

KLUANE COMMUNITY SALMON STEWARDSHIP PROGRAM, 2007

The Yukon River Panel  
Restoration and Enhancement Fund  
CRE-58-07

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## **ABSTRACT**

In 2007, the Kluane First Nation (KFN) developed a plan to involve community members in stewardship of salmon bearing streams and lakes of the White River Watershed lying within their traditional territory. Salmon habitats and stocks requiring monitoring and or assessment were identified through a review of existing information on salmon distribution in the watershed and consultations with Fisheries & Oceans Canada (DFO) fisheries managers. Based on the findings, projects were identified that could be undertaken by community stewards and incorporated into a five year plan of action. A White River Watershed Salmon Restoration and Enhancement plan/record of actions including a bibliography and summary of review findings was produced to maintain a record of annual stewardship activities. Field equipment needs as well as technical and health and safety training requirements for stewards were also identified.

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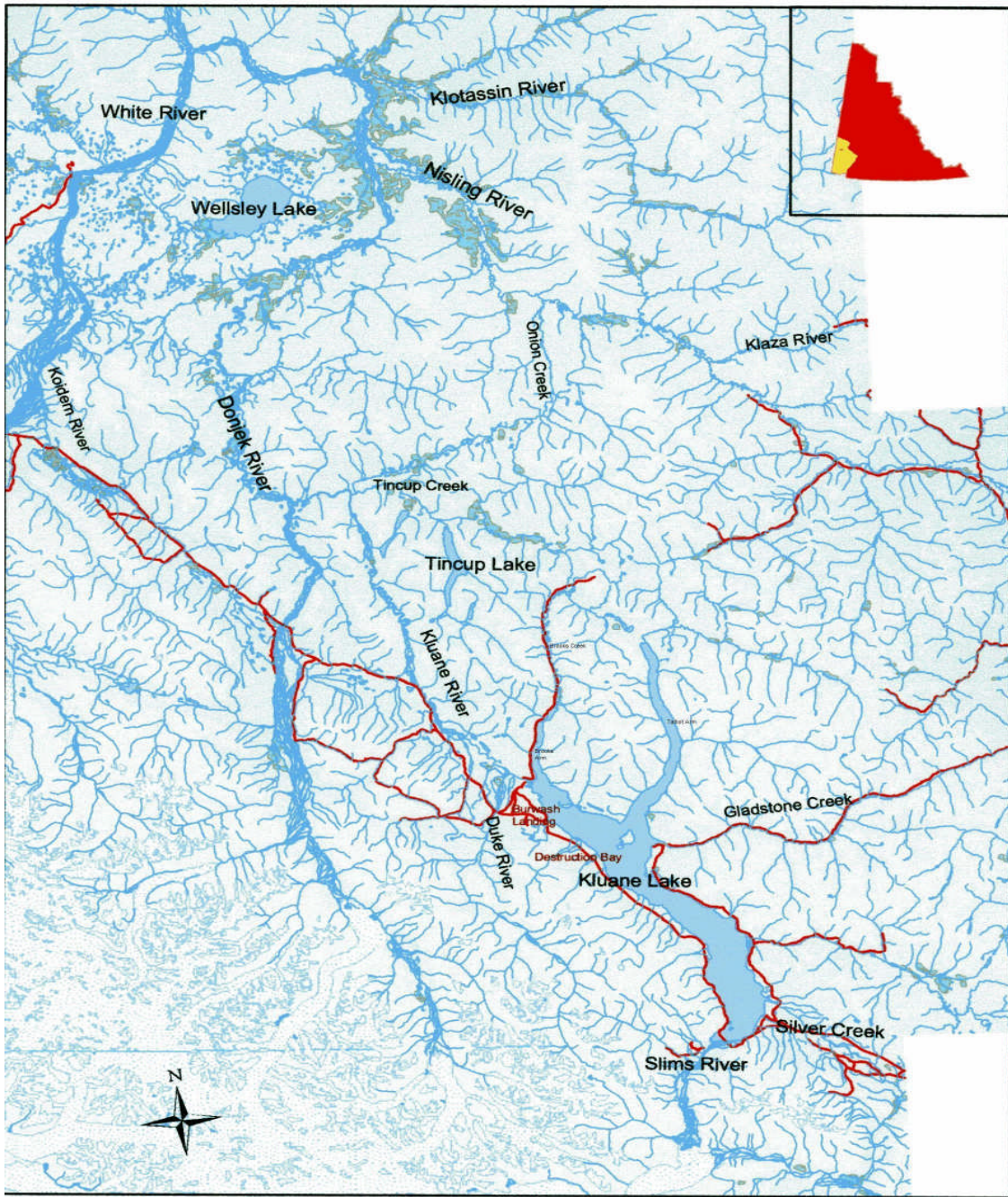
## INTRODUCTION

This project is the initiation of a multi year program of salmon stewardship activities in the White River Watershed. The watershed is primarily located within the traditional territories of the Kluane and White River First Nations. Both Chinook and Chum salmon spawning occurs in a number of areas throughout the watershed. Current information confirms Chinook salmon spawning in the Donjek, Klotassin, Nisling and Kluane Rivers and Tincup Creek. Fall Chum salmon spawning has been confirmed in a number of ground water fed channels and sloughs in the upper Kluane River, in the White, Donjek, Kluane and Koidern Rivers and in Kluane Lake.

In order to take appropriate action to conserve and restore salmon stocks and their habitat in the Kluane area, KFN would like to involve their own members in stewardship of the salmon resource in their traditional territory. Although stewardship initiatives have been attempted by KFN in the past, these have largely failed because of the lack of clear objectives or a clear plan and the technical skills required to lead and undertake fisheries field projects. In 2007, KFN applied for and received financial support from the Yukon River Panel, Restoration and Enhancement (R&E) fund to develop a detailed plan for a stewardship program in their traditional territory. KFN retained the services of J. Wilson & Associates to provide assistance in the development of the plan and technical supervision during field projects.

The specific objectives of the 2007 program were as follows:

1. Build capacity within the KFN staff and community for stewardship initiatives through workshops, technical training and field safety courses.
2. Review files and written reports on fisheries work conducted on lakes and streams in the Kluane First Nation Traditional Territory;
3. Compile a bibliography and summary of findings in a White River Watershed Salmon Restoration & Enhancement plan/record of actions;
4. Identify salmon habitat and stock monitoring and assessment needs in the watershed and develop a plan for annual stewardship activities;
5. Introduce KFN staff to Yukon River Panel protocols and demonstrate sampling methods;
6. Identify technical and health and safety training requirements.
7. Inventory existing field equipment and identify needs for field projects



Scale  
1:900,000



Data Source: NTDB250  
NAD 83, UTM Zone 7  
Map produced by Kluane First Nation.  
Not to be used without permission of KFN.

Figure 1. Major drainages and waterbodies in the Kluane Area.

## **METHODS**

### **Training and capacity building**

KFN managers were unable to retain a fisheries technician trainee(s) during the 2007 season.

A one day workshop was coordinated by the contracted biologist and held in Burwash Landing at the Kluane First Nation offices on May 30, 2007. The workshop was designed to introduce KFN renewable resource staff and the trainee(s) to stewardship objectives and the plan development process.

