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# A Unified Approach to Recovery for a Healthy & Resilient Biscayne Bay

*Biscayne Bay Task Force Report and Recommendations*

*June 2020*

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## **Biscayne Bay Task Force Members**

**Irela Bagué**, Task Force Chairperson, President, Bagué Group

**David Martin**, Task Force Vice Chairperson, President, Terra Group

**Lynette Cardoch**, Ph.D., Director of Resilience & Adaptation, Moffit & Nichol

**Lee Hefty**, Director, Division of Environmental Resources Management, Miami-Dade County

**James Murley**, Chief Resilience Officer, Office of Resilience, Miami-Dade County

**John Pistorino**, P.E., Principal, Pistorino and Alam

**Alyce Robertson**, former Director, Downtown Development Authority

**Steve Sauls**, Biscayne Bay Marine Health Summit Steering Committee Member

**Tiffany Troxler**, Ph.D., Director of Science, Sea Level Solutions Center, Florida International University

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### 46 Land Acknowledgement:

47 Our proceedings took place and these natural resources occur on the ancestral and traditional  
48 lands of the Seminole, Miccosukee, and Tequesta people.

49 **Biscayne Bay Task Force Mission & Activity**

50 On February 5, 2019, the Miami-Dade Board of County Commissioners (BCC) adopted Resolution  
51 No. R-165-19 (appendix \_), establishing the Biscayne Bay Task Force (Task Force). The Task Force  
52 was established as a nine-member advisory board consisting of appointed professionals  
53 representing civil engineers, coastal real estate developers, water quality and ecology experts,  
54 coastal managers, environmental regulators, resilience experts, and the community at-large. The  
55 Task Force was charged to meet at least four times over a six-month period to review prior  
56 studies, relevant data, and evaluations related to Biscayne Bay (Bay) as well as to receive  
57 recommendations related to the health and management of the Bay. The Task Force met 18  
58 times and received approximately 35 presentations related to the health and management of  
59 Biscayne Bay from local and state regulatory agencies, municipalities, academia, community-  
60 based organizations and other key stakeholders (appendix \_).

61

62

DRAFT

63 Letter from the Chair

64

65 *"Whatever the universe is, I believe it is all one. And this fragile shoreline, with its mangroves, coastal*  
66 *hammocks and ancient reef, is a precious part of very little that still survives of our unique environment."*

67 *- Marjory Stoneman Douglas*

68

69 When the members of the Biscayne Bay Task Force convened in June 2019, we had no idea that  
70 our final report would coincide with the impacts of the worst global pandemic in recent history. Curiously,  
71 due to Miami-Dade County's "stay at home" order, the temporary closings of our beaches and marinas,  
72 and the practice of social distancing, Biscayne Bay received a much-needed respite from human activity.  
73 Despite the unusual break, the damage to the Bay was already present before the crisis. The health of  
74 Biscayne Bay remains in a state of emergency and at a tipping point towards irreversible ecological  
75 collapse.

76 There have been many efforts undertaken in the past to protect and restore Biscayne Bay. In  
77 1974, the Florida Legislature passed the Biscayne Bay Aquatic Preserve Act. Later, in 1981, Miami-Dade  
78 County approved the Biscayne Bay Management Plan. The Florida Legislature included Biscayne Bay in  
79 the Surface Water Improvement and Management Act 1997, followed by the creation of the Biscayne Bay  
80 Partnership Initiative in 1991. In 2019, the Greater Miami and the Beaches Resilient305 Strategy listed  
81 restoration of the Bay as a principle action. These plans have helped to protect and restore parts of  
82 Biscayne Bay. However, the watershed continues to be threatened by a lack of fresh water, nutrient  
83 pollution from storm-water runoff, sewage pipe breaks, compromised septic tanks, plastic pollution, and  
84 other contaminants.

85 The problems facing Biscayne Bay are serious and complex: most will require financial  
86 investments and a unified and collaborative approach to restoration and recovery. Within this report, the  
87 Task Force recommends an overarching administrative structure to implement recommendations under  
88 seven policy themes: water quality, governance, infrastructure, watershed habitat restoration and natural  
89 infrastructure, marine debris, education and outreach, and funding. The Task Force acknowledges that  
90 some policies and projects can be implemented immediately to address the areas within the watershed  
91 with the most significant water quality issues based on the currently available water quality data and  
92 resources.

93 We hope that some of the recommendations in this report will help stabilize the ecosystem in the  
94 short-term and set a path toward comprehensive recovery and permanent, consistent oversight.

95 Biscayne Bay is Miami-Dade County's most vital quality of life asset and the mainstay of our  
96 economy. This report is an urgent and final call to make Biscayne Bay and the protection of the Biscayne  
97 Aquifer a county-wide priority. We call for a unified and committed effort by Miami-Dade County to work  
98 with all municipalities, state and federal agencies, and the public to chart a long-term course towards a  
99 healthy and resilient Biscayne Bay.

100 The members of the Biscayne Bay Task Force are grateful for the opportunity to present this  
101 report. We are confident that the Board of County Commissioners and the Mayor will take the bold and  
102 necessary actions to restore and protect Biscayne Bay for all and forever.

103 *- Irela Bagué, Task Force Chair*

104

## 105 State of the Bay

106 Of local, regional, national, and international importance, Biscayne Bay is a sub-tropical shallow  
107 estuary that is home to two state aquatic preserves, a critical wildlife area, a national park and  
108 national marine sanctuary, and is designated an aquatic park and conservation area by Miami-  
109 Dade County. Cradled by the mainland to the west and barrier islands to the east, its 428 square  
110 miles continue to be a source of sustenance, economic vitality, and provide for countless  
111 recreational opportunities enjoyed by residents and visitors alike. Its spectacular natural beauty  
112 is widely recognized and enjoyed, with nearly 2.8 million residents and millions of visitors every  
113 year.

114 Despite its many layers of county, state, and federal protection for water quality, habitat, and  
115 wildlife, Biscayne Bay is at a tipping point. Historically, Biscayne Bay received freshwater along  
116 its shoreline as water traveled south and east, mixing with water from the Atlantic Ocean. Today,  
117 natural freshwater flows have been replaced by pulsed, point source discharges from dredged  
118 canals, intended to offer flood protection and move water away from inland areas. Canals can  
119 intercept groundwater, and more than half of the freshwater received by the Bay enters via the  
120 northernmost canals where the most notable seagrass losses have occurred. Runoff from the  
121 land, impacted by the activities taking place on land, degrade the quality of the water entering  
122 canals and Biscayne Bay. The timing, source, and quality of freshwater delivered to the bay can  
123 and has influenced the health, diversity, and distribution of the flora and fauna that comprise the  
124 Biscayne Bay ecosystem. And while there may be a general awareness in South Florida of the  
125 importance of the Biscayne Aquifer and the need to protect the quality of the groundwater in  
126 this aquifer as our sole source of drinking water, what is less known is the connection of this  
127 aquifer to Biscayne Bay and the Bay's dependence on large volumes of clean, fresh water for its  
128 ecological health. Hydrological changes, water management practices, upland development, and  
129 aged infrastructure have contributed to degraded water quality, seagrass die-offs and algal  
130 blooms as determined in part through data collected via the County's surface water quality and  
131 benthic habitat monitoring programs and those data from other agencies and institutions.

132 Biscayne Bay is in trouble. The County's water quality and seagrass survey data, as well as review  
133 of scientific literature and academic studies presented as part of the Task Force's work, indicate  
134 that chronic, low-level nutrient loading and/or acute, pulsed nutrient loading is likely linked to  
135 seagrass loss in Biscayne Bay. Excess nutrients can lead to a shift from a seagrass-dominated  
136 habitat with clear water, low turbidity, and low levels of algae in the water column, to an algae-  
137 based ecosystem that is turbid and reduces habitat essential for fish, birds, marine mammals,  
138 and other marine species. Sources of nutrients can include pet waste, fertilizers, and yard  
139 clippings and can be conveyed by stormwater outfalls. Other sources may include leaky sewer  
140 infrastructure and septic tank effluent. Unique challenges presented by storms and sea level rise  
141 compound and complicate these existing issues.

142 Seagrass, the foundation of all life in Biscayne Bay, has declined significantly in several basins.  
143 Seagrasses provide habitat for ecologically and economically important fisheries such as shrimp,

144 lobster, and various fish species and provide services such as stabilizing sediments and  
145 attenuating wave energy from storms. Within the last decade, the scientific community began  
146 to better understand and quantify the role that coastal and submerged plants such as  
147 seagrasses, mangroves and other tidal wetlands play in sequestering and storing carbon,  
148 surpassing the capacity of their upland tree counterparts. While notable coverage of seagrasses  
149 occur in central and southern Biscayne Bay, seagrass losses identified over the past decade span  
150 the north, central, and southern regions of the Bay. In the South, Barnes Sound and Manatee  
151 Bay basins have experienced a decrease in seagrass of approximately 93 percent. In the central  
152 portion of the Bay, along the eastern shoreline near Coral Gables, there has been a decrease in  
153 seagrass of approximately 85 percent. And in the basins north of the Rickenbacker Causeway,  
154 seagrass losses range from approximately 66 percent to 89 percent.

