



Incline Village General Improvement District

A Plan for Water Conservation

2020 Update

Prepared by the Public Works Department
4/13/2020

Table of Contents

Introduction	3
Public Education	4
Water Loss Investigation	7
Water Rate Structure	8
Water Ordinance.....	9
WATER CONSERVATION REQUIRED UNDER CERTAIN EMERGENCY CONDITIONS	10
LANDSCAPING	11
Effluent Reuse	12
Water Supply	12
Measures to Evaluate the Effectiveness of the Water Conservation Plan.....	13
Savings due to Public Education	13
Savings due to Water Loss Investigation.....	13
Savings due to Water Rate Structure	14
Savings due to Water Ordinance.....	14
Savings due to Effluent Reuse	14
Appendix A – Water Management Plan	15

Introduction

The Incline Village General Improvement District (IVGID, District) first prepared a Plan for Water Conservation that was submitted to the State Water Planner in 1992. Since that submission, the District has implemented many water conservation practices ranging from leak detection and repair, Ordinance revisions, rate structure changes, public education, water audits, and conformance of new construction with UPC standards.

IVGID kicked off a new water conservation initiative in the spring of 2001. The primary goal was to avoid exceeding the permitted water right. With contributions from a public water conservation committee, the purpose, objectives, and mechanisms for meeting the conservation initiative were defined and accepted by the IVGID Board of Trustees in April 2001. Water conservation continues to be an important part of IVGID's business and additional resources are dedicated to this effort.

The District has an internal division called Waste Not that leads resource conservation efforts, specifically in areas of water conservation and watershed management. Waste Not staff are required to complete water conservation training. Current staff have received (AWWA) Water Efficiency Practitioner Grade I certifications and attended (Irrigation Association) Irrigation Auditor Training. IVGID also serves as the home agency for the Tahoe Water Supplier's Association (TWSA), with programs and information being shared within the membership.

The District is a leading member of the Tahoe Water Suppliers Association (TWSA) that includes all public water purveyors at Lake Tahoe with the mission to develop, implement and maintain an effective watershed control program in order to satisfy the recommendations in the watershed sanitary surveys, advocate for the protection of Lake Tahoe as a viable source of drinking water and to satisfy additional State and Federal requirements. The District Resource Conservationist acts as the Director for this Association.

The District has also been preparing annual water management plans since 1997 to summarize water usage and activities and these have been submitted to the State Engineer. These annual updates have also provided information about water conservation measures being performed by the District and reported detailed usage information.

The Nevada Legislature in 2005 passed new requirements for water conservation plans that are detailed in NRS 540, sections 121 to 151. The Water Conservation Plan that follows addresses the requirements of NRS 540 on this very important issue for the State of Nevada.

Public Education

IVGID adopted its Water Conservation Plan in 1990 that specified the long term water conservation measures to be enacted by IVGID. The primary goal was to avoid exceeding our permitted water right. Waste Not, the IVGID conservation effort, continues implementation of this conservation plan.

The purpose of the Incline Village General Improvement District Water Conservation Plan is to reduce water consumption by focusing on demand management techniques. This includes initiating changes in behavior through education, incentive programs, and Ordinance and water rate changes. The primary objectives developed include:

- Increased awareness of water rights allocation, a water conservation ordinance, and national water resource limitations.
- Increased understanding of the implications with non-compliance of the water conservation ordinance and Nevada State Water Management plan requirements.
- Provide information to allow customers to make informed decisions with water use in and around their homes.
- Encourage participation offered by the District to improve efficiency of water use by all user types in the service area.

The mechanisms for accomplishing the objectives include: establishing education and outreach programs, developing a water conservation team and irrigation audit program, implementing a landscape ordinance, compliance with the Uniform Plumbing Code for remodels and new construction, and establishing benchmark and tracking programs.

In 2019, the District implemented a new water efficient appliance rebate program for high efficiency toilets and clothes washers. In summary, water conservation outreach and awareness will continue to play a major role in the overall reduction of the community's water use. This will be accomplished with the new water efficient appliance rebate program, continued irrigation auditing, water waste patrolling and advertising to decrease the water consumption rate. IVGID Waste Not staff members are certified as AWWA Water Efficiency Practitioners to provide education and complimentary water audits.

