

Salt Chuck Mine and Mill Area Prince of Wales Island, Alaska

History

The Salt Chuck Mine is an abandoned historic gold, silver, copper and palladium mine located on the southeast side of Prince of Wales Island. The site is 4.5 miles from Thorne Bay, Alaska and is accessible by a half-mile trail from the road or by water.

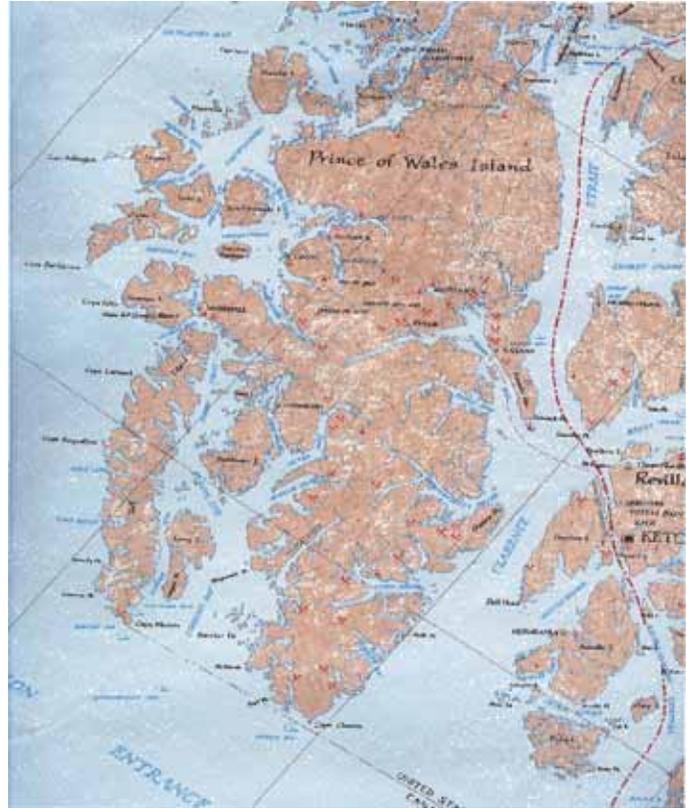
The mine and mill operated from 1905 – 1941, processing over 326,000 tons of ore. The mine openings are uphill and about a half mile from the mill area, which is on the northern shore of Salt Chuck Bay near the mouth of Lake Ellen Creek. The remnants of at least 25 of the mill's structures are present at the site as well as two large diesel tanks and four banks of diesel engines.

An extensive tailings deposit of an estimated 100,000 cubic yards is located mostly in the inter-tidal zone south of the mill, on State-owned tidelands. Additional tailings are located in the upland area, managed by the US Forest Service (USFS).

As with other abandoned historic mines, the sources of contamination at the mill area are a result of standard practices from an era before environmental regulations, when mines operated without today's permits and reclamation requirements.

The Alaska Department of Natural Resource's *Prince of Wales Area Plan* identifies the area around the site as "intensive public recreation use." The USFS has public use cabins and a campground in the area, and Salt Chuck Bay is used for subsistence clamming and crabbing. Lake Ellen Creek supports five species of anadromous fish.

The U.S. Bureau of Land Management (BLM) first investigated the Salt Chuck Mine's mill in 1995 – 1998. Those investigations led to a more in-depth one conducted by the USFS from 2002-2007.



Their draft Engineering Evaluation/Cost Analysis (EE/CA) was released in 2007 and summarized the previous sampling results.

State Concerns

DEC, the Alaska Department of Health and Social Services (DHSS), and the U.S. Environmental Protection Agency (EPA) reviewed the USFS' draft EE/CA. All of the reviewing agencies agreed that additional site characterization and an evaluation of all ways in which people and the environment might be exposed to contamination need to be conducted with an assessment of the resultant risk. This effort would provide the basis for cleanup levels and actions sufficiently protective for multiple uses of the land in the future.

DEC and EPA have been working with the USFS to try to address these issues. The

USFS has not finalized the draft EE/CA or conducted additional investigation or cleanup at the site due to funding constraints.

Contamination

The draft EE/CA outlined several areas of contamination both in the uplands and the inter-tidal area. The levels found were high enough for DEC and DHSS to believe that there is a risk to human health. The site characterization, however, did not provide enough data to be sure whether or not food gathering or other activities should be officially restricted.

