Tampa Bay Regional Planning Council
Agency on Bay Management

AGENCY ON BAY MANAGEMENT

4000 Gateway Centre Boulevard #100 · Pinellas Park, FL 33782
727.570.5151 Ext. 40
http://www.tbrpc.org/abm

MEETING AGENDA

June 9, 2016
9:00 AM

Full Agency
Mayor Bob Minning, Chair

1. CALL TO ORDER / WELCOME
2. PUBLIC COMMENT/ ANNOUNCEMENTS
3. APPROVAL OF MARCH 10, 2016 FULL AGENCY MEETING SUMMARY
4. GULF RESTORATION UPDATE

   Kelly Samek, Florida Fish & Wildlife Conservation Commission, will briefly review restoration activities related to the 2010 Deepwater Horizon oil spill and provide an update on the state's efforts to plan, prioritize and implement restoration projects using funding made available through the RESTORE Act, Natural Resource Damages Act (NRDA), and National Fish and Wildlife Foundation (NFWF).

5. CITY OF PALMETTO LIVING SHORELINE DEMONSTRATION PROJECT

   Todd Barber, Reef Ball Foundation, will share the results of efforts to replace the seawall and install a living shoreline along Riverside Park in downtown Palmetto.

6. TBEP RESEARCH PRIORITIES

   Ed Sherwood, Tampa Bay Estuary Program, will present on the progress made toward addressing existing research priorities for the Tampa Bay watershed (below). These priorities were updated by the TBEP Technical Advisory Committee in 2009, and then later in 2011-2012. The Tampa Bay Estuary Program is seeking input on any new research priorities needed for the region as part of its next update to the Comprehensive Conservation and Management Plan (CCMP), due to be complete in 2017. The current list of research priorities includes:

   A. Continue to assess the water quality, sediment quality and habitat of tidal tributaries in Tampa Bay. Specifically collect data and develop information for smaller tributaries to Tampa Bay to support implementation of management strategies developed during the tidal tributary pilot study.
   B. Improve monitoring of pollutant loading (particularly nutrients) from the entire watershed (i.e. in both gaged and ungaged basins). Deploy additional continuous water quality and flow monitors in the bay, considering new technologies (e.g., continuous turbidity measurements as a surrogate for nutrients, acoustic doppler continuous profiler, etc.).
   C. Determine the important resources affected by changes in freshwater inflow. Mine existing data sources to examine effects of freshwater inflow changes on fisheries and other biological resources. Assess potential effects of Minimum Flows and Levels determinations on habitat and biota.

If you are a person with a disability who needs any accommodation in order to participate in this meeting, you are entitled, at no cost to you, to the provision of certain assistance. Please contact the Tampa Bay Regional Planning Council at (727) 570-5151 Ext. 17 within three working days of the meeting.

D. Evaluate the potential effects of climate change on ecological systems in Tampa Bay. Identify management strategies and a framework to assess climate change impacts on coastal habitats (i.e., uplands, wetlands, seagrass, and associated fauna).
E. Determine the assimilative capacity for nutrients in the Tampa Bay estuary.
F. Determine direct and forecasted impacts of continued watershed development on estuarine resources and processes (e.g., hydrological changes, hurricane vulnerability assessments, OneBay initiative, evaluating Ecosystem Services, coastal vegetation changes).
G. Facilitate the development of Total Nitrogen TMDLs and BMAPs for waterbodies within the watershed.
H. Develop and implement a monitoring program to track habitat quantity and quality in coastal habitats. Incorporate new technologies, as appropriate, to monitor coastal habitats (LiDAR, multi-spectral remote sensing, etc.). Monitoring should incorporate more accurate and precise change analysis methods to track small-scale changes in habitat cover over short time scales (years vs. decades). Ground-level monitoring should be implemented to document community-level changes in response to climate change and other stressors (fixed transects).
I. Quantify ungaged streamflow and groundwater flow to Tampa Bay, and develop estimates of surface and groundwater flux to Tampa Bay.
J. Improve linkages between watershed-based and hydrodynamic models to better predict water quality, hydrology, sediment transport and circulation in the bay so that impacts to habitat and biota can be assessed. Refine these models for shallow-water areas, as appropriate.
K. Coordinate restoration efforts to help achieve both habitat and water quality targets.
L. Identify causes of seagrass recovery slowdown or seagrass loss in "problem areas" representing at least 10% of a bay segment.

