

INTRODUCTION

Mission: Naval Air Station Meridian is a multi-mission installation focused on enabling and sustaining the Warfighter from the Shore. The primary mission is to support Commander, Training Air Wing ONE, the wing's subordinate training squadrons and its associated T-45 aircraft in the conduct of undergraduate strike pilot training.

The NAS Meridian Team supports military readiness and the warfighters by delivering infrastructure and services to tenant training activities.

- Navy Strike Pilot Training (TW-1)
- Enlisted Rate Training (NTTC)
- Marine MOS Training (MATSS-1)
- Civilian Police Counterdrug Training (RCTA)

Setting: NAS Meridian encompasses over twelve thousand acres and is distributed across a main airfield, a target range, and an outlying field. Seventeen resident tenant commands training over 140 Naval aviators and 3100 enlisted students are supported annually. Over 3,400 work and/or live on board NAS Meridian. NAS Meridian is the #1 employer for East Central Mississippi with a payroll of \$ 121M in payroll.

Most of NAS Meridian is located in rural Lauderdale County approximately eleven miles north of the City of Meridian. In addition to the airfield, administration and housing areas, the installation includes over 6,300 acres of actively managed forest and is surrounded by farm and ranch lands with a low population density of less than fifty people per square mile that provides a highly compatible land use for the base mission.

The physical geography of NAS Meridian includes rolling hills steep valleys of the Upper East Gulf Coastal Plain of Mississippi. The humid subtropical climate combined with steep valleys provides a unique physical environment that serves as important headwaters for creeks in the Tombigbee River watershed. As important, the steep valleys create a cooler and more humid environment for plant and animal species found nowhere else in the region. In 2008, the Nature Conservancy identified this region as a freshwater species "hotspot" owing to the fact significant percent of the nations' threatened freshwater species exist in the drainage basins of this region, of which many are found nowhere else.

The human geography of the region is characterized by small communities that participate in occupations such as forestry, farming, and related support activities. For this reason, there is interest in the health and condition of the environment because it translates directly to their livelihoods.

BACKGROUND

In 2011, the installation environmental team recognized an opportunity to address multiple sites at once to help pave the way for facilities upgrades planned in 2011, 2012 and 2013. The upgrades included a new jet engine test facility, incorporation of new BASH safety standards for flight operations, and the completion of other infrastructure projects for energy and wastewater. In each of these cases, environmental restoration sites were on or adjacent to these planned activities. Working with the NAS Meridian Partnering Team, the Mississippi Department of Environmental Quality and NAVFAC SE, a plan was prepared to address eight environmental restoration sites simultaneously and to complete the actions in less than 2 years.

The environmental restoration program at NAS Meridian included eleven active restoration sites; three of which had achieved Remedy in Place (RIP) and eight additional sites in the early phases of investigation. The sites under investigation included two landfills, a jet engine test cell, a former waste water treatment plant lift station and four wastewater treatment plant sludge disposal areas. The challenge for the installation team was that these sites occupied locations where mission critical or significant support functions were undergoing upgrades or new requirements that put a premium on completing the investigation and cleanup within two years. Historically, the challenge of the CERCLA documentation alone would have taken over five years, so the team held a partnering team meeting in October 2010 to identify a path forward that would meet the needs of the installation while providing permanent and responsible solutions to the environmental issues presented by the eight sites.

Building on a strong relationship with the state regulatory agency, Mississippi Department of Environmental Quality (MDEQ), the team proposed using the removal action process as applicable so that field activities could be complete within two years. The team also was seeking opportunities to fast track site closure based on new environmental sampling data. MDEQ agreed to the revised schedule and the NAVFAC SE RPM completed contracts with the primary contractor CH2MHill, to begin the process.

Each site presented a unique challenge so individualized plans and engineering evaluation/cost analyses (EE/CA) were developed as discussed below.

Site 2: The jet engine test cell had a series of releases of JP-5 jet fuel from an oil/water separator until discovery in 1983. Previous investigations reported levels of TPH in the surface soil as high as 3,000 mg/kg compared to a MDEQ standard of 300 mg/kg. However, given that the soil in this area had been repeatedly disturbed by logging operations, it was anticipated that significant natural degradation had taken place so this site was identified as a candidate for rapid closure.

Site 3a: The Lake Martha Landfill was operated from 1968 until 1985 and received construction debris with unknown quantities of paints and solvents. A two foot cover of soil was placed on the landfill as a barrier and a long-leaf pine tree stand was planted. Earlier studies identified semivolatile compounds in the subsurface soil and groundwater as well as levels of pesticides above risk standards. Given that this landfill was over two acres, it was assumed that a removal would not be economically viable so plans for a permanent cover improvement began with the initiation of an EE/CA.

Site 3b: The Metals Landfill was operated from the mid-1960's until 1985. This landfill was located adjacent to the principle runway in a ravine. Materials disposed of included scrap metal from the aircraft maintenance hangar, automobile chassis, paint cans, gasoline tanks and various other metal debris. Clean fill material was pushed over the side of the ravine to cover the majority of the landfill, but the steepness and large cavities prevented the emplacement of a complete soil cover. The primary environmental concern for 3b was a report of highly toxic metals such as hexavalent chromium in the subsurface soil, and direct physical exposure to the contents of the landfill. Additional concerns at Site 3b included incorporating the new Bird Animal Strike Hazard standards in the action and the identification of the area as a unique steephead bank ravine that included a significant habitat for amphibians and plants.

Given that this landfill was less than an acre in size and the large concrete rubble at the surface would make a soil cap difficult and expensive to build; the removal of the landfill was considered in the EE/CA.

