Air Force Civil Engineer Center



Air Force BRAC Environmental Restoration Program

> Former Pease AFB May 2019

Battle Ready... Built Right!







- 1956 to 1991 Strategic Air Command (SAC) Base.
 - 4,365 acres
 - Population --10,715
 - Water Supply—3 on-site supply wells; Haven, Smith and Harrison wells
- 1990 added to National Priority List under CERCLA (Superfund).
- 1991 First Base in nation to be closed under the Base
- Realignment and Closure Act (BRAC). Base Clean-up Team Formed





- DERP -Defense Environmental Restoration Program. Established by Congress in 1986, it provides framework for the cleanup of Department of Defense (DoD) sites
- Clean-up is under jurisdiction of the Secretary of Defense
- DoD is lead agency for all clean-up activities at Pease.
- DoD work is coordinated through BRAC Clean-up Team (BCT)
 - BCT: Air Force, EPA and DES
- Two Cleanup Program Categories:
 - CERCLA (hazardous waste sites)
 - NHDES Sites (petroleum releases and solid waste sites)



Restoration Program



- Pease CERCLA Program Sites
 - 41 Hazardous Waste Sites identified + 9 areas of interest
 - Primarily Solvents (PCE/TCE) and metals
 - Sites were grouped into 8 Zones
- NHDES Sites (non-CERCLA)
 - 33 sites managed under NH Env-Or 600
 - 161 former fuel storage tanks removed or abandoned in place
 - 6 solid waste sites (former landfills, construction rubble dumps)





- CERCLA Records of Decision (ROD) are issued for each zone
 - 26 sites/areas closed or determined to require no further action (NFA)
 - 5 landfill sites in long term management (LTM)
 - 6 restored surface water sites
 - 13 sites remain open (8 are in close proximity and referred to as Zone 3 sites)
- NHDES Site Decisions
 - 5 Open Sites (Includes FLRS with numerous groundwater plumes)
 - 6 Solid Waste sites in LTM
 - 22 NFA Sites







VIR FORCE IMPS



Sites Map





Former Pease Air Force Base Restoration Sites



Records of Decision



Zone/Site	Date	Purpose	Remedial Action
LANDFILL 5	9/27/1993	Initial Remedy Selection	Excavate Soils below water table; Consolidate wastes from Landfills 2,4,6, Site 72, Flightline area and Railway Ditch; composite cap
SITE 34 JETC	9/27/1993	Initial Remedy Selection	Excavation and Disposal of source area soils at/near Bldg 222 to prevent leaching of jet fuel to groundwater
FIRE TRAINING AREA (Site 8)	9/30/1994	Initial Remedy Selection	Groundwater Extraction and Treatment for VOCs, free product recovery and soil-vapor extraction for VOC-contaminated soils
ZONE 5	9/30/1994	Initial Remedy Selection	No Further Action for under CERCLA for Site 9 (Construction Rubble Dump-1) and Site 11 (Field Maintenance Squadron)
ZONE 4	1/30/1995	Initial Remedy Selection	Remove soils and restore Landfill 6; land use controls; and groundwater monitoring
ZONE 1	6/26/1995	Initial Remedy Selection	No further action for Zone 1 sites other than Landfill 5; land use controls and groundwater monitoring



Records of Decision 🔬



Zone/Site	Date	Purpose	Remedial Action
OLD JET ENGINE TEST STAND (Site 45)	8/9/1995	Initial Remedy Selection	Air Sparge and Soil Vapor Extraction for fuel-related contaminants; land use controls and groundwater monitoing
BUILDING 113, 119 (Sites 32/26)	9/26/1995	Initial Remedy Selection	Technical Impracticability Waiver for VOC contamination in bedrock; containment and groundwater extraction and treatment at Bldg 113; Excavation of Soils at Bldg 119
ZONE 3	9/26/1995	Initial Remedy Selection	Groundwater extraction and treatment for VOCs primarily PCE/TCE; Soil removal near three industrial buildings
CONSOLIDATED BROOKS/DITCHES	9/30/1997	Initial Remedy Selection	Excavation and off-site disposal of sediment from Pauls Brook anc McIntyre Brook; No further action for Flagstone Brook or Lower Newfields Ditch



Records of Decision



Zone/Site	Date	Purpose	Remedial Action
ZONE 3	12/30/2003	Amendment to ROD	Contingency Wellhead Treatment for Haven Well; Optimization of Bldg 227 groundwater treatment; Treatment of Sites 73 and 49 with permeable reactive barriers (PRB) for degradation of TCE; Land use controls
ZONE 3	12/10/2012	Explanation of Significant Differences	Modifications to remedy for Site 73 to include in-situ enhanced biodegradation by injecting emulsified vegetable oil and de-chlorinating bacteria
ZONE 3	10/24/2013	Explanation of Significant Differences	Modifications toremedy for Site 49 (Bldg 22) to include in-situ enhanced biodegradation by injecting emulsified vegetable oil and de-chlorinating bacteria
ZONE 5 (Site 8)	03/25/2019	Explanation of Significant Differences	Modification to Site 8 remedy to add treatment for PFOS/PFOA in groundwater



