

ACTION PLAN *Habitat Restoration Enhancement and Monitoring*

HE-4

Develop Seagrass Restoration Target and Restore Habitat

ACTION:

Develop a seagrass restoration target that incorporates restoration of lagoon sediments and elevations, as well as water quality improvements, to promote subsequent increases in areal extent of seagrasses. Increase seagrass habitat within the Lake Worth Lagoon through implementation of restoration projects. Monitor the increase in seagrass to refine target.

BACKGROUND:

In 2007, seagrass covered at least approximately 1,688 acres or 22% of the LWL, based on aerial photographic interpretations. Of the seven seagrass species found in the Lagoon, *Halophila johnsonii* is one of the most abundant in terms of area of coverage. *H. johnsonii* is the only marine plant designated as a federally threatened species, and several designated critical habitat areas for this species are found in the Lagoon.

This Action Plan includes the development of a Seagrass Restoration Target (formerly 2008 Plan Action Plan HE-4), seagrass habitat restoration, and continued implementation of a Submerged Aquatic Vegetation (SAV) Monitoring Program (formerly 2008 Action Plan Plan EM-3).

Target: The restoration target entails setting an average maximum depth for each lagoon segment at which seagrass will recruit and grow. Methods to establish the target were proposed by Braun (2006) and resulted in an estimate of approximately 2,100 acres of potential seagrass habitat, a 25% increase over 2007. This project provides a framework for setting future targets; however, the methods need to be validated and data needs to be updated in order to arrive at a more accurate target.

Steps 1 and 2 of the 2008 HE-4 Action Plan have not been completed, but are integrated into **STEP 1** of this Action Plan. Participants of the Lake Worth Lagoon Initiative Habitat Working Group met in 2012 to share information on the status of SAV monitoring. The participants (ERM, SFWMD, FDEP, FWC and Palm Beach Atlantic University) will complete **STEP 1**. Step 3 of the 2008 HE-4 Action Plan was not accomplished, but is integrated into **STEP 8** in this Action Plan. The group will work together to continue implementation of **STEP 8**. Once established, the target elevation and acreage will be refined as additional data becomes available.

Restoration: Since 2008, an additional 11 acres have been added through the construction of two habitat restoration projects, each containing a seagrass component: South Cove Natural Area and Snook Islands II Restoration. Additional seagrass habitat restoration will be accomplished through the construction of projects outlined in Appendix C-1,

which includes constructing wave breaks, filling select dredge holes and restoring bottom sediments and elevations to promote seagrass recruitment. **STEPS 2 through 6** of this Action Plan allow for the identification, design, coordination, permitting, solicitation of funding, and construction of these projects. Monitoring of new projects is designated in **STEP 7**.

Monitoring: A sound monitoring program is essential to understanding temporal, short-term and long-term spatial changes, both on a landscape and bed/patch scale, and temporal changes in seagrass cover within the LWL. Step 1 of the 2008 EM-3 Action Plan has been completed. Monitoring protocols have been established in the LWL by ERM (annual fixed monitoring of 9 transects and aerial mapping every 5 years), SFWMD (annual monitoring of 4 beds), FWC/FWRI (annual monitoring of 8 transects), and Palm Beach Atlantic University (monitoring of 50 zones in Lake Worth Cove at MacArthur State Park). Steps 2 and 3 are ongoing and have been incorporated as **STEP 8** of this Action Plan. ERM continues to monitor the nine fixed transects on an annual basis. Aerial photographs of the Lagoon to document large-scale trends in seagrass were last acquired in 2007. The next flight is scheduled for the spring of 2013.

