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WATER CONSERVATION IN DENVER

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Denver Water is a leader in the water conservation arena, and yet we certainly have not done everything perfectly. I am here to share with you our successes and offer to you the lessons of our mistakes so you can save yourselves some pain and money.

The purposes of our conservation program are to:

- maintain a reliable, sustainable water system
- meet our conservation goals from the Foothills Agreements
- balance the need for expanding supply and reducing demand, especially peak demand
- maintain a safety margin for drought
- maintain a beautiful community
- keep water costs from escalating
- meet the challenges of the many unknowns of the future

Denver has developed a long-range program to accomplish all this, because "It is not enough to have a vision; without a plausible bridge, a strategy to get there, few people will leave the familiarity of what IS for the possibility of WHAT COULD BE." We are also discovering the truth to Robert Ingersoll's statement, "In nature, there are neither rewards nor punish-

ments, there are consequences!" When we remain silent as a utility or an industry about the pressing needs of the present and the future, our customers cannot support us because they do not know what we expect of them. We also need to consider the consequences of our past actions, whether positive or negative, and think diligently about how those actions and consequences may be different in the future.

Our conservation program is entirely voluntary now. We have initiated many programs to urge our customers to use water wisely and the most important are shown in Figure 1. Our customers use the most water during the summer for landscaping, probably the same as many communities in New Mexico. Figure 2 is an overview of our 1991 water use.

However, we found that focusing on the largest use, single-family residential landscaping, was not helping us substantially to reach our conservation goals. We had reduced water use by 5 percent between 1979 and 1984, and another 3 percent from 1986 to 1991. However, and this is a key lesson to remember, customers told me that they refused to make further efforts in conservation until they saw government

practicing what it preaches. That meant a change in my job from programs dealing with residential customers to programs dealing with fellow "bureaucrats." The most visible water use by government in Denver is on parks, parkways and public open spaces such as golf courses. We decided Denver Water must first practice conservation more thoroughly on our own properties and then work with city, county, state and federal government property managers to do likewise on their properties. Figures 3, 4, and 5 show the areas of water use; Figure 6 shows our projected reductions to meet the goals set in the Foothills Agreements. The goal is to reduce water use in our service area to 744 gallons per account per day by Jan. 1, 1999.

By 2035, Denver Water projects a savings of 36,600 acre-feet per year based on our most recent growth and demand forecasts, using conservative estimates. These savings are projected assuming a voluntary or incentive basis, but not rationing or mandatory measures (see Figure 7).

Costs of this water vary widely. Notice on Figure 8 that our meter installation program was very expensive, but it was a one-time cost. We set in place the last meter on October 29, seven years ahead of schedule and still under budget.

Some things don't work well in Denver in the water conservation field. We haven't and won't reduce overall water pressure in our system because we have too many hills, and the areas of low and high pressure become nightmares. We are phasing out evapotranspiration for residential customers as a way to conserve because almost no one uses it as a tool to measure or reduce water use. Most of the other programs in Figure 1 are very successful, and I recommend them to you in New Mexico.

Another painful lesson we learned could have been avoided if we had heeded the advice of Joel Barker in his book and video, "Discovering the Future: the Business of Paradigms." Barker suggests that the world operates on a set of agreed-upon paradigms or boundaries, and a set of agreements about what to do to be successful within those boundaries. His research has found that all organizations/agencies/ businesses, etc. need to ask themselves frequently "The Paradigm Question" in order to keep on track. That question is, "What one thing that is impossible today, could occur in the future and radically change the nature of my business?" Denver Water did not ask the paradigm question about Two Forks Dam. We never even considered that EPA would deny the permit to build the dam and thus change our direction as a water

agency, and greatly influence the direction of our conservation program.

But, since this was neither a reward nor a punishment, but rather a consequence, we have adjusted and are moving on toward new challenges. It is in our best interest and the interest of the Earth to look toward more sustainable decisions. Wise water use is one of those sustainable decisions.

