Technical Report No. 02-07

Trans-Alaska Pipeline System 2002 Fish Habitat Survey

by

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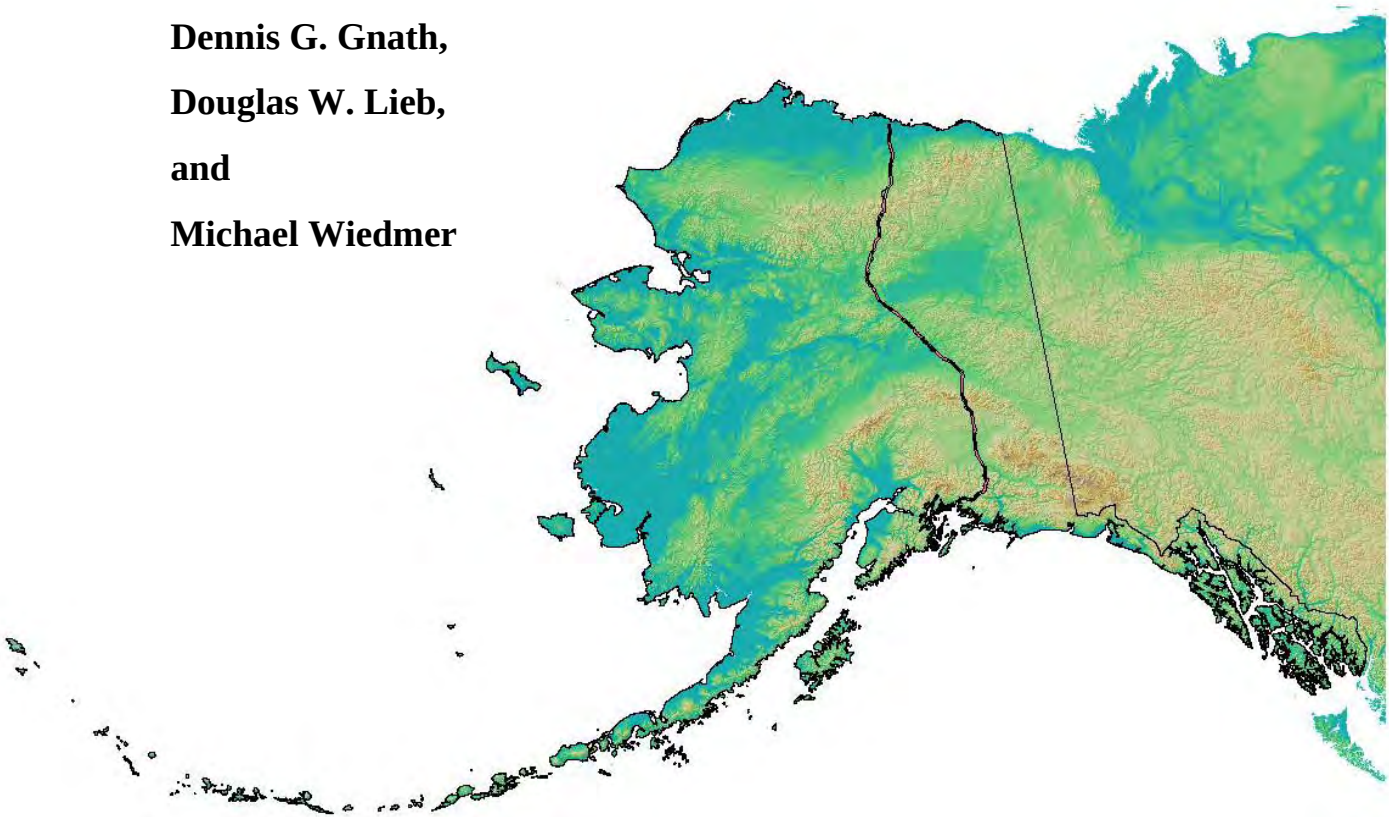

December 2002

Alaska Department of Fish and Game **Habitat and Restoration Division**

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Weights and measures (metric)

centimeter	cm
deciliter	dL
gram	g
hectare	ha
kilogram	kg
kilometer	km
liter	L
meter	m
metric ton	mt
milliliter	ml
millimeter	mm

Weights and measures (English)

cubic feet per second	ft^3/s
foot	ft
gallon	gal
inch	in
mile	mi
ounce	oz
pound	lb
quart	qt
yard	yd

Spell out acre and ton.

Time and temperature

day	d
degrees Celsius	°C
degrees Fahrenheit	°F
hour (spell out for 24-hour clock)	h
minute	min
second	s

Spell out year, month, and week.

Physics and chemistry

all atomic symbols	
alternating current	AC
ampere	A
calorie	cal
direct current	DC
hertz	Hz
horsepower	hp
hydrogen ion activity	pH
parts per million	ppm
parts per thousand	ppt, ‰
volts	V
watts	W

General

All commonly accepted abbreviations.	e.g., Mr., Mrs., a.m., p.m., etc.
All commonly accepted professional titles.	e.g., Dr., Ph.D., R.N., etc.
And	&
At	@
Compass directions:	
east	E
north	N
south	S
west	W
Copyright	©
Corporate suffixes:	
Company	Co.
Corporation	Corp.
Incorporated	Inc.
Limited	Ltd.
et alii (and other people)	et al.
et cetera (and so forth)	etc.
exempli gratia (for example)	e.g.,
id est (that is)	i.e.,
latitude or longitude	lat. or long.
monetary symbols (U.S.)	$, ¢
months (tables and figures): first three letters	Jan,...,Dec
number (before a number)	# (e.g., #10)
pounds (after a number)	# (e.g., 10#)
registered trademark	®
Trademark	™
United States (adjective)	U.S.
United States of America (noun)	USA
U.S. state and District of Columbia abbreviations	use two-letter abbreviations (e.g., AK, DC)

Mathematics, statistics, fisheries

alternate hypothesis	H_A
base of natural logarithm	e
catch per unit effort	CPUE
coefficient of variation	CV
common test statistics	F, t, χ^2, etc.
confidence interval	C.I.
correlation coefficient	R (multiple)
correlation coefficient	r (simple)
covariance	cov
degree (angular or temperature)	°
degrees of freedom	df
divided by	÷ or / (in equations)
equals	=
expected value	E
fork length	FL
greater than	>
greater than or equal to	≥
harvest per unit effort	HPUE
less than	<
less than or equal to	≤
logarithm (natural)	ln
logarithm (base 10)	log
logarithm (specify base)	$log_{2,}$ etc.
mideye-to-fork	MEF
minute (angular)	'
multiplied by	x
not significant	NS
null hypothesis	H_O
percent	%
probability	P
probability of a type I error (rejection of the null hypothesis when true)	α
probability of a type II error (acceptance of the null hypothesis when false)	β
second (angular)	"
standard deviation	SD
standard error	SE
standard length	SL
total length	TL
variance	Var

TECHNICAL REPORT NO. 02-07

TRANS-ALASKA PIPELINE SYSTEM 2002 FISH HABITAT SURVEY

by

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TABLE OF CONTENTS

Page

LIST OF TABLES ii

LIST OF FIGURES ii

LIST OF APPENDICES ii

ABSTRACT 1

INTRODUCTION 2

METHODS 3

RESULTS 5

DISCUSSION AND RECOMMENDATIONS 7

Future ADF&G Action Items 8

ACKNOWLEDGEMENTS 8

LITERTURE CITED 9

APPENDIX A. STREAM SURVEILLANCE LISTS 11

APPENDIX B. STATION MAPS 23

APPENDIX C. STATION REPORTS 73

LIST OF TABLES

Table **Page**

1. TAPS fish habitat survey personnel. 3
2. Functional life stages. 4
3. Substrate classes. 5
4. Summary of survey dates and direction. 5
5. Summary of fish species observations. 6
6. Summary of fish species diversity. 6
7. Summary of fork lengths (mm) of collected fish. 7

LIST OF FIGURES

Figure **Page**

1. Trans-Alaska Pipeline System corridor. 2

LIST OF APPENDICES

Appendix **Page**

A1. Primary stream surveillance list. 12
A2. Secondary stream surveillance list. 18
A3. Tertiary stream surveillance list. 21
B1. Stations 01A01, 01A02, and 01A03. 24
B2. Stations 01A04, 02A01, 02A02, 02A03, 02A04, 02A05, 02A06, 02A07, 02A08, and 18A01. 25
B3. Station 03A01. 26
B4. Station 03A02. 27
B5. Stations 03A03 and 03A04. 28
B6. Stations 03A05 and 03A06. 29
B7. Station 19A01. 30
B8. Stations 04A01, 04A02, 04A03, 04A04, and 04A05. 31
B9. Stations 05A01, 05A02, and 21A01. 32
B10. Stations 05A03, 05A04, 05A05, 05A06, and 05A07. 33
B11. Stations 06A01, 06A02, 06A03, 06A04, 06A05, 06A06, 06A07, 06A08, and 56A01. 34
B12. Stations 06A09, 07A01, 07A02, 07A03, and 07A04. 35
B13. Station 07A11. 36
B14. Stations 07A07, 07A08, 07A09, and 07A10. 37
B15. Stations 07A05, 07A06, and 08A01. 38
B16. Station 08A02. 39
B17. Station 09A01. 40
B18. Stations 25A01 and 25A02. 41
B19. Stations 09A02, 09A03, 26A01, and 26A02. 42
B20. Stations 09A04, 09A05, 09A06, 09A07, and 53A01. 43
B21. Station 27A01. 44
B22. Station 10A01. 45
B23. Station 28A01. 46
B24. Stations 28A02, 51A01, and 51A02. 47
B25. Station 28A03. 48
B26. Stations 50A03 and 50A04. 49
B27. Station 10A02. 50
B28. Station 50A02. 51
B29. Station 11A01. 52
B30. Stations 29A02, 29A03, and 50A01. 53

LIST OF APPENDICES (Continued)

Page

B31. Stations 49A03, 49A04, 49A05, 49A06, 49A07, and 49A08. 54
B32. Stations 11A02, 11A03, 11A04, 11A05, 30A01, 30A02, 49A01, and 49A02. 55
B33. Stations 11A06, 12A01, 12A02, 12A03, 48A02, 48A03, 48A04, 48A05, and 48A06. 56
B34. Stations 12A04, 12A05, 31A01, 31A02, 31A03, and 48A01. 57
B35. Stations 12A06, 12A07, 12A08, 13A01, 13A02, 13A03, 13A04, 13A05, and 13A06. 58
B36. Stations 13A07, 14A01, 14A02, 14A03, 33A01, 45A04, 45A05, 45A06, 45A07, 46A01, 46A02, 47A01, 47A02, 47A03, and 47A04. 59
B37. Stations 14A04, 45A01, 45A02, and 45A03. 60
B38. Stations 14A05, 15A01, 15A02, and 44A03. 61
B39. Stations 14A06, 43A03, 43A04, 43A05, 43A06, 44A01, and 44A02. 62
B40. Stations 14A07, 15A03, 42A01, 42A02, 42A03, 42A04, 43A01, and 43A02. 63
B41. Stations 15A04, 35A01, and 35A02. 64
B42. Stations 16A01, 16A02, 16A03, 16A04, 16A05, 16A06, and 35A03. 65
B43. Stations 36A01, 40A01, 40A02, and 40A03. 66
B44. Station 39A03. 67
B45. Stations 16A07 and 39A02. 68
B46. Station 39A01. 69
B47. Station 17A01. 70
B48. Stations 17A02, 17A03, and 17A04. 71
C1. Station Reports. 74

ABSTRACT

The 1288 km (800 mi) Trans-Alaska Pipeline System (TAPS), including the 284 associated access roads, crosses 800 rivers and streams between Prudhoe Bay and Valdez, Alaska. In all, these waters are known to support 5 species of anadromous Pacific salmon *Oncorhynchus* and 25 other anadromous and resident fish species.

Fish distribution in freshwaters along TAPS has been the subject of many field investigations since the construction planning phase in the early and mid-1970s. Information from these investigations has been summarized in several source documents used by regulatory agencies and Alyeska Pipeline Service Company (Alyeska) in the planning and permitting for operation and maintenance activities along TAPS. However, some of this information may be obsolete because of alterations in hydrology and resultant fish use. In other cases, the original field information has been lost, and the validity of certain summary document entries is in doubt. In response to these concerns, Alyeska assembled lists of specific streams where additional field assessment of fish use and potential fish habitat conditions was needed. Alyeska contracted the Alaska Department of Fish and Game to conduct field investigations of these waterbodies in summer of 2002.

We established sampling stations immediately adjacent to the intersections of these questioned waterbodies with the TAPS corridor. In the field at these stations, information on aquatic habitat characteristics and fish presence was entered directly into ADF&G's proprietary fish survey database using a rugged field-capable laptop computer. Fish were collected with backpack electrofishers, minnow traps, seines, or were visually observed. A total of 662 fish were captured at 42 of 181 stations (174 individual waterbodies); 10 fish species (6 *Salmonidae*, 1 *Catostomidae*, 1 *Cottidae*, 1, *Gadidae*, 1 *Gasterosteidae*) were observed in our sampling.

Of the 174 waterbody locations investigated, the survey added 9 new waterbodies, 9 species extensions, 8 waterbody or species amendments, and 15 recommended waterbody deletions to the Bureau of Land Management (BLM) Open File Report; 6 new waterbodies, 5 species extensions, 1 species amendment, and 3 recommended waterbody deletions to the BLM list of Zones of Restricted Activity; and 9 nominations to ADF&G's Anadromous Waters Catalog. The survey closed-out further surveillance needs on 69 (40%) waterbodies; 105 (60%) waterbodies will require additional field assessment to fully assess fish use. Fluvial geomorphology and hydrology along the ROW is, and will continue to be, dynamic—creating new fish habitats and eliminating historic habitats. Periodic surveys can identify changes to spawning, rearing, and migratory habitats as they occur.

Additional effort will be necessary to incorporate information from past fish inventories with the current project's database. Our vision is to present the resultant compilation of data in an easily accessible format and make it available to the engineers, permit specialists, and resource regulators early in the planning, design, and permitting phases of proposed projects to enhance their ability to protect fish resources. The database used for this project is designed to accommodate these additional records.

Key words: Trans-Alaska Pipeline System, Alyeska Pipeline Service Company, fish habitat surveys, chinook salmon, coho salmon, chum salmon, pink salmon, Arctic grayling, slimy sculpin, Dolly Varden, longnose sucker, ninespine stickleback, burbot.

INTRODUCTION

The Trans-Alaska Pipeline System (TAPS) was constructed in 1974-1977 across Alaska from the North Slope oil fields at Prudhoe Bay to a marine terminal at the Port of Valdez (Figure 1). TAPS crosses seven major physiographic provinces and widely varying landscape features, including three mountain ranges (Brooks Range, Alaska Range, and Chugach Mountains) and three drainages (Sagavanirktok, Yukon, and Copper rivers). Vegetative communities range from the North Slope's arctic tundra, through the taiga of the interior, to the coastal temperate rainforest of Prince William Sound. More than half of the topography along the route has been heavily influenced by Pleistocene and Holocene glaciation (BLM 2002), producing steep mountain sideslopes and linear U-shaped valleys.

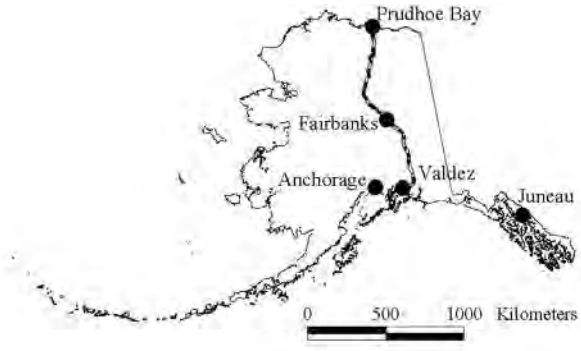

Figure 1.-Trans-Alaska Pipeline System corridor.

The pipeline was constructed on a right-of-way (ROW) granted or leased by federal, state, and private landowners. It is managed and operated by Alyeska Pipeline Service Company (Alyeska) for a consortium of owner companies. The ROW is 1,288 km (800 mi) long with 284 associated access roads. The workpad and access roads cross over 800 rivers and streams, many supporting anadromous and resident fish.

State statutes, federal laws, and the conditions and stipulations in the Federal Grant of Right-of-Way and State Right-of-Way Lease (Grant/Lease) require the protection of fish resources and their habitats (Brna and Thompson 2001). Availability of, and access to, current and accurate fish distribution information in streams crossed by TAPS enhances our collective ability to protect these resources.

In anticipation of TAPS construction, numerous studies were conducted to evaluate fish spawning, rearing, and migration areas along the ROW. Since construction, additional studies have been conducted by various entities, including the Bureau of Land Management (BLM) and the Alaska Department of Fish and Game (ADF&G), to assess fish habitats and populations along and adjacent to the TAPS corridor. The Second Edition of the *Open File Report (OFR) – TAPS Fish Streams* (BLM 1987a) is a compilation of many past studies. In consideration of Federal Grant Stipulation 2.5.3.1, Zones of Restricted Activity (ZRA) are separately listed for "key fish areas" on federally administered lands (BLM 1987b). Additionally, the ADF&G maintains an anadromous waters catalog (AWC) for all waters specified as important for the spawning, rearing, or migration of anadromous fishes (ADF&G 1998). Regulatory agencies and Alyeska use these source documents to identify fish distribution along TAPS. These documents were intended to be periodically updated as needed and as knowledge about fish presence and distribution expands.

In an effort to update these source documents, Alyeska staff began assembling lists of specific waterbodies where fish use was in doubt from observed changes to local hydrology or fish habitat characteristics, or where original field records were absent or limited. Many waterbodies Alyeska selected

were small first- and second-order streams (*sensu* Strahler 1952) that did not have year-round surface flow, or any surface flow in some years. By early 2002, Alyeska had compiled two stream surveillance lists (Appendices A1 and A2) with locations requiring field investigation. A third opportunistic list was developed during the field survey (Appendix A3).

The ADF&G and Alyeska jointly developed an operational plan for field investigations of these waterbodies during summer 2002. Our collective commitment was to gather current and accurate data in a format that can be periodically updated, readily shared, and easily accessed by engineers, permit specialists, and resource regulators to protect fish. The agreement was finalized in mid-March 2002 and field work commenced in June 2002.

The authors were the ADF&G principles responsible for this project. Douglas Lieb was responsible for all field operations and data summary; Michael Wiedmer was responsible for the survey database and field protocols, training project personnel in stream survey methodology and fish capture techniques, producing maps and station reports, and formatting this document; Dennis Gnath was responsible for overall project management, liaison between the Joint Pipeline Office and Alyeska, reporting findings to appropriate agencies, and project close-out. This Technical Report summarizes our survey; our database is enclosed with hard copies of this report.

METHODS

A 2-person ADF&G crew typically collected field data. Periodically, Alyeska personnel and ADF&G staff biologists accompanied the crew throughout the field season (Table 1). The crew transited the entire ROW three times (June, July, and August), using vehicles provided by Alyeska. We traveled primarily on adjacent public highways and accessed survey sites via Alyeska-maintained access roads. The crew was housed at Alyeska Pump Stations or in commercial accommodations.

Table 1.-TAPS fish habitat survey personnel.

Staff	Affiliation
Doug Lieb	ADF&G/JPO
John Wells	ADF&G/JPO
Dennis Gnath	ADF&G/JPO
Michael Wiedmer	ADF&G/GPO
Robert Bochenek	ADF&G/Habitat and Restoration Division
Dave Schmidt	Alyeska Pipeline Service Company
Jim Lawlor	Alyeska Pipeline Service Company
Anne Beesley	Alyeska Pipeline Service Company
Alison Kelley	Alyeska Pipeline Service Company
Ken Wilson	Alyeska Pipeline Service Company
Kathy Girard	Alyeska Pipeline Service Company
Kate Montgomery	Alyeska Pipeline Service Company
Mac Shoulders	Alyeska Pipeline Service Company

Each surveyed waterbody was first located on aerial photos provided by Alyeska (APSC *Unpublished*). The aerial photos provided Pipeline Mileposts and highway mileage to aid navigation. During the first ROW transit, Alyeska staff was present to confirm the accurate location of many of the stations. One or more sampling stations were selected at each waterbody. These stations were located near the intersection of the waterbody with the ROW where the waterbody appeared to retain pre-disturbance characteristics (fill covers the buried pipe and drivelane, where present, locally altering channel morphology). A station was defined as a discrete geographic location where we recorded waterbody parameters and, if water was present in sufficient quantities to warrant the effort, sampled existent fish. Each station was assigned a unique five character alphanumeric identifier comprised of the project date, the survey team, and the sequential station number for that survey date. For those stations visited more than once, we retained the unique station identifier, and distinguished date-specific information by linking data to an

incremental visit count. For example, Station 04A05 was first visited on project date 04, surveyed by team A (only team for this project), and was the fifth station that day. This station was visited (surveyed) three times (06/08, 07/05, and 08/26/2002).

Station coordinates (decimal degrees, NAD83 datum) and elevations were recorded at each station with a non-differential Garmin Etrex Global Positioning System[1] (GPS). We photographed each station with a Model C2020 Olympus digital camera[1].

We typically spent between 30 to 60 minutes at each station, sampling existent fish species and recording habitat characteristics and other observations. Fish were collected principally with battery-powered backpack electrofishers (Smith-Root[1] models LR-24 and 12A). Beach seines, 0.64 cm-mesh minnow traps baited with cured salmon eggs, and visual observations were also used, where appropriate.

Electrofisher output voltages and waveforms were selected to maximize capture efficiency while minimizing risk of injury or mortality to the fish present. We did not electrofish in the immediate vicinity of observed large fish (>150 cm) because the risk of injury or mortality increases with increasing fish length. Collected fish were identified to species and fork lengths measured to the nearest millimeter. We recorded life stage (Table 2) and suspected life history (anadromous, resident, or unknown). After identification, measurement, and recuperation in a water-filled bucket, collected fish were released near their capture point.

[1] Use of company's name does not constitute endorsement.

Basic water chemistry parameters (dissolved oxygen, temperature, turbidity) were recorded in the field with a Horiba[1] U-10 multimeter. Other recorded habitat characteristics included water clarity/color (clear; ferric; glacial, low turbidity; glacial, high turbidity; humic; or muddy), and qualitative velocity; channel width and thalweg depth (for both wetted channel and bankfull channel); channel gradient (Suunto[1] PM-5 clinometer); flow stage (dry, defined channel; dry, no defined channel; wet, no defined channel; low, continuous surface flow; low, discontinuous flow; low; medium; or high); substrate composition (visual estimation of dominant and subdominant classes, Table 3); and 48-hour precipitation/runoff (none/trace, moderate, or heavy).

Table 2.-Functional life stages.

Stage	Definition
Adult	Fish at, or approaching sexual maturity.
Adult Spawning	Adults observed in the act of spawning.
Carcass	Post-spawning adult carcass.
Alevin	Pre-emergent sac-fry within the interstices of the substrate.
Fixed Egg	Eggs adhering to or buried within a substrate.
Juvenile/ Adult	Free swimming fish whose sexual maturity is not determined.
Juvenile	Sexually immature free-swimming fish.
Kelt	Post-spawning iteroparous anadromous fish in freshwater prior to return to marine water.
Not Applicable	No fish observed or general information record only.
Not Recorded	Life stage not recorded.
Planktonic Egg	Non-adherent, buoyant or nearly so, eggs drifting with currents.
Planktonic Larvae	Hatched juveniles drifting with currents and with no, or poorly, developed volitional swimming capabilities.
Smolt	Juvenile anadromous fish on first emigration from fresh to marine water.

At each station, we identified physical features, if present, at or near each site that appeared to block further upstream movement of the specific species and life stage present.

In the field we entered station data into ADF&G's proprietary fish survey database using a field-tested rugged laptop computer (Itronix GO Book Max[1]). This database was developed in Microsoft Access[1] and serves all data entry functions for field use. The database and digital photographs were backed-up daily to a compact disk (CD) with a portable CD writer.

Table 3.-Substrate classes.

Class	Description
Organic	Incompletely decomposed organic material.
Sand/Silt/Clay	≤ 2 mm
Gravel	2.1 – 64 mm
Cobble	64.1 – 256 mm
Boulder	256.1 – 4096 mm
Bedrock	≥ 4096.1 mm; Solid rock, few or no discrete particles.

RESULTS

For 60 field days between June 3 and August 28, 2002, we transited the entire ROW three separate times (Table 4). The anticipated weather conditions, water temperatures, and seasonal fish movements, particularly in the higher latitude streams, dictated travel direction. Traveling south from Prudhoe Bay on the third survey successfully avoided mid-August freezing conditions north of the Brooks Range.

We recorded fish habitat parameters and fish presence at 181 stations (Appendices A, B, and C) along 1,278 km of the Trans-Alaska Pipeline ROW. Of these 181 stations, we visited 62 (34%) stations 3 times, 32 (18%) stations twice, and 87 (48%) stations once, for a total of 337 station visits (7 streams had multiple stations).

Table 4.- Summary of survey dates and direction.

Survey Dates	Direction
June 4 to June 20, 2002	Valdez to Prudhoe Bay
July 2 to July 23, 2002	Valdez to Prudhoe Bay
Aug 1 to Aug 28, 2002	Prudhoe Bay to Valdez

Water temperatures ranged from 0.9 to 19.6 °C (mean = 7.6 °C, SD = 3.6, n = 246); fish were observed in water temperatures ranging from 2.6 to 17.6 °C (mean = 8.8 °C, SD = 3.8, n = 53). Dissolved oxygen values ranged from 0.14 to 13.98 ppm (mean = 8.88 ppm, SD = 2.99, n = 241); fish were observed at stations with dissolved oxygen values ranging from 3.18 to 13.71 ppm (mean = 9.29 ppm, SD = 2.70, n = 50). Turbidity ranged from 0 to 503 NTU (mean = 20 NTU, SD = 55, n = 222); fish were observed at stations with turbidities ranging from 0 to 230 NTU (mean = 20 NTU, SD = 49, n = 50). Channel gradients ranged from 0 to 10% (mean = 2%, SD = 2.0, n = 101; fish were observed in gradients ranging from 0 to 9% (mean = 2%, SD = 2, n = 29). Clear water dominated (69%) at our survey stations, followed by humic (11%), and muddy (10%). We recorded all substrate classes but bedrock. Cobble was the most commonly encountered dominant substrate (33% of stations).

Stream widths (not including lakes and sloughs) ranged from 0.2 to 21 m (mean = 2.1 m; median = 1.2 m, SD = 3.0, n = 178). Measured thalweg depths (some waterbodies were too deep to measure with available

[1] Use of company's name does not constitute endorsement.

equipment) ranged from 0.02 to 1.0 m (mean = 0.22 m, median = 0.17 m, SD = 0.17, *n* = 169). Station elevations ranged from 3 to 1,069 m (mean = 452 m, median = 413, SD = 235, *n* = 182); anadromous fish were observed at elevations from 49 to 541 m, resident fish were found at elevations from 34 to 1,068 m.

A total of 662 fish were captured. At least one fish species was observed or collected at 42 (23%) stations (Appendix A); Arctic grayling (juveniles and adults) were the most frequently encountered species (Table 5). We observed or collected more than one fish species at 19 (10%) stations (Table 6). Arctic grayling and slimy sculpin were the most commonly encountered species combination (4 stations).

Table 5.- Summary of fish species observations.

Species	Number of stations observed
no sampling or no fish observed	139
Arctic grayling *Thymallus arcticus*	22
slimy sculpin *Cottus cognatus*	15
Dolly Varden *Salvelinus malma*	12
chinook salmon *Oncorhynchus tshawytscha*	6
coho salmon *Oncorhynchus kisutch*	5
longnose sucker *Catostomus catostomus*	3
ninespine stickleback *Pungitius pungitius*	2
fish observed, not identified	2
chum salmon *Oncorhynchus keta*	2
burbot *Lota lota*	2
pink salmon *Oncorhynchus gorbuscha*	1

Of the 9 stations where fish were observed at least once and where we conducted 3 visits, only at 1 (11%) station did we record the same species each visit. Further, at only 2 (22%) stations did we record at least one species each visit. At 6 (67%) stations we observed fish during only one of three visits.

We measured fork lengths of 204 fish of 9 species (Table 7). We measured only fish collected by electrofisher and minnow trap; visually observed fish were not measured.

Of the 174 stream locations on the three lists provided by Alyeska (Appendix A), further surveillance is not required for 69 (40%) waterbodies; 105 (60%) waterbodies will require additional field assessment to fully evaluate potential fish use.

Table 6.- Summary of fish species diversity.

Fish community	Number of stations observed
no fish observed	89
no sampling effort[a]	50
Arctic grayling only	11
Dolly Varden only	6
Arctic grayling and slimy sculpin	4
coho salmon and Dolly Varden	3
burbot and Arctic grayling	2
ninespine stickleback only	2
chinook salmon only	2
chinook salmon, chum salmon, slimy sculpin, and longnose sucker	2
fish observed, not identified	2
slimy sculpin	1
pink salmon	1
Dolly Varden, Arctic grayling, and slimy sculpin	1
Arctic grayling, slimy sculpin, and longnose sucker	1
chinook salmon, Arctic grayling, and slimy sculpin	1
burbot, Arctic grayling, and slimy sculpin	1
coho salmon and slimy sculpin	1
coho salmon, Dolly Varden, and slimy sculpin	1
Total	181

[a] water not present in sufficient quantity to justify sampling effort.

The survey added 9 new waterbodies, 9 species extensions, 8 waterbody or species amendments, and 15 recommended waterbody location deletions to the BLM Open File Report (BLM 1987a); 6 new waterbodies, 5 species extensions, 1 species amendment, and 3 recommended waterbody deletions to the BLM list of Zones of Restricted Activity (BLM 1987b); and 9 nominations to ADF&G's Anadromous

Waters Catalog (ADF&G 1998). The survey also identified 12 sites where a culvert or low water crossing may need maintenance or repair to facilitate efficient fish passage (Appendix A).

Table 7.- Summary of fork lengths (mm) of collected fish.

Species	*n*	Mean	SD	Median	Min	Max
chinook salmon	19	46	4	45	39	55
coho salmon	24	65	21	66	37	117
chum salmon	3	39	8	37	32	48
Dolly Varden	39	101	39	88	50	190
Arctic grayling	55	81	62	55	19	220
slimy sculpin	43	56	18	51	27	100
ninespine stickleback	11	58	18	50	26	82
longnose sucker	8	54	18	44	34	88
burbot	2	242	89	242	179	305

DISCUSSION AND RECOMMENDATIONS

Precipitation extremes affected fish capture efficiency. Overall, July was hot and sunny with little precipitation, contributing to low- or no-flow conditions in some streams. During the last 2 weeks of August, rain (with snow at higher latitudes) was persistent, causing high water levels and flooding north of Fairbanks, thereby reducing fish capture efficiency of the gear used.

Most of the waterbodies selected by Alyeska were small first- and second-order streams with no year-round surface flow, or any surface flow in some years. Fish migrations to, and presence in, first- and second-order streams is often seasonal and/or episodic/opportunistic and is dependent in large part on seasonal hydrology and fish life history. For example, at Station 02A05 (a Lowe River tributary near Valdez), we collected Dolly Varden and rearing coho salmon during our first visit (6/15/02); during our second visit (7/15/02) the channel was dry; and during our third visit (8/28/02) channel surface flow had returned, but a concerted sampling effort yielded no fish. Many first- and second-order streams may only be seasonally occupied by fish completing upstream and downstream movements for spawning or feeding, or as refugia from predators or adverse environmental conditions.

For some waterbodies in our study area (*n* = 39, 23%) we were able to unambiguously document fish use. For other waterbodies (*n* = 30, 17%), field evidence was sufficiently compelling to conclude the site did not support fish use, nor would it until/unless hydrogeomorphic conditions change. For the remaining waterbodies (*n* = 105, 60%), while we did not find fish during the survey, we cannot conclude the sites do not support fish given current conditions. That is, hydrogeomorphic conditions and evidence of episodic discharge suggested that these waterbodies might support fish, at least intermittently.

Fluvial geomorphology and hydrology along the ROW is, and will continue to be, dynamic—creating new fish habitats and eliminating historic habitats. Periodic field surveys can identify changes to spawning, rearing, and migratory habitats as they occur.

Accurately mapping the distribution of all fish species in the selected waterbodies will require an extensive field effort beyond the scope of this project. For some waterbodies, additional field investigations conducted at various times of year and over several seasons will be necessary to collect sufficiently compelling evidence to conclude a location does or does not support fish.

In the near future, we should engage in a concerted effort to merge current project

data with information from past studies. The database used for this project was developed to create a consistent approach for collecting, processing, and housing field information. This database proved capable of storing documents and photographs for easy search, retrieval, and display. The database used for this project is designed to, and capable of, accommodating historic records.

FUTURE ADF&G ACTION ITEMS

In 2003, we will do the following:

- Report the findings of this study to the appropriate agencies in a timely manner, so that the recommended actions are properly considered.
- Ensure that the project's fiscal obligations are properly closed-out.
- Outline future operational plans for revisiting waterbodies requiring additional field investigation.

ACKNOWLEDGEMENTS

John Wells and Douglas Lieb were responsible for all field work. They completed all scheduled stream assessments on time and within budget in the face of inclement conditions, unscheduled vehicle maintenance, and a rigorous schedule. They were "shown the way" by an enthusiastic, knowledgeable, and dedicated staff of Field Environmental Generalists at Alyeska – particularly Dave Schmidt and his cohorts Jim Lawlor, Alison Kelley, Anne Beesley, Kate Montgomery, and Kathy Girard. We wish to thank Alan Richey, Bob Atkins, and Jim Lagomarsino of Alyeska for their project support. Mac Shoulders, Alyeska's Project Coordinator and Ken Wilson, Alyeska's Fish and Wildlife Subject Matter Expert cleared many logistical hurdles for the crew and kept us "on task" over the 800-mile study area between Valdez and Prudhoe Bay. Kathy Bell and Tammy Martin met the administrative challenges at Alyeska with enthusiasm and professionalism. We wish to thank staff personnel in the ADF&G's Habitat and Restoration Division – Frank Wallis for putting in extra hours developing the database framework (Odyssey), Robert Bochenek for providing technical support during the field season, and Ryan Snow for his help developing database printable forms. We wish to thank Phil Brna and Mike Thompson, former ADF&G Liaisons to the Joint Pipeline Office (JPO); their project vision, guidance, and knowledge were a valued asset. We were the beneficiaries of their early efforts in planning a similar project and were excited at the opportunity to continue their work. We also wish to thank the JPO/Alaska Department of Natural Resources', Christine Lee for her administrative expertise, problem solving skills, and project fund distribution, and the Bureau of Land Management (Courtney Alston) for arranging our travel.

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APPENDIX A. STREAM SURVEILLANCE LISTS

Appendix A1.-Primary stream surveillance list.

Stream name or site description[a]	Pipeline milepost[b]	ADF&G 2002 Station identifier	Observed stream stage(s)[c]	Fish species observed[d]	Type of crossing or site	Current fish stream status[e]	Reason for evaluation[f]	ADF&G recommended action	ADF&G comments
Solomon Gulch	798.05	01A01	MED, MED, MED		Bridge	Resident Fish	Fish Use	Revisit	Local residents observed small fish near lake outlet. Pink salmon observed in intertidal zone.
Dayville Flats Creek	796.63	01A02	MED, MED, MED		Culvert	Resident Fish	Fish Use	Revisit	Narrow range of fish habitat between ROW culvert and waterfalls could support fish. Pink salmon observed between base of falls and intertidal zone.
Unnamed Creek	787.70	18A01	MED, MED, MED	CDV, SCO	144' Steel Bridge	Non Fish Stream	Fish Use	AWC nomination. Add stream to OFR. Close-out surveillance.	Confirmed presence of coho salmon and Dolly Varden.
Browns Creek	784.30	01A04	MED, MED, HIH	CDV	Blockpoint	Non Fish Stream	Fish Use	Add stream to OFR. Close-out surveillance.	Confirmed presence of Dolly Varden.
Lowe River Tributary (Stream #1 of 4)	784.00	02A01, 02A02	DNC		4-APL-1 Culvert	Resident Fish 784.0	Fish Use and Hydrology	Close-out surveillance	Stagnant pond with no visible inlet; blocked outlet and no channel present downstream.
Lowe River Tributary (Stream #2 of 4)	784.00	02A03, 02A04	LOW, LOW, MED	CDV, SCO	4-APL-1 Culvert	Resident Fish 784.0	Fish Use and Hydrology	AWC nomination. Add species to OFR. Amend (# cr) OFR. Repair culvert. Close-out surveillance.	Confirmed presence of Dolly Varden and coho salmon. Open File Report indicates one tributary--amend to reflect #2 of 4. Fish found in pool below perched culvert.
Lowe River Tributary (Stream #3 of 4)	784.00	02A05, 02A06, 02A08	MED, DDC, MED	CDV, SCO	4-APL-1 Culvert	Resident Fish 784.0	Fish Use and Hydrology	AWC nomination. Add species to OFR. Amend (# cr) OFR. Close-out surveillance.	Confirmed presence of Dolly Varden and coho salmon. Open File Report indicates one tributary--amend to reflect #3 of 4.
Lowe River Tributary (Stream #4 of 4)	784.00	02A07	DNC		4-APL-1 Culvert	Resident Fish 784.0	Fish Use and Hydrology	Close-out surveillance	No channel is present.
Pit Pond Outlet	758.10	03A01	DNC		LWC	Resident Fish	Hydrology	Delete from OFR. Close-out surveillance.	No channel is present.
Tiekel River Tributary	749.37	03A02	MED	CDV	LWC	Resident Fish	Hydrology	Close-out surveillance	Confirmed presence of Dolly Varden.
Little Tonsina Flats Tributary	731.00	03A05	LCF, LOW		LWC	Anadromous Fish	Hydrology	Revisit	Similar characteristics as streams in area supporting fish and possibly connected up or downstream to streams with fish.
Little Tonsina Flats Tributary	730.78	03A06	LDF	SCO, USL	LWC	Anadromous Fish	Hydrology	Close-out surveillance	Confirmed presence of coho salmon and slimy sculpin.
South Fork Yetna Creek	696.04	04A01	LCF, DNC		LWC	Resident Fish	Hydrology	Delete from OFR. Delete from ZRA. Close-out surveillance	No channel is present.
Yetna Creek Tributary	695.29	04A02	DNC			Non Fish Stream	Fish Use	Close-out surveillance	No channel is present.

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Appendix A1.-Page 2 of 6.

Stream name or site description[a]	Pipeline milepost[b]	ADF&G 2002 Station identifier	Observed stream stage(s)[c]	Fish species observed[d]	Type of crossing or site	Current fish stream status[e]	Reason for evaluation[f]	ADF&G recommended action	ADF&G comments
Yetna Cr. (USGS)/South Fork Yetna Creek (OFR, ZRA)	694.47	04A03	LCF, LDF, DDC		LWC	Resident Fish	Hydrology	Revisit	Possible fish habitat with adequate water. Note: USGS stream name used does not match stream name in BLM Open File Report or Zones of Restricted Activity list for PLMP 694.47.
North Fork Yetna Cr/Yetna Cr. (OFR)	691.87	04A04	HIH, MED, LOW		LWC	Resident Fish	Fish Use	Revisit	Fish habitat when adequate water is present. Note: USGS stream name used does not match stream name in BLM Open File Report for PLMP 691.87
North Fork Yetna Creek Tributary/North Fork Yetna Cr. (OFR)	691.71	04A05	WNC, LDF, LDF		LWC	Resident Fish	Fish Use	Revisit	Possible fish habitat with adequate water. Note: USGS stream name used does not match stream name in BLM Open File Report for PLMP 691.71
Phelan Creek Tributary	599.2 (598.5)	05A02	DNC		LWC on 36-APL-1A	Non Fish Stream	Hydrology	Close-out surveillance	No channel is present.
Delta River Tributary	584.1	05A03	LOW	GRA, USL,	Dikes	Non Fish Stream	Fish Use	Add stream to OFR. Add stream to ZRA. Close-out surveillance.	Confirmed presence of Arctic grayling and slimy sculpin. Fish found downstream of ROW.
Delta River Tributary (includes Spur Dike Cr)	582.76	05A04	DDC		Dikes	Resident Fish	Fish Use	Revisit	Possible fish habitat with adequate water.
Whistler Creek	581.81	05A05	MED		LWC	Resident Fish	Fish Use	Revisit	Similar characteristics as fish streams in area.
Boulder Creek	581.04	05A06	MED		LWC	Resident Fish	Fish Use	Revisit	Similar characteristics as fish streams in area.
Suzy Q Creek	579.9	05A07	MED		LWC	Resident Fish	Fish Use	Revisit	Downstream of LWC could support fish.
Falls Creek	578.37	06A03	LOW, LOW, MED		LWC	Resident Fish	Fish Use	Revisit	Possible resident fish present.
Camp Terry Creek	578.17	06A01	LOW		LWC	Resident Fish	Fish Use	Revisit	Possible resident fish present.
Gunnysack Creek	577.76	06A05	MED		LWC	Resident Fish	Fish Use	Revisit	Similar characteristics as fish streams in area.
One Mile Creek	566.39 (576.39)	06A06	LOW, MED, MED	GRA	LWC	Non Fish Stream	Fish Use	Add stream to OFR. Close-out surveillance.	Add Arctic grayling. U.S.G.S. maps show "One Mile Creek" approximately ½-mile south.
Unnamed Creek	575.56	06A07	LCF, DDC, DDC		LWC	Non Fish Stream	Fish Use	Close-out surveillance	Similar characteristics as fish streams in area.
Catastrophe Creek	572.33	06A09	DDC		LWC	Resident Fish	Hydrology	Revisit	Possible fish habitat with adequate water.
Donnelly Creek	566.72	07A03	LOW		Culvert	Resident Fish	Fish Use	Revisit	Similar characteristics as fish streams in area.
Beaver Creek	565.93	07A04	LOW, MED		LWC	Resident Fish	Hydrology	Revisit	Fish habitat is present.

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Appendix A1.-Page 3 of 6.

Stream name or site description[a]	Pipeline milepost[b]	ADF&G 2002 Station identifier	Observed stream stage(s)[c]	Fish species observed[d]	Type of crossing or site	Current fish stream status[e]	Reason for evaluation[f]	ADF&G recommended action	ADF&G comments
West Branch Keystone Creek	518.89	07A11	MED	GBR, GRA	30" culvert	Resident Fish	Fish Use	Add species to OFR. Close-out surveillance.	Confirmed presence of burbot and Arctic grayling. Beaver complex with deep water, other species could be present.
South Fork Minton Creek	512.3	07A10	WNC, LDF, LDF		LWC	Resident Fish	Hydrology	Revisit	Possible fish habitat with adequate water.
Minton Creek Tributary	510.69	07A09	DNC		LWC	Resident Fish	Hydrology	Delete from OFR. Close-out surveillance.	No channel is present.
North Fork Minton Creek	509.60	07A08	MED		LWC	Resident Fish	Hydrology	Revisit	Fish habitat is present.
North Fork Minton Creek	509.14	07A07	DDC, MED		LWC	Resident Fish	Hydrology	Revisit	Fish habitat is present.
Fifty-Three-A Creek	496.06	07A05	LDF		LWC	Resident Fish	Hydrology	Revisit	Similar characteristics as streams in area containing chinook salmon.
Little Salcha River Tributary	489.69	08A01	LOW, HIH, LDF		LWC	Resident Fish	Hydrology	Revisit	Possible fish habitat with adequate water.
Bear Lake Outlet	474.56	08A02	LDF		48" CMP	Resident Fish	Hydrology	Revisit	Possible fish habitat with adequate water.
Engineer Creek	449.83	09A01	LOW, MED, HIH		48" CMP	Resident Fish	Hydrology	Revisit	Fish habitat is present.
Snowshoe Creek	431.19	09A03	WNC, LDF, LDF		24" CMP	Non Fish Stream	Hydrology	Close-out surveillance	Possible fish habitat with adequate water.
Little Globe Creek	421.37	09A06	MED, MED, HIH		LWC	Non Fish Stream	Fish Use	Close-out surveillance	Fish habitat is present.
Little Globe Creek	420.70	09A04	MED, MED, HIH		LWC	Non Fish Stream	Fish Use	Close-out surveillance	Fish habitat is present.
Little Globe Creek	420.63	09A05	MED, LOW, HIH		LWC	Resident Fish	Fish Use	Revisit	Fish habitat is present.
Tatalina River Tributary	413.60	09A07	LOW, LOW, MED		LWC	Resident Fish	Hydrology	Revisit	Possible fish habitat with adequate water.
Erickson Creek Tributary	387.70	10A01	LDF, MED, LDF		LWC	Resident Fish	Hydrology	Revisit	Possible fish habitat with adequate water.
South Fork Fish Creek	297.38	10A02	LDF, WNC, DNC		30" CMP	Resident Fish	Hydrology	Revisit	Possible fish habitat with adequate water.
Beaver Spring	268.43	11A01	WNC, LDF, LDF		24" culvert	Resident Fish	Hydrology	Revisit	Possible fish habitat with adequate water.
1296363	245.52	11A02	MED	USL	Blockpoint	Anadromous and resident fish	Fish Use	Repair (clean culvert). Close-out surveillance.	Confirmed presence of slimy sculpin. Large amounts of debris blocking nearby culvert inlet. Wide and deep stream -- good fish habitat. This location is lower reach of Jackson Slough.

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Appendix A1.-Page 4 of 6.

Stream name or site description[a]	Pipeline milepost[b]	ADF&G 2002 Station identifier	Observed stream stage(s)[c]	Fish species observed[d]	Type of crossing or site	Current fish stream status[e]	Reason for evaluation[f]	ADF&G recommended action	ADF&G comments
Jackson Slough	245.27	11A03	DDC		36" CMP	Anadromous and resident fish	Hydrology	Revisit	Possible fish habitat with adequate water.
Jackson Slough	244.84	11A04	LDF, LDF, DDC		36" CMP	Anadromous and resident fish	Hydrology	Revisit	Possible fish habitat with adequate water.
1289421.00	244.21	11A05	MED, MED, LDF		LWC	Non Fish Stream	Fish Use	Repair. Revisit.	Riprap has fallen into stream channel downstream of LWC altering appearance of natural stream by creating french draining. Good fish habitat upstream of LWC.
Texas Slough	235.51	11A06	DNC		LWC	Resident Fish	Hydrology	Delete from OFR. Delete from ZRA. Close-out surveillance.	No channel is present. Parallel only; TAPS does not cross
South Fork Mary Angel Creek	234.34	12A02	DNC		48" CMP	Non Fish Stream	Hydrology	Close-out surveillance	No channel is present.
Pence's Pond	232.79	12A03	LDF, DDC, DDC		60" CMP	Resident Fish	Hydrology	Revisit	Possible fish habitat with adequate water.
Confusion Creek	227.40	12A04	LOW, DDC, DDC		36" CMP	Resident Fish	Hydrology	Revisit	Possible fish habitat with adequate water.
One-O-One Creek	221.77	12A05	LDF	GRA	48" CMP	Resident Fish	Hydrology	Close-out surveillance	Confirmed presence of Arctic grayling. Other fish species may be present at high water.
Over Creek (Complex or Rainbow Creek)	219.19	12A06	MED	GRA, USL	60" CMP	Resident Fish	Hydrology	Add species to OFR. Add species to ZRA. Close-out surveillance.	Confirmed presence of Arctic grayling and slimy sculpin. Poor hydrologic connections.
Over Creek Tributary	219.08	12A07	MED	GRA	LWC	Resident Fish	Hydrology	Close-out surveillance	Confirmed presence of Arctic grayling. Poor hydrologic connections.
Over Creek (Complex)	219.03	12A08	DNC		48" CMP	Resident Fish	Hydrology	Revisit	Poor hydrologic connections.
Alignment Slough Culvert	218.35	13A01	MED, MED, LDF		culvert	Resident Fish	Hydrology	Revisit	Stream has good fish habitat, look for blockage downstream and hydrologic connectivity in stream.
Alignment Slough Culvert	218.21	13A02	MED		culvert	Resident Fish	Hydrology	Revisit	Stream has good fish habitat, look for blockage downstream and hydrologic connectivity in stream.
Alignment Slough LWC	218.15	13A03	DNC		LWC	Resident Fish	Hydrology	Revisit	Stream has good fish habitat, look for blockage downstream and hydrologic connectivity in stream.
Alignment Slough Culvert	218.07	13A04	LOW, LDF, LDF		48" CMP	Resident Fish	Hydrology	Revisit	Stream has good fish habitat, look for blockage downstream and hydrologic connectivity in stream.

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Appendix A1.-Page 5 of 6.

Stream name or site description[a]	Pipeline milepost[b]	ADF&G 2002 Station identifier	Observed stream stage(s)[c]	Fish species observed[d]	Type of crossing or site	Current fish stream status[e]	Reason for evaluation[f]	ADF&G recommended action	ADF&G comments
Alignment Slough Culvert	218.00	13A05	LDF		48" CMP	Resident Fish	Hydrology	Revisit	Stream has good fish habitat, look for blockage downstream and hydrologic connectivity in stream.
Cushing Creek	216.3	13A06	LOW, LOW, LDF		LWC or Blockpoint	Resident Fish	Fish Use	Revisit	Possible fish habitat with adequate water. Arctic grayling observed by Alyeska Maintenance Coordinator
Marsh Creek	210.57	13A07	LOW, MED	GRA, NOS, USL	LWC	Resident Fish		Add species to OFR. Add species to ZRA. Close-out surveillance.	Confirmed presence of Arctic grayling, slimy sculpin and longnose sucker.
Marsh Creek	210.43	14A01	MED, LDF	GRA, USL	LWC	Resident Fish	Hydrology	Add stream to OFR. Add stream to ZRA. Close-out surveillance.	Confirmed presence of Arctic grayling and longnose sucker.
Marsh Creek	210.23	14A02	LDF, LDF, DDC		24" CMP	Resident Fish	Hydrology	Close-out surveillance	Confirmed presence of fish in lower stream reach (Station 14A01)
North Fork Sukakpak Creek	209.02	14A03	LDF, LOW, LDF		LWC	Resident Fish	Hydrology	Revisit	Possible fish habitat with adequate water.
Eva Creek	205.73	14A04	MED	CDV, GRA, USL	LWC 10862+60	Resident Fish	Hydrology	Add species to OFR. Add species to ZRA. Close-out surveillance.	Confirmed presence of Arctic grayling, slimy sculpin and Dolly Varden.
Dietrich River Spur Dike 5; includes Ugh Creek	194.00 (194.50)	15A01	LCF, LDF	GRA, USL	CMP	Resident Fish	Fish Use	Close-out surveillance	Confirmed presence of Arctic grayling and slimy sculpin.
Dietrich River Spur Dike 6; includes Ugh Creek	194.00 (194.50)	15A02	LOW, LDF	GRA	CMP	Resident Fish	Fish Use	Close-out surveillance	Confirmed presence of Arctic grayling.
Steep Creek	191.8	14A05	MED, MED, LOW		Drivelane across alluvial fan.	Resident Fish	Hydrology	Revisit	Similar characteristics as fish streams in area.
Ruff Creek	190.39	14A06	DDC		Drivelane across alluvial fan.	Resident Fish	Hydrology	Revisit	Similar characteristics as fish streams in area, determine why stream is becoming subsurface before reaches ROW.
Beaver Brook	176.68 (176.1)	15A03	MED	CDV	LWC	Resident Fish	Fish Use	Amend (DV?) OFR. Add stream to ZRA. Close-out surveillance.	Confirmed presence of Dolly Varden.
Tributaries/ side channels of North Fork of West Fork Chandalar River	168.60 - 168.94	15A04, 35A01, 35A02	LOW, MED, MED	GRA	LWCs	Non Fish Stream	Fish Use	Repair LWCs. Revisit.	Arctic Grayling captured or observed in NF Chandalar River (parallel to ROW) immediately downstream from the three tributaries. LWCs need maintenance; possible fish passage barriers.

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Appendix A1.-Page 6 of 6.

