

The Utility of the Future at Work: Lessons From the San Antonio Water System

Steve Clouse

Chief Operating Officer, Senior Vice-President

November 20, 2013



National Clean Water Law Seminar



San Antonio Water System

Sustainable, Affordable Water Services

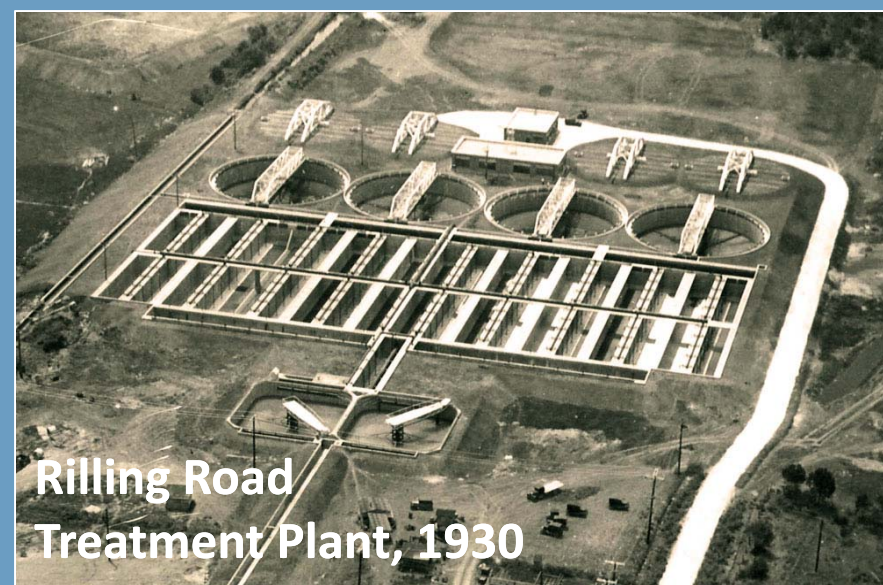
- Municipally owned water and wastewater utility
- Governed by Board of Trustees
- > 1000 mi² service area
- 3 major WRC facilities with 233 mgd permitted capacity
- 2013 Consent Decree
- Maintaining some of the lowest wastewater rates in Texas



San Antonio Water System


Historical Highlights

- First municipal water / wastewater system in North America
- Longest history of reuse and nations largest direct reuse system
- First to achieve beneficial use of all process residuals (except screenings)



- Regulatory focus:
 - Disposal
- SAWS focus:
 - Resource Management

PERMIT TO DISCHARGE WASTES



TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
P.O. Box 13087
Austin, Texas 78711-3087

TPDES PERMIT NO. WQ0010137033
[For TCEQ office use only -
EPA I.D. No. TX0077801]

This is a renewal that replaces TPDES Permit
No. WQ0010137033 issued August 18, 2006.

under provisions of
Section 402 of the Clean Water Act
and Chapter 26 of the Texas Water Code

San Antonio Water System

whose mailing address is

3495 Valley Road
San Antonio, Texas 78221

is authorized to treat and discharge wastes from the Dos Rios Water Recycling Center Wastewater Treatment Facility,
SIC Code 4952


located on Valley Road near the confluence of the San Antonio and Medina Rivers, approximately one mile west of
Interstate Highway 37 and 2.25 miles east of Farm-to-Market Road 1937 in Bexar County, Texas

from Outfall 001 to the Medina River Below Medina Diversion Lake in Segment No. 1903 of the San Antonio River
Basin; from Outfall 002 through approximately 15 miles of pipeline to the Upper San Antonio River in Segment No.
1911 of the San Antonio River Basin at a point approximately 600 feet northwest of the intersection of Tuleta Street and
Broadway; from Outfall 003 through approximately 14 miles of pipeline to the Upper San Antonio River in Segment
No. 1911 of the San Antonio River Basin at a point approximately 500 feet northwest of the intersection of Isleta Street
and East Josephine Street; from Outfall 004 through approximately 20 miles of pipeline to Salado Creek in Segment
1910 of the San Antonio River Basin at a point approximately 100 feet south of the intersection of Salado Creek
Rittiman Road; from Outfall 005 through a pipeline to the Upper San Antonio River in Segment No. 1911 of the
San Antonio River Basin at a point approximately 800 feet southeast of the intersection of South Alamo Street and East
Market Street and from Outfall 006 to the Upper San Antonio River in Segment No. 1911 of the San Antonio River
Basin

according with effluent limitations, monitoring requirements and other conditions set forth in this permit, as well
as the rules of the Texas Commission on Environmental Quality (TCEQ), the laws of the State of Texas, and other
orders of the TCEQ. The issuance of this permit does not grant to the permittee the right to use private or public
property for conveyance of wastewater along the discharge route described in this permit. This includes, but is not
limited to, property belonging to any individual, partnership, corporation, or other entity. Neither does this permit
authorize any invasion of personal rights nor any violation of federal, state, or local laws or regulations. It is the
responsibility of the permittee to acquire property rights as may be necessary to use the discharge route.

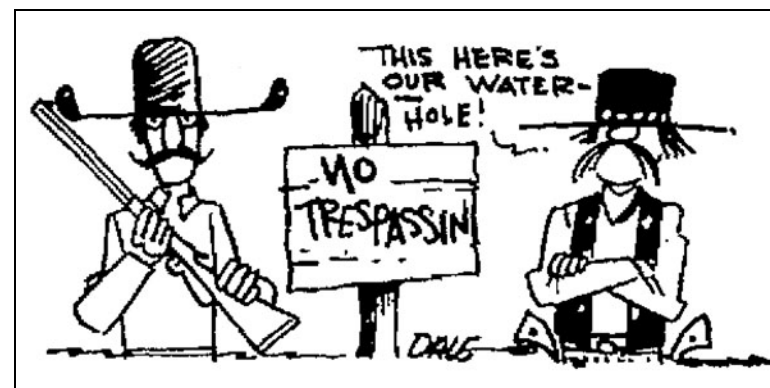
This permit shall expire at midnight, March 1, 2015.

ISSUED DATE: **SEP 21 2010**


For the Commission

Drivers of Resource Management

- Limited water supplies
- Limited rate support
- Drought
- Ability to accept risk