IVGID conducts public outreach to our water customers and residents and visitors of the Tahoe Basin. The communication stresses “Protect the Source” and “Drink Tahoe Tap®”. The messages are delivered in the monthly newsletter to all District customers, tabling at special events including regional Earth Days, recreation and education events, Children’s Science Day, Business Association meetings, etc., and at school and civic group presentations. Advertising is also included in the North Lake Tahoe Tribune, Sierra Sun, other regional newspapers/magazines, television, radio and social media. Special attention is paid to summertime irrigation use.

Table 1 shows the Waste Not education programs. These are categorized by group, scope, and extent of public outreach.

Table 1 – WASTE NOT Education and Outreach Programs

Program	Detail	Estimate of Potential Reach
Staff	3 full time staff assigned to Waste Not (and Tahoe Water Suppliers Association) education and outreach. Current staff are AWWA Water Efficiency Practitioner Grade I certified and attended (Irrigation Association) Irrigation Auditor Training	All IVGID customers
Print Media / Ads	Tahoe Tribune Newspaper Tahoe Quarterly Magazine Tahoe Local Magazines	2 to 5 ads annually (Tribune) 20,000 newspapers distributed per issue (Other publications) 60,000-100,000 copies per printing
Television and radio	Public service announcements	1-12 assorted messages annual; custom or regional Take Care messaging
Utility Bill Flyers	Information focused on water conservation	4,200 “PW News” newsletters mailed to utility customers 12 x annually. Water conservation information featured in summer months.
Brochures to class participants, utility customers and attendees at public events	“Drink Tahoe Tap” “Protect the Source”. “Keep your Water Clean” “Tahoe Top 10 Water Conservation Tips” “Water Conservation at Home” “Native Plants” “Leak Detection” “IVGID Water System” IVGID Wastewater System”	500 to 2000 of each flyer printed and distributed annually
Watershed Protection Signage / Tools	Dog Waste Stations; Cigarette Butt bins; Take Care signage	90 Dog waste stations distributed within the watershed ; 125 cigarette bins distributed in watershed; multiple signage placements

<p>Websites: Tahoe Water Suppliers Association IVGID</p> <p>Social Media</p>	<p>www.TahoeH2O.org www.DrinkTahoeTap.org www.ivgid.org</p> <p>Facebook: Drink Tahoe Tap; IVGID Public Works</p>	<p>5,000 – 10,000 annual hits</p> <p>Custom and regional Take Care messaging</p>
<p>Conservation Tools for customers</p>	<p>Dye tabs, leak detection cards, shower times, Tahoe Landscape Guide, native wildflower seeds, refillable water bottles, dog waste bags</p>	<p>5,000 -10,000 annual</p>
<p>Efficiency Rebates</p>	<p>\$100 HE appliance rebates (ULF toilet/HE clothes washer)</p>	<p>1-100 customers; annual</p>
<p>Landscape Water Use Consultations & Audits</p>	<p>District staff provides free, on-site analysis of irrigation practices for customers. Full audits conducted on as-need basis.</p>	<p>1-10 per summer</p>
<p>“Water Waste” door hangers</p>	<p>District staff posts educational door hanger at properties observed with runoff, poor irrigation practices, daytime watering, etc.....</p>	<p>1- 50 per summer</p>
<p>High Water Use ‘courtesy alert’ messages</p>	<p>Customers with monthly bills trigger high use; leak detection warning; customized billing messages; advertising the free water use consultations.</p>	<p>25 to 300 per month; summer</p>
<p>Billing Analysis</p>	<p>Meter reads are analyzed by District Meter Reader and billing staff for large increases attributed to leaks, over-irrigation.</p>	<p>15 to 100 customers per month</p>

Presentations	Presentations to local schools (K-20), Homeowner Association, Board of Realtors, etc. Ongoing classroom presentations on source water protection and water conservation.	1-6 presentations annually on IVGID services and programs, including water conservation. Presented to various grades at Incline Village Elementary, Middle School, High School. (200-500 students) Sierra Watershed Education Partnership Trashion Shows focus on water conservation and Drink Tahoe Tap ®.
Public Events		
Earth Day (2 annual)	Water Conservation / Water Quality education booth	5,000+ attendees (North Shore) 800 attendees (South Shore)
Children's Science Days (2 annual)	Water Conservation / Water Quality education booth	1000+ elementary grade students
SnapShot Day	Tahoe to Pyramid Lake regional citizens monitoring program	Over 300 volunteers watershed-wide, annual event
Other Community Outreach events	Collaboration at environmental education events held in Incline Village; North and South Lake Tahoe. Staff provides a Water Quality/Conservation education booth, taste test and activities.	50-2000 attendees per event; average 1-2 events monthly.
Demonstration Garden Classes	Classes related to native plant gardening, irrigation , composting	5 to 10 students at each class; series of 4-6 classes offered each summer.
NTCD BMP Classes	3 hour BMP workshops	3 to 5 classes annually; 20 attendees per class
Beach sampling	District staff conducts regular sampling at 6 Incline Village locations.	12-18 samples annual

