Partnership Directs Program

The Indian River Lagoon National Estuary Program is a partnership whose members work to improve the water quality and ecological integrity of the 156-mile long estuary on Florida’s east coast.

The U. S. Environmental Protection Agency (EPA) designated the lagoon as “an estuary of national significance” in April 1990 and included the lagoon in the National Estuary Program.

The Lagoon program began in April 1991, with oversight and funding from EPA. The St. Johns River and South Florida water management districts, the five counties that border the lagoon – Volusia, Brevard, Indian River, St. Lucie and Martin – and representatives of state, federal and regional governments and agencies make up the Indian River Lagoon Advisory Board, a board charged with guiding and overseeing the lagoon’s protection and restoration.

The lagoon program is sponsored by St. Johns River Water Management District and is housed at the District’s Palm Bay Service Center. The St. Johns District oversees lagoon work in Volusia, Brevard and Indian River counties. The South Florida District oversees lagoon work in St. Lucie and Martin Counties.
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Section A. General Information Reporting Requirements

A.1. Comprehensive Conservation and Management Plan Goals for Fiscal Year 2011-2012*

Biodiversity
BD-2 Acquire and effectively manage environmentally sensitive lands as a tool to preserve, protect and restore the biological diversity, functional integrity and productivity of the Indian River Lagoon region. Priority- High.

Endangered and Threatened Species
ETS-3 Protect and manage the critical habitats of endangered, threatened or species of special concern found within the Indian River Lagoon region through land acquisition and other land protection measures. Priority- High.

Fisheries
F-1. Conserve, protect, restore and manage the finfish and shellfish resources in the Indian River Lagoon region. Priority- High.

Fresh and Storm Water Discharges
FSD-1. Complete or continue the diagnostic, management or pilot projects related to stormwater or freshwater discharges being planned or undertaken by federal, state, regional and local governments. Priority- High.
FSD-4 Develop and implement best management practices (BMPs) for the management of stormwater, agricultural and fresh water discharges. Priority- High.
FSD-11. Educate residents and property owners about the impacts of freshwater and stormwater discharges on the Indian River Lagoon and what they can do to reduce these impacts. Priority- High.
FSD-13. Upgrade existing urban and agricultural stormwater systems to reduce pollutant loadings to the Indian River Lagoon. Priority- High.
FSD-14. Develop and implement appropriate mechanisms to fund and undertake the operation, maintenance and improvement of urban and agricultural stormwater management systems to reduce pollutant loadings. Priority- High.

IRL CCMP Implementation Oversight
FI-1. Continue the Indian River Lagoon Advisory Board’s role of oversight, monitoring, and guidance of implementation of the IRL CCMP. Priority- High.

Monitoring
MON-1. Continue projects related to monitoring the resources of the Indian River Lagoon and address gaps in data as needed. Priority- High.

Public Involvement and Education
PIE-1. Implement and expand public involvement and education projects or programs. Priority- High.
PIE-2. Develop, implement and refine a communications plan to inform stakeholders and government officials about the resources of the Indian River Lagoon, the economic and ecological value of these resources and threats to the continued viability of these resources. Priority- High.
PIE-4. Increase public and governmental involvement in activities designed to protect and restore the resources of the Indian River Lagoon. Priority- High.
Seagrass Protection, Restoration and Management
SG-1. Implement a program of protection, restoration and management activities needed to maintain, protect and restore the seagrass/SAV community of the Indian River Lagoon. *Priority - High.*

Wetlands

Total Maximum Daily Loads (TMDLs)
TMDL-1 Develop, implement, and update TMDLs for all areas of the Indian River Lagoon. *Priority- High.*
TMDL-3 Support implementation of Basin Management Action Plans (BMAPs) for all basins requiring TMDLs. *Priority-High.*

*Total of 20 High Priority Action Plans within 10 CCMP categories*
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<tr>
<th>Activity</th>
<th>Applicant</th>
<th>CCMPP Action Plan and Priority</th>
<th>Project Title and Abstract</th>
<th>CWA320 Funding FY 2012-2013</th>
<th>Project Partner Match</th>
<th>Total Project Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Indian River Lagoon National Estuary Program</td>
<td>High (FI-1) High (FI-2)</td>
<td>Support of NEP Project Office staff salaries and benefits for 2 FTEs to continue CCMP implementation, work plan development and implementation, project management, contracts management, program coordination and Management Conference administration.</td>
<td>189,311</td>
<td>189,311</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>St. Johns River Water Management District</td>
<td>High (MON-1)</td>
<td>Indian River Lagoon Living Resources and Water Quality Monitoring. Funding will support 3 Environmental Scientist FTEs to continue the long term living resources monitoring (seagrass and biological) and water quality collection and analysis. The data from these activities generate the core information for seagrass and water quality evaluation, development and measurement of performance measures (TMDLs) and the lagoon’s overall status and trends. SJRWMD will contribute $121,715 of staff in-kind match.</td>
<td>259,001</td>
<td>121,715</td>
<td>380,716</td>
</tr>
<tr>
<td>3</td>
<td>Indian River Lagoon National Estuary Program</td>
<td>High (FSD-11) High (PIE-2)</td>
<td>Indian River Lagoon Program Education Coordinator. The Coordinator will administer the Education Program and will coordinate the activities of the IRLNEP Citizens Action Committee, organize the annual four-day lagoon summer training workshop for IRL region teachers, and coordinate the design of the annual IRL calendar photo contest. The Coordinator also produces and disseminates IRL and District information to the community at environmental educational events, brown bag lunches and public speaking events.</td>
<td>70,000</td>
<td>70,000</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Cape Canaveral Scientific, Inc.</td>
<td>High (FSD-13) High (FSD-14)</td>
<td>2012 Grant Writing &amp; Capacity Building in Support of the IRL CCMP. This project assists local governments in meeting the challenges of financing CCMP implementation projects, and will pay for 3-grant applications during the year. The 14th year of support for this project continues to demonstrate the need of local governments to collaborate with state and federal agencies on implementation activities. Many local governments have used the service to fund capital improvement projects to implement CCMP action plans.</td>
<td>30,000</td>
<td>6,000</td>
<td>36,000</td>
</tr>
<tr>
<td>5</td>
<td>Pelican Island NWR Complex</td>
<td>High (SG-1)</td>
<td>Pelican Island Proper Restoration Phase IV Pilot Survey. Pelican Island National Wildlife Refuge is located east of Sebastian, Florida in the barrier islands between Sebastian Inlet and the Wabasso Causeway within the Indian River Lagoon. The project will inventory, map and monitor the existing seagrass beds located in the adjacent area of Pelican Island Proper to inform a Phase IV restoration effort.</td>
<td>19,300</td>
<td>13,099</td>
<td>32,399</td>
</tr>
<tr>
<td>6</td>
<td>Nova Southeastern University</td>
<td>High (TMDL-1) High (SG-1)</td>
<td>Indian River Lagoon Survey of Drift Algae Distribution and Abundance. This project will survey macroalgae (drift algae) abundance at key locations in the mainstem of the north and central Indian River Lagoon (IRL) and selected areas within the Banana River.</td>
<td>18,250</td>
<td>13,750</td>
<td>32,000</td>
</tr>
<tr>
<td>7</td>
<td>Fellsmere City</td>
<td>High (FSD-13) High (FSD-14)</td>
<td>Historic Fellsmere Storm water and Flood Control Master Plan. The project seeks the Development of a Stormwater and Flood Control Master Plan to include tasks associated with data collection and analysis using accepted methodologies, identification of specific stormwater and flood control projects, creation of an implementation schedule and cost estimates, public education and outreach, and regulatory controls.</td>
<td>9,995</td>
<td>10,240</td>
<td>20,235</td>
</tr>
<tr>
<td>8</td>
<td>Brevard County</td>
<td>High (FSD-1) High (FSD-4)</td>
<td>Installation of a Floating Vegetative Island to Uptake Nutrients Combined with A Cooperative and Comprehensive Education And Outreach Program. This project consists of a treatment train of both structural and non-structural (educational) stormwater BMPs utilizing an existing stormwater treatment pond as an anchoring BMP. A floating vegetative island will be installed in the pond, sized to the recommended 5% of surface area of the pond, then harvested in approximately one year’s time and analyzed for nutrient content in the plant tissue.</td>
<td>61,109</td>
<td>61,109</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Florida Department of Environmental Protection IRL Aquatic Preserves</td>
<td>High (W-5) High (W-6)</td>
<td>Indian River Lagoon Shoreline Restoration Project. The goal of the Shoreline Restoration Project (SRP) from 1995-2011 has been to re-establish fringing mangrove habitat on public shorelines along the Indian River Lagoon (IRL), while promoting public education and awareness of mangrove habitat and its ecosystem benefits.</td>
<td>94,573</td>
<td>94,573</td>
<td></td>
</tr>
<tr>
<td>Activity</td>
<td>Applicant</td>
<td>CCMP Action Plan and Priority</td>
<td>Project Title and Abstract</td>
<td>CWA320 Funding FY 2012-2013</td>
<td>Project Partner Match</td>
<td>Total Project Cost</td>
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<tr>
<td>10</td>
<td>The Brevard Zoo</td>
<td>High (F-1) High (PIE-4)</td>
<td><strong>Community Outreach, Restoration and Monitoring of Intertidal Oyster Reefs in Mosquito Lagoon.</strong> The project objective is to implement and monitor the success of a scientifically-based restoration technique to restore approximately 1 acre of intertidal oyster reef of the eastern oyster <em>Crassostrea virginica</em> with significant damage from wakes from recreational vessels.</td>
<td>124,400</td>
<td></td>
<td>124,400</td>
</tr>
<tr>
<td>11</td>
<td>University of Central Florida</td>
<td>High (W-5) High (W-6)</td>
<td><strong>Turtle Mound National Historic Site Shoreline Stabilization, Phase II: Protection from Erosion and Climate Change Using Science-Based Living Shoreline.</strong> This project continued the successful methods of living shoreline stabilization along an additional 80 meters of Turtle Mound shoreline using: 1) approximately 600 mangrove seedlings (red + black mangroves), 2) <em>Spartina alterniflora</em> to create a meter wide band in the intertidal zone, and 3) approximately eight-hundred 0.5 X 0.5 meter square oyster restoration mats seaward of the plants. One meter long shell bags will be used as needed for additional stabilization.</td>
<td>68,481</td>
<td></td>
<td>68,481</td>
</tr>
<tr>
<td>12</td>
<td>Jane Schnee</td>
<td>High (BD-2) High (ETS-3)</td>
<td><strong>Protect and restore imperiled scrub habitat to preserve threatened and endemic species within the Indian River Lagoon Region.</strong> Approximately 3 acres of cleared land needs to be re-planted with scrub oaks and other scrub plants to restore it to its original habitat. Non-native grasses growing in this section will be removed at the time of planting. At least 250 trees, consisting primarily of Myrtle Oak, Chapman Oak and Sand Live Oak, will be planted by volunteers, to restore scrub jay habitat.</td>
<td>1,300</td>
<td></td>
<td>1,300</td>
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<tr>
<td>13</td>
<td>Palm Bay City</td>
<td>High (FSD-11) High (PIE-1)</td>
<td><strong>Rain Garden Workshops and Demonstration Gardens.</strong> This project will develop a comprehensive Rain Garden Workshop Program that includes demonstration Rain Gardens to teach our citizens not only the importance of rain water harvesting for stormwater pollution prevention, but also for ground water recharge. Workshop participants will view a narrated power point presentation developed and presented, solely for the Indian River Lagoon Watershed, by local experts.</td>
<td>30,000</td>
<td></td>
<td>30,000</td>
</tr>
<tr>
<td>14</td>
<td>Melbourne City</td>
<td>High (W-5) High (PIE-1)</td>
<td><strong>Restoring the Indian River Lagoon Shoreline.</strong> This project will remove three acres of invasive plant species like Brazilian Pepper that displace habitat for marine and terrestrial species, and provide unsuitable food and habitat for native animals. 5,000 Mangroves and other shoreline natives will be planted to trap sediment and filter pollution, providing water quality benefits that directly enhance adjacent sea grass coverage.</td>
<td>52,500</td>
<td></td>
<td>52,500</td>
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<tr>
<td>15</td>
<td>Indian River Lagoon National Estuary Program</td>
<td>High (FI-1)</td>
<td><strong>Program Operation Costs</strong></td>
<td>1,310</td>
<td></td>
<td>1,310</td>
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<tr>
<td>16</td>
<td>The Balmoral Institute</td>
<td>High (TMDL-3)</td>
<td><strong>Prioritizing TMDLs using seagrass habitat vulnerability to sea level rise.</strong> This project will provide an ecosystem management tool to enhance the probability of successfully restoring the IRL by helping to prioritize the allocation of management resources the achieve TMDLs in light of additional impacts resulting from sea level rise.</td>
<td>20,000</td>
<td></td>
<td>20,000</td>
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</table>

**TOTALS:** 617,167 617,167 1,234,334
<table>
<thead>
<tr>
<th>Activity</th>
<th>Applicant</th>
<th>CCMP Action Plan and Priority</th>
<th>Project Title and Abstract</th>
<th>CWA320 Funding FY 2011-2012</th>
<th>Project Partner Match</th>
<th>Total Project Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>Fellsmere City</td>
<td>High (FSD-13) High (FSD-14)</td>
<td><strong>Historic Fellsmere Storm water and Flood Control Master Plan.</strong> The project seeks the</td>
<td>10,255</td>
<td>18,260</td>
<td>28,515</td>
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<td></td>
<td></td>
<td></td>
<td>Development of a Stormwater and Flood Control Master Plan to include tasks associated with data</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>collection and analysis using accepted methodologies, identification of specific stormwater and flood</td>
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<td></td>
<td></td>
<td></td>
<td>control projects, creation of an implementation schedule and cost estimates, public education and</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>outreach, and regulatory controls.</td>
<td></td>
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<tr>
<td>15</td>
<td>Indian River Lagoon National Estuary Program</td>
<td>High (FI-1)</td>
<td><strong>Program Operation Costs</strong></td>
<td>8,005</td>
<td>8,005</td>
<td>8,005</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td><strong>TOTALS</strong></td>
<td>18,260</td>
<td>18,260</td>
<td>36,520</td>
</tr>
</tbody>
</table>
A.3. Indian River Lagoon Staff and Their Respective Position Responsibilities
SJRWMD Division of Project Management
IRL Program Office – Palm Bay Service Center

IRL NEP Program Director, Troy Rice
Principal Duties and Responsibilities:
- Directs the IRL Project Office and staff, and provides primary support to the IRL Advisory Board.
- Coordinates with other agencies and local governments on lagoon conservation projects.
- Develops strategies to keep implementation activities on schedule and within budget.
- Manages information resources to individuals and organizations interested in CCMP implementation.
- Facilitates partnerships between agencies, governments and organizations to accomplish CCMP implementation.
- Oversees and provides project management for IRL Program/SJRWMD projects and programs.

IRL NEP Project Administrator, Belhaim “Frank” Sakuma, Jr.
Principal Duties and Responsibilities:
- Manages assigned contracts and local government assistance agreements
- Assists in development of Management Conference reports
- Supports preparation of project budgets, tracks expenditures, responds to audit and financial inquiries.
- Supports implementing Management Conference agreements and the CCMP
- Assists in the planning and conduct of Management Conference meetings
- Meets with and participates in various advisory boards.

IRL NEP Education Coordinator, Kathy Hill (Contingent Worker)
Principal Duties and Responsibilities:
- Coordinates IRL license plate marketing, IRL NEP public education and outreach.
- Coordinates and participates in IRL public education and outreach events to distribute information.
- Coordinates the NEP Citizens Action Committee for the Program.
- Prepares summaries of marketing and outreach activities.
- Support development of annual work plans, reports and presentations.

SJRWMD Division of Water Resources Information
Palm Bay Service Center

Environmental Scientists III, Lauren Hall & Janice Miller
Principal Duties and Responsibilities:
- Coordinates and conducts seagrass transect monitoring and multi-agency monthly water quality monitoring and provides QA/QC of data entry.
- Coordinates field projects/studies including post-storm sampling and macro-algae studies.
- Oversees seagrass aerial mapping, photography, ground-truth and development of final maps/reports.
- Oversees and conducts field and lab operations.
- Assist with preparation and presentation of technical manuscripts, presentations, status and trend reports.

