



Florida Department of Environmental Protection

Water Quality Restoration Program

Upper Ocklawaha Basin Supplemental Report

August 29, 2017

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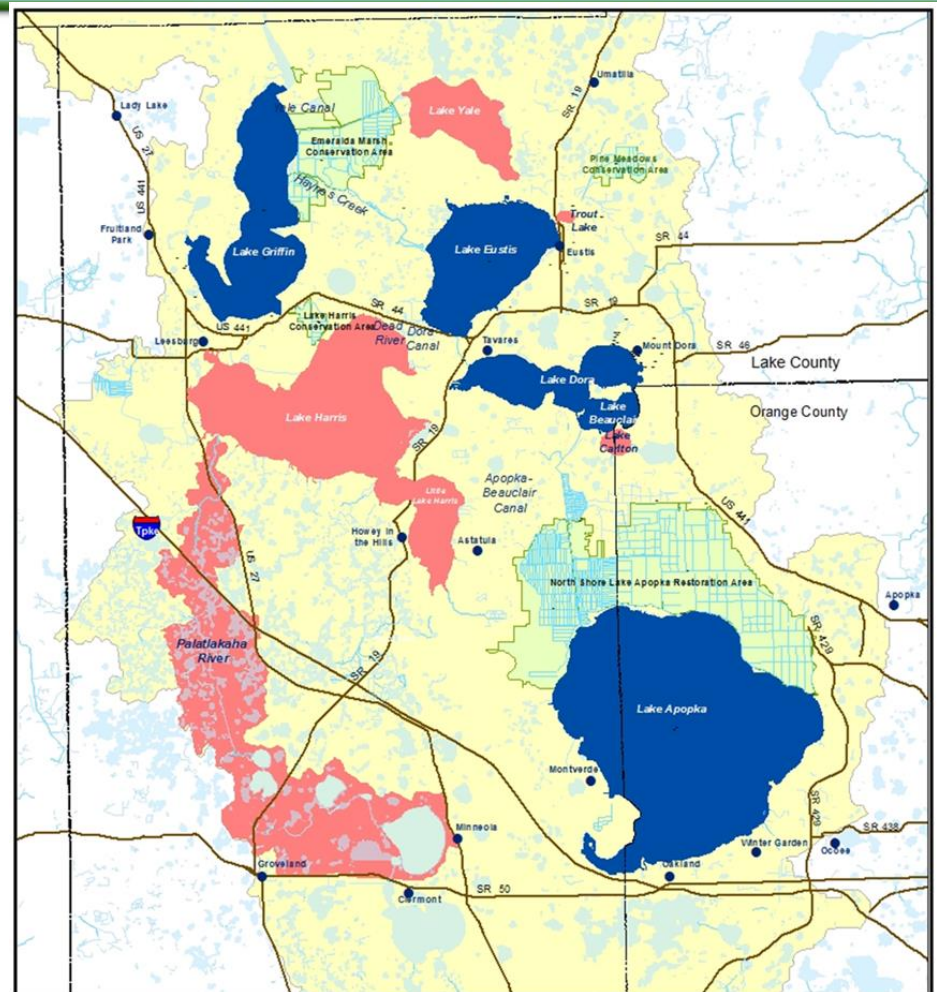
Changes

- Since the meeting in March, what has happened.
- DEP spoke with staff from Mascotte, Wildwood, Florida Turnpike Enterprise.
 - Late 2016 met with Minneola, Umatilla, and Howey-in-the Hills staff.
 - Only city we have not contacted is Astatula.
- Adjustments and corrections to project information and loading reductions.
- TMDLS for Lake Marshall, Lake Roberts and Lake Denham adopted.



Priority Waterbodies

- Lake Harris.
- Trout Lake.
- Lake Carlton.
- Lake Yale.
- Palatlakaha River.



Upper Ocklawaha River Basin

0 2 4 8 12 Miles



Map updated March 11, 2014. Water Quality Restoration Program. Contact Mary Paulic at mary.paulic@dep.state.fl.us

Outcome of Management Strategy Implementation

- Projected to meet TMDL
- Projected to not meet TMDL; Focus waterbody
- Restoration Areas
- Upper Ocklawaha Basin City

*For display purposes only. Not an accurate depiction of ground conditions.