As Chief Oren Lyons of the Onandaga Iroquois states, "We must make every decision for the well-being of the seventh generation yet unborn." The bottom line is simply, how much do we care about our children and their grandchildren? Do we care enough to overcome our past biases and attitudes in order to leave them a promising future? Water planners, land use planners, agriculturists and customers need to work together to implement solutions for our children and their grandchildren. Water conservation is one of those solutions, and it can be cost-effective if we start now. It's always cheaper to do it right than to do it over.

Thank you.

	Date Initiated
Schools Program	1976
● ◆ ■ (every-third-day irrigation guideline)	1977
Evapotranspiration (ET)	1981
Sonic Leak Detection	1981
Xeriscape	1981
Formation of Metro Water Conservation, Inc. (MWCI)	1985
Formation of the National Xeriscape Council, Inc.	1986
Residential Retrofit	1987
Metering	1987
Alternative Source Irrigation	1990
Ultra Low Volume (ULV) Toilet Rebate Program	1990
RTD Bus Boards	1990
Business and Institutions Audit Program	1990
Conservation Hotline	1991
New Rate Structure	1991
Multifamily Retrofit	1992
City and County of Denver ULV Plumbing Code	1992

Figure 1. Starting dates of major Denver water conservation initiatives (1976 - Present).

Water Conservation in Denver

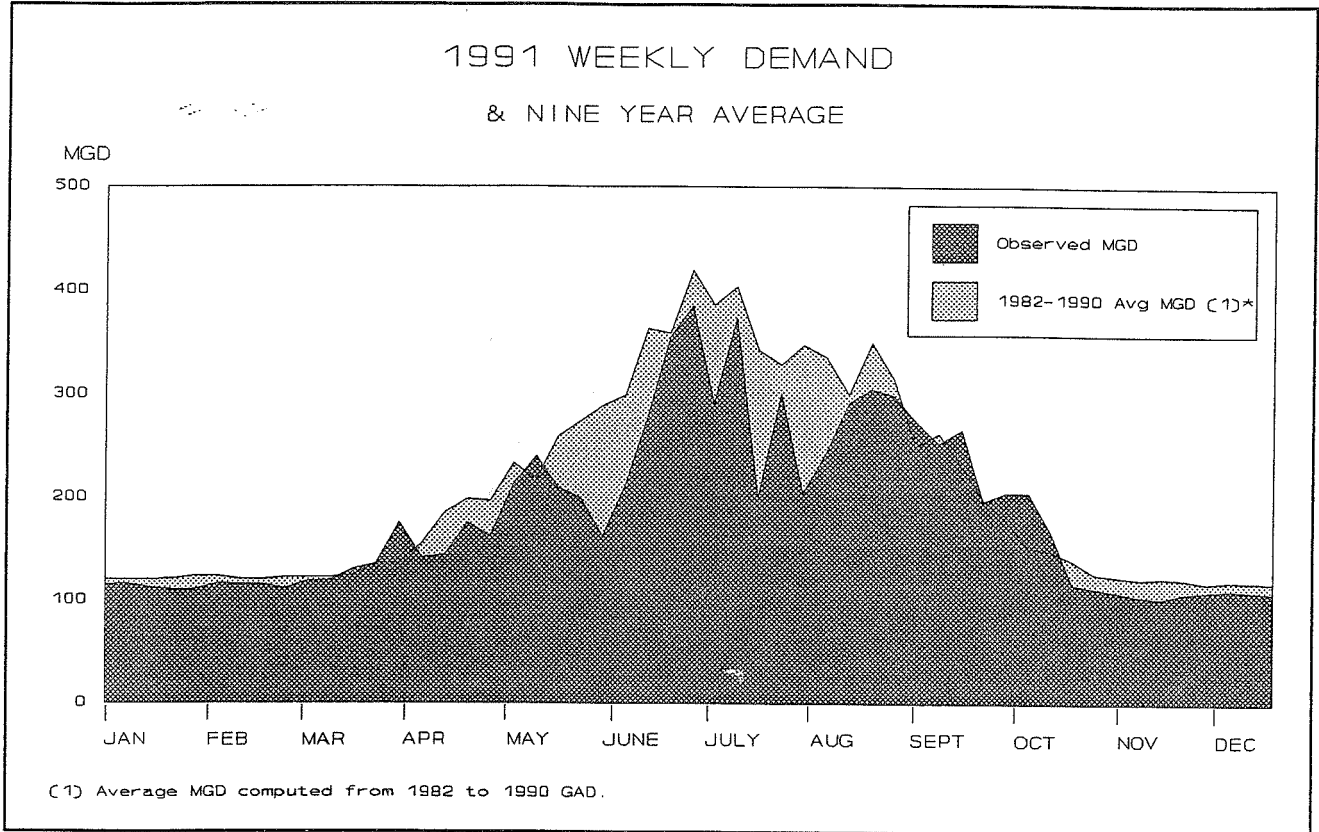


Figure 2. 1991 weekly demand and nine-year average.

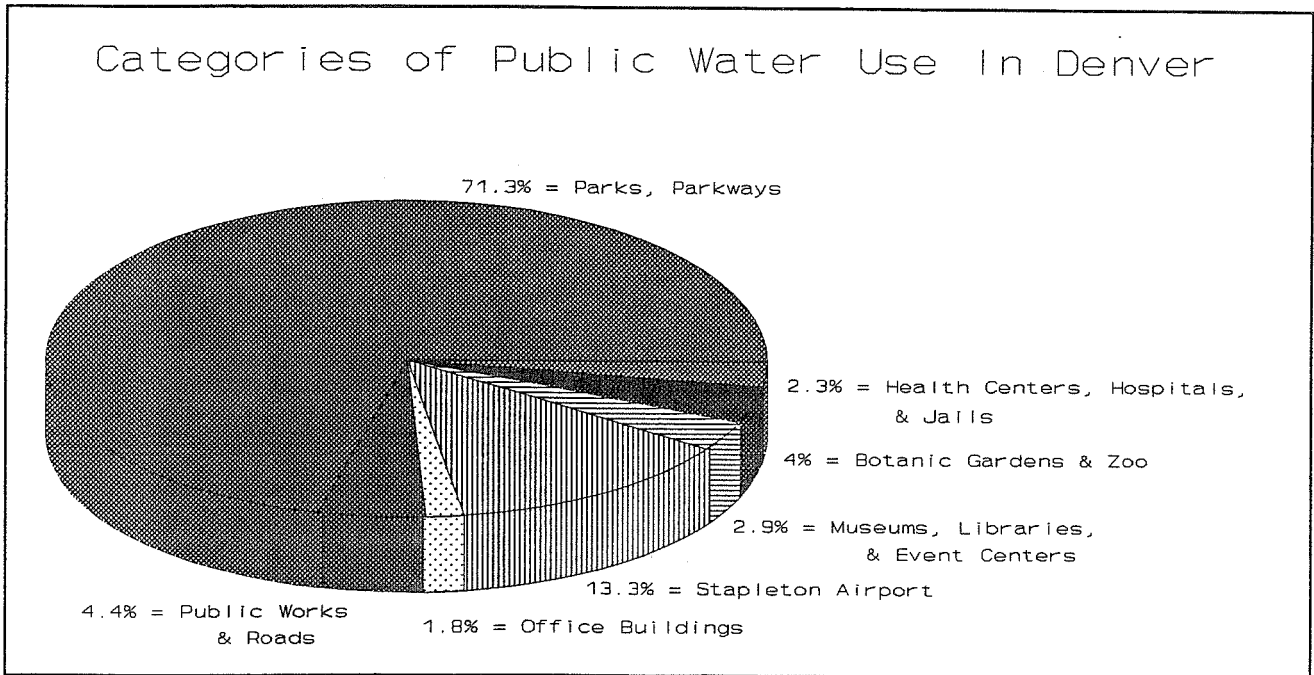


Figure 3. Categories of public water use in Denver.

