

WATER ENHANCEMENT PROGRAM

Progress Report January 2016



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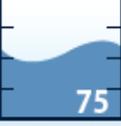
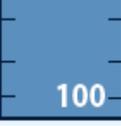
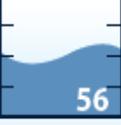
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WELCOME

The City of Las Vegas and the Las Vegas Community Water Board want to thank you for your strong conservation efforts and for bearing with us, through these trying times. We are working to provide an adequate water supply as soon as practical and at an affordable cost.

PER Summary Report

Funding Sources / PER Phase I and Water Distribution System Projects

CATEGORY	PROJECT	COST	GRANT FUNDS	CITY FUNDS	% FUNDED
 CONSERVATION	<ul style="list-style-type: none">• Automated Meter Reading	\$1.1	\$0.8	\$0.3	 100
 STORAGE	<ul style="list-style-type: none">• Bradner Dam Rehab• Peterson Dam - Structural & Leak Repair• Raw Water Conveyance• Storrie Lake Storage	\$44	\$16.2	\$14.1	 69
 TREATMENT	<ul style="list-style-type: none">• Water Treatment Plant Building Repairs	\$0.8	\$0.45	\$0.15	 75
 GROUND WATER	<ul style="list-style-type: none">• Ground Water Production - Taylor Well Field• Blending of Taylor Well #7	\$3.25	\$2.8	\$0.45	 100
 DISTRIBUTION	<ul style="list-style-type: none">• Water Storage Tanks - Cabin Site and Camp Luna Rehab/Inspect• Water Distribution System Improvements• Annual Leak Repair/Replacement	\$7.1	\$1.2	\$0.7	 26
 REUSE/RECYCLE	<ul style="list-style-type: none">• Effluent Reuse Expansion	\$3.2	\$1.3	\$0.5	 56

TOTAL (millions) \$59.5

Purpose of Progress Report

“Our Future is Clear” progress report is one component of a public information campaign designed to ensure that all Las Vegas residents and businesses are kept up to date on the actions the City is undertaking to develop a long-term, sustainable water supply. Along with this report the City is providing regular information via written media, radio, television and community presentations to civic, business, educational and other groups. Please call (505) 426-3319 to schedule a presentation.



City Council has worked aggressively to acquire and allocate funds for the Water Enhancement Program

Progress Report Content

The City continues to work on planned improvement projects, maintenance across the water system and daily operations of the facilities such as the fresh water treatment plant, diversion dam, wells and storage facilities. The report identifies the status of projects currently in progress or recently completed. The City plans to periodically update and redistribute this report. We welcome your inquires and comments.



Taylor Well Blending Tank Construction. In order to increase usable capacity of the backup Taylor Well #7, the City needed a larger blending tank.

Preliminary Engineering Report (PER)

A thorough 2010-2011 study addressed the overall needs of our water system. The result was a plan called the Preliminary Engineering Report (PER). Out of more than a hundred options, it identified and prioritized 29 recommended major projects to be completed over a forty year period, at a total cost of about \$123 million. The objective is to improve supply and increase efficiency while relying on citizens' conservation as the best and cheapest alternative.

(The PER Executive Summary can be viewed at <http://www.lasvegasnm.gov/uafall.htm>)



New Taylor Well Blending Tank (left), Old Taylor Well Tank (right)

Financing Summary

The City has applied for \$31.86 million in state and federal money. We have been awarded \$25.8 million in grants and \$6.06 million in very-low interest rate loans. The City has also financed projects with \$2 million from water rates and the ¼ percent water gross receipts tax.



Camp Luna Storage Tank Rehabilitation . The 2.5 million gallon tank at Camp Luna stores fresh water to even out fluctuation in user demands and maintain water pressure.

Use of Funds Summary

The \$31.86 million of available funds from grants, loans and City cash were assigned to six major categories of PER projects. They break down as follows: Conservation \$1.1 million, Storage \$44 million, Treatment \$ 0.8 million, Ground Water \$3.25 million, Distribution \$7.1 million and Reuse/Recycle \$3.2 million.

We also list:

- Grant \$ - dollars received and committed (state and federal outright gifts)
- Your Rate \$ - dollars committed (base rates plus rate increases, plus loans to be repaid)
- Estimate \$ - dollars needed to complete the project, including design and construction

BRADNER DAM STABILITY & EXPANSION

The City has far less storage capacity than needed to cover river flow fluctuations and emergency contingencies. The original plan was to expand the 100 year old Peterson Dam, and in the process remedy its safety and leakage issues. When the early part of the geo-technical investigations revealed that the underlying ground would not hold additional water, the City made the decision to expand the Bradner Dam Stability Analysis to include expansion and to promote it from tenth to first priority.

