

MEMORANDUM FOR RESTORATION ADVISORY BOARD MEMBERS

FROM: 20 CES/CEIE

SUBJECT: Restoration Advisory Board (RAB) Meeting Minutes

1. Meeting information:

- a. Date: 22 May 2023
- b. Time: 1830-2030
- c. Location: Patriot Park Pavilion, 200 General Drive, Sumter, SC 29150
- d. Air Force Co-Chairs: Col Matthew Davis, 20 MSG/CC and Mr. Raymond Magby, 20 MSG/DD
- e. RAB Members/Alternates and others in Attendance

City/County Officials

Mr. James McCain, Sumter County Council Mr. Carlton Washington, Sumter County Council Ms. Karen Hyatt, Sumter County Public Works Mr. Alfred Conyers, Sumter County Public Works

South Carolina Department of Health and Environmental Control (DHEC) Ms. Stacey French, SCDHEC Columbia Office Mr. Kent Krieg, SCDHEC Columbia Office Mr. Mike Danielsen, SCDHEC Columbia Office Ms. Gabrielle Munn, SCDHEC Columbia Office

<u>RAB Community Members</u> Mr. Daniel Burkett (RAB Community Co-Chair) Mr. Heath Hoover

<u>Community Members</u> Mr. Leavy Allen Mr. James Adams Mr. Stephen Bowers, ARCENT Mr. Anthony Buck Ms. LilyAnn Burkett-Neville Ms. Melissa Burkett-Neville Ms. Andrea Carter

Mr. Colin Davis Mr. Elbert Deas Mr. Ernestine Dow Ms. Evelyn Dow Ms. Patricia Fowler Ms. Jennifer Frank Ms. Mamie Gilber

Victory By Valor

- Ms. Darla Greenwald Ms. Dee Hoehn Mr. Tishiro Inabinet Ms. Patricia Isaac Mr. William Johnson Mr. Melvin Keith Ms. Carroll Kirby Ms. Cathy Kirby Ms. Kathleen Kreklau Mr. Dan McGraw Ms. Sherrie McGraw Ms. Sarah Mikell Others, Air Force Affiliated Ms. Sue Casteel, Agency for Toxic Substances and Disease Registry (ATSDR) Col Matthew Davis, 20 MSG/CC, RAB Air Force Co-Chair Mr. Raymond Magby, 20 MSG/DD, RAB Air Force Co-Chair Mr. Tim Murphy, 20 FW/JA Capt Madeline Krpan, 20 FW/PA Mr. Brannon Lamar, 20 FW/PA 2nd Lt. Thomas Earp-Pitkins, 20 FW/PA SSgt Kelsey Owen, 20 FW/PA Mr. Howard Scott, US Army Ms. Christina Burton, US Army Lt Col Jimmy Oxendine, 20 CES/CC Mr. Nick Muszynski, 20 CES/CEI Mr. Wendell Williams, 20 CES/CEIE
- Ms. Brenda Pringle Mr. Frederick Ruppert Ms. Keleigh-Renea Spivey Ms. Evolent Spivey Mr. Robert Stone Mr. Anand Vora Ms. Aimee Vora Mr. Lyle Waddell Ms. Audrey White Mr. Wallace White Ms. Carrie Wright Mr. Irvin Wright
- Mr. Jeff Garrett, AFCEC/CZOE Mr. Juvenal Salomon, AFCEC/CZOE Mr. Christopher Wargo, AFCEC/CZOE Mr. Gary Fields, AFCEC/CZOE Mr. Matt Martin, AFCEC/CZOE Ms. Anna Butler, USACE-Savannah Mr. Kevin Haborak, USACE-Savannah Ms. Leigh-Ann Fabianke, Galen Driscol Ms. Hillary Weber, Bay West Ms. Emily Widstrand, Bay West Mr. Brian Odom, Aerostar Mr. Jody Barker, Aerostar Mr. Noel Garland, Aerostar Mr. Rich Anthony, Weston-ER Mr. Nicolas Woodman, Weston-ER Mr. Scott Ross, AECOM

2. Welcome

Ms. Leigh-Ann Fabianke, Galen Driscol, served as the meeting facilitator and commenced the meeting. Ms. Fabianke introduced Col Matthew Davis, the RAB Air Force co-chair. Col Davis welcomed and thanked everyone for participating. He stated that community involvement is a critical element of the environmental clean-up process, and the RAB is an opportunity for the Air Force to share updated information about environmental restoration activities and to hear feedback from the community. The safety and health of Airmen, their families and communities surrounding Shaw AFB are top Air Force priorities.

3. Introductions

Ms. Fabianke introduced Mr. Juv Salomon, the Shaw Remedial Project Manager. RAB members present introduced themselves as did representatives from the 20th Fighter Wing Public Affairs office. Ms. Sue Casteel, ATSDR, was introduced as joining the meeting virtually. New RAB member Jim McCain, Chairman of the Sumter County Council was introduced. Mr. Carlton Washington, Sumter County Council, was also recognized. Mr. Salomon shared that the purpose

of the RAB is to promote community awareness and obtain constructive community review on current and proposed environmental cleanup actions. The RAB mission is to provide open and interactive dialogue among stakeholders. Mr. Salomon explained that technical briefings during the meeting will cover updates regarding the Shaw AFB Environmental Restoration Program (ERP), the ongoing clean-up of Shaw AFB and predominant chemicals observed off-base. The Shaw ERP is responsible for cleaning up contamination from past operations on and surrounding the installation. Due to historical practices deemed appropriate at the time, contamination found its way into the groundwater. Some of this contaminated groundwater has moved off-base.

4. New RAB Members

New member Mr. McCain was recognized again. Attendees were encouraged to complete a RAB application if interested in becoming a member.

5. Stakeholder/RAB Member Updates

No stakeholders or RAB members expressed interest in providing an update.

