CAMP LEMONNIER, DJIBOUTI (CLDJ) 2018 DRINKING WATER CONSUMER CONFIDENCE REPORT

01 JULY 2019

What is a Consumer Confidence Report (CCR)?

The Consumer Confidence Reports (CCR) summarize information that your water system already monitors and collects data to comply with regulations. The CCR is an opportunity to communicate the value of water (both as a product and as a service), to promote wise use, to build community trust and customer satisfaction, and to encourage investment in resource protection and infrastructure.

Every community water system must prepare and distribute a report. These systems typically include cities, towns, homeowners associations, residential subdivisions, manufactured housing communities, and other institutions where people live full-time such as nursing homes and hotels. The CNIC M-5090.1, Navy Overseas Drinking Water Program Ashore Manual, reflecting this stateside requirement, mandates that all overseas installations operating drinking water systems produce a CCR.

The CCR's delivery is by July 1st of each year. Thus CCR is based upon previous calendar-year's data, collected between January and December of 2018. The Navy is committed to providing safe and reliable drinking water to the CLDJ community. This annual Consumer Confidence Report for calendar year 2018 includes both general and mandatory information to educate everyone about our water source(s), treatment processes, standard requirements, and other details to help assure you that our water is safe to drink.

Is our water safe to drink?

Yes! The Camp Lemonnier drinking water system continues to provide water that is safe and Fit for Human Consumption (potable), as determined by the Camp Lemonnier Commanding Officer's Record of Decision dated 05 November 2013 and currently sustained.

The managing of CLDJ's drinking water fully complies with the safe drinking water criteria specified in the DoD Overseas Environmental Baseline Guidance Document (OEBGD), which is derived from the U.S. Environmental Protection Agency (EPA) drinking water standards. When any OEBGD and U.S. standards differ, the *most protective* requirement is adopted. A detailed list of constituents found in our drinking water is included in this report, along with a comparison to the maximum levels considered safe for the general public by these standards.

Where does our water come from and how is it treated?

The Camp Lemonnier water supply is provided by groundwater pumped from aquifers underlying the Camp through wells located on site. An aquifer is a body of sub-surface saturated rock that is both permeable and porous allowing water to move through it. Groundwater has to migrate through the pore spaces of rock and sediment to move through an aquifer. Because it takes effort to force water through tiny pores, ground water loses energy as it flows, leading to a decrease in hydraulic head, or liquid pressure, in the direction of flow. Larger pore spaces usually have higher permeability (the measure of ease water can move through a porous rock), produce less energy loss, and therefore allow water to move more rapidly. There are two aquifers underlying Camp Lemonnier: a shallow (15-meter to 49-meter thick) unconsolidated aquifer with total dissolved solids (TDS) concentrations less than 10,000 mg/L, which receives water recharge from the surface water of the Wadi Ambouli located immediately west of Camp, and a deeper aquifer with TDS near 35,000 mg/L.

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The amount of water in storage in an aquifer is reflected by the elevation of its water table and can vary from season to season and year to year. Water will eventually discharge or leave an aquifer and must be replaced by new water to replenish or recharge the aquifer. Currently, there are three drinking water wells at Camp Lemonnier and the groundwater pumped from these wells is piped to an on-site treatment plant

The treatment process at Camp Lemonnier consists of several different technologies: filtration, ultraviolet (UV) disinfection, reverse osmosis (RO) and chemical disinfection. The treatment plant, which is called a Reverse Osmosis Water Purification Unit (ROWPU), consists of eight multimedia filters, eight granular activated carbon filters, eight cartridge filters and four parallel RO treatment trains.

All four RO water treatment trains are identical. Water from three groundwater wells is processed through the granular multimedia pressure filters to remove large particulate matter. From there, water passes through the granular activated carbon (GAC) adsorption pressure filters to remove dissolved contaminants, as well as the cartridge pressure filters to remove small particles. The filtered water is then pH adjusted with hydrochloric acid, which is then sent through a UV light disinfection unit to kill any remaining microbes that might have passed through the multiple filtration steps before entering the RO unit.

In reverse osmosis treatment units, pressure is continuously applied to push the water molecules across the membrane from an area of higher concentration (less water molecules, more contaminants) to lower concentration (more water molecules, less contaminants). The RO skid removes unwanted salts, microorganisms, and other contaminants. After the RO treatment, the drinking water is pH adjusted with sodium hypochlorite and disinfected with calcium hypochlorite in order to maintain a chlorine residual in the distribution system.

Hard water contains dissolved minerals including calcium and magnesium. Because our treatment process eliminates a considerable amount of these minerals during processing, our water is considered soft water. The minerals in water provide its characteristic taste. Soap lathers less in hard water. The characteristics of soft water, e.g. a “flat” taste and lots of lather during washing, are not associated with poor quality water, just very pure water.

Why are there contaminants in drinking water?

