State of Alaska
Department of Fish and Game
Nomination for Waters
Important to Anadromous Fish

AWC Volume SE SC SW W (AR) IN USGS Quad DE LONG A-2

Anadromous Water Catalog Number of Waterway 331-00-10060-2120-3280-4021

Name of Waterway NORTH FORK RED DOG CREEK USGS name ___ Local name X

Addition ___ Deletion ___ Correction ___ Backup Information X

For Office Use

Nomination # 94 328	[signature] 10-26-93 Regional Supervisor Date
Revision Year:	[signature] 1/26/94
Revision to: Atlas ___ Catalog ___ Both ___	N/A — Drafted Date
Revision Code: N/A	

OBSERVATION INFORMATION

Species	Date(s) Observed	Spawning	Rearing	Migration	Anadromous
DOLLY VARDEN	8/29/93		X		X

IMPORTANT: Provide all supporting documentation that this water body is important for the spawning, rearing or migration of anadromous fish, including: number of fish and life stages observed; sampling methods, sampling duration and area sampled; copies of field notes; etc. Attach a copy of a map showing location of mouth and observed upper extent of each species, as well as any other information such as: specific stream reaches observed as spawning or rearing habitat; locations, types, and heights of any barriers; etc.

Comments: ENCLOSED TRIP REPORTS 6/28 to 7/2/93 AND 8/23-26/93, NOTE IN JUNE DOLLY VARDEN WERE NOT COLLECTED

ALASKA DEPT. OF FISH & GAME
NOV 08 1993
REGION II HABITAT AND RESTORATION DIVISION

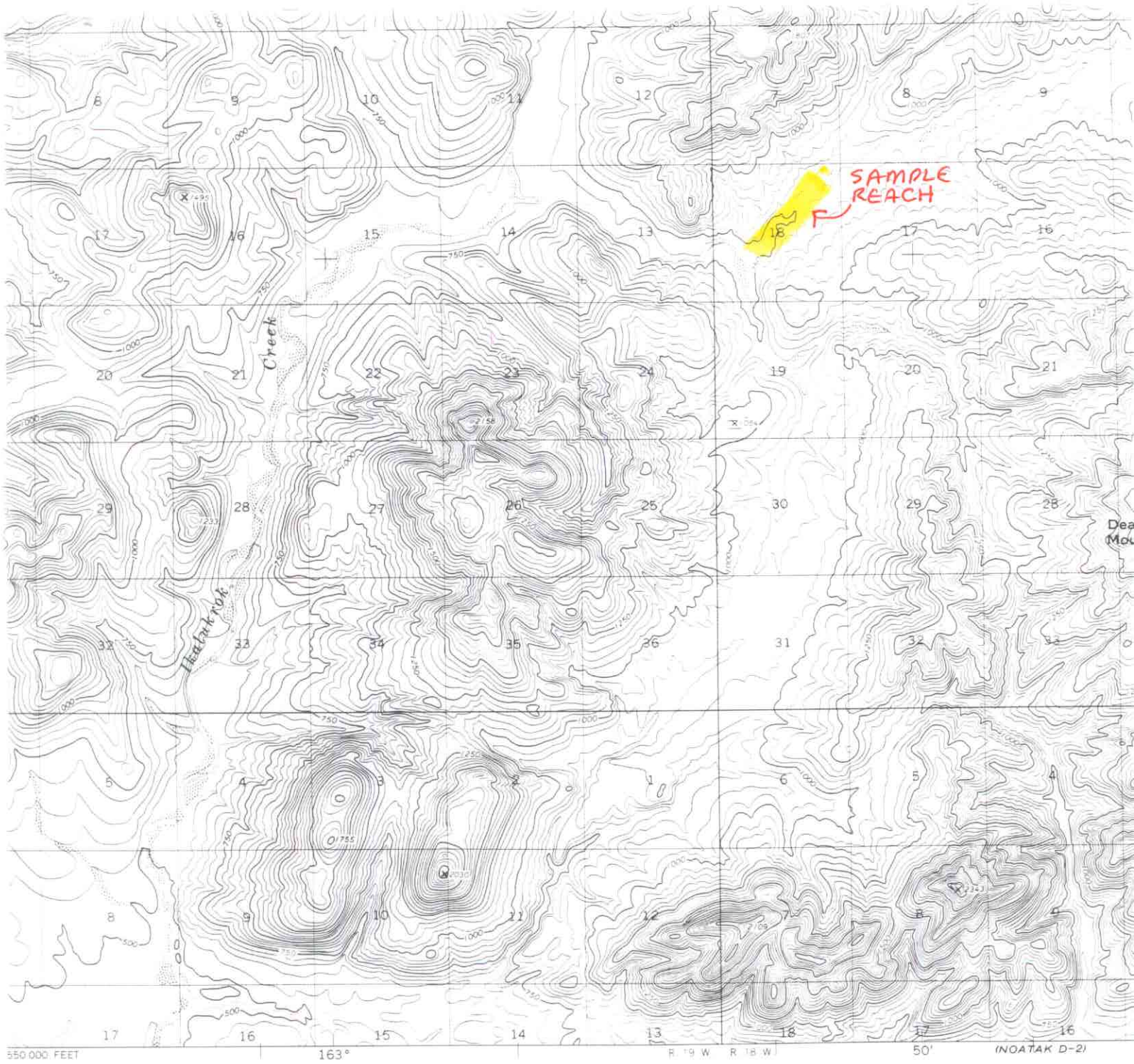
Name of Observer (please print) ALVIN G. OTT