6. Air Force Update

Shaw Optimized Remediation Contract (ORC)

Hillary Weber, Bay West

An ORC is a performance-based contract that strives to improve existing remedies by incorporating lessons learned from previous contracts. The ORC contractor Bay West and partner Arcadis are under contract to support the Air Force through 2026. The ORC includes 18 sites: 15 Installation Restoration Program (IRP) sites and three Defense Logistics Agency (DLA) sites. Contract goals include advanced site characterization at four sites, remedial actionoperation (RA-O) at 11 sites and long-term management (LTM) at three landfill sites. Advanced characterization will help the Air Force more fully understand the site, evaluate alternative objectives, and determine what actions to take to finalize a remedy. Plume maps within the presentation slides (Attachment A) indicate the limits of possible contamination impacts. The High-Resolution Site Characterization (HRSC) investigation of the airfield is 90% complete. Recommendations for additional cleanup actions will occur following the investigation. Work plans and decision documents will be reviewed by DHEC prior to cleanup actions occurring.

Shaw utilizes a Groundwater Treatment Plant (GWTP) which extracts Trichloroethylene (TCE) contaminated groundwater, treats it and then the clean water is released/injected back into the ground. The GWTP has been running for 25 years and has removed over 3,700 pounds of contamination and treated over 4.6 billion gallons of groundwater. In 2020, an Ion Exchange Resin System was added to the GWTP to treat Per- and Polyfluorinated Substances (PFAS) contamination, which is an emerging chemical of concern. Planned activities for the 11 sites in RA-O includes continued long-term monitoring and Land Use Controls (LUCs) to ensure compliance with the DHEC agreed-upon activities to ensure protection of human health and the environment. The Air Force will continue to sample and report on these sites.

PFAS Remedial Investigation

Jody Barker, Aerostar

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) provides for the cleanup of uncontrolled or abandoned hazardous waste sites as well as accidents, spills, and other emergency releases of hazardous substances. The CERCLA process is being

followed to investigate PFAS. The first part of the process was to conduct a Preliminary Assessment (PA), which identified 11 possible sites of PFAS contamination, four of which were recommended for further investigation in the next phase, the Site Investigation (SI). Those four sites, plus two more sites identified throughout the SI process, were recommended to move forward into an Expanded SI, which helped fill data gaps in the investigation and confirmed that contamination extended outside the installation boundary. The Remedial Investigation (RI) is now underway and is in the phase of the process where more data is collected to fully understand site conditions and what, where and how much PFAS has been released into the environment. There will be phases following the RI that assess risk to human health and the environment and to evaluate the cost and performance of potential treatment technologies. RI activities have included collecting surface and subsurface soil samples, collecting groundwater samples from new and existing monitoring wells, collecting surface water and sediment samples, installing new monitoring wells, and collecting porewater samples. These activities will continue over the next several months.

Hydraulic Capture and Point Source Removal

Rich Anthony, Weston-ER

In 1970, the Air Force began using aqueous film-forming foam (AFFF), firefighting agents that contained PFAS, to extinguish petroleum fires and for training purposes. Releases of AFFF into the environment can and have occurred during fire training, equipment maintenance, storage, and use. The Department of Defense is phasing out all use of AFFF by October 2024. In September 2018, Shaw AFB determined that use of AFFF at three Fire Training Areas on the east side of the base may have caused releases to soil and groundwater. Investigation determined the existence of PFAS, and data and groundwater flow directions indicate that groundwater containing PFAS compounds may be migrating off-base to drinking water wells to the east.

It was determined that a remediation called pump and treat, via a GWTP, is the quickest and best use of taxpayer dollars to address the PFAS contamination at these sites. Water is pumped to the GWTP then is treated through media engineered to remove PFAS contaminants. Clean water is reinjected into trenches in the ground to flush PFAS contaminants from the soil and to the extraction trench. Removing the PFAS via the GWTP results in cleaner soil in fire training source areas at Shaw, cleaner groundwater as precipitation naturally passes through the soil, and reduces PFAS levels in the groundwater. Water will be routinely sampled to ensure the system is working as designed. GWTP construction will begin May 2023 and is projected to be operational by January 2024. The estimated timeline to turn-off the system is January 2027.

PFAS Off-Base Drinking Water

Scott Ross, AECOM

The Air Force uses a three-step process for handling PFAS.

- IDENTIFY any releases and investigate PFAS through the PA/SI and ongoing RI.
- RESPOND to PFAS in drinking water that can be attributed to Shaw AFB, including sampling off-base private wells.
- PREVENT and PROTECT human health and the environment by replacing AFFF as previously mentioned and providing a short-term solution of bottled water/treatment systems to private wells where needed.

Since February 2020, 250 drinking water wells have been sampled within the east, south and west off-base focus areas:

- 57 wells exceeded the EPA Lifetime Health Advisory (LHA) of 70 parts per trillion (ppt), all located in the current south focus area (map of the focus area is included in the presentation slides).
- 178 residences and five businesses are on bottled water service.
- 33 wells are being sampled quarterly or semi-annually to assess contamination trends.
- 1,120+ parcels have been surveyed to the south, east, and west of Shaw AFB.

Residences and businesses on bottled water service are being transitioned to a long-term solution of connection to a public water supply provided by High Hill Rural Water. Locations that connect to public water service may still be able to use well water for non-consumption purposes (lawn watering, car washing, etc.). Other properties will continue to receive quarterly/semiannual sampling to monitor trends in PFAS concentrations. A public open house was conducted on 8 March 2023, to provide additional information about sampling, water connections and next steps. Letters were sent to properties regarding the connections and informal property visits were conducted in late 2022. To date, 24 locations have accepted the municipal water hook-up, and eight have declined. There are locations that have been unresponsive, but the Air Force will continue to follow-up. Municipal water planning and hook-ups will continue over the next year. Properties within the focus area that use well water for domestic uses (such as drinking and cooking) that have not had their water tested may still request to have their water sampled and analyzed by contacting:

- 20th Fighter Wing Public Affairs: 803-895-2019 or 20FWPublicAffairs@us.af.mil
- Juvenal Salomon, Shaw AFB RPM: 803-865-9991 or juvenal.salomon.1@us.af.mil
- Scott Ross, Brice-AECOM JV1 Support Contractor: 803-201-9662 or scott.ross@aecom.com

It was noted that EPA recently released proposed PFAS maximum contaminant levels (MCLs) for drinking water that are lower than the current LHA. These new numbers may affect the PFAS action areas around Shaw AFB once finalized, but EPA's LHA remains the same for now. EPA is requesting and considering public comments on the proposed MCLs prior to taking final action on PFAS drinking water standards/regulation. MCLs are not expected to be finalized until late 2023/early 2024. Without a regulation, authority to invest taxpayer money to address PFAS is limited.

