

Environmental Protection Division

**Proposed Amendments to
Chapter 15, Article XVII
Fertilizer Management Ordinance**

November 30, 2021

Presentation Outline

- Background
- Education
- Study Findings
- Ordinance Review
- Stakeholder Outreach
- Summary
- Next Steps



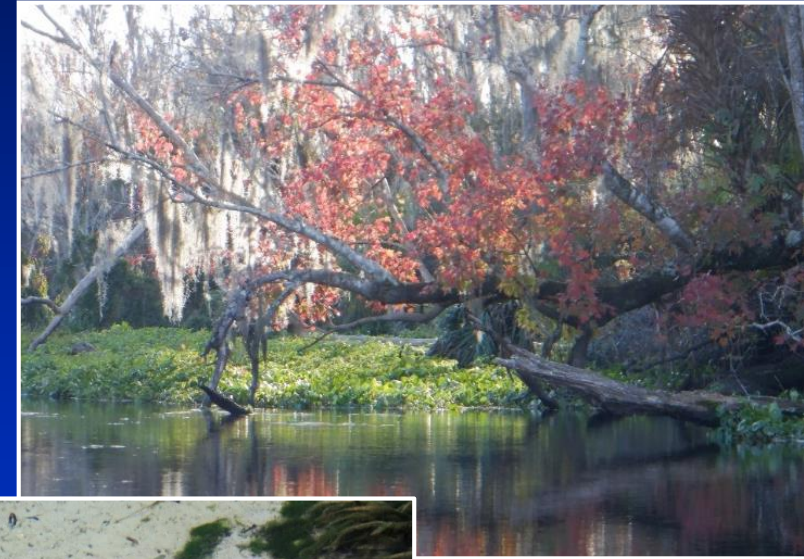
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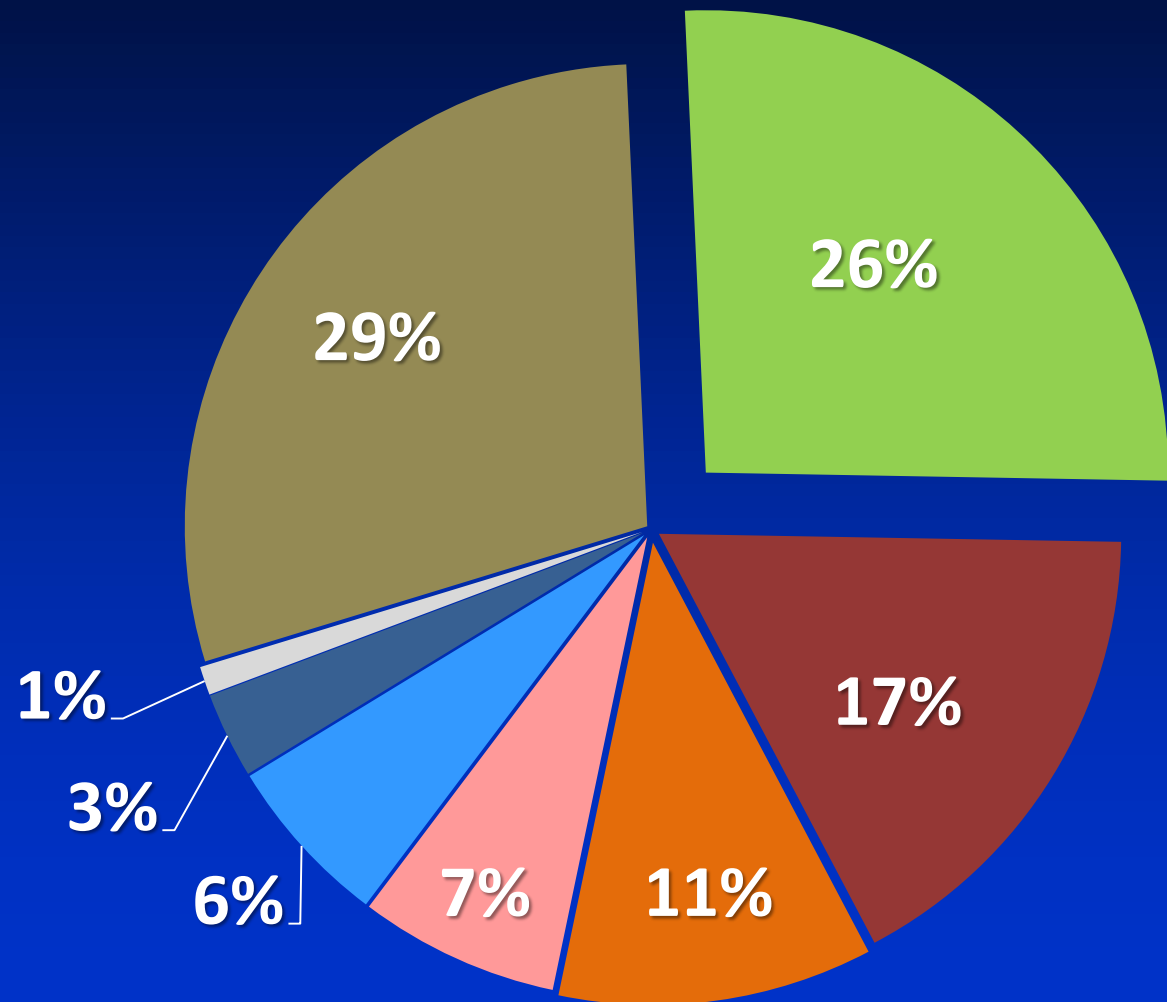


Background

- **Water Quality regulations**
 - 2008 – Wekiva TMDL – Septic tanks and fertilizer identified as highest nitrogen pollutant source
 - 2010 – Lake Jesup BMAP adopted
 - 2015 – Okeechobee BMAP adopted
 - 2016 – Florida Springs and Aquifer Protection Act
 - Required adoption of Model Fertilizer Ordinance language by July 1, 2017
 - 2018 – Wekiwa and Rock Springs BMAP



- Septic Systems
- Urban Fertilizer
- Wastewater Trt Facility
- Farm Fertilizer
- Sports Turf
- Atmospheric Deposition
- Nurseries
- Livestock Waste



2018 FDEP Wekiwa/Rock BMAP NSILT analysis



Background

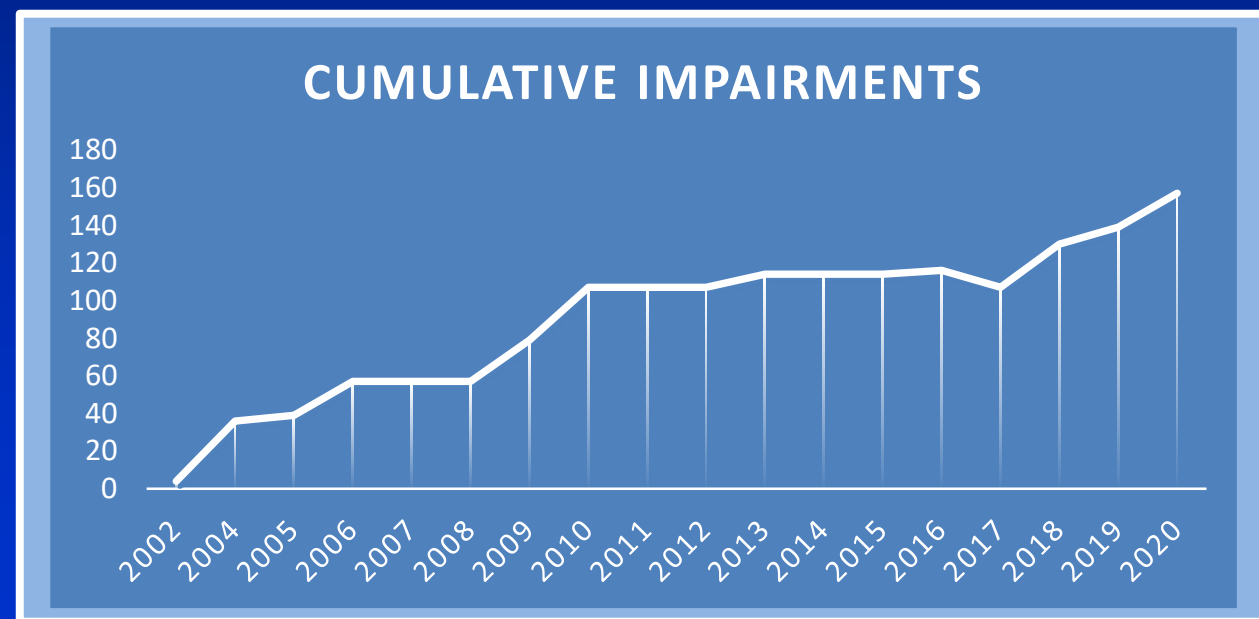
■ Water Quality regulations/drivers

—2001 – 2021:

