



November 2025

Lake Okeechobee Watershed

Upper Kissimmee Subwatershed

Assessment

The purpose of this assessment is to pinpoint the most significant nutrient loading sources, determine remaining water quality improvement needs, and recommend strategic actions. Targeted reductions are needed because the Lake Okeechobee Watershed (LOW) received approximately 250 (t) of total phosphorus (TP) above the TMDL based on the 5-year rolling average for the period of WY2020-WY2024. The Upper Kissimmee Subwatershed discharges from Lake Kissimmee at the S65 structure into the C-38 Canal / Kissimmee River which flows south through the Lower Kissimmee Subwatershed to Lake Okeechobee.

WY2020 – WY2024	
5-yr Average Flow Range	744,000 – 818,000 ac-ft
Current and Planned Static Storage	11,780 ac-ft
Storage Planning Target	Unknown ac-ft
Remaining Storage Needed	Unknown ac-ft
5-yr Average Total Phosphorus (TP) Load Range	62 – 73 tons
Planned TP Reductions ¹	1.2 tons
TP Planning Target	15.9 tons
Remaining TP Reduction Range Needed	44.9 – 55.9 tons

¹ Estimations based on recently completed and future planned projects

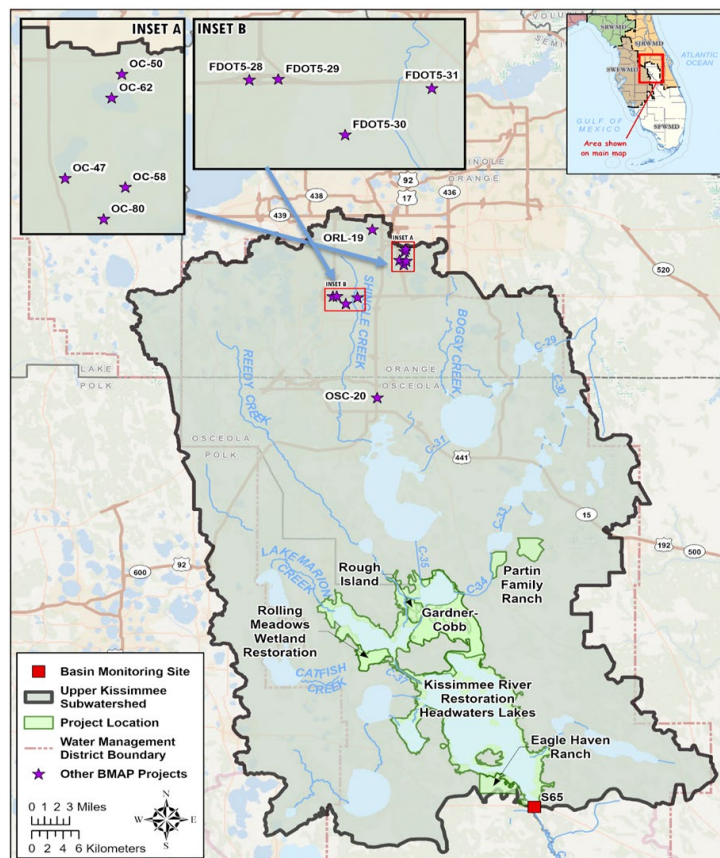


Figure 1. Locations of current LOW protection plan projects and BMAP projects completed since 2020 within the Upper Kissimmee Subwatershed.

Planned Project Operational Milestones to Reduce 5-yr Avg Nutrient Loads

2025

0.366 †

Reduction

BMAP projects

2026

0.429 †

Reduction

BMAP projects 0.063 †

2027

0.797 †

Reduction

BMAP projects 0.368 †

2029

1.197 †

Reduction

Partin Family Ranch 0.4 †

It is expected to take 5 years of operations to realize project reductions



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Long-term Basin Characteristics & Analysis

- ❖ Flow is the primary concern for this subwatershed as it has the largest runoff volume in the LOW and TP flow weighted mean concentrations (FWMC) typically below the FDEP's numeric nutrient criteria (NNC) of 120 µg/L.
- ❖ Load from the upstream sites indicate that 27 t TP comes from the northeast portion of the subwatershed and is more related to flows than TP concentrations.
- ❖ Although flow is considered the main driver of loads it was worth noting that there were increasing trends for TP load and TP FWMC for the period WY1991-WY2023 at the basin outlet (S65), but the rate of change for the increasing FWMC was small.
- ❖ Lake Kissimmee, which is immediately upstream of the S65 monitoring station, may be impacting nutrient concentrations. The majority of upstream stations indicate that nutrient levels from this subwatershed are low relative to other areas of the LOW.
- ❖ Total suspended solids at the subwatershed outlet are low.
- ❖ Flow volumes come from extreme events that may be better captured using the 95th percentile of flows, but water availability and downstream water uses also need to be considered.

