



# Water

*Infrastructure, Supply & Planning Study*

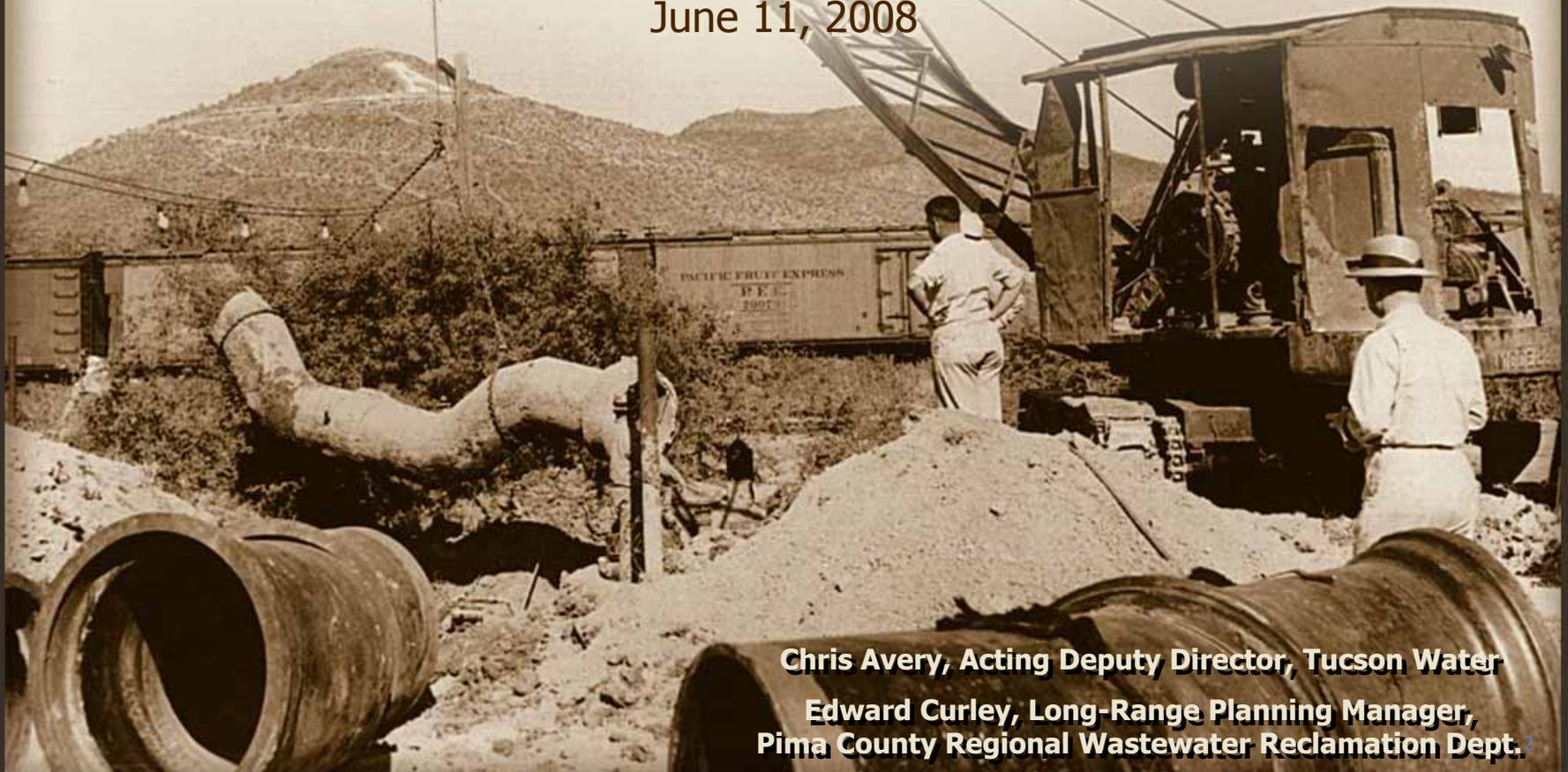
A City of Tucson  
and Pima County  
Cooperative Project



