

ARIZONA RECLAIMED WATER REGULATION: THE FUTURE IS NOW

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ABSTRACT: Legal, legislative, technical and conservation factors have created a significant amount of reclaimed water reuse in Arizona. Critical recent events include:

- * Passage of the 1980 Groundwater Management Act
- * Arizona Department of Water Resources Management Plans
- * Passage of Environmental Quality Act
- * Creation of Arizona Department of Environmental Quality
- * 1989 Arizona Supreme Court Decision of the Status of Effluent
- * 1991 Arizona Reuse Rule Adoption Status

KEY TERMS: Legal, Regulations, Reclamation, Reuse, Groundwater, Water Rights

INTRODUCTION

In 1980 Arizona Governor Bruce Babbitt signed into law unprecedented water resource legislation - The Arizona Groundwater Management Act. This law was named by the Ford Foundation as one of the ten most innovative programs in state government(ADWR). The law established The Arizona Department of Water Resources. This agency is predominately empowered to strictly regulate those portions of Arizona in which groundwater depletion has historically occurred. These areas known as Active Management Areas(AMA), account for 70% of the states' groundwater overdraft and comprise 80% of the states' population(ADWR). Each AMA is required to promulgate Water Management Plans, to be implemented in successive ten year periods. These plans call for increasingly more stringent municipal, agricultural and industrial conservation requirements and augmentation policies.

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The water augmentation functions include increased usage of reclaimed water and allows for the establishment of Augmentation Funds. These funds are made possible by a groundwater pumping tax (up to \$2/acre ft.).

The monies could be used in part by entities applying for costsharing grants or reclaimed water projects. The projected amount generated statewide is estimated to be \$1.4 million. Proceeds from this tax will be used to reduce the cost of procuring alternative water supplies. Incentives are given to users of 100% effluent which include groundwater credits or increased groundwater allotments. The 1989 Arizona Legislature passed legislation which allows for the creation of Augmentation Authorities within Active Management Areas. The Augmentation Authority may also issue revenue bonds and charge water fees to contractors.

This is an additional financing and administrative mechanism for effective water resource management through a cooperative water user authority. The Phoenix A.M.A. is mandating that 75% of all water used for new school grounds, golf courses and parks be reclaimed by 1995(ADWR). Groundwater recharge of effluent is another significant method of reclaiming effluent. The Phoenix A.M.A.recharge resources are projected to comprise 13% of the areas water supply in 2025(Johnson). In 1989 reclaimed water totaled 50,000 A.F. or 20% of Pima Counties water supply. By 2025 the available effluent could supply enough water for 600,000 people or about one half of the water demand(AZ Waterline). Since agriculture uses 85% of Arizona's water, agricultural reuse will become an increasingly important aspect in the states water resource picture. The Arizona Department of Environmental Quality is in the process of creating Agricultural Irrigation District Permits to accommodate this demand.

LAKES LAW

The State Legislature created legislation in 1987 known as The Lakes Law. Artificial lakes have become a popular amenity in upscale residential developments in Arizona. But when lake acreage exceeded 2000 surface acres in greater Phoenix alone, the public justifiably questioned its wastefulness. That amount of water could meet the needs of up to 70,000 people(Az. Waterline). This law, therefore, basically requires that newly created lakes over 12,300 square feet be filled with treated effluent or poor quality groundwater(ARS).

RECENT LEGISLATION

The State Legislature has passed two laws in 1990 that also encourage reclamation. One allows for groundwater credits when effluent is substituted. The second law authorizes Water Augmentation Authorities which would assist water users in their augmentation efforts. This new statute essentially creates a wholesale water utility that could issue revenue bonds to finance water reuse and effluent recharge projects. It also allows for effluent "exchanges", treatment, and delivery of effluent for industrial and urban uses.

THE LONG DECISION

In 1989, a major Arizona Supreme Court decision has thrown the regulatory and legal status of effluent into a quandary. The case involved farmers and an environmentally-conscious developer who felt that the current contract between the cities and The Palo Verde Nuclear Plant was unfair. The contract was written in 1973, when effluent was not considered to be the valuable resource it is today. The contract ties up the majority of all metropolitan Phoenix's cities effluent, at a very low cost, for a 5-unit nuclear plant. This would have been the largest nuclear plant in the world. But only three reactors were built. The result-Palo Verde uses only about half of the 105000 a.f. it is entitled to. The remainder is discharged into the dry salt river and subsequently used by farmers. The court decided the following:

1. The farmers receipt of the effluent is an act of grace.
2. Effluent is neither surface water nor groundwater but is a "noxious byproduct of sewage treatment".
3. Cities (the usual owners of effluent) have broad and literally unrestricted powers over effluent, dictating where and how effluent will be used.
4. The Arizona Department of Water Resources (ADWR) has no control over effluent resources-which seriously limits its ability to enforce and achieve the objectives of water conservation specifically the halting of groundwater depletion and its associated problems of increased pumping costs and earth fissures which the Az. Geological Survey calls "a significant geologic hazard in Az."(SLAFF)

The supreme court has really forced the legislature's hand to clarify and focus on a new definition for effluent and accompanying legislation to enforce it. We must begin to recognize the importance of reclaimed water as a proven, dependable, predictable and growing natural recourse not just a "noxious by-product."

