

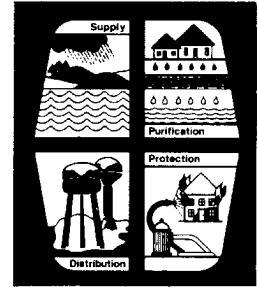


BUFFALO WATER AUTHORITY and

AmericanAnglian®

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BUFFALO, NEW YORK 14201

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1998 – 1999 Water Quality Report For the Calendar Year 1998

Buffalo Water Authority's Annual Water Supply Statement/Consumer Confidence Report

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Buffalo's Waterfront

Introduction:

The following is the fifth annual water quality report prepared by the Buffalo Water Board managed by AmericanAnglian. The purpose of this report is to answer consumer questions about the quality and safety of Buffalo's water, and to inform our customers and consumers about recent and future developments in Buffalo's water treatment process. Buffalo's water meets and exceeds the most stringent standards outlined by state and federal regulations. Find out more about Buffalo Water Authority on the internet website www.ci.buffalo.ny.us.

The Buffalo Water Board is committed to serving the community by revamping and modernizing the water treatment process to take advantage of the most effective and economical technology available. Many changes have recently taken place, and more will be undertaken in the near future in response to the changing environment and stricter government regulations.

New York State requires water suppliers to notify their customers and consumers about the risks of cryptosporidiosis and giardiasis. Cryptosporidiosis and giardiasis are intestinal illnesses caused by microscopic parasites. Cryptosporidiosis can be very serious for those with weakened immune systems, such as chemotherapy, dialysis or transplant patients, and people with Crohn's disease or HIV infection. People with weakened immune systems should discuss with their health care providers the need to take extra precautions such as boiling water, using certified

bottled water or a specially approved home filter. Individuals who think they may have cryptosporidiosis or giardiasis should contact their health provider immediately. For further information about cryptosporidiosis please see “Facts About *Cryptosporidium*” discussed in detail in this report.

For additional information on cryptosporidiosis and giardiasis, please contact: Erie County Health Dept., 95 Franklin Street, Buffalo, NY 14202, (716) 858-7677. We are eager to respond to any question or comments you may have. Please forward your remarks to: Water Quality Laboratory, 2 Porter Avenue, Buffalo, NY 14201, Tel: (716) 851-4704, Fax: (716) 851-4672.

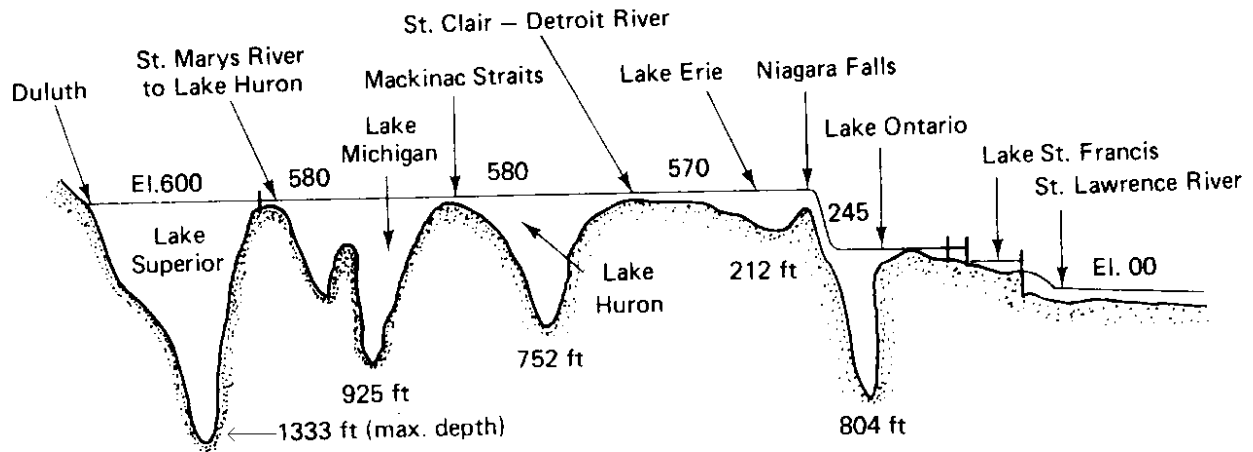
Raw Water Source:

The source of all Buffalo’s water is Lake Erie. Lake Erie is the shallowest of the Great Lakes, with an average depth of only 62-ft. It also has the shortest detention time of the Great Lakes. Water remains in the lake for only 2.6 years before it is replaced by fresh water (as compared with 191 years in Lake Superior or 22.6 years in Lake Huron).

