

APPENDICES

DRAFT

BASIN MANAGEMENT ACTION PLAN

**for the Implementation of
Total Maximum Daily Loads for Nutrients
by the Florida Department of Environmental Protection
in the
Middle St. Johns River Basin
for Wekiva River, Rock Springs Run, and
Little Wekiva Canal**

**Prepared by the
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**in cooperation with the
Wekiva Basin Management Action Plan Working Group**

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APPENDIX A: TMDL BASIN ROTATION SCHEDULE

TMDLs are developed, allocated, and implemented through a watershed management approach (managing water resources within their natural boundaries) that addresses the state's 52 major hydrologic basins in 5 groups, on a rotating schedule. **Table A-1** shows the hydrologic basins in each of the 5 groups and the Department's District office of jurisdiction.

TABLE A-1: MAJOR HYDROLOGIC BASINS BY GROUP AND DEPARTMENT DISTRICT OFFICE

DEPARTMENT DISTRICT	GROUP 1 BASINS	GROUP 2 BASINS	GROUP 3 BASINS	GROUP 4 BASINS	GROUP 5 BASINS
NW	Ochlockonee–St. Marks	Apalachicola–Chipola	Choctawhatchee–St. Andrews Bay	Pensacola Bay	Perdido Bay
NE	Suwannee	Lower St. Johns	Not applicable	Nassau–St. Marys	Upper East Coast
Central	Ocklawaha	Middle St. Johns	Upper St. Johns	Kissimmee	Indian River Lagoon
SW	Tampa Bay	Tampa Bay Tributaries	Sarasota Bay–Peace–Myakka	Withlacoochee	Springs Coast
S	Everglades West Coast	Charlotte Harbor	Caloosahatchee	Fisheating Creek	Florida Keys
SE	Lake Okeechobee	St. Lucie–Loxahatchee	Lake Worth Lagoon–Palm Beach Coast	Southeast Coast–Biscayne Bay	Everglades

Each group will undergo a cycle of five phases on a rotating schedule:

Phase 1: *Preliminary evaluation of water quality.*

Phase 2: *Strategic monitoring and assessment to verify water quality impairments.*

Phase 3: *Development and adoption of TMDLs for waters verified as impaired.*

Phase 4: *Development of Basin Management Action Plan (BMAP) to achieve the TMDL.*

Phase 5: *Implementation of the BMAP and monitoring of results.*

The Middle St. Johns River is a Group 2 basin; the Cycle 1 list of verified impaired waters was developed in 2004, and the Cycle 2 list was adopted in 2009. Subsequent TMDL and BMAP development is occurring on a schedule driven by the 1998 303(d) list (see <http://www.dep.state.fl.us/water/tmdl/> for more information) and Department staff resource availability. The Department will reevaluate impaired waters every five years to determine whether improvements are being achieved and to refine loading estimates and TMDL allocations using new data. If any changes in a TMDL are required, the applicable TMDL rule may be revised. Changes to a TMDL

would prompt revisions to the applicable BMAP, which will be revisited at least every five years and modified as necessary, regardless of whether the TMDL is modified.

APPENDIX B: SUMMARY OF STATUTORY PROVISIONS GUIDING BMAP DEVELOPMENT AND IMPLEMENTATION

SECTIONS 403.067(6) AND (7), FLORIDA STATUTES - SUMMARY OF EXCERPTS ALLOCATIONS

- *The TMDL shall include reasonable and equitable allocations of the TMDL between or among point and nonpoint sources that will alone, or in conjunction with other management and restoration activities, provide for the attainment of pollutant reductions established pursuant to paragraph (a) to achieve applicable water quality standards.*
- *The allocations may establish the maximum amount of the pollutant that may be discharged or released in combination with other discharges or releases.*
- *Allocations may also be made to individual basins and sources or as a whole to all basins and sources or categories of sources of inflow to the water body or water body segments.*
- *An initial allocation of allowable pollutant loads may be developed as part of the TMDL; in such cases detailed allocations to specific point sources and categories of nonpoint sources shall be established in the basin management action plan.*
- *The initial and detailed allocations shall be designed to attain pollutant reductions established pursuant to paragraph (a) and shall be based on consideration of:*
 1. *Existing treatment levels and management practices.*
 2. *Best management practices established and implemented pursuant to paragraph (7)(c).*
 3. *Enforceable treatment levels established pursuant to state or local law or permit.*
 4. *Differing impacts pollutant sources may have on water quality.*
 5. *The availability of treatment technologies, management practices, or other pollutant reduction measures.*
 6. *Environmental, economic, and technological feasibility of achieving the*

allocation.

7. *The cost benefit associated with achieving the allocation.*
8. *Reasonable timeframes for implementation.*
9. *Potential applicability of any moderating provisions such as variances, exemptions, and mixing zones.*
10. *The extent to which non-attainment of water quality standards is caused by pollution sources outside of Florida, discharges that have ceased, or alterations to water bodies prior to the date of this act.*

GENERAL IMPLEMENTATION

- ***DEP is the lead agency** in coordinating TMDL implementation, through existing water quality protection programs.*
- ***Application of a TMDL by a water management** district does not require WMD adoption of the TMDL.*
- *TMDL implementation may include, but is not limited to:*
 - o Permitting and other existing regulatory programs.
 - o Non-regulatory and incentive-based programs.
 - o Other water quality management and restoration activities, such as Surface Water Improvement and Management (SWIM) plans or basin management action plans.
 - o Pollutant trading or other equitable economically based agreements.
 - o Public works.
 - o Land acquisition.

BASIN MANAGEMENT ACTION PLAN DEVELOPMENT

- *DEP may develop a basin management action plan that addresses some or all of the watersheds and basins tributary to a TMDL waterbody.*
- *A basin management action plan **shall**:*
 - o Integrate appropriate management strategies available to the state through existing water quality protection programs.
 - o Equitably allocate pollutant reductions to individual basins, all basins, each identified

- point source, or category of nonpoint sources, as appropriate.
- o Identify the mechanisms by which potential future increases in pollutant loading will be addressed.
- o Specify that for nonpoint sources for which BMPs have been adopted, the initial requirement shall be BMPs developed pursuant to paragraph (c).
- o Establish an implementation schedule.
- o Establish a basis for evaluating plan effectiveness.
- o Identify feasible funding strategies.
- o Identify milestones for implementation and water quality improvement, and an associated water quality monitoring component to evaluate reasonable progress over time.
- o Be adopted in whole or in part by DEP Secretarial Order, subject to chapter 120.
- *A basin management action plan **may**:*
 - o Give load reduction credits to dischargers that have implemented load reduction strategies (including BMPs) prior to the development of the BMAP. (*Note: this assumes the related reductions were not factored into the applicable TMDL.*)
 - o Include regional treatment systems or other public works as management strategies.
 - o Provide for phased implementation to promote timely, cost-effective actions.
- *An assessment of progress in achieving milestones shall be conducted every 5 years and the basin management action plan revised, as appropriate, in cooperation with basin stakeholders, and adopted by secretarial order.*
- *DEP shall assure that key stakeholders are invited to participate in the basin management action plan development process, holding at least one noticed public meeting in the basin to receive comments, and otherwise encouraging public participation to the greatest practicable extent.*
- *A basin management action plan shall not supplant or alter any water quality assessment, TMDL calculation, or initial allocation.*

BASIN MANAGEMENT ACTION PLAN IMPLEMENTATION

- *NPDES Permits*
 - o Management strategies related to a discharger subject to NPDES permitting shall be included in subsequent applicable NPDES permits or permit modifications when the permit expires (is renewed), the discharge is modified (revised), or the permit is reopened pursuant to an adopted BMAP.
 - o Absent a detailed allocation, TMDLs shall be implemented through NPDES permit conditions that include a compliance schedule. The permit shall allow for issuance of an order adopting the BMAP within five years. (**Note:** *Intended to apply to individual wastewater permits – not MS4s*)
 - o Once the BMAP is adopted, the permit shall be reopened, as necessary, and permit conditions consistent with the BMAP shall be established.
 - o Upon request by a NPDES permittee, DEP may establish individual allocations prior to the adoption of a BMAP, as part of a permit issuance, renewal, or modification (revision).
 - o To the maximum extent practicable, MS4s shall implement a TMDL or BMAP through the use of BMPs or other management measures.
 - o A BMAP does not take the place of NPDES permits or permit requirements.
 - o Management strategies to be implemented by a DEP permittee shall be completed according to the BMAP schedule, which may extend beyond the 5-year term of an NPDES permit.
 - o Management strategies are not subject to challenge under chapter 120 when they are incorporated in identical form into a NPDES permit or permit modification (revision).
- *Management strategies assigned to nonagricultural, non-NPDES permittees (state, regional, or local) shall be implemented as part of the applicable permitting programs.*
- *Nonpoint source dischargers (e.g., agriculture) included in a BMAP shall demonstrate compliance with the applicable TMDLs by either implementing appropriate BMPs established under paragraph 7(c), or conducting water quality monitoring prescribed by **DEP or a WMD**. (**Note:** *this is not applicable to MS4s, as they are considered point sources under the federal Clean Water Act and TMDL Program.*)*
- *Failure to implement BMPs or prescribed water quality monitoring may be subject to*

DEP or WMD enforcement action.

- *Responsible parties who are implementing applicable BMAP strategies shall not be required to implement additional pollutant load reduction strategies, and shall be deemed in compliance with this section. However, this does not limit DEP's authority to amend a BMAP.*

BEST MANAGEMENT PRACTICES

- *DEP, in cooperation with WMDs and other interested parties, may develop interim measures, BMPs, or other measures for non-agricultural nonpoint sources to achieve their load reduction allocations.*
- *These measures may be adopted by **DEP or WMD** rule. If adopted, they shall be implemented by those responsible for non-agricultural nonpoint source pollution.*
- *DACS may develop and adopt by rule interim measure, BMPs, or other measures necessary for agricultural pollutant sources to achieve their load reduction allocations.*
 - o These measures may be implemented by those responsible for agricultural pollutant sources. **DEP, the WMDs, and DACS** shall assist with implementation.
 - o In developing and adopting these measures, DACS shall consult with DEP, DOH, the WMDs, representatives of affected farming groups, and environmental group representatives.
 - o The rules shall provide for a notice of intent to implement the practices and a system to ensure implementation, including recordkeeping.
- *Verification of Effectiveness and Presumption of Compliance -*
 - o DEP shall, at representative sites, verify the effectiveness of BMPs and other measures adopted by rule in achieving load reduction allocations.
 - o DEP shall use best professional judgment in making the initial verification of effectiveness, and shall notify **DACS and the appropriate WMD** of the initial verification prior to the adoption of a rule proposed pursuant to this paragraph.
 - o Implementation of rule-adopted BMPs or other measures initially verified by DEP to be effective, or verified to be effective by monitoring at representative sites, provides a presumption of compliance with state water quality standards for those pollutants addressed by the practices.

– *Reevaluation* –

- o Where water quality problems are demonstrated despite implementation, operation, and maintenance of rule-adopted BMPs and other measures, **DEP, a WMD, or DACS**, in consultation with DEP, shall reevaluate the measures. If the practices require modification, the revised rule shall specify a reasonable time period for implementation.

APPENDIX C: BASIN STAKEHOLDER INVOLVEMENT IN BMAP DEVELOPMENT FOR WEKIVA RIVER AND ROCK SPRINGS RUN

The Wekiva River and Rock Springs Run BMAP development process began with a kickoff meeting on March 6, 2009. Representatives from all jurisdictions within the Wekiva BMAP planning area and relevant state agencies, nonprofit organizations, and interested members of the public were invited.

On April 4, 2009, the Department convened the WBWG and began the formal BMAP development process. WBWG and technical meetings were held periodically from 2009 through 2012. The meetings were structured to organize and review the technical information that is the basis of the BMAP. The WBWG also identified management actions to improve water quality in the basin. The WBWG meetings were held throughout the BMAP development process on the following dates:

- *April 4, 2009.*
- *June 7, 2009.*
- *August 19, 2009.*
- *November 10, 2009.*
- *March 18, 2010.*
- *September 29, 2010.*
- *December 16, 2011.*
- *February 17, 2012.*
- *April 20, 2012.*
- *July 27, 2012.*
- *March 1, 2013.*

An additional technical meeting held in September 15, 2009, was open to anyone interested in participating in the technical discussions.

PUBLIC PARTICIPATION IN MEETINGS

All WBWG technical meetings and policy briefings were open to the public and noticed in the *Florida Administrative Weekly* (FAW).

PUBLIC MEETINGS

Public meetings on the proposed Verified List and the Lakes Harney and Monroe TMDLs were held before each list was adopted. In addition, a public workshop on the BMAP was held on April 30, 2013.

PLAN RECOMMENDATION APPROVAL AND ADOPTION

The final BMAP will be adopted by Department Secretarial Order (approximately May 15, 2012).

APPENDIX D: SUMMARY OF EPA-RECOMMENDED ELEMENTS OF A COMPREHENSIVE WATERSHED PLAN

The following is an excerpt on the nine elements of a watershed plan from the EPA's "Draft Handbook for Developing Watershed Plans to Restore and Protect Our Waters." Additional information regarding these elements can be found in the full version of the handbook located online at:
http://www.epa.gov/owow/nps/watershed_handbook/.

NINE MINIMUM ELEMENTS TO BE INCLUDED IN A WATERSHED PLAN FOR IMPAIRED WATERS FUNDED USING INCREMENTAL SECTION 319 FUNDS

Although many different components may be included in a watershed plan, EPA has identified a minimum of nine elements that are critical for achieving improvements in water quality. EPA requires that these nine elements be addressed for watershed plans funded using incremental section 319 funds and strongly recommends that they be included in all other watershed plans that are intended to remediate water quality impairments.

The nine elements are provided below, listed in the order in which they appear in the guidelines. Although they are listed as *a* through *i*, they do not necessarily take place sequentially. For example, element *d* asks for a description of the technical and financial assistance that will be needed to implement the watershed plan, but this can be done only after you have addressed elements *e* and *i*.

Explanations are provided with each element to show you what to include in your watershed plan.

NINE ELEMENTS

- 1. Identification of causes of impairment and pollutant sources or groups of similar sources that need to be controlled to achieve needed load reductions, and any other goals identified in the watershed plan. Sources that need to be controlled should be identified at the significant subcategory level along with estimates of the extent to which they are present in the watershed (e.g., X number of dairy cattle feedlots needing upgrading, including a rough estimate of the number of cattle per facility; Y acres of row crops needing improved nutrient management or sediment control; or Z linear miles of eroded streambank needing remediation).*

What does this mean?

Your watershed plan should include a map of the watershed that locates the major sources and causes of impairment. Based on these impairments, you will set goals that will include (at a minimum) meeting the appropriate water quality standards for pollutants that threaten or impair the physical, chemical, or biological integrity of the watershed covered in the plan.

2. An estimate of the load reductions expected from management measures.

What does this mean?

You will first quantify the pollutant loads for the watershed. Based on these pollutant loads, you'll determine the reductions needed to meet the water quality standards.

You will then identify various management measures (see element *c* below) that will help to reduce the pollutant loads and estimate the load reductions expected as a result of these management measures to be implemented, recognizing the difficulty in precisely predicting the performance of management measures over time.

Estimates should be provided at the same level as that required in the scale and scope component in paragraph *a* (e.g., the total load reduction expected for dairy cattle feedlots, row crops, or eroded streambanks). For waters for which EPA has approved or established TMDLs, the plan should identify and incorporate the TMDLs.

Applicable loads for downstream waters should be included so that water delivered to a downstream or adjacent segment does not exceed the water quality standards for the pollutant of concern at the water segment boundary. The estimate should account for reductions in pollutant loads from point and nonpoint sources identified in the TMDL as necessary to attain the applicable water quality standards.

3. A description of the nonpoint source management measures that will need to be implemented to achieve load reductions in paragraph 2, and a description of the critical areas in which those measures will be needed to implement this plan.

What does this mean?

The plan should describe the management measures that need to be implemented to achieve the load reductions estimated under element *b*, as well as to achieve any additional pollution prevention goals called out in the watershed plan. It should also identify the critical areas in which those measures will be needed to implement the plan. This can be done by using a map or a description.

- 4. Estimate of the amounts of technical and financial assistance needed, associated costs, and/or the sources and authorities that will be relied upon to implement this plan.*

What does this mean?

You should estimate the financial and technical assistance needed to implement the entire plan. This includes implementation and long-term operation and maintenance of management measures, I/E activities, monitoring, and evaluation activities. You should also document which relevant authorities might play a role in implementing the plan. Plan sponsors should consider the use of federal, state, local, and private funds or resources that might be available to assist in implementing the plan. Shortfalls between needs and available resources should be identified and addressed in the plan.

- 5. An information and education component used to enhance public understanding of the project and encourage their early and continued participation in selecting, designing, and implementing the nonpoint source management measures that will be implemented.*

What does this mean?

The plan should include an I/E component that identifies the education and outreach activities or actions that will be used to implement the plan. These I/E activities may support the adoption and long-term operation and maintenance of management practices and support stakeholder involvement efforts.

6. *Schedule for implementing the nonpoint source management measures identified in this plan that is reasonably expeditious.*

What does this mean?

You need to include a schedule for implementing the management measures outlined in your watershed plan. The schedule should reflect the milestones you develop in 7.

7. *A description of interim measurable milestones for determining whether nonpoint source management measures or other control actions are being implemented.*

What does this mean?

You'll develop interim, measurable milestones to measure progress in implementing the management measures for your watershed plan. These milestones will measure the implementation of the management measures, such as whether they are being implemented on schedule, whereas element *h* (see below) will measure the effectiveness of the management measures, for example, by documenting improvements in water quality.

