# Water Authority's Water System - Permitting, Compliance, Operations and Capital Improvements Planning

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Water Utility Authority

# Water System in 2015

- Water System in the 1990's and early 2000's
  - Single Source – ground water pumping
- Water System in 2015
  - Five Sources of Supply
    - Ground Water
    - Surface Water for Drinking Water Purposes
    - Surface Water for Non-potable Uses
    - Purified Industrial Effluent for Non-potable Uses
    - Treated Municipal Effluent for Non-potable Uses

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# Water System in 2015

- Significantly increased Regulatory Requirements
  - Surface Water Treatment Compliance
  - Arsenic Drinking Water Standards
  - New Ground Water rules – chlorination
- Operating Three Different Water Systems
  - Drinking Water System
  - Non-Potable Surface and Industrial Effluent Reuse
  - Non-Potable Municipal Effluent Reuse
- State Engineer and ESA Compliance

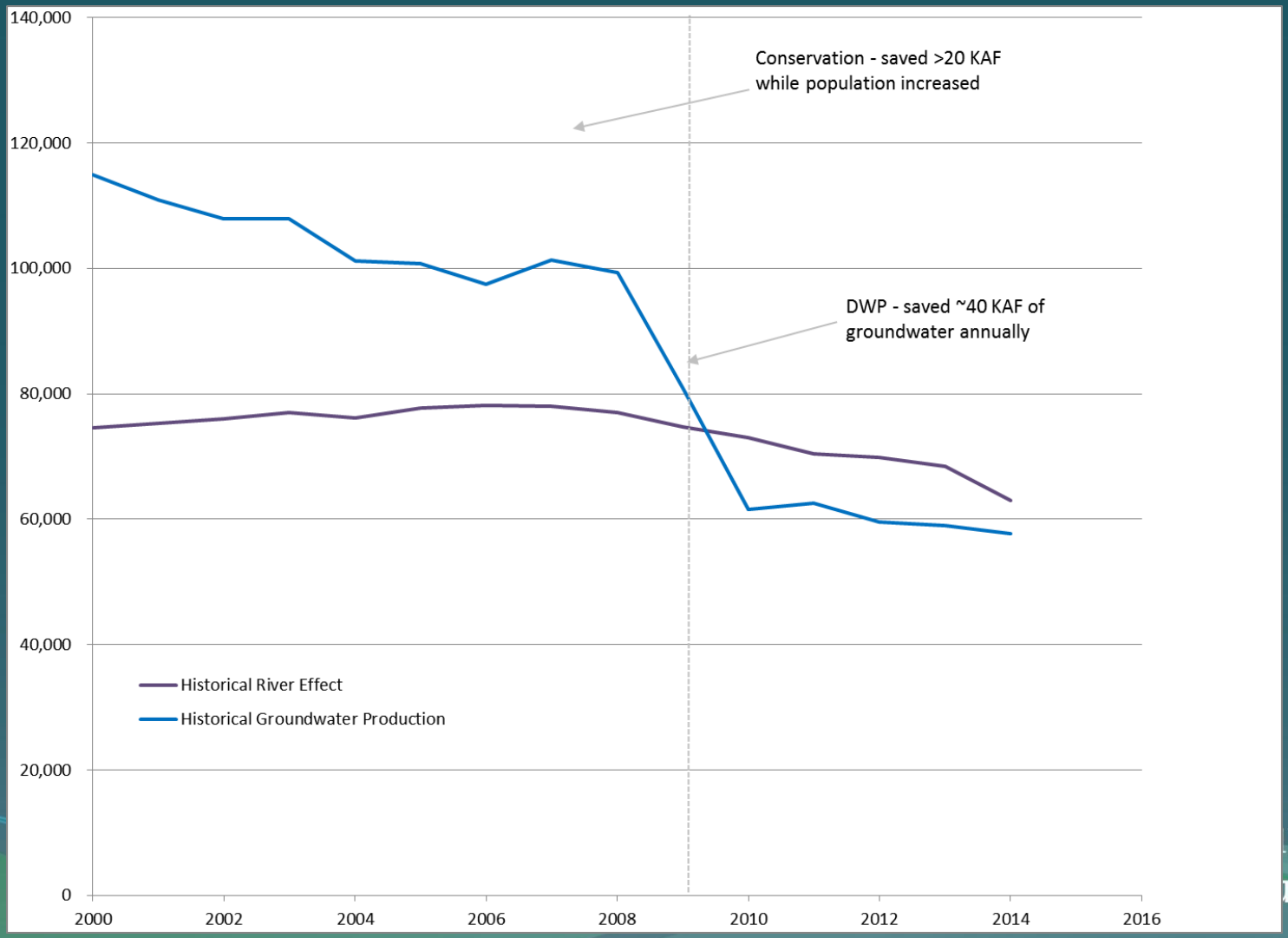
# OSE Permits

- OSE Permit RG-960 et al
