



# Portland's Experience with Pressure Loss Incidents Resulting in Boil Water Notices



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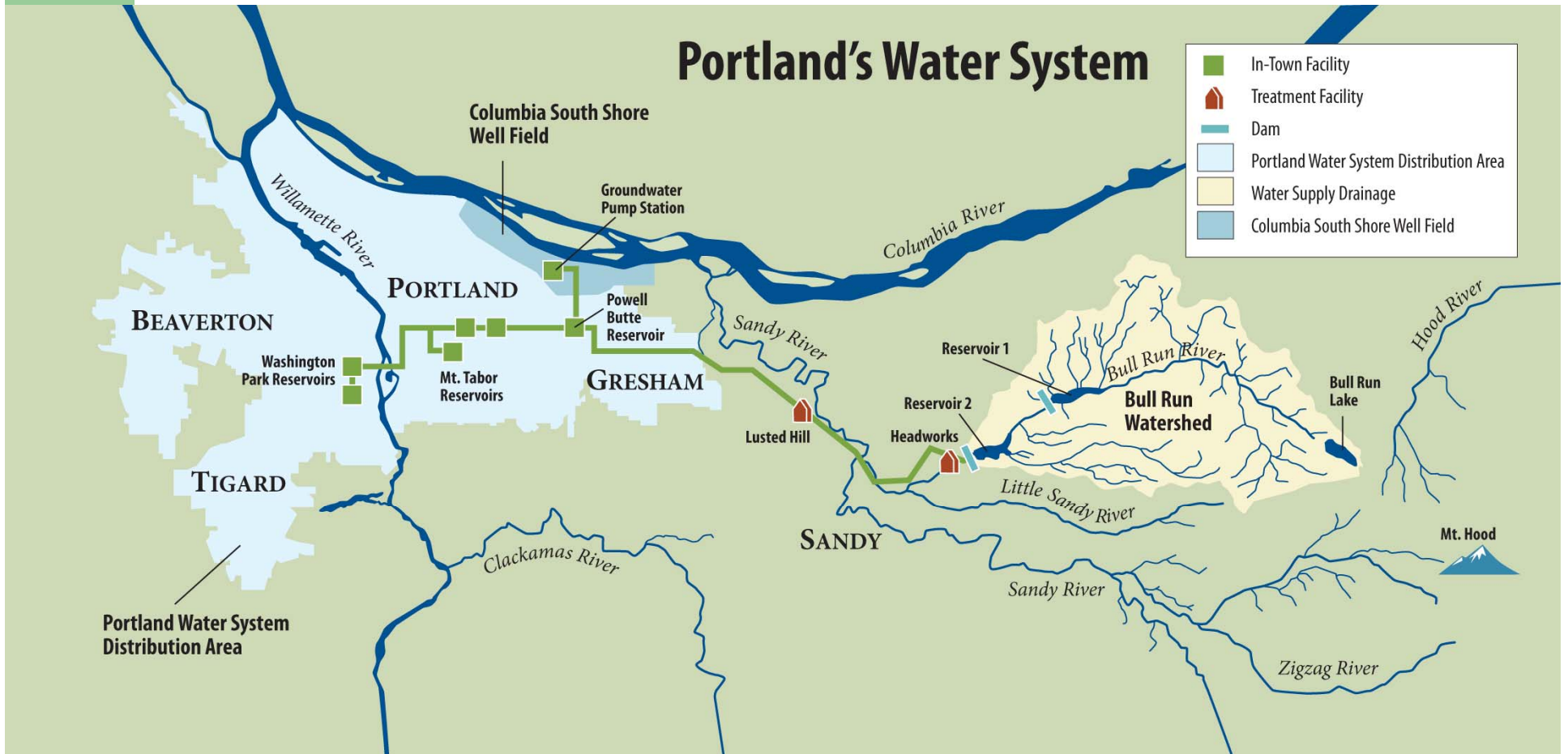
May 7, 2014

