Biscayne Bay Watershed Management Advisory Board

Board Packet

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MIAMI-DADE COUNTY

AGENDA

BISCAYNE BAY WATERSHED MANAGEMENT
ADVISORY BOARD (BBWMAB) MEETING
December 6, 2024 – 9:00 am – 11:00 am
LOCATION – Stephen P. Clark Government Center, Commission Chambers, 2nd Floor
111 NW First Street, Miami, FL 33128

1. **Roll Call**

2. **Reasonable Opportunity to be Heard**

3. **Approval of Agenda** – *Actionable Item*

4. **Approval of Minutes for September 13, 2024** – *Actionable Item*

5. **Actions Taken in support of Biscayne Bay Restoration 2020 – 2024** (Requested by Chair Cohen Higgins)
   BBWMAB Chair, Commissioner Danielle Cohen Higgins

6. **Reasonable Assurance Plan Progress Update (**Requested by Commissioner Steinberg)
   Pamela Sweeney, Sr. Water Resources Scientist, DERM

7. **2024 Highlights (**Requested by Chair Cohen Higgins**)**
   BBWMAB Chair, Commissioner Danielle Cohen Higgins
   - FDEP Biscayne Bay Water Quality Improvement Grant Program, Galo Pacheco, Marina Blanco Pape, Laura Eldredge, DERM and Christine Wartman, WASD
   - Other grant and County-funded initiatives, Marine Debris – Derelict Vessel Removal, Laura Eldredge, DERM
   - Everglades restoration related to Biscayne Bay – Dr. Erik Stabenau, Biscayne National Park
   - County-wide initiatives and accomplishments – Loren Parra, Chief Bay and Water Resources Officer

8. **Impervious Surface Ordinance Roll out** (Requested by Bay Team, OOR)
   Marina Blanco Pape, Chief, Water Management Division, DERM

9. **County's 2025 State Legislative Priorities related to Biscayne Bay (**Requested by Mayor Rachel Streitfeld**)**
   BBWMAB Chair, Commissioner Danielle Cohen Higgins

10. **Future Agenda Items**
    BBWMAB Chair, Commissioner Danielle Cohen Higgins

11. **Adjournment**
    BBWMAB Chair, Commissioner Danielle Cohen Higgins

Biscayne Bay Watershed Management Advisory Board

Stephen P. Clark Government Center
Commission Chambers, 2nd Floor
111 NW First Street
Miami, FL 33128

MINUTES September 13, 2024, 9:00 am

MEETING CALLED BY	Roll call was taken – quorum was established when called at 9:37 am. Members Absent: Vice-Chair – Mayor Vince Lago, Commissioner Kevin Cabrera, Commissioner Micky Steinberg, Jannek Cederberg, Kevin Cunniff, Jerry Menendez
MEMBER ATTENDEES	Chair – Commissioner Danielle Cohen Higgins Commissioner Alex Fernandez Commissioner Rachel Streitfeld Mayor Tim Meerbott John Alger Brett Bibeau T. Spencer Crowley, II, Esq. Dave Doebler Julissa Kepner Gerald McGinley Dr. Erik Stabenau
	Staff support for Biscayne Bay Watershed Management Advisory Board in attendance: Chief Bay and Water Resources Officer, Loren Parra (OOR); Lourdes Gomez (RER); Lisa Spadafina (RER-DERM); Pamela Sweeney (RER-DERM); Nancy Jackson (OOR); Larissa Aploks (RER); Kathleen Oswald (OOR).

REASONABLE OPPORTUNITY TO BE HEARD

Commissioner Danielle Cohen Higgins - Chair

PUBLIC COMMENT	Anthony Adams/ Margo Carrizosa - Residents – Registered to speak about their concerns regarding a DERM permit application for the Marina at Little River. County attorney clarified that as a quasi-judicial item, no public comment could be made at this meeting and would need to be made during the public hearing which would happen before the BCC. She directed members of the public to speak to Lisa Spadafina, DERM Director, if they had further questions. Scott Pollowitz – Resident – Concerned that the Waterfront Recreation Access Plan (WRAP) as well as several development proposals should be mindful that floating docks harm seagrass by shading it or blocking any sunlight reaching the Bay bottom. Also requested an update on Dr. Joan Browder Wetland Protection Plan and when it would be brought to the full board as there are over 400 acres of wetlands proposed for development right now. Maji Ramos – Resident – Not in favor of adding more boats to the Bay. The number of registered vessels continues to grow while the number of marine patrol officers has not. Requested an increase in budget for the marine patrol. She added there have been 59 fatalities in 2023 FL Boating accidents with 83% of operators of fatalities having no formal boating education.

APPROVAL OF AGENDA

Commissioner Danielle Cohen Higgins - Chair

BOARD ACTION	A motion was made to adopt the Agenda by Mayor Tim Meerbott, and seconded by Commissioner Rachel Streitfeld; motion passed unanimously.

BOARD MEMBER LEGISLATIVE ITEMS AND RESOLUTIONS

Commissioner Danielle Cohen-Higgins - Chair

DISCUSSION	Chair, Cohen Higgins was pleased to share that the Impervious Surface Ordinance passed at the County Commission with several co-sponsorships. Thanked Lourdes, Marina and the entire DERM team for their incredible work on that ordinance. She also mentioned in regard to Boater's Safety there is an item on the agenda for Tuesday's BCC meeting – 11.A.1. which simply urges the legislator to increase the regulations and sanctions at the state level. She is working with the Lucy Fernandez Foundation to create a boater's safety task force in MDC. 6 Resolutions from last meeting – Chair, Cohen Higgins will assume sponsorship over Dr. Browder's Item to have either a park, EEL Land or wetland named in her honor. **Board Comments:** Dave Doebler asked about one of the other items that was passed revising the wetlands protection and specifically naming it the Dr. Browder Wetlands Protection Act. He was hoping to find a sponsor to look into it since wetlands are no longer under the same protections as they were and that provides an opportunity to make sure the rules are clear. Chairwoman Cohen-Higgins was happy to look into that item and come back with an update.

APPROVAL OF MEETING MINUTES

Commissioner Danielle Cohen Higgins - Chair

BOARD ACTION	Mayor Tim Meerbott made a motion to approve Meeting Minutes from May 31, 2024, seconded by Commissioner Rachel Streitfeld; meeting minutes adopted unanimously.

WATERFRONT RECREATION ACCESS PLAN

Maria Nardi, Director, Parks, Recreation and Open Spaces

PRESENTATION	Chair Cohen Higgins recognized Director, Parks, Recreation and Open Spaces, Maria Nardi, to address the board. Maria Nardi presented an overview of the WRAP, emphasizing the need to enhance water-based recreation while balancing environmental protection and public access. The plan is integrated with the county's broader Parks and Open Spaces Master Plan, aiming to connect natural and cultural areas with greenways and blue ways. Public engagement revealed desires for improved bay cleanup, better maintenance, increased recreational opportunities, and safer zones for kayaks and paddleboards. The plan outlines strategic focus areas, including improving waterfront access, enhancing boater safety, and promoting stewardship, with ongoing capital projects to improve facilities like marinas and boat ramps. **Board Comments:** Spencer Crowley was happy to see the plan come to fruition and explained the initiative began 10-15 years ago inspired by a similar plan in Palm Beach County. He explained FIND typically focuses on capital projects but by seeing the success of waterfront planning in other areas, they decided to fund local planning efforts. He emphasized the importance of implementing these plans and believes in increasing responsible public access to natural resources, rather than restricting it, to foster greater care and protection of these areas.

GOVERNMENT CUT WATERSHED MANAGEMENT PLAN

Lori Kennedy, Senior Water Resources Engineer and Ellie Baker, Senior Environmental Planner, Horsely Whitten Group

PRESENTATION	Chairwoman Cohen-Higgins brought Pamela Sweeney to give background of the Government Cut Watershed Management Plan. The GCWMP is a project commissioned by NOAA and in collaboration with Miami-Dade County, FDEP, and NOAA, aimed at addressing the spread of stony coral tissue loss disease, which has severely impacted coral species in the region. The initiative focuses on identifying

sources of pollution and pathogens affecting coral health, particularly how pollutants are traveling through inlets like Government Cut and affecting offshore coral ecosystems. The county's restoration program has intervened to save hundreds of corals, and this effort ties into broader regional and national efforts to manage coral reefs and water resources.

Ellie Baker presented an overview of the project. The goal is to reduce land-based pollution, particularly nutrient and sediment loads, impacting the coral reef system. After site visits and detailed assessments, the team is formulating recommendations based on land use, pollution sources, and management practices to guide future investments in pollution reduction by NOAA and other agencies.

Lori Kennedy presented some of their key recommendations including the main focus on converting septic systems to sewer in vulnerable areas and accelerating existing county programs that address septic system impacts on water quality. Additionally, the team recommends implementing green stormwater infrastructure, like bioretention basins and drivable swales to filter stormwater runoff before it reaches water sources. Larger projects are suggested for public spaces and partnerships with local governments and agencies are encouraged to support these efforts. Other recommendations include canal bank stabilization, water treatment systems, and improving housekeeping practices like street sweeping.

Board Comments:
Chairwoman Cohen-Higgins asked Pamela Sweeney to share next steps.

Pamela Sweeney explained the final plan will be reviewed to identify overlapping items with DERM's current work on the Reasonable Assurance Plan (RAP) to help prioritize projects that align with nutrient reduction goals. She emphasized the need to collaborate with stormwater and wastewater departments, as well as municipal partners, to determine which projects are feasible for the county.

Chairwoman Cohen- Higgins added that the upcoming legislative session is coming up in Tallahassee and she is open to advocating for funding if the recommendations can be solidified before committee hearings begin.

Spencer Crowley expressed frustration in long timeline with discussion and planning but little action. He highlighted similar projects have been implemented elsewhere in the state, and significant funding is available for such initiatives. Locally, however, efforts seem stuck in the planning phase, with overlapping projects like the RAP and WRAP taking years to complete. He urges moving beyond planning and starting the projects to solve the problem with immediate action.

Pamela Sweeney acknowledged Mr. Crowley's concerns and explained that, back in 2020, the state funding for addressing stony coral tissue loss disease was initially limited but later expanded through collaboration between Mayor Levine Cava and Governor DeSantis. The Biscayne Bay Watershed Plan is seen as a comprehensive governance tool that integrates various aspects like water quality (through the RAP), land use, zoning and public access. It aims to consolidate the key issues raised by past efforts, ensuring long-term and effective management of Biscayne Bay and its ecosystems.

Dave Doebler shared similar concerns as Spencer Crowley regarding the slow pace of policy implementation, noting that while he's excited about the Impervious Surface Ordinance, many policies won't take effect until 2028. He also emphasized a sense of urgency and hope that this plan will address the impact of dredging in the Government Cut area, particularly future dredging projects that could harm the reefs, as the last project resulted in the destruction of 278 acres of corals due to inadequate planning.

Commissioner Alex Fernandez mentioned the importance of regional studies as guiding documents and suggested counties should share these studies with municipalities. Citing Miami Beach as an example, he highlighted successful environmental projects like bioswales and stormwater retention systems. He believes that sharing these studies can help cities that may not have the same resources, allowing them to incorporate sustainable solutions without duplicating efforts or spending additional public funds on new studies.

FUTURE AGENDA ITEMS Commissioner Danielle Cohen Higgins - Chair

DISCUSSION	• Chairwoman Cohen-Higgins requested a detailed progress report on the Reasonable Assurance Plan (RAP) at the December Meeting with timelines. • Chairwoman Cohen-Higgins requested a list of actions taken since the board has been convened to date of all the projects completed, policies that have been passed and funding acquired toward Biscayne Bay water quality projects and studies with a focus on completed and acquired. • Chairwoman Cohen-Higgins recognized this summer was a quiet summer with regards to not having any fish kills and the importance of continuing our work at faster pace. • Dave Doebler agreed the speed of policies going into effect and shares the sense of urgency. Also mentioned Port Miami and future dredging stating that there needs to be a strong plan in place including with a reliable contractor to avoid coral populations being impacted. • Commissioner Alex Fernandez asked for the County to share the green infrastructure studies with the municipalities. Miami Beach is incorporating bio swales in different parks as well as storm water retention. He is concerned not all cities have the funding to invest in these studies, so they do not need to spend additional funding on reinventing the wheel. • Dr. Erik Stabenau mentioned during the timespan of this board, the Florida Coral Reef Coordination Team is meeting and connecting upland activities with the coastline and their potential impacts out on the coral reefs. He also mentioned the inclusion of reporting on coastal restoration and other non-county projects under the Everglades restoration program as part of our overall accomplishments and for the the board to be made aware of. • Commissioner Alex Fernandez highlighted the Miami Beach Marine Patrol unit on their enforcement efforts on Biscayne Bay with 52 arrests this year, 801 boating citations and 24 boat tows. • Chairwoman Cohen-Higgins recognized during budget season there is an additional $270,000 being allocated for MDC Marine Patrol. • Spencer Crowley stated that FIND has grant programs to help fund police boats and thanked Commissioner Fernandez and City of Miami Beach for applying for a small-scale spoil island restoration grant. Budget year opens again October 1st, 2024. • Dave Doebler encouraged participation in International Coastal Cleanup Day. Information can be found on volunteercleanup.org.

ADJOURN Commissioner Danielle Cohen Higgins - Chair

DISCUSSION	The Chair thanked the BBWMAB and staff for their work. The meeting was adjourned.

Projects, Policies, Funding Acquired, and Other Initiatives (2020-2024)

These initiatives are organized under the seven priorities identified in the Biscayne Bay Task Force Report, the document thus far guiding and focusing the efforts of the Watershed Management Advisory Board and staff. Over 79% (49) of the 62 action items listed in the Report (some of which are noted herein) have either been accomplished or are in progress, with many actions being supported in part or in total through successful grant applications by DERM to outside funding sources such as DEP, FIND, NOAA, and EPA. More than $100 million to date is directly funding water quality and infrastructure improvements as well as habitat restoration projects.

This summary represents key actions taken by the Board of County Commissioners, Watershed Management Advisory Board, and Chief Bay Officer in meeting Task Force goals as well as many RER-DERM initiatives taken to date (2021-2024) to further these and other priority Biscayne Bay restoration goals.

While not an exhaustive list, this summary is submitted in partial fulfillment of the request made by Commissioner and Watershed Management Advisory Board Chair Danielle Cohen-Higgins for a list of projects, policies, grant funding, and other initiatives to date.

We collectively have a long way to go toward achieving restoration of Biscayne Bay's health and resilience. However, much has been accomplished while we undertake many of the most significant actions such as development of the Biscayne Bay Reasonable Assurance Plan as well as implementation of major and/or innovative infrastructure improvements and pollution investigations largely made possible through grant funding.

1. Water Quality

   Policies and Ordinances

   - Fertilizer Ordinance No. 21-26:
     - Bans use of phosphorus-containing fertilizer year-round, and fertilizer ban during rainy season from May 15-Oct 31 to prevent nutrient pollution runoff to the Bay (1K)
     - Sampling plan developed and implemented at golf courses, parks, athletic fields to characterize groundwater and surface water quality
     - DERM has partnered with fertilizer retail outlets to display informational signage at fertilizer points-of-sale in Lowes, Home Depot, and Walmart Garden Centers during the restricted fertilizer application period
     - DERM and Chief Bay Officer worked to launch comprehensive resource webpage and marketing toolkit at www.miamidade.gov/fertilizer

    - Launched a paid campaign that was organized and implemented in conjunction with RER-COM & CCED, which included search engine marketing, web banners, and social media advertising.
- Increased Penalties Ordinance No. 22-85:
    - Increased civil penalties and fines associated with impacts to water quality (1E)
- Develop a Reasonable Assurance Plan (RAP) Resolution No. R-184-22
    - Biscayne Watershed Management Advisory Board recommended development of a Reasonable Assurance Plan to Board of County Commissioners to establish pollutant load reduction goals and improve water quality in Biscayne Bay (1A)

Grant Funded Projects

- FDEP Biscayne Bay Water Quality Grant: $44M from 2020-2024
    - Water Quality Characterization to identify sources of pollution in Miami River, Little River, and Biscayne Canal (1B)
    - Localized sampling to characterize water quality & identify pollution sources & loading rate in key areas in C-6, C-7, C-8 basins (1D)
    - Installation of 10 groundwater (GW) wells to characterize pollutant sources and levels around the C-7 basin where GW enters surface water (1J)
    - Expand upon DEP FY23 phosphorus study that investigated contamination in GW to a) evaluate land use patterns and other relevant info; b) sample 10 of the original wells, revisit DEP FY23 gas station wells and add others, and c) other existing wells (USGS, SFWMD) to identify sources of GW total-P (1J)
    - Septic to Sewer Conversions in Little River area (1G)
    - Replace septic tanks on a MDC property with DWTS adjacent to the C-2 canal in the Village of Pinecrest (1G)

Other Initiatives

- Biscayne Bay webpage launched as hub for restoration activities including Watershed Board meeting resources at www.miamidade.gov/BiscayneBay
- Bayrun Sampling expansion
    - In 2023, RER-DERM's monthly sampling to monitor water quality in Biscayne Bay and the canals were expanded by adding an additional 30 sites, and increase of 28%, with now 137 surface water quality sites across the watershed and in service to municipal stormwater permit co-permittees. (1B)
    - Innovating process to perform quality control and quality assurance on water quality data

- DERM water resources team continue “Eyes on the Bay” program during the wet season in central and northern Biscayne Bay to monitor conditions indicative of fish kill or algal blooms, coordinating with FIU, DEP, and other entities and experts to facilitate information sharing and communication
- DERM has co-hosted a municipal water quality coordination workshops at the onset of the wet season to discuss initiatives to improve water quality and discuss steps being taken by the County and municipalities to ensure proper maintenance of stormwater and wastewater infrastructure, the need to increase inspection sweeps, and coordinate should environmental emergencies arise.
- DERM presented on the Reasonable Assurance Plan at the Mayor’s 2024 storm and emergency preparedness workshop at the Main Library.

2. Governance
    - Miami-Dade County Board of County Commissioners established the Biscayne Bay Watershed Management Advisory Board (2A)
    - Mayor Daniella Levine Cava established the position Chief Bay Officer, now Chief Bay and Water Resources Officer (2B)
    - Coordination and collaboration with state’s Biscayne Bay Commission through participation by County Commissioners Cohen Higgins, Cabrera, and Steinberg as well as County staff

    <u>Grant Funded Projects</u>
    - Applied for and received $500K in state funding for scoping and completion of initial phase of proposed Biscayne Bay Watershed Plan (2C)

3. Infrastructure

    <u>Policies and Ordinances</u>

    - OSTDS Ordinance No. 22-83: (3B)
        - Stricter requirements for new septic systems, reviewed by RER-DERM
        - Performance based treatment systems (PBTS) to reduce nutrient loading and pollution discharges
    - Feasible Distance Ordinance No. 22-137:
        - Revised feasible distance standards, related to when properties are required to connect to the public sanitary sewer system
    - Impervious Surface Ordinance No. 24-92: (4I)
        - Increase flood control, incentivize green infrastructure, require increased retention and minimum permeability, updated stormwater system performance and maintenance requirements

- Updates minimum water quality standards for direct discharges via outfalls to Biscayne Bay and canals connected to the Bay

Grant Funded Projects

- FDEP Biscayne Bay Water Quality Grant: $6.5M from 2020-2024
  - Stormwater treatment technology testing (1G)
  - "SMART" Covers and innovative technology to prevent SSOs (3D)
- DEP Innovation Technology Grant:
  - 2022-2024- $3M to evaluate nutrient-reducing technologies in northern Biscayne Bay partnership with South Florida Water Management District
- FDEP Resilient Florida Grant: (1G,3H)
  - 2022-2023: Over $23M for projects related to stormwater improvements, including increasing height of berms along canal to store more water and prevent volume from being conveyed down canals carrying pollutants, and retrofitting pump stations with water quality improvement technologies

4. Watershed Habitat Restoration and Natural Infrastructure

- CERP Biscayne Bay Coastal Wetlands (BBCW): (1J)
  - S-701 Pump Station Cutler Flow Way and Spreader Canal CERP Feature- large-scale restoration project began in 2023, will take approximately three years to construct, to enhance roughly 1,700 acres of mangrove wetlands and restore more natural salinities along more than three miles of Biscayne Bay coastline
  - Completion and commencement of operations of the S-709 pump station in 2023, diverts water from the C-103 canal northward via the L31-E canal, allows the water to sheet flow naturally through the coastal wetlands before reaching Biscayne Bay
- In 2024, DERM restoration experts served on panel showcasing the County's efforts at the National Conference on Ecosystem Restoration
- DERM staff and the Environmentally Endangered Lands program hosted and coordinated the 2024 national meeting of Forests in Cities, an organization dedicated to promoting and advancing healthy forested natural areas in cities
- Mapping of Mangrove Canopy
  - In 2023, RER-DERM finalized the mapping of the current mangrove canopy within the County, resulting in available GIS data layers
- DERM coral biologists continue to serve as a member of the Southeast Florida Coral Reef Initiative, a collaborative among governmental and non-governmental partners to identify and implement priority actions needed to reduce threats to coral reef resources in southeast Florida

- In 2024, DERM coral biologists completed disturbance response monitoring surveys at 34 locations as part of a larger interagency effort to document coral diversity and density and the prevalence of coral bleaching and disease across the Florida Reef Tract.
- DERM staff provided technical assistance and oversight NOAA and DEP in development of its Government Cut Inlet Contributing Area Watershed Management Plan to address water quality pollution impacting coral reef resources

Grant Funded Projects

- FDEP Biscayne Bay Water Quality Grant:
  - $500K from 2021-2024 to accomplish two projects
    - Sponge nursery evaluation
    - Living Shorelines Guidance Document
- FDEP Resilient Florida Grant:
  - 2021-2022- $4.97M for Environmentally Endangered Lands (EEL), with a focus on projects to acquire lands into public ownership that will enhance efforts to improve Biscayne Bay water quality and habitat and aquifer recharge
  - 2021-2024- Over $12M for secondary canal improvements in the Little River Basin to raise canal bank elevations to enhance storage and conveyance
  - 2022-2023- $2.5M for restoration of hydric hammock and historic Snapper Creek bed at West Matheson, EEL Program project
- U.S. EPA Grant: $650K (4H)
  - Funding for creation of a Habitat Suitability Model (HSM) for our seagrass ecosystem that will pull in data from multiple partners to assess habitat use of seagrass beds by fish and marine mammals
- FDEP and NOAA funding
  - Ongoing Stony Coral Tissue Loss Disease intervention work to prevent further spread of the disease, funded by DEP and NOAA. In 2024, 22 corals were treated by DERM coral biologists.

