



# Robins Air Force Base Environmental Advisory Board (EAB)

## Fact Sheet



Volume 14, Issue 1, August 2019

### The Robins AFB EAB

Recognizing the importance of public involvement in environmental matters, Robins Air Force Base (Robins AFB) has established the Environmental Advisory Board (EAB). The mission of the EAB is to encourage participation of surrounding communities in the Base's environmental programs and allow community members and other stakeholders to have meaningful dialog with Base officials. Specifically, the EAB serves to promote community awareness and obtain constructive community review, comment, and input on current and proposed actions associated with environmental programs at Robins AFB. The EAB supports the Air Force environmental mission of sustaining readiness, being a good neighbor, protecting human health and the environment for the Base and community, and making smart business decisions.

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### August EAB Meeting

The fall EAB meeting was held on Thursday, August 1, 2019. EAB members met at the Warner Robins City Hall in Warner Robins, Georgia, where they boarded a bus to tour Landfill No. 3 (LF003) and the Groundwater Treatment Plant (GWTP).

This *Fact Sheet* provides a summary of the information and topics discussed during the tour.

**The next EAB meeting will be held on Thursday, November 7, 2019.**

### EAB MEMBERS TOUR LANDFILL NO. 3 (LF003) AND GROUNDWATER TREATMENT PLANT (GWTP)

During the summer EAB meeting, **Mr. David Fortune** from Cape Environmental Management Inc. (CAPE) gave the EAB members a tour of LF003 and the GWTP.



Mr. Fortune of CAPE gave the EAB members an overview of LF003 and the GWTP at the summer EAB meeting (shown here at the GWTP).

### LF003

LF003 is an 8-acre landfill that encompasses three restoration sites, including the landfill, a fire protection training area, and a laboratory chemical disposal area. The remediation activities at LF003 focus on containment, with a landfill cover and slurry wall around the landfill, and removal of contaminants through a groundwater and leachate pump and treat (P&T) system. The extracted groundwater and leachate is conveyed to the Base's centralized GWTP for treatment prior to discharge.

During the tour, two of the components of the P&T system at the landfill were discussed, including the pre-treatment of: (i) leachate collected from within the landfill slurry wall; and (ii) groundwater from the extraction well network outside the landfill for iron.

## EAB MEMBERS TOUR LF003 AND GWTP (Cont'd)

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### Leachate Collection:

The leachate collected from within the landfill contains both light non-aqueous phase liquids (LNAPLs) and dense non-aqueous phase liquids (DNAPLs) (collectively termed NAPLs). These NAPLs, if conveyed directly to the GWTP, would damage the treatment system.



View of leachate from leachate collection wells (left) and NAPL from OWS (right).

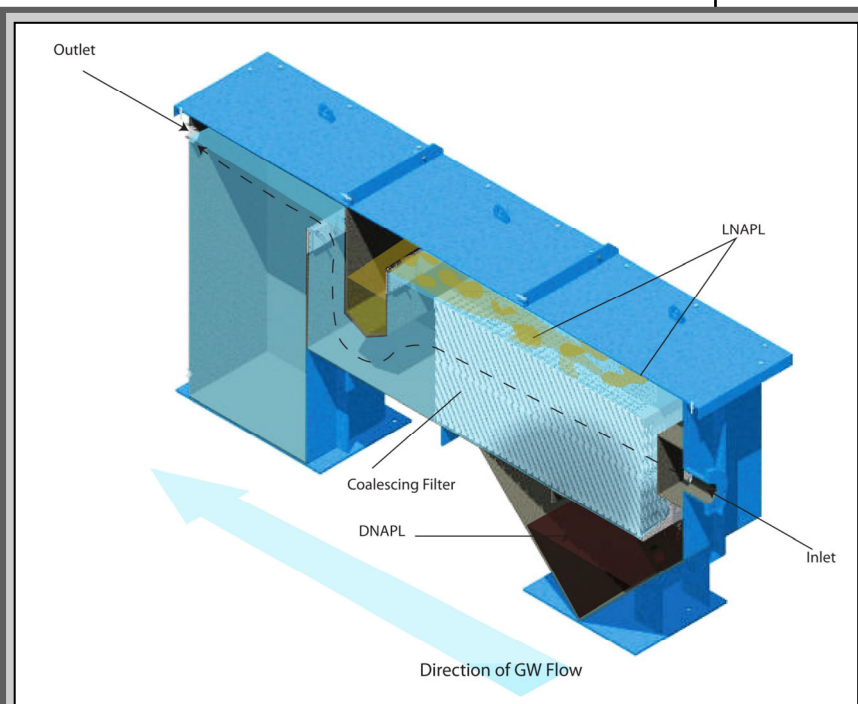
Therefore, the leachate is pumped to a wet well for preliminary separation of leachate from the NAPL product. The leachate is then pumped to a specially designed oil water separator (OWS) for additional separation before going to the treatment plant. The OWS allows for collection of both LNAPL and DNAPL.

