

# ANNUAL WATER QUALITY REPORT

*Water testing performed in 2003*



*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

## Continuing Our Commitment

Once again we proudly present our annual water quality report. This edition covers all testing completed from January through December 2003. As in the past, we are committed to delivering the best quality drinking water. To that end, we remain diligent in meeting the challenges of source water protection, water conservation, and community education while continuing to serve the needs of all of our water users.

For more information about this report, or for any questions relating to your drinking water, please call David Rich, Water Superintendent, at (269) 966-3481. The following contacts may be used for non-Battle Creek residents: City of Springfield, (269) 965-2354; Bedford Township, (269) 968-6971; Emmett Township, (269) 968-0241.

## Source Water Assessment

A Source Water Assessment was conducted by the MDEQ in October of 2003 and showed the following about our water source.

The Columbia and Verona Well Fields possess a "moderately high" and "high" susceptibility to contamination, respectively. This determination is based on a geologic sensitivity analysis, on listed potential contaminant sources within the Wellhead Protection Area (WHPA), and on the following:

- No Maximum Contaminant Level (MCL) violations have occurred.
- The well construction meets standards.
- There are no potential contamination sources within the standard isolation area.
- The community has an active Wellhead Protection Plan (WHPP) that supports management of existing or potential sources of contamination in the WHPA.
- Known sources of contamination within the WHPA are being remediated to prevent movement of contamination to the municipal wells.

## What You Can Do To Help Protect Our Water Resources

• **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.



*Clean Water Clyde*

For a listing of Household Hazardous Waste Collection sites and dates in Calhoun County, contact the Calhoun County Environmental Health Department at (269) 969-6341.

• **Septic systems:** If you have a septic system, have it checked every two to three years to ensure it is working properly.

• **Fuel storage tanks:** Leaking of storage tanks both above and below ground level is a major source of contamination. Check tanks regularly for leaks.

• **Abandoned wells:** Properly close any abandoned wells on your property. They can carry contaminants directly to groundwater.

• **Landscape with nature:** Try landscaping with plants native to Michigan. They are well suited to our climate and are resistant to pests. They can reduce the need for irrigation and fertilizer application resulting in less runoff and more water conservation.

• **Pet waste:** Because pet waste can be high in bacteria and nutrients, it should be disposed of in a toilet or trashcan.

• **Don't guess, soil test:** Have your lawn soil analyzed for nutrient information. Over-application of fertilizers can cause these products to make their way into both surface waters and groundwater.

Information on other ways that you can help conserve water can be found at [www.epa.gov/safewater/publicoutreach/index.html](http://www.epa.gov/safewater/publicoutreach/index.html).

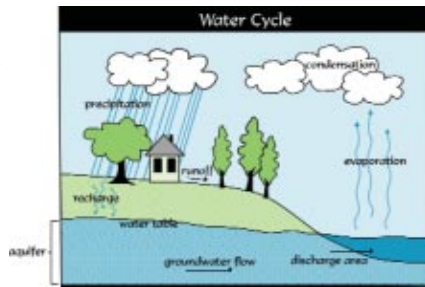
## Where Does My Water Come From?

The City of Battle Creek uses groundwater as its sole source of drinking water. Our water supply is part of the Kalamazoo River Watershed, which covers an area of roughly 2,020 square miles.

Most of the watershed is covered with agricultural and urban development. To learn more about our watershed on the Internet, visit [www.bcwater.com](http://www.bcwater.com), [www.kalamazooriver.net](http://www.kalamazooriver.net), or go to the U.S. EPA's Search Your Watershed at [www.epa.gov/surf](http://www.epa.gov/surf).

## 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 from snow or rain that passes through the soil and accumulates in the pore spaces.



*Courtesy of the Groundwater Foundation*

## 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. The water is pumped from 22 wells in the Verona Well Field and sent to the Verona Water Treatment Plant, which removes iron, radon, and manganese from the water. The treated water is then pumped throughout the metro area from the Verona Pumping Station. In addition, the City of Battle Creek maintains a supplemental well field, also in the Marshall Sandstone Aquifer.

