



# Connecting Water Utilities and Emergency Management Agencies

November 14, 2019

1:00 – 2:00 pm EST

# How to Participate

## Interactions

- Ask questions in the Questions/Chat box.
- Polling questions.

## Troubleshooting

- For help, contact [wsdwebinarsupport@cadmusgroup.com](mailto:wsdwebinarsupport@cadmusgroup.com) or call 1 (617) 673-7016.

## Notes

- All participants are in listen-only mode.
- Following the webinar will be a brief survey and an email with a PDF of the slides.

# Agenda



**Introduction**



**Connecting Emergency Management Agencies and Water Utilities**



**Portland Water Bureau and Emergency Management**



**Q&A**



# Preparedness for All-Hazards Incidents

Water and wastewater utilities face a number of threats:

- ▶ Hurricanes
- ▶ Tornadoes
- ▶ Drought
- ▶ Contamination
- ▶ Wildfires
- ▶ Earthquakes





## Connecting Emergency Management Agencies and Water Utilities

Lauren Wisniewski

# Water Sector Challenges



# Consequences of Water and Wastewater Service Loss

WATER & WASTEWATER: LOSS OF SERVICE HAS MAJOR PUBLIC HEALTH AND ECONOMIC IMPACTS



**Critical health services threatened** as hospitals are forced to close.

**Limited or no water available for fire suppression**

**People are forced to evacuate homes** due to loss of water for drinking and sanitation.

**Schools, offices, and government facilities are shut down** resulting in limited services and decreased productivity.

**Stores, restaurants, and other businesses are forced to close**, causing lost revenue that impacts local economies.

**Manufacturing and commercial operations curtailed** due to loss of water for cooling and other processes.

# Best Practices

1. Build Relationships
2. Coordinate Planning
3. Share Emergency Capabilities
4. Develop Joint Messages
5. Issue Access Cards
6. Know when to Involve Law Enforcement





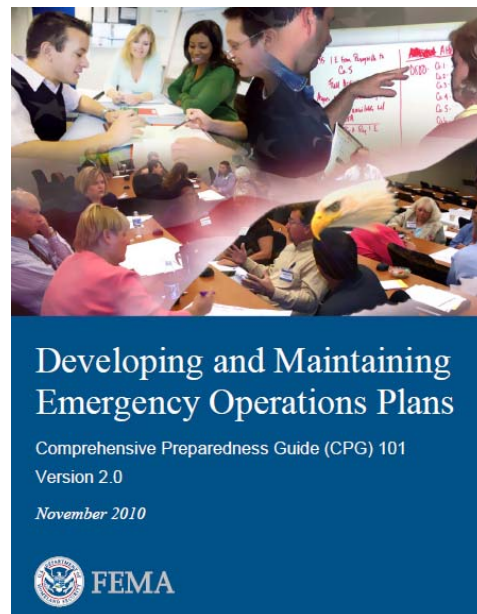
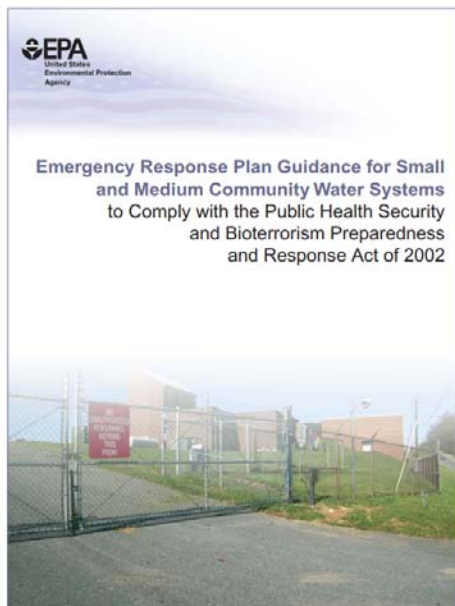
# 1. Build Relationships

- Share contact information
- Attend each other's trainings and exercises
- Tour water utilities
- Give water utilities access to Emergency Operations Center



## 2. Coordinate Planning

- Emergency Response Plans
- Emergency Operations Plans
- Hazard Mitigation Plans
- Local Emergency Planning Committee



# Case Study: Funding through Coordinated Planning

*City of Phoenix*

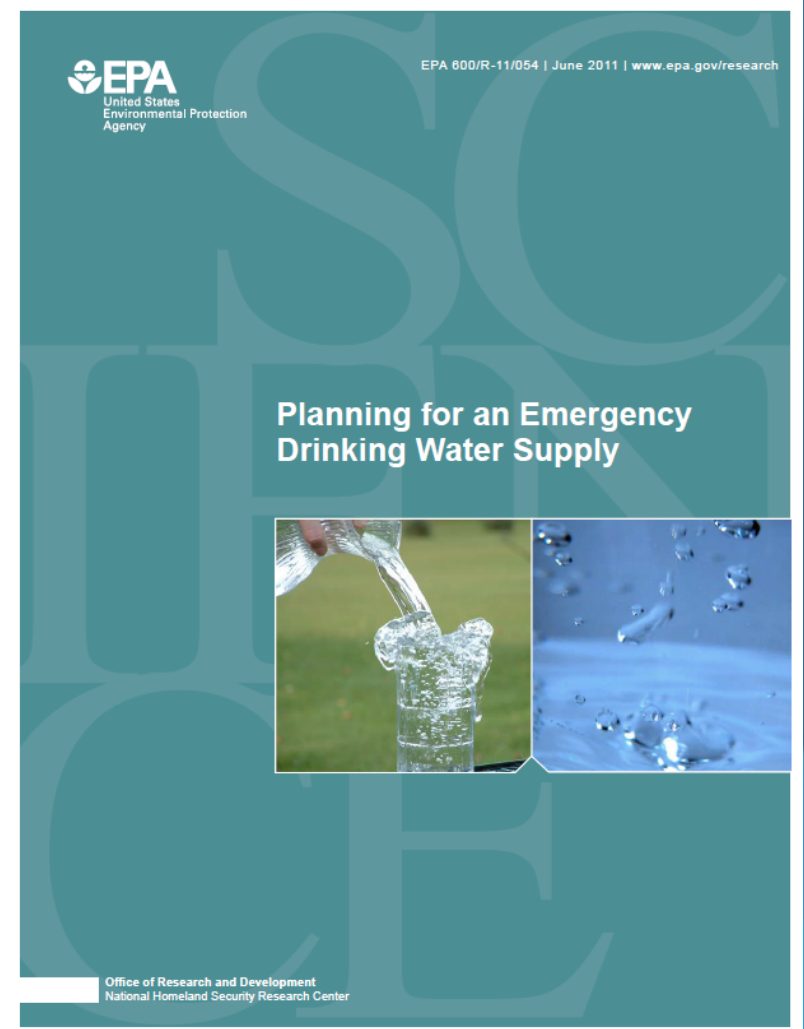
*Maricopa County Department of Emergency Management*

- City's wastewater treatment at risk of severe erosion
- Coordinated to receive funding from FEMA's Hazard Mitigation Grant Program



# Emergency Water Supply Planning

- Water utilities need to coordinate with emergency management agencies on emergency water supply plans
  - Responsibilities
  - Source, treatment, distribution



# California Emergency Drinking Water Guidance

- Provides emergency drinking water procurement and distribution planning process guidance.
- Assists local utilities and emergency response organizations to develop local plans for activating a Task Force for the distribution of emergency drinking water.
- Identifies state level programs and resources related to emergency drinking water.



