WATER QUALITY UPDATE

January 23, 2014

Presented by:
Amy Blain, Project Manager

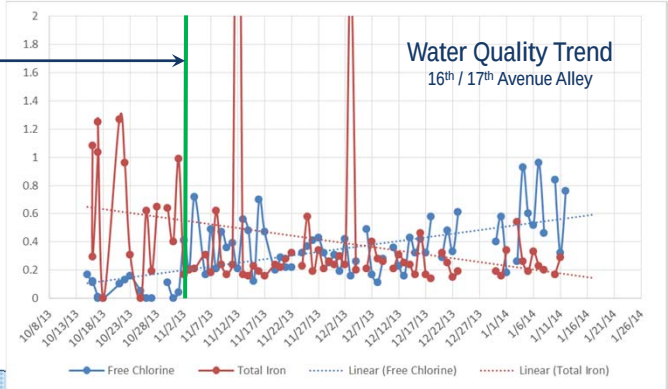
Progress Report – Customer Outreach

- **Ongoing bottled water delivery**
  - **Discontinue along 16th/17th Ave alley with new main**
- **Customer complaints down to 5 - 6 per week**
- **Rate reductions approved for 355 customers**
  - **6-month reductions expire April, 2014**
  - **All current 2-month reductions expire by Feb. 9, 2014**
  - **Most recent rate reduction based on WQ tests authorized Dec. 12, 2013**
- **YMCA shower privileges – No use during past 3 weeks**
- **News from the Well updates published regularly**

Progress Report – Emergency Water Mains

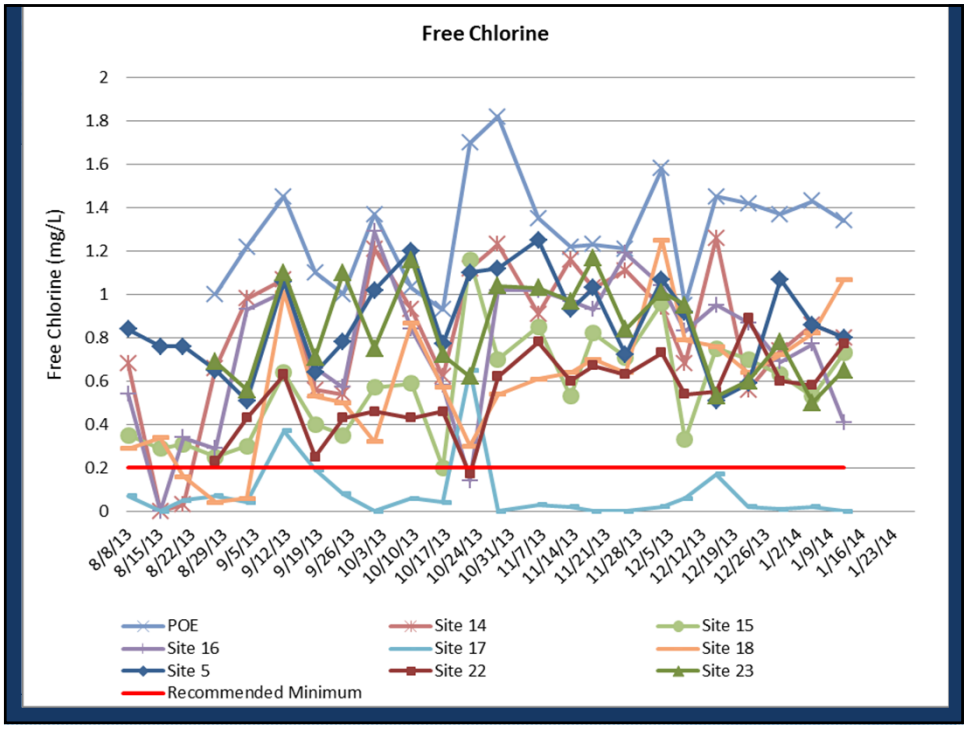
- New mains and customer services are complete and in service
- Hydrant installation, pavement repairs and restoration work is underway
- Final completion by March 11, 2014 (weather permitting)
- Improved water quality and chlorine residual in new mains

