Air Force Civil Engineer Center



Wright-Patterson AFB **Restoration Advisory Board** Meeting Greg Plamondon, RPM Dave lacovone, RPM John Crocker, RPM Joseph Ferentz, RPM AFCEC/CZOM

March 2022

Battle Ready... Built Right!







- Partnering meetings
- PFOS and PFOA Facts, Information and Projects
 - PFAS Remedial Investigation
 - Quarterly PFAS Sampling
 - PFAS EE/CA and NTCRAs
- Landfills 8 and 10
- Operable Unit (OU) 5
 - Groundwater Treatment System
 - Extraction Well (EW) 1
- Further Action Area A (FAA-A) Investigation
- Other Projects
- Questions







- PFAS Technical Meetings have been restarted between WPAFB, US EPA, Ohio EPA and the City of Dayton
 - Re-establishing lines of communication and points of contact
 - > Roles and Responsibilities
 - Discussed data requests
 - Discussed Dayton concerns regarding Air Force projects
 - Shared expectations for future meeting
 - Discussed funding requirements for off Base projects





- Perfluorooctane Sulfonate (PFOS) and Perfluorooctanoic Acid (PFOA) are organic chemicals used in industrial and consumer products such as nonstick cookware, stainresistant fabric and carpet, some food packaging and specialized foam.
- They are part of a family of synthetic fluorinated chemicals called per- and polyfluoroalkyl substances (PFAS).
- In 1970, the Air Force began using the firefighting agent Aqueous Film Forming Foam (AFFF) which contained PFOS and PFOA.





- On May 19, 2016, the EPA established a Lifetime Health Advisory (LHA) level of 70 parts per trillion for PFOS and/or PFOA in drinking water.
- The LHA is non-regulatory and not enforceable; however, under the Comprehensive Environmental Response, Compensation and Liability Act the Air Force uses it to determine an acceptable level of PFOS/PFOA in drinking water
- In June 2016, as part of an Air Force-wide initiative to investigate the potential impacts from AFFF releases, the first round of monitoring well sampling for PFAS was conducted. The sampling of select base boundary (sentinel) wells has continued quarterly to the present.
- An AFFF Area Site Inspection and Expanded Site Inspection were completed in 2017 and 2019, respectively.





- For more information of PFAS, go to: USEPA
 - https://www.epa.gov/pfas/our-current-understandinghuman-health-and-environmental-risks-pfas
 - **Centers for Disease Control**
 - https://www.cdc.gov/biomonitoring/PFAS_FactSheet.html

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https://www.afcec.af.mil/What-We-Do/Environment/Perand-Polyfluoroalkl-Substances/Frequently-Asked-Questions/

National Institute of Environmental Health Sciences

<u>https://www.niehs.nih.gov/health/topics/agents/pfc/index.</u>

Ohio EPA

https://epa.ohio.gov/monitor-pollution/pollutionissues/per-and-polyfluoroalkyl-substances-pfas



Phase I Remedial Investigation at AFFF Sites



- The RI is a multi-year effort to collect data, characterize site conditions, determine nature/extent of PFOS/PFOA, identify potential exposure pathways, and to collect data to support risk assessment for human health and the environment. The intent is to adequately characterize sites and evaluate data for possible remedial actions.
- 16 AFFF Sites to be investigated
 - Install over 100 monitoring wells, 52 soil borings, and 18 lysimeters
 - Collect 146 groundwater samples from new and 46 existing wells, twice
 - Collect over 372 soil samples, 116 surface/storm water and sediment samples
 - Collect 18 lysimeter samples, 4 times each



Phase I Remedial Investigation Site Summary



IRP Site	Name/Description	IRP Site	Name/Description
SS072P	AFFF Area 1, Hazardous Materials Storage Area (Buildings 478 and 479)	SS080P	AFFF Area 16, Fire Station #2, Spray Test Area
SS082P	AFFF Area 3, Research Survivability Test Range (Building 94)	SS078P	AFFF Area 17, Hangar 4020
SD001P	AFFF Area 4, Vehicle Maintenance and Operations (Building 60)	SS077P	AFFF Area 18, Former Hangar 4028
SS073P	AFFF Area 6, Hangar 148	AT001P	AFFF Area 20, Battle Damage Area
SS074P	AFFF Area 9, Fire Station #1, Spray Test Area	FT039P	AFFF Area 21, Fire Training Area (FTA) 5
SS075P	AFFF Area 10, Former Spray Test Area	FT038P	AFFF Area 22, Former FTA 4
SS076P	AFFF Area 11, Current Spray Test Area	AT002P	AFFF Area 23, Former Riverview Road FTA
SS079P	AFFF Area 15, Fire Station #2 (Building 4012)	SS081P	AFFF Area 29, Harrier Crash Site



Phase I Remedial Investigation at AFFF Sites



- Schedule:
 - Mobilization: 4 June 2022 or 30 days after regulatory approval of sampling plan
 - Begin installing Monitoring Wells and collecting soil, surface water, sediment and lysimeter samples: 8 June 2022
 - Complete by 13 Aug 2022
 - Conduct 2nd groundwater sampling event: 22 Jan 2023 9 Feb 2023
 - Conduct 2nd round of surface water and sediment sampling:
 29 Dec 2022 2 Jan 2023
 - Lysimeter sampling in Sept 2022, Dec 2022, and March 2023
 - Quarterly Perimeter Sampling: March 2022



Phase I Remedial Investigation Sites: Area A and Off-Base







Phase I Remedial Investigation for PFAS Area B Sites









- Contractor continues to conduct quarterly sampling for PFOA and PFOS at 14 selected wells.
- Last sampling event in December 2021; next event scheduled for March 2022.
- Draft 3rd Quarter Report submitted in December 2021.



