

# Lessons Learned From a Tier 1 Public Notice

## *Portland Water Bureau's Experience from Two Boil Water Notices*

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*May 8, 2014*



# Public Notification Rule: Three Tiers

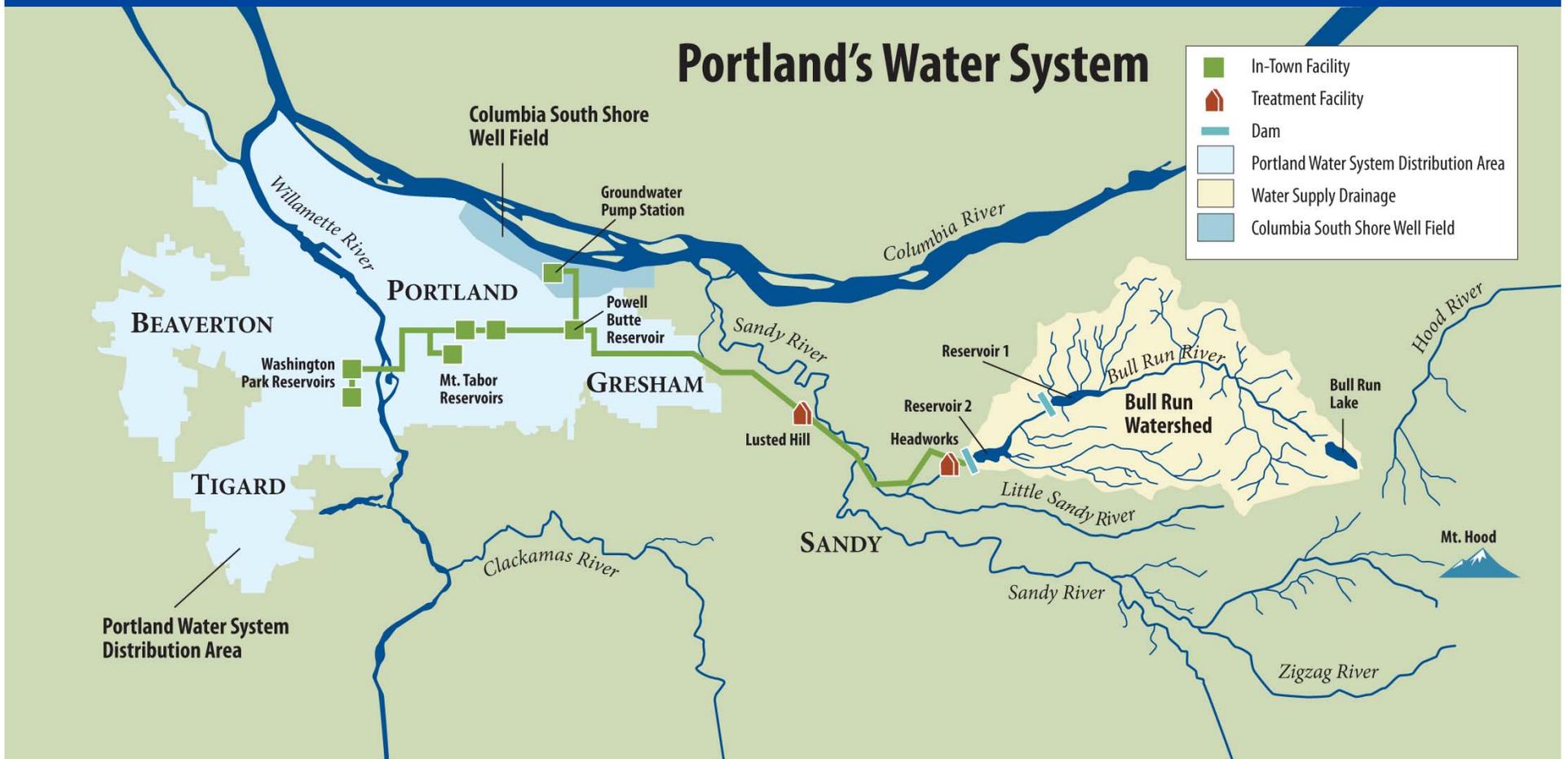
- **Tier 1:** Significant potential for serious adverse effect on human health as a result of short-term exposure
- **Tier 2:** Potential for serious adverse effect on human health
- **Tier 3:** Other violations or situations not included in Tier 1 or Tier 2

# Tier 1 Violation/Situation

- Significant potential for serious adverse effects on human health as a result of short term exposure
  - Violation of MCL for coliforms (fecal or *E.coli*)
  - Turbidity violation
  - Waterborne disease outbreak
  - Pressure loss
  - Other situation determined by OHA

➔ Public Notification – Boil, Do not Use, etc..