# A Brief History of Water and Wastewater Systems in Pima County

Presentation to the Oversight Committee,  
Water Infrastructure, Supply and Planning Study

June 11, 2008



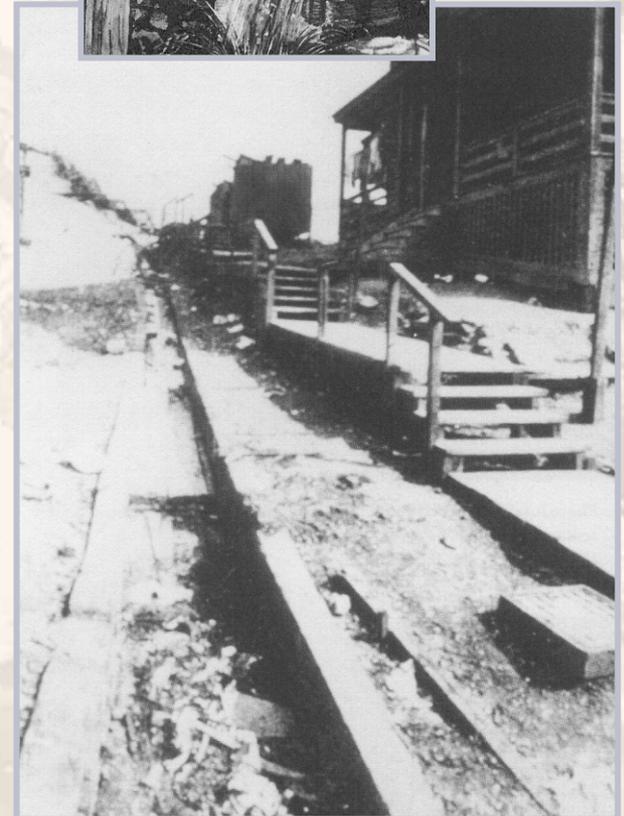
**Chris Avery, Acting Deputy Director, Tucson Water**  
**Edward Curley, Long-Range Planning Manager,**  
**Pima County Regional Wastewater Reclamation Dept.<sup>2</sup>**

**Sanitation is the greatest medical advance in the last 150 years, more important than antibiotics and modern medical technology.**

*- British Medical Journal expert poll, 2007*



**"Sowing for Diphtheria"**  
(*Harper's Weekly* illustration, 1881)



**Privies (above) and open sewer (right) in Pittsburgh, 1909** (Paul Kellogg, ed., *The Pittsburgh District: Civic Frontage, The Pittsburgh Survey*, 1914)

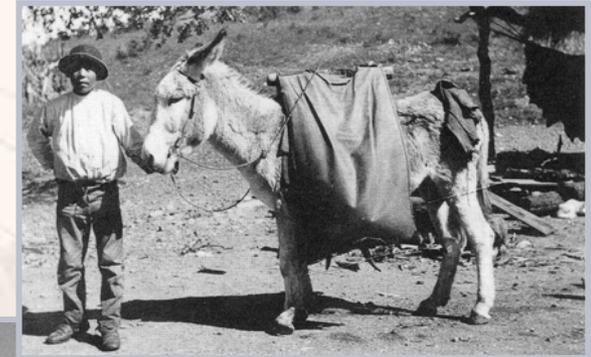
**1870 Tucson Population: 3,224 (PC: 5,716)**

**1881-1900**

Tucson Water Company formed in cooperation with the Tucson City Government

**1890s**

Groundwater pumping began with Tucson Water Company constructing 20-foot wells



**Water delivery by mule**  
(Tucson Water)



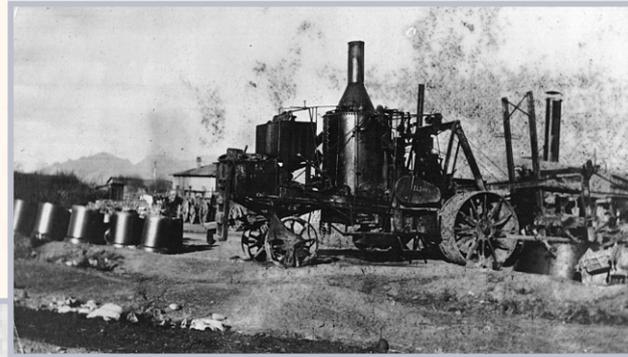
**Downtown Tucson, 1890s**  
(Arizona Historical Society)