Water Loss Investigation

Water loss is the amount of water that is lost in the distribution system from leaks, breaks, and unauthorized use. The water loss for IVGID is the difference between the water production meter at the water treatment plant and the total meter and authorized unmetered use such as hydrant testing, sewer cleaning water etc. The approach used to

determine water loss is outlined by the AWWA in the Water Audits and Loss Control Programs Manual of Water Supply Practices (M 36).

The IVGID service area is 100% metered and we conduct annual meter testing to insure the water meters are accurately reporting consumption. Water meters are read monthly and a series of reports generated by the billing software aids in identifying high water use accounts.

The District has worked hard to reduce the amount of unaccounted water. Twice per year, IVGID employs a professional leak detection service utilizing computerized sonic leak detection monitoring equipment. Once leaks are found, they are immediately repaired. Additionally, the water main replacement project replaces the older water lines in the District which are more prone to leakage. As the system leaks are repaired each year with the water main replacement project, new “weakest spots” are revealed. IVGID’s unaccounted for water rate has averaged 7% over the last five years. Industry standards maintain that an average system would expect 10% unaccounted for water. With the average District unaccounted for water rate substantially below 10% over the last five years, Staff is confident that the system unaccounted for water rate is being controlled at an exceptional level. Additional reductions in unaccounted for water are not expected. The goal is to keep unaccounted for water at or below the 10% value and to continue leak detection and watermain replacement to maintain the integrity of the assets.

IVGID continues its water main replacement program to reduce water leaks in the system. Water leaks are down to 7% for the last five water years and additional reductions will be difficult. Continued deterioration of the system will necessitate an annual replacement program just to maintain the current leak rate and additional monies will need to be spent to reduce the leak rate. Detected leaks are also smaller and do not provide as good of a rate of return compared to earlier efforts. Most detected leaks are 1 to 2 gallons per minutes and costs several thousand dollars to repair. The Capital Improvement Program is currently on a program to replace the remaining six miles of old steel water mains installed in the 1960s. This type of watermain is prone to failure and exhibits the majority of leaks. Again, these steel water mains are investigated for leaks twice per year as described above. The District also has a meter testing program and continues to replace water meters as they age and their accuracy deteriorates. This deteriorating accuracy will under account for metered water.

Water Rate Structure

IVGID’s Water Rate Structure is an increasing block-rate structure that charges a higher unit price for water as consumption increases to match the marginal increase in costs. This type of tier structure also aids in conservation of water because the customer receives proper price signaling for excessive water use. Peak capacity water is more expensive to deliver because of increasing electric rates at high demand pumping times and the costs to develop supplies such as purchasing water rights.

The District had historically billed a monthly water base rate plus charges for water consumption. The water consumption charge was previously a fee per thousand gallons

of use and did not vary based on quantity of use. Beginning in 2004 an internal rate study was conducted for water and sewer rates. The guiding principles were to develop a rate structure that: reflects the cost of service to user classes, provides revenue and rate stability, funds planned capital projects, encourages water conservation, and is commodity-based.

The rate study proposed: the elimination of energy surcharges, billing of sewer consumption to residential customers (commercial customer were already paying sewer consumption charges), a water and sewer administrative fee to be billed to each account instead of to each user, 4,000 gallons of consumption to be included in the base rates, inverted block rates with two tiers to reflect marginal costs of peak water, capital improvement charges that offset capital costs, and to reduce inequities between user classes. In addition, residential sewer consumption rates would be capped during summer months to adjust for the irrigation season.

The 4,000 gallons included in the base charge was removed in subsequent years and now customers pay directly for water consumption from the first gallon used. The District’s water and sewer rate structure is a full cost pricing type of rate structure. For a residential account the consumption charge for water are as follows in Table 2.

**Table 2 – Water Consumption Charges
Residential Service**

Consumption	Price per 1000 Gallons
0 – 20,000 gallons	\$1.55
20,000 – 60,000 gallons	\$2.48
Greater than 60,000 gallons	\$3.82

The sewer charge based on water usage also encourages conservation since essentially high water users will also have higher sewer bills. A reduction in water usage has a compounding effect by reducing the sewer bill. However, the sewer charges are capped to reflect water use for irrigation which does not reach the sewer system and therefore should not be billed to the customer.

