



JACKSON BLUE SPRING AND MERRITTS MILL POND BASIN MANAGEMENT ACTION PLAN UPDATES

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Florida Department of Environmental Protection
Marianna, Florida | April 18, 2024



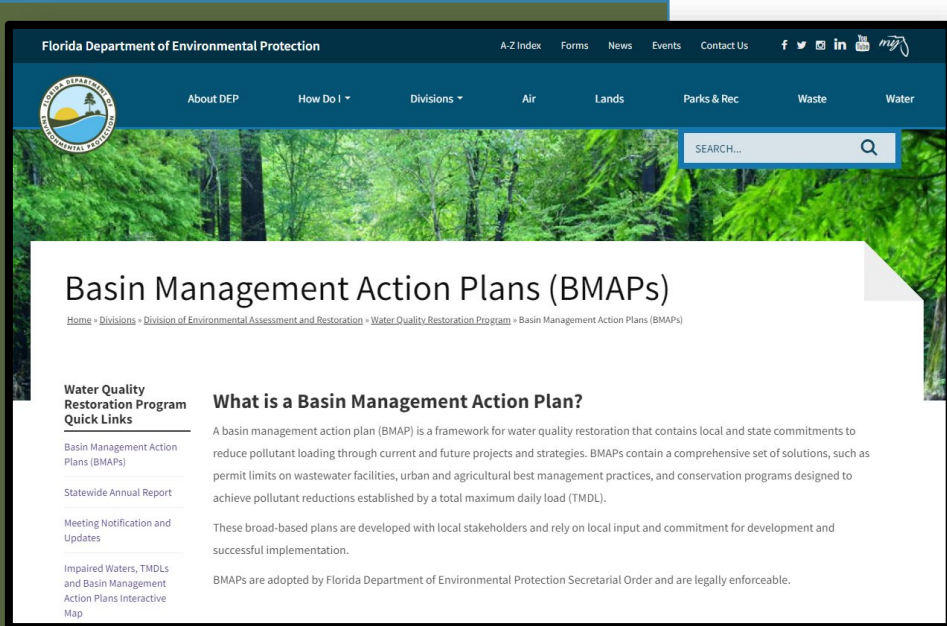
AGENDA

- Basin Management Action Plan (BMAP) Overview.
- Nitrogen Source Inventory Loading Tool (NSILT).
 - Updates.
 - Draft Results.
- Spring Vent Load Analysis.
- Next Steps - BMAP Updates.
 - Draft Allocation Approach.
 - Milestones.





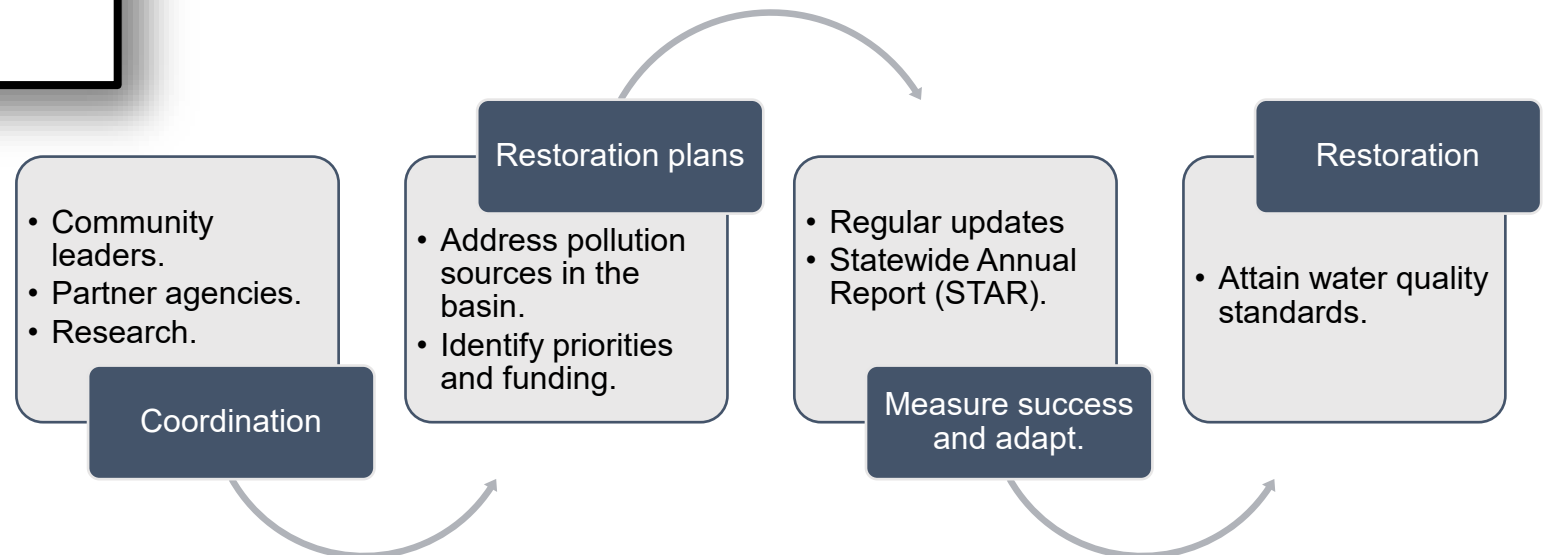
BASIN MANAGEMENT ACTION PLANS (BMAPs)



One of DEP's methods for **restoring water quality** in an impaired waterbody.

Basin Management Action Plans (BMAPs) are:

- Developed with stakeholder input.
- Adopted by DEP Secretarial Order.
- Enforceable.
- Implemented through a phased approach.
- Reported on annually.
- Updated regularly.





KEY BMAP COMPONENTS

- Total Maximum Daily Loads (TMDLs) being addressed.
- Area addressed by the restoration plan.
- Identify sources.
- Phased implementation approach.
- Milestones.
- Projects and management strategies.
- Future growth impacts.

Projects to meet the TMDL:

- Implementation timeline.
- Commitment to projects.
- Expected water quality improvement from projects and management strategies.

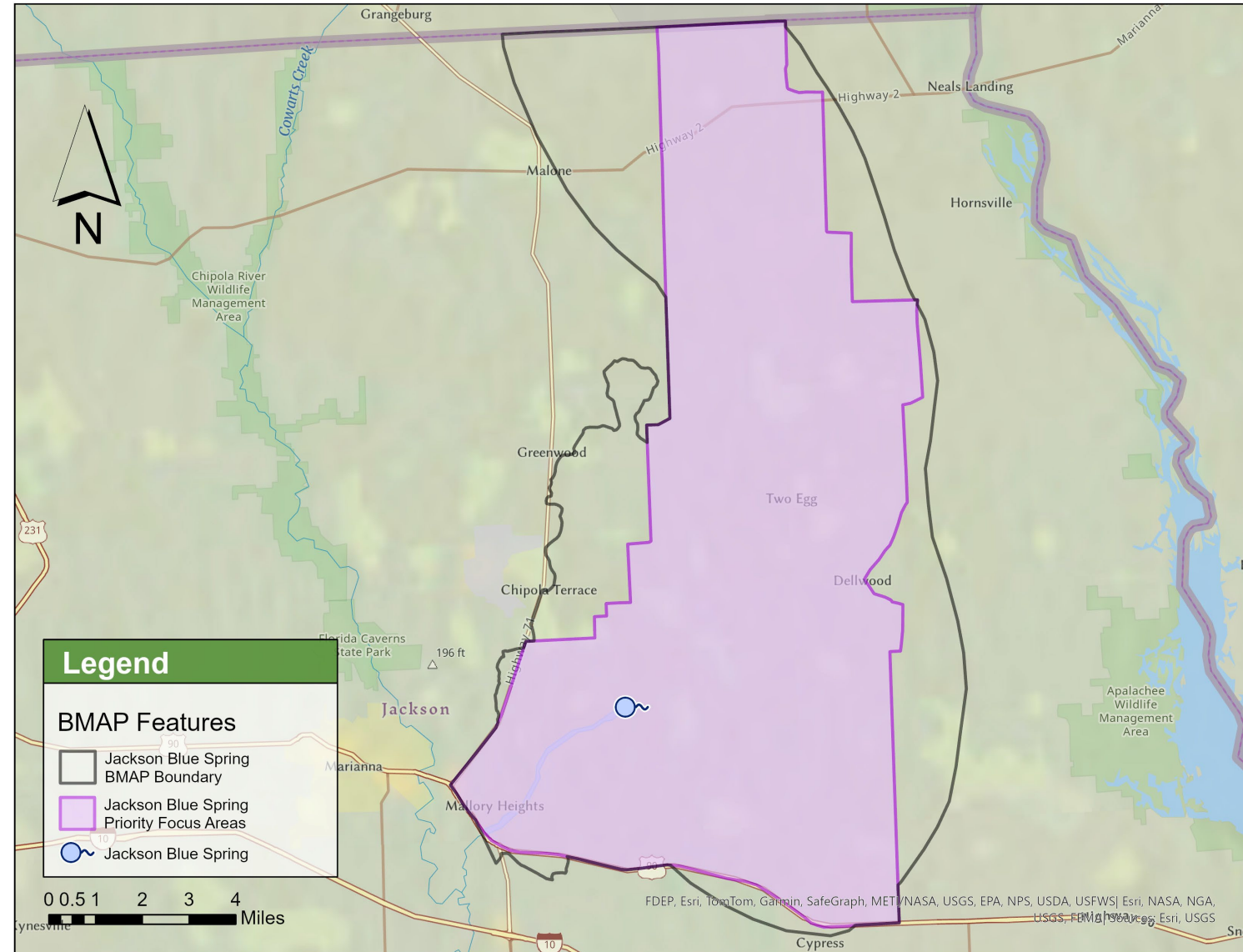
Process to assess progress toward achieving the TMDL:

- Monitoring plan.
- Project reporting.
- Periodic follow-up meetings.
- Water quality analyses.



JACKSON BLUE SPRING AND MERRITTS MILL POND BASIN MANAGEMENT ACTION PLAN

- BMAP area is approximately 90,240 acres (141 square miles) in Jackson County.
- The BMAP area includes Jackson Blue Spring and seven additional named springs that contribute to the headwaters of the 270-acre Merritts Mill Pond.
- Jackson Blue Spring is impaired for the nitrate form of nitrogen.
- Total maximum daily load (TMDL) is expressed as a concentration of 0.35 mg/L of nitrate for Jackson Blue Spring and Merritts Mill Pond.





CLEAN WATERWAYS ACT: TIMELINE

June 12, 2023

Final Order signed by the Secretary.



July 12, 2023

Deadline for written explanation of potential exemption to be submitted to the department.



Feb. 1, 2024

Deadline for submitting draft onsite sewage treatment and disposal system (OSTDS) remediation and/or wastewater treatment plans for the department's review.



Aug. 1, 2024

Deadline for submitting complete OSTDS remediation and/or wastewater treatment plans to the department.

The nutrient BMAPs included in the Final Order require these plans.



HB 1379: ENVIRONMENTAL PROTECTION

Increased protection for Outstanding Florida Springs (OFS).

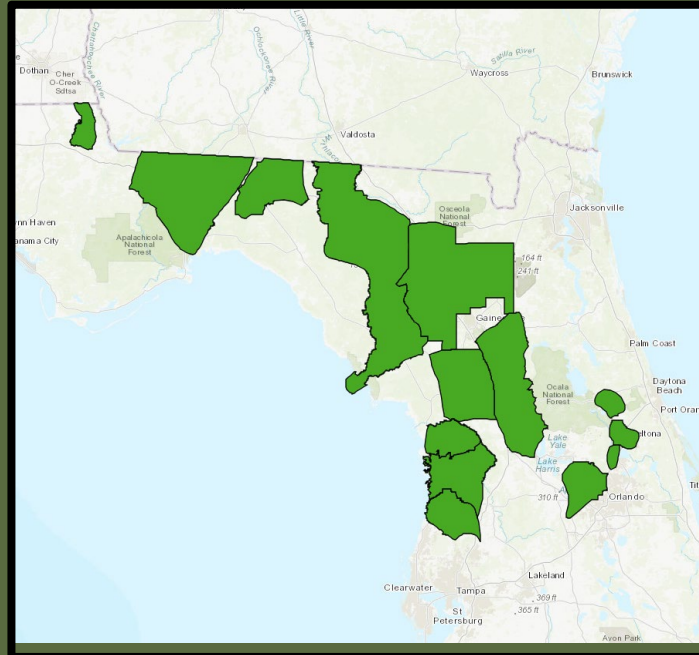
Strengthens Water Quality Protections and BMAPs.

HB1379

Improves Local Government Long-Term Comprehensive Planning.