⇒ **Lake Erie Facts**

Lake Erie is the 11th largest world lake & the 4th largest Great Lake (by surface area).

Length: 241 miles Width: 57 miles Avg. Depth: 62’
 Max Depth: 210’ Vol.: 116 miles³ Elevation: 569’
 Shoreline: 871 miles Surface area: 9,910 miles²
 Drainage Basin Area: 30,140 miles²
 Outlet: Niagara River & Welland Canal.



Water Treatment Process:

Buffalo’s water intake is located in Lake Erie at the mouth of the Niagara River. This region is known as the Emerald Channel, due to the sparkling clarity of the water. The water is gravity fed through a 12 x 12-foot conduit to an onshore screen house. There traveling screens remove large objects such as sticks and other debris that can damage pumps.

Gravity delivers the water through a conduit where chlorine, fluoride, and polyaluminum chloride (PACl) are added. Chlorine is used to disinfect the water, control zebra mussels and other organisms. Fluoride is added to guard against tooth decay. PACl is a chemical coagulant designed to cause fine particles in the water to bind together forming floc.

Pumps direct the rushing water to an underground basin for flocculation and sedimentation. Here the water is flocculated by mechanical mixers (large paddles) and travels to the settling basins where debris in the water is allowed to settle out by gravity.

The water, still containing some floc, is directed over rapid sand filter beds where filtration occurs, removing fine floc. A filter aid (an anionic polymer) is added to enhance filtration.

As the water leaves the plant, a corrosion control additive (a sodium orthopolyphosphate blend) is used. This serves as a shield against lead leaching into the water from aged residential water pipes and service lines.

The quality and safety of the water is tested by our in house laboratory at every stage of the treatment process. The water is then pumped through the water mains to the community, where further tests are conducted from samples taken throughout the city, including private homes, businesses and public facilities. This is done to ensure the water remains high in quality and safety.

Water Distribution:

Water is essential for all life. Besides drinking, bathing and recreation, water is used to fight fires, and has countless industrial applications. The City of Buffalo treats 33.7 billion gallons per year with an average of 90 million gallons each day to a population of over 310 thousand people covering 46 square miles of piping network. Water travels through 800 miles of pipes, 25,000 valves to 90,000 service connections and 7,800 fire hydrants. This enormous network of pipes, valves, service connections and hydrants is diligently maintained, day and night. In the past year we have replaced or renovated approximately 10 miles of water mains.



Customer Costs:

The billing rate for our customers is among the lowest in the region. The Buffalo Water Board charges \$1.27/1000 gal. for up to 67,325 gal purchased; \$1.15/1000 gal. for purchases between 74,805 and 269,300 gallons; and 89 ¢/1000 gal for purchases over 279,300 gallons. Seniors receive reduced rates of 77¢, 69¢ & 26¢ respectively.

As of September 1997 the Buffalo Water Board commissioned AmericanAnglian Environmental Technologies, LP to manage the Buffalo Water Authority. AmericanAnglian is a joint venture between American Water and Anglian Water. Together, they operate over 1000 treatment plants, servicing 13 million people in 5 continents. To insure continuing quality and safety in our community's water supply, the Buffalo Water Board plans the following improvements in 1999:

- Increase the capacity of our backwash pump station.
- Installation of Sludge thickeners
- Optimization of treatment to reduce costs
- Metering program: Metering will encourage water conservation and customers will be billed for actual water consumption
- Leak Detection – To reduce non-revenue water usage and the amount of water treated

Facts About Cryptosporidium:

Cryptosporidium is a parasite that lives and multiplies in the intestines of warm-blooded animals. Its eggs are shed through feces, where they can enter lakes, reservoirs and other sources of drinking water. When exposed to adverse conditions, these eggs can form a spore so rugged that they become impervious to even concentrated bleach.

Once the spore is ingested, an intestinal illness called *Cryptosporidiosis* may result. The incubation period may range from 1 - 12 days. *Cryptosporidium* can be spread by person-to-person, or animal-to person contact, and by drinking contaminated water.

