



Annual
WATER
QUALITY
REPORT

Reporting Year 2012



Presented By _____
Hardin County
Water District No. 1

PWS ID#: 0470393 & 0470990

There When You Need Us

We are once again proud to present our annual water quality report covering all testing performed between January 1 and December 31, 2012. Our employees bring almost 600 years of combined utility experience and are dedicated to producing drinking water that meets or exceeds all state and federal standards. We continually look for new methods for delivering the best-quality drinking water to you. As new challenges to drinking water safety emerge, we remain vigilant in meeting the goals of source water protection, water conservation, and community education while continuing to serve the needs of all our water users.

Please remember that we are always available to assist you should you ever have any questions or concerns about your water.

Recognition of Excellence

In 2012, we received four different state or regional awards recognizing our water and sewer operations and safety program at the Ft. Knox Wastewater Treatment Plant. Our Ft. Knox sewer operations (by Veolia Water / North America) was also featured in a cover article in a national magazine. An Award of Excellence for Customer Communications recognized our Consumer Confidence Report. We continually strive to improve and provide excellent customer service and high-quality water and appreciate the many peer and industry awards we have received.



Community Participation

You are invited to attend our regular Board of Commissioners meetings. They normally meet monthly on the third Tuesday of each month at the District's Customer Service Center located at 1400 Rogersville Road, Radcliff, KY. For more information about the meetings, contact Ms. Andrea Palmer at (270) 351-3222. Minutes of past board meetings are available on our Web site at www.HCWD.com.

Substances That Could Be in Raw 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.

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, 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.

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 may be obtained by calling the U.S. EPA's Safe Drinking Water Hotline at (800) 426-4791.

QUESTIONS?

For more information about this report, or for any questions relating to your drinking water, please call Ms. Amanda Spalding, Water Quality/Measurement Specialist, by phone at (270) 862-4340 or reach her by fax at (270) 862-5740. She can also be contacted via e-mail at aspalding@hcwd.com.

Lead in Home Plumbing

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. We are responsible for providing high-quality drinking water, but we 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 www.epa.gov/safewater/lead.

Partnership with Louisville Water Company

In 2008, we entered into a partnership agreement with the Louisville Water Company (LWC). The initial objective was to pursue the privatization effort for the Ft. Knox Water System (FKWS). This effort was successful, and we began operating the FKWS in February, 2012. Another agreement was signed with LWC which provides operations of the two FKWS WTPs, the raw water sources, and water quality monitoring and reporting for the FKWS. In May, 2012, we also entered into a Purchased Water Agreement with LWC. This agreement will allow us to purchase up to 3.5 MG daily from the LWC, as a back-up supply.

We also received a BRAC grant to build the interconnect facility between the HCWD1 and LWC systems. Final design is underway, and we hope to have completed it in late 2014. This interconnect facility could also provide water to the FKWS, should the U.S. Government decide to take advantage of the pump station and piping that is adjacent to and travels through the FKWS.

Where Does My Water Come From?

As of February 2012, we now own and operate the Ft. Knox Water System as well as our original Hardin County Water District No. 1 system. These systems include three water treatment plants (WTPs) and four separate water sources supplying these WTPs. The WTPs are the Pirtle Spring Water Treatment Plant (PWP), and the two WTPs on Ft. Knox: the Central (CWP) and Muldraugh (MWP) plants. At certain times of the year, the Ft. Knox WTPs provide water to our County system.

The source waters for the PWP are the Pirtle Spring, located at the plant site, and the Head of Rough Spring, located about 1.5 miles from the plant. The MWP is supplied by 15 deep underground water wells located on the West Point aquifer near the Ohio River. The CWP can be supplied by a surface water source near Otter Creek known as McCracken Spring, as well as by the same well sources that supply the MWP.

During 2012, a total of 1,782 MG (million gallons) of potable water was treated and a total of 51.3 MG was purchased for resale to other water systems. Total water delivered to the County and Ft. Knox systems was 1,833.7 MG. The maximum demand day was 9.085 MG, on 1 July. The average daily water demand for the year was 5.024 MG. Wholesale customers purchased 336.6 MG (+ 1.6%), which was equivalent to 37 percent of total water sold.

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 or <http://water.epa.gov/drink/hotline>.

Missed Monitoring

During February and March 2012, we did not monitor for total organic carbon (TOC) at our Ft. Knox Central WTP. Upon being notified of this violation by the KY Division of Water, we immediately analyzed our water supply for the TOCs. Results of the analysis have been received and properly recorded as required by state and federal law. We do not believe that missing this monitoring requirement had any impact on public health and safety. We have already taken the steps to ensure that adequate monitoring and reporting will be performed in the future so that this oversight will not be repeated.