8. *A set of criteria that can be used to determine whether loading reductions are being achieved over time and substantial progress is being made toward attaining water quality standards.*

What does this mean?

Using the milestones you developed above, you'll develop a set of criteria (or indicators) with interim target values to be used to determine whether progress is being made toward reducing pollutant loads. These interim targets can be direct measurements (e.g., fecal coliform concentrations) or indirect indicators of load reduction (e.g., number of beach closings). You must also indicate how you'll determine whether the watershed plan needs to be revised if interim targets are not met and what process will be used to revise the existing management approach. Where a nonpoint source TMDL has been established, interim targets are also needed to determine whether the TMDL needs to be revised.

9. *A monitoring component to evaluate the effectiveness of the implementation efforts over time, measured against the criteria established under item h immediately above.*

What does this mean?

The watershed plan must include a monitoring component to determine whether progress is being made toward attainment or maintenance of the applicable water quality standards. The monitoring program must be fully integrated with the established schedule and interim milestone criteria identified above. The monitoring component should be designed to determine whether loading reductions are being achieved over time and substantial progress in meeting water quality standards is being made. Watershed-scale monitoring can be used to measure the effects of multiple programs, projects, and trends over time. Instream monitoring does not have to be conducted for individual BMPs unless that type of monitoring is particularly relevant to the project.

APPENDIX E: PROJECTS TO ACHIEVE THE TMDLS

The tables below summarize the projects and time frames for implementation submitted by the entities to achieve their TMDL allocations for the first iteration of the BMAP. Additional reductions are expected to be necessary in future BMAP iterations to meet the loads specified in the TMDLs.

The tables provide information on the nutrient reductions, shown in lbs/yr, for most of the projects benefiting the surface watershed. Load reduction estimates were not prepared for projects benefiting the ground watershed/springshed, nor were estimates prepared for the collection system projects.

These projects were submitted to the Department with the understanding that each entity has a reasonable expectation of implementing the proposed projects and achieving the load reduction estimates; however, this list of projects is meant to be flexible enough to allow for changes that may occur over time, provided that the reduction is still met within the specified period.

This list has several main components: collection system projects, nonwastewater treatment facility projects (e.g., stormwater treatment, street sweeping, conservation, and parkland efforts).

WEKIVA BASIN BMAP

MANAGEMENT ACTIONS: STORMWATER, STREET SWEEPING, CONSERVATION/PROTECTED LANDS, ROAD PAVING, STUDIES, INSPECTIONS, ETC.

- = Empty cell/no data

N/A = Not applicable; TSS = Total suspended solids; TBD = To be determined; RCP = Reinforced concrete pipe; VCP = Vitrified clay pipe; HDPE = High-density polyethylene pipe; CMP = Corrugated metal pipe

ENTITY	SUBBASIN	PROJECT NAME	PROJECT TYPE	PROJECT DETAIL	ESTIMATED POLLUTANT LOAD REDUCTION (LBS/YR)	NITRATE REDUCTION CALCULATION METHOD	STATUS
BANK STABILIZATION (SUMMARIZED IN TABLE 4.8)		-	-	-	-	-	-
Seminole County	Little Wekiva River	Grade Control Structures 6 and 7	Bank Stabilization	Reduce sediment loads through bank stabilization and river grade control structures in Little Wekiva River; area served = >5,000 acres	TN - 174.3 TP - 18.4 TSS - 5,736	Erosion retention	Completed
Seminole County	Little Wekiva River	Horse Lovers Lane Erosion Control Project	Bank Stabilization	Reduce sediment loads through bank stabilization along Spring Lake outfall, tributary to Little Wekiva River; use gabions and grade control structures plus replace culverts; area served = >1,000 acres	TN - 112.9 TP - 11.9 TSS - 3,715	Erosion retention	Completed
Seminole County	Little Wekiva River	North Western Erosion Control Project	Bank Stabilization	Reduce sediment loads through bank stabilization along Little Wekiva River; area served > 5,000 acres	TN - 32.0 TP - 3.4 TSS - 1,053	Erosion retention	Completed
Seminole County	Little Wekiva River	Weathersfield Erosion Control Project	Bank Stabilization	Reduce sediment loads through bank stabilization along Little Wekiva River; measures include gabion lining, reno mattresses, gabion baskets to serve as grade control structures; area served = > 5,000 acres	TN - 27.9 TP - 2.9 TSS - 919	Erosion retention	Completed
Seminole County	Little Wekiva River	Little Wekiva Grade Control – Montgomery Rd. to State Road 434	Bank Stabilization/ Grade Control	Reduce sediment loads through bank stabilization and construction of 2 river grade control structures in Little Wekiva River; area served = >5,000 acres	TN - 298.3 TP - 31.4 TSS - 9,818	Erosion retention	Completed

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ENTITY	SUBBASIN	PROJECT NAME	PROJECT TYPE	PROJECT DETAIL	ESTIMATED POLLUTANT LOAD REDUCTION (LBS/YR)	NITRATE REDUCTION CALCULATION METHOD	STATUS
DIRT ROAD PAVING WITH TREATMENT (SUMMARIZED IN TABLE 4.7)		-	-	-	-	-	-
Lake County	Blackwater Creek	Dirt Roadway Paving	Dirt Roadway Paving with Treatment	Nutrient load reductions for 25 miles of road segments that were paved and improved with ditch blocks	TN - 223.31 TP - 122.14.71	AMEC report, September 10, 2012	-
Orange County	Little Wekiva Canal	11 th Ave.	Dirt Roadway Paving with Treatment	Pave .3-acre dirt road treatment with open swales and ditch blocks	TN - 2.8 TP - 2.4 TSS - 2,710	-	Constructed
Orange County	Little Wekiva Canal	13 th Ave.	Dirt Roadway Paving with Treatment	Pave .5-acre dirt road treatment with open swales and ditch blocks	TN - 4.7 TP - 3.9 TSS - 4,517	-	Constructed
Orange County	Little Wekiva Canal	15 th Ave.	Dirt Roadway Paving with Treatment	Pave .3-acre dirt road treatment with open swales and ditch blocks	TN - 2.8 TP - 2.4 TSS - 2,710	-	Constructed
Orange County	Little Wekiva Canal	17 th Ave.	Dirt Roadway Paving with Treatment	Pave .6-acre dirt road treatment with open swales and ditch blocks	TN - 5.6 TP - 4.7 TSS - 5,421	-	Constructed
Orange County	Little Wekiva Canal	Lake Pleasant Rd. Improvement	Dirt Roadway Paving with Treatment	Pave .12-acre dirt road treatment with open swales and ditch blocks	TN - 1.1 TP - 0.9 TSS - 1,084	-	Constructed
Orange County	Little Wekiva Canal	Quenton Ave. and Range Dr.	Dirt Roadway Paving with Treatment	Pave 0.3-acre dirt road treatment with open swale and ditch blocks	TN - 2.8 TP - 2.4 TSS - 2,710	-	Constructed
Orange County	Little Wekiva Canal	Ridge Terr. and Roan Rd.	Dirt Roadway Paving with Treatment	Pave 1-acre dirt road treatment with open swale and ditch blocks	TN - 9.3 TP - 7.9 TSS - 9,035	-	Constructed
Orange County	Rock Springs Run	Sadler Rd.	Dirt Roadway Paving with Treatment	Pave 1.1-acre dirt road treatment with open swales and ditch blocks	TN - 10.2 TP - 8.7 TSS - 9,938	-	Constructed
Orange County	Rock Springs Run and Little Wekiva Canal	Alternative Surface Program – Group IIIA Projects	Dirt Roadway Paving with Treatment	Pave 98.93-acre dirt road treatment with open swales and ditch blocks	TN - 921 TP - 779.9 TSS - 893,834	-	Constructed

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ENTITY	SUBBASIN	PROJECT NAME	PROJECT TYPE	PROJECT DETAIL	ESTIMATED POLLUTANT LOAD REDUCTION (LBS/YR)	NITRATE REDUCTION CALCULATION METHOD	STATUS
Orange County	Rock Springs Run and Little Wekiva Canal	Alternative Surface Program – Group IIIB Projects	Dirt Roadway Paving with Treatment	Pave 61.53-acre dirt roads treatment with open swales and ditch blocks	TN - 573 TP - 485 TSS - 555,925	-	Constructed
Orange County	Rock Springs Run and Little Wekiva Canal	Boxwood Dr. and Bull Run Rd.	Dirt Roadway Paving with Treatment	Pave 0.9-acre dirt road treatment with open swales and ditch blocks	TN - 8.4 TP - 7.1 TSS - 8,131.5	-	Constructed
Orange County	Rock Springs Run and Little Wekiva River	Hereford Rd., Highland St., and Holly St.	Dirt Roadway Paving with Treatment	Pave 1.5-acre dirt road treatment with open swales and ditch blocks	TN - 14 TP - 11.8 TSS - 13,552	-	Constructed
Seminole County	Wekiva River	Palm Springs Rd. Paving and Drainage	Dirt Roadway Paving with Treatment	Pave dirt road and install 2 nd -generation baffle box to provide water quality treatment; area served = 0.4 acres	TN - 1.3 TP - 0.2	2 nd generation baffle box	Completed
Seminole County	Wekiva River	Wekiva Springs Rd. – State Road 434 to Sabal Point	Dirt Roadway Paving with Treatment	Provide water quality treatment for new impervious portions of roadway improvements through construction of on-line exfiltration trench; area served = 3.4 acres	TN - 15.5 TP - 2.5	Online retention 0.25 inch	Completed
EDUCATION/ ENFORCEMENT (SUMMARIZED IN TABLE 4.10)		-	-	-	-	-	-
Orange County	Little Wekiva River	Stormwater Pond Inspection	Education/ Enforcement	Inspect private/public stormwater ponds for compliance with performance and permit conditions	Unknown	Unknown	Completed
EROSION PROTECTION (SUMMARIZED IN TABLE 4.8)		-	-	-	-	-	-
Orange County	Little Wekiva River	Elba Way	Erosion Protection	Erosion protection of Little Wekiva River; install gabions, grade control structures, river reshaping	TN - 154.5 TP - 35.3	-	Constructed
Orange County	Little Wekiva River	Gusty Lane	Erosion Protection	Remove existing triple aluminum pipes along Little Wekiva River at Gusty Lane Dr. and replace with control structure using rip-rap and gabion materials; install pipe and inlet for existing ditch	TN - 35.4 TP-8.1	-	Constructed

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ENTITY	SUBBASIN	PROJECT NAME	PROJECT TYPE	PROJECT DETAIL	ESTIMATED POLLUTANT LOAD REDUCTION (LBS/YR)	NITRATE REDUCTION CALCULATION METHOD	STATUS
				adjacent to canal			
Orange County	Little Wekiva River	NRCS Riverside Acres	Erosion Protection	Erosion protection of Little Wekiva riverbank; install rip-rap; project length = 287 feet	TN - 46.9 TP - 10.7	-	Constructed
Orange County	Little Wekiva River	NRCS Riverside Park Ave.	Erosion Protection	Erosion protection of Little Wekiva riverbank; install rip-rap; project length = 150 feet	TN - 24.5 TP - 5.6	-	Constructed
Orange County	Little Wekiva River	Riverside Acres Arch Pipe	Erosion Protection	Replace existing 1,750 feet of pipe-arch pipe in Riverside Acres subdivision with open channel section and restore to reflect original river configuration	Unknown	-	Constructed
Orange County	Little Wekiva River	Riverside Park Rd.	Erosion Protection	Structural stabilization of channel bed and banks in main stem of river and into Lake Lovely Outfall Canal, including grade control structure; project includes gabions, Reno mattress, and riprap channel bottom and side bank protection	TN - 164.9 TP - 37.7	-	Constructed
Orange County	Little Wekiva River	Sherry Dr.	Erosion Protection	Erosion protection of Little Wekiva River bank; install gabion block and reno mattress; project length = 400 feet	TN - 65.4 TP - 15	-	Constructed
Orange County	Rock Springs Run	New Hampshire	Erosion Protection	Pave 0.6-acre dirt road treatment with open swale and ditch blocks	TN - 5.6 TP - 4.7 TSS - 5,421	-	Constructed
Orange County	Little Wekiva River	Little Wekiva Slope Stabilization West/ East Banks	Erosion Protection and Flood Control	Project will eliminate erosion of banks due to construction of steel sheet pile	TN - 213.5 TP - 48.8	-	Completed
Seminole County	Wekiva River	Sweetwater Cove Dredging and Drainage Improvements and Sweetwater Tributary Erosion Project	Erosion Protection and Stormwater Treatment System	Increase water quality treatment resonance time through water quality treatment pond expansion, construct online sedimentation basin; carry out erosion control measures along Sweetwater Creek; area served = 2,181 acres	TN - 2,609 TP - 68 TSS - 151,296	EMC modeling-based approach	Active

ENTITY	SUBBASIN	PROJECT NAME	PROJECT TYPE	PROJECT DETAIL	ESTIMATED POLLUTANT LOAD REDUCTION (LBS/YR)	NITRATE REDUCTION CALCULATION METHOD	STATUS
Seminole County	Wekiva River	Wekiva Park Dr. Erosion Control Project	Erosion Protection	Reduce sediment loads through grade control structures; area served = 400 acres	TN - 35.6 TP - 3.8 TSS - 1,172	Erosion retention	Completed
EXOTICS REMOVAL/ REVEGETATE WITH NATIVE SPECIES		-	-	-	-	-	-
Seminole County	Little Wekiva River	Lake Mobile	Exotics Removal/ Revegetate with Native Species	Accomplished using in-house staff, residents, and volunteers	N/A	-	Completed
Seminole County	Little Wekiva River	LWR @ Springs Landing Bridge	Exotics Removal/ Revegetate with Native Species	Accomplished using in-house staff, residents, and volunteers	N/A	-	Completed
Seminole County	Little Wekiva River	Mirror Lake	Exotics Removal/ Revegetate with Native Species	Accomplished using in-house staff, residents, and volunteers	N/A	-	Completed
Seminole County	Little Wekiva River	Spring Lake	Exotics Removal/ Revegetate with Native Species	Accomplished using in-house staff, residents, and volunteers	N/A	-	Completed
LAND PRESERVATION (SUMMARIZED IN TABLE 4.9)		-	-	-	-	-	-
Altamonte Springs	Wekiva River	Stimmell Tract Land Preservation (Audubon Society)	Land Preservation	Conservation project – purchase 268 acres of land for preservation	0	Department table	Completed
Lake County	Blackwater Creek	Northeast Lake County Scrub Preserve	Land Preservation	60 acres of mature sand pine scrub community with wetlands in southeast; adjacent to Seminole State Forest; protection of land; no change in land use, therefore no load reduction	N/A	Unknown	Completed
Lake County	Springshed	Lake May Reserve	Land Preservation	136 acres of remnant citrus, xeric oak hammock and 20-acre Lake May	Unknown	Unknown	Completed

DRAFT Basin Management Action Plan Appendices: Wekiva River, Rock Springs Run, and Little Wekiva Canal, April 2013

ENTITY	SUBBASIN	PROJECT NAME	PROJECT TYPE	PROJECT DETAIL	ESTIMATED POLLUTANT LOAD REDUCTION (LBS/YR)	NITRATE REDUCTION CALCULATION METHOD	STATUS
Lake County	Springshed	Mt. Plymouth Lakes	Land Preservation	Property consists of 184 acres of lake bottom and associated uplands in plat of Mt. Plymouth	Unknown	Unknown	Completed
Lake County	Springshed	Neighborhood Lakes	Land Preservation	Part of multiagency acquisition (Department, SJRWMD, OOCEA, and Lake and Orange Counties) totaling 1,584 acres; Lake County partnered with SJRWMD to purchase 210 acres	Unknown	Unknown	Completed
Lake County	Springshed	South Pine Lakes Reserve	Land Preservation	Reserve consists of 2 adjoining properties totaling 128 acres, consisting of scrub, scrubby flatwoods, herbaceous marsh; bear habitat, possible sandhill crane nesting	Unknown	Unknown	Completed
Orange County	Rock Springs Run	Lake Lucie Conservation Area	Land Preservation	Previous land use = agriculture; management focus = scrub habitat and water resource, passive recreational; acreage = 166.22	TN - 56.7 TP - 11.2	-	-
Orange County	Rock Springs Run	Neighborhood Lakes	Land Preservation	Department, SJRWMD, OOCEA, and Lake and Orange Counties partnered to buy land and put into conservation; previous land use = agriculture; management focus = water resource, passive; acreage = 1,584 (498 acres in Orange County)	Managed by the Department	-	-
Orange County	Rock Springs Run	Pine Plantation	Land Preservation	Previous land use = agriculture; management focus = passive recreation, preservation; acreage = 40	TN - 1.4 TP - 0.1	-	-
Orange County	Rock Springs Run	Sandhill Preserve	Land Preservation	Previous land use = agriculture; management focus = water resource, sandhill; acreage = 83.03	TN - 44.6 TP - 8.2	-	-
Winter Garden	Springshed	Tucker Ranch	Land Preservation	City purchased approximately 208 acres of agricultural land and will convert it to primitive campground/park	Unknown	-	Ongoing
SHORELINE STABILIZATION (SUMMARIZED IN		-	-	-	-	-	-