Drinking water, including bottled water, may reasonably be expected to contain small amounts of some contaminants. 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 contaminants. However, the porosity, i.e., the measure of the amount of open space between grains or within cracks or cavities of the rock; of aquifers makes them good filters for natural purification of the groundwater. Like a coffee filter, the pore spaces in an aquifer purify groundwater of particulate matter (the coffee grounds), but not of dissolved substances (the coffee). Also, like any filter, if the pore sizes are too large, smaller particles can get through.

Some contaminants may be present in source drinking water, such as:

- **Microbial contaminants**, such as viruses and bacteria, that may come from wildlife, sewage treatment plants, septic systems, and livestock;

- **Disinfection by-products,** such as chlorine and chloramine used to remove pathogens from the water;
- **Pesticides and herbicides**, which may come from a variety of sources such as agriculture, urban storm water runoff, and residential uses;
- **Inorganic contaminants**, naturally occurring 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;
- **Organic chemical contaminants**, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban storm water runoff, and septic systems; and
- **Radioactive contaminants**, which can be naturally occurring or be the result of oil and gas production and mining activities.

The presence of contaminants does not necessarily indicate that water poses a health risk. In order to ensure that tap water is safe to drink, regulations limit the amount of certain contaminants in water provided by public water systems. Regular sampling is conducted to detect the level of contaminants in the water system. If the results are above regulatory levels, you will be notified by email and Public Notification. You can learn more about contaminants and any potential health effects by visiting the EPA's Drinking Water Standards website:

http://permanent.access.gpo.gov/lps21800/www.epa.gov/safewater/standards.html

Drinking Water Monitoring

U.S. Navy overseas installations are required to meet or exceed National Primary Drinking Water regulations promulgated under the Safe Drinking Water Act of 1974, which was adopted by Commander, Navy Installations Command (CNIC) Instruction 5090.1A, and are the same standards used in the U.S. to ensure safe drinking water. These standards require monitoring and testing of the drinking water for contaminants on a regular basis ensuring it is safe to drink.

Samples are analyzed for certain physical and chemical properties using field and laboratory equipment. The PWD Camp Lemonnier conducts daily samplings and analysis via the Base Operations Support Contract (BOSC) and/or the remaining required analytical testing, per OEBGD and CNICINST 5090.1, is conducted by EPA certified and accredited laboratories.

CLDJ's drinking water is monitored for and analyzed (analyzing agency shown in italics) for the following constituents at the frequencies shown below:

Daily (*PWD BOSC*) – pH, Turbidity, Residual Chlorine, Temperature, and Conductivity
Monthly (*PWD BOSC*) – Total Coliform
Quarterly (*Lab*) - PCBs, Herbicides, Pesticides, Organic Chemicals, Radionuclides
Semi-annually (*Lab*) – Lead and Copper
Annually (*Lab*) –Inorganic Chemicals, Corrosion Control, Nitrite/Nitrate, Disinfection By-Products (TTHM and HAA5)

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The water samples are collected from water faucets and fountains located throughout CLDJ. The following table provides the results of the above testing for calendar year 2018 (unless otherwise noted). The presence of contaminants in the water does not necessarily indicate that the water poses a health risk. All contaminants detected in Camp Lemonnier drinking water are below the Maximum Contaminant Levels (MCLs) allowed by EPA applicable requirements. CLDJ samples for many other parameters not listed in this report. While, if a particular contaminant(s) exceeded unsafe levels, notification of its effects, actions, precautions and corrections would be documented below.

Water Quality Data

Note *: Lowest and Highest Sample Reading collected in 2018.

Contaminant		Typical Sources	Unit of Measure	Regulatory Criteria – OEBGD & CNICINST 5090.1		Laboratory Results		
				MCLG or MRDLG	MCL, TT or MRDL	Result*		Violation
						Low	High	
Inorganics	Heavy Metals	Erosion of natural deposits	mg/L	0.0005 to 2.0	0.002 to 2.0	ND	0.034	No
	Total Nitrite & Nitrate	Run off from fertilizer use	mg/L	Nitrate 10.0 Nitrite 1.0	Nitrate 10.0 Nitrite 1.0	2.0 EHT	3.3	No
	Asbestos	Decay of asbestos cement water mains; Erosion of natural deposits	MFL	7	7	ND	ND	No
	Fluoride	Discharge from plastic and fertilizer factories Discharge from steel/metal factories; Discharge from plastic and fertilizer factories	mg/L	4.0	4.0	ND	ND	No
	Cyanide		mg/L	0.2	0.2	ND	ND	No
Organics	Volatile Organics	Discharge from industrial and agricultural chemical factories	mg/L	0.0 to 10.0	0.002 to 10	ND	ND	No
	Semi Volatile Organics & Pesticides /PCB	Run off from landfills; Discharge of waste chemicals; Runoff from herbicide used on crops and soil fumigants	mg/L	0.0 to 0.7	$3x10^{-8}$ to 0.7	ND	ND	No
Microbiological	Turbidity	Soil runoff	NTU	NA	1 maximum & 0.3 for 95% of	N/D	N/D EHT	No

