CONTAMINATION SOURCES

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, in some cases, 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:

- **Microbial contaminants**, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
- **Inorganic contaminants**, such as salts and metals, which can be naturally-occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.
- **Pesticides and herbicides**, which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.
- **Organic chemical contaminants**, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, and septic systems.
- **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. Food and Drug Administration (FDA) regulations establish limits for contaminants in bottled water which must provide the same protection for public health.

The North Dakota Department of Health has prepared a Source Water Assessment for the city of Mandan's surface water intake and has classified Mandan's water system as moderately susceptible to potential contaminant sources. It should be noted that historically, the city has effectively treated its source water to meet drinking water standards and the risk for potential contamination is low. Information about the Source Water Assessment is available by calling 701-225-9149 or 888-425-0241, or e-mail us at swa@swwater.com.

About SWA’s Quality Water

At SWA, our highest priority is your family's health where drinking water is concerned. With that thought in mind, SWA is pleased to report that this water system was in compliance with all drinking water regulations in 2016. SWA wants all of our valued customers to be informed about this water utility, therefore if you have any questions about this report or any other concerns, please contact Ken Knight, Water Treatment Plant Operator or Sandy Burwick, CFO/Office Administrator at 888-425-0241 or e-mail us at swa@swwater.com.

In order to allow individuals who consume SWA’s drinking water, but who do not receive water bills, to learn about this water system, we would appreciate large volume water customers to post copies of this report in conspicuous locations or distribute them to tenants, residents, patients, students, and/or employees.

Source and Treatment

The water source for the Crown Butte Pocket is surface water obtained from the Missouri River. The water is treated by the Mandan Water Treatment Plant using the following processes: clarification, softening, filtration, fluoridation, and disinfection. The Missouri West Water System purchases water from the city of Mandan for delivery to their customers. SWA then purchases water from Missouri West Water System for delivery to you, our valued customer.

Drinking Water Safety

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). More information about drinking water is available on EPA’s website at www.epa.gov/safewater.

Some people may be more vulnerable to contaminants in drinking water than 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/Centers for Disease Control and Prevention (CDC) guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline (800-426-4791).

What is a Consumer Confidence Report (CCR)?

This CCR is our annual water quality report that all community water systems are required to provide to their customers. It is based on the 1996 Amendments to the EPA’s Safe Drinking Water Act and the right to know provisions of that Act. As a customer of Southwest Water Authority, it gives you the opportunity to review your water quality annually. It also is provided to help you make informed choices about the water you drink. The report lets you know what, if any, contaminants are in the drinking water, and how they may affect your health.

Learn More

Visit our website at www.swwater.com to learn more about water quality. You are welcome to attend any of SWA’s regularly scheduled meetings, which are generally held on the first Monday of each month. If you are aware of non-English speaking individuals who need assistance with the appropriate language translation, please contact SWA at the number listed above. If you are interested in attending or would like to request agenda time, please contact SWA at the number listed above for information on time and location.
**DETECTED CONTAMINANTS**

EPA requires us to monitor for over 90 drinking water contaminants and those that were detected are listed in the table below. Test results are from 2016. The State does allow reduced monitoring for certain contaminants because their levels do not change significantly over time. For this reason, some of the test results may be more than one year old.

**DEFINITIONS AND ABBREVIATIONS**

- **Action Level (AL)** – The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.
- **Maximum Contaminant Level (MCL)** – The highest level of a contaminant that is allowed in drinking water. MCLs are set as close as possible to the MCLGs as feasible using the best available treatment technology.
- **Maximum Contaminant Level Goal (MCLG)** – 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 (MRDLG)** – The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.
- **Maximum Residual Disinfectant Level Goal (MRDLG)** – The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.
- **Micromhos per centimeter (umho/cm)** – A measure of conductivity.
- **Observations/field at 100 power (obsvns)**
- **Parts per billion (ppb)** – A measure of radioactivity.
- **Treatment Technique (TT)** – A required process intended to reduce the level of a contaminant in drinking water.
- **Unregulated Contaminants**

