



2011 GENERAL PLAN COMMITTEE

Community Development Department

Agenda

2011 General Plan Committee
Regular Meeting
Wednesday, September 28, 2011
4:00 PM to 6:00 PM

Downstairs Conference Room, City Hall
201 S. Cortez Street
Prescott, Arizona
928-777-1207

The following agenda will be considered by the PRESCOTT GENERAL PLAN COMMITTEE at its REGULAR MEETING on WEDNESDAY, SEPTEMBER 28, 2011, in the DOWNSTAIRS CONFERENCE ROOM, CITY HALL, 201 S. CORTEZ STREET, PRESCOTT, ARIZONA. Notice of this meeting is given pursuant to *Arizona Revised Statutes*, Section 38-431.02.

- I. Call to Order
- II. Attendance

MEMBERS

Miriam Haubrich, Co-Chair	Elisabeth Ruffner
Terry Marshall, Co-Chair	George Sheats
Brad Devries	Gary Worob
Dave Fisher	
Glenn Gooding	<i>EX OFFICIO</i>
Zena Mitchell	Steve Blair, Councilman
Roxane Nielsen	John Hanna, Councilman
David Quinn	

- III. Announcements
- IV. Regular Items

1. Consider approval of the minutes of the September 14, 2011 meeting.
2. Status of Water Element goals.
3. Discussion and edits to the Water Resource element.
4. Decide whether to change or cancel 2nd meeting in November (scheduled for November 23).
5. Call to the Public

- V. Adjournment

THE CITY OF PRESCOTT ENDEAVORS TO MAKE ALL PUBLIC MEETINGS ACCESSIBLE TO PERSONS WITH DISABILITIES. WITH 48 HOURS ADVANCE NOTICE, SPECIAL ASSISTANCE CAN BE PROVIDED FOR SIGHT AND/OR HEARING IMPAIRED PERSONS AT PUBLIC MEETINGS. PLEASE CALL 777-1272 OR 777-1100 (TDD) TO REQUEST AN ACCOMMODATION TO PARTICIPATE IN THIS MEETING.

CERTIFICATION OF POSTING OF NOTICE

The undersigned hereby certifies that a copy of the foregoing notice was duly posted at Prescott City Hall and on the City's website on September 22, 2011 at 4:00 PM in accordance with the statement filed with the City Clerk's Office.

Kathy Dudek, Administrative Assistant
Community Development Department

2011 GENERAL PLAN COMMITTEE
 REGULAR MEETING
 SEPTEMBER 14, 2011
 PRESCOTT, ARIZONA

MINUTES OF THE REGULAR MEETING OF THE 2011 GENERAL PLAN COMMITTEE HELD ON SEPTEMBER 14, 2011 AT 4:00 PM IN THE DOWNSTAIRS CONFERENCE ROOM, CITY HALL, 201 S. CORTEZ STREET, PRESCOTT ARIZONA. *Notice of this meeting was given pursuant to Arizona Revised Statutes, Section 38-431.02.*

I. Call to Order

Co-chairman Marshall called the meeting to order at 4:00 PM.

II. Attendance

MEMBERS PRESENT	EX OFFICIO MEMBERS
Miriam Haubrich, Co-Chair	John Hanna, Councilman
Terry Marshall, Co-Chair	Steve Blair, Councilman
Brad Devries	
Dave Fisher	COUNCIL PRESENT
Zena Mitchell	Marlin Kuykendall, Mayor
David Quinn	
Elisabeth Ruffner	STAFF MEMBERS PRESENT
George Sheats	Tom Guice, Community Development Director
Gary Worob	George Worley, Planning Manager
	Ryan Smith, Community Planner & Committee Liaison
MEMBERS ABSENT	Leslie Graser, Water Resources Specialist
Glenn Gooding	Kathy Dudek, Administrative Assistant &
Roxane Nielsen	Recording/Transcribing Secretary to the Committee

III. Announcements

1. Co-chair Marshall stated that emails need to be sent to Ryan Smith, Staff Liaison, who will then pass it along to the committee.

Mr. Smith reviewed committee/public emails in relation to the Open Meeting Laws of the State of Arizona. The committee may email any pertinent documents to be shared at meetings. Mr. Smith will also be the contact person for emails from the public.

2. The General Plan survey is now posted on the City's website: www.cityofprescott.net. Please encourage people to visit the site, click on the "General Plan" spotlight link and look at the survey.
3. Mr. Worob added that Prescott Creeks Association has just been notified that they are a finalist for a grant to design the future watershed. The grant proposal is for \$300,000 and will include designing the watershed for what is wanted by the citizenry.

IV. Regular Items

1. Consider approval of the minutes of the August 24, 2011 meeting.

Mr. Sheats, **MOTION: to approve the minutes** of the August 24, 2011 meeting. Mr. Worob, 2nd. **Vote: 9-0.**

2. Discussion and edits to the Water Resource element.

Mr. Quinn started the meeting with a PowerPoint™ presentation "Water Supply and Quality" which is attached as Exhibit "A". The presentation included:

- challenges to the water supply
- challenges to the water quality

The following points, as discussed by committee members, were identified and need to be considered in revising/updating the General Plan:

- inadequacy of state policy
- challenges to both supply and quality
- a joint-planning approach of jurisdictions within the AMA and Yavapai County
- adopting a watershed and riparian area policy
- identified items in the 2050 Plan
- bottlenecks in relation to the building code, city code and fire department requirements
- rainwater harvesting (macro and micro)
- incentives rather than mandates
- "marrying" water elements and land development
- tiered water rates, incentives vs. mandates
- a conservation element

The following items, as discussed, were identified to be brought back to the committee:

- grant data re testing water of Granite Creek (statistics)
- water data (to be updated by staff per Mr. Smith)
- evaluate statistics/data on what was accomplished in the 2003 General Plan
- what should be done and what is not being done (Ms. Graser to update)
- what Prescott can achieve (Ms. Graser to update)
- building, plumbing, fire and city codes
- macro, micro rainwater harvesting

3. Call to the Public

Mr. Howard Mechanic, 309 Bloom Place, expressed his views on the Big Chino Water Ranch (BCWR), recharge, additional allocation, number of houses that can be built for 28 years without additional water supply, the Talking Rock Ranch golf course water not drawing from the BCWR, state water laws needing to change, and safe yield.

Mr. Dan Mattson, 148 E. Merritt Street, noted that most people do not have a problem with water. He asked that, when writing the plan, people not be “scared” after reading the General Plan, but that people be educated about water.

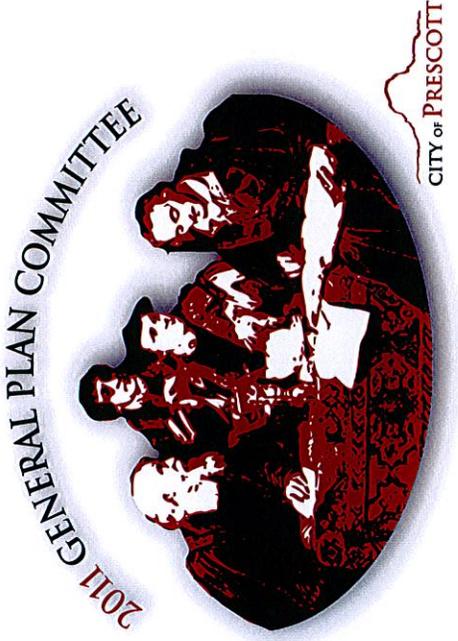
V. Adjournment

Co-chairman Marshall adjourned the meeting at 5:47 PM.