155 Even still, it is important to know that water quality improvement and seagrass recovery is  
156 possible. In Tampa Bay, there was a 90 percent decline in seagrass between 1948 and 1982.  
157 Decisive measures were taken, including the formation of a technical team to expressly  
158 investigate how to reduce nutrient loading. Following a 57 percent reduction in nitrogen loading  
159 between the 1980s and 2002, there was a marked decrease in microscopic algae clouding the  
160 water column leading to improved water clarity, helping to exceed the seagrass recovery goal in  
161 Tampa Bay. A similar effort was undertaken in Sarasota Bay which led to a 46 percent reduction  
162 in nitrogen loading and subsequent resurgence of seagrass habitat. Thinking beyond restoration  
163 of Biscayne Bay to building resilience and long-term health is particularly critical in the face of  
164 potential impacts from climate change and sea level rise.

165 Scientists have studied Biscayne Bay's fragile ecosystem and the most recent call to action came  
166 from the National Oceanic and Atmospheric Administration (NOAA) in 2019, with a warning of a  
167 "regime change" occurring in Biscayne Bay's ecosystem. We, the 2.8 million people who live in  
168 and call Miami-Dade County home, must answer that call. In taking action, it is important to  
169 acknowledge past restoration and management planning efforts but also to elevate what makes  
170 this effort different. Numerous efforts have focused on restoring the health and economic value  
171 of Biscayne Bay. Each of these efforts has been united by three common elements. First, the  
172 efforts have been collaborative in that their development involved several relevant agencies,  
173 organizations, scientific institutions, and community members contributing their knowledge and  
174 fervent support for a healthy Biscayne Bay. Second, they tell a story of Biscayne Bay and its  
175 watershed's past and set a plan in motion for the future. Third, they are predicated on the same  
176 or similar issues imperative to address in order to maintain and enhance Biscayne Bay and outline  
177 similar hurdles to addressing these issues. But today, many previously identified threats remain  
178 unabated.

179 Biscayne Bay's resilience—its capacity to withstand future changes in land use, climate shocks  
180 and stressors, and infrastructure failures--will continue to be at risk without bold action focused

181 on watershed restoration through a permanent, unified and transparent approach to manage its  
182 recovery. That is why this unified approach to recovery for a healthy and resilient Bay builds on  
183 and expands the knowledge and efforts of the past with bold, brave ideas while centering the  
184 following core ideas in order to be successful in bringing Biscayne Bay back from the brink: **Water**  
185 **Quality** is the focus of the initiatives laid out in this vision. Municipal, County, State and Federal  
186 agencies along with community organizations must commit to this work, the fruits of which may  
187 take years to be realized. **Leadership** is central to implement the bold changes we need and to  
188 hold ourselves accountable over time to bring about the change we are working toward and know  
189 we can achieve. **Education** is the tool by which our communities and our leaders will remain  
190 invested in this work and each other as we gain a clearer understanding of what projects and  
191 initiatives must be accomplished to restore Biscayne Bay. It is the hope and the mission of the  
192 Task Force that this unified and collaborative vision, overseen by a body of agencies and  
193 stakeholders and under the County's leadership, will be effective in bringing about tangible and  
194 lasting change for the health of our Bay, for the quality of life of our residents and visitors, and  
195 the future of our region's economy.

196

197

198

199 **Recommendations**

200 The following section outlines recommendations the County should take to restore water quality  
201 in Biscayne Bay. The Task Force recommends the establishment of an overarching administrative  
202 structure to implement recommendations under seven policy themes.

203

204 **Overarching recommendation**

205

206 A unified and collaborative approach to watershed restoration is urgently needed. To improve  
207 the water quality and the health of Biscayne Bay, the Task Force recommends:

208 • Miami-Dade County’s Board of County Commissioners (BCC) should create a new  
209 intergovernmental body called the Biscayne Bay Watershed Management Board (WMB).

210

211 • The WMB should be supported by the creation of a new position called the Chief Bay  
212 Officer (CBO) in the Office of the Mayor. The WMB and the CBO should be supported by  
213 County staff, appropriate technical experts and community input to improve water  
214 quality in the Biscayne Bay watershed.

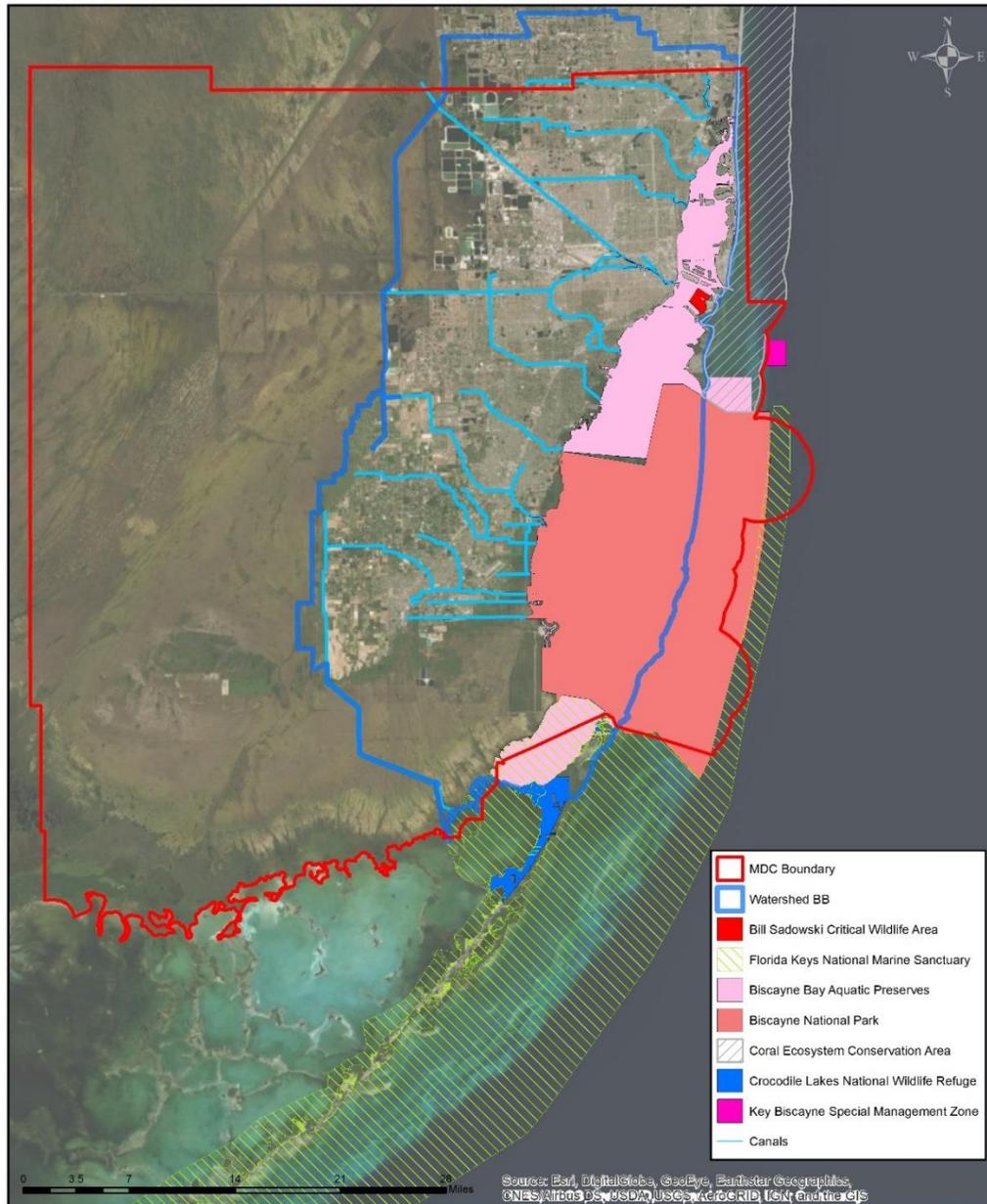
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216 • The WMB will be responsible to develop and, upon approval by the BCC, implement the  
217 Biscayne Bay Watershed Restoration Plan (WRP). The WMB, working with the CBO,  
218 should ensure that the following recommendations by the Task Force are implemented.