ENTITY	SUBBASIN	PROJECT NAME	PROJECT TYPE	PROJECT DETAIL	ESTIMATED POLLUTANT LOAD REDUCTION (LBS/YR)	NITRATE REDUCTION CALCULATION METHOD	STATUS
TABLE 4.8)							
Altamonte Springs	Little Wekiva River	Little Wekiva River Erosion Management Project (1, 2, and 3)	Shoreline Stabilization	Install structural controls to provide riverbank stabilization	Nitrate - 163 TP - 17	Sediment retention	Completed
Altamonte Springs	Little Wekiva River	Riverbend Apartments Shoreline Stabilization	Shoreline Stabilization	Install structural controls to provide riverbank stabilization	Nitrate - 71 TP - 7.5	Sediment retention	Completed
STORMWATER SYSTEM INSPECTIONS (SUMMARIZED IN TABLE 4.6)		-	-	-	-	-	-
Orlando	Little Wekiva River	Compliance Inspections of Private Stormwater Systems	Stormwater System Inspections	Inspect annually all 233 commercial, single- and multifamily systems in basin for functionality; systems include, but are not limited to, retention and detention ponds, underdrains, exfiltration, and underground vaults; by ensuring ponds are maintained at design criteria, city is ensuring level of pollutant removal efficiency is being achieved	-	-	Ongoing
Orlando	Little Wekiva River	Stormwater System Inspections	Stormwater System Inspections	Conduct proactive inspections and perform routine maintenance on 13 ponds and 31 ditches in basin to ensure systems are being maintained at optimal pollutant removal efficiency (and flood prevention)	-	-	Ongoing
STORMWATER SYSTEM REHABILITATION (SUMMARIZED IN TABLE 4.6)		-	-	-	-	-	-

DRAFT Basin Management Action Plan Appendices: Wekiva River, Rock Springs Run, and Little Wekiva Canal, April 2013

ENTITY	SUBBASIN	PROJECT NAME	PROJECT TYPE	PROJECT DETAIL	ESTIMATED POLLUTANT LOAD REDUCTION (LBS/YR)	NITRATE REDUCTION CALCULATION METHOD	STATUS
Mt. Dora	Springshed	5 th Ave. & Rossiter NSBB Installation	Stormwater System Rehabilitation	Install Suntree NSBB at 5 th Ave. and Rossiter discharge into Lake Franklin, an isolated spring-fed lake	TN – 64 TP – 26	FSA Load Reduction Tool	Completed
Mt. Dora	Springshed	1552 Hilltop Dr. Pipe Relining	Stormwater System Rehabilitation	Reline existing CMP pipe with HDPE to eliminate sinkhole formation and erosion into Lake Nettie	N/A	-	Completed
Mt. Dora	Springshed	5th Ave. and McDonald St. Retention Pond Restoration	Stormwater System Rehabilitation	Remove accumulated sediment and debris from retention pond; install new inlet pipe to prevent erosion; replace erosion protection around inlet pipes	N/A	-	Completed
Mt. Dora	Springshed	Donnelly St. and Lincoln Ave. Pipe Repair	Stormwater System Rehabilitation	Headwall broke away from pipe; water undermining Donnelly St.; install dropo structure and extend pipeline 140 linear feet	N/A	-	Completed
Mt. Dora	Springshed	Pine and Jackson Pipe Repair	Stormwater System Rehabilitation	Replace crushed section of 36x54 CMP to allow proper drainage of northeast area of city	N/A	-	Completed
Orlando	Little Wekiva River	Sandbar Removal on Lake Sarah	Stormwater System Rehabilitation	Remove 300 cubic yards of sediment from Lake Sarah	No data available	-	Completed
STORMWATER TREATMENT SYSTEM (SUMMARIZED IN TABLE 4.6)		-	-	-	-	-	-
Altamonte Springs	Little Wekiva River	Altamonte Springs Shopping Center (Crossroads) Development	Stormwater Treatment System	Construct 20,602-square-foot retail/restaurant building with attendant parking and site utilities, plus stormwater facilities, on 2.06-acre site, providing higher level of stormwater treatment as result of city ordinance	Nitrate - 0.8 TP - 0.1	EMC BMP	Completed
Altamonte Springs	Little Wekiva River	Brantley Terrace Condo	Stormwater Treatment System	Phase 3 of Lake Lotus Club, multifamily condominium development	Nitrate - 4.7 TP - 0.0	EMC BMP	Completed

ENTITY	SUBBASIN	PROJECT NAME	PROJECT TYPE	PROJECT DETAIL	ESTIMATED POLLUTANT LOAD REDUCTION (LBS/YR)	NITRATE REDUCTION CALCULATION METHOD	STATUS
Altamonte Springs	Little Wekiva River	Cracker Barrel Development	Stormwater Treatment System	Redevelop commercial site and expand existing exfiltration system, raising level of treatment to current city standards	Nitrate - 0.8 TP - 0.1	EMC BMP	Completed
Altamonte Springs	Little Wekiva River	Fairfield Marriot Suites Development	Stormwater Treatment System	Construct 92-room Fairfield Suites Hotel to replace commercial development constructed prior to stormwater development rules, raising level of water quality treatment on-site to meet city standards	Nitrate - 4 TP - 0.5	EMC BMP	Completed
Altamonte Springs	Little Wekiva River	Florida Hospital Development	Stormwater Treatment System	Proposed development is for construction of 6,000± square-foot worship center, associated paved parking, and upgrades to existing stormwater management system to replace existing parking lot	Nitrate - 12 TP - 0.8	EMC BMP	Completed
Altamonte Springs	Little Wekiva River	Gateway Clinic and Gateway Crossing Development	Stormwater Treatment System	Stormwater management system with online dry retention/detention area, providing higher level of stormwater treatment as result of city ordinance	Nitrate - 41.5 TP - 11.1	EMC BMP	Completed
Altamonte Springs	Little Wekiva River	Maitland Ave. Walgreens Development	Stormwater Treatment System	Redevelop 1.46-acre commercial site and expand existing exfiltration system, raising level of treatment to current city standards	Nitrate - 5.6 TP - 0.8	EMC BMP	Completed
Altamonte Springs	Little Wekiva River	Panera Bread (State Road 434) Development	Stormwater Treatment System	Demolish and remove existing impervious area for construction of new 4,479-square-foot restaurant, replace existing commercial building and residential areas, raise level of treatment to meet city standards	Nitrate - 0.9 TP - 0.2	EMC BMP	Completed
Altamonte Springs	Little Wekiva River	River Run South Pond 23 Improvement Project	Stormwater Treatment System	Enlarge existing retention pond	Nitrate - 2.2 TP - 0.5	EMC BMP	Completed
Altamonte Springs	Little Wekiva River	Spring Oaks, San Sebastian, and River Run Inlet Skimmer Baskets	Stormwater Treatment System	Install 39 inlet skimmer baskets	Nitrate - 4.8 TP - 1.1	EMC BMP	Completed

ENTITY	SUBBASIN	PROJECT NAME	PROJECT TYPE	PROJECT DETAIL	ESTIMATED POLLUTANT LOAD REDUCTION (LBS/YR)	NITRATE REDUCTION CALCULATION METHOD	STATUS
Altamonte Springs	Little Wekiva River	West Altamonte Operations and Administration Center	Stormwater Treatment System	Identified area does not contribute to Wekiva River; however, closed basin was not removed from consideration in TMDL due to limited number	Nitrate - 168.7 TP - 24	EMC BMP	Completed
Apopka	Rock Springs Run	Shopke-Lester Road Pond Expansion and Improvement	Stormwater Treatment System	Improve existing drainage system and dry retention pond to increase inflow mass and reduce outflow mass; pollutant removal efficiency increased from 75% to 93%	TP - 0.77	-	Completed
Eustis	Springshed	Cardinal Pond	Stormwater Treatment System	Retention for area along Bates Ave. between Glover and Wall Sts.	Not required	-	In progress
Eustis	Springshed	Downtown Master Stormwater Project	Stormwater Treatment System	Wet detention for downtown area; 32.4-acre drainage basin; project will provide pollutant reduction of 64.5% TN and 40% TP; small eastern portion of new lines falls within springshed	Not required	-	In progress
FDOT District 5	Blackwater Creek	FM: 238406	Stormwater Treatment System	State Road 44: Swales and ditch blocks providing treatment for runoff generated from existing and proposed pavement.	TN - 14.88 TP - 2.0	Pre-/post-EMC	Completed
FDOT District 5	Little Wekiva Canal	FM: 239289	Stormwater Treatment System	State Road 438: Treatment Basin 2 (Pond 2A, 2B, and 2C) and Wet Detention Pond 4 providing treatment for runoff generated from existing and proposed pavement.	TN - 88.13 TP - 9.4	Pre-/post-EMC	Completed
FDOT District 5	Little Wekiva River	FM: 239496-2	Stormwater Treatment System	State Road 423: Add lanes from Shader Rd. to State Road 424 (Edgewater Dr.). Wet Detention Pond 100 and Pond 200 providing treatment for John Young Parkway	TN - 155.61 TP - 16.7	Pre-/post-EMC	Design 100%/ pending funding
FDOT District 5	Little Wekiva River	FM: 240231-2 and 3	Stormwater Treatment System	Add lanes to State Road 434: from State Road 414 Lotus Landing Blvd. then to State Road 436: Dry Detention Pond 1N-1, 1N-2 2N, P, Wet Detention WTC Ponds 1 and 2; Exhilaration System 4N-1 and 5N providing treatment for runoff	TN - 59.93 TP - 7.3	Pre-/post-EMC	Completed

ENTITY	SUBBASIN	PROJECT NAME	PROJECT TYPE	PROJECT DETAIL	ESTIMATED POLLUTANT LOAD REDUCTION (LBS/YR)	NITRATE REDUCTION CALCULATION METHOD	STATUS
				generated from existing and proposed pavement			
FDOT District 5	Springshed	FM: 238314-1	Stormwater Treatment System	State Road 500: Dry Retention Pond 2, 4, 6; Wet Detention Pond 3E, 5 A/B; Ponds 3B, 3C, 3D; French Drain. Providing treatment for runoff generated from existing and proposed pavement	TN - 217.68 TP – 20.47	Pre-/post-EMC	Completed
FDOT District 5	Springshed	FM: 239535-2	Stormwater Treatment System	State Road 50: Add lanes from east ramps of Turnpike to Avalon Rd. Wet Detention Pond A and B providing treatment for runoff from existing and proposed pavement	TN - 67.71 TP – 7.25	Pre-/post-EMC	Design 100%/ pending funding
FDOT District 5	Springshed	FM: 409870-1	Stormwater Treatment System	Old County Road 44B: Add lanes U.S. Highway 441 to State Road 44. Dry Retention Pond 100 and Wet Detention Pond 200 providing treatment for runoff generated from existing and new pavement	TN - 31.63 TP – 3.37	Pre-/post-EMC	Design 30%
FDOT District 5	Springshed	FM: 410983-1	Stormwater Treatment System	State Road 50: from Avalon Road to State Road 429/Western Beltway. Wet Detention Pond L-4, L-7, M-10/11, and N-2/2A providing treatment for existing and new pavement	TN - 390.86 TP – 41.84	Pre-/post-EMC	Design 100%
Lake County	Springshed	Wolfbranch Drainage Retrofit	Stormwater Treatment System	Project includes removing concrete flumes in right-of-way and piping area to 2 new dry retention ponds; what cannot be treated in ponds will be captured in continuous defllective separation (CDS) unit within right-of-way, and compensating treatment for this area will be treated in Pond B	TBD	TBD	Ongoing
Mt. Dora	Springshed	5 th and McDonald Parking Lot	Stormwater Treatment System	Install 3 36-inch diameter exfiltration pipes under new parking lot	-	-	Completed

ENTITY	SUBBASIN	PROJECT NAME	PROJECT TYPE	PROJECT DETAIL	ESTIMATED POLLUTANT LOAD REDUCTION (LBS/YR)	NITRATE REDUCTION CALCULATION METHOD	STATUS
Mt. Dora	Springshed	Highway 441 and Highway 46 StormTech Installation	Stormwater Treatment System	Install StormTech System: 100 linear feet inline arrangement with "Isolator Rows" at each end for maintenance	-	-	Completed
Mt. Dora	Springshed	S. Johns St. StormTech Installation	Stormwater Treatment System	Install StormTech System: 2 50-linear-foot rows with "Isolator Row" for maintenance; regraded and paved road to improve drainage	-	-	Completed
Oakland	Springshed	SFR Infill Depressions	Stormwater Treatment System	Install depressional retention on all new infill single-family residences in old part of town to increase recharge and decrease surface flow	-	-	Ongoing
Ocoee	Springshed	ABC Fine Wine and Spirits Store # 52	Stormwater Treatment System	2.96-acre project; proposed surface water management system will retain and recover 3 inches of runoff from increase in impervious area; sewer area	1.95	Pre-/post-pollutant load analysis spreadsheet modified for TN; results of TN multiplied by 30% to obtain nitrate reduction value	Completed
Ocoee	Springshed	Arden Park South	Stormwater Treatment System	98.52-acre project; construct 157 single-family residential subdivision with 4 dry retention ponds; surface water management system to store and recover pre- vs. post-development runoff volume from 25-year, 96-hour event; sewer area	2.85	Pre-/post-pollutant load analysis spreadsheet modified for TN; results of TN multiplied by 30% to obtain nitrate reduction value	On hold

ENTITY	SUBBASIN	PROJECT NAME	PROJECT TYPE	PROJECT DETAIL	ESTIMATED POLLUTANT LOAD REDUCTION (LBS/YR)	NITRATE REDUCTION CALCULATION METHOD	STATUS
Ocoee	Springshed	Cambridge Village Subdivision	Stormwater Treatment System	Proposed Cambridge Village is 8.97-acre single-family residential subdivision located southeast of intersection of White Rd. and Clarke Rd. in city of Ocoee; surface water management system includes 30 lots, associated road, and 1 dry retention system	0.46	Pre-/post-pollutant load analysis spreadsheet modified for TN; results of TN multiplied by 30% to obtain nitrate reduction value	Completed
Ocoee	Springshed	Forest Trails Subdivision	Stormwater Treatment System	3 dry retention ponds to serve 51.8-acre single-family residential development	1.5	Pre-/post-pollutant load analysis spreadsheet modified for TN; results of TN multiplied by 30% to obtain nitrate reduction value	Completed
Ocoee	Springshed	Hackney Prairie Park	Stormwater Treatment System	4.26-acre project served by stormwater treatment retention system; sewer area	0.24	Pre-/post-pollutant load analysis spreadsheet modified for TN; results of TN multiplied by 30% to obtain nitrate reduction value	Ongoing

ENTITY	SUBBASIN	PROJECT NAME	PROJECT TYPE	PROJECT DETAIL	ESTIMATED POLLUTANT LOAD REDUCTION (LBS/YR)	NITRATE REDUCTION CALCULATION METHOD	STATUS
Ocoee	Springshed	Ingram Estates Subdivision	Stormwater Treatment System	11.47-acre residential site, single lots, with stormwater system; 2 dry retention systems; recharge volume to be recovered within 72 hours; sewer area	1.95	Pre-/post-pollutant load analysis spreadsheet modified for TN; results of TN multiplied by 30% to obtain nitrate reduction value	Ongoing
Ocoee	Springshed	Oak Trail Reserve	Stormwater Treatment System	Construct and operate surface water management system serving 61 single-family lots on 34.57-acre residential development located within Wekiva River Protection Basin; sewer area	5.86	Pre-/post-pollutant load analysis spreadsheet modified for TN; results of TN multiplied by 30% to obtain nitrate reduction value	Ongoing
Ocoee	Springshed	Ocoee Carwash	Stormwater Treatment System	1.79-acre car wash facility, Lake Lotta watershed; sewer area	8.59	Pre-/post-pollutant load analysis spreadsheet modified for TN; results of TN multiplied by 30% to obtain nitrate reduction value	Completed
Ocoee	Springshed	Olympia, PUD	Stormwater Treatment System	21.2-acre commercial and public development, including Walgreens store and 1 public library; 1 wet detention system and 1 dry retention system constructed	5.16	Pre-/post-pollutant load analysis spreadsheet modified for TN; results of TN	Completed

ENTITY	SUBBASIN	PROJECT NAME	PROJECT TYPE	PROJECT DETAIL	ESTIMATED POLLUTANT LOAD REDUCTION (LBS/YR)	NITRATE REDUCTION CALCULATION METHOD	STATUS
						multiplied by 30% to obtain nitrate reduction value	
Ocoee	Springshed	Orchard Park Phase III Subdivision	Stormwater Treatment System	Orchard Park Phase III 30.7-acre subdivision is located west of Lake Addah, on south side of Clarcona-Ocoee Rd., in west Orange County; site is located in Wekiva River Hydrologic Basin, south of State Road 436, within Most Effective Recharge Area, but does not contain any portions of Riparian Habitat Protection Zone (RHPZ); project consists of construction of 65-lot single- family residential subdivision and dry retention pond; applicant does not propose any development	0.89	Pre-/post- pollutant load analysis spreadsheet modified for TN; results of TN multiplied by 30% to obtain nitrate reduction value	Completed
Ocoee	Springshed	Peach Lake Manor Drainage Improvements	Stormwater Treatment System	Construct and operate dry retention system (retrofit) of BMPs to serve approximately 60-acre residential subdivision with no conventional stormwater treatment; sewer area	87.88	Pre-/post- pollutant load analysis spreadsheet modified for TN; results of TN multiplied by 30% to obtain nitrate reduction value	Ongoing
Ocoee	Springshed	Prairie Lake Reserve	Stormwater Treatment System	Construct surface water management system to serve 42-acre residential subdivision (townhomes); 3 retention ponds permitted	1.20	Pre-/post- pollutant load analysis spreadsheet modified for TN; results of TN multiplied by 30% to obtain nitrate reduction	Completed