Expands Funding Opportunities to Address Water Quality Impairments.

Expanded prohibitions in OFS to entire BMAP area. (373.811, Florida Statutes [F.S.])



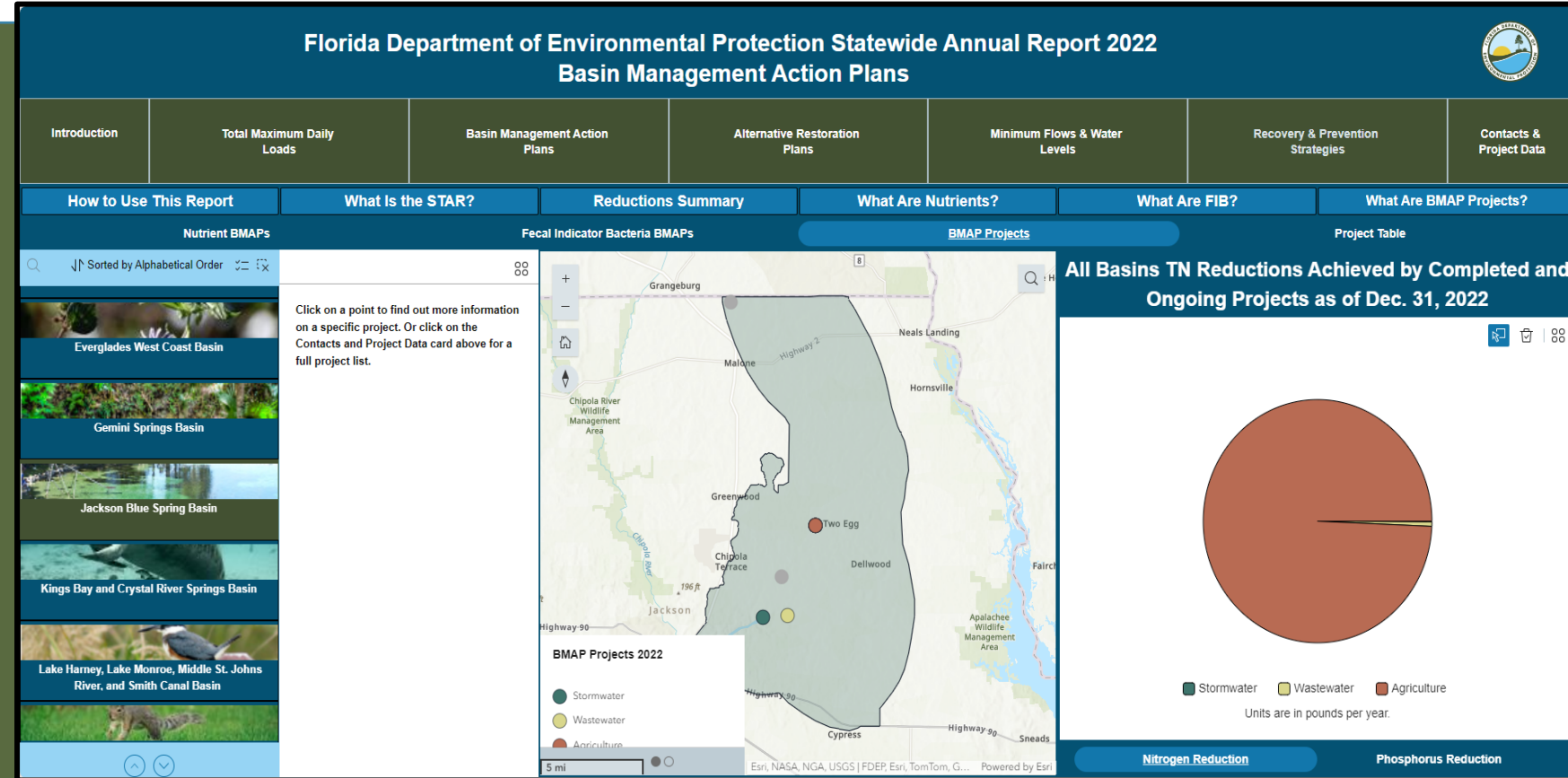
- New conventional OSTDS where sewer is available.
- New domestic wastewater disposal facilities with permitted capacities of 100,000 gallons per day or more, unless they meet Advanced Wastewater Treatment (AWT) standards.
- New HAZMAT disposal facilities.
- Land application of Class A or B biosolids not in accordance with a DEP-approved nutrient management plan.
- New agricultural operations not implementing best management practices (BMPs), measures necessary to achieve pollution reduction levels or groundwater monitoring plans.



STATEWIDE ANNUAL REPORT (STAR) PROJECT REPORTING

What is the STAR?

- Summarizes accomplishments in the BMAPs statewide.
- Reports on restoration projects and management strategies.
- Published July 1 of each year.
- Currently in the process of project verification for STAR 2023.





PRELIMINARY STAR RESULTS FOR 2023

JACKSON BLUE SPRING BMAP

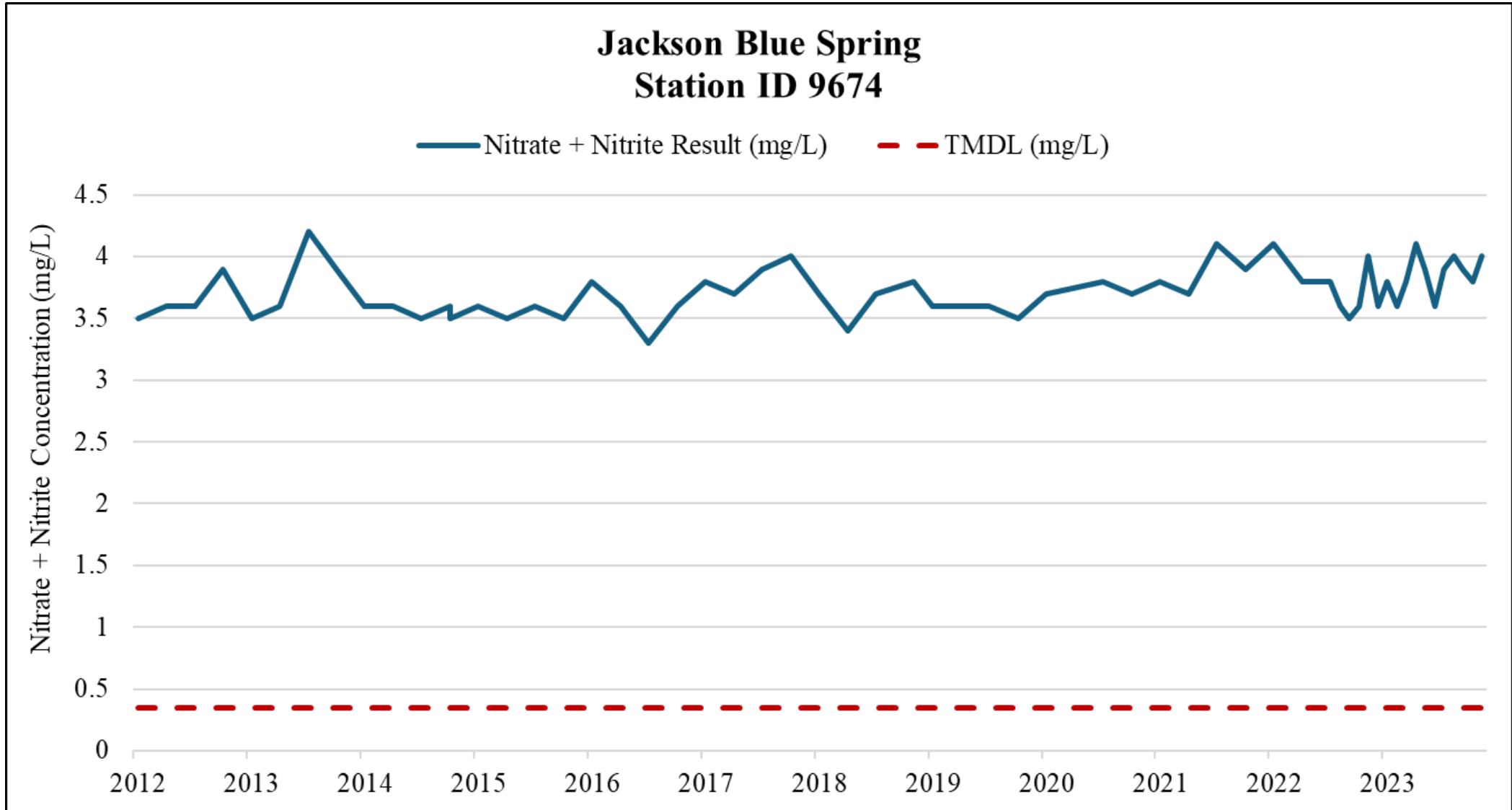
Project Status	Count of Projects
Planned	2
Ongoing	5
Underway	12
Completed	3
Total	22

As of Dec. 31, 2023, verified projects in the Jackson Blue Spring BMAP have reduced **131,201 lbs./yr.** of total nitrogen (TN).



WATER QUALITY DATA

JACKSON BLUE SPRING DATA



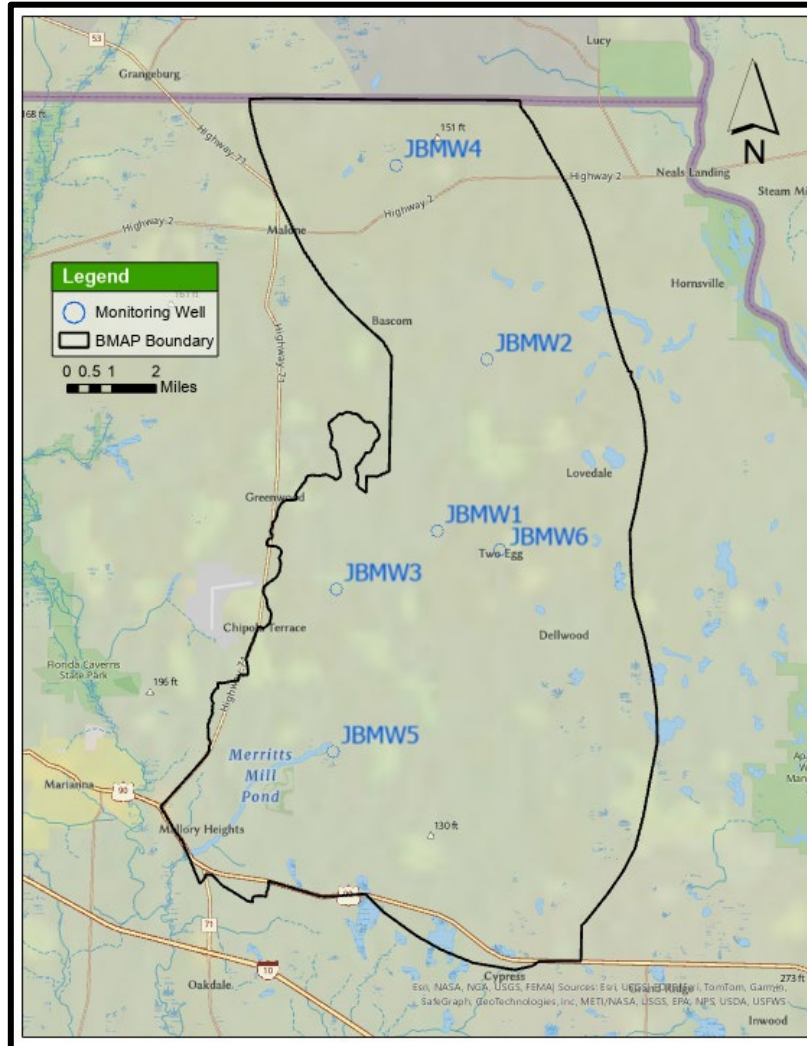


WATER QUALITY DATA

JACKSON BLUE NITRATE DATA

Groundwater Monitoring

- DEP conducted four quarters of monitoring at six wells in the Jackson Blue Spring BMAP starting in April 2022.
- DEP is working with the Northwest Florida Water Management District to perform groundwater monitoring at 14 wells for a minimum of eight quarters, starting in 2023.