# Portland's Water System



Lessons Learned From a Tier 1 Public Notice

# Bull Run Service Area

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



# Portland Water Bureau BWNs

- 2007: First localized BWN – pressure loss at services after tank pump failure
  - Localized area – hand delivered
- 2009: Thanksgiving – *E. Coli* - first widespread BWN
- 2010-2011: Several small BWNs due to pressure loss
- 2012: Summer – *E. coli* – widespread BWN
- November 2013 : Pressure loss to 570 Customers

# November 2009

- *E. coli* has occasionally been detected, **15** times before November 2009.
- Had never had a repeat TC positive after an *E. coli* positive.

# Wednesday November 25<sup>th</sup>

- Routine sample collected from outlet of Reservoir 3
- Using Colilert 24



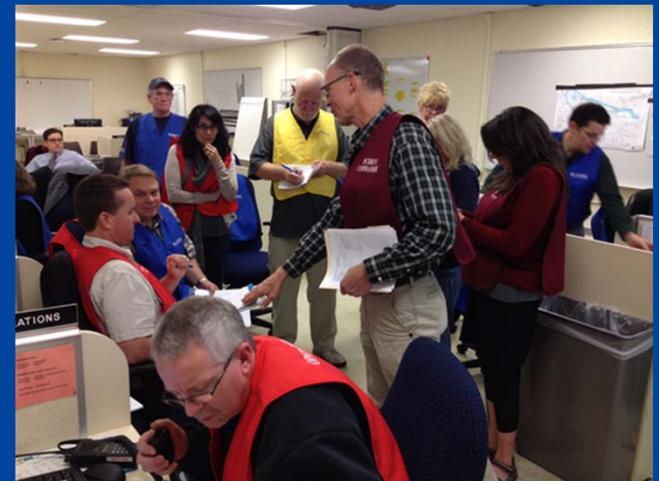
# Thanksgiving Thursday November 26<sup>th</sup>

- Approximately 1:30pm a sample from Reservoir 3 was reported as positive for *E. coli*. Fluorescence was weak, chlorine residual was 1.3 mg/L.
- DRC was notified Thursday afternoon. Due to the holiday, time of day and historical results, the decision was made to resample Friday, November 27<sup>th</sup>.



# Saturday November 29<sup>th</sup>

- Lab analyst “peeked” at the samples at 22 hrs.
- Repeat Reservoir 3 sample had indicated positive for total coliforms.
- DRC activated the PWB Emergency Operations Center.



## Saturday November 29<sup>th</sup> (cont)

- 10:31 am results from the Reservoir 3 resample were confirmed positive for TC and *E. coli*.
- The upstream and downstream were both negative for *E. coli* and total coliforms.



## Saturday November 29<sup>th</sup> (cont)

- In consultation with OHA, it is confirmed that a BWN must be issued.
- Positive sample location is upstream of the distribution system that serves:
  - West side of Portland
  - Palatine Hill
  - Valley View
  - Burlington Water Districts