Stream name or site description[a]	Pipeline milepost[b]	ADF&G 2002 Station identifier	Observed stream stage(s)[c]	Fish species observed[d]	Type of crossing or site	Current fish stream status[e]	Reason for evaluation[f]	ADF&G recommended action	ADF&G comments
Tyler Creek 8109+47	153.60	16A01	DDC, LDF, LDF		LWC	Resident Fish	Hydrology	Repair LWC. Close-out surveillance.	LWC has been filled in. Possible fish habitat with adequate water. Arctic grayling found in lower reaches of stream (Station 16A04).
One-One-Two Creek 8102+88	153.46	16A02	DDC, LDF, LDF		LWC	Resident Fish	Hydrology	Revisit	Possible fish habitat with adequate water.
Tyler Creek 8095+58	153.33	16A03	DDC, LOW, LOW		LWC	Resident Fish	Hydrology	Close-out surveillance	Possible fish habitat with adequate water. Arctic grayling found in lower reaches of stream (Station 16A04).
Tyler Creek 8091+49	153.26	16A04	LDF, LOW	GRA	LWC	Resident Fish	Hydrology	Close-out surveillance	Confirmed presence of Arctic grayling
Margaret's Marsh (6112+73 and 6112+03)	104.10	16A07	DDC, LDF, LDF	KNS	LWC	Resident Fish	Hydrology	Amend (S9?) OFR. Close-out surveillance.	Confirmed presence of ninespine stickleback. Personnel at PS 3 have observered other species fish in stream.
3 LWC's on Access RD 125-APL-3	73.20	39A01	DNC		LWC	Non Fish Stream	Hydrology	Close out surveillance	Dry, remnant channel is present. If hydraulic connection to Sagavanirktok River, then channels are "specified" by definition.
Unnamed Lake	11.10	17A01	MED	KNS	LWC 1-9	Non Fish Stream	Fish Use	Add stream to OFR. Close-out surveillance.	Confirmed presence of ninespine stickleback.
Grayling Gulch	5.12	17A02	MED		Bridge	Resident Fish	Fish Use	Revisit	Good fish habitat, similar to other streams in area that support fish. Is wide and deep need more appropriate gear.
Edge Lakes	4.12	17A03	MED		LWC	Resident Fish	Fish Use	Revisit	Waterbody is series of lakes, need to resurvey with appropriate gear. Similar to streams in area that support fish.
Edge Lakes	3.99	17A04	MED		LWC	Resident Fish	Fish Use	Revisit	Waterbody is series of lakes, need to resurvey with appropriate gear. Similar to streams in area that support fish.

[a] USGS name (if one exists) or given Alyeska name. If in conflict, USGS, or USGS-derived, name given first.

[b] TAPS pipeline milepost. If conflict occurred between pipeline milepost provided by Alyeska and pipeline milepost calculated in the field (e.g., *via* Vertical Support Member numbers), then field-derived value is listed first, followed by Alyeska value in parenthesis.

[c] DDC = Dry, defined channel; DNC = Dry, no defined channel; HIH = High; LCF = Low, continuous surface flow; LDF = Low, discontinuous flow; LOW = Low; MED = Medium; WNC = Wet, no defined channel.

[d] SCK = chinook salmon; SCO = coho salmon; SCM = chum salmon; SPI = pink salmon; CDV = Dolly Varden; GRA = Arctic grayling; NOS = longnose sucker; GBR = burbot; KNS = ninespine stickleback; USL = slimy sculpin.

[e] As listed in *Open File Report (OFR) – TAPS Fish Streams* (BLM 1987a).

[f] Rationale provided before field survey by Alyeska.

Appendix A2.-Secondary stream surveillance list.

Stream name or site description[a]	Pipeline milepost[b]	ADF&G 2002 Station identifier	Observed stream stage(s)[c]	Fish species observed[d]	ADF&G recommended action	ADF&G comments
Bassett Creek	100.89	39A02	LDF		Revisit	Possible fish habitat with adequate water.
Shifish Creek	114.86	39A03	MED	CDV	Add species to OFR. Close-out surveillance.	Confirmed presence of Dolly Varden.
Yan Creek	130.38	40A01	LDF		Revisit	Possible fish habitat with adequate water.
Moss Creek	132.95	40A02	LDF		Revisit	Possible fish habitat with adequate water.
Ed's Creek	134.25	36A01	LOW, LDF		Revisit	Possible fish habitat with adequate water.
Tributary Jill Creek	134.85	40A03	LDF		Revisit	Possible fish habitat with adequate water.
Bicycle Creek	152.83	35A03	DNC		Delete from OFR. Close-out surveillance.	No channel is present.
Truck Stop Creek	175.56	42A01	DDC		Revisit	Possible fish habitat with adequate water.
Truck Stop Creek	175.76	42A02	DNC		Revisit	Possible fish habitat with adequate water.
Truck Stop Creek	175.81	42A03	LOW		Revisit	Possible fish habitat with adequate water.
Truck Stop Creek	176.04	42A04	DNC		Delete from OFR. Close-out surveillance.	No channel is present.
One-Seven-Six Mile Creek	176.11	43A01	MED	GRA	Amend (GR?) OFR. Add stream to ZRA. Close-out surveillance.	Confirmed presence of Arctic grayling.
Bear Track Creek	177.95	43A02	DDC		Revisit	Possible fish habitat with adequate water.
Beaver Dam Brook	185.18	43A03	MED		Revisit	Arctic grayling are present, downstream of ROW
Beaver Dam Brook	185.27	43A04	LDF	GRA	Close-out surveillance. Repair culvert.	Confirmed presence of Arctic grayling, downstream of ROW. Culvert is perched.
Beaver Dam Brook	185.46	43A05	LOW		Revisit	Arctic grayling are present, downstream of ROW
Tracey's Trickle or Unnamed Creek #1	187.46	43A06	DDC		Revisit	Possible fish habitat with adequate water.
One-O Six Creek	188.35	44A01	DNC		Revisit	Possible fish habitat with adequate water.
One-O Six Creek	189.26	44A02	DDC		Revisit	Possible fish habitat with adequate water.
One-Nine-Eight Creek	198.03	44A03	DDC		Revisit	Possible fish habitat with adequate water.
Middle Fork Airport Creek	202.85	45A01	LDF		Revisit	Possible fish habitat with adequate water.
South Fork Airport Creek	202.99	45A02	LDF		Revisit	Possible fish habitat with adequate water.
1415 Lake Outlet	204.8	45A03	DDC		Revisit	Possible fish habitat with adequate water.
Two-0-Six Mile Creek	206.46	45A04	DDC		Revisit	Possible fish habitat with adequate water.

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Appendix A2.-Page 2 of 3.

Stream name or site description[a]	Pipeline milepost[b]	ADF&G 2002 Station identifier	Observed stream stage(s)[c]	Fish species observed[d]	ADF&G recommended action	ADF&G comments
Two-0-Six Mile Creek	206.53	45A05	DDC		Revisit	Possible fish habitat with adequate water.
Millie's Meander	206.9	45A06	DDC		Revisit	Possible fish habitat with adequate water.
Millie's Meander	207.1	45A07	DNC		Delete from OFR. Close-out surveillance.	No channel is present.
Wayback Creek	207.76	46A01	DDC		Revisit	Possible fish habitat with adequate water.
Two-0-Eight Mile Creek	208.63	46A02	DNC		Delete from OFR. Close-out surveillance.	No channel is present.
Spoiled Creek	212.66	47A01	DNC		Delete from OFR. Close-out surveillance.	No channel is present.
Spoiled Creek	212.79	47A02	LDF		Revisit	Possible fish habitat with adequate water.
Koyukuk Slough	212.89	47A03	LDF		Revisit	Possible fish habitat with adequate water.
Valve Site Creek	213.03	47A04	LDF		Revisit	Possible fish habitat with adequate water.
Confederate Gulch or Fry Creek	223.19	31A02	DDC		Revisit	Possible fish habitat with adequate water.
Union Gulch	223.67 (224.23)	31A03	MED	GRA, USL	Amend (GR?, CN?) OFR. Add stream to ZRA. Close-out surveillance.	Confirmed presence of Arctic grayling and slimy sculpin.
North Fork Confusion Creek	226.96	48A01	DNC		Delete from OFR. Close-out surveillance.	No channel is present.
Sharon Creek	233.38	48A03	MED		Revisit	Stream has beaver pond complex creating wide and deep channel; need appropriate gear for deep water sampling. Stream occurs in area of known chinook salmon rearing.
Sharon Creek	233.54	48A04	MED		Revisit	Stream has beaver complex creating wide and deep channel; need appropriate gear for deep water sampling. Stream occurs in area of known chinook salmon rearing.
South Fork Sharon Creek	233.66	48A05	DNC		Delete from OFR. Close-out surveillance.	No channel is present.
Clara Creek	236.45	48A06	DDC		Revisit	Possible fish habitat with adequate water.
Horseshoe Slough	239.1	49A01	DNC		Delete from OFR. Delete from ZRA. Close-out surveillance.	No channel is present.
Horseshoe Slough	239.26	49A02	DDC		Revisit	Possible fish habitat with adequate water.
Ninety-Six Creek	247.4	49A03	LOW		Revisit	Possible fish habitat with adequate water.
South Fork Windy Arm Creek	249.59	49A04	LDF		Revisit	Possible fish habitat with adequate water.
Crossroads Creek	251.69	49A05	MED		Revisit	Marsh system has wide and deep sections of open water, need appropriate sampling scheme.

-continued-

Appendix A2.-Page 3 of 3.

Stream name or site description[a]	Pipeline milepost[b]	ADF&G 2002 Station identifier	Observed stream stage(s)[c]	Fish species observed[d]	ADF&G recommended action	ADF&G comments
Crossroads Creek	251.72	49A06	LDF		Revisit	Marsh system has wide and deep sections of open water, need appropriate sampling scheme.
Crossroads Creek	251.79	49A07	LDF		Revisit	Marsh system has wide and deep sections of open water, need appropriate sampling scheme.
Crossroads Creek	251.9	49A08	MED		Revisit	Marsh system has wide and deep sections of open water, need appropriate sampling scheme.
Elwood Creek	259.91	50A01	LDF		Revisit	Possible fish habitat with adequate water.
Grayling Lake Inlet	260.57	29A03	DNC		Delete from OFR. Close-out surveillance.	No channel is present.
Ward's Wallow or Grayling Lake Inlet	261.55	29A02	DNC		Delete from OFR. Close-out surveillance.	No channel is present.
Oxbow Lake System	285.53	50A02	MED		Revisit	Need boat to properly evaluate due to deep and wide channel in wetland system.
Eight-Five Creek	312.99	50A03	MED		Revisit	Thick willows and alders make surveying difficult, possible fish habitat.
Smokey Creek	314.81	50A04	LOW		Revisit	Thick willows and alders make surveying difficult, possible fish habitat.
Knowater Creek	333.29	51A01	DNC		Delete from OFR. Close-out surveillance.	No channel is present.
Eight-0 Creek	337.55	28A02	LOW		Revisit	Possible fish habitat with adequate water.
Isom Creek Tributary	362.14	28A01	MED		Repair culvert. Revisit.	Perched culvert. However, stream has steep gradient with marginal fish habitat.
Shorty Creek	400.5	27A01	LOW, MED		Revisit (inspect culvert)	CMP culvert may be degrading. Stream has good fish habitat.
Globe Creek Tributary	417	53A01	MED		Revisit	Stream surveyed at flood stage. Survey at normal water levels.
North Fork Aggie Creek	423.68	26A02	MED, HIH		Revisit	Downstream of ROW stream presents good fish habitat, upstream is marginal.
South Fork Aggie Creek	424.44	26A01	MED		Revisit	Downstream of ROW stream presents good fish habitat, upstream is marginal.
TAPS Slough	496.16	07A06	LDF	SCK	AWC nomination. Repair culvert. Close-out surveillance.	Confirmed presence of chinook salmon. Perched culvert on upstream side of ROW may need repair.

[a] USGS name (if one exists) or given Alyeska name.

[b] TAPS pipeline milepost. If conflict occurred between pipeline milepost provided by Alyeska and pipeline milepost calculated in the field (e.g., *via* Vertical Support Member numbers), then field-derived value is listed first, followed by Alyeska value in parenthesis.

[c] DDC = Dry, defined channel; DNC = Dry, no defined channel; HIH = High; LDF = Low, discontinuous flow; LOW = Low, MED = Medium.

[d] SCK = chinook salmon; CDV = Dolly Varden; GRA = Arctic grayling; USL = slimy sculpin.

Appendix A3.-Tertiary stream surveillance list.

Stream name or site description[a]	Pipeline milepost[b]	ADF&G 2002 Station identifier	Observed stream stage(s)[c]	Fish species observed[d]	Stream added by	ADF&G recommended action	ADF&G comments
Waterhole Creek	152.19	16A06	MED, LOW, LOW		Kate Montgomery	Revisit	Presents good fish habitat and is 200-300 m from Atigun river.
One 53-mile Creek	153.03	16A05	LCF		Kate Montgomery	Revisit	Possible fish habitat with adequate water.
Oskar's Eddy	178.8	14A07	MED	GRA	Kate Montgomery	Close-out surveillance. Repair vortex rock weir step heights and LWC.	Confirmed presence of Arctic grayling. Fish found downstream of first vortex rock weir (verify fish passage through LWC).
Marsh Creek dike culvert	210.51	33A01	LOW		Doug Lieb	Close-out surveillance. Repair CMP.	Culvert is perched at low water. However, fish found downstream and upstream of culvert (see Station 13A07 on Primary List).
Hammond River	222.28	31A01	MED	NOS, SCK, SCM, USL	Dennis Gnath	AWC nomination. Add species to OFR. Add species to ZRA. Close-out surveillance.	Confirmed presence of chinook and chum salmon, longnose suckers, and slimy sculpin.
Marion Creek	233.38	48A02	MED	SCK	Mac Shoulders	Close-out surveillance	Confirmed presence of chinook salmon.
South Fork Clara Creek	236.84	12A01	LDF			Revisit	Possible fish habitat with adequate water.
Rosie Creek	242.89	30A02	MED	GRA, SCK, USL	Dennis Gnath	AWC nomination. Amend (CN?) OFR. Close-out surveillance.	Confirmed presence of chinook salmon, slimy sculpin, and Arctic grayling.
1296363	245.6	30A01	MED	GRA, SCK, USL	Doug Lieb	AWC nomination. Add stream to OFR. Add stream to ZRA. Repair culverts. Close-out surveillance.	Confirmed presence of chinook salmon, Arctic grayling, and slimy sculpin. Two blocked culverts in dike downstream of ROW blockpoint. Stream 1296363 is lower reach of Jackson Slough.
No Name Creek/North Fork Ray River	329.29	28A03	MED	GBR, GRA, USL	Dennis Gnath	Amend (BB?) OFR. Amend (BB?) ZRA. Close-out surveillance.	Confirmed presence of burbot, Arctic grayling, and slimy sculpin. Stream in proximity of ROW is deep and wide; good fish habitat upstream of ROW.
Knowater Creek?	333.30	51A02	LOW		Doug Lieb	Revisit	Possible fish habitat. Listed in Open File Report as Knowater Creek
-no name given-	431.34	09A02	LOW		Jim Lawlor	Revisit	Possible fish habitat.
Dome Creek	438.4	25A01	MED	SCK, SCM, USL, NOS	Ken Wilson	AWC nomination. Add stream to OFR. Close-out surveillance.	Confirmed presence of chinook and chum salmon, slimy sculpin and longnose sucker. Located on Access Road 62APL1; tributary to Chatanika River.
Vault Creek	438.4	25A02	MED		Ken Wilson	Revisit	Possible fish habitat, stream has beaver complex in channel. Located on Access Road 62APL1; tributary to Chatanika River.
Ruby Creek	570.18	07A02	MED			Revisit	Similar characteristics as streams in area containing fish.
Bear Creek	571.36	07A01	LOW			Revisit	Similar characteristics as streams in area containing fish.
Darling Creek	573.63	06A08/56A01	MED	GRA	Dave Schmidt	Close-out surveillance	Confirmed presence of Arctic grayling. Grayling found downstream of grade-control structures, which may be creating barrier(s) to upstream fish migration.
Falls Creek (Falls)	578.37	06A04	N / A		Doug Lieb	Close-out surveillance	Possible fish habitat upstream and downstream of falls. Station 06A03 on Primary List

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Appendix A3.-Page 2 of 2.

Stream name or site description[a]	Pipeline milepost[b]	ADF&G 2002 Station identifier	Observed stream stage(s)[c]	Fish species observed[d]	Stream added by	ADF&G recommended action	ADF&G comments
Camp Terry Creek (Falls)	578.17	06A02	N / A		Doug Lieb	Close-out surveillance	Possible fish habitat upstream and downstream of falls. Station 06A01 on Primary List
Phelan Creek Tributary	597.88	21A01	MED			Revisit	Stream has good fish habitat, possible downstream gradient too steep for fish passage.
McCallum Creek	601.51	05A01	MED		Dave Schmidt	Revisit	Similar characteristics as streams in area containing fish.
Squirrel Creek	717.28	19A01	MED	CDV, SCO, USL	Dennis Gnath	AWC nomination. Add species to OFR. Add species to ZRA. Close-out surveillance.	Confirmed presence of Dolly Varden, coho salmon and slimy sculpin.
Quarry Creek	739.26	03A04	MED		Dave Schmidt	Revisit	Possible fish habitat.
Fiftynine Mile Creek	741.03	03A03	MED	CDV	Dave Schmidt/ Alison Kelly	Close-out surveillance. Repair LWC	Confirmed presence of Dolly Varden. LWC is over twice as wide as the natural stream channel.
Dayville Flats Creek Waterfall	796.63	01A03	N / A	SPI	Doug Lieb	Close-out surveillance	Confirmed presence of pink salmon spawning from base of falls to intertidal zone.

[a] USGS name (if one exists) or given Alyeska name. If in conflict, USGS, or USGS-derived, name given first.

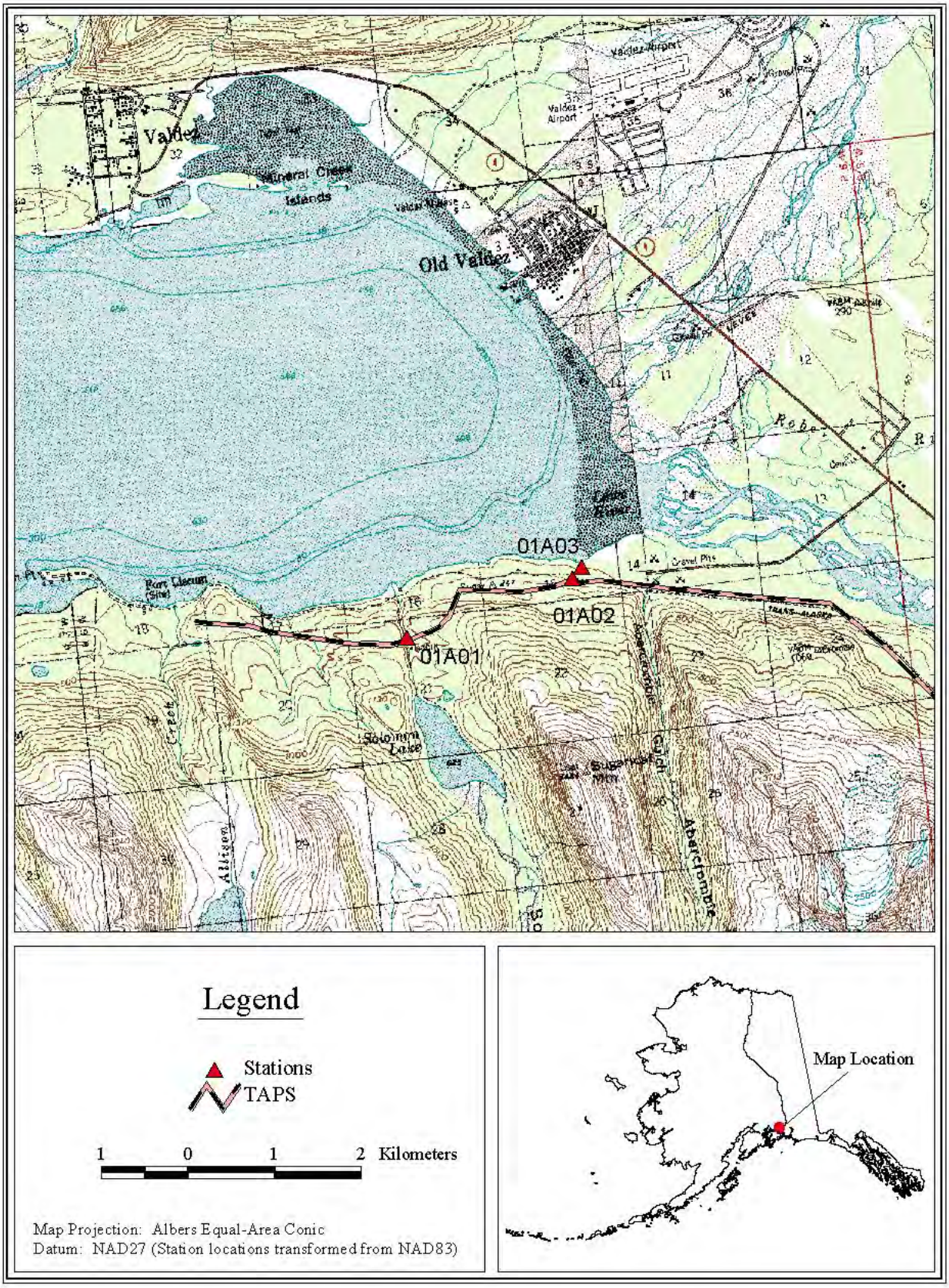
[b] TAPS pipeline milepost.

[c] LCF = Low, continuous surface flow; LDF = Low, discontinuous flow; LOW = Low; MED = Medium; N/A = Not available.

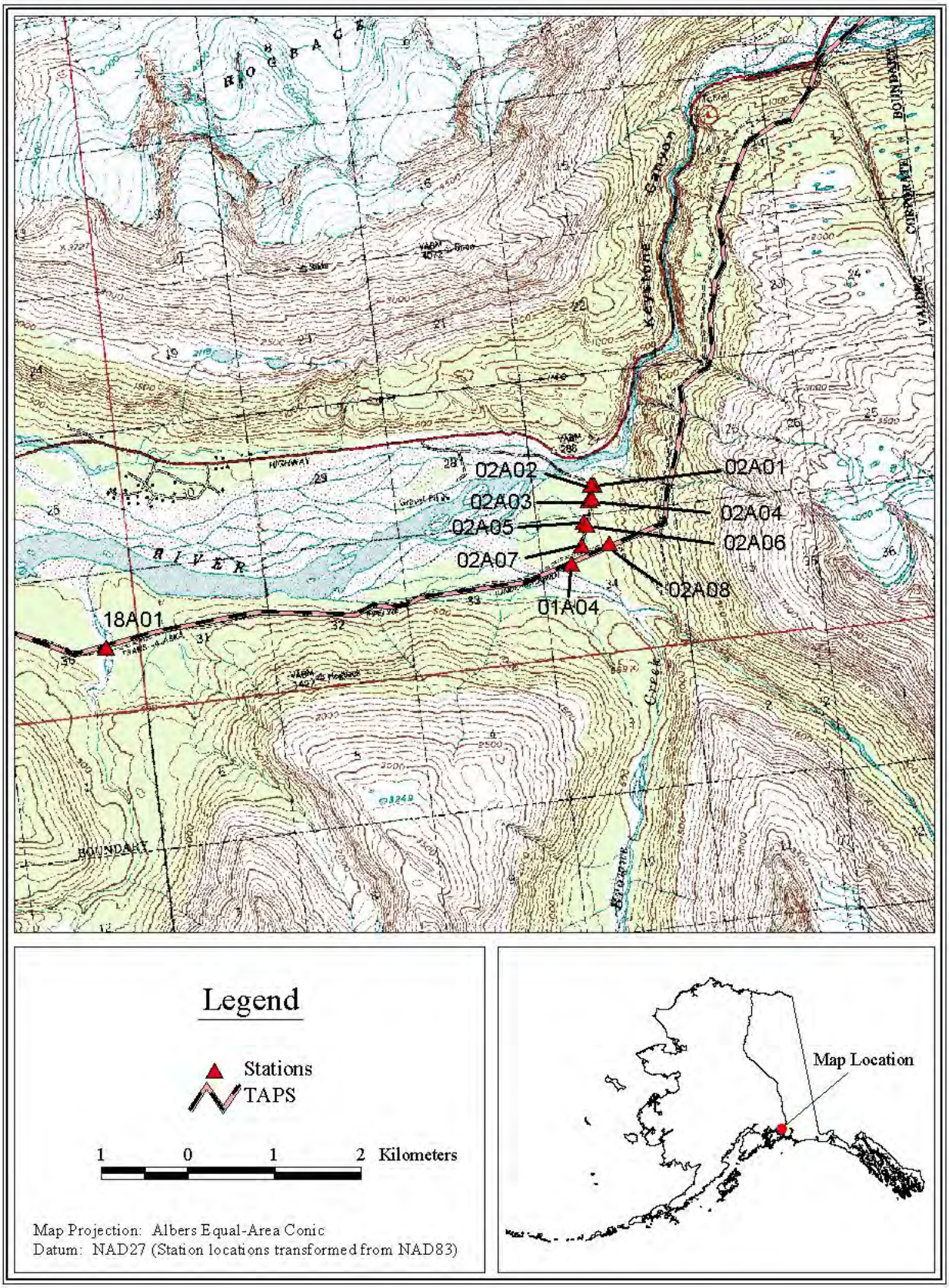
[d] SCK = chinook salmon; SCO = coho salmon; SCM = chum salmon; SPI = pink salmon; CDV = Dolly Varden; GRA = Arctic grayling; NOS = longnose sucker; GBR = burbot; USL = slimy sculpin.

APPENDIX B. STATION MAPS

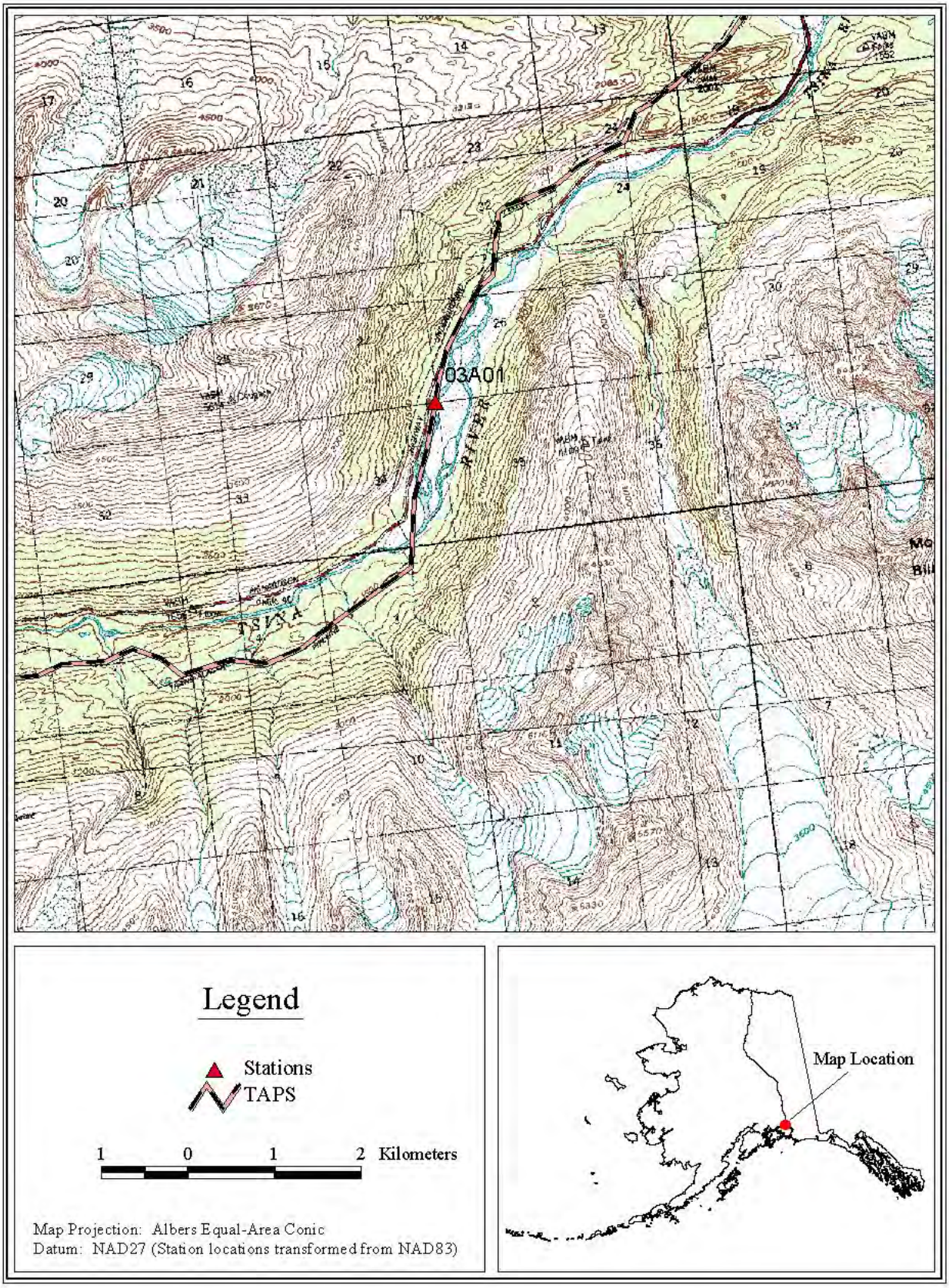
Appendix B4.-Stations 01A01, 01A02, and 01A03.



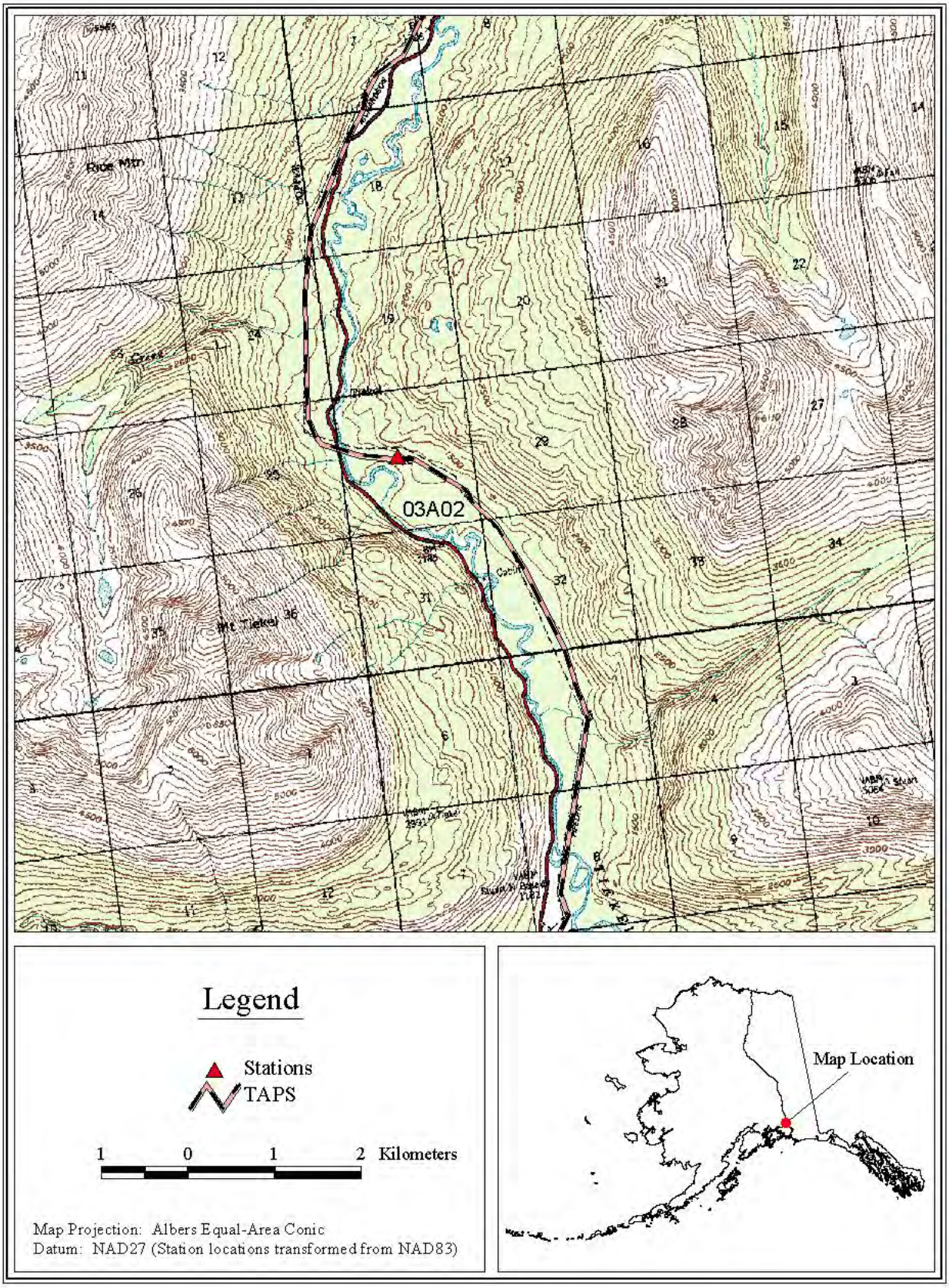
Appendix B5.-Stations 01A04, 02A01, 02A02, 02A03, 02A04, 02A05, 02A06, 02A07, 02A08, and 18A01.



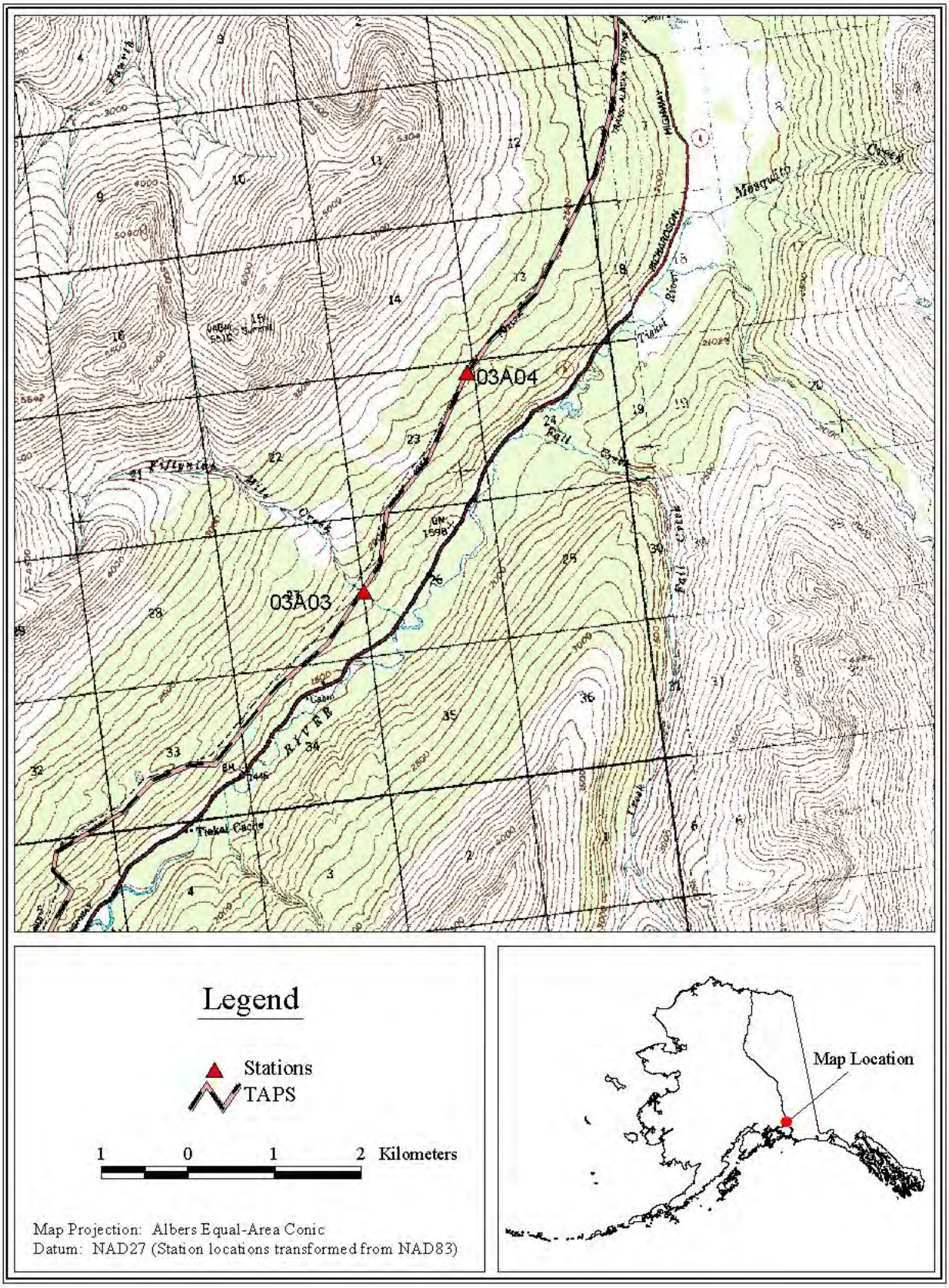
Appendix B6.-Station 03A01.



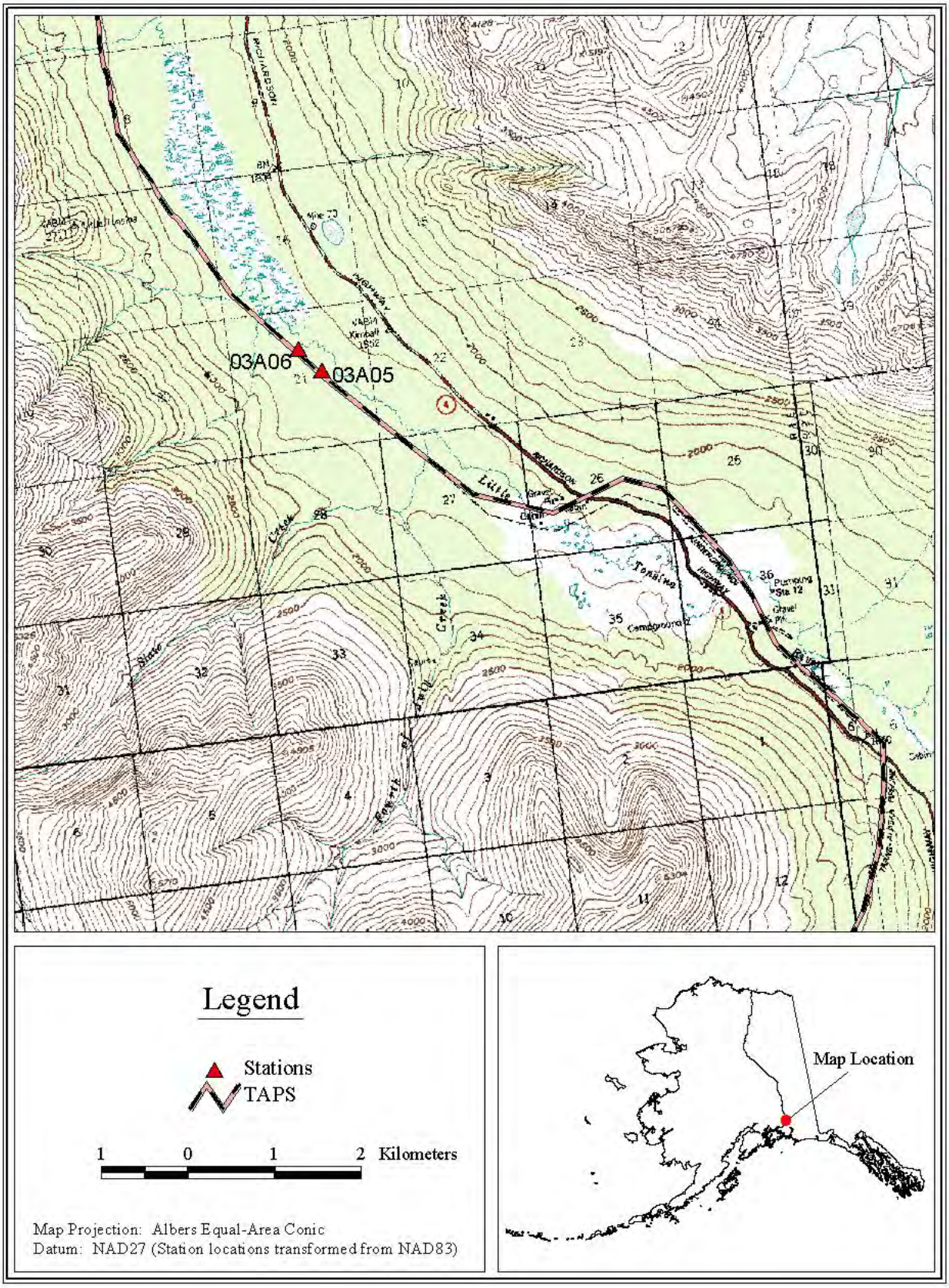
Appendix B7.-Station 03A02.



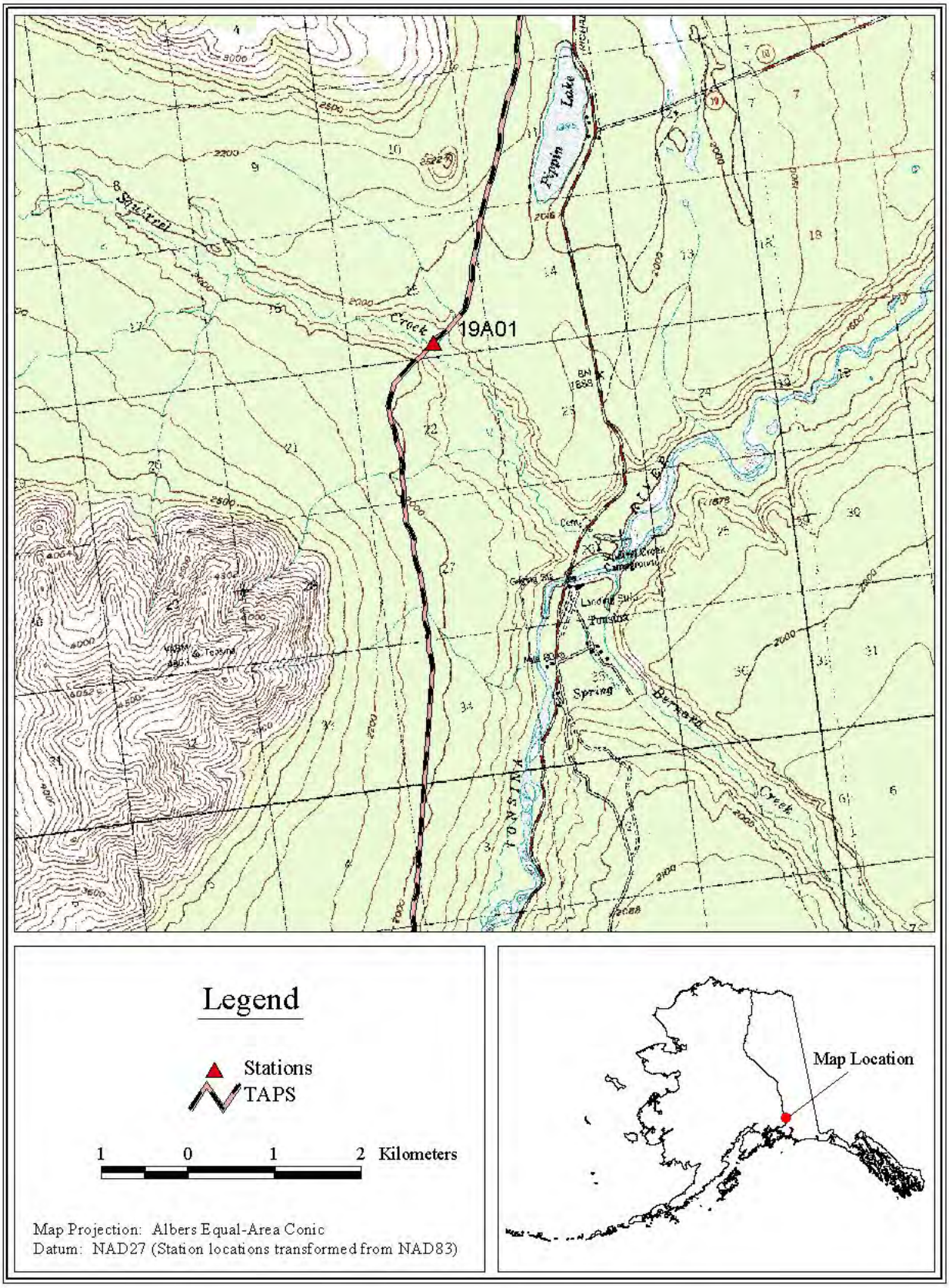
Appendix B8.-Stations 03A03 and 03A04.



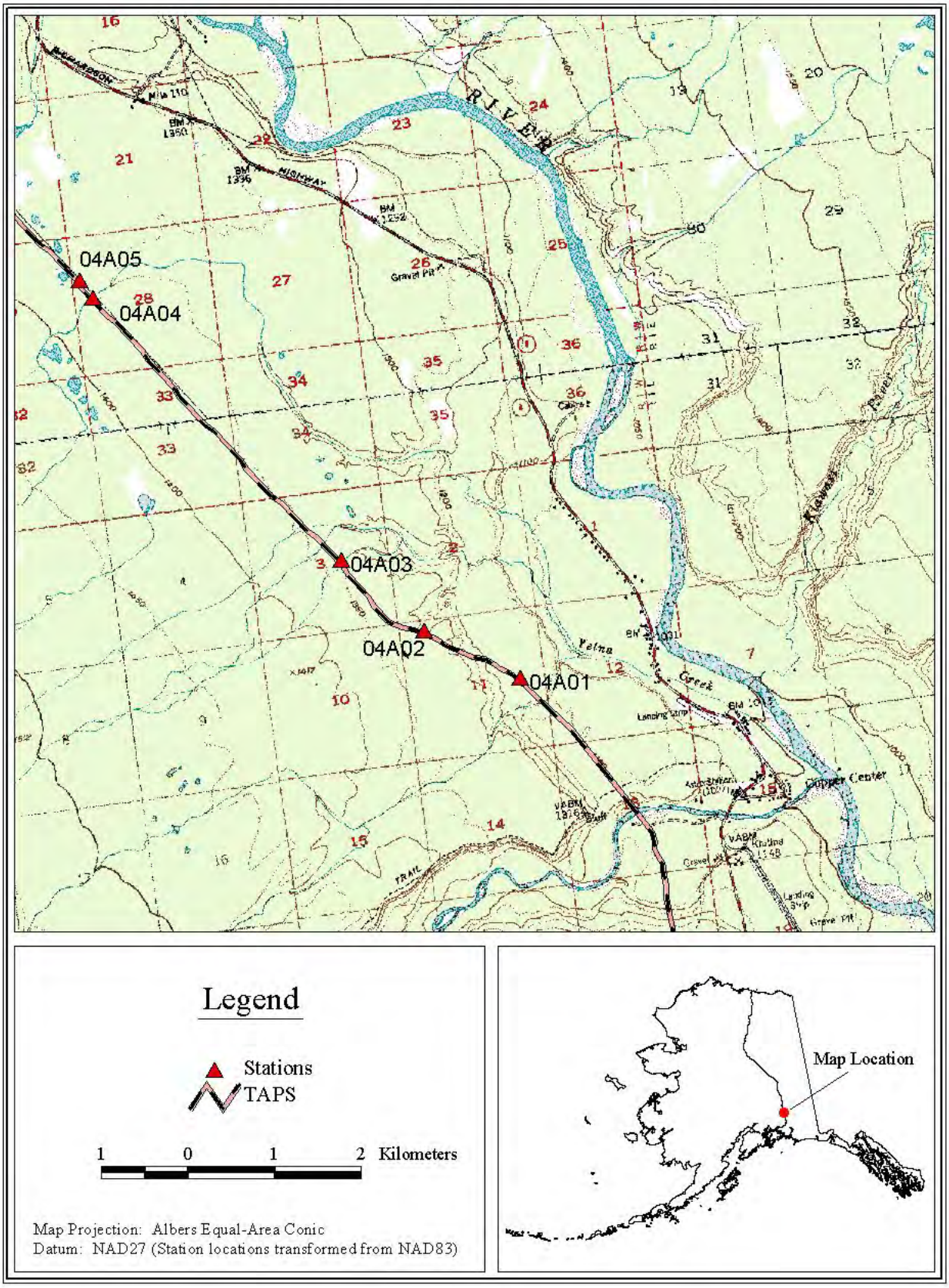
Appendix B9.-Stations 03A05 and 03A06.



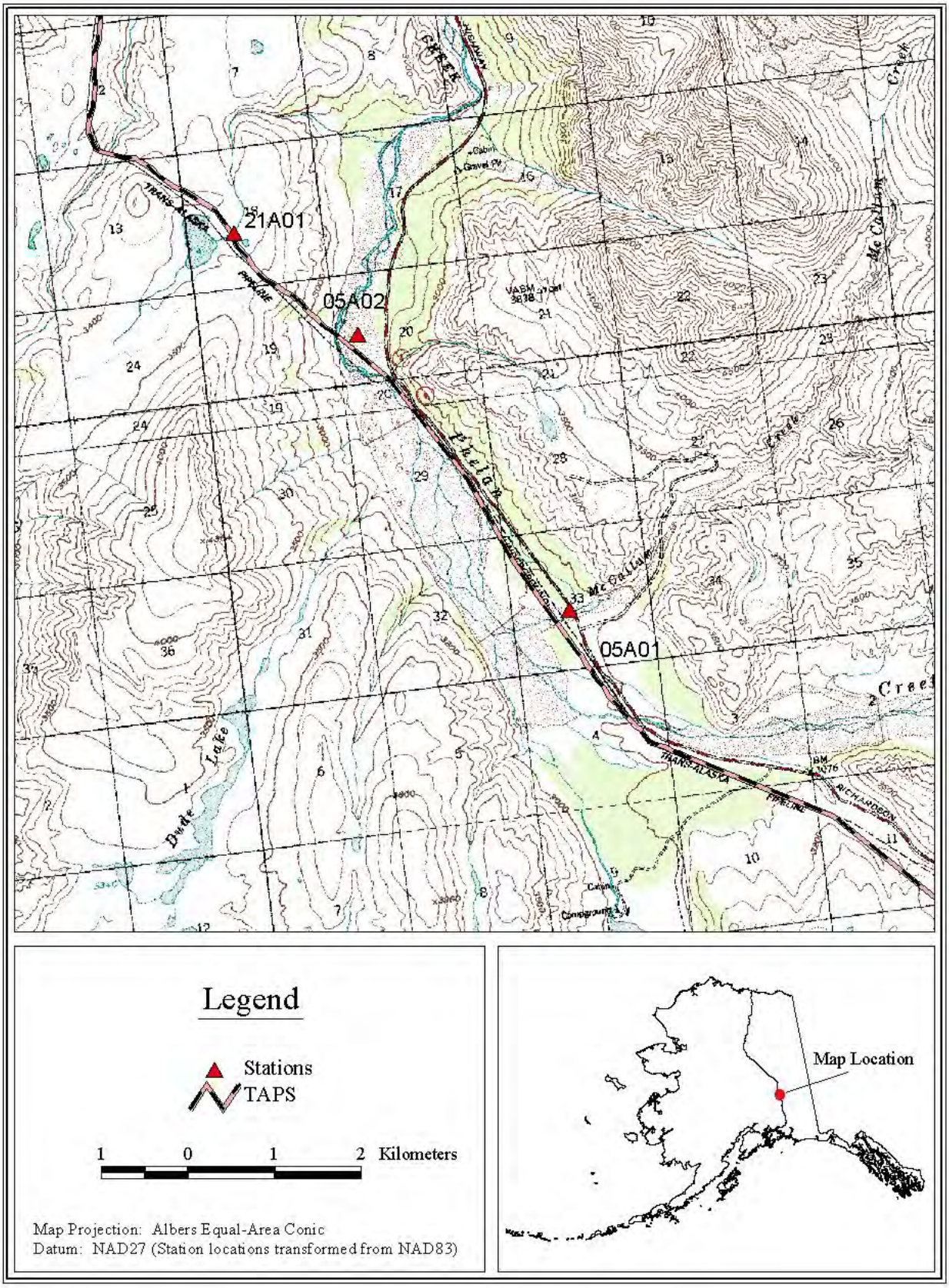
Appendix B10.-Station 19A01.