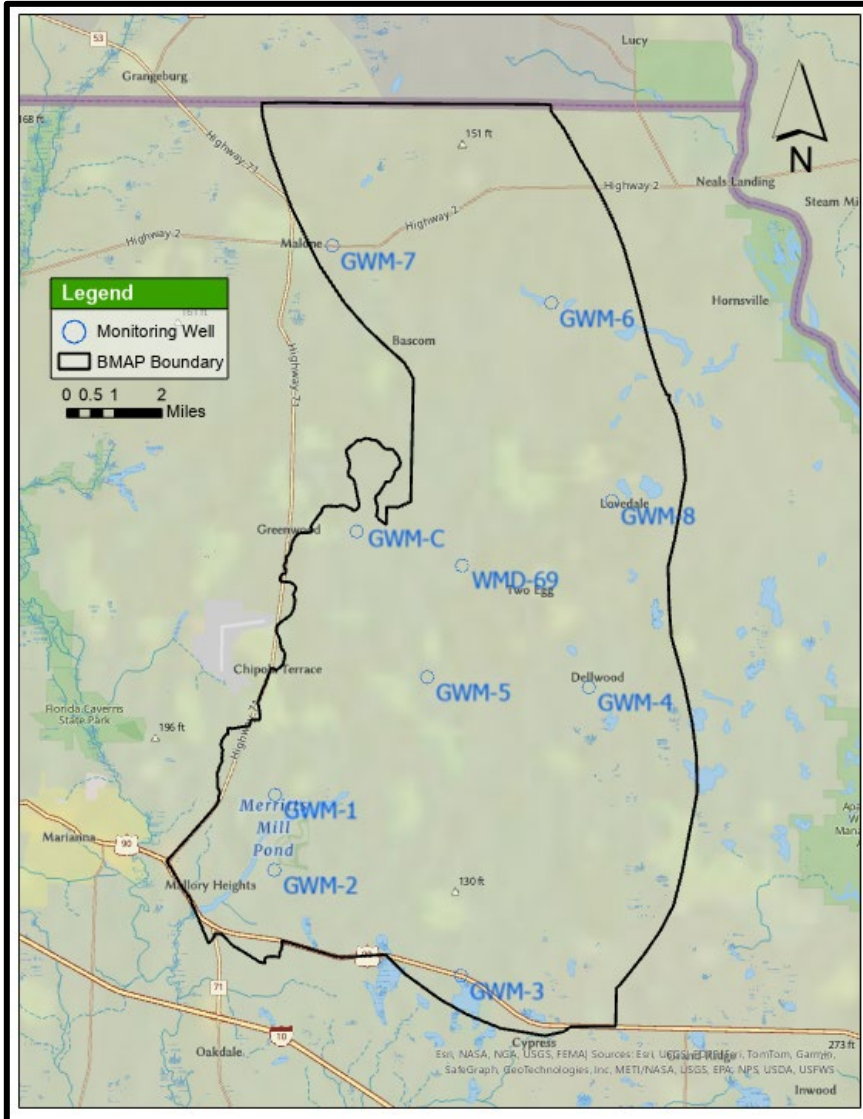


JBMW1				
Date	4/12/2022	7/13/2022	10/26/2022	1/4/2023
Result (mg/L)	4.9	4.7	4.6	4.9
JBMW5				
Date	4/13/2022	7/13/2022	10/26/2022	1/5/2023
Result (mg/L)	1.1	1.1	1.1	1.2
JBMW3				
Date	4/13/2022	7/13/2022	10/26/2022	1/5/2023
Result (mg/L)	3.4	3.2	3.3	3.8
JBMW4				
Date	4/12/2022	7/13/2022	10/26/2022	1/5/2023
Result (mg/L)	4	3.9	3.9	4.3
JBMW2				
Date	4/13/2022	7/13/2022	10/26/2022	1/4/2023
Result (mg/L)	0.24	0.22	0.21	0.23
JBMW6				
Date	4/12/2022	7/13/2022	10/26/2022	1/4/2023
Result (mg/L)	1.8	1.7	1.6	1.8



WATER QUALITY DATA

JACKSON BLUE NITRATE DATA



GWM-C				
Date	3/29/2023	6/5/2023	9/7/2023	12/5/2023
Result (mg/L)	3.32	3.18	3.49	2.7
GWM-1				
Date	3/29/2023	6/12/2023	9/6/2023	12/4/2023
Result (mg/L)	2.27	2	1.82	1.8
GWM-2				
Date	3/30/2023	6/12/2023	9/6/2023	12/4/2023
Result (mg/L)	0.458	0.24	0.24	0.45
GWM-3 Shallow				
Date	3/29/2023	6/12/2023	9/6/2023	12/4/2023
Result (mg/L)	0.24	0.306	0.24	0.45
GWM-3 Deep				
Date	3/29/2023	6/12/2023	9/6/2023	12/4/2023
Result (mg/L)	0.24	0.24	0.463	0.45
GWM-4 Shallow				
Date	3/29/2023	6/5/2023	9/6/2023	12/5/2023
Result (mg/L)	1.84	2.47	2.72	2.6
GWM-4 Deep				
Date	3/29/2023	6/5/2023	9/6/2023	12/5/2023
Result (mg/L)	3.74	2.66	3.82	3.8

GWM-5 Shallow				
Date	3/29/2023	6/5/2023	9/6/2023	12/4/2023
Result (mg/L)	3.79	3.66	3.89	4
GWM-5 Deep				
Date	3/29/2023	6/5/2023	9/6/2023	12/4/2023
Result (mg/L)	2.9	1.95	3	3.1
GWM-6 Shallow				
Date	3/30/2023	6/12/2023	9/7/2023	12/5/2023
Result (mg/L)	0.24	0.24	0.334	0.45
GWM-6 Deep				
Date	3/30/2023	6/12/2023	9/7/2023	12/5/2023
Result (mg/L)	1.99	1.74	0.98	2.3
GWM-7				
Date	3/30/2023	6/12/2023	9/7/2023	12/5/2023
Result (mg/L)	9	10.3	11.2	13
GWM-8				
Date	3/30/2023	6/5/2023	9/7/2023	12/5/2023
Result (mg/L)	2.16	1.65	1.66	1.7
WMD-69				
Date	3/29/2023	6/5/2023	9/7/2023	12/5/2023
Result (mg/L)	4.6	4.48	4.93	4.8

*Deep well screens are 50 ft below top of shallow well screens. Shallow wells are screened at the top of the Floridan Aquifer and have a 20 ft screen interval.



DATA UPLOAD

WATERSHED INFORMATION NETWORK (WIN)

- Through both the Watershed Information Network (WIN) and Florida STORET (STOrage and RETrieval) data repositories, DEP implements Florida statutory requirements, DEP rule requirements and Environmental Protection Agency (EPA) funding requirements for management of environmental (non-regulatory) data for the state.
- Data from WIN are used by DEP for standards development, Impaired Waters Rule (IWR) assessments, TMDL development, Reasonable Assurance Plans, Alternative Restoration Plans, **BMAP development and assessment** and for providing data as required to EPA and to the public.
- WIN data can be retrieved through the WIN Reports and Extracts menu at: <https://prodenv.dep.state.fl.us/DearWin/>.
- Data providers to WIN and STORET include Division of Environmental Assessment and Restoration (DEAR) and other DEP entities, water management districts, cities, counties, other state agencies, universities, private and volunteer organizations.
- If your entity is collecting ambient water quality data, please upload it to WIN.



WIN COORDINATORS

WIN Coordinator	DEP District Area or Role	Phone	Email
Justin Nelson	Northeast, Northwest, Southeast	850-245-8510	Justin.M.Nelson@FloridaDEP.gov
Casey Marston	South, Southwest	850-245-8049	Casey.Marston@FloridaDEP.gov
Lisa Schwenning	SPA (STORET Public Access), WQX (U.S. EPA Water Quality Exchange)	850-245-8509	Lisa.Schwenning@floridaDEP.gov
Jason Storrs	Central, Statewide	850-245-8467	Jason.Storrs@FloridaDEP.gov



RESOURCES

BMAP WEBSITE AND STORYMAP

Basin Management Action Plans

[Home](#) » [Divisions](#) » [Division of Environmental Assessment and Restoration](#) » [Water Quality Restoration Program](#) » Basin

Water Quality Restoration Program Quick Links

[Basin Management Action Plans \(BMAPs\)](#)

[Statewide Annual Report](#)

[Water Quality Grant Opportunities 2023-24](#)

[BMAP Public Meetings](#)

[Impaired Waters, TMDLs and Basin Management Action Plans Interactive Map](#)

[Tools and Guidance for](#)

What is a Basin Management Action Plan

A basin management action plan (BMAP) is a framework for water quality management that reduces pollutant loading through current and future projects and standards, permit limits on wastewater facilities, urban and agricultural best management practices, and other measures to achieve pollutant reductions established by a total maximum daily load. BMAPs are developed in partnership with stakeholders and rely on local input and commitment for development and implementation. BMAPs are required by Department of Environmental Protection Secretarial Order and are a key component of the

Water Quality Protection Grant

DEP has launched an [online grant portal](#) to provide eligible entities with information on grant programs. Eligible entities include local governments, academic institutions, and non-profit organizations. The [application portal](#) opened July 5, 2023. Closing dates for individual grant programs are listed on the posted date for each grant program. Applicants are encouraged to submit applications as early as possible.



Florida Springs Basin Management Action Plans (BMAPs)

Welcome to the Florida Springs Basin Management Action Plan (BMAP) StoryMap

The springs BMAPs are developed with specific provisions for the protection and restoration of the state's Outstanding Florida Springs. This story map focuses on the springs-related BMAPs; for more details about other BMAPs or more information about the BMAP program in general, visit <https://floridadep.gov/bmaps>.

* The story map will display differently depending on the screen size and resolution being used. Story map best viewed in Chrome or Firefox.

Overview



1 (COPY) Nitrogen Source Inventory and Loading Tool...



2 (COPY) Statutes & Bills



3 (COPY) Crystal River - Kings Bay BMAP Story Map



4 (COPY) DeLeon Spring BMAP Story Map



5 (COPY) Gemini Springs BMAP Story Map



6 (COPY) Homosassa and Chassahowitzka Springs Group



7 (COPY) Jackson Blue and Merritts Mill Pond BMAP Story Map



8 (COPY) Santa Fe River BMAP Story Map



9 (COPY) Silver Springs, Upper Silver Springs, and Rainbow Springs

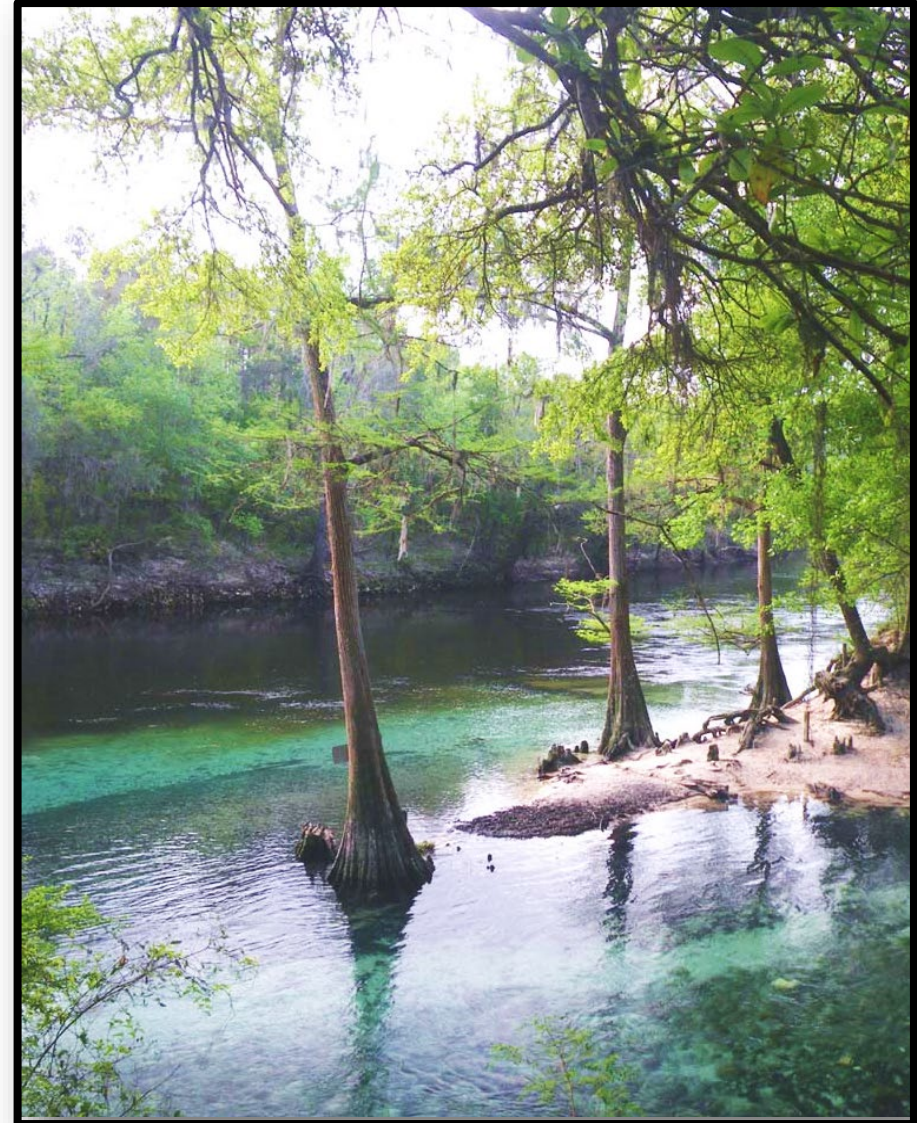




BMAP UPDATES

ADOPTED BY JULY 1, 2025

- Nitrogen Source Inventory Loading Tool (NSILT) updates.
- Spring vent load analyses.
- Entity allocation development.
- Future growth.
- Establish five-year milestones for project implementation.
- Incorporate additional projects.
- Incorporate Clean Waterways Act (SB 712) requirements.
- Incorporate HB 1379 requirements.
- Incorporate regional projects.
- Water quality data evaluation:
 - Evaluation of the monitoring network (spring vent and groundwater).
 - Water quality trend analyses.
- Evaluate further OSTDS provisions.
- Evaluate AWT or other more stringent effluent limits.
- Update the BMAP documents.