### Biscayne Bay Task Force Watershed and Managed Areas Map



219

- 220 1. **Figure X.** Proposed map of the Biscayne Bay watershed and managed areas within and  
 221 adjacent to the watershed. NOTE: Watershed layer obtained from SFWMD. This sub-watersheds  
 222 are the smallest units classified in AHED (Arc Hydro Enhanced Database). They were formerly known  
 223 at the District as Subbasins. Subwatersheds are the 12 Digit HUC (Hydrologic Unit Code) under USGS  
 224 categorization of drainage areas.  
 225

## 226 1. Water Quality

227 Improving Biscayne Bay’s water quality will require significant reductions in the levels of  
228 pollutants within its watershed. Significant improvements must be made to waters received by  
229 the Bay and canals through outfalls and sheetflow. Groundwater quality within the Biscayne  
230 Aquifer must also be improved given that the aquifer is the Bay’s watershed. Fresh water flows  
231 through this highly transmissive aquifer carry pollutants directly into the surface waters of canals  
232 and Biscayne Bay. Many actions are urgently needed to restore the Biscayne Bay watershed and  
233 protect the Biscayne Aquifer as it is our sole source of drinking water and a carrier of pollutants  
234 to the Bay. These actions include pollutant load reduction goals; additional monitoring to  
235 measure progress against those goals; leveraging the County’s role as a local authority; an open,  
236 centralized information data repository; demonstration projects – implemented and monitored;  
237 integrated flood risk reduction and water quality planning, policies, and management; a climate  
238 change vulnerability assessment; specific studies that fill key knowledge gaps; fertilizer  
239 ordinance; and capitalizing on existing County entities to make improvements to the regulatory  
240 review process to focus on Biscayne Bay and increase enforcement.

241 The Task Force recommends that the County:

242 **1A. Establish science-based, pollutant load reduction goals and interim targets to improve**  
243 **quality of surface water and groundwater and codify these limits in Chapter 24 to achieve deep**  
244 **reduction in pollutant loads for restoration of seagrass meadows to historic coverages**  
245 **consistent with a healthy Biscayne Bay ecosystem as part of a Biscayne Bay Watershed**  
246 **Restoration Plan (WRP).** Pollutant load reduction goals and interim targets should consider  
247 future scenarios of land-use, population, existing and future development, local and South  
248 Florida water management infrastructure, and climate shocks and stressors. Nutrient load  
249 reduction targets established for surface water and groundwater entering the aquifer and canals  
250 should be based on meeting, at a minimum, the chlorophyll-a based criteria, or “protective”  
251 criteria for total nitrogen (TN) and total phosphorus (TP) at the point groundwater enters the Bay  
252 as well as the locations where groundwater enters canals connected to the Bay. The County  
253 should implement similar strategies for other pollutants of concern, including fecal indicator  
254 bacteria (FIB), metals, and petroleum-based pollutants, where impairments and other hotspots  
255 have been identified to ensure consistent standards that protect public health and our economy.

256 **1B. Develop, implement and continuously monitor and demonstrate progress toward meeting**  
257 **1A’s pollutant load reduction goals and interim targets for surface and groundwater and linked**  
258 **biological recovery.** Updates should be reported to and reviewed by the WMB on a regular basis.  
259 Pollutant load reduction and biological recovery targets and goals toward meeting targets  
260 should be updated on a regular basis, every two to three years. Targets and goals should be  
261 updated based on actual land-use, population, development, local and South Florida water  
262 management infrastructure and the Comprehensive Everglades Restoration Plan, and climate  
263 shocks and stressors. Monitoring should leverage coastal information and observation system  
264 approaches with remote monitoring as necessary, to demonstrate progress toward meeting

265 interim targets and goals. Progress should also be assessed based on measurements made at  
266 individual stations or subsets of stations based on their proximity to the shoreline.

267 **1C. Leverage the Department of Regulatory and Economic Resources' (RER) role as regulatory**  
268 **agency to activate additional resource management functions.** Permits requested from and  
269 authorized by County divisions (all divisions in RER and the Water and Sewer Department  
270 (WASD)) should be coordinated, rigorously documented and archived for continuous review and  
271 evaluation to ensure they meet pollutant load reduction goals (1A). This should include:

272 i) Evaluation of permit applications including but not limited to water control and coastal  
273 and freshwater wetland dredge and fill projects. This information should be quantitative,  
274 quality-assured, transparent, documented, archived, and made publicly accessible (1E;  
275 data library).

276 ii) Required water quality monitoring associated with permitted activities to ensure water  
277 quality specifications are maintained and Best Management Practices (BMP) are  
278 performed as specified to verify that pollutant load reductions goals are being met.  
279 Update Chapter 24 as needed to ensure tracking and monitoring of these activities.

280 iii) Exercising of role as municipal separate stormwater sewer system (MS4) permit-holder  
281 to collect MS4 co-permittee information on types and implementation of all forms of  
282 BMPs, including a County-wide atlas of stormwater infrastructure systems, with maps of  
283 locations and details related to the sizing of stormwater infrastructure, and additional  
284 information as needed, to evaluate MS4 activities and compliance with pollutant load  
285 reduction goals and biological recovery targets. When reviewing applications related to  
286 stormwater, the County should consider the information produced and documented by  
287 other MS4 permit-holders and the SFWMD to assess compliance with pollutant load  
288 reduction goals.

289  
290  
291 **1D. The County should use the information collected per 1C to conduct an immediate**  
292 **assessment of land-based hotspot areas prioritized based on existing, known impairments.**  
293 Additionally, each municipality shall evaluate the water quality of each of its outfalls and report  
294 outcomes. This information should be employed to support the creation of an ordinance to be  
295 created that requires outfalls not meeting standards to be corrected or eliminated within a  
296 certain time period.

297  
298 **1E. Review, develop (as needed), implement and enforce local ordinances and policies to attain**  
299 **pollution load reduction goals set forth in the Watershed Restoration Plan (WRP).** Policies and  
300 enforcement should emphasize known and emerging sources of pollution to surface waters and  
301 groundwater including septic systems, exfiltration trenches, and other sources of stormwater  
302 pollution regulated through permits and managed via Best Management Practices (BMPs). The  
303 County should seek support as needed, and review, utilize and strengthen enforcement of  
304 Chapter 24 to enforce these pollution load reduction goals and measures of the Watershed

305 Restoration Plan with emphasis on pollutant load reductions in the Biscayne Aquifer and through  
306 stormwater outfalls.

307 **1F. Coordinate, staff and provide an annual budget for comprehensive, centralized Biscayne**  
308 **Bay Watershed data and research coordination and data management infrastructure** (e.g.,  
309 searchable data library), including a GIS-based repository integrating groundwater, surface  
310 water, external agency datasets, documentation required from MS4 co-permittees following  
311 recommendation 1C. Include information about city, agency, and university ongoing research  
312 and monitoring activities, existing and planned BMPs, watershed restoration, natural  
313 infrastructure projects, and infrastructure projects. Update regularly.

314 **1G. Undertake and secure funding for new pilot projects and research projects focused on**  
315 **reducing pollutant loads.** Projects should include specific, focused *in-situ* monitoring of areas  
316 that implement: conversions of septic to sewer and alternative decentralized wastewater  
317 systems, stormwater systems based on alternative design criteria and features, living shorelines  
318 and seawalls, stormwater easements (e.g. bioswales), and retention ponds to generate the  
319 project-specific information needed to implement and improve effectiveness of pollutant load  
320 reduction strategies, assess water quality-based performance, and changes in pollutant loads.  
321 This should include a new program of monitoring the effectiveness of BMPs to improve surface  
322 water, groundwater, and stormwater quality before waters enter canals and the Bay and for  
323 monitoring of significant stormwater outfalls. Funding sources should be identified and secured.

324 **1H. Elevate and further amend the Comprehensive Develop Master Plan (CDMP) to further**  
325 **include Biscayne Bay watershed management planning elements**, including Adaptation Action  
326 Area planning and other sea level rise planning efforts. Planning efforts should consider  
327 alternative design and development criteria in sensitive areas in order to reduce discharge,  
328 reduce pollutant loads including loads from the Biscayne Bay watershed and increase watershed  
329 pollutant treatment efficiency. The WRP produced by the WMB should include recommended  
330 criteria to improve water quality, with a focus on pollutant load reduction, to incorporate into  
331 the CDMP and other related planning efforts. Examples include higher standards for projects in  
332 the County such as requiring more stormwater retention through installation of permeable  
333 surfaces, green infrastructure, or other appropriate strategies to allow less pollutants to run-off  
334 into the Bay.

335  
336 **1I. Conduct a climate change vulnerability assessment for Biscayne Bay.** The WMB, working with  
337 the BCC and County departments, should determine the scope and the issues that would go into a  
338 vulnerability assessment for Biscayne Bay, including land-use and population, local and regional water  
339 management systems scenarios, and CERP scenarios. Federal, state, and local funds should be  
340 leveraged to conduct this assessment.