- 154 total impairments (61% of total are nutrient impairments)
- 17 nutrient TMDLs
- 5 nutrient BMAPs
 - Upper Ocklawaha
 - Wekiva River
 - Wekiwa and Rock Springs
 - Okeechobee
 - Jesup

■ Cost per pound for removal

—\$165 - \$10,000 / lb





Background

■ Ordinance History

- 2009: Orange County adopted Chapter 15, Article XVII, Fertilizer Management Ordinance
- 2013: Section 576.181, Florida Statutes preempts local governments from restricting retail sales
- 2015: State Model Ordinance updated
- 2017: Article XVII updated to comply with State Model Ordinance
 - BCC directed EPD to return upon completion of nitrate source data collection
 - Education campaigns conducted countywide and in Wekiva to present

Background

■ Related Ordinances

—Landscape Ordinance – Chapter 24

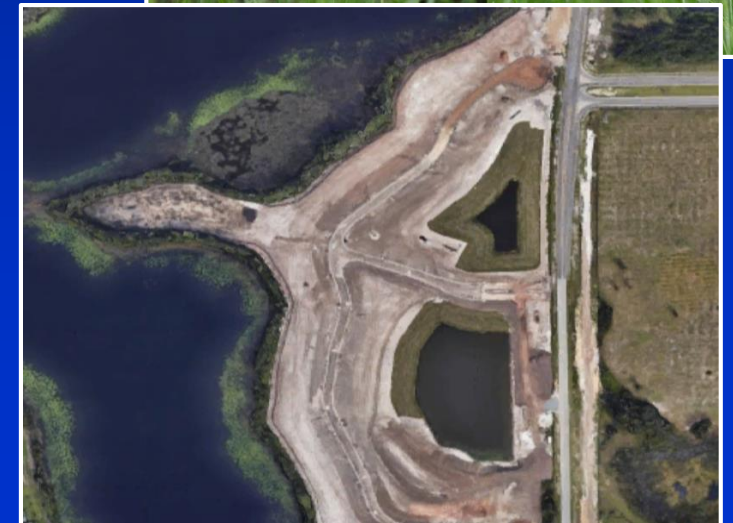
- Future considerations for soil amendments
- Keeping native vegetation/FFL vegetation

—Water Conservation – Chapter 37

- Excessive irrigation can cause:
 - Nitrogen fertilizer leaching
 - Lead to unhealthy lawns
- Follow watering restrictions

—Mass Grading – Chapter 16, 38

- Use parent soils, natural topography



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■ Ordinance requirements:

Retail Signage

- Provided to 55 stores in County
- Signage updated annually

Decals










- 766 sent to commercial applicators
- Must be displayed on vehicle used for application




ATTENTION Orange County Residents


Fertilizer Application is Regulated under the Fertilizer Management Ordinance - Chapter 15, Article XVII

EARN THE ORDINANCE AND FOLLOW THESE PRACTICES TO PROTECT OUR WATER:

 Choose fertilizer with ZERO phosphorus (P)	 Fertilizer with nitrogen (N) must be at least 65% slow-release
 Take the Orange County Fertilizer Application Education Course for Citizens	 No fertilizer June 1 to September 30 unless you take the Orange County Fertilizer Application Education Course for Citizens
 Do not fertilize 24 hours before an expected storm or heavy rain	 Clean up and properly dispose of fertilizer spills
 Keep fertilizer off pavement	 Businesses that apply fertilizer must be trained, licensed and display this decal on all vehicles of trained applicators
 When using a broadcast spreader it must have a deflector shield	

Fertilizer Application Education Course for Citizens is available on the Orange County Fertilizer Responsibility website.

**FERTILIZE RESPONSIBLY**
www.ocfl.net/FertilizeResponsibly
For questions or to report environmental concerns or violations call 311



■ Education Efforts

- Countywide “Fertilize Responsibly” necessary to maintain compliance
- Wekiva “My Yard, My Spring”
 - Grant funded
 - Required by Wekiva BMAP

■ Key calls to action include:

- Skip the nitrogen and phosphorus fertilizer in the summer
- Don’t fertilize before a storm
- Take the online training course
- Use 65% slow-release nitrogen fertilizer
- Avoid fertilizer containing phosphorus, unless soil test shows deficiency
- Keep fertilizer off of impervious surfaces, away from storm drains and waterbodies



- **Countywide “Fertilize Responsibly”**
 - Annual utility bill inserts, Newsletters
 - Annual postcard reminder to commercial applicators to update proof of training
 - Laminated signage provided to stores that sell fertilizer
 - Social media messages
 - Dedicated webpages with multimedia resources
 - Media coverage, television PSAs
 - Posters and banners, informational magnets on county vehicles
 - Training events (in collaboration with IFAS), Virtual/In person
 - Integrated fertilizer awareness training for county employees

A screenshot of the "Fertilize Responsibly" website. The header features a green background with a small image of a fertilizer container and the text "Fertilize Responsibly" and "Protect our springs, lakes and rivers". Below the header is a sidebar with a list of links: "Commercial Fertilizer Application Certification", "Fertilizer Calculator", "Fertilizer Ordinance", "Florida-Friendly Landscaping™", "Lake Cane Water Quality Video", "My Yard, My Springs", "Orange County Studies", "Prevent Water Pollution", and "Retail Fertilizer Poster (English)". The main content area shows a video player with a close-up of a fertilizer application machine's wheels and a "Fertilizer Facts" section with text about nutrient pollution.

- **Wekiva Basin area “My Yard, My Springs”**
 - Grant funded by FDEP
 - County hired professional marketing firm to develop materials
 - Laminated signage provided to stores that sell fertilizer
 - Contained maps of how yards are tied to springs
 - Social media messages, digital ad placement, animated videos
 - Dedicated webpages with multimedia resources
 - Television PSAs
 - Network (Channel 6 and 9)
 - Orange TV
 - Billboards, posters and banners



