

LOMITA CITY COUNCIL WATER SUBCOMMITTEE MEETING

Lomita Water System Update
March 28, 2017





Meeting Overview

- Actions taken since November 2016
- Hazen & Sawyer Amendment No. 2
- 2017 Sanitary Survey
- Water Loss TAP
- MWD Water Quality
- Next Steps...

Actions Taken Since November 2016

- **Capital Projects Update**
 - Reed Street Water Main Replacement
 - Construction Contract Awarded 3.21.17
 - Forrester Drive Water Main Replacement
 - Construction Contract Awarded 3.21.17
 - 253rd St Area Improvements
 - Preliminary Design Complete, Permit Process Underway
 - PCH – Narbonne Ave to Eshelman Ave
 - Preliminary Design Complete, Permit Process Underway
- **Water System Operations**
 - Pressure Reducing Valves Serviced
 - Greensand Filter Media Annual Testing/Service
 - Second Treatment Operator Position Filled

Hazen Amendment No. 2:

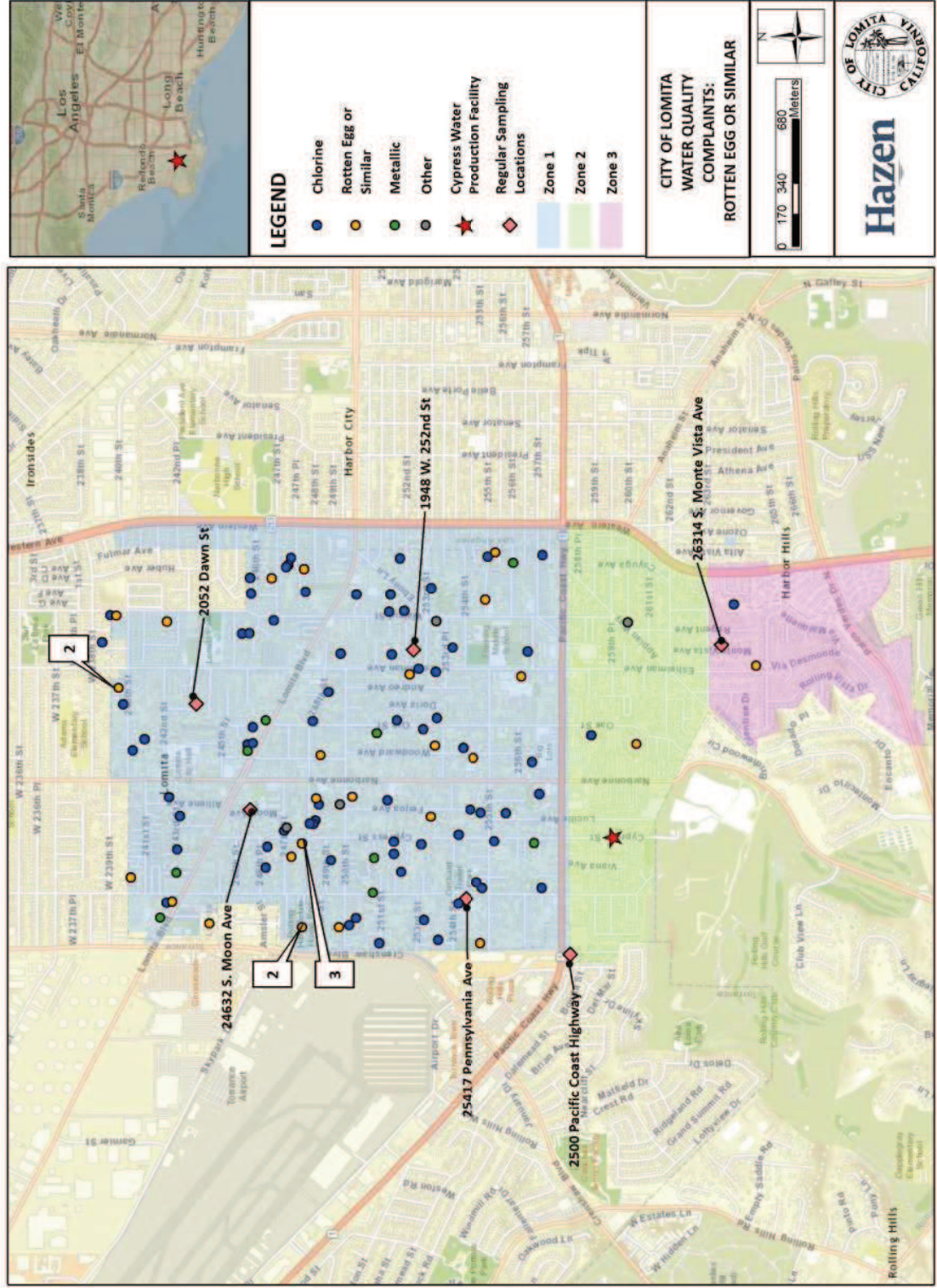
- **Water Quality Data Review**
 - Last 3+ years of data, including lab results and odor complaints/history
- **Distribution System Sampling Plan**
 - Localized sampling and testing throughout the distribution system
 - Sampling and testing of four (4) private residences
 - Performed Sept-Oct 2016 and Feb 2017
- **Membrane Filtration Modeling**
 - Hybrid Reverse Osmosis / Nanofiltration Package
 - Feasible, controls TDS/Hardness but not odor, expensive
- **Evaluate GAC for Odor Removal at CWPF**
 - Granular Activated Carbon – 2 or 4 Vessels
 - Feasible, controls odor and DBPs, does not control TDS/Hardness
 - Cost is less expensive than membrane filtration, eligible for grant funding