ENTITY	SUBBASIN	PROJECT NAME	PROJECT TYPE	PROJECT DETAIL	ESTIMATED POLLUTANT LOAD REDUCTION (LBS/YR)	NITRATE REDUCTION CALCULATION METHOD	STATUS
						value	
Ocoee	Springshed	Remington Oaks Phase I and II Subdivision	Stormwater Treatment System	140-lot single-family 49.5-acre subdivision with 2 dry retention ponds	1.43	Pre-/post- pollutant load analysis spreadsheet modified for TN; results of TN multiplied by 30% to obtain nitrate reduction value	Completed
Ocoee	Springshed	Sabinal Ct. and Geneva St. Drainage Improvements – Prima Vista Subdivision	Stormwater Treatment System	City of Ocoee is applying for Government Modification in accordance with Paragraph 40C-42.024(2)(c), F.A.C. ; city is requesting permission to perform construction activities within existing channel system that connects to Lake Lotta within Wekiva Recharge Protection Basin, but does not lie within Lake Apopka Basin; construction activities include removing and replacing concrete stormwater junction box, removing segment of 30-inch RCP, installing 18-inch RCP, installing 42- inch RCP to replace 30-inch RCP, installing 2 nd generation baffle box, pipe end treatments, repairing and regrading channel side slopes, and installing stabilization matting; proposed improvements will alleviate flooding, improve safety, and improve safety, and improve water quality in subdivision that has no permitted stormwater management treatment system (see construction drawings)	Unknown at this time	Monitoring program	Envisioned

ENTITY	SUBBASIN	PROJECT NAME	PROJECT TYPE	PROJECT DETAIL	ESTIMATED POLLUTANT LOAD REDUCTION (LBS/YR)	NITRATE REDUCTION CALCULATION METHOD	STATUS
Ocoee	Springshed	Villa Roma	Stormwater Treatment System	8.92-acre project; construct 52-townhome subdivision to be served by wet detention system; project will provide 100-year compensating storage; sewer area	5.16	Pre-/post-pollutant load analysis spreadsheet modified for TN; results of TN multiplied by 30% to obtain nitrate reduction value	Ongoing
Ocoee	Springshed	Villages of West Oak Subdivision	Stormwater Treatment System	Construct 2 dry retention ponds to serve 33-lot single-family 5.5-acre subdivision	0.16	Pre-/post-pollutant load analysis spreadsheet modified for TN; results of TN multiplied by 30% to obtain nitrate reduction value	Completed
Ocoee	Springshed	Wellington Place Subdivision	Stormwater Treatment System	Construct surface water management system to serve 14-acre residential subdivision	0.28	Pre-/post-pollutant load analysis spreadsheet modified for TN; results of TN multiplied by 30% to obtain nitrate reduction value	-

ENTITY	SUBBASIN	PROJECT NAME	PROJECT TYPE	PROJECT DETAIL	ESTIMATED POLLUTANT LOAD REDUCTION (LBS/YR)	NITRATE REDUCTION CALCULATION METHOD	STATUS
Ocoee	Springshed	West Colonial Property	Stormwater Treatment System	Construct 6.95-acre commercial development; sewer area	4.98	Pre-/post-pollutant load analysis spreadsheet modified for TN; results of TN multiplied by 30% to obtain nitrate reduction value	ONGOING
Ocoee	Springshed	Willows on the Lake	Stormwater Treatment System	Construct surface water management system to serve 86-unit, single-family, 15.18-acre subdivision and 9.99-acre Publix shopping center	6.29	Pre-/post-pollutant load analysis spreadsheet modified for TN; results of TN multiplied by 30% to obtain nitrate reduction value	Completed
Orange County	Little Wekiva Canal	Tree Planting at Elba Way/Riverside Park	Stormwater Treatment System	Project will reduce temperature of water and improve SCI	0	N/A	Completed
Orange County	Little Wekiva Canal	11 th and 12 th St. Improvement	Stormwater Treatment System	New stormwater treatment to serve 11 th and 12 th Sts.; 8.8 acres	TN - 82 TP - 69.4 TSS - 79,508	-	Constructed
Orange County	Little Wekiva Canal	Clarcona Ocoee East and West Segments	Stormwater Treatment System	4-lane road improvement; existing 2 lanes do not have stormwater treatment; project length = 2.5 miles	TN - 55.9 TP - 47.3 TSS - 54,210	-	West Segment Constructed
Orange County	Little Wekiva Canal	Riverside Pond	Stormwater Treatment System	Expand size of 0.8-acre existing treatment pond to 1.6 acres and add aeration to address DO impairment	TN - 4,533	-	Construction started 1/2012
Orange County	Little Wekiva Canal	Bay Lake Stormwater Improvement Project	Stormwater Treatment System	Will treat ~70 acres with 2 nd -generation baffle box and utilize Bold and Gold™ to increase nitrogen removal rates	TN - 251.6	EMC (Loading/yr) X BMP efficiency	Envisioned

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ENTITY	SUBBASIN	PROJECT NAME	PROJECT TYPE	PROJECT DETAIL	ESTIMATED POLLUTANT LOAD REDUCTION (LBS/YR)	NITRATE REDUCTION CALCULATION METHOD	STATUS
Orange County	Little Wekiva Canal	C-6 Canal – Solar Reuse	Stormwater Treatment System	Online wet detention with solar powered irrigation system for reuse on adjacent sports fields	TN - 721	EMC (Loading/yr) X BMP efficiency	Planned and funded
Orange County	Little Wekiva Canal	Lake Westin Curb Inlet Baskets	Stormwater Treatment System	Install 160 curb/grate inlet baskets on storm drains and apply storm drain markers	TN - 70.4	In-house study	Planned and funded
Orange County	Little Wekiva Canal	North Lake Lawne Stormwater Treatment Project (C-7)	Stormwater Treatment System	Install 120 curb/grate inlet baskets on storm drains and apply storm drain markers	TN - 51	EMC (Loading/yr) X BMP efficiency	Planned and funded
Orange County	Rock Springs Run	Rock Spring Road	Stormwater Treatment System	4-lane road improvement ; existing 2 lanes do not have stormwater treatment; project length = 2 miles	TN - 46.6 TP - 39.4 TSS - 45,175	-	Constructed
Orlando	Little Wekiva Canal	Center of Commerce	Stormwater Treatment System	Construct detention ponds to provide treatment and attenuation for Little Wekiva Canal	TN - 11,060	<i>Evaluation of Current Stormwater Design Criteria within State of Florida (Harper and Baker 2007)</i>	Envisioned
Orlando	Little Wekiva River	2 Inlet Baskets Around Lake Daniel	Stormwater Treatment System	Install 2 inlet baskets in Lake Daniel Basin	TP - 8	-	Completed
Orlando	Little Wekiva River	22 Inlet Baskets Around Lake Orlando	Stormwater Treatment System	Install 22 inlet baskets in Lake Orlando Basin	TP - 25	-	Completed
Orlando	Little Wekiva River	4 Baffle Boxes on Ardsley	Stormwater Treatment System	Capture gross pollutants and reduce levels of nitrogen entering basin by removing leaves and clippings before they enter Lake Silver	No data available	-	Completed
Orlando	Little Wekiva River	4 Inlet Baskets Around Lake Sarah	Stormwater Treatment System	Install 3 inlet baskets in Lake Sarah Basin	TP - 8	-	Completed
Orlando	Little Wekiva River	4 Inlet Baskets Around Lake Silver	Stormwater Treatment System	Install 4 inlet baskets in Lake Silver Basin	TP - 14	-	Completed

ENTITY	SUBBASIN	PROJECT NAME	PROJECT TYPE	PROJECT DETAIL	ESTIMATED POLLUTANT LOAD REDUCTION (LBS/YR)	NITRATE REDUCTION CALCULATION METHOD	STATUS
Orlando	Little Wekiva River	Lake Silver Treatment Structure (Westmoreland Dr. CDS Unit)	Stormwater Treatment System	Install CDS unit to capture gross pollutants before they enter Lake Silver	TN - 0 TP - 19	-	Completed
Orlando	Little Wekiva River	Little Lake Fairview Restoration and Dubsdread Golf Course Renovation Project	Stormwater Treatment System	Expand 5 wet detention ponds and create 10 additional wet detention ponds within golf course; 15 construct ponds in series of 3 interconnected systems; all systems eventually discharge to adjacent wetland, except during high flows, when runoff discharges to drainwell or ditch routed to Little Lake Fairview; restores hydroperiod of wetland and improves quality of wetland; also raises drainwell elevation to allow for more treatment before discharge	TN - 265 lbs/yr	<i>Evaluation of Current Stormwater Design Criteria within State of Florida</i> (Harper and Baker 2007)	Completed
Orlando	Little Wekiva River	Palomar Exfiltration	Stormwater Treatment System	Install 20-foot pipe to capture debris in separate chamber before stormwater percolates into ground	TN - 6 TP- 3	-	Completed
Seminole County	Blackwater Creek	Bear Lake Rd. Reconstruction	Stormwater Treatment System	Provide water quality treatment to existing roadway and subdivision through increased wet retention and utilization of existing dry retention pond; area served = 32 acres	TN - 91.4 TP - 32.3	EMC modeling-based approach	Completed
Seminole County	Little Wekiva Canal	Bunell Rd. Widening	Stormwater Treatment System	Provide treatment to untreated roadway through construction of new wet retention basin and exfiltration trench; designed to hold treatment volume plus 50%; area served = 7.5 acres	TN - 35.9 TP - 9.1	EMC modeling-based approach	Completed
Seminole County	Little Wekiva Canal	Eden Park Rd.	Stormwater Treatment System	Provide treatment to untreated roadway through exfiltration, installation of CDS units, and new wet retention basin; area served = 10.6 acres	TN - 58.6 TP - 14.1	EMC modeling-based approach	Completed
Seminole County	Little Wekiva River	Markham Woods Rd. – 3 Lane State Road 434 to Springs	Stormwater Treatment System	Provide water quality treatment for additional traffic lane through construction of new exfiltration trench;	TN - 32.4 TP - 4.4	Online 0.25-inch retention	Completed

ENTITY	SUBBASIN	PROJECT NAME	PROJECT TYPE	PROJECT DETAIL	ESTIMATED POLLUTANT LOAD REDUCTION (LBS/YR)	NITRATE REDUCTION CALCULATION METHOD	STATUS
		Landing Blvd.		area served = 12.4 acres			
Seminole County	Little Wekiva River	Markham Woods Rd. – 3 Lane Springs Landing Blvd. to EE Williamson Rd.	Stormwater Treatment System	Provide water quality treatment to existing roadway through exfiltration trench; area served = 9.2 acres	TN - 45.9 TP - 7.7	Online 0.75-inch retention	Completed
Seminole County	Wekiva River	Triangle Drive Treatment Pond	Stormwater Treatment System	Construct wet detention pond and provide ecological restoration on drainage parcel near Triangle Drive prior to draining into Lake Brantley; area served = 372 acres	TN - 221.5 TP - 146.4	Harper wet pond methodology online	Planned – not funded
Seminole County	Wekiva River	Wekiva Springs Rd. at Wekiva Springs State Park	Stormwater Treatment System	Construct 2 interconnected sedimentation ponds to provide additional water quality treatment for 2 square miles of residential development; area served = 2 square miles	TN - 166.7 TP - 50.42	Harper wet pond methodology online	Completed
Seminole County	Wekiva River	Wekiva Springs Rd. Hunt Club to Fox Valley	Stormwater Treatment System	Provide water quality treatment to existing roadway through swales; area served = 7 acres	TN - 53.3 TP - 9.3	Online 0.75 inch retention	Completed
Seminole County	Wekiva River	West Wekiva Tr. Treatment Pond	Stormwater Treatment System	Construct wet detention pond and provide ecological restoration on drainage parcel north of West Wekiva Tr. prior to discharge into Wekiva River; area served = 220 acres	TN - 112.5 TP - 73.8	Harper wet pond methodology online	Planned – not funded
Turnpike	Springshed	Widen Turnpike, Beulah to State Road 50	Stormwater Treatment System	Roadway; 3 inches treated in dry retention; recovered in 72 hours	95% removal	Harper	Under construction
Turnpike	Springshed	Widen Turnpike, Beulah to State Road 50	Stormwater Treatment System	Roadway; 3 inches treated in dry retention; recovered in 72 hours	95% removal	Harper	Under construction
Turnpike	Springshed	Widen Turnpike, Gotha to Beulah	Stormwater Treatment System	Roadway; 1.25 inches treated in dry retention, recovered in 72 hours	86% removal	Harper	Under construction
Turnpike	Springshed	Widen Turnpike, Gotha to Beulah	Stormwater Treatment System	Roadway; 1.25 inches treated in dry retention; recovered in 72 hours	86% removal	Harper	Under construction

DRAFT Basin Management Action Plan Appendices: Wekiva River, Rock Springs Run, and Little Wekiva Canal, April 2013

ENTITY	SUBBASIN	PROJECT NAME	PROJECT TYPE	PROJECT DETAIL	ESTIMATED POLLUTANT LOAD REDUCTION (LBS/YR)	NITRATE REDUCTION CALCULATION METHOD	STATUS
Winter Garden	Springshed	Dillard Street Pond Expansion	Stormwater Treatment System	Project is part of permitting process for New City Hall in Winter Garden; modify storm sewer system adjacent to pond to treat previously untreated runoff	272.03	Assumed at 50% removal	Completed
Winter Garden	Springshed	Plant St. Segment 1	Stormwater Treatment System	Project involves widening Plant St., including blowing out intersection of West Crown Point Rd. in Winter Garden; no stormwater treatment for this section of road prior to widening	250.05	Assumed at 50% removal	Ongoing
STREET SWEEPING		-	-	-	-	-	-
Apopka	Little Wekiva River	Street Sweeping	Street Sweeping	Street sweeping occurs daily; total miles swept = 5,000 miles per year	Nitrate - 6,862 TP - 4,440	-	-
Apopka	Rock Springs Run	Street Sweeping	Street Sweeping	Street sweeping occurs monthly; total miles swept = 3,000 miles per year	TN - 869 TP - 557	-	-
FDOT District 5	Springshed	Street Sweeping	Street Sweeping	Street sweeping occurs monthly; total miles swept = 2,247 miles per year	TN - 1,098	Pre-/post-EMC	-
Maitland	Little Wekiva River	Street Sweeping	Street Sweeping	Streets are swept twice a month; roadway length swept = 23.86 miles per 2 weeks; total miles swept = 572.64 miles per year	TN - 24 TP - 15	-	-
Mt. Dora	Springshed	Street Sweeping	Street Sweeping	Streets are swept 15 times per year; length of streets swept = 69 miles; total miles swept = 1,035 miles per year	TN - 2033 TP - 1304	-	-
Ocoee	Springshed	Street Sweeping	Street Sweeping	Streets are swept daily; length = 82 miles; road length swept = 3,500 miles per year; 500 tons of debris removed in 2011	NA	-	-
Orange County	Little Wekiva Canal	Street Sweeping	Street Sweeping	Streets are swept every 6 weeks; 481,128 pounds of material removed per year	TN - 209 TP - 134	-	-
Orlando	Little Wekiva River	Street Sweeping	Street Sweeping	Streets are swept every 2 weeks; Road length = 67 miles; total miles swept = 1,742 miles per year	TN - 1,204 TP - 772	-	-

ENTITY	SUBBASIN	PROJECT NAME	PROJECT TYPE	PROJECT DETAIL	ESTIMATED POLLUTANT LOAD REDUCTION (LBS/YR)	NITRATE REDUCTION CALCULATION METHOD	STATUS
Seminole County	Wekiva River	Street Sweeping	Street Sweeping	Arterial/collector county streets maintained: 272,525 lane feet swept 7 times yearly = 361.3 lane miles per year Subdivisions/local county streets maintained: 1,357,948 lane feet swept 2 times a year = 514.4 lane miles per year; total miles swept = 875.7 per year	TN - 596 lbs/yr TP - 268 lbs/yr	-	-
Winter Garden	Springshed	Street Sweeping	Street Sweeping	Streets are swept weekly; total miles swept = 6,380 miles per year	N/A	-	-
STUDIES (SUMMARIZED IN TABLE 5.11)		-	-	-	-	-	-
Altamonte Springs	Little Wekiva River	Citywide Pollutant Loading Model/ H&H Study	Study	City is contracting with Pegasus Engineering and CDM to complete citywide pollutant model and H&H study	Study	Study	Start-up
Altamonte Springs	Little Wekiva River	Lake Orienta, Adelaide, and Florida Hydrologic/Nutrient Budgets and Management Plans	Study	City contracted with consultants, PEC and ERD, to determine phosphorus and nitrogen loadings to Lakes Orienta, Florida, and Adelaide; treatment options recommended based on study results	Study	Study	Completed
Lake County	Blackwater Creek	Royal Trails Drainage and Water Quality Improvements	Study	Flood analysis, pollutant loading model, and conceptual project priorities are completed; this year field verification will be carried out to prioritize projects for design	N/A	N/A	Ongoing
Orlando	Little Wekiva River	Little Wekiva River – Preliminary Engineering Evaluation Lake Lawne, Center of Commerce, and Lake Orlando Sites	Study	Recommend nutrient reduction projects in Little Wekiva River watershed, using suggested drainage improvements from CDM report	-	-	Completed

ENTITY	SUBBASIN	PROJECT NAME	PROJECT TYPE	PROJECT DETAIL	ESTIMATED POLLUTANT LOAD REDUCTION (LBS/YR)	NITRATE REDUCTION CALCULATION METHOD	STATUS
WETLAND REHABILITATION	-	-	-	-	-	-	-
Mt. Dora	Springshed	Lake John Rehabilitation	Wetland Rehabilitation	Lake John is part of greater Lake Gertrude Basin project; wetland was excavated to remove excess sediment and exotic vegetation; stepwise drainage reestablished between three ponds, and new vegetation planted	Unknown	-	Completed
Altamonte Springs	Wekiva River	Wekiva GeoPark Restoration Project	Wetland Restoration	Conservation project – Restore 20 acres of wetlands in Wekiva Basin GeoPark; includes removal of logging roads	0	Department table	Completed