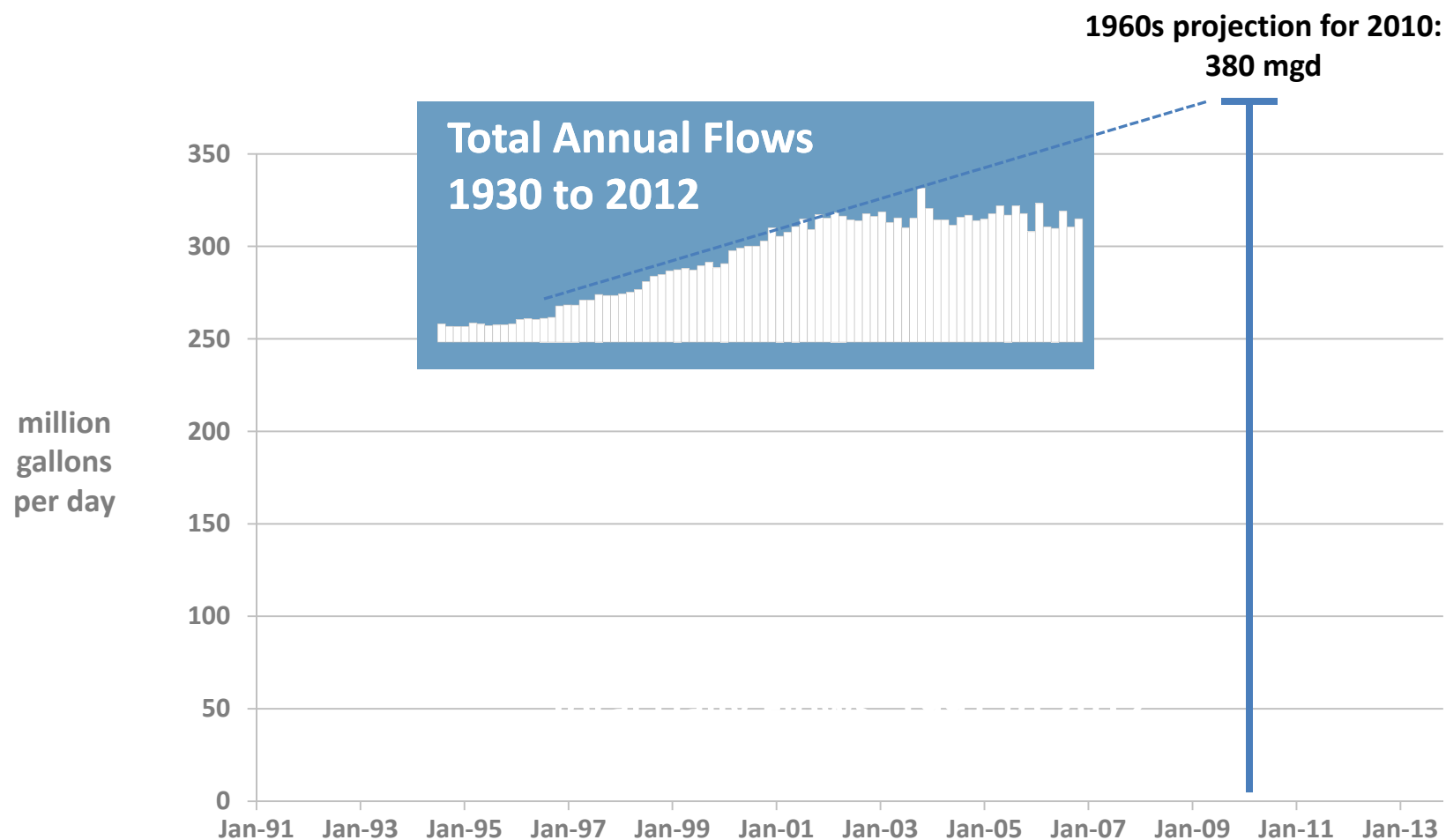


San Antonio Express-News, June 20, 1965



Texas Blind Salamander

Impact of Conservation



Step 1: Interconnect and Centralize

Centralized Treatment/ Decentralized Discharges

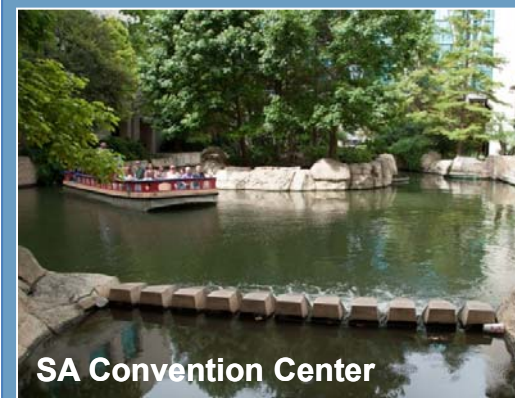
- Raw water transfers to Dos Rios
- All solids handling consolidated at Dos Rios



