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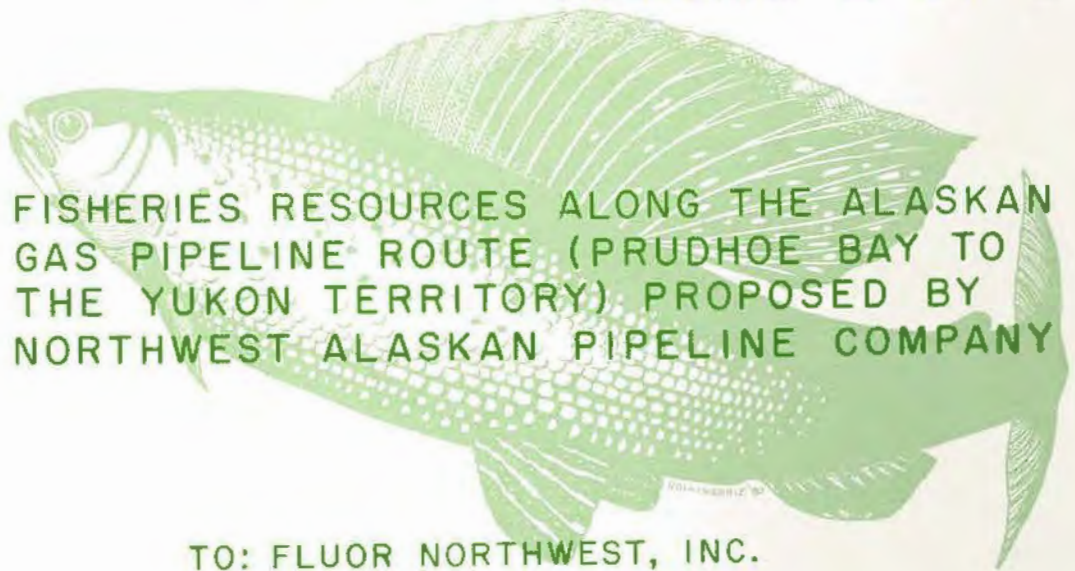
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Ecological Research Associates

SUMMARY REPORT

VOLUME 2 OF 2



FISHERIES RESOURCES ALONG THE ALASKAN
GAS PIPELINE ROUTE (PRUDHOE BAY TO
THE YUKON TERRITORY) PROPOSED BY
NORTHWEST ALASKAN PIPELINE COMPANY

TO: FLUOR NORTHWEST, INC.
701 DOUGLAS AVE.
FAIRBANKS, ALASKA 99706
CONTRACT NUMBER 478085-9-K123

FOR: NORTHWEST ALASKAN PIPELINE COMPANY
FAIRBANKS, ALASKA 99701

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OCTOBER 1981

ERRATA SHEET

for

Fisheries Resources along the Alaskan Gas Pipeline Route (Prudhoe Bay to the Yukon Territory) Proposed by Northwest Alaskan Pipeline Company.

Please note the following corrections: /

Page x

Unnamed Creek NPSI 3-166 - should read 3-116
Unnamed Creek NPSI 3-155 - should read 3-115

Page 44; Line 3

RAPS should read TAPS

Page 162 Stump Creek

LT should be added to fish species

Page 171 Tanana Overflow

AHMP should read 1305.6

Page 175 Iowa Creek

NPSI should read 4-140.09

Page 208 Unnamed Creek, paragraph 1, lines 2-4 should read

"Fishing efforts have been performed near the crossing; however no fish have been caught above the highway."

Reference 2 should be removed from the summer references and added to the spring references.

Page 313 Potlatch Creek

USGS Map reference should read Fairbanks.

Page 323 Gilmore Creek

Township should read 2N

Page 330 Unnamed Tributary to Shocker Creek

NPSI should read 4-137.06

Page 351 Shorty Creek

Section should read 8

Page 370, paragraph 1, line 4

Dpeth should read depth.

Page 377 Unnamed Creek

Range should read 11W

Page 413 Unnamed Creek

Section should read 30

Page 496, paragraph 2, line 5

Deitrich should read Dietrich.

Page 515 Dietrich River Floodplain

NPSI should read 2-29.03

Page 520 West Branch of North Fork of Chandalar River

NPRX should read 031-3

NPSI should read 2-28

Page 565 Stump Creek

LT should be added to summer species list.

Page 577 Unnamed Creek

Map reference should read Sagavanirktok

Page 584 Pescado Creek

Map reference should read Sagavanirktok

Page 585 Unnamed Lake

Map reference should read Sagavanirktok

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PART IV

A COMPENDIUM OF PRESENT KNOWLEDGE OF FISHERIES RESOURCES
IN WATERBODIES ALONG THE NORTHWEST ALASKAN GAS PIPELINE ROUTE

FILE

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INTRODUCTION

A compendium is presented that integrates all available historical information and data generated during 1979 and 1980 field surveys to summarize knowledge of fish use at 388 waterbody crossings or near crossings potentially affected by the proposed gas pipeline. For each waterbody crossing documentation of fish presence, fish use, and source of fisheries information are provided on a seasonal basis. Waterbody names follow those in Northwest Alaskan Pipeline Environmental Master Guide, November 1980 - Revision 3 (Ref. 125) or Rockwell and Johnson (Ref. 11). Waterbody location and identification numbers are abbreviated in the compendium as follows:

NPRX	- Northwest Pipeline River and Floodplain Crossing
NPSI	- Northwest Pipeline Stream Identification number
NPAS	- Northwest Pipeline Alignment Sheet (Ref. 125)
NPMP	- Northwest Pipeline Milepost
AHMP	- Alaska Highway Milepost
USGS Map	- United States Geological Survey maps are the 1:250,000 scale series. Township, range, and section number of specific stream crossings are indicated

Documented fish presence (i.e. capture or visual observation) and utilization for each waterbody crossing or near crossing is presented in a tabular format by season. For the purpose of this report the seasons spring, summer, fall, and winter have been defined by the following time periods:

Spring	1 May - 30 June
Summer	1 July - 31 August
Fall	1 September - 31 October
Winter	1 November - 30 April

Utilization of habitat by fish includes spawning, wintering, migrating, and rearing. Definition of the fish uses for the purpose of this report are:

- Spawning (S) - spawning habitat has been identified by the presence of young-of-the-year or pre-spawning, ripe, or post spawning adults
- Wintering (W) - wintering is the utilization of habitat by fish, including egg incubation during some part of the winter period
- Migrating (M) - migrating is the utilization of aquatic habitat for moving between seasonal use areas and/or habitats
- Rearing (R) - all waterbodies containing fish are considered rearing areas

The lack of seasonal documentation for fish presence and/or utilization in the compendium does not negate the possibility for fish use of an area. In some cases, documentation is lacking because no investigations were conducted. When investigations were conducted and no fish were found, habitat quality is discussed in the assessment. Good and marginal habitat as discussed in waterbody assessments are generally described as follows:

Good fish habitat - generally has an adequate water depth (15-20 cm minimum), measurable flow (at least 0.1-0.3 m²/sec), and high dissolved oxygen concentration (5 mg/ℓ minimum). These sites are typically characterized by a pH range of 6.5 to 8.5, adequate cover and no major barriers to fish movement.

Marginal fish habitat - generally has water depths less than 15-20 cm with negligible or intermittent flow and potential barriers to fish movements and dissolved oxygen concentrations of less than 5 mg/ℓ.

Abbreviations of fish species follow those in Rockwell and Johnson (Ref. 11) and are as follows:

AB	Alaska blackfish (<i>Dallia pectoralis</i>)
AC	Arctic char (<i>Salvelinus alpinus</i>)
AL	Arctic lamprey (<i>Lampetra japonica</i>)
BB	Burbot (<i>Lota lota</i>)
BC	Bering cisco (<i>Coregonus laurettae</i>)
BW	Broad whitefish (<i>Coregonus nasus</i>)
CA	Arctic cisco (<i>Coregonus autumnalis</i>)
CD	Sculpin (<i>Cottus</i> sp.)

CI	Cisco (<i>Coregonus</i> sp.)
CN	Slimy sculpin (<i>Cottus cognatus</i>)
CS	Least cisco (<i>Coregonus sardinella</i>)
DS	Chum salmon (<i>Oncorhynchus keta</i>)
DV	Dolly Varden (<i>Salvelinus malma</i>)
GR	Arctic grayling (<i>Thymallus arcticus</i>)
HW	Humpback whitefish (<i>Coregonus pidschian</i>)
IN	Inconnu (<i>Stenodus leucichthys</i>)
KS	King salmon (<i>Oncorhynchus tshawytscha</i>)
LC	Lake chub (<i>Couesius plumbeus</i>)
LS	Longnose sucker (<i>Catostomus catostomus</i>)
LT	Lake trout (<i>Salvelinus namaycush</i>)
NP	Northern pike (<i>Esox lucius</i>)
PS	Pink salmon (<i>Oncorhynchus gorbuscha</i>)
RW	Round whitefish (<i>Prosopium cylindraceum</i>)
SB	Stickleback (Family <i>Gasterosteidae</i>)
SK	Sucker (<i>Catostomus</i> sp.)
SS	Coho salmon (<i>Oncorhynchus kisutch</i>)
S9	Ninespine stickleback (<i>Pungitius pungitius</i>)
TP	Trout-perch (<i>Percopsis omiscomaycus</i>)
WF	Whitefish (<i>Coregonus</i> or <i>Prosopium</i> sp.)
X	Fish present but species not identified

Physical descriptions of the 388 waterbody crossings include available information from literature reviewed, site-specific observations from 1979 and 1980 seasonal field investigations, and professional or personal knowledge of the region. These are general descriptions and do not attempt to detail seasonal variations and fluctuations of the waterbody system.

All available aquatic information has been reviewed and synthesized to provide a concise overview of the fisheries resources for each waterbody crossing. This overview summarizes documented and reported fish habitat, fish use, and atypical stream conditions that might require considerations to mitigate impacts of construction.

WATERBODY

Waterbody Unnamed Creek

Main Drainage Scottie Creek Tributary to Unnamed Creek

NPRX 131-2 NPSI 6-227.03 NPAS 131 NPMP 740.6 AHMP 1222.2

USGS Map Reference Nabesna, AK T 10N R 23E Sec. 25

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>2,54</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Unnamed Creek is a small humic-stained stream that originates from a low muskeg area near the proposed pipeline route. It flows across the Alaska Highway into a shallow lake less than 100 m downstream of the highway crossing. The outlet of this lake drains into Scottie Creek.

Unnamed Creek provides potential fish habitat only downstream of the Alaska Highway and has little or no potential for fish use at the pipeline crossing. Sampling efforts in the spring of 1978 and 1979 confirmed the absence of fish in this area (Refs. 2 and 54). However, in the shallow lake downstream of the Alaska Highway, numerous unidentified fish were observed. The lake is a likely spawning and rearing area for northern pike and a rearing area for humpback whitefish. Instream construction activities could indirectly affect the fisheries resources of this shallow lake.

WATERBODY

Waterbody Scottie Creek

Main Drainage Tanana River Tributary to Chisana River

NPRX 131-1 NPSI 6-227 NPAS 131 NPMP 739.4 AHMP 1223.4

USGS Map Reference Nabesna, AK T 10N R 23E Sec. 24

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>BB</u>	<u>M,R</u>	<u>54</u>
Summer	<u>None</u>	<u></u>	<u>6</u>
Fall	<u>BB,LS</u>	<u>M,R</u>	<u>57</u>
Winter	<u>BB,HW,NP</u>	<u>W</u>	<u>9,55,66</u>

Scottie Creek is a deep, slow-meandering stream 15-20 m wide. Its earthen banks are steep and grassy and lined with willow, alder and spruce. The channel is relatively uniform in size above and below the proposed pipeline route and sunken logs and debris are abundant.

Although numerous references now exist on fish utilization of Scottie Creek, many (Refs. 5, 8, 9 and 10) refer to the original report of Van Hyning (Ref. 7). This report contains information from local residents which indicates that grayling, humpback whitefish and northern pike are present in Scottie Creek (Ref. 7) and that large runs of grayling and humpback whitefish occur in spring and fall (Ref. 6). While numerous reports refer to Scottie Creek, few studies have actually been performed on the stream.

Direct and indirect evidence indicate that Scottie Creek is utilized by a variety of fish and that some species may occur near the pipeline crossing on a year round basis. The presence of excellent spring spawning and rearing habitat and fish in upstream reaches of the drainage suggests that Scottie Creek is an important migration route.

Studies to date have documented winter fish use of Scottie Creek near the pipeline but actual duration of use is uncertain. Late winter studies in 1979 (Ref. 55) revealed substantial amounts of free water; however, little flow was detected and dissolved oxygen was low (1.6 mg/l). Fishing efforts did not reveal the presence of fish. In contrast, burbot, northern pike and humpback

Scottie Creek (continued)

whitefish were captured in early winter 1979 (Ref. 77). Dissolved oxygen concentrations were again relatively low (2.6 m/l) but fish utilization appeared to be high. It is possible that fish leave the area as conditions deteriorate during the winter but it is also possible that late winter fishing efforts in 1979 failed to capture fish that were present. The presence of burbot young-of-the-year in Unnamed Pond (1223.4) in spring 1979 (Ref. 54) strongly suggests that suitable overwintering conditions exist in Scottie Creek in the vicinity of the pipeline.

In summary, Scottie Creek appears to be of considerable importance to fish populations in the region. This area will require special attention to ensure that potential adverse impacts to fish populations are avoided.

WATERBODY

Waterbody Desper CreekMain Drainage Chisana RiverTributary to Scottie CreekNPRX 130-1 NPSI 6-226 NPAS 130 NPMP 737.4 AHMP 1225.6USGS Map Reference Nabesna, AKT 10N R 23E Sec. 11

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>5,6,7,10,54,121</u>
Summer	<u>None</u>	<u></u>	<u>10</u>
Fall	<u>NP</u>	<u>R</u>	<u>5,6,7,10,57</u>
Winter	<u>None</u>	<u>None</u>	<u>6,9,55</u>

Desper Creek is a moderately deep slow-flowing stream with a channel width of 5.7 m. Its humic-stained waters flow from Island Lake to Scottie Creek, approximately 2.5 km below the Alaska Highway. Steep banks are lined with willow, alder and small spruce. Leaf debris, snags and aquatic vegetation are abundant in the channel and provide adequate cover for fish.

Investigations conducted during the fall of 1979 indicate that Desper Creek is a rearing area for northern pike probably throughout the open water season (Ref. 57). Local residents report that grayling and whitefish are also present (Refs. 5, 6, 7, 10 and 26), but no specific biological data are available for these species. Visual observations and/or sampling efforts throughout the year (Refs. 6, 7, 54 and 55) had failed to verify fish use of Desper Creek prior to the 1979 fall survey (Ref. 57). Desper Creek probably serves as a spring and fall migration route for species present. During a 1979 winter study the stream was frozen solid with the exception of one site where stagnant, anoxic water was found (Ref. 55). Other studies have also found the stream to be dry or frozen to the bottom during winter (Refs. 6 and 9).

WATERBODY

Waterbody Unnamed Creek

Main Drainage Desper Creek Tributary to Island Lake

NPRX 129-5 NPSI 6-225.01 NPAS 129 NPMP 732.5 AHMP 1232.1

USGS Map Reference Nabesna, AK T 11N R 23E Sec. 29

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u>None</u>	<u>2,54</u>
Summer	<u>None</u>	<u>None</u>	<u>None</u>
Fall	<u>None</u>	<u>None</u>	<u>None</u>
Winter	<u>None</u>	<u>None</u>	<u>None</u>

In the vicinity of the proposed pipeline crossing, this small stream seeps through muskeg vegetation or follows poorly defined channels between tussocks. In this area, water accumulates in several pools with a maximum depth of 60 cm and a total surface area of approximately 60 m². One and one-half km upstream from the pipeline route, the stream is crossed by the Alaska Highway. At this point, it flows rapidly down a steep gradient making fish use unlikely.

Fish use in the vicinity of the proposed pipeline is unlikely during the open water season although some pools may offer suitable habitat. No fish were seen or captured during 1978 and 1979 spring investigations (Refs. 2 and 54). It is doubtful that fish from Island Lake are able to penetrate the 1.5 km of muskeg necessary to reach the pipeline crossing. It has been suggested that fish habitat may be present in regions downstream of the proposed pipeline crossing (Ref. 2).

Although studies have not been conducted on winter fish use of Unnamed Creek, physical data collected during spring investigations indicate that this stream dries up or freezes to the bottom during this period (Refs. 2 and 54).

WATERBODY

Waterbody Sweetwater Creek

Main Drainage Tanana River Tributary to Chisana River

NPRX 129-4 NPSI 6-225 NPAS 129 NPMP 730.2 AHMP 1234.2

USGS Map Reference Nabesna, AK T 11N R 22E Sec. 13

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u>None</u>	<u>2,54,59</u>
Summer	<u>None</u>	<u>None</u>	<u>None</u>
Fall	<u>None</u>	<u>None</u>	<u>57</u>
Winter	<u>None</u>	<u>None</u>	<u>9,55</u>

Sweetwater Creek is a small muskeg drainage which is crossed near its headwaters by the proposed pipeline. The slightly humic-stained water flows through muskeg vegetation, tussocks and willow in an often poorly defined channel. Stream substrate is primarily mud and detritus but some gravel occurs near the Alaska Highway (approximately 150 m downstream of the pipeline). A number of small pools are present between the highway and the pipeline crossing.

Fish utilization of Sweetwater Creek in the vicinity of the proposed pipeline crossing is low to non-existent year round. No fish were observed or captured in this stream during numerous investigations and it freezes to the bottom during winter (Refs. 2, 9, 54, 55, 57, 59 and 72).

WATERBODY

Waterbody Unnamed Creek

Main Drainage Chisana Creek Tributary to Sweetwater Creek

NPRX 129-3 NPSI 6-224 NPAS 129 NPMP 729.8 AHMP 1234.7

USGS Map Reference Nabesna, AK T 11N R 22E Sec. 12

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u>None</u>	<u>2,54</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Unnamed Creek is a small, slightly stained stream which drains a low lying muskeg area through a poorly defined channel. This drainage forms a small pond approximately 400 m² in surface area just above the Alaska Highway. It then crosses the highway and the proposed pipeline route before joining Sweetwater Creek. The poorly defined channel and pond margins contain primarily *Carex* and *Equisetum*. Stream and pond bottoms are composed of mud and detritus.

Unnamed Creek provides marginal fish habitat and 1978 and 1979 spring studies indicate that fish use is non-existent (Refs. 2 and 54). Low stream flow may impede fish passage through the Alaska Highway culvert (Ref. 54). Although fall and winter studies have not been conducted, low water levels observed during spring surveys indicate that Unnamed Creek dries up and/or freezes to the bottom during these periods.

WATERBODY

Waterbody Unnamed Creek

Main Drainage Chisana River Tributary to Sweetwater Creek

NPRX 129-2 NPSI 6-223 NPAS 129 NPMP 728.6 AHMP 1235.9

USGS Map Reference Nabesna, AK T 11N R 22E Sec. 2

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u>None</u>	<u>2,54</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Unnamed Creek crosses the Alaska Highway and flows southwest to Sweetwater Creek through a low muskeg and tussock area. Its narrow, poorly defined channel is bordered by willow and dwarf birch. This shallow, slightly stained stream has a mud and detritus bottom with very little aquatic vegetation. In the vicinity of the proposed pipeline, the creek flows through a series of small ponds, probably the product of thermal erosion resulting from previous construction activities. These ponds provide the only significant accumulations of water on this section of the stream.

Another very small drainage approximately 80 m north of Unnamed Creek was noted during spring 1979 (Ref. 54). Only minor seepage was observed at the pipeline crossing. Apparently, this is the second crossing of Unnamed Creek mentioned by Ref. 2.

Fisheries data collected during spring 1978 and 1979 (Ref. 2 and 54) suggest that Unnamed Creek provides little or no fish habitat the year-round. This stream was assessed as unlikely fish habitat in 1978 and poor fish habitat in 1979. Low discharge and a poorly defined channel in the proposed pipeline area may act as an effective block to upstream fish migration.

WATERBODY

Waterbody Unnamed Creek

Main Drainage Chisana River Tributary to Sweetwater Creek

NPRX 129-1 NPSI 6-222 NPAS 129 NPMP 728.2 AHMP 1236.3

USGS Map Reference Nabesna, AK T 11N R 22E Sec. 2

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>2,54</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>GR</u>	<u>R</u>	<u>57</u>
Winter	<u>None</u>	<u>None</u>	<u>55</u>

Unnamed Creek is a shallow, slightly humic-stained stream that flows with intermittent ponding, southwest into Sweetwater Creek through a poorly defined channel. Mud substrate is dominated by thick growths of aquatic vegetation. Dwarf birch, willow, grass and sedge are predominant in surrounding low lying areas while spruce and poplar are found on adjoining hillsides.

Evidence to date suggests that Unnamed Creek may be only occasionally used by fish. Spring investigations in June 1978 found fair fish habitat but fishing efforts were without success (Ref. 2). Fish use of this stream during a 1979 spring survey was considered to be low or non-existent due to low discharge, small drainage size, failure to capture fish and a poorly defined channel which could hinder fish movement (Ref. 54). Fall 1979 sampling efforts, however, yielded young-of-the-year grayling, indicating that at least the stream is used for rearing (Ref. 57). The presence of young-of-the-year grayling during fall makes the spring fish use status of this stream suspect. This stream provides no overwintering habitat for fish (Ref. 55).

WATERBODY

Waterbody Unnamed CreekMain Drainage Chisana River Tributary to Unnamed CreekNPRX 128-2 NPSI 6-221 NPAS 128 NPMP 724.2 AHMP 1240.6USGS Map Reference Nabesna, AK T 12N R 22E Sec. 20

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>2</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Unnamed Creek is a series of small ponds with poorly defined channels. Substrate is mud and riparian vegetation is grass and shrub.

Little work has been done on this stream but fish use is thought to be low to non-existent at any time of the year. A survey conducted in June 1978 did not capture or observe any fish (Ref. 2).

WATERBODY

Waterbody Unnamed Creek

Main Drainage Tanana River Tributary to Chisana River

NPRX 128-1 NPSI 6-220 NPAS 128 NPMP 723.5 AHMP 1241.2

USGS Map Reference Nabesna, AK T 12N R 22E Sec. 20

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u>None</u>	<u>2</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Unnamed Creek is a small meandering stream with a poorly defined channel. When flowing it drains a wide, marshy area interspersed with muskeg and spruce stands. It joins a large marsh-type pond approximately 1 km NE of the proposed crossing.

If typical of streams in this type of habitat, Unnamed Creek would be slow-flowing and humic stained. During a June 1978 survey (Ref. 2), this stream was found to be dry. Fish use is probably very marginal and would be restricted to times of high run-off.

WATERBODY

Waterbody Gardiner Creek

Main Drainage Tanana River Tributary to Chisana River

NPRX 127-1 NPSI 6-219 NPAS 127 NPMP 718.5 AHMP 1246.7

USGS Map Reference Nabesna, AK T 12N R 21E Sec. 3

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>CN, GR, LS</u>	<u>M, R, S</u>	<u>7, 10, 54, 59</u>
Summer	<u>CN</u>	<u>R</u>	<u>6, 7, 10</u>
Fall	<u>GR, LS</u>	<u>M, R</u>	<u>57</u>
Winter	<u>None</u>	<u>None</u>	<u>8, 9, 55</u>

Gardiner Creek is a deep, darkly-stained, slow-flowing stream that drains a large bog and marsh area northeast of the Alaska Highway and meanders southwesterly to the Chisana River (approximately 4 km from the Alaska Highway). Steep banks of silt and sand are vegetated with willow, spruce, birch and aspen. Stream substrate is mud and detritus although gravel and cobble are found immediately downstream of the Alaska Highway. Good cover is provided by sunken logs and long, deep pools provide excellent habitat. The macro-invertebrate fauna of Gardiner Creek includes black flies, mayflies and crane fly larvae (Ref. 6).

Gardiner Creek is used by a variety of fish during the open water season. Young-of-the-year and adult grayling captured during 1979 spring and fall investigations indicate that this stream is an important grayling spawning and rearing area (Refs. 54, 57 and 58), as well as a rearing area for longnose sucker and slimy sculpin (Refs. 6 and 54). Other species reported to be present include northern pike and round and humpback whitefish (Ref. 6). Winter studies indicate that Gardiner Creek freezes to the bottom in some locations (Ref. 9) and, where free water is present, extremely low dissolved oxygen concentrations prevail (Refs. 9 and 55). Therefore, winter use of this stream is unlikely and major upstream and downstream migrations of the aforementioned species must occur in spring and fall (Refs. 54, 55 and 57).

WATERBODY

Waterbody Tenmile Creek

Main Drainage Tanana River Tributary to Chisana River

NPRX 126-1 NPSI 6-218 NPAS 126 NPMP 712.5 AHMP 1252.8

USGS Map Reference Nabesna, AK T 13N R 20E Sec. 11

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>2,5,54</u>
Summer	<u>None</u>	<u></u>	<u>6,10</u>
Fall	<u>None</u>	<u></u>	<u>57</u>
Winter	<u>None</u>	<u>None</u>	<u>9,55</u>

Tenmile Creek is a small, humic-stained stream that flows southwest through a low lying muskeg area, but in the vicinity of the proposed crossing, the stream is shallow, narrow and swift (Refs. 2 and 57). This stream is a tributary to the Chisana River and supports a number of macroinvertebrates including baetid mayflies, veliids and amphipods (Ref. 6). The mud channel is choked with *Equisetum*, *Carex* and other emergent vegetation and gradually sloping banks support spruce and dense willow.

To date fisheries investigations conducted during the open water period have failed to detect fish in Tenmile Creek, although habitat was considered good (Refs. 2, 6, 54 and 57). A previous investigator suggests that Tenmile Creek may serve as a spawning area and migration pathway for northern pike (Ref. 6). Another study indicated that regions of fast water may inhibit fish movement (Ref. 2). Winter use of Tenmile Creek is non-existent as this stream is either dry or frozen to the bottom during this period (Refs. 9 and 55). Open water fish use remains uncertain but it is obvious that large numbers of fish do not use the stream near the proposed crossing and its importance to fish is marginal.

WATERBODY

Waterbody Silver Creek

Main Drainage Tanana River Tributary to Chisana River

NPRX 125-1 NPSI 6-217 NPAS 125 NPMP 706.5 AHMP 1258.7

USGS Map Reference Nabesna, AK T 14N R 20E Sec. 17 & 20

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>2,54,59,121</u>
Summer	<u>NP</u>	<u>R</u>	<u>6</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u>None</u>	<u>9,73</u>

Silver Creek is a small, humic-stained stream that flows south into Eliza Lake near the Chisana River. Near the pipeline crossing, the narrow channels of this stream are heavily vegetated with aquatic flora and the low to non-existent banks are bordered by bunch grass, willow, dwarf birch and spruce. This stream is reported to support numerous aquatic invertebrates (Ref. 6).

Fish use of Silver Creek appears to be low during the open water season (Refs. 6 and 54). Juvenile northern pike were caught in July 1976, indicating use of Silver Creek as a rearing area during summer (Ref. 6). The same study suggested that Silver Creek is a probable migration route for a few whitefish and northern pike in spring and fall. These species have been reported present by local residents (Ref. 6). No fish were caught during a 1979 spring survey although sampling efforts were limited by access restrictions (Ref. 54). During summer 1979 the Alaska Highway culvert (downstream from the proposed pipeline crossing) was clogged with roadfill and rip rap (Ref. 60).

Although Silver Creek provides no winter habitat for fish as this stream was frozen to the bottom in April 1978 and November 1979 (Refs. 9 and 73). An accurate assessment of this stream's importance as fish habitat is not currently possible. Access restrictions at the time of sampling prevented a complete survey of the waterbody.

WATERBODY

Waterbody Unnamed Creek

Main Drainage Tanana River Tributary to Chisana River

NPRX 124-3 NPSI 6-216.01 NPAS 124 NPMP 703.5 AHMP 1262.3

USGS Map Reference Tanacross, AK T 14N R 19E Sec. 11

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u>None</u>	<u>2,54</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Unnamed Creek is a small, slightly humic-stained tributary to the Chisana River. The pipeline route crosses this creek twice approximately 300 m upstream of the Alaska Highway. During 1979 spring investigations, no water was present in the stream channel except at the outfall of the highway culvert where small pools had formed (Ref. 54). Terrestrial vegetation, including willow, birch and spruce, borders these small pools. Where visible, the stream channel is less than 0.2 m wide with mud substrate.

Fish use of Unnamed Creek is considered to be non-existent and fish habitat marginal or absent year-round due to limited discharge or the absence of water. The poorly defined channel probably acts as a barrier to fish passage when water is present. In addition to these habitat limitations, the upstream end of the highway culvert was found to be clogged with highway fill during spring 1979 (Ref. 54).

WATERBODY

Waterbody Lethe Creek

Main Drainage Tanana River Tributary to Chisana River

NPRX 124-2 NPSI 6-216 NPAS 124 NPMP 701.0 AHMP 1266.5

USGS Map Reference Tanacross, AK T 15N R 19E Sec. 33

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u>None</u>	<u>2,54</u>
Summer	<u>GR, NP, X</u>	<u>R</u>	<u>123</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u>None</u>	<u>55</u>

Lethe Creek is a small (0.3-2 m wide) stream confined by heavily vegetated banks to 2 m high. Vegetation includes dead willow in or across the stream channel, birch and dwarf spruce. Its humic-stained waters flow over mud substrate and occasional patches of fine gravel. At the proposed pipeline crossing a series of shallow pools and riffles are present. Eight hundred meters downstream of the crossing a perched (3 m high) Alaska Highway culvert presents an effective barrier to fish movement.

To date, fisheries investigations during the open water period have failed to detect fish either above or below the Alaska Highway, although habitat was considered good (Ref. 2 and 54). Due to the fish block at the Alaska Highway, upstream regions including the pipeline crossing are non-fish areas. The fisheries status of the stream below the Alaska Highway is uncertain. Winter fish use is non-existent as this stream either dries up or freezes to the bottom during this period (Ref. 55).

WATERBODY

Waterbody Beaver Creek

Main Drainage Yukon River Tributary to Tanana River

NPRX 124-1 NPSI 6-215 NPAS 124 NPMP 699.2 AHMP 1268.0

USGS Map Reference Tanacross, AK T 15N R 19E Sec. 29

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>GR,LS,RW</u>	<u>M,R,S</u>	<u>54</u>
Summer	<u>GR,RW</u>	<u>R</u>	<u>6</u>
Fall	<u>GR,LS</u>	<u>M,R</u>	<u>57</u>
Winter	<u>None</u>	<u>None</u>	<u>9,55</u>

Beaver Creek is a small stream that flows southwest to its confluence with the Tanana River. This slow-flowing stream is a series of shallow riffles and pools (to 1.5 m deep) with sand and small gravel substrate. It flows through a gorge with incised, mud banks 2-3 m high. The channel is bordered by stands of willow, birch and spruce and accumulated fallen logs and snags provide a considerable cover for fish.

During the open water period, Beaver Creek provides important habitat for fish and is used by a number of species in the vicinity of the proposed crossing. This creek serves as a rearing area for grayling, longnose sucker and round whitefish (Refs. 5, 6, 26, 54 and 57). Numerous young-of-the-year grayling and longnose sucker were captured during 1979 fall sampling efforts, indicating that spawning occurs in this stream (Ref. 57). Northern pike may also use Beaver Creek as a spawning and rearing area (Ref. 6), although to date this species has not been captured or observed. Spring and fall migration of fish undoubtedly occurs in Beaver Creek. Winter investigations conducted in 1977 and 1979 indicate that the stream freezes to the bottom and provides no fish habitat during this period (Ref. 9 and 55).

WATERBODY

Waterbody Unnamed Creek

Main Drainage Yukon River Tributary to Tanana River

NPRX 123-2 NPSI 6-214.01 NPAS 123 NPMP 697.0 AHMP 1270.4

USGS Map Reference Tanacross, AK T 15N R 18E Sec. 24

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u>None</u>	<u>2,54</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Unnamed Creek is a very small drainage which flows south across the Alaska Highway and into the Tanana River. This stream had no defined channel and negligible flow in June 1979 (Ref. 54). The only significant concentration of water observed in the vicinity of the proposed crossing was a small pool approximately 90 cm deep located below the Alaska Highway culvert. Dissolved oxygen was notably low in this pool (Ref. 54).

Fish were not seen or captured during spring investigations in 1978 and 1979 (Refs. 2 and 54) and summer and fall information is not available. Fish utilization during the open water period appears to be low to non-existent. Winter fish use is unlikely as streams of this nature tend to be dry or freeze solid in winter.

WATERBODY

Waterbody Unnamed Creek

Main Drainage Yukon River Tributary to Tanana River

NPRX 123-1 NPSI 6-213.01 NPAS 123 NPMP 694.6 AHMP 1273.0

USGS Map Reference Tanacross, AK T 15N R 18E Sec. 10 & 15

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>59</u>
Summer	<u>GR</u>	<u>R</u>	<u>2,60,123</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Unnamed Creek is a small stream that flows southwest into the Tanana River. No fishing efforts have been performed near the proposed crossing, but the area was reported to be good fish habitat in the summer of 1978, especially below the highway culvert, which is probably a block to fish passage (Refs. 2 and 59).

It is not likely that this stream offers fish habitat during winter, due to its similarity to other streams in the area that have been surveyed and found to be dry or freeze solid in early winter. Grayling have been documented using this stream during the summer (Ref. 123).

WATERBODY

Waterbody Unnamed Creek

Main Drainage Yukon River Tributary to Tanana River

NPRX 122-2 NPSI 6-213 NPAS 122 NPMP 690.1 AHMP 1278.3

USGS Map Reference Tanacross, AK T 16N R 18E Sec. 30

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u>None</u>	<u>2,9</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Unnamed Creek is a small stream that flows south to the Tanana River through a 0.5-1.5 m wide channel bordered by willow and spruce. The stream bottom consists primarily of mud.

When surveyed in April 1978 the stream was dry (Ref. 9). Another investigation in June of 1978 found Unnamed Creek to have negligible flow and the stream was assessed as unlikely fish habitat (Ref. 2). A May 1979 investigation of Unnamed Creek noted waterfalls up to 1.0 m high immediately upstream of the proposed crossing. These falls and other small log jams further upstream were considered partial fish blocks (Ref. 59).

Available data indicate that this stream flows for a very limited time in the spring and is dry for the remainder of the year. Such conditions are unsuitable for fish use.

WATERBODY

Waterbody Bitters Creek

Main Drainage Yukon River Tributary to Tanana River

NPRX 122-1 NPSI 6-212 NPAS 122 NPMP 688.2 AHMP 1280.2

USGS Map Reference Tanacross, AK T 16N R 17E Sec. 24

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>CN,GR,LS,RW</u>	<u>M,R,S</u>	<u>54,69</u>
Summer	<u>CN,GR,NP,WF</u>	<u>R</u>	<u>6,10,69</u>
Fall	<u>GR</u>	<u>M,R</u>	<u>57</u>
Winter	<u>None</u>	<u>None</u>	<u>9</u>

Bitters Creek is a small stream which flows through a steep gorge and into the Tanana River approximately 1.6 km downstream of the Alaska Highway. Its channel is 2-3 m wide with sand and gravel substrate. Large boulders, snags and debris litter the channel downstream from the Alaska Highway providing excellent cover for fish. The stream gradient is steep, but pools are numerous.

Bitters Creek provides excellent fish habitat during the open water season, although no fish have been found upstream of the Alaska Highway in the vicinity of the proposed pipeline route. A perched (35-40 cm) culvert with low water levels and rapid flow probably impedes upstream movement of fish.

Downstream of the Alaska Highway, grayling, longnose sucker, northern pike, round whitefish and slimy sculpin have been captured or observed in Bitters Creek throughout the open water season (Refs. 6, 10, 54, 57 and 69). This stream provides a feeding and rearing area for the aforementioned species. Numerous unidentified fry were captured approximately 1.0 km downstream of the Highway in July 1979 (Ref. 69). The presence of fry is direct evidence of utilization by spring spawning species. Spring and fall migrations undoubtedly occur as 1977-78 winter investigations found Bitters Creek dry and winter fish habitat non-existent (Ref. 55). Although fish have not been reported near the proposed crossing, instream activities could indirectly affect fish found downstream of the Highway.

WATERBODY

Waterbody Unnamed Creek

Main Drainage Yukon River Tributary to Tanana River

NPRX 121-2 NPSI 6-210.02 NPAS 121 NPMP 685.5 AHMP 1283.2

USGS Map Reference Tanacross, AK T 16N R 17E Sec. 10

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u>None</u>	<u>2</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Unnamed Creek is a small stream that flows south to the Tanana River through a 0.4-2.0 m wide channel bordered by low grassy banks. The bottom consists primarily of mud and water depths range from 20-120 cm.

Very little information is available for this stream. One study conducted in spring of 1978 assessed the area to be fair fish habitat, but no fish were captured or observed at that time (Ref. 2). Fish use appears to be non-existent for this crossing during the open water period. Winter use is highly unlikely as streams of this size and nature have been found to freeze solid or to be dry soon after freeze-up.

WATERBODY

Waterbody Unnamed Creek

Main Drainage Yukon River Tributary to Tanana River

NPRX 121-1 NPSI 6-210.01 NPAS 121 NPMP 683.5 AHMP 1285.4

USGS Map Reference Tanacross, AK T 17N R 17E Sec. 32

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>2</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Unnamed Creek is a small stream that meanders south to the Tanana River. Low banks vegetated with shrubs and grasses confine the 0.4-1.5 m wide channel and the bottom consists primarily of mud.

Very little information is available for this stream. An investigation in the spring of 1978 assessed the stream to be fair fish habitat, but no fish were captured or observed during the study (Ref. 2). Winter fish use is considered extremely unlikely, as streams of this size and nature tend to be dry or frozen solid in winter.

WATERBODY

Waterbody Unnamed Creek

Main Drainage Yukon River Tributary to Tanana River

NPRX 119-2 NPSI 6-210 NPAS 119 NPMP 672.7 AHMP 1296.7

USGS Map Reference Tanacross, AK T 17N R 15E Sec. 11

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>2</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Unnamed Creek is a small (0.4-3 m wide) stream that flows approximately 2.5 km from the proposed pipeline crossing to a small lake lying adjacent to the Tanana River floodplain. Its banks are grassy and low (30-150 cm) and channel substrate is mud.

Fish use of Unnamed Creek is low to non-existent the year-round. Fisheries investigations conducted in June 1978 indicated that fish habitat was fair; however, no fish were captured (Ref. 2). During these same investigations the culvert at the Alaska Highway crossing was noted to be a fish block. This block is downstream of the proposed crossing and probably prevents fish from using upstream areas.

WATERBODY

Waterbody Unnamed Creek

Main Drainage Yukon River Tributary to Tanana River

NPRX 119-1 NPSI 6-209 NPAS 119 NPMP 671.4 AHMP 1297.9

USGS Map Reference Tanacross, AK T 17N R 15E Sec. 3

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u>None</u>	<u>2,59,60</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Unnamed Creek flows southwest toward the Tanana River from foothills overlooking the Tetlin Indian Reservation. This small stream is crossed by the Alaska Highway approximately 200 m downstream of the proposed pipeline crossing and then flows into a small lake adjacent to the Tanana River floodplain. Flow is intermittent and dependent upon periods of high runoff or snow melt. Incised banks are vegetated with sedges, willows and alders and stream substrate consists of sod, detritus and moss.

Intermittent flow and the presence of fish blocks within the stream preclude the possibility of fish use in the vicinity of the proposed pipeline crossing. Results of a survey in May 1979 indicate that sod ledges in the stream bottom and a perched culvert at the Alaska Highway act as barriers to fish movement (Ref. 59). This stream was dry at the Alaska Highway 28 June 1979 and electrofishing efforts in spring 1978 failed to capture any fish above or below the Alaska Highway (Ref. 2 and 60).

WATERBODY

Waterbody Tanana River

Main Drainage Yukon River Tributary to Yukon River

NPRX 118-2 NPSI 6-207 NPAS 118 NPMP 666.0 AHMP 1303.3

USGS Map Reference Tanacross, AK T 18N R 14E Sec. 25

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>BB,CN,HW,LC,LS,NP,RW</u>	<u>M,R,S</u>	<u>54</u>
Summer	<u>None</u>	<u></u>	<u>6</u>
Fall	<u>BB,CN,GR,HW,LC,LS,NP,RW</u>	<u>M,R,S</u>	<u>57</u>
Winter	<u>BB</u>	<u>R,W</u>	<u>55</u>

The Tanana River is a large, braided, glacial river formed by the junction of the Chisana and Nabesna rivers near the Alaska/Canada border. The Tanana River is crossed by the Alaska Highway at AHMP 1303.3 and flows northwest to central Alaska where it joins the Yukon River.

Relatively little is known about the fishery resource of the Tanana River near the proposed crossing. It was previously thought that few fish were able to tolerate its highly turbid waters, especially during summer months (Ref. 6); consequently, few attempts have been made to sample the Tanana River. Based on recent findings, it appears that the Tanana River is an important fish stream year-round.

The Tanana River is a rearing area for northern pike, burbot, longnose sucker, lake chub, slimy sculpin, round whitefish and humpback whitefish (Refs. 54 and 57). It is also a nursery area for humpback whitefish, longnose sucker, lake chub, grayling and slimy sculpin fry (Refs. 54 and 57). Spring and fall 1979 investigations indicate that this area could be a spawning area for humpback whitefish in the fall and may also be used by spring spawning species (Refs. 54 and 57).

The Tanana River near Tok is an important migration route for fish moving to and from overwintering areas in the river (Refs. 54 and 57). Investigations conducted during 1979 (Refs. 54, 55 and 57) indicate that the Tanana River at Tok is a wintering area for burbot and probably for other species as well (Ref. 55). Although salmon utilize downstream portions of the Tanana River, none have been captured in the river near the proposed pipeline crossing.

WATERBODY

Waterbody Tanana Overflow

Main Drainage Yukon River Tributary to Tanana River

NPRX 118-1 NPSI 6-206 NPAS 118 NPMP 663.8 AHMP 1305.4

USGS Map Reference Tanacross, AK T 18N R 14E Sec. 27

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u>None</u>	<u>2</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Tanana Overflow is an old oxbow channel of the Tanana River. It extends through an area of taiga and muskeg vegetation. Portions of the channel are overgrown especially near the Tanana River proper. It is very unlikely that this stream has any flow. Little information is available for this stream except that it was reported dry on 9 June 1978 and is not considered fish habitat (Ref. 2).

WATERBODY

Waterbody Tok River

Main Drainage Yukon River Tributary to Tanana River

NPRX 117-2 NPSI 6-205 NPAS 117 NPMP 659.9 AHMP 1309.4

USGS Map Reference Tanacross, AK T 18N R 13E Sec. 24

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>BB,CN,GR,LC,LS,RW,WF</u>	<u>M,R,S</u>	<u>6,10,54</u>
Summer	<u>None</u>		<u>69</u>
Fall	<u>CN,GR,RW</u>	<u>M,R</u>	<u>8,57</u>
Winter	<u>None</u>	<u>None</u>	<u>7,8,9,55</u>

The Tok River is a semi-glacial stream that crosses the Alaska Highway about five miles east of Tok and flows northeast into the Tanana River. This stream is 25-40 m wide, about 95 km long and originates in the Alaska Range. Its waters are clearer than entirely glacial streams due to contributions by springs and clear water tributaries.

The Tok River is important to a variety of fish species throughout the open water season. It serves as a rearing area for round whitefish, longnose sucker, grayling, burbot and slimy sculpin (Refs. 6, 10, 54 and 57). Little is known of grayling spawning in this region. Important grayling spawning grounds have been identified in the Little Tok River, a tributary of the Tok River (Ref. 39). The presence of grayling and round whitefish fry indicates fish use of the lower reaches of the Tok River near the pipeline route as a nursery area and there is increasing evidence that grayling also use this area for spawning (Refs. 54 and 57). Whitefish fry captured during 1979 spring investigations probably migrated downstream from the more stable areas within the Tok River Drainage (Ref. 54). The Tok River in the vicinity of the pipeline crossing is either dry or frozen to the bottom in winter (Refs. 7, 8, 9 and 55). and does not provide overwinter habitat for the eggs of fall spawning species.

The Tok River is a major migratory pathway for many species during spring and fall since most of this stream freezes solid during winter months. It remains unknown, however, if the important major grayling populations found in the Tok overflow and Little Tok River (upstream tributaries of the Tok River)

Tok River (continued)

migrate downstream into the Tanana River or remain upstream to overwinter. Other fish species known to be present in the Tok River include northern pike and lake chub (Refs. 6 and 19).

The presence of a State campground at the Alaska Highway bridge has created a high public use area not far upstream from the proposed crossing. A well traveled path follows the stream bank downstream to the crossing, but most activity is concentrated in the immediate vicinity of the campground.

WATERBODY

Waterbody Tok Overflow

Main Drainage Yukon River Tributary to Tanana River

NPRX 117-1 NPSI 6-204 NPAS 117 NPMP 657.6-658.0 AHMP 1311.5

USGS Map Reference Tanacross, AK T 18N R 13E Sec. 15

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u>None</u>	<u>2</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Tok Overflow is a dry oxbow channel surrounded by spruce and muskeg vegetation. Much of the channel is overgrown with vegetation and flow is probably restricted. Little information is available for this stream except that it was reported dry on 9 June 1978 and is not considered fish habitat (Ref. 2).

WATERBODY

Waterbody Crystal Slough Creek

Main Drainage Yukon River Tributary to Tanana River

NPRX 114-1 NPSI 6-203.03 NPAS 114 NPMP 640.7 AHMP 1382.2

USGS Map Reference Tanacross, AK T 18N R 10E Sec. 11 & 2

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>CN,GR,LS</u>	<u>M,R,S</u>	<u>2,54,60</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>CN,GR,NP,X</u>	<u>M,R</u>	<u>9,57</u>
Winter	<u>None</u>	<u></u>	<u>55</u>

Crystal Slough Creek originates, in part, from an upwelling source which flows north across the Alaska Highway and joins additional springs near the Tanana River. Between the proposed crossing and the Alaska Highway, its 1-3 m wide channel flows through a large muskeg area vegetated with willow, dwarf birch and scattered spruce. Crystal Slough Creek is relatively shallow (usually less than 0.5 m deep), clear, and in some areas remains open year round. The stream channel is well-defined but often hidden from view by overhanging vegetation.

Crystal Slough Creek is a rearing area during the open water season for grayling, longnose sucker, slimy sculpin and northern pike (Refs. 2, 54, 57 and 60). Young-of-the-year and adult grayling were present during 1979 fall surveys indicating that spawning occurs in Crystal Slough Creek (Ref. 57). Fair numbers of adult grayling in spawning condition were reported to have been caught at the Alaska Highway in early June 1978 (Ref. 2). Other species indigenous to the Tanana River may also frequent Crystal Slough Creek.

Crystal Springs itself provides good fish habitat in winter and should be considered a potential wintering area. Although water quality was good and potential food abundant, fish use of Crystal Springs was found to be low to non-existent during a 1979 winter survey (Ref. 55). Careful consideration should be given to this area, however. Crystal Springs may be an important water source for fish wintering areas downstream from the Alaska Highway (Crystal Springs Slough and the Tanana River) (Ref. 55).

WATERBODY

Waterbody Unnamed Creek

Main Drainage Yukon River Tributary to Tanana River

NPRX 113-4 NPSI 6-203.01 NPAS 113 NPMP 639.2 AHMP 1329.5

USGS Map Reference Tanacross, AK T 18N R 10E Sec. 10

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u>None</u>	<u>2</u>
Summer	<u>None</u>		<u>None</u>
Fall	<u>None</u>		<u>None</u>
Winter	<u>None</u>		<u>None</u>

Unnamed Creek is a small, very steep gradient stream in the vicinity of the proposed pipeline crossing. It flows approximately 200 m downstream from the crossing to the Alaska Highway and into a low-lying wetland adjacent to the Tanana River floodplain. Flow is intermittent and the stream is typically dry except during periods of high runoff or snow melt.

The physical nature of this stream precludes fish use in the vicinity of the proposed crossing. The steep gradient provides little or no habitat and results in numerous small falls and water velocity barriers to fish passage. These factors combined with the ephemeral flow of this stream would prevent fish from ascending into this portion of the stream.

Studies conducted between 20 May and 12 June 1978 found no fish by electro-fishing above and below the Alaska Highway culvert. The culvert was also described as a fish block (Ref. 2).

WATERBODY

Waterbody Unnamed Creek

Main Drainage Yukon River Tributary to Tanana River

NPRX 113-3 NPSI 6-203 NPAS 113 NPMP 638.2 AHMP 1330.5

USGS Map Reference Tanacross, AK T 18N R 10E Sec. 4 & 9

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u>None</u>	<u>2,54</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Unnamed Creek flows northerly about 2 km from the proposed crossing to its confluence with the Tanana River. This is a small stream, 2-3 m wide, which is dry except during periods of high runoff. The gradient is very steep and water velocities are high. The substrate is typical of steep, high runoff channels, consisting predominantly of large boulders (0.5-1.5 cm), cobble and some gravel. Mud and humus banks up to 1 m high are well-vegetated with mosses, grasses, alder and wild roses and are bordered by a mixed stand of birch, aspen and spruce.

This stream provides no fish habitat in the proximity of the pipeline route. Spring surveys in 1979 found that the intermittent nature of the water flow, steep gradient and accumulation of sticks and debris in the channel, prevent fish from reaching the crossing (Ref. 54). On 23 June 1979 the stream was found to be dry with some evidence of flow during the recent spring breakup. The lower reaches of this stream may provide fish habitat nearer its confluence with the Tanana River (Ref. 2).

WATERBODY

Waterbody Moon Lake Tributary

Main Drainage Yukon River Tributary to Tanana River

NPRX 113-2 NPSI 6-202 NPAS 113 NPMP 636.9 AHMP 1331.9

USGS Map Reference Tanacross, AK T 18N R 10E Sec. 5

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u>None</u>	<u>2</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Moon Lake Tributary is a small, steep gradient stream which divides into two distinct channels at the proposed pipeline crossing. The two channels are also crossed by the Alaska Highway before emptying into Moon Lake. Flow is infrequent in the channels and is dependent on high runoff or snow melt. Bottom substrates are boulders and cobble.

Moon Lake Tributary provides no fish habitat near the proposed pipeline crossing. This stream is described as 'ephemeral' (Ref. 6) and both channels were dry at the Alaska Highway in June 1978 (Ref. 2).

WATERBODY

Waterbody Yerrick CreekMain Drainage Yukon RiverTributary to Tanana RiverNPRX 113-1 NPSI 6-201 NPAS 113 NPMP 634.7 AHMP 1333.7USGS Map Reference Tanacross, AK T 19N 18N R 9E 9E Sec. 36 1

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	DV,GR	M,R	54,64
Summer	CN,DV,GR,RW	R	6,10,68,69
Fall	GR,RW	M,R	57
Winter	GR	W	55

Yerrick Creek is a swift, clear water stream flowing northerly from the Alaska Range to its confluence with the Tanana River. The 10-15 m wide and sometimes braided channel follows a steep gradient floodplain consisting of boulders, cobble and gravel. Gravel, sand and mud banks up to 2.5 m high are vegetated by alder, cottonwood and aspen. A larger volume of water has been reported approximately 1.5 km upstream of the pipeline crossing than at the Alaska Highway, which indicates the presence of some subterranean flow (Ref. 6).

Yerrick Creek provides important fish habitat for a variety of fish species throughout the year. It offers potential spring spawning habitat for grayling. (Ref. 54) and serves as a rearing area for Dolly Varden, grayling, slimy sculpin and round whitefish during the open water period (Refs. 5, 6, 10, 54, 57, 64, 68 and 69). The lower reaches of Yerrick Creek near its confluence with the Tanana River are suspected to also contain northern pike, lake chub and longnose sucker (Refs. 6, 7 and 10).

Yerrick Creek should be considered a potential overwintering stream in the vicinity of the pipeline route. Good early winter fish habitat was available throughout this region in late November 1979 and a single grayling was observed in an open water area downstream of the proposed crossing (Ref. 55).

WATERBODY

Waterbody Unnamed Creek

Main Drainage Yukon River Tributary to Tanana River

NPRX 112-10 NPSI 6-200.01 NPAS 112 NPMP 632.5 AHMP 1336.9

USGS Map Reference Tanacross, AK T 19N R 9E Sec. 33

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u>None</u>	<u>2,54,69</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

In the vicinity of the proposed pipeline route there are two branches of Unnamed Creek. The present crossing is on the branch that flows northeasterly. The other crossing is on the branch that flows northwesterly. Fish habitat in both branches is very similar; therefore the assessments are the same for both crossings. Near the proposed crossing the channel of the stream is poorly defined. Waters are slightly stained and flow through a few small, 1.5 m deep pools bordered by willow, aspen and cottonwood. The stream bottom consists of mud and banks are up to 1 m high.

Surveys conducted during the open water period of 1978 and 1979 found fish habitat to be poor in the vicinity of the pipeline route due to low discharge and a poorly defined channel (Ref. 2 and 54). An investigation conducted in June 1979 found the stream channel dry (Ref. 69).

The Alaska Highway crosses Unnamed Creek about 800 m downstream of the pipeline route. In this area there is a deep pool along the edge of a material site which empties into the Tanana River approximately 600 m downstream. Investigations conducted during the spring of 1978 and 1979 failed to capture any fish in this area; however, it was considered good fish habitat (Refs. 2 and 54). The outlet of this pool is a weed choked channel which may restrict fish movement into the pool area during low water periods (Ref. 54). This stream provides no winter fish habitat.

WATERBODY

Waterbody Unnamed CreekMain Drainage Yukon River Tributary to Tanana RiverNPRX 112-9 NPSI 6-200 NPAS 112 NPMP 632.5 AHMP 1336.9USGS Map Reference Tanacross, AK T 19N R 9E Sec. 33

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u>None</u>	<u>2,54,69</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

In the vicinity of the proposed pipeline route there are two branches of Unnamed Creek. The present crossing is on the branch that flows northwesterly. The other crossing is on the northeasterly flowing branch. Fish habitat in both branches is very similar; therefore the assessments for both crossings are the same. Near the pipeline the channel of the stream is poorly defined. Waters are slightly stained and flow through a few small 1.5 m deep pools bordered by willow, aspen and cottonwood. The stream bottom consists of mud and banks are up to 1 m high.

Surveys conducted during the open water period of 1978 and 1979 found fish habitat to be poor in the vicinity of the proposed pipeline route due to low discharge and a poorly defined channel (Refs. 2 and 54). An investigation conducted in June 1979 found the stream channel dry (Ref. 69).

