DRAFT
Wacissa River and Wacissa Spring Group
Basin Management Action Plan

Division of Environmental Assessment and Restoration Water Quality Restoration Program
Florida Department of Environmental Protection

with participation from the
Wacissa River and Wacissa Spring Group Stakeholders

April 2025

2600 Blair Stone Rd.
Tallahassee, FL 32399
floridadep.gov

Acknowledgments

The Florida Department of Environmental Protection adopted the *Wacissa River and Wacissa Spring Group Basin Management Action Plan* by Secretarial Order as part of its statewide watershed management approach to restore and protect Florida's water quality. The plan was developed in coordination with stakeholders identified below, including participation from affected local, regional and state governmental entities, non-governmental organizations and entities, and residents.

Florida Department of Environmental Protection
Alexis A. Lambert, Secretary

Table ES-1. Wacissa River and Wacissa Spring Group stakeholders

Type of Entity	Name
Responsible Entities	Agriculture City of Monticello Town of Greenville Jefferson County Madison County Private Golf Courses
Responsible Agencies	Florida Department of Agriculture and Consumer Services (FDACS) Florida Department of Environmental Protection (DEP) Florida Department of Health (FDOH) Florida Fish and Wildlife Conservation Commission (FWC) Florida Department of Transportation (FDOT) Florida Department of Corrections (FDC) Northwest Florida Water Management District (NWFWMD) Suwannee River Water Management District (SRWMD)
Other Interested Stakeholders	Agricultural Producers Residents/Homeowners Florida Farm Bureau Florida Onsite Wastewater Association (FOWA) Septic System Contractors University of Florida Institute of Food and Agricultural Sciences

See **Appendix A** for links to resources referenced in this document. For additional information, contact:

Florida Department of Environmental Protection/ Water Quality Restoration Program
2600 Blair Stone Road, Mail Station 3565
Tallahassee, FL 32399-2400
Email: BMAPProgram@FloridaDEP.gov

Table of Contents

List of Figures

List of Tables

List of Acronyms and Abbreviations

ACE	Agricultural Cooperative Regional Water Quality Elements
ALG	Agricultural Land Acreage
AWT	Advanced Waste Treatment
BEBR	Bureau of Economic and Business Research
BMAP	Basin Management Action Plan
BMPs	Best Management Practices
CAFO	Concentrated Animal Feeding Operation
CASTNET	Clean Air Status and Trends Network
cfs	Cubic Feet Per Second
CMAQ	Community Multiscale Air Quality
DEP	Florida Department of Environmental Protection
DMR	Discharge Monitoring Reports
DO	Dissolved Oxygen
EPA	Environmental Protection Agency (U.S.)
F.A.C.	Florida Administrative Code
F.A.R.	Florida Administrative Register
FDACS	Florida Department of Agriculture and Consumer Services
FDOH	Florida Department of Health
FDOT	Florida Department of Transportation
FF	Farm Fertilizer
FFS	Florida Forest Service
FGS	Florida Geologic Survey
FLWMI	Florida Water Management Inventory
FOWA	Florida Onsite Wastewater Association
F.S.	Florida Statutes
FSAID	Florida Statewide Agricultural Irrigation Demand
FWC	Florida Fish and Wildlife Conservation Commission
FYN	Florida Yards and Neighborhoods
GIS	Geographic Information System
gpd	Gallons Per Day
HB	House Bill
IV	Implementation Verification
in/yr	Inch Per Year
lbs	Pounds
lbs/yr	Pounds Per Year
lbs-N/yr	Pounds of Nitrogen Per Year
LVS	Linear Vegetation Survey
LW	Livestock Waste
MFLs	Minimum Flows and Levels
mgd	Million Gallons Per Day
mg/L	Milligrams Per Liter
MS4	Municipal Separate Storm Sewer System

N	Nitrogen
NA	Not Applicable
NADP	National Atmospheric Deposition Program
NELAC	National Laboratory Environmental Accreditation Conference
NELAP	National Environmental Laboratory Accreditation Program
NHD	National Hydrography Database
NMP	Nutrient Management Plan
NNC	Numeric Nutrient Criteria
NOI	Notice of Intent
NPDES	National Pollutant Discharge and Elimination System
NSF	NSF International (formerly National Sanitation Foundation)
NSILT	Nitrogen Source Inventory Loading Tool
NTN	National Trends Network
NWFWMD	Northwest Florida Water Management District
OAWP	Office of Agricultural Water Policy (FDACS)
OFS	Outstanding Florida Spring
OSTDS	Onsite Sewage Treatment and Disposal System
PFA	Priority Focus Area
PSA	Public Service Announcement
QA/QC	Quality Assurance/Quality Control
RAP	Reasonable Assurance Plan
RIB	Rapid Infiltration Basin
RPS	Rapid Periphyton Survey
RSF	Regional Stormwater Facility
SBIO	DEP Statewide Biological Database
SCI	Stream Condition Index
SOP	Standard Operating Procedure
SRWMD	Suwannee River Water Management District
SSURGO	National Cooperative Soil Survey Geographic Database
STF	Sports Turf Fertilizer
STORET	Florida Storage and Retrieval Database
SWIM	Surface Water Improvement and Management
SWMP	Stormwater Management Program
TDEP	Total Atmospheric Deposition Model
TDS	Total Dissolved Solids
TMDL	Total Maximum Daily Load
TN	Total Nitrogen
TP	Total Phosphorus
TSS	Total Suspended Solids
UFA	Upper Floridan aquifer
UF-IFAS	University of Florida-Institute of Food and Agricultural Sciences
USGS	U.S. Geological Survey
UTF	Urban Turfgrass Fertilizer
WBID	Waterbody Identification (Number)

WIN	Florida Watershed Information Network Database
WMD	Water Management District
WWTF	Wastewater Treatment Facility

Executive Summary

The Florida Springs and Aquifer Protection Act (Chapter 373, Part VIII, Florida Statutes [F.S.]), along with the Watershed Restoration Act (section 403.067, F.S.), provide for the protection and restoration of Outstanding Florida Springs (OFS), which comprise 24 first magnitude springs, 6 additional named springs, and their associated spring runs. DEP has assessed water quality in each OFS and has determined that 26 of the 30 OFS are impaired for the nitrate form of nitrogen. Wacissa River and Wacissa Spring Group is one of the impaired first magnitude OFS.

The Wacissa River and Wacissa Spring Group basin management action plan (BMAP) area is approximately 327,586 acres (**Figure ES-1**) in Madison and Jefferson Counties.

Wacissa River and Wacissa Spring Group Priority Focus Area (PFA)

The PFA (**see Appendix D**) comprises 217,189, in Jefferson County. The PFA represents the area in the basin where the aquifer is most vulnerable to inputs and where there are the most connections between groundwater and the Wacissa River and Wacissa Spring Group.

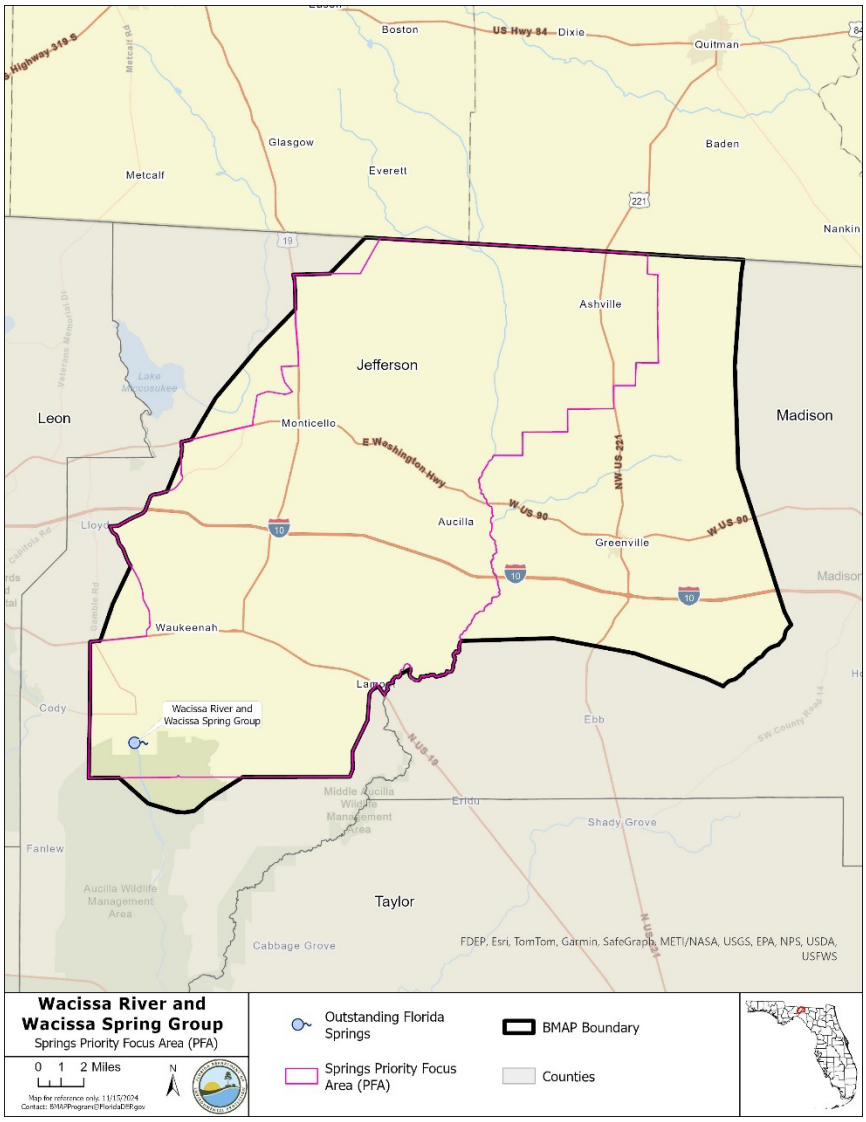

Figure ES-1. Wacissa River and Wacissa Spring Group BMAP and PFA boundaries

Nitrogen Source Identification, Required Reductions, and Options to Achieve Reductions

Wacissa River and Wacissa Spring Group was identified as impaired because of a biological imbalance caused by excessive concentrations of nitrate in the water. In 2017, a total maximum daily loads (TMDLs) for nitrate was developed as a water quality restoration target for Wacissa River and Wacissa Spring Group. The TMDLs established a monthly average nitrate-nitrite target of 0.20 milligrams per liter (mg/L) for the Wacissa River and 0.24 mg/L for the Wacissa Springs Group.

DEP developed the Nitrogen Source Inventory Loading Tool (NSILT) to provide information on the major categories of nitrogen sources in the groundwater and spring contributing areas for the springs. Among other sources, farm fertilizer (FF) represents 49% of the nitrogen loading to

groundwater, livestock waste (LW) 18.7%, and onsite sewage treatment and disposal systems (OSTDS or septic systems) 6.5% of the total loading to groundwater based on the DEP analysis conducted using the NSILT.

The total load reduction required to achieve the TMDL target at the spring vent is 227,245 pounds of nitrogen per year (lbs-N/yr). The following milestones are being established to measure progress towards achieving the total necessary load reduction of 227,245 pounds (lbs):

- 2028 - Reduction of 68,174 lbs-N/yr (30%).
- 2033 - Additional reduction of 113,623 lbs-N/yr (50%).
- 2038 - Additional reduction of 45,449 lbs-N/yr (20%).

While reductions to groundwater will benefit the spring system, it is uncertain to know with precision how those reductions will impact the necessary reductions at the spring vent. DEP will continue to monitor the springs to better understand the benefits from the policies, and implemented projects and management strategies within the springshed. The BMAP is designed to achieve 80% of the load reductions to the spring vent by 2033 and 100% by 2038. DEP will evaluate progress towards these milestones and will report to the Governor and Florida Legislature annually. Assessment of progress toward these milestones must be conducted every five years and revisions to the BMAP must be made as appropriate. BMAPs use an adaptive management approach that allows for incremental load reductions through the implementation of projects and management strategies; however, the restoration target, the TMDL, remains the same. If needed, policies and management strategies will be adjusted to ensure the target spring vent concentrations are achieved. This may include requiring additional management strategies or including remediation policies for existing OSTDS. Any such change would be incorporated into a future updated BMAP through a formal adoption process.

Cost estimates were provided by stakeholders for more than 42% of the projects and management actions listed in the BMAP. The total estimated cost for these projects exceeds $15 million. Approximately $8 million have been expended to date on completed projects. While stakeholders are required to implement additional projects listed in the BMAP, accurate cost estimates have not yet been developed for every project. The total cost estimate for all projects referenced in the BMAP is unknown until more cost information is provided. By the next 5-year BMAP milestone, stakeholders are anticipated to achieve additional reductions in annual nutrient loadings to the Wacissa River and Wacissa Spring Group Basin, including 13,185 pounds of total nitrogen (TN), based on conservative estimates of the planned and underway projects listed to date.

For the list of water quality improvement projects and management strategies, see **Appendix B**. Included are owner- implemented best management practices (BMPs) for farm fertilizer (FF), livestock waste (LW) and STF; wastewater treatment facility (WWTF) upgrades; projects to reduce UTF application; and OSTDS remediation projects.

Successful BMAP implementation requires commitment, dedicated funding and ongoing follow-up. Stakeholders have expressed their intention to carry out the plan, monitor its effects, and continue to coordinate within and across jurisdictions to achieve nutrient reduction goals. As the BMAP and TMDLs must be achieved by 2038, the DEP, water management districts (WMDs) FDOH, and FDACS will also implement state-level management strategies using relevant state and federal funding.

Restoration Approaches

Reduction in the nitrogen loading to the aquifer is needed to achieve the load reduction requirements at the spring vent. To ensure that load reductions are achieved at the spring vent, the restorations actions described below are being implemented. These actions are designed to reduce nutrient loading to the aquifer, which will reduce the load at the vent and ultimately achieve the TMDL target. Monitoring at the spring vent during implementation will continue to assess progress.

- **New OSTDS** – Florida law (sections 373.811 and 403.067, F.S) and the BMAP OSTDS remediation plan required under subsection 373.807(3), F.S., prohibit new OSTDS on lots of one acre or less within the BMAP boundary, unless the systems are enhanced nutrient-reducing OSTDS systems or other wastewater treatment systems that achieve at least 65% nitrogen reduction.

- **Existing OSTDS** – Currently, the OSTDS remediation plan required under subsection 373.807(3), F.S. in this BMAP does not include requirements for the addition of enhanced nitrogen reducing treatment to conventional systems upon the need for modification or repair of existing OSTDS. However, remediation of existing conventional OSTDS will still be beneficial to mitigate nitrogen loading from this source, restore associated groundwater and surface water to achieve the TMDL and to minimize nitrogen loads from future growth. Local governments may have existing ordinances or could adopt new ordinances that add additional requirements for enhancement of OSTDS. To expedite remediation of wastewater sources and to facilitate achievement of assigned milestones in this BMAP, DEP encourages local governments to adopt such ordinances.

- **WWTFs** – The required treatment of wastewater effluent to advanced waste standards applies to all surface water disposal and certain reuse disposal determined to be necessary by the department within the BMAP area. In the 2020 Clean Waterways Act, local governments were required to submit WWTF plans in accordance with section 403.067, F.S., if applicable, to DEP by Aug. 1, 2024, to address wastewater loads and the potential for future additional loads, including those created from sewering OSTDS. Subparagraph 403.067(7)(a)9., F.S., was amended in 2024 to clarify that private domestic wastewater facilities must provide this information to local governments effective July 1, 2024. Information related to private facilities will need to be included in future local government WWTF plans if not captured in the initial plans. Loading from

WWTFs in this BMAP does not meet the contribution threshold required; therefore, local governments were not required to submit a wastewater treatment remediation plan for this iteration of the BMAP. However, DEP encourages all local governments to undertake planning initiatives to address loading from WWTFs in their jurisdictions and plan for future growth.

- **Local governments with OSTDS or WWTF** are expected to meet their overall reduction milestones and to keep their project lists current, including any efforts to address OSTDS loading and any necessary wastewater facility improvements. Private wastewater facilities are also expected to meet their assigned reductions and keep their project lists current.

- **UTF** – UTF consists of fertilizers applied to turfgrass typically found in residential and urban areas (including residential lawns and public green spaces). Fertilizers are applied either by the homeowner or a lawn service company on residential properties. On nonresidential properties, fertilizers may be applied by contractors or maintenance staff. UTF sources are assigned to the applicable local government. Strategies to address UTF include education, enforcement of local government ordinances related to appropriate use of fertilizer, and stormwater projects.

- **STF –** STF sources include golf courses and other sporting facilities. Reductions from most sports facilities, including publicly-owned golf courses and school district sites, are assigned to the applicable local government. Private sporting facilities are assigned to the owner. Sporting facilities are required to follow the 2025 Sports Turf BMP Manual to protect water resources. Reductions from private golf courses are assigned to the golf course owners. All golf courses within the BMAP are required to follow the 2021 DEP Golf Course BMP Manual and submit for approval a final nutrient management plan (NMP) to DEP within two years of BMAP adoption, and to follow their plan.

- **FF** – All FF sources are required to implement BMPs or perform monitoring to demonstrate compliance with the TMDL. A 15% reduction to groundwater is estimated for owner-implemented BMPs. Additional reduction credits could be attained through better documentation of nutrient reductions achieved through BMP implementation or implementation of additional agricultural cost-share BMPs, projects or practices, such as precision irrigation, soil moisture probes, controlled release fertilizer and cover crops.

- **LW** – All LW sources are required to implement BMPs or perform monitoring to demonstrate compliance with the TMDL. A 10% reduction to groundwater is estimated for owner-implemented BMPs. Additional credits could be attained through better documentation of nutrient reductions achieved through BMP implementation, NMP updates and implementation, and additional projects.

- **Other Agriculture** - Cooperative agricultural regional water quality improvement elements are being developed to reduce agricultural nutrient loading in combination with owner-implemented BMPs, cost-share BMPs, other measures, and state-sponsored

regional projects. The BMAP outlines a collaborative framework for identifying, prioritizing and implementing regional projects that address nutrient loading from agricultural operations. Partner agencies will work in annual cycles with agricultural landowners to provide technical support, regulatory guidance and funding opportunities to enhance implementation and the success of regional water quality improvement initiatives.

Section 1: Background

1.1 Legislation

Chapter 373, Part VIII, F.S., the Florida Springs and Aquifer Protection Act, along with the Watershed Restoration Act (section 403.067, F.S.), provides for the protection and restoration of OFS, which comprise 24 first magnitude springs, six additional named springs, and their associated spring runs. DEP has assessed water quality in each OFS and determined that 26 of the 30 OFS are impaired for the nitrate form of nitrogen. Wacissa River and Wacissa Spring Group is an impaired first magnitude OFS. Development of the BMAP to meet the requirements of the Florida Springs and Aquifer Protection Act for the Wacissa River and Wacissa Spring Group Basin was initiated in 2016. Since adoption, additional statutory requirements in Chapter 373, F.S., and section 403.067, F.S., have been enacted into law that continue to enhance the protection and restoration of water quality throughout Florida. For specific requirements, please refer to the source management sections below.

1.2 Water Quality Standards and TMDLs

A TMDL represents the maximum amount of a given pollutant that a waterbody can assimilate and still meet water quality criteria. Wacissa River and Wacissa Spring Group is a Class III waterbody with a designated use of recreation, propagation, and the maintenance of a healthy, well-balanced population of fish and wildlife. These waters are impaired by nitrate nitrogen, which in excess has been demonstrated to adversely affect flora or fauna through the excessive growth of algae. Excessive algal growth results in ecological imbalances in springs and rivers and can produce human health problems, foul beaches, inhibit navigation, and reduce the aesthetic value of the resources.

DEP adopted nutrient TMDLs for Wacissa River and Wacissa Spring Group in 2017 (**Table 1)** of 0.20 mg/L of nitrate-nitrite in the Wacissa River and 0.24 mg/L in the Wacissa Springs Group as a monthly average to be protective of the aquatic flora and fauna. The period of record for water quality data evaluated for the TMDLs was 2005 through 2015.

Table 1. Restoration target for Wacissa River and Wacissa Spring Group

Waterbody or Spring Name	Waterbody Identification (WBID) Number	Parameter	TMDL (mg/L)
Wacissa River	3424	Nitrate, monthly average	0.20
Wacissa Spring Group	3424Z	Nitrate, monthly average	0.24

1.3 BMAP Requirements

Subsection 403.067(7), F.S., provides DEP with the statutory authority to develop and implement BMAPs. A BMAP is a comprehensive set of strategies to achieve the required pollutant load reductions. It requires any entity with a specific pollution load reduction to submit to DEP projects or strategies to meet 5-year pollution reduction milestones. In addition to this

authority, the Florida Springs and Aquifer Protection Act (Part VIII of Chapter 373, F.S.) describes additional requirements and prohibitions for the 30 OFS.

1.4 BMAP Area

The Wacissa River and Wacissa Spring Group BMAP area (**Figure 1**) comprises about 327,586 acres in Madison and Jefferson Counties.

The BMAP area contains one impaired OFS: the Wacissa Spring Group. This area includes the surface water basin as well as the groundwater contributing areas for the springs (or springsheds). The springshed for the OFS was delineated or reviewed by Northwest Florida Water Management District (NWFWMD) and the Suwannee River Water Management District (SRWMD) with input from the Florida Geological Survey (FGS). A springshed is the area of land that contributes water to a spring or group of springs, mainly via groundwater flow.

1.5 PFA

In compliance with the Florida Springs and Aquifer Protection Act, the 2018 BMAP delineated a PFA, defined as the area of a basin where the Floridan aquifer is generally most vulnerable to pollutant inputs and where there is a known connectivity between groundwater pathways and an OFS. The PFA provides a guide for focusing restoration strategies where science suggests these efforts will most benefit the springs. The document describing the delineation process for the PFA is on the DEP website (link is provided in **Appendix D)**.

1.5.1 Description

Nitrogen sources are more likely to influence groundwater quality under certain conditions. For example, where soils are sandy and well drained, less nitrogen is converted to gas and released into the atmosphere or taken up by plants, compared with other soil types. Therefore, local soil types play a role in how much nitrogen travels from the land surface to groundwater in a specific springshed. Also, the underlying geologic material influences the vulnerability of the underlying aquifers and the rate of lateral movement within the Floridan aquifer toward the springs. These conditions, and others, were considered in the delineation of the PFA (see **Appendix D**). The geographic information system (GIS) files associated with the PFA boundary are available to the public on the DEP Map Direct webpage.

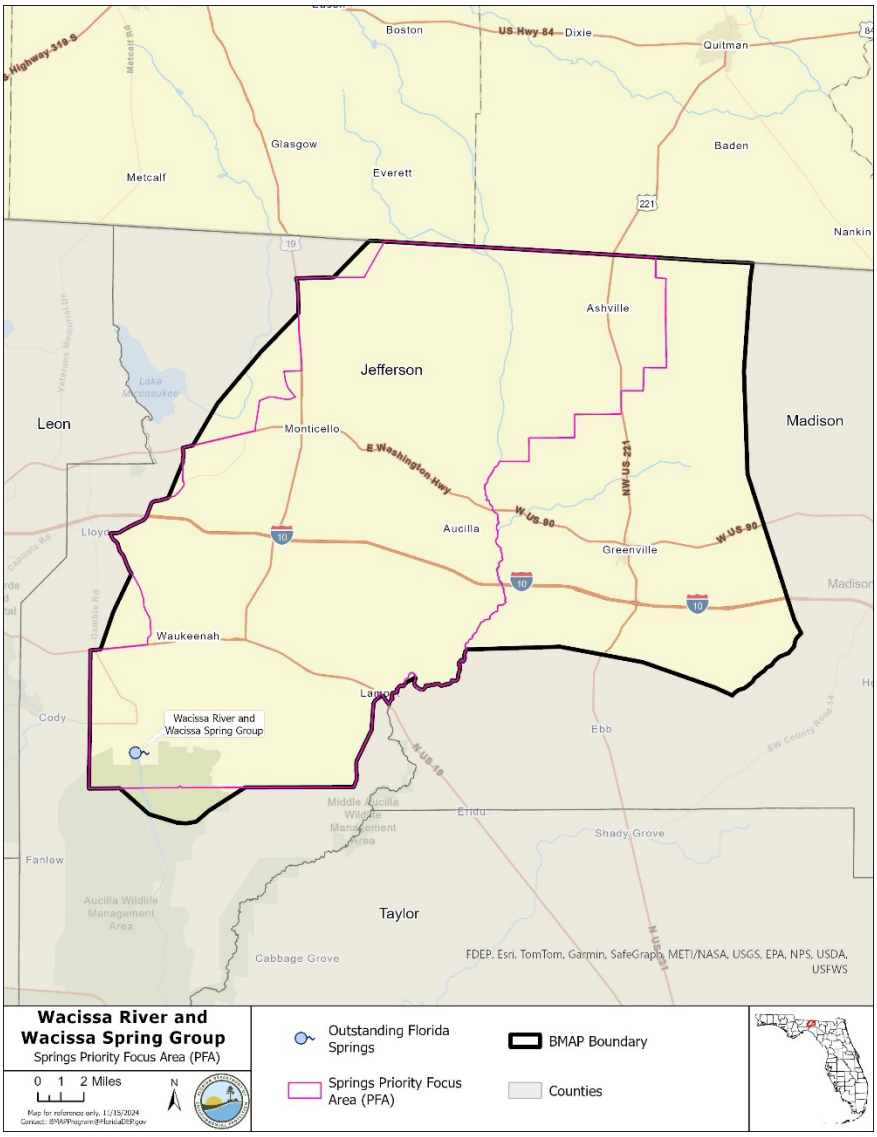

Figure 1. Wacissa River and Wacissa Spring Group BMAP and PFA boundaries

1.5.2 Additional Requirements

In accordance with section 373.811, F.S., the following activities are prohibited in the BMAP boundary:

- New domestic wastewater disposal facilities, including rapid infiltration basins (RIBs), with permitted capacities of 100,000 gallons per day (gpd) or more, except for those facilities that meet an

advanced waste treatment (AWT) standard of no more than 3 mg/L TN on an annual permitted basis.