Records of Decision



Zone/Site	Date	Purpose	Remedial Action
ZONE 3 (Site 39)	Pending	Amendment to ROD	Additional remedy components for treatment of shallow groundwater and soil vapor extraction to prevent infiltration of sub-slab vapors into Bldg 227





- Remedies selected in Records of Decision were fully implemented and operating properly and successfully
- Substantial remedial progress had been achieved
- Land use controls/ groundwater management zones prevent exposure to residual contamination
- Haven well air stripper (contingency remedy) was determined to be no longer needed and was dismantled
- Investigation into emerging contaminants PFOS and PFOA begin at Former Fire Training Area 2 (Site 8)





- June and September 2013 Air Force samples 21 wells for PFOS and PFOA at the fire training area (Site 8)
- April/May 2014 Air Force samples the Haven, Smith, and Harrison Municipal Supply Wells
- May 2014 Haven Well Shut Down
- June 2014 –Air Force begins identifying and sampling private wells in Newington and Greenland
- 2014 -2015 –39 private drinking water wells sampled quarterly; four whole house carbon treatment systems installed
- August 2015 USEPA Issues Safe Drinking Water Act Administrative Order





- EPA Administrative Order (AO) required:
 - Hydraulic Containment and Treatment at Fire Training Area
 - Groundwater Treatment System for Haven Well
 - Investigation of nature and extent of PFOS/PFOA in groundwater and surface water
- Air Force Response in Sept 2015
 - Respond to AO in parallel with CERCLA
 - Fire Training Area Treatment
 - Respond to Haven, Smith & Harrison Wells
 - Begin CERCLA Investigations (e.g. Site Inspection)





- Preliminary Assessment:
 - Completed in December 2015
 - Documented 21 storage, use, or release locations
 - AF Administrative Record (AR) #469495
- Site Inspection:
 - Sampling of soils, groundwater and surface water at locations identified in the PA and additional data gap areas
 - Most significant source areas related to past releases at Site 8 and airfield area north of the Haven Well (KC-135 fire area and former fire station)
 - Site 8 Investigation Report: AR #555567; #555567.1 (Mar 2017)
 - Base-wide SI: AR #559411; #559411.1; #559411.2 (June 2017)





- USEPA Region 1 Letter dated 7 Nov 2017
 - Requested evaluation of human exposure pathways other than drinking water
 - Provided screening values for child and adult recreation (swimming in surface water; wading in sediments); fish and shellfish consumption and soil exposure for workers
- Air Force performed Supplemental Site Inspection in 2018
 - Sampled surface water bodies, sediments, groundwater, and shellfish in water bodies receiving discharge from Pease
 - Report is underway





- Integrated Response Actions between AF, Regulators, and City of Portsmouth
 - ✓ Haven Well taken offline in 2014
 - Bottled Water provided to 5 private well users
 - Point-of-Entry Treatment on four private wells
 - ✓ Begin mitigation of known source at Fire Training Area 2 (Site 8)
 - ✓ Granular Activated Carbon (GAC) Demonstration Project for Smith & Harrison Wells
 - Airfield Interim Mitigation System up-gradient of Haven Well
 - Drinking Water Treatment System for Smith, Harrison & Haven Wells under construction



Groundwater/Drinking Water Response









- Site 8 Interim Mitigation System
 - 11 groundwater extraction wells providing up to 110 gallons per minute (gpm)
 - Regenerable ion exchange resin treatment plant sized for up to 200 gpm
 - Currently operating at 40-45 gpm from 3 extraction wells due to unexpected iron fouling
 - Iron pre-treatment under design to achieve higher extraction rates
 - First six months of data show positive trends in controlling flow of groundwater, even at lower extraction rate
 - PFOS/PFOA effectively treated to Non-Detect levels prior to re-injection





- Airfield Interim Mitigation System
 - Extraction network designed to achieve 700 gpm
 - Up to 350 gpm from a series of wells near the Airport terminal
 - 350 gpm from a well co-located with the Haven Well
 - Reinjection network to allow redundant re-injection capacity (2 x 700 gpm)
 - Single use ion exchange resin treatment





- City of Portsmouth Grafton Road Drinking Water Plant
 - Provides drinking water to Pease Tradeport
 - Water source is the Haven, Harrison, and Smith supply wells
 - Water from Harrison and Smith treated by granular activated carbon (GAC)
 - New treatment plant sized for approximately 1100 gpm under construction
 - Single use ion exchange resin treatment with GAC polishing prior to distribution to drinking water supply
 - Full plant expected to be operation in Summer 2021