Florida Department of Environmental Protection

Springs Coast Basin Management Action Plans (BMAPs)

January 18, 2017

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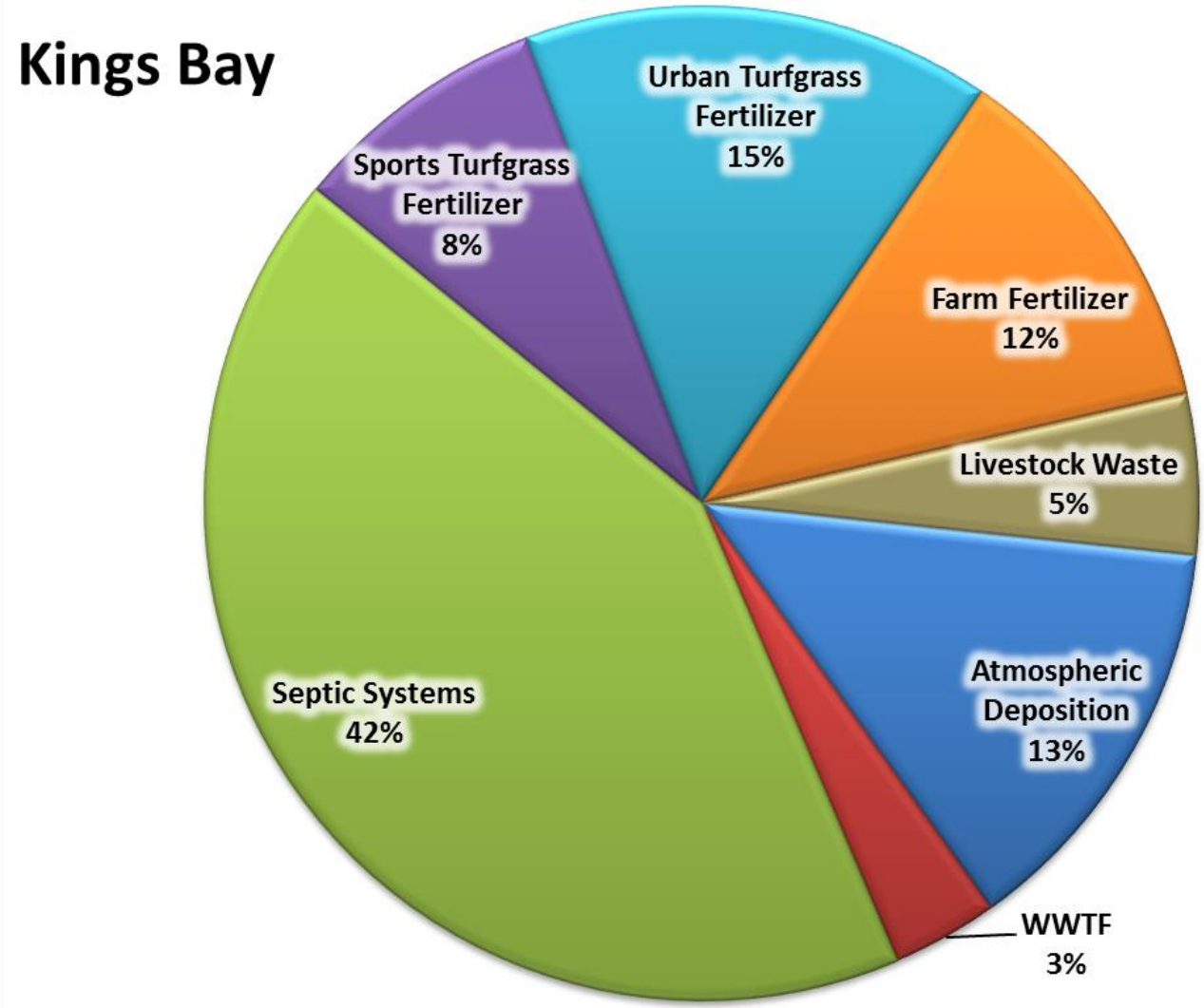
Pollutant Loading and Reduction Milestones

Kings Bay N Loading to Groundwater



Estimated Load to Groundwater: 600,000 lb-N/yr

Estimated TMDL Load: 200,000 lb-N/yr

CR/KB Nitrogen Reductions by Source

Source	Estimated Portion of Total Load (%)	Estimated Total Nitrogen Load to Groundwater (lb-N/yr)	Estimated Load Reduction (lb-N/yr) [Groundwater Load – TMDL Load (x) %]
Septic systems	42 %	252,000	168,000
Urban turfgrass fertilizer	15 %	91,500	60,000
Atmospheric deposition	13 %	81,000	56,000
Farm fertilizer	12 %	71,500	48,000
Sports turfgrass fertilizer	8 %	50,500	32,000
Livestock waste	5 %	31,500	20,000
WWTF	4 %	22,000	16,000
	100 %	**600,000**	**400,000**

TMDL = total maximum daily load

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CR/KB Nitrogen Reduction Schedule

Source	5-Year Milestone (30 % of Total) (lb-N/yr)	10-Year Milestone (50 % of Total) (lb-N/yr)	15-Year Milestone (20 % of Total) (lb-N/yr)	Total Nitrogen Reduction (100 %) (lb-N/yr)
Septic systems	50,400	84,000	33,600	168,000
Urban turfgrass fertilizer	18,000	30,000	12,000	60,000
Atmospheric deposition	16,800	28,000	11,200	56,000
Farm fertilizer	14,400	24,000	9,600	48,000
Sports turfgrass fertilizer	9,600	16,000	6,400	32,000
Livestock waste	6,000	10,000	4,000	20,000
Waste water treatment facility (WWTF)	4,800	8,000	3,200	16,000
	120,000	**200,000**	**80,000**	**400,000**

Draft January 2017

CR/KB Septic Systems Reductions

	5-Year Milestone (30 % of Total)	10-Year Milestone (50 % of Total)	15-Year Milestone (20 % of Total)	Total Reduction (100 %)
Total Nitrogen Reduction	50,400 lb-N/yr	84,000 lb-N/yr	33,600 lb-N/yr	**168,000 lb-N/yr**
Septic System Options to Meet Reduction Goals				
Enhancement in medium recharge area	17,231	28,718	11,487	**57,436**
Enhancement in high recharge area	9,573	15,954	6,382	**31,909**
Replacement in medium recharge area	11,721	19,535	7,814	**39,070**
Replacement in high recharge area	6,545	10,909	4,364	**21,818**

