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PIO PICO ENERGY CENTER
WATER CONSERVATION PLAN

April 14, 2016

SUBMITTED BY THE OTAY WATER DISTRICT

FOR THE PIO PICO ENERGY CENTER

EXECTIVE SUMMARY

On September 17, 2012, the California Energy Commission adopted the Commission Decision on the Pio Pico Energy Center (PPEC) Application for Certification. The Commission Decision includes the adoption of specific requirements that ensure that the proposed PPEC is designed, sited, and operated in a manner to protect the environmental quality, assure public health and safety, and operated in a safe and reliable manner. Section VII, "Environmental Assessment" of the Commission Decision, establishes the conditions of certification for Soil and Water Resources associated with the PPEC. The Commission Decision, with respect to Soil and Water Resources, states:

"If reclaimed water is not available and potable water will be used at plant start-up for cooling and process water, the project owner shall make a one-time pre-payment of $425,000 for implementation of a Water Conservation Plan (WCP). The WCP shall propose one or more recipients of the funds to be used to conserve potable water in the region."

Since reclaimed water is not available at the PPEC project site for the plant start-up, and potable water will be used, a Water Conservation plan is required as provided for in the Commission Decision for the project. The PPEC project is recommending that the Otay Water District (District), the project's water purveyor, be selected as the recipient of the funds. The District is considered to be an industry leader in the area of water conservation. Water conservation is a core element in the District's Strategic Plan. The District's efforts include conservation education and outreach, water conservation partnerships, a robust recycled water network in the central part of the District, and a leak detection and repair program.

A "Leak Detection and Repair Program" is an essential component for water conservation which provides measurable results. The District's Strategic Plan includes performance measures that assist the District in evaluating progress made on the Leak Detection and Repair Program. This WCP proposes to advance the District's Leak Detection and Repair Program and will allow for the survey and potential repair of more than 300 miles of potable and recycled water mains which are part of the District's first phase leak detection assessment of the District's potable and recycled distribution systems.

The Commission Decision outlines specific WCP elements required in the project's WPC as included in Section VII "Environmental Assessment" of the Commission Decision under the heading of "Water Conservation Plan", "Soil & Water – 10". The Commission Decision states:

"The project owner shall provide a WCP to the CPM (Compliance Project Manager) for review and approval and shall include the following at a minimum:

- *Identity of the entities proposed to accept conservation funds and information on each entity's programs and successes;*
- *Description of the type of entity or entities proposed to accept conservation funds (governmental, not for or non-profit organization, etc.)*
- *Contact information for the entity or entities;*
- *A statement from an authorized representative of each entity that is willing to accept the funds and use them for funding water conservation programs;*
- *A description of the current status of reclaimed water availability for the project;*
- *A statement that water meters have been or will be installed prior to plant start up and used to monitor actual amounts of potable water used; and*
- *A description supporting the general benefits and effects of the payments specified above as to water conservation resulting from the use of the funds."*

The submitted WCP proposes to support the implementation of the District's Leak Detection and Repair Program. This WCP addresses the specific WCP elements outlined in the Commission Decision. In addition, this WCP provides details on the WCP's scope, schedule, budget, and anticipated water conservation results. As outlined in

the WCP, the implementation of the proposed District's Leak Detection and Repair Program is estimated to reduce water loss and conserve between 200 and 400 acre-feet per year.

WATER CONSERVATION PLAN ELEMENTS

1. Identity of the entities proposed to accept conservation funds and information on each entity's programs and successes

The PPEC project is recommending that the Otay Water District, the project's water purveyor, be selected as the recipient of the conservation funds. The District is considered to be an industry leader in the area of water conservation. The District provides water service to customers within 125.5 square miles of southeastern San Diego County, California. Its facilities serve the potable water, recycled water, and the sewer needs of customers residing in the communities of Spring Valley, La Presa, Rancho San Diego, Jamul, eastern Chula Vista, and eastern Otay Mesa along the international border with Mexico.

Figure 1. Otay Water District Location Map

The potable water delivered by Otay Water District is purchased from the San Diego County Water Authority or the Helix Water District. Imported water is a mix of waters from the Colorado River and Northern California. Most of the water is purchased from the region's primary importer, the Metropolitan Water District of Southern California.