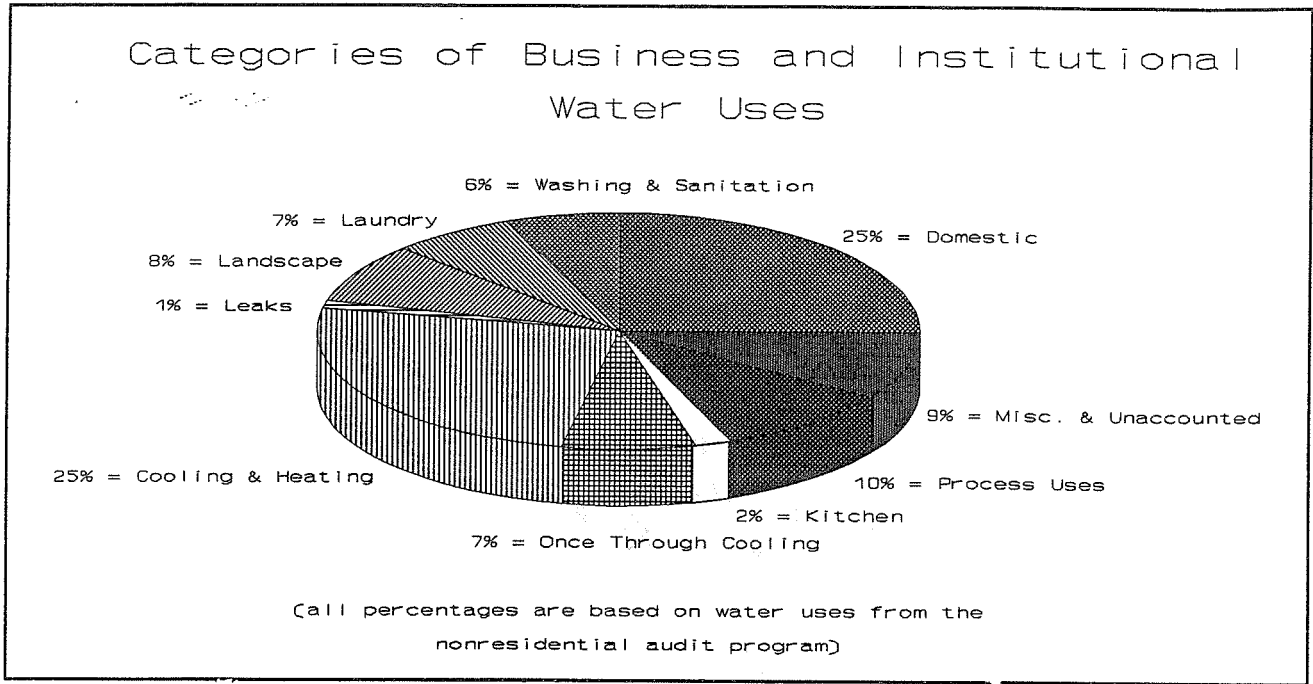


Figure 4. Categories of business and institutional water uses.