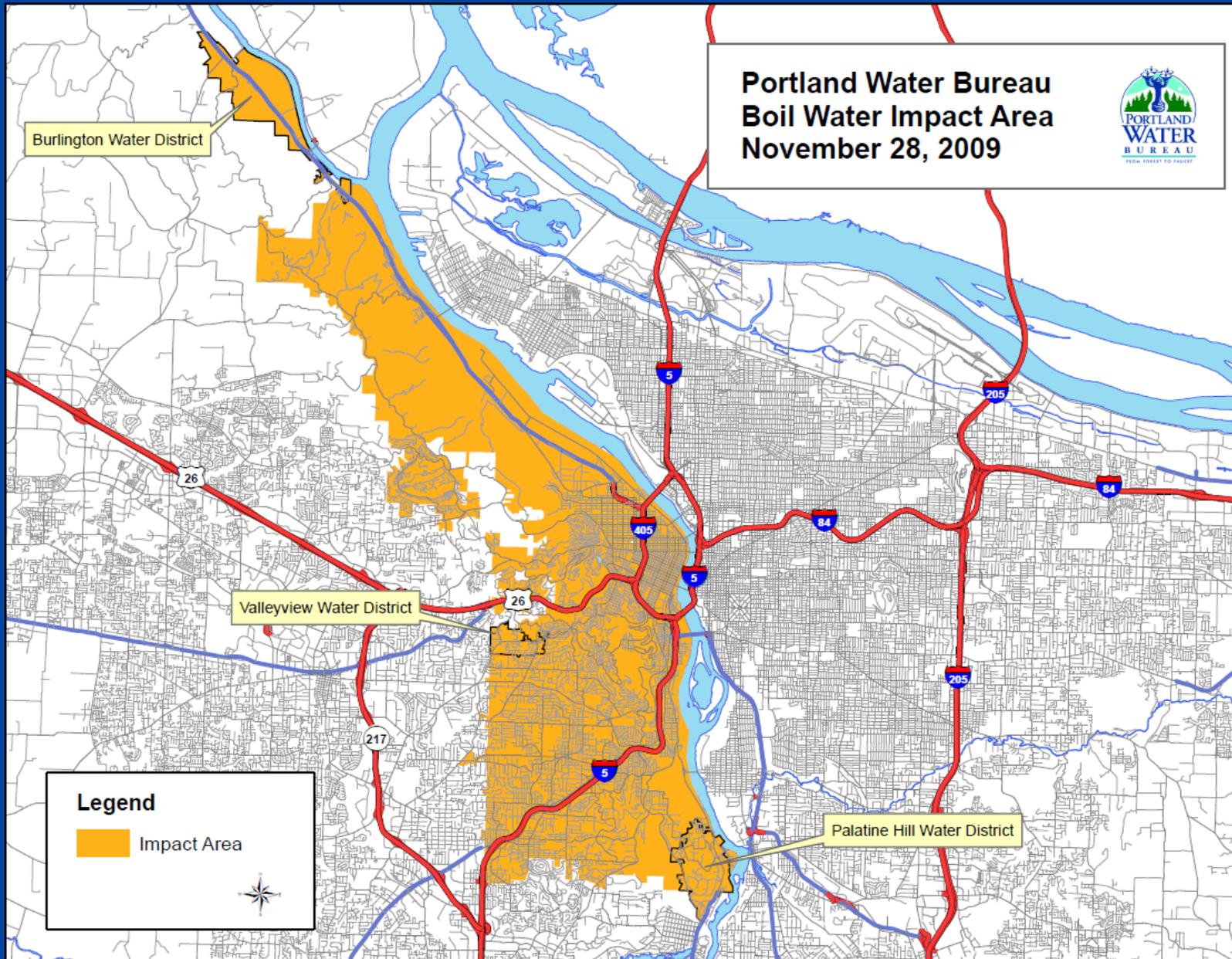
# Boil Water Notice Issued

- 4 pm Saturday November 28<sup>th</sup>,
  - Boil Water Notice to all affected customers
  - 3 days after first sample was collected!
- This is the first widespread BWN issued by Portland. Affecting approximately 50,000 customers.



The screenshot shows a news article header from The Oregonian. At the top left, there is a weather icon and the text "Set Weather" with a dropdown arrow. In the center, there is the "OREGONLIVE The Oregonian" logo. At the top right, there is a "Subscribe" button with a dropdown arrow. Below the navigation bar, there is a blue speech bubble icon with the word "comments" inside. The main headline reads: "Today's headlines: Portland issues first-ever boil-water alert; Lengthy job searches take toll".

# Portland Water Bureau Boil Water Impact Area November 28, 2009



Lessons Learned From a Tier 1 Public Notice



# Boil Water Notice

- Press release issued to all local media. Included regulatory BWN
- Posted on PWB and City website
- Press conference held with Administrator, County Health Officer and Mayor

# Boil Water Notice

**November 28, 2009**

**DRINKING WATER WARNING**

Water delivered by Portland Water Bureau, Burlington, Palatine Hill, and Valley View Water Districts could be contaminated with potentially harmful bacteria

**PORTLAND WATER BUREAU CUSTOMERS WEST OF THE WILLAMETTE RIVER AND CUSTOMERS OF BURLINGTON, PALATINE HILL AND VALLEY VIEW WATER DISTRICTS SHOULD BOIL WATER BEFORE USING**

Routine water quality samples for total coliforms, including *E. coli*, were confirmed for fecal contamination in a Washington Park open reservoir on November 28, 2009. Fecal coliforms and *E. coli* are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these waters can cause short-term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk for infants, young children, some of the elderly, and people with severely compromised immune systems.