SJRWMD Division of Environmental Sciences – Estuaries
Headquarters - Palatka

Environmental Scientist V, Charles Jacoby
Principal Duties and Responsibilities:
- Serves as the IRL NEP Program Scientist
- Provides technical support for the IRL Advisory Board and other IRL Program staff.
- Coordinates with the IRLNEP TAC and Bio-toxin Task Force to investigate scientific and research priorities
- Provides presentations on IRL research and environmental related issues.
- Participates in the development of projects to implement the IRL CCMP.
- Provides project management for IRL NEP Program/SJRWMD research and technical projects.
- Participates in the implementation of environmental assessment and monitoring programs in the IRL Basin.
Section A.4 Work Plan Project Specific Sub Award Information FY 2012-2013

<table>
<thead>
<tr>
<th>Activity</th>
<th>Project Partners</th>
<th>CCMP Action Plan and Priority</th>
<th>Project Title and Abstract</th>
<th>CWA320 Funding FY 2012-2013</th>
<th>Project Deliverables</th>
<th>Project Start/Completion Date</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>IRL NEP/St. Johns River Water Management District</td>
<td>High (FI-1) High (FI-2)</td>
<td>Support of NEP Project Office staff salaries and benefits for 2 FTEs to continue CCMP implementation, work plan development and implementation, project management, contracts management, program coordination and Management Conference administration.</td>
<td>189,311</td>
<td>Continued Program administration providing Advisory Board and management conference support, CCMP implementation oversight and budgeting/project/contract management activities and reports.</td>
<td>10/01/2012: 09/30/2013</td>
</tr>
<tr>
<td>2</td>
<td>IRL NEP/St. Johns River Water Management District</td>
<td>High (MON-1)</td>
<td>Indian River Lagoon Living Resources and Water Quality Monitoring. Funding will support 3 Environmental Scientists FTEs to continue the long term living resources monitoring (seagrass and biological) and water quality collection and analysis. The data from these activities generate the core information for seagrass and water quality evaluation, development and measurement of performance measures (TMDLs) and the lagoon’s overall status and trends. SJRWMD will contribute $121,715 of staff in-kind match.</td>
<td>259,001</td>
<td>Core monitoring information from continued long-term living resource monitoring (seagrass and biological) and water quality data collection and analysis.</td>
<td>10/01/2012: 09/30/2013</td>
</tr>
<tr>
<td>3</td>
<td>IRL NEP/St. Johns River Water Management District</td>
<td>High (FSD-11) High (FSD-14)</td>
<td>Indian River Lagoon Program Education Coordinator. The Coordinator will administer the Education Program and will coordinate the activities of the IRLNEP Citizens Action Committee, organize the annual four-day lagoon summer training workshop for IRL region teachers, and coordinate the design of the annual IRL calendar photo contest. The Coordinator also produces and disseminates IRL and District information to the community at environmental educational events, brown bag lunches and public speaking events.</td>
<td>70,000</td>
<td>Delivery of public education and outreach presentations throughout the watershed, four-day teacher summer training workshop, production of the annual IRL Calendar.</td>
<td>10/01/2012: 09/30/2013</td>
</tr>
<tr>
<td>4</td>
<td>Cape Canaveral Scientific, Inc. (lead contractor); CAPTEC Engineering, Inc. (technical support); Scientific Environmental applications, Inc (technical support)</td>
<td>High (FSD-13) High (FSD-14)</td>
<td>2012 Grant Writing &amp; Capacity Building in Support of the IRL CCMP. This project assists local governments in meeting the challenges of financing CCMP implementation projects, and will pay for 3-grant applications during the year. The 14th year of support for this project continues to demonstrate the need of local governments to collaborate with state and federal agencies on implementation activities. Many local governments have used the service to fund capital improvement projects to implement CCMP action plans.</td>
<td>30,000</td>
<td>Delivery of three (3) competitive grant applications on behalf of local governments to help implement the IRL CCMP.</td>
<td>10/01/2012: 09/30/2013</td>
</tr>
<tr>
<td>5</td>
<td>Pelican Island NWR Complex</td>
<td>High (SG-1)</td>
<td>Pelican Island Proper Restoration Phase IV Pilot Survey. Pelican Island National Wildlife Refuge is located east of Sebastian, Florida in the barrier islands between Sebastian Inlet and the Wabasso Causeway within the Indian River Lagoon. The project will inventory, map and monitor the existing seagrass beds located in the adjacent area of Pelican Island Proper to inform a Phase IV restoration effort.</td>
<td>19,300</td>
<td>Project Report on a Pelican island National Wildlife Refuge post-2006 restoration evaluation including living resources assessment and updated bathymetry and wave modeling data to create conceptual design options for future restoration activities.</td>
<td>10/01/2012: 09/30/2013</td>
</tr>
<tr>
<td>6</td>
<td>Nova Southeastern University/St. Johns River Water Management District</td>
<td>High (TMDL-1) High (SG-1)</td>
<td>Indian River Lagoon Survey of Drift Algae Distribution and Abundance. This project will survey macroalgae (drift algae) abundance at key locations in the mainstem of the north and central Indian River Lagoon (IRL) and selected areas within the Banana River.</td>
<td>18,250</td>
<td>Project Report on the results of hydro-acoustic macro-algae (drift algae) survey post-2011 super bloom to estimate distribution and abundance of drift algae in priority areas.</td>
<td>10/01/2012: 09/30/2013</td>
</tr>
<tr>
<td>7</td>
<td>Fellsmere City/Carter and Associates</td>
<td>High (FSD-13) High (FSD-14)</td>
<td>Historic Fellsmere Storm water and Flood Control Master Plan. The project seeks the Development of a Stormwater and Flood Control Master Plan to include tasks associated with data collection and analysis using accepted methodologies, identification of specific stormwater and flood control projects, creation of an implementation schedule and cost estimates, public education and outreach, and regulatory controls.</td>
<td>9,995</td>
<td>Stormwater and Flood Control Master Plan for the Town of Fellsmere.</td>
<td>10/01/2012: 09/30/2013</td>
</tr>
<tr>
<td>8</td>
<td>Brevard County Natural Resources Management Office (NRMO)</td>
<td>High (FSD-1) High (FSD-4)</td>
<td>Installation of a Floating Vegetative Island to Uptake Nutrients Combined with A Cooperative and Comprehensive Education And Outreach Program. This project consists of a treatment train of both structural and non-structural (educational) stormwater BMPs utilizing an existing stormwater treatment pond as an anchoring BMP. A floating vegetative island will be installed in the pond, sized to the recommended 5% of surface area of the pond, then harvested in approximately one year’s time and analyzed for nutrient content in the grain tissue.</td>
<td>599,11</td>
<td>Project Report detailing the results of a multi-faceted stormwater BMP project assessing the effectiveness of adding a floating vegetated island (for nutrient uptake) within an existing stormwater pond and associated area education and outreach on stormwater pollution impacts.</td>
<td>10/01/2012: 01/15/2014</td>
</tr>
<tr>
<td>9</td>
<td>Florida Department of Environmental Protection IRL Aquatic Preserves</td>
<td>High (W-5) High (W-6)</td>
<td>Indian River Lagoon Shoreline Restoration Project. The goal of the Shoreline Restoration Project (SRP) from 1995-2011 has been to re-establish fringing mangrove habitat on public shorelines along the Indian River Lagoon (IRL), while promoting public education and awareness of mangrove habitat and its ecosystem benefits.</td>
<td>54,391</td>
<td>Project Report on the IRL Shoreline Restoration Project activities for 2012-13.</td>
<td>10/01/2012: 09/30/2013</td>
</tr>
<tr>
<td>10</td>
<td>The Brevard Zoo/University of Central Florida/Volusia County Mosquito Control</td>
<td>High (F-1) High (PFE-4)</td>
<td>Community Outreach, Restoration and Monitoring of Inter tidal Oyster Reefs in Mosquito Lagoon. The project objective is to implement and monitor the success of a scientifically-based restoration technique to restore approximately 1 acre of intertidal oyster reef of the eastern oyster Crassostrea virginica with significant damage from wakes from recreational vessels.</td>
<td>54,391</td>
<td>Quarterly and final summary report on the Community Outreach and Restoration of Inter tidal Oyster Reef in Mosquito Lagoon with copies of volunteer sign-up sheets and project phots.</td>
<td>10/01/2012: 09/30/2013</td>
</tr>
<tr>
<td>11</td>
<td>University of Central Florida/Canaveral National Seashore/National Park Service Southeast Archeological Center</td>
<td>High (W-5) High (W-6)</td>
<td>Turtle Mound National Historic Site Shoreline Stabilization, Phase II: Protection from Erosion and Climate Change Using Science-Based Living Shoreline. This project continued the successful methods of living shoreline stabilization along an additional 80 meters of Turtle Mound shoreline using: 1) approximately 600 mangrove seedlings (red + black mangroves), 2) Spartina alterniflora to create a meter wide band in the intertidal zone, and 3) approximately eight-hundred 3.5 X 0.5 meter square oyster restoration mats seaward of the plants. One meter long shell bags will be used as needed for additional stabilization.</td>
<td>10,000</td>
<td>Project Report on Turtle Mound National Historic Site Shoreline Stabilization, Phase II Protection from Erosion and Climate Change Using Science-Based Living Shoreline Techniques.</td>
<td>10/01/2012: 08/15/2014</td>
</tr>
<tr>
<td>Activity</td>
<td>Project Partners</td>
<td>CCMP Action Plan and Priority</td>
<td>Project Title and Abstract</td>
<td>CWA320 Funding FY 2012-2013</td>
<td>Project Deliverables</td>
<td>Project Start Date/Completion Date</td>
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<tr>
<td>12</td>
<td>Jane Schnee/US Fish &amp; Wildlife Service/Indian River County</td>
<td>High (BD-2) High (ETS-3)</td>
<td>Protect and restore imperiled scrub habitat to preserve threatened and endemic species within the Indian River Lagoon Region. Approximately 3 acres of cleared land needs to be re-planted with scrub oaks and other scrub plants to restore it to its original habitat. Non-native grasses growing in this section will be removed at the time of planting. At least 250 trees, consisting primarily of Myrtle Oak, Chapman Oak and Sand Live Oak, will be planted by volunteers, to restore scrub jay habitat.</td>
<td>Project summary report with photos of Scrub Habitat Enhancement of 10.67 acres in Sebastian, FL.</td>
<td>10/01/2012: 09/30/2013</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Palm Bay City Public Works Stormwater Division</td>
<td>High (FSD-11) High (PIE-1)</td>
<td>Rain Garden Workshops and Demonstration Gardens. This project will develop a comprehensive Rain Garden Workshop Program that includes demonstration Rain Gardens to teach our citizens not only the importance of rain water harvesting for stormwater pollution prevention, but also for ground water recharge. Workshop participants will view a narrated power point presentation developed and presented, solely for the Indian River Lagoon Watershed, by local experts.</td>
<td>Project summary report with photos of Rain Garden Workshops and creation of three (3) demonstration rain gardens in Palm Bay, FL.</td>
<td>10/01/2012: 09/30/2013</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Melbourne City Parks Division/Marine Resources Council</td>
<td>High (W-5) High (PIE-1)</td>
<td>Restoring the Indian River Lagoon Shoreline. This project will remove three acres of invasive plant species like Brazilian Pepper that displace habitat for marine and terrestrial species, and provide unsuitable food and habitat for native animals. 5,000 Mangroves and other shoreline natives will be planted to trap sediment and filter pollution, providing water quality benefits that directly enhance adjacent sea grass coverage.</td>
<td>Project Summary Report of lagoon shoreline restoration in the city of Melbourne documenting 3-acres of exotic (Brazilian pepper) removal and planting of 5,000 native shoreline plants by volunteers with photos and sign-in sheets.</td>
<td>10/01/2012: 09/30/2013</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Indian River Lagoon National Estuary Program</td>
<td>High (FI-1)</td>
<td>Program Operation Costs</td>
<td>1,310</td>
<td>Printing and office supplies to support the IRLNEP.</td>
<td>10/01/2012: 09/30/2013</td>
</tr>
<tr>
<td>16</td>
<td>The Balmoral Institute</td>
<td>High (TMDL-3)</td>
<td>Prioritizing TMDLs using seagrass habitat vulnerability to sea level rise. This project will provide an ecosystem management tool to enhance the probability of successfully restoring the IRL by helping to prioritize the allocation of management resources the achieve TMDLs in light of additional impacts resulting from sea level rise.</td>
<td>20,000 Bathymetric model of the study area; map of the distribution of recent seagrass habitat and light limiting depth targets; quantification of the distribution of seagrass habitat as a function of sea level rise and load reduction success; working model or GIS tool.</td>
<td>10/01/2012: 09/30/2013</td>
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<tr>
<td><strong>TOTALS</strong></td>
<td></td>
<td></td>
<td></td>
<td><strong>617,167</strong></td>
<td>10/01/2012: 09/30/2013</td>
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Section A.4 Work Plan Project Specific Sub Award Information FY 2011-2012 Unexpended Carry-Forward

<table>
<thead>
<tr>
<th>Activity</th>
<th>Project Partners</th>
<th>CCMP Action Plan and Priority</th>
<th>Project Title and Abstract</th>
<th>CWA320 Funding FY 2012-2013</th>
<th>Project Deliverables</th>
<th>Project Start Date/Completion Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>Fellsmere City/Carter and Associates</td>
<td>High (FSD-13) High (FSD-14)</td>
<td>Historic Fellsmere Storm water and Flood Control Master Plan. The project seeks the Development of a Stormwater and Flood Control Master Plan to include tasks associated with data collection and analysis using accepted methodologies, identification of specific stormwater and flood control projects, creation of an implementation schedule and cost estimates, public education and outreach, and regulatory controls.</td>
<td>10,255 Stormwater and Flood Control Master Plan for the Town of Fellsmere.</td>
<td>10/01/2012: 09/30/2013</td>
<td></td>
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<tr>
<td>15</td>
<td>Indian River Lagoon National Estuary Program</td>
<td>High (FI-1)</td>
<td>Program Operation Costs</td>
<td>8,005 Travel, legal advertising, and printing to support the IRLNEP.</td>
<td>10/01/2012: 09/30/2013</td>
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<tr>
<td><strong>TOTALS</strong></td>
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<td></td>
<td><strong>18,260</strong></td>
<td>10/01/2012: 09/30/2013</td>
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</tbody>
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Section B.1 Indian River Lagoon National Estuary Program 2012-2013
Outputs and Outcomes

Outputs:

- Continued Program administration providing Advisory Board and management conference support, CCMP implementation oversight and budgeting/project/contract management activities and reports

- Core monitoring information from continued long-term living resource monitoring (seagrass and biological) and water quality data collection and analysis

- Delivery of public education and outreach presentations throughout the watershed, four-day teacher summer training workshop, production of the annual IRL Calendar

- Delivery of three (3) competitive grant applications on behalf of local governments to help implement the IRL CCMP

- Project Report on a Pelican island National Wildlife Refuge post-2006 restoration evaluation including living resources assessment and updated bathymetry and wave modeling data to create conceptual design options for future restoration activities

- Project Report on the results of hydro-acoustic macro-algae (drift algae) survey post-2011 super bloom to estimate distribution and abundance of drift algae in priority areas

- Stormwater and Flood Control Master Plan for the Town of Fellsmere

- Project Report detailing the results of a multi-faceted stormwater BMP project assessing the effectiveness of adding a floating vegetated island (for nutrient uptake) within an existing stormwater pond and associated area education and outreach on stormwater pollution impacts

- Project Report on the IRL Shoreline Restoration Project activities for 2012-13

- Quarterly and final summary report on the Community Outreach and Restoration of Intertidal Oyster Reef in Mosquito Lagoon with copies of volunteer sign-up sheets and project photos

- Project Report on Turtle Mound National Historic Site Shoreline Stabilization, Phase II Protection from Erosion and Climate Change Using Science-Based Living Shoreline Techniques

- Project summary report with photos of Scrub Habitat Enhancement of 10.67 acres in Sebastian, FL

- Project summary report with photos of Rain Garden Workshops and creation of three (3) demonstration rain gardens in Palm Bay, FL

- Project Summary Report of lagoon shoreline restoration in the city of Melbourne documenting 3-acres of exotic (Brazilian pepper) removal and planting of 5,000 native shoreline plants by volunteers with photos and sign-in sheets
• Bathymetric model of an area within the Indian River Lagoon; a map of the distribution of recent seagrass habitat and light limiting depth targets; quantification of the distribution of seagrass habitat as a function of sea level rise and load reduction success; a working model or GIS tool.

• Bi-annual Newsletter

Outcomes:

• Clean Water Act implementation
• EPA Strategic Plan implementation
• Support of EPA Non-Point Source Program
• Improved water quality and shoreline habitats
• Restored oyster beds
• Increased use of native plants
• Restored scrub habitat
• Protection of a National Historic Site
• Increased Program visibility
• Increased wetland acreage restored and or protected
• Increased public awareness and stewardship
• Continued watershed-wide coordination and networking
• Increased knowledge of living resources
Section B.2 Proposed New and Ongoing Project Reporting Requirements

Activity 1

CCMP/Work Plan Goal:
FI-1; Priority- High. Continue the Indian River Lagoon Advisory Board’s role of oversight, monitoring and guidance of implementation of the IRL CCMP.
FI-2; Priority –High. Continue measurements of progress of CCMP implementation activities.

Project/Activity Name:
INDIAN RIVER LAGOON PROJECT OFFICE.
Lead Contractor: Indian River Lagoon National Estuary Program / St. Johns River Water Management District.

Project/Activity Purpose and Description: (indicate as proposed or ongoing)
This activity is ongoing. Funding will support the salaries and benefits of the IRL NEP Director and IRL NEP Projects Administrator within the IRL Project Office at the SJRWMD Palm Bay Service Center. This activity will enable the continuation of the NEP and CCMP implementation.

Budget: $189,311 NEP funding.

Outcomes: (report anticipated and/or completed accomplishments)

Short-term: Continuation of the NEP and implementation of the 2012-2013 work plan.

Intermediate: This activity will enable staff to continue CCMP implementation oversight, manage ongoing and new implementation projects and the IRL License Plate funds, and continue the lagoon community’s participation in estuary management decisions.

Changes (+/-) in Pressure Targets: Negative. Reduces the amount of available funds for implementation projects, but allows CCMP implementation to continue.

Long-term: Maintains a viable community-based program, continues important water quality and habitat improvements and education and outreach efforts.

CWA implementation information:
This activity complies with the objectives of the CWA to coordinate implementation of the CCMP by the States as well as Federal and local agencies participating in the conference.
Activity 2

CCMP/Work Plan Goal:
MON-1; Priority- High. Continue projects related to monitoring the resources of the IRL and address gaps in data as needed.

Project/Activity Name:
INDIAN RIVER LAGOON LIVING RESOURCES AND WATER QUALITY MONITORING PROJECTS.
Lead Contractor: St. Johns River Water Management District.

Project/Activity Purpose and Description: (indicate as proposed or ongoing)
This project is ongoing. Funding will support the salaries and benefits of three (3) water management district employees to continue the long-term monitoring of the Indian River Lagoon (IRL) system: 1) living resource surveys (seagrass and other biological monitoring); and 2) water quality monitoring. The data from these two projects have generated the core information for seagrass and water quality evaluation and development of related performance measures.

Budget: $259,001 NEP funding. $121,715 in match funding from St. Johns River Water Management District.

Outcomes: (report anticipated and/or completed accomplishments)

Short-term: Collection of water quality and seagrass data.

Intermediate: Collected data will be analyzed to determine the status of water quality and the seagrass community in the IRL; identify the major components of suspended matter that limit light to seagrass and other seagrass growth limiting factors.

Changes (+/-) in Pressure Targets: Positive. This monitoring will provide a sound scientific basis for the assessment and implementation of management strategies and BMPs designed to reduce pollutant loadings to the IRL.