Project Name		Status
Badner Dam Rehabilitation		In Planning/Design
Bradner Seepage Recovery		In Planning
Solar Bee		Completed – 2013
Grant \$	Your Rate \$	Estimate \$
\$11,800,000	\$895,828	\$13,000,000



Bradner reservoir near capacity (left) and drained for rehabilitation (right). The rehabilitation will allow for increased volume, drawing cleaner water and improved dam integrity.

STORRIE LAKE STORAGE ALTERNATIVE

The City is moving forward with the acquisition of storage in Storrie Lake. This was a long-term alternative that has been moved up to a high priority due to permitting issues (protest of the Bradner Dam Water Rights Application and the Dam Safety Bureau’s requirement to acquire an easement with an adjacent property).

Project Name		Status
Storrie Lake Storage		In Acquisition
Grant \$	Your Rate \$	Estimate \$
\$0	\$12,000,000	\$12,000,000



The City is pursuing acquisition of storage space at Storrie Lake, as an alternative to a major expansion of Bradner Reservoir.

PETESON DAM-STRUCTURAL & LEAK REPAIR

Expansion of Peterson Reservoir to 1400 acre-feet was not feasible due to underlying geology. Although, the need for dam safety repairs and leak/seepage suppression are still necessary. This project will accomplish those needed improvements.

Project Name		Status
Peterson Dam Safety Improvements		Procuring Design Detail
Grant \$	Your Rate \$	Estimate \$
\$891,967	\$215,709	\$10,000,000



Peterson Reservoir (left) and Peterson Dam (right). Built in 1911, the dam allows substantial leakage and needs major upgrade to meet current dam safety requirements.



OPTIMIZE GROUNDWATER PRODUCTION AT TAYLOR WELL FIELD

The City only had Taylor Well #4 (capacity 25% of one day's use) as a backup to the Gallinas River supply. Enhancing fresh groundwater supply was always important, and in the continued drought situation, it became urgent as a short term remedy. Current capacity with Taylor Wells #2 , #2R, #4 and #7 is approximately 62% of daily demand. With the addition of Taylor Well #5 and #6 the city could provide 82% of daily demand from the well field, if necessary.

Project Name		Status
Aquifer Storage and Recovery Pilot Test		Awaiting Permit
Equip Taylor Wells 5 & 6		In Design
Rehabilitate Taylor Well #2		Completed – 2013
Rehabilitate Taylor Well #5		Completed – 2014
Rehabilitate Taylor Well #6		Completed – 2014
Well Field Hydro Sustainability Model		Completed – 2015
Rehab & Connect the PNM-Valencia Well		Not Viable
Rehab & Connect Cabin Site Well		Not Viable
Connect/Treat NMHU Golf Course Well		Awaiting Easement
Grant \$	Your Rate \$	Estimate \$
\$1,925,000	\$334,112	\$2,259,000



Drilling of Taylor Well #2. The Taylor Wells are a backup to the City's river water supply. Taylor Well #2 had suffered enough degradation that a replacement well proved necessary.



DESALINATION FACILITIES

Purified, brackish (salty) water can augment our fresh water supplies. Desalination of brackish water from Taylor Well #7 and other brackish ground water sources was promoted to Phase I from later PER phases. Due to the increased cost and waste generated from the desalination process it was determined that blending Taylor Well #7 with other Taylor Well field would produce potable water at a lower cost.

Project Name		Status
Connect & Blend Taylor Well #7 Water		In Progress
Desalination Capability		Not Viable
Grant \$	Your Rate \$	Estimate \$
\$875,000	\$116,000	\$991,000



Taylor Well #7 Installation. This deeper well provides brackish water that can now be blended with fresh water to augment the City's backup to the river supply.

RAW WATER CONVEYANCE – DIVERSION DAM TO RESERVOIR

The pipes and settling pond that carry water from the Gallinas diversion dam to the reservoirs are not large enough to let the City catch peak flows from storm events and spring runoff. This project provides enlarged pipe and a larger settling pond.

