WATER INFO NOW
THE LATEST WATER QUALITY INFORMATION FROM TUCSON WATER
Vol. 3 No. 2 August/September 2005
EMPACT News

Water Quality and the Long Range Plan

Water Plan: 2000–2050

In the March issue of the "Water Info Now" newsletter we introduced you to Tucson Water's Long Range Plan, also known as Water Plan: 2000–2050. The Plan addresses the water quality impacts that may occur in the decades to come and describes the alternative strategies for meeting our water supply needs in the future.

We discussed the first of two decisions facing our community in 2006 about how to best to use the remainder of our available Colorado River water supply. We presented information on how mineral levels in the Clearwater blend will rise naturally over time and the decision that must be made about whether to allow this natural rise to occur or to construct a treatment facility to control the mineral level in the blend. If the community decides to allow the natural rise of minerals to occur over time, Tucson Water customers may see increased costs associated with purchasing, installing, and maintaining individual home treatment systems to reduce the increased levels of minerals in their drinking water. (To review the March issue of "Water Info Now," please visit the Publications section of our web site at **www.tucsonaz.gov/water**.)

Recharge Basins at Clearwater Renewable Resource Facility

Tucson Water currently has access to nearly 136,000 acre-feet (approximately 44 billion gallons) of Colorado River water each year. The expansion of the Clearwater project approved by Tucson voters in May 2005 will not be large enough to recharge and recover all of our share of Colorado River water. How we use that remaining share of surface water is the second decision facing our community in 2006.

How should Tucson Water treat and manage the remaining share of our Colorado River water?

Option A: Recharge all of our Colorado River water by expanding the Clearwater project.

Or,

Option B: Rehabilitate the Hayden-Udall Water Treatment Plant to directly treat and blend our remaining share of Colorado River water.

Both options provide a pathway that makes use of the remaining share of our Colorado River water supply. Tucson Water is developing the relative costs for each option and will be sharing that information with the community later this year. Tucson Water recommends selecting Option A for a variety of reasons.

Hayden-Udall Water Treatment Plant

Water Quality Issues

While both options can provide water that is similar in quality, using direct treatment and blending on the surface (Option B) would accelerate the rate at which the mineral level of the blend rises to approach 600 milligrams per liter (mg/L). The EPA recommended level for total dissolved solids (minerals) in drinking water is 500 mg/L.

In addition, because recharge of Colorado River water reduces the level of naturally occurring organic material (measured as Total Organic Carbon or TOC) in the river water, the Clearwater blend would be lower in TOC than water directly treated and blended at the surface. Drinking water with higher TOC levels can produce compounds known as disinfection by-products when disinfected with chlorine. In order to reduce the potential for creating these disinfection by-products, Option B may require the use of alternative disinfectants such as ultra-violet light, chloramine, or ozone, rather than the chlorine which is currently used to disinfect our drinking water supplies.

continued inside...

Conservation Corner

Drinking water is a precious commodity in our dry desert community. Designing and maintaining beautiful landscapes while preserving this scarce resource is not only possible... it's the right choice! The most effective strategies include using Xeriscape, rainwater harvesting, installing greywater systems, and incorporating water-saving technology. Most of these conservation techniques are well promoted and very familiar to Tucsonans, with the exception of water-saving technology.

Several options are available. Evapotranspiration (ET) controllers make daily adjustments based on measuring the water needs of plants. This type of data is available from the Arizona Meteorological Network (AZMET) from a service that sends the daily local area ET data to your controller via a telecommunications feed. These units are more exact but have a higher price tag and usually require a low monthly service fee. You can also use regional historic ET data with less frequent adjustments.

Other technologies include soil moisture controllers, which use a probe to measure the moisture content in the soil to determine irrigation needs. Rain or relative humidity sensors that stop irrigation cycles during rain events are also an inexpensive option.

Incorporating water-saving technology during your design phase is much more effective than retrofitting after construction, particularly in irrigation control systems. It avoids having to mix and match solutions to irrigation problems.

Keep water conservation in mind as you design and create your landscape so our community will have more high-quality potable water to use for drinking, rather than irrigation. Conservation doesn't have to mean compromising beauty or variety. For more water-saving ideas, call Tracey Berry at 791-4331.

This article is excerpted from a longer piece written by Tracey Berry that appeared in the January 2005 issue of Builder/Architect magazine.

Q&A

***Customer**: A) How do I know where to set the hardness setting on my water softener?*
B) How should I convert milligrams per liter (mg/L) to grains per gallon (gpg) for hardness?

EMPACT Team: A) To know where to properly set your softener, you will need to find out the level of hardness in the drinking water in the area of town where you live. One way is to go to Tucson Water's website at **www.tucsonaz.gov/water** and click on the Water Quality link. Then click on the Water Quality in My Neighborhood link. Scroll down the page and click on the Neighborhood Water Quality Map link to open the map. You can zoom in on the map by clicking on it with your mouse. Find the red or blue dot on the map that is nearest your location of interest. Click on the dot and the most recent measurement of hardness will appear. You can also call Dave Schodroski, our Customer Liaison, at 791-5945 and he would be happy to help you. Once you know the hardness level of the tap water you'll be softening, you will need to follow the water softener manufacturer's instructions in the operator manual to set your system correctly. The hardness level you will want to achieve with a softening system is 0 mg/L.

B) To covert mg/L to gpg for hardness, divide the measurement in mg/L by the factor 17.1. For example, $\frac{231\ \text{mg/L}}{17.1} = 13.51$ gpg of hardness.

***Customer**: A) How much lead is allowed in drinking water?*
B) Where can I have the tap water in my home tested for lead?