7. NPDES ENFORCEMENT

Heather Maggio, City of Tampa, will discuss the regulatory framework and local government responsibility to reduce the amount of stormwater pollution entering waters, including during times of extreme rainfall and flooding. She will provide examples of how the City of Tampa addresses Clean Water Act and National Pollutant Discharge Elimination System (NPDES) permit requirements.

8. CLEARWATER CHRISTIAN COLLEGE ENVIRONMENTAL LANDS ACQUISITION

Sarah Kessler, City of Clearwater, will provide an update on the pending purchase of 111 acres of wetlands and submerged lands surrounding the former Clearwater Christian College campus on Cooper Bayou in Old Tampa Bay. The purchase will eventually allow the City to improve water quality, circulation, and restore fish populations and the health of the mangroves.

9. OTHER ITEMS

- Joint ABM/TBEP TAC Meeting – July 21st
- Future Meeting Topics
- Tampa Bay Region High Priority Projects & Programs List

10. ADJOURN

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MEETING SUMMARY

AGENCY ON BAY MANAGEMENT
MARCH 10, 2016

The full Agency met on March 10, 2016 in the Council conference room located at 4000 Gateway Centre Boulevard, Pinellas Park, FL. Mayor Bob Minning chaired the meeting.

Agenda Item 1 · Call to Order/Welcome

Chair Minning called the meeting to order at 9:00 a.m.

Agenda Item 2 · Public Comment/Announcements

No public comments were made. Ms. Burke introduced Sean Sullivan as the new Executive Director of the Tampa Bay Regional Planning Council.

Agenda Item 3 · September 10, 2015 Meeting Summary

Upon a motion by Commissioner Davis and seconded by Vice Chair Brown, the September 10, 2015 meeting summary was unanimously approved.

Agenda Item 4 · January 21, 2016 TBEP TAC & ABM NR/EIR Joint Meeting Recap

Ms. Burke summarized a proposed FDOT mitigation project to improve water quality in Old Tampa Bay and the feedback that was provided regarding several CCMP Action Plans.

Agenda Item 5 · West Indian Manatee Federal Listing Status Update

Peter Plage reviewed the US Fish and Wildlife Service's proposal to reclassify the West Indian Manatee as threatened under the Endangered Species Act of 1973. Members expressed an interest in reviewing the scientific analysis supporting the proposed change and encouraged the USFWS to maintain the existing listing status in order to protect public perceptions and cultivate a culture of stewardship.

Agenda Item 6 · NPDES Enforcement

Melanie Weed explained the regulatory tools Pinellas County uses to reduce stormwater pollution from entering waters. Members posed questions related to best practices for managing pool overflows, golf course fertilizer exemptions, challenges with code enforcement and the County's penalty matrix. Members also requested a similar presentation from the City of Tampa.

Agenda Item 7 · Domestic Wastewater Issues and Challenges

Mary Yeargan discussed some of the challenges associated with maintaining wastewater infrastructure during times of extreme rainfall. Members discussed issues specific to Clam Bayou, swimming safety, and the need to identify programs to address problems with lateral sewer lines. Members also questioned the rationale behind process changes regarding notification through the state warning point.

Agenda Item 8 · Source Tracking and Fecal Contamination

Dr. Harwood presented preliminary findings from her research using microbial source tracking to determine the sources of fecal contamination in waterbodies. Members discussed the relationship between human health and the presence of fecal coliforms, noting that sources may consist of decomposing plant materials (grass clippings, beach wrack) or may originate from an existing sediment bank. Members were interested in offering solutions (walk the WBIDs, etc.) to help cities like Gulfport manage beach closures and protect water quality for human health. DEP water quality data is available online at http://www.dep.state.fl.us/water/watersheds/assessment/tmdl-tracker.htm

Agenda Item 9 · Other Items

An Environmental Protection Agency Water Quality Monitoring Conference will be held in downtown Tampa in May 2016.

