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From start to flush, Cannon ensures safe wastewater treatment

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9/3/2008 - **CANNON AIR FORCE BASE, N.M.** -- Water is the fundamental element of life. Without it people would not survive. Most people turn on the tap and take for granted that the water they use is clean. We use what we need and discard the rest without a second thought. For some Cannon employees, the treatment of wastewater is a serious business.

"We process about 400,000 gallons of wastewater a day," said Jesse Frogge, 27th Special Operations Wing Wastewater Treatment Plant contract manager. "On average, we process 146 million gallons of wastewater annually."

The WWTP treats all of the domestic wastewater from base housing and on-base government facilities for various contaminants and pathogens that may be harmful to the local ecosystem with a portion of the wastewater being reclaimed to irrigate the golf course, driving range and Doc Stewert Recreation Park, said Brenda Schiller, 27th SOW WWTP assistant contract manager.

"We treat the wastewater to very strict Environmental Protection Agency standards along with Air Force and State of New Mexico treatment standards," said Schiller. Once the treatment is completed the treated wastewater is piped to places like the base golf course where it is used for irrigation.

The process begins with the raw wastewater entering the WWTP compound. It flows into a filtration system where an auger separates solids that are not biodegradable; these items are removed before they reach the actual treatment stage, said Schiller. Anything like paper towels or any toiletry items that do not dissolve are taken out and disposed of in the local landfill.

Once this process is completed, the wastewater is placed in basins where it is treated and solids are settled out. Various microorganisms break down the organic matter that could potentially harm the environment. From there, water is chlorinated to kill pathogenic organisms and dechlorinated before it's finally discharged into a golf course pond or on-base playa lake south of the Munitions Storage Area.

"Tardigrade, more commonly known as 'waterbears,' are our favorite microorganisms," said Schiller. "They are the workhorse that makes sure the water is clean."

All of the microorganisms used in the treatment process can be found in the human body, said Frogge. "We take things that are found in the human body, cultivate them with the right amount of air and proper pH balance to allow them to thrive and do their job."

The Cannon WWTP follows both New Mexico regulations and those set forth by the federal government.

"We go by the most stringent standards," said Schiller. "Our wastewater is piped back into the environment and if we weren't doing our job properly, there could be severe consequences for the local ecosystem."

The guidelines come from the National Pollutant Discharge Elimination System permit issued by the EPA and a New Mexico Ground Water Discharge Permit.

There are a range of stringent requirements on levels of contaminants that are permitted to be released into the environment such as Biochemical Oxygen Demand. This is the oxygen-to-chemical ratio allowed to be released into the environment, of which the federal standard is 30 milligrams per liter. Cannon does better than this standard with an average of 1-2 mg/L. In addition, the amount of Total Suspended Solids, which are the floating



CANNON AIR FORCE BASE, N.M.-- At the 27th Special Operations Wing Waste Water Treatment Plant, water is being chlorinated and then released into the Playa Lake, Apr. 22. Before the water is discharged into the Playa Lake, it undergoes a chlorination process in the chlorine contact chamber. The chamber ejects water approximately every three hours, adding up to a total of 10 discharges per day. (U.S. Air Force photo/Airman Maynelinne De La Cruz)

particles in water, is 30 mg/L. The Cannon plant also does better than the federal standard, averaging 2-4 mg/L of TSS.

"We also track Total Residual Chlorine," said Schiller. "The standard for drinking water is 0.8 mg/L and ours is 0.011 mg/L because the golf course pond and the on-base playa lake contain aquatic life."

However, do not think that the water used to irrigate the golf course is necessarily drinkable, said Frogge. "You could drink it but it would make you sick. We make sure that the fish, birds and other wildlife at the golf course and on base are not harmed with our water distribution." New Mexico guidelines are followed to ensure water used for irrigation is safe from a public contact perspective, but not an ingestion perspective.

There is a great deal of training that must be completed to become certified in wastewater treatment. All of the individuals involved in the r treatment process have been trained in federal classes in areas like biological testing to ensure the proper operations are in place to keep the environment safe.

Because of its great care in wastewater treatment and superb maintenance, the 27th SOW WWTP was recognized by the New Mexico Water and Wastewater Association in 2006 and 2007 with its Good Housekeeping Award. This award recognizes the best overall WWTP operations and maintenance practices. In addition, the operators were recognized as superior performers during the 2006 External Environmental, Safety and Occupational Health Compliance Assessment and Management Program Inspection.

"We take pride in the fact that our plant exceeds all standards set forth by the government and the Air Force," said Frogge.