Education

Fertilize Responsibly and My Yard My Springs Websites



Social Media and Logo



Utility Bill Inserts

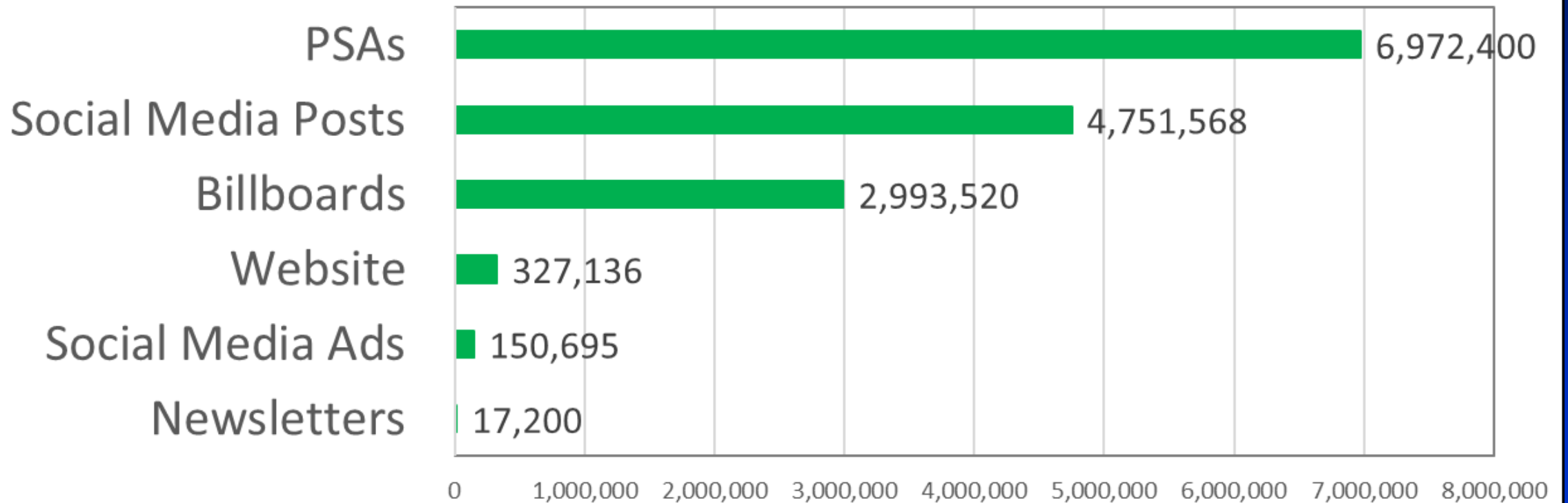


Multilingual Retail Signage, Kiosks, Banners and Billboards



Wekiva Campaign

Estimated Number of People Reached





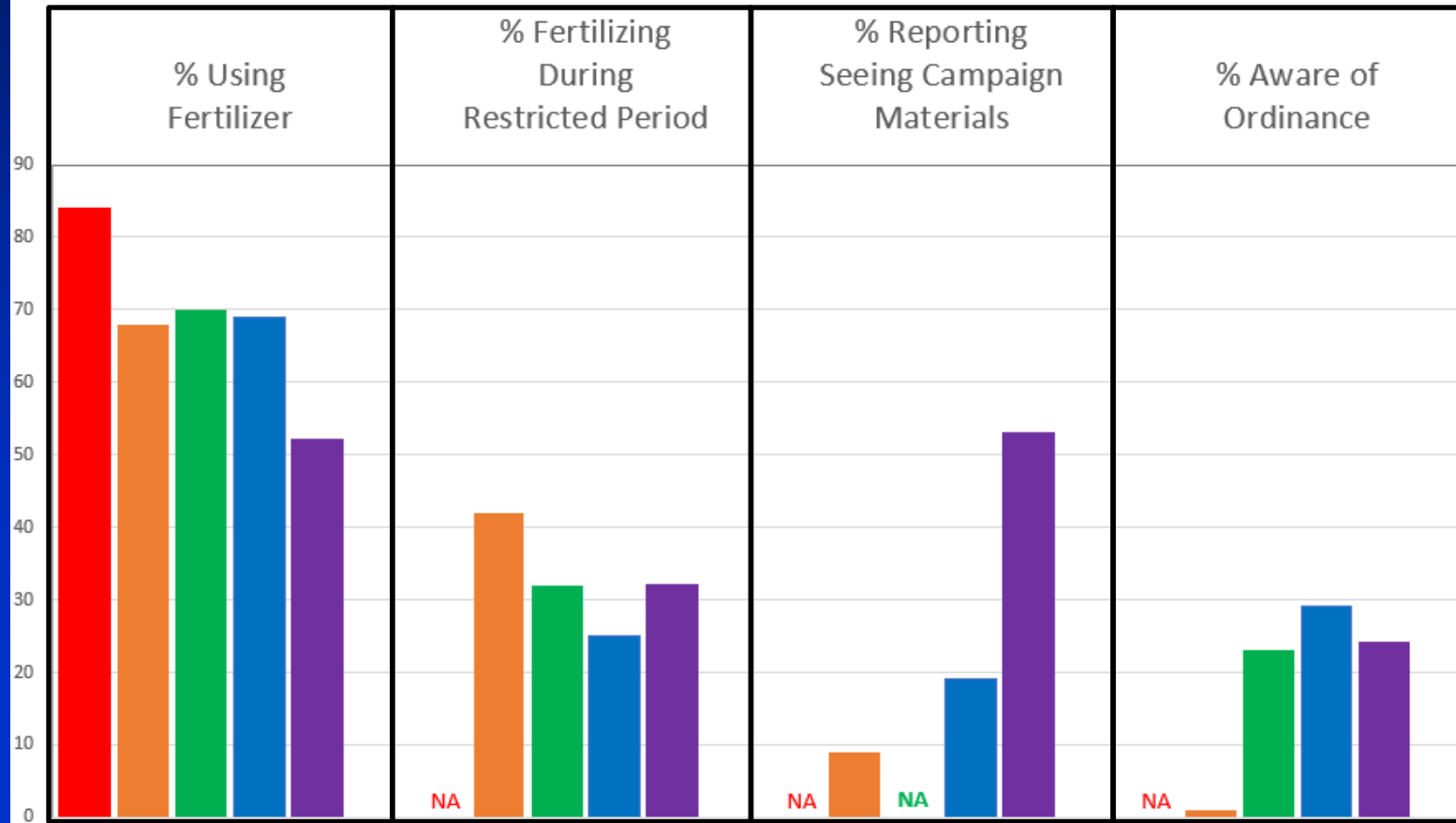
Education

Timeline



Results

Legend



▪ Enforcement

–77 complaints filed with EPD

- Reported vegetative debris in stormdrain/impervious surface
- 1 complaint on application of fertilizer
- No monetary penalties assessed
- Compliance assistance letters sent
- Education provided by EPD staff
- Rely on 311 for residents to submit occurrences
- Retail establishment audits
 - Provide new or updated posters
 - Discuss ordinance with staff



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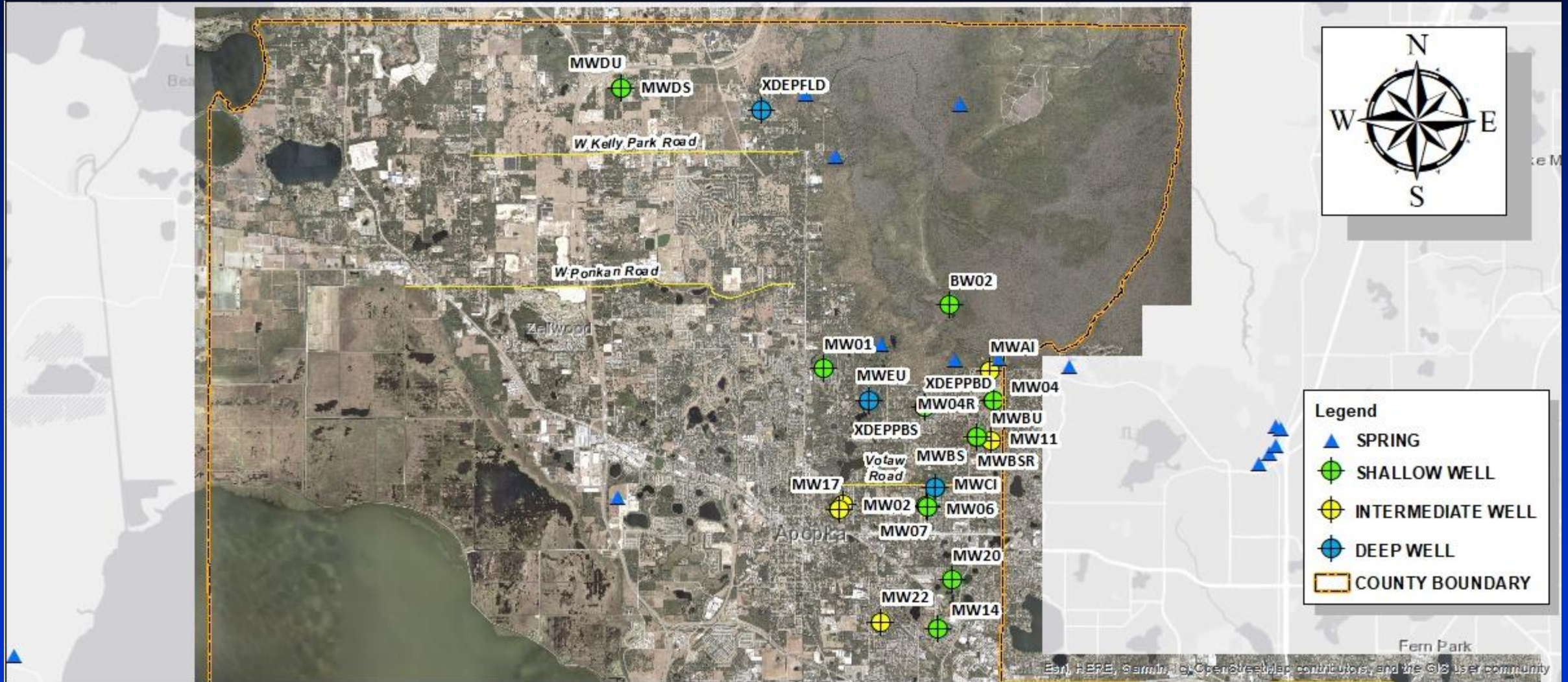


Investigation into Sources

- In 2017, Board tasked EPD to inform revisions to the current fertilizer ordinance by investigating sources of nitrate in groundwater.
- Contractors for EPD collected and analyzed data recorded from groundwater monitoring wells located in northwest Orange County.
- Stakeholders were provided the results in 3 reports:
 - Wekiva Springshed Groundwater Monitoring & Data Analysis Summary
 - Wekiva BMAP Site Assessment, Gap Analysis, and Review
 - Nitrogen Modeling Assessment Technical Memorandum



