DEPARTMENT OF THE ARMY
UNITED STATES ARMY GARRISON STUTTGART
UNIT 30401
APO AE 09107-0401

AMIM-SGG-ZA

15-Dec-2021

MEMORANDUM FOR USAG Stuttgart Community

SUBJECT: Consumer Confidence Water Quality Report Fiscal Year 2021, USAG Stuttgart

1. USAG STUTTGART WATER SAMPLES PASS ALL TESTS

2. Monitoring conducted by Public Health Command Europe (PHCE) confirmed that drinking water serving the US Army Garrison (USAG) Stuttgart community remains in compliance with environmental German Final Governing Standard (GFGS).

3. A copy of the results is enclosed. If you have any questions, please contact Ms. Veronica Vu, Environmental Division, DSN 596-6136, or civilian 09641-70-596-6136 (veronica.g.vu.civ@army.mil).

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COL, CA
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U.S. ARMY GARRISON (USAG) STUTTGART DRINKING WATER CONSUMER CONFIDENCE REPORT, FISCAL YEAR 2021

This consumer confidence report (CCR) provides information about the U.S. Army Garrison (USAG) Stuttgart drinking water quality for fiscal year (FY) 2021. This report is based on data that was provided by Public Health Command Europe (PHCE) who collects a majority of our drinking water samples at USAG Stuttgart in support of Environmental Protection Agency (EPA) and German Final Governing Standards (FGS) requirements. Please review this report for your information. If you have any questions, please call the Directorate of Public Works (DPW) Environmental Division (ED) at 596-6136 or civilian 09641-70-596-6136 (veronica.g.vu.civ@army.mil).

Drinking Water Contaminants and Your Health

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 substances resulting from the presence of animals or human activity. Contaminants that may be present in source water include:

Microbial contaminants, such as viruses and bacteria that 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 contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and 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
Perfluorooctane Sulfonate (PFOS) and Perfluorooctanoic Acid (PFOA), which is a component of aqueous film forming foam, a firefighting foam

To ensure that tap water is safe to drink, the Environment Protection Agency (EPA) prescribes regulations that limit the amount of certain contaminants in drinking 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.

USAG Stuttgart Water Sources

Two main types of drinking water sources supply the Stuttgart area: water from Lake Constance from the *Bodenseewasserversorgung* (BWV) and State Water from the *Landeswasserversorgung* (LW), in addition to some other local water suppliers. Our suppliers use lake, river and ground water sources to produce drinking water. Water is provided to the different U.S. installations through a pipeline network, which are operated and maintained by our suppliers. The Directorate of Public Works (DPW) maintains our government owned contractor operated (GOCO) community water stations (CWS). Water provider Netze BW maintains our privatized CWS. Refer to **Table 1 -** USAG Stuttgart Water Sources.

How Drinking Water Is Provided To You

Water from Lake Constance is extracted from a depth of 60 meters below the surface of the lake and pumped to the Sipplinger Berg (on Lake Constance near Ueberlingen), filtered and treated with ozone and chlorine. From there it flows through pipelines into a 100,000 cubic meter supply reservoir and distributed to the Stuttgart area. This water supplies Kelley Barracks, Patch Barracks, and the Stuttgart Army Airfield (SAAF) CWS. Once water is received at these CWSs water is further chlorinated and fluoride is added. Chlorine prevents the spread of waterborne diseases and fluoride for the prevention of tooth decay.

State Water is extracted from the Danube River, spring water wells in the Danube lowlands near Ulm, from three wells near Gingen-Burgberg and six groundwater wells in the area of the Donauried. After extraction, it is filtered and treated with ozone and chlorine for disinfection. Water is then collected in a water supply reservoir until it is distributed to the Stuttgart area. This water supplies Robinson Barracks and the Kornwestheim Golf Course CWS. Once water is received at the CWS water is further chlorinated and fluoride is added.

Panzer Kaserne receives its water from Stadtwerke Boeblingen (SWBB). SWBB does not produce its own water but receives water from two suppliers A&G-Ammertal Schoenbuchgruppe (A&G) which supplies groundwater that is extracted from 14 wells at a depth of 70 meters below the surface and that of Lake Constance. When SWBB receives the water from both suppliers, the water is mixed and treated at the reservoir before being distributed to the Boeblingen area. Once water is received at Panzer Kaserne CWS water is further chlorinated and fluoride is added. Refer to **Figure 1 –** Supply Network.