Project Name		Status
Raw Water Conveyance System Improvements		In Progress
Acquire Storrie Lake Pump		In Planning
Pump from Montezuma Skating Pond		Completed
Repair 12" Bypass Line at Settling Basin		Completed
Grant \$	Your Rate \$	Estimate \$
\$3,700,000	\$1,200,000	\$12,000,000



Montezuma Skating Pond in winter (left) and spring (right). The Skating Pond is along the path of conveyance pipes.



WATER TREATMENT PLANT OXIDATION

In the case of adverse weather conditions, the water quality from the fresh water treatment plant comes close to exceeding the allowable impurity levels, causing taste and odor issues. Oxidation was determined to be unnecessary and additional recommendations were made for improving pre-treatment.

Project Name		Status
Water Treatment Plant Oxidation		Evaluation Complete
Clarifier Basin Cover		In Planning
Grant \$	Your Rate \$	Estimate \$
\$3,700,000	\$1,200,000	\$12,000,000



Clarifier at Water Treatment Plant in winter (left) and summer (right). The clarifier allows particulate material to settle out of water. The cover will reduce sunlight-induced growth.



EFFLUENT REUSE EXPANSION

The City now returns significantly more effluent from the wastewater treatment plant to the river than required. This project allows the City to use treated effluent to replace the demand for fresh water uses. Potential uses are: irrigating of parks, car washes, cement mixing and residential irrigation.

Project Name		Status
Effluent Reuse Expansion		Procuring Design Detail
Effluent Storage & Booster Pump		Complete
Melody Park to Carnegie Effluent		In Planning
Golf Course to Hanna Effluent		In Planning
Luna Storage Ponds		In Planning
Main Extension (Cinder – Luna)		Awaiting Funding
Main Extension (Luna – Peterson)		Awaiting Funding
GW Discharge Permit (Comm. & Res.)		Awaiting Approval
Grant \$	Your Rate \$	Estimate \$
\$1,325,413	\$513,038	\$3,200,000



North Grand Effluent Tank and Booster Station. The City is now re-using cleaned wastewater for irrigating parks and ball fields. The effluent has to be pumped uphill from the wastewater treatment plant to points of use



FRESH WATER STORAGE TANKS – INSPECTION & REHABILITATION

The City uses several fresh water tanks to meet the fluctuations in demand through the course of a day and to provide fire protection. The tanks have aged significantly and are in need of inspection, cleaning and rehabilitation.

Project Name		Status
Camp Luna Tank Inspection & Rehab		Complete
Cabin Site Tank Inspection & Rehab		Seeking Funding
Grant \$	Your Rate \$	Estimate \$
\$797,000	\$266,000	\$1,900,000



Construction of Cabin Site Supplemental Tank. The Cabin Site tank near the reservoirs maintains adequate pressure in the water distribution system. The supplemental tank will serve while the main tank is offline for rehabilitation.



DISTRIBUTION

PER Phase 1/Priority 8

WATER DISTRIBUTION SYSTEM IMPROVEMENTS

The City’s distribution pipes (water mains) are old and narrow. Some run as dead-end spurs. In order to minimize outages when there is a need for repair work, the City will loop spurs so any shutdowns become highly localized. The City will also install larger pipes so as not to lose pressure in high demand conditions such as fighting fires.

Project Name	Status	
Water Distribution System Improvement	In Detail Design	
Pecos St. Water Line Replacement	In Progress	
East Loop MDF to Solid Waste	In Progress	
8 th St. (Terrace to Sperry)	In Planning	
North Gonzales (Valencia to Delgado)	In Planning	
Moreland (Legion to Christine)	In Planning	
Field E. of Hospital (Harris to Mtn. View)	In Planning	
7 th St. (Dianne to Mtn. View)	In Planning	
Alley between 4 th & 5 th (Colombia to Baca)	In Planning	
Pressure Reducing Valve	On Going	
Bulk Water	Complete – 2015	
Luna Bypass	Complete – 2015	
Valencia	Complete – 2015	
Diamond and 12 th Loop	Complete – 2015	
12 th / Douglas Cap	Complete – 2015	
12 th / Columbia EZ Valve	Complete – 2015	
12 th / National EZ Valve	Complete – 2015	
12 th / National Loop	Complete – 2015	
11 th / National Loop	Complete – 2015	
11 th / National Plug	Complete – 2015	
Bridge St. Hydrant	Complete – 2015	
Double Set Meter Bridge St.	Complete – 2015	
Pecos Line Replacement 800 to 900 Block	Complete – 2015	
Large Meter Replacement	Complete – 2015	
1407 ½ 10 th St. Hydrant Install	Complete – 2015	
Grant \$	Your Rate \$	Estimate \$
\$172,000	\$57,500	\$1,900,000



DISTRIBUTION

PER Phase 1/Priority

ANNUAL LEAK REPAIR & REPLACEMENT

Over 100 miles of distribution pipes are very old and are subject to leaks that result in loss of precious water. The PER recommended a regular annual budget to address leak detection and repair. Distribution losses are currently estimated at 25%.