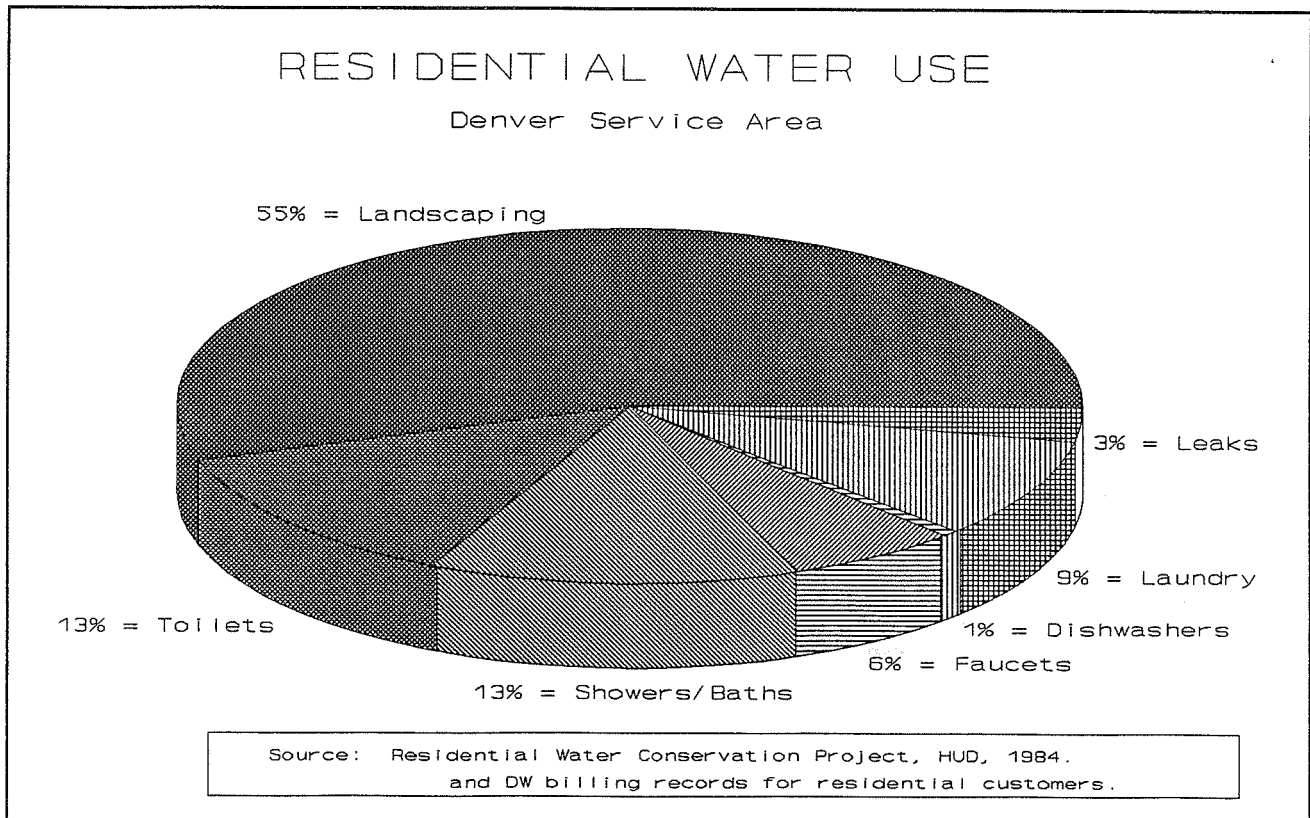


Figure 5. Residential water use - Denver service area.

