

University of
Massachusetts
Amherst

Water Quality and the FSMA Water Rule

December 18, 2024

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2024 New England Vegetable & Fruit Conference

Manchester, NH

OUTLINE

- Why water?
- FSMA requirements
- State program requirements
- Resources



Why water?

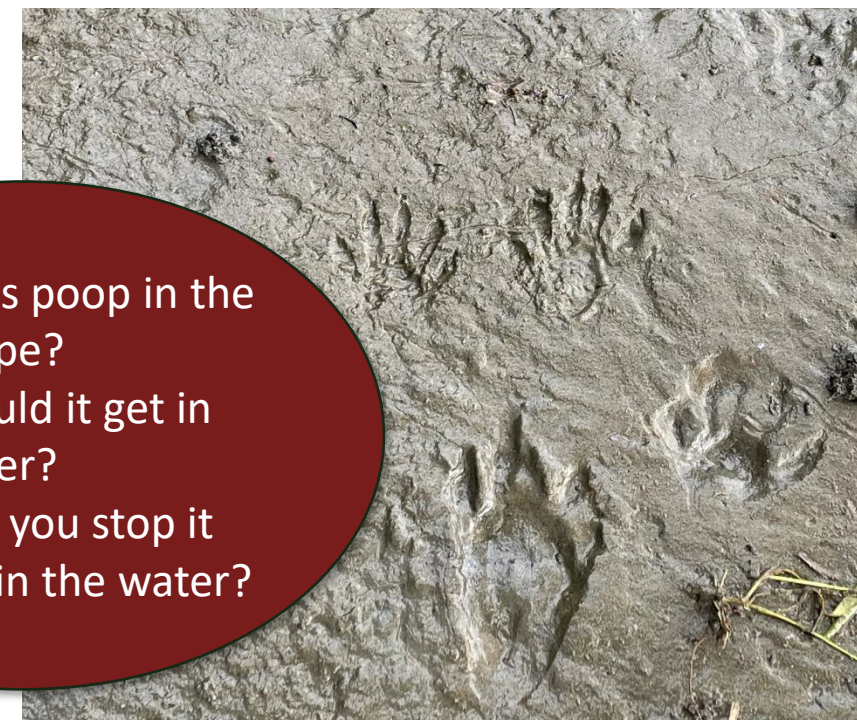
- Can spread pathogens onto produce
 - *Before or after harvest*
- Recent outbreaks linked to agricultural water
- Climate changes may affect risk



