From: - Book section -
Utah's Water Resources:
Planning for the Future
May 2001

by - Utah Division of
Water Resources

Utah



### Water and Limitations on Growth

In most areas, water will not be a limiting factor of population growth. This does not mean that each community presently has ample water for its needs or the system capacity to deliver it. Rather, it means that in most places water could be made available if the necessary water transfers, agreements and infrastructure were in place.

## Present and Future Uses Of Utah's Water Resources

Agricultural irrigation is, and will continue to be, the primary use of developed water in Utah. Other uses include municipal and industrial (M&I), environmental and recreational. Increasing competition between these uses will continue to shape and reform the way Utah's water resources are utilized. M&I water use will experience the greatest increases because of anticipated population growth.

More concern is being expressed about the environment than ever before and, with it, an awareness of societal effects on ecosystems. Properly balancing water management and environmental concerns will allow future M&I demands to be met without compromising the quality of life that comes with healthy ecosystems. Recreational use of lakes and streams will also increase and must be considered.

**Increasing municipal and industrial water demands will play a prominent role in shaping the way Utah's water resources are utilized in the future.**

### Agriculture

In recent years, the state's economy has become more reliant upon tourism, recreation, services and technology for its economic base. However, agriculture continues to be an important part of the rural economic picture. The state has about 1.5 million irrigated acres and an additional half a million acres of dry-crop land. Most of this agricultural land is devoted to raising feed for the livestock industry, but there are a steady number of acres raising row crops and a variety of fruits and specialty items.

The trend along the Wasatch Front has been a decrease in agricultural land as the growing population has converted farms to residential and commercial areas. In rural areas, agriculture growth has slowed tremendously and is remaining fairly steady. Table 6 shows present and projected agricultural land acreage and associated water use. The Jordan River, Utah Lake and Weber

TABLE 6
**Present and Projected Irrigated Land and Agricultural Water Use by Basin**

| Basin | (acres)* | | | (acre-feet/yr)† | | |
|---|---|---|---|---|---|---|
| | 2000 | 2020 | 2050 | 2000 | 2020 | 2050 |
| Sevier River | 300,700 | 299,900 | 298,200 | 767,000 | 765,000 | 760,000 |
| Bear River | 291,700 | 286,600 | 277,400 | 858,000 | 843,000 | 816,000 |
| Uintah | 198,300 | 197,800 | 197,000 | 745,000 | 744,000 | 741,000 |
| Utah Lake | 146,800 | 132,200 | 101,100 | 523,000 | 471,000 | 360,000 |
| Weber River | 117,400 | 103,800 | 88,000 | 322,000 | 283,000 | 240,000 |
| Cedar/Beaver | 95,000 | 94,300 | 92,500 | 268,000 | 266,000 | 261,000 |
| West Desert | 86,200 | 85,100 | 82,900 | 204,000 | 202,000 | 196,000 |
| West Colorado River | 83,600 | 83,500 | 82,900 | 284,000 | 283,000 | 281,000 |
| Jordan River | 20,500 | 8,100 | 0 | 85,000 | 38,000 | 0 |
| Kanab Creek/ Virgin River | 19,100 | 17,700 | 14,500 | 92,000 | 85,000 | 70,000 |
| Southeast Colorado River | 18,600 | 18,500 | 18,200 | 73,000 | 73,000 | 72,000 |
| **TOTAL** | **1,377,900** | **1,327,500** | **1,252,700** | **4,221,000** | **4,053,000** | **3,797,000** |

* Acres were developed using a geo-spacial model and are based on land-use surveys conducted by the Division of Water Resources, population densities, and population estimates from the Governor's Office of Planning and Budget.

† Water use values were derived from previous water budgets conducted by the Division of Water Resources.

*Agricultural water use is expected to slowly decline as urban growth continues. In most cases the water will be converted to municipal and industrial uses. (Photo of a new residential development near an alfalfa field in South Jordan.)*

River basins are all projected to experience a significant reduction in agricultural land over the next couple of decades due to urban growth.

In other basins, such as the Sevier, the Cedar/Beaver and the Kanab Creek/Virgin River, the existing water supply has nearly been fully developed and there is little water left for future agricultural development. In the Southeast Colorado River, Uintah, West Desert, and the West Colorado River basins, many localized areas have been fully developed, but there are a few areas where water could be developed and used for agricultural expansion. However, due to federal environmental regulation and economic conditions, it is unlikely that significant new agricultural land will be developed in the future.

In recent years, there has been a strong interest in preserving open spaces and other values associated with agricultural lands. This is especially true in urban areas where these desirable lands are rapidly disappearing. The state, conservation groups, agricultural interests and others have shown strong support for preserving open spaces for future generations. Through conservation easements and other means, some of these resources have been protected from development pressures. If this trend continues, more lands will be preserved.

**Municipal and Industrial**

Estimates of present municipal and industrial water use by basin have been made and are shown in Table 7. Projections of water use in 2020 and 2050, based on present use rates and future population, are also shown. These estimates show the largest volume increases in M&I water demand will occur in the Greater Wasatch Area which includes the Jordan River Basin and portions of the Weber River, Utah Lake, West Desert and Bear River basins. The largest percentage increase in M&I water demand is expected to occur in the Kanab Creek/Virgin River Basin, where demand is expected to more than quadruple.