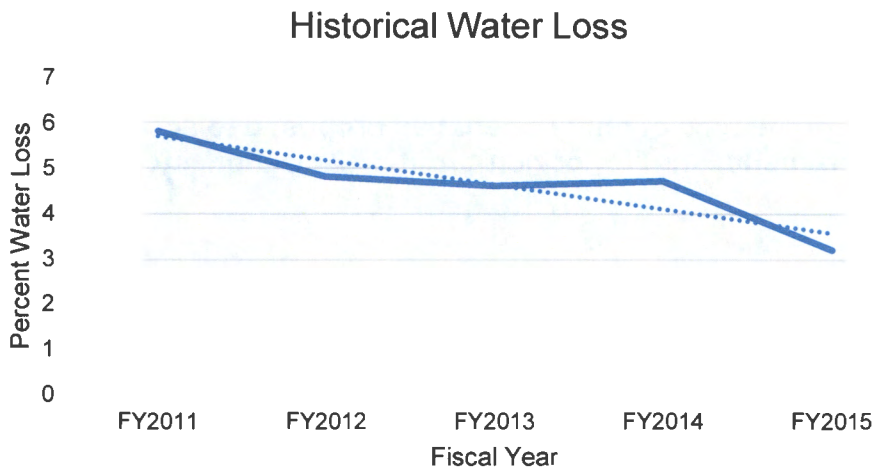
The District owns and operates a wastewater collection system providing public sewer service to homes and businesses within the Jamacha drainage basin. The District delivers recycled water to customers through a dedicated distribution system where it is used to irrigate golf courses, playing fields, public parks, roadside landscapes, and open space in eastern Chula Vista. Table 1 below provides a brief overview of the District as of August 2015.

Table 1. Otay Water District Agency Overview

SERVICE AREA:	125.5 square miles or approximately 80,140 acres
POPULATION SERVED:	Approximately 217,000 (combined water, sewer and group quarters)
POTABLE WATER SOURCE:	Imported water purchased from the region's water importers, the San Diego County Water Authority and the Metropolitan Water District of Southern California. The District also purchases treated water from the Helix Water District.
NUMBER OF EMPLOYEES:	138
OPERATING BUDGET:	$89.1 million for 2015-2016
CAPITAL IMPROVEMENT PROGRAM:	$11.1 million for 2015-2016
POTABLE WATER SALES:	29,257 Acre Feet (for FY 2015)
RECYCLED WATER SALES:	4,228 Acre Feet
WATER CONNECTIONS:	49,430 meters in service
SEWER CONNECTIONS:	6,092 connections
RECYCLED CONNECTIONS:	710
TREATMENT PLANT:	1 – The Ralph W. Chapman Water Recycling Facility with a maximum capacity of 1.3 million gallons per day.
PUMP STATIONS:	21 potable water pump stations 3 recycled water pump stations
SEWER LIFT STATIONS:	5 sewer lift stations
RESERVOIRS:	40 potable water reservoirs 4 recycled water reservoirs
WATER STORAGE CAPACITY:	217.6 million gallons – potable water storage 43.7 million gallons – recycled water storage
OTHER MISC. WATER FACILITIES:	727 miles of potable water mains 88 miles of sewer mains 104 miles of recycled water mains (4" or greater) 5,963 fire hydrants 20,676 potable water valves 1,492 recycled water valves

As part of operating the District's water and recycled water systems, the District has continually improved in the area of water loss from the systems operated and maintained by the District. Between Fiscal Year 2012 and Fiscal Year 2015, the District's proactive management of the District's water system has resulted in a decrease of water loss below 5%, as shown on the graph below.

Figure 2. Historical Water Loss



The District's successes in the area of water conservation also include providing resources to the District's customers for indoor, outdoor, home, and business applications. Water Smart Checkups, Water and Energy Efficiency Programs, Water Smart Landscape designs, and the Home Water Works Calculator are all resources that assist and educate the District's customers on water conservation. The District also maintains a strong partnership with the Water Conservation Garden which is operated within the District's boundaries. The Water Conservation Garden offers classes and displays that feature water-smart gardening themes.