WEKIVA BASIN BMAP

MANAGEMENT ACTIONS: SIGNIFICANT COLLECTION SYSTEM REPAIRS/REPLACEMENTS, SEWERING TO CONNECT HOUSEHOLDS AND BUSINESSES TO CENTRAL SEWER (INSTEAD OF SEPTIC)

- = Empty cell/no data

MGD = Million gallons per day; RIB = Rapid infiltration basin; CIPP = Cured in place pipe

ENTITY	SUBBASIN	PROJECT NAME	PROJECT TYPE	PROJECT DETAIL	ESTIMATED POLLUTANT REDUCTION (LBS/YR)	NITRATE REDUCTION CALCULATION METHOD	STATUS
COLLECTION SYSTEM EXPANSION	-	-	-	-	-	-	-
Apopka	Springshed/ Rock Springs Run	Chalet North Mobile Home Park	Collection System Expansion	City worked in cooperation with Orange County Environmental Protection Division (OCEPD) and park to decommission package WWTF and effluent percolation pond and connect to city's collection system	TN - 58,586 TP - 5,825	-	Completed
Apopka	Springshed/ Rock Springs Run	Yothers Rd. and Zellwood Station	Collection System Expansion	City installed 5,375 feet of 10-inch force main and lift station that allowed Zellwood Mobile Home Park to decommission its package WWTF and effluent percolation pond, reducing effluent load to basin	TN - 35,388 TP - 5,825	-	Completed
Altamonte Springs	Little Wekiva River	Adventist Health System Headquarters Development	Collection System Expansion/ Septic to Sewer System	Remove 5 septic systems within 200 meters of receiving waterbody by connecting them to city sanitary system	Nitrate - 72.36	TMDL report – septic calculation	Complete
Altamonte Springs	Little Wekiva River/ Lake Orienta	640 Jasmine Ave. – Septic System Removal	Collection System Expansion/ Septic to Sewer System	Remove 1 septic system within 200 meters of receiving waterbody by connecting it to city sanitary system	Nitrate - 14.5	TMDL report – septic calculation	Complete
Altamonte Springs	Little Wekiva River	Spring St., Central St., Marker St., and Campello St. Septic System Removal	Collection System Expansion/ Septic to Sewer System	Remove 7 septic systems within 200 meters of receiving waterbody by connecting them to city sanitary system	Nitrate - 101.31	TMDL report – septic calculation	Complete
Apopka	Springshed/	Individual Septic to	Collection System	Dr. Philip Trinh Dental Office	TN - 3,381	-	Completed

ENTITY	SUBBASIN	PROJECT NAME	PROJECT TYPE	PROJECT DETAIL	ESTIMATED POLLUTANT REDUCTION (LBS/YR)	NITRATE REDUCTION CALCULATION METHOD	STATUS
	Rock Springs Run	Sewer Projects	Expansion/ Septic to Sewer System	(place existing septic on city's wastewater collection system); Honey Transport Inc. (abandon existing septic and place business on city collection system); United Pentecostal Church (work with church to abandon existing septic system during its expansion and connect to city collection system); Robinsons Restaurant (work with restaurant to transfer wastewater effluent treatment from septic system to city's collection system)	TP - 557		
Apopka	Springshed/ Rock Springs Run	Kelly Park at Rock Springs (Orange County Park)	Collection System Expansion/ Septic to Sewer System	Expand Rock Springs Rd. and Kelly Park Rd. collection system, allowing city to connect Orange County's Kelly Park recreation area to city's collection system and abandon septic	TN - 1,296 TP - 213	-	Completed
Apopka	Springshed/ Rock Springs Run	Kelly Park Rd. 8-inch Force Main	Collection System Expansion/ Septic to Sewer System	Install 1,250 feet of 8-inch force main along east end of Kelly Park Rd.; allows Orange County's Kelly Park to connect to city collection system and abandon septic; also allows for future septic connections near Wekiva and Rock Springs area	-	-	Completed
Apopka	Springshed/ Rock Springs Run	U.S. Highway 441 Force Main Extension	Collection System Expansion/ Septic to Sewer System	Extend city wastewater collection system by installing 12,236 feet of 12-inch force main to Jones Ave., making connections to Zellwin Farms and Zellwood Elementary School) and providing	-	-	Completed

ENTITY	SUBBASIN	PROJECT NAME	PROJECT TYPE	PROJECT DETAIL	ESTIMATED POLLUTANT REDUCTION (LBS/YR)	NITRATE REDUCTION CALCULATION METHOD	STATUS
				availability for future connections in area			
Department (Wekiwa State Park)	Wekiva River	Remove Wekiva State Park from Septic	Collection System Expansion/ Septic to Sewer System	Phase 1 – 3 lift stations, convert administration building, main user area, Ranger Station, and residents in southern portion of park (e.g., rangers, assistant manager, law enforcement) from septic to wastewater collection to Orange County's WWTF Phase 2 – 4 lift stations, Youth Camp, 2 additional residences, and dump station for campground; dismantle 2 spray fields Phase 3 – 2 bath houses and 38 campsites	-	-	Phases 1 and 2 – completed Phase 3 – to be completed by end of March 2013
Mt. Dora	Springshed	Community Development Block Grant	Collection System Expansion/ Septic to Sewer System	Extend 8-inch sewer main and install 4 laterals to connect 4 duplexes to city sewer on 11 th Ave.; abandon existing septic systems	-	-	Completed
Orlando	Little Wekiva River	Arthur Ave. Sewer Line	Collection System Expansion/ Septic to Sewer System	Install approximately 1,200 feet of gravity lines in area with septic tanks to reduce nutrient seepage into ground water table	-	-	Completed
Orlando	Little Wekiva River	Lynx Facility	Collection System Expansion/ Septic to Sewer System	Install sanitary sewer in area with septic tanks to reduce nutrient seepage into ground water table	-	-	Completed

ENTITY	SUBBASIN	PROJECT NAME	PROJECT TYPE	PROJECT DETAIL	ESTIMATED POLLUTANT REDUCTION (LBS/YR)	NITRATE REDUCTION CALCULATION METHOD	STATUS
Orlando	Little Wekiva River	Rio Grande Sanitary Sewer	Collection System Expansion/ Septic to Sewer System	Install gravity lines in area with septic tanks to reduce nutrient seepage into ground water table	-	-	Completed
Orlando	Little Wekiva River	West Lake Fairview Sanitary Sewer	Collection System Expansion/ Septic to Sewer System	Install sanitary sewer in area with septic tanks to reduce nutrient seepage into ground water table	-	-	Envisioned
Orlando	Little Wekiva River	Fairview Shores – North Service Area	Collection System Expansion/ Septic to Sewer System and Stormwater BMP	Improve sanitary sewer, drainage, and roadway; install new sanitary force main, lift station (#65), and gravity pipes in area with septic tanks to reduce nutrient seepage into ground water table; install 2 Stormceptors to capture gross pollutants before the reach lake	-	-	Completed
RECLAIMED WATER COLLECTION, TRANSMISSION, AND STORAGE	-	-	-	-	-	-	-
Altamonte Springs	Little Wekiva River	Storage and Retrieval of Reclaimed Water in Cranes Roost, Regional Stormwater Facility	Reclaimed Water Collection, Transmission, and Storage	Department permitted storage and retrieval of reclaimed water in Cranes Roost in 2002	Nitrate - 38,271.24 lbs since 2002 (3,827 lbs/yr)	Sum of 2002 through 2011 annual RW flow to Cranes Roost (x) annual average nitrate concentration	Completed
Apopka	Little Wekiva River	Sanlando Utilities Corp. Reuse to City	Reclaimed Water Collection, Transmission, and Storage	City is in design stage of receiving Sanlando Utilities Corp. reclaimed water that is currently being discharged into Little Wekiva, starting at 1 MGD; this will also reduce ground	TN – 13,698 TP – 4,566	-	Design

ENTITY	SUBBASIN	PROJECT NAME	PROJECT TYPE	PROJECT DETAIL	ESTIMATED POLLUTANT REDUCTION (LBS/YR)	NITRATE REDUCTION CALCULATION METHOD	STATUS
				water withdrawal from city			
Apopka	Springshed/ Rock Springs Run	Northwest Reclaim and Stormwater Storage Pond	Reclaimed Water Collection, Transmission and Storage	Constructed 120-million-gallon lined reclaimed storage pond; pond also collects stormwater from 300-acre northwest recreation facility that is filtered and distributed for irrigation; this will also reduce ground water withdrawal	-	-	Completed
Apopka	Springshed/ Rock Springs Run	Orange County Reuse to City	Reclaimed Water Collection, Transmission and Storage	City is in design stage for receiving 3 MGD of reclaimed water that is currently going to Orange County RIBs; this will also reduce ground water withdrawal from city	TN – 18,254 TP – 6,088	-	Design
SANITARY SEWER COLLECTION SYSTEM REHABILITATION	-	-	-	-	-	-	-
Altamonte Springs	Little Wekiva River	Central Parkway Force Main Replacement from Lift Station 54 to Montgomery Rd.	Sanitary Sewer Collection System Rehabilitation	Replace 1,230 linear feet of failing 8-inch force main	Nitrate - 4.56	15,000 gallon/event (x) 4 events since 2000 (x) 73.0mg/L (annual average influent nitrate concentration)	Completed
Apopka	Springshed/ Rock Springs Run	Lift Station 9 and 10 Wet Wells	Sanitary Sewer Collection System Rehabilitation	Rehabilitate lift station wet well due to H2S dissolving concrete walls	-	-	Completed
Apopka	Springshed/ Rock Springs Run	Manholes (Alabama and 8th St.; Little St. and 9 th St.; Park Ave; Charleston Park Subdivision)	Sanitary Sewer Collection System Rehabilitation	Reline manholes with supercoat spray to prevent leaking between bricks	-	-	Completed
Apopka	Springshed/	Victoria Plaza, Forest	Sanitary Sewer	Reline to correct leaking joints	-	-	Completed

ENTITY	SUBBASIN	PROJECT NAME	PROJECT TYPE	PROJECT DETAIL	ESTIMATED POLLUTANT REDUCTION (LBS/YR)	NITRATE REDUCTION CALCULATION METHOD	STATUS
	Rock Springs Run	Ave., 3 rd St., Park Ave.	Collection System Rehabilitation				
Mt. Dora	Springshed	Lift Station #10 Piping Replacement (Pine Ave.)	Sanitary Sewer Collection System Rehabilitation	Replace 602 feet of 8-inch pipe and 2 manholes	-	-	Completed
Mt. Dora	Springshed	Pipe Lining 2007, 2008, 2009, and 2010	Sanitary Sewer Collection System Rehabilitation	2007 – Line 7,094 feet of 8-inch sewer main on Clayton and Liberty Sts. 2008 – Line 8,040 feet of 8- and 10-inch sewer main (Grandview, Alexander, Tremain, Baker, Lake Dora Rd, Pine Ave., and Donnelly St.). 2009 – Line 3,746 feet of 8-inch pipe on Old Eustis Rd. and Donnelly St. 2010 – Line 1,500 feet of 21-inch pipe along Lake John	-	-	Completed
Ocoee	Springshed/Wekiva River	Lift Station #7 Rehab and Relocation	Sanitary Sewer Collection System Rehabilitation	Existing lift station at end of life cycle and experiencing operational issues; relocate replacement station north 900 feet, provide new generator set, provide bypass pumping, and increase pump horsepower	N/A	N/A	Completed and in operation

ENTITY	SUBBASIN	PROJECT NAME	PROJECT TYPE	PROJECT DETAIL	ESTIMATED POLLUTANT REDUCTION (LBS/YR)	NITRATE REDUCTION CALCULATION METHOD	STATUS
Orange County	Springshed/ Study Area	Force Main/ Gravity Replacement	Sanitary Sewer Collection System Rehabilitation	Install 1,200 feet of 4-inch force main; new force main expected to prevent wastewater leakage; All American Blvd. from Clarcona Ocoee to Kennedy; force main from Avalon Rd. to Hiawassee Rd. 7,600 linear feet 36-inch force main; 760 linear feet 30-inch force main; and 1,200 linear feet 12-inch force main Many parcels near 35-21-28-0000-00-150; install 4,500 feet of 12-inch force main. New force main expected to prevent wastewater leakage. Clarcona Ocoee Rd. from Ingram to Clarke; install 11,000 feet of force main from Indian Hill Rd. to PS #3411. New force main will prevent wastewater leakage. North Pine Hills Rd. at Indian Hill Rd. and Clarcona Ocoee Rd.; Relocate 710 linear feet 4-inch force main 1,280 linear feet 16-inch force main; and 710 linear feet 8-inch gravity main Many parcels near 30-21-29-0521-00-010	TP - 176.7	Notes	90% design
Orange County	Springshed/ Study Area	Pump Station Replacements/Repairs (R/R)	Sanitary Sewer Collection System Rehabilitation	Replace Pump Station #3006 Huggins and North Hastings; R/R of wastewater pump station #3038 26-22-28-0000-	TP - 15,589.2	Notes	Ongoing

ENTITY	SUBBASIN	PROJECT NAME	PROJECT TYPE	PROJECT DETAIL	ESTIMATED POLLUTANT REDUCTION (LBS/YR)	NITRATE REDUCTION CALCULATION METHOD	STATUS
				00-003; R/R of wastewater pump station #3411 06-22-29-5844- 00-110; R/R of wastewater pump station #3099 20-23-29-5360- 00-170; R/R of wastewater pump station #3133 21-23-29-5361- 00-211; R/R of wastewater pump station #3225 12-23-30-1280- 00-001; R/R of wastewater pump station #3251 33-21-29-1341- 00-002; R/R of wastewater pump station #3302 32-21-29-7134- 03-301; R/R of wastewater pump station #F3169 19-22-29-6954- 08-051; R/R of wastewater pump station #3230 23-22-28-0000- 00-053; R/R of wastewater pump station #F3195 Near 13-22-28- 5175-04-040;			

ENTITY	SUBBASIN	PROJECT NAME	PROJECT TYPE	PROJECT DETAIL	ESTIMATED POLLUTANT REDUCTION (LBS/YR)	NITRATE REDUCTION CALCULATION METHOD	STATUS
				R/R of wastewater pump station #3014 12-22-28-0885-00-000; R/R of wastewater pump station #3028 01-22-28-0000-00-005; R/R of wastewater pump station #3202 01-22-28-4743-00-040			
Orange County (Utilities)	Springshed/ Surface Watershed	Force Main/Gravity Sewer Rehab	Sanitary Sewer Collection System Rehabilitation	Combine CIPP and point repairs to restore approximately 10,000 linear feet of 8-inch gravity sanitary sewer, including lining or coating 40 manholes. Near 20-22-29-4552-08-001; in addition to upsized storm pipes that go to Lake Robin, project includes replacing force main, gravity line, and manhole; replacement of force main will reduce leakage of sewage Near 24-22-28-7573-15-250; remove and relocate Pump Station #3045, plus remove existing force main and install 800 feet of gravity sewer. 29-21-29-4940-00-230	TN - 605.55 TP - 157.0	N/A	Construction 75% completed
Orlando	Little Wekiva River	Lift Station #37 Improvements	Sanitary Sewer Collection System Rehabilitation	Lift station is one of oldest in city; wet well is made of brick and starting to fail; replace lift station with precast concrete	-	-	Ongoing

ENTITY	SUBBASIN	PROJECT NAME	PROJECT TYPE	PROJECT DETAIL	ESTIMATED POLLUTANT REDUCTION (LBS/YR)	NITRATE REDUCTION CALCULATION METHOD	STATUS
				with liner and bigger capacity; install new pumping station and associated components, along with standby generator; also replace gravity pipes in area			
Orlando	Little Wekiva River	Lift Station #85 Variable Frequency Drives	Sanitary Sewer Collection System Rehabilitation	Install variable frequency drives that will extend life of pump motors, preventing potential overflows; will also be more energy efficient at future cost savings to city	-	-	Envisioned
Orlando	Little Wekiva River	Lift Station #93 Improvements	Sanitary Sewer Collection System Rehabilitation	Relocate and completely rebuild lift station with new, upgraded equipment, including generator not present at previous location	-	-	Completed
Orlando	Little Wekiva River	Line Sanitary Sewers	Sanitary Sewer Collection System Rehabilitation	Line sewers to prevent untreated sewage from escaping through cracks and joints; project will reduce nutrient seepage into ground water table	-	-	Planned and funded
Orlando	Little Wekiva River	West Lake Silver Phase 1 and 2	Sanitary Sewer Collection System Rehabilitation	Install lift station in new commercial area	-	-	Completed
Orlando	Little Wekiva River, Little Wekiva Canal	Mercy Dr. Sewer Rehab	Sanitary Sewer Collection System Rehabilitation	Replace force main on Mercy Dr. from south of Princeton to LS #45; connect or replace new sanitary pipe to existing pipes	-	-	Completed
Orlando	Little Wekiva River, Little Wekiva Canal	Regent Ave. Force Main 2613	Sanitary Sewer Collection System Rehabilitation	Construct force main along Silver Star Rd. connecting Lift Station #37 to existing 24-inch force main and 24-inch gravity sewer on Mercy Dr.	-	-	Envisioned
Sanlando Utilities Corp.	Wekiva River	Sweetwater I&I Investigation &	Sanitary Sewer Collection System	Camera-inspect sanitary collection system in Sweetbrier			Envisioned

