

A Lake Runs Through It . . . Or Is It a River? Or Something Else?

by

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Handout I—General Situation and Proposal

Tempe, Arizona, is a city of 160,000 persons located immediately east of Phoenix, Arizona, and one of the cities in the metropolitan area known as the Valley of the Sun (The Valley). Tempe is home to Arizona State University, many small high-tech companies, as well as several large corporations including America West Airlines (soon to merge and acquire the name U.S. Airways). The Valley sits near the northern edge of the Sonoran Desert and receives about 8 inches of rain annually (cities east of the Mississippi River normally receive over 30 inches per year). On average, Valley temperatures rise above 100 degrees about 90 days a year, producing dangerous heat and drying conditions. Despite this harsh environment, Tempe and the surrounding communities were originally founded as agricultural communities because water from the Salt River (a.k.a. Rio Salado) could be diverted into fields to grow crops to sell to nearby mining operations. One of the city founders was Charles Hayden, who built a flour mill that used water from the Salt River to power the mill.

Currently the Valley has a population of about 3.5 million and has grown from its 1990 population of 2.1 million. The expectation is that by 2025 there will be 7 to 9 million people living in the Valley. Tempe will have a difficult time expanding its population during this period of growth. Less than 5% of city land is vacant and available for development. Tempe is surrounded by other communities that have large and growing populations (Phoenix—1,365,675, Mesa—427,550, Gilbert—133,640, Chandler—194,390, and Scottsdale—214,090). These cities have been able to annex large tracts of open farmland and desert to build new housing. Tempe views itself as virtually “landlocked” amid a sea of growing cities. Because of the lack of land resources, Tempe is proposing the construction of an artificial lake in the dry riverbed of the Salt River that will create new lakefront property within walking distance of the already redeveloped downtown and Arizona State University.

Tempe Town Lake will be “one of the most daring public works projects since the construction of the Roosevelt Dam” (Manley, 2001). The proposal is to extend inflatable dams across the bed of the Salt River at the east and west end of Tempe and fill the dammed area with water to create a 220-acre lake. Tempe Town Lake will allow the city to reclaim and develop over 800 acres of undeveloped land in the floodplain. The project is being touted as a signature site for the city akin to New York City’s Central Park, San Diego’s Balboa Park, the Boston Waterfront, and the Riverwalk in San Antonio (City of Tempe, 2005a).

The goal of the Tempe Town Lake Growth Area is to develop a “regional lake-centered urban destination” that will create and link a mixture of offices, retail space, residential units, hotels, cultural destinations, and recreational opportunities. These new spaces will draw both residents and tourists to this high profile destination and catalyze economic growth and civic pride. The project will combine private and public funds and will generate a high rate of economic activity per acre. The lake’s proximity to downtown and Arizona State will make it one of the premier destinations in the Valley. The recreational space along the lakeshore will connect to the extensive park and recreational corridors in the region and the lake itself will offer aquatic activities in the desert. More important than the recreation and economic development, the project will provide flood control and reduce the potential water damage through the use of high cement levees along the river bank and deflatable dams at each end of the lake (City of Tempe, 2005b).

Significant private developments are in the works along the banks of the Rio Salado that will provide hotels, a conference center, retail, restaurant and entertainment venues, office space, corporate headquarters, and lake-view

condominiums. Estimates show that the Tempe Town Lake will have an economic impact of \$1.3 billion and will generate \$3.2 million in tax revenues annually when fully developed. When compared to golf in Arizona, golf produces \$2,847 of tax revenue per acre of irrigated turf. The Tempe Town Lake will generate \$145,454 of tax revenue per acre (City of Tempe, 2005b).

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Handout II—The Water Situation

The availability and quality of water has always been a concern for those living in these desert communities. Tempe receives its water from three sources: Salt River Project water from the Salt and Verde River Watersheds (stored in reservoirs east of the Valley—including Roosevelt Lake), the Colorado River Watershed (stored in Lake Mead and Lake Powell), and local groundwater. Although Tempe has the rights to more than enough water to meet its needs, other areas of the Valley are growing and will demand more water in the future as population increases continue to put a strain on supply.

One of the issues facing the Valley is the question of whether there are adequate water supplies to meet future population growth. The Salt and Verde reservoirs hold approximately 2.5 million acre-feet (AF) of water. Putting this measurement in perspective, an acre-foot is the amount of water required to cover one acre of land in one foot of water or about 325,000 gallons, approximately what a family of four will use in one year. If there were always 2.5 million AF of water behind the reservoir, there would be more than enough to go around. However, the Valley is beginning to emerge from a nine-year drought when the reservoirs were sometimes holding less than 1 million acre feet. It was enough water for the current population, but a larger population might face severe water shortages. The construction of the Tempe Town Lake does not send a signal in favor of water conservation. Officials from other Valley cities report their constituents will be more resistant to water conservation programs if this lake project goes through. The problem is further complicated by Western U.S. water policy where a landholder (in this case the city of Tempe) has first rights to water and if they don't use it they will lose any future use of that water. Thus Tempe is unlikely to distribute this water to other communities because they would not be able to reclaim the rights to the water in future years.

Critics of the project suggest that a lake in the desert faces water loss and retention problems because of seepage and evaporation. The lake will hold 3,065 acre-feet, but the concern is that water will seep through the bed of the Salt River. However, the city intends to engineer a system to collect and recycle this water back into the lake, and claim there will be no loss from seepage. Evaporation is another matter, and this loss of water is a natural occurrence for any open water body in the Sonoran Desert. The city reports that the 220-acre lake will lose about 1,900 acre-feet per year to evaporation. This means that this lake will send enough water into thin air to meet the needs of 7,600 people for one year. Even if people were not available to use the water, it could be re-directed to an agricultural area of the Valley where it could be used to grow 1,000 acres of cotton or alfalfa (City of Tempe, 2005b).