The District has been the recipient of numerous awards and acknowledgements for budgeting and financial reporting, including the following:

- The Government Finance Officers Association of the United States and Canada (GFOA) presented a Distinguished Budget Presentation Award to Otay Water District, for its annual budget for the fiscal year beginning July 1, 2014. In order to receive this award, a governmental unit must publish a budget document that meets program criteria as a policy document, as an operations guide, as a financial plan, and as a communications device.
- The Government Finance Officers Association of the United States and Canada (GFOA) also presented a Special Capital Recognition for the Fiscal Year 2014-2015 Budget.
- The California Society of Municipal Finance Officers (CSMFO) presented Otay Water District the Certificate of Award for Excellence in Operating Budgeting for Fiscal Year 2014-2015.
- The California Society of Municipal Finance Officers (CSMFO) presented Otay Water District the Certificate of Award for Excellence in Capital Budgeting for Fiscal Year 2014-2015.
- The Government Finance Officers Association Officers (GFOA) presented Otay Water District the Certificate of Excellence in Financial Reporting for its Comprehensive Annual Financial Report for the Fiscal Year ended June 30, 2014.

The District's Board of Directors has adopted a Strategic Plan which is the core document that guides the agency's efforts to meet and positively adapt to change. The Strategic Plan is guided by the District's Mission Vision and Values. The Strategic Plan contains key Strategic Objectives that are focused on the foundational items necessary to build required systems and infrastructure and leverage these items to optimize the District's resources and business processes. The Strategic Plan includes Performance Measures designed to ensure that the day-to-day operations of the utility are meeting agreed upon targets. The "Leak Detection Program" and "Distribution System Loss" are both reportable performance measures included in the District's Strategic Plan.

2. Description of the type of entity or entities proposed to accept conservation funds (governmental, not for or non-profit organization, etc.)

The District is a potable water, recycled water, and sewer service provider. The State Legislature authorized the establishment of the Otay Water District in 1956 as a California Special District under the provisions of the Municipal Water District Law of 1911, Division 20 (commencing with Section 71000) of the Water Code of the State of California. The District is a "revenue neutral" public agency where each end user pays only his or her fair share of the District's costs of acquiring, treating, transporting, or the operation and maintenance of the potable water, recycled water, or sewer facilities.

The District is represented by a Board of Directors that consists of five directors, elected by voters to serve respective divisions, set the District's ordinances, policies, taxes, and rates for service. Members of the Board of Directors serve four-year terms of office.

3. Contact information for the entity or entities

Otay Water District
Mark Watton, General Manager
2554 Sweetwater Springs Boulevard
Spring Valley, CA 91978-2004
Telephone: (619) 670-2241
Facsimile: (619) 670-6184