ENTITY	SUBBASIN	PROJECT NAME	PROJECT TYPE	PROJECT DETAIL	ESTIMATED POLLUTANT REDUCTION (LBS/YR)	NITRATE REDUCTION CALCULATION METHOD	STATUS
		Collection System Repairs	Rehabilitation	subdivision and correct noted deficiencies			
Seminole County	Wekiva River	Apple Valley LS	Sanitary Sewer Collection System Rehabilitation	Relocate and build brand new lift station	-	-	Completed
Seminole County	Wekiva River	Bridgewater Dr.	Sanitary Sewer Collection System Rehabilitation	Manhole sealing	-	-	Completed
Seminole County	Wekiva River	Gravity Main Testing and Repairs	Sanitary Sewer Collection System Rehabilitation	Lateral repair – 1512 Cherry Rdg., 2067 Northumbria, 169 Killarney Ct., Shadowmoss Dr. Gravity main repair – 844 Preserve Terr., International Dr. and County Road 46A, Lake Rena Dr. Smoke test and seal laterals – Alaqua Lakes, Heathrow Woods # 1 & 2 LS, Lake Forest 1 & 2, Lake Forest 1 & 2 Additional work – Lake Forest 3 & 4, Aster Farms	-	-	Completed
Seminole County	Wekiva River	Lift Station Rehab	Sanitary Sewer Collection System Rehabilitation	Seal wet well and rehabilitate lines (Wilson School LS, Breckenridge LS, Stockbridge LS, Lake Forest #5 LS, Buckingham LS, Retreat at Wekiva LS, Aster Farms LS, Bel-Aire #3 LS, Bel-Aire #1 LS, Heathrow Master LS)	-	-	Completed
Winter Garden	Springshed	State Road 50 Utility Relocation	Sanitary Sewer Collection System Rehabilitation	Replace city utilities due to widening of State Road 50; project includes replacement of 5,210 linear feet of 24-inch	-	-	Ongoing

ENTITY	SUBBASIN	PROJECT NAME	PROJECT TYPE	PROJECT DETAIL	ESTIMATED POLLUTANT REDUCTION (LBS/YR)	NITRATE REDUCTION CALCULATION METHOD	STATUS
				clay pipe and 2,650 linear feet of 18-inch clay pipe			
Mt. Dora	Springshed	Lift Station #1, 2, 3, 7, 9, 10, 11, 12, 13, 14, 15, 16, 17, 20, 22, 25, 27, 28, 30, 31, & 34 Piping	Sanitary System Inspections	#1 - Clean and camera-inspect 8- and 10-inch pipe totaling 11,981 feet (Alexander St., Donnelly St., Baker St., Lake Dora Rd., Tremain St.) #2 - Clean and camera-inspect 8-inch pipe totaling 5,275 feet (Grandview, Clayton, Liberty, Simpson, Rhodes, Rossiter, Stowe, Plymouth, First Ave.) #3 - Clean and camera-inspect 8-inch pipe totaling 2,223 feet (Sand Lake Ct., High Pt.) #7 - Clean and camera-inspect 8-inch pipe totaling 1,975 feet and upsized 360 feet of force main (Chetanham Ct., Coventry Ct., Canterbury Ct., Dorsett Ct., Liberty Ave.) #9 - Clean and camera-inspect 12,281 feet of 8-inch pipe (2nd Ave., 3rd Ave., 4th Ave., 5th Ave., Simpson, Rhodes, Rossiter, Lake Franklin Dr., Summit Ave, GrovelandPinecrest, Stanley Bell Dr.) #10 - Clean 22,558feet of 8-	-	-	Completed

ENTITY	SUBBASIN	PROJECT NAME	PROJECT TYPE	PROJECT DETAIL	ESTIMATED POLLUTANT REDUCTION (LBS/YR)	NITRATE REDUCTION CALCULATION METHOD	STATUS
				inch pipe; camera-inspect 2,500 feet of 8-inch pipe (Unser, Orange, Simpson, Rhodes, Wardell, Limit Ave., Jefferson Dr., Jackson Ave., Grant Ave., Florida Ave., Pine Ave., Highland Ave., Fearon Ave.) # 11 - Smoke test 10,228 feet of 8-, 10-, and 12-inch pipe (Stacey Dr., Sunrise Blvd., Karen Dr., Stacey Cir., Brookside Cir., Brookside Dr., Elizabeth Ln., Eric Ln., Oak Cir, Briarcliff Ln., Cottonwood Ln.) #12 - Smoke test 3,214 feet of 8-inch pipe (St. Andrews Way., Heathland Ct.) #13 - Smoke test 10,811 feet of 8-inch pipe (Laurel Ridge Dr., St. James Way, Pine Hollow Dr., Arcadian Ct., Covey Cir., Friars Ct.) #14 - Smoke test 1,524 feet of 8-inch pipe on Greenbriar Tr. #15 - Smoke test 11,674 feet of 8-inch pipe (Hunter Green, Country Club Blvd., Oakcrest Cir., Laurel Dr., Shadowood Cir., Falconbridge Pl., Spring Creek Ct.)			

ENTITY	SUBBASIN	PROJECT NAME	PROJECT TYPE	PROJECT DETAIL	ESTIMATED POLLUTANT REDUCTION (LBS/YR)	NITRATE REDUCTION CALCULATION METHOD	STATUS
				#16 - Smoke test 5,399 feet of 8-inch pipe (Park Forest Blvd., Chase Ct., Stafford Springs Blvd., Citrus Cir., Edgewater Dr., Wyngate Ct., Country Club Blvd.) #17 - Smoke test 3,885 feet of 8-inch pipe (Loch Leven Ln., Juliette Blvd., Augustus Ln., Caesars Ct.) #20 - Clean and camera-inspect 8-inch pipe totaling 5,688 feet (Waterman Ave., Oakhill Ln., Mapleton Ln., Rockport Ln., Elmwood Ln., York Ln., Warfield Way, Salem Ave., Waterford Ave., Essex Ave., Beacon Ln.) #22 - Clean and camera-inspect 3,666 ft of 8- and 21-inch pipe on Limit Ave. #23 - Clean and camera-inspect 745 feet of 8-inch pipe on Magnolia Landing #25 - Clean and camera-inspect 6,741 feet of 8-inch pipe (Village Ln., Stratford Ln., Foxboro Ct., Amherst Ln., Clagary Ln., Mary Ln., Ken Ct., David Ct., Durham Ct.) #27 - Clean and camera-inspect 2,628 feet of 8-inch pipe on			

ENTITY	SUBBASIN	PROJECT NAME	PROJECT TYPE	PROJECT DETAIL	ESTIMATED POLLUTANT REDUCTION (LBS/YR)	NITRATE REDUCTION CALCULATION METHOD	STATUS
				Spring Harbor Cir. #28 - Clean and camera-inspect 1,163 feet of 8-inch pipe #30 - Clean and camera-inspect 2,509 feet of 8-inch pipe (Oleander, Camellia, Azalea, Laurel Dr.) #31 - Clean and camera-inspect 512 feet of 8-inch pipe on Arbor Way #34 - Clean, camera-inspect, and smoke test 10,168 feet of 8-inch pipe (Castelli Blvd., Capri Ln., Palermo Ct., Isola Bella Blvd., Stefano Ct., Murano Ct.)			
Orlando	Little Wekiva River	Sanitary System Inspections	Sanitary System Inspections	Conduct proactive inspections and perform routine maintenance on lift stations and sanitary lines; identify problem areas, and increase maintenance frequency or perform repairs to prevent overflows from occurring; also assist with Sunshine State One- Call of Florida ("Call Before You Dig"/Line Locater)	-	-	Ongoing
Altamonte Springs	Little Wekiva River	Citywide I&I Study	Study	Contract with consultant to evaluate city's sewer system to identify areas prone to I&I and develop schedule for repair	N/A	N/A	Study in process

APPENDIX F: MONITORING STATIONS

The tables in this appendix list the following Wekiva River and Rock Springs Run monitoring stations:

- *Core surface water.*
- *Supplemental surface water.*
- *Springs.*
- *Ambient ground water.*
- *Biological monitoring.*
- *Flow measurement.*

The following information is provided:

- *Indication of core parameters monitored.*
- *Sampling entity.*
- *Station number and name.*
- *Subbasin.*
- *Latitude and longitude.*

**WEKIVA BASIN BMAP
CORE SURFACE WATER MONITORING STATIONS**

Notes: Sort is by “sampling entity” and “station name.”

N/A = Not applicable

LAT/LONG are shown in decimal form.

SAMPLING ENTITY	STATION NUMBER OR NAME	STATION DESCRIPTION	SUBBASIN	LATITUDE	LONGITUDE
City of Altamonte Springs	N/A	Little Wekiva River 119 Variety Tree Cir.	Little Wekiva River	28.65469	-81.40609
City of Altamonte Springs	N/A	Little Wekiva River Merrill Park	Little Wekiva River	28.67697	-81.41461
City of Altamonte Springs	N/A	Little Wekiva River Montgomery Rd. Bridge	Little Wekiva River	28.67909	-81.40242
City of Altamonte Springs	N/A	Little Wekiva River Sanlando Office Park	Little Wekiva River	28.68422	-81.39703
City of Altamonte Springs	N/A	Little Wekiva River Seminole Trail	Little Wekiva River	28.66584	-81.41093
City of Apopka	A25	Lake Marshall (west of State Road 429 and Lake Marshall Road)	Springshed	28.67803	-81.53292
City of Apopka	A51	Dream Lake (downtown Apopka area – Park Ave. and Myrtle St.)	Rock Springs Run	28.68424	-81.51154
City of Apopka	BW51	Lake Pleasant (Lake Pleasant Rd. and Apopka Blvd. South of 441)	Little Wekiva Canal	28.65686	-81.48099
City of Maitland	N/A	Lake Destiny (center)	Little Wekiva River	28.63985	-81.39120
City of Maitland	N/A	Lake Harvest (center)	Little Wekiva River	28.62358	-81.39600
City of Maitland	N/A	Lake Hungerford (center)	Little Wekiva River	28.62082	-81.38967
City of Maitland	N/A	Lake Loch Lomond (center)	Little Wekiva River	28.63680	-81.39270
City of Maitland	N/A	Lake Lucien (center)	Little Wekiva River	28.62707	-81.39035
City of Maitland	N/A	Lake Shadow (center)	Little Wekiva River	28.62330	-81.40303
City of Orlando	N/A	Lake Lawne – North (center of northern lobe)	Little Wekiva Canal	28.56690	81.43800
City of Orlando	N/A	Lake Orlando (West) (aka Lake Wekiva)	Little Wekiva Canal	28.59660	81.43330
City of Orlando/OCEPD	City Number = N/A; Orange County	Little Wekiva River	Little Wekiva River	28.61300	81.42160

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SAMPLING ENTITY	STATION NUMBER OR NAME	STATION DESCRIPTION	SUBBASIN	LATITUDE	LONGITUDE
	Number = NPDES[Date]- 1/LWO				
Lake County (Water Resource Management Lab [WRM LAB])	BWC44	BWC44	Blackwater Creek	28.87464	-81.48942
Lake County (Adopt-a-Lake)	DALHOUSIBR	Lake Dalhousie	Blackwater Creek	28.90255	-81.61795
Lake County (Adopt-a-Lake)	SENECASESH	Lake Seneca (off Lake Seneca Rd.)	Blackwater Creek	28.86753	-81.58619
OCEPD	BWB	Big Wekiva B (Wekiva Marina dock on the main river)	Upper Wekiva River	28.71366	-81.44538
OCEPD	BWKP	Big Wekiva KP (Kelly Park by the bathing beach)	Rock Springs Run	28.75612	-81.49861
OCEPD	LWA	Little Wekiva A (Silver Star Rd. north side of bridge)	Little Wekiva River	28.57816	-81.43447
OCEPD	LWB	Little Wekiva B (North OBT north side of bridge just past All American Blvd.)	Little Wekiva River	28.60938	-81.42723
OCEPD	LWD	Little Wekiva D (Oranole Rd., north side of bridge)	Little Wekiva River	28.64000	-81.42420
Seminole County	LAN	Little Wekiva River – LAN (at Springs Landing Blvd.)	Little Wekiva River	28.70194	-81.39194
Seminole County	SPG	Spring Lake – SPR	Little Wekiva River	28.65242	-81.40050
Seminole County	WEK46	Wekiva River WEK 46 at State Road 46)	Wekiva River	28.81550	-81.41949
Seminole County	WA	Little Wekiva River – WA (off Weathersfield Ave.)	Little Wekiva River	28.65917	-81.40722
SJRWMD	02235000	Wekiva River near Sanford at State Road 46	Wekiva River	28.81523	-81.41948
SJRWMD	BWCCPB	Blackwater Creek at Carter Prop. Bridge	Blackwater Creek	28.85749	-81.43689
SJRWMD	LW-MP	Little Wekiva River off Bull Run Rd.	Little Wekiva River	28.73086	-81.39733
SJRWMD	RSR-SR	Rock Springs Run, campsite within Rock Springs Run State Reserve	Rock Springs Run	28.74055	-81.46680
SJRWMD	BWC44	Blackwater Creek at State Road 44	Blackwater Creek	28.87464	-81.48942

**WEKIVA BASIN BMAP
SUPPLEMENTAL SURFACE WATER MONITORING STATIONS**

Notes: Sort is by “sampling entity” and “station name.”

- = Empty cell/no data

N/A = Not applicable

LAT/LONG are shown in decimal form.

SAMPLING ENTITY	STATION NUMBER OR NAME	STATION DESCRIPTION	SUBBASIN	LATITUDE	LONGITUDE
City of Altamonte Springs	ADE_Main	Lake Adelaide (main waterbody)	Little Wekiva River	28.66662	-81.36500
City of Altamonte Springs	ADE_Weir	Lake Adelaide (weir at Palm Spring)	Little Wekiva River	28.66952	-81.37389
City of Altamonte Springs	CR_EastBW	Cranes Roost (east boardwalk)	Little Wekiva River	28.66862	-81.38183
City of Altamonte Springs	CR_WestBW	Cranes Roost (west boardwalk)	Little Wekiva River	28.66631	-81.38719
City of Altamonte Springs	FLA_Ctr	Lake Florida (center)	Little Wekiva River	28.67369	-81.36395
City of Altamonte Springs	LOT_Ctr	Lake Lotus (center)	Little Wekiva Canal	28.64805	-81.42176
City of Altamonte Springs	LWR_Northwestern Bridge	Little Wekiva River (at Northwestern Bridge)	Little Wekiva River	28.65409	-81.41055
City of Altamonte Springs	ORI_NMidLobe	Lake Orienta (north middle lobe)	Little Wekiva River	28.65920	-81.36954
City of Altamonte Springs	ORI_NorthLobe	Lake Orienta (north lobe)	Little Wekiva River	28.66177	-81.36849
City of Altamonte Springs	ORI_SMidLobe	Lake Orienta (south middle lobe)	Little Wekiva River	28.65789	-81.37317
City of Altamonte Springs	ORI_SouthLobe	Lake Orienta (south lobe)	Little Wekiva River	28.65397	-81.37756
City of Altamonte Springs	PEA_Ctr	Lake Pearl (center)	Little Wekiva River	28.66306	-81.42485
City of Orlando	N/A	Bay Lake (center)	Little Wekiva Canal	28.59120	81.42180
City of Orlando	N/A	Kasey Lake (center)	Little Wekiva Canal	28.59910	81.44320
City of Orlando	N/A	Kelly Lake (eastern portion of lake)	Little Wekiva Canal	28.59900	81.44800
City of Orlando	N/A	Kristy Lake (southwest portion of lake)	Little Wekiva Canal	28.59750	81.44710

SAMPLING ENTITY	STATION NUMBER OR NAME	STATION DESCRIPTION	SUBBASIN	LATITUDE	LONGITUDE
City of Orlando	N/A	Lake Daniel (center)	Little Wekiva Canal	28.58210	81.40120
City of Orlando	N/A	Lake Fairhope (center)	Little Wekiva Canal	28.58420	81.39370
City of Orlando	N/A	Lake Fairview – North (center)	Little Wekiva Canal	28.59700	81.40510
City of Orlando	N/A	Lake Fairview - South (center)	Little Wekiva Canal	28.59150	81.40560
City of Orlando	N/A	Lake Lawne – South (center of southernmost lobe)	Little Wekiva Canal	28.56010	81.43830
City of Orlando	N/A	Lake Orlando East [aka Lake Wekiva] (center of eastern lobe)	Little Wekiva Canal	28.59940	81.42660
City of Orlando	N/A	Lake Sarah (center)	Little Wekiva Canal	28.58460	81.40200
City of Orlando	N/A	Little Lake Fairview (center)	Little Wekiva Canal	28.59140	81.38860
Lake County (WRM LAB)	DORR	Lake Dorr (off State Road 19 north of Altoona)	Blackwater Creek	29.01576	-81.63494
Lake County (Adopt-a-Lake)	WOLFSINK	Wolfbranch Sink (south of State Road 46, east end of Robie St., Mt. Dora)	Blackwater Creek	28.79414	-81.61245
Lake County (WRM LAB)	-	Sulphur Run	Blackwater Creek	28.87667	-81.44333
OCEPD	BW19	Crooked Lake	Little Wekiva Canal	28.59846	-81.47885
OCEPD	BW41	Lake McCoy (center)	Rock Springs Run	28.68833	-81.49658
OCEPD	BW52	Lake Prevatt (center)	Rock Springs Run	28.70843	-81.48936
OCEPD	BW81	Sand Lake (Big Wekiva Basin) (center)	Rock Springs Run	28.72155	-81.47216
OCEPD	BWKL	Big Wekiva KL (Katie's Landing) (off bulkhead)	Upper Wekiva River	28.82918	-81.41300
OCEPD	LW7	Lake Gandy (center)	Little Wekiva Canal	28.62786	-81.43244
OCEPD	XCONTRVRS1	Little Wekiva at Riverside	Little Wekiva River	28.63272	-81.41638
Seminole County	BER	Bear Lake	Blackwater Creek	28.65687	-81.44661

SAMPLING ENTITY	STATION NUMBER OR NAME	STATION DESCRIPTION	SUBBASIN	LATITUDE	LONGITUDE
Seminole County	BRA	Lake Brantley	Upper Wekiva River	28.69270	-81.42300
Seminole County	CUB	Cub Lake	Little Wekiva Canal	28.64603	-81.44078
Seminole County	LBR	Little Bear Lake	Little Wekiva Canal	28.64659	-81.44411
Seminole County	LWEK	Little Wekiva River at State Road 434	Little Wekiva River	28.68722	-81.39694
Seminole County	MIR	Mirror Lake	Little Wekiva River	28.66826	-81.43994
Seminole County	MOB	Lake Mobile	Little Wekiva River	28.67214	-81.35355
Seminole County	MRI	Lake Marion	Springshed	28.67881	-81.36633
Seminole County	MRK	Lake Markham	Lower Wekiva River	28.80298	-81.39828
Seminole County	YNK	Yankee Lake	Lower Wekiva River	28.80020	-81.39494

**WEKIVA BASIN BMAP
SPRINGS MONITORING STATIONS**

Notes:

All stations are “core.”