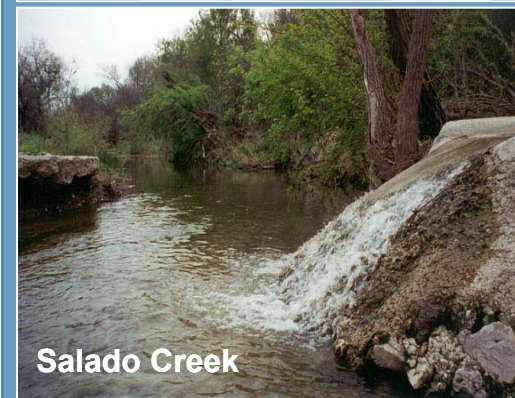
New Discharge Locations



Brackenridge Park

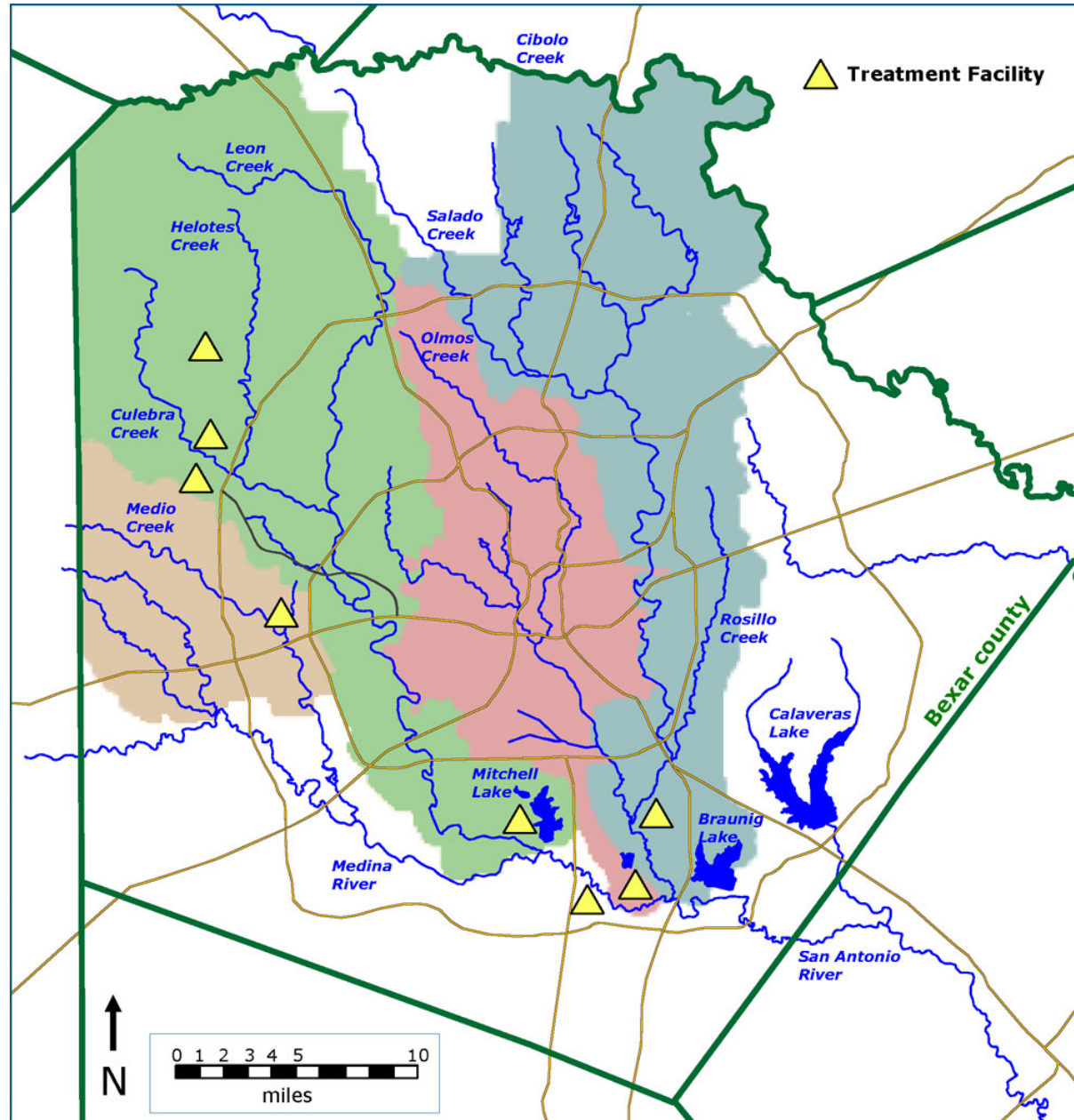


SA Convention Center

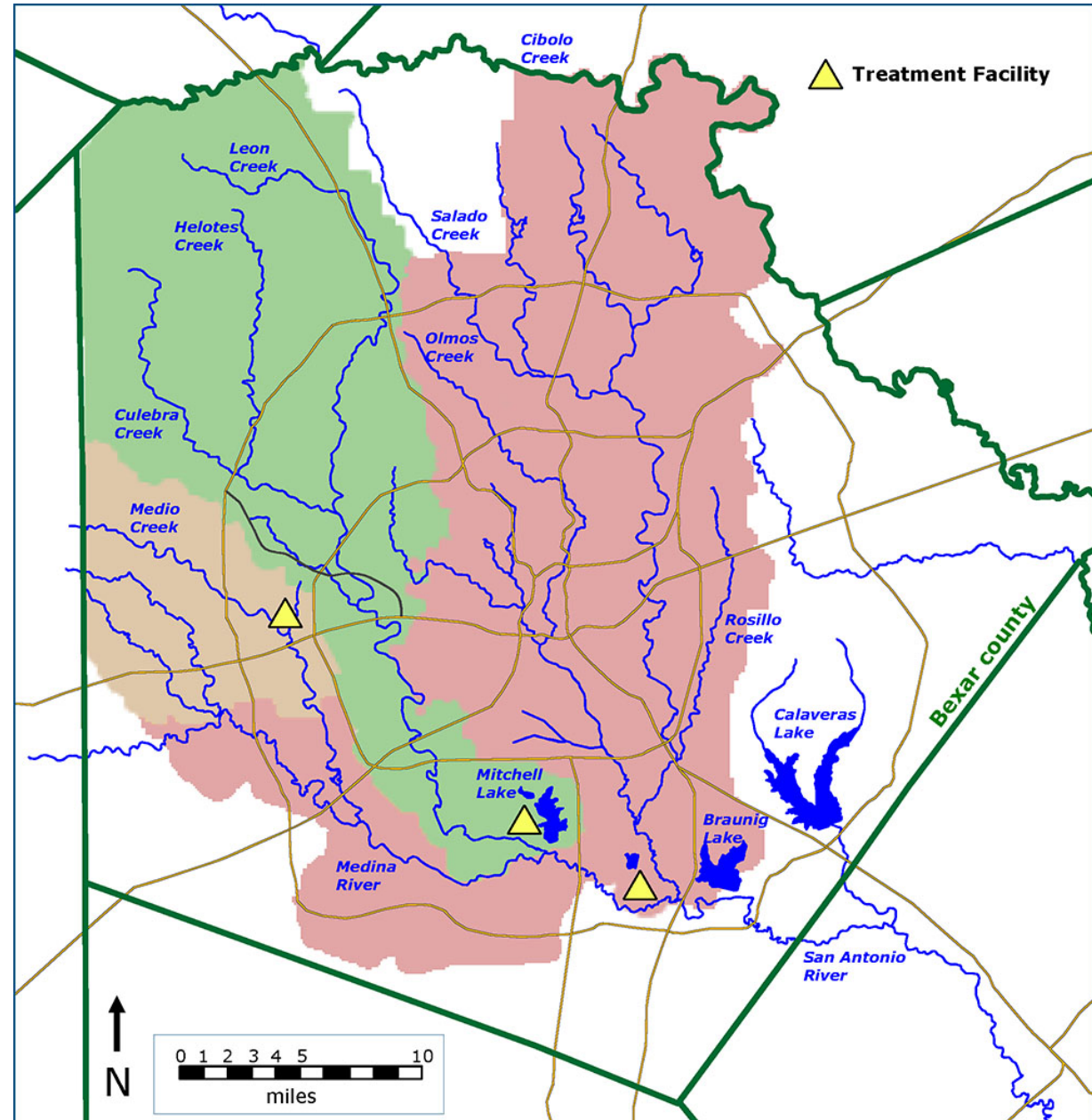


Salado Creek

1990s Sewersheds and Wastewater Treatment Facilities