Terry Marshall, Co-Chairman

Miriam Haubrich, Co-Chairman

**Kathy Dudek, Administrative Assistant
& Recording/Transcribing Secretary to
the Committee**



For Discussion:
Water Supply and Quality

EXHIBIT "A"

Water Element Headlines

- **Challenges to Our Water Supply:**
 - Despite proactive steps by Prescott in recent years, achieving safe yield within the Prescott AMA by 2025 is **uncertain at best.**
 - Without water importation, the existing Prescott water budget allows 421 AF to be allocated to future growth, or less than 1200 single family lots.
 - The Big Chino pipeline faces legal, financial, and political hurdles, which suggests that **we not consider** its implementation as a baseline planning assumption.

Water Element Headlines

- **Challenges to Our Water Supply:**
 - State water policy is inadequate:
 - Focused on AMA rather than aquifer integrity
 - Laissez-faire approach to exempt wells, no regulation outside AMA
 - Lot splits allowed in unincorporated area without assured water supply
 - Separate legal regulation of surface and groundwater supplies
 - Regional water planning and policy needs to be improved:
 - Safe yield efforts lack integrated, joint planning process with county and other municipalities within the AMA. No process inclusion of entities outside AMA.
 - Usage of existing supplies in Big/Little Chino aquifers are unquantified, therefore not managed

Water Element Headlines

- **Challenges to Our Water Quality:**
 - Hazards of pharmaceutical pollution unknown and therefore un-managed
 - Watershed/riparian area health and adequacy impact quality and supply but these impacts are not yet defined and understood by decision-makers

Possible Water Strategies

- Invite sister jurisdictions within AMA to consider joint and integrated planning for safe yield
- Request Yavapai County Water Advisory Committee to apply political pressure for improved State water laws and regulations
- Consider establishment of an aquifer-wide water district to ensure aquifer integrity and safe yield achievement
- Evaluate strategies for storm-water recharge
- Adopt watershed/riparian area policies based upon recent study
- Create a grant-funded project to identify pharmaceutical pollution in supply wells and recharged effluent



2011 General Plan Committee Community Development

Date: Wednesday, September 28, 2011

To: Councilman Steve Blair, Brad Devries, Dave Fisher, Glenn Gooding, Councilman John Hanna, Miriam Haubrich, Terry Marshall, Zena Mitchell, Roxanne Nielsen, David Quinn, Elisabeth Ruffner, George Sheats and Gary Worob

From: Tom Guice, Community Development Director
George Worley, Planning Manager
Ryan Smith, Community Planner

Staff Memo Status of Water Element Goals

PURPOSE:

The Committee has requested staff to provide a brief evaluation and available statistical data, regarding the 2003 General Plan Water Element Goals. The data is provided to assist the Committee in its task to update the goals of the General Plan Water Element.

BACKGROUND:

The Current 2003 Water Element embodies the principals of Growing Smarter legislation, however, the goals and strategies have been attempted with varying degrees of success. The Committee should use the provided data to determine if goals should continue to remain or be modified in the updated General Plan.

The text of the Water Element supports each goal, describes how goals were arrived at and why they are important. As goals are updated, deleted and/or created, the text will be also be modified accordingly. Again, City staff will update all numerical and statistical data. The Committee must focus on concepts and notions as based on the future of the City.

10.4 WATER RESOURCES GOALS AND STRATEGIES

Goal 1. Provide a reliable water supply for the city by employing water conservation measures.

Add a strategy to develop a Long Term Water Management Plan here. As of September 13, 2011 all litigation associated with the City's Decision and Order (D&O) from the Arizona Department of Water Resources (ADWR) has ended. This D&O describes the sources of water that the City is entitled to based on ADWR examination which is that it

is physically, legally, and continuously available for 100 years. Simply put, an overall goal for reliable water supplies (quantity and quality) would include the development of a long-term water management plan. This plan would take into account all supplies recognized in the D&O they include the following: groundwater, surface water, treated effluent, and imported supplies.

Strategy 1.1 Annually review the city water budget and limit new allocations to match available resources according to the City's water budget policy.

This is in effect under the Water Management Policy extended thru 2011 by Resolution 4058-1128. Presentations are made to Council yearly. The budgeting and tracking of City water supplies will continue indefinitely.

Strategy 1.2 Reduce lost and unaccounted for water through monitoring and appropriate action.

This is tracked by Operations and reported on an annual basis to ADWR. The City has never exceeded 10% loses, which are averaged out on a yearly basis as set by ADWR. The City's infrastructure is very old in various locations, City Operations staff promptly repairs leaks found by staff or reported by the public. These efforts and tracking will continue indefinitely. Older lines known to be a problem are replaced as budget allows.

Year	2005	2006	2007	2008	2009	2010
% loss	7.55%	8.85%	8.36%	8.47%	8.79%	9.40%

Strategy 1.3 Review additional conservation measures for possible addition to the City's existing Water Conservation Program.

In 2006, as part of a citizen committee recommendation a full-time staff member was hired to further conservation efforts. The water conservation incentive program processed 477 applications in calendar year 2010, and from 2006-2010 has seen a cumulative savings of 236 AF (76,900,836 gallons). This incentive program (with adjustments as needed) and the overall conservation program will likely be continued into the future.

Strategy 1.4 Adopt an incentive billing structure tied to consumption to encourage conservation.

A tier rate structure was previously adopted as part of the Prescott City Code Article 2-1-18. See attached water rate schedule.

Strategy 1.5 Expand Water Conservation Program Public Education Component.

As above with strategy 1.3, the addition of the Water Conservation Coordinator to the city's staff in 2006 yielded greater conservation efforts for not just the citizens, but the local businesses and school districts.

Conservation public education includes a component describing why conservation is important. It has been suggested that we include a strategy to include an effort at public education regarding the challenges of water supply and quality facing our community. Is this different than, or in addition to conservation education?

Goal 2. Improve water supply reliability by optimizing effluent supplies.

Strategy 2.1 Provide no potable water or effluent for irrigation use by future golf courses.

Golf Courses are permitted in residential districts with a Special Use Permit approved by Council. Staff does not endorse golf courses due to water concerns in the General Plan. No new golf courses have been allowed since the 1994 approval of the Prescott Lakes Master Planned Community.

Strategy 2.2 Periodically re-evaluate effluent rates to contract customers and impose penalties for use over allotments.

Most rates are set in contracts and increase yearly based on the Consumer Price Index. When the contract term has ended, a new price is negotiated based on market rates in Prescott.

Strategy 2.3 Continue to maximize effluent recharge programs and pursue efficient water management practices.

The City has held effluent recharge permits since 1994. All effluent that is not used directly, under contract or requested by periodic contractors, is sent to the City's recharge facility. The recharge facility is maintained for optimum percolation of water.

Strategy 2.4 Extend sewers wherever feasible to recover effluent from water customers presently on septic systems based upon a case-by-case cost-benefit analysis.

This has not been completed due to high costs and resistance from property owners. The City has had some peripheral success with a new development in the County off Williamson Valley Road. These were allowed to hook up to sewer with no water service. They wouldn't annex, but the density would eventually prohibit septic systems. This was not ideal but did also help prevent degradation of Willow Creek. The consensus up to this point is that with limited funding, any contribution to sewer hook up, would be only for areas within the City. This is a component that may need to be looked at more seriously and could likely be addressed in a long-term water management plan.

Strategy 2.5 Continue to convert City parks to use effluent for irrigation where feasible.

