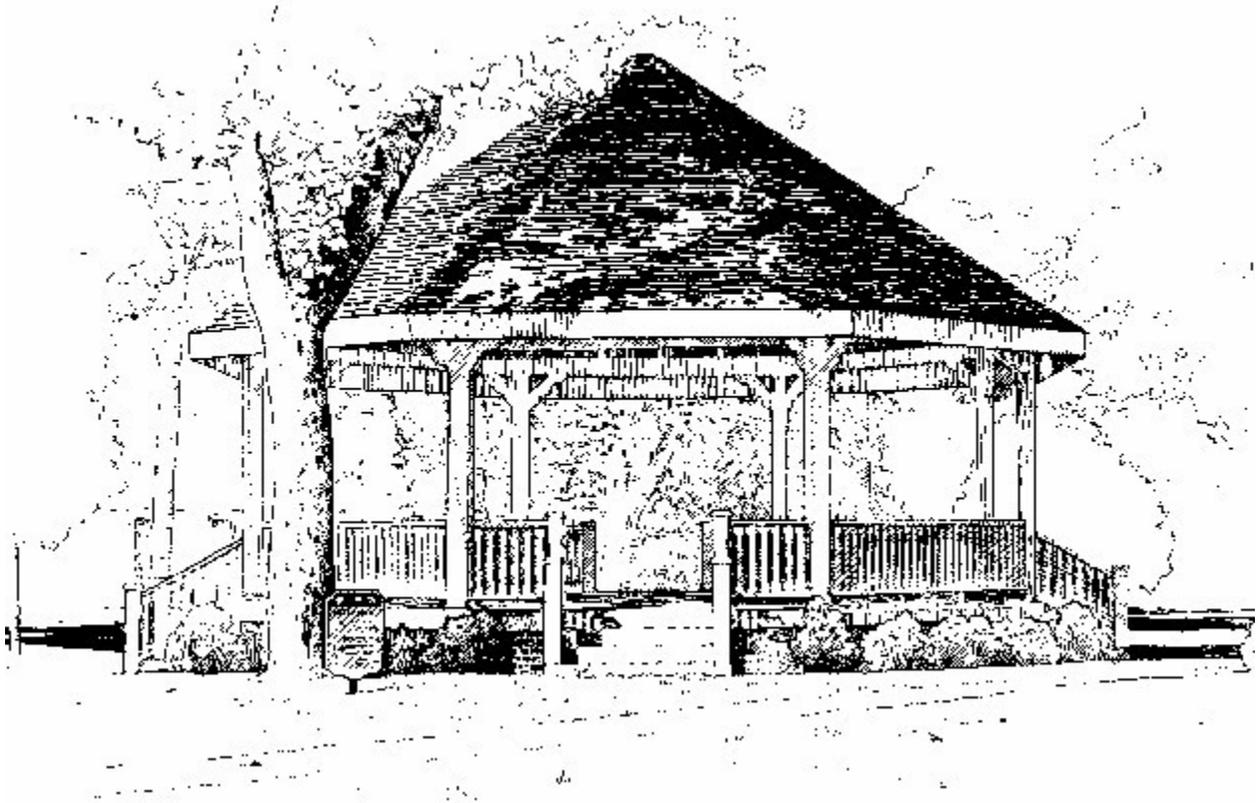


**ANNUAL DRINKING WATER QUALITY REPORT
PWSID 7210010 at CARLISLE BARRACKS, PENNSYLVANIA
JANUARY 1, 2015 TO DECEMBER 31, 2015**



PREPARED BY

**DIRECTORATE OF PUBLIC WORKS
ENVIRONMENTAL OFFICE**

May 2016

Este informe contiene informacion muy importante sobre su agua beber. Traduzcalo o hable con alguien que lo entienda bien.

OVERVIEW:

This is annual report is to inform you of the quality of drinking water produced and delivered to Carlisle Barracks by Carlisle Barracks' Water Plant, PWS 7210010. Our goal is to provide you with a safe and dependable supply of drinking water every day. This report meets Safe Drinking Water Act (SDWA) requirements for "Consumer Confidence Reports" and contains important information on the source of our water, its constituents, and health risks associated with any contaminants. If you have any questions or comments concerning this report or your drinking water, please contact Environmental Chief Paul Herzer at 245-4811.