5. Marine Debris

Grant Funded Projects

- **501 derelict vessel removals to date** since inception of program, credit to DERM's John Ricisak, with costs totally approximately $2M covered by the Biscayne Bay Environmental Enhancement Trust Fund and grants from

Florida Inland Navigation District, Fish and Wildlife Conservation Commission, and National Oceanic and Atmospheric Administration. (5C)
    - Collectively, the 501 boats would measure over 2.55 miles (approximately 13,490 feet) if placed end-to-end, about the distance across the Bay from the mainland to Miami Beach.
- 146 DVs removed since 2021, total over 150 before close of 2024, and on target to remove at least 50 DVs in 2024 alone.
- Over $170K for DV removal in 2024

Other Initiatives

- Since 2021, approximately 875 derelict fishing traps removed from Biscayne Bay, not including those removed offshore, resulting in the release of 845 live stone crabs, 355 spiny lobsters, and hundreds of other marine life including sharks and eels.
- In 2024 alone, over 250 derelict traps were moved, the majority of which were removed from Biscayne National Park
- Initiated trap buy-back program where owners of lost and abandoned traps are notified and offered an opportunity to retrieve their traps that MDC has recovered during trap closure periods
- In 2024, coordinated and implemented community service program wherein environmental offenders sentenced to court-mandated service have removed over two tons of debris from sensitive coastal areas including Chapman Field, R. Hardy Matheson
- Increased coordination with Biscayne National Park to assist in removal of DVs from the park, and coordinating several coastal cleanups with park staff
- Working with agency and community partners to identify priorities to comprehensively address marine debris prevention, reduction, and removal (Laura)

6. Education and Outreach

Grant Funded Projects ($900K)

- FDEP Biscayne Bay Water Quality Grant: $500K from 2020-2024
    - Education and outreach for homes remaining on septic in Little River area
- U.S. EPA Grants: $400K
    - Implement a Biscayne Bay boating community outreach initiative

Other Initiatives

- Baynanza

    - In its 42nd year in 2024, Baynanza's Biscayne Bay Cleanup Day drew 4,556 participants, who collected over 17 tons of trash across 34 sites cleanup sites (greatest number of sites) throughout Miami-Dade County. In 2023, 4,200 volunteers collected 15 tons of trash across 31 sites.
- International Coastal Cleanup
    - DERM financially supported the 2024 ICC and organized and hosted cleanups at four Environmentally Endangered Lands sites.
- Plastic Free 305
    - RER-DERM partnered with Plastic Free Cities, including canvassing, to promote Plastic Free 305. Currently, there are 92 organizations participating in RER-DERM's Plastic Free 305 program
    - Created social media discussing the extent of the plastic pollution crisis and promoting Plastic Free 305 throughout Plastic Free July.
- Adopt-a-Tree
    - During the 2024 season, 7,000 native trees and fruit-bearing trees were distributed throughout the Miami-Dade County community. In 2023, 6,900 trees were adopted and 7,500 in 2022.
- World Cleanup Day
    - DERM organized and conducted a joint cleanup with Miami-Dade Solid Waste.
    - Promoted World Cleanup Day to educate residents about the solid waste crisis and the actions the community can take to make a positive impact
- EEL
    - In 2024, DERM launched a week-long social media campaign to highlight and promote the importance and raise awareness of the Pine Rockland Ecosystem
- DERM promoted Septic Smart Week to encourage residents to maintain their systems and understand their connection to the environment.
- DERM promoted America Recycles Day to educate residents on the importance of recycling as part of the solution to the solid waste crisis, as well as provided guidance on how to recycle properly.
- DERM promoted the International Day for the Conservation of the Mangrove Ecosystem to educate the community about the importance of the mangrove ecosystem.
- DERM Conducted over 75 environmental outreach events at schools, places of worship, private organizations, town halls, webinars, and with the regulated community

7. Funding

   Other initiatives

   - Urging for additional funding for Biscayne Bay-related grant funding (7A)
   - Designate a Biscayne Bay License Plate (7B)
   - Updating the Biscayne Bay Economic Study in collaboration with the South Florida Water Management District (7C)

FLORIDA DEPARTMENT OF Environmental Protection

Bob Martinez Center
2600 Blair Stone Road
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Ron DeSantis
Governor

Jeanette Nuñez
Lt. Governor

Shawn Hamilton
Secretary

November 22, 2024 VIA EMAIL

Pamela Sweeney
Division of Environmental Resources Management (DERM)
Miami-Dade County Department of Regulatory and Economic Resources (RER)
701 NW 1st Court – 4th Floor
Miami, Florida 33136

RE: Biscayne Bay RAP – Plan of Study Document Approval

Dear Ms. Sweeney,

This letter confirms the Florida Department of Environmental Protection's (DEP) approval of the "Plan of Study for the Biscayne Bay Reasonable Assurance Plan, November 2024," submitted by the Miami-Dade County Department of Regulatory and Economic Resources, Division of Environmental Resources Management (RER-DERM). This plan outlines the necessary steps to develop the Reasonable Assurance Plan (RAP) for Biscayne Bay and its watershed.

DEP appreciates your team's efforts in addressing our comments on the draft Plan of Study and providing the final version on November 19, 2024. We also support the ongoing use of the Decision Memos that RER-DERM will submit to document continued collaboration in developing a stakeholder-led RAP to restore and protect Biscayne Bay.

We agree that the Plan of Study presents a reasonable and realistic approach to developing a successful RAP, based on sound science, to restore and protect Biscayne Bay's water quality and ensure full support of aquatic life and recreational uses.

DEP is pleased to approve the Plan of Study and looks forward to continued coordination in support of this effort as our respective teams work through its implementation with the ultimate goal of developing a stakeholder supported and scientifically defensible RAP.

If you have additional questions about DEP's acceptance of this document, please contact Kevin O'Donnell at (850) 245-8469 or Kevin.ODonnell@FloridaDEP.gov.

Sincerely,
Kevin J. O'Donnell
Kevin O'Donnell, Program Administrator
Water Quality Evaluation and TMDL Program

CC: Craig Grossenbacher, RER-DERM
Omar Abdelrahman, RER-DERM
Ken Weaver – DEP
Benjamin Ralys – DEP

PLAN OF STUDY FOR THE BISCAYNE BAY REASONABLE ASSURANCE PLAN

Prepared for:
Miami-Dade County
Department of Regulatory and Economic Resources
Division of Environmental Resource Management

November 2024

Prepared by:
Environmental Science Associates

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Figures

Tables

Acronyms and Other Abbreviations

Abbreviation	Definition
ARP	Alternative Restoration Plan
CERP	Comprehensive Everglades Restoration Plan
CIP	capital improvement plan
DACS	Department of Agriculture and Consumer Services
DEP	Florida Department of Environmental Protection
DO	dissolved oxygen
ENP	Everglades National Park
ENR	Estuarine Nutrient Region
EPA	U.S. Environmental Protection Agency
ESA	Environmental Science Associates
ET	evapotranspiration
F.A.C.	Florida Administrative Code
FIU	Florida International University
FWC	Florida Fish and Wildlife Conservation Commission
GIS	Geographic Information System
HUC	hydrologic unit code
ICWW	Intracoastal Waterway
IMP	integrated modeling plan
ISE	Integral Square Error
IWR	Impaired Waters Rule
MAE	mean absolute error
ME	mean error
mg/L	milligrams per liter
MSGP	Multi-Sector Stormwater Generic Permit
NNC	Numeric Nutrient Criteria
NSE	Nash-Sutcliffe Model Efficiency Coefficient
OFW	Outstanding Florida Water
R2	Coefficient of Determination
RAP	Reasonable Assurance Plan
RER-DERM	Miami-Dade County Department of Regulatory and Economic Resources-Division of Environmental Resource Management
RRLM	Road Research Laboratory Model
RMSED	Root Mean Square Error Dimensionless
SFWMD	South Florida Water Management District
SWMM	Storm Water Management Model
TMDL	total maximum daily load
TN	total nitrogen
TP	total phosphorus
UCURM	University of Cincinnati Urban Runoff Model
ug/L	micrograms per liter
USGS	U.S. Geological Survey
WBID	Waterbody Identification Unit
WIN	Watershed Information Network

1. Introduction

The Miami-Dade County Department of Regulatory and Economic Resources Division of Environmental Resources (RER-DERM) has contracted with Environmental Science Associates (ESA) to provide technical support in the development of a Reasonable Assurance Plan (RAP) for Biscayne Bay (Figure 1). The first task under this effort is to prepare a RAP Plan of Study (Plan) based on an earlier outline dated November 29, 2022, that was previously reviewed by the Florida Department of Environmental Protection (DEP). The Plan defines RAP objectives and establishes the process by which the elements of the RAP will be developed consistent with DEP and the U.S. Environmental Protection Agency (EPA) guidance for Alternative Restoration Plans (ARP).

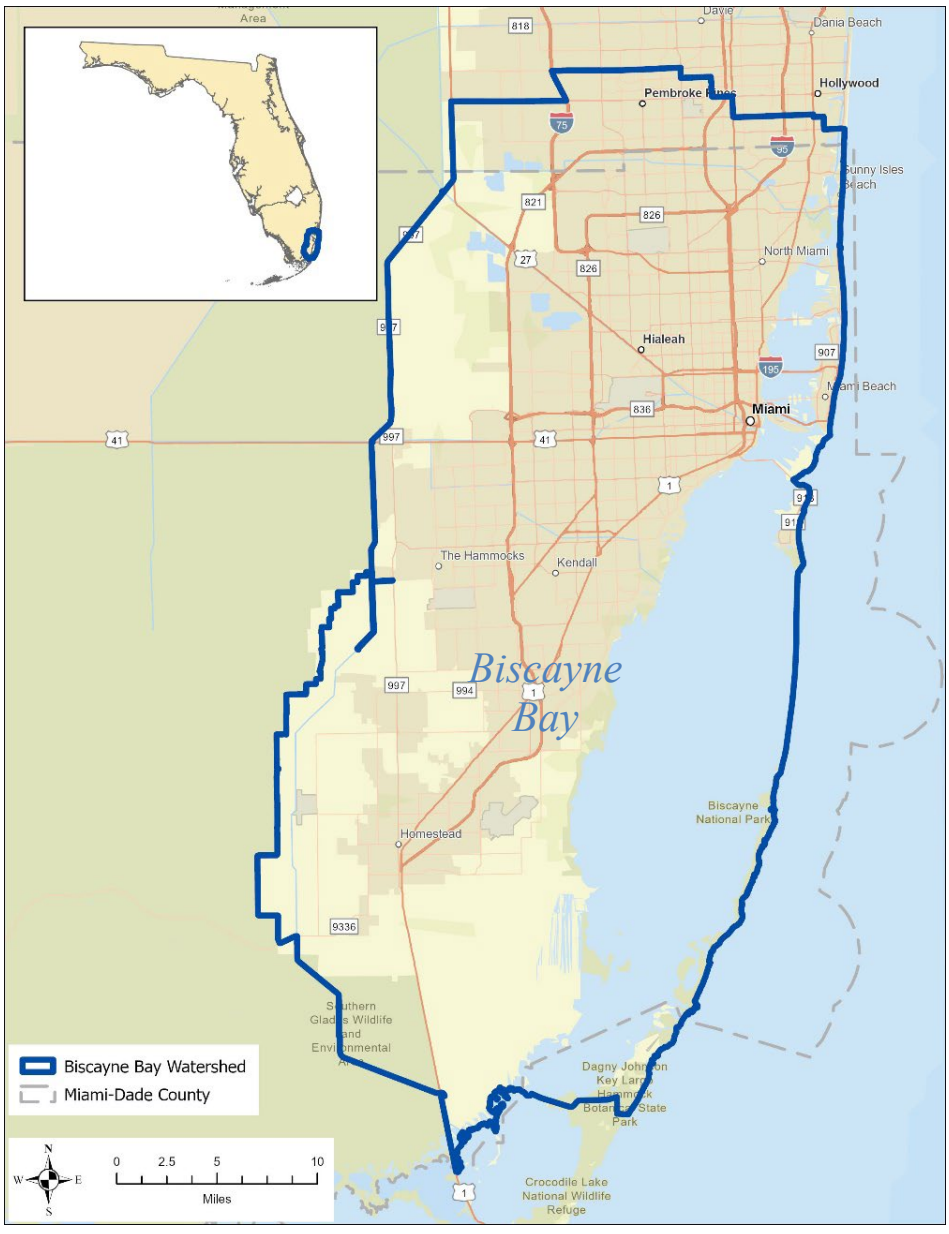

Figure 1
Locator Map of Biscayne Bay and Its Watershed

1.1 Purpose of Plan of Study

This Plan provides detailed information on how the key components of a successful RAP for Biscayne Bay will be developed. Ultimately, the successful RAP will lead to the restoration of the Bay, while satisfying DEP and EPA regulatory requirements, which in turn will open additional funding sources. RER-DERM plans to submit the Plan to DEP for their review and approval which will help ensure that the final RAP is approvable by both agencies. RER-DERM will also share the Plan with Biscayne Bay stakeholders to receive their comments and initiate their involvement with the RAP development process.

The Plan acknowledges that stakeholder support is a prerequisite for any watershed restoration plan and is, in fact, a requirement for an approvable RAP. In Florida, approved RAPs are adopted by Final Order of the DEP Secretary and must provide "reasonable assurance" that the proposed pollution control mechanisms in the plan will effectively address the documented impairment and will be carried out by the identified stakeholders. As such, the Plan also describes the public outreach processes that will be followed to facilitate stakeholder participation throughout RAP development and ensure stakeholder support for the final adopted RAP.

The Plan has been designed to meet all regulatory requirements of DEP and EPA following guidance provided in EPA's "Nine Elements of an Effective Watershed Plan" and the information outlined in DEP's RAP guidance document (DEP, 2021). The final RAP will describe both existing conditions that resulted in the impairment designation (as described below) and conditions required to meet Biscayne Bay's applicable nutrient criteria in Rule 62-302.532, Florida Administrative Code (F.A.C), and designated uses as defined in Rule 62-302.400, F.A.C. The Plan defines the work necessary to complete a RAP including a delineation of the Bay watershed, a current list of water quality impairments, identification of the causes of the impairments, estimation of existing pollutant loads, and derivation of water quality or ecological targets or water quality criteria representing a healthy condition. The final RAP document will also define the reduction in pollutant loading necessary to attain healthy conditions, identify projects needed to reduce or maintain loads to healthy levels, and estimate the technical and financial resources needed to implement the projects, include a project schedule with interim milestones for project implementation to attain water quality standards. The final RAP will also describe stakeholder outreach efforts and resultant partnerships and provide a detailed monitoring and assessment program that evaluates restoration progress and assesses overall plan effectiveness.

The Plan acknowledges that stakeholder support is a prerequisite for any watershed restoration plan and is, in fact, a requirement for an approvable RAP. In Florida, approved RAPs are adopted by Final Order of the DEP Secretary and must provide "reasonable assurance" that the proposed pollution control mechanisms in the plan will effectively address the documented impairment and will be carried out by the identified stakeholders. As such, the Plan also describes the public outreach processes that will be followed to facilitate stakeholder participation throughout RAP development and ensure stakeholder support for the final adopted RAP.

The development of the final RAP for Biscayne Bay will require surface and groundwater modeling, pollutant loading model estimates, a project prioritization matrix, and peer review that will be conducted under separate contracts with RER-DERM. An additional purpose of this Plan is to provide direction to those outside consultants. Therefore, the Plan has been crafted to also include key details like the critical questions and alternatives that should be considered within the full scope of RAP development.

1.2 RAP Objectives

The primary objective of a RAP is for stakeholders to proactively develop a clear roadmap for restoration of an impaired waterbody that does not currently meet its applicable water quality standards. DEP has recognized that stakeholder-driven restoration processes like RAPs are an effective and often faster pathway to water quality restoration. This RAP will focus on reducing nutrient loads to the Biscayne Bay because the Bay has been identified by DEP as impaired by excess nutrients (portions of Biscayne Bay do not meet the applicable numeric nutrient criteria (NNC)). These excess nutrients have led to increased algal growth, which in turn have contributed to both loss of seagrasses by reducing light transmission to the bottom and fish kills caused by low dissolved oxygen [DO] levels.

The numbered sections that follow provide details on the specific tasks that will be undertaken to develop the RAP.

2. Document Background Information

2.1 Description of Biscayne Bay and Its Watershed

A definition and description of the study area is the first step in developing a RAP. The watershed boundary was provided RER-DERM and derived from hydrologic data by the South Florida Water Management District. For the description of Biscayne Bay and its watershed, ESA will provide the required watershed-related information necessary for DEP and EPA review as well as a wide variety of additional information to lay the foundation for subsequent sections of the RAP. DEP guidance requires that RAPs include the name of the impaired waterbody, the location of the waterbody and watershed (e.g., basin group and planning unit), the watershed/U.S. Geological Survey (USGS) eight-digit hydrologic unit code (HUC), the WBID number, the waterbody type (lake, stream, or estuary), the designated use classification, and the designated use(s) not being attained. The description will also include a map of the Bay and watershed, the area of the Bay and watershed, the general location of the watershed in the county, subdivisions of the Bay (including both DEP's ENRs and other recommended subdivisions), the main cities in the watershed, some basic demographic information for the watershed (population and growth), land uses in the watershed (including both a map (Figure 2), and a table of main land uses) general land characteristics (slope and soil types), a description of the major ecosystems/habitats, a description of the major hydrologic features (canals and tributaries), any managed areas (state or federal aquatic preserves or parks), any tribal lands, and any special designations (e.g., Outstanding Florida Waters [OFWs], Comprehensive Everglades Restoration Plan [CERP] boundaries).

For the evaluation of land use information, ESA will start with the 2017 to 2019 South Florida Water Management District (SFWMD) land use coverage because it has already incorporated land use information from many municipalities and organizations and incorporates detailed information on the managed hydrology of the canal system. However, specialized land use information like that provided by the Florida Fish and Wildlife Conservation Commission (FWC) for conservation areas and by the Department of Agriculture and Consumer Services (DACS) for agricultural areas will also be evaluated and incorporated, as needed.

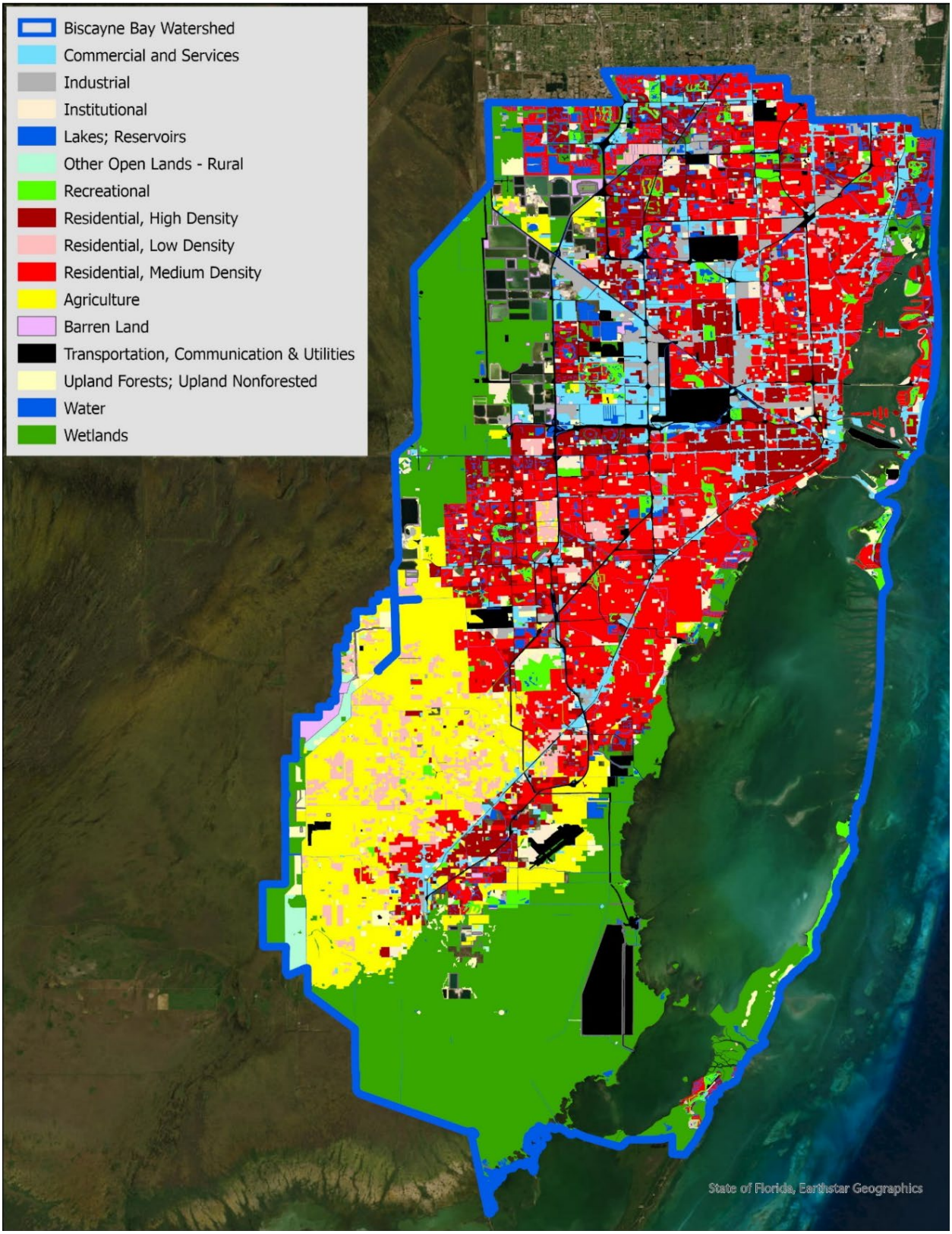

Figure 2
Land Uses in the Biscayne Bay Watershed

As part of the description of the major ecosystems/habitats, ESA will review and summarize existing documents related to the key ecological resources in the Bay, identify the key ecological resources, and discuss the water quality conditions (nutrient concentrations/load, light requirements, and DO) needed to ensure the health of these resources. The water quality targets and allowable nutrient loads developed as part of this RAP will be designed to ensure protection of these resources, which will ensure conditions that support aquatic life in the Bay (i.e., provide for aquatic life use support) and recreation in and on the water.

While the description of the managed areas within the basin will be more comprehensive in the RAP, it is important to acknowledge that the bay is managed by local, county, state and federal agencies. Key managed areas include Biscayne Bay Aquatic Preserves (BBAP, managed by DEP), Biscayne National Park (BNP, managed by the National Park Service), the Florida Keys National Marine Sanctuary (FKNMS, co-managed by the National Oceanic and Atmospheric Administration [NOAA] and DEP), and the Biscayne Bay Habitat Focus Area (HFA, managed by NOAA) (Figure 3). Additionally, the Miami-Dade County Board of County Commissioners designated Biscayne Bay and its environs an aquatic park and conservation area. Given their active resource management responsibilities, these agencies will be key stakeholders in the development of the RAP. Furthermore, the designations of the BBAP and BNP as Outstanding Florida Waters (OFW) bring an extra level of protection to the Bay because permitted discharges are not allowed to lower background ambient water quality within an OFW and the new State Stormwater Rule requires more stringent performance standards for new stormwater permits that discharge into an OFW.

Biscayne Bay Aquatic Preserves (BBAP) is comprised of two preserves. The first to be designated was Biscayne Bay-Cape Florida to Monroe County Line Aquatic Preserve, in 1970. The original boundaries began offshore of southern Key Biscayne, extended out to the edge of Florida state waters and then went southward to the county line dividing Miami-Dade and Monroe counties. The boundary returned northward interior of Biscayne Bay along the intracoastal waterway. The preserve concluded back at southern Key Biscayne including the waters of Bill Baggs Cape Florida State Park. With the designation of Biscayne National Monument to a National Park in 1980, the Biscayne Bay-Cape Florida to Monroe County Line Aquatic Preserve lost much of its original acreage. Today, the remnant of this aquatic preserve is approximately 4,163 acres off the eastern shore of Key Biscayne. (DEP, 2013).

The second, Biscayne Bay Aquatic Preserve, was established in 1974 and runs the length of Biscayne Bay from the headwaters of the Oleta River down through Card Sound west of Key Largo. BBAP is about 64,607 submerged acres. This aquatic preserve (AP) is split in half by BNP.

The 2013 Biscayne Bay Aquatic Preserve Management Plan noted a variety of issues related to water quality in the bay, including the need to replace sewage mains, nutrient loading from stormwater issues, consumptive use withdrawals that are inconsistent with restoration, and unmanaged mooring areas. The plan recommended expansion of existing water quality and benthic monitoring networks, the need to better understand changes in vegetative composition and algal blooms, and more frequent, higher resolution aerial photography to allow layers to be digitized and used in GIS mapping efforts.

