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# Brackish Water Desalination at El Paso Water Utilities

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**Ft. Quitman**

*Rio Grande*

# Regional Water Resources



# Diversified Resources

*50-Year Water Resource Management Plan adopted in 1991*



# Kay Bailey Hutchison Desalination Plant

The image shows the exterior of the Kay Bailey Hutchison Desalination Plant. The building features a prominent glass facade on the right side, reflecting the sky and clouds. In the foreground, there is a concrete courtyard with some landscaping, including a small tree and some shrubs. The sky is blue with scattered white clouds.

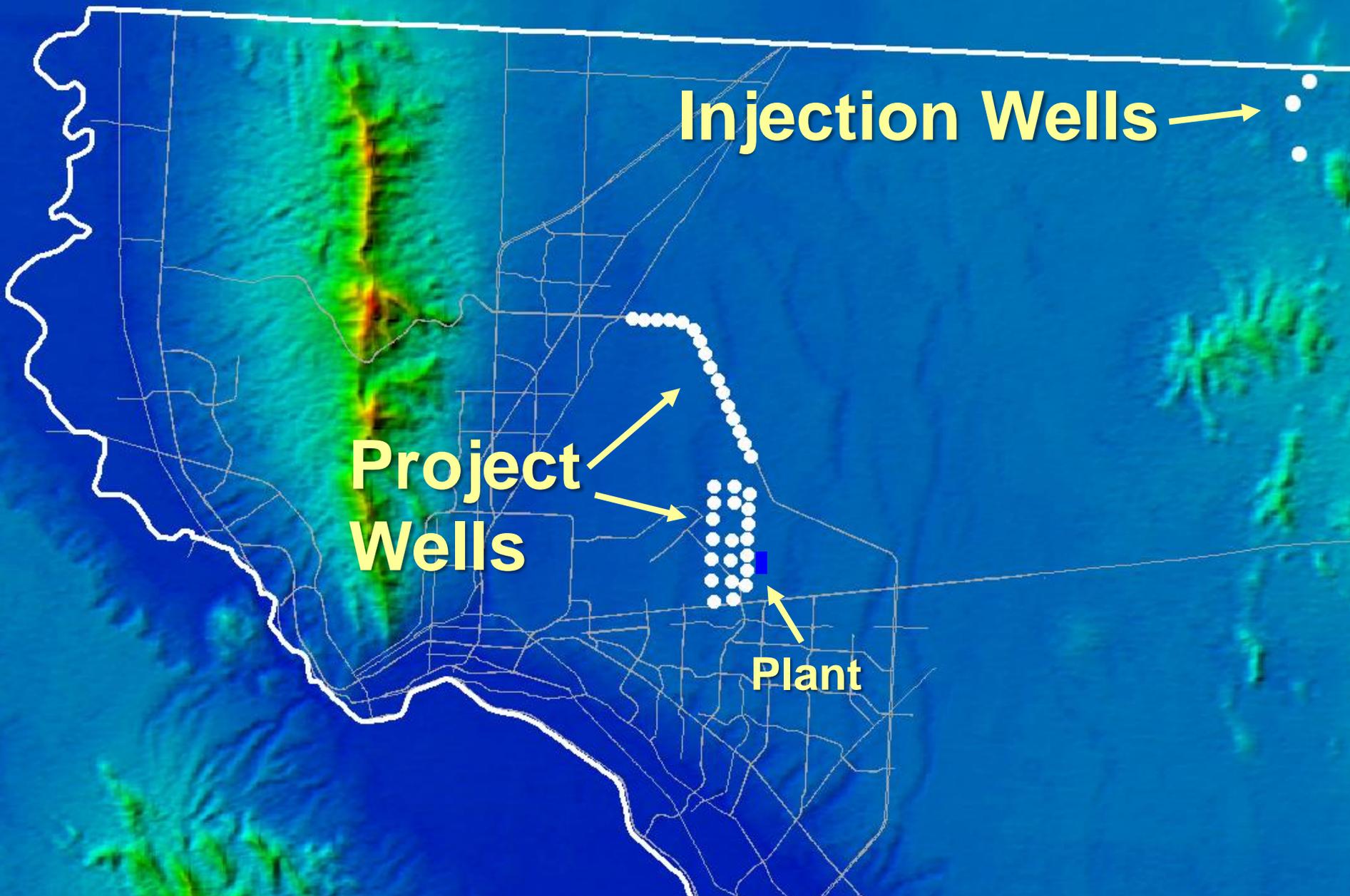
Opened in 2007 to deal with:

- Drought
- Emergency situations
- Growth
- Brackish water intrusion

# Desalination Plant Details



- Up to 27.5 MGD capacity
- Utilizes 5 reverse osmosis skids
- Year round usually runs at 1-2 skids
- Operated at full capacity for the first time in May 2012



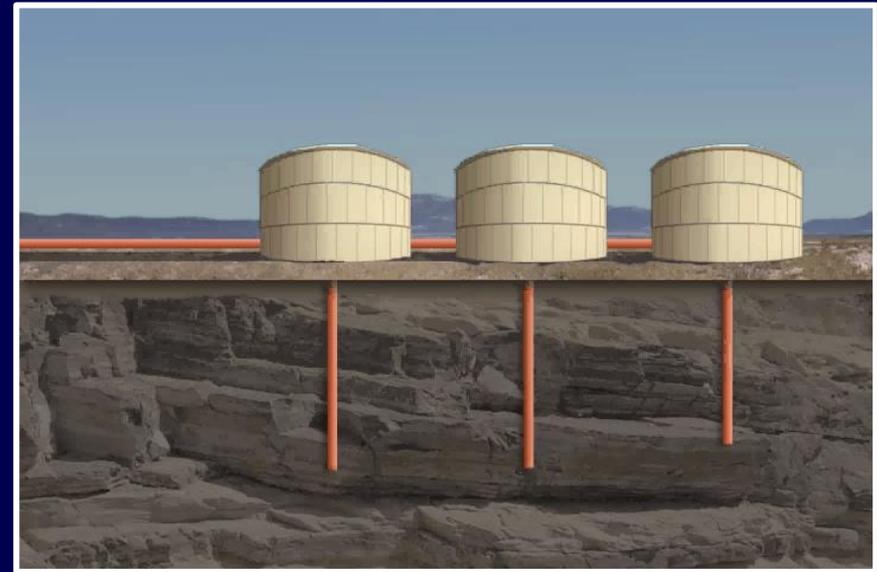
**Injection Wells** →

**Project Wells**

**Plant**

# Remote Concentrate Disposal Area

- Less costly and less environmental impact than evaporation ponds
- 3 injection wells
- Concentrate pipeline (22 mi)



# Injection Well Construction

- Class I Standards
- Well 1 (2004)
  - 3,777 ft deep
- Well 3 (2006)
  - 4,030 ft deep
- Well 2 (2007)
  - 3,720 ft deep
- Flow is by gravity



# Regulatory Concepts

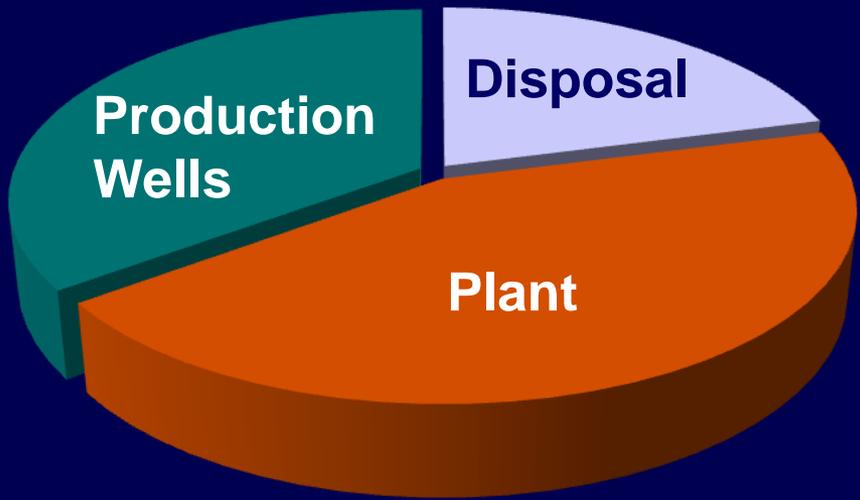
- **Safe Drinking Water Act (SDWA) prohibits injection that endangers an underground source of drinking water**
- EPWU injection zone is considered a drinking water source because the TDS is  $<10,000$  mg/L
- Current Class V injection well authorization prohibits injecting water that does not meet primary drinking water standards