### **Literature Review/White River Watershed Salmon Restoration & Enhancement plan (WRWSRERA)**

The first step in the development of a stewardship plan was to review files and written reports on scientific/technical, traditional and local knowledge of salmon distribution in the White River Watershed. Files and reports were reviewed in the libraries and/or offices of Fisheries & Oceans Canada (DFO) and Kluane First Nation. A bibliography and summary of findings was compiled and listed by major watershed to form the basis of a White River Watershed Salmon Restoration and Enhancement plan/Record of Actions (WRWSRERA) for documenting and tracking salmon restoration and enhancement projects (Appendix 1).

### **Identify salmon habitat and stock monitoring and assessment needs in the watershed and develop a plan for annual stewardship activities**

The second step was to identify salmon monitoring and assessment needs in the watershed based on the information found during the review and consultations with Fisheries & Oceans Canada (DFO) fisheries managers. These were then evaluated as to their importance and economic feasibility. Monitoring and assessment needs receiving priority were identified in each of the major drainages in the Kluane area and developed into field projects that could be conducted over a period of five years.

### **Introduce KFN staff to Yukon River Panel protocols and demonstrate sampling methods**

A demonstration of procedures for baiting and setting minnow traps for the collection of juvenile Chinook salmon (jcs) and sampling reporting methods for jcs captures was given to KFN staff and a community member by Al von Finster (DFO) and the contracted biologist. Gee type minnow traps were baited and set in Swede Johnson Creek above and below the Alaska Highway culvert on August 1 and examined the following day.

The 2007 Yukon/Transboundary DNA sampling protocols were demonstrated to KFN staff and a designated fisheries technician by the contracted biologist, on October 30, using post-spawned chum salmon collected at the southeast end of Kluane Lake near the outlet of Silver and Outpost Creeks.

### **Identify technical and health and safety training requirements.**

Training opportunities for participants in stewardship activities were identified including formal technical training and health and safety courses.

### **Inventory existing field equipment and identify needs for field projects**

An inventory of existing field equipment was made and equipment needs identified.

## **RESULTS**

The one day workshop took place as planned on May 30, 2007. Attending the workshop were: KFN Renewable Resource staff (Geraldine Pope and Fred Green); Kluane Community Steward for the Kluane Region (Elsabé Kloppers); DFO Habitat Restoration Biologist (Al von Finster) and contracted biologist (Jane Wilson). It was anticipated that members of KFN interested in participating in stewardship activities would also attend, however, those expressing an earlier interest were unable to attend the workshop and participate in formal and informal training this year due to other work commitments.

During the workshop, Al von Finster gave an overview of stewardship objectives and discussed the need for an annual work plan. General habitat and stock assessment needs in the watershed were discussed as well as access logistics and equipment requirements. Particular tasks in the development of the stewardship plan were also identified and assigned to the individual agencies involved.

### **Technical and health and safety training**

A list of training courses recommended for staff undertaking field projects in future stewardship projects is given below. It should be noted that all necessary training certification be obtained in any given year prior to commencing field projects.

#### **Training for Technician:**

- Enrolment in Yukon Fisheries Field Technician Course offered by Yukon College (if offered in 2008) or equivalent.
- Standard Wilderness First Aid certification, offered by Yukon College.
- Swift Water Rescue Technician level 1 certification, offered by Tatshenshini Expediting.
- Bear awareness course, offered by government of Yukon Territory (YTG).

- Helicopter & fixed wing safety courses.

**KFN youth (18 years old or under):**

- Standard First Aid, offered by St. John Ambulance
- Bear awareness course, offered by government of Yukon Territory (YTG).
- Helicopter & fixed wing safety courses, offered by government of Yukon Territory (YTG).

**Kluane Community Salmon Stewardship Five-Year Plan of Activities**

The following is an outline of proposed annual stewardship activities between the years 2008 and 2012:

<p><b>YEAR 1, (2008) <i>Upper Kluane River; Brooks Arm (Kluane Lake)</i></b></p>
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**PROJECTS:**

- 1) Investigate the following streams to gain information on salmon distribution and utilisation of habitats:

- All streams flowing into the Upper Kluane River along the east bank between the outlet of Kluane Lake and the confluence of Swede Johnson Creek.
- Side channels of Glacier Creek.
- All streams flowing into the little arm (Brooks Arm) of Kluane Lake including: Brooks Creek and 7 unnamed streams.

- 2) Monitor the following streams:

- Duke River
- Glacier Creek
- Swede Johnson Creek

- 3) Collect biological samples

If adult Chinook are observed in the upper Kluane River mainstem and Brooks Creek, collect biological samples including DNA tissue samples and age-sex-length (ASL) data.

- 4) Investigate possible site for long term monitoring of water temperatures

Investigate all above streams for potential site to monitor water temperatures on a long term basis (in consultation with DFO).



**PURPOSE:**

- To determine if there was any successful Chinook spawning in the upper reaches of Kluane River in response to reports of adult salmon sightings.
- To identify other Chinook salmon spawning sites in response to reports of adult Chinook salmon sightings at the northwest end of Kluane Lake.

**METHODS:**

- Minnow trapping using G-type minnow traps and juvenile salmon sampling in accordance with current YRP Protocols for the collection and reporting of data from juvenile salmon sampled in Canadian R&E projects.
- Beach seining at suitable sites.
- Documentation of stream habitat characteristics using modified 'B.C DFO/BCMOE Fish Habitat Inventory & Information Program' stream survey forms (Appendix 2).
- Biological sample collection in accordance with current Yukon/Transboundary sampling protocols.

**TIME FRAME:**

Two week period (end of July – August)

**ACCESS:**

- Access to Kluane River tributaries by jet boat from boat launches at Burwash Landing or Glacier Creek.
- Access to Brooks Arm by lake boat from boat launch at Burwash Landing

**PERSONNEL:**

Technician (KFN), youth trainee (KFN), contracted biologist

<p><b><u>YEAR 2, (2009)</u></b> <i>Nisling River drainage</i></p>
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**PROJECTS:**

- 1) Investigate the following streams to gain information on salmon distribution and utilisation of habitats:
  - All tributaries of the Nisling River between the Klaza River confluence and the mouth.
- 2) Collect biological samples

If adult Chinook salmon are observed in the Nisling River, collect biological samples including DNA tissue samples and age-sex-length (ASL) data.

**PURPOSE:**

To identify critical Chinook salmon spawning and rearing habitat in the Nisling River drainage.

**METHODS:**

- Minnow trapping using G-type minnow traps and juvenile salmon sampling in accordance with current YRP Protocols for the collection and reporting of data from juvenile salmon sampled in Canadian R&E projects.
- Beach seining at suitable sites.
- Documentation of stream habitat characteristics using modified 'B.C DFO/BCMOE Fish Habitat Inventory & Information Program' stream survey forms (Appendix 2).
- Biological sample collection in accordance with current Yukon/Transboundary sampling protocols.

**TIME FRAME:**

Two week period (end of July – August)

**ACCESS:**

- helicopter drop off near the Klaza River confluence/pick up at mouth.
- Float survey by raft

**PERSONNEL:**

Technician (KFN), youth trainee (KFN), contracted biologist

<b><u>YEAR 3, (2010)</u></b> <i>Klotassin River drainage</i>
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**PROJECTS:**

1) Investigate the following streams to gain information on salmon distribution and utilisation of habitats:

- All tributaries of the Klotassin River between the confluence of Dip Creek and the mouth.