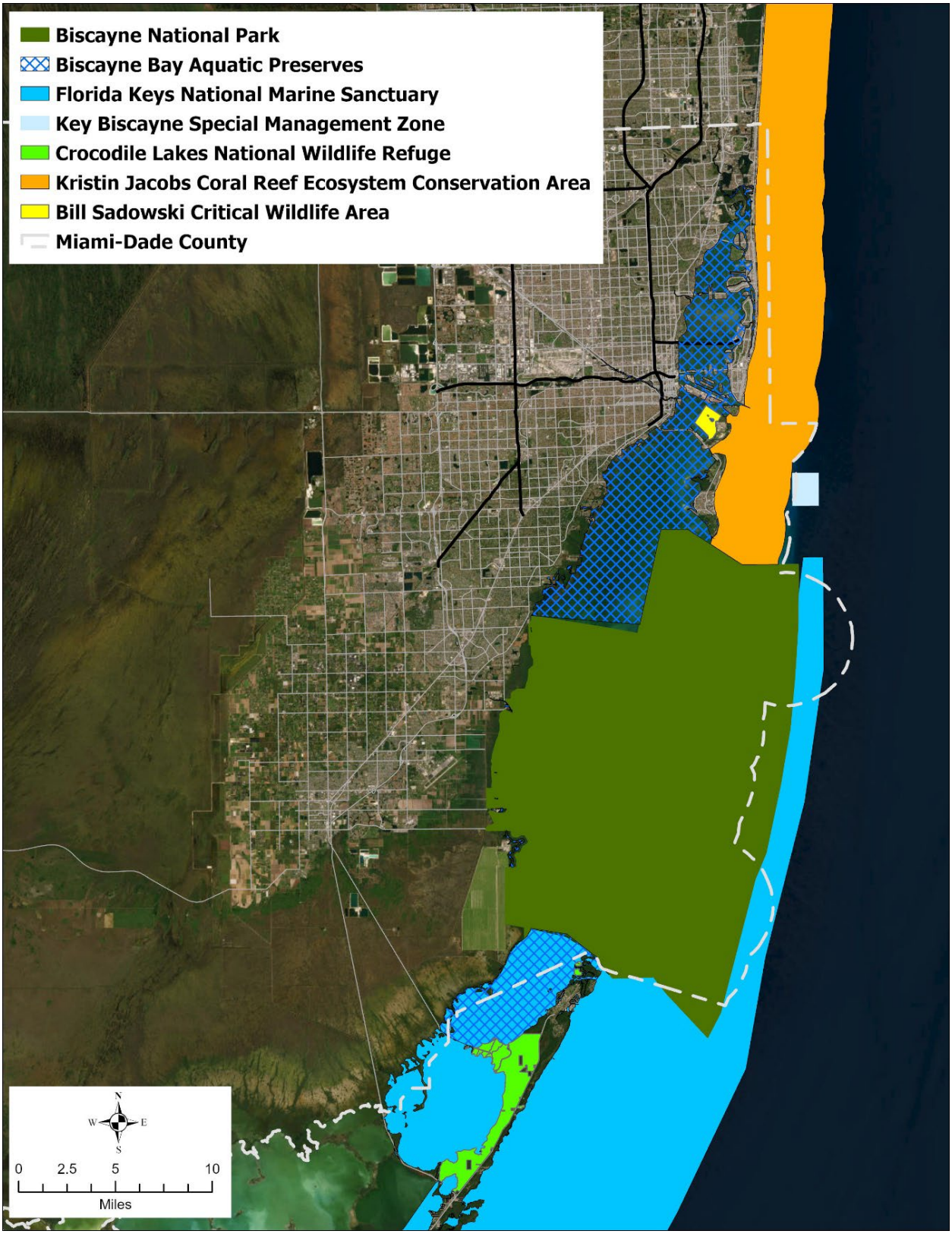

Figure 3
State and Federal Managed Areas in Biscayne Bay

Biscayne National Park (BNP) was initially established as Biscayne National Monument in 1968 and expanded and re-designated as a national park in 1980. The park covers approximately 173,900 acres (270 square miles). The northern boundary of the park is near the southern tip of Key Biscayne, and the park's southern boundary (about 22 miles to the south) is near Key Largo. The western boundary consists of natural areas consisting of red mangrove forests and coastal marshes that are intersected by canals, marinas. The eastern boundary extends out to sea about 14 miles to the east and is defined by the contiguous 60-foot (10 fathoms) depth contour. BNP is bordered offshore to the east and to the south by the Florida Keys National Marine Sanctuary.

Card Sound is located within the Florida Keys National Marine Sanctuary (FKNMS). Additionally, FKNMS extends north along the western boundary of BNP. The shoreward boundary is the Mean High Water Line (MHWL), including man-made bodies of water such as canals.

BB has also been designated as a Habitat Focus Area (HFA) by the National Oceanic and Atmospheric Administration (NOAA). The Biscayne Bay HFA includes Biscayne Bay and its adjacent reef tract, including all of Biscayne National Park, both Florida DEP Biscayne Bay Aquatic Preserves, and the northern extension of the Florida Keys National Marine Sanctuary beyond the US Highway 1 bridge at

Manatee Bay. NOAA and potential partners have developed an Implementation Plan for the HFA that has four goals, including (1) improving water quality, (2) securing and maintaining sufficient freshwater inflow into the bay, (3) protecting and improving habitat for protected and fishery resources that use the bay and reef tract, and (4) generating a strong, well-informed constituency through education and outreach activities. NOAA senior scientists are actively working with the University of Miami to ensure there is a strong scientific basis for good resource management decision-making and working with the Miami Waterkeeper to assist with education and outreach activities.

2.2 Applicable Numeric Nutrient and Dissolved Oxygen Criteria

The NNC nutrient criterion for Biscayne Bay were developed by DEP using a "maintain existing conditions" approach using water quality data collected from 1995 to 2009 by Florida International University (FIU) (DEP, 2011). DEP demonstrated that the Bay supported healthy biological communities during this period and derived criteria for different Bay estuarine nutrient regions (ENR).

The adopted NNC for TN in milligrams per liter (mg/L), total phosphorus (TP) in units of mg/L, and chlorophyll *a* in units of micrograms per liter (ug/L) for the ENRs in the Bay are summarized in Table 1. All the NNC for Biscayne Bay are expressed as annual geometric means not to be exceeded more than once in a three-year period.

It should be noted that the narrative nutrient standard also applies in Biscayne Bay. Paragraph 62-320.530(48)(b), F.A.C., states that "In no case shall nutrient concentrations of a body of water be altered so as to cause an imbalance in natural populations of aquatic flora or fauna." This RAP will be designed to ensure that both the applicable NNC and the narrative nutrient standard are met, which will ensure that Clean Water Act requirement to protect all designated uses is attained.

The applicable marine DO criterion includes three different expressions: a daily average (shall not be below 42 percent saturation in more than 10 percent of the values); seven-day average (shall not be below 51 percent saturation more than once in any twelve-week period); and 30-day average (shall not be below

56 percent more than once per year) criteria. As noted in Section 2.3, Biscayne Bay has not been identified as impaired for DO, despite the fact that Biscayne Bay has experienced significant fish kills in the last few years due to anoxic conditions. While this may seem counterintuitive, it is not surprising because the criteria and assessment methodology are geared at longer term conditions, while the fish kills have been relatively short lived.

TABLE 1
NUMERIC NUTRIENT CRITERIA FOR BISCAYNE BAY

ENR Name	ENR Number	TP	TN	Chlorophyll *a*
Card Sound	ENRH1	0.008 mg/L	0.33 mg/L	0.5 µg/L
Manatee Bay-Barnes Sound	ENRH2	0.007 mg/L	0.58 mg/L	0.4 µg/L
North Central Inshore	ENRH3	0.007 mg/L	0.31 mg/L	0.5 µg/L
North Central Outer-Bay	ENRH4	0.008 mg/L	0.28 mg/L	0.7 µg/L
Northern North Bay	ENRH5	0.012 mg/L	0.30 mg/L	1.7 µg/L
South Central Inshore	ENRH6	0.007 mg/L	0.48 mg/L	0.4 µg/L
South Central Mid-Bay	ENRH7	0.007 mg/L	0.35 mg/L	0.2 µg/L
South Central Outer-Bay	ENRH8	0.006 mg/L	0.24 mg/L	0.2 µg/L
Southern North Bay	ENRH9	0.010 mg/L	0.29 mg/L	1.1 µg/L

2.3 Existing Impairment Assessment

When RER-DERM initially contracted with ESA to initiate development of a RAP for Biscayne Bay, the impairment assessment was based on DEP's 2020–2022 Biennial Assessment, in which DEP identified several segments identified by Waterbody Identification units or WBIDs of Biscayne Bay as impaired for nutrients (Table 2), including Biscayne Bay (WBID 6001), the Port of Miami (WBID 3226H3), the Intracoastal Waterway (ICWW) Miami-Dade County (WBID 3226H), Haulover Inlet/Arch Creek (WBID 3226H2), and ICCW Miami-Dade Northern Segment (WBID 3226H1). Each of these WBIDs were verified as impaired because the WBID overlapped with an ENR that had annual geometric mean chlorophyll *a* values that exceeded its applicable NNC for chlorophyll *a* more than once in a three-year period. WBID 3226H1 also exceeded its applicable total nitrogen (TN) NNC. The WBID-based listings were based on exceedances of NNC in ENRH3, ENRH4, ENRH5, ENRH6, ENRH7, ENRH8, and ENRH9.

TABLE 2
NUTRIENT IMPAIRED WATERS IN BISCAYNE BAY BASED ON 2020 TO 2022 BIENNIAL ASSESSMENT

Impaired Water Name	WBID	Parameters of Concern	Associated ENR
ICCW (Miami-Dade Northern Segment)	3226H1	Nutrients (chl *a* and TN)	ENRH5
Haulover Inlet/Arch Creek	3226H2	Nutrients (chl *a)*	ENRH5
ICWW (Miami-Dade County)	3226H	Nutrients (chl *a)*	ENRH5 and ENRH9
Port of Miami	3226H3	Nutrients (chl *a)*	ENRH9
Biscayne Bay	6001	Nutrients (chl *a)*	ENRH3, ENRH4, ENRH6, ENRH7, and ENRH8

DEP now conducts impairment assessments every two years and the latest assessment (2022–2024 Biennial Assessment) was approved by the DEP secretary on August 16, 2024, including data from January 1, 2015, through June 30, 2022. Several important changes were made to the assessment process that impacted the resultant nutrient impairment listings for Biscayne Bay. As part of this assessment, DEP addressed the disconnect between the main Biscayne Bay WBID (6001) and the associated ENRs by retiring WBID 6001 and re-assigning all of the data to one of WBIDs 6001D, 6001E, 6001F, 6001G, and 6001H, which now align with their associated ENRs (Figure 4, right panel). The new assessment delists WBIDs 6001D, 6001E, 6001F, 6001G, and 6001H for chlorophyll *a* but adds nutrient impairments for Card Sound (WBID 6001C), Biscayne – North Central Inshore (WBID 6001D), and Biscayne – South Central Inshore (WBID 6001F) based on exceedances of the Total Nitrogen (TN) NNC (see Table 3 and Figure 5). The new lists also add ICCW Northern North Bay (WBID 3226H5) and ICWW Southern North Bay (WBID 3226H6) for exceedances of chlorophyll *a* concentration criteria. The WBID changes, combined with de-listings and listings for different parameters, are confusing, but the key conclusion is that large portions of Biscayne Bay are still designated by DEP as impaired by nutrients.

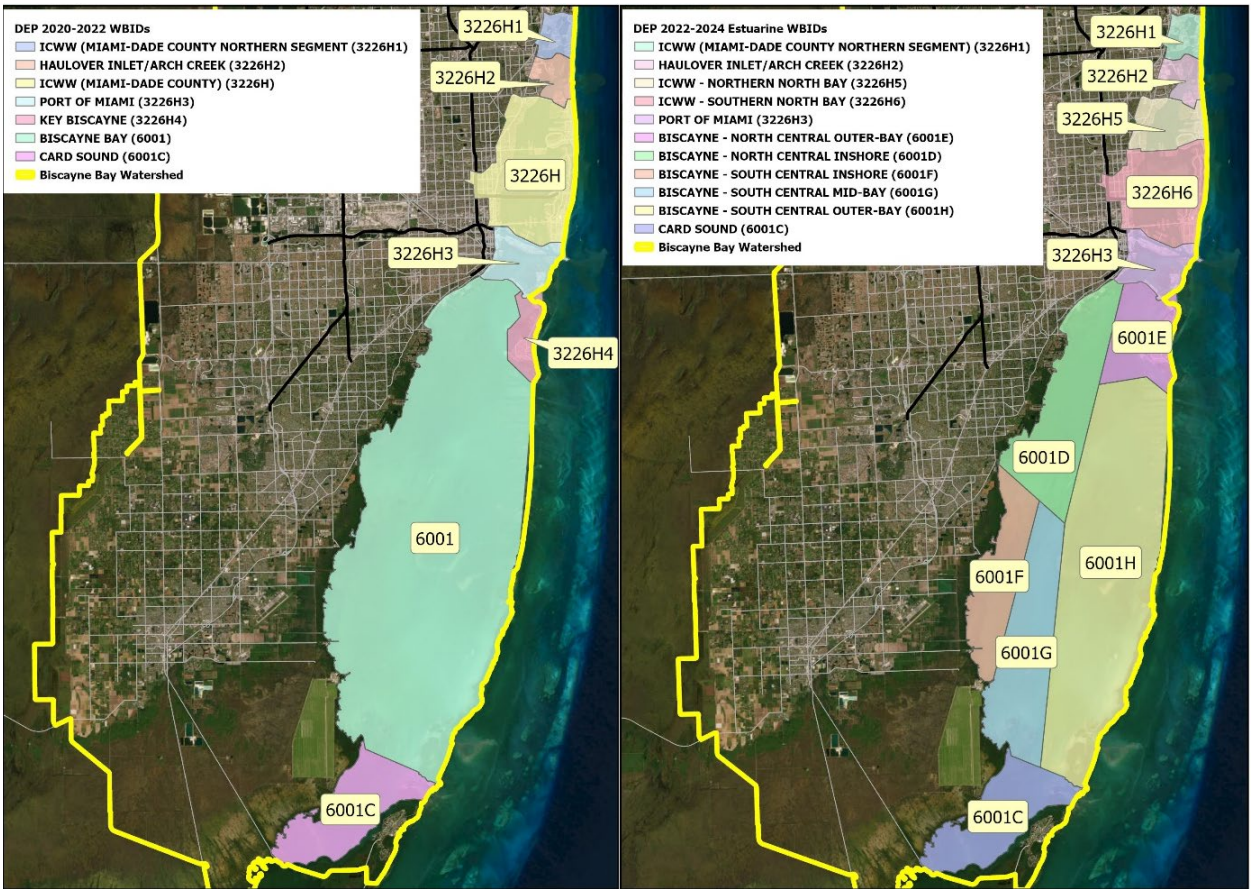

Figure 4
FDEP WBIDs in 2020–2022 (left panel) and 2022–2024 (right panel) Assessments

TABLE 3
NUTRIENT IMPAIRED WATERS IN BISCAYNE BAY BASED ON 2022 TO 2024 BIENNIAL ASSESSMENT

Impaired Water Name	WBID	Parameters of Concern	Associated ENR
ICWW (Broward County Southern Segment)	3226G3	Nutrients (TP)	ENRH5
ICWW (Miami-Dade County Northern Segment)	3226H1	Nutrients (Chl *a* and TN)	ENRH5
Haulover Inlet/Arch Creek	3226H2	Nutrients (Chl *a*)	ENRH5
ICWW Northern North Bay	3226H5	Nutrients (Chl *a*)	ENRH5
ICWW Southern North Bay	3226H6	Nutrients (Chl *a*)	ENRH9
Card Sound	6001C	Nutrients (TN)	ENRH1
Biscayne – North Central Inshore	6001D	Nutrients (TN)	ENRH3
Biscayne – South Central Inshore	6001F	Nutrients (TN)	ENRH6

While DEP relies on the NNC as the primary means for assessing nutrient impairment, the Impaired Waters Rule [Chapter 62-303, Florida Administrative Code (F.A.C)] includes a provision noting that DEP also considers "other information indicating an imbalance in flora or fauna due to nutrient enrichment, such as algal blooms or mats, excessive nuisance macrophyte growth, decrease in the distribution (either in density or areal coverage) of seagrasses or other submerged aquatic vegetation, adverse changes in algal species composition, and excessive diel oxygen swings" when assessing waters for nutrient impairment under the rule. DEP did not invoke this provision as part of the biennial assessments, but Biscayne Bay has clearly exhibited these signs of eutrophication, and they will be addressed in the RAP by setting ecological based targets for seagrass.

Both the 2020–2022 and the 2022–2024 Biennial Assessments listed many WBIDs in the Biscayne Bay watershed as impaired for DO, but all of them were placed on the Study List rather than the Verified List because DEP was unable to identify a causative pollutant. None of the WBIDs within Biscayne Bay were identified as impaired for DO.

As part of this task, ESA will review the Final Order adopted by the Secretary to evaluate the changes in the final lists. ESA will also review the data used by DEP to identify the various impairments and review the methodology used by DEP to verify the impairment.

It should be noted that RER-DERM conducts a comprehensive assessment of the health of the Bay that includes an assessment of chlorophyll *a*, Total Nitrogen (TN), and Total Phosphorus (TP) levels. While the RER_DERM methodology, which is described in detail in the website for the Biscayne Bay Report Card, utilizes different thresholds for chlorophyll *a*, TN and TP, the results for the 2023 Report Card reinforce the findings of the DEP assessment.

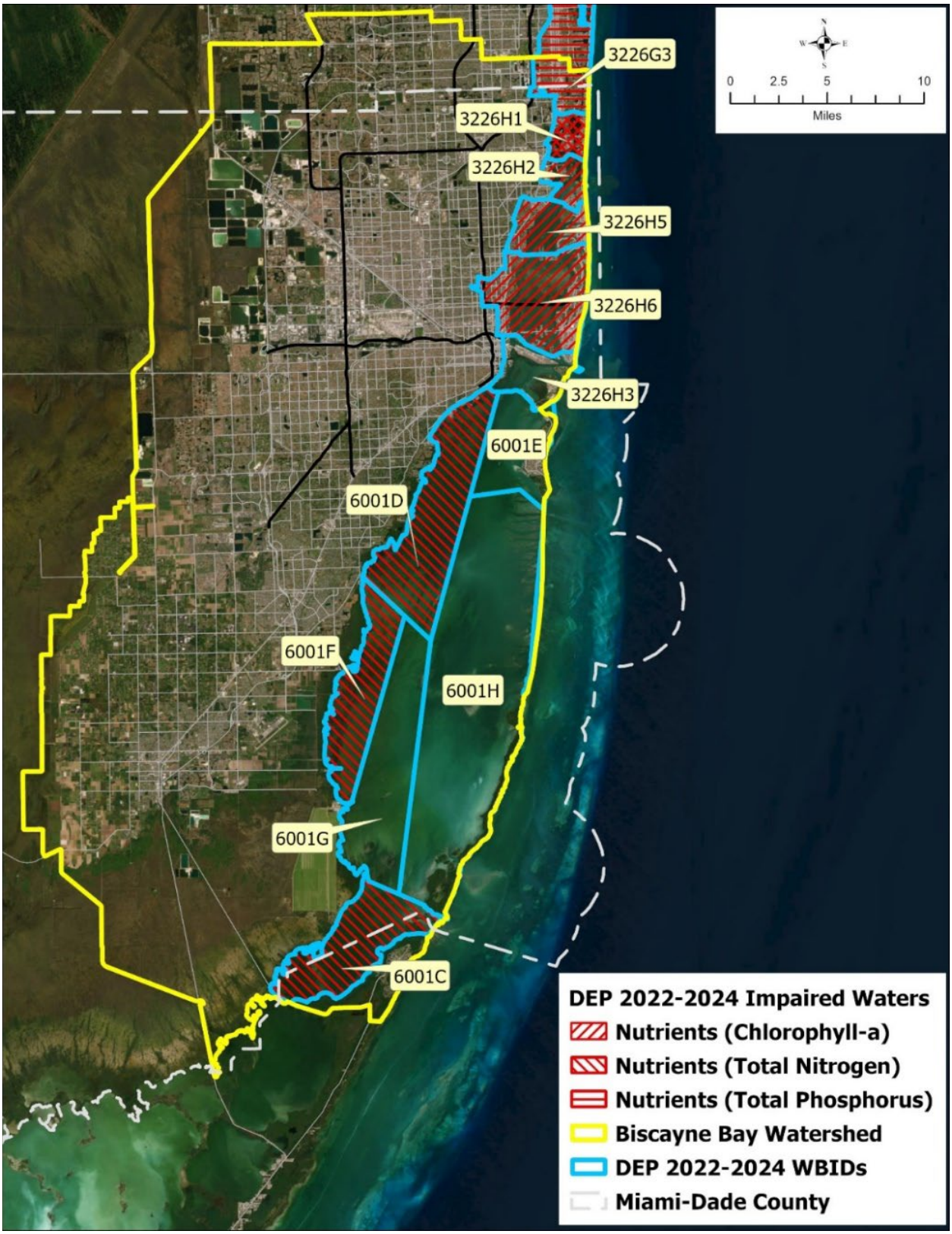

Figure 5
Current Nutrient Impaired Waters of Biscayne Bay Based on DEP 2022–2024 Assessment

3. Identify, Obtain, and Compile Existing Water Quality Data

There is a great deal of water quality-related information already available for Biscayne Bay (see Figure 6 for stations that have been monitored in the basin). RER-DERM has an extensive water quality monitoring program for Biscayne Bay and its watershed that currently includes forty-six (46) estuarine stations and ninety-one (91) sampling points located in the internal freshwater or tidal portion of the canals. ESA will gather these data and data from other sampling entities by downloading data from the DEP Impaired Waters Rule (IWR) Run 65 or later database, DEP Watershed Information Network (WIN) database (which should include DERM's water quality data), and the SFWMD DBHYDRO database. Additional data may be provided by local providers as well. ESA has scheduled a meeting with other interested parties who may have data to contribute to this effort and these data will be screened for data quality issues using the same protocols utilized by DEP for regulatory assessments prior to inclusion as part of the RAP. ESA will also work with RER-DERM and DEP to collect effluent data from wastewater facilities permitted to discharge to surface or groundwaters in the basin. These data will be used to characterize their loads to the Bay.

4. Re-examine Bay Segmentation

ESA will work with FIU and other stakeholders to re-examine the Bay segmentation approach used by DEP to establish the ENRs over which the NNC apply. As described above, several changes have been made to the WBID boundaries that encompass the ENRs used by DEP in their Biannual Assessments. DEP generally recommends that NNC be applied to sub-basins with similar water quality characteristics, and for the case of Biscayne Bay, DEP relied primarily on FIU's recommended segmentation of the Bay as the basis for developing the ENRs, with some modifications based on watershed characteristics and stakeholder input. The FIU Bay segmentation was based on a sound statistical characterization of FIU's available water quality data (a combination of Principal Component Analysis and Hierarchical Clustering of 8 to 13 parameters). However, the segmentation includes offshore areas that complicate establishment of allowable loads for individual ENRs because it is unclear how the offshore ENRs relate to contributing basins.

As part of the re-examination, ESA will consider additional data (both older data not used by FIU and more recent data collected after FIU's analysis). ESA will conduct statistical analysis of the available TN, TP, and chlorophyll *a* data to determine if alternative geographical delineations such as Caccia and Boyer (2007) (Figure 7), which was based on both water quality and nutrient sources, may be more appropriate for evaluating water quality in Biscayne Bay. Alternative segmentations will be assessed using statistical resampling techniques to evaluate the effects of any potential alternative geographic delineations on the current assessment framework, establishment of segment-specific water quality targets, and associated allowable nutrient loads to the Bay.