Agenda Item 10 · Adjourn

Chair Minning adjourned the meeting at 11:40 a.m.

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Recording Secretary

_____

Mayor Bob Minning, Chair

Tampa Bay Regional Planning Council
Agency on Bay Management

AGENCY ON BAY MANAGEMENT
SIGN IN
MARCH 10, 2016

PRINT NAME	REPRESENTING	MEMBER
Melanie Weed	Pinellas County	
Joseph Thames	Pinellas County	
Scott Brownish	~~MANATEE~~ COUNTY	
Serre Herndon	TBW	
Jim Tyler	CAC TBEP	
Brandon Johnson	Stantec	
Lizanne Garcia	SWFWMD	
Andy Squires	Pinellas County	
Jinny Ashton	FDEP	
David Tomsko	ESA	
[illegible]	HC BCC	
Maucee O'Hara	TBEP	✓
Melinda Scali	TBW	
Sam Henderson	Gulfport	✓
Henn Shelton	Amec Foster Wheeler	✓
Marcia Biggs	Sierra Club	
Penny Hall	FWC/FWRI	✓
Bruce Hasbrouck	Taylor Davis & Assoc.	
Valerie J. (Jody) Harwood	USF	
Rick Gorski	CH2M	
[illegible]	City of Palmetto	✓

Tampa Bay Regional Planning Council
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AGENCY ON BAY MANAGEMENT
SIGN IN
MARCH 10, 2016

PRINT NAME	REPRESENTING	MEMBER
Sarah Kessler	Clearwater	Yes
Cindy Davis	private citizen	
Pete Plage	US FWS	✓
Kacie McCartney	Mosaic	
JAN PLATT		✓
Bob Minning	TBRPC	—
IVER HUNCHO	Private Citizen	—
Gerard O'Regan	" "	
[illegible]	[illegible]	✓
Carlos Fong	COSP	
Vicki Parsons	Bay Soundings	
Carol Grunewicz	PC Env Mgt	
Ed Sherwood	TBEP	
Shawn College	Hills. Planning Commission	✓
Ed Snipes	Self	
Libby Carnahan	FL Sea Grant, UF IFAS	✓
Robin Barnes	Pinellas County	
JASON KIRKPATRICK	MacDill Air Force Base	✓
Dana Broomfield	Mosaic	✓
YOLANDA ROMAN	GULFPORT	
Kara Brown	Manatee	✓
Irana Kaplevic	TBW	✓
Ben Brice	SEC	
Gail Swingle	SEC	
Sally Thompson	TBC	✓
Amy McBurney	TEC	
Melanie Grillone	TBW	
Martha Gruber	TBW	
Heather Maggard	City of Tampa	✓

TBEP TAC Priorities (Updated July 2009 & 2011-12) & Other TBEP Initiatives – Progress to Date (May 2016)

A. Continue to assess the water quality, sediment quality and habitat of tidal tributaries in Tampa Bay. Specifically collect data and develop information for smaller tributaries to Tampa Bay to support implementation of management strategies developed during the tidal tributary pilot study.

- In response to the preliminary management recommendations developed as part of the 2006 Tampa Bay Tidal Tributary Habitat Initiative (TBEP Tech Pub. 02-08), the Tampa Bay Estuary Program (TBEP), in partnership with the US Fish and Wildlife Service (US FWS) and Southwest Florida Water Management District (SWFWMD), completed a ***Salinity Barrier Removal Feasibility*** project with GPI Southeast, Inc. A Final Report was developed (TBEP Tech Pub. 09-12). Currently, TBEP staff are working with the SWFWMD, Pinellas and Hillsborough County staff to implement a hydrologic restoration activities within Channel 5 (Pinellas County) and Channels A & G (Hillsborough County). Both these activities are ongoing through 2016. Additionally, a MS-AL Sea Grant award was utilized to restore hydrology within ditched/altered mangrove systems along the MacDill AFB shoreline. Initial phases of the project were completed in 2015, but other restoration work supported by MacDill AFB and the SWFWMD are still ongoing.