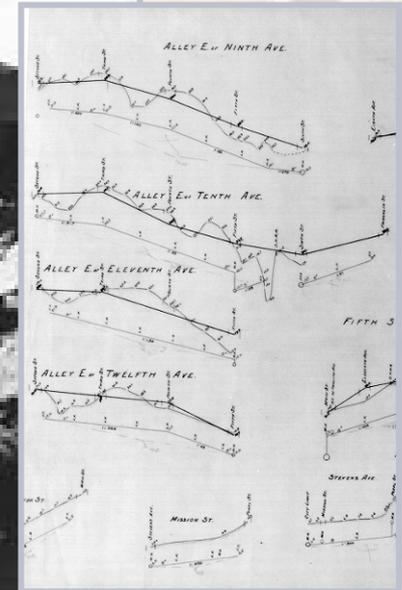
**Water delivery truck in front of Pima County Courthouse, circa 1900**

**1900 Tucson Population: 7,531 (PC: 14,689)**

**1900** First sewer installed on Main Avenue



**Installation of clay sewer pipe, Tucson, circa 1905** (Arizona Historical Society #48804)



**1900 Tucson sewer plans** (PCRWRD)

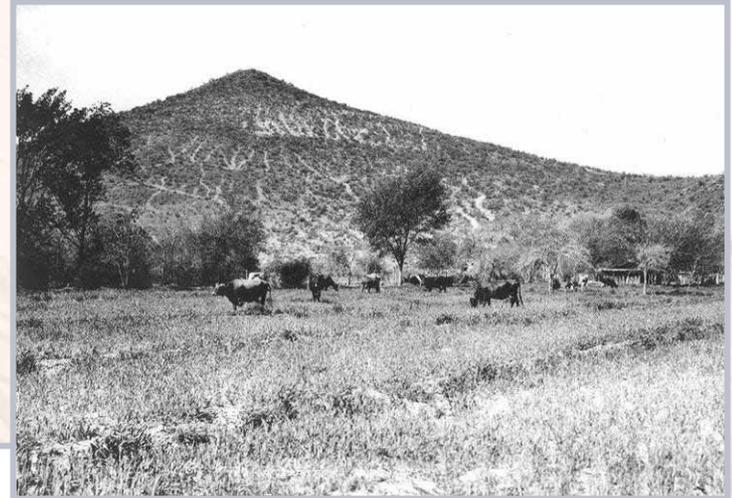
**Sewer installation in Tucson, circa 1910**  
(Arizona Historical Society #48788)

## 1910 Tucson Population: 13,191 (PC: 22,818)

1900

City of Tucson purchased the Tucson Water Company and formed the Water and Sewerage Department

- Sewage conveyed to sewage farm near A Mountain



**Dairy Farm near A Mountain, probably the site of the City of Tucson Sewage Farm**  
(Arizona Historical Society)



**New reservoir for City of Tucson Plant 1, circa 1914**  
(Tucson Water)



**Congress Street, 1910**  
(Arizona Historical Society)

**1930 Tucson Population: 32,506 (PC: 55,676)**

**1920s**

High-powered "deep well" turbine pumps allowed groundwater to become major source