The Alaska Highway crosses Unnamed Creek about 800 m downstream of the pipeline route. In this area there is a deep pool along the edge of a material site which empties into the Tanana River approximately 600 m downstream. Investigations conducted during spring of 1978 and 1979 failed to capture any fish in this area; however, it was considered good fish habitat (Refs. 2 and 54). The outlet of this pool is a weed choked channel which may restrict fish movement into the pool area during low water periods (Ref. 54). This stream provides no winter fish habitat.

WATERBODY

Waterbody Cathedral Rapids Creek #1Main Drainage Yukon River Tributary to Tanana RiverNPRX 112-8 NPSI 6-199 NPAS 112 NPMP 630.9 AHMP 1338.1USGS Map Reference Tanacross, AK T 19N R 9E Sec. 32

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u>None</u>	<u>60</u>
Summer	<u>None</u>	<u>None</u>	<u>68,69</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

At the proposed pipeline route, Cathedral Rapids Creek is divided into seven channels. The seven channels are actually formed by three drainages that flow northerly from the Alaska Range and subdivide near the proposed pipeline. The channels have been channelized by bulldozers in the vicinity of the Alaska Highway crossings (approximately 300-400 m downstream of the proposed pipeline route) to facilitate flood-stage runoff. The sporadic water flow in these channels restricts potential fish use to times of high runoff.

WATERBODY

Waterbody Cathedral Rapids Creek #2

Main Drainage Yukon River Tributary to Tanana River

NPRX 112-7 NPSI 6-198 NPAS 112 NPMP 630.4 AHMP 1338.7

USGS Map Reference Tanacross, AK T 19N R 9E Sec. 31

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u>None</u>	<u>2,60</u>
Summer	<u>None</u>	<u>None</u>	<u>68,69</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

At the proposed pipeline route, Cathedral Rapids Creek is divided into seven channels. The seven channels are actually formed by three drainages that flow northerly from the Alaska Range and subdivide near the proposed pipeline. The channels have been channelized by bulldozers in the vicinity of the Alaska Highway crossings (approximately 300-400 m downstream of the proposed pipeline route) to facilitate flood-stage runoff. The sporadic water flow in these channels restricts potential fish use to times of high runoff.

WATERBODY

Waterbody Cathedral Rapids Creek #3Main Drainage Yukon River Tributary to Tanana RiverNPRX 112-6 NPSI 6-197B NPAS 112 NPMP 630.3 AHMP 1338.7USGS Map Reference Tanacross, AK T 19N R 9E Sec. 31

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u>None</u>	<u>2,60</u>
Summer	<u>None</u>	<u>None</u>	<u>60,68,69</u>
Fall	<u>None</u>	<u>None</u>	<u>None</u>
Winter	<u>None</u>	<u>None</u>	<u>None</u>

At the proposed pipeline route, Cathedral Rapids Creek is divided into seven channels. The seven channels are actually formed by three drainages that flow northerly from the Alaska Range and subdivide near the proposed pipeline. The channels have been channelized by bulldozers in the vicinity of the Alaska Highway crossings (approximately 300-400 m downstream of the proposed pipeline route) to facilitate flood-stage runoff. The sporadic water flow in these channels restricts potential fish use to times of high runoff.

WATERBODY

Waterbody Cathedral Rapids Creek #4Main Drainage Yukon River Tributary to Tanana RiverNPRX 112-5 NPSI 6-197A NPAS 112 NPMP 630.2 AHMP 1338.8USGS Map Reference Tanacross, AK T 19N R 9E Sec. 31

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u>None</u>	<u>59</u>
Summer	<u>None</u>	<u>None</u>	<u>68,69</u>
Fall	<u>None</u>	<u>None</u>	<u>None</u>
Winter	<u>None</u>	<u>None</u>	<u>None</u>

At the proposed pipeline route, Cathedral Rapids Creek is divided into seven channels. The seven channels are actually formed by three drainages that flow northerly from the Alaska Range and subdivide near the proposed pipeline. The channels have been channelized by bulldozers in the vicinity of the Alaska Highway crossings (approximately 300-400 m downstream of the proposed pipeline route) to facilitate flood-stage runoff. The sporadic water flow in these channels restricts potential fish use to times of high runoff.

WATERBODY

Waterbody Cathedral Rapids Creek #5

Main Drainage Yukon River Tributary to Tanana River

NPRX 112-4 NPSI 6-197 NPAS 112 NPMP 630.1 AHMP 1338.9

USGS Map Reference Tanacross, AK T 19N R 9E Sec. 31

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u>None</u>	<u>68,69</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

At the proposed pipeline route, Cathedral Rapids Creek is divided into seven channels. The seven channels are actually formed by three drainages that flow northerly from the Alaska Range and subdivide near the proposed pipeline. The channels have been channelized by bulldozers in the vicinity of the Alaska Highway crossings (approximately 300-400 m downstream of the proposed pipeline route) to facilitate flood-stage runoff. The sporadic water flow in these channels restricts potential fish use to times of high runoff.

WATERBODY

Waterbody Cathedral Rapids Creek #6

Main Drainage Yukon River Tributary to Tanana River

NPRX 112-3 NPSI 6-196 NPAS 112 NPMP 629.9 AHMP 1339.0

USGS Map Reference Tanacross, AK T 19N R 9E Sec. 31

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u>None</u>	<u>2,59,60</u>
Summer	<u>None</u>	<u>None</u>	<u>68</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

At the proposed pipeline route, Cathedral Rapids Creek is divided into seven channels. The seven channels are actually formed by three drainages that flow northerly from the Alaska Range and subdivide near the proposed pipeline. The channels have been channelized by bulldozers in the vicinity of the Alaska Highway crossing (approximately 300-400 m downstream of the proposed pipeline route) to facilitate flood-stage runoff. The sporadic water flow in these channels restricts potential fish use to times of high runoff.

WATERBODY

Waterbody Cathedral Rapids Creek #7Main Drainage Yukon River Tributary to Tanana RiverNPRX 112-2 NPSI 6-195 NPAS 112 NPMP 629.7 AHMP 1339.2USGS Map Reference Tanacross, AK T 19N R 9E Sec. 31

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u>None</u>	<u>59, 60</u>
Summer	<u>None</u>	<u>None</u>	<u>68, 69</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

At the proposed pipeline route, Cathedral Rapids Creek is divided into seven channels. The seven channels are actually formed by three drainages that flow northerly from the Alaska Range and subdivide near the proposed pipeline. The channels have been channelized by bulldozers in the vicinity of the Alaska Highways crossings (approximately 300-400 m downstream of the proposed pipeline route) to facilitate flood-stage runoff. The sporadic water flow in these channels restricts potential fish use to times of high runoff.

WATERBODY

Waterbody Unnamed Creek

Main Drainage Yukon River Tributary to Tanana River

NPRX 112-1 NPSI 6-193 NPAS 112 NPMP 628.9 AHMP 1339.8

USGS Map Reference Tanacross, AK T 19N R 8E Sec. 25

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>*LC,NP,RW</u>	<u>R</u>	<u>54</u>
Summer	<u>*GR,LC,LS,NP,RW</u>	<u>R</u>	<u>2,6,10,69</u>
Fall	<u>None</u>	<u></u>	<u>57</u>
Winter	<u>None</u>	<u>None</u>	<u>55</u>

* See assessment - no fish recorded in immediate vicinity of pipeline.

In the vicinity of the pipeline crossing, Unnamed Creek flows northwesterly through a heavily vegetated, low bog area. Precipitation and runoff in spring 1979 caused ponding at the crossing with no inward or outward exchange of water (Ref. 54). Other surveys in summer and fall have found the area to be dry (Ref. 2, 57 and 69). From the pipeline crossing to 30 m below the Alaska Highway, the stream channel is undefined and flow or seepage intermittent (Refs. 54 and 57). At the Alaska Highway crossing, the wooden culvert is perched (approximately 0.6 m) and would impede fish movement to upstream regions. The above conditions combine to make fish utilization of the stream in areas closely adjacent to the proposed pipeline crossing extremely unlikely.

Approximately 30 m downstream of the highway, Unnamed Creek is transformed into a slough-like backwater of the Tanana River. This slough is turbid and has a mud/silt bottom. It provides good fish habitat whenever water levels of the Tanana River cause inundation and during these periods many species indigenous to the Tanana River are likely to frequent this slough. Lake chub, round whitefish, northern pike, longnose sucker and grayling have been found to utilize this waterbody as a rearing or nursery area during spring and summer (Refs. 6, 10 and 54). Although no northern pike fry have been captured, this slough is considered good spawning habitat for this species. Fish probably enter this slough immediately after breakup but it is highly unlikely that they are able to proceed upstream to the proposed pipeline crossing during any time of year. This backwater area provides no winter habitat for fish (Ref. 55).

WATERBODY

Waterbody Unnamed Creek

Main Drainage Yukon River Tributary to Tanana River

NPRX 111-6 NPSI 6-192.01 NPAS 111 NPMP 628.4 AHMP 1340.5

USGS Map Reference Tanacross, AK T 19N R 8E Sec. 25

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u>None</u>	<u>2,54</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

From above the proposed pipeline crossing downstream to the Alaska Highway, the channel of Unnamed Creek is poorly defined through a spruce and willow forest. Below the Alaska Highway, the channel is narrow (0.3-1.1 m), well-defined and has a steep gradient.

Fish use of this stream near the pipeline crossing is unlikely at any time of the year due to absence of appropriate habitat. The stream channel was dry during 1978 and 1979 spring investigations. In addition, the Alaska Highway culvert is a barrier to upstream fish migration due to a 1.0 m drop at its outfall.

WATERBODY

Waterbody Unnamed Creek

Main Drainage Yukon River Tributary to Tanana River

NPRX 111-5 NPSI 6-192 NPAS 111 NPMP 628.0 AHMP 1340.9

USGS Map Reference Tanacross, AK T 19N R 8E Sec. 24

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u>None</u>	<u>2</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Unnamed Creek is a small stream draining a montane area and flowing into the Tanana River approximately 600 m downstream of the proposed crossing. In the vicinity of the crossing the vegetation is primarily deciduous shrubs and grasses.

No information is available concerning this stream except that it was reported dry on 1 June and 4 June 1978 and is not considered fish habitat (Ref. 2).

WATERBODY

Waterbody Sheep CreekMain Drainage Yukon River Tributary to Tanana RiverNPRX 111-4 NPSI 6-191 NPAS 111 NPMP 626.8-627.0 AHMP 1342.2USGS Map Reference Tanacross, AK T 19N R 8E Sec. 14

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u>None</u>	<u>7,54</u>
Summer	<u>None</u>	<u>None</u>	<u>6,10,68,69</u>
Fall	<u>None</u>	<u>None</u>	<u>8</u>
Winter	<u>None</u>	<u>None</u>	<u>8</u>

Sheep Creek is a small stream (1-2 m wide) that drains a northern portion of the Alaska Range and flows northeast to its confluence with the Tanana River. The water of this intermittently flowing stream is slightly turbid (glacial). Substrate consists primarily of gravel with numerous sand and silt deposits. Downstream of the proposed pipeline crossing, 1-2 m high banks are heavily vegetated with willow and alder. Upstream the floodplain widens to approximately 175 m and substrates are mainly cobble and boulder.

Available data indicate that fish use of Sheep Creek in the pipeline area is minimal or non-existent. A 1979 spring field survey found good fish habitat near the pipeline crossing, but no fish were captured or observed during this investigation (Ref. 54). Other investigators have also failed to document fish use of this stream (Refs. 6, 7, 8, 10, 68 and 69).

WATERBODY

Waterbody Unnamed CreekMain Drainage Yukon River Tributary to Tanana RiverNPRX 111-3 NPSI 6-190 NPAS 111 NPMP 625.4 AHMP 1343.7USGS Map Reference Tanacross, AK T 19N R 8E Sec. 11

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u>None</u>	<u>2,54</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Unnamed Creek flows northeast to the Tanana River through a series of small ponds and areas of low-lying muskeg. The narrow channel, less than 1 m wide, is bordered by low banks vegetated with sedges, willow and spruce. Terrestrial vegetation, including grasses and willows, is abundant within the stream channel which suggests only occasional or intermittent flow. The stream bottom consists primarily of mud with some areas of cobble substrate.

Approximately 90 m upstream of the Alaska Highway the pipeline route bisects a pond approximately 250 m². Sedges are dominant in and around this shallow (0.3 m) standing waterpond. A poorly defined outlet with only seepage flow in the spring makes fish passage into the pond from downstream unlikely (Ref. 54). In addition, the Alaska Highway culvert is perched and has created a 0.3 m vertical drop. This would block or impede upstream fish movements.

Fish use of Unnamed Creek is unlikely year-round due to poor fish habitat, the perched highway culvert and the intermittent nature of this stream (Refs. 2 and 54).

WATERBODY

Waterbody Unnamed Creek

Main Drainage Yukon River Tributary to Tanana River

NPRX 111-2 NPSI 5-189 NPAS 111 NPMP 624.9 AHMP 1344.1

USGS Map Reference Tanacross, AK T 19N R 8E Sec. 2

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u>None</u>	<u>2</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Unnamed Creek is a small stream draining a montane area and flowing into the Tanana River approximately 540 m downstream of the proposed pipeline crossing. The stream is confined to a narrow channel whose banks are vegetated with spruce and deciduous shrubs.

No other information is available concerning this stream except that it was reported dry on 1 June and 4 June 1978 and is not considered fish habitat (Ref. 2).

WATERBODY

Waterbody Unnamed Creek

Main Drainage Yukon River Tributary to Tanana River

NPRX 111-1 NPSI 5-188 NPAS 111 NPMP 623.6 AHMP 1345.2

USGS Map Reference Tanacross, AK T 20N R 8E Sec. 34

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u>None</u>	<u>2</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Unnamed Creek (NPMP 623.6) is a small stream draining low-lying, moist area to the west of the proposed pipeline crossing. At the crossing the stream flows through a marshy area vegetated with sedges, spruce, and deciduous shrubs.

No other information is available concerning this stream except that it was reported dry on 4 June 1978 and is not considered fish habitat (Ref. 2).

WATERBODY

Waterbody Robertson River

Main Drainage Yukon River Tributary to Tanana River

NPRX 110-5 NPSI 5-187 NPAS 110 NPMP 621.2-621.5 AHMP 1347.6

USGS Map Reference Tanacross, AK T 20N R 8E Sec. 23

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>CN,GR,WF</u>	<u>M,R</u>	<u>9,54</u>
Summer	<u>None</u>		<u>6,10</u>
Fall	<u>GR,LC</u>	<u>M,R</u>	<u>8,57,75</u>
Winter	<u>None</u>	<u>None</u>	<u>7,8,9,55,77</u>

The Robertson River is a large braided glacial stream which originates in the Alaska Range and flows northeast into the Tanana River. The waters of the Robertson River are highly turbid during spring and summer but are clear by late fall. High turbidity from glacial silt during summer months had been reported to preclude residence of aquatic life in the Robertson River (Ref. 6); however, recent 1979 investigations indicate that this is not wholly true. The Robertson River has two major clearwater tributaries which are known to contain fish. These feeder streams enter the Robertson approximately 10-13 km above the Alaska Highway and are reported to contain round whitefish, grayling and Dolly Varden (Ref. 6).

The Robertson River is a rearing area for a variety of species in spring and fall (Refs. 54, 57 and 75). Spawning probably does not occur in the main-stem of the Robertson River near the proposed pipeline crossing, but fish likely migrate through the region to and from upstream spawning areas.

Winter fish use in the Robertson River is non-existent as this river provides unsuitable habitat (Refs. 7, 8, 9, 55 and 77). Winter investigations have found water confined to thin lenses in the ice or very narrow fast flowing channels (Ref. 77). These channels are constricted by accumulations of anchor ice that shift and cause overflow water. This continues throughout the winter covering the entire floodplain with aufeis to 2.35 m thick (Ref. 55).

WATERBODY

Waterbody Unnamed Creek

Main Drainage Yukon River Tributary to Tanana River

NPRX 110-4 NPSI 5-186 NPAS 110 NPMP 619.7 AHMP 1349.4

USGS Map Reference Tanacross, AK T 20N R 8E Sec. 14

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u>None</u>	<u>2</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Unnamed Creek is a small stream, 10-150 cm deep and .5 to 3 m wide. Substrate is silt to gravel and riparian vegetation is grass and shrub.

Fisheries data concerning this stream are scant. However, an investigation during June 1978 reported no fish use in this stream due to a total fish block created by the highway culvert.

Unless the status of the highway culvert has changed, fish use of Unnamed Creek is considered low to non-existent throughout the year.

WATERBODY

Waterbody Unnamed Creek

Main Drainage Yukon River Tributary to Tanana River

NPRX 110-3 NPSI 5-185.04 NPAS 110 NPMP 619.5 AHMP 1349.3

USGS Map Reference Tanacross, AK T 20N R 8E Sec. 11

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Unnamed Creek is a small stream draining a small area to the west of the proposed pipeline crossing. The stream flows through a muskeg area in a poorly defined channel. No other information is available on this stream as it has not been surveyed. Due to its apparent small size and limited drainage it is doubtful that this stream provides suitable fish habitat.

WATERBODY

Waterbody Unnamed Creek

Main Drainage Yukon River Tributary to Tanana River

NPRX 110-2 NPSI 5-185.03 NPAS 110 NPMP 618.9 AHMP 1350.1

USGS Map Reference Tanacross, AK T 20N R 8E Sec. 10

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u>None</u>	<u>2,54</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Unnamed Creek is a very small drainage with no defined channel. Its waters seep from a tundra/muskeg area, cross the Alaska Highway and the pipeline route about 80 m downstream from the highway. The only significant concentrations of water were just above and below the Alaska Highway culvert and at the pipeline crossing in spring 1979 (Ref. 54). Flow was intermittent between these locations.

It is unlikely that this drainage in the area of the pipeline route supports fish at any time of year due to poor habitat (Ref. 54). The stream was seined in June 1978 without results (Ref. 2). A perched culvert (1 m drop at outfall) at the Alaska Highway is also a barrier to fish passage.

WATERBODY

Waterbody Unnamed Creek

Main Drainage Yukon River Tributary to Tanana River

NPRX 110-1 NPSI 5-185.02 NPAS 110 NPMP 618.7 AHMP 1350.2

USGS Map Reference Tanacross, AK T 20N R 8E Sec. 10

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u>None</u>	<u>2,54</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Unnamed Creek is a very small drainage which appears to seep from a tundra/muskeg area south of the Alaska Highway. The only body of water found during a 1979 spring survey was a small pool just upstream from the Alaska Highway culvert (Ref. 54). This poorly defined channel is overgrown with spruce and willow and was dry at the pipeline crossing in June 1979 (Ref. 54).

Unnamed Creek does not provide fish habitat and it is extremely unlikely that fish utilize this drainage in the area of the pipeline route at any time of year (Ref. 54). The stream was also considered marginal habitat at the pipeline crossing and was electrofished without result in June 1978 (Ref. 2).

WATERBODY

Waterbody Unnamed Creek

Main Drainage Yukon River Tributary to Tanana River

NPRX 109-2 NPSI 5-185.01 NPAS 109 NPMP 616.8 AHMP 1352.3

USGS Map Reference Tanacross, AK T 21N R 8E Sec. 33

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u>None</u>	<u>2,54</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Unnamed Creek is a small drainage that seeps from a large muskeg area south of the Alaska Highway. Its poorly defined channel disappears not far upstream and downstream from the highway and there is no definable channel at the proposed pipeline crossing. The only significant concentrations of water found during a 1979 spring survey were small pools on either end of the wooden highway culvert (Ref. 54).

Unnamed Creek is not a fish stream in the vicinity of the pipeline route. No fish were observed or captured during surveys conducted during the spring of 1978 or 1979 (Refs. 2 and 54).

WATERBODY

Waterbody Bear Creek

Main Drainage Yukon River Tributary to Tanana River

NPRX 109-1 NPSI 5-185 NPAS 109 NPMP 611.6 AHMP 1357.3

USGS Map Reference Tanacross, AK T 21N R 7E Sec. 11,12

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>GR,CN</u>	<u>M,R,S</u>	<u>10,54,123</u>
Summer	<u>CN,DV,GR,LS</u>	<u>R</u>	<u>6,10</u>
Fall	<u>GR</u>	<u>M,R</u>	<u>57</u>
Winter	<u>None</u>	<u>None</u>	<u>7,8,9,55,73,77</u>

Bear Creek is a glacial stream 6-12 m in width which originates in the Alaska Range. Its main tributary flows from Fish Lake and contributes slightly humic-stained water to the main stem 18 km above the Alaska Highway. The stream bottom is composed primarily of gravel and cobble with some scattered boulders. Benthic periphyton is abundant on these substrates in summer.

At the pipeline crossing, Bear Creek provides good fish habitat and is used by a variety of fish as a spring and fall migration route and a rearing area during the open water period. Adult and young-of-the-year grayling captured in Bear Creek indicate spawning use of this stream (Refs. 54 and 57). Longnose sucker, slimy sculpin, and Dolly Varden have also been captured or observed in Bear Creek throughout the open water season (Refs. 6, 10, 54 and 57).

Winter use of Bear Creek at the pipeline crossing is non-existent. Investigations conducted to date report the stream to be dry during winter (Refs. 7, 8, 9, 55 and 77). The upper reaches of Bear Creek are known to support Dolly Varden and slimy sculpin throughout the winter season (Ref. 9). This suggests year-round flow in that area and subterranean flow in the area of the pipeline crossing.

WATERBODY

Waterbody Chief CreekMain Drainage Tanana River Tributary to Bear CreekNPRX 108-4 NPSI 5-184 NPAS 108 NPMP 610.3 AHMP 1358.6USGS Map Reference Mt. Hayes, AK T 21N R 7E Sec. 2

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>7,54</u>
Summer	<u>GR</u>	<u>R</u>	<u>6,10,60</u>
Fall	<u>None</u>	<u></u>	<u>57</u>
Winter	<u>None</u>	<u>None</u>	<u>8,9</u>

Chief Creek is a small humic-stained stream which drains a portion of Knob Ridge and flows north across the Alaska Highway into Bear Creek. Chief Creek is reported to be fed by an occasional spring (Ref. 10) but depends primarily on surface runoff to sustain its flow. Flow is seasonal and intermittent; extreme fluctuations occur throughout the open water months. The stream was 1.5-5 m wide at the time of the 1979 fall survey and ice was forming in pool areas. The bottom is composed of gravel and silt. Shallow banks (0.2-2 m) are vegetated with willow, alder and grass.

Evidence to date indicates that fish use of Chief Creek is low to non-existent near the proposed pipeline. Although habitat appeared to be fair in 1979 spring and fall investigations, no fish were captured (Ref. 54 and 57). No fish or macroinvertebrates were found during stream surveys in July 1976 (Ref. 6). However, one grayling was caught in the stream in June on 1963 (Ref. 10). The paucity of fish is probably due largely to intermittent flow, a stream characteristic highly unfavorable for continued use through the open water season. Winter use of Chief Creek is non-existent as this stream is dry during this time (Refs. 8 and 9).

WATERBODY

Waterbody Unnamed Creek

Main Drainage Yukon River Tributary to Tanana River

NPRX 108-3 NPSI 5-183 NPAS 108 NPMP 607.1 AHMP 1361.7

USGS Map Reference Mt. Hayes, AK T 22N R 7E Sec. 28 & 29

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>2,54</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Unnamed Creek is a small muskeg drainage which flows east from the proposed pipeline crossing and is crossed by the Alaska Highway before emptying into Dot Lake. The slow-flowing humic-stained water is contained in a channel that rarely exceeds 1.0 m in width. The stream is bordered by tussocks of willow and dwarf birch, *Equisetum*, *Eriophorum* and small spruce. Along the pipeline route and at the Alaska Highway the channel forms a number of ponds up to 1.5 m deep.

Although northern pike and grayling have been reported in Dot Lake (Refs. 10 and 26) and these species could use the lowermost reaches of Unnamed Creek downstream from the Alaska Highway, this stream provides poor fish habitat near the pipeline crossing and fish use in this area is unlikely year-round. No fish were seen or captured during 1979 spring field investigations (Ref. 54) and the Alaska Highway culvert was noted to be a potential barrier to upstream fish movement, especially during periods of low flow (Ref. 54). This stream likely freezes to the bottom and provides no winter habitat for fish.

WATERBODY

Waterbody Unnamed CreekMain Drainage Yukon River Tributary to Tanana RiverNPRX 108-2 NPSI 5-182.01 NPAS 108 NPMP 606.8 AHMP 1362.0USGS Map Reference Mt. Hayes, AK T 22N R 7E Sec. 29

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u>None</u>	<u>2,54</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Unnamed Creek is a small, low-lying muskeg drainage with little or no flow and a few isolated pools near the pipeline corridor. A distinct channel was not visible between the proposed crossing and the highway.

This stream does not support fish in the vicinity of the crossing. Fish access to infrequently ponded water is prevented by the absence of connecting channels between the Tanana and areas upstream near the crossing. Spring 1978 and 1979 investigations (Refs. 2 and 54) substantiate these findings.

WATERBODY

Waterbody Unnamed CreekMain Drainage Yukon River Tributary to Tanana RiverNPRX 108-1 NPSI 5-182 NPAS 108 NPMP 605.8 AHMP 1363.4USGS Map Reference Mt. Hayes, AK T 22N R 7E Sec. 19

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u>None</u>	<u>2</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Unnamed Creek is a shallow narrow (10-20 cm deep and 0.3 m wide) stream with negligible flow. Stream bottom and banks are both vegetated with grasses.

An investigation during June 1978 reported this stream as unlikely fish habitat (Ref. 2). Due to this stream's small size and negligible flow fish use is considered low to non-existent throughout the year.

WATERBODY

Waterbody Unnamed Creek

Main Drainage Yukon River Tributary to Tanana River

NPRX 107-2 NPSI 5-181 NPAS 107 NPMP 604.8 AHMP 1364.4

USGS Map Reference Mt. Hayes, AK T 22N R 6E Sec. 24

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u>None</u>	<u>2,54</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u>None</u>	<u>73</u>

Unnamed Creek is a small (1-4 m wide) stream which forms two large ponds; one 20 m downstream from the pipeline crossing and the other just downstream from the Alaska Highway. These ponds are approximately 350 m² in surface area and 1.5 m deep. Aquatic vegetation is abundant in the ponds as well as the stream channel. Sunken logs and organic debris further contribute to potential fish cover. The presence of a 72" corrugated metal pipe (cmp) and a 48" cmp at the highway may indicate periodically high flow.

Fish use of this stream during the open water period appears to be low to non-existent although habitat was considered good (Ref. 54). Previous fisheries investigations gave similar results (Ref. 2). Fish access to this area may be impeded by log jams and debris downstream of the highway and by perched (0.1 m) culverts at the Alaska Highway (Ref. 54).

Unnamed Creek does not provide any overwintering habitat. Investigations in early November 1979 found the stream to be dry under ice 7-10 cm thick (Ref. 73).

WATERBODY

Waterbody Sam CreekMain Drainage Yukon River Tributary to Tanana RiverNPRX 107-1 NPSI 5-180 NPAS 107 NPMP 603.3 AHMP 1365.9USGS Map Reference Mt. Hayes, AK T 22N R 6E Sec. 14

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u>None</u>	<u>7,54</u>
Summer	<u>None</u>	<u>None</u>	<u>6,10</u>
Fall	<u>None</u>	<u>None</u>	<u>None</u>
Winter	<u>None</u>	<u>None</u>	<u>9,10,55</u>

Sam Creek is a small stream that originates from springs and ponds in a large marsh area north of the Alaska Highway. Sam Creek crosses the Alaska Highway at milepost 1365.9 and then parallels the highway and the Haines Products Pipeline for several miles before emptying into the Tanana River. However, Sam Creek no longer has an active stream channel at the Alaska Highway. Only vague remnants of a previous drainage exist in the pipeline area and there are no drainage structures at the Alaska Highway. Sam Creek was also reported to have a dry stream bed at the Alaska Highway in June 1976 (Ref. 6).

Sam Creek at the proposed pipeline crossing is not a fish stream (Refs. 6, 54 and 55), although grayling, northern pike, round whitefish and longnose sucker are reported further downstream (Refs. 5, 6, 7, 9 and 10).

WATERBODY

Waterbody Unnamed Creek

Main Drainage Tanana River Tributary to Sam Creek

NPRX 106-3 NPSI 5-179 NPAS 106 NPMP 600.1 AHMP 1369.1

USGS Map Reference Mt. Hayes, AK T 22N R 6E Sec. 17

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>*CN,GR</u>	<u>R</u>	<u>54</u>
Summer	<u>*CN,GR,LS,RW</u>	<u>R</u>	<u>6,10</u>
Fall	<u>*CN,GR,RW</u>	<u>R</u>	<u>57</u>
Winter	<u>None</u>	<u>None</u>	<u>55,73</u>

* See assessment - fish species not present in immediate vicinity of pipeline crossing.

Unnamed Creek is a small, humic-stained stream which drains the north face of Knob Ridge and empties into Sam Creek north of the Alaska Highway. Its channel is 1-3 m wide and the bottom is composed primarily of mud and silt. Its banks are steep, 1.5-2.5 m high, and well vegetated. *Equisetum* is common near the water's edge while willow, birch and spruce line the banks. This stream crosses the Alaska Highway through a perched wooden culvert that probably serves as an effective fish block year-round. The spill distance from the bottom of the culvert to the stream surface is 1.0 m.

Between the Alaska Highway and the proposed pipeline crossing Unnamed Creek provides good fish habitat but is not used by fish at any time due to the aforementioned fish block (Refs. 54 and 57). Winter fish use is non-existent as this stream dries up or freezes to bottom substrate at this time (Refs. 55 and 73).

Downstream from the Alaska Highway, the stream is a rearing area for grayling, round whitefish, longnose sucker and slimy sculpin (Refs. 6, 10, 54 and 57). Large numbers of fish were captured in the culvert outfall pool in July of 1976 but no information as to whether these fish were fry, juveniles, or adults was apparently recorded (Ref. 6). In general, little is known about this stream below the Alaska Highway because previous investigations have emphasized only this pool and upstream areas and present investigations were limited to the same area by access restrictions.

WATERBODY

Waterbody Berry Creek

Main Drainage Tanana River Tributary to Johnson Slough

NPRX 106-2 NPSI 5-178 NPAS 106 NPMP 597.9 AHMP 1371.4

USGS Map Reference Mt. Hayes, AK T 22N R 5E Sec. 13

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>CN,GR,LS,RW</u>	<u>M,R,S</u>	<u>54</u>
Summer	<u>BB,CN,DV,GR,LS,RW</u>	<u>R</u>	<u>6,10</u>
Fall	<u>CN,GR,LS</u>	<u>M,R</u>	<u>8,57</u>
Winter	<u>CN,DV</u>	<u>W</u>	<u>8,9,55,77</u>

Berry Creek originates from glaciers behind the Macomb Plateau and flows northerly across the Alaska Highway into Johnson Slough. Fed primarily by springs and summer runoff, the flow of this olive green, slightly turbid stream is seasonal, with little winter flow (Refs. 10 and 55). Berry Creek flows over a cobble, gravel and pebble bottom through an 8-13 m wide channel. The channel is bordered by 1-2 m high banks. Stream bank vegetation includes willow, alder and spruce. The benthic macroinvertebrate fauna of Berry Creek is extremely rich (Ref. 6) and numerous deep pools and shallow riffles provide excellent fish habitat.

Berry Creek provides important fish habitat throughout the open water season and is a rearing area for a number of species (Refs. 6, 10, 54 and 57). The presence of grayling fry observed during a 1979 spring (Ref. 54) survey strongly indicates spawning use of this stream. Longnose sucker may also spawn in Berry Creek (Ref. 57). No evidence of spawning was apparent in early October 1979 (Ref. 57). Berry Creek is also a migration route during spring and fall for species indigenous to the stream.

In 1979, early winter fish habitat was found to be good in the vicinity of the pipeline crossing. Slimy sculpin were observed or captured in each of the small open water areas surveyed (Ref. 77). However, it is suspected that over-wintering in this area deteriorates as winter progresses. During February and March of 1978, attempts to locate water at or downstream of the Alaska Highway bridge were unsuccessful (Ref. 9). Other late winter investigations in March 1979 found that the only water present was confined to fast flowing lenses within the ice column (Ref. 55).

WATERBODY

Waterbody Sears Creek

Main Drainage Tanana River Tributary to Johnson Slough

NPRX 106-1 NPSI 5-177 NPAS 106 NPMP 594.8 AHMP 1374.4

USGS Map Reference Mt. Hayes, AK T 22N R 5E Sec. 16

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>GR,LS</u>	<u>M,R,S</u>	<u>54</u>
Summer	<u>GR</u>	<u>R</u>	<u>6,10</u>
Fall	<u>GR</u>	<u>M,R</u>	<u>57</u>
Winter	<u>None</u>	<u>W</u>	<u>9,55,77</u>

Sears Creek is a small humic-stained stream which flows north from the foothills of the Macomb Plateau to its confluence with Johnson Slough. Channel width varies from 3-5 m. It is a predominantly shallow, slow-flowing stream with gravel substrates in riffle areas and sand, mud and detritus in pools. Banks are 0.5-1.5 m high and are bordered by alder and willow.

The Sears Creek channel contains numerous log jams that may impede fish movement within the stream. A beaver dam built during the summer of 1979 is located about 5 m downstream of the Alaska Highway bridge and appears to be a major obstacle to upstream and downstream fish movement.

Sears Creek is a documented rearing area for grayling and longnose sucker during spring and for grayling during summer and fall. Other fish species such as sculpin, round whitefish and Dolly Varden may use this stream as well, but none has been caught (Refs. 6, 9 and 10). Grayling young-of-the-year were captured during fall 1979 indicating that the stream may be used for spawning in spring (Ref. 57). Minor immigration and emigration probably occurs during spring and fall.

Sears Creek appears to provide suitable winter habitat for fish; however, it is unknown to what extent fish use this habitat. A minnow trap set overnight on 26 February 1978 caught no fish (ref. 9). Overwintering habitat was considered marginal 27 March 1979, due to excessive aufeis depths; however, free water under the aufeis could have been present (Ref. 55). Recent

FISHERIES ASSESSMENT (CONT.)

Sears Creek (continued)

investigations (23-26 November 1979) have identified winter fish habitat near the proposed pipeline crossing as a result of the recently constructed beaver dam. No fish were captured during these investigations but sampling efforts were limited to minnow traps as beaver activity and ice conditions prevented the use of gillnets (Ref. 77). Although data is scant and inconclusive, Sears Creek is believed to provide winter habitat for fish.

WATERBODY

Waterbody Unnamed Creek

Main Drainage Tanana River Tributary to Johnson Slough

NPRX 105-2 NPSI 5-176.01 NPAS 105 NPMP 592.3 AHMP 1377.0

USGS Map Reference Mt. Hayes, AK T 14S R 16E Sec. 24

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u>None</u>	<u>2.54</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Unnamed Creek flows north to Johnson Slough through a narrow (1 m wide) channel bordered by low banks heavily vegetated with overhanging willow. The bottom is mud and detritus with numerous riffle areas of gravel and sand.

Unnamed Creek was dry during 1979 spring investigations and showed no signs of recent flow (Ref. 54). It is likely that this stream contains water only during periods of high spring runoff and fish use during any time of the year is unlikely.

WATERBODY

Waterbody Dry Creek

Main Drainage Tanana River Tributary to Johnson Slough

NPRX 105-1 NPSI 5-176 NPAS 105 NPMP 591.2 AHMP 1378.1

USGS Map Reference Mt. Hayes, AK T 14S R 16E Sec. 23

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u>None</u>	<u>7,54,59,60</u>
Summer	<u>None</u>	<u>None</u>	<u>6,10,69</u>
Fall	<u>None</u>	<u>None</u>	<u>8,9,57</u>
Winter	<u>None</u>	<u>None</u>	<u>9</u>

Dry Creek flows north into Johnson Slough through a 6-15 m wide channel bordered by steep, incised, well-vegetated banks 2-3 m high. The bottom consists primarily of gravel with occasional sand bar deposits. At the proposed pipeline crossing, flow in Dry Creek is intermittent, restricted to those periods of high spring runoff and heavy rain. Dry Creek is reported to flow year-round farther upstream (Ref. 9), and may support a resident population of fish (Ref. 6).

Fish use of Dry Creek in the vicinity of the proposed pipeline is unlikely at any time of year due to the intermittent nature of the stream flow in this area (Refs. 6, 7, 8, 9, 10, 54, 59, 60 and 68).

WATERBODY

Waterbody Johnson River

Main Drainage Yukon River Tributary to Tanana River

NPRX 104-1 NPSI 5-175 NPAS 104 NPMP 588.6-588.8 AHMP 1380.5

USGS Map Reference Mt. Hayes, AK T 14S R 16E Sec. 16

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>54</u>
Summer	<u>None</u>	<u></u>	<u>6,10</u>
Fall	<u>GR,LC,RW</u>	<u>M,R</u>	<u>57</u>
Winter	<u>None</u>	<u>None</u>	<u>9,55,77</u>

The Johnson River is a large, braided, glacial stream originating from the Johnson Glacier in the Alaska Range and flowing northward into the Tanana River. Its waters are highly turbid during summer, moderately turbid during spring and fall, and clear in winter. The stream bottom is primarily gravel while the floodplain is composed of sand and silt. The Johnson River is bounded by steep banks 20-30 m high at the proposed crossing.

Prior to 1979 fall fisheries investigations, fish use of the mainstem of the Johnson River had not been documented despite numerous efforts (Refs. 6, 9, 54 and 55). However, previous surveys had identified feeder streams (5-7 km upstream of the Alaska Highway) as being used by whitefish, grayling and Dolly Varden (Ref. 6). Fall field investigations in 1979 documented fish use in the Johnson River at the proposed pipeline crossing for the first time and later early winter investigations helped to clarify the winter fish use status of this stream.

Fish utilization of the Johnson River during spring appears to be low. No fish were seen or captured during spring fisheries investigations 12 May and 26 June 1979 (Ref. 54). Fish use is also believed to be low during summer months when its glacial waters are extremely swift and turbid. A previous investigator failed to capture fish in July and concluded that its silty waters were not suitable for fish (Ref. 6). The Johnson River is a rearing area during fall for grayling, round whitefish and lake chub (Ref. 57) and a probable migration route during spring and fall for fish moving to and from productive

Johnson River (continued)

feeder streams. Although 1979 late winter investigations indicated the presence of potential overwintering habitat near the pipeline crossing, winter fish use of the Johnson River is believed to be low to non-existent in this area. Results of winter (1979) investigations indicated that winter habitat was poor due to abundant anchor ice and narrow ice-constricted channels which cause high water velocities. In addition, no fish have been captured during the winter period (Refs. 9, 55 and 77).

WATERBODY

Waterbody Little Gerstle River

Main Drainage Yukon River Tributary to Tanana River

NPRX 103-2 NPSI 5-174 NPAS 103 NPMP 581.0 AHMP 1388.4

USGS Map Reference Mt. Hayes, AK T 13S R 15E Sec. 14

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>CN,GR,LS,RW</u>	<u>M,R,S</u>	<u>6,7,10,54</u>
Summer	<u>CN,GR,LS,RW</u>	<u>R</u>	<u>6,7,10</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u>None</u>	<u>8,9,55</u>

The Little Gerstle River is a medium size (8-10 m wide) stream of moderate gradient flowing northeast into the Tanana River. The greenish, glacially-turbid water of this stream flows through an often braided channel bordered by 1 m high sand and gravel banks vegetated with alders and willow. The stream bottom is primarily cobble mixed with areas of sand and gravel. In the area of the proposed pipeline the 100 m wide floodplain is bordered by cottonwood and aspen trees.

The Little Gerstle River is a rearing area for grayling, slimy sculpin, longnose sucker and round whitefish during spring and summer and probably fall, although information regarding fall fish use is unavailable. Dolly Varden are also reported to be present (Refs. 5, 6, 7 and 10) but none has been caught. The Little Gerstle River provides spawning habitat for grayling during spring and serves as a nursery area for grayling young-of-the-year during late spring and summer. The stream does not provide winter habitat for fish (Refs. 9 and 55) and is therefore an important migratory route for indigenous species moving upstream in spring and downstream prior to freeze-up.

WATERBODY

Waterbody Dougherty CreekMain Drainage Yukon River Tributary to Tanana RiverNPRX 103-1 NPSI 5-173 NPAS 103 NPMP 579.0 AHMP 1390.4USGS Map Reference Mt. Hayes, AK T 13S R 15E Sec. 9

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u>None</u>	<u>2</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Dougherty Creek is a small, meandering stream draining a wet, low-lying area to the southwest of the Alaska Highway. The stream enters the Tanana River floodplain approximately 1.7 km northeast of the proposed pipeline crossing. In the vicinity of the crossing the stream flows through a muskeg area with spruce lining the banks.

No other information is available concerning this stream, except that it was preported dry on 31 May and 3 June 1978 and is not considered fish habitat (Ref. 2).

WATERBODY

Waterbody Gerstle River

Main Drainage Yukon River Tributary to Tanana River

NPRX 102-1 NPSI 5-172 NPAS 102 NPMP 576.3-576.7 AHMP 1393.0

USGS Map Reference Mt. Hayes, AK T 13S R 15E Sec. 6

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>7,54</u>
Summer	<u>None</u>	<u></u>	<u>6</u>
Fall	<u>GR</u>	<u>M,R</u>	<u>57</u>
Winter	<u>None</u>	<u>None</u>	<u>8,9,55</u>

The Gerstle River is a large, braided, glacial stream that originates at the Gerstle and Riley creek glaciers, high in the Alaska Range. Although the floodplain is approximately 600 m in width, the glacially-turbid water is confined to multiple small channels with cobble, gravel, sand and silt substrates. The absence of standing vegetation and presence of scattered deadwood within the floodplain is indicative of the magnitude of flooding and ice scouring that occurs. Outside the active floodplain, the primary vegetation consists of poplar and alder intermixed with tundra and spruce forest.

The Gerstle River is a rearing area for grayling in fall (Ref. 57), although fish use of this river appears to be low and may be limited to periods of low water when turbidity is reduced. Grayling were captured during 1979 fall investigations (Ref. 57), but prior studies had not documented fish use of this river (Refs. 6, 7 and 54). Local residents believe that Dolly Varden may also be present periodically (Ref. 6). Upstream tributaries provide poor fish habitat (Ref. 6) and major fish migrations to these areas are unlikely. The Gerstle River is not a wintering area for fish at or near the proposed pipeline crossing (Refs. 8, 9 and 55).

Available data indicate that the Gerstle River near the proposed crossing is of limited importance to fish and only during the open water season.

WATERBODY

Waterbody Sawmill Creek

Main Drainage Tanana River Tributary to Clearwater Creek

NPRX 100-2 NPSI 5-171 NPAS 100 NPMP 565.4 AHMP 1403.9

USGS Map Reference Mt. Hayes, AK T 12S R 13E Sec. 5

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u>None</u>	<u>7,54</u>
Summer	<u>None</u>	<u>None</u>	<u>6,10</u>
Fall	<u>None</u>	<u>None</u>	<u>8</u>
Winter	<u>None</u>	<u>None</u>	<u>9</u>

Sawmill Creek is a small, intermittent stream that flows northeast across the Alaska Highway to its confluence with Clearwater Creek. It is reported to go subterranean some 4 km above the Alaska Highway crossing (Ref. 6). During aerial surveys in 1979, flowing water was found in an area extending from approximately 5 km upstream of the Alaska Highway to a point approximately 18 km farther upstream, near the foothills.

Fish use of Sawmill Creek at the proposed pipeline crossing is probably non-existent due to intermittent flow and resultant unstable habitat. This creek was found to be dry at the pipeline crossing by numerous investigators (Refs. 6, 7, 8, 9, and 54) and appears to contain water only during high spring runoff and heavy rain (Refs. 6 and 54).

WATERBODY

Waterbody Rhoads CreekMain Drainage Sawmill Creek Tributary to Granite CreekNPRX 100-1 NPSI 5-170 NPAS 100 NPMP 561.2 AHMP 1407.6USGS Map Reference Mt. Hayes, AK T 11S R 12E Sec. 26

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u>None</u>	<u>54</u>
Summer	<u>None</u>	<u>None</u>	<u>6,10</u>
Fall	<u>None</u>	<u>None</u>	<u>None</u>
Winter	<u>None</u>	<u>None</u>	<u>9</u>

Rhoads Creek drains the north face of the Granite Mountains and flows northeast across the Alaska Highway and the proposed pipeline crossing to its confluence with Granite Creek. It is a small stream that contains water only during high spring runoff and heavy rains. This stream was not visible except at the highway culvert during aerial surveys conducted in June 1979 (Ref. 54).

Rhoads Creek, at the proposed pipeline crossing, should not be considered a fish stream at any time of year due to the absence of habitat. Several investigations have found the stream to be dry (Refs. 6, 9, 10 and 54).

WATERBODY

Waterbody Granite Creek

Main Drainage Tanana River Tributary to Sawmill Creek

NPRX 099-1 NPSI 5-169 NPAS 99 NPMP 559.4 AHMP 1409.2

USGS Map Reference Mt. Hayes, AK T 11S R 12E Sec. 22

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u>None</u>	<u>7.54</u>
Summer	<u>None</u>	<u>None</u>	<u>6.10</u>
Fall	<u>None</u>	<u>None</u>	<u>None</u>
Winter	<u>None</u>	<u>None</u>	<u>9</u>

Granite Creek drains an area north and west of the Granite Mountains and flows north across the Alaska Highway into Sawmill Creek. Far above the highway (at least 5 km) stream discharge is reported to be considerable. The stream discharge was 5.182 m³/sec some 31 km upstream from the Alaska Highway in July 1976 (Ref. 6). No fish were encountered in the upper reaches of this stream but habitat appeared to be good and food abundant (Ref. 6).

Granite Creek becomes subterranean before reaching the Alaska Highway and fish use of the stream in the pipeline crossing area appears to be low or non-existent throughout the year. In this area the stream is small and intermittent and flows above ground only during spring runoff and after heavy rains. Granite Creek was dry during investigations conducted throughout the open water period (Refs. 6, 7, 10 and 54), as well as during winter (Ref. 9).

WATERBODY

Waterbody Tanana RiverMain Drainage Yukon RiverTributary to Yukon RiverNPRX 096-1 NPSI 5-166 NPAS 96 NPMP 539.2 AHMP NAUSGS Map Reference Big Delta, AK T 9S R 10E Sec. 5

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	BB,CN,CS,DS,GR,HW KS,LC,LS,NP,RW,SS	M,R	11,15,16,30,32,33
Summer	KS	M	11
Fall	BB,BW,CI,DS, GR,HW,KS,LS,NP,SS	M,R,S	11,15,16,30,32,57
Winter	DS,GR,KS,SS,BB	M,S,W	11,15,16,30,32,33,77, 209

The Tanana River is a large braided glacial river formed by the junction of the Chisana and Nabesna Rivers near the Alaska/Canada border. The Tanana River flows northwest into central Alaska where it joins the Yukon River. The proposed pipeline route crosses this river twice. The farthest downstream crossing (NPMP 539.2) is considered here.

The Tanana River at Delta Junction near the proposed pipeline crossing is utilized by a wide variety of fish species the year round. Most species indigenous to the Tanana River are likely to occur in this area but specific documentation regarding presence and timing for each species is often not available. This river is a major migratory route for many fish species including king, coho and chum salmon. Adult salmon generally move into the proposed pipeline area from midsummer (king salmon) through November (coho and chum salmon). Emigration of fry and juvenile salmon generally occur from April through June. The Tanana River near Delta Junction is a major chum salmon spawning area. Other major salmon spawning areas occur upstream in the Goodpaster River (king salmon) and the Delta Clearwater River (chum and coho salmon) and downstream in the lower Delta River (chum and coho salmon). Sub-permafrost springs or aquifers are located throughout this area of the Tanana River and provide excellent overwintering habitat for many species. The Tanana River is one of the largest and most important fish streams crossed by the pipeline.

WATERBODY

Waterbody Tanana River Side Channel

Main Drainage Yukon River Tributary to Tanana River

NPRX 095-1 NPSI 5-165.01 NPAS 95 NPMP 538.7 AHMP NA

USGS Map Reference Big Delta, AK T 8S R 10E Sec. 32

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>BW,LC,LS,RW</u>	<u>M,R</u>	<u>122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

The Tanana River Side Channel is located on the northwest side of the Tanana River. It is very similar to the main channel. Banks vary from gently sloping sand and silt to 2-3 m high actively eroding silt banks. The channel is well defined and the wide (15-20 m) turbid stream is slow-moving. Stream depths range to 2 m and may provide adequate overwintering habitat. During the fall 1980 investigation, one potential overwintering area was appropriately marked for future surveys. Riparian vegetation consists of willow, alder, birch, spruce, and grasses and substrate is fines, silt and mud.

Broad whitefish, lake chub, longnose sucker and round whitefish have been documented in this side channel during fall (Ref. 122). Although fisheries investigations of this channel have not been conducted during other seasons, it is reasonable to assume that species indigenous to the Tanana River (see Tanana River - RX 96-1) during open water occur here as well.

Tanana River Side Channel should be considered an important migration route and rearing area throughout the open water period. Reference 122 suggests that this area may provide winter habitat for some species.

WATERBODY

Waterbody Shaw Creek

Main Drainage Yukon River Tributary to Tanana River

NPRX 093-2 NPSI 5-165 NPAS 93 NPMP 527.4 AHMP NA

USGS Map Reference Big Delta, AK T 7S R 8E Sec. 36

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>GR</u>	<u>M,R,S</u>	<u>11</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>GR,RW</u>	<u>M,R</u>	<u>57</u>
Winter	<u>BB,GR,HW,RW</u>	<u>W</u>	<u>11,55,77</u>

Shaw Creek is a deep, slow-flowing stream approximately 15 m wide shaded by overhanging mature spruce, birch and willow. Bottom substrate is mud, sand and sunken logs and banks are 2-3 m high.

Near the proposed pipeline crossing, Shaw Creek provides good fish habitat for grayling, round whitefish, humpback whitefish and burbot throughout most of the year. Fall investigations found grayling and round whitefish present in this area and one adult male grayling that appeared to have spawned in the spring (Ref. 57). Spring surveys in 1975 indicated that Shaw Creek appears to be a grayling spawning and nursery area (Ref. 11). Shaw Creek is probably an important migration route for the aforementioned species.

Investigations suggest that late winter use of Shaw Creek is marginal (Refs. 11 and 55). In November 1979 several species of fish were caught and winter habitat was determined to be good (Ref. 77). However, fish habitat deteriorates as winter progresses since previous winter studies reported no measurable flow or that the stream tends to freeze solid in winter (Refs. 11 and 55).

Shaw Creek should be considered to be important to fish in all seasons except late winter.

WATERBODY

Waterbody Lower Rosa Creek

Main Drainage Tanana River Tributary to Shaw Creek

NPRX 093-1 NPSI 5-164 NPAS 93 NPMP 526.4 AHMP NA

USGS Map Reference Big Delta, AK T 7S R 8E Sec. 26

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>GR,WF</u>	<u>M,R,S</u>	<u>5,11</u>
Summer	<u>GR</u>		<u>48</u>
Fall	<u>None</u>		<u>122</u>
Winter	<u>None</u>		<u>None</u>

Lower Rosa Creek is a narrow (0.3-2.0 m), humic-stained tributary to Shaw Creek. In the vicinity of the proposed pipeline crossing the slow-flowing water meanders southeasterly in a series of pools and deep channels through wetlands and forest. Riparian vegetation consists of willow, birch and spruce, and stream substrate is mud. Erosion has caused trees along the steep banks to slough into and over the channel.

At the proposed pipeline crossing fish use of Lower Rosa Creek, during fall, was low to non-existent. Although adequate water depth (53-62 cm), flow and good cover are available in this stream, sampling efforts in September 1980 did not yield fish and none were visually observed (Ref. 122). Grayling fry and juveniles and whitefish have been reported downstream of the proposed crossing during spring (Ref. 11). During the open water period fish use of the proposed crossing is considered to be low and winter use non-existent as streams of this size and type tend to be dry or frozen solid in winter.

WATERBODY

Waterbody Rosa Creek #2

Main Drainage Tanana River Tributary to Shaw Creek

NPRX 092-12 NPSI 5-162 NPAS 92 NPMP 521.5 AHMP NA

USGS Map Reference Big Delta, AK T 7S R 8E Sec. 4

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Rosa Creek is a small headwater drainage that flows southeast to its confluence with Shaw Creek. Rosa Creek upstream from crossing #2 provides poor habitat for fish. The limited flow and poorly defined stream channel create numerous fish blocks which impede fish movement into this area except during periods of very high runoff (Ref. 57). No fish were captured in this area in fall 1979 (Ref. 57).

Site specific information for the present crossing is not available. Winter use is likely as streams of this size and type tend to be dry or freeze solid in winter.

Winter use is likely as streams of this size and type tend to be dry or freeze solid in winter.

WATERBODY

Waterbody Rosa Creek #3Main Drainage Tanana River Tributary to Shaw CreekNPRX 092-11 NPSI 5-161.09 NPAS 92 NPMP 521.4 AHMP NAUSGS Map Reference Big Delta, AK T 6S R 8E Sec. 33

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>57</u>
Winter	<u>None</u>	<u>None</u>	<u>55</u>

Rosa Creek is a small headwater drainage that flows southeast to its confluence with Shaw Creek. Rosa Creek upstream from crossing #3 provides very poor habitat for fish. The limited flow and poorly defined stream channel create numerous fish blocks which impede fish movement into this area except during periods of very high runoff (Ref. 57). During March 1979, this small drainage was found to be dry or completely frozen (Ref. 55) and no fish were captured in this area in fall of the same year (Ref. 57).

WATERBODY

Waterbody Rosa Creek #4

Main Drainage Tanana River Tributary to Shaw Creek

NPRX 092-10 NPSI 5-161.08 NPAS 92 NPMP 520.4 AHMP NA

USGS Map Reference Big Delta, AK T 6S R 8E Sec. 32

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u>None</u>	<u>55</u>

Rosa Creek is a small headwater drainage that flows southeast to its confluence with Shaw Creek. Downstream of crossing #4 the small channel repeatedly splits and is lost where the flow percolates through tundra and bog areas.

The upper reaches of Rosa Creek near crossing #4 provide poor habitat for fish and available evidence indicates that this crossing is probably inaccessible to fish. Limited flow and numerous fish blocks would hinder fish movement up to Rosa Creek #4 except possibly during periods of very high runoff or snow melt (Ref. 57). During winter surveys in March 1979 this small drainage was found to be dry or completely frozen downstream from crossing #4 (Ref. 55).

