



City of Carlsbad Municipal Water System

2016 Annual Consumer Report on the Quality of Your Drinking Water

For areas serviced by the Carlsbad Municipal and
Double Eagle Water Systems





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This is an **US EPA-required report** that is a result of an unfunded mandate added under the federal Safe Drinking Water Act amendment of 1996. The Safe Drinking Water Act (SDWA) was signed into law on December 16, 1974. The purpose of the law is to assure that the nation's water supply systems serving the public meet minimum national standards for the protection of public health.

This brochure explains how drinking water provided by the City of Carlsbad is of high quality. Included is a listing of results from water-quality tests as well as an explanation of where our water comes from and tips on how to interpret the data. This "Consumer Confidence Report" is required by law. We're proud to share our results with you. Please read them carefully.

Our drinking water currently meets or surpasses all federal and state drinking water quality standards.

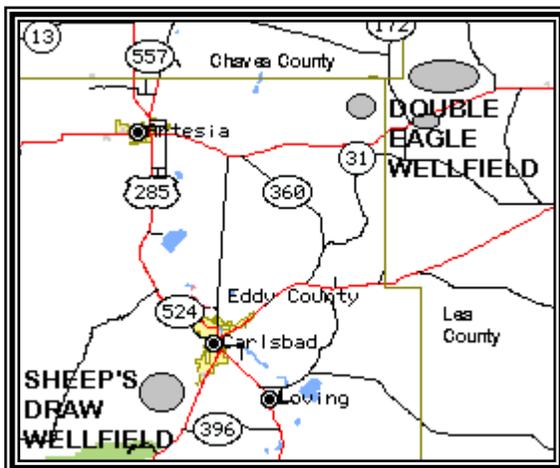
Overview

In 2015, your water department distributed 2.560 billion gallons of water to Carlsbad area customers. Our system consists of 1162 miles of water distribution and transmission lines spread throughout the Carlsbad area, Lea and Eddy Counties. The Water Department office is located at 1502 W. Stevens Street. City water main leaks should be reported to the Water Department Superintendent at 885-6313 (M-F, 7 AM to 4 PM) or the Police Department at 885-2111 (after hours, weekends, and holidays). Water billing is handled through the Finance Department at City Hall (101 N. Halagueno Street). Billing inquires can be directed to Customer Service at 887-1191 (M-F, 8 AM to 5 PM).

Water Sources

The City of Carlsbad is serviced by two separate well fields - Sheep's Draw and Double Eagle (see Map below). Approximately 98% of Carlsbad's water (identified as Zone 1 in Table below) is supplied by groundwater pumped from 9 wells located 7 miles southwest of Carlsbad in an area called Sheep's Draw in the foothills of the Guadalupe Mountains. These wells range in depth from 500 to 900 feet and pull water from the same limestone formation that the Carlsbad Caverns was formed in. This aquifer is called the Capitan Aquifer. The City of Carlsbad, under the authority of its ordinance (Ordinance 2000-13) maintains and enforces a Wellhead Protection Program to protect your water from contamination and depletion.

Map A: Geographic Location of Sheep's Draw and Double Eagle



The Double Eagle well system serves the Ridgcrest Subdivision, Connie Road, Blackfoot Road, as well as the Hobbs Highway Industrial Park Area, Brantley Lake State Park, and the Waste Isolation Pilot Plant and is supplied by groundwater pumped from 11 wells near Maljamar, NM in northwestern Lea County. These wells are 150-350 feet in depth. Double Eagle water comes from a hydrologic formation known as the Ogallala Aquifer.

The SDWA covers all public water systems with piped water for human consumption with at least 15 service connections or a system that regularly serves at least 25 individuals. The SDWA directed the U.S. Environmental Protection Agency (EPA) to establish national drinking water standards. These standards limit the amount of certain contaminants provided by public water. Food and Drug Administration (FDA) regulations establish limits for contaminants

in bottled water. All drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that the water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the [EPA Safe Drinking Water Hotline \(800-426-4791\)](tel:8004264791).

