WRIGHT- PATTERSON AFB (WPAFB) DRINKING WATER CONSUMER CONFIDENCE REPORT 2017

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USEPA

Safe Drinking Water Hotline

(800) 426-4791

WPAFB Meets Federal and State Drinking Water Quality Standards

This drinking water consumer confidence report (CCR) provides valuable information on the quality of the drinking water at WPAFB. Included in this report is general health information, water quality test results, information on how you can participate in decisions concerning your drinking water, and water system contacts. We are very pleased to report that WPAFB continued to meet all Federal and State drinking water health standards in calendar year (CY) 2017.

WPAFB Source Water

The source of WPAFB's drinking water is the Great Miami Buried Valley Aquifer. This natural aquifer provides approximately one billion gallons of water each year to WPAFB.

There are six wells that serve Area A and four wells that serve Area B. Treatment includes air stripping (removes volatile organic compounds) (VOCs), chlorine disinfection (eliminates bacteria), and fluoridation (promotes strong teeth). Water from two of the wells in Area A is also treated by a granular activated carbon (GAC) system (removes perfluorinated compounds) (PFCs). Housing residents in The Bricks and The Woods receive water which is softened (removes minerals).

The Area A public water system (PWS) has interconnections with the City of Fairborn's PWS. The City of Fairborn is capable of supplying water to Area A to meet emergency needs. The Area B water system has an alternate ground water supply from wells located by Huffman Prairie.

Ensuring Water Quality

In CY 2017, Bioenvironmental Engineering personnel conducted sampling for bacteria, VOCs, nitrates, disinfection byproducts, radiologicals, inorganics, perfluorinated compounds, lead and copper. Sampling data is located in the Table on page 3. The Ohio Environmental Protection Agency (OEPA) requires sampling for some contaminants less than once per year because concentrations of these contaminants do not change very often. That is why some of the data may be more than one year old.

Source Water Assessment

In 2007, the OEPA completed a study of WPAFB's source of drinking water to identify potential contaminant sources and provide guidance on protecting the drinking water source. According to this study, the aquifer that supplies water to WPAFB Areas A and B well fields has a high susceptibility to contamination. This determination is based on the following information: the lack of a protective layer of clay or other material overlying the aquifer, a shallow depth (between 5-15 feet below ground surface) of the aquifer, the presence of significant potential contaminant sources in the protection areas, and the presence of man made contaminants in the ground water.

Tetrachloroethene was detected within the treated water above the maximum contaminant level (MCL) on 1/10/91, 4/03/91, 5/01/91, and 6/04/91. WPAFB upgraded the treatment systems in 1992. Since that time, all results have been under the MCL for Tetrachloroethene in the treated water. Nitrate was detected in the treated water above the aquifer susceptibility concentration of concern of 2.0 mg/L on some occasions. The Nitrate MCL is 10 mg/L.

The risk of future contamination can be minimized by implementing appropriate protective measures. More information about the source water assessment and what consumers can do to help protect the aquifer is available by contacting the WPAFB Installation Management Division at 257-5899.

Drinking Water Contamination Sources

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 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: **(A)** ***Microbial contaminants,*** such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife; **(B)** ***Inorganic contaminants,*** such as salts and metals, which can be naturally occurring or result from urban storm runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming; **(C)** ***Pesticides and herbicides,*** which may come from a variety of sources such as agriculture, urban storm water runoff, and residential uses; **(D)** ***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 storm water runoff and septic systems; **(E)** ***Radioactive contaminants,*** which can be naturally-occurring or be the result of oil and gas production and mining activities.

In order to ensure that your tap water is safe to drink, the US EPA prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. Food and Drug Administration (FDA) 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 contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and their potential health effects can be obtained by calling **EPA's Safe Drinking Water Hotline at 800-426-4791.**

WPAFB License to Operate (LTO)

In 2017, WPAFB had an unconditioned LTO for two Public Water Systems, (Area B: OH290-3312) and (Area A: OH290-3412). The WPAFB hospital has a separate LTO for a consecutive water system to Area A.