- New OSTDS or septic systems on lots one acre or less inside the BMAP where central sewer is available. If central sewer is unavailable, then the owner must install a DEP-approved enhanced nutrient-reducing OSTDS that achieves 65% nitrogen reduction, or other wastewater system that achieves 65% reduction.

- New facilities for the disposal of hazardous waste.

- The land application of Class A or Class B domestic wastewater biosolids not in accordance with a DEP-approved NMP establishing the rate at which all biosolids, soil amendments, and sources of nutrients at the land application site can be applied to the land for crop production, while minimizing the amount of pollutants and nutrients discharged to groundwater or waters of the state.

- New agricultural operations that do not implement BMPs, measures necessary to achieve pollution reduction levels established by DEP, or groundwater monitoring plans approved by a WMD or DEP.

1.5.3 Biosolids and Septage Application Practices

The aquifer contributing to the springs is highly vulnerable to contamination by nitrogen sources and where soils have a high to moderate tendency to leach applied nitrogen. DEP previously documented elevated nitrate concentrations in groundwater beneath septage application zones in contributing areas to springs. Within BMAP areas for OFS, section 373.811, F.S. prohibits the land application of Class A or Class B domestic wastewater biosolids not in accordance with a department approved NMP establishing the rate at which all biosolids, soil amendments, and sources of nutrients at the land application site can be applied to the land for crop production while minimizing the amount of pollutants and nutrients discharges to groundwater or waters of the state. Further, there are additional requirements for biosolid and septage application practices under Chapter 62-640 F.A.C.

1.6 Other Scientific and Historical Information

In preparing this BMAP, DEP collected and evaluated credible scientific information on the effect of nutrients, particularly forms of nitrogen, on springs and springs systems. Some of the information collected is specific to the Wacissa River and Wacissa Spring Group Basin, while other references provide information on related knowledge for restoring springs, such as nitrogen-reducing technologies, the treatment performance of OSTDS, and runoff following fertilizer applications.

1.7 Stakeholder Involvement

Stakeholder involvement is critical to develop, gain support for, and secure commitments in a BMAP. In the context of the BMAP, there are different organizations named in the plan.

- **R*esponsible entities*** are those organizations who are assigned load reductions and must comply with the BMAP provisions; these organizations are sometimes referred to as "***Lead Entities***."
- ***Responsible agencies*** may be accountable for reducing loads from their own activities or have an important public sector role in BMAP implementation such as regulatory oversight, monitoring, research, or other related duties.
- ***Interested stakeholders*** are those organizations that have engaged with BMAP development and implementation with the intention to influence the implementation process and outcomes.
- ***Stakeholders*** is a more general term often used in the BMAP context to include all three of the previously mentioned organizations—responsible entities, responsible agencies, and interested stakeholders.

The BMAP process engages responsible entities, responsible agencies, and interested stakeholders and promotes coordination and collaboration to address the pollutant load reductions necessary to achieve the TMDL. DEP invited stakeholders to participate in the BMAP development process and encouraged public participation and consensus to the greatest practicable extent. **Table ES-1** identifies the stakeholders who participated in the development of this BMAP.

During the development and update of the Wacissa River and Wacissa Spring Group BMAP, DEP held a series of meetings involving stakeholders and the public. The purpose of these meetings was to consult with stakeholders to gather information, evaluate the best available science, define management strategies and milestones, update the NSILT, develop entity required reductions, and update monitoring requirements. Public meetings were held virtually in January 2024 and May 2024. An in-person meeting was held on October 7, 2024, in Monticello, Florida. All meetings were open to the public and noticed in the *Florida Administrative Register* (F.A.R.). Additionally, a final public meeting was held on April 15, 2025, that was noticed in the F.A.R. and in local newspapers.

In addition to public meetings, DEP held several one-on-one meetings with the responsible stakeholders for this BMAP. Throughout the process, DEP made themselves available to answer stakeholder questions.

Upon BMAP adoption, DEP intends to facilitate annual meetings with stakeholders to review progress towards meeting entity required reductions identified for the milestones that are needed to achieve the TMDL.

1.8 Description of BMPs Adopted by Rule

Table 2 identifies FDACS adopted agricultural BMPs and BMP manuals relevant to this BMAP, along with environmental resource permitting requirements for certain land use activities.

Table 2. BMPs and BMP manuals adopted by rule as of July 2025

Agency	F.A.C. Chapter	Chapter Title
FDACS Office of Agricultural Water Policy (OAWP)	5M-1	Office of Agricultural Water Policy
FDACS OAWP	5M-6	Florida Nursery Operations, 2024 Edition: Water Quality and Water Quantity Best Management Practices
FDACS OAWP	5M-8	Florida Vegetable and Agronomic Crop (VAC) Operations, 2024 Edition: Water Quality and Water Quantity Best Management Practices
FDACS OAWP	5M-9	Florida Sod Operations, 2024 Edition: Water Quality and Water Quantity Best Management Practices
FDACS OAWP	5M-11	Florida Cattle Operations, 2024 Edition: Water Quality and Water Quantity Best Management Practices
FDACS OAWP	5M-12	Conservation Plans for Specified Agricultural Operations
FDACS OAWP	5M-13	Florida Specialty Fruit and Nut Crop Operations, 2024 Edition: Water Quality and Water Quantity Best Management Practices
FDACS OAWP	5M-14	Florida Equine Operations, 2024 Edition: Water Quality and Water Quantity Best Management Practices
FDACS OAWP	5M-16	Florida Citrus Operations, 2024 Edition: Water Quality and Water Quantity Best Management Practices
FDACS OAWP	5M-17	Florida Dairy Operations, 2024 Edition: Water Quality and Water Quantity Best Management Practices
FDACS OAWP	5M-18	Florida Agriculture Wildlife Best Management Practices
FDACS OAWP	5M-19	Florida Poultry Operations, 2024 Edition: Water Quality and Water Quantity Best Management Practices
FDACS Division of Agricultural Environmental Services	5E-1	Fertilizer
FDACS Division of Aquaculture	5L-3	Aquaculture Best Management Practices, 2023 Edition
FDACS Florida Forest Service	5I-6	Best Management Practices for Silviculture, 2008 Edition
FDACS Florida Forest Service	5I-8	Florida Forestry Wildlife Best Management Practices for State Imperiled Species
DEP	62-330	Environmental Resource Permitting

Additionally in 2024, the Florida Legislature ratified changes to the Statewide Stormwater Rule related to the minimum treatment requirements for Environmental Resource Permits for urban stormwater. The treatment requirements for nitrogen and phosphorus were increased to reduce the nutrient loading of future urban development and other structural changes to assist with water quality restoration in impaired waters.

Section 2: Implementation to Achieve TMDL

2.1 Allocation of Pollutant Loads

2.1.1 Nutrients in the Springs and Spring Systems

DEP developed the NSILT to provide information on the estimated nitrogen loading from major sources to groundwater in the spring contributing area for the OFS (**Table 3**). The NSILT was updated in 2023 with more current data and some methodology improvements and revised in 2024 based on stakeholder feedback. The NSILT is a GIS- and spreadsheet-based tool that provides spatial estimates of the relative contribution of nitrogen from major nitrogen sources to groundwater and accounts for the transport pathways and processes affecting the various forms of nitrogen as they move from the land surface through the soil and geologic strata to groundwater.

The first major factor to be considered in estimating the loading to groundwater in the NSILT is the attenuation of nitrogen as it moves from its source through the environment, before it reaches the Upper Floridan aquifer (UFA). Biological and chemical processes that occur as part of the nitrogen cycle, as well as hydrogeological processes, control the movement of nitrogen from the land surface to groundwater. Many of these processes attenuate (impede or remove) the amount of nitrogen transported to groundwater. An understanding of how water moves through the subsurface and the processes that transform the different forms of nitrogen is essential for estimating nitrogen loading to groundwater from various sources.

A second major factor to consider in estimating the loading to groundwater is the geologic features in the springshed and the related "recharge rate." Water movement between the shallow groundwater (surficial aquifer, where present) and the deeper aquifer (UFA) is slowed by a low permeability layer of clay, silt and fine sand that retards the vertical movement of infiltrating water from the surface. The UFA is in limestone that can be prone to dissolving and, over geologic time, develop numerous karst features (sinkholes, caves and conduits). These features allow water to move directly and relatively rapidly from the land surface into the aquifer, and in some areas, the groundwater in the aquifer then moves rapidly to the springs.

Potential recharge rates from the surface to the UFA are affected by variations in geologic materials and the presence of karst features. DEP estimated three recharge rate categories, which were applied to the NSILT:

- Low recharge (0 to 3 inches per year [in/yr]).
- Medium recharge (3 to 10 in/yr).
- High recharge (greater than 10 in/yr).

In the NSILT, DEP applied different attenuation factors to different types of sources to estimate the various biological, chemical and hydrogeological effects. Attenuation is the process where

the nitrogen source is removed or stored by chemical and biological processes before it reaches the groundwater. In the NSILT estimates, the attenuation rates ranged from 90% (for atmospheric deposition) to 25% (for wastewater disposal in a RIB). This means that, for these examples, only 10% of nitrogen from atmospheric deposition is expected to reach the aquifer, while 75% of nitrogen from a RIB is expected to reach groundwater, because the remainder is attenuated by various chemical and biological processes.

Phosphorus is naturally abundant in the geologic material underlying much of Florida and is often present in high concentrations in surface water and groundwater. Monitoring and evaluation of phosphorus and other chemical and biological influences on the springs continues as the nitrate-nitrite TMDL is implemented.

Table 3. Estimated total nitrogen load to groundwater by source in the BMAP area

Nitrogen Source	Total Nitrogen Load to Groundwater in Pounds of Total Nitrogen Per Year pounds per year (lbs/yr)	% Contribution
OSTDS	35,872	6.5%
UTF	3,659	0.7%
Atmospheric Deposition	105,274	19.1%
FF	270,052	49%
STF	468	<1%
LW	102,964	18.7%
LW - CAFO	25,864	4.7
WWTFs	6,524	1.2%
Total	**550,677**	**100%**

2.1.2 Assumptions and Considerations

The NSILT estimates are based on the following assumptions and considerations:

- **NSILT Nitrogen Inputs** – The methods used to estimate nitrogen inputs for each pollutant source were based on a detailed synthesis of information, including direct water quality measurements, census data, surveys following University of Florida-Institute of Food and Agricultural Sciences (UF-IFAS) trainings, WWTF permits, published scientific studies and reports, and information obtained in meetings with agricultural producers, WMDs and FDACS. For some pollutant source categories, nitrogen inputs were obtained using assumptions and extrapolations and, as a result, these inputs may be further refined if more detailed information becomes available. More details on the NSILT methodology and assumptions are in the NSILT Technical Support Document in **Appendix F**.

- **OSTDS Inventory and Load Contribution** – A per capita contribution to an OSTDS of 10 lbs-N/year was used to calculate the loading from OSTDS. The average household

contribution was estimated based on 2020 U.S. Census Bureau Data on the average number of people per household by county (2.21 for Jefferson County and 2.38 for Madison County).

The total number of OSTDS in the basin is estimated based on the Florida Water Management Inventory (FLWMI) data. OSTDS loading calculations in future BMAPs may be adjusted based on improved information on the number, location and type (conventional and enhanced nutrient-reducing) of existing septic systems, and will include updates on additional OSTDS installed in the area since the previous BMAP adoption.

Note that all values listed in this report are rounded, while the actual calculations were completed using whole numbers.

Other assumptions and considerations for BMAP implementation include the following:

- **Unquantified Project Benefits** – Nitrogen reductions for some of the projects and activities listed in this BMAP cannot currently be quantified. However, these projects are included because of their assumed positive impact to reduce pollutant loads, and estimated loading reductions may be determined at a later date.

- **Atmospheric Deposition** – Atmospheric sources of nitrogen are local, national and international. Local sources include the petroleum-fueled combustion engines of cars and trucks as well as fertilizers used for agricultural and residential uses. Other local or regional sources may include power plants and industrial facilities. Atmospheric sources have generally low nitrogen concentrations compared with other sources and are further reduced through additional biological and chemical processes before they reach groundwater. Recent data (Himes and Dawson, 2017) indicate that the deposition of nitrogen has been generally decreasing in Florida with an up to 55% decrease in atmospheric deposition by 2028, possibly related to power plant fuel source changes and air treatment upgrades as well as the increased use of electric vehicles, decreasing mobile sources (Himes and Dawson, 2017) and increased use of solar energy. This gradual decrease in atmospheric deposition of nitrogen will assist with creating the necessary reductions for this source. However, atmospheric deposition is a nitrogen source and is, therefore, estimated as a loading factor to the springs. As other sources are addressed and decreased, the relative percentage contribution of atmospheric sources is expected to increase. For this BMAP, atmospheric deposition sources and trends will be re-evaluated periodically. The regulatory programs that limit atmospheric sources are primarily national or international, which limits how this BMAP can regulate these sources.

- **PFA** – The PFA provides a guide for focusing strategies where science suggests efforts will best benefit the springs. The PFA boundary may be adjusted in the future if additional relevant information becomes available.

- **Project Collection Period –** The BMAP project collection period is limited to projects after

a certain date, based on the data used to calculate the reductions needed. Reductions from older projects are accounted for in the updated baseline loading. The timing eligibility for projects is dependent on the data used to estimate the NSILT loads, which also depend on the source type. The following project cutoff dates apply in this BMAP document, which are based on the data used in the most recent NSILT update.

  - Urban and agricultural stormwater projects: Projects completed in the BMAP, on or after January 1, 2005.
  - WWTF Improvements: Projects completed on or after January 1, 2022, or later. Prior projects were included in the NSILT estimates.
  - OSTDS Enhancements/50% Treatment or OSTDS Connection to Sewer: Projects completed on or after January 1 of the years listed below, based on the county in which the project is located and the FLWMI data year used in the 2023 NSILT update.
    - Jefferson County: 2021.
    - Madison County: 2022.

- **Legacy Sources** – Land uses, activities or management practices not currently active in the basin may still be affecting the nitrate concentration of the springs. The movement of water from the land surface through the soil column to the UFA and through the UFA to the spring system varies both spatially and temporally and is influenced by local soil and aquifer conditions. As a result, there may be a time lag between when nitrogen input to the UFA occurs and, ultimately, when that nitrogen arrives at the impaired springs. The timing of this delay is not fully known.

- **Milestones –** Assessment of progress toward the milestones must be conducted every five years and revisions to the plan must be made as appropriate. BMAPs use an adaptive management approach that allows for incremental load reductions through the implementation of projects and management strategies; however, the restoration target, or TMDL, remains the same.

- **Implementation Schedule** – Nutrient load reduction in BMAP implementation is intended to occur over 20 years. To meet the TMDL within this timeframe, this plan defines nitrogen reduction milestones for 2028 (30%), 2033 (+50%) and 2038 (+20%) implementation (see **Section 2.1.5** for further details). Further, the total reductions and the project credits may be adjusted under the adaptive management approach used for the BMAP. This approach requires regular follow-up to ensure that management strategies are carried out and that their incremental effects are assessed. The process acknowledges that there is some uncertainty associated with the outcomes of proposed management strategies and the estimated response in nitrogen concentration at the springs. As more information is gathered and progress

towards each milestone is reviewed, additional management strategies may be developed or existing strategies refined to better address the sources of nitrogen loading to achieve the TMDL.

- **Changes in Spring Flows** – The role of this BMAP is specifically to address the implementation of projects that reduce nitrogen load to groundwater, while the minimum flows and levels (MFLs) established for specific springs address water flows and levels. To maximize efforts between the two programs, it is recommended that when practicable, springs protection projects provide both water quality and quantity benefits.

2.1.3 Loading by Source

Based on the updated NSILT results, **Figure 2** depicts the estimated percentage of nitrogen loading to groundwater by source in the BMAP. For example, FF represents 49% of the total nitrogen loading to groundwater, LW including CAFO loads are 23.4%, and OSTDS loads are 6.5%. Stormwater loading to groundwater is incorporated into the various source categories.

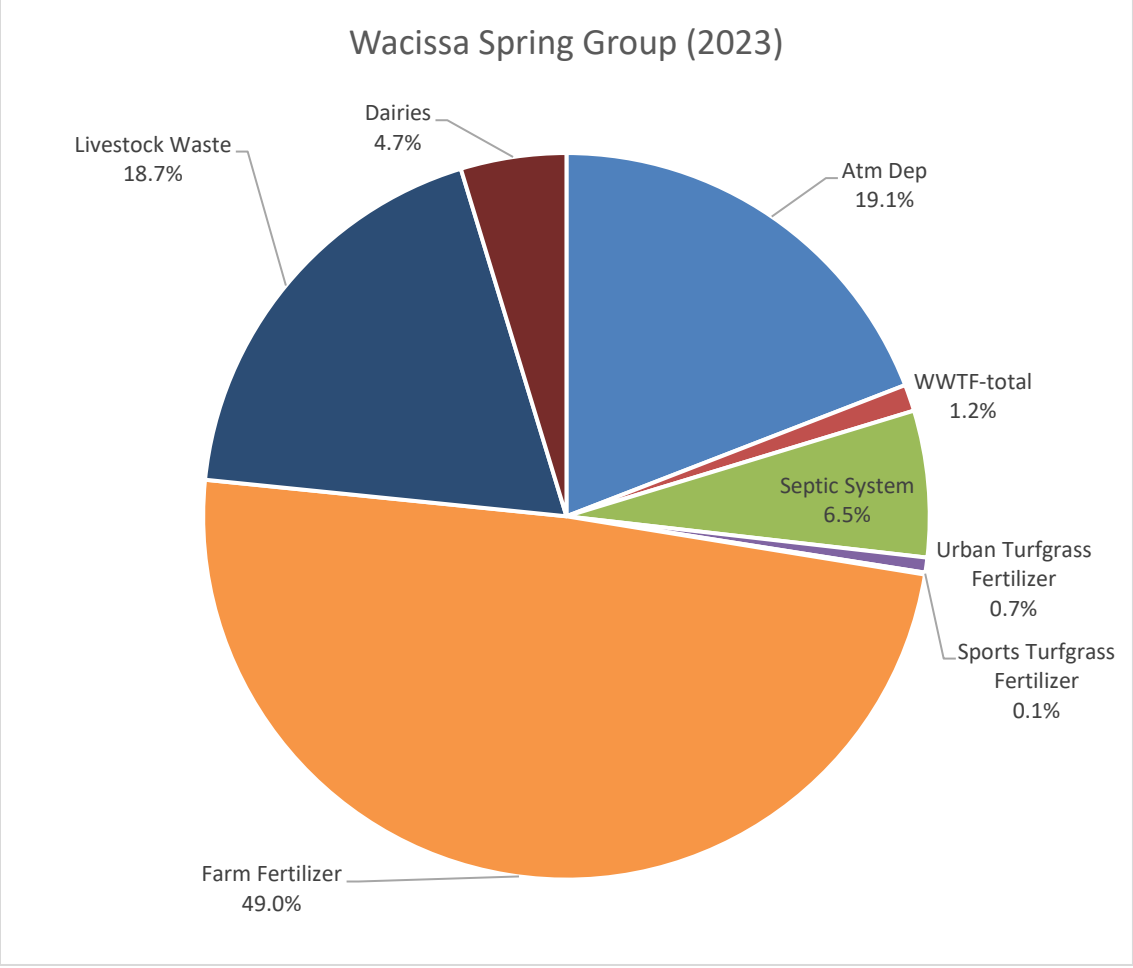

Figure 2. Loading to groundwater by source in the Wacissa River and Wacissa Spring Group BMAP area

2.1.4 Loading Allocation

The nitrogen source reductions are based on the estimated current nitrogen loading to groundwater

in the NSILT, the measured nitrate concentrations and flows at the vent, and the TMDL target nitrate concentrations. **Table 4** lists the measured nitrate (as nitrogen) loads at the spring vent compared with the TMDL nitrate target concentration of 0.24 mg/L. The difference between the spring vent loading and the TMDL loading target is the required percent reduction to meet the TMDL. The total required load reduction is allocated to sources and to entities based on existing loads.

Table 4. Total reduction required to meet the TMDL

Description	Nitrogen Loads (lbs/yr)	Notes Regarding Data Used
Total Load at Spring Vent	184,802	Upper 95% confidence interval - nitrate data and flow data from 2012 to 2022 (0.41 mg/L and 230 cubic feet per second [cfs])
TMDL Load	108,541	TMDL target is 0.24 mg/L and using the spring vent flow data from 2012 to 2022
Percent Reduction	41%	Calculated reduction needed based on the total load at the spring vent and the TMDL load
NSILT Load	550,649	Total load to groundwater from the updated NSILT
Required Reduction	**227,245**	**Percent reduction multiplied by the NSILT load**

2.1.5 Description of 2028, 2033, and 2038 Milestones/Reduction Schedule

Under HB 1379 (2023), section 403.067, F.S., was amended to require that TMDL implementation be addressed through milestones that include a list of projects that will achieve the pollutant load reductions to meet the TMDL or the load allocations established pursuant to subsection 403.067(6), F.S. Each project must include a planning-level cost estimate and an estimated completion date. Any responsible entity within the BMAP that has a pollutant load reduction requirement must identify projects or strategies to undertake to meet the current 5-year pollution reduction milestone. The overall load reduction targets are 30% of the total by 2028, 80% of the total by 2033, and 100% of the total by 2038. DEP will evaluate progress towards these milestones and will report implementation progress and project information to the Governor and Florida Legislature annually through the BMAP Statewide Annual Report (STAR). DEP will adjust management strategies if needed to reduce loading to the aquifer to ensure the target concentrations at the spring vent are achieved. This may include expanding the area to which the OSTDS remediation policies apply, requiring additional projects or management strategies, or developing other nutrient reduction policies. Any changes would be incorporated into a future BMAP update through a formal adoption process.

Table 5 lists the estimated nitrogen reduction schedule by milestone. Progress will be tracked yearly and adjustments made as needed. At the 2028 milestone, progress will be assessed and load reductions adjusted as necessary. Entities have flexibility in the types and locations of

projects as long as they achieve their required load reductions. Consideration may be given to entities with projects that are planned or underway that will be completed in a future milestone phase, to allow adequate time for projects to be fully implemented. **Section 2.2** describes detailed source reduction strategies.

Table 5. Nitrogen reduction schedule (lbs/yr)

2028 Milestone (30% of Total)	2033 Milestone (+50% of Total)	2038 Milestone (+20% of Total)	Total Nitrogen Reduction (100%)
68,173	113,622	45,499	227,245

2.2 Load Reduction Strategy

A precise total load reduction to groundwater needed to meet the TMDL is dependent on a number of complex factors and may be refined if additional information becomes available. Based on current information, there must be a reduction of at least 227,245lbs/yr TN by 2038 to achieve the TMDL. However, due to the distance of some reductions in relation to the spring vent and the uncertainties of fate and transport in the karst geology, additional actions may be necessary to ensure that loading at the spring vent is reduced to achieve the TMDL target within the timeline of the BMAP.

To increase our understanding of the relationship between project reductions and changes in concentrations at the spring vent, as well as the time lag of water movement within the springshed to the spring, water quality monitoring of existing groundwater within the BMAP and at the spring vent is essential.

2.3 Entity Allocations

The results from the NSILT and spring vent load analysis were used to calculate the nitrogen loads associated with each responsible stakeholder. **Table 6** summarizes the total required reductions assigned to each entity. Regional projects are state-sponsored management actions that treat nutrient loading from one or many sources.

Table 6. Total required reductions by entity

Entity	Total Assigned Reductions by Entity (lbs/yr)
Town of Greenville	6,802
Jefferson County	10,970
Madison County	2,905
City of Monticello	505
Agriculture	164,603
Private WWTFs	744
Private Golf Courses	147

Entity	Total Assigned Reductions by Entity (lbs/yr)
Total, All Reductions	**186,676**

Table 7 includes the 5-year milestone required reductions for each entity. **Table 8** compares the current list of planned, underway, and completed projects to the first 5-year milestone. The management actions provided by responsible stakeholders to achieve these reductions are described in **Appendix B**.