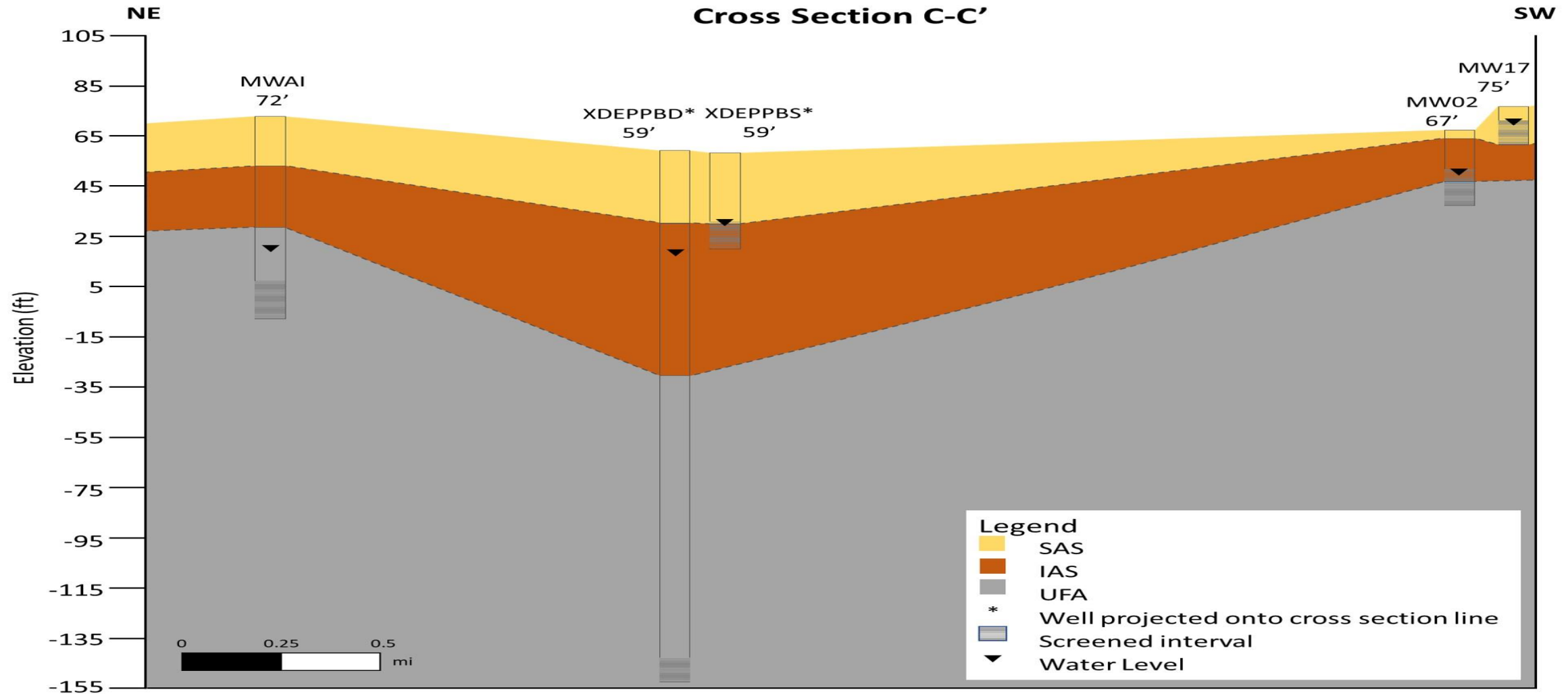
Groundwater Monitoring Well Locations





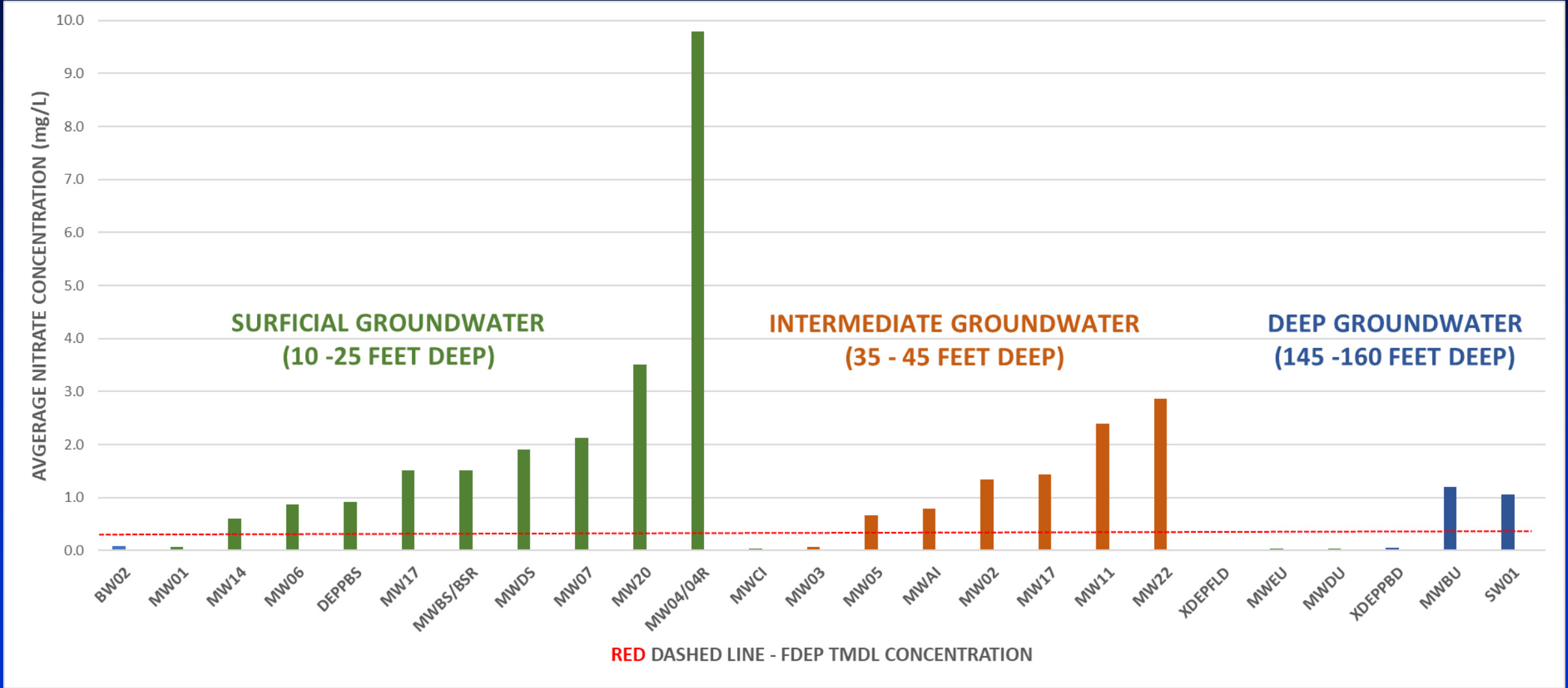
Groundwater Zones

Shallow, Intermediate, & Deep



