

How Many More Homes Can Be Built in Prescott Without New Sources of Water?

By

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If Prescott resumes the growth rate it had prior to the 2007-2010 housing bust, the city can continue to build new homes for about 27 years without additional water supplies

I. Issue, Purpose and Scope

A large, and many would say unhealthy, portion of the Prescott Region's economy has been based on home construction. As such, local officials have placed a high value on its continuation. From time to time, various interests have stated that if Prescott doesn't get new supplies of alternative water soon, new residential development will come to an abrupt halt and our community's economy will suffer. These claims have been used to justify the rapid implementation of the proposed Big Chino Pipeline Project, which would import "alternative" water from the adjacent groundwater basin.

But how many homes can actually be built in the City of Prescott with the existing portfolio of water? Are the City's claims valid and do we need the Big Chino water soon? Is there a rush?

This report will not advocate for a lower growth rate than existed three or four years ago. Instead, in this report I will analyze the City's water portfolio and determine the number of homes that can be built with existing supplies *assuming the fast growth rate of a few years ago returned*. I will also estimate the numbers of years this home construction could take. I will show that a large number of homes can be built within the City's current borders and potential annexed areas with current water sources and that brisk construction activity can continue for many years without new sources of water.

II. Background

In 1980, the State of Arizona enacted the Groundwater Management Act. The Act provided for the creation of Active Management Areas in those groundwater basins where population growth is stressing the available water supply. The Prescott Active Management Area (PrAMA) is one of five AMAs created and consists of the Little Chino and Agua Fria sub-basins. The PrAMA is the water source for Prescott, Prescott Valley, Chino Valley and the Dewey-Humboldt communities, a few private water companies and a large number of wells for individual homes.

The PrAMA was given a management goal of achieving Safe Yield by the year 2025. Safe Yield is defined in law as a long-term balance between groundwater withdrawals and both natural and artificial recharge.

In January of 1999, the Arizona Department of Water Resources declared the PrAMA to be out of Safe Yield. In other words, the users were over-drafting the aquifer and the water table was declining.

With the out-of-safe-yield declaration, the state's Assured Water Supply (AWS) regulations went into effect. Among other requirements, the regulations prohibit the platting of new subdivisions using PrAMA

groundwater. Any new subdivision requires what is referred to as “alternative” water, i.e. any water other than PrAMA groundwater. Alternative water can include surface water from inside or outside the PrAMA, groundwater from anywhere outside the PrAMA, effluent that has been recharged to the aquifer in the PrAMA and, potentially, harvested rainwater.

In the months prior to the January 1999 declaration when it became known that restrictions on groundwater use would be imposed in the PrAMA, there was a large influx of applications for new subdivisions. In all, about 32,000 lots were platted in the “Great Plat Rush.” Although many of the Great Plat Rush homes have been built, a large number of lots remain vacant. These “grandfathered” lots are able to use PrAMA groundwater and don’t require alternative water.

III. Methodology

It is important to understand that future construction activity can include un-built homes that have been allocated water as well as homes that can receive a water allocation from the existing (unused) water portfolio. This analysis, therefore, consists of the following three categories of potential construction activity:

1. Un-built homes from the Great Plat Rush—lots platted prior to the 1999 declaration, but not yet built;
2. Subdivisions or parcels for which the City has committed alternative water, but which have not been built; and
3. Uncommitted alternative water in the City’s portfolio that can be allocated to new subdivisions.

All data used in this report comes from two City reports that are cited below.

IV. Analysis

1. Un-built Homes from the Great Plat Rush

In a presentation to City Council on December 8, 2009, Ms. Connie Tucker, Water Management Analyst, reported on the status of the Assured Water Supply portfolio. The amount of water she determined was needed for the un-built lots from the Great Plat Rush is presented in the table below. As described above, this water can be supplied from PrAMA groundwater and does not require alternative water. The volume of water was calculated by Ms. Tucker using the number of lots and the City’s water annual use figure of 0.35 AF per residential lot.

