

Environmental Protection and Growth Management Department

STAFF REPORT
Amendment 21-T2: Peril of Flood

I. Item Summary

Commission District	All
Proposed modifications	Amendments are proposed to the following Comprehensive Plan elements: <ul style="list-style-type: none"> • Broward Municipal Services District Element • Capital Improvement Element • Coastal Management Element • Deepwater Port Component • Intergovernmental Coordination Element • Recreation and Open Space Element • Transportation Element • Water Management Element
Effect of Proposed Change	Addresses the requirements of Florida Statutes Section 163.3178(2)(f) regarding peril of flood.
Comprehensive Plan Consistency	Consistent

II. Staff Recommendation

On July 23, 2021, the Broward County Environmental Protection and Growth Management Department Local Planning Agency (LPA) found the proposed ordinance consistent with the Broward County Comprehensive Plan and recommend that the Broward County Board of County Commissioners (Board) adopt the proposed ordinance.

III. Background.

In 2015, the State Legislature amended Florida Statutes Section 163.3178(2)(f) requiring Coastal Management Elements to include “A redevelopment component that outlines the principles that must be used to eliminate inappropriate and unsafe development in the coastal areas when opportunities arise.”

IV. Description of Amendments.

Amendments are proposed to the objectives and policies of multiple comprehensive plan elements to address the peril of flood requirements within Section 163.3178(2)(f), Florida Statutes. These include the Broward Municipal Services District, Capital Improvement, Coastal Management, Intergovernmental Coordination, Recreation and Open Space, Transportation, and Water Management elements, as well as the Deepwater Port Component. In general, the proposed amendments address flood considerations in terms of capital programming, infrastructure planning, intergovernmental coordination, and development review processes.

V. Data and Analysis.

The Coastal Management Element Support Document is being updated to include the data and analysis required to support the proposed amendments. The updates are based upon the impacts of hurricanes, rainfall patterns, and sea level rise on flooding in the Broward Municipal Services District and regional county facilities. It includes an analysis of priority planning areas, storm surge zones, and Federal Emergency Management Area Flood Zones. The impacts of sea level rise in the Broward Municipal Services District and upon major county facilities are expected to be geographically limited. However, the degree to which individual parcels and facilities will be impacted varies. A small number of parcels, including single-family homes and county facilities, as well as certain streets may be completely inundated. Storm surge is modeled on current sea level rise conditions and does not account for high tide or sea level rise; both factors would increase the areas impacted by storm surge.

Broward County has regional, countywide, and local roles in water management. Various plans, regulations, programs, and agreements are in place that address peril of flood. Broward County has long recognized the potential for sea level rise to have long-term impacts on infrastructure and facilities. Extensive work has been done to classify these long-term impacts, including modeling vulnerabilities and analyzing risks, planning thoughtfully, developing sound public policies, convening support through stakeholder involvement, and implementing strategic projects and economic investments. Through this extensive work, Broward County is well-positioned to address current and future flood risk.

VI. Attachments.

Attachment A: Proposed Amendments

Attachment B: Coastal Management Support Document

A. BMSD Element:

POLICY BMSD 1.1.3 Future land uses ~~shall be designated~~ map amendments shall be evaluated with consideration of ~~appropriate~~ topography, soil conditions, ~~and~~ floodplain elevation, ~~and adopted sea level rise projections.~~ to avoid flooding, erosion, and repetitive property loss.

POLICY BMSD 1.1.12 The BMSD Map Series shall display the following:

1. Existing and planned public potable water wells, cones of influence, and wellhead protection areas
2. Rivers, bays, lakes, floodplains, canals, and harbors
3. Wetlands
4. Minerals and soils
5. ~~Adaptation Action Areas~~ Broward County Land Use Plan's Priority Planning Areas Map
6. Designated Historic Preservation Sites
7. Floodplain elevations.

OBJECTIVE BMSD 1.2 – Future Land Use Map Amendments

Proposed amendments to the BMSD Future Land Use Map shall be evaluated based on the availability of public facilities and services, site suitability, compatibility with surrounding uses, complete streets, transportation infrastructure, affordable housing, ~~and~~ potential impacts on natural resources, and potential future impacts that may result from sea level rise.

POLICY BMSD 1.2.2 Availability and capacity of the following public facilities and services shall be considered:

1. Potable water
2. Sanitary sewer
3. Solid waste
4. Roads, sidewalks, and bicycle facilities
5. Public transit
6. Drainage, including impacts from potential sea level rise
7. Parks and recreation facilities
8. Hurricane shelters and evacuation routes
9. Public Schools.

B. Capital Improvement Element:

POLICY CI1.1 Capital projects will be evaluated using the following criteria:

1. Elimination of hazards that impact public health and safety,
2. Promotion of efficient development and prevention of urban sprawl,
3. Level of impact on operating budget,
4. Protection of prior infrastructure investments,
5. Consistency with County plans and the plans of other agencies,
6. Elimination of existing deficiencies,
7. Maintenance of adopted levels of service (LOS),
8. Availability of funds and reflection of sound fiscal policies,
9. Implementation of County Commission adopted goals, and

10. Climate resilience, including flooding and sea level rise.

POLICY CI2.1 Broward County, in conjunction with its municipalities and partner agencies, will work to ensure that adaptation to climate change impacts, especially sea level rise and flooding, is incorporated into the planning, siting, construction, replacement, and maintenance of public infrastructure in a manner that is cost-effective and that maximizes the use of the infrastructure throughout its expected life span.

POLICY CI2.2 Broward County, in conjunction with its municipalities and partner agencies, will make the practice of adapting the built environment to the impacts of climate change, sea level rise, and flooding an integral component of all planning and capital improvement processes.

POLICY CI2.3 Broward County will, in coordination with its municipalities, designate Adaptation Action Areas (AAA) per Florida State law, in order to:

1. Identify areas that are vulnerable to the impacts of rising sea level and flooding,
2. Identify and implement adaptation policies to increase community resilience,
3. Enhance the funding potential of infrastructure adaptation projects

The Broward County Commission, the Broward County Planning Council, or a municipality may apply for AAA of Regional Significance designation, if the problem(s) and proposed solution(s) of the proposed area demonstrate regional significance and conform with one or more of the criteria listed in Section 2: Implementation Requirements and Procedures, Subsection: Implementation Regulations and Procedures, No. 9 - Criteria for Designating Adaptation Action Areas of Regional Significance, of the Broward County Land Use Plan.

Areas designated by the County as AAA of Regional Significance will be added to the Priority Planning Areas for Sea Level Rise Map as part of the Broward County Land Use Plan.

C. Coastal Management Element:

OBJECTIVE CM6 Promote reduction of flood risk resulting from high-tide events, storm surge, flash floods, stormwater runoff, and sea level rise, in coastal areas, as well as areas connected to or influenced by coastal waters, through development and redevelopment principles, and strategic planning.

POLICY CM6.1 Broward County shall continue to use projections regarding rainfall, sea level rise, and storm surge, as well as the Broward County Land Use Plan's Priority Planning Areas Map to plan and develop strategies that reduce flood risk to development in the Broward Municipal Services District and County infrastructure and facilities.

POLICY CM6.2 Broward County shall ensure development and redevelopment projects are designed to ensure adequate surface water management that provides for water quality and flood protection, by applying the provisions of various plans and codes including, but not limited to the following:

1. Broward County Comprehensive Plan and associated maps;

2. Broward County Land Use Plan and associated maps;
3. Broward County Code of Ordinances,
4. Florida Building Code;
5. Federal Emergency Management Agency flood elevation maps and standards.

POLICY CM6.3 Broward County shall address the impacts of flood on the built environment through adaptive planning and shall collaborate with local and regional partners to secure funding for adaptation projects.

POLICY CM6.4 Broward County shall regularly assess and plan for public infrastructure, facilities and utilities as required by the Capital Improvements Element, including the impacts of potential floods and sea level rise.

POLICY CM6.5 Broward County shall support the operation, management and enhancement of drainage infrastructure to manage floods consistent with the Climate Change and Water Management elements.

POLICY CM6.7 Broward County shall limit capital investment in high-risk flood areas except for the following:

1. Maintenance and enhancement of natural areas and resources;
2. Investments in regional infrastructure and facilities, such as Fort Lauderdale-Hollywood International Airport and Port Everglades;
3. Investments in the Broward Municipal Services District that protect public infrastructure and facilities.

POLICY CM6.8 Broward County shall consider the potential impacts of floods when planning public infrastructure improvements.

POLICY CM6.9 By 2025, Broward County shall evaluate potential flood impacts that may result from hurricanes, rainfall patterns, and sea level rise upon public infrastructure, facilities, and utilities, and plan and implement mitigation strategies such as raising base finish floor standards and developing additional site design and stormwater management standards.

POLICY CM6.10 Broward County shall assist state agencies, as requested, in the enforcement and monitoring of compliance with the Department of Environmental Protection Coastal Construction Control Line regulations in accordance with Florida Statutes.

POLICY CM6.11 Broward County shall continue to support the reduction of flood insurance premiums for County residents through the following actions:

1. Participating in the National Flood Insurance Program's Community Rating System (CRS) administered by the Federal Emergency Management Agency (FEMA) to reduce flood losses;
2. Supporting programs and outreach which educate residents on the benefits of flood insurance, and their flood risk associated with high tide events, storm surge, flash

- floods, stormwater runoff, and the sea level rise;
3. Reviewing, developing, and enhancing standards and programs to mitigate increasing flood;
 4. Coordinating with relevant stakeholders to secure access to technical assistance and support for the County and municipalities;
 5. Supporting municipalities in their development of resiliency policies and implementation of prioritized hazard mitigation projects;
 6. Maintaining the enhanced Local Mitigation Strategy and local mitigation project lists.

D. Intergovernmental Coordination

OBJECTIVE IC7 – Ensure Adaptation to Climate Change Impacts. Broward County shall ensure that potential impacts from climate changes, including impacts resulting from floods, hurricanes, and sea level rise, adaptation to climate change impacts, especially sea level rise, is are considered as part of during the planning, siting, construction, replacement, and maintenance of public infrastructure.

POLICY IC7.1 Broward County shall coordinate with local, regional, State, and federal government agencies to ensure that climate change impacts, especially impacts resulting from floods, hurricanes, and sea level rise, are considered during public infrastructure planning processes.

POLICY IC7.2 Broward County shall provide technical support for municipalities that seek to develop policies that mitigate or minimize climate change impacts, including:

1. Coastal and inland flooding;
2. Salt water intrusion; and
3. Other related impacts of climate change, including floods, hurricanes, and sea level rise.

POLICY IC7.3 Broward County shall coordinate with municipalities to designate Adaptation Action Areas, pursuant to Florida Statutes, for the purposes of:

1. Planning for climate change, including floods, hurricanes, and sea level rise;
2. Designating areas vulnerable to floods and sea level rise, including, but not limited to:
 - a. Areas below, at, or near mean high water;
 - b. Areas which have a hydrological connection to coastal waters; and
 - c. Areas designated as evacuation zones for storm surge; and
3. Prioritizing funding for infrastructure needs and adaptation planning.

POLICY IC7.4 Broward County shall collaborate with federal, State, regional, and local entities to:

1. Seek federal government technical and financial assistance to plan, develop, and implement projects and strategies that assess and mitigate impacts expected from climate change, including floods, hurricanes, and sea level rise;

2. Coordinate and advance strategies, programs, and other initiatives that reduce greenhouse gas (GHG) emissions; and
3. Encourage local governments to participate in the Federal Emergency Management Administration (FEMA) Community Rating System (CRS) program as it relates to flood plain management and assist those who participate to maintain and/or improve their ratings, as applicable.

POLICY IC7.5 Broward County shall continue to create collaborative intergovernmental practices and mechanisms in order to coordinate and advance strategies, programs, and other sustainable initiatives throughout the County and region, that mitigate GHG emissions and protect and adapt the built and natural environments to the consequences of climate change, including floods, hurricanes, and sea level rise.

POLICY IC7.6 Broward County shall coordinate regionally with other Southeast Florida counties, academia, and State and federal government agencies in the analysis of climate change impacts, including sea level rise, drainage flood, and hurricane impacts, and the planning of adaptation measures.

POLICY IC7.7 Broward County shall continue to collaborate with municipalities, neighboring counties, and regional and state agencies, as well as private entities to create, develop, and implement a suite of planning tools for climate change mitigation and adaptation, including adaptation to floods, hurricanes, and sea level rise.

POLICY IC7.8 Broward County shall continue to collaborate with and support local and regional planning entities to ensure that plans, such as local municipal comprehensive plans, regional strategic plans, post-disaster mitigation plans, water management plans, and transportation plans are updated to provide for a sustainable environment and reflect the best available data and strategies for adapting to future climate change impacts, including sea, level rise, flood and hurricane impacts.

POLICY IC7.9 Broward County shall continue to actively participate in the Southeast Florida Regional Climate Change Compact, ~~working with our neighboring counties to make our region more~~ further climate change resilience, by sharing technical expertise, assessing regional vulnerabilities, advancing agreed upon mitigation and adaptation strategies, and developing joint regional, State and federal legislative policies and programs.

POLICY IC7.10 Broward County shall seek ~~to engage~~ the support of federal agencies, such as National Oceanic and Atmospheric Administration, U.S. Geological Survey, Federal Emergency Management Agency, Environmental Protection Agency, the U.S. Department of Interior, U.S. Department of Energy, and the U.S. Army Corps of Engineers, that can provide technological and logistical support to further State, regional, County, and local planning efforts in the assessment of climate change vulnerabilities (including sea level rise, flood, and hurricane impacts) and adaptation strategies.

E. Port Component:

OBJECTIVE P2.1 – PROTECTION FROM NATURAL HAZARDS

~~PEĐ~~ The Port Everglades Department shall implement the measures required by Broward County and other agencies to protect human life and property from natural hazards, including airborne hazards, sea level rise, and potential flooding, and will work with Broward County in implementing the Broward County Enhanced Local Mitigation Strategy (2017) and ensure new Port facilities and infrastructure, including roads, are hardened from disasters related to wind and flood.

POLICY P2.1.1 - ~~PEĐ~~ The Port Everglades Department shall ensure that any habitable, non-residential buildings in special flood hazard areas are designed and constructed to reduce the potential for flooding and wind damage. ~~All structures within the defined flood zones shall be constructed in accordance with the provisions specified in the Florida Building Code. (See Policy 2.1.2)~~

POLICY P2.1.2 - ~~PEĐ~~ The Port Everglades Department shall ensure that all buildings are designed and constructed in accordance with the Florida Building Code and as approved by Broward County and the appropriate municipality.

OBJECTIVE P2.2 – Coastal Storm High Hazard Areas

~~PEĐ~~ The Port Everglades Department shall follow Broward County's requirements for Coastal High Hazard Storm Areas, ~~which shall be defined as the Category 1 and 2 Hurricane Evacuation Zones identified within~~ as shown on the Broward County Land Use Map (Series) entitled "Flood Plains, Flood-Prone Areas, and Coastal Storm Areas."

POLICY P2.2.2 - ~~PEĐ~~ The Port Everglades Department shall ~~continue to disallow the allocation of not use public funds expenditures~~ for infrastructure improvements, ~~that do not consider the potential impacts of sea level rise and flooding and that would promote residential development or the concentration of permanent populations within the Coastal Storm High Hazard Area. It shall also continue to~~ and shall discourage any amendment ~~to~~ of the Broward County Land Use Plan's Port Everglades Transportation Area permitted uses section of the BCLUP and any amendment of the Port Everglades Development District to allow permanent residential uses within the PJA Port Jurisdictional Area.

OBJECTIVE P2.8 – POST-DISASTER REDEVELOPMENT

~~PEĐ~~ The Port Everglades Department shall work with the EMD in the ongoing initiative to develop a Broward County Recovery Framework, a long-term strategic framework for post-disaster redevelopment in compliance with State guidelines.