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					the monthly samples			
	Total Coliform Bacteria	Naturally present in the environment	NA	0	No more than one positive sample per month	0 Negative	0 Negative	No
Disinfectant & Disinfection By-Products	Halo Acetic Acids (HAA5)	Byproduct of drinking water disinfection	mg/L	0.0 to 0.07	Annual average 0.06	ND	ND	No
	Total Tri-Halo-Methanes (TTHM)	Byproduct of drinking water disinfection	mg/L	0.0 to 0.07	Annual average 0.08	ND	ND	No
Radionuclide[1]	Gross Alpha/ Radium-226 and 228	Erosion of natural deposits	pCi/L	NA	5	ND	0.829	No

NOTE 1: Radionuclide testing done every 4 years. – Next testing in 2020.

Contaminant	**Typical Sources**	**Unit of Measure**	**Regulatory Criteria – OEGBD & CNICINST 5090.1**		**Laboratory Results***		**Violation**
			MCLG	**AL**	**Low**	**High**	
Lead	Corrosion of household plumbing systems; erosion of natural deposits.	mg/L	0	0.015 based on 90th percentile results exceeding AL	< 0.011	0.106	No
Copper	Corrosion of household plumbing systems; erosion of natural deposits.	mg/L	1.3	1.3 based on 90th percentile results exceeding AL	< 0.0013	0.0024	No

Data Table Key: Unit Descriptions

mg/L	mg/L: number of milligrams of substance in one liter of water
ppm	ppm: parts per million, or milligrams per liter
ppb	ppb: parts per billion, or micrograms per liter
ppt	ppt: parts per trillion, or nanograms per liter
MFL	MFL: million fibers per liter (fibers greater than 10 micrometers in length)

NTU	NTU: nephelometric turbidity units
pCi/L	pCi/L: picocuries per liter (a measure of radioactivity)
NA	NA: not applicable
ND	ND: not detected
NR	NR: monitoring not required

Important Drinking Water Definitions

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 MCLG 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 systems must follow.
MRDLG	Maximum Residual Disinfectant Level Goal: The level of a drinking water disinfectant below which there is no known or expected risk to health (4 mg/L of chlorine). 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 (4 mg/L of chlorine). There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

Violations and Exceedances:

There were no Maximum Contaminant Level (MCL) exceedances during the CY 2018.

Compliance DW Sample Testing – Delayed and completed outside of the required time requirements. Compliance DW Testing Samplings are conducted, as per 40 CFR; Part 14; Subpart C – Monitoring and Analytical Requirements. The CY 2018 4th – Quarter Sample Testing (October – November –December), along with Semi-Annual Testing Requirements (for Lead and Copper) and Annual Testing requirements (Inorganics, Nitrate/Nitrite, Dis-infection by-products, etc.), were not collected by the end of calendar year 2018. The delayed was due to administrative funding issues. All required sample test collections were completed in February 2019 with final certified results made available on 11 March 2019. There were no MCL exceedances reported.

General Information about Drinking Water

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:

- 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 that can be naturally-occurring or result from urban storm water runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.
- Organic chemical contaminants, including synthetic and volatile organic chemicals that are byproducts of industrial processes and petroleum production and can also come from gas stations, urban stormwater runoff, agricultural application, and septic systems.
- Radioactive contaminants that can be naturally occurring or be the result of oil and gas production and mining activities.
- Pesticides and herbicides that may come from a variety of sources such as agriculture, urban storm water runoff, and residential uses.

Some people must use special precautions

There are people who may be more sensitive 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 EPA's Safe Drinking Water website:

http://www.epa.gov/safewater.

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CLDJ Water Conservation is Everyone's Responsibility

Lastly, in a desert environment that we live and work in, it is imperative to practice water conservation, saving water is simple and inexpensive. Practicing a few of the following tips can make a difference in conserving our planets most precious resource:

- For repair of any water leaks anywhere and at any time; e.g., faucets and toilets, water line breaks. Call DSN: 824-2653 – the Base Operations Control Center (OCC) immediately!
- Take short showers - a 3 - 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.
- Run the clothes washer on a full load. You can save up to 1,000 gallons a month.
- Water plants only when necessary. Apply water only as fast as the soil can absorb it and during the cooler parts of the day to reduce evaporation.
- Visit www.epa.gov/watersense for more information.

Points of Contact

If you have any questions and concerns regarding this report or about the drinking water processes, please contact any of the following Installation Water Quality Board (IWQB) members below:

Public Works Officer
Camp Lemonnier
DSN: 311-824-4064

Installation Environmental Program Director
Camp Lemonnier
DSN: 311-824-5523

Environmental Health Officer/Industrial Hygiene Officer
Camp Lemonnier EMF
DSN: 311-824-4910