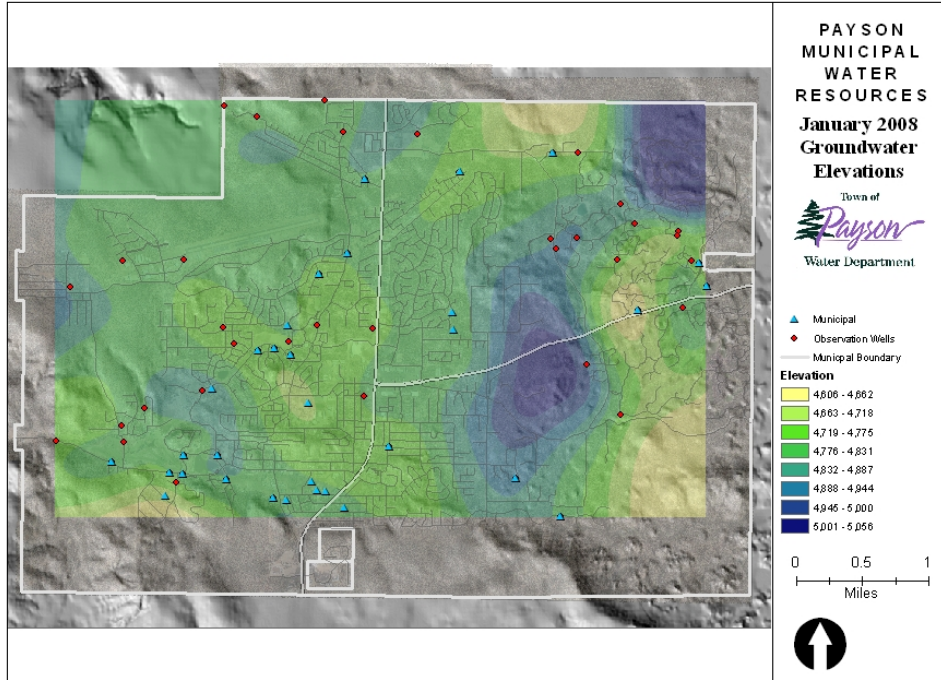


# TOWN OF PAYSON WATER RESOURCES MANAGEMENT

## 2008 STATUS REPORT



**APRIL 3<sup>RD</sup>, 2008**

Prepared By:  
Town of Payson Water Department

## 2008 PAYSON WATER RESOURCES STATUS SUMMARY

The Town of Payson desires to maintain water usage below what is replaced on a long-term average basis by rain and snowfall within the watersheds that recharge or re-fill the aquifer upon which it relies. Maintaining groundwater usage below this amount is considered "Safe Yield". The amount of groundwater available to the Town of Payson within a Safe Yield state is estimated at up to 2,681ac-ft/y.

It is the policy of the Town of Payson local government that the Town will make attempts to manage its water supply and take efforts relating to water development and water conservation to achieve and/or maintain a "Safe Yield" condition of its groundwater supplies each year. Currently, Payson's water consumption remains below the long-term state of "Safe Yield". In 2007, Payson residents consumed local groundwater resources in an amount equal to 65% of "Safe Yield". The net per person usage of water for 2007 was only 85gpcd. This value is below the Payson Water Department's target of 89gpcd.

Because per person water use remains below 89gpcd, groundwater levels have risen dramatically from a wet winter season, and yet there remains an expectation for the return of drought conditions, the **Town of Payson will again implement Water Conservation Level II** water use limitation level for the period of April 2008 to May 2009. This level of conservation includes a ban on washing paved areas such as sidewalks or drives and limiting outside water use to certain days of the week. Complete details are available at the Payson Water Department. These efforts in combination with increased water conservation education, including the Town's participation in "Arizona Project WET" this spring are a meaningful attempt by Town government to achieve the Town's water resources demand goals. The Level II water use limits are commensurate with the reality of our environment and the potential for recurring drought conditions by summer 2008.

The long-term water resources outlook for Payson is excellent as agreements with Salt River Project on C.C. Cragin surface water are nearly complete and associated efforts to bring the "wet" water to Payson are moving forward.

