EXECUTIVE SUMMARY by Friends of Admiralty Island
Of the Preliminary Technical Report Titled:
Comparison of Stable Isotope Ratios and Lead in Clam Shells Over Time in Hawk Inlet
March 14, 2023

Friends of Admiralty recently completed the attached peer reviewed study of the effects of Greens Creek mining operations on the accumulation of lead in Hawk Inlet. Using clam shells from intertidal and raised beaches, the results show increases in the levels of lead over time and more specifically, it traces the source of the lead to tailings from the Greens Creek Mine. This accumulation of lead is causing irreparable harm of the Hawk Inlet marine ecosystem.

Clam shells have proven to be a reliable indicator of water and sediment levels of lead in the environment at the time the clams were alive. Due to the natural uplift of land as glaciers recede, raised beach shell deposits provide shells that reveal conditions of water and sediment for hundreds and even thousands of years prior to the mine's operations. We tested the lead in these pre-mining era shells and compared them to living specimens, representing changing conditions over time.

Our study also included adjacent Young Bay, as a "control area". Young Bay makes an ideal comparison area, having a rich mineralized watershed that is very similar in geology to Greens Creek but having only mineral exploration, without mining.

Findings

1. The lead in Hawk Inlet's pre-mining clam shells and in Young Bay pre-mining and living clam shells remained stable over hundreds of years and only recently increased, reflecting the global increase of lead due to the burning of fossil fuels. Lead in Hawk Inlet's living clam shells, however, initially followed this linear track until mining commenced, after which a dramatic 50% increase in lead accumulation occurred as compared to the control area in Young Bay. Increasing lead in the marine environment at the Greens Creek location is man-made and not from natural erosion. It is a direct result of activities at the Greens Creek mine.

2. Accumulating lead in Hawk Inlet can be tracked to the Greens Creek mine through the isotopic signature of lead in the mine tailings which closely matches that of the lead in the living clam shells sampled in Hawk Inlet. In comparison, the pre-mining living clam shells tested in Young Bay and the pre-mining living clam shells tested in Hawk Inlet lacked the close isotopic signature of the tailings lead.

3. The release of lead-laden dust from the mine tailings disposal facility, which, as of 2020, contained approximately 53,000 tons of lead, is causing irreparable harm to Admiralty Island National Monument and Wilderness.

4. Sediment samples gathered in Hawk Inlet in 2015 showed the concentration of all measured metals increased substantially since mining began. The average increase for 11 metals tested was 73 times original baseline maximum levels, and 183 times the Inlet-wide mean original baseline levels. Results in the control area of Young Bay showed relatively little to no change in most of the 11 trace metals analyzed in 1981.

BACKGROUND

The Greens Creek mine was in the early stages of planning and development in the mid 1970's when in 1978, President Carter proclaimed most of Admiralty Island as a National Monument. In 1980, Congress added additional protection for most of Admiralty by designating it as a wilderness area. The mine was within the National Monument land, but it was grandfathered in, with specific language assuring that it would operate under a higher standard to protect the Monument values. Congress allowed that the mine could operate until 2095 as long as its operation did not cause any "irreparable harm to Monument values." The mine has operated since 1989, with only a 2-year temporary closure.

In 1981 before the mine began operation, an ecological baseline study was conducted to track long-term environmental impacts due to the mine's operation. Young Bay, on the north side of the island, was included in the study as a control area for comparison purposes. The baseline study concluded that the Hawk Inlet marine environment was in a "pristine" state at that time.

The pre-mining baseline designed to track population-level effects of the mine on marine species and upland flora and fauna, has never been replicated and was even misfiled and unavailable for reference for a number of years. Once "rediscovered" the Alaska Departments of Environmental Conservation and Fish and Game stated that the baseline could not be replicated because the sample areas were not documented with GPS coordinates. They further stated that the on-going testing was adequate, since increasing level of toxins were not alarming.

The baseline documented the species diversity and population numbers, which scientists (including a statement from Hecla's scientist) agree is the best indicator of environmental health. Friends of Admiralty (FOA), for years has advocated that replication of the baseline was essential.

To demonstrate the feasibility of replicating the baseline, FOA contracted with Oceanus Alaska in 2015 to determine the feasibility of replicating the study to test sediment and organic tissue and to determine what changes have occurred since the original data was collected. This study demonstrated the feasibility of replicating the baseline, as well as documenting substantial increases in tissue and sediment metal loading.

The Alaska Department of Environmental Conservation continues to claim that heavy metal increases in Hawk Inlet sediment and organic tissues are not related to mining but are instead a result of natural erosion from the highly mineralized watershed.

NECESSARY ACTIONS

1. Replicate the original baseline studies, testing for the original 11 metals, prior to issuing any new permits for tailings expansion.
2. Determine the pathways by which mine toxins enter the marine, aquatic fresh water and upland ecosystems.
3. Evaluate how the 1989 spill of lead ore concentrate in front of the mine and continuous releases of fugitive dust from the tailings pile affects the Hawk Inlet food chain and terrestrial wildlife. This is necessary as a first step toward developing a mitigation and removal plan.
4. Develop a monitoring plan that can accurately determine the rate and pathways of toxins to higher trophic consumers, including humans.
5. Request the state of Alaska to declare the entirety of Hawk Inlet as an "Impaired Water Body" under applicable law.
6. Compensate the village of Angoon for loss of traditional subsistence and cultural values due to Green Creek mine operations.

CONCERN FOR THE FUTURE

In March or April of 2023, the U.S. Forest Service will release a Supplemental Draft Environmental Impact Statement (EIS) in response to HECLA Corporation's application to expand their existing tailings storage facility. HECLA is the present permit holder for the Greens Creek Mine. Studies by the Friends of Admiralty show the facility is a major source of the toxins accumulating in the surrounding environment. This is the third time the tailings facility has been expanded since the mine began operations. Since HECLA stated that they have 13 years of proven ore reserves and have identified over 11 million tons of high-grade ore for future mining (2021 HECLA Annual Report), the tailings deposition will likely continue for decades. The EIS must consider the long-term effect of mining on the environment, not just the ten years currently proposed.

Based on a FOA's citizen-funded studies of Hawk Inlet, we are convinced that the current Greens Creek monitoring program is inadequate and does not support the conclusion that increases of toxins are due to natural erosion. Furthermore, the current monitoring fails to characterize mine related effects on higher trophic level animals, many of which are critical food sources to local communities.

Lead and other metal contamination can have devastating impacts on natural ecosystems, resident organisms, and human health. According to the Alaska Department of Environmental Conservation, there are no safe levels of exposure to lead. If this type of pollution is allowed to continue in the future, with no mitigation or removal plan, Admiralty Island National Monument will continue to suffer irreparable harm. This violates federal law that allows the mine to operate on the National Forest. Until baseline studies are replicated and a mitigation or removal plan is implemented, no further tailings expansion should be permitted.

Prepared by, Friends of Admiralty