Long-term: Continuation of data sets supporting evaluation of the condition of IRL resources and strategies implemented to manage and restore these resources.

CWA implementation information:
Data collected will be used to evaluate progress in reaching CWA goals including established TMDL targets. Development of these TMDL targets depends on this project as it is a primary component of the IRL ambient water quality monitoring network.
Activity 3

CCMP/Work Plan Goal:
FSD-11; Priority-High. Educate residents and property owners about the impacts of freshwater and storm water discharges on the Indian River Lagoon and what they can do to reduce these impacts. PIE-2; Priority-High. Develop, implement and refine a communications plan to inform stakeholders and government officials about the resources of the Indian River Lagoon, the economic and ecological value of these resources and threats to the continued viability of these resources.

Project/Activity Name:
IRLNEP Outreach and Education Coordinator

Project/Activity Purpose and Description: (indicate as proposed or ongoing)
This project is ongoing. The Coordinator will administer the Education Program for the Indian River Lagoon Program. Additionally, she will coordinate the activities of the IRLNEP Citizens Action Committee, organize the annual four-day lagoon summer training workshop for IRL region teachers, and coordinate the design of the annual IRL calendar photo contest. The Coordinator also produces and disseminates IRL and District information to the community at environmental educational events, brown bag lunches and public speaking events.

Budget: $70,000 NEP funding.

Outcomes: (report anticipated and/or completed accomplishments)

Short-term: Attend and provide IRLNEP materials to the public at speaking events and festivals. Discuss IRL strengths and challenges with the public at those events.

Intermediate: Increased awareness of the state of the IRL and promote changes in lifestyle that will benefit the IRL.

Changes (+/-) in Pressure Targets: Positive as teachers, students, citizens and community leaders are informed about IRL strengths and challenges and because of this heightened awareness, become better stewards of the IRL.

Long-term: Public awareness of the importance of the IRL habitat restoration and water quality improvement programs; anthropogenic impacts to the IRL and changes in behavior that will curtail pointless personal pollution.

CWA implementation information:
One of the strategic goals for the EPA Office of Environmental Education is to promote the use of environmental education in schools and communities to improve academic achievement and stewardship. This project compliments that goal.
Activity 4

CCMP/Work Plan Goal:
FSD-13; Priority- High. Upgrade existing stormwater systems.
FSD-14; Priority- High. Develop and implement appropriate mechanisms to fund and undertake the operation, maintenance and improvement of urban and agricultural stormwater management systems to reduce pollutant loadings.

Project/Activity Name:
Grant Writing Services in Support of the Indian River Lagoon CCMP.
Lead Contractor: Cape Canaveral Scientific Inc.

Project/Activity Purpose and Description: (indicate as proposed or ongoing)
This project is ongoing. The project assists local governments in meeting the challenges of financing CCMP implementation projects. Most local governments in the IRL watershed have little if any staff support including engineering services to dedicate to preparation of grant applications for stormwater projects and environmental restoration. As this project has gained acceptance and success stories circulated, more local governments have agreed to utilize the services of the grant writer team. Last year, while under contract with the IRLNEP, Cape Canaveral Scientific (CCS) worked with various local governments to submit seven applications for water quality improvements, stormwater retrofits, and land acquisition from the State of Florida’s 319, TMDL and Florida Forever programs.

Budget: $30,000 NEP Funding, $17,500 in match funding from CCS.

Outcomes: (report anticipated and/or completed accomplishments)
Short-term: Develop, generate, submit and support three grant applications.
Intermediate: Since the inception of this project, the number of participating partners has steadily increased.

Changes (+/-) in Pressure Targets: Projected change is negative. As many of these grants require a local match, state mandated property tax reductions will impact implementation of CCMP Action Plans by local governments. State of Florida funding for the Florida Forever/Florida Communities Trust Program has been significantly reduced. IRLNEP funding for CCS in FY 2012-2013 has also been reduced which will result in fewer grant applications produced by CCS.

Long-term: These projects have a direct benefit to the IRL either through land acquisition or stormwater improvements designed to reduce nonpoint source pollution and untreated stormwater discharges to the IRL.

CWA implementation information:
This project supports the EPA Non Point Source (NPS) Program to provide technical assistance for implementation of activities designed to reduce non point sources of pollution. The grants writer has submitted 319 and TMDL funding applications for projects that include the development of stormwater parks and treatment systems in urbanized areas and for the purchase of environmentally sensitive lands through the Florida Forever/ Florida Communities Trust Program.
**Activity 5**

**CCMP/Work Plan Goal:**
SG-1: Priority- High. Implement a program of protection, restoration and management activities needed to maintain, protect and restore the seagrass/SAV community of the Indian River Lagoon.

**Project/Activity Name:**
Pelican Island Proper Restoration Phase IV Pilot Survey.
Lead Contractor: Pelican Island National Wildlife Refuge Complex.

**Project/Activity Purpose and Description:** (indicate as proposed or ongoing)
This project is proposed. In an effort to continue restoration and protection of Pelican Island it is necessary to evaluate changes to the island since the 2006 artificial oyster reef restoration. The placement of the oyster reef has encouraged the establishment of extensive seagrass. Surveys around the island by experienced PINWR staff identified all seven species including the threatened Johnson’s grass (Halophila Johnsonii) immediately surrounding the island. The next phase (Phase IV) of Pelican Island restoration may include the extension of a naturally occurring oyster reef to further protect the island from wave action and address concerns of sea level rise (climate change). In order to evaluate if this is a feasible restoration option, a detailed seagrass survey must be completed to document the distribution and species composition of seagrass in order to avoid and minimize potential impacts of future restoration actions.

**Budget:** $19,300 NEP Funding, $13,099 in match funding from United States Fish and Wildlife Service.

**Outcomes:** (report anticipated and/or completed accomplishments)

**Short-term:** Wave modeling review and analysis.

**Intermediate:** Seagrass mapping and monitoring. Project Report on a Pelican island National Wildlife Refuge post-2006 restoration evaluation including living resources assessment and updated bathymetry and wave modeling data to create conceptual design options for future restoration activities.

**Changes (+/-) in Pressure Targets:** Positive as the Island is stabilized and rate of erosion reduced.

**Long-term:** Successful completion of this project will result in the creation of additional habitat for federally and state protected wading bird species, and enhanced protection of our nation’s first national wildlife refuge.

**CWA implementation information:**
This project directly correlates to the direction given to EPA by the CWA to provide for the protection and propagation of a balanced, indigenous population of shellfish, fish, and wildlife.
Activity 6

CCMP/Work Plan Goal:
TMDL-1: Priority- High. Develop, implement, and update TMDLs for all areas of the Indian River Lagoon.
SG-1: Priority- High. Implement a program of protection, restoration and management activities needed to maintain, protect and restore the seagrass/SAV community of the Indian River Lagoon.

Project/Activity Name:
Indian River Lagoon Survey of Drift Algae Distribution and Abundance.
Lead Contractor: Nova Southeastern University.

Project/Activity Purpose and Description: (indicate as proposed or ongoing)
This project is proposed. Drift algae (DA) provides an important habitat comparable to seagrass, a food source for lagoon fauna (including manatees), as well as accounting for a large reduction in the IRL nutrient load via uptake and tissue storage. This survey will focus on previously determined key DA locations and environmentally sensitive areas where the 2011 phytoplankton superbloom was centered. During the bloom, anecdotal information indicates that DA was almost completely extirpated. Both the lack of DA as an important nutrient uptake mechanism, in addition to the substantial release of nutrients from its decomposition may have been an important contributor to the algal bloom that resulted in large losses of seagrass via phytoplankton algal-induced light limitations. However, no quantitative DA surveys were completed in 2011, nor are planned during 2012 that can be used for verification of its status. The requested funds will provide for the first post-2011 estimate of area wide DA distribution and abundance, its potential recovery, and possible association with post-2011 changes in water quality.

Budget: $18,250 NEP Funding, $13,750 in match funding from the St Johns River Water Management District.

Outcomes: (report anticipated and/or completed accomplishments)

Short-term: Survey planning and project work plan development based on a final scope of work. Field equipment preparation and transport to study survey sites data collection, QA/QC, and preliminary data processing to assure desired information is accurately provided

Intermediate: Project report on the results of hydro-acoustic DA survey post-2011 super bloom to estimate distribution and abundance of DA in priority areas.

Changes (+/-) in Pressure Targets: Positive as the project supports efforts to attain and maintain water and sediment of sufficient quality to support a healthy estuarine lagoon system.

Long-term: This project will contribute to the understanding of: nutrient dynamics within the lagoon, related to internal storage and release by DA that may influence phytoplankton production and photosynthetic light conditions; and DA relationship to seagrass target depths.

CWA implementation information:
EPA is responsible for protecting surface waters that support fish and shellfish through the Pesticides, Toxics and Chemicals Program. This project will build on the body of knowledge related to harmful algal blooms and the negative effect those algal blooms have on IRL biota and human health.
Activity 7

CCMP/Work Plan Goal:
FSD-13; Priority- High. Upgrade existing stormwater systems.
FSD-14; Priority- High. Develop and implement appropriate mechanisms to fund and undertake the operation, maintenance and improvement of urban and agricultural stormwater management systems to reduce pollutant loadings.

Project/Activity Name:
Historic Fellsmere Stormwater and Flood Control Master Plan.
Lead Contractor: City of Fellsmere.

Project/Activity Purpose and Description: (indicate as proposed or ongoing)
This project is proposed. The City of Fellsmere will develop a stormwater and flood control master plan. The goal is to define a series of stormwater projects, public education, and regulatory controls that once implemented will result in stormwater discharge meeting current regulations while enhancing flood protection thus enhancing the water quality within the IRL and leading toward reduced pollutant loadings.

Budget: $20,250 NEP Funding: $9,995 in FY2012-2013 funds & $10,255 in FY 2011-2012 unexpended funds. $28,500 in match funding from the City of Fellsmere.

Outcomes: (report anticipated and/or completed accomplishments)

Short-term: Identification of specific stormwater and flood control projects, creation of an implementation schedule and cost estimates, public education and outreach, and regulatory controls.

Intermediate: Stormwater and Flood Control Master Plan for the City of Fellsmere.

Changes (+/-) in Pressure Targets: Positive, as the items identified in the plan, when implemented, will lead to enhanced flood control, pollution prevention, and stormwater management

Long-term: Development of a Stormwater and Flood Control Master Plan will outline tasks and specific projects, that when implemented, will provide for increased recharge areas, water conservation measures, flood protection, and increase fish populations. Due to improved water quality entering the IRL, implementation of the actions to be identified in the plan will also help to lead toward increased sea grass coverage in the lagoon.

CWA implementation information:
EPA is responsible for protecting surface waters that support fish and shellfish through the Pesticides, Toxics and Chemicals Program. This project will build on the body of knowledge related to harmful algal blooms and the negative effect those algal blooms have on IRL biota and human health.
Activity 8

CCMP/Work Plan Goal:
FSD-1: Priority- High. Complete or continue the diagnostic, management or pilot projects related to stormwater or freshwater discharges being planned or undertaken by federal, state, regional and local governments.
FSD-4: Priority- High. Develop and implement best management practices (BMPs) for the management of stormwater, agricultural and fresh water discharges.

Project/Activity Name:
Installation of a Floating Vegetative Island to Uptake Nutrients Combined with A Cooperative and Comprehensive Education And Outreach Program.
Lead Contractor: Brevard County Natural Resources Management Office.

Project/Activity Purpose and Description: (indicate as proposed or ongoing)
This project is proposed. This project consists of a treatment train of both structural and non-structural (educational) stormwater BMPs utilizing an existing stormwater treatment pond as an anchoring BMP. A floating vegetative island will be installed in the pond, then harvested in approximately one year’s time and analyzed for nutrient content in the plant tissue. Merritt Island High School students will create and give PowerPoint presentations to educate area residents about stormwater runoff and explain how the pond and vegetative island are only a partial solution. Storm drain markers will be installed in the watershed by volunteers. Rain barrels will be made and used by some homeowners. A small native plant garden will be installed and maintained at the pond site.

Budget: $29,466 in IRL License Plate match funding, and $31,643 in match funding from Brevard County and citizen volunteers.

Outcomes: (report anticipated and/or completed accomplishments)
Short-term: Installation of automatic sampling equipment on site. Presentations by Merritt Island High School students to homeowners and Friends of Ulumay to explain the project and review a suite of homeowner stormwater pollution prevention lifestyles.

Intermediate: Installation of Floating Vegetative Island. “Make a Rain Barrel” day with high school and area residents. “Create a Native Plant Garden” weekend at the pond. Presentation by high school students to local homeowners, Friends of Ulumay, and Brevard County Natural Resources Management Office to update stakeholders on the status, obstacles and results of the project.

Changes (+/-) in Pressure Targets: Positive as pollutant and nutrient loadings to the IRL will be reduced, and volunteers learn about water quality and pass that information along throughout their community.

Long-term: With the reduced pollutant loadings, water quality will improve in the IRL resulting in greater seagrass propagation and habitat restoration producing more fisheries and wildlife abundance. Increased citizen knowledge and activism for pollution prevention and environmental protection and enhanced personal responsibility to reduce water quality impacts at home, business, and public spaces while utilizing new stormwater BMP.

CWA implementation information: This project complies with the objectives of the Clean Water Act to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters and to control point and non-point sources of pollution.
Activity 9

CCMP/Work Plan Goal:

Project/Activity Name:
Indian River Lagoon Shoreline Restoration Project.
Lead Contractor: Florida Department of Environmental Protection – IRL Aquatic Preserves

Project/Activity Purpose and Description: (indicate as proposed or ongoing)
This project is ongoing. The goal of this project is to continue to stabilize publicly-owned shorelines impacted by wave energy to limit erosion, sedimentation and enhance littoral habitat, while facilitating environmental awareness, stewardship and public participation in restoration activities.

Budget: $42,570 IRL License Plate funds plus $52,003 in in-kind match funding and volunteer services from FDEP IRL Aquatic Preserves.

Outcomes: (report anticipated and/or completed accomplishments)

Short-term: Planting of native species along two identified mangrove ecosystem restoration sites of 200X2M of shoreline, removal of invasive exotics at the sites. Provide an activity for volunteers to participate in lagoon restoration enhancing stewardship and awareness.

Intermediate: Expand mangrove shoreline habitat ecological benefits, reducing suspended solids and erosion and contributing to shoreline stabilization.

Changes (+/-) in Pressure Targets: Positive as the shoreline native vegetation becomes established and provides enhanced estuarine habitat and improvements to adjacent surface water quality. Development of volunteers to become IRL stewards.

Long-term: Restoration of mangrove shoreline forests, enhanced public participation in restoration activities, and enhanced habitat and water quality.

CWA implementation information:
Implementation of the EPA Strategic Plan to restore estuaries and maintain healthy habitats within estuaries. This project will result in a gain of habitat acreage as sites over run with invasive vegetation are rehabilitated.
Activity 10

CCMP/Work Plan Goal:
F-1; Priority- High. Conserve, protect, restore and manage the finfish and shellfish resources in the Indian River Lagoon region.
PIE-4; Priority- High. Increase public and governmental involvement in activities designed to protect and restore the resources of the Indian River Lagoon.

Project/Activity Name:
Community Outreach, Restoration and Monitoring of Intertidal Oyster Reefs in Mosquito Lagoon
Lead Contractor: The Brevard Zoo

Project/Activity Purpose and Description: (indicate as proposed or ongoing)
This project is ongoing. The project objective is to implement and monitor the success of a scientifically based restoration technique to restore approximately 1 acre of intertidal oyster reef of the eastern oyster Crassostrea virginica with significant damage from wakes from recreational vessels. To meet our project goals, the community outreach coordinator will continue to organize volunteers to produce a minimum of 2,000 restoration mats. Project funding will also support the contractual efforts of UCF to conduct the following activities: conduct three vertical reef profiles for each dead margin to be leveled (a minimum of two dead margins); collect any live plant biomass on these dead margins; determine dry weights of all biomass collected, organize and participate in deployment of 2,000 oyster restoration mats on the leveled dead margins in spring/summer 2013.

Budget: $62,200 in IRL License Plate match funding. $62,200 in match funding from The Brevard Zoo, the University of Central Florida, Volusia County Mosquito Control, and citizen volunteers.

Outcomes: (report anticipated and/or completed accomplishments)
Short-term: Production and deployment of 2,000 oyster mats in Mosquito Lagoon.

Intermediate: Quarterly and final summary report on the Community Outreach and Restoration of Intertidal Oyster Reef in Mosquito Lagoon with copies of volunteer sign-up sheets and project photos

Changes (+/-) in Pressure Targets: Positive as the number of oyster reefs in Mosquito Lagoon increases and the outreach component of this project allows citizen volunteers to be directly involved in a marine restoration project.

Long-term: Historically viewed as a commodity to harvest, sell and eat, oysters have been gaining value for the economically important “ecosystem services” they provide including water filtration, shoreline stabilization, and shelter and food for many commercially and recreationally important species.

CWA implementation information
This project directly correlates to one of EPA’s primary responsibilities as directed by the Clean Water Act- to provide for the protection and propagation of a balanced, indigenous population of shellfish, fish, and wildlife.
Activity 11

CCMP/Work Plan Goal:

Project/Activity Name:
Turtle Mound National Historic Site Shoreline Stabilization, Phase II: Protection from Erosion and Climate Change Using Science-Based Living Shoreline.
Lead Contractor: The University of Central Florida.

Project/Activity Purpose and Description: (indicate as proposed or ongoing)
This project is ongoing. This project continues the successful methods of living shoreline stabilization along an additional 80 meters of Turtle Mound shoreline using: 1) approximately 600 mangrove seedlings (red + black mangroves), 2) Spartina alterniflora to create a meter wide band in the intertidal zone, and 3) approximately eight-hundred 0.5 X 0.5 meter square oyster restoration mats seaward of the plants. One meter long shell bags will be used as needed for additional stabilization.

Budget: $29,857 in IRL License Plate match funding, and $38,624 in match funding from The University of Central Florida, the Central Florida Coastal Conservation Association, and citizen volunteers.