Project Name		Status
Annual Leak Repair/Replacement		In Detail Design
Grant \$	Your Rate \$	Estimate \$
\$223,500	\$74,500	\$3,328,000



Construction of water distribution improvements on East Loop. To prevent leaks, to improve water circulation, and to improve pressure for firefighting, both new and replacement pipes are needed.



WATER TREATMENT PLANT BUILDING REPAIRS

The fresh water treatment plant building was observed to have some structural problems, probably from settling. These were remedied to prevent further damage. In addition, other relatively minor fixes are needed.

Project Name		Status
WTP Building Repairs		Complete – 2015
Alum Tank Cover		Complete – 2015
Electrical at Alum Building		Complete – 2014
WTP Office Porch		In Planning
Grant \$	Your Rate \$	Estimate \$
\$202,500	\$67,500	\$270,000



Water Treatment Plant Building Repairs. Settling cracks and other structure maladies were repaired at the fresh water treatment plant near the reservoirs.



CONSERVATION

NON-PER PROJECT

An important project not explicitly addressed by the PER because it was already in progress. Besides reducing labor costs and errors in meter reading, this project will attract attention to customer leaks by detecting unusually large or unusual off hour use of water.

Project Name		Status
Automatic Meter Reading & Analysis System		Complete – 2014
Grant \$	Your Rate \$	Estimate \$
\$825,000	\$275,000	\$1,100,000



Automatic Meter Reading & Analysis System Installation. Some 5000 automated meters now are interrogated by drive-by trucks to provide records of use. The system enables prompt leak detection, more accurate billing and lower labor costs.

Completed Projects 2011-2013



STORAGE

Project Name	
Peterson Pump Back System	Replace 24" Meter
Repair Valve Leak in Pump House	Repair 12" Bypass Line at Settling Basin
Geotechnical Investigation	Convert TESCO PLC & Rotork Actuator RW



SURFACE WATER

Project Name	
HACH CL17 Analyzer in Filter Building	Lagoon Pump for Repair
NMDOH Compliance Inspection	Replace Float – Miox System



REUSE/RECYCLE

Project Name	
Effluent Rodriguez Park – 2100'	Effluent Bore to Islands at Plaza Park (4)
Effluent Cinder Road – 1410'	Melody Park Effluent Service
Effluent Pipes, Valves MMS – 800'	Install Effluent Tap 12 th St.
10K gal Effluent Tank MMS Field	Install Effluent Tap 905 12 th St.
10K gal Effluent Tank WLV Field	Install 240' Effluent Main, 12 th St.
Effluent to NMHU Baseball Field	Install 240' Electrical Conduit 12 th St.

Completed Projects 2011-2013



GROUND WATER

Project Name	
Drill Taylor Well #2R	Replace PLC at Taylor Well #4
Rehab Taylor Well #2	Replace PLC at Valencia Station



DISTRIBUTION

LEAK REPAIR & REPLACEMENT

Project Name			
901 Palo Verde St.	Railroad Ave.	1331 Reynolds	7 th St.
414 Washington St.	8 th St.	Legion & 8 th St.	Valencia St.
Santa Fe St.	Mullins Dr.	Rita Dr.	8 th St.
Chico Dr.	1622 5 th St.	N. Gonzales St.	El Llano Rd.
1 st & Baca St.	NMHU/9 th St.	N.M. Ave.	Placitas del Llano Rd.
Vegas Dr.	West Dr.	Anderson St.	Dolores St.
Commerce St.	Dalby Dr.	Water Plant	Montana del Fibre
Harris Dr.	Sabino St.	Colorado & 8 th St.	121 Independence
Pecos St.	Perez St.	Chavez St.	135 Independence
Baca St.	Blanchard St.	Baca St.	8 th St.
Colorado St.			