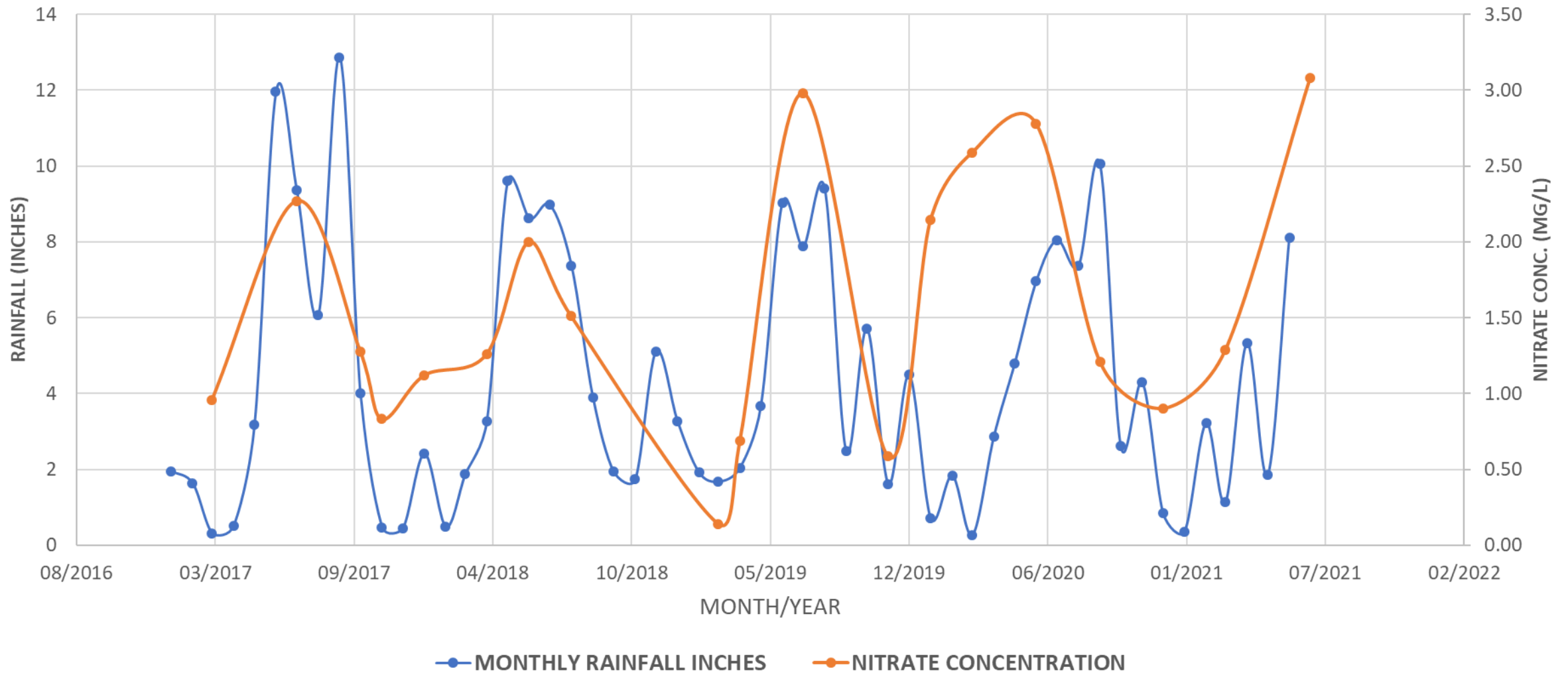


Average Nitrate Concentrations in Groundwater





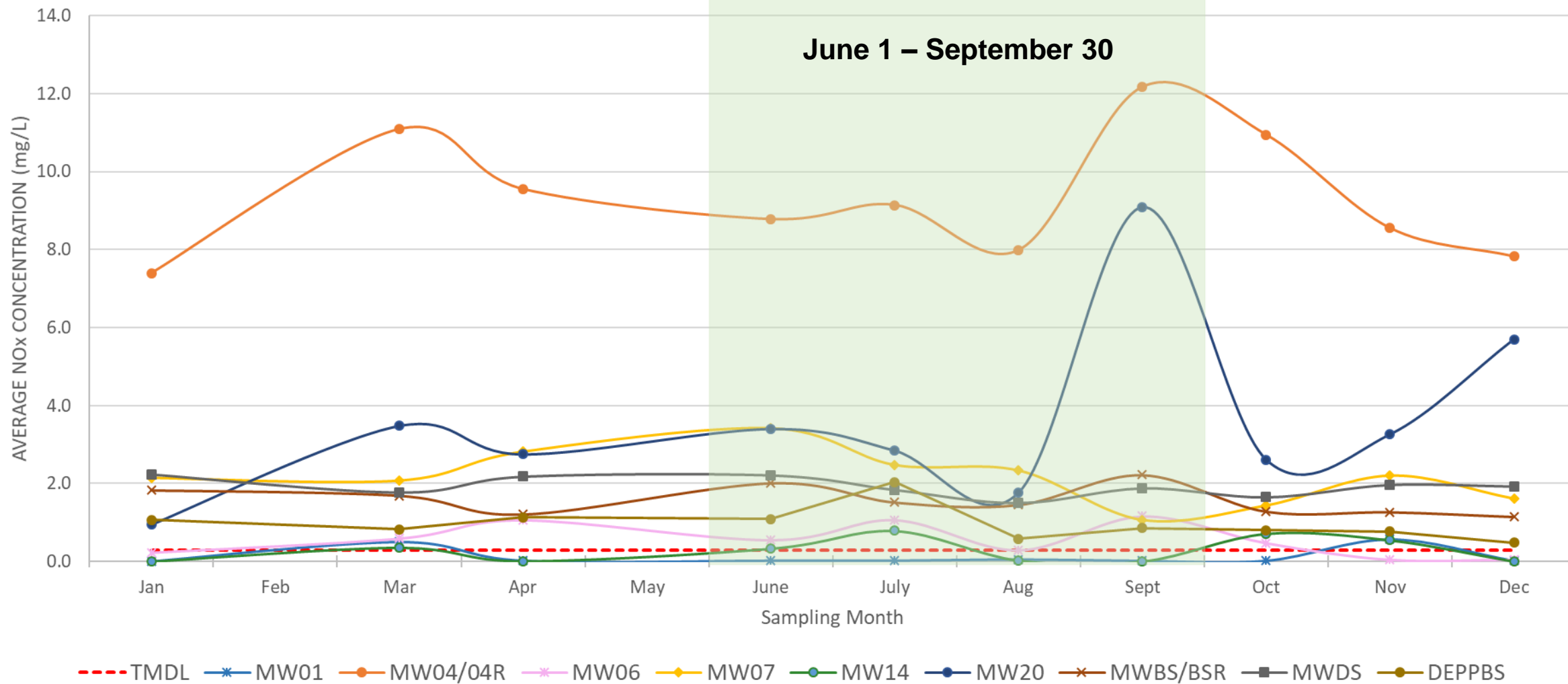
Groundwater Nitrate & Rainfall (MW-7)