F. Recreation and Open Space Element:

POLICY R4.3 Broward County Parks and Recreation Division, Environmental Planning and Community Resilience Division, and Highway Construction and Engineering Division shall study climate change, sea level rise, and potential flooding impacts on recreation and open space areas and facilities, including the cost impacts on net acreage, and include strategies and recommendations to address these impacts.

POLICY R4.5 Broward County shall support funding for sustainability of parks and recreation areas, including the possible costs of climate change, sea level rise, and potential flooding adaptation, by evaluating the current level of impact fees. Recommendations provided will be based on future needs and best practice examples.

G. Transportation Element:

OBJECTIVE T2.5 Broward County shall advance transportation and land use choices that: reduce fossil fuel use and vehicle miles traveled; improve the mobility of people, goods, and services; provide a diverse, efficient, and equitable choice of transportation options; and increase the County's resiliency to the impacts of climate change, including sea level rise and potential flooding.

POLICY T2.5.5 Broward County should assist in coordinating transportation-related adaptation policies across jurisdictional boundaries and ensure consistency among broader planning and plan implementation efforts, including the Broward County Emergency Management Enhanced Local Mitigation Strategy and Fort Lauderdale-Hollywood International Airport Master Plan. Specifically, strategies for preparing for sea level rise and potential flooding, such as increasing road surface elevation standards, subsurface stabilization, stormwater management and drainage, ~~and~~ adjustment of bridge heights to allow for navigation, and should shall be collaboratively assessed and implemented.

POLICY T3.2.2 Broward County shall make the most efficient use of transportation funding through implementation of, but not limited to, the following programs and activities:

1. Coordinate construction of roadway and utility projects to avoid duplicate construction costs and inconvenience to residents, where feasible;
2. Continue to add bicycle lanes and multimodal improvements as a part of roadway resurfacing projects, where feasible;
3. Continue to utilize the Complete Streets Team to prioritize Complete Streets projects and coordinate with municipalities, the Broward MPO, and FDOT on projects and to identify funding opportunities to expand the number of Complete Streets projects implemented each year;
4. Consider establishing public-private partnerships to enable the expedient construction and operations of major/critical transportation infrastructure projects; ~~and~~
5. Regularly apply for Broward MPO Complete Streets and other Localized Initiatives Program (CSLIP) grants and other local, State, and federal grants that support multimodal transportation planning, design, and construction;
6. Consider the impacts of potential sea level rise and flooding when planning transportation improvement projects and incorporate adaptation practices as needed to protect transportation infrastructure investments.

POLICY T4.2.7 The 2014 2018 update to the Port Everglades Master/Vision Plan, which is a plan designed to maximize market share and revenue through a realistic five year

facility development program within a framework of 10 and 20-year vision plans, shall guide Port development.

POLICY T4.2.8 Projects developed consistent with the 2019 update to the Port Everglades Master/Vision Plan shall consider the impacts of sea level rise and flooding on Port improvements projects and incorporate adaptation practices to protect Port investments.

POLICY T4.5.11 Broward County shall collaborate with regional and local transportation partners, including FDOT and rail operators, to identify areas and projects most vulnerable to climate change and sea level rise and take appropriate action to increase resiliency to adverse physical, economic, and/or social impacts. The County shall continue to implement recommendations in the Southeast Florida Regional Climate Change Action Plan.

H. Water Management Element:

POLICY WM1.7 WWS will identify and evaluate the costs and benefits of climate change, sea level rise, and potential flooding adaptation alternatives; implement energy and other resource efficiencies; and incorporate resilient designs; while balancing operational, economic, and environmental effects, when evaluating construction of new, or retrofit of existing, potable water facilities and infrastructure.

POLICY WM1.12 WWS will implement construction of new, or retrofit of existing, sanitary sewer facilities and collection systems in coastal areas that are identified as potentially impacted by sea level rise and potential flooding by 2045, but may limit expenditures in Coastal Storm Areas consistent with the Capital Improvements Element (Objective CI2).

POLICY WM1.13 WWS will assess, identify, and evaluate the costs and benefits of the design, construction, and operation of storm water management facilities within its jurisdiction in a manner that conserves and enhances the availability of potable water and supports environmental resources, while preventing area flooding and protecting from sea level rise, potential flooding, and other climate change impacts when evaluating construction of new, or retrofit of existing, facilities.

POLICY WM2.5 Broward County will continuously update the future conditions map series, including wet season groundwater elevation and future condition flood elevation maps, to reflect impacts of projected sea level rise, potential flooding, and climate change for planning and regulatory purposes.

POLICY WM2.7 Broward County will support ongoing and enhanced development of regional hydrologic models, the integration of downscaled climate data, and continuous data collection to help predict and track the impacts of sea level rise, potential flooding, and changing rainfall patterns on groundwater levels, saltwater intrusion, and drainage infrastructure to support local planning and projects.

POLICY WM2.8 Broward County will use the Broward County Land Use Plan's Priority Planning Areas Map to identify assess water infrastructure at risk from ~~unified projected~~ sea level rise. projections of 9 to 26 inches (timeframe of 2010 to 2060) and other climate change related impacts by 2025 and update this assessment every 5 years or as new data is available. (20-T4: Adopted June 15, 2021.)

POLICY WM2.9 Broward County will coordinate with the County's drainage districts, municipal governments, SFWMD, Florida Department of Health (FDOH), and the Florida

Department of Environmental Protection (FDEP) to study whether to build, modify, or relocate water, wastewater, and storm water transmission infrastructure to allow for strategic retreat from areas at risk from potential flooding and sea level rise.

POLICY WM2.12 Broward County will provide support to and coordinate with municipalities, drainage/water control districts, and the SFWMD in planning for ~~climate adaptation and drainage system improvements~~, including improvements that may be required due to sea level rise and potential flooding.

OBJECTIVE WM3 – Water Resources Development, Permitting and Management
Broward County will develop and manage its water resources and related infrastructure in a manner that maximizes use of existing resources; is cost-effective; provides protection for existing resources, to the maximum extent practicable; meets all applicable federal, State, and local regulations; and takes into consideration the future water management challenges associated with adaptation to sea level rise, potential flooding, and climate change.

POLICY WM3.3 Potable water facilities will be designed, constructed, maintained, and operated with consideration given to the potential impacts of sea level rise, potential flooding, and climate change and in such a manner as to protect the functions of natural groundwater recharge areas, natural drainage features, and groundwater levels, without inducing the inland movement or upwelling of saline water into Underground Sources of Drinking Water (USDW), as defined in Chapter 62-528, FAC, and SFWMD Basis of Review for Water Use, as referenced in Chapter 40E-2, FAC.

POLICY WM3.4 Broward County will work to protect existing wellfields, water supplies, surface or subsurface storage facilities, control structures, water and wastewater treatment plants, and transmission infrastructure from increased coastal or inland flooding, sea level rise, saltwater intrusion, and other potential future climate change impacts, and support utility efforts to plan infrastructure replacement and relocation, as needed.

POLICY WM3.10 Broward County will collaborate with utilities, drainage districts, and the ~~SFWMD~~ South Florida Water Management District to ensure the adequacy of water supply facilities and infrastructure to effectively capture, store, treat, and distribute potable water under variable climate conditions, including changes in rainfall patterns, unified sea level rise projections, ~~of 9 to 26 inches from 2010 to 2060~~, and flooding, and associated water quality and quantity impacts. **(20-T4: Adopted June 15, 2021)**

POLICY WM3.17 Broward County will encourage the use of storm water best management practices (BMPs) in accordance with its regulations and those of the FDEP and SFWMD in order to mitigate potential impacts of floods and protect water quality.

POLICY WM3.19 Broward County will continue to monitor the quality of waters flowing into the Broward County coastal ecosystems and implement strategies to maintain protection or improvement of the system, considering potential contamination resulting from floods, inundation, structural failure, or abandonment of residential, industrial, and

municipal assets resulting from sea level rise, storm events, or other climate related impacts.

POLICY WM4.7 Broward County will coordinate regionally to advance the use of the IWRP and Countywide Reuse Master Plan tools to increase flood protection, water quality treatment, water supply sources, storm water storage, wetland sustainability, ground water recharge, use of reclaimed water for irrigation, aquifer recharge, and environmental enhancement, where technically, environmentally, and economically feasible, to protect water resources and develop climate change, including potential flooding and sea level rise resilience.

POLICY WM4.9 Broward County, in cooperation with its municipalities and appropriate local agencies, will evaluate water and storm water management systems operation strategies in the context of potential flooding or sea level rise to: lessen negative impacts to parks and open spaces, wetland mitigation areas, and other natural systems; improve the ability of these systems to adapt to climate change, including potential flooding and sea level rise; and optimize the ability of these systems.

POLICY WM4.11 Broward County will work with the SFWMD and drainage districts to implement applicable portions of the most recent LECRWSP Update, intended to reduce losses of excess storm water to tidal runoff, recharge the Surficial Aquifer System, and provide additional storage of surface waters ~~in the context of sea level rise~~, in order to improve the ability of these systems to adapt to climate change, including potential flooding, sea level rise, and ~~prevent~~ saltwater intrusion.

POLICY WM4.12 Broward County will participate in intergovernmental coordination of subregional water supply projects and the development of alternative water supply projects to:

- ensure adaptation to climate change impacts, including potential flooding and especially adopted sea level rise projections, is incorporated into the project planning, siting, construction, replacement, and maintenance of water supply infrastructure;
- ~~in a manner that is~~ ensure projects are cost-effective; and,
- ~~and that~~ maximizes the use of the infrastructure throughout its expected life span.

POLICY WM4.13 Broward County will collaborate with local, regional, state, and federal agencies and others on potential impacts of flooding and climate change on the region's water resources and support the development of local integrated models and continuous data collection to help predict and track the impacts of sea level rise on groundwater levels, saltwater intrusion, and drainage infrastructure.

POLICY WM4.16 Broward County will coordinate with local municipalities and water and wastewater utilities to develop, by 2025, policies and plans that set short-, intermediate, and long-range goals and establish adaptive management implementation strategies for water and wastewater resources under their jurisdiction to address the potential operational, economic, and environmental effects impacts of floods, sea level rise, and climate change. ~~and its operational, economic, and environmental effects.~~

POLICY WM4.18 Broward County will coordinate with the SFWMD, local utilities and neighboring counties to develop regional water demand projection scenarios over a 100-year planning horizon that account for potential impacts of floods, sea level rise, and climate changes including changes in: (1) population and rates of water consumption; (2) municipal, industrial, and agricultural demands; and (3) energy generation water demands due to the possible use of new fuel sources.

POLICY WM4.19 Broward County will collaborate with local, regional, state, and federal partner agencies to develop the scientific and technical knowledge needed to understand the potential impacts of of floods, sea level rise, and climate change on the region's water resources, evaluate various adaptation technologies, and, by 2025, create an adaptive response plan. Advanced hydrological modeling and engineering evaluations by SFWMD, USGS, and U.S. Army Corps of Engineers (USACE) will be especially critical to this effort.

Contents

Introduction	1
B. Service Area	1
Data Requirements	1
H. Post-Disaster Redevelopment	1
1. <u>Comprehensive Emergency Management Plan</u>	1
2. <u>Peril of Flood</u>	2
a. <u>Hurricanes</u>	4
b. <u>Rainfall Patterns</u>	5
c. <u>Sea Level Rise</u>	5
Analysis Requirements	6
A. Post-Disaster Redevelopment	6
1. <u>Broadview Park</u>	6
a. <u>Priority Planning Areas</u>	7
i. <u>Sunview Park</u>	7
ii. <u>Florida’s Turnpike Drainage</u>	7
iii. <u>Butterfly Lake</u>	7
iv. <u>Single-family</u>	7
v. <u>SR 7/US 441 Right-of-Way</u>	7
vi. <u>SW 25th Street</u>	7
b. <u>Storm Surge Zones</u>	7
c. <u>Federal Emergency Management Area Flood Zones</u>	8
2. <u>Central County</u>	8
a. <u>Priority Planning Areas</u>	8
i. <u>Reverend Samuel Delevoe Park</u>	8
ii. <u>Single-family Residential</u>	9
iii. <u>Cemetery</u>	9
b. <u>Storm Surge Zones</u>	9
c. <u>Federal Emergency Management Area Flood Zones</u>	9
3. <u>North County</u>	10
a. <u>Priority Planning Areas</u>	10
b. <u>Storm Surge Zones</u>	10
c. <u>Federal Emergency Management Area Flood Zones</u>	10
4. <u>Port Everglades</u>	11
a. <u>Priority Planning Areas</u>	11
b. <u>Storm Surge Zones</u>	11
c. <u>Federal Emergency Management Area Flood Zones</u>	11
5. <u>Fort Lauderdale-Hollywood International Airport</u>	11
a. <u>Priority Planning Areas</u>	11
b. <u>Storm Surge Zones</u>	11
c. <u>Federal Emergency Management Area Flood Zones</u>	13
6. <u>Water Conservation Areas</u>	13
Implementation Requirements	14
H. Post Disaster Redevelopment and Peril of Flood	14
1. <u>Plans, Regulations, and Agreements</u>	15
a. <u>Broward County Charter</u>	15

- b. [Broward County Land Use Plan](#) 15
- c. [Broward County Comprehensive Plan](#) 18
- d. [Broward County Code of Ordinances](#)..... 21
- e. [Future Conditions Map Series](#)..... 24
- f. [Priority Planning Areas for Sea Level Rise Map](#)..... 24
- g. [Federal National Flood Insurance Program](#)..... 24
- h. [South Florida Regional Climate Change Compact](#)..... 25
- 2. [Intergovernmental Coordination Initiatives](#) 25
 - a. [Water Advisory Board](#) 25
 - b. [Climate Change Task Force](#)..... 25
 - c. [Broward Leaders Roundtable on Climate Resilience](#)..... 26
 - d. [Chief Resilience Officer and Climate Resilience Unit](#)..... 26

Figures

- [Figure 1: Central and South Florida Project Boundaries](#) 3
- [Figure 2: Hurricane Evacuation Zones](#) 4
- [Figure 3: Priority Planning Areas-Broadview Park](#) 6
- [Figure 4: Storm Surge Zones-Broadview Park](#)..... 7
- [Figure 5: Federal Emergency Management Area Flood Zones-Broadview Park](#) 8
- [Figure 6: Priority Planning Areas and Storm Surge Zones-Central County](#)..... 9
- [Figure 7: Federal Emergency Management Agency Flood Zones-Central County](#) 10
- [Figure 8: Federal Emergency Management Agency Flood Zones-North County](#) 10
- [Figure 9: Priority Planning Areas-Fort Lauderdale-Hollywood International Airport and Port Everglades](#)..... 12
- [Figure 10: Storm Surge Zones- Fort Lauderdale-Hollywood International Airport and Port Everglades](#)..... 12
- [Figure 11: Flood Zones - Fort Lauderdale International Airport and Port Everglades](#) 13
- [Figure 12: Water Conservation Areas and Developable Area](#)..... 14
- [Figure 13: Peril of Flood-related Comprehensive Plan Objectives and Policies](#) 19

Introduction

B. Service Area. The planning service area, as it relates to beach erosion and accretion accumulation trends, beach nourishment projects, beach conditions, vegetative coverings, marine resources, sea turtle protection, fisheries' management, and artificial reefs, is Countywide. The planning service area, as it relates to peril of flood, is the Broward Municipal Services District and regional infrastructure and facilities.