Responsible entities must submit a sufficient list of additional projects and management strategies to DEP no later than January 14, 2026, to be compliant with the upcoming BMAP milestone or be subject to further department enforcement.

If any lead entity is unable to submit a sufficient list of eligible management strategies to meet their next 5-year milestone reductions, specific project identification efforts are required to be submitted by January 14, 2026. Any such project identification efforts must define the purpose of and a timeline to identify sufficient projects to meet the upcoming milestone. The project description and estimated completion date for any such project identification effort must be provided and reflect the urgency of defining, funding, and implementing projects to meet the upcoming and future BMAP milestones. These planning efforts are ineligible for BMAP credit themselves but are necessary to demonstrate that additional eligible management actions will be forthcoming and BMAP compliance will be achieved. Examples of project identification efforts are included in **Appendix C**. Only those entities that provide sufficient project identification efforts will be deemed as possessing a defined compliance schedule. Those entities without an adequate project list nor a defined compliance schedule to meet their upcoming 5-year milestone may be subject to enforcement actions.

Table 7. 5-year milestone required reductions by entity

Entity	2028 Milestone Assigned Reductions (30%) (lbs/yr)	2033 Milestone Assigned Reductions (80%) (lbs/yr)	2038 Milestone Assigned Reductions (100%) (lbs/yr)
Town of Greenville	2,041	5,442	6,802
Jefferson County	3,291	8,776	10,970
Madison County	872	2,324	2,905
City of Monticello	152	404	505
Agriculture	49,381	131,682	164,603
Private WWTFs	223	595	744
Private Golf Courses	44	118	147
Total, All Reductions	**56,004**	**149,341**	186,676

Table 8. Progress towards next 5-year milestone by entity

** Planned and underway project reduction estimates are not verified by DEP.*

*** Projected reductions include projects with a project status of completed, ongoing, planned, and underway.*

Entity	2028 Milestone Assigned Reductions (30%) (lbs/yr)	TN Reductions from Completed & Ongoing Projects (lbs/yr)	TN Reductions from Planned & Underway Projects* (Not Verified) (lbs/yr)	Total Projected** Project TN Reductions by Entity Through 2028 (lbs/yr)
Town of Greenville	2,041	954	6,210	7,164
Jefferson County	3,291	0	0	0
Madison County	872	0	0	0
City of Monticello	152	0	0	0
Agriculture	49,381	80,428	6,975	87,403
Private WWTFs	223	0	0	0
Private Golf Courses	44	0	0	0
Total, All Reductions	**56,004**	**81,382**	**13,185**	**94,567**

2.4 Prioritization of Management Strategies

Required under Chapter 373.807, F.S., management strategies listed in **Appendix B** are ranked with a priority of high, medium, or low. To help prioritize projects towards the next milestone as required under 403.067, F.S., planning-level details for each listed project, along with their priority ranking have been determined.

Project status was selected as the most appropriate indicator of a project's priority ranking based primarily on if the project is going towards the next 5-year milestone, as well as need for funding. Overall, any project that is needed by a responsible entity to meet their next reduction milestone is considered a priority. Projects classified as "underway" were assigned a high or medium priority because some resources have been allocated to these projects, but additional assistance may be needed for the project to be completed. High priority was assigned to projects listed with the project status "planned" that are needed to meet the next milestone, as well as certain "completed" projects that are designated as "ongoing" each year, and select projects that are elevated because substantial, subsequent project(s) are reliant on their completion.

2.5 OSTDS Management Strategies

2.5.1 Management of New OSTDS Loads

Beginning July 1, 2023, sections 373.811 and 403.067, F.S., prohibit any new conventional OSTDS serving a lot of one acre or less where central sewer is available. Within this BMAP area, if central sewer is unavailable on lots of one acre or less,, then the owner must install a DEP-approved enhanced nutrient-reducing OSTDS that achieves 65% nitrogen reduction, or other wastewater system that achieves 65% reduction.

2.5.2 Existing OSTDS Remediation

Currently, existing OSTDS are not required to receive additional nitrogen treatment. In this iteration, this BMAP does not require OSTDS remediation plans from local governments. However, annually through the statewide reporting process, management actions that reduce loads from existing OSTDS such as sewer connection, adding enhancement nitrogen treatment to OSTDS, or installing another type of wastewater system on the property, are eligible as restoration efforts.

Enhanced OSTDS can achieve an estimated 50% improvement in the load to groundwater compared to a conventional system. OSTDS replaced by sewer reduce the conventional nitrogen inputs by an estimated 95%, assuming a sewer connection to a WWTF meeting AWT levels. For projects addressing OSTDS loads, load reductions are estimated based on average nitrogen loads per person and the U.S. Census information on the county's average number of persons per household. The OSTDS location determines the applicable county. The improvement to groundwater is calculated by applying an attenuation rate as well as a location-based recharge factor, which estimates how likely the improved loading will travel into the deep groundwater system. For more information about how OSTDS loads were estimated, see the NSILT Technical Support Document in **Appendix F**.

2.5.2.1 Section 373.807, F.S.

Subsection 373.807(3), F.S., specifies that if, during the development of a BMAP for an OFS, DEP identifies OSTDS as contributors of at least 20% of nonpoint source nitrogen pollution in a PFA or if DEP determines OSTDS remediation is necessary to achieve the TMDL, the BMAP must include an OSTDS remediation plan. The OSTDS remediation plan requires policies for new OSTDS to provide loading reductions consistent with achieving the TMDL within 20 years of plan adoption (subparagraph 373.807(1)(b)8., F.S.).

DEP assessed the overall OSTDS loading compared to other nitrogen sources in the BMAP area. Based on these assessments, DEP has determined that OSTDS contribute less than 20% of nonpoint source nitrogen pollution to the OFS. In this iteration of the BMAP, the OSTDS remediation plan pursuant to section 373.807, F.S., (**Appendix E**), does not include requirements for the addition of enhanced nitrogen reducing treatment to conventional systems upon the need for modification or repair of existing OSTDS. However, remediation of existing conventional OSTDS will still be beneficial to mitigate nitrogen loading from this source, restore associated groundwater and surface water to achieve the TMDLs and to minimize nitrogen loads from future growth.

Based on FLWMI data (2021-2022), there are approximately 4,126 known and likely OSTDS in the PFA and approximately 5,209 known and likely OSTDS in the BMAP (**Figure 3**). **Table E-1** in **Appendix E** summarizes the estimated count of OSTDS throughout the basin. **Figure E-1** shows the locations of all OSTDS in the BMAP area based on FLWMI; however, local governments or utilities may have more current information about OSTDS locations in their jurisdiction.

2.5.2.2 Subsection 403.067(7)(a)9., F.S

Subparagraph 403.067(7)(a)9., F.S., also requires local governments within a BMAP to develop an OSTDS remediation plan that is adopted as part of the BMAP no later than July 1, 2025, if DEP identifies OSTDS as contributors of at least 20% of point source or nonpoint source nutrient pollution or if DEP determines remediation is necessary to achieve the TMDL. Loading from OSTDS in this BMAP does not meet the 20% contribution threshold; therefore, local governments were not required to submit an OSTDS remediation plan for this BMAP iteration.

This BMAP encourages local governments to include the remediation of OSTDS as options for their management actions, including those described in **Appendix B** and updated annually through the statewide reporting process that reduce loads from existing OSTDS through either sewer connection, adding enhancement nitrogen treatment to OSTDS, or installing another type of wastewater system on the property, as applicable. Local governments are encouraged to submit projects describing how OSTDS loads are addressed as part of BMAP reporting and estimate the load reductions associated with each project. The estimated reductions to the spring from addressing these septic systems will be based on several factors, including how they are addressed (i.e., connection to sewer or enhancement) and the amount of attenuation and recharge that occurs. These projects are described in **Appendix B**.

2.5.2.3 Local Government Ordinances

Local governments may have existing ordinances or could adopt new ordinances that add additional requirements for enhancement of OSTDS. To expedite remediation of wastewater sources and to facilitate achievement of assigned milestones in this BMAP, DEP encourages local governments to adopt such ordinances.

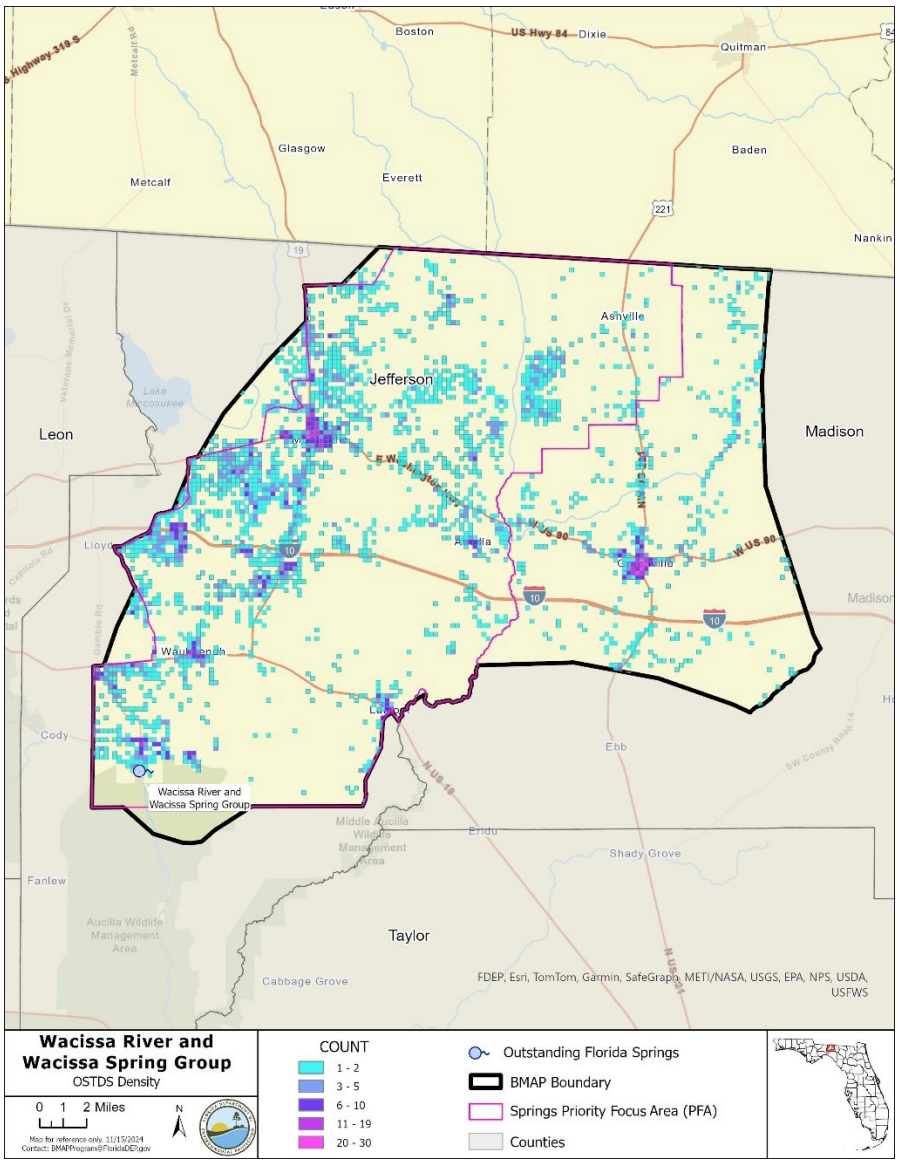

Figure 3. Estimated OSTDS location density in the Wacissa River and Wacissa Spring Group BMAP area and PFA

2.6 WWTF Management Strategies

2.6.1 Facility Improvements and Effluent Limits

There are several WWTFs located in the Wacissa River and Wacissa Spring Group BMAP area, including three domestic WWTFs permitted to discharge more than 100,000 gallons of treated effluent per day (or 0.1 million gallons per day [mgd]). **Figure 4** shows the locations of domestic WWTFs in the Wacissa River and Wacissa Spring Group BMAP.

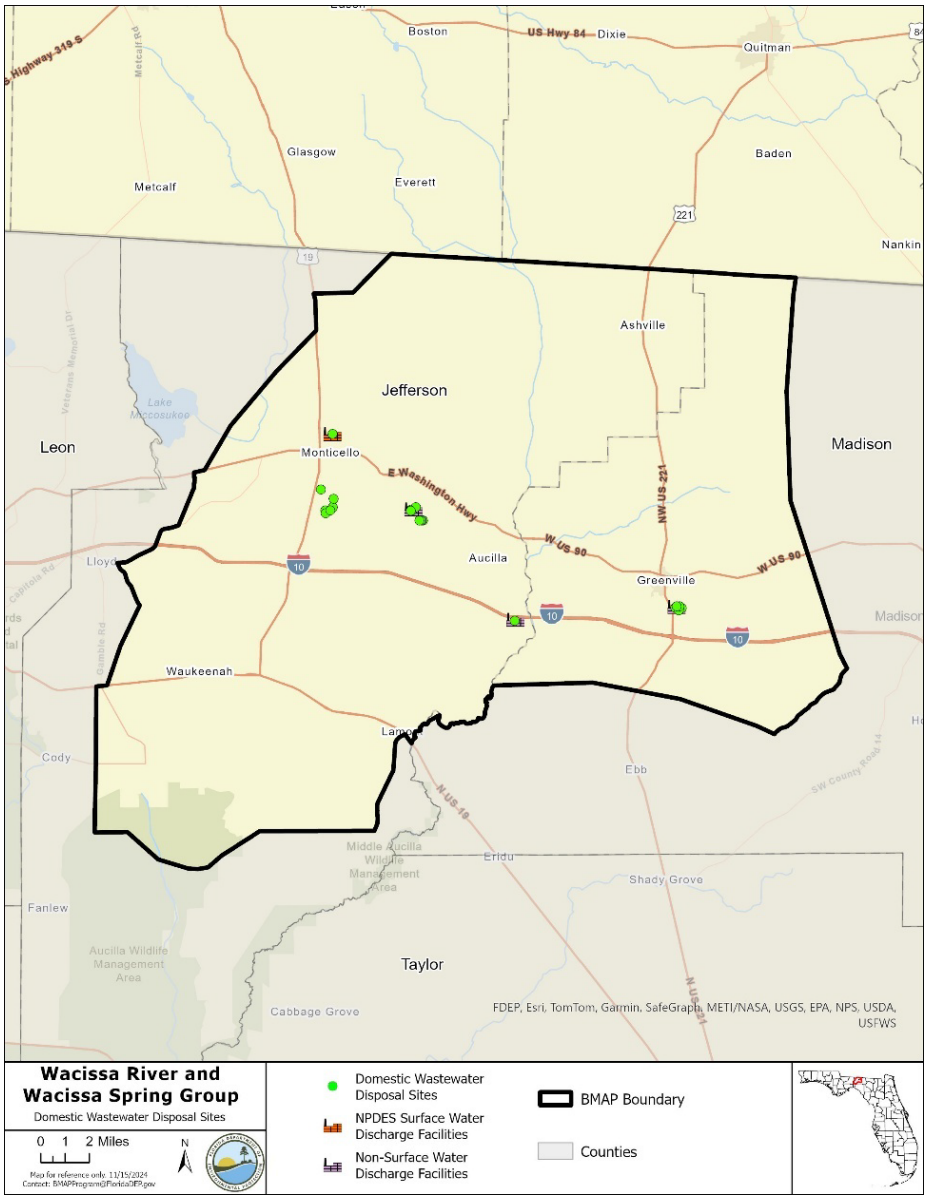

Figure 4. Locations of domestic WWTFs in the Wacissa River and Wacissa Spring Group BMAP Area

In the Wacissa River and Wacissa Spring Group BMAP area is discharged to sprayfields. The nitrogen load from WWTFs is 6,524 lbs-N/year. The discharge location (such as proximity to the spring, highly permeable soils, etc.) and level of wastewater treatment are important factors to consider when calculating loadings to groundwater.

The U.S. EPA authorizes DEP to issue permits for discharges to surface waters under the National Pollutant Discharge and Elimination System (NPDES) Program. Permits for discharges to groundwater are issued by DEP based on Florida law and rules. Wastewater discharge permits establish specific limitations and requirements based on the location and type of facility or

activity releasing industrial or domestic wastewater from a point source. In areas with an adopted, nutrient-related BMAP prior to July 1, 2023, section 403.086, F.S., requires any facility discharging to a waterbody to upgrade to AWT by January 1, 2033. Further, waterbodies determined not to be attaining nutrient or nutrient-related standards after July 1, 2023, or subject to a BMAP or reasonable assurance plan (RAP) after July 1, 2023, have 10 years to provide AWT after such determination or adoption.

Further, section 373.811, F.S., prohibits new domestic wastewater disposal facilities, including those discharging to RIBs, with permitted capacities of 100,000 gallons per day or more, unless the discharge meets the AWT standard of no more than 3 mg/L TN, on an annual permitted basis, or a more stringent treatment standard if the department determines the more stringent standard is necessary to attain a TMDL for the OFS.

The nitrogen effluent limits set forth in **Table 9** will be applied as an annual average, taken at end of pipe before any land disposal (or other authorized compliance point), to all new and existing WWTFs with a DEP-permitted discharge or disposal area within this BMAP. DEP will evaluate the need for more stringent nutrient effluent limits as appropriate.

Table 9. Wastewater effluent standards for the BMAP area

95% of the Permitted Capacity (gpd)	Surface Water Discharges (mg/L)	WWTFs Not Listed in Appendix G – Rapid Rate Land Application Effluent Disposal System (mg/L)	WWTFs Not Listed in Appendix G – All Other Disposal Methods, Including Reuse (mg/L)
Greater than 100,000	3	3	3
20,000 to 100,000	3	3	6
Less than 20,000	3	6	6

Where the law does not provide a compliance timeframe, new effluent standards will take effect at the time of permit renewal or no later than five years after BMAP adoption, whichever is sooner.

Additionally, new and existing wastewater permits in the BMAP area must require at least quarterly sampling of the effluent discharge for TN concentrations and report these sampling results in the discharge monitoring reports (DMRs) submitted to DEP.

In 2021, subsection 403.064(16), F.S., was amended where domestic wastewater utilities that dispose of effluent, reclaimed water, or reuse water by surface water discharge were required to submit for DEP review and approval, a plan for eliminating non-beneficial surface water discharge by January 1, 2032. A utility must fully implement the approved plan by January 1, 2032. If a plan was not timely submitted or approved by DEP, the utility's domestic WWTFs may not dispose of effluent, reclaimed water, or reuse water by surface water discharge after January 1, 2028. Violations are subject to administrative and civil penalties pursuant to sections

403.121, 403.131, and 403.141, F.S.

2.6.2 Reclaimed Water Effluent Limits

In accordance with section 403.086. F.S., by July 1, 2034, any WWTF providing reclaimed water that will be used for commercial or residential irrigation or be otherwise land applied within a nutrient BMAP or RAP area is required to meet AWT standards for TN and total phosphorus (TP), such that the reclaimed water product contains not more, on a permitted annual average basis, of 3 mg/L of TN and 1 mg/L of TP if the department has determined in an applicable basin management action plan or reasonable assurance plan that the use of reclaimed water as described in this subparagraph is causing or contributing to the nutrient impairment being addressed in such plan.. These requirements do not apply to reclaimed water that is land applied as part of a water quality restoration project or water resource development project approved by DEP to meet a TMDL or minimum flow or level and where the TN and TP will be at or below AWT standards prior to entering groundwater or surface water.

DEP has determined that certain WWTFs providing reclaimed water for the purpose of commercial or residential irrigation or that is otherwise being land applied within this BMAP area are causing or contributing to the nutrient impairments being addressed in this BMAP. Based on DEP's determination, these facilities are identified in **Appendix G** and are subject to the nitrogen and phosphorus limits set forth in section 403.086, F.S. The facilities listed in **Appendix G** have 10 years from BMAP adoption to meet the applicable AWT standards. This requirement does not prevent the department from requiring an alternative treatment standard, if the department determines the alternative standard is necessary to achieve the TMDL(s) or applicable water quality criteria. For facilities that did not have adequate information to complete an evaluation or where a change occurs to the facility's application of reclaimed water after the initial evaluation (e.g., an increase in facility capacity or change in location of reclaimed water application), the department will evaluate the land application of reclaimed water as more information becomes available pursuant to section 403.086, F.S.

All new permitted facilities providing reclaimed water that will be used for commercial or residential irrigation or be otherwise land applied within the BMAP area are required to meet AWT standards for TN in accordance with section 403.086, F.S.

DEP encourages the reuse of treated wastewater for irrigation as a water conservation measure. The expansion of reuse water for irrigation can reduce reliance on the Floridan aquifer for water supply. The nitrogen load to groundwater from reuse water is expected to be reduced through these WWTF policies, as improvements in reuse water quality will both reduce loads from this source and minimize future increases in nutrient loading from reuse because of higher treatment levels.

2.6.3 Wastewater Treatment Facility Plans

Subparagraph 403.067(7)(a)9., F.S., requires local governments within a BMAP to develop WWTF plans to be adopted as part of nutrient BMAPs no later than July 1, 2025, if DEP identifies domestic wastewater as contributors of at least 20% of point source or nonpoint source

nutrient pollution or if DEP determines remediation is necessary to achieve the TMDL. The WWTF plans must be developed by each local government in cooperation with DEP, WMDs, and public and private domestic wastewater facilities within the jurisdiction of the local government. Each local government's wastewater treatment plan for applicable BMAPs must contain the information outlined in Final Order 23-0112 to 23-0135 for each existing or proposed domestic wastewater facility in the local government's jurisdiction.

Subparagraph 403.067(7)(a)9., F.S., was amended in 2024 to clarify that private domestic wastewater facilities must provide this information to local governments effective July 1, 2024. Information related to private facilities will need to be included in future local government WWTF plans if not captured in the initial plans.

Loading from WWTFs in this BMAP does not meet the 20% contribution threshold; therefore, local governments were not required to submit a wastewater treatment remediation plan for this BMAP iteration. However, DEP encourages all local governments to undertake planning initiatives to address loading from WWTFs in their jurisdictions and plan for future growth.

2.6.4 Connection to Sewer

The installation of new OSTDS within a BMAP area is prohibited where connection to sewer lines is available. For existing OSTDS, the owner must connect to sewer within 365 days of written notification by the utility that connection to its sewer line is available. A utility is statutorily required (section 381.00655, F.S.) to provide written notice to existing OSTDS owners regarding the availability of sewer lines for connection. Additionally, existing OSTDS needing repair or modification must connect to available sewer lines within 90 days of notification by DEP.

To facilitate an inventory of noncompliant properties, by February 2, 2026, and every two years thereafter, each utility with sewer lines in the BMAP shall provide DEP a list of properties with existing OSTDS where sewer is available but has not connected. For each identified property, include the date(s) which the utility provided written notice to the owners of the availability of sewer.

2.6.5 Biosolids and Septage

To provide assurance that nitrogen and phosphorus losses to surface water and groundwater are minimized from the permitted application of biosolids and septage in the BMAP area, the requirements in Chapter 62-640 F.A.C. apply to newly permitted application sites and existing application sites upon permit renewal. Where biosolids materials mixed with yard waste or other organic materials are distributed as compost or soil amendments, DEP recommends the recipients of these materials be notified of their increased nutrient content, so that any fertilization practices on the site can be adjusted accordingly. FDACS and UF-IFAS are coordinating efforts to ensure that the distribution process for these kinds of materials includes notification of the nutrient content to the site manager.

2.7 UTF Management Strategies

UTF consists of fertilizers applied to turfgrass typically found in residential and urban areas (including residential lawns and public green spaces). It is applied by either the homeowner or a lawn service company on residential properties, while on nonresidential properties they may be applied by contractors or maintenance staff. UTF can be addressed through a mix of efforts, including public education, enforcement of local ordinances (regulating fertilizer use and irrigation), land development codes or stormwater projects. Based on progress towards meeting the TMDL and water quality monitoring results, reduction requirements and crediting of projects such as fertilizer ordinances and education efforts may be reevaluated in future BMAP updates, particularly with respect to enforcement of fertilizer ordinances. As part of the annual reporting process, stakeholders will be required to provide a detailed and quantified description of their ordinance enforcement and environmental education activities to receive credits for these activities.

It is recommended that appropriate grasses are used based on soil characteristics, irrigation needs and fertilization needs. It is recommended that Bahia grass (*Paspalum notatum*), which is a durable grass that can be drought and heat tolerant should be used over St. Augustinegrass (*Stenotaphrum secundatum*) on sandy soils within spring BMAPs. Both homeowners and developers should follow the recommendations within the BMAP. If a local government has recommendations for what grasses should be used, DEP recommends that homeowners and developers follow them for the protection of water resources, if they are different than the BMAP.

Using reclaimed water is a way to distribute nutrients that need to be disposed of onto locations where nutrients are needed. However, caution needs to be exercised when applying nutrients (through fertilizer or reclaimed water) in the recharge area for the springs. For areas using reclaimed water for irrigation, it is important to understand the amount of nitrogen and phosphorus that is needed for the landscape and how much is being applied through reclaimed water. Monitoring the concentration of nitrogen and phosphorus in reclaimed water is important for understanding how much nutrients are being applied onto the urban landscape. The result may be that reclaimed water customers will not need to add more phosphorus or nitrogen, resulting in lower fertilizer costs and possibly fewer maintenance requirements and costs (e.g., mowing, turf replacement).