NSILT UPDATES

- NSILT Process.
- Methodology review for sources:
 - Atmospheric deposition.
 - Wastewater treatment facilities.
 - OSTDS.
 - Urban turfgrass fertilizer.
 - Sports turfgrass fertilizer.
 - Farm fertilizer.
 - Livestock waste.
 - Biosolids (no sites in Jackson Blue BMAP).
- Draft results.





NSILT GENERAL PROCESS SUMMARY

Estimate loading to land surface for each source category.

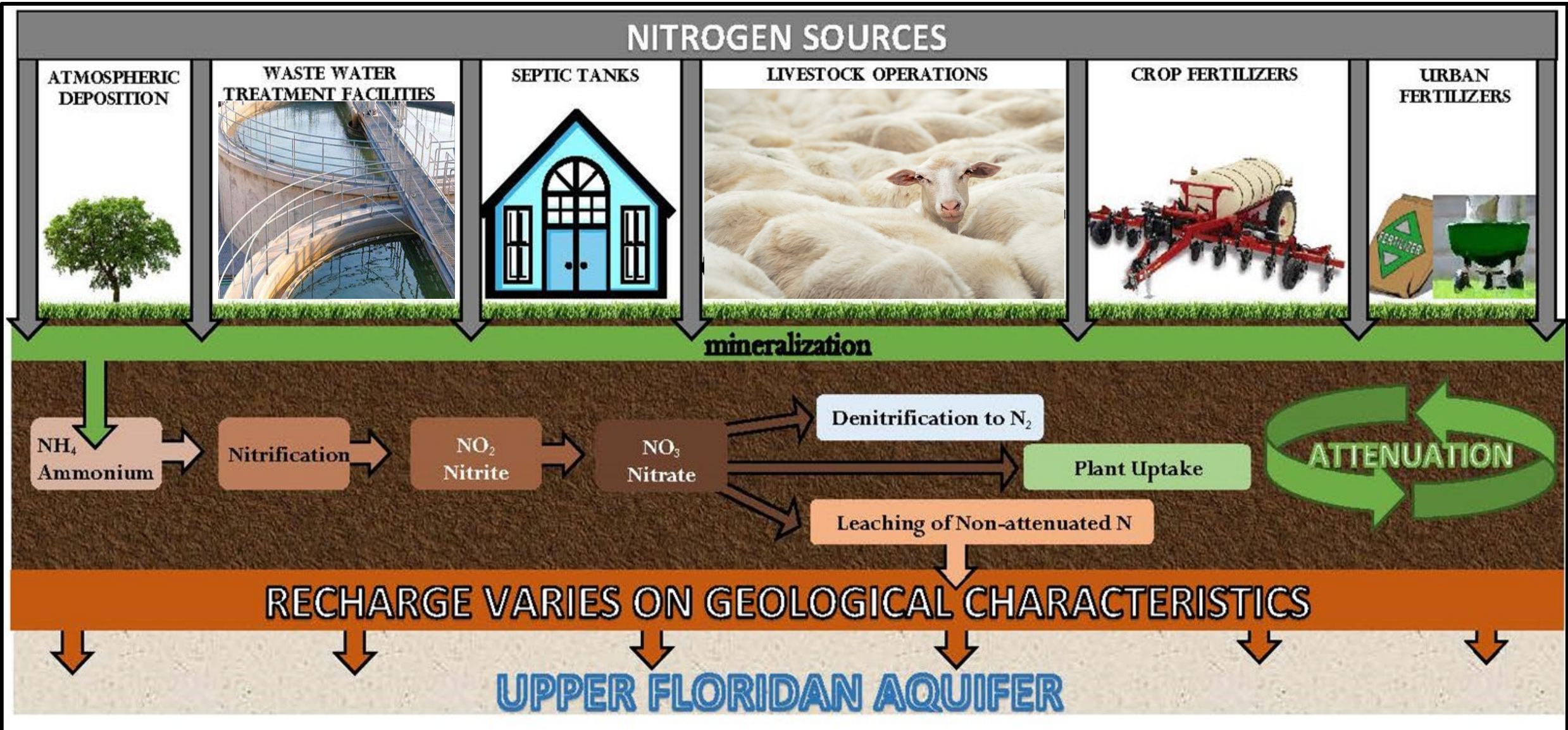
Apply a source specific, literature derived biochemical attenuation factor to surface loading estimate.

Apply a location specific recharge factor to surface loading estimate.

LOADING TO GROUNDWATER.



NITROGEN CYCLE AND ATTENUATION

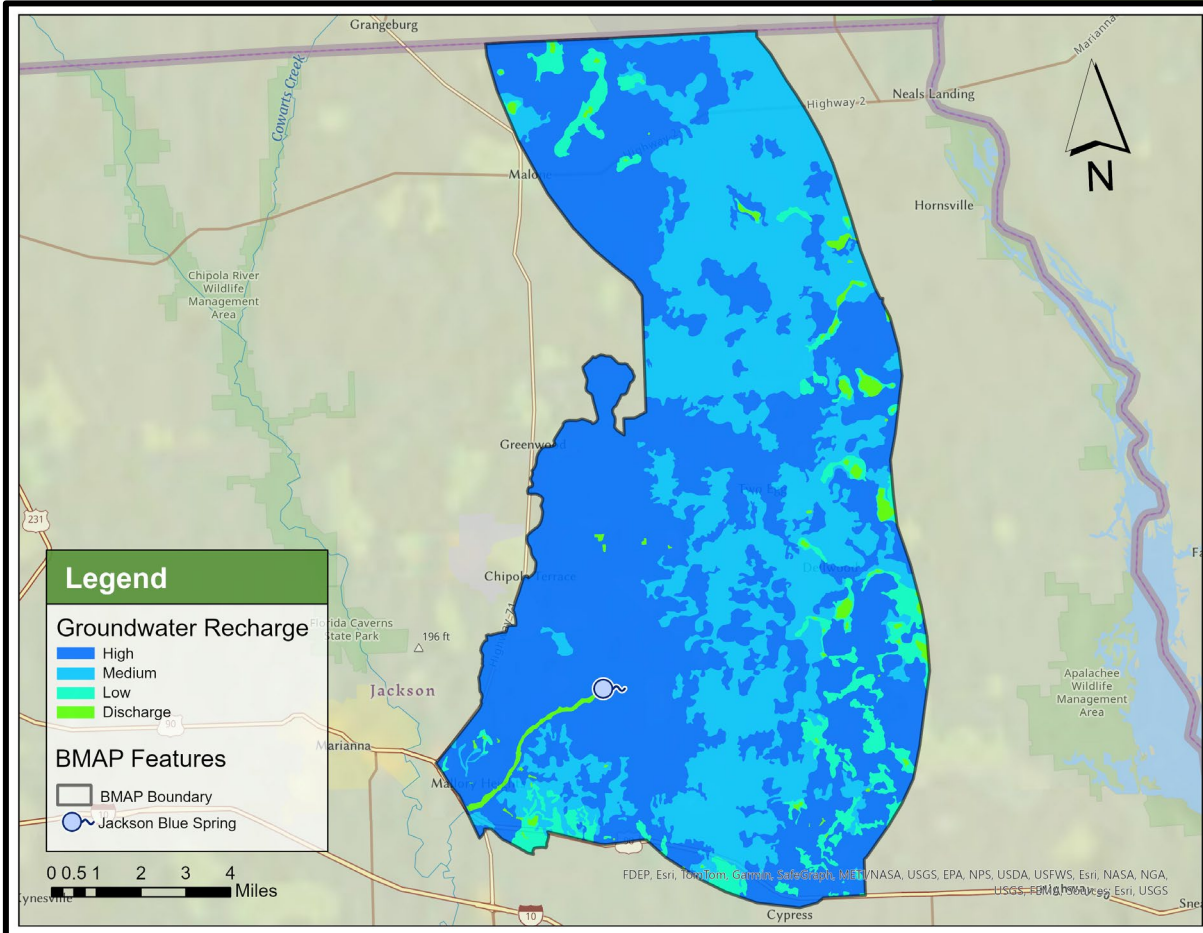




RECHARGE TO GROUNDWATER

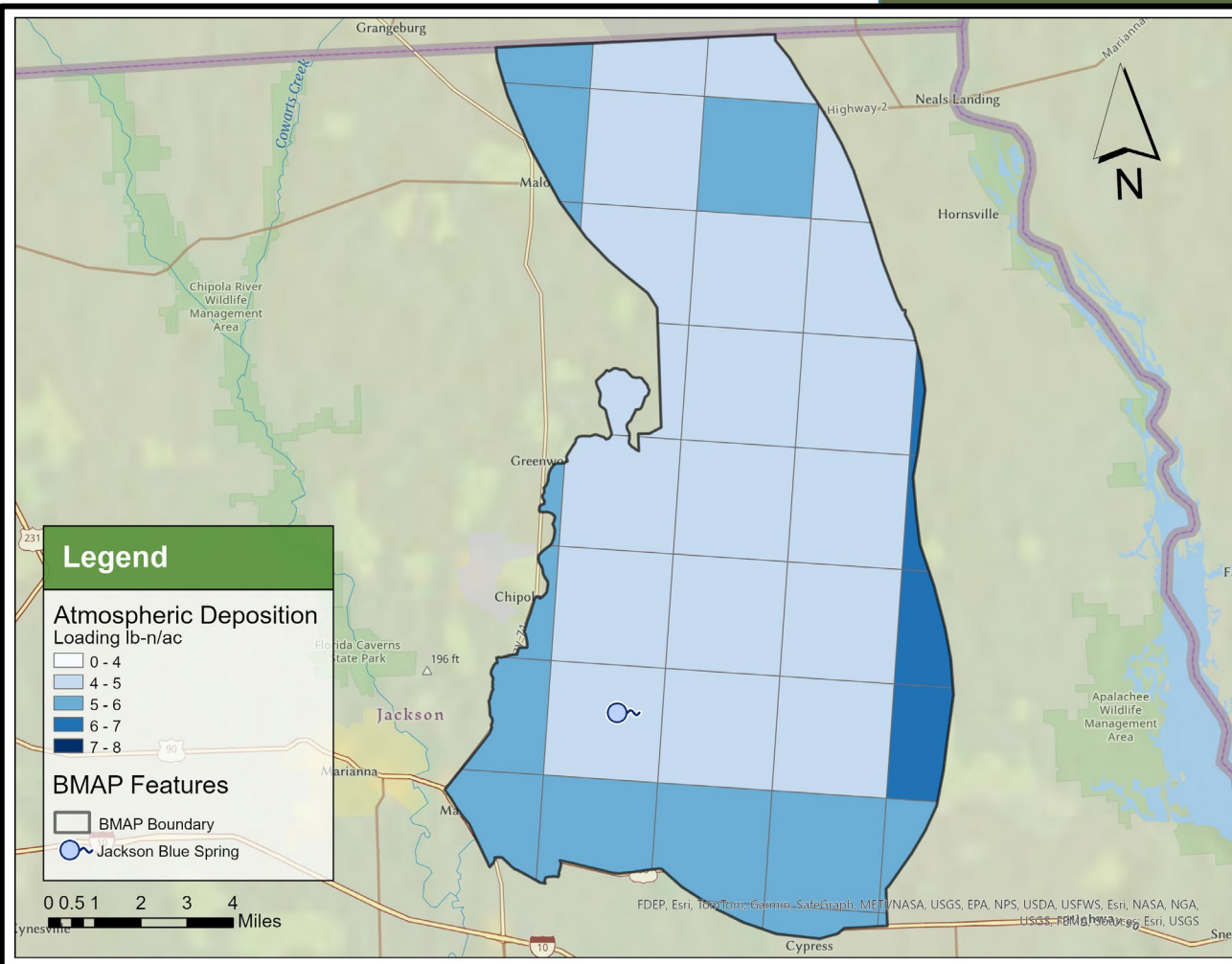
- Jackson Blue BMAP is divided into four recharge categories based on the soil drainage of the Floridan aquifer.
- In well drained areas it is estimated that 90% of the nutrients remaining after bioattenuation will impact the Floridan aquifer. In moderately drained areas, this rate is estimated to be 70%, and 10% in poorly drained areas.
- It is estimated that in discharge areas, no water or nutrients will be recharged to the Floridan aquifer.
- Delineation of well drained, moderately drained, poorly drained and discharge areas and associated recharge rates are consistent with the previous NSILT report.
- Recharge factors are applied to estimate loading potential for all source categories.