Table A: Well field Service Areas

ZONE 1- Serviced by the Sheep's Draw System	ZONE 2- Serviced by the Double Eagle System
Every service connection in City of Carlsbad located west of and on Muscatel Avenue	Oakwood Drive, Ridgecrest Drive, Connie Road, Old US Refinery Road, Blackfoot Road, and all service connections on Hobbs Hwy. east of Muscatel Avenue.
The La Huerta Area	The Waste Isolation Pilot Plant
Otis Water Coop customers using City water	Enron Pipeline Station off of US 62-180
All Standpipe-area service connections	Brantley Lake State Park

DEFINITIONS OF WATER QUALITY TERMS

Action Level - The concentration of a contaminant, which, if exceeded, triggers treatment or other requirements, which a water system must follow.

Non-Detects (ND) - Laboratory analysis indicates that the constituent is not present.

Parts per million (ppm) or Milligrams per liter (mg/L) - One part per million corresponds to one minute in two years or a single penny in \$10,000.

Parts per billion (ppb) - or Micrograms per liter (µg/L) - One part per billion corresponds to one minute in 2,000 years, or a single penny in \$10,000,000.

Parts per trillion (ppt) - or Nanograms per liter (nanograms/L) - One part per trillion corresponds to one minute in 2,000,000 years, or a single penny in \$10,000,000,000.

Parts per quadrillion (ppq) or Picograms per liter (picogram/L) - One part per quadrillion corresponds to one minute in 2,000,000,000 years, or a single penny in \$10,000,000,000,000.

Picocuries per liter (pCi/L) - Picocuries per liter is a measure of the radioactivity in water.

Millirems per year (mrem/yr) - Measure of radiation absorbed by the body.

Million Fibers per Liter (MFL) - Million fibers per liter is a measure of the presence of asbestos fibers that are longer than 10 micrometers.

Nephelometric Turbidity Unit (NTU) - Nephelometric turbidity unit is a measure of the clarity of water. Turbidity in excess of 5 NTU is just noticeable to the average person.

Variations & Exemptions (V&E) - State or EPA permission not to meet an MCL or a treatment technique under certain conditions.

Treatment Technique (TT) - A treatment technique is a required process intended to reduce the level of a contaminant in drinking water.

Maximum Contaminant Level - The "Maximum Allowed" (MCL) is the highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

Maximum Contaminant Level Goal -The "Goal" (MCLG) is the level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

Maximum Residual Disinfectant Level Goal - The "Goal" (MRDLG) is the level of a drinking water disinfectant below which there is no known or expected risk to health.

Maximum Residual Disinfectant Level - The "Maximum" (MRDL) is the highest level of a disinfectant allowed in drinking water.

How to Read These Tables

This report is based upon tests conducted as of December 31, 2015 by City of Carlsbad Public Water System and the New Mexico Environment Department. The first table refers to water tested from the Sheep's Draw System (see Table A, Zone 1). The second table refers to water tested from the Double Eagle System (see Table A, Zone 2). Terms used in the Water-Quality Table and in other parts of this report are defined below.

Key To Tables B & C below:

<p>AL = Action Level MCL = Maximum Contaminant Level MCLG = Maximum Contaminant Level Goal MFL = million fibers per liter NTU = Nephelometric Turbidity Units mrem/year = millirems per year (a measure of radiation absorbed by the body)</p>	<p>pci/l = picocuries per liter (a measure of radioactivity) ppm = parts per million, or milligrams per liter (mg/l) ppt = parts per trillion, or nanograms per liter ppb = parts per billion, or micrograms per liter (µg/l) ppq = parts per quadrillion, or picograms per liter TT = Treatment Technique</p>
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Table B: Sheep's Draw Contaminants. If you live or work in Zone 1 (see Table A above), use this table:

Contaminant	Date Tested	Unit	MCL What's Allowed	MCLG	Detected Level What's in your Water	Range What's in your Water	Major Sources	Violation
Inorganic Contaminants								
Arsenic	6/24/14	ppb	10	0	ND	ND	Erosion of natural deposits; Runoff from orchards; Runoff from glass and electronics production wastes	NO
Barium	6/24/14	ppm	2	2	0.074	0.074 – 0.074	Discharge of drilling wastes; Discharge from metal refineries Erosion of natural formations	NO
Chromium	6/24/14	ppb	100	100	ND	ND	Discharge from steel and pulp mills. Erosion of natural formations	NO
Copper	8/26/15	ppm	AL=1.3	1.3	0.12	0.0044- 0.17	Corrosion of household plumbing systems; erosion of natural deposits	NO
Lead	8/26/15	ppb	AL= 15	0	1.6	0.0 – 2.6	Corrosion of household plumbing systems; erosion of natural deposits	NO
Selenium	6/24/14	ppb	50	50	1.3	1.3	Discharge from petroleum and metal refineries; Erosion of natural deposits	NO
Thallium	6/24/14	ppb	2.0	0.5	ND	ND	Leaching from ore-processing sites; discharge from electronics, glass, and pharmaceutical companies	NO
Nitrate	7/14/15	ppm	10	10	ND	ND	Runoff from fertilizer use; Leaching from septic tanks, sewage; Discharge from mines. Erosion of natural formations	NO
Fluoride	6/24/14	ppm	4	4	0.25	0.25 - 0.25	Erosion of natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer and aluminum factories	NO
Nickel	6/24/14	ppm	10	10	ND	ND	Erosion of natural deposits, metal shops	NO
Sulfate	5/23/00	ppm	9,999	250**	108	60 – 108	Erosion of natural deposits	NO
Radioactive Contaminants								
Uranium	6/21/11	ppb	30	30	<1.0	<1.0	Erosion of natural deposits	NO
Alpha emitters	6/21/11	pCi/L	15	0	1.9	1.4 – 1.9	Erosion of natural deposits	NO
Beta/photon emitters	6/21/11	pCi/L	50	0	1.5	1.5	Decay of natural and man-made deposits	NO
Combined Radium 226/226	6/21/11	pCi/L	5	0	0	0	Erosion of natural deposits	NO
Disinfectant and Disinfection By-Products								
TTHMs [Total Trihalomethanes]	12/9/15	ppb	80	0	3.31	2.19 – 3.31	By-product of drinking water chlorination	NO
HAA5	12/9/15	ppb	60	0	0.665	0.135 – 0.665	By-product of drinking water chlorination	NO
Disinfectant								
Chlorine Residual	12/31/15	ppm	4	4	0.87	0.20 - 0.87	By-product of drinking water chlorination	NO
Asbestos								

Asbestos	12/23/13	ppm	7	7	ND	ND	Erosion of Asbestos Cement Pipe	No
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Water-Quality Table Footnotes

* Below current EPA MCL, levels of 10.0 ppb

** Unregulated, however, below suggested EPA Maximum Contaminant Level (MCL) of 250 ppm

Although we ran many other tests, only the listed substances were found.

Table C: Double Eagle Contaminants. If you live or work in Zone 2 (see Table A above), use this table:

