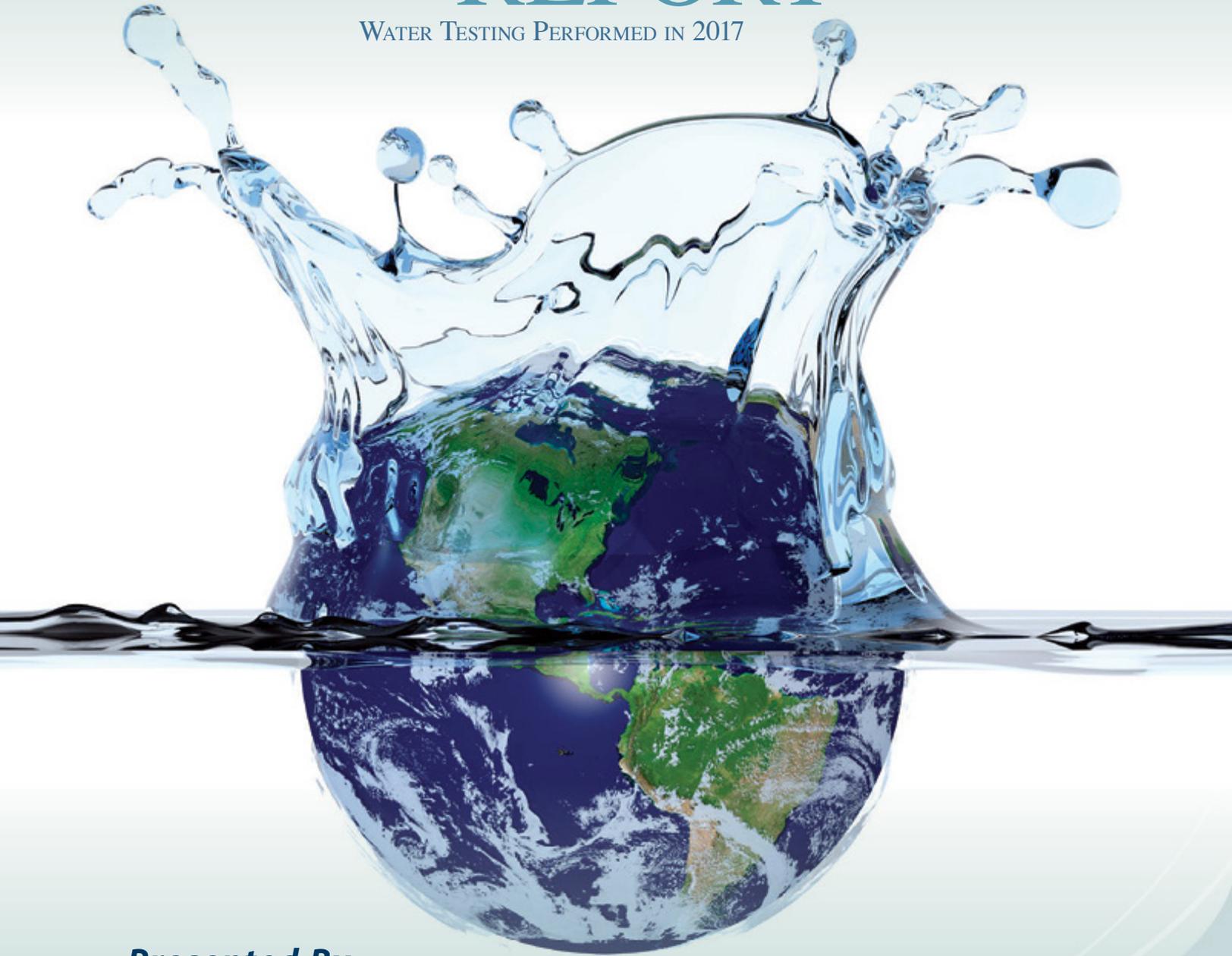


ANNUAL WATER QUALITY REPORT

WATER TESTING PERFORMED IN 2017



Presented By
**Hardin County
Water District No. 1**



Quality First

Once again we are pleased to present our annual water quality report. As in years past, we are committed to delivering the best-quality drinking water possible. To that end, we remain vigilant in meeting the challenges of new regulations, source water protection, water conservation, and community outreach and education while continuing to serve the needs of all of our water users. We encourage you to share your thoughts with us on the information contained in this report. After all, well-informed customers are our best allies. For more information about this report, or for any questions relating to your drinking water, please call Mr. Chris Gohman, Water Treatment Plant Supervisor, by phone at (270) 862-4340 or by fax at (270) 862-5740. He can also be contacted via e-mail at cgohman@hcwd.com.

Important Health Information

Some people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised persons such as those with cancer undergoing chemotherapy, those 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>.

Community Participation

You are invited to attend our regular Board of Commissioners meetings. They normally meet monthly on the last Tuesday of each month, 11:30 a.m., 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.

Where Does My Water Come From?

We own and operate both the Fort Knox Water System (since 2012) as well as the original Hardin County Water District No. 1 system (since 1952). 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 two WTPs on the Fort Knox system: Central (CWP) and Muldraugh (MWP). At certain times of the year, the Fort Knox WTPs provide water to our County system customers. We provide the City of Vine Grove 100% of their supply and about 70% of Meade County Water District's supply. We can provide a backup supply to the City of Hardinsburg and Hardin County Water District No. 2. 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 2017, a total of 1,648 MG (million gallons) of potable water was treated at our WTPs; a total of 16.33 MG was purchased (0.98%) to supplement our production. The maximum demand day was 6,530 MG, which occurred on 11 July. The average daily water demand for the year was 4,514 MG. Wholesale customers purchased 320.6 MG for delivery to their customers, which was equivalent to 19% of total water sold. In 2017, we painted our Whispering Hills water tank to ensure that our tank maintains good water quality and a quality appearance. During the nearly 60 days of painting, the Hardin County Water District No.1 purchased water from our neighboring Hardin County Water District No. 2. Their water quality data for 2017 have been added to this year's CCR.