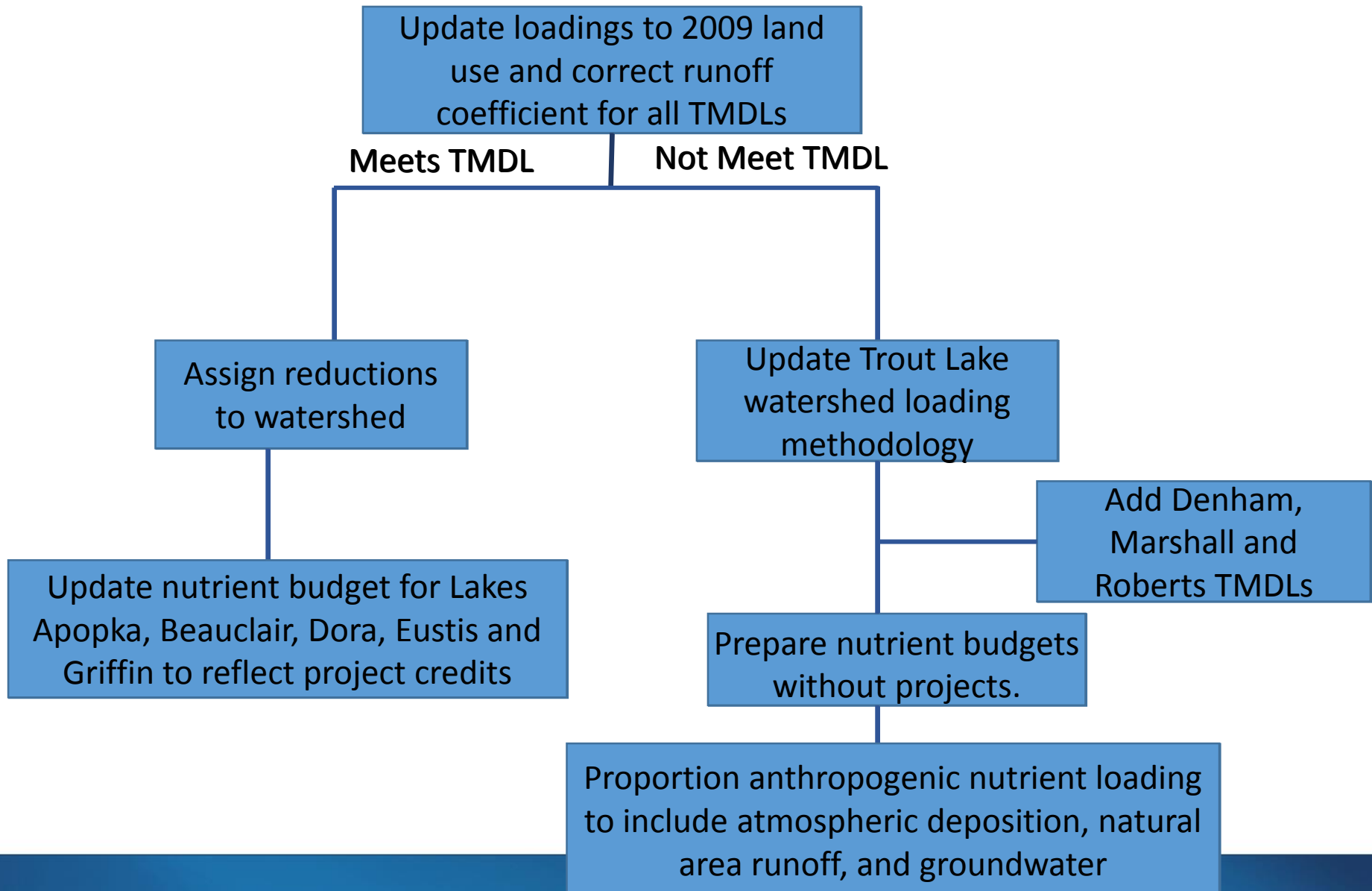


New TMDLs

- Lake Denham, Lake Roberts, and Marshall Lake.
- Adopted into rule.
- Supplemental Report assigns loading reductions and 10 year time frame for reducing loadings.



