

# **Appendix E**

## **Waterbodies without Adopted Minimum Flows and Levels (MFLs) Assessment**

## Introduction

Rivers, springs, and lakes without adopted Minimum Flows and Levels (MFLs) were evaluated during the Western Water Supply Plan (WWSP) process. This assessment provided a screening evaluation of the potential for water resource impacts in portions of the planning region where MFLs have not been adopted. This document reviews the basic methodology used to evaluate these waterbodies without adopted MFLs within the WWSP region followed by a summary of the results.

## Methodology

Reference conditions for the waterbodies without adopted MFLs were calculated using the NFSEG model pumps off (PO) scenario. Predicted river flows and spring flows under this reference condition were compared to the simulated withdrawal conditions at the 2045 planning horizon. Rivers and springs with a simulated groundwater flow reduction greater than or equal to 10% from PO to 2045 were identified. The change in aquifer level from the PO to 2045 projection was used to evaluate lakes and was based on lake specific criteria.

A 10% reduction in flow does not necessarily correspond to an ecological threshold beyond which harm would occur. Conversely, waterbodies experiencing less than a 10% reduction in flow may still experience significant harm. The 10% threshold does, however, provide a high level of ecological protection for environmental flows and highlights areas where resource constraints may occur (Richter et al. 2012).

Accounting for the unique hydrologic and ecological conditions of individual springs and linking changes in flow to a quantitative significant harm threshold occurs during MFL development. Subsequent versions of the WWSP will incorporate any newly adopted or reevaluated MFLs.

## Results

Within the WWSP region, there were four river gages, 22 springs, and one lake assessed (Figure E1). Of these, there are 17 waterbodies that are meeting the 10% screening criteria at 2045 and 10 waterbodies that are exceeding the screening criteria at 2045 (Table E1; Figure E2). MFL development is still ongoing for the springs and river gages listed below.

The springs that are meeting the screening criteria in 2045 are Allen Mill Pond Springs, Anderson Spring, Bell Spring, Bonnet Spring, Hart Springs, Little River Spring, Otter Spring, Pothole Spring, Rock Bluff Springs, Rock Sink Spring, Royal Spring, Ruth Spring, Telford Spring, and Turtle Spring on the Middle Suwannee River. The river gage that is currently meeting the screening criteria is the Withlacoochee River near Pinetta. Additionally, Cherry Lake in Madison County is meeting the lake-specific screening criteria.

The springs that are exceeding the screening criteria in 2045 are Branford Spring, Charles Spring, Guaranto Spring, Hardee (Rosseter) Spring, Lime Sink Rise, Lime Spring, Pot Spring, and Suwanacoochee Spring on the Withlacoochee and Middle Suwannee Rivers. Additionally, the Suwannee River at Branford, the Suwannee River at Ellaville, and the Withlacoochee River near Lee also exceed the screening criteria at 2045.

*Table E1: WWSP Waterbodies without Adopted MFLs Assessment Results*

<b>Waterbody Type</b>	<b>Waterbody Name</b>	<b>County/Basin</b>	<b>Exceeds Screening Criteria at 2045</b>
Spring	Allen Mill Pond Springs	Middle Suwannee River	No
Spring	Anderson Spring	Middle Suwannee River	No
Spring	Bell Spring	Middle Suwannee River	No
Spring	Bonnet Spring	Middle Suwannee River	No
Spring	Branford Spring	Middle Suwannee River	Yes
Spring	Charles Spring	Middle Suwannee River	Yes
Lake	Cherry Lake	Madison	No
Spring	Guaranto Spring	Middle Suwannee River	Yes
Spring	Hardee (Rosseter) Spring	Withlacoochee River	Yes
Spring	Hart Springs	Middle Suwannee River	No
Spring	Lime Sink Rise	Middle Suwannee River	Yes
Spring	Lime Spring	Middle Suwannee River	Yes
Spring	Little River Spring	Middle Suwannee River	No
Spring	Otter Spring	Middle Suwannee River	No
Spring	Pot Spring	Withlacoochee River	Yes
Spring	Pothole Spring	Middle Suwannee River	No
Spring	Rock Bluff Springs	Middle Suwannee River	No
Spring	Rock Sink Spring	Middle Suwannee River	No
Spring	Royal Spring	Middle Suwannee River	No
Spring	Ruth Spring	Middle Suwannee River	No
Spring	Suwanacoochee Spring	Middle Suwannee River & Withlacoochee River	Yes
River	Suwannee River at Branford	Middle Suwannee River	Yes
River	Suwannee River at Ellaville	Middle Suwannee River	Yes
Spring	Telford Spring	Middle Suwannee River	No
Spring	Turtle Spring	Middle Suwannee River	No
River	Withlacoochee River near Lee	Withlacoochee River	Yes
River	Withlacoochee River near Pinetta	Withlacoochee River	No