This has not occurred due to the cost of new infrastructure, lack of available effluent during the summer months and the use of effluent to recharge the Little Chino aquifer which supports the City water portfolio. Again, this is a component that may need to be looked at more seriously and could likely be addressed in a long-term water management plan.

Goal 3. Develop Additional Water Supplies for the city.

Add a strategy for rainwater harvesting here or at Goal 1. - depending on if conservation (individual micro-harvesting) or additional water supply (macro-harvesting) is the goal. The General Plan committee could recommend that efforts be made to encourage reducing the use of potable water for residential outdoor watering through native plant

choices and the addition of rain water catchments on the house. Currently, the City's incentive program does have a rainwater harvesting credit (Rainwater Cisterns \$0.10 per gallon—500 gallon minimum storage, \$ 300 Maximum credit). For Macro Rainwater Harvesting, the technology and application in the Prescott AMA needs further study.

Strategy 3.1 Pursue the importation of water resources in sufficient quantities to reduce depletion of local water reserves and achieve “safe yield”.

The City has won legal challenges associated with the designation of assured water supply, confirming that Prescott has the water rights to 8,068 acre feet of water, which may be pumped from the Big Chino Water Ranch and additional alternative supplies. Obstacles exist to create the water main needed to move the water from the north Chino Valley area. Land purchases and easements over multiple jurisdictions outside of Prescott are needed.

Strategy 3.2 Utilize imported water in a manner recognizing it as a benefit of limited reliability due to potential drought impacts and legal claims by other jurisdictions.

Currently, the Big Chino Water Ranch is the only project proposing imported water. There is additional language in the General Plan that is supportive of this goal. This could be assessed in a long-term water management plan.

Strategy 3.3 Develop funding strategies to finance new water sources and technologies.

The City currently has two funding sources related to water. All new construction is assessed a Water Resource Development Fee and Water System Impact Fee. The development fee may only be used for the acquisition, operation and maintenance of additional water resources. Fees collected for water system impacts may only be used for acquisition and upgrades to the City's water production, treatment, and transmission and distribution system.

Strategy 3.4 Investigate creating a water impact fee for new homes and/or commercial buildings to finance new water sources and technology.

Water impact and water resource development fees are in place, but in jeopardy based on possible state legislation. The State has frozen Impact fees to 2009 levels. Pending legislation may eliminate impact fees altogether. See:
http://www.azleague.org/bulletin/11/110204/index.cfm?a=impact_fees

Strategy 3.5 Investigate creating a differential water buy-in fee for new multifamily homes set at a lower rate than for Single-family homes as an incentive for lower cost housing.

Water buy in fees are based on meter size. The larger the meter, the higher the fee. Multi-family water rates are less than single-family rates. Meters are required on a per structure basis. As an example, a 10 unit apartment building may have one meter, which is shared by all units in the building. Condominiums may have separate meters for each unit. Overall, multi-family housing units use less water than single family homes, thus requiring smaller meters (multifamily common area landscaping would be on a separate

meter). See attached rate schedule and Development Fees For Water Resources, Water Impact and Buy-In Fees schedule.

Goal 4. Include the citizens in decision making on water policies.

Strategy 4.1 Provide continuing public information regarding water policy questions.

Reports on Current and Future Annual Water Resources & Management are available. On an annual basis reports are provided to City Council regarding groundwater pumping and assured water supply. This information is made available on the city website. This year a new report was created for the public, the Annual Water Resources & Management Report. Each year, this report will have timely information for the public.

Strategy 4.2 Promote public involvement in major capital improvement decisions for water acquisition projects.

The Big Chino Water Ranch is the City's latest acquisition for water supplies and was purchased in 2004. There was extensive public dialogue before, during, and after this acquisition. Continued public involvement will be associated with this and other sources of future city water supplies.

Goal 5. Continue to participate in regional coordination Programs regarding water resources.

Strategy 5.1 Continue to take an active role in regional water forums.

City staff continues to be active in several regional water groups, they include the following:

Groundwater Users Advisory Council – established in 1980

Authority: A.R.S. §45-420

Membership: five-member, Governor-appointed council representing the users of groundwater in the active management area and on the basis of their knowledge of, interest in and experience with problems relating to the development, use and conservation of water. At this time the City doesn't have an appointed member.

Term of Office: Members are appointed to six year terms

General Duties: Each Council provides advice and recommendations to the AMA Director on the groundwater management programs and policies within the AMA. **Meets:** as needed

Staff Contact: Scott Miller, ADWR

Yavapai County Water Advisory Committee – established in 1999

Authority: A.R.S. §11-251

Membership: 15 members representing the three Supervisor districts, the nine incorporated cities and towns in the County, the Arizona Department of Water Resources, and the Yavapai Apache and Yavapai Prescott Tribes. The cities and towns are represented by elected officials for those entities, ADWR is represented by ADWR staff, and the Tribes are represented by either Tribal officials or staff. The three Supervisors are members.

Term of Office: Indefinite terms.

General Duties: Review information on water issues of a regional nature as may be provided by researchers and scientists, the Verde Watershed Association, the Groundwater Users' Advisory Council of the Prescott AMA, and other water-

related organizations or individuals and report findings and recommendations to the Board of Supervisors.

Meets: Monthly.

Staff Contact: John Rasmussen, 442-5199.

Northern Arizona Municipal Water Users Association – established in 2002

Membership: executive board consisting of elected officials from 9 northern Arizona municipalities.

Term of Office: Indefinite terms.

General Duties: Embraces the concept of sustainability of water resources for our customers. Promotes working relationships with water providers, state and federal agencies and other stakeholders. Seeks to develop and communicate a unified position before regulatory agencies and legislative bodies. Encourages water conservation, water quality and stakeholder input.

Meets: Board – every other month, Technical Staff – monthly

Staff Contact: Ron Doba

Upper Verde River Watershed Protection Coalition – established in 2006

Authority: Intergovernmental Agreement recorded as Book 4509 Page 87

Membership: 5 member board consisting of elected officials from the City of Prescott, Town of Chino Valley, Town of Prescott Valley, Yavapai County and Yavapai-Prescott Indian Tribe.

Term of Office: Indefinite terms.

General Duties: Working together to protect the Upper Verde River, the Coalition is committed to balancing the reasonable water needs of the residents of the Upper Verde River Watershed Area with protection of the base flow of the Upper Verde River to the maximum possible extent, and achieving safe-yield within the Prescott Active Management Area (AMA), by developing best management practices that incorporate science-based planning, utilization and conservation of all water resources within the Upper Verde River Watershed Area, and provide financial and staff resources to support the protection activities of the Coalition.

Meets: Board – every other month, Technical Staff – monthly

Staff Contact: Shawn Bradford, Burgess and Niple

Strategy 5.2 Partner with other jurisdictions and fund studies to identify conservation measures and additional water resources.

The Upper Verde River Watershed Protection Coalition is a multi-jurisdictional group that strives to meet the conservation intent of this strategy. The Northern Arizona Municipal Water Users Association is a multi-jurisdictional group that strives to protect and seek the additional supplies contemplated in this strategy.

MACRO-RAINWATER HARVESTING/EVAPORATION INTERCEPTION

Douglas McMillan¹

Richard Shroads²

ABSTRACT:

In 1999, the Arizona Department of Water Resources (ADWR) officially declared the Prescott Active Management Area (AMA) "out of safe yield". ADWR has estimated the groundwater overdraft to average over 11,000 acre-feet per year. Several alternatives have been offered in the past to achieve safe yield including water conservation and importation of water supplies. Recently, an additional alternative termed, Macro-Rainwater Harvesting/Evaporation Interception (MRH/EI), has been proposed for the Prescott AMA.