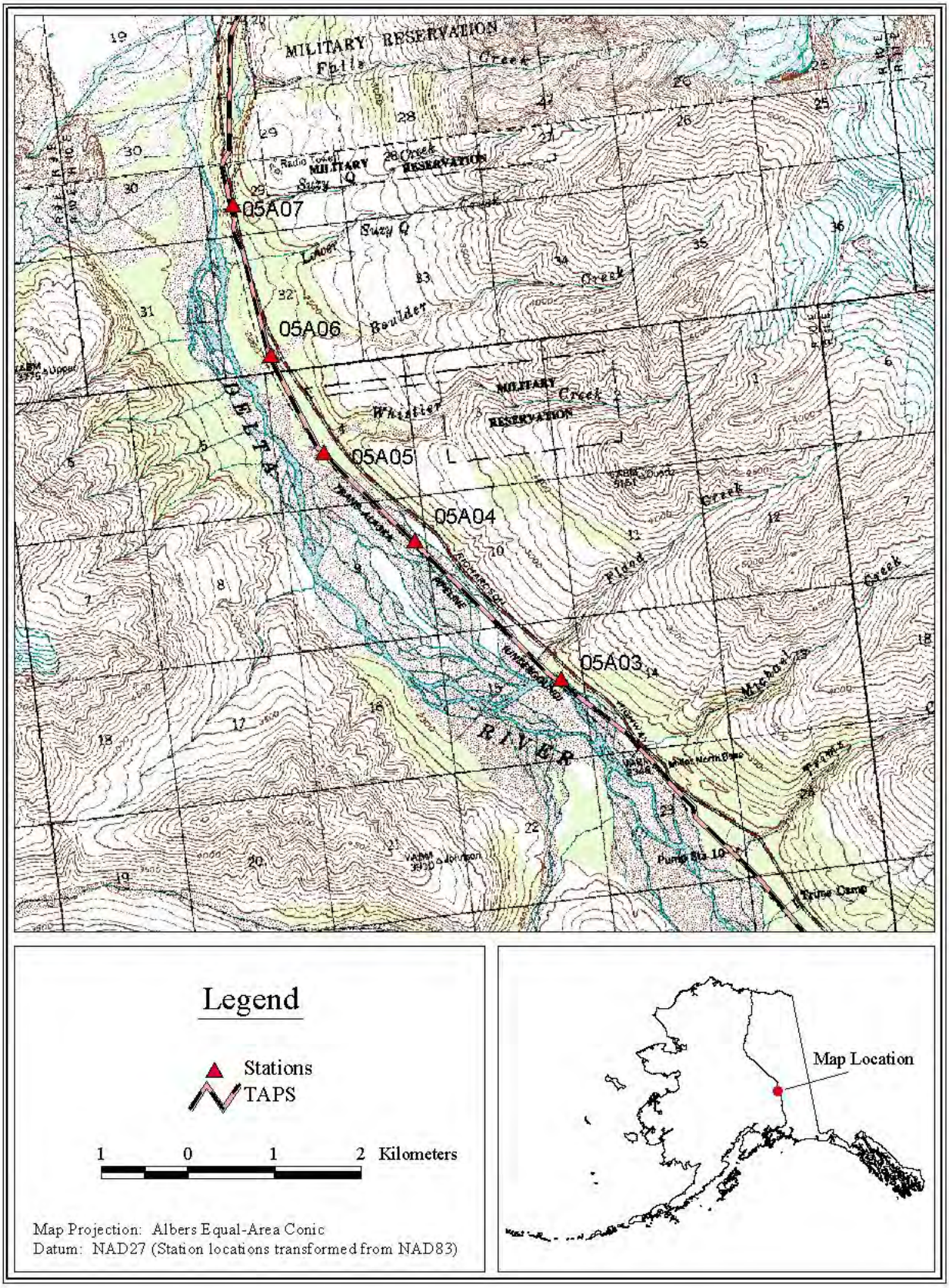
Appendix B11.-Stations 04A01, 04A02, 04A03, 04A04, and 04A05.



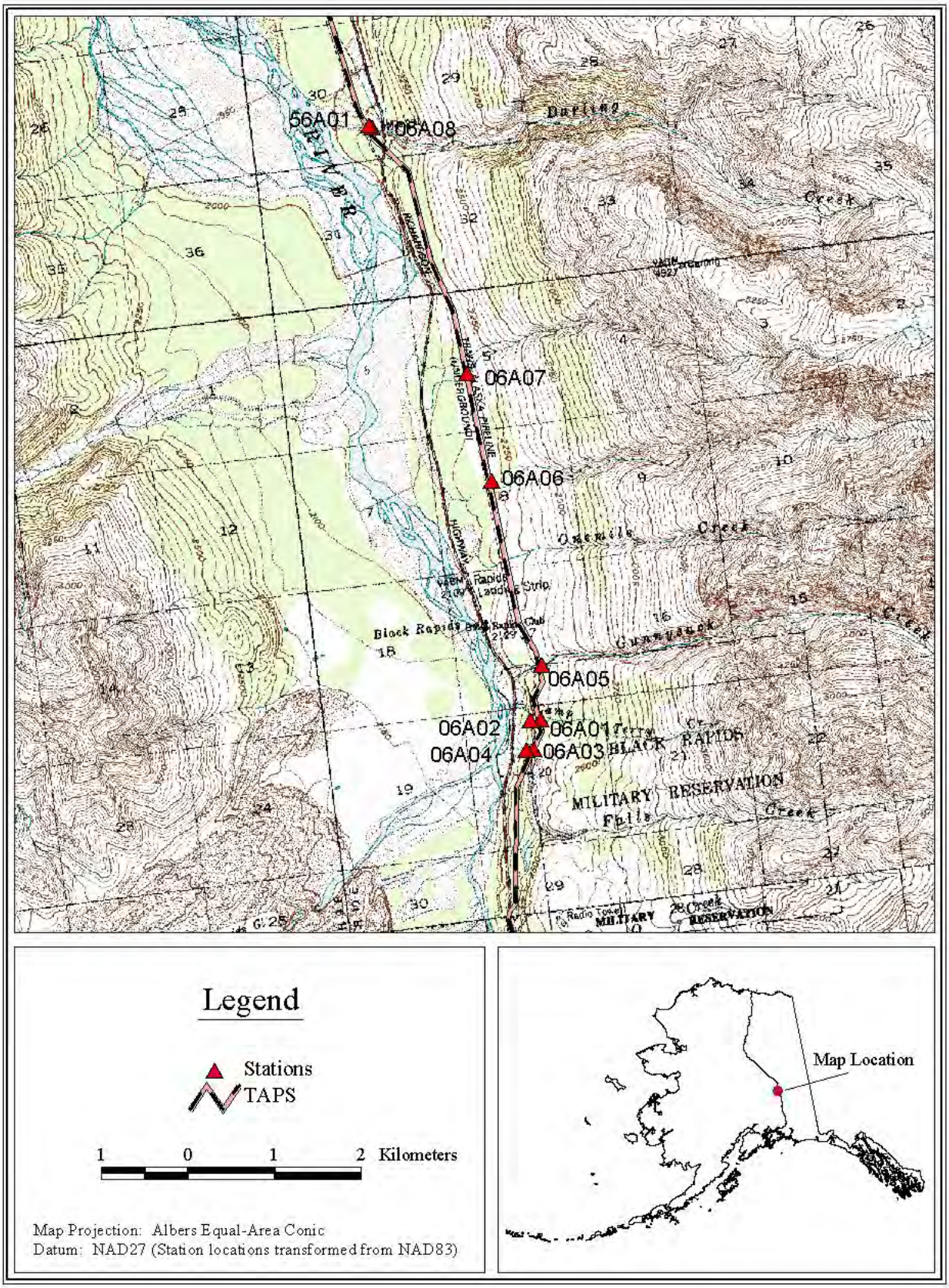
Appendix B12.-Stations 05A01, 05A02, and 21A01.



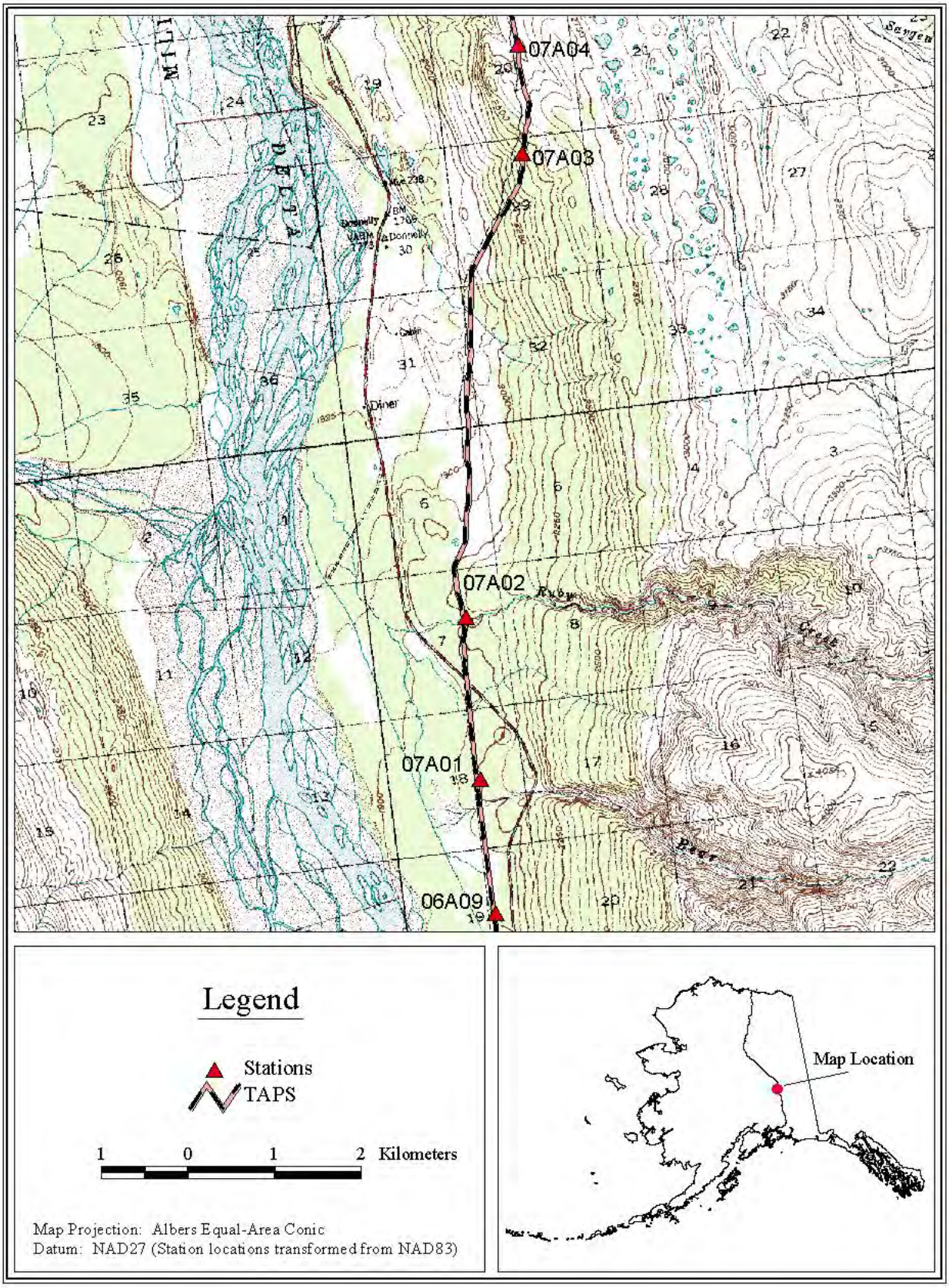
Appendix B13.-Stations 05A03, 05A04, 05A05, 05A06, and 05A07.



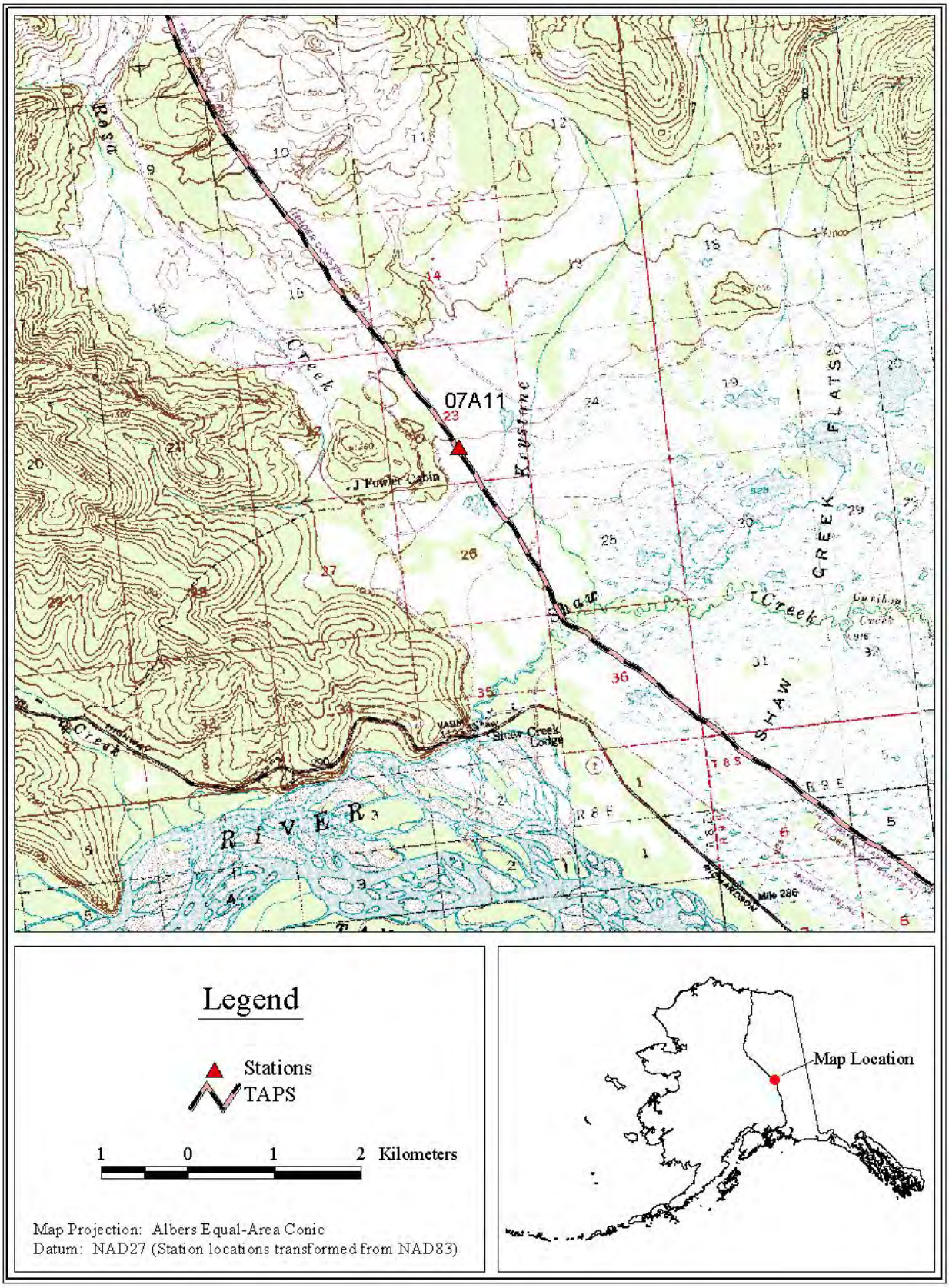
Appendix B14.-Stations 06A01, 06A02, 06A03, 06A04, 06A05, 06A06, 06A07, 06A08, and 56A01.



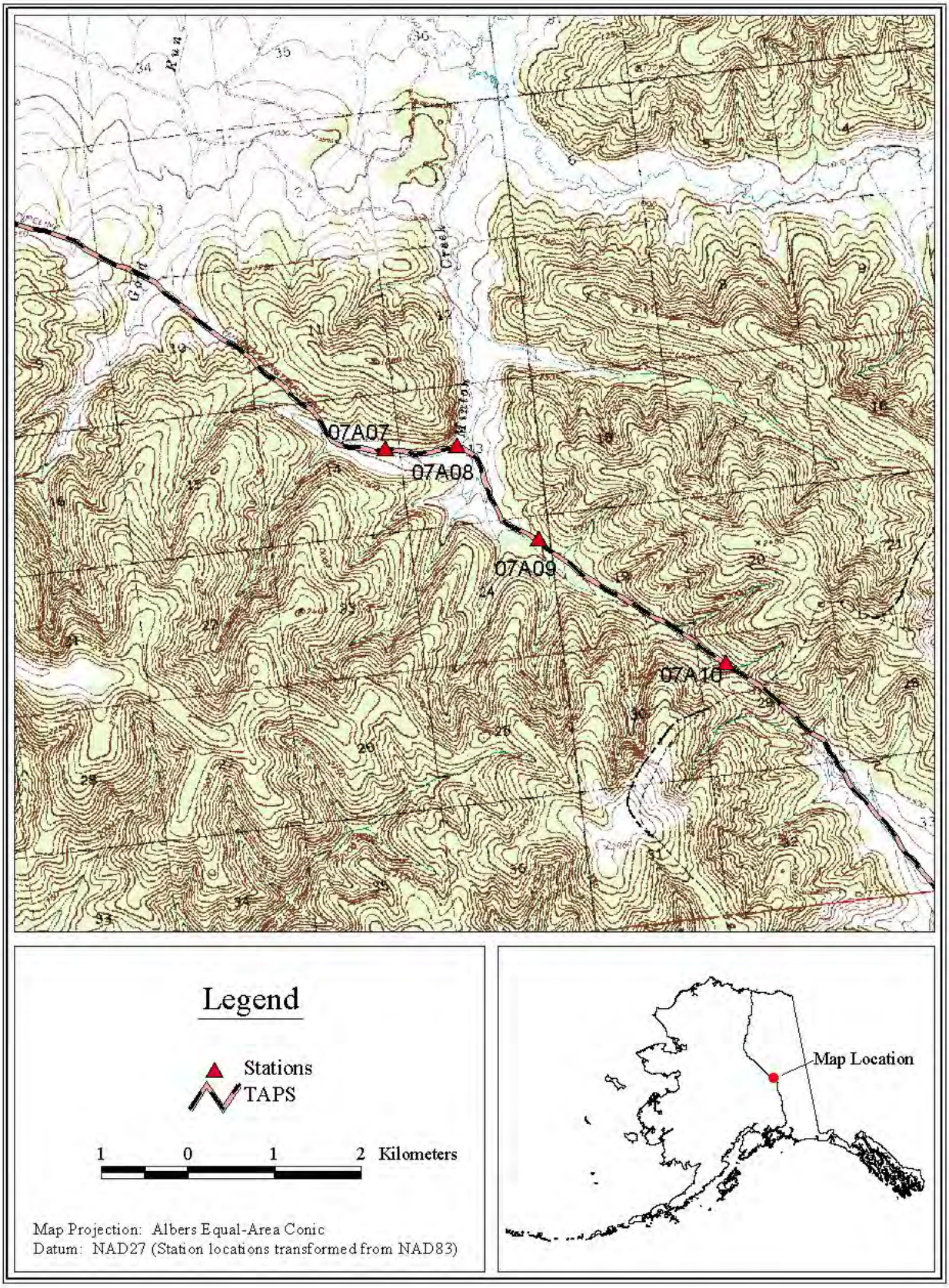
Appendix B15.-Stations 06A09, 07A01, 07A02, 07A03, and 07A04.



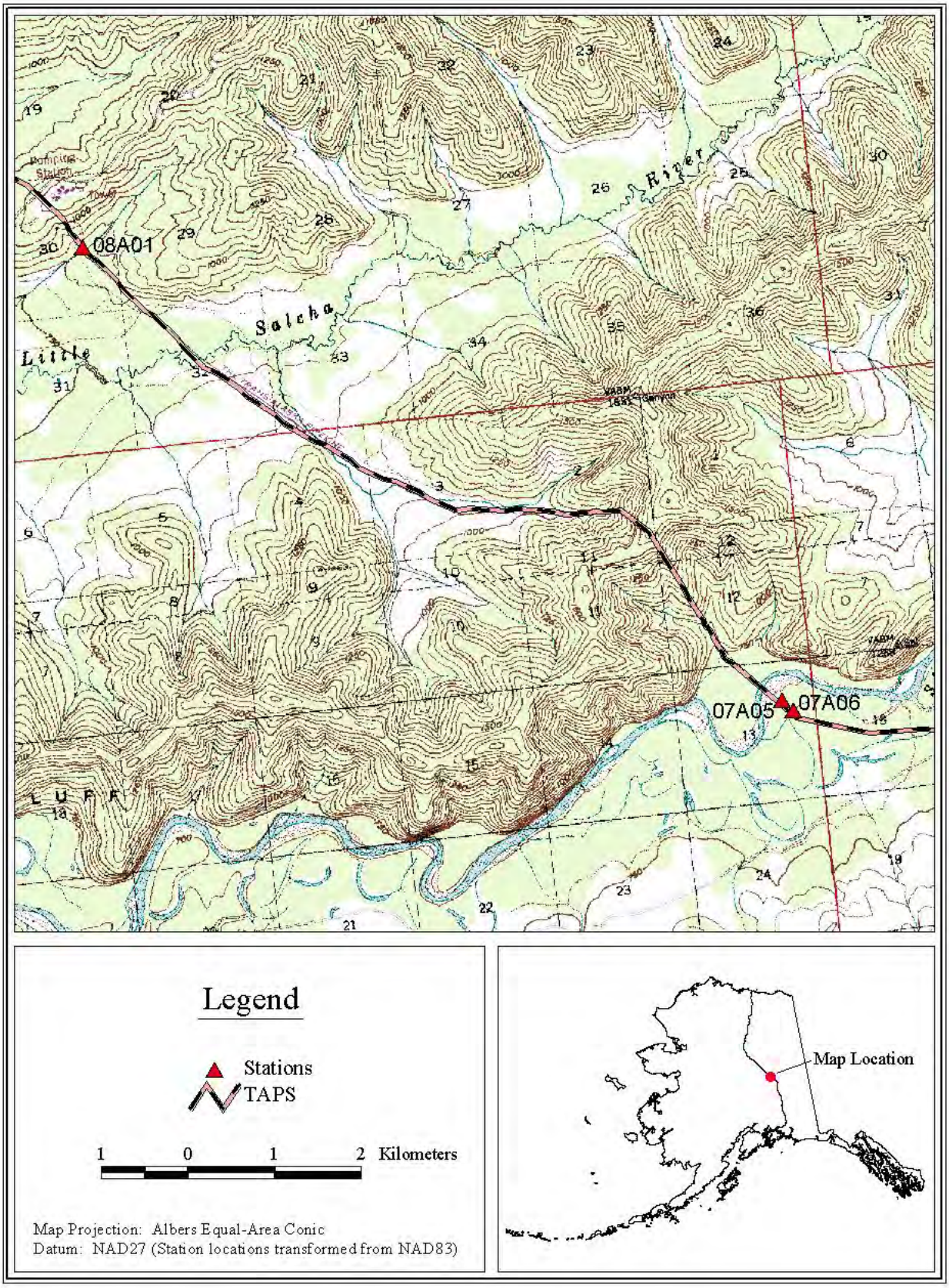
Appendix B16.-Station 07A11.



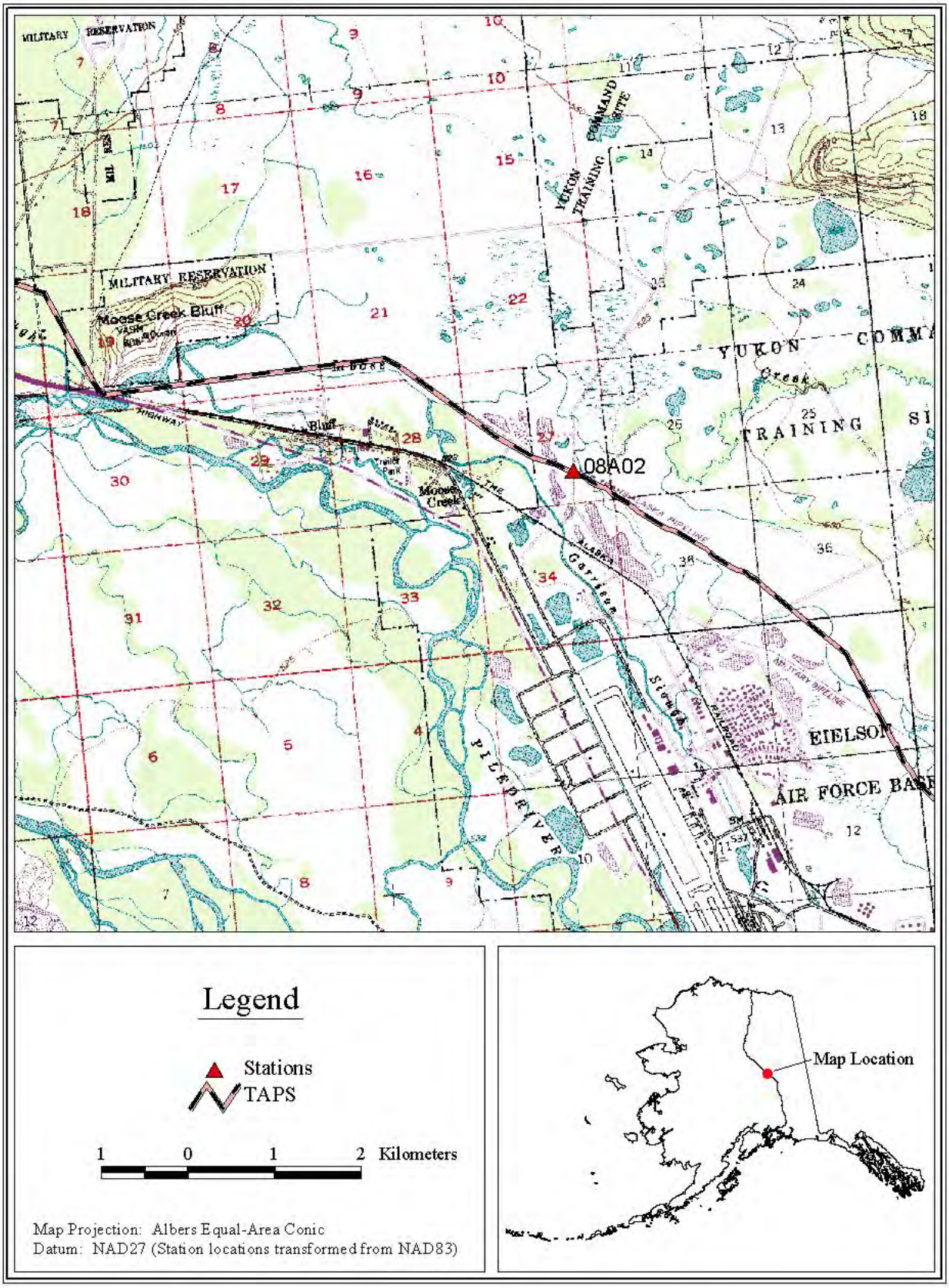
Appendix B17.-Stations 07A07, 07A08, 07A09, and 07A10.



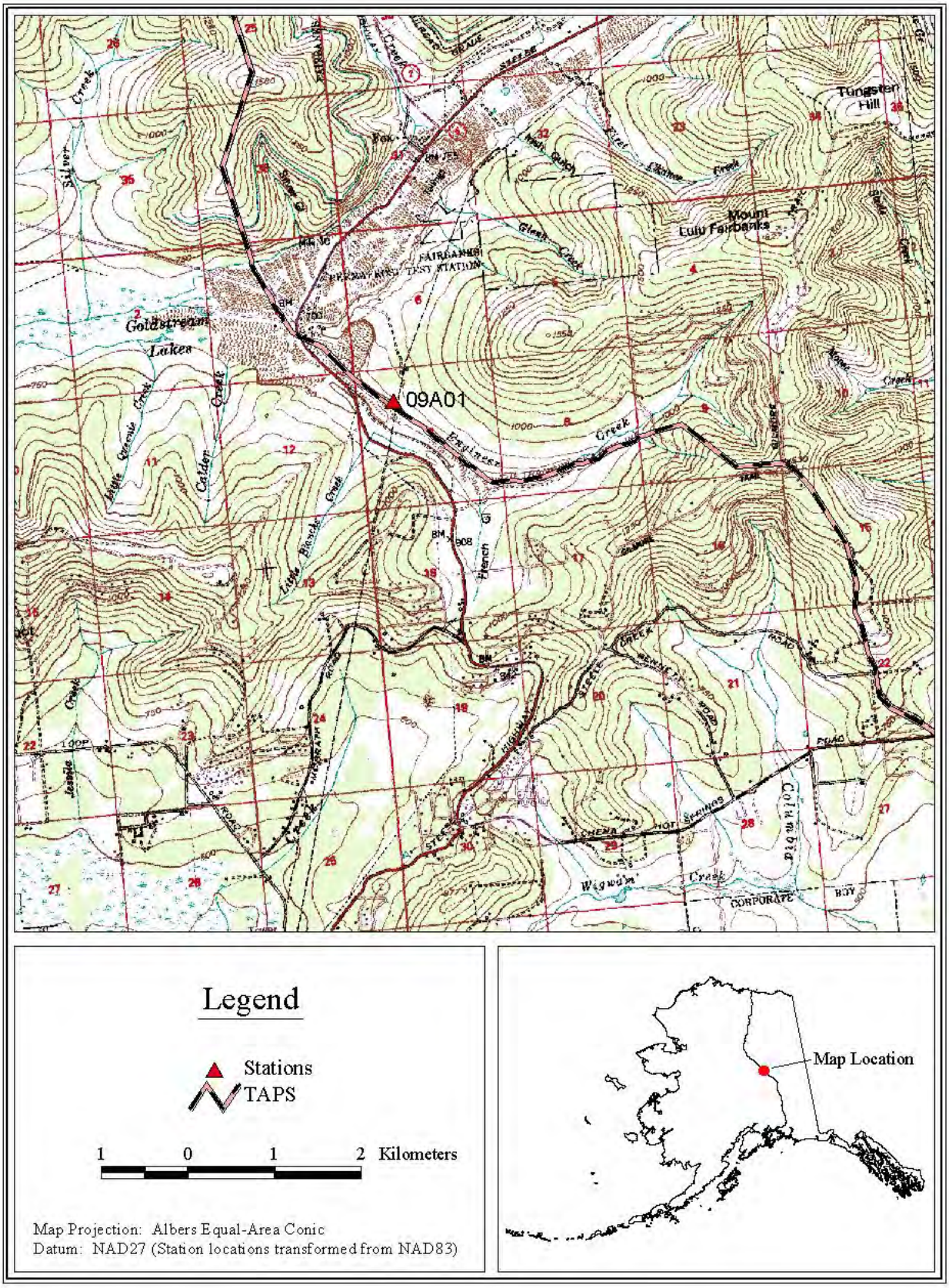
Appendix B18.-Stations 07A05, 07A06, and 08A01.



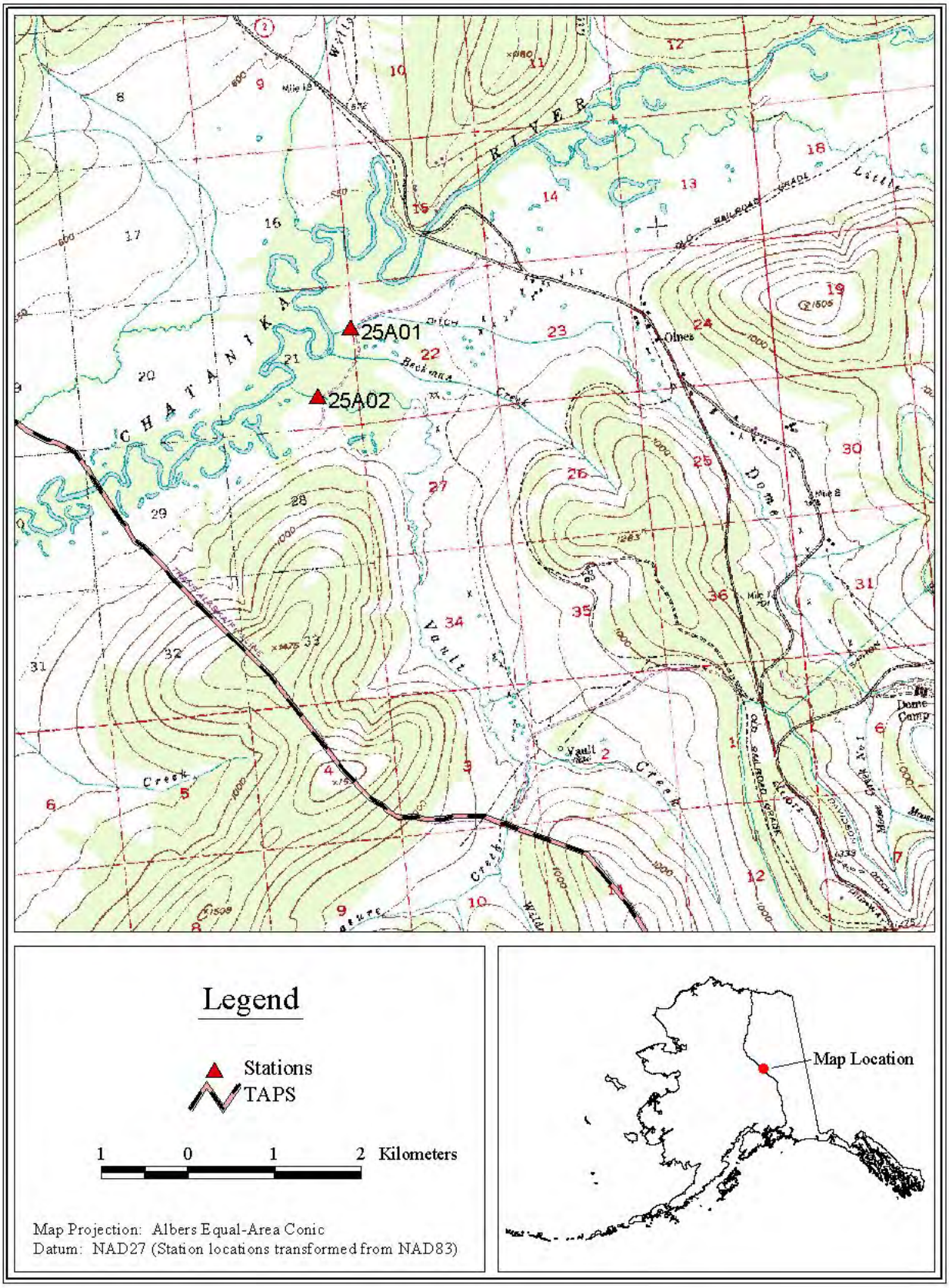
Appendix B19.-Station 08A02.



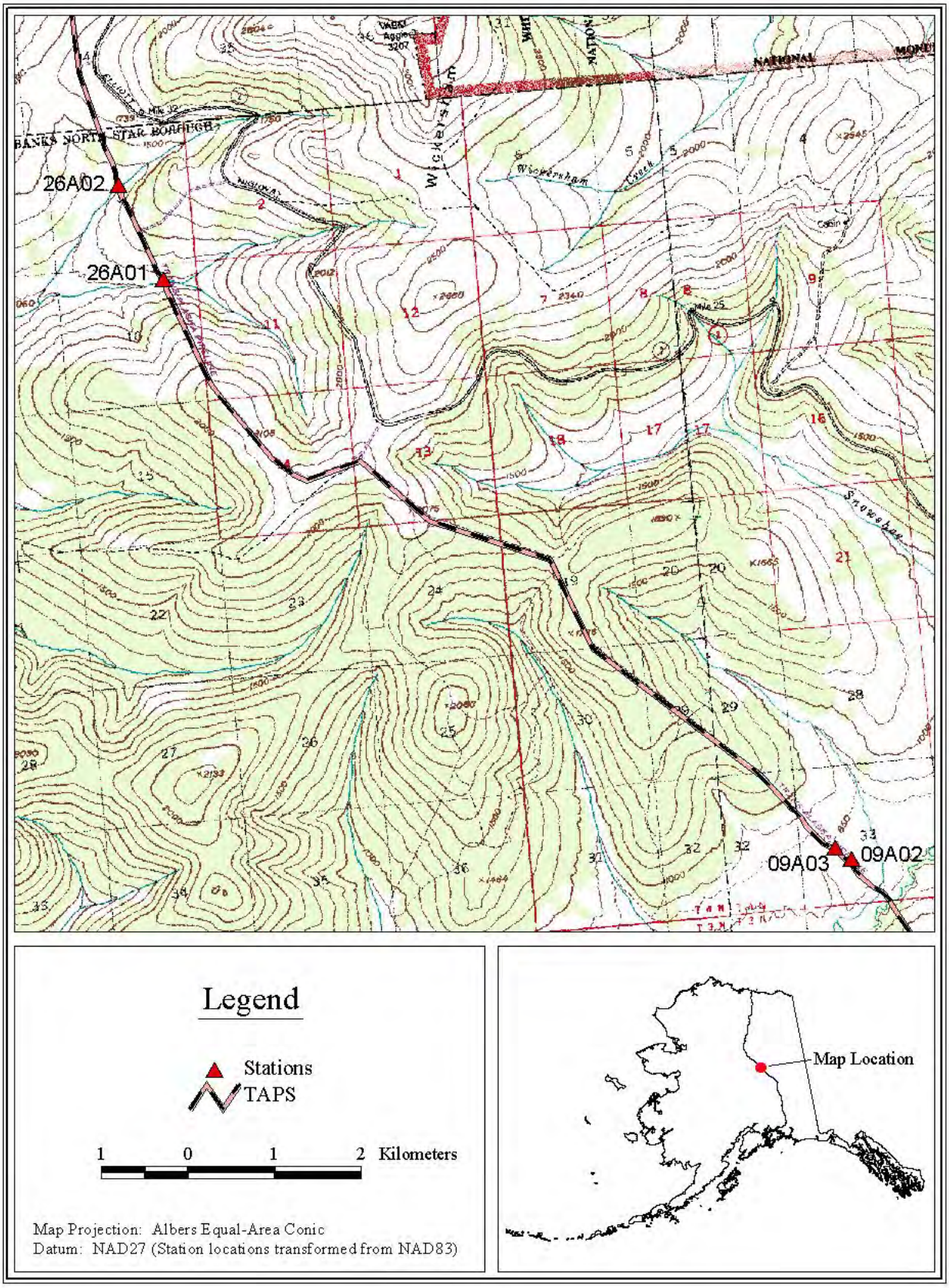
Appendix B20.-Station 09A01.



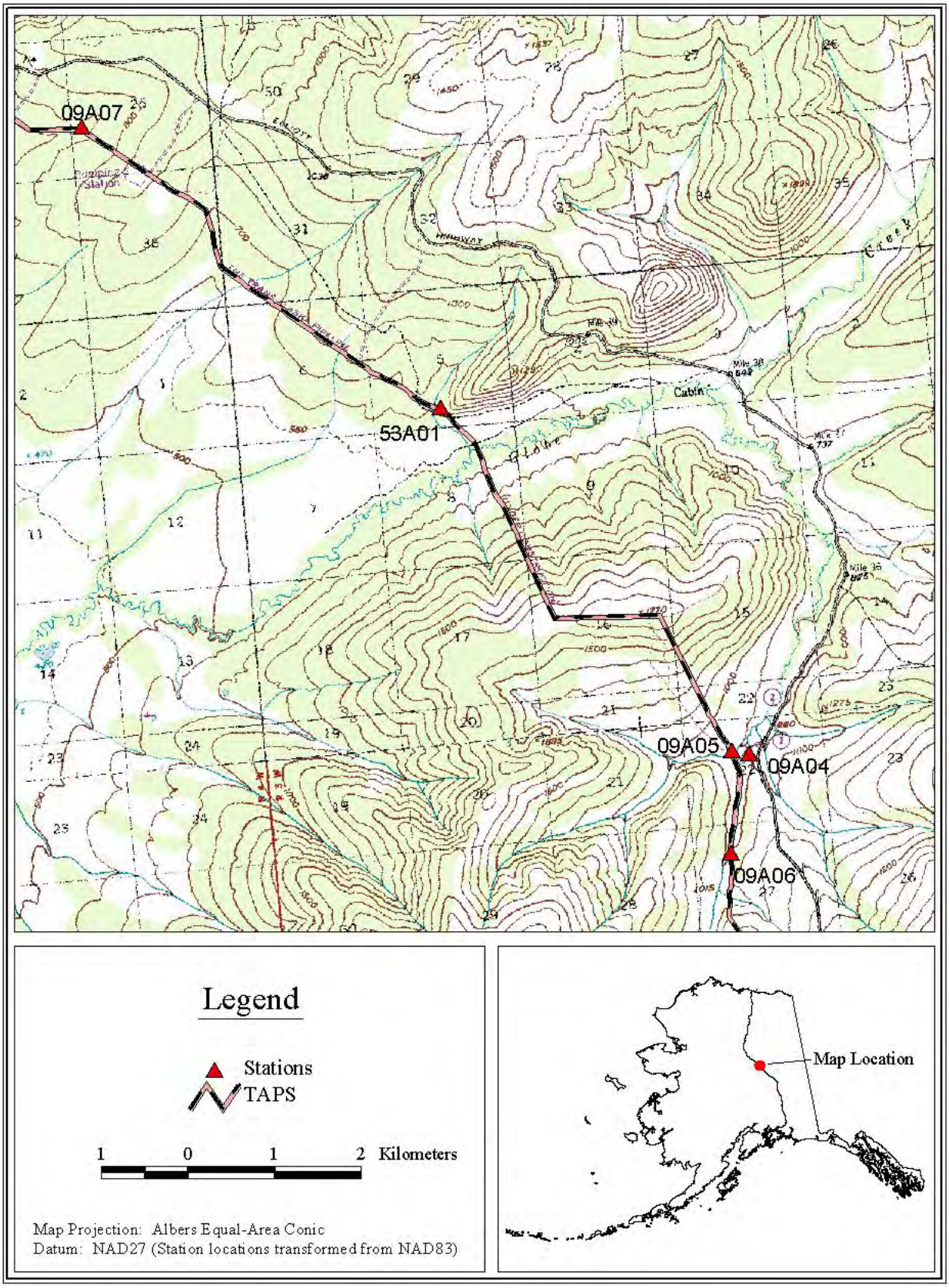
Appendix B21.-Stations 25A01 and 25A02.



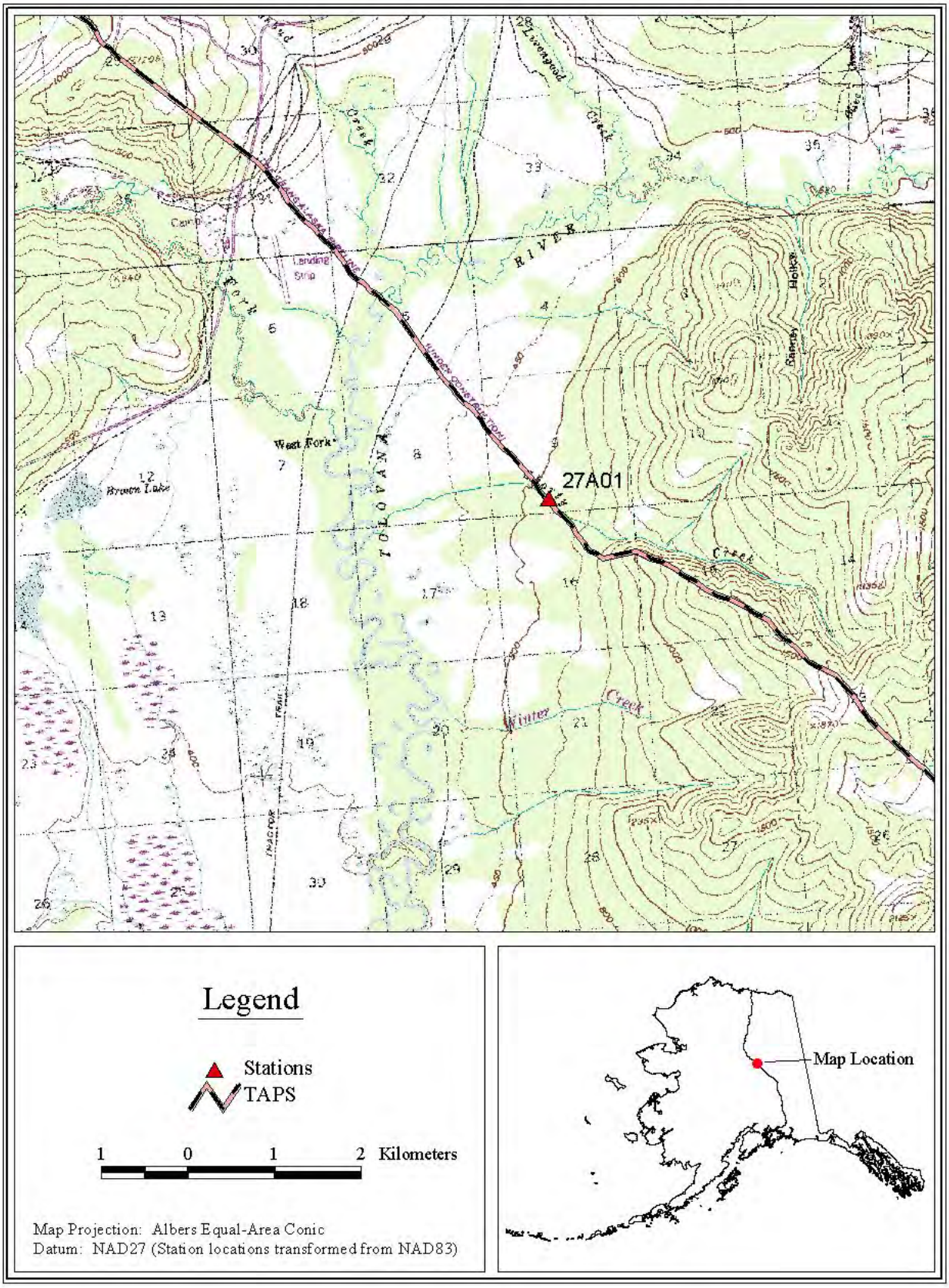
Appendix B22.-Stations 09A02, 09A03, 26A01, and 26A02.



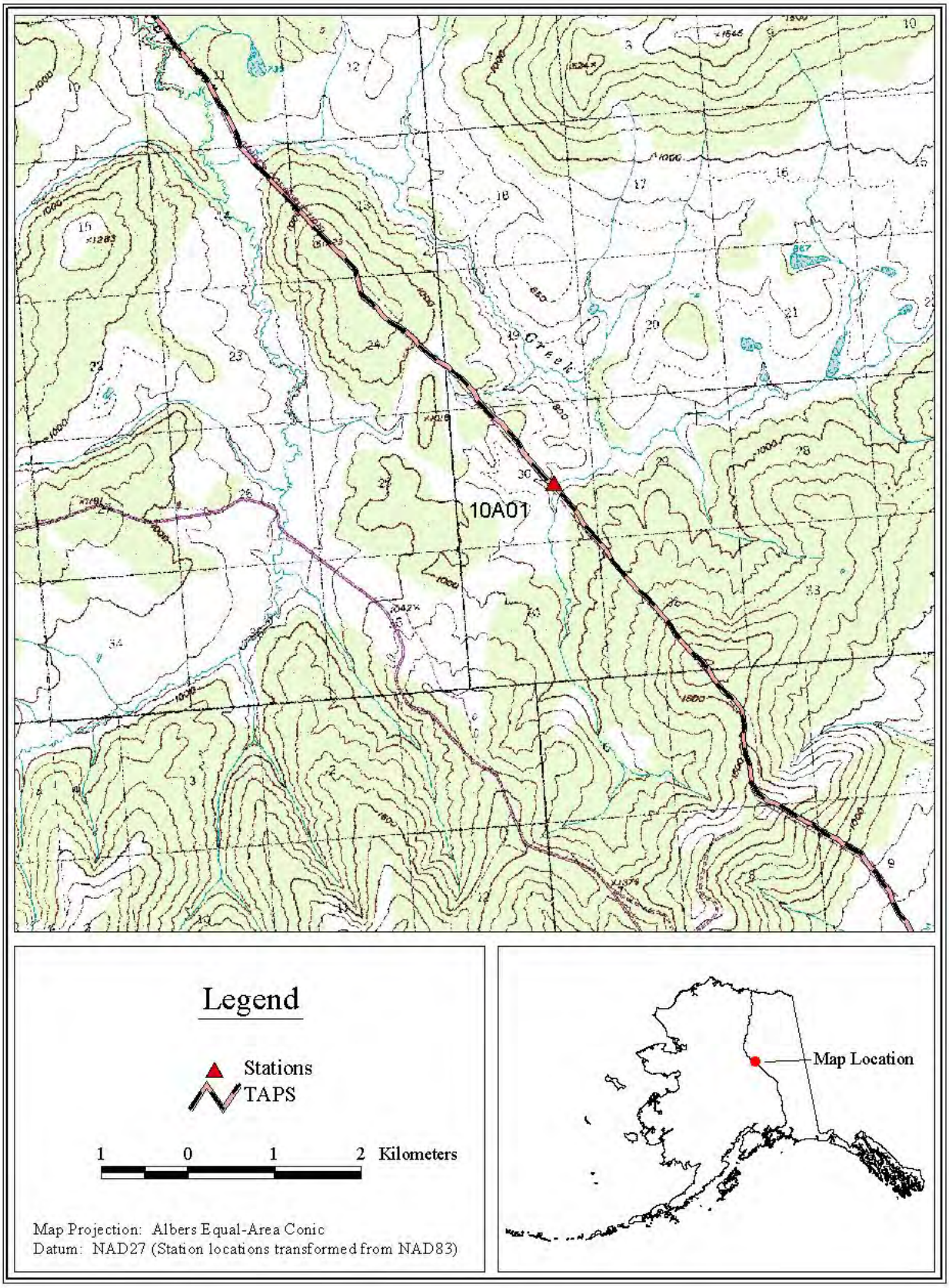
Appendix B23.-Stations 09A04, 09A05, 09A06, 09A07, and 53A01.



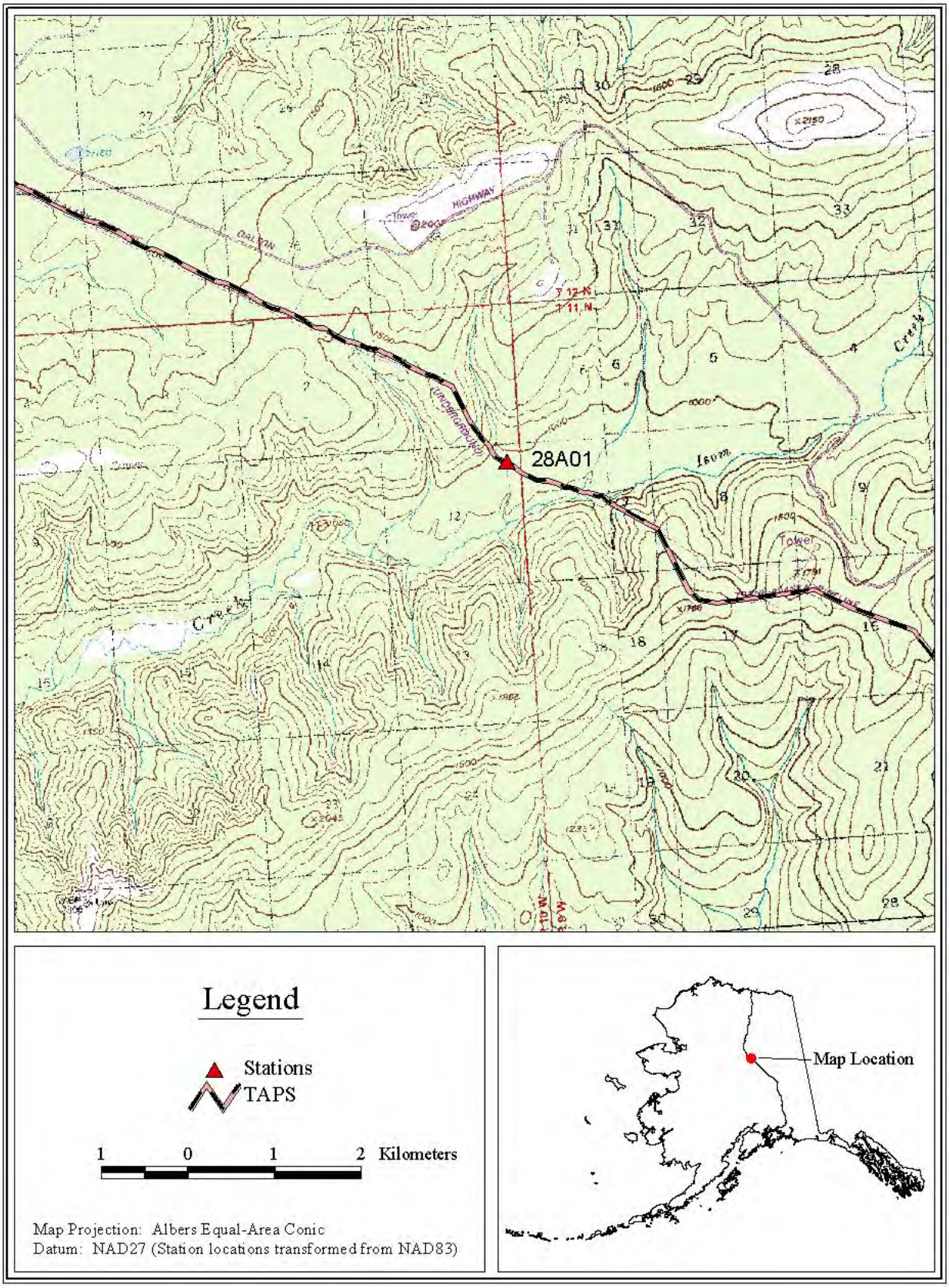
Appendix B24.-Station 27A01.