## Emergency Drinking Water Procurement & Distribution Planning Guidance

May  
2014

Edmund G. Brown Jr.  
Governor  
State of California

Mark Ghilarducci  
Director  
Governor's Office of Emergency Services

### 3. Share Emergency Capabilities

- Emergency Management Agency can share information on:
  - Emergency Operations Center
  - Resource request process
- Water Utilities can share information on:
  - Back-up power resource and needs
  - Mutual aid agreements



# Water & Wastewater Agency Response Network (WARN)

- Network of utilities helping utilities
  - 50 WARNs nationwide
- Utilities organized within a state to facilitate the exchange of resources after an incident



## 4. Develop Joint Messages



**Benefits: Consistent messaging for communities, broader message distribution, less false information**



# Case Study: Chapel Hill, NC

- Fluoride overfeed at water treatment plant
- Utility exercised its interconnect
- 12-inch main break the following day led to EOC activation
- All key players issued “Do Not Use, Do Not Drink” notice
- Customers reduced consumption by 37 percent



## 5. Issue Access Credentials



**Benefit: Quicker community recovery**

# Crisis Event Response and Recovery Access (CERRA) Framework:

An Emergency Preparedness Access Implementation and Best Practice Guide



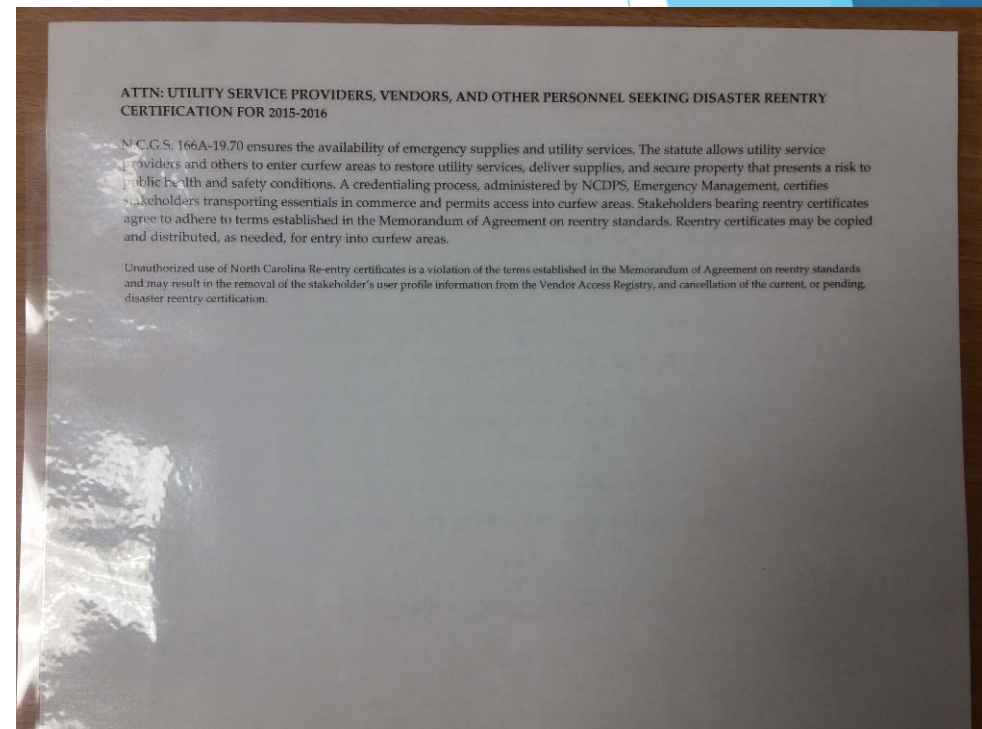
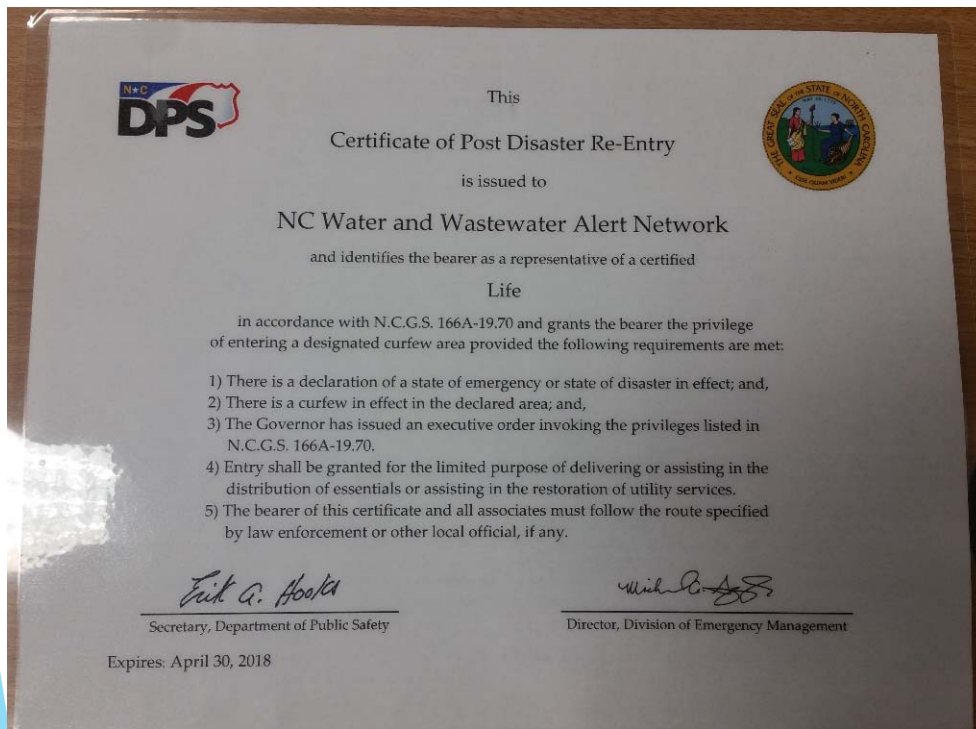
Homeland  
Security

March 2018

# Water Sector Operational Challenges

1. Public works employees often not seen as first responders
2. Water utility assets are often spread across a wide area
3. Coordination of water response is a challenge because needs are spread across multiple Emergency Support Functions (ESFs) – 3, 4, 7 and 8
4. Water utilities may require the delivery of chemicals, fuel, and generators