Completed Projects 2011-2013



DISTRIBUTION

WATER SYSTEM IMPROVEMENTS

Project Name		
Install 6" Tap to Valencia St.	Install 6" Tap to Rio Arriba St.	Static Test on all Hydrants
Water Main Replacement – Railroad Ave. – 3000'	Connect New Main at Columbia to 4 th St. Alley	Replace Various Water Meter Boxes
Valve Maint. – Baca, 3 rd , 7 th , University, E. National	Install New Fire Tap at Tractor Supply Center	Renew 4 Dbl. Setters after Rita Dr. Main Repl.
Leak Survey 16' River Crossing	Leak Survey Well Field Transmission Line	Taps and Service Renewals Rita Dr. – 530'
Leak Survey Montezuma Main	Install 6" Water Tap – Dolores St.	Install 6" Gate Valve – Silva St.
Paint Various Fire Hydrants	Install Water Main Silva/Dolores St. – 610'	Install Water Main Silva St. – 790'
Install In-Line EZ Valve on Washington Ave.	Install Water Main Montezuma St. – 1240'	Install New Fire Hydrant Silva St.
Install PVC pipe on Encino – 485'	Replace Fire Hydrant 4 th St. /Columbia Ave.	Replace Fire Hydrant McRae St.
Install 2 New Fire Hydrants Montezuma St.	Replace Fire Hydrant Independence Ave.	Replace Fire Hydrant Alamo/McRae St.
Replace Fire Hydrant Grant St./Salazar St.	Replace Fire Hydrant Moreno St.	Relocated Services (4)
Replace Fire Hydrant Mullins Dr.	Replace Fire Hydrant Pecos St	Renew Services (68)
New Services (29)	Removed Services (9)	

CITY OF LAS VEGAS WATER ENHANCEMENT PROGRAM

ensuring a sustainable
water supply for our
community



BENEFITS of **Sustainable Water**

- **Better Quality and Taste**
 - **Beautification of Homes and Community**
 - **Reduced Water Restrictions**
 - **Enhanced Fire Protection**
- 
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AREAS of **IMPROVEMENT**



Conservation



Storage



Surface Water



Ground Water



Distribution



Reuse/Recycle

The City has identified six categories of significance, all of which must be improved to allow the City to reliably deliver quality water in sufficient quantities

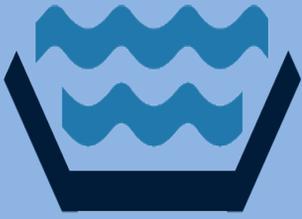


CONSERVATION



The first step to ensure a sustainable water supply is to use existing water conservatively. There are many ways to decrease water consumption and it is easy for each of us to do our part.

- **Projects:**
 - Automated Meter Reading
- **Programs**
 - Home Audits
 - Water Usage Graphs
 - Free high efficiency toilets for qualifying customers
 - Free water savings kits

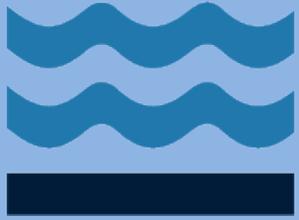


STORAGE



The City's current water storage system does not have the ability to divert all river water available to us. The Water Enhancement Plan calls for increasing our water storage capacity

- **Projects:**
 - **Raw Water Conveyance**
 - **Bradner Dam Rehabilitation**
 - **Peterson Dam Replacement**
 - **Storrie Lake Storage**

