All FGCU Institutes/Centers should use the university’s mission, the college’s mission, and their own mission as a guideline for this report. The three missions should be aligned with each other.

Name of the Institute/Center:

Coastal Watershed Institute

1. **What are the specific goals of your Institute/Center?**

The following goals were identified for the Coastal Watershed Institute during FY 2006-2007. These goals are directly related to the mission statement of the Institute.

**Goal A**
Address regional concerns regarding the use and conservation of coastal watersheds.

**Goal B**
Support undergraduate and graduate education in marine science and coastal watershed study.

**Goal C**
Focus and coordinate university research on coastal environments and the conservation of natural resources.

**Goal D**
Disseminate information to Southwest Florida citizens to engage and inform them about the health of coastal watersheds and related issues.

2. **What are the specific objectives of your Institute/Center?**

The following objectives were identified for each goal related to Coastal Watershed Institute programs for the 2006–2007 fiscal year. These objectives directly support the goals of the Institute and many of the objectives have already been achieved for this year.

**Goal A**

*Objective 1*
Continue to dialogue with local and regional water and resource managers to identify issues of regional concern in Southwest Florida.

**Objective 2**
Work with Rookery Bay National Estuarine Research Reserve to encourage collaborations in research, restoration, and/or education efforts that complement the missions of both the Coastal Watershed Institute and the Reserve.

**Goal B**

**Objective 1**
Provide and support research and internship opportunities in the areas of marine sciences and coastal watershed studies for undergraduate students.

**Objective 2**
Support graduate student research in the areas of marine science and coastal watershed studies.

**Objective 3**
Provide curricular enhancement to formal coursework for FGCU students in the areas of marine science and coastal watershed studies.

**Goal C**

**Objective 1**
Conduct research related to the study of sediment transport dynamics in Southwest Florida estuaries.

**Objective 2**
Conduct research programs related to the establishment of minimum flows and levels of freshwater input into Southwest Florida estuaries.

**Objective 3**
Work with water and resource managers to develop water quality targets for oyster-reef restoration in Southwest Florida and implement community-based oyster-reef restoration and enhancement projects in Southwest Florida.

**Objective 4**
Conduct research related to the geological history of oyster reefs in Southwest Florida.

**Objective 5**
Conduct research examining nutrients in the Caloosahatchee River and Estuary.

**Objective 6**
Develop new research initiative related to water contaminants.
Objective 7
Develop new research initiative related to phytoplankton ecology.

Goal D
Objective 1
Maintain a website for the Coastal Watershed Institute to inform the general public about the mission of the Institute and its activities related to education, research, and restoration.

Objective 2
Participate in public presentations and/or forums regarding issues related to the study of coastal watersheds and the work of the Coastal Watershed Institute.

3. What specific assessment measures are used to evaluate your Institute/Center?

The specific activities of the individual faculty members contributing to the Institute are compiled each year. This list is then examined with respect to how well the activities of the Institute achieved the stated goals and objectives (see assessment Appendix). Because the Institute is funded almost entirely (98.5%) through external funds, this factor is considered when evaluating the ability of the Institute to consistently meet specific objectives.

Institute planning is accomplished through monthly meetings among Institute faculty and staff. These meetings provide a forum for developing strategic initiatives that create long-term objectives as well as for discussing how to better achieve the Institute’s current stated objectives. These meetings also provide an opportunity for developing new objectives that address emerging environmental issues. To further ensure that projects related to achieving Institute objectives are properly implemented, the Director holds weekly tactical meetings with Institute staff.

4. How do you evaluate Institute/Center activities?

Each faculty member of the Institute is required to provide the Director with a list of activities related to the stated goals and objectives of the Institute. These activities are then compiled and evaluated as described previously in Question 3.

Furthermore, the activities of the Institute as well as other pertinent information are provided annually to the Provost, to the University Grants and Research Team, and to the Dean of the College of Arts and Science to ensure that the work of the Institute is in keeping with the missions of both the University and the College.

5. Please define your service area. “Five-county area” is too vague. Please identify who is being served and what does it cost the community.
As its name implies, the Coastal Watershed Institute primarily supports the coastal counties of the University’s service area with research, education, and outreach activities focusing specifically on Lee and Collier counties: Caloosahatchee River, Estero Bay, Naples Bay, and the Ten Thousand Islands adjacent to the Florida Everglades. However, communities that lie within these watersheds comprise the service area of the Institute and therefore the actual service area extends far inland as upstream activities in each watershed affect coastal waters downstream.

The Coastal Watershed Institute exists at no cost to the community. In fact, rather than costing the community, the Institute provides a range of benefits to the community. Because 98.5% of the FY 2006-2007 budget consisted of external grants and contracts as well as private funds, the Institute brought dollars into the service area that would not have otherwise been available. Furthermore, the activities of the Institute not only resulted in direct income to local businesses, but by contributing jobs to the region, local revenue is also enhanced indirectly as these employees contribute to the local economy through their private spending. In addition, through its research and community-based restoration efforts, the Institute is involved in improving the quality of life in Southwest Florida by conserving and improving local water bodies that provide such amenities as fishing, boating, beaching, and bird watching to tourists and residents alike.

6. Please provide a brief narrative explaining the actual expenditures pertaining to your Institute/Center. Explain actual expenditures for each budget category as specified in the annual report submitted to the Division of Colleges and Universities (DCU). For example, an explanation of SUS appropriated funds (if any), contracts & grants, fees for service, private and other.