## How Is Our Drinking Water Protected?

To protect the drinking water of our area, the City of Battle Creek adopted a Wellhead Protection Plan (Plan) for both of our well fields. The Plan was developed by a committee consisting of citizens with an interest in protecting our drinking water resources. Known as the Wellhead Protection Team (WHT), the group continues to meet to help implement the Plan, which has several key elements.

**Wellhead Protection Area Delineation (WHPA):** This is the area that contributes groundwater to the well field; it has been established as a protection zone.

**Sources of Contamination Within the Protection Area:** During the development of the Plan, the WHT assessed known 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. As a result, the team identified 20 known sites of contamination, 63 sites of known or suspected hazardous substance use, and 64 oil and gas well sites.

**Management of the WHPA:** Management of the WHPA provides a mechanism for preventing the

existing and potential sources of contamination from impacting our public water. Management strategies include the incorporation of wellhead protection language in the Community Master Plan, the promotion of the proper closure of abandoned wells, the enhancement of the site plan review process, and outreach to business and industry within the WHPA.

**Contingency Plan:** Should a contamination incident occur that threatens 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:** Education about water resource protection is an important aspect of the Plan and is key to its success. In addition to other educational efforts, small businesses located in either wellhead protection area have the opportunity to participate in a FREE, VOLUNTARY, and CONFIDENTIAL program, known as the Facility Risk Evaluation Program. Participants will receive an environmental evaluation of their business performed by a professional consultant. If you feel your business qualifies, call (269) 966-0712 for more information.

## How Is My Water Treated And Purified?

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

## Substances That Might 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.

## Important Health Information



Some people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised 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 may be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. The U.S. EPA/CDC (Centers for Disease Control and Prevention) 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.

## Sampling Results

During the past year we have taken hundreds of water samples to determine the presence of any radioactive, biological, inorganic, volatile organic or synthetic organic contaminants. The table below shows only those contaminants that were detected in the water. With the exception of copper (see the violation section below discussing the measures we have taken to address the problem), all of the substances listed here are under the Maximum Contaminant Level (MCL). 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
<b>Barium</b> (ppm)	2003	2	2	0.16	NA	No	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
<b>Fluoride</b> (ppm)	2003	4	4	1.2	NA	No	Erosion of natural deposits; Water additive that promotes strong teeth; Discharge from fertilizer and aluminum factories
<b>Selenium</b> (ppb)	2003	50	50	2	NA	No	Discharge from petroleum and metal refineries; Erosion of natural deposits; Discharge from mines
<b>TTHMs [Total Trihalomethanes]</b> (ppb)	2003	80	NA	31	19.4-46.7	No	By-product of drinking water disinfection

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

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

### UNREGULATED SUBSTANCES

SUBSTANCE (UNITS)	YEAR SAMPLED	AMOUNT DETECTED	RANGE (LOW-HIGH)	TYPICAL SOURCE
<b>Sodium</b> (ppm)	2003	10	NA	Naturally present in the environment; Road salting

<sup>1</sup>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 at (800) 426-4791.

## About Our Violation

**D**uring routine testing in June 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.

This study was started at once to determine the most effective way to reduce the corrosiveness of the water. In October 2000, the city started adding a phosphate product that is known to help control corrosion. Preliminary test results from the 10 highest locations show that the copper level is below the Action Level again. The city is continuing to study and adjust the process to achieve optimal corrosion control. We will be doing another complete round of compliance monitoring in 2004 to ensure that we are once again 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 takes 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 using water for 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 personal doctor.

If you have questions about the copper violation, please contact either the City of Battle Creek at (269) 966-3481 or the Michigan Department of Environmental Quality at (269) 567-3500.



## Table Definitions

**AL (Action Level):** The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which 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).