WATERBODY

Waterbody Rosa Creek #5

Main Drainage Tanana River Tributary to Shaw Creek

NPRX 092-9 NPSI 5-161.07 NPAS 92 NPMP 520.1 AHMP NA

USGS Map Reference Big Delta, AK T 6S R 8E Sec. 29

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Rosa Creek flows southeast from crossing #5 to its confluence with Shaw Creek. Downstream of the present crossing the poorly distinguished channel splits repeatedly and is lost amongst the tundra and bog vegetation through which it percolates.

The upper reaches of Rosa Creek provide poor to non-existent fish habitat. Available evidence indicates that this crossing is inaccessible to fish. Limited flow and numerous fish blocks hinder fish movement up to a location approximately 1.5 km downstream from crossing #5 except during periods of very high runoff or snow melt (Ref. 57). Rosa Creek #5 provides no fish habitat in winter, as the stream was found to be dry or frozen solid at two locations downstream from crossing #5 during winter surveys in March 1979 (Ref. 55).

WATERBODY

Waterbody Rosa Creek #6

Main Drainage Tanana River Tributary to Shaw Creek

NPRX 092-8 NPSI 5-161.06 NPAS 92 NPMP 519.9 AHMP NA

USGS Map Reference Big Delta, AK T 6S R 8E Sec. 29

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Rosa Creek flows southeast from crossing #6 to its confluence with Shaw Creek. Downstream of the present crossing the poorly distinguished channel splits repeatedly and is lost among the tundra and bog vegetation through which it percolates.

The upper reaches of Rosa Creek provide poor to non-existent fish habitat. Available evidence indicates that this crossing #6 is inaccessible to fish. Limited flow and numerous fish blocks hinder fish movement up to a location approximately 2 km downstream from crossing #6 except during periods of very high runoff or snow melt (Ref. 57). Rosa Creek #6 provides no fish habitat in winter, as the stream was found to be dry or frozen solid at two locations downstream from crossing #6 during winter surveys in March 1979 (Ref. 55).

WATERBODY

Waterbody East Fork Minton Creek #6Main Drainage Salcha River Tributary to McCoy CreekNPRX 092-7 NPSI 5-161.05 NPAS 92 NPMP 518.7 AHMP NAUSGS Map Reference Big Delta, AK T 6S R 8E Sec. 19

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u>None</u>	<u>54</u>
Summer	<u>None</u>		<u>11</u>
Fall	<u>None</u>	<u>None</u>	<u>57</u>
Winter	<u>None</u>	<u>None</u>	<u>55,66</u>

East Fork Minton Creek is a small clearwater stream that flows through tundra and muskeg areas and is overgrown by willow. Flow in this headwater drainage is substantially influenced by fluctuations in runoff and/or snow melt. Crossing #6 is one of the six crossings of the East Fork and is located in the upper portion of the stream.

In the vicinity of crossing #6, East Fork Minton Creek provides little or no fish habitat throughout the open water period and is frozen solid through the winter (Refs. 55 and 66). Evidence from spring and fall surveys in 1979 suggests that low flow limits both access to and fish habitat in this section of the stream (Refs. 54 and 57). Fish passage across the TAPS workpad was not required above crossing #5 which is about 0.5 km downstream (Ref. 11). This section of the stream is not considered to be important to fish.

WATERBODY

Waterbody East Fork Minton Creek #5

Main Drainage Salcha River Tributary to McCoy Creek

NPRX 092-6 NPSI 5-161.04 NPAS 92 NPMP 518.3 AHMP NA

USGS Map Reference Big Delta, AK T 6S R 8E Sec. 19

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u>None</u>	<u>54</u>
Summer	<u>None</u>	<u></u>	<u>11</u>
Fall	<u>None</u>	<u>None</u>	<u>57</u>
Winter	<u>None</u>	<u>None</u>	<u>55,66</u>

East Fork Minton Creek is a clearwater stream that flows through tundra and muskeg areas and is heavily overgrown by willows. Flow in this headwater drainage is substantially influenced by runoff and/or snow melt. Crossing #5 is one of six crossings of the East Fork and occurs in the upper portion of the stream.

In the vicinity of crossing #5, East Fork Minton Creek provides little or no fish habitat. Evidence from spring and fall surveys in 1979 suggests that fish access to this area and the possibility of habitat are limited by the low flow (Refs. 54 and 57). Winter surveys found this stream frozen to the bottom (Refs. 55 and 66). Fish passage across the TAPS workpad was required up to crossing #5 but not in upper portions of the stream (Ref. 11). This section of the stream is not considered to be important to fish.

WATERBODY

Waterbody South Fork Minton CreekMain Drainage Salcha River Tributary to McCoy CreekNPRX 092-5 NPSI 5-161.032 NPAS 92 NPMP 518.2 AHMP NAUSGS Map Reference Big Delta, AK T 6S R 7E Sec. 19

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u>None</u>	<u>54</u>
Summer	<u>None</u>	<u></u>	<u>11</u>
Fall	<u>None</u>	<u>None</u>	<u>57</u>
Winter	<u>None</u>	<u>None</u>	<u>55,66</u>

South Fork Minton Creek is a clearwater stream that flows through tundra and muskeg areas and is heavily overgrown by willows. Flow in this headwater drainage is substantially influenced by runoff and/or snow melt.

In the vicinity of the proposed crossing, South Fork Minton Creek provides little or no fish habitat. Evidence from spring and fall surveys in 1979 suggests that fish access to this area and the possibility of habitat are limited by the low flow (Refs. 54 and 57). Winter surveys found this stream frozen to the bottom (Refs. 55 and 66). This section of the stream is not considered to be important to fish.

WATERBODY

Waterbody South Fork Minton Creek

Main Drainage Salcha River Tributary to McCoy Creek

NPRX 092-4 NPSI 5-161.031 NPAS 92 NPMP 518.0 AHMP NA

USGS Map Reference Big Delta, AK T 6S R 8E Sec. 19

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u>None</u>	<u>54</u>
Summer	<u>None</u>	<u></u>	<u>11</u>
Fall	<u>None</u>	<u>None</u>	<u>57</u>
Winter	<u>None</u>	<u>None</u>	<u>55,66</u>

South Fork Minton Creek is a clearwater stream that flows through tundra and muskeg areas and is heavily overgrown by willows. Flow in this headwater drainage is substantially influenced by runoff and/or snow melt.

In the vicinity of the proposed crossing, South Fork Minton Creek provides little or no fish habitat. Evidence from spring and fall surveys in 1979 suggests that fish access to this area and the possibility of habitat are limited by the low flow (Refs. 54 and 57). Winter surveys found this stream frozen to the bottom (Refs. 55 and 66). This section of the stream is not considered to be important to fish.

WATERBODY

Waterbody East Fork Minton Creek #4

Main Drainage Salcha River Tributary to McCoy Creek

NPRX 092-3 NPSI 5-161.03 NPAS 92 NPMP 517.8 AHMP NA

USGS Map Reference Big Delta, AK T 6S R 7E Sec. 24

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u>None</u>	<u>54</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u>None</u>	<u>55,66</u>

Crossing #4 of East Fork Minton Creek is located in the upstream region of the stream. In this area, the stream is small (1-2.5 m wide) and flows over a gravel and sand substrate. Flow is largely dependent upon runoff and/or snow melt.

In the vicinity of crossing #4, East Fork Minton Creek provides little fish habitat and fish access to the region would be possible only during periods of high runoff (Ref. 54). No fish were seen or captured during 1979 spring investigations (Ref. 54). Winter conditions preclude fish use at that time, as 1979 winter surveys found the stream frozen to the bottom (Refs. 55 and 66).

WATERBODY

Waterbody East Fork Minton Creek #3

Main Drainage Salcha River Tributary to McCoy Creek

NPRX 092-2 NPSI 5-161.02 NPAS 92 NPMP 517.4 AHMP NA

USGS Map Reference Big Delta, AK T 6S R 7E Sec. 24

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u>None</u>	<u>55,66</u>

East Fork Minton Creek near crossing #3 is a small stream that flows through tundra and muskeg areas and is characterized by incised banks overgrown with willow. Flow in this clearwater stream is strongly influenced by runoff and fluctuates throughout the open water period.

The vicinity of East Fork Minton Creek #3 provides little or no fish habitat year-round. Although fish use is known to occur (Refs. 11 and 54), the upstream portions of East Fork Minton Creek have little or no fish use. It is possible that fish occur near crossing #3, but such use is likely to be infrequent and restricted to periods of high runoff. Winter conditions preclude fish use of the stream near crossing #3 since the stream freezes to the bottom (Refs. 55 and 66). This region of South Fork Minton Creek is considered to be of minimum importance to fish.

WATERBODY

Waterbody East Fork Minton Creek #2

Main Drainage Salcha River Tributary to McCoy Creek

NPRX 092-1 NPSI 5-161.01 NPAS 92 NPMP 517.1 AHMP NA

USGS Map Reference Big Delta, AK T 6S R 7E Sec. 13

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u>None</u>	<u>55,66</u>

East Fork Minton Creek is a headwater drainage that is crossed by the proposed pipeline route and then joins South Fork Minton Creek. This small stream drains a spruce/muskeg area; the flow fluctuates as a function of snow melt or runoff.

This stream provides little or no fish habitat throughout the open water period and is frozen solid through the winter (Refs. 55 and 66). The small size of the stream would prevent fish utilization except possibly during extended periods of high run-off. Previous studies have not reported fish in the upper portions of East Fork Minton Creek where the present stream is located. This stream is not considered to be important to fish.

WATERBODY

Waterbody East Fork Minton Creek #1

Main Drainage Salcha River Tributary to McCoy Creek

NPRX 091-6 NPSI 5-161 NPAS 91 NPMP 517.0 AHMP NA

USGS Map Reference Big Delta, AK T 6S R 7E Sec. 13

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>121</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

East Fork Minton Creek #1 is located approximately 750 m upstream of the confluence of the South and North forks of Minton Creek. This stream is small (0.5-1.5 m wide) and has heavily incised banks vegetated with willow and stunted spruce. Although site specific information for this crossing is scant, this area is probably used by grayling in the open water period. Spring surveys in 1979 found grayling (Ref. 55) and previous studies failed to find fish in September 1979, although suitable habitat existed at that time (Ref. 57). Winter investigations in 1979 found this stream frozen to the bottom indicating the absence of fish habitat throughout the winter (Ref. 55).

WATERBODY

Waterbody West Fork Minton Creek #1

Main Drainage Salcha River Tributary to McCoy Creek

NPRX 091-5 NPSI 5-160.02 NPAS 91 NPMP 516.0 AHMP NA

USGS Map Reference Big Delta, AK T 6S R 7E Sec. 14

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u>None</u>	<u>54</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u>None</u>	<u>55,76</u>

The stream channel of North Fork Minton Creek is heavily overgrown with willow and stunted spruce; substrate is predominantly mud and silt.

Fish use near this crossing is believed to be non-existent year-round. Grayling have been reported in North Fork Minton Creek approximately 1.4 km downstream of West Fork Minton Creek #1 (Ref. 11) but it is extremely unlikely that fish are able to ascend beyond that point; also a number of fish blocks (waterfalls and brush piles) are present a short distance upstream from North Fork Minton Creek (Ref. 54). Winter investigations indicate that this stream provides no winter habitat for fish (Ref. 55).

WATERBODY

Waterbody West Fork Minton Creek #2Main Drainage Salcha River Tributary to McCoy CreekNPRX 091-4 NPSI 5-161 NPAS 91 NPMP 515.5 AHMP NAUSGS Map Reference Big Delta, AK T 6S R 7E Sec. 14

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u>None</u>	<u>54</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u>None</u>	<u>55,76</u>

In the vicinity of the proposed crossing West Fork Minton Creek #2 is small, braided and heavily overgrown with willow and stunted spruce. The substrate is predominantly mud and silt where the channel is visible.

Fish use of this stream is believed to be non-existent year-round in the vicinity of crossing #2. Downstream of this crossing, fish access is blocked by a number of waterfalls and brush piles which prevent upstream fish movement. Late winter investigations in March 1979 found West Fork Minton Creek frozen to the bottom (Ref. 55).

WATERBODY

Waterbody Gold Run CreekMain Drainage Salcha River Tributary to McCoy CreekNPRX 091-3 NPSI 5-160 NPAS 91 NPMP 514.3 AHMP NAUSGS Map Reference Big Delta, AK T 6S R 7E Sec. 3

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u>None</u>	<u>54</u>
Summer	<u>None</u>	<u>None</u>	<u>None</u>
Fall	<u>None</u>	<u>None</u>	<u>11</u>
Winter	<u>None</u>	<u>None</u>	<u>55</u>

Gold Run Creek at the proposed pipeline crossing is a small tundra stream 0.5-1.1 m wide. Stream substrate consists primarily of mud with submerged logs and debris. Log jams extend 0.3-0.4 m out of the water, thereby creating fish barriers.

Fish use of Gold Run Creek at the TAPS workpad crossing is non-existent year-round. Natural fish barriers and high stream velocity provide poor fish habitat and impede movement of fish to this area (Ref. 54). Grayling were caught 80 m below the crossing in September 1975 (Ref. 11). Winter surveys in 1979 indicate that Gold Run Creek does not provide suitable winter fish habitat as it freezes to the bottom (Ref. 55).

WATERBODY

Waterbody Small Creek

Main Drainage Salcha River Tributary to McCoy Creek

NPRX 091-2 NPSI 5-159.02 NPAS 91 NPMP 512.9 AHMP NA

USGS Map Reference Big Delta, AK T 6S R 7E Sec. 4

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u>None</u>	<u>54</u>
Summer	<u>None</u>	<u>None</u>	<u>None</u>
Fall	<u>None</u>	<u>None</u>	<u>11.57</u>
Winter	<u>None</u>	<u>None</u>	<u>None</u>

Small Creek is a narrow stream 0.4-0.6 m in width with a sand, cobble and gravel substrate. This proposed crossing is located in a high elevation region of Small Creek where stream gradient is steep. Waterfalls 0.3-0.4 m high are common in this area. Water velocities varied from an estimated 1-1.5 m³/sec between waterfalls in June 1979 (Ref. 54). Incised banks were generally 1.5-2.5 m high and covered with willow and birch.

Small Creek does not provide good fish habitat during the open water season due to waterfalls, high velocity water and log jams common in the crossing area. Electrofishing efforts during 1979 spring and 1975 and 1979 fall surveys did not detect fish in this stream (Ref. 11, 54 and 57). Although winter investigations have not been conducted, this stream probably dries up or freezes to the bottom substrate during this period.

WATERBODY

Waterbody Tributary to Small Creek

Main Drainage McCoy Creek Tributary to Small Creek

NPRX 091-1 NPSI 5-159.01 NPAS 91 NPMP 512.3 AHMP NA

USGS Map Reference Big Delta, AK T 6S R 7E Sec. 5

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u>None</u>	<u>54</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

This unnamed stream was not visible from the air or ground at the proposed pipeline crossing during 1979 spring surveys (Ref. 54). This crossing is approximately 0.3 km downstream of the drainage origin at an elevation of 400 m. This stream does not offer fish habitat at the crossing at any time of year.

WATERBODY

Waterbody Redmond Creek

Main Drainage Tanana River Tributary to Salcha River

NPRX 090-1 NPSI 5-159 NPAS 90 NPMP 507.3 AHMP NA

USGS Map Reference Big Delta, AK T 5S R 6E Sec. 22

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>GR</u>	<u>M,R,S</u>	<u>54</u>
Summer	<u>BB,RW</u>	<u>R</u>	<u>25</u>
Fall	<u>GR</u>	<u>M,R</u>	<u>11,57</u>
Winter	<u>None</u>	<u>None</u>	<u>25,55,77</u>

Redmond Creek is a meandering stream which flows into the Salcha River. The channel width varies from 3-6 m and has a silt, mud and gravel substrate. This stream has a good pool:riffle ratio and pools are deep, providing good cover for fish.

In the vicinity of the proposed pipeline crossing Redmond Creek provides important habitat to several fish species during the open water period. Burbot, grayling and round whitefish use this stream as a rearing area (Refs. 25, 54, and 57). Adult (including a male that had recently spawned) and juvenile grayling found during spring 1979 (Ref. 54) and young-of-the-year were captured during the fall of 1979 (Ref. 57). This indicates that Redmond Creek is a spawning area for grayling. This stream is also reported to support spawning salmon in the fall (Ref. 11) but no salmon were found during 1979 fall surveys (Ref. 57). During the same survey a beaver dam was found to completely block Redmond Creek approximately 200 m upstream from its confluence with the Salcha River (Ref. 57). The permanency of the dam is unknown; however, it is an effective fish block to fish movement to and from the Salcha River.

Winter fish habitat in Redmond Creek is marginal and fish use at this time probably does not occur. The stream was found intermittently frozen to the bottom during 1974 and 1979 winter investigations and where free water was found, no flow could be detected; no fish were captured or observed (Refs. 25, 55 and 77).

Waterbody Tributary to the Salcha RiverMain Drainage Tanana River Tributary to Salcha RiverNPRX 089-3 NPSI 4-158.03 NPAS 89 NPMP 504.5 AHMP NAUSGS Map Reference Big Delta, AK T 5S R 6E Sec. 18

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u>None</u>	<u>11,54</u>
Summer	<u>None</u>	<u>None</u>	<u>None</u>
Fall	<u>None</u>	<u>None</u>	<u>None</u>
Winter	<u>None</u>	<u>None</u>	<u>None</u>

Unnamed Tributary to the Salcha River is an old highwater channel which has been dry for many years. The Salcha River has migrated further to the west at this site which would reduce the possibility of this drainage being flooded. At the confluence with the Salcha River, a 1.5m high cut bank would prevent fish from moving upstream. This area does not provide fish habitat (Ref. 54).

WATERBODY

Waterbody Third Slough

Main Drainage Tanana River Tributary to Salcha River

NPRX 089-2 NPSI 4-158.02 NPAS 89 NPMP 503.9 AHMP NA

USGS Map Reference Big Delta, AK T 5S R 5E Sec. 13

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Third Slough is an old, unused channel of the Salcha River that cuts through a large oxbow south of the proposed pipeline route. The channel appears to be dry at the TAPS crossing. It is doubtful if this waterbody can be considered good fish habitat in the vicinity of the proposed crossing.

Waterbody Salcha River

Main Drainage Yukon River Tributary to Tanana River

NPRX 089-1 NPSI 4-158 NPAS 89 NPMP 503.5 AHMP NA

USGS Map Reference Big Delta, AK T 5S R 5E Sec. 13

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>AL,CN,DS,GR,KS,LS</u>	<u>M,R,S</u>	<u>14,25,32,35</u>
Summer	<u>BB,CN,DS,GR,KS,RW,SB</u>	<u>M,R,S</u>	<u>11,14,25,32,35,38,123</u>
Fall	<u>CN,DS,GR,KS,RW</u>	<u>R,S</u>	<u>14,25,32</u>
Winter	<u>BB,DS,KS</u>	<u>S,W</u>	<u>25,32,35</u>

The Salcha River originates in the Tanana Hills approximately 135 km east of Fairbanks and flows 200 km southwest to the Tanana River 55 km southeast of Fairbanks. This braided river forms a single channel at the pipeline crossing and is 30-60 m wide and 1-2 m deep. The river bottom is cobble and gravel with some sand and silt. The stream banks are vegetated with spruce, birch, willows and cottonwood (Refs. 11 and 38).

The Salcha River is important fish habitat for a wide variety of fish species. This river is particularly important to king and chum salmon and supports the largest known spawning populations of these salmon species in the Tanana River drainage. The average annual escapement into the Salcha River is approximately 1000 king salmon and 8000 chum salmon (Refs. 14 and 32). King salmon enter the Salcha beginning in early July and spawn through July and August throughout the lower 120 km of the river (Refs. 24 and 32). Most king salmon (82%) spawn upstream of the pipeline crossings; however, redds have been found at the crossing and in downstream regions (Refs. 14 and 32). King salmon emerge from the natal gravels in April and May, overwinter in the river, and emigrate the following spring during May and early June (Refs. 14, 25, 32 and 35). Chum salmon enter the Salcha in late July and Caribou Creek from August to mid-September. Although chum salmon spawning occurs downstream of the pipeline crossing, most (97%) occurs in upstream regions (Refs. 14 and 32). Chum salmon emigrate soon after emergence from gravel in May (Refs. 25, 32 and 35).

Salcha River (continued)

Grayling are found throughout the Salcha River during open water periods and utilize all the main tributaries and the main river (Ref. 25) for spring spawning. Burbot and round whitefish are found throughout the lower reaches of the Salcha River. Burbot spawning occurs in winter under the ice (Ref. 25). Round whitefish also are reported to spawn in the river (Ref. 25).

Arctic lamprey, slimy sculpin, longnose sucker, northern pike, and stickleback are also known to be present in the river during the open water periods but, the extent to which these species use the Salcha is not well understood or documented.

The Salcha River provides a major migration route for fish movement to and from tributaries of the river and in the mainstem.

WATERBODY

Waterbody Two-Nineteen Creek

Main Drainage Tanana River Tributary to Little Salcha River

NPRX 088-4 NPSI 4-157.01 NPAS 88 NPMP 499.8 AHMP NA

USGS Map Reference Big Delta, AK T 5S R 5E Sec. 4

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>11,54</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Two-Nineteen Creek is a small beaded tundra stream 0.5-2 m in width and 0-15 cm in depth. Its highly stained water flows over unstable mud and sand substrates. The tundra banks vary from 0.5 to 1.5 m in height and are occasionally severely incised. Predominant vegetation includes dwarf spruce and willow intermixed with some birch.

Fish use in the vicinity of the pipeline crossing is unlikely at any time of year due to poor fish habitat. No fish were caught in this area during a 1979 spring survey (Ref. 54). Downstream areas provide fish habitat since grayling have been reported to be present in downstream reaches. Although no studies have been performed in winter, habitat at that time is very unlikely or non-existent since the stream probably freezes to the bottom.

WATERBODY

Waterbody Little Salcha River

Main Drainage Yukon River Tributary to Tanana River

NPRX 088-3 NPSI 4-157 NPAS 88 NPMP 498.2 AHMP NA

USGS Map Reference Big Delta, AK T 4E R 5S Sec. 32

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>GR</u>	<u>M.R.S</u>	<u>54,83</u>
Summer	<u>GR</u>	<u>R</u>	<u>11,30</u>
Fall	<u>CN,GR</u>	<u>M.R</u>	<u>30,57</u>
Winter	<u>None</u>		<u>55,77</u>

Little Salcha River is a bog-fed stream of variable width (4-8 m) and depth (0.1-2 m). During the summer, its waters are stained red/brown from leachates of surrounding tundra and muskeg. Viewed from the air, the stream is a series of alternating circular pools and narrower straight riffles. Substrate is gravel and sand in fast water and mud in pool or slow water areas. Banks are moderately high (1.8-2.4 m) and are heavily wooded with alder and spruce in the area of the pipeline crossing.

In the vicinity of the proposed pipeline crossing, the Little Salcha River provides important rearing habitat for grayling and slimy sculpin and possibly other species throughout the open water season (Refs. 11, 30, 54, 57, and 83). Grayling spawning has also been documented in this stream (Ref. 83). Migration undoubtedly occurs as fish move to and from wintering area in spring and fall (Refs. 54, 57 and 83).

Surveys conducted in 1979 found that suitable winter fish habitat exists near the pipeline crossing but no fish were observed or captured (Refs. 55 and 77). Winter fish use of the Little Salcha River remains unknown. Previous studies conducted in 1953 by U.S. Fish and Wildlife Service reported chum salmon in this stream (Ref. 81). It is unlikely, however, that they move upstream as far as the proposed crossing.

Waterbody Tributary to Little Salcha RiverMain Drainage Tanana RiverTributary to Little Salcha RiverNPRX 088-2NPSI 4-156.05NPAS 88NPMP 497.3AHMP NAUSGS Map Reference Big Delta, AKT 4SR 5ESec. 30

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>11,54</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

The Tributary to the Little Salcha River is a small poorly-defined stream with a width of 0.1-0.5 m near the proposed pipeline crossing. Stream flow was negligible in June 1979 (Ref. 54), which indicates that this drainage may dry up frequently. Where visible, substrate is mud, sand and some gravel (near the TAPS workpad). This tributary is intermittent and disappears into bogs and tundra which would impede fish passage. The stream is considered to be poor fish habitat and fish utilization non-existent (Ref. 54).

Reference 11 indicates that areas further downstream contain grayling but that these fish are not found as far upstream as the pipeline route.

WATERBODY

Waterbody Tributary to Million Dollar Creek

Main Drainage Tanana River Tributary to French Creek

NPRX 088-1 NPSI 4-156.04 NPAS 88 NPMP 495.7 AHMP NA

USGS Map Reference Big Delta, AK T 4S R 4E Sec. 24

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u>None</u>	<u>11,54</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Tributary to Million Dollar Creek is a shallow, muddy stream with a poorly defined stream channel near the proposed crossing. This drainage frequently disappears into bogs and willow thickets which would impede fish movements during dry years.

Tributary to Million Dollar Creek is poor fish habitat due to its limited flow, the absence of defined channels in many locations, and unstable substrate. No fish were caught or seen during a 1979 spring survey (Ref. 54). Fish use, if any, in this stream would probably occur during high water and very infrequently. Department of Fish and Game personnel recommended removal of this creek from the fish stream list (8 June 1979, Ref. 31).

WATERBODY

Waterbody Million Dollar Creek

Main Drainage Tanana River Tributary to French Creek

NPRX 087-2 NPSI 4-156.03 NPAS 87 NPMP 493.4 AHMP NA

USGS Map Reference Big Delta, AK T 4S R 4E Sec. 11

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>CN,GR</u>	<u>M,R,S</u>	<u>30,31</u>
Summer	<u>GR</u>	<u>R</u>	<u>11,30</u>
Fall	<u>None</u>		<u>None</u>
Winter	<u>None</u>	<u>None</u>	<u>55</u>

Million Dollar Creek flows through a muskeg area and is bordered by dense willows and occasional stunted spruce. In the proximity of the TAPS workpad the stream has been channelized for approximately 50 meters.

Fish use probably occurs from breakup to freeze-up in the vicinity of the proposed crossing. During spring this stream is used as a migration route and for grayling spawning (Refs. 30 and 31). Slimy sculpin young-of-the-year were captures in Million Dollar Creek approximately 2 km downstream of the present crossing in fall (Ref. 57), indicating that this species also spawns in the stream. The lack of winter fish habitat (Ref. 55) suggests fall emigration of fish prior to freeze-up.

WATERBODY

Waterbody French Creek

Main Drainage Tanana River Tributary to Moose Creek

NPRX 087-1 NPSI 4-155 NPAS 87 NPMP 489.9 AHMP NA

USGS Map Reference Big Delta, AK T 3S R 4E Sec. 34

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED *	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>GR</u>	<u>R</u>	<u>11,38</u>
Fall	<u>CN</u>	<u>M,R</u>	<u>31,57</u>
Winter	<u>None</u>	<u>None</u>	<u>55,77</u>

* See assessment - additional species present, but site specific data are lacking.

French Creek approximately 2 km upstream of the present crossing is a narrow (0.5-1.1 m) tundra stream with depths ranging from 10-45 cm and occasionally deeper pools to 150 cm. The stream drains a muskeg/bog area and has a mud and detritus substrate. Grassy banks (0.1-3 m high) are bordered by willows, dwarf birch and scattered stands of spruce.

Fish use of French Creek very likely occurs from breakup to freeze-up, but site specific data for particular crossings are often lacking. Migration into French Creek probably occurs during or shortly after breakup. Young-of-the-year grayling and slimy sculpin have been found in French Creek which indicates that they probably spawn in the stream (Refs. 19 and 57). Rearing of these species continues until prior to freeze-up, at which time emigration occurs. Whitefish and northern pike also occur in the stream (Ref. 11), but no site specific information is available for these species. Winter fish use of French Creek, in general, is thought to be low to non-existent due to limited flow and low dissolved oxygen concentrations (Refs. 55 and 77). French Creek should be considered important to fish throughout the open water season.

WATERBODY

Waterbody Knokanpeover Creek

Main Drainage Tanana River Tributary to French Creek

NPRX 086-5 NPSI 4-154 NPAS 86 NPMP 487.5 AHMP NA

USGS Map Reference Fairbanks, AK T 3S R 4E Sec. 20

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>GR</u>	<u>M,R,S</u>	<u>30,31</u>
Summer	<u>GR</u>	<u>R</u>	<u>11,30</u>
Fall	<u>GR</u>	<u>M,R</u>	<u>57</u>
Winter	<u>None</u>	<u>None</u>	<u>55</u>

Knokanpeover Creek is a small stream (3-5 m wide) with depths to 150 cm. Its stained waters flow over firm sand and gravel substrate and through a series of pools and riffles. Numerous large trees which have fallen into the creek provide excellent cover for fish. Streamside vegetation consists of large mature spruce and birch among weed and willows.

Knokanpeover Creek is a grayling spawning stream and provides habitat for rearing grayling throughout the open water period. Since this stream provides no overwintering habitat (Ref. 55), major grayling migrations must occur in spring and fall. Other fish species may be present in this stream but none has been recorded.

WATERBODY

Waterbody Tributary to French Creek

Main Drainage Moose Creek Tributary to French Creek

NPRX 086-4 NPSI 4-148.06 NPAS 86 NPMP 485.6 AHMP NA

USGS Map Reference Fairbanks, AK T 3S R 4E Sec. 7

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u>None</u>	<u>122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Tributary to French Creek drains a low wetland tundra and taiga forest and flows westerly from the proposed pipeline crossing 0.8 km to French Creek. This intermittent stream forms a series of pools and bog areas connected by narrow stream channels clogged with logs and branches, and flow is frequently subterranean. The stream bottom consists of mud and detritus, and willows, alder, spruce, grasses and herbaceous plants vegetate the low banks. Numerous signs of beaver activity were observed in September 1980; however, no dams or lodges were present.

In the vicinity of the proposed pipeline crossing this stream does not provide fall fish habitat due to numerous clogged channels and subterranean flow. Fish use of this stream is considered non-existent in fall and winter.

WATERBODY

Waterbody Tributary to French CreekMain Drainage Tanana River Tributary to French CreekNPRX 086-3 NPSI 4-148.05 NPAS 86 NPMP 485.1 AHMP NAUSGS Map Reference Fairbanks, AK T 3S R 4E Sec. 7

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>GR</u>	<u>R</u>	<u>122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Tributary to French Creek drains a tundra marshland and meanders southerly to its confluence with French Creek. The shallow (6-30 cm) water course flows in alternating pools (3.0 wide) and narrow channels (0.5 m). The banks are stable and lined with a dense growth of grasses, overhanging alder, birch and spruce. Stream substrate consists of fines and detritus and is sometime vegetated with emergent grass.

Good fall fish habitat in this stream provided a feeding and rearing area for grayling fry. This area may also serve as a migration route for fish movement to downstream areas. The shallow nature of the stream would preclude winter fish habitat.

WATERBODY

Waterbody Tributary to French Creek

Main Drainage Tanana River Tributary to French Creek

NPRX 086-2 NPSI 4-148.04 NPAS 86 NPMP 484.7 AHMP NA

USGS Map Reference Fairbanks, AK T 3S R 4E Sec. 6

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u>None</u>	<u>122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Tributary to French Creek is a small stream that meanders through and drains a low wetland and taiga forest area. Stream flow in September 1980 was intermittent and in some areas subterranean. Riparian vegetation consists of grasses but some woody plants such as willows, alder, birch and spruce grow near the creek banks. Log debris clogs the channel and a 1 m waterfall exists at the confluence with French Creek.

In the vicinity of the proposed pipeline crossing, Tributary to French Creek provides poor habitat for fish and fish use is non-existent. Lack of surface flow, log debris and 1 m drop at French Creek confluence create numerous fish blocks that would be a barrier to fish movement even during periods of high runoff.

WATERBODY

Waterbody Unnamed Creek

Main Drainage Tanana River Tributary to French Creek

NPRX 086-1 NPSI 4-148.03 NPAS 86 NPMP 483.7 AHMP NA

USGS Map Reference Fairbanks, AK T 2S R 4E Sec. 31

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Unnamed Creek (MPNP 483.7) is a small stream that meanders through and drains a low muskeg and taiga area approximately 1.5 km east of Eielson Air Force Base. In the vicinity of the proposed pipeline crossing, the stream bed is in a wide marshy area vegetated with either sedges or grasses bordered by deciduous shrubs. Fishery investigations have not been conducted on this stream at any time. It is probable that winter use is non-existent.

WATERBODY

Waterbody Unnamed Creek

Main Drainage Tanana River Tributary to Moose Creek

NPRX 085-2 NPSI 4-148.02 NPAS 85 NPMP 482.6 AHMP NA

USGS Map Reference Fairbanks, AK T 2S R 3E Sec. 25

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Unnamed Creek flows through and drains a low-lying muskeg and taiga area to the northeast of Eielson Air Force Base. In the vicinity of the proposed pipeline crossing the riparian vegetation consists of grasses or sedges, and deciduous shrubs. Fishery investigations have not been conducted on this stream at any time. It is probable that winter use is non-existent.

WATERBODY

Waterbody Moose Creek

Main Drainage Yukon River Tributary to Tanana River

NPRX 085-1 NPSI 4-148 NPAS 85 NPMP 482.0 AHMP NA

USGS Map Reference Fairbanks, AK T 2S R 3E Sec. 25

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>CN,GR</u>	<u>M,R</u>	<u>122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Moose Creek is a moderately sized (3.2-4.2 m wide), deep (25-150 cm), meandering stream that drains a low-lying tundra/muskeg area east of Eielson Air Force Base and flows 7.2 km to Piledriver Slough. In the vicinity of the proposed pipeline crossing the well-defined stream channel is confined by high banks (1.5-3.0 m) vegetated with willow, alder, spruce, birch and grasses. Channel substrate is mud, sand and fines littered with deadfall slumped from stream banks.

During September 1980 Moose Creek provided excellent rearing habitat for grayling and slimy sculpin (Ref. 122). Longnose sucker, round whitefish, hump whitefish and burbot documented in the lower reaches of this stream during the open water periods (Refs. 11, 30, 54 and 57) and northern pike and burbot documented during winter surveys (Ref. 77) may also utilize the present crossing. This area should be considered important to fall downstream migration since water depths of less than 2 m indicate that this portion of Moose Creek would freeze solid in winter.

WATERBODY

Waterbody Unnamed Creek

Main Drainage Yukon River Tributary to Chena River

NPRX 084-5 NPSI 4-144.04 NPAS 84 NPMP 476.3 AHMP NA

USGS Map Reference Fairbanks, AK T 1S R 3E Sec. 34

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Unnamed Creek (NPMP 476.3) is an old channel of the Chena River. Vegetation in the vicinity of the proposed crossing is probably made up of grasses, sedges and deciduous shrubs. It is not known if water exists in the channel on a year-round basis. Fishery investigations have not been conducted on this stream at any time. It is probable that winter use is non-existent.

WATERBODY

Waterbody Unnamed Creek

Main Drainage Yukon River Tributary to Chena River

NPRX 084-4 NPSI 4-144.03 NPAS 84 NPMP 476.2 AHMP NA

USGS Map Reference Fairbanks, AK T 1S R 4E Sec. 27

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Unnamed Creek (NPMP 476.2) is an old channel of the Chena River. In the vicinity of the crossing, vegetation appears to consist of sedges, grasses and deciduous shrubs. It is not known if water exists in the channel on a year-round basis. Fishery investigations have not been conducted on this stream at any time. It is probable that winter use is non-existent.

WATERBODY

Waterbody Chena River Side Channel

Main Drainage Yukon River Tributary to Chena River

NPRX 084-3 NPSI 4-144.02 NPAS 84 NPMP 475.8 AHMP NA

USGS Map Reference Fairbanks, AK T 1S R 4E Sec. 27

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u>None</u>	<u>122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

The proposed crossing of this Chena River Side Channel is located approximately 1.8 km west of the Chena Lakes Flood Control Project. The wide stream (approximately 12-15 m) is confined by stable banks vegetated with grasses, birch and herbaceous plants. Stream substrate consists of fines and detritus and aquatic vegetation is present. Beaver dams are located upstream and downstream of the proposed crossing. Water depths in many areas of this stream reach 2 m. As a result of the dams, fish migration into the area may be blocked.

Electrofishing efforts during the fall 1980 survey (Ref. 122) did not capture any fish. In view of the poor access created by the fish blocks, this side channel does not provide suitable fish habitat at any time of the year.

WATERBODY

Waterbody Chena RiverMain Drainage Yukon RiverTributary to Tanana RiverNPRX 084-2NPSI 4-144NPAS 84NPMP 475.3AHMP NAUSGS Map Reference Fairbanks, AKT 1SR 4ESec. 27 & 28

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	BB,CN,DS,GR,IN,KS,NP SK,SS,WF	M,R,S	11,30,39,76
Summer	AL,BB,BW,CN,CS,DS,GR, HW,IN,KS,LS,NP,RW,SS	M,R,S	11,39,76,96,97
Fall	BB,CN,DS,GR,IN,KS,NP, SK,SS,WF	M,R,S	11,39,76
Winter	BB,CN,DS,GR,IN,KS,NP, SK,SS,WF	M,S,W	11,39,76

The Chena River flows west from the White Mountains for approximately 240 km to where it enters the Tanana River just west of Fairbanks. The proposed pipeline crossing occurs 28 km east of Fairbanks. In this area the channel is approximately 30 m wide and the banks are heavily vegetated by willows and alder and bordered by mature stands of spruce. The water is darkly stained in summer and fall and depths are 1-2 m.

The Chena River provides important fish habitat throughout the year. Burbot, slimy sculpin, chum salmon, king salmon, silver salmon, grayling, sheefish, longnose suckers and round whitefish are all present in the vicinity of the pipeline crossing at various times and some are present on a year-round basis (Refs. 11 and 30). Additional species suspected to be present include Arctic lamprey, broad whitefish, least cisco, and humpback whitefish (Ref. 11). This area is utilized as a migration route by different species during all seasons. Rearing of various life stages of fish occurs throughout the open water season. Overwintering of burbot, slimy sculpin, grayling, king salmon, and unidentified whitefish is known to occur in the area (Ref. 11). The Chena River is of obvious importance to fish throughout the year.

WATERBODY

Waterbody Unnamed CreekMain Drainage Yukon RiverTributary to Chena RiverNPRX 084-1

NPSI4-140.14

NPAS 84NPMP 475.1AHMP NAUSGS Map Reference Fairbanks, AKT 1SR 3ESec. 21

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Unnamed Creek (NPMP 475.1) is a side slough near the Chena River. In the vicinity of the crossing, vegetation appears to consist of sedges, grasses and deciduous shrubs. It is not known if water exists in the channel on a year-round basis. Fishery investigations have not been conducted on this stream at any time. It is probable that winter use is non-existent.

WATERBODY

Waterbody Potlatch Creek

Main Drainage Tanana River Tributary to Chena River

NPRX 083-6 NPSI 4-140.13 NPAS 83 NPMP 472.7 AHMP NA

USGS Map Reference Fairbnaks, AK T 1S R 3E Sec. 8

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Potlatch Creek drains a tundra/muskeg area south of the White Mountains and flows from the proposed gas line crossing 5.8 km to the Chena River. Surrounding riparian vegetation consists of spruce, alder and birch. Numerous beaver dams have been constructed up and downstream of the proposed pipeline crossing resulting in a series of deep, humic-stained pools. Bottom type consists of soil and detritus. Numerous aquatic plants line the margin of this stream.

The beaver dams in Potlatch Creek appear to be major barriers to fish movements in the vicinity of the proposed crossing. Electrofishing efforts in deep pools and shallow areas yielded no fish during fall 1980 (Ref. 122); therefore, fish use of Potlatch Creek is considered to be non-existent at any time of the year.

314 WATERBODY

Waterbody Tributary to Little Chena River #1Main Drainage Chena River Tributary to Little Chena RiverNPRX 083-5 NPSI 4-140.12 NPAS 83 NPMP 469.9 AHMP NAUSGS Map Reference Fairbanks, AK T 1N R 3E Sec. 31

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u>None</u>	<u>122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Tributary to Little Chena River #1 is an intermittent stream that drains a small lake north of the proposed pipeline crossing. The clear, humic-stained waters flow through an undefined channel bordered by tall grass and alder to the Little Chena River. Aquatic vegetation consists of water lillies and emergent grasses, and substrate is sand and fines. Beaver activity has resulted in active and abandoned dams up and downstream of the proposed pipeline crossing.

Due to its intermittent nature, the presence of beaver dams and low dissolved oxygen levels (2.4 mg/l) this stream does not provide suitable fish habitat and it is unlikely that fish use this stream during any time of year.

WATERBODY

Waterbody Tributary to Little Chena River #2

Main Drainage Chena River Tributary to Little Chena River

NPRX 083-4 NPSI 4-140.11 NPAS 83 NPMP 469.2 AHMP NA

USGS Map Reference Fairbanks, AK T 1N R 3E Sec. 30

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Tributary to Little Chena River is a small stream which flows west through spruce-deciduous woodland to its confluence with the Little Chena River.

Fishery investigations have not been conducted on this stream at any time. It is probable that winter use is non-existent.

Waterbody Little Chena River

Main Drainage Tanana River Tributary to Chena River

NPRX 083-3 NPSI 4-140.10 NPAS 83 NPMP 468.9 AHMP NA

USGS Map Reference Fairbanks, AK T 1N R 3E Sec. 30

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

The Little Chena River is a moderately large, meandering stream that flows west from the White Mountains, draining many small clear-water tributaries. The proposed pipeline crossing occurs 23 km east of Fairbanks. In this area the Little Chena River is 12-14 km wide and an estimated 1.5-2.5 m deep. Its very turbid waters are contained by steep banks (approximately 3 m) vegetated with willows, alder, grass and herbaceous plants. Stream substrate consists of mud.

Although no fish were captured or observed during the September 1980 surveys, the Little Chena River is presumably a fall migration route for fish movement from clearwater tributaries to wintering areas and likely provides fall rearing area for fish. Limited data are available concerning fish use of this river.

WATERBODY

Waterbody Iowa Creek

Main Drainage Chena River Tributary to Little Chena River

NPRX 083-2 NPSI 4-140.09 NPAS 83 NPMP 468.3 AHMP NA

USGS Map Reference Fairbanks, AK T 1N R 3E Sec. 31

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>GR,CN</u>	<u>R</u>	<u>122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Iowa Creek is a moderate sized (3.5-12 m), fast flowing stream that drains a tundra/muskeg area south of the White Mountains. From the proposed pipeline crossing this stream flows southwesterly 0.5 km to the Little Chena River. Several deep pools (1-2 m deep) were observed in the study area during the fall 1980 survey. Riparian vegetation consists of overhanging willows, alder, birch and spruce. Numerous logs litter the stream channel and provide good cover (approximately 30%). Evidence of beaver activity is present but no dams were observed in September 1980.

Iowa Creek provides excellent fall habitat and is a rearing area for young-of-the-year and juvenile grayling and adult slimy sculpin. The presence of young-of-the-year grayling suggests that this stream may be a grayling spawning area as well. During this investigation two potential overwintering areas were located 30 m and 60 m upstream of the proposed crossing. No additional information concerning fish use of Iowa Creek is available at this time.

WATERBODY

Waterbody Tributary to Smallwood Creek #1Main Drainage Chena RiverTributary to Little Chena RiverNPRX 083-1NPSI NPAS 83NPMP 467.8AHMP NAUSGS Map Reference Fairbanks, AKT 1NR 2ESec. 24

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u> </u>	<u>None</u>
Summer	<u>None</u>	<u> </u>	<u>None</u>
Fall	<u>None</u>	<u> </u>	<u>None</u>
Winter	<u>None</u>	<u> </u>	<u>None</u>

Tributary to Smallwood Creek is a small stream draining an area south of the White Mountains. It joins Smallwood Creek approximately 200 m downstream from the proposed pipeline crossing. Vegetation in the vicinity of the crossing is probably grasses and deciduous shrubs. No fisheries investigations have been conducted on this stream at any time. It is probable that winter use of this stream is non-existent.

Waterbody Tributary to Smallwood Creek #2Main Drainage Chena River Tributary to Little Chena RiverNPRX 082-2 NPSI 4-140.08 NPAS 82 NPMP 465.9 AHMP NAUSGS Map Reference Fairbanks, AK T 1N R 1E Sec. 14

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Tributary to Smallwood Creek is a narrow (0.3-1.5 m wide), humic-stained stream that drains an area south of the White Mountains. It flows southerly to the Little Chena River through a well defined channel lined with a dense growth of overhanging willows and alder. Stream substrate consists of mud and detritus.

During the fall adequate water depth (15-80 cm), cover (40%), and discharge (0.02 m²/sec) provided suitable fish habitat. However, electrofishing efforts indicate that fish use of this stream was low to non-existent at this time. No additional information concerning fish use of this stream is available at this time.

WATERBODY

Waterbody Smallwood Creek

Main Drainage Little Chena River Tributary to Unnamed Creek

NPRX 082-1 NPSI 4-140.07 NPAS 82 NPMP 463.9 AHMP NA

USGS Map Reference Fairbanks, AK T 1N R 1E Sec. 9

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>CN</u>	<u>M,R</u>	<u>122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Smallwood Creek is a shallow (4-21 cm) clear water stream that drains the south slope of Gilmore Dome and flows southerly to join Unnamed Creek. Many small tributaries feed Smallwood Creek. Immediately north of the proposed pipeline crossing 7 beaver dams are present. Below the beaver dams Smallwood Creek flows through a narrow uniform channel lined with willows and alder. Stream substrate consists of fines and sand and banks are stable.

Smallwood Creek provides excellent fall fish habitat but sampling efforts on 16 September 1980 yielded only four slimy sculpin (Ref. 122). Although no previous studies have been conducted on this stream it is suspected that grayling may also use this area during the open water season. Upstream of the proposed crossing (approximately 50 m) a series of beaver dams serve as an effective block to fish movement beyond those areas. Fall migration out of Smallwood Creek undoubtedly occurs as streams of this size generally freeze solid or become dry in winter.

WATERBODY

Waterbody Nugget Creek TributaryMain Drainage Smallwood Creek Tributary to Nugget CreekNPRX 081-5 NPSI 4-140.06 NPAS 81 NPMP 460.5 AHMP NAUSGS Map Reference Fairbanks, AK T 2N R 2E Sec. 36

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Nugget Creek Tributary is a narrow stream (average width is 1 m) which flows easterly for approximately 1 km before joining Nugget Creek. Its streambed is primarily fines and sand and is confined by stable banks densely vegetated with grasses, willows and spruce. Many small pools and debris in the stream provide good cover for fish. However, abandoned beaver dams located above and below the proposed crossing and on Nugget Creek itself likely restrict any fish movement to this area and preclude fish use of this stream in the vicinity of the crossing at any time of the year (Ref. 122).

WATERBODY

Waterbody Rose Creek

Main Drainage Chatanika River Tributary to Gilmore Creek

NPRX 081-4 NPSI 4-140.05 NPAS 81 NPMP 459.3 AHMP NA

USGS Map Reference Fairbanks, AK T 2N R 2E Sec. 26 & 35

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Rose Creek is a small stream which crosses the proposed gas line approximately 18 km north of Fairbanks. Streamside vegetation consists primarily of spruce, willows and grasses.

Fishery investigations have not been conducted on this stream at any time. It is probable that winter use is non-existent, but field study during the open water period would be necessary to clarify its importance to fish.

WATERBODY

Waterbody Gilmore CreekMain Drainage Chatanika River Tributary to Goldstream CreekNPRX 081-3 NPSI 4-140.04 NPAS 81 NPMP 457.6 AHMP NAUSGS Map Reference Fairbanks, AK T 12N R 2E Sec. 27

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Gilmore Creek is a small stream which crosses the proposed gas line approximately 19 km north of Fairbanks. Streamside vegetation consists primarily of spruce, willows and grasses.

Fishery investigations have not been conducted on this stream at any time. It is probable that winter use is non-existent, but field study during the open water period would be necessary to clarify its importance to fish.

324 WATERBODY

Waterbody Pedro Creek

Main Drainage Chatanika River Tributary to Goldstream Creek

NPRX 081-2 NPSI 4-140.03 NPAS 81 NPMP 457.4 AHMP NA

USGS Map Reference Fairbanks, AK T 2N R 2E Sec. 28

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Pedro Creek is a small stream which crosses the proposed gasline approximately 19 km north of Fairbanks. Streamside vegetation consists primarily of spruce, willows and grasses.

Fishery investigations have not been conducted on this stream at any time. It is probable that winter use is non-existent, but field study during the open water period would be necessary to clarify its importance to fish.

WATERBODY

Waterbody Gold Run Creek

Main Drainage Chatanika River Tributary to Goldstream Creek

NPRX 081-1 NPSI 4-140.02 NPAS 81 NPMP 456.9 AHMP NA

USGS Map Reference Fairbanks, AK T 2N R 2E Sec. 28

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Gold Run Creek is a small stream which crosses the proposed gas line approximately 18 km north of Fairbanks. Streamside vegetation consists primarily of spruce, willows and grasses.

Fishery investigations have not been conducted on this stream at any time. It is probable that winter use is non-existent, but field study during the open water period would be necessary to clarify its importance to fish.

WATERBODY

Waterbody Fox Creek

Main Drainage Chatanika River Tributary to Goldstream Creek

NPRX 080-2 NPSI 4-140.01 NPAS 80 NPMP 454.4 AHMP NA

USGS Map Reference Fairbanks, AK T 2N R 1E Sec. 19

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u>None</u>	<u>122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Fox Creek is a small (0.6-3.4 m wide) stream that flows southward paralleling the Elliott Highway. The proposed pipeline crossing is located 3.0 km north of the junction of the Elliott and Steese Highways. At the crossing Fox Creek flows through a previously mined area and is confined by tailings overgrown with alder, willows and a few spruce. In this area the stream appears to have been channelized and solid waste (beer cans, lumber, abandoned mining equipment) litter the stream bottom. Regions up and downstream of the proposed crossing have numerous fallen trees and resultant branches and logs in the channel.

Fox Creek provides very poor fish habitat during the fall and fish use at this time is non-existent (Ref. 122). The presence of numerous potential barriers would preclude fish movement to this area. Fox Creek provides poor fish habitat throughout the year.

WATERBODY

Waterbody Treasure Creek

Main Drainage Chatanika River Tributary to Vault Creek

NPRX 080-1 NPSI 4-140 NPAS 80 NPMP 450.1 AHMP NA

USGS Map Reference Livengood, AK T 2N R 1W Sec. 3

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u>None</u>	<u>11,30,54</u>
Summer	<u>None</u>	<u></u>	<u>11,30</u>
Fall	<u>None</u>	<u>None</u>	<u>57</u>
Winter	<u>None</u>	<u>None</u>	<u>55</u>

Treasure Creek is a small tundra stream about 1 m wide with 0.3-1.5 m high banks. The silt and mud banks are occasionally incised and vegetated with birch, dwarf spruce and dwarf willow. Substrates consist primarily of soft mud with many sunken logs and an abundance of detritus. Upstream placer mining may account partially for the extensive mud and silt deposits and abundance of sunken logs.

Fish use appears non-existent in the vicinity of the proposed pipeline crossing of Treasure Creek. Although suitable habitat was present, no fish were captured or observed during spring and fall investigations conducted in 1979 (Ref. 54 and 57). The absence of fish is probably attributable to three active beaver dams, 800-1200 m downstream of the proposed crossing, which are complete stream blocks. The largest is 1.5 m in height. Fish are probably present downstream of these dams during open water season. No fish habitat occurs during the winter months as the stream was found to be frozen to the bottom at the pipeline crossing in the winter of 1979 (Ref. 55). Previous studies reported slimy sculpin and grayling to be present in the area (Ref. 11, 30 and 76); however, the lack of overwintering habitat and the beaver dams appear to preclude fish use of the stream near the pipeline crossing at the present time.

WATERBODY

Waterbody Chatanika River

Main Drainage Tanana River Tributary to Tolovana River

NPRX 079-4 NPSI 4-139 NPAS 79 NPMP 446.4 AHMP NA

USGS Map Reference Livengood, AK T 3N R 1W Sec. 29

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	AB,BB,CN,CS,DS,GR,HW,IN, LS,NP	M,R,S	11,84,89
Summer	AB,BB,CN,CS,DS,GR,HW,IN, LS,NP,RW	M,R,S	11,81,84,89,113
Fall	BB,CN,CS,DS,GR,HW,IN,KS, LS,NP,RW,AL,SS	M,R,S	11,81,84,89,113,133,210
Winter	BB,CS,DS,GR,HW,IN,KS	W	11,84,113,133

The Chatanika River flows southwesterly from the White Mountains and is paralleled by the Steese Highway and crossed by the Elliott Highway before joining the Tolovana River in the Minto Flats Area. The proposed pipeline crossing lies approximately 6 km downstream of the Elliott Highway crossing. The slow, meandering stream is about 15 m wide at the crossing. Banks are silty sand to 2 m high and bordered by alder, birch and mature spruce. The substrate in this area is predominantly gravel.

The Chatanika River is a very important fish stream year-round. The vicinity of the gas pipeline crossing is particularly sensitive as it is utilized by a number of species for spawning and as a rearing area for early life stages of these fish. Grayling spawning occurs around the time of breakup and most fry emerge in June (Refs. 11 and 84). Anadromous species including king salmon and chum salmon are known to spawn near the crossing. King salmon spawn from the middle of July to around 10 August while chum salmon spawn typically from late July through September (Ref. 88). Silver salmon are also reported to be present. Through September and October hump-back whitefish, sheefish and least cisco also spawn within this area. Eggs of fall spawning species remain within the gravel and hatch the following spring.

WATERBODY

Waterbody Shocker Creek

Main Drainage Tanana River Tributary to Chatanika River

NPRX 079-3 NPSI 4-138 NPAS 79 NPMP 445.3 AHMP NA

USGS Map Reference Livengood, AK T 3N R 1W Sec. 19

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>GR</u>	<u>M,R,S</u>	<u>30,54</u>
Summer	<u>CN,GR,RW</u>	<u>R</u>	<u>11,30</u>
Fall	<u>CN,GR</u>	<u>M,R</u>	<u>30,57,133</u>
Winter	<u>None</u>	<u>None</u>	<u>133</u>

Shocker Creek is a small tundra stream 0.6-2 m in width with 1-1.5 m high banks. The banks are silt and are covered with tundra, willow, birch and berry bushes. This drainage is a braided tundra stream with highly stained water. Substrates consist of gravel and mud and emergent grass is abundant in shallow water in summer.

Shocker Creek at the pipeline crossing is used by grayling, slimy sculpin and round whitefish during the open water period. In the spring, young-of-the-year and juvenile grayling were found, suggesting that grayling spawn near the crossing (Ref. 54). Grayling, slimy sculpin and round whitefish were present above and below the proposed crossing in late summer (Ref. 11). Intensive studies during fall showed Shocker Creek to be moderately important as a rearing area for young-of-the-year grayling and a feeding area for slimy sculpin (Ref. 133). Winter surveys in the area of the proposed pipeline crossing indicate that most of the creek bed is frozen solid. In isolated areas where there is entrained under-ice water, the DO levels are too low (0.25-2.2 mg/l) to sustain grayling or sculpin (Ref. 133). Although winter use is precluded, this stream provides good habitat for fish during the open water season.

