What You Can Do To Help Protect Our Water Resources

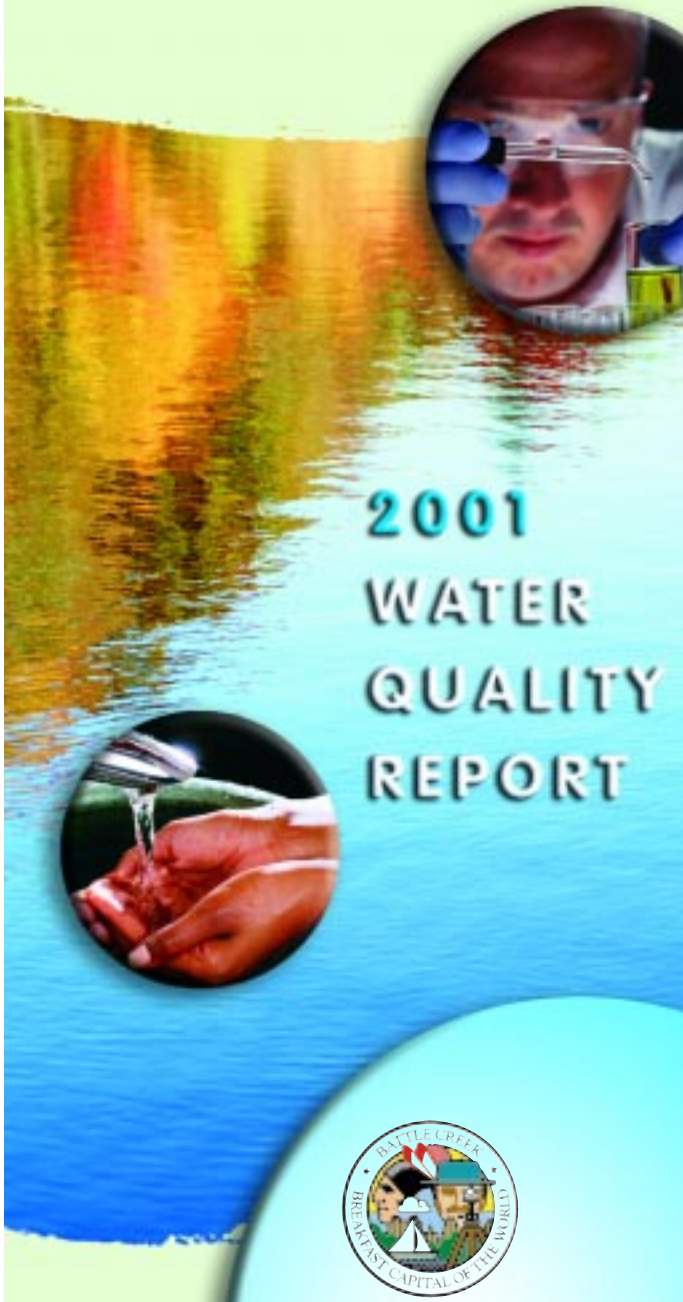
- **Properly dispose of household hazardous waste.** Never dump items such as used motor oil, fuel products, cleaners, paints, and pesticides on the ground or down the drain. They can contaminate groundwater and surface water. For a listing of Household Hazardous Waste Collection sites and dates in Calhoun County, contact the Calhoun County Environmental Health Department at (616) 969-6341.
- **When using fertilizers or pesticides, closely follow the instructions.** Over-application can cause these products to make their way into both surface waters and groundwater.
- **Septic System:** If you have a septic system, have it checked every two to three years to ensure it is working properly.
- **Fuel Storage Tanks:** Leaking aboveground and underground storage tanks are a major source of contamination. Check both regularly for leaks.
- **Abandoned Wells:** Properly close any abandoned wells on your property. They can act as conduits for contamination of groundwater.

How Is Our Water Treated and Purified?

The treatment process consists of a series of steps. First, raw water is pumped from the aquifer and sent to the iron removal system. Air is added to the water, which forces the iron to settle. The water is then filtered to remove the iron. After filtration, a phosphate product is added to control corrosion. The water is sent to an underground reservoir and is disinfected by chlorine. Finally, fluoride (used to prevent tooth decay) and chlorine (as an additional, precautionary disinfection measure) are added before the water is pumped to sanitized water towers and into your home or business.

City of Battle Creek
P.O. Box 1717
Battle Creek, MI 49016

United We Stand



2001 WATER QUALITY REPORT

Serving the City of Battle Creek, City of Springfield, Bedford Township, Emmett Township and a portion of Pennfield Township. Pennfield Township is generating a report for its water system.

PWS ID#: MI0000450

Our Mark of Excellence

We are once again proud to present to you our annual water quality report. Over the years, we have made it our objective to produce drinking water that meets or exceeds all state and federal drinking water standards. We continually strive to adopt new and better methods of delivering the best quality drinking water to you, our customer. As regulations and drinking water standards change, we are committed to incorporating these changes system-wide in a prompt and cost-effective manner. If you have any health concerns relating to the information in this report, we encourage you to contact your health care provider.