Budget expenditures for the fiscal year ending June 30, 2007 totaled $1,881,994 with 98.5% of the funding coming from external grants and contracts ($1,823,673) and private funds ($30,250) (see section on Current Resources). These expenditures were higher than the $1,544,125 projected in the proposed 2006-2007 budget due to the growth of the Institute and the resulting additional funding from external grants and contracts. State University System appropriated funds received were used to support a course release each semester and a small stipend for the Institute’s director and totaled an additional $28,072.

Of the total expensed in FY 2006–2007, $1,316,770 was directed toward salaries and benefits (faculty, A&P, and USPS positions): course releases and summer salary for faculty, 7 full-time faculty/staff positions at the Coastal Watershed Institute, 16 full-time positions at the Rookery Bay National Estuarine Research Reserve, and 4 full-time positions at the Department of Environmental Protection’s Coral Reef Program in Miami.

Another $154,935 was used to support undergraduate interns working with the Institute on faculty directed research programs as well as graduate students working on their thesis research. In addition, $9,724 was provided to pay for tuition of graduate students
working with the Institute. Approximately $162,385 was used to purchase laboratory supplies and equipment and $143,559 was used to purchase capital equipment in support of the Institute’s research activities and infrastructure needs. Capital equipment purchased included an automated nutrient analyzer, mercury analyzer, an acoustic doppler current profiler for the simultaneous measurement of water velocity at various depths in the water column, an IsoMet low-speed saw and polisher for making thin slices of shell for isotopic analysis, and a new boat, motor, and trailer to support the Institute’s field operations.

7. Please provide a brief narrative explaining the anticipated budget for you Institute/Center broken down by budget category as specified in the annual report already submitted to DCU. Same categories as question 6.

Total budget expenditures for FY 2007–2008 are anticipated to be approximately $1,807,011. Sources of funding will include a Congressional Grant from the U.S. Environmental Protection Agency and grants and contracts from the Rookery Bay National Estuarine Research Reserve, the Florida Department of Environmental Protection’s Coral Reef Program, and the South Florida Water Management District. It is likely that the actual budget for 2007-2008 will exceed that estimated due to the number of grant proposals in development or pending (see section on Potential Resources); however, because of the nature of grant and contract funding, and because 98.5% of the Institute’s resources are currently derived from external funding, projected budgets and actual budgets exhibit a high degree of variation. State University System support is projected to provide $28,302 of the total expenditures.

8. Please provide an explanation of resources including current sources and potential sources of funding.

Since the Institute’s inception, its growth has been carefully planned and controlled so that its activities remain sustainable through time. In order to ensure successful operation for an extended period of time, Institute faculty will continue to pursue external funds in support of Institute programs. We anticipate future grant awards from such agencies as the South Florida Water Management District, the Charlotte Harbor National Estuary Program, the City of Sanibel, and Lee County. We are currently seeking additional infrastructure support, both equipment and staff, in the form of a Federal appropriation and we will seek new sources of grant funds from such agencies as opportunities arise.

Current Resources FY 2006-2007 (CWI faculty/staff in bold)


Florida Sea Grant. $1,000. Elise B Newell Seminar Grant. PI: AK Volety. Nov 2006

Florida Institute of Oceanography. $7,000 Shiptime. Shiptime support for Florida Gulf Coast University's Marine Science curriculum. PI: SG Tolley. Apr 2007

Florida Institute of Oceanography. $7,500. Shiptime support for Florida Gulf Coast University’s Marine Science Curriculum. PI: D Fugate. Apr 2007


South Florida Water Management District. $15,000. GIS technical support for Stormwater Management Division. PI: AN Loh. Jan–Dec 2007


Potential Resources FY 2007–2008


City of Sanibel and Lee County. $423,302. Bioavailability and sources of nutrients and the linkages to nuisance red drift algae. PI: AN Loh; Co-PIs: L Brand, J Cassani, D Ceilley, E Everham, D Fugate, E Milbrandt, M Parsons, G Rawl, B Lapointe and P Bell.


Florida Sea Grant. $150,000. Change in ecosystem condition, as measured by zooplankton community structure and trophic base, associated with seasonal freshwater inflow to the Caloosahatchee estuary. PI: SG Tolley; CoPIs: EB Peebles & DJ Hollander. Pending

South Florida Water Management District. $49,900. Dynamics of the Estuarine Turbidity Maximum (ETM) in the St Lucie Estuary. PI: D Fugate. Pending
South Florida Water Management District. $25,550. Dynamics of the Estuarine Turbidity Maximum (ETM) in the Caloosahatchee River. PI: D Fugate. Pending


Florida Gulf Coast University, Office of Research and Sponsored Programs. $5,000. Fate of Caloosahatchee River ETM associated sediment. PI: D Fugate. Jul 2007–Jun 2008


9. Please provide an explanation of space allocated for Institute/Center activities.

Although Florida Gulf Coast University is designated a comprehensive university, with both undergraduate and graduate degree programs, its primary emphasis is on undergraduate education. As such, limited laboratory facilities are available for faculty to conduct research. With the continued success of Institute faculty in securing funding for watershed research, the growth in the Marine Science undergraduate program, and the growth in the Environmental Science graduate
program, these already limited facilities prove increasingly inadequate. A new marine research and education laboratory has already been identified as a priority on FGCU’s Capital Improvement Plan and is on the State of Florida’s Public Education Capital Outlay. FGCU has also been diligently seeking a private-public partnership to move this project forward: private funds will be used to leverage additional funding from the State using the Courtelis Capital Facilities Matching Trust Fund.