Sort is by “sampling entity” and “station name.”

LAT/LONG are shown in decimal form.

SAMPLING ENTITY	STATION NUMBER OR NAME	STATION NAME	SUBBASIN	LATITUDE	LONGITUDE
OCEPD	XWEKIVASW1	Wekiwa Springs (SW – WS)	Springshed	28.71191	-81.46045
OCEPD	BWD (formerly BW82)	Wekiva Springs (near boil)	Springshed	28.71287	-81.45935
SJRWMD	Rock Spg	Rock Spring (at Apopka)	Springshed	28.75644	-81.50174
SJRWMD	Wekiwa Spg	Wekiwa Spring (at Altamonte)	Springshed	28.71189	-81.46042
SJRWMD	Miami Spg	Miami Spring (at Longwood)	Springshed	28.71017	-81.44303
SJRWMD	Palm Spg Sem SF	Palm Spring – Seminole (at Longwood)	Springshed	28.84377	-81.45009
SJRWMD	Sanlando Spg	Sanlando Spring (at Longwood)	Springshed	28.68870	-81.39530
SJRWMD	Starbuck Spg	Starbuck Spring (at Longwood)	Springshed	28.69684	-81.39106

**WEKIVA BASIN BMAP
AMBIENT GROUND WATER MONITORING STATIONS**

Notes:

All stations are “core.”

Sort is by “sampling entity” and “station name.”

Stations in boldface type and highlighted in red are currently inactive; need to consider reactivating them to collect ground water data for surficial and intermediate aquifer systems.

LAT/LONG are shown in decimal form.

SAMPLING ENTITY	STATION NUMBER	STATION NAME	STATION LOCATION DESCRIPTION	LATITUDE	LONGITUDE	DEPTH OF MONITORING ZONE
City of Apopka	MWB-3	WAFR#5443/65630, GMS#3048A13435	Sprayfield – South Field Cleveland St. – Background Well	28.651428	-81.49859	44
City of Apopka	MWB-6	WAFR#5438/5453/65633, GMS#3048A13440	Sprayfield – East Field Cleveland St. – Background Well	28.654698	-81.49984	43
City of Mt. Dora	MW-4	MW-4	City of Mt. Dora WWTF Sprayfield – Background Well	28.607417	-81.54806	77.66
City of Mt. Dora	MW-13	MW-13	City of Mt. Dora WWTF Christian Home Irrigation – Background Well	28.607417	-81.54806	149.35
City of Winter Garden	MWC-1	MWC-1	Background well associated with RIBs – also referred to as MW-B	28.607417	-81.54806	22
Lake County WRM Lab	EUS-AB2	EUS-AB2	Eustis Spray Field – Background Well	28.842493	-81.57229	160
Lake County WRM Lab	FS39	FS39	Mt. Plymouth Rd. fire station	28.807449	-81.53620	Unknown possibly available from SJRWMD
Lake County WRM Lab	Irrigation well	Irrigation well	Irrigation well at intersection of State Road 44 and County Road 437	28.84648	-81.55724	Depth is 135 feet; casing to 84 feet
OCEPD	XWEKIVAMW15	MW-15	996 Piedmont Oaks Dr.	28.665336	-81.47100	15
OCEPD	XWEKIVAMW17	MW-17	60 N. Cervidac Dr.	28.678423	-81.50014	10
OCEPD	XWEKIVAMW20	MW-20	2112 Wekiva Oaks Dr.	28.662893	-81.47187	10
OCEPD	XWEKIVAMW6	MW-6	1516 Sunset View Cir.	28.679283	-81.47840	10
OCEPD	XWEKIVAMW7	MW-7	1525 Sunsetview Cir.	28.679028	-81.47823	10
OCEPD	XWEKIVAMW10	MW-10	2421 Cimmaron Ash Way	28.678655	-81.46516	15

SAMPLING ENTITY	STATION NUMBER	STATION NAME	STATION LOCATION DESCRIPTION	LATITUDE	LONGITUDE	DEPTH OF MONITORING ZONE
OCEPD	XWEKIVAMW3	MW-3	2241 Park Village Pl.	28.708823	-81.47158	15
OCEPD	XWEKIVAMW1	MW-1	1750 Gulf Winds Ct.	28.709476	-81.50432	10
Orange County Utilities	5252	MWB-12	Northwest Water Reclamation Facility – Apopka, FL – Background	28.62252	-81.52725	30
Orange County Utilities	57407	MWB-11	Northwest Water Reclamation Facility – Apopka, FL – Background	28.63931	-81.53269	53
Orange County Utilities	6-06	6-06 / 5147	WCII RIB Site 6 – Background Well	28.49825	-81.61243	40.21
SJRWMD	L-0701	Cardinal Ln	Cardinal Lane at Mount Plymouth	28.83667	-81.57722	35
SJRWMD	OR0106	Plymouth Twr	Plymouth Tower Deep	28.70836	-81.58089	395
SJRWMD	OR0107	Plymouth Twr	Plymouth Tower Surficial	28.70836	-81.58089	40
SJRWMD	OR0547	Wekiva Spg SP	Wekiva Springs State Park	28.71117	-81.58089	645
SJRWMD	OR0548	Wekiva Spg SP	Wekiva Springs State Park	28.71117	-81.58089	155
SJRWMD	OR0546	Wekiva Spg SP	Wekiva Springs State Park	28.71117	-81.58089	60
SJRWMD	OR0796	Crate Mill	Crate Mill at Apopka	28.66639	-81.50861	270
SJRWMD	OR0894	Prevatt Lk	Prevatt Lake	28.70759	-81.48812	20
SJRWMD	OR1108	Lk Gem ES Wells	Lake Gem ES Wells	28.60509	-81.48859	39
SJRWMD	OR1110	Lk Gem ES Wells	Lake Gem ES Wells	28.60509	-81.48859	180
SJRWMD	OR1109	Lk Gem ES Wells	Lake Gem ES Wells	28.60509	-81.48859	90
SJRWMD	OR1121	Johns LK E Wells	Johns Lake E Wells (surficial aquifer)	28.52914	-81.61033	30
SJRWMD	OR1123	Johns LK E Wells	Johns Lake E Wells	28.52914	-81.61033	170
SJRWMD	S-1310	Yankee Lk	Yankee Lake STP at Sanford	28.82398	-81.39738	35
SJRWMD	S-1230	Yankee Lk	Yankee Lake STP at Sanford	28.82398	-81.39738	403

SAMPLING ENTITY	STATION NUMBER	STATION NAME	STATION LOCATION DESCRIPTION	LATITUDE	LONGITUDE	DEPTH OF MONITORING ZONE
SJRWMD	S-1014	Charlotte St	Charlotte St. at Altamonte Springs	28.68239	-81.35551	300
SJRWMD	S-1015	Charlotte St	Charlotte St. at Altamonte Springs	28.68239	-81.35551	50
SJRWMD	L-0814	Seminole SF New	Seminole State Forest – New at Cassia	28.88986	-81.46083	38
SJRWMD	L-0815	Seminole SF New	Seminole State Forest – New at Cassia	28.88986	-81.46083	72
SJRWMD	L-0816	Seminole SF New	Seminole Forest – New at Cassia	28.88986	-81.46083	220
SJRWMD	S-0716	Sylvan Lake	Sylvan Lake (surficial aquifer)	28.4805879	-81.2302.459	20
SJRWMD	S-0717	Sylvan Lake	Sylvan Lake (intermediate aquifer)	28.4805884	-81.2302408	64
SJRWMD	S-0718	Sylvan Lake	Sylvan Lake (upper Floridan aquifer)	28.4805849	-81/2302.51	202
SJRWMD	OR0650	Rock Spg Wells	Rock Springs Wells at Sorrento	28.77608	-81.43899	15
SJRWMD	OR0651	Rock Spg Wells	Rock Springs Wells at Sorrento	28.77608	-81.43899	72
SJRWMD	OR0652	Rock Spg Wells	Rock Springs Wells at Sorrento	28.77608	-81.43899	506
SJRWMD	OR0662	Rock Spg Wells	Rock Springs Wells at Sorrento	28.77608	-81.43899	180
SJRWMD	OR0661	Crate Mill	Crate Mill at Apopka (surficial aquifer)	28.66685	-81.50845	44
SJRWMD	15474992	Prevatt Lk	Prevatt Lake (upper Floridan aquifer)	28.70757	-81.48812	140
SJRWMD	L-0929	Lk Norris Wells	Lake Norris Wells at Paisley (surficial aquifer)	28.92272	-81.56993	25
SJRWMD	L-0930	Lk Norris Wells	Lake Norris Wells at Paisley (intermediate confining aquifer)	28.92272	-81.56993	95.5
SJRWMD	L-0935	Lk Norris Wells	Lake Norris Wells at Paisley (upper Floridan aquifer)	28.92272	-81.56993	238

**WEKIVA BASIN BMAP
WATER QUALITY AND FLOW STATIONS**

Notes:

- = Empty cell/no data

LAT/LONG are shown in decimal form.

SAMPLING ENTITY	STATION NUMBER OR NAME	STATION NAME	SUBBASIN	LATITUDE	LONGITUDE
OCEPD	BWB	Big Wekiva B (Wekiva Marina)	Upper Wekiva River	28.71366	-81.44538
OCEPD	BWKP	Big Wekiva KP (Kelly Park)	Rock Springs Run	28.75612	-81.49861
OCEPD	LWA	Little Wekiva A (Silver Star Rd.)	Little Wekiva River	28.57816	-81.43447
OCEPD	LWB	Little Wekiva B (North OBT)	Little Wekiva River	28.60938	-81.42723
OCEPD	LWD	Little Wekiva D (Oranole Rd.)	Little Wekiva River	28.64000	-81.42420
OCEPD	BWD	Wekiva Springs (formerly BW82)	-	28.71287	-81.45935
SJRWMD	02235000	02235000/ Wekiva River at State Road 46	Wekiva River	28.81523	-81.41948
SJRWMD	BWC44	Blackwater Creek at State Road 44/44A	Blackwater Creek	28.87464	-81.48942
SJRWMD	Rock Spg	Rock Spring	-	28.75644	-81.50174
SJRWMD	Wekiwa Spg	Wekiwa Spring	-	28.71189	-81.46042
SJRWMD	Miami Spg	Miami Spring	-	28.71017	-81.44303
SJRWMD	Palm Spg Sem	Palm Spring – Seminole	-	28.84377	-81.45009
SJRWMD	Sanlando Spg	Sanlando Spring	-	28.68870	-81.39530
SJRWMD	Starbuck Spg	Starbuck Spring	-	28.69684	-81.39106

**WEKIVA BASIN BMAP
FLOW ONLY STATIONS**

Notes:

LAT/LONG are shown in decimal form.

SAMPLING ENTITY	STATION NUMBER	STATION DESCRIPTION	SUBBASIN	LATITUDE	LONGITUDE
OCEPD	XCONTRVRSD1	Little Wekiva at Riverside	Little Wekiva River	28.63272	-81.41638
SJRWMD	30143084	Blackwater Creek DeBary	Blackwater Creek	28.85750	-81.43691
SJRWMD	09512135	Wekiva River Railroad Bridge	Lower Wekiva River	28.79264	-81.41336
SJRWMD/USGS	08561939	Little Wekiva River (at Altamonte Springs)	Little Wekiva River	28.68708	-81.39714

**WEKIVA BASIN BMAP
BIOLOGICAL MONITORING STATIONS**

NOTES:

NO stations are 'core.'

All stations are supplemental.

Sort is by 'sampling entity' and 'station name.'

LAT/LONG is presented in decimal form.

- = Empty cell/no data

N/A = Not applicable

SAMPLING ENTITY	STATION NUMBER	STATION NAME	STATION LOCATION DESCRIPTION	STATION TYPE	SAMPLE TYPE
City of Orlando/OCEPD	City Number = N/A; Orange County Number = NPDES[Date]-1/LWO	Little Wekiva River	100 meters of stream – West of All American Blvd; South of Edgewater Dr (located ~ 750 feet due west of intersection of All American Blvd./Edgewater Dr.)	Macroinvertebrate Assessment	Grab + biological
OCEPD	BWKP	Big Wekiva KP (Kelly Park)	Down by bathing beach boardwalk	Water Quality, Flow	SCI
OCEPD	LW7	Gandy	Lake Center	Water Quality	Aquatic vegetation assessment
OCEPD	LWD	Little Wekiva D (Oranole Rd)	Sample north side of bridge	Water Quality, Flow	SCI
Seminole County	BER	Bear	Bear Lake	Vegetation Assessment	LVI
Seminole County	BER	Bear	Bear Lake	Macroinvertebrate Assessment	LCI
Seminole County	BER	Bear	Bear Lake	Whole Lake Assessment	Aquatic vegetation assessment
Seminole County	BRA	Brantley	Lake Brantley	Vegetation Assessment	LVI
Seminole County	BRA	Brantley	Lake Brantley	Macroinvertebrate Assessment	LCI
Seminole County	BRA	Brantley	Lake Brantley	Whole Lake Assessment	Aquatic vegetation assessment
Seminole County	CUB	Cub	Cub Lake	Vegetation Assessment	LVI
Seminole County	CUB	Cub	Cub Lake	Whole Lake Assessment	Aquatic vegetation assessment
Seminole County	LBR	Little Bear	Little Bear	Vegetation Assessment	LVI

SAMPLING ENTITY	STATION NUMBER	STATION NAME	STATION LOCATION DESCRIPTION	STATION TYPE	SAMPLE TYPE
Seminole County	LBR	Little Bear	Little Bear	Whole Lake Assessment	Aquatic vegetation assessment
Seminole County	LWEK	Little Wekiva River – SR434	Little Wekiva River at West State Road 434	Macroinvertebrate Assessment	BioRecon
Seminole County	MRK	Markham	Lake Markham	Whole Lake Assessment	Aquatic vegetation assessment
Seminole County	MIR	Mirror	Mirror Lake	Macroinvertebrate Assessment	LCI
Seminole County	MIR	Mirror	Mirror Lake	Whole Lake Assessment	Aquatic vegetation assessment
Seminole County	MOB	Mobile	Lake Mobile	Vegetation Assessment	LVI
Seminole County	MOB	Mobile	Lake Mobile	Macroinvertebrate Assessment	LCI
Seminole County	SPG	Spring	Spring Lake	Vegetation Assessment	LVI
Seminole County	SPG	Spring	Spring Lake	Macroinvertebrate Assessment	LCI
Seminole County	SPR	Spring	Spring Lake	Whole Lake Assessment	Aquatic vegetation assessment
Seminole County	SPRW	Springwood	Springwood	Whole Lake Assessment	Aquatic vegetation assessment
Seminole County	SPRWW	Springwood Waterway	Springwood Waterway	Whole Lake Assessment	Aquatic vegetation assessment
Seminole County	SYL	Sylvan	Lake Sylvan	Vegetation Assessment	LVI
Seminole County	SYL	Sylvan	Lake Sylvan	Macroinvertebrate Assessment	LCI
Seminole County	SYL	Sylvan	Lake Sylvan	Whole Lake Assessment	Aquatic vegetation assessment
SJRWMD	RSR3	-	Rock Springs Run	SAV/Algal Survey	Aquatic vegetation assessment
SJRWMD	RSR2	-	Rock Springs Run	SAV/Algal Survey	Aquatic vegetation assessment
SJRWMD	RSR1	-	Rock Springs Run	SAV/Algal Survey	Aquatic vegetation assessment
SJRWMD	RSR4	-	Rock Springs Run	SAV/Algal Survey	Aquatic vegetation assessment

SAMPLING ENTITY	STATION NUMBER	STATION NAME	STATION LOCATION DESCRIPTION	STATION TYPE	SAMPLE TYPE
SJRWMD	RSR5	-	Rock Springs Run	SAV/Algal Survey	Aquatic vegetation assessment
SJRWMD	RSR6	-	Rock Springs Run	SAV/Algal Survey	Aquatic vegetation assessment
SJRWMD	RSR7	-	Rock Springs Run	SAV/Algal Survey	Aquatic vegetation assessment
SJRWMD	RSR8	-	Rock Springs Run	SAV/Algal Survey	Aquatic vegetation assessment
SJRWMD	RSR9	-	Rock Springs Run	SAV/Algal Survey	Aquatic vegetation assessment
SJRWMD	RSR10	-	Rock Springs Run	SAV/Algal Survey	Aquatic vegetation assessment
SJRWMD	RSR11	-	Rock Springs Run	SAV/Algal Survey	Aquatic vegetation assessment
SJRWMD	RSR12	-	Rock Springs Run	SAV/Algal Survey	Aquatic vegetation assessment
SJRWMD	RSR13	-	Rock Springs Run	SAV/Algal Survey	Aquatic vegetation assessment
SJRWMD	RSR14	-	Rock Springs Run	SAV/Algal Survey	Aquatic vegetation assessment
SJRWMD	RSR15	-	Rock Springs Run	SAV/Algal Survey	Aquatic vegetation assessment
SJRWMD	RSR16	-	Rock Springs Run	SAV/Algal Survey	Aquatic vegetation assessment
SJRWMD	WEKR1	-	Wekiva River	SAV/Algal Survey	Aquatic vegetation assessment
SJRWMD	WEKR2	-	Wekiva River	SAV/Algal Survey	Aquatic vegetation assessment
SJRWMD	WEKR3	-	Wekiva River	SAV/Algal Survey	Aquatic vegetation assessment
SJRWMD	WEKR4	-	Wekiva River	SAV/Algal Survey	Aquatic vegetation assessment
SJRWMD	WEKR5	-	Wekiva River	SAV/Algal Survey	Aquatic vegetation assessment
SJRWMD	WEKR6	-	Wekiva River	SAV/Algal Survey	Aquatic vegetation assessment
SJRWMD	WEKR7	-	Wekiva River	SAV/Algal Survey	Aquatic vegetation assessment

