

A black and white photograph of a creek with trees reflected in the water. The image is split vertically: the left half shows the water and reflections, while the right half is a dark grey background with white text.

Clearwater Creek

Water

Quality

Monitoring

Project

**Interim Report
January 5, 1993**

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BACKGROUND

The Delta Clearwater River (DCR), often referred to as The Clearwater River or Clearwater Creek, is a spring-fed stream in the Interior of Alaska approximately 100 miles southeast of Fairbanks. The DCR is only 20 miles in length and enters the Tanana River approximately 12 miles upstream from the Richardson Highway bridge crossing (Parker 1991). The mouth of the DCR is at Latitude 64° 06' N and Longitude 145° 34' W. According to James F. Parker, Area Management Biologist, with the Alaska Department of Fish and Game, Sport Fish Division, the DCR is a very popular recreation area averaging 6,600 angler-days per year and on a volume basis, is the largest of all clearwater spring-fed streams in the Tanana drainage. Good access combined with the prime summer Arctic Grayling and Coho Salmon sport fishery make the DCR the fifth most popular location for sport fishing in the Interior of Alaska (Parker 1991). In addition to its prolific fishery/recreational capability the DCR is home for 12 year-round residents along the South bank of the middle 1/3 of the DCR (Ridder, pers. comm.).

In March of 1992 The Salcha/Big Delta Soil and Water Conservation District (hereafter referred to as The District) received a grant from the Environmental Protection Agency (EPA) passed-through the Alaska Department of Environmental Conservation (ADEC) for



DCR, SEPTEMBER, 1992

the purpose of conducting water quality analysis of the DCR. The justification for this project is to determine if existing non-point source pollution is resulting from the use of pesticides, herbicides and fertilizers from farming activities combined with the growing popularity of DCR as a recreational river. The project called for samples to be collected during; Spring, pre-breakup; Spring Break-up; Mid-Summer storm event and Fall, pre-freezeup.

PURPOSE

The purpose of this report is to summarize water quality monitoring data collected from the DCR and its adjacent woodlands prior to 1992, as well as water quality monitoring data collected during the spring, summer

and fall of 1992. This report may be used to determine impacts from agricultural activity, recreational usage or impacts from the residences along the river. This summary may also be used to evaluate past monitoring activities and make recommendations for future monitoring in the DCR watershed.

CONCERNS/JUSTIFICATION FOR 1992 SAMPLING

The DCR is a prime fish habitat for species such as; Arctic Grayling, Silver Salmon and White Fish. The two predominant species being Arctic Grayling and Silver Salmon.

ARCTIC GRAYLING

The DCR is the fifth largest grayling fishery in the Interior of Alaska with the largest average size of any major fishery in the Interior (Parker, 1990).

SILVER SALMON

The DCR is the largest known Silver Salmon spawning tributary in the entire Yukon drainage. During 1988 nearly 1,300 Silver Salmon were harvested from the DCR or 77% of the Tanana River Drainage Silver Salmon harvest comes from the DCR. These two species in combination with others provides not only countless hours of recreation but indirectly injects approximately \$1,000,000 of revenue to the Delta Junction area annually (Parker, 1990).



Sport Fisherman on the DCR

At the present time there is an underlying feeling of concern from the Delta Junction community as well as users of this fishery who live elsewhere, that this resource may be in jeopardy. The cause of this concern is not only from the obvious damage of siltation from surface runoff but the potential damage from the use of agrachemicals and the increased pressure placed on the river from human use as well. There are numerous recreational cabins along both sides of the Clearwater River, an ever increasing number of year-round residences on the South bank plus the problem of siltation caused by bank erosion from increased river boat traffic, when all of the factors are combined the cause for concern is well justified.

The DCR is primarily spring-fed receiving the majority of its water via an aquifer from the Tanana River, Gerstle River and several small creeks draining the north face of the Alaska Range (Wilcox, 1980). While surface water is sometimes deposited directly into the river during spring breakup and summer storm events, this amount is considered inconsequential in volume. Since surface runoff has the potential for bringing many possible contaminants into the DCR there is a situation in which the least significant source (in volume) becomes a significant source (of possible pollutants). Hence, the concern for the quality of DCR.



Sediment from flood event, turns naturally clear DCR brown.