# North Carolina Certificate of Post Disaster Re-Entry



## 6. Know when to Involve Law Enforcement

- Threat Identification
- Information Sharing
- Asset Protection
- Investigation
- Credentialing



# Case Study: Vandalism Incident



# Vandalism Incident

## Parties involved

- Water utility
- Law enforcement
- State primacy agency

## Security Improvements

- Motion cameras
- Intrusion alarms
- Improved signage





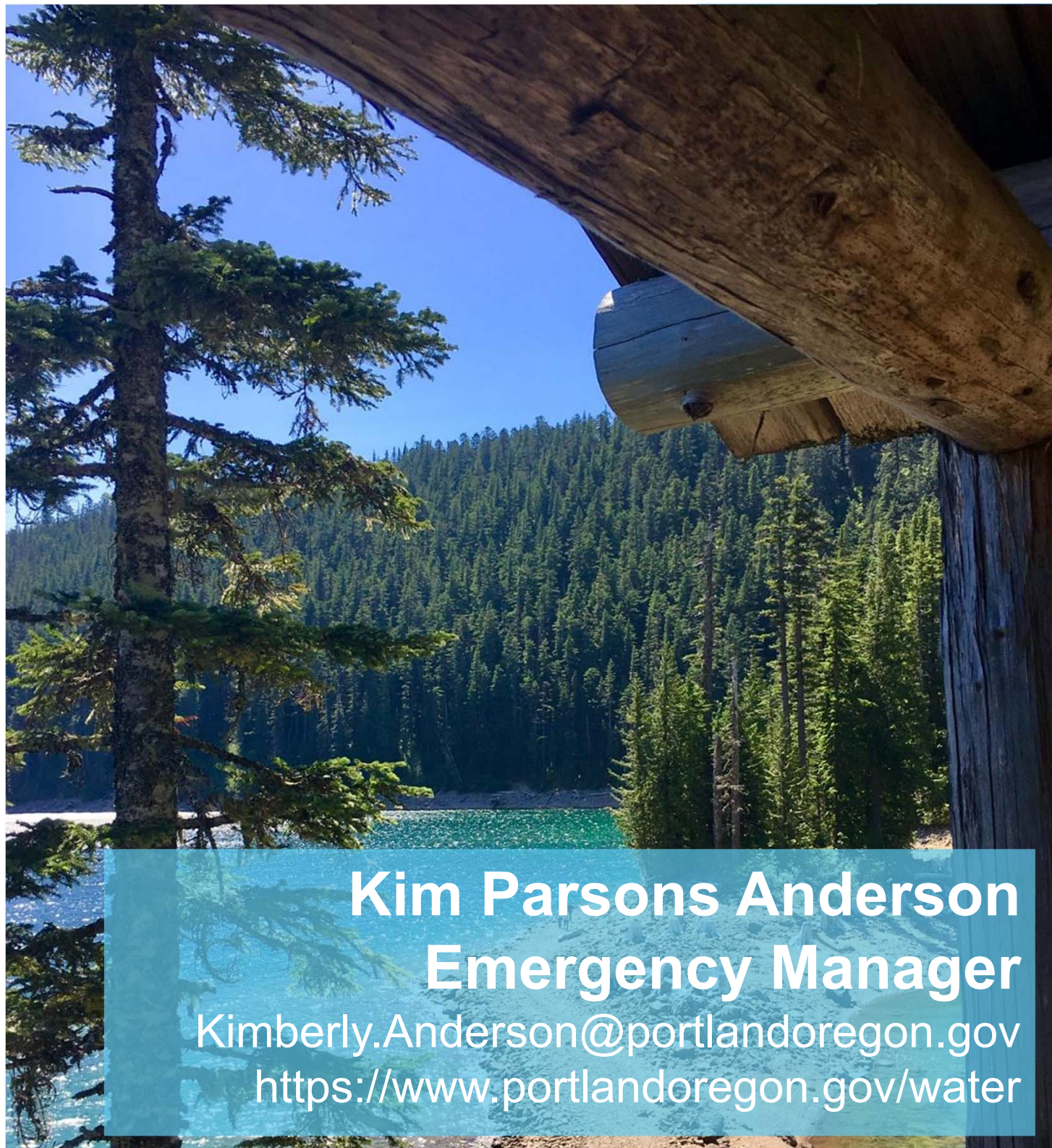
# Portland Water Bureau

Connecting Water Utilities &  
Emergency Management  
Agencies










**Kim Parsons Anderson**  
**Emergency Manager**

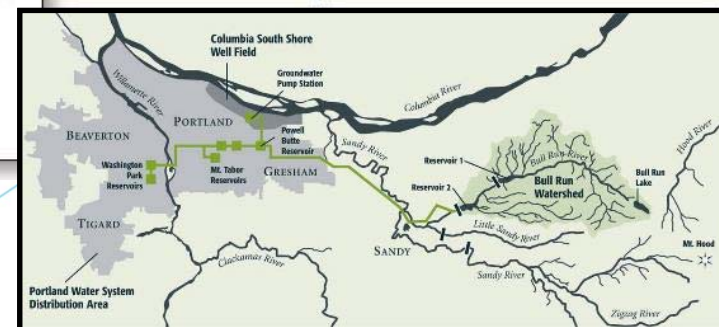
Kimberly.Anderson@portlandoregon.gov  
<https://www.portlandoregon.gov/water>



# Portland's Water System



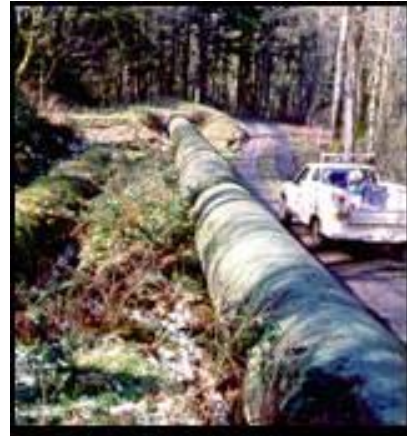
	Water Storage Facility		Portland Water System Distribution Area
	Water Supply Pipes		Water Source
	Water Treatment Facility		Protected Area
	Dam		



