



REMEDIATION on North Dutch Island

Environmental expertise moved a project from investigation to remedial action in a single Alaska field season under two consecutive, yet distinct contracts.

By Monica Oakley, PMP

Excavated contaminated soils are placed in Super Sacks and barged offsite for proper disposal.

Reprinted with permission from **THE MILITARY ENGINEER**,
No. 712, January/February 2018
Copyright © 2018 by the Society of American Military Engineers.
All rights reserved.

In 1980, 2.1-million-acres within the Prince William Sound of the Chugach National Forest of Alaska were deemed the College Fjord-Nellie Juan Wilderness Study Area (WSA). This region of wilderness boasts tidewater glaciers, icebergs, post-glacial terrain, and reforestation.

The U.S. Forest Service evaluates the area's eligibility for Federal Wilderness status, which is ultimately enacted by Congress. Meanwhile, this designation also offers interim protection roughly following the guidelines of the *Wilderness Act of 1964*.

However, a site within the WSA, specifically on North Dutch Island, was known to be contaminated. Hazardous building materials and petroleum hydrocarbons remained from the former operations dating back to the 1940s and 1950s of the Civil Aeronautics Authority, which in 1959 was reorganized and renamed the Federal Aviation Administration (FAA).

Brice Environmental Services Corp. tackled this contamination through a two-phase time critical project. The work was performed at the former VHF Communication Station, a historic site.

SCHEDULING WORK

For FAA and the Forest Service, completing site cleanup was best done before the area was designated as Federal Wilderness. To do so afterward would present a host of permitting challenges, making it more difficult to mobilize to the site with heavy equipment. However, only the first phase of work—consisting of asbestos abatement, infrastructure demolition and debris removal, and a release investigation—was approved, funded, and contracted.

Due to the sensitivity of working in a protected area, both agencies and the Alaska Department of Conservation were onboard with attempting to complete the Phase Two removal action within the same field season. Doing so would avoid remobilizing heavy equipment, materials, and a field team the following year, saving on costs as well as further impact to the natural environment.

UNIQUE SITE RESTRICTIONS

The WSA status posed restrictions on Phase One operations, requiring the evaluation of various alternatives and negotiations with project stakeholders. Minimizing impact to the surrounding forest and its historic resources shaped every decision regarding life support, mobilization, and equipment selection during planning.

Typical approaches for fieldwork in a remote location (it is only accessible by air and water) were prohibited. For example, a man camp could not be set up on the island to house the field crew. The alternative became a houseboat anchored offshore. Heavy equipment such as a 10,000-lb excavator was not permitted given its impact to soils and potential impact to known historical resources. Though mats were proposed to mitigate impact to the ground surface, they were not initially approved for use. The use of helicopter slinging to move materials offsite was also prohibited to avoid impact to birds.

The job still had to get done. Heavy equipment was the only option and mats were a must, especially considering the island's exceedingly wet soil conditions were making equipment navigation nearly impossible. The region experiences an annual average of 150-in of precipitation.



A temporary path was constructed using crane mats to minimize impact to soils and vegetation, and to create stable movement of heavy equipment over extremely wet ground conditions.

The use of lightweight crane mats to construct a temporary path for heavy equipment was proposed. Though still not ideal, the Forest Service and the U.S. Fish & Wildlife Service weighed all options and ultimately approved this solution. Mats were inspected to ensure no transfer of invasive species and the Forest Service walked the proposed pathway for mat placement to safeguard historical sites. With mats in place, Phase One moved forward.

SETTING THE TIMER

Work began in early spring with the removal of infrastructure and debris including a former elevated wooden plank road; a two-story communications/quarters building; tank cradle; wooden septic crib; concrete cistern; catch basin; water pump house; electrical transformer; two 10,000-gal fuel aboveground storage tanks; an electrical transformer; scattered drums; and 600-ft of a mostly buried 4-in fuel pipeline that ran near the primary powerhouse building. Asbestos and lead-based paint were removed from each of the buildings prior to demolition. Debris inventory and classification were completed for proper waste classification and disposal.

A release investigation was then conducted to characterize and delineate potential contamination associated with the former VHF Communication Station. Approximately 150 soil borings were advanced across the site via hand auger to collect soil samples and investigate for potential fuel releases and other potential sources of contamination. Surface water sampling was also performed.

To avoid impact to historical resources, an archaeologist worked with the State Historic Preservation Office to perform monitoring during the project's ground disturbing activities.

LEVERAGING PAST EXPERIENCE

By the end of May, Phase One was complete. Given the possibility of performing the removal action within the current field season, crew stashed the equipment on the island in a location above the mean high-water line before demobilizing.

With abatement, demolition, debris removal, and release investigation completed early in the field season, a sufficient window of time remained to complete the removal action. But there was much to do. Through a series of meetings, buy-in was obtained



by the project stakeholders and the team was empowered to do what it would take to complete the removal action this year.

To meet the goal, Brice leveraged in-house expertise in environmental science with over a decade of working knowledge of Alaska environmental regulations. Using the release investigation data, the firm worked to develop site-specific alternative cleanup levels (ACLs) through the Alaska Department of Environmental Conservation Method Three Online Calculator.

Elevated background concentrations of hydrocarbon ranges due to biogenic interference required interpretation of silica gel cleanup results and chromatograms. The use of silica gel cleanup procedures as confirmation samples was approved. This method removed the biogenic interference and allowed for a more accurate reading of contamination

levels. Once calculated, ACLs proved more applicable where actual exposure pathways and receptors were limited. Specifically, as a WSA, North Dutch Island would never be developed for residential or commercial use, nor would groundwater, if present, be used as a drinking water source. Any visitors would be limited to recreational uses, subsistence harvesters, and consumers with minimal exposure to the site. The ACL results were presented and discussed with the project's stakeholders. Several remedial alternatives were evaluated from the focused feasibility study and the most favorable alternative, soil excavation, groundwater and surface water monitoring, and transport and disposal, was selected.

The field season was now more than half over. Given the urgency of getting the job done within the year, a direct award was made to allow for seamless operations.

A WIN FOR THE WILDERNESS

By the end of July, removal action plans had been developed and approved, and the field team returned to the site to execute the work, just two months after Phase One was completed.

Approximately 256-T of contaminated soil was removed and transported offsite for disposal. Imported backfill was not an option due to the WSA designation and potential for introducing invasive species onto the island. Excavations were restored with existing beach gravel to original grade or re-sloped to prevent ponding of water and unsafe conditions.

Forest Service approval was obtained prior to and after site restoration to ensure compliance with its Special Use Permit and that the site was in accordance with its vision of preserving natural conditions and maintaining the WSA designation.

The field team demobilized by the end of August, successfully avoiding the heavy rainfall typical of late summer in Prince William Sound. This race against the clock offered several benefits to both the client and project owners. Not only were costs reduced through lower excavation quantities, approval and funding to perform the removal action in the same field season avoided at least another \$300,000 for a second mobilization/demobilization, and more than 5,000-gal of diesel fuel.

With the site now cleaned, the project was surely a win for its stakeholders, but most certainly, for the Alaskan wilderness.

TME

Monica Oakley, PMP, is Project Manager, Brice Environmental Services Corp.; moakley@briceenvironmental.com.



On Alaska's North Dutch Island, hazardous building materials and petroleum hydrocarbons remained from past operations of the Civil Aeronautics Authority, the forerunner of the Federal Aviation Administration. PHOTOS COURTESY BRICE ENVIRONMENTAL