2) Monitor the following streams:

- Dip Creek

3) Collect biological samples:

If adult Chinook salmon are observed in the Klotassin River, collect biological samples including DNA tissue samples and age-sex-length (ASL) data.

**PURPOSE:**

To identify critical Chinook spawning and rearing habitat in the Klotassin River drainage.

**METHODS:**

- Minnow trapping using G-type minnow traps and juvenile salmon sampling in accordance with current YRP Protocols for the collection and reporting of data from juvenile salmon sampled in Canadian R&E projects.
- Beach seining at suitable site
- Documentation of stream habitat characteristics using modified 'B.C DFO/BCMOE Fish Habitat Inventory & Information Program' stream survey forms (Appendix 2).
- Biological sample collection in accordance with current Yukon/Transboundary sampling protocols.

**TIME FRAME:**

Two week period (end of July – August)

**ACCESS:**

- helicopter drop off near the Dip Creek confluence/pick up at mouth.
- Float survey by raft

**PERSONNEL:**

Technician (KFN), youth trainee (KFN), contracted biologist

<p><b><u>YEAR 4, (2011)</u></b> <i>Upper Donjek River drainage/Tincup Creek</i></p>
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**PROJECTS:**

1) **Upper Donjek River**

Investigate the following streams to gain information on salmon distribution and utilisation of habitats:

- All tributaries and side-channels of the Donjek River between the Arch Creek confluence and the Kluane River confluence.

## **PURPOSE:**

- To determine if there was any successful Chinook spawning in upper reaches of the Donjek River.
- Identify chum salmon spawning sites.

## **METHODS:**

### **Chinook salmon**

- Minnow trapping using G-type minnow traps and juvenile salmon sampling in accordance with current YRP Protocols for the collection and reporting of data from juvenile salmon sampled in Canadian R&E projects.
- Beach seining at suitable site
- Documentation of stream habitat characteristics using modified 'B.C DFO/BCMOE Fish Habitat Inventory & Information Program' stream survey forms (Appendix 2).
- Biological sample collection in accordance with current Yukon/Transboundary sampling protocols.

### **Chum Salmon**

- Aerial survey of side-channels

## **TIME FRAME:**

- Chinook salmon – 2 week period (last week of July – August).
- Chum salmon – 1 day (aerial survey) – sometime in late fall depending on run timing.

## **ACCESS:**

- from Alaska Hwy by 4-wheelers. Use of jet boat downstream of bridge
- aerial survey by helicopter

## **PERSONNEL:**

Technician (KFN), youth trainee (KFN), contracted biologist

### 2) **Tincup Creek**

#### **Collect biological samples**

Collect biological samples from adult Chinook salmon in Tincup Creek including DNA tissue samples and age-sex-length (ASL) data.

**PURPOSE:**

- To provide fishery managers with information on the biological characteristics of the Tincup Chinook stock for management purposes.

**METHODS:**

- Biological sample collection in accordance with current Yukon/Transboundary sampling protocols.

**TIME FRAME:**

- 1 week period –mid August (depends on run timing).

**ACCESS:**

- by aircraft to Tincup Lake.
- Access to major spawning site on foot and/or use of raft.

**PERSONNEL:**

Technician (KFN), youth trainee (KFN), contracted biologist

<p><b><u>YEAR 5, (2012)</u></b> <i>Koidern River drainage/Tincup Creek</i></p>
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**PROJECTS:**

1) **Koidern River**

Investigate the following streams to gain information on salmon distribution and utilisation of habitats:

- All tributaries of the Koidern River.

**PURPOSE:**

- To determine if Chinook salmon utilise the Koidern River.

**METHODS:**

- Minnow trapping using G-type minnow traps and juvenile salmon sampling in accordance with current YRP Protocols for the collection and reporting of data from juvenile salmon sampled in Canadian R&E projects.
- Beach seining at suitable site
- Documentation of stream habitat characteristics using modified 'B.C DFO/BCMOE Fish Habitat Inventory & Information Program' stream survey forms (Appendix 2).

- Biological sample collection in accordance with current Yukon/Transboundary sampling protocols.

**TIME FRAME:**

Two week period (end of July – August)

**ACCESS:**

- from Alaska Hwy on foot and/or
- Float survey by raft

2) **Tincup Creek**

Collect biological samples

Collect biological samples from adult Chinook salmon in Tincup Creek including DNA tissue samples and age-sex-length (ASL) data.

**PURPOSE:**

- To provide fishery managers with information on the biological characteristics of the Tincup Chinook stock for management purposes.

**METHODS:**

- Biological sample collection in accordance with current Yukon/Transboundary sampling protocols.

**TIME FRAME:**

- 1 week period –mid August (depends on run timing).

**ACCESS:**

- by aircraft to Tincup Lake.
- Access to major spawning site on foot and/or use of raft.

**PERSONNEL:**

Technician (KFN), youth trainee (KFN), contracted biologist

**Field equipment requirements**

The following is a list of equipment for field projects that will be supplied by KFN and the contracted biologist:

KFN	Contractor
Life jackets	Water quality meters (Dissolved Oxygen, pH, Conductivity, temperature)
Camping gear	Seine net
Waders	Measuring tape & scale card books
GPS	Measuring tools for stream assessments
Minnow traps	Measuring tools for jcs
Salmon roe	DNA sample kit
Field books/journals etc.	
Boats/motors/fuel & oil	
Boat safety equipment	

## DISCUSSION

The five year plan of stewardship activities outlined in this report will assist KFN in obtaining critical information on current abundance, distribution and habitat utilisation of salmon stocks in five major drainages of the White River Watershed. This information will provide the basis for future stewardship initiatives and research on salmon in the watershed and enable the First Nation to ensure the protection of critical salmon habitat when developing land use plans in their traditional territory.

It is the desire of KFN to build capacity within their membership to undertake stewardship projects and effectively participate with management agencies in the conservation and management of salmon stocks in their traditional territory. Through the stewardship program, KFN participants will receive field experience by working with a fisheries biologist as well as formal technical and health and safety training. Although KFN managers were unable to retain stewardship trainees in 2007, they will continue to promote the stewardship program in their community and encourage youth who have an interest in fish and wildlife issues in the Kluane area to become involved.

As specified in the proposal submitted to the Yukon River Panel in 2007, funds were requested to cover the costs of formal training for technician trainees including wages and expenses incurred. The Panel approved this funding request. Due to the inability to obtain technician trainees in the 2007 season, however, funds allocated for training will be forfeited. It is proposed that KFN will submit a proposal for stewardship activities in 2009 including funding requests for training potential fisheries stewards in their community.

## ACKNOWLEDGMENTS

The author would like to thank Elsabé Kloppers and Al von Finster for conducting the literature review and developing the White River Watershed Salmon Restoration & Enhancement plan/Record of Actions (WRWSRERA). Thanks are also due to Geraldine Pope and Joe Johnson for their valuable input in field logistical considerations and to Shane Johnson for participating in field demonstrations.