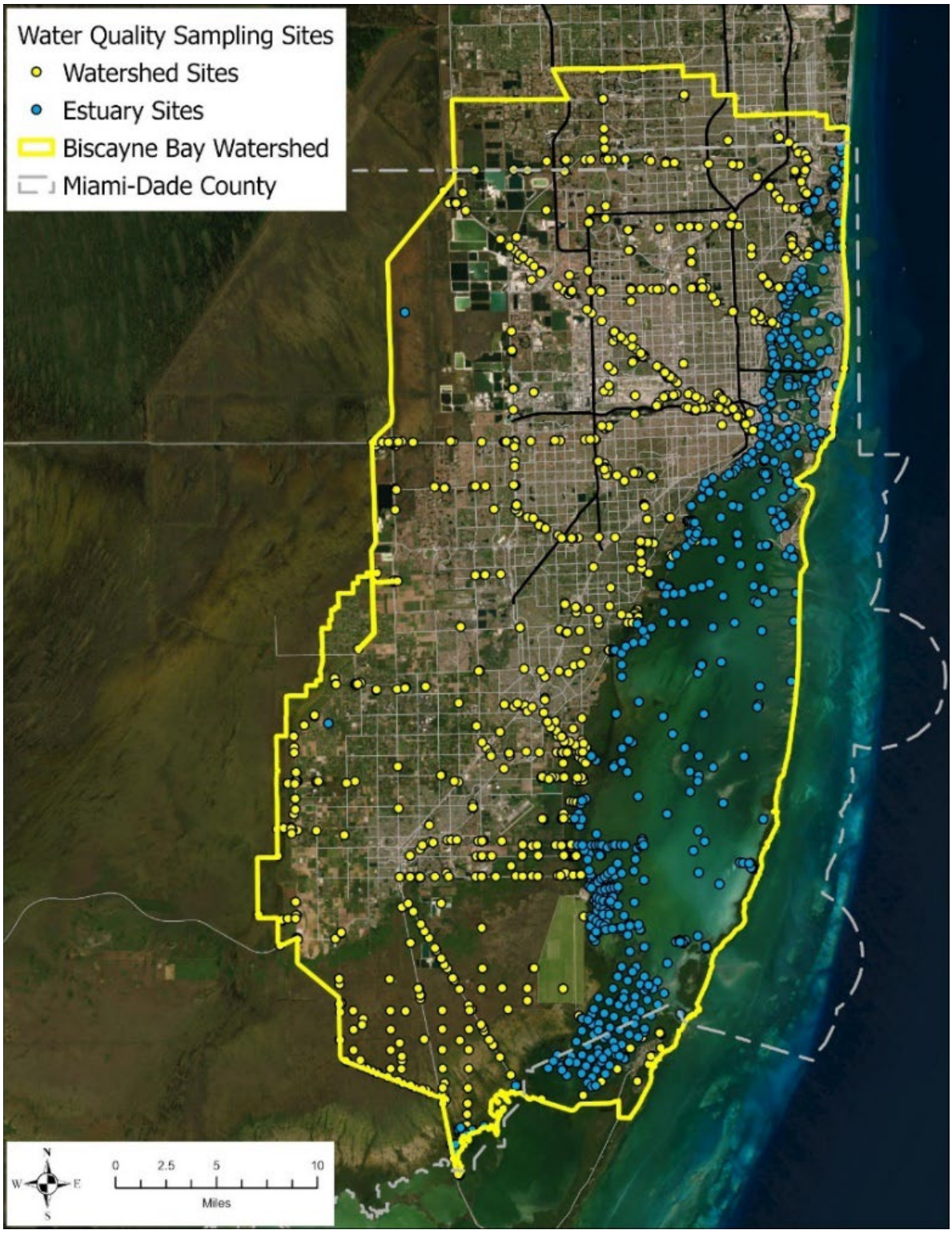

Figure 6
Water Quality Sampling Stations in Biscayne Bay (blue) and Its Watershed (yellow) from IWR RUN65

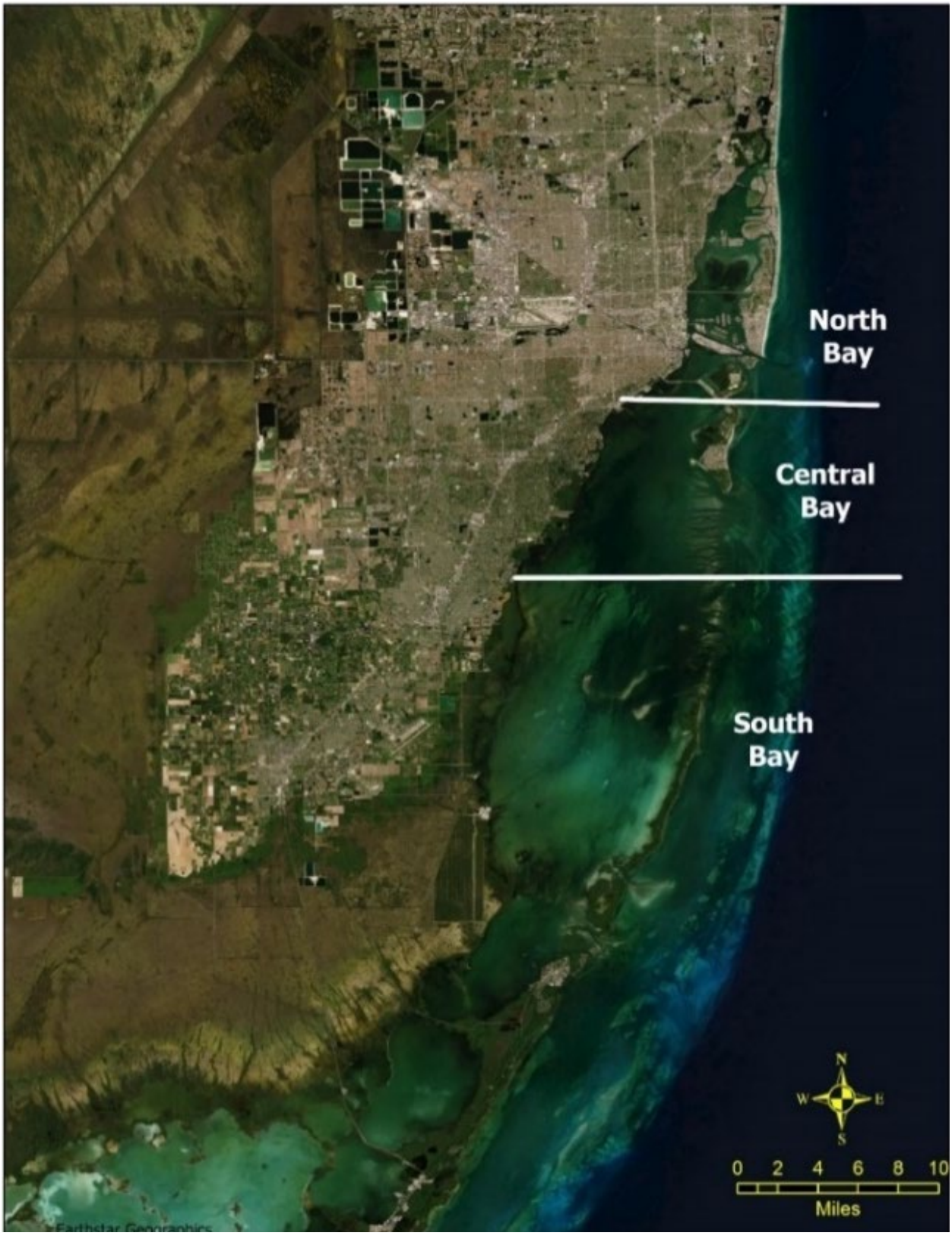

Figure 7
Bay Segmentation Recommended by Caccia and Boyer (2007)

5. Develop Concentration-Based Water Quality and Quantitative Ecological Targets

DEP has produced an *Overview of Approaches for Numeric Nutrient Criteria Development in Marine Waters* (2012). This document describes three main approaches that would be applicable to developing NNC for impaired estuarine waters: a mechanistic approach using hydrodynamic/water quality modeling; a stressor response-based empirical approach relying on relationships between nutrients and biological indicators; a reference period approach; and a reference site approach. While DEP has already developed concentration-based NNC that serve as water quality standards for current assessments, ESA may develop potential alternative concentration-based nutrient water quality targets for TN, TP, and chlorophyll *a* using DEP-approved methodology for consideration. These water quality targets can become the applicable water quality criteria if adopted as a change to water quality standards as part of the RAP adoption process and approved by EPA.

To determine the concentration-based nutrient water quality targets, ESA will evaluate two of the three methods outlined in the DEP document. DEP considers **mechanistic modeling** or stressor response-based approaches as the preferred methods for NNC development. However, given the long duration and high costs of setting up and calibrating hydrodynamic and water quality models of the Bay, the mechanistic approach using a hydrodynamic and water quality model of the Bay is not-well suited for the Biscayne Bay RAP.

Given the limitations of the mechanistic modeling approach, ESA will first apply the **stressor response-based empirical approach** and if statistically significant relationships between nutrient loads/concentration and a biological response variable cannot be determined, ESA will use the reference period approach for developing potential targets. For the empirical approach, ESA will organize the available nutrient data for both the Bay and inputs (canals and main tributaries), and statistically analyze the data for relationships between the following: 1) nutrient concentrations in the main Bay areas and some biological response variable (DO, chlorophyll *a*, seagrass distribution, or light attenuation) in the Bay; and 2) tributary nutrient loads and a biological response variable in the Bay. The empirical analysis will consider the effects of monitoring frequency, spatial coverage of the sampling, seasonality, water quality detection limits, and the potential for lags in response between rainfall, nutrient loadings and biological responses. DEP uses annual geometric averages as default criterion metric for evaluation. ESA will ensure that any developed targets conform to the methods generally used by DEP to evaluate waterbodies under existing applicable water quality standards.

As part of the data analysis, ESA will also conduct trend analyses of the available data using the Seasonal Kendall Tau Test for trend that removes seasonal signals common in water quality data due to seasonal fluctuations in temperature and rainfall. This allows better resolution of increasing or decreasing long term interannual trends in the data, independent of seasonal trends. The trend tests will be conducted on monthly means for all of the waterbodies with sufficient data. In addition, the assembled water quality data will be compared to the applicable NNC and the marine DO criterion.

If ESA cannot establish statistically significant relationships between nutrient loads/concentrations and a biological response in the Bay, ESA will use **reference period approach** to develop the water quality targets. For this approach, ESA will follow the procedures described in the document *Numeric Nutrient*

Criteria for Estuaries Addressed in the August 1, 2013, Report to the Governor and Legislature (DEP, 2015). The approach identifies times when an estuarine area was healthy and well-balanced and establishes the NNC based on the nutrient loads or concentrations measured during the healthy period. DEP's method relies on three biological endpoints (chlorophyll *a*, DO, and water clarity) to indicate whether an estuarine area is healthy. These biological endpoints were recommended by the EPA Science Advisory Board because they are sensitive to nutrients and necessary to ensure the protection of balanced populations of aquatic flora and fauna. The three endpoints used by DEP are:

1. A chlorophyll *a* threshold of 20 µg/L, not to be exceeded more than 10% of the time each year.
2. A minimum allowable daily DO percent saturation of 42% (the applicable marine DO criterion), to be met at least 90% of the time each year.
3. Site-specific seagrass depth (Z_c) and water clarity (K_d) targets to achieve 20% of surface light at the mean depth of the deep edge of seagrass beds, relative to mean sea level, based on historical or recent seagrass coverages (where available, as proposed by EPA [2012] or by a water management district), using Secchi depth measurements.

While ESA will initially evaluate potential reference periods using the three biological endpoints used by DEP, ESA will also consider alternative thresholds for chlorophyll *a* and DO that may be more appropriate for the Bay and consider alternative biological endpoints.

The sequence of steps to identify a healthy period using the reference period approach is as follows:

1. Compile available water quality data for TN, TP, chlorophyll *a*, DO, and Secchi depth.
2. Conduct quality assurance evaluations and data screening on any data to be used for criteria development.
3. Establish estuarine segmentation based on areas of relative homogeneity (e.g., salinity, hydrology, system morphology, etc.).
4. Evaluate areas on the 303(d) list of impaired waters and exclude data from stations that were in segments with WBID numbers verified as impaired.
5. Determine the exceedance frequencies for the biological endpoints (chlorophyll *a*, DO, and Secchi depth data) for each year of the historical data record.
6. Evaluate the achievement of biological endpoints using the screened data and establish a period during which the reference period approach was appropriate.

Once the reference period is determined, water quality targets for different Bay segments will be determined by statistical analyses of the TN, TP, and chlorophyll *a* data collected in each segment during the reference period. ESA will use the statistical methods outlined in DEP (2015) for NNC derivation, which are designed to develop criteria expressed in a manner that maintains the data distribution for the reference period.

ESA will then evaluate whether the new targets (with potentially new segmentation) are more robust site-specific interpretations of the narrative nutrient standard. If DEP and EPA agree that alternative criteria are appropriate replacements for the current NNC, the new targets could become the applicable site-specific NNC pursuant to Rule 62-302.531(2)(a)1.d., F.A.C., once the RAP is adopted by final order. Either the currently adopted NNC or the new water quality targets will be used to determine the allowable nutrient loads to the Bay (see Section 7) and to evaluate the effectiveness of the RAP (see Section 14).

6. Estimate Potential Nutrient Loading Sources to the Bay

As noted previously, there is not enough time to develop hydrodynamic/water quality models of the Bay. However, the MIKE suite of watershed models will be used to estimate watershed nutrient loading to the bay. There are two major sources of nutrient loading to the Bay: watershed loading, which includes all surface and groundwater loading sources; and atmospheric deposition. The watershed loading will include the loads entering the Bay watershed from upstream watersheds via the South Florida canal system. The following provides a general overview of the modeling components and the associated steps that will be used to estimate nutrient loading from watershed sources to Biscayne Bay.

6.1 Watershed Loads

Some important details of the modeling cannot be determined until the modeling team reviews the available time series data, and additional details will be presented in a subsequent Integrated Modeling Plan (IMP) for the project that will be submitted approximately three months following the notice to proceed for the modeling contract. This section describes general plans for model calibration but does not address specifics for model validation/verification. The ESA plans to conduct continuous model simulations and, once the models are calibrated, ESA will decide on the best periods for model validation based on data availability. Further details will be included in the IMP.

To meet the desired RAP objectives and to understand the complex interactions between surface water bodies and groundwater systems, an integrated surface water and ground water model is needed. The integrated modeling approach is crucial for the following reasons:

- **Understanding Hydrological Interactions:** Integrated models help simulate the interactions between groundwater and surface water, which are closely connected in the Biscayne Bay watershed. Changes in one can significantly impact the other, such as groundwater with elevated nutrient concentrations affecting canal flows or surface waters recharging groundwater aquifers during high precipitation events.
- **Water Resource Management:** These models are vital for effective water resource management. They provide insights into how water systems respond to natural events and human activities, such as irrigation, which can influence water availability and quality.
- **Environmental and Water Quality:** Integrated models can be used to study the transport and fate of nutrients in water systems. They can simulate how nutrients move through and between surface and groundwater, which is crucial for managing nutrient sources and protecting Biscayne Bay.
- **Unified Model and Precision Outcomes:** Unified model that integrates all elements of the system, including overland flow, subsurface flow, canal/network, and water quality. Enhanced precision of project outcomes for immediate and extended simulations through a consolidated model.

Overall, integrated surface water and groundwater models are indispensable for comprehensively understanding and managing water resources, especially in regions with complex hydrological interactions and water quality impacts like Biscayne Bay.

Figure 8 outlines the overall workflow of the integrated modeling approach proposed for the RAP to estimate the baseline, current, and “healthy conditions” loads to the Bay. It details the modeling tools,

procedures, and how the various elements connect. The upcoming project will incorporate and synchronize the following models:

- **MIKE SHE** – Used to develop the integrated hydrology of the watershed incorporating ground and surface waters, recharge and evapotranspiration.
- **MIKE +** – Used to represent the hydraulic features that include open and closed conduit systems. MIKE+ model will be then coupled with MIKE SHE to determine the water quantity discharged to the bay.
- **MIKE ECO-LAB** – Used to determine nutrient loads to the Bay based on the hydrology from MIKE+, boundary nutrient concentrations, and biological and chemical processes impacting nutrients in the watershed.

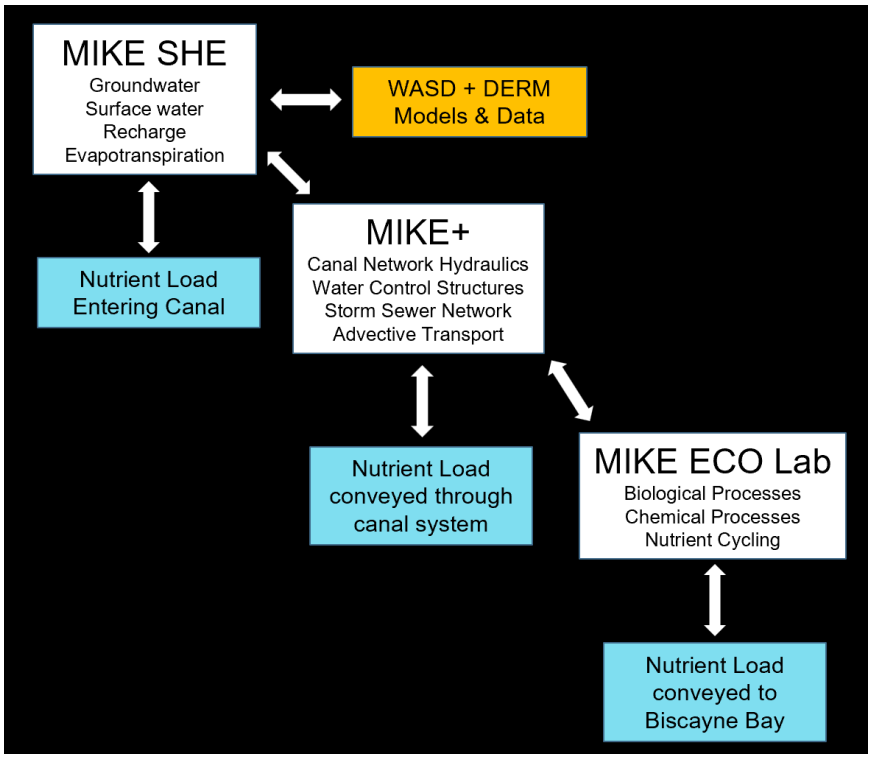

Figure 8
Graphical Representation of the Proposed Integrated Modeling Approach

6.1.1 Model Development

The key tasks that will be used to successfully develop the integrated model and identify nutrient reduction projects include:

- The initial step to be taken in the combined MIKE SHE/MIKE + model development requires gathering and examining all pertinent data. This involves assessing data sets from both regulatory and non-regulatory databases, including existing model files, geographic information system (GIS) databases, hydraulic modeling reports, land use, soil types, rainfall, groundwater information, etc. The aim is to evaluate data quality and pinpoint any missing data necessary for building the integrated model. The output from this task will be a technical memorandum addressing data gaps and quality to be provided for DEP review.

- The next step entails the development of the IMP. This task will create a plan outlining an integrated model strategy, including the data sets utilized in modeling, the integration of different modeling tools, and the methodologies employed. The plan will also outline how to leverage existing models from stakeholders or agencies like MODFLOW and the MIKE models from RER-DERM in these modeling activities. The work product will be the IMP, which will define the spatial and temporal regimes of the model and be presented to DEP.
- The next critical step in the development of the surface water-groundwater model (MIKE SHE) will involve creating the surface water module after verifying the available project information and obtaining any missing data, plus incorporating the ground water element using MODFLOW data. Key hydrologic datasets to be included in the MIKE SHE model are as follows:
  - Topography
  - Rainfall Depths and Patterns
  - ET Reference Evapotranspiration
  - Land Use Data Set
  - Overland Flow Module (which includes storage for ponded water, groundwater leakage coefficients for evaluation of surface water – groundwater interaction, and flood codes to simulate additional storages)
  - Groundwater Components (includes updates to the saturated zone with the inclusion of horizontal and vertical hydraulic conductivities in different geological layers for surface-groundwater interchange)
- After development of the MIKE SHE model, the next step entails development of the MIKE + Model. This task is dedicated to revising the MIKE + component of the model that encompasses both open and closed conduit systems, including channels, hydraulic structures, sewer networks, and others. The objective is to integrate this model with MIKE SHE to establish a unified surface water-groundwater hydrologic/hydraulic model. The components of the MIKE + segment are as follows:
  - Development of the network that will include flood codes and coupling links for the Biscayne Bay system
  - Development of cross-sections for open canals, rivers and lakes and still maintain boundary conditions and ground water elevations from MODFLOW
  - Having developed a calibrated Integrated Surface Water-Groundwater Model, the next step in the proposed modeling approach will be development of a Water Quality Model. This task will create a water quality model by combining MIKE Eco Lab, MIKE SHE, and MIKE + to estimate nutrient loads and track their movement to overland and groundwater systems, as well as through network systems to Biscayne Bay.

6.1.2 Surface Water Flow Calibration

Once the Integrated Surface Water-Groundwater Model (base model) is built, the next step will be calibration of the base model for selected temporal resolution. The corresponding stage/flow observations at available canal gaging stations and available potentiometric surface level data from area wellfields will be used to calibrate model parameters and validation of the integrated model. Model calibration will be evaluated both qualitatively and quantitatively.

Calibration of simulated surface water flow is based on the availability and quality of level/flow data for the available gauging stations (within canals, at water control structures, etc.). In addition, the model may

also use anecdotal data on existing flooding problems or presence of high-water marks, which will aid in better calibration of model parameters and validation of the integrated model.

For the calibration process, it is crucial to define and assess precision and accuracy among the modeled and observed variables and clearly define calibration criteria to process the simulation results and demonstrate the credibility of the model. Both qualitative and quantitative calibration methods will be used, and previous calibration ratings are provided as examples, however it is important to acknowledge best professional judgement is an important component of model evaluation.

Qualitative calibration criteria for the model will rely on visual comparison of time series plots of model simulated flows/levels versus observed flow/levels data for the monthly, seasonal and annual flows, taking into account both the peak values and patterns in the observed and simulated results. Plots will show the maximum peak flow on a daily basis for the duration of the simulation. Additionally, minimum and maximum levels on the same daily time period can also be shown for each simulation.

The following two (2) statistical measures will likely be used as a single, non-subjective, statistical measure of model calibration:

- Integral Square Error (ISE)
- Root Mean Square Error Dimensionless (RMSED)

The ISE and the RMSED were selected based on their wide use and acceptance in calibration processes. Marsalek, et al. (1975) examined three urban runoff models, namely the Road Research Laboratory Model (RRLM), the Storm Water Management Model (SWMM), and the University of Cincinnati Urban Runoff Model (UCURM), by comparing the modeled and observed hydrographs on several urban watersheds. This comparison was done for the hydrograph peak points as well as for the entire hydrographs using such statistical measures as the correlation coefficient, the special correlation coefficient, the integral square error (ISE), and the root mean square error dimensionless (RMSED). ISE and RSMED were found to be a good measure of goodness-of-fit between observed and modeled hydrographs. Other sources supporting ISE and RMSED include Smith and Vidmar (1994), Singhofen (2001), Shamsi (2002), James (2005), and Shamsi and Ciucci (2013).

Example goodness-of-fit calibration ratings for different ranges of the ISE and RMSED that have been used in other monitoring projects are provided Tables 4 and 5, respectively (Shamsi and Koran, 2017).

TABLE 4
CALIBRATION RATING FOR ISE RANGES

ISE Range	Calibration Rating
0–6	Excellent
6–10	Good
10–25	Fair
>25	Poor

TABLE 5
CALIBRATION RATINGS FOR RMSED RATINGS

RMSED Range	Calibration Rating
0–6	Excellent
6–10	Good
10–25	Fair
>25	Poor

Under this approach, an overall rating can then be given to each station based on the results for the ISE and RMSED according to the overall rating criteria in Table 6.