FGCU is currently working with the Rookery Bay National Estuarine Research Reserve to put the finishing touches on a 34-year sublease agreement for a 20-acre parcel of property within the Reserve for the purpose of locating the proposed marine research and education laboratory. This site is located approximately 35-40 minutes south of FGCU’s main campus, consists of ~14 buildable acres of disturbed uplands, and has available infrastructure nearby. The proposed facility will take the form of a small campus of adjacent or interconnected buildings that meets the research, education, and support needs of a marine lab and that is appropriate to the site itself. Actual square footage of the laboratory will be predicated on available funding, but current preliminary plans envision a 25,000 square-foot facility. The campus approach is appropriate because of the programming elements involved: in addition to classroom and laboratory space, the facility will consist of wet labs (aquarium rooms), office space, meeting space, boat storage, and support space for field operations.

The University recently purchased waterfront property in Bonita Springs to be used as a marine and environmental field station. Although limited in size and facilities, the property does offer the potential to create additional laboratory space and flow-through seawater systems for maintaining marine organisms. In addition, the property has a number of boat slips providing access to coastal and estuarine environments in and around Estero Bay.

Existing space currently allocated to the Coastal Watershed Institute is located in Whitaker Hall and is detailed below:

**Laboratory Space**

*Microscope Lab (WH 105):* This multipurpose laboratory is used primarily for sorting, identifying, and cataloguing marine organisms. Housed in the lab are a number of dissecting stereo-microscopes including a high-end zoom microscope connected to a digital camera and monitor for imaging marine organisms, a petrological scope for examining thin slices of rock, and an inverted compound microscope. Also contained within the lab are a biological fume hood and a vapor pressure osmometer.

*Combined Marine Chemistry/Physics/Geology Lab (WH 110):* This laboratory houses specific research capabilities including: gas chromatograph mass spectrometer; calorimeter; and total organic carbon, particle size, automated nutrient and mercury analyzers.
**Sedimentology Lab (WH 125F):** This laboratory is where sediment cores are processed, analyzed, and archived for studies on sea-level rise and paleo-environmental conditions.

**Marine Physiology Lab (WH 127):** This laboratory houses a micro-plate reader and general laboratory equipment and supplies. Principal activities conducted in this lab are related to the physiological responses of marine organisms to environmental stress and include the examination of energy stores, disease prevalence and condition, and reproductive state of marine organisms.

**Histology Lab (WH 266D):** This space houses a new microtome/embedding system and is used for processing tissue samples.

**Support Space**

**Wet Lab (WH 127A):** This is an aquarium room where marine organisms are maintained under controlled and experimental conditions to examine the effects of environmental stressors on physiology. The lab is located immediately adjacent to the marine Physiology Lab.

**Coastal Watershed Institute Main Office (WH 231):** This room houses office space for three CWI staff members, grant and purchasing information maintained on file, all quality assurance and quality control documents required by the U.S. Environmental Protection Agency, and other documents and materials related to the operation of the Institute. In addition, a high-speed laser printer, a color laser printer, and a report binding machine are on hand for use by Institute faculty and staff.

**Shared Space**

**Mud Room (WH 126):** This multipurpose space is shared with faculty and students from the Environmental Studies program and is used primarily as a staging area for field operations; as location for work that does not require conditioned space; and as storage for field, boat, and safety equipment as well as tools and spare parts. This space is located immediately adjacent to a loading dock for loading and unloading Institute boats and tow vehicles.

**Geographic Information System Lab (GIS) (WH 230):** This space is allocated for use by both faculty and students working on research projects. The room houses multiple computers purchased by the Institute, a large-format printer-plotter for creating maps and posters, a variety of statistical, mapping, data imaging, and GIS software, and a Global Positioning System (GPS) to ground-truth environmental and mapping data using GIS software. Students from all disciplines of the College utilize this room for creating posters to capture their capstone experiences as well as to present the results of their work at FGCU’s annual Research Day held each spring. In addition, graduate students in the
Environmental Science program utilize this space for analyzing data and for writing related to their thesis work.

*Environmental Lab (WH 128):* Although this space is primarily allocated for use by faculty in the Environmental Studies program, several Institute faculty utilize the space. The relevant research capabilities housed in this space include acoustic and optical backscatter instruments, a CTD (conductivity-temperature-depth), a laser in situ scattering and transmissometer, and rotating side-scan sonar.

10. **How has the Institute/Center enhanced the mission of FGCU during the past year?**

The Coastal Watershed Institute has made significant contributions to environmental education and research at FGCU. During the past year, Institute faculty have attracted external funding for both research and education, and have obtained significant resources, financial and otherwise, to support both undergraduate and graduate students.

The Coastal Watershed Institute provides additional resources and training opportunities for students in both the undergraduate Marine Science and graduate Environmental Science programs. These programs help ensure that FGCU achieves its goals related to environmental education, especially with respect to water-related issues and the study of coastal and estuarine environments. Both of these academic programs provide students with the technical training they will need for an increasingly competitive job market, and both require students to become actively involved in research as part of their educational experience.