7. RAB Business Update

Board member participation has waned over the years. If anyone is interested in becoming a RAB member or knows of anyone interested, please put them in contact with Mr. Salomon or 20th Fighter Wing Public Affairs (contact information included above). Attendees were encouraged to complete RAB member applications that were available during the meeting.

Shaw AFB is also continuing to update its Community Involvement Plan (CIP), which captures public concerns and outlines how to keep the public informed and involved in the cleanup process. Everyone is encouraged to provide input on a survey which seeks preferred ways for base officials to communicate with the public. Online survey link: www.surveymonkey.com/r/PX3BJQ9.

8. Public Comment

There were numerous questions and comments from attendees regarding PFAS, some expressed during the meeting, and some were provided on comment cards. These questions and comments are included in Attachment 2 to these meeting minutes.

9. Conclusion

Mr. Salomon shared that if anyone has additional questions, to please contact him at (803) 895-9991 or juvenal.salomon.1@us.af.mil. Questions can also be directed to 20th Fighter Wing Public Affairs: (803) 895-2019. The Air Force administrative record is the official record of cleanup action decision documents and can be found at: <u>https://ar.afcec-cloud.af.mil/</u>. The next RAB meeting is tentatively scheduled for May 2024.

Col Davis thanked everyone for their interest in Shaw's environmental program and for joining the RAB meeting. The community is encouraged to stay involved by joining the RAB or providing input to the CIP survey.

#	Action Item	Who	Status
1.	Numerous comment cards were submitted during the RAB. Shaw AFB Environmental Restoration staff will work to address the questions and comments and get responses to RAB attendees. UPDATE: Responses to comment cards/captured in-meeting questions are included on <i>Attachment 2</i> of the May 2023 Shaw AFB RAB Meeting Minutes.	Air Force	OPEN

JÜVENAL Q. SALOMON, GS-13, DAF RAB Administrator

Approved as written.

RAYMOND S. MAGBY, GS-14, DAF Deputy Director for Installation Support

Attachments:

1. Shaw AFB May 2023 RAB Agenda and Presentation Slides

2. Shaw AFB May 2023 RAB Questions and Answers

cc:

Skelton)

20 FW/CV/JA/PA/HO 20 MSG/CC/DD 20 MDG/SGPB 20 CES/CC/CEI/CEIE AFCEC/CZOE AFCEC/CZR (Mr. Tony Williams) USACE – Savannah (Ms. Anna Butler) SCDHEC (Mr. Mike Danielsen and Mr. Keith Lane) Sumter County Council Chairman (Mr. James McCain) Sumter County Public Works Director (Ms. Karen Hyatt) Sumter City Engineer (Mr. Bill Rozier) Sumter City Engineer (Mr. Bill Rozier) Sumter City-County Planning (Mr. Jeff Derwort and Ms. Helen Roodman) RAB Community Members (Mr. Daniel Burkett, Mr. Charles Firmbach, Mr. John Hayes, Mr. Heath Hoover, Mr. Anthony Horton, Rev. Willie Lawson, Mr. Steven Schmidt, and Ms. Amanda





Shaw AFB Restoration Advisory Board Annual Meeting

Patriot Park, Sumter, SC. May 22, 2023

Agenda

- Welcome/Introductions
- Purpose/Mission
- Shaw Environmental Restoration Program Update
 - Optimized Remediation Contract
 - PFAS Remedial Investigation
 - PFAS On-Base Interim Remedial Action Point Source Removal
 - PFAS Off-Base Interim Remedial Action Drinking Water
- Break
- Public Comment
- Conclusion



Welcome/Introductions

- Welcome from Co-Chairs:
 - Community Mr. Daniel Burkett
 - Air Force Col Matthew Davis
- Shaw AFB Remedial Project Manager/RAB Coordinator
 - Mr. Juv Salomon
- RAB Members
- Elected or Appointed Officials
- South Carolina Department of Health and Environmental Control
- Media
- Public Affairs
- Online



Agency for Toxic Substances and Disease Registry (ATSDR)

Sue Casteel **Health Educator ATSDR**, Region 4 **Atlanta Georgia** (404) 747-4185 AOV2@cdc.gov



RAB Purpose/Mission

• Purpose:

- Promote community awareness
- Obtain constructive community review and input on current and proposed environmental cleanup actions

• Mission:

- Open and interactive dialogue
 - Among the Air Force, South Carolina Department of Health and Environmental Control, and our neighbors
 - Concerning Shaw's Environmental Restoration Program



Admin/Handouts

- Tight agenda
- Restrooms
- Please silence cell phones
- Save questions for the end of each presentation
- Avoid side-bar conversations
- Sign-in sheet
- Agenda
- RAB application
- Action items
- Slides will be emailed
- Use question/comment cards



Question/Comment Cards

Question/Comment:

What is ...? Please consider... RAB improvements... John Doe 123 Question St. Sumter, SC 29154 (803) 895-XXXX Email

Please hand completed cards to the facilitator or leave on the sign-in table.

RAB Updates

• New RAB Members

Mr. Jim McCain Jr., Chairman of the Sumter County Council

- Accepting Applications
- RAB Member Updates
- Stakeholder Organization Updates





Shaw AFB Optimized Remediation Contract (ORC)

Environmental Remediation and Site Restoration Activities

ORC Overview

- What is an ORC Contract?
 - A performance-based contract that incorporates and strives to improve existing remedies by incorporating lessons learned from previous contracts.
- Environmental Remediation and Site Restoration Activities
 - 15 Installation Restoration Program Sites
 - 3 Defense Logistics Agency (DLA) Sites
 - 18 total sites
 - 16 managed under the installation's Resource Conservation and Restoration Act Permit
 - 2 managed under the South Carolina Underground Storage Tank program







Date Drawn/Revised: 5/4/2021

Project No. J190238

Drawn By: SC

ORC Overview continued

- Period of Performance August 2020 through August 2026
 - Goals
 - Advanced Site Characterization (4 sites)
 - Remedial Action Operation (11 sites)
 - Long Term Management (3 sites)