  - Ground Water Pumping of up to 155,000 acre-feet per year
  - Required to offset river depletions from pumping
- Surface Water Permit SP-4819 (non-potable uses)
  - Surface diversion up to 3,000 acre-feet SJC per year
- Surface Water Permit SP-4830 (DWP)
  - Divert San Juan-Chama Water up to 96,200 acre-feet SJC per year (total combined with SP-4819)

# DWP - OSE and Biological Opinion

- Use of the DWP has been successfully implemented. Severe drought has prevented the Water Authority from operating the plant for several months each year in 2011, 2012 and 2013. Full operation in 2014.
  - Biological Opinion from FWS and OSE Permit restrict use during low flows - <121 cfs at Central Avenue Bridge
- Low flows in the Rio Grande has proven to be the most limiting factor
- Heavy sediment loads during periodic storm events (solids handling) will continue to be an issue

# Reduced Depletions on the Rio Grande



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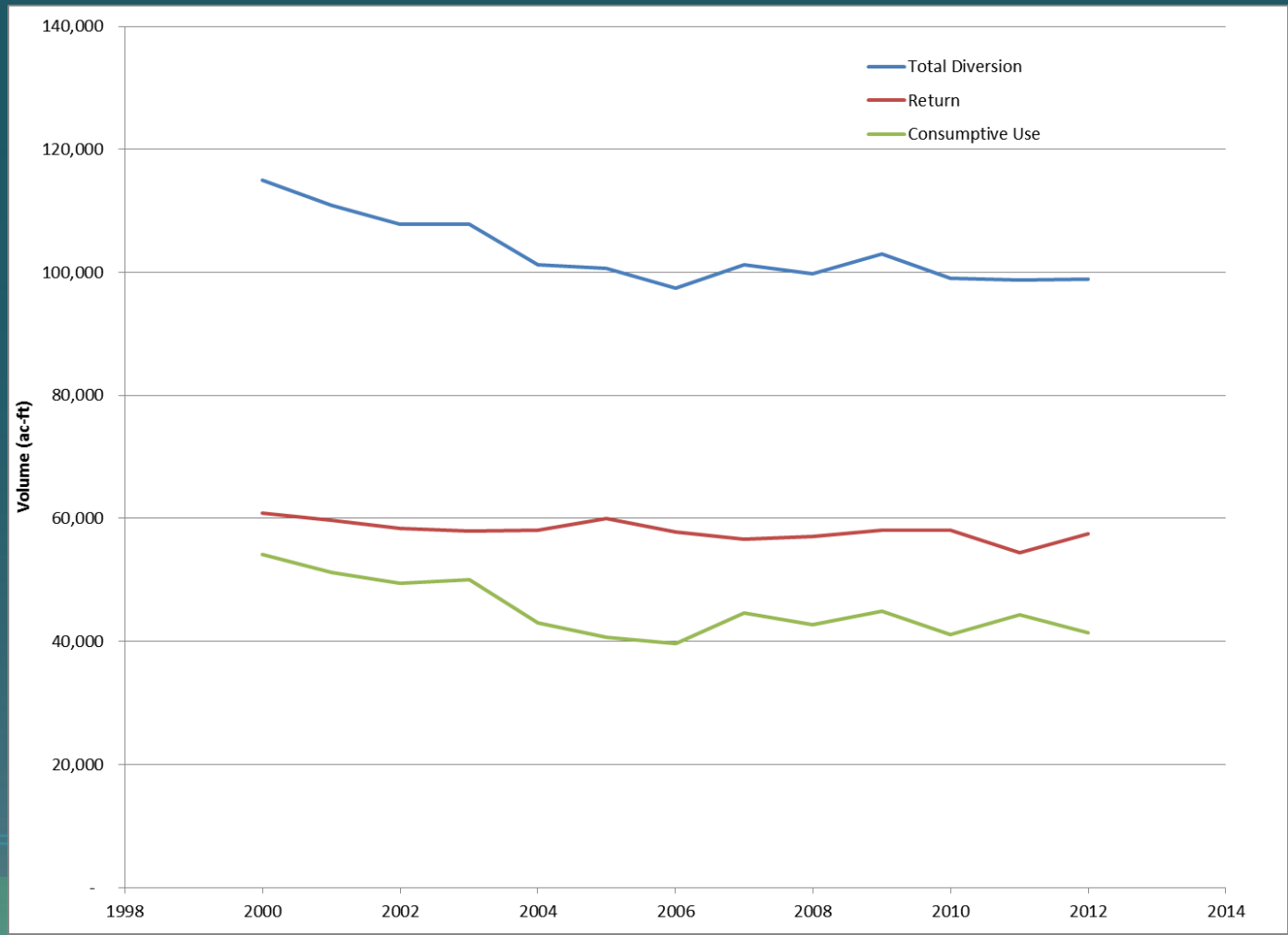
# Return Flow and Consumptive Use