Water Ordinance

The District’s Water Ordinance establishes rates, rules and regulations for water service. There are three sections in the Ordinance that support water conservation, Article 5, Application for Regular Water Service, Article 17, Water Conservation Required Under Certain Emergency Conditions and Article 18, Landscaping. The District also prohibits water waste by Ordinance. Article 17 provides the mechanisms to implement mandatory cutbacks on water use in emergency conditions.

The District reviews and signs off all Building permits for commercial and residential construction, remodels and new construction, in our service area under the jurisdiction of the Washoe County Building Permit and under Article 5. All Building Permits require compliance with the current Uniform Plumbing Code which specifies water efficient plumbing fixtures. The significant amount of remodels and reconstruction in the service area has dramatically increased the amount of water efficient fixtures in the last 20 years.

As discussed earlier, the Board of Trustees approved water conservation measures in the Water Ordinance in 2001. The applicable section is copied below.

WATER CONSERVATION REQUIRED UNDER CERTAIN EMERGENCY CONDITIONS

When in the opinion of the Board of Trustees circumstances require water conservation by District customers, the Board may impose one or more of the following conditions after consideration of those circumstances at a regular public hearing after notice to the customers as provided for in NRS 318.199.

Limited Conservation

- Restrict watering to evening and morning hours. Watering is allowed between the hours of 7 p.m. and 11 p.m., and between 5 a.m. and 9 a.m. There is no restriction to hand watering using hoses with self-closing nozzles.
- Prohibit wash-down of driveways, sidewalks, parking lots and other impervious surfaces.

Moderate Conservation

- All items under Limited Conservation.
- Restrict landscape irrigation to alternate days. Odd-numbered addresses allowed to water on odd-numbered calendar days; even-numbered addresses allowed to water on even-numbered calendar days. No irrigation allowed on the 31st day of the month.
- Limit use of water from fire hydrants to actual fire fighting use.
- Hand-washing of vehicles allowed only with hoses equipped with self-closing nozzles.

Strict Conservation.

- All items under Moderate Conservation.
- No landscape or lawn irrigation under any circumstances.
- No new lawn or landscape installation.
- No wash-down of automobiles, trucks, vans or other motorized equipment except at commercial washing facilities that recycle wash water.
- Impose an excess consumption charge of 300% of the existing rate per 1,000 gallons for water use in excess of the base rate.

Circumstances Under Which Conservation May be Required.

The Board, upon its findings that one or more of the following emergency conditions are present, may impose any or all of the above-mentioned restrictions:

- Water scarcity condition exists or is likely to exist.
- Failure of water production, storage or distribution system(s).
- Demand for service in excess of the District's authorized water rights.
- Order of any agency of the federal, state or local government having jurisdiction in such matters.
- Any other condition that may require such action.

Article 18 defines landscape requirements for customers. These are enforced with every set of plans submitted to the Washoe County Building Department for development projects in the IVGID service area. The applicable section of the Ordinance is inserted below.

LANDSCAPING

Intent

The intent of this section is to implement landscaping standards which will result in the conservation of water, and eliminate water waste.

Applicability

This section applies to all new construction, remodeling where the building and deck footprint increases by more than 15%, any irrigation meter application, all Washoe County irrigation system permit applications, and/or an improvement requiring an increase of the service line or meter.

Requirements

All applicants must submit a landscaping plan as part of the permit process. The landscaping plan must identify turf coverage, irrigation systems, plant selections, water features, maintenance schedules, and installer/owner information.

Design and Construction Standards

Minimum standards for the planning, design, and construction of landscape irrigation systems within the District shall be in accordance with the LANDSCAPING STANDARDS copies which are on file in the District office. The District Engineer may permit or require modifications where special or unusual conditions are encountered.

Completion of Work Required

Before final approval of the work, or turn-on of the irrigation system, the landscape plan shall be complete in full compliance with all the requirements of the LANDSCAPING STANDARDS.

The IVGID Ordinance in Article 7 also states that no customer shall knowingly or negligently cause water waste with the District service area. Some examples in our policy that District staff enforces are presented below.

