

destruction of much of the site. Thereafter, the NPS brought Mike Shields to Alaska to develop a program of training, consultation, and disposal that provides the highest possible standard of safety for all concerned. Numerous classes in the hazards of old explosives and their identification have been held for park staff and, on several occasions, park residents. Literally tons of explosives and thousands of blasting caps have been removed from the landscape

and destroyed.

Controlling access to underground workings was developed for public safety. A number of methods were used including foam plugs, slotted gates (accessible to bats but not humans), and the deliberate collapse of existing openings. Care was taken to ensure that the mine workings continued to drain and were ventilated to prevent different problems in the future. To date, 29 mine openings have been closed in parks

as diverse as Glacier Bay, Kenai Fjords, Denali, and Wrangell-St. Elias.

Given the historical significance of many mining areas, explosives management and mine closure efforts have been coordinated closely with cultural and natural resource managers to identify the best approaches for mitigating often extreme hazards and protecting public and employee safety with cultural sensitivity.

Mine structures along with numerous

other historic resources have been addressed through park maintenance programs and preservation efforts based on park needs and historical significance. Non-historic structures have been removed as funds allowed to improve the esthetics and safety of the mining districts. In other cases, structures in mining areas such as the Chisana and Bremner historic districts in Wrangell-St. Elias have been rehabilitated and opened as public-use cabins.

Abandoned Mineral Land Restoration Activities in Alaska

By Lynn Griffiths

The NPS has had an ongoing Abandoned Mineral Land restoration program (AML) since the 1990s. Since much of mining activity on lands now managed by NPS occurred prior to environmental compliance regulations, mined areas were not necessarily restored to their original condition. To date a substantial amount of disturbed lands

have been restored, and numerous dangerous conditions have been made safe. However, more work remains to be done.

The AML program has focused on two distinct aspects of land restoration. The first is the safety of park visitors. A seemingly endless number of hazards exist—underground mine openings including shafts and adits, deteriorating equipment, hazardous materials, explosives, and deteriorating structures. The Kennecott mine, which was created to extract copper ore, in Wrangell-St. Elias National Park and Preserve is an example of a mine where visitor safety is a concern. It has 70 miles of dangerous underground workings with numerous openings, and deteriorating mill buildings and equipment. Methods used to close unsafe mines include steel gates made of manganal steel (jail cell steel), polyurethane plugs and blasting to collapse openings.

The second emphasis of the program has been restoration of disturbed lands,



National Park Service photograph by Lynn Griffiths

Upper Caribou Creek in Denali National Park and Preserve, where large barren tailings piles have been leveled and re-contoured.

primarily those in flood plains and riparian habitat disturbed by placer mining. Restoration projects have used innovative methods to remove hazardous waste, reduce hazardous conditions, reshape the mined area to approach original surface contours, meander streams, and promote stream bank stabilization, sediment control, and revegetation by indigenous plants.

Upper Caribou Creek, in the Kantishna area of Denali is an example of a restoration project of a placer mined area. Sections of

the stream bed have been mined from bank to bank. Restoration activities included removing hazardous materials and equipment from the park, leveling and contouring large tailings piles establishing more natural channel meanders, and applying erosion controls.

Many mined areas remain to be restored and made safe for public use. The National Park Service will continue this work in an effort to protect the public and preserve mining history in Alaska National Parks.



National Park Service photograph by Lynn Griffiths

Mine hazard at Wrangell-St. Elias.