Monthly Nitrate Concentrations

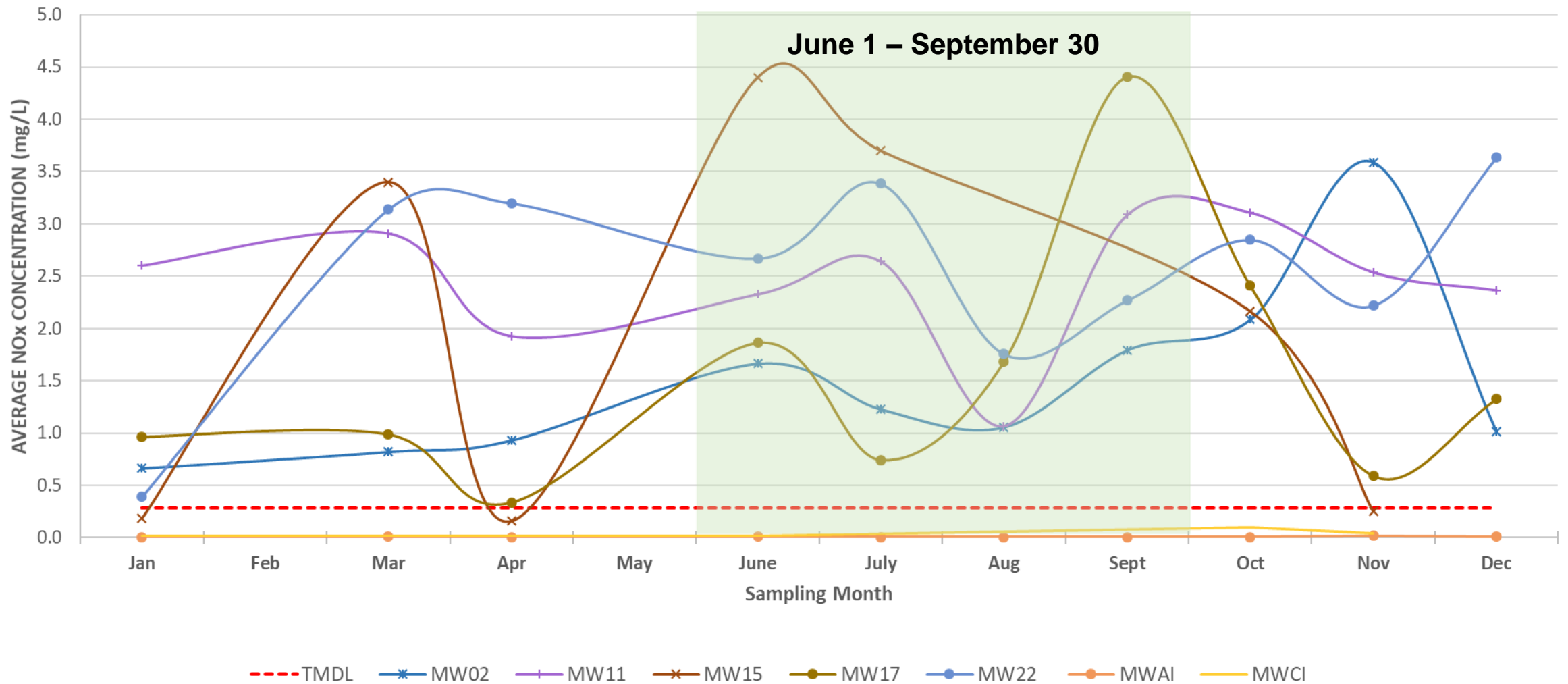
Shallow Groundwater





Monthly Nitrate Concentrations

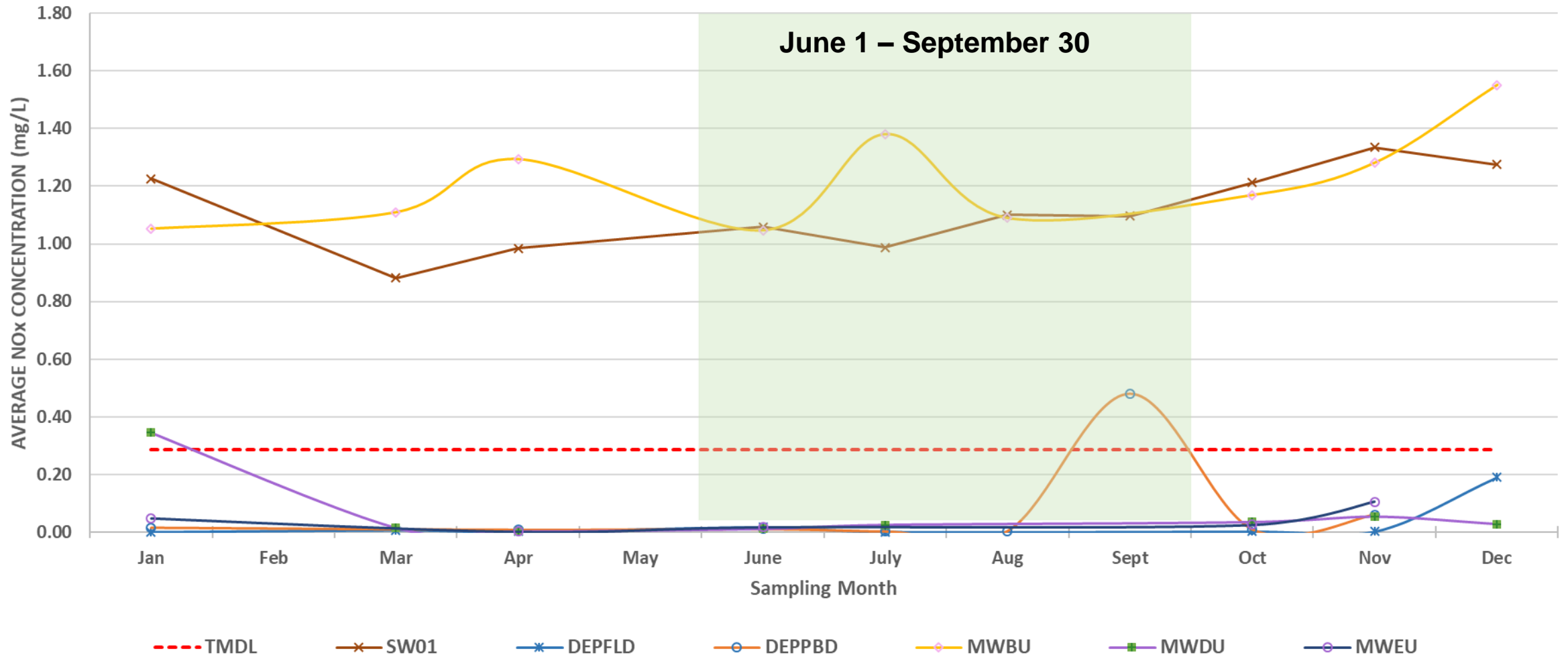
Intermediate Groundwater



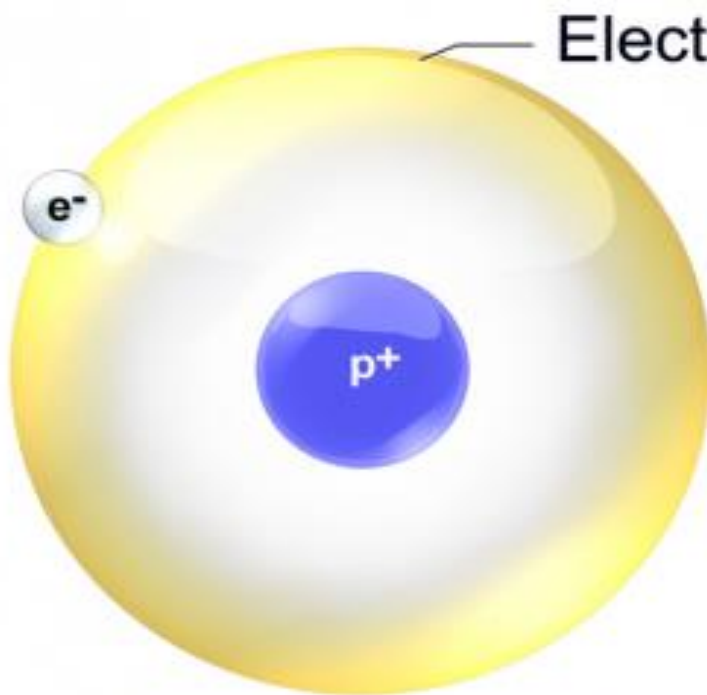


Monthly Nitrate Concentrations

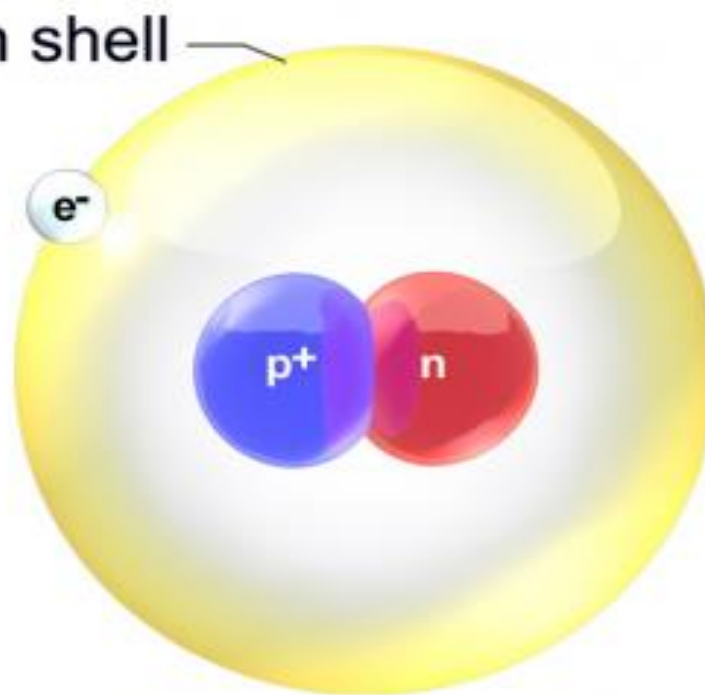
Deep Groundwater



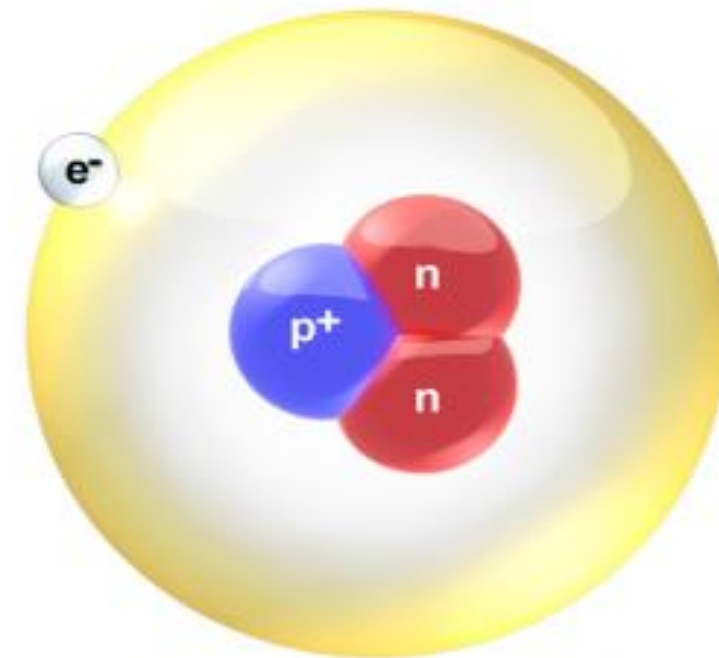
Isotopes – Same Element, Different Weights