Advanced Characterization Sites

- 4 sites with ongoing Remedial Action- Operation (RA-O)
 - OT016B (AOC F)
 - SS015 (OU-1/SWMU 2)
 - SS035 (SD029/AOC H/AOC L)
 - SS036 (AOC N)
- Ongoing RA-O at these sites includes:
 - Groundwater Treatment Plan Operation and Maintenance
 - In Situ Chemical Oxidation for OT016B and SS035
 - Long Term Monitoring and Land Use Controls for all 4 sites
 - Includes off-base LUCs and bilateral agreement requirements















HRSC Status

- Airfield Investigation 90% complete
- Off Base Well Installation Drilling in Late Spring/Early Summer 2023
- On Base investigation Late Spring
- Following Investigation:
 - Revised conceptual site model
 - Recommendations for additional corrective measures
 - Decision documents and Corrective Measures Work Plans



Base Groundwater Treatment Plant

- Pump, Treat, Inject System for water from sites OT016B (AOC F), SS035 (SD029/AOC H/AOC L), SS036 (AOC N)
- Online for 25 years
- The system has removed over 3,700 pounds of contaminants and treated over 4.5 billion gallons of water



Remedial Action – Operation

- 9 Sites have corrective measures ongoing:
 - CG038 (AOC O)
 - FT001 (SWMU 59)
 - OT016C (AOC D and AOC W)
 - ST018 (SWMU 87) UST Site
 - ST030 (AOC M)
 - SD033 (SWMU 96)
 - DLA Building 1200 (SWMU 98)
 - DLA Building 1610 (SWMU 99)
 - DLA Building 326 (SWMU 100)
 - – UST Site



2

Remedial Action Operation

- 2 RA-O sites without treatment systems:
 - DP039 (AOC32/SWMU 101)
 - Supplemental Investigation and updated Risk Assessment
 - Develop corrective measures study
 - Develop Statement of Basis
 - Develop Corrective Measures Implementation Work
 Plan
 - Implement LTM and LUCs with the approved CMI WP
 - OT016A (SWMU 78)
 - Supplemental Investigation for Pesticides (Dieldrin)
 - Revise Corrective Measures Implementation Work
 Plan
 - Continue LTM and LUCs



Long Term Management

- 3 Landfill Sites:
 - LUCs and Landfill cover maintenance
 - LF003 (SWMU 58)
 - LF008 (SWMU 85)
 - LF009 (SWMU 52)



Air Force Civil Engineer Center



Shaw AFB Remedial Expanded Site Investigation Presentation

Restoration Advisory Board May 2023

Battle Ready... Built Right!



Previous PFAS Investigations



<u>2015 – 2016 Preliminary Assessment (PA)</u> - involved gathering historical and other available information about site conditions as well as interviewing Air Force personnel with knowledge of past AFFF use to evaluate whether per- and polyfluoroalkyl substances (PFAS) may have been released within a site and if further investigation was needed.

<u>2016 – 2018 Site Inspection (SI)</u> – collected soil, groundwater, sediment, and surface water samples at each site identified for further investigation in the PA to determine if PFAS was released to the environment and is a threat to human health. Also added two sites, one from the PA and another discovered afterward for investigation.

<u>2019 – 2021 Expanded SI</u> - Based on the results of the SI and concern that PFAS may have migrated to or beyond the base boundary, soil, groundwater, sediment, and surface water samples were collected to assess if PFAS had migrated off base near drinking water sources.



Previous PFAS Investigations



<u>Preliminary Assessment (PA)</u> - Identified 11 possible sites, 4 recommended for SI.

<u>Site Inspection (SI)</u> - Investigated 4 sites from PA plus 2 identified afterward. All 6 sites were recommended to move on to Expanded SI.

Expanded SI - Filled in gaps in data and also confirmed that contamination extended outside of base boundary.

Samples collected During SI and Expanded SI 27 Monitoring Wells Installed (11 permanent, 16 temporary) 56 Groundwater Samples Collected from New and Existing Wells 89 Soil Samples Collected 8 Sediment Samples Collected 6 Surface Water Samples Collected



PFAS Site Inspection Sites







Remedial Investigation



<u>Remedial Investigation*(RI)</u> - The phase of work after the Expanded SI where more data is collected to fully characterize site conditions and which types of PFAS have been released and at what concentrations (What, Where, and How Much). There will be following phases following the RI that assess risk to human health and the environment and to evaluate the cost and performance of potential treatment technologies. After the RI, a feasibility study*(FS) phase will begin when a detailed evaluation of alternative remedial actions is completed.

*EPA Definitions for RI and FS

RI – The RI serves as the mechanism for collecting data to characterize site conditions, determine the nature of waste, assess risk to human health and the environment, and conduct treatability testing to evaluate the potential performance and cost of the treatment technologies that are being considered. FS – The feasibility study is the mechanism for the development, screening, and detailed evaluation of alternative remedial actions.






<u>What Have We Completed?</u>

- Collected 91 surface and subsurface soil samples
- Collected 146 groundwater samples from new and existing monitoring wells
- Collected 55 surface water and sediment samples
- Installed 22 new monitoring wells
- Installed 3 lysimeters for porewater sample collection







Planned Work for the Immediate Future

- Awaiting final approval of the QAPP Addendum
- Install 7 new monitoring wells
- Install 3 new lysimeters
- Collect 38 sediment and surface water samples
- Collect 48 surface and subsurface soil samples
- Collect 101 groundwater samples
- Collect 6 porewater samples





Hydraulic Capture and Point Source Removal Shaw Air Force Base Sumter, SOUTH CAROLINA











Shaw AFB Sumter, SOUTH CAROLINA



TIMELINE OF PFAS USE AT SHAW AFB

- 1970 the Air Force began using PFAS containing AFFF for firefighting purposes.
- 1970 to present Releases to the environment have occurred, likely during fire training, equipment maintenance, storage, and use of AFFF.