# Presentation Outline



- Introduction to Portland's Water System
- Background of Pressure Loss Incidents in Portland's system
- Case Study: SW Bertha Incident, Fall 2013
- Lessons Learned

# Service Area and Water Sources



# Service Population & System



- Total service population of 935,000
  - 566,000 retail
  - 372,000 wholesale
- 20 wholesale customers
  
- 100 MGD average demand
- ~70 tanks
- ~39 pump stations
- ~180 pressure zones

# History of Pressure Loss Events Leading to Boil Water Notices

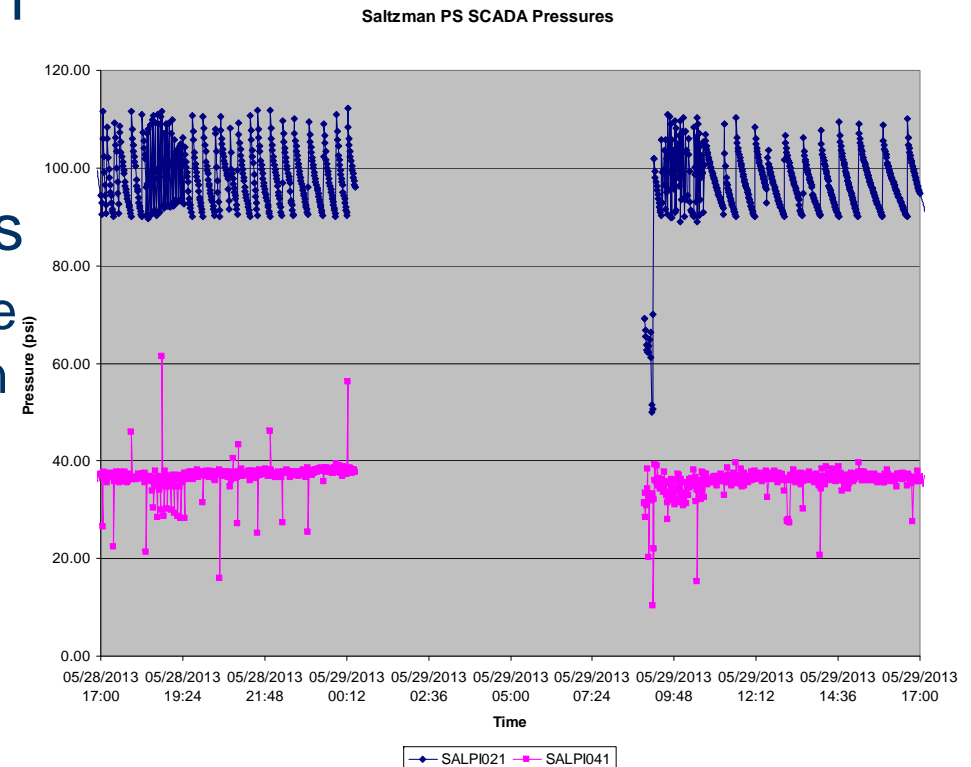
- Approximately 7 events
  - First in 2007 – Council Crest
  - Tank ran dry (2)
  - Main breaks caused by construction activities (2)
  - Power loss to pump station
  - Closing of valves during construction activities (2)
- Each affected 2 - 572 retail customers, large users (i.e.) Zoo/Children's Museum, wholesalers
- 2 large scale EC+ BWN events

# Avoid Total Pressure Loss if Possible

- Best Management Practices
  - Maintain positive pressure
  - Shut off affected customers at the meter
  - Notify customers in advance if possible
- How are we alerted?
  - Usually originates with customer call
- Determine if there really was a pressure loss
  - Direct contact with customers
  - Check in field
  - Check via SCADA and hydraulic model

# Example of Tool Used to Determine Pressure Loss

- Saltzman Pump Station
  - power outage at the pump station resulting in a BWN for 4 services
  - When we lost power, we also lost communication
  - The minimum HGL was based on observed discharge pressure at the station by field staff