Decision Tree





Non-priority Waterbodies

- Lake Apopka, Lake Beauclair, Lake Dora, Lake Eustis, Lake Griffin.
- No allocation of loading reductions to watershed because these lakes will meet their TMDLs.
- Project reductions estimated through December 2016 and agriculture BMPs estimated through 2015.
- In some case estimated load reductions may be larger than modeled estimates urban runoff.



Non-priority Nutrient Budget

Sources of TP	Lake Apopka Net Estimated Load	Net Change in Lake Apopka Sources	Lake Beauclair Net Estimated Load	Net Change in Lake Beauclair Sources	Lake Dora Net Estimated Load	Net Changes in Lake Dora Sources	Lake Eustis Net Estimated Load	Net Changes in Lake Eustis Sources	Lake Griffin Net Estimated Load	Net Changes in Lake Griffin Sources
Spring Discharge	2,208	-	-	-	-	-	-	-	-	-
Muck Farm Discharge	-	-115,686	1,702	-	-	-	175	-1,020	-	-22,704
Apopka Restoration Area	11,895	-27,263	-	-	-	-	-	-	-	-
Pine Meadows Restoration Area	-	-	-	-	-	-	475	-580	-	-
Harris Bayou	-	-	-	-	-	-	-	-	423	423
Emeralda Marsh Restoration Area	-	-	-	-	-	-	-	-	4,653	-19,246
Atmospheric Deposition	13,645	-	311	-	1,267	-	2,251	-	3,816	-
Discharge from Lake Apopka	-	-	2,774	-40,752	-	-	-	-	-	-
Discharge from Lake Beauclair	-	-	-	-	4,460	-31,394	-	-	-	-
Discharge from Lake Dora	-	-	6	-9	-	-	3,116	-15,900	-	-
Discharge from Lake Eustis	-	-	-	-	13	-1	-	-	8,250	-13,694
Discharge from Lake Harris	-	-	-	-	-	-	4,089	-2,197	-	-
Discharge from Lake Yale	-	-	-	-	-	-	-	-	2	-



Non-priority Nutrient Budget (cont)

Sources of TP	Lake Apopka Net Estimated Load	Net Change in Lake Apopka Sources	Lake Beauclair Net Estimated Load	Net Change in Lake Beauclair Sources	Lake Dora Net Estimated Load	Net Changes in Lake Dora Sources	Lake Eustis Net Estimated Load	Net Changes in Lake Eustis Sources	Lake Griffin Net Estimated Load	Net Changes in Lake Griffin Sources
Point Sources	2,671	-	-	-	1	-	15	15	-	-
Stormwater Runoff	-1,348	-	-	-	-	-	-	-	-	-
Natural Areas Runoff	-	-	324	-37	245	-81	992	41	1,688	585
Agricultural Runoff	-	-	377	75	44	21	171	-32	350	5
Agricultural BMPs	-	-	-	-21	-	-1-	-	-7	-	-1
Stormwater Runoff Developed	-	-	26	-15	23	-1,748	-591	2,739	1,963	--400
Stormwater BMPs	-	-5,204	-	-209	-	-1,460	-	-3,096	-	-561
Septic Systems	-	-	178	-	445	33	1,391	-	1,006	-
Package WWTPs	-	-	83	-	-	-	910	-	1,644	-
Margin of Safety	1,168	-	-	-	-	-	-	-	-	-
Loading information										
Baseline TP loading	138,497	-	46,681	-	39,829	-	35,174	-	78,474	-
Expected Reduction in TP loading	108,258	-	40,900	-	33,329	-	22,180	-	54,679	-
Net Expected TP Loading	30,239	-	5,781	-	6,499	-	12,994	-	23,795	-
TMDLs	35,052	-	7,056	-	13,230	-	20,286	-	26,901	8 -