Who needs to take special precautions?

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 can be particularly at risk to infections. These people should seek advice about drinking water from their health care providers. EPA and Centers for Disease Control guidelines on appropriate means to lessen the risk of infection by cryptosporidium and other microbial contaminants are available from the EPA Safe Drinking Water Hotline at 800-426-4791.

Lower Part of Area B Experiences System Depressurization in 2017

On 18 September 2017, the WPAFB Area B Public Water System experienced a distribution depressurization due to a major water main break. The break caused an interruption in service to all customers in the lower part of Area B.

The OEPA issued a Notice of Violation to WPAFB Area B PWS due to concerns with the length of time it took personnel to respond to inquiries made by OEPA. WPAFB provided the required information within the regulatory prescribed 24 hour timeframe and has updated the drinking water system contingency response plan to include additional notification procedures to improve notification to the OEPA.

Lead Education Information

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 the service lines and home plumbing. WPAFB is responsible for providing high quality drinking water, but cannot control the variety of material 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 want 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; (800) 426-4791or EPA's web site: http://www.epa.gov/safewater/lead.

Abbreviations and Definitions Used In Tables:

- **Maximum Contaminant Level Goal (MCLG):** 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 Contaminant Level (MCL):** 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.
- **Parts per Million (ppm) or Milligrams per Liter (mg/L)** are units of measure for concentration of a contaminant. A part per million corresponds to one second in approx. 11.5 days.
- **Parts per Billion (ppb) or Micrograms per Liter (ug/L)** are units of measure for concentration of a contaminant. A part per billion corresponds to one second in 31.7 years.
- **Parts per Trillion (ppt) or Nanograms per Liter (ng/L)** are units of measure for concentration of a contaminant.
- **Maximum Residual Disinfectant Level Goal (MRDLG):** The level of residual 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.
- **Maximum Residual Disinfectant Level (MRDL):** 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.
- **Action Level (AL):** The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.
- **Picocuries per liter (pCi/L):** A common measure of radioactivity.
- **Million Fibers per liter (MFL):** A measure of the presence of asbestos fibers that are longer than 10 micrometers.
- **NA:** Indicates Not Applicable.
- **ND:** Not Detected.
- **CY- Calendar Year:** (Jan through Dec)

Microbiological Contaminants	Unit of Measure	MCLG	MCL	AREA A # of Positive Samples	AREA A Range of Detections	AREA B # of Positive Samples	AREA B Range of Detections	Violation	Typical Sources of Contaminant
Total Coliform	# Positive	0	NA	1 in July	0-1	0	0	No	Naturally present in the environment
Residual Disinfectants	**Unit of Measure**	**MRDLG**	**MCL**	**AREA A Level Found**	**AREA A Range of Detections**	**AREA B Level Found**	**AREA B Range of Detections**	**Violation**	**Typical Sources of Contaminant**
Total Chlorine	ppm	4	4	1.1	0.5 –1.6	1.1	0.6 - 1.4	No	Water additive used to control microbes
Disinfection By-products	**Unit of Measure**	**MCLG**	**MCL**	**AREA A Level Found**	**AREA A Range of Detections**	**AREA B Level Found**	**AREA B Range of Detections**	**Violation**	**Typical Sources of Contaminant**
Haloacetic Acids (HAA5)	ppb	na	60	2.67	ND-2.67	6.61	5.11-6.61	No	By-product of drinking water chlorination
Total Trihalomethanes	ppb	na	80	11.16	2.99-11.16	15.53	14.91-15.53	No	By-product of drinking water chlorination
Inorganic Contaminants	**Unit of Measure**	**MCLG**	**MCL**	**AREA A Level Found**	**AREA A Range of Detections**	**AREA B Level Found**	**AREA B Range of Detections**	**Violation**	**Typical Sources of Contaminant**
Barium	ppm	2	2	0.136	0.0389-0.136	0.134	0.0422-0.134	No	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits
Nitrate Measured as Nitrogen	ppm	10	10	2.23	2.16-2.23	0.61	0.60-0.61	No	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
Fluoride	ppm	4	4	1.06	0.82-1.19	1.10	0.54-1.30	No	Erosion of natural deposits; Water additive which promotes strong teeth; discharge from fertilizer and aluminum factories
Radioactive Contaminants	**Unit of Measure**	**MCLG**	**MCL**	**Area A Level Found**	**Area A Range of Detections**	**Area B Level Found**	**Area B Range of Detections**	**Violation**	**Typical Sources of Contaminant**
Radium 228	(pCi/L)	0	5	1	NA	1	NA	No	Erosion of natural deposits
Gross Alpha	(pCi/L)	0	15	4.32	NA	3	NA	No	Erosion of natural deposits
Volatile Organic Contaminants	**Unit of Measure**	**MCLG**	**MCL**	**Area A Level Found**	**Area A Range of**	**Area B Level Found**	**Area B Range of**	**Violation**	**Typical Sources of Contaminant**
Xylene CY 2016	ppm	10	10	NA	NA	1.07	0 - 1.07	No	Discharge from petroleum factories; Discharge from chemical factories