SAMPLING ENTITY	STATION NUMBER	STATION NAME	STATION LOCATION DESCRIPTION	STATION TYPE	SAMPLE TYPE
SJRWMD	WEKR8	-	Wekiva River	SAV/Algal Survey	Aquatic vegetation assessment
SJRWMD	WEKR9	-	Wekiva River	SAV/Algal Survey	Aquatic vegetation assessment
SJRWMD	WEKR10	-	Wekiva River	SAV/Algal Survey	Aquatic vegetation assessment
SJRWMD	WEKR11	-	Wekiva River	SAV/Algal Survey	Aquatic vegetation assessment
SJRWMD	WEKR12	-	Wekiva River	SAV/Algal Survey	Aquatic vegetation assessment
SJRWMD	WEKR13	-	Wekiva River	SAV/Algal Survey	Aquatic vegetation assessment
SJRWMD	WEKR14	-	Wekiva River	SAV/Algal Survey	Aquatic vegetation assessment
SJRWMD	WEKR15	-	Wekiva River	SAV/Algal Survey	Aquatic vegetation assessment
SJRWMD	WEKR16	-	Wekiva River	SAV/Algal Survey	Aquatic vegetation assessment
SJRWMD	WEKR17	-	Wekiva River	SAV/Algal Survey	Aquatic vegetation assessment
SJRWMD	WEKR18	-	Wekiva River	SAV/Algal Survey	Aquatic vegetation assessment
SJRWMD	WEKR19	-	Wekiva River	SAV/Algal Survey	Aquatic vegetation assessment
SJRWMD	WEKR20	-	Wekiva River	SAV/Algal Survey	Aquatic vegetation assessment
SJRWMD	WEKR21	-	Wekiva River	SAV/Algal Survey	Aquatic vegetation assessment
SJRWMD	WEKR22	-	Wekiva River	SAV/Algal Survey	Aquatic vegetation assessment
SJRWMD	WEKR23	-	Wekiva River	SAV/Algal Survey	Aquatic vegetation assessment
SJRWMD	WEKR24	-	Wekiva River	SAV/Algal Survey	Aquatic vegetation assessment
SJRWMD	WEKR25	-	Wekiva River	SAV/Algal Survey	Aquatic vegetation assessment

APPENDIX G: GLOSSARY OF TERMS

303(d) List: The list of Florida's waterbodies that do not meet or are not expected to meet applicable water quality standards with technology-based controls alone.

305(b) Report: Section 305(b) of the federal Clean Water Act requires states to report biennially to the EPA on the quality of the waters in the state.

Background: The condition of waters in the absence of human-induced alterations.

Baffle Box: An underground stormwater management device that uses barriers (or baffles) to slow the flow of untreated stormwater, allowing particulates to settle out in the box before the stormwater is released into the environment.

Baseline Loading: The quantity of pollutants in a waterbody, used as a basis for later comparison.

Basin Management Action Plan (BMAP): The document that describes how a specific TMDL will be implemented; the plan describes the specific load and wasteload allocations as well as the stakeholder efforts that will be undertaken to achieve an adopted TMDL.

Basin Status Report: For the MSJR Basin, this document was published in 2003 by the Department. The report documents the water quality issues, list of water segments under consideration for a TMDL and data needs in the basin.

Best Available Technology (BAT) Economically Achievable: As defined by 40 CFR, §125.3, outlines technology-based treatment requirements in permits.

Best Management Practices (BMPs): Methods that have been determined to be the most effective, practical means of preventing or reducing pollution from nonpoint sources.

Clean Water Act (CWA): The Clean Water Act is a 1977 amendment to the Federal Water Pollution Control Act of 1972, which set the basic structure for regulating discharges of pollutants to waters of the United States.

Continuous Deflective Separation (CDS) Unit: A patented stormwater management device that uses the available energy of the storm flow to create a vortex to cause a separation of solids from fluids.

Pollutants are captured inside the separation chamber, while the water passes out through the separation screen.

Designated Use: Uses specified in water quality standards for each waterbody or segment (such as drinking water, swimmable, fishable).

Detention Pond: A stormwater system that delays the downstream progress of stormwater runoff in a controlled manner, typically by using temporary storage areas and a metered outlet device.

Domestic Wastewater: Wastewater derived principally from dwellings, business buildings, institutions and the like; sanitary wastewater; sewage.

Effluent: Wastewater that flows into a receiving stream by way of a domestic or industrial discharge point.

Environmental Protection Agency (EPA): This federal agency was created in December 1970 to address the nation's urgent environmental problems and to protect the public health. Most of the Department's regulatory programs have counterparts at the EPA or are delegated from the EPA.

Event Mean Concentration (EMC): The flow-weighted mean concentration of an urban runoff pollutant measured during a storm event.

Exfiltration: Loss of water from a drainage system as the result of percolation or absorption into the surrounding soil.

External loading: Pollutants originating from outside a waterbody that contribute to the pollutant load of the waterbody.

Flocculent: A liquid that contains loosely aggregated, suspended particles.

Florida Department of Environmental Protection (Department): The Department is Florida's principal environmental and natural resources agency. The Florida Department of Natural Resources and the Florida Department of Environmental Regulation were merged together to create the Department effective July 1, 1993.

Ground Water or Ground water: Water below the land surface in the zone of saturation where water is at or above atmospheric pressure.

Impairment: The condition of a waterbody that does not achieve water quality standards (designated use) due to pollutants or an unknown cause.

Load Allocations (LA): The portions of a receiving water's loading capacity that are allocated to one of its existing or future nonpoint sources of pollution.

Load Capacity: The greatest amount of loading that a waterbody can receive without violating water quality standards.

Loading: The total quantity of pollutants in stormwater runoff that contributes to the water quality impairment.

Margin of Safety (MOS): An explicit or implicit assumption used in the calculation of a TMDL, which takes into account any lack of knowledge concerning the relationship between effluent limitations and water quality. An explicit MOS is typically a percentage of the assimilative capacity or some other specific amount of pollutant loading (e.g., the loading from an out-of-state source). Most Department-adopted TMDLs include an implicit MOS based on the fact that the predictive model runs incorporate a variety of conservative assumptions (they examine worst-case ambient flow conditions, worst-case temperature, and assume that all permitted point sources discharge at their maximum permittable amount).

National Pollutant Discharge Elimination System (NPDES): The permitting process by which technology based and water quality-based controls are implemented.

Nonpoint Source (NPS): Diffuse runoff without a single point of origin that flows over the surface of the ground by stormwater and is then introduced to surface or ground water. NPS includes atmospheric deposition and runoff or leaching from agricultural lands, urban areas, unvegetated lands, OSTDS, and construction sites.

Nonpoint Source Pollution: Nonpoint source pollution is created by the flushing of pollutants from the landscape by rainfall and the resulting stormwater runoff, or by the leaching of pollutants through the soils into the ground water.

Outfall: The place where a sewer, drain, or stream discharges.

Particulate: A minute separate particle, as of a granular substance or powder.

Pollutant Load Reduction Goals (PLRGs): PLRGs are defined as the estimated numeric reductions in pollutant loadings needed to preserve or restore designated uses of receiving waterbodies and maintain water quality consistent with applicable state water quality standards. PLRGs are developed by the water management districts.

Point Source: An identifiable and confined discharge point for one or more water pollutants, such as a pipe, channel, vessel, or ditch.

Pollutant: Generally any substance, such as a chemical or waste product, introduced into the environment that adversely affects the usefulness of a resource.

Pollution: An undesirable change in the physical, chemical, or biological characteristics of air, water, soil, or food that can adversely affect the health, survival, or activities of humans or other living organisms.

Removal efficiency: A description of how much of a given substance (metals, sediment, etc.) has been extracted from another substance.

Retention Pond: A stormwater management structure whose primary purpose is to permanently store a given volume of stormwater runoff, releasing it by infiltration and /or evaporation.

Reuse: The deliberate application of reclaimed water for a beneficial purpose. Criteria used to classify projects as “reuse” or “effluent disposal” are contained in Subsection 62-610.810, F.A.C.

Quality Assurance (QA): An integrated system of management activities involving planning, implementation, documentation, assessment, reporting, and quality improvement to ensure that a process, product, or service meets defined standards of quality.

Quality Control (QC): The overall system of technical activities that measures the attributes and performance of a process, product, or service against defined standards to verify that they meet the established data quality objectives.

Septic Tank: A watertight receptacle constructed to promote the separation of solid and liquid components of wastewater, to provide the limited digestion of organic matter, to store solids, and to allow clarified liquid to discharge for further treatment and disposal in a soil absorption system.

STORET: The EPA's STOrage and RETrieval database, used nationally for water quality data storage.

Stormwater Runoff: The portion of rainfall that hits the ground and is not evaporated, percolated, or transpired into vegetation, but rather flows over the ground surface seeking a receiving water body.

Surface Water: Water on the surface of the earth, whether contained in bounds created naturally or artificially or diffused. Water from natural springs is classified as surface water when it exits the spring onto the earth's surface.

Surface Water Improvement and Management (SWIM) Waterbody: A waterbody designated by statute or by a water management district for priority management to restore and maintain water quality, habitat, and other natural features of the waterbody. The MSJR Basin has this special designation.

Total Maximum Daily Load (TMDL): The sum of the individual wasteload allocations for point sources and the load allocations for nonpoint sources and natural background. Prior to determining individual wasteload allocations and load allocations, the maximum amount of a pollutant that a waterbody or waterbody segment can assimilate from all sources while still maintaining its designated use must first be calculated. TMDLs are based on the relationship between pollutants and instream water quality conditions.

Wasteload Allocations (WLAs): Pollutant loads allotted to existing and future point sources, such as discharges from industry and sewage facilities.

Wastewater: The combination of liquid and pollutants from residences, commercial buildings, industrial plants, and institutions, together with any ground water, surface runoff, or leachate that may be present.

Waterbody Identification (WBID) Numbers: WBIDs are numbers assigned to hydrologically based drainage areas in a river basin.

Water Quality Standards (WQSs): (1) Standards that comprise the designated most beneficial uses (classification of water), the numeric and narrative criteria applied to the specific water use or classification, the Florida Anti-degradation Policy, and the moderating provisions contained in Rules 62-302 and 62-4, F.A.C. (2) State-adopted and EPA-approved ambient standards for waterbodies. The standards prescribe the use of the waterbody (such as drinking, fishing and swimming, and shellfish harvesting) and establish the water quality criteria that must be met to protect designated uses.

Watershed: Topographic area that contributes or may contribute runoff to specific surface waters or an area of recharge.

Watershed Management Approach: The process of addressing water quality concerns within their natural boundaries, rather than political or regulatory boundaries. The process draws together all the participants and stakeholders in each basin to decide what problems affect the water quality in the basin, which are most important, and how they will be addressed.

APPENDIX H: BIBLIOGRAPHY OF KEY REFERENCES AND WEBSITES

REFERENCES:

- Bailey, N. June 8, 2008. *Nutrient and dissolved oxygen TMDL for the Little Wekiva Canal, WBID 3004*. TMDL report. Tallahassee, FL: Division of Water Resource Management, Florida Department of Environmental Protection.
- Bottcher, D. July 14, 2008. Nutrient loading rates, reduction factors and implementation costs associated with BMPs and technologies. *Soil and Water Engineering Technology, Inc.*
- Camp Dresser McKee. 2005. *Watershed Management Model (WMM)*. Rouge River National Wet Weather Demonstration Project.
- . November 2005; updated March 2006. *Wekiva Parkway and Protection Act Master Stormwater Management Plan support final report, Appendix E*. Prepared for the St. Johns River Water Management District and others.
- Cichon, J.R., A.E. Baker, A.R. Wood, and J.D. Arthur. 2005. Wekiva aquifer vulnerability assessment. *Florida Geological Survey RI No. 104*.
- Florida Department of Environmental Protection. 2004. *A strategy for water quality protection: Wastewater treatment in the Wekiva Study Area*. A report to the Governor and Department of Community Affairs, submitted under Section 369.318(1), F.S.
- . January 2007. *Best management practices for the enhancement of environmental quality on Florida golf courses*.
- Gao, X. April 18, 2008. *Nutrient TMDLs for the Wekiva River (WBIDs 2956, 2956A, and 2956C) and Rock Springs Run (WBID 2967)*. TMDL report. Tallahassee, FL: Division of Water Resource Management, Florida Department of Environmental Protection.
- Hall, P., and S.J. Clancy. June 4, 2009. *The Florida statewide inventory of onsite sewage treatment and disposal systems (OSTDS)*. Final draft report to the Florida Department of Health by EarthSTEPS and GlobalMind.

Harper, H.H., and D.B. Baker. 2003. *Evaluation of alternative stormwater regulations for southwest Florida*. Submitted to the Water Enhancement & Restoration Coalition, Inc. Prepared by Environmental Research & Design, Inc.

Harrington, D., G. Maddox, and R. Hicks. February 2010. *Florida Springs Initiative Monitoring Network report and recognized sources of nitrate*. Tallahassee, FL: Ground Water Management Section, Division of Environmental Assessment and Restoration, Florida Department of Environmental Protection.

Katz, B.G., D.W. Griffin, P.B. McMahon, H. Harden, E. Wade, R.W. Hicks, and J.P. Chanton. 2010. Fate of effluent-borne contaminants beneath septic tank drainfields overlying a karst aquifer. *Journal of Environmental Quality* 39: 1181–1195.

MACTEC. March 2010. *Wekiva River Basin nitrate sourcing study. Final report*. MACTEC Project No. 6063090160A. Prepared for the St. Johns River Water Management District and Florida Department of Environmental Protection.

Mattson, R.A., E.F. Lowe, C.L. Lippincott, and L. Battoe. 2006. *Wekiva River and Rock Springs Run pollutant load reduction goals*. Report to the Florida Department of Environmental Protection. Palatka, FL: St. Johns River Water Management District.

McGurk, B. May 2000. Estimating spring recharge areas—an example from the Wekiva River Basin area of east-central Florida. St. Johns River Water Management District Presentation.

St. Johns River Water Management District. 2009. 2009 Land use and land cover. Land cover and land use in the St. Johns River Water Management District based on 2009 color infrared aerial photography. This layer is a copy of the 2004 land use/land cover dataset, with updates based on conditions in the 2009 photography.

———. 2011. *Monitoring submerged aquatic vegetation and macroalgae in the Wekiva River and Rock Springs Run. Annual report 2011*. Submitted to satisfy requirements of Permit No. 02161113. Florida Department of Environmental Protection, Division of Recreation and Parks.

Toth, D.J., and C. Fortich. 2002. *Nitrate concentrations in the Wekiva groundwater basin, with emphasis on Wekiva Springs*. St. Johns River Water Management District Technical Publication SJ2002-2.

University of Central Florida. March 31, 2009. *Wekiva residential fertilizer practices*. Florida Department of Environmental Protection Contract G0078. Orlando, FL: Stormwater Management Academy.

WEBSITES:

TABLE G-1: STORMWATER AND WATER QUALITY PROTECTION WEBSITES

- = Empty cell

WEBSITE	URL
LOCAL AND REGIONAL SITES	-
SJRWMD	http://www.floridaswater.com/
Seminole County Water Atlas	http://www.seminole.wateratlas.usf.edu/
STATE SITES	-
General Portal for Florida	http://www.myflorida.com
Department	http://www.dep.state.fl.us/
Watershed Management	http://www.dep.state.fl.us/water/watersheds/index.htm
TMDL Program	http://www.dep.state.fl.us/water/tmdl/index.htm
BMPs, Public Information, and Environmental Education Resources	http://www.dep.state.fl.us/water/nonpoint/pubs.htm
NPDES Stormwater Program	http://www.dep.state.fl.us/water/stormwater/npdes/index.htm
Nonpoint Source Funding Assistance	http://www.dep.state.fl.us/water/nonpoint/319h.htm
Middle St. Johns River Assessment Report	http://www.dep.state.fl.us/water/basin411/sj_middle/assessment.htm
Adopted BMAPs	http://www.dep.state.fl.us/water/watersheds/bmap.htm
Wekiva BMAP Development Documents	http://publicfiles.dep.state.fl.us/DEAR/BMAP/Wekiva/
FDACS OAWP	http://www.floridaagwaterpolicy.com/
NATIONAL SITES	-
Center for Watershed Protection	http://www.cwp.org/
EPA Office of Water	http://www.epa.gov/water
EPA Region 4 (Southeast)	http://www.epa.gov/region4
Clean Water Act History	http://www.epa.gov/lawsregs/laws/cwahistory.html
USGS: Florida Waters	http://sofia.usgs.gov/publications/reports/floridawaters/#options