Polychlorinated biphenyls (PCBs) are present in the tailings around the mill and suspected to be from former electrical equipment. Copper, lead, and mercury were found in the soils around the former assay shop, and lead from batteries was found in the soils around the electric locomotive.

Petroleum-contaminated soil is present near the aboveground storage tanks, drum caches and in the sludge on the floor of the mill. The sludge has also migrated to the tailings and intertidal area.

Several piles of tailings exist in the uplands area near the mill and next to the unnamed stream that flows through the site. Elevated levels of copper were found in all of the tailings, and mercury, selenium, and PCBs in tailings in various locations.

In the intertidal area, the main contaminants of concern in the extensive area of tailings are copper and vanadium. Samples were collected of tailings, sediment below and downgradient of the tailings, and biota, including several species of clams and mussels. PCBs are present in the tailings closest to the mill and tend to be less prevalent farther into the bay. The sediments below the tailings and out in Salt Chuck Bay also showed elevated levels of copper and vanadium as well as arsenic and isolated hotspots of mercury, PCBs and polycyclic

aromatic hydrocarbons. In general, the contaminant levels decreased as the sample locations extended into Salt Chuck Bay.

The surface water of the bay showed levels of arsenic, copper, mercury, nickel, and selenium significantly higher than samples collected from uncontaminated background locations.

Butter clams, little neck clams, softshell clams and blue mussels were collected and the tissue analyzed for metals and PCBs. No PCBs were found. Arsenic, copper, mercury, selenium and vanadium were found in all of the samples. Arsenic and vanadium were found in several samples at levels which exceed the human health risk based screening level for ingestion. Copper was found at levels which exceed the ecological risk based screening level. It was noted that no bivalves were present in the most contaminated tailings which are closest to the mill.

Solutions

EPA is interested in putting this site on its National Priorities List of highly contaminated sites. This would result in a more thorough cleanup, protective of human health and the environment and allowing the land to be reused safely. Also, funds from the EPA's Superfund would be available for almost all of the effort.

The governor must either concur with the listing or not object to it in order for EPA to pursue listing the site.

Contacts

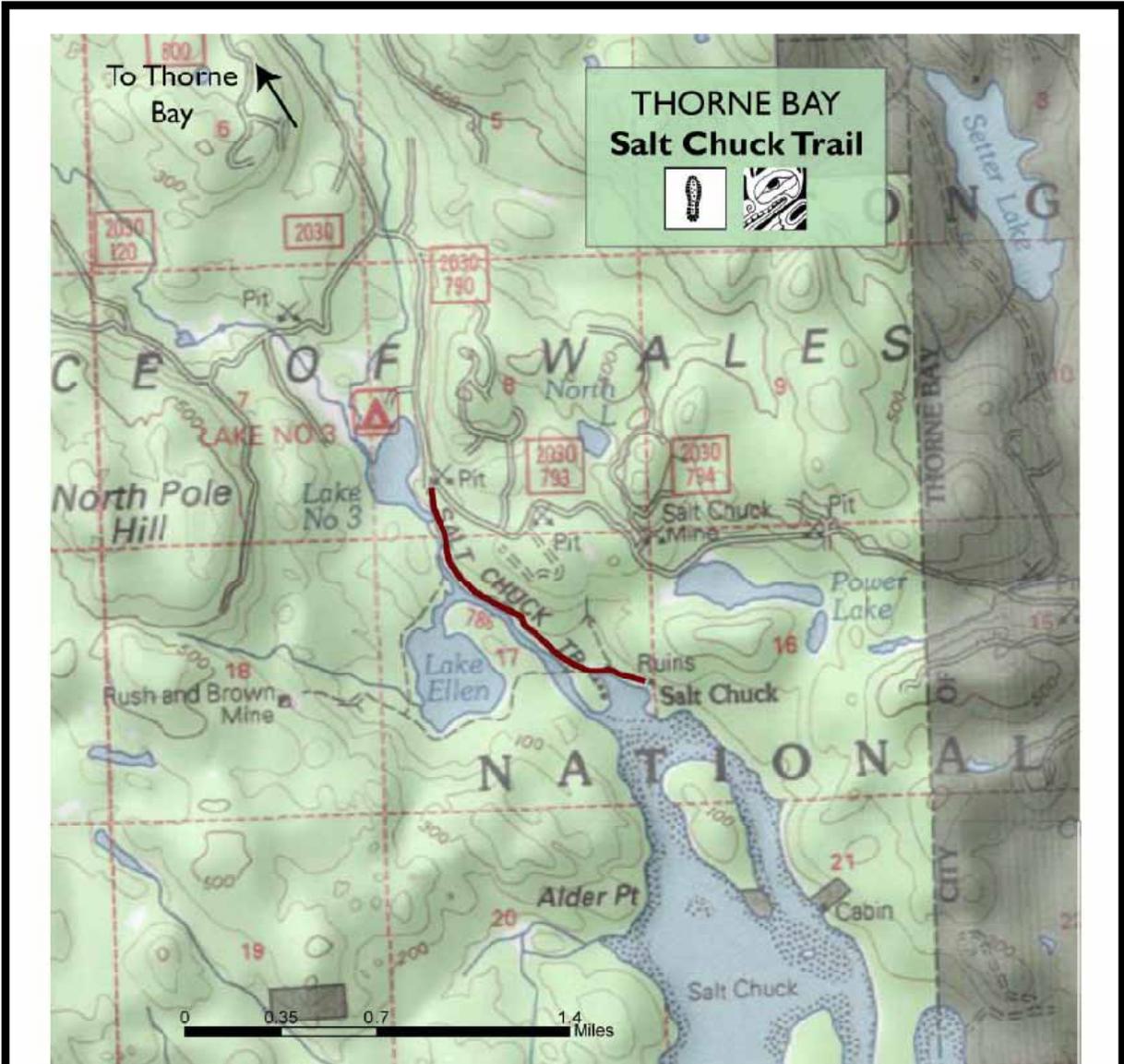
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THORNE BAY SEAtails