Priority Waterbody Nutrient Budget

Sources of Total Phosphorus	Lake Harris Net Estimated Load lbs TP/yr	Palatlakaha River Net Estimated Load lbs TP/yr	Lake Carlton Net Estimated Load lbs TP/yr	Trout Lake Net Estimated Load lbs TP/yr	Lake Yale Net Estimated Load lbs TP/yr
Spring discharge	2,047	-	-	-	-
Muck farm discharges	1,827	-	-	455.2	-
Restoration area discharges	-1	-	-	539.5	-
Atmospheric deposition	5,422	-	118	29.6	1,443
Discharge from Lake Eustis	84	-	-	-	-
Discharge from Palatlakaha River	4,586	-	-	-	-
Point Source	1	-	-	-	-
Stormwater runoff	-	-	-	-	-
Natural Area runoff	2,253	1,049	69	381.7	610
Agriculture runoff	488	414	100	69.8	361
Developed uses runoff	3,295	1,306	121	514.3	693
Seepage/groundwater	-	27	-	-	-
Septic systems total	2,191	-	70	7.4	586
Septic systems	1,515	-	54	7.4	191
Package plants	675	-	16	-	394
Loading Information					
Net TP loading (lbs/yr)	22,192	2,796	478	1,997.5	3,692
Total Maximum Daily Load (lbs/yr)	18,302	2,207	195	521	2,844
Additional reduction needed in TP loading to meet TMDL (lbs/yr)	3,890	589	283	1,476.5	848



Apportionment Approach

- Equitable approach.
 - Approach does not favor or burden any one stakeholder relative to another.
 - Previous stormwater projects/efforts are accounted for.
- Loading reduction is proportional to the amount of loading generated from a jurisdiction.
- Local governments are not responsible for loads from agriculture or historic muck farm restoration areas or natural lands; those are separated from the local developed land use loads.