Human *Cryptosporidiosis* was first reported in 1976. The primary symptom is acute diarrhea. Other symptoms include abdominal pain, vomiting, headache, loss of appetite and a low-grade fever.

Some persons infected with *Cryptosporidium* will not become ill, but others may be especially susceptible to *Cryptosporidiosis*. In most individuals with normal immune systems, symptoms generally persist for two weeks or less. But immunocompromised persons, including individuals receiving chemotherapy and kidney dialysis patients, persons on steroid therapy, and those with Crohn's disease or HIV/AIDS, may have severe and long-lasting illness.

Properly operated water treatment procedures are effective in providing a barrier to *Cryptosporidium* and other pathogenic microorganisms from reaching the distribution system. Due to their high resistivity to chlorine, normal disinfection methods are ineffective against these parasites. Proper filtration of these small tough organisms, including the coagulation and sedimentation processes, is the most important vehicle in their control and elimination.

Cryptosporidium is spread through contact with fecal matter. One can minimize the risk of acquiring and spreading this parasite by cleansing hands after fecal contacts such as after toilet use, diaper changing and picking up pet waste. Since cattle are a common source, avoid drinking raw milk, and cleanse hands after contact with any farm animals. Avoid drinking unfiltered water, and comply with any water advisory issued by local and state authorities. If uncertain about the quality of a water supply, exposing water to a rolling boil for at least one minute will kill *Cryptosporidium*.

Bottled water, unless distilled or certified for cyst removal may contain *Cryptosporidium*. Current standards for bottled water do not guarantee that it be *Cryptosporidium*-free.

If home water filters are used, filters should have a pore size of less than 2 microns. Home filters should be certified for cyst removal by the National Sanitation Foundation (NSF; Standard #53). **Consumer Tips:**

⇒ **Appearance**

- If your cold tap water appears brown or red it is probably mineral deposits dislodged caused by :
 - * a water main break
 - * water or sewer workers flushing fire hydrants
 - * vibrations caused by construction
 - * children playing with fire hydrants

To report these problems, call the water dept. at 851-4704 or 851-4747, 851-4748, 851-4749. Once the reason has been identified and the disruption of the water main has ceased, run your cold water tap until it clears.

- If your water appears cloudy in winter or early spring or during a water main break, it is most likely entrapped air. If the water is allowed to sit for a short while, the bubbles will rise to the surface and dissipate.

⇒ **Taste & Odor**

- After chlorination there remains minute amounts of chlorine, required by state and federal regulatory agencies to protect public health. The following are some ways to eliminate or improve this taste:
 - a) Place water in refrigerator, in an uncapped bottle.
 - b) Cool water to less than 60°F in the summer, cool water definitely tastes better.

Water Conservation:

Water is a vital and limited resource. It is crucial to conserve water and conserving water reduces water bills and protects our children's future from shortages. Severe shortages in many areas already exist. We must learn to conserve water now, to avoid severe shortages in the future. By saving water you reduce your water, sewer, and utility bills, while easing the burden on water storage, purification, distribution, and treatment. There are four basic ways to save water: economize; repair leaks; installs water saving devices; reuse water.

Water Saving Tips:

The following are some water saving suggestions that you may find useful:

- **Dishwashing:** Wash dishes in standing water after you wipe grease off dishes with a paper towel or cloth. Turn off faucet frequently, and you will save over 20 gallons of water a day. Soak pots and pans before washing
- **Tooth-brushing:** Don't let water run while your brushing your teeth. Rinse your mouth with water in a glass and you will save over a gallon of water each time you brush.
- **Shower & Bath:** Take showers instead of baths. Take shallow baths. Keep showers short with pressure at low force. Bathe small children together.
- **Toilet:** Flush only when necessary. Don't use as a wastebasket for cigarette butts or disposable diapers. Install water saving displacement devices.
- **Sink:** Fill bowl with water instead of letting water run when you wash or shave.
- **Laundry:** More than 10% of all water used in the home is used in the washing machine. Use the load selector to match water level to size of load. Try to wash full loads whenever possible. Presoak heavily soiled items. If buying a new washing machine, choose one with conservation features.
- **Cleaning:** Use a pail or basin instead of running water. Use sponge mops instead of string mops (uses less water for mopping and takes less water to keep clean).
- **Lawn & Garden:** Water slowly and thoroughly during cool, shady, and windless times of the day. Let grass grow taller in hot weather. Use judicious amounts of mulch in the garden and around shrubs to conserve moisture. Plant shrubs that don't need a lot of watering.
- **Car Washing:** Wet car quickly, turn hose off, wash car from a bucket of soapy water, and rinse quickly with hose.