The Institute has also taken a leadership role in restoration coordination in Southwest Florida through its involvement with the Greater Everglades Ecosystem Restoration, an $8 billion public works project. For example, Mike Savarese developed an agency-based consensus-building process to assess environmental science and restoration needs through the formation of the Big Cypress Watershed Restoration Coordination Team (BCW RCT) and the larger Southwest Florida Regional Restoration Coordination Team (SWFL RRCT). These teams prioritize restoration needs and forward recommendations to the South Florida Ecosystem Restoration Working Group, which in turn advises the Federal Task Force on Everglades Restoration. Savarese has chaired or co-chaired both the BCW RCT and the SWFL RRCT, and is currently a member of both organizations. In addition, Greg Tolley serves on the Northern Estuaries Fish Subteam for the Restoration Coordination and Verification (a.k.a. RECOVER) of the Everglades Comprehensive Restoration Plan.

Furthermore, the Coastal Watershed Institute enhances the contributions of FGCU to research and education related to regional water issues by developing partnerships with other agencies and organizations in Southwest Florida. For
example, the partnership with the Rookery Bay National Estuarine Research Reserve, located southeast of Naples, Florida, will continue to enhance educational opportunities for FGCU students and will increase the scope and scale of watershed research throughout the 110,000-acre Reserve. As part of the partnership the Reserve will serve as the eventual home for the FGCU marine laboratory as well as for the Coastal Watershed Institute.

11. What unique research capabilities and opportunities have been fostered through Institute/Center activities over the past year?

Florida Gulf Coast University is in the right place at the right time to provide leadership and expertise in the field of coastal watershed studies. The five-county service area designated for the University includes all or portions of the following important watersheds: the Peace and Myakka rivers, Charlotte Harbor, the Caloosahatchee River and Lake Okeechobee, Estero Bay (the State’s first aquatic preserve), Naples Bay, the Rookery Bay National Estuarine Research Reserve, the Ten Thousand Islands, and the Florida Everglades. Although some of these watersheds are relatively healthy, major challenges exist in managing them effectively in the face of tremendous population growth and the concomitant development and changes in land and water use. Several of these watersheds are currently the subjects of intensive restoration, including what has been referred to as the world’s largest ecosystem restoration effort—the Comprehensive Everglades Restoration Plan. This long-term restoration plan has significant research and education components that can be addressed by the Coastal Watershed Institute.

Focusing on the study of coastal watersheds highlights and complements the strength of existing FGCU faculty and staff in the College of Arts and Sciences. Faculty have been working with the South Florida Water Management District (SFWMD) to understand the influence of variability in freshwater inflow on the health of oysters and the use of oyster-reef habitat by associated organisms. This information is being used to establish minimum flows of freshwater into Estero Bay and has already been used to modify the water release schedules from Lake Okeechobee into the estuary for the benefit of estuarine ecosystems downstream. Institute faculty have also been trying to identify water quality conditions (including salinity, a proxy for freshwater inflow) that are conducive to healthy oysters and robust oyster-reef communities. As a result faculty have been working with the SFWMD to develop performance measures for both the Caloosahatchee Estuary and Estero Bay as part of ongoing water management and restoration projects. Institute faculty have also been directly involved in oyster-reef restoration in several Southwest Florida estuaries. Using the above data, Institute faculty have identified locations in local estuaries where water quality conditions are favorable for oyster-reef growth, but where no hard substrate currently exists for the attachment of oyster larvae. Working with representatives from state and federal agencies, volunteers from the local community, and FGCU students, Institute faculty and staff then place bagged oyster shell in these areas to create a hard surface on which young oysters
can attach and grow. These community-based restorations programs combine sound science with environmental stewardship in order to restore or enhance important ecosystems in Southwest Florida estuaries. In recognition of this work, several members of the Institute’s faculty and staff, along with FGCU students and community volunteers, were presented this year with a Coastal America Partnership Award by Timothy Keene, Deputy Assistant Secretary of Commerce for Oceans and Atmosphere, of the National Oceanographic and Atmospheric Administration. This past year, Institute faculty have also begun research initiatives on red tide, sediment transport, and water contaminants in Southwest Florida estuaries

Research Capabilities:

Oyster physiology. – Research includes investigating the effects of watershed alteration, freshwater inflow, and contaminants on the biochemical, physiological, and ecological responses of oysters.

Geobiology. – Research addresses the interpretation of the history of environmental change during the late Holocene (past 5,000 years), including the effects of sea-level rise on coastal environmental evolution, the history and paleoecology of reef development, and the effects of environmental change on oyster reef ecology.

Marine Organic Geochemistry. – Research investigates the character, sources, fate and transport of natural organic matter and nutrients. Specific capabilities include stable and radio-isotope analysis, total dissolved and particulate carbon analysis, and nutrient analysis.

Sediment Transport. – Research focuses on the development of three-dimensional sediment transport models with emphasis on coastal and estuarine circulation, sediment transport and changes in geomorphology resulting from altered freshwater inflow, and on sedimentation rates associated with mangrove ecosystems.

Ecotoxicology. – Research focuses on the study of transport, fate and ecological effects of contaminants, in particular mercury, within coastal watersheds.

Phytoplankton Ecology. – Research on the responses of phytoplankton populations to changing environmental conditions and how these responses affect higher trophic levels. Research focuses on harmful algal bloom species in which algal-borne toxins can be transferred to higher trophic levels resulting in marine life mortalities and human health concerns.