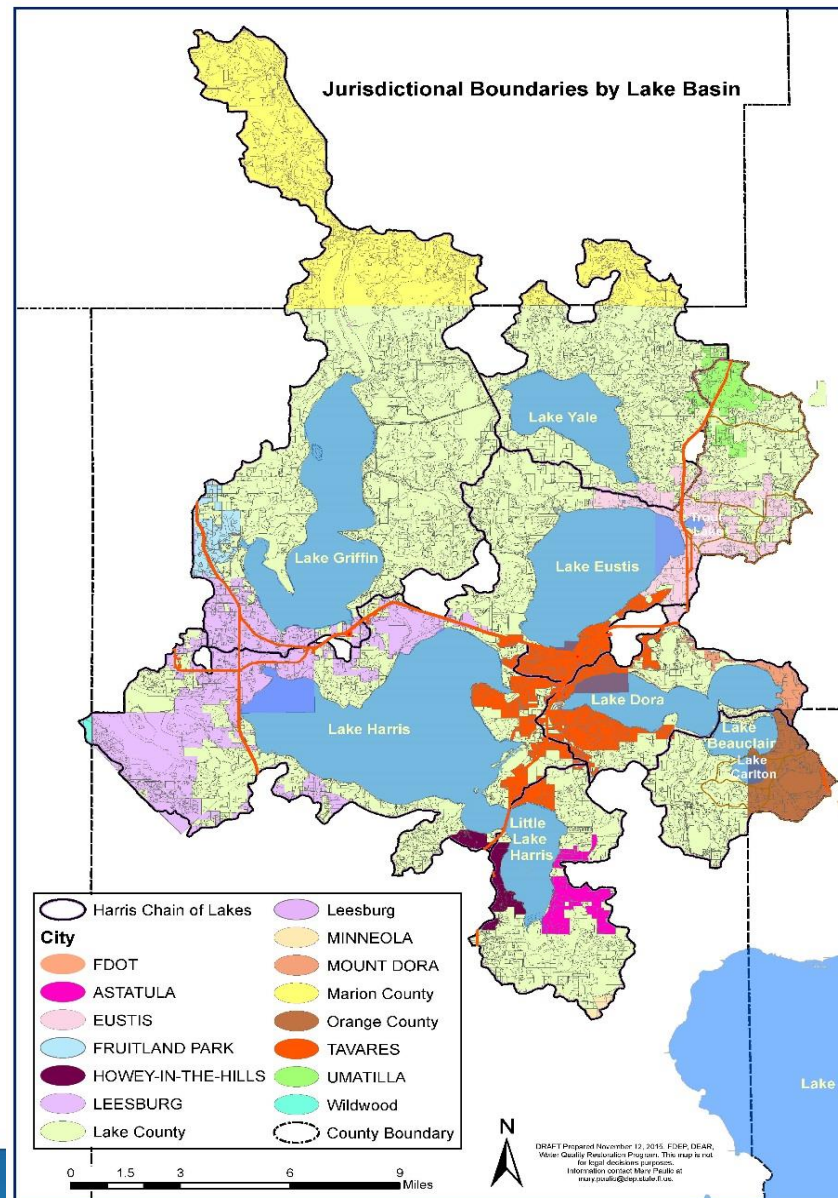


Developed Land Use Categories

Category	Description
Developed Land Use – High	High density residential, high density commercial, and industrial
Developed Land Use – Medium	Medium density residential and low density commercial
Developed Land Use – Low	Low density residential, mining, sprayfields, and open land recreational
Category Palatlakaha River	Description Palatlakaha River
Developed Land Use – High	High density residential
Developed Land Use – Medium	Medium density residential and transportation
Developed Land Use – Low	Low density residential and urban open