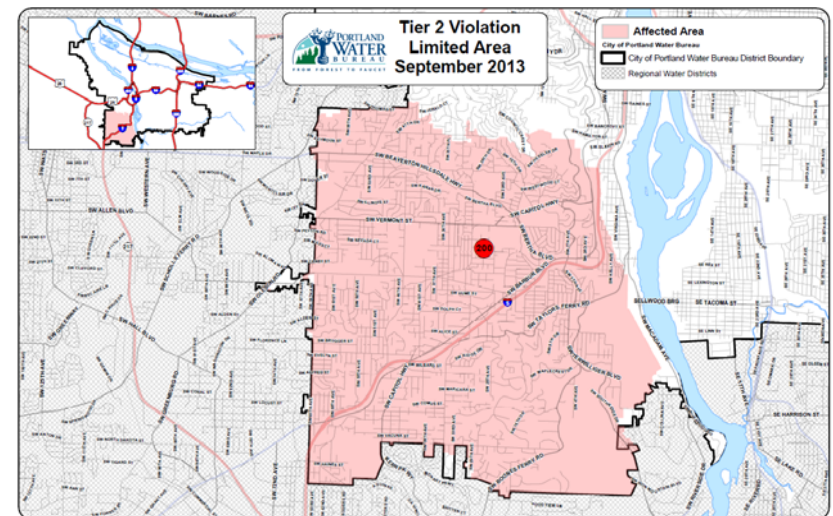
# Delivery Mechanisms for Notifications

- Hand deliver
- Direct contact by phone
- Website
- Social media
- Media release



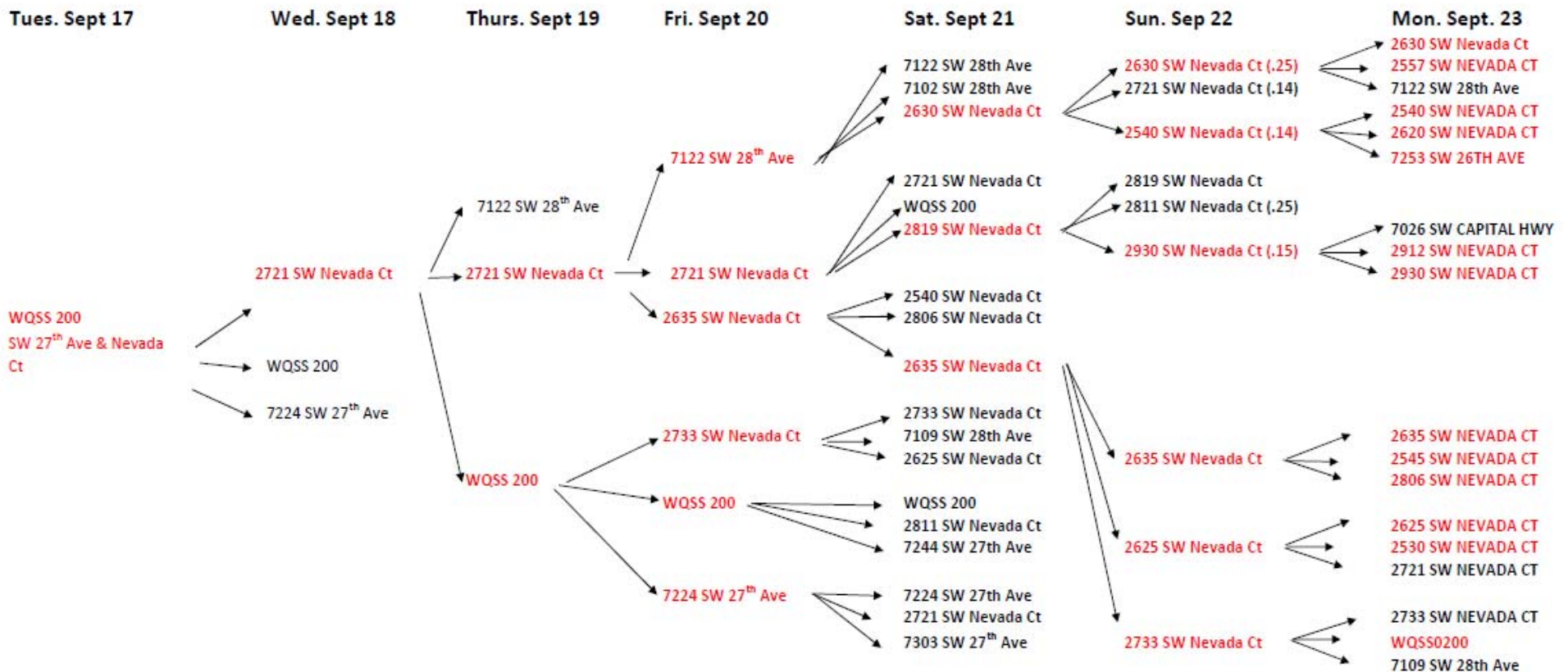
# Case Study: SW Bertha Incident – Fall 2013