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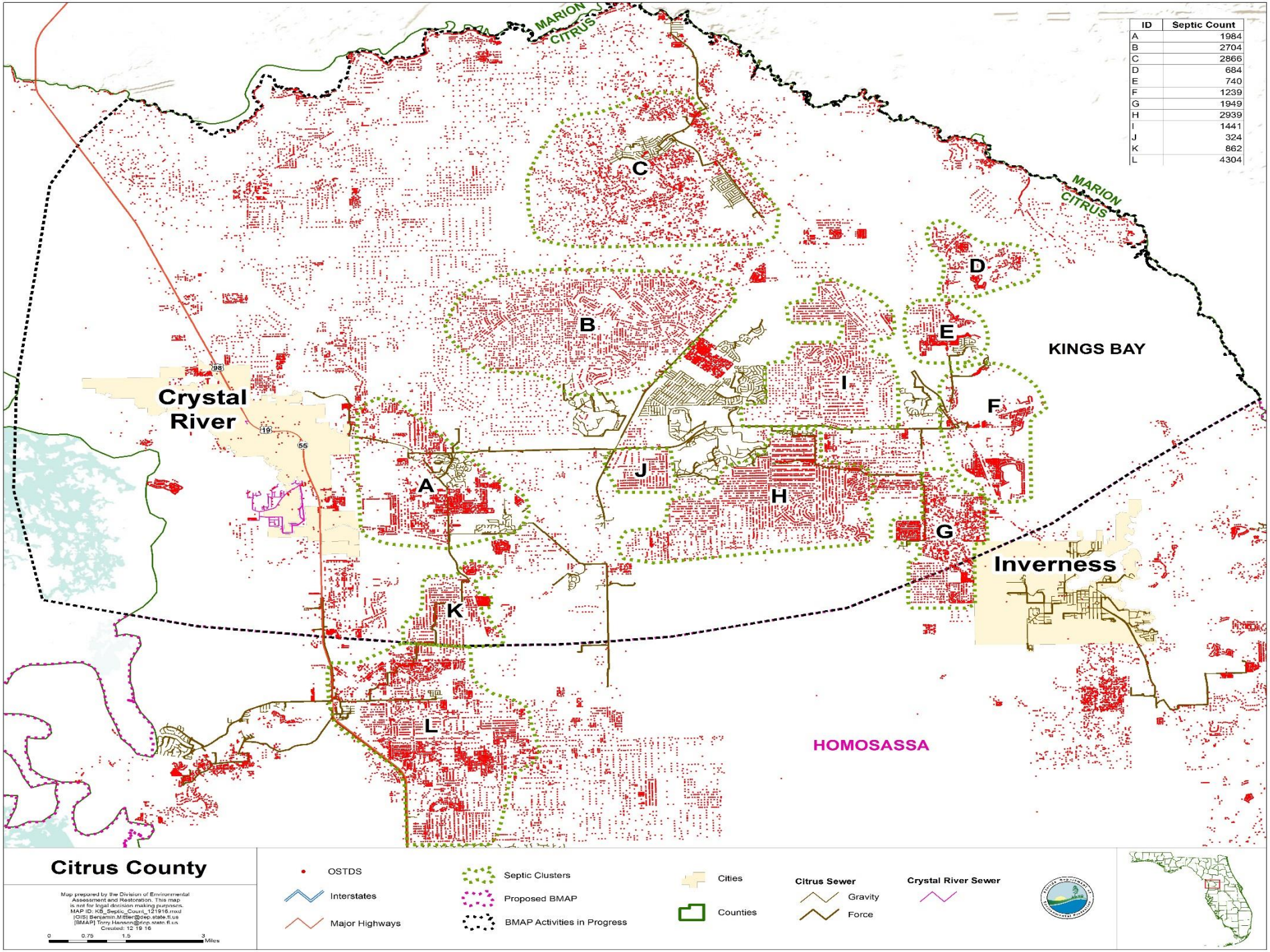
Notes:

1. One septic system averages 18 lb-N/year loading (based on two persons per household at 9.012 lb-N/person).
2. Septic enhancement achieves 65% reduction in overall loading to groundwater (35% continues to groundwater).
3. Septic replacement achieves 95% reduction in existing load to groundwater.


MARION
CITRUS
MARION
CITRUS
KINGS BAY
Crystal River
Inverness
HOMOSASSA
98
19
55
A
B
C
D
E
F
G
H
I
J
K
L
ID | Septic Count
A | 1984
B | 2704
C | 2866
D | 684
E | 740
F | 1239
G | 1949
H | 2939
I | 1441
J | 324
K | 862
L | 4304
Citrus County
Map prepared by the Division of Environmental Assessment and Restoration. This map is not for legal decision making purposes.
MAP ID: KB_Septic_Count_121916.mxd
[GIS] Benjamin.Mittler@dep.state.fl.us
[BMAP] Terry.Hansen@dep.state.fl.us
Created: 12 19 16
0 0.75 1.5 3 Miles
OSTDS
Interstates
Major Highways
Septic Clusters
Proposed BMAP
BMAP Activities in Progress
Cities
Counties
Citrus Sewer
Gravity
Force
Crystal River Sewer

Calculating Source Load Reductions

- Estimated source load to surface (from the Nitrogen Source Inventory Loading Tool [NSILT]) X % reduction the best management practice (BMP) action is estimated to achieve = source surface load “credit.”
- This “credit” X attenuation X recharge factor = reduction in source load to groundwater.
- Evaluate this groundwater load reduction against the 5/10/15-year targets.

CR/KB Nitrogen Reductions by Source

Source	Estimated Load Reduction (lb-N/yr) [Groundwater Load – TMDL Load (x) %]	Estimated % Reductions	Total "Credit" Generated (lb-N/yr)
Septic systems	168,000	# tanks	3/5 to 4/8 per tank
Urban turfgrass fertilizer	60,000	6 % to land surface input	7K to 13K
Atmospheric deposition	56,000	NA	
Farm fertilizer	48,000	13 % to 15 % reduction in groundwater nitrate	9.3K to 11K
Sports turfgrass fertilizer (STF)*	32,000	6 % to land surface input	0.3 / 11.5K*
Livestock waste	20,000	5 % to land surface input	1.5K to 14K
WWTF	16,000	Based on design & permit	
	400,000		