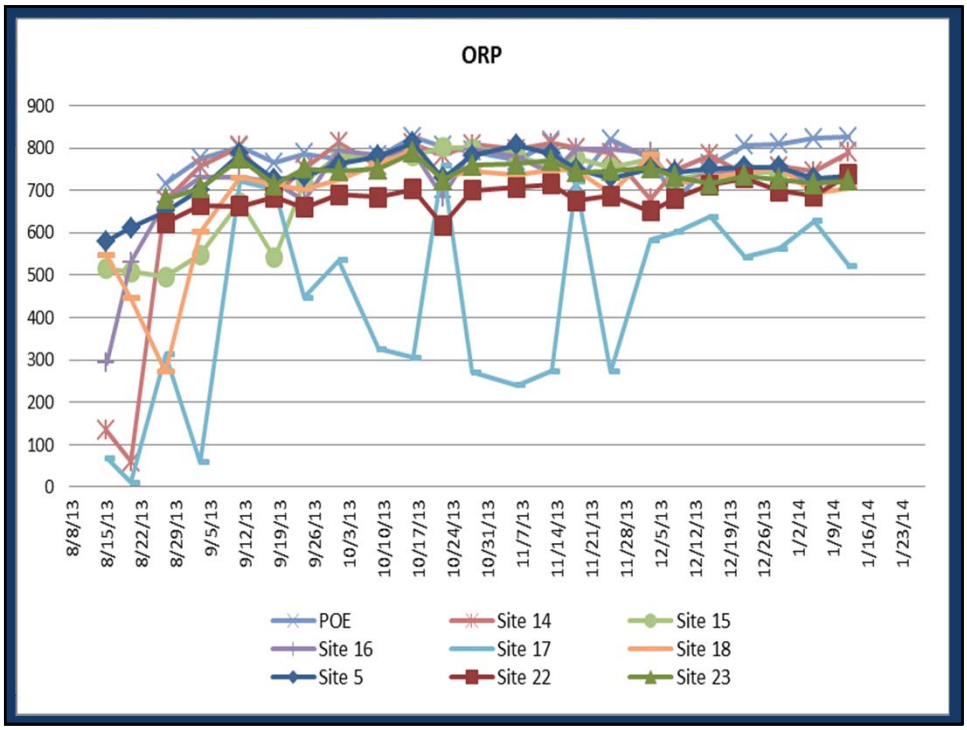
Start of Construction 11/4/2013



Progress Report – Distribution System

- Ongoing weekly distribution system sampling
  - Stable or decreasing soluble iron and manganese confirm most of distribution system continues to stabilize
  - Inconsistent water quality at Site 17
- Ongoing flushing throughout main pressure zone
  - Auto flushers in use for gentle water exchange except in freezing weather conditions
  - Remove on case by case basis depending on area water quality changes, fluctuating water demand, and temperature
  - Re-deploy to historic problem areas with dead end mains, stagnation, or other water age issues


Free Chlorine
Free Chlorine (mg/L)
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
8/8/13
8/15/13
8/22/13
8/29/13
9/5/13
9/12/13
9/19/13
9/26/13
10/3/13
10/10/13
10/17/13
10/24/13
10/31/13
11/7/13
11/14/13
11/21/13
11/28/13
12/5/13
12/12/13
12/19/13
12/26/13
1/2/14
1/9/14
1/16/14
1/23/14
POE
Site 14
Site 15
Site 16
Site 17
Site 18
Site 5
Site 22
Site 23
Recommended Minimum