These symptoms are not only caused by organisms in drinking water. If you experience any of these symptoms and they persist, you may want to seek medical advice. People at increased risk should seek advice about drinking water from their health care providers.

**What Should I do? What does this mean to me?**

**DO NOT DRINK THE WATER WITHOUT BOILING IT FIRST OR USE BOTTLE WATER.** Boiled or bottled water should be used for drinking, making ice, brushing teeth, washing dishes, and food preparation until further notice. Bring all water to a rolling boil for one minute, and let it cool before using, or use bottled water. Boiling kills bacteria and other organisms in the water.

**What is being done?**

The Portland Water Bureau has taken the reservoir out of service. We will inform you when tests show no bacteria and you no longer need to boil your water. We anticipate resolving the problem within 24 hours.

For more information, please contact Portland Water Bureau at 503-823-7770 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

# Boil Water Notice

- Multnomah County Health Department robo called restaurants in affected area.
- PWB Called hospitals and universities.
- Staffed customer service call center.
- All bubblers in affected area are shut-off
- Contacted public gathering spaces: zoo, airport, train station, shopping malls



# Sunday November 30<sup>th</sup>

- 4 pm, the samples from Saturday were all negative. Boil Water Notice lifted:
  - Issued problem corrected notice via press release to local media
  - Press conference with Mayor, Commissioner, Administrator, County Health Officer
  - Posted and issued via all methods used to distribute BWN.



# Sunday November 30<sup>th</sup>

The screenshot shows a Microsoft Internet Explorer browser window displaying the Portland Water Bureau website. The address bar shows the URL: <http://www.portlandonline.com/water/index.cfm?c=26426>. The website header includes the Portland Water Bureau logo and navigation links. The main content area features a public notice dated 4:25 PM November 29, 2009, titled "EFFECTIVE IMMEDIATELY BOIL WATER NOTICE ENDED: WATER DELIVERED TO ALL TAPS HAS TESTED SAFE TO DRINK". The notice text states that residents and businesses west of the Willamette River can now drink tap water without boiling it. It also mentions that contamination was detected in Washington Park Reservoir 3 and that the reservoir will be tested and cleaned before being put back on line. A quote from Multnomah County Health Officer Gary Oxman is included. The notice concludes with information about sampling on Saturday. On the right side, there is a "PWB Leaders" section featuring photos and names of Commissioner Randy Leonard and Administrator David Shaff, with links to their web sites and email addresses. A "HAVE YOUR SAY" button is visible at the bottom right of the notice area.

Water Bureau - Microsoft Internet Explorer provided by City of Portland v1.3

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites Refresh Print

Address <http://www.portlandonline.com/water/index.cfm?c=26426> Go

CITY OF PORTLAND, OREGON  
**PORTLAND WATER BUREAU**  
FROM FOREST TO FAUCET

add content manage content category options tools shortcuts log stats portlandonline subscribe my account sign out

Search Water Bureau type your search here

Home Bills & Accounts Portland's H2O About PWB Conserving H2O Water Blog Projects Development & Permits Site Map Water Cooler

POL → Government → Bureaus & Offices → Water Bureau

**Portland Water Bureau** 4:25 PM November 29, 2009

**EFFECTIVE IMMEDIATELY**

**BOIL WATER NOTICE ENDED: WATER DELIVERED TO ALL TAPS HAS TESTED SAFE TO DRINK**

- Click here for information on LT2
- Click here to pay your bill
- Click here to check out the Water Blog

Residents and businesses west of the Willamette River may now drink tap water without boiling it first. This includes customers of the Portland Water Bureau, Palantine Hill, Valley View and Burlington water districts. Additional testing of drinking water has shown no further presence of bacterial contamination. The Portland Water Bureau recommends all residents and businesses flush all taps for 2 minutes or until the water runs cold before consuming for the first time.

**"The second set of results showing no contamination is good news; it indicates that whatever contamination was present was both transient and limited to a relatively small portion of the water system," said Multnomah County Health Officer Gary Oxman.**

Earlier this week, contamination was detected in Washington Park Reservoir 3 that serves west side customers of the Portland Water Bureau, and the Palatine Hills, Valley View and Burlington water districts. That reservoir has been taken off-line and being drained, which will take up to four days. The reservoir will be tested, investigated for contamination, and cleaned before it is put back on line.

