

Documentation in Support of Category 4e for WBID 756F: Lake Lafayette (Upper Segment)

Waterbody/Watershed Identification

Organization	City of Tallahassee (COT) – Local Government Agency
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Project Title	Upper Lake Lafayette Nutrient Reduction Facility(ULL NRF)
Waterbody(s)	WBID 756F (formerly 756A/756) – Lake Lafayette (Upper Segment)
Watershed(s)	Ochlockonee/St. Marks River Watershed/Lake Lafayette Planning Unit
No. Waterbody / Pollutant Combinations	Lake Lafayette (WBID 756) was listed on the 1998 303(d) consent decree list for “nutrients”, “coliforms” and “turbidity.”, WBID 756A 2002 Verified list for nutrients and dissolved oxygen (DO) (linked to nutrients), WBID 756A 2009 Verified list for fecal coliforms and DO
No. Watersheds Improved	One (1) Apalachee-St. Marks River 03120001

Description of Baseline Conditions

Watershed(s)	Apalachee-St. Marks River 03120001		
Impairments	<u>HUC</u> St. Marks R.	<u>WBID 756F</u> 1998 WBID 756(Lk Lafayette)-nutrients, coliforms, turbidity 2002 Verified List-WBID 756A(Upper Segment)-Dissolved Oxygen (DO), Nutrients (TSI) 2009 Verified List WBID 756A (Upper Segment)-DO, Fecal Coliforms	<u>Impairment Cause</u> 1998 -Landfill, urban runoff, heavy construction and groundwater contamination 2002 -Urban runoff, linked to nutrients, high phosphorus (TP) 2009 -Urban runoff, linked to nutrients and high TP
Baseline Data	Table 1 shows the ambient pollutant concentrations and calculated pollutant loading at two inflow stations from samples collected every two weeks from May 2004 to May 2005. Pre-project monitoring data are included in an aquatic weed treatment report that was provided to FDEP in July 2011 (see supporting documentation). Recent data from IWR45 for WBID 756F are also provided in the supporting documentation.		
Map	Figure 1 shows a map delineating the watershed area and landuse that contributes to ULL NRF and identifies the project area.		

Table 1. Average Ambient Pollutant Concentration for Inflow to WBID 756F

Station 2 Area = 2,604 acres (25.6%)
 Station 3 Area = 7,571 acres (74.4%)
 Total Area = 10,175 acres