Today's Sewersheds and Water Recycling Centers

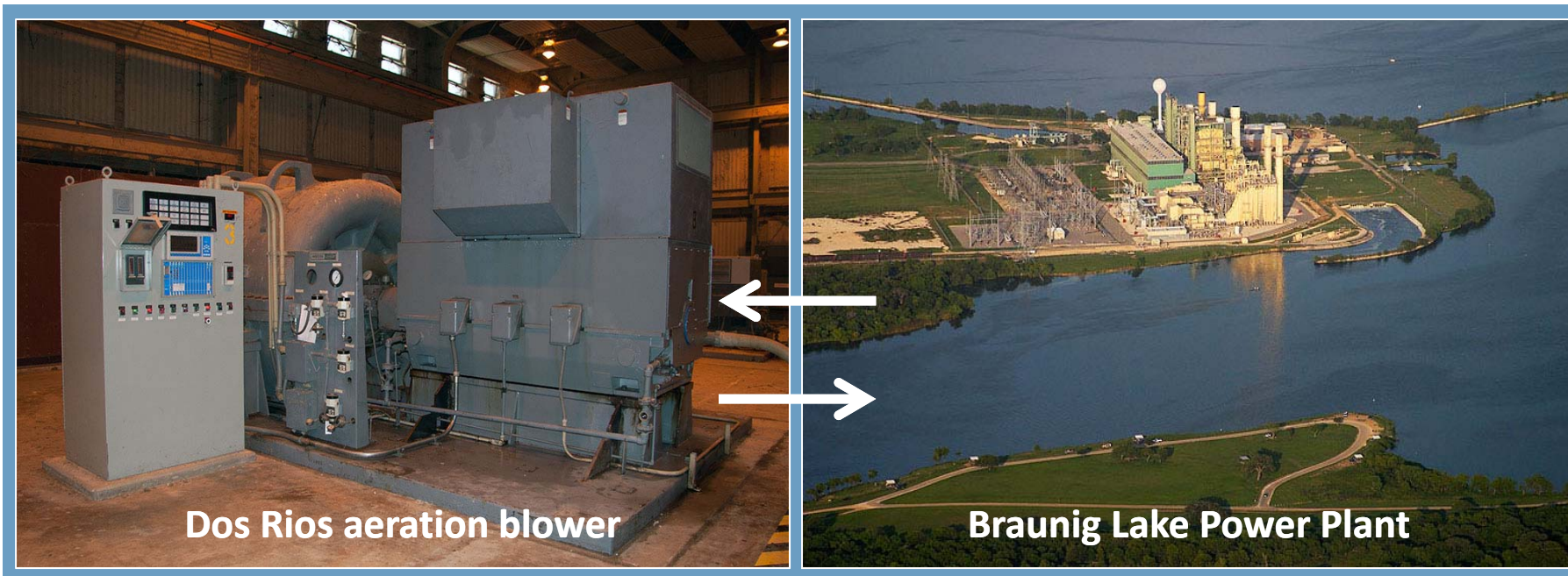


Step 2:

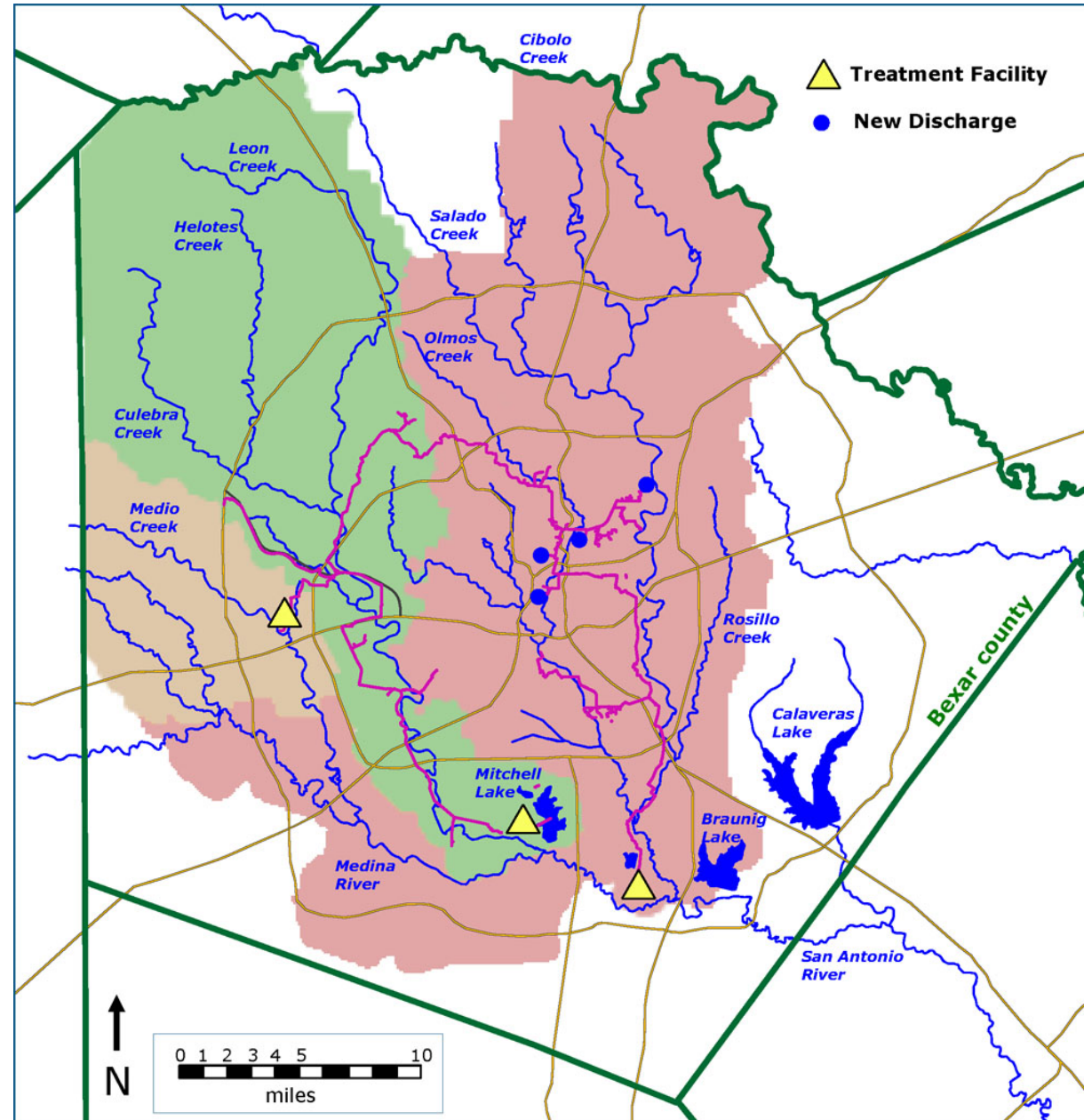
- Establish markets for residual products
- Capture other opportunities