- In response to EPA's continuing development of numeric nutrient criteria for estuarine and freshwaters of the State of Florida, the TBEP (in partnership with the SBEP and CHNEP, and with input from the TBEP TAC and the Tampa Bay Nitrogen Management Consortium) developed recommended numeric nutrient criteria for the Tampa Bay estuary (Link to Documents). However, insufficient data were available to make recommendations for tidal tributaries. The TBEP, in partnership with SBEP, CHNEP and 7 county partners along SW Florida coast, received an EPA Wetlands Grant to develop NNC recommendations for these systems in 2013. Tidal Creek data collection efforts were completed in 2015, and NNC recommendations were completed in 2016. Link to document: https://www.tbeptech.org/TBEP_TECH_PUBS/2016/TBEP_02_16_SW_FL_Tidal_Creeks_Final_Draft_Report_160121.pdf . In 2016, partners have submitted a new proposal for an EPA Wetlands Grant to investigate the sources of nutrients that may be causing NNC target and threshold exceedances in SW FL tidal creeks.

- In 2014-15, TBEP commissioned the USF College of Marine Science to perform additional hyperbenthos monitoring in Tampa Bay tidal creeks. This work supplemented the NNC development effort for tidal creeks in Tampa Bay, and led to a final report here: http://tbeptech.org/TBEP_TECH_PUBS/2015/TBEP_03_15_Report_USF_Zoopl&HyperbIndicators_Final.pdf .

- At BASIS 5 in October 2009, an afternoon session was dedicated to synthesizing information on tidal tributaries. The resulting presentations and submitted papers have added additional insight on the ecology of these systems. More information can be viewed on the BASIS 5 section of the TBEP Tech Website here: http://www.tbeptech.org/index.php?option=com_content&view=category&id=31:basis&Itemid=57&layout=default .

- TBEP staff have participated in the 2011 and 2013 Southeast Tidal Creek Summits. A strategic management plan for Southeast US Tidal Creeks is anticipated from these efforts.

B. Improve monitoring of pollutant loading (particularly nutrients) from the entire watershed (i.e. in both gaged and ungaged basins). Deploy additional continuous water quality and flow monitors in the bay, considering new technologies (e.g., continuous turbidity measurements as a surrogate for nutrients, acoustic doppler continuous profiler, etc.).

- TBEP, in partnership with Pinellas County, has contracted with Hydrologic Data Collection, Inc. to determine stream flow from 2, previously ungaged basins discharging to Old Tampa Bay (Alligator Creek & Allen's Creek). Rating curves and discharge profiles were developed for these systems from 2011-16. Continued monitoring is anticipated through 2019 in Allen's Creek and a new ungaged site (Joe's Creek).

- TBEP contracted with Hydrologic Data Collection, Inc. to determine stream flow from Sugarhouse Creek, a tributary to the Braden River (Manatee County). This additional monitoring supported the NNC development effort for Tampa Bay tidal creeks (see above).

- TBEP, in partnership with the SWFWMD, commissioned the development of an integrated ecological model for the Old Tampa Bay watershed. This project was developed from input garnered from the TBEP TAC and Management Board, and is based in part, on developing a better understanding of the ecological stresses observed in Old Tampa Bay including the refinement of nutrient and hydrologic loads entering the system. Specific management actions will be evaluated with the integrated model to determine the greatest net ecological benefits associated with implementation of the actions. This work began in the Fall 2011, and the final models and scenario evaluations were completed in 2015. All deliverables from the project can be viewed here: http://tbeptech.org/special-projects/otb-model/106-old-tampa-bay-integrated-model-development-deliverables . Model code and products can be requested from Ed Sherwood (esherwood@tbep.org).