Lead and Copper - AREA A

Contaminants (units)	Action Level (AL)	Individual Results over the AL	90% of test levels were less than	Violation	Year Sampled	Typical Source of Contaminants
Lead (ppb)	15 ppb	0	3.14	No	2017	Corrosion of household plumbing systems, erosion of natural deposits
	0 out of 60 samples were found to have lead levels in excess of the lead action level of 15 ppb.					
Copper (ppm)	1.3 ppm	0	0.494	No	2017	
	0 of 60 samples were found to have copper levels in excess of the copper action level of 1.3 ppm.					

Lead and Copper - AREA B

Contaminants (units)	Action Level (AL)	Individual Results over the AL	90% of test levels were less than	Violation	Year Sampled	Typical Source of Contaminants
Lead (ppb)	15 ppb	17.6	2.54	No	2015	Corrosion of household plumbing systems, erosion of natural deposits
	1 of 30 samples were found to have lead levels in excess of the lead action level of 15 ppb.					
Copper (ppm)	1.3 ppm	1.46 / 1.67 / 2.57	1.27	No	2015	
	3 of 30 samples were found to have copper levels in excess of the copper action level of 1.3 ppm.					

Unless otherwise noted, the data presented in this Table is from sampling performed during CY 2017.

WPAFB TABLE OF DETECTED UNREGULATED CONTAMINANTS (AREA A = PWS 290-3412) (AREA B = PWS 290-3312)

*Unregulated Contaminants	Unit of Measure	Area A Average	Area A Range	Area B Average	Area B Range	Year Sampled	Typical Sources of Contaminant
Nickel **(CY 2014)**	ppb	6.61	ND - 6.61	ND	NA	2014	Erosion of natural deposits
Bromodichloromethane	ppb	2.82	ND-4.27	2.67	0.68-4.88	2017	Disinfection By-Products
Bromoform	ppb	0.60	ND –0.64	1.05	ND-1.37		
Chloroform	ppb	5.34	ND-14.2	3.16	ND-8.45		
Dibromochloromethane	ppb	1.55	ND-2.06	3.13	1.41-4.79		
Dichlorodifluoromethane	ppb	ND	NA	1.27	ND-1.27	2016	
Chromium **(CY2015)**	ppb	0.24	ND - 0.38	0.30	0.28 - 0.31	2015	Naturally-occurring element; used in making steel and other alloys
Chromium-6 **(CY2015)**	ppb	0.041	0.04 - 0.05	0.12	0.12 - 0.13		
Strontium **(CY2015)**	ppb	136.0	31.7 –208	370.0	104 - 506	2015	Naturally occurring element; commercial use in faceplate glass of cathode-ray tube televisions to block x-ray emissions
Molybdenum **(CY2015)**	ppb	1.62	1.4 –1.8	3.60	3.5 - 3.7	2015	Naturally-occurring element found in ores and present in plants, animals and bacteria
Chlorate **(CY2015)**	ppb	33.7	ND-49.8	ND	NA	2015	Agriculture defoliant or desiccant; used in production of chlorine dioxide
Perfluorohexanesulfonic Acid **(PFHxS**	**ppt**	1.84	ND-41	29	NA	2017	Man made chemical; used in products to make stain, grease; heat and water resistant; also used in fire fighting foam
Perfluorooctanoic Acid **(PFOA)**	**ppt**	1.88	ND-6.3	4.58	ND-9.3		
Perfluorooctanesulfonic Acid **(PFOS)**	**ppt**	ND	ND	ND	ND		