On Saturday, in addition to the sites required for resampling, the Portland Water Bureau sampled twenty sites in the distribution system. Eighteen of these sites were downstream of Reservoir 3 and reflect the area affected by the boil water notice. All of these samples were negative for total coliform and E.coli, indicating that there is not persistent widespread contamination in the distribution system.

**PWB Leaders**

  
**Commissioner Randy Leonard**  
[Web site](#)  
[E-mail](#)

  
**Administrator David Shaff**  
[E-mail](#)

**HAVE YOUR SAY**

Portland Water Bureau

## Lessons Learned From a Tier 1 Public Notice

# Lessons Learned: Positives

- PWB had guidelines
  - Prepared regulatory templates
- Relationship with Health Officials
  - OHA
  - MCHD
- Notice issued in 6 hours (8 hours from peek)
- Restaurant Notification
  - MCHD used new robo-call system
- Priority Population Notification
  - Hospitals
  - Universities
  - Public spaces

# Lessons Learned: Shortfalls

- Repeat sampling – waited 24 hours
- Didn't activate EOC until follow-up results were imminent
- Needed more staff trained on guidelines
- Messaging:
  - Characterizing potential threat
  - Media release templates
  - Fact sheets
  - Social media
  - Maps
  - Too many hands in the pot

# Lessons Learned: Shortfalls

- Communication:
  - Coordination with wholesale systems
  - External agencies – Parks, ODA
  - Customer service:
    - Needed more staff
    - Phone system
    - Difficult questions
- Customer Communication:
  - Who is affected?
  - Responding to questions
    - Phones
    - Social media

# Changes

- Open reservoirs taken off-line ASAP after a positive sample
- Changed to Colilert 18
- Inspect and replace sample lines
- Outlined needed changes

# Changes

- Set Goals
  - EC+: Issue BWN 1 hour
  - TC+: Issue BWN 4 hours
  - Other (Pressure loss): Issue BWN 6 hours
- Revised Guidelines
  - Factsheets
  - Priority populations
- Checklists:
  - TC+
  - BWN

## Checklist for a Total Coliform Positive Compliance Sample

All tasks below are to be completed asap. The goal is to be able to issue a BWN four hours after the resample.

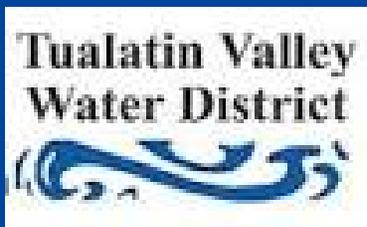
For a Positive *E. coli* See *E. coli* Checklist tab below

All involved staff are to meet at 3pm (or before leaving for the day) to review checklist and confirm preparation for the next day.