- SP-4830 assumed 54% return flow
- Actual percentage has increased to about 60% due to conservation



# Safe Drinking Water Act Compliance

Mark Kelly, P.E.

# Sampling Locations

- Customer Taps
- Entry Points to the Distribution System
- Surface Water Treatment Plant

# Customer Taps

| | Substance | Maximum Contaminant Level (MCL) | Maximum Detected (2014) | Sampling Frequency |
|---|---|---|---|---|
| Microbiological | Total Coliform | 5% of Samples | 0% of Samples | 240 per Month |
| Disinfectants | Chlorine | 4.0 PPM | 1.9 PPM | 240 per Month |
| Disinfectant By-Products | TTHMs | 80 PPB | 57 PPB | Quarterly |
| | HAA5 | 15 PPB | 17 PPB | Quarterly |
| Metals (90th percentile) | Lead | 0.015 PPM | 0.003 PPM | Every 3 Years |
| | Copper | 1.3 PPM | 0.29 PPM | Every 3 Years |

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# Entry Points

| | Substance | MCL | Maximum Detected (2014) | Voluntary Sampling Frequency | Regulatory Sampling Frequency |
|---|---|---|---|---|---|
| Metals | Arsenic | 10 PPB | 8 PPB | Quarterly | Every 3 Years |
| | Barium | 2 PPM | 0.2 PPM | Quarterly | Every 3 Years |
| | Chromium | 100 PPB | 8 PPB | Quarterly | Every 3 Years |
| Minerals | Fluoride | 4 PPM | 1.2 PPM | Quarterly | Every 3 Years |
| Nutrients | Nitrate | 10 PPM | 3.1 PPM | Quarterly | Annually |
| Radionuclides | Gross Alpha | 15 pCi/L | 5 pCi/L | | Every 6 Years |
| | Uranium | 30 PPB | 3 PPB | | Every 6 Years |
| Disinfectants | Chlorine | Must have a residual | | Every 15 minutes | Every 15 minutes |