Water Conservation in Denver

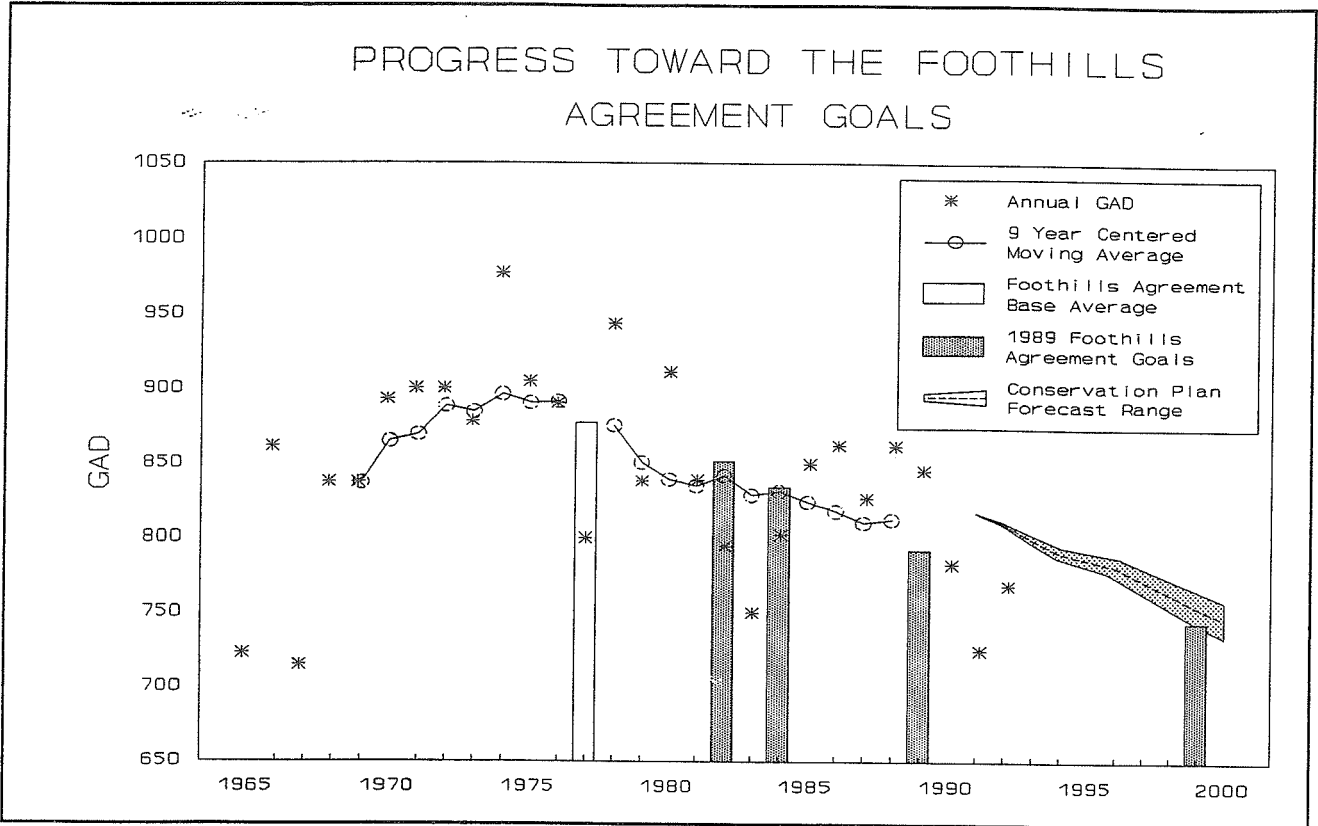


Figure 6. Progress toward the foothills agreement goals.

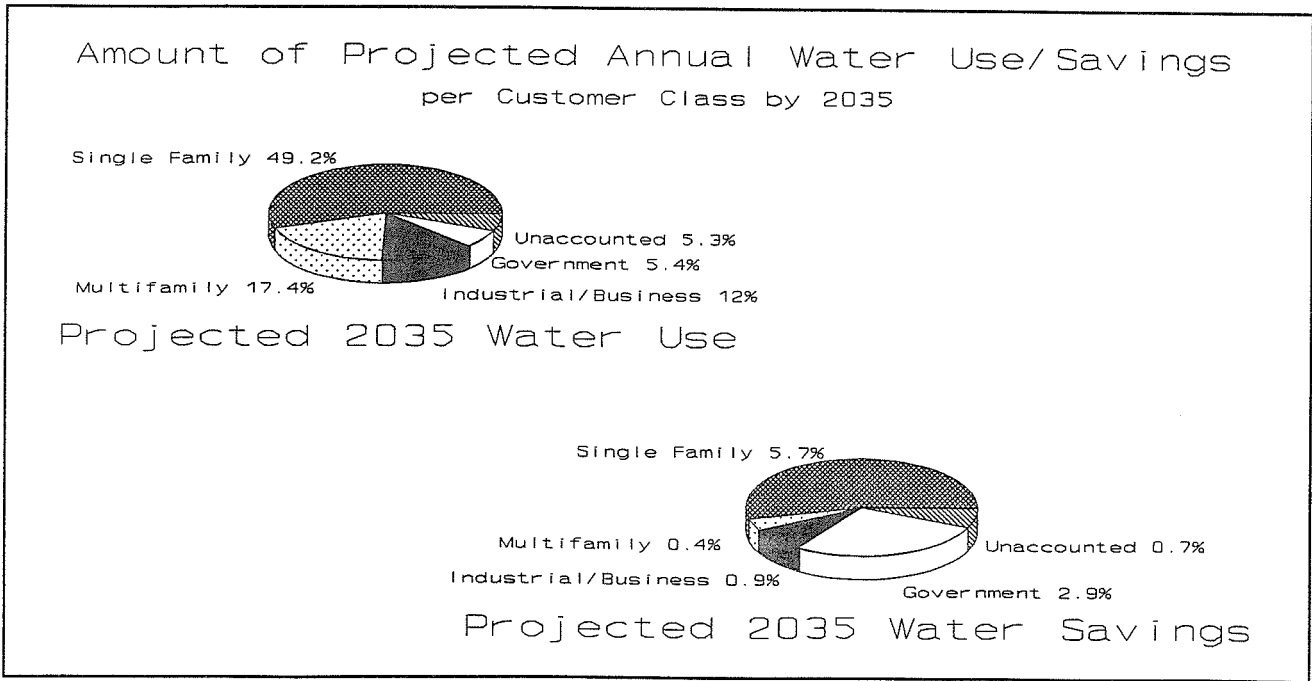


Figure 7. Amount of projected annual water use/savings per customer class by 2035.