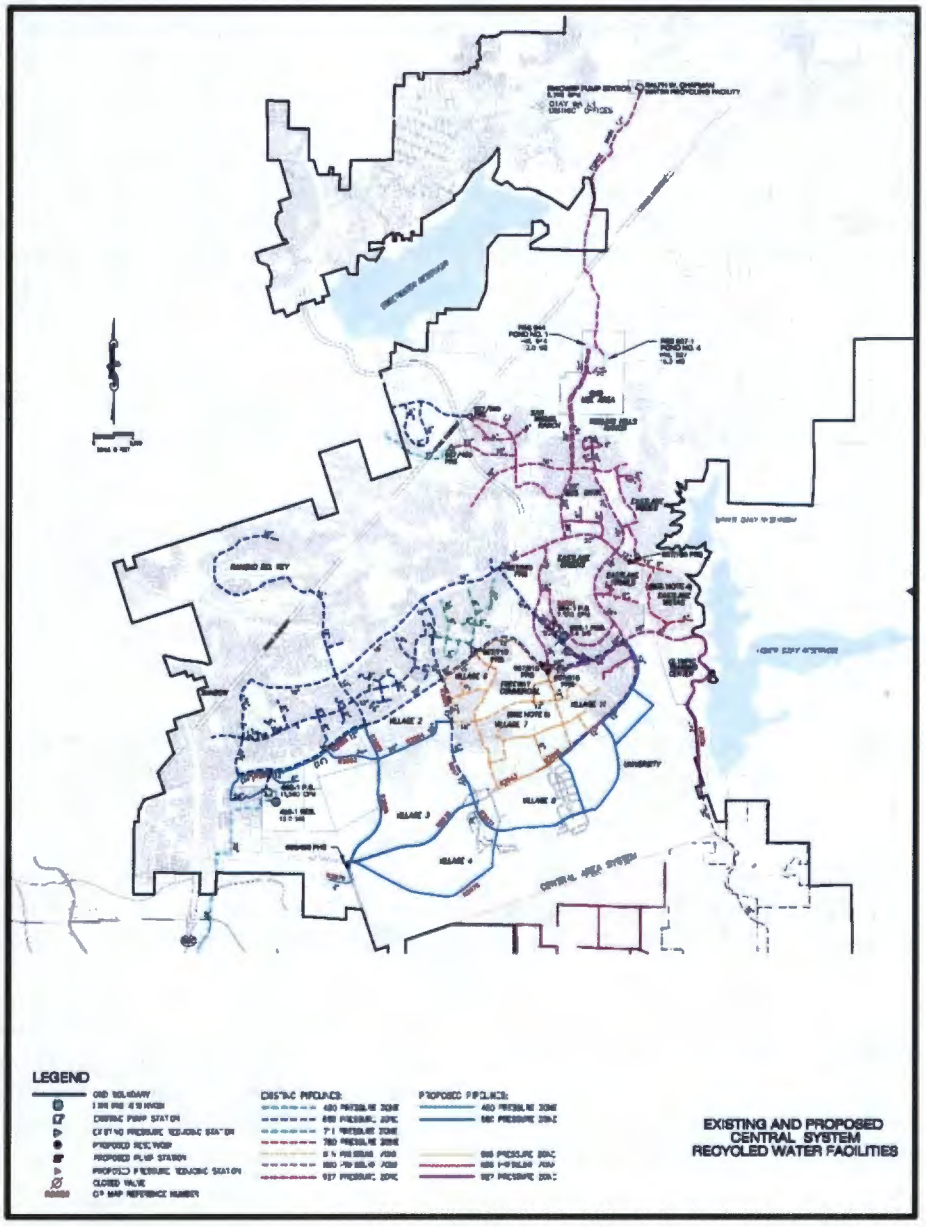
4. A statement from an authorized representative of each entity that is willing to accept the funds and use them for funding water conservation programs

Exhibit A provides a letter from the District's Authorized representative.

5. A description of the current status of reclaimed water availability for the project

The District supplies recycled (reclaimed) water to the central area of the District. As shown in Table 1 above, the District operates the Ralph W. Chapman Water Recycling Facility which provides one of the two sources of recycled water for the District. The second source of recycled water is purchased from the City of San Diego and is produced at the City's South Bay Water Reclamation Plant. Approximately seventy five (75) percent of the recycled water used by the District is supplied from the City of San Diego through a recycled water supply agreement. The District operates and maintains four recycled water reservoirs that have a recycled water storage capacity of 43.7 million gallons. These reservoirs supply recycled water to 104 miles of recycled water pipeline that supports 710 recycled water connections which are primarily located in the District's central region.

Figure 3. Otay Water District Recycled Water Central System



Currently, recycled water is not available for the PPEC project which is located in Otay Mesa at the south end of the District. Some recycled water infrastructure has been constructed in an effort to bring recycled water to Otay Mesa as included in the District's approved Water Resources Master Plan.

In June of 2014, the District conducted a preliminary assessment of the costs and benefits of implementing the recycled water transmission main infrastructure needed to bring recycled water to Otay Mesa. The assessment included factors such as the estimated costs to construct the infrastructure; securing critical easements from the City of San Diego; the anticipated future demand for recycled water on Otay Mesa; the costs and reliability of the recycled water supply from the City of San Diego; potential availability of grant funding; and the expiration dates of recycled water incentives currently available from the Metropolitan Water District and San Diego County Water Authority. The assessment also considered potential new sources of water that may not require independent transmission main infrastructure and could compete with recycled water on a cost of supply basis, including Indirect Potable Reuse, Direct Potable Reuse, and Conservation. The preliminary cost-benefit financial analysis that incorporated the factors described concluded that the payback period for the additional Otay Mesa recycled water infrastructure was in excess of seventy (70) years which is beyond the estimated useful life of the planned recycled water infrastructure. Given this preliminary analysis, the District's Board placed a temporary moratorium on the installation of new recycled water facilities on Otay Mesa on July 2, 2014. The staff report that provides greater details is available on the Otay Water District website (http://www.otaywater.gov/board-agenda/). The temporary moratorium will allow time for information regarding external factors, including reliability/cost of supply from the City of San Diego, potential new sources, and projected demand to mature and give greater certainty to the assumptions made in the preliminary analysis. The District anticipates completing the assessment within the next few years.

