

# **Ag Water Update**





# Two Sections on Water

- **Part I: Production Water**
  - Water used in contact with produce during growth
  - Irrigation, fertigation, foliar sprays, frost protection
- **Part II: Postharvest Water**
  - Water used during or after harvest







# Agricultural Water Quality

- All **agricultural water** must be safe and of adequate sanitary quality for its intended use
  - Applies to water used for purposes outlined in both Parts I and II of this module



# Why Focus on Water?

- Singular critical point capable of amplifying an error in management during production, harvest, or postharvest





# Production Water Concerns

- Many factors impact water quality
- Many sources and uses of water on the farm
- Human pathogens can be introduced into water and contaminate produce during growing activities

**Produce safety is impacted by all of these!**







# Production Water Uses Include:

- Irrigation
- Frost protection
- Fertigation
- Dust abatement
- Crop sprays
- Other uses where water directly contacts produce
- Cooling





## **Standards for the Growing, Harvesting, Packing, and Holding of Produce for Human Consumption Relating to Agricultural Water**

- FDA released the proposed revisions to Subpart E – Agricultural Water on December 2, 2021
  - Docket FDA-2021-N-0471
  - <https://www.regulations.gov/document/FDA-2021-N-0471-0001>
- Proposed revisions move from testing as the primary metric for decision making to an Agricultural Water Assessment (AgWA) meant to look at the whole water system
- The expectation is for each grower to set their standards and understand why these standards are appropriate for their farm
  - Should be prepared to explain to inspectors

**SUPPLEMENTAL MATERIAL**



# Evaluating Risks Related to Production Water

Three main impact points for produce safety risks related to production water are:

1. Production water source and quality
  - Public water supply, ground water, surface water
  - Testing frequency and sampling location
2. Application method
  - Water that does not contact the harvestable portion
  - Water that contacts the harvestable portion of the crop
3. Timing of application
  - At planting or close to harvest





# Probability of Contamination



**Public Water Supply**



Treated

**Ground Water**



**Surface Water**



Open to  
Environment



# Agricultural Water Assessment

- *Growers would be required to evaluate these factors to identify conditions reasonably likely to introduce known or reasonably foreseeable hazards onto produce or food contact surfaces*

## Ag Water system

- Source and location (surface, ground, municipal)
- Water distribution system (open or closed)
- Degree of protection from possible contamination including other users, animal impacts, and adjacent land uses