Contaminant	Date Tested	Unit	MCL What's Allowed	MCLG	Detected Level What's in your Water	Range What's in your Water	Major Sources	Violation
Inorganic Contaminants								
Arsenic	1/15/14	ppb	10*	10	7.7	5.3 - 7.7	Erosion of natural deposits; Runoff from orchards; Runoff from glass and electronics production wastes	NO
Barium	1/15/14	ppm	2	2	0.14	0.093 – 0.14	Discharge of drilling wastes; Discharge from metal refineries Erosion of natural formations	NO
Chromium	1/15/14	ppb	100	100	ND	ND	Discharge from steel and pulp mills. Erosion of natural formations	NO
Selenium	1/15/14	ppb	50	50	3.4	2.8 – 3.4	Discharge from petroleum and metal refineries; Erosion of natural deposits	NO
Thallium	1/15/14	ppb	2.0	0.5	ND	ND	Leaching from ore-processing sites; discharge from electronics, glass, and pharmaceutical companies	NO
Nitrate	7/14/15	ppm	10	10	2.6	2.1 - 2.6	Runoff from fertilizer use; Leaching from septic tanks, sewage; Discharge from mines. Erosion of natural formations	NO
Fluoride	1/15/14	ppm	4	4	0.78	0.70 – 0.78	Erosion of natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer and aluminum factories	NO
Nickel	1/15/14	ppm	10	10	ND	ND	Erosion of natural deposits, metal shops	NO
Sulfate	5/4/00	ppm	9,999	250	51.00	51 – 51	Erosion of natural deposits	NO
Radioactive Contaminants								
Uranium	3/12/14	ppb	30	30	1.0	1.0	Erosion of natural deposits	NO
Alpha emitters	3/12/14	pCi/L	15	0	1.3	1.3	Erosion of natural deposits	NO
Beta/photon emitters	3/12/14	pCi/L	50	0	2.7	2.7	Decay of natural and man-made deposits	NO
Combined Radium 226/228	3/12/14	pCi/L	5	0	0.03	0.03	Erosion of natural deposits	NO
Disinfectant and Disinfection By-Products								
TTHMs [Total Trihalomethanes]	12/9/15	ppb	80	0.8	3.315	3.315	By-product of drinking water chlorination	NO
HAA5	12/9/15	ppb	60	1.0	0.668	0.668	By-product of drinking water chlorination	NO
Disinfectant								
Chlorine Residual	12/31/15	ppm	4	4	1.41	0.58 - 1.41	By-product of drinking water chlorination	NO

Water-Quality Table Footnotes

* The current EPA regulated MCL level of Arsenic 10.0 ppb. Arsenic is a naturally occurring mineral known to cause cancer in humans in high concentrations.

** Unregulated, however, below suggested EPA Maximum Contaminant Level (MCL) of 250 ppm

Although we ran many other tests, only the listed substances were found.

Explanation of Violations

No Violations. If a situation arises where the water is no longer safe to drink, you will be notified within 24 hours.

Unregulated Contaminants

During testing in December of 1994, our water showed a mean radon level of 111 to 132 picocuries per liter (pCi/l) for the Sheep's Draw System. Testing in October of 1998 showed a radon level of 95 to 197 pCi/l for Double Eagle System. The U.S. Environmental Protection Agency (EPA) is preparing a regulation, which will specify a Maximum Contaminant Level for radon. Radon is a radioactive gas that occurs naturally in ground water and is released from water into the air during household use. At high exposure levels it can cause lung cancer. Radon readings in our water are low and should not cause concern.

Required Additional Health Information

To ensure that tap water is safe to drink, EPA prescribes limits on the amount of certain contaminants in water provided by public water systems. FDA regulations establish limits for contaminants in bottled water. Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline (1-800-426-4791).

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and radioactive material, and can pick up substances resulting from the presence of animals or from human activity. Contaminants that may be present in source water include:

(A) Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.

(B) Inorganic contaminants, such as salts and metals, which can be naturally-occurring or result from urban storm runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.

(C) Pesticides and herbicides, which may come from a variety of sources such as agriculture, stormwater runoff, and residential uses.

(D) Organic chemical contaminants, including synthetic and volatile organics, which are by-products of industrial processes and petroleum production, and can also, come from gas stations, urban stormwater runoff and septic systems.

(E) Radioactive contaminants, which can be naturally occurring or be the result of oil and gas production and mining activities. In order to ensure that tap water is safe to drink, EPA prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. FDA regulations establish limits for contaminants in bottled water, which must provide the same protection for public health. Some people may be more vulnerable to contaminants in drinking water than is the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by Cryptosporidium are available from the Safe Drinking Water Hotline (800-426-4791).