# Portland's Water System



2 Dams



100+ miles of large pipe



2,300+ miles of Smaller dia. pipe



66 Tanks and Reservoirs



14,000+ hydrants



50,000+ valves



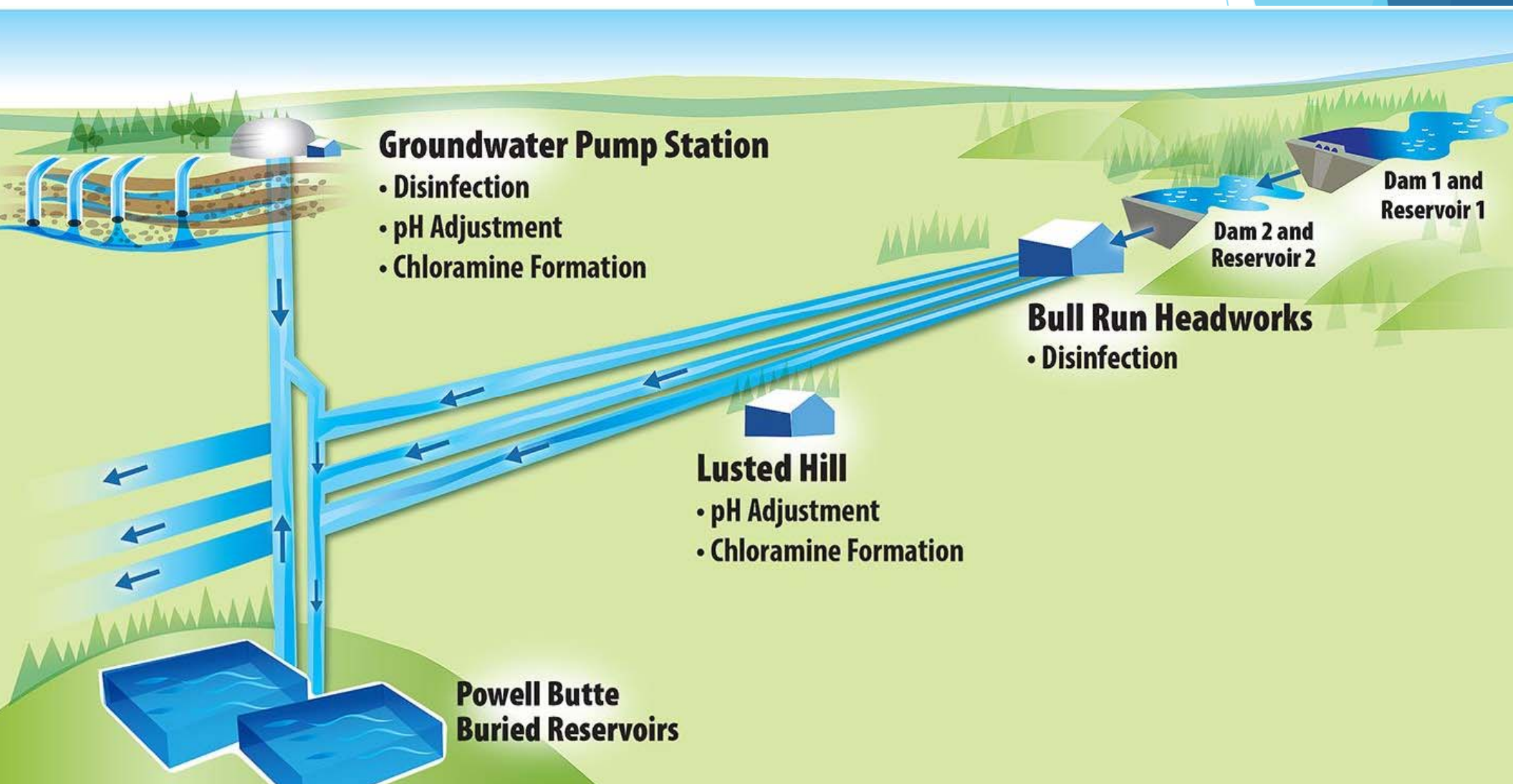
180,000 meters



41 pump stations

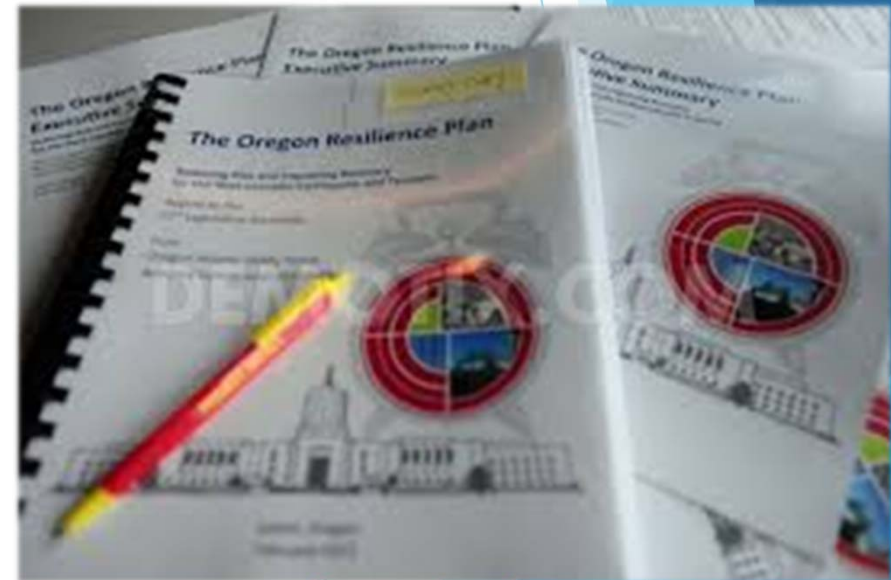
# Water Treatment & Supply Features

- Rain dominated surface water supply
- Federally protected
- No public access



# Risks & Oregon Resilience Plan (ORP)

- Specifies likely impacts of a magnitude 9.0 Cascadia Subduction Zone (CSZ) earthquake
- Defines target states of recovery goals to be met within 50 years
- Recommends changes in practice and policy
- [http://www.oregon.gov/OMD/OEM/osspace/docs/Oregon Resilience Plan Final.pdf](http://www.oregon.gov/OMD/OEM/osspace/docs/Oregon%20Resilience%20Plan%20Final.pdf)



# ORP Target States of Recovery

KEY TO THE TABLE

TARGET TIMEFRAME FOR RECOVERY:

Desired time to restore component to 80–90% operational

Desired time to restore component to 50–60% operational

Desired time to restore component to 20–30% operational

Current state (90% operational)

G
Y
R
X

TARGET STATES OF RECOVERY: WATER & WASTEWATER SECTOR (VALLEY)											
	Event occurs	0–24 hours	1–3 days	3–7 days	1–2 weeks	2 weeks–1 month	1–3 months	3–6 months	6 months–1 year	1–3 years	3+ years
Domestic Water Supply											
Potable water available at supply source (WTP, wells, impoundment)		R	Y		G			X			
Main transmission facilities, pipes, pump stations, and reservoirs (backbone) operational		G					X				
Water supply to critical facilities available		Y	G				X				
Water for fire suppression—at key supply points		G		X							
Water for fire suppression—at fire hydrants				R	Y	G			X		
Water available at community distribution centers/points			Y	G	X						
Distribution system operational			R	Y	G				X		

(To be continued on next page)