### Groundwater Extraction:

The groundwater at LF003 contains high levels of dissolved iron. When the groundwater is extracted, the iron precipitates and subsequently clogs the recovery wells, pumps, pipelines, and the treatment systems, which reduces operational efficiency.



Iron deposition on extraction well caps at LF003 (left) and dosing pump for the iron deposition system (right).



Schematic of OWS at LF003.

These precipitates were historically removed with harsh chemicals, such as hydrogen peroxide, which presented safety concerns with regard to both application and storage on-site. To address the iron fouling before it can occur, an iron deposition control system was developed for the P&T system at LF003.

The groundwater extraction well heads have been retrofitted to allow the groundwater to be dosed with deposit control chemicals as groundwater extraction is occurring. A portion of the dosed groundwater is subsequently returned to the well, keeping the wells, recovery pumps, well screens, and pipelines free of iron solids. The chemicals used in the system are mixtures that keep iron from forming solids, or keep any solids that do form from growing or settling in the system.

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## EAB MEMBERS TOUR LF003 AND GWTP (Cont'd)

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### GWTP

The GWTP has been retrofitted to accommodate the decrease in flow that occurred as the remediation strategies at the various restoration sites were transitioned away from P&T to other more aggressive treatment technologies. The P&T system at LF003 is currently the only system providing flow to the GWTP.

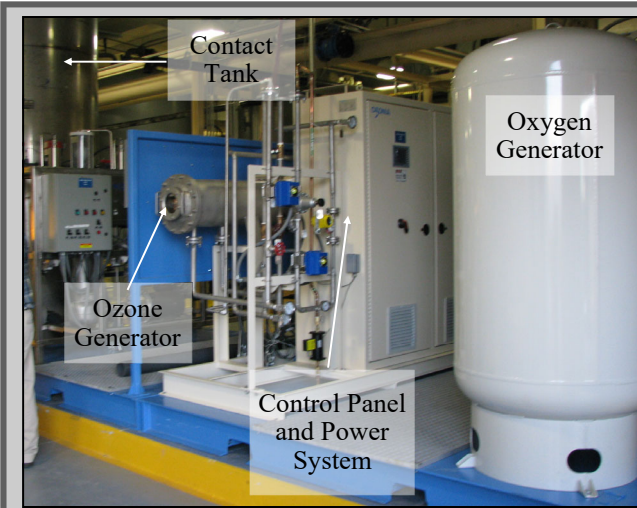
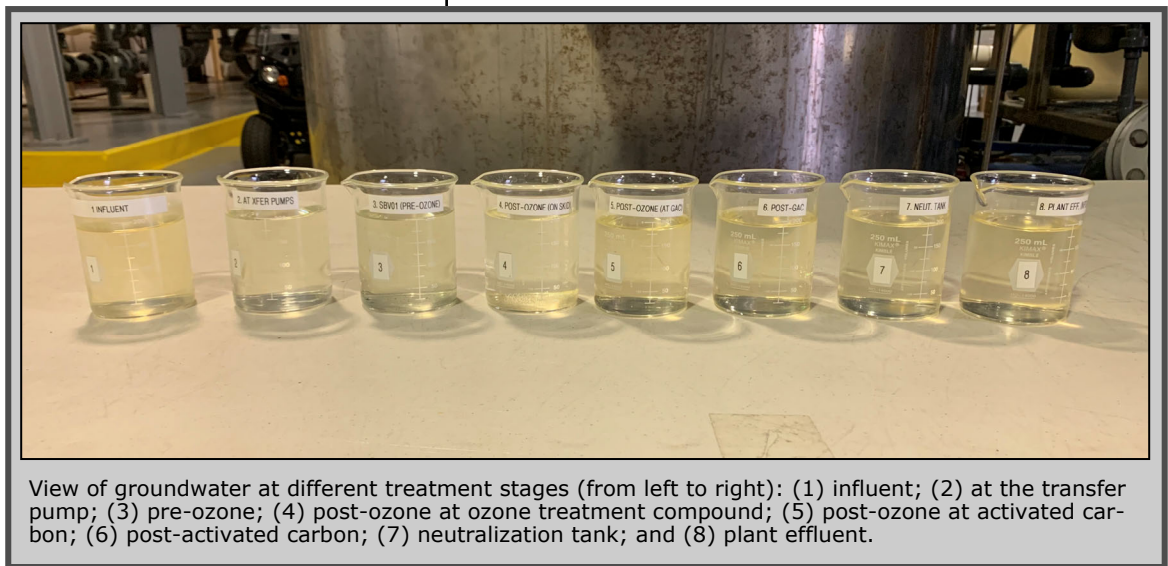
The GWTP was originally designed for a flow rate of 900 gallons per minute (gpm); the current flow rate ranges from approximately 30 to 45 gpm. The groundwater conveyed from LF003 also has some of the highest contaminant concentrations of any of the sites that have contributed flow to the plant; and therefore, the flow is more concentrated.