341 **1J. Initiate and fund studies that illuminate specific knowledge gaps for application toward**  
342 **watershed restoration.** Specific studies include:

- 343 • Reassess the north to south and source (canal, stormwater and groundwater) distribution of  
344 discharge entering Biscayne Bay and work with SFWMD and other agencies to identify  
345 strategies for implementing wetland rehydration projects (e.g. Deering Estate) in other areas  
346 of the watershed to improve distribution, timing and magnitude of flows
- 347 • Regenerate the circulation modeling output for the Bay, gap-fill monitoring data for robust  
348 calibration and validation, and expand domain to northern Biscayne Bay
- 349 • Institute source tracking in hot spot areas (bacteria, pharmaceuticals, nutrients, petroleum-  
350 based pollutants)
- 351 • Update and apportion pollutant loading of primary watershed and Bay sources, incorporating  
352 contributions from episodic loadings from natural hazards and infrastructure failures to  
353 develop phosphorus and nitrogen budgets that support Biscayne Bay recovery and resilience
- 354 • Apply *in-situ* studies to evaluate the following: a) water quality-based performance of  
355 alternative decentralized wastewater and stormwater infrastructure treatment approaches  
356 over traditional approaches and b) influence on load contributions to stormwater and  
357 groundwater
- 358 • Reevaluate “protective” nutrient criteria based on pollutant loads and load reduction goals
- 359 • Increase the number of permanent seagrass monitoring sites and allocate additional funding  
360 as needed
- 361 • Increase the spatial and temporal frequency of water quality sampling in hot spot areas, areas  
362 that have experienced significant increase in pollutant loads, including areas defined as  
363 impaired waters, and areas that improve the management of benthic resources
- 364 • Evaluate the relationship between recreational and commercial fishing activities, food web  
365 structure, and Biscayne Bay water quality
- 366 • Evaluate facility-level pollutant loading contributions against existing permitted discharges

367 **1K. Pass a county-wide ordinance to prevent the negative secondary and cumulative effects of**  
368 **excess nutrients caused by fertilizer runoff entering Biscayne Bay through groundwater and**  
369 **stormwater entering surface water bodies such as canals.** The ordinance should include: public,  
370 commercial and non-commercial property; a mandate that fertilizer can only be applied to  
371 actively-growing turf; a mandate that fertilizer cannot be applied during the rainy season; a  
372 designation of a fertilizer-free zone of 15 feet from waterways; a focus on the regulation of  
373 nitrogen-releasing fertilizer in most forms; and a more rigorous regulation of phosphorus.  
374 Additional model ordinances should be developed and codified to reduce use and application of  
375 pesticides and herbicides. The County should work with municipalities to adopt the same  
376 ordinances.

377 **1L. Increase inspections of all marinas and commercial operations along waterways.** Such  
378 operations must have containment structures to eliminate direct runoff into waterways. Such  
379 containment structures must have treatment equipment especially for oils, grease, and wash  
380 water from boat maintenance operations. Impose fines and shutdowns if non-compliance is  
381 discovered.

382 **1M. Continue to monitor the progress of the October 7th, 2015 Consent Agreement between**  
383 **FP&L and Miami-Dade County** to address impacts associated with the plant, including addressing  
384 the hypersaline groundwater plume and elevated levels of chloride found outside property  
385 boundaries including within the L-31E canal. The County should continue to monitor water  
386 quality in the areas surrounding the Turkey Point facility including elevated levels of chlorides, as  
387 well as nutrients such as ammonia, and take appropriate actions to ensure the environment is  
388 protected and that pollutant load reduction goals are met.

389

## 390 2. Governance

391 In order to establish a permanent and unified approach to the recovery of water quality in  
392 Biscayne Bay and future management of the watershed, the Task Force recommends that the  
393 County:

394 **2A. Establish by ordinance a Biscayne Bay Watershed Management Board (WMB).** The Task  
395 Force recommends the selection and invitation of participants with diverse backgrounds to the  
396 WMB and its committees. It is recommended that the WMB shall be comprised of a total of (11)  
397 members as follows:

- 398 • (3) members of the Board of County Commissioners (BCC);
- 399 • (3) designees of the Miami-Dade County League of Cities;
- 400 • South Florida Water Management District Governing Board (member who resides in  
401 Miami-Dade County);
- 402 • Florida Department of Environmental Protection;
- 403 • U.S. Department of Interior;
- 404 • Florida Fish and Wildlife Conservation Commission; and
- 405 • Florida Inland Navigational District.

406

407 Members will have experience with issues related to Biscayne Bay and are expected to leverage  
408 the professional and financial resources of their respective organizations to effect goals of the  
409 Watershed Restoration Plan.

410 **2B. The Mayor should appoint a Chief Bay Officer (CBO) and request funding for the position.**

411 The CBO will advise the Miami-Dade County Mayor and the BCC and manage the WMB and its  
412 committees. The CBO will act as liaison with County departments, County boards, external  
413 agencies, stakeholder groups, and local, state and federal governments on water quality issues,  
414 policies and appropriations related to the health and recovery of Biscayne Bay.

415 **2C. The WMB will, with technical and community recommendations, review, recommend**  
416 **funding for and implement the Watershed Restoration Plan (WRP)** to send to the BCC in order  
417 to achieve time-bound and measurable progress (e.g., X% by XXXX) towards WRP goals to achieve  
418 water quality and seagrass restoration and meet its mandate of Bay health, recovery, and

419 resilience. The WRP should be developed by the end of 2021. While developing the plan, the  
420 WMB can concurrently work to implement recommendations in this report. The WMB will be  
421 responsible for recommending to Miami-Dade County departments and to the Office of  
422 Management and Budget to prioritize water quality restoration in the annual budget cycle.

423 The WMB will work to make recommendations and develop funding strategies for projects to be  
424 reviewed and approved by the BCC, incorporate relevant policies in SB712: Clean Waterways  
425 Act<sup>1</sup>, develop and execute the Biscayne Bay Watershed Restoration Plan, inform the BCC on a  
426 regular basis, secure funding for meeting the timeline for pollutant load reduction goals, and  
427 update the Biscayne Bay SWIM Plan<sup>2</sup>, as mandated by the SWIM Act (Chapter 87-97 Florida  
428 Statutes).<sup>3</sup> The WMB shall collaborate in organizing a biannual Biscayne Bay Marine Health  
429 Summit.<sup>4</sup>

430 The WMB should establish and appoint committees to address specific Bay issues to advise and  
431 make recommendations on policies, restoration projects, public information campaigns and  
432 water quality monitoring and targets. The Task Force recommends establishing the following  
433 committees: the Technical Advisory Committee, the Community Advisory Committee, and the  
434 Nutrient Reduction Committee.

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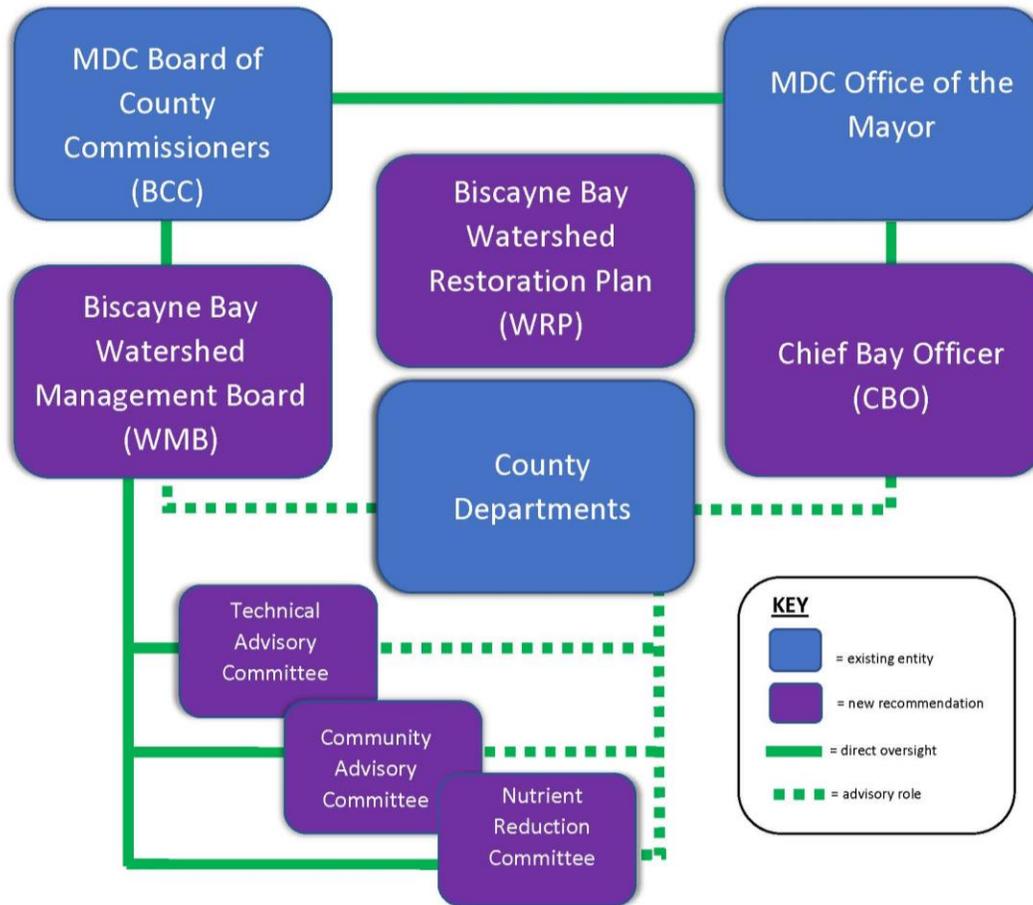
<sup>1</sup> SB712: Clean Waterways Act