*STF = Sports Fields / Golf Courses

Draft January 2017

Golf Course Land Surface Inputs

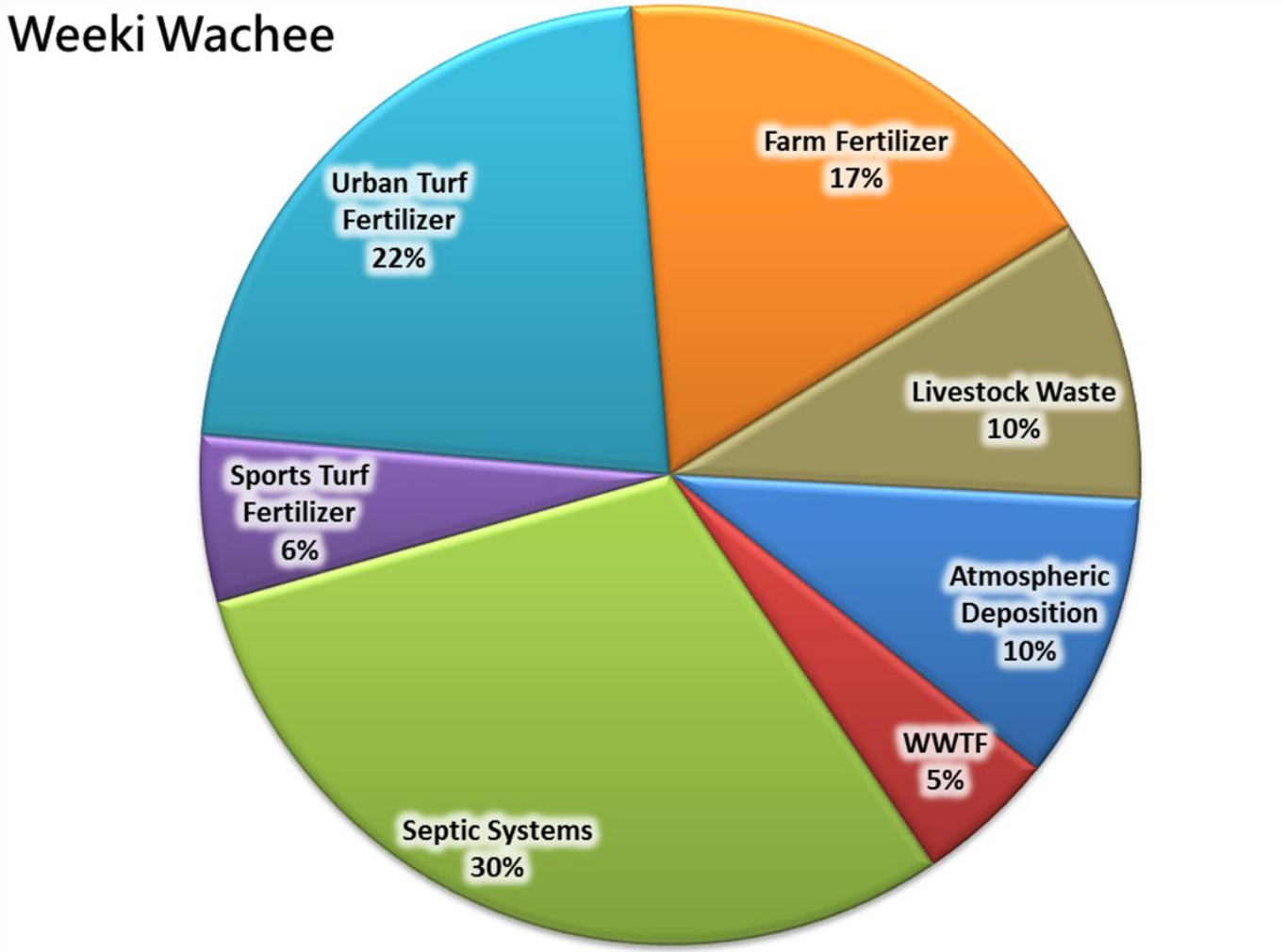
Crystal River/Kings Bay

Table 6: Summary of urban fertilizer input of nitrogen attributed to golf courses

† = Facility receives reuse water in addition to applied fertilizer.
* = Provided response to survey.

Golf Course	Medium-Recharge Fertilizable Land Area (acres)	High-Recharge Fertilizable Land Area (acres)	Average Application Rate (lb-N/ac)	Total Input (lb-N/yr)
Black Diamond†*		544	2.1	1,130
Citrus Hills		284	141.1	40,077
Citrus Springs		241	141.1	33,942
Lakeside*		185	13.4	2,483
Pine Ridge*		222	141.1	31,318
Seven Rivers*		163	25.8	4,204
Skyview		203	141.1	28,594
Twisted Oaks		134	141.1	18,931
Plantation Inn	198		141.1	27,911

Weeki Wachee N Loading to Groundwater



Estimated Load to Groundwater: 940,000 lb-N/yr

Estimated TMDL Load: 103,000 lb-N/yr

WW Nitrogen Reductions by Source

Source	Estimated Portion of Total Load (%)	Estimated Total Nitrogen Load to Groundwater (lb-N/yr)	Estimated Load Reduction (lb-N/yr) [Groundwater Load – TMDL Load (x) %]
Septic systems	30 %	282,875	251,100
Urban turfgrass fertilizer	22 %	209,689	184,140
Farm fertilizer	17 %	163,935	142,290
Atmospheric deposition	10 %	93,208	83,700
Livestock waste	10 %	91,347	83,700
Sports turfgrass fertilizer	6 %	53,841	50,220
WWTF	5 %	45,105	41,850
	100 %	**940,000**	**837,000**

Draft January 2017

WW Nitrogen Reduction Schedule

Source	5-Year Milestone (30 % of Total) (lb-N/yr)	10-Year Milestone (50 % of Total) (lb-N/yr)	15-Year Milestone (20 % of Total) (lb-N/yr)	Total Nitrogen Reduction (100 %) (lb-N/yr)
Septic systems	75,330	125,550	50,220	251,100
Urban turfgrass fertilizer	55,242	92,070	36,828	184,140
Farm fertilizer	42,687	71,145	28,458	142,290
Atmospheric deposition	25,110	41,850	16,740	83,700
Livestock waste	25,110	41,850	16,740	83,700
Sports turfgrass fertilizer	15,066	25,110	10,044	50,220
WWTF	12,555	20,925	8,370	41,850
	251,100	**418,500**	**167,400**	**837,000**