Produce Safety Alliance

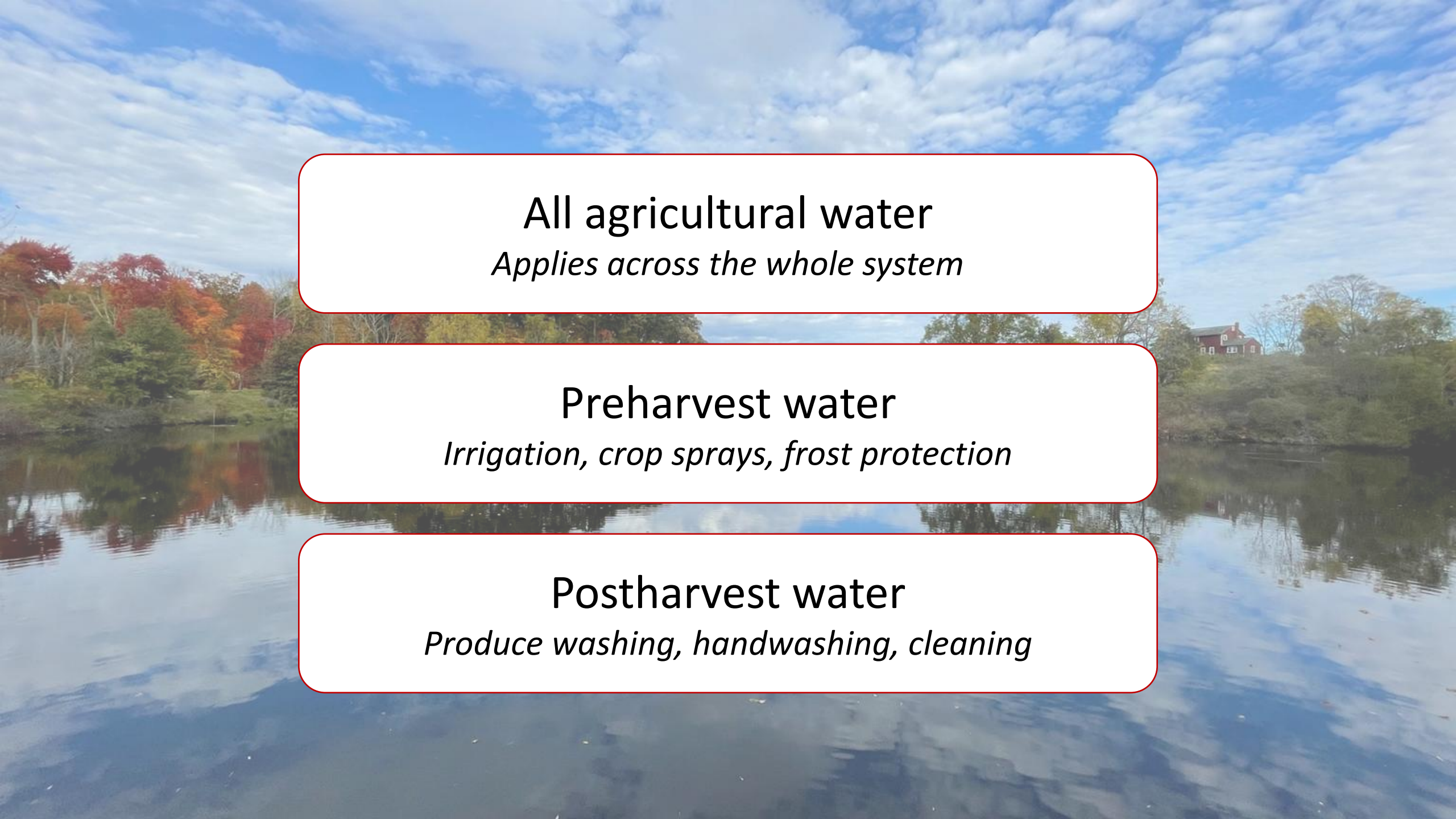


- Where is poop in the landscape?
- How could it get in the water?
- How do you stop it getting in the water?





The FSMA Water Rule



All agricultural water
Applies across the whole system

Preharvest water
Irrigation, crop sprays, frost protection

Postharvest water
Produce washing, handwashing, cleaning



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- All agricultural water must be safe and of adequate sanitary quality for its intended use
- At least **annually**, inspect all agricultural water systems to identify produce safety hazards
- Maintain all ag water systems to prevent contamination



- **Map** the whole system
- Regularly check **pressure sensors**
- Ensure **check valves** are functioning properly
- Properly **store** equipment
- Ensure water sources are **free of debris**, trash, domestic animals, other possible sources of contamination
- Ensure **well head** is locked
- Ensure **conduit pipe** is present and secure enough to prevent access to insects and other animals
- **Vent hole** should be screened
- Ensure **concrete pad** isn't cracked
- Note the **nature of each water source, extent of your control, degree of protection, adjacent land uses, likelihood of introduction of hazards**
- Complete water system **inspection record**



Agricultural Water System Inspection Record *Template (1 of 2)*

§§ 112.42(a)(1-5) Requirements Relating to Agricultural Water Source or System

Name and address of farm: _____

Date and time of inspection: _____ Name and Initials: _____

Water source ID	General description of water source	Nature of the source (e.g., ground, surface)	Extent of control over water source	Describe the extent of your control over the water. If water source is not under your full control, explain why.
<i>Pond #1</i>	<i>½ acre spring-fed pond, northwest of house</i>	<i>Surface</i>	<i>Partial control</i>	<i>Runoff from property to the northwest of farm property flows to pond</i>

Water source ID	Degree of protection from hazards	Describe the degree of protection for this water source	Describe potential concerns from adjacent and nearby land uses	Describe any prior uses of the water that may introduce hazards
<i>Pond #1</i>	<i>Mostly protected</i>	<i>Spring fed, only a little fill from runoff. No exclusion to prevent wildlife access to pond.</i>	<i>Property to the northwest of farm property is used as a horse grazing pasture</i>	<i>No prior users of the water</i>

FSMA PSR reference § 112.50(b)(1) Confidential Record

Agricultural Water System Inspection Record Template (2 of 2)
§ 112.50(b)(1) Findings of Annual Agricultural Water System Inspection

Also addresses §§ 112.42(b-d) for routine monitoring (documentation not required)

Name and address of farm: _____

Date and time of inspection: _____ Name and Initials: _____

Date, time, and type of monitoring		Water Source and/or Distribution System	Observations	Actions Taken	Initials
<i>Annual</i> 5/20/24	7:05 AM	Pond #1	Berm along northwest edge of pond shows signs of disrepair	Berm reinforced with riprap and additional fill	EAB
<i>Routine</i> 6/22/24	9:00 AM	Pond #1	Significant geese presence	Scared geese until they left, introduced swan decoys. Will monitor	EAB