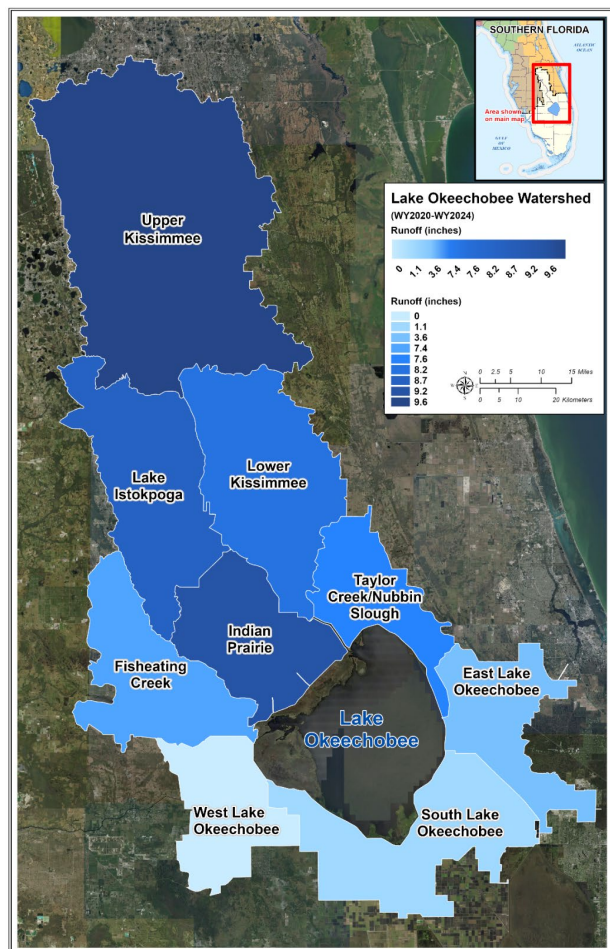


Figure 2. Runoff in LOW.

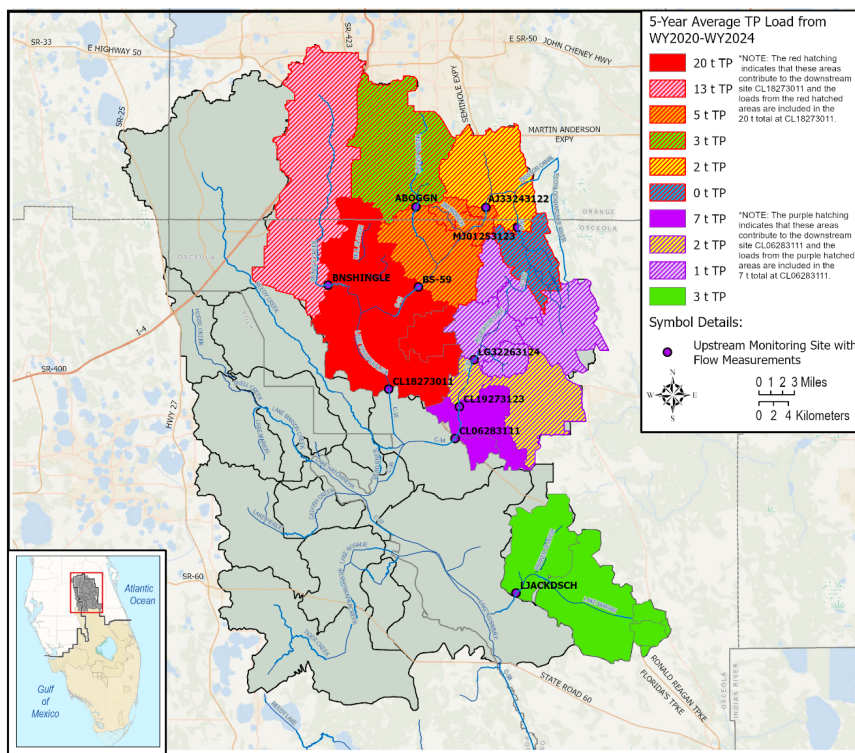


Figure 3. TP load from Upstream Monitoring Sites.



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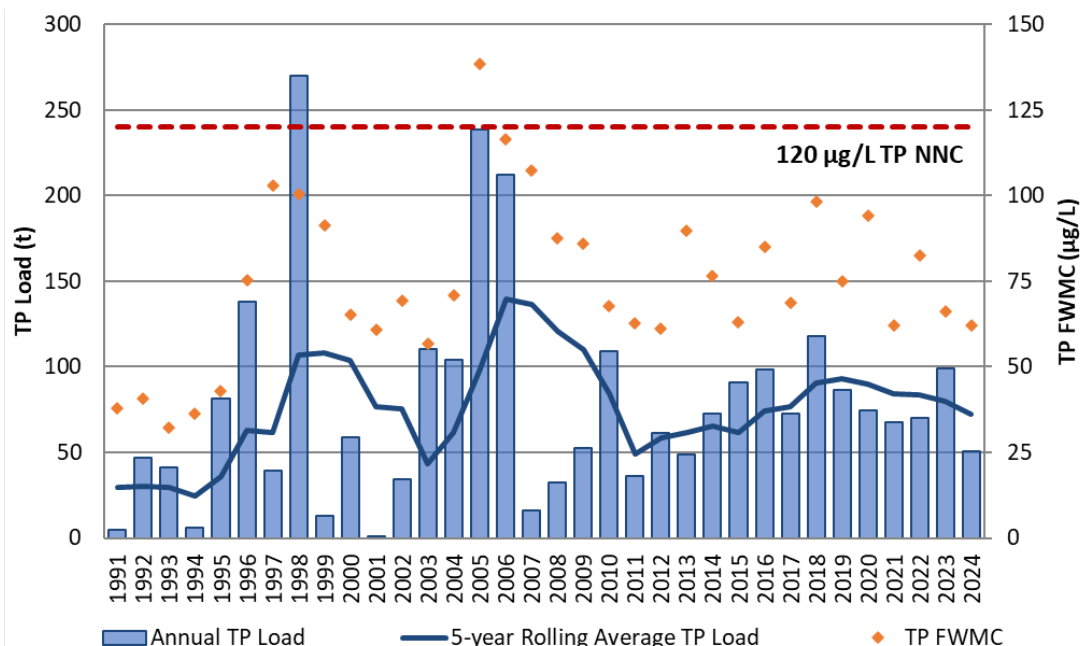