Draft January 2017

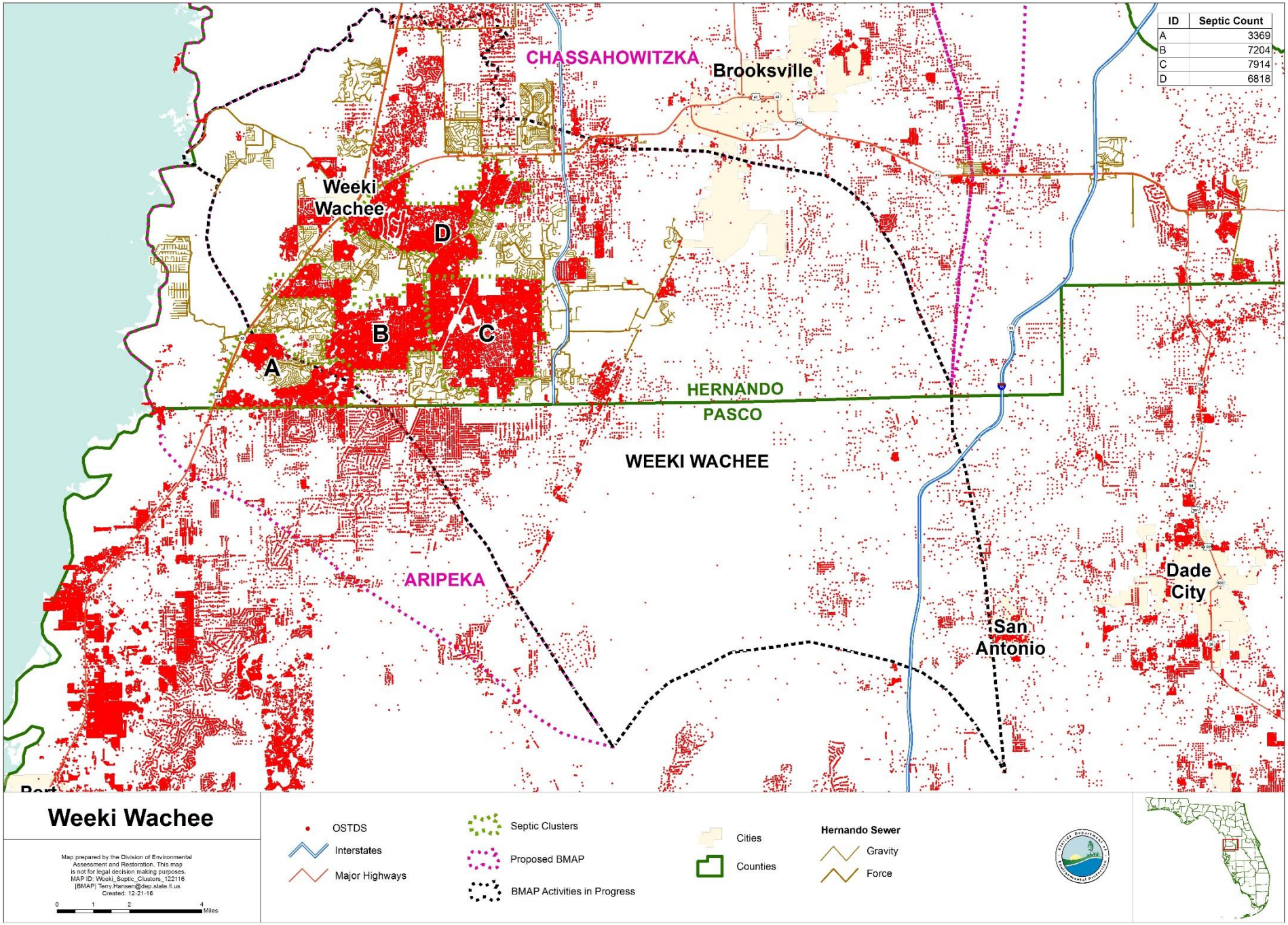
WW Septic Systems Reductions

	5-Year Milestone (30 % of Total)	10-Year Milestone (50 % of Total)	15-Year Milestone (20 % of Total)	Total Reduction (100 %)
Total Nitrogen Reduction	75,330 lb-N/yr	125,550 lb-N/yr	50,220 lb-N/yr	**251,100 lb-N/yr**
Septic System Options to meet Reduction Goals				
Enhancement in medium recharge area	21,071	35,119	14,048	**70,238**
Enhancement in high recharge area	11,706	19,510	7,804	**39,021**
Replacement in medium recharge area	14,417	24,029	13,349	**51,795**
Replacement in high recharge area	8,010	13,349	5,340	**26,699**

Draft January 2017

Notes:

1. One septic system averages 18 lb-N/year loading (based on two persons per household at 9.012 lb-N/person).
2. Septic enhancement achieves 65% reduction in overall loading to groundwater (35% continues on to groundwater).
3. Septic replacement achieves 95% reduction in existing load to groundwater.



Weeki Wachee

Map prepared by the Division of Environmental Assessment and Restoration. This map is not for legal decision making purposes.
MAP ID: Weeki_Septic_Clusters_122116
[BMAP] Terry.Hansen@dep.state.fl.us
Created: 12-21-16

0 1 2 4 Miles

- OSTDS
- Interstates
- Major Highways
- Septic Clusters
- Proposed BMAP
- BMAP Activities in Progress
- Cities
- Counties

Hernando Sewer

- Gravity
- Force

WW Nitrogen Reductions by Source

Source	Estimated Load Reduction (lb-N/yr) [Groundwater Load – TMDL Load (x) %]	Estimated % Reductions	Total "Credit" Generated (lb-N/yr)
Septic systems	251,100	# tanks	3/5 to 4/8 per tank
Urban turfgrass fertilizer	184,140	6 % to land surface input	29K
Atmospheric deposition	83,700	NA	0
Farm fertilizer	143,000	13 % to 15 % reduction in groundwater nitrate	21K to 25K
Sports turfgrass fertilizer*	50,220	6 % to land surface input	TBD
Livestock waste	83,700	5 % to land surface input	36K
WWTF	41,850	Based on design & permit	
	837,000		

*STF = Sports Fields / Golf Courses

Draft January 2017

Golf Course Land Surface Inputs

Weeki Wachee

Table 8: Summary of urban fertilizer input of nitrogen attributed to golf courses

* = Received response to survey.