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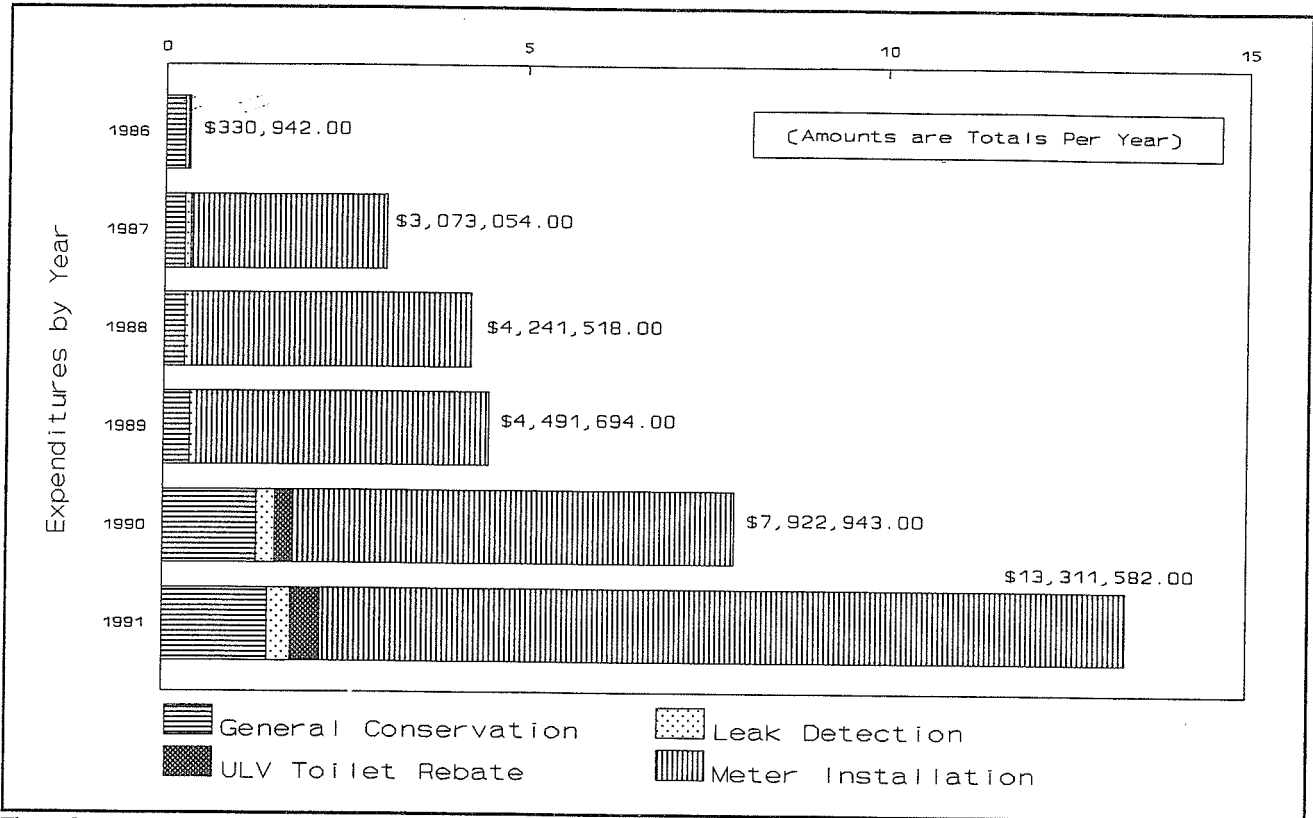


Figure 8. Annual conservation expenditures 1986 - 1991.