TABLE 6
COMBINED RATINGS FOR STATIONS BASED ON ISE AND RMSED RATING

		RMSED Rating		
		0–6	6–10	>10
Ranges	ISE Rating	Excellent	Good	Poor
0–6	Excellent	Excellent	Excellent	N/A
6–10	Good	Excellent	Good	Poor
>10	Fair/Poor	N/A	Poor	Poor

6.1.3 Groundwater Model Calibration

The calibration will be performed on the groundwater monitoring wells data for levels and flows. The objective is to determine a unique combination of input parameters to produce a numerical solution that best fits the observed data for groundwater elevations throughout the monitoring well network and observed groundwater flow directions.

Parameters that will be adjusted during the calibration process will most likely be the following:

- Horizontal and vertical hydraulic conductivity (K_h, K_v)
- Overland – groundwater leakage coefficient
- Manning's n (overland flow and MIKE + cross sections)
  - Cross sections and cross section levels to remove instabilities
  - Control structure operations

The qualitative evaluations include:

- Visually comparing the simulated versus observed groundwater elevations and groundwater flow directions.
- Examining the spatial distribution of calibration residuals, or error, in matching the calibration targets. Calibration residuals are calculated as the observed groundwater elevation minus the simulated groundwater elevation at each calibration target location. A negative residual value indicates that the observed groundwater elevation is over-predicted, and a positive residual value

indicates that the observed groundwater elevation is under-predicted. Focused areas of largely over- or under-predicted groundwater elevations would indicate spatial bias in the simulated result, and adjustments to model input parameters are made to minimize this bias.

The quantitative assessment will be assessed based on the following goodness-of-fit metrics/statistics:

- Mean Error (ME)
- Mean Absolute Error (MAE)
- RMSED

The ME measures the average difference (i.e., error) between observed and simulated data for each pair of measured and simulated values. This metric indicates if the simulated value is over or underpredicting the observed value but does not consider the natural variation in the observed data. For each paired observed and simulated record, the difference of the observed and simulated value is calculated, and subsequently averaged.

The MAE value represents the average magnitude of the errors in the predicted values. It is important to note that the MAE value is always non-negative, as it considers the absolute differences between predicted and actual values. The closer the MAE value is to zero, the better the model's performance, indicating a smaller average error magnitude and a higher level of accuracy.

A lower MAE value indicates a higher level of accuracy, as it means that the predicted values are closer to the actual values. Conversely, a higher MAE value suggests that the model's predictions deviate significantly from the true values.

The objective of the model calibration is to minimize this statistical error. Data extraction tools will be applied to compare model results with observed information and calculate goodness-of-fit metrics as discussed above.

6.1.4 Water Quality Model Calibration

The next task is to calibrate the integrated surface water-ground water model of the watershed with water quality against available nutrient data. When calibrating a water quality model, there is an inherent trade-off between a model's bias and variance. Specifically, including additional parameters in a model and increasing its complexity can increase model variance, but decrease model bias. Model variance is the variability of individual simulated values relative to the true value of a field measurement. Model bias is how well the model predicts, on average, the true measured value. A well-calibrated model is a model that has balanced bias and variance error. It will be able to capture regular patterns in the calibration data and exhibit relatively low variance compared to individual measurements, while possessing the flexibility to extrapolate to novel scenarios that may contain conditions and data that were not part of the original calibration data. Example model calibration and validation targets from Donigan (2002) are provided in Table 7 and will be further refined in the IMP document.

TABLE 7
POTENTIAL WATER QUALITY CALIBRATION TARGETS

	Percent Difference between Simulated versus Observed Results			
Model Simulated Parameters	**Excellent**	**Good**	**Fair**	**Poor**
Water Temperature	<7%	8% to 12%	13% to 18%	>18%
Sediment	<20%	20% to 30%	30% to 45%	>45%
Water Quality/DO	<15%	15% to 25%	25% to 35%	>35%
Nutrients/Chlorophyll *a*	<30%	30% to 45%	45% to 60%	>60%

For the qualitative evaluations, x/y plots of observed and simulated parameters will be prepared to help identify systematic bias in model results that may not be easily discernible from quantitative statistics alone. Examination of these plots can help inform specific model parameters that may be adjusted during calibration. The three x/y plots typically used in this step include:

- Time Series Plot
- Cumulative Probability Distribution Plot
- Observed Versus Simulated Plot

Like the ones described for the surface water-ground water model, the water quality model will be assessed using several widely used goodness-of-fit statistics as listed below. However, these statistics will be further refined as part of the IMP:

- ME
- MAE
- RMSED
- Nash-Sutcliffe Model Efficiency Coefficient (NSE)
- Coefficient of Determination (R^2)

Example goodness-of-fit ratings for the different Nash-Sutcliffe model efficiency coefficient NSE and R^2 ranges are provided in Table 8. The NSE is commonly used to assess the predictive power of hydrological discharge models. However, it can also be used to quantitatively describe the accuracy of model outputs for other things than discharge such as nutrient loadings, temperature, concentrations etc. NSE values can range from infinity to 1.0. An efficiency of 1.0 corresponds to a perfect match between model and observed data, whereas an efficiency less than 0.0 occurs when the observed mean is a better predictor than the model.

TABLE 8
CALIBRATION RATING FOR NSE AND R^2 RANGES

NSE/R^2 Range	Calibration Rating
0.5–1.0	Excellent
0.3–0.5	Good
0.3–0.2	Fair
< 0.2	Poor

6.1.5 Model Performance Evaluation

Due to limitations of any single metric's ability to effectively assess model calibration and performance, a "weight of evidence" approach will be implemented for model calibration. Specifically, model calibration and performance are assessed through a combination of quantitative (e.g., calibration statistics) and qualitative (e.g., visual inspection of calibration graphs) methods. This approach integrates multiple metrics, leveraging the strengths of each individual test while helping to acknowledge their limitations. This can provide a broader assessment of model performance across the full range of environmental conditions observed during the simulation period. Moreover, it improves the robustness of a model's predictions and ability to extrapolate values when the model is applied to novel model scenarios:

1. Identification and Scenario Analysis of Nutrient Reduction Projects - this task will estimate nutrient load reductions associated with the structural and nonstructural pollutant reduction projects identified in Section 10 as needed to achieve nutrient targets. Various scenario analyses will be conducted, culminating in a recommendation of the final project selection.
2. Development of Modeling Report – in addition to project deliverables identified above, this task will compile a comprehensive modeling report by summarizing sections from prior tasks for inclusion in the RAP.
3. The entire process from the start through the final execution of the project will undergo a rigorous third-party peer review of the associated models, technical memoranda and reports so that there are no surprises at the end of the project. All comments will be addressed, and appropriate responses provided.

6.2 Atmospheric Deposition Loads

ESA will estimate direct atmospheric wet deposition of NO_3, NH_4, TP to Biscayne Bay using the methods described by Caccia and Boyer (2007). ESA will also estimate dry deposition of TN and TP. Loads will be estimated using monthly data from the National Atmospheric Deposition Program (NADP, http://nadp.sws.uiuc.edu). These data have been collected from one station located in Everglades National Park (FL11, 25.39 Latitude North and 80.68 Longitude West) as it was the nearest site to Biscayne Bay. The precipitation data sources used to calculate the watershed loads will be applied for the deposition estimation. The loadings will be expressed as kg/area/month.

7. Identify Potential Methods for Determining Allowable Nutrient Loads

As part of the RAP development process, ESA will need to determine the TN and TP loads to the Bay that attain the applicable water quality targets (either the currently adopted NNC or the concentration-based nutrient water quality targets described in Section 5) and support a healthy well-balanced population of fish and wildlife. This "allowable" load is used as a reference to compare against current (or "baseline") nutrient loadings and determine the reductions that are needed to restore the Bay.

If the water quality targets are based on the empirical approach, the method to determine the allowable load will depend on whether the empirical relationship is between nutrient load and a biological response variable or between nutrient concentrations and a biological response variable. If the relationship is based on loads, then the nutrient loads for TN and TP that attain the water quality target or response variable will be the allowable load. If the relationship is based on nutrient concentrations in the Bay, then the loads from years that attain the nutrient concentrations will be used to determine the allowable nutrient load, However, this latter scenario will only occur when there is no consistent relationship between nutrient loads and biological response, and some best professional judgment will be needed to determine a consistently protective allowable load.

If the water quality targets are based on the reference period approach, ESA will determine the allowable nutrient load to the Bay based on the total annual loads to the Bay during a period when the Bay was meeting is designated uses. The allowable load will be statistically derived from the distribution of nutrient loads for the reference period and will include a magnitude, duration, and frequency to ensure that the reference period load is clearly protective and attains the applicable water quality targets.

8. Identify Method to Discretize Surface Watershed Loads by Stakeholder

To meet the RAP goal of providing allocations to individual entities that are sources of nutrients to the Bay, the RAP will require assignment of estimated nutrient (TN and TP) loadings to these entities, including nonpoint sources. For nonpoint sources, ESA will utilize the protocols developed for the Tampa Bay RAP nitrogen load allocation effort (Tampa Bay Nitrogen Management Consortium [2010]) to assign the nonpoint source loads to the appropriate entities. The following presents the steps to be taken to develop the geographical discretization of the nonpoint source loadings generated in the watershed.

- Identification of jurisdictional boundaries.
- Assignment of the land uses found within the Bay's contributing watershed. ESA will use the geographical land use/land cover dataset provided by the SFWMD, which was last updated in March 2023. Conservation lands will include those lands identified by the counties and the District as conservation. ESA will also request GIS coverages of conservation lands identified by other key stakeholders.

As agricultural nutrient loadings are not the responsibility of urban stakeholders, it will be necessary to distinguish the Florida Land Use, Cover, and Forms Classification System (FLUCCS) codes found within

the Bay watershed as either "Agricultural" or "Urban." The agricultural land use category will include the "Agricultural" lands in the following Level 2 FLUCCS codes:

- 2100 Cropland and Pastureland
- 2200 Tree Crops
- 2300 Feeding Operations
- 2400 Nurseries and Vineyards
- 2500 Specialty Farms
- 2600 Rural Open Lands
- 3100 Herbaceous
- 3200 Shrub and Brushland
- 3300 Mixed Rangeland

"Urban" lands will include the following Level 2 FLUCCS codes:

- 1100, 1200, 1300 Low, Medium, and High Density Residential
- 1400 Commercial
- 1500 Industrial
- 1700 Institutional
- 1800 Recreational
- 1900 Urban Open Land
- 8100 Transportation
- 8200 Communication
- 8300 Utilities

This approach allows for the nutrient loads for jurisdictions with both urban and agricultural lands to be adjusted for the agricultural land contributions to the nonpoint source loads generated within each jurisdictional boundary. Those land uses not included within the "Conservation" lands definition and not classified as either "Agricultural" or "Urban" categories will be defined as category "Other."

To appropriately account for nutrient loads from Multi-Sector Stormwater Generic Permits (MSGPs), we will request from DEP a listing of MSGPs in the Biscayne Bay watershed. The list from DEP is expected to include the following information for each permit, by county:

- County
- Facility identification
- Facility name and address
- Responsible person name, phone number, email, and address
- Permit issue and expiration dates

- Latitude and longitude of the center of the facility as supplied by the permittee

ESA will then match up the MSGP addresses with each county's parcel boundary layer by either address and/or owner name utilizing ArcGIS. Those MSGPs determined to contain at least 25 acres, as identified from the parcel boundary information and matching the master MSGP list, will be selected for further discretization of load estimates, along with assignment of responsibility.

ESA will obtain entity jurisdictional boundary information as GIS coverages from county and/or city representatives and provide a table listing the data source providers and responsible entities. The jurisdictional coverages will then be combined with the GIS coverage of land use categories (Conservation, Agriculture, Urban, Other, and National Pollutant Discharge Elimination System [NPDES] classifications). This allows for assignment of loading responsibility due to loadings from each parcel within the watershed.

ESA will provide the results from the application of the approach given above for each Bay segment, with tables containing segment-specific listings of acreages of each land use category by jurisdiction, and segment-specific maps of the land use class areas and jurisdictional extents. ESA will also provide a tabular listing of all MSGPs in the watershed as developed from the information provided from DEP.

9. Identify Stakeholders in the Basin and Summarize Outreach Plan

The Plan will also address the public outreach processes that will be followed to facilitate stakeholder participation throughout RAP development and to set the stage for effective plan implementation. A subcontractor, Wildwood Consulting, will be assisting ESA personnel with these activities. ESA will work with the Miami-Dade County staff to identify stakeholders in the basin who are concerned about the health of the Bay and will participate in plan implementation, whether for controlling pollution, project implementation, monitoring, funding, research, or political support. Introductory meetings with the Miami-Dade staff are planned at the outset of the project to solicit their research and data into the process. These entities represent different stakeholder groups with some groups wholly responsible for controlling nutrient loadings to the Bay while others provide support for effective watershed management planning efforts but do not contribute a pollutant load. These groups of potential stakeholders are defined below and include:

- **Key Stakeholders** – Those entities that hold responsibility for nitrogen and phosphorus loading will be identified. These entities include local governments (including Broward and Monroe Counties), tribes, wastewater utilities, state agencies, federal agencies, public & private utilities, and private entities such as agriculture and rock mines. Miami-Dade has relationships with most of these entities and their knowledge of the county personnel will be the starting point.

  Efforts with these key stakeholders will include the following:

  – Contacts for these entities will be compiled to foster communications and meeting invitations. The ESA Team and the contractor who will be engaged by RER-DERM will help in compiling the contacts and identifying personnel when the individual contacts are unknown or when the consultants have experience working directly with those organizations in other restoration efforts.

  - The ESA Team and the contractor to be engaged will also work to compile a geographic information system database of the jurisdictional boundaries of the key stakeholders for use in the allocation process and creating maps.
  - Four virtual meetings are planned as kickoff meetings. Miami-Dade staff will present and facilitate the kickoff meetings. The consulting team will provide PowerPoint slides and review the meeting materials to support the preparations of the Miami-Dade staff.
  - Later in the process, four additional virtual meetings (geographically based) with key stakeholders are planned to review stakeholder allocations and reduction targets. The consulting team will facilitate these meetings and provide meeting support for the agendas, action items, and presentations.
  - After the allocation meetings are held, four more virtual meetings (geographically based) are planned to discuss the list of projects and a review of the needs to demonstrate how the reduction targets will be met.
  - The consulting team will also provide detailed information to the key stakeholders on project collection and eligibility and other feedback on DEP policies to ensure the RAP components are aligned with DEP restoration plan expectations.

- **University and Agency Contacts** – Those experts that perform research and monitoring in the basin that have insight and data that can assist the modeling and planning process.
  - The ESA Team and the contractor to be engaged will help compile the contacts and identify personnel when the individual contacts are unknown or when the consultants have experience working directly with those organizations in other restoration efforts. The ESA Team and the contractor to be engaged will also provide a SharePoint site where technical experts can provide data and papers that will inform the watershed restoration, monitoring, and modeling processes.
  - A virtual kick off meeting is planned in Fall 2024 to engage the university and agency contacts to include their knowledge and data into the RAP development process. The consulting team will facilitate this meeting and provide meeting support for the agenda, action items, meeting summary, and the presentation. This meeting will be publicly noticed to allow participation from Bay-related committee members who fall under the Sunshine Law rules.
- **Bay Leaders** – Those specific leaders within Miami-Dade County whose purpose is to focus on Biscayne Bay restoration and support RAP development.
  - Monthly briefings are planned. The consultants will provide information and materials to Miami-Dade staff and these leaders to keep them apprised of the progress and issues during RAP development. The ESA Team and the contractor to be engaged may also participate in virtual meetings with these leaders, when appropriate.
- **State and Federal Technical Experts** – Those DEP personnel who will review the RAP and its components for technical merit and sufficiency to recommend Secretarial adoption and the EPA staff who will review the RAP as part of Florida's 303(d) list submittal.
  - Monthly meetings are planned, and additional meetings may be added, if needed. The ESA consulting team will facilitate virtual meetings with these technical experts and provide meeting support for the agenda, action items, and the presentations. It is envisioned that the consulting team will actively engage with the DEP personnel to discuss the efforts, develop decision memos, and respond to questions from the department. The purpose of these meetings is to ensure that the DEP technical staff are informed about the technical options before decisions are made and that the staff can provide input and voice concerns at regular intervals. It is envisioned that decision

memos, prepared by the consulting team, will document Quarterly the key technical direction and decisions that are made over time.

  - The consulting team will also support the review process and meetings with U.S. EPA during the review process for EPA approval.

- **State Leadership** – Those DEP personnel and leaders who will perform the final review of the RAP document and its components for sufficiency to recommend and issue a Secretarial adoption.
  - Quarterly virtual meetings are planned. The ESA consulting team will provide pertinent information to the Miami-Dade staff and Bay Leaders to foster productive discussion and progress reports on the RAP process. The purpose of these meetings is to keep the highest-level leaders informed and with open lines of communication should issues arise. Also, these meetings will provide opportunities to identify any issues with the RAP approach as early as possible, so problems can be addressed. The consultants may also participate in virtual meetings with these leaders, when appropriate.
- **Public Engagement** – Those groups, organizations, residents, and businesses who want to be engaged with the Biscayne Bay restoration process.
  - As early as possible in the process, up to three virtual kick off meetings (geographically based) with the key stakeholders are planned as a precursor to buy in on project collection and plan implementation. Engagement and participation of the various entities that manage infrastructure and stormwater are essential to the development of the RAP. The consulting team will facilitate these meetings and provide meeting support for the agendas, action items, and presentations.
  - In the next phase of communications, up to three virtual public meetings (geographically based) with the interested parties and the general public are planned. The support of the environmental community and business groups is important for future funding and the political will to identify, fund, and implement projects that benefit Biscayne Bay. The consulting team will facilitate these meetings and provide meeting support for the agendas, action items, and presentations.
  - When the draft RAP document is ready to be shared for public comment, up to three public meetings (geographically based) with the key stakeholders, interested parties, and the public are planned. The ESA consulting team will facilitate these meetings and provide meeting support for the agendas, meeting summary, action items, and presentations.
  - The consulting team will support the public comment process on the draft RAP.

10. Identify Nutrient Load Reduction Projects Needed to Achieve the Nutrient Loading Targets

The objective of this task is to identify those projects that in combination will achieve the loading targets that are defined in Section 7 above. This will be the specific focus of the work to be conducted by a contractor yet to be determined. The potential projects can include either structural or nonstructural best management practices, based on eligible projects in the DEP guidance documents for nutrient reduction efforts. Initially, the stakeholders will be approached to obtain nutrient load reduction projects for the following project classes: completed, underway, ongoing, planned, and canceled.

Having identified the projects in these classes, the cumulative load reductions that these projects can be expected to deliver will be estimated. A template will be developed of the types of information that will be collected for each project. Additionally, supporting information will be collected that documents the type of project, their attributes, and the load reduction calculations that substantiate the estimated load

reduction for each project. The projects will be compiled into a list of projects and their estimated reductions that can be incorporated into the RAP document and updated in future years to document progress during implementation.

The estimated cumulative load reductions for the projects in each portion of the watershed will be compared to the loading targets. If the load targets are achieved, the load reduction allocations will be estimated for each stakeholder that delivers nutrients to the Bay. If further load reductions are needed to achieve the loading targets, then a methodology that estimates the relative loads from each stakeholder and identifies their allocation to the total load reduction needed to achieve the targets will be developed. The contractor will assist the local entities in identifying additional projects or categories of projects with an implementation schedule that show how the reduction targets will be met with project implementation. These projects and their reduction estimates will be added to the project list and the supporting materials for the estimated reductions included in the project documentation.

11. Partnerships and Funding Opportunities

RER-DERM understands the financial challenges stakeholders will face to fund the development and construction of nutrient load reductions projects. RER-DERM, working with their contractors, will identify funding opportunities from various federal and state agencies and through legislative appropriation. These projects are costly, and only the highest-priority projects will receive funding during a capital improvement program (CIP) cycle. Likely sources of grant funding for stormwater projects involving water quality improvements include 319(h), TMDL, and other grants through DEP and SFWMD stormwater improvement co-funding. A menu of funding opportunities will be developed to assist stakeholders seeking funding opportunities.

12. Monitoring Plan to Support Compliance Assessment

RER-DERM plans to implement the POS using an adaptive management approach that evolves depending on how the Bay responds to restoration activities. To implement this strategy, RER-DERM will work with the stakeholders to develop a water quality sampling plan to assess the Bay's response to restoration projects based on the water quality management targets determined as part of the RAP. RER-DERM is currently the primary source of recent data collected within Biscayne Bay and its watershed, with extensive water quality and seagrass monitoring programs at both fixed and randomly selected sites **(**Figure 9**)**. The County collects and analyzes the samples at their NELAC certified laboratory and uploads the results to the DEP WIN data repository. Additional stakeholders, including Biscayne Bay Aquatic Preserve, SFWMD, and DEP also collect water quality data in the Bay. ESA will gather information from each of these monitoring entities on the number, location, parameters list, and monitoring frequency to determine if the current monitoring networks will provide sufficient spatial distribution and frequency of sampling to support the compliance assessment activities and reporting described in the next three sections. If needed, the plan will include recommendations on whether additional sampling sites or increased monitoring frequencies are needed.

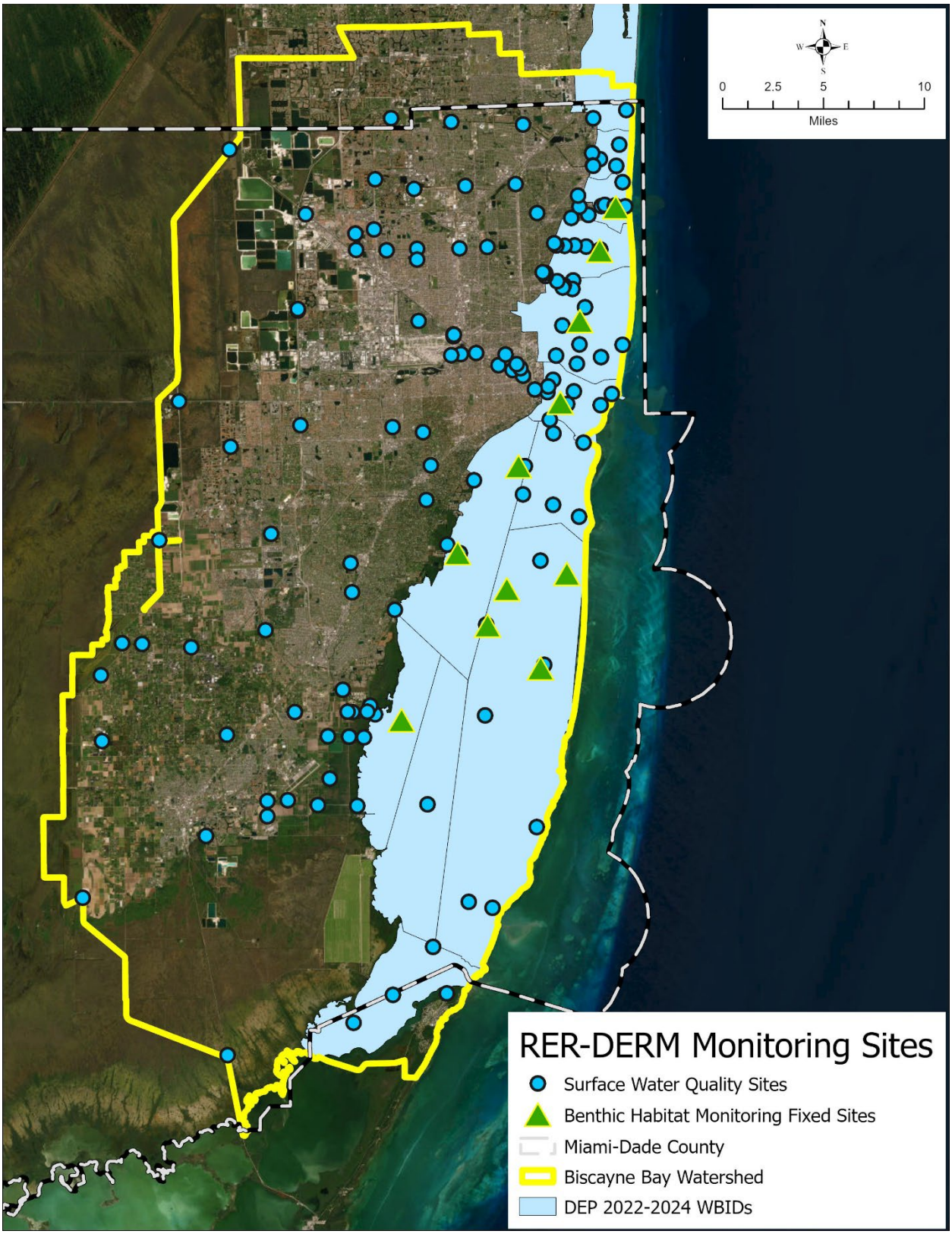

Figure 9
RER-DERM Water Quality Sampling Sites and Seagrass Monitoring Program

The RAP will also include a seagrass monitoring element to determine how the seagrass distribution responds to restoration activities. Fortunately, RER-DERM already has an extensive Benthic Habitat Monitoring Program. The program, which was established in 1985, currently collects data on both the health and presence of a variety of benthic resources, including seagrass, macroalgae, sponges, hard corals, and soft corals. RER-DERM annually visits 11 fixed stations and 137 randomly selected stations (selected within polygons). Two additional expansions to the historical program in areas of macroalgae increases and seagrass die-off occurred in 2010 (*Anadyomene* Bloom Area) and 2016 (NNB Expansion Area), adding more than 200 stations to the annual surveys. DERM has been using Submerged Aquatic Vegetation and Sponge Frequency as indicators of the health of the bottom habitats in Biscayne Bay, and the RAP will incorporate those indicators and water quality monitoring results to offer an accurate assessment of the Bay's response to restoration activities.