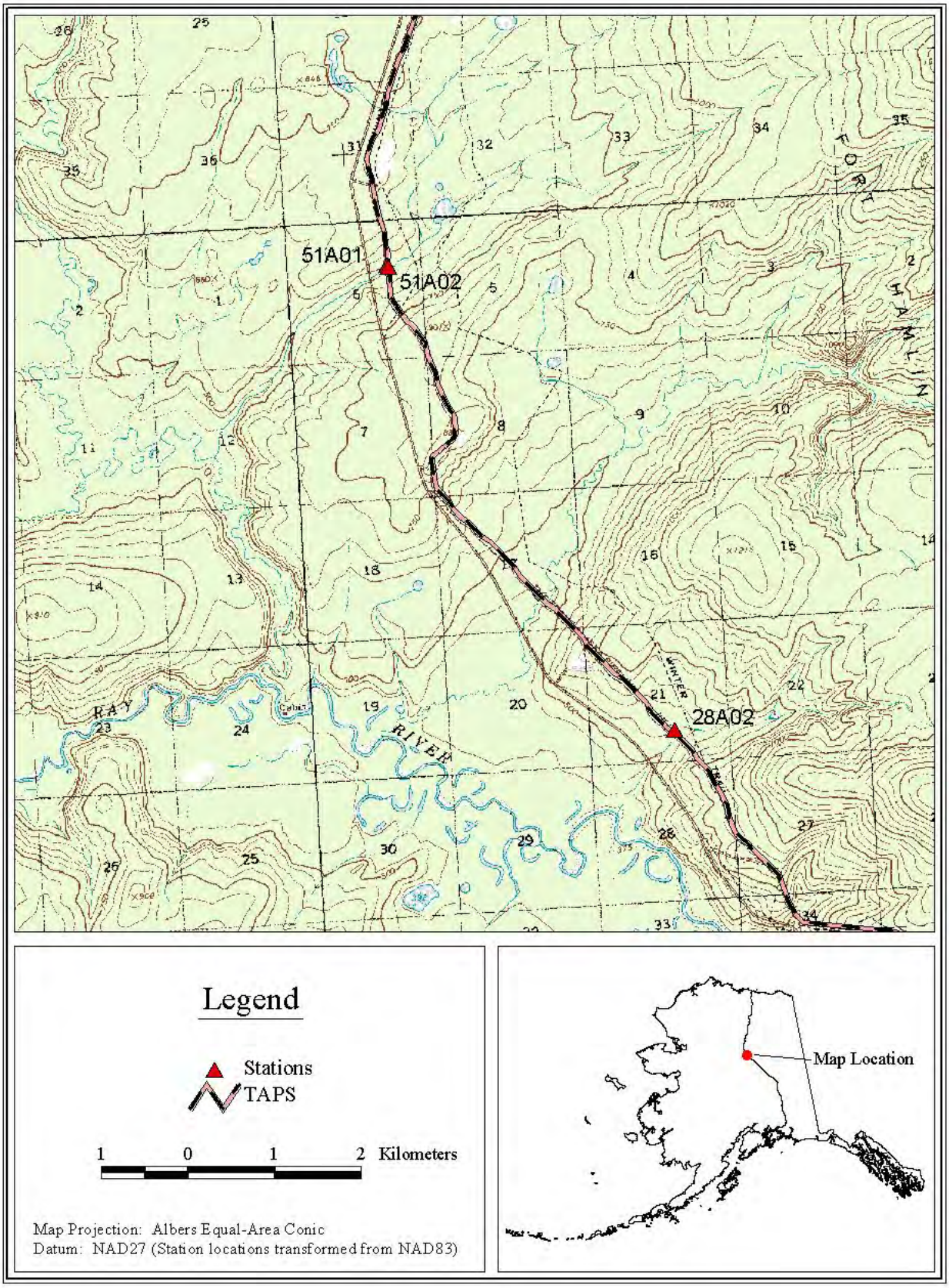
Appendix B25.-Station 10A01.



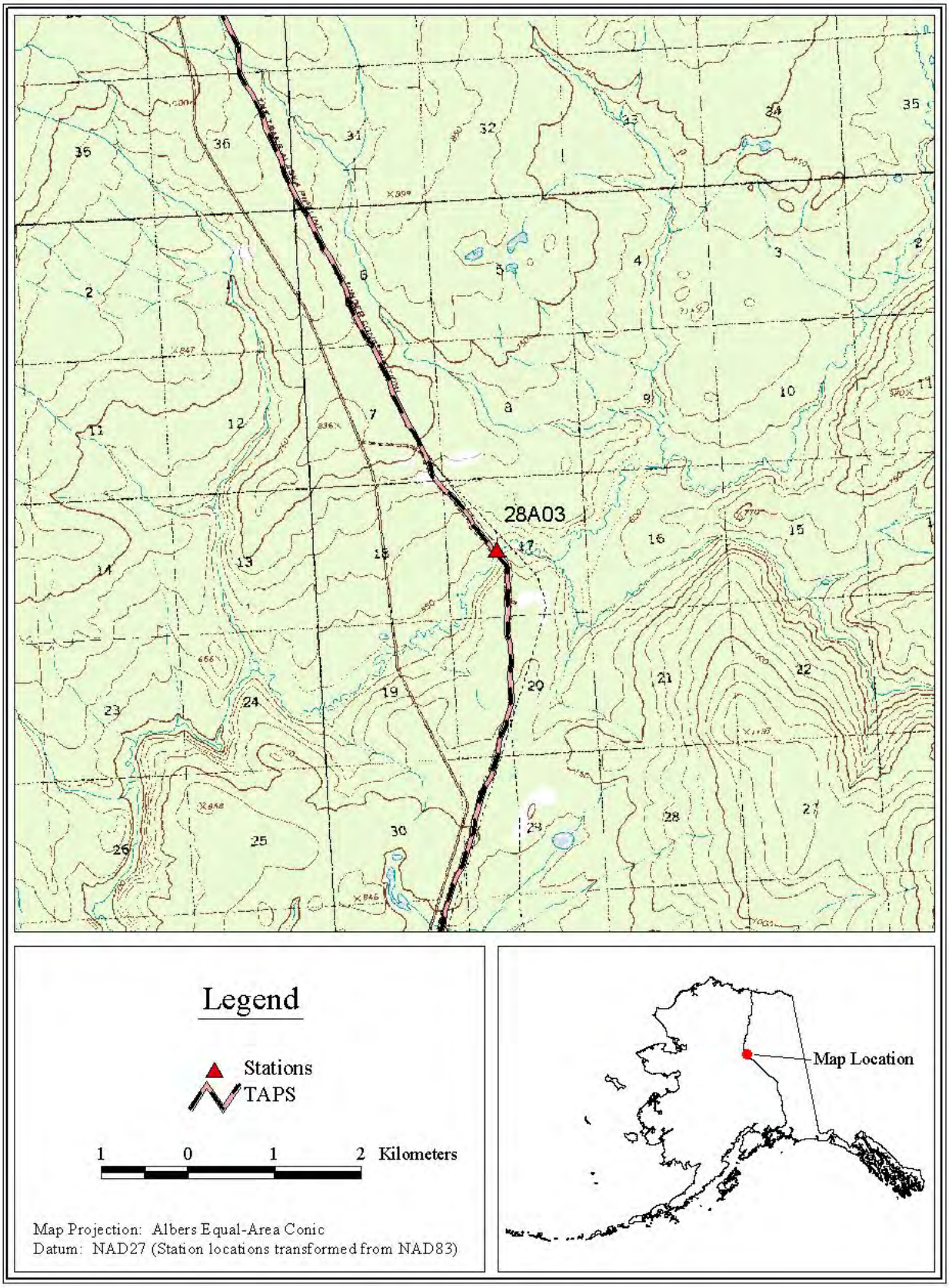
Appendix B26.-Station 28A01.



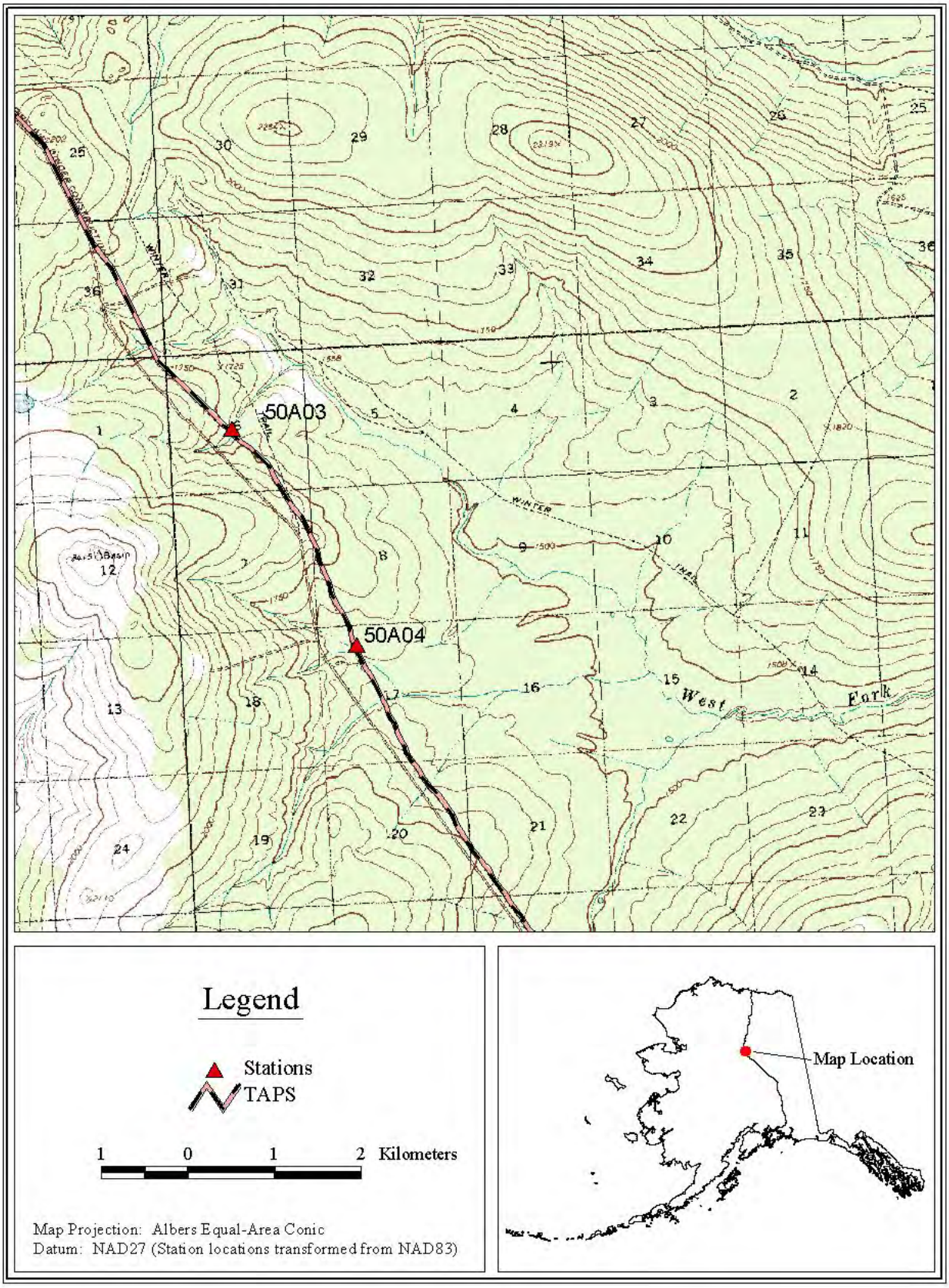
Appendix B27.-Stations 28A02, 51A01, and 51A02.



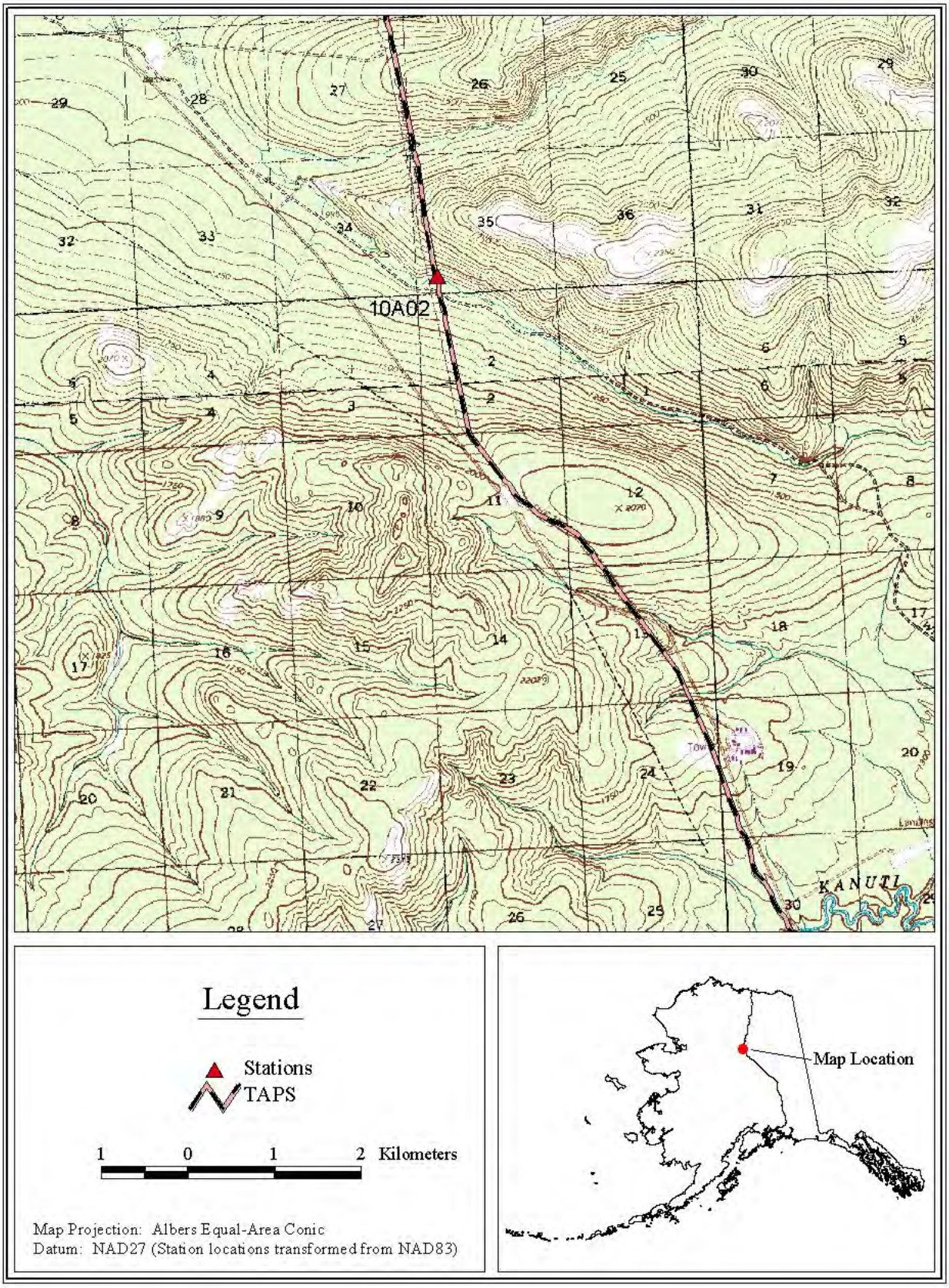
Appendix B28.-Station 28A03.



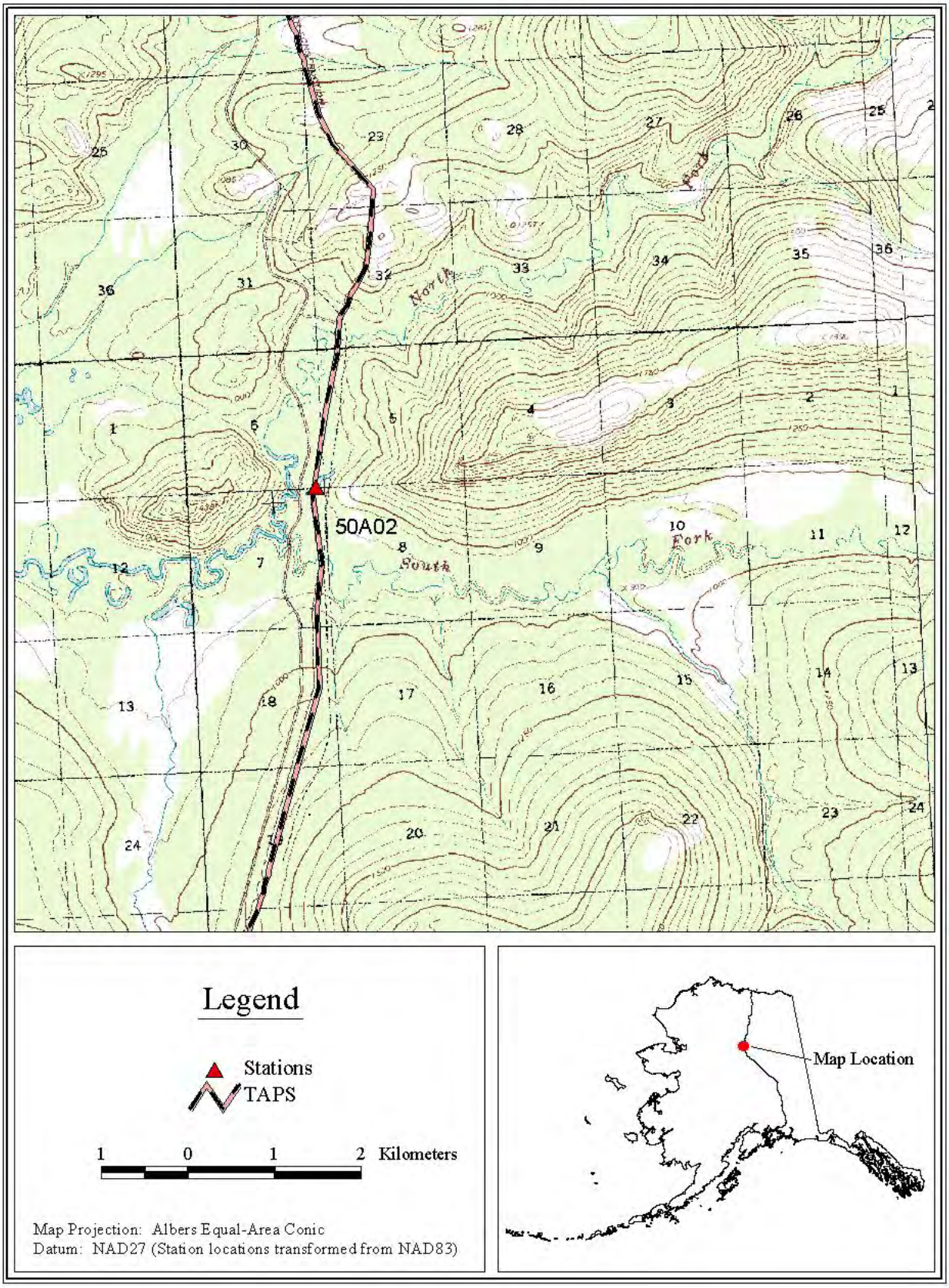
Appendix B29.-Stations 50A03 and 50A04.



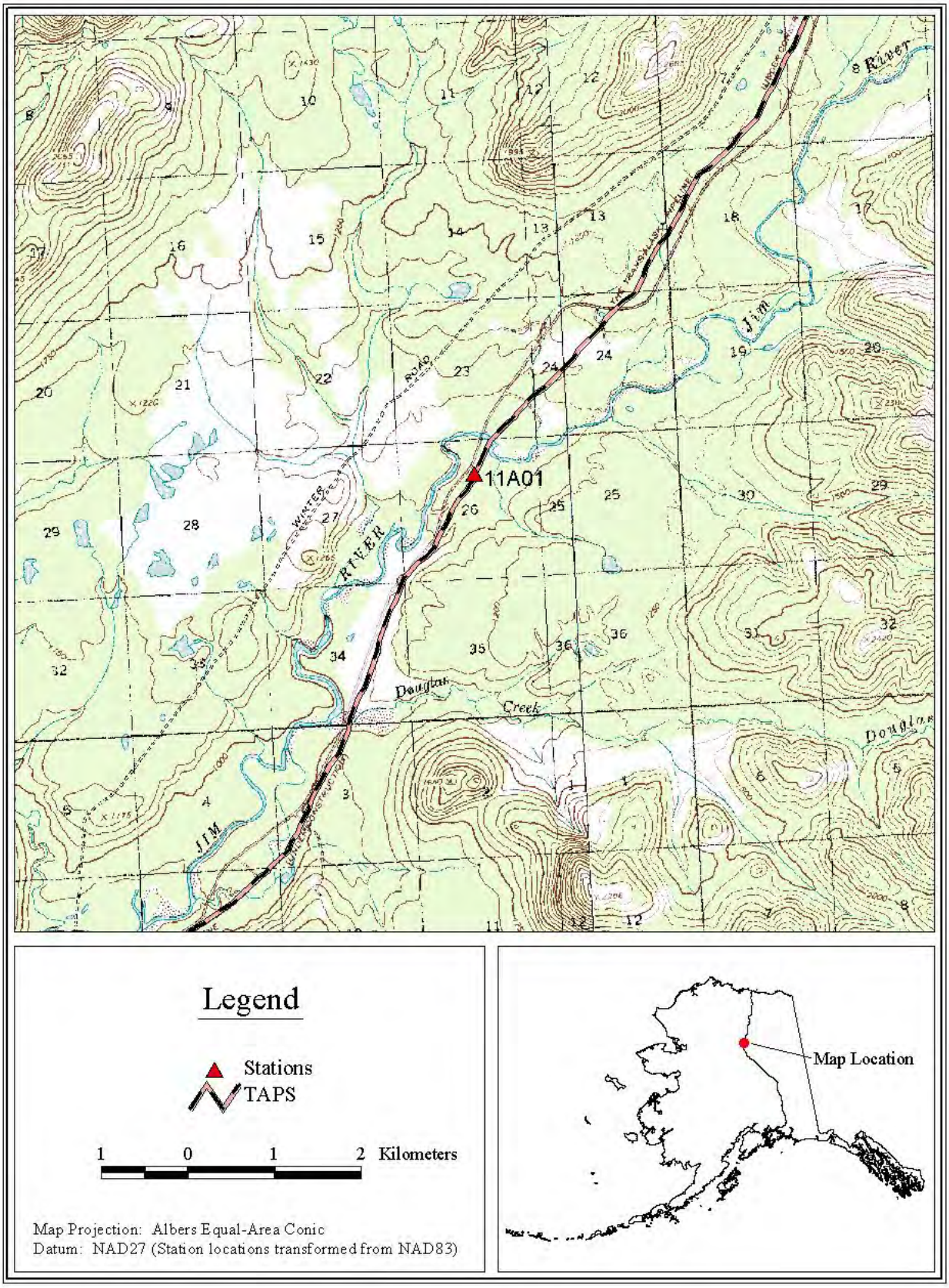
Appendix B30.-Station 10A02.



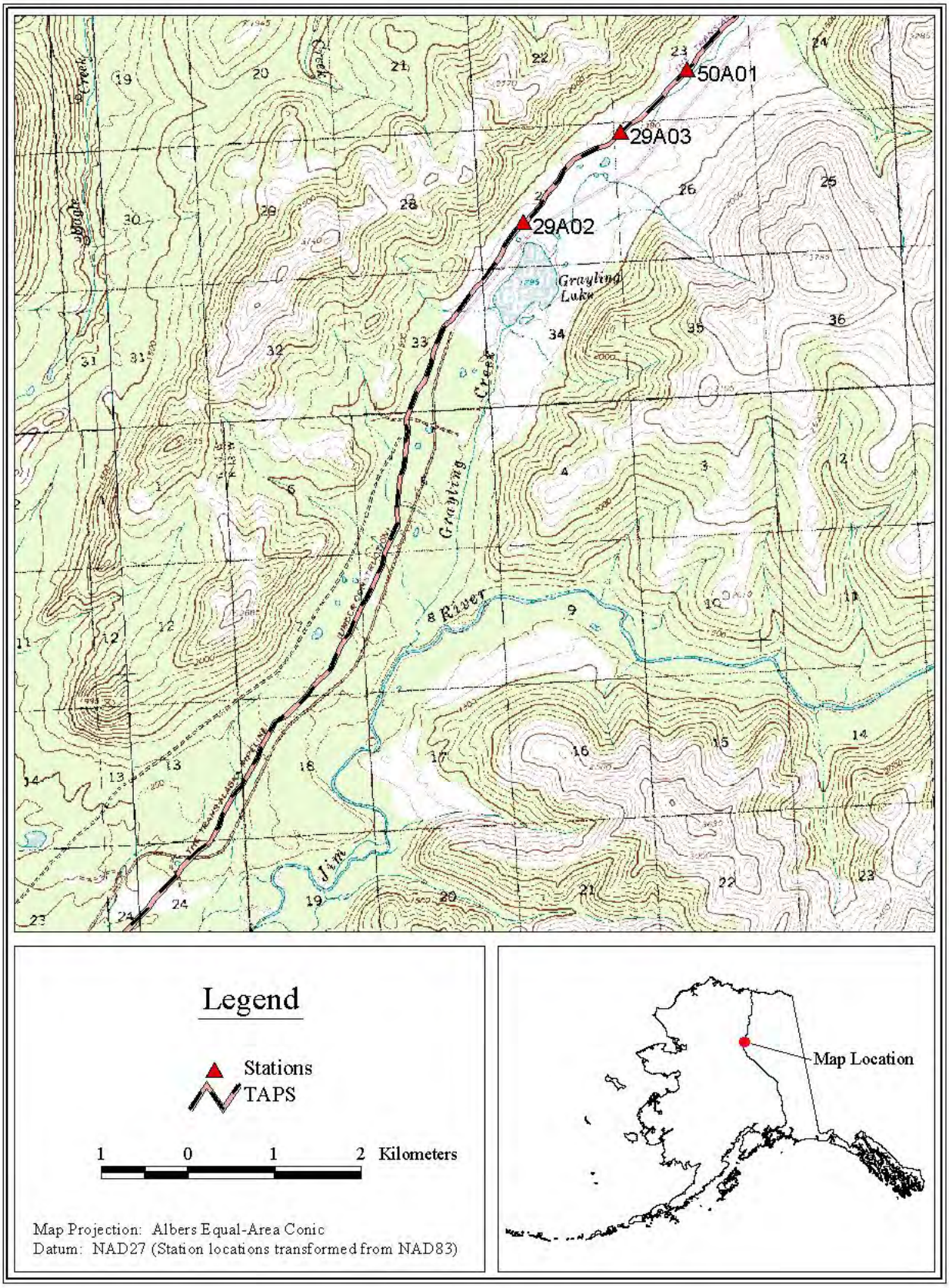
Appendix B31.-Station 50A02.



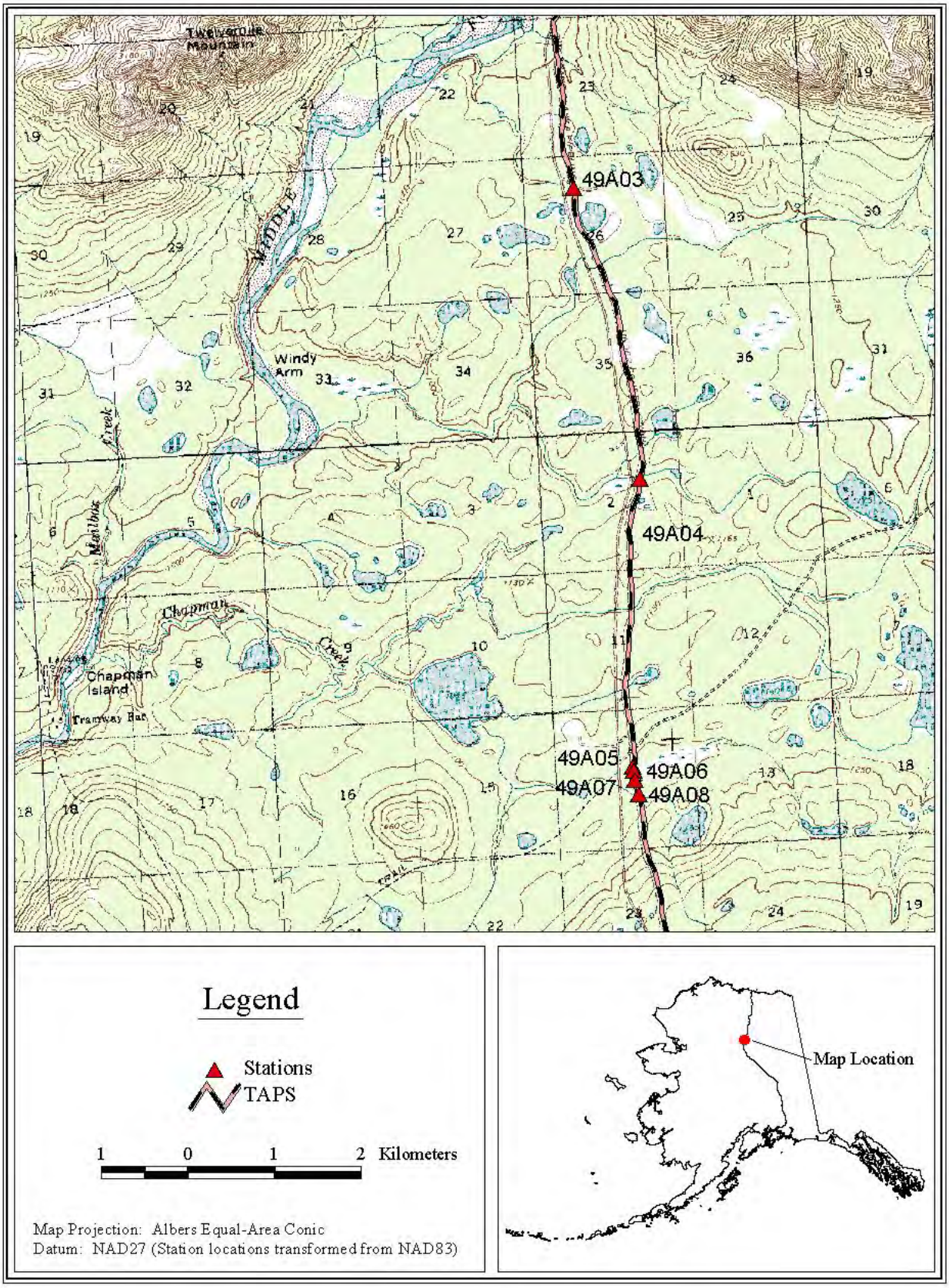
Appendix B32.-Station 11A01.



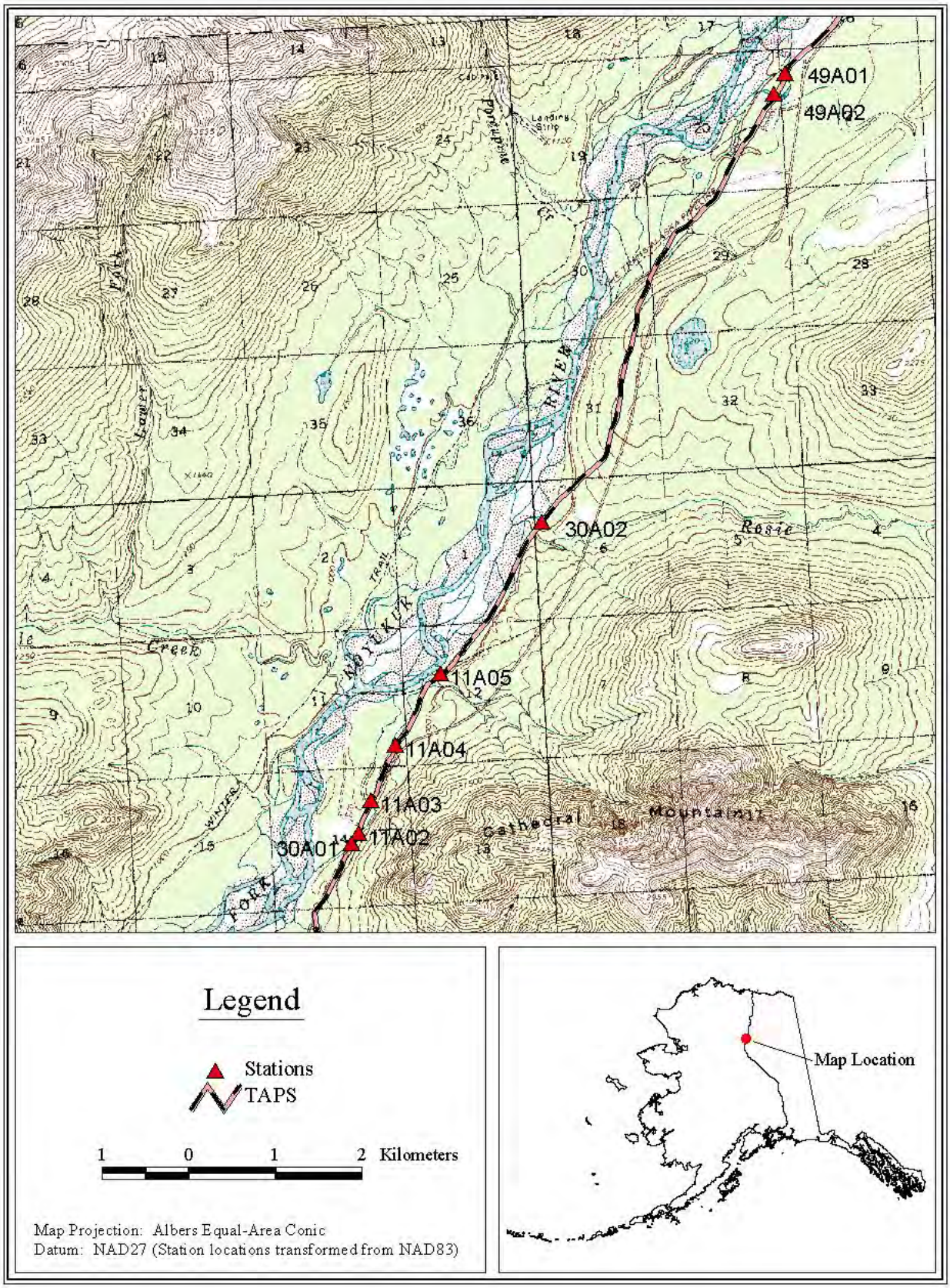
Appendix B33.-Stations 29A02, 29A03, and 50A01.



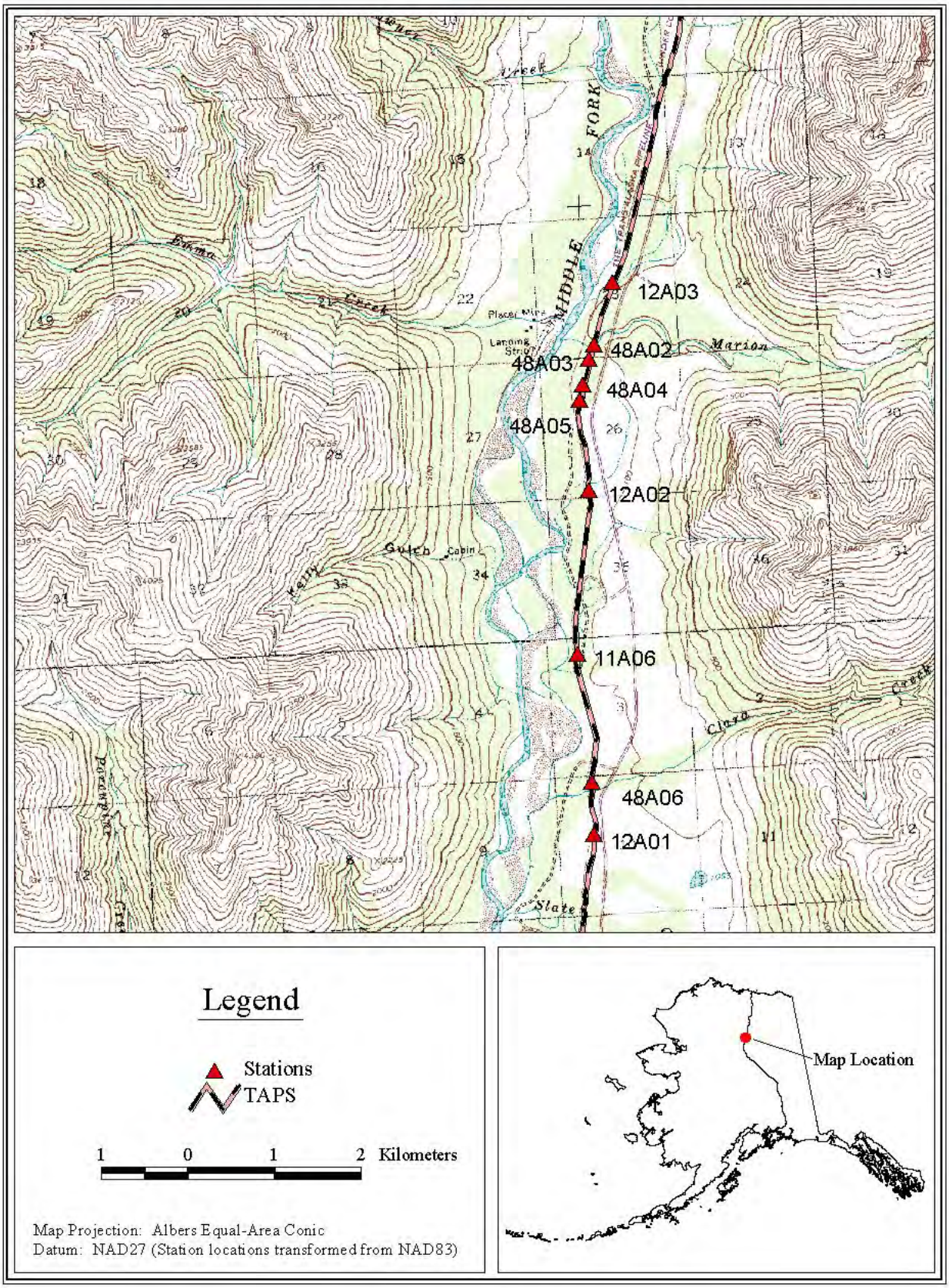
Appendix B34.-Stations 49A03, 49A04, 49A05, 49A06, 49A07, and 49A08.



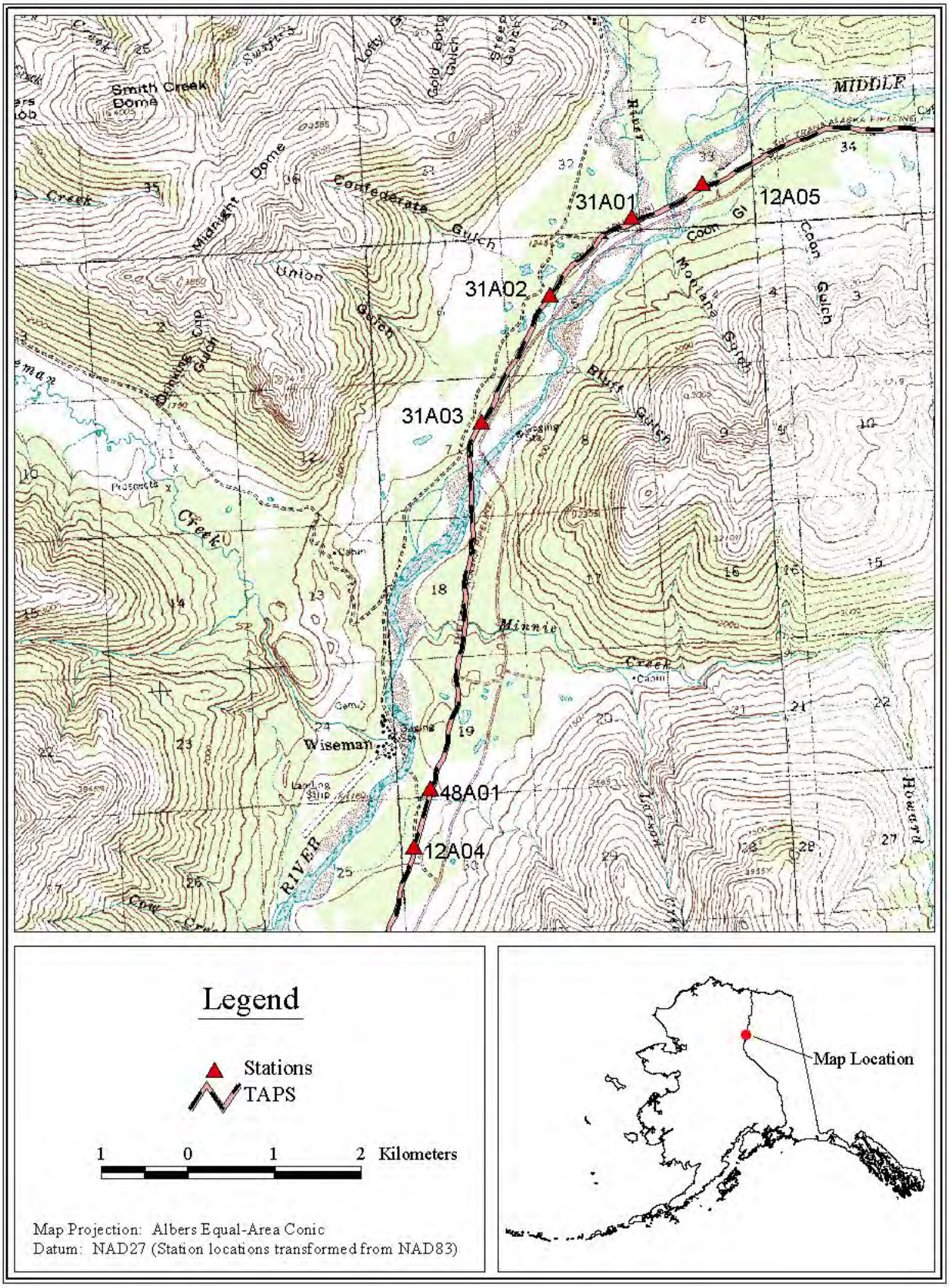
Appendix B35.-Stations 11A02, 11A03, 11A04, 11A05, 30A01, 30A02, 49A01, and 49A02.



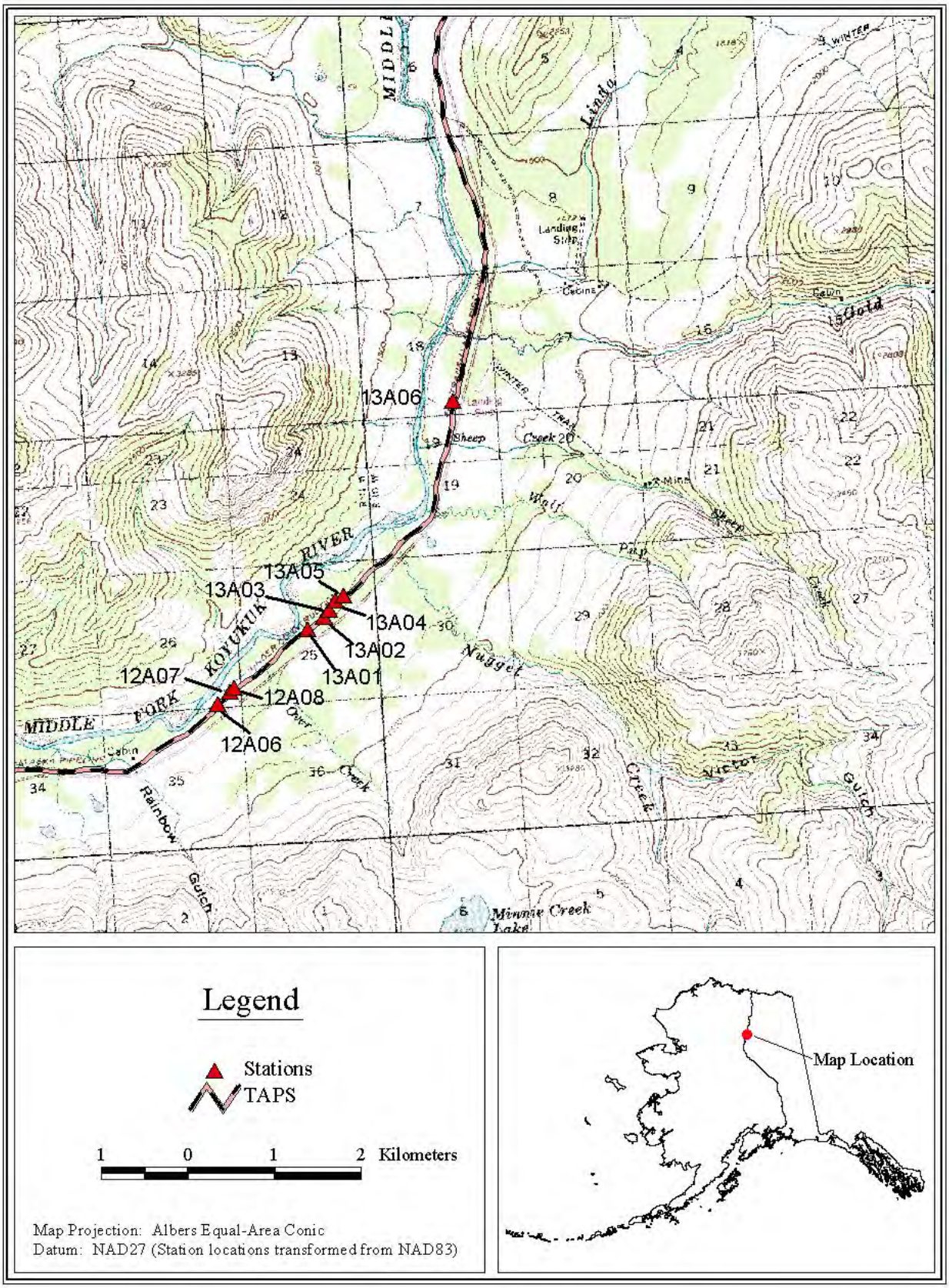
Appendix B36.-Stations 11A06, 12A01, 12A02, 12A03, 48A02, 48A03, 48A04, 48A05, and 48A06.



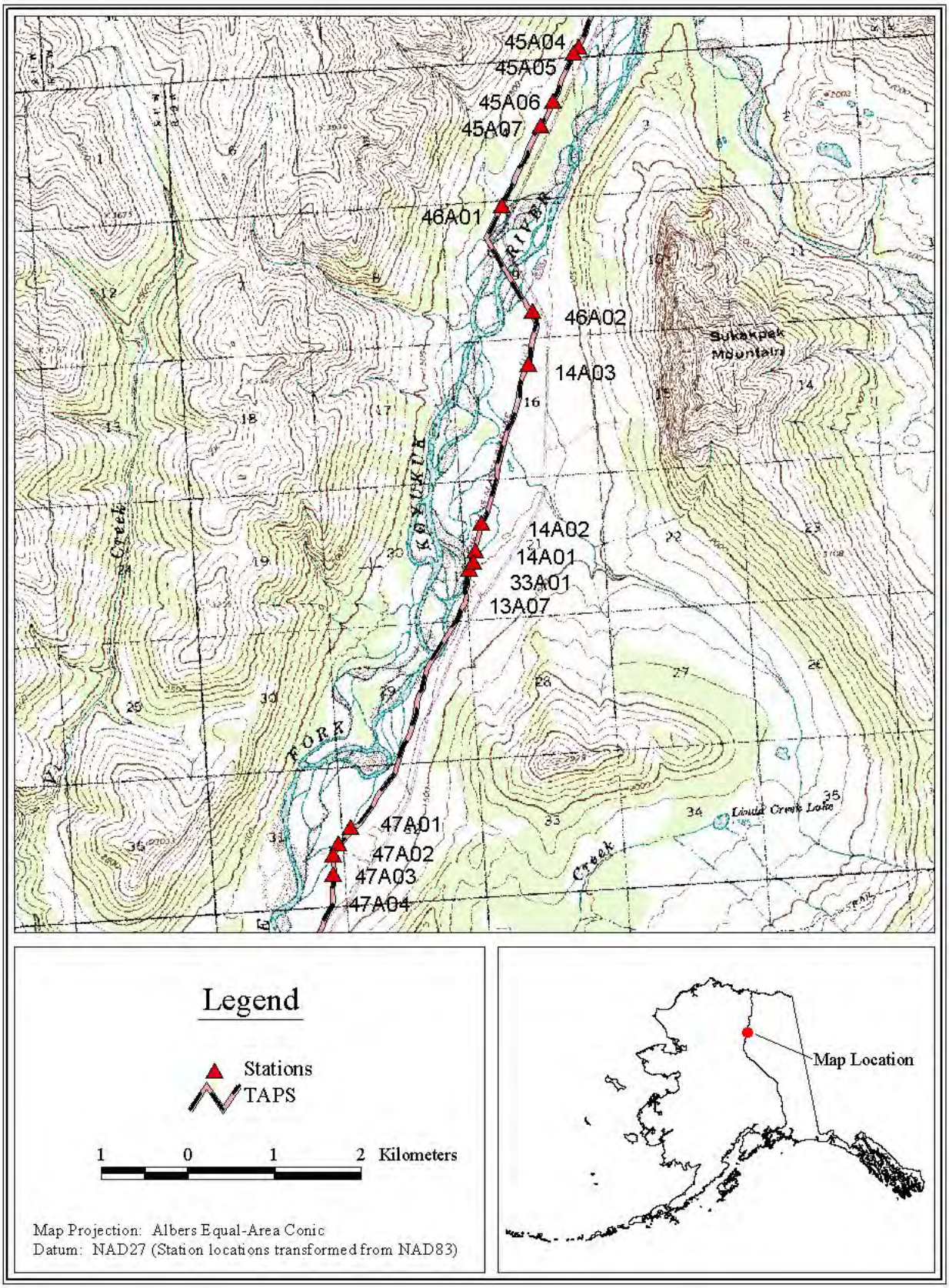
Appendix B37.-Stations 12A04, 12A05, 31A01, 31A02, 31A03, and 48A01.