STRATEGY:

- STEP 1 Propose a target elevation and acreage for seagrass restoration in each lagoon segment based on existing information. Share the target with Federal, State, and local governments and stakeholders.
Responsible parties: ERM, SFWMD, FDEP, FWC, USFWS, and NOAA
- STEP 2 Identify sites within the Lagoon for restoration/creation using the agreed upon seagrass target (see Appendix C-1).
Responsible parties: ERM
- STEP 3 Develop conceptual design for each of the priority seagrass habitat restoration projects identified in Appendix C-1.
Responsible parties: ERM
- STEP 4 As necessary, establish Interlocal Agreements with municipalities, to restore and create habitat within their jurisdiction, and protect the habitat through education.
Responsible parties: ERM, SFWMD, FDEP, League of Cities and Municipalities, including North Palm Beach, Lake Park, Riviera Beach, Palm Beach Shores, West Palm Beach, Palm Beach, South Palm Beach, Lake Worth, Lantana, Hypoluxo, Manalapan, Boynton Beach, and Ocean Ridge
- STEP 5 Obtain permits for priority seagrass habitat restoration projects identified in Appendix C-1.
Responsible parties: ERM, SFWMD, FDEP, USACE

STEP 6 Identify funding and construct projects to restore/create seagrass habitat.
Responsible parties: ERM, FDEP, FIND, FWC, USACE, NOAA, USFWS and municipalities

STEP 7 Develop and implement project-specific monitoring programs to document areal increase in seagrass habitat as result of restoration projects.
Responsible parties: ERM, SFMWD, FDEP, HBOI/FAU

STEP 8 Continue long-term monitoring programs, which include landscape and bed/patch surveys, to document spatial and temporal changes in seagrass cover and correlate trends with water quality and sediment parameters.
Responsible parties: ERM, SFWMD, FDEP, FWC, PBAU, HBOI/FAU

SCHEDULE:

STEP 1 is anticipated to begin in 2013. **STEP 2** can occur concurrently with **STEP 1**, as priority projects have already been identified (Appendix C-1). Additional projects may be identified at the completion of **STEP 1**. Conceptual design for those projects already identified as priority will be initiated in 2013, followed by completion of **STEP 4**, when necessary, and **STEP 5**. **STEP 6** will primarily be dependent on funding. **STEP 7** will begin upon completion of construction. **STEP 8** will be ongoing, but contingent on funding. The next landscape (aerial) surveys is scheduled for 2013 and for every 5 years thereafter, while bed/patch surveys are scheduled annually (ERM, FWC) and bi-annually (SFWMD).

COST:

- Construction of up to 15 acres of seagrass habitat over the next five years is estimated at \$3,500,000. Staff time involved in project design, permitting, management, and post-construction monitoring is estimated at \$450,000.
- The estimated cost for the fixed transect monitoring program is \$30,000 annually, and the estimated cost for the aerial mapping is \$140,000.
- Annual costs for staff, subcommittee meetings, and materials to establish target elevation and acreage are estimated at approximately \$50,000.

EXPECTED BENEFITS:

Restoration of seagrass habitat will provide food, substrate, and shelter for thousands of species of flora and fauna, including commercially and recreationally important fish, manatees, and sea turtles, and also help stabilize sediments and maintain water clarity. Monitoring allows managers to quantify the coverage of seagrass within the Lake Worth Lagoon, as well as identify problems and design solutions to protect seagrass resources. The restoration target provides an effective management tool to determine where restorative and protection efforts of seagrass should be focused in the Lagoon.

MONITORING ENVIRONMENTAL RESPONSES:

Progress in implementing seagrass habitat restoration will be monitored by ERM. Project-specific monitoring will be conducted by ERM, while the long-term monitoring programs will be conducted by ERM, SFWMD, FDEP, and FWC.

REGULATORY NEEDS:

Permits for construction are required by FDEP or SFWMD and USACE. Legislation to streamline the permitting process, for Government sponsored limited restoration or enhancement projects (including living shorelines), is currently being evaluated for inclusion in the Statewide Environmental Resource Permit rule as a Restoration General Permit. Some of the habitat restoration/enhancement projects may qualify for the USACE Nationwide Permit #27. Steps are being considered by USACE to streamline the permitting for "Living Shoreline" shoreline stabilization projects.

FUNDING:

Funding will be sought by ERM.

POTENTIAL PARTNERS AND FUNDING SOURCES*:

PBC, SFWMD, FDEP, FWC, FIND, PBAU, USACE, USFWS, NOAA, EPA, HBOI/FAU

*Listed Agencies have not committed funds and are subject to Agencies' budget approvals