Table 1. USAG Stuttgart Water Sources

City/Municipality	Water Supplier	Water Provider	Water System	Area Served
Stuttgart	Bodenseewasserversorgung (BWV)	Netze BW	Stuttgart Area CWS (privatized)	Patch Barracks Patch Family Housing
				Kelley Barracks
				Moehringen Family Housing
Stuttgart	Landeswasserversorgung Langenau (LV)	Netze BW	Robinson CWS (privatized)	Robinson Barracks
				Robinson family Housing
Boeblingen	A&G-Ammertal Schoenbuchgruppe and Bodenseewasserversorgung	Stadtwerke Boeblingen (SWBB)	Panzer CWS (GOCO)	Panzer Kaserne
				Panzer Family Housing
Stuttgart	Bodenseewasserversorgung	Flughafen Stuttgart	Stuttgart Army Airfield (SAAF) CWS Waiver to not disinfect further	Stuttgart Army Airfield
Stuttgart	Landeswasserversorgung Langenau	Pattonville Energie & Wasser Gmbh	Kornwestheim CWS Waiver to not disinfect further	Kornwestheim Golf Course

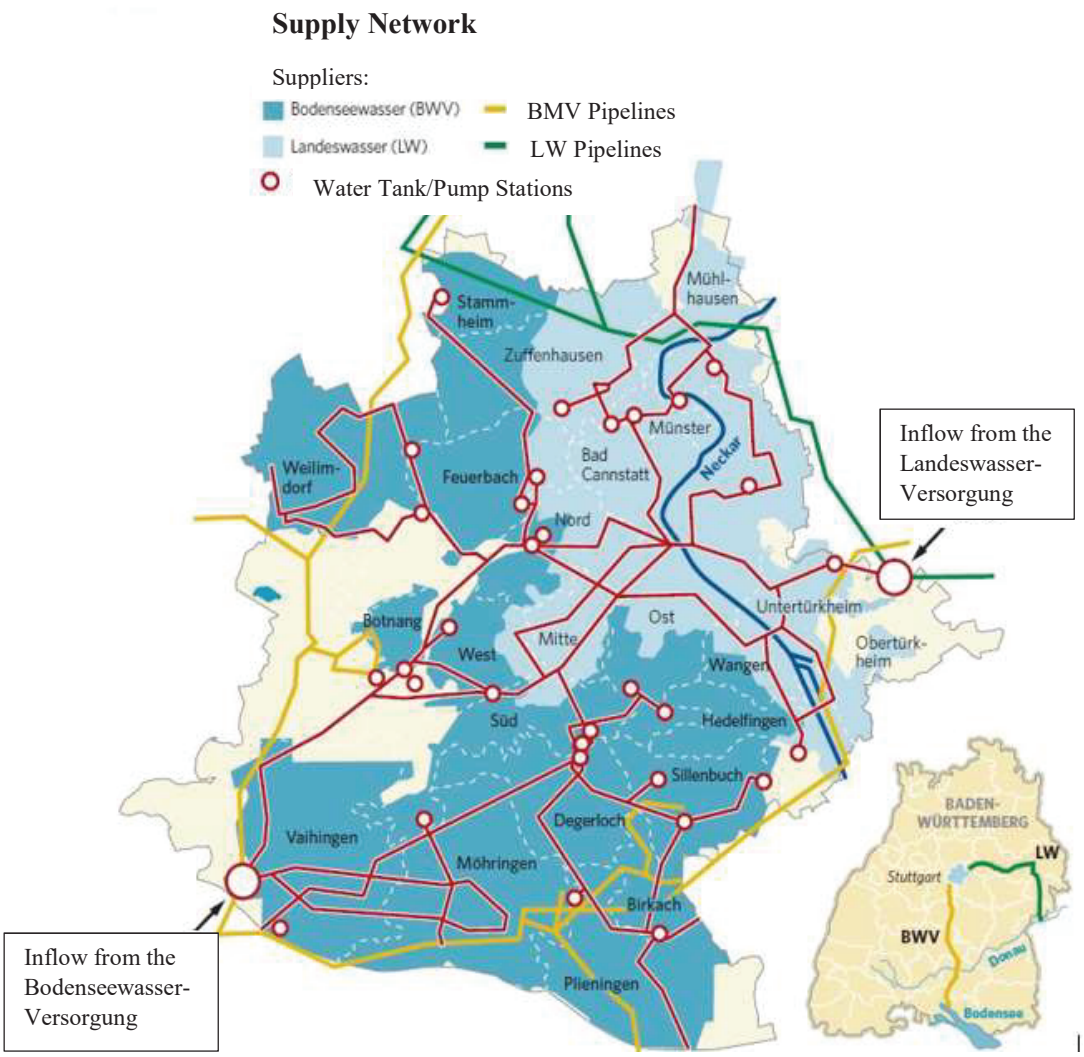

Figure 1. Water Supply Network

General Treatment of Drinking Water

General treatment of drinking water is conducted in several stages. The most commonly used processes includes coagulation (flocculation and sedimentation), filtration, and disinfection of the water. Some water systems also use ion exchange and adsorption. Water utilities select the treatment combination most appropriate to treat the contaminants found in the source water of that particular system. Refer to **Figure 2** - General Water Treatment Processes.

More information can be obtained directly at

Bodensee-Wasserversorgung (BWV)
Hauptstraße 163
70563 Stuttgart
Phone +49 711 9730
E-Mail: info@bondensee-wasserversorgung.de
Internet: https://www.bodensee-wasserversorgung.de/startseite.html

Landeswasserversorgung (LW)
Schützenstraße 4
70182 Stuttgart
Phone +49 711 2175-0
E-Mail: lw@lw-online.de
Internet: www.lw-online.de

