

ADEQ and Reuse: Looking Ahead

by

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- **A**DEQ news
 - organizational changes
 - LEAN: process improvements
 - position classification/pay—transformative changes
- **A**rizona reuse snapshot
- **A**nticipating the future
 - IPR/DPR
 - reclaimed water rules update
 - emerging contaminants
 - desalination brine management

Organizational Changes

- **New Director and Deputy Director of WQD**
 - Trevor Baggiore
 - Randy Matas
- **Many retirements/departures**



About the Director

Arizona State Board of Technical Registration



- **ADEQ continuing Lean journey**
- **Water Division Improvement Statistics**
 - **35% improvement in permitting time**
 - 81% for reuse general permits!
 - 69% for reuse individual permits!
 - **76% improvement in return to compliance time**
 - **Still have work...-48.93% on compliant facilities**
 - Currently at 10.45% in compliance for the reuse program



- **Exciting ADEQ News**
 - **Pilot Career path for Environmental Staff**
 - Covers ~1/2 of department staff
 - Higher retention of high performers
 - Additional recruiting benefit
 - Increase in staff responsibility/authority



Reuse in Arizona

- Arizona's regulatory program has been **EFFECTIVE** in expanding the safe use of reclaimed water
- **2001** - New rules transformed program



2001 Comprehensive Rule Framework

- Reuse fostered while protecting WQ & human health
- Stringent treatment stds. for new/expanding WWTPs
- 5 reclaimed water quality classes (A+, A, B+, B, C)
 - with corresponding allowed end uses
- Reclaimed water permits issued to end users
 - simple O&M and reporting requirements



**Turf irrigation at NAU
with Class A+ water**

Many Allowable End Uses of Class A+, A

- irrigation of food crops
- recreational impoundments
- residential/schoolyard irrigation
- toilet & urinal flushing
- fire protection systems
- snowmaking
- and more



**Reclaimed
Water
Fire
Hydrant**



Freestone Park, Gilbert

But... There Are Prohibitions

- Evaporative cooling, misting
- Full-immersion water activities w/potential for ingestion
 - swimming, windsurfing, water skiing, etc.
- ***Direct reuse for human consumption***



Of Arizona's 100 largest WWTPs (i.e., design flow ≥ 1 mgd)...

- ***93% distribute at least some reclaimed water for reuse***
- ***56% distribute Class A+ water***
- ***>82% of treated wastewater generated in the Phx metro area (60% of AZ population) is reused***



**Irrigating athletic field with
reclaimed water, U of A**

**Class A+ water irrigates
Safford golf course**



Photo: Mt. Graham Golf Course

60% of all 300 WWTPs in AZ (large & small) now distribute treated wastewater for reuse!