MRH/EI is a three step process involving: 1) **harvesting** of enhanced rainwater runoff and subsurface infiltration that otherwise would have been lost to evaporation, 2) **transporting** the harvested rainwater to natural or artificially constructed areas with relatively high infiltration rates and 3) **recharging** the harvested rainwater. During this process, the time exposure of the harvested rainwater to evaporative conditions is minimized. The goal of MRH/EI is to supplement natural groundwater recharge to achieve safe yield but to not harvest rainwater that potentially could leave the AMA boundary as surface flow. Unlike conventional harvesting techniques applied on relatively small parcels or urban areas, MRH/EI would be applied on a **large scale** potentially involving multiple square miles of land.

In the case of the Prescott AMA, natural groundwater recharge represents approximately two percent (2%) of the total annual precipitation. A total of five percent (5%) is needed to reach safe yield. Therefore, an additional three percent (3%) recharge is required which MRH/EI could help achieve.

Harvesting of rainwater runoff involves capturing rainwater from impervious surfaces in developed areas and enhancing runoff in undeveloped areas. Runoff would be enhanced by changing the topography of the land and increasing ground surface impermeability. Topographic modifications involve the construction of sloped earthen mounds and swales. Soil impermeability would be increased by either compacting the top soil, applying chemical bonding agents such as common road dust palliatives or installing polyethylene membrane sheets.

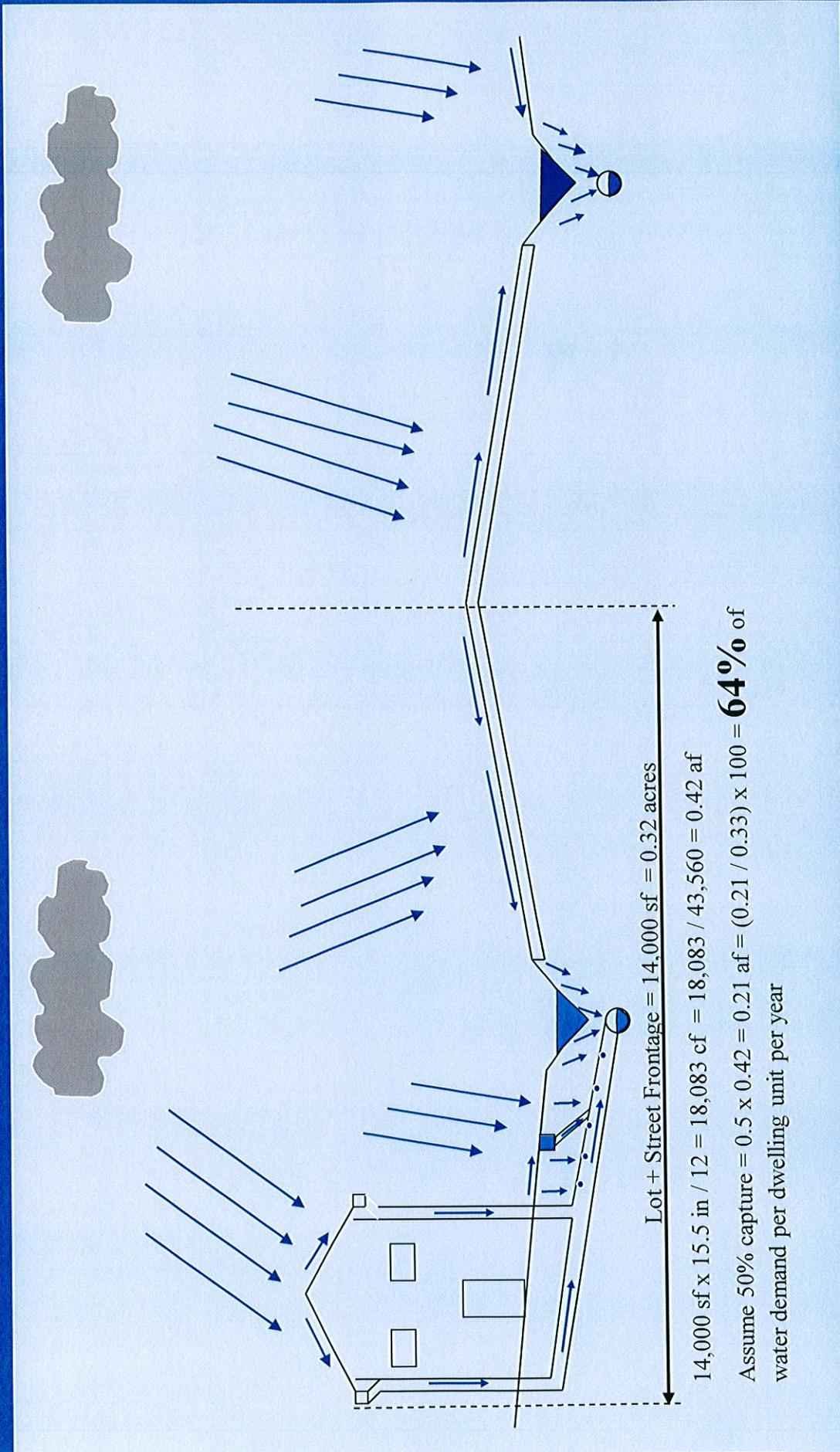
Harvesting of rainwater below the surface involves the installation of perforated pipe drainage systems in areas artificially or naturally prone to saturated soils. Rainwater runoff and subsurface infiltration harvesting systems could be designed similar to sewer collection systems with excessive infiltration/inflow.

The Upper Verde River Watershed Protection Coalition and Civiltec Engineering plan to study the cost effectiveness of these rainwater harvesting methods through the construction and operation of pilot scale facilities in Prescott, Prescott Valley and Chino Valley. The pilot scale facilities have been designed but the Coalition is currently waiting for construction funding.

- 1. Senior project engineer at Civiltec Engineering. Registered professional civil engineer in Arizona and California.**

2. **President of Civiltec Engineering. Registered professional civil engineer and land surveyor in Arizona and California. Member of the Arizona Floodplain Management Association (AFMA), American Society of Civil Engineers (ASCE), American Public Works Association (APWA) and the Arizona Professional Land Surveyors Association (APLS).**

Sub-Surface Infiltration Collection Using Perforated Pipes Along Roadside Ditches and in Developed Areas

