Annual Water Consumer Confidence Report

McGuire Drinking Water System **on Joint Base McGuire-Dix-Lakehurst**

Public Water System ID No. NJ0326006

Monitoring Period:
January 1, 2020 – December 31, 2020

Is my water safe?

Yes. Last year, as in years past, the tap water in the McGuire water system met all U.S. Environmental Protection Agency (EPA) and New Jersey Department of Environmental Protection (NJDEP) drinking water health standards. Members of the 87th Air Base Wing, 87th Medical Group and 87th Civil Engineer Group vigilantly safeguard water supplies and once again we are proud to report that our system is in full compliance with primary water quality standards. This report is being distributed to consumers to provide information, enabling consumers to make personal health-based decisions regarding drinking water consumption. This report provides sampling data for the water system and discusses health concerns for any contaminants detected in the system. The report also provides definitions so consumers are clear on the terminology discussed. Additional information concerning water consumption anywhere in the United States can be obtained by calling the Safe Drinking Water Hotline, toll free at (800) 426-4791.

Where does my water come from?

McGuire draws water from the Potomac-Raritan-Magothy (PRM) aquifer, a groundwater source. Wells tap into the PRM aquifer at approximately 800-900 feet below the surface. Three wells (Wells A, B-2, and C-1) are maintained by Civil Engineering Utilities. In December 2012 JB MDL requested that Well A be placed in inactive status by NJDEP. In 2020, a new Well A was completed and is active. (Well D has been inactive since 2018.) The well water is treated (filtered for iron, chlorinated and fluoridated) before entering the system and then distributed across the base, including housing areas. McGuire's drinking water is monitored by two base agencies. The 87th Civil Engineer Squadron services the drinking water supply and distribution system, while the 87th Operational Medical Readiness Squadron's Bioenvironmental Engineering (BE) checks the quality of the drinking water provided to consumers and addresses any related health concerns. All monitoring follows EPA-approved methods for sampling and laboratory analyses. BE personnel and State-certified laboratories collect samples from the wells and water distribution system. Samples are then delivered to a State-certified laboratory where water quality analyses are performed. To ensure your drinking water is of the highest quality, BE samples for approximately 100 possible contaminants. NJDEP has directed compliance sampling schedule requirements in two categories: point of entry to the distribution system and distribution system monitoring requirements. The points of entry samples

are collected at the individual wells and represent the quality of the source water. Distribution system samples represent the quality of the water in the pipes of the system. Samples are taken from different locations across the distribution system every week.

Source Water Assessments

NJDEP has prepared Source Water Assessment Reports and Summaries for all public water systems. For more information on the Source Water Assessment Program, visit NJDEP's source water assessment web site at www.nj.gov/dep/watersupply/swap/index.html or by contacting NJDEP's Bureau of Safe Drinking Water at (609) 292-5550. Consumers may also contact the personnel in charge of the public water system through the Joint Base Public Affairs office at (609) 754-2104.

Source Water Assessment Summary

The results of the source water assessment performed on our three (3) sources (all groundwater wells) are presented in Table 1. The table illustrates the susceptibility ratings each individual source for each contaminant categories and provides the rating for each well: high, medium, and low for each contaminant category. The McGuire system does not have any sources that are classified as ground water under the direct influence of surface water, (GUDI) or surface water and it does not purchase water from other public water systems. The eight contaminant categories are defined below Table 1.

Table 1 – Source Water Assessment Summary

Contaminant	Well A	Well B	Well C
Pathogens	Low	Low	Low
Nutrients	Low	Low	Low
Pesticides	Low	Low	Low
Volatile Organic Compounds (VOCs)	Low	Low	Low
Inorganics	Low	Low	Low
Radionuclides	Low	Low	Medium
Radon	Low	Low	Low
Disinfection Byproducts Precursors (DBPs)	Low	Low	Low

Pathogens: Disease causing organisms such as bacteria and viruses. Common sources are animal and human fecal wastes.

Nutrients: Compounds, minerals and elements that aid growth, that are both naturally occurring and man-made. Examples include nitrogen and phosphorous.

VOCs: Man-made chemicals used as solvents, degreasers and gasoline components. Examples include benzene, methyl tertiary butyl ether (MTBE) and vinyl chloride.

Pesticides: Man-made chemicals used to control pests, weeds and fungus. Common sources include land application and manufacturing of pesticides. Examples include herbicides such as atrazine and insecticides such as chlordane.