Priority	Tasks	Action	Responsible for Completion		Task Completed By	Date
			Weekday	Weekend and Holiday		
<b>Top Priority Actions</b>						
	Notify Incident Commander	Chris Wanner or designee (DRC or designee on weekends and holidays)	WQ Comp Duty Staff	Interstate Laboratory/WCC		
	Call WQI Supervisor	Schedule compliance upstream, downstream, and repeat sample. To identify the upstream and downstream locations refer to the WQSS Database \\Wbfile1\group5\Operations\Water_Quality\WQuality_Compliance\Internal\Distribution_System\WQSS. If the TC+ occurred in an open reservoir outlet sample, use the "Sampling Around Reservoirs" diagram in the incident resources folder to select resample sites. Note for Open Reservoirs: All open reservoirs require a repeat sample and two downstream samples. Because reservoirs have daily paired samples collected at the outlet and a downstream station, for a positive read on Tues/Wed/Thur, the repeat and one downstream sample may have already been collected as part of that morning's TCR Route. Verify in LIMS and schedule the required resamples. Collect an upstream surveillance sample (TCR sample, but not the official "upstream" sample) to rule out upstream contamination. If multiple TC samples, identify surveillance samples from likely downstream locations in the dist. sys	WQ Comp Duty Staff	DRC		
	Notify CII Manager and Administrator	CII Manager: 503-381-0056 (cell) Administrator: 3-2222	Incident Commander	DRC		
	Notify Water Control Center	Confirm current operating status, and inquire for any unusual activity in area surrounding positive sample. 3-1560	Incident Commander	DRC		
	Notify Operational Analysis	Contact to characterize potentially affected area. Identify staff availability for next 36 hours. Rod Allen: 3-1564 or Sarah Maier 3-6032 or WCC	Incident Commander	DRC		
	Call OHA	Notify OHA and report incident details (result, date, and location)	WQ Comp Duty Staff	DRC		
	Direct Lab Report	Fax direct report to OHA	Lab Manager	Lab Manager		
	System evaluation	Identify broadest area that could be affected - confirm with wholesalers if applicable	Ops Analysis	Ops Analysis		
	Revise BWN template	Templates: J:\Operations\Water_Quality\WQuality_Compliance\External\Boil_Water_Notice\Current_BWN_Templates	WQ Comp Duty Staff	DRC		
	Prepare to issue BWN media release and other public notification	See PIO Checklist	PIO	PIO		
<b>Second Priority Actions</b>						
	Collect confirmation samples	Collect upstream and downstream samples as necessary, and surveillance samples. <b>Should be done by a DIFFERENT sample collector from initial sample.</b>	WQI Supervisor	WQI Supervisor		
	Notify Interstate Laboratory	Alert lab of repeat samples and any special samples that will be collected (# samples, location, and time expected). Identify staff availability for next 48 hours. 503-823-4900	WQI Supervisor	WQI Supervisor		
	Walk around reservoir	Look for gross contamination, presence of animals, water clarity, sample tap issues, etc. Take photo if any unusual circumstances are observed.	WQI Supervisor	WQI Supervisor		
	Check sample point	Condition of sample tap, proper installation, etc. Take photo if any unusual circumstances are observed. Contact initial sample collector and confirm process -use of gloves, or sanitizer - document results.	WQI Supervisor	WQI Supervisor		
	Isolate Reservoir	Ops will isolate reservoir as soon as possible <b>AFTER repeat samples have been collected.</b>	Incident Commander directs WCC	DRC directs WCC		

# Changes

- Communication
  - Wholesalers
  - Outside agencies
- Public Alerts



# Changes

- Mapping
  - Google Maps

+You Search Images Maps Play YouTube News Gmail Drive Calendar More ▾

Google   pwb\_pio@yahoo.com ▾

Get directions My places

Collaborate

Explore making custom maps in an [interactive tutorial](#).

**Boil Water Notice: effective [Date]**  
As of [Date] all customers in the affected area are advised not to drink tap water without boiling it first. Bring your tap water to a rolling boil for one minute and let it cool before using, or use bottled water.  
For more information visit <http://www.portlandoregon.gov/water> or call Portland Water Bureau Customer Service 503-823-7770

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Internet | Protected Mode: On 145%

Lessons Learned From a Tier 1 Public Notice



# Changes

- Mapping
  - Address look-up

Content Manager Add Content Manage Content Category Options Tools Shortcuts Log Stats

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From forest to faucet, we deliver the best drinking water in the world. GENERAL INFORMATION: 503-823-7404  
1120 SW Fifth Ave, Suite 600, Portland, OR 97204 [MORE CONTACT INFO](#)

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- Account Policies

**Am I a Portland Water Bureau customer?**  
We often get questions from people wanting to know if the Portland Water Bureau is your water provider. Type your address in the box below and click

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From forest to faucet, we deliver the best drinking water in the world. 1120 SW

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**Water Utilities**

Water District	City of Portland Water Bureau
Pressure Zone	TABOR 302

- System Va
- Air Releas
- Blowoff
- Service
- CurbServic
- FirelineSe

Lessons Learned From a Tier 1 Public Notice



# Changes

## Did they work?

# Res 3 EC+ BWN Take 2 -- July 2012

- Friday July 20th
  - Received results of *E. Coli* positive
    - Outlet Reservoir 3
    - Sample collected Thursday July 19<sup>th</sup>
    - Repeat samples collected
- Saturday July 21st
  - Repeat downstream TC+

→ BOIL WATER NOTICE



# July 2012

- Portland Water Bureau West of the Willamette
- Six Wholesaler providers
  - Burlington
  - Lake Grove
  - Palatine Hill
  - Tigard
  - Valley View
  - West Slope

# July 2012

- BWN issued noon Saturday
  - Took 4 hours
- Media release to all local outlets
- Press conference
  - MCHD present
- Customer Service Center active
- FAQs on website and at call center
- Use of Public Alerts