Outcomes: (report anticipated and/or completed accomplishments)
Short-term: Grow mangroves and Spartina; build oyster bags and oyster mats.

Intermediate: Deploy all shoreline stabilization materials to cover 80 meters of shoreline. Create and deploy interpretative signage showcasing this living shoreline project. Create, print and distribute fact sheet showcasing the living shoreline project and Turtle Mound. Complete, print and distribute children’s book on protecting shell middens.

Changes (+/-) in Pressure Targets: Positive, as past deployments have resulted in shoreline stabilization, recruitment of oyster larvae and other species.

Long-term: These methodologies will be utilized to stop or reduce further damage to Turtle Mound in Canaveral National Seashore, which is on the National Register of Historic Places and one of Florida’s best-known archeological sites.

CWA implementation information
Implementation of the EPA Strategic Plan to restore estuaries and maintain healthy habitats within estuaries. The re-establishment of oyster reefs along eroding shorelines will lead to a reduction of sediment loading, increases in oyster habitat and adjacent seagrass growth, and shoreline stabilization.
CCMP/Work Plan Goal:
BD-2: Priority- High. Acquire and effectively manage environmentally sensitive lands as a tool to preserve, protect and restore the biological diversity, functional integrity and productivity of the Indian River Lagoon region.
ETS-3: Priority- High. Protect and manage the critical habitats of endangered, threatened or species of special concern found within the Indian River Lagoon region through land acquisition and other land protection measures.

Project/Activity Name:
Protect and restore imperiled scrub habitat to preserve threatened and endemic species within the Indian River Lagoon Region.
Lead Contractor: Jane Schnee.

Project/Activity Purpose and Description: (indicate as proposed or ongoing)
This project is proposed. 10.67 acres of scrub habitat was purchased by Jane Schnee in Sebastian, FL in August 2011 for $100,000 in order to preserve and restore this critical and imperiled ecosystem. The contiguous property currently supports four Florida Scrub-Jays (federally listed threatened species), many Gopher Tortoises (state listed threatened species), Conradina grandiflora (USDA listed threatened plant), and other endemic flora and fauna. Approximately three acres of previously cleared land will be re-planted with scrub oaks and other scrub plants to restore it to its original habitat. Non-native grasses growing in this section will be removed at the time of planting. At least 250 trees, consisting primarily of Myrtle Oak, Chapman Oak and Sand Live Oak, will be planted by volunteers, to restore this scrub jay habitat.

Budget: $1,300 in IRL License Plate match funding.

Outcomes: (report anticipated and/or completed accomplishments)
Short-term: Scrub plants and 250 trees, consisting primarily of Myrtle Oak, Chapman Oak and Sand Live Oak, will be purchased.
Intermediate: Volunteers will remove non-native trees and grasses, and then plant native grasses and trees throughout the 10.67 acre parcel.
Changes (+/-) in Pressure Targets: Positive, as this project seeks to protect and manage the critical habitats of endangered and threatened species found within the Indian River Lagoon region.
Long-term: Reestablishment of critical scrub habitat within a residential community offering long-term refuge for several listed species.

CWA implementation information
Implementation of the EPA Strategic Plan to restore estuaries and maintain healthy habitats within estuaries. This project will result in a gain of habitat acreage as sites over run with invasive vegetation are rehabilitated.
Activity 13

CCMP/Work Plan Goal:
FSD-11; Priority-High. Educate residents and property owners about the impacts of freshwater and storm water discharges on the Indian River Lagoon and what they can do to reduce these impacts.
PIE-1: Priority- High. Implement and expand public involvement and education projects or programs.

Project/Activity Name:
Rain Garden Workshops and Demonstration Gardens.
Lead Contractor: City of Palm Bay.

Project/Activity Purpose and Description: (indicate as proposed or ongoing)
This project is proposed. The project will develop a comprehensive Rain Garden Workshop Program that includes demonstration Rain Gardens to teach our citizens not only the importance of rainwater harvesting for stormwater pollution prevention, but also for ground water recharge. Workshop participants will view a narrated power point presentation developed and presented, solely for the Indian River Lagoon Watershed, by local experts.

Budget: $15,000 in IRL License Plate match funding, and $15,000 in match funding from the city of Palm Bay and citizen volunteers.

Outcomes: (report anticipated and/or completed accomplishments)

Short-term: Rain garden workshop curriculum, guides, and workbook development.

Intermediate: Guides and workbooks will be distributed at workshops and made available online on the City of Palm Bay’s website. City staff and members of the community will create three demonstration rain gardens.

Changes (+/-) in Pressure Targets: Positive, as the demonstration Rain Gardens teach our citizens not only the importance of rainwater harvesting for stormwater pollution prevention, but also for ground water recharge.

Long-term: Prevention of polluted stormwater runoff; increased ground water recharge; flood protection by retaining the runoff on site similar to a retention pond; erosion prevention; sedimentation of soils; improved quality of waters in Turkey Creek and the Indian River Lagoon.

CWA implementation information
One of the strategic goals for the EPA Office of Environmental Education is to promote the use of environmental education in communities to improve stewardship. This project compliments that goal.
Activity 14

CCMP/Work Plan Goal:
PIE-1: Priority- High. Implement and expand public involvement and education projects or programs.

Project/Activity Name:
Restoring the Indian River Lagoon Shoreline.
Lead Contractor: City of Melbourne.

Project/Activity Purpose and Description: (indicate as proposed or ongoing)
This project is proposed. The project will remove three acres of invasive plant species like Brazilian Pepper that displace habitat for marine and terrestrial species, and provide unsuitable food and habitat for native animals. 5,000 Mangroves and other shoreline natives will be planted to trap sediment and filter pollution, providing water quality benefits that directly enhance adjacent sea grass coverage.

Budget: $16,000 in IRL License Plate match funding, and $36,500 in match funding from the City of Melbourne and citizen volunteers.

Outcomes: (report anticipated and/or completed accomplishments)

Short-term: Purchase of mangrove saplings and other shoreline native plants. Removal of three acres of invasive plant species like Brazilian Pepper by mechanical and chemical means.

Intermediate: Planting of mangrove saplings and other shoreline native plants on 3 acres of Indian River Lagoon shoreline.

Changes (+/-) in Pressure Targets: Positive, as the shoreline native vegetation becomes established and provides enhanced estuarine habitat and improvements to adjacent surface water quality. Development of volunteers to become IRL stewards.

Long-term: Restoration of mangrove shoreline forests, enhanced public participation in restoration activities, and enhanced habitat and water quality..

CWA implementation information
Implementation of the EPA Strategic Plan to restore estuaries and maintain healthy habitats within estuaries. This project will result in a gain of habitat acreage as sites over run with invasive vegetation are rehabilitated.
**Activity 15**

**CCMP/Work Plan Goal:**
FI-1: Priority-High. Continue the Indian River Lagoon Advisory Board’s role of oversight, monitoring, and guidance of the implementation of the IRL CCMP.

**Project/Activity Name:**
Indian River Lagoon Program Operations
Lead Contractor: IRL NEP / St. Johns River Water Management District

**Project/Activity Purpose and Description:** (indicate as proposed or ongoing)
This project is ongoing. The goal of this project is to continue to support the IRL Project Office within the SJRWMD’s Palm Bay Service Center providing funds for travel, legal advertising of meetings, printing, office supplies and field equipment.

**Budget:** $1,310 NEP funding. Plus an additional $8,005 in FY2011-2012 unexpended NEP funds as carry forward.

**Outcomes:** (report anticipated and/or completed accomplishments)

*Short-term:* Enables staff to travel to the required NEP EPA National Meeting in Washington DC in March, to legally advertise Advisory Board meetings in accordance with Florida’s Sunshine Law, and provides a small amount of funds for supplies and printing to support CCMP implementation.

*Intermediate:* Supports implementation of the FY2012-2013 work plan.

*Changes (+/-) in Pressure Targets:* Positive, allowing staff to continue CCMP implementation and management of work plan projects.

*Long-term:* Continues the project office operations for on-going CCMP implementation, reporting and future work plan development.

**CWA implementation information:**
Implementation of the EPA Strategic Plan to restore estuaries and maintain healthy habitats within estuaries.
Activity 16

CCMP/Work Plan Goal:
TMDL-3: Priority- High. Support implementation of Basin Management Action Plans (BMAPs) for all basins requiring TMDLs.

Project/Activity Name:
Prioritizing TMDLs using seagrass habitat vulnerability to sea level rise.
Lead Contractor: The Balmoral Institute.

Project/Activity Purpose and Description: (indicate as proposed or ongoing)
This project is proposed. Rising sea level will deepen the IRL. Loss of seagrass habitat will accompany a deepening estuary as an ever enlarging proportion of the estuarine sea bed falls below the deep edge boundary for growth. Habitat loss may be even higher in areas of the lagoon impaired by persistent pollutant loading and poor water quality. Although the CCMP and TMDL BMAPs include water quality targets and reduction of nutrient loadings designed to restore and protect seagrass, it is unlikely that sufficient resources will be available everywhere throughout the estuary in a timely manner to implement water quality improvement projects needed to meet the TMDL targets. Therefore, the maps and descriptive statistics generated by this project will provide the basis for allocating resources to help ensure TMDL and CCMP implementation targets the most vulnerable sub-basins and segments related to sea level rise vulnerability. Project deliverables will include a working model or GIS tool, accompanied by a technical memorandum that can be transferred to other estuaries who may wish to replicate this work in other systems. Complete metadata, attribute tables and supporting reference materials including literature citations will be provided.

Budget: $20,000 NEP Climate Ready Estuary Funding, $20,000 in match funding from the Balmoral Institute.

Outcomes: (report anticipated and/or completed accomplishments)

Short-term: A bathymetric model of the study area.

Intermediate: Mapped distribution of recent seagrass habitat and light limiting depth targets. Quantified distribution of seagrass habitat as a function of sea level rise and load reduction success; maps and descriptive statistics with a working model or GIS tool.

Changes (+/-) in Pressure Targets: Positive as the project supports efforts to attain and maintain water and sediment of sufficient quality to support a healthy estuarine lagoon system.

Long-term: This project will provide information to lagoon resource managers to evaluate source reduction prioritization as an effective management tool and the utility of seagrass as a water quality monitoring parameter..

CWA implementation information:
This project directly correlates to EPA’s primary responsibilities as directed by the Clean Water Act- identifying polluted waters and developing plans to restore them (total maximum daily loads) and addressing diffuse, nonpoint sources of pollution as well as protecting coastal waters through the National Estuary Program.
Section C. Completed Major Projects/ Activities

Previous Years Reporting

C.1 Summary of IRLNEP and Management Conference Accomplishments for 2011-2012

The IRLNEP had another successful year in FY 2011-2012 implementing the IRL CCMP. The FY 2011-2012 work plan provided funding for five (5) FTE employees and one contract worker to administer the Program including 10 high priority CCMP implementation projects (please see Section C.2 of this Work Plan) which ranged from impounded wetlands reconnection to ecological and genetic monitoring of exotic aquatic species, design of a second generation algal turf scrubber nutrient removal facility and ongoing seagrass resource and water quality monitoring throughout the estuary. The IRLNEP also funded a number of other projects utilizing revenue from the sales of the Indian River Lagoon Specialty License Plate. These projects included the restoration of oyster habitat in Mosquito Lagoon, shoreline restoration and stabilization and community education and outreach.

Completed Major Projects

City of Edgewater Eastern Shores Stormwater Improvement Project
Objective – Construction of a stormwater treatment train of best management practices and a public education campaign to reduce nutrient loadings into the Mosquito Lagoon.
Lead Project Implementer – City of Edgewater
Section 320 funds - $0 / $100,000 SJRWMD, EPA/FDEP Sec. 319 $474,360, City SW Utility $319,041
Project Deliverables – site survey, project design, construction photos, water quality monitoring plan, delivery of education campaign with pet waste receptacles, final project report.
Project Outcomes – the project has produced a 99% reduction in TSS, 88% reduction in TP, and 53% reduction in TN from this 47-acre drainage basin. As well as provided transferrable knowledge on a pet waste campaign that demonstrated community and social compliance are important motivators for proper action.
CWA Core Programs – (4) addressing diffuse, NPS pollution & (6) protecting coastal waters through the NEP
Program Role: Significant

MC-2 Bird Island Protection Project
Objective – installation of a wave attenuation system to prevent further erosion of the MC-2 shoreline.
Lead Project Implementer- Martin County
Section 320 funds- $100,000 (2010) / Cost-share $500,000 – FIND, USFWS, Martin County
Project Deliverables – photographs of system installation and native plantings. Project monitoring is ongoing and will be complete by June 2013.
Project Outcome – MC-2 is home to one of the most important bird-nesting colonies in South Florida including federally and state listed species such as wood storks (Mycteria Americana), little blue herons (Egretta caerulea), tri-colored herons (Egretta tricolor), and brown pelicans (Pelecanus occidenta). The protection of this site is critical to the recovery of wading bird species.
CWA Core Program – (5) protecting wetlands
Program Role: Significant
2011 Indian River Lagoon Seagrass Mapping
Objective – Lagoon-wide seagrass maps derived from aerial photos provide an overall picture of IRL seagrass resources and serve as important management tools for TMDL compliance and water quality status and trends.
Lead Project Implementer – IRLNEP / SJRWMD
Section 320 funds - $25,000 (through staff salaries) / $165,871 SJRWMD / $42,250 NOAA FL Coastal Mgmt Program
Project Deliverables – study plan, field work, photointerpretation, orthophotography of imagery, positional accuracy assessment, final report with maps.
Project Outcome – production of 2011 aerial imagery of the IRL captured in digital format. Use of the maps assists resource managers when commenting on regulatory permits, assists in seagrass restoration projects, provides compliance criteria for TMDL implementation.
CWA Core Program – (1) establishing water quality standards & (2) identifying polluted waters and developing plans to restore them (TMDLs).
Program Role – Primary

Connecting St. Lucie county Wetlands to the Indian River Lagoon
Objective – to ensure that the managed mosquito control impoundment 14C, a 178-acre marsh, closely mimics the natural wetland hydrology to support healthy mangrove/marsh communities and a high diversity of aquatic fauna while preventing mosquito breeding without chemical treatments.
Lead Project Implementer – St. Lucie County Mosquito Control
Section 320 funds - $12,918 (2010 & 2011) / $35,274 County & SFWMD
Project Deliverables – site survey, engineering design and permits, photos of 3 culvert installations, progress report & final report.
Project Outcome – reconnection of this large impounded wetland has resulted in improved water quality, restored seagrasses adjacent to the impoundment levee, restored nursery and foraging habitat, enhanced mosquito control without expenditure of $100,000 annually for chemical treatments.
CWA Core Program – (5) protecting wetlands & (6) protecting coastal waters through the NEP
Program Role - Significant

The IRLNEP Management Conference made up of the Indian River Lagoon Advisory Board, the Citizen’s Action Committee (CAC), and the Technical Advisory Committee (TAC) continues to lead the program through active community directed guidance and oversight.

Below and on the following pages are projects that have been initiated and/or completed by members of the IRLNEP Management Conference in FY 2011-2012.

St. Johns River Water Management District (SJRWMD)
The SJRWMD continues to implement the IRL Surface Water Improvement and Management Plan (SWIM) in the northern and central IRL and provide on-going local sponsor support for the IRLNEP Project Office and staff. The SJRWMD continued several regional stormwater and environmental enhancement projects in 2011 and 2012 in the basin.

- SJRWMD’s Estuaries Section continued to assist the Florida Department of Environmental Protection’s (FDEP) Bureau of Watershed Management in fine-tuning lagoon TMDLs based on Pollutant Load Reduction Goals for sea grass restoration in the IRL and Banana River Lagoon and is currently working on creating scientifically based numeric nutrient criteria in cooperation with FDEP.
• Impounded wetlands and drag-line ditched wetland restoration is continuing under the guidance of SJRWMD in partnership with U.S. Fish and Wildlife Service and Volusia County, with funding assistance from IRLNEP, the IRL License Plate Program, and a grant from the National Oceanic and Atmospheric Administration, and National Coastal Wetlands Grants Program.

• The first phase of the C-1 Re-diversion Project is complete with the construction of the western pump station and the MS-1 gate modifications finished in early 2011. This project will re-divert 25% of the freshwater currently discharged from the 100 square mile Melbourne-Tillman Water Control District west, into the upper basin of the St Johns River. Phase 2, to be complete in several years, will re-divert a total of 33% of these discharges.

• Construction of the Fellsmere Water Management Area is ongoing to create a 10,000-acre management area providing water quality treatment of agricultural discharges in northwest Indian River County.

The Indian River Lagoon License Plate Program was established to support habitat restoration, water quality improvement, and associated education projects. The South Florida Water Management District is responsible for administering Indian River Lagoon License Plate funds for projects in St. Lucie, Martin and Palm Beach counties. The IRLNEP is responsible for administering IRL License Plate funds for projects in Brevard, Volusia, and Indian River counties.

Indian River Lagoon License Plate projects that were completed in FY2011 include:

Martin County:

• Pest Plant Removal from Audubon Lands in Martin County: The objective of this project was to improve habitat by removing invasives and replacing them with native plants where necessary on five Audubon properties adjacent to the St. Lucie River in Martin County.

• Harbor Branch Preserve Water Quality Project: The objective of this project was to construct a pump station and install the utilities to operate it, in order to improve the water quality and circulation in the wetland, and control exotic plants and mosquitoes using artificial water management instead of insecticides.

• Living Shoreline 2011: This project serves to implement a goal of the Comprehensive Everglades Restoration Program, Indian River Lagoon – South Project. The goal is the restoration of historic oyster populations to continue water quality improvements and benefit the St. Lucie Estuary and Indian River Lagoon. This project restored approximately 0.20 acres of oyster reefs and near shore habitat within the St. Lucie Estuary near the Roosevelt Bridge.

St. Lucie County:

• The Marine Clean-up Initiative in both Martin and St.Lucie counties: The objective of these two projects was to remove marine debris and eradicate ghost fishing to help restore, protect, enhance and conserve the coastal and marine habitats and ecosystems of the Indian River Lagoon.
Palm Beach County:

- Cypress Creek Restoration – Jupiter Ranches: The objective of this project was to improve the overall water quality, storm water attenuation and base-flow maintenance of the Loxahatchee River. The project consisted of scraping down shell pits and re-contouring areas by moving the fill and spoil berms created during the original excavation of the shell material from the Jupiter Ranch site in Palm Beach County.