Inorganics: Mineral based compounds that are both naturally occurring and man-made. Examples include arsenic, asbestos, copper, lead and nitrate.

Radionuclides: Radioactive substances are both naturally occurring and man-made. Examples include radium and uranium.

Radon: Colorless, odorless, cancer causing gas that occurs naturally in the environment.
DBPs: A common source is naturally occurring organic matter in surface water. Disinfection byproducts are formed when the disinfectant (usually chlorine) used to kill pathogens reacts with dissolved organic material (for example leaves) present in surface water. Examples include Trihalomethanes (TTHMs) & Haloacetic Acids (HAA5).

If a system is rated highly susceptible for a contamination category, it does not mean a customer is or will be consuming contaminated water. The rating reflects the potential for contamination of source water, not the existence of contamination. Public water systems are required to monitor for regulated contaminants and to install treatment if any are detected at frequencies and concentrations above allowable levels.

NJDEP found the following potential contaminant sources within the source water assessment areas for our sources. All potential contaminant sources are on the base:

1. Solid and hazardous waste handling and transfer facilities.
2. Closed solid waste landfill.
3. Septic tanks.
4. Urban, commercial and industrial land use.
5. Distance of the wells to wetlands.
6. The Golf Course.
7. Population density.
8. Density of known contaminated sites, and NJDEP permitted surface water discharges.

Source Water Protection Tips: Protection of drinking water is everyone's responsibility. You can help protect your community's drinking water source in several ways:

- Eliminate excess use of lawn and garden fertilizers and pesticides – they contain hazardous chemicals that can reach your drinking water source.
- Pick up after your pets.
- If you have your own septic system, properly maintain your system to reduce leaching to water sources or consider connecting to a public water system.
- Dispose of chemicals properly; take used motor oil to a recycling center.
- Volunteer in your community. Find a watershed or wellhead protection organization in your community and volunteer to help. If there are no active groups, consider starting one. Use EPA's "Adopt Your Watershed" to locate groups in your community, or visit the Watershed Information Network's "How to Start a Watershed Team."
- Organize a storm drain stenciling project with your local government or water supplier. Stencil a message next to the street drain reminding people "Dump No Waste - Drains to River" or "Protect Your Water." Produce and distribute a flyer for households to remind residents that storm drains dump directly into your local water body.

Sources of Drinking Water Contamination

Sources of drinking water (both tap water and bottled water) may 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. Regulated 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, and wildlife
- Inorganic contaminants, such as salts and metals, which can be naturally-occurring or result from urban storm water 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 storm water runoff, and residential uses
- Organic chemical compounds, including synthetic and volatile organic compounds (VOC's), which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban storm water runoff, and septic systems
- Radioactive contaminants, which can be naturally-occurring or the result of oil/gas production and mining activities
- Perfluorinated Compounds (PFCs) have been used to make carpets, clothing, fabrics for furniture, paper packaging for food and other materials (e.g., cookware) that are resistant to water, grease or stains. They are also used in aircraft firefighting foam and in a number of industrial processes. In 1970, the Department of Defense (DOD) began using Aqueous Film Forming Foam (AFFF), a firefighting agent containing PFCs, to extinguish petroleum fires and protect people and property. AFFF has also been used for firefighting training and in some aircraft hangar fire suppression systems. Perfluorooctane sulfonate (PFOS) is a component of AFFF while Perfluorononanoic acid (PFNA) and Perfluorooctanoic acid (PFOA) are stable end products resulting from the degradation of precursor substances. Firefighting training as well as inadvertent releases from hangars resulted in AFFF being released directly onto the ground where it has seeped in to groundwater where it has the potential to affect drinking water supplies. (See Page 5 of this report for additional information.)

In order to ensure that tap water is safe to drink, 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 that must provide the same protection for public health. Table 2 summarizes the regulated analyses and monitoring frequencies for the wells (points of entry) and distribution system servicing the McGuire area.

