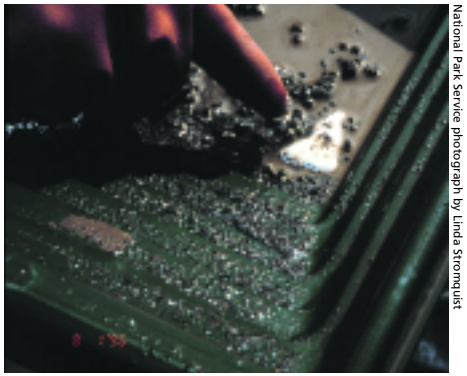
National Park Service photograph by Linda Stromquist

Overview of soil-washing process to remove mercury from soil.



National Park Service photograph by Linda Stromquist

Example of mercury recovered in mitigation process.

National Park Service photograph by Mike Shields

These explosives were found near Kennecott in Wrangell-St. Elias National Park and Preserve. Manufactured in 1917, they remained dangerous until destroyed in 1988.

Mining and Mitigation: The Coal Creek Remediation Project

By Linda Stromquist

A bucket-line dredge operation which mined the Coal Creek valley between 1936 and 1977 resulted in numerous petroleum spills, stockpiles of drums, hazardous debris, and areas of heavy metal contamination in the Coal Creek watershed. With the transfer of the Coal Creek claims to the National Park Service in 1986, NPS assumed the responsibility for the cleanup of the contaminants. After this acquisition, the NPS initiated site investigations to characterize the nature and extent of contamination and hazardous debris in the valley.

As a result, 830 55-gallon drums, 18 lead-acid batteries, 2,500 pounds of solid waste, and 46,000 pounds of scrap steel were removed from the area in 1994. By 1996, park managers initiated an effort to remediate lead-and mercury-contaminated soils in the watershed. NPS crews excavated approximately five cubic yards of lead-contaminated soils from the historic blacksmith shop. This material was packed into drums and shipped for disposal to a licensed facility in Washington State.

For the mercury-contaminated soils, a different process was followed. NPS crews built an on-site soil washing facility to treat the contaminated soils. A 4,000 square foot work pad and 14,000 gallon recycle pond were constructed in the maintenance yard of the main camp complex. Approximately 45 cubic yards of mercury-contaminated soil were excavated from the area surrounding the historic assay building and transported to the work pad. The soils were then mixed in a slurry, treated with an ore cleaning solution, and passed across a hydraulic jig, a copper plate, and a series of sluice boxes. Process waters were directed into the recycle pond and process solids were retained on the work pad until laboratory analysis verified cleanup standards had been obtained. An on-site lab utilized X-ray fluorescence analysis to monitor excavation and soil washing operations. Northern Testing Laboratory in Fairbanks also analyzed samples, confirming the on-site findings. Approximately 172 pounds of mercury concentrates generated by the soil washing effort were shipped off-site for disposal.

The NPS continued environmental mitigation of Coal Creek camp with a detailed investigation of petroleum-contaminated soil in and around the Coal Creek area. After excavation of the petroleum-contaminated soils, the material was treated by thermal desorption, utilizing a portable thermal treatment unit that was flown to the site in the summer of 1998. With the close of the field season in 1998, the NPS completed the multi-year remediation of the contaminants that were part of the legacy of mining in the Coal Creek valley.

Physical Hazards Abatement: "Look but Don't Touch; Stay Out, Stay Alive"

By Logan Hovis

With the creation of the ANILCA parks, the NPS in Alaska was forced to deal with the physical hazards associated with mining on a scale never before contemplated. The new parks were huge and the land therein had long been used for mining and other industrial purposes. Chief among the dangers were mine openings such as adits and shafts, abandoned explosives, and the collapsing fabric of the mines. Mine sites ranged in size from simple prospecting pits to expansive placer mining areas and on to the Kennecott mines complex.

Mine sites are attractive hazards drawing in the unwary and the unprepared — residents, visitors, and staff. Over the past 25 years, the NPS undertook an increasingly active and coherent program to identify, prioritize, and mitigate such hazards. Abandoned explosives became a major issue when a misinformed effort to eliminate explosives at the Stampede Mine caused the