- In September/October 2013 PWB had a series of TC+
- Resulting in Tier 2 violation to 17,500 services



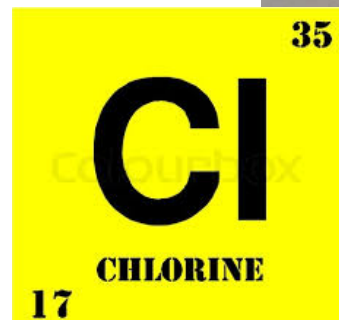
# Sampling: Sept 18-23

- The situation in Bertha was especially unusual because the resamples came back positive for total coliforms.
- 30+ TC+, >5% → Tier 2 violation, not a BWN



# Mitigations

- Deep cycling and cleaning tanks
- A unidirectional flushing (UDF) plan was developed for Bertha
- Increased  $\text{Cl}_2$  dose from 1.8 to 3 mg/L
- All clear in October

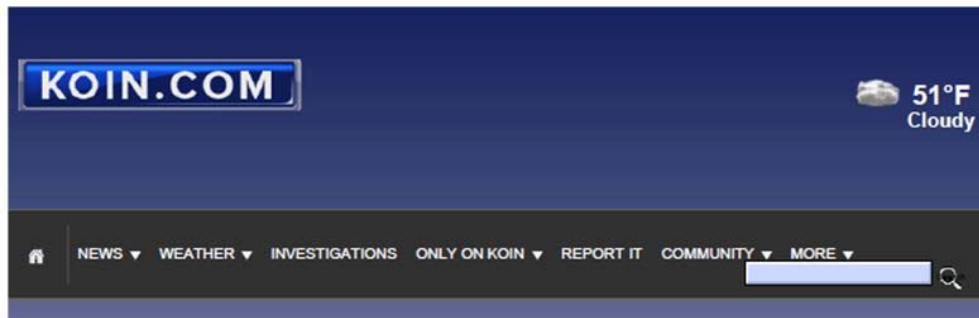




# Press Coverage

“PWB kept quiet on contaminated water”

October 31, 2013



No gloves required for PWB water testers

EPA recommends gloves for water contamination test

By Carla Castano

Updated: Monday, November 4, 2013, 6:31 PM PST  
Published: Monday, November 4, 2013, 5:57 PM PST



“No gloves required for PWB water testers. EPA recommends gloves for water contamination test”