Table 2 – Regulated Substances and Monitoring Frequencies

Regulated Substance	Frequency Well A	Frequency Wells B and C
Total Coliform, Free Available Chlorine, pH	Monthly	Monthly
Nitrates	Annually	Annually
Trihalomethanes (TTHM)	Quarterly	Quarterly
Haloacetic Acids (HAA5)	Quarterly	Quarterly

Inorganics	Every 3 years	Every 3 years
Secondary Standards	Every 3 years	Every 3 years
VOCs	Quarterly	Every 3 years
Radiologicals	Every 9 years	Every 9 years
Lead and Copper	Every 3 years	Every 3 years
Asbestos	Within first 3-years of 9-year cycle	Within first 3-years of 9-year cycle
Iron, Manganese	Annually	Annually
Per- and polyfluoroalkyl substances (Regulated PFAS)	Quarterly	Quarterly

NJDEP allows reduced monitoring requirements for radiologicals and VOCs. **Current sample results for all VOCs were below analytical detection limits.** Our system received a monitoring waiver for synthetic organic compounds because prior sampling events have demonstrated that these substances were not detected in our source water.
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 can be obtained by calling the EPA's Safe Drinking Water Hotline (1-800-426-4791).

Additional Information for 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. JB MDL is responsible for providing high quality drinking water but 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 two 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 http://www.epa.gov/safewater/lead.

The water supplied to the McGuire system is tested for lead triennially and has a consistent history of low concentrations. Lead testing in 2018 showed results of <1.0 parts per billion (ppb). This is almost 15 times lower than the action level of 15 ppb. Testing for Lead and Copper is scheduled to occur again in 2021.

Additional Information for PFCs

PFCs are a subset of man-made compounds containing approximately 6,000 chemicals formed from carbon chains with fluorine attached to these chains. PFCs are part of a group of the most extensively produced and studied chemicals and are currently classified as unregulated or "emerging" contaminants. PFCs are being studied by the EPA to determine if regulation is needed.

On 19 May 2016, the EPA's Office of Water issued new Lifetime Health Advisory levels (LHAs) for two PFCs (1) PFOS – Publication EPA 822-R-16-004 and (2) PFOA – EPA 822-R-16-005. The EPA LHAs are 70 parts per trillion (ppt) for both PFOS and PFOA, individually or as the sum of the two. PFOS/PFOA were below the detection limit in the McGuire water system when initially sampled in 2016. The LHAs are calculated based on the average consumption of breastfeeding mothers (who tend to drink a higher volume of water) and household use of drinking water during food preparation (e.g., cooking or to prepare coffee, tea or soup). The LHAs apply to both short-term (i.e., weeks to months) scenarios, as well as to lifetime-exposure scenarios.

In 2018, the NJDEP established health based Maximum Contaminant Level (MCL) for PFNA, PFOA and PFOS and has identified these three analytes as "Regulated PFAS". The MCLs are 0.013 micrograms per liter (µg/L) (or 13 ppt) for PFNA and PFOS, and 0.014 µg/L (or 14 ppt) for PFOA. **Regulated PFAS were below the detection limit in the McGuire water system for 2020**.

The Air Force is committed to the safety and well-being of its personnel. Based upon the potential for PFC contamination from past releases of AFFF, drinking water provided at AF installations has been sampled by AF/SG personnel to assess risk to on-base consumers.

Parts per billion (ppb) and parts per trillion (ppt) are the most commonly used terms to describe very small amounts or trace levels of chemicals of concern in our drinking water.

- One ppb is the equivalent of one drop of impurity in 500 barrels of water or 1 cent out of $10 million.
- One ppt is the equivalent of one drop of impurity in 500,000 barrels of water or traveling 6 inches out of a 93 million-mile journey toward the sun.

For more information on how EPA manages the unregulated or "emerging" contaminants, refer to: UCMR - https://www.epa.gov/dwucmr/learn-about-unregulated-contaminant-monitoring-rule

For more information on drinking water health advisories for PFOS and PFOA, refer to: https://www.epa.gov/ground-water-and-drinking-water/drinking-water-health-advisories-pfoa-and-pfos

Water Quality Data Tables

To ensure tap water is safe to drink, EPA prescribes regulations which limit the amount of contaminants in water provided by public water systems. All sources of drinking water contain some naturally occurring contaminants. At low levels, these substances are generally not harmful in drinking water. Table 3 and 4 below list the drinking water monitoring results for the calendar year of the report unless otherwise noted. The EPA and the state require monitoring for certain contaminants less than once per year because the concentrations of these contaminants do not vary significantly from year to year, or the system is not considered vulnerable to this type of contamination. As such, some of the data, though representative, may be more than one year old. Table 5 and 6 provides a comprehensive listing of abbreviations and definitions for terms found throughout this document which might not be familiar to the average consumer.