Data Requirements

H. Post-Disaster Redevelopment.

1. Comprehensive Emergency Management Plan.

The Comprehensive Emergency Management Plan's Recovery Plan addresses the recovery phase of a disaster. It is intended to provide for rapid and efficient delivery of recovery operations following a natural disaster. Recovery actions span from initial response through the long-term recovery. ~~In 2019, Broward County will initiate a Vulnerability Analysis that will help inform the requirements of the 2015 Peril of Flood legislation, described below.~~

1. Peril of Flood Legislation.

~~In 2015, the State Legislature adopted "Peril of Flood" legislation that was added to Section 163.3178 Coastal management, F.S. Subsection (2)(f) adds the requirement for, "A redevelopment component that outlines the principles that must be used to eliminate inappropriate and unsafe development in the coastal areas when opportunities arise." The component must:~~

- ~~1. Include development and redevelopment principles, strategies, and engineering solutions that reduce the flood risk in coastal areas which results from high-tide events, storm surge, flash floods, stormwater runoff, and the related impacts of sea-level rise.~~
- ~~2. Encourage the use of best practices development and redevelopment principles, strategies, and engineering solutions that will result in the removal of coastal real property from flood zone designations established by the Federal Emergency Management Agency.~~
- ~~3. Identify site development techniques and best practices that may reduce losses due to flooding and claims made under flood insurance policies issued in this state.~~
- ~~4. Be consistent with, or more stringent than, the flood-resistant construction requirements in the Florida Building Code and applicable flood plain management regulations set forth in 44 C.F.R. part 60.~~
- ~~5. Require that any construction activities seaward of the coastal construction control lines established pursuant to s. 161.053 be consistent with chapter 161.~~
- ~~6. Encourage local governments to participate in the National Flood Insurance Program Community Rating System administered by the Federal Emergency Management Agency to achieve flood insurance premium discounts for their residents."~~

~~These requirements are being met through multiple policies that appear in the Climate Change, Coastal Management, Intergovernmental Coordination, Natural Disaster, and Water Management Elements, in addition to the Broward Municipal Services District Land Use and Community Planning Element. A new objective has been added to the Coastal Management Element that focuses on flood mitigation and post-disaster redevelopment issues related to flooding.~~

~~Broward County will continue to further explore other planning and post-disaster strategies and policies, which address:~~

- ~~1. Expediting demolition of abandoned significantly damaged structures;~~
- ~~2. Requiring utility and infrastructure improvements that reduce vulnerability to storms and disasters;~~
- ~~3. Promoting energy efficient, heat reduction, and storm resilient features in the redevelopment of neighborhoods, including solar farms and replanting trees;~~
- ~~4. Improving drainage and raising structures, driveways and streets to avoid flooding damages;~~
- ~~5. Restricting redevelopment of properties in areas prone to repeat flood, wind or fire damage;~~
- ~~6. Addressing resiliency of mobile homes and other types of manufactured homes;~~
- ~~7. Transferring of title of abandoned properties within a reasonable time frame to promote expedited redevelopment.~~

~~2. Areas Subject to Coastal~~ Peril of Flood.

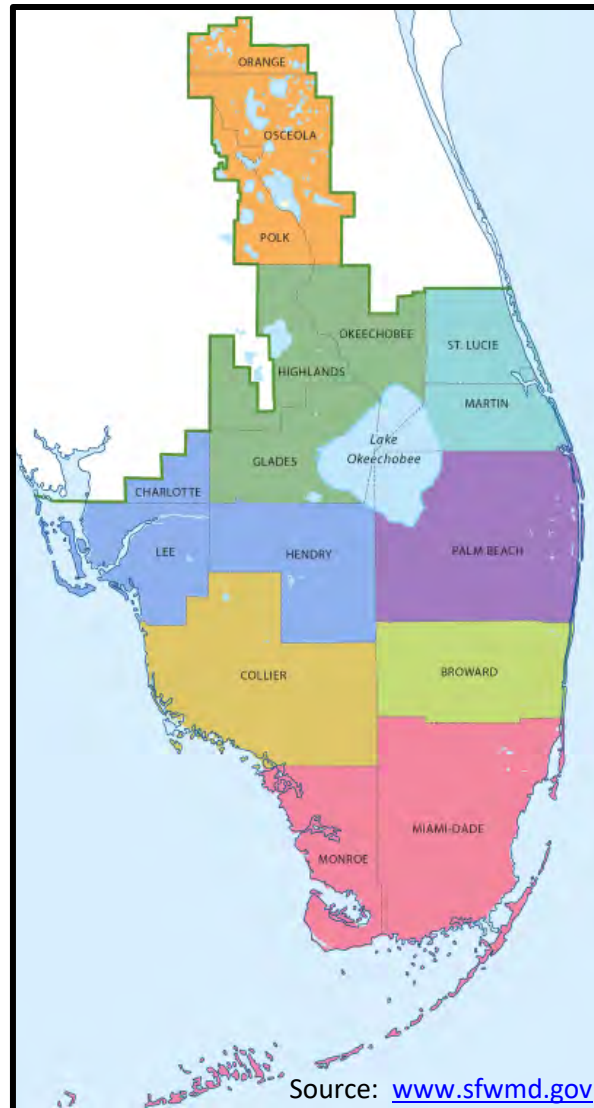
~~In 2015, the State Legislature amended Florida Statutes Section 163.3178(2)(f) requiring Coastal Management Elements to include “A redevelopment component that outlines the principles that must be used to eliminate inappropriate and unsafe development in the coastal areas when opportunities arise.”~~

~~The redevelopment component must:~~

- ~~• Include development and redevelopment principles, strategies, and engineering solutions that reduce the flood risk in coastal areas which results from high-tide events, storm surge, flash floods, stormwater runoff, and the related impacts of sea-level rise.~~
- ~~• Encourage the use of best practices of development and redevelopment principles, strategies, and engineering solutions that will result in the removal of coastal real property from flood zone designations established by the Federal Emergency Management Agency.~~
- ~~• Identify site development techniques and best practices that may reduce losses due to flooding and claims made under flood insurance policies issued in this state.~~
- ~~• Be consistent with, or more stringent than, the flood-resistant construction requirements in the Florida Building Code and applicable flood plain management regulations set forth in 44 C.F.R. part 60.~~
- ~~• Require that any construction activities seaward of the coastal construction control lines established pursuant to s. 161.053 be consistent with chapter 161.~~

- Encourage local governments to participate in the National Flood Insurance Program Community Rating System administered by the Federal Emergency Management Agency to achieve flood insurance premium discounts for their residents.”

Figure 1: Central and South Florida Project Boundaries



Development of Broward County was made possible through extensive environmental alterations to drain and fill land that was part of the Everglades. The flood control and drainage system is comprised of both regional and local infrastructure. The result is an extensive system of interconnected drainage canals, water storage areas, levees, and pumps.

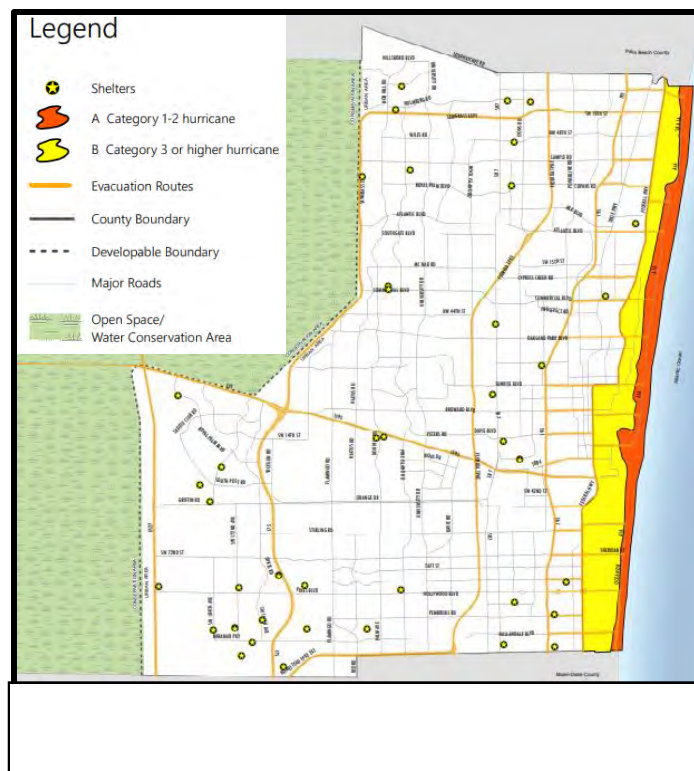
The regional or primary drainage system is part of the federal Central and Southern Florida Project. It is managed by the South Florida Water Management District, a regional state agency that extends from Orange County to the north to Monroe County to the south. It includes the Water Conservation Areas and primary drainage canals that store and convey water, primarily to the Atlantic Ocean.

The local or secondary drainage system includes an extensive system of minor canals and water detention ponds, managed by local government and drainage districts. The on-site or tertiary drainage systems direct water from buildings and parking areas. On-site drainage works may involve extensive site conditioning through filling, grading, and other earthworks. Local government ensure proper on-site drainage through the development review process.

Historically, the regional and local drainage systems have worked effectively to protect development. However, hurricanes, rainfall patterns, and sea level rise place increased demands on the system.

- a. **Hurricanes.** The phrase “areas subject to coastal flooding” refers to areas delineated by the local hurricane evacuation plan that require evacuation. The Federal Emergency Management Agency designates these areas as flood zone VE and they also are known as the coastal high hazard areas. Flood VE Zone is defined by the 100-year flood, meaning there is a one percent (1%) annual chance of flooding. The base flood elevations reflect the combined influence of still-water flood elevations, primary frontal dunes, and wave effects 3 feet or greater. In Broward County, the VE flood zone generally corresponds with the Category 3 storm event evacuation zone. Map ND-1 of the BrowardNEXT Map Series illustrates the evacuation zones for a Category 1-2 Hurricane and for a Category 3 or higher Hurricane. The evacuation zone for a Category 3 or higher hurricane is generally east of Federal Highway and a Category 1-2 Hurricane is generally east of the Intracoastal Waterway.

Figure 2: Hurricane Evacuation Zones



The Broward Municipal Services District does not have residential areas located within flood zone VE or the coastal high hazard area. A portion of Port Everglades,

which consists primarily of major roadways and rights-of-way, is located within the Broward Municipal Services District. The majority of Port Everglades is located within the City of Hollywood, but portions also are located within the Broward Municipal Services District and the cities of Dania Beach and Fort Lauderdale. The multi-jurisdictional area occupied by Port Everglades is the called the Port Jurisdictional Area. The Broward County Board of County Commissioners operates Port Everglades as a landlord and develops and leases its facilities to private-sector tenants. The Port is divided into three drainage sections: Northport, Midport, and Southport. Over 80 outfalls discharge into the Dania Cutoff Canal, Southport Turning Notch, Intracoastal Waterway, Florida Power and Light Canal, and the Northport Turning Basin. Surface water runoff is treated through exfiltration trenches or detention area prior to discharge through one of the outfalls. The 2018 Port Everglades Master/Vision Plan Update addresses drainage, including stormwater management design with consideration of projected sea level rise.

- b. Rainfall Patterns. Broward County receives most of its rainfall between the middle of May and the middle of October. The rainfall pattern varies and is influenced by the presence of El Nino or La Nina conditions. In general, El Nino is a warming of Pacific Ocean water. It creates conditions that produce greater than average rainfall, but suppress hurricanes. In contrast, La Nina is a cooling of Pacific Ocean water. It creates conditions that produce less than average rainfall, but favor hurricanes.
- c. Sea Level Rise. Broward County is especially vulnerable to sea level rise due to its low elevation and porous geology. It is also susceptible to king tides, which are the highest predicted tides of the year at a coastal location. King tides are a natural occurrence produced by the combined gravitational pulls of the earth, moon, and sun. Sea level rise amplifies the impacts of king tides and causes king tides to be higher than normal and extend farther inland. Broward County primarily experiences king tides during the fall.

Broward County is part of the Southeast Florida Regional Climate Change Compact in partnership with Miami-Dade, Monroe, and Palm Beach counties. The first Regionally Unified Sea Level Rise Projection for Southeast Florida was adopted by the Board of County Commissioners in 2013, with updates in 2015 and 2019. It is used by Broward County to assist with decision-making regarding future development and infrastructure planning. It provides the basis for the Priority Planning Areas for Sea Level Rise Map which indicates areas that are potentially vulnerable to sea level rise, including areas that are subject to tidal influence.

The Board of County Commissioners adopted the current Priority Planning Areas for Sea Level Rise Map as part of the Broward County Planning Council's Natural Resources Map Series on February 23, 2021. It reflects a 3.3-foot sea level rise projection by 2070. The update substantially increased the geographic extent of the Priority Planning Areas along tidally influenced inland canals and waterways.

Analysis Requirements.

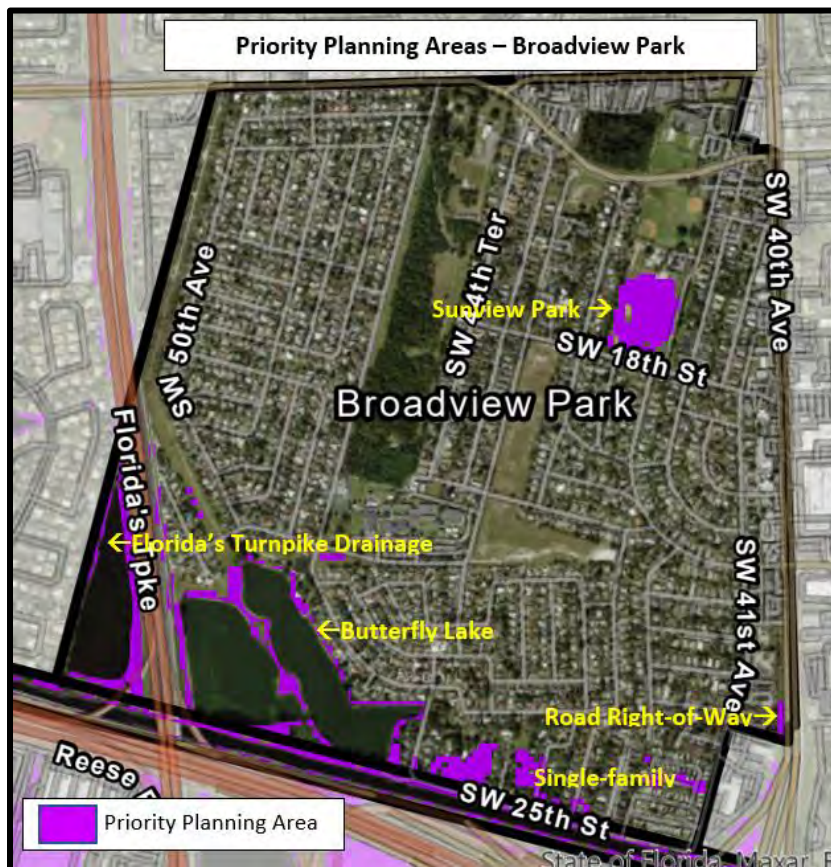
H. Post-Disaster Redevelopment

This section provides an analysis of how peril of flood impacts the Broward Municipal Services District and regional facilities, including Broadview Park, Central County, North County, Port Everglades, Fort-Lauderdale Hollywood International Airport, and the Water Conservation Areas. The following analysis is based upon the projected 3.3-foot sea level rise by 2070. As demonstrated in the following analysis, the impacts of sea level rise in the Broward Municipal Services District and upon major county facilities are expected to be geographically limited. However, the degree to which individual parcels and facilities will be impacted varies. A small number of parcels, including single-family homes and county facilities, as well as certain streets may be completely inundated. Storm surge is modeled on current sea level rise conditions and does not account for high tide or sea level rise; both factors would increase the areas impacted by storm surge.