Water Quality Data Review

- Lab Results and Complaint History Reviewed
- Timeframe: January 2014 through August 2016
 - 134 Water Quality Complaints for “Odor”
 - 87: “Chlorine” or “Bleach”
 - 32: “Rotten Egg” or “Sulfur”
 - 11: “Metallic”
 - 7: “Other”
- Last 6 Months
 - Less complaints but similar ratios
- Analysis/Recommendations

Water Quality Data Review



Water Quality Data Review

- Data Analysis
 - 50% Complaints – Chlorine Smell
 - 25% Complaints – Rotten Egg Smell
 - Chlorine complaints spiked during “Free Chlorine” operations, and potential other causes are when chloramine ratios are out of optimal range
 - Newly Installed Analyzers to Control Ratios
 - Second Treatment Operator Position Filled – Additional Monitoring
 - Rotten Egg complaints due to organics present in groundwater, current CWPF treatment does not effectively remove all organics
 - Requires Continued Blending with MWD
 - Blend Ratio of 50-60% Groundwater Max

Water Quality Data Review

- Recommendations
 - Continue Chlorine Residual Levels
 - 2 to 3 mg/L at Distribution System Entry Point
 - Optimal Chlorine to Ammonia Ratios
 - Between 4:1 and 5:1
 - Controls Potential Nitrification
 - Maintain Short Water Age
 - Distribution System Turnover
 - Monitor MWD Water Quality
 - Nitrites
 - Customer Outreach
 - Kitchen/bathroom drains may be causing odor
 - Stagnant or old water in house piping may need to be flushed
 - Replace washing machine and garden hoses that house bacteria
 - Hot water heater maintenance

Membrane Filtration (MF)

- Two Different MF Options, Hybrid Configuration
 - Reverse Osmosis (RO)
 - Nanofiltration (NF)
- Proprietary Software to Model the Membrane System
 - Membrane Vendor Software and Chemical Software
- Input Feed Water Quality (Well No. 5)
- Design Parameters
 - TDS – 500 mg/L
- Evaluated Results
 - TDS / Hardness – YES (estimated)
 - Taste Improvement – YES (estimated)
 - Sulfide / Odor – NO (estimated)

MF Conceptual Design

- Capital Cost – \$5.2 million (\$3 million connection fee)
- Annual O&M – \$350k
- Annualized Cost – \$234/Acre-foot
- Assumes 100% Groundwater Utilized
 - MF not effective at sulfide removal, and not likely to improve odor enough to allow for 100% groundwater usage
 - Blending operations would need to be continued after implementation of MF if no additional odor control implemented
 - Current TDS/Hardness levels have dropped due to Northern California water availability, which will likely continue for remainder of this year pending MWD operations