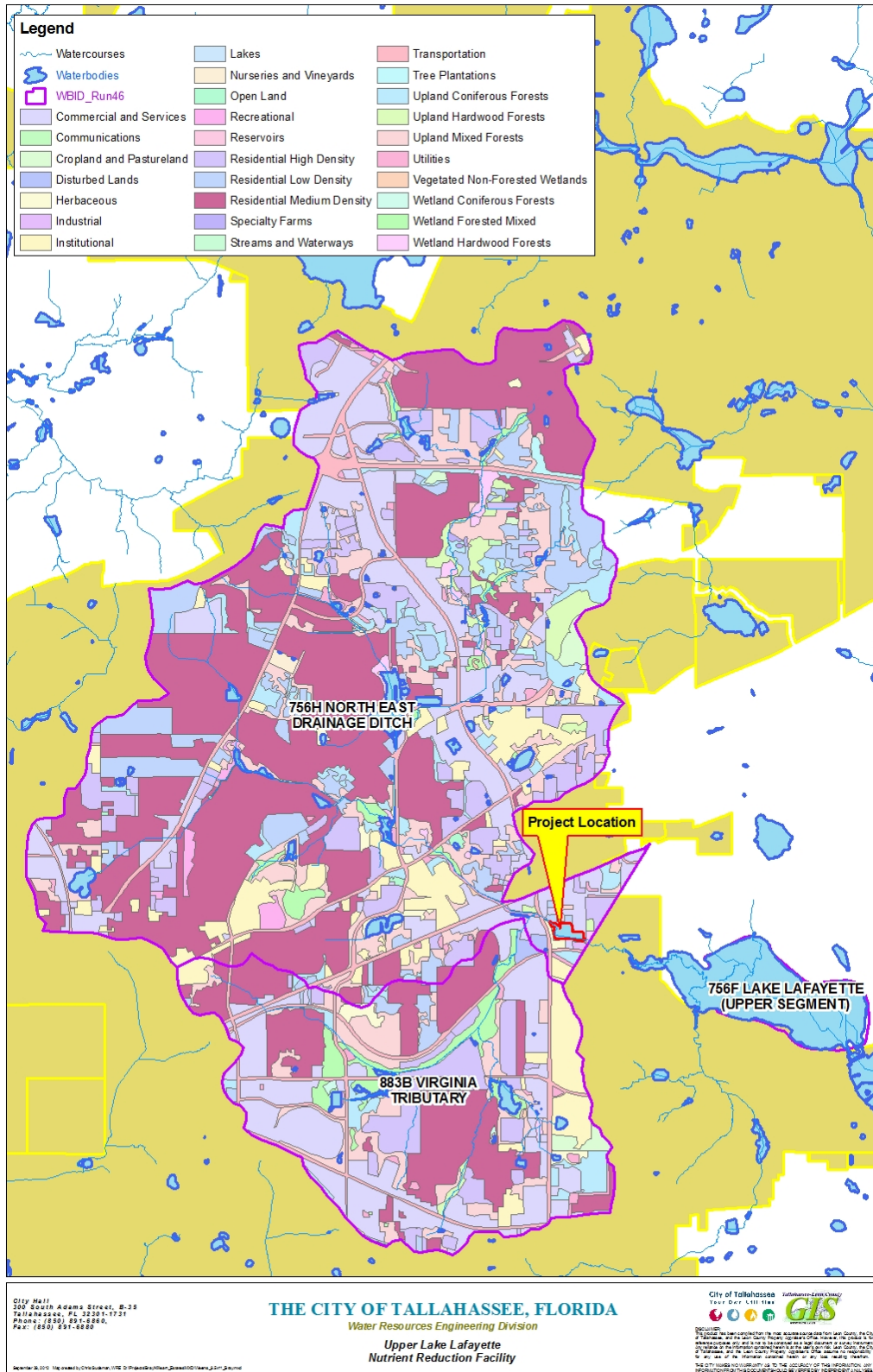
Station 2 (Park Ave.)
 Average Annual Inflow Volume = 5,019 ac-ft
 Station 3 (NEDD)
 Average Annual Inflow Volume = 5,891 ac-ft
 Average Annual Inflow Volume = 10,910 ac-ft

Station 2		
Parameter	Average	Total Pollutant Load
BOD5	1.65 mg/L	10,212.97 kg/yr
TN	0.35 mg/L	2,166.39 kg/yr
TP	0.08 mg/L	495.17 kg/yr
TSS	2.80 mg/L	17,331.10 kg/yr
fecal coliform	439.18 Count/100mL	2.72E+13 TC/yr

Station 3		
Parameter	Average	Total Pollutant Load
BOD5	1.60 mg/L	11,625.83 kg/yr
TN	0.42 mg/L	3,051.78 kg/yr
TP	0.13 mg/L	944.60 kg/yr
TSS	6.56 mg/L	47,665.91 kg/yr
fecal coliform	874 Count/100 mL	6.35E+13 TC/yr

Total	
Parameter	Total Pollutant Load
BOD5	21,838.80 kg/yr
TN	5,218.17 kg/yr
TP	1,439.77 kg/yr
TSS	64,997.01 kg/yr
fecal coliform	9.07E+13 TC/yr

Figure 1.