Table 3 – Water Monitoring Results

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised 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 from infections. These people should seek advice about drinking water from their health care providers. EPA/Centers for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Water Drinking Hotline (800-426-4791).

Disinfectant, Disinfectant Precursors and Byproducts									
Contaminant Units	**Location**	**MCLG or MRDLG**	**MCL, TT, or MRDL**	**LRAA**	**Range**		**Sample Date**	**Violation**	**Typical Source**
					Low	**High**			
Chlorine (as Cl_2, ppm) (Monthly Range)	N/A	4	4	N/A	0.3	1.00	2020	No	Drinking water disinfectant[1]
TTHMs (ppb)	3333	NA	80	9.45	4.08	14.64	2020	No	Byproduct of drinking water disinfection[1]
	3457			6.86	4.5	10.23	2020	No	
	4551			2.4	1.21	4.4	2020	No	
	1507			29.74	22.5	41.4	2020	No	
HAA5 (ppb)	3333	NA	60	0.001	0	3.2	2020	No	Byproduct of drinking water disinfection[1]
	3457			2.98	2.52	3.7	2020	No	
	4551			3.93	1.04	10.61	2020	No	
	1507			5.2	3.4	8.43	2020	No	

1. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

Contaminants Units	**MCLG or MRDLG**	**MCL, TT, or MRDL**	**Range**		**Sample Date**	**Violation**	**Typical Source**
			Low	**High**			
Nitrate							
Nitrate [measured as Nitrogen] (ppm)	10	10	<0.1	<0.3	2020	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits

Contaminants Units	MCLG or MRDLG	MCL, TT, or MRDL	Range		Sample Date	Violation	Typical Source
			Low	High			
Microbiological							
Total Coliform (positive samples/months)[2,3]	0	0	0	0	2020	No	Human or animal fecal waste
2. A violation occurs when a routine sample and a repeat sample, in any given month, are total coliform positive, and one is also fecal coliform or E. coli positive. 3. If a system collecting fewer than 40 samples per month has two or more positive samples in one month, the system has an MCL violation.							

Volatile Organic and Synthetic Organic Compounds (VOCs/SOCs)							
Contaminants Units	MCLG or MRDLG	MCL, TT, or MRDL	Range		Sample Date	Violation	Typical Source
			Low	High			
1,2,3-Trichloropropane (ppb)	0.03	0.03	N/A	<0.0064	2020	No	Discharge of industrial solvents and cleaning/degreasing agent; impurity resulting from the production of soil fumigants
Ethylene dibromide (EDB) (ppb)	0.05	0.05	N/A	<0.0075	2020	No	Used as a fumigant to protect against insects, pests, and nematodes in crops; treatment of felled logs; intermediate for dyes, resins, waxes, and gums
1,2 Dibromo-3-chloropropane (DBCP) (ppb)	0.2	0.2	N/A	<0.006	2020	No	Used a soil fumigant and nematocide; also as an intermediate in the synthesis of organic chemicals

Inorganic Compounds*							
Contaminants (Units)	**MCLG or MRDLG**	**MCL, TT, or MRDL**	**Range**		**Sample Date**	**Violation**	**Typical Source**
			Low	**High**			
Barium (ppm)	2	2	<0.1	0.1	2020	No	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
* All other IOC analyzed during monitoring period were below the detectable limit, and are considered zero							

Radioactive Contaminants							
Contaminants (Units)	**MCLG or MRDLG**	**MCL, TT, or MRDL**	**Range**		**Sample Date**	**Violation**	**Typical Source**
			Low	**High**			
Gross Alpha Emitters (pCi/L)	0	15	<3	3.64	2020	No	Naturally present in the environment
Radium –228 & 226 combined (pCi/l)	0	5	<1	3.64	2020	No	

Regulated PFAS								
Contaminant (Unit)	**MCL**	**Well A**		**Well B**		**Well C**		**Monitoring Year**
		Low	**High**	**Low**	**High**	**Low**	**High**	
PFNA (ppt)	13	<0.05	<0.14	<0.05	<0.21	<0.06	<0.19	2020
PFOS (ppt)	13	<0.17	<0.52	<0.19	<0.56	<0.18	<0.54	2020
PFOA (ppt)	14	<0.56	<0.79	<0.67	<1.00	<0.41	<0.79	2020

Table 4 – Secondary and Unregulated Contaminants (No MCL Established)