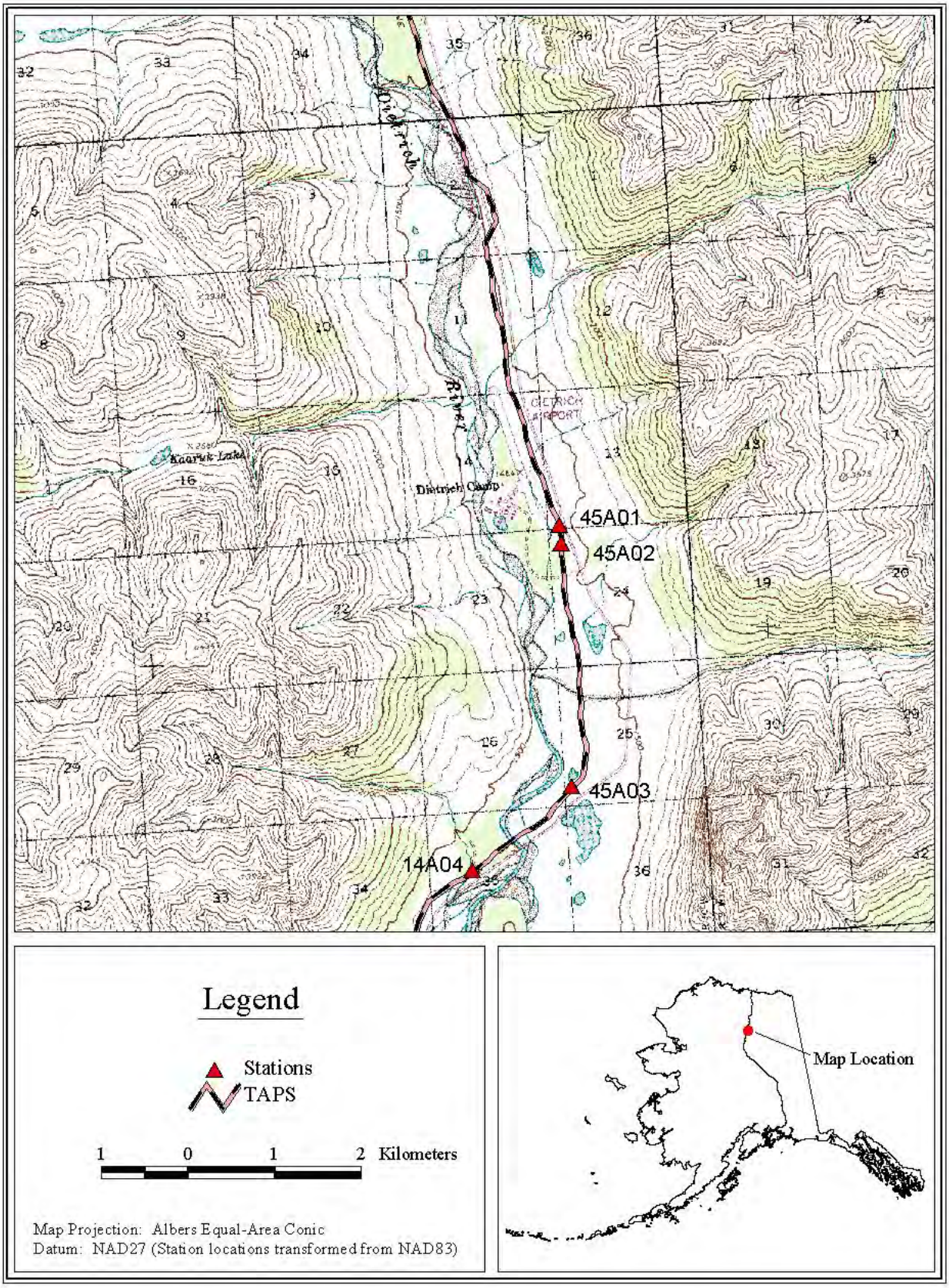
Appendix B38.-Stations 12A06, 12A07, 12A08, 13A01, 13A02, 13A03, 13A04, 13A05, and 13A06.



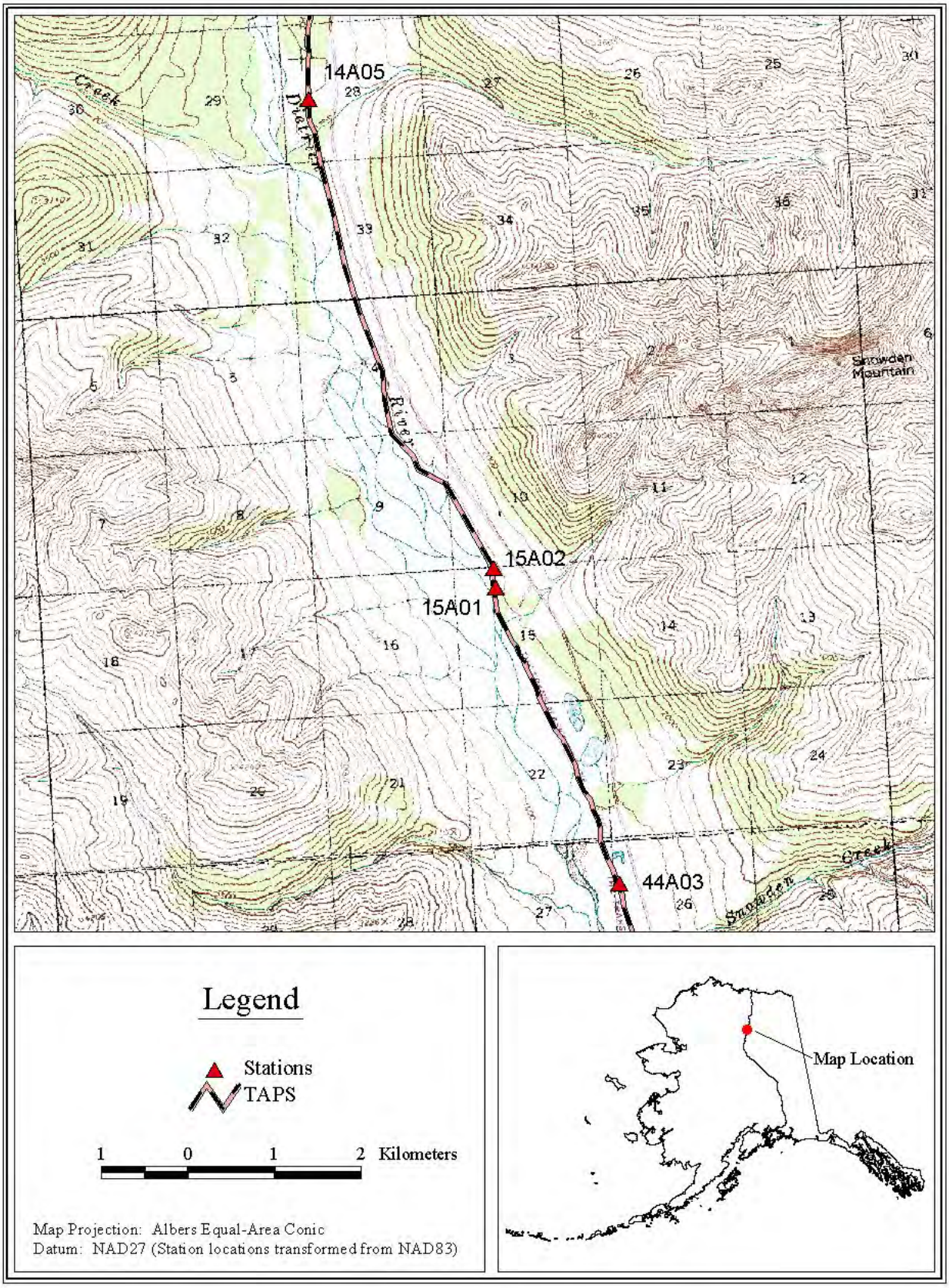
Appendix B39.-Stations 13A07, 14A01, 14A02, 14A03, 33A01, 45A04, 45A05, 45A06, 45A07, 46A01, 46A02, 47A01, 47A02, 47A03, and 47A04.



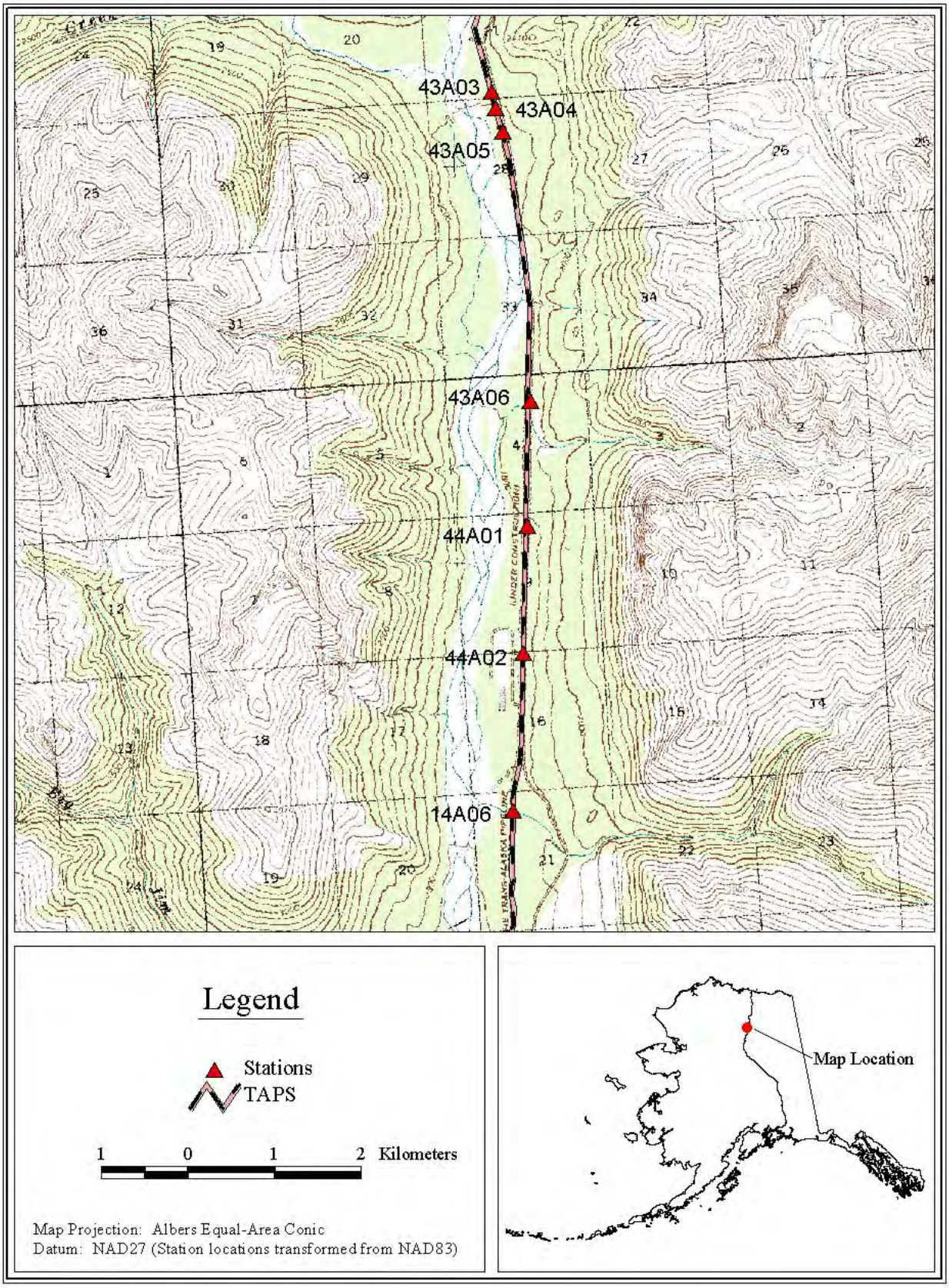
Appendix B40.-Stations 14A04, 45A01, 45A02, and 45A03.



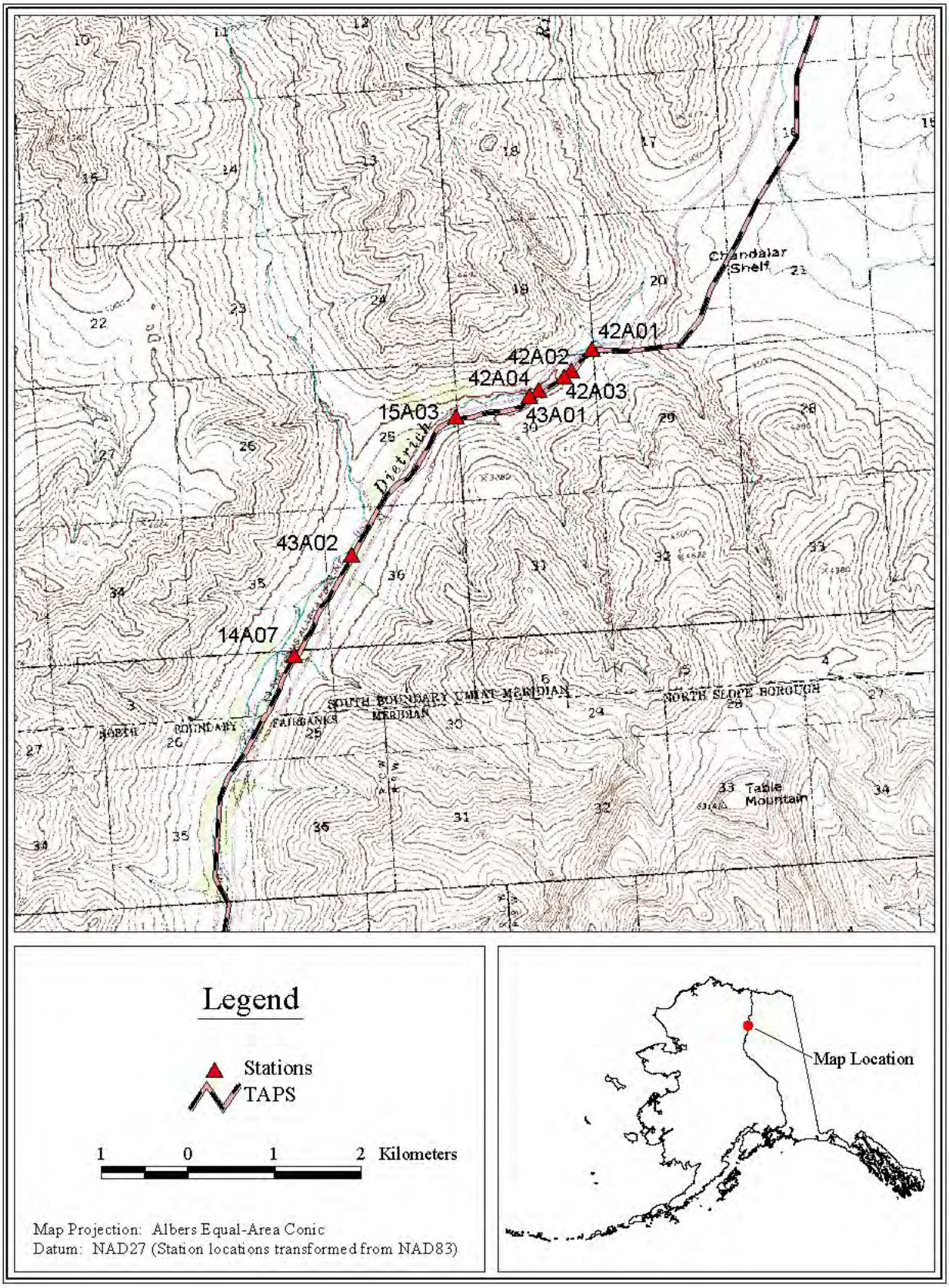
Appendix B41.-Stations 14A05, 15A01, 15A02, and 44A03.



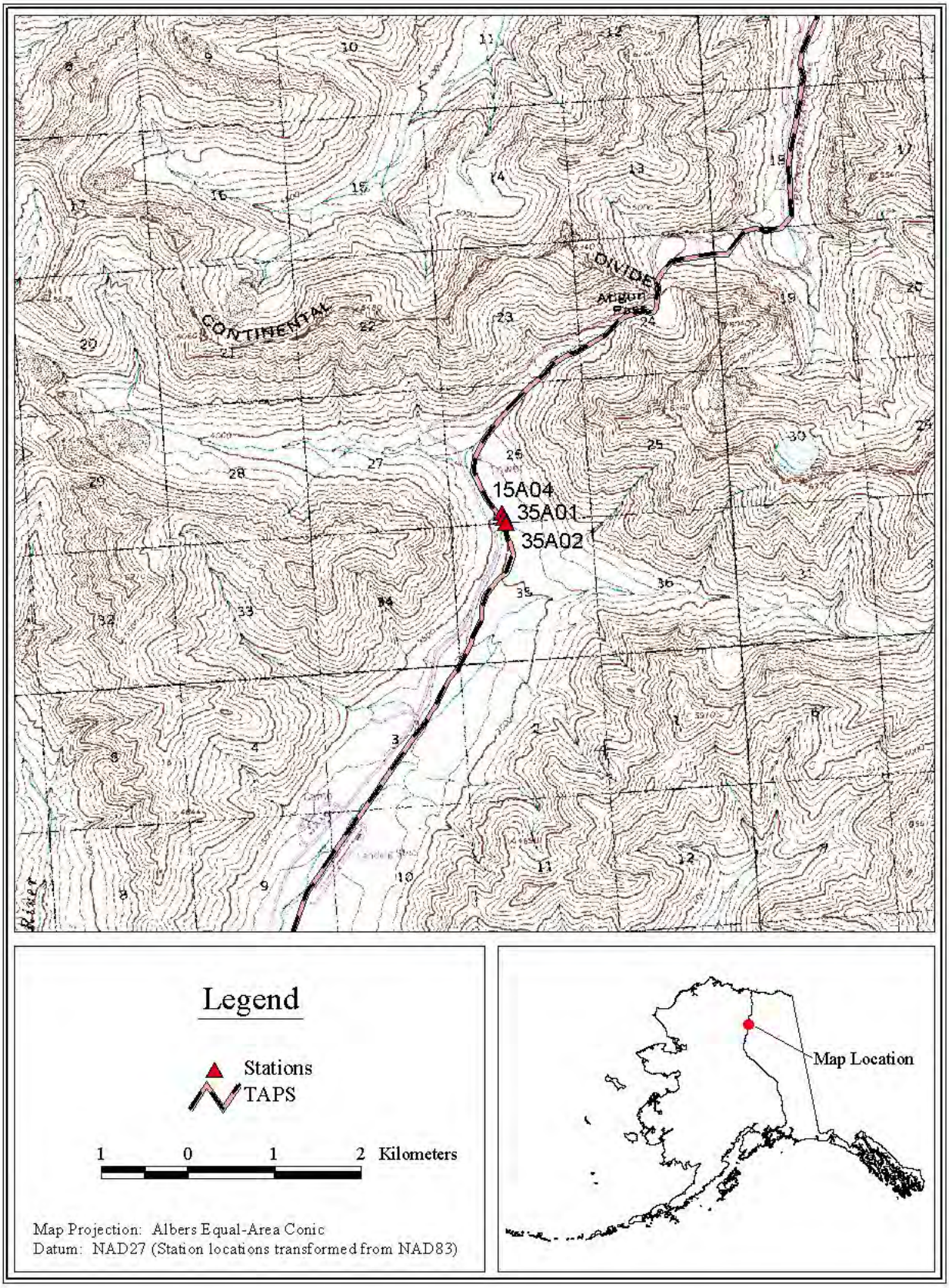
Appendix B42.-Stations 14A06, 43A03, 43A04, 43A05, 43A06, 44A01, and 44A02.



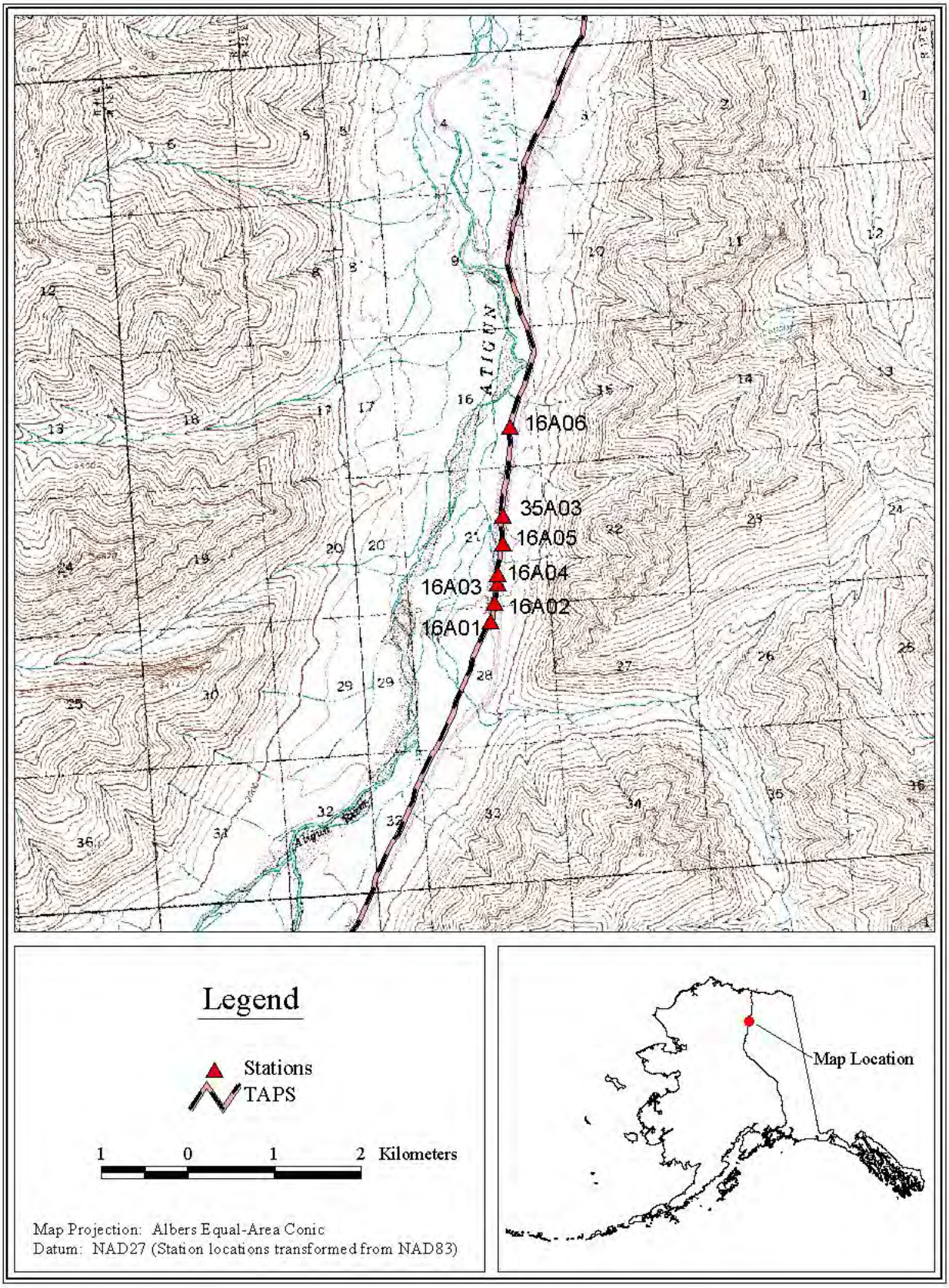
Appendix B43.-Stations 14A07, 15A03, 42A01, 42A02, 42A03, 42A04, 43A01, and 43A02.



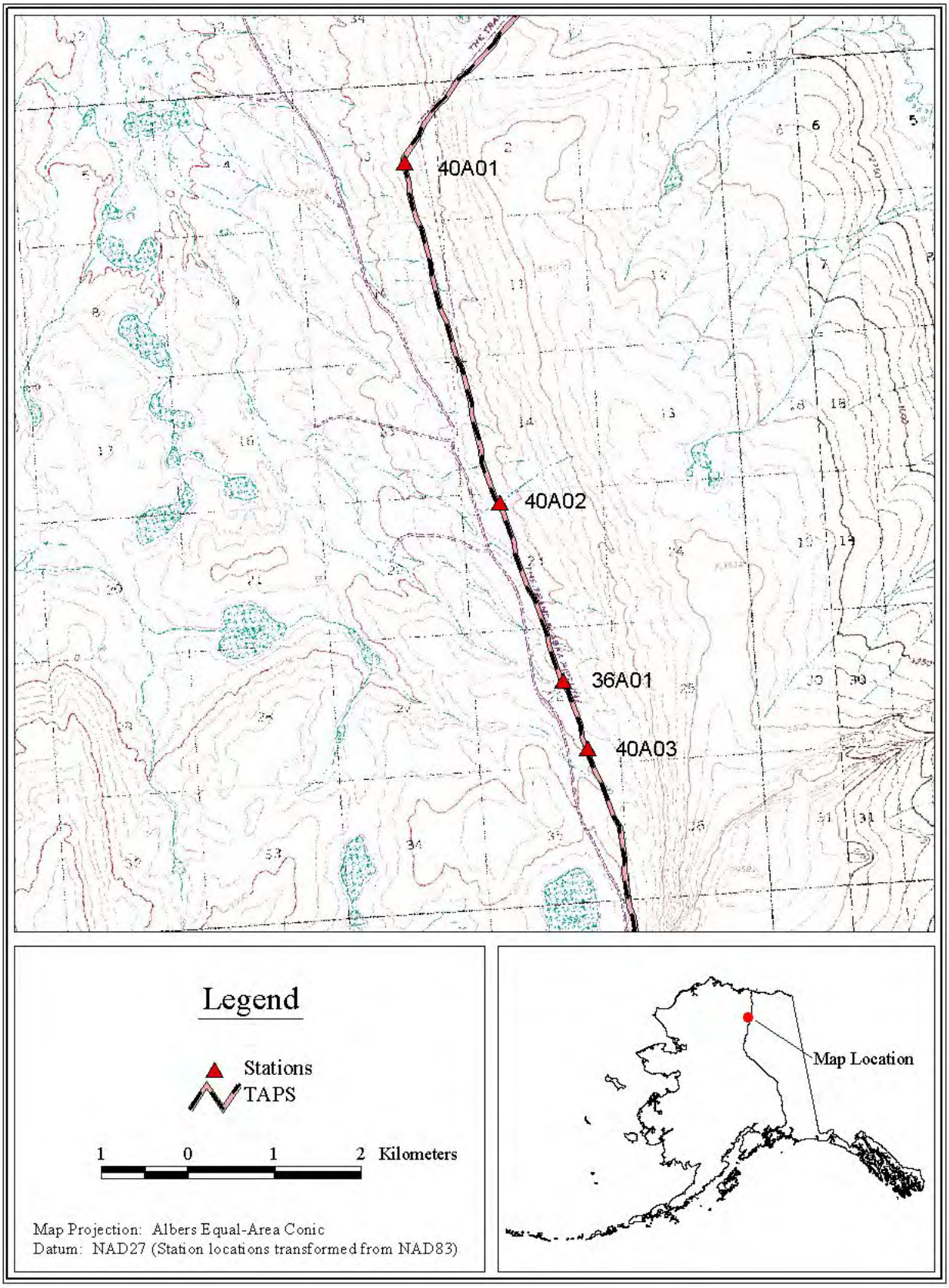
Appendix B44.-Stations 15A04, 35A01, and 35A02.



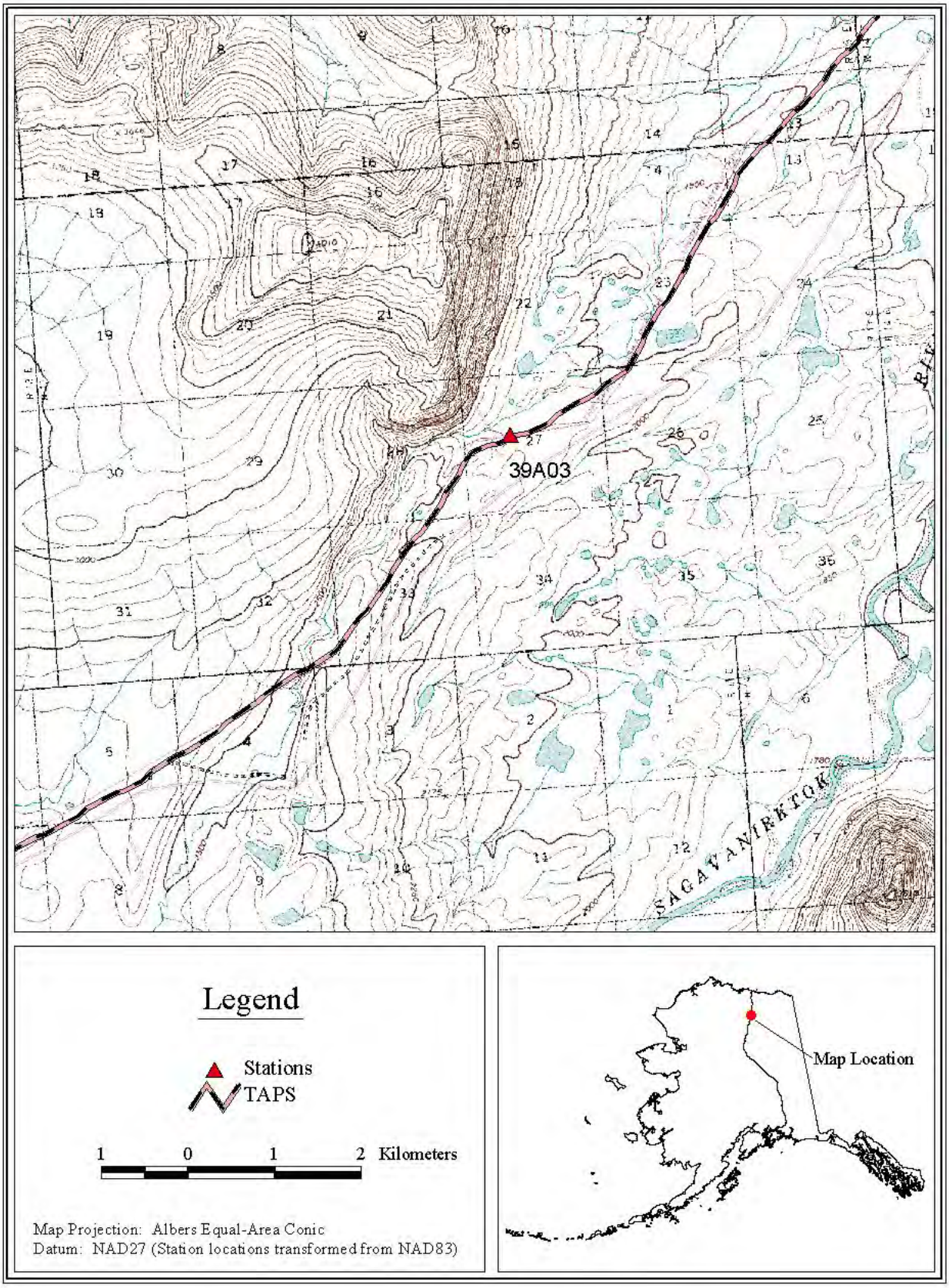
Appendix B45.-Stations 16A01, 16A02, 16A03, 16A04, 16A05, 16A06, and 35A03.



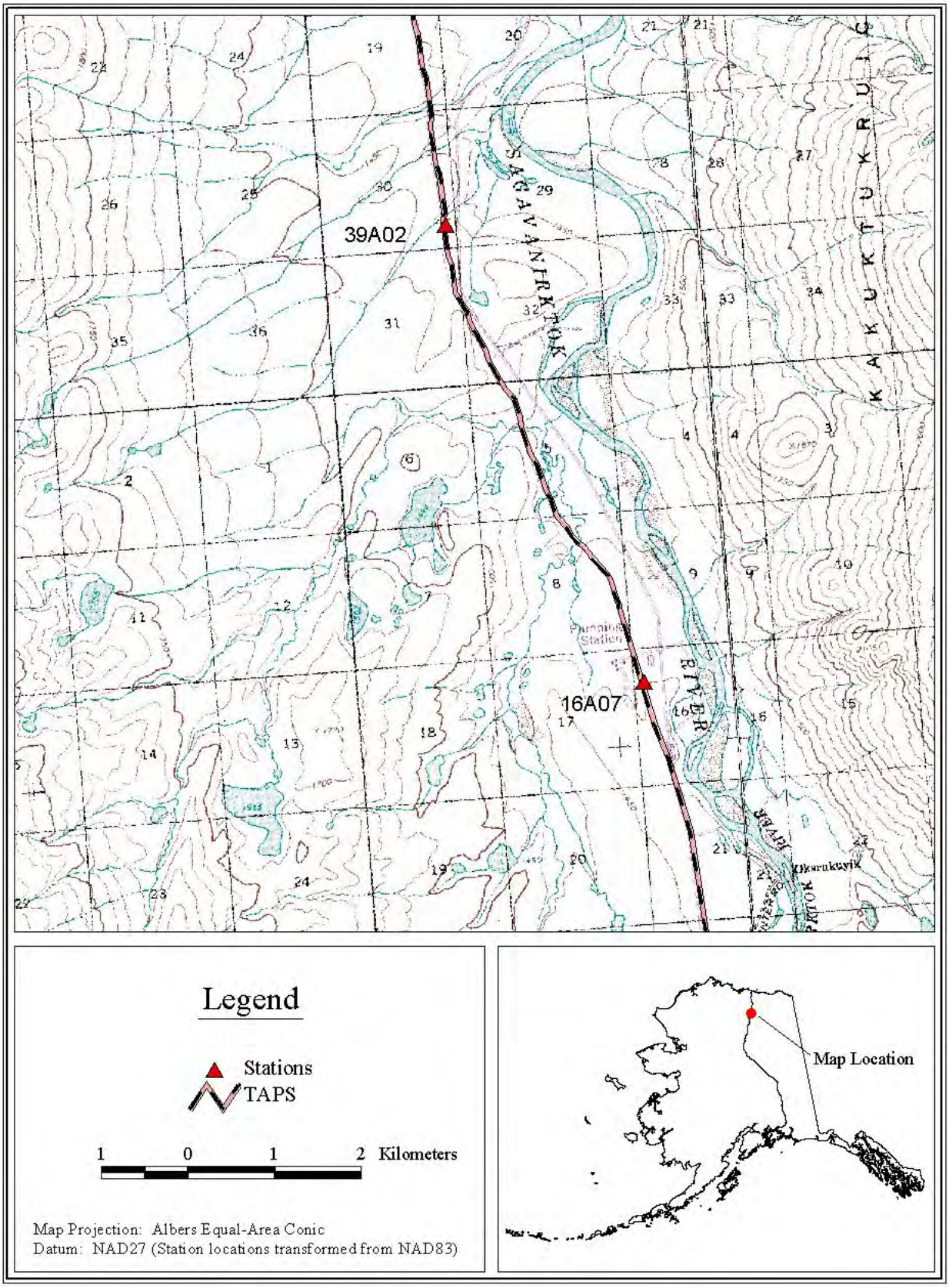
Appendix B46.-Stations 36A01, 40A01, 40A02, and 40A03.



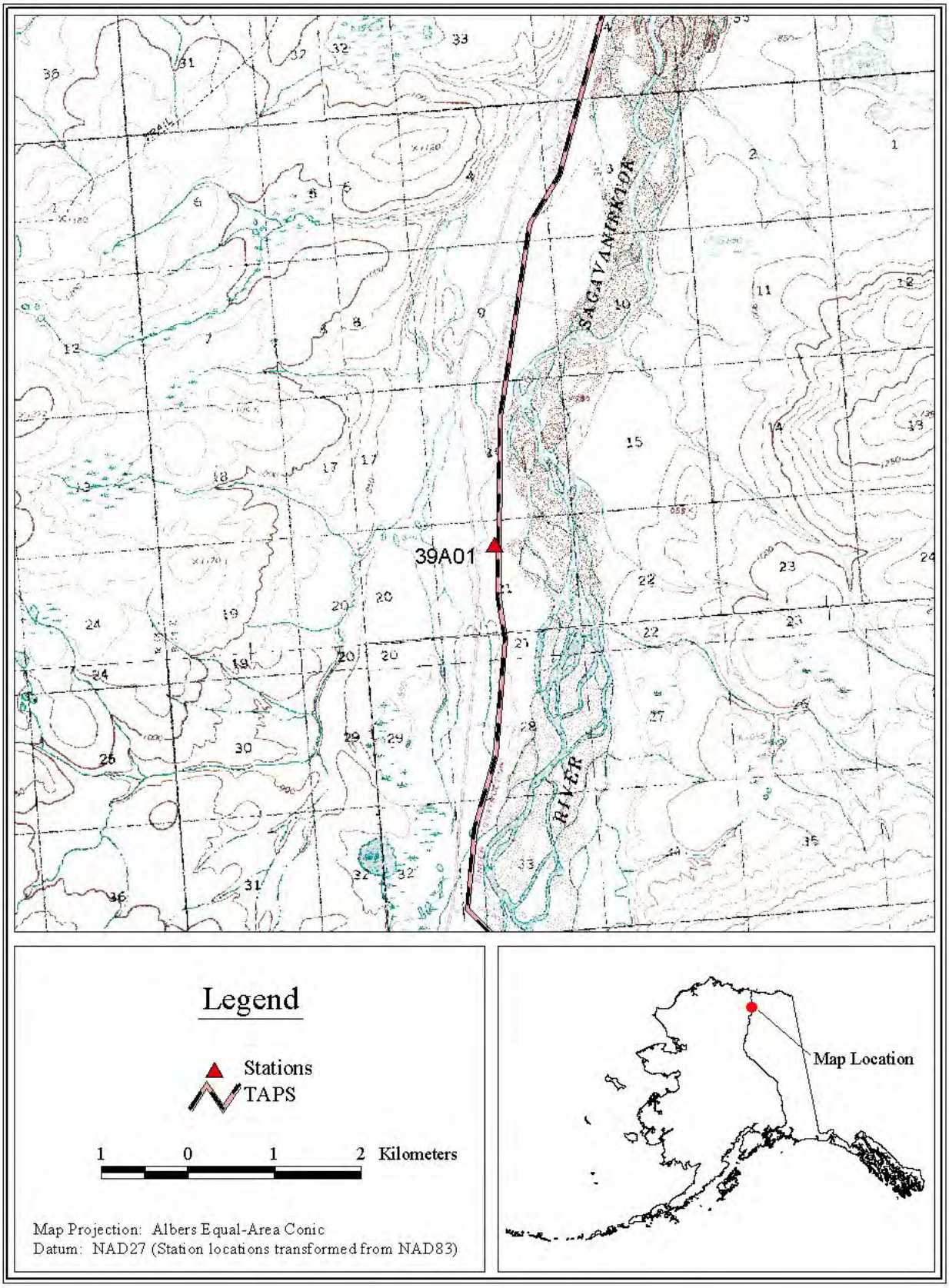
Appendix B47.-Station 39A03.



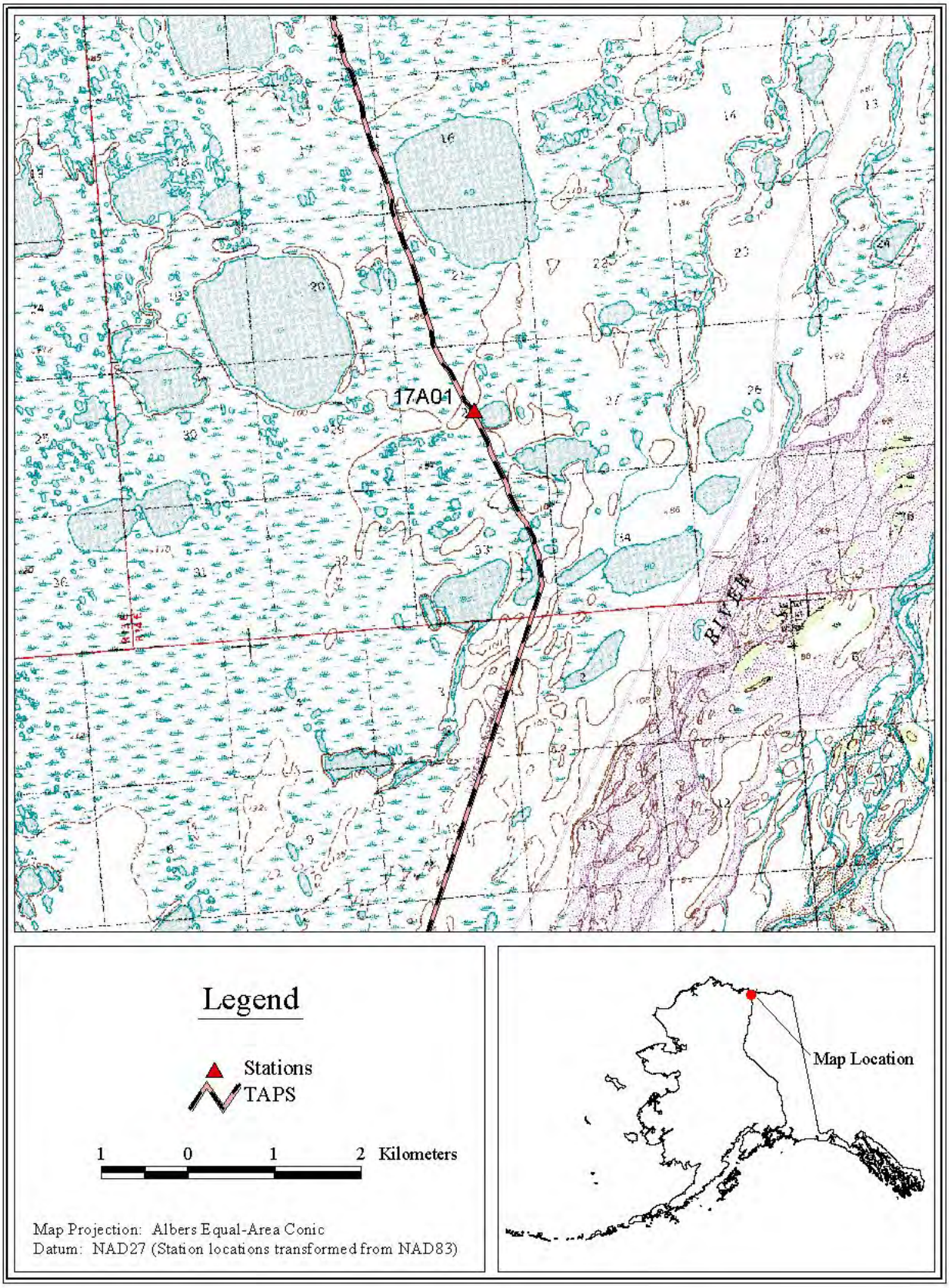
Appendix B48.-Stations 16A07 and 39A02.



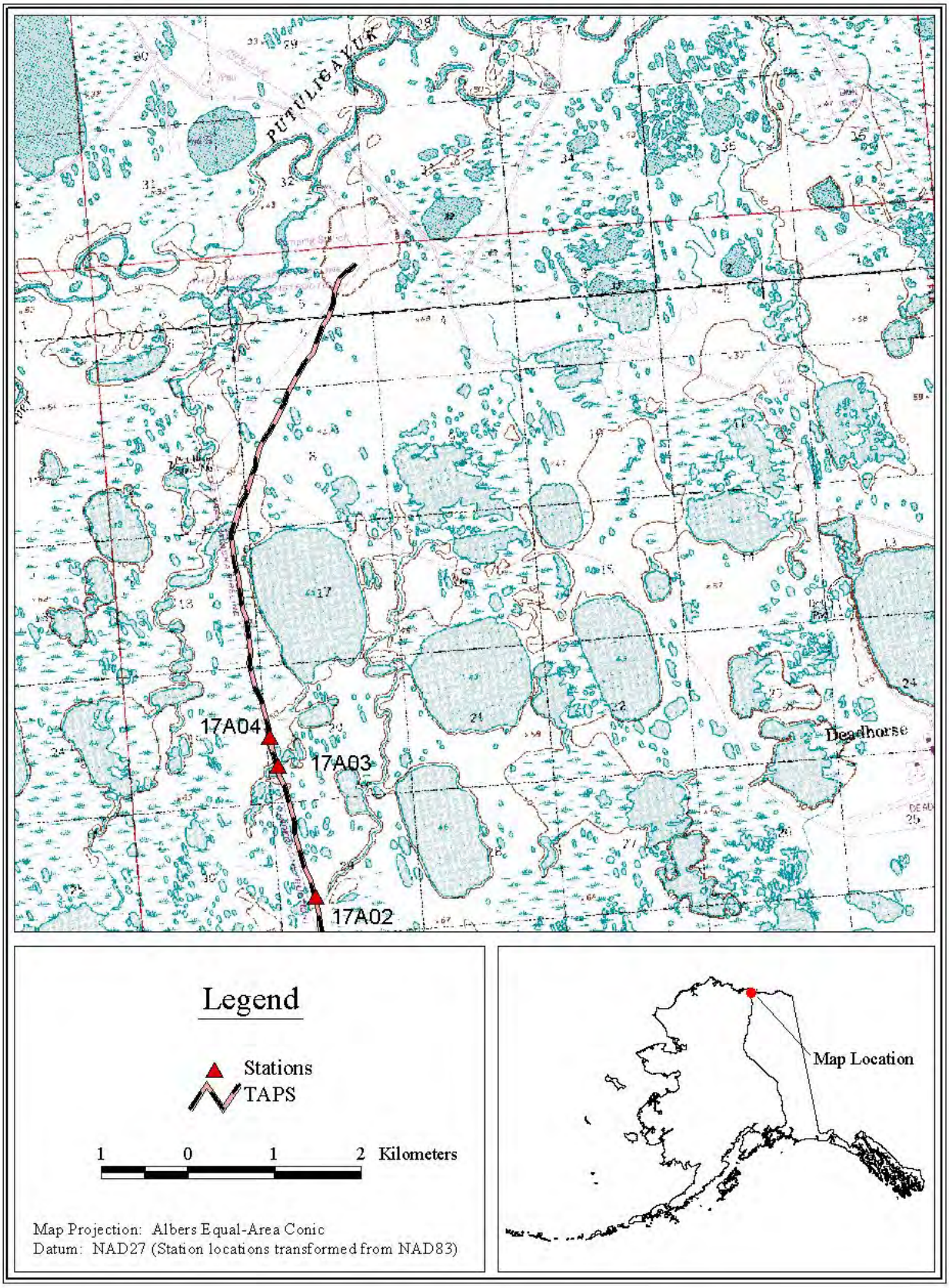
Appendix B49.-Station 39A01.



Appendix B50.-Station 17A01.



Appendix B51.-Stations 17A02, 17A03, and 17A04.



APPENDIX C. STATION REPORTS

Appendix C1.-Station Reports.

Station 01A01 **Visit** 1 **Survey Date:** 06/04/2002 **Time:** 2:28 PM

Waterbody Name: Solomon Gulch **Pipeline Milepost:** 798.05

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 9
	61.07875	-146.30508		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Valdez A-7 **Elevation (m):** 141

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is below ground. Metal span bridge crosses stream with white metal sign listing stream name and PLMP as 797.9.

Station Characteristics

Temperature (C) **Air:** 9 **Water:** 5 **DO (ppm):** 11.5 **Turbidity (NTU)** 1 **Stream Gradient (%):** 2

Qualitative Velocity: Medium **Water Color:** Glacial, Low Turbidity

Stream Stage: Medium **48 hr. Precipitation/Runoff:** N/A

Channel Dimensions (m):	**OHW**	**Wetted**
Width	15	8
Thalweg Depth	0.4	

Substrate

Dominant: Boulder

Subdominant: Cobble

Subdominant:

Survey Team: Doug Lieb, John Wells, David Schmidt, Dennis Gnath

Visit Comments:

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 311 **# Traps:** 0 **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments:

Station 01A01 **Visit** 1 **Survey Date** 6/4/2002

PIC01001.jpg

PIC01002.jpg

PIC01003.jpg

Station 01A01 **Visit** 2 **Survey Date:** 07/02/2002 **Time:** 3:45 PM

Waterbody Name: Solomon Gulch **Pipeline Milepost:** 798.05

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 9
	61.07875	-146.30508		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Valdez A-7 **Elevation (m):** 141

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is below ground. Metal span bridge crosses stream with white metal sign listing stream name and PLMP as 797.9.

Station Characteristics

Temperature (C) **Air:** 16 **Water:** 7.4 **DO (ppm):** 11.06 **Turbidity (NTU)** 5 **Stream Gradient (%):** 2.5

Qualitative Velocity: Medium **Water Color:** Clear

Stream Stage: Medium **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**
Width		2
Thalweg Depth		0.15

Substrate

Dominant: Boulder

Subdominant: Cobble

Subdominant:

Survey Team: Doug Lieb, John Wells, Dennis Gnath

Visit Comments: Station located under bridge. Stream has multiple pools and channels. Falls upstream and downstream of station. Thalweg depth varies greatly.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 218 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments:

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Minnow Trap, 1/4 in. Mesh **EF Time (s):** **# Traps:** 4 **Trap Duration (h):** 0.7

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Collection effort did occur, record is for minnow trapping effort.

Station 01A01 **Visit** 2 **Survey Date** 7/2/2002

PIC18004.jpg

PIC18005.jpg

PIC18006.jpg

Station 01A01 **Visit** 3 **Survey Date:** 08/28/2002 **Time:** 1:10 PM

Waterbody Name: Solomon Gulch **Pipeline Milepost:** 798.05

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 9
	61.07875	-146.30508		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Valdez A-7 **Elevation (m):** 141

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is below ground. Metal span bridge crosses stream with white metal sign listing stream name and PLMP as 797.9.

Station Characteristics

Temperature (C) **Air:** **Water:** 9.8 **DO (ppm):** 12.01 **Turbidity (NTU)** 40 **Stream Gradient (%):**

Qualitative Velocity: Medium **Water Color:** Glacial, Low Turbidity

Stream Stage: Medium **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**
Width		15
Thalweg Depth		0.18

Substrate

Dominant: Boulder

Subdominant: Cobble

Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Stream has same appearance as in previous visits. Thalweg depth and width taken under bridge. The stream has many boulders creating very uneven thalweg.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 90 **# Traps:** 2 **Trap Duration (h):** 0.3

Channel: Main Channel (>50% of water flow)

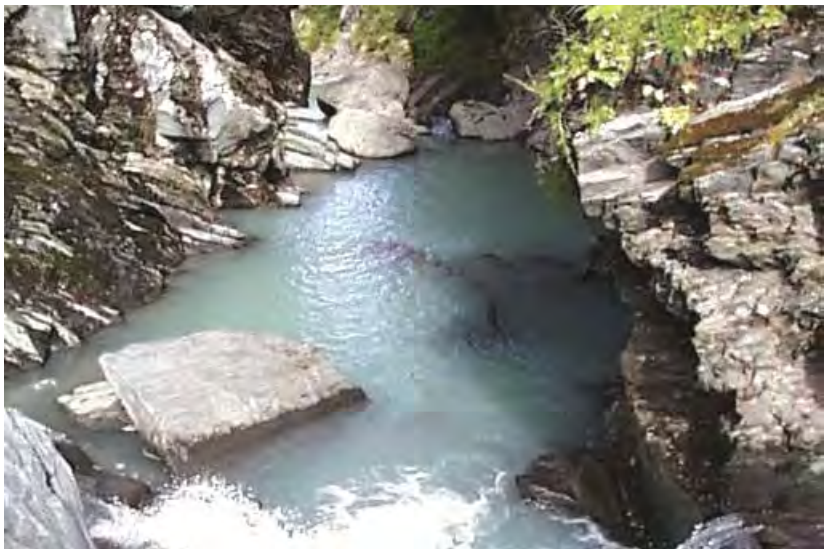
Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Electrofished from pool above downstream waterfall up to pool before upstream waterfall, covering all water underneath the bridge.

Station 01A01 **Visit** 3 **Survey Date** 8/28/2002

PIC60029.jpg

PIC60030.jpg



PIC60031.jpg

Appendix C1.-Page 7 of 674.

Station 01A02 **Visit** 1 **Survey Date:** 06/04/2002 **Time:** 3:55 PM

Waterbody Name: Dayville Flats Creek (Local Name) **Pipeline Milepost:** 796.63

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 7
	61.08274	-146.26831		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Valdez A-7 **Elevation (m):** 63

Anadromous Waters Catalog Number:

Geographic Comments: Station is immediately downstream of culvert underneath the ROW.