THREE RECENT DEVELOP- MENTS

which are possible factors to the potential decline of the quality of the DCR are: 1. a wild-fire in 1987 (South of the Alaska highway) which removed small trees, shrubs and moss which acted as a "sponge" slowing the water as it flowed from the Granite Mountains. 2. Land clearing in the Delta I Agricultural Project to the North and South of the Alaska Highway and land clearing on the south side of the Alaska Highway to establish a grazing area for wild bison, hereafter refereed to as the Bison Range. 3. A network and both old and new military, hunting, public firewood cutting and bison trails. (A military trail at milepost 1408 leads from the

Granite Mountains directly to the bog which feeds the South Fork of the DCR).

HISTORY OF MONITORING

(Note: the following sections were taken from "Summary of Water Quality Monitoring in and adjacent to Clearwater Creek Delta, Alaska 1978-1991", a publication of the ADEC, Northern Regional Office, by Steven Buscovich and Joyce Beelman. History of Monitoring, Fish Tissue Analysis for Pesticides, Water Sampling for Pesticides, Sediment Sampling for Pesticides, Water Sampling, Sediment Sampling)

In 1978 and 1979, Dr. Jacqueline LaPerriere conducted a study of water quality conditions in the DCR, as part of the baseline studies for the Delta I Agriculture Project (LaPerriere 1978-79). The objective of this research was to record information and conditions characteristic of the area prior to large scale agricultural development. The following water quality parameters were tested at four sites : alkalinity, conductivity, color, chemical oxygen demand (COD), dissolved oxygen (DO), hardness, Ph, phosphorus (orthophosphate, total phosphorus, total dissolved phosphorus) nitrogen (nitrate, nitrite, organic), potassium, total dissolved solids, total suspended solids, silica, temperature and turbidity.

Public concern over a new undocumented brown staining in the waters of the North Fork of the DCR in 1982, led the Alaska Department of Environmental Conservation (ADEC) to start a monitoring program utilizing some of Dr. LaPerriere's testing parameters and sampling locations from the baseline study. The testing results for the brown staining were inconclusive. It is thought the brown staining in the North Fork of Clearwater Creek, was

from the vegetative decay processes in the wetland bog area surrounding the North Fork. In addition to the existing sampling parameters used by Dr. LaPerriere, ADEC decided to conduct new tests for pesticides, tannin / lignins and coliform bacteria. A continuous sampling program was conducted from 1982 to 1986. Data was summarized in the Salcha-Big Delta Soil Water Conservation District report published in 1987. ADEC results for that period were comparable to the baseline ranges obtained by Dr. LaPerriere. Lack of staff and the Exxon Valdes oil spill, kept ADEC from monitoring the Clearwater Creek in the ensuing years of 1987-89.

In 1990, water quality concerns over the Fairbanks Municipal Utilities System's (MUS) permit applications to spread treated wastewater sludge on farms in the agricultural project prompted ADEC to renew monitoring activities in the DCR watershed. Previous ADEC sampling locations were used, and new parameters were added, including tests for total recoverable metals, (iron, cadmium, copper, lead, zinc and nickel), measured by the Inductively Coupled Plasma (ICP) Method. Screening for pesticides was expanded to include water, sediment and fish tissue sampling. No major changes were noted in the 1990 sampling results except for higher potassium levels recorded at all three water sampling sites. With just one sampling event that year, it was difficult to infer any conclusions.

ADEC monitored the DCR again in 1991. The water sampling consisted of one sample taken during the month of April at Cosgrove Farm, and a set of samples taken in August duplicating the 1990 water sampling effort. New sediment sample locations were established for pesticides and heavy metals near wetland bog areas inside the Delta I Agricultural Project. All 1991 water samples showed no major variation from the original baseline ranges.

FISH TISSUE ANALYSIS FOR PESTICIDES

Both the United States Fish and Wildlife Service (USFWS) and ADEC have collected fish tissue samples from the DCR. In 1982, tissue sampling by Dr. Howard Metsker (USFWS) found no detectable levels of 2, 4 Dichlorophenoxyacetic acid (2,4-D) or 2, 4, 5, Trichlorophenoxy acetic acid (2, 4, 5, -T). Furthermore, no polychlorinated biphenyls (PCB's) were found at levels above those specified by the EPA for acute and chronic toxicity in fish (Metsker 1981).

ADEC collected and analyzed fish tissue in 1983 and 1990. No insecticides and herbicides were found to at detectable levels. Those parameters tested included 2, 4, 5, -T, 2, 4, 5-TB, Dinoseb, Dicamba, 2, 4, -D, 2, 4-DB, Dalapon and MCPP analyzed by EPA Method 8150.

WATER SAMPLING FOR PESTICIDES

ADEC's water sampling has found no detectable pesticides presence in the DCR using EPA method 608.

It is believed that Delta farmers will continue the practice applying standard pesticides to