To accommodate the decrease in flow and increase in contaminant concentration, the treatment process at the GWTP was modified to include an ozone treatment system. Ozone is a strong natural oxidizer that will break down the

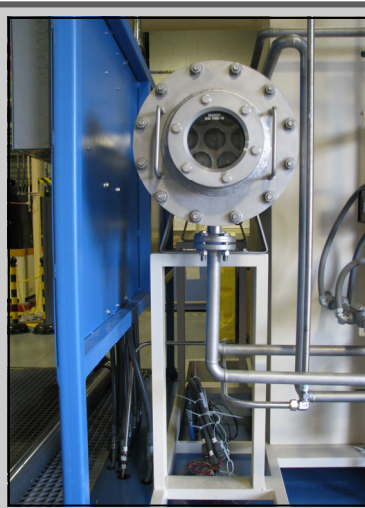
contaminants in the groundwater.

Extracted leachate and groundwater from LF003 is conveyed to a equalization tank. It is subsequently pumped to the ozone system where it is injected with ozone prior to transfer to a pressurized contact tank. Following ozone treatment, the pH must be adjusted to within the National Pollutant Discharge Elimination System (NPDES) permit limits. The treated water is then polished in granular activated carbon vessels and conveyed to a neutralization tank prior to discharge.

Contaminant concentrations in the effluent are generally non-detect or detected at low estimated values well below the NPDES permit limits or Georgia instream water quality standards.



View of ozone system at the GWTP.



Close-up of Ozone Generator.



Close-up of Contact Tank.

## UPDATE ON PROGRESS - SWMU 61

The source of the petroleum contamination at SWMU 61 was identified as a leaking valve located on an 8-inch diameter underground Jet Propellant No. 8 (JP-8) fuel supply line. The remedy for the site consists of Air Sparge/Soil Vapor Extraction (AS/SVE), followed by monitored natural attenuation (MNA).

The AS/SVE system ran from 2003 to 2009. In 2009, the site remedy transitioned to MNA due to contaminant concentrations being reduced to near remediation levels (RLs). In 2011, based on concentrations below RLs in three of the four site wells, the Georgia Environmental Protection Division (GA EPD) reduced the annual sampling requirement to only one well, S61MW4.

Due to recalcitrant benzene concentrations and a detection of 1,3,5-trimethylbenzene above the RL at S61W4 in 2013, CAPE began quarterly monitoring in October 2013.

CAPE also installed In-Situ Submerged Oxygen Curtains (iSOC®)

in December 2013, and conducted oxygen releasing compound injections using TersOX™ in January 2014. Immediately following the implementation of these technologies, a decrease in contaminant concentrations was observed. However, concentrations of naphthalene subsequently increased above the RL.

In June and August 2018, CAPE conducted injections of dilute hydrogen peroxide and water. CAPE also installed new oxygen diffusers to replace the iSOC® units in December 2018.

The naphthalene concentration in the March 2019 groundwater sample was an estimated concentration of 13 micrograms per liter (ug/L), which is above the RL of 6.5 ug/L.

The path forward for SMWU 61 is continued operation of the oxygen diffusers.

Acronyms	
AFB	Air Force Base
AS/SVE	Air Sparge/Soil Vapor Extraction
CAPE	Cape Environmental Management Inc.
DNAPL	Dense Non-Aqueous Phase Liquid
EAB	Environmental Advisory Board
GA EPD	Georgia Environmental Protection Division
gpm	gallons per minute
GWTP	Groundwater Treatment Plant
iSOC®	In-Situ Submerged Oxygen Curtain
JP-8	Jet Propellant No. 8
LF003	Landfill No. 3
LNAPL	Light Non-Aqueous Phase Liquid
ug/L	micrograms per liter
MNA	Monitored Natural Attenuation
NPDES	National Pollutant Discharge Elimination System
OWS	Oil Water Separator
P&T	Pump and Treat
RL	Remediation Level
SWMU	Solid Waste Management Unit

For more information regarding the EAB, please contact **Ms. Laurel Cordell, Robins AFB EAB Manager**, at (478) 327-9275 or visit <http://www.robinseab.org>

Environmental Advisory Board Members		
<b>Vacant, Robins AFB</b> Installation Co-Chair	<b>Mr. James Harden, Warner Robins</b> Community Member	<b>Dr. Clarence Riley, Warner Robins</b> Community Member
<b>Dr. Linda Smyth, Macon</b> Community Co-Chair	<b>Mayor John Harley, Centerville</b> Community Member	<b>Dr. Brian E. Rood, Macon</b> Community Member
<b>Ms. Anna Cornelious, US EPA Region 4</b> Superfund Division	<b>Mr. Stephen Johnson, Macon</b> Community Member	<b>Mr. Penrose Wolf, Perry</b> Community Member
<b>Mr. Jim Ashworth, GA EPD</b> Hazardous Waste Management	<b>Ms. Debra Jones, Warner Robins</b> Community Member	
<b>Mayor Lawrence Collins, Byron</b> Community Member	<b>Mr. Mike Maffeo, Macon</b> Community Member	