Hydrogen-1
mass number: 1



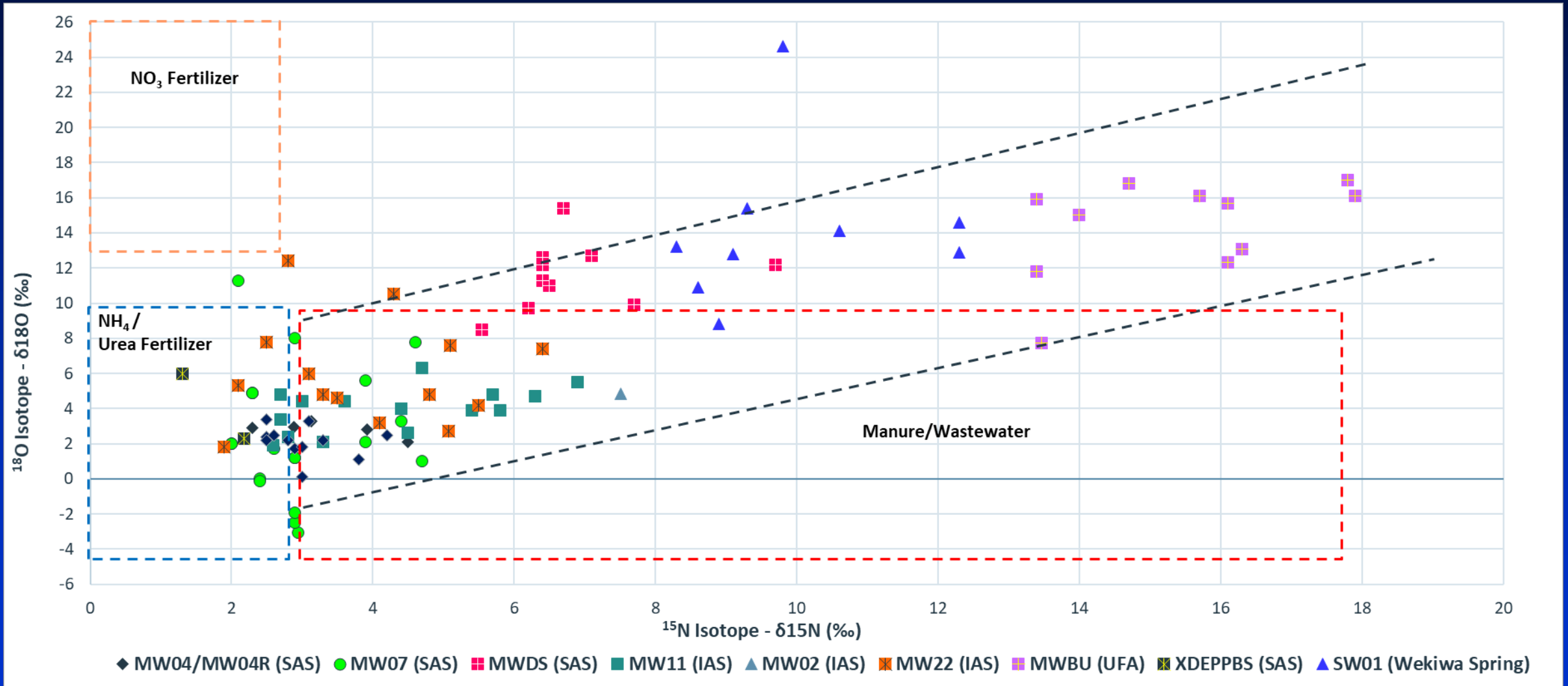
**Hydrogen-2,
deuterium**
mass number: 2



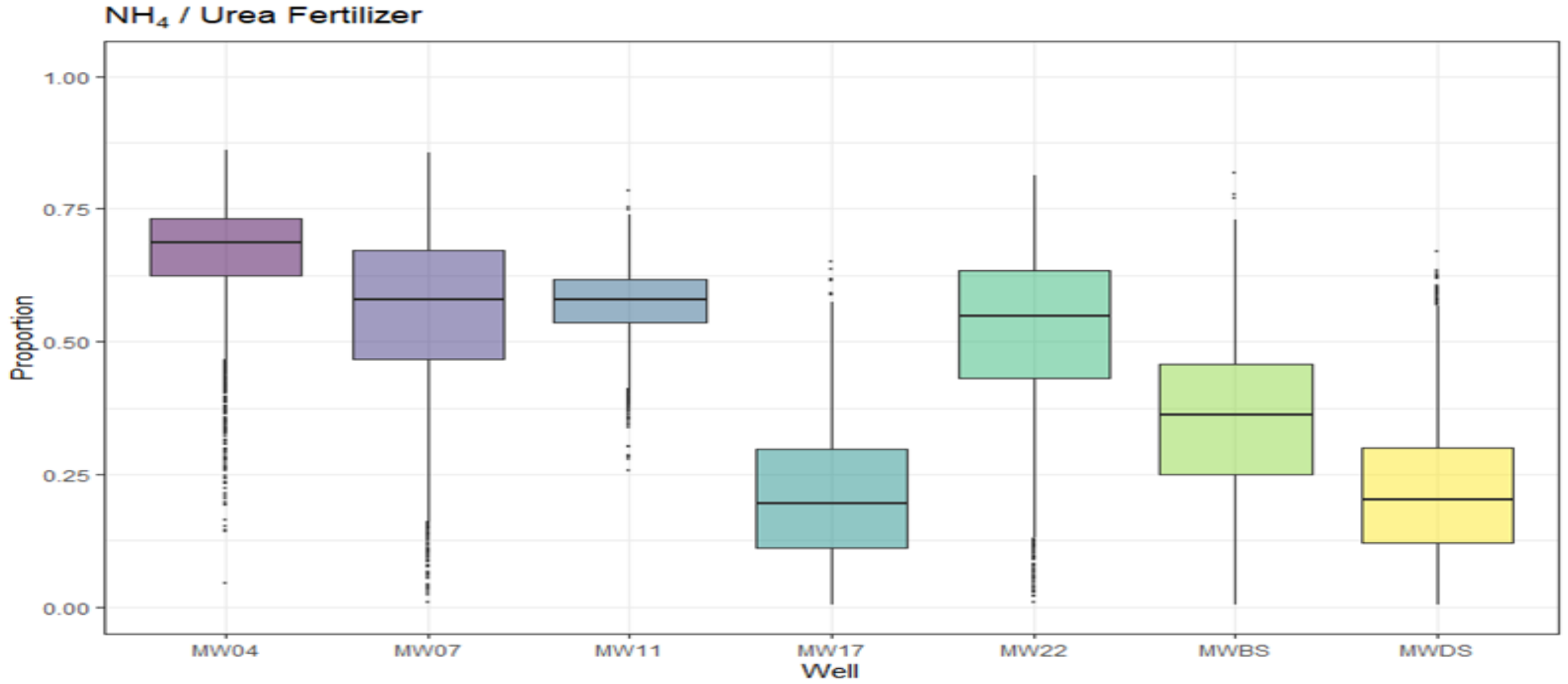
**Hydrogen-3,
tritium**
mass number: 3



Nitrate Source Isotopic Signatures (2017 – 2021)