<sup>2</sup> Biscayne Bay SWIM Plan

<sup>3</sup> SWIM Act

<sup>4</sup> Biscayne Bay Marine Health Summit

435 The proposed organizational structure below highlights the working relationship between the  
 436 BCC, CBO, Office of the Mayor, WMB, and the committees.<sup>5</sup> Existing entities are shown in blue  
 437 boxes while new recommendations by this Task Force are shown in purple boxes. Solid green  
 438 lines mean an entity has direct oversight over a connecting entity. Dotted green lines mean an  
 439 entity plays an advisory role to another entity:



440 **Figure X.** Proposed organizational structure illustrating the relationships between entities

441 **2D. Develop a formal partnership in the form of a Memorandum of Understanding (MOU)**  
 442 **with the SFWMD to create an internal staff working group in addition to their participation**  
 443 **on the WMB.** The CBO will lead this effort. The group will work collaboratively to implement  
 444 the WRP and manage and fund activities to meet pollutant load reduction goals, determine  
 445 redundancies and data gaps, focus on canals that show high nutrient loads, trash pollution, and  
 446 study pollutant loads originating outside the watershed, including agricultural sources, develop  
 447 BMPs and Outstanding Waters standards and regulations, and enhance adaptation efforts to  
 448 improve the resilience of the regional water management system to manage saltwater  
 449 intrusion.

<sup>5</sup> For more information on the committees, refer to Appendix A.

450 **2E. Enable the alignment and coordination of County departments that takes a holistic,**  
451 **comprehensive approach to Biscayne Bay recovery and resilience.** Resilient305 directs Greater  
452 Miami and the Beaches to Restore and Preserve Biscayne Bay (Action 1), Employ a One Water  
453 Approach (Action 54), and Share Bold Integrated Water Models (Action 53) to align County  
454 departments in their work on issues facing the Bay.<sup>6</sup> Direct departments to prioritize Biscayne  
455 Bay recovery and resilience in their budgets and develop performance metrics to assess the  
456 effectiveness of this effort and identify funding. Report progress in quarterly updates to the  
457 Science/Technical Advisory committee and, as needed, to the full WMB.

458 **2F. Develop a formal partnership in the form of a Memorandum of Understanding (MOU)**  
459 **with the Miami River Commission (MRC) to ensure that the advice and expertise of the MRC is**  
460 **available to the CBO and the WMB. The MRC has twenty years of experience advising public and**  
461 **private interests along the Miami River which will be invaluable in the development of the WRP**  
462 **and in the implementation of many other recommendations.**

463  
464

### 465 3. Infrastructure

466 To ensure county-wide infrastructure is working as intended and not contributing pollution to  
467 the Bay, design, standards, construction inspection requirements, and operation and  
468 maintenance requirements of wastewater collection, including septic systems, water and  
469 wastewater, and stormwater collection and drainage systems should be reviewed and updated  
470 in Chapter 24 of the Miami-Dade County Code as needed.

#### 471 *For Septic Systems:*

472 The State’s Blue-Green Algae Task Force Consensus Document<sup>7</sup> recommended “a septic system  
473 inspection and monitoring program” to identify “improperly functioning and/or failing systems  
474 so that corrective action can be taken to reduce nutrient pollution, negative environmental  
475 impacts and preserve human health.” The Task Force also noted that “current regulations  
476 prohibit permitting of new septic systems on lots of one acre or less...within an Outstanding  
477 Florida Spring watershed unless the system includes enhanced treatment.” The County released  
478 a report indicating the occurrence of improperly functioning and/or failing systems based on  
479 current and future groundwater levels.

480

481 Florida Senate Bill 712 (SB:712) takes effect July 1, 2020 and transfers duties and powers from  
482 the Department of Health to the Department of Environmental Protection, including to “develop  
483 a comprehensive program to ensure that onsite sewage treatment and disposal systems  
484 regulated by the department are sized, designed, constructed, installed, sited, repaired,  
485 modified, abandoned, used, operated, and maintained in compliance with this section and rules

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<sup>6</sup> Greater Miami and the Beaches, Resilient305 Strategy. 31 May 2019. <<https://resilient305.com/>>

<sup>7</sup> Blue-Green Algae Task Force Consensus Document #1. 11 October 2019. <[https://floridadep.gov/sites/default/files/Final%20Consensus%20%231\\_0.pdf](https://floridadep.gov/sites/default/files/Final%20Consensus%20%231_0.pdf)>

486 adopted under this section to prevent groundwater contamination, including impacts from  
487 nutrient pollution, and surface water contamination and to preserve the public health.”<sup>8</sup>

488

489 The Task Force recommends that the County:

490

491 **3A. Increase compliance with existing laws** to result in the immediate connection of ~12,000  
492 properties to the sewer system and reduction in the number of new septic systems in  
493 coastal/waterfront areas.

494 **3B. Develop and enforce septic system design criteria with design parameters** including  
495 proximity to canals and Biscayne Bay, elevation relative to groundwater level, sea level rise,  
496 sizing, materials, individual and cumulative loading, and basin-specific criteria. Basin-specific  
497 criteria should be based on existing (or lack of) infrastructure, land use, loading parameters and  
498 other criteria to ensure pollutant load reduction goals are met.

499 **3C. Initiate a mandatory septic system registration and inspection program** that will first  
500 prioritize those systems identified as vulnerable to shallow groundwater levels, those near (1000  
501 feet) of Biscayne Bay and canals, and for new and substantially improved (50% of market value)  
502 developments. The program should then be expanded county-wide. In addition, utilize  
503 alternative treatment technologies or conversion to sewer, and identify, create and secure new  
504 funding sources. Efforts should build on the State’s Task Force recommendations and State’s  
505 SB:712 - Clean waterways provisions. All data and records pertaining to such recommendations  
506 should reviewed by County staff, WMB advisory committees, and presented for review by WMB.

507

508 *For Water and Wastewater Systems:*

509 One Sanitary Sewer Overflow (SSO) is one too many; these are preventable with appropriate  
510 policies and enforcement. The County must be proactive and have reliable information on all its  
511 underground assets. For water and wastewater systems in Miami-Dade County, the County is  
512 the primary system for all jurisdictions. Though some municipalities own and operate their own  
513 infrastructure, the main system receiving the effluent is managed by the County. Additionally,  
514 all design, operation, and maintenance requirements must include effluent standards for  
515 pollutants.

516 The Task Force recommends that the County:

517 **3D. Undertake immediate efforts to identify and eliminate all root causes of Sanitary Sewer**  
518 **Overflows (SSO) including inflow and infiltration. Accelerate sewer infrastructure maintenance**  
519 **and upgrades**, with an emphasis on addressing all wastewater sewers that are located within  
520 2,000 linear feet from Biscayne Bay shorelines and further West (inland) near Canals, Creeks,  
521 Rivers and Lakes to reduce the potential for and impacts of SSOs, should they occur. All plans are

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<sup>8</sup> <https://www.flsenate.gov/Session/Bill/2020/712/BillText/er/HTML>

522 to be certified by letter/report, signed, and sealed by a Florida Registered Professional Engineer.  
523 Ensure the County institutes its authority to implement proactive management and have reliable  
524 information on all underground assets. Ensure adequate funding is authorized to accelerate  
525 these activities. Use the County’s authority to institute stiffer penalties for SSOs, understanding  
526 that SSOs harm the economic prosperity, health and quality of life of its residents and businesses  
527 – referencing SB:712 and increasing fines for unpermitted activities over SB:712 (Sanitary sewers,  
528 maintenance, etc.).