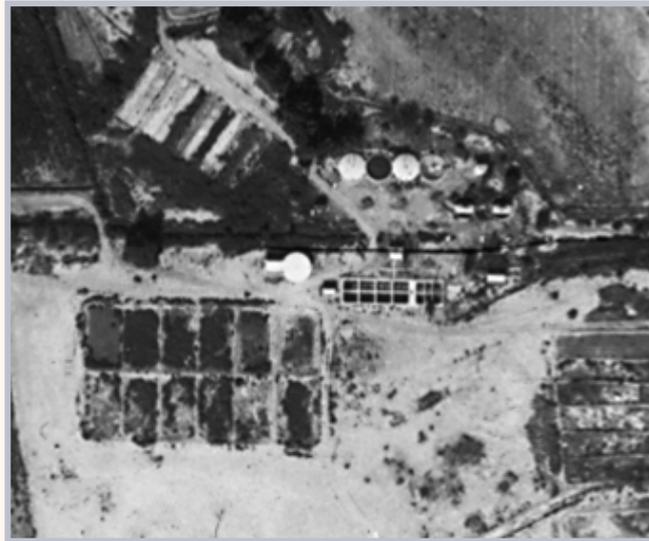
**Congress Street, 1926**

(Arizona Historical Society)

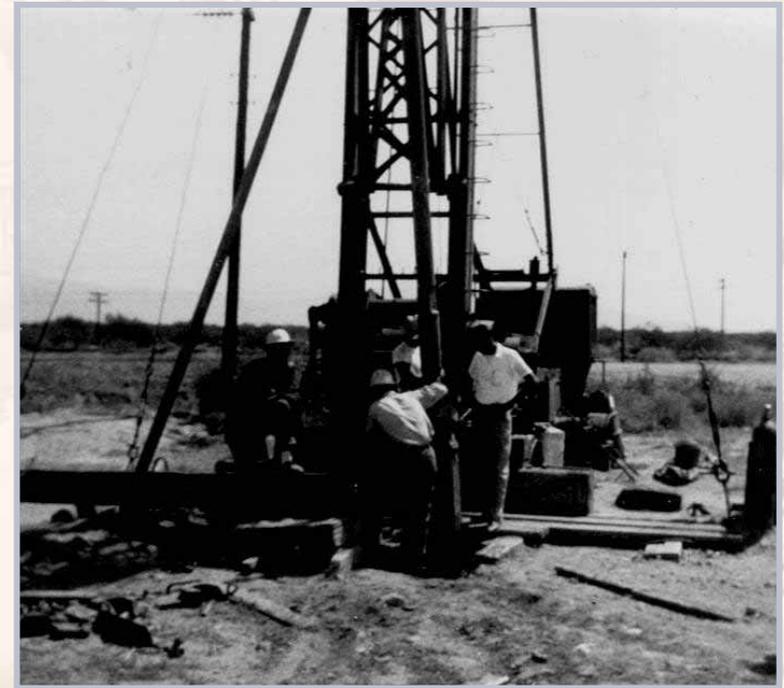


**1928**

City built first Wastewater Treatment Facility west of the Santa Cruz River on Fort Lowell Road



**Ft. Lowell Road treatment plant**  
(PCRWRD, photo date 1953)



**Construction of well, Tucson**  
(Tucson Water)

## 1940 Tucson Population: 35,752 (PC: 72,838)

1940

Last year that Tucson's water table was balanced

- Groundwater was withdrawn in some areas at greater rate than natural replenishment