## Appendix 1. White River Watershed Salmon Restoration and Enhancement Plan/Record of Actions

### WHITE RIVER WATERSHED SALMON RESTORATION AND ENHANCEMENT PLAN/RECORD OF ACTIONS

#### **INTRODUCTION**

The White River Watershed is one of 8 comprising the Canadian portion of the Yukon River drainage basin. The watershed is primarily located within the traditional lands of the Kluane and White River First Nations. The White River Watershed Salmon Restoration and Enhancement Record of Actions (WRWSRERA) allows salmon restoration and enhancement projects to be documented and tracked. Tributaries are listed hierarchically: that is, a stream draining into a tributary is listed under that tributary. Projects are summarised and listed by year for each tributary. Recommendations from each project are included in the WRWSRERA.

The Plan is a living document, and may be updated on an annual basis or as information becomes available.

The organisation of the WRWSRERA includes a "Watershed Overview", which briefly outlines the structure of the watershed. This is followed by "Projects", which are generally those supported by the YR Restoration and Enhancement Fund, and comprises the most active part of the WRWSRERA. The final section is "References". This lists, again in a hierarchical form, documents important to understanding the distribution of salmon in the White River drainage basin.

#### **WATERSHED OVERVIEW**

##### **Salmon Distribution**

Salmon are distributed widely in the White River Watershed. As of August 2007, Chinook salmon spawning has been confirmed in the following waters:

- Donjek River
- Klotassin River
- Nisling River
- Kluane River
- Tincup Creek

Fall Chum Salmon spawning has been confirmed in the following waters, or in back- or side channels of the rivers:



White River  
Donjek River  
Kluane River  
Kluane Lake  
Koidern River

Coho Salmon have not been captured or observed in the watershed.

## **Physical Environment**

### **Land & Water**

The headwaters of the White River are in the Kluane Range of the St. Elias Mountains and the Ruby Range. The mid river crosses the glaciated area of the Yukon Plateau, and the lower reach flows through unglaciated terrain to join the Yukon River just south of the mouth of the Stewart River.

The glaciated section of the watershed has numerous lakes and glacio-fluvial deposits of sands and gravels. This allows storage of water during the spring and summer. The water is released during low flow periods. This is particularly important during winter.

The White River is unique in the Upper Yukon River basin in that it derives much of its flow from melting glaciers. This results in high sediment loads in the mainstem and some tributaries. Glacial melt also extends high water periods into late summer.

Kluane Lake is the largest water body in the drainage basin. It has drained into the Yukon River drainage basin only for the last 300 years. Prior to that it drained to the Alsek River.

## **Communities and Settlements**

Beaver Creek, Burwash Landing and Destruction Bay are the primary communities in the watershed. All are located along the Alaska Highway.

## **Access**

The Alaska Highway traverses the western headwaters of the drainage basin. The Mt. Nansen and Aishihik roads provide limited access to the eastern headwaters. Most of the drainage is accessible only by air, foot, or horse.

## PROJECTS RECORD OF ACTION

### White River

Watershed code: 8400000000  
Watershed Area: km<sup>2</sup>  
Location of mouth: 63°10.958' N, 139°35.557' W (11504)  
Salmon Utilisation: Traditional/Local/Scientific-Technical Knowledge  
Chinook - migration  
Chum – migration and spawning

#### Restoration and Enhancement Record of Activities:

##### CRE-060-02

EDI Environmental Dynamics Inc. 2002. 2002 Upper White River Chinook Reconnaissance. Prepared for Yukon River Panel. 23pp.

##### *Summary*

- reviewed existing knowledge, and conducted some sampling to determine Chinook salmon utilisation within the upper White River watershed (above the Donjek River).
- referred to traditional and local knowledge of past utilisation. No salmon were observed or captured.

##### *Recommendations*

- Continue to monitor the upper White River watershed for Chinook salmon.

##### CRE-053N-03

EDI Environmental Dynamics Inc. 2004. Salmon Planning Within the White River First Nation Traditional Territory. Prepared for Yukon River Panel and White River First Nation. 30pp. + appendices.

##### *Summary*

- includes scientific, traditional and local knowledge of salmon distribution within the White River drainage.

##### *Recommendations*

- Determine feasibility of potential Chinook stock restoration in Snag Creek.
- Identify suspected (historical vs. Present) changes in fish habitat specific streams or portions thereof; conduct assessment of such changes in relation to suspected natural and human effects.

##### CRE-77N-03

Mercer, B. and J.H. Eiler. 2004. Distribution and Abundance of Radio Tagged Chinook Salmon in the Canadian Portion of the Yukon River

Watershed as Determined by 2003 Aerial Telemetry Surveys. Prepared for Yukon River Panel. 37pp. + appendices.

*Summary*

- Determined end of upstream migration of radio-tagged Chinook salmon in the Yukon River watershed in 2003.
- one radio-tagged Chinook Salmon ended it's upstream migration in the White River mainstem.

CRE-77-04

Mercer, B. 2004. Distribution and Abundance of Radio Tagged Chinook Salmon in the Canadian Portion of the Yukon River Watershed as Determined by 2004 Aerial Telemetry Surveys. Prepared for Yukon River Panel.

*Summary*

- Determined end of upstream migration of radio-tagged Chinook salmon in the Yukon River watershed in 2004.
- four radio-tagged Chinook Salmon ended their upstream migration in the White River mainstem.

**Donjek River**

Watershed Code:	8430000000
Watershed Area:	km <sup>2</sup>
Location of mouth:	62°36.275' N, 139°59.785' W (115J12)
Salmon Utilisation:	Traditional/Local/Scientific-Technical Chinook- migrating Chum- spawning, migrating

Restoration and Enhancement Record of Activities:

CRE-036-98

Otto, D.K. 1998. Lower Donjek River Chinook Salmon Habitat and Stock Assessment. Prepared for Yukon River Panel and White River First Nation.

*Summary*

- 2 adult Chinook salmon were observed by aerial survey near the mouth of the Klotassin River.

CRE-058-02

Wilson, J. 2006. Aerial Enumeration Survey of Adult Chinook salmon and Telemetry Tracking of Radio-Tagged Chinook in Select Tributaries of the White River Sub-basin. Prepared for Yukon River Panel and Kluane First Nation. 6pp.

*Summary*

- One radio-tagged Chinook salmon (presumed dead) was located in the Donjek River near the confluence of the Kluane River.

CRE-053N-03

EDI Environmental Dynamics Inc. 2004. Salmon Planning Within the White River First Nation Traditional Territory. Prepared for Yukon River Panel and White River First Nation. 30pp. + appendices.

*Summary*

- reported Chinook and Chum Salmon in the Donjek River, including spawning Chum Salmon at two locations in the Donjek mainstem downstream of the Kluane River.

*Recommendations*

- Assess size and dynamics of Chum Salmon populations utilizing the Donjek River.

CRE-058-03

McKenzie, J. And J. Wilson. 2005. Traditional and Local Knowledge Survey in the Kluane Area and Identification of Upwelling Groundwater Areas in Kluane Lake. Prepared for Yukon River Panel. 4pp. + appendices.

*Summary*

- Survey of traditional and local knowledge of salmon utilisation and use in the Kluane area.

CRE-77N-03

Mercer, B. and J.H. Eiler. 2004. Distribution and Abundance of Radio Tagged Chinook Salmon in the Canadian Portion of the Yukon River Watershed as Determined by 2003 Aerial Telemetry Surveys. Prepared for Yukon River Panel. 37pp. + appendices.