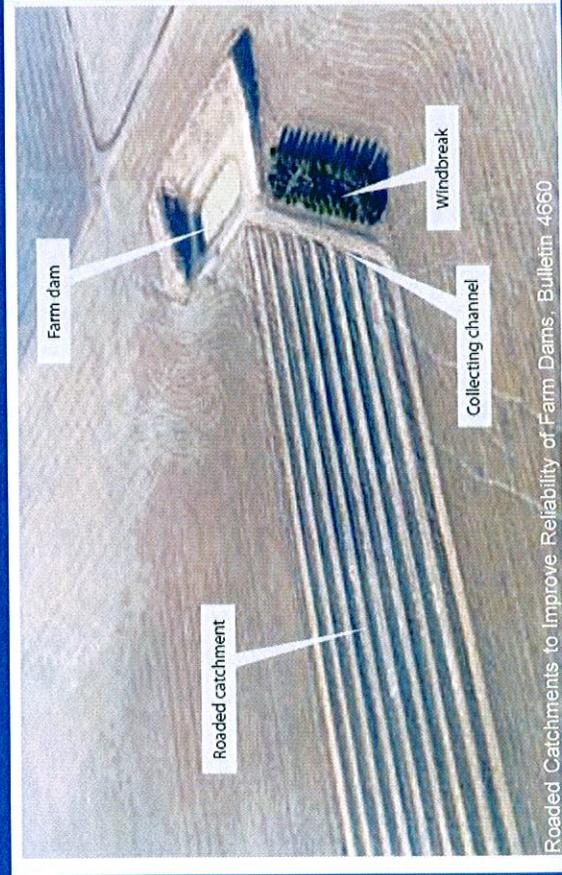


Lot + Street Frontage = 14,000 sf = 0.32 acres

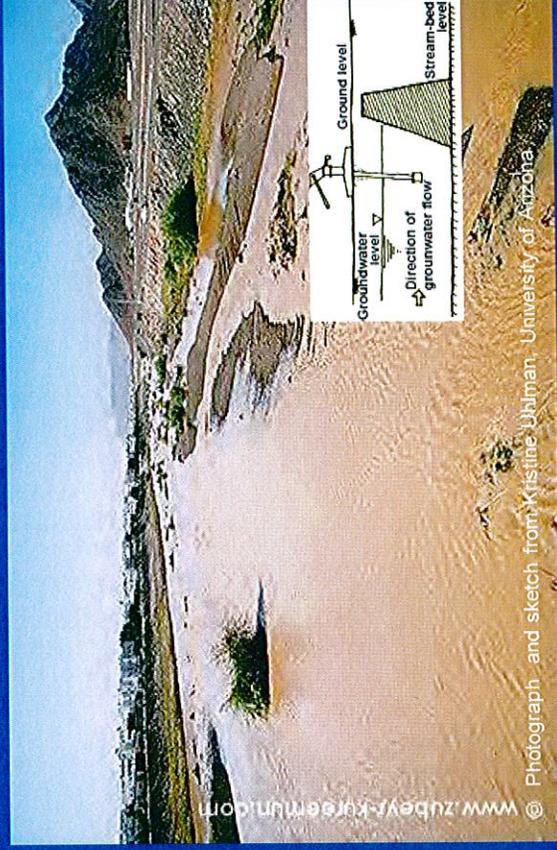
$$14,000 \text{ sf} \times 15.5 \text{ in} / 12 = 18,083 \text{ cf} = 18,083 / 43,560 = 0.42 \text{ af}$$

Assume 50% capture = $0.5 \times 0.42 = 0.21 \text{ af} = (0.21 / 0.33) \times 100 = \mathbf{64\%}$ of water demand per dwelling unit per year

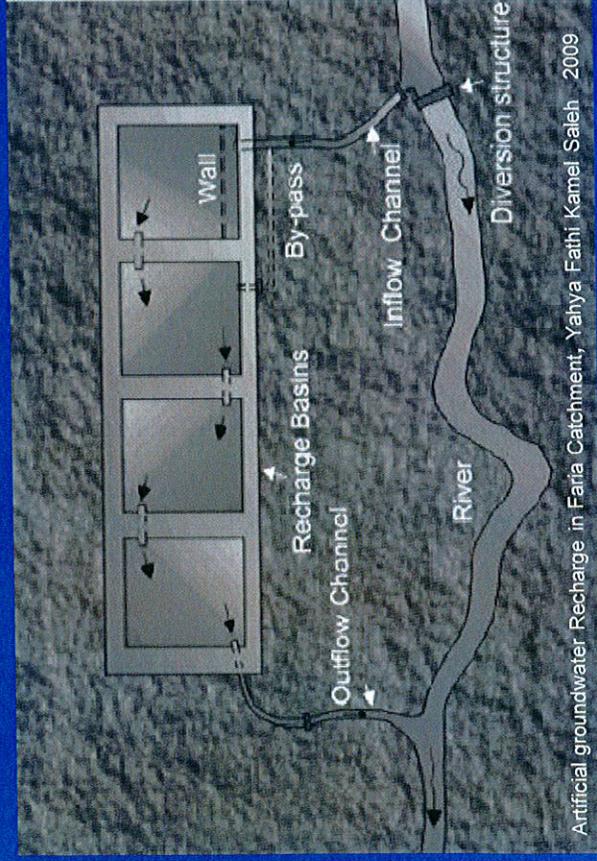
Rainwater Harvesting and Recharge in Other Countries