ENVIRONMENTAL QUALITY ACT

In 1986 Arizona established the Arizona Environmental Quality Act. The L.A. Times called this "The nation's toughest law to protect underground water." The law created the Arizona Department of Environmental Quality (ADEQ) It strengthened existing groundwater protection law establishing an Aquifer Permit Protection Program.

The law gave ADEQ the power to "promote and recommend reuse . . . consistent with environmental quality policies" (ARS). The reuse permit process is far more streamlined and easier to obtain because it requires fewer financial, technical and hydrogeological requirements. However, all applicants must prove through a water balance that no discharges into aquifers or surface waters will occur. The water balance ensures a 100% consumptive use of the reclaimed water with allowances made for evaporation.

CURRENT AND PROJECTED USES IN ARIZONA

Arizona has been a leader in the use of reclaimed water dating back to 1926, when the Grand Canyon National Park began operations of the first engineered wastewater reclamation plant in the U.S.(Fleming). Currently, the state has a water ski facility, the world's tallest fountain, and numerous artificial wetlands which partly or wholly use reclaimed water. Proposed projects include the Tempe Rio Salado project which will reclaim the normally dry Salt River creating a series of parks and water features that will tie into Arizona State University's Sun Devil Stadium and golf course.

Current and Future Arizona Projects
TABLE I

Area	1990 Usage A.F	Purposes	Comments/Future
Phoenix	164,000	Agricultural	Potable in 2020
Palo Verde Nuclear Plant	40,000 a.f.	Electricity Generation	
Scottsdale	1,200	Parks, Golf	100%
Tempe	None	Parks, Golf Rio Salado Project	100%
Mesa	9,400	Parks, Golf Courses	23% in 2035
Goodyear	None	Parks, Freeways	100% in 1922
Glendale	None	Lakes, Golf, Parks, Schools, Medians	75% goal
Chandler	2,400	Residential, Parks, Lakes, Golf, Industrial Cooling	
Tucson	7,000	Golf, Parks, Lakes, Farms, Recharge	20% now 50% in 2002 Potable in 2050

PROPOSED REUSE RULE ADOPTION STATUS

Arizona is currently revising and updating its reuse rules. Current draft thinking includes the following:

1. Proposing strict effluent quality standards for fishable lakes.
2. Making a clear distinction between Reuse Permitting and Aquifer Protection Permits i.e. Wastewater plants will get APPs and either the owner of the reuse site or the purveyor of the reclaimed water will get the reuse permit.
3. Proposing a classification system for reclaimed water. This would be a unit treatment process approach to assure effluent quality and public health protection.
4. Addition of new beneficial uses for reclaimed water.

5. Eliminating most pathogenic microbial limits except if required by the department.
6. Dropping the ban on direct potable usage.
7. Tightening fecal coliform requirements.
8. Adopting four Permit Types 1) Individual 2) General 3) Municipal 4) Irrigation District.

These rules apply to water quality issues, however, water quantity and new definitions for reclaimed water still await pending legislative action and AZ Department of Water Resources (ADWR) rule making processes.

THE FUTURE

The use of reclaimed water in Arizona will grow to an enormous extent in the future. Why? Here are some reasons:

1. It is a cost effective. State surface and aquifer water quality standards are becoming increasingly more stringent. Discharge to washes or any discharge that could potentially reach the aquifer are becoming either impractical or impossible. These involve acquiring a National Pollution Discharge Elimination System (NPDES) Permit or an Aquifer Protection Permit (APP). Both of these involve more time and generally involve more technical and hydrogeological requirements.
2. Most reliable, easily planned water resource.
3. The current environmental trend promoting conservation.
4. The only growing water resource available to water resource planners.
5. New laws continue to encourage or mandate water reuse. Maricopa County requires effluent or CAP for golf courses and large common areas (AZ Republic 12/4/90). Aquifer Protection Permits (APP) have some exemptions for reuse.
6. Increasingly stringent Arizona Department of Water Resources (ADWR) Management Plans in the major population centers of the state. These plans, backed up with the force of state law, call for continual reductions in cities water usage.
7. Water rights litigation, known as adjudication could potentially award more surface water rights to Indian Tribes. This would cause a greater strain on existing water supplies.
8. Aquifer Protection Permit (APP) exemptions for reuse.

9. Cities will be forced to charge more for potable water deliveries than for reclaimed water.
10. The creation of artificial wetlands, golf course water hazards, aesthetic subdivision lakes & other "wet features" will continue to expand. Parched Arizona residents will either prefer or demand these amenities and the developers will continue to supply the demand.

CONCLUSION

Arizona's approach is simple. Provide for assured water supplies in the future, protect and ensure public health, maintain and improve scenic and environmental quality policies. Maintaining a desert lifestyle which uses and sometimes over uses our precious water resources can only be continued through encouraging and promoting the reuse of reclaimed water.

One of America's greatest once said "When the well's dry, we know the worth of water." The impact and importance of those words has never rung truer than today, even though Benjamin Franklin spoke them over 200 years ago. Lets reuse our water to its fullest extent possible, while protecting public health and environmental quality in the process.

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