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Y
R
X

	Event occurs	0–24 hours	1–3 days	3–7 days	1–2 weeks	2 weeks–1 month	1–3 months	3–6 months	6 months–1 year	1–3 years	3+ years
Wastewater Systems											
Threats to public health & safety controlled			R	Y		G			X		
Raw sewage contained & routed away from population		R		Y			G		X		
Treatment plants operational to meet regulatory requirements					R			Y	G		X
Major trunk lines and pump stations operational					R		Y	G			X
Collection system operational							R	Y	G	X	

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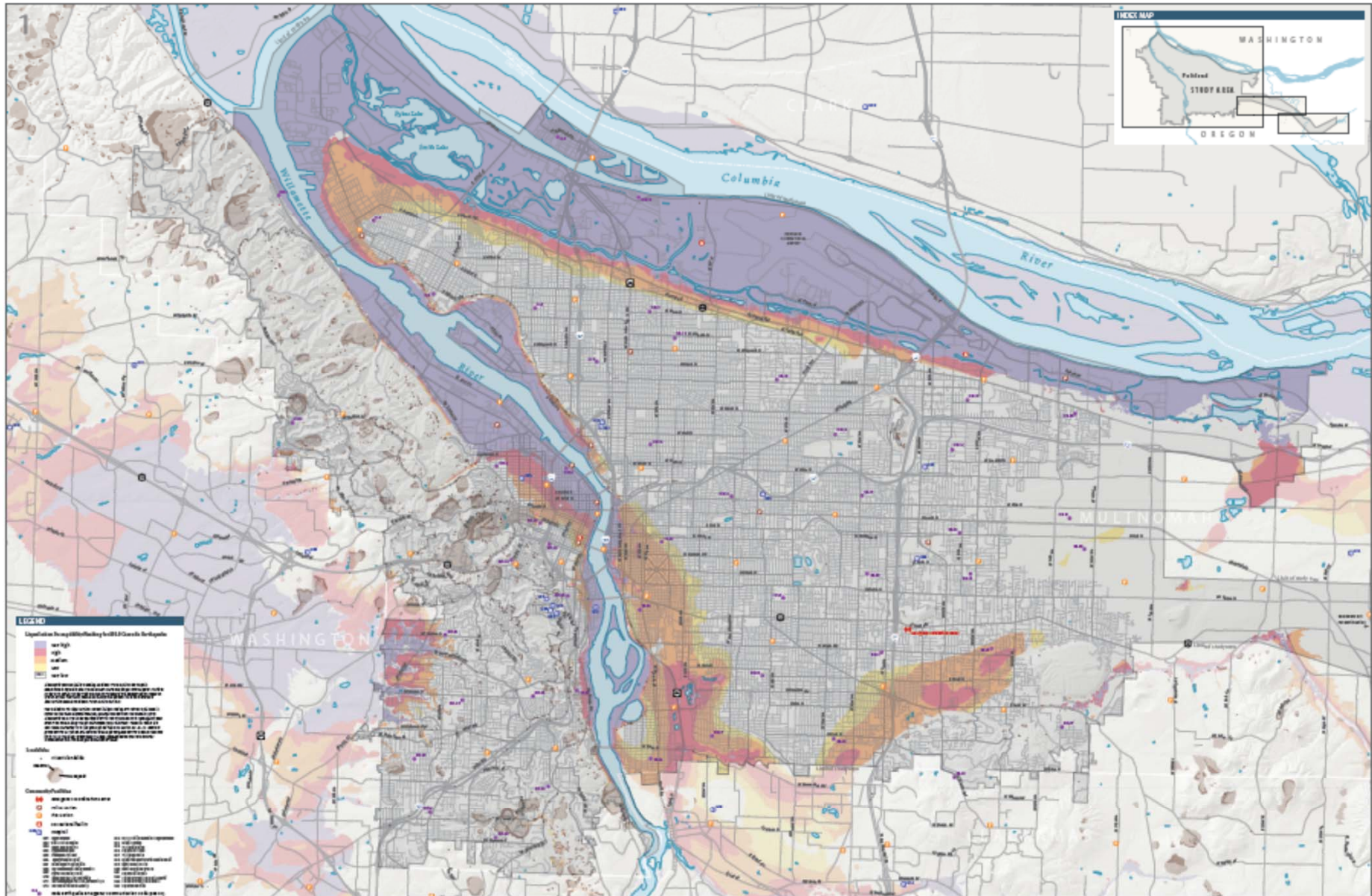
# 2017 Water System Seismic Study

Complies with the Oregon Resilience Plan

- Complete a seismic risk assessment of PWB's water system.
- Produce an infrastructure mitigation plan to meet or exceed the water recovery goals (target states of recovery) listed in the ORP.



# Liquefaction Susceptibility for M9.0 Cascadia Earthquake



### LEGEND

Liquefaction Susceptibility for M9.0 Cascadia Earthquake

Very High  
High  
Medium  
Low  
Very Low

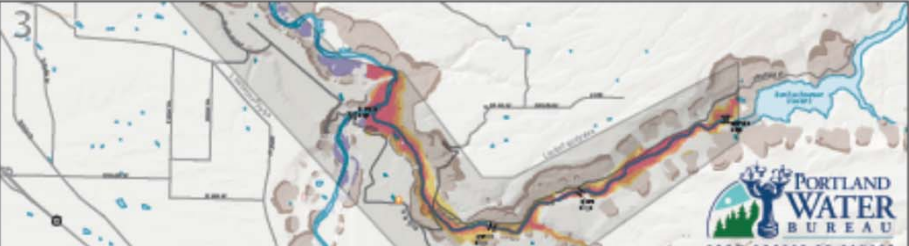
Waterways  
- mainstem  
- tributary

City Limits  
- Washington  
- Multnomah  
- Clatsop

Other Features  
- major roads  
- rail lines  
- airports  
- parks  
- schools  
- hospitals  
- government buildings  
- industrial areas  
- residential areas  
- commercial areas  
- utility lines  
- power lines  
- gas lines  
- water lines  
- sewer lines  
- stormwater lines  
- telecommunications lines  
- fire hydrants  
- fire stations  
- police stations  
- fire stations  
- police stations  
- fire stations  
- police stations

Map Scale  
1:50,000

Map Date  
2018





# Causes of Damage due to Seismicity

## 1) Permanent Ground Deformation

- Liquefaction
- Lateral Spreading
- Dynamic Slope Instability (Landslides)
- Surface Rupture (study assumes it will not occur)