Early  
1940s

End of any perennial surface flow in the Santa Cruz River near Tucson



**Ground subsidence**  
(Tucson Water)



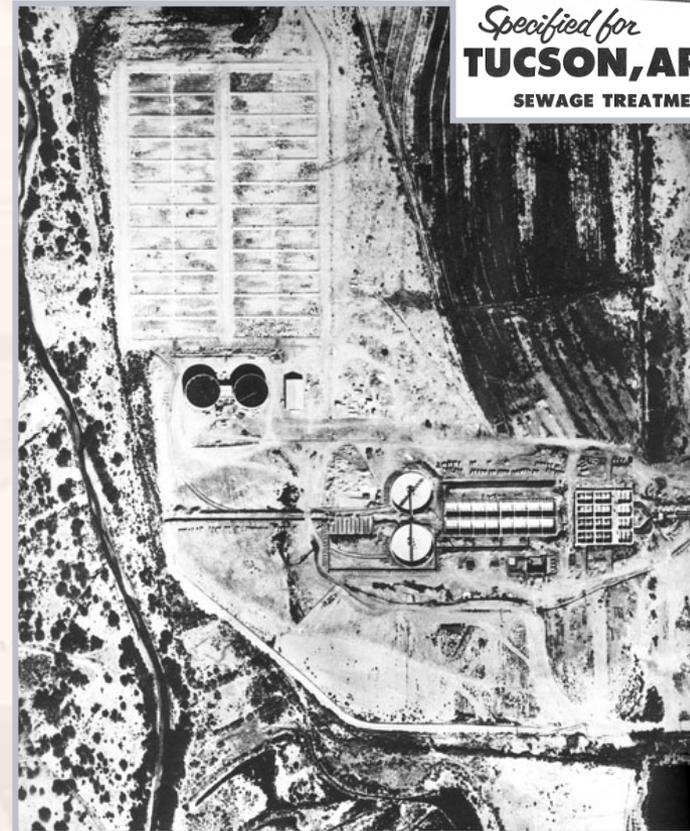
## 1950 Tucson Population: 45,454 (PC: 141,216)