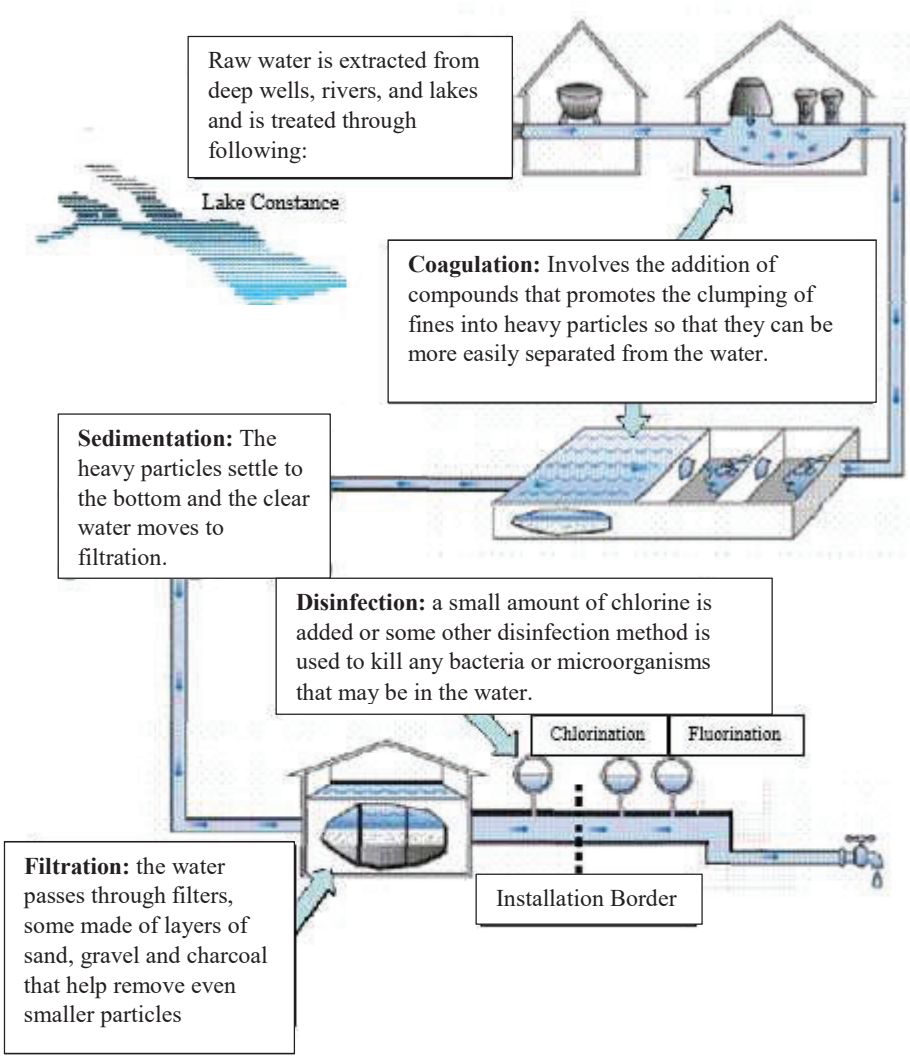

Figure 2. General Water Treatment Process

Water Quality Monitoring

Along with the strict monitoring performed by German water suppliers, the U.S. Army conducts additional testing to ensure water quality standards are maintained. Daily monitoring of CWS stations ensure adequate chorine and fluoride are present in the water system. U.S. Army Medical Department Activity (MEDDAC performs monthly bacteriological testing throughout USAG Stuttgart, in addition to, checking available chorine, and fluoride levels. Public Health Command Europe (PHCE) performs additional monitoring, per EPA requirements, for metals (lead, copper) and various other water contaminants. All water reports are reviewed by Directorate of Public Works (DPW) to ensure standards are maintained throughout our water systems. Additionally, HQ IMCOM monitors all Army Family Housing (AFH) units for lead in drinking water. This testing is in addition to the required monitoring performed by PHCE. As lead poses a danger to children under 6 years of age, the Army has gone beyond EPA regulations to ensure our communities are safe. Upon testing, if there are any elevated readings residents will be immediately notified and corrective actions will take place to mitigate issue.

Water Quality Data Table

The following tables list the water quality results received by PHCE. Obtained results show that USAG Stuttgart is compliant with EPA and GFGS limits in FY21. The GFGS allows us to monitor for some contaminants less than once per year because the concentrations of these contaminants do not vary significantly from year to year, or our system is not considered vulnerable to this type of contamination. Some of our data, though representative, are more than one year old. The presence of these contaminants does not necessarily indicate that the water poses a health risk.

