Annual Water Consumer Confidence Report

***Dix Drinking Water System* on**
Joint Base McGuire-Dix-Lakehurst (JB MDL)

Public Water System ID No. 0325001

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

Is my water safe?

Yes. Last year, as in years past, the tap water in the Dix drinking water system on JB MDL 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, 87th Civil Engineer Group, and Pride Industries safeguarded water supplies and once again, we are proud to report that our system currently is in full compliance with primary water quality standards. This report is being distributed to you, the consumer, to provide you with information to allow you to make personal health-based decisions regarding drinking water consumption. The report provides sampling data for the water system and discusses health concerns for each contaminant detected in the system. The report also provides definitions so consumers are clear on the terminology and material presented in this report. 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?

The Dix drinking water system obtains water from four groundwater wells and a surface water treatment plant. The wells are screened in the Potomac-Raritan-Magothy (PRM) Aquifer System. The wells range in depth from 1118 feet to 1155 feet. Total pumping capacity of the wells is approximately 700 gallons per minute (GPM) each. The groundwater is filtered through manganese greensand filters for iron and manganese removal. Sodium hypochlorite is used for disinfection.

The surface water source is the Greenwood Branch of the North Branch of the Rancocas Creek. The surface water plant has a capacity of 4 million gallons per day (MGD). Surface water is treated using sodium hydroxide to adjust pH, rapid mixing with aluminum sulfate addition for flocculation (a process where solids in water aggregate through chemical action so they can be separated from water), sedimentation (solids settling by gravity), multimedia filtration, and

chlorine gas for disinfection. The water system has a total storage capacity of 3,000,000 gallons for use at JB MDL - Dix in four water towers/clear wells.

Source Water Assessments

The NJDEP has prepared Source Water Assessment Reports and Summaries for all public water systems. Further information on the Source Water Assessment Program can be obtained by logging onto NJDEP's source water assessment web site at www.state.nj.us/dep/swap or by contacting NJDEP's Bureau of Safe Drinking Water at (609) 292-5550. You may also contact the personnel in charge of the public water system through the Joint Base Public Affairs office, 87 ABW/PA, at (609) 754-2104.

Source Water Assessment Summary

The results of the source water assessment performed on our five water sources (two active groundwater wells, two inactive groundwater wells, and one surface water source) are presented in the following table. The table illustrates the susceptibility ratings for the seven contaminant categories and radon for each well in the system. The table provides the rating for each well: high, medium, and low for each contaminant category. The Dix system does not have any sources that are classified as groundwater under the direct influence of surface water, and it does not purchase water from other public water systems. The eight contaminant categories are defined in Table 1.

Table 1 – Source Water Assessment Summary

Contaminant	Rancocas Creek	Well 2R	Well 4R	Well 5	Well 6
Pathogens	High	Low	Low	Low	Low
Nutrients	Low	Low	Low	Low	Low
Pesticides	Low	Low	Low	Low	Low
Volatile Organic Compounds (VOCs)	Low	Low	Low	Low	Low
Inorganics	High	Low	Low	Low	Low
Radionnuclides	Low	Medium	Medium	Medium	Medium
Radon	Low	Low	Low	Low	Low
Disinfection Byproducts Precursors (DBPs)	High	Medium	Medium	Medium	Medium

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 organic compounds (SOCs) and volatile organic compounds (VOCs), which are byproducts 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 be the result of oil and 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 into shallow groundwater where it has the potential to affect drinking water supplies. (See Page 6 of this report for additional information.)

In order to ensure that tap water is safe to drink, the Environmental Protection Agency (EPA) prescribes regulations that 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 analytes and monitoring frequencies for the wells (points of entry) and distribution system servicing the Dix area.

Table 2 – Regulated Substances and Monitoring Frequencies

Regulated Substance	Frequency
Total Coliform, Free Available Chlorine	Monthly
Nitrates	Annually

TTHM	Quarterly
HAA5	Quarterly
Inorganics	Annually
Secondary Standards	Annually
VOCs	Annually
Radiologicals	Every 3 years
Lead and Copper	30 samples every third year of a 3-year cycle
Asbestos	Within the first 3-years of 9-year cycle
DBP Precursors	Monthly
Iron & Manganese	Annual
1,2,3-Trichloropropane (TCP)	Quarterly
Ethylene dibromide (EDB)	Quarterly
1,2 Dibromo-3-chloropropane (DBCP)	Quarterly
PFCs	Quarterly
Unregulated Substance	**Frequency**
Unregulated Contaminant Monitoring Rule	Every 5 years

The NJDEP regulations allow monitoring waivers to reduce or eliminate the monitoring requirements for asbestos, radiological, VOCs, and SOCs. Our system received monitoring waivers for asbestos, radiological, and SOCs because prior samplings 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 (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 2 minutes before using water for drinking or cooking. If you are concerned about lead in your drinking water, you may wish to have your water tested. Information on lead in drinking water is available from the Safe Drinking Water Hotline or at http://www.epa.gov/safewater/lead.

JB MDL participated in lead and copper monitoring in 2018. 90% of all sample results are required to be at or below the Action Level (AL). The next scheduled round of monitoring is 2021.

Of the 31 samples collected in 2018 for lead, the 90th percentile result was <0.002 mg/L. The highest concentration detected in one single sample was 0.002 mg/L. The AL for lead by regulation is 0.015 mg/L.