November 4, 2013

# Pressure Loss Event – November 2013

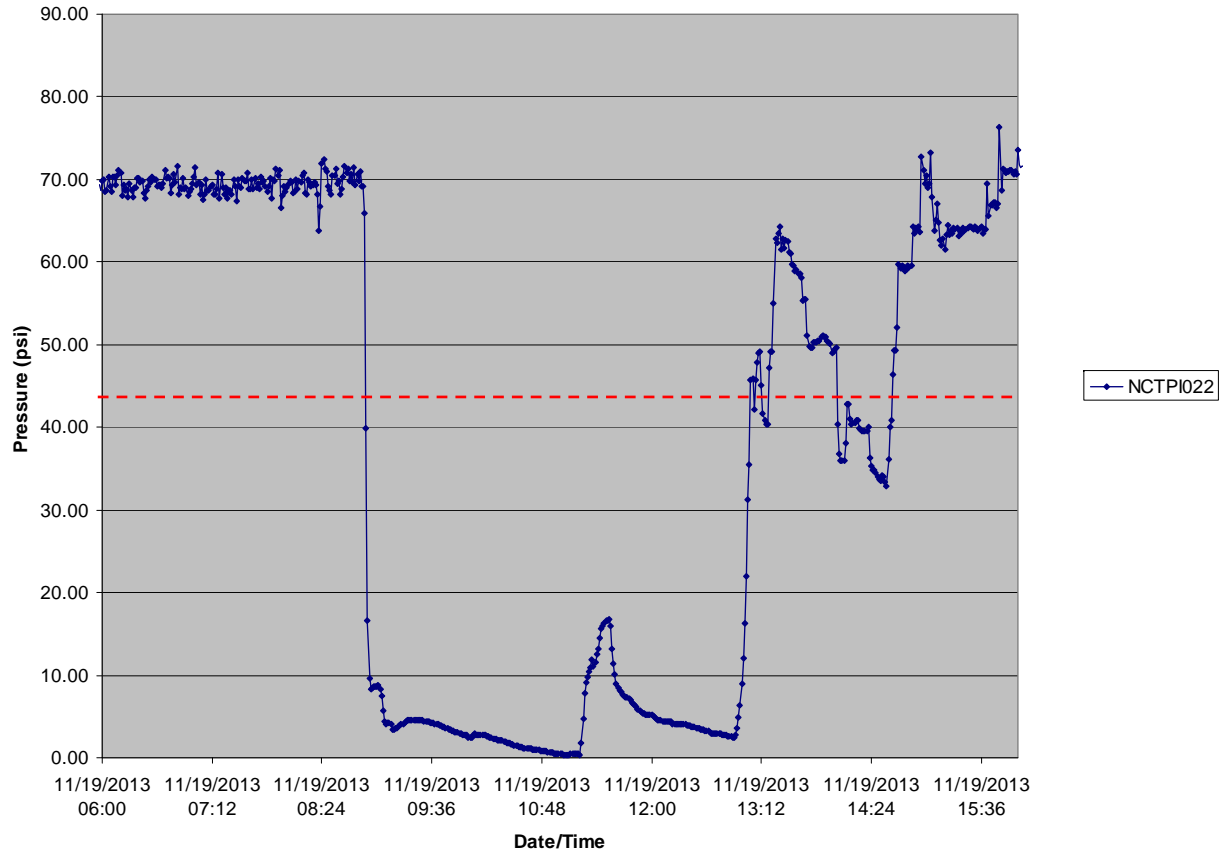
- Then in November, Waterline receives calls from multiple homes – low or no pressure
  - In SW Bertha – the **exact same area**
- Planned shutdown on 8-inch water main
- 10 homes were planned to be affected and had been notified
- Miscommunication resulted in shutting off water to approximately 570 affected customers
- Once the work started, service could not be restored until work was completed
- Confirmed pressure went to zero
  - Customer communications
  - Field staff
  - Modeling



# Confirmed Pressure Loss

- Based on the lowest HGL observed at a pressure monitor in the area, we confirmed that the pressure went to zero and how many services were out of water.