# Surface Water Treatment Plant

| | Substance | MCL | Maximum Detected (2014) | Voluntary Sampling Frequency | Regulatory Sampling Frequency |
|---|---|---|---|---|---|
| Microbiological | Turbidity | 1 NTU, 95%<0.3 | 0.33, 99.9%<0.3 | Every 15 minutes | Every 15 minutes |
| | Total Organic Carbon | 50% removal, 2 PPM | 1.4 PPM | 5 days/week | Monthly |
| Metals | Chromium | 100 PPB | < 1 PPB | Quarterly | Annually |
| Minerals | Fluoride | 4.0 PPM | 0.5 PPM | Quarterly | Annually |
| Nutrients | Nitrate | 10 PPM | 0.31 PPM | Quarterly | Annually |
| Disinfectants | Chlorine | 4.0 PPM | 1.4 PPM | Every 15 minutes | Every 15 minutes |

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# Special Sampling

| | Substance | Timeframe | Sampling Frequency |
|---|---|---|---|
| UCMR3 | Unregulated Contaminants | March | Every 5 years |
| | • VOCs, SOCs | | |
| | • Cr(VI), total Cr | | |
| | • Hormones | | |
| LT2 | Cryptosporidium | April | Monthly for 24 months |
| | Turbidity | | |
| | E.Coli | | |
| Burton and Ridgecrest Wells | VOCs, SOCs, EDB | Since 2010 | Monthly |

# Water System Operation

Charlie Leder, P.E.

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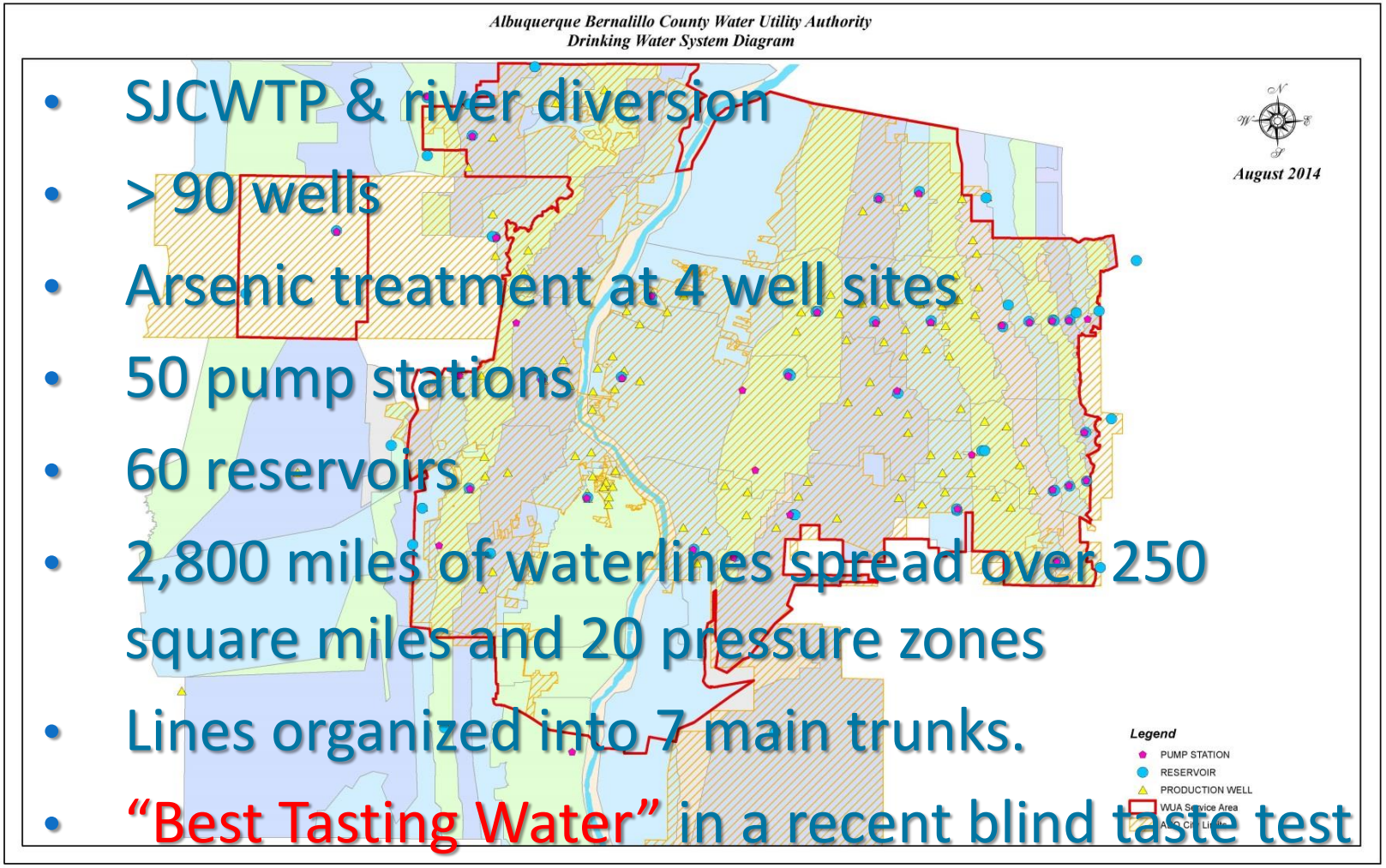
# Water Supply System Overview




