History of Tucson’s Recycled Water System

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1979 IGA With Pima County

Mayor & Council Communication

June 23, 1979

Subject: TRANSFER OF CITY SEWAGE SYSTEM TO PIMA COUNTY

On December 13, 1978 the Mayor and Council, by a majority of 6/1, voted to transfer the City Sewage System to Pima County subject to the following four conditions:

1) County acceptance of the City's terms on the efficient issue.
2) County acceptance of the responsibility for existing City sewer debt.
3) County commitment to the Regional Facilities Plan for a period of three (3) years or award of a construction contract for the sewer line plan by September 30, 1979, (End of Federal fiscal year)
4) County commitment to not turn the sewerage system over to an independent agency for a period of ten (10) years.

On this same date, the Board of Supervisors voted unanimously to accept the City's proposed transfer and the four conditions.

A City-County Intergovernmental Agreement (IGA), which provides for the above conditions, was proposed to and accepted by the Mayor and Council on June 13, 1979. Mayor and Council adoption of the IGA was the first formal action required to implement the sewerage system transfer and to settle the efficient controversy.

Today, Mayor and Council are requested to approve a series of resolutions that are required to implement the terms of the IGA.

Required Actions of the Mayor and Council

The following attached Resolutions and transfer documents are recommended for adoption and execution:

Resolution authorizing Application to IGA for Grant Transfers: Successor in Interest Agreement
Resolution authorizing assignment of sewer contracts
Resolution authorizing execution of deed to Super Road Treatment Plant; deed
Resolution authorizing execution of deed to Randolph Treatment Plant; deed
Resolution authorizing execution of License to County for use of City Rights-of-Way; License
Resolution authorizing the sale of certain motor vehicles to County; Bill of Sale

IGA HIGHLIGHTS

IGA Title: Relating to water and sewer; reporting resolution number 1978-1 and authorizing the execution of an Intergovernmental agreement with Pima County providing for the transfer of the City sewage system and for the disposition of treated and reclaimed water.

Resolution Number and Date: 1978 (Adopted by the Mayor and Council, 6-20-79)

Signed Parties:
City of Tucson (Water Department), Pima County (Water and Wastewater Management Department)

Related IGAs:
City of Tucson — Pima County Intergovernmental Agreement Relating to Efficient (Resolution 1977. Adopted by the Mayor and Council, 2-26-79)

Resolution 1977: Relating to the transfer of the City of Tucson's sewage system to Pima County, authorizing the execution of a supplemental intergovernmental agreement between Pima County and City of Tucson for the performance of public works in Pima County and the City of Tucson (Adopted by Mayor and Council, 2-26-79). (Note to file: A copy of a related draft agreement dated August 1978 was found in the files but it is unclear whether this was ever finalized.)

Key Points:

Key obligations of parties (summary, detailed timeframe annually, case by case basis, etc.)

On December 14, 1979 the Mayor and Council, by a majority of 6/1, voted to transfer the City Sewage System to Pima County subject to the following four conditions:

1) County acceptance of the City's terms on the efficient issue.
2) County acceptance of the responsibility for existing City sewer debt.
3) County commitment to the Regional Facilities Plan for a period of three (3) years and award of a construction contract for the sewer line plan by September 24, 1979. (End of Federal fiscal year)
4) County commitment to not turn the sewerage system over to an independent agency for a period of ten (10) years.

On this same date, the Board of Supervisors voted unanimously to accept the City's proposed transfer and the four conditions.

A City-County Intergovernmental Agreement (IGA), which provides for the above conditions, is presented for adoption at today's meeting. The IGA is the first formal action required to implement the sewage system transfer and to settle the efficient controversy.

CUMBER STAYS OF TRANSFER

The City and County staff have negotiated an IGA which has been reviewed by the Mayor and Council and the Board of Supervisors. The City and County have previously indicated concern with all terms of the IGA with the exception of Article III Dealing with Efficient (Re-Claimed Water).