Modified from On-Farm Decision Tree Project: Soil Amendments—v5 7/16/2014
 E.A. Bihn, M.A. Schermann, A.L. Wszelaki, G.L. Wall, and S.K. Amundson, 2014 www.gaps.cornell.edu

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Final FSMA Subpart E – Ag Water Assessment

1. Ag Water System	<ul style="list-style-type: none">• Source and location (surface, ground, municipal)• Water distribution system (open or closed)• Degree of protection (e.g., from other users, animals, and adjacent land uses)
2. Ag Water Practices	<ul style="list-style-type: none">• Application method (overhead, drip, furrow, flood)• Time interval between last direct application and harvest
3. Crop Characteristics	<ul style="list-style-type: none">• Susceptibility to surface adhesion or internalization
4. Environmental Conditions	<ul style="list-style-type: none">• Frequency of rain or extreme weather that might impact the agricultural water system or might damage produce• Air temperatures• Sun (UV) exposure
5. Other Factors	<ul style="list-style-type: none">• Can include results of water testing

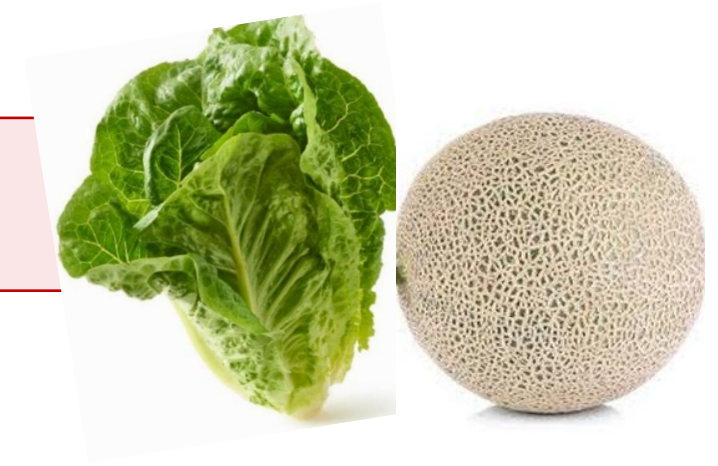
2. Ag Water Practices

- **Application method** (overhead, drip, furrow, flood)
- **Time interval** between last direct application and harvest



3. Crop Characteristics

- **Susceptibility** to surface adhesion or internalization



4. Environmental Conditions

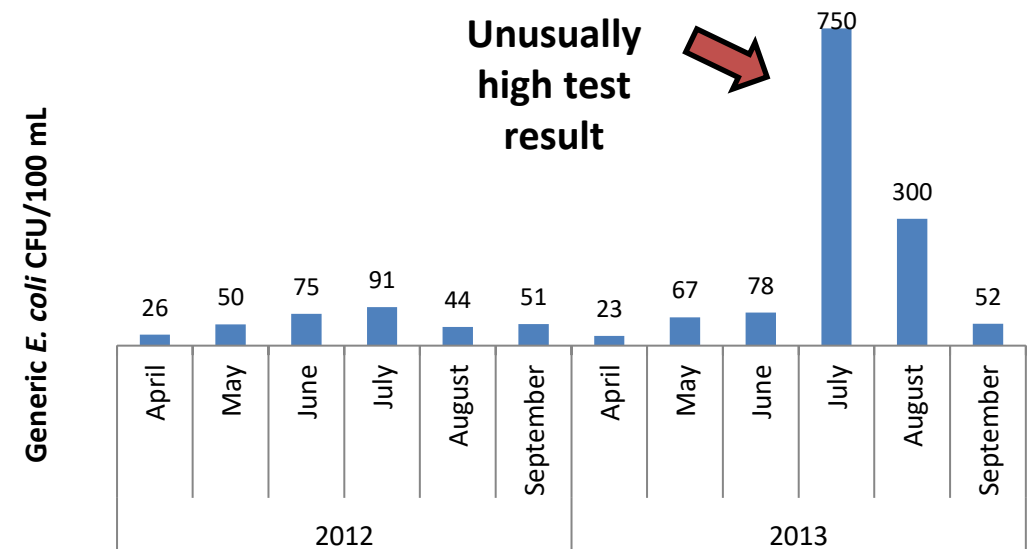
- **Frequency of rain or extreme weather** that might impact the agricultural water system or might damage produce
- Air temperatures
- Sun (UV) exposure



5. Other Factors

- *Can* include results of **water testing**

- Water testing not required for preharvest water
- No numerical threshold to meet
- Testing for generic *E. coli* may still be a useful tool for assessing risk



Agricultural Water Assessment

Element	Response
Please provide your farm location:	S. Deerfield, MA
Please provide your farm name:	UMass
Please provide your primary contact:	Lisa McKeag

Use of Agricultural Water

Do you use agricultural water in the growing of covered produce (other than sprouts)?