Table 1. Panzer CWS

Substance	Sample Frequency	Violation Y/N	Results	MCL	MCLG	Units	Potential Source of Contamination
Microbial Contaminants							
Coliform Bacteria	Monthly	N	0	Two or more positive samples/month	0	CFU	Naturally present in environment
Inorganics							
Fluoride	Monthly	N	0.66	4.0	4.0	mg/L	Chemical additive
Nitrate	Annual	N	1.7	10	10	mg/L	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
Barium		N	0.023	2	2	mg/L	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Nickel		N	<0.004	0.1	0.020	mg/L	Naturally-occurring, urban storm water runoff, wastewater discharges, oil and gas production, mining or farming
Free Residual Chlorine	Monthly	N	0.00-0.07	MRCL = 4	Detectable residual	mg/L	Water additive used to control microbes
Lead	Every 3 years[1] Sampled: 2020 Due: 2023	N	90th Percentile 0.0015	AL = 0.015	0	mg/L	Corrosion of household plumbing systems
Copper		N	90th Percentile 0.41	AL = 1.3	1.3	mg/L	
Organic Chemicals							
Trihalomethanes, Total	Annual[2]	N	0.0096	0.08	0	mg/L	By-product of drinking water chlorination
HAA5, Total		N	<0.0060	0.06	0	mg/L	
Radionuclides							
Gross Alpha Activity, calculated	Every 4 years Sampled: 2018 Due: 2022	N	1.3	15	0	pCi/L	Erosion of natural deposits
Gross Beta Activity, total		N	3.0	50	0	pCi/L	
Combined Radium 226/228		N	0.101	5	0	pCi/L	
PFOS/PFOA							
Combined PFOS/PFOA	Every 2 years Sampled: 2020/2021 Due: 2023	N	<0.0017-.019	0.070	0	µg/L	Component of aqueous film forming foam, a Firefighting foam

[1] CWS complied with the GFGS requirements for lead and copper in drinking water and has reduced monitoring frequency to every three years. The next scheduled event is summer FY23.

[2] Due to consistently low results throughout FY14-FY16 of TTHM/HAA5 the monitoring frequency was reduced by PHCE beginning FY17 from quarterly monitoring to one sample per year.