## Ag Water practices

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

## Crop characteristics

- Susceptibility to surface adhesion or internalization

## Environmental Conditions

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

## Other factors

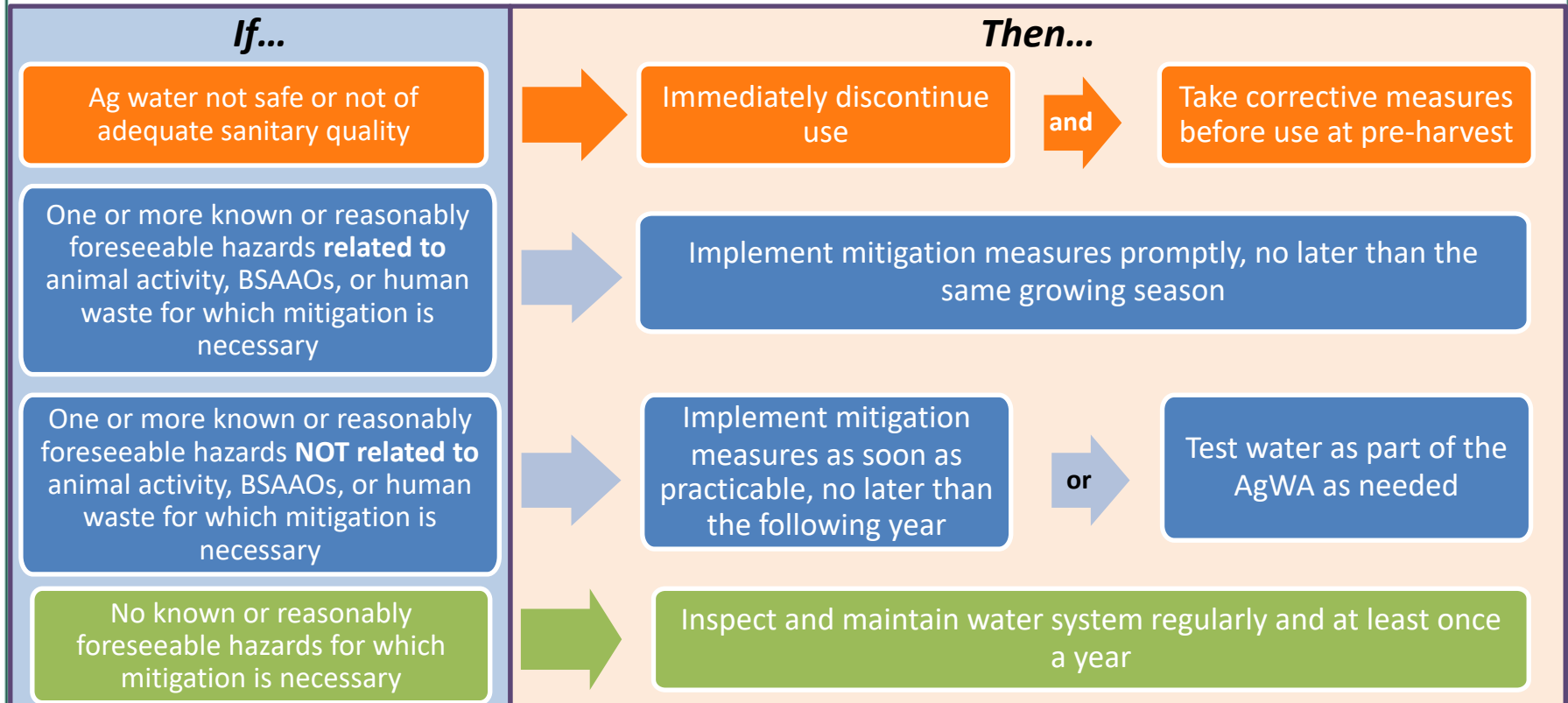
- Includes results of testing

**SUPPLEMENTAL MATERIAL**



# Agricultural Water Assessment

- *Outcomes: Farms would use the outcomes of the AgWA to determine corrective or mitigation measures*



**SUPPLEMENTAL MATERIAL**



# Municipal Water

- Lowest risk for contamination, highest cost!
- By law, water from municipal water systems must be potable
- But A LOT can happen between the water source and the field



Photo: [j davidlewisphotography.zenfolio.com](http://j davidlewisphotography.zenfolio.com)



# Preventing Contamination of Municipal Water

- Assess your connection to the public water supply and distribution system downstream
- Test the water if you have any concerns about the water source
- Have a back-up plan if you think water in the distribution system may be unsafe

# Well Water Sources

- Wellhead is a place where risk of potential contamination is high
- An improperly constructed well provides a point source for contaminants to enter



Slide courtesy of Keith Baldwin, NC A & T, and Garry Grabow, NCSU





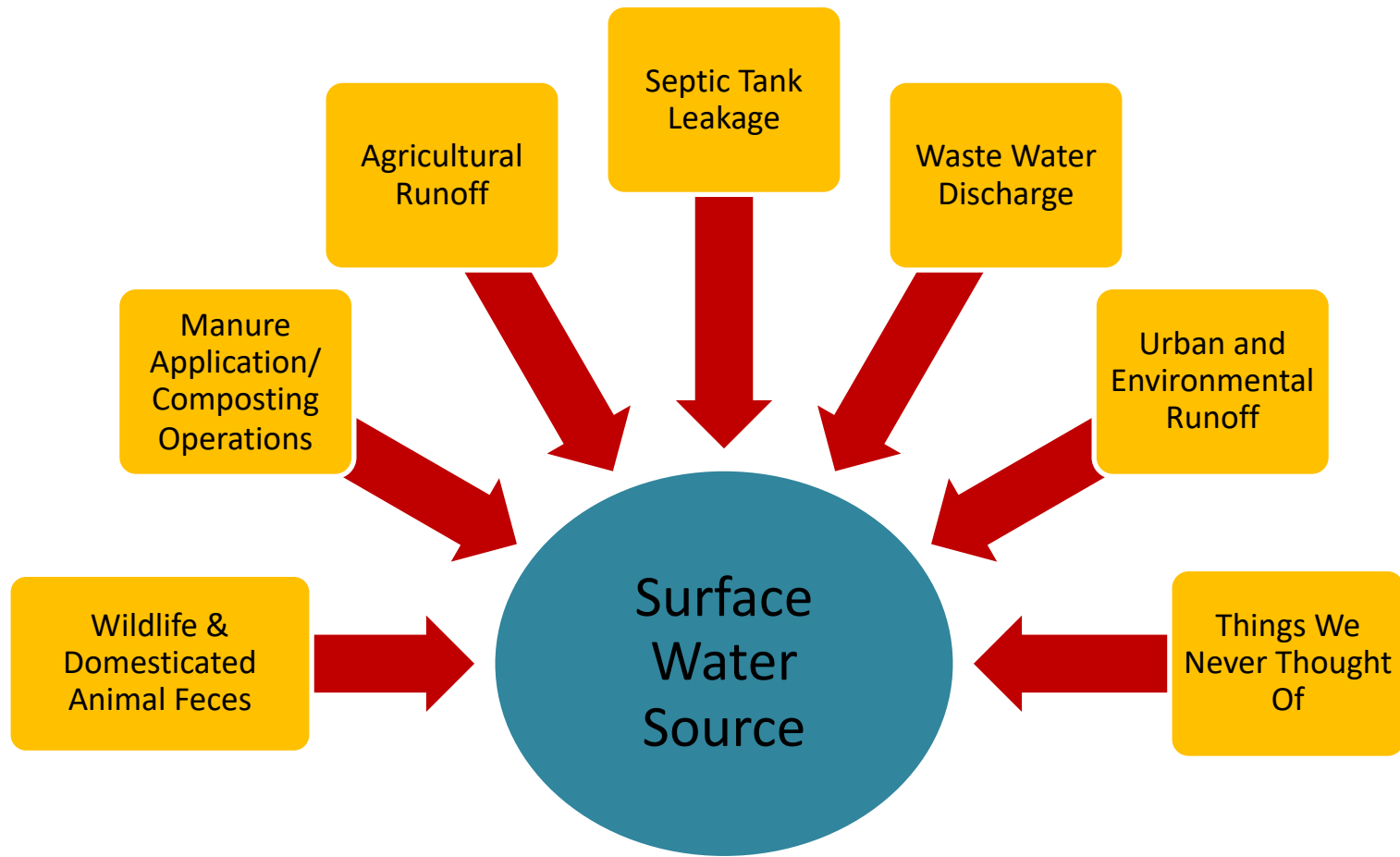
# Preventing Contamination of Ground Water Sources