# Regulatory Concepts (cont)

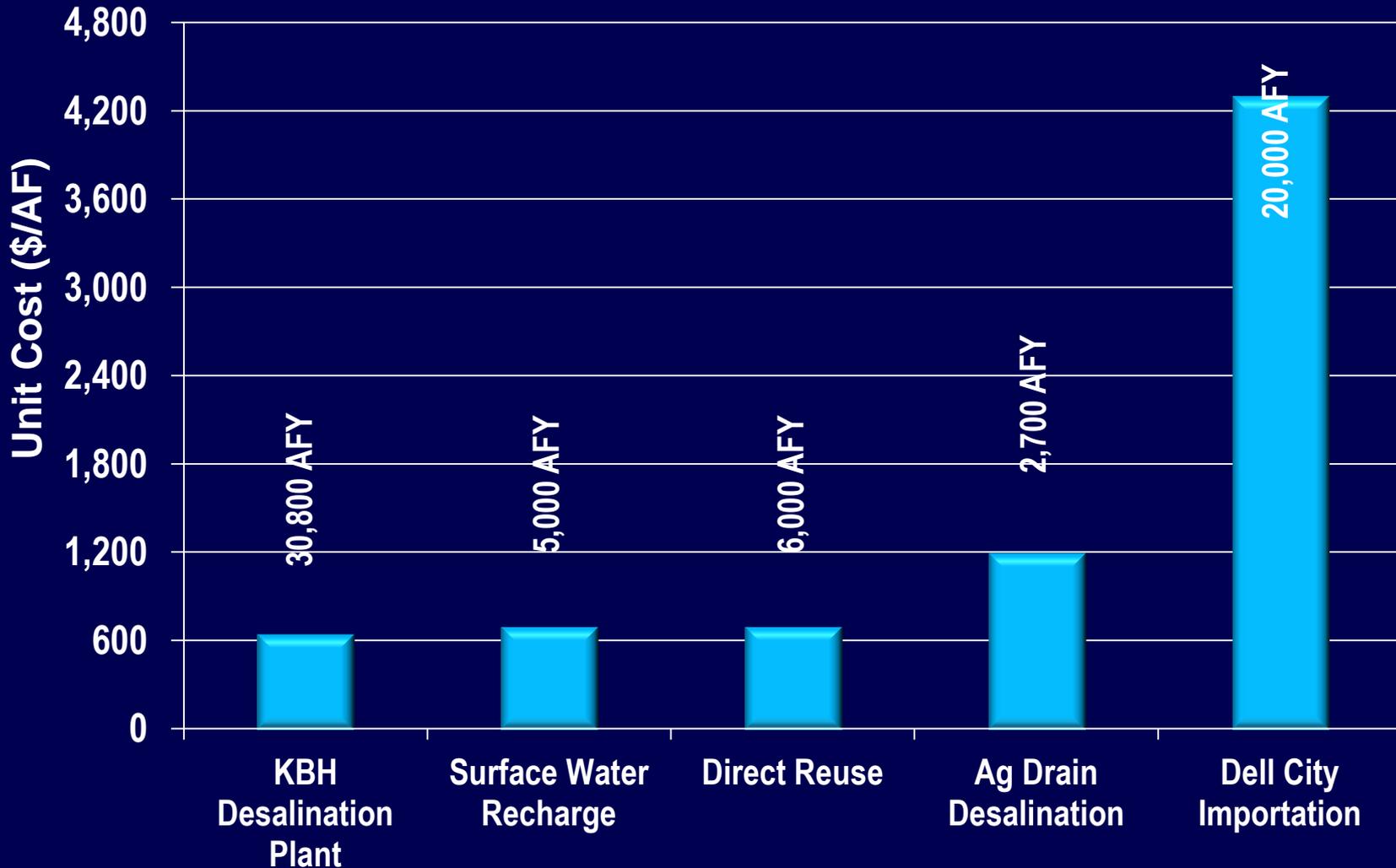
- Natural groundwater in the injection zone does not meet national and state primary drinking water standards for arsenic, gross alpha, nitrite, and radium.
- Membrane treatment would be required prior to use. It is not a source of drinking water.
- Aquifer Exemption-EPA approval
- TCEQ amendment of Class V authorization

# Capital Costs (21 Contracts)

Production wells and collectors	\$ 32 Million
Plant and Near-Plant Pipes	\$ 40 Million
Concentrate Disposal	\$ 19 Million
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<b>Total Cost</b>	<b>\$ 91 Million</b>