*Summary*

- Determined end of upstream migration of radio-tagged Chinook salmon in the Yukon River watershed in 2003.
- one radio-tagged Chinook salmon ended its upstream migration in the White River mainstem.

CRE-77-04

Mercer, B. 2004. Distribution and Abundance of Radio Tagged Chinook Salmon in the Canadian Portion of the Yukon River Watershed as Determined by 2004 Aerial Telemetry Surveys. Prepared for Yukon River Panel.

### *Summary*

- Determined end of upstream migration of radio-tagged Chinook salmon in the Yukon River watershed in 2004.
- two radio-tagged Chinook salmon ended their upstream migration in the White River mainstem.

### **Klotassin River**

Watershed Code: 8431025000000  
Watershed Area: km<sup>2</sup>  
Location of mouth: 62°33.984' N, 139°30.396' W (115J12)  
Salmon Utilisation: Traditional/Local/Scientific-Technical  
Chinook- spawning, rearing

### Restoration and Enhancement Record of Activities:

CRE-036-98

Otto, D.K. 1998. Lower Donjek River Chinook Salmon Habitat and Stock Assessment. Prepared for Yukon River Panel and White River First Nation.

#### *Summary*

- 4 adult Chinook salmon were observed in the Klotassin River.

CRE-053N-03

EDI Environmental Dynamics Inc. 2004. Salmon Planning Within the White River First Nation Traditional Territory. Prepared for Yukon River Panel and White River First Nation. 30pp. + appendices.

#### *Summary*

- reported spawning Chinook salmon in the Klotassin River.

#### *Recommendations*

- Assess the extent of Chinook salmon utilization of the Klotassin River, and assess effects of natural events and human activities.

CRE-77N-03

Mercer, B. And J.H. Eiler. 2004. Distribution and Abundance of Radio Tagged Chinook Salmon in the Canadian Portion of the Yukon River Watershed as Determined by 2003 Aerial Telemetry Surveys. Prepared for Yukon River Panel. 37pp. + appendices.

### *Summary*

- Determined end of upstream migration of radio-tagged Chinook salmon in the Yukon River watershed in 2003.
- one radio-tagged Chinook salmon ended its upstream migration in the Klotassin River.

## **Nisling River**

Watershed Code: 84314030000000  
Watershed Area: km<sup>2</sup>  
Location of mouth: 62°27.792' N, 139°28.981' W (115J06)  
Salmon Utilisation: Traditional/Local/Scientific-Technical  
Chinook- spawning, rearing

### Restoration and Enhancement Record of Activities:

CRE-017-98

Cox, J. 1999. Salmon in the Yukon River Basin, Canada – a Compilation of Historical Records and Written Narratives. Prepared for Yukon River Panel.

#### *Summary*

- Accounts of Chinook salmon trapped by First Nations in the Nisling River.

CRE-036-98

Otto, D.K. 1998. Lower Donjek River Chinook Salmon Habitat and Stock Assessment. Prepared for Yukon River Panel and White River First Nation.

#### *Summary*

- 110 adult Chinook salmon were observed in the Nisling River.

CRE-058-02

Wilson, J. 2006. Aerial Enumeration Survey of Adult Chinook Salmon and Telemetry Tracking of Radio-Tagged Chinook in Select Tributaries of the White River Sub-basin. Prepared for Yukon River Panel and Kluane First Nation. 6pp.

#### *Summary*

- Five radio-tagged Chinook salmon (presumed dead) were located in the Nisling River.

CRE-053N-03

EDI Environmental Dynamics Inc. 2004. Salmon Planning Within the White River First Nation Traditional Territory. Prepared for Yukon River Panel and White River First Nation. 30pp. + appendices.

*Summary*

- Reported traditional and local knowledge of Chinook salmon and to a lesser extent Chum Salmon spawning in the Nisling drainage.

*Recommendations*

- Assess extent of upstream migration of Chinook salmon in the Nisling River and assess effects of natural events and human activities.

CRE-77N-03

Mercer, B. and J.H. Eiler. 2004. Distribution and Abundance of Radio Tagged Chinook Salmon in the Canadian Portion of the Yukon River Watershed as Determined by 2003 Aerial Telemetry Surveys. Prepared for Yukon River Panel. 37pp. + appendices.

*Summary*

- Determined end of upstream migration of radio-tagged Chinook salmon in the Yukon River watershed in 2003.
- four radio-tagged Chinook salmon ended their upstream migration in the Nisling River.

CRE-77-04

Mercer, B. 2004. Distribution and Abundance of Radio Tagged Chinook Salmon in the Canadian Portion of the Yukon River Watershed as Determined by 2004 Aerial Telemetry Surveys. Prepared for Yukon River Panel.

*Summary*

- Determined end of upstream migration of radio-tagged Chinook salmon in the Yukon River watershed in 2004.
- five radio-tagged Chinook salmon ended their upstream migration in the Nisling River.

**Kluane River**

Watershed Code: 84357140000000  
Watershed Area: km<sup>2</sup>  
Location of mouth: 61°52.666' N, 139°43.134' W (115G13)

Salmon Utilisation: Traditional/Local/Scientific-Technical  
Chinook- migrating/spawning  
Chum- spawning, migrating

Restoration and Enhancement Record of Activities:

CRE-09-98 – Part I

Boyce, I. 1999. Upper Yukon Radio Telemetry Tracking Station Installation and Spawning Ground Sampling/Tag Recovery. Prepared for Yukon River Panel.

*Summary*

- Summary of telemetry tracking station data, and helicopter surveys of Chum Salmon spawning areas in the Upper Yukon River drainage.

CRE-053N-03

EDI Environmental Dynamics Inc. 2004. Salmon Planning Within the White River First Nation Traditional Territory. Prepared for Yukon River Panel and White River First Nation. 30pp. + appendices.

*Summary*

- Reported Chum and to a lesser extent Chinook salmon spawning in the Nisling drainage.

*Recommendations*

- Assess extent of Chinook salmon spawning in the Kluane watershed and assess feasibility of Marine Derived Nutrients (MDN) research in salmon spawning areas.

CRE-058-03

McKenzie, J. And J. Wilson. 2005. Traditional and Local Knowledge Survey in the Kluane Area and Identification of Upwelling Groundwater Areas in Kluane Lake. Prepared for Yukon River Panel. 4pp. + appendices.

*Summary*

- Survey of traditional and local knowledge of salmon utilisation and use in the Kluane area.

**Tincup Creek**

Watershed Code: 8435714080000000  
Watershed Area: km<sup>2</sup>  
Location of mouth: 61°53.257' N, 139°32.622' W  
(115G13)



Salmon Utilisation: Scientific/Technical/Traditional-  
Local  
Chinook- spawning, rearing,  
migrating

Restoration and Enhancement Record of Activities:

CRE-011-00

Wilson, J. 2000. Inventory of Chinook Salmon Habitat in the Tincup Creek Drainage. Prepared for Yukon River Panel, Kluane First Nation, and Aboriginal Fisheries Strategy. 28pp. incl. appendices.

*Summary*

- Survey of adult and juvenile Chinook salmon in Tincup Creek.