13. Define Annual Reporting Requirements, including Water Quality Data Assessment

RER-DERM understands the need to develop annual reports for submittal to DEP documenting the stakeholders' progress to meeting the RAP goals. The RAP will include provisions for an annual report to be prepared that will outline the progress of the RAP. Each annual report will include:

- Results of the water quality and seagrass assessments
- Explanation of deficiencies in achieving targets
- Status of the monitoring plan
- Updates on the status of project implementation and load reduction estimates

14. Define 5-Year Reporting Requirements

Every 5 years an update to the RAP will be completed. Items to be included are:

- Results of the water quality and seagrass assessments.
- An update of the annual pollutant loads.
- Explanation of deficiencies in achieving targets.
- Status of the monitoring plan.
- Updates on the status of project implementation.
- Estimates of the load reductions made to date.
- Any additional projects needed to meet the load-reduction requirements.
- Pollutant-Loading Assessment

As part of the 5-year RAP update, pollutant loadings to each of the project areas defined in Task 7 will be estimated that will account for changes in land use, the implementation of new best management practices, and additional management actions put in place during that period. These estimates will be used to assess compliance with the proposed loading targets.

15. Define Interim Milestones that Track Progress in RAP Implementation

ESA, working with RER-DERM and the other stakeholders, will identify key interim milestones that will be achieved over the timeframe of the RAP. These milestones will be used in conjunction with the annual and 5-year reports to track progress and allow for adaptive strategies if progress towards achieving water quality compliance is not being met. The milestones could represent achieving load reductions over time, recovery of seagrasses, or progress towards achieving nutrient or DO criteria, as examples.

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Memorandum

Date: August 30, 2024

To: Eulois Cleckley, Department of Transportation and Public Works Director
Roy Coley, Water and Sewer Department Director
Lourdes Gomez, Regulatory and Economic Resources Director
Lisa Spadafina, Department of Environmental Resource Management Director
Pete Gomez, Department of Emergency Management Director
Maria Nardi, Parks, Recreation and Open Spaces Department Director

From: Daniella Levine Cava
Mayor

Subject: Prioritization of Biscayne Bay Restoration Efforts

Biscayne Bay supports a high quality of life for all those who call Miami-Dade County home. It drives much of the region's tourism and supports many of Florida's most iconic animal and plant species, including coral reefs and mangroves that help reduce the impact of oncoming storms. Biscayne Bay also supports local industry and our economy, contributing $64 billion annually for the county. However, recent fish kills, algal blooms, and seagrass loss have led County scientists and community experts to warn that the Bay has reached a tipping point, threatening commercial fishing, the recreation industry, and marine life, alike. To protect both our economy and all those who rely on Biscayne Bay, I am directing departments to prioritize Bay restoration efforts including the Reasonable Assurance Plan, the Biscayne Bay Watershed Plan (further described below), and internal coordination for state and federal funding requests.

In 2020, the Board of County Commissioners acted on these concerns by directing the Administration to establish the position of Chief Bay Officer (CBO) and calling for implementation of the comprehensive set of recommendations in the completed Biscayne Bay Task Force Report. Our first CBO, Irela Bague, successfully oversaw the rollout of many of these recommendations and after her departure, I appointed Loren Parra into an expanded role: Chief Bay and Water Resources Officer (CBWRO). In this new role, Loren continues to serve as a liaison to both the Mayor and the Board of County Commissioners (BCC) to advance watershed restoration goals and is also responsible for centralizing internal initiatives that impact Biscayne Bay and for incorporating Bay health into the many policies and projects initiated within my administration.

To coordinate water quality improvement efforts across the County, the CBWRO works with relevant county departments to identify, implement, and/or streamline existing projects (nutrient reduction, flood control, relevant land-use efforts, and overall water management and storage) that can improve the health and resilience of Biscayne Bay, identify opportunities to incorporate water quality improvement activities wherever possible, and address issues of non-compliance that can lead to nutrients and other contaminants reaching Biscayne Bay. By increasing internal collaboration, we can more strategically leverage local and state investments, meeting critical

water quality standards that are both required by regulatory agencies and necessary for our community to thrive.

The State of Florida has declared several segments of Biscayne Bay as impaired due to nutrient-related degradation of water quality. To address this deterioration, and in accordance with the Board of County Commissioners' 2022 resolution, my administration is developing a "Reasonable Assurance Plan" (RAP). The RAP, led by Division of Environmental Resources Management (DERM) in partnership with the CBWRO, is focused on reducing the amount of nutrients entering Biscayne Bay through groundwater and surface water across Miami-Dade. It serves as a stakeholder-led alternative to a State mandated Basin Management Action Plan (BMAP), which can be a longer and costlier approach for cities and residents alike. Ultimately, the voluntary RAP will allow for central leadership from the County and participation from our many municipalities to ensure compliance. We risk state enforced oversight if we do not proceed expeditiously to complete our RAP timely. Once created, the RAP will address major sources of nutrient pollution in Biscayne Bay - pollution from fertilizer, stormwater runoff, and leaky septic tanks - and unlock significant federal and state funds to implement water quality improvement projects countywide. But to reach state-mandated compliance and complete the plan, we will require deep collaboration from each of our 34 municipalities and our many county departments over the next 6-12 months.

With a recent appropriation from the State legislature, my administration will also develop a comprehensive Biscayne Bay watershed plan which will include current and future initiatives to improve the overall health and resilience of Biscayne Bay. The plan will achieve water quality and habitat restoration -- not only through water quality improvements but also by addressing land use changes, water management and storage needs, the implications of sea level rise and extreme heat, increasing recreational access for residents, the protection of both our drinking water supply and wetlands, and more.

Each of our County Departments plays a role in the protection of Biscayne Bay, but there is an opportunity for each of you to accelerate restoration. And while the focus and expertise of departments like RER/DERM will continue to be central to this effort, a more expansive and comprehensive approach through each of your departments will only serve to expedite our ultimate water resource goals. I ask that each of you work closely with the CBWRO and her team to identify opportunities to advance our comprehensive Watershed Plan, complete the RAP, and better leverage state and federal funding. With your collaboration, I am confident we can restore our Bay - strengthening our local economy, boosting tourism, and guaranteeing Florida's Biscayne Bay for generations to come. My staff will be in touch to schedule an in-person meeting to discuss these priorities further.

c:

Office of the Mayor Senior Staff
Patricia Gomez, Interim Chief Resilience Officer
Loren Parra, Chief Bay Officer & Water Resources Officer
Department Directors

Memorandum

MIAMI-DADE COUNTY

Date: October 30, 2024

Agenda Item No. 2(B)(3)
November 20, 2024

To: Honorable Chairman Oliver G. Gilbert, III
and Members, Board of County Commissioners

From: Daniella Levine Cava
Mayor

Subject: Recommendations Regarding Spoil Islands in Biscayne Bay – Directive No. 232190

Executive Summary

The Board of County Commissioners (Board) adopted Resolution No. R-1157-23 sponsored by Commissioner Danielle Cohen Higgins and Co-Sponsored by Commissioner Micky Steinberg, directing the County Mayor or County Mayor's designee to study information and data related to the spoil islands in Biscayne Bay within Miami-Dade County and make recommendations with respect to such spoil islands, which may include future policies, uses, incentives, and municipal coordination, as appropriate. Such recommendations shall be focused on the various issues related to the spoil islands, such as trash, marine debris, boating traffic, protection of wildlife, the overflow of garbage and debris, and illegal dumping. These recommendations shall also include, but not be limited to, recommendations on how best to coordinate and collaborate with the governmental entities that own or control the various spoil islands on issues and matters such as (a) informational campaigns related to trash such as "Pack it in, Pack it out" or "Leave No Trace," (b) the creation of a program to encourage or incentivize the reporting of illegal dumping on spoil islands, (c) increasing land-based trash removal signage, trash cans, and dumpsters, and (d) engaging with and educating boaters as to regulations and the importance of these issues. In addition, these recommendations shall address how best to support and encourage each respective governmental entity to actively enforce such entity's existing restrictions and regulations with respect to its spoil islands.

The attached report was prepared by the Department of Regulatory and Economic Resources, Division of Environmental Resources Management (RER-DERM). Recommendations outlined in the report are summarized below:

Recommendations

1. **Commitment to Habitat Restoration**: RER-DERM is reaffirming its longstanding commitment to restore and maintain habitat values on the islands. This involves ecological restoration activities aimed at preserving and enhancing natural habitats. The recommendations suggest that achieving these goals will require a more robust effort from all spoil island owners.
2. **Enhanced Public Participation**: There is a call for enhanced participation with the public. This should include community engagement, educational initiatives, and outreach programs to raise awareness about habitat conservation, proper trash disposal, and rules and regulations.

3. **Collaborative Management Approach**: RER-DERM emphasizes the need for a coordinated effort involving education and outreach, increased presence by park personnel, and heightened law enforcement on the islands. This involves working closely with spoil island owners, local communities, and possibly other governmental agencies to ensure a consistent management effort across all spoil islands.
4. **Policy Development and Enforcement**: RER-DERM is engaging in discussions with spoil island owners regarding new policies like "Leave No Trace." New policy developments must be accompanied by proper oversight and enforcement must be implemented to ensure sustainable management practices.
5. **Exploration of Management Pathways**: RER-DERM is exploring additional pathways for organized and collective management. This may include formal agreements between the County and each entity that owns the islands, outlining roles, responsibilities, and funding support for RER-DERM contracted services.

RER-DERM's comprehensive strategy enhances habitat restoration efforts on spoil islands through collaborative management, public engagement, policy development, and potential formal agreements with island owners. The goal is to ensure sustainable management practices that protect and restore natural habitats, while involving all relevant stakeholders in the process. By prioritizing these measures, we can ensure that Biscayne Bay and its spoil islands remain a vibrant and sustainable environment for future generations to enjoy.

Background

There are 23 spoil islands within Biscayne Bay, of which ownership and management vary by island. Miami-Dade County does not own any of the spoil islands. Owners include the State of Florida, City of Miami Beach, City of Miami, City of North Miami, and the American Legion. Miami-Dade County has a long-standing commitment to the health of Biscayne Bay, including significant investment in habitat restoration and management of bay spoil islands. RER-DERM's involvement in spoil island management includes weekly trash removal by a contracted maintenance company, inspections by RER-DERM staff every other month, eradication of invasive exotic vegetation on an as-needed basis, and supplemental planting of native coastal vegetation.

RER-DERM has successfully restored 97.5 acres of spoil island upland habitats on fourteen islands and stabilized their soils using a variety of vegetative and non-vegetative techniques at a cost of approximately $5.7 million (not adjusted for inflation) using a combination of grants and Biscayne Bay Environmental Enhancement Trust Fund (BBEETF) monies. Per the existing trash removal maintenance contract, the RER-DERM vendor's responsibilities include providing and emptying trash receptacles, removing litter left behind by island users, and properly disposing of the collected solid waste after transporting it to land. The contracted trash and garbage removal has an annual budget of approximately $60,000. The actual cost for the service may vary depending on the rate charged by the vendor, enhanced partnerships for island cleanups, and adjustments to the level of service provided. Funding for the trash and garbage removal services comes from the BBEETF. The current contract is set to expire in 2027.

The City of Miami launched a new "Leave No Trace" campaign on May 18, 2024, to encourage users of its waterfront and island parks to "pack out" all their trash. This campaign entails removing trash receptacles from all of the City's spoil islands so that users are compelled to dispose of their trash on the mainland. Since the scope of work and conditions of RER-DERM's contract with its trash removal vendor are not consistent with the "Leave No Trace" approach implemented by the City of Miami, it will be necessary for RER-DERM to modify its role in the routine removal of trash from Osprey, Morningside, and Teachers islands. This will likely require alterations to the existing contract or a new contract, while allowing for the transferring of trash removal responsibility of these three islands entirely to the City of Miami. Preliminary observations indicate that trash continues to be left on the islands, even though this policy is in place. RER-DERM will continue to monitor this ongoing situation and the "Leave No Trace" effort on the islands.

Despite RER-DERM's efforts to provide trash removal and disposal service on as many as twelve spoil islands, the issue of trash and marine debris on the islands persists. Issues also include boating traffic, protection of wildlife, destruction of native vegetation, vandalism, and illegal dumping. A lack of resources, staff, law enforcement, oversight, and funding have exacerbated these issues. The proper management of solid waste on the islands is critical, along with greater physical presence by law enforcement and park personnel. Our recommendations strongly focus on more involvement of the entities that own the islands with RER-DERM providing a unifying role in bringing entities together to manage the islands. The spoil island property owners are encouraged to develop a collaborative approach and possible shared contract(s) to proactively maintain their public park lands.

In accordance with Ordinance No. 14-65, this report will be placed on the next available full Board meeting agenda, without committee review, as directed in Resolution No. R-1157-23. If you have any questions or require additional information, please contact Lourdes M. Gomez, Director, Department of Regulatory and Economic Resources, at Lourdes.Gomez@miamidade.gov or by phone at 305-375-2886.

Attachment– Report on Spoil Islands in Biscayne Bay

c: Geri Bonzon-Keenan, County Attorney
Gerald Sanchez, First Assistant County Attorney
Jess McCarty, Executive Assistant County Attorney
Office of the Mayor Senior Staff
Lourdes M. Gomez, Director, Department of Regulatory and Economic Resources
Lisa Spadafina, Assistant Director, Department of Regulatory and Economic Resources
Yinka Majekodunmi, Commission Auditor
Theresa Therilus, Interim Chief, Office of Budgetary and Policy Affairs
Basia Pruna, Director, Clerk of the Board
Eugene Love, Agenda Coordinator

MIAMI-DADE COUNTY

Report on Spoil Islands in Biscayne Bay

Department of Regulatory and Economic Resources
Division of Environmental Resources Management
RER-DERM

Background

In the 1920's, the U.S. Army Corps of Engineers began digging channels in northern Biscayne Bay and extended the Intracoastal Waterway. The dredged bay bottom material was discarded in various locations nearby, forming spoil islands both parallel and perpendicular to the channels. Over time, the smaller islands became opportunities for public use, while the longer, linear islands were utilized for cross-bay causeways for vehicular use. Because the islands' shorelines were unconsolidated, they were subject to erosion and were referred to as "walking islands" because their borders shifted due to the effects of winds and tides. The erosion of the islands initially limited their recreational use by the public and was a significant source of turbidity. The islands were eventually colonized by invasive, exotic vegetation that provided "green" relief in an increasingly urbanized Biscayne Bay.

In one notable instance, dredge spoil was used to mark an important occasion in the history of South Florida. Miami Beach pioneer developer Carl Fisher built Flagler Memorial Island aka "Monument Island" in honor of Henry Flagler's influence on the area's early development. However, the island's perfectly circular original form soon eroded and sediment along its edges was distributed back into the bay waters. A 110-foot obelisk monument placed at the center of the island with its Industry, Pioneer, Education, and Prosperity allegorical statues remains today.

Protection

In 1974 and 1975, the Biscayne Bay Aquatic Preserve and the Cape Florida to Monroe County Line Aquatic Preserve were designated by acts of the Florida Legislature to protect lands throughout the Biscayne Bay region from rampant dredging and filling practices that significantly altered the contours and natural resources of the Bay. Since the material used to create the spoil islands was dredged from the bay bottom of the preserves, the emergent spoil islands became protected by the Biscayne Bay Preserve Act (Chapter 18-18, Florida Administrative Code and 258.397 Florida Statute). As stated in the Act, only privately held uplands, such as Bird Key, are omitted from the Aquatic Preserves. Even though many of the islands have been deeded by the State to municipalities that have proprietary control over them, proprietary authorization, regulatory and management authority still resides with the State of Florida to protect the Aquatic Preserve for future generations.

In 1977, a Florida Sea Grant symposium led to the State appropriating funding for enhancements in northern Biscayne Bay. This resulted in Miami-Dade County's former Department of Environmental Resources Management creating the Biscayne Bay Restoration and Enhancement Program to lead a working group to discuss and rank enhancement projects in Biscayne Bay. Miami-Dade County's Biscayne Bay Management Plan (BBMP) was finalized and adopted by the Board of County Commissioners in 1981.

The primary goal of the BBMP is "to develop a unified, Countywide management plan for the entire bay system, including its adjacent wetlands, embayment and contiguous developed shorelands in a manner that will maintain or enhance where necessary, those physical, chemical, biological and aesthetic qualities that provide the basic character and value of this resource." The BBMP is intended to serve five basic purposes: (1) to define the scope of concerns and programs that should be addressed within a comprehensive, coordinated approach to bay management, (2) to recommend programs and actions that should be undertaken in order to move towards comprehensive and coordinated management of Biscayne

Bay, (3) to identify a coordinating committee structure to oversee the scope and direction of programs that are recommended, (4) to identify those agencies and community based groups that have responsibility for implementing certain management programs, and (5) to identify sources of funding or community based resources that can be utilized to achieve a coordinated approach to Bay management.

Flagler Monument Island photographed by RER-DERM during an island inspection.

The BBMP also calls for the stabilization of all spoil island shorelines where erosion is a concern. In order to reduce turbidity levels and improve water clarity in Biscayne Bay, the following guidelines are adopted in the plan: all fill, including spoil islands, which has been, or is, placed adjacent to or within Biscayne Bay and is causing a turbidity problem should be stabilized; and un-stabilized areas that cause turbidity should be stabilized through riprapping and/or the use of natural vegetation or other environmentally acceptable methods.

Major recommendations in the plan have been implemented, incorporated into the Code of Miami-Dade County or the Comprehensive Development Master Plan, or continue to be implemented through ongoing monitoring, restoration, recreation, water management and acquisition programs. RER-DERM's Biscayne Bay Restoration and Enhancement Program, a major implementation tool of the BBMP, has been funded over the years by Miami-Dade County with assistance from the State of Florida, the Florida Department of Environmental Protection (FDEP), Florida Inland Navigation District (FIND), and the South Florida Water Management District (SFWMD).

RER-DERM has successfully restored twenty-three islands and stabilized their soils using a variety of vegetative and non-vegetative techniques at a cost of approximately $5.7 million (not adjusted for inflation) using a combination of grants and Biscayne Bay Environmental Enhancement Trust Fund (BBEETF) monies. Four habitat types, consisting of about 90 species, have been established using cost-effective methods. These habitats cover tropical hardwood hammock communities, mangrove communities, coastal strand communities, and dune communities on fourteen islands in Biscayne Bay, for a combined 97.50 acres of restored and enhanced spoil island upland habitats.

Ownership & Management

The 23 spoil islands within Biscayne Bay are depicted in the attached map (Attachment 1). Ownership and management vary by island, falling under the jurisdiction of either the State or a municipality. Miami-Dade County does not own any of the spoil islands, nor are there any formal agreements between the island owners and the County related to the islands' management. Ownership is as follows:

Florida Department of Environmental Protection (FDEP)
The State of Florida owns several of the spoil islands throughout northern Biscayne Bay. From north to south, these include Sandspur, Little Sandspur, Quayside, Tern, Sandpiper, Pelican, and Frigate Islands. Sandspur Island is also within the jurisdiction of Oleta River State Park and has proprietary, regulatory, and management authority from Florida's Division of State Parks and FDEP. The State of Florida also owns Chicken Key in southern Biscayne Bay.

City of Miami Beach
The City of Miami Beach was deeded ownership of Flagler Monument Island by Carl Fisher's Alton Beach Realty Company in 1939 (Deed No. 16801). The City Commission granted historic site status to the island on March 20, 2002. For many years, the former Environmental Coalition of Miami and the Beaches (ECOMB) led the charge to help maintain the island.

City of Miami
The City of Miami owns the greatest number of spoil islands in northern Biscayne Bay including the southern half of Legion Island, and all of Mangrove, Osprey, Morningside, Teachers (aka Pace), Willis, and the five Dinner Key Islands. The five Dinner Key Islands ("A-E") were deeded to the City by the State in 1949 (Deed No. 19448). By Resolution No. 36473, the City of Miami Commission requested permission from the State to use Mangrove, Osprey, Morningside, Teachers, and Willis islands for municipal park and recreation purposes in Biscayne Bay. The resolution also dedicated the islands within the Tuttle Basin as parks intended to be managed and maintained for use by the boating public. The resolution was approved, and the islands deeded to the City by the State in 1966 (Deed No. 24164).

City of North Miami
The City of North Miami owns three islands, Crescent A & B and Helker's Islands. By Resolution No. 1095, the City of North Miami requested the State dedicate the three spoil islands for public park and recreational purposes. The resolution was approved, and the islands deeded to the City by the State in 1965 (Deed No. 23991).

The American Legion
The northern half of Legion Island was deeded by the State to The American Legion in 1934 (Deed No. 182590). The island was historically used by the non-profit organization's members and their families who cleared the island, and installed picnic benches, toilets and fireplaces for recreational use.

Trash and Garbage Removal

Miami-Dade County has a long-standing commitment to the health of Biscayne Bay, including significant investment in habitat restoration and management of bay spoil islands. Although the County does not own any of the spoil islands, RER-DERM has continued to conduct various environmental restoration and enhancement activities on islands throughout Biscayne Bay as part of the Biscayne Bay Restoration and Enhancement Program. These activities include weekly trash removal by a contracted maintenance company, inspections by RER-DERM staff every other month, eradication of invasive exotic vegetation on an as-needed basis, and supplemental planting of native coastal vegetation. For decades, RER-DERM has maintained a contract with a vendor to perform trash and garbage removal services from as many as twelve spoil islands in northern Biscayne Bay. The City of North Miami recently took over maintenance of its three islands (Crescent A & B and Helker's), leaving nine that are still maintained by RER-DERM (Sandspur, Little Sandspur, Quayside, Tern, Sandpiper, Osprey, Morningside, Teachers, and Flagler Monument Islands). The removal services take place every Monday (after peak weekend use by boaters), except for Quayside Island, which is only serviced on the last Monday of the month. Per the existing maintenance contract, the RER-DERM vendor's responsibilities include providing and emptying trash receptacles, removing additional litter left behind by island users, and properly disposing of the collected solid waste after transporting it to land. The contracted trash and garbage removal has an annual budget of approximately $60,000. The actual cost for the service may vary depending on the rate charged by the vendor, enhanced partnerships for island cleanups, and adjustments to the level of service provided. Funding for the trash and garbage removal services comes from the BBEETF. The current contract is set to expire in 2027.