WATERBODY

Waterbody Unnamed Tributary to Shocker CreekMain Drainage Tanana River Tributary to Chatanika RiverNPRX 079-2 NPSI 4-137.05 NPAS 79 NPMP 445.0 AHMP NAUSGS Map Reference Livengood, AK T 3N R 1W Sec. 19

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u>None</u>	<u>54</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

The channel of Unnamed Tributary to Shocker Creek was generally not visible in late June 1979 due to heavy growths of grass and tundra. It was dry in many areas above and below the proposed crossing (Ref. 54). Where present, water was highly stained but not measurably flowing. Tributary #2 does not provide suitable habitat for fish near the proposed pipeline crossing.

WATERBODY

Waterbody Unnamed Tributary to Shocker Creek

Main Drainage Tanana River Tributary to Chatanika River

NPRX 079-1 NPSI 4-137.05 NPAS 79 NPMP 444.8 AHMP NA

USGS Map Reference Livengood, AK T 3N R 1W Sec. 19

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u>None</u>	<u>54</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Unnamed Tributary to Shocker Creek is a small tundra drainage confined to a 0.2-1.0 m wide channel. The substrate consists of gravel and mud with an abundance of emergent grasses. The primary vegetation includes dwarf willow, birch and black spruce with an abundance of blueberry and highbush cranberry. During spring sampling, this stream was cutting a new channel through willows at the pipeline crossing (Ref. 54).

Fish habitat is poor in this stream in spring. Habitat likely deteriorates during summer and in all probability the stream freezes to the bottom during winter if it is not dry by fall. Available data suggest that it is not a fish stream.

WATERBODY

Waterbody Unnamed Tributary to Chatanika River #1

Main Drainage Tolovana River Tributary to Chatanika River

NPRX 078-5 NPSI 4-137.03 NPAS 78 NPMP 443.3 AHMP NA

USGS Map Reference Livengood, AK T 3N R 2W Sec. 13

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u>None</u>	<u>11</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Unnamed Tributary to Chatanika River #1 drains a small area (approximately 3.3 km²) west of the Elliott Highway. This stream is braided near its origin where the proposed pipeline makes three crossings. The present crossing is the southernmost. From the pipeline, this tributary flows southwest and then south to the Chatanika River through low muskeg and stands of birch and spruce.

Although no fisheries investigations have been conducted in this stream, a fish block was reported downstream from the TAPS in 1975 (Ref. 11) and fish use of this small drainage is considered to be unlikely the year round.

WATERBODY

Waterbody Unnamed Tributary to Chatanika River #2Main Drainage Tolovana River Tributary to Chatanika RiverNPRX 078-4 NPSI 4-137.02 NPAS 78 NPMP 443.2 AHMP NAUSGS Map Reference Livengood, AK T 3N R 2W Sec. 14

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u>None</u>	<u>11</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Unnamed Tributary to Chatanika River #2 drains a small area (3.3 km²) west of the Elliott Highway. This stream is braided near its origin where the proposed pipeline makes three crossings. From the pipeline, this tributary flows southwest and then south to the Chatanika River through low muskeg and stands of birch and spruce.

Although no fisheries investigations have been conducted in this stream, a fish block was reported downstream from the TAPS in 1975 (Ref. 11) and fish use of this small drainage is considered unlikely the year round.

WATERBODY

Waterbody Unnamed Tributary to Chatanika River #3

Main Drainage Tolovana River Tributary to Chatanika River

NPRX 078-3 NPSI 4-137.01 NPAS 78 NPMP 443.1 AHMP NA

USGS Map Reference Livengood, AK T 3N R 2W Sec. 14

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u>None</u>	<u>11</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Unnamed Tributary to Chatanika River #3 drains a small area (3.3 km²) west of the Elliott Highway. This stream is braided near its origin where the proposed pipeline makes three crossings. The present crossing is the northernmost. From the pipeline, this tributary flows southwest and then south to the Chatanika River through low muskeg and stands of birch and spruce.

Although no fisheries investigations have been conducted in this stream, a fish block was reported downstream from the TAPS in 1975 (Ref. 11) and fish use of this small drainage is considered unlikely the year round.

WATERBODY

Waterbody Washington Creek

Main Drainage Tanana River Tributary to Tolovana River

NPRX 078-2 NPSI 4-137 NPAS 78 NPMP 439.8 AHMP NA

USGS Map Reference Livengood, AK T 3N R 2W Sec. 4 & 33

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>GR</u>	<u>M,R</u>	<u>30,11,54</u>
Summer	<u>GR</u>	<u>R</u>	<u>11,30</u>
Fall	<u>GR</u>	<u>M,R</u>	<u>30,11,57</u>
Winter	<u>GR</u>	<u>W</u>	<u>30,55,77</u>

Washington Creek, in the vicinity of the proposed pipeline crossing, is about 5-8 m wide with well defined banks 1.0-2.5 m in height. This stream meanders westerly through mature stands of birch and spruce and also muskeg areas. Washington Creek was clear and humic-stained in late September 1979. Substrates are gravel and sand with small amounts of mud or silt.

Near the proposed pipeline crossing, Washington Creek is a rearing area for grayling. It may also provide spawning and nursery habitat as well as a migration route to and from upstream areas.

Habitat is good throughout the winter (Ref. 55) and grayling were captured in the area in December 1979 (Ref. 77). Washington Creek is known for its good grayling fishing and should be considered to be sensitive to disturbance year-round.

WATERBODY

Waterbody Unnamed Tributary to Washington CreekMain Drainage Tanana River Tributary to Washington CreekNPRX 078-1 NPSI 4-136.01 NPAS 78 NPMP 439.6 AHMP NAUSGS Map Reference Livengood, AK T 4N R 2W Sec. 33

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>11</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Unnamed Tributary to Washington Creek is a small tundra stream which crosses the proposed pipeline approximately 0.3 km northwest of Washington Creek. The stream flows southwest through a muskeg area into Washington Creek approximately .8 km downstream from the pipeline crossing.

Due to the small size of this stream, fish use is considered to be low to non-existent. Reference 11 reports that there are probably no fish in this stream.

WATERBODY

Waterbody South Fork Aggie Creek

Main Drainage Tanana River Tributary to Washington Creek

NPRX 076-5 NPSI 4-136 NPAS 76 NPMP 432.5 AHMP NA

USGS Map Reference Livengood, AK T 4N R 3W Sec. 10

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u>None</u>	<u>54</u>
Summer	<u>None</u>	<u>None</u>	<u>11,31</u>
Fall	<u>None</u>	<u>None</u>	<u>57</u>
Winter	<u>None</u>	<u>None</u>	<u>None</u>

South Fork Aggie Creek drains the southern face of Wickersham Dome and flows southwesterly approximately 15 km to its confluence with Washington Creek. The headwaters of this small clear water drainage are crossed by the Elliott Highway and by the proposed pipeline route, approximately 1.7 km farther downstream. The narrow channel varies in width (0.1 to 1.0 m) and flows through dense tundra and muskeg vegetation which in some areas completely conceals the stream from view. The steep gradient results in high water velocities and the substrate consists of gravel, sand and some detritus.

South Fork Aggie Creek provides little or no fish habitat in the vicinity of the pipeline crossing. Fish habitat is poor as a result of high water velocities and fish access into this area is very unlikely due to numerous small waterfalls through brush and willow and a 1.0 m high waterfall on the TAPS workpad. The South Fork probably freezes solid during the winter as is typical of small headwater drainages of this area. Although grayling have been reported to possibly occur in the South Fork of Aggie Creek (Ref. 11), spring and fall investigations in 1979 failed to produce fish (Refs. 54 and 57), as have previous studies from 1969 to 1977 (Refs. 11 and 31). It is possible that grayling are present in downstream regions of the drainage but suitable habitat appears to be quite far removed (5-7 km) from the proposed pipeline route.

WATERBODY

Waterbody North Fork Aggie CreekMain Drainage Tanana River Tributary to Washington CreekNPRX 076-4 NPSI 4-135 NPAS 76 NPMP 431.7 AHMP NAUSGS Map Reference Livengood, AK T 4N R 3W Sec. 3

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u>None</u>	<u>54</u>
Summer	<u>None</u>	<u>None</u>	<u>11,38</u>
Fall	<u>None</u>	<u>None</u>	<u>57</u>
Winter	<u>None</u>	<u>None</u>	<u>None</u>

North Fork Aggie Creek drains the southern face of Wickersham Dome and flows southwesterly approximately 15 km to its confluence with Washington Creek. The headwaters of this small clear water drainage are crossed by the Elliott Highway and by the proposed pipeline route, approximately 1.4 km farther downstream. The stream is narrow (0.2-1.5 m wide) and flows through dense tundra and muskeg vegetation. In some regions the channel becomes extensively braided and is difficult to locate. Water velocities are high in the vicinity of the pipeline crossing as a result of the steep stream gradient in this area. Substrate near the TAPS workpad is gravel, with mud, sand and brush in other areas.

The North Fork Aggie Creek does not appear to provide fish habitat. The steep stream gradient, high water velocities, numerous natural waterfalls and areas of extensive braiding prevent fish access to, or utilization of, this portion of the stream. Although grayling have been reported to possibly occur in North Fork Aggie Creek (Ref. 11), fish were not reported during spring and fall surveys conducted in 1979 (Refs. 54 and 57) or in 1969 (Refs. 11 and 38). It is possible that grayling are present in downstream regions of the drainage but suitable habitat appears to be quite far removed (5-7 km) from the proposed pipeline crossing.

WATERBODY

Waterbody Tributary of Little Globe Creek

Main Drainage Globe Creek

Tributary to Little Globe Creek

NPRX 076-3

NPSI 4-134.01

NPAS 76

NPMP 430.0

AHMP NA

USGS Map Reference Livengood, AK

T 5N

R 3W

Sec. 27

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

This Tributary of Little Globe Creek is a small stream that flows northwest through spruce and deciduous woodlands and crosses the proposed pipeline about 600 m upstream of the TAPS crossing. From the TAPS crossing, the stream flows for approximately 60 m before joining Little Globe Creek.

Fisheries investigations have not been conducted in this stream. Due to the small size of the stream, winter fish use is expected to be non-existent.

WATERBODY

Waterbody Little Globe Creek

Main Drainage Tatalina River Tributary to Globe Creek

NPRX 076-2 NPSI 4-134 NPAS 76 NPMP 429.0 AHMP NA

USGS Map Reference Livengood, AK T 5N R 3W Sec. 22

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>67</u>
Summer	<u>None</u>	<u></u>	<u>67</u>
Fall	<u>None</u>	<u></u>	<u>67,122</u>
Winter	<u>None</u>	<u></u>	<u>67</u>

Little Globe Creek is a small stream that flows north 6 km from the crossing to its confluence with Globe Creek near the Elliott Highway. For 1.7 km of its channel length Little Globe Creek parallels the TAPS workpad. Surrounding vegetation consists of grasses, spruce, alder and willows. Numerous branch and log jams were observed primarily in the vicinity of the proposed pipeline crossing in September 1980 (Ref. 122). Sixty meters downstream of the crossing, Little Globe Creek flows across a low water crossing of an APL road.

Little work has been done on this stream but fish use is thought to be low to non-existent at any time of the year. A survey conducted in September 1980 (Ref. 122) reported habitat as marginal with much instream debris and numerous log jams which likely restrict fish passage. No fish were captured or observed at that time.

WATERBODY

Waterbody Unnamed Tributary to Little Globe CreekMain Drainage Globe Creek Tributary to Little Globe CreekNPRX 076-1 NPSI 4-133.01 NPAS 76 NPMP 428.9 AHMP NAUSGS Map Reference Livengood, AK T 5N R 3W Sec. 22

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Unnamed Tributary to Little Globe Creek is a small stream that meanders northeast through a spruce-deciduous woodland and crosses the proposed pipeline about 150 m above its junction with Little Globe Creek. This small tributary drains an area of 8.8 km² above the proposed pipeline (Ref. 11).

No information is available concerning fish use of this stream during any portion of the year. Winter use is considered very unlikely, as streams of this size and nature have been found to go dry or freeze solid shortly after freeze-up.

WATERBODY

Waterbody Globe CreekMain Drainage Tolovana RiverTributary to Tatalina RiverNPRX 075-2NPSI 4-133NPAS 75NPMP 426.3AHMP NAUSGS Map Reference Livengood, AKT 5NR 3WSec. 9

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>121</u>
Summer	<u>GR</u>	<u>R</u>	<u>11,30,38</u>
Fall	<u>None</u>	<u></u>	<u>66,122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Globe Creek is a fast-flowing, humic-stained stream that drains an area of approximately 160 km² above the proposed pipeline crossing. It flows southwest to the Tatalina River through a well-defined channel confined by high, stable banks. Riparian vegetation consists of grasses and moss bordered by dense willows and alder with some spruce. The stream bottom is composed of gravel and sand except in pool areas, where the bottom is predominantly gravel, cobble and boulder. The stream was 6-9 m wide and 6-40 cm deep during the fall 1980 investigation. A wide variety of benthic invertebrates have been reported in Globe Creek and the stream is reported to have excellent recreational potential (Ref. 38).

Several investigators have been unsuccessful in documenting fish presence in Globe Creek in spite of the excellent habitat available. Although documentation of fish in Globe Creek is limited to observations of grayling in summer (Refs. 11, 30 and 38), Globe Creek should be considered important grayling habitat throughout the open water period. Fish use of this stream during winter is believed to be non-existent due to its small size.

WATERBODY

Waterbody Unnamed Tributary to Globe CreekMain Drainage Tatalina River Tributary to Globe CreekNPRX 075-1 NPSI 4-132.02 NPAS 75 NPMP 425.3 AHMP NAUSGS Map Reference Livengood, AK T 5N R 3W Sec. 4

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>11</u>
Fall	<u>None</u>	<u></u>	<u>66</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Unnamed Tributary to Globe Creek is a small stream that flows south across the TAPS line route and continues for approximately 1 km to its junction with Globe Creek. This stream drains an area above the TAPS line of approximately 3.2 km² and surrounding vegetation is typical spruce-deciduous woodland (Ref. 11).

No fish documentation is available for this stream; however, grayling are suspected to be present in the pipeline area, which has been described as excellent habitat (Ref. 11). The possibility of winter fish use of this small stream is considered low to non-existent, but field investigations, especially in the spring, would be necessary to confirm fish utilization during the open water period.

WATERBODY

Waterbody Unnamed Tributary to Tatalina River

Main Drainage Tanana River Tributary to Tatalina River

NPRX 074-2 NPSI 4-132.01 NPAS 74 NPMP 422.0 AHMP NA

USGS Map Reference Livengood, AK T 6N R 4W Sec. 25

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>11</u>
Summer	<u>None</u>	<u></u>	<u>11</u>
Fall	<u>None</u>	<u></u>	<u>11</u>
Winter	<u>None</u>	<u></u>	<u>11</u>

Unnamed Tributary to Tatalina River flows west through spruce-deciduous woodland and crosses the proposed pipeline approximately 450 m above the TAPS crossing. Draining an area above the TAPS of approximately 1.2 km, this creek flows down a gradient of approximately 5% (Ref. 11).

Unnamed Tributary to Tatalina River is reported to support fish during spring in its lower reaches; field studies have not been conducted but fish are not suspected to move upstream as far as the TAPS (Ref. 11).

This creek is not expected to provide suitable fish habitat during the fall or winter periods due to its small size.

WATERBODY

Waterbody Tatalina River

Main Drainage Tanana River Tributary to Chatanika River

NPRX 074-1 NPSI 4-132 NPAS 74 NPMP 421.0 AHMP NA

USGS Map Reference Livengood, AK T 6N R 4W Sec. 23

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>GR</u>	<u>M,R</u>	<u>121</u>
Summer	<u>BB,CI,GR,IN,NP,WF</u>	<u>R</u>	<u>11,30</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u>None</u>	<u>55</u>

The Tatalina River flows approximately 100 km from the western slopes of the White Mountains to where it joins the Chatanika River. The proposed crossing is approximately 29 km downstream of the headwaters of this river. Here the small, humic-stained stream (10-15 m wide) is a series of alternating riffles and shallow pools. Substrate is mud and gravel.

The Tatalina River is probably utilized by fish throughout the open water season. Numerous species are reported to be present in the Tatalina River all of which may occur at the pipeline crossing. These include burbot, grayling sheefish, northern pike and unidentified whitefish and cisco (Refs. 11, 30 and 121). This area serves as a migration route for fish moving to upstream spawning and rearing areas in spring and returning to downstream wintering areas in fall. Grayling may spawn near the proposed crossing during or following breakup and various life stages of all species may occur here between breakup and freeze-up. No overwintering fish habitat is available in the proximity of the crossing as a result of limited water, absence of flow and low dissolved oxygen levels (Ref. 55).

WATERBODY

Waterbody Tributary of Slate Creek

Main Drainage Chatanika River Tributary to Slate Creek

NPRX 073-5 NPSI 4-131.01 NPAS 73 NPMP 416.8 AHMP NA

USGS Map Reference Livengood, AK T 6N R 4W Sec. 8

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u>None</u>	<u>122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Tributary of Slate Creek is a small stream that flows west into Slate Creek approximately 0.3 km downstream of the proposed pipeline crossing. The stream channel, poorly defined and littered with log debris, consists of wet gravel through which water percolates. During September 1980 water in Tributary of Slate Creek was percolating through the gravel at the low water crossing (Ref. 122). Willows, alder, spruce and birch densely vegetate the surrounding area.

Low flow and numerous log jams are effective barriers to fish movement in this stream and fish use, if any, is likely restricted to the spring.

WATERBODY

Waterbody Slate Creek

Main Drainage Chatanika River Tributary to Tatalina River

NPRX 073-4 NPSI 4-131 NPAS 73 NPMP 416.6 AHMP NA

USGS Map Reference Livengood, AK T 6N R 4W Sec. 5 & 8

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>30, 121</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Slate Creek is a moderately small, humic-stained, meandering stream clogged in numerous places with branches and fallen trees. The predominant riparian vegetation is spruce, willows, alder and herbaceous plants. Substrate in Slate Creek consists of sand, gravel and pebbles.

Slate Creek is reported to serve as a rearing area for grayling during spring (Ref. 30), although no specific fish documentation for this creek during spring is available. Efforts to capture fish in Slate Creek during mid-September were unsuccessful (Ref. 122). Adequate water depth, cover and flow provided good habitat for fish at that time, however, numerous log jams and resultant water falls present potential barriers to fish movement.

At this time fish use of Slate Creek is considered low throughout the open water period and non-existent in winter as streams of this size and nature tend to be dry or freeze solid in winter.

WATERBODY

Waterbody Ski Jump Ramp Creek

Main Drainage Tatalina River Tributary to Slate Creek

NPRX 073-3 NPSI 4-130 NPAS 73 NPMP 414.9 AHMP NA

USGS Map Reference Livengood, AK T 7N R 4W Sec. 31

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Ski Jump Ramp Creek is a small, narrow creek with many meanders, chutes and falls. It flows southeast 2.0 km from the proposed pipeline crossing to Slate Creek and drains both a taiga area on the north and a lichen covered slope on the south. Riparian vegetation consists of spruce, willows, alder, birch and grass and substrate is fines, sand, gravel and pebbles.

Little work has been done on this stream but fish use is thought to be low to non-existent at any time of the year. A survey conducted in September 1980 (Ref. 122) reported habitat as marginal with numerous instream debris and log jams which effectively restrict fish passage. No fish were captured or observed at that time.

WATERBODY

Waterbody Wilber Creek

Main Drainage Tanana River

Tributary to Tolovana River

NPRX 073-2

NPSI 4-129

NPAS 73

NPMP 414.0

AHMP NA

USGS Map Reference Livengood, AK

T 7N

R 4W

Sec. 30

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>GR</u>	<u>R</u>	<u>11</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Wilber Creek is a small stream that flows northeast to the Tolovana River through a narrow channel bordered by typical spruce-deciduous vegetation. Above the pipeline crossing, Wilber Creek drains an area of approximately 9.4 km² as it flows down a moderate gradient of approximately 1.7% (Ref. 11).

It is suspected that Wilber Creek serves as a rearing area for grayling during spring and summer; however, only spring fish use has been documented (Ref. 11) and no studies have been performed in other seasons. Wilber Creek does not offer suitable fish habitat during winter and this area is not believed to be utilized by fish for spawning. The small size of this stream would preclude fish overwintering in the vicinity of the proposed crossing.

WATERBODY

Waterbody Tributary of Wilber Creek

Main Drainage Tolovana River Tributary to Wilber Creek

NPRX 073-1 NPSI 4-128.04 NPAS 73 NPMP 412.7 AHMP NA

USGS Map Reference Livengood, AK T 7N R 5W Sec. 25 & 26

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Tributary of Wilber Creek is a small stream that drains an area of approximately 2 km² above the proposed pipeline route. At the proposed crossing this creek is braided and densely vegetated with tall grasses and willows. Approximately 200 m downstream of the proposed crossing, the channels disperse through a marsh area and becomes subterranean in places. Substrate consists of mud and detritus and banks are vegetated with grasses, moss, willows, alder and some spruce.

Little work has been done on this stream but fish use is thought to be low to non-existent at any time of the year. A survey conducted in September 1980 (Ref. 122) reported habitat as marginal due to a poorly defined channel choked with vegetation. No fish were observed or captured at that time.

WATERBODY

Waterbody Shorty Creek

Main Drainage Tanana River Tributary to Tolovana River

NPRX 072-3 NPSI 4-128.03 NPAS 72 NPMP 408.5 AHMP NA

USGS Map Reference Livengood, AK T 7N R 5W Sec. 9

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Shorty Creek is a small stream (0.1-3.3 m wide) that meanders west to the Tolovana River in a series of small pools and narrow channels (10-59 cm in depth). This stream drains an area of about 5.9 km² (Ref. 11) and has moderately high banks (0.5 m) vegetated with grasses, moss and scattered willows, alder and spruce. Stream substrate consists entirely of mud and detritus.

Reference 122 reports that physical and chemical characteristics of Shorty Creek indicate good habitat for fish. However, instream log debris, approximately 175 m downstream of the proposed pipeline crossing, created a 0.5 m falls which may preclude fish movement to this area. Intensive sampling efforts during the September 1980 survey did not yield fish. Although available information is limited, it is suspected that fish use of this stream is low to non-existent.

352 WATERBODY

Waterbody Tributary to Tolovana River

Main Drainage Tanana River Tributary to Tolovana River

NPRX 072-2 NPSI 4-128.01 NPAS 72 NPMP 407.5 AHMP NA

USGS Map Reference Livengood, AK T 7N R 5W Sec. 5 & 8

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Tributary to the Tolovana River is an old high water channel of the Tolovana River that was dry on 16 September 1980 (Ref. 122). No inlet or outlet was observed at that time and the channel was vegetated with terrestrial grasses and willows which indicates that the channel had not been recently inundated. Tributary to the Tolovana River would contain water only during severe flooding and should not be considered fish habitat.

WATERBODY

Waterbody Tolovana River

Main Drainage Yukon River Tributary to Tanana River

NPRX 072-1 NPSI 4-128 NPAS 72 NPMP 407.0 AHMP NA

USGS Map Reference Livengood, AK T 7N R 5W Sec. 5

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>121</u>
Summer	<u>None</u>	<u></u>	<u>11</u>
Fall	<u>GR</u>	<u>M,R</u>	<u>30,31,57</u>
Winter	<u>None</u>	<u>None</u>	<u>55,74</u>

The Tolovana River drains the western slope of the White Mountains and flows southwesterly for approximately 130 km to where it joins the Tanana River. This medium sized, highly stained stream is crossed by the proposed gas pipeline route about 12 km south of Livengood. Here the meandering stream is 10-15 m wide with occasional pools in excess of 1 m deep. The substrate is predominately mud and silt with some gravel in occasional riffles. Mud and silt banks to 2 m high are vegetated with grasses and willows and are bordered by a mature stand of spruce. Erosion of these banks has caused numerous large trees to fall into or across the river channel. Extensive placer mining activity upstream results in heavy siltation of the stream for most of the open water period.

The vicinity of the proposed crossing of the Tolovana River provides fish habitat throughout the open water season. Many species are reported to occur in this stream (Ref. 11); however, the distribution of most of these is confined to lower reaches in the Minto Flats area. Fish which probably utilize the portion of the river near the proposed crossing include grayling, slimy sculpin, round whitefish, and northern pike. Young-of-the-year grayling have been caught during fall investigations (Ref. 57), indicating use as a rearing and possibly spawning area by grayling. Fish use during late winter is unlikely as a result of very low dissolved oxygen levels and absence of flow (Ref. 55).

WATERBODY

Waterbody Unnamed Tributary to the West Fork Tolovana River

Main Drainage Tanana River Tributary to West Fork Tolovana River

NPRX 071-2 NPSI 4-127.01 NPAS 71 NPMP 403.9 AHMP NA

USGS Map Reference Livengood, AK T 8N R 6W Sec. 25

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u>None</u>	<u>122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Unnamed Tributary to the West Fork Tolovana River is a narrow (0.2-1.7 m wide), shallow (1-6 cm deep) stream that flows southwest to the West Fork Tolovana River. Draining an area approximately 4.3 km² above the crossing, this stream flows over a moderately steep gradient (5.5%) (Ref. 11). The low banks are vegetated with grasses and a dense growth of overhanging willows, alder, birch and spruce. During the fall 1980 survey this stream was found to be dry 10 m upstream of the proposed pipeline crossing and choked with leaves and grass throughout the study area.

Due to the nature of the poor habitat in Unnamed Tributary to the West Fork Tolovana River, fish use at any time of the year is considered unlikely (Ref. 122), except for spring flood periods.

WATERBODY

Waterbody Lost Creek

Main Drainage Chatanika River Tributary to West Fork Tolovana River

NPRX 071-1 NPSI 4-127 NPAS 71 NPMP 400.7 AHMP NA

USGS Map Reference Livengood, AK T 8N R 6W Sec. 16

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>CN,GR,WF</u>	<u>M,R</u>	<u>11,121</u>
Summer	<u>GR</u>	<u>R</u>	<u>11,123</u>
Fall	<u>None</u>		<u>122</u>
Winter	<u>None</u>		<u>None</u>

Lost Creek is a moderate sized, humic-stained stream 2.5 to 8.7 m wide that meanders south to the West Fork Tolovana River. This creek flows over a 0.8% gradient and drains an area above the pipeline route of approximately 130 km² (Ref. 11). In the vicinity of the proposed pipeline crossing many deep (approximately 64 cm) pools and shallow riffle areas provide excellent fish habitat. Stream substrate is 50% gravel and 50% sand. The banks are stable and vegetated with willows, alder, grasses and spruce.

Grayling, slimy sculpin, and whitefish have been observed in Lost Creek in spring and grayling have also been reported in summer (Ref. 11 and 121). An investigation conducted in September 1980 (Ref. 122) did not yield any fish. It is possible that any fish present at that time may have migrated downstream to overwintering areas prior to the survey.

The documented fish use in spring and summer (Ref. 11 and 121) and the excellent habitat available during September 1980 indicate that Lost Creek is an important migration route and rearing area in the vicinity of the proposed crossing during open water. Winter use is unlikely as streams of this size and type tend to be dry or freeze solid in winter.

WATERBODY

Waterbody Erickson Creek TributaryMain Drainage Hess Creek Tributary to Erickson CreekNPRX 070-1 NPSI 4-126 NPAS 70 NPMP 396.3 AHMP NAUSGS Map Reference Livengood, AK T 9N R 6W Sec. 30

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u>None</u>	<u>121</u>
Summer	<u>None</u>	<u>None</u>	<u>11</u>
Fall	<u>None</u>		<u>11</u>
Winter	<u>None</u>		<u>None</u>

Erickson Creek Tributary crosses the proposed pipeline route and flows north approximately 850 m to Erickson Creek. It drains an area of approximately 13 km² above the pipeline and has a moderate gradient (0.6%) (Ref. 11). This narrow, slightly humic-stained stream is bordered by low banks vegetated with willows, alder and spruce.

A survey conducted in May 1980 (Ref. 121) reported that the Alyeska LWC was acting as an effective fish block due to insufficient flow. Reference 121 also reports that a local resident confirmed that the stream goes dry in summer. In addition, Reference 11 reports that fish did not travel upstream as far as the TAPS line and lower sections of Erickson Creek do go dry in summer.

Fish use is likely non-existent in Erickson Creek Tributary throughout the year due to the poor nature of the available habitat.

WATERBODY

Waterbody West Fork Erickson Creek

Main Drainage Yukon River Tributary to Hess Creek

NPRX 069-I NPSI 4-125 NPAS 69 NPMP 393.0 AHMP NA

USGS Map Reference Livengood, AK T 9N R 7W Sec. 14

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

West Fork Erickson Creek is a dark, humic-stained stream that drains an area upstream of the crossing of approximately 208 km² (Ref. 11) and flows north to its confluence with Hess Creek. During September 1980 (Ref. 122) this stream varied in width from 1.3 m to 10 m and in depth from 14 cm to 200 cm. Substrate consists of sand, gravel and pebbles and banks are moderately stable and lined with willows, alder, spruce and grasses. Numerous deep pools and shallow riffle areas provide good fish habitat and fallen logs and debris offer some cover.

An investigation conducted in September 1980 (Ref. 122) failed to document fish use in West Fork Erickson Creek although habitat appeared favorable. Grayling and longnose sucker have been observed in upstream regions of this watershed during spring and summer indicating that West Fork Erickson Creek is an important migration route as well as a possible rearing area during open water. Winter use is unlikely as streams of this size and type tend to be dry or freeze solid in winter.

WATERBODY

Waterbody Hess Creek Oxbow

Main Drainage Yukon River Tributary to Hess Creek

NPRX 068-5 NPSI 4-123.05 NPAS 68 NPMP 387.0 AHMP NA

USGS Map Reference Livengood, AK T 10N R 7W Sec. 29

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u>None</u>	<u>122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Hess Creek Oxbow is an inactive oxbow of the main channel of Hess Creek. Stream substrate is gravel, and willows cover portions of the channel bed and the stable banks. The only water found in this channel during September 1980 (Ref. 122) was contained in several isolated depressions in the vicinity of the proposed pipeline crossing. Low dissolved oxygen of the pooled water indicates that flow in this channel is infrequent and probably restricted to periods of very high runoff.

Fish use of Hess Creek Oxbow is non-existent except during flood periods which are most likely to occur in the spring.

WATERBODY

Waterbody Hess Creek

Main Drainage Yukon River Tributary to Yukon River

NPRX 068-4 NPSI 4-123A.04 NPAS 68 NPMP 386.8 AHMP NA

USGS Map Reference Livengood, AK T 10N R 7W Sec. 19

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED *	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>GR,X</u>	<u></u>	<u>121</u>
Summer	<u>CN,GR</u>	<u>R</u>	<u>11,30</u>
Fall	<u>GR</u>	<u>M,R</u>	<u>31</u>
Winter	<u>None</u>	<u>None</u>	<u>55</u>

* See assessment - additional species present but site specific data are lacking.

Hess Creek flows from the western slopes of the White Mountains to the Yukon River. The proposed pipeline crossing is approximately 34 km upstream of its confluence with the Yukon River. This humic-stained stream varies from 15-30 m in width and gravel and sand banks are to 2 m in height. Alternating shallow pools and riffles are present and substrate is gravel and sand.

Hess Creek in the vicinity of the proposed pipeline provides important fish habitat from breakup to freeze-up. This section of the stream serves as a migration route for fish moving to upstream spawning and rearing areas in spring and returning to wintering areas in fall. Grayling and possibly sculpin may spawn in the vicinity of the pipeline during or shortly after breakup. Broad whitefish, humpback whitefish, round whitefish, Bering cisco, least cisco, slimy sculpin, grayling, sheefish, longnose sucker and northern pike are reported to be present in Hess Creek (Refs. 31 and 30), although no site specific documentation is available. Rearing of various life stages of those species listed above probably occurs near the pipeline during the open water season. Winter investigations conducted on 4 April 1979 found no suitable fish habitat in this area.

WATERBODY

Waterbody Hess Creek and Tributary from Fish and Mastadon CreekMain Drainage Yukon River Tributary to Yukon RiverNPRX 068-3 NPSI 4-123.03 NPAS 68 NPMP ³⁸⁶⁻387.3 AHMP NAUSGS Map Reference Livengood, AK T 10N R 7W Sec. ^{19,29}30

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

This RX number encompasses a large amount of fish habitat; species found throughout this drainage system migrate into and out of the area via Hess Creek. For a description of habitat type and species common to the area, see the assessment for Hess Creek (RX 046-4).

WATERBODY

Waterbody Two-Bank Creek

Main Drainage Hess Creek Tributary to Two-Bit Creek

NPRX 068-2 NPSI 4-123.02 NPAS 68 NPMP 382.4 AHMP NA

USGS Map Reference Livengood, AK T 10N R 8W Sec. 5

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Two-Bank Creek is a very small stream that drains a marshland area (approximately 1.6 km²) and flows over a steep gradient (approximately 5%) southwest to join a tributary of Hess Creek (Ref. 11). This intermittent stream varies in width from 0.3 to 2.8 m and is choked with many fallen branches and resultant log jams. Bottom substrate consists of fines, sand, gravel and pebbles. Riparian vegetation consists of spruce, willows, alder, aspen, sedge and grasses.

Little work has been done on this stream but fish use is thought to be low to non-existent at any time of the year. A survey conducted in September 1980 (Ref. 122) reported habitat as marginal with much instream debris and numerous log jams which likely restrict fish passage. No fish were captured or observed at that time.

WATERBODY

Waterbody Unnamed Creek

Main Drainage Hess Creek Tributary to Two-Bit Creek

NPRX 068-1 NPSI 4-123.01 NPAS 68 NPMP 381.8 AHMP NA

USGS Map Reference Livengood, AK T 10N R 8W Sec. 10

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Unnamed Creek is an intermittent (0-13 cm deep), dark-stained stream that flows into Two-bit Creek (a tributary to Hess Creek) below the proposed gasoline crossing. This small stream has a relatively steep gradient and drains an approximately 1.5 km² area (Ref. 11) through a poorly defined marshland area. Near the crossing this creek has been channeled through a CMP at the Elliott Highway. The surrounding riparian area is vegetated by spruce, willows and sedge. Substrate consists of fines.

A survey conducted in September 1980 (Ref. 122) described this stream as poor fish habitat due to a poorly defined channel; in many places flow became subterranean. Fish use of this stream is likely to be low to non-existent at any time of the year.

WATERBODY

Waterbody Two-Bit Creek

Main Drainage Yukon River Tributary to Hess Creek

NPRX 067-5 NPSI 4-123 NPAS 67 NPMP 381.4 AHMP NA

USGS Map Reference Livengood, AK T 10N R 8W Sec. 5

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Two-Bit Creek is a small tributary to Hess Creek that drains an area of approximately 13 km² over steep gradient (approximately 5%) (Ref. 11). Stream substrate is sand and fines, and banks are vegetated with grasses, alder, spruce, and dense willows. During the fall 1980 investigations (Ref. 122), stream width varied from 0.3 to 6.3 m and depth ranged from 9 to 14 cm. Numerous instream willow branches and deadfalls have created small log jams and falls which could impede fish movement to this area.

Little work has been done on this stream but fish use is thought to be low to non-existent at any time of the year. A survey conducted in September 1980 (Ref. 122) reported habitat as marginal with much instream debris and numerous log jams which likely restrict fish passage. No fish were captured or observed at that time.

WATERBODY

Waterbody Unnamed Creek

Main Drainage Yukon River Tributary to Hess Creek

NPRX 067-4 NPSI 3-122.05 NPAS 67 NPMP 380.2 AHMP NA

USGS Map Reference Livengood, AK T 10N R 8W Sec. 5

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Unnamed Creek is a small tributary to Hess Creek which flows down a relatively steep gradient (approximately 5%) through a narrow channel bordered by spruce and birch (Ref. 11).

Examination of aerial photographs taken on May 17, 1978 suggests that Unnamed Creek was dry at that time; however, field verification would be necessary to confirm habitat in the stream. Unnamed Creek is not expected to provide suitable fish habitat during late summer, fall or winter.

WATERBODY

Waterbody Unnamed Creek

Main Drainage Yukon River Tributary to Hess Creek

NPRX 067-3 NPSI 3-122.04 NPAS 67 NPMP 379.5 AHMP NA

USGS Map Reference Livengood, AK T 10N R 8W Sec. 5

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Unnamed Creek is a very narrow (0.1-1.0 m wide) stream that meanders over a steep gradient to Hess Creek. A well defined channel confines the alternating shallow (6-10 cm) pools and connecting streams bordered by grasses, willows, alder and spruce. Stream substrate is gravel and pebbles that have eroded somewhat forming many series of 10 cm falls (approximately 3 per m).

Little work has been done on this stream but fish use is thought to be low to non-existent at any time of the year. A survey conducted in September 1980 (Ref. 122) reported habitat as suited to supporting fish but the steep gradient in the vicinity of the crossing likely restricts fish movement. No fish were captured or observed at that time.

WATERBODY

Waterbody Hot Cat Creek

Main Drainage Yukon River Tributary to Hess Creek

NPRX 067-2 NPSI 3-122.03 NPAS 67 NPMP 378.5 AHMP NA

USGS Map Reference Livengood, AK T 11N R 8W Sec. 31

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>		<u>121</u>
Summer	<u>GR</u>	<u>R</u>	<u>30</u>
Fall	<u>None</u>		<u>122</u>
Winter	<u>None</u>		<u>None</u>

Hot Cat Creek is a moderately fast-flowing, humic-stained stream that flows south to Hess Creek in a series of small pools and narrow chutes. During the September 1980 investigation this stream was approximately 1.5-3.2 m wide and 12-49 cm deep. Banks are vegetated with grasses, herbaceous plants, willows, alder and spruce. Some erosion has occurred causing trees and branches to clog portions of the stream.

Documentation of fish use in Hot Cat Creek is limited to summer, at which time grayling are reported to rear in the area (Ref. 30). Although investigations conducted in spring and fall 1980 (Ref. 121 and 122) reported no fish present, Hot Cat Creek should be considered fish habitat during open water. Winter use is unlikely as streams of this nature tend to be dry or frozen solid in winter.

WATERBODY

Waterbody Unnamed Creek

Main Drainage Yukon River Tributary to Hot Cat Creek

NPRX 067-1 NPSI 3-122.02 NPAS 67 NPMP 375.9 AHMP NA

USGS Map Reference Livengood, AK T 11N R 9W Sec. 26

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Unnamed Creek is a narrow, humic-stained stream which flows south to its confluence with Hot Cat Creek. Stream substrate is composed of fines and heavily littered with vegetative debris. Banks are stable and covered with spruce, alder, willows and grasses. Numerous log jams, created by debris and deadfalls, likely prevent any fish from migrating in to this area from Hot Cat Creek.

Little work has been done on this stream but fish use is thought to be low to non-existent at any time of the year. A survey conducted in September 1980 (Ref. 122) reported habitat as marginal with much instream debris and numerous log jams which likely restrict fish passage. No fish were captured or observed at that time.

WATERBODY

Waterbody Unnamed CreekMain Drainage Yukon River Tributary to Hess CreekNPRX 066-4 NPSI 3-122.01 NPAS 66 NPMP 374.3 AHMP NAUSGS Map Reference Livengood, AK T 11N R 9W Sec. 22

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Unnamed Creek is a shallow (11-13 cm), darkly-stained tributary to Hess Creek that drains south through a low-lying marsh area. Stream substrate consists of fines and detritus and banks are densely vegetated with spruce, willows, alder, birch and grass. In the area of the proposed crossing, numerous log jams created by instream debris and deadfalls likely prevent fish movement to this area.

Little work has been done on this stream but fish use is thought to be low to non-existent at any time of the year. A survey conducted in September 1980 (Ref. 122) reported habitat as marginal with much instream debris and numerous log jams which likely restrict fish passage. No fish were captured or observed at that time.

WATERBODY

Waterbody Isom Creek

Main Drainage Yukon River Tributary to Yukon River

NPRX 066-3 NPSI 3-122 NPAS 66 NPMP 371.4 AHMP NA

USGS Map Reference Livengood, AK T 11N R 9W Sec. 7

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Isom Creek is a deep (50-150 cm), humic-stained stream that drains a 26 km² area above the proposed pipeline crossing (Ref. 11). Stream width varies from 0.5 m to 3.0 m and substrate consists of fines. High (3 m) banks are vegetated with grasses, herbaceous plants and overhanging willows and alder. A few spruce have fallen into the stream channel creating occasional falls approximately 10 cm high.

Isom Creek has been reported as a rearing area for grayling during spring, summer and fall (Refs. 11 and 76); however, specific fish documentation is not available to verify these reports. A survey conducted in September 1980 (Ref. 122) recorded no fish although habitat appeared favorable. Fish use is suspected to be low during the open water period and in winter is unlikely as streams of this type tend to be dry or freeze solid in winter.

WATERBODY

Waterbody Tributary to Isom CreekMain Drainage Yukon RiverTributary to Isom CreekNPRX 066-2NPSI 3-121.02NPAS 66NPMP 370.6AHMP NAUSGS Map Reference Livengood, AKT 11NR 10WSec. 7

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>X</u>	<u>R</u>	<u>11,30</u>
Fall	<u>None</u>	<u></u>	<u>122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Tributary to Isom Creek is a small (0.2-2.9 m wide), slow moving stream that crosses the proposed pipeline route about 90 m north of Isom Creek. Its humic-stained waters flow south to Isom Creek over mud and detritus substrate in a series of pools and narrow streams 10-100 cm in depth. Sloughing banks are vegetated with grasses, moss, willows, alder and spruce. In the vicinity of the proposed crossing several falls 0.3-0.5 m high have been created by erosion of the stream channel. This stream drains an area above the pipeline crossing of 2.8 km² (Ref. 11).

Grayling are suspected to use this stream during the open water season (Ref. 11). However, investigations conducted during September 1980 (Ref. 122) did not yield any fish suggesting that fish use of this stream during open water is likely very low. Winter use is thought to be non-existent as streams of this size and type tend to be dry or freeze solid in winter.

WATERBODY

Waterbody Tributary to Isom CreekMain Drainage Yukon RiverTributary to Isom Creek
 NPRX 066-1 NPSI 3-121.01 NPAS 66 NPMP 370.4-370.5 AHMP NA
USGS Map Reference Livengood, AKT 11N R 9W Sec. 6

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Tributary to Isom Creek is a slightly humic-stained stream which flows west into Isom Creek through a 0.5-1.5 m wide channel and ranges in depth from 10-30 cm bordered by spruce, willows, birch and cottonwood.

Fishery investigations have not been conducted on this stream at any time. It is probable that winter use is non-existent, but field study during the open water period would be necessary to clarify its importance to fish.

WATERBODY

Waterbody Tributary to Isom Creek

Main Drainage Yukon River Tributary to Isom Creek

NPRX 065-1 NPSI 3-121 NPAS 65 NPMP 369.4 AHMP NA

USGS Map Reference Livengood, AK T 11N R 10W Sec. 1

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Tributary to Isom Creek is a small slightly humic-stained stream which crosses the proposed pipeline route about 90 m north of Tributary to Isom Creek and flows south into Isom Creek. Banks are bordered by spruce, willows, birch and cottonwood.

Grayling are suspected to use this area during the open water period (Ref. 11), but no information is available to substantiate fish usage. Further investigations would be necessary to clarify the importance of this stream to fish in the open water season. The small size of the stream strongly suggests that it freezes to the bottom in winter.

WATERBODY

Waterbody Yukon RiverMain Drainage Yukon RiverTributary to Yukon River
 NPRX 064-2 NPSI 3-120 NPAS 64 NPMP 360.7-361.1 AHMP NA

 USGS Map Reference Livengood, AK T 12N R 10W Sec. 7

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	AL,BB,CN,DS,GR,IN,KS LC,LS,NP,RW,SS,TP	M,R,S	11,20,21,30,76
Summer	AL,BB,CN,DS,GR,IN,KS LC,LS,NP,RW,SS,TP	M,R,S	11,20,21,30,76
Fall	AL,BB,CN,DS,GR,IN,KS LC,LS,NP,RW,SS,TP	M,R,S	11,30,76
Winter	AL,BB,CN,DS,GR,IN,KS LS,NP,RW,SS,TP	M,R,S,W	11,30,76

The Yukon River is the largest river in Alaska and flows more than 3700 km from headwater regions in Yukon Territory to the Bering Sea. The proposed pipeline crossing occurs approximately 30 km downstream of the Yukon Flats area. Here the river is bordered by steep hills which confine the turbid waters to a channel 750-800 m wide.

The Yukon River in the vicinity of the proposed gas pipeline route provides important fish habitat year-round. Numerous species are reportedly present in the Yukon River and 12 species have been documented to occur in the vicinity of the crossing (Ref. 20). Additional species suspected to be present in this area include Arctic lamprey, Bering cisco, broad whitefish, humpback whitefish, and least cisco (Ref. 21). Other species reported in the Yukon River include sockeye salmon, pink salmon, Arctic lamprey, Arctic cisco, pond smelt, rainbow smelt (Ref. 11). However, it is unlikely that these species ascend as far upstream as the proposed pipeline crossing. The river supports large runs of king, silver and chum salmon which provide an important economic contribution to the Yukon Basin. This section of the river is utilized for migration, spawning and rearing by different fish species throughout the year. This region is also a wintering area for many fish that descend from smaller tributaries and upstream regions to overwinter in the mainstem of the river.

The Yukon River is of great importance to fisheries resources in Alaska.

374 WATERBODY

Waterbody Burbot Creek

Main Drainage Yukon River Tributary to Yukon River

NPRX 064-1 NPSI 3-119 NPAS 64 NPMP 359.3 AHMP NA

USGS Map Reference Livengood, AK T 12N R 11W Sec. 1

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>BB</u>	<u>R</u>	<u>11,20,21,30</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Burbot Creek drains a small lake and then flows southwesterly to its confluence with the Yukon River. Its waters are stained brown and confined to a small channel (0.3-1.2 m wide, 15-46 cm deep) (Refs. 11 and 21). Substrate is silt, grasses and debris and stream bank vegetation is spruce, willows, alder and horsetail (Refs. 11 and 21).

In the vicinity of the proposed pipeline crossing, burbot use Burbot Creek for rearing and as a nursery area (Refs. 11, 20 and 21). The presence of burbot fry in the stream suggests spawning; however, spawning has not been reported in this area and spawning is more likely to occur in the small lake located approximately 1.2 km upstream of the proposed crossing (Refs. 11 and 21).

No information is available concerning use of Burbot Creek at the proposed crossing in spring or fall but it is possible that fish use the stream throughout the open water season. Winter use of the stream is unlikely since it is thought that free water would be absent in winter.

WATERBODY

Waterbody Woodchopper CreekMain Drainage Yukon River Tributary to Yukon RiverNPRX 063-1 NPSI 3-118 NPAS 63 NPMP 358.4 AHMP NAUSGS Map Reference Livengood, AK T 12N R 11W Sec. 1 & 2

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>GR</u>	<u>R</u>	<u>11,20,30</u>
Summer	<u>None</u>		<u>None</u>
Fall	<u>None</u>		<u>None</u>
Winter	<u>None</u>		<u>None</u>

Woodchopper Creek is a small, darkly humic-stained stream approximately 1.2 m wide and approximately 90 cm deep which flows northwest across the proposed pipeline route to the Yukon River about 2.0 km downstream. Low banks are vegetated with spruce, alder and grasses. This stream flows down a slight gradient (approximately 0.8%) and drains an area approximately 35 km² above the pipeline (Ref. 11). The stream bottom consists primarily of silt.

Woodchopper Creek is reported to have deep pools, flowing water and good fish cover; however, a log jam at the pipeline crossing may act as a barrier to fish movement (Ref. 20). The stream has been reported to serve as a spring rearing area for sculpin, northern pike, grayling and whitefish (Ref. 11); however, actual fish documentation appears to be limited to spring observations of grayling (Ref. 30). Information concerning fish use of Woodchopper Creek during the summer and fall is not available but it is very likely used throughout the open water period. Winter fish use of this stream is thought to be low to non-existent.

WATERBODY

Waterbody Phelps CreekMain Drainage Yukon River Tributary to Ray RiverNPRX 062-4 NPSI 3-117 NPAS 62 NPMP 352.9 AHMP NAUSGS Map Reference Livengood, AK T 13N R 11W Sec. 17

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>GR</u>	<u>R</u>	<u>11,30</u>
Fall	<u>GR</u>	<u>R</u>	<u>11,30,64</u>
Winter	<u>None</u>	<u></u>	<u>11,30</u>

Phelps Creek is a moderate sized lightly humic-stained stream which meanders west to the Ray River and drains an area above the pipeline route of approximately 21 km². This stream flows down a relatively steep gradient (approximately 5%) through an area characterized as a spruce-deciduous woodland (Ref. 11).

Phelps Creek has been reported to serve as a rearing area for grayling during the spring season (Ref. 11), however, actual fish observations are limited to summer and fall (Refs. 30 and 64). Phelps Creek probably freezes to the bottom in winter and fish use at that time would be low to non-existent. Available data suggest that the stream is important to grayling throughout the open water period.

WATERBODY

Waterbody Unnamed Creek

Main Drainage Yukon River Tributary to Ray River

NPRX 062-3 NPSI 3-116 NPAS 62 NPMP 351.1 AHMP NA

USGS Map Reference Livengood, AK T 13N R 12W Sec. 7

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Unnamed Creek is a small stream with a poorly defined channel, that flows through a tundra marsh area to the Ray River. Substrate is detrital material and sphagnum moss. Riparian vegetation consists of a dense growth of spruce, willows, sedge, grasses and sphagnum moss.

Little work has been done on this stream but fish use is thought to be low to non-existent at any time of the year. A survey conducted in September 1980 (Ref. 122) reported habitat as marginal with much instream debris and numerous log jams which likely restrict fish passage. No fish were captured or observed at that time.

WATERBODY

Waterbody Unnamed Creek

Main Drainage Yukon River Tributary to Ray River

NPRX 062-2 NPSI 3-115 NPAS 62 NPMP 350.0 AHMP NA

USGS Map Reference Livengood, AK T 13N R 12W Sec. 1

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Unnamed Creek is a small stream that drains a forested valley. The stream in the vicinity of the proposed crossing consists of fast, narrow steep banked chutes connecting wider, gently flowing pools. Many of the pools are clogged with logs and branches. Riparian vegetation consists of willows, alder, spruce, grasses and moss. Portions of the same area upstream of the proposed crossing show signs of recent fire.

Little work has been done of this stream but fish use is thought to be low to non-existent at any time of the year. A survey conducted in September 1980 (Ref. 122) reported habitat as marginal with much instream debris and numerous log jams which likely restrict fish passage. No fish were captured or observed at that time.

WATERBODY

Waterbody Stumblin Creek

Main Drainage Yukon River Tributary to Ray River

NPRX 062-1 NPSI 3-114 NPAS 62 NPMP 348.6 AHMP NA

USGS Map Reference Bettles, AK T 14N R 12W Sec. 35

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Stumblin Creek is a narrow, shallow stream that flows west to its confluence with the Ray River. This stream is characterized by short runs, chutes and numerous small falls created by debris and deadfalls. Riparian vegetation consists of overhanging willows, spruce, moss and grasses. About 25% of the stream bank shows sign of erosion and bank slumping.

Little work has been done on this stream but fish use is thought to be low to non-existent at any time of the year. A survey conducted in September 1980 (Ref. 122) reported habitat as marginal with much instream debris and numerous log jams which likely restrict fish passage. No fish were captured or observed at that time.

WATERBODY

Waterbody Unnamed CreekMain Drainage Yukon RiverTributary to Ray RiverNPRX 061-3NPSI 3-113NPAS 61NPMP 347.3AHMP NAUSGS Map Reference Bettles, AKT 14NR 12WSec. 34

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Unnamed Creek is a narrow shallow stream that flows west to its confluence with the Ray River. Riparian vegetation consists of overhanging willows, spruce, moss and grasses.

Fishery investigations have not been conducted on this stream at any time. It is probable that winter use is non-existent, but field study during the open water period would be necessary to clarify its importance to fish.

WATERBODY

Waterbody Unnamed Creek

Main Drainage Yukon River Tributary to Ray River

NPRX 061-2 NPSI 3-112 NPAS 61 NPMP 345.4 AHMP NA

USGS Map Reference Bettles, AK T 14N R 12W Sec. 21

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>20,21</u>
Fall	<u>None</u>	<u></u>	<u>122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Unnamed Creek is a small, darkly stained stream that drains an 7.7 km² area (Ref. 11) above the proposed pipeline crossing. It flows westerly over sand, gravel and pebble substrate to its confluence with the Ray River. This stream was 0.3 to 0.7 m wide and 8 to 10 cm deep during recent fall investigations. Willows, spruce, sedge, grasses and herbaceous plants densely vegetate the stable banks. Instream debris and deadfalls have created numerous jams that may impede fish movement to this area.

Past investigations (Refs. 11, 20 and 21) have failed to document fish use in Unnamed Creek and the most recent survey conducted in September 1980 (Ref. 122) described the habitat as poor and fish use likely non-existent at any time of the year.

WATERBODY

Waterbody Fort Hamlin Hills CreekMain Drainage Yukon RiverTributary to Ray RiverNPRX 061-1NPSI 3-111NPAS 61NPMP 344.1AHMP NAUSGS Map Reference Bettles, AKT 14NR 12WSec. 17

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>GR</u>	<u>R</u>	<u>11,70</u>
Summer	<u>GR</u>	<u>R</u>	<u>20,30</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Fort Hamlin Hills Creek is a moderate sized, darkly humic-stained stream that flows southwest to the Ray River. The stream is about 3 m wide and is up to 120 cm deep. The channel is bordered by spruce, willows, alder and grasses (Refs. 11, 20 and 21). Draining an area of approximately 87 km² above the proposed alignment (Refs. 11) Fort Hamlin Hills Creek crosses the pipeline route approximately 360 m above the Haul Road Crossing.

Fort Hamlin Hills Creek has been reported to serve as a rearing area for grayling, and possibly sculpin and round whitefish during the spring and summer period (Refs. 11, 20, 30 and 70).

No information concerning fish use of this stream in fall is available, but fish are expected to emigrate at that time since overwintering habitat in the stream is expected to be low to non-existent.