# July 2012

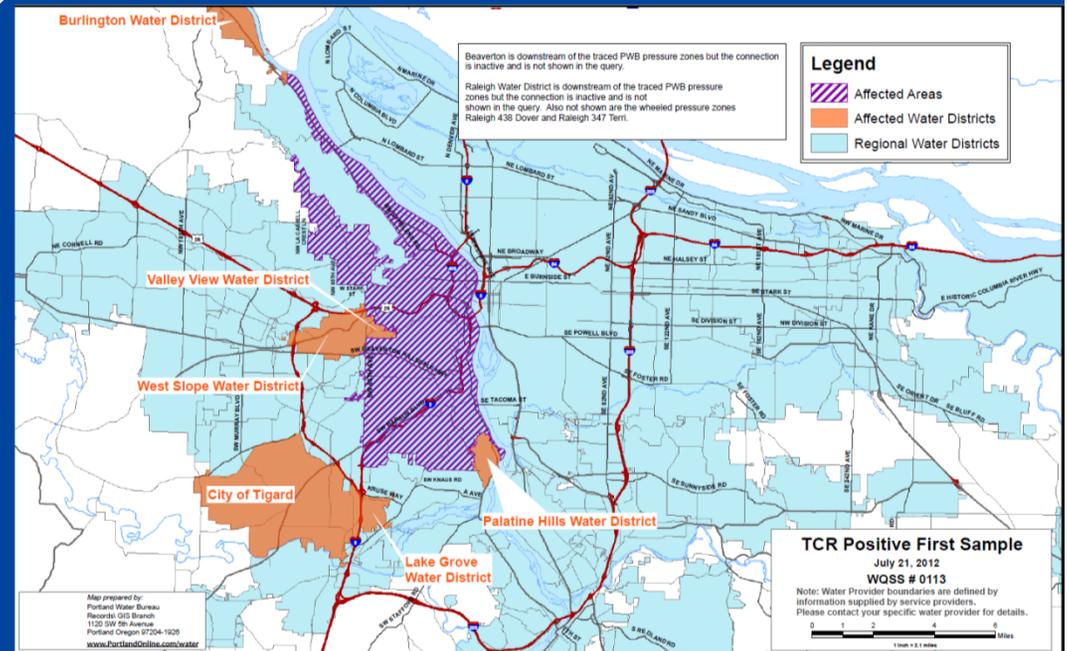
- Priority Populations Notified
  - Hospitals
  - Public gathering areas
  - Portland parks
  - Sensitive users list
  - Restaurants robo-called



# July 2012

- Maps
  - Google Maps
  - ARC View on web
  - Address look-up

- Reduced calls



Lessons Learned From a Tier 1 Public Notice



# Lessons Learned: Positives

- Revised guidelines
- Templates
  - Media Release
  - Regulatory Notice
  - FAQs
- Issued faster – 4 hours
- Water Quality staff at customer service to answer new questions and update FAQs
- Continued relationship with county and state health officials

# Lessons Learned: Positives

- Checklists
  - EC/TC+ for pre-event prep
  - BWN – during event
- Better communication of affected area
  - Less calls and confusion
  - Used more tools:
    - Social media
    - Mapping products
    - Priority population resources

# Lessons Learned: Shortfalls

- Staff Training
  - New staff – PIO and Water Quality
  - Key staff out of town
- Coordination with Wholesalers
  - Communication was better
  - Made initial assumptions on affected areas
  - Knowledge affected wholesaler area
- Too many cooks in the kitchen

# Lessons Learned: Shortfalls

## – Messaging

- Why did it take so long (48 hours)
- Why do we have to boil?
- Public Alerts - <33% success

## – Mapping

- Alternate tools took time to activate
- Google maps
- Address look-up

## – Translations

# Changes

- Checklists

- Split TC+ and EC+
  - EC+ - assume a BWN will be issued
    - Activate EOC after 1<sup>st</sup> result
    - Report to EOC next day before repeat results

- Website Template

- Customer Coordination

- Better knowledge of large and critical users and wholesale systems/connections
- Improved communication
- Sample collection coordination with wholesalers

# Changes

- Streamline/improve affected area delineation
  - Map templates

## Continuous...

- Revising Guidelines – living document
  - Messaging:
    - Coordinating with OHA and MCHD on templates:
      - Media Release
      - Notice
      - FAQs
      - Talking Points

# Take Home Thoughts

- Relationships:
  - Know your local health officer
  - A strong working relationship with regulator makes process much easier
  - Know your customers – wholesale systems, large users, vulnerable populations



