

Harris Chain of Lakes TP loading estimates

Comparison of TMDL Baseline (1991-2000),
with 2009 land uses and baseline period
hydrology

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September 10, 2015



Baseline period (1991-2000) TP loading estimates

- Major tributaries (Palatlakaha River and tributaries connecting lakes)
 - Daily discharge volumes measured at dams
 - TP concentrations measured generally monthly
- Atmospheric deposition
 - TP in rainfall and in dry deposition measured from wet/dry deposition collector located near Lake Apopka
 - Network of rain gauges in or near basin



Baseline period (1991-2000) TP loading estimates

- Stormwater runoff
 - No direct measurements in basin; estimated by modeling approach, based on studies conducted elsewhere that determined runoff from different types of land use
 - Data needed for estimates – maps of drainage basins, land use, soil type, distance of drainage subbasins from lake, and rainfall
 - Runoff estimates based on 1987 and 1995 land use maps
 - Stormwater treatment assumed for land developed after 1987; treatment efficiency based on studies in Florida – 63% removal of TP



Baseline period (1991-2000) TP loading estimates

- **Septic tanks**
 - No direct measurements in basin; estimated by modeling approach, based on studies conducted elsewhere
 - Assumed no loading from houses within service areas of municipal wastewater treatment plants (WWTP), or from areas served by package treatment plants located > 200 m from lakes
 - All houses outside of WWTP service areas and package plants within 200 m of lakes assumed to contribute septic tank loading
 - Number of contributing houses estimated from 1995 aerial photos



Septic tank loading estimates

- For contributing septic systems:
 - 6.7 pounds TP/year discharged to drainfield
 - 90% of TP discharged is retained within drainfield
 - Assumed no septic tank failures



Baseline period (1991-2000) TP loading estimates

- Muck farms – permit records of discharges when available, otherwise estimated by relating available discharge data to rainfall
- SJRWMD restoration areas – TP measurements, combined with pump records or stormwater runoff methods
- Point sources – FDEP permit files
- Springs – periodic measurements of TP and discharge volumes



2009 land uses with baseline period hydrology

- Estimate stormwater TP loading using 2009 land use map, but same rainfall as used for baseline period (1991-2000)
- Subtract stormwater load reductions from BMAP projects
- Septic tanks – New count of contributing houses from 2009 aerial photos
- SJRWMD restoration areas – assume 1 lb TP/acre/year



2009 land uses with baseline period hydrology

- Tributary loads from Palatlakaha River or from upstream lakes – assume to change proportionately to the loads to those upstream basins
- Point sources – use average for last 5 years (~0 other than for Apopka)
- Other sources assumed no change in loading from baseline (atmospheric, springs, remaining muck farms)



Lake Yale estimated total phosphorus loads