**1947** Joint City/County study recommends construction of Roger Road WWTP

**1948** Pima County Sanitary District formed for areas outside city limits

**1951** City of Tucson completed Phase I of Roger Road WWTP with capacity of 12 million gallons per day (mgd)

**1953 ad showing the Roger Road WWTP (PCRWRD)**



**Roger Road WWTP, 1950**  
(PCRWRD)

**1960 Tucson Population: 212,892 (PC: 265,660)**

**1960** Roger Road WWTP expanded to 24 mgd

**1961** Pima County Sanitary District installed wastewater treatment lagoons at Ina Road site

**1968** Pima County Sanitary District dissolved and Pima County Department of Sanitation formed

Roger Road WWTP expanded to 36.9 mgd

**Construction at Roger Road WWTP**  
(PCRWRD)



## 1970 Tucson Population: 262,933 (PC: 351,661)

1965-  
1980s

COT purchased and retired over 22,500 acres of farm land in Avra Valley

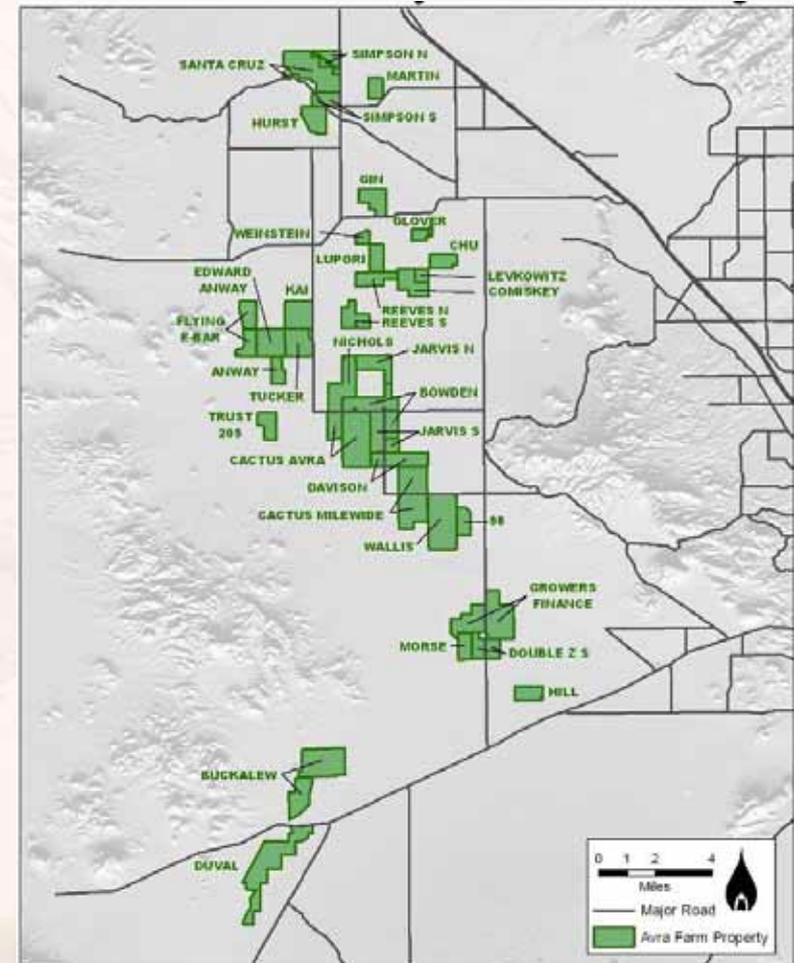
1975

COT submitted letter of intent to begin using its CAP allotment

- Implementation goal – 1992

EPA demonstration grant to build pilot plant at Randolph Park. First reclaimed water system in Arizona; effluent used for city golf course irrigation

**Tucson Water –  
Avra Valley Retired  
Farm Holdings**



1970s

Creation of the Environmental Protection Agency and the Clean Water Act led to availability of funds for treatment improvements and a push for coordinated infrastructure



Pima Association of Governments (PAG) created for cross-jurisdictional planning issues

- Established PAG 208 planning process and Designated Management Agency

EPA requested consolidation of wastewater infrastructure to obtain federal grants for Ina and Roger Road facilities



Pima County Ina Road WPCF (25 mgd) completed in 1977

**1980 Tucson Population: 330,537 (PC: 531,443)**

- 1979** Through City/County IGA, Pima County Government assumed responsibility for sanitary sewerage service in City and County
- County received consolidated City/County wastewater conveyance and treatment system
  - City received 90% of effluent

- 1980** Groundwater Management Act led to creation of Arizona Department of Water Resources (ADWR)
- Established goal of safe yield in the Tucson Active Management Area by 2025



## 1990 Tucson Population: 405,390 (PC: 666,881)

- 1992** First CAP water delivered to customers
- Customer complaints led to 1994 City directive to return to groundwater until issues resolved

- 1995** Citizen's initiative prevented Tucson Water from directly delivering CAP water
- Tucson Water developed the Central Avra Valley Storage and Recovery Project (CAVSARP) to blend ground and CAP water

- 1998** Roger Road WWTP expanded to current capacity of 41 mgd



**CAVSARP recharge basins**



**2000 Tucson Population: 486,699 (PC: 843,746)**

**2001** Delivery of blended water started through CAVSARP project

**2008** City of Tucson begins recharge of CAP water to Southern Avra Valley Storage and Recovery Project (SAVSARP)

**1995-2007** Arid West Water Quality Research Project (AWWQRP)

**2000-2008** Renewal of discharge permits for Ina and Roger Road WRFs: requirement for reduction of nitrogen concentrations in effluent discharged to the Santa Cruz River



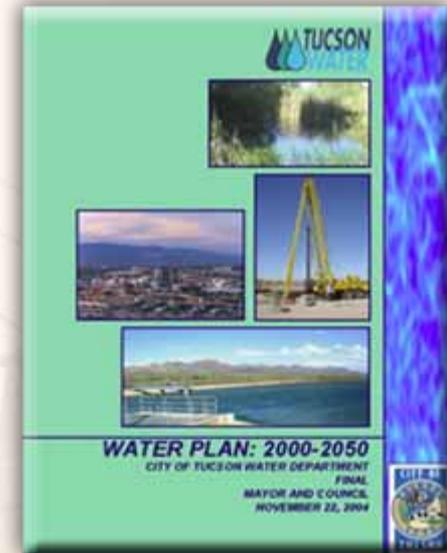
**Effluent discharged into the Santa Cruz River supports riparian habitat**

**Planning for the Future: 2006 County Population: 1,000,000 (COT: 534,685)**

**2006** Pima County Metropolitan Facility Plan Update

**2007** Pima County Regional Optimization Master Plan (ROMP)

- Deadlines of 2014/2015 for regulatory compliance at Ina and Roger Road WRFs



**2008** Tucson Water – Water Plan: 2000-2050 Update



**ROMP plans for the Ina Road WRF (left) and the Water Reclamation Campus on the site of the current Roger Road WRF (right)**



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## **Questions**

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