WATERBODY

Waterbody Knowater Creek

Main Drainage Ray River Tributary to North Fork Ray River

NPRX 060-2 NPSI 3-110.01 NPAS 60 NPMP 341.3 AHMP NA

USGS Map Reference Bettles, AK T 14N R 12W Sec. 6

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>20, 21</u>
Fall	<u>None</u>	<u></u>	<u>122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Knowater Creek is a small, humic-stained stream that flows southwest into the North Fork of the Ray River. This stream drains muskeg and forest through many small channels. The stream is channelized through a culvert at the Prudhoe Bay road and a low water crossing at the TAPS workpad, 100 m upstream of the proposed crossing. The culvert at the road has buckled in the middle and the corrugations form a long riffle.

It has been reported that grayling and sculpin may be present in this stream and in the small lake upstream of the proposed crossing (Refs. 11, 20 and 21). However, this has not been documented and a survey in September 1980 did not yield any fish (Ref. 122).

Fish use of this stream is thought to be low during low open water and non-existent in winter.

384 WATERBODY

Waterbody North Fork Ray RiverMain Drainage Yukon River Tributary to Ray RiverNPRX 060-1 NPSI 3-110 NPAS 60 NPMP 337.9 AHMP NAUSGS Map Reference Bettles, AK T 15N R 12W Sec. 17

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>GR,LS</u>	<u>M,R,S</u>	<u>30,76</u>
Summer	<u>BB,CD,GR,LS,NP,RW</u>	<u>R</u>	<u>11,20,38,30,76</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>GR</u>	<u>W</u>	<u>55,77</u>

The North Fork Ray River is a slow-moving stream that meanders through dense stands of willows, birch and large spruce trees. Near the proposed pipeline route the stream channel varies in width from 9-15 m and averages 2-3 m in depth. Incised banks range in height from 3-8 m and substrate consists of mud and silt. Numerous dead trees fallen into the stream channel provide good cover for fish.

Grayling use the North Fork of the Ray River in the vicinity of the crossing for spawning in spring and early summer and probably as a rearing area through the fall open water season. Burbot, sculpin, longnose sucker, northern pike and round whitefish rear in the area in summer and are likely present during other seasons. Sheefish and lake chub are also reported to utilize this stream (Ref. 11) but their actual presence has not been documented. Early winter investigations in 1979 found grayling both upstream and downstream of the proposed crossing. Conditions at that time appeared favorable to support fish, although discharge was extremely low (Ref. 77). In late winter 1979 habitat was very poor or absent. The stream was frozen to the bottom or anoxic free water was found in the vicinity of the proposed pipeline (Ref. 55).

WATERBODY

Waterbody Fed Creek

Main Drainage Ray River Tributary to North Fork Ray River

NPRX 059-1 NPSI 3-109 NPAS 59 NPMP 333.2 AHMP NA

USGS Map Reference Bettles, AK T 16N R 13W Sec. 25

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>11, 121</u>
Summer	<u>None</u>	<u></u>	<u>11</u>
Fall	<u>None</u>	<u></u>	<u>122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Fed Creek is a small slow-flowing, humic-stained stream that meanders southeast across the proposed pipeline to its confluence with the North Fork of the Ray River. This stream flows down a moderate gradient (2.5%) and over many log jams (Ref. 11). Vegetation in this area is spruce-deciduous woodlands.

Past efforts to document fish in Fed Creek have been unsuccessful (Refs. 11, 20, 21 and 121), and no fish were observed during September 1980 (Ref. 122). Fish use of Fed Creek is thought to be low to non-existent throughout the year.

WATERBODY

Waterbody (South Branch) West Fork of the Dall RiverMain Drainage Dall River Tributary to West Fork Dall RiverNPRX 057-3 NPSI 3-108 NPAS 57 NPMP 325.8 AHMP NAUSGS Map Reference Bettles, AK T 17N R 13W Sec. 28

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>GR</u>	<u>R</u>	<u>11,30</u>
Summer	<u>GR</u>	<u>R</u>	<u>11,20,21,30</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>1,11</u>

The South Branch of the West Fork of the Dall River flows northeast to its confluence with the West Fork Dall River. The humic-stained stream is 1-3 m wide and depths are variable (about 20 cm in the riffle areas and up to 1.8 m in the pools). Stream banks are well vegetated with spruce, alder, willows and grasses and range from 3-5 m high. The stream bottom consists primarily of coarse gravel, with occasional accumulations of mud in the pooled areas. The stream drains an area of about 42 km² above the pipeline and flows down a relatively steep gradient (approximately 5% (Ref. 11)).

Grayling, sheefish, whitefish and sculpin have been reported in this stream (Ref. 11); however, actual documentation appears to be limited to spring and summer records of grayling (Refs. 11, 20, 21 and 30). No information concerning fall fish use is available for this stream, but fish are expected to emigrate during this period since the stream does not provide suitable over-wintering fish habitat (Ref. 1).

WATERBODY

Waterbody (Middle Branch) West Fork of the Dall RiverMain Drainage Dall River Tributary to West Fork Dall RiverNPRX 057-2 NPSI 3-107 NPAS 57 NPMP 323.4 AHMP NAUSGS Map Reference Bettles, AK T 17N R 13W Sec. 17

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>GR</u>	<u>M,R</u>	<u>11,30</u>
Summer	<u>None</u>	<u></u>	<u>20,21,38</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>1</u>

The Middle Branch of the West Fork of the Dall River flows southeast, crossing the proposed pipeline route about 1,200 m upstream of its confluence with the West Fork Dall River. Draining an area of about 10.6 km² above the pipeline, this brown-stained stream is approximately 1.5 m wide and 40-45 cm deep. Its channel is bordered by spruce, willows and grasses.

The Middle Branch of the West Fork of the Dall River is reported to serve as a rearing area for grayling, sheefish, whitefish and possibly sculpin (Ref. 11); however, documentation appears to be restricted to spring use of the stream by grayling (Ref. 30). No fish were captured during summer investigations (Ref. 20). Data on fish use during fall are unavailable, but the stream does not provide suitable overwintering fish habitat (Ref. 1) and emigration must occur.

WATERBODY

Waterbody Smoky Creek

Main Drainage West Fork Dall River Tributary to Middle Branch West Fork Dall River

NPRX 057-1 NPSI 3-106.02 NPAS 57 NPMP 322.7 AHMP NA

USGS Map Reference Bettles, AK T 17N R 13W Sec. 7

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>121</u>
Summer	<u>None</u>	<u></u>	<u>11,20,21</u>
Fall	<u>None</u>	<u></u>	<u>122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Smoky Creek is a small, lightly humic-stained stream that flows southeasterly to its confluence with the West Fork of the Dall River. Adjacent to the proposed gas line crossing, this stream varies from 0.9-6.3 m in width and water depths are approximately 15 cm. Banks are bordered by spruce, birch, moss, sedge, and herbaceous plants, and the substrate consists of soil and silt. The stream flows down a moderate gradient and has many log jams in its channel.

Past sampling efforts to document fish in Smoky Creek did not locate any fish (Refs. 11, 20, 21, 121) and no fish were captured or observed during September 1980 (Ref. 122). Fish use of Smoky Creek during fall or any other time of the year is likely low or non-existent, due to the poor habitat created by numerous log jams.

WATERBODY

Waterbody Unnamed Creek

Main Drainage West Fork Dall River Tributary to (North Branch) West Fork Dall River

NPRX 056-3 NPSI 3-106.01 NPAS 56 NPMP 321.1 AHMP NA

USGS Map Reference Bettles, AK T 17N R 13W Sec. 6

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>121</u>
Summer	<u>None</u>	<u></u>	<u>11,20,21</u>
Fall	<u>None</u>	<u></u>	<u>122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Unnamed Creek flows northeast and crosses the proposed pipeline and the TAPS oil line approximately 1.3 km upstream of its confluence with the North Branch of the West Fork of the Dall River. This small, humic-stained stream is 0.5-7 m wide and 10-22 cm deep. The riparian vegetation along the poorly defined channel consists of dense, overhanging willows, dwarf birch and alder. The stream has a moderate gradient (4%) and drains an area above the proposed alignment of about 2.5 km² (Ref. 11). In the vicinity of the crossing, the stream bottom consists primarily of mud and detritus.

Fisheries investigations have been conducted on this stream throughout the open water period and fish use has never been documented. Fish use of this stream at any time of the year is expected to be non-existent.

WATERBODY

Waterbody Finger Mountain Creek

Main Drainage West Fork Dall River Tributary to (North Branch) West Fork Dall River

NPRX 056-2 NPSI 3-106 NPAS 56 NPMP 320.2 AHMP NA

USGS Map Reference Bettles, AK T 18N R 14W Sec. 36

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>GR</u>	<u>R</u>	<u>11</u>
Summer	<u>None</u>	<u></u>	<u>20</u>
Fall	<u>None</u>	<u></u>	<u>20</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Finger Mountain Creek flows east crossing the proposed pipeline approximately 1.1 km upstream of its confluence with the north branch of the West Fork of the Dall River. Draining an area of about 3.7 km² above the crossing, this lightly stained stream flows down a moderate gradient (approximately 2%) through an area vegetated with spruce, willows, alder and grasses.

Finger Mountain Creek has been documented as a rearing area for grayling during spring (Ref. 11). A previous investigation conducted in July of 1971 found the stream devoid of suitable fish habitat, but it is suspected that such conditions exist only during years of extremely low water. Winter fish use of Finger Mountain Creek is expected to be low to non-existent since the size of the stream indicates that it would freeze to the bottom.

WATERBODY

Waterbody Unnamed Creek

(North Branch)
Main Drainage West Fork Dall River Tributary to Finger Mountain Creek

NPRX 056-1 NPSI 3-105.01 NPAS 56 NPMP 319.8 AHMP NA

USGS Map Reference Bettles, AK T 18N R 14W Sec. 36

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>11,20</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Unnamed Creek flows southeasterly across the proposed gas line route and Haul Road prior to joining Finger Mountain Creek west of the TAPS workpad. Banks are vegetated with spruce, willows, alder and grasses.

This stream was reported dry on 17 July 1971 (Ref. 20) and except during periods of high flow likely does not provide suitable fish habitat at any time of the year.

WATERBODY

Waterbody Olson's Lake Creek

Main Drainage Koyukuk River Tributary to Kanuti River

NPRX 055-3 NPSI 3-105 NPAS 55 NPMP 316.9 AHMP NA

USGS Map Reference Bettles, AK T 18N R 14W Sec. 23

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>GR</u>	<u>M,R</u>	<u>11,30,31,70</u>
Summer	<u>GR</u>	<u>R</u>	<u>31</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Olson's Lake Creek crosses the proposed pipeline route approximately 10-12 km south of Old Man Camp. This small stained creek flows north, through relatively open country with scattered spruce into Olson's Lake (Ref. 30). Stream banks are 1-3 m high and well vegetated with low brush and willows (Ref. 30).

Grayling have been reported several times to be present in Olson's Lake Creek along with sightings near the proposed pipeline 3 June 1977 and at its inlet to Olson's Lake 18 June 1979 (Refs. 11, 30, 31 and 70). Grayling likely use this stream during open water for migration and rearing. No information is available concerning fall fish use near the proposed pipeline crossing but it is likely that grayling are present throughout the open water season. Winter use of Olson's Lake Creek in the vicinity of the proposed crossing is unlikely as streams of this size tend to be dry or freeze to the bottom in winter.

WATERBODY

Waterbody Kristie's Creek

Main Drainage Kanutli River Tributary to Olson's Lake Creek

NPRX 055-2 NPSI 3-104.01 NPAS 55 NPMP 316.6 AHMP NA

USGS Map Reference Bettles, AK T 18N R 14W Sec. 15

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>GR</u>	<u>R</u>	<u>11</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Kristie's Creek is a small stream which flows through relatively open country with scattered spruce to Olson's Lake Creek.

Fisheries information concerning Kristie's Creek is scant. However, grayling have been observed near the proposed crossing in August 1977 (Ref. 11) suggesting that grayling use this stream during the open water period. Further investigation is needed to fully assess this stream's importance to fish. Winter use is unlikely as streams of this size and type tend to be dry or frozen solid in winter.

WATERBODY

Waterbody Caribou Mountain CreekMain Drainage Koyukuk River Tributary to Kanuti RiverNPRX 055-1 NPSI 3-104 NPAS 55 NPMP 314.1 AHMP NAUSGS Map Reference Bettles, AK T 18N R 14W Sec. 4

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>GR</u>	<u>R</u>	<u>31</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Caribou Mountain Creek drains an area of approximately 17 km² west of the proposed pipeline crossing (Ref. 11) and flows to the Kanuti River east of the pipeline route. The banks of this small tundra stream (2-3 m wide) are vegetated with birch, willow and some spruce.

Adult grayling are known to use Caribou Mountain Creek in June. No data exist for other seasons, but due to its small size, Caribou Mountain Creek probably does not provide overwintering habitat for fish.

WATERBODY

Waterbody Kanuti River

Main Drainage Yukon River Tributary to Koyukuk River

NPRX 054-4 NPSI 3-103 NPAS 54 NPMP 311.0 AHMP NA

USGS Map Reference Bettles, AK T 19N R 14W Sec. 30

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>BB,GR</u>	<u>M,R,S</u>	<u>20,30</u>
Summer	<u>CN,GR</u>	<u>R</u>	<u>20,21,30</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u>None</u>	<u>31,57</u>

The Kanuti River drains the southern slopes of the Philip Smith Mountains and flows west across the Kanuti Flats before joining the Koyukuk River. The proposed pipeline crossing is approximately 2.3 km south of Old Man Camp. In this region, the meandering stream is 10-15 m wide with depths to 2 m. Banks are up to 2 m high. The river flows through tundra and is bordered by willows, dwarf birch, and some spruce. The water is humic-stained and the substrate is primarily mud with gravel in riffle areas.

The Kanuti River in the proximity of the proposed crossing is likely utilized by fish throughout the open water season. This stream is reported to support a wide variety of species; however the distribution of many of these is limited to the lower section of the river which flows through the Kanuti Flats. Fish that are suspected to occur as far upstream as the proposed crossing include burbot, slimy sculpin, grayling, northern pike, round whitefish and possibly longnose suckers (Ref. 21). Species restricted to the lower river probably include Bering cisco, broad whitefish, least cisco, chum salmon, hump-back whitefish, and sheefish (Refs. 11 and 30). Near the crossing, the river serves as a migration route in spring and fall for fish moving to and from upstream spawning and rearing areas. Grayling fry have been captured during July 1971 (Ref. 20) indicating use as a rearing area and possibly spawning area. During the open water period, various life stages of all of those species listed on the previous page could rear in this area. Winter investigations indicate that little or no winter fish habitat is available in the vicinity of the proposed pipeline. This is due to limited flow or absence of flow and low dissolved oxygen concentrations (Refs. 31, 55 and 74).

WATERBODY

Waterbody Netsch's Creek Tributary #1

Main Drainage Koyukuk River Tributary to Kanuti River

NPRX 054-3 NPSI 3-102 NPAS 54 NPMP 309.1 AHMP NA

USGS Map Reference Bettles, AK T 19N R 15W Sec. 13

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Netsch's Creek Tributary #1 is a small headwater tributary to the Kanuti River. This crossing is approximately 0.5 km north of Old Man Camp. During fall 1980 the stream was 0.5-4.5 m wide and 16-23 cm deep although pools and wetland areas alongside this stream suggests that it is significantly wider and probably deeper during periods of high water. Stream substrate is sand and detrital materials and approximately 80% cover is provided by willows that densely vegetate the stream bank.

Fisheries investigations have only been conducted on Netsch's Creek Tributary #1 during September 1980 (Ref. 122). At that time no fish were observed or captured, although habitat appeared quite favorable. Fish reported in areas downstream of the proposed crossing (Ref. 11) likely use this area during open water. Further investigation is needed to fully assess this stream's importance to fish. Winter use is not likely as streams of this type tend to be dry or frozen solid in winter.

WATERBODY

Waterbody Netsch's Creek Tributary #2Main Drainage Koyukuk River Tributary to Kanuti RiverNPRX 054-2 NPSI 3-101 NPAS 54 NPMP 308.7 AHMP NAUSGS Map Reference Bettles, AK T 19N R 15W Sec. 13

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Netsch's Creek Tributary is a small headwater tributary to the Kanuti River. Crossing #2 of the proposed pipeline is approximately 0.5 km north of Old Man Camp. Vegetation typical of the area consists of willow and dwarf birch.

There have been no studies of fish use in Netsch's Creek Tributary near crossing #2. Fish have been observed in downstream areas (Ref. 11), however no site specific documentation is available for these observations. Winter use near the crossing is unlikely, as streams of this size tend to be dry or frozen solid in winter.

WATERBODY

Waterbody Netsch's Creek Tributary #3Main Drainage Koyukuk RiverTributary to Kanutu RiverNPRX 054-1 NPSI 3-100.01 NPAS 54 NPMP 308.5 AHMP NAUSGS Map Reference Bettles, AK T 19N R 15W Sec. 13

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Netsch's Creek Tributary is a small headwater tributary to the Kanuti River. Crossing #3 of the proposed pipeline is approximately 0.5 km north of Old Man Camp. Vegetation typical of the area consists of willow and dwarf birch.

There have been no studies of fish use in Netsch's Creek Tributary near crossing #3. Fish have been observed in downstream areas (Ref. 11), however no site specific documentation is available for these observations. Winter use near the crossing is unlikely, as streams of this size tend to be dry or frozen solid in winter.

WATERBODY

Waterbody South Fork Fish Creek

Main Drainage South Fork Koyukuk Tributary to Fish Creek

NPRX 053-4 NPSI 3-100 NPAS 53 NPMP 305.0 AHMP NA

USGS Map Reference Bettles, AK T 20N R 15W Sec. 35

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>GR</u>	<u>M,R,S</u>	<u>30</u>
Summer	<u>GR</u>	<u>R</u>	<u>11</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>CN</u>	<u>W</u>	<u>77</u>

South Fork Fish Creek is a shallow, moderately fast-flowing stream approximately 2 m wide. Willow and grass vegetate the occasionally incised banks (1-3 m high). Stream substrate consists primarily of cobble and gravel.

The fish species that are known to use South Fork Fish Creek in the vicinity of the crossing are grayling and slimy sculpin. Grayling spawn in the late spring and rearing grayling are probably found in the stream throughout the open water period (Refs. 11 and 50). Sculpin have been found near the proposed crossing in November (Ref. 77), but fish habitat appears to deteriorate in late winter and the stream freezes to the bottom in some years (Refs. 11 and 55). Spring sources present 0.5 km downstream of the proposed pipeline crossing may be important water sources for fish and should be evaluated (Ref. 55).

WATERBODY

Waterbody Middle Fork Fish CreekMain Drainage South Fork KoyukukTributary to Fish CreekNPRX 053-3NPSI 3-99NPAS 53NPMP 304.0AHMP NAUSGS Map Reference Bettles, AKT 20NR 15WSec. 26

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>GR,RW</u>	<u>M,R</u>	<u>11,30</u>
Fall	<u>GR,RW</u>	<u>M,R</u>	<u>11,30</u>
Winter	<u>None</u>	<u>None</u>	<u>55</u>

Middle Fork Fish Creek is a small stream with a channel 3-4.5 m wide. Near the pipeline, a steep hill occurs on the north side of the stream, and flat topography to the south. Banks are up to 0.6 m high and are bordered by spruce forest.

Middle Fork Fish Creek is a rearing area for grayling and round whitefish during summer and fall (Refs. 11 and 30). Although no fish documentation is available for spring, it is likely that fish use this area throughout the open water period. Many sections of this stream were frozen to the bottom during April 1979 and provided no overwintering habitat for fish (Ref. 55). Consequently, this stream is a likely migration route for fish moving upstream during spring and downstream prior to freeze up.

WATERBODY

Waterbody Fish Creek

Main Drainage South Fork Koyukuk Tributary to Fish Creek

NPRX 053-2 NPSI 3-98 NPAS 53 NPMP 302.2 AHMP NA

USGS Map Reference Bettles, AK T 20N R 15W Sec. 23

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>GR,RW</u>	<u>M,R,S</u>	<u>20</u>
Summer	<u>CD,GR,LS,RW,WF</u>	<u>R</u>	<u>11,30,69,128</u>
Fall	<u>GR</u>	<u>M,R</u>	<u>30</u>
Winter	<u>None</u>	<u>None</u>	<u>21,55</u>

The main fork of Fish Creek is the largest of the three headwater creeks which form Fish Creek. The channel width varies from 6-15 m with 1.2-1.8 m high banks that are occasionally incised. Vegetative cover consists of tall spruce, willows, dwarf birch and berry bushes. Stream substrate is generally gravel and sand.

A variety of fish species have been reported to inhabit Fish Creek in the vicinity of the proposed pipeline crossing, but actual fish use for many species is not well documented. Fish Creek is used by grayling for spring spawning and rearing (Refs. 30 and 64). Chum salmon have also been reported in Fish Creek (Ref. 11) but not near the pipeline crossing. In the proximity of the proposed crossing the stream apparently freezes to the bottom during winter (Refs. 21 and 55), thus providing no overwintering habitat. Fish Creek is considered to provide good habitat for fish during the open water period. Since the creek lacks winter habitat, fish must make spring and fall migrations to and from the stream near the pipeline crossing.

WATERBODY

Waterbody Alder Mountain CreekMain Drainage South Fork Koyukuk River Tributary to Fish CreekNPRX 053-1 NPSI 3-97 NPAS 53 NPMP 300.7 AHMP NAUSGS Map Reference Bettles, AK T 20N R 15W Sec. 11

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>CN</u>	<u>R</u>	<u>11,30</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Alder Mountain Creek drains a 5 km² area east of the proposed pipeline then flows west across the pipeline route into Fish Creek. This small tundra stream ranges from 3 to 4.5 m in width. Bank vegetation is composed of willow and alder.

Slimy sculpin are found in Alder Mountain Creek in summer and use the stream for rearing. Grayling and round whitefish are also believed to use this stream during the open water season (Ref. 11) but use by these species is not documented. Use of this stream by fish in fall and winter is not known but the stream probably does not provide overwintering habitat at the pipeline crossing due to its small drainage area.

WATERBODY

Waterbody Pung's Crossing Creek

Main Drainage Fish Creek Tributary to Bonanza Creek

NPRX 052-4 NPSI 3-96.01 NPAS 52 NPMP 297.6 AHMP NA

USGS Map Reference Bettles, AK T 21N R 14W Sec. 30

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>GR</u>	<u>R,S</u>	<u>11,30</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Pung's Crossing Creek drains an area east of the proposed pipeline and flows southwest to Bonanza Creek. Near the crossing, the stream ranges from 1.5-3 m wide and from 12-30 cm deep. The substrate is composed primarily of sand and gravel and the banks are bordered by dense growths of willow and birch.

Grayling are known to use this stream in the late spring as a rearing and spawning area. Use by grayling through the rest of the open water season is not documented, but grayling are probably present through the summer and fall. Sculpin and round whitefish are also reported to use this stream (Ref. 11), but field documentation for these species is apparently lacking. Pung's Crossing Creek does not provide overwintering habitat due to its small size.

WATERBODY

Waterbody South Fork Bonanza CreekMain Drainage South Fork Koyukuk Tributary to Bonanza CreekNPRX 052-3 NPSI 3-95 NPAS 52 NPMP 293.8 AHMP NAUSGS Map Reference Bettles, AK T 21N R 14W Sec. 8

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>CN,GR,RW</u>	<u>M,S,R</u>	<u>30,31,67</u>
Summer	<u>BB,CN,GR,LS,NP,RW</u>	<u>R</u>	<u>11,20,30</u>
Fall	<u>CN,GR,LS,RW</u>	<u>M,R</u>	<u>30,34</u>
Winter	<u>BB,CN,GR</u>	<u>W</u>	<u>55,76,77</u>

South Fork Bonanza Creek is a clear, mountain stream with alternating pools and riffles throughout the proposed construction area. Channel width varies from 10-15 m and the 1.5-2 m high mud banks are incised and bordered with willows, birch and spruce. At the TAPS workpad stream bottom consists primarily of gravel and the banks are boulder/cobble riprap.

A number of fish species are found in the vicinity of the proposed pipeline crossing during the open water season. Young-of-the-year and mature grayling have been found in the stream in summer, which strongly suggests that spawning takes place in the area (Refs. 34, 30 and 76). Chum salmon reportedly use the South Fork of Bonanza Creek near the mouth (Ref. 11) but none have been observed near the pipeline crossing. Burbot, grayling and sculpin were present near the crossing in November 1979 (Ref. 77). In April 1979 late winter habitat was assessed to be marginal in the immediate vicinity of the crossing but suitable habitat was present about 1260 m downstream (Ref. 55).

Available evidence indicates that South Fork Bonanza Creek is of considerable importance to fish populations during all seasons of the year with the possible exception of the late winter period in the immediate vicinity of the proposed pipeline route.

WATERBODY

Waterbody Grizzly Creek

Main Drainage South Fork Koyukuk River Tributary to Bonanza Creek

NPRX 052-2 NPSI 3-94.03 NPAS 52 NPMP 293.7 AHMP NA

USGS Map Reference Bettles, AK T 21N R 15W Sec. 8

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>GR,CN</u>	<u>M,R</u>	<u>11,122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Grizzly Creek is a moderate-sized, slow-moving stream that flows from its spring source 0.4 km to the South Fork Bonanza Creek. Stream width varies from 1 m to 8 m and depth varies 10 cm to 20 cm except in several still pools where stream depths were to 1.0 m. During the late September 1980 survey water temperatures in Grizzly Creek were higher (4.3° C) than in South Fork Bonanza Creek (0.5° C). Riparian vegetation consists of willows, spruce, and grasses. Moss occurs in dense mats within the stream.

Numerous fish were observed and captured in Grizzly Creek in fall 1980 (Ref. 122). This stream is probably a rearing area for slimy sculpin and grayling throughout the open water period. Round whitefish, burbot, longnose sucker and northern pike found in South Fork Bonanza Creek may also use this area. Warm temperature and adequate water depth in Grizzly Creek may provide overwintering habitat for fish and/or eggs. Grizzly Creek provides excellent fish habitat and could be important to fish the year-round.

WATERBODY

Waterbody Unnamed Bonanza Creek ChannelMain Drainage Bonanza Creek Tributary to South Fork Bonanza CreekNPRX 052-1 NPSI 3-94.02 NPAS 52 NPMP 293.7 AHMP NAUSGS Map Reference Bettles, AK T 21N R 14W Sec. 7

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>11,20,21</u>
Fall	<u>None</u>	<u>None</u>	<u>122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Unnamed Bonanza Creek Channel is an inactive channel of South Fork Bonanza Creek. The channel is dry upstream of the proposed pipeline crossing. At the crossing a small (0.3 m wide) stream of water percolates from a groundwater source and is ponded (5 m wide) in a wide, undefined channel by the TAPS workpad. This channel is completely isolated from the South Fork Bonanza Creek.

Past investigations have failed to document fish use in Unnamed Bonanza Creek Channel (Refs. 11, 20 and 21). A survey conducted in September 1980 (Ref. 122) reported available habitat but fish use was non-existent due to the lack of an inlet or outlet.

It is unlikely that Unnamed Bonanza Creek Channel supports fish at any time of the year.

WATERBODY

Waterbody Oxbow Lake SystemMain Drainage Bonanza Creek Tributary to North Fork Bonanza CreekNPRX 051-5 NPSI 3-94.01 NPAS 51 NPMP 293.2 AHMP NAUSGS Map Reference Bettles, AK T 21N R 14W Sec. 6 & 7

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Oxbow Lake System is a series of moderately sized pockets of water 50-300 cm deep that drain into Oxbow Pond of Bonanza Creek. At the proposed pipeline crossing this waterbody is approximately 15-20 m across. Substrate consists of mud and detritus, and tall grasses grow in and along the waterbody. Stable banks are vegetated with grass, willows, alder and some spruce.

Oxbow Lake System provides marginal fall fish habitat largely due to low dissolved oxygen and pH. Fish were not captured or observed in September 1980 (Ref. 122). Grayling have been reported present in Oxbow Lake System on 24 June 1976 (Ref. 11); however, information concerning the location of the sighting is not available. Fish use during other seasons is probably low.

WATERBODY

Waterbody North Fork Bonanza CreekMain Drainage South Fork Koyukuk Tributary to Fish CreekNPRX 051-4 NPSI 3-94 NPAS 51 NPMP 292.2 AHMP NAUSGS Map Reference Bettles, AK T 22N R 14W Sec. 32

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>GR</u>	<u></u>	<u>121,20</u>
Summer	<u>CN,GR,LS,NP,RW</u>	<u>R</u>	<u>11,20,30,34,123,128</u>
Fall	<u>CN,GR,LS</u>	<u>M,R</u>	<u>30</u>
Winter	<u>None</u>	<u>None</u>	<u>55</u>

North Fork Bonanza Creek is a small meandering creek with alternating pools and riffles. It flows through stands of large spruce and birch. Stream width varies from 7-15 m in summer and 2-5 m in winter. Substrate is primarily gravel and cobble.

The North Fork of Bonanza Creek in the vicinity of the pipeline crossing is used by a number of fish species in summer and fall (Refs. 20, 30, 34, 123 and 128). Fry and juvenile grayling have been observed near the crossing in July and August (Refs. 20 and 34) which suggests use of the stream for spawning. This stream does not provide winter habitat for fish as it was found to be frozen to the bottom in late winter (Ref. 55).

WATERBODY

Waterbody South Fork of the Little Nasty Creek

Main Drainage Bonanza Creek Tributary to The Little Nasty Creek

NPRX Q51-3 NPSI 3-93 NPAS 51 NPMP 290.0 AHMP NA

USGS Map Reference Bettles, AK T 22N R 14W Sec. 19 & 20

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>121</u>
Summer	<u>GR</u>	<u>R</u>	<u>30, 21</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

South Fork Little Nasty Creek flows west across the proposed pipeline route to Bonanza Creek. This small stream (1-3 m wide; 0.3-1 m deep) is characterized by pools with overhanging steep banks that are well vegetated with sedges, willows and spruce.

Grayling are known to use this stream as a rearing area during the summer. Further studies would be required to ascertain the extent of fish use during the remainder of the year; however, the stream probably does not provide overwintering habitat due to its small size.

WATERBODY

Waterbody The Little Nasty CreekMain Drainage Fish CreekTributary to Bonanza CreekNPRX 051-2NPSI 3-92NPAS 51NPMP 289.7AHMP NAUSGS Map Reference Bettles, AKT 22NR 14WSec. 19

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>GR,RW</u>	<u>R</u>	<u>30</u>
Summer	<u>CN,GR</u>	<u>R</u>	<u>20,21,30,128</u>
Fall	<u>RW</u>	<u>R</u>	<u>30</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Little Nasty Creek drains an area east of the proposed pipeline (Ref. 11) and flows west to Bonanza Creek. This small stream (1-2 m wide; 0.5-2 m deep) flows within a sharply defined channel through a dense growth of sedges, willows and spruce. The water is light brown to clear in color and the substrate is composed of silt and pebbles.

This stream is used by grayling, round whitefish and sculpin as a rearing area during the open water season. Winter use by fish is unknown but, due to its small size, the stream is unlikely to provide overwintering habitat.

WATERBODY

Waterbody North Fork Little Nasty CreekMain Drainage Bonanza CreekTributary to Little Nasty CreekNPRX 051-1NPSI 3-91.02NPAS 51NPMP 289.6AHMP NAUSGS Map Reference Bettles, AKT 22NR 14WSec. 19 & 20

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u>None</u>	<u>122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

The North Fork Little Nasty Creek drains an area east of the proposed pipeline crossing and flows west to Little Nasty Creek. Upstream of the proposed pipeline crossing this waterbody becomes a series of pools and trickles. Downstream 100-200 m, the stream channel is undefined and lost in the muskeg. Stream substrate is moss and detritus; the banks are low and vegetated with grasses, moss and willows.

During investigations in September 1980 no fish were caught or observed (Ref. 122) in the vicinity of the proposed crossing. This creek provides little or no fish habitat due largely to its small size and undefined channel.

WATERBODY

Waterbody Prospect Creek

Main Drainage South Fork Koyukuk Tributary to Jim River

NPRX 050-3 NPSI 3-91 NPAS 50 NPMP 285.3 AHMP NA

USGS Map Reference Bettles, AK T 23N R 14W Sec. 31

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>CN,GR,LS,RW</u>	<u>M,R,S</u>	<u>30</u>
Summer	<u>CN,GR,KS,NP,RW</u>	<u>R,S</u>	<u>20,21,30,34,38,128</u>
Fall	<u>CN,GR,WF</u>	<u>M,R</u>	<u>30,128</u>
Winter	<u>CN</u>	<u>W</u>	<u>55,57</u>

At the proposed pipeline crossing, Prospect Creek is a clear, shallow, fast-flowing stream of alternating pools and riffles varying in width from 6-15 m. The 2-3 m high banks of boulders and cobbles are bordered by willows and small spruce. Substrate consists of cobble and gravel. Below the proposed pipeline crossing, Prospect Creek grades into a slower flowing stream that meanders through a dense stand of spruce.

During the open water period, in the vicinity of the proposed pipeline crossing, Prospect Creek provides a migration route and rearing area for several species of fish: slimy sculpin, grayling, longnose sucker, king salmon, northern pike and round whitefish. The presence of young-of-the-year grayling in the vicinity of the pipeline crossing indicates that grayling likely use this area for spawning (Ref. 34). Adult king salmon are present in late summer (Refs. 31 and 34); however, available data indicate that spawning does not occur near the pipeline crossing. Perennial springs approximately 10-12 km upstream from the pipeline route are documented salmon spawning areas as they provide suitable overwintering habitat for eggs (Ref. 41).

Although sculpin were present in mid-November 1979 at the proposed crossing, the area was extensively iced and it is likely that later in the winter this region offers only marginal overwinter habitat (Refs. 55 and 77).

It is especially important that upstream summer and fall migrations of mature king salmon and downstream migration of smolts not be disrupted by construction activities.

WATERBODY

Waterbody Unnamed Creek

Main Drainage South Fork Koyukuk River Tributary to Prospect Creek

NPRX 050-2 NPSI 3-90.05 NPAS 50 NPMP 284.7 AHMP NA

USGS Map Reference Bettles, AK T 23N R 14W Sec. 17

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Unnamed Creek (RX 050-2) is a small stream which flows westerly crossing under the Haul Road entering Prospect Creek. Banks are heavily vegetated with spruce, willows and alder.

No fishery investigations have been conducted on this stream. It is probable that winter use is non-existent. Field study during the open water period would be necessary to document the importance of this stream to fish.

WATERBODY

Waterbody Unnamed CreekMain Drainage South Fork Koyukuk River Tributary to Jim RiverNPRX 050-1 NPSI 3-90.04 NPAS 50 NPMP 282.1 AHMP NAUSGS Map Reference Bettles, AK T 23N R 14W Sec. 17

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Unnamed Creek is a small stream which flows westerly crossing under the Haul Road before entering the Jim River. Banks are heavily vegetated with spruce, willows and alder.

No fishery investigations have been conducted on this stream. It is probable that winter use is non-existent. Field study during the open water period would be necessary to document this stream's important to fish.

WATERBODY

Waterbody Douglas CreekMain Drainage South Fork Koyukuk River Tributary to Jim RiverNPRX 049-2 NPSI 3-89 NPAS 49 NPMP 278.4 AHMP NAUSGS Map Reference Bettles, AK T 24N R 14W Sec. 34

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>121</u>
Summer	<u>CD,GR</u>	<u>R</u>	<u>20,21,30</u>
Fall	<u>CD,GR</u>	<u>R</u>	<u>30,34</u>
Winter	<u>None</u>	<u></u>	<u>3</u>

Douglas Creek is approximately 6-9 m wide and 30-90 cm deep. Substrate is sand, gravel and cobbles and stream bank vegetation consists of spruce, willows and alder (Ref. 11).

In the vicinity of the proposed pipeline crossing, grayling and slimy sculpin have been documented in summer and fall (Refs. 20, 21, 30 and 34). The presence of these species indicates that Douglas Creek is used for migration in spring and fall and rearing throughout the open water period. In the vicinity of the proposed pipeline crossing Douglas Creek becomes extensively iced in winter, and probably does not provide any overwintering habitat (Ref. 3).

WATERBODY

Waterbody Unnamed CreekMain Drainage South Fork Koyukuk River Tributary to Jim RiverNPRX 049-1 NPSI 3-87.03 NPAS 49 NPMP 276.6 AHMP NAUSGS Map Reference Bettles, AK T 24N R 14W Sec. 25

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Unnamed Creek is a very small stream which flows westerly to its confluence with the Jim River. Riparian vegetation consists of spruce, alder and willows.

No fishery investigations have been conducted on this stream. It is probable that winter use is non-existent. Field study during the open water period would be necessary to document the importance of this stream to fish.

WATERBODY

Waterbody Jim RiverMain Drainage Koyukuk RiverTributary to South Fork Koyukuk RiverNPRX 048-3NPSI 3-87NPAS 48NPMP 275.2AHMP NAUSGS Map Reference Bettles, AKT 24NR 14WSec. 24

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>GR,RW,CN</u>	<u>M,S</u>	<u>31</u>
Summer	<u>BB,CN,DS,GR,HW,KS,LS,NP,RW</u>	<u>M,R,S,</u>	<u>11,20,34,128</u>
Fall	<u>KS</u>	<u>M,R,S,</u>	<u>30</u>
Winter	<u>CN</u>	<u>W</u>	<u>30.55</u>

Jim River is a medium sized stream with a channel width of about 20 m in the area of the pipeline crossing. Two channels converge 30 m upstream of the crossing to form the main channel which lies in a floodplain about 40 m wide composed of large cobble and bordered by spruce.

In the vicinity of the proposed crossing the Jim River is used by a wide variety of fish species for spawning, rearing, migration and overwintering. Both king salmon and chum salmon have been observed spawning in the vicinity of the crossing in August (Ref. 11). This area is also considered to be excellent spawning habitat for grayling, and grayling fry have been observed in the summer (Ref. 34). The only species that has been documented to be present in winter is slimy sculpin (Ref. 55) but successful spawning of king and chum salmon indicates that eggs and larvae overwinter.

This portion of the Jim River should be considered sensitive to disturbance on a year-round basis due to the variety, numbers and importance of the fish species that use the stream.

WATERBODY

Waterbody Jim River SloughMain Drainage Koyukuk River Tributary to Jim RiverNPRX 048-2 NPSI NPAS 48 NPMP 275.0 AHMP NAUSGS Map Reference Bettles, AK T 24N R 14W Sec. 24

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u> </u>	<u>None</u>
Summer	<u>None</u>	<u> </u>	<u>None</u>
Fall	<u>None</u>	<u> </u>	<u>None</u>
Winter	<u>None</u>	<u> </u>	<u>None</u>

Jim River Slough appears to be an old channel of the Jim River which lies on the north side of the present channel. Vegetation in the vicinity of the proposed pipeline crossing is probably sedges, spruces, and deciduous shrubs. It is not known if the slough has water on a year-round basis or if suitable fish habitat is present. No fisheries investigations have been conducted on this waterbody. Due to its small size winter use by fish is probably non-existent.

WATERBODY

Waterbody Inlet to Grayling LakeMain Drainage South Fork Koyukuk River Tributary to Grayling LakeNPRX 048-1 NPSI 3-86.05 NPAS 48 NPMP 270.4 AHMP NAUSGS Map Reference Bettles, AK T 25N R 13W Sec. 33

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Inlet to Grayling Lake is a small, narrow stream which flows east across the pipeline route and the Haul Road into the west end of Grayling Lake. Streams in this area tend to be surrounded by grasses and willows with substrate of sand and silt.

Fish have not been documented in this stream, but grayling have been seen in another nearby inlet to Grayling Lake in spring (Ref. 30), thus it is likely that Inlet to Grayling Lake may be used as a grayling rearing or spawning area during spring or summer. In winter this small stream probably freezes solid and provides no overwintering habitat.

WATERBODY

Waterbody Ward's Wallow

Main Drainage Grayling Lake Tributary to Grayling Lake

NPRX 047-6 NPSI 3-86.04 NPAS 47 NPMP 269.8 AHMP NA

USGS Map Reference Bettles, AK T 25N R 13W Sec. 27

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Ward's Wallow drains into Grayling Lake through a Haul Road CMP. It is approximately 30-45 m wide and 50-300 cm deep. The shoreline is vegetated with grasses and willows. Pond substrate consists of mud and detritus with some tailings near the CMP.

This small lake has only been surveyed during fall at which time no fish were observed or captured (Ref. 122). Grayling were reported in the inlet to Grayling Lake (NPSI 3-86.04) during spring (Ref. 11) which suggests that grayling use Ward's Wallow during the open water season. However, further investigation is needed to fully assess the use of this lake by fish. Use by fish during winter is unlikely as lakes of this type freeze solid in winter.

WATERBODY

Waterbody Grayling Lake Inlet

Main Drainage South Fork Koyukuk River Tributary to Grayling Creek

NPRX 047-5 NPSI 3-86.02 NPAS 47 NPMP 269.3 AHMP NA

USGS Map Reference Bettles, AK T 25N R 13W Sec. 26 & 27

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>GR</u>	<u>R</u>	<u>30</u>
Summer	<u>GR</u>	<u>R</u>	<u>21,30</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Grayling Lake Inlet drains an area west of the proposed pipeline route (Ref. 11), and flows east into the northern end of a small lake that in turn drains into Grayling Lake. The stream near the proposed crossing is 1-1.3 m wide and 15-46 cm deep. Grasses and willows overhang the banks of the stream, and silt and sand cover the bottom.

Grayling Lake Inlet is used by grayling as a rearing area during spring and summer and probably in fall as well. Slimy sculpin are also suspected to use this stream (Refs. 11 and 21) but this species' presence has not been confirmed. Due to the stream's small size, it probably freezes to the bottom and does not provide overwintering habitat.

WATERBODY

Waterbody Elwood CreekMain Drainage South Fork Koyukuk River Tributary to Abba-dabba CreekNPRX 047-4 NPSI 3-86.01 NPAS 47 NPMP 267.6 AHMP NAUSGS Map Reference Bettles, AK T 25N R 13W Sec. 23

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Elwood Creek is a small stream which flows northerly to its confluence with Abba-dabba Creek. This narrow stream is bordered by willows and grasses.

No fishery investigations have been conducted on this stream. It is probable that winter use is non-existent. Field study during the open water period would be necessary to document the importance of this stream to fish.

WATERBODY

Waterbody East Fork Abba-Dabba CreekMain Drainage South Fork Koyukuk River Tributary to Abba-Dabba CreekNPRX 047-3 NPSI 3-86.005 NPAS 47 NPMP 267.0 AHMP NAUSGS Map Reference Bettles, AK T 25N R 13W Sec. 24

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

East Fork Abba-Dabba Creek is a small, clear stream which flows northerly to its confluence with Abba-dabba Creek. Banks are heavily vegetated with grasses and willows.

No fishery investigations have been conducted on this stream. It is probable that winter use is non-existent. Field study during the open water period would be necessary to document the importance of this stream to fish.

WATERBODY

Waterbody Abba-Dabba CreekMain Drainage Yukon River Tributary to South Fork Koyukuk RiverNPRX 047-2 NPSI 3-86 NPAS 47 NPMP 266.5 AHMP NAUSGS Map Reference Bettles, AK T 25N R 13W Sec. 13

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>GR</u>	<u>M,R</u>	<u>11</u>
Summer	<u>CN,GR</u>	<u>R</u>	<u>11,64</u>
Fall	<u>CN</u>	<u>M,R</u>	<u>122</u>
Winter	<u>CN</u>	<u>W</u>	<u>77</u>

Abba-Dabba Creek is a shallow (6-20 cm), spring-fed stream that varies in width from 1 to 5 m and is reported to contain water year-round (Ref. 77). It parallels the Prudhoe Bay Haul Road and flows 4.6 km north to the South Fork Koyukuk River. Steep banks (1-2.5 m high) are heavily vegetated with grasses and willows. Several areas are partially clogged with willow branches and sloughed trees. Substrate is comprised of cobble and boulders with small amounts of sand and gravel in the backwaters and eddies.

Abba-Dabba Creek is used by grayling and sculpin as a rearing area (Refs. 11, 64 and 122). Slimy sculpin have been found in this creek in early winter (Ref. 77). High dissolved oxygen levels and close proximity of spring sources upstream of the Haul Road in the vicinity of the pipeline crossing suggests that Abba-dabba Creek may offer fish overwintering habitat.

WATERBODY

Waterbody South Fork Koyukuk RiverMain Drainage Yukon River Tributary to Koyukuk RiverNPRX 047-1 NPSI 3-85 NPAS 47 NPMP 264.4 AHMP NAUSGS Map Reference Wiseman, AK T 25N R 12W Sec. 6

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>CN,GR</u>	<u>M,R</u>	<u>20,30</u>
Summer	<u>CN,DS,GR,KS,SK,WF</u>	<u>M,R,S</u>	<u>11,21,30</u>
Fall	<u>WF</u>	<u>M,R</u>	<u>30</u>
Winter	<u>None</u>	<u>W</u>	<u>None</u>

The South Fork of the Koyukuk River flows west across the pipeline route to the Koyukuk River. It is a medium sized (24-60 m wide; 0.3-2 m deep), somewhat braided clear water river. The banks are vegetated with willow, alder, spruce and aspen and the substrate is composed of rubble, gravel and sand.

The South Fork of the Koyukuk River is an important fish stream. King salmon spawn in the area from Fish Creek to 7.5 km above the proposed pipeline crossing; chum salmon spawn from the mouth of the river to at least 7.5 km above the pipeline (Ref. 11). This area of the South Fork Koyukuk River is therefore critical to salmon during spring and summer as a migration route, a rearing area and later in the season as a spawning area. Overwintering of salmon eggs must also occur. Slimy sculpin, grayling, longnose sucker and whitefish also utilize this area as a rearing area during the open water season. The amount of overwintering habitat that is present is unknown; however, since salmon spawn in the area overwintering habitat must exist. This stream is considered important to fish year-round.

WATERBODY

Waterbody South Fork Koyukuk RiverMain Drainage Yukon River Tributary to Koyukuk RiverNPRX 046-4 NPSI 3-85 NPAS 46 NPMP 264.3 AHMP NAUSGS Map Reference Wiseman, AK T 25N R 12W Sec. 6

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

South Fork Koyukuk River (RX 046-4) is actually a high-water channel of the South Fork Koyukuk River (RX 047-1). During spring and early summer this channel probably contains flowing water and thus may be used as a fish migration route and rearing area. Hydrology and water chemistry would be similar to the main channel at high water periods. During late summer, fall, and winter, low water conditions would preclude spawning or over-wintering activities.

WATERBODY

Waterbody Crossroads Creek #1Main Drainage Middle Fork Koyukuk River Tributary to Chapman CreekNPRX 046-3 NPSI 3-82.03 NPAS 46 NPMP 259.6 AHMP NAUSGS Map Reference Wiseman, AK T 26N R 13W Sec. 14

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>20,21</u>
Fall	<u>None</u>	<u></u>	<u>122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Crossroads Creek #1 flows northwesterly through a marshy area to its confluence with Chapman Creek. The stream is narrow with a poorly defined channel congested with sedges and grasses. Stream substrate is soil.

Past investigations have been unsuccessful in documenting the presence of fish in Crossroads Creek (Refs. 11 and 21). No fish were captured or observed during an investigation in September 1980 (Ref. 122). Due to the congested channel and low flow, use of the proposed crossing by fish is likely low or non-existent during open water. Winter use is unlikely as streams of this type usually dry up or freeze solid in winter.

WATERBODY

Waterbody Crossroads Creek #2Main Drainage Middle Fork Koyukuk River Tributary to Chapman CreekNPRX 046-2 NPSI 3-82.02 NPAS 46 NPMP 259.5 AHMP NAUSGS Map Reference Wiseman, AK T 26N R 13W Sec. 14

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>20,21</u>
Fall	<u>None</u>	<u></u>	<u>122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Crossroads Creek #2 flows northwesterly through a marshy area to its confluence with Chapman Creek. The stream is narrow with a poorly defined channel congested with sedge and grass. Stream substrate is soil.

Northern pike have been reported present in the lake upstream; however, field investigations conducted in Crossroads Creek have failed to document the presence of fish (Refs. 20, 21 and 122).

Due to the congested channel and low flow, fish use of the proposed crossing is likely low or non-existent during open water. Winter use is unlikely as streams of this type usually dry up or freeze solid in winter.

WATERBODY

Waterbody Chapman Creek

Main Drainage Yukon River Tributary to Middle Fork Koyukuk River

NPRX 046-1 NPSI 3-81 NPAS 46 NPMP 258.3 AHMP NA

USGS Map Reference Wiseman, AK T 26N R 13W Sec. 11

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>GR</u>	<u>R</u>	<u>20,21,30</u>
Fall	<u>GR</u>	<u>R</u>	<u>30</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Chapman Creek drains an area east of the TAPS crossing. Upstream areas include several lakes containing fish (Ref. 11). This small beaded tundra stream (2.4-3 m wide; 0.2-1.2 m deep) flows into the Middle Fork Koyukuk River and a waterfall 1.2-2 m high is located a short distance from its mouth (Ref. 20). The stream banks are vegetated with willows and grasses and the bottom is composed of sand and pebbles.

Grayling are known to use Chapman Creek in the vicinity of the TAPS pipeline crossing as a rearing area in summer and fall. Northern pike and slimy sculpin are also reported in the stream (Refs. 20 and 21), but the presence of these species has not been confirmed. Chapman Creek probably does not provide overwintering habitat due to its small size.

It is not known if the aforementioned waterfall is a complete barrier to fish, hence the origin of the fish that are present in the stream in the open water period is unknown. The lakes in upstream portions of the drainage are a possible source of fish.

WATERBODY

Waterbody South Fork Windy Arm Creek

Main Drainage Middle Fork Koyukuk River Tributary to North Fork Windy Arm Creek

NPRX 045-7 NPSI 3-80 NPAS 45 NPMP 257.3 AHMP NA

USGS Map Reference Wiseman, AK T 26N R 13W Sec. 2

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>GR</u>	<u>M,R</u>	<u>121</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>GR</u>	<u>R</u>	<u>11,30</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

South Fork Windy Arm Creek drains a low-lying muskeg area east of the pipeline (Ref. 11), and flows west into North Fork Windy Arm Creek. The low banks are heavily vegetated with sedges and the stream bottom is composed of sand and cobbles.

Grayling have been observed in the vicinity of the proposed pipeline during June and September (Refs. 11, 30 and 121). Although no investigations have been conducted during summer, grayling likely use this stream for rearing throughout the open water period and as a migration route during spring and fall. Winter use of South Fork Windy Arm Creek is unlikely as streams of this type usually dry up or freeze solid in winter.

Waterbody North Fork Windy Arm Creek

Main Drainage Yukon River Tributary to Middle Fork Koyukuk River

NPRX 045-6 NPSI 3-79 NPAS 45 NPMP 256.0 AHMP NA

USGS Map Reference Wiseman, AK T 27N R 13W Sec. 35

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>CN,GR</u>	<u>R</u>	<u>11,21,30,64</u>
Summer	<u>GR</u>	<u>R</u>	<u>11</u>
Fall	<u>GR</u>	<u>R</u>	<u>11,30</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

North Fork Windy Arm Creek drains an area east of the proposed pipeline route (Ref. 11), and flows west into the Middle Fork of the Koyukuk River. This small tundra stream, which is about 0.9-1.5 m wide and 10 to 50 cm deep, flows within an ill-defined channel through grasses and willows (Ref. 20).

North Fork Windy Arm Creek is known to be a grayling rearing area during the open water season. Slimy sculpin are also found during spring (Ref. 30) and probably use the stream during the rest of the open water season. Open water has been observed flowing as late as mid-November in the vicinity of the pipeline crossing (Ref. 74); however, due to the stream's small size, it probably does not provide habitat throughout the winter.

WATERBODY

Waterbody Unnamed Creek

Main Drainage Yukon River Tributary to Middle Fork Koyukuk River

NPRX 045-5 NPSI 3-78.01 NPAS 45 NPMP 255.1 AHMP NA

USGS Map Reference Wiseman, AK T 27N R 13W Sec. 26

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>20,21,121</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Unnamed Creek drains two lakes and flows northerly to its confluence with Middle Fork Koyukuk River. This stream's poorly defined channel is composed of silt and grasses with grasses, willows and alder vegetating the banks (Refs. 11, 20 and 21).

Several investigations of this stream during spring failed to document fish (Refs. 11, 20, 21 and 121) and summer and fall investigations have not been conducted. Use of Unnamed Creek by fish is likely low or non-existent during open water. Winter use is unlikely as streams of this type usually dry up or freeze solid in winter.

WATERBODY

Waterbody Trent's Trickle

Main Drainage Yukon River Tributary to Middle Fork Koyukuk River

NPRX 045-4 NPSI 3-78 NPAS 45 NPMP 254.0 AHMP NA

USGS Map Reference Wiseman, AK T 27N R 13W Sec. 23

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>GR</u>	<u>M,R</u>	<u>20,21,30</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>GR</u>	<u>M,R</u>	<u>122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Trent's Trickle flows northerly through wetlands to its confluence with the Middle Fork of the Koyukuk River. In the vicinity of the proposed pipeline crossing its channel is poorly defined. Substrate is silt and aquatic vegetation (grass) is present. Bank vegetation is spruce, willows, sedges, and herbaceous plants.

Grayling were abundant near the proposed crossing in spring (Refs. 20 and 21). During September 1980, several young grayling were captured from a large school of about 30 fish (Ref. 122).

During open water Trent's Trickle is a migration route and rearing area for grayling in the vicinity of the proposed crossing. Winter use is unlikely as streams of this type usually dry up or freeze solid in winter.

WATERBODY

Waterbody Jackson's Slough East Channel #1Main Drainage Yukon River Tributary to Middle Fork Koyukuk RiverNPRX 045-3 NPSI 3-77.02 NPAS 45 NPMP 253.2 AHMP NAUSGS Map Reference Wiseman, AK T 27N R 13W Sec. 14

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>CN,GR</u>	<u>M,R,S</u>	<u>30</u>
Summer	<u>CN,GR,KS,RW</u>	<u>R</u>	<u>30,34,64,123,132</u>
Fall	<u>GR</u>	<u>M,R</u>	<u>30,64</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Crossing #1 of Jackson's Slough East Channel is the southernmost of three proposed crossings of the slough. The slough is variable in width, but averages about 3.5 m wide and 45 cm deep. The bottom is mud-silt to coarse gravel and bank vegetation is spruce, aspen, willows, alder and grasses (Ref. 34).

The presence of grayling during the open water period, and grayling and king salmon fry in July and August (Ref. 34, 123 and 132) indicates that these species use this channel for migration, spawning, and rearing. According to Hallberg (1975 - Ref. 34), construction activities in Jackson's Slough resulted in blockage of some channels and creation of new man-made channels. Despite this disturbance, Jackson's Slough continues to be used by fish in the open water season.