Recharge to Groundwater	
Category	Rate
Well Drained	90%
Moderately Drained	70%
Poorly Drained	10%
Discharge	0%





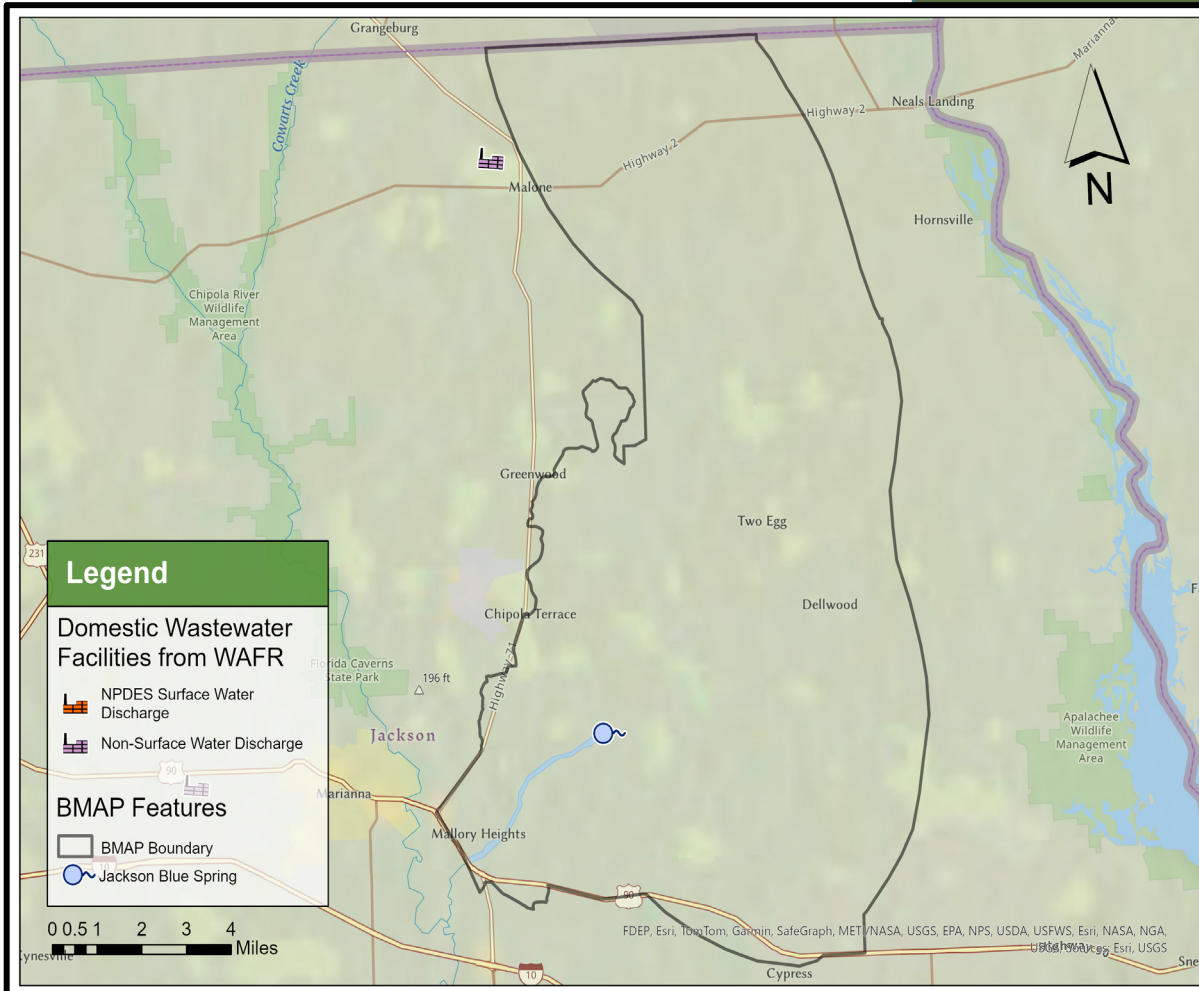
ATMOSPHERIC DEPOSITION



- Atmospheric deposition (AD) of nitrogen was estimated using a nationwide model developed by the Total Deposition Science Committee and U.S. Environmental Protection Agency (EPA) called the TDEP (Total Deposition) model.
- AD estimates from 2019 and 2020 were averaged to estimate annual loading in the Jackson Blue BMAP area.
- An estimated 462,063 pounds of nitrogen are loaded annually at the land surface within the Jackson Blue BMAP area.
- An estimated 36,104 pounds of nitrogen are loaded to the Floridan aquifer annually from AD after attenuation and recharge have been considered.
- Methodology is consistent with previous NSILT.



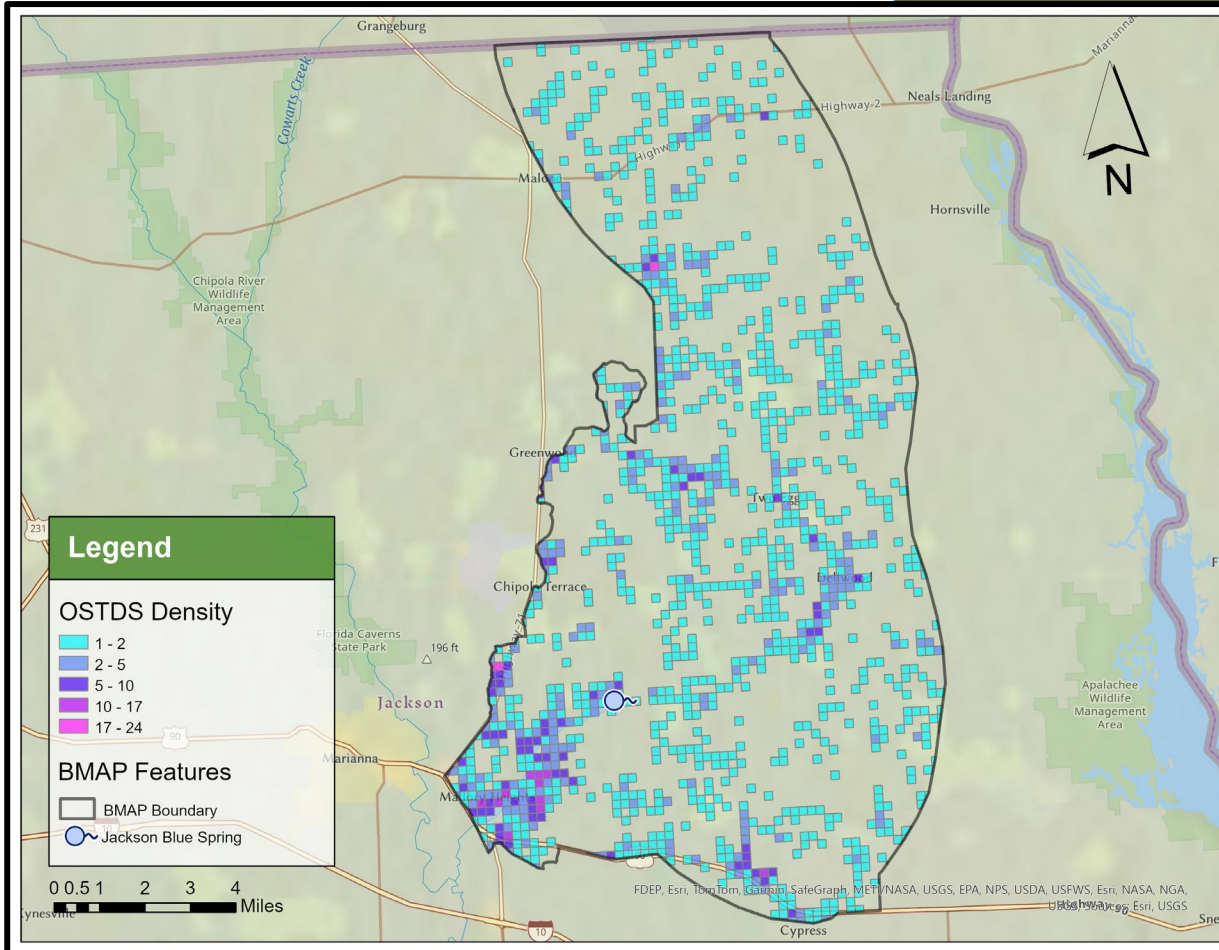
WASTEWATER TREATMENT FACILITIES (WWTFS)



- There are no wastewater treatment facilities within the Jackson Blue BMAP area, so there is no loading to land surface attributed to this category.
- Some areas in the southwest corner of the basin are serviced by the Marianna WWTF, resulting in nutrient loading being transported out of the basin and reducing the load in the BMAP.



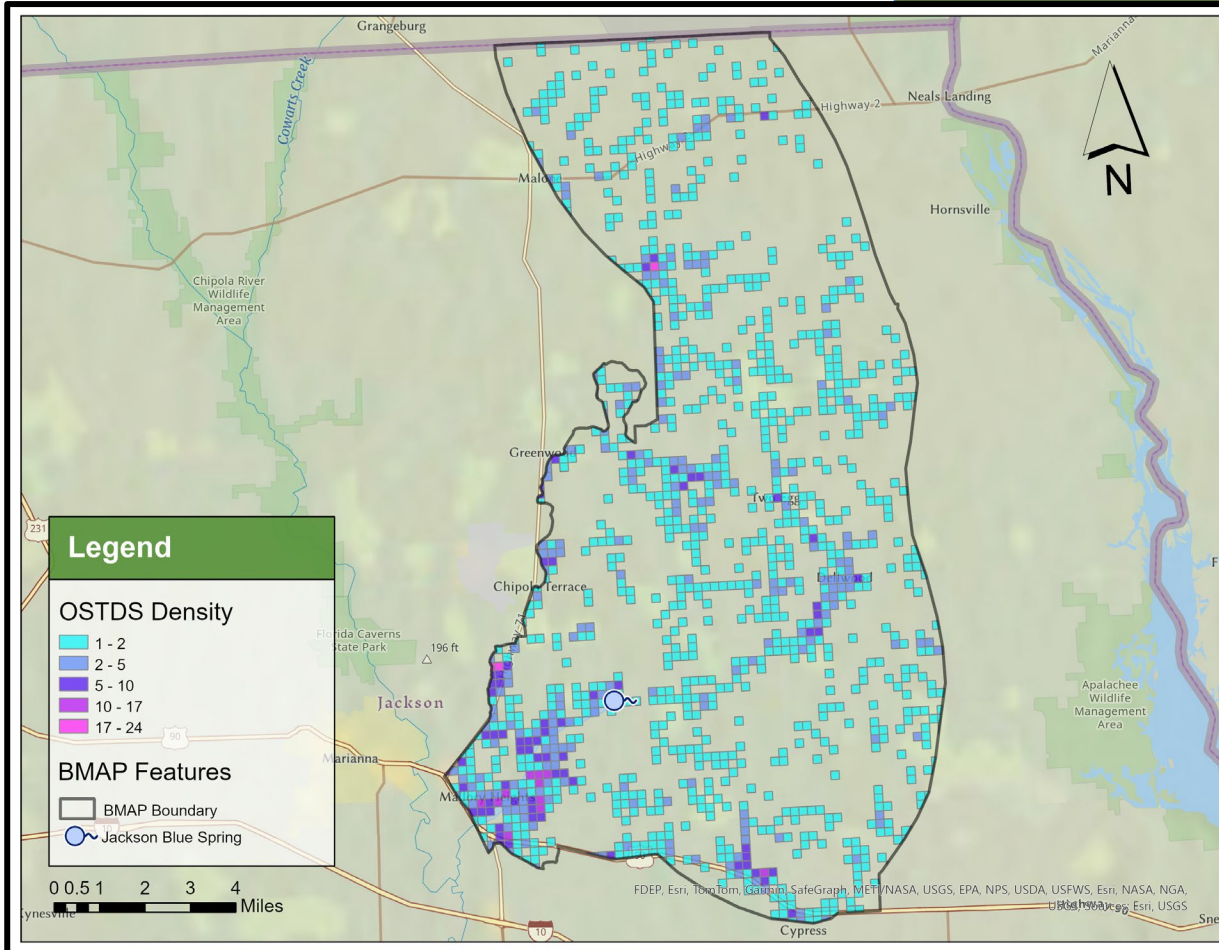
ONSITE SEWAGE TREATMENT AND DISPOSAL SYSTEMS (OSTDS)



- Florida Water Management Inventory (FLWMI) data was used to estimate the number of OSTDS within the Jackson Blue Spring Basin (updated 2021).
- Parcels identified as "known septic", "likely septic" and "somewhat likely septic" were considered to have one septic system per parcel.
- 2020 U.S. Census data was used to estimate persons per household for Jackson County.
- Estimated loading of 10 lb-N/year per person (Armstrong, 2015).
- Estimated load per tank based on multiplying persons per household by loading per person.
- Credited enhanced nutrient reducing OSTDS with a 50% reduction from existing conditions in TN loading.
- Loading from OSTDS is estimated to attenuate at 30%.