**SOURCEWATERWATER AUTHORITY’S TABLE OF DETECTED REGULATED CONTAMINANTS**

<table>
<thead>
<tr>
<th>Contaminant (units)</th>
<th>MCLG</th>
<th>MCL</th>
<th>Level Detected</th>
<th>Detection Range</th>
<th>Test Date</th>
<th>Exceedance or Violation?</th>
<th>Major Sources in Drinking Water</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alkalinity (ppm) Source/Water</td>
<td>N/A</td>
<td>TT</td>
<td>1.50</td>
<td>1.40-1.60</td>
<td>2016</td>
<td>N/A</td>
<td>Natural erosion, plant activities, and certain industrial wastes discharges</td>
</tr>
<tr>
<td>Total Organic Carbon (ppm) Source/Water</td>
<td>N/A</td>
<td>TT</td>
<td>4.90</td>
<td>3.80-4.90</td>
<td>2016</td>
<td>N/A</td>
<td>Naturally present in the environment</td>
</tr>
<tr>
<td>Total Organic Carbon (ppm) Finished Water</td>
<td>N/A</td>
<td>TT</td>
<td>3.00</td>
<td>2.10-3.00</td>
<td>2016</td>
<td>N/A</td>
<td>Naturally present in the environment</td>
</tr>
<tr>
<td>Turbidity (NTU)</td>
<td>N/A</td>
<td>TT</td>
<td>0.03</td>
<td>0.006</td>
<td>2016</td>
<td>100% of samples met turbidity limit</td>
<td>Soil runoff</td>
</tr>
<tr>
<td>Barium (ppm)</td>
<td>2.00</td>
<td>2.00</td>
<td>0.1111</td>
<td>N/A</td>
<td>2016</td>
<td>No</td>
<td>Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits</td>
</tr>
<tr>
<td>Fluoride (ppm)</td>
<td>4.00</td>
<td>4.00</td>
<td>0.14</td>
<td>N/A</td>
<td>2016</td>
<td>No</td>
<td>Discharge of natural deposits</td>
</tr>
<tr>
<td>Nickel-Nitrite (ppm)</td>
<td>10.00</td>
<td>10.00</td>
<td>0.03</td>
<td>N/A</td>
<td>2016</td>
<td>No</td>
<td>Runoff from fertilizer use; Leaching from septic tanks; Wastage of natural deposits</td>
</tr>
</tbody>
</table>

**Unregulated Contaminants**

- **Alkalinity, Carbonate (ppm)**
- **Bicarbonate as HCO3 (ppm)**
- **Calcium (ppm)**
- **Chloride (ppm)**
- **Conductivity, M/C (umho/cm)**
- **Magnesium (ppm)**
- **pH (pH)**
- **Potassium (ppm)**
- **Sodium (ppm)**
- **Sodium Adsorption Ratio (obsvns)**
- **TDS (ppm)**
- **Zinc (ppm)**

**DISTRIBUTED CONTAMINANTS**

- **Alkalinity (ppm) Source/Water**
- **Bicarbonate as HCO3 (ppm)**
- **Calcium (ppm)**
- **Chloride (ppm)**
- **Conductivity, M/C (umho/cm)**
- **Magnesium (ppm)**
- **pH (pH)**
- **Potassium (ppm)**
- **Sodium (ppm)**
- **Sodium Adsorption Ratio (obsvns)**
- **TDS (ppm)**
- **Zinc (ppm)**

**SOUTHWEST WATER AUTHORITY’S TABLE OF DETECTED REGULATED CONTAMINANTS**

<table>
<thead>
<tr>
<th>Contaminant (units)</th>
<th>MCLG</th>
<th>MCL</th>
<th>Level Detected</th>
<th>Detection Range</th>
<th>Test Date</th>
<th>Exceedance or Violation?</th>
<th>Major Sources in Drinking Water</th>
</tr>
</thead>
<tbody>
<tr>
<td>Copper (ppm)</td>
<td>1.00</td>
<td>1.00</td>
<td>1.21</td>
<td>0.08</td>
<td>2016</td>
<td>No</td>
<td>Nickel/materials in sludge handling systems; Erosion of natural deposits</td>
</tr>
<tr>
<td>Lead (ppb)</td>
<td>0</td>
<td>15</td>
<td>0</td>
<td>N/D</td>
<td>2016</td>
<td>No</td>
<td>Nickel/materials in sludge handling systems; Erosion of natural deposits</td>
</tr>
<tr>
<td>Chlorinated Solvents</td>
<td>MCLG = 4.0</td>
<td>MCL = 1.7</td>
<td>2.2</td>
<td>N/D</td>
<td>2016</td>
<td>No</td>
<td>Nickel/materials in sludge handling systems; Erosion of natural deposits</td>
</tr>
<tr>
<td>Trichloroethylene</td>
<td>0 &amp; 60</td>
<td>60</td>
<td>57</td>
<td>39.75-71.00</td>
<td>2016</td>
<td>No</td>
<td>Nickel/materials in sludge handling systems; Erosion of natural deposits</td>
</tr>
<tr>
<td>Total Volatile Acids (ppm)</td>
<td>0 &amp; 60</td>
<td>60</td>
<td>44</td>
<td>35.67-43.96</td>
<td>2016</td>
<td>No</td>
<td>Nickel/materials in sludge handling systems; Erosion of natural deposits</td>
</tr>
</tbody>
</table>

**SOUTHWEST WATER AUTHORITY’S TABLE OF DETECTED REGULATED CONTAMINANTS**

- **Copper (ppm)**
- **Lead (ppb)**
- **Chlorinated Solvents**
- **Trichloroethylene**
- **Total Volatile Acids (ppm)**

The drinking water is monitored 365 days a year, 24/7 for its quality.

**Source Water Microbiological Monitoring**

The city of Mandan conducted source water monitoring for Cryptosporidium, and E. coli as part of the Long Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR). The purpose of the LT2ESWTR is to protect public health from illnesses due to Cryptosporidium and other microbial pathogens. Cryptosporidium is a microbial pathogen found in surface water though out the U.S. Although filtration removes Cryptosporidium, the most commonly used filtration methods cannot guarantee 100% safe removal. In accordance with this rule Cryptosporidium, and E. coli samples were taken monthly from October through December of 2016 from the raw water line and analyzed by certified laboratories. Results were used to determine “Tier” classification, which determines whether further treatment for Cryptosporidium is needed.