

**RESILIENT ENVIRONMENT DEPARTMENT  
URBAN PLANNING DIVISION  
STAFF REPORT**

**Broward County Code Amendment 24-WRM1: Future Groundwater Conditions**

**I. Item Summary**

<b>Commission District</b>	All
<b>Application/Agent</b>	Resilient Environment Department
<b>Proposed modifications</b>	Amends the Broward County Code of Ordinances, Chapter 27- Pollution Control, Article V, Water Resource Management, Section 27-200. Criteria for issuance or denial of licenses, (b) Surface water management, (5) Design criteria, 3. Criteria, b) Antecedent conditions. (Exhibit 2 - Attachment A)
<b>Effect of Proposed Change</b>	<ul style="list-style-type: none"> <li>- Applies an updated Plate WM 2.1 Average Wet Season Groundwater Levels. (Exhibit 2 - Attachment B)</li> <li>- Adds Plate WM 2.2 – 2060 Future Conditions Average Wet Season Groundwater Levels. (Exhibit 2 - Attachment C)</li> <li>- Adds Plate WM 2.3 – 2070 Future Conditions Average Wet Season Groundwater Levels. (Exhibit 2 - Attachment D)</li> </ul>
<b>Comprehensive Plan Consistency</b>	<p><b>Consistent (Exhibit 2 – Attachment E)</b></p> <p><u>Broward County Land Use Plan</u> Strategies CCR-2, EP-2, DP-1 Policy 2.21.3</p> <p><u>Broward County Comprehensive Plan – Climate Change Element</u> Policies CC2.9, CC2.10, CC2.12</p> <p><u>Broward County Comprehensive Plan - Water Management Element</u> Policies WM2.5, WM3.14, WM3.15</p> <p><u>Broward County Climate Change Action Plan</u> POLICY 9</p> <p><u>Southeast Florida Regional Climate Action Plan 3.0</u> ER-2, ST-1.1, ST-2.1, ST-2.3, WS-8.1</p>

**II. Staff Recommendation**

The Resilient Environment Department, Urban Planning Division (UPD) staff recommends that the Local Planning Agency (LPA) find the proposed amendment consistent with the Broward County Comprehensive Plan.

**III. Background.**

The future conditions map series is intended to be used to build resiliency into current and future infrastructure investments. The Resilient Environment Department uses the development permitting and licensing process to ensure flood and water quality protections are adequate. This includes construction and operation of surface water management

systems for new development and major redevelopment. Plate WM 2.1 – Average Wet Season Groundwater Levels is used to determine the average wet season groundwater level.

The following information provides key actions and time frames in the development of Plate 2.1.

- A. 2000: Board of County Commissioners adopts Plate WM 2.1 – Average Wet Season Groundwater Levels.
- B. 2015: Board of County Commissioners accepted the Unified Regional Sea Level Rise Projection (2015) of the Southeast Florida Regional Climate Change Compact for 2060. It showed 2.2 feet of sea level rise by 2060. The Board also directed staff to use the projection as the basis for sea level rise adaptation activities.
- C. 2017:
  1. Board of County Commissioners directed staff to create and maintain a future conditions map series. The maps show predicted changes in groundwater levels that are influenced by variables such as:
    - Sea level rise,
    - Rainfall intensification,
    - Land use changes,
    - Planned water control structure changes,
    - Seasonal king tides and soil saturation.
  2. Board of County Commissioners adopted Plate WM 2.1 – Future Conditions Average Wet Season Groundwater Elevation Map. The map includes average wet season groundwater levels and 100-year flood elevations. The United States Geological Survey (USGS) developed the hydrologic model used to create Plate WM 2.1 – Future Conditions.
- D. 2019:
  1. New sea level rise projections were issued. The updated projections showed 3.3 feet of sea level rise by 2070.
  2. The Resilient Environment Department contracted the USGS to update the model using the latest available data and the 2019 projections.
- E. March 10, 2020: Broward County accepted the 2019 projections and directed staff to use the projections as the basis for sea level rise adaptation planning activities.
- F. May 23, 2023: Board of County Commissioners directed the Office of the County Attorney to draft an Ordinance amending the Broward County Code of Ordinances, Chapter 27, Article V, Water Resource Management to update Plate WM 2.1 – Future Conditions Average Wet Season Groundwater Elevation Map.