1. Broadview Park.

- a. Priority Planning Areas: Under the 3.3-foot sea level rise scenario, limited areas of Broadview Park may experience inundation. The most vulnerable areas are along the New River, Butterfly Lake, and Sunview Park.

Figure 3: Priority Planning Areas-Broadview Park



Source: Broward County Environmental Planning and Community Resilience Division, February 23, 2021.

- i. Sunview Park: Some sports fields and a small support building in the park may be inundated.
- ii. Florida's Turnpike Drainage: Water may rise on the embankment of the drainage pond located at the northwest corner of the intersection of I-595 and Florida's Turnpike.
- iii. Butterfly Lake: A single-family house abutting the northeastern side of the lake is at risk of inundation by a 3.3-foot sea level rise. High-voltage powerlines cross a portion of Butterfly Lake. Powerline support structures are located on a narrow peninsula that is subject to inundation. Several single-family homes located to the southeast of Butterfly Lake may be inundated by a 3.3-foot sea level rise.
- iv. Single-family: A portion of agriculturally zoned land may be inundated; this land is not actively used for farming, however, several single-family homes may be inundated by a 3.3-foot sea level rise. An open space portion of the Lazy Land Mobile Home Park located in the southeastern portion of Broadview Park may be inundated by a 3.3-foot sea level rise.
- v. SR 7/US 441 Right-of-Way: A portion of SR 7/US 441 located in the southeastern portion of Broadview Park may be inundated by a 3.3-foot sea level rise. It is currently used for stormwater retention.
- vi. SW 25th Street. Portions of SW 25th Street may be inundated by a 3.3-foot sea level rise. Access to most development along SW 25th Street may be provided by interconnecting streets. The southernmost section of the Lazy Land Mobile Home Park is accessed by NW 25th Street. Mitigation measures may be needed for flood protection; however, few mobile home parks remain within Broward County. It is expected that mitigation would be done at the time of redevelopment.

- b. Storm Surge Zones: Storm surge zones are located in Butterfly Lake and along the New River Greenway. Storm surge is expected to be confined to the current lake basin and canal channel. Damage to structures is not expected.

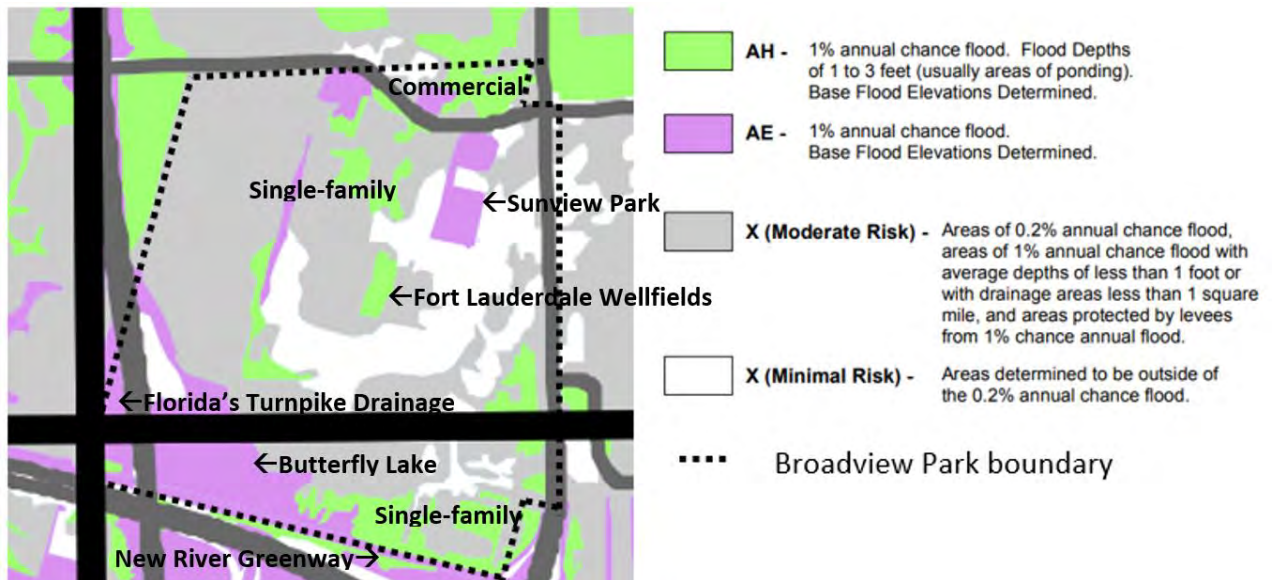
Figure 4: Storm Surge Zones-Broadview Park



Source: Broward County Environmental Planning and Community Resilience Division, February 23, 2021.

- c. Federal Emergency Management Area Flood Zones. Broadview Park is mostly located within FEMA Flood Zone X, which is associated with minimal or moderate flood risk. Some portions of Broadview Park are designated as Zones AE or AH. These zones have a one percent (1%) annual chance of flooding. Property owners in these areas may protect their assets through the purchase of insurance through the National Flood Insurance Program.

Figure 5: Federal Emergency Management Area Flood Zones-Broadview Park



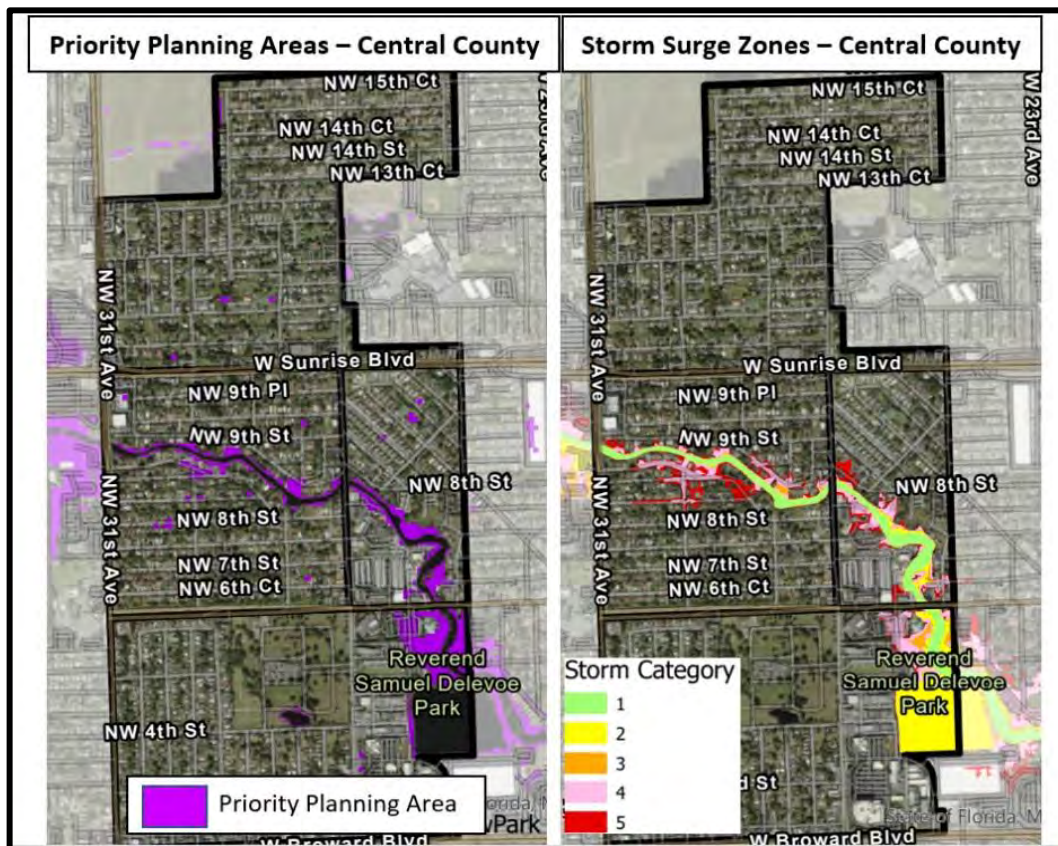
Source: [Broward County Preliminary Flood Zones with FEMA Flood Zone Panels Issued 12/31/2019](#)

2. Central County.

- a. Priority Planning Areas: Under the 3.3-foot sea level rise scenario, limited areas of Central County may experience inundation. The most vulnerable areas are along the North Fork New River (NFNR). The NFNR is a tidally influenced canal that runs through the Central County neighborhoods. Several places on the NFNR are expected to be impacted by a 3.3-foot sea level rise. The Broward County Wetlands Map indicates these riparian sites include wetlands.
- i. Reverend Samuel Delevoe Park: The park is bounded on the northeast by the NFNR and includes a lake. Areas along the lake's perimeter, as well as some parking lots, sports courts, and open space areas are expected to experience impacts from the 3.3-foot sea level rise. Several undeveloped sections of the park adjacent to the NFNR are expected to be inundated with a 3.3-foot sea level rise. The current recreation building could become completely surrounded; however, sea level rise is not expected to impact the African-American Research Library located on the northwest side of the park. These areas also are identified as Saltwater Swamp on the Broward County Wetlands Map. These sites do not include critical infrastructure and are located in areas of the park intended for passive use;

- ii. Single-family Residential: Single-family impacts are expected along the North Fork New River and scattered pockets throughout Central County. It is expected these impacts will be primarily limited to parking area, streets, and yards rather than structures. The back yards of residential properties located along the North Fork New River are especially vulnerable to flooding.
 - iii. Cemetery: The 3.3-foot sea level rise scenario within the cemetery are limited to several pockets along the back of an existing pond.
- b. Storm Surge Zones: Storm surge in Central County may be experienced along the North Fork New River. Impacts may be expected from a Category 4 or 5 hurricane. However, most impacts are limited to streets, yards, open space, and river banks. The number of structures expected to be damaged is limited; however, structures that are damaged could experience severe damage.

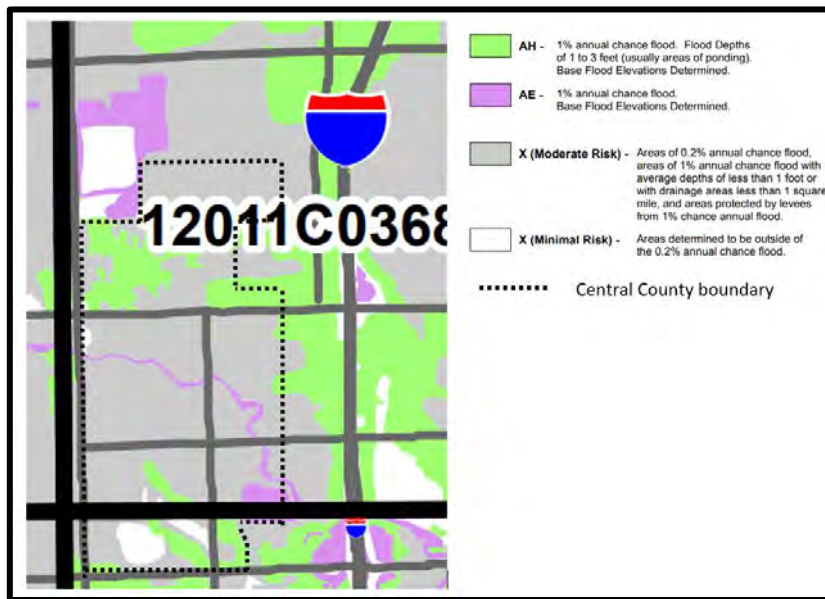
Figure 6: Priority Planning Areas and Storm Surge Zones-Central County



Source: Broward County Environmental Planning and Community Resilience Division, February 23, 2021.

- c. Federal Emergency Management Area Flood Zones. Central County is mostly located within FEMA Flood Zone X, which is associated with minimal or moderate flood risk. Some portions are designated as Zones AE or AH. These zones have a one percent (1%) annual chance of flooding. Property owners in these areas may protect their assets through the purchase of insurance through the National Flood Insurance Program.

Figure 7: Federal Emergency Management Agency Flood Zones Zones-Central County



Source: [Broward County Preliminary Flood Zones with FEMA Flood Zone Panels Issued 12/31/2019](#)

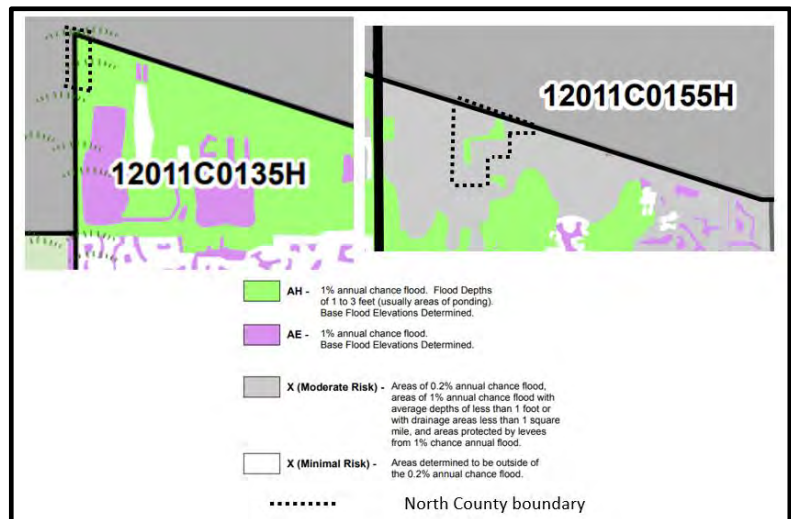
3. North County.

a. Priority Planning Areas. North County does not include sites that that are subject to inundation in the event of a 3.3-foot level rise or storm surge.

b. Storm Surge Zones: North County is located over ten (10) miles inland and is not subject to storm surge.

c. Federal Emergency Management Area Flood Zones: North County is mostly located within FEMA Flood Zone X, which is associated with minimal or moderate flood risk. Some portions are designated as Zone AH. These zones have a one percent (1%) annual chance of flooding. Currently, one large site is used for crop farms and the other is vacant. Property owners in these areas may protect their assets through the purchase of insurance through the National Flood Insurance Program.

Figure 8: Federal Emergency Management Agency Flood Zones - North County



Source: [Broward County Preliminary Flood Zones with FEMA Flood Zone Panels Issued 12/31/2019](#)

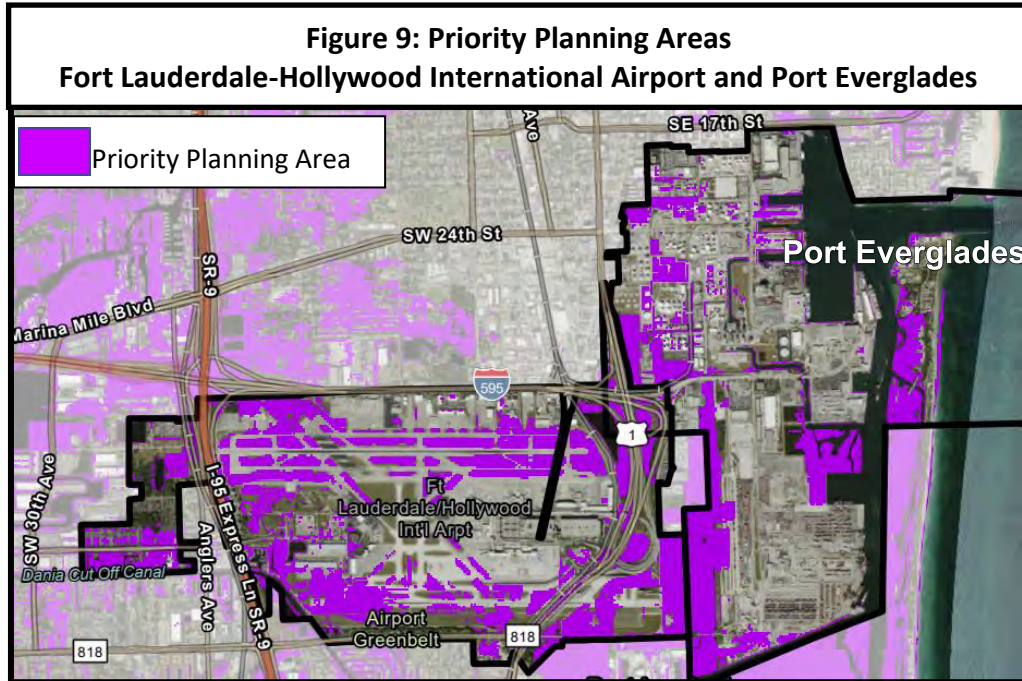
4. Port Everglades.