## 2) Seismic Wave Propagation



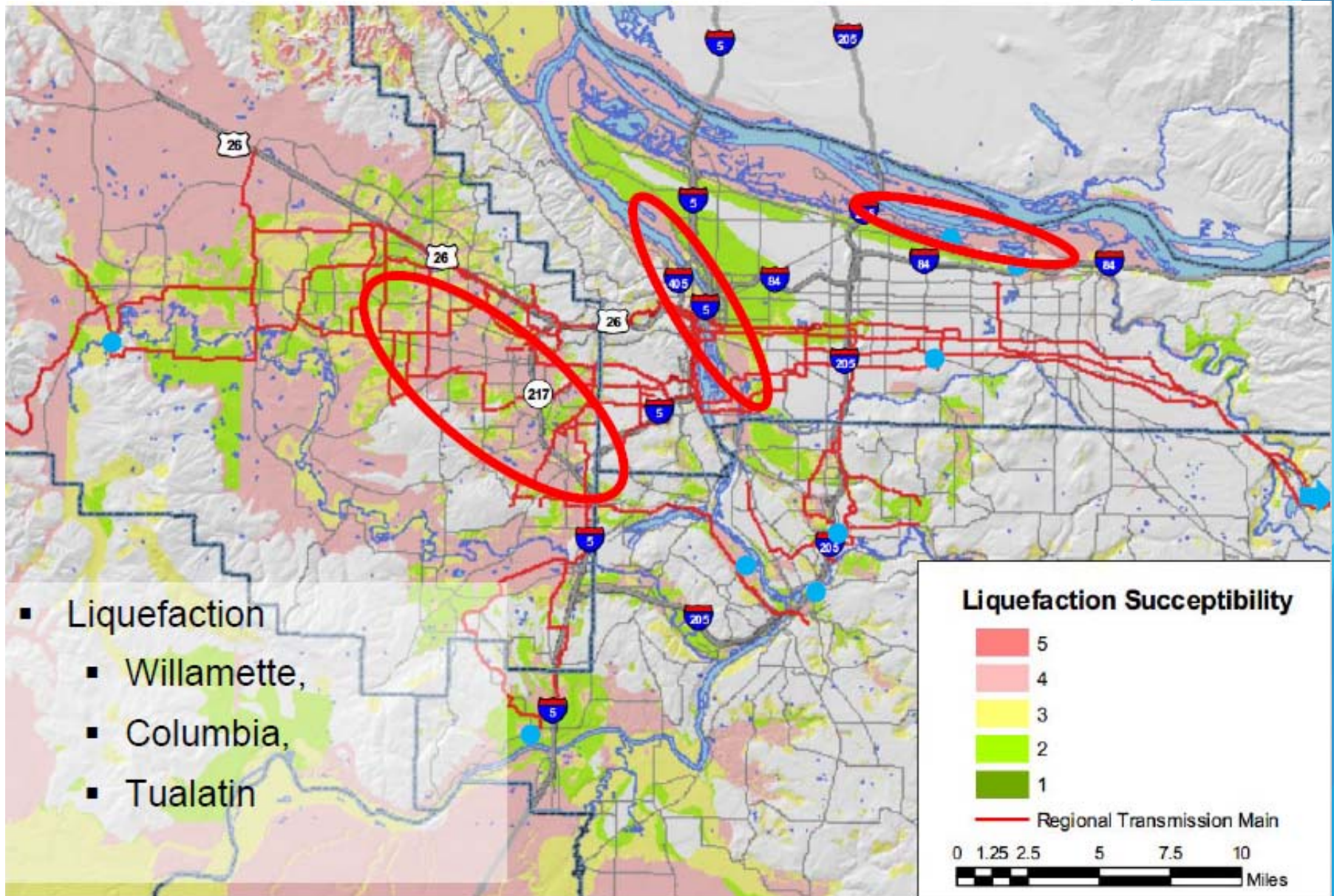
# Liquefaction & Lateral Spreading

- Occurs due to strong ground shaking
- In saturated soil profiles with significant sand content
- Results in a semi-fluid state
- Causes loss of soil strength and bearing capacity



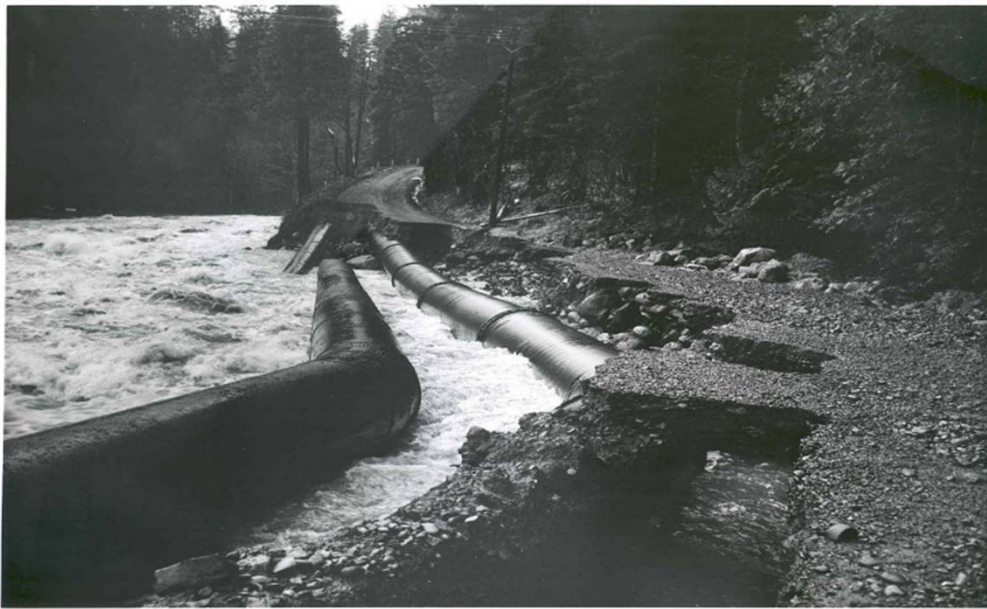
# Liquefaction

Industrial, Commercial, Fuel Storage, Transportation Routes



# Earthquakes are not the only Vulnerability

System has been subjected to significant hazard events in its 100-year history



1964 Headworks Floods



1996 Headworks Flood

# Emergency Response & Repair Plans

## Target States of Recovery

- Harden System
- Repair Capabilities
  - Internal Resources
  - Repair Times
  - Mutual Assistance
  - Emergency Contracts
- Operational Changes
- Multiple Resilience Projects
- Short and Long Term Upgrades and Replacement Projects