Given the limitations with the data used in the NSILT to estimate the UTF loading to groundwater, DEP will work with entities and other agencies to collect better data by requiring more detailed documentation on behavior changes and water quality improvements. In addition, DEP will work with stakeholders to improve on additional measures to reduce residential and commercial property fertilizer application, such as requiring annual reporting on ordinance enforcement and results from local governments.

2.7.1 Fertilizer Ordinance Adoption

Subsection 373.807(2), F.S., requires local governments with jurisdictional boundaries that

include an OFS or any part of a springshed or delineated PFA of an OFS to develop, enact and implement a fertilizer ordinance by July 1, 2017. The ordinance is required to be based, at a minimum, on the DEP model ordinance for Florida-friendly fertilizer use on urban landscapes. As part of the annual reporting process, stakeholders will be required to provide a detailed and quantified description of their ordinance enforcement to receive credits for these activities.

2.7.2 Municipal Separate Storm Sewer System (MS4) Designations

Although loading from urban stormwater is not specifically estimated in the NSILT, urban stormwater is a considerable source of nutrient loading the Wacissa River and Wacissa Spring Group and many urban areas are already regulated under the Municipal Separate Storm Sewer System (MS4) NPDES Stormwater Program. An MS4 is a conveyance or system of conveyances, such as roads with stormwater systems, municipal streets, catch basins, curbs, gutters, ditches, constructed channels, or storm drains. If an MS4 permittee is identified as a contributor in the BMAP, the permitted MS4 must undertake projects specified in the BMAP. Refer to **Appendix A** for a link to a list of MS4 permittees.

Regulated MS4s are required to implement stormwater management programs (SWMP) to reduce pollutants to the maximum extent practicable and address applicable TMDL allocations. Both Phase I and Phase II MS4 permits include provisions for the modification of SWMP activities. Phase I medium and large MS4s are regulated under an individual permit, with multiple permittees having coverage under the same permit as "co-permittees." Phase II small MS4s are regulated under a generic permit. Under the "NPDES Two-Step Generic Permit for Discharge of Stormwater from Phase II MS4s" (paragraph 62-621.300(7)(a), F.A.C.), regulated Phase II MS4s must develop a SWMP that includes BMPs with measurable goals and a schedule for implementation to meet six minimum control measures.

DEP can designate an entity as a regulated MS4 if its discharges meet the requirements of the rule and are determined to be a significant contributor of pollutants to surface waters of the state in accordance with Rule 62-624.800, F.A.C. A Phase II MS4 can be designated for regulation when a TMDL has been adopted for a waterbody or segment into which the MS4 discharges the pollutant(s) of concern. Because urban areas located in the BMAP that are not currently covered by an MS4 permit also significantly contribute to nutrient loading, individually or in aggregate, the NPDES Stormwater Program will, within five years of BMAP adoption, evaluate any entity located in the BMAP area that serves a minimum resident population of at least 1,000 individuals that is not currently covered by an MS4 permit and designate eligible entities as regulated MS4s, in accordance with Chapter 62-624, F.A.C.

2.7.3 Stormwater Rule

On June 28, 2024, Governor Ron DeSantis signed Senate Bill 7040 into law, which updates Florida's stormwater rules and design criteria, including Chapter 62-330 F.A.C., to protect the state's waterways. The new regulations aim to manage runoff from developments, ensuring that future stormwater systems are better maintained. Operation and maintenance entities will be required to have estimates for the expected routine maintenance costs and to certify that they

have the financial capability to maintain the stormwater system over time. The rule will also provide for more consistent oversight through a required periodic inspection routine and reporting on the inspection results to the permitting agency.

Additionally, under Chapter 62-330 F.A.C., the new rule establishes requirements for applicants to demonstrate, through calculations or modeling, that the future stormwater management systems would provide additional treatment to meet new Environmental Resource Permits stormwater treatment performance standards for an 80% reduction for TP and 55% reduction for TN, along with additional requirements that would apply where a project discharges to Outstanding Florida Waters or impaired waters. Additional permitting requirements to protect groundwater can be found within the Stormwater Applicant Handbook Volume I, Section 8.5.2.

2.8 STF Management Strategies

Sports turfgrass areas fall into two main categories that are evaluated separately: golf courses and sporting facilities (such as baseball, football, soccer and other fields). There is one golf course covering 124 acres in the Wacissa River and Wacissa Spring Group BMAP area. All The golf course acreage is located in low recharge areas. There are two sports fields covering approximately 21 acres in the BMAP area. DEP and UF-IFAS are collaborating to create a BMP manual addressing sports turfgrass management for public and private entities, which will be complete in 2025.

DEP will work with sports field managers and golf course superintendents to ensure relevant BMPs are implemented and to estimate reductions associated with these efforts. To improve the golf course loading estimate to groundwater over a literature-based approach, DEP will also confer with golf course superintendents to update fertilizer application rates based on site-specific data.

For other sports facilities besides golf courses, managers of sports fields can assist by reducing fertilizer use, using products that reduce leaching, and irrigating sports turf more efficiently irrigating.

2.8.1 Golf Courses

All golf course superintendents within the BMAP must obtain a certification for golf course BMPs (UF-IFAS Florida Golf Courses Best Management Practices Program) under section 403.9339 F.S. and all golf courses must implement the BMPs described in the DEP golf course BMP manual, *Best Management Practices for the Enhancement of Environmental Quality on Florida Golf Courses (DEP, 2021)*. All golf courses located within a BMAP are required to submit an NMP to DEP that is designed to sustain even plant growth while minimizing excessive growth and nutrient losses. Required information for the NMP is available in **Appendix H**. A draft NMP must be submitted to DEP within one year of BMAP adoption and a final document is due two years after adoption. All soil, water and tissue sampling must include appropriate nitrogen and phosphorous analyses.

If a facility (either golf course or other sporting facility) uses fertilizer rates greater than those in the BMP manuals, the facility is required to conduct water quality monitoring prescribed by DEP or a WMD that demonstrates compliance with water quality standards. Private golf courses in the BMAP area are listed in **Appendix J**.

2.9 Agricultural Sources Management Strategies

As presented in **Appendix I**, based on data including Florida Statewide Agricultural Irrigation Demand (FSAID) IX geodatabase land use, FDACS identified agricultural acreage within the BMAP. An estimated 46,623 acres of land in the BMAP are considered agricultural based on FDACS' assessment.

While agriculture is essential, it is important to manage potential environmental impacts associated with agricultural operations. Nitrogen and phosphorus, essential for crop growth, can enter waterways through various agricultural activities, including fertilizer application, livestock waste disposal and irrigation runoff. To address nutrient loading from agricultural operations effectively, it is necessary to have a balanced approach that supports agricultural productivity while safeguarding water resources. This entails promoting farming practices that optimize nutrient and water use efficiency, minimize runoff and enhance soil health.

Section 403.067, F.S., requires agricultural producers in adopted BMAPs either enroll and properly implement the applicable FDACS BMPs for their operation or to conduct water quality monitoring activities as required by Chapter 62-307, F.A.C. BMPs include practices such as nutrient management, irrigation management. and water resource protection. They can mitigate nutrient loading while promoting environmental stewardship. In many BMAPs, however, the implementation of BMPs alone will not be sufficient to meet water quality restoration goals, and regional projects and innovative technologies will be needed.

Information on agricultural enrollment and reductions in this BMAP was provided by FDACS and is available in **Appendix I**.

2.9.1 FF Loading

Nitrogen in agricultural fertilizer is applied at varying rates, depending on the crop and individual farm practices. The NSILT estimated total nitrogen load to groundwater from FF is 270,052 lbs/yr TN, or 49% of the total nitrogen load to groundwater in the BMAP area**.** FF includes commercial inorganic fertilizer applied to row crops, field crops, pasture, hay fields, and nurseries.

2.9.2 LW Loading

Agricultural practices specific to livestock management were obtained through meetings with UF-IFAS extension, FDACS, agricultural producers and stakeholders. The NSILT estimated total nitrogen load to groundwater from LW is 102,964 lbs/yr TN, or 18.7% of the total nitrogen load to groundwater in the BMAP area.

2.9.2.1 Dairies and Other Concentrated Animal Feeding Operations (CAFOs)

There are currently three CAFO dairies within the Wacissa BMAP. CAFO dairies permitted under Chapter 62-670, F.A.C., located within a BMAP, may not cause or contribute to a violation of water quality standards and must implement nutrient management practices identified in the permits. To minimize infiltration of liquid manure, waste storage ponds must be lined using a concrete or geosynthetic liner. If a clay liner exists, then the operation will need to upgrade to a concrete or geosynthetic liner when funding is available, or it must demonstrate that the liner does not allow leaching that results in water quality exceedances.

Additionally, sampling for TN and TP of land applied effluent/wastewater must be included in the DEP-approved nutrient monitoring plan established in the permit and implemented in accordance with the monitoring plan.

2.9.2.2 Livestock Operations Without CAFO Permits

Livestock operations may not cause or contribute to a violation of water quality standards. Not all livestock operations are large enough to require an NPDES CAFO permit under Chapter 62-670, F.A.C. For these operations, section 403.067, F.S., requires the operation to enroll in the FDACS BMP Program and implement applicable BMPs or to conduct a monitoring program according to Chapter 62-307, F.A.C., that is approved by DEP or the applicable WMD.

2.9.3 Aquaculture

Under the federal Clean Water Act, aquaculture activities are defined as a point source. In 1999, the Florida Legislature amended Chapter 597, F.S., Florida Aquaculture Policy Act, to create a program within FDACS that requires those who sell aquatic species to annually acquire an Aquaculture Certificate of Registration and implement Chapter 5L-3, F.A.C., Aquaculture BMPs. Permit holders must be certified every year.

2.9.4 Silviculture

The Florida Forest Service (FFS) within FDACS is the lead entity responsible for assisting landowners, loggers, and forestry professionals with silviculture BMP implementation as well as for conducting statewide silviculture BMP training and compliance monitoring. The FFS implements Chapter 5I-6, F.A.C., and requires both private and public forest landowners across the state to comply with BMPs and the rule. Compliance with the rule involves submitting a Notice of Intent to Implement BMPs (NOI) to the FFS and thereby committing to follow BMPs during all current and future forestry operations.

2.9.5 Prioritized Management Strategies and Milestones

In addition to the above requirements, subsection 373.811(5), F.S., prohibits any new agricultural operations that do not implement either applicable FDACS BMPs, or measures necessary to achieve pollution reduction levels established by DEP, or groundwater monitoring plans approved by a WMD or DEP. Failure to implement BMPs or conduct water quality monitoring that demonstrates compliance with pollutant reductions may result in enforcement action by DEP (paragraph 403.067(7)(b), F.S.).

Every two years, FDACS is required to perform onsite inspections of each agricultural producer that enrolls in BMPs to ensure that the practices are being properly implemented. The verification includes: review and collection of nutrient application records that producers must maintain to demonstrate compliance with the BMP Program; verification that all other applicable BMPs are being properly implemented; verification that any cost shared practices are being properly implemented; and identification of potential cost share practices, projects or other applicable BMPs not identified during enrollment. Rule 5M-1.008, F.A.C., outlines the procedures used to verify the implementation of agricultural BMPs. Producers not implementing BMPs according to the process outlined in Chapter 5M-1, F.A.C., are referred to DEP for enforcement action after attempts at remedial action by FDACS are exhausted. Failure to implement BMPs or conduct water quality monitoring that demonstrates compliance with pollutant reductions may result in enforcement action by DEP (paragraph 403.067(7)(b), F.S.).

Pursuant to paragraph 403.067(7)(c), F.S., where water quality problems are demonstrated the appropriate implementation, operation, and maintenance of adopted BMPs, DEP, a WMD or FDACS, in consultation with DEP, must conduct a reevaluation of the BMPs. If a reevaluation of the BMPs is needed, FDACS will also include DEP, the appropriate WMD, and other partners in the reevaluation and BMP update processes.

FDACS will work with applicable producers within the BMAP area to implement BMPs. As of July 2024, NOIs covered 26,539 acres in the Wacissa River and Wacissa Spring Group BMAP area (26,59 of 48,231 adjusted agricultural acres). Currently, no producers are conducting water quality monitoring in lieu of implementing BMPs. **Appendix B** lists project information. **Appendix I** provides detailed information on BMPs and agricultural practices in the BMAP area.

2.9.6 Agricultural Cooperative Regional Elements

Section 403.067, F.S., requires FDACS, DEP, and agricultural producers to work together to establish Agricultural Cooperative Regional Water Quality Elements (ACE) in BMAPs where agricultural nonpoint sources contribute at least 20% of nonpoint source nutrient discharges to impaired waterbodies, or where DEP determines this element is necessary to achieve the TMDLs. FDACS is responsible for providing DEP a list of projects which, in combination with BMPs, state-sponsored regional projects and other management strategies, will achieve the needed pollutant load reductions established for agricultural nonpoint sources. The list of projects included in the ACE must include a planning-level cost estimate of each project along with the estimated amount of nutrient reduction that such project will achieve. Partner agencies and key stakeholders referred to in this process include FDACS, DEP and agricultural producers.

Addressing nutrient loading from agricultural sources in Florida's waterways requires collective action and partnership among the key stakeholders, and in consultation with the WMDs. By fostering cooperation and engagement, the ACE framework facilitates the exchange of knowledge, resources, and expertise, leading to innovative solutions and effective strategies for tackling water quality challenges. Engaging producers in the decision-making process ensures that projects are practical, feasible, and tailored to the needs and realities of agricultural

operations. Partner agencies provide technical support, regulatory guidance, and funding opportunities that will enhance the implementation and success of regional water quality improvement initiatives. This cooperative effort is essential for implementing targeted actions that balance the economic and social benefits of agriculture with the obligation to address agricultural nonpoint source loading beyond BMP implementation and cost share.

The ACE framework leverages resources and technical expertise to efficiently identify regional projects and other strategies tailored to the diverse agriculture production methods, landscapes, and watersheds that will need to be implemented to achieve the TMDLs. Regional project types will vary among the different BMAPs, and can include, but are not limited to, a combination of traditional projects that focus on water treatment, land acquisition in fee or conservation easements on the lands of willing sellers, site-specific water quality improvement projects, dispersed water management projects, innovative technologies, and regional projects funded through existing or enhanced cost share programs administered by FDACS or the WMDs.

While FDACS is assigned the lead role on project solicitation, development, selection, and implementation, they will work closely with all the key stakeholders, including DEP as a partner agency, to define and identify regional projects that will be included in the BMAP and to leverage existing programs and resources. FDACS will lead engagement with producers and industry groups through workshops to identify potential regional projects. Identified projects will be implemented through various mechanisms, such as existing agency cost share or grant programs or through a legislative budget request and eventual appropriation. Upon identification of a project, FDACS will update DEP on project development and implementation, including the funding strategy.

FDACS and DEP will work together to track progress on agricultural water quality projects under the ACE framework through the development of performance metrics and evaluation of water quality monitoring data in the basin or, if necessary, at the project level. The default performance measures will be the expected range of pollutant removal efficiencies associated with a project or strategy. Tools may be needed to determine the effectiveness of projects, such as modeling and where feasible onsite water quality monitoring.

FDACS will report on projects annually through DEP's STAR process and during BMAP update and/or development. Projects and other management strategies implemented through the ACE will be evaluated cooperatively by partner agencies using the predetermined performance metrics. The ACE process provides for adaptive management, allowing flexibility to adapt and improve based on regional project or management strategy results.

Currently, agricultural nonpoint sources contribute approximately 72% of the TN nutrient sources in the Wacissa River and Wacissa Spring Group BMAP. Pursuant to subparagraph 403.067(7)(e)1., F.S., an ACE is required in this BMAP. Most agricultural lands are engaged in row crop production. **Table 10** shows the three dominant crop types within the Wacissa BMAP.

Table 10. Dominant crop types in the Wacissa River and Wacissa Spring Group BMAP

Crop Type	Acres
Row Crops	31,874
Grazing Land	13,503
Hay	9,160

Targeting future funding toward precision agriculture, manure management, innovative technologies or soil health practices, including combining practices where applicable, to address nutrient impacts from row crop production on a regional scale could provide additional reductions.

FDACS will continue to work with key stakeholders in the Wacissa River and Wacissa Spring Group BMAP to identify additional options for addressing agricultural nonpoint source nutrient loading. For more information on the FDACS Regional Projects Program, see the links in **Appendix I**.

2.10 Atmospheric Deposition Management Strategies

2.10.1 Summary of Loading

Atmospheric deposition is largely a diffuse, albeit continual, source of nitrogen. Nitrogen species and other chemical constituents are measured in wet and dry deposition at discrete locations around the U.S. In 2014, Schwede and Lear developed a hybrid model for estimating the total atmospheric deposition of nitrogen and sulfur for the entire U.S., referred to as the total atmospheric deposition model (TDEP). Deposition data from several monitoring networks--including the Clean Air Status and Trends Network (CASTNET); the National Atmospheric Deposition Program (NADP) Ammonia Monitoring Network; the Southeastern Aerosol Research and Characterization Network; and modeled data from the Community Multiscale Air Quality (CMAQ) Modeling System—are combined in a multistep process with National Trends Network (NTN) wet deposition values to model total deposition. The TDEP model run used for the NSILT included data from 2019 to 2020.

2.10.2 Description of Approach

Atmospheric sources of nutrients are local, national, and international. Nitrogen atmospheric sources are generally of low concentration compared with other sources and are further diminished through additional biological and chemical processes before they reach groundwater. Recent data (Himes and Dawson, 2017) indicate that the deposition of nitrogen has been generally decreasing in Florida with an up to 55% decrease in atmospheric deposition by 2028, possibly related to power plant fuel source changes and air treatment upgrades as well as the increased use of electric vehicles, decreasing mobile sources (Himes and Dawson, 2017). This gradual decrease in atmospheric deposition will result in the necessary reductions from this source to meet the next 5-year milestone (**Figure 5**). Currently, since the scale of the national and international programs to address these air deposition loads are difficult to integrate into the much smaller scale of this water quality plan, there are no specific reductions assigned to this

source category. Atmospheric deposition sources and trends will be re-evaluated periodically.

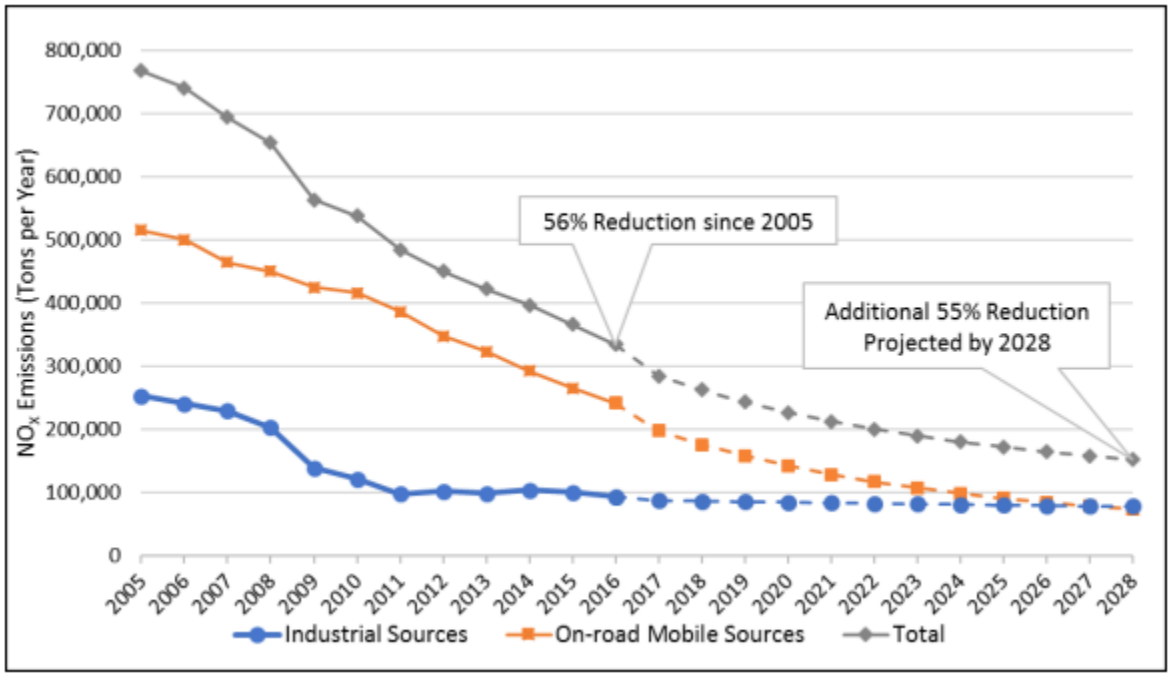

Figure 5. Florida NOx emissions for 2005 to 2016 and projected emission decreases for 2017 to 2028 from industrial and on-road mobile sources

2.11 Future Growth Management Strategies

Nutrient impacts from new development are addressed through a variety of mechanisms outlined in this BMAP, as well as provisions of Florida law. While most of the restoration projects and management strategies listed in this BMAP address current nutrient loading, the need to plan and implement sound management strategies to address additional population growth must be considered.

DEP has included in this BMAP specific elements to address current and future WWTF effluent, OSTDS loading and stormwater sources. Broader requirements—such as local land development regulations, comprehensive plans, ordinances, incentives, environmental resource permit requirements, and consumptive use permit requirements—all provide additional mechanisms and avenues to protect water resources and reduce the impact of new development and other land use changes as they occur.

Further strengthening of comprehensive plans is required under section 163.3177, F.S., which required local governments to amend their comprehensive plans with the following considerations:

- Identify and prioritize projects to meet the TMDLs.
- Update the wastewater section to include plans for treatment updates--not just capacity--and AWT must be prioritized.

- In developments with more than 50 lots with more than one OSTDS per acre, the plan must consider the feasibility of providing sanitary sewer within a 10-year planning horizon and identify the facility that could receive the flows. The plan must review the capacity of the facility and any associated transmission facilities; projected wastewater flow at that facility for the next 20 years, including expected future new construction and connections of OSTDS to sanitary sewer; and timeline for the construction of the sanitary sewer system. The plan was required to be updated by July 1, 2024.
- Comprehensive plans must contain capital improvements element to consider the need for and the location of public facilities:
    - Construction, extension, or increase in capacity of public facilities as well as principals for correcting existing public facility deficiencies. Components must cover at least a 5-year period.
    - Costs, timeline, general location, and projected revenue sources to fund the facilities.
    - Standards to meet an acceptable level of service.
    - Schedule of capital improvements, which may include privately funded projects.
    - A list of projects necessary to achieve the pollutant load reductions attributable to the local government, as established in a BMAP.
    - The element must address coordinating the extension of, increase in the capacity of, or upgrade in treatment of facilities to meet future needs; prioritizing AWT while maximizing the use of existing facilities and discouraging urban sprawl; conserving potable water resources; and protecting the functions of natural groundwater recharge areas and natural drainage features.

Through this array of laws and the requirements in this BMAP, new development must undertake certain nutrient-reduction measures before the development is complete. DEP recommends that local governments revise their planning and land use ordinance(s) to adequately address future growth and the associated environmental impact. Maintaining land at lower intensity uses through land purchases or easements for conservation and recreational use is one strategy that can help reduce water quality impacts in the basin. Any additional nutrient loading from land use intensification will be evaluated during future BMAP update efforts. If an increase in loading occurs, a responsible entity may receive additional reduction allocations that will require additional management actions by the responsible entity to mitigate those water quality impacts.

2.11.1 Future Growth Analysis

An analysis was done to consider the impacts of future population growth and urban development on loading in the basin. Wastewater sources were evaluated using per-person estimations calculated for portions of the population estimated to be served by OSTDS and those connected to central sewer. Stormwater sources were evaluated using per-acre estimations calculated for portions of a jurisdictional area that may be developed.

First, population growth for each county was taken from the Bureau of Economic and Business Research (BEBR) 2040 Medium Growth Projections. Then, a spatial analysis was performed to determine the proportion of developable land area attributed to each entity within each county. Areas where there are permanent waterbodies, or which have been set aside for conservation are unlikely to see future development or increased population so the National Hydrography Database (NHD) for lake and ponds and the Florida Natural Areas Inventory conservation lands were used to remove lands from the analysis. The percentage of remaining land attributed to each entity was applied to the county projected population growth to determine the number of additional people anticipated to contribute to loading by 2040.

The next step was to distinguish the future population expected to be served by sewer versus those with OSTDS based on the most recent FLWMI for each BMAP county. For this, FLWMI parcels within each entity's jurisdiction were counted and categorized based on the Wastewater Type field. The number of points in "Known Sewer," "Likely Sewer," and "Somewhat Likely Sewer" divided by the total number of points estimated a portion of the population that are served by central wastewater collection system. The remainder are assumed to have an OSTDS.