- a. Priority Planning Areas: Some areas of Port Everglades are subject to inundation from sea level rise. These areas are mostly streets and parking lots; however, certain facilities may be impacted. Port Everglades maintains a Five-year Capital Improvement Program to address capital projects programming within the Port, including infrastructure needs. The Port also maintains a 20-Year Master/Vision Plan that is updated every two to three years. The Broward County Comprehensive Plan's Port Component Policy P4.2.3 provides for Port Everglades to ensure adequate infrastructure and utilities for Port operations and ensure that standards are consistent with the goals, objectives and policies of the Broward County Comprehensive Plan and Broward County Land Development Code. It is expected that the Port's long-term vision plan will continue to provide for adequate infrastructure and facilities.
- b. Storm Surge Zones: Port Everglades maintains a Five-year Capital Improvement Program to address capital projects programming within the Port, including infrastructure needs. The Port also maintains a Master/Vision Plan that is updated every two to three years to address capital needs beyond the five-year capital improvement program. The Broward County Comprehensive Plan's Port Component Policy P4.2.3 provides for Port Everglades to ensure adequate infrastructure and utilities for Port operations and ensure that standards are consistent with the goals, objectives and policies of the Broward County Comprehensive Plan and Broward County Land Development Code. It is expected that the Port Master/Vision Plan will continue to provide for adequate infrastructure and facilities and address Storm Surge Zones.
- c. Federal Emergency Management Area Flood Zones. Port Everglades is mostly located within FEMA Flood Zone X, which is associated with minimal or moderate flood risk. Some portions are designated as Zone AH. These zones have a one percent (1%) annual chance of flooding. A portion of the Port Everglades jurisdictional area is located in Flood Zone VE and have a one percent (1%) annual chance of flood with a wave action velocity hazard. Establishments located within Flood Zones AH and VE may protect their assets through the purchase of insurance through the National Flood Insurance Program.

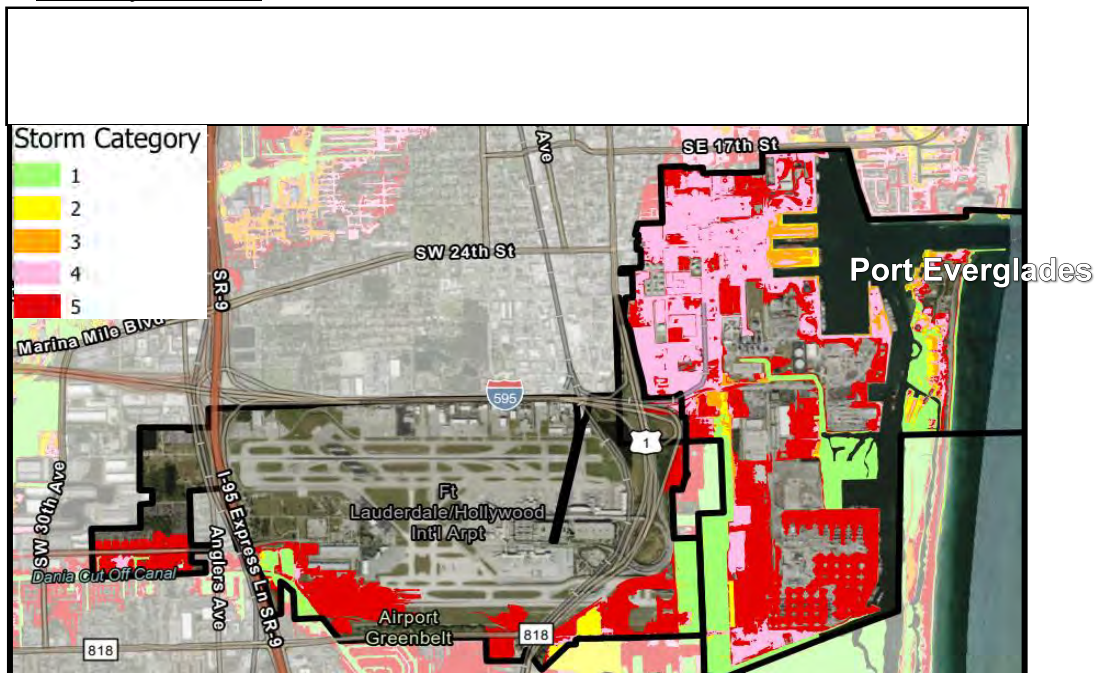
5. Fort Lauderdale-Hollywood International Airport:

- a. Priority Planning Areas: The Broward County Aviation Department is in the process of updating its Master Plan. The update will address capital improvements needed through 2035. It is expected that the airport's Master Plan will continue to provide for adequate infrastructure and facilities and address Priority Planning Areas. The Comprehensive Plan's Broward Municipal Services District and Community Planning Element Policy 1.1.15 provides for facilities of regional importance, including the airport, to remain unincorporated.
- b. Storm Surge Zones: The Broward County Aviation Department is in the process of updating its Master Plan. The update will address capital improvements needed

through 2035. It is expected that the airport's Master Plan will continue to provide for adequate infrastructure and facilities and address Storm Surge Zones. The Comprehensive Plan's Broward Municipal Services District and Community Planning Element Policy 1.1.15 provides for facilities of regional importance, including the airport, to remain unincorporated.

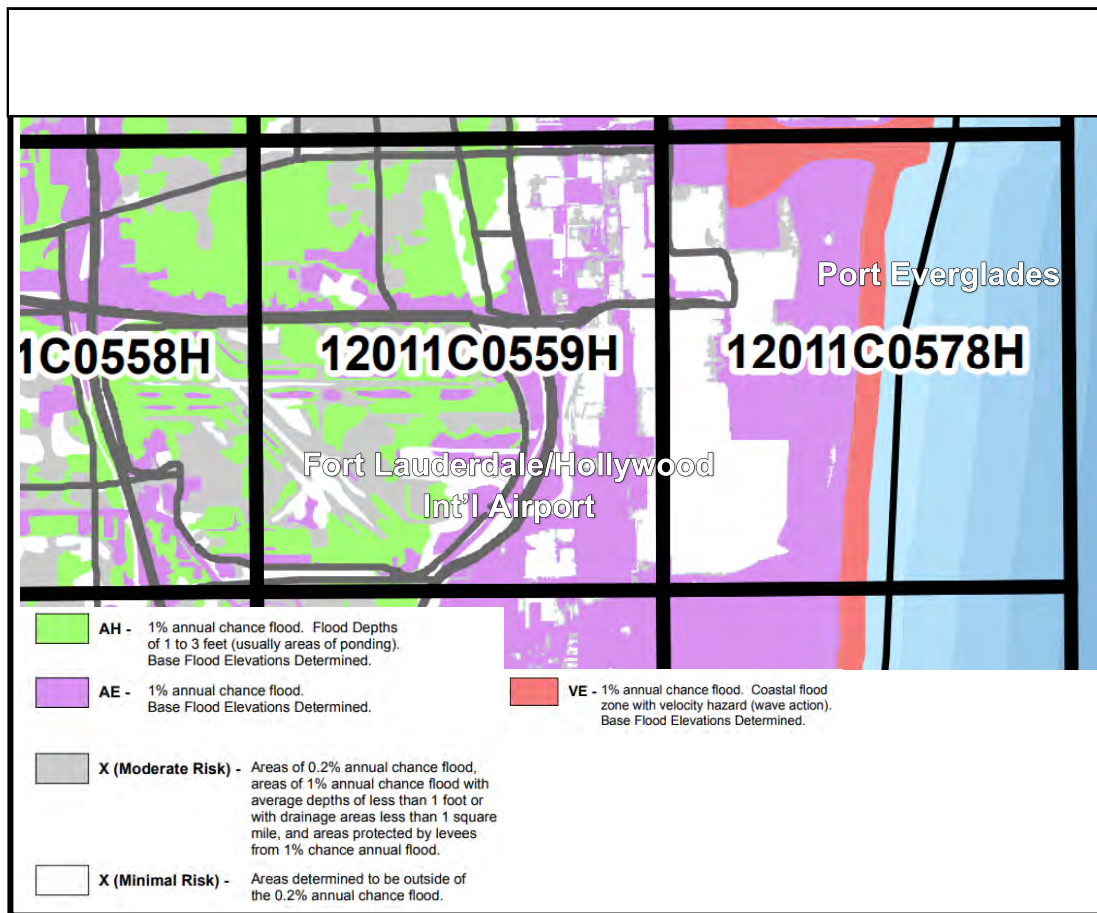


Source: Broward County Environmental Planning and Community Resilience Division, February 23, 2021.



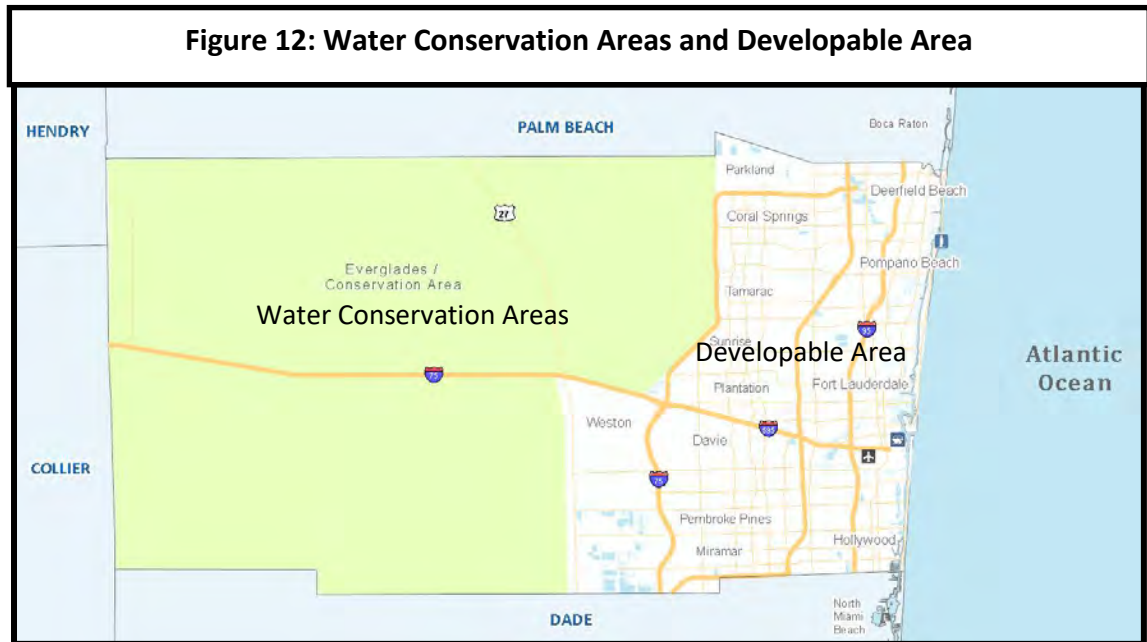
Source: Broward County Environmental Planning and Community Resilience Division, February 23, 2021.

c. Federal Emergency Management Area Flood Zones. The Fort Lauderdale-Hollywood International Airport is mostly located within FEMA Flood Zone X, which is associated with minimal or moderate flood risk. Airport facilities, including runways and terminals are located within Flood Zone X. Some portions are designated as Zone AH. These zones have a one percent (1%) annual chance of flooding. These portions are mostly used for drainage purposes. The Broward County Aviation Department is in the process of updating its Master Plan. The update will address capital improvements needed through 2035. It is expected that the airport's Master Plan will continue to provide for adequate infrastructure and facilities and address Flood Zones.



Source: [Broward County Preliminary Flood Zones with FEMA Flood Zone Panels Issued 12/31/2019](#)

6. Water Conservation Areas. Approximately two-thirds of Broward County is located within the Water Conservation Areas (WCAs), also known as the historic Everglades. They are part of the regional Central and Southern Florida Flood Control Project that is operated by the South Florida Water Management District. The WCAs provide flood control and drainage, as well as water supply and wildlife habitat. The eastern levees of the WCAs represent the defacto urban growth boundary in Broward County. Development is limited to water supply and flood control uses. The WCAs are not part of the developable area of Broward County and are not expected to be negatively impacted by sea level rise or storm surge.



Implementation Requirements

H. Post Disaster Redevelopment and Peril of Flood

Broward County has invested significantly in developing the tools necessary to assist in the work that is critical to planning for and addressing the impact of climate change in our communities. There is no single solution to the climate crisis; therefore, strategies include modeling vulnerabilities and analyzing risks, thoughtful planning, developing sound public policies, convening support through stakeholder involvement, and implementing strategic projects and economic investments.

Broward County's role in water management is regional, countywide, and local. This section describes the various plans, regulations, programs and agreements that address peril of flood, including the following:

- Broward County Charter,
- Broward County Land Use Plan
- Broward County Comprehensive Plan, and,
- Broward County Code of Ordinances.
- Future Conditions Map Series.
- Priority Planning Areas for Sea Level Rise Map,
- Federal National Flood Insurance Program.
- South Florida Regional Climate Change Compact,

This section also describes Broward County intergovernmental coordination initiatives that address peril of flood, including the following:

- Chief Resilience Officer
- Water Advisory Board Technical Advisory Committee,

- Climate Change Task Force.
- Broward Leaders Roundtable on Climate and Resilience.

1. Plans, Regulations, Programs, and Agreements

a. Broward County Charter. The Broward County Charter established Broward County as a regional government entity. Under this regional authority, Broward County develops and implements programs and policies with a regional or countywide focus and delivers services on both a countywide and less than countywide basis. In addition, Broward County ordinances supersede municipal ordinances in the following situations:

- Setting minimum standards protecting the environment through the prohibition or regulation of air or water pollution, or the destruction of resources in the County belonging to the general public.
- Land use planning.

b. Broward County Land Use Plan. The Broward County Planning Council (BCPC) has countywide land use planning authority and maintains the Broward County Land Use Plan (BCLUP) and Map. Municipal future land use plans and maps, as well as future land use plans and maps for the unincorporated areas, must substantially conform to the Broward BCLUP and Map. The Comprehensive Plan's Broward Municipal Services District (BMSD) Element and Map include the future land use plan and map for the unincorporated areas. The BCPC has found the BMSD Element and Map consistent with the BCLUP.

The Broward County Environmental Planning and Community Resilience Division staff reviews all Broward County Land Use Plan amendments and Future Unincorporated Area Land Use Plan amendments for consistency with the Broward County Land Use Plan.

The BCLUP identifies seven highlighted regional issues. There is a vision and associated strategies for each regional issue, as well as policies. Climate change and disaster resilience/post-disaster redevelopment are regional issues.

- **Climate Change.** The BCLUP recognizes that climate change, including sea level rise and severe storms, has the potential to fundamentally impact Broward County's beaches, coastal and inland communities, water supplies, natural systems, critical infrastructure and its economic core.