Great Plat Rush Category	Annual Acre-Feet
Lots with Final Plats	1,206
Lots with Preliminary Plats	1,244
Total	2,450

2. **Parcels and Subdivisions with Reserved or Allocated Alternative Water, Prior to the October 13, 2009 Report**

Parcel Reserve

As presented in the table below, the City has reserved water for parcels within the city that have not yet been platted, with the expectation that homes eventually will be built. The number of un-watered vacant residentially-zoned parcels was obtained from the City’s “Alternative Water Portfolio Analysis” dated October 13, 2009, which is attached. (It should be noted that subsequent to the October 13, 2009 report the City reduced the amount of water reserved for un-watered vacant residentially-zoned parcels. The amount of reduction was just shifted elsewhere; thus it does not affect the calculations in this report.)

Subdivision Allocation

From 1999 until late 2009, the City allocated 1,283 AF from its alternative water portfolio for subdivisions. That water was enough to build over 3,600 homes. The City, unfortunately, has not maintained records of the number of homes that have been built with this allocated water and as a result, does not know the number of homes that remain to be built. Therefore, this report cannot include the number of such homes in calculating the total homes that can be built without new water supplies. Whatever homes are still to be built on the allocated alternative water should be added to the computations submitted here. Consequently this report understates the number of homes that remain to be built.

Reserved or allocated for Parcels or Subdivision	Annual Acre Feet
Un-watered Vacant Residentially-Zoned City Parcels	1,296
Allocations from 1999 to Late 2009 Un-built Homes	Unknown

3. **Uncommitted Alternative Water**

The alternative water that has not been committed and that can be allocated to new subdivisions is presented in the table below. These values were also obtained from the City’s “Alternative Water Portfolio Analysis” dated October 13, 2009. It should be noted that the Big Chino water included in the 2010 Decision and Order is not included in the above table because Big Chino water is not yet available and is considered new water in this analysis.

Uncommitted Alternative Water Category	Annual Acre Feet
Remainder of the 2006-2010 Water Management Budget	287
Remainder of the 2005 Decision and Order Alternative Water Portfolio	296 *
Addition from the 2010 Decision and Order Alternative Water Portfolio	1,215
Total	1,798

* As was noted, the Remainder value of 296 AF in the above table was taken directly from the City’s “Alternative Water Portfolio Analysis.” My computation of this remainder figure from the data in the City’s “Analysis” indicates that it should be 256 AF. This difference is insignificant for the purpose of this report, thus I elected to use the City’s computed value of 296 AF.

4. Potential Home Construction Activity

As shown in the table below, the sum of the three categories of available water presented above is 5,544 AF as of the beginning of calendar year 2010.

Category	Annual Acre Feet
Great Plat Rush	2,450
Reserved or Allocated Alternative Water, Parcels and Subdivisions	1,296
Uncommitted Alternative Water	1,798
Total	5,544

Based on current state procedures for Prescott, the City must remove 0.35 AF from its water portfolio for each new home the City is to provide water to. Therefore, water is available to construct **15,840 homes**. It should be noted that the 0.35 AF per home annual water figure includes water for the commercial activities associated with new residential development, such as schools, restaurants and other businesses that use substantial quantities of water.

The construction of 15,840 homes would result in a population increase of 33,422, based on the Prescott average of 2.11 persons per home. This is approximately a 74% increase over the current population.

5. Years of Potential Construction Activity

It is seldom possible to accurately determine a city’s projected rate of population growth. The rate will almost always be a rough estimate subject to the vagaries of the marketplace. We are currently in a major economic slump, and we have a historically large inventory of homes for sale. New housing construction is at a virtual standstill.

Just prior to the current recession, however, during a period of high regional growth, Prescott had been adding about 1,200 people per year. For the purpose of this analysis, I believe it is reasonable to use that figure for estimating Prescott’s growth over the next few decades. Using the population increase figure of 33,422 calculated above and the growth rate of 1,200 per year, enough water has or can be made available by Prescott to last over 27 years, or to the year 2037.