Travis Air Force Base, Calif., Sept. 24, 2013. (Ken Wright/U.S. Air Force)







Shaw AFB Sumter, SOUTH CAROLINA

PFAS INVESTIGATIONS AT 3 FORMER FIRE TRAINING AREAS

- September 2018 Shaw AFB determined AFFF use at 3 Fire Training Areas may have released PFAS compounds to groundwater.
- June 2021 Investigation of soil and groundwater to determine extent of PFAS contamination commenced.
- May 2022 Completed soil and groundwater PFAS Investigation at the 3 source areas.
- Investigation determined PFAS contamination present.
- Groundwater data strongly indicate that PFAS compounds in groundwater may be migrating off-base to drinking water wells to the east.







Hydraulic Capture and Point Source Removal Shaw AFB Sumter, SOUTH CAROLINA

MAR CIVILENCINER CENTRE



PFAS CLEANUP OPTION AT SHAW AFB

- Department of Air Force approved a proposed cleanup option based on cost estimates.
- Approved cleanup option is Pump and Treat of Groundwater via a Groundwater Treatment Plant.
- What is Pump and Treat?







Shaw AFB Sumter, SOUTH CAROLINA

GROUNDWATER PUMP AND TREAT

- PFAS contaminated groundwater is pumped from deep trenches that have a perforated pipe installed.
- Water is pumped through pipes to the groundwater treatment plant.
- > The water is pumped through:
 - Settling tanks and filters to remove large particles
 - Media vessels to remove contaminants
 - Centrifuge to remove any remaining solids
 - Injection trenches to flush contaminants from the soil and groundwater.
- Water will be sampled weekly to verify removal of PFAS



Wurtsmith Air Force Base, Mich., 2022. (Courtesy/U.S. Air Force)











GROUNDWATER TREATMENT

- Water is pumped to the Groundwater Treatment Plant.
- Water is treated through media engineered to remove contaminants (PFAS).
- Clean water is reinjected into trenches to flush PFAS contaminants from the soil and to the extraction trench.

Shaw Air Force Base, S.Car. (Weston-ER/U.S. Air Force)







Shaw AFB Sumter, SOUTH CAROLINA

PIPING FOR TREATMENT

- Untreated groundwater is pumped to the treatment plant via red water lines.
- Treated water is returned to reinjection trenches via blue water lines.
- Treated water flushes more contaminants to the extraction trench for treatment.









Shaw AFB Sumter, SOUTH CAROLINA



WHY TREAT GROUNDWATER?

- Removing the PFAS via treatment results in:
 - Cleaner soil in Fire Training Source Areas at Shaw
 - Cleaner groundwater as precipitation naturally passes through soil
 - Reduce PFAS levels in the groundwater





Shaw AFB Sumter, SOUTH CAROLINA



INSTALLATION OF TRENCHES

- Using the BIGGEST trencher in the United States!
- ➤ 50-foot long trenching arm!

Shaw Air Force Base, S.Car., Mar. 2023. (Weston-ER/U.S. Air Force)





Hydraulic Capture and Point Source Removal Shaw AFB Sumter, SOUTH CAROLINA



INSTALLATION OF RISER PIPE

Holds and protects our pumps that will pump groundwater to the treatment plant







Shaw AFB Sumter, SOUTH CAROLINA





WHAT'S NEXT?

- Groundwater Treatment Plant:
 - Construction: May 2023 – December 2023
 - Projected operational: January 2024
 - Estimated termination: January 2027





Air Force Uses a 3-step Approach

- **IDENTIFY** releases, investigate PFAS
 - Preliminary Assessment (PA)/ Site Inspection (SI)
 - Remedial Investigation (RI) (ongoing)
- RESPOND to PFAS in drinking water
 - Sample private wells off base
- **PREVENT** and **PROTECT**
 - Aqueous Film Forming Foam (AFFF) replacement; retrofit fire response vehicles
 - Off-Base drinking water short-term (bottled water) response transitioning to long-term response (connection to public water supply)









- Since Feb 2020, 250 Drinking Water wells sampled within the east, south, and west off-base focus areas
- 57 wells exceeded the Lifetime Health Advisory (LHA) Level of 70 parts per trillion (ppt); all are located in the current south focus area
- 178 residences/5 businesses on bottled water service
- 33 wells on quarterly/semi-annual sampling for trends analysis
- 1,120+ parcels surveyed; south/east/west of base
 - 8 Mar 2023: Conducted Open House Public Meeting
 - Well attended by community, stakeholders, and was covered by local press
- Currently completing administrative tasks to start field work – connect those parcels to High Hills
- Currently 20 wells are sampled quarterly and 13 wells are sampled semi-annually







- Spring/Summer 2023 installation of longterm solution to limit exposure to PFAS
- Residences (including mobile home parks and businesses) on bottled water service are being offered connection to local public water service provider
- Locations that connect to public water service may still be able to use well water for non-consumption purposes (lawn watering, car washing, etc.)
- Other properties will continue to receive quarterly/semi-annual sampling to monitor trends in PFAS concentrations

Properties within the focus area that use well water for domestic uses (such as drinking and cooking) that have not had their water tested may still request to have their water sampled and analyzed.





Community Outreach Activities

- Sent letters to residents (owners and occupants) on 27 and 28 September 2022
- Conducted informational property visits 30 November and 1 December 2022
- To date: 24 accepted, 8 declined, 3 already connected to High Hills, and 2 pending (1 verbal accept, 1 verbal decline)
- Continuing to follow-up with unresponsive locations

Next Steps Implementation of Removal Action

- Resident account set up (ongoing)
- Install hot taps and water meters (Summer 2023)
- Connection planning site visits (late June 2023)
- Utility clearances (June-July 2023)
- Hot tap connections, including disconnecting and abandoning water supply line to existing well; tie in new location at water line; pressure and tightness testing; establish water flow, site restoration; and water sample collection (Summer 2023)
- Incidental Design and Close-out Packages (Fall 2023 - Spring 2024)





Points of Contact

- 20th Fighter Wing Public Affairs
 - Phone: 803-895-2019
 - Email: 20FWPublicAffairs@us.af.mil
- Juvenal Salomon, Shaw AFB Remedial Project Manager (RPM)
 - Phone: 803-865-9991
 - Email: juvenal.salomon.1@us.af.mil
- Scott Ross, Brice-AECOM JV1 Support Contractor
 - Phone: 803-201-9662
 - Email: scott.ross@aecom.com



Interested in joining the RAB?