Estuarine Ecology. – Research investigates the influence of freshwater inflow on estuarine communities including the distribution and abundance of target organisms, the ecology of marine fishes, and the role of oysters in creating essential fish habitat.
Research Opportunities:

The above research capabilities have resulted in numerous collaborations with researchers at other institutions and agencies across the country as well as direct partnerships with institutions, agencies, and organizations.

Collaborators

Tomma Barnes, PBS&J, New Orleans
Larry Brand, University of Miami
Scott Burghart, University of South Florida
David Bushek, Rutgers University
Robert Brumbaugh, The Nature Conservancy
Robert Chant, Rutgers, The State University of New Jersey
Loren Coen, South Carolina Department of Natural Resources
Tim Dellapenna, Texas A&M University
Peter Doering, South Florida Water Management District
Ray Grizzle, University of New Hampshire
Cindy Heil, Florida Fish and Wildlife Research Institute
David Hollander, University of South Florida
Heather Hunt, University of New Brunswick, California
Rami Keren, Hebrew University of Jerusalem, Israel
Mark Luckenbach, Virginia Institute of Marine Science
Frank Mazzotti, University of Florida
Eric Milbrandt, Sanibel Captiva Conservation Foundation
Ernst Peebles, University of South Florida
Martin Posey, University of North Carolina Wilmington
Sean Powers, University of South Alabama
Larry Sanford, University of Maryland
John Trefry, Florida Institute of Technology
Arnoldo Valle-Levinson, Florida State University

Partners

Big Cypress Basin, South Florida Water Management District
Charlotte Harbor National Estuary Program
Conservancy of Southwest Florida
Department of Environmental Protection, Miami
Fish America Foundation, National Oceanic and Atmospheric Administration
Florida Fish and Wildlife Research Institute
Florida Institute of Oceanography
Florida Sea Grant
Mote Marine Laboratory
Rookery Bay National Estuarine Research Reserve
South Florida Water Management District
Sanibel Captiva Conservation Foundation
12. Please provide a summary of activity during the last completed fiscal year (FY) detailing presentations, expert testimony, training programs, publications, grant awards, recognition received, etc. include a link to your Institute/Center Web site.

Peer-Reviewed Publications (CWI faculty/staff in bold; * Denotes student author)


Fugate, DC & CT Friedrichs. 2007. Lateral dynamics and associated transport of sediment in the upper reaches of a partially mixed estuary, Chesapeake Bay, USA, *Continental Shelf Research* 27:679-698


Conference Presentations (* Denotes student author; CWI faculty/staff in bold)

Invited


Volety, AK, SG Tolley & M Savarese. 2007. Achieving ecological restoration: consideration of factors influencing the success or failure of restoration efforts. Florida Oyster Reef Restoration Summit, St. Petersburg, FL


Contributed


Volety, AK, SG Tolley, M Savarese, R Wasno* & T Barnes. 2006. Role of bivalves in estuarine management: a case study from Southwest Florida. International Congress on Medical and Applied Malacology, Qingdao, China

Volety, AK, DJ Crean, P Doering & TK Barnes. 2006. Relationship between freshwater inflows and shellfish responses in Estero Bay, Florida: utilizing shellfish responses in ecosystem management and restoration. American Society of Limnology and Oceanography, Santa Fe, NM


Agobian, JN* & M Savarese. 2006. Community shifts resulting from anthropogenic manipulation of the Caloosahatchee watershed: mollusk assemblages as indicators of environmental change. Greater Everglades Ecosystem Restoration Conference, St. Petersburg, FL

Gilmour, CC, WH Orem, D Krabbenhoft, GR Aiken & D Rumbold. 2007. Sulfur contamination of the Everglades: effects on methylmercury production and implications for ecosystem restoration. American Society of Limnology and Oceanography, Santa Fe, NM

Rumbold, DG. 2006. Ecological risk at a methylmercury hot spot in the Florida Everglades. Society of Environmental Toxicology and Chemistry, Montréal, Québec, Canada

Technical Reports


**Grants and Contracts** (Awarded 2006-2007)


Florida Fish and Wildlife Research Institute. $45,000. Monitoring of red tide in the northwestern Everglades and adjacent coastal areas. PI: **ML Parsons.** Apr 2007–Oct 2008

Charlotte Harbor National Estuary Program. $15,000. Fate of Caloosahatchee River ETM associated sediment. PI: **D Fugate.** Apr 2007-Sep 2008

Florida Sea Grant. $628. Elise B Newell Seminar Grant. PI: **SG Tolley.** Mar 2007

Florida Sea Grant. $1,000. Elise B Newell Seminar Grant. PI: **AK Volety.** Apr 2006

Florida Institute of Oceanography. $7,000 Shiptime. Shiptime support for Florida Gulf Coast University's Marine Science curriculum. PI: **SG Tolley.** Apr 2007

South Florida Water Management District. $50,000. Caloosahatchee Estuary oyster monitoring and research. PI: **AK Volety.** Mar–May 2007

South Florida Water Management District. $21,000. Mercury-sulfur technical support I & II. PI: **DG Rumbold.** Nov 2006–Apr 2007

South Florida Water Management District. $8,288. Support for Lower West Coast Water Review Staff. PI: **AN Loh.** May–Oct 2007

South Florida Water Management District. $15,000. GIS technical support for Stormwater Management Division. PI: **AN Loh.** Jan–Dec 2007