6. A statement that water meters have been or will be installed prior to plant start up and used to monitor actual amounts of potable water used

On December 30, 2015, the PPEC project purchased a 4-inch meter that will supply potable water to the project for the purposes of plant start up. This meter will monitor actual amounts of potable water used. Installation of the meter is required prior to plant start up.

7. A description supporting the general benefits and effects of the payments specified above as to water conservation resulting from the use of the funds

A Leak Detection and Repair Program is an essential component for water conservation which provides measurable results. The District's Leak Detection and Repair program, combined with the District's Valve Exercising Program, has allowed the District to successfully maintain a measured Distribution System Loss (Strategic Plan Performance Measure Id# 3.3.308) at a rate of less than 5% over the last four years.

The District piloted a leak detection and repair project during the District's 2013/2014 fiscal year. The results of the pilot project demonstrated that significant gains in water loss reduction could be achieved through a Leak Detection and Repair Program. The pilot concluded that a proactive leak detection and repair program saves water resources and identifies small leaks in the underground distribution system before they surface or become catastrophic. The net result of a proactive leak detection and repair program is increased water conservation.

Figure 4. Leak Detection at a Water Meter

The District's Strategic Plan also includes a new performance measure of the District's Leak Detection Program (Exhibit B - Strategic Plan Performance Measure Id# 5.2.520) which assists the District in evaluating progress made on leak detection within both the potable and recycled distribution systems. The District's target first established for Fiscal Year 2015 is to perform a leak detection survey on approximately 20 percent of the distribution system each year, based on miles of pipe surveyed.

Thus far, approximately 42% of the District's system has had leak detection performed which includes part of the system that was surveyed under the pilot project. The annual expenditures by the District to survey the District's system are shown below in Table 2.

Table 2. Annual Expenditures to Perform Leak Detection Survey

Year	System Surveyed (%)	Leak Detection Service Expenditures ($)
2013	8.4%	$ 18,200.00
2014	13.0%	$ 27,756.00
2015	20.1%	$ 44,200.00

Based on the leak detection effort to date, the District's consultants have identified leaks and estimated that repairs performed on the leaks have conserved approximately 500 Acre-Feet per Year (Ac-Ft/Yr). The District, as part of this proposal, will complete a forensic analysis on the repaired facilities in an effort to provide an accurate assessment of water conservation. The forensic analysis involves removal and examination of the affected facility. The analysis will also measure the size of the leak from the affected facility and apply the specific water pressure at that location to provide the estimate of water conservation when the facility is repaired. Lastly, the forensic analysis will aid the District in determining if the root cause of the leak is localized or more widespread in that area of the system.

Funding from this Water Conservation Plan will allow the District to complete the survey and the potential repair of more than 300 miles of potable and recycled water mains which are part of the District's first phase leak detection assessment of the District's potable and recycled water distribution systems. Table 3 below provides a summary of the estimated costs and results of this WCP for the proposed District Leak Detection and Repair Program.

Table 3. WCP Leak Detection and Repair Program

District System to be Surveyed	Estimated Water Conservation Range (Ac-Ft per Year)	Estimated Number of Leaks Likely to be Located and Repaired	Estimated Leak Detection Service	Estimated Total Leak Repair Costs	TOTAL Costs
46%	200 - 400	220	$100,000.00	$320,000.00	$420,000.00

The estimated water conservation, along with the number of leaks likely to be located and repaired, as shown in Table 3, are based on the survey and repair results of the 42% of the District's system completed to date. The estimated costs associated with the Leak Detection Service are based on the work performed as outlined in Table 2. The total estimated cost for Leak Repairs is based on a historical average of leak repair costs performed on pipelines, service laterals, and at meters. It is estimated that the funds from this WCP will support the survey of 46% of the system. The remaining 12% of the system will be surveyed by the District, as part of a continuing Leak Detection and Repair Program.

Water savings from the Leak Detection and Repair Program begin when the detected leak is repaired, which is typically within two business days of identifying the leak. The water savings is annualized for the remaining life of the facility repaired, resulting in the annual conservation amount. The age of the District's existing infrastructure is variable with the oldest infrastructure being built in the mid 1950's. The District plans to perform Leak Detection and Repair on the entire potable and recycled water system.