- TBEP also commissioned a monitoring program to evaluate residential stormwater quality in response to implementation of local fertilizer management ordinances. The project's objectives were to determine any changes in residential fertilization behavior and stormwater/groundwater quality in neighborhoods throughout

the Tampa Bay watershed where various residential fertilizer ordinances have been enacted. The project began in the Summer 2011 and was completed in 2014. A final report from the project is here: http://tbeptech.org/TBEP_TECH_PUBS/2015/TBEP_02_15_TB_Residential_Stormwater_Evaluation_FinalReport+DataAppendices_March2015.pdf . Additionally, UF/IFAS researchers recently investigated the sources of nutrients in residential stormwater from a Tampa Bay community. Their research is summarized here: http://dx.doi.org/10.1021/acs.est.5b05353 .

C. Determine the important resources affected by changes in freshwater inflow. Mine existing data sources to examine effects of freshwater inflow changes on fisheries and other biological resources. Assess potential effects of Minimum Flows and Levels determinations on habitat and biota.

- SWFWMD continues to develop MFLs for waterways throughout the region. From 2016-2020, the SWFWMD is anticipated to propose MFLs for the estuarine portions of the Little Manatee, Manatee, and Braden Rivers. The TBEP will work with the SWFWMD to ensure that TBEP TAC input is provided in review of the anticipated MFL documents.

- Continued TBEP efforts in Tampa Bay tidal creeks are also contributing to this research priority.

D. Evaluate the potential effects of climate change on ecological systems in Tampa Bay. Identify management strategies and a framework to assess climate change impacts on coastal habitats (i.e., uplands, wetlands, seagrass, and associated fauna).

- TBEP staff developed a new amendment to the CCMP in 2012: CC-1 Improve Ability of Bay Habitats to Adapt to a Changing Climate. The TBEP Policy Board approved the new CCMP action plan in February 2013. An expanded action to address any potential climate change impacts across all CCMP activities is anticipated for the next CCMP update, due to be complete by 2017.

- TBEP staff, in partnership with the Tampa Bay Regional Planning Council, have developed an updated habitat vulnerability assessment based on sea level rise estimates of 0.5-m to 2.0-m by 2100. An online visualization tool has been developed based on the results (http://www.tampabay.wateratlas.usf.edu/TB_SLRViewer/), and it was tailored for use by land use managers/planners. The resulting assessment tool was included as an example of an adaptation strategy used by Gulf Coast communities in a recent, EPA-CRE guidebook (http://www.tbeptech.org/DATA/cre/gulfcoasthandbook.pdf).

- TBEP initiated a new project (see 2011-2012 Work Plan) entitled “Coastal Resiliency Prioritization” in the Summer 2014. This project aims to build upon the recommendations and results from the 2010 Tampa Bay Habitat Master Plan Update (2010 HMPU) and the EPA Climate Ready Estuaries Grant to incorporate climate resiliency into habitat restoration and protection strategies. In 2010-11, the TBEP developed updated habitat vulnerability maps for potential sea level rise scenarios in the Tampa Bay watershed (see above). An updated coastal land prioritization was completed as part of TBEP’s Blue Carbon Tampa Bay Demonstration project (initiated in 2014; anticipated for completion by summer 2016). Final products are forthcoming. These projects have focused on identifying and prioritizing restoration and acquisition sites in the Tampa Bay watershed based upon updated sea level rise scenario recommendations and the potential for new restoration/acquisition sites to contribute Blue Carbon benefits to the region.

- As referenced above, a group of local resource management experts and scientists (Tampa Bay Climate Science Advisory Panel) developed regional recommendations for anticipated sea level rise in 2015. A final document from these efforts is here: http://tbrpc.org/council_members/councilagendas/2015/101215/8c.pdf .

- TBEP initiated another new project entitled “Critical Coastal Habitat Assessment (CCHA)” in the Fall 2013. This project implements the monitoring and assessment recommendations from the 2010 Habitat Master Plan Update. A Critical Coastal Habitat Assessment Framework was developed in 2013 and Atkins implemented the monitoring program over the 2014-2016 period at 5 coastal sites. The project specifically aims to monitor habitat changes due to climate change/sea level rise in Tampa Bay. The CCHA was expanded in 2016, through an EPA Wetlands Development Grant, to include 4 additional sites, as well as to develop a video training tutorial on the methods. FWRI staff are the lead on this expanded CCHA project, and hope to implement similar monitoring programs throughout the state.