ONSITE SEWAGE TREATMENT AND DISPOSAL SYSTEMS (OSTDS)

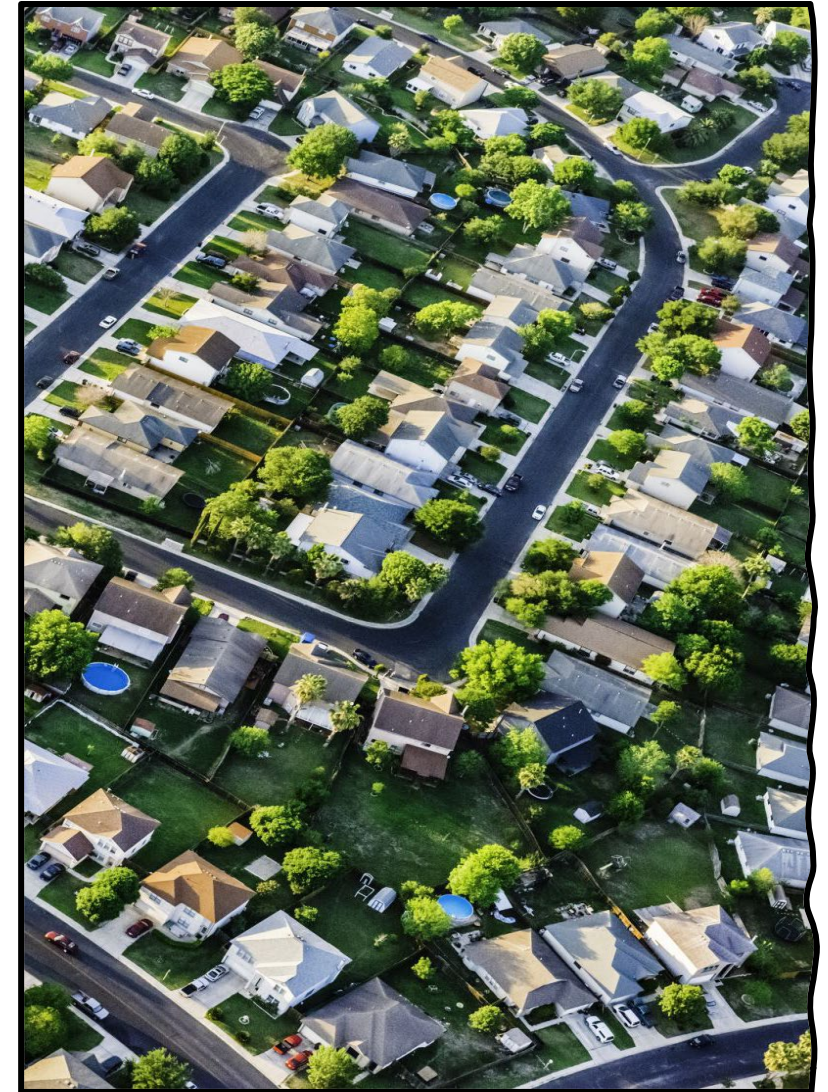


- There is an estimated total of 2,542 OSTDS within the Jackson Blue BMAP.
- There are no advanced nitrogen removing OSTDS within the Jackson Blue BMAP.
- An estimated 57,590 pounds of nitrogen are loaded to drainfields annually from OSTDS within the Jackson Blue BMAP.
- An estimated 32,786 pounds of nitrogen are loaded to groundwater annually after recharge and attenuation factors are applied.



URBAN TURFGRASS FERTILIZER (UTF)

- Urban turfgrass fertilizer loading was evaluated separately for single family residential, non-single family residential and sports turfgrass.
- Sports turfgrass loading includes the application of fertilizers to both sports fields and golf courses.
- Loading from urban turfgrass fertilizers are estimated to attenuate at 70%.



Microsoft Stock Image, 2023



URBAN TURFGRASS FERTILIZER (UTF)

Single Family Residential Fertilization:

- 2021 Florida Department of Revenue Cadastral information was used to determine size and value of single-family residential parcels.
- Assumed 27.8% of parcel as impervious area (Tilley & Slonecker, 2006).
- Assumed 0.5 acres maximum for fertilized area for single family residential parcels greater than 0.5 acres in the Jackson Blue BMAP.
- Assumed likelihood to fertilize rate is based on home value. Three tiers of home value considered.
- Fertilizer application rates are informed by local survey information and the Green Industries Best Management Practice (GIBMP) manual.

Lawn Care Source	
Service	19.00%
Self	16.00%
None	65.00%

Self Application Rates	Percent of Self Lawn Care Source	Application Rate (lbs/N/ac/application)	Number of Applications
BMP	20.00%	26.136	1.880
Low	75.00%	30.490	1.880
High	5.00%	43.560	1.880



URBAN TURGRASS FERTILIZER (UTF)

NON-SINGLE FAMILY RESIDENTIAL

- Water management district land use/land cover data was used to estimate non-single family residential UTF application acreage estimates. Land use data year is dependent on the water management district with all data updated between 2019 and 2022.
- Fifteen land cover codes were assumed to be likely to receive fertilizer.
- Impervious area was estimated using a United States Geological Survey (USGS) study (Tilley & Slonecker, 2006). Percent impervious area was dependent on the land use category.
- The area of pervious surface expected to receive fertilizer was evaluated by local land cover data. The percentage of pervious area evaluated to be bare ground or grass surface was applied to the estimated pervious areas of the 15 land cover codes to then estimate the area expected to receive fertilization.

WMD Land Cover Code	Percent Impervious	Percent of Pervious area Receiving Fertilizer
1220: Medium Density, Mobile Home Units	32.6%	17.7%
1230: Medium Density, Mixed Units (Fixed and Mobile Home Units)	32.6%	15.4%
1320: High Density, Mobile Home Units	44.4%	20.7%
1330: Multiple Dwelling Units, Low Rise	44.4%	27.8%
1340: High Density, Multiple Dwelling Units, High Rise (Four Stories or More)	44.4%	32.8%
1400: Commercial and Services	72.2%	31.3%
1411: Shopping Centers	72.2%	31.3%
1480: Cemeteries	8.3%	42.2%
1700: Institutional	34.4%	43.3%
1710: Educational	30.3%	60.6%
1720: Religious	39.9%	37.7%
1740: Medical and Health Care	72.2%	33.8%
1750: Governmental	35.4%	41.0%
1850: Parks and Zoos	12.5%	44.9%
1860: Community Recreational Facilities	12.5%	59.8%



URBAN TURGRASS FERTILIZER (UTF)

- Estimated fertilizer application rates for non-single family residential fertilized areas were based on an evaluation of the GIBMP Manual. It is estimated that fertilizer is applied at a rate of 2.5 lb-N/1,000 ft² to fertilized turfgrass in the region.
- In total, it is estimated that 10,311 lb-N/year are applied to single family residential areas, and 7,054 lb-N/year are applied to non-single family residential areas within the Jackson Blue BMAP.
- With attenuation and recharge factors considered, it is estimated that 2,562 lb-N/year is loaded to groundwater from single family residential sources, and 1,757 lb-N/year is loaded to groundwater from non-single family residential sources, for a total of 4,319 lb-N/year loaded to groundwater from UTF.



SPORTS TURFGRASS FERTILIZER (STF)

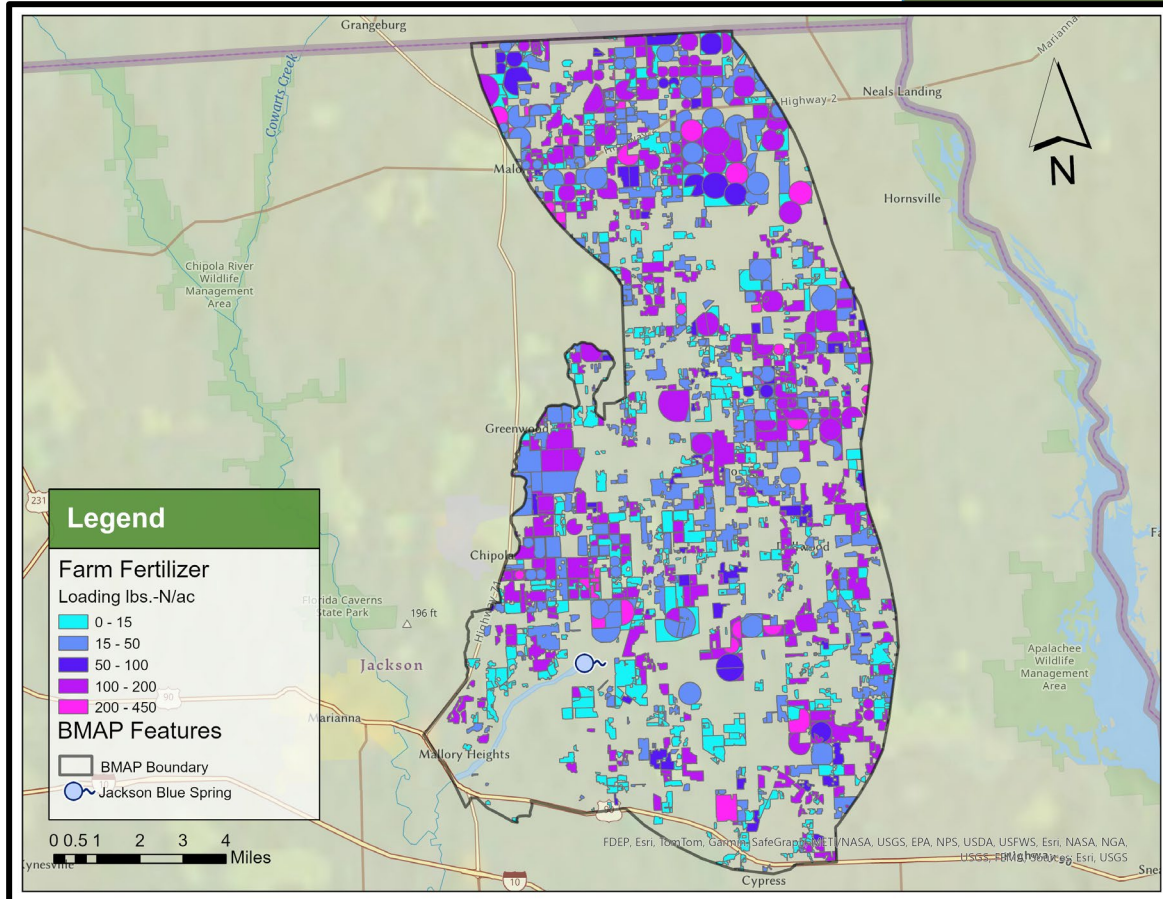
- Golf courses operating within the Jackson Blue BMAP were reviewed.
- Golf course application rates were updated based on a study of regional golf course practices published by HortTechnology (Shaddox, et al., 2023).
- It is estimated that 13,340 lb-N/year is applied to the land surface at golf courses.
- When attenuation and recharge are considered, it is estimated that 3,348 lb-N/year is loaded to groundwater from golf courses.
- No other areas were determined to be maintained as sports turfgrass within the Jackson Blue BMAP area.