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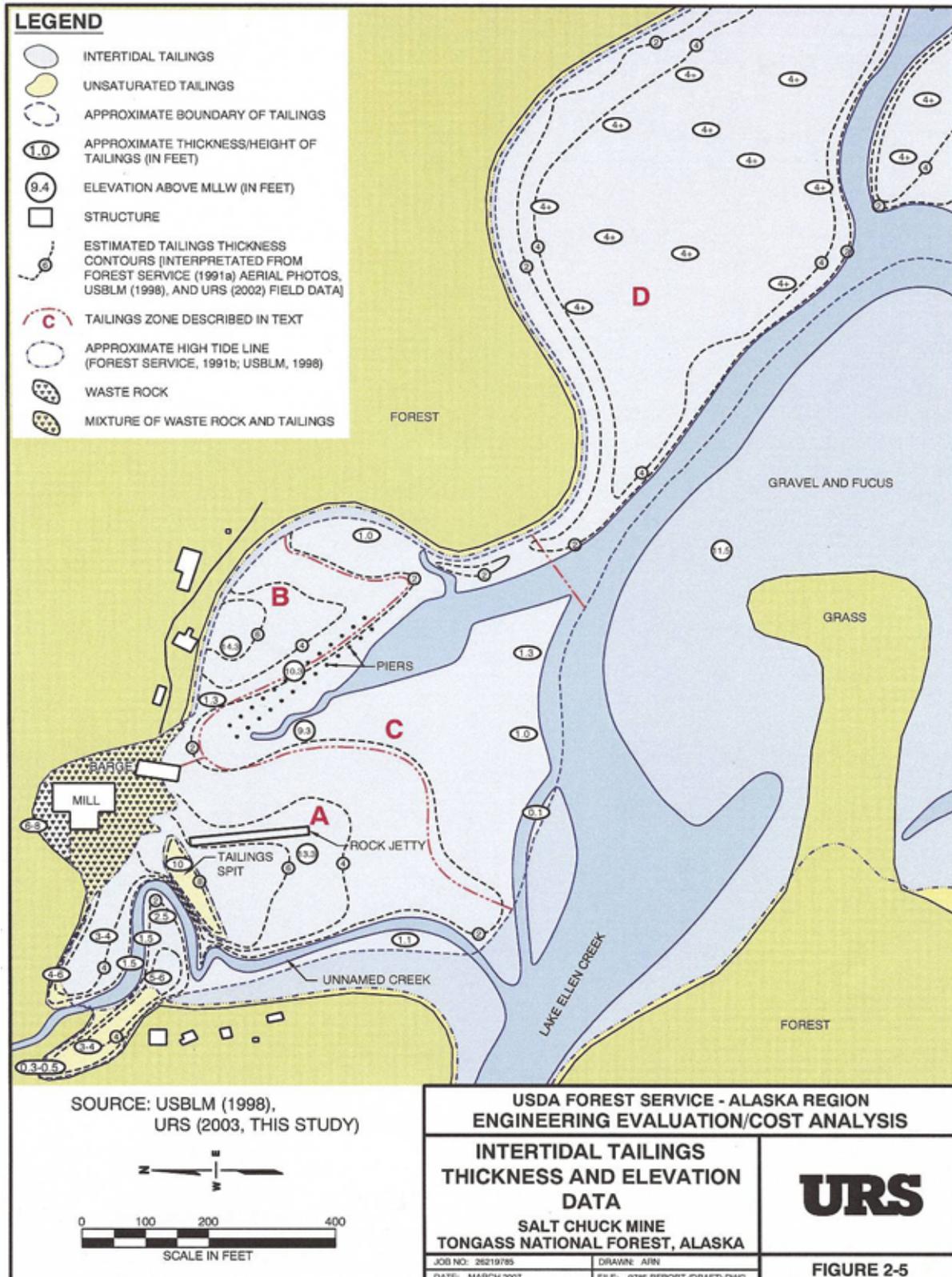