South Florida Water Management District. $13,792. Support for Lower West Coast Compliance Staff. PI: **AN Loh.** Oct 2006–Oct 2007

**Seminars/Public Presentations**

Ave Maria University, Immokalee, FL, 2007 (Tolley)
Bailey-Matthews Shell Museum, Sanibel Island, FL, 2007 (Tolley)
Comcast Broadcasting documentary: Climate change and sea level rise. Fort Myers, FL 2007 (Savarese)
Friends of Tigertail Beach, Marco Island, FL, 2007 (Savarese)
Everglades National Park Staff, Everglades National Park 2006 (Savarese)
Friends of Tigertail Beach, Marco Island, FL, 2007 (Savarese)
Gulf of Mexico Alliance, Naples, FL 2007 (Savarese)
13. Please provide a list of university personnel who are affiliated with your specific Institute/Center and a summary of their contribution to the Institute Center over the past year.

S. Gregory Tolley, Professor of Marine Science, Director of the Coastal Watershed Institute. – Dr. Greg Tolley oversees the day-to-day operations of the Institute. In addition to the responsibilities listed below, Dr. Tolley also maintains an active research agenda and serves as faculty advisor to five graduate students whose theses are related to the study of coastal watersheds.

Supervisory Responsibilities. – Hiring faculty and staff and supervising staff at FGCU, the Rookery Bay National Estuarine Research Reserve (RBNERR) in Naples, and the Department of Environmental Protection Coral Reef Program in Miami (DEP Miami). Through partnership agreements with the latter two agencies, Dr. Tolley is ultimately responsible for supervising 20 employees working at Rookery Bay and at DEP Miami. On the FGCU campus, Tolley was responsible for supervising two research assistants and a program assistant.

Project Administration. – In addition to his responsibilities related to the administration of research grants at FGCU, Tolley was the principal investigator on the Coastal Watershed Institute Partnership grant ($716,218) that funded 16 positions at the Rookery Bay National Estuarine Research Reserve and on the Coral Reef Conservation Program grant ($320,513) that funded 4 positions at the Department of Environmental Protection, Coral Reef Program in Miami. Tolley was also principal investigator for a Congressional Award through the U.S. Environmental Protection Agency that provided another $1,192,900 in funding for coastal watershed research in Southwest Florida and served as PI on a $200,000 grant from the South Florida Water Management District.

Marine Laboratory Development. – Tolley has been serving as FGCU’s point person regarding the development of a new marine laboratory to be located within the Rookery Bay National Estuarine Research Reserve (RBNERR). During FY 2006–2007 this responsibility included working with the FGCU administration and RBNERR to finalize a 34-year sublease for the 20-acre parcel of land on which the marine lab will be sited. Tolley also had discussions
with a donor regarding a potential seven-figure gift to the University to be used specifically to fund this project.

**Coastal Watershed Institute Administration.** – Tolley’s primary responsibility as Director of the Coastal Watershed Institute involves the work of the Institute itself. As a result, he was responsible for the following activities and programs during FY 2006–2007.

- Strategic planning and budgeting in order to accomplish the Institute's mission
- Developing and maintaining partnerships with other water-related agencies in Southwest Florida
- Participating along with RBNERR representatives in the short-term and long-term planning for cost-shared positions between the two organizations
- Participating in public relations related to the Institute.
- Allocating resources and coordinating major equipment purchases
- Coordinating facilities support for the Marine Science undergraduate curriculum and the Environmental Science graduate curriculum.
- Assessment and reporting requirements

Aswani K. Volety, Professor of Marine Science, Chair of the Division of Marine and Ecological Sciences. – During FY 2006–2007, Dr. Volety’s primary contributions included budget preparation and strategic planning, developing and maintaining partnerships with local agencies and organization, and participation in the research and education goals of the Institute. Volety is also responsible for overseeing a significant portion of the Institute’s outreach program through its community-based oyster reef projects. Volety also serves as the Quality Assurance Manager for the Institute and as such is responsible for reviewing all quality control and quality assurance plans related to the environmental data operations of the Institute.

Mike Savarese, Professor of Marine Science, Director of Graduate Studies. – During FY 2006–2007, Dr. Savarese’s primary contributions included active participation in the research and educational goals of the Institute as well as strategic planning.

Ai Ning Loh, Assistant Professor of Marine Science. – During FY 2006–2007, Dr. Loh’s primary contributions included active participation in the research and educational goals of the Institute as well as strategic planning.

Fugate, David, Assistant Professor of Marine Science. – During FY 2006–2007, Dr. Fugate’s primary contributions included active participation in the research and educational goals of the Institute as well as strategic planning.
Rumbold, Darren, Associate Professor of Marine Science. – During FY 2006–2007, Dr. Rumbold’s primary contributions included active participation in the research and educational goals of the Institute as well as strategic planning.

Michael L. Parsons, Associate Professor of Marine Science. – Dr. Parsons joined the Institute in January 2006. During FY 2006-2007, Dr. Parsons’ primary contributions included serving as principal investigator on a research grant related to the Institute’s mission and building collaborations among local/regional researchers and community leaders from which future research, educational and outreach initiatives will be developed.

Edwin M. Everham III, Associate Professor of Environmental Studies. – During FY 2006–2007, Dr. Everham’s primary contributions included active participation in the research and educational goals of the Institute.

Lesli Haynes, Research Assistant. – Ms. Haynes’ primary responsibilities include the coordination and direct oversight of field and laboratory operations related to the Institute’s research and education programs. Haynes also serves as an onsite supervisor of undergraduate interns working with the Institute.