Jackson									
Golf Course	Regional Rate or Site Specific Rate?	Land Area (Ac)				N Input (lb-N/yr)			
		High	Medium	Low	Discharge	High	Medium	Low	Discharge
Indian Springs Golf and Country Club	Regional	95	44.2			-	-	-	-

Golf Course Study Rate		
Application Rate	95.832	lb-N/ac
% fertilized	100%	



FARM FERTILIZER



- Florida Statewide Agricultural Irrigation Demand 9 (FSAID 9) data layer published in 2021 was analyzed to estimate acreage of all crop types and determine whether the crop was irrigated within each recharge category in BMAP areas.
- Application rates previously used in the NSILT were reviewed by Florida Department of Agriculture and Consumer Services (FDACS), water management districts, and University of Florida Institute of Food and Agricultural Science (IFAS).
- For all crops besides pasture and nurseries, loading to land surface was calculated by multiplying the acreage of a given crop type by the estimated fertilizer application rate.
- Loading from farm fertilizer is estimated to attenuate at 80% for non-irrigated crops and at 65% for irrigated crops.



FARM FERTILIZER

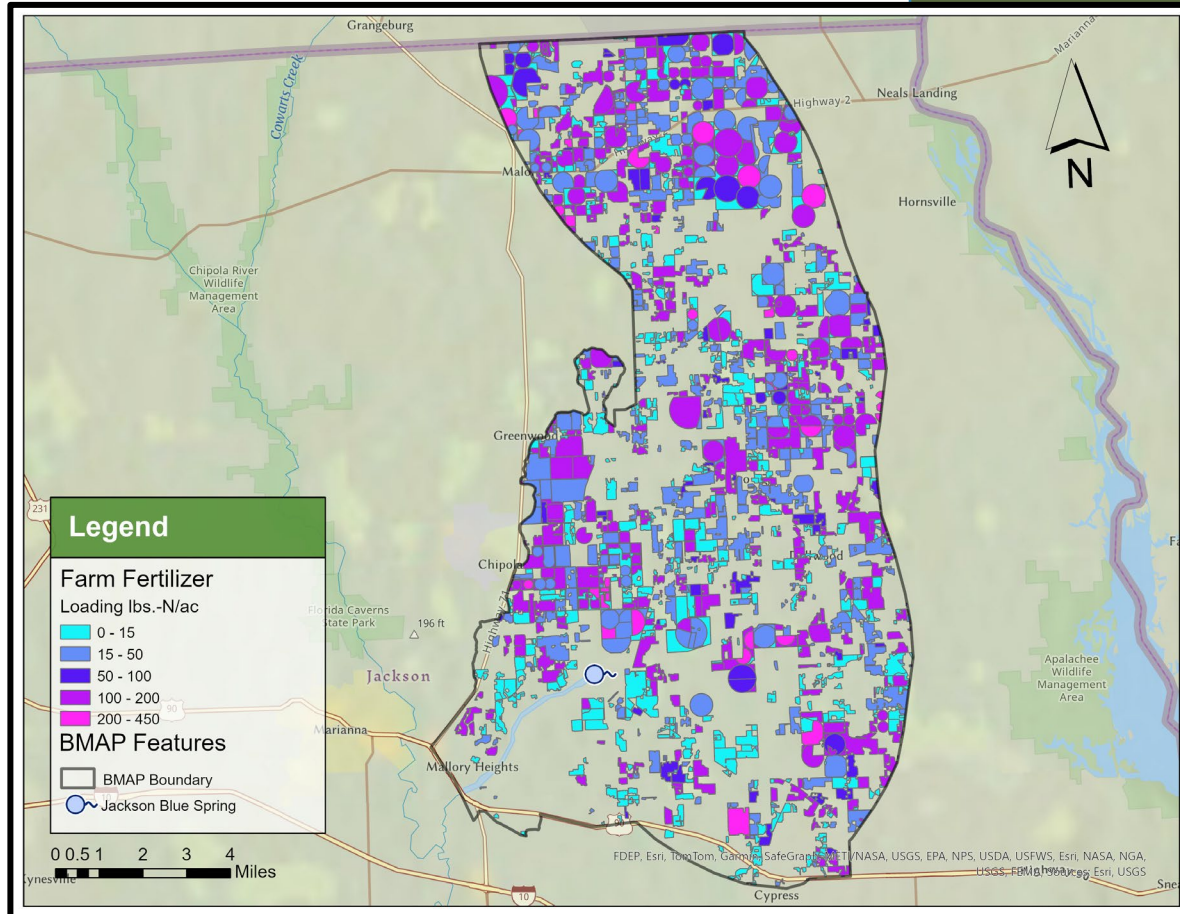
Nursery Crops	Fertilizer Application Rate (lb-N/acre)	Effective Application Rate (lb-N/acre)
Asparagus Fern	90	21.6
Aspidistra	90	21.6
Container Nursery	150	36
Coontie Fern	90	21.6
Fern	90	21.6
Field Nursery	90	21.6
Leatherleaf	90	21.6
Liriope	90	21.6
Nurseries and Vineyards	90	21.6
Nursery	90	21.6
Ornamentals	90	21.6
Pittosporum	90	21.6
Timber Nursery	50	12
Tree Nurseries	90	21.6

Crop	Fertilizer Application Rate (lb-N/acre)	Effective Application Rate (lb-N/acre)
Grass Pasture	80	16
Horse Farms	50	10
Improved Pastures	50	10
Pasture	50	10

- For nursery crops, due to containerization and the need for access:
 - A reduction of 20% of the FSAID 9 land area was made to account for plant spacing.
 - A reduction of 70% of loading was estimated to account for the fact that fertilizer is applied to containers that will trap more of the nutrients for longer.
- Adjustment to fertilizer application rates were made to pastureland to account for field rotation.
 - Fertilizer was estimated to be applied to 20% of pasturelands annually.



FARM FERTILIZER



- In total, it is estimated that 2,854,442 pound of nitrogen are applied to the land surface from crop production within the Jackson Blue BMAP area.
- When recharge an attenuation are applied, it is estimated that 610,581 pounds of nitrogen are loaded to the Floridan aquifer annually from farm fertilizer.



FARM FERTILIZER

Crop	Fertilizer Application Rate (lb-N/acre)	Acres
Peanuts	20	11,171
Cotton	110	10,463
Improved Pastures	50	4,432
Hay	180	3,722
Row Crops	60	1,144
Cotton Peanuts	65	1,111
Corn	240	998
Cropland Pastureland	50	786
Corn Peanuts	130	415
Field Corn	240	468

- The most common crop types by acreage within the Jackson Blue BMAP are cotton and peanuts.
- When the fertilizer application rates and the adjustments for pasture and nursery crops are considered, cotton is the crop with the highest estimated loading to land surface within the BMAP area.
- When attenuation and recharge factors are applied, cotton is estimated to be the crop contributing the greatest load to groundwater within the basin.

Crop	Fertilizer Application Rate (lb-N/acre)	Sum Loading to Land Surface
Cotton	110	1,150,966
Hay	180	669,975
Corn	240	239,560
Peanuts	20	223,426
Field Corn	240	112,216
Cotton Peanuts	65	72,228
Row Crops	60	68,616
Corn Peanuts	130	60,850
Improved Pastures	50	44,317
Cropland Pastureland	50	39,291

Crop	Fertilizer Application Rate (lb-N/acre)	Sum Loading to Groundwater
Cotton	110	257,554
Hay	180	109,665
Corn	240	58,395
Peanuts	20	49,780
Field Corn	240	31,066
Cotton Peanuts	65	20,045
Corn Peanuts	130	15,269
Row Crops	60	10,946
Vegetables	150	8,858
Squash Vegetables	300	8,349



LIVESTOCK WASTE

- Livestock populations were estimated using 2017 U.S. Dept. of Agriculture (USDA) census of agriculture data. USDA population estimates are provided by county.
- FSAID 9 land use was used to evaluate the proportion of livestock land within a BMAP area and adjust USDA population estimates.
- Waste factors were multiplied by the estimated animal population to calculate livestock waste loading.
- Loading from livestock waste is estimated to attenuate at 90%.
- Loading from dairy cattle was evaluated separately, however, there were not dairy operations within the Jackson Blue BMAP.

Livestock Type	Waste Factor (lb-N/day)
Beef Cattle	0.337
"Other" Cattle	0.31
Calves	0.068
Dairy Cows	0.977
Donkeys	0.1
Horses	0.273
Chicken, Broilers	0.002
Chicken, Layers	0.003
Goats	0.035
Hogs	0.19
Sheep	0.198
Turkeys	0.006



LIVESTOCK WASTE

Estimated Livestock Population	
Livestock Type	Count
Beef Cattle	3,309
"Other" Cattle	1,041
Calves	2,342
Donkeys	29
Horses	136
Chicken, Broilers	30
Chicken, Layers	395
Goats	154
Hogs	37
Sheep	31
Turkeys	21

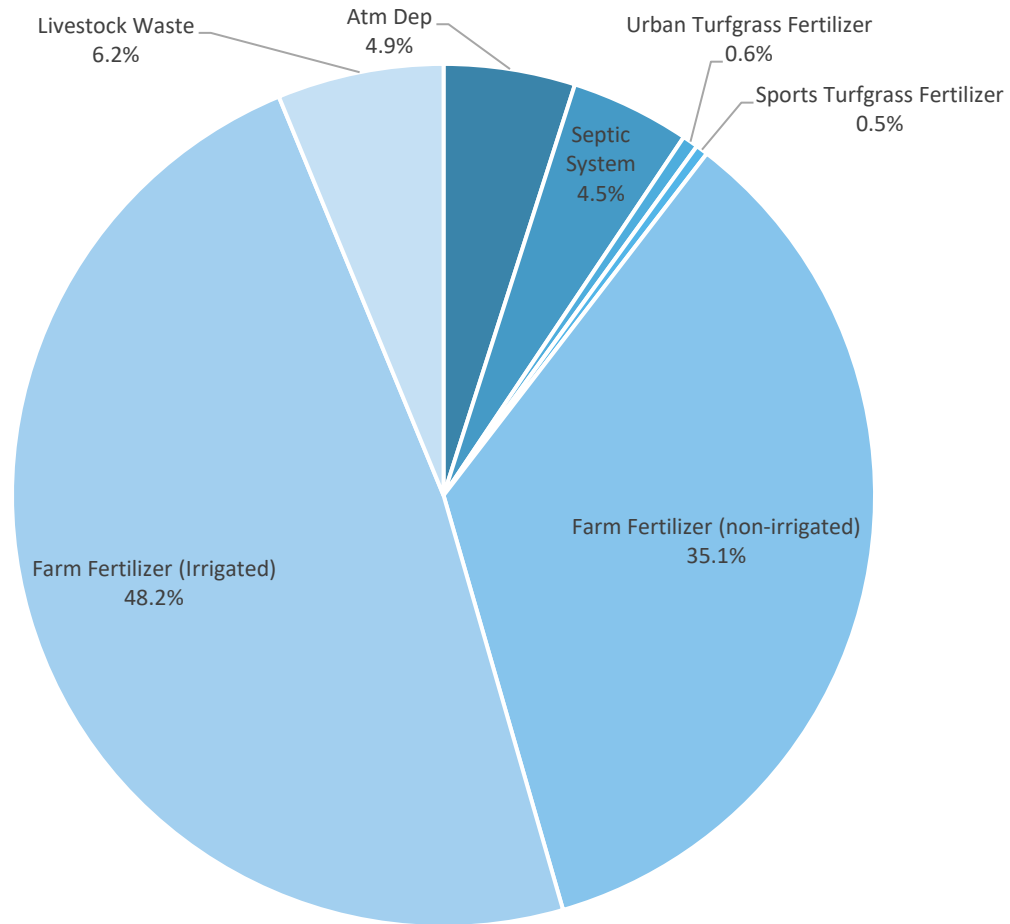
Livestock Type	Loading to Land Surface (lb-N/year)	Loading to Groundwater (lb-N/year)
Beef Cattle	407,018	32,291
"Other" Cattle	117,791	9,345
Calves	29,148	2,312
Donkeys	1,054	84
Horses	13,535	1,078
Chicken, Broilers	22	2
Chicken, Layers	432	34
Goats	1,981	158
Hogs	2,604	207
Sheep	2,235	178
Turkeys	45	4

- An estimated total of 575,864 pounds of nitrogen per year are deposited on the land surface from livestock within the Jackson Blue BMAP area.
- When recharge and attenuation are applied, an estimated total of 45,693 pounds of nitrogen per year are loaded to groundwater.



DRAFT NSILT LOADING

Jackson Blue Spring (2023)



Jackson Blue BMAP Area	
Source	Annual Loading (lb-N/year)
Atmospheric Deposition	36,104
Septic System	32,786
Urban Turfgrass Fertilizer	4,319
Sports Turfgrass Fertilizer	3,348
Farm Fertilizer (non-irrigated)	257,120
Farm Fertilizer (Irrigated)	353,461
Livestock Waste	45,693
Total	732,831



BMAP UPDATES

SPRING VENT LOAD ANALYSIS

Calculated the current loading using the most recent 10 years of nitrate and discharge data.