Golf Club Name	County	High-Recharge Fertilizable Land Area (acres)	Medium-Recharge Fertilizable Land Area (acres)	Average Application Rate (lb-N/ac)	Total Input (lb-N/yr)
Brookridge*	Hernando	187	0	176	32,844
Glen Lakes*	Hernando	125	0	7	602
Heather*	Hernando	46	0	89	4,875
Hernando Oaks*	Hernando	139	0	141	19,624
High Point*	Hernando	70	0	78	5,489
Oak Hills	Hernando	184	0	141	26,029
Rivard	Hernando	95	0	141	13,469
Seven Hills	Hernando	129	0	141	18,164
Silverthorn	Hernando	176	0	141	24,768
Southern Hills Plantation	Hernando	162	0	141	22,824
Spring Hill	Hernando	159	0	141	22,374
Timber Pines*	Hernando	215	0	10	684
Travelers Rest RV*	Pasco	16	20	141	5,045

Aripeka N Loading to Groundwater

Magnolia-Aripeka

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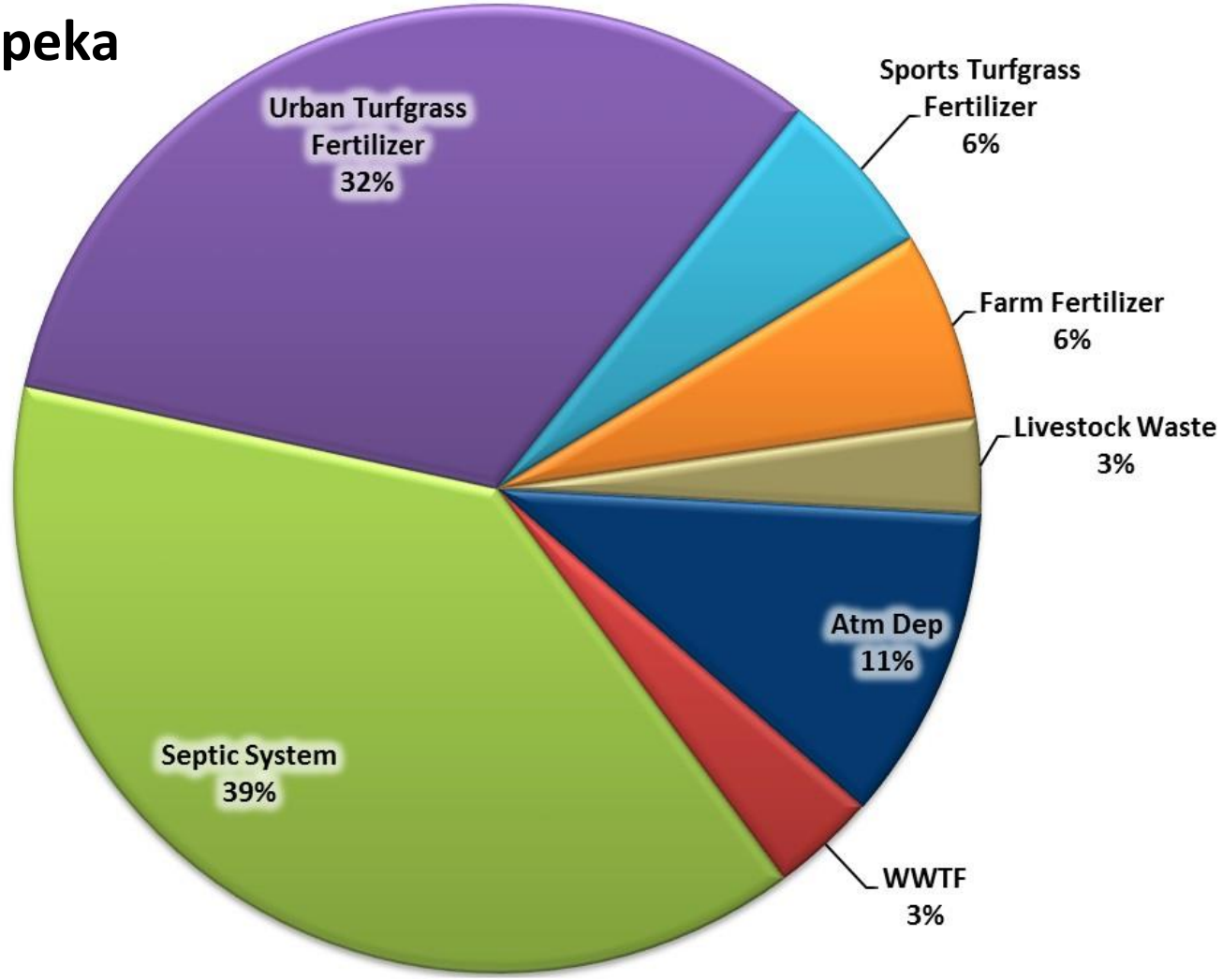

Estimated Load to Groundwater: 137,929 lb-N/yr

Estimated TMDL Load: 4,228 lb-N/yr

Aripeka Estimated N load to Groundwater

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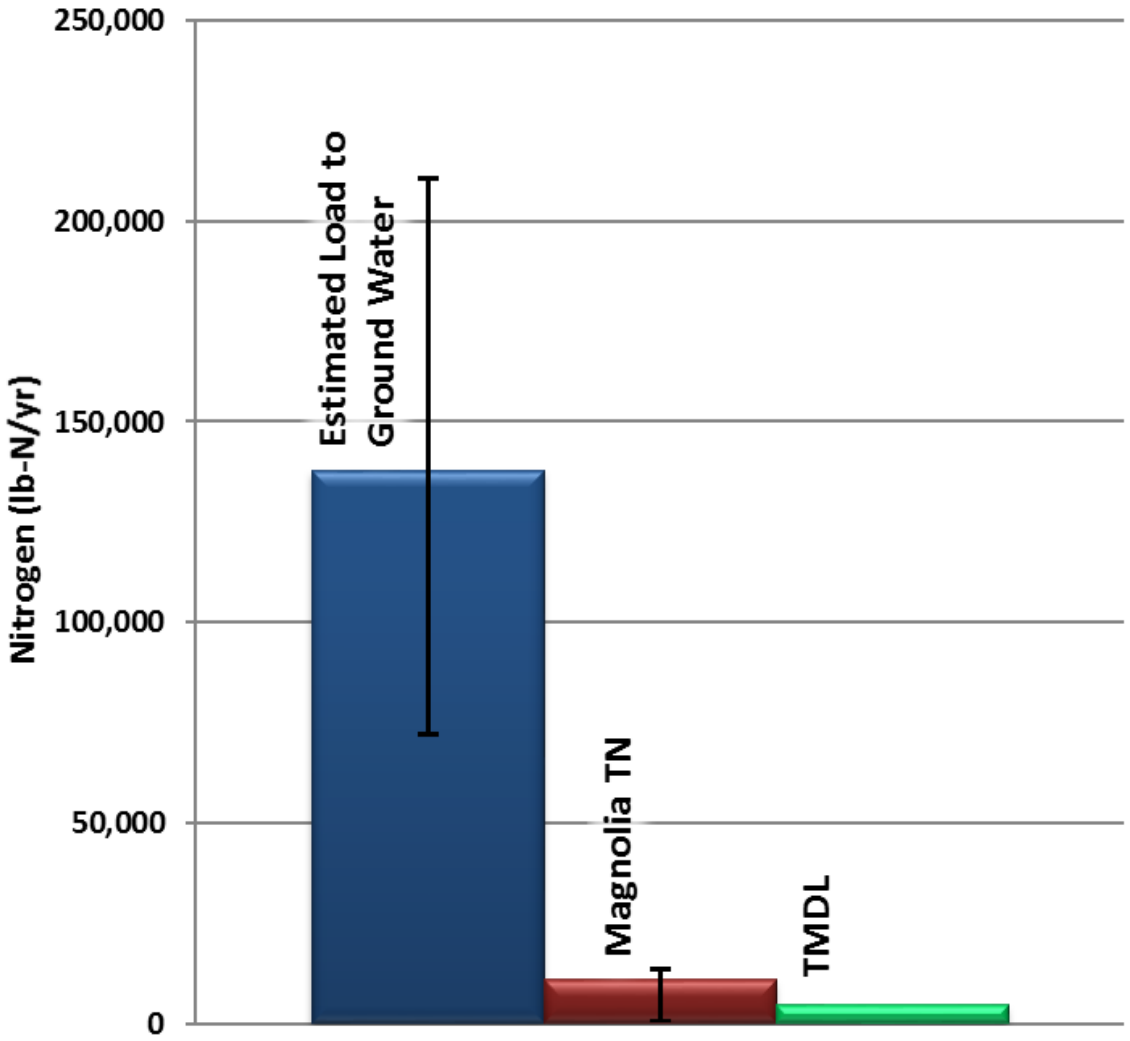