Per person loading calculations were used to estimate future loads from WWTFs and OSTDS under different planning scenarios, described below. DEP's Domestic Wastewater Program estimates each person in Florida generates 100 gallons of wastewater per day. For OSTDS, FDOH estimates each person in Florida generates 10 lbs TN/yr. Average attenuation for wastewater effluent disposal and a weighted basin recharge factor were applied to loading calculations to derive the estimated future load to groundwater.

Per acre loading calculations were used to estimate future loads from increased urban turfgrass as a result of development under different planning scenarios, described below. First, a number of developed acres were derived by applying percentages to the developable lands from the initial GIS analysis for each entity. Then, the loadings were based on UF-IFAS recommended fertilization rates for different turfgrass species. Finally, attenuation for UTF and a weighted basin recharge factor were applied to loading calculations to derive the estimated future load to groundwater.

Scenario 1 represents a future planning scenario with the highest levels of treatment feasible. It assumes all local governments within the BMAP have a minimum of 90% of their population served by centralized sewer, and all domestic wastewater will be treated to AWT standards (3 mg/L TN or less and 1mg/L TP or less) by 2040 based on current Florida law and BMAP management strategies. This scenario also assumes that all future OSTDS will be enhanced nutrient-reducing systems or other wastewater systems with a nitrogen treatment efficiency of at least 65%. For urban development, this scenario represents a conservative growth future where 2% of developable land is converted to urban, development codes only allow a 10% coverage of turfgrass, and the species used is centipedegrass, which has low TN fertilization requirements.

Scenario 2 utilizes the current rates of sewer availability based on the FLWMI parcels to

estimate the population served by central wastewater collection system. This future planning scenario assumes that all domestic wastewater will be treated to AWT standards (3 mg/L TN or less and 1mg/L TP or less) by 2040 based on current Florida law and BMAP management strategies. This scenario also assumes that all future OSTDS will be enhanced nutrient-reducing systems or other wastewater systems with a nitrogen treatment efficiency of at least 65%. For urban development, this scenario represents a moderate growth future where 10% of developable land is converted to urban, development codes only allow a 10% coverage of turfgrass, and the species used is centipedegrass, which has low TN fertilization requirements.

Scenario 3 represents a future planning scenario with the lowest levels of treatment feasible. It utilizes the current rates of sewer availability based on the FLWMI parcels to estimate the population served by central wastewater collection system and assumes that all domestic wastewater will be treated to 6 mg/L TN and 3 mg/L TP by 2040. This scenario also assumes that all future OSTDS will be conventional systems. For urban development, this scenario represents an extreme growth future where 17% of developable land is converted to urban, development codes allow up to 25% coverage of turfgrass, and the species used is St. Augustine grass, which has higher TN fertilization requirements.

Based on the methodology above, **Table** shows the estimated future loads from wastewater and urban stormwater sources that may be assigned to local governments if growth continues as projected under the three planning scenarios. DEP encourages local governments to consider these additional nutrient loads when authorizing new development or changes in land uses, and when developing local plans for wastewater infrastructure expansion and maintenance, to ensure that the TMDL target is achieved and maintained.

Table 11. Estimated nitrogen load from future growth in the BMAP area

Entity	BEBR 2040 Additional Population	2040 Additional Nitrogen Loading – Scenario 1 (lbs/yr)	2040 Additional Nitrogen Loading – Scenario 2 (lbs/yr)	2040 Additional Nitrogen Loading - Scenario 3 (lbs/yr)
Jefferson County	815	1,167	11,586	177,633
City of Monticello	14	19	184	3,006
Madison County	35	367	4,476	75,449
Town of Greenville	0	4	53	884
Totals	**864**	**1,557**	**16,299**	**256,972**

Scenario 1 resulted in an additional basin load of 1,557 lbs/yr TN. Scenario 3 resulted in an additional basin load of 256,972 lbs/yr TN. When compared to the results of the Wacissa River and Spring NSILT (550,677 lbs/yr TN), it is estimated that growth in the basin could result in an 0.3% to 46.6% increase in nitrogen loading to the groundwater by 2040.

While it is unlikely that additional nutrient loading from future populations can be entirely avoided, the results of this analysis provide local governments information on how they can mitigate future nitrogen loading by pursuing planning scenarios which prioritize the expansion of centralized sewer services that meet or exceed AWT standards for wastewater effluent. Entities with minor changes in 2040 loading under Scenarios 1 and 2 already have a high rate of sewering in their jurisdiction.

This broad analysis is not being used to determine allocated reductions for responsible entities because it does not capture all local considerations and complexities of mixed land use, or current allocation approaches for wastewater. In addition, changes in nutrient loading from future population and development are difficult to model because much of it is dependent on the type and location of development, enforcement of local ordinances, future home values, and future social attitudes towards lawn maintenance and waste management. There are also complex dynamics associated with new urban development in which loading from human activities is compounded by potential removal or conversion of forest lands or green spaces, which had previously provided natural remediation of atmospheric and soil nutrients, as well as other ecosystem benefits. However, the results show trends in how loading in the basin might change in the coming decades without comprehensive local and regional planning.

Other mechanisms discussed in this section are available to local governments to further mitigate future nutrient loading from existing and future developed land. For example, strengthening and enforcing fertilizer ordinances, working with homeowners' associations or neighborhood groups to reduce fertilizer use on community landscaping, or incentivizing Florida Friendly development practices could reduce the overall impact of additional nutrient loading associated with urban fertilizer. Additionally, wastewater can be treated to higher standards than those built into this analysis through upgrades to WWTFs and use of enhanced nutrient-reducing OSTDS certified with higher nitrogen treatment efficiencies or other wastewater treatment systems with higher treatment levels. Local governments can use this information to incorporate water quality considerations when developing and implementing local ordinances, comprehensive plans, stormwater planning, and enhanced OSTDS incentive programs in areas of urban expansion.

2.12 Funding Opportunities

Chapter 2023-169,Laws of Florida, expanded grant opportunities for local governments and eligible entities working to address a TMDL or impaired water. Through the Water Quality Improvement Grant program, eligible entities can apply for grant funding for wastewater, stormwater and regional agricultural projects. Projects are prioritized that have the maximum nutrient load per project, demonstrate project readiness, are cost-effective, have cost-share by the applicant (except for Rural Areas of Opportunity), have previous state commitment, and are in areas where reductions are most needed. There are multiple competitive funding resources available under the Protecting Florida Together website, including $50 million in springs-specific funding.

Financial and technical assistance through FDACS, NWFWMD and the SRWMD are available

to agricultural producers within the Wacissa River and Wacissa Spring Group BMAP. FDACS provides outreach and education on BMP implementation for enrolled operations, as well as work with interested producers to provide cost share funding for projects to improve on-farm nutrient and irrigation efficiencies that work in tandem with the applicable practices from the producer's BMP checklist. The NWFWMD and SRWMD cost share program also provides outreach and funding for projects that provide nutrient and irrigation management benefits. FDACS, NWFWMD and the SRWMD work closely to ensure their cost share programs complement each other to meet the needs of the producers while considering the characteristics of the region.

Section 3: Monitoring and Reporting

3.1 Methods for Evaluating Progress

DEP will work with stakeholders to track project implementation and organize and evaluate the monitoring data collected each year. The project and monitoring information will be presented in an annual update. Stakeholders have agreed to meet annually after the adoption of the BMAP to follow up on plan implementation, share new information, and continue to coordinate on TMDL restoration related issues. The following activities may occur at annual meetings~

Implementation data and reporting:

- Collect project implementation information from stakeholders, including FDACS agricultural BMP enrollment and FDOH-issued permits, and compare with the BMAP schedule.
- Discuss the data collection process, including any concerns and possible improvements to the process.
- Review the monitoring plan implementation, as detailed in **Section 3.3**.

Sharing new information:

- Report on results from water quality monitoring and trend information.
- Provide updates on new management strategies in the basin that will help reduce nutrient loading.
- Identify and review new scientific developments on addressing nutrient loads and incorporate any new information into annual progress reports.

Coordinating on TMDL restoration-related issues:

- Provide updates from DEP on the basin assessment cycle and activities related to any impairments, TMDL, and BMAP.
- Obtain reports from other basins where tools or other information may be applicable to the TMDL.

3.2 Adaptive Management Measures

Adaptive management involves making adjustments in the BMAP when circumstances change or monitoring indicates the need for additional or more effective restoration strategies. Adaptive management measures may include the following:

- Implementing procedures to determine whether additional cooperative strategies

are needed.

- Using criteria/processes for determining whether and when plan components need revision because of changes in costs, project effectiveness, social effects, watershed conditions or other factors.

- Revising stakeholders' roles during BMAP implementation and after BMAP completion.

- Updating information on corrective actions (and any supporting documentation) being implemented as data are gathered to refine project implementation schedules and performance expectations.

Key components of adaptive management to share information and expertise are tracking plan implementation, monitoring water quality and pollutant loads, and holding periodic meetings.

3.3 Water Quality Monitoring

3.3.1 Objectives

Focused objectives are critical for a monitoring strategy to provide the information needed to evaluate implementation success. Since the BMAP implementation involves an iterative process, the monitoring efforts are related to primary and secondary objectives. The primary objectives focus on achieving water quality targets, while the secondary objectives focus on sub-regional effectiveness of projects and management strategies and other water quality parameters that can be used to provide information for future refinements of the BMAP. The monitoring strategy may be updated as necessary.

Primary objectives:

- Measure the water quality and biological response in the impaired springs and groundwater at the beginning of the BMAP period and during implementation.

- Document nutrient trends in the Wacissa River and Wacissa Spring Group Basin.

Secondary objectives:

- Identify areas where groundwater data and modeling might help in understanding the hydrodynamics of the system.

- Evaluate groundwater quality trends and nutrient loading to the aquifer across the basin.

- Confirm and refine nutrient removal efficiencies of agricultural and/or urban BMPs, projects and other management efforts.

3.3.2 Parameters, Frequency and Network

To achieve the objectives listed above, the monitoring strategy will focus on two types of indicators to track improvements in water quality at the spring vent and in the groundwater: core and supplemental (**Table 12** and **Table 13**, respectively). The core indicators are directly related to the parameters causing impairment in the associated springs. Supplemental indicators will be monitored primarily to support the interpretation of core water quality parameters. The monitoring network is established for a variety of purposes.

For this BMAP, nitrate is the core parameter measured, to track progress in decreasing nitrogen concentrations in groundwater and the water surfacing at the spring vent. The other parameters are considered supplementary parameters for the BMAP, as they build information about groundwater and the spring but are not direct measurements of impairment.

At a minimum, the core parameters will be tracked to determine the progress that has been made towards meeting the TMDL and/or achieving the numeric nutrient criteria (NNC). Resource responses to BMAP implementation may also be tracked. A significant amount of time may be needed for changes in water chemistry to be observed.

Table 12. Core water quality indicators and field parameters for spring vent and groundwater

Core Parameters
TN
Total Kjeldahl Nitrogen
Nitrate as Nitrogen
Orthophosphate as Phosphorus
TP

Table 13. Supplemental water quality indicators and field parameters for spring vent and groundwater

Supplemental Parameters
Specific Conductance
Dissolved Oxygen (DO)
pH
Temperature
Total Suspended Solids (TSS)
Total Dissolved Solids (TDS)
Turbidity
Chloride
Color
Ammonia (as nitrogen [N])
Total Organic Carbon
Calcium

Supplemental Parameters
Magnesium
Sodium
Potassium
Sulfate
Fluoride
Alkalinity

3.3.3 Nutrient Monitoring

Water quality is monitored to evaluate progress towards achieving the TMDL targets of 0.24 milligrams per liter (mg/L) for the Wacissa Springs Group and 0.20 mg/L for the Wacissa River of nitrate-nitrite to be protective of the aquatic flora and fauna. Surface water quality data are collected at the spring vent to determine if the TMDL nitrate targets are being achieved, and once achieved, are being maintained. Flow data are collected in support of the secondary objective of estimating total mass loading of nitrate at the vent and can be used to evaluate TN loading in the BMAP. Groundwater well data are collected to evaluate aquifer conditions in the source water for the springs. A robust groundwater monitoring program can be used to evaluate TN loading in the BMAP, and may give an indication of future changes in spring vent concentrations as nutrient levels in the groundwater are expected to respond to changes in loading prior to the spring vent due to transport time to the spring vent.

3.3.3.1 Spring Sampling

Samples at the spring vent are collected quarterly at two stations, Wacissa Head Spring #2 and Big Blue Spring. Discharge measurements are recorded continuously by USGS. **Figure 6** displays the nitrate plus nitrite concentration at the spring vent stations 9719 and 9717.

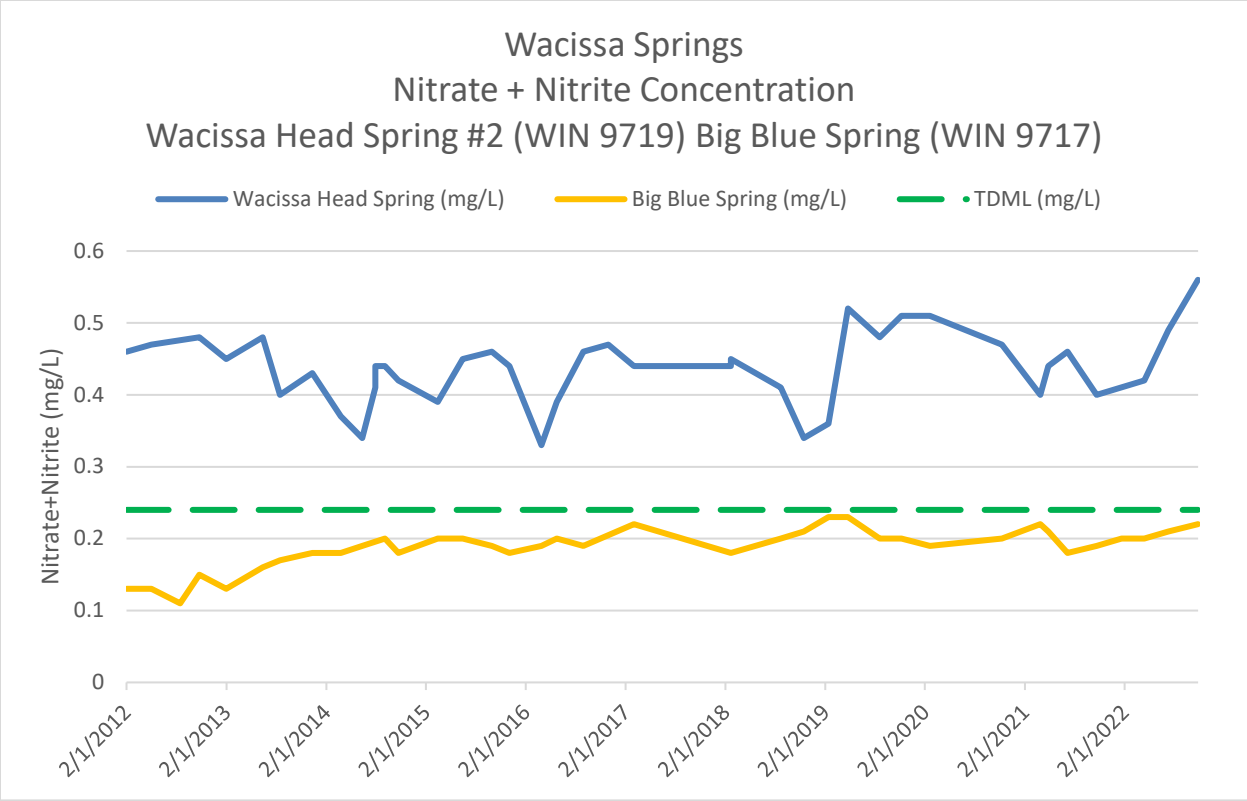

Figure 6. Nitrate plus nitrite concentration over time at station 73641

3.3.3.2 Groundwater Results and Discussion

Data from groundwater monitoring wells were obtained from DEP's Water Information Network (WIN) database and SRWMD. The analyte of concern is nitrate, including both the total and the dissolved species. For these analyses, no differentiation between the two species was made. There was insufficient data to perform statistically robust trends analyses. Available data was evaluated in order to perform a visual analysis using box plots to review change in nitrate concentrations for two periods of time (Early and Late) within the available period of record. To determine what wells would be included in the analysis, the frequency of sampling was considered. Wells that were sampled regularly through the period of record were considered "fixed". Wells with inconsistent sampling (i.e. less than four samples over the period of record) were considered "sporadic". Data from the fixed wells were preferred for analyses because comparisons between time periods represent changes in the same set of wells. In the Wacissa Basin, there were five fixed well stations and 19 sporadic well stations sampled within the period of record.

Groundwater data are subject to serial and spatial autocorrelation (AC), meaning that sampling that occurs temporally or spatially close can potentially affect the results of any trend-analysis hypothesis test. The effect of serial correlation in groundwater samples can be accounted for by using increments of time one year or longer, (Helsel, 2006). Regarding spatial AC, nitrate concentrations from wells located close to each other (clusters) often have significant correlations. Using the annual medians of all samples within the basins was determined to be the

best way to reduce the effect of spatial AC before a more thorough correlation matrix can be completed. For these reasons, after initial data clean up to remove qualified data results, a grand median of the annual median nitrate concentrations from each well was used for the visual analysis for each time period evaluated.

A box plot was generated for the Weeki Wachee Basin as seen in **Figure 6** below. To create the box plot, the period of record was divided into early (2017 to 2020) and late (2021 to 2024) subperiods. For the box plot, the upper horizontal line of the box represents the 75th percentile. The lower horizontal line of the box represents the 25th percentile (Q1). The middle horizontal line in the box represents the median (50th percentile or Q2). The top of the point of the upper whisker is the 95th percentile. The bottom point of the lower whisker is the 5th percentile. Circles represent outliers.

In the Wacissa Basin, the five fixed and 19 sporadic sampling stations were evaluated to develop 24 median sample results for the early period and 26 median sample results for the late period. The overall grand median value for the early period is 0.12 mg/L and the overall grand median value for the late period is 0.04 mg/L.

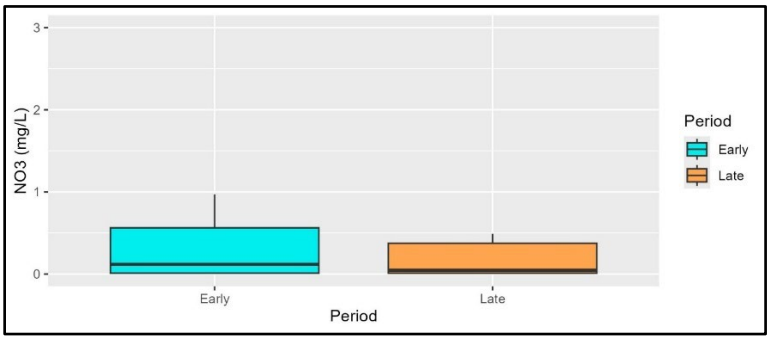

Figure 6. Wacissa groundwater nitrate concentrations of early and late periods with outliers

DEP is working to evaluate monitoring network for the Wacissa Basin and develop a sampling schedule that will allow for trend analysis of groundwater conditions in future iterations of the BMAP. A review of spatial distribution and well construction details will allow DEP to focus monitoring efforts that will provide the most informative data about groundwater trends and potentially nitrogen loading in the Upper Floridan aquifer.

3.3.4 Biological Monitoring

Biological resource responses represent improvements in the overall ecological health of the Wacissa River and Wacissa Spring Group BMAP area (see **Table 14**). DEP recommends that several types of biological monitoring be conducted to assess the health of the Wacissa River and Wacissa Spring Group.

Table 14. Biological response measures for spring runs

Biological Response Measures	Target Community	Sampling Methods
Chlorophyll *a*	Phytoplankton	DEP standard operating procedure (SOP) FS 2100
Stream Condition Index (SCI) score	Aquatic Macroinvertebrates	DEP SOP SCI 1000
Linear Vegetation Survey (LVS) score	Aquatic Vegetation	DEP SOP FS 7320
Rapid Periphyton Survey (RPS) score	Attached Algae (Periphyton)	DEP SOP FS 7230

The RPS is a rapid assessment tool for evaluating streams' ecological condition based on the attached algae. The RPS quantifies periphyton length and extent in a 100-meter stretch of a stream by assigning a rank category to the length of periphyton filaments. The LVS is a rapid assessment tool for evaluating the ecological condition of streams based on the nativity status and relative human disturbance tolerance of vascular plants. The RPS, LVS, and chlorophyll *a* are used to evaluate the floral integrity of the spring.

The SCI evaluates the aquatic macroinvertebrate community present in the river and/or springs. In addition, habitat assessments are conducted per DEP SOP FT 3100 to assess the habitat present to support the aquatic macroinvertebrates. Water quality samples and field measurements of physical water quality are collected with the biological monitoring.

DEP and other agencies and local governments across the state conduct surveys of vegetation along numerous transects in a spring runs, measuring macrophytes and algae percent cover and biomass. As water quality projects and management strategies are implemented, a more intensive and routine monitoring approach is needed to measure biological changes as progress is made towards the TMDL. Existing bioassessment tools include the RPS, LVS, and SCI as described above. The DEP, in collaboration with the SRWMD, implemented a pilot study in 2022 to develop a robust monitoring plan to measure biological response over time using an adjustment to theses tools to be able to develop a routine protocol that can be consistently used across unique spring runs. One of the goals of the pilot study is to identify and track biological response of spring systems to determine if strategies for reducing nitrate concentration are effective at restoring biological condition. Results from this pilot study will be made available in future BMAP updates.

3.3.5 Data Management and Assessment

As of June 30, 2017, entities that collect water quality data in Florida enter the data into the Florida Watershed Information Network (WIN) Database, which replaced the Florida Storage and Retrieval System (STORET). DEP pulls water quality data directly from WIN and U.S. Geological Survey (USGS) databases to evaluate waters according to the Impaired Waters Rule, Chapter 62-303, F.A.C., and for TMDL development. Data providers must upload their data regularly, so DEP can use the information as part of the water quality assessment process, for annual reporting and trend analyses. Data providers should upload their data to WIN upon completion of the appropriate quality assurance/quality control (QA/QC) checks. All data collected in the last quarter of the calendar year should be uploaded no later than April 1 of the

following year.

DEP sampling teams enter their biological data into the DEP Statewide Biological (SBIO) database. Biological data should be collected and regularly provided to DEP following the applicable standard operating procedures. All biological data collected in the last quarter of the calendar year should be uploaded or provided no later than April 1 of the following year.

Available water quality data will be analyzed during BMAP implementation to determine trends in water quality and the health of the biological community. A wide variety of statistical methods are available for the water quality trend analyses. The selection of an appropriate data analysis method will depend on the frequency, spatial distribution, and period of record available from existing data. Specific statistical analyses were not identified during BMAP development.

3.3.6 QA/QC

Stakeholders participating in the BMAP monitoring plan must collect water quality data in a manner consistent with Chapter 62-160, F.A.C. Therefore, field samples must be collected following the DEP SOPs, and lab analyses must be conducted by National Environmental Laboratory Accreditation Conference (NELAC)–accredited laboratories.

Section 4. Commitment to Plan Implementation

4.1 Adoption Process

The 2025 BMAP update is adopted by Secretarial Order and assigns TN load reductions to the responsible stakeholders in the Wacissa River and Wacissa Spring Group BMAP area.

4.2 Tracking Reductions

The required loading reductions are expected to be met by 2038. Each entity responsible for implementing management actions to meet their upcoming 5-year milestone as part of the BMAP will provide DEP, via the statewide annual report process, with an annual update of progress made in implementing load reductions. The update will track the implementation status of the management actions listed in the BMAP and document additional projects undertaken to further water quality improvements in the basin. DACS will continue to report acreage enrolled in NOIs at least annually to DEP.

4.3 Revisions to the BMAP

Adaptive management involves setting up a mechanism for making course corrections in the BMAP when circumstances change, or feedback mechanisms indicate that a more effective strategy is needed. Section 403.067, F.S., requires that the plan be revised, as appropriate, in collaboration with basin stakeholders. All or part of a revised BMAP must be adopted by Secretarial Order. Adaptive management measures include the following:

- Need to update based on new information, including model updates.
- New law requirements.
- Procedures to determine whether additional cooperative actions are needed.
- Criteria/process for determining whether and when plan components need to be revised because of changes in costs, environmental impacts, social effects, watershed conditions, or other factors.
- Descriptions of the stakeholders' role after BMAP completion.

Tracking implementation, monitoring water quality and pollutant loads, and holding periodic meetings to share information and expertise are key components of adaptive management.

Section 5. References

Florida Department of Environmental Protection. 2021. *Best Management Practices for the Enhancement of Environmental Quality on Florida Golf Courses*. Tallahassee, FL.

Helsel, D.R., and Frans, L.M., 2006. *Regional-Kendall test for trend*. Environmental Science and Technology, v. 40, no. 13, pp. 4066-4073.

Himes, B., and Dawson, J., *Florida Nitrogen Oxides Emissions Trends.* Division of Air Resource Management, Florida Department of Environmental Protection. 2017.