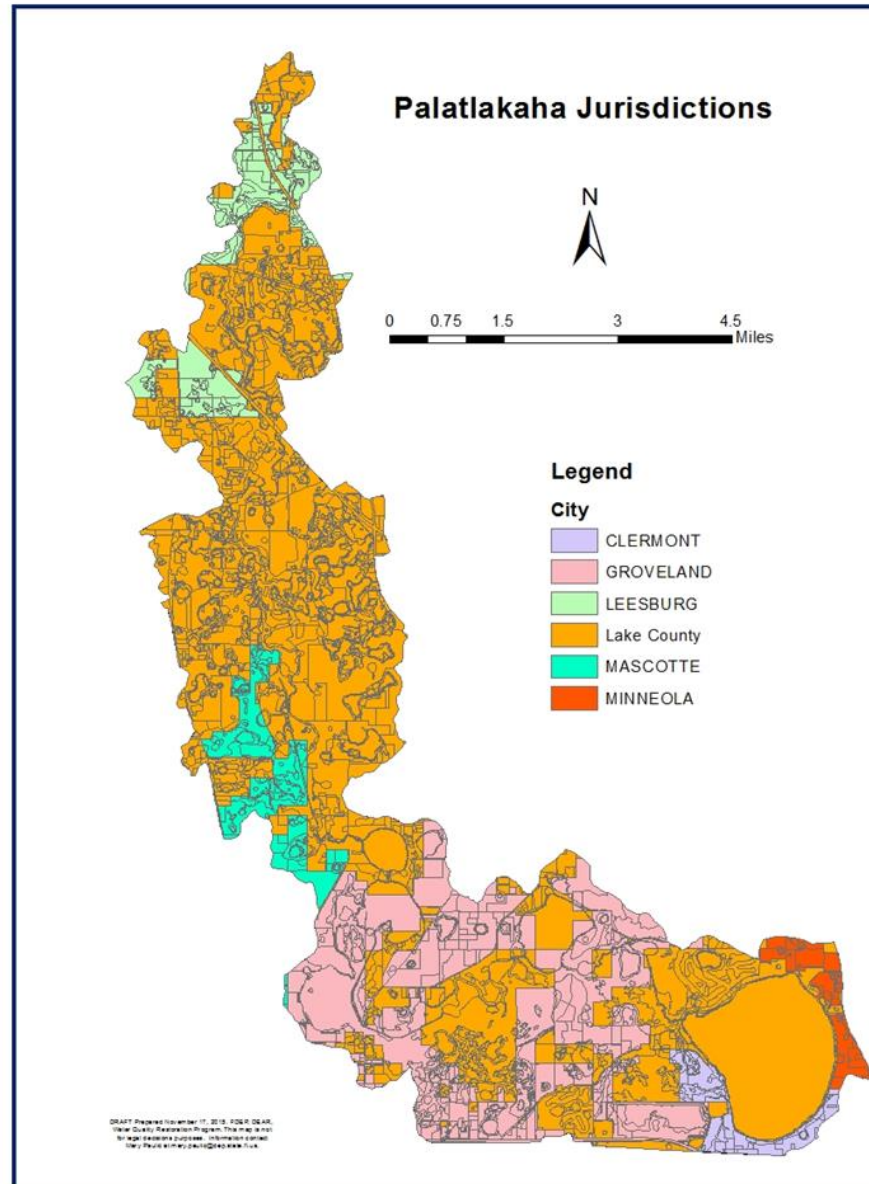


Jurisdictions in the Harris Chain of Lakes





Palatlakaha River Jurisdictions





Calculations for Jurisdictions

- Using the land uses, add jurisdictional boundaries.
- Calculate area of different developed land use for the entire watershed.
- Calculate developed land use area (acres) within each jurisdiction.
- Calculate each jurisdiction's percent of the total area of developed land use.
 - This percent used to apportion reduction in TP loading required by that jurisdiction.
- Percent of area within jurisdiction times needed reduction to estimate jurisdiction reduction in loading.



Septic System Calculations

- Septic systems within 200 meters of waterbody or tributaries.
- Priority waterbodies apportion reduction by percent of septic systems within a jurisdiction.
- New TMDLs groundwater and septic system load combined.
 - Loading allocated in TMDL.
 - Proportioned to jurisdiction by percent area of watershed.
 - Included with developed land loading.



Low Priority Ranking

- Jurisdiction loading as percent of watershed stormwater loading.
- Less than 1 % not requiring loading reduction.
- Does not completely release jurisdiction from any BMAP responsibilities.
 - Inventory low priority ranked jurisdictions for potential projects.
 - Reevaluate status in 5 years.
 - Mascotte and Florida Turnpike Enterprise in Palatlahaha River Basin.
 - Wildwood in Lake Harris Basin.



Basin Attenuation

- Reductions in downstream loading from upstream reductions.
 - Reductions for individual projects carried to downstream waterbody.
- Address in second 5 year phase of allocations.
 - By reevaluating progress made in reaching TMDL as pounds TP reduced.
 - Readjust reduction targets as needed.
- Most important for Lake Harris as a receiving waterbody.
 - Other priority waterbodies and new TMDLs are terminal waterbodies.



Notes on Education Credits

- Local municipalities that are MS4 permit holders , typically awarded at least 1% credit unless they indicated otherwise.
- Lake County municipalities not supporting Florida Friendly landscaping – 3% credit assigned to Lake County to cover participation by those residents in county program.



Education Credits

Entity	*Educational Credits (%)
Apopka	5.5
Clermont	2.75
Eustis	6
FDOT	0.5
Fruitland Park	5.5
Howey-in-the Hills	1
Lady Lake	6
Lake County	5.5
Leesburg	6
LWCA	0
Marion County	5
Minneola	1
Mount Dora	1.5
Ocoee	0.75
Orange County	6
SJRWMD	0
Tavares	1.75
Umatilla	5.5
Winter Garden	6
Florida Turnpike Enterprise	0.5
Wildwood	1.0
Mascotte	1.0

Activity	Credit
Florida Yards and Neighborhoods program	3%
Landscaping local code/ordinance	0.50%
Irrigation local code/ordinance	0.50%
Fertilizer local code/ordinance	0.50%
Pet waste management local code/ordinance	0.50%
Public Service Announcements (PSAs)	0.25%
Informational pamphlets	0.25%
Website	0.25%
Inspection program and call-in number for illicit discharges	0.25%
Total Credit for Education Activities	6.00%



Education Credit Summary

- All stormwater loading and credits in lbs TP/yr.