# Take Home Thoughts

- Messaging:
  - Timely
  - Know what works in your community:
    - Traditional Media
    - Social Media
    - Door – to – Door
    - Reverse 911
  - Have templates ready

# Take Home Thoughts

- Maps:
  - By far the most common question:
    - Am I affected?
  - Detailed and accurate maps are key
- Develop SOPs and Guidelines
- Training:
  - Regularly
  - Often
  - Back-up staff



# Take Home Thoughts

- Develop SOPs and Templates
  - Regulatory Notices
  - Media Release
  - FAQs
  - Phone messages
  - Websites
- Borrow from Others

# Resources

- OHA Templates:

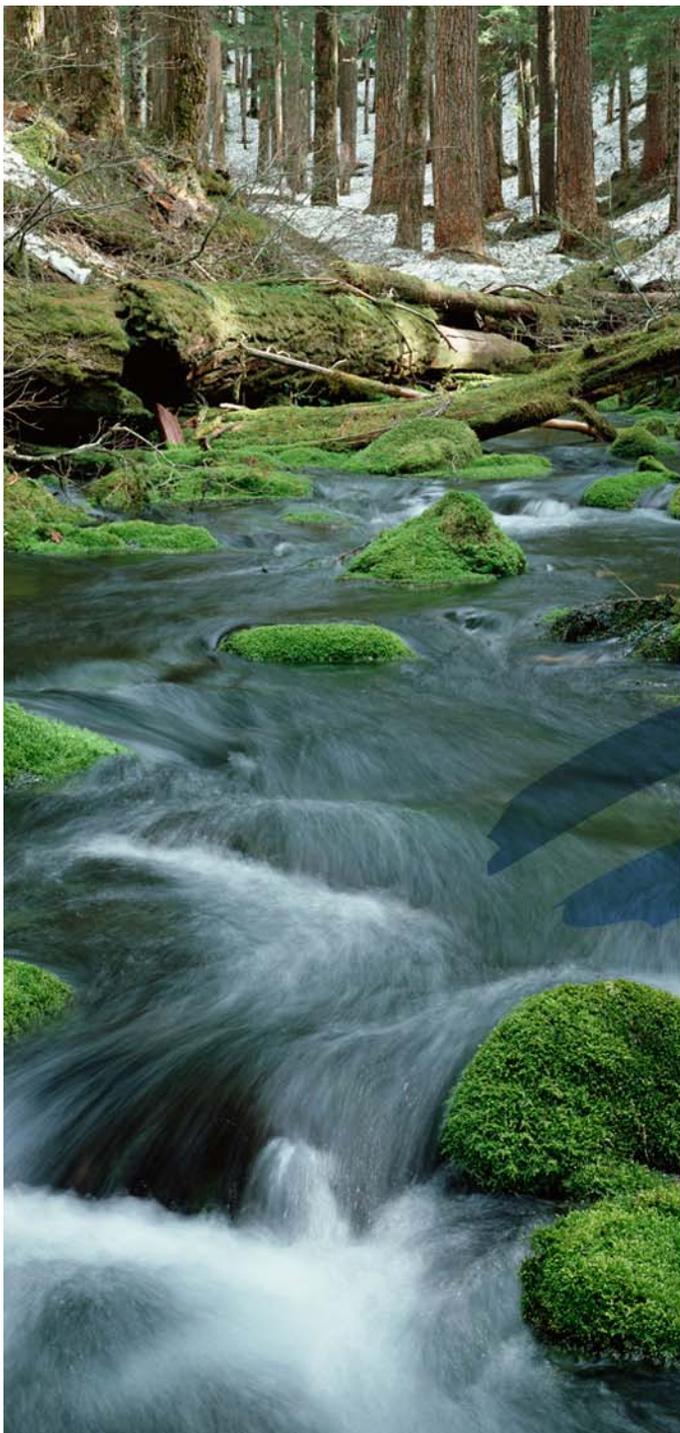
- <http://public.health.oregon.gov/HEALTHYENVIRONMENTS/DRINKINGWATER/OPERATIONS/Pages/publicnotices.aspx>

- EPA

- <http://water.epa.gov/lawsregs/rulesregs/sdwa/publicnotification/compliancehelp.cfm>

- CDC/AWWA – Drinking Water Advisory Communication Toolbox

- [http://www.cdc.gov/healthywater/emergency/drinking\\_water\\_advisory/index.html](http://www.cdc.gov/healthywater/emergency/drinking_water_advisory/index.html)



# Questions?

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