CRE-033-01

Wilson, J. 2002. Inventory of Chinook salmon Habitat in the Tincup Creek Drainage. Prepared for Yukon River Panel. 8pp. + appendices.

*Summary*

- Adult Chinook Salmon were observed in core spawning area of Tincup Creek, and one Chinook Salmon was observed in Tincup Lake.

*Recommendations*

- monitor the Chinook Salmon stock, and the physical and biological characteristics of habitat in Tincup Creek;
- Use Tincup Creek for fisheries training for KFN;
- Study egg-to-fry emergence of Chinook salmon and specific spawning requirements for future restoration considerations.

CRE-058-02

Wilson, J. 2006. Aerial Enumeration Survey of Adult Chinook Salmon and Telemetry Tracking of Radio-Tagged Chinook in Select Tributaries of the White River Sub-basin. Prepared for Yukon River Panel and Kluane First Nation. 6pp.

*Summary*

- One radio-tagged Chinook salmon (alive) was located in Tincup Creek near a spawning redd.

CRE-053N-03

EDI Environmental Dynamics Inc. 2004. Salmon Planning Within the White River First Nation Traditional Territory. Prepared for Yukon River Panel and White River First Nation. 30pp. + appendices.

*Summary*

- Reported Chinook salmon and isolated reports of Chum Salmon in Tincup Creek.

CRE-058-03

McKenzie, J. And J. Wilson. 2005. Traditional and Local Knowledge Survey in the Kluane Area and Identification of Upwelling Groundwater Areas in Kluane Lake. Prepared for Yukon River Panel. 4pp. + appendices.

*Summary*

- Chinook Salmon were an important resource in Tincup Creek and Tincup Lake area.

CRE-77N-03

Mercer, B. and J.H. Eiler. 2004. Distribution and Abundance of Radio Tagged Chinook Salmon in the Canadian Portion of the Yukon River Watershed as Determined by 2003 Aerial Telemetry Surveys. Prepared for Yukon River Panel. 37pp. + appendices.

*Summary*

- Determined end of upstream migration of radio-tagged Chinook salmon in the Yukon River watershed in 2003.
- five radio-tagged Chinook salmon ended their upstream migration in Tincup Creek.

CRE-77-04

Mercer, B. 2004. Distribution and Abundance of Radio Tagged Chinook Salmon in the Canadian Portion of the Yukon River Watershed as Determined by 2004 Aerial Telemetry Surveys. Prepared for Yukon River Panel.

*Summary*

- Determined end of upstream migration of radio-tagged Chinook salmon in the Yukon River watershed in 2004.
- one radio-tagged Chinook salmon ended its upstream migration in Tincup Creek.

## **Duke River**

Watershed Code: 8435714477000000  
Watershed Area: km<sup>2</sup>  
Location of mouth: 61°26.457' N, 139°06.123' W  
(115G06)  
Salmon Utilisation: - Traditional/Local/Scientific-  
Technical  
Chum- spawning

### Restoration and Enhancement Record of Activities:

CRE-053N-03

EDI Environmental Dynamics Inc. 2004. Salmon Planning Within the White River First Nation Traditional Territory. Prepared for Yukon River Panel and White River First Nation. 30pp. + appendices.

#### *Summary*

- Isolated reports of Chum Salmon in the Duke River.

## **Kluane Lake**

Watershed Code: 84357140000000  
Watershed Area: km<sup>2</sup>  
Location of outlet: 61°25.360' N, 139°02.728' W  
(115G06)  
Salmon Utilisation: Traditional /Local- Scientific-  
Technical  
Chum- spawning

### Restoration and Enhancement Record of Activities:

CRE-058-03

McKenzie, J. And J. Wilson. 2005. Traditional and Local Knowledge Survey in the Kluane Area and Identification of Upwelling Groundwater Areas in Kluane Lake. Prepared for Yukon River Panel. 4pp. + appendices.

#### *Summary*

- Chum Salmon spawning near the mouth of Silver Creek; possible Chum Salmon spawning near Cultus Bay, Christmas Bay, Dutch

Harbour, and near the mouths of the Gladstone River and Copper Joe Creek.

- Chum Salmon occasionally netted in Kluane Lake near Jackson Point (Bayshore), Cultus Bay, Burwash Point, Goose Bay, Dutch Harbour, the mouth of Silver Creek, and the outlet of Kluane Lake.
- Chinook Salmon occasionally netted in Kluane Lake near the mouths of Copper Joe and Spring Creeks, near Burwash Point, Burwash Landing, and up Brooks Arm (Little Arm).

#### CRE-053N-03

EDI Environmental Dynamics Inc. 2004. Salmon Planning Within the White River First Nation Traditional Territory. Prepared for Yukon River Panel and White River First Nation. 30pp. + appendices.

##### *Summary*

- Reports of Chum Salmon and isolated reports of Chinook salmon in Kluane Lake.

##### *Recommendations*

- Assess Chum Salmon spawning areas in Kluane Lake.
- Assess past and/or current Chinook salmon spawning destinations at the outlet of Kluane Lake.

#### CRE-057-02

Wilson, J. 2006. Preliminary Investigation of Chum Salmon Spawning in Kluane Lake. Prepared for Yukon River Panel and Kluane First Nation. 9pp. + appendices.

##### *Summary*

- physical characteristics of the Silver City Chum Salmon spawning site, and collection of DNA.

##### *Recommendations*

- Continue to collect genetic material;
- Conduct freshwater life stages of Chum Salmon in a lake environment;
- Investigate groundwater source, flow paths, and quantity;
- Investigate potential Chum Salmon spawning areas near other creek outlets and alluvial fan complexes in Kluane Lake.

## **Brooks Creek**

Watershed Code: ?  
Watershed Area: km<sup>2</sup>  
Location of mouth: 61°33.384' N, 138°56.885'  
W (115G10)  
Salmon Utilisation: Local

### Restoration and Enhancement Record of Activities:

CRE-053N-03

EDI Environmental Dynamics Inc. 2004.  
Salmon Planning Within the White River First  
Nation Traditional Territory. Prepared for  
Yukon River Panel and White River First  
Nation. 30pp. + appendices.

#### *Summary*

- Isolated reports of Chinook salmon spawning in Brooks Creek.

## **Cultus Creek**

Watershed Code: 84357148960000000  
Watershed Area: km<sup>2</sup>  
Location of mouth: 61°09.711' N, 138°25.219'  
W (115G01)  
Salmon Utilisation: Local

### Restoration and Enhancement Record of Activities:

CRE-053N-03

EDI Environmental Dynamics Inc. 2004.  
Salmon Planning Within the White River First  
Nation Traditional Territory. Prepared for  
Yukon River Panel and White River First  
Nation. 30pp. + appendices.

#### *Summary*

- Isolated reports of Chum Salmon spawning in Cultus Creek.

## **Christmas Creek**

Watershed Code: 84357149380000000  
Watershed Area: km<sup>2</sup>

Location of mouth: 61°03.513' N, 138°21.140'  
W (115G01)  
Salmon Utilisation: Traditional /Local/  
Scientific/Technical  
Chum - spawning

Restoration and Enhancement Record of Activities:

CRE-053N-03

EDI Environmental Dynamics Inc. 2004. Salmon Planning Within the White River First Nation Traditional Territory. Prepared for Yukon River Panel and White River First Nation. 30pp. + appendices.