- SJCWTP & river diversion
- > 90 wells
- Arsenic treatment at 4 well sites
- 50 pump stations
- 60 reservoirs.
- 2,800 miles of waterlines spread over 250 square miles and 20 pressure zones
- Lines organized into 7 main trunks.
- "Best Tasting Water" in a recent blind taste test

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# SJCWTP quick facts

- Can supply 92 MGD of potable water
- Water released at Abiquiu Dam and diverted near Alameda Bridge (2 days of travel)
- SJCWTP usually operates at 60-80 MGD *(*river flow permitting)*
- SJCWTP output usually at 50-80% of daily demand

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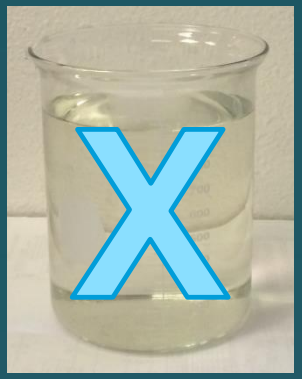
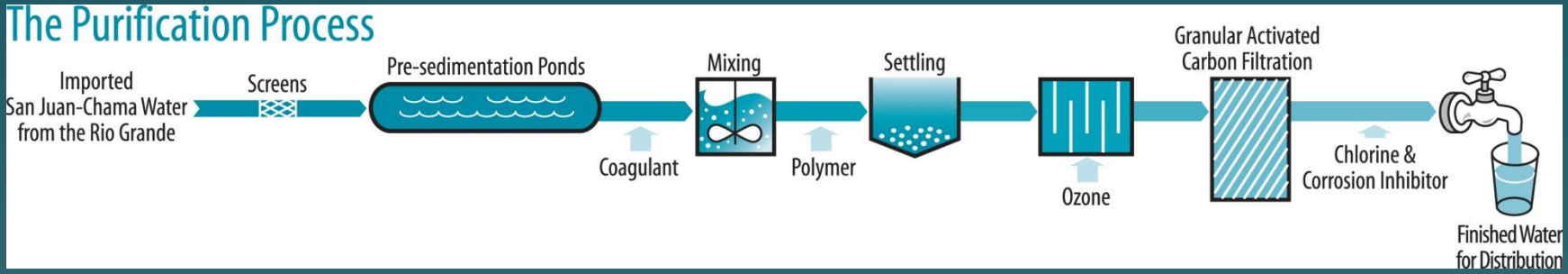
# SJCWTP treatment process