To increase the resilience of the community to the effects of climate change. The strategy includes preparing for the impacts of sea level rise, including consideration and preparation of impacts in the planning and design of projects and operations of community services, including impacts from: severe tropical storms, temperature extremes, severe wet and dry seasons, sea level rise along the coast leading to coastal and inland flooding and rising groundwater levels, increased coastal erosion and increased stress and pressure on natural systems.
Implementation strategies include:

- Requiring all land use and planning decisions within the Priority Planning Areas to consider and effectively address future climate predictions for a 50-year planning horizon, including sea level rise.
- Designating Adaptation Action Areas to identify areas vulnerable to coastal flooding, implement adaptation policies, and enhance and prioritize the funding of infrastructure adaptation projects.
- Applying the unified sea level rise projection for Southeast Florida when considering land use (including areas of potential population growth, natural system restoration, and infrastructure adaptation) and long-term functionality of appurtenant infrastructure, especially water management, drainage, water supply and water treatment systems, both coastal and inland.
- Delineating anticipated habitat transition zones from climate impacted areas and expand zones through land use changes to protect environmentally sensitive greenways and reserves for migrating species.
- Furthering the integration of green infrastructure and natural systems into the urban environment to increase resilience to future climate change impacts.
- Preserving and protecting the County's natural shoreline with an emphasis on the expansion and preservation of sand dunes, protection of beaches from armoring and the encroachment of development, and conservation of our coral reefs.
- Coordinating municipalities to adopt land use regulations that limit development and redevelopment in areas particularly vulnerable to flooding due to sea level rise, stormwater inundation, and other impacts of climate change.
- Using a green infrastructure map series to achieve community equity in the integrated use of green infrastructure as part of community resiliency strategies, including tree canopy coverage, presence of solar projects infrastructure, access to fresh food, etc.

Goals, objectives, and policies: The BCLUP Goals, Objectives and Policies includes a section entitled "Climate Resiliency, Adaptation Action Areas, and Priority Planning Areas." It includes seven policies that, among other items, provide for the following:

- Policy 2.21.1 strongly discourages plan amendments that place additional development at risk of flooding from sea level rise. The basis for this review includes:
 - Sea level rise/flood protection mitigation strategies and requirements included within local comprehensive plans and/or development regulations;
 - Flood protection improvements committed to by amendment applicants, which would mitigate or enhance flood protection and adaptation from rising sea levels.
- Policy 2.21.2 provides for coordinating with municipalities and affected agencies to designate Adaptation Action Areas to:

- Identify areas of regional significance that are vulnerable to the impacts of rising sea level;
 - Identify and implement adaptation policies to increase community resilience;
 - Enhance the funding potential of infrastructure adaptation projects.
 - Policy 2.21.3 requires updating climate related policies and maps, including the Priority Planning Areas for Sea Level Rise Map every 5 years or as available, including findings of the Broward County and USGS Joint Climate Change Inundation Modeling effort, which seeks to achieve a better understanding of the impacts of climate change and rising sea level on the County's water supplies, drainage and flood control systems.
 - Policy 2.21.4 provides for working cooperatively with local governments and transportation agencies to:
 - Identify and evaluate transportation infrastructure at risk;
 - Help coordinate adaptation efforts for infrastructure immediately landward of coastal high hazard areas, in order to ensure functional access to emergency evacuation routes for coastal populations.
 - Policy 2.21.5 requires only recommending approval of land use plan amendments in areas identified on the Flood Plains, Flood Prone Areas, and Coastal High Hazard Areas Map and the Priority Planning Areas for Sea Level Rise Map when it has been determined that development will:
 - Be served by adequate storm water management and drainage facilities;
 - Not adversely affect groundwater quality or environmentally sensitive lands;
 - Not increase saltwater intrusion or area-wide flooding.
 - Policy 2.21.6 requires coordinating with affected stakeholders to implement the recommendations of the Broward County Climate Action Plan, to the maximum extent feasible.
 - Policy 2.21.7 includes a requirement for tidally-influenced municipalities to adopt the following by February 13, 2022:
 - Regionally consistent top elevations for seawalls, banks and berms, and other appurtenant infrastructure (e.g., boat ramps) consistent with the findings and recommendations of the United States Army Corps of Engineers/Broward County Flood Risk Management Study for Tidally Influenced Coastal Areas.
 - These standards shall be consistent with the Broward County Code of Ordinances, Chapter 39-Zoning, Article XXV – Resiliency Standards for Flood Protection, which shall serve as the model ordinance, and shall not be applicable to oceanfront beaches or shorelines seaward of the Coastal Construction Control Line.
- **Disaster Resilience/Post-Disaster Redevelopment.** The BCLUP Goals, Objectives and Policies includes a section entitled “ Disaster Planning and Post-Disaster Redevelopment. It includes seven policies that, among other items, provide for the following:

- Policy 2.12.1 Develop and implement post-disaster redevelopment and hazard mitigation land use controls and development regulations including strong preventive measures, to protect the health, safety and welfare of Broward County’s current and future residents.
 - Policy 2.12.2 Broward County, in coordination with its local governments, shall adopt a countywide long-term recovery and redevelopment strategy which focuses on immediate recovery needs and establishes an orderly process for reviewing private and public redevelopment proposals to restore the economic and social viability of the community in a timely fashion.
 - Policy 2.12.3 Broward County’s long-term recovery and redevelopment strategy shall inventory hazard prone properties, including repetitive loss properties, and utilize public funds to purchase such properties to reduce future property damages and losses.
 - Policy 2.12.4 Broward County shall, by December 31, 2017, work with municipalities and affected parties to identify and designate a “Coastal Storm Area” on the County’s Natural Resource Map Series which shall depict the Coastal High Hazard Area, as defined by state statutes, all properties directly connected to the mainland by bridges and all low-lying properties that have restricted evacuation and emergency access.
 - Policy 2.12.5 Broward County shall limit public funding within the identified “Coastal Storm Area,” unless infrastructure improvements are necessary to repair or update existing infrastructure or enhance hurricane evacuation clearance times or emergency shelter capacities, or to mitigate the effects of storm surge flooding or sea level rise.
 - Policy 2.12.6 Broward County shall encourage the utilization of park and open space land to locate temporary housing for those visitors and residents who have been displaced by man-made or natural disasters.
 - Policy 2.12.7 Broward County shall encourage and incentivize the transition of mobile homes to affordable housing options such as manufactured and modular housing which meet or exceed current building code standards.
 - Policy 2.12.8 Broward County shall discourage land use plan amendments which negatively impact hurricane evacuation clearance times and/or emergency shelter capacities.
- c. Broward County Comprehensive Plan. Broward County is responsible for planning and maintaining certain countywide facilities, as well as certain local facilities. Multiple elements of the Broward County Comprehensive address the provision of these infrastructure and facilities. Accordingly, the various comprehensive plan elements include objectives and policies that address peril of flood. Applicants for Future Unincorporated Area Land Use Element Map Series amendments are required to demonstrate that development that occurs as a result of the amendment will not increase flooding.

The table below includes identifies applicable objectives and policies from the various plan elements. The full text is included in Appendix CM-D.

Figure 13: - Peril of Flood-related Comprehensive Plan Objectives and Policies			
<u>Element</u>	<u>Objectives and Policies</u>	<u>Element</u>	<u>Objectives and Policies</u>
<u>Broward Municipal Services District</u>	<u>Policy BMSD 1.1.3</u> <u>Policy BMSD 1.1.12</u> <u>Objective BMSD 1.2</u> <u>Policy BMSD 1.2.2</u>	<u>Capital Improvement Element</u>	<u>Policy CI 1.1</u> <u>Policy CI 2.1</u> <u>Policy CI 2.2</u> <u>Policy CI 2.3</u>
<u>Coastal Management Element</u>	<u>Objective CM 6</u> <u>Policy CM 6.1</u> <u>Policy CM 6.2</u> <u>Policy CM 6.3</u> <u>Policy CM 6.4</u> <u>Policy CM 6.5</u> <u>Policy CM 6.6</u> <u>Policy CM 6.7</u> <u>Policy CM 6.8</u> <u>Policy CM 6.9</u> <u>Policy CM 6.10</u> <u>Policy CM 6.11</u> <u>Policy CM 6.12</u> <u>Policy CM 6.13</u>	<u>Intergovernmental Coordination Element</u>	<u>Objective IC 7</u> <u>Policy IC 7.1</u> <u>Policy IC 7.2</u> <u>Policy IC 7.3</u> <u>Policy IC 7.4</u> <u>Policy IC 7.5</u> <u>Policy IC 7.6</u> <u>Policy IC 7.7</u> <u>Policy IC 7.8</u> <u>Policy IC 7.9</u> <u>Policy IC 7.10</u>
<u>Port Component</u>	<u>Objective 2.1</u> <u>Policy 2.1.1</u> <u>Policy 2.1.2</u> <u>Objective 2.2</u> <u>Policy 2.2.2</u> <u>Objective 2.8</u>	<u>Recreation and Open Space</u>	<u>Policy R 4.3</u> <u>Policy R 4.5</u>
<u>Transportation Element</u>	<u>Objective T 2.5</u> <u>Policy T 2.5.5</u> <u>Policy T 3.2.2</u> <u>Polict T 4.2.7</u> <u>Policy T 4.2.8</u> <u>Policy T 4.5.11</u>	<u>Water Management Element</u>	<u>Policy WM 1.7</u> <u>Policy WM 1.12</u> <u>Policy WM 1.13</u> <u>Policy WM 2.5</u> <u>Policy WM 2.7</u> <u>Policy WM 2.8</u> <u>Policy WM 2.9</u> <u>Policy WM 2.12</u> <u>Objective WM 3</u> <u>Policy WM 3.3</u> <u>Policy WM 3.4</u> <u>Policy WM 3.10</u> <u>Policy WM 3.17</u> <u>Policy WM 3.19</u> <u>Policy WM 4.7</u> <u>Policy WM 4.9</u> <u>Policy WM 4.11</u>

			<u>Policy WM 1.12</u> <u>Policy WM 1.13</u> <u>Policy WM 4.16</u> <u>Policy WM 4.18</u> <u>Policy WM 4.19</u>
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- Broward Municipal Services District Land Use Planning.** The Broward Municipal Services District does not have coastal neighborhoods; consequently, coastal flooding is primarily a concern from an emergency management and hurricane evacuation perspective, not a land use planning, building, and permitting perspective. However, the Broward Municipal Services District Element’s Policy 1.1.3 requires future land uses to be designated with consideration of appropriate topography, soil conditions, and floodplain elevation to avoid flooding, erosion, and repetitive property loss. Policy BMSD 1.1.5 requires future land uses to be coordinated with the availability of public facilities and services, including drainage. The Broward County Environmental Protection and Growth Management Department’s Environmental Planning and Community Resilience Division reviews Broward Municipal Services District Future Land Use Map amendments and provides recommendations to the Broward County Planning and Development Management Division. Their review considers Priority Planning Areas for Sea Level Rise, surface water management, and flood zones.

Existing development in the Broward Municipal Services District is not expected to experience negative impacts from floods that result from sea level rise. Future land use map amendments are evaluated to ensure public facilities and services will be available to serve the proposed amendment site. This review considers the impacts of sea level rise. In addition, the Broward County Code of Ordinances, Article IX.-Broward County Land Development Code, Division 2.-Development Review Requirements, Section 5-182.6 addresses the adequacy of water management, including level-of-service standards for drainage. These include the protection of roads and buildings, standards for off-site discharge, and on-site storage, among others.

The Broward County Code of Ordinances, Chapter 27-Pollution Control, Article V.-Water Resource Management requires licenses to be issued prior to development that involves water works, including surface water management. License applications are reviewed for compliance with myriad criteria, including criteria that address flood protection, such as seasonal water tables, stormwater runoff routing, minimum building floor and road elevations, pervious areas, and other drainage and surface water management criteria.

- Infrastructure Planning.** Broward County is responsible for certain regional infrastructure such as transportation, water, sewer, and parks that

may be susceptible to flooding and sea level rise. The vulnerability of these facilities to sea level rise and floods is difficult to predict; planning for their protection requires forecasting conditions that are plausible, but uncertain. Broward County intends to address the protection and hardening of these facilities by utilizing adaptive planning: an interdisciplinary, reiterative process to develop near and long-term strategies that are sound and flexible. This adaptive planning approach involves the following steps:

- Reviewing scientific data,
- Assessing vulnerability,
- Assessing risk,
- Developing adaptation plans,
- Implementing adaptation plans,
- Monitoring adaptation plans.

Adaptation may involve raising or waterproofing the first floor of buildings, installing flood barriers, wetland restoration, regional scale levees, relocation of at-risk infrastructure and development, and repurposing development sites for less vulnerable uses such as passive parks or habitat restoration.

- d. Broward County Code of Ordinances. The Environmental Protection and Growth Management Department reviews development proposals for compliance with the Broward County Code of Ordinances and Broward County comprehensive Plan.
- **Zoning.** The Broward County Code of Ordinances, Chapter 39-Zoning, Article XXV.-Resiliency Standards for Tidal Flood Protection establishes a consistent minimum elevation for tidal flood barriers. To this end, the statute:
 - Provides a standard for flood mitigation infrastructure that serves as a barrier to tidal flooding, not seepage, by accounting for water levels predicted under combined conditions of sea level rise, high tides, and high frequency storm surge through the year 2070; and
 - Ensures new shoreline structures and major shoreline improvements are designed for use as tidal flood barriers through application of consistent standards that account for future predicted tidal flood conditions and coastal water levels associated with sea level rise in accordance with current regional sea level rise projections, as updated and adopted by the Broward County Board of County Commissioners.
 - Addresses minimum elevations for coastal infrastructure within tidally influenced areas in the Broward Municipal Services District to improve flood protection under conditions of sea level rise.
 - Serves as a model code and planning foundation for municipal adoption of regionally consistent minimum standards and a basis for resilience investments across the community.
 - Requires real estate contracts for property located within tidally influenced areas to include a disclosure that states the owner may be required by County or municipal ordinance to meet minimum tidal flood

barrier elevation standards during construction or substantial repair or substantial rehabilitation of sea walls, banks, berms, and similar infrastructure or when required to abate nuisance flooding.

- **Aquatic and Wetland Resource Protection.** Chapter 27, Article XI, Broward County Code of Ordinances addresses aquatic and wetland resource protection. One of the purposes of Chapter 27 is to protect the Everglades wetlands and water of Broward County for flood storage. *An environmental resource license* is required for activities involving dredging and filling an aquatic resource, wetland alteration, mangrove alteration or mitigation banking.

The Priority Planning Areas for Sea Level Rise Map identifies areas that are at increased risk of flooding due to, or exacerbated by, sea level rise by the year 2060. In review of land use plan amendments, the County requires the applicant to demonstrate that the project will not increase saltwater intrusion or areawide flooding, not adversely affect groundwater quality or environmentally sensitive lands, and that subsequent development will be served by adequate stormwater management and drainage facilities. The County also strongly discourages those amendments which would place additional residential and non-residential development at risk of flooding from sea level rise. The County takes into consideration sea level rise and flood protection mitigation strategies and requirements included within the city's local comprehensive plans and/or development regulations, or improvements committed to by the applicant which would mitigate or enhance flood protection and adaptation from rising sea levels.

Broward County maintains a Surface Water Management Program to address the management of surface water, including the provision of adequate flood protection and drainage, as well as removal of pollutants from stormwater discharges. Surface water management facilities may include storm drains, street gutters, dams, pumps, swales, ponds, and wetlands, among others. The Division is responsible for implementing the Broward County Code of Ordinances, Chapter 27-Pollution Control, Article V.-Water Resource Management.

The Code includes criteria for flood protection and drainage, including minimum finished floor elevations of buildings, minimum roadway crown elevations, and flood design standards for private roadways and parking lots. The criteria are based upon the Future Conditions 100-Year Floor Elevation Map. The map was first developed in the mid-1970's. The most recent update was in January 2021.