Granular Activated Carbon (GAC)

- Groundwater aquifer has organics that can cause odor issues, such as “rotten-egg” or “sulfur” smell
- Bench testing of aeration showed that aeration alone was not sufficient to control odor
- Granular Activated Carbon (GAC) is effective at filtering out organics and improving odor; next step was to bench test different GAC filter media

GAC Pilot – Bench Testing



GAC Pilot – Bench Testing

- Testing Period: 11.9.16 through 1.24.17
- Evaluated Two Different GAC Media
 - Calgon Centaur 12x40 – Catalytic GAC
 - Calgon Filtrasorb 400 – Conventional GAC
- Treated 100% Groundwater
- Once, Daily, and Weekly Samples
 - Field – pH, temp, turbidity, sulfide, DO, ORP, FPA
 - Laboratory – TOC, iron, manganese, nitrate, TTHM, HAA5
- Evaluated Results
 - Sulfide Removal - YES
 - Odor Removal (FPA) – YES
 - Iron, manganese, turbidity, headloss, nitrate peaking – no concern

GAC Conceptual Design

- Capital Cost – \$1.7 million
- Annual O&M – \$450k
 - Based on two (2) month GAC media replacement estimate from pilot test results
 - Conservative estimate - larger GAC vessels likely to outperform pilot test vessels
- Annualized Cost – \$196/Acre-foot
- Funding Opportunities
 - Grant programs available for funding projects that increase the use of local groundwater supplies, of which Lomita has adjudicated rights in the West Coast Basin
 - Adjudicated rights available for 80% of Zone 1 demand, and leasing rights for remaining 20% is available and would potentially reduce costs even further

2017 Sanitary Survey

- State Water Resources Control Board
 - Division of Drinking Water – Regulatory Agency Oversight
 - System Survey Performed Every Few Years
 - Last Survey Nov. 2012 – 21 comments/recommendations/directives
- Survey Performed January 26, 2017
 - Field visit of all facilities (WB-7, WB-8, Appian Way PRS, CWPF including Well #5 and Reservoir, Harbor Hills Tank)
 - Meeting to discuss November 2012 Survey and outstanding items that had not been previously addressed, that were not known to current engineering and maintenance staff due to turnover
- Sanitary Survey Letter dated February 28, 2017
 - Only seven (7) comments/recommendations/directives
 - Primarily focused on data and information / records



2017 Sanitary Survey

- Notable Quote:

“Based on the recent system field inspections, file review, and other related evaluations, DDW finds that the City provides wholesome potable water to its water customers. DDW also finds the operation of the City water system satisfactory overall.”



Water Loss TAP

- SB 555 – New State Law
- Requires a “Level 1 Validated” Water Loss Audit to be Submitted Annually, beginning October 1, 2017
- Technical Assistance Program (TAP)
 - Lomita participating in the TAP
 - On track to submit by the deadline
 - www.californiawaterloss.org
- Benefits
 - Identify areas of water loss, consequently areas of revenue loss

MWD Water Quality

- Water sample testing in Zone 2 and Zone 3 continue to show some slight decreases in water quality over the last several months
- Continued Communication with MWD
 - Not a health concern
 - MWD is performing maintenance activities
 - City operational changes to address short-term decrease in MWD water quality – flushing in Zone 2 & 3, operational changes at CWPf to make up differences
- MWD supplying 100% Northern California water, projected through the end of the year



Next Steps

- Draft Funding Plan for GAC Project
 - Capital Cost - \$1.7 million
 - Annual O&M
 - Offset Surface Water Purchases
 - Grant Funding Opportunities
- Council Consideration of Hazen Report, Water Subcommittee Discussions, and Potential GAC Project
- Develop FY 17-18 Capital Project List (underway)
- Water Loss Audit due October 1, 2017 (underway)
 - Request Leak Detection for FY 17-18 Budget
 - Implement Meter Auditing Program for FY 17-18 Budget
- Next Water Subcommittee Meeting (TBD)