Brevard County:

- The Indian River Lagoon Species Web Based Education Tool was continued with a focus on invertebrates, design of a new introductory page and uploading of the 2012 photo contest entries.
- Brevard Zoo’s Lagoon Quest to integrate real-life experience with 4th grade curriculum using the lagoon environment gets students, teachers and parents involved in lagoon conservation.
- The FDEP Aquatic Preserves IRL Shoreline Habitat Restoration Project is proceeding on schedule.
- Support for the InSTEP educational program and RV mobile lab continues.
- Mosquito Lagoon community oyster reef restoration continues with deployment of 1,500 mats during the spring and summer of 2012.

Volusia County:

- Matching dollars for a Florida Fish and Wildlife Conservation Commission (Federal through State) coastal wetland restoration grant

Indian River County:

- Support for the design of the PC South Phase 1 Algal turf Scrubber System for the south relief canal

**Indian River County** completed the Main Relief Canal Pollution Control project in 2008 and the Egret Marsh Regional Stormwater Park in 2010. Both of these projects are large-scale water quality improvement projects that address the heavy sedimentation, phosphorous, and nitrogen loadings that had been discharging untreated into the IRL from the Indian River Farms Water Control District.

**Main Relief Canal Pollution Control Project (Now known as PC Main):**

- Design and construction of the Main Relief Canal Pollution Control System Using Series Screening Methodology is complete and the facility is in operation. In 2011, the facility removed 638.2 tons of plants and debris from the Main Relief Canal. In a two day period in September, 161.1 tons were removed. Additionally, 4,026 tons of sediment was removed by the facility’s two sediment traps in 2011. Between January 1, 2012 and April 19, 2012 an additional 4.8 tons of material were removed.

**Egret Marsh Regional Stormwater Park:**

- Egret Marsh was placed in service in June 2010. The facility’s primary purpose is to remove dissolved nutrients from drainage canals that accept runoff from a 9,000-acre basin. Egret Marsh uses an aquatic based plant system, the patented Algal Turf Scrubber (ATS) system, for the majority of the dissolved nutrient removal. Ten million gallons of water per day is pumped from the Indian River Farms Water Control District’s canal system to a gently sloping algae field. The algae removes dissolved nitrogen and phosphorus from the diverted water. Additional nutrients that have bonded with solids are removed through settling in the project’s three large polishing
ponds. Water leaving the ATS flows through the three polishing ponds and finally to a wetland marsh for additional treatment prior to discharge to canals leading to the IRL. During a recent one-year water quality study for FDEP ending August 29, 2011, the facility removed 5,278 pounds of TN (2.64 tons) and 1,477 pounds of TP (0.74 tons). This removal occurred during one of the longest droughts on record and represents 18.2 and 49.4 percent removal of TN and TP respectively, from the 9,000 acre watershed.

PC South:
- Indian River County is in final design stages for the construction of another ATS system near the Indian River Farms Water Control District’s South Relief Canal. An ATS pilot plant study has been completed and the data is being used for final design of the ATS that will treat 10 mgd, similar to Egret Marsh. Reverse Osmosis reject water from the County’s South County Water Treatment Plant will be mixed with the canal water and the ATS system will remove nitrogen and phosphorus from both the reject water and the canal water. Some of the treated effluent will ultimately be incorporated into a new water reuse system operated by the Indian River County Division of Utility Services. Final design is expected to be complete in the summer of 2012 and construction is expected to begin in the fall of 2012.

The National Aeronautics and Space Administration:
- NASA has initiated a wetland mitigation plan for the NASA Causeway Revetment project, which is currently underway. The plan is to create 8-10 acres of high salt marsh along the NASA Causeway. An Environmental Resource Permit application has been received and funding is now available to start the work. The project will allow the filling of rotary cut ditches along the causeway and grading of the south side of the causeway to an elevation that will allow for inundation from the IRL. The project area will be planted with salt marsh plant species. Current schedule is to commence work when the water levels in the lagoon are low enough to allow grading to low water elevation.
- NASA continues to operate an atmospheric deposition site at Kennedy Space Center adjacent to the IRL in collaboration with St. Johns River Water Management District as part of the Clean Air Status and Trends Network (CASTNET) system.
- NASA, working with the Goddard Institute for Space Studies (GISS) and Columbia University, is examining the risks to KSC of climate change and sea level rise projections for the next 60 to 100 years. The multi-year project is focused on assessment of effects on facilities, infrastructure, roads, launch pads, workforce and natural resources. The second phase of the project is addressing, through field measurement and modeling, the potential for climate change and sea level rise to influence the distribution of vegetation communities at KSC including submerged aquatic vegetation, wetlands, flatwoods and scrub. These communities support numerous species of special concern and federally protected species including manatees, sea turtles, Florida Scrub Jays, indigo snakes, and southeastern beach mice.

The U.S. Fish and Wildlife Service (USFWS) manages the Pelican Island National Wildlife Refuge (PINWR) and the Merritt Island National Wildlife Refuge (MINWR). Combined, the two refuges constitute a land mass of over 145,000 acres. Managing conservation habitats of that size requires a variety of tools ranging from conducting wildlife surveys to implementing wetland impoundment strategies to exotic vegetation removal.
**MINWR:**

- With assistance from FWC, contract crews treated exotic vines (air potato, guinea grass and cogon grass) on 125 acres.
- Using Merritt Island funding, we killed giant cane and Brazilian pepper on 200 acres on the south end of the Refuge
- Refuge staff retreated 200 known Cogon grass sites on the refuge.
- Refuge staff treated a 50-acre Old World Climbing Fern site in T24D impoundment.

**PINWR:**

- Throughout 2009-2010, the refuge staff continued to treat Category I and II invasive species, concentrating on Brazilian pepper and cogon grass across 300 acres of the refuge. Efforts are focused on public use areas and restoration sites. All other areas are treated in a systematic order and recorded.
- Funding from 2010-2011 SJRWMD IRLNEP was used toward initial treatment and retreatment of exotic plant species (Australian pine and Brazilian pepper) along the shorelines of Preachers, Nelsons, and Paul’s island. Approximately 32 acres of exotics were initially treated or retreated by EarthBalance (in combination with USFWS funding) and 3 acres were treated by Marine Resources Council. The plants were cleared by chainsaw or a mulched and the stump was sprayed with herbicide to prevent further infestation. As documented by refuge staff, interns, and volunteers, the eradication efforts were effective.
- In April 2011, volunteers from the Coastal Conservation Association of the Treasure Coast held 3 workdays on the islands to install 4,000 cordgrass, 1,000 sea purslane, 1,000 saltwort, and 500 red mangrove plants along 6,750 ft of shoreline on the three islands. Marine Resources Council installed 400 red mangroves on the north side of Paul’s island. Staff from the U.S. Fish and Wildlife Service Ecological Services office grew red mangroves in their offices for one year as part of a contest. These 125 plants were installed in April by the participants of the contest and FDEP staff.
- In 2011 the refuge, the Environmental Learning Center, and the Marine Resources Council partnered to install over 1,000 red mangroves on the northern end of Paul’s island. Dates for ELC camps are set for the summer of 2012.
- Island clean-ups continue sporadically on IR4, IR5, and IR6 through volunteer efforts and outreach activities.
- The refuge continues to participate in waterway clean-ups and derelict crab trap removal.
- The Refuge is coordinating with the IRLNEP and Coastal Wildlife Conservation Imitative to conduct a lionfish survey of Sebastian Inlet State Park and lionfish rodeo for removal of exotic species if necessary.
In May 2010, a new boardwalk overlook was installed on Pete’s Impoundment to provide wildlife viewing opportunities to the public. An eight passenger energy efficient tram was used October through February conducting tours to this outlook.

In September 2010, a 10-year bioreview of Pelican Island habitat and wildlife programs was reviewed by experts from the area and top USFWS advisors. The final bio-review report is set to be complete by the end of May 2012. Currently, there is a 300 page Habitat Management Plan in draft form that describes all activities, goals, and protocols and is undergoing final stages of editing.

The Sierra Club was here October 2011 and March 2012 conducting beautification projects on the Refuge, including the restroom area and entrance to new office facility.

In September 2011, Refuge staff moved into newly constructed office facility on the Refuge.

In January 2012, a new Refuge (the Everglades Headwaters National Wildlife Refuge) was added to the Pelican Island NWR Complex.

Refuge staff participated in Marine Resources Councils Indian River Lagoonwatch by taking water quality samples at sites around the historic rookery.

An extensive bird survey protocol was developed for PINWR and flight-line counts have been and are counted bi-weekly.

In March 2012, Florida Atlantic University with the use of USFWS Migratory Bird funds began conducting aerial surveys of Pelican Island proper. Study to continue through breeding season.

Woodstorks returned to the island to nest after a 5 year hiatus.

National Geographic filmed a lagoon piece on Pauls Island with Marine Resources Council, Refuge staff, and volunteers.

Research continues on the Refuge, including: climate change studies by the Smithsonian Enviro Research, woodrat and trapping and genetics with USFWS Ecological Services, beachmouse trapping and studies with Innovative Health Services and Univ. of Central Florida, nutrient loading studies by Duke University, smalltooth sawfish surveys by the University of Florida, shoreline restoration by FDEP Aquatic Preserves, and sea turtle studies in the lagoon by University of Central Florida.

**South Florida Water Management District** (SFWMD) continues to lead localized IRL restoration efforts and CCMP implementation throughout the southern IRL watershed.

- SFWMD, in collaboration with FDEP, FDACS and local stakeholders, submitted the 2012 St. Lucie River Watershed Protection Plan to the legislature. This update focuses on the progress since 2009 toward meeting the plan’s integrated, multi-phased goals. It also defines current and proposed nutrient reduction and storage projects and programs that will require funding for implementation and identifies the lead agencies responsible for implementation.
Since 2005, the South Florida Water Management District has been working with a coalition of agencies, environmental organizations, ranchers and researchers to enhance opportunities for storing excess surface water on private, public and tribal lands. In addition to utilizing regional public projects, the Dispersed Water Management Program encourages property owners to retain water on their land rather than drain it, accept and detain regional runoff, or do both. The ultimate goal for the Dispersed Water Management Program is to provide 450,000 acre-feet of retention/storage throughout the Northern Everglades watershed. 137,000 acre-feet of water retention/storage has been made available to date with an additional 230,000 acre-feet planned, pending funding.

SFWMD through the CERP RECOVER program is monitoring IRL and St. Lucie River benthos, submerged aquatic vegetation, oyster reefs and water quality parameters in partnership with the U.S. Army Corps of Engineers. Data is reported in the System Status Report on Evergladesplan.org

The SFWMD Coastal Ecosystems Sciences Division (CESD) is currently doing research on the effects of low level dry season freshwater releases into the estuary on the productivity in the oligohaline zone of the estuary.

The CESD is developing and calibrating a water quality model and a nutrient budget for the St. Lucie Estuary.

The St. Lucie River Issues Team was formed by the South Florida Ecosystem Restoration Working Group in May 1998 and is managed by SFWMD. The Issues Team mission is to develop federal, state and stakeholder consensus on an action plan that would accelerate progress toward improving water and habitat quality in the St. Lucie River Estuary and IRL. This action plan assessed current problems in the estuary and lagoon and set direction for achieving improvements in both water quality and estuarine ecosystem functions (e.g., fish and wildlife habitat).

The Issues Team has continued to solicit, rank and submit projects to the Florida Legislature. And to date, has received $63.7 million from the Florida Legislature, and an additional $2 million in federal funding for over 114 individual projects in Martin and St. Lucie counties.

Current Issues Team projects are as follows:

- **Warner Creek Water Quality Retrofits**: This Martin County effort is a multi-faceted project to enhance water quality in the Warner Creek Basin. The project includes the installation of exfiltration in public road right-of-way, dry or wet detention and Stormwater Treatment Area (STA) marshes in County acquired parcels. The project is scheduled for completion in 2012.

- **Manatee Creek Water Quality Retrofit**: This Martin County project consists of the creation of a Stormwater Treatment Area (STA) marsh for treatment and attenuation of flows from the New Monrovia Sub-division, which was developed prior to requirements for treatment of stormwater discharges. Another STA is being constructed to treat runoff from the portion of the Manatee Creek basin draining from US Highway 1 lateral ditch and lands to the west. This project is scheduled for completion in 2012.

- **Danforth Creek Water Quality Retrofit**: This Martin County project will re-direct flows from Danforth Creek into an excavated deep cell lake with littoral shelves and an STA, and construct a
water quality control structure weir for detention prior to discharging back into Danforth Creek. A second project component would serve a 90-acre sub-basin, of which roughly 55-acres have been developed prior to today’s water quality standards, and provide about 5.5 acre-feet of wet detention treatment. This project is scheduled for completion in 2012.

- Paradise Park Stormwater Improvements, Phase 3: This St. Lucie County project includes the construction of conveyance and treatment facilities for stormwater runoff from the Paradise Park Sub-division, which ultimately discharges into the Indian River Lagoon. This project is scheduled for completion in 2013.

Issues Team projects completed in since April 2011 includes:

- E-8 Waterway Phase 3 Stormwater Quality Retrofit: The SFWMD and the City of Port St. Lucie increased stormwater treatment for older subdivisions and commercial development, reduced peak discharges, reduced the Watershed “B” runoff nutrient loads and helped resolve recurring drainage and flood control problems through exotic nuisance vegetation removal, side slope re-grading and sodding, channel dredging and outfall control structure upgrades within the E-8 Waterway.

- St. Lucie Tributary Flow Monitoring Network: The SFWMD oversaw a monitoring network within the urban portion of the St. Lucie River/Estuary watershed in order to document water quality and flow conditions and to develop a baseline data set for calculation of loads from these tributaries. The District is looking into re-instating the program in the future to support source control.

- St. Lucie River Fish Health Study: NOAA/NMFS conducted a research project to characterize the environmental quality of the St. Lucie system in terms of prevalence as an assessment tool to integrate the impacts of multiple stressors and trach cumulative effects of restoration projects in regional and local watersheds discharging fresh water to the St. Lucie system.

- Manatee Pocket Dredging Project: Martin County is removed approximately 250,000 CY of muck from the Manatee Pocket to improve navigation, reverse the degradation of seagrass bed habitat, remove accumulated pollutants in the upper muck layer and create a sediment trap at the mouth of a key tributary.

- Howard Creek Stormwater Quality Retrofit: The City of Port St. Lucie is constructed a Stormwater Treatment Area (STA) on City-owned property and made flow-way improvements to remove pollutants, improve flood protection, control peak discharges, shoaling and exotic vegetation removal, restore hydraulic capacity, and provide habitat restoration within environmentally sensitive lands. This project is one component of the Eastern Watershed Improvement Project (EWIP).

- Old Palm City Water Quality Retrofit: This Martin County project included land acquisition for the construction of retention and stormwater treatment areas, weirs piping and baffles boxes in an older section of Palm City. The project will also enable wetland enhancement by removal of exotic vegetation.
St Lucie County Indian River Lagoon restoration efforts this year were concentrated on rehabilitating IRL shorelines and spoil islands, stormwater management and land acquisition.

- Installed equalizer culverts at impoundments 8G, 8J, and 14B (one each). Installed pump station at Impoundment 14C. Removed exotic plants, including Brazilian pepper, Scaevola taccada and Australian pine from 102.7 acres at John Brooks Park, Blind Creek Park, Dollman Park Riverside, Ocean Bay Park Riverside, and Waveland Beach Park North.

Stormwater management projects in 2011 focused on retrofitting several existing neighborhoods and watersheds that ultimately drain to the IRL, including:

- Began design of the Paradise Park Phase IV drainage retrofit providing stormwater management, water quality treatment and paved roads to 55 acres of this 171 acre single family, residential neighborhood draining to the IRL via SFWMD Canal C-25.

- Construction of the Paradise Park Phase III drainage retrofit that will provide stormwater management, water quality treatment and paved roads to 21 acres of this 171 acre single family, residential neighborhood draining to the IRL via SFWMD Canal C-25.

- Awarded construction for the Harmony Heights Phase I drainage retrofit that will provide stormwater management, water quality treatment and paved roads to 44 acres of this 222 acre single family, residential neighborhood draining to the IRL via SFWMD Canal C-25.

- Awarded construction for the Indian River Estates Phase II drainage retrofit that will provide a drainage conveyance system to the pump station, alum injection and wet detention facilities constructed in Phase I. When completed this system will provide stormwater management and water quality treatment to this 1,200 acre single family residential neighborhood draining to the IRL via the Savannas State Preserve.

- Began survey and design for the San Lucie Plaza Master Drainage Plan providing stormwater management, water quality treatment and paved roads to a 175 acre single family, residential neighborhood draining to the IRL via SFWMD Canal C-25.

The Florida Department of Agricultural and Consumer Services (FDACS) is actively involved in the development of Best Management Practices (BMP’s) addressing water quality and water conservation applicable to agriculture operations as well as commercial and residential properties. Florida law provides for farmers to reduce their impacts to water quality through the implementation of BMPs adopted by FDACS. Agricultural BMPs are practical, cost-effective actions that agricultural producers can take to reduce the amount of pesticides, fertilizers, animal waste, and other pollutants entering our water resources. Implementing BMPs benefits both the farmer and the environment, and demonstrates agriculture’s commitment to water resource protection.