Winter use of Jackson's Slough at crossing #1 is unlikely, as waterbodies of this type usually freeze solid in winter.

WATERBODY

Waterbody Jackson's Slough Cross Channel

Main Drainage Yukon River Tributary to Middle Fork Koyukuk River

NPRX 045-2 NPSI 3-77.01 NPAS 45 NPMP 253.0 AHMP NA

USGS Map Reference Wiseman, AK T 27N R 13W Sec. 14

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>GR</u>	<u>M,R,S</u>	<u>30</u>
Summer	<u>CN,GR,RW,KS</u>	<u>R</u>	<u>30,34,123,132</u>
Fall	<u>GR</u>	<u>M,R</u>	<u>11,30</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Jackson's Slough Cross Channel is approximately 0.4 km north of Crossing #1. The slough is approximately 3.5 m wide and 45 cm deep. The bottom is mud-silt to coarse gravel and bank vegetation is spruce, aspen, willows, alder and grasses (Ref. 34).

The presence of grayling during the open water period, and grayling and king salmon fry in July and August (Ref. 34, 123 and 132) indicates that these species use this channel for migration, spawning, and rearing.

According to Hallberg (1975 - Ref. 34), construction activities in Jackson's Slough have resulted in blockage of some channels and creation of new man-made channels. Despite this disturbance, Jackson's Slough continues to be used by fish in the open water season. Winter use of Jackson's Slough Cross Channel is unlikely, as waterbodies of this type usually freeze solid in winter.

WATERBODY

Waterbody Jackson's Slough East Channel #2Main Drainage Middle Fork Koyukuk River Tributary to Jackson's Slough Cross
ChannelNPRX 045-1 NPSI 3-77 NPAS 45 NPMP 252.8 AHMP NAUSGS Map Reference Wiseman, AK T 27N R 13W Sec. 14

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>CN,GR</u>	<u>M,R,S</u>	<u>30</u>
Summer	<u>CN,GR,KS,RW</u>	<u>R</u>	<u>30,34,123,132</u>
Fall	<u>GR</u>	<u>M,R</u>	<u>64</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Crossing #2 Jackson's Slough East Channel is the northernmost of three proposed crossings of the slough. The slough is approximately 3.4 m wide and 45 cm deep. The bottom is mud-silt to coarse gravel and bank vegetation is spruce, aspen, willows, alder and grasses (Ref. 34).

The presence of grayling during the open water period, and grayling and king salmon fry in July and August (Ref. 34, 123 and 132) indicates that these species use this channel for migration. According to Hallberg (1975 - Ref. 34), construction activities at Jackson's Slough have resulted in blockage of some old channels and creation of new man-made channels. Despite this disturbance, Jackson's Slough continued to be used by fish in the open water season.

Winter use in the area of crossing #2 is unlikely, as waterbodies of this type usually freeze solid in winter.

WATERBODY

Waterbody Cathedral Mountain Creek

Main Drainage Yukon River Tributary to Middle Fork Koyukuk River

NPRX 044-6 NPSI 3-75 NPAS 44 NPMP 251.8-252.0 AHMP NA

USGS Map Reference Wiseman, AK T 27N R 13W Sec. 12

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Cathedral Mountain Creek is comprised of two channels. The northernmost is a small run-off channel confined by high banks vegetated with willows, alder, birch, and spruce. During a recent fall survey (Ref. 122), this channel was fed by groundwater seepage. The southernmost channel is a narrow (0.6-1.8 m) clearwater stream that drains the western slope of Cathedral Mountain and flows westerly over a steep gradient. The stream banks are 0.5 m high and heavily vegetated with mosses, willows, and mixed forest. Substrate consists of sand, gravel and cobble. The two channels meet at a point approximately 150 m downstream of the proposed gas pipeline crossing.

An investigation during September 1980 yielded no fish in these channels (Ref. 122). Due to the poor fish habitat in Cathedral Mountain Creek, fish use is unlikely at any time of the year.

WATERBODY

Waterbody Rosie Creek

Main Drainage Yukon River Tributary to Middle Fork Koyukuk River

NPRX 044-5 NPSI 3-74 NPAS 44 NPMP 250.5 AHMP NA

USGS Map Reference Wiseman, AK T 27N R 12W Sec. 6

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>CD,GR,BB</u>	<u>M,R,S,</u>	<u>11,21,30</u>
Summer	<u>CN,DV,GR,RW</u>	<u>R</u>	<u>20,30</u>
Fall	<u>CN,DV,GR,RW</u>	<u>M,R</u>	<u>30,34</u>
Winter	<u>GR</u>	<u>W</u>	<u>31,77</u>

Upstream of the Haul Road, Rosie Creek is a moderately swift, clear-water stream confined to a 4 m wide channel within a floodplain approximately 10 m wide. Substrate is sand and gravel, and gravel banks (0.3 m high) are bordered by dense willows and spruce. Downstream of the Haul Road, Rosie Creek meanders sluggishly through a dense stand of spruce.

Grayling use Rosie Creek in the vicinity of the proposed crossing as a migration route and rearing area throughout the open water period (Refs. 20, 21, 30, 31 and 76). Grayling fry were captured in September 1975, indicating that grayling use this area for spawning; however, no spawning has been documented in the immediate vicinity of the crossing (Ref. 31). Other species, present in Rosie Creek during the open water period include slimy sculpin, burbot, Dolly Varden and round whitefish (Refs. 11, 20, 21, 30, 34 and 76). Although no fish were captured in the vicinity of the proposed crossing during early winter investigations, overwintering potential was judged to be high (Ref. 77). Grayling were observed through the ice in April 1977 approximately 600 m below the proposed pipeline route (Ref. 31). Available data suggest that Rosie Creek is used by fish throughout the year.

WATERBODY

Waterbody First Creek

Main Drainage Yukon River Tributary to Middle Fork Koyukuk River

NPRX 044-4 NPSI 3-72.06 NPAS 44 NPMP 248.1 AHMP NA

USGS Map Reference Wiseman, AK T 28N R 12W Sec. 29

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>CN,GR</u>	<u>M,R</u>	<u>20,30</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

First Creek is a small tundra stream (1-3 m wide; 5-30 cm deep) that drains an area east of the proposed pipeline crossing (Refs. 11 and 21). Stream banks are low and densely vegetated with willows and grasses (Ref. 20).

Grayling and slimy sculpin are known to use First Creek in the vicinity of the TAPS crossing as a rearing area in spring (Refs. 20 and 30). However, it is unclear from these references whether this stream was surveyed near the Haul Road crossing or near its confluence. The proposed crossing is located on a plateau above the Haul Road; hence previous reports may not apply to this area. The small lake drained by First Creek could also be a source of fish that use the stream in the open water season. First Creek is not expected to contain fish in winter due to its small size.

440 WATERBODY

Waterbody Tributary to East Fork Spring SloughMain Drainage Yukon River Tributary to Middle Fork Koyukuk RiverNPRX 044-3 NPSI 3-72.04 NPAS 44 NPMP 247.0 AHMP NAUSGS Map Reference Wiseman, AK T 28N R 12W Sec. 21

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>GR</u>	<u>M,R</u>	<u>11</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

The Spring Slough drainage lies east of the proposed pipeline. The Tributary to East Fork Spring Slough is the southernmost of four crossings of Spring Slough between 3HR776+84 and 3HR797+60. This clear water stream is small (0.5-1.5 m wide; 15-60 cm deep) and flows over a sand and gravel bottom through overhanging banks covered with willows and grasses (Ref. 21).

Grayling are known to use the Tributary to East Fork Spring Slough in spring but other data on use of this stream by fish are lacking. The stream probably does not provide overwintering habitat due to its small size.

WATERBODY

Waterbody Tributary to Spring Slough #1

Main Drainage Yukon River Tributary to Middle Fork Koyukuk River

NPRX 044-2 NPSI 3-72.03 NPAS 44 NPMP 246.8 AHMP NA

USGS Map Reference Wiseman, AK T 28N R 12W Sec. 21

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>GR</u>	<u>M,R</u>	<u>11,21</u>
Summer	<u>GR</u>	<u>R</u>	<u>130</u>
Fall	<u>GR</u>	<u>M,R</u>	<u>11</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Spring Slough drains an area east of the proposed pipeline route. The upper reaches of this slough break into numerous tributaries accounting for four crossings of the proposed pipeline. The tributaries are generally small (0.5-1.5 m wide; 15-60 cm deep), clear streams which flow over a sand and gravel substrate through overhanging banks vegetated with willows and grasses (Ref. 21).

Grayling have been reported present in Spring Slough throughout the open water period (Refs. 11, 21 and 130) and sculpin are also present (Ref. 21). Although site specific data are lacking, Tributary to Spring Slough provides good rearing habitat for grayling and sculpin during the open water period.

Winter use of Spring Slough and tributaries is questionable, however, grayling were observed here on 29 September 1975 (Ref. 11). Further study is necessary to fully assess the stream's potential as winter habitat for fish.

WATERBODY

Waterbody Tributary to Spring Slough #2Main Drainage Yukon River Tributary to Middle Fork Koyukuk RiverNPRX 044-1 NPSI 3-72.02 NPAS 44 NPMP 246.7 AHMP NAUSGS Map Reference Wiseman, AK T 28N R 12W Sec. 21

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>GR</u>	<u>M,R</u>	<u>11,21</u>
Summer	<u>GR</u>	<u>R</u>	<u>130</u>
Fall	<u>GR</u>	<u>M,R</u>	<u>11</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Spring Slough drains an area east of the proposed pipeline route. The upper reaches of this slough break into numerous tributaries accounting for four crossings of the proposed pipeline. The tributaries are generally small (0.5-1.5 m wide; 15-60 cm deep) clear streams which flow over a sand and gravel substrate through overhanging banks vegetated with willow and grasses (Ref. 21).

Grayling have been reported present in Spring Slough throughout the open water period (Refs. 11, 21 and 130) and sculpin are also present (Ref. 21). Although site specific data are lacking, tributary to Spring Slough provides good rearing habitat for grayling and sculpin during the open water period.

Winter use of Spring Slough and tributaries is questionable, however, grayling were observed here on 29 September 1975 (Ref. 11). Further investigations are necessary to fully assess this stream's potential as winter habitat for fish.

WATERBODY

Waterbody Tributary to Spring Slough #3

Main Drainage Yukon River Tributary to Middle Fork Koyukuk River

NPRX 043-9 NPSI 3-72.01 NPAS 43 NPMP 246.5 AHMP NA

USGS Map Reference Wiseman, AK T 28N R 12W Sec. 21

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>GR</u>	<u>M,R</u>	<u>11,21</u>
Summer	<u>GR</u>	<u>R</u>	<u>130</u>
Fall	<u>GR</u>	<u>M,R</u>	<u>11</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Spring Slough drains an area east of the proposed pipeline route. The upper reaches of this slough breaks into numerous tributaries accounting for four proposed crossings of the gas line. The tributaries are generally small (0.5-1.5 m wide, 15-60 cm deep), clear streams which flow over a sand and gravel substrate through overhanging banks vegetated with willows and grasses (Ref. 21).

Grayling have been reported present in Spring Slough throughout the open water period (Refs. 11, 21 and 130) and sculpin are also present (Ref. 21). Although site specific data are lacking, Tributary to Spring Slough provides good rearing habitat for grayling and sculpin during the open water period.

Winter use of Spring Slough and tributaries is questionable, however, grayling were observed here on 29 September 1975 (Ref. 11). Further study is necessary to fully assess this stream's potential as winter habitat for fish.

WATERBODY

Waterbody Slate Creek

Main Drainage Yukon River Tributary to Middle Fork Koyukuk River

NPRX 043-8 NPSI 3-72 NPAS 43 NPMP 245.0 AHMP NA

USGS Map Reference Wiseman, AK T 28N R 12W Sec. 15

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>CN,DV,GR,KS,RW</u>	<u>R</u>	<u>11,20,30,34,76</u>
Fall	<u>DS,GR</u>	<u>M,R,S</u>	<u>122,131</u>
Winter	<u>None</u>	<u></u>	<u>55</u>

Slate Creek is a large (8-16 m wide), clear, swiftly flowing stream which meanders westerly to the Koyukuk River. Substrate is sand, gravel, pebble, and cobble; banks vary in height (up to 1.5 m) and are vegetated with spruce, willows, alder and some aspen and birch.

Many age classes of grayling have been observed in Slate Creek during August and September near the proposed pipeline crossing (Refs. 34 and 122). This indicates that grayling may spawn, as well as rear in the stream. Information on the use of Slate Creek by Dolly Varden, slimy sculpin and round whitefish is scant, but these species have been observed during summer.

Both king salmon (August 1974) and chum salmon (August 1979 and September 1980) have been reported present in Slate Creek (Refs. 11, 122 and 131). The presence of these salmon during late summer and early fall suggests that Slate Creek is a salmon spawning stream. During the open water period, Slate Creek provides excellent spawning and rearing habitat for several fish species, and is a migration route during spring and fall.

Reference 55 reported that during April 1979 Slate Creek provided no winter habitat. However, the presence of salmon in late summer and fall suggests that this stream harbors incubating salmon eggs during winter months.

WATERBODY

Waterbody Calf Creek

Main Drainage Yukon River Tributary to Middle Fork Koyukuk River

NPRX 043-7 NPSI 3-71 NPAS 43 NPMP 244.3 AHMP NA

USGS Map Reference Wiseman, AK T 28N R 12W Sec. 10

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>GR</u>	<u>R</u>	<u>11,30,31</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Calf Creek is a small (3-4.5 m wide; 0.2-0.6 m deep) tundra stream which drains an area east of the proposed pipeline (Ref. 11). The banks of the stream are vegetated with grasses and willows.

Grayling are known to use Calf Creek in spring from its confluence to well above the Haul Road crossing. Dolly Varden, round whitefish and sculpin are also reported to use this stream (Ref. 11); however, use by these species is not well documented. This stream was reported to be dry at the pipeline crossing on 6 May, but by mid-June contained water and many grayling were present (Ref. 11). This indicates that the stream does not contain habitat for fish in winter and early spring, and that fish using this stream during the open water season must migrate in from other areas (i.e., the Koyukuk River).

WATERBODY

Waterbody South Fork Clara Creek OverflowMain Drainage Middle Fork Koyukuk River Tributary to Clara Creek OverflowNPRX 043-6 NPSI 3-70.01 NPAS 43 NPMP 244.0 AHMP NAUSGS Map Reference Wiseman, AK T 28N R 12W Sec. 10

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>CN,GR</u>	<u>R</u>	<u>11,30,31</u>
Summer	<u>RW</u>	<u>R</u>	<u>11,30</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

The South Fork of Clara Creek Overflow is a small braided stream with a silt bottom (Ref. 29). The stream has a slight gradient (approximately 0.8%) and flows west, crossing the pipeline about 60 m upstream of its confluence with Clara Creek Overflow. The narrow channel is bordered by dense willows and grasses.

Although the stream was reported dry in June of 1977 (Ref. 31), other investigations have reported South Fork of Clara Creek Overflow to contain sculpin, grayling, whitefish and possibly Dolly Varden during the spring or summer (Ref. 11 and 30). However, the latter species has not been documented in the stream. No information concerning use of this stream by fish in fall is available, but it is likely that fish emigrate during this period because the stream lacks suitable overwintering fish habitat.

WATERBODY

Waterbody Clara Creek Overflow

Main Drainage Yukon River Tributary to Middle Fork Koyukuk River

NPRX 043-5 NPSI 3-70 NPAS 43 NPMP 243.9 AHMP NA

USGS Map Reference Wiseman, AK T 28N R 12W Sec. 10

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>GR</u>	<u>R</u>	<u>11,30,31,64</u>
Summer	<u>GR,RW</u>	<u>R</u>	<u>11,30,31</u>
Fall	<u>None</u>		<u>None</u>
Winter	<u>None</u>		<u>None</u>

Clara Creek Overflow is a small braided stream (Ref. 29) that flows southwest, crossing the proposed pipeline about 1.8 km upstream of its confluence with the Middle Fork of the Koyukuk River. It drains an area of about 18 km² and flows down a moderate gradient (approximately 1.0%), through a series of small deep pools and shallow riffles. The stream bottom in the vicinity of the pipeline is composed primarily of coarse gravel (Ref. 11).

Clara Creek Overflow has been documented to serve as a spring rearing area for grayling and a summer rearing area for both grayling and round whitefish (Refs. 11 and 30). Although documentation of use by fish in fall is not available for this crossing, the presence of grayling in late August (Ref. 11) suggests that this stream contains fish well into fall. Sculpin are also suspected to be present in this stream during the open water period (Ref. 11); however, field investigations have failed to verify their presence. Clara Creek Overflow probably does not provide overwintering habitat in the vicinity of the proposed alignment.

448 WATERBODY

Waterbody Clara Creek

Main Drainage Yukon River Tributary to Middle Fork Koyukuk River

NPRX 043-4 NPSI 3-69 NPAS 43 NPMP 243.8 AHMP NA

USGS Map Reference Wiseman, AK T 28N R 12W Sec. 10

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>GR,X</u>	<u>R</u>	<u>11,31</u>
Summer	<u>GR,X</u>	<u>R</u>	<u>31,34</u>
Fall	<u>None</u>		<u>None</u>
Winter	<u>None</u>		<u>None</u>

Clara Creek is a small (1-1.2 m wide; 15 cm deep), slightly turbid stream which flows southwest down a moderate gradient (approximately 2.0%) into the Middle Fork of the Koyukuk River. It drains an area of approximately 18 km² and meanders through dense spruce, willows and birch. The stream bottom consists primarily of sand and small gravel (Ref. 11).

Clara Creek serves as a rearing area for grayling and an unidentified species of fish during the spring and summer period. No information exists concerning use by fish in fall, but it is likely that fish emigrate during this time since winter use of this stream is considered unlikely.

WATERBODY

Waterbody South Fork Mary Angel CreekMain Drainage Middle Fork Koyukuk River Tributary to Mary Angel CreekNPRX 043-3 NPSI 3-65 NPAS 43 NPMP 241.5 AHMP NAUSGS Map Reference Wiseman, AK T 29N R 12W Sec. 26

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>CN,GR</u>	<u>R</u>	<u>11,30,31</u>
Summer	<u>CN,GR</u>	<u>R</u>	<u>11,30,31</u>
Fall	<u>None</u>	<u></u>	<u>11</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

South Fork Mary Angel Creek flows southwest, crossing the proposed pipeline route about 400 m upstream of its confluence with Mary Angel Creek. The area is characterized by a marsh heavily vegetated with tall grasses and willows. The stream flows down a moderate (2.5%) gradient and drains an area of approximately 0.6 km² (Ref. 11). In the vicinity of the pipeline, South Fork Mary Angel Creek flows through several large pools, creating 600-800 m of productive habitat (Ref. 11).

This stream has been documented as a rearing area for grayling and sculpin during spring and summer (Ref. 11, 30 and 31). Spawning is likely to occur in this stream, however, this has not been verified. South Fork Mary Angel Creek is likely to contain fish during fall, considering its size and its close proximity to Mary Angel Creek (known to contain fish in fall). Fish probably do not use this stream in winter, similar streams in this area do not provide winter habitat.

WATERBODY

Waterbody Mary Angel CreekMain Drainage Yukon RiverTributary to Middle Fork Koyukuk RiverNPRX 043-2 NPSI 3-63.04 NPAS 43 NPMP 241.4 AHMP NAUSGS Map Reference Wiseman, AKT 29N R 12W Sec. 26

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>GR</u>	<u>M,R,S</u>	<u>11,30,70</u>
Summer	<u>BB,CN,GR,LS,RW</u>	<u>R</u>	<u>11,30,34,64,60,123</u>
Fall	<u>GR</u>	<u>M,R</u>	<u>11</u>
Winter	<u>None</u>		<u>74</u>

Mary Angel Creek crosses the proposed pipeline and flows southwest for about 610 m to its confluence with a side channel of the Middle Fork of the Koyukuk River. Flowing through an area characterized as a partly wooded, swampy muskeg, this stream is about 1.2 m wide and is partially shrouded by dense high grasses and willows. The stream bottom is reported to consist primarily of hardpan and sand with some detritus (Ref. 34). Numerous pools, described as deep-scoured depressions (Ref. 34), were noted at many of the stream bends throughout the system. Mary Angel Creek flows down a moderate gradient (approximately 2.5%) and drains an area of approximately 3 km².

Mary Angel Creek is a rearing area for burbot, sculpin, grayling, longnose sucker, and round whitefish during the summer season (Refs. 11, 34 and 123). It is likely that some or all of the species present in summer also occupy this stream during spring and fall; however, only rearing grayling have been observed in spring and fall. It is unlikely that fish use this stream in winter; the stream was reported completely frozen over and snow covered in mid-November (Ref. 74), suggesting that it probably freezes solid and provides no habitat in winter. Spawning is likely to occur in the stream, as all age classes of grayling have been reported and marginal spawning habitat is present (Ref. 34).

WATERBODY

Waterbody South Fork Sharon Creek

Main Drainage Yukon River Tributary to Middle Fork Koyukuk River

NPRX 043-1 NPSI 3-63.03 NPAS 43 NPMP 240.8 AHMP NA

USGS Map Reference Wiseman, AK T 29N R 12W Sec. 26

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>GR</u>	<u>R</u>	<u>11,30</u>
Summer	<u>None</u>	<u></u>	<u>11</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

South Fork Sharon Creek is a small stream that flows southwest across the pipeline route to the Middle Fork of the Koyukuk River about 760 m from the proposed pipeline. The stream has a relatively steep gradient (approximately 5.0%) and flows through spruce-deciduous woodland.

Information regarding fish use of the stream is limited to a spring observation of 40-50 grayling at the Haul Road crossing (Ref. 11). Available information does not permit an assessment of the value of this stream to fish in summer or fall or as spring spawning habitat. Due to the size and nature of this stream, winter habitat for fish is probably not available.

WATERBODY

Waterbody Marion CreekMain Drainage Yukon RiverTributary to Middle Fork Koyukuk RiverNPRX 042-6NPSI 3-63NPAS 42NPMP 240.3AHMP NAUSGS Map Reference Wiseman, AKT 29NR 12WSec. 23

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>CD,DV,GR</u>	<u>M,R,S</u>	<u>11,20,21,30,31</u>
Summer	<u>CD,GR</u>	<u>R</u>	<u>11,30,34</u>
Fall	<u>GR</u>	<u>M,R</u>	<u>122</u>
Winter	<u>None</u>	<u></u>	<u>74</u>

Marion Creek is a moderate sized (10-15 m wide; 10-50 cm deep), clear water stream that flows west across the pipeline route to the Middle Fork of the Koyukuk River. The stream is partly shaded by overhanging vegetation, which includes spruce, birch, alder, willows and aspen (Ref. 34). Substrate consists primarily of sand and gravel. Marion Creek drains an area of approximately 120 km². Watershed type in the area ranges from spruce-muskeg to flat rolling tundra (Ref. 34).

During the open water period, Marion Creek is a rearing area for a number of fish species. Many age classes of grayling and sculpin have been reported in Marion Creek and good spawning habitat is present (Refs. 34 and 122). This indicates that spawning could occur near the proposed crossing. Round whitefish are also suspected to use this stream during the open water period (Refs. 11 and 21), but to date field collections have not verified their presence. Spring migrations up Marion Creek may be hindered at the Haul Road crossing, since water velocities in the three existing culverts become extremely high during periods of heavy run-off. Also a waterfall approximately 2.4 km upstream of the Haul Road is reportedly a complete barrier to fish (Ref. 11). A number of fish species utilize this stream throughout the open water period and make annual spring and fall migrations. Winter use of Marion Creek is expected to be low or non-existent.

WATERBODY

Waterbody North Marion Creek Overflow #1

Main Drainage Yukon River Tributary to Middle Fork Koyukuk River

NPRX 042-5 NPSI 3-62.04 NPAS 42 NPMP 240.2 AHMP NA

USGS Map Reference Wiseman, AK T 29N R 12W Sec. 23

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u>None</u>	<u>122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

North Marion Creek Overflow #1 is a small, highwater run-off channel which is crossed by the Haul Road about 135 m north of the Marion Creek crossing. In the vicinity of the proposed pipeline crossing, the channel is poorly defined and vegetated with grasses, moss, spruce, birch and willows. The channel was dry during fall 1980 and it is doubtful that it would contain water even during periods of high run-off (Ref. 122). It is unlikely that North Marion Creek Overflow #1 is used by fish at any time of the year.

WATERBODY

Waterbody North Marion Creek Overflow #2

Main Drainage Yukon River Tributary to Middle Fork Koyukuk River

NPRX 042-4 NPSI 3-62.03 NPAS 42 NPMP 240.1 AHMP NA

USGS Map Reference Wiseman, AK T 29N R 12W Sec. 23

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

North Marion Creek Overflow #2 is a small, high water run-off channel, which crosses the proposed pipeline about 180 m north of the Marion Creek crossing.

No fisheries information is available for this stream near crossing #2. It is suspected to contain water only during periods of high run-off, but open water investigations would be necessary to document the importance of this stream to fish.

WATERBODY

Waterbody North Marion Creek Overflow #3Main Drainage Yukon River Tributary to Middle Fork Koyukuk RiverNPRX 042-3 NPSI 3-62.02 NPAS 42 NPMP 240.0 AHMP NAUSGS Map Reference Wiseman, AK T 29N R 12W Sec. 23

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

North Marion Creek Overflow #2 is a small high water run-off channel, which crosses the proposed pipeline about 550 m north of the Marion Creek crossing.

No fisheries information is available for this stream near crossing #3. It is suspected to contain water only during periods of high run-off, but open water investigations would be necessary to document this stream's importance to fish.

WATERBODY

Waterbody Pence's Pond CreekMain Drainage Yukon RiverTributary to Middle Fork Koyukuk RiverNPRX 042-2NPSI 3-62.01NPAS 42NPMP 239.9AHMP NAUSGS Map Reference Wiseman, AKT 29NR 12WSec. 23

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>GR</u>	<u>M,R</u>	<u>11,20,21,30</u>
Summer	<u>None</u>	<u></u>	<u>11</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>31</u>

Pence's Pond Creek is a small (approximately 1 m wide, 30 cm deep), clear water stream that flows southwest across the proposed pipeline, entering the Middle Fork of the Koyukuk River approximately 150 m downstream of the proposed crossing. The stream drains an area of about 4.8 km² and flows down a relatively steep (approximately 5%) gradient. The stream bottom is composed primarily of silt with some boulders (Refs. 11 and 20). Stream banks are vegetated with grasses, some spruce and mosses (Ref. 11).

This creek is a rearing area for grayling in spring (Ref. 30), and sculpin are also suspected to be present during some portion of the open water period (Refs. 11 and 20). Available information does not permit a full assessment of the stream's importance to fish during the open water season. Use of this stream by fish during winter is expected to be low or non-existent, as streams of this size and type freeze to the bottom.

WATERBODY

Waterbody Dry GulchMain Drainage Yukon River Tributary to Middle Fork Koyukuk RiverNPRX 042-1 NPSI 3-62 NPAS 42 NPMP 236.3 AHMP NAUSGS Map Reference Wiseman, AK T 29N R 12W Sec. 1

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Dry Gulch is a small stream which flows west across the proposed pipeline route to the Middle Fork Koyukuk River. Dry Gulch flows through a channel bordered by spruce, willows, alder and grasses.

Fishery investigations have not been conducted on this stream. It is unlikely that winter use by fish occurs. Field study during the open water period would be necessary to document the important of this stream to fish.

Waterbody South Fork Confusion CreekMain Drainage Middle Fork Koyukuk River Tributary to Confusion CreekNPRX 041-8 NPSI 3-61.03 NPAS 41 NPMP 234.1 AHMP NAUSGS Map Reference Wiseman, AK T 30N R 11W Sec. 30

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED*	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

* See assessment. Fish reported present but dates of observations are unknown.

South Fork Confusion Creek is a small stream which flows west across the proposed pipeline route through a narrow channel bordered by spruce, birch, willows and grasses.

Grayling and sculpin have been reported present in South Fork Confusion Creek (Ref. 11), but the dates of these observations are unknown. It is likely that grayling and sculpin are present in this stream during open water, however, further investigation is needed to fully assess this stream's importance to fish. Winter use is unlikely as streams of this size and type usually dry up or freeze solid in winter.

Waterbody Confusion Creek

Main Drainage Yukon River Tributary to Middle Fork Koyukuk

NPRX 041-7 NPSI 3-61.02 NPAS 41 NPMP 233.9 AHMP NA

USGS Map Reference Wiseman, AK T 30N R 11W Sec. 30

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>GR</u>	<u>R</u>	<u>31</u>
Summer	<u>GR</u>	<u>R</u>	<u>31</u>
Fall	<u>None</u>		<u>None</u>
Winter	<u>None</u>	<u>None</u>	<u>77</u>

Confusion Creek is a narrow (2 m) stream of moderate gradient with a gravel bottom bordered by 0.5 m high gravel banks heavily vegetated with willows, dwarf birch and spruce.

During the spring and early summer of unusually wet years, Confusion Creek appears to offer marginal fish habitat. Fish have been reported trapped in several small pools below the proposed crossing on 10 June 1976 (Ref. 31). On 15 June 1977 Confusion Creek was dry (Ref. 31). Spring sources have been reported below the pipeline route (Ref. 11), but an extensive early winter survey of Confusion Creek in November of 1979 failed to verify the existence of any spring sources, and the creek was completely dry at that time (Ref. 77). Confusion Creek appears to be only marginally important to fish in the early part of the open water season.

460 WATERBODY

Waterbody Middle Fork Confusion Creek

Main Drainage Yukon River Tributary to Middle Fork Koyukuk River

NPRX 041-6 NPSI 3-61.015 NPAS 41 NPMP 233.8 AHMP NA

USGS Map Reference Wiseman, AK T 30N R 11W Sec. 30

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Middle Fork Confusion Creek is a small clear water tributary to the Middle Fork Koyukuk River. This stream is approximately 1.2 m wide and 0.3 m deep with a mixed substrate of silt, sand and few rocks. Banks are vegetated with willows and grasses (Ref. 11).

Grayling and sculpin have been reported present in Middle Fork Confusion Creek (Ref. 11), but the dates of these observations are unknown. It is likely that grayling and sculpin are present in this stream during open water, however, further investigation is needed to fully assess this stream's importance to fish. Winter use is unlikely as streams of this size and type usually dry up or freeze solid in winter.

WATERBODY

Waterbody Minnie Creek

Main Drainage Yukon River Tributary to Middle Fork Koyukuk River

NPRX 041-5 NPSI 3-61 NPAS 41 NPMP 232.3 AHMP NA

USGS Map Reference Wiseman, AK T 30N R 11W Sec. 18

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>CN,GR</u>	<u>M,R,S</u>	<u>11,30</u>
Summer	<u>BB,CN,GR</u>	<u>R</u>	<u>11,30,34,38,123</u>
Fall	<u>None</u>		<u>11,30,34</u>
Winter	<u>None</u>		<u>11</u>

Minnie Creek is a moderate-sized stream (2-15 m wide and up to 30 cm deep) that flows west across the pipeline through a spruce, willow, alder and birch low-land muskeg area (Ref. 11). Its waters are slightly stained and the stream bottom consists primarily of coarse gravel and rubble (Ref. 34). Springs have been reported within the drainage of the stream (Ref. 11).

Minnie Creek is a rearing area for sculpin and grayling in the spring and summer, as well as a rearing area for burbot during summer (Refs. 30, 34 and 123). Dolly Varden and round whitefish are also suspected to rear in Minnie Creek during the open water period (Refs. 11 and 34); however, no documentation exists for these species. This area is probably used for spawning, as grayling fry were observed throughout the area surveyed (Ref. 34). No specific fall fisheries information is available for the stream, however, fish use is likely as the stream offers suitable habitat well into fall. Springs in the area may extend the length of time the stream offers suitable habitat in fall or early winter, but suitable overwintering habitat is not expected to be present near the proposed crossing.

462 WATERBODY

Waterbody Middle Fork Koyukuk River

Main Drainage Yukon River Tributary to Yukon River

NPRX 041-4 NPSI 3-60.19 NPAS 41 NPMP 231.1 AHMP NA

USGS Map Reference Wiseman, AK T 30N R 11W Sec. 7,18

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>CN,DV,GR,LS,RW</u>	<u>M,R</u>	<u>11,20,30</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>GR</u>	<u>W</u>	<u>21</u>

The Middle Fork of the Koyukuk River is a braided stream which drains a spruce, birch, and muskeg watershed north of the present pipeline crossing (Ref. 11). From the crossing, the river flows south to join the North and South forks of the Koyukuk River. In the vicinity of the proposed crossing, the river is 35-60 m wide with a bottom of sand and gravel.

Grayling, Dolly Varden, slimy sculpin, longnose sucker, and round whitefish have been captured in the vicinity of the TAPS line crossing during spring (Ref. 20). These species are probably present throughout the open water period, although this has not been documented. Adult king and chum salmon have been observed in the Middle Fork of the Koyukuk as far upstream as Wiseman. Local residents reported that salmon once migrated as far upstream as the TAPS line crossing, but this run was apparently eliminated by over-harvesting and siltation (Ref. 21). Grayling have been observed in open leads in winter, indicating that overwintering habitat does exist. Apparently water flow is maintained all winter throughout the river adjacent to the pipeline corridor (Ref. 21).

This stream is considered important to fish year-round.

WATERBODY

Waterbody Union Gulch Creek

Main Drainage Yukon River Tributary to Middle Fork Koyukuk River

NPRX 041-3 NPSI 3-60.17 NPAS 41 NPMP 230.3 AHMP NA

USGS Map Reference Wiseman, AK T 30N R 11W Sec. 7

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>CD,GR</u>	<u>M,R,S,</u>	<u>20,21,30</u>
Summer	<u>GR</u>	<u>R</u>	<u>30,31</u>
Fall	<u>RW</u>	<u>M,R</u>	<u>11,30</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Union Gulch Creek is a branch of the Middle Fork of the Koyukuk River. This clear stream is approximately 0.3-1.2 m wide and 0.1-0.9 m deep. Substrate is gravel and pebbles, and banks are vegetated with willows and grasses. (Refs. 20 and 21).

In the vicinity of the proposed crossing Union Gulch Creek serves as a spring and fall migration route, and rearing area for grayling, round whitefish and sculpin (Refs. 11, 20, 21, 30 and 31). Young-of-the-year grayling were observed near the proposed crossing in July 1977 (Ref. 31), suggesting that spawning occurs in the area. Winter use of Union Gulch Creek is unlikely as streams of this type usually dry up or freeze solid in winter.

WATERBODY

Waterbody Confederate Gulch Creek

Main Drainage Yukon River Tributary to Middle Fork Koyukuk River

NPRX 041-2 NPSI 3-60.16 NPAS 41 NPMP 229.8 AHMP NA

USGS Map Reference Wiseman, AK T 30N R 11W Sec. 5

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>GR</u>	<u>M,R,S,</u>	<u>11</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Confederate Gulch Creek is a small tundra stream which drains a muskeg area adjacent to the Middle Fork Koyukuk River floodplain. This stream drains a number of small ponds, the largest of which is approximately 3,700 m².

This stream probably provides suitable habitat for grayling throughout the open water period; however, only information for spring is available. Grayling are reported to spawn within the LWC on the TAPS workpad (Ref. 11). It is very likely that this small stream freezes to the bottom in winter and grayling probably make annual spring and fall migrations to use the stream during the open water period.

WATERBODY

Waterbody Hammond River

Main Drainage Koyukuk River Tributary to Middle Fork Koyukuk River

NPRX 041-1 NPSI 2-55 NPAS 41 NPMP 229.0-229.1 AHMP NA

USGS Map Reference Wiseman, AK T 30N & 31N R 11W Sec. 5 & 33

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>CN,DV,GR,WF</u>	<u>R</u>	<u>11,20,30,67</u>
Summer	<u>GR</u>	<u>R</u>	<u>30</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u>None</u>	<u>55</u>

The Hammond River is a small stream (4.0-4.5 m wide) in summer with an active gravel floodplain occasionally up to 300 m wide. This river has a high runoff in spring but is dry in winter. Islands are present in the floodplain and are vegetated primarily with willow. The main stream banks are 0.3-1.0 m high and are bordered with spruce and willow with a few forbs and grasses (Refs. 55 and 67).

Both adult and juvenile grayling have been found in the Hammond River in June in the vicinity of the proposed pipeline crossing (Ref. 67). Grayling also use this area for rearing in August (Ref. 30). Dolly Varden, slimy sculpin, and whitefish have been observed in spring and use this stream as a rearing area. The area proposed for the pipeline crossing does not provide overwintering habitat for fish (Ref. 55).

466 WATERBODY

Waterbody Middle Fork Koyukuk River

Main Drainage Yukon River Tributary to Yukon River

NPRX 040-8 NPSI 2-60.13 NPAS 40 NPMP 228.8 AHMP NA

USGS Map Reference Wiseman, AK T 31N R 11W Sec. 33

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>CN,DV,GR,LS,RW</u>	<u>M,R</u>	<u>20,21,30</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>GR</u>	<u>W</u>	<u>21</u>

The Middle Fork of the Koyukuk River is a braided stream which drains a spruce, birch and muskeg watershed north of the present crossing of the pipeline (Ref. 11). From the crossings the river flows south to join the North and South forks of the Koyukuk River west of the pipeline route. At this TAPS line crossing, the river is approximately 16-38 m wide with a bottom of sand and gravel.

In spring, grayling, Dolly Varden, slimy sculpin, longnose sucker, and round whitefish have been taken in the Middle Fork Koyukuk River near the present TAPS line crossing (Ref. 20). These species are probably present throughout the open water period, although studies have not been performed in summer or fall. King and chum salmon are known to utilize this branch of the Koyukuk as far upstream as Wiseman. Local residents reported that salmon once migrated as far upstream as the TAPS line crossing, but this run was apparently eliminated by overharvesting and siltation (Ref. 21). Grayling have been observed in open leads in winter, indicating that winter habitat does exist. Apparently, water flow is maintained all winter throughout the river adjacent to the TAPS line corridor (Ref. 21).

This stream is considered important to fish year-round.

WATERBODY

Waterbody One-0-One Creek

Main Drainage Yukon River Tributary to Middle Fork Koyukuk River

NPRX 040-7 NPSI 2-60.122 NPAS 40 NPMP 228.6 AHMP NA

USGS Map Reference Wiseman, AK T 31N R 11W Sec. 33

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>LS</u>	<u>M.R</u>	<u>11</u>
Summer	<u>CN.GR</u>	<u>R</u>	<u>34</u>
Fall	<u>None</u>		<u>None</u>
Winter	<u>None</u>		<u>11,34</u>

One-0-One Creek is a small (approximately 1.2 m wide and 23 cm deep), clear, spring-fed tributary to the Middle Fork Koyukuk River (Refs. 11 and 34). Pools to 0.6 m deep make up approximately 25-40% of the total stream length. Substrate is a mixture of silt and gravel. Moss and algae are present in the creek and overhanging banks are vegetated with tall grasses and willows (Refs. 11 and 34).

During the open water period One-0-One Creek provides excellent rearing habitat for grayling, longnose sucker, and slimy sculpin (Refs. 11 and 34). The presence of grayling fry in August indicates that grayling spawn in this stream during spring. This stream was reported flowing under ice cover on 7 April 1972 (Ref. 11) indicating that useable habitat is available during at least part of the winter. Further winter investigations are necessary to determine if this stream provides winter habitat for fish.

WATERBODY

Waterbody Coon Gulch Creek

Main Drainage Yukon River Tributary to Middle Fork Koyukuk River

NPRX 040-6 NPSI 2-60.121 NPAS 40 NPMP 228.1 AHMP NA

USGS Map Reference Wiseman, AK T 31N R 11W Sec. 33

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>GR,SK</u>	<u>M,R</u>	<u>11</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Coon Gulch Creek is a small (1.2 m wide and 20 cm deep), clear water tributary to the Middle Fork Koyukuk River. Substrate is primarily mud; pools are connected by grassy stream bed; streamside vegetation includes grasses, spruce and alder (Ref. 11).

Although little work has been done on this stream, grayling and suckers have been reported present in Coon Gulch Creek during spring (Ref. 11). The presence of these species in spring suggests that this stream is a rearing area during open water, however, further investigations are needed to fully assess this stream's importance to fish. Winter use is unlikely as streams of this size and type tend to be dry or freeze solid in winter.

WATERBODY

Waterbody Richardson's Slough

Main Drainage Yukon River Tributary to Middle Fork Koyukuk River

NPRX 040-5 NPSI 2-60.12 NPAS 40 NPMP 226.1 AHMP NA

USGS Map Reference Chandalar, AK T 31N R 11W Sec. 35

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>GR,RW</u>	<u>M,R</u>	<u>30</u>
Summer	<u>GR</u>	<u>R</u>	<u>30</u>
Fall	<u>GR</u>	<u>M,R</u>	<u>30</u>
Winter	<u>None</u>		<u>None</u>

Richardson's Slough drains into Middle Fork Koyukuk River and crosses the proposed pipeline at two points. The slough is approximately 20 m wide and 75 cm deep (Ref. 11). Vegetation in the area is scattered spruce, willows, alder and birch.

In the vicinity of the proposed crossings, grayling use this stream for spring and fall migration and as rearing habitat throughout the open water period (Refs. 11 and 30). Additionally, round whitefish have been reported in June (Refs. 11 and 30).

Winter use is unlikely, as waterbodies of this type usually freeze solid in winter.

WATERBODY

Waterbody Over CreekMain Drainage Yukon River Tributary to Middle Fork Koyukuk RiverNPRX 040-4 NPSI 2-60.07 NPAS 40 NPMP 225.8 AHMP NAUSGS Map Reference Chandalar, AK T 31N R 11W Sec. 35

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>BB,GR</u>	<u>M,R</u>	<u>11,30</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Over Creek is a small stream approximately 2 m wide and 0.3-0.6 m deep (Ref. 11), which joins the Middle Fork Koyukuk River. Substrate is gravel and cobble, and bank vegetation is spruce and grasses (Ref. 11).

In the vicinity of the Over Creek crossing, grayling and burbot have been captured in June and likely use this area for migration and rearing in spring (Refs. 11 and 30). No data are available for summer and fall, but it is likely that fish are present throughout the open water season and emigrate in fall. Winter use of Over Creek is unlikely, as streams of this type usually dry up or freeze solid in winter.

WATERBODY

Waterbody Nugget Creek

Main Drainage Yukon River Tributary to Middle Fork Koyukuk River

NPRX 040-3 NPSI 2-60 NPAS 40 NPMP 224.2 AHMP NA

USGS Map Reference Chandalar, AK T 31N R 10W Sec. 19

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>20,21</u>
Summer	<u>CN,GR</u>	<u>R</u>	<u>11,30,34</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Nugget Creek is a fast-flowing run-off stream approximately 2.5 m wide and 23 cm deep (Ref. 34). Turbidity varies from clear to silty and substrate is composed of coarse gravel and rubble. Bank vegetation is spruce, birch, willows, alder and some grasses.

The presence of grayling and slimy sculpin in August 1975 (Refs. 30 and 34) suggests that these species utilize Nugget Creek near the proposed crossing throughout the open water period. Data gaps exist concerning fish use of this stream in spring and fall. An investigation in June 1971 failed to capture fish, but this may have been due to adverse sampling conditions (Refs. 20 and 21).

Winter use of Nugget Creek is unlikely, as streams of this type usually dry up or freeze solid in winter.

WATERBODY

Waterbody Wolf Pup CreekMain Drainage Yukon River Tributary to Middle Fork Koyukuk RiverNPRX 040-2 NPSI 2-59 NPAS 40 NPMP 223.7 AHMP NAUSGS Map Reference Chandalar, AK T 31N R 10W Sec. 19

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>20,121</u>
Summer	<u>CN</u>	<u>R</u>	<u>34</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Wolf Pup Creek is a small stream (1.5 m wide and 20-30 cm deep) with a substrate of sand and gravel. Bank vegetation is overhanging willows (Ref. 34).

An investigation near the area of the proposed crossing in August 1975 reported one dead slimy sculpin and described Wolf Pup Creek as a ravine supplied by runoff (Ref. 34). Many isolated pools created by low flow in summer months were also noted. Investigations in June of 1971 and 1980 failed to record any fish (Refs. 20 and 121). It appears that, in the area of the proposed crossing, Wolf Pup Creek provides marginal habitat during the open water periods. No overwintering habitat is expected to be present.

WATERBODY

Waterbody Sheep Creek

Main Drainage Yukon River Tributary to Middle Fork Koyukuk River

NPRX 040-1 NPSI 2-53 NPAS 40 NPMP 223.2 AHMP NA

USGS Map Reference Chandalar, AK T 31N R 10W Sec. 19

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>CN,GR</u>	<u>M,R</u>	<u>30</u>
Summer	<u>None</u>	<u></u>	<u>34</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Sheep Creek is a high gradient stream approximately 1.8 m wide and 25-40 cm deep which drains into Middle Fork Koyukuk River (Ref. 34). Substrate is sand and finest to coarse gravel; banks are vegetated with grasses, alder, willows, birch and spruce (Refs. 11 and 34). Hallberg (1975 - Ref. 34) reported that in the area of the proposed pipeline crossing the steep gradient of Sheep Creek presents barriers to fish movement during low flow periods. This suggests that in the area of the proposed crossing, Sheep Creek provides marginal habitat except during high flow periods. The presence of grayling and slimy sculpin in June and an undated sighting of unidentified fingerlings (Ref. 30) indicate that fish use likely occurs in the area of the proposed crossing during high flow periods. Absence of fish in August 1975 (Ref. 34) suggests that fish migrate downstream as flow decreases in the dry summer months. Information concerning fall fish use of Sheep Creek is lacking. Winter use is unlikely, as streams of this type usually dry up or freeze solid in winter.

WATERBODY

Waterbody Cushing Creek

Main Drainage Yukon River Tributary to Middle Fork Koyukuk River

NPRX 039-4 NPSI 2-52.01 NPAS 39 NPMP 222.9 AHMP NA

USGS Map Reference Chandalar, AK T 31N R 10W Sec. 18

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Cushing Creek is a small tributary of Middle Fork Koyukuk River. It flows westerly through pools (1-2 m deep) and small falls in a defined channel from 100 m upstream of the proposed pipeline crossing to the TAPS crossing. Below the TAPS crossing, Cushing Creek meanders through tall grass and sedge in a series of pools, narrow channels and marshlands. Stream substrate is generally sand, fines and detritus with cobble and boulder at the low water crossing of the TAPS work pad. Streamside vegetation consists of grasses, willows and birch.

Fish use of Cushing Creek in the vicinity of the proposed crossing has never been documented. An investigation in September 1980 reported the habitat in Cushing Creek as suitable for fish use, however, no fish were observed or captured (Ref. 122). Downstream migration of fish may have occurred prior to this survey. A previous investigation reported an unidentified fish species in this stream, but specific information on location or time of year is not available (Ref. 11).

Cushing Creek appears to provide only marginal habitat during the open water period, however, further investigations are needed to fully assess this stream's importance to fish. Winter use is unlikely as streams of this size and type usually dry up or freeze solid in winter.

Waterbody Gold Creek

Main Drainage Yukon River Tributary to Middle Fork Koyukuk River

NPRX 039-3 NPSI 2-52 NPAS 39 NPMP 222.4 AHMP NA

USGS Map Reference Chandalar, AK T 31N R 10W Sec. 18

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>X</u>	<u>M,R</u>	<u>30,64,121</u>
Summer	<u>GR</u>	<u>R</u>	<u>30,34</u>
Fall	<u>None</u>		<u>None</u>
Winter	<u>None</u>		<u>31</u>

Gold Creek is a fast flowing stream approximately 4.5-6 m wide and 0.3-0.9 m deep. Its streambed is sand to boulders and bank vegetation is willows, aspen, and alder (Refs. 11, 21, and 34).

The presence of grayling fry in August 1975 (Ref. 34) near the proposed crossing indicates that Gold Creek is very likely used for spring spawning, as well as for summer rearing. An undated, non-site specific observation also reported sculpin to be present in Gold Creek (Ref. 11). Gold Creek was dry on 4 August 1978 (Ref. 31). Therefore, fish utilization of the stream is relatively brief and would be confined to spring and the first few months of summer.

WATERBODY

Waterbody Linda Creek

Main Drainage Yukon River Tributary to Middle Fork Koyukuk River

NPRX 039-2 NPSI 2-51 NPAS 39 NPMP 221.9 AHMP NA

USGS Map Reference Chandalar, AK T 31N R 10W Sec. 8

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>21,121</u>
Summer	<u>CN,GR</u>	<u>R</u>	<u>30</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Linda Creek is fed by Linda Creek Lake and runoff (Ref. 34). In the vicinity of the proposed pipeline crossing, Linda Creek is approximately 1.2 m wide and 10 cm deep with a stream bed composed of silt and coarse gravel. Banks are vegetated with willows, spruce and grasses (Refs. 11 and 34).

Grayling and slimy sculpin have been reported in August (Ref. 30) and undated reports of slimy sculpin (Refs. 11 and 20) indicate that this stream is used for rearing at least during the summer. Emigration likely occurs in fall before freeze-up. Past investigators have reported siltation and channelization in Linda Creek near the proposed crossing due to an upstream mining operation, which has resulted in marginal fish habitat during the open water period (Refs. 11, 20 and 34). Winter use of Linda Creek is unlikely, as streams of this type tend to be dry or frozen solid in winter.

WATERBODY

Waterbody Valve Site Creek

Main Drainage Yukon River Tributary to Middle Fork Koyukuk River

NPRX 039-1 NPSI 2-49.07 NPAS 39 NPMP 219.7 AHMP NA

USGS Map Reference Chandalar, AK T 32N R 10W Sec. 32

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u>None</u>	<u>20</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Valve Site Creek is a small stream which flows west through willow, sedge and spruce to the Middle Fork of the Koyukuk River.

Use of this stream by fish is unlikely at any time except perhaps during high water periods when fish could migrate into Valve Site Creek from the Koyukuk River. This area was investigated on 28 June 1971 at which time no flow, pools, or fish were found (Ref. 20). Due to the small size of this stream, winter habitat is lacking.

WATERBODY

Waterbody Sukakpak Creek

Main Drainage Yukon River Tributary to Middle Fork Koyukuk River

NPRX 038-8 NPSI 2-49.03 NPAS 38 NPMP 216.5 AHMP NA

USGS Map Reference Chandalar, AK T 32N R 10W Sec. 16

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>GR</u>	<u>M,R,S</u>	<u>11,20</u>
Summer	<u>GR</u>	<u>R</u>	<u>30</u>
Fall	<u>GR</u>	<u>M,R</u>	<u>11</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Sukakpak Creek originates east of the pipeline route and flows through a series of small ponds and a marshy meadow area into the Middle Fork of the Koyukuk River. The stream is 1-3 m wide, contains numerous shallow pools and has a bottom of sand and gravel. Bank vegetation is composed primarily of grasses and sedges.

Grayling are present in Sukakpak Creek throughout the open water period. Numerous small salmonids which were believed to be grayling fry were observed upstream of the pipeline pad on 14 September 1976 (Ref. 11). This indicates that Sukakpak Creek may be used as a spawning area. Due to the small size of this stream, overwintering habitat is probably not present at the proposed crossing and fish using this area would have to emigrate at the close of the open water season.

WATERBODY

Waterbody Access Road CreekMain Drainage Middle Fork Koyukuk River Tributary to West Fork Sukakpak CreekNPRX 038-7 NPSI 2-49.026 NPAS 38 NPMP 216.2 AHMP NAUSGS Map Reference Chandalar, AK T 32N R 10W Sec. 16

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>GR</u>	<u>M,R</u>	<u>11</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Access Road Creek is a small stream which drains into a small lake immediately west of the Haul Road.

Although little work has been done on this stream, grayling have been reported in Access Road Creek during spring (Ref. 11). The presence of grayling in spring suggests that this stream is a rearing area during open water, however, further investigations are needed to fully assess this stream's importance to fish. Winter use is unlikely as streams of this size and type usually dry up or freeze solid in winter.

WATERBODY

Waterbody West Fork Sukakpak Creek

Main Drainage Yukon River Tributary to Middle Fork Koyukuk River

NPRX 038-6 NPSI 2-49.025 NPAS 38 NPMP 216.0 AHMP NA

USGS Map Reference Chandalar, AK T 32N R 10W Sec. 16

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>GR</u>	<u>M,R</u>	<u>11</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

West Fork Sukakpak is a narrow stream with a well-defined channel which drains westerly across the Haul Road and the TAPS line to the Middle Fork Koyukuk River.

Although little work has been done on this stream, grayling have been reported in West Fork Sukakpak Creek during spring (Ref. 11). The presence of grayling in spring suggests that this stream is a rearing area during open water, however, further investigations are needed to fully assess this stream's importance to fish. Winter use is unlikely as streams of this size and type usually dry up or freeze solid in winter.

WATERBODY

Waterbody Middle Fork Koyukuk River

Main Drainage Yukon River Tributary to Yukon River

NPRX 038-5 NPSI 2-49 NPAS 38 NPMP 214.3-214.6 AHMP NA

USGS Map Reference Chandalar, AK T 32N R 10W Sec. 9

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>CN,DV,GR,LS,RW</u>	<u>M,R</u>	<u>30,74</u>
Summer	<u>None*</u>	<u></u>	<u>None</u>
Fall	<u>None*</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

* See assessment - fish present but site specific data lacking.

This proposed crossing of the Middle Fork of the Koyukuk River is located approximately 3 km downstream of the confluence of the Bettles River and the Dietrich River. In this area the Koyukuk River is extensively braided and a number of river channels are present. The bottom material consists of sand and gravel. Bank vegetation is grasses, sedges, willows, and spruce.

A variety of fish species are found near the proposed crossing of the Middle Fork Koyukuk River in spring (Ref. 30). Although site specific information is lacking, this general area of the river is known to contain fish throughout the open water period. Chum salmon occur in the Koyukuk River (Ref. 30); however, it is doubtful that they occur in upstream areas near this crossing (Ref. 21). Apparently, water flow is maintained all winter throughout the river section adjacent to the TAPS line corridor (Ref. 21). Information on winter fish use near the proposed crossing is lacking but this portion of the river should be considered to be important to fish year-round.

WATERBODY

Waterbody Millie's Meander

Main Drainage Yukon River Tributary to Middle Fork Koyukuk River

NPRX 038-4 NPSI 2-48.03 NPAS 38 NPMP 214.0 AHMP NA

USGS Map Reference Chandalar, AK T 32N R 10W Sec. 4

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>CN,GR</u>	<u>M,R</u>	<u>11,30,31,64,70,121</u>
Summer	<u>CN</u>	<u>R</u>	<u>30</u>
Fall	<u>None</u>		<u>None</u>
Winter	<u>None</u>		<u>None</u>

Millie's Meander is a small side channel of the Middle Fork of the Koyukuk River that flows through an area of open spruce forest and mixed shrub (Refs. 11 and 70).