Residual #1 - Water

The Energy / Water Nexus



Nations Largest Direct Recycled Water System



Uses of Recycled Water



landscaping



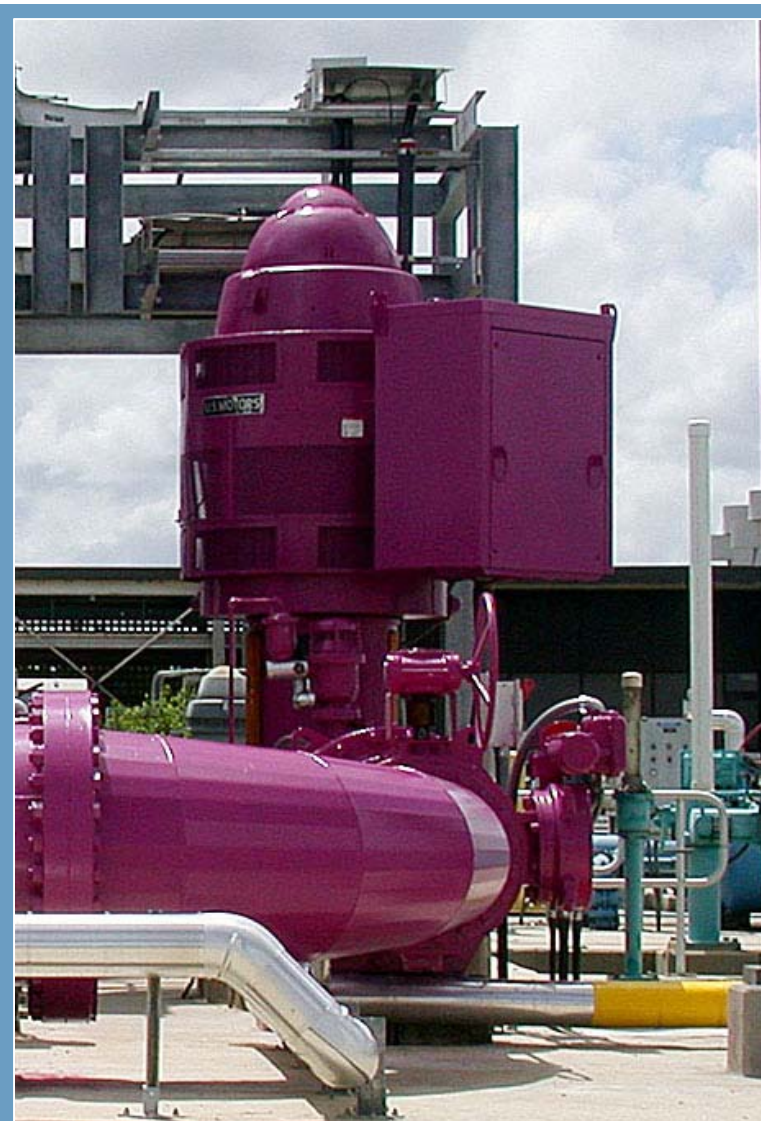
golf courses



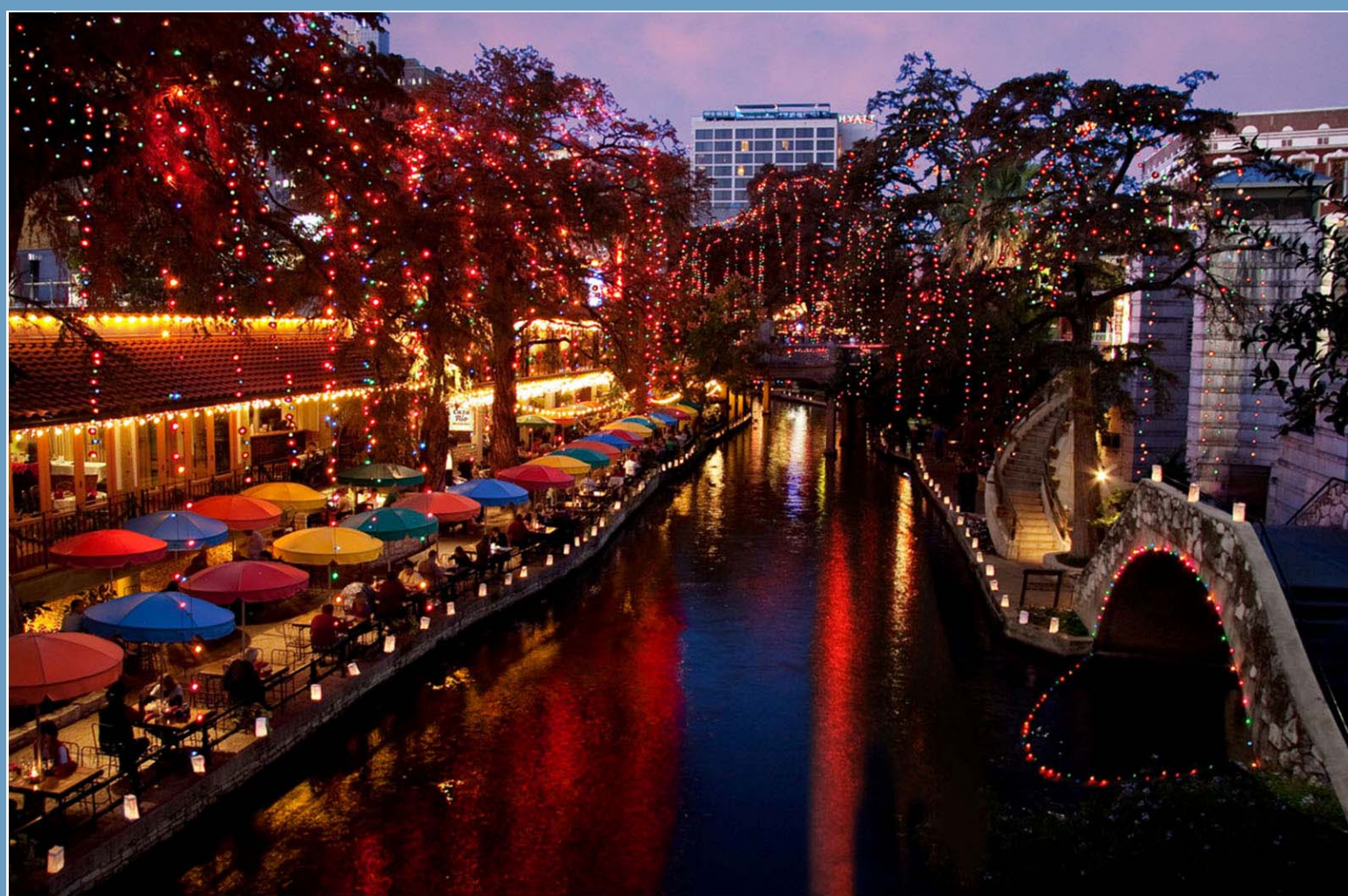
cooling towers



