



PFOS/PFOA COMPLIANCE/RESTORATION ACTIONS SELFRIDGE AIR NATIONAL GUARD BASE



Storm Water Study for PFAS - Project Objective

Potential sources of per- and polyfluoroalkyl substances (PFAS) within the storm water conveyance system are being assessed at Selfridge Air National Guard Base (SANGB), 127th Wing in Macomb County, Mt. Clemens, Michigan. A Short-Term Storm Water Characterization Study (STSWCS) was conducted to quantify the PFAS being discharged from the six storm water outfalls into water bodies of the State (Lake St. Clair and the Clinton River). A follow-on Storm Water PFAS Study (SWPS) was completed on storm water within the drains, ditches, and storm water sewer system piping conveyance systems.

Background

Based on two phases of investigation conducted at SANGB, historical operations at the base have resulted in the release of aqueous film forming foam (AFFF). These operations included fire training exercises, where AFFF was used to extinguish fires, and nozzle testing, where small amounts of AFFF were released from firetrucks on a periodic basis to make sure that the nozzles were not plugged and would operate properly during an emergency situation. Perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA) are key compounds of the suspected AFFF releases being evaluated.

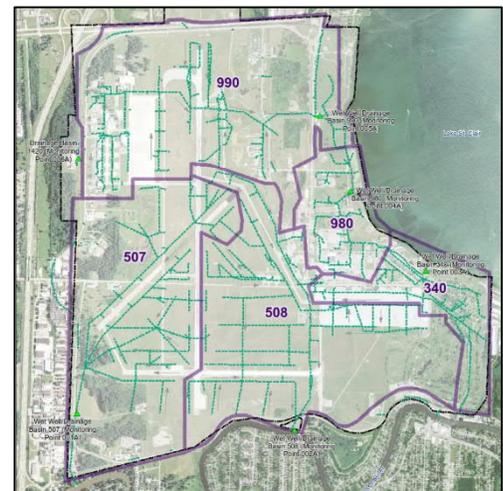


Figure 1. Site Location Map

In 2017, the Michigan Department of Environment, Great Lakes, and Energy (EGLE) established Water Quality Standards (WQSs) for PFOS at 11 nanograms per liter (ng/L) and PFOA at 420 ng/L for surface drinking water sources under Michigan Administrative Code Rule 323.1057, implementing Michigan's Natural Resources and Environmental Protection Act. Storm water at SANGB is discharged via six National Pollution Discharge Elimination System (NPDES)-permitted storm water outfalls to Lake St. Clair and the Clinton River.

Project Findings

Field activities for the STSWCS/SWPS investigation occurred between February and December 2019 and involved storm water sample collection from the six storm water outfalls and various storm water conveyance structures during wet and dry weather conditions. Surface water samples were collected in Lake St. Clair and the Clinton River to analyze downstream PFOS and PFOA impacts from the storm water outfalls to the receiving bodies of water. A dye test was completed to model mixing conditions in the water following discharges from the outfalls to better understand the movement of PFOS and PFOA. Finally, additional groundwater and surface soil samples were collected from on-base discharge areas for further characterization of PFOS/PFOA-impacted areas within SANGB.

The results of the studies are as follows:

- All six outfalls continued to display exceedances of the WQS of 11 ng/L for PFOS. Overall PFOS concentrations ranged from 17.2 to 8,900 ng/L. No exceedances of the WQS of 420 ng/L for PFOA were observed.
- Surface water samples collected in Lake St. Clair and the Clinton River, approximately 500 feet downstream from the six outfalls, had PFOS concentrations ranging from 4.13 to 119 ng/L with exceedances of the WQS for PFOS (11 ng/L) observed at all locations. The PFOS levels appeared to be strongly influenced by the amount of precipitation received, water levels, and variable mixing patterns in the water bodies.
- Samples collected from storm water conveyance structures, groundwater, and surface soil suggest two significant sources of PFOS at SANGB: Former Fire Training Area #2, where fire training exercises took place, and the Nozzle Testing Area, where firetruck nozzles were tested.



Figure 2. Inside the granular activated carbon treatment system at SANGB

Current PFOS/PFOA Mitigation Efforts

A mobile treatment system is being piloted at SANGB to assess the viability of removing PFOS/PFOA in storm water. The pilot test, utilizing various filtration technologies, is being implemented as an interim control measure to reduce PFOS loads in one of the outfalls (Wet Well 507) that has exhibited the highest levels of PFOS discharged to Lake St. Clair and the Clinton River. The treatment system began operation on January 3, 2020 and is currently funded to run until 2022. Initial results are promising with an average 71% decrease in PFOS levels at Wet Well 507 when compared to results obtained prior to the installation of the treatment system. Additional mitigation options for PFOS/PFOA continue to be evaluated at SANGB and will be influenced by the findings of the ongoing pilot study.

Public Access to Site Information

Information concerning the PFOS/PFOA Compliance/Restoration Program at SANGB, as required under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and Freedom of Information Act (FOIA), can be reviewed. Current records can be viewed online at the following link: <https://ar.afcec-cloud.af.mil/>. Other records can be made available upon written requests submitted to the Selfridge Public Affairs Office for additional environmental information.

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