Emergency Preparedness and Response

Presented by Chantal Wikstrom

Oregon Health Authority

DRINKING WATER SERVICES
Public Health Division

Oregon Health Authority

Agenda

- EPA cybersecurity requirements
- Drought implications
- Emergency preparedness
  - Equity
  - Coordination
- Emergency Response
  - Roles
  - Reporting emergencies
  - Emergency sources
  - Emergency trailers
  - Water hauling
- Survey form changes
- Review

EPA's cybersecurity requirements

In short…

- If a PWS uses Supervisory Control and Data Acquisition (SCADA) technology, then the state (or regulator) must evaluate the cybersecurity risks during a sanitary survey.
- If cybersecurity deficiencies are found then it should be included as a significant deficiency.

1. **PWS self-assessment or third-party assessment**
2. **State primacy agency assessment during sanitary survey**
3. **Alternative program (state EM or homeland security agency)**

EPA's cybersecurity requirements

What is DWS doing?

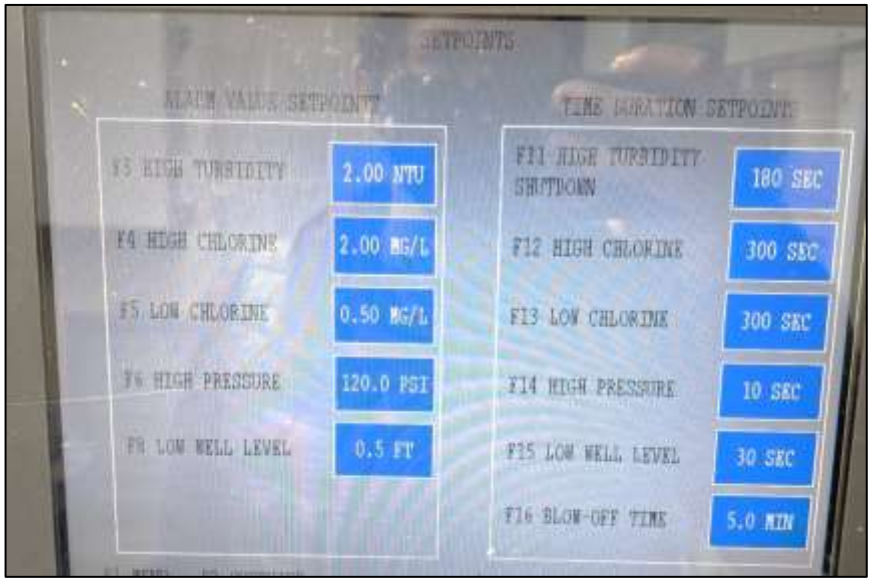
- Developing a plan to implement these requirements
  - considering PWS concerns, potential security risks, capacity and funding issues to correct significant deficiencies, and cybersecurity experience of state surveyors.

- **Other actions DWS is taking:**
  - Determining what third-party assessments should be allowed
  - Consulting with Oregon Department of Justice to determine if DWS has statutory authority
  - Determining significant deficiencies to propose for rule change
  - Public disclosure exemptions for cybersecurity significant deficiencies
  - Changes to the sanitary survey process
  - Outreach to PWSs

Cybersecurity Impacts

- Interruption or changes in supply, treatment, or distribution
- Overriding alarms or pump controls
- Theft of customer information
- Access to critical locations (GW or SW supplies)
- Loss of monitoring or automated processes

Potential public heath issues!



EPA's cybersecurity requirements

What can county partners do?