***Unregulated contaminant monitoring helps the EPA to determine where certain contaminants occur and whether it needs to regulate those contaminants.**

Unregulated Contaminant Monitoring

Unregulated contaminants are those contaminants for which the EPA has not established drinking water standards. The purpose of unregulated contaminant monitoring is to assist the EPA in determining the occurrence of unregulated contaminants and whether future regulation is warranted.

In 2014 and 2015, OEPA directed sampling for perfluorinated compounds; subsequently, WPAFB's monitoring detected Perfluorooctanoic Acid (PFOA) and Perfluorooctanesulfonic Acid (PFOS) in the Area A distribution system. In discussion with OEPA, WPAFB performed sampling at all active wells in March 2016 and discovered that two of the six wells located in Area A had elevated levels of PFOS/PFOA. In April 2016, monitoring revealed a PFOS level of 110 parts per trillion (ppt) in the distribution system. It was suspected that the source of the PFOS/PFOA chemicals came from firefighting foam used at fire training and crash sites on the base.

On 19 May 2016, the US EPA issued a lifetime drinking water Health Advisory Limit (HAL– classified as a nonenforceable technical guidance) of 70 parts per trillion (ppt) for human exposure to PFOA and PFOS (individually and combined). On 20 May 2016, WPAFB issued a drinking water advisory for Area A informing the public that Area A had a PFOS detection that exceeded the new HAL of 70 ppt. WPAFB initiated monthly monitoring at all wells and entry points for Area A as well as quarterly monitoring for Area B.

Since that time, WPAFB Civil Engineering (CE) and Bioenvironmental Engineering (BE) personnel have been working closely with the OEPA to remediate the contaminant. In June of 2017, **Granular Activated Carbon (GAC) Units** were installed to remove the contaminant from water being pumped from the contaminated wells. The GAC units were placed online on 2 June 2017. The wells were returned to service at that time.

BE continues monthly monitoring at all of the wells in Area A as well as at the entry point to the distribution system post GAC filtration. Since placing the GAC on line, the PFOS/PFOA levels have consistently been well below the HAL of 70 ppt.

Monitoring results for 2017 are listed in the table above. More information may be obtained by contacting the Bioenvironmental Engineering Office at (937) 255-6815.

GAC Filtration System Area A

Public Participation Information

Thank you for taking time to read our annual Drinking Water Quality Report. If you would like more information about WPAFB drinking water quality, or if you have any questions pertaining to the information contained in this report, please contact Mrs. Kimberly McSparran, Bioenvironmental Engineering Flight, Drinking Water Manager at (937) 255-6815 or (937) 904-8335.

The Bioenvironmental Engineering Office holds a Drinking Water Working Group that meets quarterly to discuss local drinking water issues involving compliance, risk reduction and continuous improvement. Public participation and comments are encouraged and can be discussed at these meetings by contacting the Bioenvironmental Engineering Office. This report is also available at the following web sites:

http://www.wpafb.af.mil/Portals/60/documents/Index/environmental/180612-2017-Drinking-Water.pdf?

https://mdg.wpafb.af.mil/88amds/BioEng/SitePages/Home.aspx