Future Growth Strategies

Future Growth Strategies

These do not result in load reduction credits, but rather are "hold the line" strategies for future growth.

Example Strategies – Future Growth

Rainbow Springs BMAP

Strategy Type	Title	Lead Entity	Description	Start Date	Status
Plan	2013-2017 Springs Management Plan	Southwest Florida Water Management District (SWFWMD)	The plan summarizes the vision, issues, and solutions that SWFWMD will address over the next five years to manage and protect springs. Through strategic investments and partnerships, SWFWMD is implementing projects to conserve and restore the ecological balance of our spring systems, thereby supporting regional economies and quality of life.	2013	Ongoing
Comprehensive Plan	Marion County Transfer of Development Rights (TDR)	Marion County	The TDR Program is designed to protect natural resources including, but are not limited to, the preservation of high water recharge and underground drainage basins, springs, karst areas, sinkholes, sinks, sinkhole ponds, and other karst features. The land from which development rights are transferred is subject to a conservation easement.	2000	Ongoing

Example Strategies – Future Growth

Rainbow Springs BMAP

Strategy Type	Title	Lead Entity	Description	Start Date	Status
Comprehensive Plan	Marion County Rural Community Land Use Designation	Marion County	The comprehensive plan establishes the Rural Community future land use designation to provide for clustered urban-density development patterns in the Rural designated lands while requiring permanent open spaces reserved from development and complete urban services (e.g., central water, central sewer, and designed/constructed stormwater systems) that comply with Marion County's design and development standards, including Springs Protection.	2000	Ongoing
Regulation or Ordinance	Marion County Springs Protection Zones (SPOZ)	Marion County	Resolution 05-R-106 establishes SPOZs and development standards. Comprehensive Plan Future Land Use Element Objective 7.2 identifies the extent of the primary and secondary zones along with other design and development standards. Articles 5 and 6 of the land development code set forth the specific design and development criteria related to the applicable SPOZ.	2005	Ongoing
Regulation or Ordinance	River Protection Corridors	City of Dunnellon	The city established river protection corridor areas for both the Rainbow and Withlacoochee Rivers. The corridor extends 150 feet from the ordinary high water line and implements specific development standards for development.	2008	Ongoing

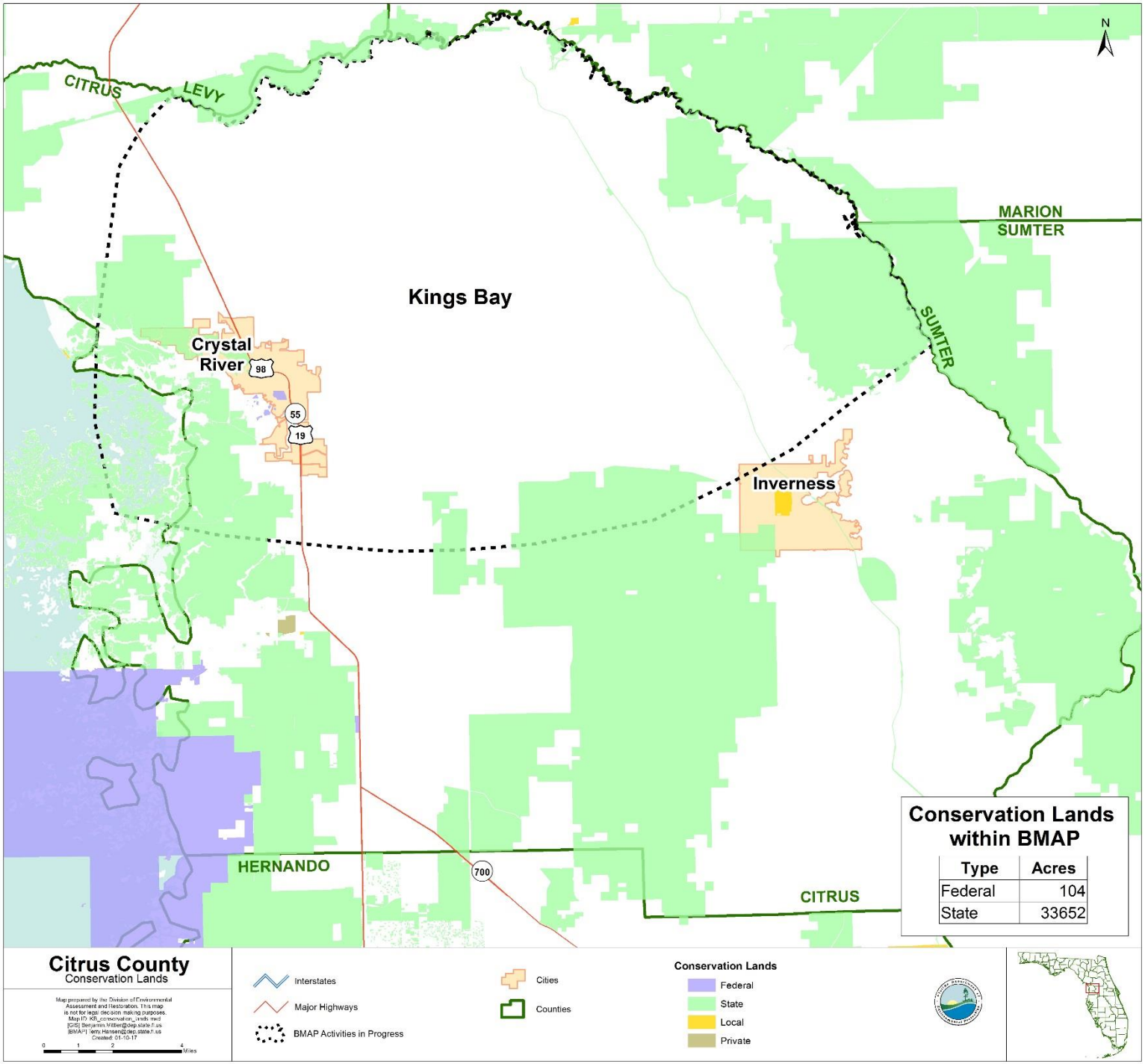
Protection of Surface Water and Groundwater Resources through Land Conservation