Of the 31 samples collected in 2018 for copper, the 90th percentile result was 0.4 mg/L. The highest concentration detected in one single sample was 0.8 mg/L. The AL for copper by regulation is 1.3 mg/L.

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 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. 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.

PFCs 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) 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 into shallow groundwater where it has the potential to affect drinking water supplies.

PFOS/PFOA were below the detection limit in the Dix 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. The highest reported concentration of PFNA was 1.5 ppt, PFOS was 1.1 ppt, and PFOA was 5.1 ppt. **There have been no reported levels of Regulated PFAS within the Dix water system above the MCL.**

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 that tap water is safe to drink, EPA prescribes regulations that 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 our drinking water. Table 3 below lists the drinking water monitoring results for the calendar year of this report. Some of our data, though representative, may be more than one year old but still within required sampling frequency. To help you understand the contents of this Consumer Confidence Report, we have provided the common abbreviations, terms, and definitions in Tables 4 and 5 below.

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									
Contaminants 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	0.78	1.53	2020	No	Drinking water disinfectant[1]
TTHMs (ppb)	1220	NA	80	34	2.4	35.9	2020	No	Byproduct of drinking water disinfection[1]
	3601			33	4.71	57.9	2020	No	
	5255			40	4.71	57.6	2020	No	
	5953			32	0.78	28.8	2020	No	

HAA5 (ppb)	1220	NA	60	34	4.7	13.18	2020	No	Byproduct of drinking water disinfection[1]
	3601			31	1.08	23.3	2020	No	
	5255			44	2.66	57.8	2020	No	
	5953			40	5	35.1	2020	No	
Total Organic Carbon (% Removal)	NA	NA	TT	NA	67.13%	85.90 %	2020	No	Organic materials naturally present in the environment, Disinfectants and Disinfection byproducts
1. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.									

Physical Contaminants							
Contaminants (Units)	**MCLG or MRDLG**	**MCL, TT, or MRDL**	**Range**		**Sample Date**	**Violation**	**Typical Source**
			Low	**High**			
Turbidity[2]	NA	0.3	NA	0	2020	No	Soil runoff
2. 100% of the samples were below the TT value of 0.3. A value less than 95% constitutes a TT violation. The highest single measurement was 0.298. Any measurement in excess of 1 is a violation unless otherwise approved by the state.							
Radioactive Contaminants							
Gross Alpha Emitters (pCi/L)	0	15	<3	<3	2020	No	Naturally present in the environment
Radium –228 & 226 combined (pCi/l)	0	5	<1	2.53	2020	No	
Nitrate							
Nitrate [measured as Nitrogen] (ppm)	10	10	<0.1	0.2	2020	No	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits

Microbiological							
Contaminants (Units)	**MCLG or MRDLG**	**MCL, TT, or MRDL**	**Range**		**Sample Date**	**Violation**	**Typical Source**
			Low	**High**			
Total Coliform (positive samples/months)[3,4]	0	0	0	0	2020	No	Human or animal fecal waste
3. 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. 4. 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)							
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

Regulated PFAS				
Contaminant (Unit)	**MCL**	**Range**		**Date of Monitoring**
		Low	**High**	
PFNA (ppt)	13	0.83	1.5	2020
PFOS (ppt)	13	<0.379	5.1	2020
PFOA (ppt)	14	<0.100	1.1	2020

Table 4 – Secondary and Unregulated Contaminants- No MCL Established

Secondary Group				
Unregulated Contaminant[5]	**Recommended Upper Limit (RUL)**	**Range**		**Date of Monitoring**
		Low	**High**	
Alkalinity (ppm)	N/A	10	24	2020
Aluminum (ppm)	0.2	<0.015	0.09	2020
Chloride (ppm)	250	6.2	12.9	2020
Hardness (ppm) (as CaCO3)	250	48	80	2020
Iron (ppm)	0.3	<0.04	0.6	2020
Manganese (ppm)	0.05	<0.01	0.04	2020
Sodium (ppm)	50	10	33	2020
Sulfate (ppm)	250	11.5	45.6	2020
Surfactants ABS/L.A.S. (ppm)	0.5	<0.05	0.38	2020
Total Dissolved Solids (ppm)	500	80	100	2020
5. 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**
<	Less than the lowest detectable concentration for the specific approved analysis method used
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	The number of positive samples taken that year
NA	Not applicable
ND	Not detected
NR	Monitoring not required, but recommended.
LRAA	Local (site specific) Running Annual Average

Table 6 – Drinking Water 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.
TT	Treatment Technique: A required process intended to reduce the level of a contaminant in drinking water.
AL	Action Level: The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.
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).
Variances and Exemptions	Variances and Exemptions: State or EPA permission not to meet an MCL or a treatment technique under certain conditions.

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	State Assigned Maximum Permissible Level
pCi/L	PicoCuries of contaminant per Liter of water – a Curie is a measurement of how radioactive a material is.

How can I get Involved?

The Consumer Confidence Report was prepared by Joint Base Water Working Group members from the 87th Medical Group, 87th Civil Engineer Group and Pride Industries. We welcome your questions and comments about the water quality from the Dix system. Any questions regarding this report or the quality of Dix tap water should be directed to the 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 United Communities Housing Office; Joint Base Library; Warfighter and Family Readiness Centers; Bioenvironmental Engineering Office; Civil Engineering Office and the Dix Correctional Facility. Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.

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

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