Due changing environmental conditions, the current Plate WM 2.1 no longer provides an adequate basis for surface water management system design. Prior to consideration by the Board of County Commissioners, the Resilient Environment's Department's Local Planning Agency must hold a public hearing to receive public comment and make a determination as to whether the proposed amendment is consistent with the Broward County Comprehensive Plan.

#### **IV. Description of Amendments.**

The proposed Ordinance:

- Renames Plate WM 2.1 to WM 2.1-Average Wet Season Groundwater levels.
- Provides for the continued use of Plate WM 2.1 to determine the average wet season groundwater levels when calculating a design event for an existing project.
- Adds Plate WM 2.2 – 2060 Future Conditions Average Wet Season Groundwater Levels and Plate WM 2.3 – 2070 Future Conditions Average Wet Season Groundwater Levels.
- Provides for the groundwater elevation of either Plate WM 2.2 or Plate WM 2.3, whichever is higher, to be used when determining average wet season groundwater levels for the following:
  - New surface water management license,
  - Major redevelopment of existing sites,
  - Major modifications to an existing surface water management license.

#### **V. Data and Analysis.**

Section 27-191 of Broward County's Pollution Control Code provides for the Board to manage land and water resources, including the prevention of damage from floods and degradation of the county's drinking water supply. Section 27-200(b)(5)3.b provides for Plate WM 2.1 – Future Conditions to be used for determining the average wet season groundwater levels when calculating a design event for the purpose of issuing a surface water management license.

County staff utilized the 2019 Sea Level Rise Projections as a model input to generate the updated Plate WM 2.3 – 2070 Future Conditions Average Wet Season Groundwater Elevation, resulting in a more accurate projection of groundwater elevations over a 50-year planning horizon. Incorporating the updated Plate WM 2.1 – 2070 Future Conditions map into the Code's surface water management design criteria will help ensure that new and major redevelopments are designed and constructed to deliver the necessary flood protection level of service and water quality treatment during their expected useful lifespan.

Plate WM 2.1 – 2070 Future Conditions represents the expected future average wet season groundwater elevations for Broward County. The average is based on the outputs of three models for the months of May through October for the year 2070. These three models are developed by the United States Geological Survey and are MODFLOW based. The three models are:

- Broward County Inundation Model Phase 1
- Broward County Inundation Model Phase 2
- Broward County Northern Variable Density Model

Future conditions considered by the models include precipitation and sea level rise.

The future precipitation pattern is based on the Center for Ocean-Atmospheric Prediction Studies downscaled Community Climate System Model. This is a global model that represents an increase of 9.1% rainfall from the base case of 1990-1999 (53.4 inches/year to 58.2 inches/year).

The future sea level rise projection is based on the 2017 National Oceanic and Atmospheric Administration (NOAA) Intermediate-High Sea Level Rise Scenario for 2070 with a predicted increase of 40 inches relative to the year 2000. Final groundwater elevation results are presented in the North American Vertical Datum of 1988.

The proposed Plate WM 2.1 – Future Conditions Average Wet Season Groundwater Elevation (2070) and methodology were presented for comment as follows:

- April 21, 2023 and June 16, 2023: Broward County Water Advisory Board's (WAB) Technical Advisory Committee (TAC).
- July 10, 2023: Stakeholder workshop .
- September 8, 2023: Joint WAB and TAC.
- October 20, 2023: WAB TAC voted to transmit the proposed map to the WAB with a recommendation for approval.
- November 3, 2023: WAB voted to transmit the proposed map to the Broward County Board of County Commissioners with a recommendation for approval.