Examples – Land Conservation

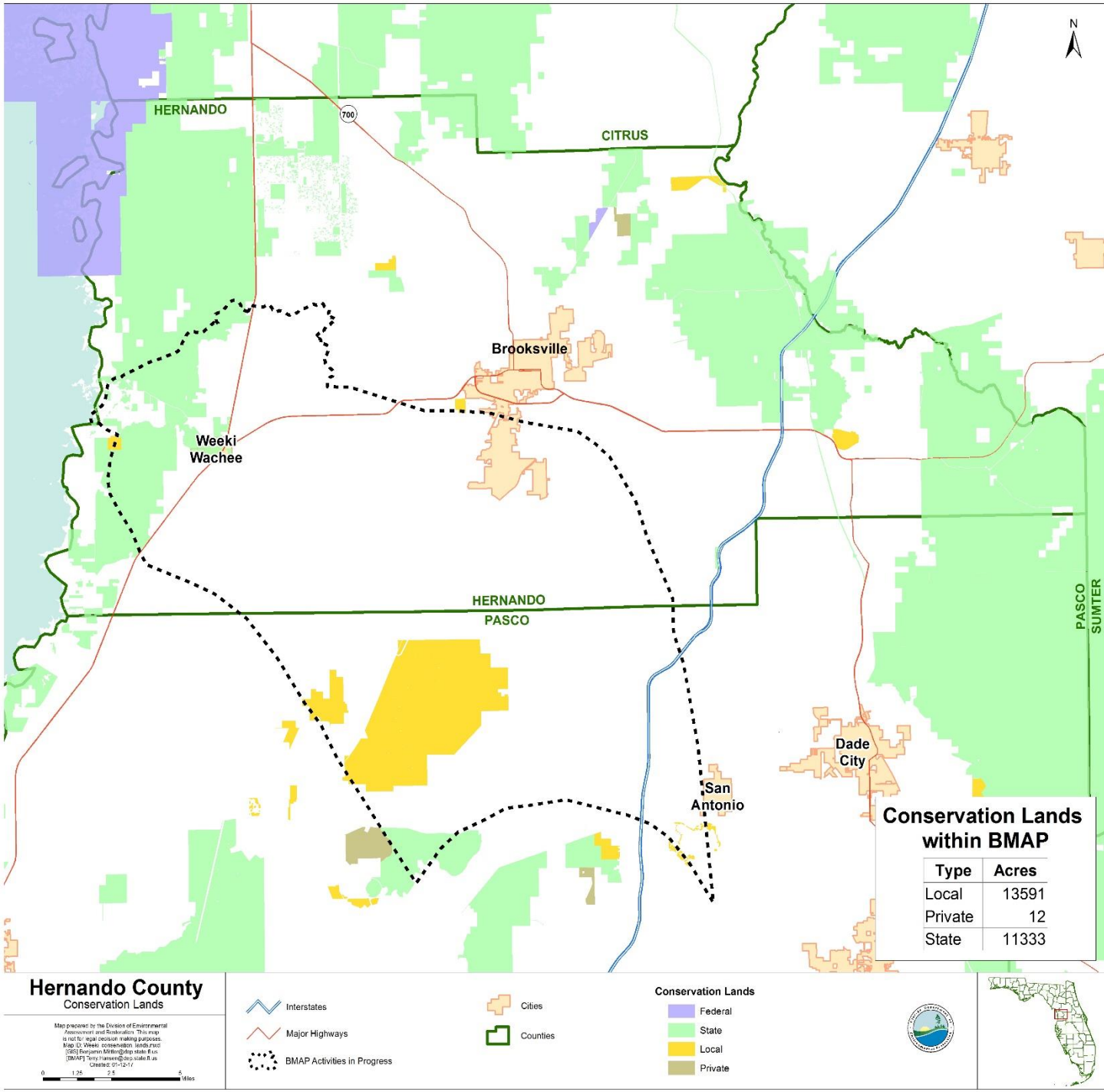
Rainbow Springs BMAP

Title	Lead Entity	Description	Partners	Acreage / Year Acquired	Cost
Rainbow River Corridor	DEP	The Rainbow River Corridor project is designed to protect most of the undeveloped or minimally developed private land remaining along the Rainbow River. The southern parcels bring a remaining large portion of undeveloped shoreline along the eastern side of the river into state ownership, and provide a connection to the southern end of the Rainbow Springs State Park. In addition, the potential restoration of altered habitats would help restore and maintain water quality and habitat along one of Florida's largest spring-run streams.	City of Dunnellon, Marion County, Rainbow River Conservation	32 acres / 2008	$3,200,000
Carr Farm/Price's Scrub	DEP	This property is in southwestern Alachua County and northwestern Marion County and includes scrub, upland mixed forest, scrubby flatwoods, wet flatwoods, depression marsh, marsh lake, and sinkhole lake. 962 acres were acquired in Marion County in 2001.	N/A	962 acres / 2001	$2,061,144
South Goethe	DEP	This acquisition will provide a corridor from the Goethe State Forest to the Marjorie Harris Carr Cross Florida Greenway State Recreation and Conservation Area along the Withlacoochee River and will also form a linkage to the Etoniah Cross Florida Greenway Florida Forever project.	N/A	-	$11,574,303
Bear Hammock	DEP	Acquisition of this property in southern Marion County would provide a connector between Goethe State Forest and the Marjorie Harris Carr Cross Florida Greenway, creating a continuity of more than 200,000 acres.	N/A	-	$32,576,529