Table 2. Stuttgart CWS (Kelley/Patch Barracks)

Substance	Sample Frequency	Violation Y/N	Results	MCL	MCLG	Units	Potential Source of Contamination
Microbial Contaminants							
Coliform Bacteria	Monthly	N	0	Two or more positive samples/month	0	CFU	Naturally present in environment
Inorganics							
Fluoride	Monthly	N	0.15	4.0	4.0	mg/L	Chemical additive
Nitrate	Annual	N	0.87	10	10	mg/L	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
Barium		N	0.025	2	2	mg/L	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Nickel		N	<0.004	0.1	0.020	mg/L	Naturally-occurring, urban storm water runoff, wastewater discharges, oil and gas production, mining or farming
Free Residual Chlorine	Monthly	N	0.33-0.42	MRCL = 4		mg/L	Water additive used to control microbes
Lead	Every 3 years[1] Sampled: 2019 Due: 2022	N	90th Percentile 0.0032	AL = 0.015	0	mg/L	Corrosion of household plumbing systems
Copper		N	90th Percentile 0.59	AL = 1.3	1.3	mg/L	
Organic Chemicals							
Trihalomethanes, Total	Annual[2]	N	<0.0005-0.0050	0.08	0	mg/L	By-product of drinking water chlorination
HAA5, Total		N	<0.0060	0.06	0	mg/L	
Radionuclides							
Gross Alpha Activity, calculated	Every 4 years Sampled: 2018 Due: 2022	N	0.52	15	0	pCi/L	Erosion of natural deposits
Gross Beta Activity, total		N	0.94	50	0	pCi/L	
Combined Radium 226/228		N	0.283	5	0	pCi/L	
PFOS/PFOA							
Combined PFOS/PFOA	Patch Sampled: 2020/2021 Due: 2023 Kelley Sampled 2021 Due: 2022	N	Patch: 0.022-0.026 Kelley: 0.024	0.070	0	µg/L	Component of aqueous film forming foam, a Firefighting foam

[1] CWS complied with the GFGS requirements for lead and copper in drinking water and has reduced monitoring frequency to every three years. The next scheduled event is summer FY22.

[2] Due to consistently low results throughout FY14-FY16 of TTHM/HAA5 the monitoring frequency was reduced by PHCE beginning FY17 from quarterly monitoring to one sample per year.

Table 3. Robinson CWS

Substance	Sample Frequency	Violation Y/N	Results	MCL	MCLG	Units	Potential Source of Contamination
Microbial Contaminants							
Coliform Bacteria	Monthly	N	0	Two or more positive samples/month	0	CFU	Naturally present in environment
Inorganics							
Fluoride	Monthly	N	0.81	4.0	4.0	mg/L	Chemical additive
Nitrate	Quarterly[1]	N	4.0-5.1	10	10	mg/L	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
Barium	Annual	N	0.020	2	2	mg/L	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Nickel		N	<0.004	0.1	0.020	mg/L	Naturally-occurring, urban storm water runoff, wastewater discharges, oil and gas production, mining or farming
Free Residual Chlorine	Monthly	N	0.12	MRCL = 4		mg/L	Water additive used to control microbes
Lead	Every 3 years[2] Sampled: 2020 Due: 2023	N	90th Percentile 0.0076	AL = 0.015	0	mg/L	Corrosion of household plumbing systems
Copper		N	90th Percentile 0.27	AL = 1.3	1.3	mg/L	
Organic Chemicals							
Trihalomethanes, Total	Annual[3]	N	0.0098	0.08	0	mg/L	By-product of drinking water chlorination
HAA5, Total		N	<0.0060	0.06	0	mg/L	
Radionuclides							
Gross Alpha Activity, calculated	Every 4 years Sampled: 2018 Due: 2022	N	0.38	15	0	pCi/L	Erosion of natural deposits
Gross Beta Activity, total		N	1.8	50	0	pCi/L	
Combined Radium 226/228		N	0.474	5	0	pCi/L	
PFOS/PFOA							
Combined PFOS/PFOA	Every 3 years Sampled: 2020 Due: 2023	N	<0.0038	0.070	0	µg/L	Component of aqueous film forming foam, a Firefighting foam

[1] When the measured nitrate level exceeds 50 percent of the MCL, DPW is required to collect quarterly samples to closely monitor the nitrate level. DPW Environmental Division has been instructed by PHCE to continue to collect quarterly samples at Robinson to analyze for nitrates

[2] CWS complied with the GFGS requirements for lead and copper in drinking water and has reduced monitoring frequency to every three years. The next scheduled event is summer FY23.

[3] Due to consistently low results throughout FY14-FY16 of TTHM/HAA5 the monitoring frequency was reduced by PHCE beginning FY17 from quarterly monitoring to one sample per year.