*Summary*

- reported Chum Salmon spawning in Christmas Creek.

CRE-058-03

McKenzie, J. And J. Wilson. 2005. Traditional and Local Knowledge Survey in the Kluane Area and Identification of Upwelling Groundwater Areas in Kluane Lake. Prepared for Yukon River Panel. 4pp. + appendices.

*Summary*

- Local knowledge of Chum Salmon spawning in Christmas Creek.

**Snag Creek**

Watershed Code: 84375040000000  
Watershed Area: km<sup>2</sup>  
Location of mouth: 62°24.181' N, 140°21.571' W (115K08)  
Salmon Utilisation: Local/Traditional

CRE-053N-03

EDI Environmental Dynamics Inc. 2004. Salmon Planning Within the White River First Nation Traditional Territory. Prepared for Yukon River Panel and White River First Nation. 30pp. + appendices.

*Summary*

- reported accounts of adult Chinook Salmon in Snag Creek.

### *Recommendations*

- Assess the feasibility of potential Chinook stock restoration in Snag Creek;
- assess salmon habitat changes in relation to suspected impacts, such as climate change, forestry, highway construction, and pipeline development.

## **Koidern River**

Watershed Code: 8460000000000  
Watershed Area: km<sup>2</sup>  
Location of mouth: 62°01.989' N, 140°26.355' W (115K01)  
Salmon Utilisation: Scientific/Technical  
Chum – spawning

### Restoration and Enhancement Record of Activities

#### CRE-053N-03

EDI Environmental Dynamics Inc. 2004. Salmon Planning Within the White River First Nation Traditional Territory. Prepared for Yukon River Panel and White River First Nation. 30pp. + appendices.

#### *Summary*

- Past spawning of Chum Salmon, and isolated reports of Chinook salmon in the Koidern River.

#### *Recommendations*

- Assess Chum Salmon populations utilizing the Koidern River.

#### CRE-058-03

McKenzie, J. And J. Wilson. 2005. Traditional and Local Knowledge Survey in the Kluane Area and Identification of Upwelling Groundwater Areas in Kluane Lake. Prepared for Yukon River Panel. 4pp. + appendices.

#### *Summary*

- Chum Salmon spawned in the Koidern River.

## **References:**

### **White River**

Bostock, H.S. 1969. Kluane Lake, Yukon Territory, it's drainage and allied problems (115G and 115 F E). Department of Energy, Mines and Resources. Paper 69-28. 19 p.

- explains flow reversal from Alsek to Yukon River drainages, hydrology of downstream White River.

Beak Consultants. 1977. A Survey of Fall Spawning Fish Species Within the Influence of the Proposed Alaska Highway Gas Pipeline in the Yukon Territory. Prepared for Foothills Pipelines (Yukon).

- Fish species distributions and life histories are discussed, and site-specific concerns related to potential conflicts with the proposed pipeline route are outlined.
- Local knowledge of Chum Salmon migrating past the proposed pipeline crossing site on the White River.

Department of Fisheries and Oceans. 1985. The Distribution and Abundance of Chinook Salmon in the Upper Yukon River Basin as Determined by a Radio-Tagging and Spaghetti Tagging Program, 1982-83. Canadian Technical Report of Fisheries and Aquatic Sciences 1352.

- Summary of ground and aerial telemetry flight data for radio- and spaghetti-tagged Chinook salmon in the Upper Yukon River Basin.

Department of Fisheries and Oceans. 1986. The Distribution and Abundance of Chum Salmon in the Upper Yukon River Basin as Determined by a Radio-Tagging and Spaghetti Tagging Program, 1982-83. Canadian Technical Report of Fisheries and Aquatic Sciences 1351.

- Summary of ground and aerial telemetry flight data for radio- and spaghetti-tagged Chum Salmon in the Upper Yukon River Basin.
- 15 radio-tagged Chum Salmon were tracked to the mainstem White River.

The United States and Canada Yukon River Joint Technical Committee. Annual. Yukon River Salmon (past) Season Review and (next season) Outlook.

- Annual report containing historical data on salmon stock levels and expectations in the Yukon River Basin.



## **Ladue River**

von Finster, A. November 29, 1988. Investigation of the Ladue River, North Ladue River and Ladue Creek. Memo to Stream Files. 3 p.

Dept. of Fisheries and Oceans Canada. 1995. Rationale for Classification: Ladue Creek tributary to the Ladue River YPA 74 Yukon and NWBC Division, Whitehorse Yukon. 6 p.

Dept. of Fisheries and Oceans Canada. 1995. Rationale for Classification: Rice Creek tributary to the Ladue River YPA 74 Yukon and NWBC Division, Whitehorse Yukon. 6 p.

- Sampling described in all three reports focussed on salmon, but only a single juvenile Chinook salmon was captured at the confluence with the White River.

## **Donjek River**

Beak Consultants. 1977. A Survey of Fall Spawning Fish Species Within the Influence of the Proposed Alaska Highway Gas Pipeline in the Yukon Territory. Prepared for Foothills Pipelines (Yukon).

- Fish species distributions and life histories are discussed, and site-specific concerns related to potential conflicts with the proposed pipeline route are outlined.

Department of Fisheries and Oceans. 1986. The Distribution and Abundance of Chum Salmon in the Upper Yukon River Basin as Determined by a Radio-Tagging and Spaghetti Tagging Program, 1982-83. Canadian Technical Report of Fisheries and Aquatic Sciences 1351.

- Summary of ground and aerial telemetry flight data for radio- and spaghetti-tagged Chum Salmon in the Upper Yukon River Basin.
- 11 radio-tagged Chum Salmon were tracked to the mainstem Donjek River.

Otto, D.K. 1999. Lower Donjek River Chinook Salmon Feasibility Study. Prepared for the White River First Nation.

- Fishwheel construction and operation for a subsistence fishery for the White River First Nation; outlines difficulties of logistics.

## **Klotassin River**

von Finster, A. 1994. Overview: waters, which may be affected by the Casino Project or by infrastructure associated

with it. Memo to file. Habitat Management, DFO NWBC & YT. 8 p.

- Adult Chinook salmon observed in the Klotassin River and juveniles captured in Dip Creek.

## **Nisling River**

Schwatka, F., 1891. Schwatka's Last Search: The New York Ledger Expedition through Unknown Alaska and British America, including the Journal of Charles Willard Hayes, 1891. University of Alaska Press, 1996. 278p.

- Records arrival of Chinook salmon at a fish trap on the Nisling River.

Department of Fisheries and Oceans. 1985. The Distribution and Abundance of Chinook Salmon in the Upper Yukon River Basin as Determined by a Radio-Tagging and Spaghetti Tagging Program, 1982-83. Canadian Technical Report of Fisheries and Aquatic Sciences 1352.

- Summary of ground and aerial telemetry flight data for radio- and spaghetti-tagged Chinook salmon on the Upper Yukon River Basin.
- One radio-tagged Chinook salmon spawned in the Nisling River, 20km above its confluence with the Donjek River.

von Finster, A. December 18, 1995. Overflight of Nisling River. Memo to stream file. DFO HEB. 4 p.