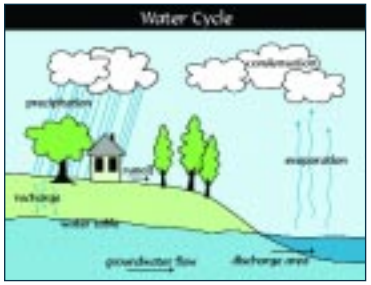
For more information about this report, please contact David Rich, Water Superintendent, at (616) 966-3481. The following contacts may also be used for non-Battle Creek residents: City of Springfield, (616) 965-2354; Bedford Township, (616) 968-6917; Emmett Township, (616) 968-0241.

Special Health Information

Some people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised persons such as people with cancer undergoing chemotherapy, people who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants may be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. The U.S. Environmental Protection Agency (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 at (800) 426-4791.

Where Does Our Drinking Water Come From?

The City of Battle Creek uses groundwater as its sole source of drinking water.



Courtesy of the Groundwater Foundation

What is groundwater?

Groundwater is water beneath the surface of the Earth that fills openings, known as pore spaces, in sand, gravel, or fractures of rock. Groundwater begins as precipitation, snow or rain that passes through the soil and accumulates.

What is an aquifer?

When enough water accumulates to supply a well, it is considered an aquifer. The City of Battle Creek obtains its water from the Marshall Sandstone Aquifer, a bedrock aquifer. It is the second largest producer of water from a single bedrock source in the state. The water is pumped from 22 wells in the Verona Well Field, which is located in the northeast part of Battle Creek. The water is treated at the Verona Water Treatment Plant and is pumped throughout the metro area from the Verona Pump Station. The City of Battle Creek also maintains a supplemental well field, for emergencies, located in the area between Columbia Avenue and the Airport. It is also in the Marshall Sandstone Aquifer.

Substances Expected to be in Drinking Water

To ensure that tap water is safe to drink, the U.S. EPA prescribes regulations limiting the amount of certain contaminants in water provided by public water systems. U.S. Food and Drug Administration regulations establish limits for contaminants in bottled water, which must provide the same protection for public health. Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of these contaminants does not necessarily indicate that the water poses a health risk.

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 can acquire naturally occurring minerals, in some cases, radioactive material, and substances resulting from the presence of animals or from human activity.

Substances 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, or wildlife;

Inorganic Contaminants, such as salts and metals, which can be naturally occurring or may 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 may also come from gas stations, urban stormwater runoff, and septic systems;

Radioactive Contaminants, which can be naturally occurring or may be the result of oil and gas production and mining activities.

For more information about contaminants and potential health effects, call the U.S. EPA's Safe Drinking Water Hotline at (800) 426-4791.

What's In Our Drinking Water?

We are pleased to report that during the past year, with the exception of copper (see the violation section below discussing the measures we are taking to address the problem), the water delivered to your home or business complied with, or did better than, all state and federal drinking water requirements. For your information, we have compiled a list in the table below showing what substances were detected in our drinking water during 2001. Although all of the substances listed below are under the Maximum Contaminant Level (MCL) set by the U.S. EPA, we feel it is important that you know exactly what was detected and how much of the substance was present in the water. The state requires us to monitor for certain substances less than once per year because the concentrations of these substances do not change frequently. In these cases, the most recent sample data are included, along with the year in which the sample was taken.

REGULATED SUBSTANCES

SUBSTANCE (UNITS)	YEAR SAMPLED	MCL	MCLG	AMOUNT DETECTED	RANGE (LOW-HIGH)	VIOLATION	TYPICAL SOURCE
Ethylbenzene (ppb)	2001	700	700	0.4	NA	No	Discharge from petroleum refineries
Fluoride (ppm)	2001	4	4	1.1	NA	No	Erosion of natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer and aluminum factories
TTHMs [Total Trihalomethanes] (ppb)	2001	100	0	33.7	11.5-56.9	No	By-product of drinking water chlorination
Total Coliforms (% positive samples)	2001	5% positive samples	0	1%	NA	No	Naturally present in the environment
Xylenes (ppm)	2001	10	10	0.0032	NA	No	Discharge from petroleum factories; Discharge from chemical factories

Tap water samples were collected for lead and copper analyses from 30 homes in the service area

SUBSTANCE (UNITS)	YEAR SAMPLED	AL	MCLG	AMOUNT DETECTED (90th%tile)	HOMES ABOVE AL	VIOLATION	TYPICAL SOURCE
Copper (ppm)	2000	1.3	1.3	1.37	4	Yes	Corrosion of household plumbing systems; Erosion of natural deposits; Leaching from wood preservatives
Lead (ppb)[1]	2000	15	0	5	2	No	Corrosion of household plumbing systems; Erosion of natural deposits

UNREGULATED SUBSTANCES

SUBSTANCE (UNITS)	YEAR SAMPLED	AMOUNT DETECTED	RANGE (LOW-HIGH)	TYPICAL SOURCE
Bromoform (ppb)	2001	1.4	0.6-1.8	By-product of drinking water chlorination
Chlorodibromomethane (ppb)	2001	9.3	4.0-12.1	By-product of drinking water chlorination
Chloroform (ppb)	2001	10.8	2.3-23.8	By-product of drinking water chlorination
Dibromomethane (ppb)	2001	12.2	4.0-19.4	By-product of drinking water chlorination
Sodium (ppm)	2001	12	NA	Naturally present in the environment;

Table Definitions

AL (Action Level): The concentration of a contaminant, which if exceeded, triggers treatment or other requirements that a water system must follow.

