

Preface

How, ultimately, do we make a rich, a full, a complete water policy? The beginning of the answer is that a great many factors must go into any natural resources policy in the American West, for these are complex times. Water means too many things to too many people for it to be pat, one-dimensional, bound up in a single ideology... Another, related part of the answer is that we must move away from jargon, from bland words and thinking that dehumanize what ultimately are intensely human, even spiritual matters.
—Charles Wilkinson, *The Eagle Bird*, 1992

Tucsonans face important decisions in the coming months and years that will affect the future of their community. At issue is Tucson's water supply, the true lifeblood of the area. A topic of vital importance and one that affects every citizen, Tucson's water supply has long been the focus of controversy. Debates about water issues have caused divisiveness and strife within the community. A major and ongoing source of controversy has been the city's effort to introduce Central Arizona Project (CAP) water into the city system. This did not go smoothly, and the many problems that resulted from this effort frustrated and angered many citizens. This situation helped create a climate that discouraged constructive community debate and consideration of important water information.

Tucsonans now must grapple with the question of how best to ensure a long-term water supply for the community. This involves examining various options, with special attention devoted to finding ways to more effectively use present supplies. Further, if CAP water is to be part of the solution to Tucson's water supply problem, the community must find the ways and means to use this renewable source that are

both affordable and acceptable to Tucson citizens.

The many thousands of people who have moved into the Tucson metropolitan area in the past 50 years are using millions of gallons of water daily. Most of that water is "old" water, stored underground for hundreds or thousands of years. Because more "old water" is used each year than is replaced by precipitation, either by rain or snowmelt from surrounding mountains, water tables decline and wells must reach deeper and deeper to tap remaining water. If we do not reduce the amount of water we use and/or unless we utilize a new dependable supply, we will suffer the consequences of our excessive reliance on groundwater. These include the increased cost of pumping from greater depths, decreased water quality and the occurrence of sub-

sidence which can threaten structures, homes, streets and utilities.

Figure 2 shows major water demand categories and sources of water supply for the Tucson area. What is readily apparent is that municipal

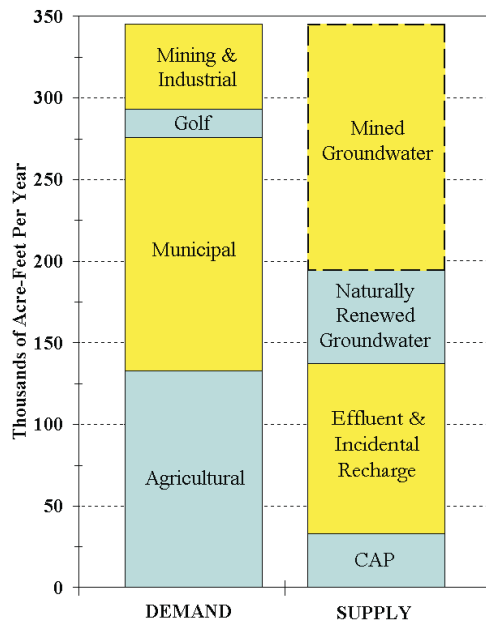


Figure1 View from "A" Mountain at the end of the twentieth century. Photo: UA Biomedical Communications.

uses represent the greatest demand and mined groundwater is our primary water source.

Our largest new water source is the CAP which brings water from the Colorado River.

Figure 2 Water demand and supply in the Tucson AMA (1997 conditions)



Because first efforts to introduce CAP water in Tucson met with serious problems, a majority of voters subsequently rejected its use in their homes unless certain conditions were met. Tucson Water, Tucson’s largest water utility, is making efforts to meet those conditions. When contemplating CAP water use the public needs to understand how its use will affect their homes and lives and the costs involved to minimize any adverse impacts. Tucsonans could

then better evaluate CAP options compared to other kinds of water management actions.

Other community water issues also need attention. For example: Who should help pay to prolong the usefulness of the aquifer? Should this be the obligation of all water users or just those users who actually use alternative supplies such as CAP and effluent? Should the mines and farms be required to use CAP water or at least help pay for it? Other management issues that need addressing include: Should all Tucson Water customers have a say in Tucson Water policy? Should there be more comprehensive basin-wide management of water supplies? Should there be further limits on total water use? The report notes areas where information for making necessary decisions is lacking. The authors do not recommend any solution, but instead have presented facts and information to assist citizens and decision-makers.

As is evident from its title, this publication is about the sustainability of our water resources. Sustainability is a popular word nowadays, often heard when natural resources is the topic of discussion. Used in varied contexts, in government reports, academic journals and the popular press, sustainability is not easily summarized in a one-size-fits-all definition. One point of shared understanding, however, is that sustainability is a desirable goal.