Schwede, D.B., and G.G. Lear. 2014. *A novel hybrid approach for estimating total deposition in the United States*. Atmospheric Environments 92:207–220.

Appendices

Appendix A. Important Links

The links below were correct at the time of document preparation. Over time, the locations may change and the links may no longer be accurate. None of these linked materials are adopted into this BMAP.

DEP Website: http://www.floridadep.gov

DEP Map Direct Webpage: https://ca.dep.state.fl.us/mapdirect/

PFA information: https://floridadep.gov/dear/water-quality-restoration/content/bmap-public-meetingshttps://www.floridadep.gov/pfamap

Florida Statutes: http://www.leg.state.fl.us/statutes:

Florida Watershed Restoration Act (Section 403.067, F.S.)

Florida Springs and Aquifer Protection Act (Part VIII of Chapter 373, F.S.)

DEP Model Ordinances: https://ffl.ifas.ufl.edu/ffl-and-you/gi-bmp-program/fertilizer-ordinances/

DEP Onsite Sewage Program: https://floridadep.gov/water/onsite-sewage/content/permitting-enhanced-nutrient-reducing-onsite-sewage-treatment-and

DEP Standard Operating Procedures for Water Quality Samples: https://floridadep.gov/dear/quality-assurance/content/dep-sops

National Atmospheric Deposition Program (NADP) Total Deposition Science Committee (TDep): https://nadp.slh.wisc.edu/committees/tdep/

NELAC National Environmental Laboratory Accreditation Program (NELAP): https://floridadep.gov/dear/florida-dep-laboratory/content/nelap-certified-laboratory-search

FDACS BMPs: https://www.fdacs.gov/Agriculture-Industry/Water/Agricultural-Best-Management-Practices

FDACS BMP and Field Staff Contacts: https://www.fdacs.gov/Divisions-Offices/Agricultural-Water-Policy/Organization-Staff

Florida Administrative Code (Florida Rules): https://www.flrules.org/

SRWMD Springs: https://www.mysuwanneeriver.com/267/Springs

NWFWMD Springs: https://nwfwater.com/water-resources/springs/

UF–IFAS Research: http://research.ifas.ufl.edu/

OSTDS Information Links:

https://floridadep.gov/water/onsite-sewage/content/springs-protection-and-basin-management-action-plans-bmaps

Information for septic system owners and buyers at https://floridadep.gov/water/onsite-sewage/content/information-septic-system-owners-and-buyers

Information for septic tank contractors at https://floridadep.gov/water/onsite-sewage/content/septic-tank-contractor-registration

UF-IFAS has developed a website that includes frequently asked questions, and extensive information for septic system owners and local governments at https://water.ifas.ufl.edu/septic-systems/your-septic-system/

Appendix B. Projects to Reduce Nitrogen Sources

B.1 Prioritization of Management Strategies

BMAPs must now include projects that show how responsible entities will meet their 5-year milestones. To help prioritize projects towards the next milestone as required under 403.067, F.S., planning-level details for each listed project, along with their priority ranking have been determined. The management strategies listed in **Appendix B** are ranked with a priority of high, medium, or low.

Project status was selected as the most appropriate indicator of a project's priority ranking based primarily on if the project is going towards the next 5-year milestone, as well as need for funding. Overall, any project that is needed by a responsible entity to meet their next reduction milestone is considered a priority. Projects classified as "underway" were assigned a high or medium priority because some resources have been allocated to these projects, but additional assistance may be needed for the project to be completed. High priority was assigned to projects listed with the project status "planned" that are needed to meet the next milestone, as well as certain "completed" projects that are designated as "ongoing" each year, and select projects that are elevated because substantial, subsequent project(s) are reliant on their completion.

B.2 Description of the Management Strategies

Responsible entities submitted these management strategies to the department with the understanding that the strategies would be included in the BMAP, thus requiring each entity to implement the proposed strategies as soon as practicable. However, this list of strategies is meant to be flexible enough to allow for changes that may occur over time. Any change in listed management strategies, or the deadline to complete these actions, must first be approved by the department. Substituted strategies must result in equivalent or greater nutrient reductions than expected from the original strategies.

While the 20-year planning period for this BMAP is 2018 to 2038, urban and agricultural stormwater projects completed since January 21, 2005, and OSTDS and wastewater projects completed since January 1, 2022, count toward the overall nitrogen reduction goals. Estimated nitrogen reductions provided by the responsible entity are subject to refinement based on DEP verification and/or on adjustment to calculations based on loading to groundwater that takes into consideration recharge and attenuation.

Projects with a designation of TBD (to be determined) denote information is not currently available but will be provided by the responsible entity when it is available. Projects with a designation of NA (not applicable) indicate the information for that category is not relevant to that project. Projects with a designation of "Not Provided" denote that information was requested by DEP but was not provided by the responsible entity.

Table B-1. Stakeholder projects to reduce nitrogen sources

ProjID	Lead Entity	Partners	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	Cost Estimate	Funding Amount
5121	Jefferson County	SRWMD; DEP	JC-01	Wacissa Springs Park Improvement Phase I	Construct picnic shelters, restroom facilities, and boardwalk.	LID- Other	Underway	2018	0	390,126	DEP - $195,063.00; Jefferson County - $195,063.00
5122	Jefferson County	SRWMD; DEP	JC-02	Wacissa Springs Park Improvement Phase II	Provide slope protection in Wacissa Springs. Remove sediment at Aucilla and Thomas springs. Replace dirt parking lot with asphalt and management facility. TN reduction to land surface (42,303 lb-N/yr) adjusted to reflect load to groundwater. See SRWMD-04.	Shoreline Stabilization	Canceled	2019	0	521,500	DEP - $517,500.00; Jefferson County - $4,000.00
5124	SRWMD	Local Governments; DEP	SRWMD-01	Coastal Rivers Basin SWIM Plan	Implementation and periodic review and update of the Coastal Rivers SWIM Plan which includes the Aucilla River and Wacissa Spring Group.	Study	Completed	2017	0	100,000	SRWMD - $0.00; NFWF - $218,130.00
5125	SRWMD	Jefferson County	SRWMD-02	Lower Aucilla River Hydrographic Survey	Complete digital hydrographic survey that will allow creation of a hydrological model of the Aucilla/Wacissa watershed.	Study	Completed	2014	0	200,000	SRWMD - $200,000.00
5126	SRWMD	Jefferson County	SRWMD-03	Walker Springs Road Cross Drains	Improve flood protection and erosion at three unpaved road crossings over Bailey Mill Creek.	Stormwater System Rehabilitation	Completed	2018	0	139,907	Jefferson County - $106,987.00; SRWMD - $39,420.00
5127	UF-IFAS	Agricultural Producers	IFAS-01	Winter Forage Demonstration Plots	Established winter forage plots on farms in 2014, 2015, 2016, and 2017 to demonstrate the benefits of overseeding legumes on pastures to reduce dependence on nitrogen for winter forage production. Two field days were held in 2014 and 2016.	Agricultural BMPs	Completed	2017	0	0	UF-IFAS - $0.00

ProjID	Lead Entity	Partners	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	Cost Estimate	Funding Amount
5128	UF-IFAS	Suwannee County Conservation District; Jefferson SWCD; SRWMD; Three Cooperating Farms	IFAS-02	Three On Farm/Cover Crop Demonstrations	Established cover crop demonstrations on three farms. Demonstrations will reflect cover crops ability to reduce soil erosion, improve water filtration, recycle nutrients, make nitrogen, improve beneficial insect habitat, and improve soil health.	Agricultural BMPs	Underway	2022	0	0	Suwannee County Conservation District - $0; FDACS - $0; Stestson University - $0; SRWMD - $49,875
5131	Management Strategies	TBD	WU-01	Wastewater Treatment Facility Approach	Achieved by WWTF policy if implemented BMAP-wide. The policy will be implemented through the permit renewal process.	WWTF Upgrade	Planned	TBD	0	0	TBD - $0.00
5446	Town of Greenville	DEP	TOG-01	Greenville Sewer System Phase 1	Wastewater collection and treatment to phase out approximately 200 septic systems.	OSTDS Phase Out	Completed	2024	954	6,740,000	DEP Springs - $6,740,000.00
5447	SRWMD	Jefferson County	SRWMD-04	Wacissa Springs Water Quality Improvement	Slope protection; remove sediment at Aucilla Springs and Thomas Springs; replace dirt parking lot with asphalt and stormwater management facility; install 300 ft. boardwalk.	Shoreline Stabilization	Completed	2019	0	516,698	SRWMD - $0.00; Jefferson County - $32,000.00; DEP - $484,698.00
5448	SRWMD	Jefferson County	SRWMD-05	Wacissa Springs Phase 1	Bank stabilization to prevent sedimentation and erosion, removal of invasive plants. Water Management Lands Trust Funds/Springs Restoration. One-time sediment removal of 600 cubic yards.	Shoreline Stabilization	Completed	2015	0	235,600	Jefferson County - $95,600.00; SRWMD - $140,000.00
5449	SRWMD	Local Producers	SRWMD-06	Dairy Screen Separators	Connect two pivots to the Jeffco Dairy's wastewater system and retrofit three irrigation systems to low-pressure drop nozzle sprinklers. The project will offset groundwater use with a lower quality water source and allow for better use of nutrients.	Agricultural BMPs	Completed	2020	574.93	62,027	SRWMD - $0.00; DEP - $46,520.00; Local Producers - $15,507.00

ProjID	Lead Entity	Partners	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	Cost Estimate	Funding Amount
5450	SRWMD	Local Producers	SRWMD-07	Fertigation	Fertigating allows the producer to split up the application of fertilizer needed to grow a crop over the entire length of a growing season.	Agricultural BMPs	Completed	2019	4115	45,000	DEP - $25,875.00; SRWMD - $7,875.00; Local Producers - $11,250.00
5451	SRWMD	DEP; Local Governments	SRWMD-08	Suwannee Valley Springs Initiative	The District is developing a multi-media campaign that will focus on springs awareness and education to increase knowledge, engagement, and passion for water resources among residents and visitors.	Enhanced Public Education	Completed	2023	0	10,000	DEP - $300,000.00
5452	SRWMD	Local Producers	SRWMD-09	Precision Ag	Implementation of soil type mapping, soil and tissue sampling, aerial imagery and banding equipment to reduce fertilizer and lime application on farms.	Agricultural BMPs	Underway	2024	6060	24,080	Local Producers - $11,350.00; DEP - $25,000.00
5802	FDACS	Agricultural Producers	FDACS-01a	BMP Implementation and Verification - Farm Fertilizer	Enrollment and verification of BMPs by agricultural producers. Acres treated and reductions estimated using FDACS June 2024 Enrollment and NSILT Loading tool (based on FSAID IX) developed by FDACS.	Agricultural BMPs	Ongoing	NA	40,479	0	Not provided - $0.00
5803	FDACS	Agricultural Producers	FDACS-02a	BMP Implementation and Verification - Livestock Waste	Enrollment and verification of BMPs by agricultural producers. Acres treated and reductions estimated using FDACS June 2024 Enrollment and NSILT Loading tool (based on FSAID IX) developed by FDACS.	Agricultural BMPs	Ongoing	NA	10,302	0	Not provided - $0.00
6482	Town of Greenville	DEP	TOG-02	Greenville Flood Reduction	Continued Improvements to stormwater drainage system to reduce flooding in southern and western Greenville.	Stormwater System Upgrade	Planned	2027	0	1,336,327	DEP - $695,000.00
6484	FDACS	Agricultural Producers	FDACS-03a	BMP Implementation and Verification - Permitted Dairies	Enrollment and verification of BMPs by agricultural producers. Acres treated and reductions estimated using FDACS June 2024 Enrollment and NSILT Loading tool (based on FSAID IX) developed by FDACS.	Agricultural BMPs	Ongoing	NA	2,586	0	Not provided - $0.00

ProjID	Lead Entity	Partners	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	Cost Estimate	Funding Amount
6567	SRWMD	Local Producers	SRWMD-11	Fertigation	Fertigating allows the producer to split up the application of fertilizer needed to grow a crop over the entire length of a growing season.	Agricultural BMPs	Completed	2019	65	12,000	SRWMD - $0.00; DEP - $9,000.00; Local Producers - $3,000.00
6608	SRWMD	Agricultural Producers	SRWMD-10	District Cost Share	Best Management Practices cost share including but not limited to soil moisture probes, irrigation retrofits or upgrades, alternative water supply, centralized control systems not covered under DEP grants.	Agricultural BMPs	Underway	2025	913	0	Agricultural Producers - $3,420.00; SRWMD - $3,800.00
6609	SRWMD	Agricultural Producers	SRWMD-12	AWS Pivot Retrofits	AWS Pivot retrofits	Agricultural BMPs	Underway	2025	1.82	0	SRWMD - $0.00; Agricultural Producers - $4,155.00; DEP AWS - $9,900.00
6649	City of Monticello	DEP; Florida Commerce; NWFWMD	COM-01	I-10 & SR-19 Sewer Transmission System Improvements - Phase 1	Project completion rehabilitates 5 of the City's critically aged lift stations along the I-10/SR-19 corridor and begins construction a manifolded force main transmission system extended from I-10 to the Drifton Lift Station, supporting nutrient reduction.	Wastewater Service Area Expansion	Planned	TBD	0	6,000,000	Florida Commerce (D0285) - $300,000.00; NWFWMD - $0.00; DEP - $0.00
6797	Town of Greenville	DEO	TOG-04	Honey Lake Septic to Sewer Conversion	Removal of septic tanks at Honey Lake and connection to the Town of Greenville centralized sewer.	OSTDS Phase Out	Planned	2027	1518.74	0	DEO - $300,000.00
6798	Town of Greenville	DEP	TOG-03	Greenville Sewer System Septic Conversion	Wastewater collection and treatment to phase out approximately 200 septic systems.	OSTDS Phase Out	Underway	2026	0	0	DEP Springs - $1,250,000.00
7369	Town of Greenville	DEP	TOG-05	Greenville WWTF Effluent Management	The project involves upgrading the WWTF in Greenville. Capacity will be increased and upgraded treatment units will be specifically designed to achieve higher levels of nutrient removal, primarily nitrate to < 3 mg/L.	WWTF Nutrient Reduction	Planned	2026	4691	0	DEP Springs - $1,250,000.00

ProjID	Lead Entity	Partners	Project Number	Project Name	Project Description	Project Type	Project Status	Estimated Completion Date	TN Reduction (lbs/yr)	Cost Estimate	Funding Amount
	FDACS	Agricultural Producers	FDACS-04	Cost-Share BMP Projects	Cost-share projects paid for by FDACS. Project treatment areas and reductions based on FDACS June 2024 Enrollment and NSILT Loading tool (based on FSAID IX) developed by FDACS.	Agricultural BMPs	Ongoing	NA	22306	0	Not provided - $0.00

Appendix C. Planning for Additional Management Strategies

Responsible entities must submit a sufficient list of additional projects and management strategies to DEP no later than January 14, 2026, to be compliant with the upcoming BMAP milestone or be subject to further department enforcement.

If any lead entity is unable to submit a sufficient list of eligible management strategies to meet their next 5-year milestone reductions, specific project identification efforts are required to be submitted by January 14, 2026. Any such project identification efforts must define the purpose of and a timeline to identify sufficient projects to meet the upcoming milestone. The project description and estimated completion date for any such project identification effort must be provided and reflect the urgency of defining, funding, and implementing projects to meet the upcoming and future BMAP milestones.

These planning efforts are ineligible for BMAP credit themselves but are necessary to demonstrate that additional eligible management actions will be forthcoming and BMAP compliance will be achieved. Only those entities that provide sufficient project identification efforts will be deemed as possessing a defined compliance schedule. Those entities without an adequate project list nor a defined compliance schedule to meet their upcoming 5-year milestone may be subject to enforcement actions. Examples of project identification efforts include the following:

- Planning and identifying water quality projects and related costs and schedules in specific plans.
  - Feasibility studies (e.g., stormwater feasibility studies or wastewater feasibility studies).
  - Flood mitigation plans with nutrient management components.
  - Basinwide water quality management plans.
  - Nutrient management plans.
- Applying for external project funding.
- Developing interagency/interdepartmental agreements or MOUs for collaboration on nutrient reduction projects that cross jurisdictional or administrative boundaries.
- Updating future growth considerations in local comprehensive plans, land development reviews, and audits of relevant codes and ordinances
- Updating existing remediation plans.
- Monitoring water quality in support of project planning and implementation.
- Researching innovative technologies.

Appendix D. Wacissa River and Wacissa Spring Group PFA Report

During the development of the 2018 Wacissa River and Wacissa Spring Group BMAP, the PFA was defined as the area of the basin where the Floridan aquifer is generally most vulnerable to pollutant inputs and where there is a known connectivity between groundwater pathways and an OFS. As required by the Florida Springs and Aquifer Protection Act, DEP defined a PFA which is incorporated by reference into this BMAP. Information on this and other springshed PFAs are available at the following link: https://floridadep.gov/dear/water-quality-restoration/content/bmap-public-meetings

Appendix E. OSTDS Remediation Plan

Section 373.807, F.S., requires that if, during the development of a BMAP for an OFS, DEP identifies OSTDS as contributors of at least 20% of nonpoint source nitrogen pollution in a PFA or if DEP determines remediation is necessary to achieve the TMDL, the BMAP must include an OSTDS remediation plan. Based on the Wacissa River and Wacissa Spring Group NSILT estimates and GIS coverages, OSTDS contribute approximately 6.5% of the pollutant loading in the BMAP. Irrespective of the percent contribution from OSTDS, DEP has determined that an OSTDS remediation plan is necessary to achieve the TMDLs and to limit the increase in nitrogen loads from future growth.

Permitting for OSTDS is implemented either by DEP, delegated counties, or by County Health Departments under an interagency agreement. To aid in implementation, the DEP Map Direct webpage includes a detailed downloadable springs PFA boundary shapefile for planning purposes. DEP also maintains on its website an interactive map of the PFA and BMAP boundaries; the map can be easily searched for specific street address locations (currently available at https://floridadep.gov/BMAPs-ARP-OSTDS).

E.1 Plan Elements

E.1.1 Installation of New OSTDS

Beginning July 1, 2023, sections 373.811 and 403.067, F.S., prohibit new OSTDS serving lots of one acre or less where central sewer is available. Within this BMAP area, if central sewer is unavailable on lots of one acre or less, then the owner must install a DEP-approved enhanced nutrient-reducing OSTDS that achieves 65% nitrogen reduction, or other wastewater system that achieves 65% reduction.

Installation of new OSTDS is permitted pursuant to Chapter 62-6, F.A.C., and includes not only systems installed on a property where one has not previously been installed, but also systems installed to replace illegal systems, systems installed in addition to existing systems, and other new systems. Permitting requirements with respect to the definition of "new" or "one acre or less" will be followed for this remediation plan. To meet the enhanced nitrogen treatment requirement, the system must be a DEP-approved enhanced nutrient reducing system meeting 65% nitrogen reduction.

E.1.2 Modification or Repair of Existing OSTDS

Currently, the remediation plan for this BMAP does not include requirements for the addition of enhanced nitrogen reducing treatment to conventional systems upon the need for modification or repair of existing OSTDS. However, remediation of existing conventional OSTDS will still be beneficial to mitigate nitrogen loading from this source, restore associated groundwater and surface water to achieve the TMDL and to minimize nitrogen loads from future growth.

For existing OSTDS, the owner must connect to sewer within 365 days of written notification by the utility that connection to its sewer line is available. A utility is statutorily required (section

381.00655, F.S.) to provide written notice to existing OSTDS owners regarding the availability of sewer lines for connection. Additionally, existing OSTDS needing repair or modification must connect to available sewer lines within 90 days of notification by DEP.

To facilitate an inventory of noncompliant properties, by February 2, 2026, and every two years thereafter, each utility with sewer lines in the BMAP shall provide DEP a list of properties with existing OSTDS where sewer is available but has not connected. For each identified property, include the date(s) which the utility provided written notice to the owners of the availability of sewer.

E.1.3 Other Plan Elements

Section 373.807, F.S., also requires that that the OSTDS remediation plan contain the following elements.

- An evaluation of credible scientific information on the effect of nutrients, particularly forms of nitrogen, on springs and spring systems. (See **Section E.2**.)
- Options for repair, upgrade, replacement, drain field modification, the addition of effective nitrogen-reducing features, connection to a central sewer system, or other action. (See **Section E.3**.)
- A public education plan to provide area residents with reliable, understandable information about OSTDS and springs. (See **Section E.4**.)
- Cost-effective and financially feasible projects necessary to reduce the nutrient impacts from OSTDS. (See **Section 2** and **Appendix B**.)
- A priority ranking for each project for funding contingent on appropriations in the General Appropriations Act. (See **Section 2** and **Appendix B**.)

Section 373.807, F.S., defines an OSTDS as a system that contains a standard subsurface, filled, or mound drain field system; an aerobic treatment unit; a graywater system tank; a laundry wastewater system tank; a septic tank; a grease interceptor; a pump tank; a solids or effluent pump; a waterless, incinerating, or organic waste–composting toilet; or a sanitary pit privy that is installed or proposed to be installed beyond the building sewer on land of the owner or on other land on which the owner has the legal right to install such a system. The term includes any item placed within, or intended to be used as a part of or in conjunction with, the system. The term does not include package sewage treatment facilities and other treatment works regulated under Chapter 403, F.S.

E.2 Collection and Evaluation of Credible Scientific Information

As discussed in **Section 2,** DEP developed the Wacissa River and Wacissa Spring Group NSILT, a planning tool that provides estimates of nitrogen loading to groundwater based on best available scientific data for a particular geographic area. The NSILT results were peer reviewed

by NWFWMD, SRWMD and FDACS. Additional technical support information concerning the NSILT can be found in **Appendix F**.

DEP developed calculation methods to estimate nitrogen reductions associated with OSTDS enhancement and replacement projects, WWTF projects, and stormwater projects.

Monitoring and research:

- Improve understanding of the ecological responses to nutrient enrichment and reductions.
- Maintain and expand water quality monitoring programs.
- Report annual status and trends.
- Evaluate new and emerging technologies.
- Research and develop advanced septic systems.
- Monthly water sampling at the spring.

Completed projects:

- Florida Onsite Sewage Nitrogen Reduction Strategies Study.
- Long Term Performance and Operational Experience for Non-Proprietary Passive Nitrogen Reducing Onsite Sewage Treatment And Disposal Systems (https://floridadep.gov/water/onsite-sewage/content/onsite-sewage-research-reports).

Ongoing projects:

- Quarterly springs water quality monitoring.
- Stream water quality monitoring.
- UFA nutrient modeling.
- Springs initiative modeling.
- Monitoring of in-ground nitrogen reducing biofilters.

Proposed projects:

- Groundwater quality monitoring for BMAP assessment.
- Performance monitoring on advanced OSTDS in Florida.

- Other DEP projects.

E.3 Remediation Options

As required by Florida law, this OSTDS remediation plan identifies remediation options for existing OSTDS, including repair, upgrade, replacement, drain field modification, the addition of effective nitrogen-reducing features, connection to a central sewer system, or other action. More simply, remediation options can be classified as enhancement or replacement. DEP's Onsite Sewage Program maintains a list of approved nitrogen-reducing systems on its website: https://floridadep.gov/water/onsite-sewage/content/permitting-enhanced-nutrient-reducing-onsite-sewage-treatment-and.

The NSILT estimates that OSTDS contribute approximately 6.5% of the pollutant loading to groundwater in the BMAP. **Table E-1** lists the number of existing OSTDS in the PFA and the estimated nitrogen reductions associated with enhancement or connection to sewer. **Figure E-1** shows the areas where OSTDS are located.

Table E-1. Estimated reduction credits for OSTDS enhancement or sewer

*Estimated reductions are for either enhancement or sewer per parcel classification. Reductions cannot be combined for the same parcel classification but can be combined between the different classifications. For example, the sewer credit associated with parcels one acre or less in size can be combined with the sewer credit associated with parcels one acre or greater in size.

Recharge Area	Conventional OSTDS in BMAP	Credit for Enhancement (lbs/yr)	Credit for Sewer (lbs/yr)
High	1,630	11,674	22,180
Medium	1,106	4,345	8,255
Low	2,473	1,914	3,636
Totals	**5,209**	**17,933**	**34,071**

Estimated reductions are for either enhancement or sewer per parcel classification. Reductions cannot be combined for the same parcel classification but can be combined between the different classifications.

Nitrogen impacts from new development could also be reduced through prohibiting new conventional OSTDS on all lot sizes throughout the BMAP area. Local governments can develop programs to help fund the additional costs required to upgrade existing OSTDS to include nutrient reducing features. The funding program will be designed to prioritize OSTDS where it is most economical and efficient to add nutrient reducing features (i.e., systems needing a permit for a repair or modification, within the PFA, and on lots of one acre or less). Local governments can apply for competitive grant funding from DEP programs, which are available at ProtectingFloridaTogether.com.