529 **3E. Develop and expedite a Condition Assessment and Asset Management Action Plan to**  
530 **document the condition of the County’s wastewater system assets and certify all historical “As**  
531 **Builts” and/or those not already certified with a focus on identifying horizontal and vertical**  
532 **locations of main wastewater transmission lines.** As-builts must be certified, signed and sealed  
533 by a Florida Professional Surveyor and Mapper qualified and registered to do work in Miami-  
534 Dade County. In addition, a Florida Professional Engineer, qualified and registered to do work in  
535 Miami-Dade County shall inspect and document the condition of these assets, to prioritize their  
536 condition based on risk of failure and expedite rehabilitation and/or replacement or lining  
537 following mandates in the WASD consent decree.

538  
539 *For Stormwater Systems:*

540 Actions to improve stormwater systems should leverage cost- and maintenance-effectiveness of  
541 technologies and should be holistic in order to address stormwater quality concerns at all levels,  
542 both for public and private systems county-wide. It is important to note that stormwater systems  
543 in Miami-Dade County are controlled by jurisdictions. The County only has control over the  
544 stormwater system in the Unincorporated Municipal Service Area (UMSA), so working with  
545 municipalities to coordinate improvements is critical.

546 The Task Force recommends that the County:

547 **3F. Enforce the existing code and update the stormwater design criteria to improve**  
548 **effectiveness and include advances in stormwater treatment technologies** such as stormwater  
549 catch basins, stormwater filtering systems and smart stormwater system technology that can  
550 also take into account future hydrologic conditions related to CERP and climate change. Existing  
551 Code should be updated to establish an annual operating permit for all municipal and private  
552 stormwater systems to include regular inspections and monitoring to address performance such  
553 as during heavy rainfall events. Stormwater design criteria should be updated for science-based  
554 effectiveness of water quality treatment and consider the multitude of impacts that sediment  
555 erosion, leaves, litter and other items have on stormwater systems. These can include costs of  
556 cleanups, floods caused by clogged stormwater catch basins and pipes, and groundwater and  
557 surface water pollution caused by stormwater runoff. Evaluation of technologies should be  
558 holistic in order to address stormwater runoff concerns at all points, from the street level through  
559 the outfalls. All design, operation, and maintenance requirements must include effluent

560 standards for pollutants. Develop and implement guidelines for stormwater dry retention ponds  
561 and swales that maximize watershed pollutant retention. Allocate funding for pollutant  
562 monitoring to improve design of dry and wet retention ponds for Miami-Dade County and areas  
563 within the SFWMD regional system.

564 **3G. Develop a plan to prioritize the retrofitting of stormwater infrastructure within basins with**  
565 **the most substantial water quality and/or habitat degradation issues.** All stormwater systems  
566 should be upgraded to maximize protection of water quality and municipalities should be urged  
567 to provide updates of storm water improvements to the County for inventory.

568 **3H. Eliminate direct and indirect stormwater discharges to Biscayne Bay** through a combination  
569 of infrastructure modifications (e.g., treatment technologies) to retain more stormwater at the  
570 property-level via increased stormwater management in retention and infiltration and to conduct  
571 monitoring to verify, identify and secure funding through community based and/or public private  
572 partnerships while leveraging private working capital for implementation. Eliminate discharge of  
573 untreated stormwater into canals, creeks, rivers and lakes, including from the streets. Conduct  
574 monitoring to verify, identify and secure funding to implement. Ensure basic design criteria for  
575 stormwater system management are met and documented to include : 1) grates to block debris  
576 from entering the storm drains and smart water sensors, 2) more regular maintenance of  
577 stormwater systems to prevent discharge of debris and sediment, 3) more regular cleaning of  
578 storm drainage system, and 4) standards that account for higher groundwater levels and the  
579 reduced efficacy of exfiltration systems. Specify a minimum stormwater system management  
580 schedule for MS4 co-permittees for stormwater discharged into canals, creeks, rivers and lakes,  
581 conduct monitoring to verify, identify and secure funding to implement. Implement a regular  
582 review process to update design criteria to take future conditions into account.

583

584 *For Design and Construction Methods:*

585 **3I. Set policy that all As-Builts/Record Drawings are done and certified by a Florida Professional**  
586 **Surveyor and Mapper qualified and registered to do work in Miami-Dade County.**

587 **3J. Set policy to require during the design phase of future construction that all existing utilities**  
588 **are designated and located vertically and horizontally** based on American Society of Civil  
589 Engineers (ASCE) Standard 38-02<sup>9</sup> utilizing non-destructive subsurface utility engineering  
590 methods such as soft digs and 3-D ground penetrating radar. Survey grade Mobile or Static LIDAR  
591 shall be used for mapping above ground features and utilities conducted by a Florida Professional  
592 Surveyor and Mapper qualified and registered to do work in Miami-Dade County. During plans  
593 review process, Miami-Dade County shall ensure design complies with the policy prior to final  
594 approval or issuance of any construction permit.

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<sup>9</sup> <https://www.fhwa.dot.gov/programadmin/asce.cfm>

595

596 *For Coastal Flood Management Systems:*

597 **3K. Ensure that new infrastructure projects to address coastal flooding and storm surge that**  
598 **are cost-shared by the County adhere to the recommendations of this Task Force and prioritize**  
599 **Biscayne Bay health and resilience.** This includes such USACE Back Bay Coastal Storm Risk  
600 Management (CSRSM) Feasibility Study and any future flood control projects.

601

602

#### 603 **4. Watershed Habitat Restoration and Natural Infrastructure**

604 Biscayne Bay’s health is dependent on the activities that happen within its watershed. Improving  
605 and restoring habitat county-wide has multiple benefits, including diversifying plant and animal  
606 species, providing habitat for fisheries, and increasing green spaces that absorb and filter water  
607 before it reaches our waterways and the Bay. Depending on the project, natural infrastructure is  
608 just as beneficial: it can provide additional water filtration services, can act as habitat for fisheries  
609 and other wildlife that help support our economy, and can protect the shoreline from coastal  
610 erosion and storm surge. To utilize watershed habitat restoration and natural infrastructure to  
611 improve the health of the Bay, the Task Force recommends that the County:

612 **4A. Develop ecologically acceptable living shoreline design options that are consistent with the**  
613 **existing Biscayne Bay Aquatic Preserve Act.** The County shall create “A Living Shoreline Guide”  
614 and conduct workshops with municipalities, developers, coastal engineers and other industry  
615 experts to provide the appropriate guidance on design and regulations. The County should  
616 develop incentives for living shoreline installation.

617 **4B. Raise awareness of the value of mangroves through a homeowner education campaign.**  
618 Mangroves are the first line of coastal defense and a natural barrier protecting coastal  
619 communities from storm surge, flooding and sea level rise. Mangroves provide carbon storage  
620 which helps lower carbon emissions.

621 **4C. Increase enforcement of existing rules for protecting existing mangroves and mangrove**  
622 **shorelines** to improve their future health and maintain the appropriate amount of canopy.  
623 Existing culverts that provide water to existing mangroves must be inspected and repaired.

624 **4D. Identify vulnerable properties along the coastline and partner with municipalities to focus**  
625 **on public properties and private property owners to create a voluntary Mangrove Protection**  
626 **and Restoration Zone Program** (e.g., mangrove planter box initiative) in flood-prone coastal  
627 communities to designate protection zones, plant mangroves based on the “Living Shoreline  
628 Guide,” and monitor and report progress post-storm events. In this effort, the County should  
629 include: data collection, review and consideration of opportunities for converting flood-damaged  
630 properties from willing sellers participating in current and future buy-out programs; increasing

631 buffer areas via vegetated easements; or as projects for listing in the Miami-Dade County Local  
632 Mitigation Strategy (LMS).

633 **4E. Prioritize existing and identify new green and blue infrastructure approaches and**  
634 **restoration projects**, including projects identified in existing plans like the Miami-Dade County  
635 Department of Parks, Recreation, and Open Spaces “Parks and Open Space System Master  
636 Plan,”<sup>10</sup> using data to help inform projects with significant potential for improving water quality.  
637 Retain a pool of environmental engineering firms with qualifications that include green  
638 infrastructure projects to assist staff in designing and implementing these projects. Create  
639 mechanisms for extending research and monitoring capacity by local universities to include  
640 adequate research and monitoring funds as a proportion of project funding to monitor water  
641 quality improvements. Increase incentives for green infrastructure, such as green walls and roofs,  
642 for new development, substantially improved/damaged structures, and retrofitting projects to  
643 decrease pollutant runoff. In addition, each new seawall permit application should be evaluated  
644 for natural and hybrid alternatives. Review existing County regulatory process and policies as  
645 necessary to promote the installation of natural shorelines and green infrastructure consistent  
646 with protection and enhancement of Biscayne Bay.