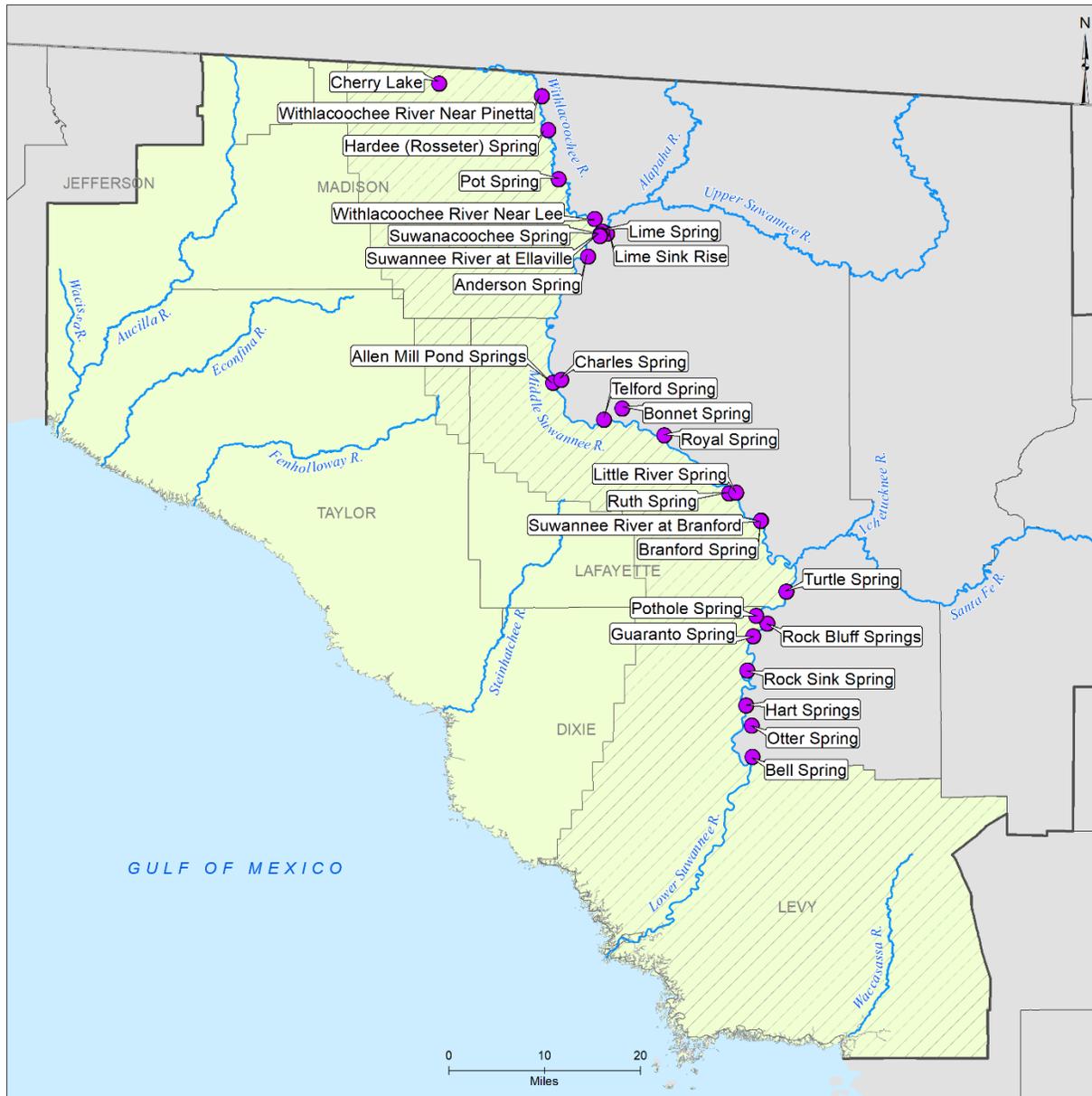


Figure E1: Names and locations of waterbodies without adopted MFLs in the WWSP region