Secondary Group				
Unregulated Contaminant[4]	**Recommended Upper Limit (RUL)**	**Range Detected**		**Date of Monitoring**
		Low	**High**	
Alkalinity (ppm)	N/A	60	68	2020
Aluminum (ppm)	0.2	0.09	0.1	2020
Chloride (ppm)	250	4.2	4.9	2020
Fluoride	2.0	<0.1	2.6	2020
Hardness (ppm) (as $CaCO_3$)	250	48	80	2020
Iron (ppm)	0.3	<0.04	0.7	2020
Manganese (ppm)	0.05	NA	<0.04	2020
Silver	0.1	NA	<0.001	2020
Sodium (ppm)	50	NA	<10	2020
Sulfate (ppm)	250	8.6	10	2020
Surfactants ABS/L.A.S. (ppm)	0.5	<0.05	0.38	2020
Total Dissolved Solids (ppm)	500	60	86	2020
Zinc	5	NA	<0.04	2020

4. Unregulated contaminant monitoring helps EPA to determine where certain contaminants occur and whether the agency should consider regulating those contaminants in the future.

Table 5 – Unit Descriptions

Unit Descriptions	
Term	**Definition**
ppm	parts per million or milligrams per liter (mg/L)
ppb	parts per billion or micrograms per liter (µg/L)
ppt	parts per trillion or nanograms per liter (ng/L).
positive samples	positive samples/year: the number of positive samples
MFL	million fibers per liter
NA	not applicable
ND	not detected
NR	monitoring not required but recommended
pCi/L	Pico Curies (pCi) of contaminant per Liter of water – One pCi is one trillionth of a Curie; a Curie is a measurement of the rate at which a radioactive material decays.

Table 6 – Definitions

Important Drinking Water Definitions	
Term	**Definition**
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.
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.
RUL	Recommended Upper Limit: NJDEP
AL	Action Level: The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.
MRDLG	Maximum Residual Disinfection 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
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.
MNR	Monitored Not Regulated
MPL	Maximum Permissible Level: State-assigned

LHA	Lifetime Health Advisory levels (LHAs) are not regulatory standards. LHAs identify the concentration of a chemical of concern in drinking water at and below which adverse health effects are not anticipated to occur over specific exposure durations (e.g., 1 day, 10 days, a lifetime).
LRAA	Locational Running Annual Average

Water Conservation Tips

The average U.S. household uses approximately 400 gallons of water per day or 100 gallons per person per day. Luckily, there are many low-cost and no-cost ways to conserve water. Small changes can make a big difference – try one today and soon it will become second nature.

- Take short showers - a 5 minute shower uses 4 to 5 gallons of water compared to up to 50 gallons for a bath.
- Shut off water while brushing your teeth, washing your hair and shaving and save up to 500 gallons a month.
- Use a water-efficient showerhead. They're inexpensive, easy to install, and can save you up to 750 gallons a month.
- Run your clothes washer and dishwasher only when they are full. You can save up to 1,000 gallons a month.
- Water plants only when necessary.
- Fix leaky toilets and faucets. Faucet washers are inexpensive and take only a few minutes to replace. To check your toilet for a leak, place a few drops of food coloring in the tank and wait. If it seeps into the toilet bowl without flushing, you have a leak. Fixing it or replacing it with a new, more efficient model can save up to 1,000 gallons a month.
- Adjust sprinklers so only your lawn is watered. Apply water only as fast as the soil can absorb it and during the cooler parts of the day to reduce evaporation.
- Teach your children about water conservation to ensure a future generation that uses water wisely. Make it a family effort to reduce next month's water bill.
- Visit www.epa.gov/watersense for more information.

How can I get involved?

This Consumer Confidence Report was prepared by the Joint Base Water Working Group members from the 87th Medical Group and the 87th Civil Engineer Group. For more information, call the Joint Base Public Affairs office at (609) 754-2104, Bioenvironmental Engineering at (609) 754-9057 or Civil Engineering at (609) 754-6166. Copies of this report are available in the following locations: Base Library, United Communities Housing Office, Warfighter and Family Readiness Center and the Bioenvironmental Engineering and Civil Engineering Offices.

The public website for the JBMDL installation posted links to the reports here:

https://www.jbmdl.jb.mil/Activity-Feed/About-Us/Environmental-Publications/Consumer-Confidence-Report/