WATER SOURCE:

Our water source is Spring CU-SP-19 which is part of the Saint Paul Group aquifer. Spring CU-SP-19 is located within Carlisle Barracks. A Source Water Assessment for this spring was completed in 2005 by Penn State Environmental Resources Research Institute, Pennsylvania Department of Environmental Protection (DEP). A copy of the assessment is available for review at DPW – Environmental Office.

WATER QUALITY AND TREATMENT:

U.S. Army Garrison at Carlisle Barracks, Directorate of Public Works, routinely monitors for contaminants in your drinking water according to federal and state laws. The tables included in this report show the results of our monitoring for the period of January 1, 2015 to December 31, 2015. The DEP requires monitoring less than once per year for certain contaminants because concentrations of these do not change frequently. Some of our data is from prior years in accordance with the SDWA. If the data is from a prior year, the sample date is noted on the sample results table.

At Carlisle Barracks' Water Plant raw water taken from Spring CU-SP-19 is filtered, treated with chlorine for disinfection and ortho/polyphosphate for corrosion control, fluoride is added to promote strong teeth, and goes through a softening system before it is distributed to Carlisle Barracks.

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** - The "Maximum Allowed" (MCL) is 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.
- **Maximum Contaminant Level Goal** -The "Goal" (MCLG) is 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** – The highest level of a disinfectant allowed in drinking water.
- **Maximum Residual Disinfectant Level Goal** – The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDGLs do not reflect the benefits of the use of disinfectants to control microbial contamination.
- **Non-Detects (ND)** - laboratory analysis indicates that the contaminant is not present at a detectable level.
- **Treatment Technique (TT)** - A treatment technique is a required process intended to reduce the level of a contaminant in drinking water.

UNITS OF MEASURE:

- **Parts per million (ppm) or Milligrams per liter (mg/L)** - one part per million corresponds to one minute in two years or a single penny in \$10,000.
- **Parts per billion (ppb) or Micrograms per liter** - one part per billion corresponds to one minute in 2,000 years, or a single penny in \$10,000,000.
- **Parts per trillion (ppt) or Nanograms per liter (nanograms/L)** - one part per trillion corresponds to one minute in 2,000,000 years, or a single penny in \$10,000,000,000.
- **Parts per quadrillion (ppq) or Picograms per liter (picograms/L)** - one part per quadrillion corresponds to one minute in 2,000,000,000 years or one penny in \$10,000,000,000,000.
- **Picocuries per liter (pCi/L)** - picocuries per liter is a measure of the radioactivity in water.

DETECTED SAMPLE RESULTS

Microbial Contaminants	MCL	Highest # of Positive Samples	MCLG	Violation	Sources of Contamination
Total Coliform	More than 1 positive monthly sample	0	0	NO	Naturally present in the environment.

Note: Sample date is supplied if other than 2015.

Contaminant	MCL	MCLG	Level Detected	Range of Detections	Units	Violation	Sources of Contamination
Fluoride*	4	4	0.16	0.67 – 1.59	ppm	NO	Erosion of natural deposits; water additive which promotes strong teeth; discharge from fertilizer and aluminum factories
Nitrate	10	10	3.7	4.3 - 4.4	ppm	NO	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
Metolachlor June '09	N/A	N/A	0.00031	0.00031	ppm	NO	Found in pre-emergent herbicides
Sulfate Jan '07	250	5	32	N/A	mg/L	NO	Naturally occurring in water.
Trihalomethanes July '15	0.08	N/A	0.0009	N/A	ppm	NO	By-product of drinking water chlorination
Haloacetic Acids July '15	0.06	N/A	ND	N/A	ppm	NO	By-product of drinking water chlorination
Asbestos Entry Point June '13	7	N/A	ND	N/A	MFL	NO	Found in pipes made from asbestos concrete and naturally occurring in rock
Asbestos Distribution March '14	7	N/A	ND	N/A	MFL	NO	Found in pipes made from asbestos concrete and naturally occurring in rock

* EPA's MCL for fluoride is 4 ppm, however Pennsylvania set a lower MCL to better protect human health.

Contaminant	AL	MCLG	90 th Percentile Value	Units	# of Sites Above AL out of 10 sample sites	Violation	Sources of Contamination
Copper Sept '13	1.3	1.3	0.67	ppm	0	NO	Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives
Lead Sept '13	15	15	0.0031	ppm	0	NO	Corrosion of service lines and household plumbing systems; erosion of natural deposits

MONITORING, REPORTING VIOLATIONS & ENFORCEMENT ACTIONS:

None.