Figure 4. TP load and FWMC for WY1991-WY2024 with the 5-year rolling average for the Upper Kissimmee Subwatershed measured at S65.

Upstream Analysis

- ❖ Only 5 of 31 upstream sites have 5-year average annual TP concentrations greater than 120 µg/L.
- ❖ No increasing TP trends were found at upstream stations for the periods of WY1991- WY2023 (period of record) or WY2014- WY2023 (last 10 years).

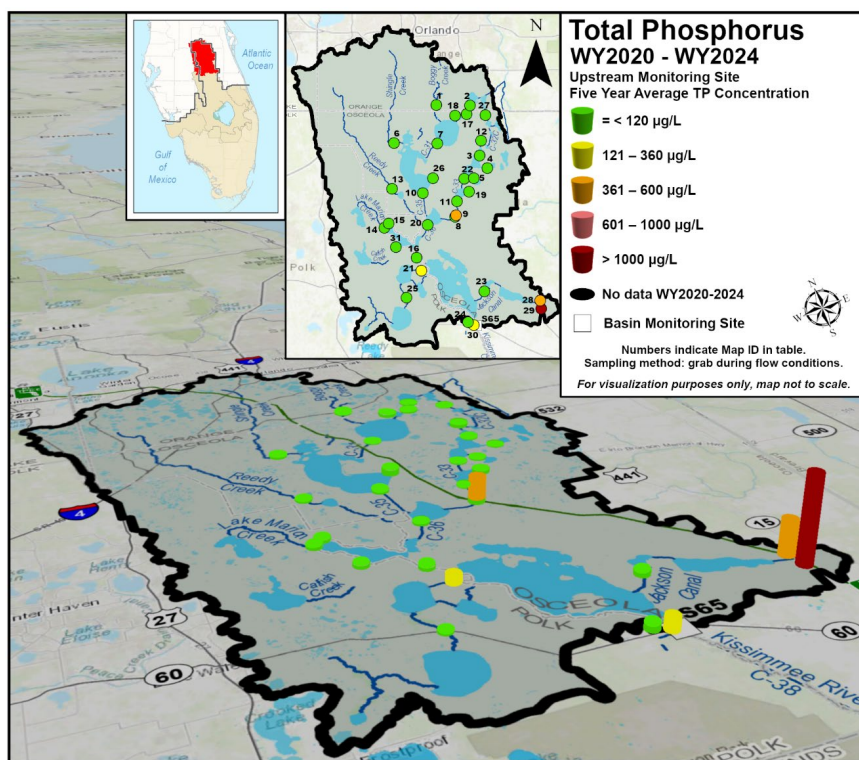


Figure 5. Upper Kissimmee Subwatershed Upstream five-year average TP concentrations.



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Project Focus

- ❖ To address high subwatershed flow volumes, SFWMD projects should focus on capturing or reducing peak rain event runoff with the understanding that projects may only be able to store water at certain times due to water supply and ecological constraints. This means at times these projects might not have any water stored in them.
- ❖ Stormwater detention and wetland restoration projects are recommended.
- ❖ It is also critical that source control efforts continue so the low nutrient concentrations observed persist.

Request for Proposals Suggested Criteria

Project characteristics to prioritize in project evaluations:

- ❖ Operational discharge structures and flexible operation plans able to consider operations of downstream waterbodies
- ❖ Connection to regional system in basins with demonstrated water availability
- ❖ Maximized runoff volume storage, attenuating flow to downstream waterbodies, while demonstrating nearby restoration projects will not be impacted
- ❖ Water retention or treatment in areas with demonstrated higher TP concentrations
- ❖ Located at lower elevations and close to downstream receiving water
- ❖ Effective water retention
- ❖ Projects upstream of lakes with TMDLs or a pollutant reduction plan for TP
- ❖ Located to benefit the following flood prone areas as described in [Upper Kissimmee Subwatershed Focus Assessment Report](#)



Figure 6. Upper Kissimmee Subwatershed Basins.