

## **Time-Critical Responses to the 2003 Flood Damage at the Holden Mine Site**

The October 2003 flooding in North Central Washington caused damage at the Holden Mine Site that warranted immediate action to avoid further damage to the environment. The Holden Mine Site is situated adjacent to Railroad Creek within the Chelan Ranger District of the Okanogan-Wenatchee National Forest and is approximately 12 miles west of the boat landing at Lucerne on Lake Chelan.

A flood event on October 20, 2003, eroded portions of Railroad Creek and Copper Creek channels. Floodwaters and surface water runoff caused severe damage to three bridges, the tailings piles, and to other facilities. An estimated 600 cubic yards of mine tailings was displaced by erosion and some portion of this was transported into Railroad Creek. Of particular concern was the damage to riprap protection along the toe of the tailings piles, as well as gully formation across Tailings Pile No.1, which if left unchecked will continue to cause significant erosion and could lead to large scale slope failures of both Tailings Piles No. 1 and 2

Immediate stabilization of the tailings piles was urgently required to prevent further release of contaminants. Time was of the essence in completing this work due to the imminent winter weather, since high waters during spring snowmelt will exacerbate existing conditions that could lead to additional releases of hazardous substances to the environment. Therefore, the USDA – Forest Service approved an Action Memorandum on November 12, 2003 for a time-critical removal action to be conducted under an existing Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Administrative Order on Consent (AOC), dated April 11, 1998, between Intalco (successor to Howe Sound Mining Company) and the Agencies (USDA-Forest Service, US-EPA and the Washington Department of Ecology) for conducting a Remedial Investigation/Feasibility Study (RI/FS) of the Holden Mine Site. The Forest Service is the lead agency directing the RI/FS.

The time-critical removal action began on November 14, 2003 and was successfully completed before November 25, 2003. Work consisted of adding riprap materials to area of damaged riprap along Railroad Creek, removal of logjams in Railroad Creek adjacent to two bridges, modification of Copper Creek channel upstream of the culverts above Tailings Pile No. 1, and placement of sandbags and surface regrading to address erosion that occurred on top of Tailings Pile No. 1.

In 2004 additional stream bank protection and stabilization of the Railroad Creek channel at and up stream of the vehicle bridge was immediately required to prevent further erosion of stream bank sediments that could potentially lead to release of contaminants to the environment. Furthermore, replacement of the damaged Holden Village Vehicle Bridge is urgently needed in order to provide the necessary health and safety support should an emergency situation develop within the underground mine workings of the Holden Mine. It was important to complete this

work without delay due to the potential for high water during winter storm events and spring 2005 snowmelt exacerbating rerouting of Railroad Creek above the vehicle bridge. Therefore, the USDA – Forest Service approved an Action Memorandum on August 23, 2004 for a time-critical removal action under the existing CERCLA AOC.

This time-critical removal action began on October 4, 2004 and was successfully completed before October 25, 2004. Work consisted of upstream bank protection by adding riprap materials to areas upstream of the damaged vehicle bridge; replacement of the damaged vehicle bridge with an 80-foot long Hamilton EZ bridge; removal of the old flood-damaged vehicle bridge; and removal of logs within Railroad Creek adjacent to two of the bridges.