Calculated the percent reduction using the TMDL and current loading.

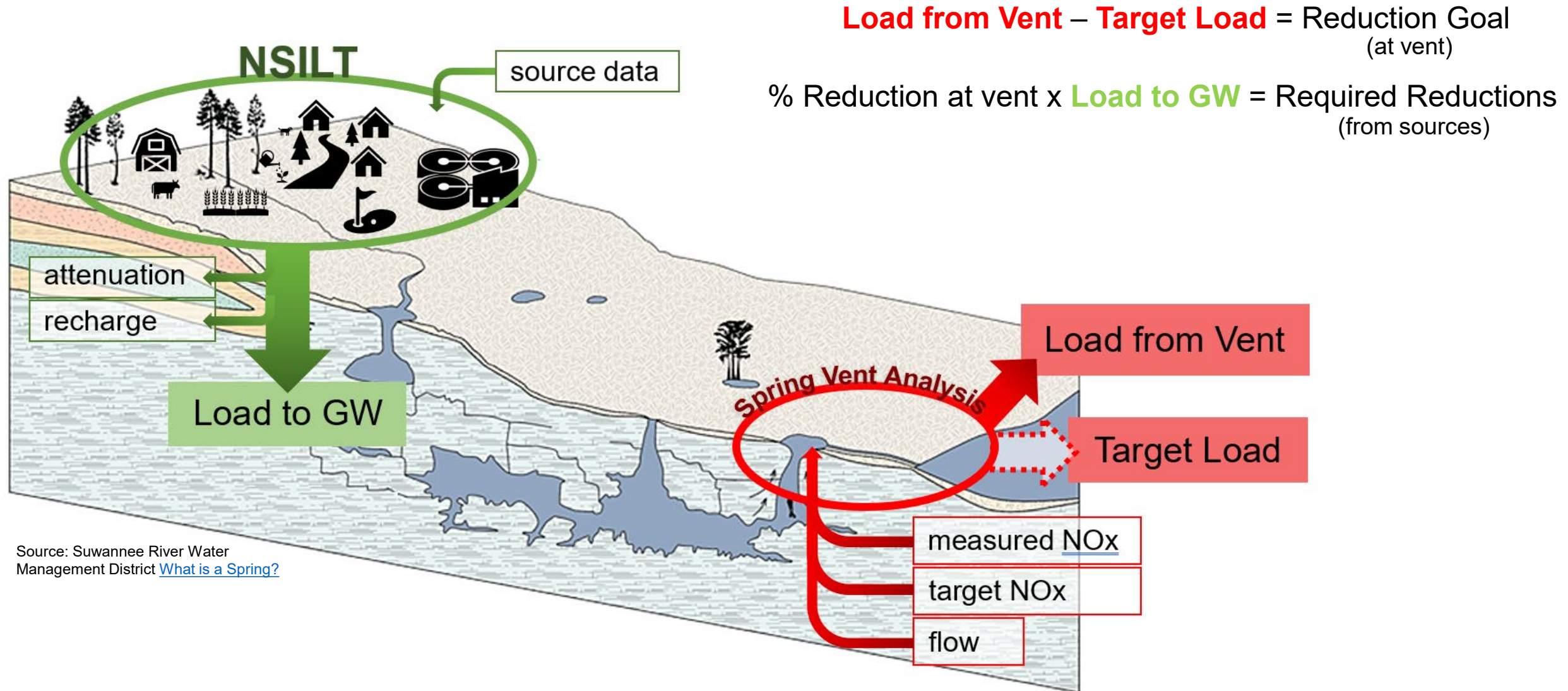
Applied the spring vent percent reduction to the updated NSILT loading.

Estimate the total reduction needed at the land surface to meet the TMDL.



BMAP UPDATES

SPRING VENT LOAD ANALYSIS



Source: Suwannee River Water Management District [What is a Spring?](#)



BMAP UPDATES

DRAFT SPRING VENT LOAD ANALYSIS

Description	DRAFT Nitrate Loads (lb.-N/yr.)	Notes Regarding Data Used
Total Load at Spring Vent	839,637	Upper 95% confidence interval - nitrate data and flow data from 2012 to 2022.
TMDL Load	78,763	TMDL target is 0.35 mg/L and using the same flow data from 2012 to 2022.
Reduction Goal	760,874	Total required reduction of 91% is needed to meet the TMDL.



BMAP UPDATES

ALLOCATION AND REDUCTION APPROACH

- The percent reduction calculated from the spring vent analysis is applied to the estimated NSILT load to determine the overall required reduction needed in the basin.
- Each source will be evaluated for a reduction strategy.
- Responsible entities will receive an allocation based on the combined necessary reductions estimated by source for their area based on the NSILT loading.



BMAP UPDATES

ALLOCATION AND REDUCTION APPROACH

OSTDS

- Reduction strategy based on BMAP OSTDS requirements in Appendix D.

WWTF

- Reduction strategy based on BMAP effluent requirements in the BMAP document.

Agriculture

- Reduction strategy based on:
 - BMP enrollment using a 15% reduction applied to FF load to groundwater.
 - BMP enrollment using a 10% reduction applied to LW and dairies.
 - Any remaining agricultural reductions will be allocated to agricultural cooperative elements, which could include regional projects and cost-share practices.

AD

- Anticipated reductions to be addressed by reductions from other sources.



BMAP UPDATES

ALLOCATION AND REDUCTION APPROACH

UTF

- Apply the 91% reduction to the total UTF load to groundwater and allocate to the applicable local governments.

STF

- Apply the 91% reduction to the STF load to groundwater and allocate to the applicable governments.

Golf Courses

- Reduction based on requirement of all golf courses to submit information on their implementation of BMPs and a Nutrient Management Plan (NMP) to address their loading.



BMAP UPDATES

FUTURE GROWTH

Domestic Wastewater Projections:

- Use wastewater to estimate future growth projections.
- Start with population growth for each county from Bureau of Economic and Business Research (BEBR)
 - 2040 medium growth projections.
- Proportion growth for each entity based on land area.
- Distinguish the future population expected to be served by sewer versus those with OSTDS based on the most recent FLWMI for each BMAP county.
- Use per person calculations to estimate future loads from WWTF and OSTDS.

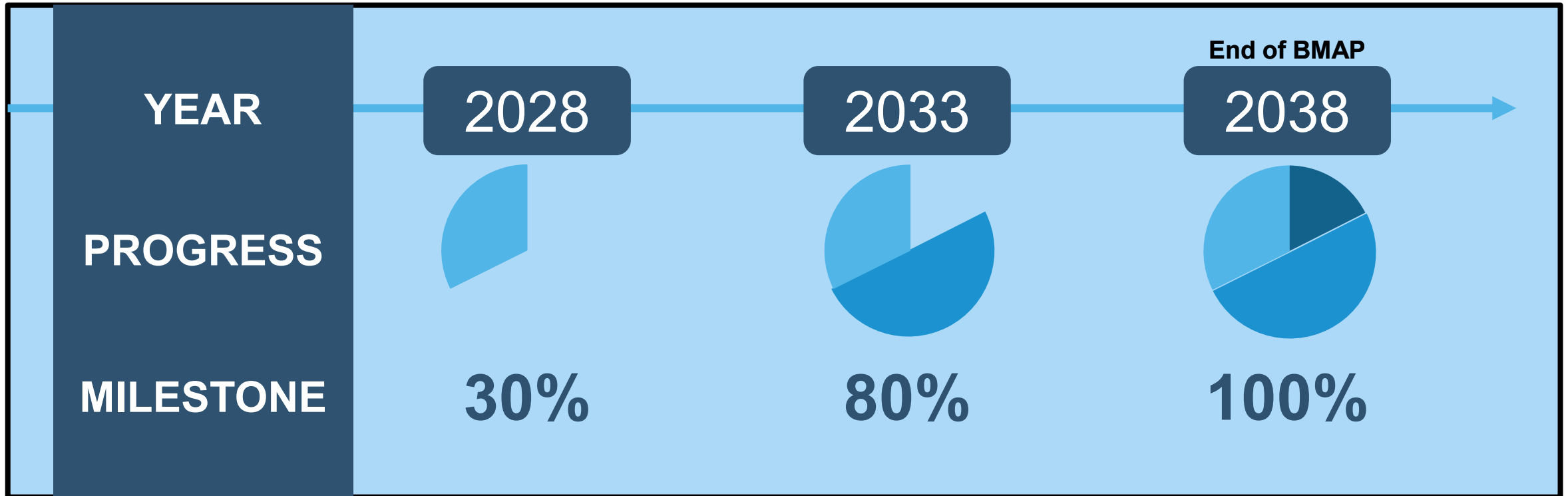
Agriculture Projections:

- Exploring different tools to estimate future changes in agricultural acreage in the BMAPs to estimate changes in agricultural loading.



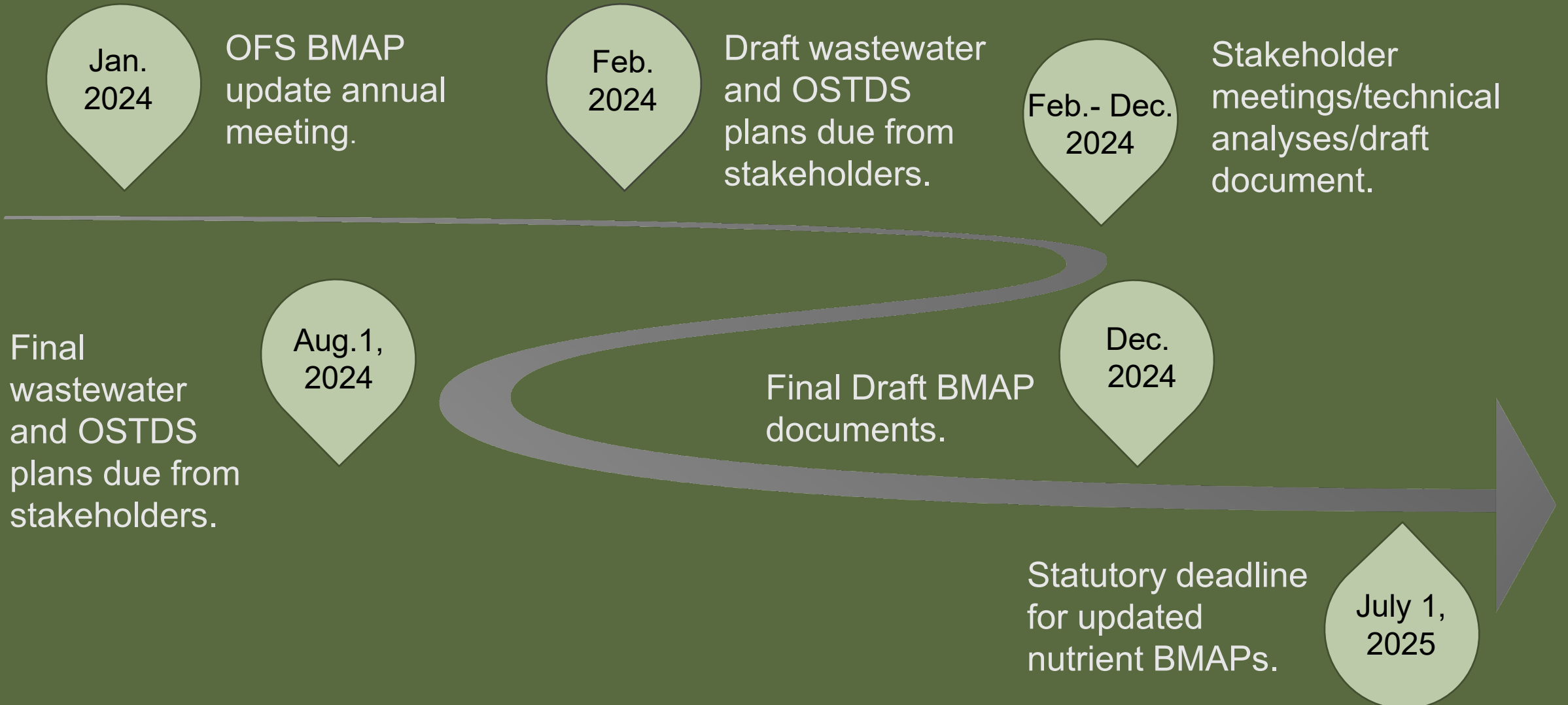
BMAP UPDATES

5-, 10- AND 15-YEAR MILESTONES/REDUCTION SCHEDULE





SPRINGS BMAP UPDATES TIMELINE





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THANK YOU

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