Contrary to the unanimous vote of the Board of Supervisors on December 14, 1978, on June 13, 1979, the County indicated they do not accept the City's terms on the efficient issue and have submitted their terms. However, staff has been advised that the County has specifically withheld approval on all other terms of the IGA including the efficient clause.

The City and County correspondence relative to the June 13, 1979 meeting is included in the agenda. In this communication.

REPLACEMENT IGA

Article III of the IGA that is presented for adoption at today's meeting is based on efficient terms determined by the Mayor and Council on May 7, 1979 and transmitted to the County on May 11, 1979. Since May 11, 1979, the Mayor and Council approved IGA has been updated with clarifying language and other changes as needed.
1980 Ground Water Management Act

- Established laws that allowed the State to manage and protect groundwater for the benefit of all Arizona residents.
  - Created ADWR
  - Established Active Management Areas
  - Initiated Assured Water Supply Program
  - Mandated Reductions in Water Use
Construction of Recycled Water Plant, First Test Basins

Recycling water since 1984.
Recycled Water Treatment Plant

- Secondary Effluent received from Pima County
- Treat 6,000 AF/YR
- Peak daily rate of 10 MGD
- Dual-media filtration (Sand, Coal)
- Disinfection
Tucson Water’s Recycled Water System

- All 6 Public (City And County) Golf Courses & 11 Private Courses
- 62 Schools
- 37 Parks
Tucson Water’s Recycled Water Plant, Recharge Basins & Pima County Agua Nueva Water Reclamation Facility
Our Recycled Water System Today

• 1000+ Customers
• 173 Miles of Pipe
• 15 Boosters
• Over 30 MGD Delivery Capacity
Tucson Water Total Water Production (2020)
112,095 AF

- Recycled Water 12%
- Colorado River Water 82%
- Remediated Groundwater 6%
Recycled Water Use By Sector (% Volume)

- Golf Courses
- Parks
- Oro Valley
- Commercial
- Residential
- Agriculture (U of A Farms)
- Schools
Recycled Water Revenues and Operational Budget

• Recycled Water revenues are about $9 Million a year
• Operational budget averages $4 Million
• Total cost about $13 Million a year including
  • $16.4 Million Planned in Capital Improvement Projects in next 5 years
    • Includes Reservoir and Tank Rehabilitation
    • Filter modification
    • Main replacements and system enhancements
Incentives to Convert Loan Program

• Tucson Water Advances Funds For On-site Improvements

• Funds Repaid From Savings

• No Increased Cost For School District Taxpayers
Benefits of Recycled Water Recharge

Flexibility:

- Seasonal Storage for Peak Usage Months
- Long-Term Storage

Water Quality Improvements:

- Total Nitrogen
- Turbidity
- Bacteria
- Total Organic Carbon
Recycled Water Recharge Projects

- Sweetwater Recharge Facilities (SRF) 1984
- Santa Cruz River Managed Underground Storage Facility (SCRMUSF) 1999
- Lower Santa Cruz River Managed Recharge Project (LSCRMRP) 2003
- Santa Cruz River Heritage Project (Heritage) 2019
- Southeast Houghton Area Recharge Project (SHARP) 2020
Sweetwater Wetlands Designed to be
A Wastewater Backwash Treatment Facility

- Settling Basins
- Recharge Basins

Santa Cruz River
Recycled Water Recharge Basins
Sweetwater Wetlands and Recharge Basin Facility Maintenance
Recharge Basin Maintenance

Chemistry

Schmutzdecke

Chisel plowing to maintain Infiltration

Algae
Managing Mosquitoes?