Station Characteristics

Temperature (C) **Air:** 12 **Water:** 4.5 **DO (ppm):** 11.94 **Qualitative Velocity:** Fast **Turbidity (NTU)** 0 **Water Color:** Clear **Stream Gradient (%):** 6

Stream Stage: Medium **48 hr. Precipitation/Runoff:** N/A

Channel Dimensions (m):	**OHW**	**Wetted**
Width	2.1	2.1
Thalweg Depth	0.5	0.15

Substrate

Dominant: Gravel

Subdominant: Cobble

Subdominant:

Survey Team: Doug Lieb, John Wells, Dennis Gnath, David Schmidt

Visit Comments: This station is approximately 30 m downstream from a perched culvert.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** **# Traps:** 0 **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments:

Station 01A02 **Visit** 1 **Survey Date** 6/4/2002

PIC01007.jpg

PIC01005.jpg

PIC01008.jpg

Station 01A03 **Visit** 1 **Survey Date:** 06/04/2002 **Time:**

Waterbody Name: Dayville Flats Creek (Local Name) **Pipeline Milepost:** 796.63

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 10
	61.08374	-146.26607		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Valdez A-7 **Elevation (m):** 49

Anadromous Waters Catalog Number: 221-60-11366

Geographic Comments: Dayville Flats waterfall downstream of Station 01A02.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air:	**Water:**			

Qualitative Velocity: N/A **Water Color:** Clear

Stream Stage: **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:** Cobble
Thalweg Depth			**Subdominant:** Gravel
			Subdominant:

Survey Team: Doug Lieb, John Wells, Dennis Gnath, Michael Wiedmer

Visit Comments: Station is 30 m downstream of a 18 m high waterfall. This station is downstream of Station 01A02, which is upstream of barrier falls. Waterfall drops into a canyon approximately 50 m long.

Species: pink salmon **Life Stage:** Carcass **Life History:** Anadromous

Count: 50 **Fork lengths (mm):**

Gear: Visual Observation, Ground **EF Time (s):** **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Geologically Fixed, Waterfall/High Gradient **Height (m):** 18 **Pool depth (m):**

Comments: Approximately 50 m downstream of waterfall spawned out pink salmon carcasses were observed. Waterfall creates definite barrier to upstream fish migration.

Appendix C1.-Page 10 of 674.

Station 01A03 **Visit** 1 **Survey Date** 6/4/2002

PIC01009.jpg

PIC01010.jpg

Station 01A04 **Visit** 1 **Survey Date:** 06/04/2002 **Time:** 6:16 PM

Waterbody Name: Browns Creek **Pipeline Milepost:** 784.3

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 10
	61.04695	-145.92717		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Valdez A-6 **Elevation (m):** 99

Anadromous Waters Catalog Number:

Geographic Comments: Stream creates a block point in the ROW. Take Access Road 4-APL-1 and follow south until reaching stream.

Station Characteristics

Temperature (C) **Air:** 11.5 **Water:** 3.8 **DO (ppm):** 12.25 **Turbidity (NTU)** 94 **Stream Gradient (%):** 2

Qualitative Velocity: Fast **Water Color:** Glacial, High Turbidity

Stream Stage: Medium **48 hr. Precipitation/Runoff:** N/A

Channel Dimensions (m):	**OHW**	**Wetted**
Width	20	20
Thalweg Depth	1	

Substrate

Dominant: Cobble

Subdominant: Boulder

Subdominant: Gravel

Survey Team: Doug Lieb, John Wells, David Schmidt, Dennis Gnath

Visit Comments: Fast current. Low visibility because of suspended fines.

Species: Dolly Varden **Life Stage:** Juvenile/Adult **Life History:** Unknown

Count: 4 **Fork lengths (mm):** 103 88 92 96

Gear: Portable Electrofisher **EF Time (s):** **# Traps:** 0 **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Unknown **Height (m):** **Pool depth (m):**

Comments: Two other suspected Dolly Varden were sighted but not captured.

Appendix C1.-Page 12 of 674.

Station 01A04 **Visit** 1 **Survey Date** 6/4/2002

PIC01011.jpg

PIC01012.jpg

Station 01A04 **Visit** 2 **Survey Date:** 07/02/2002 **Time:** 5:22 PM

Waterbody Name: Browns Creek **Pipeline Milepost:** 784.3

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 10
	61.04695	-145.92717		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Valdez A-6 **Elevation (m):** 99

Anadromous Waters Catalog Number:

Geographic Comments: Stream creates a block point in the ROW. Take Access Road 4-APL-1 and follow south until reaching stream.

Station Characteristics

Temperature (C) **Air:** 12 **Water:** 5.6 **DO (ppm):** 12.62 **Qualitative Velocity:** Fast **Turbidity (NTU)** 208 **Stream Gradient (%):** **Water Color:** Glacial, High Turbidity

Stream Stage: Medium **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m): **OHW** **Wetted**

Width

Thalweg Depth

Substrate

Dominant: Cobble

Subdominant: Boulder

Subdominant: Gravel

Survey Team: Doug Lieb, John Wells, Dennis Gnath

Visit Comments: Station is on 1 of 2 channels that both carry 50% of flow.

Species: Dolly Varden **Life Stage:** Juvenile/Adult **Life History:** Unknown

Count: 28 **Fork lengths (mm):** 88 74 75 121 96 90 86 89 102 130

Gear: Portable Electrofisher **EF Time (s):** 341 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Unknown **Height (m):** **Pool depth (m):**

Comments: Fish were caught from mouth of stream up to Station. Current is swift and steep, unstable banks make sampling difficult in all but the eddies. Additional fork lengths: 103, 95, 94, 77, 73, 67, 64, 136, 112.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Minnow Trap, 1/4 in. Mesh **EF Time (s):** **# Traps:** 4 **Trap Duration (h):** 1.0

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Current is fast; difficult to properly anchor minnow traps.

Station 01A04 **Visit** 2 **Survey Date** 7/2/2002

PIC18007.jpg

PIC18008.jpg

PIC18009.jpg

Station 01A04 **Visit** 3 **Survey Date:** 08/28/2002 **Time:** 8:37 AM

Waterbody Name: Browns Creek **Pipeline Milepost:** 784.3

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 10
	61.04695	-145.92717		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Valdez A-6 **Elevation (m):** 99

Anadromous Waters Catalog Number:

Geographic Comments: Stream creates a block point in the ROW. Take Access Road 4-APL-1 and follow south until reaching stream.

Station Characteristics

Temperature (C) **Air:** 7 **Water:** 4.2 **DO (ppm):** 13.71 **Qualitative Velocity:** Fast **Turbidity (NTU)** 152 **Stream Gradient (%):** **Water Color:** Glacial, High Turbidity

Stream Stage: High **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m): **OHW** **Wetted**

Width

Thalweg Depth

Substrate

Dominant: Cobble

Subdominant: Boulder

Subdominant: Gravel

Survey Team: Doug Lieb, John Wells

Visit Comments: Stream water surface is higher than on Visit 2. The gravel bar that was present directly in middle of sample area is underwater. There is a small flow of water, a slough that cuts through area that was not present on last visit. Water surface is visibly rougher and wider.

Species: Dolly Varden **Life Stage:** Juvenile/Adult **Life History:** Unknown

Count: 8 **Fork lengths (mm):** 109 70 89 85 86 91 85 92

Gear: Portable Electrofisher **EF Time (s):** 437 **# Traps:** 4 **Trap Duration (h):** 1.0

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Unknown **Height (m):** **Pool depth (m):**

Comments: First 4 fork length measurements were caught with electrofisher. Two (FL = 86, 91) were caught in traps in slow portion of Browns Creek. Six other fish were turned with electrofisher but not netted. Identity of these fish uncertain, all were approximately same size as Dolly Varden caught. Pictures 5 - 12 are of fish caught.

Station 01A04 **Visit** 3 **Survey Date** 8/28/2002

PIC60001.jpg

PIC60002.jpg

PIC60003.jpg

Station 02A01 **Visit** 1 **Survey Date:** 06/05/2002 **Time:** 9:56 AM

Waterbody Name: Lowe River Tributary (Local Name) **Pipeline Milepost:** 784

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 11
	61.05473	-145.92029		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Valdez A-6 **Elevation (m):** 123

Anadromous Waters Catalog Number:

Geographic Comments: Stream crosses Access Road 4-APL-1. The station is on the upstream side of the access road. This stream has 2 stations on it, 02A01 and 02A02, they are up and downstream of the culvert underneath access road.

Station Characteristics

Temperature (C) **Air:** 9 **Water:** 11.2 **DO (ppm):** 7.45 **Qualitative Velocity:** N/A **Turbidity (NTU)** 1 **Water Color:** Clear **Stream Gradient (%):** 0

Stream Stage: Medium **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**
Width	32	32
Thalweg Depth		

Substrate

Dominant: Organic

Subdominant:

Subdominant:

Survey Team: Doug Lieb, John Wells, Michael Wiedmer, Dennis Gnath

Visit Comments: Standing pond with no surface outlet. Downstream from road is discontinuous surface flow. Riprap blocks water flow from entering the culvert (which connects to station 02A02). Thalweg is too deep to measure with current means. Estimated at 2 meters deep.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Minnow Trap, 1/4 in. Mesh **EF Time (s):** **# Traps:** 4 **Trap Duration (h):** 6.3

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Multiple leaches caught in minnow traps.

Appendix C1.-Page 18 of 674.

Station 02A01 **Visit** 1 **Survey Date** 6/5/2002

PIC02001.jpg

Station 02A02 **Visit** 1 **Survey Date:** 06/05/2002 **Time:** 10:22 AM

Waterbody Name: Lowe River Tributary (Local Name) **Pipeline Milepost:** 784

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 7
	61.05479	-145.92097		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Valdez A-6 **Elevation (m):** 113

Anadromous Waters Catalog Number:

Geographic Comments: Downstream of Access Road 4-APL-1. This stream has two stations on it--02A01 and 02A02--that are up and downstream of the culvert underneath access road.

Station Characteristics

Temperature (C) **DO (ppm):** **Turbidity (NTU)** **Stream Gradient (%):**

Air: **Water:** **Qualitative Velocity:** N/A **Water Color:**

Stream Stage: Dry, No defined Channel **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells, Dennis Gnath, Michael Wiedmer

Visit Comments: No current surface flow or evidence of recent flow. Terrestrial vegetation across entire area immediately downstream from culvert outlet. Culvert length 18.3 m, width 0.76 m which connects to upstream station 02A01.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments:

Appendix C1.-Page 20 of 674.

Station 02A02 **Visit** 1 **Survey Date** 6/5/2002

PIC02002.jpg

Station 02A03 **Visit** 1 **Survey Date:** 06/05/2002 **Time:** 11:15 AM

Waterbody Name: Lowe River Tributary (Local Name) **Pipeline Milepost:** 784

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 11
	61.05327	-145.92172		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Valdez A-6 **Elevation (m):** 90

Anadromous Waters Catalog Number:

Geographic Comments: Downstream of Access Road 4-APL-1. This stream has two stations on it. Station 02A03 is downstream of the ROW culvert; 02A04 is upstream of ROW.

Station Characteristics

Temperature (C) **Air:** 9.5 **Water:** 4.6 **DO (ppm):** 11.09 **Turbidity (NTU)** 0 **Stream Gradient (%):** 0.2

Qualitative Velocity: N/A **Water Color:** Clear

Stream Stage: Low **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**	
Width	3.5	2	**Dominant:**	Gravel
Thalweg Depth	0.5	0.2	**Subdominant:**	Sand
			Subdominant:	Organic

Survey Team: Doug Lieb, John Wells, Michael Wiedmer, Dennis Gnath

Visit Comments: Right bank is in floodplain of Lowe River. Stream follows southern edge floodplain and is tributary to the Lowe River. Upstream of ROW stream has second station listed as 02A04.

Species: Dolly Varden **Life Stage:** Juvenile/Adult **Life History:** Unknown

Count: 6 **Fork lengths (mm):** 86 68 89 58 68 83

Gear: Portable Electrofisher **EF Time (s):** 136 **# Traps:** 0 **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Human, Culvert **Height (m):** 0.44 **Pool depth (m):** 0.4

Comments: Perched culvert creates migration barrier for Dolly Varden. Two culverts 92 feet long, 48 inch diameter.

Station 02A03 **Visit** 1 **Survey Date** 6/5/2002

PIC02003.jpg

PIC02004.jpg

PIC02006.jpg

Station 02A03 **Visit** 2 **Survey Date:** 07/05/2002 **Time:** 10:20 AM

Waterbody Name: Lowe River Tributary (Local Name) **Pipeline Milepost:** 784

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 11
	61.05327	-145.92172		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Valdez A-6 **Elevation (m):** 90

Anadromous Waters Catalog Number:

Geographic Comments: Downstream of Access Road 4-APL-1. This stream has two stations on it. Station 02A03 is downstream of the ROW culvert; 02A04 is upstream of ROW.

Station Characteristics

Temperature (C) **Air:** 15 **Water:** 6.8 **DO (ppm):** 11.67 **Qualitative Velocity:** Medium **Turbidity (NTU)** 9 **Water Color:** Clear **Stream Gradient (%):**

Stream Stage: Low **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**
Width		1.5
Thalweg Depth		0.22

Substrate
Dominant: Gravel
Subdominant: Organic
Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Downstream of Access Road the culvert outlet is perched. Gravel substrate in faster moving sections. Upstream of culvert stream has good fish rearing habitat with pools and vegetation overhanging the low banks.

Species: Dolly Varden **Life Stage:** Juvenile/Adult **Life History:** Unknown

Count: 10 **Fork lengths (mm):** 80 78 40 67 42 68

Gear: Portable Electrofisher **EF Time (s):** 388 **# Traps:** 2 **Trap Duration (h):** 1.0

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Unknown **Height (m):** **Pool depth (m):**

Comments: Small fish were in a pile of leaves on the bottom and when stunned would not float out of leaves. All fish were caught downstream of culvert.

Station 02A03 **Visit** 2 **Survey Date** 7/5/2002

PIC20001.jpg

PIC20002.jpg

PIC20003.jpg

Station 02A03 **Visit** 3 **Survey Date:** 08/28/2002 **Time:** 11:10 AM

Waterbody Name: Lowe River Tributary (Local Name) **Pipeline Milepost:** 784

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 11
	61.05327	-145.92172		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Valdez A-6 **Elevation (m):** 90

Anadromous Waters Catalog Number:

Geographic Comments: Downstream of Access Road 4-APL-1. This stream has two stations on it. Station 02A03 is downstream of the ROW culvert; 02A04 is upstream of ROW.

Station Characteristics

Temperature (C) **Air:** 13 **Water:** 7.5 **DO (ppm):** 11.99 **Qualitative Velocity:** Medium **Turbidity (NTU)** 0 **Stream Gradient (%):** **Water Color:** Clear

Stream Stage: Medium **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**
Width		1.6
Thalweg Depth		0.08

Substrate
Dominant: Gravel
Subdominant: Sand
Subdominant: Organic

Survey Team: Doug Lieb, John Wells

Visit Comments: Outlet of culvert is still perched. Stream has same appearance as Visit 1. There are many deep and wide sections of this stream downstream of culvert.

Species: Dolly Varden **Life Stage:** Juvenile/Adult **Life History:** Unknown

Count: 9 **Fork lengths (mm):** 109 104 91 41 58 68 80 81 82

Gear: Portable Electrofisher **EF Time (s):** 433 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Unknown **Height (m):** **Pool depth (m):**

Comments: Fish were all caught downstream of culvert. Two of the largest were caught in pool directly below perched culvert.

Species: coho salmon **Life Stage:** Juvenile **Life History:** Anadromous

Count: 1 **Fork lengths (mm):** 73

Gear: Portable Electrofisher **EF Time (s):** 433 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Unknown **Height (m):** **Pool depth (m):**

Comments: Coho caught 50 m downstream of culvert. Robust fish.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Minnow Trap, 1/4 in. Mesh **EF Time (s):** **# Traps:** 2 **Trap Duration (h):** 1.0

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Traps were set downstream of culvert, water upstream not deep enough.

Station 02A03 **Visit** 3 **Survey Date** 8/28/2002

PIC60017.jpg

PIC60018.jpg

PIC60019.jpg

Station 02A04 **Visit** 1 **Survey Date:** 06/05/2002 **Time:** 11:45 AM

Waterbody Name: Lowe River Tributary (Local Name) **Pipeline Milepost:** 784

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	61.05339	-145.92102		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Valdez A-6 **Elevation (m):** 100

Anadromous Waters Catalog Number:

Geographic Comments: Upstream of Access Road 4-APL-1. This stream has two stations. Station 02A03 is downstream of the ROW culvert; 02A04 is upstream of ROW.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air:	**Water:**			

Qualitative Velocity: Medium **Water Color:** Clear

Stream Stage: Low **48 hr. Precipitation/Runoff:** N/A

Channel Dimensions (m):	**OHW**	**Wetted**
Width		1.5
Thalweg Depth		0.15

Substrate

Dominant: Gravel

Subdominant: Cobble

Subdominant:

Survey Team: Doug Lieb, John Wells, Dennis Gnath, Michael Wiedmer

Visit Comments:

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 87 **# Traps:** 0 **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments:

Appendix C1.-Page 28 of 674.

Station 02A04 **Visit** 1 **Survey Date** 6/5/2002

PIC02007.jpg

Station 02A05 **Visit** 1 **Survey Date:** 06/05/2002 **Time:** 1:09 PM

Waterbody Name: Lowe River Tributary (Local Name) **Pipeline Milepost:** 784

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 10
	61.05109	-145.92332		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Valdez A-6 **Elevation (m):** 106

Anadromous Waters Catalog Number: 221-60-11370-2254

Geographic Comments: Downstream of Access Road 4-APL-1. Downstream of 02A06 and 02A08. All three stations are on the same stream.

Station Characteristics

Temperature (C) **Air:** 11 **Water:** 6 **DO (ppm):** 10.3 **Qualitative Velocity:** N/A **Turbidity (NTU)** 0 **Water Color:** Clear **Stream Gradient (%):** 1

Stream Stage: Medium **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**
Width	7.5	1.25
Thalweg Depth	0.5	0.2

Substrate

Dominant: Gravel
Subdominant: Cobble
Subdominant: Organic

Survey Team: Doug Lieb, John Wells, Michael Wiedmer, Dennis Gnath

Visit Comments: Station 20 m downstream of culvert under access road.

Species: Dolly Varden **Life Stage:** Juvenile/Adult **Life History:** Unknown

Count: 2 **Fork lengths (mm):** 67 55

Gear: Portable Electrofisher **EF Time (s):** 126 **# Traps:** 0 **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: None **Height (m):** **Pool depth (m):**

Comments: One Dolly Varden eluded capture.

Species: coho salmon **Life Stage:** Juvenile **Life History:** Anadromous

Count: 3 **Fork lengths (mm):** 37 37 37

Gear: Portable Electrofisher **EF Time (s):** 30 **# Traps:** 0 **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Specific Barrier Unknown **Height (m):** **Pool depth (m):**

Comments: Appeared recently emergent.

Station 02A05 **Visit** 1 **Survey Date** 6/5/2002

PIC02008.jpg

PIC02009.jpg

PIC02010.jpg

Station 02A05 **Visit** 2 **Survey Date:** 07/05/2002 **Time:** 12:05 PM

Waterbody Name: Lowe River Tributary (Local Name) **Pipeline Milepost:** 784

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 10
	61.05109	-145.92332		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Valdez A-6 **Elevation (m):** 106

Anadromous Waters Catalog Number: 221-60-11370-2254

Geographic Comments: Downstream of Access Road 4-APL-1. Downstream of 02A06 and 02A08. All three stations are on the same stream.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air: 15	**Water:**			

Qualitative Velocity: N/A **Water Color:**

Stream Stage: Dry, Defined Channel **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:** Gravel
Thalweg Depth			**Subdominant:** Cobble
			Subdominant: Organic

Survey Team: Doug Lieb, John Wells

Visit Comments: Stream at station is dry. No flowing water present. Downstream of culvert a few small pools are still present indicating channel has not been dry for long, location where cohos were caught on previous visit is dry. A walk up to the point were this stream crosses ROW revealed stream has water flow but much lower at the upper portion of stream. Twenty-five meters upstream of culvert water flow ends. Upstream of this a section of subsurface flow for 15 m. Upstream where there is water flowing is shallow and low velocity.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** **# Traps:** **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: No water, no sampling.

Station 02A05 **Visit** 2 **Survey Date** 7/5/2002

PIC20006.jpg

PIC20007.jpg

PIC20008.jpg

Station 02A05 **Visit** 3 **Survey Date:** 08/28/2002 **Time:** 10:15 AM

Waterbody Name: Lowe River Tributary (Local Name) **Pipeline Milepost:** 784

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 10
	61.05109	-145.92332		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Valdez A-6 **Elevation (m):** 106

Anadromous Waters Catalog Number: 221-60-11370-2254

Geographic Comments: Downstream of Access Road 4-APL-1. Downstream of 02A06 and 02A08. All three stations are on the same stream.

Station Characteristics

Temperature (C) **Air:** 12 **Water:** 8.3 **DO (ppm):** 11.1 **Qualitative Velocity:** Medium **Turbidity (NTU)** 0 **Water Color:** Clear **Stream Gradient (%):**

Stream Stage: Medium **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**	
Width		1	**Dominant:**	Gravel
Thalweg Depth		0.17	**Subdominant:**	Cobble
			Subdominant:	Organic

Survey Team: Doug Lieb, John Wells

Visit Comments: Stream has good water flow in channel. Stream appears similar to Visit 1. Stream has sections of shallow gravel riffle flow, interspersed with deep slow pools. There is woody debris in water and suspended over stream. One hundred meters downstream of culvert stream emerges onto Lowe River alluvial floodplain. One hundred meters downstream on floodplain the channel dries up and no surface flow. Fifteen meters further downstream is confluence with Lowe River tributary (Stations 02A03 and 02A04).

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 296 **# Traps:** 3 **Trap Duration (h):** 0.5

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Stream was clear and slow and narrow. One trap upstream, 2 set downstream.

Station 02A05 **Visit** 3 **Survey Date** 8/28/2002

PIC60014.jpg

PIC60015.jpg

PIC60016.jpg

Station 02A06 **Visit** 1 **Survey Date:** 06/05/2002 **Time:** 1:27 PM

Waterbody Name: Lowe River Tributary (Local Name) **Pipeline Milepost:** 784

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 8
	61.05072	-145.92285		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Valdez A-6 **Elevation (m):** 99

Anadromous Waters Catalog Number:

Geographic Comments: Upstream of Access Road 4-APL-1. This stream has 3 stations: 02A05, 02A06, and 02A08. Station 02A05 is downstream of culvert, 02A06 and 02A08 are upstream of culvert.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air:	**Water:**			

Qualitative Velocity: N/A **Water Color:** Clear

Stream Stage: Medium **48 hr. Precipitation/Runoff:** N/A

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**	
Width		1	**Dominant:**	Gravel
Thalweg Depth		0.15	**Subdominant:**	Cobble
			Subdominant:	Organic

Survey Team: Doug Lieb, John Wells, Dennis Gnath, Michael Wiedmer

Visit Comments: Station upstream of culvert and 02A05. Area directly upstream of culvert disturbed due to power line clearing.

Species: Dolly Varden **Life Stage:** Juvenile/Adult **Life History:** Unknown

Count: 3 **Fork lengths (mm):** 65

Gear: Portable Electrofisher **EF Time (s):** 112 **# Traps:** 0 **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Unknown **Height (m):** **Pool depth (m):**

Comments: Large fish got away, likely a Dolly Varden.

Station 02A06 **Visit** 1 **Survey Date** 6/5/2002

PIC02011.jpg

PIC02012.jpg

Station 02A07 **Visit** 1 **Survey Date:** 06/05/2002 **Time:** 2:17 PM

Waterbody Name: Lowe River Tributary (Local Name) **Pipeline Milepost:** 784

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	61.04873	-145.92455		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Valdez A-6 **Elevation (m):** 97

Anadromous Waters Catalog Number:

Geographic Comments: Single station on Access Road 4-APL-1.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air: 11	**Water:**			

Qualitative Velocity: N/A **Water Color:**

Stream Stage: Dry, Defined Channel **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells, Dennis Gnath, Michael Wiedmer

Visit Comments: Dry streambed

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** **# Traps:** 0 **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments:

Appendix C1.-Page 38 of 674.

Station 02A07 **Visit** 1 **Survey Date** 6/5/2002

PIC02013.jpg

Station 02A08 **Visit** 1 **Survey Date:** 06/05/2002 **Time:** 2:56 PM

Waterbody Name: Lowe River Tributary (Local Name) **Pipeline Milepost:** 784

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 9
	61.04858	-145.91841		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Valdez A-6 **Elevation (m):** 139

Anadromous Waters Catalog Number:

Geographic Comments: Downstream of Access Road 4-APL-1 (road switchbacks, crossing stream twice). Station is on the same stream as stations 02A05 and 02A06. This occurs because road crosses stream once at 02A05/02A06 and a second time upstream (02A08) as access road ascends steep mountain slope.

Station Characteristics

Temperature (C) **Air:** 13 **Water:** 6.1 **DO (ppm):** 10.87 **Qualitative Velocity:** N/A **Turbidity (NTU)** 0 **Stream Gradient (%):** **Water Color:** Clear

Stream Stage: Medium **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**
Width	2.3	1.9
Thalweg Depth	0.4	0.25

Substrate
Dominant: Gravel
Subdominant: Cobble
Subdominant: Organic

Survey Team: Doug Lieb, John Wells, Dennis Gnath, Michael Wiedmer

Visit Comments: Upon walking downstream, discovered it is same as stream 02A05 and 02A06. Pictures downstream culvert 25, upstream 26.

Species: Dolly Varden **Life Stage:** Juvenile/Adult **Life History:** Unknown

Count: 1 **Fork lengths (mm):** 83

Gear: Portable Electrofisher **EF Time (s):** 444 **# Traps:** 0 **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Unknown **Height (m):** **Pool depth (m):**

Comments: Stunned many fish; unable to capture all but one.

Appendix C1.-Page 40 of 674.

Station 02A08 **Visit** 1 **Survey Date** 6/5/2002

PIC02014.jpg

PIC02015.jpg

Station 03A01 **Visit** 1 **Survey Date:** 06/06/2002 **Time:** 8:54 AM

Waterbody Name: Pit Pond Outlet (Local Name) **Pipeline Milepost:** 758.1

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	61.22525	-145.37296		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Valdez A-4 **Elevation (m):** 404

Anadromous Waters Catalog Number:

Geographic Comments: Travel in on Access Road 10-APL-1, travel towards Valdez until reaching 758.10.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air:	**Water:**			

Qualitative Velocity: N/A **Water Color:**

Stream Stage: Dry, No defined Channel **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells, Michael Wiedmer, David Schmidt

Visit Comments: Stream is dry with an undefined channel.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** **# Traps:** **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: No water, no sampling.

Station 03A01 **Visit** 1 **Survey Date** 6/6/2002

PIC03001.jpg

Station 03A02 **Visit** 1 **Survey Date:** 06/06/2002 **Time:** 10:01 AM

Waterbody Name: Tiekel River Tributary (Local Name) **Pipeline Milepost:** 749.43

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 9
	61.31906	-145.29994		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Valdez B-4 **Elevation (m):** 393

Anadromous Waters Catalog Number:

Geographic Comments: Stream is located by accessing 10-APL-1, traveling on ROW until 749.37. Stream crosses ROW at top of hill 200 m south of Richardson Highway. Actual mile marker found with a PLMP of 749.43.

Station Characteristics

Temperature (C) **Air:** 9 **Water:** 4 **DO (ppm):** 11.6 **Qualitative Velocity:** N/A **Turbidity (NTU)** 2 **Water Color:** Clear **Stream Gradient (%):** 5

Stream Stage: Medium **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**
Width	2.5	1.5
Thalweg Depth	2.5	0.17

Substrate
Dominant: Boulder
Subdominant: Cobble
Subdominant: Gravel

Survey Team: Doug Lieb, John Wells, Michael Wiedmer

Visit Comments: Richardson Highway culvert downstream of station unplugged by maintenance crew in past 2 weeks releasing several feet of ponded water. Log skidding and fiber optic installation is ongoing upstream of highway.

Species: Dolly Varden **Life Stage:** Juvenile/Adult **Life History:** Unknown

Count: 5 **Fork lengths (mm):** 70 50 120

Gear: Portable Electrofisher **EF Time (s):** 197 **# Traps:** 0 **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Unknown **Height (m):** **Pool depth (m):**

Comments: Five fish stunned, only 3 caught and measured. Dolly Varden rearing in step pool channel immediately downstream of LWC.

Station 03A02 **Visit** 1 **Survey Date** 6/6/2002

PIC03002.jpg

PIC03003.jpg

PIC03004.jpg

Station 03A02 **Visit** 2 **Survey Date:** 07/03/2002 **Time:** 5:46 PM

Waterbody Name: Tiekel River Tributary (Local Name) **Pipeline Milepost:** 749.43

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 9
	61.31906	-145.29994		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Valdez B-4 **Elevation (m):** 393

Anadromous Waters Catalog Number:

Geographic Comments: Stream is located by accessing 10-APL-1, traveling on ROW until 749.37. Stream crosses ROW at top of hill 200 m south of Richardson Highway. Actual mile marker found with a PLMP of 749.43.

Station Characteristics

Temperature (C) **Air:** 16 **Water:** 7.3 **DO (ppm):** 10.5 **Qualitative Velocity:** N/A **Turbidity (NTU)** 2 **Stream Gradient (%):** **Water Color:** Clear

Stream Stage: Medium **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**
Width		
Thalweg Depth		

Substrate
Dominant: Boulder
Subdominant: Cobble
Subdominant: Gravel

Survey Team: Doug Lieb, John Wells

Visit Comments: Upstream of LWC stream gets wide and has pools and tree overhangs. Downstream of LWC where the fish were caught is adjacent to fiber optic cable installation. At this location a road has been carved through the trees and cut the stream off from the Richardson Highway culvert. The stream is flooding the road being created by fiber optic crew. Many trees fallen by fiber optic project extend up to 10 m downstream of the LWC.

Species: Dolly Varden **Life Stage:** Juvenile/Adult **Life History:** Unknown

Count: 6 **Fork lengths (mm):** 76 71 60 250

Gear: Portable Electrofisher **EF Time (s):** 121 **# Traps:** 2 **Trap Duration (h):** 0.5

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Unknown **Height (m):** **Pool depth (m):**

Comments: No fish were caught in minnow traps. Three small fish caught downstream of LWC within 5 m of heavy disturbance from fiber optic cable installation. Large (250 mm FL) fish was collected upstream of LWC. Fallen trees over stream made sampling difficult.

Station 03A02 **Visit** 2 **Survey Date** 7/3/2002

PIC19024.jpg

PIC19027.jpg

PIC19026.jpg

Station 03A03 **Visit** 1 **Survey Date:** 06/06/2002 **Time:** 12:13 PM

Waterbody Name: Fiftynine Mile Creek **Pipeline Milepost:** 741.03

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	61.40503	-145.19337		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Valdez B-4 **Elevation (m):** 556

Anadromous Waters Catalog Number:

Geographic Comments: Stream is located by access through 12-APL-1, traveling north on ROW. Stream crosses ROW within 50 m of PLMP 741.

Station Characteristics

Temperature (C) **Air:** 7 **Water:** 2.7 **DO (ppm):** 11.7 **Qualitative Velocity:** Medium **Turbidity (NTU)** 0 **Water Color:** Clear **Stream Gradient (%):** 9

Stream Stage: Medium **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**
Width	5	2.5
Thalweg Depth		0.3

Substrate

Dominant: Boulder
Subdominant: Cobble
Subdominant: Gravel

Survey Team: Doug Lieb, John Wells, David Schmidt, Michael Wiedmer

Visit Comments: Large amounts of scrub trees hanging over the stream. At LWC a pool has formed.

Species: salmon, trout, char, grayling or whitefish, undif. **Life Stage:** Juvenile/Adult **Life History:** Unknown

Count: 1 **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 267 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Unknown **Height (m):** **Pool depth (m):**

Comments: One fish stunned, but not captured. Suspected Dolly Varden. Swift current and large woody debris make sampling difficult.

Station 03A03 **Visit** 1 **Survey Date** 6/6/2002

PIC03006.jpg

PIC03007.jpg

PIC03008.jpg

Station 03A03 **Visit** 2 **Survey Date:** 08/27/2002 **Time:** 12:45 PM

Waterbody Name: Fiftynine Mile Creek **Pipeline Milepost:** 741.03

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	61.40503	-145.19337		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Valdez B-4 **Elevation (m):** 556

Anadromous Waters Catalog Number:

Geographic Comments: Stream is located by access through 12-APL-1, traveling north on ROW. Stream crosses ROW within 50 m of PLMP 741.

Station Characteristics

Temperature (C) **Air:** 14 **Water:** 6.1 **DO (ppm):** 12.35 **Turbidity (NTU)** 0 **Stream Gradient (%):**

Qualitative Velocity: Medium **Water Color:** Clear

Stream Stage: Medium **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**	
Width		1.5	**Dominant:**	Boulder
Thalweg Depth		0.23	**Subdominant:**	Cobble
			Subdominant:	Gravel

Survey Team: Doug Lieb, John Wells, Alison Kelley

Visit Comments: Stream has large shallow pool forming on the ROW where the LWC should be. The stream has formed a delta into the LWC and then a wide exit out of pool downstream where stream narrows again. Stream is a riffle-dominated stream with step pools. Boulders present, creating pools and mini channels.

Species: Dolly Varden **Life Stage:** Juvenile/Adult **Life History:** Unknown

Count: 18 **Fork lengths (mm):** 190 150 71 112 72 189 132 137 87

Gear: Portable Electrofisher **EF Time (s):** 128 **# Traps:** 4 **Trap Duration (h):** 1.0

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Unknown **Height (m):** **Pool depth (m):**

Comments: Five stunned downstream with 4 getting away. Four caught upstream with 3 getting away. Fish (FL = 125, 91) were caught in trap downstream of LWC, these are not listed in Fork Length.

Station 03A03 **Visit** 2 **Survey Date** 8/27/2002

PIC59001.jpg

PIC59002.jpg

PIC59008.jpg

Station 03A04 **Visit** 1 **Survey Date:** 06/06/2002 **Time:** 12:57 PM

Waterbody Name: Quarry Creek (Local Name) **Pipeline Milepost:** 739.26

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	61.42598	-145.16492		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Valdez B-4 **Elevation (m):** 744

Anadromous Waters Catalog Number:

Geographic Comments: Accessed by 12-APL-1. Stream crosses ROW with the 739 PLMP in view at the top of the hill.

Station Characteristics

Temperature (C) **Air:** 9 **Water:** 2 **DO (ppm):** 9.16 **Qualitative Velocity:** N/A **Turbidity (NTU)** 0 **Water Color:** Clear **Stream Gradient (%):** 3

Stream Stage: Medium **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**
Width	1.5	1
Thalweg Depth	0.4	0.19

Substrate

Dominant: Organic

Subdominant: Gravel

Subdominant:

Survey Team: Doug Lieb, John Wells, David Schmidt, Michael Wiedmer

Visit Comments: Quarry Creek surveyed at the request of Dave Schmidt. Stream forms pond in LWC ruts. Station is upstream from LWC.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 155 **# Traps:** 0 **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments:

Station 03A04 **Visit** 1 **Survey Date** 6/6/2002

PIC03009.jpg

PIC03010.jpg

PIC03011.jpg

Station 03A04 **Visit** 2 **Survey Date:** 07/02/2002 **Time:** 4:20 PM

Waterbody Name: Quarry Creek (Local Name) **Pipeline Milepost:** 739.26

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	61.42598	-145.16492		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Valdez B-4 **Elevation (m):** 744

Anadromous Waters Catalog Number:

Geographic Comments: Accessed by 12-APL-1. Stream crosses ROW with the 739 PLMP in view at the top of the hill.

Station Characteristics

Temperature (C) **Air:** 17 **Water:** 7.3 **DO (ppm):** 7.37 **Turbidity (NTU)** 19 **Stream Gradient (%):**

Qualitative Velocity: Medium **Water Color:** Clear

Stream Stage: Medium **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**	
Width		1.5	**Dominant:**	Organic
Thalweg Depth		0.13	**Subdominant:**	Gravel
			Subdominant:	

Survey Team: Doug Lieb, John Wells

Visit Comments: Stream is shallow at LWC with deep channel for 10 m above LWC where it becomes shallower and covered by thick alders. Downstream of LWC stream enters willows and alders and fans out into 3 multiple channels flowing in different directions. All but 1 channel ends in a pool. Last channel around 1 m wide and 0.13 m deep, this flows continuously off into alders and willows.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 120 **# Traps:** 2 **Trap Duration (h):** 0.4

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Mesh for traps 1/4". Downstream trap was not completely submerged.

Station 03A04 **Visit** 2 **Survey Date** 7/3/2002

PIC19020.jpg

PIC19021.jpg

PIC19022.jpg

Station 03A04 **Visit** 3 **Survey Date:** 08/27/2002 **Time:** 2:20 PM

Waterbody Name: Quarry Creek (Local Name) **Pipeline Milepost:** 739.26

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	61.42598	-145.16492		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Valdez B-4 **Elevation (m):** 744

Anadromous Waters Catalog Number:

Geographic Comments: Accessed by 12-APL-1. Stream crosses ROW with the 739 PLMP in view at the top of the hill.

Station Characteristics

Temperature (C) **Air:** 15 **Water:** 6.6 **DO (ppm):** 9.15 **Turbidity (NTU)** 17 **Stream Gradient (%):**

Qualitative Velocity: Slow **Water Color:** Clear

Stream Stage: Medium **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**	
Width		0.45	**Dominant:**	Organic
Thalweg Depth		0.12	**Subdominant:**	Gravel
			Subdominant:	

Survey Team: Doug Lieb, John Wells, Alison Kelley

Visit Comments: LWC has ruts which have formed pools. The water is higher than last visit creating a defined flowing channel downstream of LWC. Wide section of stream above LWC which becomes narrow and riffle-dominated as it flows into thick alders.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 98 **# Traps:** 4 **Trap Duration (h):** 0.5

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Traps were evenly distributed above and below LWC. Stream was narrow and shallow allowing full electrofishing access.

Station 03A04 **Visit** 3 **Survey Date** 8/27/2002

PIC59012.jpg

PIC59013.jpg

PIC59015.jpg

Station 03A05 **Visit** 1 **Survey Date:** 06/06/2002 **Time:** 2:28 PM

Waterbody Name: Little Tonsina Flats Tributary (Local Name) **Pipeline Milepost:** 731

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	61.50722	-145.23244		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Valdez C-4 **Elevation (m):** 546

Anadromous Waters Catalog Number:

Geographic Comments: ROW accessed from highway just after MP 66 of Richardson Highway. Powerlines cross stream upstream of the LWC.

Station Characteristics

Temperature (C) **Air:** 11 **Water:** 5.6 **DO (ppm):** 0.4 **Qualitative Velocity:** N/A **Turbidity (NTU)** 7 **Stream Gradient (%):** **Water Color:** Feric

Stream Stage: Low, Continuous Surface Flow **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width		1.5	**Dominant:** Organic
Thalweg Depth		0.6	**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells, David Schmidt, Michael Wiedmer

Visit Comments: Station is upstream of LWC, stream at station is a pond that has flooded into the forbs along banks. Area presents marsh-like habitat, with a beaver complex creating the flooding.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Minnow Trap, 1/4 in. Mesh **EF Time (s):** **# Traps:** 4 **Trap Duration (h):** 20.

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Traps are set in pond on upstream side of LWC. Returned the morning of the 06/07/02; no fish were present in any of the 4 traps.

Station 03A05 **Visit** 1 **Survey Date** 6/6/2002

PIC03012.jpg

PIC03013.jpg

PIC03014.jpg

Station 03A05 **Visit** 2 **Survey Date:** 07/03/2002 **Time:** 3:00 PM

Waterbody Name: Little Tonsina Flats Tributary (Local Name) **Pipeline Milepost:** 731

Station Coordinates (decimal degrees) **Latitude** 61.50722 **Longitude** -145.23244 **Datum:** NAD83 **GPS Error (m):** 6

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Valdez C-4 **Elevation (m):** 546

Anadromous Waters Catalog Number:

Geographic Comments: ROW accessed from highway just after MP 66 of Richardson Highway. Powerlines cross stream upstream of the LWC.

Station Characteristics

Temperature (C) **Air:** 21 **Water:** 14.6 **DO (ppm):** 2.57 **Qualitative Velocity:** Slow **Turbidity (NTU)** 461 **Stream Gradient (%):** **Water Color:** Feric

Stream Stage: Low **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m): **OHW** **Wetted**

Width

Thalweg Depth

Substrate

Dominant: Organic

Subdominant:

Subdominant:

Survey Team: Doug Lieb, John Wells, Dennis Gnath

Visit Comments:

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** **# Traps:** **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Water not deep enough to set traps or to electrofish.

Station 03A05 **Visit** 2 **Survey Date** 7/3/2002

PIC19017.jpg

PIC19018.jpg

PIC19019.jpg

Station 03A06 **Visit** 1 **Survey Date:** 06/06/2002 **Time:** 3:30 PM

Waterbody Name: Little Tonsina Flats Tributary (Local Name) **Pipeline Milepost:** 730.78

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	61.50970	-145.23701		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Valdez C-4 **Elevation (m):** 541

Anadromous Waters Catalog Number:

Geographic Comments: Station is located by using odometer for 0.22 miles past 731 PLMP. Location is 50 m north of beaver pond where it crosses the ROW. Powerlines to west. There is a second stream just 0.5 miles further north.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air:	**Water:**			

Qualitative Velocity: N/A **Water Color:** Feric

Stream Stage: Low, Discontinuous Flow **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:** Organic
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells, David Schmidt

Visit Comments: No sampling effort performed because of lack of water.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** **# Traps:** **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments:

Station 03A06 **Visit** 1 **Survey Date** 6/6/2002

PIC03015.jpg

PIC03016.jpg

Station 03A06 **Visit** 2 **Survey Date:** 07/03/2002 **Time:** 1:55 PM

Waterbody Name: Little Tonsina Flats Tributary (Local Name) **Pipeline Milepost:** 730.78

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	61.50970	-145.23701		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Valdez C-4 **Elevation (m):** 541

Anadromous Waters Catalog Number:

Geographic Comments: Station is located by using odometer for 0.22 miles past 731 PLMP. Location is 50 m north of beaver pond where it crosses the ROW. Powerlines to west. There is a second stream just 0.5 miles further north.

Station Characteristics

Temperature (C) **DO (ppm):** 7.01 **Turbidity (NTU)** 1 **Stream Gradient (%):** 1

Air: 22 **Water:** 14.3 **Qualitative Velocity:** Slow **Water Color:** Clear

Stream Stage: Low, Discontinuous Flow **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:** Organic
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells, Dennis Gnath

Visit Comments: Stream is 0.75 m wide and 0.04 m deep at LWC. Upstream of LWC stream is a marsh with tall graminoids, surrounded by willows; 50 m further upstream, channel opens up into series of ponds. Downstream of LWC stream goes subsurface off and on for 10 m, where it emerges and flows into a series of pools. Whole area is wet marsh with thick graminoids.

Species: coho salmon **Life Stage:** Juvenile **Life History:** Anadromous

Count: 10 **Fork lengths (mm):** 44 40 38 46 51 66 77 71 75

Gear: Portable Electrofisher **EF Time (s):** 142 **# Traps:** 4 **Trap Duration (h):** 0.8

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Unknown **Height (m):** **Pool depth (m):**

Comments: Four cohos where caught in traps with 3 from traps set in pond upstream of LWC. Mesh of traps was 1/4. Pictures 14,15,16 are of coho and sculpin.

Species: slimy sculpin **Life Stage:** Juvenile/Adult **Life History:** Resident

Count: 1 **Fork lengths (mm):** 51

Gear: Portable Electrofisher **EF Time (s):** 142 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Unknown **Height (m):** **Pool depth (m):**

Comments: Caught with electrofisher downstream of LWC.

Station 03A06 **Visit** 2 **Survey Date** 7/3/2002

PIC19009.jpg

PIC19010.jpg

PIC19011.jpg

Station 04A01 **Visit** 1 **Survey Date:** 06/07/2002 **Time:** 1:35 PM

Waterbody Name: South Fork Yetna Creek (Local Name) **Pipeline Milepost:** 696.06

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	61.96877	-145.34892		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Valdez D-4 **Elevation (m):** 375

Anadromous Waters Catalog Number:

Geographic Comments: Accessed through 19-APL-3. Crossing 70 m south of where pipeline emerges from ground. Sixty meters from 696 PLMP.

Station Characteristics

Temperature (C) **Air:** **Water:** 6.4 **DO (ppm):** 8.16 **Qualitative Velocity:** N/A **Turbidity (NTU)** 0 **Water Color:** Clear **Stream Gradient (%):** 0.5

Stream Stage: Low, Continuous Surface Flow **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**
Width		1.5
Thalweg Depth		0.7

Substrate

Dominant: Organic

Subdominant:

Subdominant:

Survey Team: Doug Lieb, John Wells, David Schmidt

Visit Comments: Stream forms pool in LWC. Downstream of LWC, channel spreads out creating a wet area with no flow or channel. Above LWC stream is defined channel for 7 m then spreads out into a bog with several sections of open water.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 58 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: High conductivity required reducing electrofisher voltage output.

Appendix C1.-Page 66 of 674.

Station 04A01 **Visit** 1 **Survey Date** 6/7/2002

PIC04001.jpg

PIC04002.jpg

Station 04A01 **Visit** 2 **Survey Date:** 07/05/2002 **Time:** 2:50 PM

Waterbody Name: South Fork Yetna Creek (Local Name) **Pipeline Milepost:** 696.06

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	61.96877	-145.34892		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Valdez D-4 **Elevation (m):** 375

Anadromous Waters Catalog Number:

Geographic Comments: Accessed through 19-APL-3. Crossing 70 m south of where pipeline emerges from ground. Sixty meters from 696 PLMP.

Station Characteristics

Temperature (C) **Air:** 19 **Water:** 11 **DO (ppm):** 5.6 **Turbidity (NTU)** 0 **Stream Gradient (%):**

Qualitative Velocity: Still **Water Color:** Humic

Stream Stage: Dry, No defined Channel **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**
Width		
Thalweg Depth		

Substrate

Dominant: Organic

Subdominant:

Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: There is no water in or flowing through LWC. To the east of LWC there is no water or presence of a channel. To the west of LWC there is standing water in a pool/marsh system. Pools are heavily vegetated with graminoids which would make shocking very inefficient.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 80 **# Traps:** 2 **Trap Duration (h):** 3.0

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Caught tadpole in minnow trap. Electrofished pond/marsh area, heavy vegetation limited areas could sample.

Station 04A01 **Visit** 2 **Survey Date** 7/5/2002

PIC20009.jpg

PIC20010.jpg

PIC20011.jpg

Station 04A01 **Visit** 3 **Survey Date:** 08/26/2002 **Time:** 11:20 AM

Waterbody Name: South Fork Yetna Creek (Local Name) **Pipeline Milepost:** 696.06

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	61.96877	-145.34892		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Valdez D-4 **Elevation (m):** 375

Anadromous Waters Catalog Number:

Geographic Comments: Accessed through 19-APL-3. Crossing 70 m south of where pipeline emerges from ground. Sixty meters from 696 PLMP.

Station Characteristics

Temperature (C) **Air:** 11 **Water:** 8.2 **DO (ppm):** 6.69 **Turbidity (NTU)** 3 **Stream Gradient (%):**

Qualitative Velocity: Still **Water Color:** Clear

Stream Stage: Dry, No defined Channel **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**
Width		
Thalweg Depth		

Substrate

Dominant: Organic

Subdominant:

Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: The LWC is dry, and no channel is evident east of the LWC. To the west of LWC there is no channel, but 5 m from the LWC water appears in marsh graminoids. This water is present till other side of PAD where it forms a large marsh pond. The pond has graminoids that have fallen over and created a top layer of graminoids over the whole water surface, making inefficient to electrofish. Two traps were set, 1 in each of the marsh ponds.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Minnow Trap, 1/4 in. Mesh **EF Time (s):** **# Traps:** 2 **Trap Duration (h):** 0.5

Channel: Off Channel (disconnected at inlet and/or outlet)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Traps were set in marsh ponds.

Station 04A01 **Visit** 3 **Survey Date** 8/26/2002

PIC58014.jpg

PIC58015.jpg

PIC58016.jpg

Station 04A02 **Visit** 1 **Survey Date:** 06/07/2002 **Time:** 2:14 PM

Waterbody Name: Yetna Creek Tributary (Local Name) **Pipeline Milepost:** 695.29

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	61.97489	-145.36852		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Valdez D-4 **Elevation (m):** 421

Anadromous Waters Catalog Number:

Geographic Comments: At designated PLMP no stream or dry stream channel is found. Derived PLMP from VSMs.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air:	**Water:**			

Qualitative Velocity: N/A **Water Color:**

Stream Stage: Dry, No defined Channel **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells, David Schmidt

Visit Comments: No water quality or sampling performed because of lack of water or channel.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** **# Traps:** **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments:

Station 04A02 **Visit** 1 **Survey Date** 6/7/2002

No Photo Available

Station 04A03 **Visit** 1 **Survey Date:** 06/07/2002 **Time:** 2:38 PM

Waterbody Name: Yetna Creek **Pipeline Milepost:** 694.47

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	61.83210	-145.38472		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Valdez D-4 **Elevation (m):** 431

Anadromous Waters Catalog Number:

Geographic Comments: Station is between VSMs 3666794 and 3666855.

Station Characteristics

Temperature (C) **DO (ppm):** 8.78 **Turbidity (NTU)** 1 **Stream Gradient (%):** 1

Air: 24 **Water:** 7.4 **Qualitative Velocity:** N/A **Water Color:**

Stream Stage: Low, Continuous Surface Flow **48 hr. Precipitation/Runoff:** N/A

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**	
Width		1	**Dominant:**	Organic
Thalweg Depth		0.09	**Subdominant:**	Gravel
			Subdominant:	Cobble

Survey Team: Doug Lieb, John Wells, David Schmidt

Visit Comments: Upstream of LWC stream comes from pond-like structure into a narrow channel 5 m long, then spreads out when crossing ROW. On downstream side, channel spreads out into a 4 m-wide pool that drains off into forest. LWC is well rutted.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 127 **# Traps:** **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Stream morphology hinders sampling efficiency, lots of weeds and very narrow, shallow channels.

Station 04A03 **Visit** 1 **Survey Date** 6/7/2002

PIC04003.jpg

PIC04004.jpg

PIC04005.jpg

Station 04A03 **Visit** 2 **Survey Date:** 07/05/2002 **Time:** 3:15 PM

Waterbody Name: Yetna Creek **Pipeline Milepost:** 694.47

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	61.83210	-145.38472		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Valdez D-4 **Elevation (m):** 431

Anadromous Waters Catalog Number:

Geographic Comments: Station is between VSMs 3666794 and 3666855.

Station Characteristics

Temperature (C) **Air:** 19 **Water:** 10.9 **DO (ppm):** 5.85 **Turbidity (NTU)** 0 **Stream Gradient (%):**

Qualitative Velocity: Slow **Water Color:** Muddy

Stream Stage: Low, Discontinuous Flow **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**
Width		0.2
Thalweg Depth		0.1

Substrate

Dominant: Organic

Subdominant: Gravel

Subdominant: Cobble

Survey Team: Doug Lieb, John Wells

Visit Comments: West of LWC the stream has discontinuous surface water that turns into a marsh with standing water and thick graminoids. Directly off the ROW to the east of LWC is standing pool that trap was set in. There is discontinuous surface water flow to the east and 10 m from ROW a small pond is formed not deep enough to sink trap. From here it flows in marsh for 20 m where flow goes subsurface.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 64 **# Traps:** 1 **Trap Duration (h):** 0.4

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Water flow is discontinuous, low and full of grasses. The small amount of fishable water limited sampling time. Only enough water to set the one trap.

Station 04A03 **Visit** 2 **Survey Date** 7/5/2002

PIC20013.jpg

PIC20014.jpg

PIC20015.jpg

Station 04A03 **Visit** 3 **Survey Date:** 08/26/2002 **Time:** 11:08 AM

Waterbody Name: Yetna Creek **Pipeline Milepost:** 694.47

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	61.83210	-145.38472		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Valdez D-4 **Elevation (m):** 431

Anadromous Waters Catalog Number:

Geographic Comments: Station is between VSMs 3666794 and 3666855.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air: 8	**Water:**			

Qualitative Velocity: N/A **Water Color:**

Stream Stage: Dry, Defined Channel **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:** Organic
Thalweg Depth			**Subdominant:** Gravel
			Subdominant: Cobble

Survey Team: Doug Lieb, John Wells

Visit Comments: There is a defined LWC with a few small puddles, and a channel that goes under the pipeline but then disappears into marsh vegetation. Upstream and downstream the only evidence of a channel is the marsh vegetation growing very thick, with some standing water.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** **# Traps:** **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: No water, no sampling.

