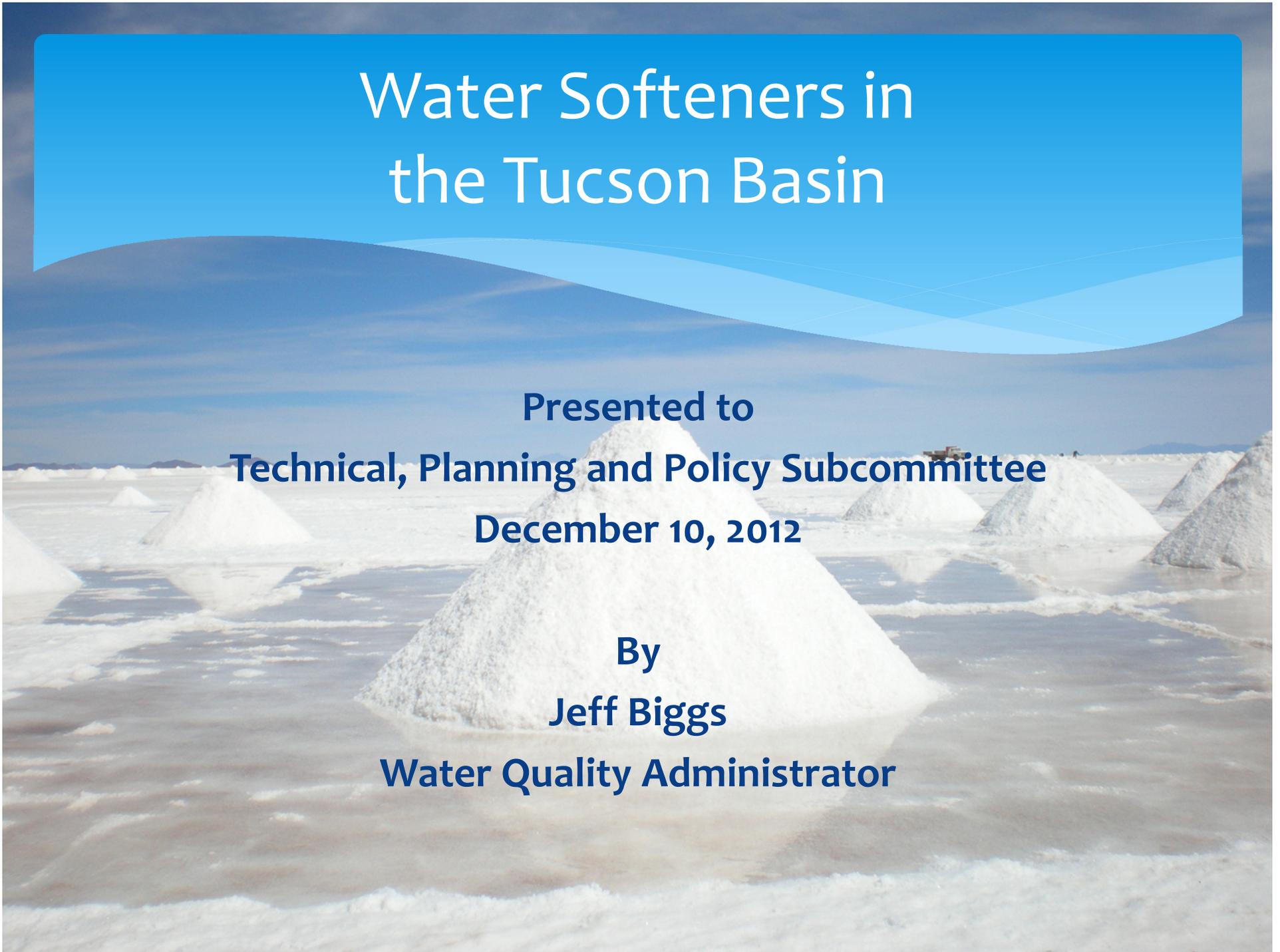


# Water Softeners in the Tucson Basin

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# Examples of Problems associated with Salinity Build-up

## **Golf Courses**

- \* Golf course grass cannot tolerate high TDS water
- \* Salts precipitate into soil and prevent drainage
- \* Requires more water to flush soil

## **Household Appliances**

- \* Scale build-up reduces life expectancy
- \* Scale build-up reduces hot water heater efficiency

## **Infrastructure**

- \* Scale build-up increases maintenance costs in WTP & WWTP
- \* Scale build-up reduces equipment life expectancy

# Residential Water Softeners

## Studies

- \* PAG 1994
- \* CASS Phase I, TAMA 2003
- \* Tucson Water RPT 2003
- \* U.S. Bureau of Reclamation Greater Phoenix Valley Softener Study 2004
- \* CASS / Cave Creek Water Reclamation Salinity Study 2005
- \* City of Tucson softener survey 2006

# Residential Water Softeners

## CASS Phase I Salt Balance for Tucson AMA (tons/year)

Description	2000	2015
Average salt inflow from CAP	65,000	191,000
Average salt inflow from groundwater	5,000	5,000
Average salt inflow from natural recharge	31,000	31,000
Additional salt sources	29,000	29,000
<b>Total Salt Entering AMA</b>	<b>130,000</b>	<b>261,000</b>
Average salt outflow in groundwater	14,000	14,000
Average salt outflow in Santa Cruz River	9,000	41,000
Total Salt Leaving AMA	23,000	55,000
<b>Net Salt Accumulation in AMA</b>	<b>107,000</b>	<b>205,000</b>

# Residential Water Softeners

## Relationship of Water Softener Penetration and Residual Salinity (650 TDS)

Water Softener Penetration (year)	26% (2015)	39% (2030)	50% (2050)
Additional TDS Load to Wastewater	383 mg/L	479 mg/L	561 mg/L
Total Wastewater Load	1033 mg/L	1129 mg/L	1211 mg/L
Residual Salt in AMA	233,000 Tons	241,000 Tons	248,000 Tons

# Summary

- \* Private Water Softener Use Will Increase
- \* Increased TDS in Effluent Will Impact
  - Wastewater Treatment
  - Turf Irrigation
  - Recycled Water Reuse
- \* Ordinances that Limit the Use of Water Softeners will Meet Resistance
  - Customers
  - M&C
  - Softener Industry and Suppliers

# Next Steps

- \* Current Studies are out of date
- \* New studies need to be done for the Tucson Area
- \* Keep CWAC updated on survey results



# QUESTIONS