- Free-running hoses
- Watering of landscaping which results in excess water running off the property into public right-of-way or adjacent property
- Free-running, visible leaks from damaged plumbing or landscape irrigation piping
- Unfixed leaks in customer water service lines
- Excess watering of landscaping that results in significant ponding on site
- During a water restriction, watering between the hours of 9 a.m. to 5 p.m.
- Other actions that, in the determination of the Director of Public Works are deemed to be water wastage

Effluent Reuse

IVGID is located in the Lake Tahoe Basin where the reuse of wastewater effluent is not permitted nor is disposal allowed. The District's effluent is pumped out of the Lake Tahoe Basin to either our 900 acre Wetlands Disposal Facility located southeast of Carson City or to two customers connected to the effluent pipeline that utilize effluent for irrigation purposes. Those two customers utilize nearly 100% of the wastewater effluent from May 1 to October 15, every year, approximately 104 million gallons of wastewater effluent was used for irrigation purposes in 2019. The remaining effluent, approximately 230 million gallons in 2019 of effluent flowed to the wetlands facility for beneficial reuse purposes in the constructed wetlands.

Water Supply

The District has surface water rights to Lake Tahoe and pumps water out of Lake Tahoe for potable water service. The District's permitted water intake provides reliable service in nearly all lake conditions. It should be noted that because IVGID is located in the Lake Tahoe Basin, it would take an extreme drought event to reduce lake levels to a non-usable water supply. It is extremely unlikely that in the near future that the lake will drop to a level where water could not be withdrawn from Lake Tahoe through the water intake. Instead, the more likely situation is that water demand could potentially exceed our permitted water right which is when water conservation required under certain emergency conditions would be implemented. Another potential scenario is the State may declare a drought emergency that would require mandatory statewide conservation measures to be implemented by water purveyors. The Water Ordinance contains action levels for implementing these provisions based on total water use on specified dates.

Measures to Evaluate the Effectiveness of the Water Conservation Plan

Savings due to Public Education

Public Education campaigns are used to raise awareness on the importance of efficiently using water so the customer can maximize their benefit from its use. Customers are not always aware that fixtures, technology and behavior changes can result in better outcomes of water use and monetary savings. Public education also helps prevent backsliding on previous gains in water conservation. It is important for the water conservation message to reach new residents and businesses as people move in and out of the service area. In 2019, IVGID initiated a high efficiency water appliance rebate program (100 annual = \$100 per appliance; HEF toilet or clothes washer). Water savings from the public education effort are expected to be less than 5%.

Savings due to Water Loss Investigation

The District has worked hard to reduce the amount of unaccounted water. Twice per year, IVGID employs a professional leak detection service utilizing computerized sonic leak detection monitoring equipment. Once leaks are found, they are immediately repaired. Additionally, the water main replacement project replaces the older water lines in the District which are more prone to leakage. The amount of recoverable water from the leak survey was calculated as 6.3 million gallons for the entire 2019 year. These leaks were repaired immediately after discovery. As the system leaks are repaired each year with the water main replacement project, new “weakest spots” are revealed. In 2019 the total unaccounted for water losses was 40.3 million gallons, 4.5% of the total pumped water supply. District staff has put in extra effort to determine where additional unaccounted water loss may be occurring. This includes checking every hydrant, investigating around water tanks, inspecting watermains near creeks, and other detailed system inspections. The District has also undertaken a sub-metering program to try and determine if a certain water zone is exhibiting high unaccounted for water rates.

The annual leak detection of the watermains continues to find no major leaks and meter testing has confirmed accuracy of the meters tested to be within AWWA standards. Tanks, hydrants and other system components have been inspected to look for leaking water with nothing found.

The District has a meter testing program to verify accuracy of our billing and to schedule replacement of meters as they age and performance deteriorates. See **Appendix A** for a more detailed analysis of the 2019 Water Loss Audit. Industry standards maintain that an average system would expect 10% unaccounted for water. With the average District unaccounted for water rate below 10% over the last five years, Staff is confident that the system unaccounted for water rate is being controlled at an exceptional level.

Total water losses in 2019 was 163 acre feet of water per year. The 2015 Water conservation plan detailed a goal to reduce the total water losses from 250 acre feet per year to 200 acre-feet per year, a reduction of 50 acre feet per year, over 10 years. The goal was achieved early and the reduction exceeded the goal. The goal for the next 10

years is to maintain this water loss at less than 175 acre feet per year, this is an additional reduction of 25 acre-feet compared to the 2015-2020 goal.