Amanda Booth, Research Assistant. – Ms. Booth’s primary responsibilities include the scheduling, coordination, and direct oversight of field and laboratory operations related to the Institute’s research and education programs. Booth also serves as an onsite supervisor of undergraduate interns working with the Institute.

Christal Niemeyer, Program Assistant. – Ms. Niemeyer’s primary responsibilities include arranging for all purchasing and travel related to the Institute, maintaining up-to-date files and budget information, and assisting the Director on issues related to human resources as well as other day-to-day operations of the Institute. Threet also serves as the Document Management Coordinator for the Quality Management Plan (quality assurance/quality control) of the Institute.

Sarah Davis, Executive Assistant of the Big Cypress Restoration. – Ms. Davis’ responsibilities include planning, coordinating, and organizing meetings for Big Cypress Restoration Coordination Team (RCT); updating the Big Cypress Science Plan and delivering it to relevant audiences; coordinating with other watershed initiatives; mapping regional monitoring efforts; and representing the Big Cypress RCT at Regional Restoration Coordination Team meetings.

Vincent Encomio, Post-Doctoral Fellow. – Dr. Encomio is responsible for laboratory analyses of bivalve responses, developing and optimizing techniques to detect stress in marine organisms, and analyzing the data and drafting reports. Dr. Encomio's work focuses on the physiological responses of organisms at the cellular, organelle, and organism level.
Alayde Barbosa, Research Technician. Dr. Barbosa is responsible for the analysis of nutrients and other water quality samples, and for providing technical support to geobiology projects.

Liza Delizo, Research Technician. Ms. Delizo is responsible for helping in laboratory analyses of oyster responses as well as setting up both an algal culture facility for shellfish nutrition and a shellfish hatchery.

The following personnel are affiliated with the Coastal Watershed Institute through a partnership grant with the Rookery Bay National Estuarine Research Reserve; however, they work at Rookery Bay and their primary responsibilities are related to the education, research, restoration, and public outreach goals of the RBNERR (www.rookerybay.org/)

Beverly Anderson, Research Specialist. – Responsible for the Coastal Bird Monitoring program within the RBNERR.

Greg Curry, Resource Management Specialist. – Responsible for coordinating environmental restoration projects conducted within the RBNERR.

Sarah Falkowski, Program Coordinator, Environmental Learning Center. – Assists the ELC Manager in the on-site oversight of the Environmental Learning Center at Rookery Bay. Coordinates public outreach programs run through the Center. On-site responsibilities include the training of volunteers and scheduling of special events.

Joy Hazel, Assistant Coordinator, Coastal Training Program. – Assists the Coastal Training Program Coordinator in the development, coordination, and delivery of educational programs aimed at training local decision makers regarding the use of sound science as a basis for environmental decision-making.

Amelia Horadam, Manager, Environmental Learning Center. – Responsible for day-to-day oversight of the Environmental Learning Center at Rookery Bay and for public outreach programs run through the Center. Responsibilities include the training of volunteers, business management, purchasing, and scheduling of special events.

Joni Grove, Coordinator Educational Training Programs. – Responsible for the development and delivery of informal education programs for participating schools and the general public.
Vicki McGee, Water Quality Specialist. – Responsibilities include deploying and maintaining automated water-quality monitoring devices throughout the RBNERR. Related responsibilities involved the management of the data stream generated by this water-quality monitoring system.

Cheryl Metzger, Resource Management Specialist. – Responsible for coordinating environmental restoration projects conducted within the RBNERR.

Laura Novosad, Volunteer Coordinator. – Responsible for orientation, scheduling, and training of volunteers working with the RBNERR.

Amanda O’Connell, Program Assistant. – Responsible for orientation of visitors to the Environmental Learning Center as well as for the day-to-day operations of the nature store.

Christina Panko, Water Quality Assistant. – Responsibilities include deploying and maintaining automated water-quality monitoring devices throughout the RBNERR. Related responsibilities involved the management of the data stream generated by this water-quality monitoring system.

Jill Schmid, GIS Specialist. – Ms. Schmid is responsible for training RBNERR staff in incorporation of Geographic Information Systems (GIS) in research and restoration projects. She is also a certified technician who creates and manages many of the RBNERR GIS databases.

Robert Sebold, Marine Mechanic. – Oversees vessel usage and maintenance. Coordinates training for RBNERR staff, FGCU faculty and students, and visiting scientists in the proper use of RBNERR resources.

Tabitha Stadler, Coordinator, Coastal Training Program. – Responsible for the development, coordination, and delivery of educational programs aimed at training local decision makers regarding the use of sound science as a basis for environmental decision making.

Brenda Varnes, Administrative Assistant. – Assists the Environmental Manager in the day-to-day operations of the RBNERR.

Renee Wilson, Research Translator. – Responsibilities include the development and delivery of public outreach activities related to marine and coastal education. Specifically, Ms. Wilson was one of the RBNERR staff responsible for leading educational field trips within Rookery Bay for FGCU students and faculty.
The following personnel are affiliated with the Coastal Watershed Institute through a partnership grant with the Department of Environmental Protection, Coral Reef Program; however, they work in Miami, Florida and their primary responsibilities are related to education, conservation, and public outreach (www.dep.state.fl.us/COASTAL/programs/coral/).