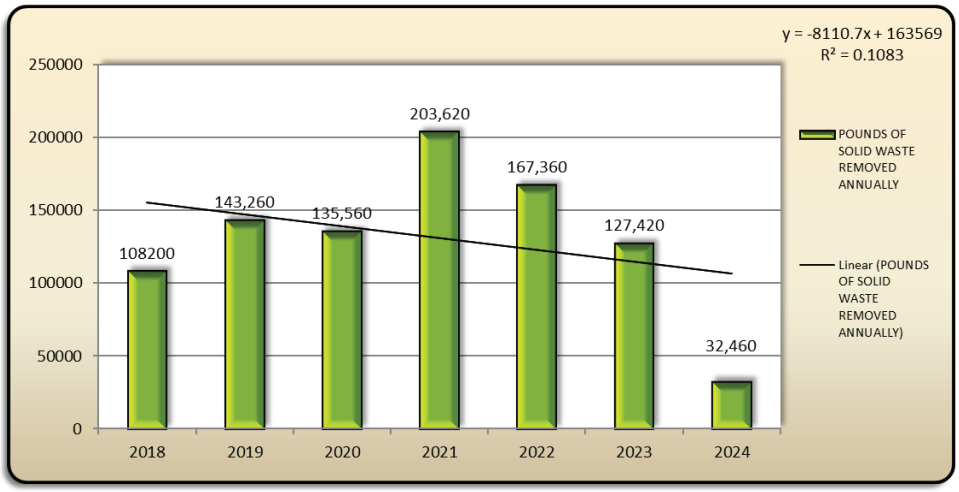


Figure 1. Pounds of solid waste removed from spoil islands by RER-DERM's vendor. The downward trend is due to an additional day of trash removal on Teachers Island initiated by the City of Miami in 2023 and the City of North Miami having taken over trash removal on its three islands last year, along with additional cleanup efforts on the islands.

In December 2015, FDEP's Biscayne Bay Aquatic Preserves (BBAP) initiated an Adopt-an-Island Program to engage the community in service actions that would benefit the island resources and inhabitants, while increasing awareness on the issues of trash that is left on the islands from recreational use and marine debris that washes onto the islands from other sources. This program has led to multiple islands being adopted by several entities including private citizens, scout troops, and student groups. Each

adoption is reviewed on an annual basis and requires that the entity conduct at least quarterly cleanups on the islands, compile data on the types and locations of collected debris and submit the data to BBAP staff for inclusion in a master marine debris spreadsheet. The island adoptions focused on the state-owned islands, but interest by the public and notifications to the municipal island owners led to additional adoptions on non-state-owned islands.

The City of Miami has "piggybacked" RER-DERM's trash removal contract to include additional service days for a second trash pick-up on Fridays for Willis and Teachers Islands, and for trash removal on the five Dinner Key Islands on Tuesdays. The Coconut Gove Sailing Club has been a steward of Dinner Key Island "E" over the last century and the island has since been dedicated to Robert Clarington, the first dock master, now referred to as "Clarington Island". In 2015, CGSC began working with VolunteerCleanup.org to engage and invite the community to get more involved in the island's cleanup. Legion Island is maintained by the City of Miami Parks and Recreation Department and The American Legion. Mangrove Island does not currently have trash and garbage removal services, however City of Miami Resolution No. R-23-0514, adopted in November 2023, directed the City to limit harmful human activity on and around Mangrove Island to protect the nesting rookery.

The City of Miami launched a new "Leave No Trace" campaign on May 18, 2024, to encourage users of its waterfront and island parks to "pack out" all their trash. This entailed removing trash receptacles from all of the City's spoil islands so that users would be compelled to dispose of their trash on the mainland. According to the City of Miami, boaters who continue to leave their trash on the islands will be subject to existing litter laws and may face fines or arrest for violations. The City of Miami Parks and Recreation Department plans to reinforce the new initiative with signage at city managed boat ramps. Additionally, on May 22, 2024, the City announced the temporary closure of Osprey, Morningside, Teachers, and Willis Islands, "to prevent contamination and littering in the bay and allow [the City of Miami] to assess and restore the natural beauty of our city and waterways." The Miami Marine Patrol unit enforced a strict zero-tolerance policy for trespassers during the closure. The islands reopened on July 12, 2024.

Since the scope of work and conditions of RER-DERM's contract with its trash removal vendor are not consistent with the "Leave No Trace" approach implemented by the City of Miami, it will be necessary for RER-DERM to modify its role in the routine removal of trash from Osprey, Morningside, and Teachers Islands. This will likely require alterations to the existing contract or a new contract, while allowing for the transferring of trash removal responsibility for these three islands entirely to the City of Miami, similarly to how the City of North Miami assumed responsibility over their three islands. Preliminary observations indicate that trash continues to be left on the islands, even though this policy is in place. RER-DERM will continue to monitor this ongoing situation and the "Leave No Trace" effort on the islands.

Garbage accumulated at spoil island, despite educational signage.

Out of the eight spoil islands owned and managed by FDEP, five of them are serviced by RER-DERM's vendor for trash and garbage removal. The three State-owned islands not serviced by RER-DERM are Frigate Island, Chicken Key, and Pelican Island, which are serviced by Miami-Dade County Department of Parks, Recreation, and Open Spaces (PROS). BBAP is currently considering the feasibility of a "Leave No Trace" policy on their islands. The three spoil islands owned by the City of North Miami were serviced by RER-DERM's vendor until May 2023 when the City took over maintenance of its islands utilizing the County's vendor. Crescent Islands A & B are serviced on the last Monday of each month, and Helker's Island is serviced weekly on Monday.

The deeds that convey ownership of the islands from the State to the respective municipalities require that the islands be maintained and used for public park and recreational purposes. If, for a period of three consecutive years, an island owner fails and neglects to maintain and use the deeded islands for public park and recreational purposes, the deed may be subject to termination.

Issues

Various issues related to the spoil islands include boating traffic, protection of wildlife, destruction of native vegetation, vandalism and illegal dumping, and the accumulation of trash, garbage, and marine debris. Despite RER-DERM's efforts to provide trash removal and disposal service on the aforementioned spoil islands, the issue of trash and marine debris on the islands remains problematic. Trash cans on the spoil islands are regularly found to be overflowing and solid waste of various kinds is routinely found spread all over these island parks. Regulatory and informational signs, including those directing the public not to litter, are frequently removed or vandalized. Wind, tides, and wildlife scatter uncontained trash all over the islands and into Biscayne Bay. There are also relatively few trash receptacles at locations from which boaters access the Bay and its spoil islands, such as at boat ramps and marinas. Aside from aesthetic impacts, litter and marine debris impact wildlife both on and off the spoil islands. Birds utilizing the

rookery on Mangrove Island, for example, have been found entangled in improperly discarded fishing line.

Boaters are often ignorant of, or willfully ignore existing regulations pertaining to the use of the spoil islands and surrounding waters. Besides failing to properly dispose of their trash, users stay on the islands past sunset when the island parks are closed, beach their vessels along the shoreline and/or tie up their vessels to island vegetation, cut down vegetation to use as firewood or for other purposes, sell and consume alcoholic beverages, build structures, abandon beach chairs, tents, barbecues, and other camping equipment, defecate in public areas, and destroy public property. The safety of boaters and bathers is also of concern, due to the high level of watercraft traffic and boating speed surrounding the spoil islands.
Perhaps the major challenge in addressing all these problems is availability of resources to enforce existing laws and regulations. Adequate enforcement and oversight of the spoil islands is generally limited due to lack of staff. The City of Miami's "Leave No Trace" initiative will prove difficult to enforce without proper oversight by marine law enforcement and/or park rangers maintaining a frequent physical presence at the islands. It will also require a consistent and wide-reaching educational component aimed at all actual and potential user groups and including all the spoil islands and the entities that own them. Enforcement is key to a successful program to disincentivize leaving trash on the islands by issuing fines and violations to those who continue to litter. Unfortunately, lack of enforcement is almost always a result of lack of funding.

Signage with city regulations blocked by branches, and trash at Teachers (Pace) Island.

Recommendations

RER-DERM's recommendations include future policies, alteration of usage, and promotion of incentives to change behaviors of the public when enjoying the islands. These recommendations also include how

best to coordinate and collaborate with the governmental entities that own or control the various spoil islands and to support and encourage active enforcement of existing restrictions and regulations. RER-DERM will continue to monitor habitat health and conduct maintenance of invasive species and restoration activities as needed and in collaboration with island owners. The proper management of solid waste on the islands is critical, along with a greater physical presence by law enforcement and park personnel. Our recommendations focus on more involvement of the islands' owners, with regards to education and outreach, a presence on the islands, and enforcement, also in accordance with their legal obligations as owners to maintain the islands, while RER-DERM provides a unifying role. The spoil island property owners are encouraged to develop a collaborative approach and possible shared contract to proactively maintain their public park lands. RER-DERM is exploring additional pathways for organized and collective management, which may include the County entering into an agreement with each entity that owns the islands, to outline and establish these roles and responsibilities, including funding support for RER-DERM contracted services.

Informational Campaigns

Biscayne Bay is a source of sustenance and economic vitality in Miami-Dade County, while also providing a plethora of recreational opportunities enjoyed by residents and visitors alike. Protection of water quality in Biscayne Bay is of upmost importance to our community. Educating the public on how their actions at the spoil islands directly affect the environment is important to our efforts to protect the Bay. The islands can be protected by activities that bring attention to the problem of marine debris and the effects of improper trash disposal. A highly focused educational campaign that gets our residents and visitors to think about how their actions impact the health of the bay can bring awareness to this important issue and help address the proper means of trash disposal.

As a part of the Biscayne Bay spotlight "Leave No Trace" campaign, RER-DERM coordinated a "Leave No Trace" training event with other agencies on February 23, 2024. Following the training, a stewardship event was conducted at Pelican Harbor Marina, where the principles of minimum impact practices were shared, and reusable garbage bags were provided to the public to collect and dispose of their trash at the marina. The principles of this stewardship campaign can be expanded via additional education and outreach in the form of signage at marinas and other points of entry, reminding boaters to "pack in" and "pack out" everything they are bringing on the water and to the islands. The campaign's central messaging should be guided by the science of marine debris and include the effects of trash, where trash is generated (i.e. point of origin) and analyses of behavioral changes induced by educational campaigns.

The municipal and state owners of the respective spoil islands must be more engaged and active in their management, which should include proactive interaction with spoil island users and user groups. The proactive engagement should include various formats such as signage at prominent points of entry; printed materials in English, Spanish, and Haitian Creole, with uniform messaging to include the importance of the aquatic preserve and Biscayne Bay, maps of the islands including the boundary of the Bill Sadowski Critical Wildlife Area, and promoting tips to keeping litter and pollution out of the Bay; an established property owner hotline to report and address issues; and active park staff interactions with visitors on the spoil islands. Because the spoil islands are close to each other, have common hydrogeomorphology, experience similar usage, and may share the same visitors, we recommend a unified approach to the messaging and regulation of the islands. This unified approach could be facilitated by the Biscayne Bay Aquatic Preserves manager as FDEP owns eight of the spoil islands. All informational materials,

developed through this joint effort, should be disseminated to all marinas, marine patrol units, and the Greater Miami Chamber of Commerce.

Various initiatives have been developed by RER-DERM staff to inform the public of proper and improper ways to dispose of trash and the impacts of littering and marine debris to the health and management of Biscayne Bay. Baynanza, a series of environmental events including Biscayne Bay Cleanup Day, is part of the County's longstanding commitment to enhance public awareness of Biscayne Bay as a recreational, economic, historic, scientific, and environmental resource. The County also developed a website dedicated to Biscayne Bay for the public to easily access information on the health of the Bay and provides resources to get involved in its protection. Baynanza's tag line, "Do the Shore Thing" can easily be applied to new messages, which RER-DERM recommends continuing to focus on a unifying theme in a wide-ranging social media strategy by owners of the spoil islands. Public service announcements through radio and television were previously researched by RER-DERM staff, however due to costs it was concluded they were not the best approach for this type of campaign. Alternatively, the Department of Regulatory and Economic Resources (RER) Communications created the following video, for use in social media: https://www.youtube.com/watch?v=oGwauYqbLjA. Future educational campaigns and volunteer efforts on the islands could capitalize on the name recognition and central mission of the Baynanza Bay Cleanup program.

As part of this effort, it is recommended that the property owners organize routine outreach events such as cleanups, invasive vegetation removal, and restoration projects to promote environmental stewardship and a sense of ownership within the community. These efforts are already implemented at actively managed waterfront parks across multiple jurisdictions and are not novel. At minimum, the efforts to maintain these public lands should mirror the property owner's efforts at their other publicly owned and managed park lands.

It is also recommended that the governmental agencies adequately budget for the necessary oversight and management of the spoil islands, and stretch available funding through grants, partnerships, and philanthropic opportunities. Collaboration with FDEP to expand their Adopt-an-Island Program to motivate individual citizens, local organizations, and other groups interested in participating in litter prevention program activities, can also help achieve this goal.

Boater Education

RER-DERM has received preliminarily grant funding through the U.S. Environmental Protection Agency (EPA) – Region 4, for the development and implementation of a *Biscayne Bay Boating Community Outreach and Education Campaign*. This project will engage the boating public through the creation of multilingual messaging broadcast across social media, through workshops to the boating community, and through in-person interactions at frequent vessel launching locations to promote "pack-in/pack-out" strategies for litter and marine debris prevention and environmental stewardship, and the distribution of durable, reusable, and branded marketing collateral to help facilitate responsible trash and solid waste management by the recreational boating public. The focus of the educational and outreach efforts is for the recreational boating public and litter and marine debris, specifically. The tonnage of solid waste removed through the spoil island trash removal contract and bimonthly monitoring at three spoil islands in northern Biscayne Bay will help shape the project's narrative and serve as proxies to gauge the effectiveness of the educational and outreach efforts.

RER-DERM recommends outreach efforts by the collective spoil island owners including engaging with and educating boaters as to rules and regulations. Various activities within Biscayne Bay, including on the spoil islands, are regulated by the Florida Administrative Code (F.A.C.), Florida Statutes (F.S.), the Code of Miami-Dade County, and other local ordinances.

Notable regulations are outlined below:

62D-2 F.A.C. Operation of Division Recreation Areas and Facilities
Provides for protection and preservation of parks' property and resources, regulations for recreational activities, and civil penalties for violations of the provisions.

18-18 F.A.C. / 258.397 F.S. Biscayne Bay Aquatic Preserve
Establishes the Biscayne Bay Aquatic Preserves and provides for protection, preservation and enhancement in Biscayne Bay and all natural waterways tidally connected to the bay, including regulation of human activities within the preserve.

18-14 F.A.C. Administrative Fines for Damaging State Lands or Products Thereof
Establishes violations for noncompliance with Chapter 253 F.S. related to damaging state lands including imposition and collection of fines.

18-21 F.A.C. Sovereignty Submerged Lands Management
Provides for management, protection, and enhancement of sovereignty lands so that the public may continue to enjoy traditional uses including, but not limited to, navigation, fishing and swimming. Includes provisions on spoil island development and structures constructed on spoil islands.

Miami-Dade County Code Chapter 7: Boats, Docks, and Waterways
Establishes rules and regulations regarding vessel mooring. Prohibits mooring to any publicly owned bank or shore unless under a lease or permit issued by the governmental body having jurisdiction thereof.

Miami-Dade County Code Chapter 24: Environmental Protection Ordinance
Establishes environmental protections for Biscayne Bay, the Biscayne Bay Management Plan, prohibitions against water pollution, and use of the BBEETF.

Miami-Dade County Code Chapter 8CC: Code Enforcement / Schedule of Civil Penalties
Provides penalties for violations of the Code. Including escalating penalties for second, third, or subsequent offenses for specified Chapter 24 violations, such as sanitary nuisances and waste dumping.

City of Miami Beach Code Section 118-593
Establishes historic preservation designation for the Flagler Memorial and Monument Island historic site.

City of Miami Code Chapter 50: Ships, Vessels, and Waterways
Prohibits the beaching of watercraft and mooring of watercraft on City owned lands without authorization. Establishes an exclusion/safety zone for the designated waters of and near the Dinner Key Spoil Islands and prohibits operation of any motorized vessel, boat or watercraft within the Dinner Key North Mooring Field motorized vessel exclusion zones.

City of North Miami Code Chapter 14: Parks and Recreation
Establishes rules and regulations for parks and recreation, including marine activities.

Reporting of Illegal Dumping

In order to encourage reporting of illegal dumping on spoil islands, it is recommended to install additional illegal dumping warning signage at the islands, including a QR code link or reference for how the public can report violations. While increased educational outreach and signage will be an important aspect of efforts to curtail the problems associated with the intensifying public use of the spoil islands, increased enforcement of existing regulations is necessary. Education is unlikely to deter individuals who are responsible for the more egregious incidents of littering, vandalism, and other unlawful activities. Although it isn't currently practical or possible to post a law enforcement officer at each island, consideration should be given to the random assignment of uniformed and plainclothes officers on the islands during their peak use. Citing, and arresting (if necessary) those responsible for despoiling the islands may be a more successful way to convey that such behavior is unacceptable.

Trash accumulated on a spoil island after weekend use.

Enforcement

As mentioned, trash and other issues are largely a result of not enough law enforcement personnel present on the islands which also impedes enforcement. To preserve and protect these natural resources, robust enforcement, increased funding, and enhanced management are crucial. Strategic actions can ensure the protection, cleanliness, and sustainable enjoyment of the spoil islands. Effective enforcement is fundamental to maintaining order and ensures that environmental laws and regulations are upheld, preventing illegal activities such as littering, unauthorized construction, and the destruction of habitats. Without adequate enforcement, these activities can proliferate, leading to the degradation of ecosystems and the loss of biodiversity. RER-DERM recommends engaging with municipalities and the state to prioritize increased contractual services for the islands, increased budget, increased park rangers, and increased law enforcement patrol on the water.

Moreover, consistent enforcement will foster responsible behavior on the islands. When rules are consistently applied and violators are held accountable, it reinforces the importance of respecting our natural resources. This creates a culture of stewardship, where individuals are more likely to engage in behaviors that protect and preserve the environment. To ensure cleanliness and order, increased patrols by park rangers and environmental officers can mitigate the problem of accumulation of trash and other pollutants. Their presence serves as an important educational function as well as a deterrent to potential violators and ensures that any infractions are swiftly addressed. Regular patrols also enable prompt responses to environmental hazards, such as oil spills or illegal dumping, minimizing their impact on the ecosystem.

To accomplish this goal, there is a need for increased funding and resources. To enhance enforcement and ensure the effective management of the spoil islands, municipalities must prioritize increased funding and resources. Allocating a larger budget for environmental protection will facilitate the hiring of more park rangers and the acquisition of necessary equipment, such as boats, to maintain a regular presence on the water. Contractual services can also be expanded to include specialized clean-up operations and habitat restoration projects. Increased budget allocations will not only improve enforcement capabilities, but also support educational programs that raise awareness about the importance of protecting Biscayne Bay's natural resources. Education initiatives can foster community involvement and encourage responsible behaviors, further complementing enforcement efforts.

Collaboration between the state, local governments, environmental organizations, and community stakeholders is essential to the successful implementation of enforcement actions. Municipalities should work together with the state to create comprehensive management plans that address the specific needs of the spoil islands. These plans should include strategies for regular monitoring, rapid response to environmental threats, and public education campaigns as recommended in this report. By engaging with municipalities and the state, stakeholders can advocate for policies that prioritize environmental protection and allocate sufficient resources for enforcement. This collaborative approach ensures that the spoil islands receive the attention and care needed to preserve their ecological integrity and recreational value.

The Biscayne Bay Management Plan (BBMP)

The BBMP's five fundamental purposes aim to develop a unified, countywide management plan for the entire bay system, including adjacent wetlands, embayments, and contiguous developed shorelands. The

plan focuses on maintaining or enhancing the physical, chemical, biological, and aesthetic qualities that define and add value to this critical resource.

A key recommendation of the BBMP is to stabilize all spoil island shorelines where erosion is a concern. To reduce turbidity levels and improve water clarity in Biscayne Bay, the plan adopts guidelines such as stabilizing all fill, including spoil islands that cause turbidity, through methods like riprapping, natural vegetation, or other environmentally acceptable techniques. Although significant recommendations from the BBMP have been integrated into the Code of Miami-Dade County and the Comprehensive Development Master Plan, and they continue to be implemented through ongoing monitoring, restoration, recreation, water management, and acquisition programs, there is still much to be done.

State endangered *Zanthoxylum spinosum* (Biscayne prickly ash) planted by RER-DERM staff on a spoil island in Biscayne Bay.

To ensure the continued health and sustainability of Biscayne Bay, it is recommended that policymakers:

1. **Continue to Support the BBMP:** Recognize and endorse the BBMP's comprehensive approach and objectives.
2. **Ensure Ongoing Funding:** Secure and allocate necessary funds for ongoing and future BBMP-related programs.
3. **Promote Coordination:** Strengthen the coordinating committee structure and foster ownership actions to ensure effective oversight and implementation.
4. **Enhance Community Engagement:** Involve community-based groups and local agencies and owners in applying management and restoration efforts.
5. **Prioritize Environmental Stabilization:** Implement measures to stabilize spoil islands and reduce turbidity levels for improved water clarity.

By adopting these recommendations, policymakers can contribute significantly to the preservation and enhancement of Biscayne Bay's vital ecosystem.

Conclusion

The spoil islands within Biscayne Bay are a priceless natural resource that require vigilant protection through robust enforcement actions and strategic implementation. Increased funding, enhanced enforcement presence, and collaborative efforts with municipalities are crucial to maintaining the cleanliness, order, and ecological health of these islands. By prioritizing these measures, we can ensure that Biscayne Bay remains a vibrant and sustainable environment for future generations to enjoy.