## 2008 WATER RESOURCES STATUS

### GROUNDWATER LEVELS

Groundwater levels in the Payson area are ever changing, not only from year to year but also from day to day. It is important to note that changes in groundwater levels either up or down are normal, within the context of a particular area's history. Because the Town of Payson currently obtains all of its potable water supplies from a fractured aquifer groundwater source, highly variable groundwater levels are indeed expected.

Groundwater level changes are related to many factors. Recharge or re-filling of the aquifer occurs in times of precipitation (rainfall and snowmelt). This results in groundwater level rise. In an opposite way, groundwater levels will drop in response to periods of no recharge or drought. Groundwater levels will also drop and rise in response to well(s) pumping or not pumping. The topic becomes more complicated by the type of aquifer of which the Town and communities in the region depend on. The Payson regional aquifer is in fact a complex system of interconnected cracks and sections of porous (sponge like) earth that yield water to wells. Nearly all of the earthen material beneath Payson and its surrounding area consist of the "Payson Granite". Some areas in the granite have more cracks and porous earth (decomposed granite) than others and some of the cracks or "fractures" are more interconnected than others. Therefore, changes in depth to groundwater can become complicated if not considered in light of the many variables as presented previously and even more.

Groundwater levels are measured quarterly from all wells in the Town of Payson's observation network. This network consists of nearly 100 wells in the Payson area. Monthly measurements are collected at all active production wells and also at key observation wells. Some wells have water level monitoring devices installed that collect and record data automatically. The water level data is maintained in a database by Water Department staff. This database has recently been revamped in 2007 to include Global Information Systems "GIS" components. The Department now has the capability to view past groundwater elevation surfaces to a monthly level of detail (See Cover). By collecting, maintaining, and now further processing water level histories the Water Department is now even more able to assess the status of its groundwater resources both on the whole and at specific locations.

In 2007, groundwater levels have been observed to increase nearly everywhere. In fact, some groundwater levels have risen to levels not observed in a decade or more. Therefore, the Town's groundwater resources are considered to be in improved condition from previous years.

## 2008 WATER RESOURCES STATUS

### CONSERVATION

#### Conservation Programs

During the past year, there have been many reports throughout the nation of possible and probable water shortages. Many of these shortages have occurred after a prolonged drought; and unfortunately the attitude of many was a “response to a crisis” versus being “prepared for a crisis”. In Payson we have been and continue to be prepared. Even though we experienced a slight increase in the per person use during 2007, many of our customers have developed a new attitude of being “efficient users of water”. Through water efficient practices we have once again met our target goal for per person use by staying under the established 89 gpcd (gallons per person per day) target. The per person use during 2007 was 85 gpcd.

The washing machine replacement program was well received by our customers and, therefore, was continued during 2007. This program will expire on June 1<sup>st</sup> or after 20 rebates have been issued. Two other rebate programs are also in process; the Hot Water Recirculation Pump Rebate and Dual Flush Toilet Rebate.

The “Project Wet” Water Festival will be held May 2, 2008. Project Wet is a multi agency sponsored education program designed for interaction with and the education of 4<sup>th</sup> grade students. We are hoping to make this an annual event in an effort to educate our future water users about the water cycle, the watershed, groundwater and aquifers and, of course, water conservation.

In an effort to provide more current information to our customers, we have updated our web pages on the Town of Payson website, [www.ci.payson.az.us](http://www.ci.payson.az.us). There you will find most of the brochures that we offer in a PDF format, as well as tips for improving your water efficiency practices and a water audit that you can conduct in your homes to determine more areas where you could become a water wise consumer. In addition the Town of Payson Native and Low-Water Use Plant List has been updated and improved to include not only a listing of plants, but color photographs of many species as well. The list is available online or the full color version can be purchased at the Water Department in paper format for \$5.00 or on CD for \$1.00.

Plans for classes sponsored by the Water Department to promote efficient irrigation practices are in progress. Announcements will be posted on our website.