647 **4F. Continue to work with SFWMD and to have the State of Florida allocate the funds necessary**  
648 **to ensure the timely commencement of construction of the Cutler Flow Way in accordance with**  
649 **the project timeline in the Integrated Delivery Schedule.** The County has been a significant  
650 investor of funding and resources for the Comprehensive Everglades Restoration Plan (CERP)  
651 Biscayne Bay Coastal Wetlands (BBCW) Project by providing land acquisition, staff resources, data  
652 sharing, and directly funding a portion of the costs for the redesign of the Cutler Flow Way for  
653 Phase 1 of BBCW. Funds must be allocated from the State of Florida in a timely manner to ensure  
654 commencement of construction of the Cutler Flow Way and to allow for completion and  
655 operation under the current Integrated Delivery Schedule without further delays.

656 **4G. Continue to advocate for funding to support the Biscayne Bay Southern Everglades**  
657 **Ecosystem Restoration (BBSEER) project (also known as the BBCW / C-111).** The County should  
658 continue to actively participate and coordinate as part of the Project Delivery Team during the  
659 planning process with the USACE and SFWMD and other agencies of the Program Delivery Team  
660 (PDT) to ensure that the quantity, quality, timing and distribution of water are adequate for the  
661 complete, full scale salinity restoration of the portions of the Bay proposed for restoration under  
662 the BBCW and BBSEER projects.

663 **4H. Establish seagrass growth and maintenance requirements** based on pollutant loading and  
664 reduction targets (nutrients, sediments/turbidity), influence of temperature and dissolved  
665 oxygen, carbon dioxide, changes in food web structure, Bay recreational use, and resulting  
666 influence on water clarity and seagrass health.

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<sup>10</sup> Miami-Dade County Department of Parks, Recreation, and Open Spaces “Parks and Open Space System Master Plan.” December 2007. <[http://www.miamidade.gov/parksmasterplan/library/osmp\\_final\\_report\\_entiredocument.pdf](http://www.miamidade.gov/parksmasterplan/library/osmp_final_report_entiredocument.pdf)>

667 **4I. Accelerate green infrastructure solutions for flooding, resiliency and water quality** that  
668 include a review of watershed habitat restoration opportunities in repetitive loss areas and  
669 future flood hazard areas. Evaluate and allocate cost savings of Community Rating Systems (CRS)  
670 benefits into the Biscayne Bay watershed water quality restoration plan.

671  
672

## 673 **5. Marine Debris**

674 Marine debris is one of the most widespread problems facing the world's oceans, waterways  
675 and coastlines. It can travel long distances and traverse territorial borders, and there are many  
676 difficulties in identifying its sources. There are two common sources of marine debris: the  
677 actions that take place on land (land-based sources), and the actions that take place in  
678 waterways and the marine environment (water-based sources). It is estimated that 80% of  
679 marine debris is from land-based sources. To reduce marine debris and its impacts to the  
680 stormwater system, the Task Force recommends that the County:

681 **5A. Create a comprehensive marine debris prevention, reduction, and removal program within**  
682 **DERM and to adequately fund and staff the program.** The primary goal of the program would  
683 be to prevent, reduce, and remove the amount of marine debris entering Biscayne Bay and its  
684 tidal tributaries, thereby reducing the impact of marine debris on the Bay's flora and fauna while  
685 enhancing the quality of life for the County's residents and visitors. To accomplish this goal,  
686 program activities should include, at a minimum, marine debris related project planning,  
687 implementation and obtaining funding; public outreach and education; and enforcement action  
688 when necessary and appropriate. The program should establish annual targets for the  
689 prevention, reduction, and removal of marine debris entering the Bay.

690 **5B. Establish a marine debris working group to promote collaboration on ways to reduce**  
691 **marine debris.** The working group may include, but not necessarily be limited to, representatives  
692 of County, state and municipal resource agencies, including the SFWMD, law enforcement  
693 agencies, stormwater utilities, solid waste and public works departments, recreational and  
694 commercial boaters and fishers, and NGOs. Among the purposes of the working group should be  
695 to share information, coordinate efforts, and develop a plan to prevent, reduce, and remove  
696 marine debris. The plan should address marine debris emergency response and define annual  
697 targets for the prevention, reduction, and removal of marine debris entering the Bay. The marine  
698 debris working group could also make recommendations to the County and municipalities  
699 regarding policy and legislation for the prevention and reduction of marine debris.

700  
701 **5C. Through the Miami-Dade County Police Department, direct the Marine Patrol Unit to**  
702 **prioritize its commitment to the enforcement of all applicable laws having a nexus to the**  
703 **environmental health of the Bay and its tributaries,** including but not limited to those related to  
704 fisheries, derelict and at-risk vessels, vessel marine sanitation devices, vessel speed zones, vessel

705 groundings and mooring restrictions. The BCC should urge state and municipal marine law  
706 enforcement agencies to do the same.

707 **5D. Conduct an analysis of marine debris in Biscayne Bay** to identify primary sources of marine  
708 debris, the routes by which it is introduced into the Bay, and the areas of most significant  
709 accumulations, including within stormwater catchment basins, to guide prevention efforts and  
710 target removal.

711 **5E. Adopt a target maximum input level policy for trash.** Work with municipalities to decrease  
712 the amount of trash pollution entering Biscayne Bay from land-based trash sources and  
713 stormwater systems.

714 **5F. Evaluate the various existing stormwater outfall systems throughout the county to**  
715 **determine their effectiveness at preventing debris from entering Biscayne Bay.** This evaluation  
716 should include any recommendations for alternative designs and maintenance as well as any  
717 changes in policy or regulations regarding installation of stormwater outfall systems.

718 **5G. Identify and establish dedicated and recurring funding sources to pay for marine debris**  
719 **prevention and removal activities** and to use as matching funds for supplemental grant  
720 opportunities. Such sources may include, but not be limited to, vessel registration fees and  
721 stormwater utility fees.

722

## 723 6. Education and Outreach

724 Every citizen and visitor must be informed and educated about water quality impacts related to  
725 littering and pollution. They must be given ample opportunities to create a personal connection  
726 to, and responsibility for, the health Biscayne Bay. To educate citizens and visitors, the Task Force  
727 recommends the County:

728 **6A. Create a multi-lingual, multi-media campaign and educational outreach program** to  
729 promote and improve awareness of the economic, commercial and recreational opportunities of  
730 Biscayne Bay.

731 **6B. Leverage the funding in the Community Based Organization grant program to create a**  
732 **special focus on Biscayne Bay education.** Encourage greater coordination with local  
733 environmental education organizations, including the Environmental Education Providers, and  
734 work together with related NGOs, municipalities, agencies, public/private schools, academic  
735 institutions, environmental organizations, business organizations, and marine and tourism  
736 industry organizations to increase impact and avoid duplication of efforts.

737 **6C. Conduct an educational campaign to inform the public on the proper and improper ways**  
738 **to dispose of trash and the impacts of littering and marine debris to the health and**

739 **management of Biscayne Bay** as recommended by the Grand Jury Report (August 8<sup>th</sup> 2019)<sup>11</sup>,  
740 and instructed by Resolution R-1260-19<sup>12</sup> adopted on November 11<sup>th</sup>, 2019. Include promoting  
741 native landscapes and xeriscapes and education on the vulnerability of the Biscayne Aquifer and  
742 watershed to pollutants among other key topics. As part of the campaign, increase signage in  
743 public areas and include storm drain signage in the adopted in Resolution R-1335-19.<sup>13</sup>

744 **6D. Implement policies to reduce the amount of locally generated plastic marine debris** by  
745 restricting or banning the use and/or sale of single-use plastic items at County buildings, parks,  
746 beaches, and other facilities, and at County-sponsored events.

747 **6E. Build upon and increase volunteer clean-up activities county-wide** to support the “Keep  
748 Miami-Dade County Beautiful” initiative with the Departments of Solid Waste Management and  
749 Parks, Recreation and Open Spaces, through “Neat Streets Miami.”

750 **6F. Develop environmental sustainability and “plastic free” best practices** for commercial  
751 businesses and all public events and county-owned properties. Incorporate “Leave No Trace”  
752 principles in public education campaign.

753 **6G. Support a “Living Laboratory for Bay Health”** in conjunction with local universities, NGOs,  
754 and private sector partners to train and inspire the next generation of scientists, eco-engineers  
755 and environmental stewards through sustainable and resilient policies and business practices.  
756 Develop partnerships with academic, business and industry associations.

757 **6H. Develop and implement a contractor and lawn care industry training program** for  
758 contractors that do business with the County and all MS4 co-permittees, including County and  
759 city staff. Include an educational campaign specific to the landscaping industry about water  
760 quality impacts from fertilizer use and proper disposal of yard waste.