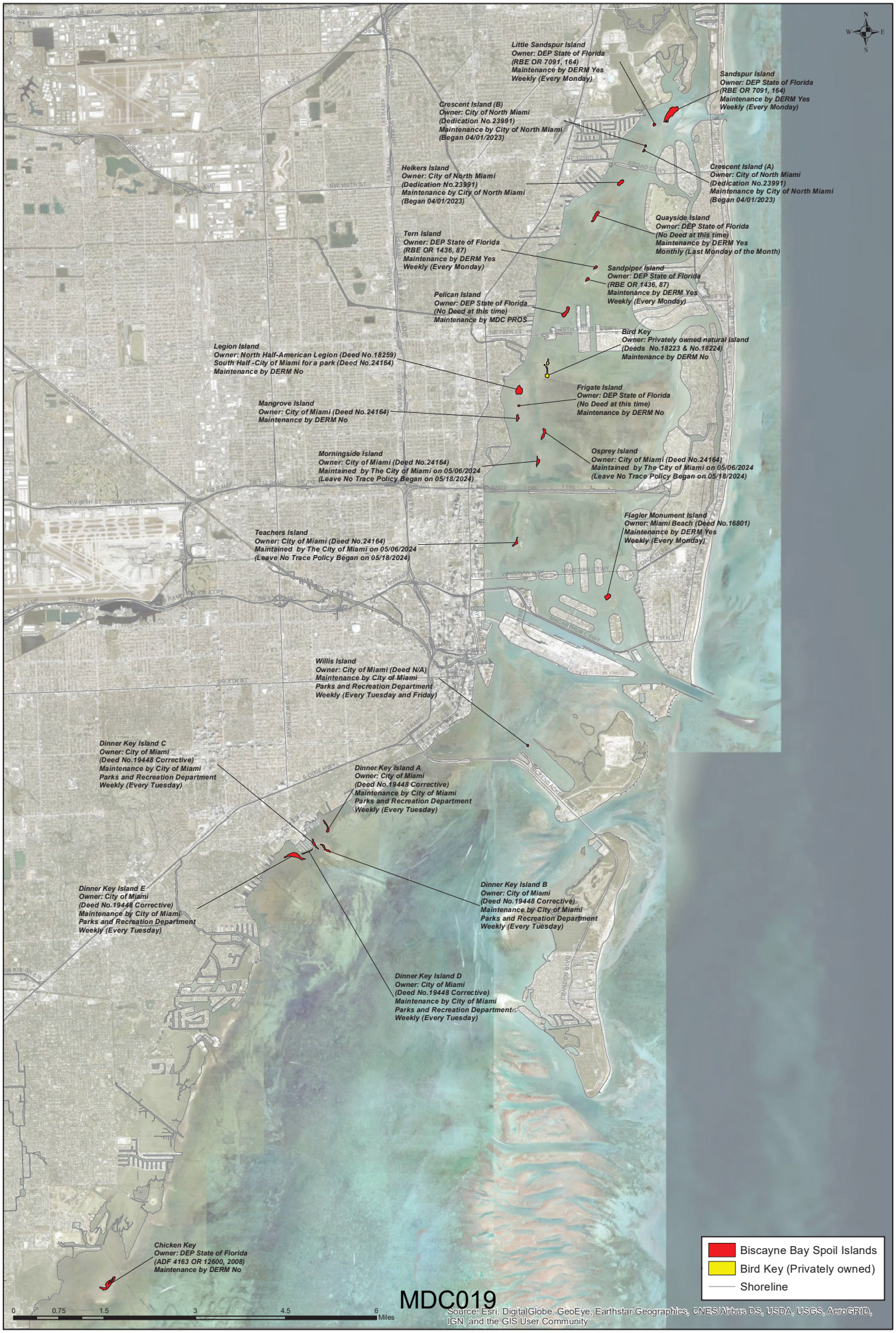
As RER-DERM continues our longstanding commitment to restore and maintain habitat values on the islands, the recommendations detailed in this report will require a dedicated effort by all spoil island owners and participation with the public. Through a coordinated effort on education and outreach, presence on the islands, and increased law enforcement, these goals can be accomplished. RER-DERM will focus on bringing all stakeholders together to manage the islands in a collaborative approach. Discussions with the spoil island owners are ongoing, particularly as new policies develop (i.e. Leave No Trace), while RER-DERM explores additional pathways for collective management. RER-DERM's objective will remain to enhance habitat restoration efforts on spoil islands through collaborative management, public engagement, and policy development with island owners, to ensure sustainable practices that protect and restore natural habitats.

Attachments:
Attachment 1 – Biscayne Bay Spoil Islands Map

MIAMI-DADE COUNTY

Biscayne Bay Spoil Islands

Attachment 1



MDC019

MEMORANDUM

PRSC
Agenda Item No. 3(A)

TO: Honorable Chairman Oliver G. Gilbert, III
and Members, Board of County Commissioners

DATE: November 13, 2024

FROM: Geri Bonzon-Keenan
County Attorney

SUBJECT: Resolution authorizing the disbursement of $3,000,000.00 from the Biscayne Bay Environmental Enhancement Trust Fund for environmental enhancement through the removal and disposal of bulky marine debris within Biscayne Bay, its tidal tributaries, and foreshore and technical services to develop the reasonable assurance plan

The accompanying resolution was prepared by the Regulatory and Economic Resources Department and placed on the agenda at the request of Prime Sponsor Commissioner Danielle Cohen Higgins.

Geri Bonzon-Keenan
County Attorney

GBK/ks

Memorandum

Date: December 3, 2024

To: Honorable Chairman Oliver G. Gilbert, III
and Members, Board of County Commissioners

From: Daniella Levine Cava
Mayor

Subject: Resolution Authorizing the Disbursement of up to $3,000,000.00 from the Biscayne Bay Environmental Enhancement Trust Fund for Environmental Enhancement through the Removal and Disposal of Bulky Marine Debris within Biscayne Bay and for the Technical Services to Develop the Reasonable Assurance Plan

Executive Summary

The attached resolution seeks authorization from the Board of County Commissioners (Board) for the disbursement of up to $3,000,000.00 from the Biscayne Bay Environmental Enhancement Trust Fund (BBEETF) for environmental enhancement through the removal of bulky marine debris within Biscayne Bay and for technical services for the development of the Reasonable Assurance Plan (RAP). Of the $3,000,000.00 disbursement, $500,000.00 will fund the removal and disposal of derelict vessels, lost and abandoned fishing gear, illegal structures, and other bulky marine debris located in the Bay, its tidal tributaries, and foreshore. The remaining $2,500,000.00 will fund technical services required to develop the RAP including modeling needs, nutrient reduction project identification, as well as peer review services as needed. As the Board is aware, the County is developing the RAP to address Biscayne Bay water quality impairments that have contributed to habitat loss, fish kills, and algal blooms and attain compliance with water quality standards. Water quality standards are established by the state to protect a waterbody's designated uses; Biscayne Bay is designated as Class III waters to protect fish consumption, recreation, and propagation and maintenance of a healthy, well-balanced population of fish and wildlife. These activities will be conducted in association with the County's ongoing Biscayne Bay restoration and enhancement activities and are consistent with Section 24-40 of the Code of Miami-Dade County (Code) and Ordinance No. 24-102, which allow BBEETF funds to be used for the aforementioned activities.

Recommendation

It is recommended that the Board adopt the attached resolution authorizing the disbursement of up to $3,000,000.00 from the BBEETF to conduct environmental enhancement in Biscayne Bay through the removal and disposal of derelict vessels, lost and abandoned fishing gear, illegal structures, and other bulky marine debris from Biscayne Bay, its tidal tributaries, and foreshore; and to fund technical services required to develop the RAP including modeling needs, nutrient reduction project identification, as well as peer review services as needed.

Scope

This disbursement request will provide benefits County-wide and serve all Commission Districts. The RAP will address Biscayne Bay's water quality impairments throughout the watershed, including all incorporated and unincorporated areas, and removal of bulky marine debris provides safer and healthier recreational opportunities for all residents and visitors who recreate on the Bay.

Delegation of Authority
This item has no delegation of authority.

Fiscal Impact/Funding Source
The funding source of the disbursement up to $3,000,000.00 will be County vessel registration fees collected pursuant to Section 328.66 Florida Statutes and deposited into the BBEETF. Of the $3,000,000.00 disbursement, $500,000.00 will fund the removal and disposal of derelict vessels, lost and abandoned fishing gear, illegal structures, and other bulky marine debris located in the Bay, its tidal tributaries, and foreshore. The remaining $2,500,000.00 disbursement will fund technical services required to develop the RAP including modeling needs, nutrient reduction project identification, as well as peer review services as needed. This disbursement is consistent with Section 24-40 of the Code and Ordinance No. 24-102, which allows BBEETF funds to be used for the aforementioned activities. The proposed use of the funds is also consistent with Section 328.66(1) Florida Statutes and with Section 7-22.1 of the Code.

The vessel registration fee balance within the BBEETF as of September 30, 2024, is $11,124,343 (TF064).

Track Record/Monitor
The Manager of the Restoration & Enhancement Section of RER-DERM, Laura Eldredge, will monitor marine debris removal activities and Senior Manager of the Water Resources Section of RER-DERM, Pamela Sweeney, will monitor activities related to RAP development.

Background
Through its Restoration and Enhancement and Water Resources Sections, RER-DERM plays the leading and active role in restoring the health and resilience of the Bay. Disbursement of BBEETF funding serves to improve the health of the Bay while adding to its ecological, economical and recreational value. RER-DERM requires a disbursement of up to $3,000,000.00 to remove bulky marine debris from the Bay and for technical services to develop the RAP.

Bulky Marine Debris

Since 2008, RER-DERM has removed and disposed of over 500 derelict vessels and associated pollutants, tons of lost and abandoned fishing gear including multiple derelict nets and over 4,000 crab and lobster traps, numerous unauthorized and unsafe structures, and other bulky debris located in the marine environment of Miami-Dade County. This has provided many benefits to the County's residents, visitors, and businesses by eliminating significant environmental and public safety hazards and enhancing the aesthetic and ecological quality of our coastal areas.

Since the last $500,000.00 disbursement was authorized specifically for bulky marine debris by Resolution No. R- 299-21 in April of 2021, RER-DERM has removed and disposed of over 145 derelict vessels and associated pollutants, over 1,000 abandoned crab and lobster traps, and numerous other items of bulky debris from the marine environment of Miami-Dade County. This work was accomplished using BBEETF funds and, in the case of derelict vessels, an additional $423,886.39 in grant funds from the Florida Inland Navigation District and Florida Fish & Wildlife Conservation Commission for which BBEETF monies were sometimes used to meet matching fund requirements. Some of these grant awards would have been otherwise unobtainable had it not been for the availability of the previously approved BBEETF funds.

If granted, this disbursement is anticipated to provide funding for the removal and disposal of

bulky marine debris for a period of up to three years and will allow RER-DERM to continue, and increase the effectiveness of, its marine debris removal efforts. When appropriate, these funds may also be used to meet matching requirements for marine debris removal grants offered by other agencies and organizations. Debris removal and disposal work will be performed by County staff, by volunteers when appropriate, and by pre-qualified local contractors selected through a competitive bidding process.

Reasonable Assurance Plan (RAP)

As the Board is aware, the County is developing a RAP to address Biscayne Bay water quality impairments and attain compliance with water quality criteria in Biscayne Bay. The County is developing the RAP to address Biscayne Bay water quality impairments that have contributed to habitat loss, fish kills, and algal blooms and attain compliance with water quality standards. Water quality standards are established by the state to protect a waterbody's designated uses; Biscayne Bay is designated as Class III waters to protect fish consumption, recreation, and propagation and maintenance of a healthy, well-balanced population of fish and wildlife. The development of the RAP requires that nutrient loading from various sources is identified and quantified, that more protective water quality targets are set using scientifically sound methodology and requires that nutrient-reducing projects and policies are identified for implementation to meet water quality targets to be established. Achieving water quality targets will support restoration and maintenance of Bay habitats, fish and wildlife. Once the RAP is approved by FDEP and the U.S. Environmental Protection Agency, broader state and federal funding is anticipated to be available to support implementation of nutrient reduction projects, which include but is not limited to stormwater and wastewater infrastructure improvements.

Development of the RAP on an expedited schedule will be facilitated by RER-DERM obtaining technical expertise and support for modeling services, nutrient reduction project identification, and peer review services as needed to meet strict timelines. The BBEETF disbursement will support the following technical needs:

1. Develop Model

The consultant will develop, calibrate, and validate an integrated groundwater and surface water model to estimate pollutant loading from groundwater and surface water sources to support the RAP development. The work will be completed by employing a model or modeling approach approved by FDEP and will require close coordination with County staff, other consultants, and FDEP.

2. Identify Nutrient Reduction Projects

The consultant will identify potential projects and policies to achieve the required nutrient load reduction targets as established through separate modeling efforts. The work includes estimating nutrient loading from point and non-point sources impacting groundwater and surface water and will require close coordination with County staff, other consultants, FDEP, and entities who may contribute loads to groundwater or surface water.

3. Conduct Model Runs

Once FDEP approves development of the model, the consultant is to conduct model runs of the integrated groundwater and surface water model to establish nutrient reduction target goals by regions or basins which would have been determined in earlier phases of the project.

4. Conduct Peer Review

While existing County staff continue to work on various tasks in support of RAP development including but not limited to data collection needed for model creation and model runs and obtaining additional information as needed, as strict timelines may necessitate additional support from outside consultants. Work would include peer review of model outputs and other technical work related to the model with feedback to be provided to model consultant and other consultants to support the development of the RAP.

5. Technical Analysis and Technical Report Development

County staff will obtain technical guidance and development of the technical report from a team whose work is recognized by FDEP as a team who have successfully completed and had approved water quality restoration plans, including RAPs. This support will be utilized for the preparation of the Biscayne Bay RAP beginning with the Plan of Study (POS). The POS will establish the contents needed in the RAP and define the methods to gather, evaluate, and apply sufficient data, models, plans, actions, and projects. The contractor will serve as the County's technical advisor for the County's submittal to FDEP and will contribute to the technical development and execution of all RAP-related services. The goal of the RAP is to attain water quality standards that are set by the state to restore and maintain Bay habitats and ensure protection of designated uses. Biscayne Bay is designated as Class III waters with standards to protect fish consumption, recreation, and propagation and maintenance of a healthy, well-balanced population of fish and wildlife.

In accordance with Section 24-40(4) of the Code and Ordinance No. 24-102, I have received and considered the attached recommendation of the Director of the Department of Regulatory and Economic Resources for the disbursement of $3,000,000.00 from the BBEETF to be used for the removal of derelict vessels and other types of bulky marine debris and for technical services needed to develop the RAP.

Jimmy Morales
Chief Operating Officer

Memorandum

Date: August 15, 2024

To: Daniella Levine Cava
Mayor

From: Lourdes M. Gomez, Director
Department of Regulatory and Economic Resources

Subject: Recommendation for the Disbursement of up to $3,000,000.00 from the Biscayne Bay Environmental Enhancement Trust Fund to the Department of Regulatory and Economic Resources for Environmental Enhancement through the Removal and Disposal of Bulky Marine Debris within Biscayne Bay and Technical Services to Develop the Reasonable Assurance Plan

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Pursuant to Section 24-40 of the Code of Miami-Dade County (Code) and Ordinance No. 24-102, I am recommending the disbursement of up to $3,000,000.00 from the Biscayne Bay Environmental Enhancement Trust Fund (BBEETF) to the Miami-Dade Department of Regulatory and Economic Resources, Division of Environmental Resources Management (RER-DERM), to be used for the removal and disposal of bulky marine debris located in Biscayne Bay, its tidal tributaries, and foreshore (up to $500,000.00) and for technical services for the development of the Reasonable Assurance Plan (RAP), including modeling needs, nutrient reduction project identification, as well as peer review services as needed (up to $2,500,000.00).

Through its Biscayne Bay restoration and enhancement activities, RER-DERM has long played the lead and active role in the removal and disposal of bulky marine debris located in the tidal waters of Miami-Dade County. This has provided many benefits to the County's residents, visitors, and businesses by eliminating significant environmental and public safety hazards and enhancing the aesthetic and ecological quality of our coastal areas and waterways.

On April of 2021 the Board of County Commissioners, pursuant to Resolution No. R-299-21, authorized a previous $500,000.00 disbursement from the BBEETF for bulky marine debris removal. These funds, combined with an additional $423,886.39 in grants from the Florida Inland Navigation District and Florida Fish & Wildlife Conservation Commission, have supported the removal of over 145 derelict vessels and associated pollutants, over 1,000 abandoned crab and lobster traps, and numerous other items of bulky debris from the marine environment of Miami-Dade County. Some of the grant awards would have been otherwise unobtainable had it not been for the availability of matching funds from the BBEETF.

If approved, the $500,000.00 disbursement will fund the removal and disposal of bulky marine debris for a period of up to three years and will allow RER-DERM to continue, and increase the effectiveness of, its marine debris removal efforts. These funds may also be used to meet matching requirements for marine debris removal grants offered by other agencies and organizations. Debris removal and disposal work will be performed by County staff, by volunteers when appropriate, and by pre-qualified local contractors selected through a competitive bidding process.

As the Board is aware, the County is developing the RAP to address Biscayne Bay water quality impairments that have contributed to habitat loss, fish kills, and algal blooms and attain compliance with water quality standards. Water quality standards are established by the state to protect a

waterbody's designated uses; Biscayne Bay is designated as Class III waters to protect fish consumption, recreation, and propagation and maintenance of a healthy, well-balanced population of fish and wildlife. The development of the RAP requires that nutrient loading from various sources is identified and quantified, that more protective water quality targets are set using scientific methodology, and that nutrient-reducing projects and policies are identified for implementation to meet water quality targets to be established. Achieving water quality targets will support restoration and maintenance of Bay habitats, fish and wildlife. Once the RAP is developed and approved by FDEP and the U.S. Environmental Protection Agency, broader state and federal funding is anticipated to be available to support implementation of nutrient reduction projects, which include but is not limited to stormwater and wastewater infrastructure improvements.

If approved, the $2,500,000.00 disbursement will fund the development of the RAP and the needed technical support for modeling services, nutrient reduction project identification, and peer review services, as needed, to meet strict timelines.

The source of the disbursement will be County vessel registration fees collected pursuant to Section 328.66 Florida Statutes and deposited into the BBEETF. This disbursement is consistent with Section 24-40 of the Code and Ordinance No. 24-102. The proposed use of the funds is also consistent with Section 328.66(1) Florida Statutes and with Section 7-22.1 of the Code of Miami-Dade County. There are sufficient unencumbered funds currently available in the BBEETF to fulfill this request.

MEMORANDUM

(Revised)

TO: Honorable Chairman Oliver G. Gilbert, III
and Members, Board of County Commissioners

DATE: December 3, 2024

FROM: Geri Bonzon-Keenan
County Attorney

SUBJECT: Agenda Item No.

Please note any items checked.

_____ **"3-Day Rule" for committees applicable if raised**

_____ **6 weeks required between first reading and public hearing**

_____ **4 weeks notification to municipal officials required prior to public hearing**

_____ **Decreases revenues or increases expenditures without balancing budget**

_____ **Budget required**

_____ **Statement of fiscal impact required**

_____ **Statement of social equity required**

_____ **Ordinance creating a new board requires detailed County Mayor's report for public hearing**

_____ **No committee review**

_____ **Applicable legislation requires more than a majority vote (i.e., 2/3's present ____, 2/3 membership ____, 3/5's ____, unanimous ____, majority plus one ____, CDMP 7 vote requirement per 2-116.1(3)(h) or (4)(c) ____, CDMP 2/3 vote requirement per 2-116.1(3) (h) or (4)(c) ____, CDMP 9 vote requirement per 2-116.1(4)(c) (2) ____) to approve**

_____ **Current information regarding funding source, index code and available balance, and available capacity (if debt is contemplated) required**

Approved _____ Mayor Agenda Item No.
Veto _____
Override _____

RESOLUTION NO. _____

RESOLUTION AUTHORIZING THE DISBURSEMENT OF $3,000,000.00 FROM THE BISCAYNE BAY ENVIRONMENTAL ENHANCEMENT TRUST FUND FOR ENVIRONMENTAL ENHANCEMENT THROUGH THE REMOVAL AND DISPOSAL OF BULKY MARINE DEBRIS WITHIN BISCAYNE BAY, ITS TIDAL TRIBUTARIES, AND FORESHORE AND TECHNICAL SERVICES TO DEVELOP THE REASONABLE ASSURANCE PLAN

WHEREAS, this Board desires to accomplish the purposes outlined in the accompanying memorandum, a copy of which is incorporated herein by reference,

NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF COUNTY COMMISSIONERS OF MIAMI-DADE COUNTY, FLORIDA, that this Board, pursuant to section 24-40 of the Code of Miami-Dade County, hereby authorizes the disbursement of funds not to exceed $3,000,000.00 from the Biscayne Bay Environmental Enhancement Trust Fund to be used to conduct environmental restoration through the removal and disposal of bulky marine debris located within Biscayne Bay, its tidal tributaries, and foreshore and technical services for the development of the Reasonable Assurance Plan. These activities will be conducted and overseen by the Restoration & Enhancement and Water Resources Coordination Sections, respectively, of the Department of Regulatory and Economic Resources Division of Environmental Resources Management (RER-DERM).

The foregoing resolution was offered by Commissioner , who moved its adoption. The motion was seconded by Commissioner and upon being put to a vote, the vote was as follows:

Oliver G. Gilbert, III, Chairman
Anthony Rodríguez, Vice Chairman

Marleine Bastien	Juan Carlos Bermudez
Kevin Marino Cabrera	Sen. René García
Roberto J. Gonzalez	Keon Hardemon
Danielle Cohen Higgins	Eileen Higgins
Kionne L. McGhee	Raquel A. Regalado
Micky Steinberg	

The Chairperson thereupon declared this resolution duly passed and adopted this 3rd day of December, 2024. This resolution shall become effective upon the earlier of (1) 10 days after the date of its adoption unless vetoed by the County Mayor, and if vetoed, shall become effective only upon an override by this Board, or (2) approval by the County Mayor of this resolution and the filing of this approval with the Clerk of the Board.

MIAMI-DADE COUNTY, FLORIDA
BY ITS BOARD OF
COUNTY COMMISSIONERS

JUAN FERNANDEZ-BARQUIN, CLERK

By:_____
Deputy Clerk

Approved by County Attorney as
to form and legal sufficiency.
Abbie Schwaderer-Raurell

MIAMI-DADE COUNTY

2025 BISCAYNE BAY
LEGISLATIVE PRIORITIES

Florida's Biscayne Bay is a cherished resource for locals, an undeniable draw for tourists, and home to some of our State's most iconic species, including storm-reducing mangroves and coral reefs. But our Bay is deteriorating rapidly due to pollution, stormwater runoff, and aging infrastructure.

Our Bay generates over **$64 billion** in economic output a year, supporting **448,000** jobs, and contributing **$4 billion** in tax revenue for Miami-Dade County. In 2022, Biscayne Bay contributed 19% to Miami-Dade, 9% to Southeast Florida, and 3% to the State of Floria in economic output. It's never been more clear - a healthy Biscayne Bay means a stronger Miami-Dade and a more prosperous Florida.

LEGISLATIVE PRIORITIES

- **Biscayne Bay Water Quality Grant Program:**
  SUPPORT sustained funds in the grant program to address water quality challenges. Projects may include stormwater management, wastewater, and other projects.
- **Homeowner assistance to connect sanitary sewers**
  SUPPORT funding to help homeowners with the private property cost of constructing and connecting to sanitary sewer laterals.
- **Septic Systems**
  SUPPORT sustained funding to address failing septic systems and convert compromised septic systems to centralized sewer infrastructure to protect public health and water quality.

APPROPRIATION REQUESTS

- **Rootwells for Flood Mitigation and Water Quality:**
  SUPPORT funding for 20 enhanced root zone wells within flooded and impervious areas for tree planting that seeks to serve the public and the Bay.
- **Biscayne Gardens Pump Station Retrofit & Improvement Project:**
  SUPPORT project intended to increase and optimize flood control capability of the existing pump station and accounts for projected sea level rise. This upgrade would improve water quality in the Spur #4 Canal.
- **Goulds Canal Restoration | Leachate Pollution Reduction & Prevention:**
  SUPPORT project will prevent contaminants from being drawn from the Goulds Canal, which is adjacent to the South Dade Landfill; the L-31E canal, and the Comprehensive Everglades Restoration Plan (CERP), Biscayne Bay Coastal Wetlands S-705 pump station project. The Goulds Canal filling will directly limit landfill nutrient leachate from traveling into Biscayne Bay Aquatic Preserves and Biscayne National Park.
- **Miami-Dade County Secondary Canal improvements:**
  SUPPORT C6 (Miami River) and C9 (Snake Creek) Basin Improvements (Phase 2) which include raised top of bank elevations (enhancing storage), culvert upgrades (enhancing conveyance), and outfall improvements, all designed to account for sea level rise projections to 2060. Once implemented, these improvements would improve water quality throughout the C-6 and C-9 watershed basins.
- **Ghost trap rodeo event:**
  SUPPORT funding for this signature event where locals compete to find and remove ghost fishing gear and marine debris harmful to wildlife and the ecosystem from Biscayne Bay. The bi-annual tournament is an excellent way for residents to learn more about how they can improve the health of Biscayne Bay.

Regulatory and Economic Resources
OFFICE OF RESILIENCE
miamidade.gov/**resilience**

To obtain this information in an accessible format, please call 305-372-6779.