## 2008 WATER RESOURCES STATUS

### **CONSERVATION....Continued**

#### **Conservation Level**

Water conservation requirements pursuant to Resolution No. 1742 anticipate that Water Conservation Level requirements be enacted according to the deficit or surplus of precipitation that occurred in the twelve month period immediately preceding the annual water report. Additional, resource factors are also considered when setting the Water Conservation Level requirements for any given year.

Precipitation for Payson's water year of 2007-08 (April 08-March 08) was over 27 inches (official values from the NWS were not available at printing time). This amount is above the long-term average of 22 inches per year as referenced in conservation ordinances.

In light of Payson's already low per-person (per capita) water use but the likelihood of the return of drought in 08, it is determined that Water Conservation Level II remains as the appropriate measure to implement upon Council acceptance of this report in April, 2008 for the following year. It is anticipated that implementation of Level II water use limitations will continue to promote responsible water use and maintain annual water use below the target 89gpcd (per-person) level.

## 2008 WATER RESOURCES STATUS

### WATER DEMAND

Water demand for the 2007 year increased a total average of 2% over 2006. Maintaining conservation awareness remains important to ensure peak demands stay low as moderate drought conditions are expected to return in 08.

The 18% and 14% increases in usage for July and September 2007 are indicative of outdoor water use due to dry conditions. The month of July nearly exceeded the record peak monthly demand total by reaching 71.5 million gallons. Per capita demand during this peak month exceeded 129gpcd, indicating that there is room for improvement in irrigation efficiency during dry periods. Conservation staff is looking into innovative incentives and efficiency improvements to help lower outdoor irrigation use and shave peak demands that occur in dry times.

### Water Consumption 2007

Month 2007	Monthly Consumption	Percent Change From 2006
Jan	39901700	2
Feb.	32166900	-13
March	36604800	2
April	42198200	8
May	52642300	-7
June	61650200	-6
July	71525300	<b>18</b>
August	49449800	-12
Sept.	53270500	<b>14</b>
Oct.	46570700	5
Nov.	45250700	12
Dec	33318100	-6
<b>Total Usage (gal)</b>	<b>564549200</b>	2
<b>Total Usage (ac/ft)</b>	<b>1733</b>	2
<b>Percent Safe Yield</b>	<b>65</b>	

<b>2007 Demand Extremes</b>				
<u>Month</u>	<u>Total</u>	<u>Avg. Peak Day</u>	<u>Peak Day (est)*</u>	<u>Peak Month gpcd</u>
July	71,525,300	2,307,268	3,299,393	129
<b>2007 Lows</b>				
<u>Month</u>	<u>Total</u>	<u>Avg. Low Day</u>	<u>Lowest Day (est)**</u>	<u>Low Month gpcd</u>
February	32,166,900	1,148,818	746,732	58