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 or 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, which was completely rebuilt in 2009, has won five industry awards since. Tours may be arranged for school and civic groups at any of our WTP's. Contact Mr. Gohman to arrange a tour.



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/lead.

Wellhead Protection Plan

Hardin County Water District No. 1 and Fort Knox Water updated the Wellhead Protection Plans (WHPPs) in 2016. We held a county-wide public meeting that included representatives from all water-producing utilities in the county as well as personnel from KY Rural Water Association, KY Geological Survey, and Hardin County Planning and Zoning. This collaborative effort will serve to strengthen source water protection efforts. Earlier WHPP efforts included identifying the area basins that drain into our raw water sources, to identify possible types and sources of contamination and to develop programs or additional measures to better protect this source water from those contaminants. Pirtle Spring WTP found that its two separate sources 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, in largely agricultural areas, subject our treatment process to contaminants from agricultural runoff including fertilizers, pesticides, and herbicides.

Fort Knox personnel conducted a comprehensive inventory of existing wells for the West Point well field and surrounding 5.5 square mile protection area, which serves Muldraugh WTP, as well as for the 19.4 square mile recharge area for McCracken Springs, which serves Central WTP. These inventories identify and monitor potential sources of contamination to the water supply. One of the primary management strategies included in the Fort Knox WHPP is the use of control wells to protect the groundwater supply from chloride intrusion from nearby abandoned oil and gas wells.

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

Because of the karst aquifers through which both of our source waters traverse, our water is high in calcium, averaging about 80 parts per million (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 to 1300 mg/day, depending on the age and gender of the individual. By consuming the recommended 0.2 to 1.0 gallons of water per individual per day, our customers can satisfy over 20% of their recommended daily intake of calcium.

We acknowledge that the hardness of our water does have 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 their lives. Both Fort Knox WTPs do however provide a softening process to lower the hardness of the finished water. It lowers hardness by about 63%.