Quarterly Sentinel Well Sampling Results: March 2021







- Engineering Evaluation/Cost Analysis: The primary goal is to accomplish an EE/CA and a Non-Time Critical Removal Action Memorandums (NTCRAM) for PFOS and PFOA for each of five sites at WPAFB.
 - Completion of draft EE/CAs through regulatory review to allow for funding requests to made by Sep 2022
- The 5 sites include:
 - > Site SD001P (AFFF Area 4, Maintenance Building 60)
 - Site SS076P (AFFF Area 11, Current Spray Test Area)
 - Site SS078P (AFFF Area 17, Hangar 4020)
 - Site FT038P (AFFF Area 22, Fire Training Area 4)
 - > Site AT002P (AFFF Area 23, Former Riverview Road FTA)



Non-Time Critical Removal Action Project Locations







Current Non-Time Critical Removal Actions



- NTCRAs are being conducted concurrently at AFFF Areas
 1 (Area B) and 21 (Area A) to mitigate the downgradient impacts of PFOS/PFOA-impacted groundwater and surface water. The NTCRA objectives for each site include:
 - Evaluating results of the completed Data Gap Investigation (DGI) to support the design and cost analyses that will be presented in the Engineering Evaluation/Cost Analysis (EE/CAs),
 - Conduct a Pilot Treatment Study (PTS) at AFFF Area 21 to evaluate the performance of selected treatment media by extracting and treating PFAS-impacted groundwater,
 - Complete the EE/CAs based on the results of the DGI and PTS to evaluate various removal action alternatives, and prepare an Action Memorandum for each site,
 - Design and construct the selected alternative based on the approved EE/CA and Action Memorandum for each site.



AFFF Area 1: Surface Water Results







AFFF Area 1: Passive Bed Treatment of Groundwater and Surface water







AFFF Area 21: Groundwater Extraction and Passive Bed Treatment







US Geological Survey Surface Water Sampling



- The primary goals of this project are:
 - To collect surface water samples and discharge measurements to verify the efficacy of NTCRAs at AFFF Area 1 in Area B leading to Outfall 1 and AFFF Area 21 in Area A adjacent to Mad River by evaluating the mass flux of PFAS in surface water.
- Funds for this project were released the week of January 17, 2022
- The RPM is coordinating with USGS to initiate sampling as soon as possible.
 - Surface water samples will be collected at up to 21 locations upstream and downstream of AFFF Areas 1 and 21.
 - The sampling will be conducted prior to and following implementation of the selected remedy.



Proposed USGS Sample Locations: AFFF Area1







Proposed USGS Sample Locations: AFFF Area 21







Optimized Remediation Contract Projects



- Landfills 8 & 10
- Landfill 10 EE/CA
- Landfill 5 GWTS
- Extraction Well-1
- TAS Demolition







- 3 Remedial Action Systems:
 - Engineered impermeable landfill caps
 - Inspected on quarterly basis
 - Leachate Collection System
 - As of October 1 2021, ~1,083,074 gallons discharged
 - Discharges to City of Fairborn POTW
 - Landfill Gas Collection System (Flare)
 - Operates when sufficient methane is present is system.
 - Operation attempted every Monday.
 - Flare has not operated due to low methane throughout 2021.
 - Leachate Collection



Landfill 10 Engineering Evaluation/Cost Analysis





- Field Activities conducted in Aug2021 to evaluate LF cover and subsidence areas
- Test Pitting for visual observations, soil sample collection.
- EE/CA Report currently in review.





- Treatment of VOCs in groundwater by tray air stripper.
- Water pumped from Extraction Well 1 (EW-1)
 - Total of 7,836,784,305 gallons discharged as of 30 September 2021.
 - Influent and Effluent samples collected monthly (NPDES Permit 11N00156*HD).
 - PFAS sampled on annual basis



Extraction Well 1 (EW-1)





- EW-1 rehabilitated May-June 2021
- Flow rates below 500 gpm prior to activities.
- Pump/Motor removed and rehabbed.
- Well Screen cleaned via chemical treatment and surging
- Once completed, flow rates increased to <800 gpm.





- Located downgradient of LF5 and upgradient of the City of Dayton Huffman Dam Well Field
- To further delineate the TCE plume, a Data Gap Investigation is being conducted:
 - 6 sets of 4 nested wells with depth ranging from 30 ft to 90 ft below ground surface; soil samples will be collected at each screened interval
 - Wells will be sampled after installation and again approx. 6 months later
- Work Plan/UFP-QAPP currently under review
- Field work anticipated to start in April 2022



Further Action Area A: Data Gap Investigation







Other Projects



- Former Bldgs 20025, 20059 & 20079
 - Remedial Investigation in progress

Building 20056

Remedial Investigation Report in progress

• LF512 Building 30013

Proposed Plan and Record of Decision to be completed under the Great Lakes ORC.

Military Munitions Sites

- TS899 Supplemental RI to be performed to complete data collection in the disturbed areas of the site to be completed under the Great Lakes ORC.
- MU897 Supplemental Remedial Investigation, Revised Feasibility Study, Proposed Plan and ROD to be completed under the Great Lakes ORC.

Long-Term Monitoring (VOCs)

- Continue annual and semi-annual sampling
- Landfills 1-4, 7, 9 and 11
 - Landfills sampled semi-annually under the ORC