Other critics suggest that this project with its dams and cement walls is nothing more than a glorified cement pond that will be difficult to maintain and will require continuous monitoring and adjustment to maintain a proper water chemical balance. There is nothing natural about the lake and, although it will be stocked with fish, it is designed to keep waterfowl out. The reason waterfowl will be restricted from the proposed lake is because of its proximity to Sky Harbor Airport, which is only 12,000 feet away. Sky Harbor Airport is the sixth busiest airport in the country (U.S. Bureau of Transportation, 2005) and its runways are in direct line with the proposed lake. The fear is that birds coming to nest and feed in the lake's vicinity would interfere with aircraft landing and taking off (Eschenfelder, 2000). As a result, the design team took great care in ensuring that the lake would not become an attraction for birds and other wildlife. For example, the lake has no places for birds to nest or roost as evidenced by the steep sloping walls, absence of trees, and the deepness of the water. Additionally, Rio Salado park areas have a strict policy against feeding birds and wildlife. Food and beverage vendors are restricted from serving items that attract fowl, such as popcorn and peanuts. Special wildlife habitat areas are planned near the lake, where birds can fly with no threat to airline safety. The city promises to continue to monitor the situation and make changes as necessary (City of Tempe, 2005a).

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City of Tempe. 2005a. Tempe Town Lake on the Rio Salado. <http://www.tempe.gov/lake/Lakehistory/askqst.htm>

City of Tempe. 2005b. Rio Salado Water. http://www.tempe.gov/lake/Water/water_main.htm

Eschenfelder, P. 2000. Phoenix Rio Salado/Tempe Town Lake. International Bird Strike Committee, U.S. Air Line Pilots Association. Spring, Texas; and Bureau of Transportation. 2005. Press Release. http://www.bts.gov/press_releases/2005/bts036_05/html/bts036_05.html#table_07

Handout III—Project Financing and Outcomes

The hallmark of this project is the cooperative efforts made by private and public agencies and corporations. The channelization of the river (for flood protection) has been completed at a cost of \$40 million and was paid for by the Flood Control District of Maricopa County and the Arizona Department of Transportation. Construction of the Tempe Town Lake will cost just less than \$45 million, \$27 million of which will be absorbed by private developers who will also assist in long-term operational and maintenance funding. Additional revenue will be realized as some city-owned property along the lakeshore will be leased to private sector developers. Up to \$3 million will be generated annually in sales revenue and this will be reinvested into the lake. Federal and state funds will be used to finish the project and create public art, hiking and biking trails, and landscaping (City of Tempe, 2005a).

Outside estimates vary about the real costs of the project. The city's public relations department focuses primarily on the \$45 million outlay to build Tempe Town Lake. But the city has spent tens of millions of dollars improving Rio Salado Parkway, building the second Mill Avenue Bridge, constructing bike paths around the lake, installing streetlights, and building parks—all essential features of Rio Salado. The U.S. Conference of Mayors estimates that the City of Tempe will invest more than \$88.1 million. Another \$62.5 million has come from federal and state grants and contributions from the many partners in this project (\$150.6 million).

Others suggest the price tag is more. “The public has never known what Rio Salado is all about,” says former councilwoman Barbara Sherman. “They never knew what these costs are really. It’s all been fluff.” What is supposed to be a \$45 million project will immediately consume more than \$100 million, with an additional \$59 million in expenses on the horizon. Throw in \$45 million more in state and flood-control district expenses and you’re looking at over \$200 million. That’s twice what the City of Phoenix spent to build America West Arena. Other informal estimates show the city is poised to spend \$100 million on Rio Salado and will commit another \$24 million over the next five years. The \$124 million is four times as much as the city said it would spend on Rio Salado in 1993. The \$124 million committed so far doesn’t include several major pending expenses. Additional outlays of \$35 million loom including the plans for a \$15 million marina on the north side of the lake that will provide a safe haven for boats when the Town Lake’s inflatable dams must be lowered to allow floodwaters to pass through (Dougherty, 1999). City councilman Hugh Hallman says the city turned what could have been a relatively inexpensive project emphasizing recreation and wildlife zones into a monstrous economic development labyrinth requiring an investment that will easily top \$200 million to complete. At that time the lake will still need to be maintained.

“The actual water quality and ecological balance in Town Lake will not be completely known for some time, possibly even years after the lake is initially filled,” a report prepared by the city’s environmental consultant states. The city plans to spend about \$350,000 a year actively managing the lake’s water quality. There are concerns that the lake from time to time might develop rather noxious conditions. The environmental report succinctly outlines some of these concerns about certain aquatic life: “For instance, under certain conditions, blue-green algae grows and dies in mass. Then it sinks, producing unpleasant gasses until the gasses give it enough buoyancy to rise to the surface in large, foul-smelling mats. Effective lake management practices can minimize the occurrence of these mats but probably cannot prevent them entirely.” The same report notes that in other instances, “fish kills can occur if oxygen content falls too low; on the other hand, fast-growing, emergent vegetation can clog the surface of the lake.” There is no doubt that from time to time, Town Lake will be an unpleasant place to be. “Through active management of the lake, such undesirable conditions can be reduced in both frequency and severity, but probably will not be eliminated entirely,” the report concludes (Dougherty, 1999).

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City of Tempe. 2005a. *Tempe Town Lake on the Rio Salado*.

<http://www.tempe.gov/lake/Lakehistory/askqst.htm>

Dougherty, J. 1999. A Fortune Runs Through It. *Phoenix New Times*.

Worksheet

Strengths (Internal factors)

Weaknesses (Internal factors)

Opportunities (External factors)

Threats (External factors)