

# Protect the Peaks... Provide for Flagstaff's Future

## A plan to conserve water resources and the environment.

Wastewater Bulletin

November 2006

Several years ago the City of Flagstaff made a hasty decision to sell reclaimed wastewater for making snow on the San Francisco Peaks. Now the City plans to spend 30 million dollars of taxpayer approved bonds to fund new water projects. These divergent and counter productive strategies illustrate the need for a comprehensive water conservation and drought management plan to provide a safe, reliable, and cost effective water supply. Cities across the West, including Tucson, San Diego and El Paso, are adopting long-range water supply plans that view reclaimed water, and the treatment technologies needed to remove pollutants for safe reuse in aquifer recharge programs, as an essential component of their future water supply.

## The Cost of Doing Nothing

The use of reclaimed wastewater is increasing, but our understanding of the potential impact lags behind. For example, there are many measurable compounds in reclaimed wastewater that are not included in current water quality standards. Scientists across the United States are studying how these compounds effect the natural environment and human health. As research continues, the prudent action would be to install new wastewater treatment technologies, to reduce potential harmful exposure to humans and the environment.

While some of these solutions cost a great deal of money, the clean up costs should be balanced against the health of future generations and the high cost of new water sources. For example, a new \$487 million Ground Water Recharge system in Orange County, California will produce high quality water by purifying wastewater and returning it to local aquifers for \$476 an acre foot. (*The Cost of Building and Operating a Water Purification System to Provide a New Source of Water for an Arid Region*, [www.gwrsystem.com](http://www.gwrsystem.com)) According to a draft Bureau of Reclamation report, *North Central Arizona Water Supply Study: Report of Findings*, the Flagstaff plan to produce drinking water from the Coconino Aquifer will cost approximately \$1950 an acre foot. The Water cleaned at the new Orange County facility with a Granular Activated Carbon, Carbon Regeneration and Reverse Osmosis process is estimated to cost \$1.44 per thousand gallons. New water from the Coconino Aquifer is projected to cost between six dollars to a little over eight dollars, per thousand gallons of water.

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# A Plan for the Future

## Water Conservation

The City of Flagstaff, while enacting strong conservation measures, has yet to develop a long term water conservation and drought management plan. Conservation of water in the arid Southwest requires a comprehensive approach that combines traditional conservation measures, such as low flow plumbing and limits on residential watering, with new technologies that allow for safe recycling and reuse of wastewater. Flagstaff must retain the long term ability to use all of its water resources for community needs, instead of exporting reclaimed water to make artificial snow.

A comprehensive water conservation plan should seek to reduce the use of fresh water, study solutions for removing pollutants in wastewater, require recycling of gray water, reuse reclaimed wastewater, and create a plan to recharge the aquifers.

## Reduce Fresh Water Use

The pressures of ongoing drought and increasing population growth require the implementation of strict water conservation measures as a tool for reducing the need for new water supplies. The October 17, 2006, *Arizona Daily Sun*, reported that residential customers use 6,000 gallons of water a month. The 180 million gallons of reclaimed wastewater that could be sold each winter for making snow, is the equivalent of one month's water supply for 30,000 residential customers. The City is currently reviewing a proposal by the Water Commission to raise water and sewer rates to pay for new wells and pipelines. The use of reclaimed water as a source for non potable residential needs should be a part of the current discussion and planning. A long term commitment to supply the Arizona Snowbowl with reclaimed water will reduce future water supply options for Flagstaff.

## Research Solutions

A growing body of scientific research illustrates the need to find solutions for removing the variety of chemical compounds polluting reclaimed wastewater. The *Arizona Water Institute*, created by Governor Napolitano in December of 2005, will study water supply, quality, conservation and management issues. Funded by the Arizona Legislature and the Board of Regents, the Institute will unite research and education efforts of Arizona's three universities. With over 430 university-based water researchers, Arizona now has the expertise to research and develop solutions for new conservation and purification technologies.

One of the Institute's priorities is to study *emerging contaminants*. This area of study involves research on contaminants in municipal wastewater, the beneficial reuse of reclaimed wastewater and recharge of groundwater supplies. In July of 2006 the Arizona Department of Water Resources and the Arizona Department of Environmental Quality identified the evaluation of treatment options, and costs regarding recharge and reuse with respect to emerging contaminants as a research priority for the *Arizona Water Institute*. The Institute has appointed a panel of scientists to research new wastewater treatment methods at the state level.

The Arizona Department of Environmental Quality is currently undergoing a review of water quality standards in Arizona. Current standards and treatment protocols are likely to be raised in response to the variety of chemical compounds identified by new research and testing technologies. The City of Flagstaff should be planning for the installation of new treatment technologies to allow for the safe reuse of reclaimed wastewater.