“Roaded Catchments” in Australia



Underground Dams (Wadis) in Saudi Arabia

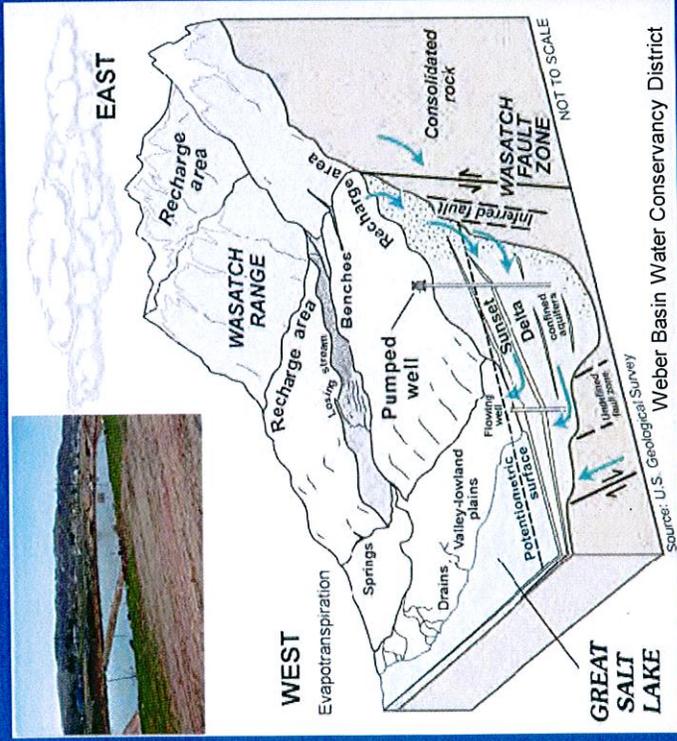


Infiltration Basins in Jordan

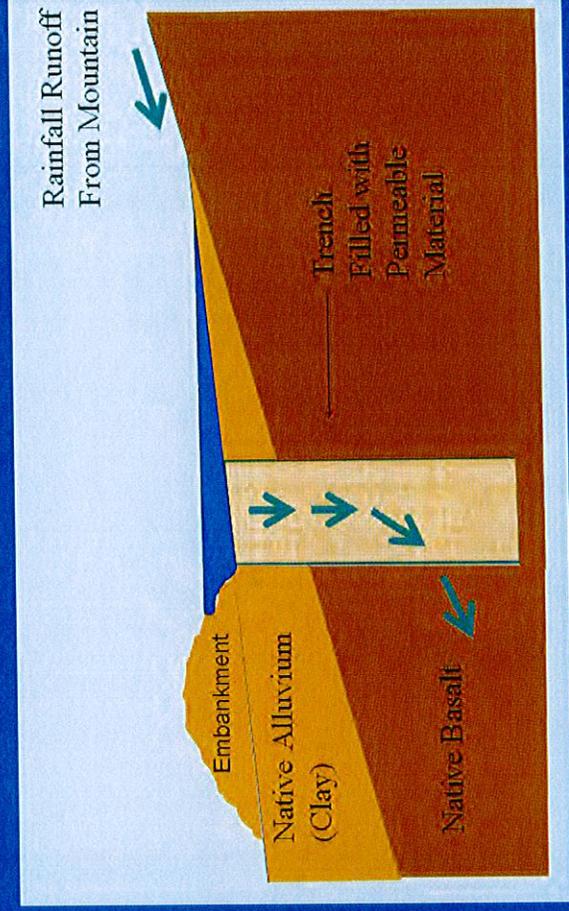


Microcatchments in Israel

Rainwater Harvesting and Recharge in Other States



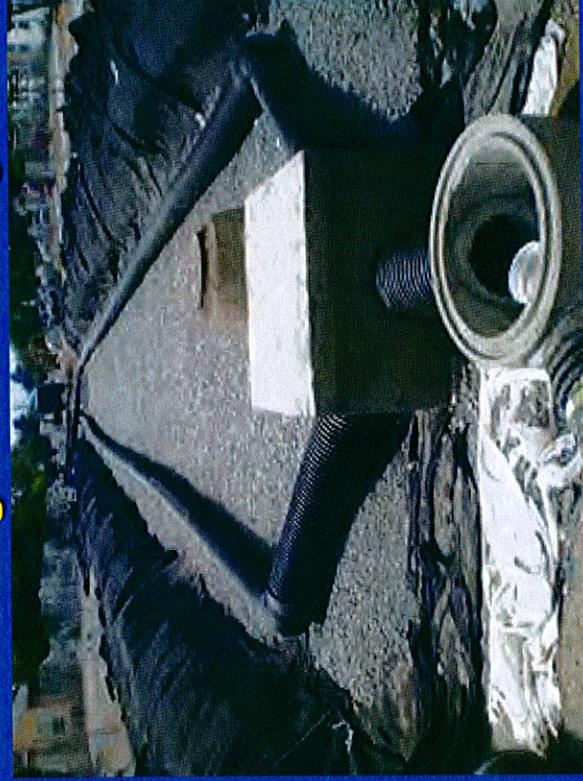
Mountain Front Recharge in Ogden, UT



Enhanced Mountain Front Recharge Concept



Rainwater Harvesting and Recharge in Other States



Decentralized Rainwater Harvesting and Groundwater Recharge, Los Angeles, CA

Los Angeles & San Gabriel Watershed Council

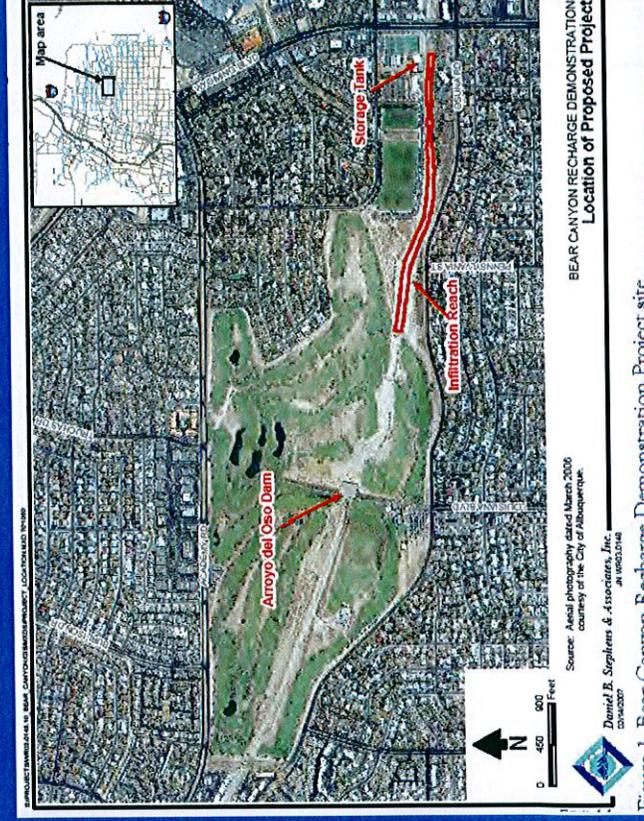


Figure 1. Bear Canyon Recharge Demonstration Project site

Bear Canyon Recharge Demonstration Project, Albuquerque, NM

Stephanie Moore, Daniel B. Stephens and Assoc

Bill proposes study of rainwater harvesting's potential in Arizona

100°F, Partly Cloudy

By Spring Eselgroth • Cronkite News Service

Published: Friday, April 8, 2011

Updated: Friday, April 8, 2011 17:04

When rain hits the roof of Greg Peterson's home, almost half flows directly into a giant cistern to be used to water his garden and most of the rest goes into an underground pipe carrying it to his fruit trees. What remains pours onto trees placed strategically beneath the eaves.

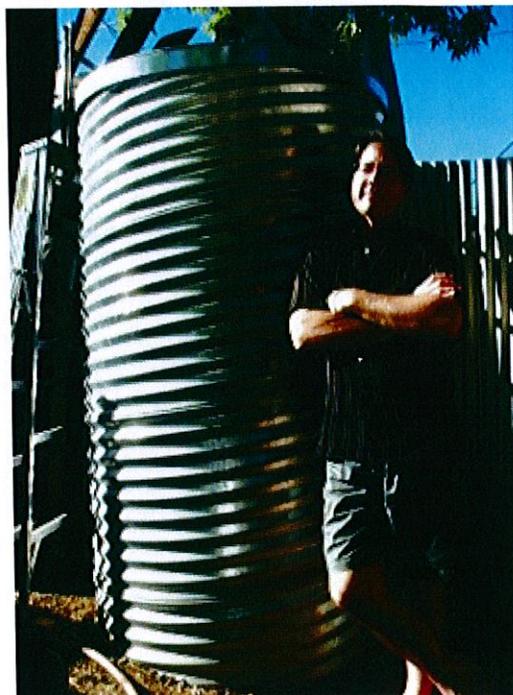
Peterson uses these rainwater harvesting systems in order to live and promote an environmentally conscious lifestyle. But a lower water bill is a nice benefit.

"I'm fully in support of rainwater harvesting," Peterson said. "It's the best way for individuals to water their yards."

The process of collecting rainwater is nothing new; people have done it for generations. But if one lawmaker has his way, harvested rainwater may eventually be recognized and regulated as an official water source.

Sen. Steve Pierce, R-Prescott, authored a bill calling for a committee to study the impact of large-scale rainwater harvesting on current water sources, including the aquifers and surface water, as well as the environment.

SB 1522 involves what it calls macro-rainwater harvesting, which rather than collecting water from the roofs of homes would involve large projects to collect rainfall.



Spring Eselgroth / Cronkite News Service

Greg Peterson standing by one of his three rainwater harvesting systems. Peterson is a local conservation advocate and founder of Urban Farm.

Pierce and supporters of the bill hope that the study would prove that macro-rainwater harvesting would help overcome annual water deficits that parts of Arizona experience.

Yavapai County Supervisor Carol Springer, who helped generate the legislation, said macro-rainwater harvesting has immense potential for the future of Arizona.

"The rainwater is a resource that is being wasted and it's a renewable resource," Springer said. "There are many places in the state where this problem exists – mainly rural – that don't have access to surface water rights."

Pierce's original bill, which won Senate approval, would have required the Arizona Department of Water Resources to create rules and regulations for large-scale rainwater collection. The bill would provide a credit allowing those who use harvested rainwater to recharge aquifers to pump out half of what they put in.

The bill was amended in the House to call for a study by a committee consisting of both House and Senate members and other stakeholders to more fully understand the impact of large-scale rainwater harvesting on aquifers as well as surface water supplies. If the measure clears the House, the Senate would have to concur with the change or resolve the differences in a conference committee.