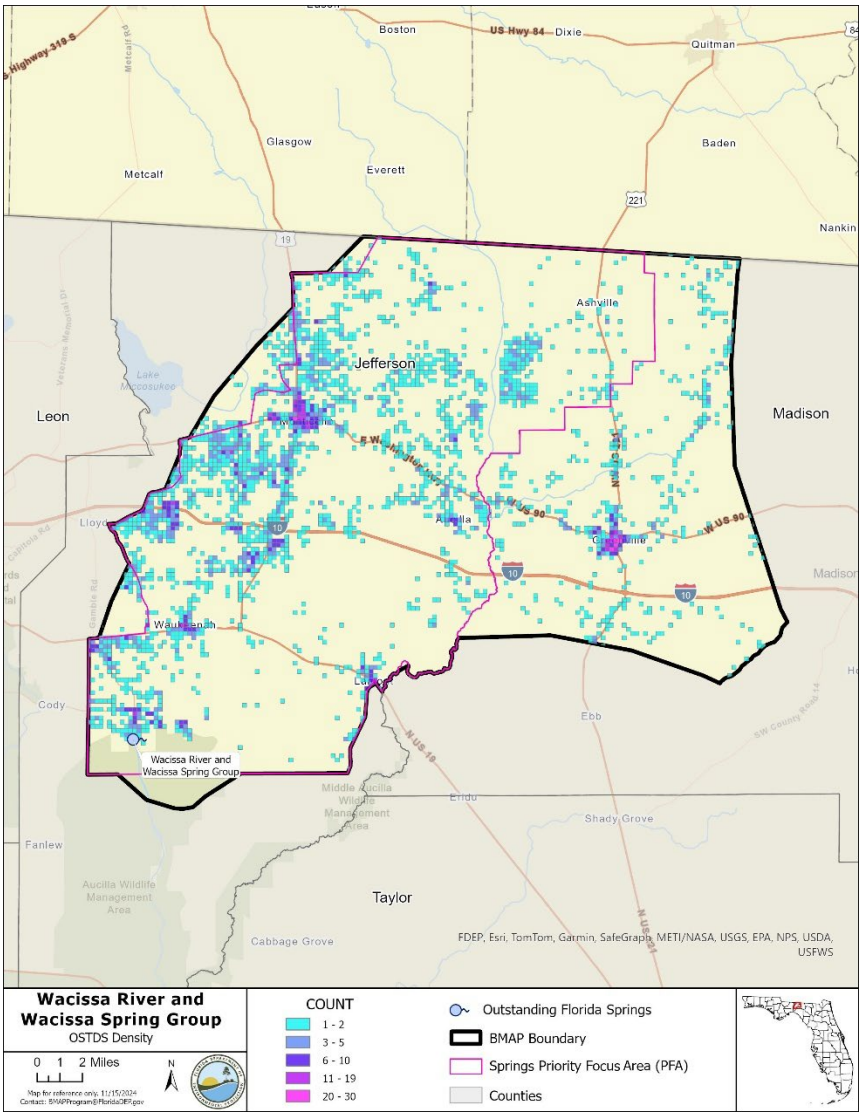

Figure E-1. Locations of OSTDS in the PFA in the Wacissa River and Wacissa Spring Group BMAP

E.4 Public Education Plan

DEP will develop and disseminate educational material focused on homeowners and guidance for builders and septic system contractors. The materials will identify the need for enhanced nitrogen reducing OSTDS along with the requirements for installing nitrogen reducing technologies under this OSTDS remediation plan. DEP will coordinate with industry groups such as Florida Home Builders Association and Florida Onsite Wastewater Association (FOWA).

DEP's Onsite Sewage Program's website provides information on the following:

- The requirements for nitrogen-reducing systems for springs protection and BMAPs (https://floridadep.gov/water/onsite-sewage/content/springs-protection-and-basin-management-action-plans-bmaps).

- Information for septic system owners and buyers (https://floridadep.gov/water/onsite-sewage/content/information-septic-system-owners-and-buyers).

- Information for septic tank contractor (https://floridadep.gov/water/onsite-sewage/content/septic-tank-contractor-registration).

UF-IFAS has developed a website that includes frequently asked questions, and extensive information for septic system owners and local governments (https://water.ifas.ufl.edu/septic-systems/your-septic-system/).

Appendix F. Technical Support Information

This appendix is being shared as a separate file until the BMAP documents are finalized.

Appendix G: Wastewater Facilities

DEP has determined that certain WWTFs providing reclaimed water for the purpose of commercial or residential irrigation or that is otherwise being land applied within this BMAP area are causing or contributing to the nutrient impairments being addressed in this BMAP. Based on DEP's determination, the facilities listed below are subject to the nitrogen and phosphorus limits set forth in section 403.086, F.S.

These facilities have 10 years from BMAP adoption to meet the applicable AWT standards. This requirement does not prevent the department from requiring an alternative treatment standard, if the department determines the alternative standard is necessary to achieve the TMDL(s) or applicable water quality criteria.

For facilities that did not have adequate information to complete an evaluation or where a change occurs to the facility's application of reclaimed water after the initial evaluation (e.g., an increase in facility capacity or change in location of reclaimed water application), the department will evaluate the land application of reclaimed water as more information becomes available pursuant to section 403.086, F.S.

Table G- 1. Wastewater facilities subject to the nitrogen and phosphorus limits set forth in section 403.086, F.S.

Facility Name	Permit Number
Greenville WWTF	FLA011658
Jefferson Correctional Institution WWTF	FLA011642

Appendix H: Golf Course NMPs

The fertilizers used to maintain golf courses can be significant sources of nutrients in watersheds that are impaired for nitrogen and/or phosphorous. To achieve the TMDL target(s), all nutrient sources need to reduce their nutrient loading. Similar to other sources, golf courses are required to implement management strategies to mitigate their nutrient loading and be in compliance with the BMAP. Florida BMAPs are adopted by Secretarial Order and therefore legally enforceable by the DEP. Requirements for golf courses located in BMAPs are below.

1. **Golf Course BMP Certification, Implementation, and Reporting.**

   a. In areas with an adopted BMAP, all golf courses must implement the BMPs described in DEP's golf course BMP manual, *Best Management Practices for the Enhancement of Environmental Quality on Florida Golf Courses* (DEP, 2021).

   b. At minimum, the superintendent for each golf course must obtain and maintain certification through the UF-IFAS Florida Golf Courses Best Management Practices Program. It is highly recommended that course managers and landscape maintenance staff also participate in the certification program to ensure proper BMP implementation and understanding of nutrient-related water quality issues and the role of golf courses in water quality restoration and protection. By no later than January 14, 2026, the golf course superintendents must confirm to DEP whether they have completed the certification. Certification must be completed by December 31, 2026. This certification must be renewed every four years.

   c. Beginning in 2026 a nutrient application record (fertilizer, reuse, etc.) must be submitted each year during the BMAP statewide annual reporting process.

   d. Fertilizer rates should be no greater than the UF-IFAS recommendations to help prevent leaching. This includes nutrients from reuse or any other source applied. If a facility uses fertilizer rates greater than those in the BMP manual they are required to conduct water quality monitoring prescribed by DEP or WMD that demonstrates compliance with water quality standards (**Table H-1**).

   e. Example golf course BMPs applicable to protecting water quality are listed below.

      - Use slow release fertilizer to prevent volatilization.
      - Use of lined media in stormwater features.
      - Use of denitrification walls.
      - Use of rain gardens.
      - Use of tree boxes.

- Use of bioswales.

Table H-1. Nutrient ranges for warm-season turfgrass species

Note: For more information refer to the Best Management Practices for the Enhancement of Environmental Quality on Florida Golf Courses (DEP, 2021).

Nutrient	Bermudagrass (%)	St. Augustinegrass (%)	Seashore Paspalum (%)	Centipedegrass (%)	Zoysia (%)
N	1.95 - 4.63	1.53 - 2.41	2.80 -3.50	1.5 - 2.9	2.04 - 2.36
P	0.15 - 0.43	0.30 - 0.55	0.30 - 60	0.18 - 0.26	0.19 - 0.22
Potassium (K)	0.43 - 1.28	1.1 - 2.25	2.00 - 4.00	1.12 - 2.50	1.05 - 1.27
Calcium (Ca)	0.15 - 0.63	0.24 - 0.54	0.25 - 1.50	0.50 - 1.15	0.44 - 0.56
Magnesium (Mg)	0.04 - 0.10	0.20 - 0.46	0.25 - 0.60	0.12 - 0.21	0.13 - 0.15
Sulfur (S)	0.07 - 0.02	0.15 - 0.48	0.20 - 0.60	0.20 - 0.38	0.32 - 0.37
Sodium (Na)	0.05 - 0.17	0.00 - 0.17	-	-	-

2. All golf courses located within a BMAP are required to submit a NMP that is designed to, while maintaining even plant growth, prevent nutrient losses to the Floridan aquifer and surrounding surface waters. A draft NMP must be submitted to DEP within one year of BMAP adoption and a final document is due two years after adoption. The NMP must include the following:

a. ***A brief description of the goals of the nutrient management plan.***

This should be a paragraph that describes the goals of your NMP. Talk about how you are managing for high quality turf and water quality. Remember your goal is to protect water quality while maintaining the golf course in premium condition.

b. Identification of areas where nutrient applications will be made including greens, tees, fairways and roughs.

Discuss the areas of the course where you plan to use fertilizer, and why. Also discuss the areas that do not need or get any fertilizer applications.

Include a GIS shapefile identifying all of these areas.

Complete the table(s) detailing your nutrient application practices.

Turf Details

Turf Type	Turf Species	Acreage
Tees		
Greens		
Fairways		
Roughs		
Totals		

Fertilizer Applications

Table H-2. Sample fertilizer application table

Month	Turf Type	TN Application Rate (lbs/acre)	TP Application Rate (lbs/acre)	Number of Applications	Total TN Applied (lbs/acre)	Total TP Applied (lbs/acre)
January	Tees					
	Greens					
	Fairways					
	Roughs					
February	Tees					
	Greens					
	Fairways					
	Roughs					
March	Tees					
	Greens					
	Fairways					
	Roughs					
April	Tees					
	Greens					
	Fairways					
	Roughs					
May	Tees					
	Greens					
	Fairways					
	Roughs					
June	Tees					
	Greens					
	Fairways					
	Roughs					
July	Tees					
	Greens					
	Fairways					
	Roughs					
August	Tees					
	Greens					
	Fairways					
	Roughs					
September	Tees					
	Greens					
	Fairways					

Month	Turf Type	TN Application Rate (lbs/acre)	TP Application Rate (lbs/acre)	Number of Applications	Total TN Applied (lbs/acre)	Total TP Applied (lbs/acre)
	Roughs					
October	Tees					
	Greens					
	Fairways					
	Roughs					
November	Tees					
	Greens					
	Fairways					
	Roughs					
December	Tees					
	Greens					
	Fairways					
	Roughs					
Totals						

Amount of Reuse/Reclaimed Water Applied

Table H-3. Sample reclaimed water and fertilizer use table

*Supply reuse/reclaimed water volumes applied, if applicable.

Month	Reuse/Reclaimed Water Quantity (Gallons)	Monthly Average TN (mg/L)	Monthly Average TP (mg/L)	Quantity of TN Applied (lbs)	Running Total of TN Applied per Acre (lbs/acre)	Quantity of TP Applied (lbs)	Running Total of TP Applied per Acre (lbs/acre)
January							
February							
March							
April							
May							
June							
July							
August							
September							
October							
November							
December							
Totals							

Are any other sources of nutrients (i.e. manure, etc.) applied to the grounds? If so, please detail in a table similar to the reuse and fertilizer tables.

c. Soil sampling methods and results for each area receiving fertilizer applications. Areas receiving fertilizer applications shall be sampled once every three years. Soil samples shall be collected and analyzed according to UF-IFAS/DEP recommendations or standard industry practice. Soil samples shall be analyzed, at minimum, for:

1. Nitrogen
2. Phosphorus

Describe existing soil sampling here. Describe what your planned soil sampling schedule looks like. Have you been soil testing for years already? Please describe. If you are just getting started with soil testing the course, you can discuss that. What parts of the course are priority?

If soil samples from areas of similar soil, fertilizer use and management are combined, then describe that process and justify why you feel they are similar enough to combine into a "representative" sample. That's fine, just describe why.

Keep all soil test results (or copies of them) in this file as part of your nutrient management plan. Please do not send them in to DEP individually. If you've been soil testing for years, remember to add copies of all those past results to your NMP file.

d. Water quality sampling methods and results. Water quality sampling and analysis should be conducted in accordance with DEP's Standard Operating Procedures. Water quality samples shall be analyzed, at minimum, for:

1. Nitrogen
2. Phosphorus.

Describe your existing water quality sampling here. Describe what your planned water quality sampling schedule looks like. Have you been sampling for years already? If you are just getting started with water quality testing , you can discuss that. What parts of the course are priority?

Keep all water quality test results (or copies of them) in this file as part of your nutrient management plan. Please do not send them in to DEP individually. If you've been testing for years, remember to add copies of all those past results to your NMP file.

e. ***Tissue sampling methods and results. Tissue samples shall be collected and analyzed according to UF-IFAS/DEP recommendations or standard industry practice.***

Describe existing tissue sampling plan here. Keep all test results (or copies of them) in this file as part of your nutrient management plan. Please do not send them in to DEP individually. If you've been testing for years, remember to add copies of all those past results to your NMP file.

f. Soil, tissue and water quality sample results shall be maintained for a minimum of 5 years. Please provide records.

When developing new (or expanding) golf courses, pre- and post- monitoring should be implemented in accordance with UF-IFAS/DEP recommendations.

Appendix I. Agricultural Enrollment and Reductions

FDACS provided the information for this appendix for each BMAP. The information in this appendix does not represent DEP's position.

Agricultural Landowner Requirements

Section 403.067, F.S., requires agricultural producers and landowners located within BMAP areas to either enroll in the FDACS Best Management Practices (BMP) Program and properly implement BMPs applicable to their property and operation or to conduct water quality monitoring activities as required by Rule Chapter 62-307, F.A.C. Producers or agricultural landowners who are enrolled in the FDACS BMP Program and are properly implementing the applicable BMPs identified on the BMP Checklist, or who are in compliance with the Equivalent Program requirements of Rule Chapter 5M-1, F.A.C., are entitled to a presumption of compliance with state water quality standards per section 403.067(7)(c)3., F.S.

FDACS Office of Agricultural Water Policy (OAWP) BMP Program

Best Management Practices (BMPs) Definition

For the purposes of the OAWP BMP Program, the term "best management practice" means a practice or combination of practices determined based on research, field-testing, and expert review, to be the most effective and practicable on-location means, including economic and technological considerations, for improving water quality in agricultural discharges. Section 403.067, F.S., requires that BMPs reflect a balance between water quality improvements and agricultural productivity. FDACS works closely with the FDEP, water management districts (WMDs), industry experts, and academic institutions to understand the environmental and agronomic effects addressed by BMPs.

Section 403.067, F.S., authorizes and directs FDACS to develop and adopt by rule BMPs that will help Florida's agricultural industry achieve the pollution reductions allocated in BMAPs. To date, FDACS OAWP has adopted 11 commodity specific BMP manuals by rule, covering cattle, citrus, equine, dairy, nurseries, poultry, sod, small farms and specialty livestock, specialty fruit and nut, vegetable and agronomic crops, and wildlife operations. All OAWP BMP manuals are periodically revised, updated, and subsequently reviewed and preliminarily verified by DEP before re-adoption. BMPs serve as part of a multidisciplinary approach to water resource restoration and protection that includes public/private partnerships, landowner agreements and regional treatment technologies, which together form the comprehensive strategy needed to meet the goals established in BMAPs.

Enrolling in an FDACS BMP Program

To initially enroll in the FDACS BMP Program, agricultural landowners and producers must meet with an FDACS representative on site to determine the appropriate practices that are applicable to their operation(s) and to document the BMPs on the Notice of Intent (NOI) and BMP Checklist. FDACS representatives consider site-specific factors when determining the applicability of BMPs including commodity type, topography, geology, location of production, soil type, field size, and type and sensitivity of the ecological resources in the surrounding areas. Producers collaborate with

the FDACS representative to complete an NOI to implement the BMPs and the BMP Checklist from the applicable BMP manual.

Once the NOI and Checklist are completed, signed, and submitted to OAWP, the producer is formally enrolled in the BMP Program. Because many agricultural operations are diverse and are engaged in the production of multiple commodities, a landowner may sign multiple NOIs for a single parcel. Producers must properly implement all applicable BMPs as soon as practicable, but no later than 18 months after completion and execution of the NOI and associated BMP Checklist.

Enrollment Prioritization

To address the greatest resource concerns, OAWP utilizes a phased approach based on commodity type, irrigation, and agricultural acreages, while ensuring that all entities identified as agriculture will be notified. Enrollment efforts have previously focused on enrolling parcels that are most impactful to water quality including parcels containing many agricultural acres, irrigated acres, or more intense agricultural land uses.

Implementation Verification

Section 403.067, F.S., requires FDACS to conduct an Implementation Verification (IV) site visit at least every two years to ensure that agricultural landowners and producers are properly implementing the applicable BMPs identified in the BMP Checklist. An IV site visit includes: review and collection of nutrient application records that producers must maintain to demonstrate compliance with the BMP Program; verification that all other applicable BMPs are being properly implemented; verification that any cost shared practices are being properly implemented; and identification of potential cost share practices, projects or other applicable BMPs not identified during enrollment. During the IV site visit, FDACS representatives also identify opportunities for achieving greater nutrient, irrigation, or water resource management efficiencies, including opportunities for water conservation. Procedures used to verify the implementation of agricultural BMPs are outlined in Rule 5M-1.008, F.A.C.

Nutrient Application Records

Enrolled landowners and producers are required to keep records on the total pounds of nitrogen (N) and phosphorus (P) fertilizer from all sources that are applied to their operations to comply with BMP program requirements, including AA bio-solids. Nutrient records from Class A or B biosolids applied in accordance with Chapter 62-640, F.A.C. are collected through the DEP permitting process as described in 5M-1.008(5). FDACS will collect information pertaining to these records for a two-year period identified when an IV site visit is scheduled. OAWP adopted a Nutrient Application Record Form (NARF) (FDACS-04005, rev. 06/24, incorporated in 5M-1.008(4), F.A.C.), to help simplify the record keeping requirement. The form is available under Program Resources at https://www.fdacs.gov/Agriculture-Industry/Water/Agricultural-Best-Management-Practices. As these records relate to processes or methods of production, costs of production, profits, other financial information, fertilizer application information collected during an IV site visit is considered confidential and may be exempt from public records under chapters 812 and 815, Florida Statutes (F.S.), and Section 403.067, F.S. In accordance with subsection 403.067(7)(c)5., F.S., FDACS is required to provide DEP the nutrient application records.

Compliance Enforcement

If multiple efforts to contact agricultural landowners and producers within BMAPs about enrollment in the BMP Program are unsuccessful or if the landowner or producer chooses not to enroll in the BMP Program FDACS refers them to DEP for enforcement action per Section 403.067(7)(b), F.S. If a producer is enrolled in the FDACS BMP program and the producer chooses not to properly implement the applicable BMPs, FDACS representatives provide the landowner or producer with a list of corrective measures and the timeframes within which they must be implemented. If a landowner or producer does not cooperate with FDACS to identify or implement corrective or remedial measures, or refuses an IV site visit, FDACS refers them to DEP for enforcement action after attempts at corrective and remedial action are exhausted. Chapter 5M-1, F.A.C. outlines the process to ensure compliance with the BMP Program requirements
.

Equivalent Programs

Enrollees operating under one of the Equivalent Programs listed in Rule 5M-1.001(7), F.A.C., are required to complete an NOI and meet the other requirements for Equivalent Programs specified in Rule Chapter 5M-1, F.A.C. Compliance with BMPs on the area(s) of the NOI property subject to the Equivalent Program instrument is demonstrated by fulfilling the requirements of Rule 5M-1.008(8), F.A.C. An Enrollee under an Equivalent Program listed in Rule 5M-1.001(7)(a)-(b), F.A.C., that is not required to complete a BMP Checklist is not subject to IV site visits. For Enrollees under an Equivalent Program listed in Rule 5M-1.001(7)(a)-(b), F.A.C., implementation verification shall be undertaken by the agency that issued the permit pursuant to its statutory and/or rule authority.

Other FDACS BMP Programs

FDACS implements other regulatory programs that help minimize nonpoint source pollution from agricultural activities.

Aquaculture

The FDACS Division of Aquaculture develops and enforces regulations governing the commercial aquaculture industry in Florida. Chapter 597, F.S., Florida Aquaculture Policy Act, requires Floridians who engage in commercial aquaculture to annually acquire an Aquaculture Certificate of Registration and implement all applicable Aquaculture Best Management Practices listed in Rule Chapter 5L-3.004, F.A.C. Facilities with certain production and discharge rates also require an NPDES permit from DEP. The Aquaculture BMPs were last updated by rule in November 2023. FDACS Division of Aquaculture conducts annual site visits at certified facilities to confirm compliance with BMPs. These include management practices in areas of construction, containment, shrimp culture, sturgeon culture, shellfish culture, live rock culture, aquatic plants, including fertilizer application, and health management. For more information about FDACSs Division of Aquaculture and Aquaculture BMPs go to https://www.fdacs.gov/Divisions-Offices/Aquaculture. Within the Wacissa River and Wacissa Spring Group BMAP, there are no aquaculture facilities under certification with the FDACS Division of Aquaculture as of November 2024. As with agricultural land use in Florida, aquaculture facilities are frequently in and out of production. The

facilities being provided may no longer be in operation and/or there may be new companies in different parts of the basin by the next BMAP iteration.

Forestry

The FDACS Florida Forest Service (FFS) develops, implements (through education and training), and monitors Silviculture BMPs in Florida. Silviculture BMPs are applicable to *bona-fide* ongoing silviculture operations and are not intended for use during tree removal or land clearing operations that are associated with a land-use change to a non-forestry objective. The FFS Silviculture BMP Manual is adopted under Chapter 5I-6.002 F.A.C. and was last updated in 2008. FFS is currently in the process of updating the manual with guidance from the FDACS Silviculture BMP Technical Advisory Council. The current manual is composed of fourteen BMP categories covering many aspects of silviculture operations including timber harvesting, site preparation, forest roads, stream and wetland crossings, and forest fertilization. The primary objectives of Silviculture BMPs are to minimize the risks to Florida's water resources from silviculture-related sources of nonpoint source pollution and maintain overall ecosystem integrity. Section 403.067, F.S., provides silviculture practitioners implementing Silviculture BMPs a presumption of compliance with state water quality standards for the pollutants addressed by the BMPs.

The FFS Silviculture BMP implementation monitoring program was initiated in 1981 and follows the criteria which have been established for state forest agencies in the southeastern United States by the Southern Group of State Foresters. Monitoring surveys are conducted biennially on a random sample of recently conducted silviculture operations throughout Florida with the goal of determining the level of implementation and compliance with Silviculture BMPs. For the period of record (1981 to 2023), Florida's statewide Silviculture BMP compliance rates range from 84% (1985) to 99.7% (2019) and have shown an overall average compliance rate above 98% since 2005. For more information about Silviculture BMPs and to download a copy of the latest FFS Silviculture BMP Implementation Survey Report go to https://www.fdacs.gov/bmps.

Agricultural Land Use

Agricultural Land Use in BMAPs

Land use data are helpful as a starting point for estimating agricultural acreage, determining agricultural nonpoint source loads, and developing strategies to reduce those loads in a BMAP area, but there are inherent limitations in the available data. Agriculture acreages fluctuate when volatile economic markets for certain agricultural commodities provide incentive for crops to change at a fast pace, properties are sold, leases are terminated, production areas decrease, or production ceases, among other reasons. Florida's recent population growth has also resulted in accelerated land use changes statewide, some of which include transitioning agricultural or fallow agricultural lands to developed land uses. The dynamic nature of Florida's agricultural industry creates challenges with comparing agricultural acres from year to year.

When developing a BMAP, agricultural nonpoint source loading is estimated using a broad methodology based on statewide land use data. Oftentimes, this results in properties being designated as agricultural nonpoint pollution sources and creates an obligation for these properties

to enroll in the FDACS BMP Program when they may be better addressed under other programs more applicable to the practices occurring on those properties. Examples of these properties include: rural residential/homesteads, ranchettes, or single-family homes with accessory structures for livestock or groves that serve the needs of those living on the property. Continued identification of these properties as agricultural nonpoint sources limits the ability to reliably direct programmatic resources to meet water quality restoration goals.

FDACS uses the parcel-level polygon agricultural lands (ALG) data that is part of the Florida Statewide Agricultural Irrigation Demand (FSAID) Geodatabase to estimate agricultural acreages statewide. FSAID provides acreages and specific crop types of irrigated and non-irrigated agricultural lands statewide. FSAID is updated annually based on water management district land use data, county property appraiser data, OAWP BMP enrollment data, U.S. Department of Agriculture data for agriculture, such as the Cropland Data Layer and Census of Agriculture, FDACS Division of Plant Industry citrus data, as well as field verification performed by the U.S. Geological Survey, water management districts, and OAWP. As the FSAID is detailed and updated on an annual basis, it provides a reliable characterization of agricultural land uses that accounts for the fast-growing population and resultant land use changes taking place statewide. The FSAID also provides FDACS a clearer picture of agriculture's impact on the landscape and consistent method to better track, direct, and assess BMP implementation, cost share projects, and regional projects. **Table I-1** and **Figure I-1** show the percentage of agricultural land use within the Wacissa River and Wacissa Spring Group BMAP, determined by comparing the FSAID 11 ALG and total acreage of the BMAP boundary. Understanding what proportion of a BMAP is comprised of agriculture provides insight as to the potential contribution of agricultural nonpoint sources.