Substances That Could Be in 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 that 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.

Upcoming Change

Hardin County Water District No.1 will be switching to chloramines disinfectant by the end of 2018. The primary reason for this change is related to a new connection with Louisville Water Company (LWC), which will provide HCWD#1 with a reliable and abundant supplemental source in the near future. Water from LWC is disinfected with chloramines. To be able to mix LWC water HCWD#1 water, HCWD#1 will be converting to the same disinfection method. In addition, several other benefits will be gained from the conversion, including a reduction in regulated disinfectant by-products, a more persistent residual in the distribution system as compared with HCWD#1's current disinfectant, chlorine, and elimination of taste and odor issues that are common with chlorine. As the conversion approaches, HCWD#1 will dispense more educational information to customers. If you have any questions, please call (270) 862-4340.

Test Results

Our water is monitored for many different kinds of substances on a very strict sampling schedule. The information in the data tables shows only those substances that were detected between January 1 and December 31, 2017. Remember that detecting a substance does not necessarily mean the water is unsafe to drink; our goal is to keep all detects below their respective maximum allowed levels. The state recommends monitoring 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.

HCWD#1 had a detect of Atrazine on 5/03/16 with 4 ppb. We re-sampled on 5/16/16 and had a result of 0.8ppb. With the average of the two samples, we were below the MCL, but these detects triggered quarterly monitoring. We sampled again on 8/30/16, 10/5/16, 2/1/17, 4/5/17, and 7/18/17, with all samples resulting in less than 0.2ppb. On 10/1/2017, we received notice of reduced monitoring of Atrazine to once per year. Atrazine is a herbicide and can get into our spring during a heavy rain event. We increased powdered activated carbon treatment in our process during heavy rain events to help minimize organic contaminants such as Atrazine.

Hardin County Water District No.1 monitored for *Cryptosporidium* in our source water but had no positive samples.

REGULATED SUBSTANCES

SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	MCL [MRDL]	MCLG [MRDLG]	Hardin County Water District No. 1		Fort Knox Water Plant		Hardin County Water District No. 2		VIOLATION	TYPICAL SOURCE
				AMOUNT DETECTED	RANGE LOW-HIGH	AMOUNT DETECTED	RANGE LOW-HIGH	AMOUNT DETECTED	RANGE LOW-HIGH		
Alpha Emitters (pCi/L)	2017	15	0	NA	NA	3.4	ND–3.4	NA	NA	No	Erosion of natural deposits
Arsenic (ppb)	2017	10	0	NA	NA	NA	NA	0.3	ND–0.3	No	Erosion of natural deposits; Runoff from orchards; Runoff from glass and electronics production wastes
Atrazine (ppb)	2017	3	3	ND	NA	NA	NA	NA	NA	No	Runoff from herbicide used on row crops
Barium (ppm)	2017	2	2	0.031	NA	NA	NA	0.037	0.029–0.045	No	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Beta/Photon Emitters ¹ (pCi/L)	2017	50	0	NA	NA	6.5	ND–6.5	NA	NA	No	Decay of natural and man-made deposits
Chloramines (ppm)	2017	[4]	[4]	NA	NA	NA	NA	2.28	1.1–3.99	No	Water additive used to control microbes
Chlorine (ppm)	2017	[4]	[4]	1.56	0.56–2.20	1.52	0.77–2.20	NA	NA	No	Water additive used to control microbes
Combined Radium (pCi/L)	2014	5	0	1.3	NA	NA	NA	NA	NA	No	Erosion of natural deposits
Fluoride (ppm)	2017	4	4	0.4	NA	0.7	0.6–0.8	0.5	0.5–0.5	No	Erosion of natural deposits; Water additive that promotes strong teeth; Discharge from fertilizer and aluminum factories
Haloacetic Acids [HAAs] (ppb)	2017	60	NA	45.3	16–57	4.55	2–12.2	37	18–49	No	By-product of drinking water disinfection
Nitrate (ppm)	2017	10	10	0.8	NA	0.3	0.1–0.5	1.35	0.9–1.8	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
TTHMs [Total Trihalomethanes] (ppb)	2017	80	NA	37	14–46	12.28	2.5–26.3	39	19–49	No	By-product of drinking water disinfection
Total Coliform Bacteria ² (% positive samples)	2017	TT	NA	0	NA	0	NA	1.21	NA	No	Naturally present in the environment
Total Organic Carbon ³ (ppm)	2017	TT	NA	1.3	0.8–2.5	0.61	0.5–1.06	1.83	1.0–3.51	No	Naturally present in the environment
Turbidity ⁴ (NTU)	2017	TT	NA	0.076	0.019–0.076	0.160	0.026–0.160	0.04	0.04–0.04	No	Soil runoff
Turbidity (Lowest monthly percent of samples meeting limit)	2017	TT = 95% of samples meet the limit	NA	100	NA	100	NA	100	NA	No	Soil runoff