- The flight took place on August 13, 1995, a new upstream limit of Chinook salmon spawning was established.
- A bio-physical overview of the Nisling River is provided.

von Finster, A. August 14, 2005. FCSAAP Overflight of Mt. Nansen; Nisling River Chinook salmon spawning investigation; and DNA collection. DFO OHEB. 2p.

- Established a new upstream limit of Chinook salmon spawning in the Nisling River.

## **Kluane River**

Beak Consultants. 1977. A Survey of Fall Spawning Fish Species Within the Influence of the Proposed Alaska Highway Gas Pipeline in the Yukon Territory. Prepared for Foothills Pipelines (Yukon).

- Fish species distributions and life histories are discussed, and site-specific concerns related to potential conflicts with the proposed pipeline route are outlined.
- Low numbers of Chinook salmon seen in the Kluane River at the outlet of Kluane Lake.

Beak Consultants. 1978. A Summary of the Fisheries Investigations in Waterbodies Within the Influence of the Proposed Alaska Highway Pipeline in the Yukon Territory. Prepared for Foothills Pipelines (Yukon).

- Fish species distributions and life histories are discussed, and site-specific concerns related to potential conflicts with the proposed pipeline route are outlined.

Department of Fisheries and Oceans. 1974. Distribution and Abundance of Chinook and Chum Salmon in the Upper Yukon River System in 1974, as Determined by a Tagging Program.

- Summary of ground and aerial flight data for tagged Chinook and Chum Salmon in the Upper Yukon River Basin.

Department of Fisheries and Oceans. 1986. The Distribution and Abundance of Chum Salmon in the Upper Yukon River Basin as Determined by a Radio-Tagging and Spaghetti Tagging Program, 1982-83. Canadian Technical Report of Fisheries and Aquatic Sciences 1351.

- Summary of ground and aerial telemetry flight data for radio- and spaghetti-tagged Chum Salmon in the Upper Yukon River Basin.
- 14 radio-tagged Chum Salmon (status unknown) were tracked to spawning areas of the Kluane River.

## **Tincup Creek**

Beak Consultants. 1977. A Survey of Fall Spawning Fish Species Within the Influence of the Proposed Alaska Highway Gas Pipeline in the Yukon Territory. Prepared for Foothills Pipelines (Yukon).

- Fish species distributions and life histories are discussed, and site-specific concerns related to potential conflicts with the proposed pipeline route are outlined.
- Numerous spawning Chinook salmon and redds seen in Tincup Creek.

Department of Fisheries and Oceans. 1985. The Distribution and Abundance of Chinook Salmon in the Upper Yukon River Basin as Determined by a Radio-Tagging and Spaghetti Tagging Program, 1982-83. Canadian Technical Report of Fisheries and Aquatic Sciences 1352.

- Summary of ground and aerial telemetry flight data for radio- and spaghetti-tagged Chinook salmon on Upper Yukon River Basin.
- One radio-tagged Chinook salmon spawned in Tincup Creek, 5km above its confluence with the Kluane River.

## **Duke River**

Beak Consultants. 1978. A Summary of the Fisheries Investigations in Waterbodies Within the Influence of the Proposed Alaska Highway Pipeline in the Yukon Territory. Prepared for Foothills Pipelines (Yukon).

- Fish species distributions and life histories are discussed, and site-specific concerns related to potential conflicts with the proposed pipeline route are outlined.
- 1 adult Chum Salmon was observed.

## **Kluane Lake**

Beak Consultants. 1977. A Survey of Fall Spawning Fish Species Within the Influence of the Proposed Alaska Highway Gas Pipeline in the Yukon Territory. Prepared for Foothills Pipelines (Yukon).

- Fish species distributions and life histories are discussed, and site-specific concerns related to potential conflicts with the proposed pipeline route are outlined.
- Chum Salmon (status unknown) collected at Burwash, at the SE corner of the Lake near the Slims River, and at Christmas Bay.

Beak Consultants. 1978. A Summary of the Fisheries Investigations in Waterbodies Within the Influence of the Proposed Alaska Highway Pipeline in the Yukon Territory. Prepared for Foothills Pipelines (Yukon).

- Fish species distributions and life histories are discussed, and site-specific concerns related to potential conflicts with the proposed pipeline route are outlined.

### **Gladstone Creek**

Dept. of Fisheries and Oceans Canada. 1989. Rationale for Classification: Gladstone Creek, tributary to Kluane Lake Yukon and NWBC Division, Whitehorse Yukon. 16 pp.

- No salmon were captured in focussed sampling.

### **Christmas Creek**

Beak Consultants. 1978. A Summary of the Fisheries Investigations in Waterbodies Within the Influence of the Proposed Alaska Highway Pipeline in the Yukon Territory. Prepared for Foothills Pipelines (Yukon).

- Fish species distributions and life histories are discussed, and site-specific concerns related to potential conflicts with the proposed pipeline route are outlined.
- 2 adult Chum Salmon were observed in Christmas Creek.

## **Snag Creek**

von Finster, A. July 18, 1996. Sampling: Enger and Snag Creeks. Memo to Stream Files. Fisheries and Oceans. 1 p.

- in response to reports of adult salmon in Enger Creek, juvenile sampling was conducted the following year to identify any successful spawning. No juveniles were captured.

## **Koidern River**

Beak Consultants. 1977. A Survey of Fall Spawning Fish Species Within the Influence of the Proposed Alaska Highway Gas Pipeline in the Yukon Territory. Prepared for Foothills Pipelines (Yukon).

- Fish species distributions and life histories are discussed, and site-specific concerns related to potential conflicts with the proposed pipeline route are outlined.
- Low numbers of Chum Salmon seen at both proposed pipeline crossings.

Beak Consultants. 1978. A Summary of the Fisheries Investigations in Waterbodies Within the Influence of the Proposed Alaska Highway Pipeline in the Yukon Territory. Prepared for Foothills Pipelines (Yukon).

- Fish species distributions and life histories are discussed, and site-specific concerns related to potential conflicts with the proposed pipeline route are outlined.
- Low numbers of Chum Salmon were seen in the Koidern River.

Appendix 2. Stream survey form

Stream Survey form									
REACH:									
SAMPLE SITE:									
DATE:			WEATHER:			CREW:			
<b>STREAM CHARACTERISTICS</b>		Distance surveyed (m)					Photos		
<b>CHANNEL CHARACTERISTICS</b>		<b>HABITAT TYPE</b>		<b>BED MATERIAL(%)</b>		<b>COVER</b>			
Ave.Chan.Width (m)		Pool		Silt		Cover: Total %			
Ave.Wet.Width (m)		Run		Sand		Comp. Sum 100%			
Flood sign width (m)		Riffle		Gravels		Deep pool			
Ave.Max.Riffle depth (m)		Other		Cobble		L.O.D.			
Ave.Max.Pool depth (m)				Boulder		Boulder			
Ave.Max.Run depth (m)				Bedrock		Instream veg.			
Gradient (%)				Compaction: L M H		Overstream veg.			
Side Chan. (%)						Cutbank			
Braided (Y N)						Crown closure %			
Bars (%)									
<b>BANKS</b>		Confinement:			Water Temp. (°C)		2.4		
Height (m)		Stream Stage:			pH		8.5		
% unstable					Water Clarity		clear		
Composition:		Riparian Vegetation:			Obstructions:				
FISH SUMMARY:									
COMMENTS:									