Date: 10/1/93 Signature: [signature]

Address: 1300 COLLEGE Rd.
FOX, AK 99701

This certifies that in my best professional judgement and belief the above information is evidence that this waterbody should be included in or deleted from the Catalog of Waters Important for Spawning, Rearing or Migration of Anadromous Fishes per AS 16.05.870.

Signature of Area Biologist: [signature] 10/25/93 Rev. 7/93



SCALE 1:63360

1 ½ 0 1 2 3 4 MILES

3000 0 3000 6000 9000 12000 15000 18000 21000 FEET

1 .5 0 1 2 3 4 5 KILOMETERS

CONTOUR INTERVAL 50 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

19°
TRUE NORTH
MAGNETIC NORTH

APPROXIMATE MEAN DECLINATION, 1955

FOR SALE BY U. S. GEOLOGICAL SURVEY
FAIRBANKS, ALASKA 99701, DENVER, COLORADO 80225, OR RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

DE LONG A-2

TRIP REPORT, RED DOG MINE (JUNE 28 TO JULY 2, 1993)

A field trip to the Red Dog Mine was made during the week of June 28 to July 2, 1993. Fish sampling was conducted in the North Fork of Red Dog, Anxiety Ridge, Dudd, Ikalukrok, Evaingiknuk, and Little Creeks. Visual observations were made at cross drainage structures along the Haul Road, at the Red Dog solid waste site, and in Red Dog Creek above and below the clean/dirty water ditch.

Minnow traps baited with salmon roe (10 traps/sample reach) were fished in the North Fork of Red Dog, Anxiety Ridge, Dudd, Ikalukrok, Evaingiknuk, and Little Creeks. Dolly Varden juveniles were captured in all creeks except the North Fork of Red Dog Creek (Table 1).

Table 1. Dolly Varden collected in the North Fork of Red Dog, Anxiety Ridge, Dudd, Ikalukrok, Evaingiknuk, and Little Creeks using minnow traps (10 traps fished for 24 hours per sample reach) baited with salmon roe.

Stream	Sample Time	Water Temperature	Total Number DV	DV/Trap
North Fork	6/28-29/93	51.1°F	0	0.0
Ikalukrok	6/29-30/93	49.6°F	8	0.8
Dudd	6/29-30/93	50.3°F	1	0.1
Anxiety	6/29-30/93	53.8°F	55	5.5
Eva	6/29-30/93	59.0°F	29	2.9
Little	6/29-30/93	61.3°F	1	0.1

Arctic grayling were observed in Little, Dudd, and the North Fork of Red Dog Creeks. Twenty-five Arctic grayling (130, 255, 195, 228, 159, 410, 218, 140, 180, 265, 188, 162, 152, 218, 214, 205, 215, 264, 222, 194, 186, 405, 204, 152, and 197 mm) were collected, measured, and released in the North Fork of Red Dog Creek.

The larger Arctic grayling, particularly the two over 400 mm, were adults that probably spawned in the North Fork of Red Dog Creek. Several other large Arctic grayling (>350 mm) also were observed.

The solid waste site located just south of the mine was inspected and no evidence was found to indicate that animals (e.g., foxes, ravens) had been using the site.