How Is My Water Treated and Purified?

All three WTPs use a three-step treatment process. This includes clarification to remove larger particles in the raw water. The PWP and MWP also add powdered, activated carbon to absorb many other types of chemicals and contaminants. The water then passes through a multimedia filter system that uses four sizes of sand and gravel, plus a layer of anthracite coal. The filters are able to remove many other microscopic particles and contaminants. Finally, the treated water is kept in a holding tank where it is completely disinfected to meet all state and federal requirements. The finished water is then pumped through more than 400 miles of water mains until it reaches 13 storage tanks that can store up to 7 million gallons of treated water.

The PWP was completely rebuilt in 2009 and has won three industry awards since. Tours may be arranged for school and civic groups at any of our WTPs. Contact Ms. Spalding to arrange a tour.

Wellhead Protection Plan

The Hardin County Water District No. 1 (HCWD1) has completed Phase II of the Wellhead Protection Plan (WHPP). We have also completed a source water assessment study that classified our water source as groundwater that is affected by the flow and seepage of surface water. The WHPP requires us to identify the area basins that drain into our raw water source, to identify possible types and sources of contamination, and then to develop programs or additional measures to better protect this source water from these contaminants. Our water plant found that its sources include two separate sources that do not share the same water. The Pirtle Spring, located at the plant site, collects water from a 27-square-mile area. The Head of Rough Spring, located about 1.5 miles from the water plant, receives water from a 17-square-mile area. Both of these watersheds are in largely agricultural areas and thus subject our treatment process to contaminants from agricultural runoff including fertilizers, pesticides, and herbicides. The District's staff and a public committee are working with the Kentucky Division of Water and the Kentucky Rural Water Association as well as the Hardin County Planning and Zoning Board to develop protection strategies and action plans. These requirements will provide better source water protection from possible contaminants.

A WHPP was also completed in 2002 for the watersheds that provide water to the two WTPs located on Ft. Knox.

A copy of these reports is available by contacting us during regular business hours.

Because of the karst aquifers through which both of the County's source waters traverse, our water is high in calcium averaging about 80 ppm calcium and 200 ppm calcium hardness. The calcium that is provided in our drinking water is beneficial to our customers' health. Calcium is vital to several essential functions like blood clotting, muscle contraction (including the contraction of the heart), and bone and tooth formation. The Institute of Medicine recommends that each individual's recommended dietary allowance of calcium is 700-1300 mg/day depending on the age and gender of the individual. By consuming the recommended 0.2 - 1.0 gallon(s) of water per individual per day, our customers can satisfy over 20 percent of their recommended daily intake of calcium.

We do acknowledge that the hardness of our water has its drawbacks. Water heaters, dishwashers, and humidifiers seem to be the most problematic as calcium precipitates out of water at higher temperatures, causing scale to build up on these heating elements and in these systems. A preventative maintenance program performed every 3 to 6 months for these household appliances can dramatically extend the life of these conveniences. Both of Ft. Knox WTPs do however provide a softening process to lower the hardness of the finished water. This process lowers hardness by about 63 percent.

Sampling Results

During the past year, we have taken hundreds of water samples in order to determine the presence of any radioactive, biological, inorganic, volatile organic, or synthetic organic contaminants. The tables below show only those contaminants that were detected in the water. The secondary contaminants listed pose no health risk, and we are not required to report these in our CCR. However, we want to make every effort possible to further the knowledge of our customers.