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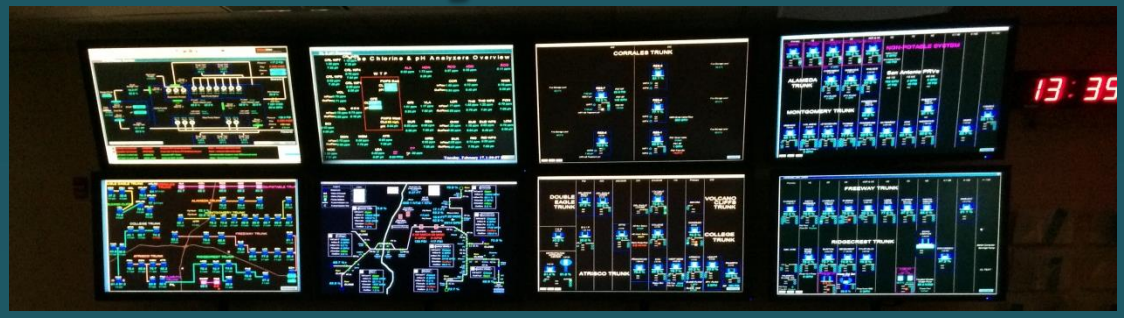
# Water System SCADA



- Automatically operates the system as a “gravity fed” system
- Includes automatic protections against:
  - Overfilling / Spills at Reservoirs
  - Pump equipment damage from high/low temperatures
  - High/Low pressures in waterlines
- Start/stop well and booster pumps based on:
  - Reservoir level
  - Time of day & cost of energy
  - Achieving ≤ 10 ppb As by blending (includes SJCWTP water)

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# Managing the Operation

- A *TEAM* effort with team member contributions as follows:
  - **Plant Operations** – Daily O&M and repair of wells, tanks, treatment facilities, and booster stations
  - **Field Operations** – Daily O&M and repair of waterlines & main line valves
  - **Compliance** – collection and analysis of water samples and SDWA regulatory compliance reporting
  - **Water Resources** – coordination with State & Federal agencies on surface water releases
- Team members hold *DAILY* teleconference Mon-Fri from April to Oct to make sure Operation runs **smoothly;** Hold weekly teleconferences rest of year

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# Water System Capital Improvement Planning

Anthony Montoya, P.E.

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# Water System Leaks

The ABCWUA has in excess of 3,343 miles of water pipe
Of this 2,453 miles are small diameter (4” to 12”)
There were 1,613 main and service line failures in 2014
This equates to 1 pipe failure every 0.66 miles this year alone
This is also about 4.4 leaks per day

| | |
|---|---|
| Miles of Pipe | 2,453 |
| # of Failures in 2014 | 1613 |
| Breaks/mile of pipe | 0.66 |