## Recycle Gray Water

Gray water, the wastewater which comes from bathtubs, sinks and washing machines, makes up 50 to 80 percent of residential wastewater. A simple redesign of home plumbing, allows Gray water to be captured for use as subsurface irrigation. Fresh water is not needed for flushing toilets! A filtration system, to remove odor causing particles, makes gray water usable for flushing toilets.

Building codes should be updated to require water conservation through residential gray water systems and water harvesting. The June 2002 *North Central Arizona Water Demand Study*, notes that over 45 percent of the water used in Tusayan, Arizona is from alternative supplies, with almost 6 percent from rain-water harvesting.

## Reuse of Reclaimed Water

Our population is rapidly growing while our supply of fresh water is shrinking and becoming more expensive to develop. Like other Western communities, Flagstaff needs to view reclaimed wastewater as an essential component of our future water supply.

The 1995 Tusayan Area Management Plan requires all new commercial and industrial developments to use reclaimed wastewater for non potable uses such as toilet flushing, irrigation and fire protection. These new developments are also required to construct their fair share of facilities for a reclaimed water storage and distribution system.

Taxpayers would be better served if the City of Flagstaff invested in upgrades to existing water treatment facilities, reclaimed water lines to residential neighborhoods and gray water plumbing and filtration systems instead of allowing the equivalent of 6 percent of Flagstaff's water supply to be used to make artificial snow.

## Recharge Aquifers

The City of Flagstaff should support development of an aquifer recharge plan that would ensure a balance between use and recharge, and that the water used for recharge is of potable quality.

Residents of Orange County, California, have begun implementation of a \$487 million Groundwater Replenishment System that will begin processing wastewater in 2007. The project, when it comes on line, will purify enough wastewater to serve 140,000 households. The removal of pharmaceuticals and other compounds before recharge has been a priority. According to a February 3, 2006, Orange County Water District Bulletin, Orange County's Groundwater Replenishment System has been designed to include a state of the art water purification facility that will focus on removing pharmaceuticals.

Under the Orange County system, the already highly treated wastewater goes through an advanced purification process including micro filtration, reverse osmosis and ultraviolet light with hydrogen peroxide treatment. The final result is water that is near-distilled quality. The water is then piped to recharge lakes where it will take the natural path of rainwater as it filters to the deep aquifers in the groundwater basin. The purified water will then blend with other groundwater sources and will remain in the ground for at least a year before removal .

Successful reuse and recharge programs include additional treatment before allowing the reclaimed water to return to the aquifer for future groundwater supplies. Unfortunately, many communities like Flagstaff simply allow the treated effluent to enter the aquifer without additional treatment, risking contamination of the aquifers.

## Act Now to Save the Peaks

Your help is needed to protect the natural environment of the San Francisco Peaks and to conserve our precious water resources for future generations. Please write the Mayor, City Council Members and the City Manager expressing your opposition to using reclaimed wastewater on the San Francisco Peaks. Ask them **not to renew** the Arizona Snowbowl reclaimed water contract. Tell them to develop a long term water conservation and drought management plan that seeks to safely use reclaimed water for the direct benefit of Flagstaff residents.

### Make the following points:

- The City of Flagstaff should conduct a full public process regarding the use of reclaimed wastewater for snowmaking, and the cost to taxpayers. Lost future opportunities relating to residential, municipal and industrial uses must be disclosed.
- Experimenting with the natural environment of the San Francisco Peaks by using reclaimed wastewater to make snow is a bad idea.
- Express concern about the human health impacts of ingesting artificial snow made from reclaimed wastewater.
- Tell the City not to waste the 180 million gallons of reclaimed water that could be sold for snowmaking each winter. Flagstaff should be investing in an infrastructure to make use of reclaimed wastewater to support future housing needs. Potential savings to residential customers if reclaimed water were available for toilets, irrigation and fire protection should be analyzed.
- The cost of new technologies for safe and reliable reuse and recharge programs should be fully analyzed and balanced against the cost of developing new water supplies and compliance with future upgrades in water quality standards.
- A comprehensive conservation and drought management plan should include the five R's: Reduce, Research, Recycle, Reuse and Recharge.

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### How to Contact the Mayor, City Council and City Manager

You may contact the Mayor and Flagstaff City Council as a group via email at:

[council@ci.flagstaff.az.us](mailto:council@ci.flagstaff.az.us)

or by using the individual email addresses below.

Mayor Donaldson: [jdonaldson@ci.flagstaff.az.us](mailto:jdonaldson@ci.flagstaff.az.us)

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Letters can be mailed to Flagstaff City Hall, 211 W. Aspen Ave., Flagstaff, AZ 86001.

If you prefer to call, the phone number is (928) 779-7600 or brief messages can be left on the Opinion Hotline (928) 779-7691.

For more information about the design and cost of the Orange County Groundwater Replenishment System, please visit [www.gwrsystem.com](http://www.gwrsystem.com) and [www.ocwd.com](http://www.ocwd.com), Projects, Water Factory 21.

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