Leak Detection:

- 4 Check the small red (leak detection) dial, found between the 7 & 8 on the face of the new water meter. If this dial is turning when you think the water is not being used, this indicates a leak somewhere inside the house.
- 4 Check for leaks from faucet. A slow drip can waste 15 to 20 gallons a day, fix it and save 6,000 gallons per year. Most leaks are caused by worn out washers, which often can be repaired by the homeowner.
- 4 Check for leaks from toilet tanks by putting a few drops of food coloring in the tank. Without flushing; wait 10 to 15 minutes; if the color shows up in the bowl, you have a leak. It's possible to lose up to 100 gallons a day from an "invisible leak", that's more than 30,000 gallons per year. Nearly 90% of all residential leaks are caused by leaks from toilet tanks.

- 4 Check for leaks from tub faucets and showers. Replacing showerheads with low flow models can save 5 to 10 gallons per minute.
- 4 Listen for a "hissing" noise on service lines at your water meter when no water is being used inside the house. You could have a water line that goes to another building, such as: (1) front house to rear building; (2) house to garage. If you suspect a problem, you should contact your plumber to check this out
- 4 Note that water loss due to leaks in a multi-family building are multiplied by the number of units in the complex.

Drinking Water Standards:

The Safe Drinking Water Act (SDWA) was passed in 1974 because of congressional concerns about organic contaminants in drinking water and uneven state supervision of public drinking water supplies. Last year we conducted over 15000 tests for over 80 drinking water contaminants. No contaminants detected were in violation of a Maximum Contaminant Level (MCL), a Treatment Technique (TT), or exceeding an Action Level (AL). A supplement of testing results titled "Buffalo Water Authority 1998-1999 Water Quality Report" is available at the Erie County Public Library or upon request at the Buffalo Water Authority.

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 EPA's Safe Drinking Water Hotline (800-426-4791).

The table below is a summary of test results for 80 drinking water contaminants. We are pleased to report that your water meets and exceeds all of the most stringent standards required by New York State Health Department (NYSDOH) and United States Environmental Protection Agency (USEPA)