- A RAB is a forum to discuss and exchange information about Shaw AFB's environmental restoration program, identify issues of concern, and establish a direct line of communication between the Air Force, the community, and regulators.
- Reinvigorating Shaw RAB
- Accepting applications and encouraging local citizens who want to become involved with environmental Restoration activities at Shaw AFB
- Applications available at sign-in table
- Leave completed applications on sign-in table or send to 20th Fighter Wing Public Affairs Office, (803) 895-2019 or <u>20FWPublicAffairs@us.af.mil</u>



Why join the RAB?

- Provide advice to the Air Force but the RAB is NOT a decision-making body
- Bring the community's interests and concerns to the attention of the Air Force.
- Work with the Air Force to ensure investigations and cleanup plans to meet the needs of the communities involved.
- Provide feedback on important investigations, reports, and cleanup actions.
- Assist the Air Force by taking accurate information back to the communities.
- Help the local community to understand the cleanup process and encourage them to participate.



What is expected of a RAB member?

- Attend all meetings.
- Volunteers are highly encouraged to participate on the RAB for a minimum of one year.
- Provide input on environmental restoration issues in an open, honest and constructive manner to the decision makers.
- Represents and communicates community concerns to the Shaw AFB RAB.
- Act as a channel for the exchange of information between the community, Shaw AFB and SCDHEC regarding Shaw AFB's environmental restoration program.
- Review, evaluate and comment on documents and other materials related to restoration program, where applicable.
- Serves on the RAB without compensation.

Community Involvement Survey (CIP)

- CIP outlines how to keep the public informed and involved in the cleanup process
- Provides site information
- Seeks preferred ways for base officials to communicate with the public about environmental cleanup efforts
- Survey conducted every 3 years Updated in 2022, but updating further in 2023
- Online: https://www.surveymonkey.com/r/ShawCIP by June 30, 2023
- See facilitator or call (210) 758-3535 by June 30, 2023, to schedule a phone interview



Public Comments

- Please keep comments brief
- Use question/comment cards as needed
- Will create Action Items and follow-up as needed

Conclusion

- Inputs from Board Members
- Action Items
- Questions? Contact Shaw AFB Public Affairs (803) 895-2019 or <u>20FWPublicAffairs@us.af.mil</u>
- Administrative Record Official record of cleanup action decision documents: <u>https://ar.afcec-cloud.af.mil/</u>
- Next meeting: May 20, 2024 (Tentative)

Closing Remarks/Adjourn RAB

• RAB Co-Chairs





<u>Attachment 2</u> Questions from the Restoration Advisory Board (RAB), 22 May 2023

(*Questions and answers were paraphrased for clarity.)

Inquiries seeking more information about PFAS, what it is, its origins, types, usage, hazards, latest health advisory, etc.

More information about PFAS can be found at the following websites: US Air Force: <u>https://www.afcec.af.mil/WhatWeDo/Environment/Perfluorinated-Compounds/</u> Office of the Secretary of Defense: <u>https://www.acq.osd.mil/eie/eer/ecc/pfas/index.html</u> SCDHEC: <u>https://scdhec.gov/environment/polyfluoroalkyl-substances-pfas</u> US EPA: <u>https://www.epa.gov/sdwa/questions-and-answers-drinking-water-health-advisoriespfoa-pfos-genx-chemicals-and-pfbs</u>

Inquiries pertaining to the health impacts of PFAS.

As each person's health issue(s) is unique, and to respect each person's medical privacy, please refer directly to the Agency for Toxic Substances and Disease Registry (ATSDR) for health-related questions: **Ms. Sue Casteel**, Health Educator, (404) 747-4185 / (770) 488-3003, <u>AOV2@cdc.gov</u>, or **Ms. Leann Bing**, Health Scientist, (770) 488-3002, <u>KGB0@cdc.gov</u>.

Requests for private well sampling.

All requests for private well sampling have been addressed or are being addressed individually. For new private well sampling requests, please contact Shaw AFB Public Affairs: (803) 895-2019 or <u>20FWPublicAffairs@us.af.mil</u>

1. If water is migratory, how can you encapsulate it?

Currently, pump and treat is the best available technology to limit PFAS migration and to remediate the impacted groundwater. Once the PFAS plume is delineated through sampling, extraction wells/trenches are installed to remove contaminated groundwater from the subsurface. The extracted groundwater is processed through filters to remove elevated levels of PFAS. The treated water is reinjected back to the groundwater or discharged to surface water. This technology is currently being applied at various on-base well locations with additional extraction trenches being constructed at three PFAS source areas for future implementation.

2. **If PFAS is being filtered and it is a forever chemical, what are the plans for disposal?** *Currently filter media that contains PFAS is disposed of in an approved landfill. Studies are ongoing to determine other disposal methods.*

3. Are we going to be here 10 years from now discussing this?

Assessing any timeframe for remediation is speculative, but scientific understanding and technology is continuing to evolve to speed up progress. Source remediation/groundwater treatment is being implemented to reduce exposure. In the meantime, a clean water source, through temporary bottled water service and connection to High Hills municipal water, is

being offered where drinking water (private/public wells) exceeds 70 parts per trillion (ppt) PFAS.

4. I am not hearing compensation for contaminated wells. I am not seeing data or severities on health issues of residences in affect areas. No updated or current data on High Hills Water.

The Air Force is requesting that properties with contaminated wells accept the offer to connect to the High Hills Rural Water. The Air Force is paying for these connections.

Please refer to the Agency for Toxic Substances and Disease Registry (ATSDR) for healthrelated questions: Ms. Sue Casteel, Health Educator, (404) 747-4185 / (770) 488-3003, <u>AOV2@cdc.gov</u>, or Ms. Leann Bing, Health Scientist, (770) 488-3002, <u>KGB0@cdc.gov</u>.

The South Carolina Department of Health and Environmental Control (DHEC), has a website showing public water sample results for PFAS near Shaw AFB: <u>https://scdhec.gov/BOW/perfluoroalkyl-substances-pfas/pfas-shaw-air-force-base</u>

The Air Force has requested that High Hills update the water quality information on their website.