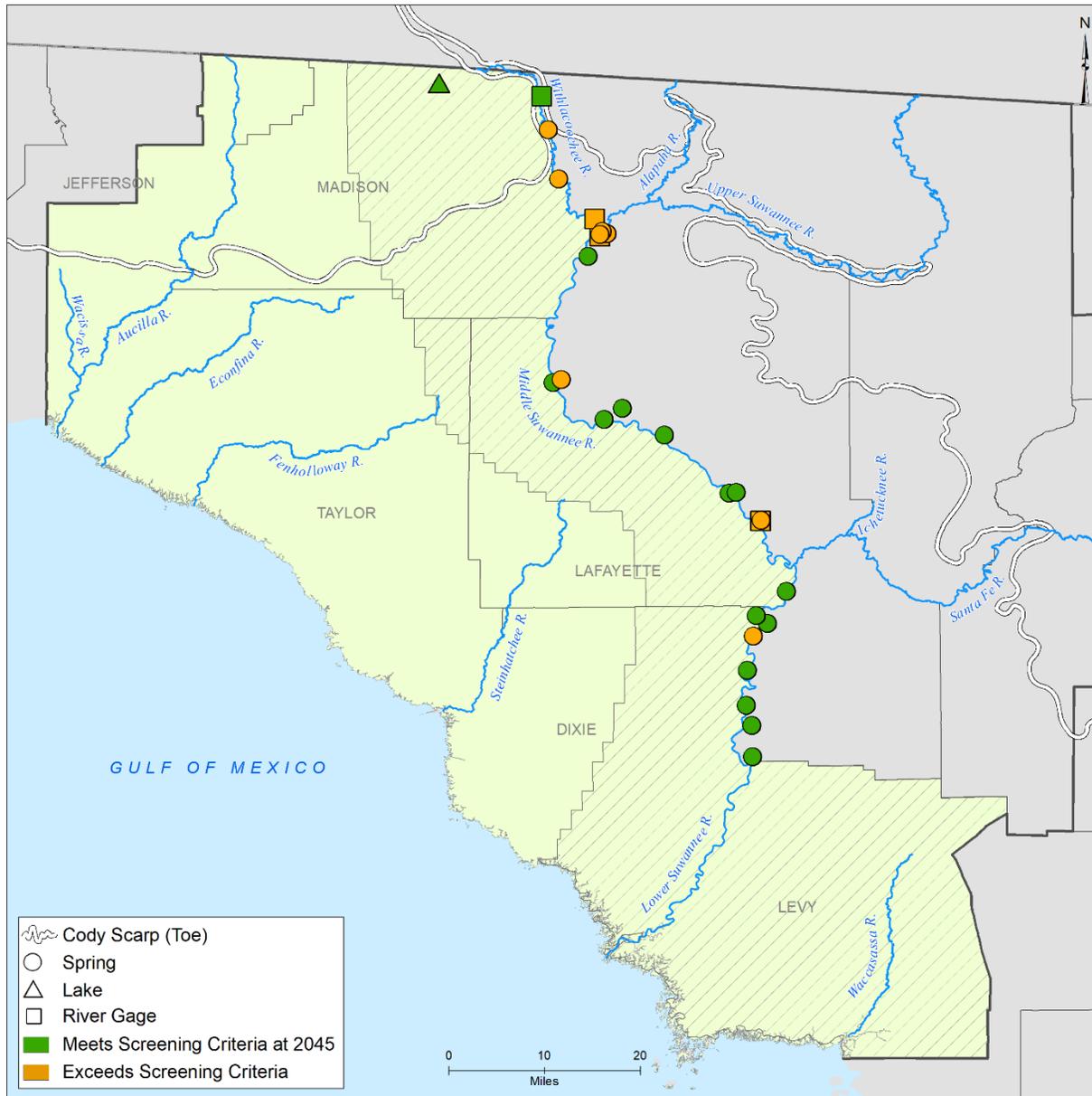


Figure E2: Waterbodies without adopted MFLs meeting or exceeding screening criteria

## References

Richter, B.D., Davis, M.M., Apse, C. and Konrad, C. (2012), A PRESUMPTIVE STANDARD FOR ENVIRONMENTAL FLOW PROTECTION. *River Res. Applic.*, 28: 1312-1321. <https://doi.org/10.1002/rra.1511>