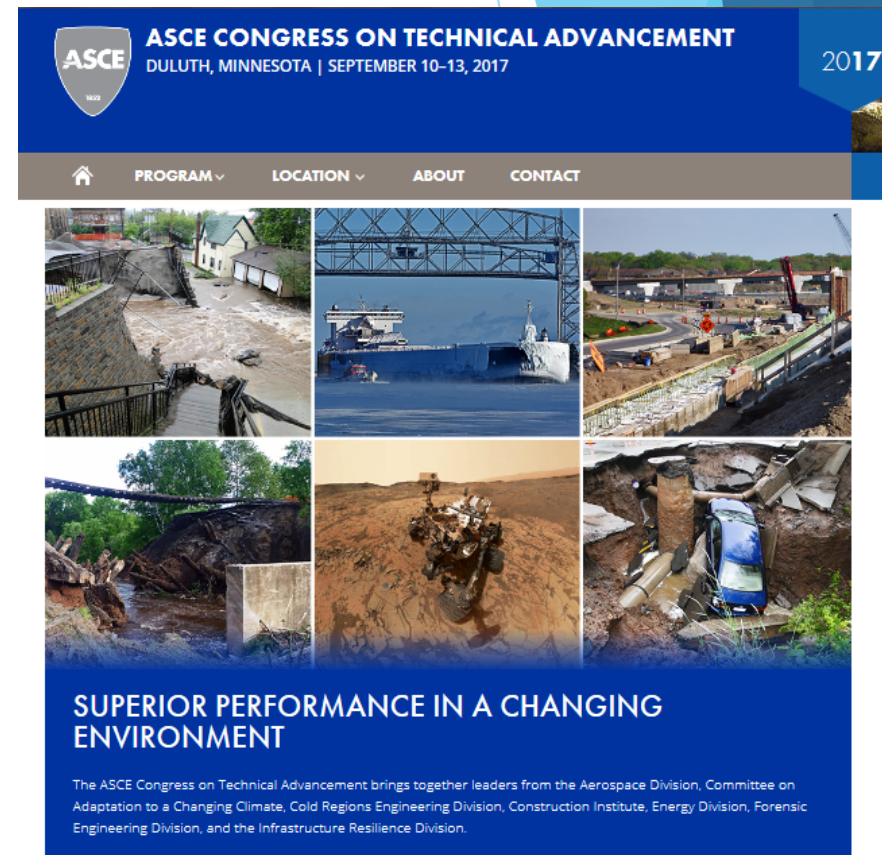


# Portland Water Bureau Continuity

## Case Study: Continuity of Operations Plan vs Business Continuity Plan

*The City of Portland Water Bureau analyzed business continuity planning guidelines, and expanded on the bureau's Continuity of Operations Plan in conducting the Case Study.*


*By publishing this case study, it is hoped that other utilities will be inspired to follow and further transform themselves into resilient organizations.*



ASCE CONGRESS ON TECHNICAL ADVANCEMENT  
DULUTH, MINNESOTA | SEPTEMBER 10-13, 2017

2017

PROGRAM ▾ LOCATION ▾ ABOUT CONTACT



**SUPERIOR PERFORMANCE IN A CHANGING ENVIRONMENT**

The ASCE Congress on Technical Advancement brings together leaders from the Aerospace Division, Committee on Adaptation to a Changing Climate, Cold Regions Engineering Division, Construction Institute, Energy Division, Forensic Engineering Division, and the Infrastructure Resilience Division.

# Plan Now – Using BCP or COOP



It CAN happen here... **Left: India**      **Right: Colorado**

**continuity planning = resilience**

# PWB Emergency Management Program



- 2 Emergency Managers
- 97 Emergency Responders
- 7 Trained City-Wide Emergency Coordination Center Participants
- 6 Damage Assessment Teams, 4 Persons per Team
- DAT Collaboration to Train-up Responders in Other Bureaus
- DATs include PWB Operating Engineers, Maintenance Staff
- Trained Section Staff:
  - Incident Command
  - Planning
  - Logistics
  - Finance
  - Operations
  - EOC Staff




# Employee Preparedness is Critical

Employees who are Prepared at Home are Better able to Report to Work



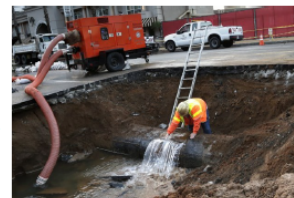
# Training and Exercise – Responders are Ready



 **EPA**  
Water Utilities and Emergency Services Coordination Workshop  
Portland, OR • February 15, 2017

The U.S. EPA Water Security Division will be hosting this free one-day workshop designed to build on the Cascadia Rising Exercise. It will include presentations from various affected entities, including water and wastewater, emergency management, fire and law enforcement, and transportation on their roles and responsibilities following a catastrophic event. It will also include a facilitated discussion involving an emergency response to a wide scale emergency that impacts numerous critical infrastructure facilities.

The workshop aims to increase coordination and communication and improve understanding of critical priorities between water utilities and emergency management, fire and law enforcement, transportation and other emergency response agencies at all levels of government. The City of Portland Water Bureau and Environmental Services, ORWARN, the Regional Water Providers Consortium, and the Portland Bureau of Emergency Management are assisting U.S. EPA to plan and conduct this workshop.



For more information, please contact Lauren Wisniewski of the EPA at 202-564-2918 or [lwisniewski@epa.gov](mailto:lwisniewski@epa.gov) or Tom Mc

# Training in Action: Eagle Creek Fire



# PWB is Ready to Help: New Orleans 2005 – After Katrina



1000's of pipe breaks and other severe utility damage



500 utility vehicles destroyed by flooding – No way to repair

# PWB – Active ORWARN Members

AFTERNOON PROGRAM				
<i>Attendees may select either session within Tracks 1 or 2</i>				
Track 1 - Planning				
2:30 P.M. - 3:30 P.M.	Business Continuity Planning for Your Water/Wastewater Utility	1.0 Hr. ORW - 0.1 ORWW - 0.1 WAW - 0.1 WAWW - 0.1	Teresa Elliott, PWB Kim Anderson, PWB	Cascade A
3:30 P.M. - 3:45 P.M.	<b>Break</b>			
3:45 P.M. - 4:45 P.M.	Public Education & Preparedness for a Water Emergency	1.0 Hr. ORW - 0.1 WAW - 0.1 WAWW - 0.1	Rebecca Geisen, Regional Water Providers Consortium	Cascade A
Track 2 - Recovery				
2:30 P.M. - 3:30 P.M.	Pacific NW Seismicity	1.0 Hrs/0	Tim Collins, PWB	Cascade B
3:30 P.M. - 3:45 P.M.	<b>Break</b>			
3:45 P.M. - 4:45 P.M.	A Community Without Drinking Water	1.0 Hr ORW - 0.1 WAW - 0.1	Adrianna Hummer, IDWARN	Cascade B Conference Center Lobby



ORWARN Chair Chris Wanner, PWB Director of Operations



# ORWARN Training & Exercise



# Participate in Regional Water Providers Consortium Emergency Planning Committee



[www.regionalh2o.org](http://www.regionalh2o.org)

# Support Consortium's Emergency Preparedness Campaigns

- Preparedness Month
- Campaign Includes:
  - Television (4 weeks)
  - TriMet bus ads (4 weeks)
  - Website
  - Social media
  - How to videos
  - Print materials
  - Events