Savings due to Water Rate Structure

The District has had metered water service for over 30 years and a tiered water rate structure for 16 years, since 2004. The pricing of the tiered rates are to recover the costs of producing the water. The average single family home has averaged 300 gallons per day for the last 5 years and the average multi family unit has averaged 150 gallons per day. In the 7 years prior to the introduction of tiered water rates in 2004, the average single family home averaged 407 gallons per day and the average multi family unit averaged 184 gallons per day. Future gains are expected to be minimal overall. Individual customers will see reduction with new water efficient appliances, but this will take many years to see the water savings across the whole service area.

Savings due to Water Ordinance

The Ordinance section declaring Water Conservation Required Under Certain Emergency Conditions has never been implemented since the inclusion in the Ordinance in 1997. We have no data on the potential water savings from the stated four levels of strict water conservation. Communities across the United States have seen savings from 0 to 25% when they implement these type of measures.

The Ordinance section restricting the use of turf will not generate new water savings since it applies to new installations. It will aid in capping continued creep in water use in properties that previously had no turf landscaping. In the Tahoe Basin, traditionally homes had no landscaping but ever since the lifting of the building moratorium in the Tahoe Basin around 1990 we have seen increasingly elaborate landscaping and automated irrigation systems. It will be important with Public Education to educate people on the effective and efficient way to landscape and water in the Tahoe Basin.

Savings due to Effluent Reuse

The use of wastewater effluent in the Tahoe Basin is prohibited by State Law. A total of 105 million gallons was used in 2019 by a golf course and agricultural customer in Douglas County. This use is saving the State of Nevada 105 million gallons of potable water supply every year.

Appendix A – Water Loss Audit

The following document is the Incline Village General Improvement District Water Loss Audit. This is prepared in accordance with the American Water Works Association Water Audits and Loss Control Programs, M36.

TABLE 1				
IVGID Water Audit Worksheet				
Water Year 2019				
Line	Item	Subtotal	Units*	Percent
Task 1- Measured Supply				
1	Burnt Cedar Water Production	893.99	MG	100.0%
2A	Source meter error (+ or -)	0.00	MG	
4	Adjusted water supply to the distribution system (add lines 1 and 2A)	893.99	MG	
Task 2- Measured Metered Use				
5	Uncorrected total metered use	840.82	MG	94.1%
6	Adjustments due to meter reading			
7	Metered deliveries (add lines 5 and 6)	840.82	MG	94.1%
8A-C	Sales meter error and system-service meter error (+ or -)			
8A	Residential meter error	0.00	MG	
8B	Large meter error	0.00	MG	
8C	Total (add lines 8A and 8B)	0.00	MG	0.0%
9	Corrected total metered water deliveries (add lines 7 and 8C)	840.82	MG	94.1%
10	Corrected total unmetered water (Subtract line 9 from line 4)	53.17	MG	5.9%
11A-M	Authorized unmetered water uses			
11A	Firefighting, training, and hydrant testing	5.00	MG	
11B	Main and Tank flushing	2.00	MG	
11C	Storm drain flushing	0.00	MG	
11D	Sewer cleaning	0.30	MG	
11J	Construction sites	4.60	MG	
11K	Water quality and other testing (pressure testing pipe, water quality, etc.)	0.00	MG	
11M	Other unmetered uses	1.00	MG	
12	Total authorized unmetered water (Add lines 11A through 11M)	12.90	MG	1.4%
13	Total water losses (Subtract line 12 from line 10)	40.27	MG	4.5%
14A-G	Identified water losses			
14A	Accounting procedure errors	0.00	MG	
14C	Malfunctioning distribution system controls	0.00	MG	
14F	Reservoir overflows	0.00	MG	
14G	Discovered leaks	6.31	MG	
15	Total identified water losses (Add lines 14A through 14G)	6.31	MG	0.7%
16	Potential water system leakage (Subtract line 15 from 13)	33.96	MG	3.8%
17	Recoverable leakage (Multiply line 16 by 0.75)	25.47	MG	2.8%
Line	Item	Dollars per MG		
18A-B	Cost savings			
18A	Cost of water supply	\$1,550		
18B	Variable operation and maintenance costs	\$0		
19	Total costs per unit of recoverable leakage (Add lines 18A and 18B)	\$1,550		
Line	Item	Dollars per Year		
20	One-year benefit from recoverable leakage (Multiply line 17 by line 19)	\$39,479		
21	Total costs of leak detection project	\$10,000		
22	Benefit to cost ratio (divide line 20 by line 21)	3.95		