- Approximately 353,214 acres of agricultural land within Brevard, Indian River, Martin, St. Lucie, and Volusia counties are enrolled in FDACS BMP programs. This is an increase of 48,321 acres over 2011 figures. Indian River, Martin, and St. Lucie counties comprise 268,916 of the total acres. The table below provides a breakout of enrolled acres by county and commodity.
### Acres Enrolled in FDACS OAWP BMP Programs (03/31/2012)

<table>
<thead>
<tr>
<th>Program</th>
<th>Brevard</th>
<th>Indian River</th>
<th>Martin</th>
<th>St. Lucie</th>
<th>Volusia</th>
<th>Program Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Citrus</td>
<td>4,082.50</td>
<td>44,437.64</td>
<td>40,950.74</td>
<td>82,537.58</td>
<td>105.00</td>
<td>172,113.46</td>
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<tr>
<td>Nursery</td>
<td>149.98</td>
<td>163.00</td>
<td>1,437.40</td>
<td>895.56</td>
<td>154.00</td>
<td>2,799.94</td>
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<tr>
<td>Row Crops</td>
<td>590.00</td>
<td>0.00</td>
<td>3,147.36</td>
<td>0.00</td>
<td>0.00</td>
<td>3,737.36</td>
</tr>
<tr>
<td>Cow/Calf</td>
<td>66,192.46</td>
<td>2,417.27</td>
<td>58,740.31</td>
<td>33,864.57</td>
<td>9,426.00</td>
<td>170,640.61</td>
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<tr>
<td>Leatherleaf Ferns</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>953.30</td>
<td>953.30</td>
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<tr>
<td>Sod</td>
<td>2,050.00</td>
<td>3.25</td>
<td>181.65</td>
<td>130.00</td>
<td>589.55</td>
<td>2,954.45</td>
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<td>Fruit &amp; Nut</td>
<td>3.94</td>
<td>0.00</td>
<td>10.00</td>
<td>0.00</td>
<td>0.50</td>
<td>14.44</td>
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<tr>
<td><strong>County Totals</strong></td>
<td><strong>73,068.88</strong></td>
<td><strong>47,021.16</strong></td>
<td><strong>104,467.46</strong></td>
<td><strong>117,427.71</strong></td>
<td><strong>11,228.35</strong></td>
<td><strong>353,213.56</strong></td>
</tr>
</tbody>
</table>

- The County Alliance for Responsible Environmental Stewardship (CARES) program highlights efforts by farm owners to improve natural resource management. The CARES program is sponsored by the University of Florida Institute of Food and Agriculture Science (IFAS). FDACS provides support for the program in evaluating BMP implementation and assisting with organizing and conducting awards events. Farm owners who have met verifiable standards of excellence in resource management receive a CARES designation and post signage on their properties identifying them as award winners for their good work.

- For more than a decade, partnership-based Mobile Irrigation Labs (MILs) have been operating free of charge, throughout the State of Florida. The MILs provide expertise in analyzing irrigation systems and educating agricultural, commercial, and residential property owners on how to improve water conservation and use. They give recommendations on the improvement of existing irrigation systems and equipment, and inform their customers and the public on water conservation, irrigation planning, and irrigation management. There are two MILs that operate within the Indian River Lagoon Region: The Treasure Coast Resource Conservation and Development Council MIL (agricultural), which serves St. Lucie and Martin counties, and the East Central Florida Resource Conservation and Development Council MIL (urban), which serves Brevard and Volusia Counties.

The **Florida Department of Environmental Protection** (FDEP) has a number of ongoing research and restoration projects benefitting the IRL ecosystem. Listed below is a sampling of those projects:

The Basin Management Action Plans are currently under development for the IRL to implement TMDLs. The Indian River Lagoon has been divided into 3 sub-basins, Banana River, North Indian River and Central Indian River. It was determined that nutrient TMDLs for the tributaries were not necessary. The NPDES Permits for Domestic and Industrial Wastewater Facilities with surface water discharges have been revised to include new nutrient load allocations as contained in the adopted TMDL. Facilities continue to work to maximize reuse and minimize discharge into the IRL. FDEP continues to monitor wastewater treatment plants throughout the IRL watershed for compliance with the Indian River Lagoon Protection Act.
The City of Cocoa Beach received a SRF loan in 2011 for the construction of advanced waste treatment facilities and an injection well for aquifer storage and recovery of reclaimed water, to enable compliance with the nutrient wasteload allocation contained in the TMDL for the Indian River Lagoon. Construction is ongoing.

- The City of Melbourne was awarded an SRF loan for construction of reclaimed water reuse improvements for the City’s D. B. Lee WWTF in 2011. This construction project is ongoing.

- The City of Vero Beach was awarded an SRF loan in 2009 and an IRL initiative appropriation through the St. Johns River Water Management District for construction of reclaimed water transmission facilities and an underground injection control well for disposal of demineralization concentrate and excess reclaimed water during wet weather. Construction was completed in January 2011 and the injection well has received an operation permit. This project essentially eliminated the City’s discharge of demineralization concentrate and excess reclaimed water to the IRL.

- Brevard County was awarded a federal 319 grant in 2009 to construct Phase 1 of the Pine Island Stormwater Improvement project. In fiscal year 2011, the County received a federal 319 grant to complete Phase 2 of the Pine Island Stormwater Management on North Merritt Island. The overall stormwater improvements, for both phases, include converting two existing borrow pits into treatment/settling ponds, installing a pump house station with three high capacity hydraulic pumps, and the fabrication of a diversion weir to force polluted stormwater runoff from the 5,970-acre drainage on North Merritt Island into both settling basins.

- The Town of Melbourne Beach was awarded a federal 319 grant in 2010 for stormwater retrofit project involving additional storage within basins in Melbourne Beach and construction of a stormwater treatment train. In fiscal year 2011, the Town of Melbourne Beach received a federal 319 grant to undertake a project to install stormwater Best Management Practices (BMP) at Riverside Drive and Hibiscus Trail to improve the quality of the stormwater runoff discharging to the Indian River Lagoon.

- The City of New Smyrna Beach received a federal 319 grant to construct the improvements to the North Atlantic Drainage Basin that will place innovative Best Management Practices (BMPs) into a 25 acre watershed that is approximately 90% urbanized. These BMPs will begin reducing the non-point source pollutant load and mitigating the resulting ecological impacts that are impairing the receiving water body. The project will include two dry stormwater retention ponds, an exfiltration trench, and an in-stream trash trap.

- The FDEP performed water quality and macroinvertebrate sampling in Brevard County at New Found Harbor off Airport Point, for the north IRL in Titusville and SR 528 at the IRL and Banana River during 2010. In 2011 FDEP collected a macroinvertebrate sample in the IRL near New Smyrna Beach Yacht Club Island.

- Biological monitoring of bird colonies and roosting sites in the IRL watershed and the East Central Florida Aquatic Preserves (ECFAP) is performed by FDEP through weekly boat and foot surveys. ECFAP conducts routine surveys at the Banana River Aquatic Preserve documenting nesting and roosting Roseate spoonbills, pelicans, cormorants, herons, egrets and anhinga. Staff has surveyed and documented approximately 50 Wood Stork nests at spoil island BC 49 in the IRL as well as roosting egrets, herons and pelicans. Routine surveys are conducted at islands BC 49, 49 and 30 in the Banana River and IRL.
• FDEP ECFAP staff supported the Florida Fish and Wildlife Conservation Commission with routine fish species sampling in Mosquito Lagoon.

• FDEP is expanding local awareness and support of the IRL and Mosquito Lagoon Aquatic Preserves by conducting volunteer spoil island enhancement activities.

• FDEP is the lead contractor on the IRL Shoreline Restoration Project that focuses on re-establishing mangrove fringe along the IRL between Cocoa Beach (SR 528) and Jupiter Inlet. Twelve red mangrove experimental sites that compare three planting methods at three different shoreline elevations have been established since the summer of 2008. The final report for FY 2009 was completed in October of 2009 and provides a project history, current objectives, and future goals. The project is funded through FDEP and the IRLNEP and is funded through FY 2010.

FDEP continues to partner with the St. Lucie County Mosquito Control District to enhance St. Lucie County spoil island SL 3 (across from Harbor Branch Oceanographic Institute).

The Nature Conservancy (TNC) is the world’s leading conservation organization working to protect ecologically important lands and waters for nature and people. TNC has a strong presence in the IRL region focusing on the areas of invasive species management and habitat restoration.

Oyster Reef Restoration

• Since 2005, The Nature Conservancy, University of Central Florida, Canaveral National Seashore, IRLNEP, St. Johns River Water Management District, Brevard Zoo, Royal Caribbean Cruise Lines, and many partners including thousands of community volunteers have been helping to restore intertidal oyster reefs degraded by boat wakes in the Mosquito Lagoon, Florida. TNC, in partnership with UCF, has received funding from the TNC/NOAA Community-Based Restoration Program since the inception of the restoration project. In addition to the TNC/NOAA CRP grants, funding has also been received through several other grant sources including the IRLNEP/SJRWMD. Since 2005 more than $3.5 million has been directed to this project through public grants, private donations and in-kind services. By the end of 2011, a total of 50 reefs have been restored with the help of more than 25,000 volunteers who made and deployed 25,978 oyster mats (2005-2011). These newly created reefs provide habitat and food for species, including fishes, crabs, birds and other important estuarine species. More than 140 different species have been identified using these restored reefs, which is similar to the number of species using nearby natural reefs. In addition, seagrass establishment has been observed adjacent to new reefs. Results have proven the oyster mat restoration technique successful in the shallow, intertidal system of Mosquito Lagoon. After only one year in the water, an average of 36 new oysters had settled on each mat and a 3-dimensional reef structure has started to form on all of the restored reefs. The new reefs are monitored every year to determine the success of this restoration method over time. Seventeen additional dead margins have been permitted by the FDEP and ACOE for restoration in Canaveral National Seashore. Several of these margins were leveled in March 2012 in preparation for restoration during the 2012 spring/summer mat deployment season. The leveling was performed by Volusia County Mosquito Control using a hydrologic excavator, paid for by the TNC/NOAA Community-based Restoration Program (CRP) grant.
The Nature Conservancy received three grants and an award in 2010 to continue the oyster reef restoration work in the Mosquito Lagoon. The 2010 ANEP/NOAA Community-Based Restoration Program and IRLNEP License Plate grants were awarded for FY 2011. Both of these grants are collaborations with the IRLNEP, UCF and other partners. A third grant was received through the US Fish and Wildlife Service Coastal Program. In addition to these public grants TNC was awarded $100,000 through the Disney Friends for Change program. All of these grants were completed as of March 2012. The Nature Conservancy is currently managing a 2-year grant from the TNC/NOAA CRP that is supporting the oyster reef restoration in Mosquito Lagoon. The grant ends in September 2012. Brevard Zoo has transitioned into the project as the lead for working with the community and volunteers on mat-making activities and assisting with deployment. The Zoo has been awarded grants from other agencies, including the IRLNEP, to continue the Mosquito Lagoon oyster reef restoration and the Conservancy continues to collaborate on all aspects of the project.

Invasive Species Management

TNC led or assisted with coordination of the Treasure Coast Cooperative Invasive Species Management Area (TC CISMA). TC CISMA is a regional invasive working group that includes northern Palm Beach County, and all of Martin, St. Lucie and Indian River counties. Major partners include TNC, Florida Park Service, Martin County, St. Lucie County, Florida Fish and Wildlife Conservation Commission, U.S. Fish and Wildlife Service, Palm Beach County, Natural Resource Conservation Service-Resource Conservation and Development Program, Florida Exotic Pest Plant Council, Florida Native Plant Society, Florida Forest Service, Florida Grazing Land Coalition, and University of Florida/IFAS. Other participants include FPL, The Boy Scouts of America, Institute for Regional Conservation, and South Florida and St Johns Water Management Districts. TC CISMA’s mission is to implement a comprehensive, cooperative approach across boundaries to address the threats of invasive species within the Treasure Coast. Highlights from the past year include: receiving funding from the USFWS Coastal Program for the Scaevola taccada barrier island removal project; participation in National Invasive Species Awareness Week with a cooperative multi-agency workday on FPL’s Barley Barbour Swamp; seven additional cooperative multi-agency workdays; quarterly steering committee meetings and two subcommittee meetings on private lands and invasive animals; and scheduling three Natural Areas Training herbicide license certification classes.

TNC has assisted with the coordination of the East Central Florida CISMA (ECF CISMA), a regional invasive species working group in Putnam, Flagler, Volusia and Brevard counties. Partners include the Florida Fish and Wildlife Conservation Commission, Volusia Soil & Water Conservation District, Volusia County, Brevard County, Department of Defense, Florida Forest Service, Flagler County, Florida Dept. Environmental Protection, Florida Park Service, Florida Dept. of Transportation, TNC, U.S. Fish and Wildlife Service, University of Florida/IFAS, St. Johns River Water Management District, U.S. Dept. of Agriculture Natural Resources Conservation Service, Florida Exotic Pest Plant Council, Florida Dept. of Agriculture and Consumer Services Division of Plant Industry, U.S. Army Corps of Engineers, and the U.S. Forest Service. Highlights from the past year include: four steering committee meetings; participation in National Invasive Species Awareness Week with an educational program; creation of an annual work plan and annual report; finalization of an EDRR plant species list for creating weed deck cards; two cooperative multi-agency workdays; and participation in environmental festivals.
Martin County

As one of the six county governments participating in the implementation of the IRL South Comprehensive Everglades Restoration Plan (CERP), Martin County supports the improvement of water quality and enhancement of the habitat within and adjacent to the IRL. This support is evidenced by the development and implementation of the Martin County Lands for Healthy Rivers and Natural Resources Protection Program. The proposed land purchases within this program are priority parcels identified within CERP, the Florida Forever Program, the IRL Blueway Program and other state and federal land acquisition programs. In addition, on November 7, 2006, Martin County citizens voted to add a one half cent sales tax for five years and dedicate the revenues to acquisition of land for river restoration, matching funds for conservation lands purchase and to fund capital projects for water quality improvement and recreation. The tax is expected generated close to $60 million with 50% of the funds conditioned for recreation and 50% of the proceeds dedicated to the Conservation Lands Program, which will be used to leverage other state and federal funds. To date, approximately 820 acres within the IRL watershed have been acquired at a cost of $23 million.

In addition to conservation and recreational land acquisition, Martin County has also aggressively implemented numerous stormwater BMP’s. In FY 2011-2012 Martin County, either completed or initiated the following stormwater capital improvements:

- The Manatee Creek Retrofit. Phase I of this project included creation of 12-acres of stormwater treatment area (STA) marsh, creation of a dry detention facility and infrastructure improvement to convey runoff to the treatment facilities for water quality and to provide relief to residences from chronic flooding. Phases II & III include conversion of the decommissioned, seven acre, Dixie Park Wastewater Treatment Plant (WWTP) to an STA/wet detention system with a prototype denitrification bed to treat runoff from serving 200+ acres and creation of a 5 acre STA within the adjacent sub-basin serving 40 acres of older residential development and reduce chronic structural flooding in the New Monrovia subdivision. Project construction was completed in July 2011.

- Old Palm City Phase 3 project will address water quality and flood attenuation problems within the southern portion of the basin, and proposes construction of two (2) STA’s totaling approximately 6.5 acres. Construction of the project was 100% completed in January 2012.

- Tropical Farms Stormwater Quality Improvement. The construction of the project is 100% complete. The project’s improvements include construction of a pipe system to collect the first inch of stormwater runoff from a 468-acre basin and convey this runoff to a 17 acre STA that will provide 39 acre-feet of water quality treatment and flood attenuation volume.

- The Rio St. Lucie Water Quality Retrofit Phases I & II will treat runoff from a 104-acre basin of an older development and roadway, which historically drained untreated runoff to the St. Lucie River. The project utilizes a treatment train approach to stormwater management including; installation of exfiltration and dry retention, converting conveyance ditches into dry retention swales with underdrains and piping beneath wherever appropriate conditions exist, creation of an STA detention marsh with control structure and installation of a control structure on the outlet of an existing uncontrolled pond. The project is complete.

- Leilani Heights/Warner Creek Stormwater Quality Retrofit. Approximately 1600 acres drain to Warner Creek between the Savannas State Reserve and the St. Lucie River. This retrofit is a multi-phased project, which includes installation of exfiltration, baffle boxes, and swales in upper basin reaches; installation of sediment traps in middle reaches of the creek, and construction of...
wet detention facilities in the downstream reaches. Phase I consisting of the installation of 1600 linear feet of exfiltration trench, installation of a 2nd generation nutrient separating baffle box, and creation of 900 linear feet of swales is complete. Phase 2 of the project is construction of a wet detention facility on the site of the decommissioned, five-acre Beacon 21 Waste Water Treatment Plant, and Phase 3 of the project involves sediment removal, channel widening and increased creek depth upstream of an existing weir in Warner Creek and replacement of undersized CMP culverts in Warner Creek with box culverts. Construction of Phase 2 improvements in Beacon 21 were completed in April 2011. Construction on Phase 3 has been completed as well. The County will continue to look for opportunities to hold stormwater in this system in the future.

- The County completed construction of the Manatee Pocket Enhancement Project. The project involved the removal of nearly 300,000 cubic yards of muck sediments from the Pocket and its tributaries. The project started in June 2010 and was completed in December 2011. The bulk of the muck sediments was hydraulically dredged to a nearby dewatering area and ultimately transported to a permitted mining operation where it will be used to create islands in excavated pits. Prior upland water quality projects, totaling over $10 million are treating the water now entering Manatee Pocket.

- Martin County spent $120,000 on eradicating exotic vegetation from properties that adjoin the South Fork of the St. Lucie River and IRL within the last year.

- Martin County acquired the River Cove Tract just north of the Stuart Causeway on Hutchinson Island. This three acre parcel cost roughly $840,000. The parcel is important because the Environmental Studies Center of Jensen Beach uses it for their estuary exploration programs.

- Martin County completed construction of the Spoil Island MC-2 Off-shore Wave Attenuation System. This project involved constructing a 400 linear foot rip rap structure along the northern edge of the island to prevent erosion. MC-2 is considered to be one of the most important bird nesting and roosting islands in the Indian River Lagoon because of the number and species diversity of birds that nest on the island. The County constructed an additional 250-feet of oyster reef behind the rip-rap structure.

- Between 2009 and 2011 Martin County received grants totaling over $4 million from the American Recovery and Reinvestment Act of 2009 through the National Oceanic and Atmospheric Administration (NOAA) and the South Florida Water Management District. The County used this funding to construct approximately 22 acres of oyster reefs in the St. Lucie Estuary (SLE). In October 2011, the County received $212,000 in additional funding from NOAA to construct another 2 acres of oyster reef in the SLE. The County also received $16,000 through the Indian River Lagoon License Plate Program in April 2012 to create oyster reefs along the IRL and SLE.

