

# PNWS-AWWA

Bellevue, WA

April 30, 2015

# The Baker City Water Crisis:

Emergency Response &  
Accelerated Implementation  
of Treatment

# Water System Background

- \* 10,000 people (well almost!)
- \* 10,000 acre watershed
- \* 1 of 4 unfiltered surface water systems in Oregon
- \* ASR well/ground water right
- \* 1.5MGD Winter-7MGD Summer
- \* LT2 Progress
- \* Community
- \* Council

# Goodrich Reservoir

## 210MG



# LT2 Compliance Journey

- \* 2006 EPA LT2 Rule
  - \* 2 forms of disinfection required
  - \* Initial Compliance Date of Oct. 2013
- \* 2009 Options Study
  - \* Evaluated Ozone, UV, Chlorine Dioxide and Membrane Filtration
- \* 2010/2011 Required *Cryptosporidium* Testing
  - \* 3 of 24 samples tested positive (1-2 oocyst/sample)
- \* 2011 Consider Waiver/Ask for Extension
- \* Granted extension until Oct 2016

# LT2 Compliance Journey

- \* 2011 Equipment Selection Process
- \* Late 2012 Design of UV Facility begins
- \* And then...

# Don't Panic!



Remain Calm. Everything Will Be OK!

# A day like any other day

Or not...

“Houston-we have a problem”

- July 31 (1am)-City Manager's daughter goes to ER-told she it is suspected she has *Crypto*
- July 31 5am-first Emergency Management Meeting
- July 31-told onset of symptoms was mid July
- Could be Goodrich-turn it out!
- July 31 10am-first press deadline-OOPS!
- July 31 11:23am-first press release out-Voluntary



## • PRESS RELEASE

July 31, 2013

Cryptosporidium illnesses prompt Baker City voluntary boil-water notice  
City water system to be flushed, municipal pool to close for cleaning

BAKER CITY, Ore. - The Baker City Public Works and the Baker County Health Department are warning Baker City residents to boil their water until further notice after confirming five cases of illness due to exposure to the microscopic parasite cryptosporidium.

All the cases are believed to have been exposed to the parasite between July 12 and July 26. County health and city officials, working with epidemiologists from the Oregon Health Authority's Public Health Division, believe the Baker City water system, which is pulled from a 10,000-acre watershed and serves approximately 10,000 residents, may be the source of the contamination.

The city plans to flush the water system in the coming days, and it is closing the municipal pool, Sam-o Swim Pool, so it can be drained and cleaned.

City officials say residents should not drink city water without boiling it first. They should allow the water to boil for one full minute, and let the water cool before using it, or use bottled water. Until further notice, boiled or bottled water should be used for drinking, making ice, brushing teeth, washing dishes and food preparation. Boiling kills bacteria and other organisms in the water.

Pets also can be affected by cryptosporidium, said Dr. DeBess. Pet owners should boil water for their pets as well or provide bottled water.

According to the Centers for Disease Control and Prevention, the most common symptom of cryptosporidiosis, the disease caused by cryptosporidium exposure, is watery diarrhea. Other symptoms include:

- \* Stomach cramps or pain.
- \* Dehydration.
- \* Nausea.
- \* Vomiting.
- \* Fever.
- \* Weight loss

Symptoms typically appear five to 10 days after exposure. In persons with healthy immune systems, symptoms usually last about 1 to 2 weeks. The symptoms may go in cycles in which you may seem to get better for a few days, then feel worse again before the illness ends.

People with compromised immune systems could require treatment and should contact their primary care provider.  
Other CDC recommendations:

### \* Healthy Swimming

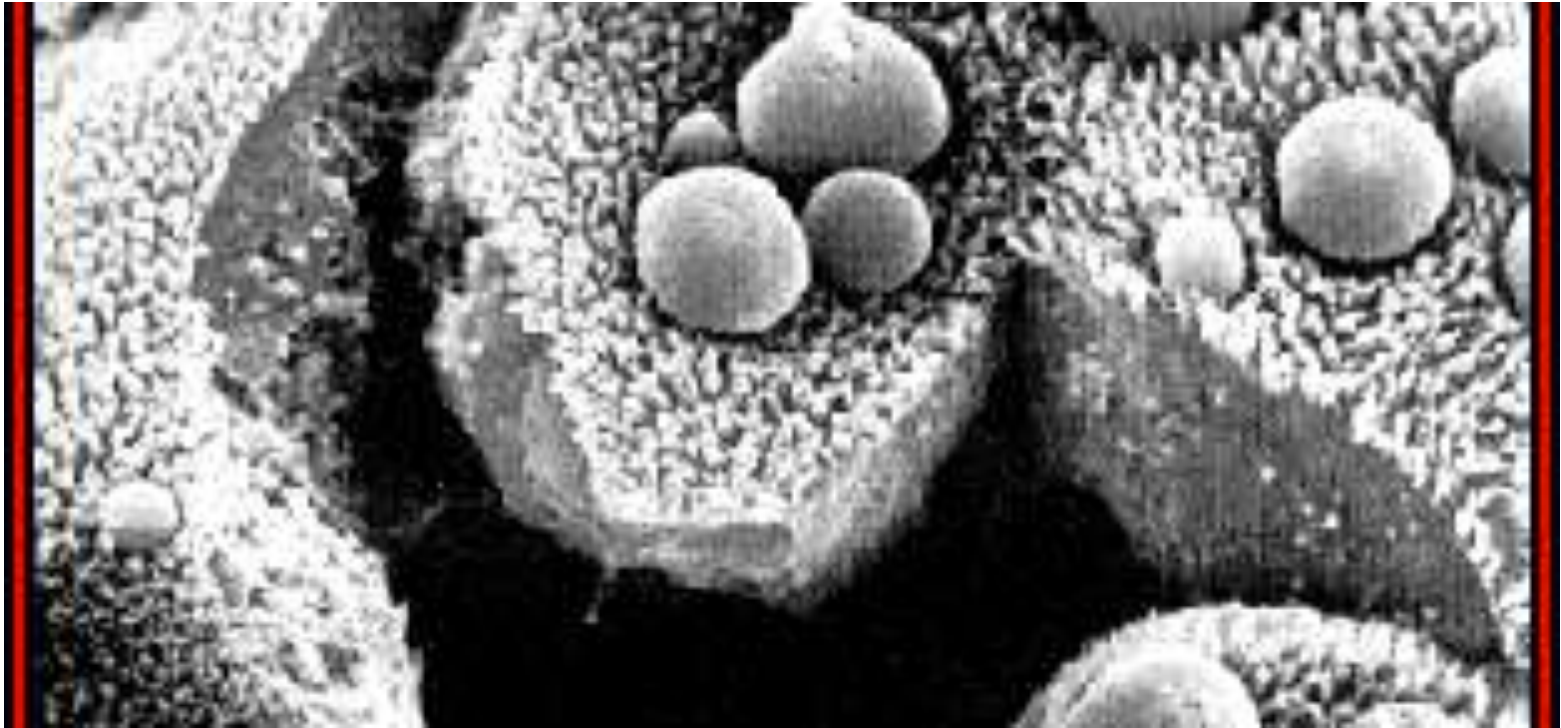
- o Do not swim when you have diarrhea. You can spread germs in the water and make other people sick.
- o Do not swallow pool water. Avoid getting water in your mouth.
- o Practice good hygiene. Shower with soap before swimming and wash your hands after using the toilet or changing diapers. Germs on your body end up in the water.
- o Take your kids on bathroom breaks or check diapers often. Waiting to hear "I have to go" may mean that it's too late.
- o Change diapers in a bathroom or a diaper-changing area and not at poolside. Germs can be spread in and around the pool.
- o Wash your children thoroughly (especially the rear end) with soap and water before they go swimming. Invisible amounts of fecal matter can end up in the pool.

### \*\*Hand Washing

1. Wet your hands with clean running water and apply soap. Use warm water if it is available.
2. Rub hands together to make a lather and scrub all surfaces.
3. Continue rubbing hands for 20 seconds. Need a timer? Imagine singing "Happy Birthday" twice through to a friend!
4. Rinse hands well under running water.
5. Dry your hands using a disposable paper towel or air dryer.
6. Use your disposable paper towel, if possible, to turn off the faucet.