TRIP REPORT, RED DOG MINE (AUGUST 23 TO 26, 1993)

A field trip to the Red Dog Mine was made during the week of August 23 to 26, 1993. Fish sampling was conducted in the North Fork of Red Dog, Anxiety Ridge, Dudd, Ikalukrok, Evaingiknuk, and Little Creeks. Visual observations were made at the Red Dog solid waste site and in Red Dog Creek between the discharge point of the wastewater and the confluence of the North Fork of Red Dog and Red Dog Creeks.

Minnow traps baited with salmon roe (10 traps/sample reach) were fished in the North Fork of Red Dog, Anxiety Ridge, Dudd, Ikalukrok, Evaingiknuk, and Little Creeks. Dolly Varden were captured in all creeks (Table 1). Six Dolly Varden from the North Fork of Red Dog and six from Anxiety Ridge Creek were retained for whole body heavy metal analyses.

Table 1. Dolly Varden collected in the North Fork of Red Dog, Anxiety Ridge, Dudd, Ikalukrok, Evaingiknuk, and Little Creeks using minnow traps (10 traps fished per sample reach) baited with salmon roe.

Stream	Date (Hours Fished)	Water Temperature	Number DV	DV/Trap
North Fork	8/23-25/93 (48)	45.2°F	31	3.1
Ikalukrok	8/24-25/93 (22)	42.8°F	38	3.8
Dudd	8/24-25/93 (20)	43.6°F	20	2.0
Anxiety	8/24-25/93 (22)	47.2°F	295	29.5
Eva	8/24-25/93 (22)	46.8°F	26	2.6
Little	8/24-25/93 (22)	46.4°F	8	0.8

Arctic grayling (young-of-the-year) were observed in both the North Fork of Red Dog Creek and in Little Creek. Arctic grayling young-of-the-year were numerous along the margins and in shallow backwater areas of the North Fork of Red Dog Creek with three (51, 48, and 52 mm) captured in minnow traps.

A visual survey of Red Dog Creek from its confluence with the North Fork of Red Dog Creek upstream to the discharge point of wastewater from the mine was conducted. Fish were not observed. Several side channels fed by ground and surface waters contained dense mats of green algae.

MEMORANDUM

State of Alaska
Department of Fish and Game

To: Lance Trasky
Regional Supervisor
Habitat and Restoration Division

Date: October 25, 1993

File No:

Telephone Number: 451-6192

From: Alvin G. Ott
Regional Supervisor
Habitat and Restoration Division
Department of Fish and Game

Subject: 1994 Anadromous Catalog Nominations

RE: 1994 Anadromous Catalog Nominations -- Justification for Designation of Juvenile Arctic Char (Dolly Varden) within the Seward Peninsula Area as Anadromous.

In response to your past requests, the following justification has been prepared for the record and reflects the factual basis for our determination that Seward Peninsula Arctic char (now classified as Dolly Varden) are predominately anadromous.

Arctic and sub-arctic char populations exhibit a number of life history patterns. This variation is further complicated in that char within a single drainage exhibit considerable "plasticity" in which sympatric and allopatric forms exist with different life history patterns. McCart (1980) describes four life history types. Three of these types (isolated stream residents, residual and anadromous) occupy stream habitats while the fourth type resides in lakes. The lake resident type is generally regarded to be a resident, non-anadromous, population (recent taxonomic clarification regards this morph type as a true Arctic char - other char morph types are now considered to be Dolly Vardens). However, McCart concludes that all three stream morphs cannot be distinquished by meristic characteristics. The only way to distinguish anadromous and non-anadromous populations is to document the life history pattern of the fish in question or examine external characteristics such as parr-marks and coloration. All three stream morphs are identical for the first several years of life and are indistinguishable until either (1) anadromous populations undertake their first sea-ward migration (Age III to V) or (2) stream residents and residual morphs first reach sexual maturity (typically Age VI).

Within this framework, research conducted by Dr. Hans Norbeng of Norway is particularly noteworthy. Dr. Norbeng artifically spawned both resident and anadromous char as separate groups and presented the results of his research at the First International Symposium on Arctic char in 1981. Dr. Norbeng's research demonstrated that both matings between resident adults and matings between anadromous adults produced the same ratio of resident versus anadromous offspring. Regardless of whether resident or anadromous adults were spawned, the offspring produced were 30% small residents, 10% large residents, and 60% anadromous. He concluded that small and large resident char were analogous to precocious individuals in salmon populations and that the life history pattern that develops may be a function of gene ratio.

Based on these findings, we believe that a reasonable basis exists for concluding that a significant percentage of juvenile char collected in mainstem and tributary streams on the