| Pipe Type | 2014 |
|---|---|
| MAIN LINES | 883 |
| SERVICE LINES | 730 |
| TOTAL | 1613 |

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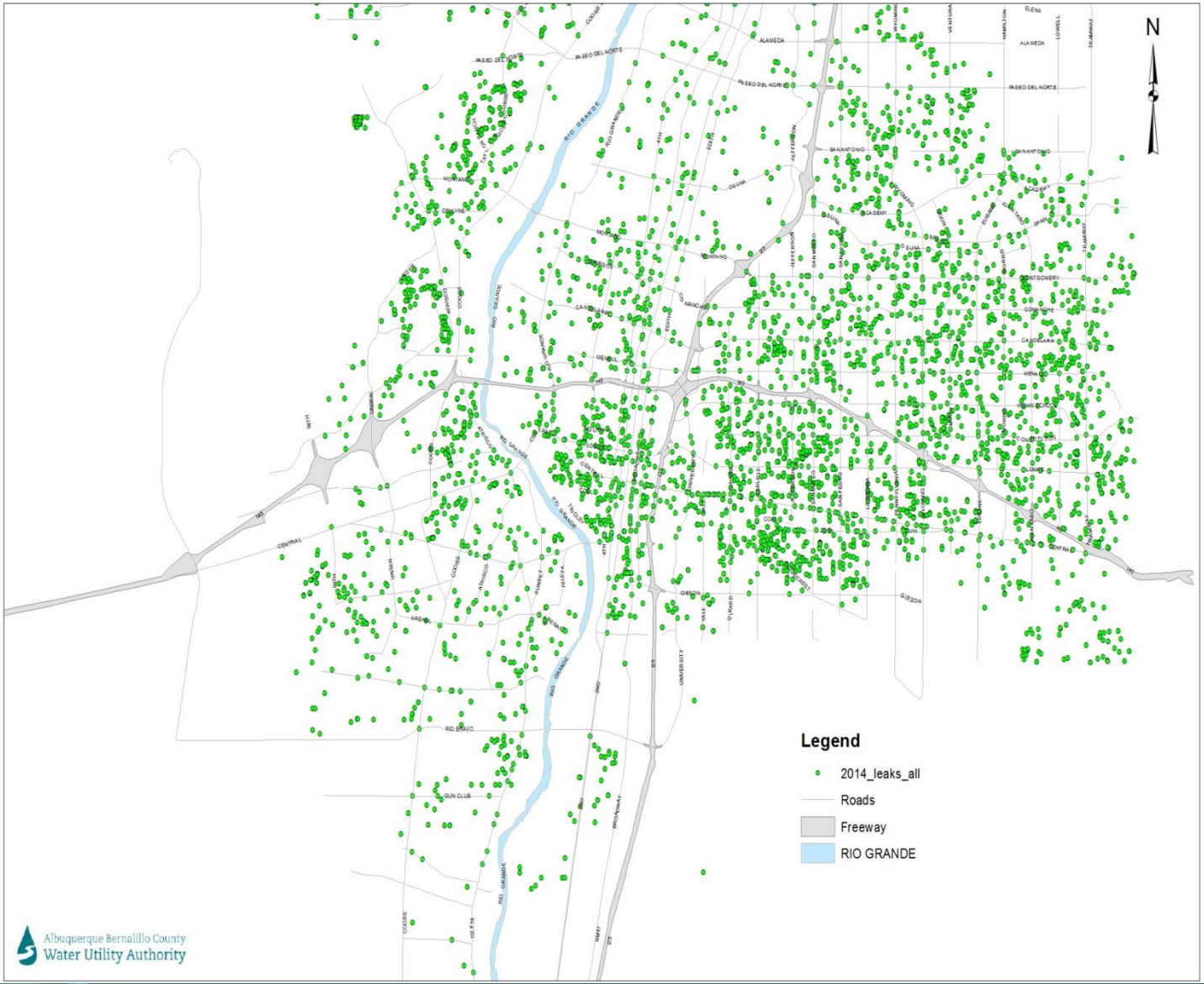
INFRASTURUCTURE FAILURES
2014




Infrastructure failures occur around the city every year.

There are over 5,320 leaks that were reported in 2014.

1,613 of these leaks occurred on small and large diameter pipes.

3,707 leaks on other infrastructure (meters, valves, hydrants, etc.)

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## Cast Iron & Steel Waterline Rehab Projects for 2014

| | |
|---|---|
| *Menaul from Jefferson to Madison | 350 LF - $ 80k |
| Aztec from Palomas to San Pedro | 700 LF - $270k |
| Cagua from Aztec to La Corrida | 850 LF - $150k |
| Adams from Indian School Rd to Joe Dan | 1200 LF - $180k |
| *3rd St. from Tijeras to Marquette | 700 LF - $ 65k |
| Truman from Mountain to Marble | 700 LF - $120k |
| *Quincy from Lomas to Marble | 700 LF - $204k |
| *Truman from Lomas to Marble | 700 LF - $316k |
| Los Altos Neighborhood | 2400 LF - $305k |
| *San Mateo & Comanche | 50 LF - $ 25k |
| Total | 8350 LF - $1.7M (1.58 Miles) |