City	Credit for Educational Activities as Percent	Palatlakaha SW Loading	Palatlakaha River Credits	Lake Harris SW Loading	Lake Harris Credits	Lake Carlton SW Loading	Lake Carlton Credits	Lake Yale SW Loading	Lake Yale Credits	Trout Lake SW Loading	Trout Lake Credits
Astatula	0.00%	-	-	127.5	-	-	-	-	-	-	-
Clermont	2.25%	44.2	1.0	-	-	-	-	-	-	-	-
Eustis	6.00%	-	-	-	-	-	-	230.3	13.8	227.6	13.7
FDOT	0.500%	24.4	0.1	149.5	0.7	16.0	0.1	45.5	0.2	31.1	0.2
Groveland	2.25%	347.1	7.8	-	-	-	-	-	-	-	-
Howey-in-the-Hills	1.00%	-	-	68.9	0.7	-	-	-	-	-	-
Lake County	5.50%	715.2	35.8	1230.5	61.5	12.3	0.6	356.2	17.8	77.7	3.9
Leesburg	6.00%	89.0	5.3	1242.3	74.5	-	-	-	-	-	-
Marion County	5.50%	-	-	-	-	-	-	-	0.8	-	-
Mascotte	1.00%	2.7	0.0	-	-	-	-	-	-	-	-
Minneola	1.00%	70.0	0.7	-	-	-	-	-	-	-	-
Orange County	5.50%	-	-	-	-	92.7	5.1	-	-	-	-
Tavares	1.75%	-	-	470.9	8.2	-	-	-	-	-	-
Umatilla	5.50%	-	-	-	-	-	-	46.2	2.5	177.8	9.8
Wildwood	1.00%	-	-	4.8	-	-	-	-	-	-	-
Turnpike	0.50%	12.3	0.0	-	-	-	-	-	-	-	-
Fruitland Park	5.50%	-	-	-	-	-	-	-	-	-	-
Mount Dora	1.50%	-	-	-	-	-	-	-	-	-	-
Lake County City Jurisdiction	3.00%	464.1	13.9	667.4	20.0	-	-	-	-	-	-
Total Stormwater Loading or Credits lbs TP/yr	-	1304.9	50.7	3294.6	145.7	121.1	5.8	693.0	35.2	514.3	27.5

SW=stormwater



Education Credit 2017 TMDLs

City	Credit for educational Activities Percent	Lake Roberts SW Loading kg TP /yr	Lake Roberts Credits kg TP/yr	Marshall Lake SW Loading kg TP/yr	Marshall Lake Credits kg TP/yr	Lake Denham SW Loading kg TP/yr	Lake Denham Credits kg TP/yr
FDOT	0.50%			9.5	0.05	7.2	0.0
Lake County	5.50%					30.9	1.7
Leesburg	6.00%					108.2	6.5
Orange County	5.50%	17.8	1.0	22.7	1.4		
Wildwood	1.00%					3.2	0.0
Apopka	5.50%			119.1	6.5		
Winter Garden	6.00%	15.3	0.9				
Central Florida Expressway Authority	0.00%			19.8			
Total Stormwater Loading or Credits kg TP/yr		33.2	1.9	171.1	8.0	149.4	8.3



Total Reduction

- Total Reduction = Developed Land Uses + Portion of Septic System Loading.
 - Septic system load reduction apportioned by jurisdiction.
 - Palatlakaha River does not have septic system reduction.
- Marshall Lake, Lake Roberts, Lake Denham.
 - Total Reduction = Developed land uses + portion of groundwater/septic system loading.
 - Groundwater septic system loading apportioned by percent area of jurisdiction.



Priority Waterbody Reductions

- Quick notes:
 - If jurisdiction meets all loading reductions, final required loading is 0.
 - Does not account for upstream loading reductions. Those will be considered at the end of the first 5-year cycle.
 - Adjusted dates for each 5-year period.
 - Where possible, suggested larger scale management actions that could be considered for project development.
- Refer to Handout

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• Any comments or questions???