\*Peak Day = 1.43 times the average Peak Day

\*\*Lowest Day = .65 times the average Low Day

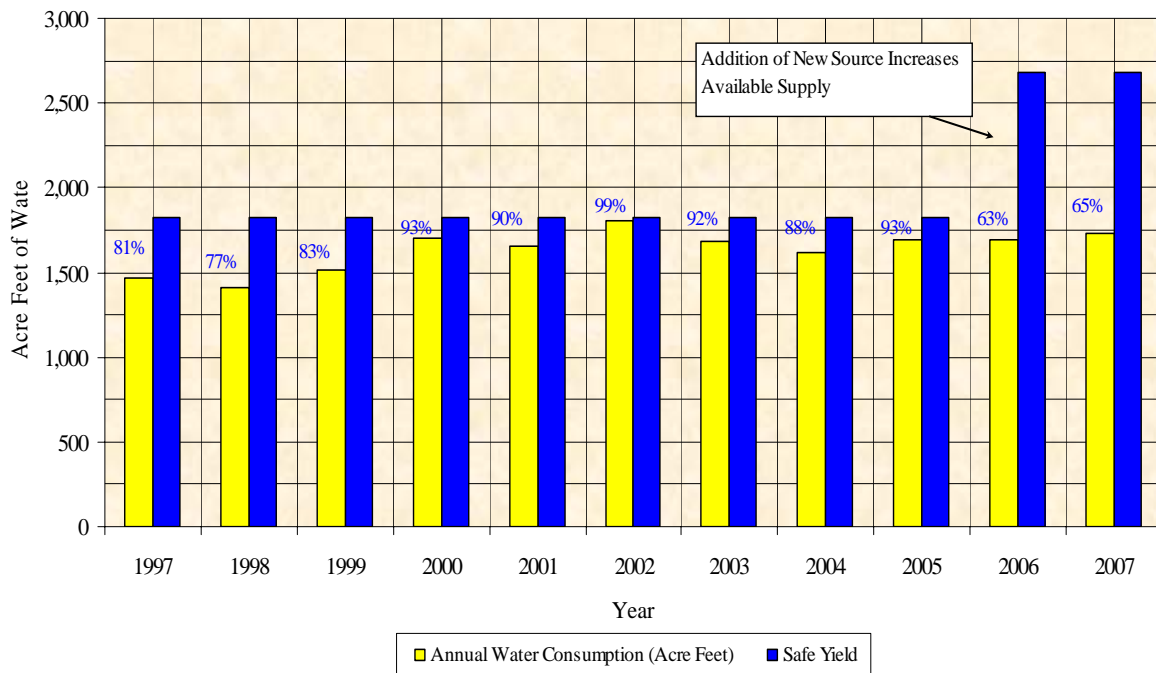
## 2008 WATER RESOURCES STATUS

### SAFE YIELD

#### Safe Yield Status

Safe Yield is a term commonly used to define the amount of groundwater that is naturally and artificially replenished via deep percolation of precipitation into the subject aquifer. In Payson, this value has been estimated to be 2,681ac-ft/yr for its well fields. The value does not include artificial recharge or the now confirmed presence of a deep regional groundwater source. The 2,681c-ft/yr “Safe Yield” is considered quite conservative and by maintaining water use significantly below this value it serves as a tool for achieving maintaining sustainable groundwater supplies. In the year 2007, ground-water consumption increased by just 2% to 1,733ac-ft and represents 65% of the available groundwater supply.

**Town of Payson Annual Groundwater Consumption  
Since 1997 Relative to % of Safe Yield**



## 2008 WATER RESOURCES STATUS

### C.C. CRAGIN STATUS and PLANNING

#### **C. C. Cragin Reservoir Project**

The Town of Payson Water Department has placed top priority on its efforts at working towards securing surface water from C.C. Cragin reservoir (Blue Ridge). The addition of surface water to the Town of Payson's water resources portfolio will foster a comprehensive water supply package that will include 1) Groundwater 2) Reclaimed water for groundwater recharge and non-potable irrigation uses, and 3) Surface water from C.C. Cragin reservoir (Blue Ridge). These resources, when collectively managed alongside sound growth policies, will ensure adequate water resources exist far into Payson's future. Negotiations with Salt River Project "SRP" surrounding the acquisition of Cragin water are nearly complete. The Department is also working in parallel to secure the proper Federal permits for the construction of the Cragin pipeline infrastructure needed to bring the surface water supply to Payson. Ultimately, funding for the capital investment, estimated at ~\$30M, is expected to come from impact fees.

#### **Water Resources Planning**

The Town of Payson Water Department is working to diversify its water resources portfolio by removing dependence on groundwater sources. By employing the following plan, the Department is confident that it can meet all current and future needs of the community while remaining well within Safe Yield:

- 1) Pursue surface water supplies via C.C. Cragin Reservoir (Blue Ridge) to replace groundwater as Payson's primary source.
- 2) Promote a comprehensive water conservation program through innovation, technology, and responsible water usage policies.
- 3) Optimize existing groundwater sources through well rehabilitation and optimum operational schedules.
- 4) Develop deeper regional groundwater resources and interim and reserve groundwater supplies, as needed.
- 5) Promote recharge and reuse of reclaimed water via an agreement with the Northern Gila County Sanitary District.
- 6) Promote beneficial use of contaminated groundwater through treatment technology.
- 7) Preserve and protect existing and future water supplies via foresight, aggressive water policies, and with the support of highly respected water law professionals.