Table I-1. Agricultural land use in Wacissa River and Wacissa Spring Group BMAP

Non-agricultural acres	264,945
Agricultural acres	48,231

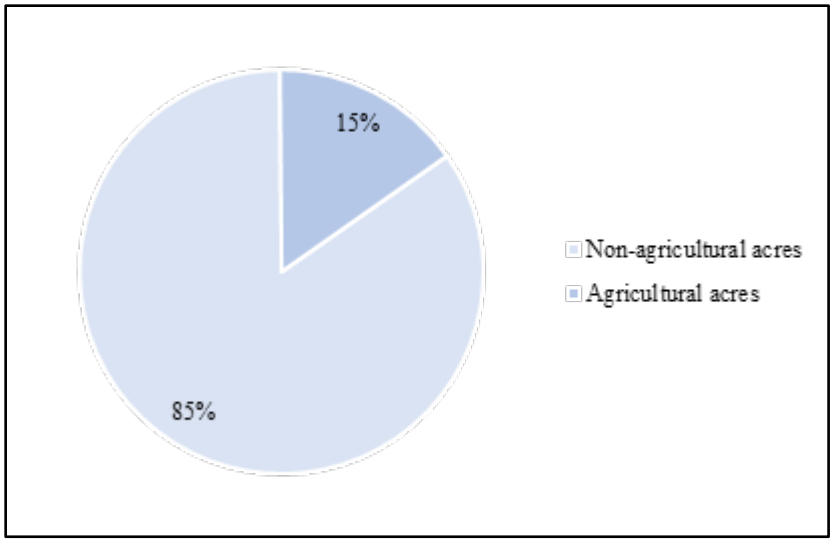

Figure I-1. Comparison of agricultural acres versus other land uses in the

BMAP area

FDACS BMP Program Metrics

Enrollment Delineation and BMAP Metrics

BMP enrollments are delineated in GIS using county property appraiser parcels. In terms of NOIs, enrolled acreage fluctuates when parcels are sold, when leases end or change hands, or when production areas downsize or production ceases, among other reasons. Nonproduction areas such as forest, roads, urban structures, and water features are often included within the parcel boundaries. Conversely, agricultural lands in the FSAID ALG only include areas identified as agriculture. To estimate the agricultural acres enrolled in the BMP program, OAWP overlays the FSAID ALG and BMP enrollment data within GIS to calculate the acres of agricultural land in an enrolled parcel.

Summary Tables

Table I-2. Agricultural lands enrolled in the Wacissa River and Wacissa Spring Group BMAP by BMP program commodity

Commodity	Agricultural Acres Enrolled
Citrus	114
Cow/Calf	7,304
Dairy	1,318
Multiple Commodities	9,831
Nursery	544
Row/Field Crop	7,428
Total	**26,539 (55%)**

As of July 2024, 55% of the agricultural acres in the Wacissa River and Wacissa Spring Group BMAP area are enrolled in FDACS' BMP program. **Table I-2** shows the acreages enrolled in the BMP Program by commodity. It is important to note that producers often undertake the production of multiple commodities on their operations, resulting in the requirement to implement the applicable BMPs from more than one BMP manual. When this occurs, the acres enrolled under more than one BMP manual are classified as “multiple commodity” and not included in the individual commodity totals to prevent duplication.

Enrollment Map

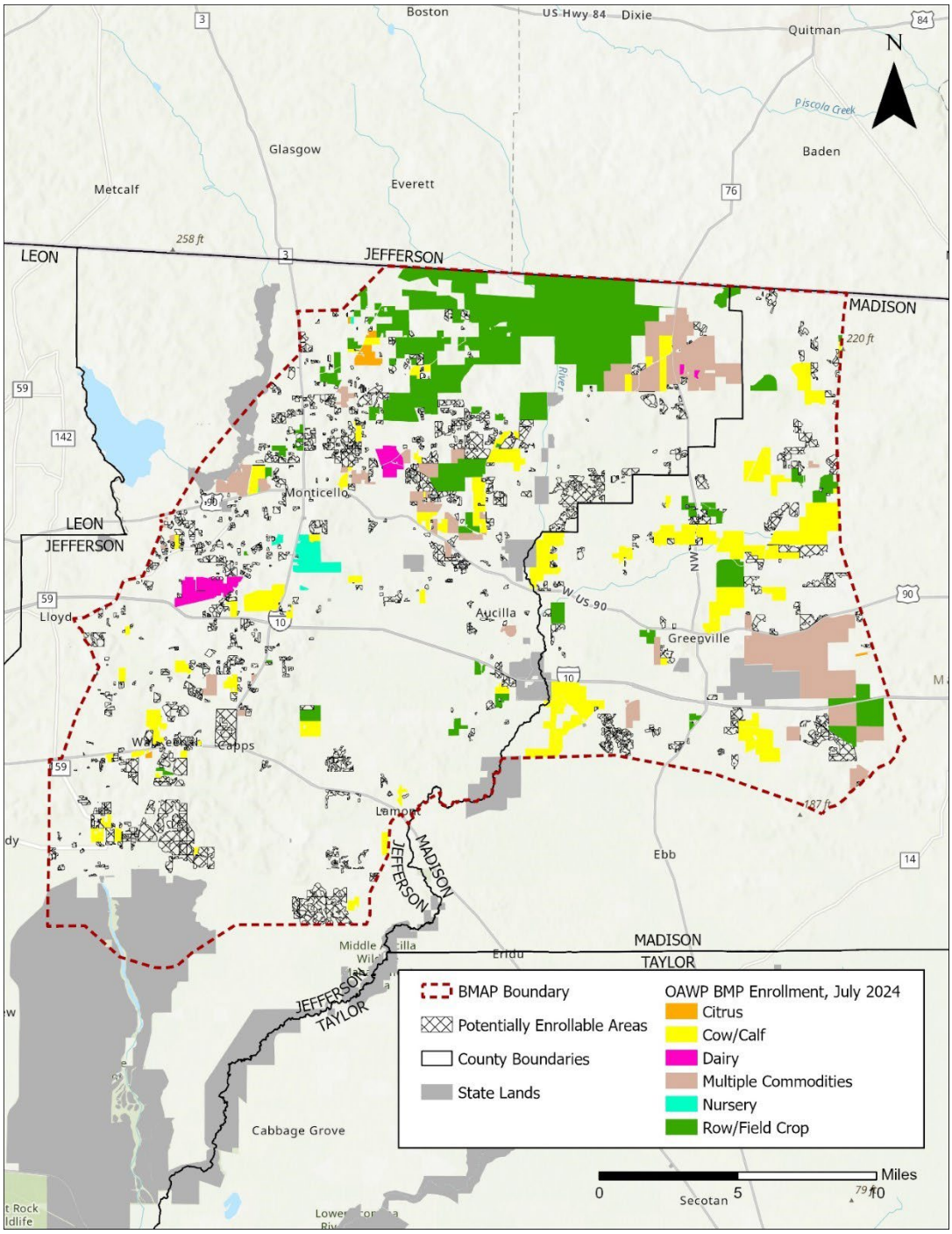

Figure I-2. Agricultural lands enrolled in the BMAP area

Unenrolled Agricultural Lands

Oftentimes, there are lands initially identified as agriculture which, upon closer evaluation, raise questions as to whether there is agricultural activity and whether it is enrollable within the purview of OAWP. FDACS characterizes lands classified as agriculture in the FSAID ALG, but not currently enrolled in the FDACS BMP Program using property appraiser data such as parcel owner information, agricultural tax valuation for exemption purposes, other parcel land use details to determine whether the remaining lands are potentially enrollable. More information about the "Unenrolled agricultural lands" characterization analyses is available in **FDACS Annual Status of Implementation of BMPs Report**.

The assessment of unenrolled agricultural lands at a more granular scale provides an indication of which areas are more likely (or unlikely) to have enrollable agricultural activities occurring on them. It also provides an estimate of the number of parcels and the associated agricultural acres deemed to be enrollable. The number of parcels is a useful proxy for the level of resource dedication needed to enroll the associated agricultural acres and where best to focus finite resources and staffing needs. It is often the case that much of the potentially enrollable acreage is encompassed within many smaller parcels which may require additional resources to enroll and require further evaluation, such as those that have agricultural activity intended solely for personal use ancillary to a residence, those that do not have an agricultural land use per the property appraiser, as well as parcels where there is no current activity to enroll.

Table I-3 shows the breakdown of agricultural lands within the Wacissa River and Wacissa Spring Group BMAP based on the FSAID 11 and the results of the FDACS unenrolled agricultural lands characterization.

Table I-3. Agricultural Lands in Wacissa River and Wacissa Spring Group BMAP

* Enrollment information current as of July 2024.

Crediting Location	Agricultural Acres	Unenrolled - Unlikely Enrollable Acres	Agricultural Acres - Adjusted	Agricultural Acres Enrolled*
BMAP Wide	62,648	14,417	48,231	26,538

Potentially Enrollable Lands

There are 21,697 acres of potentially enrollable lands within the Wacissa River and Wacissa Spring Group BMAP based on the assessment of unenrolled agricultural lands performed by FDACS. **Table I-4** shows the potentially enrollable acreages by crop type. **Figure I-3** shows the count of potentially enrollable parcels based on size classifications used by FDACS.

Table I-4. Potentially enrollable acres by crop type

Crop Type	Acres
Cropland and/or Pastureland	682
Crops	2,002

Crop Type	Acres
Fallow	1,562
Fruit (Non-citrus)	85
Grazing Land	13,402
Hay	3,309
Livestock	204
Nursery	167
Open Lands	284
Total	**21,697**

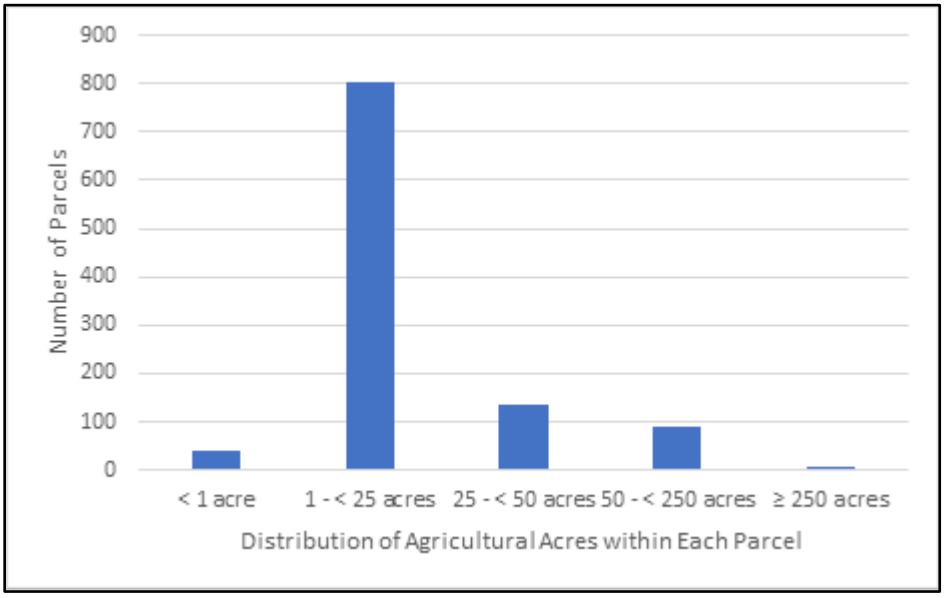

Figure I-3. Count of potentially enrollable parcels by size class

FDACS Cost Share

Enrollment in and proper implementation of BMPs makes a producer eligible for cost share for certain BMPs, other practices, and projects. The availability of cost share funds depends on annual appropriations by the Florida Legislature, and therefore, the amount available can vary each year. Cost share applications may be submitted once a producer has enrolled in the BMP Program and has been assigned an NOI number. Cost share practices are categorized as nutrient management, irrigation management, or water resource protection. BMPs, other practices, and projects eligible for cost share funding may include precision agriculture technologies, variable rate irrigation methods, water control structures, and tailwater recovery systems. OAWP seeks to leverage its cost share funding with other cost share programs offered by FDACS and other state and federal agencies. The United States Department of Agriculture NRCS offers funding through its Environmental Quality Incentives Program, and certain WMDs have agricultural cost share programs. Applicants are encouraged to use OAWP cost share in conjunction with other available conservation programs although funding cannot be duplicative.

Table I-5 identifies agricultural technologies eligible for funding through cost-share assistance and the associated nutrient reductions. The nutrient reductions were used to develop a methodology to estimate nutrient reductions for NOIs that have received cost-share funding[2]. The NOI boundary, based on property appraiser parcel data, was considered the area treated by the cost-shared agricultural technology or project. For parcels with more than one cost-share project, OAWP identified the order of treatment to determine the reductions for the multiple projects based on each cost-shared agricultural technology. Estimated nutrient reductions from FDACS cost share in the Wacissa River and Wacissa Spring Group BMAP are shown in **Table I-6**.

Table I-5. Cost share project types and estimated nutrient reduction efficiencies

Project Types	BMP Category	Mechanism	N Impact
Nutrient Management Plan	Precision Nitrogen Management	N application reduction	15%
Plastic Mulch Layer - Drip Tape	Precision Nitrogen Management	N leaching reduction	18%
Controlled Release Fertilizer	Precision Nitrogen Management	N leaching reduction	20%
Applicator (Hoop Sprayer)	Precision Nitrogen Management	N application reduction	20%
Applicator (Liquid)	Precision Nitrogen Management	N application reduction	15%
Spreader (Dry Variable)	Precision Nitrogen Management	N application reduction	15%
Applicator (Dry Banding)	Precision Nitrogen Management	N application reduction	25%
Cover Crops	Tillage, Cover Crops and Soil Health BMPs	N leaching reduction	30%
Vertical Till	Tillage, Cover Crops and Soil Health BMPs	N leaching reduction	6%
Flail Mower	Tillage, Cover Crops and Soil Health BMPs	N application reduction	8%
Integrated Crop-Livestock Rotations	Livestock BMPS	N leaching reduction	50%
Rhizoma Peanut Mix Pasture System	Livestock BMPS	N application reduction	31%
Fencing	Livestock BMPS	N leaching reduction	20%
Livestock Water Exclusion	Livestock BMPS	N runoff reduction	33%
Alternative Water Supply - Livestock	Livestock BMPS	N runoff reduction	33%
Free Stall Barn	Livestock BMPS	N leaching reduction	30%
Culvert/Riser	Drainage and Erosion Reduction BMPs	N runoff reduction	16%
Water Control Structures or Stormwater Improvement	Drainage and Erosion Reduction BMPs	N runoff reduction	17%
Tailwater Recovery Ponds	Drainage and Erosion Reduction BMPs	N runoff reduction	42%
Storage – Compost	Storage	N leaching reduction	26%
Storage – Potting Soil	Storage	N leaching reduction	23%
Rotation – mobile corral	Livestock BMPS	N leaching reduction	20%
Rotation – portable feeder/wagon	Livestock BMPS	N leaching reduction	20%

Table I-6. Nutrient reductions from FDACS cost share

BMP Category	TN Reductions to Groundwater
Drainage and Erosion Reduction BMPs	292
Irrigation BMPs	5,037
Livestock BMPs	5,196
Precision Nitrogen Management	5,661
Tillage, Cover Crops and Soil Health BMPs	6,119
Total	**22,306**

Future Efforts

Outreach

To address resource concerns, FDACS continues enhancing coordination with producers, agencies, and stakeholders to increase enrollment in the BMP program. OAWP is sending correspondence to agricultural landowners within BMAPs that are not currently enrolled in the BMP program to increase enrollment rates and verify land uses where additional focus may be required to achieve resource protection. This effort is utilizing a phased approach and targeting priority land uses, and then evaluating the amount of agricultural acreage for the remaining unenrolled lands, while ensuring that all entities identified as agriculture will be notified. Additionally, OAWP continues to coordinate with industry groups and outreach partners to educate and inform agricultural producers about the BMP program.

Dairy Loading Estimations

Dairy operations represent a diverse agricultural industry within Florida, varying widely from pasture-based operations to confinement facilities where the cows spend the entire day under roof. Dairies must balance nutrient use and management based on the amounts of manure and wastewater generated onsite. Nutrient management requirements vary based on herd sizes and are implemented either through the permitting process under Chapter 62-670, F.A.C. or through enrollment in the FDACS BMP program.

Manure is typically stored onsite as solids or in the operation's waste storage pond (WSP). Manure solids can be land-applied, composted, or hauled off-site. Waste stored in the waste storage pond can be land-applied as liquid organic fertilizer, such as through a center pivot irrigation system. Use of nutrients from solids or the WSP allows dairy operations to produce forage or silage crops for their herds and maintain a nutrient balance.

Manure is an organic source of Nitrogen (N) subject to volatilization based on many factors including temperature, rainfall, soil type, and storage method. Volatilization provides for less available N to be lost through leaching, but also less available N for crop uptake.

Concentrated Animal Feeding Operation (CAFO) Dairies

Dairies with a herd size over 700 are Concentrated Animal Feeding Operations (CAFOs) and are permitted by FDEP under Chapter 62-670, F.A.C. CAFO dairies are required to implement a Nutrient Management Plan (NMP) as part of their permit. The NMP outlines the nutrient inputs and outputs of a particular dairy operation, including any reuse and off-site disposal of manure and any commercial fertilizers used to grow forage or silage crops. CAFO dairies must perform water quality monitoring onsite and submit quarterly and annual reports demonstrating compliance with water quality standards and their NMP.

While CAFO dairies can meet most of their crop nutrient requirements using waste generated onsite, in some instances the amount of N lost due to volatilization may require the use of supplemental commercial fertilizers. However, when commercial fertilizers are utilized, they are typically applied at rates below the standard application rates for agronomic crops based on the NMPs and annual reports submitted by permitted dairies.

Non-CAFO Dairies

Dairies with herd sizes smaller than 700 are non-CAFO and are subject to the same requirements as other agricultural operations within BMAPs. They must enroll in and implement BMPs applicable to their operation or perform water quality monitoring per Chapter 62-307, F.A.C. While not duplicative of permit requirements, the FDACS Dairy BMP Program has some similarities including lining of WSPs and maintenance of a nutrient balance through record review and collection. Further, enrolled dairy operations are subject to the Implementation Verification (IV) site visit requirement every 2 years as required by s. 403.067(7)(d)3., F.S.

NSILT Estimation of Dairy Loading

The NSILT provides estimates of loading to groundwater based on land use and other factors in a springshed, where it may be harder to capture nuances happening on the ground such as methods of agricultural production.

Commercial Fertilizers

While the crop fields associated with CAFO dairies grow similar crops to the rest of a region, e.g., corn, hay, or grasses, they are grown under a different management system based on the use of organic sources of N such as manure or effluent. Any commercial fertilizer will be applied at rates that differ from those used in standard crop production.

To illustrate the range of potential inputs and loads from CAFO dairies, the commercial fertilizer amounts reported to DEP between 2021 and 2023 were averaged for each springshed to determine an application rate. The Farm Fertilizer (80%) and Livestock Waste (90%) attenuation rates from the NSILT were then averaged to account for application of both organic and inorganic sources of N. **Table I-7** reflects the variation in estimated loading from forage or silage fields associated with CAFO dairies.

Table I-7. Revised NSILT farm fertilizer loading estimates using reported

application rates in the Wacissa River and Wacissa Spring Group BMAP

BMAP	Springshed	Groundwater Recharge Rate	Average Commercial N Rate	Average Attenuation	Original Load to Groundwater	Modified Load to Groundwater
Suwannee	Middle	High	200	85%	308,711	238,322
Suwannee	Middle	Medium	200	85%	2,555	2,073
Suwannee	Lower	High	118	85%	196,286	150,225
Wacissa	Wacissa Spring Group	High	85	85%	15,082	11,561
Wacissa	Wacissa Spring Group	Low	85	85%	1,140	918
Wacissa	Wacissa Spring Group	Medium	85	85%	3,951	3,042

Attenuation Factors

All dairies must demonstrate a balance between their nutrient inputs and outputs based on the nutrient of concern in a basin, e.g., nitrogen. Nutrient balance considers a variety of factors including waste treatment systems, volatilization losses, and crop uptake. **Table I-8** shows the overall nitrogen (N) remaining for crop uptake for typical dairy waste treatment systems.

Table I-8. Overall nitrogen remaining for crop uptake with the described systems

Type of System	N Remaining
Cows on Pasture	40%
Cows on concrete floor to storage pond with less than 7 days hold time then sprayed through sprinkler or thinly surface applied	35%
Cows on concrete floor to storage pond with less than 7 days hold time then incorporated or seepage ditch	40%
Cows on concrete floor to storage pond with 7 to 30 days hold time then sprayed through sprinkler or thinly surface applied	30%
Cows on concrete floor to storage pond with 7 to 30 days hold time then incorporated or seepage ditch	35%
Cows on concrete floor to storage pond with greater than 30 days hold time then sprayed through sprinkler or thinly surface applied	10%
Cows on concrete floor to storage pond with greater than 30 days hold time then incorporated or seepage ditch	15%
From WSP samples to crop uptake if applied via sprinkler or thinly surface applied	50%
From WSP sample to incorporated or seepage ditch	80%
Solids thinly applied	75%
Solids incorporated	95%

Dairies produce waste daily, and many produce crops year-round, therefore the nutrients in manure that is land applied through spreading or through an irrigation system are either lost to the atmosphere or taken up by a crop. Manure is stored prior to land application and may be treated in some way, e.g., separating solids from process wastewater or held in a WSP, allowing additional time for volatilization to occur. It is reasonable to expect dairy waste to have the same of attenuation at both CAFO and non-CAFO dairies. The NSILT assumes non-CAFO dairy waste has an

attenuation rate of 50%, whereas CAFO dairy waste is assumed to attenuate at 85%. A comparison of the loading estimates using the different attenuation rates based on the NSILT is shown in **Table I-9**.

Table I-9. Estimated dairy loading at different attenuation rates

BMAP	Springshed	Recharge	Dairy Load to Groundwater - 50% Attenuation	Dairy Load to Groundwater - 85% Attenuation
Suwannee	Middle	High	93,051	27,915
Suwannee	Middle	Medium	20,310	6,093
Santa Fe	Hornsby	Low	2,313	694
Silver	Silver	High	26,535	7,960
Chassahowitzka/Homosassa	Homosassa	High	34,209	10,263

Future Steps to Refine and Address Dairy Loading

While variability in production systems is not unique to dairy operations, it is important to assess the various management systems at both CAFO and non-CAFO dairies to estimate an operation's impact in a springshed. Loading from dairy operations is expected to be reevaluated regularly as part of the adaptive management inherent in BMAP implementation.

The Suwannee River Water Management District (SRWMD) is working with the dairy industry on sustainability projects focused on nutrient mitigation and water conservation. Additionally, CAFO and non-CAFO dairy operations enrolled in FDACS BMPs are eligible for regular cost share funding from FDACS and SRWMD.

Legacy Loads

Legacy loading can present an additional challenge to measuring progress in many areas of Florida with adopted BMAPs. Based on research, initial verification by DEP, and long-term trends in water quality in the BMAP area, it is expected that current efforts, such as BMP implementation, will continue to provide improvements in overall water quality despite the impacts from legacy loads.

While the implementation of BMPs will improve the water quality in the basin, it is not reasonable to assume that BMP implementation alone can overcome the issues of legacy loads, conversion to more urban environments, and the effects of intense weather events. BMP implementation is one of several complex and integrated components in managing the water resources of a watershed.

Collaboration between DEP, FDACS, the water management districts, and other state agencies, as well as local governments, federal partners, and agricultural producers, is critical in identifying projects and programs, as well as locating funding opportunities to achieve allocations provided for under this BMAP. To improve water quality while retaining the benefits that agricultural production provides to local communities, wildlife enhancement, and the preservation of natural areas requires a commitment from all stakeholders to implementing protective measures in a way that maintains the viability of agricultural operations.

Appendix J. Private Facilities with BMAP Responsibilities

The tables below list privately owned and operated facilities that have been identified as contributing sources of nitrogen loading to the groundwater in the Wacissa River and Wacissa Spring Group BMAP. Publicly-owned facilities have been assigned as a part of the responsible entities allocation. The golf courses in **Table J-1** are subject to nutrient management strategies identified in **Section 2.8** and **Appendix H** of this document. All facilities or entities listed below have been assigned required TN reductions to meet the TMDLs. DEP encourages coordination between public and private entities as necessary to address loading in the basin.

Table J- 1. Privately owned or operated golf courses in the Wacissa River and Wacissa Spring Group BMAP

County	Golf Course Name
Jefferson	Jefferson Country Club