- TBEP staff, as well as TAC members, participated in the organization and facilitation of the Resilient Tampa Bay workshop at the USF Patel Center in February 2011. The workshop was designed to foster the exchange of ideas and knowledge to deal with climate change challenges in the Tampa Bay region with local and international experts. More information on the workshop is here: http://sgs.usf.edu/rtb/index.php

- TBEP staff have been working with EPA Gulf Breeze to refine data and products developed as part EPA’s Ecosystem Services Demonstration Project for Tampa Bay. EPA has developed a website to visualize ES for the Tampa Bay area based on the work accomplished to date here: http://www.epa.gov/ged/tbes/ .

E. Determine the assimilative capacity for nutrients in the Tampa Bay estuary.

- TBEP, with input from the TBEP TAC and TBNMC, has developed recommended numeric nutrient criteria for the Tampa Bay estuary (Link to Documents). These recommendations have been incorporated into FAC for open waters of the Tampa Bay estuary. Work continues on implementing NNC recommendations for SW Florida tidal creeks, as a result of an EPA Wetland Grant received by SBEP, TBEP and CHNEP.

- The TBNMC developed a 2012 Reasonable Assurance Update for the 2007-2011 period in December 2012. Re-evaluation of allocations developed for this period based upon the 2009 RA Addendum (Link to documents) was not conducted, but may be pursued as part of the next RA Update which is due to FDEP by December 2017 for the 2012-2016 period.

F. Determine direct and forecasted impacts of continued watershed development on estuarine resources and processes (e.g., hydrological changes, hurricane vulnerability assessments, OneBay initiative, evaluating Ecosystem Services, coastal vegetation changes).

- See section B. and D. above relating to increased monitoring of tidal creeks, the OTB Integrated Modeling Project, CCHA project, and the residential stormwater quality evaluation.

- In addition, TBEP, in partnership with the TBRPC, completed a project to inform planning departments, business and development groups and other appropriate parties about regulatory requirements related to water quality standards and capping nitrogen loads at existing levels (Nitrogen Management for Planners). The Tampa Bay Nitrogen Management Consortium (NMC) has spent considerable effort developing load allocations for partners in the Tampa Bay watershed. In the future, any new loads due to development, increased wastewater treatment plant capacity, etc. will need to be offset using load reduction projects. While NMC partners and others within the region are aware of the nitrogen reduction strategy, many involved with planning may not understand the process and the implications it will have for public and private entities within the region. Final products from this project are posted on the TBRPC website at: http://www.tbrpc.org/resource_center/integrating_nitrogen_management.shtml

- The TBEP serves as a One Bay partner. The organization was formed in 2007 following the success of Reality Check, a day-long exercise in which community leaders and citizens envisioned the future of Tampa Bay, including housing, employment and transportation infrastructure. Since Reality Check, the organization has engaged in a series of public input events and presentations engaging over 6,000 citizens across the seven-county region. This shared regional vision will help the overall region prosper from a position of strength, diversity, opportunity, and economic vitality over the long term as it continues to grow.

  Current One Bay initiatives include Livable Communities, Healthy Communities, and Lifelong Learning. The Tampa Bay Regional Planning Council is the lead with additional partners including the Southwest Florida Water Management District, Tampa Bay Partnership Regional Research & Education Foundation and the Urban Land Institute Tampa Bay District.

  The One Bay Livable Communities group recently merged with the Tampa Bay Regional Transportation Authority's Land Use Working Group and continue to meet to discuss the Tampa Bay region's land use planning issues, specifically relating to existing land use patterns, long-range land use plans, growth projects, and local community goals.

- In 2016, the Tampa Bay Regional Planning Council was awarded a Tampa Bay Environmental Restoration Fund grant to cross-walk TBEP CCMP actions with local land use planning and development codes.