The Florida Fish and Wildlife Conservation Commission (FFWCC) has a number of completed and ongoing research and restoration projects in the IRL watershed:

- Continued studying manatee use of secondary warm water refugia in Brevard and neighboring counties. FFWCC staff is monitoring water temperature, salinity, and the availability of fresh water and food sources among other factors at sites used by manatees between the months of November and March.
• Completed a fish sampling project to describe the overall composition, abundance, and distribution of fish communities within smaller tidal and non-tidal rivers and streams of the IRL. This project will determine the relative resource value of these tidal and non-tidal rivers and streams for Species of Greatest Conservation Need and rare peripheral species along Florida’s east coast.

• Ongoing monitoring of marine fisheries through fisheries-independent, fisheries-dependent and life history projects for the assessment and management of fisheries resources.

• Initiated collaboration with the Florida Institute of Technology to conduct a literature survey of the natural resources present within the boundaries of the Cape Canaveral National Seashore (Mosquito Lagoon).

• Ongoing seagrass sampling at the restored spoil island (SL15) in Fort Pierce, a Florida Department of Transportation mitigation site.

• Completed three-years of monthly monitoring of finfish and macro invertebrates in Mosquito Lagoon.

• Continuing with a study on habitat utilization and resource partitioning of apex predators in coastal rivers.

• Ongoing participation in cooperative monthly sampling of HABs in the IRL in collaboration with the University of Florida, Innovative Health Applications, the St. Johns River Water Management District and the IRLNEP.

• Continuing to work with the St. Johns River Water Management District and Volusia County to conduct dike removal/impoundment restoration on public lands in Volusia County. The project is funded through a three-year grant from the NOAA National Coastal Program. A grant for Phase 2 was secured for an additional three years.

• Continued a study of blackwater effects on coral stress at St. Lucie Reef in Martin County funded through the State Wildlife Grant program.

• Continued developing a Restoration Plan for Johnson’s seagrass within its range funded by NOAA.

• Completed the demolition/renovation of buildings at the old New Smyrna Beach High School along Mosquito Lagoon as part of a Marine Ecocenter development process. Facilitated occupation of admin building by Marine Discovery Center and a local artist group. Conducted design planning for construction of a 4-acre marsh on site.

• Conducted monitoring of a reconnected historical oxbow along the North Fork St. Lucie River funded through FWC’s Lake Restoration program.

• Facilitated the development of a North Florida Estuarine Restoration Team and secured funding to develop a comprehensive planning document for NE FL through FDEP’s Coastal Zone Management Program (funds administered by SJRWMD).
Continued studying manatee use of secondary warm water refugia in Brevard and neighboring counties. FFWCC staff is monitoring water temperature, salinity, and the availability of fresh water and food sources among other factors at sites used by manatees between the months of November and March.

Ongoing monitoring of marine fisheries through fisheries-independent, fisheries-dependent and life history projects for the assessment and management of fisheries resources.

Ongoing fish/seagrass sampling at the restored spoil island (SL15) in Fort Pierce, a Florida Department of Transportation mitigation site.

Completed a study on habitat utilization and resource partitioning of apex predators in coastal rivers

Completed participation in cooperative monthly sampling of HABs in the IRL in collaboration with the University of Florida, Innovative Health Applications, the St. Johns River Water Management District and the IRLNEP.

Continuing to work with the St. Johns River Water Management District to conduct dike removal/impoundment restoration on public lands in Volusia County. The project is funded through a two-year grant from the NOAA National Coastal Program.

Completed the final report related to a project to look at the impacts of dredging on fish. This was a cooperative project funded by SJRWMD with Smithsonian (benthic invertebrates) and FIT (sediments) to look at the overall system changes in the St. Sebastian River during the removal of muck deposits.

During the past year, Brevard County has initiated and/or completed several stormwater treatment and outreach projects.

Completed stormwater treatment projects include:

- The Merritt Island Airport Pond was expanded and reconfigured to provide stormwater treatment for a 190-acre watershed, which previously discharged directly into the Banana River. Approximately 0.6 acres of highly disturbed marsh on the west side of the pond was enhanced by removing Brazilian peppers and re-establishing native species.

- Indialantic Drainage Improvements were partially completed in 2008 and fully completed in 2011. Final completion was delayed by the need to relocate a conflicting sewer pipe. This project will reduce flooding near Hoover middle School.

- A baffle box was installed at Indian River Isles several years ago, however piping from that box to the lagoon could not be replaced without a temporary construction easement from the adjacent property owner. The property recently sold and the new owner granted the easement needed to complete this water quality improvement project. After replacement of the pipe, the canal shoreline was stabilized and muck was removed near the outfall.

- Through a partnership between the County and Town of Grant-Valkaria, three existing borrow pits located on a county property were reconfigured to provide a regional treatment system for a
524-acre drainage basin within the Town of Grant-Valkaria. County staff coordinated design, permitting, construction, and grant documentation for this project known as Valkaria Lakes.

- The intersection of Hwy 520, Cox Road and A-Lane was re-aligned for safety reasons. As a part of the realignment, the county purchased a corner lot that was used to add a small stormwater treatment pond. Large box culverts were added under the re-aligned road to connect about $8 million of drainage improvements that will be constructed in adjacent areas in 2012.

**Stormwater projects with construction underway:**

- Phase I of the North Merritt Island/Pine Island project consists of expanding and converting an existing borrow pit within the Pine Island Conservation Area into an 83-acre stormwater pond to provide water quality treatment for drainage from a 5970-acre basin. This project is being constructed on land owned jointly by the County and St. Johns River Water Management District.

- Fortenberry Regional Pond is a multi-phase project to construct a 26-acre regional stormwater treatment pond just south of the Merritt Square Mall. Phase 1b will be advertised for bids this summer to expand the pond by another 8 acres.

- The A-Lane ditch is being expanded to improve stormwater conveyance and reduce wide-spread flooding in West Cocoa. Hopefully, a future phase will be funded to provide treatment for this conveyance.

- The Range Rd and Pluckebaum ditches are being expanded to improve stormwater conveyance and reduce wide-spread flooding in West Cocoa. Hopefully, a future phase will be funded to provide treatment for this conveyance.

Brevard County has multiple stormwater projects in the final days of contracting or advertisement for bids. These projects are anticipated to begin construction during the summer of 2012:

- Chain of Lakes Expansion will further improve the quality of storm water flowing into the Indian River from an 1175-acre drainage basin by adding several more acres of treatment pond to the existing regional park project. This regional park currently consists of created wetlands, lakes, walking bridges, paved walking trails, a bird watching tower, soccer fields and softball fields.

- Through a partnership between the County and the City of Titusville, two more South Lake/Carpenter Rd projects will provide water quality treatments for drainage systems that outfall to South Lake. The improvements will include dry retention, exfiltration, and a viewable bafflebox that will be visited by classes from the nearby South Lake Elementary School.

- Phase II of the North Merritt Island/Pine Island project consists of expanding and converting a second existing borrow pit within the Pine Island Conservation Area into a stormwater pond to provide additional water quality treatment for drainage from the 5970-acre basin. This project will also be constructed on land owned jointly by the County and St. Johns River Water Management District.

- Sarno Lakes Phase II will improve upstream conveyance and divert additional flows to three existing stormwater treatment ponds totaling 14.5 acres. The project also diverts stormwater
from the IRL, restoring the historic hydrological connection between the basin and the St. Johns River.

- Crane Creek/Lamplighter Phase II will redirect additional freshwater flows to the St Johns River and away from the IRL by adding additional conveyance improvements and a large stormwater treatment pond.

- The Lake Drive ditch will be expanded to improve stormwater conveyance and reduce widespread flooding in West Cocoa. Hopefully, a future phase will be funded to excavate a stormwater treatment pond on a 20 acre parcel purchased for the conveyance improvements.

The Brevard County Natural Resources Management Office (NRMO) offered the following outreach/educational programs and events in 2011:

- Working in partnership with Good Ed Solutions, eight municipalities, and Keep Brevard Beautiful, Brevard County helped to launch LIVE BLUE - a new partnership in stormwater outreach. In its first year, LIVE BLUE has focused on contracting, logo development, branding, website and social media development, expanded classroom outreach, and has begun development of a campaign to reduce misuse of fertilizer. Billboard adds were used to start generating program awareness. A survey on current fertilizer use and water quality perceptions was developed and distributed to 50,000 addresses. Over 2000 surveys were completed and are being tabulated. Survey results are being used to maximize campaign results by developing outreach that targets specific demographics. A music video has been produced to target fishermen and home-owners who fertilize their lawns. This video will air in the area’s major theaters before summer blockbusters released for 4th of July. Grant funds continue to be sought to fund a post-campaign survey to measure results. LIVE BLUE will begin developing outreach to local businesses during its second year. Visit www.LiveBlueFL.org.

- Through workshops with city staff and the IFAS Florida Yards and Neighborhoods (FYN) staff, ideas were generated for how to make the FYN program more visible and attractive to the public. A survey was conducted to better understand current yard-care practices and perceptions. Survey results are being analyzed by Agricultural Extension experts at the University of Florida. Brevard County Stormwater fees are now partially supporting the FYN program and multiple public workshops are being offered throughout Brevard annually. When available, survey results will be used to improve program delivery.

- Staff presentations that described local watersheds, drainage basins, and Best Management Practices for homeowners.

- A “Wonders of Water Science Night” event at Pinewood and Gemini Elementary Schools. Community partners assisted with water related activities for fourth and fifth grade students.

- Watershed science was presented to 8-12 year old students at the Brevard County Public Libraries as part of the summer reading program.

- Brevard County continued outreach to local veterinarians to encourage pet owners to dispose of pet waste properly. Bacteria and nutrients from pet waste have been identified as a significant pollutant of the Eau Gallie River and Crane Creek, major IRL tributaries. “Bags on Board” waste disposal tools were distributed at area “dog” events such as Paws in the Park.
NRMO continued to partner with the Florida Department of Environmental Protection and the City of Palm Bay Public Works Stormwater Department to offer certification classes for construction inspectors and other construction industry employees on BMP’s that reduce erosion on construction sites.

Staff continued to partner with the University of Central Florida Stormwater Academy, Brevard County Cooperative Extension Service, municipalities and local businesses to provide multiple rain barrel workshops for the public.

Staff participated in events such as the Family Fun Day, Secondary Science Teacher Conference, Earth Day at the Enchanted Forest and Indian River Lagoon Day.

The NRMO Website continues to offer stormwater guidelines for homeowners and contractors, updates on NRMO projects, and a calendar of events. The URL for the NRMO website is: http://www.brevardcounty.us/natres/index.cfm
<table>
<thead>
<tr>
<th>Project Partners</th>
<th>CCMP Action Plan and Priority/Project Proposal Title and Abstract</th>
<th>CWA 320 Funding</th>
<th>Project Deliverables</th>
<th>Scheduled Completion Date</th>
<th>Project Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>IRL NEP / St. Johns River Water Management District</td>
<td>High (FI-10); High (FI-2); Support of NEP Project Office staff salaries and benefits for 2 FTEs to continue CCMP implementation, work plan development and implementation, project management, contracts management, program coordination and Management Conference administration</td>
<td>187,941</td>
<td>This objective will support the NEP Program Director and Program Administrator to continue CCMP implementation oversight and work plan management</td>
<td>9/30/2012</td>
<td>On Schedule</td>
</tr>
<tr>
<td>IRL NEP / St. Johns River Water Management District</td>
<td>High (MON-1); Indian River Lagoon Living Resources and Water Quality Monitoring. Funding will support 3 Environmental Scientist FTEs to continue the long term living resources monitoring (seagrass and biological) and water quality collection and analysis. The data from these activities generate the core information for seagrass and water quality evaluation, development and measurement of performance measures (TMDLs) and the lagoon’s overall status and trends. SJRWMD will contribute $91,980 of staff in-kind match.</td>
<td>257,514</td>
<td>This objective will support the NEP Program Scientist and two additional Environmental Scientists to conduct water quality monitoring and seagrass trend analysis.</td>
<td>9/30/2012</td>
<td>On Schedule</td>
</tr>
<tr>
<td>IRL NEP / St. Johns River Water Management District</td>
<td>High (PIE-2); High (FSD-11); Indian River Lagoon Program Education Coordinator. The Coordinator will administer the Education Program in Indian River County. Additionally, she will coordinate the activities of the IRLNEP Citizens Action Committee, organize the annual four-day lagoon summer training workshop for IRL region teachers, and coordinate the design of the annual IRL calendar photo contest. The Coordinator also produces and disseminates IRL and District information to the community at environmental educational events, brown bag lunches and public speaking events. FY10 unexpended Sec 320 funds of $28,000 will be added to this project.</td>
<td>42,000</td>
<td>This objective will support the NEP Education Coordinator to continue outreach activities and educational projects including teacher workshops, events, Citizens Action Committee, IRL calendar and other activities.</td>
<td>9/30/2012</td>
<td>On Schedule</td>
</tr>
<tr>
<td>University of Central Florida</td>
<td>High (IFF-1); Long-term ecological and genetic monitoring of exotic species in the Indian River Lagoon. The University of Central Florida (UCF) will utilize funds from IRL NEP to examine three species recently introduced to the IRL, the charu mussel Mytilopsis charuna, the green mussel Perna viridis and the pink barnacle Megabalanus coccopoma. UCF proposes to conduct two tasks to identify and characterize the specific species that have invaded the IRL and to monitor their spread. Their third task involves distributing invasive species identification keys to inform the public about the concerns of invasive species in general and specific invasive species present in the IRL. These projects have been ongoing since 2006 and provide a unique opportunity to investigate long term diversity and distribution of three co-distributed invasive species.</td>
<td>19,945</td>
<td>This project will produce four deliverables. First, UCF will submit test results of the genetic diversity of M. charuna, P. viridis and M. coccopoma; Second, UCF will provide data from the monitoring of 50 locations along length of Indian River Lagoon on docks and along shores for the presence of invasive species; Third, UCF will print and distribute their laminated guide to invasive species; Fourth, UCF will hold a public lecture on invasive species.</td>
<td>9/30/2012</td>
<td>On Schedule</td>
</tr>
<tr>
<td>Brevard Zoo (lead contractor); University of Central Florida (technical support); Citizen Volunteers</td>
<td>High (F-1); High (F-4); Community Outreach, Restoration and Monitoring of Intertidal Oyster Reefs in Mosquito Lagoon, Florida. The project objective is to implement and monitor the success of a scientifically-based restoration technique to restore approximately 1 acre of intertidal oyster reef of the eastern oyster Crassostrea virginica with significant damage from wakes from recreational vessels. To meet our project goals, the community outreach coordinator will continue to organize volunteers to produce a minimum of 1,500 restoration mats. Project funding will also support the contractual efforts of UCF to conduct the following activities: conduct three vertical reef profiles for each dead margin to be leveled (a minimum of two dead margins); organize and participate in deployment of 1,500 oyster restoration mats on the leveled dead margins in spring/summer 2012. This project is providing a portion of the required non-federal match and includes $55,718 in IRL License Plate funds and additional $50,011 from Brevard Zoo in-kind match.</td>
<td>11,549</td>
<td>The objective of this project is to implement a scientifically based restoration technique that minimizes wake damage from recreational boats on intertidal oyster reefs. Project deliverables include periodic reports summarizing the number of citizen volunteers participating; the numbers of mats produced and deployed. The final project report will detail how well the deployed mats are recruiting oyster larvae and an inventory of other wildlife found on the deployed mats.</td>
<td>9/30/2012</td>
<td>On Schedule</td>
</tr>
<tr>
<td>Indian River County (lead contractor); Hydromenta Inc. (technical support)</td>
<td>High (FSD-13); PC SOUTH – PHASE 1 ALGAL TURF SCRUBBER SYSTEM. PC South’s Algal Turf Scrubber (ATS) System will treat 10 million gallons per day of polluted water from IRFWCD’s South Relief Canal. The South Relief Canal flow averages 26 MGD with nutrient-rich contributions from a 12,500-acre drainage basin that is a mix of developed industrial, residential, commercial, and agricultural land. PC South’s ATS will remove dissolved nitrogen and phosphorous from the canal water. A final polishing filter, similar to a wastewater treatment type filter will be included in the treatment train downstream of the ATS to remove all remaining solid particles from the treated water. Initially, up to three million gallons per day of treated canal water will be disinfected and placed into a new County reuse water system. The remaining water will be returned to the South Relief Canal where it will continue its journey to the Indian River Lagoon. An additional $44,446 in IRL License Plate funds will be added to this project and Indian River County will provide $123,424 towards the project.</td>
<td>11,549</td>
<td>The project timeline for PC South Phase 1 ATS runs until summer 2013. CWA 320 funding is for the final design of Phase 1 of the project. The project deliverable is the final design for Phase 1 of the algal turf scrubber system.</td>
<td>9/30/2013</td>
<td>On Schedule</td>
</tr>
<tr>
<td>St. Lucie County Mosquito Control</td>
<td>High (W-5); Connecting St. Lucie Wetlands to the IRL. This project will restore tidal flow into a 178-acre impounded wetland known as Impoundment 14C, to the IRL by installing a pump station and four culverts with floodgates into the perimeter dike. Restoration of this impounded wetland will provide additional habitat, foraging grounds, and water quality improvements in the adjacent surface waters. An additional $5,668 in FY10-11 unexpended funds will be added to this project as well as $35,274 from St. Lucie County.</td>
<td>7,250</td>
<td>This project will restore the tidal exchange to this impounded wetland, restoring habitat and foraging grounds.</td>
<td>9/30/2012</td>
<td>On Schedule</td>
</tr>
<tr>
<td>Project Partners</td>
<td>CCMP Action Plan and Priority/Project Proposal Title and Abstract</td>
<td>CWA 320 Funding</td>
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<tr>
<td>Marine Discovery Center (lead contractor); Volusia County School Board (funding partner)</td>
<td><strong>High (MON-2); High (PIE-4); Volusia County Adopt-An-Estuary Program – Year Two Implementation.</strong> Our proposal will continue the current Adopt an Estuary Program that was funded with 2010-11 IRL NEP funds. The new proposal will build on the protocols generated and will also include the addition of biological monitoring and further protocol development into the Indian River Lagoon. The goals of the program are to: 1) collect baseline estuary health data 2) educate and train schoolchildren and citizens to monitor and protect estuaries 3) increase public awareness about estuary issues and water quality health 4) maintain a website portal where citizens can easily access estuary information and data. MDC will contribute $30,555 in in-kind match.</td>
<td>45,000</td>
<td>Project deliverables are: employment contract of Adopt-An-Estuary Coordinator; notification of student and school participation commitments; numbers of student and adult participants; event photos; training manual and guide; templates with raw data; notification of posting of monitoring data to websites.</td>
<td>9/30/2012</td>
<td>On Schedule</td>
</tr>
<tr>
<td>Martin County School District (lead contractor); Curtis &amp; Edith Munson Foundation (funding partner)</td>
<td><strong>High (PIE-1); High (PIE-4); Martin County Schools’ Environmental Studies Center Camp WET 2012.</strong> The project will provide three, two-week sessions of academic summer camp for a total of 156 students using a hands-on field based curriculum. The project will employ proven instructional methods to engage the students and motivate them to make positive behavior changes as well as share their concern for and knowledge of the Indian River Lagoon with others. Martin Co. and the Munson Foundation will provide $32,200 in match.</td>
<td>23,056</td>
<td>The following deliverables/outcomes will be produced by this project: development of student selection guidelines; a roster of 156 student participants; summer camp curriculum and student activity book; a hands-on interactive summer camp program; pre and post tests as well as parent and student surveys.</td>
<td>9/30/2012</td>
<td>On Schedule</td>
</tr>
<tr>
<td>Florida Institute of Technology</td>
<td><strong>High (PIE-1); Operational support for the Florida Tech SEAS Mobile Laboratory and weather monitoring.</strong> The goal of this project is to increase public awareness about priority Indian River Lagoon issues as a part of InSTEP’s NSF funded educational program. The Integrated Science Teaching Enhancement Partnership (InSTEP) is part of the NSF’s Graduate Fellowships in K-12 Education (GK-12) Program and is designed to foster student interest in science while boosting teacher confidence in science content and inquiry-based instruction. The SEAS Mobile Laboratory is used to support educational activities in field studies and promote ocean literacy at public events throughout the Indian River Lagoon region. This project is a portion of the non-federal match with $9,970 in IRL License Plate and $9,970 in in-kind match from FL Tech.</td>
<td></td>
<td>FIT will support up to 10 public outreach education events related to inform the general public about priority coastal management issues. Also, FIT will submit information from the operation of the near real time weather monitoring systems.</td>
<td>9/30/2012</td>
<td>On Schedule</td>
</tr>
<tr>
<td>Florida Department of Environmental Protection - Aquatic Preserves Program</td>
<td><strong>High (W-6); Indian River Lagoon Shoreline Restoration.</strong> FDEP’s IRL Aquatic Preserves Field Office will continue to coordinate the 16-year, grant-funded IRL Shoreline project to stabilize publicly-owned shorelines impacted by wave energy to limit erosion, sedimentation and enhance habitat, while facilitating environmental awareness and stewardship. The SJRWMD will provide $47,040 in IRL License Plate and FDEP will provide $56,330 in in-kind services as match.</td>
<td></td>
<td>Volunteer sign-in sheets, restoration of 400 meters of IRL shoreline</td>
<td>9/30/2012</td>
<td>On Schedule</td>
</tr>
<tr>
<td>Smithsonian Marine Station</td>
<td><strong>High (PIE-1); High (BD-4); Indian River Lagoon Species Web-Based Education Tool.</strong> The Smithsonian will continue the successful expansion of the species web site focusing on IRL invertebrates, designing a new introductory web page and continue to update the IRL Photo Gallery. The SJRWMD will contribute $22,961 in IRL License Plate funds and Smithsonian will contribute $9,534 in in-kind services as match.</td>
<td></td>
<td>Introductory descriptive information and images and diagrams of three invertebrate phyla, with 21 full species narratives, increased functionality of web site, and new page outlining personal behavior modifications to protect water quality.</td>
<td>9/30/2012</td>
<td>On Schedule</td>
</tr>
<tr>
<td>Brevard Zoo</td>
<td><strong>High (PIE-1); Lagoon Quest.</strong> Brevard Zoo will continue the successful Lagoon Quest Program to integrate real-life experience with 4th grade curriculum using the rich environmental resources of the IRL. This program is designed to get students, teachers and families involved through a variety of activities including native shoreline restoration plantings. The SJRWMD will provide $24,000 in IRL License Plate and the Zoo will contribute $13,500 in in-kind services.</td>
<td></td>
<td>Lagoon Quest curriculum, final report with photos</td>
<td>9/30/2012</td>
<td>On Schedule</td>
</tr>
<tr>
<td>Indian River Lagoon National Estuary Program</td>
<td><strong>High (FI-1); Program operational costs, including travel to the EPA NEP National Meeting, printing, legal ads, supplies and equipment.</strong></td>
<td>4,745</td>
<td>2012 Program Evaluation</td>
<td>9/30/2012</td>
<td>On Schedule</td>
</tr>
</tbody>
</table>