5. **May I request that High Hills include PFOS/PFOA sampling in their yearly report?** *Currently PFAS is not a regulated contaminant, so there is no enforcement mechanism to mandate PFAS reporting.*

DHEC has a website showing public water sample results for PFAS near Shaw AFB: <u>https://scdhec.gov/BOW/perfluoroalkyl-substances-pfas/pfas-shaw-air-force-base</u> (includes High Hills wells as Non-Detect for PFAS compounds).

- 6. Advertise for meeting better: post posters in Cherryvale grocery and other stores. *Noted, thank you for the input.*
- 7. How close are these contaminants to our schools located on the back side of Shaw AFB?

Schools located on the back side of Shaw AFB use water from High Hills, so are not affected by contaminated groundwater.

- 8. **Do we need to start taking safety measures with our water at these schools?** *As discussed during the RAB meeting, area schools use water from High Hills so are not affected by contaminated groundwater.*
- 9. Provide info to local churches and community centers. There are 4-5 churches and 2 centers.

Noted, thank you for the input.

10. More meetings to address concerns.

Additional PFAS public meetings will be held in the future. The RAB contact list will be notified when more information is available.

- 11. **First time access to Mrs. Sue (ATSDR), so thanks for that.** *Noted, thank you for the input.*
- 12. Why is our water [has] yellow [tint] at my house sometimes? What causes that and how come when they come to fix it never really goes away?

The property owner can contact the Air Force for PFAS sampling if the home uses a private well. Contact High Hills or your water provider if a private well is not being used.

13. Why are some people's water clean but others are not?

This depends on whether a home is connected to a public water source or utilizes a private well. Contamination fate, transport and exposure is a very complex topic. Many factors such as the chemical characteristics, groundwater flow direction and sediment type affect how contaminants move in subsurface water. Some drinking water wells may be in the pathway of the contamination, while others may not.

14. If people die from this, why is it barely in the news?

Studies are ongoing to determine what, if any, health effects may be related to PFAS. Please refer to the Agency for Toxic Substances and Disease Registry (ATSDR) for healthrelated questions: Ms. Sue Casteel, Health Educator, (404) 747-4185 / (770) 488-3003, <u>AOV2@cdc.gov</u>, or Ms. Leann Bing, Health Scientist, (770) 488-3002, <u>KGB0@cdc.gov</u>.

15. Can you safely garden in the soil and eat the fruit and vegetables that have been planted in the ground?

An ATSDR representative provided during the RAB meeting that an answer to this question is not fully known, but home produce can be tested. Please refer to the Agency for Toxic Substances and Disease Registry (ATSDR) on additional questions or clarification: Ms. Sue Casteel, Health Educator, (404) 747-4185 / (770) 488-3003, <u>AOV2@cdc.gov</u>, or Ms. Leann Bing, Health Scientist, (770) 488-3002, <u>KGB0@cdc.gov</u>.

16. Can we use our well water to water produce?

It is not fully known what the effects are of watering fruit/vegetables with water containing PFAS. If your well water has been sampled for PFAS and is above the 70 ppt Lifetime Health Advisory Level (LHA), then the Air Force requests that you accept the offer to connect to the High Hills Rural Water. Please refer to the Agency for Toxic Substances and Disease Registry (ATSDR) for additional questions or clarification: Ms. Sue Casteel, Health Educator, (404) 747-4185 / (770) 488-3003, <u>AOV2@cdc.gov</u>, or Ms. Leann Bing, Health Scientist, (770) 488-3002, <u>KGB0@cdc.gov</u>.

17. Who is going to pay for produce testing?

The Air Force is not currently paying for produce testing. If anyone feels they have a claim under the Federal Tort Claims Act, contact the Shaw legal office at: (803) 895-1560, organizational email: <u>20fw.ja.generallaw1@us.af.mil</u>

18. Are residents on base drinking the same water?

Yes; Shaw AFB uses deep wells to provide water to the base. All operational wells are below the LHA. Shaw AFB's Annual DW Consumer Confidence Report (Jan-Dec 2022): <u>https://www.shaw.af.mil/Portals/98/Environmental/Public%20Notices/2022/2022%20CCR</u> %20-%20Shaw%20AFB%20(May%202023).pdf?ver=PajO8m2jzz5soJKxruYn-A%3d%3d

19. What are the PFOS/PFOA levels in the base drinking water?

Shaw AFB uses deep wells to provide water to the base. All operational wells are below the LHA. Shaw AFB's Annual DW Consumer Confidence Report (Jan-Dec 2022): <u>https://www.shaw.af.mil/Portals/98/Environmental/Public%20Notices/2022/2022%20CCR</u>%20-%20Shaw%20AFB%20(May%202023).pdf?ver=PajO8m2jzz5soJKxruYn-A%3d%3d

20. Why has the AF ignored the June 2022 EPA levels?

EPA recently published additional Q&A's that are pertinent to this question: <u>https://www.epa.gov/sdwa/questions-and-answers-drinking-water-health-advisories-pfoa-pfos-genx-chemicals-and-pfbs#q9</u>

DoD respects and values the public comment process on this proposed nationwide drinking water rule and looks forward to the clarity that a final regulatory drinking water standard for PFAS will provide. In anticipation of the final standard that EPA expects to publish, the Department is assessing what actions DoD can take to be prepared to incorporate EPA's final regulatory standard into our current cleanup process, such as reviewing our existing data and conducting additional sampling where necessary. In addition, DoD will incorporate nationwide PFAS cleanup guidance, issued by EPA and applicable to all owners and operators under the federal cleanup law, as to when to provide alternate water when PFAS are present.

21. When was the first geological study done at SAFB, specifically for PFAS?

Please refer to the January 2019 report, "The Site Inspections Report of Fire Fighting Foam Usage at Shaw Air Force Base Sumter County, South Carolina" in the Shaw AFB Administrative Record (additional information below). The investigation was conducted to determine if PFAS is in the surface water, groundwater, and soils on-base. Environmental samples in this initial investigation were collected in January 2018. Administrative Record: <u>https://ar.afcec-cloud.af.mil/</u> Please search for Administrative Record #3877

22. Why wasn't everyone notified about the contamination at the Carolina Mobile Home Park? There was 80 tons of soil taken to an abandoned landfill north of the Base for 4

months before DHEC was notified; Oct 1990 80 tons of soil that needs to be removed. The notification process needs to be updated.