NCTPI022 Outage



# Boil Water Notice – Nov 2013

- Called and coordinated with OHA
- Prepared notification
- Restored service
- Flushed
- Collected samples



Nick Fish, Commissioner  
David G. Shaff, Administrator  
1120 SW 5<sup>th</sup> Avenue, Room 600  
Portland, Oregon 97204-1926  
Information: 503-823-7404  
[www.portlandoregon.gov/water](http://www.portlandoregon.gov/water)



November 19, 2013

**WARNING**  
**Effective Immediately**  
**BOIL YOUR WATER BEFORE USING**

For More Information call the Water Line: 503-823-7525

On November 19, 2013, work on a pipe serving your location may have resulted in a loss of pressure at your property. As a result, as of November 19, 2013, the Portland Water Bureau is asking customers to boil their water as a precaution. While unlikely, a loss of pressure in the water system may allow contaminants to enter the system without being treated. These contaminants include organisms such as bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea and associated headaches.

**What should I do? What does this mean?**

- Boiled or bottled water should be used for drinking, making ice, washing dishes, brushing teeth, and food preparation until further notice. Bring all water to a boil, let it boil for 1 minute, and let cool before using, or use bottled water.
- If you experience any of the above symptoms and they persist, you may want to seek medical advice.

**What is the Portland Water Bureau doing?**

We are working to restore pressure to your address as soon as possible and are collecting samples to be sure your water is safe to drink.

The Portland Water Bureau is also reviewing our procedures for construction projects and will implement necessary changes to prevent a similar situation in the future.

We will inform you when tests confirm the water is safe and you no longer need to boil your water. We anticipate having lab test results approximately noon Wednesday, November 20, 2013.

For more information, please contact Portland Water Bureau at [www.portlandoregon.gov](http://www.portlandoregon.gov) or 503-823-7525 or 1120 SW 5<sup>th</sup> Ave., Portland, OR, 97204. General guidelines on ways to lessen the risk of infection by microbes are available from the EPA Safe Drinking Water Hotline at 1-800-426-4791.

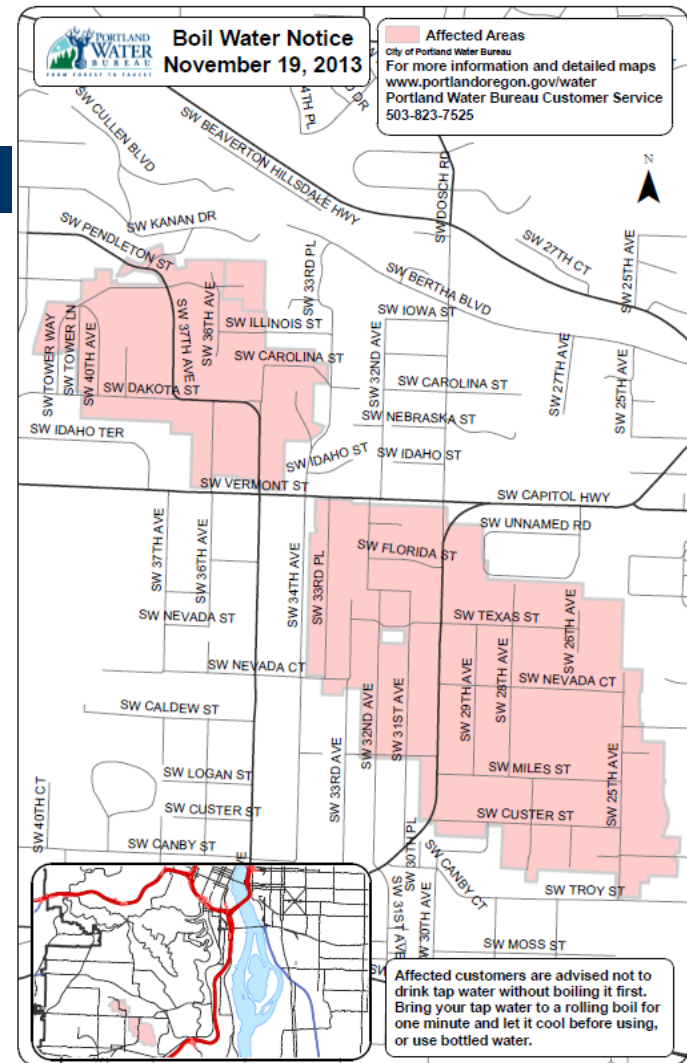
*Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.*

This notice is being sent to you by Portland Water Bureau. State Water System ID#: OR4100657.  
Date distributed: November 19, 2013.