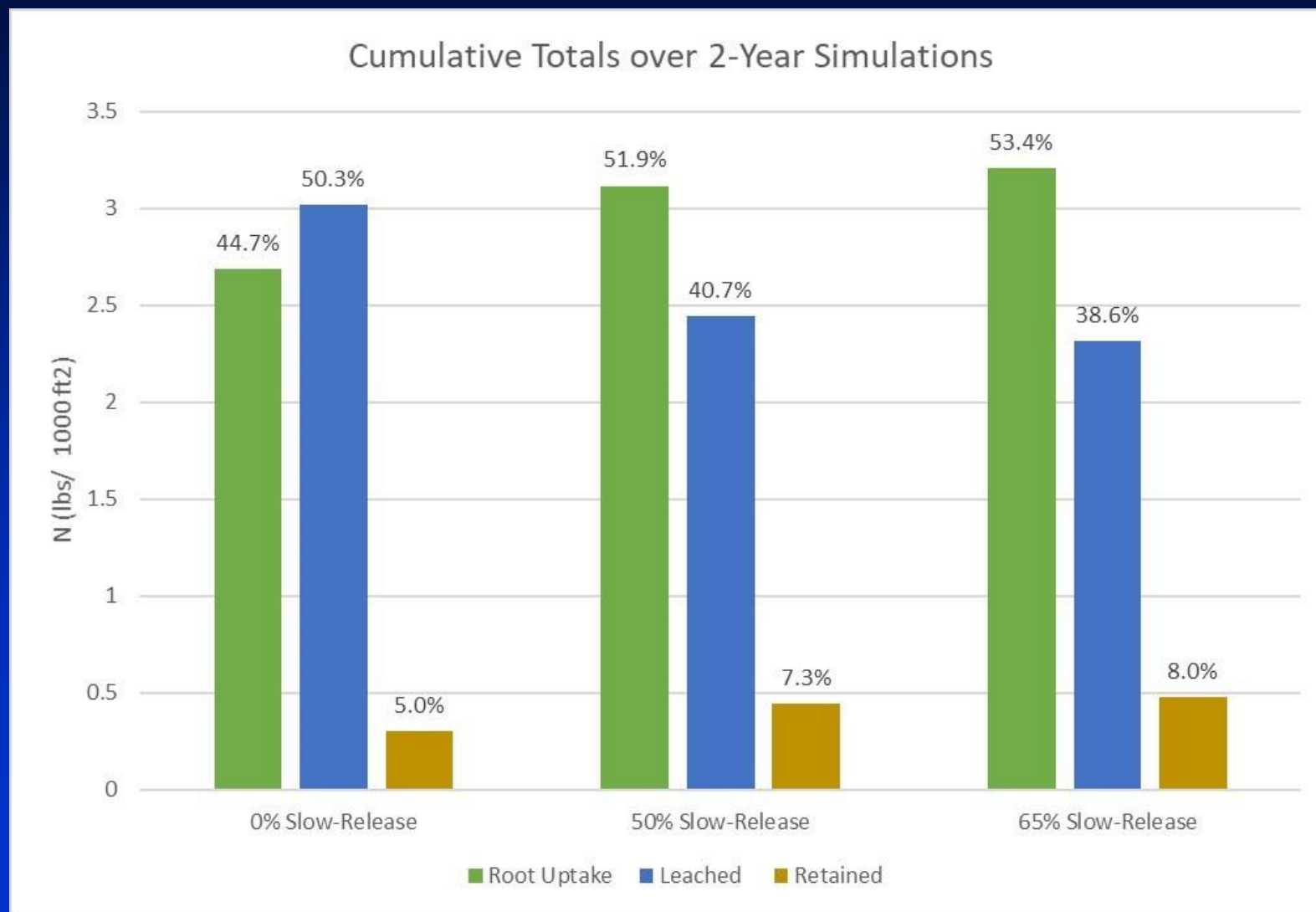
Mixing Model Source Contributions (2017 – 2021)





Modeling Nitrate Leaching from Fertilizer

- Simulate nitrate leaching from 3 lbs N/1000 sf/yr
- 0%, 50%, 65% SRN Fertilizer
- Two year rainfall record (OIA)
- Model with USDA Hydrus 1D Software





Study Findings

■ Results & Recommendations:

- Groundwater nitrate concentrations remain above the 0.286 mg/L TMDL for the Wekiva River system.
- Isotopic signatures indicate that N-fertilizer is a major source of nitrate detected in the groundwater monitoring wells.
- Nitrate concentrations in monitoring wells appear to show peaks in the wet season.
- Additional restrictions during the wet season intended to reduce nitrogen leaching to groundwater is supported by nitrogen transport modeling.



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Ordinance Review

Issue	Orange County Current	Proposed
Update definitions		Code enforcement officer, Institutional applicators, restricted/prohibited period, saturated soils
Retail signage	Stores must post signage provided by county	Stores must post signage provided by county at point of distribution to consumers.
Set back from Surface Water	15ft	25ft
Slow Release Nitrogen	50%, 65% if available	65%
Exemptions	Bona Fide Agricultural lands, parks, athletic fields, golf courses*	Include grazing lands and scientific research lands, golf must follow BMP
Variance	Must be approved by EPD Manager, must not be self imposed	Consider options to strengthen



Ordinance Review

Issue	Orange County Current	Proposed
Summer period blackout (June 1-September 30 th)	Allows nitrogen application from trained applicators	Remove training language – no nitrogen/phosphorus fertilizer allowed
Annual Application for Nitrogen	---	2 lbs/1,000 sq.ft./year
Seeding/Sodding	---	No fertilizer for 30 days
Reclaimed Water	----	Must reduce rates proportional to amount of nutrients in water
Training	commercial, residential	Clarify language, add institutional applicators
Enforcement	Three tiered enforcement procedure	Follow Chapter 11 procedures

County	% Slow Release Nitrogen (SRN)	Fertilizer-Free Zone Next to Water Bodies (ft)	Rainy Season Restriction (June 1-Sept 30)	Maximum Application per Year per 1,000sf	Seeding or Sodding Restrictions
Orange (current)	65%, when readily available	15 ft	allowed if trained		
Orange (proposed)	65%	25 ft	✓	2 lbs	✓
Seminole	65%	15 ft	✓		✓
Brevard	50%	15 ft	✓		✓
Lake	50%	15 ft	✓		✓
Martin	50%	25 ft	✓	No maximum, lowest amount necessary	✓
Miami-Dade	65%	20 ft	✓ May 15 - Oct 31	4 lbs	✓
Pinellas	50%	10 ft	✓	4 lbs	✓



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Stakeholder Outreach (2017)

- **Environmental Groups**
 - Adopt Seminole County's Ordinance
 - Summer restriction; no exemption for commercial/non-commercial applicators of nitrogen or phosphorus containing fertilizers
 - 65% slow release Nitrogen by 2020 if available
- **Agricultural – Non bona fide grazing pastures should be exempt from ordinance**
- **Industry – Supports draft changes including existing exemptions**
- **EPC – Supports draft changes including existing exemptions**



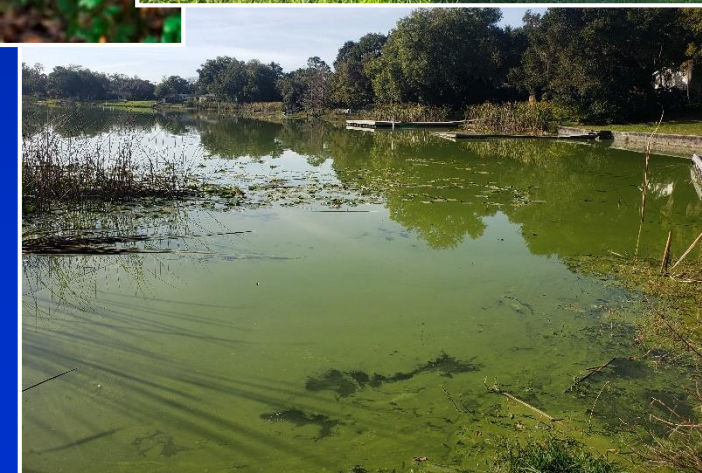
Stakeholder Outreach (2021)

- **Environmental Groups** – Support summer blackout and want variance option removed
- **Industry** – Not supportive of blackout for Nitrogen application and increase annual cap from 2 lbs N/yr
- **Other engagement**
 - Public Stakeholder meetings at IFAS
 - Commissioners and IFAS/UF researchers
 - Agricultural Advisory Board
 - Environmental Protection Commission
 - Sustainability Advisory Board
- **Municipalities** – City of Orlando supportive



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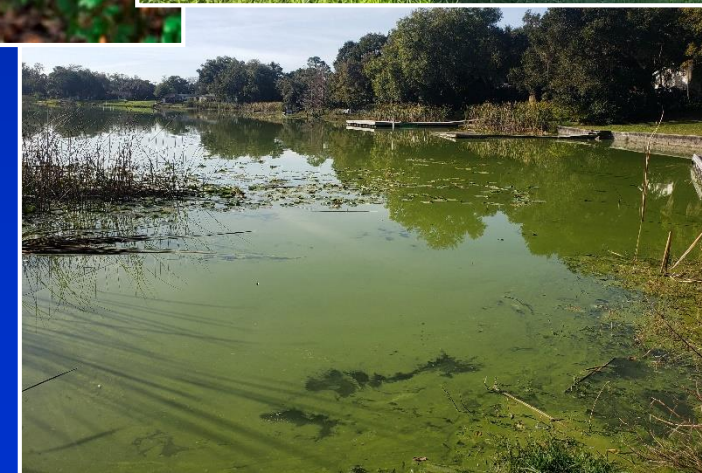
Summary

- Studies conducted since 2017 confirm that fertilizer is a major source of nitrate in groundwater for northwest part of County
- Continued increase in nutrient impairments in surface waters
- Orange County required to remove pollutants sources and pollutants once they are in impaired waters
- Proposed changes to Fertilizer Management Ordinance reflect additional restrictions
 - Implementing a “summer blackout” period for fertilizer application between June 1 through September 30 may assist Orange County with efforts to control nitrogen loading to groundwater from urban fertilizer
 - The current ordinance should also be revised to include a cap of two (2) pounds N-fertilizer per 1,000 square feet annually in an effort to reduce leaching



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Next Steps

- **Continue to engage to the stakeholder community**
- **Prepare final ordinance for Board public hearing based on direction**
- **Adoption public hearing anticipated February 2022**
- **Notice to retailers, commercial applicators, and large institutions**
- **Continue citizen educational efforts**