OTHER CONTAMINANTS:

Test results for Volatile Organic Chemicals (VOCs) (2015), Poly Chlorinated Biphenyls (PCBs) (2012), Alpha emitters (2015), Synthetic Organic Compounds (SOCs) (2014), and Nitrite (2015) were Non-Detects.

ADDITIONAL INFORMATION:

From August of 2014 to June of 2015, Carlisle Barracks DPW started painting the exterior and interior of water tower 840 as a part of routine and preventative maintenance. While the painting process occurred the source of drinking water was switched from the Carlisle Barracks water treatment plant to the Borough of Carlisle. As a result, we have included pertinent information as it appears from Carlisle Borough's Consumer Confidence Report below, which includes water quality information during the time period Carlisle Barracks customers were receiving water from the Borough:

Drinking Water Sources

"The Carlisle Borough Municipal Authority (CBMA) intake is located on the Conodoguinet Creek, near Carlisle, Cumberland County. Land use in the watershed is approximately 62% agriculture, 33% forested, and 5% developed lands. The remaining less than 1% is water and transitional land. Approximately 3 million gallons of water is withdrawn from the intake daily. The population served by the intake is approximately 20,000 people. The communities served by the water supplier include Carlisle and surrounding areas.

Water Quality and Water Treatment Information

Carlisle's water treatment plant is a modern facility that purifies source water drawn from the Conodoguinet Creek. The source water contains impurities, which must be removed before the finished water is safe for human use. These impurities are removed as the water passes through a series of treatment processes. Chlorine is added for disinfection, fluoride is added to help prevent tooth decay and a blended ortho/polyphosphate corrosion control additive reduces corrosion in approximately 80 miles of distribution system piping. We also have the ability to add caustic soda for pH control on rare occasions.

Treated or finished water is pumped to two new bolted water tanks constructed in 2013 for \$2.9 million that replaced the aging reservoirs built circa 1890 and 1950. These tanks are ideal for preserving stored water quality. Three elevated storage tanks also store water throughout the distribution system. We maintain an approximate one-

day supply of water in storage at any given time. We also maintain interconnections with adjacent Townships that can supply up to 1.5 MGD of potable water in the event of an emergency.”

Chemical or Microbiological Contaminant	MCL In CCR Units	MCLG	Highest Level Detected	Range of Detection	Units or Sample Date	Violation YES/NO	Sources of Contamination
Chlorine ¹ (Entry Point) (Distribution)	Minimum Disinfectant Residual=0.2 MRDL = 4	n/a MRDL G=4	1.07 ¹ 1.26 ¹	1.07 - 1.97 0.94 - 1.26	ppm	NO	Water additive used to control microbes
Fluoride*	2	2	2.0	0.15 - 2.0	ppm	NO	Erosion of natural deposits; water additive w promotes strong teeth; discharge from fertiliz aluminum factories
Nitrate	10	10	4.7	3.5 - 4.7	ppm	NO	Runoff from fertilizer use; septic tank leachin Erosion of natural deposits
Barium	2	2	0.039	single sample	ppm	NO	Discharge of drilling wastes; discharge from refineries; erosion of natural deposits
Total Haloacetic Acids (HAA)**	60	n/a	40.7	7.4 - 40.7	ppb	NO	By-product of drinking water disinfection (ch
Total Trihalomethanes (TTHM's)**	80	n/a	44.7	9.4 - 59.4	ppb	NO	By-product of drinking water disinfection (ch
Total Organic Carbon ² (TOC)** *	TT	n/a	30.4	26.9 - 48.5	% removal	NO	Naturally present in the environment

Contaminant	Action Level (AL)	MCLG	90th Percentile Value	Units	# of Sites Above AL of Total Sites	Violation of TT YES/NO	Sources of Contamination
Copper	1.3	1.3	0.076	ppm	0 of 31	NO	Corrosion of household plumbing; erosion of natural deposits; leaching from wood preservatives
Lead	15	15	4.7	ppb	1 of 31	NO	Corrosion of household plumbing systems; erosion of natural deposits

Contaminant	MCL	MCLG	Highest Level Detected	Violation of TT YES/NO	Sources of Contamination
Turbidity	TT = 1 NTU for a single measurement	0	0.07	NO	Soil runoff
	TT = at least 95% of monthly samples ≤ 0.3 NTU		100%	NO	