ORP
900
800
700
600
500
400
300
200
100
0
8/8/13
8/15/13
8/22/13
8/29/13
9/5/13
9/12/13
9/19/13
9/26/13
10/3/13
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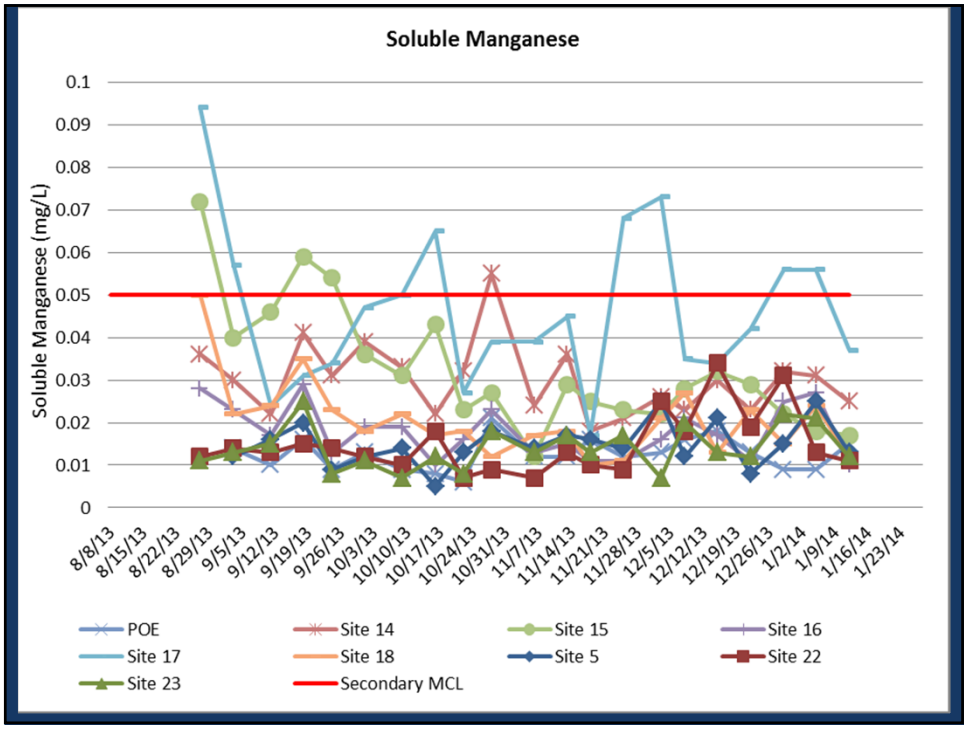
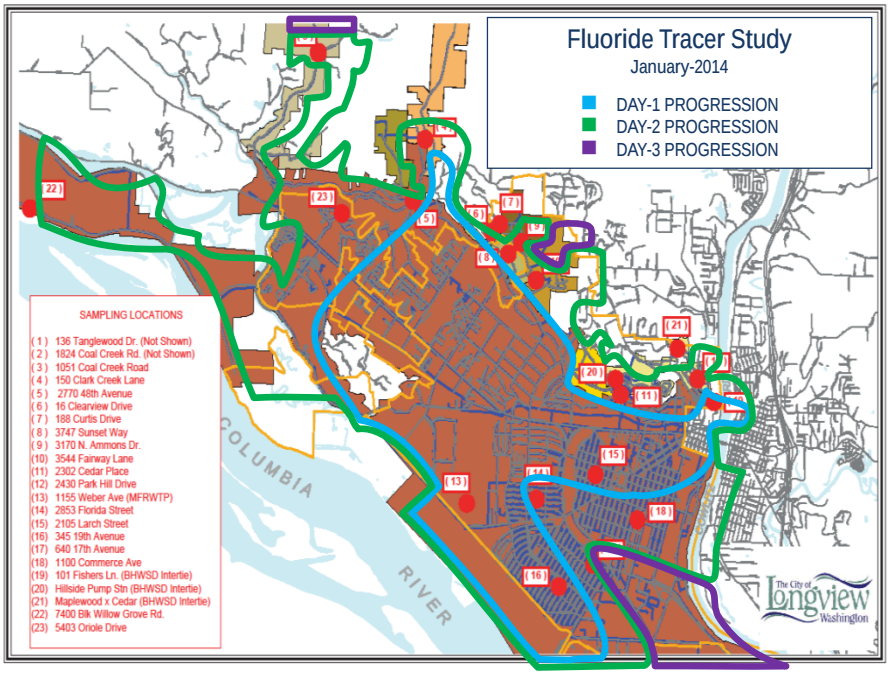


Progress Report – Tracer Study

- ***Question: How Long Does Water Travel in the Distribution System?***
  - **Tested baseline fluoride levels at 23 locations throughout system**
  - **Stopped fluoride Nov 25, 2013 and allowed system to purge**
  - **Restarted fluoride Jan 6, 2014 and sampled daily to track progression**
- ***Purpose: Determine Water Age to Correlate Phosphate Effectiveness***
  - **Phosphates begin to break down after about 2 days**
  - **Day 1: Fluoridated water reached majority of main zone**
  - **Day 2: Fluoridated water reached majority of upper zones**
  - **Day 3: Fluoridated water reached outer limits and isolated pockets**
  - **Tracer study will be repeated during high demand period**



Progress Report – Softening Evaluation

- ***Jar Tests: What Level of Calcium and Silica Removal is Feasible ?***
  - **Created waters to simulate multiple softening treatment techniques**
    - **Ion exchange eliminated due to increased dissolved solids**
  - **Created waters to simulate silica treatment techniques**
- ***Tile Tests: What Level of Treatment is Required to Reduce Spotting?***
  - **Compared removal of calcium (hardness) to removal of silica**
  - **Silica removal more effective than hardness removal**

Tile K - 75% Hardness Removed

Tile N - 75% Silica Removed

Progress Report – Softening Evaluation

- **Silica Removal Treatment Options**
  - **Do Nothing – Silica may decrease with time to reflect Columbia River**
  - **Activated Alumina – Not feasible, no known full scale applications**
  - **Reverse Osmosis**
  - **Magnesium Co-Precipitation**
  - **Alum Coagulation Trial**
    - **Bench top trial conducted January 17, 2014**
    - **Jar test two alum products at varied dosage levels**
    - **Compare silica removal efficiency at varied pH levels**
- **Developing budgetary cost of silica treatment options**

Progress Report – Evaluation Workshop

- **Water Quality workshop – February 20, 2014**
  - **Review distribution water quality status**
  - **Review pilot test results and treatment options**

QUESTIONS ?