761 **6I. Expand the scope of Baynanza** to add year-round activities and host the Biscayne Bay  
762 Marine Health Summit (BBMHS) in collaboration with the BBMHS Steering Committee

## 763 7. Funding

764 Since all governmental levels have a role in the management of the Bay, funding needs to come  
765 from all levels: federal, state, and local. Adequate external funding will be necessary to preserve,  
766 protect and revitalize the habitat and watershed for long-term, meaningful results. To ensure  
767 funding for projects and programs, the Task Force recommends the County make water quality  
768 restoration of Biscayne Bay an annual budget priority. The Task Force also recommends that the  
769 County:

770 **7A. Collaborate with the Miami-Dade Legislative Delegation and the Congressional Delegation**  
771 **to secure annually appropriated funds to support Biscayne Bay watershed restoration**, possibly

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<sup>11</sup> Grand Jury Report (August 8<sup>th</sup> 2019)

<sup>12</sup> Resolution R-1260-19

<sup>13</sup> Resolution R-1335-19

772 through mechanisms such as legislative budget requests that may include support for a National  
773 Estuary Program and other programs that support the Biscayne Bay-based economy and quality  
774 of life in Southeast Florida.

775 **7B. Immediately engage in the legislative process to designate a Biscayne Bay License Plate**  
776 drawing from regional examples of related, successful specialty plates for Indian River Lagoon  
777 and the Tampa Bay Estuary. Funds from the sale of the license plate should benefit habitat  
778 restoration, pollution prevention and environmental education initiatives.

779 **7C. Immediately enter into a cost-share partnership with SFWMD** who has allocated funds to  
780 update the 2005 Biscayne Bay Economic Study. The purpose of the Biscayne Bay Economic Study  
781 2019 Update is to estimate the economic contribution of the Bay from 2005 to 2019 as it is used  
782 for recreation, shipping, cruising, and commercial fishing and to update the recreational uses and  
783 intensity of Biscayne Bay. The study will employ the same methodology as was used in the original  
784 2005 Biscayne Bay Economic Study that evaluated the Bay's economic contribution from 1980 to  
785 2004 so that comparisons may be made.

786 **7D. Collaborate with Florida Inland Navigational District (FIND) to immediately identify projects**  
787 **that will improve water quality and restoration of the Biscayne Bay watershed.**

788 **7E. Leverage municipal financial resources through interlocal agreements to supplement**  
789 **County funds** in order to accelerate projects that improve the water quality of Biscayne Bay.

790 **7F. Develop a mechanism to allow municipalities to work with the development community** to  
791 enhance development rights in exchange for substantial capital investments in protecting  
792 Biscayne Bay.

793 **7G. Direct the preparation of a report of potential funding sources by the Office of**  
794 **Management and Budget and the Office of Intergovernmental Affairs which would potentially**  
795 **be used for long-term support of the restoration of Biscayne Bay.** The report should include a  
796 review of the following:

- 797 • All Stormwater utilities - fees for stormwater infrastructure. The County should  
798 consider working with the cities to agree to adopt the BBMP;
- 799 • Evaluate existing revenues to determine if they are adequate to update their  
800 stormwater infrastructure to improve water quality;
- 801 • Evaluate and engage in community-based partnerships and public-private  
802 partnerships
- 803 • Senate Bill 712 – analyze the matching grant program to upgrade septic systems or  
804 hook a septic tank to a municipal sewage system;
- 805 • Evaluate potential of a voluntary contribution on WASD or municipal stormwater bills  
806 would be revenue positive, and add a voluntary contribution to fund priority septic  
807 conversions and elimination of direct stormwater outfalls

- 808 • Explore other grant programs to help upgrade outdated municipal sewage treatment
- 809 plants;
- 810 • NOAA marine debris grant funding;
- 811 • Bond program for Biscayne Bay funding;
- 812 • EPA urban water program;
- 813 • Future FDEP funding for septic system upgrades and/or conversion to sewer;
- 814 • PACE program funding;
- 815 • Water quality trading;
- 816 • Mitigation credits

817

## 818 The Future of the Bay

819 Today, there are diverse, complex problems impacting the water quality of Biscayne Bay. As  
820 water quality declines and we lose our seagrasses and habitats, the health and resilience of the  
821 Bay will continue to decline. Poor water quality will impact recreational and commercial fishing,  
822 boating, other water-related activities, and general tourism related to the Bay. Losing the jewel  
823 that is Biscayne Bay could severely affect our tourism-driven economy and depreciate waterfront  
824 property values. However, through a coordinated approach to improving water quality in the  
825 short-and long-term, we can recover and preserve Biscayne Bay for its ecological functions,  
826 economic importance, and natural splendor.

827 As our region grows and welcomes new residents and visitors, pollution prevention will be critical  
828 to improving water quality in the watershed and Biscayne Bay. The Task Force believes many of  
829 the long-term solutions to improve and manage water quality resides in the upland watershed.  
830 Local and regional canals drain into Biscayne Bay, bringing nutrient pollution from stormwater  
831 runoff, sewage pipe breaks, compromised septic tanks, plastic, marine debris, and other  
832 contaminants. Furthermore, the channelization of our waterways has led to a lack of historic  
833 freshwater flows which has contributed to changes in the ecosystem of the Bay.

834 Through land-use changes, behavioral changes spurred by education, and infrastructure  
835 improvements, we can be proactive and prevent pollution from reaching our waterways in the  
836 first place. To implement these changes and improvements, we must prioritize the Biscayne Bay  
837 watershed in our County and our municipal budgets while advocating for funding at the state and  
838 federal levels. Sustained funding sources will be critical to implement the recommendations in  
839 this report and to advance future guidance from the WMB.

840 The creation of the governing entity, the WMB, will be the mechanism for addressing the short-  
841 and long-term issues that lay in front of us. Future recommendations will surely be made by the  
842 WMB as better technology and data become available. By providing additional staff, resources  
843 and expertise now - and making the health of the Bay a county-wide priority - we can take the

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844 appropriate actions now to increase the long-term resilience of Biscayne Bay for our families,  
845 visitors, and future generations living, working, and playing in Miami-Dade County.

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847 Appendices

848 Appendix A

849 The proposed organizational structure illustrating the relationships between  
850 entities is outlined below:

- 851 • MDC Board of County Commissioners (BCC): Receives reports from WMB for progress updates,  
852 requests for funding through contracts, grants and disbursements, requests to collaborate, etc.
- 853 • Biscayne Bay Watershed Management Board (WMB): Comprised of 11 members outlined in  
854 **Figure X**, the WMB will serve as a clearinghouse for the technical and community outreach work.  
855 Members will have experience with issues related to Biscayne Bay and are expected to leverage  
856 the professional and financial resources of their respective organizations to effect goals of the  
857 Watershed Restoration Plan.
- 858 • Chief Bay Officer (CBO): The CBO will advise the Miami-Dade County Mayor and the BCC and  
859 manage the WMB and its committees. The CBO will also act as liaison with County departments,  
860 County boards, external agencies, stakeholder groups, and local, state and federal governments  
861 on water quality issues, policies and appropriations related to the health and recovery of Biscayne  
862 Bay.
- 863 • Biscayne Bay Watershed Restoration Plan (WRP): WMB will, with technical and community  
864 recommendations, review, recommend funding for and implement the Watershed Restoration  
865 Plan (WRP) to achieve time-bound and measurable progress (**e.g., X% by XXXX**) towards WRP goals  
866 to achieve water quality and seagrass restoration and meet its mandate of Bay health, recovery,  
867 and resilience.

868  
869 *The WMB should establish and appoint committees to address specific Bay issues to advise*  
870 *and make recommendations on policies, restoration projects, public information*  
871 *campaigns and water quality monitoring and targets:*

- 872  
873 • Technical Advisory Committee: Will serve as the technical experts to address those issues outlined  
874 in the restoration plan and are expected to conduct work that will include but not be limited to  
875 engaging with outside experts as needed, design and implement special studies, research and  
876 propose innovative designs, standards, and best management practices. Sub-committees may be  
877 created and chaired as designated by the Chief Bay Officer or County leadership. This committee  
878 communicates with other committees and sub-committees as needed.
- 879 • Community Advisory Committee: Will serve to implement the education and outreach restoration  
880 goals and objectives and will be comprised of members of the community as designated by the  
881 WMB or Chief Bay Officer. This committee communicates with other committees and sub-  
882 committees as needed.
- 883 • Nutrient Reduction Committee: Will serve as the technical experts whose mission is specific to  
884 the identification (i.e., load, fate and transport) and reduction of pollutant loading into surface  
885 waters of the County. This committee communicates with other committees and sub-committees  
886 as needed.

887