In the vicinity of the proposed crossing, grayling and slimy sculpin use Millie's Meander for migration and rearing (Refs. 11, 30, 31, 64 and 70). Although information concerning fall use is lacking, slimy sculpin have been reported present in July (Ref. 30). Both species likely use this stream in the area of the proposed crossing for rearing throughout the open water period and for fall migration. Winter use is unlikely as streams of this type tend to be dry or frozen solid in winter.

WATERBODY

Waterbody Eva's Alv

Main Drainage Yukon River Tributary to Middle Fork Koyukuk River

NPRX 038-3 NPSI 2-48.01 NPAS 38 NPMP 212.4 AHMP NA

USGS Map Reference Chandalar, AK T 33N R 10W Sec. 35

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u>None</u>	<u>121</u>
Summer	<u>None</u>		<u>None</u>
Fall	<u>GR</u>	<u>M,R</u>	<u>11,30</u>
Winter	<u>None</u>		<u>None</u>

Eva's Alv is a small high gradient stream that flows easterly into the Dietrich River. The stream is approximately 1.2 m wide and 2.5-5.0 cm deep. Substrate is composed of fine sand to boulders and banks are vegetated with spruce, willows, and alder (Ref. 11).

Grayling have been reported present in Eva's Alv during September (Refs. 11 and 30). However, a survey conducted in June 1980 reported that in the area of the proposed gasline crossing, Eva's Alv does not provide any fish habitat because a perched culvert at the Haul Road (Ref. 121) blocks fish movement upstream past the Haul Road.

WATERBODY

Waterbody Dietrich River (Lower)

Main Drainage Yukon River Tributary to Middle Fork Koyukuk River

NPRX 038-2 NPSI 2-48 NPAS 38 NPMP 212.1 AHMP NA

USGS Map Reference Chandalar, AK T 33N R 10W Sec. 35

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>GR,LS</u>	<u>M,R</u>	<u>30,31</u>
Summer	<u>CN,GR,LS,RW</u>	<u>R</u>	<u>30</u>
Fall	<u>BB,CN,GR</u>	<u>M,R</u>	<u>11,30,31</u>
Winter	<u>GR,X</u>	<u>W</u>	<u>11,31,55,77</u>

The proposed pipeline route follows the Dietrich River valley for approximately 48 km and crosses or encroaches upon the river and floodplain a number of times. This is the farthest downstream crossing and it occurs 550 m upstream of the confluence of the Bettles and Dietrich rivers. In this location the stream is confined to a single channel which is 30-40 m wide and lies within a 180 m wide floodplain. Substrate is gravel and some cobble.

This region of the Dietrich River provides habitat for numerous fish species, many of which may be present year-round. Fish species present during open water include burbot, slimy sculpin, grayling, longnose sucker and round whitefish (Refs. 11, 30 and 31). Dolly Varden are known to be present farther upstream (Ref. 77) and probably also occur at this crossing. This region of the river serves as a migration route for fishes moving to upstream spawning and rearing areas in spring. During the fall many of the upstream tributaries begin to freeze and fish migrate downstream to overwintering areas. Early winter investigations found grayling in the vicinity of the proposed crossing on 14 November 1979 (Ref. 77). No fish were found on 9 April 1979. By 26 April 1979 meltwater had caused the water level to rise and numerous juvenile fish were observed (Ref. 77). Additional overwintering areas are reported to occur in the lower regions of the Dietrich River (Refs. 11 and 31).

The lower reaches of the Dietrich River are considered important to fish year-round.

WATERBODY

Waterbody 1415 Lake OutletMain Drainage Middle Fork Koyukuk River Tributary to Dietrich RiverNPRX Q38-1 NPSI 2-46.01 NPAS 38 NPMP 211.5 AHMP NAUSGS Map Reference Chandalar, AK T 33N R 10W Sec. 25

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>121</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

1415 Lake Outlet is a small stream which flows from a small shallow lake west of the TAPS line into a relatively large shallow lake east of the Haul Road.

A survey conducted in June 1980 recorded no fish (Ref. 121) and data for summer and fall are lacking. Use of this stream by fish during the open water period is expected to be low or non-existent. Winter use is unlikely as this stream probably freezes to the bottom in winter.

WATERBODY

Waterbody Brockman CreekMain Drainage Koyukuk River Tributary to Dietrich RiverNPRX 037-7 NPSI 2-46 NPAS 37 NPMP 210.6 AHMP NAUSGS Map Reference Chandalar, AK T 33N R 10W Sec. 25

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>CN,DV,GR</u>	<u>R</u>	<u>11,30,64</u>
Fall	<u>CN</u>	<u>R</u>	<u>30</u>
Winter	<u>None</u>	<u>None</u>	<u>55</u>

Brockman Creek has a steep gradient and a 50 m wide floodplain. Its large rock and cobble substrate suggests that it is subject to flooding by high velocity water. The channel runs essentially straight downhill to its confluence with the Dietrich River.

Brockman Creek is a rearing area for sculpin, grayling and Dolly Varden in summer and fall. It was reported that this stream is probably used by grayling for spawning (Ref. 11); however, this has not been documented. Brockman Creek freezes to the bottom and provides no overwintering habitat (Ref. 55).

WATERBODY

Waterbody South Branch Airport CreekMain Drainage Middle Fork Koyukuk River Tributary to Dietrich RiverNPRX 037-5 NPSI 2-45.03 NPAS 37 NPMP 209.4 AHMP NAUSGS Map Reference Chandalar, AK T 33N R 10W Sec. 24

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>GR</u>	<u>R</u>	<u>11,20,123,128</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

South Branch Airport Creek is a clear, small stream approximately 0.3 m wide and 0.1 m deep. The stream is almost entirely silt bottomed pools with grassy banks (Ref. 11). It is located approximately 0.8 km south of Dietrich Camp runway.

Information concerning use of this stream by fish during spring and fall is not available. However, grayling have been reported in the region of the proposed crossing in July 1971 and August 1980 (Refs. 11, 20, 123 and 128). Winter use is unlikely as streams of this type tend to be dry or frozen solid in winter.

WATERBODY

Waterbody Middle Fork Airport CreekMain Drainage Middle Fork Koyukuk River Tributary to Dietrich RiverNPRX 037-4 NPSI NPAS 37 NPMP 209.2 AHMP NAUSGS Map Reference Chandalar, AK T 33N R 10W Sec. 13

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u> </u>	<u>None</u>
Summer	<u>GR</u>	<u>R</u>	<u>11,20</u>
Fall	<u>None</u>	<u> </u>	<u>None</u>
Winter	<u>None</u>	<u> </u>	<u>None</u>

Middle Fork Airport Creek is a clear, small stream approximately 0.3 m wide and 0.1 m deep. The stream is nearly 100% pools with a silt bottom and grassy banks (Ref. 11). It is located approximately 0.4 km south of Dietrich Camp runway.

Information concerning fish use of this stream for spring and fall is not available. However, grayling have been reported in the region of the proposed crossing in July 1971 (Refs. 11 and 20). Winter use is unlikely as streams of this nature tend to be dry or freeze solid in winter.

WATERBODY

Waterbody Airport CreekMain Drainage Middle Fork Koyukuk River Tributary to Dietrich RiverNPRX 037-3 NPSI 2-45.01 NPAS 37 NPMP 208.5 AHMP NAUSGS Map Reference Chandalar, AK T 33N R 10W Sec. 14

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>DV,GR</u>	<u>M,R</u>	<u>11,30</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Airport Creek is located approximately 0.5 km northeast of Dietrich Camp. In the vicinity of the proposed crossing, the stream is a collection of very small pockets of water with little flow between pools. The substrate is silt and banks are grassy (Ref. 11).

Dolly Varden and grayling occur near the proposed crossing in June (Refs. 11 and 30). Since Airport Creek would provide no overwintering habitat, fish must migrate into the system in spring. Duration of fish use during the open water period is unknown, but it is probably brief because little flow was observed in early summer (Ref. 11).

WATERBODY

Waterbody Disaster CreekMain Drainage Middle Fork Koyukuk River Tributary to Dietrich RiverNPRX 037-2 NPSI 2-45 NPAS 37 NPMP 207.8 AHMP NAUSGS Map Reference Chandalar, AK T 33N R 10W Sec. 11

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>CN,GR</u>	<u>R</u>	<u>30,64</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Disaster Creek is a small stream which drains a mountainous area east of the pipeline route. Above the Haul Road, Disaster Creek has a steep gradient. Below the Haul Road, the gradient is less steep and the stream flows through a braided channel over material site 104-3 before entering the Dietrich River. At the proposed crossing, Disaster Creek is 1-2 m wide, its substrate is sand, gravel and boulders, and the stream banks are vegetated with spruce, alder and willows.

Adult and juvenile grayling have been found during July in Disaster Creek between the Haul Road and its confluence with the Dietrich River. Slimy sculpin are also known to use this portion of the stream in summer (Refs. 30 and 64). Winter habitat is probably lacking in Disaster Creek due to its small size.

WATERBODY

491

Waterbody Unnamed Creek

Main Drainage Middle Fork Koyukuk River Tributary to Dietrich River

NPRX 037-1 NPSI 2-43.07 NPAS 37 NPMP 207.5 AHMP NA

USGS Map Reference Chandalar, AK T 33N R 10W Sec. 11

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Unnamed Creek is located approximately 4 km south of Snowden Creek and drains a small area of alder, willows and sedge east of the proposed pipeline route.

No information is available on fish in this stream. Fish use, if it exists, would be restricted to the open water period, since this stream is too small to provide overwintering habitat.

WATERBODY

Waterbody Snowden CreekMain Drainage Middle Fork Koyukuk River Tributary to Dietrich RiverNPRX 036-4 NPSI 2-43 NPAS 36 NPMP 205.0 AHMP NAUSGS Map Reference Chandalar, AK T 34N R 10W Sec. 26

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>CN,GR</u>	<u>R</u>	<u>11,20</u>
Summer	<u>CN,GR</u>	<u>R</u>	<u>30,64</u>
Fall	<u>GR</u>	<u>R</u>	<u>122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Snowden Creek drains a mountainous area east of the proposed pipeline route. The lower portion of the stream, where the crossing is located, is wide (floodplain 30 m; stream 5.4 wide in fall), fast flowing and braided (Refs. 11 and 34). A variety of substrates are found in this stream. The banks are vegetated with alder, spruce and willows. Fish passage is blocked at the Haul Road by a perched CMP.

Grayling and slimy sculpin have been observed in Snowden Creek during spring and summer (Refs. 20 and 64). During fall 1980 grayling were observed in the scour pool below the perched culvert (Ref. 122). Snowden Creek provides good rearing habitat for grayling and slimy sculpin throughout the open water period. Winter use is unlikely as streams of this nature tend to be dry or frozen solid in winter.

WATERBODY

Waterbody Snowden Pond Inlet

Main Drainage Snowden Pond Outlet Tributary to Snowden Pond

NPRX 036-3 NPSI 2-41.04 NPAS 36 NPMP 204.4 AHMP NA

USGS Map Reference Chandalar, AK T 34N R 10W Sec. 26

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Snowden Pond Inlet is a small mountain creek flowing northwest through a spruce-alder forest. Typical substrate in this vicinity consists of sand, gravel and cobble, and the water tends to be clear and fast flowing.

Fishery investigations have not been conducted on this stream. It is probable that winter use is non-existent. Field study during the open water period would be necessary to document its importance to fish.

WATERBODY

Waterbody Numbers Lake CreekMain Drainage Middle Fork Koyukuk River Tributary to Dietrich RiverNPRX 036-2 NPSI 2-41.03 NPAS 36 NPMP 203.7 AHMP NAUSGS Map Reference Chandalar, AK T 34N R 10W Sec. 22

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>X</u>	<u>M,R</u>	<u>121</u>
Summer	<u>CD,GR</u>	<u>R</u>	<u>11,20</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Numbers Lake Creek drains a mountainous area east of the TAPS line and flows west into the Dietrich River. Average stream width at the pipeline crossing is about 1 m. Substrate is sand, gravel and cobbles and the bank vegetation consists of spruce, sedges and willows. Several waterfalls are located downstream from the Haul Road crossing; these may be barriers to fish passage.

Adult and juvenile grayling and sculpin have been found in Numbers Lake Creek in summer (Refs. 11 and 20) and an unidentified species (presumed to be grayling) was reported in spring 1980 (Ref. 121). Fall data are lacking but grayling and sculpin likely rear in this stream throughout the open water season. Winter use is unlikely as streams of this size and type tend to be dry or frozen solid in winter.

WATERBODY

Waterbody Ugh CreekMain Drainage Middle Fork Koyukuk River Tributary to Dietrich RiverNPRX 036-1 NPSI 2-41 NPAS 36 NPMP 202.3 AHMP NAUSGS Map Reference Chandalar, AK T 34N R 10W Sec. 15

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>GR</u>	<u>M,R</u>	<u>30</u>
Summer	<u>None</u>	<u></u>	<u>20</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Ugh Creek is a high gradient run-off stream with a wide rocky stream bed. It flows through material site 105-2 and sinks into an alluvial fan near its mouth (Refs. 11 and 20). Some flow had been reported in the vicinity of the TAPS crossing (Ref. 11).

The presence of grayling in June (Ref. 30) and an undated report of grayling and slimy sculpin (Ref. 11) indicate that this stream is used by fish at least in the spring. Fish use is likely restricted to the area of flow reported downstream near the TAPS crossing (Refs. 11 and 20). Winter use at Ugh Creek is unlikely, as streams of this type usually dry up or freeze solid in winter.

WATERBODY

Waterbody Steep CreekMain Drainage Middle Fork Koyukuk River Tributary to Dietrich RiverNPRX 035-4 NPSI 2-39 NPAS 35 NPMP 198.3 AHMP NAUSGS Map Reference Chandalar, AK T 35N R 10W Sec. 28

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>121</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Steep Creek flows through a single channel to below the proposed crossing where it is braided until its confluence with the Dietrich River. At the pipeline crossing the stream is 1.8-4.3 m wide, 10-17 cm deep and flows over cobble and boulder substrate forming many riffle areas and few pools. The stable alluvial banks are occasionally vegetated with spruce and willows. A scour pool has formed at the downstream end of the Prudhoe Bay Road culvert which is perched approximately 45 cm above the channel bottom.

Habitat provided by this steep glacial stream can only be termed adequate. Investigations in spring and fall of 1980 did not record any fish and reported a perched CMP creating a 30 cm falls which likely presented a barrier to fish movement (Ref. 121 and 122). References 11 and 30 indicate that much of the waters of Steep Creek percolate into the alluvial fan above the Dietrich River. Should this occur, fish movement would be blocked during periods of low water; however, during the fall 1980 investigation no such block was evident. Although few studies have been conducted on Steep Creek, fish use of this stream is suspected to be low to non-existent at any time of the year.

WATERBODY

Waterbody Buff Creek

Main Drainage Middle Fork Koyukuk River Tributary to Dietrich River

NPRX 035-3 NPSI 2-38 NPAS 35 NPMP 196.8 AHMP NA

USGS Map Reference Chandalar, AK T 35N R 10W Sec. 16 & 21

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED *	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>121</u>
Summer	<u>None</u>	<u></u>	<u>20</u>
Fall	<u>None</u>	<u></u>	<u>122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

* See assessment - fish reported in the stream but specific data are lacking.

Buff Creek is a steep, mountain stream that varies in width (1.7-7 m) and depth (8-17 cm) in the vicinity of the proposed pipeline crossing. Its clear waters flow westerly through braided channels to its confluence with the Dietrich River approximately 0.5 km downstream of the crossing. The banks of Buff Creek are stable and lined with spruce, birch, willows and alder. Stream substrate is cobble and boulder with some gravel, sand and fines.

Although no fish were captured or observed during spring and fall investigations in 1980 (Refs. 121 and 122), fish habitat in Buff Creek appeared favorable. Grayling have been reported in this stream (Refs. 11 and 30) but actual documentation of this is not available. Previous reports have suggested that fish use of Buff Creek may be restricted due to its intermittent nature (Ref. 11). During the fall 1980 surveys, however, sufficient water was available for fish use.

WATERBODY

Waterbody Burger's Bayou

Main Drainage Dietrich River Tributary to Drainage Material Site 106

NPRX 035-2 NPSI 2-36.02 NPAS 35 NPMP 196.3 AHMP NA

USGS Map Reference Chandalar, AK T 35N R 10W Sec. 16

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>DV,GR</u>	<u>M,R</u>	<u>11,30</u>
Summer	<u>None</u>		<u>11,30</u>
Fall	<u>BB,CN,GR</u>	<u>M,R</u>	<u>122</u>
Winter	<u>CN</u>	<u>W</u>	<u>11,30,77</u>

Burger's Bayou is a shallow, slow-flowing, spring-fed stream originating approximately 150 m upstream of the proposed pipeline and flowing 650 m downstream to the Dietrich River. The substrate is composed of gravel covered with filamentous green algae. This stream is bordered on the east side by a steep spruce-covered slope and on the west by dense willow and spruce.

During the open water period burbot, slimy sculpin, Dolly Varden and grayling have been documented in Burger's Bayou (Refs. 11, 30 and 122). Although individual species have been reported present during different seasons, it is likely that many species use this stream throughout the open water season.

Burger's Bayou has been reported to remain open all year (Ref. 11) and slimy sculpin have been reported present in mid-November (Ref. 77). This stream should be considered important fish habitat year-round.

WATERBODY

Waterbody Tracy's Trickle

Main Drainage Middle Fork Koyukuk River Tributary to Dietrich River

NPRX 035-1 NPSI 2-36 NPAS 35 NPMP 193.9 AHMP NA

USGS Map Reference Chandalar, AK T 35N R 10W Sec. 4

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>GR</u>	<u>R</u>	<u>30</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Tracy's Trickle is a steep, montane stream with a wide, braided streambed. It flows west through scattered spruce and willow to its confluence with the Dietrich River.

Grayling have been reported in Tracy's Trickle in July (Ref. 30). The exact location is unknown but they were probably found near the mouth of the stream. Fish use in the area of the proposed crossing is likely restricted to periods of high flow. Winter use of the stream by fish is unlikely as streams of this type tend to be dry or frozen solid in winter.

WATERBODY

Waterbody Unnamed CreekMain Drainage Middle Fork Koyukuk River Tributary to Dietrich RiverNPRX 034-8 NPSI 2-34.07 NPAS 34 NPMP 192.9 AHMP NAUSGS Map Reference Chandalar, AK T 36N R 10W Sec. 33

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Unnamed Creek is a small stream which flows west to the Dietrich River, through terrain vegetated with willows and alder.

Fishery investigations have not been conducted on this stream and it is not possible to accurately assess this stream's importance as fish habitat.

WATERBODY

501

Waterbody Beaver Dam Brook #1

Main Drainage Middle Fork Koyukuk River Tributary to Dietrich River

NPRX 034-7 NPSI 2-34.05 NPAS 34 NPMP 192.4 AHMP NA

USGS Map Reference Chandalar, AK T 36N R 10W Sec. 28

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>GR</u>	<u>R</u>	<u>30</u>
Summer	<u>GR</u>	<u>R</u>	<u>20,21,30,64</u>
Fall	<u>CN,GR,RW</u>	<u>R</u>	<u>122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Beaver Dam Brook #1 is a clear water stream that is joined by a small spring east of the Haul Road and flows southerly in a series of pools and marsh areas across the Haul Road to join the Dietrich River. It is contained by high banks on the east that are vegetated with overhanging willows and alder. The west banks are low and sparsely vegetated with willows. Stream substrate near the Haul Road consists of gravel and fines. In the upstream marsh and pool areas substrate is mud and detritus. Beaver have constructed numerous dams throughout the stream beginning approximately 50 m upstream of the Haul Road CMP. These dams are effective barriers to fish passage (Refs. 20, 64 and 122).

When not blocked by beaver dams, this stream provides excellent fish habitat (Refs. 30 and 122). Grayling are known to use the stream in spring and summer as a rearing area. Numerous grayling, round whitefish and slimy sculpin were observed and captured in September 1980. Grayling were observed in a pond created by a beaver dam approximately 50 m upstream of the CMP (Ref. 122). It is believed that these fish entered the pond through the marsh area west of the beaver dam during periods of high water.

In the area of the CMP, this stream serves as an excellent rearing area and migration route for several species. Winter use of the stream proper is not likely as it is probably dry or frozen solid in winter.

WATERBODY

Waterbody Beaver Dam Brook #2

Main Drainage Middle Fork Koyukuk River Tributary to Dietrich River

NPRX 034-6 NPSI 2-34.04 NPAS 34 NPMP 192.0 AHMP NA

USGS Map Reference Chandalar, AK T 36N R 10W Sec. 28

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Beaver Dam Brook is a clear water stream that is joined by a small spring east of the Haul Road and flows southerly in a series of pools and marsh areas across the Haul Road to join the Dietrich River. It is contained by high banks on the east that are vegetated with overhanging willows and alder. The west banks are low and sparsely vegetated with willows. Stream substrate near the Haul Road consists of gravel and fines. In upstream marsh and pool areas substrate is mud and detritus. Beaver have constructed numerous dams throughout the stream beginning approximately 50 m upstream of the Haul Road CMP. These dams are effective barriers to fish passage (Refs. 20, 64 and 122).

Beaver Dam Brook #2 provides excellent fall habitat for fish; however, beaver dams downstream of this crossing are effective barriers to fish movement to this area. No fish were captured or observed in September 1980, thus use by fish near this crossing is low to non-existent.

WATERBODY

Waterbody Beaver Dam Brook #3

Main Drainage Middle Fork Koyukuk River Tributary to Dietrich River

NPRX 034-5 NPSI 2-34.03 NPAS 34 NPMP 191.8 AHMP NA

USGS Map Reference Chandalar, AK T 36N R 10W Sec. 28

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Beaver Dam Brook is a clear water stream that is joined by a small spring east of the Haul Road and flows southerly in a series of pools and marsh areas across the Haul Road to join the Dietrich River. It is contained by high banks on the east that are vegetated with overhanging willows and alder. The west banks are low and sparsely vegetated with willows. Stream substrate near the Haul Road consists of gravel and fines. In upstream marsh and pool areas substrate is mud and detritus. Beaver have constructed numerous dams throughout the stream beginning approximately 50 m upstream of the Haul Road CMP. These dams are effective barriers to fish passage (Refs. 20, 64 and 122).

Beaver Dam Brook #3 is a small stream that flows into Beaver Dam Brook. Small ponds were the only water found in September 1980. Fish habitat is marginal and fish use low to non-existent.

WATERBODY

Waterbody Beaver Dam Brook #4

Main Drainage Middle Fork Koyukuk River Tributary to Dietrich River

NPRX 034-4 NPSI 2-34.02 NPAS 34 NPMP 191.8 AHMP NA

USGS Map Reference Chandalar, AK T 36N R 10W Sec. 28

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Beaver Dam Brook is a clearwater stream that is joined by a small spring east of the Haul Road and flows southerly in a series of pools and marsh areas across the Haul Road to join the Dietrich River. It is contained by high banks on the east that are vegetated with overhanging willows and alder. The west banks are low and sparsely vegetated with willows. Stream substrate near the Haul Road consists of gravel and fines. In upstream marsh and pool areas substrate is mud and detritus. Beaver have constructed numerous dams throughout the stream beginning approximately 50 m upstream of the Haul Road CMP. These dams are effective barriers to fish passage (Refs. 20, 64 and 122).

Beaver Dam Brook #4 is a very small stream. Downstream, approximately 50 m, it is joined by a small spring. Numerous beaver dams constructed downstream of Beaver Dam Brook #4 provide effective barriers to fish movement. Use of this stream by fish is low to non-existent.

WATERBODY

Waterbody Nutirwik Creek

Main Drainage Middle Fork Koyukuk River Tributary to Dietrich River

NPRX 034-3 NPSI 2-34 NPAS 34 NPMP 190.8 AHMP NA

USGS Map Reference Chandalar, AK T 36N R 10W Sec. 21

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>GR</u>	<u>R</u>	<u>11,20,21,30</u>
Fall	<u>DV</u>	<u>M,R</u>	<u>122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Nutirwik Creek is a clear water stream that varies in width from 3.9-14 m and in depth from 17-24 cm. It is fed by spring water sources and flows down a steep gradient to join the Dietrich River just west of the Haul Road. Stream substrate is cobble and boulder with some gravel; aquatic vegetation is lacking. Banks are stable and essentially void of vegetative cover on the wide alluvial fan. Off the alluvium, vegetation consists of alder, grasses and some spruce.

Grayling have been reported to occur in Nutirwik Creek in June and July (Refs. 11, 20, 21 and 30) and Dolly Varden have been documented in September (Ref. 122). It is probable that both species can be found in this area throughout the open water period. Other species thought to be present include slimy sculpin and round whitefish (Refs. 11 and 21). Due to its small size, it is unlikely that Nutiswik Creek provides any overwintering habitat. Species present in fall likely migrate downstream into the Dietrich River before freeze-up.

WATERBODY

Waterbody Homewood Spring

Main Drainage Middle Fork Koyukuk River Tributary to Dietrich River

NPRX 034-2 NPSI 2-32.05 NPAS 34 NPMP 188.4-188.7 AHMP NA

USGS Map Reference Chandalar, AK T 36N R 10W Sec. 10

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>GR</u>	<u>R</u>	<u>30</u>
Fall	<u>CN,DV,GR</u>	<u>M,R</u>	<u>122</u>
Winter	<u>GR</u>	<u>w</u>	<u>41,55</u>

Homewood Spring originates from several spring sources approximately 170 m east of the proposed pipeline crossing. These springs feed a shallow (3-14 cm) stream (2-4 m wide) that flows approximately 0.5 km before reaching the Dietrich River. Stream substrate consists of sand and gravel with some fines and cobbles. Aquatic vegetation is scant. Stable banks vary from low sloping to incised and are sparsely vegetated with willows.

Although spring information is lacking, grayling were reported in August (Ref. 30), and young-of-the-year Dolly Varden, juvenile and adult grayling and adult slimy sculpin were captured in the vicinity of the proposed pipeline crossing on 12 September 1980 (Ref. 122). During the open water period Homewood Spring is an important rearing area for Dolly Varden, slimy sculpin and grayling.

Surveys indicate that this spring is a fish overwintering area during some years. Juvenile grayling have been reported in January 1976 (Ref. 41), but winter surveys conducted in April 1979 found the spring solidly frozen (Ref. 55).

WATERBODY

Waterbody Unnamed CreekMain Drainage Middle Fork Koyukuk River Tributary to Dietrich RiverNPRX 034-1 NPSI 2-33 NPAS 34 NPMP 187.8 AHMP NAUSGS Map Reference Chandalar, AK T 36N R 10W Sec. 3

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Unnamed Creek is a small mountainous stream which flows west over an alluvial fan to the Dietrich River.

Fishery investigations have not been conducted on this stream and an accurate assessment of this stream's importance as fish habitat is not presently possible.

WATERBODY

Waterbody Overwintering CreekMain Drainage Middle Fork Koyukuk River Tributary to Dietrich RiverNPRX 033-7 NPSI 2-32.02 NPAS 33 NPMP 186.8 AHMP NAUSGS Map Reference Chandalar, AK T 37N R 10W Sec. 35

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>BB,CN,DV,GR</u>	<u>R</u>	<u>30</u>
Fall	<u>CN,DV,GR</u>	<u>M,R,S</u>	<u>11,30</u>
Winter	<u>DV</u>	<u>W</u>	<u>40</u>

Overwintering Creek is a spring-fed stream in the Dietrich River flood plain. Near the proposed crossing, the stream is divided into two channels separated by low brush. Depths range from 7.5-46 cm (Ref. 11).

Being spring-fed (Ref. 30), Overwintering Creek provides important year-round fish habitat (Refs. 30 and 40). A variety of species use this stream in summer and fall (Refs. 11 and 30) and Dolly Varden are present in winter (Ref. 30). Although no information is available in spring, fish are very likely present. This stream is considered important to fish throughout the year.

WATERBODY

Waterbody Nina CreekMain Drainage Middle Fork Koyukuk River Tributary to Dietrich RiverNPRX 033-6 NPSI 2-31.01 NPAS 33 NPMP 186.0 AHMP NAUSGS Map Reference Chandalar, AK T 9W R 10W Sec. 25

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>GR</u>	<u>R</u>	<u>30</u>
Summer	<u>GR,DV,CN</u>	<u>R</u>	<u>30</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Nina Creek is a small mountainous stream which drains westerly to the Dietrich River. Stream banks are lined with willows.

Use of Nina Creek by grayling during spring and grayling, Dolly Varden and slimy sculpin during summer has been documented (Ref. 30). Winter use by fish probably does not occur as streams of this size are usually dry or frozen to the bottom at that time of year.

WATERBODY

Waterbody Oskar's EddyMain Drainage Middle Fork Koyukuk River Tributary to Dietrich RiverNPRX 033-5 NPSI 2-31 NPAS 33 NPMP 185.1 AHMP NAUSGS Map Reference Philip Smith Mountains, AK T 17S R 10E Sec. 2

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>DV</u>	<u>M,R</u>	<u>30</u>
Summer	<u>DV</u>	<u>R</u>	<u>20,21</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Oskar's Eddy is a steep, glacial stream. The stream bed is gravel and cobble. Spruce, birch and willows line the banks of the stream (Refs. 11 and 30).

Dolly Varden have been reported near the proposed crossing in June (Ref. 30) and in upper areas of the drainage in July (Refs. 20 and 21). This suggests that in the area of the proposed crossing, Dolly Varden use Oskar's Eddy for migration and rearing throughout the open water period. It should be noted that an undated observation reported that grayling are also present in the stream (Ref. 11). Winter use of this stream is unlikely, as streams of this type tend to be dry or frozen solid in winter.

WATERBODY

Waterbody Unnamed Creek

Main Drainage Middle Fork Koyukuk River Tributary to Dietrich River

NPRX 033-4 NPSI 2-30.02 NPAS 33 NPMP 184.9 AHMP NA

USGS Map Reference Philip Smith Mountains, AK T 16S R 10E Sec. 35

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u>None</u>	<u>20</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Unnamed Creek is a small stream located in the Dietrich River floodplain, which probably carries run-off water from the hillside east of the Haul Road. This creek was found to be dry in early summer (Ref. 20). Other data on fish habitat are lacking, but it is evident that this stream would flow only during periods of heavy run-off.

WATERBODY

Waterbody Dietrich River

Main Drainage Yukon River Tributary to Middle Fork Koyukuk River

NPRX 033-3 NPSI 2-32.04 NPAS 33 NPMP 184.5 AHMP NA

USGS Map Reference Philip Smith Mountains, AK T 16S R 10E Sec. 36

FISHERIES ASSESSMENT

	* SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>31</u>
Summer	<u>None</u>	<u></u>	<u>11,30</u>
Fall	<u>None</u>	<u></u>	<u>31</u>
Winter	<u>None</u>	<u></u>	<u>31,77</u>

The proposed pipeline route follows the Dietrich River valley for approximately 48 km and crosses or encroaches upon the river and floodplain a number of times. In the area of the proposed pipeline crossing the braided channel lies within a floodplain approximately 200 m in width. The substrate is gravel and cobble with some sand.

Site specific data for this area of the Dietrich River are wholly lacking; however, substantial amounts of information exist for other nearby regions. Several species of fish including burbot, slimy sculpin, Dolly Varden, grayling and round whitefish are reported in the Dietrich River (Ref. 11) and most, if not all, can be expected to occur in the river in the vicinity of the crossing. Slimy sculpin, Dolly Varden and grayling are present in upstream and downstream sections of the river in winter (Refs. 31 and 77). Various reports (Refs. 11, 21, 30, 31 and 119) document the presence of these species in addition to round whitefish during the open water period.

The present area must be a migration route for some fish since fish move upstream in the spring to spawning and rearing areas and downstream in the fall to overwintering areas. Grayling and Dolly Varden are known to spawn in tributary streams near the present section of pipeline route (Refs. 11 and 31) and they could also spawn in the mainstem of the river. Rearing of various life stages of fish occurs in this general area and suitable early winter habitat was present in areas further upstream and downstream.

FISHERIES ASSESSMENT (CONT.)

Despite the lack of site specific data for this area, general information and site specific data from adjacent regions indicate that the present area should be considered important to fish year-round.

514 WATERBODY

Waterbody Wetfoot CreekMain Drainage Middle Fork Koyukuk River Tributary to Dietrich RiverNPRX 033-2 NPSI 2-29.04 NPAS 33 NPMP 184.0 AHMP NAUSGS Map Reference Philip Smith Mountains, AK T 16S R 10E Sec. 36

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>121</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>DV,GR,RW</u>	<u>M,R</u>	<u>122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Wetfoot Creek is a spring-fed stream that originates in the Endicott Mountains and flows southeasterly to join the Dietrich River approximately 150 m downstream of the proposed pipeline crossing. In the vicinity of the crossing, the stream is primarily a riffled area to 25 cm deep. Substrate is gravel, cobble, and boulder with some sand. Stream banks are stable alluvium sparsely vegetated with willows and alder and few herbaceous plants.

Dolly Varden, grayling and round whitefish have been reported in Wetfoot Creek during fall (Ref. 122). Reference 11 also reports the presence of Dolly Varden and grayling, however, these observations are not dated.

The presence of fish in fall, combined with the apparently excellent habitat provided by Wetfoot Creek, suggests that this stream is an important rearing area. This stream, being spring-fed, may provide overwintering habitat.

WATERBODY

Waterbody Dietrich River Floodplain

Main Drainage Yukon River Tributary to Middle Fork Koyukuk River

NPRX 033-1 NPSI 29.03 NPAS 33 NPMP 182.1-183.3 AHMP NA

USGS Map Reference Philip Smith Mountains, AK T 16S R 10E 25, 19
16S 11E Sec. & 30

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>		<u>121</u>
Summer	<u>GR</u>	<u>R</u>	<u>11,30</u>
Fall	<u>GR</u>	<u>M,R</u>	<u>30</u>
Winter	<u>None</u>		<u>77</u>

The proposed pipeline route follows the Dietrich River valley for approximately 48 km and crosses or encroaches upon the river and floodplain a number of times. For a distance of approximately 2 km, the pipeline route follows the centerline of the Dietrich River floodplain, near its headwaters crossing the main channel many times. In this region, the braided channel lies within a floodplain with 30-100 m in width. The substrate is gravel and cobble with some sand.

The upper regions of the Dietrich River provide habitat for a number of fish species throughout the open water season. Grayling have been reported at this crossing of the Dietrich River during the summer and fall (Ref. 30). Dolly Varden and slimy sculpin are also suspected to occur in the area (Refs. 11 and 20). This area serves as a migration route in spring and fall. During breakup, fish begin to move upstream to spawning and rearing areas in the river itself and in nearby tributaries. In the fall, fish move from these tributaries and upper reaches of the Dietrich River to overwinter in areas farther downstream. Rearing of various life stages of those species listed above occurs in this region of the Dietrich River throughout the open water season. The small size of the Dietrich River in this area suggests that little or no fish habitat is present through the winter months.

516 WATERBODY

Waterbody Dietrich River Floodplain

Main Drainage Yukon River Tributary to Middle Fork Koyukuk River

NPRX 032-3 NPSI 2-29.02 NPAS 32 NPMP 181.8-182.1 AHMP NA

USGS Map Reference Philip Smith Mountains, AK T 16S R 11E Sec. 20

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>CN,DV,GR,RW</u>	<u>M,R</u>	<u>122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

The proposed pipeline route follows the Dietrich River valley for approximately 48 km and crosses or encroaches upon the river and floodplain a number of times. This proposed crossing occurs within approximately 0.6 km of the base of the Chandalar Shelf, 6-7 km downstream of the Dietrich River headwaters in the Endicott Mountains. In this region the channel is confined by steep but stable banks. Riparian vegetation (willows and alder) provide some cover for fish. Stream width varied from 3 to 10 m and was 4 cm deep during the fall 1980 survey. Substrate is gravel, cobble and boulder with no aquatic vegetation. Alternating pool and riffle areas provide a good variety of fish habitat in the vicinity of the proposed gasline crossing.

This portion of the Dietrich River provides excellent fish habitat and is a feeding and rearing area for Dolly Varden, grayling, round whitefish and slimy sculpin. Burbot have also been reported to occur in the area (Refs. 11 and 30). Dolly Varden are known to spawn in tributary streams in this area (Ref. 11 and 30) and may spawn in the river itself. Mature Dolly Varden were captured during September 1980 (Ref. 122) but none was in spawning condition. This portion of the Dietrich River should be considered important fish habitat throughout the open water period. Winter fish use is unlikely due to the shallow nature of this portion of the Dietrich River.

WATERBODY

Waterbody Unnamed CreekMain Drainage Yukon River Tributary to Chandalar RiverNPRX 032-2 NPSI 2-28.02 NPAS 32 NPMP 177.4 AHMP NAUSGS Map Reference Philip Smith Mountains, AK T 16S R 11E Sec. 3

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Unnamed Creek is a small mountainous stream of high gradient which flows easterly to its confluence with the Chandalar River. Streamside vegetation consists of willows and alder, and substrate is gravel and boulders.

Fishery investigations have not been conducted on this stream and it is not possible to assess this stream's importance as fish habitat. It is probable that winter use is non-existent.

WATERBODY

Waterbody Unnamed CreekMain Drainage Yukon River Tributary to Chandalar RiverNPRX 032-1 NPSI 2-28.01 NPAS 32 NPMP 177.0 AHMP NAUSGS Map Reference Philip Smith Mountains, AK T 15S R 11E Sec. 34

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Unnamed Creek is a small mountainous stream of high gradient which flows easterly to its confluence with the Chandalar River. Streamside vegetation consists of willows and alder, and substrate is gravel and boulders.

Fishery investigations have not been conducted on this stream and it is not possible to assess this stream's importance as fish habitat. It is probable that winter use is non-existent.

WATERBODY

Waterbody Unnamed Creek

Main Drainage Chandalar River Tributary to West Branch of North Fork of Chandalar River

NPRX 031-3 NPSI 2-27.05 NPAS 31 NPMP 174.8 AHMP NA

USGS Map Reference Philip Smith Mountains, AK T 15S R 11E Sec. 35

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Fisheries investigations have never been conducted on this stream and it is not currently possible to accurately assess this stream's importance as fish habitat.

WATERBODY

Waterbody West Branch of North Fork of Chandalar River

Main Drainage Yukon River Tributary to Chandalar River

NPRX 013-3 NPSI NPAS 31 NPMP 175.4 AHMP NA

USGS Map Reference Philip Smith Mountains, AK T 15S R 11E Sec. 26

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u> </u>	<u>None</u>
Summer	<u>CN,GR</u>	<u>R</u>	<u>20,21</u>
Fall	<u>CN,GR</u>	<u>M,R</u>	<u>30,64</u>
Winter	<u>CN,GR</u>	<u>W</u>	<u>77</u>

The West Branch of the North Fork of the Chandalar River is a moderate-sized stream that drains a montane area. The stream is confined to a braided channel whose banks are vegetated with alpine tundra flora. The proposed pipeline crosses the stream approximately 50 m west of the Prudhoe Bay Road and 5 km north of the Chandalar camp.

Grayling and slimy sculpin have been documented in this stream during the summer, fall and winter (Refs. 20, 21, 30 and 77). No spring studies have been performed but it is very likely that fish are also present at that time. Previous investigations covered that section of stream approximately 2 km south of the Chandalar camp, but this information is likely to apply to the vicinity of the proposed crossing also. Dolly Varden and round whitefish are also suspected to be present (Refs. 11, 20 and 21). This stream is important to fish year-round.

WATERBODY

Waterbody East CreekMain Drainage Sagavanirktok River Tributary to Atigun RiverNPRX 031-2 NPSI 2-27.04 NPAS 31 NPMP 171.8 AHMP NAUSGS Map Reference Philip Smith Mountains, AK T 15S R 12E Sec. 19

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

East Creek is a moderate-size stream which flows north to its confluence with East Fork Atigun River. The channel is braided and mostly unvegetated. Substrate consists of gravel and cobble.

Fisheries data on East Creek are scarce, several investigations in the area of the upper East Fork Atigun River failed to document fish (Ref. 31). It is not possible at this time to accurately assess this stream's importance as fish habitat. It is unlikely that this stream provides any winter habitat as streams of this size and type usually dry up or freeze solid in winter.

522 WATERBODY

Waterbody North Atigun Pass CreekMain Drainage Sagavanirktok RiverTributary to Atigun RiverNPRX 031-1NPSI 2-27.03NPAS 31NPMP 171.7AHMP NAUSGS Map Reference Philip Smith Mountains, AK T 15S R 12E Sec. 18

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

North Atigun Pass Creek is a moderate-size stream which flows west into the Atigun River. Substrate is gravel and cobble and the braided channel is confined by low banks.

Fishery investigations have not been conducted on this stream and it is not possible to accurately assess this stream's importance as fish habitat. It is probable that winter use is non-existent.

WATERBODY

Waterbody Unnamed CreekMain Drainage Sagavanirktok River Tributary to Atigun RiverNPRX 030-2 NPSI 2-27.02 NPAS 30 NPMP 168.6 AHMP NAUSGS Map Reference Philip Smith Mountains, AK T 15S R 12E Sec. 5

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Unnamed Creek is a small stream which flows westerly over a steep alluvial fan to its confluence with the Atigun River. Substrate consists of gravel and cobble, and the channel is confined by low banks sparsely vegetated with willows.

Fishery investigations have not been conducted on this stream and it is not possible to accurately assess this stream's importance as fish habitat. It is probable that winter use is non-existent.

WATERBODY

Waterbody Unnamed CreekMain Drainage Sagavanirktok River Tributary to Atigun RiverNPRX 030-1 NPSI 2-27.01 NPAS 30 NPMP 165.5 AHMP NAUSGS Map Reference Philip Smith Mountains, AK T 14S R 12E Sec. 20

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Unnamed Creek is a small stream which flows westerly over a steep alluvial fan to its confluence with the Atigun River. Substrate consists of gravel and cobble, and the channel is confined by low banks sparsely vegetated with willows.

Fishery investigations have not been conducted on this stream and it is not possible to accurately assess this stream's importance as fish habitat. It is probable that winter use is non-existent.

WATERBODY

Waterbody Who Creek

Main Drainage Sagavanirktok River Tributary to Atigun River

NPRX 029-9 NPSI 2-26 NPAS 29 NPMP 163.8 AHMP NA

USGS Map Reference Philip Smith Mountains, AK T 14S R 12E Sec. 8

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>GR</u>	<u>R</u>	<u>30</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

In the vicinity of the proposed pipeline crossing, Who Creek cascades over a steep alluvial fan and through a material site to its confluence with the Atigun River. Stream substrate consists of gravel and cobbles. The channel is confined by low banks of tundra vegetation.

Fish use has not been documented for Who Creek in the vicinity of the proposed pipeline crossing. Fish may use this stream near the pipeline crossing only during highwater periods. During periods of low water (summer and fall) the stream may be subterranean, filtering through the porous alluvial substrate. Use of this stream by grayling has been reported, but in an area 450 m downstream of the proposed crossing (Ref. 30). Winter use by fish is probably non-existent due to the size and type of this stream.

WATERBODY

Waterbody Mickey's 6:30 CreekMain Drainage Sagavanirktok River Tributary to Atigun RiverNPRX 029-8 NPSI 2-25.03 NPAS 29 NPMP 163.6 AHMP NAUSGS Map Reference Philip Smith Mountains, AK T 14S R 12E Sec. 8

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Near the proposed pipeline crossing, Mickey's 6:30 Creek flows over a steep alluvial deposit to its confluence with the Atigun River. Stream substrate consists of gravel and cobbles. The channel is confined by low tundra banks.

Although fish use has not been documented for Mickey's 6:30 Creek near the proposed pipeline crossing, fish have been reported downstream near the TAPS, about 450 m from the proposed crossing (Ref. 11). Due to the small size and steep gradient of this stream, it is likely that fish utilize the area near the proposed crossing only during periods of high water. Little or no flow is expected in late summer and the stream would provide no winter fish habitat.

WATERBODY

Waterbody Whybothor CreekMain Drainage Sagavanirktok River Tributary to Atigun RiverNPRX 029-7 NPSI 2-25.02 NPAS 29 NPMP 163.5 AHMP NAUSGS Map Reference Philip Smith Mountains, AK T 14S R 12E Sec. 8

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Near the proposed pipeline crossing, Whybothor Creek flows over a steep alluvial deposit to its confluence with the Atigun River. Stream substrate consists of gravel and cobbles and the channel is confined by low tundra banks.

Although fish use has not been documented for Whybothor Creek near the proposed pipeline crossing, fish have been reported downstream near the TAPS, about 450 m from the proposed crossing (Ref. 11). Due to the small size and steep gradient of this stream, it is likely that fish utilize the area near the proposed crossing only during periods of high water. Little or no flow is expected in late summer and the stream would provide no winter fish habitat.

WATERBODY

Waterbody Named Creek

Main Drainage Sagavanirktok River Tributary to Atigun River

NPRX 029-6 NPSI 2-25.01 NPAS 29 NPMP 163.2 AHMP NA

USGS Map Reference Philip Smith Mountains, AK T 14S R 12E Sec. 8

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Near the proposed pipeline crossing, Named Creek flows over a steep alluvial deposit to its confluence with the Atigun River. Stream substrate consists of gravel and cobbles and the channel is confined by low tundra banks.

Although fish use has not been documented for Named Creek near the proposed pipeline crossing, fish have been reported downstream near the TAPS, about 450 m from the proposed crossing (Ref. 11). Due to the small size and steep gradient of this stream, it is likely that fish utilize the area near the proposed crossing only during periods of high water. Little or no flow is expected in late summer and the stream would provide no winter fish habitat.

WATERBODY

Waterbody Trevor Creek

Main Drainage Sagavanirktok River Tributary to Atigun River

NPRX 029-5 NPSI 2-25 NPAS 29 NPMP 160.6 AHMP NA

USGS Map Reference Philip Smith Mountains, AK T 13S R 12E Sec. 28

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>AC,GR</u>	<u>M,R,S</u>	<u>70,123</u>
Summer	<u>AC,GR,RW</u>	<u>R</u>	<u>11,30,64,123,128</u>
Fall	<u>None</u>		<u>None</u>
Winter	<u>None</u>		<u>None</u>

In the vicinity of the proposed pipeline crossing, Trevor Creek is a clear, braided stream that meanders through the Atigun River floodplain and into the Atigun River. The glacial waters flow over gravel and boulder substrate and are confined by low banks vegetated with dwarf willow and tundra flora.

Trevor Creek provides excellent fish habitat and is a rearing area for Arctic char, grayling and round whitefish during spring and summer (Refs. 11, 30, 64, 60, 123 and 128). Grayling likely use this stream for spawning (Ref. 123). Grayling have been documented to occur from 300 m upstream of the TAPS to the stream's confluence with the Atigun River (Refs. 64 and 123), with the largest numbers found in a scour pool downstream of the Haul Road culvert, which is perched and poses as a block to upstream migration. Fish migrations undoubtedly occur as streams of this size and type usually dry up or freeze solid in winter.

WATERBODY

Waterbody Tyler Creek

Main Drainage Sagavanirktok River Tributary to Atigun River

NPRX 029-4 NPSI 2-24.03 NPAS 29 NPMP 160.5 AHMP NA

USGS Map Reference Philip Smith Mountains, AK T 13S R 12E Sec. 28

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>GR</u>	<u>M,R</u>	<u>30,121</u>
Summer	<u>GR,RW,X</u>	<u>R</u>	<u>11,30,128</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Tyler Creek is a braided, clear water stream that meanders through an extensive riparian willow floodplain to its confluence with the Atigun River. The stream channel is confined by low banks and substrate consists of gravel and cobbles.

Near the proposed crossing, Tyler Creek provides excellent fish habitat and is a rearing area for grayling and round whitefish during the open water period. These species were observed in the vicinity of this crossing in June and July 1978 and 1980 (Refs. 11, 30, 121 and 128). Winter fish use is probably non-existent as this stream would not provide suitable habitat after freeze-up. Migrations to and from this area would therefore have to occur.

WATERBODY

Waterbody Unnamed CreekMain Drainage Sagavanirktok River Tributary to Atigun RiverNPRX 029-2 NPSI 2-24.007 NPAS 29 NPMP 159.6 AHMP NAUSGS Map Reference Philip Smith Mountains, AK T 13S R 12E Sec. 21

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>		<u>None</u>
Summer	<u>GR</u>	<u>R</u>	<u>128</u>
Fall	<u>None</u>		<u>None</u>
Winter	<u>None</u>		<u>None</u>

Unnamed Creek is a small stream which flows over an alluvial deposit to its confluence with the Atigun River. Substrate is likely gravel and cobble with banks vegetated with willows which is typical to the area (Ref. 118).

Although little work has been done on this stream grayling have been reported present in Unnamed Creek during summer (Ref. 128). The presence of grayling in summer suggests that this stream is a rearing area during open water. Winter use is unlikely as stream of this size and type usually dry up or freeze solid in winter.

WATERBODY

Waterbody Bicycle Creek

Main Drainage Sagavanirktok River Tributary to Atigun River

NPRX 029-1 NPSI 2-24.006 NPAS 29 NPMP 159.5 AHMP NA

USGS Map Reference Philip Smith Mountains, AK T 13S R 12E Sec. 21

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>GR</u>	<u>R</u>	<u>128</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Bicycle Creek is a small stream which flows over an alluvial deposit to its confluence with the Atigun River. Substrate is likely gravel and cobble with banks vegetated with willows (Ref. 118).

Although little work has been done on this stream, grayling have been reported present in Bicycle Creek during summer (Ref. 128). The presence of grayling in summer suggests that this stream is a rearing area during open water. Winter use is unlikely as streams of this size and type tend to be dry or frozen solid in winter.

WATERBODY

Waterbody Waterhole Creek

Main Drainage Sagavanirktok River Tributary to Atigun River

NPRX 028-2 NPSI 2-24.005 NPAS 28 NPMP 158.8 AHMP NA

USGS Map Reference Philip Smith Mountains, AK T 13S R 12E Sec. 21

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>		<u>None</u>
Summer	<u>GR</u>	<u>R</u>	<u>128</u>
Fall	<u>None</u>		<u>None</u>
Winter	<u>None</u>		<u>None</u>

Waterhole Creek is a small stream which flows west across the Haul Road and proposed pipeline into the Atigun River. The presence of grayling in summer suggests that this stream is a rearing area during open water. Winter use is unlikely as streams of this size and type tend to be dry or frozen solid in winter.

WATERBODY

Waterbody Roche Moutonee

Main Drainage Sagavanirktok River Tributary to Atigun River

NPRX 028-1 NPSI 2-24 NPAS 28 NPMP 154.1 AHMP NA

USGS Map Reference Philip Smith Mountains, AK T 12S R 12E Sec. 28

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>GR,LT,RW</u>	<u>M,R,S</u>	<u>30,128</u>
Summer	<u>AC,GR,LT,RW</u>	<u>R</u>	<u>11,30,64,128</u>
Fall	<u>GR</u>	<u>M,R</u>	<u>30,57</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Roche Moutonee is a small (3-6.5 m wide), slightly turbid stream which flows west across the Haul Road and proposed pipeline into the Atigun River. This stream flows through a wide (100-150 m) gravel and cobble floodplain and has a braided channel with low, gradual sloping banks lined with willows.

During open water periods Roche Moutonee is utilized by grayling for migration and rearing. In addition, the presence of young-of-the-year grayling indicates that this stream provides suitable spawning habitat for this species (Ref. 57). Arctic char, lake trout and round whitefish have also been reported in the stream during open water periods (Refs. 11, 30 and 128). It is unlikely that Roche Moutonee provides any overwintering habitat near the proposed pipeline crossing due to its small size, but good fish habitat is present during the open water period.

WATERBODY

Waterbody Leentha Creek

Main Drainage Atigun River Tributary to Mainline Spring

NPRX 027-4 NPSI 2-23.015 NPAS 27 NPMP 152.8 AHMP NA

USGS Map Reference Philip Smith Mountains, AK T 12S R 12E Sec. 21

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>121</u>
Summer	<u>AC,GR</u>	<u>R</u>	<u>11</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Leentha Creek is a small stream originating east of the Haul Road which drains through a tundra wetlands area to its confluence with Mainline Spring (Ref. 121). Substrate is gravel to cobble in lower reaches, changing to silt and detritus near the proposed crossings.

During spring 1980, no fish were observed in Leentha Creek, however, adult grayling were reported near the confluence of Leentha Creek with Mainline Spring (Ref. 121). Numerous juvenile grayling and two Arctic char were reported during summer in 1977 (Ref. 11). Although spring and fall documentation of use by fish is lacking, the available information suggests that Leentha Creek is an important rearing area throughout the open water periods. Winter use of this stream is unlikely as streams of this size and type usually dry up or freeze solid in winter.

WATERBODY

Waterbody Holden Creek

Main Drainage Sagavanirktok River Tributary to Atigun River

NPRX 027-3 NPSI 2-23.01 NPAS 27 NPMP 151.8 AHMP NA

USGS Map Reference Philip Smith Mountains, AK T 12S R 12E Sec. 16

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>GR,RW</u>	<u>M,R</u>	<u>123</u>
Summer	<u>AC,GR,RW</u>	<u>R</u>	<u>11,30,64,123,128</u>
Fall	<u>GR</u>	<u>M,R</u>	<u>11,30,128</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Holden Creek is a clear water stream of moderate size that flows southwest to the Atigun River through a broad floodplain vegetated with willow. The banks of this stream are occasionally incised and show signs of block slumpage. Holden Creek flows down a moderate (approximately 2%) gradient and through material site No. 114-1.

Arctic char, adult and juvenile grayling and round whitefish have been documented in Holden Creek during the open water period (Refs. 11, 30, 64, 123 and 128).

This extensive fish use indicates that Holden Creek is an important migration route in spring and fall, and provides excellent rearing habitat throughout the open water season.

The presence of young-of-the-year grayling in August strongly suggests that this stream is used by grayling for spawning (Ref. 128). Winter use is unlikely as streams of this size and type usually dry up or freeze solid in winter.

WATERBODY

Waterbody Tad Creek

Main Drainage Atigun River Tributary to Vanish Creek

NPRX 027-2 NPSI 2-22.04 NPAS 27 NPMP 151.8 AHMP NA

USGS Map Reference Philip Smith Mountains, AK T 12S R 12E Sec. 16

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>121</u>
Summer	<u>GR</u>	<u>R</u>	<u>11,30</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Tad Creek is a small, high gradient stream that flows west through low shrub and tussock tundra into Vanish Creek, approximately 1.6 km south of TAPS Pump Station #4. Tad Creek is a summer rearing area for grayling (Refs. 11 and 30). During a spring survey in 1980 no fish were observed (Ref. 121) and Tad Creek was no longer in evidence at the Haul Road. No drainage structures or provisions for drainage currently exist at the Haul Road. Fish use is probably restricted to downstream areas when sufficient water is present. Due to its small size and probable intermittent flow, this stream provides no winter habitat for fish.