For more information on cryptosporidium: <http://www.cdc.gov/parasites/crypto/index.html>

# Tiny bug=Big problem



# What do we do Now?

It depends on who you ask...

# Around the Table...

PW Staff

City Management

City Council

County Commissioner

Health Department

State Agencies

Drinking Water

Dept. of Ag

Epidemiology

CDC/Federal too

Emergency Management

County Environmental Health

POLITICIANS  
FIND BLAME

LEADERS  
SOLVE PROBLEMS

# Back to the Crisis...

- \* It's Summer
- \* It's HOT
- \* It's the Shriner East/West Football Game
- \* It's County Fair



# BOIL Order

Conflict over Boil Order when there was no clear guidance of what it would take to come off of a Boil Order

July 31- 2pm Press Release 2 implementing water curtailment

Pulled water samples from both sides of system

August 1-6pm Press Release 3-drinking water available

August 2-9pm First lab results confirming Crypto and Girardia

August 3-8am Shrine Parade in full swing! Hundreds of visitors!

August 3-4pm Drinking Water Warning issued (Boil Order)

August 3-4pm Reverse 9-1-1 call made

We spent time isolating diversions, testing multiple sites, finding out our lab was not certified, finding a new lab, gathering scat, testing scat (thanks CDC)...

AUGUST 6<sup>th</sup>

Portable Filtration System Offered by  
ORWARN

AUGUST 7<sup>th</sup>

Got results on Elk Creek 713 Oocysts!  
Began flushing system

AUGUST 13<sup>th</sup>

Council Meeting  
A total of 23 confirmed cases



**Option 1:** Protect with temporary treatment to allow re-decision process with state input followed by design – lowest risk / highest cost



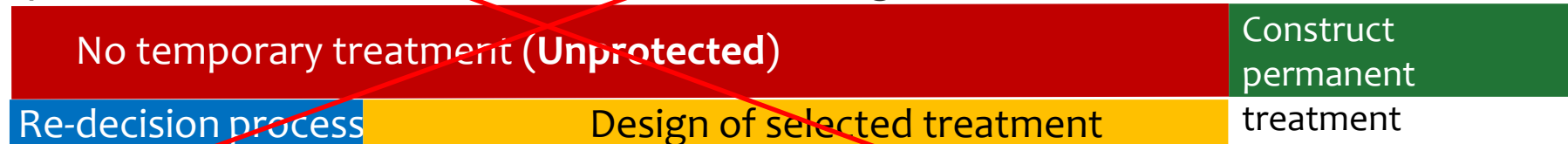
**Option 2:** Protect with temporary treatment; accelerate permanent treatment; design both UV and Filter options until decision is made – lowest risk / medium-high cost



**Option 3:** No temporary treatment (unprotected); accelerate permanent treatment; design both UV and Filter options until decision is made – high risk / medium cost



~~**Option 4:** No temporary treatment (unprotected); delay design for permanent treatment until decision is made – highest risk / lowest cost~~



# Progress

- \* Consultant helped locate a temporary UV system.
  - \* Calgon 24” Sentinel unit used for validation
  - \* Capable of treating MILLIONS of gallons
  - \* Removed flow meter and replaced with UV reactor
  - \* Medium Pressure System vs. Low Pressure High Output UV

# If at First you don't succeed...

The Council eventually authorized the continued advancement of the proposed UV installation.

The Council then approved an accelerated method of delivery for the UV project –CM/GC.

The Council finally authorized the installation of a temporary UV system so that water could be injected without contaminating the ASR well in March of 2014.

The James W Fowler Company/ HDR Engineering Inc. and Baker City PW began installation of the permanent UV system in April of 2014.

The UV facility was completed in November 2014 and operates today!

# The Finished Product



# The Finished Product



# Lessons Learned

Plan

Prepare

Practice

Partner

And **communicate** all of these things!

# What's Next?



# Thank You

- \* Bryan Black, PE
  - \* HDR Engineering
- \* Anna Zaklikowski, PE
  - \* Regional Engineer, Washington State Department of Health
- \* Matthew Duffy, PE
  - \* HDR Engineering
- \* James W Fowler Company
- \* Calgon and Xylem/WEDECO
- \* ORWARN