Response: Yes

Exemptions

Can you demonstrate one of the following for the agricultural water you apply during growing activities for covered produce (other than sprouts)? If Yes, please explain. Note also that the exemptions below only apply if it is reasonably likely that the quality of water will not change prior to the water being used as agricultural water (for example, due to the manner in which the water is held, stored, or conveyed) (§ 112.43(b)(2)).



**FDA Ag Water
Assessment Builder**

Outcomes

If...

Then...

Ag water not safe or not of adequate sanitary quality

Immediately discontinue use **AND**
Take **corrective** measure(s) before use at pre-harvest

Condition(s) on adjacent or nearby land uses pose risk **related to animal activity, BSAAO, or human waste**

Implement **mitigation** measures promptly, and no later than the same growing season

Other conditions that may introduce known or reasonably foreseeable hazards, **not related** to animal activity, BSAAO, or human waste on adjacent or nearby lands

Implement **mitigation** measures as soon as practicable, and no later than the following year
OR
Test water as part of the agricultural water assessment and implement measures as needed

No known or reasonably foreseeable hazards for which mitigation is necessary

Inspect and maintain water system regularly and at least once a year

Corrective and mitigation measures

- **Re-inspect and make repairs**
- **Treat the water**
- Apply quantitative or qualitative die-off = increase time b/w application and harvest
- Change water application method
- Other activities that result in die-off or removal – *commercial washing*
- Reassess – annually or anytime there's a significant change

Exemptions

- Farms are exempt from conducting a **pre-harvest ag water** assessment if:
 - No detectable generic *E. coli* in 100 mL and meets other postharvest agricultural water testing requirements
 - Not untreated surface water
 - From a public water system
 - Treated in accordance with FSMA PSR
- Reasonably likely the water quality will not change prior to use
- Each exemption condition requires supporting records

➤ *Still have to do an annual inspection of the whole system!*



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Postharvest water

- Water used for:
 - Direct contact with covered produce during or after harvest
 - Direct contact with food contact surfaces
 - Ice making
 - Handwashing
- No detectable generic *E. coli* per 100 mL sample
- No untreated surface water





Postharvest water



Source	Testing Requirements
Untreated Ground Water	4 or more times during the growing season or over the period of a year 1 or more tests per year after initial year
Public Water Supply	Copy of test results or current certificates of compliance

- Must have a plan for maintaining and monitoring quality of recirculated and batch water



Compliance dates

	FSMA PSR	Large >\$500K annual produce sales	Small \$250K to \$500K annual produce sales	Very small <\$250K produce sales
<u>All water</u>	<ul style="list-style-type: none"> Annual ag water system inspection 	January 26, 2023	January 26, 2024	January 26, 2025
<u>Pre-harvest</u> 	<ul style="list-style-type: none"> No testing required Annual Ag Water Assessment 	April 7, 2025	April 6, 2026	April 5, 2027
<i>E. Coli</i> Threshold	None			
<u>Post-harvest</u> 	<ul style="list-style-type: none"> Surface – Not allowed Ground water – <ul style="list-style-type: none"> - 4x in 1st year - 1x/year after Municipal – certificate 	January 26, 2023	January 26, 2024	January 26, 2025
<i>E. Coli</i> Threshold	0 CFU/100 ml			

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Summary of records

- ❖ Farms that use *any* ag water
 1. **Ag water system inspection record** – e.g., map, descriptions, observations
- ❖ Farms that use *pre-harvest* agricultural water:
 2. **Agricultural water assessment** – determination re adequate quality
 - OR documentation to support exemption
 - *If testing used in assessment, keep water test reports*
 - *If measures implemented as an outcome of assessment, records of what you did and any supporting documentation to support that practice*
- ❖ Farms that use *postharvest* agricultural water:
 3. **Water tests** if using untreated groundwater
Or Certificate if using public water
 - *If using sanitizer in wash water, sanitizer treatment monitoring logs*

State Agencies and Contacts

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Maine Department of Agriculture, Conservation and Forestry

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For VT CAPS Program:

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Other resources

UMassExtension
Vegetable Program

Produce Safety
ALLIANCE

NECAFS
The Northeast Center to
Advance Food Safety





Takeaways

- Water has the potential to contaminate produce
- FSMA rules require you to:
 - Inspect your entire water system
 - Qualitatively assess risks from *preharvest* water
 - Quantitatively assess risk from *postharvest* water – NO generic *E. coli*
- Water testing is no longer required under FSMA for preharvest water but it can help you assess risk

Thank You!
Questions?

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