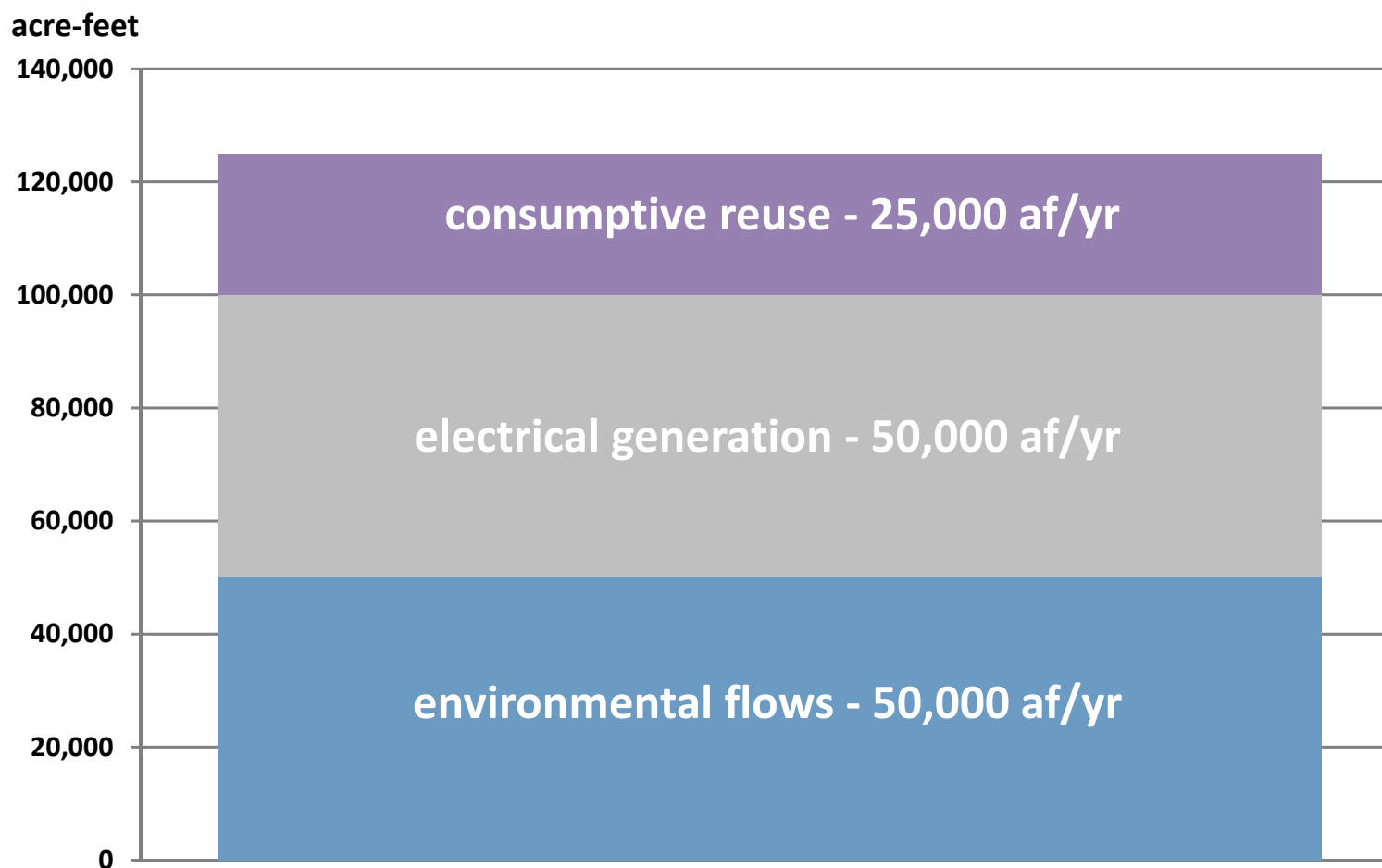
industrial processes



River Walk



Effluent Allocation

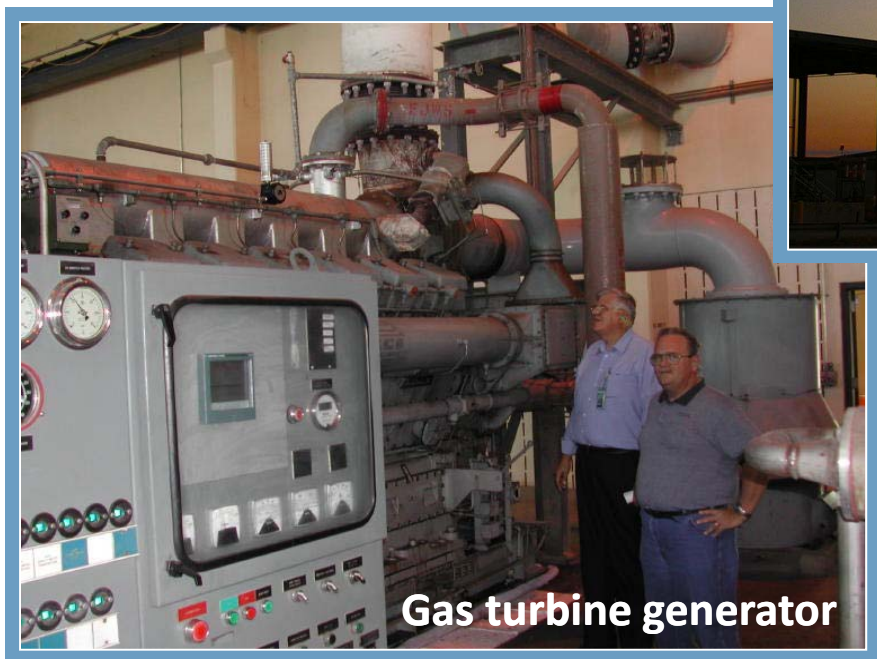


Residual #2 - Biosolids

Biosolids Compost



Residual #3 – Methane gas



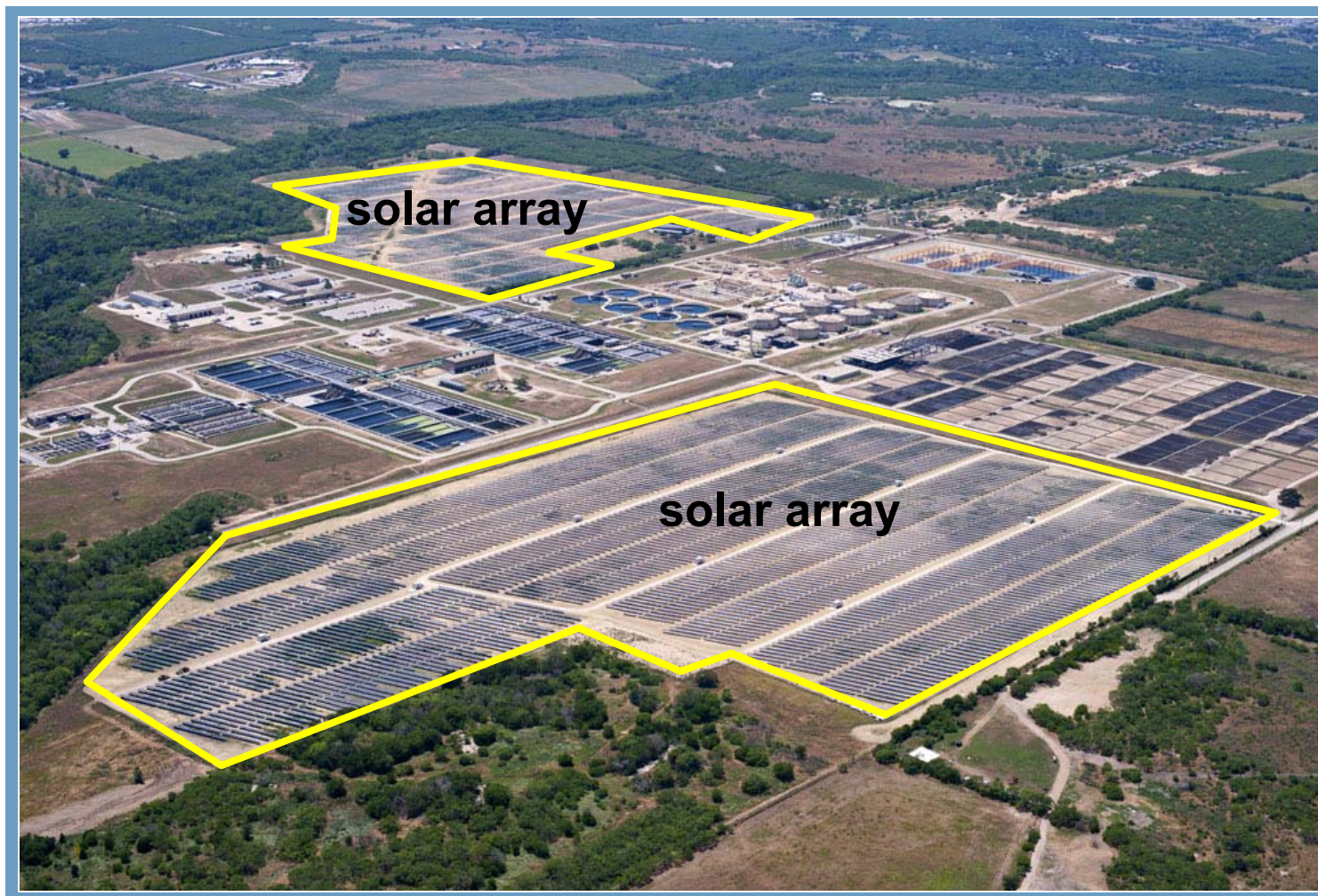