The tons of soil removed from Carolina Mobile Home Park was part of the interim remedial action in response to a consent order which EPA Region 4 was directly overseeing at the time as part of Site OU-2 (Operating Unit #2). SCDHEC took over oversight in 1992 with issuance of Shaw's first RCRA permit, listing this site as SWMU 78 (Solid Waste Management Unit #78). Full history of on-going cleanup of SWMU 78 (formerly OU-2A), including recurring annual notifications to affected parcel owners, are kept in the Air Force Administrative Record. Meeting minutes of recurring RAB public meetings also documented status updates of cleanup activities conducted at this site.

23. Has the contamination affected High Hills water?

DHEC has a website showing public water sample results for PFAS near Shaw AFB: <u>https://scdhec.gov/BOW/perfluoroalkyl-substances-pfas/pfas-shaw-air-force-base</u> (includes High Hills wells as Non-Detect for PFAS compounds).

24. Why hasn't Shaw done something earlier concerning the cleanup?

In 2015, prior to any regulatory cleanup requirement for PFAS, Shaw Air Force Base initiated a basewide assessment to evaluate the storage, usage, and releases of PFAS containing aqueous film-forming foam (AFFF). In January 2019, a Preliminary Assessment Report of the findings was published. In 2016, the EPA established unregulated Lifetime Health Advisory Levels (LHA) for combined PFAS (PFOS/PFOA) at 70 ppt. In March 2023, the EPA had proposed a National Primary Drinking Water Regulation (NPDWR) to establish legally enforceable levels, called Maximum Contamination Levels (MCLs) for PFAS. Currently this proposed regulation, to establish enforceable PFAS cleanup standards, has not been finalized.

25. Who is going to pay when my pipes burst?

Pressure reducing values are being used, however if you feel you have a claim under the Federal Tort Claims Act, you can contact the Shaw legal office at: (803) 895-1560, organizational email: <u>20fw.ja.generallaw1@us.af.mil</u>

26. Why doesn't Shaw have people at the RAB meeting that can answer questions? Representatives from Shaw AFB are committed to being transparent and providing

accurate information. The science behind PFAS is evolving and information regarding addressing it is constantly changing.

Please refer to the Agency for Toxic Substances and Disease Registry (ATSDR) for healthrelated questions: Ms. Sue Casteel, Health Educator, (404) 747-4185 / (770) 488-3003, <u>AOV2@cdc.gov</u>, or Ms. Leann Bing, Health Scientist, (770) 488-3002, <u>KGB0@cdc.gov</u>.

27. Why hasn't the base people in the homes and dorms been told about the water contamination?

Shaw AFB uses deep wells to provide water to the base. All operational wells are below the LHA. Shaw AFB's Annual DW Consumer Confidence Report (Jan-Dec 2022): <u>https://www.shaw.af.mil/Portals/98/Environmental/Public%20Notices/2022/2022%20CCR</u>%20-%20Shaw%20AFB%20(May%202023).pdf?ver=PajO8m2jzz5soJKxruYn-A%3d%3d

28. Have cancer cluster studies been done?

Please refer to the Agency for Toxic Substances and Disease Registry (ATSDR) for healthrelated questions: Ms. Sue Casteel, Health Educator, (404) 747-4185 / (770) 488-3003, <u>AOV2@cdc.gov</u>, or Ms. Leann Bing, Health Scientist, (770) 488-3002, <u>KGB0@cdc.gov</u>.

Additional inquiries can also be directed to the South Carolina Central Cancer Registry: <u>https://scdhec.gov/CancerRegistry</u>

29. Is Dieldrin being sampled around my property?

As discussed during the RAB meeting, yes, Dieldrin sampling is ongoing to monitor the plume, overseen by SCDHEC under Shaw's RCRA permit for Site SWMU #78.

30. Shaw needs to provide a site where the public can view the water quality reports for the Base.

Shaw AFB publishes Annual Drinking Water Consumer Confidence Report, latest report (Jan-Dec 2022) can be found at: https://www.shaw.af.mil/Portals/98/Environmental/Public%20Notices/2022/2022%20CCR

<u>nttps://www.snaw.aj.mti/Portals/98/Environmental/Public%20Notices/2022/2022%20CCR</u> %20-%20Shaw%20AFB%20(May%202023).pdf?ver=PajO8m2jzz5soJKxruYn-A%3d%3d

Shaw AFB uses deep wells to provide water to the base. All operational wells are below the LHA. The next report (Jan-Dec 2023) will be published Summer 2024.

31. We need more frequent meetings and can't wait a year to meet again. When will the next meeting be?

Additional PFAS public meetings will be held in the future. The RAB contact list will be notified when more information is available.

32. We need to meet with our delegation and Washington Congressional members on the cleanup at Shaw. They are the ones that can get things done. We need someone with "power" to move the ball to make things happen.

Congressional Delegation notifications were started in January 2020, followed by a few more notifications later in the year, focusing on providing updates of response actions south of the base.

33. Why won't the High Hills water company provide water testing results to me? *The Air Force cannot speak on behalf of High Hills Rural Water.*

34. I built a home off base, and no one told me about the GW contamination. How do we ensure homeowners are notified of the contamination?

There is a recurring notification process that the Air Force/Shaw conducts quarterly/annually for affected homeowners. Under South Carolina law, it is generally the seller's responsibility to notify the new buyer.

35. No one can sell their homes due to the loss in property values. What can we do? If you feel you have a claim under the Federal Tort Claims Act, you can contact the Shaw legal office at: (803) 895-1560, organizational email: <u>20fw.ja.generallaw1@us.af.mil</u>

36. Who is (the Base/DHEC) going to change the laws so unsuspecting homeowners know about the contamination.

There is a recurring notification process that the Air Force/Shaw conducts quarterly/annually for affected homeowners. Under South Carolina law, it is generally the seller's responsibility to notify the new buyer.

37. Where do we find information on the cleanup at the base?

Newsletters providing clean-up information are mailed to the stakeholder contact list. Please contact Shaw AFB Public Affairs to be added to the mailing list: (803) 895-2019 or <u>20FWPublicAffairs@us.af.mil</u>

Additional information regarding the Shaw AFB Environmental Restoration Program can be found in the Administrative Record at <u>https://ar.afcec-cloud.af.mil/</u>