G. Facilitate the development of Total Nitrogen TMDLs and BMAPs for waterbodies within the watershed.

- TBEP partners have been actively engaged in development of freshwater TMDLs related to TN loads within the watershed. A group of local partners has worked with FDEP/EPA to refine TMDLs originally proposed in 2009. More information on the reposted TMDL documents can be found on FDEP's website here: http://www.dep.state.fl.us/water/tmdl/repost_tmdl.htm

- TBEP, in partnership with the FDEP, completed a web-based Action Plan Database Portal for partners to submit pollutant load reduction projects within the region (http://apdb.tbeptech.org/). The online portal integrates mapping and reporting features to visually display and summarize projects throughout the Tampa Bay watershed.

- TBEP stands ready to assist FDEP in development of BMAPs based upon TMDLs developed through FDEP and EPA. At this time, FDEP has not requested assistance from TBEP. Previously, TBEP has served as a stakeholder/facilitator for development of the Alafia, Manatee and Hillsborough River Fecal Coliform BMAPs. Updates to FDEP BMAPs within our region can be found here: http://www.dep.state.fl.us/water/watersheds/bmap.htm .

H. Develop and implement a monitoring program to track habitat quantity and quality in coastal habitats. Incorporate new technologies, as appropriate, to monitor coastal habitats (LiDAR, multi-spectral remote sensing, etc.). Monitoring should incorporate more accurate and precise change analysis methods to track small-scale changes in habitat cover over short time scales (years vs. decades). Ground-level monitoring should be implemented to document community-level changes in response to climate change and other stressors (fixed transects).

- See section D. above related to the Critical Coastal Habitat Assessment (CCHA) Project. A detailed CCHA framework on which the monitoring will be based is located here: http://www.tbeptech.org/DATA/RFP/DRAFT_FINAL_CCHA_REPORT_09132013.pdf .

- SWFWMD, through a Tampa Bay Environmental Restoration Fund grant, commissioned CSA, Inc. to develop a hard bottom habitat map for a pilot area within Tampa Bay during 2014-16. Final map products utilizing advanced sonar technologies are anticipated in summer 2016.

I. Quantify ungaged streamflow and groundwater flow to Tampa Bay, and develop estimates of surface and groundwater flux to Tampa Bay.

- See section B. above related to tidal creek hydrology monitoring and development of the OTB Integrated Model.

J. Improve linkages between watershed-based and hydrodynamic models to better predict water quality, hydrology, sediment transport and circulation in the bay so that impacts to habitat and biota can be assessed. Refine these models for shallow-water areas, as appropriate.

- TBEP's project to develop an integrated ecological model for the Old Tampa Bay watershed is intended to directly address this TBEP TAC priority. TBEP, in partnership with the SWFWMD, commissioned the development of an integrated ecological model for the Old Tampa Bay watershed. This project was developed from input garnered from the TBEP TAC and Management Board, and is based in part, on developing a better understanding of the ecological stresses observed in Old Tampa Bay including the refinement of nutrient and hydrologic loads entering the system. Specific management actions will be evaluated with the integrated model to determine the greatest net ecological benefits associated with implementation of the actions. This work began in the Fall 2011, and the final models and scenario evaluations were completed in 2015. All deliverables from the project can be viewed here: http://tbeptech.org/special-projects/otb-model/106-old-tampa-bay-integrated-model-development-deliverables . Model code and products can be requested from Ed Sherwood (esherwood@tbep.org).

K. Coordinate restoration efforts to help achieve both habitat and water quality targets.

- See section D. above, and L. below.

- TBEP and regulatory partners continue work on the "Development of a Coordinated Approach to Linking Compensatory Mitigation and Habitat Restoration Goals in the Tampa Bay Watershed." The objective is to develop a coordinated approach for directing mitigation of freshwater wetlands in the Tampa Bay watershed with habitat restoration and protection goals. Currently there is no linkage between freshwater wetland mitigation and broader planning initiatives, such as the Tampa Bay Habitat Masterplan. This project extends the planning process to freshwater wetlands and freshwater wetland restoration targets and priority sites for restoration and protection have been identified. The TBEP Policy Board adopted the new FW wetland targets in August 2013. A final report summarizing the results is here: http://tbeptech.org/TBEP_TECH_PUBS/2014/TBEP_05_15_Freshwater_Wetland_Master_Plan.pdf .