- Inspect well to ensure it is in good condition
- Inspect wellhead to ensure it is properly capped and elevated
- Be sure land slopes away from wellhead to prevent runoff contamination into the well
- Install backflow prevention devices





# Potential Sources of Surface Water Contamination





# Preventing Contamination of Surface Water Sources

- Assess nearby land use and upstream water activities to identify risks
  - Work with neighbors and local watershed groups to understand and minimize identified risks
- Assess and address runoff risks
  - Develop diversion ditches, berms or containments to minimize environmental runoff, runoff from manure and compost piles, or runoff from livestock feeding areas
- Monitor and control animal access to irrigation water sources where practical (e.g., irrigation reservoirs)





# Methods of Irrigation

- Overhead (sprinkler)
  - Higher risk: A direct water application method resulting in contact with produce
- Flood (surface, furrow)
  - May avoid direct contact with produce
  - Consider risk of contact with contaminated soil during harvest or from splash
- Drip (trickle, subsurface, micro, under canopy)
  - Lower risk: Produce generally not in direct contact (except root crops), reduces foliar diseases, improves water use efficiency



# Pre-harvest Direct vs. Indirect Application

Indirect  
Contact

Irrigation  
(drip, furrow)  
Fertigation



Direct  
Contact

Overhead Irrigation  
Foliar Sprays  
Compromised Drip  
Tape  
Drip with root crops  
Frost Protection





# Agricultural Water Assessment

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## Crop characteristics

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- Frequency of rain or extreme weather that might impact the agricultural water system or might damage produce
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## Other factors

- Includes results of testing

**SUPPLEMENTAL MATERIAL**

# Evaluating Water Quality

- Testing is the only way to quantitatively evaluate the quality of the water
- Records become very important in the event of an outbreak investigation
- Document the results of each water test for comparison purposes
- Changes in results may help identify problems, not only for safety but also for production...

Slide courtesy of Keith Baldwin, NC A & T,  
and Garry Grabow, NCSU





# Less Water Contact = Lower Risk

**A key question for evaluation of risk is:**

“Is water applied using a direct water application method?”

- If answer is “never”, the risk from water is very low
- If answer is “yes”, the type of commodity, quality of the water and the timing of the application should be reviewed to assess risks





# Reassessment



- Conduct each year, **AND**
- Anytime there is a significant change in:
  - The agricultural water system(s)
  - Agricultural water practices
  - Crop characteristics
  - Environmental conditions
  - Other things likely to introduce a hazard
    - i.e. changing to a surface water source
- Evaluate: Impact of the changes, new hazards
- Record: Written determination of whether corrective or mitigation measures needed

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# Records

- Written records of the pre-harvest AgWA during initial assessment and reassessment, including:
  - Description of factors evaluated
  - Written determination of whether corrective or mitigation measures are needed
- Growers testing pre-harvest ag water as part of their assessment must maintain documentation related to sampling and testing procedures
- Supervisors must review and sign written pre-harvest AgWA and determinations

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# FDA Proposes Subpart E Compliance Dates

- FDA proposes compliance dates for harvest and postharvest agricultural water requirements

Business Size	<u>Proposed</u> Water Related Compliance Dates
All other businesses (>\$500K)	January 26, 2023
Small businesses (>\$250K-500K)	January 26, 2024
Very small businesses (>\$25K-250K)	January 26, 2025

**SUPPLEMENTAL MATERIAL**





# FDA Proposes Subpart E Compliance Dates

- FDA proposes compliance dates for proposed pre-harvest agricultural water requirements for covered produce other than sprouts

Business Size	<u>Proposed</u> Water Related Compliance Dates
All other businesses (>\$500K)	9 months after the effective date
Small businesses (>\$250K-500K)	1 year, 9 months after the effective date
Very small businesses (>\$25K-250K)	2 years, 9 months after the effective date

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# Assessing Water Systems Now

- Growers currently testing their water may continue to do so
- If not testing, growers may consider starting to test to better understand their water quality
- Follow Good Agricultural Practices (GAPs) to protect and maintain water quality
- **Develop water management strategies, such as water system surveys, to identify and reduce risks**