Ameresco Gas Conditioning Facility

Public-private partnership



Other Opportunities- Solar Power

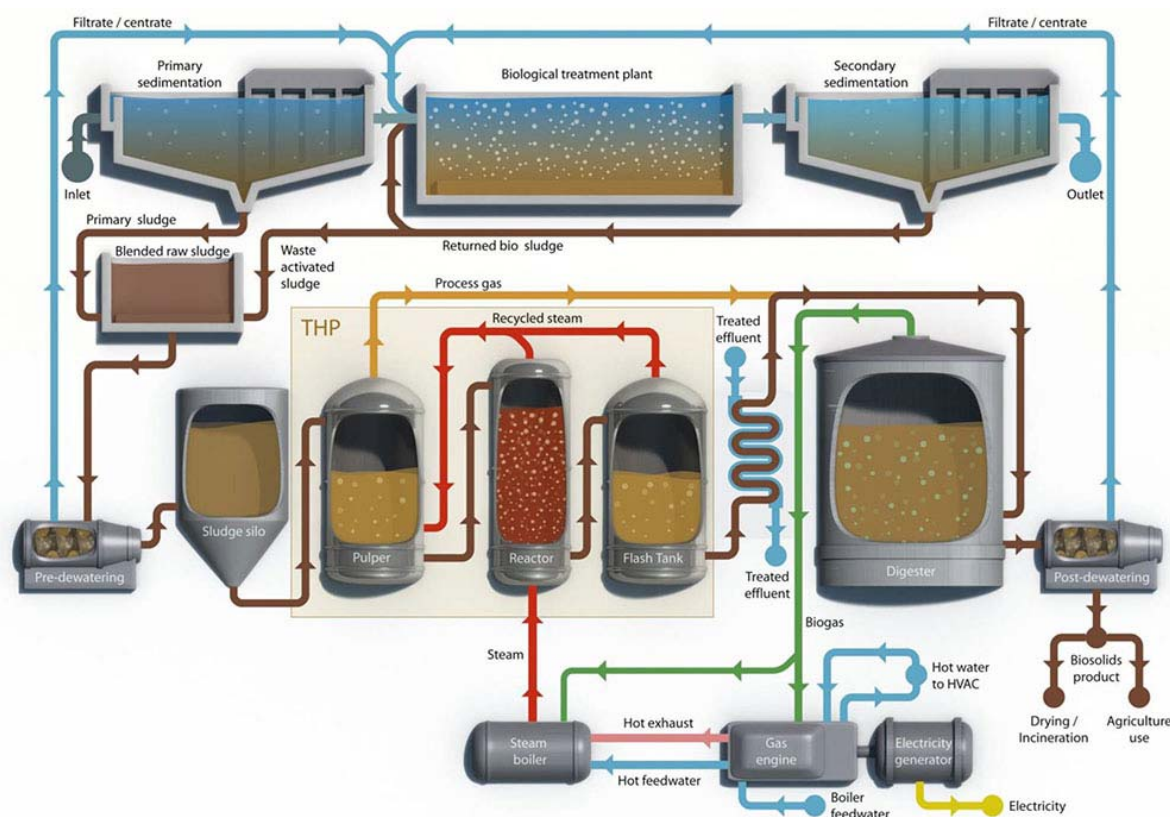
Public-private partnership



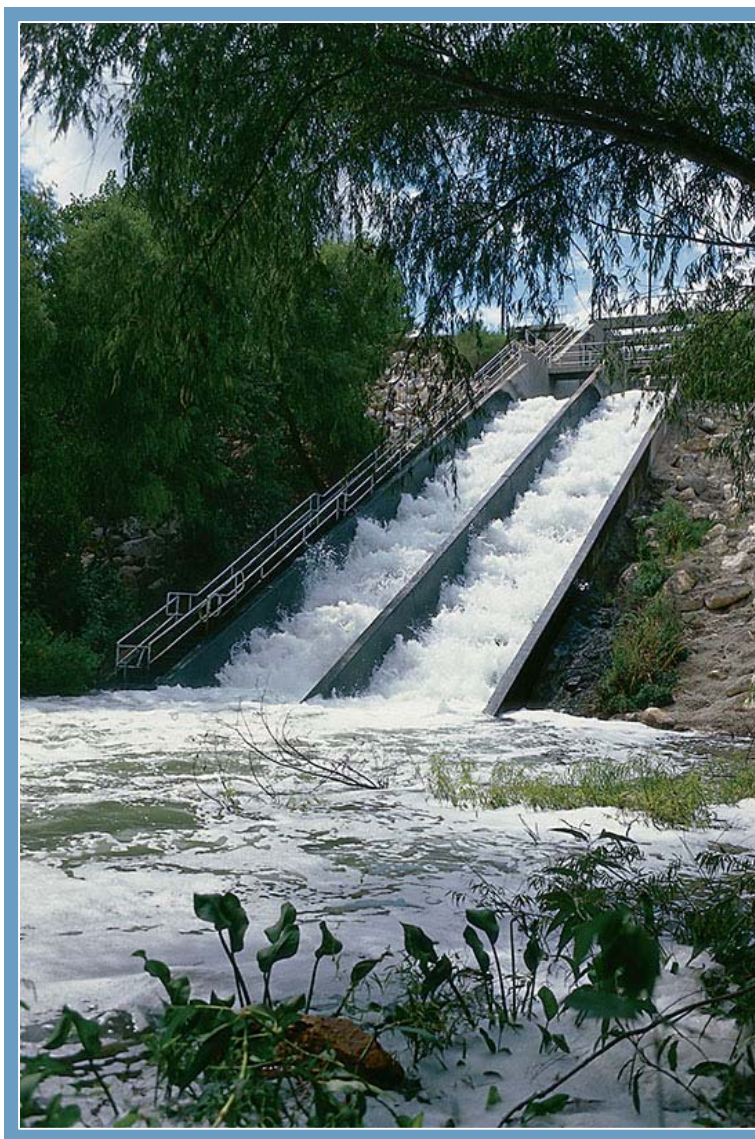
Step 3: Keep moving toward new opportunities

