

## **Two Key Tools in Fight for Water Quality: TMDLs and BMAPs**

No doubt, if you drill down into Total Maximum Daily Loads (TMDLs) and Basin Management Action Plan (BMAPs), it gets wonky quickly. However, at a high level the concepts are straight forward. TMDLs are calculated values for how much of a given pollutant is allowed to enter a water body and not exceed state water-quality standards. Once a TMDL has been assigned to a water body, a plan to improve the quality of that water body is created. That plan is called a BMAP. That is all you need to know about TMDLs and BMAPs to be able to understand our next upcoming article “Why Sanibel’s Jordan Marsh Treatment Park is So Cool.”

What follows is a further discussion of TMDLs and BMAPs. Also included is an example of how they are not always effective, at least in the short term. The example is the Lake O BMAP. The fact that this BMAP is not achieving its goal means that Lake Okeechobee continues to have an unacceptably high level of pollutants that unfortunately tend to flow down the Calahoosatchee River to the refuge.

### TMDLs

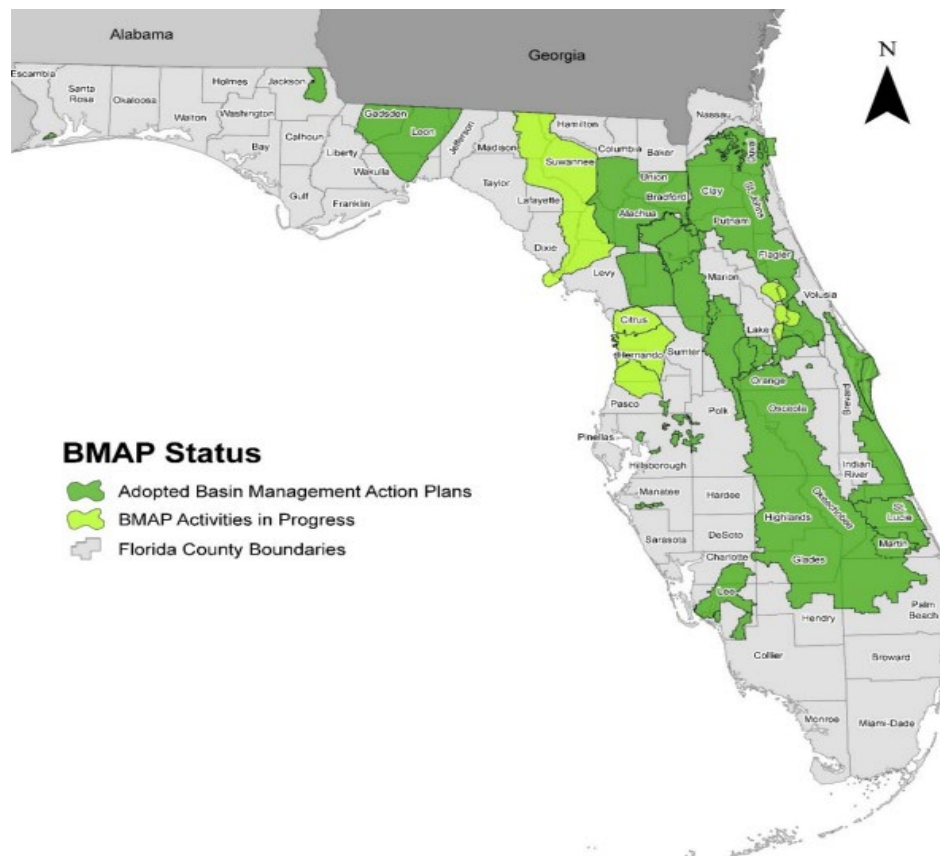
According to the Clean Water Act (CWA), each state must develop TMDLs for all the waters identified on their list of impaired waters (waterbodies not meeting state standards). The objective of a TMDL is to determine the loading capacity of a waterbody for the water quality parameters that are not meeting state standards and to allocate a target load for the waterbody so that the appropriate control actions can be taken and water-quality standards can be achieved.

States are responsible for developing TMDLs and submitting them to the U.S. Environmental Protection Agency (EPA) for approval. TMDLs are developed using a range of techniques, from somewhat simple calculations to complex water-quality modeling approaches. The degree of analysis varies based on a variety of factors including the waterbody type, complexity of flow conditions, and the pollutants causing the impairment. All contributing sources of the pollutants are identified, and they are allocated a portion of the allowable load. Natural background sources, seasonal variations, and a margin of safety are all taken into account in the allocations. For more on TMDLs, see [here](#).

### BMAPs

BMAPs are plans for restoring impaired waters by reducing pollutant loadings to meet the allowable loadings established in a TMDL. BMAPs are a comprehensive set of strategies including permit limits on wastewater facilities, urban and agricultural best management practices (BMPs), conservation programs, financial assistance, and revenue-generating activities. These strategies are designed to implement the pollutant reductions established by the TMDL.

According to a 2018 [State of Florida report](#) on TMDLs and BMAPs, Florida has 25 active BMAPs and is developing others. Those BMAPs are shown in Figure 1. (Source – that State of Florida Report.)



### TMDLs and BMAPs in Practice.

Some organizations have expressed concern about the effectiveness of BMAPs. To exemplify their concern, consider the Lake Okeechobee Protection Act, which was passed in 2000. That plan calls for Total Maximum Daily Loads (TMDLs) for Lake Okeechobee of 140 metric tons (mt) of total phosphorus (TP) per year. Roughly 370 metric tons of phosphorus entered Lake O in 2017 and, impacted in part by Hurricane Irma, the situation got dramatically worse in 2018. See [here](#).

This doesn't mean that the Lake O BMAP has not made a difference. The Florida Department of Environmental Protection has documented several BMAP projects that have reduced the flow of phosphorous into Lake O. To date, however, the annual increase in the amount of phosphorous entering the lake has exceeded the reduction in phosphorous that has resulted from the Lake O BMAP projects. In order to achieve the TMDL for Lake O, significantly more work must be done to eliminate the sources of nutrients entering the lake. This will require the cooperation of local stakeholders and significant funding for projects to address the nutrient sources.

In case you missed it: The second meeting of the Blue Green Algae Task Force was held on July 1 in Fort Myers. See [more](#).