Station 04A03 **Visit** 3 **Survey Date** 8/26/2002

PIC58012.jpg

PIC58013.jpg

Station 04A04 **Visit** 1 **Survey Date:** 06/07/2002 **Time:** 3:31 PM

Waterbody Name: North Fork Yetna Creek (Local Name) **Pipeline Milepost:** 691.87

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	61.01329	-145.43172		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Gulkana A-3 **Elevation (m):** 435

Anadromous Waters Catalog Number:

Geographic Comments: Fifty meters north of valve 107 on ROW. Powerline crosses upstream of ROW approximately 30 m.

Station Characteristics

Temperature (C) **Air:** 25 **Water:** 12.2 **DO (ppm):** 7.8 **Qualitative Velocity:** Medium **Turbidity (NTU)** 1 **Water Color:** Clear **Stream Gradient (%):** 1.8

Stream Stage: High **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**
Width		4
Thalweg Depth		0.73

Substrate

Dominant: Organic

Subdominant:

Subdominant:

Survey Team: Doug Lieb, John Wells, David Schmidt

Visit Comments: Stream at LWC is spread out, creating a pool with fast flow. Stream is flooded above OHW. This makes it difficult to measure OHW width and thalweg depth. Stream is flooded into the shrubs along the banks, both above and below ROW. Station is upstream of ROW. Downstream of LWC the stream flows through very thick willows.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 131 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Stream is flooded above OHW and spread out into the shrubs making electrofishing difficult.

Station 04A04 **Visit** 1 **Survey Date** 6/7/2002

PIC04006.jpg

PIC04007.jpg

PIC04008.jpg

Station 04A04 **Visit** 2 **Survey Date:** 07/05/2002 **Time:** 3:55 PM

Waterbody Name: North Fork Yetna Creek (Local Name) **Pipeline Milepost:** 691.87

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	61.01329	-145.43172		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Gulkana A-3 **Elevation (m):** 435

Anadromous Waters Catalog Number:

Geographic Comments: Fifty meters north of valve 107 on ROW. Powerline crosses upstream of ROW approximately 30 m.

Station Characteristics

Temperature (C) **Air:** 19 **Water:** 15.6 **DO (ppm):** 7.23 **Qualitative Velocity:** N/A **Turbidity (NTU)** 4 **Water Color:** Clear **Stream Gradient (%):**

Stream Stage: Medium **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**
Width		
Thalweg Depth		0.29

Substrate

Dominant: Organic

Subdominant:

Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Stream is much lower than first visit. Downstream of LWC, channel becomes braided with vegetation and willows growing right into water. No real banks.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 164 **# Traps:** 2 **Trap Duration (h):** 0.5

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: No fish were seen or turned. Overgrowth of willows downstream of LWC is so thick only small portions of stream can be accessed. Upstream of LWC stream is very marshy with narrow channel.

Station 04A04 **Visit** 2 **Survey Date** 7/5/2002

PIC20016.jpg

PIC20017.jpg

PIC20018.jpg

Station 04A04 **Visit** 3 **Survey Date:** 08/26/2002 **Time:** 9:55 AM

Waterbody Name: North Fork Yetna Creek (Local Name) **Pipeline Milepost:** 691.87

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	61.01329	-145.43172		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Gulkana A-3 **Elevation (m):** 435

Anadromous Waters Catalog Number:

Geographic Comments: Fifty meters north of valve 107 on ROW. Powerline crosses upstream of ROW approximately 30 m.

Station Characteristics

Temperature (C) **Air:** 7 **Water:** 8.2 **DO (ppm):** 9.71 **Turbidity (NTU)** 1 **Stream Gradient (%):**

Qualitative Velocity: Slow **Water Color:** Clear

Stream Stage: Low **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**
Width		1.6
Thalweg Depth		0.23

Substrate

Dominant: Organic

Subdominant:

Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: LWC is wide pool with a high point on downstream side where rocks have formed a ridge from trucks driving through. Stream has two channels flowing out of LWC pool into the thick willows which overgrow the channels and grow out of the water. Upstream of LWC the stream has open water for 10 m then water is sufficiently shallow for emergent vegetation; creating a closed channel with water flowing through the plants very slowly. Pictures taken start with downstream of LWC and then move to upstream and up into the essentially non-flowing upstream portion with emergent vegetation.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 229 **# Traps:** 2 **Trap Duration (h):** 0.8

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Willows downstream are very thick, preventing access to sections of stream. Upstream, thick plant growth in and over water prevent water access.

Station 04A04 **Visit** 3 **Survey Date** 8/26/2002

PIC58005.jpg

PIC58006.jpg

PIC58008.jpg

Station 04A05 **Visit** 1 **Survey Date:** 06/07/2002 **Time:** 3:54 PM

Waterbody Name: North Fork Yetna Creek Tributary (Local Name) **Pipeline Milepost:** 691.7

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 8
	61.01519	-145.43422		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Gulkana A-3 **Elevation (m):** 436

Anadromous Waters Catalog Number:

Geographic Comments: Stream is 7 m south of VMS 3652210.

Station Characteristics

Temperature (C) **Air:** **Water:** 9 **DO (ppm):** 4.38 **Turbidity (NTU)** 0 **Stream Gradient (%):**

Qualitative Velocity: N/A **Water Color:** Clear

Stream Stage: Wet, No Defined Channel **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width		1.7	**Dominant:**
Thalweg Depth		0.4	**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells, David Schmidt

Visit Comments: Station is upstream of ROW LWC. At LWC pool has formed with ruts from vehicle crossings. Below ROW flow empties into bog. Above station water emerges from bog. Stream channel under pipeline artificially created by APSC.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 84 **# Traps:** 0 **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments:

Station 04A05 **Visit** 1 **Survey Date** 6/7/2002

PIC04009.jpg

PIC04010.jpg

PIC04011.jpg

Station 04A05 **Visit** 2 **Survey Date:** 07/05/2002 **Time:** 4:45 PM

Waterbody Name: North Fork Yetna Creek Tributary (Local Name) **Pipeline Milepost:** 691.7

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 8
	61.01519	-145.43422		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Gulkana A-3 **Elevation (m):** 436

Anadromous Waters Catalog Number:

Geographic Comments: Stream is 7 m south of VMS 3652210.

Station Characteristics

Temperature (C) **Air:** 19 **Water:** 11.4 **DO (ppm):** 2.62 **Turbidity (NTU)** 1 **Stream Gradient (%):**

Qualitative Velocity: Slow **Water Color:** Clear

Stream Stage: Low, Discontinuous Flow **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width		0.2	**Dominant:**
Thalweg Depth		0.12	**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Pool in LWC. Both directions channel becomes graminoid-covered marsh. Some flow is evident coming into the LWC from the west. First 5 m upstream of LWC is channel with flow in it, after that become graminoid marsh.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 65 **# Traps:** 0 **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Sampled LWC and 15 m upstream until channel became too densely vegetated to electrofish. Upstream and downstream of LWC water is not deep enough for minnow trapping.

Station 04A05 **Visit** 2 **Survey Date** 7/5/2002

PIC20020.jpg

PIC20021.jpg

PIC20022.jpg

Station 04A05 **Visit** 3 **Survey Date:** 08/26/2002 **Time:** 9:40 AM

Waterbody Name: North Fork Yetna Creek Tributary (Local Name) **Pipeline Milepost:** 691.7

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 8
	61.01519	-145.43422		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Gulkana A-3 **Elevation (m):** 436

Anadromous Waters Catalog Number:

Geographic Comments: Stream is 7 m south of VMS 3652210.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air: 7	**Water:**			

Qualitative Velocity: Still **Water Color:** Muddy

Stream Stage: Low, Discontinuous Flow **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: LWC has ruts with two puddles. There is no flow, the small channel evident on last visit is no longer present, there are several small standing water pools in the vegetation. Remainder of area on both west and east of LWC is marsh.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** **# Traps:** **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Not enough water to electrofish, only open water are puddles in LWC.

Station 04A05 **Visit** 3 **Survey Date** 8/26/2002

PIC58001.jpg

PIC58002.jpg

PIC58004.jpg

Station 05A01 **Visit** 1 **Survey Date:** 06/08/2002 **Time:** 8:47 AM

Waterbody Name: McCallum Creek **Pipeline Milepost:** 601.51

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	63.22362	-145.65265		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Mt Hayes A-4 **Elevation (m):** 917

Anadromous Waters Catalog Number:

Geographic Comments: At downstream side of McCallum Creek Richardson Highway crossing with street sign listing name visible. Station is upstream of ROW. Location is not on stream list, stream was added at the request of Dave Schmidt, APSC.

Station Characteristics

Temperature (C) **DO (ppm):** 11.27 **Turbidity (NTU)** 17 **Stream Gradient (%):** 1

Air: 15 **Water:** 2.4 **Qualitative Velocity:** Medium **Water Color:** Glacial, Low Turbidity

Stream Stage: Medium **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**	
Width		4	**Dominant:**	Cobble
Thalweg Depth			**Subdominant:**	Boulder
			Subdominant:	Gravel

Survey Team: Doug Lieb, John Wells, David Schmidt

Visit Comments: This is a stream restoration project by Alyeska. Stream has artificial channel created to prevent meandering. Channel is created with high gravel banks with rock outcroppings every 20 meters to control water velocity. Willows were cut and buried in the stream banks by Alyeska to help stabilize the banks. Beyond banks of stream are open gravel fields with few shrubs.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 175 **# Traps:** 0 **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Swift glacial water makes sampling difficult. Fishing was performed from banks because of swift current.

Station 05A01 **Visit** 1 **Survey Date** 6/8/2002

PIC05001.jpg

PIC05002.jpg

Station 05A02 **Visit** 1 **Survey Date:** 06/08/2002 **Time:** 9:59 AM

Waterbody Name: Phelan Creek **Pipeline Milepost:** 599.2

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 7
	63.25453	-145.69308		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Mt Hayes B-4 **Elevation (m):** 858

Anadromous Waters Catalog Number:

Geographic Comments: Station is at old LWC, 70 m before bridge with locked gate on it. Phelan Creek runs parallel to Access Road 36-APL-1A. Mileage on fish list 598.5 appears incorrect. Nothing was found at that mileage.

Station Characteristics

Temperature (C) **DO (ppm):** **Turbidity (NTU)** **Stream Gradient (%):**

Air: **Water:** **Qualitative Velocity:** N/A **Water Color:**

Stream Stage: Dry, No defined Channel **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m): **OHW** **Wetted** **Substrate**

Width **Dominant:**

Thalweg Depth **Subdominant:**

Subdominant:

Survey Team: Doug Lieb, John Wells, David Schmidt

Visit Comments: No water present at designated location. There once was a culvert at this location, but it has been removed. This station was located by Dave Schmidt.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** **# Traps:** 0 **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: No water present.

Appendix C1.-Page 94 of 674.

Station 05A02 **Visit** 1 **Survey Date** 6/8/2002

PIC05003.jpg

Station 05A03 **Visit** 1 **Survey Date:** 06/08/2002 **Time:** 11:21 AM

Waterbody Name: Delta River Tributary (Local Name) **Pipeline Milepost:** 584.1

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	63.44239	-145.79887		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Mt Hayes B-4 **Elevation (m):** 723

Anadromous Waters Catalog Number:

Geographic Comments: Stream is Delta River tributary that comes in off a dike used to prevent Delta River flooding onto ROW. Accessed using 36-APL-5: head north and will have dike on right side of vehicle, at end of dike is LWC.

Station Characteristics

Temperature (C) **Air:** 15.5 **Water:** 7.8 **DO (ppm):** 9.8 **Qualitative Velocity:** N/A **Turbidity (NTU)** 0 **Water Color:** Clear **Stream Gradient (%):** 1

Stream Stage: Low **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**
Width	12	6
Thalweg Depth	0.7	0.25

Substrate

Dominant: Gravel
Subdominant: Silt/Clay
Subdominant: Sand

Survey Team: Doug Lieb, John Wells, David Schmidt

Visit Comments: Stream follows ROW then crosses at the LWC. Upstream of station the stream channel widens; downstream of LWC stream narrows again as goes through the channel constructed through the dike.

Species: salmon, trout, char, grayling or whitefish, undif. **Life Stage:** Juvenile/Adult **Life History:** Unknown

Count: 1 **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 219 **# Traps:** 0 **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Unknown **Height (m):** **Pool depth (m):**

Comments: Fish seen out of electrofisher range; approximately 100 mm FL.

Station 05A03 **Visit** 1 **Survey Date** 6/8/2002

PIC05004.jpg

PIC05005.jpg

Station 05A03 **Visit** 2 **Survey Date:** 07/06/2002 **Time:** 1:30 PM

Waterbody Name: Delta River Tributary (Local Name) **Pipeline Milepost:** 584.1

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	63.44239	-145.79887		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Mt Hayes B-4 **Elevation (m):** 723

Anadromous Waters Catalog Number:

Geographic Comments: Stream is Delta River tributary that comes in off a dike used to prevent Delta River flooding onto ROW. Accessed using 36-APL-5: head north and will have dike on right side of vehicle, at end of dike is LWC.

Station Characteristics

Temperature (C) **Air:** 14 **Water:** 11.3 **DO (ppm):** 9.67 **Qualitative Velocity:** Medium **Turbidity (NTU)** 3 **Water Color:** Clear **Stream Gradient (%):** 0.5

Stream Stage: Low **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**	
Width		5	**Dominant:**	Gravel
Thalweg Depth		0.27	**Subdominant:**	Silt/Clay
			Subdominant:	Sand

Survey Team: Doug Lieb, John Wells

Visit Comments: Station is upstream of LWC. Dump trucks have been crossing with loads of gravel that are being dumped on 25 m north of LWC to fill in a depression. Stream downstream of LWC has pools and woody debris in channel. Upstream of LWC stream broadens and has heavy deposition poorly consolidated sand and silt.

Species: grayling **Life Stage:** Juvenile/Adult **Life History:** Resident

Count: 3 **Fork lengths (mm):** 91 65

Gear: Portable Electrofisher **EF Time (s):** 391 **# Traps:** 3 **Trap Duration (h):** 1.0

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Unknown **Height (m):** **Pool depth (m):**

Comments: No fish caught in minnow traps. One fish seen at minnow trap location halfway between stream mouth and LWC. One grayling caught at stream mouth. Second grayling caught halfway between mouth and LWC.

Species: slimy sculpin **Life Stage:** Juvenile/Adult **Life History:** Resident

Count: 1 **Fork lengths (mm):** 53

Gear: Portable Electrofisher **EF Time (s):** 391 **# Traps:** **Trap Duration (h):** 1.0

Channel: Main Channel (>50% of water flow)

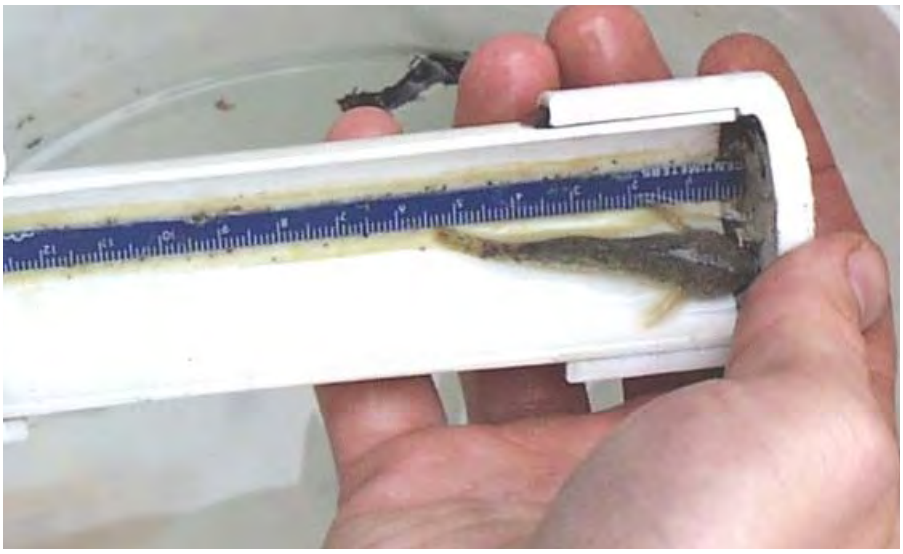
Fish Passage Barrier: Unknown **Height (m):** **Pool depth (m):**

Comments: Caught downstream of LWC. Picture 8 taken of sculpin.

Station 05A03 **Visit** 2 **Survey Date** 7/6/2002

PIC21006.jpg

PIC21007.jpg



PIC21008.jpg

Station 05A04 **Visit** 1 **Survey Date:** 06/08/2002 **Time:** 12:00 PM

Waterbody Name: Delta River Tributary (Local Name) **Pipeline Milepost:** 582.76

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 8
	63.45847	-145.82861		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Mt Hayes B-4 **Elevation (m):** 705

Anadromous Waters Catalog Number:

Geographic Comments: Using PLMP located site given on fish stream list: no channel, culvert, or LWC was located.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air:	**Water:**			

Qualitative Velocity: N/A **Water Color:**

Stream Stage: Dry, Defined Channel **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: No channel or water at specified PLMP.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** **# Traps:** **Trap Duration (h):**

Channel:

Fish Passage Barrier: **Height (m):** **Pool depth (m):**

Comments: No water to sample.

Station 05A04 **Visit** 1 **Survey Date** 6/8/2002

No Photo Available

Station 05A05 **Visit** 1 **Survey Date:** 06/08/2002 **Time:** 12:25 PM

Waterbody Name: Whistler Creek **Pipeline Milepost:** 581.81

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 8
	63.46859	-145.84705		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Mt Hayes B-4 **Elevation (m):** 702

Anadromous Waters Catalog Number:

Geographic Comments: Upstream of station is Richardson Highway with bridge sign stating "Whistler Creek". On the ROW there is also a sign stating the creek name along with PLMP of stream.

Station Characteristics

Temperature (C) **Air:** 14 **Water:** 5.6 **DO (ppm):** 10.21 **Qualitative Velocity:** N/A **Turbidity (NTU)** 18 **Water Color:** Glacial, Low Turbidity **Stream Gradient (%):** 4

Stream Stage: Medium **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**
Width	30	2
Thalweg Depth	1.5	0.19

Substrate

Dominant: Cobble

Subdominant: Boulder

Subdominant:

Survey Team: Doug Lieb, John Wells, David Schmidt

Visit Comments: Stream has well defined cobble, boulder floodplain with evidence of channel meandering.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 210 **# Traps:** 0 **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Fast velocity of water and slight sediment load makes difficult to see if are fish present.

Station 05A05 **Visit** 1 **Survey Date** 6/8/2002

PIC05006.jpg

PIC05007.jpg

PIC05008.jpg

Station 05A05 **Visit** 2 **Survey Date:** 07/06/2002 **Time:** 3:21 PM

Waterbody Name: Whistler Creek **Pipeline Milepost:** 581.81

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 8
	63.46859	-145.84705		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Mt Hayes B-4 **Elevation (m):** 702

Anadromous Waters Catalog Number:

Geographic Comments: Upstream of station is Richardson Highway with bridge sign stating "Whistler Creek". On the ROW there is also a sign stating the creek name along with PLMP of stream.

Station Characteristics

Temperature (C) **Air:** 15 **Water:** 9 **DO (ppm):** 10.32 **Qualitative Velocity:** Fast **Turbidity (NTU)** 80 **Stream Gradient (%):** **Water Color:** Glacial, High Turbidity

Stream Stage: Medium **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**
Width		1
Thalweg Depth		0.2

Substrate

Dominant: Cobble

Subdominant: Boulder

Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Stream has heavy turbidity, possible work upstream near Richardson Highway.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 208 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Current is swift, with high turbidity. Difficult to walk in stream and visibility is poor.

Station 05A05 **Visit** 2 **Survey Date** 7/6/2002

PIC21010.jpg

PIC21011.jpg

PIC21012.jpg

Station 05A05 **Visit** 3 **Survey Date:** 08/25/2002 **Time:** 12:36 PM

Waterbody Name: Whistler Creek **Pipeline Milepost:** 581.81

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 8
	63.46859	-145.84705		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Mt Hayes B-4 **Elevation (m):** 702

Anadromous Waters Catalog Number:

Geographic Comments: Upstream of station is Richardson Highway with bridge sign stating "Whistler Creek". On the ROW there is also a sign stating the creek name along with PLMP of stream.

Station Characteristics

Temperature (C) **Air:** 13 **Water:** 6.7 **DO (ppm):** 12.29 **Qualitative Velocity:** Fast **Turbidity (NTU)** 102 **Stream Gradient (%):** **Water Color:** Glacial, Low Turbidity

Stream Stage: Medium **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**
Width		3
Thalweg Depth		0.21

Substrate

Dominant: Cobble

Subdominant: Boulder

Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Stream has wide alluvial floodplain with braided channels, which is not drivable.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 154 **# Traps:** 2 **Trap Duration (h):** 0.3

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Traps were both set upstream of LWC. The water was turbid and turbulent.

Station 05A05 **Visit** 3 **Survey Date** 8/25/2002

PIC57017.jpg

PIC57018.jpg

Station 05A06 **Visit** 1 **Survey Date:** 06/08/2002 **Time:** 1:12 PM

Waterbody Name: Boulder Creek **Pipeline Milepost:** 581.04

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	63.47921	-145.85669		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Mt Hayes B-4 **Elevation (m):** 714

Anadromous Waters Catalog Number:

Geographic Comments: Stream is located by "Boulder Creek" signs on Richardson Highway and on ROW; pipeline sign lists PLMP.

Station Characteristics

Temperature (C) **Air:** 15 **Water:** 5.2 **DO (ppm):** 10.77 **Qualitative Velocity:** N/A **Turbidity (NTU)** 9 **Stream Gradient (%):** 5

Water Color: Clear

Stream Stage: Medium **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**
Width	20	1.8
Thalweg Depth	2	0.24

Substrate

Dominant: Cobble

Subdominant: Boulder

Subdominant:

Survey Team: Doug Lieb, John Wells, David Schmidt

Visit Comments: Station is located in main channel of braided system. Stream eroding banks heavily, with riparian trees falling into channel.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 290 **# Traps:** 0 **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Stream velocity is fast with multiple channels lowering efficiency of the electrofisher.

Station 05A06 **Visit** 1 **Survey Date** 6/8/2002

PIC05009.jpg

PIC05010.jpg

PIC05011.jpg

Station 05A06 **Visit** 2 **Survey Date:** 07/06/2002 **Time:** 4:20 PM

Waterbody Name: Boulder Creek **Pipeline Milepost:** 581.04

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	63.47921	-145.85669		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Mt Hayes B-4 **Elevation (m):** 714

Anadromous Waters Catalog Number:

Geographic Comments: Stream is located by "Boulder Creek" signs on Richardson Highway and on ROW; pipeline sign lists PLMP.

Station Characteristics

Temperature (C) **Air:** 15 **Water:** 9.8 **DO (ppm):** 9.99 **Turbidity (NTU)** 76 **Stream Gradient (%):**

Qualitative Velocity: Fast **Water Color:** Glacial, High Turbidity

Stream Stage: Medium **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**
Width		1.5
Thalweg Depth		0.22

Substrate

Dominant: Cobble

Subdominant: Boulder

Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Flow in main channel is swift with high turbidity. Subsurface flow creating discontinuous small side channels, along with surface flow branching small side channels. Stream width varies greatly along length of stream.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 180 **# Traps:** 1 **Trap Duration (h):** 0.5

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Only one trap placed due to fast current with no pools. Trap was placed under a small waterfall. Fast and turbid water lowered fishing efficiency.

Station 05A06 **Visit** 2 **Survey Date** 7/6/2002

PIC21013.jpg

PIC21014.jpg

PIC21015.jpg

Station 05A06 **Visit** 3 **Survey Date:** 08/25/2002 **Time:** 11:25 AM

Waterbody Name: Boulder Creek **Pipeline Milepost:** 581.04

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	63.47921	-145.85669		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Mt Hayes B-4 **Elevation (m):** 714

Anadromous Waters Catalog Number:

Geographic Comments: Stream is located by "Boulder Creek" signs on Richardson Highway and on ROW; pipeline sign lists PLMP.

Station Characteristics

Temperature (C) **Air:** 13 **Water:** 6.2 **DO (ppm):** 12.61 **Turbidity (NTU)** 47 **Stream Gradient (%):**

Qualitative Velocity: Fast **Water Color:** Glacial, Low Turbidity

Stream Stage: Medium **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**	
Width		2.5	**Dominant:**	Cobble
Thalweg Depth		0.31	**Subdominant:**	Boulder
			Subdominant:	

Survey Team: Doug Lieb, John Wells

Visit Comments: LWC is not maintained, difficult crossing in a vehicle. Stream has same appearance as in last visit. Water is not muddy but has suspended fines slightly tinting water.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 186 **# Traps:** 4 **Trap Duration (h):** 0.8

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Traps were set 2 upstream and 2 downstream of LWC. Stream is fast moving, water has many deep sections with low visibility in water.

Station 05A06 **Visit** 3 **Survey Date** 8/25/2002

PIC57014.jpg

PIC57015.jpg

PIC57016.jpg

Station 05A07 **Visit** 1 **Survey Date:** 06/08/2002 **Time:** 1:59 PM

Waterbody Name: Suzy Q Creek **Pipeline Milepost:** 579.9

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 7
	63.49509	-145.86107		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Mt Hayes B-4 **Elevation (m):** 724

Anadromous Waters Catalog Number:

Geographic Comments: Stream has name sign name on Richardson Highway and ROW has name and PLMP.

Station Characteristics

Temperature (C) **DO (ppm):** 10.6 **Turbidity (NTU)** 2 **Stream Gradient (%):** 8

Air: 15 **Water:** 5.6 **Qualitative Velocity:** Fast **Water Color:** Clear

Stream Stage: Medium **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**	
Width		1.4	**Dominant:**	Boulder
Thalweg Depth			**Subdominant:**	Cobble
			Subdominant:	Gravel

Survey Team: Doug Lieb, John Wells, David Schmidt

Visit Comments: Station is located upstream of ROW and LWC. Upstream of ROW is a waterfall, and downstream is smaller waterfall, both approx 10-20 m from ROW. Across ROW the stream is shallow and spreads out. On downstream side of ROW the channel deepens and becomes much steeper.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 144 **# Traps:** 0 **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Waterfall both above and below station create barriers for fish (if present) migration upstream. Upper water fall is 6.3 m with pool depth of 0.27 m; lower waterfall is 2.83 m with pool depth of 0.4 m.

Station 05A07 **Visit** 1 **Survey Date** 6/8/2002

PIC05012.jpg

PIC05013.jpg

PIC05016.jpg

Station 05A07 **Visit** 2 **Survey Date:** 07/07/2002 **Time:** 9:38 AM

Waterbody Name: Suzy Q Creek **Pipeline Milepost:** 579.9

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 7
	63.49509	-145.86107		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Mt Hayes B-4 **Elevation (m):** 724

Anadromous Waters Catalog Number:

Geographic Comments: Stream has name sign name on Richardson Highway and ROW has name and PLMP.

Station Characteristics

Temperature (C) **Air:** 16 **Water:** 8.7 **DO (ppm):** 10.33 **Qualitative Velocity:** Fast **Turbidity (NTU)** 0 **Water Color:** Clear **Stream Gradient (%):**

Stream Stage: Medium **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**
Width		1
Thalweg Depth		0.15

Substrate

Dominant: Boulder

Subdominant: Cobble

Subdominant: Gravel

Survey Team: Doug Lieb, John Wells

Visit Comments: LWC is flattened out and flow widens and becomes shallow. Upstream of LWC is a waterfall (measured in Visit 1). Downstream is a small series of falls (measured in Visit 1). Stream is steep, with no vegetation directly on the banks. Evidence of high floods and fast current.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 216 **# Traps:** 3 **Trap Duration (h):** 0.5

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Fishing was very efficient, stream is clear and narrow allowing us to reach and see whole stream.

Station 05A07 **Visit** 2 **Survey Date** 7/7/2002

PIC22001.jpg

PIC22002.jpg

Station 05A07 **Visit** 3 **Survey Date:** 08/25/2002 **Time:** 10:20 AM

Waterbody Name: Suzy Q Creek **Pipeline Milepost:** 579.9

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 7
	63.49509	-145.86107		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Mt Hayes B-4 **Elevation (m):** 724

Anadromous Waters Catalog Number:

Geographic Comments: Stream has name sign name on Richardson Highway and ROW has name and PLMP.

Station Characteristics

Temperature (C) **Air:** 13 **Water:** 6.9 **DO (ppm):** 12.43 **Turbidity (NTU)** 0 **Stream Gradient (%):**

Qualitative Velocity: Fast **Water Color:** Clear

Stream Stage: Medium **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**	
Width		1.45	**Dominant:**	Boulder
Thalweg Depth		0.14	**Subdominant:**	Cobble
			Subdominant:	Gravel

Survey Team: Doug Lieb, John Wells

Visit Comments: LWC is in need of repair. The stream has become a braided channel across the LWC. Upstream and downstream of LWC the stream is one channel.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 156 **# Traps:** 3 **Trap Duration (h):** 0.8

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Stream has frequent plunge pools, and highly turbulent water, making sampling difficult. Traps were set in these pools up and downstream of LWC.

Station 05A07 **Visit** 3 **Survey Date** 8/25/2002

PIC57010.jpg

PIC57011.jpg

PIC57012.jpg

Station 06A01 **Visit** 1 **Survey Date:** 06/09/2002 **Time:** 8:45 AM

Waterbody Name: Camp Terry Creek (Local Name) **Pipeline Milepost:** 578.17

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 7
	63.51913	-145.89400		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Mt Hayes C-4 **Elevation (m):** 701

Anadromous Waters Catalog Number:

Geographic Comments: Sign labeling stream as "Terry Creek" on ROW. Access through Camp Terry.

Station Characteristics

Temperature (C) **Air:** 10 **Water:** 2.9 **DO (ppm):** 11.91 **Qualitative Velocity:** N/A **Turbidity (NTU)** 0 **Water Color:** Clear **Stream Gradient (%):** 8

Stream Stage: Low **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**
Width	5	1
Thalweg Depth	1.1	0.08

Substrate

Dominant: Boulder

Subdominant: Cobble

Subdominant:

Survey Team: Doug Lieb, John Wells, David Schmidt

Visit Comments: Station is upstream of LWC. Stream flooded previously and washed out the LWC and ROW. APSC has constructed a new channel and put in boulders to help stabilize the banks.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 290 **# Traps:** 0 **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Downstream is a series of three waterfalls that create a fish (if present) migration barrier. These waterfalls are identified in Station 06A02.

Station 06A01 **Visit** 1 **Survey Date** 6/9/2002

PIC06001.jpg

PIC06002.jpg

Station 06A01 **Visit** 2 **Survey Date:** 07/07/2002 **Time:** 11:00 AM

Waterbody Name: Camp Terry Creek (Local Name) **Pipeline Milepost:** 578.17

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 7
	63.51913	-145.89400		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Mt Hayes C-4 **Elevation (m):** 701

Anadromous Waters Catalog Number:

Geographic Comments: Sign labeling stream as "Terry Creek" on ROW. Access through Camp Terry.

Station Characteristics

Temperature (C) **Air:** 19 **Water:** 4.6 **DO (ppm):** 11.61 **Qualitative Velocity:** Medium **Turbidity (NTU)** 31 **Water Color:** Clear **Stream Gradient (%):**

Stream Stage: Low **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**	
Width		1.2	**Dominant:**	Boulder
Thalweg Depth		0.07	**Subdominant:**	Cobble
			Subdominant:	Gravel

Survey Team: Doug Lieb, John Wells

Visit Comments: Station is at the LWC, which looks to be in a heavily disturbed area, lots of work on bank stabilization.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 150 **# Traps:** 0 **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Stream is shallow and narrow allowing access to all parts of stream. Downstream sections had in-stream woody debris creating potential fish cover.

Station 06A01 **Visit** 2 **Survey Date** 7/7/2002

PIC22003.jpg

PIC22004.jpg

PIC22005.jpg

Station 06A01 **Visit** 3 **Survey Date:** 08/25/2002 **Time:** 9:10 AM

Waterbody Name: Camp Terry Creek (Local Name) **Pipeline Milepost:** 578.17

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 7
	63.51913	-145.89400		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Mt Hayes C-4 **Elevation (m):** 701

Anadromous Waters Catalog Number:

Geographic Comments: Sign labeling stream as "Terry Creek" on ROW. Access through Camp Terry.

Station Characteristics

Temperature (C) **Air:** 9 **Water:** 3.5 **DO (ppm):** 13.14 **Qualitative Velocity:** Medium **Turbidity (NTU)** 0 **Water Color:** Clear **Stream Gradient (%):**

Stream Stage: Low **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**
Width		1.1
Thalweg Depth		0.03

Substrate

Dominant: Boulder
Subdominant: Cobble
Subdominant: Gravel

Survey Team: Doug Lieb, John Wells

Visit Comments: LWC is in good shape, some small rutting is beginning to occur. Stream flow is low compared to previous visits. The stream is very shallow, which would make for difficult fish passage, creating lots of step pools.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 156 **# Traps:** 0 **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Water level low, and narrow. Not deep enough for any traps to be set.

Station 06A01 **Visit** 3 **Survey Date** 8/25/2002

PIC57001.jpg

PIC57002.jpg

PIC57003.jpg

Station 06A02 **Visit** 1 **Survey Date:** 06/09/2002 **Time:** 9:27 AM

Waterbody Name: Camp Terry Creek (falls) (Local Name) **Pipeline Milepost:** 578.17

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 7
	63.51915	-145.85182		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Mt Hayes C-4 **Elevation (m):** 678

Anadromous Waters Catalog Number:

Geographic Comments: Located downstream of Station 06A02 on same stream. Underneath wooden walking bridge.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air:	**Water:**			

Qualitative Velocity: N/A **Water Color:**

Stream Stage: **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells, David Schmidt

Visit Comments: If fish present in system, waterfalls create fish migration barrier. For description see Fish Data.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

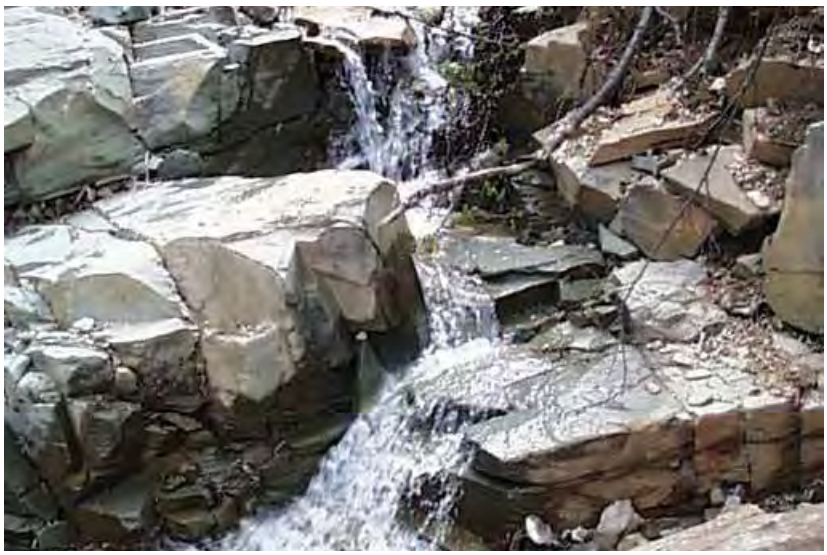
Gear: None **EF Time (s):** **# Traps:** 0 **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: A series of waterfalls measuring 0.7 m high with 0.12 m pool depth, 0.90 m high with 0.15 m pool depth, 1.3 m high with 0.17 m pool depth respectively.

Station 06A02 **Visit** 1 **Survey Date** 6/9/2002



PIC06003.jpg

PIC06004.jpg

Station 06A03 **Visit** 1 **Survey Date:** 06/09/2002 **Time:** 10:13 AM

Waterbody Name: Falls Creek **Pipeline Milepost:** 578.37

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 7
	63.51622	-145.85194		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Mt Hayes C-4 **Elevation (m):** 691

Anadromous Waters Catalog Number:

Geographic Comments: Stream name posted on ROW sign.

Station Characteristics

Temperature (C) **Air:** 11 **Water:** 4.2 **DO (ppm):** 10.18 **Qualitative Velocity:** N/A **Turbidity (NTU)** 1 **Water Color:** Clear **Stream Gradient (%):** 1.5

Stream Stage: Low **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**
Width	10	2
Thalweg Depth	0.7	0.13

Substrate

Dominant: Cobble

Subdominant: Boulder

Subdominant: Gravel

Survey Team: Doug Lieb, John Wells

Visit Comments: Station is upstream of LWC.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 113 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Downstream of station is a waterfall which creates a fish (if present) migration barrier. Waterfall is at Station 06A04.

Station 06A03 **Visit** 1 **Survey Date** 6/9/2002

PIC06005.jpg

PIC06006.jpg

Station 06A03 **Visit** 2 **Survey Date:** 07/07/2002 **Time:** 11:30 AM

Waterbody Name: Falls Creek **Pipeline Milepost:** 578.37

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 7
	63.51622	-145.85194		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Mt Hayes C-4 **Elevation (m):** 691

Anadromous Waters Catalog Number:

Geographic Comments: Stream name posted on ROW sign.

Station Characteristics

Temperature (C) **Air:** 19 **Water:** 10.2 **DO (ppm):** 9.99 **Qualitative Velocity:** Fast **Turbidity (NTU)** 1 **Water Color:** Clear **Stream Gradient (%):**

Stream Stage: Low **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**
Width		2.4
Thalweg Depth		0.18

Substrate

Dominant: Cobble

Subdominant: Boulder

Subdominant: Gravel

Survey Team: Doug Lieb, John Wells

Visit Comments: Station is just upstream of LWC. Several small side trickles come into stream at LWC. Some vegetation overhangs bank on left side of stream.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 103 **# Traps:** 2 **Trap Duration (h):** 0.5

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Minnow trapping was not very effective, because pool microhabitat was limited. Waterfall is Station 06A04.

Station 06A03 **Visit** 2 **Survey Date** 7/7/2002

PIC22006.jpg

PIC22007.jpg

PIC22008.jpg

Station 06A03 **Visit** 3 **Survey Date:** 08/25/2002 **Time:** 9:40 AM

Waterbody Name: Falls Creek **Pipeline Milepost:** 578.37

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 7
	63.51622	-145.85194		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Mt Hayes C-4 **Elevation (m):** 691

Anadromous Waters Catalog Number:

Geographic Comments: Stream name posted on ROW sign.

Station Characteristics

Temperature (C) **Air:** 9 **Water:** 6.8 **DO (ppm):** 11.84 **Qualitative Velocity:** Fast **Turbidity (NTU)** 0 **Water Color:** Clear **Stream Gradient (%):**

Stream Stage: Medium **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**
Width		2.7
Thalweg Depth		0.16

Substrate

Dominant: Cobble

Subdominant: Boulder

Subdominant: Gravel

Survey Team: Doug Lieb, John Wells

Visit Comments: Sections of bank are cutbanks with trees falling into the water. Stream maintains the same riffle-dominated channel from the waterfall continuously upstream.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 136 **# Traps:** 2 **Trap Duration (h):** 0.5

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Traps were set from top of waterfall up through LWC and further upstream. Current is swift, and turbulence lowers visibility. Water depth allows walking across width of stream. Waterfall is Station 06A04.

Station 06A03 **Visit** 3 **Survey Date** 8/25/2002

PIC57005.jpg

PIC57006.jpg

PIC57009.jpg

Station 06A04 **Visit** 1 **Survey Date:** 06/09/2002 **Time:** 10:37 AM

Waterbody Name: Falls Creek **Pipeline Milepost:** 578.37

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 7
	63.51618	-145.85352		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Mt Hayes C-4 **Elevation (m):** 678

Anadromous Waters Catalog Number:

Geographic Comments: Waterfall is located downstream of Station 06A03. Military training facility located at base of waterfall. Stream name is posted on ROW sign.

Station Characteristics

Temperature (C) **DO (ppm):** **Turbidity (NTU)** **Stream Gradient (%):**

Air: **Water:** **Qualitative Velocity:** N/A **Water Color:**

Stream Stage: **48 hr. Precipitation/Runoff:** N/A

Channel Dimensions (m): **OHW** **Wetted** **Substrate**

Width **Dominant:**

Thalweg Depth **Subdominant:**

Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: This station marks the waterfall downstream of Station 06A03 on Falls Creek. See fish data for waterfall information.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

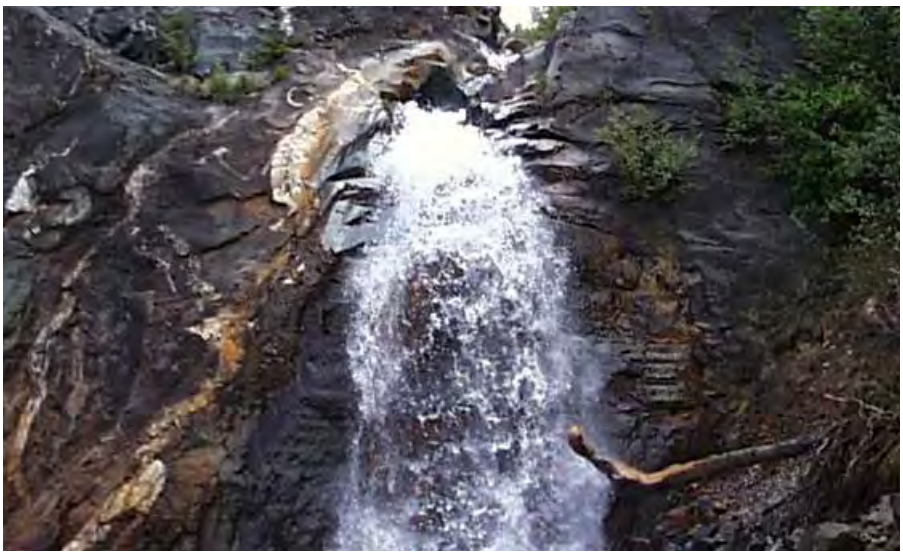
Gear: None **EF Time (s):** **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** 9 **Pool depth (m):**

Comments:

Station 06A04 **Visit** 1 **Survey Date** 6/9/2002



PIC06007.jpg

PIC06008.jpg

Station 06A05 **Visit** 1 **Survey Date:** 06/09/2002 **Time:** 11:13 AM

Waterbody Name: Gunnysack Creek **Pipeline Milepost:** 577.76

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	63.52468	-145.84767		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Mt Hayes C-4 **Elevation (m):** 694

Anadromous Waters Catalog Number:

Geographic Comments: In big open canyon. On north side of creek is sign identifying stream.

Station Characteristics

Temperature (C) **Air:** 12 **Water:** 4.4 **DO (ppm):** 10.74 **Qualitative Velocity:** N/A **Turbidity (NTU)** 7 **Water Color:** Clear **Stream Gradient (%):** 3

Stream Stage: Medium **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**
Width	34	3.3
Thalweg Depth	4	0.3

Substrate

Dominant: Boulder

Subdominant: Cobble

Subdominant:

Survey Team: Doug Lieb, John Wells, David Schmidt

Visit Comments: Station is upstream of LWC. Stream has cut a deep and wide canyon. At LWC stream widens out, then narrows again downstream.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 105 **# Traps:** 0 **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Swift current and high turbulence.

Station 06A05 **Visit** 1 **Survey Date** 6/9/2002

PIC06009.jpg

PIC06010.jpg

PIC06011.jpg

Station 06A05 **Visit** 2 **Survey Date:** 07/07/2002 **Time:** 1:00 PM

Waterbody Name: Gunnysack Creek **Pipeline Milepost:** 577.76

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	63.52468	-145.84767		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Mt Hayes C-4 **Elevation (m):** 694

Anadromous Waters Catalog Number:

Geographic Comments: In big open canyon. On north side of creek is sign identifying stream.

Station Characteristics

Temperature (C) **Air:** 20 **Water:** 8.7 **DO (ppm):** 10.48 **Turbidity (NTU)** 503 **Stream Gradient (%):**

Qualitative Velocity: Fast **Water Color:** Glacial, High Turbidity

Stream Stage: Medium **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**
Width		2.5
Thalweg Depth		0.32

Substrate

Dominant: Boulder

Subdominant: Cobble

Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Station is 3 m upstream of LWC. Stream has high sediment load. Stream has wide alluvial floodplain with steep and deeply entrenched banks. Stream has many pools downstream of boulders. No overhanging vegetation, or on banks of stream.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 148 **# Traps:** 2 **Trap Duration (h):** 0.5

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Flow is swift and turbid, making visibility poor.

Station 06A05 **Visit** 2 **Survey Date** 7/7/2002

PIC22009.jpg

PIC22010.jpg

Station 06A05 **Visit** 3 **Survey Date:** 08/24/2002 **Time:** 2:25 PM

Waterbody Name: Gunnysack Creek **Pipeline Milepost:** 577.76

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	63.52468	-145.84767		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Mt Hayes C-4 **Elevation (m):** 694

Anadromous Waters Catalog Number:

Geographic Comments: In big open canyon. On north side of creek is sign identifying stream.

Station Characteristics

Temperature (C) **Air:** 15 **Water:** 6.8 **DO (ppm):** 11.97 **Qualitative Velocity:** Fast **Turbidity (NTU)** 136 **Water Color:** Glacial, High Turbidity **Stream Gradient (%):**

Stream Stage: Medium **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**
Width		2
Thalweg Depth		0.3

Substrate

Dominant: Boulder

Subdominant: Cobble

Subdominant: Gravel

Survey Team: Doug Lieb, John Wells

Visit Comments: LWC is not drivable, too many boulders under water, and the current is very fast. Wide alluvial floodplain present. Stream looks same as in previous 2 visits.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 326 **# Traps:** 4 **Trap Duration (h):** 0.8

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Flow is swift, turbulent, and turbid. Sampling efficiency low.

Station 06A05 **Visit** 3 **Survey Date** 8/24/2002

PIC56023.jpg

PIC56024.jpg

Station 06A06 **Visit** 1 **Survey Date:** 06/09/2002 **Time:** 12:15 PM

Waterbody Name: One Mile Creek (Local Name) **Pipeline Milepost:** 569.39

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 8
	63.54422	-145.85390		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Mt Hayes C-4 **Elevation (m):** 680

Anadromous Waters Catalog Number:

Geographic Comments: Stream name is posted on ROW sign. USGS maps show "One Mile Creek" 0.5 miles south of this stream.

Station Characteristics

Temperature (C) **Air:** 14 **Water:** 6.8 **DO (ppm):** 10.42 **Turbidity (NTU)** 4 **Stream Gradient (%):** 3.5

Qualitative Velocity: N/A **Water Color:** Clear

Stream Stage: Low **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**
Width	56	2
Thalweg Depth	2	0.15

Substrate

Dominant: Boulder

Subdominant: Cobble

Subdominant:

Survey Team: Doug Lieb, John Wells, David Schmidt

Visit Comments: Station is upstream of LWC in a highly disturbed area. Stream flooded two summers ago. APSC constructed vortex rock weirs to control channel migration. Stream is braided across alluvial delta.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 365 **# Traps:** 0 **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Stream fast moving with pools and multiple channels.

Station 06A06 **Visit** 1 **Survey Date** 6/9/2002

PIC06012.jpg

PIC06013.jpg

PIC06014.jpg

Station 06A06 **Visit** 2 **Survey Date:** 07/08/2002 **Time:** 9:29 AM

Waterbody Name: One Mile Creek (Local Name) **Pipeline Milepost:** 569.39

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 8
	63.54422	-145.85390		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Mt Hayes C-4 **Elevation (m):** 680

Anadromous Waters Catalog Number:

Geographic Comments: Stream name is posted on ROW sign. USGS maps show "One Mile Creek" 0.5 miles south of this stream.

Station Characteristics

Temperature (C) **Air:** 18 **Water:** 8.9 **DO (ppm):** 10.41 **Qualitative Velocity:** Medium **Turbidity (NTU)** 17 **Water Color:** Clear **Stream Gradient (%):**

Stream Stage: Medium **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**
Width		1
Thalweg Depth		0.19

Substrate

Dominant: Boulder
Subdominant: Cobble
Subdominant: Gravel

Survey Team: Doug Lieb, John Wells

Visit Comments: Station is at LWC. Stream has many small, deep pools out of main flow. Trees are black spruce and cottonwood. Heavy disturbance and construction downstream by Richardson Highway.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: 0 **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 229 **# Traps:** 3 **Trap Duration (h):** 0.8

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Electrofished main channel and the few side channels. Water is clear, stream is not too wide, allowing easy access to whole channel and visibility to see any fish if present.

Station 06A06 **Visit** 2 **Survey Date** 7/8/2002

PIC23001.jpg

PIC23002.jpg

PIC23003.jpg

Station 06A06 **Visit** 3 **Survey Date:** 08/24/2002 **Time:** 1:10 PM

Waterbody Name: One Mile Creek (Local Name) **Pipeline Milepost:** 569.39

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 8
	63.54422	-145.85390		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Mt Hayes C-4 **Elevation (m):** 680

Anadromous Waters Catalog Number:

Geographic Comments: Stream name is posted on ROW sign. USGS maps show "One Mile Creek" 0.5 miles south of this stream.

Station Characteristics

Temperature (C) **Air:** 15 **Water:** 9.6 **DO (ppm):** 11.32 **Qualitative Velocity:** Medium **Turbidity (NTU)** 13 **Water Color:** Clear **Stream Gradient (%):**

Stream Stage: Medium **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**
Width		1
Thalweg Depth		0.15

Substrate

Dominant: Boulder
Subdominant: Cobble
Subdominant: Gravel

Survey Team: Doug Lieb, John Wells, Alison Kelley

Visit Comments: LWC is in good shape--is same width as rest of channel. Stream has multiple channels, wide alluvial floodplain with no vegetation. Stream has a step-pool morphology.

Species: grayling **Life Stage:** Juvenile/Adult **Life History:** Resident

Count: 8 **Fork lengths (mm):** 181 123 95 99 99 112

Gear: Portable Electrofisher **EF Time (s):** 186 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Unknown **Height (m):** **Pool depth (m):**

Comments: Two grayling (FL = 181, 95) caught upstream of LWC. Remainder below LWC. All grayling were caught in pools or at pool tails. Water surface has ripples, limiting ability to see fish. One fish was seen but not caught or turned. One grayling escaped from net while empting into bucket. Picture 22 of grayling.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Minnow Trap, 1/4 in. Mesh **EF Time (s):** **# Traps:** 4 **Trap Duration (h):** 0.9

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Two minnow traps upstream and two downstream of LWC. No fish captured in traps.

Station 06A06 **Visit** 3 **Survey Date** 8/24/2002

PIC56020.jpg

PIC56021.jpg

PIC56022.jpg

Station 06A07 **Visit** 1 **Survey Date:** 06/09/2002 **Time:** 12:44 PM

Waterbody Name: Unnamed Creek (Local Name) **Pipeline Milepost:** 575.56

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 8
	63.55550	-145.85649		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Mt Hayes C-4 **Elevation (m):** 651

Anadromous Waters Catalog Number:

Geographic Comments: Fifty meters south of 40-APL-1 sign.

Station Characteristics

Temperature (C) **Air:** **Water:** 9.5 **DO (ppm):** 9.15 **Qualitative Velocity:** N/A **Turbidity (NTU)** 2 **Water Color:** Clear **Stream Gradient (%):** 1

Stream Stage: Low, Continuous Surface Flow **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**
Width		0.5
Thalweg Depth		0.03

Substrate

Dominant: Gravel

Subdominant:

Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Station at GPS coordinates recorded in Geographic Information module is at previous channel location, but stream has left original channel and diverted through the forest; crossing the ROW 50 m north of original well defined (dry) channel. The GPS coordinates of new ROW crossing are: Latitude 63.55579 & Longitude -145.85643 @ 653 m elevation with GPS error of 6 m. As stream crosses ROW creates multiple braided channels. This new crossing is several small trickles of water.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** **# Traps:** 0 **Trap Duration (h):**

Channel: Off Channel (disconnected at inlet and/or outlet)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Water level was too low to warrant use of electrofisher.