CYBERSECURITY & INFRASTRUCTURE SECURITY AGENCY

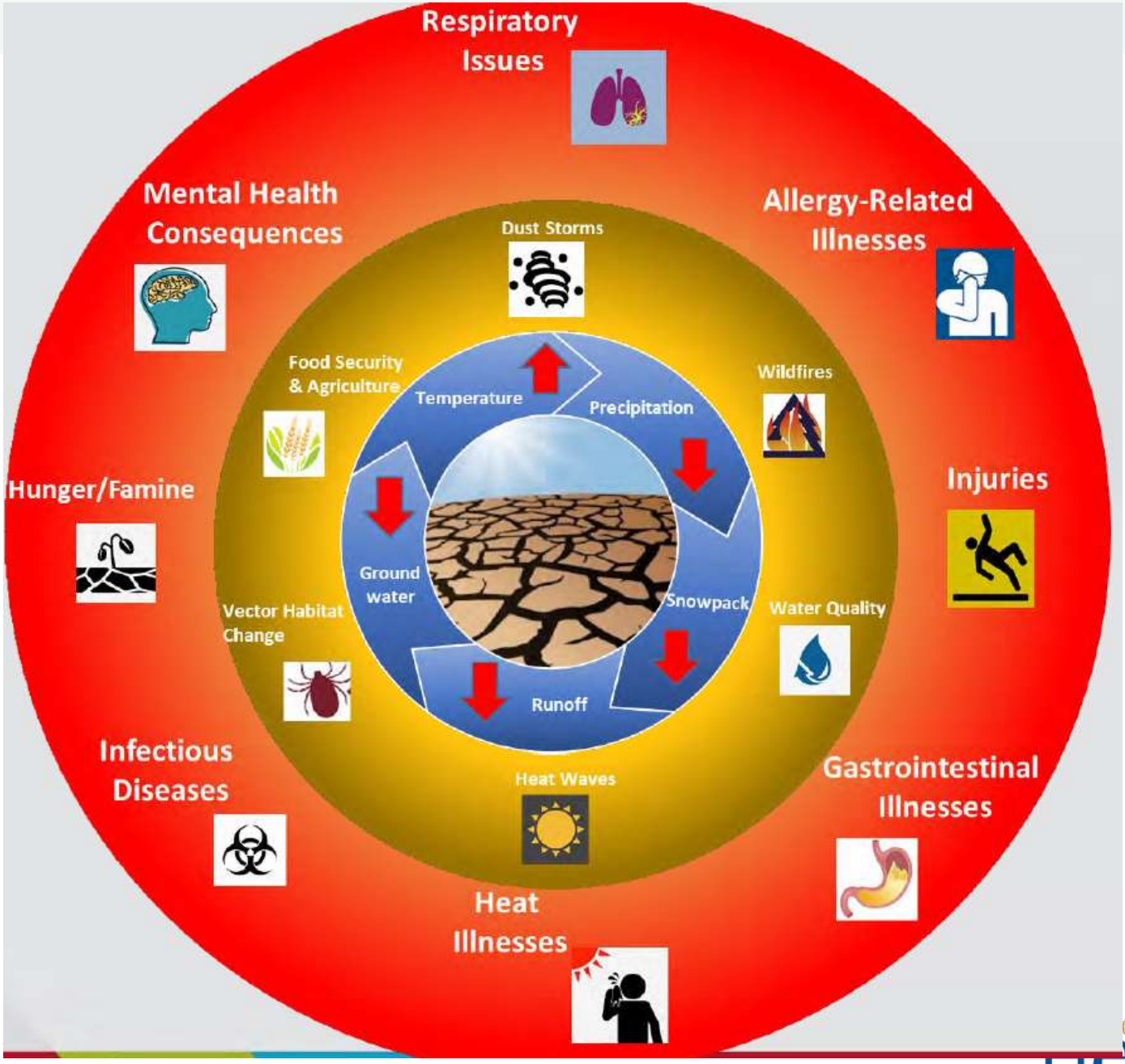
AMERICA'S CYBER DEFENSE AGENCY

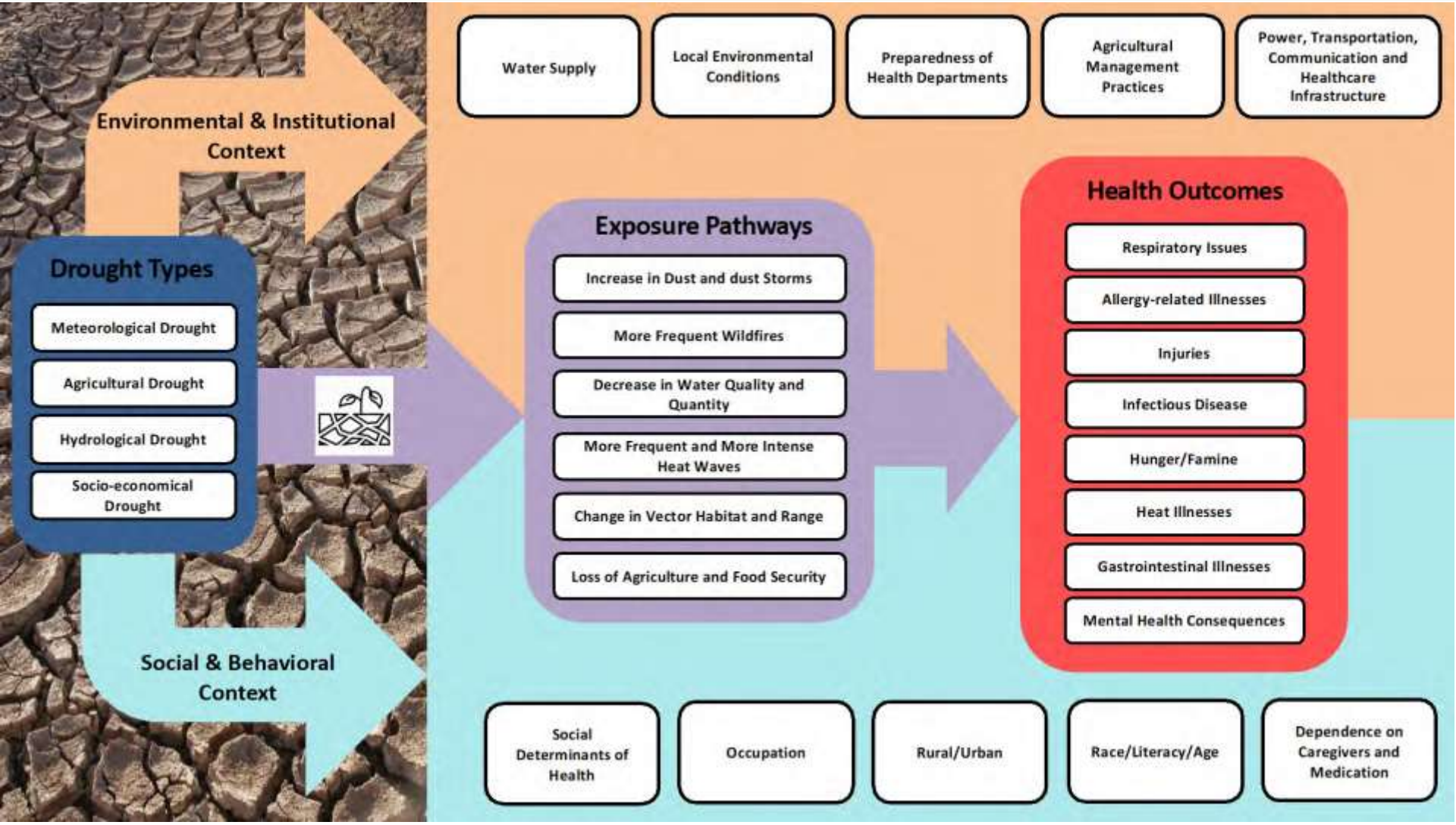
EPA

- Help PWSs report or respond to cybersecurity incidents
  - CISA's cybersecurity incident reporting form
- Encourage PWSs to sign up for FREE cybersecurity risk assessments
  - CISA Region 10: Leslie Ann Kainoa, leslie.kainoa@cisa.dhs.gov, (503) 462-5626
  - EPA's cybersecurity risk assessment
- Let PWSs know the requirements

Drought Implications

…It's complicated.


Respiratory Issues
Mental Health Consequences
Allergy-Related Illnesses
Dust Storms
Food Security & Agriculture
Wildfires
Temperature
Precipitation
Hunger/Famine
Injuries
Ground water
Snowpack
Vector Habitat Change
Water Quality
Runoff
Infectious Diseases
Heat Waves
Gastrointestinal Illnesses
Heat Illnesses


Environmental & Institutional Context
Water Supply
Local Environmental Conditions
Preparedness of Health Departments
Agricultural Management Practices
Power, Transportation, Communication and Healthcare Infrastructure
Drought Types
Meteorological Drought
Agricultural Drought
Hydrological Drought
Socio-economical Drought
Exposure Pathways
Increase in Dust and dust Storms
More Frequent Wildfires
Decrease in Water Quality and Quantity
More Frequent and More Intense Heat Waves
Change in Vector Habitat and Range
Loss of Agriculture and Food Security
Health Outcomes
Respiratory Issues
Allergy-related Illnesses
Injuries
Infectious Disease
Hunger/Famine
Heat Illnesses
Gastrointestinal Illnesses
Mental Health Consequences
Social & Behavioral Context
Social Determinants of Health
Occupation
Rural/Urban
Race/Literacy/Age
Dependence on Caregivers and Medication

Drought Implications

Drought occurs over extended time periods ranging from months to years, making it more difficult to assess its impacts on human health.