Funding of this Water Conservation Plan will also assist the District in establishing a minimum allowable annual leakage rate that would support a cost-effective Leak Detection and Repair Program.

In total, the WCP proposes to survey in excess of 300 miles of potable and recycled water mains and estimates a range of 200 to 400 Acre-Feet per year of water conservation resulting from reduced water loss.

The Final Report associated with this Water Conservation Plan will provide a summary of the following:

- Percent of System Surveyed
- Number of Leaks Located and Repaired
- Costs of Leak Detection Service
- Costs of Leak Repairs
- Results of Forensic Analysis
- Water Conservation Achieved
- Lessons Learned
- Leak Detection and Repair Program Recommendations

The work proposed under this plan is scheduled to occur during the District's 2016, 2017, 2018, and 2019 fiscal years. The Table 4 below provides the proposed schedule of the WCP activities:

Table 4. Water Conservation Plan Schedule

Water Conservation Plan Schedule			
ACTIVITY	**START**	**FINISH**	**ESTIMATED COST**
Water Conservation Plan Approval	2/1/2016	4/15/2016	$1,600
Approve Budget, Agreement & Contract Services	4/16/2016	6/30/2016	$1,600
Leak Detection and Leak Repair	1/1/2016	6/30/2018	$420,000
Develop Draft Final Report	7/1/2018	11/1/2018	$1,200
Final Report	11/2/2018	12/1/2018	$600
		TOTAL	$425,000

In the event that the actual costs for the proposed leak detection and repair program are less than those estimated within the approved plan, the District will request that the approved plan be amended to fund other water conservation efforts, including but not limited to potable and recycled water meter replacements.

Approval of this WCP and the corresponding funding from the Pio Pico Energy Center will advance the District's Leak Detection and Repair Program resulting in water conservation. If this WCP is approved, the District will initiate action to accept the funds and program the funding into the District's budget for Fiscal Years 2016, 2017, 2018 and 2019.

CALIFORNIA ENERGY COMMISSION APPROVAL AND AUTHORITY TO PROCEED

We have reviewed this Water Conservation Plan and have determined that it meets the minimum requirements of the adopted California Energy Commission Decision on the Pio Pico Energy Center (PPEC) Application for Certification.

Dale Rundquist 4/21/2016

Approved By Date

Dale Rundquist

California Energy Commission Pio Pico Compliance Project Manager

EXHIBIT A

...Dedicated to Community Service
2554 SWEETWATER SPRINGS BOULEVARD, SPRING VALLEY, CALIFORNIA 91978-2004
TELEPHONE: 670-2222, AREA CODE 619 www.otaywater.gov

April 14, 2016

Project Nos.: P1000-000000
R1000-000000

Dale Rundquist
Compliance Project Manager
California Energy Commission
1516 Ninth Street
Sacramento, CA 95814

Subject: Pio Pico Energy Center Water Conservation Plan – Otay Water District Letter of Intent to Accept Funds

Dear Mr. Rundquist:

In coordination with the approval of the Pio Pico Energy Center Water Conservation Plan (WCP), the Otay Water District (District), through action by the District's Board of Directors, is willing to accept the WCP funding of $425,000. Through a mutual agreement, the District will commit to use the Pio Pico Energy Center Water Conservation Plan funding to advance the District's Leak Detection and Repair program, as provided in the approved WCP.

Should you have any questions or concerns, please contact Dan Martin, P.E., Engineering Manager, at 619-670-2243.

Sincerely,
OTAY WATER DISTRICT

Mark Watton
General Manager

MW:jf

Strategic Business Plan

Performance Measure 5.2.520 Summary

Title: Leak Detection Program

Project Lead: Jacob Vaclavek

Measure Description: This measure is to document the District's proactive leak detection program. A proactive leak detection program helps save water resources and helps identify small leaks in the underground distribution system before they surface or become catastrophic. This is an annual measure and will be on target when 20% of the distribution system is surveyed for leaks per year. The distribution system surveyed consists of both potable and recycled systems.

Calculation Definition: The leak survey will take 4-5 weeks and will occur between November and April each year. Percentage of distribution pipelines surveyed. The calculation is miles of pipe surveyed divided by total miles of pipe times 100.

Target Description: 20% of system surveyed for leaks per year