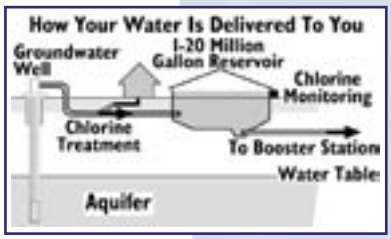
EMPACT Team: A) Lead contamination generally occurs from corrosion of household plumbing that may contain lead pipe. Copper plumbing connected with lead solder or brass fixtures that may contain up to 8% lead may also be sources of lead contamination in drinking water. To control the leaching of lead from plumbing materials, the EPA requires public water systems to control the corrosiveness of their drinking water. Corrective action must be taken if more than 10% of the first draw samples collected for lead from customers' home taps equals or exceeds 15 parts per billion (ppb)*. The Action Level is set at 15 ppb because according to the EPA, given present technology and resources, this is the lowest level to which water systems can reasonably be required to control this contaminant should it occur in drinking water at their customers' home taps.

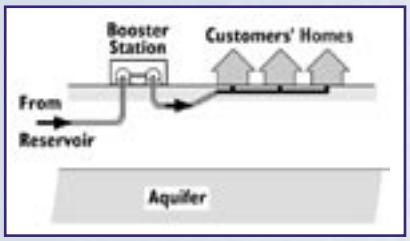
B) You will need to have your tap water tested by a state certified laboratory. To test your drinking water for lead, you will need to collect a water sample after your tap water has not been used for at least 6 hours. A good time to take a sample is first thing in the morning before the tap water is used for the day. Before collecting a sample you should contact a state certified laboratory to obtain the correct sample bottles and a complete set of sampling instructions.

*One part per billion is the same as one microgram per liter and is the same as one teaspoon in 1.3 million gallons.

Email your questions about drinking water quality to Dan Quintanar at Dan.Quintanar@tucsonaz.gov or call him at 791-5080, ext. 1372.

Water Quality 101





Last October we began talking about how Tucson Water delivers tap water to where you live, work and play. Tucson Water's drinking water delivery or distribution system is very large and covers about 375 square miles and delivers more than 37 billion gallons of drinking water to 680,000 customers. Tucson Water owns and operates eleven separate drinking water distribution systems: one large central system that serves the metropolitan area and 10 smaller isolated systems that serve smaller communities outside the city limits like Diamond Bell, Silverbell, Catalina, and Corona de Tucson. None of these isolated distribution systems is connected to the central system. They have their own operational and water quality characteristics just like the large central distribution system, except on a smaller scale.

The central distribution system contains about 4,200 miles of pipes of different sizes from 96 inches to 2 inches in diameter. This huge complex system is all underground and occasionally you'll see evidence of it around town, maybe as a well or a reservoir in your neighborhood. Sometimes you will see water in the street, which can mean that an underground pipe that carries the tap water to homes and businesses in the area has broken. More than 150 points-of-entry (like a well) add chlorinated water to the distribution system, and 20 reservoirs can store up to 250 million gallons to use when the community needs it. As the tap water is pumped to reservoirs for storage and to help maintain adequate water pressure, it is delivered to homes along the way. Hundreds of booster stations and pressure control valves are used to maintain a constant flow of tap water and to lift it to homes at higher elevations. The chlorine level is monitored and adjusted as needed in reservoirs and at other sites throughout the distribution system. Due to the complexity of our delivery system, it is difficult to say with certainty which well or set of wells are the source of your tap water. This is because all the tap water is added to the distribution system, mixed and then delivered. Even if you live near a well, it may not be the source of your tap water.

To help you better understand and learn more about our complex system, we divided the central distribution system into water quality zones, 1 through 10. Each isolated distribution system also has been designated as its own water quality zone, 11 through 17. A water quality zone is defined as an area of the distribution system that has similar water quality and water pressure characteristics and is bordered by geographical and political boundaries. The map on the right shows these water quality zones.

In future newsletters, we will explore the water quality characteristics of each water quality zone.

Water Quality Zones for Tucson Water customers in Tucson and surrounding areas

Water Quality and the Long Range Plan

Water Plan: 2000-2050

...continued from front page

Water Supply Issues

Option A provides the flexibility of storing additional Colorado River water in the ground for use in the future. Preliminary research in Avra Valley shows that the recharge capacity of the Clearwater facilities could be increased to as much as 180,000 acre-feet per year by 2012. This would allow the Arizona Water Banking Authority to store large volumes of surplus Colorado River water at our facilities for Tucson Water and others to use, should the Colorado River water supply ever be interrupted.

By 2014, our community must make two other critical decisions concerning the potential use of effluent (wastewater) as an additional water supply. We will explore those decisions in upcoming issues of the "Water Info Now." These critical decisions the community will be making will be presented to Tucson's Mayor and City Council. Mayor and Council will make the final decisions on the direction Tucson Water will take to ensure we deliver a high quality and safe product for the next 50 years. For more information, visit us at **www.tucsonaz.gov/water** and click on the Water Plan: 2000–2050 link or call Mitch Basefsky, our Public Information Officer, at 791-4331.

Tucson Water
P.O. Box 27210
Tucson, AZ 85726-7210

EMPACT

Water Info Now is published by the EMPACT Team led by Tucson Water and provides up-to-date information about water quality in the greater Tucson area. To be added to the mailing list, please call 791-5080, ext. 1372 or email Dan.Quintanar@tucsonaz.gov.

Esta información está disponible en español. Por favor llame al 791-5080, ext. 1372.

For more information about the Environmental Monitoring for Public Access and Community Tracking (EMPACT) program for Tucson's water quality reporting, visit the Tucson Water web site at **www.tucsonaz.gov/water**. For more information about the United States Environmental Protection Agency (USEPA) EMPACT programs nationwide, visit the EPA website at **www.epa.gov/empact**.