(F) Arsenic above 5 up through 10 ppb: While your drinking water meets the current standard for arsenic, it does contain low levels of arsenic. The standard balances the current understanding of arsenic's possible health effects against the costs of removing arsenic from drinking water. The EPA continues to research the health effects of low levels of arsenic, which is a mineral known to cause cancer in humans at high concentrations and is linked to other health effects such as skin damage and circulatory problems.

Additional Information for Lead

If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. City of Carlsbad is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at <http://www.epa.gov/safewater/lead>.

Other Important Water Characteristics

Other water characteristics, which are not categorized as contaminants, are also tested. This information can be valuable for those on very specifically restricted diets, for determining how the water would serve in special applications such as photo developing, water softeners and other chemistry sensitive areas, or in balancing chemical characteristics in sensitive environments such as aquariums. The following is a summary of the test results as of the end of 2015.

Chemical Characteristic	Average Level	Comments
pH	7.27	Normal
Total Hardness	329 mg/L or about 19.24 grains/gallon	Moderately Hard
Chlorides	16 mg/L	Normal
Sulfates	56 mg/L	Normal for southeastern NM, above average nationally
Fluorides	0.38 mg/L	Normal
Specific Conductance	626 mmohs	Normal
Total Dissolved Solids	307 mg/L	Normal

National Primary Drinking Water Regulation Compliance

This report is an unfunded mandate required under the federal Safe Drinking Water Act amendment of 1996. Each year, the City is now required by the United States Environmental Protection Agency to distribute this report to all users of our water and publish a copy in the local newspaper. For more information, call the City of Carlsbad Environmental Services Department at 887-1191.

Public Participation:

Issues dealing with the planning for and protection of your water system are posted in the Council Agenda at the Carlsbad Municipal Building and decisions are made at the corresponding City Council Meetings. The Carlsbad City Council meets on the second and fourth Tuesday of every month at 6:00 PM in the Municipal Building's Council Chamber (101 N. Halagueno). If you are interested in participating in the planning and protection of Carlsbad's drinking water, please plan to attend one soon.

Other Water & Wastewater System News:

Water and Sewer Capital Improvement Plan Projects Update

The following capital improvements projects are currently in progress or recently completed:

1. High Pressure Loop Extension ~ \$3,622,282.00, completed.
2. Double Eagle Waterline Phase 2 Improvements ~ \$14,255,184.00, completed.
3. Double Eagle Waterline Phase 1 Improvements, completed.
4. Sewer Lift Stations to Stevens, Hagerman, Bataan, Pate and Hall Addition ~ \$2,289,686.00, evaluating bids.
5. Wastewater Effluent Reuse ~ \$529,591, under construction.
6. Double Eagle SCADA – under construction, completion date is end of May 2016.
7. Double Eagle Wells Replacement Phase III – construction underway, drilling phase completed.
8. Double Eagle Wells Replacement Phase IIB – in design phase.
9. Sewer Interceptor – design phase completed, out to bid in June 2016.
10. 8th Street Water Line Project – in preliminary design.

Groundwater Monitoring Program

The Water Department continues to monitor groundwater levels and ground water quality for any changes that may adversely impact your drinking water. Long, prolonged periods of drought such as the current event, have a negative impact on groundwater levels. The groundwater monitoring program supports the water conservation ordinance recently implemented by the City.

Source Water Assessment & Protection Program (SWAPP)

The Carlsbad Municipal water system is well maintained and operated, and sources of drinking water are generally protected from potential sources of contamination based on well construction, hydrogeologic settings, and system operations and management. The susceptibility rank of the entire water system is **Moderate**. The SWAPP Report is intended primarily to provide water utility companies, and water customers with information about the susceptibility of their water supplies to contamination. The report was provided to the Carlsbad Municipal Water System and is available through the State of New Mexico Environment Department Drinking Water Bureau, 525 Camino de Los Marquez, Suite 4, Santa Fe, NM 87505. Copies may also be requested by emailing the Drinking Water Bureau at SWAPP@nmenv.state.nm.us or by calling (505) 827-7536 (toll free 1-877-654-8720). Please include your name, address, telephone number, and email address, and the name of the Water System. NMED-DWB may charge a nominal fee for paper copies.