Point of Use Test Results

Compounds	Allowed	Entry Point & Distribution			
Inorganics & Contaminants	MCL mg/l	Samples	Freq	Range	Ave mg/l
Aluminum	0.2	4	4	12-158	0.139
Antimony	0.006	2	Varies	ND	ND
Arsenic	0.050	2	Varies	0.001	0.001
Barium	2.000	1	1	0.022	0.022
Beryllium	0.004	2	Varies	ND	ND
Boron	NLS	1	1	ND	ND
Cadmium	0.005	2	2	ND	ND
Chloride	250	1	1	16.9	16.9
Chromium	0.100	4	4	ND	ND
Cobalt	NLS	2	Varies	ND	ND
Copper	1.300	57	Varies	ND-075	0.02
Cyanide	0.2	1	1	ND	ND
Fluoride	2.2	4010	Varies	18 - 1.25	0.94
Iron	0.3	4	4	ND	ND
Lead	0.015	57	Varies	ND-008	0.0017
Manganese	0.05	4	4	ND	ND
Mercury	0.002	1	1	ND	ND
Nickel	0.100	4	4	001-009	0.005
Nitrate-N	1	4	4	0-015	0.00375
Nitrite-N	10	4	4	0-18	0.085
Radon(pCi/L)	NLS	2	Varies	ND	ND
Selenium	0.050	2	Varies	ND	ND
Silver	0.100	2	Varies	ND	ND
Sodium	NLS	4	4	9	9
Strontium	NLS	1	Varies	0.14	0.14
Sulfate	250	1	1	21.4	21.4
Thallium	0.002	2	Varies	ND	ND
Turbidity (NTU)	5/5.0	2475	2190	05-7	0.16
Zinc	5	4	4	ND-01	0.0025
Gross Alpha (pCi/L)	15 pCi/L	1	1	1.8	1.8
Gross Beta (pCi/L)	30 pCi/L	1	1	2.8	2.8
Radium 226 (pCi/L)	5pCi/L	1	1	ND	ND
Radium 228 (pCi/L)	5pCi/L	1	1	ND	ND
UV254 (1/cm)	NLS	26	Varies	011-019	0.014
Organics					
Total THM's	0.1	24	20	017-044	0.027
Organics - POC's					
1.1.1.2-Tetrachloroethane	0.005	1	1	ND	ND
1.1.1-Trichloroethane	0.005	1	1	ND	ND
1.1.2.2-Tetrachloroethane	0.005	1	1	ND	ND
1.1.2-Trichloroethane	0.005	1	1	ND	ND
1.1-Dichloroethane	0.005	1	1	ND	ND
1.1-Dichloroethlene	0.005	1	1	ND	ND
1.1-Dichloroethene	0.005	1	1	ND	ND
1.2.3-Trichlorobenzene	0.005	1	1	ND	ND
1.2.3-Trichloropropane	0.005	1	1	ND	ND
1.2.4-Trichlorobenzene	0.005	1	1	ND	ND
1.2.4-Trichlorobenzene	0.005	1	1	ND	ND
1.2.4-Trimethylbenzene	0.005	1	1	ND	ND
1.2-Dichlorobenzene (ortho)	0.005	1	1	ND	ND
1.2-Dichloroethane	0.005	1	1	ND	ND
1.2-Dichloropropane	0.005	1	1	ND	ND
1.3.5-Trimethylbenzene	0.005	1	1	ND	ND
1.3-Dichlorobenzene (meta)	0.005	1	1	ND	ND
1.3-Dichloropropane	0.005	1	1	ND	ND
2.4.5-TP (Silvex)	0.010	1	1	ND	ND
2.4-D	0.050	1	1	ND	ND
Alachlor	0.002	1	1	ND	ND
Aldicarb	0.003	1	1	ND	ND
Aldicarb Sulfone	0.002	1	1	ND	ND
Aldicarb Sulfoxide	0.004	1	1	ND	ND
Atrazine	0.003	1	1	ND	ND
Benzo(a)pyrene	0.0002	1	1	ND	ND
Carbofuran	0.040	1	1	ND	ND
Chlordane, Total	0.002	1	1	ND	ND
Dinoseb	0.007	1	1	ND	ND
Diquat	0.020	1	1	ND	ND
Endrin	0.002	1	1	ND	ND
Heptachlor	0.0004	1	1	ND	ND
Heptachlor epoxide	0.002	1	1	ND	ND
Hexachlorobenzene	0.001	1	1	ND	ND
Lindane	0.0002	1	1	ND	ND
Methoxychlor	0.040	1	1	ND	ND
PCB, Total	0.0005	1	1	ND	ND
Pentachlorophenol	0.001	1	1	ND	ND
Simazine	0.004	1	1	ND	ND
Toxaphene	0.003	1	1	ND	ND
vinyl chloride	0.002	1	1	ND	ND
Organics - VOC's					
1.1.1.2-tetrachloroethane	0.050	1	1	ND	ND
1.1.1-trichloroethane	0.050	1	1	ND	ND
1.1.2.2-tetrachloroethane	0.050	1	1	ND	ND
1.1.2-trichloroethane	0.050	1	1	ND	ND
1.1-dichloroethane	0.050	1	1	ND	ND
1.1-dichloropropane	0.050	1	1	ND	ND
1.2.3-trichlorobenzene	0.050	1	1	ND	ND
1.2.3-trichloropropane	0.050	1	1	ND	ND
1.2.4-trichlorobenzene	0.050	1	1	ND	ND
1.2.4-trimethylbenzene	0.050	1	1	ND	ND
1.2-dichlorobenzene	0.050	1	1	ND	ND
1.2-dichloroethane	0.050	1	1	ND	ND
1.2-dichloropropane	0.050	1	1	ND	ND
1.3.5-trimethylbenzene	0.050	1	1	ND	ND
1.3-dichlorobenzene	0.050	1	1	ND	ND
1.3-dichloropropane	0.050	1	1	ND	ND
1.4-dichlorobenzene	0.050	1	1	ND	ND
2.2-dichloropropane	0.050	1	1	ND	ND
2-chlorotoluene	0.050	1	1	ND	ND
4-chlorotoluene	0.050	1	1	ND	ND
benzene	0.050	1	1	ND	ND
bromobenzene	0.050	1	1	ND	ND
bromochloromethane	0.050	1	1	ND	ND
bromomethane	0.050	1	1	ND	ND
carbon tetrachloride	0.050	1	1	ND	ND
chlorobenzene	0.050	1	1	ND	ND
chloromethane	0.050	1	1	ND	ND
cis-1.2-dichloroethene	0.050	1	1	ND	ND
cis-1.3-dichloropropene	0.050	1	1	ND	ND
dibromomethane	0.050	1	1	ND	ND