V. Conclusion

The above analysis shows that the available water for residential construction and the commercial activities associated with new homes can last almost three decades. Although population growth can proceed at faster or slower rates than it has in Prescott's recent past, it seems safe to conclude that water for home construction activity will last sufficiently long to allow the city to do a comprehensive evaluation of all financial, legal and environmental aspects of the Big Chino water importation project prior to major expenditures.

It should also be noted that implementation of conservation measures for new homes could allow the City to justify to the state an annual water use per home figure of less than 0.35 AF, which would allow an even greater number of homes to be built with available water and thus a longer period of population growth.

Importantly, all or virtually all of the home construction and population increase described above is based on water already included in calculations for our aquifer's overdraft. This analysis assumes Prescott will allocate all the above water supplies to new growth—as the City has done in the past—rather than applying any of that available water to safe yield. Thus, any new construction activity will increase the overdraft and take us further from Safe Yield. The purpose of this analysis is not to support such a policy, but to determine the outcome of the policy.

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ATTACHMENT

C i t y o f P r e s c o t t
Alternate Water Portfolio Analysis (10-13-09)

A t t a c h m e n t 5

The 2005 Decision and Order granting Prescott's Assured Water Supply (AWS) identified 5,480 acre-feet (AF) annually of alternate water resources (Alternate Water) available to the City for allocation:

Stored and recovered effluent credits	2,178 AF
Direct use of effluent credits	1,796 AF
Annual surface water storage and recovery	1,391 AF
Long term storage credits	115 AF

Of the Alternate Water above 5,184 AF have been allocated or reserved:

1999-2010 Water Management Budget Allocations	1,570 AF
Direct use of effluent credits	1,796 AF
Reservations	
o CVID agreement	505 AF
o Other agreements	57 AF
o Unwatered vacant residentially-zoned parcels within the City limits	1,296 AF

The current 2005 Alternate Water portfolio balance available for new allocations, reservations, or other agreements is the difference: $5,480 - 5,184 = 296$ AF.

Review of the reservation for unwatered vacant residential parcels established that it was overly conservative. Considering the location and slope of each such parcel, the reservation can be adjusted to 70% of maximum density allowed by current zoning. This adjustment would reduce the reservation from 1,296 AF to 672 AF, increasing availability by the difference of 584 AF.

With this adjustment the 2005 Alternate Water portfolio balance available for new allocations, reservations, or other agreements is $296 \text{ AF} + 584 \text{ AF} = 880 \text{ AF}$.

The following subtractions from this amount apply:

Remainder of 2006-2010 Water Management Budget	287 AF
Granite Dells Estates reservation (balance)	33 AF
First Increment to Deep Well Ranch per agreement	<u>450 AF</u>
	770 AF

After these subtractions the 2005 Alternate Water Portfolio balance available for new allocations, reservations, or other agreements is $880 \text{ AF} - 770 \text{ AF} = 110 \text{ AF}$.

It is important to note that this quantity (110 AF) assumes all 287 AF presently remaining in the 2006-2010 Water Management Budget will be allocated to new development by the end of the water budget period (end of calendar year 2010).

Expected approval of the 2008 Draft Decision and Order for Prescott's AWS would increase the Alternate Water Portfolio by 1,215 AF annually, for a total availability of $1,215 + 110 \text{ AF} = 1,325 \text{ AF}$.

Applying the Second Increment for Deep Well Ranch per the agreement would reduce this availability to $1,325 \text{ AF} - 500 \text{ AF} = 825 \text{ AF}$.

It is important to note again that this amount (825 AF) assumes all 287 AF presently remaining in the 2006-2010 Water Management Budget will be allocated to new development by the end of the water budget period (end of calendar year 2010). Any unallocated quantity from this budget will be added to/increase the 825 AF.