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Comments: Forest Supervisor

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Dear Supervisor Sherman,

With this letter I am submitting my personal comments on the Greens Creek North Extension Project #57306 at Hawk Inlet on northern Admiralty Island. I am very familiar with this area as I was the Principal Investigator for the Alaska Department of Fish & Game (ADF&G) for two wildlife field research projects (Sitka black-tailed deer and brown bears) centered around Hawk Inlet from 1977 through 1989. I have a Ph.D. in Wildlife Ecology from the University of Washington and worked as a research biologist and senior conservation biologist for ADF&G for 20 years. Following that work, I was employed by Audubon Alaska as their senior scientist for 14 years during which time I continued to do studies on the Tongass National Forest. I also served, for a number of years, as an affiliate assistant professor of wildlife biology for the University of Alaska.

The proposal to expand the waste storage facility for Hecla Greens Creek mine on Admiralty National Monument is concerning because of increased levels of lead in this area since the mine was established. In fact, a recent peer-reviewed study contracted by the Friends of Admiralty Island (FOA) found a 50% increase in lead levels in clam shells within the Hawk Inlet area pre- and post-mine development. I have reviewed that study and believe there is reasonable merit with their findings and conclusions. Further, the study found that the post-mining clam shells had an isotopic signature similar to the lead in the Greens Creek tailings.

The Tongass Forest National Forest, that permitted the Greens Creek mine, stipulated that a comprehensive baseline study be conducted prior to development of the mine in 1981. This baseline was intended to be replicated at regular intervals to monitor the potential impacts of the mine on the local environment. This was an essential requirement because it is within the Admiralty National Monument and also because of the importance of this area for subsistence, commercial, and recreational uses of the marine resources within this productive ecosystem. As a scientist, I strongly concur that regular follow up monitoring of the potential environmental impacts of the Greens Creek Mine is essential for future assessment of mining activity on the environment of Hawk Inlet and beyond.

In my bear research on Admiralty, we collected bear hair and blood samples from our captured animals and those were archived at Fish and Game to create a baseline of data that could be used to look at before and after mine development. I should think that ADF&G Com Fish should also have some kind of escapement numbers for Green's Creek. In my recent book Tongass Odyssey (University of Alaska Press 2020), I included a short section on our bear research related to Green's Creek mine development. I have copied portions of that section here and have highlighted in yellow my reference to the importance of comparing baseline contaminant levels (from archived bear hair and blood) collected in the mid to late 1980s with current levels. I have raised this issue with ADF&G several times over the years after my retirement.

Greens Creek Mine Development on Admiralty Island:

To assess what, if any, effects the Greens Creek Mine development would have on brown bears on northern Admiralty, we established a baseline population estimate using the aerial capture-mark-resight census technique described earlier. The density on northern Admiralty, which surrounded the mine development, was estimated in

1986-1987 to be one bear per square mile. This estimate was repeated by Kim Titus and LaVern Beier in 1993 and remained basically unchanged during that time period.<sup>65</sup>

We also conducted several specific projects to help us evaluate how various mining activities might influence bears in the vicinity. We monitored the denning locations of six radio-collared female bears that denned within two and a half miles of the mine site in upper Greens Creek over subsequent years. As mine activities increased (including substantial aircraft flights, mine and road construction, and blasting activity), the collared bears denned farther away from the mine site. No radio-collared males denned within the Greens Creek drainage. In general, it did not appear that annual home ranges of adult female brown bears (with the exception of denning) were substantially influenced in the short term by mine development activities. Major road building between the mine site at upper Greens Creek and the staging area at the Hawk Inlet Cannery was well under way by 1986, and we were able to monitor twelve marked bears in the lower Greens and Zinc Creek drainage.

During late summer 1986, all radio-collared bears, except two adult males, continued to use the lower Greens Creek drainage despite intensive road construction activity, which included blasting and heavy equipment operation.<sup>66</sup> Intensive telemetry surveys conducted three times a day indicated, however, that the female bears remaining in the lower Greens Creek drainage did in fact shift away (at a scale of several hundred yards) from the immediate vicinity of construction activity, and then moved back near the road when activity was reduced. I believe these bears remained in the area because this was their established home range and they were attracted to the high-density food resource-spawning salmon in lower Zinc and Greens Creeks. It appeared that the abundance of food was more important than the disturbance created by construction activity. This is somewhat analogous to a bear that is food-conditioned to human garbage and continues to use that resource in spite of aggressive actions to scare it away. I also suspect that the dense forest may have ameliorated construction disturbance by providing the bears with adequate security cover to remain in the vicinity but out of direct interaction with humans.

During our Greens Creek study, through early 1989, we had no knowledge of any bears being killed by construction workers or mine operators. We attributed this initial success to a rigidly enforced garbage policy and camp guidelines prohibiting employees from carrying firearms, littering, hunting, or recreating on site. As a result, bears were not attracted to the camp facility and interactions between bears and people were minimized. These positive results, however, only reflect short-term relationships. The ultimate test will be to compare our initial baseline bear population census to a subsequent census following mine closure. In addition, it will be important to compare salmon escapement levels of Greens and Zinc Creeks and to compare contaminant levels in those systems and in the bears and salmon using those systems. We had been collecting bear hair and blood samples to archive. These samples will provide ADF&G with a baseline to compare to subsequent samples.

This information summarized above from my book can also be found in the final report for my brown bear research project. Schoen, J. and L. Beier. 1990. Brown bear habitat preferences and brown bear logging and mining relationships in southeast Alaska. Study 4.17 W-22-1,2,3,4,5,6 and W-23-1,2,3. Federal Aid in Wildlife Restoration Research Report, ADF&G Division of Wildlife Conservation Juneau, AK.

I suggest that you contact Dr Kimberlee Beckmen, Lead Veterinarian at ADF&G in Fairbanks [kimberlee.beckmen@alaska.gov](mailto:kimberlee.beckmen@alaska.gov). I believe that Kimberlee is the steward of the division's archived biological samples. It would be a relatively simple and low-cost project to set up hair snares from which to compare lead content in bear hair from pre-mine development samples to current samples.

In summary, I believe it is essential to compare the potential heavy metal contamination within the Hawk Inlet region pre- and post-mine development. I believe that baseline studies and rigorous monitoring was an ANILCA permitting requirement for mine development and operation within the Admiralty National Monument. Prior to approval of an additional three to four decade extension of additional tailings storage producing fugitive dust, it is logical to prepare a science-based monitoring and mitigation plan for this fragile and productive terrestrial-

aquatic-marine ecosystem. Perhaps this plan should be developed by an interagency-interdisciplinary team of experts. Clearly, evidence has been presented suggesting increased lead build up in the Hawk Inlet environment. It should be incumbent on the mine and regulatory agencies to follow up on this information to ensure the continued productivity and resilience of this important temperate rainforest ecosystem.

Sincerely,

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