The map was developed through integrated hydrologic modeling of surface and groundwater, incorporating future land use changes, projected sea level rise, rainfall intensification, and seasonal high tide to predict future flood conditions. The Future Conditions 100-Year Flood Elevation Map is intended to serve as the basis for establishing future finished floor elevations for new

development. The flood elevations range between four (4) feet and twenty-three (23) feet. They represent a one percent (1%) annual chance of flood during years 2060-2069.

A Surface Water Management License is required prior to activities that alter the flow of surface water, such as construction of impervious surface and grading. Broward County maintains jurisdiction over surface water management in most of the County, except areas located within independent water control districts.

Broward County requires minimum finished floor elevations (FFE). These standards vary depending upon whether a Broward County Surface Water Management License is required

- Structures within Unincorporated Areas of Broward County that DO NOT require a Surface Water Management (SWM) License (i.e., single-family dwelling or duplex on a lot less than two (2) acres in size, with less than 0.5 acres of isolated wetland impacts, with less than 4 stories, and the lot was subdivided prior 1989). The minimum FFE is set as the highest of:
 - a) Crown of Road (COR) plus 18 inches;
 - b) Broward County 100-year Flood Map Elevation;
 - c) FEMA Flood Insurance Rate Map Base Flood Elevation (BFE) plus additional elevation (1 foot) required by Florida Building Code (FBC). Not applicable if property is outside the Special Flood Hazard Area (SFHA);
 - d) Master Permit/License (Master Permit) required Elevation;
 - e) If The proposed structure is a manufactured home, it may need to meet additional elevation requirements of Section 5-91 of the Broward Code of Ordinances.
- Structures located in areas a Broward County SWM License is required. The minimum FFE is set as the highest of:
 - a) Crown of Road (COR) plus 18 inches. Only applicable to residential construction with ten (10) or less parking spaces;
 - b) Broward County 100-year Flood Map Elevation;
 - c) FEMA Flood Insurance Rate Map BFE plus additional elevation (1 foot, 2 feet, or 3 feet, depending on the type of building) required by Florida Building Code (FBC). Not applicable if property is outside the Special Flood Hazard Area (SFHA);
 - d) Master Permit/License (Master Permit) required Elevation;
 - e) Site-Specific 100-year Flood Elevation (calculated as part of SWM License requirements).
- **Resiliency Standards for Tidal Flood Protection.** The Broward County Zoning Code establishes consistent minimum flood elevations for tidal flood barriers in order to:
 - Provide a standard for flood mitigation infrastructure that serves as a barrier to tidal flooding, not seepage, by accounting for water levels predicted under combined conditions of sea level rise, high tides, and high frequency storm surge through the year 2070; and

- Ensure new shoreline structures and major shoreline improvements are designed for use as tidal flood barriers through application of consistent standards that account for future predicted tidal flood conditions and coastal water levels associated with sea level rise in accordance with current regional sea level rise projections, as updated and adopted by the Broward County Board of County Commissioners.

The standards provide regional guidance for all tidally influenced properties so that coastal flood barriers will continue to provide protection, even under future sea level rise conditions. In addition, the ordinance requires a first of its kind real estate disclosure that states the owner may be required by county or municipal ordinance to meet minimum tidal flood barrier elevations during construction or substantial repair or substantial rehabilitation of seawalls, banks, berms, and similar infrastructure.

- e. Future Conditions Map Series. In 2017, the Broward County Board of County Commissioners established a Future Conditions Map Series, intended to evolve with the application of best available science to develop models and provide data to update design requirements for land use decisions, accounting for future flood and climate risk. Two planning documents have been generated; 1) the Future Conditions 100-Year Flood Elevation Map which accounts for future floods compounded by sea level rise, increased precipitation, saturated soil conditions, and land use changes; and 2) the Future Conditions Groundwater Elevation Map which represents the expected future average wet season groundwater elevations for Broward County and is used when reviewing surface water management licenses.
- f. Priority Planning Areas for Sea Level Rise Map. The Priority Planning Areas for Sea Level Rise and Storm Surge maps demonstrate where impacts may be expected based upon ongoing modeling efforts. Although it is certain that sea levels are rising, the amount of sea level rise and the rapidity at which sea level rise will occur is not certain. Consequently, the timing, cost, type, and extent of mitigation projects is not yet known. In the near term, it is expected that roads, parking lots, and yards may experience temporary or chronic inundation. In the long term, it is expected that certain structures, including a small number of single-family homes, recreational facilities, and streets may experience temporary or chronic inundation. In addition, regional facilities, such as Port Everglades and Fort Lauderdale-Hollywood International Airport may experience temporary inundation; however, it is expected these impacts will be addressed through the Port and Airport Master Planning processes.
- g. Federal National Flood Insurance Program. The Federal Emergency Management Agency (FEMA) maintains the National Flood Insurance Program (NFIP). Flood zone maps identify the flood risk associated with a property, as well as base flood elevation. When the lowest finished floor elevation of a building is below the base flood elevation, lenders require the mortgagor to purchase flood insurance. The FEMA Flood Insurance Rate Maps reflect

- existing conditions and the maps are updated every 10-20 years. Preliminary updated maps were released in 2021. Once finalized, they will be incorporated into the Comprehensive Plan.
- h. South Florida Regional Climate Change Compact. Broward County is part of the Southeast Florida Regional Climate Change Compact, a regional partnership among Broward, Palm Beach, Miami-Dade, and Monroe counties; municipalities; and other partners. They host the Annual Climate Summit to foster collaboration on climate-related issues.
2. Intergovernmental Coordination Initiatives. Broward County conducts extensive intergovernmental coordination through various boards and county agencies, including a Water Advisory Board, Climate Change Task Force, Roundtable on Climate and Resilience, and Climate Resilience Unit.
- a. Water Advisory Board. The Broward County Board of County Commissioners created the Water Advisory Board nearly 30 years ago. The Board advises and makes recommendations to the Broward County Board of Commissioners about the development, use, and management of water resources within Broward County. The Board is supported by two committees:
- 1) a Technical Advisory Committee composed of water managers, utility directors, business interests, and representatives from state agencies, providing technical support and analysis to the Water Advisory Board.
 - 2) A Surface Water Coordinating Committee composed of drainage and water control district and government water managers that meet quarterly to discuss issues of mutual interest and concern. Two members also serve on the Technical Advisory Committee. The purpose of the Surface Water Coordinating Committee is to encourage all water control districts, municipalities and regional water managers to participate in surface water resources management and to assist in surface water efficiency for Broward County.
- The Water Advisory Board includes broad municipal representation and serves as a forum for stakeholder engagement in the refinement of resilience recommendations that will be considered by the Board of County Commissioners.
- b. Climate Change Task Force. Broward County has established a Climate Change Task Force that works toward developing recommendations for a coordinated county-wide strategy to mitigate the local impacts of climate change, including sea level rise. Several efforts of the Climate Change Task Force include:
- Developing tools that help identify major infrastructure at risk,
 - Incorporating climate resilience and disaster preparedness into the Broward County Land Use Plan,
 - Developing the Priority Planning Areas for Sea Level Rise Map,
 - Integrating climate change issues into the Broward County Comprehensive Plan through the Climate Change Element,
 - Establishing the Future Conditions Average Wet Season Groundwater Elevation map.

- c. Broward Leaders Roundtable on Climate and Resilience. Broward County hosts an annual Broward Leaders Roundtable on Climate and Resilience. Its purpose is to foster collective sharing and advancement of communications, planning, and investments vital to the resilience of Broward County's communities.
- d. Chief Resilience Officer and Climate Resilience Unit. Broward County's Chief Resilience Officer oversees county-wide climate resiliency initiatives, water resource policy and planning, environmental monitoring, shoreline protection and marine resources programs. The Climate Resilience Unit coordinates across departments, municipalities, and the region to ensure Broward's resiliency by developing effective responses to current and future conditions.

A. BMSD Element:

POLICY BMSD 1.1.3 Future land uses ~~shall be designated~~ map amendments shall be evaluated with consideration of ~~appropriate~~ topography, soil conditions, ~~and~~ floodplain elevation, ~~and adopted sea level rise projections.~~ to avoid flooding, erosion, and repetitive property loss.

POLICY BMSD 1.1.12 The BMSD Map Series shall display the following:

1. Existing and planned public potable water wells, cones of influence, and wellhead protection areas
2. Rivers, bays, lakes, floodplains, canals, and harbors
3. Wetlands
4. Minerals and soils
5. ~~Adaptation Action Areas~~ Broward County Land Use Plan's Priority Planning Areas Map
6. Designated Historic Preservation Sites
7. Floodplain elevations.

OBJECTIVE BMSD 1.2 – Future Land Use Map Amendments

Proposed amendments to the BMSD Future Land Use Map shall be evaluated based on the availability of public facilities and services, site suitability, compatibility with surrounding uses, complete streets, transportation infrastructure, affordable housing, ~~and~~ potential impacts on natural resources, and potential future impacts that may result from sea level rise.

POLICY BMSD 1.2.2 Availability and capacity of the following public facilities and services shall be considered:

1. Potable water
2. Sanitary sewer
3. Solid waste
4. Roads, sidewalks, and bicycle facilities
5. Public transit
6. Drainage, including impacts from potential sea level rise
7. Parks and recreation facilities
8. Hurricane shelters and evacuation routes
9. Public Schools.

B. Capital Improvement Element:

POLICY CI1.1 Capital projects will be evaluated using the following criteria:

1. Elimination of hazards that impact public health and safety,
2. Promotion of efficient development and prevention of urban sprawl,
3. Level of impact on operating budget,
4. Protection of prior infrastructure investments,
5. Consistency with County plans and the plans of other agencies,
6. Elimination of existing deficiencies,
7. Maintenance of adopted levels of service (LOS),
8. Availability of funds and reflection of sound fiscal policies,
9. Implementation of County Commission adopted goals, and

10. Climate resilience, including flooding and sea level rise.

POLICY CI2.1 Broward County, in conjunction with its municipalities and partner agencies, will work to ensure that adaptation to climate change impacts, especially sea level rise and flooding, is incorporated into the planning, siting, construction, replacement, and maintenance of public infrastructure in a manner that is cost-effective and that maximizes the use of the infrastructure throughout its expected life span.

POLICY CI2.2 Broward County, in conjunction with its municipalities and partner agencies, will make the practice of adapting the built environment to the impacts of climate change, sea level rise, and flooding an integral component of all planning and capital improvement processes.

POLICY CI2.3 Broward County will, in coordination with its municipalities, designate Adaptation Action Areas (AAA) per Florida State law, in order to:

1. Identify areas that are vulnerable to the impacts of rising sea level and flooding,
2. Identify and implement adaptation policies to increase community resilience,
3. Enhance the funding potential of infrastructure adaptation projects

The Broward County Commission, the Broward County Planning Council, or a municipality may apply for AAA of Regional Significance designation, if the problem(s) and proposed solution(s) of the proposed area demonstrate regional significance and conform with one or more of the criteria listed in Section 2: Implementation Requirements and Procedures, Subsection: Implementation Regulations and Procedures, No. 9 - Criteria for Designating Adaptation Action Areas of Regional Significance, of the Broward County Land Use Plan.

Areas designated by the County as AAA of Regional Significance will be added to the Priority Planning Areas for Sea Level Rise Map as part of the Broward County Land Use Plan.

C. Coastal Management Element:

OBJECTIVE CM6 Promote reduction of flood risk resulting from high-tide events, storm surge, flash floods, stormwater runoff, and sea level rise, in coastal areas, as well as areas connected to or influenced by coastal waters, through development and redevelopment principles, and strategic planning.

POLICY CM6.1 Broward County shall continue to use projections regarding rainfall, sea level rise, and storm surge, as well as the Broward County Land Use Plan's Priority Planning Areas Map to plan and develop strategies that reduce flood risk to development in the Broward Municipal Services District and County infrastructure and facilities.

POLICY CM6.2 Broward County shall ensure development and redevelopment projects are designed to ensure adequate surface water management that provides for water quality and flood protection, by applying the provisions of various plans and codes including, but not limited to the following:

1. Broward County Comprehensive Plan and associated maps;

2. Broward County Land Use Plan and associated maps;
3. Broward County Code of Ordinances,
4. Florida Building Code;
5. Federal Emergency Management Agency flood elevation maps and standards.

POLICY CM6.3 Broward County shall address the impacts of flood on the built environment through adaptive planning and shall collaborate with local and regional partners to secure funding for adaptation projects.

POLICY CM6.4 Broward County shall regularly assess and plan for public infrastructure, facilities and utilities as required by the Capital Improvements Element, including the impacts of potential floods and sea level rise.

POLICY CM6.5 Broward County shall support the operation, management and enhancement of drainage infrastructure to manage floods consistent with the Climate Change and Water Management elements.

POLICY CM6.7 Broward County shall limit capital investment in high-risk flood areas except for the following:

1. Maintenance and enhancement of natural areas and resources;
2. Investments in regional infrastructure and facilities, such as Fort Lauderdale-Hollywood International Airport and Port Everglades;
3. Investments in the Broward Municipal Services District that protect public infrastructure and facilities.

POLICY CM6.8 Broward County shall consider the potential impacts of floods when planning public infrastructure improvements.

POLICY CM6.9 By 2025, Broward County shall evaluate potential flood impacts that may result from hurricanes, rainfall patterns, and sea level rise upon public infrastructure, facilities, and utilities, and plan and implement mitigation strategies such as raising base finish floor standards and developing additional site design and stormwater management standards.

POLICY CM6.10 Broward County shall assist state agencies, as requested, in the enforcement and monitoring of compliance with the Department of Environmental Protection Coastal Construction Control Line regulations in accordance with Florida Statutes.

POLICY CM6.11 Broward County shall continue to support the reduction of flood insurance premiums for County residents through the following actions:

1. Participating in the National Flood Insurance Program's Community Rating System (CRS) administered by the Federal Emergency Management Agency (FEMA) to reduce flood losses;
2. Supporting programs and outreach which educate residents on the benefits of flood insurance, and their flood risk associated with high tide events, storm surge, flash

- floods, stormwater runoff, and the sea level rise;
3. Reviewing, developing, and enhancing standards and programs to mitigate increasing flood;
 4. Coordinating with relevant stakeholders to secure access to technical assistance and support for the County and municipalities;
 5. Supporting municipalities in their development of resiliency policies and implementation of prioritized hazard mitigation projects;
 6. Maintaining the enhanced Local Mitigation Strategy and local mitigation project lists.

D. Intergovernmental Coordination

OBJECTIVE IC7 – Ensure Adaptation to Climate Change Impacts. Broward County shall ensure that potential impacts from climate changes, including impacts resulting from floods, hurricanes, and sea level rise, adaptation to climate change impacts, especially sea level rise, is are considered as part of during the planning, siting, construction, replacement, and maintenance of public infrastructure.

POLICY IC7.1 Broward County shall coordinate with local, regional, State, and federal government agencies to ensure that climate change impacts, especially impacts resulting from floods, hurricanes, and sea level rise, are considered during public infrastructure planning processes.

POLICY IC7.2 Broward County shall provide technical support for municipalities that seek to develop policies that mitigate or minimize climate change impacts, including:

1. Coastal and inland flooding;
2. Salt water intrusion; and
3. Other related impacts of climate change, including floods, hurricanes, and sea level rise.

POLICY IC7.3 Broward County shall coordinate with municipalities to designate Adaptation Action Areas, pursuant to Florida Statutes, for the purposes of:

1. Planning for climate change, including floods, hurricanes, and sea level rise;
2. Designating areas vulnerable to floods and sea level rise, including, but not limited to:
 - a. Areas below, at, or near mean high water;
 - b. Areas which have a hydrological connection to coastal waters; and
 - c. Areas designated as evacuation zones for storm surge; and
3. Prioritizing funding for infrastructure needs and adaptation planning.