Leak Detection and Conservation Tips

Whose responsibility is it to fix leaks?

That depends on where the leak is located. The Water Department is responsible for leaks on the street side of the water meter and in the meter pit. Leaks from the connection to the water meter to the home, as well as leaks inside the home are the responsibility of the customer. It is very important to repair leaks as quickly as possible. Ignoring leaks can waste a great deal of water, cause significant property damage and can be costly to the consumer. Quickly addressing leaks will save water and money.

Check for leaking toilets

Leaking toilets are the number one source of wasted water in the home. A leaky toilet tank wastes between 300 gallons (slow leak) and 60,000 gallons (running toilet) per month. To detect a slow leak, put food coloring in the toilet tank and wait 15 minutes without flushing. If the water in the bowl turns color, your toilet tank is leaking. The Water Department recommends you perform this test at least twice a year.

Check for Underground Leaks

An underground water leak due to a broken pipe or faulty coupling can be very costly because the water loss is not always easy to spot. Careful attention to the signs of a water leak can help minimize costly water leaks.

1. Be aware of your normal consumption patterns. The new utility bill format (April 2004) provides your water usage for the previous year.
2. Search for unusual soggy spots in the general vicinity of your water line.

Check for leaky faucets, showers and hoses

Worn Plumbing fixtures waste a great deal of water and can be costly to the consumer. Check faucets and hose connections (i.e. at your washing machine) frequently. The figure below illustrates the potential water loss from leaky faucets:

Even a Small Leak Costs You Money			
Slow Leak	Steady Drip	Slow Stream	Steady Stream
			
450 gallons per month	750 gallons per month	3,000 gallons per month	12,000 gallons per month

High Water Bill? Here are some tips for lowering your water usage.

- Never use your toilet as a waste basket.
- Do not let the water run while shaving or brushing teeth.
- Take short showers instead of tub baths.
- Keep drinking water in the refrigerator instead of letting the faucet run until the water is cool.
- Operate the dishwasher only when completely full.
- Use the appropriate water level or load size selection on the washing machine.
- Sweep driveways, sidewalks and steps rather than hosing off.
- Wash the car with water from a bucket.
- If you have a swimming pool, consider a new water-saving pool filter.
- Lower pool water level to reduce amount of water splashed out.
- Use a pool cover to reduce evaporation when pool is not being used.
- Repair all leaks. A leaky toilet can waste 200 gallons per day. To detect leaks in the toilet, add food coloring to the tank water. If the colored water appears in the bowl, the toilet is leaking.
- Install ultra-low flow toilets, or place a plastic container filled with water or gravel in the tank of your conventional toilet. Be sure it does not interfere with operation of the toilet's flush mechanisms.
- Install low-flow aerators and showerheads.
- Consider purchasing a high efficiency washing machine, which can save over 50% in water and energy use.
- Try xeriscaping. Plants, which are adapted to live in arid or semi-arid areas, require less water.
- Water your lawn in the early pre-dawn hours. On a hot day in Carlsbad, up to 50% of the water sprayed onto your lawn in the middle of the day can be lost to evaporation.

Description of Photos:

Front Cover, Top: Mainline Water Break

Front Cover, Bottom Left: DE Phase 1 Construction

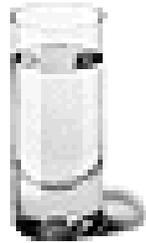
Front Cover, Bottom Right: DE Phase 1 Pipeline Installation

Back Cover, Top: Water Department Addition

Back Cover, Bottom: DE New Office and Shop



Water is Life



Help us Conserve and Protect it.