**Pumping reclaimed water,
Surprise, Arizona**



**Reclaimed water amenity,
Sun Lakes, Maricopa County**

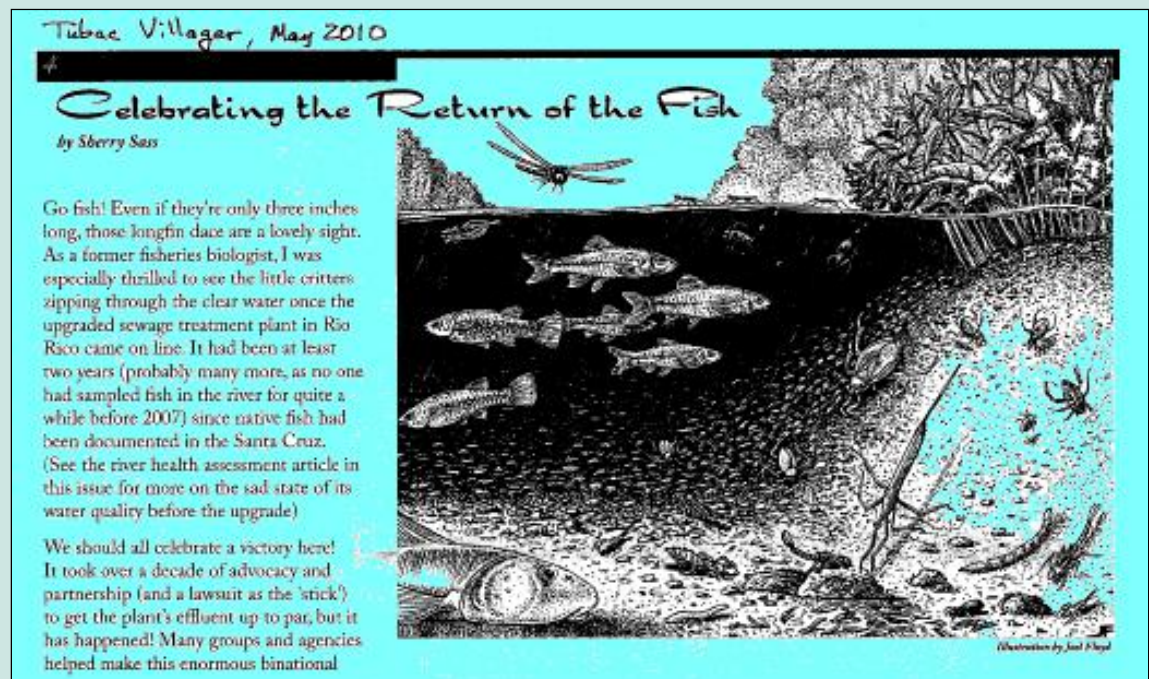


**Town of Payson
Green Valley Lake**

Program Accomplishments

- No new N-contaminated groundwater sites due to treatment requirements for new/expanding WWTPs
- Many formerly poor-quality discharges have been dramatically improved
 - Nutrients
 - Clarity
 - Health risk

**Santa Cruz River below
the upgraded Nogales
International WWTP
comes back to life**



- Large majority of WWTPs now produce high-quality treated wastewater suitable for reuse
 - Has turned a waste “to be gotten rid of” into a resource with value

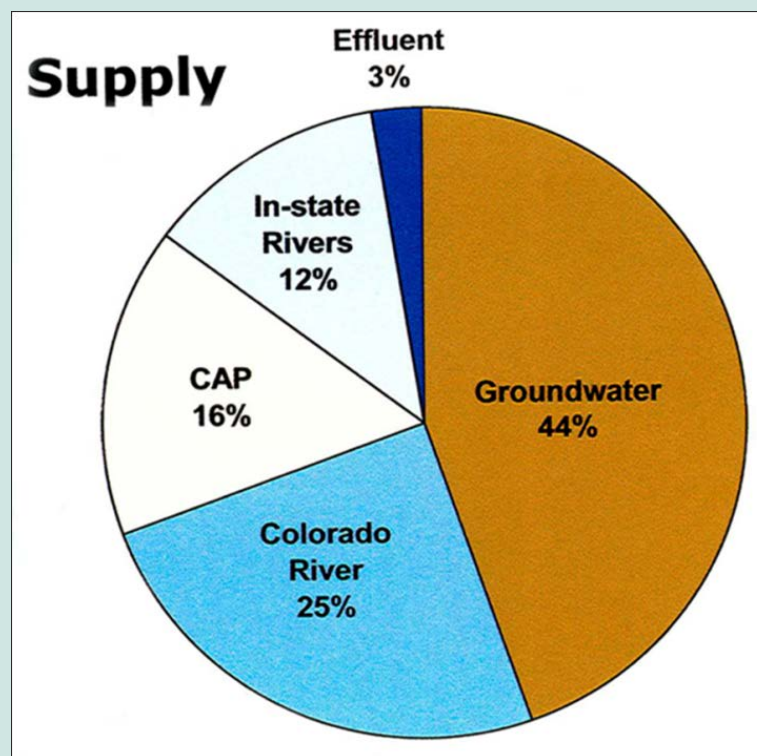


**Wheeling reclaimed water around,
Gilbert Riparian Preserve**

Water Supply Impact?

...but probably little change to this chart

**Sources of Arizona's
water supply**



- Increased utilization, particularly off-season

Alternatives other than golf courses?



DC Ranch, Scottsdale
Photo: Cronkite News Service



More ski areas?

- Transition to higher-valued reclaimed water end uses

More industrial reuse?



SCA Tissues, Flagstaff



**Intel Ocotillo Campus,
Chandler**



Craft beer, too??!

- **More reuse – smaller plants, smaller communities**
 - no reuse at 40% of WWTPs in AZ
 - almost all small (< 1 mgd)