POLICY IC7.4 Broward County shall collaborate with federal, State, regional, and local entities to:

1. Seek federal government technical and financial assistance to plan, develop, and implement projects and strategies that assess and mitigate impacts expected from climate change, including floods, hurricanes, and sea level rise;

2. Coordinate and advance strategies, programs, and other initiatives that reduce greenhouse gas (GHG) emissions; and
3. Encourage local governments to participate in the Federal Emergency Management Administration (FEMA) Community Rating System (CRS) program as it relates to flood plain management and assist those who participate to maintain and/or improve their ratings, as applicable.

POLICY IC7.5 Broward County shall continue to create collaborative intergovernmental practices and mechanisms in order to coordinate and advance strategies, programs, and other sustainable initiatives throughout the County and region, that mitigate GHG emissions and protect and adapt the built and natural environments to the consequences of climate change, including floods, hurricanes, and sea level rise.

POLICY IC7.6 Broward County shall coordinate regionally with other Southeast Florida counties, academia, and State and federal government agencies in the analysis of climate change impacts, including sea level rise, drainage flood, and hurricane impacts, and the planning of adaptation measures.

POLICY IC7.7 Broward County shall continue to collaborate with municipalities, neighboring counties, and regional and state agencies, as well as private entities to create, develop, and implement a suite of planning tools for climate change mitigation and adaptation, including adaptation to floods, hurricanes, and sea level rise.

POLICY IC7.8 Broward County shall continue to collaborate with and support local and regional planning entities to ensure that plans, such as local municipal comprehensive plans, regional strategic plans, post-disaster mitigation plans, water management plans, and transportation plans are updated to provide for a sustainable environment and reflect the best available data and strategies for adapting to future climate change impacts, including sea, level rise, flood and hurricane impacts.

POLICY IC7.9 Broward County shall continue to actively participate in the Southeast Florida Regional Climate Change Compact, ~~working with our neighboring counties to make our region more~~ further climate change resilience, by sharing technical expertise, assessing regional vulnerabilities, advancing agreed upon mitigation and adaptation strategies, and developing joint regional, State and federal legislative policies and programs.

POLICY IC7.10 Broward County shall seek ~~to engage~~ the support of federal agencies, such as National Oceanic and Atmospheric Administration, U.S. Geological Survey, Federal Emergency Management Agency, Environmental Protection Agency, the U.S. Department of Interior, U.S. Department of Energy, and the U.S. Army Corps of Engineers, that can provide technological and logistical support to further State, regional, County, and local planning efforts in the assessment of climate change vulnerabilities (including sea level rise, flood, and hurricane impacts) and adaptation strategies.

E. Port Component:

OBJECTIVE P2.1 – PROTECTION FROM NATURAL HAZARDS

~~PEĐ~~ The Port Everglades Department shall implement the measures required by Broward County and other agencies to protect human life and property from natural hazards, including airborne hazards, sea level rise, and potential flooding, and will work with Broward County in implementing the Broward County Enhanced Local Mitigation Strategy (2017) and ensure new Port facilities and infrastructure, including roads, are hardened from disasters related to wind and flood.

POLICY P2.1.1 - ~~PEĐ~~ The Port Everglades Department shall ensure that any habitable, non-residential buildings in special flood hazard areas are designed and constructed to reduce the potential for flooding and wind damage. ~~All structures within the defined flood zones shall be constructed in accordance with the provisions specified in the Florida Building Code. (See Policy 2.1.2)~~

POLICY P2.1.2 - ~~PEĐ~~ The Port Everglades Department shall ensure that all buildings are designed and constructed in accordance with the Florida Building Code and as approved by Broward County and the appropriate municipality.

OBJECTIVE P2.2 – Coastal Storm High Hazard Areas

~~PEĐ~~ The Port Everglades Department shall follow Broward County's requirements for Coastal High Hazard Storm Areas, ~~which shall be defined as the Category 1 and 2 Hurricane Evacuation Zones identified within~~ as shown on the Broward County Land Use Map (Series) entitled "Flood Plains, Flood-Prone Areas, and Coastal Storm Areas."

POLICY P2.2.2 - ~~PEĐ~~ The Port Everglades Department shall ~~continue to disallow the allocation of not use public funds expenditures~~ for infrastructure improvements, ~~that do not consider the potential impacts of sea level rise and flooding and that would promote residential development or the concentration of permanent populations within the Coastal Storm High Hazard Area. It shall also continue to~~ and shall discourage any amendment ~~to~~ of the Broward County Land Use Plan's Port Everglades Transportation Area permitted uses section of the BCLUP and any amendment of the Port Everglades Development District to allow permanent residential uses within the PJA Port Jurisdictional Area.

OBJECTIVE P2.8 – POST-DISASTER REDEVELOPMENT

~~PEĐ~~ The Port Everglades Department shall work with the EMD in the ongoing initiative to develop a Broward County Recovery Framework, a long-term strategic framework for post-disaster redevelopment in compliance with State guidelines.

F. Recreation and Open Space Element:

POLICY R4.3 Broward County Parks and Recreation Division, Environmental Planning and Community Resilience Division, and Highway Construction and Engineering Division shall study climate change, sea level rise, and potential flooding impacts on recreation and open space areas and facilities, including the cost impacts on net acreage, and include strategies and recommendations to address these impacts.

POLICY R4.5 Broward County shall support funding for sustainability of parks and recreation areas, including the possible costs of climate change, sea level rise, and potential flooding adaptation, by evaluating the current level of impact fees. Recommendations provided will be based on future needs and best practice examples.

G. Transportation Element:

OBJECTIVE T2.5 Broward County shall advance transportation and land use choices that: reduce fossil fuel use and vehicle miles traveled; improve the mobility of people, goods, and services; provide a diverse, efficient, and equitable choice of transportation options; and increase the County's resiliency to the impacts of climate change, including sea level rise and potential flooding.

POLICY T2.5.5 Broward County should assist in coordinating transportation-related adaptation policies across jurisdictional boundaries and ensure consistency among broader planning and plan implementation efforts, including the Broward County Emergency Management Enhanced Local Mitigation Strategy and Fort Lauderdale-Hollywood International Airport Master Plan. Specifically, strategies for preparing for sea level rise and potential flooding, such as increasing road surface elevation standards, subsurface stabilization, stormwater management and drainage, ~~and~~ adjustment of bridge heights to allow for navigation, and should shall be collaboratively assessed and implemented.

POLICY T3.2.2 Broward County shall make the most efficient use of transportation funding through implementation of, but not limited to, the following programs and activities:

1. Coordinate construction of roadway and utility projects to avoid duplicate construction costs and inconvenience to residents, where feasible;
2. Continue to add bicycle lanes and multimodal improvements as a part of roadway resurfacing projects, where feasible;
3. Continue to utilize the Complete Streets Team to prioritize Complete Streets projects and coordinate with municipalities, the Broward MPO, and FDOT on projects and to identify funding opportunities to expand the number of Complete Streets projects implemented each year;
4. Consider establishing public-private partnerships to enable the expedient construction and operations of major/critical transportation infrastructure projects; ~~and~~
5. Regularly apply for Broward MPO Complete Streets and other Localized Initiatives Program (CSLIP) grants and other local, State, and federal grants that support multimodal transportation planning, design, and construction;
6. Consider the impacts of potential sea level rise and flooding when planning transportation improvement projects and incorporate adaptation practices as needed to protect transportation infrastructure investments.

POLICY T4.2.7 The 2014 2018 update to the Port Everglades Master/Vision Plan, which is a plan designed to maximize market share and revenue through a realistic five year

facility development program within a framework of 10 and 20-year vision plans, shall guide Port development.

POLICY T4.2.8 Projects developed consistent with the 2019 update to the Port Everglades Master/Vision Plan shall consider the impacts of sea level rise and flooding on Port improvements projects and incorporate adaptation practices to protect Port investments.

POLICY T4.5.11 Broward County shall collaborate with regional and local transportation partners, including FDOT and rail operators, to identify areas and projects most vulnerable to climate change and sea level rise and take appropriate action to increase resiliency to adverse physical, economic, and/or social impacts. The County shall continue to implement recommendations in the Southeast Florida Regional Climate Change Action Plan.

H. Water Management Element:

POLICY WM1.7 WWS will identify and evaluate the costs and benefits of climate change, sea level rise, and potential flooding adaptation alternatives; implement energy and other resource efficiencies; and incorporate resilient designs; while balancing operational, economic, and environmental effects, when evaluating construction of new, or retrofit of existing, potable water facilities and infrastructure.

POLICY WM1.12 WWS will implement construction of new, or retrofit of existing, sanitary sewer facilities and collection systems in coastal areas that are identified as potentially impacted by sea level rise and potential flooding by 2045, but may limit expenditures in Coastal Storm Areas consistent with the Capital Improvements Element (Objective CI2).

POLICY WM1.13 WWS will assess, identify, and evaluate the costs and benefits of the design, construction, and operation of storm water management facilities within its jurisdiction in a manner that conserves and enhances the availability of potable water and supports environmental resources, while preventing area flooding and protecting from sea level rise, potential flooding, and other climate change impacts when evaluating construction of new, or retrofit of existing, facilities.

POLICY WM2.5 Broward County will continuously update the future conditions map series, including wet season groundwater elevation and future condition flood elevation maps, to reflect impacts of projected sea level rise, potential flooding, and climate change for planning and regulatory purposes.

POLICY WM2.7 Broward County will support ongoing and enhanced development of regional hydrologic models, the integration of downscaled climate data, and continuous data collection to help predict and track the impacts of sea level rise, potential flooding, and changing rainfall patterns on groundwater levels, saltwater intrusion, and drainage infrastructure to support local planning and projects.

POLICY WM2.8 Broward County will use the Broward County Land Use Plan's Priority Planning Areas Map to identify assess water infrastructure at risk from ~~unified projected~~ sea level rise. projections of 9 to 26 inches (timeframe of 2010 to 2060) and other climate change related impacts by 2025 and update this assessment every 5 years or as new data is available. (20-T4: Adopted June 15, 2021.)

POLICY WM2.9 Broward County will coordinate with the County's drainage districts, municipal governments, SFWMD, Florida Department of Health (FDOH), and the Florida

Department of Environmental Protection (FDEP) to study whether to build, modify, or relocate water, wastewater, and storm water transmission infrastructure to allow for strategic retreat from areas at risk from potential flooding and sea level rise.

POLICY WM2.12 Broward County will provide support to and coordinate with municipalities, drainage/water control districts, and the SFWMD in planning for ~~climate adaptation and drainage system improvements~~, including improvements that may be required due to sea level rise and potential flooding.

OBJECTIVE WM3 – Water Resources Development, Permitting and Management
Broward County will develop and manage its water resources and related infrastructure in a manner that maximizes use of existing resources; is cost-effective; provides protection for existing resources, to the maximum extent practicable; meets all applicable federal, State, and local regulations; and takes into consideration the future water management challenges associated with adaptation to sea level rise, potential flooding, and climate change.

POLICY WM3.3 Potable water facilities will be designed, constructed, maintained, and operated with consideration given to the potential impacts of sea level rise, potential flooding, and climate change and in such a manner as to protect the functions of natural groundwater recharge areas, natural drainage features, and groundwater levels, without inducing the inland movement or upwelling of saline water into Underground Sources of Drinking Water (USDW), as defined in Chapter 62-528, FAC, and SFWMD Basis of Review for Water Use, as referenced in Chapter 40E-2, FAC.

POLICY WM3.4 Broward County will work to protect existing wellfields, water supplies, surface or subsurface storage facilities, control structures, water and wastewater treatment plants, and transmission infrastructure from increased coastal or inland flooding, sea level rise, saltwater intrusion, and other potential future climate change impacts, and support utility efforts to plan infrastructure replacement and relocation, as needed.

POLICY WM3.10 Broward County will collaborate with utilities, drainage districts, and the ~~SFWMD~~ South Florida Water Management District to ensure the adequacy of water supply facilities and infrastructure to effectively capture, store, treat, and distribute potable water under variable climate conditions, including changes in rainfall patterns, unified sea level rise projections, ~~of 9 to 26 inches from 2010 to 2060~~, and flooding, and associated water quality and quantity impacts. **(20-T4: Adopted June 15, 2021)**

POLICY WM3.17 Broward County will encourage the use of storm water best management practices (BMPs) in accordance with its regulations and those of the FDEP and SFWMD in order to mitigate potential impacts of floods and protect water quality.

POLICY WM3.19 Broward County will continue to monitor the quality of waters flowing into the Broward County coastal ecosystems and implement strategies to maintain protection or improvement of the system, considering potential contamination resulting from floods, inundation, structural failure, or abandonment of residential, industrial, and

municipal assets resulting from sea level rise, storm events, or other climate related impacts.

POLICY WM4.7 Broward County will coordinate regionally to advance the use of the IWRP and Countywide Reuse Master Plan tools to increase flood protection, water quality treatment, water supply sources, storm water storage, wetland sustainability, ground water recharge, use of reclaimed water for irrigation, aquifer recharge, and environmental enhancement, where technically, environmentally, and economically feasible, to protect water resources and develop climate change, including potential flooding and sea level rise resilience.

POLICY WM4.9 Broward County, in cooperation with its municipalities and appropriate local agencies, will evaluate water and storm water management systems operation strategies in the context of potential flooding or sea level rise to: lessen negative impacts to parks and open spaces, wetland mitigation areas, and other natural systems; improve the ability of these systems to adapt to climate change, including potential flooding and sea level rise; and optimize the ability of these systems.

POLICY WM4.11 Broward County will work with the SFWMD and drainage districts to implement applicable portions of the most recent LECRWSP Update, intended to reduce losses of excess storm water to tidal runoff, recharge the Surficial Aquifer System, and provide additional storage of surface waters ~~in the context of sea level rise~~, in order to improve the ability of these systems to adapt to climate change, including potential flooding, sea level rise, and ~~prevent~~ saltwater intrusion.

POLICY WM4.12 Broward County will participate in intergovernmental coordination of subregional water supply projects and the development of alternative water supply projects to:

- ensure adaptation to climate change impacts, including potential flooding and especially adopted sea level rise projections, is incorporated into the project planning, siting, construction, replacement, and maintenance of water supply infrastructure;
- ~~in a manner that is~~ ensure projects are cost-effective; and,
- ~~and that~~ maximizes the use of the infrastructure throughout its expected life span.

POLICY WM4.13 Broward County will collaborate with local, regional, state, and federal agencies and others on potential impacts of flooding and climate change on the region's water resources and support the development of local integrated models and continuous data collection to help predict and track the impacts of sea level rise on groundwater levels, saltwater intrusion, and drainage infrastructure.

POLICY WM4.16 Broward County will coordinate with local municipalities and water and wastewater utilities to develop, by 2025, policies and plans that set short-, intermediate, and long-range goals and establish adaptive management implementation strategies for water and wastewater resources under their jurisdiction to address the potential operational, economic, and environmental effects impacts of floods, sea level rise, and climate change. ~~and its operational, economic, and environmental effects.~~

POLICY WM4.18 Broward County will coordinate with the SFWMD, local utilities and neighboring counties to develop regional water demand projection scenarios over a 100-year planning horizon that account for potential impacts of floods, sea level rise, and climate changes including changes in: (1) population and rates of water consumption; (2) municipal, industrial, and agricultural demands; and (3) energy generation water demands due to the possible use of new fuel sources.

POLICY WM4.19 Broward County will collaborate with local, regional, state, and federal partner agencies to develop the scientific and technical knowledge needed to understand the potential impacts of of floods, sea level rise, and climate change on the region's water resources, evaluate various adaptation technologies, and, by 2025, create an adaptive response plan. Advanced hydrological modeling and engineering evaluations by SFWMD, USGS, and U.S. Army Corps of Engineers (USACE) will be especially critical to this effort.