Evidence of Watershed Approach

Area of Effort	<p>The Upper Lake Lafayette watershed (WBID 756A) lies within the Ochlockonee-St. Marks River Basin, a TMDL Group 1 Basin. Weems Pond Stormwater Treatment Facility, DEP Permit 37-0074748-001-RG (Weems Pond) has a top of bank surface area of 13 acres that receives and treats runoff from a highly urbanized sub-watershed area of approximately 10,175 acres and discharges into a drainage ditch that flows into the Upper Lake Lafayette system.</p>
Key Stakeholders Involved and Their Roles	<p>The pond was originally permitted by FDEP as a cooperative project between the FDOT, Leon County, and the City of Tallahassee (COT) to provide new stormwater treatment for the expansion of Capital Circle NE as well as treatment for several hundred acres of existing developed area within the basin. The COT received transfer of ownership and responsibility of maintenance in October 2009 (see supplemental documentation). This project was recommended by DEP and included in a Tri-Party Agreement (see supplemental documentation) with the COT, FDOT and DEP as part of the covenants agreed to for transfer of the facility from FDOT to the COT.</p> <p>The COT is the managing entity for the “Upper Lake Lafayette Nutrient Reduction Facility” (ULL-NRF) project. The project is funded by the COT with TMDL Water Quality Restoration grant funding by FDEP.</p>
Watershed Plan & Other Supporting Documentation	<p>WBID 756F was included on the 1998 303d list for fecal coliform (FC) and nutrients (TP). The Northeast Drainage Ditch (NEDD, WBID 756H) and the Virginia Tributary also known as the Park Avenue Tributary WBID 883B contribute flow to Upper Lake Lafayette (WBID 756F). These WBIDs, which previously were contained in WBID 756 and 756A, were included on the Environmental Protection Agency’s (EPA) 1998 303d/consent decree list for fecal coliform (FC) and nutrients (total phosphorus or TP) and were rated high for TMDL development for coliforms and nutrients (linked to TP). The NEDD WBID (currently 756H) has been verified as impaired by FDEP and TMDLs were established by U.S. EPA for fecal coliform in 2005 (63% reduction). In March 2012, EPA finalized a TMDL for WBID 756A requiring a 36% reduction for TP for Upper Lake Lafayette. The NEDD/Park Ave. sub-watershed area constitutes approximately 71% of the runoff to the entire WBID.</p> <p>With this project, the COT will retrofit the existing Weems Pond stormwater facility to create a chemically enhanced stormwater treatment system. The implementation of this project will significantly improve the pollutant removal efficiencies of the stormwater treatment system and reduce pollutant loading to Upper Lake Lafayette in compliance with the EPA adopted TMDLs. The system, as proposed, will treat approximately 8,922 ac-ft of stormwater runoff each year or approximately 82% of the total annual stormwater runoff volume from the 10,175 acre contributing watershed. The treatment system will annually remove an estimated 1,281 kg (2,825 lbs) of total nitrogen, (25%) 1,060 kg (2,337 lbs) of total phosphorus (74%), 7,150 kg (15,766 lbs) of BOD (33%), 48,000 kg (111,355 lbs) of TSS (78%) and 81% of fecal coliform bacteria (7.3 x 10¹³ cfu). The pre and post pollutant loadings are included in the supporting documentation. (The 2007 Feasibility Study for this project can be</p>

	provided upon request).
Point Sources	<p>The contributing WBIDs have two permitted industrial wastewater facilities:</p> <ul style="list-style-type: none"> • FLG510017 Leon County Public Works Mosquito Control Program Industrial Wastewater Program for Pesticide Treatment, 2280 Miccosukee Rd • FLG110378 Ready Mix USA - Weems Road Plant Industrial Wastewater Program, Concrete Batch GP 3440 Weems Rd <p>Note: Generic Permits for stormwater discharge from large and small construction activities were considered temporary; therefore, not included in this listing.</p>
Nonpoint Sources	<p>The contributing sub-watersheds to the Upper Lake Lafayette system that will be targeted in this project consist of a highly urbanized landuse. The landuse consists of 51.5% Residential, 16.6% Commercial, 1.4% Industrial, 3.5% Roads&Hwys, 26.5% Recreational Open Space and 0.5% Open Water. Typical non-point sources for nutrients from this area would include soil erosion, fertilizer, septic systems, pet waste, and wildlife.</p> <p>The entire area is within the jurisdiction of the Municipal Separate Storm Sewer System (MS4) permit (FLS000034).</p>
Restoration Work	<p>The NRF system will be designed to automatically treat 82% of the annual average stormwater flow up to 200 cfs with 5 mg/L Al. (alum). The project will include regrading eroded side slopes, channel realignment for rapid mixing and flocculation basins, and the construction of an operations building that will include blowers for air mixing, alum flow meters, chemical feed pumps and two 15,000 gallon alum storage tanks. All of the stormwater flow will pass through a proposed concrete sedimentation basin upstream of the treatment system. An off-line chemical injection system will be added after the sedimentation basin. Up to 200 cfs of stormwater flow from the NEDD will be diverted off-line, treated with aluminum sulfate, and sent through a rapid mix basin and flocculation basin before discharging into the settling pond. Stormwater flow will be continuously monitored and alum will be injected into the rapid mix basin on a flow proportionate basis so that an alum dose of 5 mg aluminum per liter (5 mg Al/L) is applied regardless of water flow rate. (Design Plans are provided in the supporting documentation). The completion of this project will greatly improve the pollutant removal efficiencies of the system and, will exceed the percent reductions required to meet the current TMDL requirements.</p> <p>A majority of the project site is currently Weems Pond, a permitted wet detention stormwater facility. The City acquired a vacant parcel of land at the northwest corner of the pond on which the operations building will be placed. The period for Invitation For Bids for construction was closed on September 20, 2012.</p> <p>Public awareness signs will be developed and installed near the ULL NRF facility to help increase awareness among the general public about the value of area water resources, the importance of preventing non-point source pollution, and best management practices for stormwater treatment.</p>