A study by the Division of Water Resources collected detailed M&I water use data in Utah. Table 8 contains the per capita use rates of public community and secondary water systems obtained by this study.

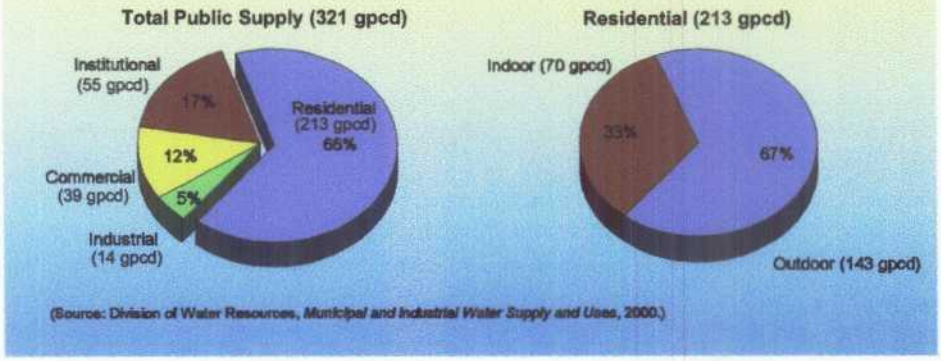
municipal & industrial

TABLE 7
**Present and Projected Total M&I Water Use by Basin**

| Basin | (acre-feet/yr) | | |
|---|---|---|---|
| | Present* | 2020† | 2050† |
| Jordan River | 332,000 | 449,000 | 650,000 |
| Weber River | 170,000 | 267,000 | 358,000 |
| Utah Lake | 134,000 | 232,000 | 383,000 |
| Bear River | 50,000 | 71,000 | 103,000 |
| West Colorado River | 51,000 | 55,000 | 62,000 |
| Sevier River | 48,000 | 55,000 | 64,000 |
| Kanab Creek/Virgin River | 42,000 | 86,000 | 183,000 |
| West Desert | 24,000 | 35,000 | 53,000 |
| Uintah | 24,000 | 27,000 | 31,000 |
| Cedar/Beaver | 20,000 | 33,000 | 51,000 |
| Southeast Colorado River | 9,000 | 10,000 | 12,000 |
| TOTAL | 904,000 | 1,320,00 | 1,950,00 |

* The exact year of the data shown varies from 1992 to 1998, see Division of Water Resources, *Municipal and Industrial Water Supply and Uses*, (Salt Lake City: Department of Natural Resources, 2000).
† Projections represent future demands based on current use rates and future population projections from the Governor's Office of Planning and Budget. Actual demands will likely be less, depending on the level of conservation that can be achieved.

FIGURE 11
**Breakdown of Public Supply Water Use Including Secondary Water**




institutional and industrial components. Residential use is by far the largest component at about 66 percent or 213 gpcd. As shown on the right, an estimated 143 gpcd, or 67 percent of this amount, is used outdoors and 70 gpcd (33 percent) is used indoors. Institutional uses, which include schools, churches, parks, cemeteries and city-owned properties, are about 55 gpcd. Commercial uses are approximately 39 gpcd and industrial uses (public supplied only) are approximately 14 gpcd.

Although these statewide values provide useful information for comparison purposes, individual communities should establish their own baseline use rates. This will assist these communities in setting appropriate goals and monitoring the progress toward reaching those goals through the various conservation measures and programs they decide to implement.

## Water Conservation Measures

An effective water conservation program contains a variety of water-saving measures with emphasis on reducing outdoor use. The following paragraphs discuss some of the measures that will most likely result in positive reductions in water demand.

### Incentive Pricing

Much research and experimentation have been done in the area of water pricing as an incentive to reduce water use. Nearly all the literature agrees that a properly designed water rate structure is an essential element of an effective water conservation program. If water prices are too low, then the signal sent to the consumer is that the resource is abundant and they need not conserve.[4]

In an era where developable water supplies are reaching their limits and economic and environmental concerns make further development less desirable, it makes sense to reflect these conditions in water rate structures. Yet, many water providers continue to use structures that do little to promote efficiency.

Table 9 lists average water prices of several cities in Utah and the western United States. As shown, Utah's rates are among the lowest in the West and are well below the national average. Some reasons that may help explain why Utah's rates are lower include the following: much of Utah's population

TABLE 9
**Water Prices of Various Western Cities**

| City | Estimated Cost per 1,000 gallons |
|---|---|
| Reno | $3.39 |
| Seattle | $2.30 |
| Los Angeles | $2.22 |
| Park City, UT | $2.20 |
| Tucson | $1.81 |
| Boise | $1.68 |
| Las Vegas | $1.65 |
| Phoenix | $1.61 |
| Albuquerque | $1.41 |
| Denver | $1.14 |
| Sandy, UT | $0.99 |
| Salt Lake City | $0.87 |
| Provo, UT | $0.75 |
| Sacramento | $0.75 |
| **AVERAGE** | **$1.63** |
| Utah Average | $1.15 |
| National Average | $1.96 |

(Out-of-state values adapted from, "Western States Water Newsletter," dated, December 31, 1998. In-state values taken from Utah Division of Drinking Water, *1999 Survey of Community Drinking Water Systems*, 2000, Appendix 7, 1-6.)