To assist with access to City programs, services and activities, the City of Portland will reasonably modify policies/procedures and provide auxiliary aids/services to persons with disabilities. To request an ADA accommodation, please notify the City no less than five (5) business days prior to the date the accommodation is needed. Call 503-823-7404 or by TTY at 503-823-6866.

# Determine Affected Area

- Using hydraulic modeling
- Determined 570 customers in SW Portland were affected





# Boil Water Notification

- Media vs. door-to-door
- Door hangers
- 20 person crew – approximately 3 hours
- BWN information on website
- Lookup map online
- Notified wholesalers

# PWB Website

## IS AN ADDRESS AFFECTED?

Type in an address to see if an area is affected by the Boil Water Notice

## MAPS

Map of affected area and link to a "zoom in" Google Map

## FACT SHEETS & OTHER INFORMATION

What you need to know about the Boil Water Notice currently in effect and recommended actions

## CURRENT UPDATES

Updated information as it becomes available

## Boil Water Notice – IN EFFECT



- **3,584 total views** of the BWN website
- **~1,600 external visits** to the map of the affected area webpage
- **~1,500 external visits** to the FAQ page

# Lifting the BWN

- Clean samples
- Issue rescind boil water notice
- Same delivery method
  - Hand delivered notices to affected homes
  - 20 M&C folks walked through the neighborhood hanging door hangers
  - Media release



Nick Fish, Commissioner  
David G. Shaff, Administrator

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## NEW RELEASE

For Immediate Release  
November 20, 2013

For more information, contact Tim Hall, Public Information, at 503-823-8064

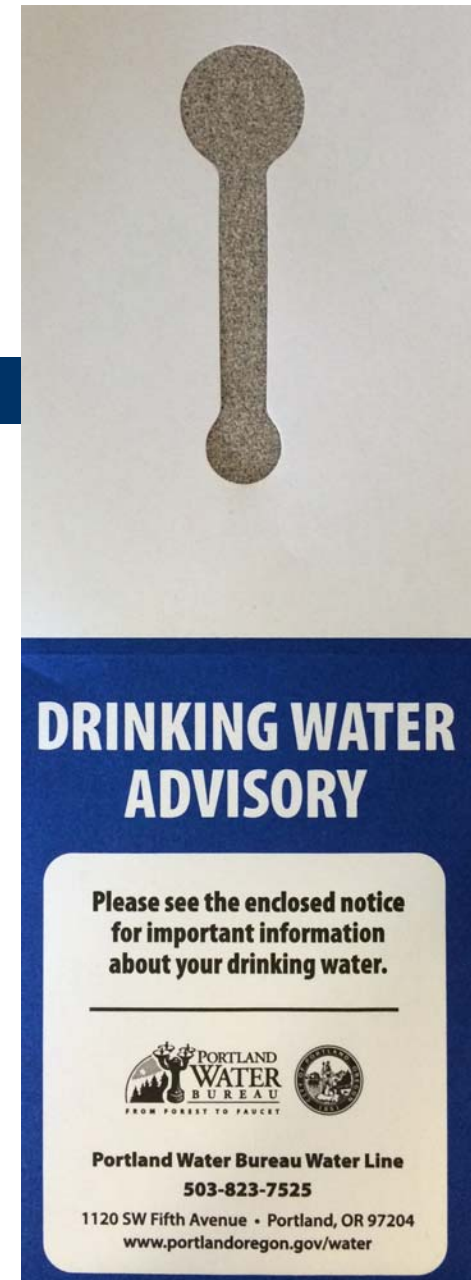
### Southwest Portland tap water is safe to drink: Boil water notice ends

Portland, OR – As of 1:00 pm today, Wednesday November 20, 2013, the boil water notice for some 570 homes in Southwest Portland has been lifted. No contamination was detected following the unexpected loss of pressure, and the water is safe to drink.