Drought is a disaster multiplier

- **Wildfires:** increases dry debris, changes regional climate, wildfire smoke and air quality, increases potential for wildfires
- **Extreme heat:** heat related illnesses, reduces water supply, compromises food supply
- **Water quality changes:** heavy rain events, turbidity spikes, increased nutrient concentration, warmer water may lead to rapid algal growth (HABs), may require additional treatment techniques

Leads to:

→ Increases customer demand
→ Costs for water system operations
→ Water supply issues
→ Infrastructure changes
→ Shortage of qualified staff
→ Emergency response and recovery costs

Drought Implications

Assessing the Impact of Drought on Arsenic Exposure from Private Domestic Wells in the Conterminous United States

Melissa A. Lombard,* Johnni Daniel, Zuha Jeddy, Lauren E. Hay, and Joseph D. Ayotte

Cite This: *Environ. Sci. Technol.* 2021, 55, 1822−1831

ABSTRACT: This study assesses the potential impact of drought on arsenic exposure from private domestic wells by using a previously developed statistical model that predicts the probability of elevated arsenic concentrations (>10 μg per liter) in water from domestic wells located in the conterminous United States (CONUS). The application of the model to simulate drought conditions used systematically reduced precipitation and recharge values. The drought conditions resulted in higher probabilities of elevated arsenic throughout most of the CONUS. While the increase in the probability of elevated arsenic was generally less than 10% at any one location, when considered over the entire CONUS, the increase has considerable public health implications. The population exposed to elevated arsenic from domestic wells was estimated to increase from approximately 2.7 million to 4.1 million people during drought. The model was also run using total annual precipitation and groundwater recharge values from the year 2012 when drought existed over a large extent of the CONUS. This simulation provided a method for comparing the duration of drought to changes in the predicted probability of high arsenic in domestic wells. These results suggest that the probability of exposure to arsenic concentrations greater than 10 μg per liter increases with increasing duration of drought. These findings indicate that drought has a potentially adverse impact on the arsenic hazard from domestic wells throughout the CONUS.

Emergency Preparedness

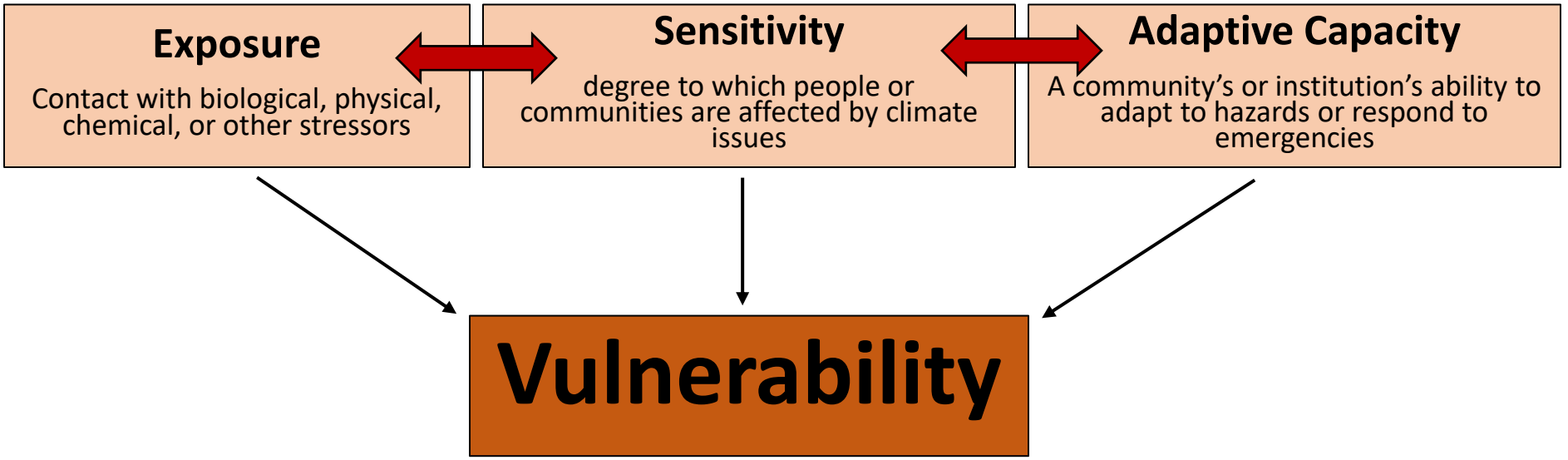
Emergency response is not effective model for emergencies.