# Assist Consortium in Planning & Exercises

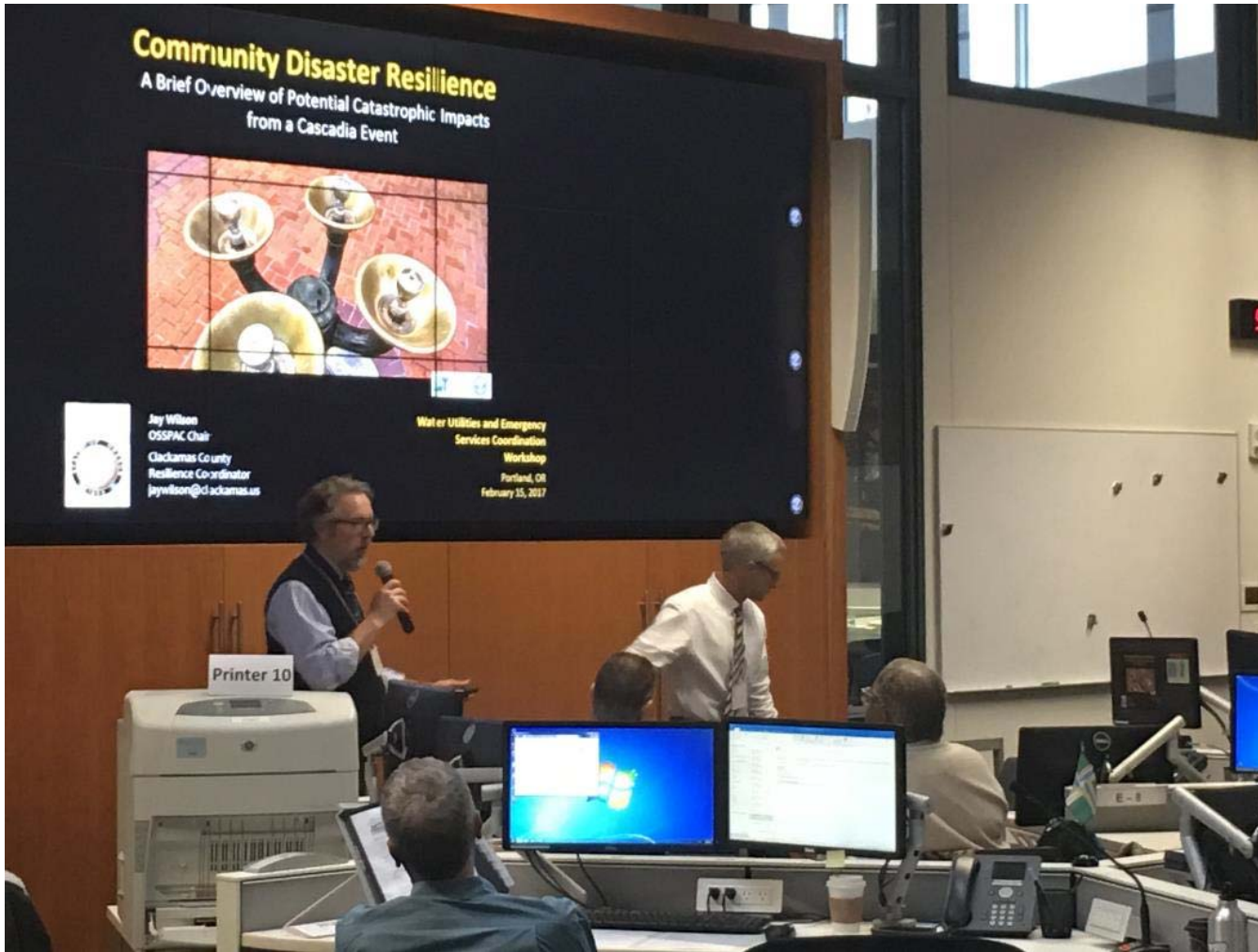
2019 Regional table top exercise included 90 participants from water providers, county health and emergency management, state and other partners



**BLOOM DOOM**  
**TABLE TOP EXERCISE**  
2019

Presented by the Regional Water  
Providers Consortium

# Collaboration & Partnerships



Multnomah County



# 1. Build Relationships. PWB &:

- **Portland Bureau of Emergency Management (PBEM):**
  - Co-located, share offices, public and meeting spaces
  - Collaborate on emergency response
  - Plan, train and exercise together
- **Bureau of Environmental Services (BES):**
  - Share plans, brain storm solutions
  - Formed Portland Emergency Planners
  - Collaborate; working together on planning, and Damage Assessment Teams
- **Environmental Protection Agency:**
  - Plan and host workshops, exercises
  - Collaborate on writing, webinars
- **City of Seattle Public Utilities:**
  - Collaborate on mutual planning interests – AWIA law compliance, risk analysis, others
  - Answer system and technical questions



## 2. Coordinate Planning. PWB &:

- **Portland Bureau of Emergency Management**
  - Actively engage in emergency response planning and coordination
  - Review and edit each other's plans
  - Train and exercise together
- **Emergency Management Steering Committee**
  - Ongoing planning, discussion, plans
  - Recommend actions for leadership – Disaster Policy Council
  - Meet as Continuity of Operations (COOP) Group to analyze and update COOP plans
- **Multnomah County**
  - Attend and participate in plan update meetings – Natural Hazard Mitigation Plan, Community Wildfire Protection Plan, Debris Management Plan
  - Co-locate at PBEM ECC for response to actual events.
  - Cooperate with and send PWB employees to Training
  - Host Trainings at ECC/EOC
- **Clackamas County**
  - Coordinate messaging for Bull Run Dam Emergency Action Plan, evacuation planning
  - Assist with costs of administering Everbridge Alert System



# Speaking of Building Relationships...

- **Open Invitation to Visit Portland**
- **Tour our Emergency Operations Center**
- **Discuss Emergency Planning**
- **Potential Mutual Aid Agreements**
- **Collaborate on Best Practices**
- **Discuss AWIA Certification Progress and Planning**

**Would you Welcome a Visit, want to Discuss Mutual Aid, or Collaborate?**

Kim Parsons Anderson  
Emergency Manager, Portland Water Bureau  
[Kimberly.Anderson@portlandoregon.gov](mailto:Kimberly.Anderson@portlandoregon.gov)

Questions?



# Post Webinar Action Items

- ✓ Download “Connecting Water Utilities and Emergency Management Agencies”
- ✓ Join the EPA Water Security Division mailing list to receive the quarterly What’s Going On? newsletter.
- ✓ For more information about Water Resiliency, visit [www.epa.gov/communitywaterresilience](http://www.epa.gov/communitywaterresilience) or email [WSD-Outreach@epa.gov](mailto:WSD-Outreach@epa.gov).

# Thank you!



**Lauren Wisniewski**

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(202) 564-2918

**Kim Parsons Anderson**

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**Water Security Division**

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[epa.gov/waterresilience](http://epa.gov/waterresilience)

Visit [www.epa.gov/waterresilience](http://www.epa.gov/waterresilience) for more information.