Oracle



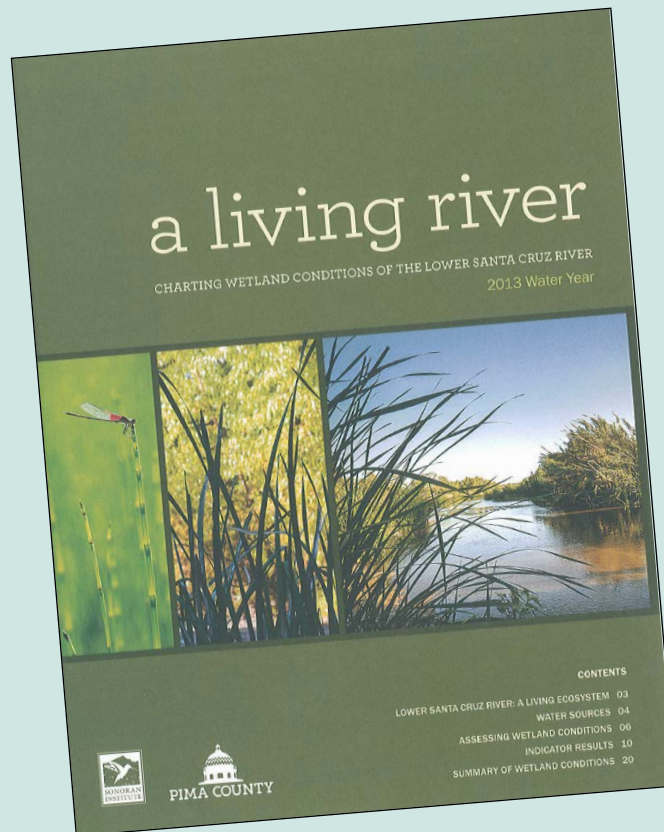
Tombstone



Quartzsite

• Unintended Consequences?

- Is reclaimed water becoming so valuable that riparian areas dependent on it are becoming threatened?



- **More multi-purpose & community enrichment projects**



**Kino Environmental
Restoration Project
Credit: Pima County**



**Town of Payson
Green Valley Lake**



**Anthem Community Park
Credit: MCM Group**



**Birdwatching blind,
Veterans Oasis Park, Chandler
Credit: Buck-Fever**

Into the Future: IPR/DPR?

- ***De facto* IPR is already here, officially or not**
 - Groundwater: 49 ADWR-permitted recharge facilities receive treated wastewater only
 - Surface water: 1-2% of CAP Canal water to Phx/Tucson is treated wastewater (Las Vegas)



Town of Prescott Valley recharge facility for treated wastewater (Civiltech Engineering photo)



Treated wastewater in Las Vegas Wash flowing to Lake Mead (SNWA photo)

Into the Future: IPR/DPR?

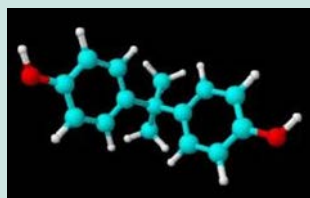
- ADEQ supports stakeholder efforts to develop IPR/DPR criteria
- IPR criteria – may be adoptable as guidance w/o rule changes
- DPR criteria – adoption by rule, concurrent with rescission of current DPR prohibition
- ADEQ would lead expanded stakeholder processes for these



Planning for the Future: Reclaimed Rule Revision

- **AZ reclaimed regulatory framework is excellent, but revisions are needed**
 - reflect new technology, research, processes
 - eliminate conflicts, clarify ambiguities
 - simplify processes where possible
 - add new end uses
- **Rule moratorium may be an impediment to a comprehensive rule revision effort**
- **Current ADEQ resources limit ability to carry out a major stakeholder process so schedule uncertain**

- Advisory Panel on Emerging Contaminants (APEC) is completing work
- APEC Outreach/Education Committee nearly done with draft report for full APEC review
- Report will contain
 - information on occurrence in Arizona's waters
 - recommendations for water/wastewater utilities
 - recommendations for general public



Bis-phenol A



Emerging Contaminants: AZ is Ahead of the Game

- Unlike most states, AZ mandates high-performance treatment with N-removal in all new & expanding WWTPs
- Corollary benefit: EC levels are greatly reduced
- Work by UA & others shows high EC removal rates
 - Traditional primary/secondary treatment: **20-40%** removal
 - AZ plants with N-removal: **60-99+%** removal



Planning for the Future: Desal Brine Mgmt

- RO will generate increasing volumes of brines
 - to improve reclaimed water quality
 - to exploit Arizona's brackish water resources
- ADEQ policy for not allowing deep-well injection of desalination brines is under review
- ADEQ hopes to convene stakeholders to develop deep-well injection criteria meeting APP requirements
- Should regional multi-agency injection facility be pursued?



City of Scottsdale RO Treatment Facility

Water Reuse from A – Z

More information on
reclaimed water is at:
www.azdeq.gov.

Or, email me at:
tb4@azdeq.gov



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Press Releases

10/15/10: Conn-Selmer of Nogales to Pay \$150,000 Penalty to Resolve Hazardous Waste Violations in Santa Cruz County

10/13/10: Southwest Rock Products and Subsidiaries to Pay \$93,526 for Air Quality Violations in Five Arizona Counties from 2006 until 2009

10/08/10: ADEQ Plans St. Johns Event and Other Actions for National Children's Health Month and World Water Monitoring Day

10/01/10: ADEQ Improves Air Quality in Santa Cruz, Cochise counties by Completing 39 School Bus Retrofits to Reduce Emissions

09/30/10: Ozone Season Ends with a Health Watch Forecast

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