1,4-Dichlorobenzene (para)	0.005	1	1	ND	ND
2,2-Dichloropropane	0.005	1	1	ND	ND
2-Chlorotoluene	0.005	1	1	ND	ND
4-Chlorotoluene	0.005	1	1	ND	ND
4-Isopropyltoluene	0.005	1	1	ND	ND
Benzene	0.005	1	1	ND	ND
Bromobenzene	0.005	1	1	ND	ND
Bromochloromethane	0.005	1	1	ND	ND
Bromomethane	0.005	1	1	ND	ND
Carbon Tetrachloride	0.005	1	1	ND	ND
Chlorobenzene (mono)	0.005	1	1	ND	ND
Chloroethane	0.005	1	1	ND	ND
Chloromethane	0.005	1	1	ND	ND
cis-1,2-Dichloroethylene	0.005	1	1	ND	ND
cis-1,3-Dichloropropene	0.005	1	1	ND	ND
Dibromomethane	0.005	1	1	ND	ND
Dichlorodifluoromethane	0.005	1	1	ND	ND
Ethylbenzene	0.005	1	1	ND	ND
Fluorotrichloromethane	0.005	1	1	ND	ND
Hexachlorobutadiene	0.005	1	1	ND	ND
Isopropylbenzene	0.005	1	1	ND	ND
Methylene Chloride	0.005	1	1	ND	ND
n-Butylbenzene	0.005	1	1	ND	ND
sec-Butylbenzene	0.005	1	1	ND	ND
Styrene	0.005	1	1	ND	ND
tert-Butylbenzene	0.005	1	1	ND	ND
Tetrachloroethylene (PCE)	0.005	1	1	ND	ND
Toluene	0.005	1	1	ND	ND
trans-1,2-Dichloroethylene	0.005	1	1	ND	ND
trans-1,3-Dichloropropene	0.005	1	1	ND	ND
Trichloroethylene (TCE)	0.005	1	1	ND	ND
Xylenes, Total	0.005	1	1	ND	ND

dichlorodifluoromethane	0.050	1	1	ND	ND
ethylbenzene	0.050	1	1	ND	ND
hexachlorobutadiene	0.050	1	1	ND	ND
isopropylbenzene	0.050	1	1	ND	ND
methylene chloride	0.050	1	1	ND	ND
m-xylene	0.050	1	1	ND	ND
n-butylbenzene	0.050	1	1	ND	ND
o-xylene	0.050	1	1	ND	ND
p-isopropyltoluene	0.050	1	1	ND	ND
p-xylene	0.050	1	1	ND	ND
sec-butylbenzene	0.050	1	1	ND	ND
styrene	0.050	1	1	ND	ND
tert-butylbenzene	0.050	1	1	ND	ND
tetrachloroethane	0.050	1	1	ND	ND
toluene	0.050	1	1	ND	ND
trans-1,2-dichloroethene	0.050	1	1	ND	ND
trans-1,3-dichloropropene	0.050	1	1	ND	ND
trichloroethene	0.050	1	1	ND	ND
trichlorofluoromethane	0.050	1	1	ND	ND
vinyl chloride	0.002	1	1	ND	ND

Abbreviations Used

SOC = Synthetic Organic
 POC = Principal Organic Contaminant
 MCL = Maximum Contaminant Level
 NSL = No Set Limit
 < = Less than
 ND = Not Detected
 mg/l = milligrams per liter
 NTU = Nephelometric
 VOC = Volatile Organic Contaminant

Freq = Frequency
 Ava = Average

First Flange Resetter Installation



Old Flange meter on line before



Unbolting flanges to



Scrapping away old gasket



Placing resetter



Tightening flanges
to resetter

Tightening
couplings to new