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# United States Department of the Interior

## FISH AND WILDLIFE SERVICE

Fish and Wildlife Enhancement

Ecological Services Juneau

Southeast Alaska Ecological Services

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IN REPLY REFER TO:

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December 28, 1992

Glen E. Justis  
Regulatory Branch  
Corps of Engineers  
Pouch 898  
Anchorage, Alaska 99506

Dear Mr. Justis:

This responds to your 10 December 1992 letter requesting information on contaminant concentrations in sediment that would cause toxicity to marine organisms. These data have been obtained from the NOAA Status and Trends (NS&T) program which collects and chemically analyzes sediment samples from coastal areas throughout the U.S. The program includes effects-based concentrations that are established through biological toxicity testing. The biological effects ranges are at two levels, Effects Range-Low (ER-L) and Effects Range - Medium (ER-M). These are not NOAA standards or criteria, but demonstrate concentrations where adverse biological effects would occur (Long and Morgan 1990).

Comparison of the data collected by ASCG for Gastineau Channel 435 and the NS&T ER-L and ER-M concentrations are displayed in Table 1. Arsenic and copper are the only metals from these sediments that do not exceed the ER-L concentrations. The ER-L levels represent concentrations from the lower ten percent of sites around the U.S. These concentrations are toxic to marine organisms, but represent the low end of toxicity to most organisms. Cadmium, lead, silver, and zinc concentrations from the site exceed the ER-M levels. With the exception of relatively resistant species, adverse effects were always observed with metal concentrations at or exceeding the ER-M levels in the NS&T program. The U.S. Fish and Wildlife Service (Service) questions the background sample collected for comparison of site data because former mining activity in this general location may cause elevated background levels.

Table 1. Comparison of sediment metal concentrations for Gastineau Channel 435 (ASCG 1992) with NS&T, ER-L, ER-M criteria (Long and Morgan 1990).

Metal	ER-L <sup>1</sup>	ER-M <sup>2</sup>	Gastineau Channel 435 Concentration Range	Background Sample
As	33	85	9.1 - 28.8	13.4
Cd	5	9.0	3.8 - 15.9	6.3
Cu	67	390	27.4 - 62.7	39.2
Cr	80	145	47.8 - 78.4	----
Hg	0.15	1.3	0.10 - 0.12	0.18
Ni	30	50	20.4 - 44.8	60.1
Pb	35	110	52.4 - 207	81.2
Si	1.0	2.2	2.1 - 2.4	3.5
Zn	120	270	150 - 641	182

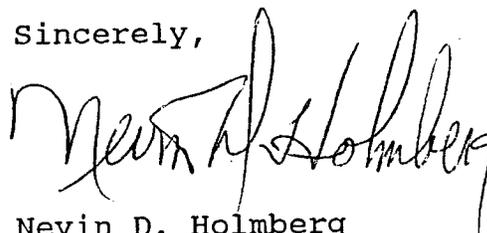
<sup>1</sup> Effects Range-Low

<sup>2</sup> Effects Range - Medium

In our 18 March 1992, letter we cited the Washington State sediment criteria which were developed for Puget Sound. The Service finds the NS&T criteria more applicable for Gastineau Channel 435 because the degree of pollution found in Gastineau Channel sediments is not comparable to degraded conditions of Puget Sound sediments. We refer you to the NOAA publication by Long and Morgan (1990) for detailed information on toxicity to specific marine organisms.

We appreciate your interest in this issue, and believe it is inextricably related to the project in its entirety. If you need any further information on metal toxicity levels please contact this office.

Sincerely,



Nevin D. Holmberg  
Field Supervisor

CITATION:

ASCG. 1992. Summary of Environmental Reports on Occurrence, Concentrations and Leachability of Heavy Metals. Letter of April 6, 1992 to Dept. of Army, Anchorage, AK.

E.R. Long and L.G. Morgan. 1990. The potential for biological effects of sediment-sorbed contaminants tested in the National Status and Trends Program. NOAA Tech. Mem. NOS OMA 52., Seattle, WA.

CC: DEC, NMFS, Juneau  
ADF&G, Douglas