Table 4. Stuttgart Army Airfield

Substance	Sample Date	Violation Y/N	Results	MCL	MCLG	Units	Potential Source of Contamination
Microbial Contaminants							
Coliform Bacteria	Monthly	N	0	Two or more positive samples/month	0	CFU	Naturally present in environment
Inorganics							
Nitrate	Annual	N	0.88	10	10	mg/L	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
Barium		N	0.025	2	2	mg/L	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Nickel		N	<0.004	0.1	0.020	mg/L	Naturally-occurring, urban storm water runoff, wastewater discharges, oil and gas production, mining or farming
Lead	Every 3 years[1] Sampled: 2021 Due: 2024	N	90th Percentile 0.0048	AL = 0.015	0	mg/L	Corrosion of household plumbing systems
Copper		N	90th Percentile 0.60	AL = 1.3	1.3	mg/L	
Organic Chemicals							
Trihalomethanes, Total	Annual[2]	N	0.0091	0.08	0	mg/L	By-product of drinking water chlorination
HAA5, Total		N	<0.0060	0.06	0	mg/L	
Radionuclides							
Gross Alpha Activity, calculated	Every 4 years Sampled: 2018 Due: 2022	N	0.45	15	0	pCi/L	Erosion of natural deposits
Gross Beta Activity, total		N	1.1	50	0	pCi/L	
Combined Radium 226/228		N	0.247	5	0	pCi/L	
PFOS/PFOA							
Combined PFOS/PFOA	Every 2 years Sampled: 2020/2021 Due: 2023	N	0.021-0.027	0.070	0	µg/L	Component of aqueous film forming foam, a Firefighting foam

[1] CWS complied with the GFGS requirements for lead and copper in drinking water and has reduced monitoring frequency to every three years. The next scheduled event is summer FY21.

[2] Due to consistently low results throughout FY14-FY16 of TTHM/HAA5 the monitoring frequency was reduced by PHCE beginning FY17 from quarterly monitoring to one sample per year.

Table 5. Kornwestheim Golf Course

Substance	Sample Date	Violation Y/N	Results	MCL	MCLG	Units	Potential Source of Contamination
Microbial Contaminants							
Coliform Bacteria	Monthly	N	0	Two or more positive samples/month	0	CFU	Naturally present in environment
Inorganics							
Nitrate	Annual	N	3.6	10	10	mg/L	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
Barium		N	0.02	2	2	mg/L	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
Nickel		N	<0.004	0.1	0.020	mg/L	Naturally-occurring, urban storm water runoff, wastewater discharges, oil and gas production, mining or farming
Lead		N	90th Percentile 0.013	AL = 0.015	0	mg/L	Corrosion of household plumbing systems
Copper		N	90th Percentile 0.34	AL = 1.3	1.3	mg/L	
Organic Chemicals							
Trihalomethanes, Total	Annual[(1)]	N	0.0093	0.08	0	mg/L	By-product of drinking water chlorination
HAA5, Total		N	<0.0060	0.06	0	mg/L	
Radionuclides							
Gross Alpha Activity, calculated	Every 4 years Sampled: 2021 Due: 2025	N	0.76	15	0	pCi/L	Erosion of natural deposits
Gross Beta Activity, total		N	2.38	50	0	pCi/L	
Combined Radium 226/228		N	0.14	5	0	pCi/L	
PFOS/PFOA							
Combined PFOS/PFOA	Every 3 years Sampled: 2020 Due: 2023	N	<0.0036	0.070	0	µg/L	Component of aqueous film forming foam, a Firefighting foam

[1] Due to consistently low results throughout FY14-FY16 of TTHM/HAA5 the monitoring frequency was reduced by PHCE beginning FY17 from quarterly monitoring to one sample per year.

Table Definitions and Abbreviations

Table Definitions:

AL Action Level - The concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.
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 the 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 contamination

Table Abbreviations:

CFU - Coli-forming Units (CFU)
ppb parts per billion or micrograms per liter (ug/L)
ppm parts per million or milligrams per liter (mg/L)
pCi/L picoCuries per liter (a measure of radioactivity)
N/A not applicable
ND not detected

Special Requirements:

Additional Information for 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 for advice from your health care provider.

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. USAG Stuttgart water providers along with DPW are 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. 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/safewater/lead

Summary of Results

A number of different water samples are collected and analyzed for various contaminants throughout the year. The number and frequency of sampling events depends on federal and state requirements. The water quality tables list the drinking water contaminants monitored during FY21. All of the substances listed in these tables are below the MCLs set by the EPA and GFGS.