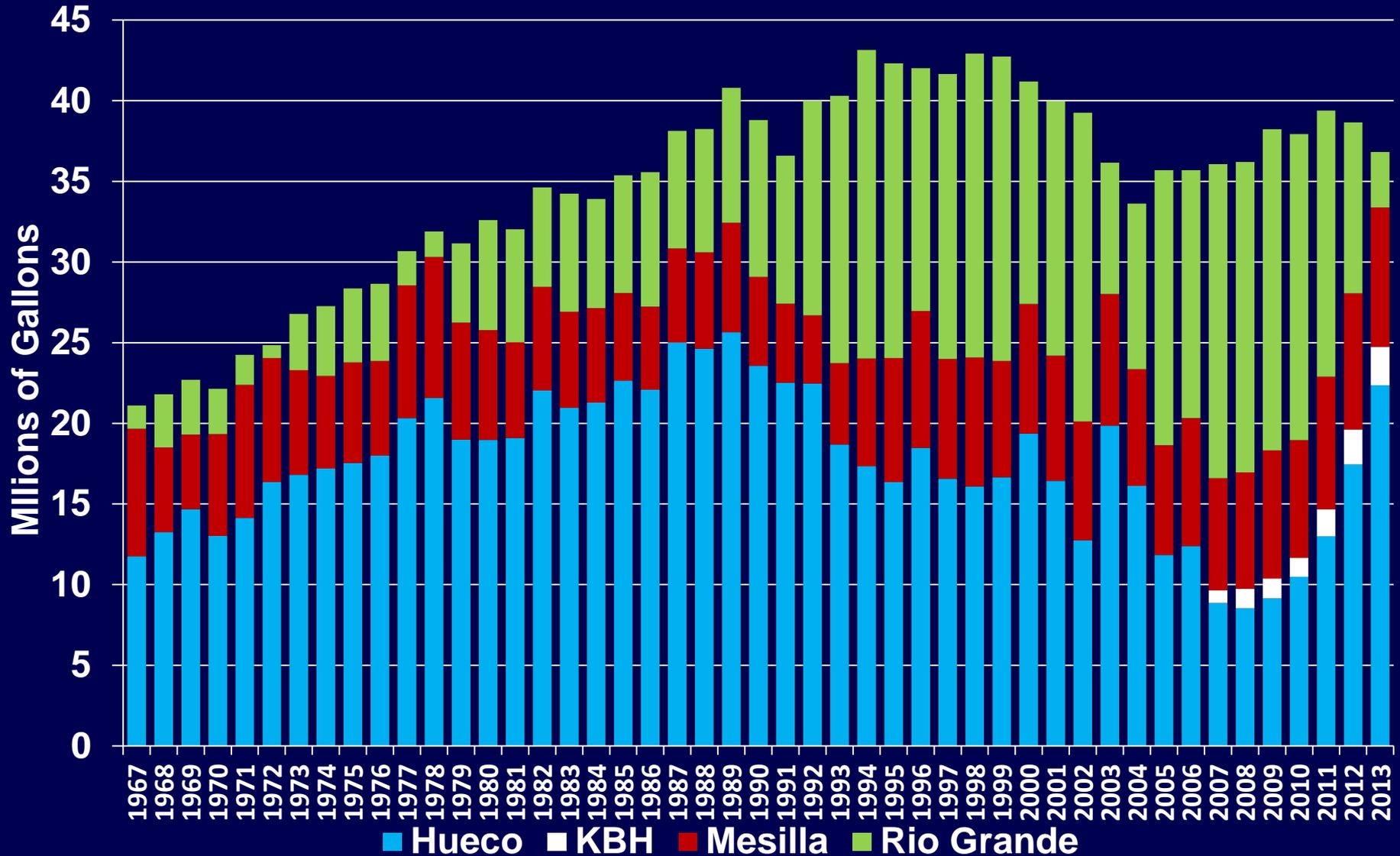


# Cost Comparison of Alternative Water Supply



\*Desalination costs include Capital (\$27 million grant) and O & M

# EPWU Water Production



# Current Desalination Efforts

- Finding ways to improve water recovery
- EWM Pilot Plant
- Starting feasibility study for expansion of desalination plant
- Promoting inland desalination with State Legislators

# WHAT EWM DOES



*EWM separates waste brine into commodities, allowing access to vast sources of additional freshwater supplies*

## *Illustration of EWM's Solution*



**Kay Bailey Hutchison Desalination Plant concentrate**



# Lessons Learned

- Drought has increased attention and discussion toward desalination as a means of meeting future water resources
- Barriers have been identified and specific recommendations to legislative bodies are being made
- Significant time and funding are currently needed to allow for feasibility and permitting