CR/KB Conservation Lands



Weeki Wachee Conservation Lands



Projects to Reduce Pollutant Loads

Project Template

Required Information for each Project

Lead Entity	Priority Ranking	Project Number	Project Name	Description	Project Type	Estimated Nutrient Load Reduction	Milestone (5-, 10-, or 15-year)	Cost Estimate (planning-level)	Funding		Status (Underway, Planned, or Completed)	Estimated Completion Date
									Source	Amount		

Funding Updates

319(h) Nonpoint Source Education Grant

- $1 million available.
- Eligible Applicants: Local governments.
- Grant Schedule:
  - **January 2017** – Solicitation advertised.
  - **March 2017 –** Project proposals are **due** to DEP for review and ranking. Project proposals received after March 31st may be excluded from the selection process.
  - **Spring – Summer 2017 –** EPA approval expected to occur and projects to be evaluated and selected by DEP. Status letters will be mailed to all applicants.
  - **Summer 2017 – Fall 2017 –** Contracts will be executed for selected projects. No costs may be reimbursed for work occurring outside the **contract period**.
  - **September 30, 2020 –** Contract requirements should be completed. All projects should be completed and invoiced by this date.

319(h) Nonpoint Source Education Grant (continued)

- Subjects on Nonpoint Source Pollution Education and Outreach include, but are not limited to:
  - Preventing nonpoint source pollution.
  - Onsite sewage treatment and disposal systems (OSTDS) maintenance and pollution prevention.
  - Low impact development projects.
  - Activities identified in the BMAPs and targeting BMAP issues.
  - Citizen and volunteer monitoring programs.

319(h) Nonpoint Source Education Grant (continued)

Eligible Projects/Activities for Grant Funding:

- Nonpoint source education/outreach projects that implement adopted BMAPs.
- Projects should include a minimum 40 % non-federal match; 319(h) funding may not exceed 60 % of the total eligible project cost.

Methods of outreach may include, but are not limited to:

- Public service announcements (PSAs).
- Development, publication, and distribution of BMP manuals.
- Training through workshops, field days, and classes.
- Creating and providing information through publications such as flyers and notices.
- Posting information on local websites.
- Coordinating with area schools to provide classroom education and nonpoint curriculum opportunities.

2018
319(h) Nonpoint Source Grant

- Expected funding between $5 to $6 million.
- Eligible Applicants: The following Florida entities: state agencies, local governments, state universities, state colleges, and water management districts.
- 2018 Grant Schedule:
  - **January 2017** – Solicitation advertised.
  - **March 2017 –** Project proposals are **due** to DEP for review and ranking. Project proposals received after March 15th may be excluded from the selection process.
  - **Spring – Summer 2017 –** Projects will be evaluated and sent to EPA for approval. Status letters will be mailed to all applicants.
  - **Spring – Summer 2018** – EPA will provide comment and/or approval of the draft work plan and grant recipients will be notified of the award.
  - **Summer 2018 – Fall 2018** - Contracts will be executed for projects approved by EPA. No costs may be reimbursed for work occurring outside the **contract period**.
  - **September 30, 2021** – Contract requirements should be completed. All projects should be completed and invoiced by this date.

2018
319(h) Nonpoint Source Grant

- Eligible Projects/Activities for Grant Funding:
  - Projects that treat nonpoint source pollution at its source.
  - Projects should include a minimum 40 % non-federal match; 319(h) funding may not exceed 60 % of the total eligible project cost.

Grant Proposal OSTDS Upgrades

- Municipal governments (county, city, etc.) should develop a list and schedule for upgrading and/or replacing OSTDS (entire system or drainfield) - NOT sewering.
- Designed to assist homeowner with costs.
- Entity would apply for springs funding and then they would administer funds – *not the state*.
- Match dollars may be required.

Watershed Information Network (WIN) and Florida STOrage and RETrieval (STORET)

Update

WIN Project Schedule

- WIN construction continues to go well!
- Phase 1a, Data Uploads to Staging and Migrated.
  - Open for data uploads in spring 2017.
- Phase 1b, Data Reporting and Extraction.
  - Open for data extraction in spring 2017.

Florida STORET Database Schedule

- **Florida STORET will remain open for data uploads until December 2017 for data collected prior to July 2017.**
- Existing data that do not meet WIN Minimum Data Quality Standards (MDQS) should be brought to Florida STORET by December 2017.
- Corrections for data already in Florida STORET should be made by December 2017.
- STORET Public Access (SPA) will remain open for reporting of data from Florida STORET after December 2017.
  - SPA: http://prodenv.dep.state.fl.us/DearSpa.

WIN and Florida STORET

- DEP will accept migrations of data from Florida STORET to WIN any time after WIN comes on-line.
  - Data must meet WIN MDQS and be brought to WIN by the provider.
  - DEP will remove those data from Florida STORET
  - We recommend not migrating data until after you have established flow of new data to WIN.
- Changes to data in Florida STORET or WIN will be provided to U.S. EPA Water Quality Exchange (WQX) by DEP.
- For data collections occurring now, we strongly encourage data providers to make process changes (collection and/or data recording) necessary to meet WIN MDQS.

Getting Ready for WIN

- Information for mapping to WIN is provided at ftp://ftp.dep.state.fl.us/pub/outgoing/STORET/WIN_Communication/.
  - Includes MDQS, standard values lists (SVLs), example data files, FAQs and a flow diagram.
- Contact your STORET/WIN Coordinators with questions on WIN implementation.

District	Coordinator	Phone	E-mail
Central & Statewide	Tommy Adams	850-245-8467	Thomas.l.adams@dep.state.fl.us
Northeast & Northwest	Justin Nelson	850-245-8510	Justin.m.nelson@dep.state.fl.us
South	Kyle Ferris	850-245-8049	Kyle.ferris@dep.state.fl.us
Southeast	Vilma Quant	850-245-8544	Vilma.quant@dep.state.fl.us
Southwest	Lisa Schwenning	850-245-8509	Lisa.Schwenning@dep.state.fl.us

Basin Management Action Plan

Contact: Terry Hansen, P.G.

terry.hansen@dep.state.fl.us

http://www.dep.state.fl.us/water/

http://publicfiles.dep.state.fl.us/DEAR/BMAP/Springs Coast/BMAPs