Figure 2. The mill at Salt Chuck mine, mid-1970s (photo by Patricia Roppel),

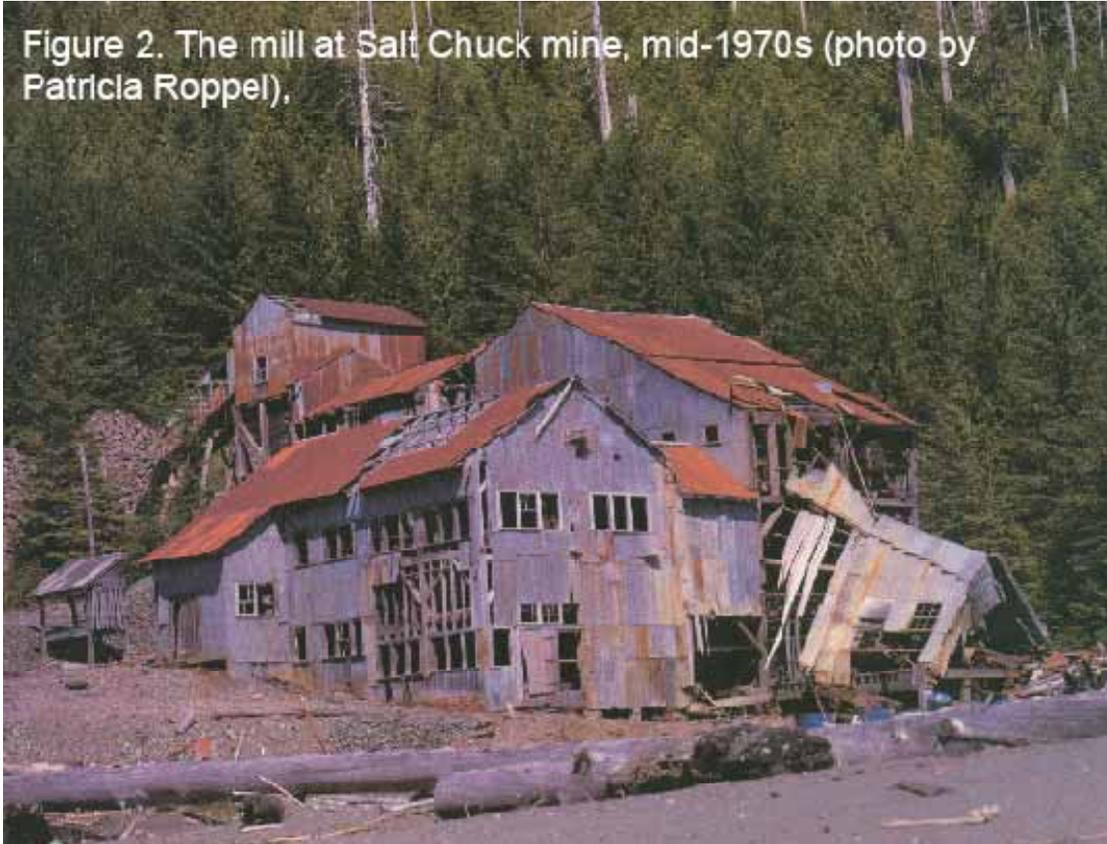


Photo courtesy of the U.S. Forest Service



Tailings and tailings spit looking southwest.

March 2009



Above-ground fuel storage tanks near mill site.



Collecting water sample from tailing seep.