Detection Unregulated Contaminants

Unregulated Contaminant	Average Level Detected	Range of Detection	Units	Sources of Contamination
Chromium	0.38	0.28 - 0.47	ppb	Naturally occurring element; used in making steel and other alloys; chromium -3 or -6 forms are used for chrome plating, dyes and pigments, leather tanning, and wood preservation
Chromium-6	0.15	0.11 - 0.22	ppb	
Strontium	244	217 - 307	ppb	Naturally occurring elemental metal; historically used for faceplate glass of cathode-ray tube televisions to block x-ray emissions
Vanadium	only 1 of 8 samples had a detectable level of 0.22	ND - 0.22	ppb	Naturally occurring elemental metal; used as vanadium pentoxide which is a chemical intermediate and a catalyst

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 byproducts 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.

To ensure tap water is safe to drink, the Environmental Protection Agency (EPA) prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. Food and Drug Administration regulations establish limits for contaminants in bottled water which must provide the same protection for public health. More information about contaminants and potential health effects can be obtained by calling the EPA's **Safe Drinking Water Hotline at 1-800-426-4791** or by visiting the EPA website at **www.epa.gov/safewater**.

Some people may be more vulnerable to contaminants in drinking water than is the general population. Immuno-compromised person 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/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 (above).

Lead

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. Potential for lead exposure can be minimized by flushing the tap for 30 seconds to 2 minutes after water has been sitting in the lines for several hours before using it for drinking or cooking. 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 website (above).

Copper

Copper is an essential nutrient, required by the body in very small amounts. However, EPA has found copper to potentially cause the following health effects when people are exposed to it at levels above the Action Level. Short periods of exposure can cause gastrointestinal disturbance, including nausea and vomiting. Use of water that exceeds the Action Level over many years could cause liver or kidney damage. People with Wilson's disease may be more sensitive than others to the effect of copper contamination and should consult their health care provider.

Copper is rarely found in source water. Copper contamination generally occurs from corrosion of household copper pipes, it cannot be directly detected or removed by the water system. Instead, EPA requires water systems to control corrosiveness of their water if the level of copper at home taps exceeds an Action Level. Potential for copper exposure can be minimized by flushing the tap for 30 seconds to 2 minutes after water has been sitting in the lines for several hours before using it for drinking or cooking.

Nitrate

Nitrate in drinking water at levels above 10 ppm is a health risk for infants of less than six months of age. High nitrate levels in drinking water can cause blue baby syndrome. Nitrate levels may rise quickly for short periods of time because of rainfall or agricultural activity. If you are caring for an infant you should ask advice from your health care provider.

Sodium

Due to our water softening requirements the average level of sodium in our water is 157 mg/L. We understand some customers follow a low sodium diet. If you are on a restricted sodium diet, please consult your health care provider or registered dietitian for guidance.

WATER CONSERVATION

The average person uses about 62 gallons of water every day the majority of which is used for laundry, toilet flushing, and showering. The next highest use is faucet use and leaking fixtures.

Try these water conservation tips:

- Have dripping faucets and leaking toilets repaired. Repairs can save 10 gallons of water per person per day. A faucet dripping at one drop per second wastes 2,700 gallons of water per year.
- Only run the washing machine and dishwasher with full loads. Scrape food debris off dishes and eliminate or reduce rinsing.
- Turn off water when not needed while hand washing dishes or laundry, brushing teeth,

and making coffee. Take short showers.

- Water lawns on when necessary and do so in the early morning or late afternoon to reduce loss from evaporation. Water slowly and only long enough to allow water to soak into and dampen soil.
- Water trees, shrubs, and other outdoor plants by watering cans or a hand-held hose equipped with an automatic shut-off nozzle. Do not use sprinklers. Water specific plants slowly and only long enough to allow water to soak into and dampen soil. Water in the early morning or late afternoon to reduce loss from evaporation.
- Sweep or use a leaf blower instead of a hose to clean paved surfaces such as sidewalks, driveways, garages, decks and patios.
- Wash vehicles at commercial car washes located around Carlisle Barracks. These car washes have approved control devices that conserve water, and many have the capability to recycle water.

We at U.S. Army Garrison Carlisle Barracks, Directorate of Public Works, are proud to provide you with quality water. We ask all our customers help us protect our water sources. If you have any questions regarding this report, contact Paul Herzer, Carlisle Barracks Environmental Officer at 245-4811 or paul.s.herzer.civ@mail.mil.