Sandra Fabritz-Whitney, acting director of Arizona Department of Water Resources, said that the study would be a fair and necessary first step in the process.

"We are not opposed to the idea, but we need to understand the impact and if it has possible detrimental impact on water users," Fabritz-Whitney said. "The study is a compromise, and we're fine with that."

It's no coincidence that the main architects of the bill are from Prescott, where the long-term health of the aquifer is a concern. The Arizona Department of Water Resources would like to see the Prescott Active Management Area remove no more groundwater than is recharged by 2025.

Doug McMillan, a senior project manager at Civiltec, a Prescott engineering firm, said the ADWR goal could easily be met by capturing a mere 3 percent of the rain that falls each year. Based on his research, 98 percent of rainwater is lost to evaporation and transpiration, leaving only 2 percent to reach the aquifer. McMillan said recharging the aquifer through macro-rainwater harvesting could be a win-win situation.

"We need more water going into the aquifer, and this could do that," McMillan said. "It could also lessen the burden on the Verde River, which in turn protects the wildlife that depend on that river."

Springer said she's confident that rainwater harvesting can solve Prescott's water challenges without dramatically affecting natural processes.

"This is a small percentage of rainwater we're proposing," Springer said. "Most of the rainwater

will go where it's always gone, into the ground, lost through evaporation, or go to the plants."

But according to Bruce Hallin, manager of water rights and contracts at Salt River Project, the science behind the concept isn't as sound as it needs to be.

"There are a lot of unknowns and unproven science," Hallin said. "From our perspective more analysis is necessary to determine what is true and good science."

In addition to a potential impact on the aquifer, Hallin said he's concerned about the consequences of collecting rain before it reaches surface streams, potentially taking away water belonging to users down river.

Springer and McMillan said the proposed time frame is long enough and that the time has come for such a study.

"When most people turn on their taps, they don't think about where that water comes from, and we can't wait until the tap is dry to find a solution," McMillan said. "We need to be looking generations ahead."

^ ___ =

Some water-conservation tips:

- Make sure the dishwasher and washing machine are full before use.
- Turn off the faucet while brushing teeth.
- Water lawns in the morning.
- Use composting instead of a garbage disposal.
- Switch to a water-efficient shower head.

Source: www.wateruseitwisely.com

CITY OF PRESCOTT
Everybody's Hometown



Paying for
GROWTH
 in Prescott

Wastewater
 Buy-In Fees

and
 Impact

Resources Water

For
 Water

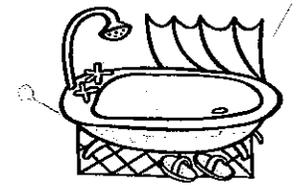
Development Fees

WATER FEES

Includes Meter Fees, Water Resource Development Fees, Water System Impact Fees and Water Service Permit Fees

Meter Size (Please check one)	<input type="checkbox"/> 5/8" x 3/4"	<input type="checkbox"/> 1"	<input type="checkbox"/> 1 1/2"	<input type="checkbox"/> 2"	<input type="checkbox"/> All Others
Meter Fee *	\$ 220.00	\$ 400.00	\$ 800.00	\$ 1,000.00	Cost plus 10%
9.35% Tax for Meters Only	\$ 20.57	\$ 37.40	\$ 74.80	\$ 93.50	9.35% of Cost
Water Resource Development Fees	\$ 4,944.71	\$ 8,257.73	\$16,465.84	\$26,355.26	
Water System Impact Fees	\$ 5,389.02	\$ 8,999.71	\$17,945.39	\$28,723.43	
Water Service Permit Fees	\$ 5.00	\$ 5.00	\$ 5.00	\$ 5.00	
TOTAL WATER FEES	\$10,577.10	\$17,695.84	\$35,283.03	\$56,167.19	

*Fee assumes that an existing box & yoke is present, or that a box & yoke will be installed by a licensed contractor. If not, additional fees will apply.



**CITY OF PRESCOTT, ARIZONA
WATER RATES
Effective 2/1/2011**

Monthly Fixed Charge

Meter Size	Amount
5/8	10.60
3/4	11.30
1	12.70
1 1/2	16.30
2	20.60
3	30.70
4	45.10
6	81.10
8	124.30

Residential (rate per 1,000 gallons)

Single Family		Multi-Family (Per Unit)	
First 3,000	2.86	First 1,700	2.30
Next 7,000	4.30	Next 3,300	3.46
Next 10,000	6.45	Next 5,000	5.19
Over 20,000	12.90	Over 10,000	10.39

Non-Residential (rate per 1,000 gallons)

5/8" Meter		1" Meter		1 1/2" Meter	
First 6,000	2.61	First 15,000	2.61	First 30,000	2.61
Next 22,000	3.92	Next 55,000	3.92	Next 110,000	3.92
Next 32,000	5.88	Next 80,000	5.88	Next 160,000	5.88
Over 60,000	11.76	Over 150,000	11.76	Over 300,000	11.76

2" Meter		3" Meter		4" Meter	
First 48,000	2.61	First 96,000	2.61	First 150,000	2.61
Next 176,000	3.92	Next 352,000	3.92	Next 550,000	3.92
Next 256,000	5.88	Next 512,000	5.88	Next 800,000	5.88
Over 480,000	11.76	Over 960,000	11.76	Over 1,500,000	11.76

6" Meter		8" Meter	
First 300,000	2.61	First 480,000	2.61
Next 1,100,000	3.92	Next 1,760,000	3.92
Next 1,600,000	5.88	Next 2,560,000	5.88
Over 3,000,000	11.76	Over 4,800,000	11.76

Alternate Water Source

An additional seventy cents (\$0.70) per one thousand (1,000) gallons of water consumed per month.

The revenues from these charges are restricted to defray expenses of the city associated with obtaining alternative water sources in order to comply with the groundwater laws of the State.

Rates for Customers in the Town of Chino Valley

Add thirty per cent (30%) to the above rates.

Rates for Customers Outside City or Town Limits

Add thirty-nine per cent (39%) to the above rates.

**CITY OF PRESCOTT, ARIZONA
SEWER AND SANITATION RATES**

SEWER RATES
Effective 2/1/2011

Residential

Monthly Base Charge	14.42
Volume charge per 1,000 gallons	3.12

Non-Residential

Monthly Base Charge	16.70		
Volume charge per 1,000 gallons:			
Uniform Non-Residential	4.28	Laundry, Commercial	4.28
Bar w/o Dining Facilities	4.28	Markets w/ Garbage Disposal	5.84
Car Wash	4.28	Mortuaries	5.84
Dept/Retail Stores	4.28	Professional Offices	4.28
Hospital/Convalescent	4.28	Repair Shops/Service Stations	4.28
Hotel w/Dining Facilities	4.28	Restaurants	6.28
Hotel w/o Dining Facilities	4.28	Schools and Colleges	4.28
Laundry, Industrial	5.01	Septage Haulers	100.00
Laundromat	4.28	Grease Disposal	270.00

The monthly base charge is in addition to the charge for consumption based on the above rates. Sewer rates are based on average monthly water consumption during winter months.

SANITATION RATES

Residential

Residential accounts shall be charged a monthly service fee of \$14.50. This fee entitles you to 1 (one) 68 gallon container. Additional containers may be ordered at a charge of \$5.80 each for a minimum of 3 months. Base rate includes a \$.50 landfill closure cost.

Commercial

Commercial accounts shall be charged a monthly service fee of \$19.15. This fee entitles you to 2 (two) 68 gallon containers. Call 777-1116 for dumpster sizes and rates.