Trapping Mosquito's
- Dry ice lure
- Battery operated
- Over night deployed
- Once a week
- U of Arizona
  - Counts
  - And identifies

Tucson Water Hydrologist and Mosquito Wrangler
Once a Year We Burn Excess Vegetation

After the Burn .....
Sweetwater: A Multi-Benefit Project

Educational Signs

Group Educational Opportunities

USGS with Bureau of Indian Affairs Students

An Outdoor Classroom
Tucson Meet Your Birds

Come to Sweetwater Wetlands and let us show you the birds!
Saturday, March 3 | 7 AM to noon

Learn more
Managed Recharge
Managed Recharge Projects

Legal Framework
- 1989 Arizona Public Service V. Long
- 1994 ADWR Authorized To Issue Facility Permits
- 2019 Legislative Change to Cut-to-the-Aquifer (50% - 5%)

Institutional Framework
- 1979 COT Transfers RRWTP To PC
- COT Retains Ownership Of 90% Of Effluent
- PC Retains 10% Of Effluent
- SAWRSA - 28,200 AF/YR
SCRMUSF Layout

- 5.1 Miles of the Santa Cruz River
- ANWRF Outfall
- TRWRF Outfall
- Permitted Volume of 9,307 AF/YR
- Source Water Average Delivery 2015-2020 - 5,744 AF/YR
- Recharge Rates: Average 3.38 AF/mile
- Evapotranspiration: ~1.54 Feet/day (Average of 580 AF/YR)

No recharge calculated on storm days
Stream Flow measured at USGS Cortaro Gaging Station
LSCRMRP Description

• 17.9 Miles of the Santa Cruz River
• Average Delivery 32,000 AF/YR
• Permitted Volume 43,000 AF/YR
• Average Recharge Rate 43,000 AF/YR
• Average Recharge Rate 4.3 AF/mile
• Evapotranspiration ~3.5% (Average of 1,020 AF/YR)

No recharge calculated on storm days
LSCRMRP Monitoring

Stream Flow measured at USGS Trico Gaging Station
2019 Effluent Entitlement

- SAWRSA 28,200 AF
- Pima County 2,934 AF
- Marana Water 316 AF
- Tucson Water 21,818 AF
- Metro Water 1,882 AF
- Oro Valley 1,894 AF
- Flowing Wells Irrigation District 438 AF
- Spanish Trails 53 AF
Managed Recharge Projects

Yearly Project Delivery

Starting February 2019 Cut to the Aquifer changed from 50% to 5%
Santa Cruz River Heritage Project

Projected 2024
Historic Santa Cruz River
Heritage Project Overview

• Construction Cost – less than $1 million
• Approximately 3,800 AF/YR
• Maximum flow rate of 3.4 MGD

Release Party - June 24, 2019 Over 300 attendees
Community Response and Impact
Southeast Houghton Area Recharge Project (SHARP)
Southeast Houghton Area Recharge Project (SHARP)
Tucson’s Newest One Water Constructed Recharge Project
SHARP: A Multi-Benefit Project

Recreation
- Walking trails
- ADA Compliant
- Mt. Bike Trails

Education
- Public
- Schools
- Rainwater Harvesting

Recharge
- Permitted-Annual 4,000 AF (6-months)
- Recycled Water
- Replenish the Aquifer
- Store for Future
SHARP: TimeLine

- Planning and Feasibility Studies 2011-2012
- Regulatory Permitting 2017
- Construction Summer 2019-Fall 2020
- Site Selection 2009
- Design 2015
- Re-Design 2017-2018
- Operation December 2020

11-Years from Vision to Completion
SHARP Recharge Basins & Rainwater Harvesting

Recharge Basins

Rainwater Harvesting

Passive

Active

RB-301

RB-302

RB-303
SHARP - Sustainable and Recreational

A Desert Oasis
Native Plants
- 100 plants transplanted
- 491 Trees
- 906 Flowering Shrubs
- 338 Cactus/Bush
- Wildflower Mix
SHARP - Recreational Amenities

- Bike Trails
- 0.6 Miles of Paved Path
- 1 Mile of Walking Trails
- ADA Compliant Access to Basin 1
- Ramadas
- Benches
- Drinking Fountains
- Public Restrooms
What Does the Future of Reuse Look Like?

• Expansion of Commercial/Industrial Uses
• On-Site Non-Potable Reuse
• Expansion of Constructed Recharge Projects
• Expansion of Riparian/Aquifer Recharge Projects