After consulting with the Oregon Health Authority on Tuesday, November 19, 2013, the Portland Water Bureau issued a precautionary boil water notice to residents in an area near SW 30<sup>th</sup> Avenue and SW Vermont Street.

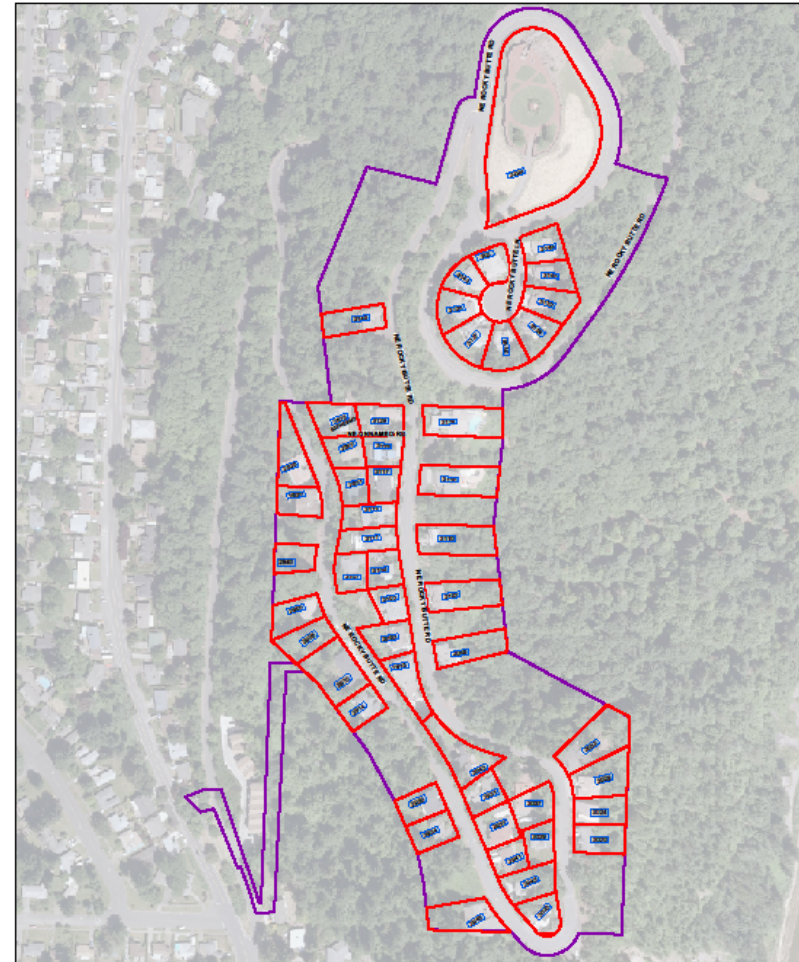
# Lessons Learned

- Better coordination between Maintenance & Construction with Operational Analysis
- Test pressure outside of shutdown area
- Good, timely communication with our customers
- Timing of notifications
- Good communication with wholesalers was very important, especially with so much misinformation about the previous situation in the media
- Need to develop a custom door hanger
- Print extra copies
- Could have used CENS system



## Prepare as Much as Possible Ahead of Time

- Prepare for high risk areas
  - Vulnerable locations in system (parts of the system that are directly pumped and vulnerable to loss of power to pumps)
  - Maps & list of tax lots
  - BWN template
- Build offline web pages



Rocky Butte Pump  
Services Above 411'

# Questions?



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503-823-7648