Water Smart

Program Overview 2007-2011

Public Works Department

433 N Virginia, Prescott, AZ

928.777.1130

City website: www.cityofprescott.net

City line: 928.777.1130

e-mail: water.smart@cityofprescott.net

“To facilitate and promote awareness appreciation knowledge and stewardship of water resources”

Goal:

To promote water conservation by all users and providers in the City of Prescott water service area.

Objective:

To reduce total annual water consumption with emphasis on reducing water demand during the summer peak use period.

Strategies:

- * Extensive water conservation education and publicity (awareness)
- * Water conservation incentive programs (utility bill credit)
- * Revised and improved conservation regulations and enforcement
- * Research of structured water rates (tiered rate structure)

Citizen Participation

Water Smart Projects or Programs

1. 12 - Water Smart Cards – Regional
2. 6 – Centennial Water Smart Cards
3. Hotel Linen Card Project - 2012
4. Home water smart audit kit -
5. Rainwater harvesting booklet
6. Utility billing insert – 12 year
7. CONSERVATION Regional Water Awareness Handbook
8. Regional Water Conservation Survey and results - 2009
9. Certified Irrigation Audit Education
10. Ongoing Targeted Education Events
11. Spot Children’s Museum Display 2011 2012
12. Parks – Water Conservation Evaluation and technology investment FY2007-2011
13. Incentive Credit Program FY 2006- FY2011 processed over 2300 applications, estimated water savings 348 acre feet or 113,383,577 gallons.

Public Events

- Earth Day
- Highland Center Native Plant Sale
- Community Celebrations
- Water Education Festival
- Film Festival
- Yavapai County Contractors Home and Garden Show
- Nursery Fall Festivals
- Centennial Celebration 2011

Speaking Engagements

- Classroom PUSD
- Chamber of Commerce
- Rotary Club
- Local Plant Nursery
- Citizen Groups
- HOA
- Garden Club

Professional Organization

- UVRWPC.org
- EPA - Water Sense Partner
- Certified Irrigation Organization
- Water Efficiency AWWA

**Project WET Water Education for Teachers - UVRWPC Grant Sponsor
2007- 2011**

Curriculum and Activity Guide, training formal and non formal educators, multi disciplinary study of water

Sponsored over 15 projects in the Teaching environment in support of K-12 water Education

**Water Conservation Website Management
Update and redevelop site - scheduled October 2011**

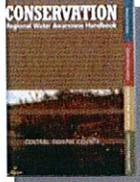
Inventive Program Fiscal Year 2006-2011

*Applications are available at: City Hall, Public Works, on the city website,
<http://www.cityofprescott.net/services/water/conservation.php> and mailed to customers by request.*

See attachment for products and activities.

Water Smart

2009 Conservation Results



- **Program Reimbursed \$48,500 – Bureau of Reclamation Grant, 2007**

Regional Survey, Planning, Training, CONSERVATION – handbook, Retiree Connection Commercials

- **Water Smart regional education implemented** for the Upper Verde River Watershed Protection Coalition. www.uvrwpc.org – 17 locations in region

- **641 Incentive Credit Applications Processed**

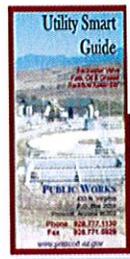
- Representing a 20 % increase over 2008.
- Cumulative water saved 2006-2009 = 232 AF

- **Tiered rate structure adopted (July 2007)**

CITY OF PRESCOTT

Water Smart

FY2010 Program, Projects and Partnerships



1. Sustain the Water Conservation Incentive Credit and Regional Education Program.
2. Partner with Parks and Recreation – evaluate BMP and low technology to support water efficiency.
3. Support CLIA (Certified Landscape Irrigation Auditor) training and implementation for the parks irrigation managers.
4. Assist Public Works with Utility Smart education program designed for plumbers, landscapers and property owners. Install and maintain backflow protection and sewer backwater valves.

CITY OF PRESCOTT

Water Smart



FY2011 Programs Projects & Partnerships

1. Sustain the Water Conservation Incentive Credit and Regional Education Program.
2. Ongoing Desktop Audits – Process 300 plus per year
3. Partner with Parks and Recreation – and install low cost UgMo technology at three park sites plus 12 waterless urinals.
4. Assist Lakes Committee with Watson and Willow Lake education effort at Library May 2011.
5. Co Support Well Owner Workshop – U of A Extension Service.
6. Schedule Program - Plumbing Industry, Am Std Responsible Bathroom Tour at Prescott Winnelson
7. Yavapai County Home and Garden Show Regional Water Smart Booth - Rainwater harvesting and Education.
8. Design Nursery Plant Stakes and Shrub Tags Program
9. Wet teacher grants review
10. Sharlot Hall Museum – Vintage and Historic Picture Research
11. Sponsor Best Management Practice Seminar – Irrigation Industry – Round Table and Presentations
12. Support Firewise and Water Smart Education
13. Utility Smart – FOG, BACKFLOW and SEWER VALVE-ED

CITY OF PRESCOTT

Projects and Programs 2012

Water Smart INCENTIVE CREDIT PROGRAM RULES AND APPLICATION

Credit is subject to program rules and product installation verification. Please allow 30 days to process utility bill credit from date of application received in our office.

WATER SMART PRODUCT DESCRIPTION	MAXIMUM CREDIT
Landscape conversion to automatic drip systems - Attach a copy of Irrigation Blanket Permit	\$25 per component \$ 75 Maximum
Certified Irrigation Audit *	\$ 100
Rainwater Cisterns * \$10 per gallon—450 gallon minimum storage	\$ 300 Maximum
Turf removal on-site and in adjacent right-of-way * Requires a minimum turf removal (Crews must have been installed prior to January 2012, located on-site or in an adjacent right-of-way \$0.25 per sq. ft.)	Residential \$ 400 Commercial \$ 800
Rotator Sprinkler Head Technology—Replace a minimum of 12 spray heads with rotator efficiency	\$2 per rotator head \$40 Maximum
Leak repair: (\$25.00 maximum benefit total for indoor or outdoor detection)	\$5 per leak \$25 Maximum
Low-flow Toilets (not to exceed 5 gallons per flush, 1994 or older replacement only)	\$-30: Old toilets must be destroyed
High Efficient Toilets and/or Dual Flush Toilets (1994 or older replacement only)	DO NOT DONATE
Commercial Urinals (0.8 gal or 0.2 gal chemical treatment- 1994 or older replacements only)	\$ 50
Showersheds (not to exceed 2.4 gallons per minute gallons per minute, gpm)	\$ 10
Low Flow—Low Tech retrofit Water Smart device - submit packaging specifying water savings	\$ 10 per device

*LANDSCAPE CONVERSION TO AUTOMATIC DRIP SYSTEM

Water Smart

On Line Water Audit Request:

<http://www.cityofprescott.net/service/water/audit.php>

CITY OF PRESCOTT

Water Smart

Water Education Campaign FY 2012

- AZ Centennial – Best Fest
- Poster Presentation Water Smart Innovation 2011 Conference
- Ewing Toro Irrigation Presentation
- Hospitality Education Partnership
- Spot, discovery Museum - Water Education Display
- Mall Children's Museum

Water Smart

Water Education

- Water Utility Customers
- School Districts
- Highland Center Native Plant Sale
- WET Trained Teachers
- Earth Day
- Girl and Boy Scout Programs

Community Development

- Plumbing Trade
- Nursery
- Irrigation Suppliers
- Home Retailers
- Home Owners Associations