WATERBODY

Waterbody Atigun RiverMain Drainage Sagavanirktok RiverTributary to Sagavanirktok RiverNPRX 027-1NPSI 2-22NPAS 27NPMP 148.4AHMP NAUSGS Map Reference Philip Smith Mountains, AKT 11SR 12ESec. 32

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>AC,BB,CN,GR,LT,RW</u>	<u>M,R,S</u>	<u>11,30</u>
Summer	<u>AC,BB,CN,GR,LT,RW</u>	<u>R</u>	<u>11,30,31,76</u>
Fall	<u>AC,BB,CN,GR,LT,RW</u>	<u>M,R</u>	<u>30,57</u>
Winter	<u>None</u>	<u>None</u>	<u>77</u>

The Atigun River flows north 73 km from its origins in the Brooks Range to the Sagavanirktok River. The proposed pipeline route lies within the Atigun River valley for a distance of approximately 35 km and crosses the river twice. The farthest downstream crossing occurs near Galbraith Lake where the river turns east towards the Sagavanirktok River. Here the 25 m wide braided channel lies within a 125 m wide flood plain. Steep incised banks up to 7 m high are composed of sand and gravel and are partially covered by tundra vegetation. The substrate is sand and gravel and the water is typically clear except during high run-off in spring.

This stream provides suitable fish habitat throughout the open water season. The Atigun River serves as a migration route for fish moving to upstream spawning and rearing areas in spring and returning to downstream wintering areas in fall. Grayling fry have been found in the river, indicating that spawning may occur (Ref. 11). Other species present include Arctic char, burbot, slimy sculpin, round whitefish and lake trout (Refs. 11 and 30). These species may be found rearing in the vicinity of the crossing from breakup to freeze-up. Early winter investigations indicate a lack of suitable habitat near the proposed crossing, therefore, it is unlikely that fish use this area during the winter (Ref. 77).

WATERBODY

Waterbody Jill CreekMain Drainage Colville River Tributary to Itkillik RiverNPRX 025-9 NPSI 2-21.11 NPAS 25 NPMP 141.6 AHMP NAUSGS Map Reference Philip Smith Mountains, AK T 10S R 11E Sec. 35

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>121</u>
Summer	<u>GR</u>	<u>R</u>	<u>11,20,64,128</u>
Fall	<u>None</u>	<u></u>	<u>122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Jill Creek is a beaded tundra stream that drains a marshland area. The channel is narrow, well defined and is confined by low banks. Stream substrate is gravel or mud and silt. Jill Creek flows northwesterly to the Itkillik River.

Documentation on fish use in Jill Creek is limited. A single grayling was observed during a summer survey in 1976 and 1980 (Refs. 30 and 128). However, no fish were captured or observed during open water investigations conducted in 1977, 1978 and 1980 (Refs. 30, 64, 121 and 122). Fish probably do not use this creek in winter as streams of this size and type dry up or freeze to the bottom.

WATERBODY

Waterbody Jill Creek Tributary

Main Drainage Itkillik River Tributary to Jill Creek

NPRX 025-8 NPSI 2-21.10 NPAS 25 NPMP 141.5 AHMP NA

USGS Map Reference Philip Smith Mountains, AK T 10S R 11E Sec. 26

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Jill Creek Tributary is a small, beaded stream that drains a tundra marshland. The channel is narrow and confined by low banks. Stream substrate is gravel and/or mud and silt. This stream flows southwest to join Jill Creek just below the Haul Road.

Fish use in Jill Creek Tributary has not been documented although fish may be present (Ref. 11) during the open water period. Winter use by fish is unlikely as streams of this size and type tend to dry up or freeze solid.

WATERBODY

Waterbody Ed Creek

Main Drainage Kuparuk River Tributary to Toolik Lake Inlet

NPRX 025-7 NPSI 2-21.09 NPAS 25 NPMP 140.9 AHMP NA

USGS Map Reference Philip Smith Mountains, AK T 10S R 11E Sec. 26

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>121</u>
Summer	<u>GR</u>	<u>R</u>	<u>123</u>
Fall	<u>None</u>	<u></u>	<u>122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Ed Creek is a small beaded tundra stream that drains a marshland and flows northwest to Toolik Lake. The channel is poorly defined and streamside vegetation consists of sedges. Substrate in this area is generally mud and silt.

Juvenile grayling have been documented in Ed Creek during August 1980 (Ref. 123). Spring information is lacking. A fall survey conducted in September 1980 recorded no fish but partial ice cover precluded effective sampling (Ref. 122). Juvenile grayling reported in August (Ref. 123) indicate that Ed Creek provides good rearing habitat throughout the open water period. Winter use is unlikely as streams of this size and type tend to be dry or frozen solid in winter.

WATERBODY

Waterbody Mack CreekMain Drainage Kuparuk River Tributary to Ed CreekNPRX 025-6 NPSI 2-21.08 NPAS 25 NPMP 140.6 AHMP NAUSGS Map Reference Philip Smith Mountains, AK T 10S R 11E Sec. 26

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>GR</u>	<u>R</u>	<u>123</u>
Fall	<u>None</u>	<u></u>	<u>122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Mack Creek is a beaded clear water stream that flows through tundra marshlands in an incised channel. This stream is one of several that flows into Toolik Lake.

Juvenile grayling have been documented in Mack Creek during August 1980 (Ref. 123). Spring information is lacking and a fall survey conducted in September 1980 recorded no fish but partial ice cover precluded effective sampling (Ref. 122).

Juvenile grayling reported in August (Ref. 123) indicate that Mack Creek provides good rearing habitat throughout the open water period. Winter use is unlikely as streams of this size and type tend to be dry or frozen solid in winter.

WATERBODY

Waterbody Terry Creek

Main Drainage Kuparuk River Tributary to Ed Creek

NPRX 025-5 NPSI 2-21.07 NPAS 25 NPMP 139.9 AHMP NA

USGS Map Reference Philip Smith Mountains, AK T 10S R 11E Sec. 23

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>GR</u>	<u>R</u>	<u>11, 30, 64</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Terry Creek is a beaded stream that flows through tundra marshlands in an incised channel. Terry Creek is one of several tributaries to Toolik Lake. Substrate is gravel or mud and silt.

In the vicinity of the proposed pipeline route, Terry Creek is a rearing area for grayling. These fish were captured or observed during open water surveys conducted in 1976, 1977, 1978 and 1979 (Ref. 11, 30 and 64). Fish migration undoubtedly occurs in spring and fall as streams of this size and type provide unsuitable habitat for fish in winter.

WATERBODY

Waterbody Moss Creek

Main Drainage Kuparuk River Tributary to Terry Creek

NPRX 025-4 NPSI 2-21.06 NPAS 25 NPMP 139.4 AHMP NA

USGS Map Reference Philip Smith Mountains, AK T 10S R 11E Sec. 14

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Moss Creek is an extremely small tundra stream that originates east of the proposed pipeline route in a marshy area and flows into Terry Creek west of the pipeline. Stream banks are vegetated with tundra flora and substrate is gravel, mud and silt.

Moss Creek is reported to have good fish habitat upstream of the pipeline crossing (Ref. 30). No fisheries investigations have been conducted, but fish are believed to be present in Moss Creek during the open water period (Ref. 30). Grayling and lake trout have been reported downstream in the inlet of Toolik Lake (Ref. 11) and fish use is documented in similar tributaries to the lake (Ref. 118). Moss Creek probably does not provide winter habitat as streams of this size either dry up or freeze to the bottom during winter.

Waterbody Hallock Creek

Main Drainage Terry Creek Tributary to Moss Creek

NPRX 025-3 NPSI 2-21.05 NPAS 25 NPMP 139.3 AHMP NA

USGS Map Reference Philip Smith Mountains, AK T 10S R 11E Sec. 15

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>30</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Hallock Creek is a small tundra stream with many beaded channels. Its red-stained waters flow over a steep gradient and substrate is gravel or mud and silt.

An investigation conducted in mid-July 1977 reported that fish habitat in Hallock Creek was poor to non-existent due to the small amount of water present at that time (Ref. 30). It was also suggested that fish passage would be hindered at the Haul Road (Ref. 30). Although no other documentation exists, fish use of this stream is expected to be low or non-existent and confined to periods of high water.

WATERBODY

Waterbody Clawsod CreekMain Drainage Kuparuk River Tributary to Toolik Lake InletNPRX 025-2 NPSI 2-21.045 NPAS 25 NPMP 137.6 AHMP NAUSGS Map Reference Philip Smith Mountains, AK T 10S R 11E Sec. 10

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u>None</u>	<u>30</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Clawsod Creek is a small tundra stream draining west into Toolik Lake inlet. No accurate surveys have been done on Clawsod Creek. It is assumed that this creek is very similar to nearby creeks which are surrounded by typical wetland tundra plants and have substrates of gravel, mud and silt. It was reported to be dry in July 1977 (Ref. 30).

Fish use in Clawsod Creek is probably low to non-existent at any time of the year, however, it is not possible at this time to accurately assess this stream's importance as fish habitat.

WATERBODY

Waterbody Yan Creek

Main Drainage Kuparuk River Tributary to Toolik Lake Inlet

NPRX 025-1 NPSI 2-21.04 NPAS 25 NPMP 137.0 AHMP NA

USGS Map Reference Philip Smith Mountains, AK T 10S R 11E Sec. 3

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>CN</u>	<u>R</u>	<u>11</u>
Fall	<u>None</u>	<u></u>	<u>122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Yan Creek flows through tundra marshlands in a uniform channel with large pools to 0.9 m deep. Banks are tundra covered and substrate is gravel or mud and silt.

In the area of the proposed pipeline crossing, Yan Creek provides good fish habitat, but to date only slimy sculpin have been reported in the area during summer. A survey conducted in September 1980 found the stream to be partially frozen. No fish were observed but habitat was reportedly suitable (Ref. 122). Fish habitat above the TAPS line is non-existent (Ref. 11). This stream would provide no overwintering habitat and present data indicate that downstream portions could be used during the open water period.

WATERBODY

Waterbody Kuparuk River

Main Drainage Kuparuk River Tributary to Kuparuk River

NPRX 024-1 NPSI 2-21 NPAS 24 NPMP 132.6 AHMP NA

USGS Map Reference Philip Smith Mountains T 9S R 12E Sec. 19

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>GR</u>	<u>M,R,S</u>	<u>11,30,67</u>
Summer	<u>GR</u>	<u>R</u>	<u>11,30,36</u>
Fall	<u>CN,GR</u>	<u>M,R</u>	<u>11,30</u>
Winter	<u>None</u>	<u>None</u>	<u>55</u>

The Kuparuk River is located west of the Sagavanirktok River. It flows north from headwater glacial lakes for about 300 km before emptying into Gwydyr Bay, Beaufort Sea. In its upper portion, the Kuparuk River is a beaded stream where little scouring occurs and the banks are stable and well vegetated (Ref. 11 and 30). Where crossed by the TAPS line, this stream is 15-20 m wide and has a substrate consisting mostly of large cobbles and boulders (Ref. 11 and 67).

The entire Kuparuk River drainage offers habitat suitable for grayling spawning and rearing during the open water season (Ref. 11 and 36). The general pattern of use in the upper portion of the river is for grayling to overwinter in lakes, migrate downstream in spring, spawn, spend the summer in the river and migrate upstream back to the lakes in the fall (Ref. 11). Adult, juvenile and young-of-the-year grayling have been found in the vicinity of the TAPS line crossing in spring, summer and fall. Slimy sculpin have also been observed in this area during early fall (Ref. 30). During winter, no suitable overwintering habitat has been found near the TAPS line crossing (Ref. 55).

WATERBODY

Waterbody East Fork Kuparuk RiverMain Drainage Kuparuk River Tributary to Kuparuk RiverNPRX 023-3 NPSI 1-20.01 NPAS 23 NPMP 130.7 AHMP NAUSGS Map Reference Philip Smith Mountains, AK T 9S R 12E Sec. 21

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>121</u>
Summer	<u>GR</u>	<u>R</u>	<u>30</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

The East Fork of the Kuparuk River is a small, beaded foothills stream having banks vegetated with mosses, grasses and willows (Refs. 30 and 121). Substrate is primarily silt. Many pools with depths in excess of 1 m are present, and they provide excellent fish habitat (Ref. 121).

WATERBODY

Waterbody Toolik River

Main Drainage Kuparuk River Tributary to Kuparuk River

NPRX 023-2 NPSI 1-20 NPAS 23 NPMP 130.0 AHMP NA

USGS Map Reference Philip Smith Mountains, AK T 9S R 12E Sec. 21

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>121</u>
Summer	<u>AC,GR</u>	<u>R</u>	<u>11,30</u>
Fall	<u>None</u>	<u></u>	<u>122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Toolik River is a lightly stained, braided tundra stream 2-8 m wide, which flows south to the Kuparuk River. Substrate is composed primarily of fines. Banks are less than 0.5 m high and vegetated with sedges, willows and dwarf birch. Maximum pool depths are about 1.8 m (Ref. 11).

During spring 1980, no fish were seen in the Toolik River (Ref. 121). A fall survey conducted in September 1980 did not record any fish, possibly due to restricted sampling efforts caused by partial ice cover (Ref. 122). However, during July all sizes of grayling were reported to be abundant and Arctic char were also present (Ref. 11 and 30). It is probable that the Toolik River is used by fish throughout the open water season and that grayling spawn in the stream. The stream is unlikely to provide suitable overwintering habitat.

WATERBODY

Waterbody East Fork Toolik River

Main Drainage Kuparuk River Tributary to Toolik River

NPRX 023-1 NPSI 1-19.01 NPAS 23 NPMP 129.6 AHMP NA

USGS Map Reference Philip Smith Mountains, AK T 9S R 12E Sec. 22

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>121</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

East Fork Toolik River is a small, beaded tundra stream with banks less than 0.5 m high vegetated with sedges, willows and dwarf birch. Streambed is approximately 0.6-2.0 m wide with a substrate of fines and silt.

Fisheries data concerning East Fork Toolik River are scarce. Surveys conducted in spring and fall 1980 reported no fish (Refs. 121 and 122). Sampling efforts during the fall survey were hampered by partial ice cover but habitat was reported as favorable with numerous pools (Ref. 122).

Information concerning fish use of East Fork Toolik River during the open water period is inconclusive and an accurate assessment of this stream is not possible at this time. Winter use is unlikely as streams of this type tend to be dry or frozen solid in winter.

WATERBODY

Waterbody Mary Lamb CreekMain Drainage Kuparuk River Tributary to Toolik RiverNPRX 022-2 NPSI 1-19.005 NPAS 22 NPMP 125.0 AHMP NAUSGS Map Reference Philip Smith Mountains, AK T 9S R 13E Sec. 8

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Mary Lamb Creek is a small beaded tundra stream which flows north to its confluence with the Toolik River. Riparian vegetation is likely willow and dwarf birch which is common to the area (Ref. 122).

Fishery investigations have not been conducted on this stream and it is not possible to currently assess this stream's importance as fish habitat.

WATERBODY

Waterbody Oksrukuyik CreekMain Drainage Sagavanirktok River Tributary to Sagavanirktok RiverNPRX 022-1 NPSI 1-19 NPAS 22 NPMP 124.0 AHMP NAUSGS Map Reference Philip Smith Mountains, AK T 9S R 13E Sec. 4

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>AC,CN,GR</u>	<u>M,R,S</u>	<u>11,30</u>
Summer	<u>AC,CN,GR</u>	<u>R</u>	<u>11,30,64</u>
Fall	<u>None</u>	<u></u>	<u>57</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Oksrukuyik Creek is a moderate sized (5-10 m) tributary to the Sagavanirktok River. In the vicinity of the TAPS line crossing the clear, brown water flows over a steep gradient of cobble and boulder substrate. A dense growth of green algae covers the stream bottom in summer and willow and tundra grass line 0.3-1.0 m high banks.

Oksrukuyik Creek provides excellent fish habitat and is utilized by Arctic char, grayling and slimy sculpin throughout the open water season (Refs. 11, 30 and 64). Grayling fry found in July 1978 (Ref. 30) indicate spawning in the stream. Oksrukuyik Creek is also used as a rearing area and is a likely migration route as well. Although winter investigations have not been conducted fish use is unlikely as streams of this size and nature are dry or freeze to the bottom during winter.

WATERBODY

Waterbody Lower Oksrukuyik CreekMain Drainage Sagavanirktok RiverTributary to Sagavanirktok RiverNPRX 020-1NPSI 1-18.0NPAS 20NPMP 110.2AHMP NAUSGS Map Reference Philip Smith Mountains, AKT 7SR 14ESec. 8

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>GR</u>	<u>M,R,S</u>	<u>11</u>
Summer	<u>BB,GR,WF</u>	<u>R</u>	<u>11,30,64,123</u>
Fall	<u>AC,CN,GR,RW</u>	<u>M,R</u>	<u>30,57,64,124</u>
Winter	<u>None</u>		<u>77</u>

Lower Oksrukuyik Creek is a large (6-16 m wide), clear water stream with gravel/cobble substrate. It is characterized by large, deep pools (2 m) and shallow riffles. The 1.5-3.0 m high banks are lined with willow and are actively eroding.

Lower Oksrukuyik Creek near the proposed crossing provides excellent fish habitat and is used by a variety of fish throughout the open water season and perhaps throughout the year. The stream is a rearing and feeding area for grayling, Arctic char, whitefish and slimy sculpin (Refs. 11, 30, 57, 64, 123, and 124). The presence of grayling fry observed during the summer of 1979 (Ref. 64) indicates that spring spawning occurs in this stream. Arctic char found during a survey conducted in early October 1979 (Ref. 64) may indicate use of this area for fall spawning activities. Internal migration throughout Lower Oksrukuyik Creek has been reported (Ref. 11).

Although early winter investigations conducted in 1979 did not verify the presence of fish in Lower Oksrukuyik Creek, high dissolved oxygen levels and an abundance of free water at all sample locations indicate possible overwintering habitat (Ref. 77). Previous studies in late fall documented the presence of Arctic char, grayling and sculpin in Lower Oksrukuyik Creek (Refs. 57 and 64). This strongly suggests that fish use the stream at least in early winter. Information on late winter conditions is necessary to verify the importance of this stream to fish.

WATERBODY

Waterbody Rudy CreekMain Drainage Sagavanirktok RiverTributary to Oksrukuyik CreekNPRX 019-6NPSI 1-17NPAS 19NPMP 108.6AHMP NAUSGS Map Reference Philip Smith Mountains, AKT 7SR 14ESec. 5

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>GR</u>	<u>M,R</u>	<u>121</u>
Summer	<u>AC,GR</u>	<u>R</u>	<u>30</u>
Fall	<u>GR</u>	<u>M,R</u>	<u>122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Rudy Creek is a moderate sized, humic-stained stream which meanders easterly through tundra to its confluence with Oksrukuyik Creek. Banks are stable, up to 1 m high, and vegetated with sedges, willows, dwarf birch and herbaceous plants. The stream flows over a sand to cobble substrate and small pools and riffle areas which provide excellent fish habitat.

Grayling have been documented in spring, summer and fall (Refs. 11, 30, 121 and 122). Arctic char have been documented only during summer; it is likely that this species is present throughout the entire open water period. Winter use of Rudy Creek is unlikely as streams of this size and type tend to dry up or freeze solid in winter.

WATERBODY

Waterbody Bassett Creek

Main Drainage Sagavanirktok River Tributary to Dennis Creek

NPRX 019-5 NPSI 1-16.03 NPAS 19 NPMP 107.0 AHMP NA

USGS Map Reference Philip Smith Mountains, AK T 6S R 14E Sec. 29

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Bassett Creek is a small tundra stream that flows into Dennis Creek about 5.5 km north of Pump Station #3.

Fisheries information for Bassett Creek is not available. Winter use of the stream is unlikely due to its small size.

WATERBODY

Waterbody Dennis Creek

Main Drainage Sagavanirktok River Tributary to Sagavanirktok River

NPRX 019-4 NPSI 1-16.02 NPAS 19 NPMP 106.9 AHMP NA

USGS Map Reference Philip Smith Mountains, AK T 6S R 14E Sec. 29

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>GR</u>	<u>M,R</u>	<u>121</u>
Summer	<u>AC,GR</u>	<u>R</u>	<u>11,30</u>
Fall	<u>GR</u>	<u>M,R</u>	<u>122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Dennis Creek is a small beaded tundra stream that drains easterly to its confluence with the Sagavanirktok River.

The poorly defined channel is a braided series of small pools choked with aquatic vegetation. Banks are non-existent and streamside vegetation consists primarily of sedges with some willows. Stream substrate consists of fines and detritus.

Grayling have been documented in Dennis Creek throughout the open water period (Refs. 11, 30, 121 and 122) and Arctic char have been recorded in summer (Ref. 11). Dennis Creek provides good rearing habitat and serves as a migration route during the open water season for grayling, and likely Arctic char. Winter use of Dennis Creek is unlikely as streams of this size and type tend to dry up or freeze solid in winter.

WATERBODY

Waterbody Climb Creek

Main Drainage Sagavanirktok River Tributary to Dennis Creek

NPRX 019-3 NPSI 1-16.01 NPAS 19 NPMP 106.3 AHMP NA

USGS Map Reference Philip Smith Mountains, AK T 6S R 14E Sec. 29

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>X</u>	<u>M,R</u>	<u>121</u>
Summer	<u>AC,GR,X</u>	<u>R</u>	<u>11,30,64</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Climb Creek is a small (approximately 1 m wide) beaded tundra stream that drains easterly to the Sagavanirktok River. Streamside vegetation typical of the area is sedges, willows and herbaceous plants.

Grayling adults and fry were present in the stream in August 1976 (Refs. 11 and 30). This suggests that spawning occurs in the stream, as well as summer rearing. Other species reported include Arctic char in July 1977 (Refs. 11 and 30), unidentified juvenile fish in July 1978 (Ref. 64), and unidentified fish (presumed to be grayling) in Spring 1980 (Ref. 121).

Fish observations in spring and summer strongly suggests that Climb Creek serves as a migration route and rearing area throughout the open water period. Winter use of Climb Creek is unlikely as streams of this type usually dry up or freeze solid in winter.

WATERBODY

Waterbody Poison Pipe Creek

Main Drainage Sagavanirktok River Tributary to Sagavanirktok River

NPRX 019-2 NPSI 1-16 NPAS 19 NPMP 106.1 AHMP NA

USGS Map Reference Philip Smith Mountains, AK T 6S R 14E Sec. 20

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>GR</u>	<u>M,R</u>	<u>30</u>
Summer	<u>AC,GR</u>	<u>R</u>	<u>11,30</u>
Fall	<u>GR</u>	<u>M,R</u>	<u>30</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Poison Pipe Creek is a small, beaded tundra stream approximately 1-3 m wide with a substrate of gravel and cobble. This stream flows through rolling hills vegetated with sedges and willows.

In the area of the proposed crossing, grayling use Poison Pipe Creek as a spring and fall migration route and as a rearing area throughout the open water period (Refs. 11 and 30). Other species reported in the stream include Arctic char and unidentified fry (Refs. 11 and 30). Presence of the latter suggest spawning in the area. Winter use of Poison Pipe Creek is unlikely as streams of this type tend to be dry or frozen solid in winter.

WATERBODY

Waterbody Polygon Creek

Main Drainage Sagavanirktok River Tributary to Sagavanirktok River

NPRX 019-1 NPSI 1-15 NPAS 19 NPMP 105.1 AHMP NA

USGS Map Reference Philip Smith Mountains, AK T 6S R 14E Sec. 17

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>AC,BB,CN</u>	<u>M,R,S</u>	<u>30</u>
Summer	<u>AC,GR</u>	<u>R</u>	<u>11,64</u>
Fall	<u>GR</u>	<u>M,R</u>	<u>122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Polygon Creek is a small tundra stream that winds through a narrow channel (approximately 8 km) to the Sagavanirktok River. The area extending from the mouth of the stream to approximately 300 m upstream is dry except during high water periods (Refs. 11). Substrate is primarily gravel and cobble.

During most of the open water period, Polygon Creek is a rearing area for Arctic char, grayling and burbot, as well as a spring spawning area for grayling. These species have been documented in the spring of 1977 and/or the summer of 1977 and 1979, and fall 1980 (Refs. 11, 30, 64 and 122).

Winter fish use of Polygon Creek is unlikely as streams of this size and type tend to be dry or frozen to the bottom in winter. Since downstream regions could be dry in fall, fish using this stream in spring and summer could become trapped and perish in the winter.

WATERBODY

Waterbody Gustafson Gulch

Main Drainage Sagavanirktok River Tributary to Sagavanirktok River

NPRX 018-4 NPSI 1-14 NPAS 18 NPMP 102.3 AHMP NA

USGS Map Reference Philip Smith Mountains, AK T 6S R 14E Sec. 5

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>GR</u>	<u>M,R,S</u>	<u>121</u>
Summer	<u>AC,GR</u>	<u>R</u>	<u>11,30</u>
Fall	<u>GR</u>	<u>M,R</u>	<u>122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Gustafson Gulch is a small, beaded tundra stream of humic-stained waters that flow over mud substrate. Approximately 230 m upstream of its confluence with the Sagavanirktok River the substrate changes to cobbles and boulders.

In the vicinity of the proposed crossing, Gustafson Gulch provides good fish habitat during open water (Ref. 63 and 122). Although Arctic char have been documented only in summer (Ref. 11), it is likely that they use this stream along with grayling for migration and rearing throughout the open water period (Refs. 11, 30, 121 and 122). The presence of grayling fry and adults in July 1977 (Refs. 11 and 30) strongly suggests that spring spawning also occurs in this stream.

Winter use of Gustafson Gulch is unlikely, however, several deep pools located approximately 30 m downstream of the proposed crossing may provide some overwintering habitat (Ref. 122).

WATERBODY

Waterbody Arthur Creek

Main Drainage Sagavanirktok River Tributary to Sagavanirktok River

NPRX 018-3 NPSI 1-13 NPAS 18 NPMP 101.9 AHMP NA

USGS Map Reference Philip Smith Mountains, AK T 5S R 14E Sec. 32

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>AC,BB,CN,GR</u>	<u>M,R,S</u>	<u>11,30</u>
Summer	<u>CN,GR</u>	<u>R</u>	<u>11,30,64</u>
Fall	<u>GR</u>	<u>M,R</u>	<u>122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Arthur Creek is a small clear stream that flows over gravel, cobble and boulders to the Sagavanirktok River. Pools providing good fish habitat are found scattered along this 7.5 km long stream. Stream banks are vegetated with sedges, willows, dwarf birch and herbaceous plants.

In the vicinity of the proposed pipeline crossing, Arthur Creek is a rearing area and migration route for Arctic char, burbot, slimy sculpin and grayling during spring and summer (Refs. 11 and 30). The presence of grayling fry and adults during July 1977 and 1979 surveys (Refs. 30 and 64) suggest that spring spawning occurs in this stream. In addition, grayling were observed and captured during September 1980 (Ref. 122). Arthur Creek serves as a migration route and rearing area for grayling and possibly Arctic char, burbot and slimy sculpin throughout the open water period.

Winter use of Arthur Creek is unlikely as streams of this size and type usually dry up or freeze solid in winter.

WATERBODY

Waterbody Sagavanirktok River Side Channel

Main Drainage Sagavanirktok River Tributary to Sagavanirktok River

NPRX 018-2 NPSI 1-12.05 NPAS 18 NPMP 99.7 AHMP NA

USGS Map Reference Philip Smith Mountains, AK T 5S R 14E Sec. 21

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>GR</u>	<u>M,R,S</u>	<u>11,121</u>
Summer	<u>GR</u>	<u>R</u>	<u>11,30</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

The Sagavanirktok River floodplain is drained by a network of braided channels which are confined by low banks vegetated with dwarf willows and tundra flora. Stream substrate is gravel and/or mud and silt.

Sagavanirktok River Side Channel, RX 018-2, is the farthest upstream of two proposed crossings of the same channel (see Sagavanirktok River Side Channel RX 018-1). This channel is oxbow shaped and is an overflow area for the Sagavanirktok River (Ref. 11). Examination of aerial photographs indicate that at this crossing, the channel is very narrow.

This side channel provides good fish habitat and is used by grayling as a rearing area and migration route (Refs. 11 and 30) in spring and winter. Adult grayling and grayling fry observed in July 1977 indicate spawning occurs in this area (Ref. 11). Fall fishery investigations of this waterbody have not been conducted and examination of aerial photographs indicate that fish habitat may deteriorate in the fall as lower water levels occur in the Sagavanirktok River.

Winter use of this side channel is unlikely as channels of this size and type dry up or freeze solid in winter.

WATERBODY

Waterbody Sagavanirktok River Side Channel

Main Drainage Sagavanirktok River Tributary to Sagavanirktok River

NPRX 018-1 NPSI 1-12.04 NPAS 18 NPMP 99.1 AHMP NA

USGS Map Reference Philip Smith Mountains, AK T 5S R 14E Sec. 21

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>CN,GR</u>	<u>M,R,S</u>	<u>11,30,121</u>
Summer	<u>GR</u>	<u>R</u>	<u>11,30</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

A network of braided channels drain the Sagavanirktok River floodplain. Within the study area, these channels are confined by low banks vegetated with dwarf willows and tundra flora. Stream substrate is gravel and/or mud and silt.

Sagavanirktok River Side Channel, RX 018-1, is downstream from Sagavanirktok River Side Channel, RX 018-2. This channel is oxbow shaped and is an overflow area of the Sagavanirktok River (Ref. 11).

This side channel provides excellent fish habitat and is utilized by grayling and slimy sculpin for rearing and as a migration route (Refs. 11, 121 and 30). Presence of adult and young-of-the-year grayling in July 1979 (Ref. 11) strongly indicates that spawning occurs in this area. These fish undoubtedly migrate to and from the Sagavanirktok River in the spring and fall.

Winter fish use of this side channel is unlikely as channels of this size and type provide unsuitable habitat.

WATERBODY

Waterbody Stump Creek

Main Drainage Sagavanirktok River Tributary to Sagavanirktok River

NPRX 017-3 NPSI 1-12.02 NPAS 17 NPMP 97.4 AHMP NA

USGS Map Reference Sagavanirktok, AK T 5S R 14E Sec. 16

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>GR</u>	<u>R</u>	<u>11.30</u>
Fall	<u>GR,S9</u>	<u>M,R</u>	<u>57.63</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Stump Creek is a small beaded stream that drains Clark's Lake. It flows approximately 3 km to its confluence with the Sagavanirktok River. Humic-stained waters follow a gentle gradient through tundra connecting a series of marshes and ponds. Channel width varies from 0.3-3.0 m and consists of mud and detritus in ponded areas with occasional cobbles and boulders in faster water. Rooted aquatic vegetation is abundant in areas of slow flowing water, while filamentous green algae cover the cobbles and boulders in riffle areas. Numerous caddis fly larvae were observed in fall 1979 (Ref. 57).

Stump Creek provides an important rearing area for grayling and ninespine stickleback (Refs. 11, 30 and 57), probably throughout the open water season. Lake trout have also been reported in this stream (Refs. 11 and 30) although presence of this species has not been documented. Fish migration undoubtedly occurs in this stream, since streams of this size and type are normally dry or frozen solid during winter.

WATERBODY

Waterbody Tributary to Lori CreekMain Drainage Sagavanirktok River Tributary to Lori RiverNPRX 017-2 NPSI 1-12.015 NPAS 17 NPMP 94.7 AHMP NAUSGS Map Reference Sagavanirktok, AK T 4S R 14E Sec. 31

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Tributary to Lori Creek is a small beaded tundra stream which flows northerly to its confluence with Lori Creek (Ref. 125). Examination of aerial photographs indicate the stream is confined by low banks vegetated with dwarf willows and tundra flora (Ref. 43).

Fishery investigations have not been conducted on this stream and it is not possible to currently assess this stream's importance as fish habitat.

WATERBODY

Waterbody Lori Creek

Main Drainage Sagavanirktok River Tributary to Alternate Channel of Sagavanirktok River

NPRX 017-1 NPSI 1-12.01 NPAS 17 NPMP 93.6 AHMP NA

USGS Map Reference Sagavanirktok, AK T 4S R 14E Sec. 29

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>121</u>
Summer	<u>GR</u>	<u>R</u>	<u>11,30</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Lori Creek originates in a small tundra lake west of the proposed pipeline route and flows north to the Sagavanirktok River. The total length of the stream is about 8 km (Ref. 11). Lori Creek is a small beaded tundra stream with a mud bottom, a well defined channel, and well-vegetated banks (Ref. 30).

In the vicinity of the proposed pipeline crossing, Lori Creek provides good grayling habitat; adult and juvenile grayling have been found there during summer (Ref. 11 and 30). Although no fish were captured during a 1980 spring investigation (Ref. 121) and fall data are lacking, Lori Creek likely provides good grayling habitat throughout the open water period. Winter use is unlikely as streams of this type tend to be dry or frozen solid in winter.

WATERBODY

Waterbody Charlotte Creek

Main Drainage Sagavanirktok River Tributary to Sagavanirktok River

NPRX 016-3 NPSI 1-12 NPAS 16 NPMP 91.5 AHMP NA

USGS Map Reference Sagavanirktok, AK T 4S R 14E Sec. 18

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>GR</u>	<u>M,R,S</u>	<u>64</u>
Summer	<u>AC,CN,GR,S9</u>	<u>R</u>	<u>11,64</u>
Fall	<u>GR,RW</u>	<u>M,R</u>	<u>122</u>
Winter	<u>None</u>	<u>None</u>	<u>64</u>

Charlotte Creek is a stable stream of humic-stained waters. Its low stream banks are heavily vegetated with grasses and willows. This stream is characterized by alternating pools and riffles that flow over gravel, large cobbles and boulders.

Charlotte Creek provides good fish habitat and is considered to be one of the most productive fish streams crossed by the Haul Road in the North Slope (Ref. 64). Arctic char, slimy sculpin, ninespine stickleback, round whitefish, and grayling utilize this stream as a rearing area during the open water season (Refs. 11, 30, 64 and 122) and grayling spawning occurs during spring (Ref. 64). Fish leave Charlotte Creek in fall as this stream freezes solid and does not provide winter habitat (Ref. 64).

WATERBODY

Waterbody Happy Valley Camp Creek

Main Drainage Sagavanirktok River Tributary to Sagavanirktok River

NPRX 016-2 NPSI 1-11 NPAS 16 NPMP 87.6 AHMP NA

USGS Map Reference Sagavanirktok, AK T 3S R 14E Sec. 30

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>GR</u>	<u>M,R,S</u>	<u>11</u>
Summer	<u>GR</u>	<u>R</u>	<u>11,64</u>
Fall	<u>AC,CN,GR,RW</u>	<u>M,R</u>	<u>122</u>
Winter	<u>None</u>	<u>None</u>	<u>11</u>

In the area of the proposed crossing, Happy Valley Camp Creek is a moderate-sized foothill stream confined by low banks vegetated with sedges, willows, alder and a few herbaceous plants. The humic-stained waters flow over a stable substrate of gravel, pebble and cobble. The straight channel is characterized by shallow riffles and a few pools.

Near the proposed crossing, this stream is a rearing and spawning area for grayling in spring and summer. During open water surveys in 1971 grayling spawning activities were monitored (Ref. 11) and grayling fry were observed in the stream in July 1978 (Ref. 64). Previously fall data had been lacking, however, investigations conducted in September 1980 documented grayling, round whitefish, Arctic char and slimy sculpin (Ref. 122). Happy Valley Camp Creek provides excellent fish habitat throughout the open water period.

Fish undoubtedly migrate from this stream in late summer or fall since it is dry in winter (Ref. 11).

WATERBODY

Waterbody Milke Creek

Main Drainage Sagavanirktok River Tributary to Happy Valley Camp Creek

NPRX 016-1 NPSI 1-10 NPAS 16 NPMP 87.1 AHMP NA

USGS Map Reference Sagavanirktok, AK T 3S R 14E Sec. 30

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>GR</u>	<u>M,R,S</u>	<u>11,30</u>
Summer	<u>AC,GR,S9</u>	<u>R</u>	<u>11,30</u>
Fall	<u>GR</u>	<u>M,R</u>	<u>30,63</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Milke Creek is a foothill stream (Ref. 11) of humic-stained waters that flow in alternating riffles and pools. Stream banks are low and vegetated with thick willows and alder. Substrate consists of gravel, rocks and some large cobbles.

In the vicinity of the pipeline crossing, Milke Creek provides excellent habitat and is a rearing area for Arctic char, grayling and ninespine stickleback from breakup to freeze-up (Refs. 11, 30 and 63). Direct evidence that grayling use this area for spawning was found during a June survey in 1971 (Ref. 11). Migrations undoubtedly occur as streams of this size and type provide unsuitable winter habitat for fish. This stream is considered important to fish throughout the open water period.

WATERBODY

Waterbody Unnamed Creek

Main Drainage Sagavanirktok River Tributary to Sagavanirktok River

NPRX 015-3 NPSI 1-9.5 NPAS 15 NPMP 86.4 AHMP NA

USGS Map Reference Sagavanirktok River, AK T 3S R 14E Sec. 19

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>GR</u>	<u>R</u>	<u>30</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Unnamed Creek is a small, beaded tundra stream with a poorly defined channel. It drains a small lake located approximately 1 km west of the proposed crossing (Ref. 125). Riparian vegetation includes dwarf willows and tundra flora (Ref. 30).

Although grayling have only been documented in summer (Ref. 30), Unnamed Creek likely provides good fish habitat during the rest of the open water period. Winter use is unlikely as streams of this size and type tend to be dry or frozen solid in winter.

WATERBODY

Waterbody Stout Creek

Main Drainage Sagavanirktok River Tributary to Sagavanirktok River

NPRX 015-2 NPSI 1-9 NPAS 15 NPMP 83.6 AHMP NA

USGS Map Reference Sagavanirktok, AK T 3S R 14E Sec. 5

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>AC,BB,CN,GR</u>	<u>R</u>	<u>30</u>
Summer	<u>GR</u>	<u>R</u>	<u>11,64,70</u>
Fall	<u>GR</u>		<u>122</u>
Winter	<u>None</u>		<u>None</u>

Stout Creek is a moderate-sized stream that drains several small lakes. The humic-stained waters flow through undercut banks vegetated with willows and alder. Stream substrate consists of cobbles and boulders.

Stout Creek provides good fish habitat and is a rearing area for grayling throughout the open water season (Refs. 11, 30, 64, 70 and 122). Burbot, slimy sculpin and Arctic char are also likely to be present during the open water season. Reference 11 suggests that grayling may spawn near the Haul Road crossing. Fish migration undoubtedly occurs as streams of this size and type dry up or freeze solid in winter.

WATERBODY

Waterbody Spoiled Mary Creek

Main Drainage Sagavanirktok River Tributary to Sagavanirktok River

NPRX 015-1 NPSI 1-8 NPAS 15 NPMP 82.4 AHMP NA

USGS Map Reference Sagavanirktok, AK T 2S R 14E Sec. 32

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>CN</u>	<u>M,R</u>	<u>11,30</u>
Summer	<u>AC,GR</u>	<u>R</u>	<u>11,30</u>
Fall	<u>None</u>		<u>122</u>
Winter	<u>None</u>		<u>None</u>

Spoiled Mary Creek is a shallow, spring-fed stream that also receives water from the Sagavanirktok River during high water periods. This slow-flowing stream winds through a narrow (1-2 m) channel over gravel and cobble substrate. Pools (to 0.5 m deep) provide excellent fish habitat (Ref. 30).

Spoiled Mary Creek provides important habitat to several species of fish throughout the open water season. This stream is a rearing area for slimy sculpin, grayling and Arctic char (Refs. 11 and 30). Grayling fry were found in July (Ref. 30), indicating that spawning may occur in this stream. Spoiled Mary Creek undoubtedly serves as a migration route for fish during spring and fall.

Winter use of Spoiled Mary Creek by fish is probably non-existent, as streams of this size and type are dry or freeze to the bottom in winter.

WATERBODY

Waterbody Mark Creek

Main Drainage Sagavanirktok River Tributary to Sagavanirktok River

NPRX 014-1 NPSI 1-7 NPAS 14 NPMP 76.5 AHMP NA

USGS Map Reference Sagavanirktok, AK T 1S R 14E Sec. 34

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>CN,GR</u>	<u>M,R,S</u>	<u>11,30</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>BB,CN,GR,WF</u>	<u>M,R</u>	<u>11,30</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Mark Creek is a small, lightly humic-stained stream approximately 1.5 m wide and 0.3-1.0 m deep. Mark Creek flows northeast approximately 16 km from its origin in upland tundra to the Sagavanirktok River. This stream is bordered by banks 0.5-1.5 m high which are vegetated with willows and tundra flora. Pools up to 10 m long, 6 m wide and 1.8 m deep are common in its lower reaches.

During spring and early summer Mark Creek serves as a migration route and rearing area for slimy sculpin and grayling which move into the stream from the Sagavanirktok River. It is also a grayling spawning stream and provides rearing habitat for burbot, slimy sculpin, grayling and whitefish until habitat deteriorates with the onset of winter.

Winter use of Mark Creek by fish is probably non-existent, as streams of this size and type usually dry up or freeze to the bottom in winter.

WATERBODY

Waterbody Toolik River Tributary

Main Drainage Kuparuk River Tributary to Toolik River

NPRX 013-1 NPSI 1-5.49 NPAS 13 NPMP 69.6 AHMP NA

USGS Map Reference Sagavanirktok, AK T 1N R 14E Sec. 32

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

In the vicinity of the proposed pipeline route, Toolik River Tributary is a small, beaded stream confined by low banks vegetated with tundra flora. Stream substrate consists of gravel or mud and silt.

The stream near the proposed crossing may be a rearing area for fish during open water (Ref. 30); however, documentation of fish in this stream is not available. Reference 11 suggests that fish may not migrate as far as the Haul Road. Fish use in winter is probably non-existent, as streams of this size and type are dry or frozen to the bottom in winter.

WATERBODY

Waterbody Sand Creek

Main Drainage Kuparuk River Tributary to Toolik River

NPRX 012-2 NPSI 1-5.485 NPAS 12 NPMP 67.8 AHMP NA

USGS Map Reference Sagavanirktok River, AK T 1N R 14E Sec. 28

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

In the vicinity of the proposed pipeline crossing Sand Creek is a small, beaded stream confined by low banks vegetated with tundra flora. Stream substrate likely consists of gravel or mud and silt.

Fishery investigations have not been conducted on this stream and it is not possible to assess this stream's importance as fish habitat. It is probable that winter use is non-existent.

WATERBODY

Waterbody Unnamed Creek

Main Drainage Sagavanirktok River Tributary to Sagavanirktok River

NPRX 012-1 NPSI 1-5.48 NPAS 12 NPMP 64.3 AHMP NA

USGS Map Reference Beechey Point, AK T 1N R 14E Sec. 12

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Unnamed Creek is a clear narrow tundra stream with a poorly defined channel. It drains a tundra marshland immediately west of the Haul Road. The streambed is composed of fines, and dense growth of aquatic sedges are present. Stream banks are low and are vegetated with sedges, willows, and herbaceous plants.

During a 1980 fall survey partial ice cover precluded effective sampling (Ref. 122). Habitat in this stream is marginal (i.e., shallow and choked with aquatic vegetation). Fall fish use of this stream is likely to be low or non-existent. No investigations have been conducted in spring or summer, therefore it is not possible to fully assess this stream's importance to fish. Winter use is unlikely as streams of this size and type tend to be dry or freeze solid in winter.

WATERBODY

Waterbody Lake 802

Main Drainage Sagavanirktok River Tributary to Sagavanirktok River

NPRX 010-1 NPSI 1-5.295 NPAS 10 NPMP 54.4 AHMP NA

USGS Map Reference Sagavanirktok, AK T 3N R 14E Sec. 26 & 35

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Lake 802 is a moderate (approximately 0.4 km²) sized lake located immediately west of the Haul Road.

Fishery investigations have not been conducted on this stream at any time and it is not possible to assess this lake's importance as fish habitat. It is probable that winter use is non-existent.

WATERBODY

Waterbody East Fork Sylvia CreekMain Drainage Sagavanirktok River Tributary to Sylvia CreekNPRX 007-5 NPSI 1-5.055 NPAS 7 NPMP 39.3 AHMP NAUSGS Map Reference Sagavanirktok, AK T 5N R 14E Sec. 18

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>11</u>
Fall	<u>None</u>	<u></u>	<u>122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

In the area of the proposed crossing, East Fork Sylvia Creek is a marsh with no detectable discharge. Substrate consists of fines.

During a fall survey in 1980 the only available water was found at a low water crossing of the TAPS line with no apparent flow (Ref. 122). Fish use of the stream is considered to be non-existent at any time of the year.

WATERBODY

Waterbody Sylvia Creek

Main Drainage Sagavanirktok River Tributary to Sagavanirktok River

NPRX 007-4 NPSI 1-5.05 NPAS 7 NPMP 39.0 AHMP NA

USGS Map Reference Sagavanirktok, AK T 5N R 14E Sec. 7

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>AC,GR</u>	<u>M,R,S</u>	<u>11</u>
Summer	<u>AC,GR,S9</u>	<u>R</u>	<u>11</u>
Fall	<u>None</u>		<u>None</u>
Winter	<u>None</u>		<u>None</u>

Sylvia Creek is a small tundra stream that drains several ponds and lakes. The channel is confined by low banks and substrate is gravel or mud and silt.

During the open water season, in the vicinity of the proposed pipeline route Sylvia Creek is a spawning and rearing area for grayling and ninespine stickleback (Ref. 11 and 30) and a rearing area for Arctic char (Ref. 11). Reference 11 suggests that fish become isolated in the river during periods of low flow. Fish migration undoubtedly occurs as streams of this size and type usually dry up or freeze solid in winter.

WATERBODY

Waterbody Tributary to Short Creek

Main Drainage Sagavanirktok River Tributary to Sagavanirktok River

NPRX 007-3 NPSI 1-5.045 NPAS 7 NPMP 38.6 AHMP NA

USGS Map Reference Sagavanirktok, AK T 5N R 14E Sec. 7

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Tributary to Short Creek is a small tundra stream which joins Short Creek approximately 350 m below the Haul Road (Ref. 125). Examination of aerial photographs indicates that the stream is confined by low banks vegetated with willows and tundra flora (Ref. 43). Substrate is likely similar to the substrate in Short Creek which consists of gravel, or mud and silt (Ref. 118).

Fisheries data for this stream are not available and it is currently not possible to assess this stream's importance as fish habitat. Winter use is unlikely as streams of this size and type tend to be dry or frozen solid in winter.

WATERBODY

Waterbody Short CreekMain Drainage Sagavanirktok River Tributary to Sagavanirktok RiverNPRX 007-2 NPSI 1-5.02 NPAS 7 NPMP 38.4 AHMP NAUSGS Map Reference Sagavanirktok, AK T 5N R 14E Sec. 7

FISHERIES ASSESSMENT

	* SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

*See assessment - fish present in channel but site specific data are lacking.

Short Creek is a small tributary to the Sagavanirktok River confined by low banks vegetated with dwarf willows and tundra flora. Substrate consists of gravel, or mud and silt. In the vicinity of the proposed crossing fish use has not been documented. However, grayling have been observed in downstream reaches of the same channel (Ref. 118, see NPSI 1-5.02) and it is likely that fish use the crossing area during the open water season. Winter use in Short Creek is unlikely as streams of this type tend to dry or freeze solid in winter.

WATERBODY

Waterbody Telma Creek

Main Drainage Sagavanirktok River Tributary to Sagavanirktok River

NPRX 007-1 NPSI 1-5.01 NPAS 7 NPMP 35.8 AHMP NA

USGS Map Reference Sagavanirktok, AK T 6N R 13E Sec. 25

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>S9</u>	<u>R</u>	<u>122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Telma Creek is a small, clear tundra stream that drains a marshland west of the Haul Road. Near its origin the channel is poorly defined and choked with horsetails. Lower sections of the stream are more distinct with stable banks vegetated with sedges and willows.

Near the proposed crossing, Telma Creek provides good fall habitat and is a rearing area for ninespine stickleback (Ref. 122). It is likely that ninespine stickleback and some species indigenous to the Sagavanirktok River use Telma Creek throughout the open water period. Reference 11 suggests the presence of grayling in Telma Creek during the spring and summer, however, documentation is not available. Winter fish use is probably non-existent, as streams of this size and type tend to be unsuitable for fish after freeze-up.

WATERBODY

Waterbody Pescado Creek

Main Drainage Sagavanirktok River Tributary to Sagavanirktok River

NPRX 005-2 NPSI 1-4.07 NPAS 5 NPMP 27.4 AHMP NA

USGS Map Reference Beechey Point, AK T 7N R 14E Sec. 19

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>S9</u>	<u>R</u>	<u>122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Pescado Creek is a small, clear tundra stream that originates from several small ponds west of the Haul Road. The channel is characterized by alternating pool and riffle areas, with a few small falls (0.1-0.25 m). Substrate consists of fines, gravel and pebbles; some aquatic vegetation is present. The channel is poorly defined near its origin, but in downstream regions it becomes more distinct and is confined by low banks (< 1.0 m high) vegetated with sedges and willows.

Pescado Creek provides good fish habitat and is a rearing area for ninespine stickleback (Ref. 122). Species indigenous to the Sagavanirktok River may use this stream during the open water period, but further investigations are necessary to document this. Winter use of this stream is unlikely, as streams of this type tend to dry up or freeze solid in winter.

WATERBODY

Waterbody Unnamed Lake

Main Drainage Sagavanirktok River Tributary to Sagavanirktok River

NPRX 005-1 NPSI 1-4.06 NPAS 5 NPMP 26.7 AHMP NA

USGS Map Reference Beechey Point, AK T 7N R 14E Sec. 18

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Unnamed Lake is a tundra pond of unknown depth that is confined by low banks vegetated with tundra flora. The proposed pipeline route encroaches on the northeastern shoreline of the lakes.

Fish use of Unnamed Lake has not been documented. The presence of fish in tundra lakes of this size and type is dependent on lake depth and fish access to the lake.

WATERBODY

Waterbody Low-Life CreekMain Drainage Sagavanirktok River Tributary to Sagavanirktok RiverNPRX 004-2 NPSI NPAS 4 NPMP 23.0 AHMP NAUSGS Map Reference Beechey Point, AK T 8N R 14E Sec. 28

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u> </u>	<u>None</u>
Summer	<u>None</u>	<u> </u>	<u>None</u>
Fall	<u>S9</u>	<u>R</u>	<u>122</u>
Winter	<u>None</u>	<u> </u>	<u>None</u>

Low-Life Creek varies in width from 2.0 to 15 m. The shallow (5-10 cm), poorly defined channel is lined with sedges and scattered willows. Stream substrate consists of fines with some gravel. Limited cover is provided by aquatic vegetation.

At the proposed gas line crossing, Low-Life Creek provides good fall fish habitat and is a rearing area for ninespine stickleback (Ref. 122). No additional information on fish use of this stream is available. Other species, indigenous to the Sagavanirktok River drainage, may use this creek as well. Further open water investigations are necessary to assess this stream's importance to fish. This stream is unlikely to provide overwintering habitat.

WATERBODY

Waterbody Unnamed Lake

Main Drainage Sagavanirktok River Tributary to Sagavanirktok River

NPRX 004-1 NPSI 1-3.04 NPAS 4 NPMP 17.6 AHMP NA

USGS Map Reference Beechey Point, AK T 9N R 14E Sec. 34

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Unnamed Lake is a tundra pond of unknown depth that is confined by low banks vegetated with tundra flora. The proposed pipeline route encroaches on the northeastern shoreline of the lake.

Fish use of Unnamed Lake has not been documented. The presence of fish in tundra lakes of this size and type is dependent on lake depth and fish access to the lake.

WATERBODY

Waterbody Unnamed Lake

Main Drainage Sagavanirktok River Tributary to Sagavanirktok River

NPRX 003-1 NPSI 1-3.03 NPAS 3 NPMP 12.5 AHMP NA

USGS Map Reference Beechey Point, AK T 9N R 14E Sec. 4 & 9

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>None</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Unnamed Lake is a tundra pond of unknown depth that is confined by low banks vegetated with tundra flora. The proposed pipeline route encroaches on the northeastern shoreline of this lake.

Fish use of Unnamed Lake has not been documented. The presence of fish in tundra lakes of this size and type is dependent on lake depth and fish access to the lake.

WATERBODY

Waterbody Little Putuligayuk River

Main Drainage Prudhoe Bay Tributary to Putuligayuk River

NPRX 002-1 NPSI 1-3 NPAS 2 NPMP 9.4 AHMP NA

USGS Map Reference Beechey Point, AK T 10N R 14E Sec. 20

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>None</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>None</u>	<u></u>	<u>57,122</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

Little Putuligayuk River is a typical beaded, tundra stream characterized by alternating channels and pools to 1.5 m deep. In the area of the proposed pipeline crossing, the low tundra banks are lined with sedges and the stream bottom consists of mud and gravel. Grasses are abundant in the stream bed.

Fish use of the Little Putuligayuk River is extremely low or non-existent. During 1979 and 1980 fall surveys, fish habitat appeared favorable, but no fish were captured. Winter use is probably non-existent as streams of this size and type are generally dry or frozen solid during winter.

WATERBODY

Waterbody Putuligayuk RiverMain Drainage Prudhoe Bay Tributary to Prudhoe BayNPRX 001-1 NPSI 1-1 NPAS 1 NPMP 3.2 AHMP NAUSGS Map Reference Beechey Point, AK T 11N R 14E Sec. 28

FISHERIES ASSESSMENT

	SPECIES DOCUMENTED	FISH USE	MAJOR FISHERIES REFERENCES
Spring	<u>None</u>	<u></u>	<u>121</u>
Summer	<u>None</u>	<u></u>	<u>None</u>
Fall	<u>S9</u>	<u>R</u>	<u>57</u>
Winter	<u>None</u>	<u></u>	<u>None</u>

The Putuligayuk River is broad (10-20 m wide), shallow stream of brown-stained water that drains into Prudhoe Bay. Previous excavation has altered the gravel floodplain in the vicinity of the pipeline crossing, causing the formation of large, shallow pools. Banks of tundra vegetation exhibit block slumpage.

Few data are available upon which to base assessments for the Putuligayuk River near the proposed crossing. An investigation conducted in spring 1980 failed to yield any fish (Ref. 121). A single ninespine stickleback was captured in late fall 1979. At that time the stream was considered only fair fish habitat. It was also thought that the stream would freeze to the bottom near the proposed crossing and provide no overwintering habitat (Ref. 57).

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