MCL (Maximum Contaminant Level): 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.

MCLG (Maximum Contaminant Level Goal): 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.

NA: Not applicable

ppb (parts per billion): One part substance per billion parts water (or micrograms per liter).

ppm (parts per million): One part substance per million parts water (or milligrams per liter).

Should I be concerned about sodium in my drinking water?

No. Sodium levels in drinking water from most public water systems are unlikely to be a significant contribution to adverse health effects. According to the MDEQ, water is rated excellent with respect to sodium if test results are 20 ppm or lower.

Community Participation

We encourage you to call with any

				Road salting
Sulfate (ppm)	2001	58	NA	Naturally present in the environment

[1]Infants and young children are typically more vulnerable to lead in drinking water than the general population. It is possible that lead levels at your home may be higher than at other homes in the community as a result of materials used in your home's plumbing. If you are concerned about elevated lead levels in your home's water, you may wish to have your water tested and flush your tap for 30 seconds to 2 minutes before using tap water. Additional information is available from the Safe Drinking Water Hotline (800-426-4791).

We questions, comments, or concerns relating to our drinking water. Also, please call us for information on individual and group tours of our water production and treatment facilities at (616) 966-3481.

How is Our Drinking Water Protected?

To protect the drinking water in our area, the City of Battle Creek adopted a Wellhead Protection Plan for both of our well fields,
our primary well field, Verona, and our supplemental well field, Columbia. The plan was developed by a committee consisting of citizens with an interest in protecting our water resources. In October 2001, the plan was approved by the Michigan Department of Environmental Quality (MDEQ) through its Wellhead Protection Program.

It has several key elements:

Wellhead Protection Area Delineations (WHPA):
This is the area that contributes groundwater to the well field and it is determined based on a ten-year time of travel. In other words, the delineation shows how large of an area from which contaminants can affect the public water supply.

Sources of contamination within the protection area:
These are known sources and potential sources of contamination, such as leaking underground storage tanks, failed septic tank systems, hazardous chemicals from industrial sites, transportation accidents, and mismanaged manure operations. Through this process, the city identified 20 known sites of contamination, 63 sites of known or suspected significant hazardous substance use, and 64 oil and gas well sites.

Management of the WHPA:
Management of the area provides a mechanism for preventing the existing and potential sources of contamination from impacting our public water. Management strategies include the inclusion of wellhead protection in the Community Master Plan, properly closing abandoned wells within the WHPA, using Geographical Information System (GIS) mapping, proper firewater containment and site plan review.

Contingency Plan:
Should a contamination incident occur threatening our community's water supply, a contingency plan has been developed for three scenarios: routine monitoring discovery; contaminant release from a site within the protection area; and chemical spills from a transportation accident.

Water Resource Education:
As another crucial element of the WHPA, education efforts will be geared toward the following audiences: the general public, area schools, city employees, township representatives, business/industry, and the agricultural community. Look for our logo, "Clean Water. You Make The Difference." It will be identified with water protection activities
throughout our area.

The city is proud of achieving an approved Wellhead Protection Plan for our area. The plan provides a vehicle for keeping
our drinking water safe!

MCL Violation for Copper

During routine testing in June of 2000, we found that the copper levels had exceeded the Action Level. Higher than expected copper levels can be caused by corrosive water. Exceeding the Action Level requires the City to do a Corrosion Control Study. The study was started at once to determine the most effective way to reduce the corrosiveness of the water. In October of 2000, the City started adding a phosphate product to the water that is known for corrosion control. Preliminary test results in our 10 highest locations show the copper level is again below the Action Level. The City is continuing to study and adjust the process to achieve optimal corrosion control. We hope to do a complete round of compliance monitoring in the third quarter of 2002 to demonstrate that the copper level is indeed below the Action Level.

When water is corrosive, it interacts with copper piping causing a small amount of the metal to dissolve into the water. Since corrosive water needs time to affect plumbing, water not in use for extended periods, such as overnight, will have higher levels. Anyone concerned about copper levels in their homes should let their faucets run several minutes to flush out the lines before cooking or drinking.

Copper is an essential nutrient, but some people who drink water containing copper in excess of the Action Level over a relatively short amount of time could experience gastrointestinal distress. Some people who drink water containing copper in excess of the Action Level over many years could suffer liver or kidney damage. People with Wilson's Disease should consult their physician about the dangers of excessive copper consumption.

If you have questions about the copper violation, please contact us at (616) 966-3494 or the Michigan Department of Environmental Quality at (616) 567-3500.

MI2517