The state requires us to monitor for certain substances less often 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									
				Hardin County Water District No. 1		Fort Knox Water Plant			
SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	MCL [MRDL]	MCLG [MRDLG]	AMOUNT DETECTED	RANGE LOW-HIGH	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
Alpha Emitters (pCi/L)	2008	15	0	NA	NA	0.98	0.16–1.8	No	Erosion of natural deposits
Barium (ppm)	2012	2	2	0.025	NA	NA	NA	No	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Chlorine (ppm)	2012	[4]	[4]	1.21	0.24–2.2	1.4	0.55–2.2	No	Water additive used to control microbes
Combined Radium (pCi/L)	2008	5	0	0.9	0.2–1.6	0.48	0.45–0.51	No	Erosion of natural deposits
Fluoride (ppm)	2012	4	4	0.5	NA	NA	NA	No	Erosion of natural deposits; Water additive that promotes strong teeth; Discharge from fertilizer and aluminum factories
Haloacetic Acids [HAAs] (ppb)	2012	60	NA	18	7–34	5.8	1.0–12.3	No	By-product of drinking water disinfection
Nitrate (ppm)	2012	10	10	1.4	NA	NA	NA	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
Selenium (ppb)	2012	50	50	1	NA	NA	NA	No	Discharge from petroleum and metal refineries; Erosion of natural deposits; Discharge from mines
TTHMs [Total Trihalomethanes] (ppb)	2012	80	NA	23	10–42	19.6	3.2–40.1	No	By-product of drinking water disinfection
Total Coliform Bacteria (% positive samples)	2012	5% of monthly samples are positive	0	NA	NA	4.84	NA	No	Naturally present in the environment
Total Organic Carbon ¹ (ppm)	2012	TT	NA	1.2	0.6–2.2	0.57	0.38–0.95	No	Naturally present in the environment
Turbidity ² (NTU)	2012	TT	NA	0.076	0.023–0.076	0.17	0.02–0.17	No	Soil runoff
Turbidity (Lowest monthly percent of samples meeting limit)	2012	TT	NA	100	NA	100	NA	No	Soil runoff
Uranium (ppb)	2008	30	0	NA	NA	0.14	0.10–0.18	No	Erosion of natural deposits
Tap water samples were collected for lead and copper analyses from sample sites throughout the communities									
				Hardin County Water District No. 1		Fort Knox Water Plant			
SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	AL	MCLG	AMOUNT DETECTED (90TH%TILE)	SITES ABOVE AL/ TOTAL SITES	AMOUNT DETECTED (90TH%TILE)	SITES ABOVE AL/ TOTAL SITES	VIOLATION	TYPICAL SOURCE
Copper (ppm)	2010	1.3	1.3	0.464	0/30	0.018 ³	0/30 ³	No	Corrosion of household plumbing systems; Erosion of natural deposits
Lead (ppb)	2010	15	0	4	0/30	NA	NA	No	Corrosion of household plumbing systems; Erosion of natural deposits

SECONDARY SUBSTANCES

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	SMCL	MCLG	Hardin County Water District No. 1		Fort Knox Water Plant		VIOLATION	TYPICAL SOURCE
				AMOUNT DETECTED	RANGE LOW-HIGH	AMOUNT DETECTED	RANGE LOW-HIGH		
Aluminum (ppb)	2012	200	NA	50	NA	327	ND–327	No	Erosion of natural deposits; Residual from some surface water treatment processes
Chloride (ppm)	2012	250	NA	7.7	NA	NA	NA	No	Runoff/leaching from natural deposits
Copper (ppm)	2012	1.0	NA	0.002	NA	NA	NA	No	Corrosion of household plumbing systems; Erosion of natural deposits
Corrosivity (Units)	2012	Noncorrosive	NA	-0.282	NA	0.54	0.52–0.56	No	Natural or industrially influenced balance of hydrogen, carbon, and oxygen in the water; Affected by temperature and other factors
Fluoride (ppm)	2012	2.0	NA	0.5	NA	NA	NA	No	Erosion of natural deposits; Water additive that promotes strong teeth; Discharge from fertilizer and aluminum factories
Iron (ppb)	2012	300	NA	60	NA	NA	NA	No	Leaching from natural deposits; Industrial wastes
pH (Units)	2012	6.5–8.5	NA	7.28	NA	9.09	8.96–9.21	No	Naturally occurring
Sulfate (ppm)	2012	250	NA	10	NA	NA	NA	No	Runoff/leaching from natural deposits; Industrial wastes
Total Dissolved Solids [TDS] (ppm)	2012	500	NA	64	NA	NA	NA	No	Runoff/leaching from natural deposits

¹The monthly ratio is the percent of TOC removal achieved compared to the percent of TOC removal required. The annual average of monthly ratios must be 1.0 or greater for compliance.

²Turbidity is a measure of the cloudiness of the water. It is monitored because it is a good indicator of the effectiveness of the filtration system. Turbidity can not exceed 1 NTU and must be <0.3 NTUs in greater than 95% of monthly samples.

³Sampled in 2011.

Definitions

AL (Action Level): The concentration of a contaminant that, if exceeded, triggers treatment or other requirements that a water system shall 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. Secondary MCLs (SMCLs) are set to protect the odor, taste and appearance of drinking water.

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.

MRDL (Maximum Residual Disinfectant Level): The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

MRDLG (Maximum Residual Disinfectant Level Goal): 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.

NA: Not applicable

ND (Not detected): Indicates that the substance was not found by laboratory analysis.

NTU (Nephelometric Turbidity Units): Measurement of the clarity, or turbidity, of water. Turbidity in excess of 5 NTU is just noticeable to the average person.

pCi/L (picocuries per liter): A measure of radioactivity.

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).

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