Thermal Hydrolysis

Improve Quality, More Gas, Less Sludge



Hydropower: Dos Rios Discharge



In-line Hydropower



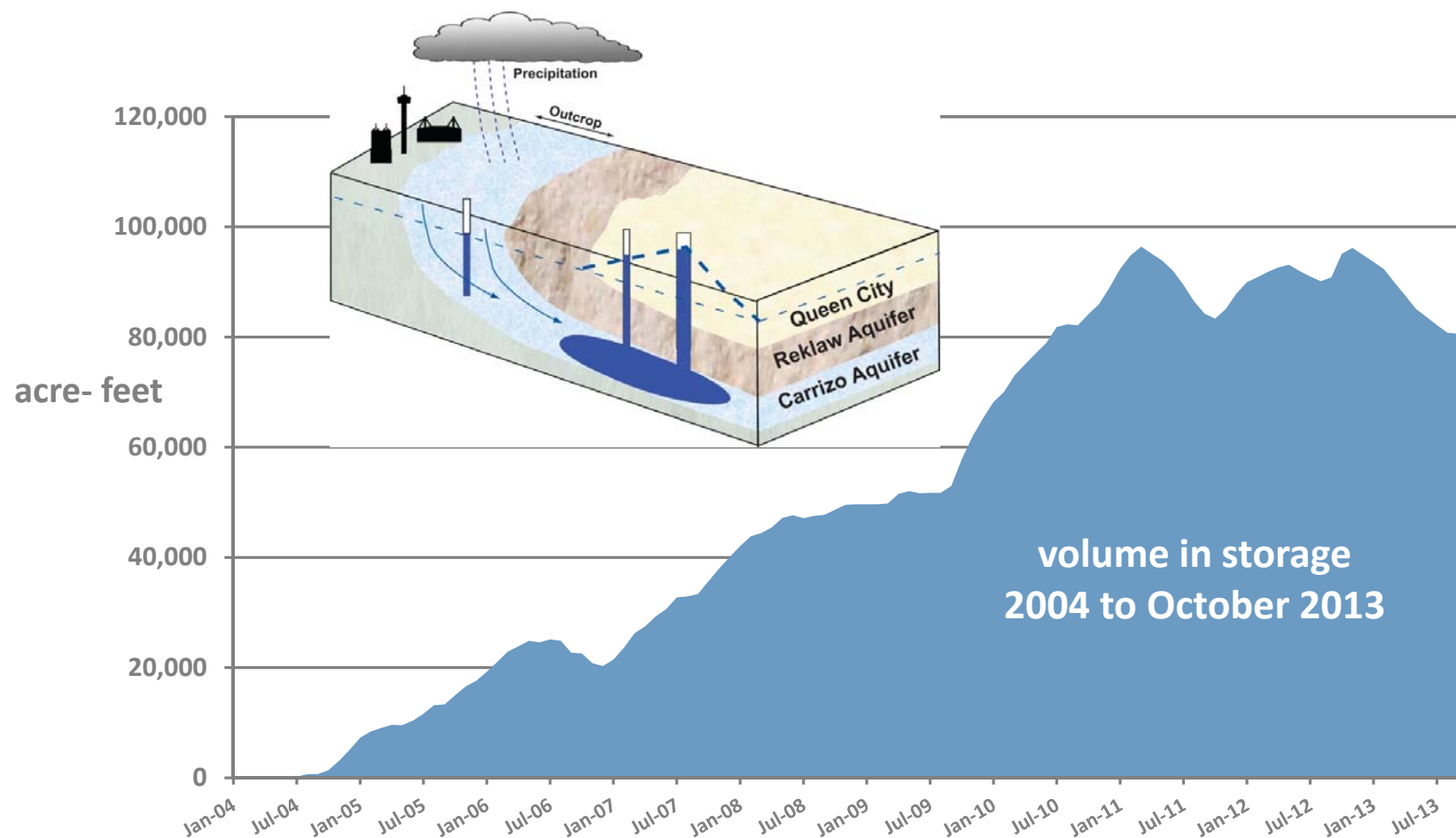
Waste Heat to Energy



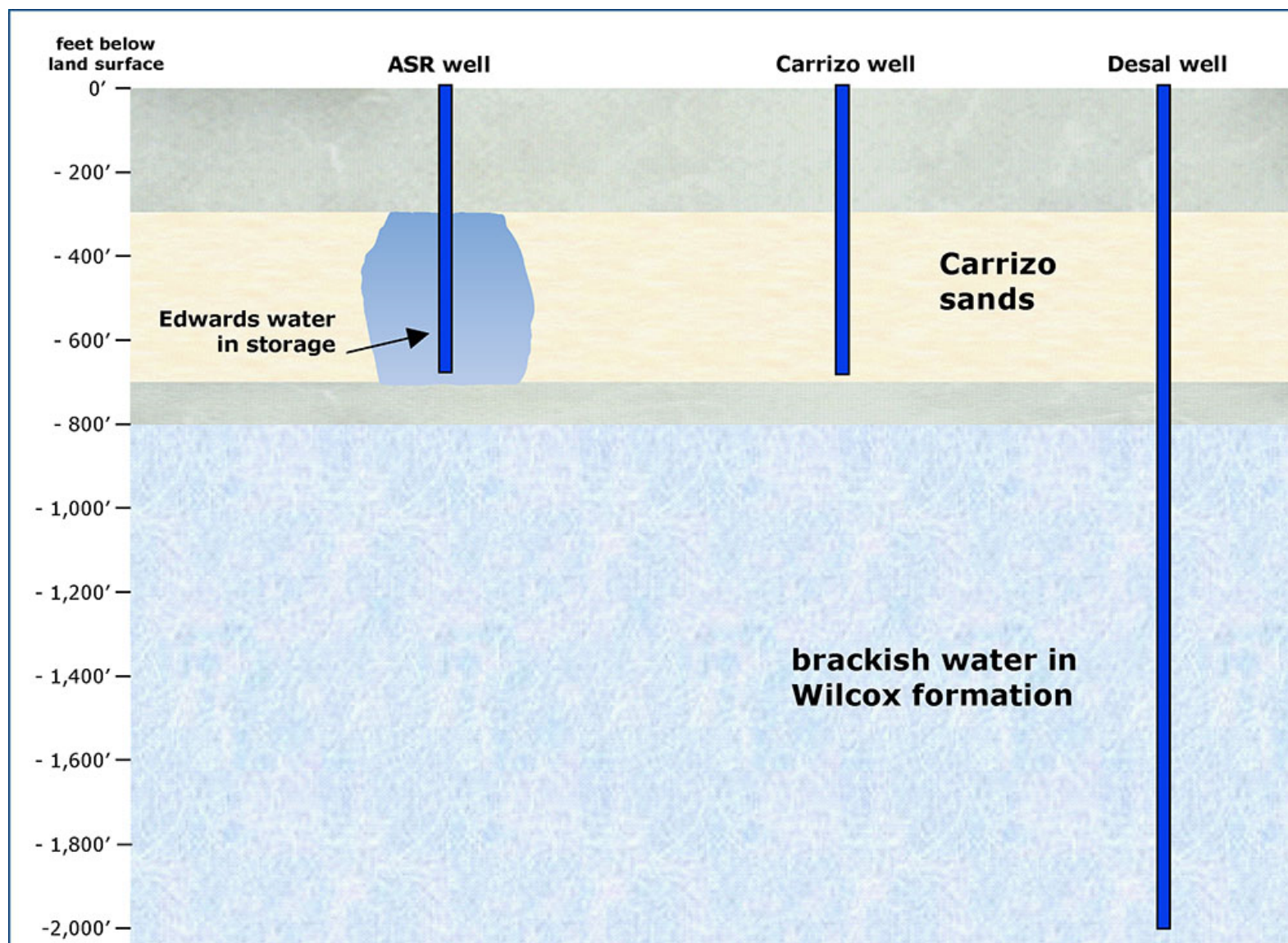
aeration piping

Other Innovations

Aquifer Storage and Recovery



Three Sources on Same Property



The Utility of the Future at Work: Lessons From the San Antonio Water System

Steve Clouse

Chief Operating Officer, Senior Vice-President

November 20, 2013



National Clean Water Law Seminar