At one level, sustainability, when referring to water resources, means we are not consuming more water than can be renewed. Sus-

tainability implies a balance between supply and demand. For example, groundwater is not an unlimited resource. If we use groundwater supplies at a greater rate than the aquifer is recharged, we are violating the principles of sustainability. Groundwater use at that level is not sustainable. This definition generally corresponds to the definition of safe yield, which is the management goal of the Tucson Active Management Area (TAMA).

Sustainability also has a broader definition, one that takes into account social, economic and environmental values. In this context, a sustained water supply involves more than matching water demand with supply. Sustainability also means that our water resources are managed in a way to preserve the environment, to maintain the economy, and to ensure that all water users share equitably in

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Figure 3 View from “A” Mountain at the end of the nineteenth century. Photo: Arizona Historical Society/Tucson.

reaching and maintaining a balance between water supply and demand.

Both definitions, but especially the latter, involve a shift in mind set. What is involved is less emphasis on developing new water supplies, which has been the traditional approach, with more attention devoted to learning to use water in a way that allows current and future users to live in balance with nature and one another.

One final point: The geographical area covered by the report needs defining. Tucson as the “study area” of this report covers more territory than what is bounded by city limits. This presents some difficulties. Defining a “study area” is complex and often contextual. The most common term used in this report is the “Tucson area.” This term is meant to encompass the most heavily populated portions of eastern Pima County, from Avra Valley on the west, to the Rincons to the east, and from Green Valley on the south, to Pinal County on the north. These boundaries are approximate and are intended to roughly delineate an area in which there are extensive political and hydrologic connections.

The maps in this document show most of the Tucson area, with the exception of Green Valley. (See Figure 4.) The choice of map extent represents a compromise between showing sufficient detail in the most heavily populated areas and showing the larger geographic extent. The map boundaries are not intended to be absolute.

In many instances this report refers to more specific boundaries, usually in the con-

text of the source of available data. For instance, many of the data in this report come from the Arizona Department of Water Resources’ Tucson Active Management Area. TAMA is based, in part, on groundwater basin boundaries.

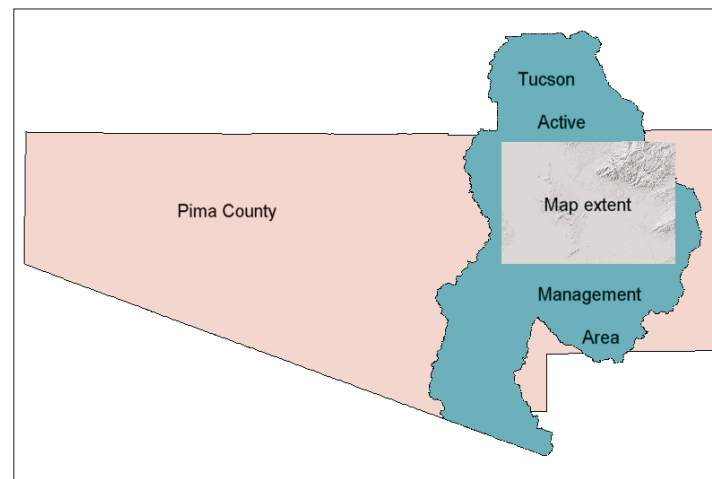
An effort has been made to be both precise and consistent in the use of terms and geographic extent. The reader should be aware, however, that there is some inherent “fuzziness” in these definitions, due to overlapping political and hydrologic boundaries.

Each of the following chapters begins with a brief summary of its content. Background information then is provided on topics crucial to understanding Tucson’s water dilemma. The final chapter offers readers an opportunity to make their own choices from a range of options, based on the information in the previous chapters.

If this report can be said to have a single, underlying message, it is that there is no one simple, inexpensive solution to our water problems. Each proposed solution has both positive and negative impacts.

All of us — Tucson Water customers, private utility customers, farmers, miners, industrial water users and those with their own wells — have straws in the same glass. What we do affects everyone else. The challenge for the community is to pick an effective and desirable solution at a price it is willing to pay.

Figure 4 Study area.



This report was funded entirely by the University of Arizona and was produced by the UA Water Resources Research Center as a service to the community. Its intent is to provide useful, accurate information for Tucson citizens to use in making water decisions. The authors believe both scientific information and community values have important roles to play in deciding water issues. With this in mind, the authors have collected information from a wide variety of sources including federal, state and local agencies’ reports, university research, information from private water utilities and studies by nonprofit groups. Although staff members of local agencies were consulted at various times during the preparation the report, the Water Resources Research Center researchers defined the issues and summarized the information with the assistance of other university experts.