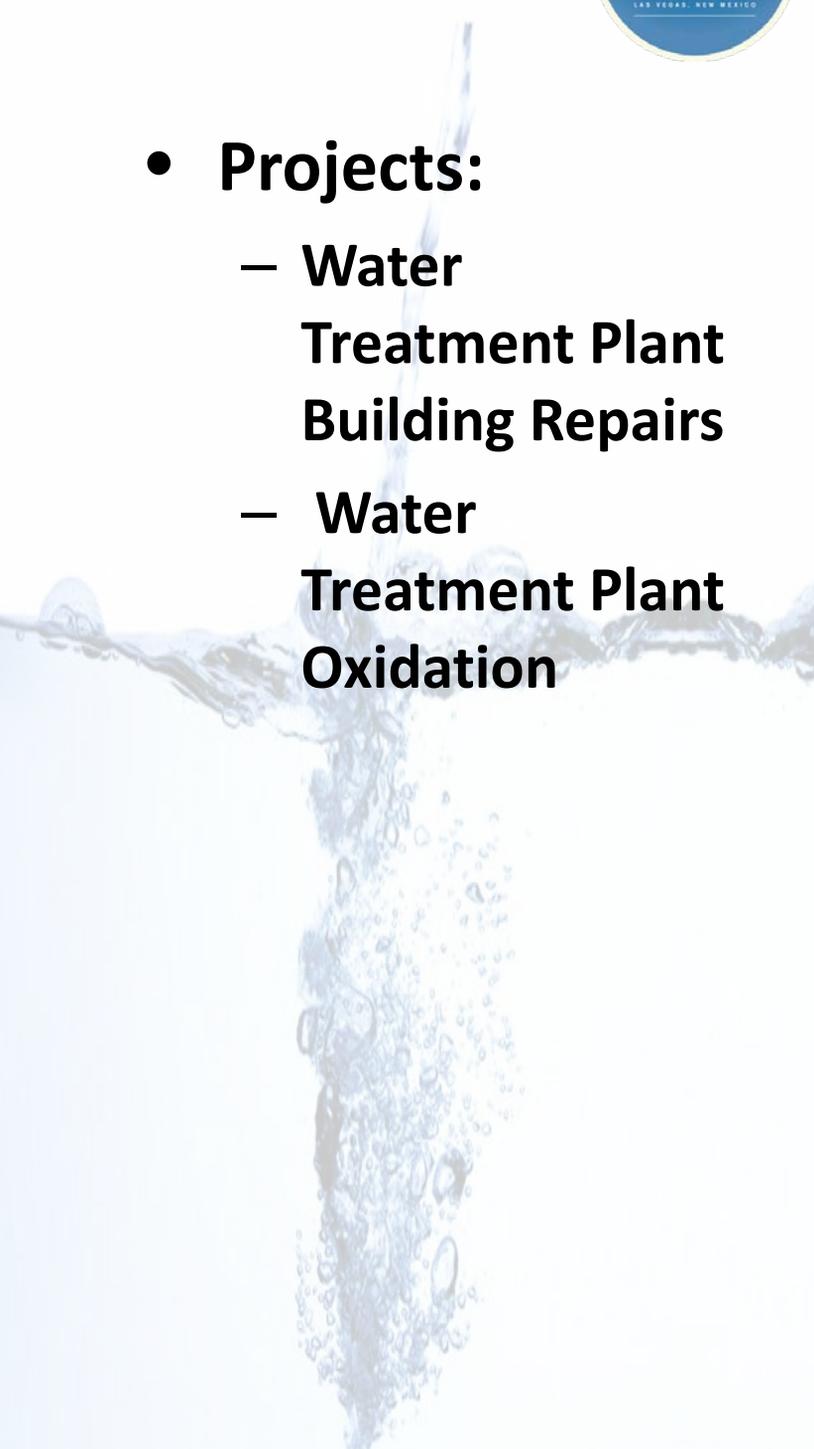


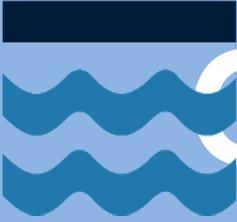
TREATMENT



The City is working to purify diverted and captured water to make it suitable for drinking and other practical uses.

- **Projects:**
 - **Water Treatment Plant Building Repairs**
 - **Water Treatment Plant Oxidation**





GROUND WATER



Las Vegas has been pumping water from the Taylor Well Field since its construction in the 1950's. To ensure an adequate supply of ground water, the City will tap new wells to make alternative sources available.

- **Projects:**
 - **Groundwater Production Taylor Well Field**
 - **Rehabilitate Existing Well and Drill New Wells**
 - TW #2
 - TW #2R
 - TW 5
 - TW 6
 - TW 7



DISTRIBUTION



Our current distribution system of water pipes is outdated and inadequate. The City is laying new pipes to provide redundant routing to minimize water outages.

- **Projects:**
 - **Water Storage Tanks Inspect & Rehab**
 - **Water Distribution Improvements**
 - **Looping**
 - **Line Repair**
 - **Line Replacement**



REUSE / RECYCLE



Water that has been used doesn't have to be wasted. The City is developing systems to recycle and reuse water to enhance the beauty of our community.

- **Projects:**
 - North Grand Effluent Booster Station
 - Hanna Park
 - Carnegie Park
 - South Park
 - Melody Park
 - Luna Storage Ponds
 - Reservoir Storage
 - Commercial & Residential Irrigation