  The project partners include local, state and federal government agencies, the University of South Florida and, potentially, non-profit and for-profit partners. Jointly, the team has explored the current legal, policy, and economic limitations to this concept and are developing a framework for including compensatory mitigation in a meaningful way within habitat restoration goals, as well as local and state management plans. In this manner, it is hoped that publicly-funded land preservation and habitat restoration programs will be coordinated with regulatory compensatory mitigation activities, thus better optimizing available resources directed towards attainment of adopted watershed-based wetland habitat restoration goals.

  As a component of this project, TBEP jointly funded the development of a Pinellas County Stormwater Management Manual to review and update of the County's stormwater/floodplain regulations and develop a "catalog" of options for developers to choose from to meet regulatory standards and improve the quality of site runoff and the ecological value of their site. The manual addresses low impact design (LID) strategies and stormwater regulations that support improvements in water quality and enhancement of wetland habitats in an urbanized watershed.

- TBEP is continuing work on implementing the McKay Bay Sediment Quality Action Plan. Fish and invertebrate tissue samples were collected in 2012 and 2013, as part of a TBEF grant acquired by the TBEP. A final report from this study is here: http://tbeptech.org/TBEP_TECH_PUBS/2014/TBEP_03_14_Final_Report_Determining_Biotic_Effects_Sediment_Contaminants_02272014.pdf . Additional watershed restoration activities are being pursued through EPA Brownsfield Coalition Assessment grants.

L. Identify causes of seagrass recovery slowdown or seagrass loss in "problem areas" representing at least 10% of a bay segment.

- See section J. above related to the development of the OTB Integrated Model.

- TBEP is continuing work on the development of a Tampa Bay Seagrass Restoration and Protection Masterplan. The project aims to collate existing information on seagrass recovery in Tampa Bay and the potential factors affecting the rate of recovery. This information will be used to review and re-evaluate adopted seagrass

restoration and protection goals based on the most recent monitoring data. The Seagrass Masterplan will be incorporated into the next, comprehensive Tampa Bay Habitat Master Plan, anticipated to be completed in 2018.

- TBEP is continuing work on the Feather Sound Tidal Wetland Restoration Project. This project is a continuation of the Feather Sound seagrass recovery projects which attempted to determine why seagrass were not recovering in western Old Tampa Bay. The management recommendations developed by the Feather Sound team included restoring the tidal wetlands at Feather Sound in order to improve water quality and increase seagrass coverage in the offshore area; this represents the first phases of the restoration project. Restoration designs have been developed using a phased approach for the entire 640 acre wetland area and surrounding uplands. The complete restoration is expected to include restoring the natural hydrology of the area, removal of exotic vegetation, and planting of native tidal wetlands species. Phase 1 of restoration was completed in 2013 and included more than 20 acres of hydrologic modifications, removal of exotic vegetation and planting of native wetland species. The second and final phase of the project, due to be completed in summer 2016, will include additional hydrologic restoration for nutrient removal and restoration of a salt barren habitat, exotic removal and planting of native species.

- TBEP completed work on the Tampa Bay Longshore Bar Project. The project included design, permitting, construction and monitoring of four 200-foot long experimental longshore bar options south of the MacDill peninsula. Three bars were partially funded by the Pinellas County Environmental Fund (PCEF) with the fourth bar partially constructed by the EPA's Gulf of Mexico Program (GOMP). The Tampa Port Authority (TPA) provided construction funds to double the length of the bar system and some monitoring. Construction of the bars was completed in December 2010. The project team has conducted five years of post-construction monitoring of the establishment of seagrass, bathymetry and structural integrity. The project team is requesting that it be released from formal monitoring requirements and will asses an appropriate schedule for continued monitoring and assessment of the project results. A final report on the project is located here: http://tbeptech.org/TBEP_TECH_PUBS/2013/TBEP_06_13_Tampa_Bay_Longshore_Bar_Seagrass_Recovery_Project_GOMP_%20Final_Report_Jan2013.pdf .