Tap water samples were collected for lead and copper analyses from sample sites throughout the community.

				Hardin County Water District No. 1		Fort Knox Water Plant		Hardin County Water District No. 2			
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	AMOUNT DETECTED (90TH% TILE)	SITES ABOVE AL/ TOTAL SITES	VIOLATION	TYPICAL SOURCE
Copper (ppm)	2016	1.3	1.3	0.239	0/30	0.035 ⁵	0/30 ⁵	0.126 ⁶	0/30 ⁶	No	Corrosion of household plumbing systems; Erosion of natural deposits
Lead (ppb)	2016	15	0	3	0/30	2.5 ⁵	0/30 ⁵	8 ⁶	1/30 ⁶	No	Corrosion of household plumbing systems; Erosion of natural deposits

OTHER SUBSTANCES

				Hardin County Water District No. 1		Fort Knox Water Plant		Hardin County Water District No. 2			
SUBSTANCE (UNIT OF MEASURE)	YEAR SAMPLED	MCL [MRDL]	MCLG [MRDLG]	AMOUNT DETECTED	RANGE LOW-HIGH	AMOUNT DETECTED	RANGE LOW-HIGH	AMOUNT DETECTED	RANGE LOW-HIGH	VIOLATION	TYPICAL SOURCE
<i>Cryptosporidium</i> (Oocysts/L)	2017	NA	NA	ND	NA	3 ⁷	ND–3 ⁷	3 ⁸	NA	No	Naturally occurring

¹The MCL for beta particles is 4 mrem/year. The U.S. EPA considers 50 pCi/L to be the level of concern for beta particles.

²HCWD#2 collects more than 40 samples per month. By regulation, if the % of samples is below 5%, they are within compliance.

³The 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. Hardin County Water District No.1 and Fort Knox Water achieved this criterion in 100% of the monthly samples.

⁴Turbidity 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 cannot exceed 1 NTU and must be less than 0.3 NTUs in greater than 95% of monthly samples.

⁵Sampled in 2017.

⁶Sampled in 2015.

⁷In 2017, Fort Knox Water monitored for the presence of *Cryptosporidium* in the source water. In February there were 2 counts of *Cryptosporidium*, in September there was 1 count, and in November there were 3 counts. Fort Knox Water optimizes the treatment process to ensure the removal of *Cryptosporidium*.

⁸In 2017, HCWD#2 had 3 out of 18 samples show the presence of *Cryptosporidium* in their two water sources. *Cryptosporidium* is a tiny intestinal parasite, often found in surface waters, which can cause flu-like symptoms if ingested. HCWD#2 optimizes the treatment process at both treatment plants to help ensure removal.

Definitions

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

LRAA (Locational Running Annual Average): The average of sample analytical results for samples taken at a particular monitoring location during the previous four calendar quarters. Amount Detected values for TTHMs and HAAs are reported as the highest LRAAs.

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.

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.