**CWA Funding Total:** $598,800
<table>
<thead>
<tr>
<th>Project Partners</th>
<th>CCMP Action Plan and Priority/Project Proposal Title and Abstract</th>
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<th>Scheduled Completion Date</th>
<th>Project Status</th>
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</thead>
<tbody>
<tr>
<td>IRL NEP / St. Johns River Water Management District</td>
<td>High (PIE-2); High (FSD-11); Indian River Lagoon Program Education Coordinator. The Coordinator will administer the Education Program in Indian River County. Additionally, she will coordinate the activities of the IRLNEP Citizens Action Committee, organize the annual four-day lagoon summer training workshop for IRL region teachers, and coordinate the design of the annual IRL calendar photo contest. The Coordinator also produces and disseminates IRL and District information to the community at environmental educational events, brown bag lunches and public speaking events. FY10 unexpended Sec 320 funds of $28,000 will be added to this project.</td>
<td>28,000</td>
<td>This objective will support the NEP Education Coordinator to continue outreach activities and educational projects including teacher workshops, events, Citizens Action Committee, IRL calendar and other activities.</td>
<td>9/30/2012</td>
<td>On Schedule</td>
</tr>
<tr>
<td>Cape Canaveral Scientific Inc. (lead contractor); CAPTEC Inc. (technical support); Scientific Environmental Applications Inc. (technical support)</td>
<td>High (FSD-13); High (FSD-14); 2012 Grant Writing &amp; Capacity Building in Support of the IRL-CCMP. This project assists local governments in meeting the challenges of financing CCMP implementation projects. The thirteenth year of work under this project continues to demonstrate a desire by lagoon area municipalities and counties to collaborate with state and federal agencies on implementation activities. Many local governments have utilized the services of the IRLNEP consultant to identify new funding sources, prepare grant proposals and join with other partners to implement CCMP Action Plans.</td>
<td>47,855</td>
<td>Develop, write, submit and support up to five grant applications to the Florida Department of Environmental Protection’s 319 Non Point Source Grants Program and/or the TMDL Water Quality Restoration Grant Program for the treatment of stormwater, and/or the Florida Department of Community Affairs’ Florida Communities Trust Program for the acquisition of environmentally sensitive land.</td>
<td>9/30/2012</td>
<td>On Schedule</td>
</tr>
<tr>
<td>St. Lucie County Mosquito Control</td>
<td>High (W-5); Connecting St. Lucie Wetlands to the IRL. This project will restore tidal flow into a 178-acre impounded wetland known as Impoundment 14C, to the IRL by installing a pump station and four culverts with floodgates into the perimeter dike. Restoration of this impounded wetland will provide additional habitat, foraging grounds, and water quality improvements in the adjacent surface waters. An additional $5,668 in FY10-11 unexpended funds will be added to this project as well as $35,274 from St. Lucie County.</td>
<td>5,668</td>
<td>This project will restore the tidal exchange to this impounded wetland, restoring habitat and foraging grounds.</td>
<td>9/30/2012</td>
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</tr>
<tr>
<td>Indian River County (lead contractor); Hydromentia Inc. (technical support)</td>
<td>High (FSD-13); PC SOUTH – PHASE 1 ALGAL TURF SCRUBBER SYSTEM. PC South’s Algal Turf Scrubber (ATS) System will treat 10 million gallons per day of polluted water from IRFWCD’s South Relief Canal. The South Relief Canal flow averages 26 MGD with nutrient-rich contributions from a 12,500-acre drainage basin that is a mix of developed industrial, residential, commercial, and agricultural land. PC South’s ATS will remove dissolved nitrogen and phosphorus from the canal water. A final polishing filter, similar to a wastewater treatment type filter will be included in the treatment train downstream of the ATS to remove all remaining solid particles from the treated water. Initially, up to three million gallons per day of treated canal water will be disinfected and placed into a new County reuse water system. The remaining water will be returned to the South Relief Canal where it will continue its journey to the Indian River Lagoon. Non-federal match of $47,249 is provided to the FY10-11 unexpended funds.</td>
<td>11,500</td>
<td>The project timeline for PC South Phase 1 ATS runs until summer 2013. CWA 320 funding is for the final design of Phase 1 of the project. The project deliverable is the final design for Phase 1 of the algal turf scrubber system.</td>
<td>9/30/2013</td>
<td>On Schedule</td>
</tr>
</tbody>
</table>

CWA Funding Total 93,023
Section C.3. IRLNEP Clean Water Act Implementation

The IRLNEP CCMP established under Section 320 of the Clean Water Act (CWA) and in compliance with the CWA has developed partnerships with federal, state and local governments, non-profit organizations, academia and the IRL region citizens. These partnerships form the framework for consensus, ecosystem based management strategies designed to restore and maintain IRL water quality and habitat.

The FY 2012-2013 IRLNEP Work Plan directly or indirectly supports all of the CWA core programs. Highlighted in this section are specific examples of programs and projects implemented in the IRL basin that are directly related to CWA.

Activity 2

Indian River Lagoon Living Resources and Water Quality Monitoring. This project provides funding support for the long-term monitoring of the lagoon including living resource surveys (seagrass and other biological monitoring) and water quality monitoring. The data collected from this monitoring generates core information for seagrass and water quality evaluation and development of related performance measures and compliance criteria for the TMDLs associated with the lagoon’s impaired waters.

Clean Water Act Implementation Information

The IRLNEP has a primary role in this project. The project complies with CWA to identify polluted waters and developing plans to restore them (TMDLs).

Activity 4

Grants Writer/ Facilitator. The project is funded entirely by the IRLNEP as a mechanism to assist local governments in meeting the challenges of financing projects that implement the IRL CCMP. Many local governments have utilized the services of the IRLNEP grant writer to identify new funding sources, prepare grant proposals and join with other partners to help implement CCMP Action Plans. In Martin County, the lagoon’s southern most county, the IRL NEP funded grants writer has submitted 31 grant applications on behalf of the county garnering over $32.6 million in state and federal funds supporting over $81.5 million in total CCMP implementation projects. This service to local governments will continue through September 30, 2013.

This project directly supports the IRLNEP goal to identify and develop long-term funding sources to implement CCMP prioritized projects. Without offering grant writing assistance to IRL local governments via this project, it is highly unlikely that these activities would be completed.

Clean Water Act Implementation Information

IRLNEP has a primary role in this project. This project directly supports the objectives of the CWA to restore and maintain the chemical, physical and biological integrity of the Nation’s waters and to control point and non-point sources of pollution. The grants writer has submitted Florida Department of Environmental Protection 319 and TMDL funding applications for projects that include the development of stormwater parks, installation of treatment train methodology systems in older, highly urbanized areas and for the purchase of environmentally sensitive lands through the Florida Forever/ Florida Communities Trust Program.
Activity 5

Pelican Island Proper Restoration Phase 4 Pilot Survey. This project will evaluate changes to Pelican Island since the creation of the oyster reef wave attenuation system in 2006. This oyster reef wave attenuation has encouraged the establishment of extensive seagrass habitat adjacent to the oyster reef, including *Halophila Johnsonii* threatened species. This resource survey will document the distribution and species composition of the seagrasses as a pre-cursor to possibly extending a naturally occurring oyster reef to further protect the island from wave action and address concerns of sea level rise (climate change).

Clean Water Act Implementation Information

IRLNEP has a significant role in this project. This project supports the objectives of the CWA to protect wetlands and coastal waters through the National Estuary Program. Pelican Island is America’s first National Wildlife Refuge and a National Historic Landmark, a Wetland of International Importance and a National Wilderness Area.
C.4. Discussion of External Factors Impacting the IRLNEP FY 2012-2013 Work Plan Implementation

At the present time all IRLNEP projected FY 2012-2013 Work Plan projects are being scoped for contracting and IRLNEP staff is in communication with the project leads to create viable, effective outcomes. The State of Florida is slowly rebounding from the economic downturn that began in 2008, and tourism and the housing industry are beginning to demonstrate renewed increases. These are the two primary revenue sources for the state generated through sales tax and property tax collections. When tourism and housing and existing property values experienced a downturn, state and local revenue were reduced substantially impacting funding for lagoon restoration. Florida does not employ a state income tax.

The IRLNEP’s host agency, the St Johns River Water Management District (SJRWMD) is a regional ad valorem taxing agency and as such, saw a dramatic reduction in revenue from the economic downturn as well as a state legislative mandated tax cap on the amount of revenue the SJRWMD could collect in 2011. Similar to the last four year’s, the SJRWMD has asked the IRLNEP to continue to fund the major seagrass and water quality monitoring effort in the IRL. This project was historically funded entirely by SJRWMD utilizing ad valorem revenue. The IRLNEP management conference continues to believe that this project is highly beneficial to the IRL and recommended that funds be provided from the CWA Sec 320 funds for this activity. On May 23, 2012, the Advisory Board approved the work plan.

The IRL license plate sales have leveled following several years of decline, as have the majority of the state’s 114+ specialty license plates. The IRLNEP believes this is a direct result of Floridians adjusting family budgets to prioritize expenses and will continue until the Florida economy stages a comeback. Unfortunately, the lull in license plate sales has been compounded since 2009, when the Florida legislature increased the fees for all license plates, and those increases coupled with the additional cost of a specialty license plate are causing drivers to re-consider the purchase of any specialty plate.

In a continuing tight budget year, funding from the State of Florida to the SJRWMD has been eliminated. The SJRWMD historically received funding from the state for projects that benefit state identified priority water bodies. While the IRL is one of those priority water bodies, no state dollars are projected for IRL in FY 2012-2013. The state legislature did appropriated $100,000 for a feasibility study for the Eau Gallie River environmental dredging project, but these funds were vetoed by Florida’s Governor Rick Scott.

Therefore, the future fiscal year promises to be another challenging one economically for the IRLNEP. However, our host agency the SJRWMD continues its on-going commitment to support the IRLNEP with overhead, offices, pool vehicles, computers, contracting services, technical support, employee training and development, legal counsel, human resources and outreach support through the production and distribution of the bi-annual IRL Newsletter. We believe that the continuing SJRWMD operations support coupled with our funding source diversification will enable the IRL NEP to continue CCMP implementation activities at a moderate level and the IRLNEP will continue to meet challenges in the lagoon and to partner on critical, high priority projects.
### Section D. Clean Water Act Travel Funds

#### Indian River Lagoon National Estuary Program FY 2011-2012 Travel Cost

<table>
<thead>
<tr>
<th>Personnel</th>
<th>Travel Dates</th>
<th>Purpose</th>
<th>Location</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Troy Rice, Jan Miller, Lauren Hall</td>
<td>11/06/2011 to 11/10/2011</td>
<td>Coastal and Estuarine Research Federation Conference</td>
<td>Daytona Beach, Florida</td>
<td>$448.98</td>
</tr>
<tr>
<td>Charles Jacoby</td>
<td>12/13/2011 to 12/14/2011</td>
<td>IRLNEP meeting, Basin Management Action Plan meetings</td>
<td>Vero Beach, Florida</td>
<td>$124.69</td>
</tr>
<tr>
<td>Troy Rice, Charles Jacoby, Frank Sakuma</td>
<td>2/27/2012 to 3/01/2012</td>
<td>ANEP/EPA Spring Conference</td>
<td>Washington D.C.</td>
<td>$4,289.87</td>
</tr>
<tr>
<td>Charles Jacoby</td>
<td>3/12/2012 to 3/14/2012</td>
<td>Coastal Wildlife Conservation Initiative Indian River Lagoon Working Group meeting; IRLNEP Advisory Board Steering Committee meeting; US Geological Survey Invasive Fish in IRL meeting</td>
<td>Cocoa Beach &amp; Vero Beach Florida</td>
<td>$280.58</td>
</tr>
<tr>
<td>Charles Jacoby</td>
<td>3/21/2012 to 3/22/2012</td>
<td>Oyster Restoration in Mosquito Lagoon</td>
<td>Edgewater, Florida</td>
<td>$131.72</td>
</tr>
<tr>
<td>Charles Jacoby</td>
<td>4/05/2012 to 4/06/2012</td>
<td>Projects and Land Committee Meetings</td>
<td>Sebastian, Florida</td>
<td>$179.09</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>Multiple Dates/Summer 2012</strong></td>
<td><strong>IRLNEP meeting, Basin Management Action Plan meetings</strong></td>
<td><strong>Brevard County</strong></td>
<td><strong>$822.68</strong></td>
</tr>
</tbody>
</table>

#### Indian River Lagoon National Estuary Program FY 2011-2012 Travel Cost (Estimate to end of FY)

<table>
<thead>
<tr>
<th>Personnel</th>
<th>Travel Dates</th>
<th>Purpose</th>
<th>Location</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Charles Jacoby</td>
<td>Multiple Dates/Summer 2012</td>
<td>IRLNEP meeting, Basin Management Action Plan meetings</td>
<td>Brevard County</td>
<td>$822.68</td>
</tr>
</tbody>
</table>

**Total** $7,000.00