* Emergency Project

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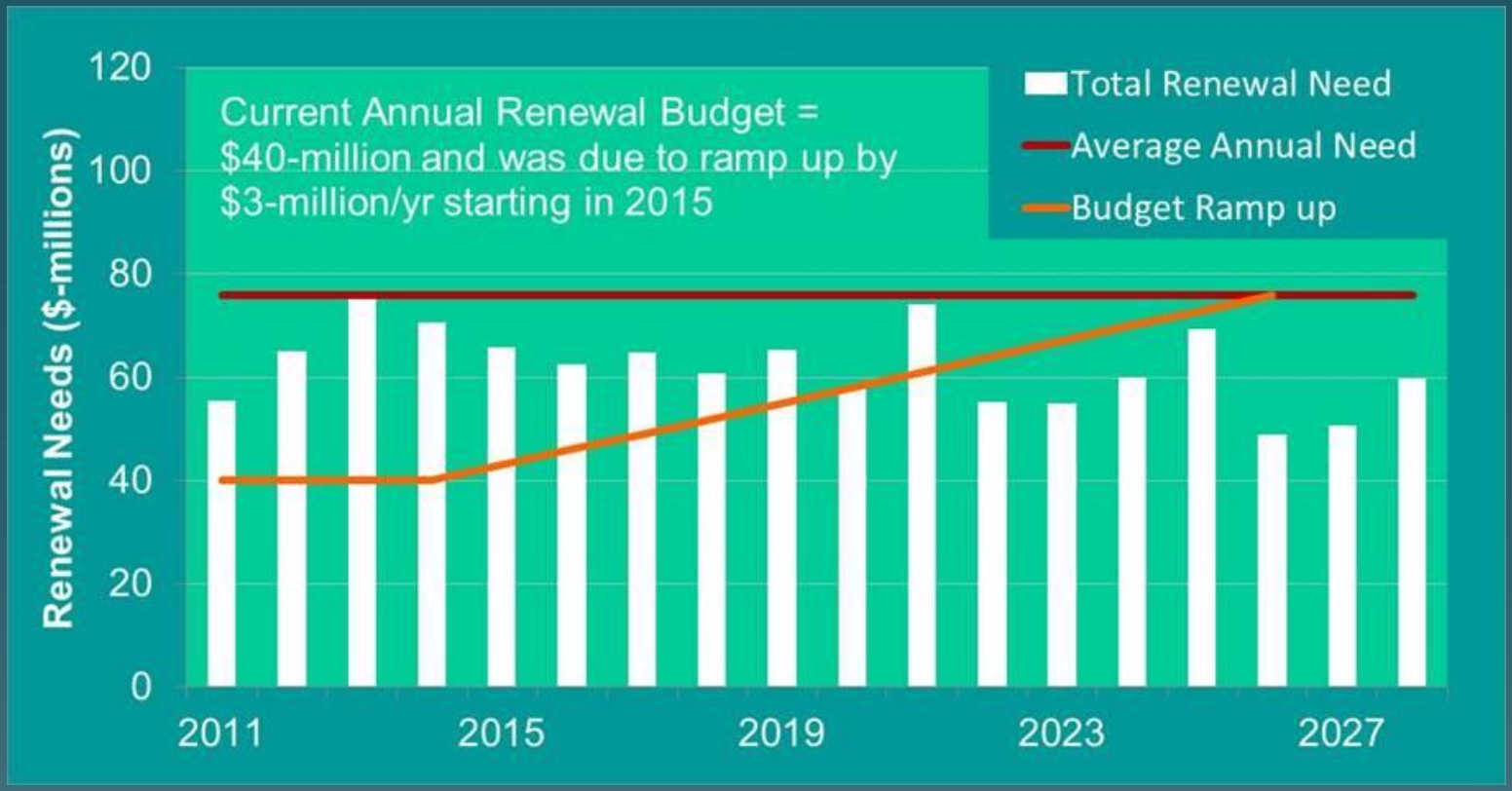
# Per Asset Management Plans:

Water Rehab Spending needs to increase from $5M to $14M per year
Rehab needs to increase from 6.6 miles to 18.9 miles per year
Planned Rehab Projects replace more infrastructure over Emergencies

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# Questions?

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