Sites 4a, 4b, 4c, and 4d: Four areas were identified that received dried sludge from the installation wastewater treatment plant. Concerns at these sites were a history of paint

stripping and the paint shop at the hangar maintenance facility that could impact the sludge. Given the low concentrations reported previously, it seemed likely that natural degradation processes had reduced concentrations the EE/CA was not initiated for these sites pending the results of the sampling. These sites were also identified as candidates for early closure.

Site 7: The wastewater treatment plant lift station experienced a spill from the diesel tank for the backup generator. A rapid response to abate the spill and remove obviously stained soil was completed, but residual contamination was suspected in the soil which prompted adding the site to the restoration program. Given the recent age of the spill, a removal a planned and the EE/CA was initiated.

PROGRAM SUMMARY

The primary objective of the installation restoration program is to manage environmental sites to protect human health and the environment while demonstrating leadership utilizing the cost-effective and sustainable methods. Starting in 2011, the environmental restoration program at NAS Meridian had a goal to address the remaining eight active restoration sites within two years to allow significant projects affecting flight and other support activities to be completed.

To meet this objective field investigation workplans were fast-tracked and within six months site specific testing of the soil and groundwater were completed. The results were used to tailor the actions described for each site below.

Site 2 Jet Engine Test Cell: As expected, significant degradation of the TPH compounds resulted in concentrations reduced to below 30 mg/kg - well below state standards. The team prepared a Decision Document immediately requesting no further action. The Decision Document was accepted and signed within two months.

Site 3a Lake Martha Landfill: The sampling results confirmed persistent soil and groundwater concentrations above human health standards, but indicated the existing cover was working at preventing direct exposure and offsite migration of contamination. The EE/CA recommended that the existing cap be armored in areas susceptible to weathering and erosion.

Site 3b Metals Landfill: The sampling results confirmed that contamination was present only in the soil and that the extents of the landfill were indeed less than 1 acre. The EE/CA also

identified a significant volume of materials (scrap metal, concrete and soil) that could be recycled.

Sites 4a, 4b, 4c, and 4d: The sampling results confirmed that these sites met or exceeded residential screening criteria. The team prepared a Decision Document immediately requesting no further action. The Decision Document was accepted and signed within eight months.

Site 7 Lift Station Spill: The sampling results in the soil identified the horizontal and vertical extent of diesel contamination that would be removed to meet MDEQ human health standards. The EE/CA recommended that the removal of approximately 200 cubic yards of soil would eliminate the risk posed by the site which would support a no further action request.

ACCOMPLISHMENTS :

The team met or exceeded all of the goals set forth at the partnering team meeting in October 2010.

Site 2: With the environmental concerns addressed, the demolition of the old test cell was completed and the new jet engine testing facility was built and is currently operational. Utilizing the EE/CA risk-based approach versus the traditional remedial investigation-remedial action saved nearly \$80,000.

Site 3a: The stand of long-leaf pine was preserved and the armored landfill cap is functioning as designed. The action memorandum was accepted which requires long term monitoring of the barrier and landfill cap and land use controls. The success of using the existing soil cover had a significant cost impact. Cost estimates for a new cover were approximately \$1.5MM. Armoring the existing cover was completed for approximately \$300,000.

Site 3b: The entire landfill was successfully removed for less than the cost of a complete soil cover. Significant volumes of material were recycled for use on and off site. Restoration efforts were supported by plant/native species biologists from the U.S Fish and Wildlife Service and incorporated BASH standards by planting giant southern cane which does not produce seeds or berries, eliminating the attractiveness to birds and animals. The planted cane also preserves the natural steephead bank environment and is successfully preventing erosion and filling in of the springs at the base of the ravine.

The success of the recycling of the landfill materials were as follows; approximately 1,469 cubic yards of concrete, 100 tires, and 2,280 cubic yards of construction debris, such as scrap metals and body parts from old cars, have been transported and recycled offsite. In addition, approximately 9,000 cubic yards of onsite soil was tested, cleaned, and re-used as backfill which eliminated the need for imported soil, saving thousands of dollars in the process. If a remediation approach including transport and recycling of waste offsite was not used, then approximately 5,000 cubic yards of new soil would have been required to complete a traditional soil cap over the site. Since the site will be No Further Action, the Navy will save thousands in annual groundwater sampling and reporting as well as annual land use control inspections. As was anticipated, the removal of the landfill was completed for less cost than the emplacement of an improved permanent cover. Similar to Site 3a, a permanent cover would have cost approximately \$1.5MM, as the large concrete rubble at the surface prevented placement of soil fill. The removal costs were approximately \$1.0MM, and successful clean closure eliminated long term monitoring and management costs, which over 30 years would have been nearly \$200,000 for a total site savings of \$700,000.

Sites 4a, 4b, 4c, and 4d: The former sludge sites are no longer managed as environmental sites and have been returned to the facility. They are all within either open areas or managed forest. Utilizing the EE/CA risk-based approach versus the traditional remedial investigation-remedial action saved nearly \$80,000.

Site 7: The removal action was carried out successfully with the removal of approximately 250 cubic yards of soil that were disposed of as non-hazardous waste. While the clean-up action was the same as the traditional approach, investigative and reporting costs were reduced by approximately \$55,000.

In total six acres have been returned to productive and unrestricted use for the installation. Green and sustainable remediation principles reduced the energy and cost to complete these actions and preserved important habitats on the installation. Risks to human health and the environment were reduced or eliminated. The efforts of the installation environmental restoration team resulted in eight Decision Documents/Action Memoranda, six Site Closeouts (SC) and two Remedies in Place (RIP) in less than two years at a cost savings of over \$1.2MM.