Critical Milestones/Monitoring

Anticipated Critical Milestone(s):	Design, permitting and land acquisition is completed and construction bids re currently under review. It is anticipated that construction will be completed in early 2014, and chemical treatment should begin at that time.
Monitoring Component	<p>Six months prior to project completion, a detailed BMP effectiveness monitoring plan will be prepared and submitted to FDEP for review. The plan will incorporate the FDEP QAPP requirements, including provisions for sampling, analysis, data management and reporting.</p> <p>Data collection will include rainfall as well as volume of stormwater inflow and outflow. The data will be collected for a wide variety of conditions, without restrictions relative to rainfall magnitude or antecedent weather conditions.</p> <p>The City has, in anticipation of these provisions, completed one year of pre-project pollutant load performance monitoring of the existing facility. The pre-project monitoring data are included in an aquatic weed treatment report that was provided to FDEP in July 2011 (see supporting documentation).</p>

Key Dates

Critical Milestone Dates	Design, permitting and land acquisition is completed and construction bids re currently under review. It is anticipated that construction will be completed in early 2014, and chemical treatment should begin at that time. Post-project monitoring will begin after construction is complete.
Estimated Completion Date for the Restoration Activities	2014
Estimated Delisting Date	The WBID is in the state's Group 1 Basin. The Group 1 Basin is currently in assessment Cycle 3 (2012) and is expected that Cycle 4 will be in 2017, at which time sufficient data will be acquired to fully assess the WBID, and if not impaired, the WBID is expected to be delisted by FDEP.

Financial Commitments

Estimated Implementation Cost	The total project cost is anticipated to be \$6,113,471. The COT is contributing 91% of the total funding including the match funding. The annual operation and maintenance for the lifetime of the facility is approximately \$100,000/year		
	Task No.	Task Title	
	1	Land Acquisition	\$113,550
	2	Design and Permitting	\$500,000
	3	Bidding	\$11,930

Funding Sources	4	Initiate BMP Construction	\$1,390,332
	5	Complete BMP Construction	\$3,842,659
	6	Monitoring	\$210,000
	7	Public Education	\$15,000
	8	Draft and Final Reports	\$30,000
	FDEP is providing funding for the construction component of the project. The funding amount is 8.2% of the total costs or \$500,000 for construction. The COT is providing matching funds for \$500,000.		

Supporting Documentation (References)

1. Aquatic Weed Treatment Report
2. Cover letter to DEP for Aquatic Weed Report (Includes Pre-construction monitoring)
3. IWR45 Raw Data for WBID 756F (Upper Segment Lake Lafayette)
4. Weems Pond Transfer of Ownership (Letter from DOT to DEP)
5. Final Executed Tr-Party Agreement
6. Estimated Pollutant Load Reductions (excerpt from Weems Pond Stormwater Treatment Facility Improvements Feasibility Study Final Report, 2007)
7. ULL NRF Design Plans
8. Map (Landuse)