Christopher Boykin, Awareness and Appreciation Project Coordinator. – Provides technical assistance and leads the planning and implementation of local action strategy projects identified in the Awareness & Appreciation section of the Southeast Florida Coral Reef Initiative.

Nicholas Gadbois, Land-Based Sources of Pollution Project Coordinator. – Provides technical assistance and leads the planning and implementation of local action strategy projects identified in the Land-Based Sources of Pollution section of the Southeast Florida Coral Reef Initiative.

Joanna Walczak, Coral Reef Program Coordinator. – Assists the Coral Reef Program Manager in all aspects of planning, directing and coordinating the implementation of the Southeast Florida Coral Reef Initiative (SEFCRI) Local Action Strategies, as developed by the SEFCRI Team of stakeholders and other interested parties.

Robert Rudzika III, Fishing, Diving and Other Uses Project Coordinator. – Provides technical assistance and leads the planning and implementation of local action strategy projects identified in the Fishing, Diving & Other Uses section of the Southeast Florida Coral Reef Initiative.

14. Please provide a statement of goals and objectives for the current fiscal year.

The following goals and objectives were identified as targets for Coastal Watershed Institute activities for the 2007–2008 fiscal year. These goals are directly related to the mission statement of the Institute and many of the objectives have already been achieved for this year.

Goal A
Address regional concerns regarding the use and conservation of coastal watersheds.

Objective 1
Continue to dialogue with local and regional water and resource managers to identify issues of regional concern in Southwest Florida.

Objective 2
Work with Rookery Bay National Estuarine Research Reserve to encourage collaborations in research, restoration, and/or education efforts that complement the missions of both the Coastal Watershed Institute and the Reserve.
Goal B
Support undergraduate and graduate education in marine science and coastal watershed study.

Objective 1
Provide and support research and internship opportunities in the areas of marine sciences and coastal watershed studies for undergraduate students.

Objective 2
Support graduate student research in the areas of marine science and coastal watershed studies.

Objective 3
Provide curricular enhancement to formal coursework for FGCU students in the areas of marine science and coastal watershed studies.

Goal C
Focus and coordinate university research on coastal environments and the conservation of natural resources.

Objective 1
Conduct research related to the study of sediment transport dynamics in Southwest Florida estuaries.

Objective 2
Conduct research programs related to the influence of freshwater inflow on estuarine ecosystems.

Objective 3
Work with water and resource managers to develop water quality targets for oyster-reef conservation and restoration in Southwest Florida.

Objective 4
Conduct research related to the geological history of oyster reefs in Southwest Florida.

Objective 5
Conduct research examining nutrients in the Caloosahatchee River and Estuary.

Objective 6
Conduct research initiative related to water contaminants.
Objective 7
Develop a new research initiative to study the dynamics of algal-borne toxin transfer into coastal food webs in Southwest Florida, potentially with human-health implications.

Goal D
Disseminate information to Southwest Florida citizens to engage and inform them about the health of coastal watersheds and related issues.

Objective 1
Maintain a website for the Coastal Watershed Institute to inform the general public about the mission of the Institute and its activities related to education, research, and restoration.

Objective 2
Participate in public presentations and/or forums regarding issues related to the study of coastal watersheds and the work of the Coastal Watershed Institute.

Objective 3
Develop a pilot outreach initiative to engage local citizens in addressing human-health implications regarding harmful algal blooms in the coastal waters of southwest Florida.

15. To what extent are students involved in the activities of your Institute/Center?

One of the primary goals of the Coastal Watershed Institute is to support undergraduate and graduate education in marine science and coastal watershed studies. Accordingly, a conscious effort is made by the Institute to encourage and promote undergraduate research, to support graduate research, and to enhance both the undergraduate and graduate curriculum.

Undergraduate students are involved with the Institute in a variety of ways. This past year the Institute provided internships for 21 FGCU undergraduates so that they could participate in ongoing research and restoration programs related to coastal watersheds. These students work alongside faculty and staff to help accomplish the mission of the Institute. One undergraduate was coauthor with several Institute faculty of a peer-reviewed publication, two undergraduates coauthored a technical report, and 6 undergraduates coauthored professional presentations made at national conferences.

The Institute not only promotes graduate research but also relies on graduate students to accomplish its mission. During 2006-2007, 17 graduate students in the Environmental Science M.S. Program were advised by Institute faculty. Tuition for 5 of these students and assistantships for 7 of these students were provided using Institute funds. Many of these graduate students were actively involved in the
Institute’s sponsored research programs and 10 of these students were first authors or coauthors on presentations at national and international conferences. One graduate student was coauthor of a peer-reviewed publication. Institute funds were also used to help support travel of 1 graduate student to a workshop on statistical analysis.

The Institute was also responsible for enhancing both the undergraduate and graduate curriculum by writing successful proposals to fund teaching cruises on a state operated oceanographic research vessel for two classes. Faculty members with the Institute also wrote successful proposal to bring two nationally renowned researchers to FGCU to give a seminar presentation to students and faculty.

Finally, a major component of the Institute’s community outreach effort includes community-based restoration of oyster reefs. For the past several years, FGCU students have been involved in every phase of this project from helping collect and process the data that enables Institute faculty to identify potential sites for restoration, to bagging fossil oyster shell for use as a substrate to promote the attachment of young oysters, to working alongside faculty, staff, and volunteers from the local community in creating new reefs using these bags as building blocks.