Disaster preparedness helps reduce or eliminate the impacts of a hazard or disaster on a community.

Begin by identifying the risks and vulnerabilities that are most likely to impact your community.

Emergency Preparedness – Equity

Drought, climate conditions, and health outcomes are unevenly felt through certain communities.



Focus on prevention, preparedness, vulnerability, and equity.

Coordination

- Include the whole community
- Other programs within your public health department
  - Community health assessments
  - Food and lodging
  - Maternal or child health
- Local or county emergency managers
- Local community-based organizations
  - Soil and water conservation districts
  - Volunteer organizations
- Encourage consolidation or water system partnerships

Lane County
FIREWISE
Incentive Program

Coordination

Examples of DWS coordination:

- **Department of Environmental Quality** - source water protection
- **Oregon Water Agency Response Network** – trainings, disseminating information
- **Oregon Emergency Management** – preparedness and response activities, understanding water issues
- **Water Resources Department** – drought response and information sharing, well construction
- **Cybersecurity and Infrastructure Security Agency** – offering water system vulnerability assessments and technical assistance

Emergency Roles

Drinking Water Services' roles:

- Collect water system updates
- Report out to responding agencies
- Help with resources requests if needed Public messaging assistance
- Technical assistance
- Funding source assistance
- Participate in Oregon Health Authority or State Incident Management Team

What Drinking Water Partners can do:

- Collect water system update
- Send updates to DWS
- Connect and work with emergency managers
- Assist with water system resource requests
- Technical assistance

Emergency Response – Reporting Emergencies

Cybersecurity

- CISA's cyber attack reporting form
- CISA works with EPA and FBI to investigate and helps water systems respond to the attack

Any other emergency (water supply, drought, water hauling, wildfire impacts, flooding, etc.)

- Let your DWS contact person know the status and if resources are needed
- System requests assistance from other ORWARN members
- Request assistance through local or county emergency manager
- If the local or county emergency manager cannot fulfill, the request gets sent up to the state

Emergency Response – Emergency Sources

Newly connected sources

- Sources not connected to the existing infrastructure must go through the plan review process and have approval before use
- If an emergency arises, contact the plan review team
  - Advisory may be needed

Temporary interties

- Connections with other nearby systems can help alleviate water supply issues
- Must go through plan review process and have approval

Existing emergency GW sources

- Before using – take steps to inspect the source, controls, treatment system, shock chlorinate, and flush.
- Startup tips for GW wells

Emergency Response – Emergency Trailers

- Portable water treatment, storage, or distribution trailers in the event a PWS is unable to deliver water to distribution system
- Unregulated and does not require plan review
- Oregon Emergency Management (OEM) SPIRE Grant

BMPs

- Ensure proper filtration of surface water supplies
- Proper disinfection of the water
- All equipment coming into water is NSF Standard 61 or equivalent
- Consider issuing a boil water advisory for customers using water from these systems
- See Emergency DW Facilities Guidelines for more detail

Emergency Response – Water Hauling

- Unregulated
- Both haulers and PWS receiving hauled water should follow BMPs

BMPs

- Verify the source - use water from another PWS
- Use a food-grade tank or one dedicated for water
- Ensure proper inspection, cleaning, and disinfection of tank
- Measure free-chlorine residual upon arrival of the tank
- Ensure presence of an airgap to prevent backflow
- See DWS Water Hauling Guidelines for more detail

Survey Changes

Resiliency

- Does system coordinate with local emergency management agency?
- Are mutual aid agreements in place? (with ORWARN or other)
- Are there frequent power outages?
- Are there drought, water shortage, or water conservation plans in place?
- Describe water supply or drought issues the system has experienced.
- Describe actions taken by the system in response to the supply or drought issues.

Data Collection

- Sharing results with OEM and other agencies to help systems prepare and find out where to focus resources.
- Helps DWS guide where to push resources, guidance, capacity development, funding.
- Review changes over time.

Review

- Cybersecurity requirements for sanitary surveys are coming soon.
- Drought and its impacts are complicated and develop over time.
- Drought can lead to more intense emergencies.
- Emergency response is not sustainable, **encourage water systems to focus on preparedness**.
- Equity and coordination is important in our work – **form connections and collaborate!**

Thank you!

Questions or feedback welcome:
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