Station 06A07 **Visit** 1 **Survey Date** 6/9/2002

PIC06015.jpg

PIC06016.jpg

PIC06017.jpg

Station 06A07 **Visit** 2 **Survey Date:** 07/08/2002 **Time:** 10:49 AM

Waterbody Name: Unnamed Creek (Local Name) **Pipeline Milepost:** 575.56

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 8
	63.55550	-145.85649		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Mt Hayes C-4 **Elevation (m):** 651

Anadromous Waters Catalog Number:

Geographic Comments: Fifty meters south of 40-APL-1 sign.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air: 18	**Water:**			

Qualitative Velocity: N/A **Water Color:**

Stream Stage: Dry, Defined Channel **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m): **OHW** **Wetted**

Width

Thalweg Depth

Substrate

Dominant: Gravel

Subdominant:

Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Stream at LWC is dry. Surface water located 193 m upstream of LWC. The surface flow at that location goes subsurface. Picture 5 is of water going subsurface. Picture 6,7 are of dry LWC.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** **# Traps:** 0 **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: No water present at LWC so no fishing performed.

Station 06A07 **Visit** 2 **Survey Date** 7/8/2002

PIC23005.jpg

PIC23006.jpg

PIC23007.jpg

Station 06A07 **Visit** 3 **Survey Date:** 08/24/2002 **Time:** 1:01 PM

Waterbody Name: Unnamed Creek (Local Name) **Pipeline Milepost:** 575.56

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 8
	63.55550	-145.85649		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Mt Hayes C-4 **Elevation (m):** 651

Anadromous Waters Catalog Number:

Geographic Comments: Fifty meters south of 40-APL-1 sign.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air: 14	**Water:**			

Qualitative Velocity: N/A **Water Color:**

Stream Stage: Dry, Defined Channel **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:** Gravel
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells, Alison Kelley

Visit Comments: There is a defined channel as in previous visits and no water present in channel surveyed 50 m to north. There is evidence that the wetted channel migrates frequently.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** **# Traps:** **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: No water present.

Station 06A07 **Visit** 3 **Survey Date** 8/24/2002

PIC56017.jpg

PIC56018.jpg

PIC56019.jpg

Station 06A08 **Visit** 1 **Survey Date:** 06/09/2002 **Time:** 1:20 PM

Waterbody Name: Darling Creek **Pipeline Milepost:** 573.63

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	63.58186	-145.87144		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Mt Hayes C-4 **Elevation (m):** 635

Anadromous Waters Catalog Number:

Geographic Comments: Station is approximately 10 m upstream of ROW. Stream was added to list to survey by Dave Schmidt. At Richardson Highway 200 m upstream is sign naming creek. On north side of stream wash is ROW sign also naming creek. Fifty meters upstream from Station 56A01.

Station Characteristics

Temperature (C) **Air:** 14 **Water:** 5.9 **DO (ppm):** 10.46 **Qualitative Velocity:** N/A **Turbidity (NTU)** 4 **Water Color:** Clear **Stream Gradient (%):** 2.5

Stream Stage: Medium **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**
Width	150	4
Thalweg Depth		0.22

Substrate

Dominant: Cobble

Subdominant: Boulder

Subdominant:

Survey Team: Doug Lieb, John Wells, David Schmidt

Visit Comments: Stream has had work done by APSC putting in boulder outcrops to slow stream speed and help control stream meandering.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: 0 **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments:

Station 06A08 **Visit** 1 **Survey Date** 6/9/2002

PIC06019.jpg

PIC06020.jpg

Station 06A09 **Visit** 1 **Survey Date:** 06/09/2002 **Time:** 1:45 PM

Waterbody Name: Catastrophe Creek (Local Name) **Pipeline Milepost:** 572.33

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	63.60063	-145.87872		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Mt Hayes C-4 **Elevation (m):** 601

Anadromous Waters Catalog Number:

Geographic Comments: Access through 40-APL-4 then turn south until reaching LWC at designated PLMP.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air:	**Water:**			

Qualitative Velocity: N/A **Water Color:**

Stream Stage: Dry, Defined Channel **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells, David Schmidt

Visit Comments: No water present in visible stream channel.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** **# Traps:** **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: No water present in channel.

Appendix C1.-Page 156 of 674.

Station 06A09 **Visit** 1 **Survey Date** 6/9/2002

PIC06021.jpg

Station 06A09 **Visit** 2 **Survey Date:** 07/08/2002 **Time:** 11:10 AM

Waterbody Name: Catastrophe Creek (Local Name) **Pipeline Milepost:** 572.33

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	63.60063	-145.87872		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Mt Hayes C-4 **Elevation (m):** 601

Anadromous Waters Catalog Number:

Geographic Comments: Access through 40-APL-4 then turn south until reaching LWC at designated PLMP.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air: 19	**Water:**			

Qualitative Velocity: N/A **Water Color:**

Stream Stage: Dry, Defined Channel **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Stream has no water in LWC. There is a channel evident, but vegetation is starting to overgrow the channel. Twenty meters east of LWC channel splits into two. Channel substrate has surface of mud, possibly indicating surface water during heavy rains. Picture with Doug in it indicates the other channels.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** **# Traps:** 0 **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: No water present in channel or LWC, no electrofishing performed.

Station 06A09 **Visit** 2 **Survey Date** 7/8/2002

PIC23008.jpg

PIC23009.jpg

PIC23010.jpg

Station 06A09 **Visit** 3 **Survey Date:** 08/24/2002 **Time:** 11:27 AM

Waterbody Name: Catastrophe Creek (Local Name) **Pipeline Milepost:** 572.33

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	63.60063	-145.87872		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Mt Hayes C-4 **Elevation (m):** 601

Anadromous Waters Catalog Number:

Geographic Comments: Access through 40-APL-4 then turn south until reaching LWC at designated PLMP.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air: 12	**Water:**			

Qualitative Velocity: N/A **Water Color:**

Stream Stage: Dry, Defined Channel **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells, Alison Kelley

Visit Comments: No water present, same as previous visits.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** **# Traps:** 0 **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: No water present.

Station 06A09 **Visit** 3 **Survey Date** 8/24/2002

PIC56011.jpg

PIC56012.jpg

Station 07A01 **Visit** 1 **Survey Date:** 06/10/2002 **Time:** 9:42 AM

Waterbody Name: Bear Creek **Pipeline Milepost:** 571.36

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 7
	63.61456	-145.87851		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Mt Hayes C-4 **Elevation (m):** 603

Anadromous Waters Catalog Number:

Geographic Comments: Access stream at Richardson Highway MP 234.5 where pipeline crosses highway. At stream is brown sign identifying stream ID.

Station Characteristics

Temperature (C) **Air:** 9 **Water:** 4 **DO (ppm):** 13.04 **Turbidity (NTU)** 5 **Stream Gradient (%):** 2

Qualitative Velocity: N/A **Water Color:** Clear

Stream Stage: Low **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**
Width	20	2
Thalweg Depth	1	0.26

Substrate

Dominant: Boulder

Subdominant: Cobble

Subdominant:

Survey Team: Doug Lieb, John Wells, David Schmidt

Visit Comments: Station is upstream of LWC. Area around stream is highly disturbed. Stream has eroding banks and broad floodplain.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 239 **# Traps:** 0 **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Stream swift; heavy rains.

Station 07A01 **Visit** 1 **Survey Date** 6/10/2002

PIC07001.jpg

PIC07002.jpg

PIC07003.jpg

Appendix C1.-Page 163 of 674.

Station 07A02 **Visit** 1 **Survey Date:** 06/10/2002 **Time:** 10:39 AM

Waterbody Name: Ruby Creek **Pipeline Milepost:** 570.18

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	63.63128	-145.87715		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Mt Hayes C-4 **Elevation (m):** 611

Anadromous Waters Catalog Number:

Geographic Comments: Used VSMs to used to locate station. A brown sign identifies the stream name.

Station Characteristics

Temperature (C) **Air:** **Water:** 4.2 **DO (ppm):** 12.78 **Turbidity (NTU)** 11 **Stream Gradient (%):** 1.5

Qualitative Velocity: N/A **Water Color:** Clear

Stream Stage: Medium **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**
Width	12	1.7
Thalweg Depth	1.4	0.23

Substrate

Dominant: Boulder

Subdominant: Cobble

Subdominant:

Survey Team: Doug Lieb, John Wells, Ken Wilson

Visit Comments: Station is upstream of pipeline and LWC. At LWC stream is beginning to form a pool. It is raining heavily at time of survey. Lots of small and large woody debris (ranging from small meter long sticks to large logs) present.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 351 **# Traps:** 0 **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Heavy rain and swift current.

Station 07A02 **Visit** 1 **Survey Date** 6/10/2002

PIC07004.jpg

PIC07005.jpg

Station 07A03 **Visit** 1 **Survey Date:** 06/10/2002 **Time:** 11:18 AM

Waterbody Name: Donnelly Creek (Local Name) **Pipeline Milepost:** 566.72

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	63.67805	-145.85088		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Mt Hayes C-4 **Elevation (m):** 731

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground, used VSM to used to locate station. Accessed through 41-APL-1.

Station Characteristics

Temperature (C) **DO (ppm):** 12.27 **Turbidity (NTU)** 0 **Stream Gradient (%):** 10

Air: 9 **Water:** 0.9 **Qualitative Velocity:** N/A **Water Color:** Clear

Stream Stage: Low **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**	
Width	4	0.6	**Dominant:**	Cobble
Thalweg Depth	2	0.08	**Subdominant:**	Gravel
			Subdominant:	Boulder

Survey Team: Doug Lieb, John Wells

Visit Comments: Station is 2 m upstream of ROW culvert. Stream is well entrenched above culvert with well vegetated banks. Below culvert stream spreads out into a wide fan 4 m wide then splits into two small channels that continue on into the forest. Culvert length is 12.2 m; diameter is 0.95 m.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 129 **# Traps:** 0 **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Stream is narrow with many pools and vegetated cut banks.

Station 07A03 **Visit** 1 **Survey Date** 6/10/2002

PIC07006.jpg

PIC07007.jpg

PIC07008.jpg

Station 07A03 **Visit** 2 **Survey Date:** 07/08/2002 **Time:** 11:57 AM

Waterbody Name: Donnelly Creek (Local Name) **Pipeline Milepost:** 566.72

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	63.67805	-145.85088		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Mt Hayes C-4 **Elevation (m):** 731

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground, used VSM to used to locate station. Accessed through 41-APL-1.

Station Characteristics

Temperature (C) **Air:** **Water:** 4.1 **DO (ppm):** 10.96 **Turbidity (NTU)** 24 **Stream Gradient (%):**

Qualitative Velocity: Medium **Water Color:** Clear

Stream Stage: Low **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**
Width		0.4
Thalweg Depth		0.09

Substrate

Dominant: Cobble

Subdominant: Gravel

Subdominant: Boulder

Survey Team: Doug Lieb, John Wells

Visit Comments: Station is downstream of culvert. Thick alders grow along stream bank. Stream channel is very narrow upstream of culvert. Downstream of culvert, channel is wide for 3 m then splits into 2 channels that come together and split apart off and on downstream.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 163 **# Traps:** 0 **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Electrofished downstream and upstream of ROW culvert. Downstream sampled both channels. No pools or water deep enough to set traps.

Station 07A03 **Visit** 2 **Survey Date** 7/8/2002

PIC23015.jpg

PIC23013.jpg

PIC23014.jpg

Station 07A03 **Visit** 3 **Survey Date:** 08/24/2002 **Time:** 10:10 AM

Waterbody Name: Donnelly Creek (Local Name) **Pipeline Milepost:** 566.72

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	63.67805	-145.85088		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Mt Hayes C-4 **Elevation (m):** 731

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground, used VSM to used to locate station. Accessed through 41-APL-1.

Station Characteristics

Temperature (C) **Air:** 11 **Water:** 5 **DO (ppm):** 11.54 **Turbidity (NTU)** 1 **Stream Gradient (%):**

Qualitative Velocity: Medium **Water Color:** Clear

Stream Stage: Low **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**
Width		0.85
Thalweg Depth		0.08

Substrate

Dominant: Cobble

Subdominant: Gravel

Subdominant: Boulder

Survey Team: Doug Lieb, John Wells, Alison Kelley

Visit Comments: Culvert has rocks inside which have been washed in from upstream. Stream downstream of culvert is multi-channeled. Stream is steep with step pools throughout.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 181 **# Traps:** 0 **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: No pools deep enough to sink a trap.

Station 07A03 **Visit** 3 **Survey Date** 8/24/2002

PIC56007.jpg

PIC56008.jpg

PIC56009.jpg

Station 07A04 **Visit** 1 **Survey Date:** 06/10/2002 **Time:** 12:12 PM

Waterbody Name: Beaver Creek (Local Name) **Pipeline Milepost:** 565.93

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	63.68921	-145.84879		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Mt Hayes C-4 **Elevation (m):** 771

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground--VSMs used to calculate exact PLMP.

Station Characteristics

Temperature (C) **DO (ppm):** 12.14 **Turbidity (NTU)** 0 **Stream Gradient (%):** 8

Air: 12 **Water:** 3.3 **Qualitative Velocity:** N/A **Water Color:** Clear

Stream Stage: Low **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m): **OHW** **Wetted**

Width

Thalweg Depth

Substrate

Dominant: Cobble

Subdominant:

Subdominant:

Survey Team: Doug Lieb, John Wells, David Schmidt, Ken Wilson

Visit Comments: Station is downstream of ROW. At LWC a pool has formed. Large amount of snow covers channel upstream of ROW. Stream flows into thick willows. Stream gradient is high due to steep drop on downstream side of ROW.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 49 **# Traps:** 0 **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Snow upstream of ROW prevented sampling. Heavy thick willows overlapping stream hindered downstream sampling.

Station 07A04 **Visit** 1 **Survey Date** 6/10/2002

PIC07009.jpg

PIC07010.jpg

Station 07A04 **Visit** 2 **Survey Date:** 07/08/2002 **Time:** 12:45 PM

Waterbody Name: Beaver Creek (Local Name) **Pipeline Milepost:** 565.93

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	63.68921	-145.84879		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Mt Hayes C-4 **Elevation (m):** 771

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground--VSMs used to calculate exact PLMP.

Station Characteristics

Temperature (C) **Air:** 20 **Water:** 8.6 **DO (ppm):** 10.09 **Qualitative Velocity:** Medium **Turbidity (NTU)** 31 **Water Color:** Clear **Stream Gradient (%):**

Stream Stage: Low **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**
Width		1.25
Thalweg Depth		0.1

Substrate

Dominant: Cobble

Subdominant:

Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Station is 1 m upstream of LWC; where channel parameters were measured. Upstream of LWC the stream flows through multiple channels; in some flow remains on surface, in others flow disappears subsurface. Heavy thick alders along stream edges with surrounding wet marsh.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 119 **# Traps:** 0 **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Sampled all channels. Heavy riparian alder growth made stream access difficult both up and downstream of LWC. Overall good fishing efficiency.

Station 07A04 **Visit** 2 **Survey Date** 7/8/2002

PIC23016.jpg

PIC23017.jpg

PIC23018.jpg

Station 07A04 **Visit** 3 **Survey Date:** 08/24/2002 **Time:** 9:15 AM

Waterbody Name: Beaver Creek (Local Name) **Pipeline Milepost:** 565.93

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	63.68921	-145.84879		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Mt Hayes C-4 **Elevation (m):** 771

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground--VSMs used to calculate exact PLMP.

Station Characteristics

Temperature (C) **Air:** 10 **Water:** 5.7 **DO (ppm):** 11.88 **Qualitative Velocity:** Medium **Turbidity (NTU)** 7 **Water Color:** Clear **Stream Gradient (%):**

Stream Stage: Medium **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**
Width		1
Thalweg Depth		0.13

Substrate

Dominant: Cobble

Subdominant:

Subdominant:

Survey Team: Doug Lieb, John Wells, Alison Kelley

Visit Comments: LWC is 3 m wide across the ROW; the channel then narrows downstream. Where gradient lessens, stream becomes multi-channeled with unevenly spaced pools. Ruts in LWC are creating ridges perpendicular to the stream flow. Upstream of LWC the stream is multi-channeled, with occasional subsurface flow, and with deep pools. Willows grow down to waters edge, majority of stream has canopy coverage by the willows.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 171 **# Traps:** 4 **Trap Duration (h):** 0.5

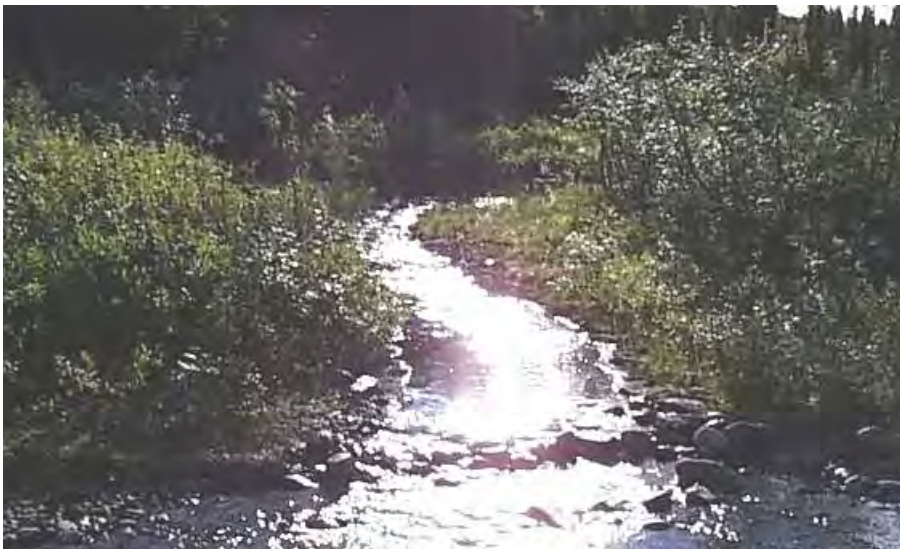
Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments:

Station 07A04 **Visit** 3 **Survey Date** 8/24/2002

PIC56001.jpg



PIC56002.jpg

PIC56003.jpg

Station 07A05 **Visit** 1 **Survey Date:** 06/10/2002 **Time:** 4:44 PM

Waterbody Name: Fifty-Three-A Creek (Local Name) **Pipeline Milepost:** 496.06

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	64.48383	-146.65810		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Big Delta B-6 **Elevation (m):** 231

Anadromous Waters Catalog Number:

Geographic Comments: Pipe is below ground. PLMP marker 496 is 100 m north. Powerline on west side of ROW.

Station Characteristics

Temperature (C) **Air:** 16.2 **Water:** 11.4 **DO (ppm):** 0.138 **Turbidity (NTU)** 45 **Stream Gradient (%):**

Qualitative Velocity: N/A **Water Color:** Humic

Stream Stage: Low, Discontinuous Flow **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width		20	**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells, David Schmidt, Ken Wilson

Visit Comments: No surface water crosses road. Station is east of ROW. Pond complex formed above and below the ROW. Pond is filled with marsh vegetation. One hundred meters west of ROW, the pond opens up to 10 m wide. Directly on west side of ROW is muddy marsh.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 95 **# Traps:** 0 **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Electrofishing brought up cadis fly larvae.

Station 07A05 **Visit** 1 **Survey Date** 6/10/2002

PIC07011.jpg

PIC07012.jpg

Station 07A05 **Visit** 2 **Survey Date:** 07/09/2002 **Time:** 10:36 AM

Waterbody Name: Fifty-Three-A Creek (Local Name) **Pipeline Milepost:** 496.06

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	64.48383	-146.65810		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Big Delta B-6 **Elevation (m):** 231

Anadromous Waters Catalog Number:

Geographic Comments: Pipe is below ground. PLMP marker 496 is 100 m north. Powerline on west side of ROW.

Station Characteristics

Temperature (C) **Air:** 22 **Water:** 7.4 **DO (ppm):** 4.14 **Qualitative Velocity:** Still **Turbidity (NTU)** 2 **Water Color:** Clear **Stream Gradient (%):**

Stream Stage: Low, Discontinuous Flow **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**
Width		
Thalweg Depth		

Substrate

Dominant: Organic

Subdominant:

Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Station is east of LWC in a pond. Water is pooled on the LWC. The pond has heavy aquatic graminoid growth. This pond continues east where it becomes slightly narrower and continues on with trees and forbs growing in the water. To the west of the LWC is dense graminoid growth and water for 25 m; at this point becomes a slough/pond body of water, there is no flow here either. Both are too wide and deep to get a thalweg measurement.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 211 **# Traps:** 5 **Trap Duration (h):** 1.0

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Difficult electrofishing large, deep pond.

Station 07A05 **Visit** 2 **Survey Date** 7/9/2002

PIC24001.jpg

PIC24002.jpg

PIC24003.jpg

Station 07A06 **Visit** 1 **Survey Date:** 06/10/2002 **Time:** 5:10 PM

Waterbody Name: TAPS slough (Local Name) **Pipeline Milepost:** 496.16

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	64.48269	-146.65570		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Big Delta B-6 **Elevation (m):** 229

Anadromous Waters Catalog Number: 334-40-11000-2490-3329

Geographic Comments: Station 400 m south of Station 07A05.

Station Characteristics

Temperature (C) **Air:** 14 **Water:** 11.2 **DO (ppm):** 8.83 **Qualitative Velocity:** N/A **Turbidity (NTU)** 0 **Water Color:** Humic **Stream Gradient (%):**

Stream Stage: Low, Discontinuous Flow **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m): **OHW** **Wetted**

Width

Thalweg Depth

Substrate

Dominant: Gravel

Subdominant: Organic

Subdominant:

Survey Team: Doug Lieb, John Wells, David Schmidt, Ken Wilson

Visit Comments: Station is located east of ROW. This is a pond 15 m in diameter currently with no visible inlet or outlet surface flow. No current surface hydrologic connection to downstream section of channel. Downstream (west) of culvert for 15 m is a dry gravel channel, at the end of which is upwelling creating surface water flow. Culvert on east side of ROW is perched (culvert length 41.4 m; diameter 0.64 m).

Species: chinook salmon **Life Stage:** Juvenile **Life History:** Anadromous

Count: 15 **Fork lengths (mm):** 46 47 45 43

Gear: Portable Electrofisher **EF Time (s):** 134 **# Traps:** 1 **Trap Duration (h):** 0.3

Channel:

Fish Passage Barrier: Unknown **Height (m):** **Pool depth (m):**

Comments: Fish were caught in pond upstream of ROW. School of fish seen swimming throughout pond.

Station 07A06 **Visit** 1 **Survey Date** 6/10/2002

PIC07013.jpg

PIC07014.jpg

PIC07015.jpg

Station 07A07 **Visit** 1 **Survey Date:** 06/10/2002 **Time:** 6:54 PM

Waterbody Name: North Fork Minton Creek (Local Name) **Pipeline Milepost:** 509.19

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 7
	64.39587	-146.29042		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Big Delta B-5 **Elevation (m):** 390

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline above ground--VSMs used to locate station.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air: 12	**Water:**			

Qualitative Velocity: N/A **Water Color:**

Stream Stage: Dry, Defined Channel **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:** Cobble
Thalweg Depth			**Subdominant:** Gravel
			Subdominant:

Survey Team: Doug Lieb, John Wells, David Schmidt, Ken Wilson

Visit Comments: Well established dry channel 0.7 m wide by 0.3 m deep with evidence in form of mud indicating presence of a past pool in LWC, but no flowing or standing water on either side of ROW.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** **# Traps:** 0 **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: No water present.

Station 07A07 **Visit** 1 **Survey Date** 6/10/2002

PIC07016.jpg

PIC07017.jpg

Station 07A07 **Visit** 2 **Survey Date:** 07/09/2002 **Time:** 12:50 PM

Waterbody Name: North Fork Minton Creek (Local Name) **Pipeline Milepost:** 509.19

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 7
	64.39587	-146.29042		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Big Delta B-5 **Elevation (m):** 390

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline above ground--VSMs used to locate station.

Station Characteristics

Temperature (C) **Air:** 18 **Water:** 3.4 **DO (ppm):** 11.56 **Qualitative Velocity:** Medium **Turbidity (NTU)** 28 **Water Color:** Clear **Stream Gradient (%):**

Stream Stage: Medium **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**
Width		1.25
Thalweg Depth		0.16

Substrate

Dominant: Cobble

Subdominant: Gravel

Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Station is 2 m upstream of LWC. There is a pile of rocks at edge of LWC, most likely preparations to redo the LWC since it is flooding out in the truck ruts. Stream has lots of overhanging trees and some overhanging banks making potentially good fish habitat. Immediately downstream another section of NF Minton Creek connects with this one. Deep pools are present both up and downstream.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 106 **# Traps:** 4 **Trap Duration (h):** 1.3

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Sampling efficiency poor because of dense riparian alder and willow growth creating difficult stream access.

Station 07A07 **Visit** 2 **Survey Date** 7/9/2002

PIC24006.jpg

PIC24007.jpg

PIC24008.jpg

Station 07A08 **Visit** 1 **Survey Date:** 06/10/2002 **Time:** 7:19 PM

Waterbody Name: North Fork Minton Creek (Local Name) **Pipeline Milepost:** 509.72

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	64.39526	-146.27338		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Big Delta B-5 **Elevation (m):** 354

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground--VSMs used to locate station. Metal ROW sign identifies creek. North Fork Minton Creek follows ROW and meanders back and forth over it.

Station Characteristics

Temperature (C) **Air:** 12 **Water:** 2.9 **DO (ppm):** 12.71 **Qualitative Velocity:** N/A **Turbidity (NTU)** 18 **Water Color:** Clear **Stream Gradient (%):** 1.5

Stream Stage: Medium **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**
Width	2.5	2
Thalweg Depth	0.2	0.08

Substrate

Dominant: Gravel
Subdominant: Sand/Silt/Clay
Subdominant: Cobble

Survey Team: Doug Lieb, John Wells, David Schmidt

Visit Comments: Stream west of ROW has several channel flowing into one that crosses at PLMP 509.72. Stream spreads out into a pool 3 m across at LWC. Downstream channel narrows to 0.5 m and with stable banks with medium entrenchment. Cobbles are substrate at LWC. Willow trees are present also.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 196 **# Traps:** 0 **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments:

Station 07A08 **Visit** 1 **Survey Date** 6/10/2002

PIC07018.jpg

PIC07019.jpg

Station 07A08 **Visit** 2 **Survey Date:** 07/09/2002 **Time:** 2:26 PM

Waterbody Name: North Fork Minton Creek (Local Name) **Pipeline Milepost:** 509.72

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	64.39526	-146.27338		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Big Delta B-5 **Elevation (m):** 354

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground--VSMs used to locate station. Metal ROW sign identifies creek. North Fork Minton Creek follows ROW and meanders back and forth over it.

Station Characteristics

Temperature (C) **Air:** 18 **Water:** 3.7 **DO (ppm):** 11.85 **Turbidity (NTU)** 40 **Stream Gradient (%):**

Qualitative Velocity: Medium **Water Color:** Clear

Stream Stage: Medium **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**	
Width		1.5	**Dominant:**	Gravel
Thalweg Depth		0.23	**Subdominant:**	Sand/Silt/Clay
			Subdominant:	Cobble

Survey Team: Doug Lieb, John Wells

Visit Comments: Station is upstream of LWC, the stream is deeper here than downstream of LWC where it is riffle-dominated for 10 m before flowing into thick alder and willows and becomes narrower and deeper with many deep pools.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 112 **# Traps:** 2 **Trap Duration (h):** 0.5

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Dense riparian alder growth makes access difficult but possible.

Station 07A08 **Visit** 2 **Survey Date** 7/9/2002

PIC24010.jpg

PIC24011.jpg

PIC24012.jpg

Station 07A08 **Visit** 3 **Survey Date:** 08/23/2002 **Time:** 10:30 AM

Waterbody Name: North Fork Minton Creek (Local Name) **Pipeline Milepost:** 509.72

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	64.39526	-146.27338		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Big Delta B-5 **Elevation (m):** 354

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground--VSMs used to locate station. Metal ROW sign identifies creek. North Fork Minton Creek follows ROW and meanders back and forth over it.

Station Characteristics

Temperature (C) **Air:** 9 **Water:** 2.2 **DO (ppm):** 13.78 **Qualitative Velocity:** Medium **Turbidity (NTU)** 9 **Water Color:** Muddy **Stream Gradient (%):**

Stream Stage: Medium **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**
Width		2
Thalweg Depth		0.21

Substrate

Dominant: Gravel
Subdominant: Sand/Silt/Clay
Subdominant: Cobble

Survey Team: Doug Lieb, John Wells

Visit Comments: Water chemistry readings taken upstream of LWC. The LWC is forming a pool 4 m wide. Stream is higher than on last visit, the stream appears to have more water due to rains in the area. The stream is a 1 m wide channel flowing into the LWC; downstream of LWC the stream is a riffle across the pad. Downstream in the forest the channel begins to retake the channel appearance upstream of LWC. Upstream of the LWC the stream has entrenched banks, which are vegetated with grasses and mosses. The stream meanders, has infrequent deep pools, and the water is very muddy. There is large wood debris fallen into and over the stream. North on the ROW, APSC is redoing the LWC on the other section of North Minton Creek, this activity is adding some mud to the water.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 156 **# Traps:** 4 **Trap Duration (h):** 0.5

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Flow is swift and muddy.

Station 07A08 **Visit** 3 **Survey Date** 8/23/2002

PIC55001.jpg

PIC55002.jpg

PIC55003.jpg

Station 07A09 **Visit** 1 **Survey Date:** 06/10/2002 **Time:** 7:46 PM

Waterbody Name: Minton Creek Tributary (Local Name) **Pipeline Milepost:** 510.69

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 8
	64.38473	-146.25638		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Big Delta B-5 **Elevation (m):** 390

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground--VSMs used to locate station.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air:	**Water:**			

Qualitative Velocity: N/A **Water Color:**

Stream Stage: Dry, No defined Channel **48 hr. Precipitation/Runoff:** N/A

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells, David Schmidt

Visit Comments: No channel is present or evident crossing the ROW. Stream is west of the ROW in the forest and no longer crosses the ROW. Site possibly inundated during a flood.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** **# Traps:** 0 **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: No water, no sampling.

Station 07A09 **Visit** 1 **Survey Date** 6/10/2002

PIC07020.jpg

PIC07021.jpg

Station 07A09 **Visit** 2 **Survey Date:** 07/09/2002 **Time:** 3:11 PM

Waterbody Name: Minton Creek Tributary (Local Name) **Pipeline Milepost:** 510.69

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 8
	64.38473	-146.25638		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Big Delta B-5 **Elevation (m):** 390

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground--VSMs used to locate station.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air:	**Water:**			

Qualitative Velocity: N/A **Water Color:**

Stream Stage: Dry, No defined Channel **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: No water is present in the LWC. No channel is evident nor has a LWC been present for a long time.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** **# Traps:** **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: No water, no sampling.

Station 07A09 **Visit** 2 **Survey Date** 7/9/2002

PIC24013.jpg

PIC24014.jpg

PIC24015.jpg

Station 07A09 **Visit** 3 **Survey Date:** 08/23/2002 **Time:** 11:37 AM

Waterbody Name: Minton Creek Tributary (Local Name) **Pipeline Milepost:** 510.69

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 8
	64.38473	-146.25638		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Big Delta B-5 **Elevation (m):** 390

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground--VSMs used to locate station.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air: 9	**Water:**			

Qualitative Velocity: N/A **Water Color:**

Stream Stage: Dry, No defined Channel **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: The only water in the non-existent LWC is several puddles that formed from the last few day's rain. There is no channel on either side of the ROW. There is nothing present but a dip in the road. To the west a stream channel parallels the road. On either side of dip in road the vegetation has grown over and covered channel that may have been present at one time.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** **# Traps:** **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: No water, no sampling.

Station 07A09 **Visit** 3 **Survey Date** 8/23/2002

PIC55007.jpg

Station 07A10 **Visit** 1 **Survey Date:** 06/10/2002 **Time:** 8:04 PM

Waterbody Name: South Fork Minton Creek (Local Name) **Pipeline Milepost:** 512.3

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 8
	64.36981	-146.21535		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Big Delta B-5 **Elevation (m):** 517

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground--VSMs used to locate station. Listed as South Fork Minton Creek on fish list.

Station Characteristics

Temperature (C) **DO (ppm):** **Turbidity (NTU)** **Stream Gradient (%):**

Air: **Water:** **Qualitative Velocity:** N/A **Water Color:**

Stream Stage: Wet, No Defined Channel **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m): **OHW** **Wetted** **Substrate**

Width **Dominant:**

Thalweg Depth **Subdominant:**

Subdominant:

Survey Team: Doug Lieb, John Wells, David Schmidt, Ken Wilson

Visit Comments: No water is present crossing the ROW. There are trace pools of water east of the ROW. Slight marks in ROW indicate at one time water had crossed the ROW.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** **# Traps:** 0 **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: No water, no sampling.

Station 07A10 **Visit** 1 **Survey Date** 6/10/2002

PIC07022.jpg

PIC07023.jpg

Station 07A10 **Visit** 2 **Survey Date:** 07/09/2002 **Time:** 3:25 PM

Waterbody Name: South Fork Minton Creek (Local Name) **Pipeline Milepost:** 512.3

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 8
	64.36981	-146.21535		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Big Delta B-5 **Elevation (m):** 517

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground--VSMs used to locate station. Listed as South Fork Minton Creek on fish list.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air:	**Water:**			

Qualitative Velocity: N/A **Water Color:**

Stream Stage: Low, Discontinuous Flow **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: There is a trickle of water crossing the ROW at the supposed LWC which looks like it has been filled in at one time. There are several pools east of the ROW in the muskeg. Thick alders grow on both sides of ROW. It appears willows have been laid down on the east side to divert the flow of water from crossing the ROW.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** **# Traps:** 0 **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: All that is on ROW is several puddles, not warranting sampling.

Station 07A10 **Visit** 2 **Survey Date** 7/9/2002

PIC24016.jpg

PIC24017.jpg

PIC24018.jpg

Station 07A10 **Visit** 3 **Survey Date:** 08/23/2002 **Time:** 11:55 AM

Waterbody Name: South Fork Minton Creek (Local Name) **Pipeline Milepost:** 512.3

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 8
	64.36981	-146.21535		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Big Delta B-5 **Elevation (m):** 517

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground--VSMs used to locate station. Listed as South Fork Minton Creek on fish list.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air: 9	**Water:**			

Qualitative Velocity: Slow **Water Color:** Muddy

Stream Stage: Low, Discontinuous Flow **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: The LWC is just part of the ROW that has a trickle of water flowing out onto it from the east. This water then flows north down the ROW. There is water flowing in and among the willows east of the ROW. The water has many pools that are only several centimeters deep. West of the LWC there is evidence of water having traveled through the LWC and into the trees. There is no channel evident on the west side. Water appears to flow through this LWC only during high water episodes. Flow is discontinuous and in small trickles from one small pond to another. There is ferric coloring to many of these pools. Alders are too thick, and water too shallow to warrant electrofishing. Water is not deep enough to use multimeter.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** **# Traps:** 0 **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Water too shallow to sample.

Station 07A10 **Visit** 3 **Survey Date** 8/23/2002

PIC55008.jpg

PIC55009.jpg

PIC55010.jpg

Station 07A11 **Visit** 1 **Survey Date:** 06/10/2002 **Time:** 8:40 PM

Waterbody Name: W. Br. Keystone Creek (Local Name) **Pipeline Milepost:** 518.89

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 7
	64.28966	-146.10461		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Big Delta B-5 **Elevation (m):** 299

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground--VSMs used to locate station. Metal ROW sign identifies stream.

Station Characteristics

Temperature (C) **Air:** 15 **Water:** 10.1 **DO (ppm):** 0.91 **Qualitative Velocity:** N/A **Turbidity (NTU)** 12 **Water Color:** Humic **Stream Gradient (%):** 0.5

Stream Stage: Medium **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:** Organic
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells, David Schmidt, Ken Wilson

Visit Comments: Only a trickle of water is flowing through the culvert. Station is upstream of culvert. Upstream is marshy with standing water, with multiple large ponds all connected via channels with outlet into the culvert. Culvert length is 30.7 m, diameter is 0.76 m. Downstream side has flow coming from stream parallel to ROW. Ten meters further down the ROW in the pool created is a blockage looking like a beaver dam.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 77 **# Traps:** 0 **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Water visibility very limited.

Station 07A11 **Visit** 1 **Survey Date** 6/10/2002

PIC07024.jpg

PIC07025.jpg

PIC07026.jpg

Station 07A11 **Visit** 2 **Survey Date:** 07/09/2002 **Time:** 4:14 PM

Waterbody Name: W. Br. Keystone Creek (Local Name) **Pipeline Milepost:** 518.89

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 7
	64.28966	-146.10461		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Big Delta B-5 **Elevation (m):** 299

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground--VSMs used to locate station. Metal ROW sign identifies stream.

Station Characteristics

Temperature (C) **Air:** 19 **Water:** 12.3 **DO (ppm):** 6.98 **Qualitative Velocity:** N/A **Turbidity (NTU)** 1 **Water Color:** Humic **Stream Gradient (%):**

Stream Stage: Medium **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**
Width		
Thalweg Depth		

Substrate

Dominant: Organic

Subdominant:

Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Upstream of culvert is a deep channel. A large upstream pool has inlets flowing in from marsh area. Downstream of culvert, the stream opens into wide and deep channel. There is a beaver dam downstream of culvert that has created the deep and wide stream reach. North of the culvert, downstream of ROW, water is flowing in from stream parallel to ROW. Channel is too deep to measure thalweg, and width varies highly (≥6 m in wide portions).

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 151 **# Traps:** 4 **Trap Duration (h):** 0.5

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Stream was very wide and deep so sampling conducted from banks only. Two traps were set in the upstream portion, and 2 traps were set in the downstream portion.

Station 07A11 **Visit** 2 **Survey Date** 7/9/2002

PIC24021.jpg

PIC24022.jpg

PIC24023.jpg

Station 07A11 **Visit** 3 **Survey Date:** 08/23/2002 **Time:** 12:30 PM

Waterbody Name: W. Br. Keystone Creek (Local Name) **Pipeline Milepost:** 518.89

Station Coordinates (decimal degrees) **Latitude** 64.28966 **Longitude** -146.10461 **Datum:** NAD83 **GPS Error (m):** 7

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Big Delta B-5 **Elevation (m):** 299

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground--VSMs used to locate station. Metal ROW sign identifies stream.

Station Characteristics

Temperature (C) **Air:** 13 **Water:** 7.6 **DO (ppm):** 6.54 **Qualitative Velocity:** Slow **Turbidity (NTU)** 3 **Water Color:** Humic **Stream Gradient (%):**

Stream Stage: Medium **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m): **OHW** **Wetted**

Width

Thalweg Depth

Substrate

Dominant: Organic

Subdominant:

Subdominant:

Survey Team: Doug Lieb, John Wells, Alison Kelley

Visit Comments: Multimeter readings were taken upstream of culvert as in previous two visits. Multimeter was also taken on east side, just to the north of culvert which is in water that has the incoming flow from stream paralleling the ROW on east side. These values appear more suitable for fish: 11.58 DO, 4.8 degrees Celsius, 7.29 pH, 167 cond, 3 NTU. Area is a beaver pond complex with lots of flow, beaver house present. This makes difficult to measure thalweg or width.

Species: grayling **Life Stage:** Juvenile/Adult **Life History:** Resident

Count: 1 **Fork lengths (mm):** 53

Gear: Portable Electrofisher **EF Time (s):** 273 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Unknown **Height (m):** **Pool depth (m):**

Comments: Grayling caught downstream of culvert to south of culvert in beaver pond complex. Water is wide and deep making electrofishing difficult

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Species: burbot **Life Stage:** Juvenile/Adult **Life History:** Resident

Count: 1 **Fork lengths (mm):** 179

Gear: Dip Net **EF Time (s):** **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Unknown **Height (m):** **Pool depth (m):**

Comments: Burbot caught downstream of culvert in beaver pond complex.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Minnow Trap, 1/4 in. Mesh **EF Time (s):** **# Traps:** 4 **Trap Duration (h):** 0.8

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Traps set in pond structure on west, upstream side of culvert. Trap in downstream side, and south of culvert in beaver pond complex. One trap north of the downstream side of culvert, in stream flowing in parallel to ROW.

Station 07A11 **Visit** 3 **Survey Date** 8/23/2002

PIC55011.jpg

PIC55012.jpg

PIC55014.jpg

Station 08A01 **Visit** 1 **Survey Date:** 06/11/2002 **Time:** 11:01 AM

Waterbody Name: Little Salcha River Tributary (Local Name) **Pipeline Milepost:** 489.69

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	64.53822	-146.81323		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Big Delta C-6 **Elevation (m):** 248

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground--VSMs used to locate station. Valve Station BL2 is 15 m north. Station is downstream of ROW.

Station Characteristics

Temperature (C) **Air:** **Water:** 2.8 **DO (ppm):** 10.55 **Qualitative Velocity:** N/A **Turbidity (NTU)** 8 **Water Color:** Feric **Stream Gradient (%):** 1.2

Stream Stage: Low, Continuous Surface Flow **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**
Width	4	0.4
Thalweg Depth	1	0.1

Substrate

Dominant: Gravel

Subdominant: Organic

Subdominant:

Survey Team: Doug Lieb, John Wells, David Schmidt, Ken Wilson

Visit Comments: There is an old LWC with no surface flow. Water does flow through a culvert. Upstream of ROW is a boggy area with several small channels flowing from multiple directions to the culvert, including water paralleling the ROW. Downstream of ROW the stream becomes one channel and flows into forest. Culvert length 24.4 m; diameter 1.1 m.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 153 **# Traps:** 0 **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Sampled downstream main channel. Upstream of ROW the stream has no main channel so all the individual pools were electro fished.

Station 08A01 **Visit** 1 **Survey Date** 6/11/2002

PIC08001.jpg

PIC08002.jpg

PIC08003.jpg

Station 08A01 **Visit** 2 **Survey Date:** 07/10/2002 **Time:** 10:42 AM

Waterbody Name: Little Salcha River Tributary (Local Name) **Pipeline Milepost:** 489.69

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	64.53822	-146.81323		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Big Delta C-6 **Elevation (m):** 248

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground--VSMs used to locate station. Valve Station BL2 is 15 m north. Station is downstream of ROW.

Station Characteristics

Temperature (C) **Air:** 19 **Water:** 6.3 **DO (ppm):** 9.66 **Qualitative Velocity:** Slow **Turbidity (NTU)** 180 **Stream Gradient (%):** **Water Color:** Humic

Stream Stage: Low **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**	
Width		0.75	**Dominant:**	Gravel
Thalweg Depth		0.13	**Subdominant:**	Organic
			Subdominant:	

Survey Team: Doug Lieb, John Wells

Visit Comments: No water present in the LWC. A culvert 5 m to the south has water flow. The flow through this culvert was sampled in visits 1 and 2. Channel upstream of culvert turns south and parallels ROW for 15 m then heads east into trees. Downstream of culvert stream is narrow and different channels with deep holes and deep banks.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 205 **# Traps:** 3 **Trap Duration (h):** 0.8

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Electrofished whole stream; narrow width allowed complete coverage.

Station 08A01 **Visit** 2 **Survey Date** 7/10/2002

PIC25001.jpg

PIC25002.jpg

PIC25003.jpg

Station 08A01 **Visit** 3 **Survey Date:** 08/20/2002 **Time:** 2:00 PM

Waterbody Name: Little Salcha River Tributary (Local Name) **Pipeline Milepost:** 489.69

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	64.53822	-146.81323		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Big Delta C-6 **Elevation (m):** 248

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground--VSMs used to locate station. Valve Station BL2 is 15 m north. Station is downstream of ROW.

Station Characteristics

Temperature (C) **Air:** 11 **Water:** 4.4 **DO (ppm):** 12 **Turbidity (NTU)** 20 **Stream Gradient (%):**

Qualitative Velocity: Medium **Water Color:** Humic

Stream Stage: High **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**
Width		
Thalweg Depth		

Substrate

Dominant: Gravel

Subdominant: Organic

Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Stream is flooding out of channel. Downstream of culvert the stream meanders through multiple channels through forest. Upstream of culvert 2 channels meet at culvert inlet, the northern-most channel has lower flow, and comes out of a bog. The southern channel parallels the ROW for 30 m then cuts east into forest. Fifty meters into forest the flow goes subsurface. The bog is so wet the area is like a water bed. Five meters upstream it reemerges, it continues on with this pattern. No real thalweg and width can be determined because of flooding.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 206 **# Traps:** 4 **Trap Duration (h):** 0.8

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Conditions allowed electrofishing of most habitat in area. Two traps were set upstream (one in each of the 2 channels); two downstream.

Station 08A01 **Visit** 3 **Survey Date** 8/20/2002

PIC54009.jpg

PIC54010.jpg

PIC54011.jpg

Station 08A02 **Visit** 1 **Survey Date:** 06/11/2002 **Time:** 12:35 PM

Waterbody Name: Bear Lake Outlet (Local Name) **Pipeline Milepost:** 474.56

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 7
	64.70756	-147.11548		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Fairbanks C-1 **Elevation (m):** 169

Anadromous Waters Catalog Number:

Geographic Comments: VSM 25058+23 is visible right before pipeline goes underground. Sign identifying transmitter road PLMP 474.5 is 10 m north of culvert.

Station Characteristics

Temperature (C) **Air:** 17 **Water:** 12.9 **DO (ppm):** 3.51 **Qualitative Velocity:** N/A **Turbidity (NTU)** 0 **Water Color:** Humic **Stream Gradient (%):**

Stream Stage: Low, Discontinuous Flow **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width		4.5	**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells, Jim Lawlor, Ken Wilson

Visit Comments: Station is at pond on upstream side of culvert. Eielson Air Force Base created a dike between Bear Lake and culvert under ROW to prevent flooding of Bear Lake from high water events in French and Moose Creeks. This did not stop the flooding so Eielson Air Force Base crushed and buried east side of culvert to prevent backflow of water from French Creek. In past when flooding occurred, Bear Lake pavilion 1/4 mile upstream was inundated. Culvert is now perched with upstream pool. Culvert diameter 1.2 m, length unavailable.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 104 **# Traps:** 0 **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: No visible inlet from Bear Lake (which is supposedly stocked) into the pond formed on upstream side of culvert.

Station 08A02 **Visit** 1 **Survey Date** 6/11/2002

PIC08005.jpg

PIC08006.jpg

PIC08007.jpg

Station 09A01 **Visit** 1 **Survey Date:** 06/12/2002 **Time:** 9:19 AM

Waterbody Name: Engineer Creek **Pipeline Milepost:** 449.83

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 12
	64.93194	-147.63483		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Fairbanks D-2 **Elevation (m):** 233

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline goes underground 100 m south of stream. Elliot Highway is 500 m north of stream.

Station Characteristics

Temperature (C) **Air:** **Water:** 2 **DO (ppm):** 9.96 **Turbidity (NTU)** 0 **Stream Gradient (%):** 0.5

Qualitative Velocity: N/A **Water Color:** Feric

Stream Stage: Low **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**
Width	3.5	2
Thalweg Depth	1	0.5

Substrate

Dominant: Cobble

Subdominant: Gravel

Subdominant: Organic

Survey Team: Doug Lieb, John Wells, Jim Lawlor, Hillary Schaffer

Visit Comments: Station is downstream of ROW. Stream is free flowing and shallow upstream of culvert. Downstream channel becomes deep and slow, essentially creating a pond. Previously there was a series of beaver dams; APSC installed drain pipes into dams to limit ROW flooding. Beavers have not been active since drain pipes were installed. APSC is excavating a check valve 100 m north of stream. Culvert length is 17.7 m, diameter 1.4 m. Stream gradient taken on both sides of culvert because of gradient change at ROW. Stream gradient upstream of culvert is 1%, downstream is 0.5%. Thalweg upstream is 0.10 m; 1.2 m width.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 418 **# Traps:** 0 **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments:

Station 09A01 **Visit** 1 **Survey Date** 6/12/2002

PIC09001.jpg

PIC09002.jpg

PIC09003.jpg

Station 09A01 **Visit** 2 **Survey Date:** 07/11/2002 **Time:** 8:55 AM

Waterbody Name: Engineer Creek **Pipeline Milepost:** 449.83

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 12
	64.93194	-147.63483		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Fairbanks D-2 **Elevation (m):** 233

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline goes underground 100 m south of stream. Elliot Highway is 500 m north of stream.

Station Characteristics

Temperature (C) **Air:** 18 **Water:** 3.3 **DO (ppm):** 8.96 **Turbidity (NTU)** 27 **Stream Gradient (%):**

Qualitative Velocity: N/A **Water Color:** Clear

Stream Stage: Medium **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**	
Width		1.5	**Dominant:**	Cobble
Thalweg Depth		0.48	**Subdominant:**	Gravel
			Subdominant:	Organic

Survey Team: Doug Lieb, John Wells

Visit Comments: Station is downstream of culvert. Downstream of culvert stream becomes deep and slow moving, there are several woody debris jams that back up flow. This is causing heavy sediment deposition downstream of culvert. Stream is shallow and medium velocity. Stream narrows as it flows into birch forest. Banks are low and with heavy moss growth. Upstream thalweg is 0.15 m with width of 1 m or less.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 119 **# Traps:** 3 **Trap Duration (h):** 0.8

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Downstream of ROW, channel has very soft banks, and is deep and wide, making electrofishing difficult. Upstream stream is narrow and shallow allowing 100% electrofishing coverage..

Station 09A01 **Visit** 2 **Survey Date** 7/11/2002

PIC26001.jpg

PIC26002.jpg

PIC26003.jpg

Station 09A01 **Visit** 3 **Survey Date:** 08/20/2002 **Time:** 12:05 PM

Waterbody Name: Engineer Creek **Pipeline Milepost:** 449.83

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 12
	64.93194	-147.63483		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Fairbanks D-2 **Elevation (m):** 233

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline goes underground 100 m south of stream. Elliot Highway is 500 m north of stream.

Station Characteristics

Temperature (C) **Air:** 11 **Water:** 5.9 **DO (ppm):** 9.49 **Turbidity (NTU)** 3 **Stream Gradient (%):**

Qualitative Velocity: Medium **Water Color:** Humic

Stream Stage: High **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**	
Width		2	**Dominant:**	Cobble
Thalweg Depth		0.23	**Subdominant:**	Gravel
			Subdominant:	Organic

Survey Team: Doug Lieb, John Wells

Visit Comments: Water chemistry measurements taken upstream of LWC with picture 5, 6 upstream and 7,8 downstream of culvert. Sections of stream flooded over banks. Upstream of LWC the stream becomes shallow. Where channel flows into the trees, the channel narrows to 1 m for 10 m, then flow floods over banks creating wide and deep pools. Downstream of culvert the channel is 3m wide and too deep to measure, no more ripples. On the downstream side are several beaver dam remains/beginnings.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 160 **# Traps:** 4 **Trap Duration (h):** 0.8

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Downstream of culvert, stream is too wide and deep to electrofish much more than margins.

Station 09A01 **Visit** 3 **Survey Date** 8/20/2002

PIC54005.jpg

PIC54006.jpg

PIC54007.jpg

Station 09A02 **Visit** 1 **Survey Date:** 06/12/2002 **Time:** 11:06 AM

Waterbody Name: **Pipeline Milepost:** 431.34

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	65.12757	-147.97203		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Livengood A-2 **Elevation (m):** 261

Anadromous Waters Catalog Number:

Geographic Comments: Stream crosses Access Road 64-APL-2 10 m before access road connects with ROW. VSM 2277454 is first one north of access road on ROW. Stream name not provided by Jim Lawlor (APSC) who added stream.

Station Characteristics

Temperature (C) **Air:** **Water:** 1.2 **DO (ppm):** 13.09 **Turbidity (NTU)** 41 **Stream Gradient (%):** 1.3

Qualitative Velocity: N/A **Water Color:** Muddy

Stream Stage: Low **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width		1	**Dominant:** Clay
Thalweg Depth		0.5	**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells, Jim Lawlor, Hillary Schaffer

Visit Comments: Station is upstream of LWC which is in need of maintenance with a pool forming. A water pump is drawing water 1 m from station. Main channel of stream parallels ROW with many pools and miscellaneous inlets of water forming a marsh. Downstream of LWC stream spreads out into floodplain with exceptionally muddy water caused by the dump trucks crossing through the LWC. Water pump is providing water for pad restoration.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 218 **# Traps:** 0 **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Stream downstream has thick suspension of mud from truck traffic at LWC. Water is opaque.

Station 09A02 **Visit** 1 **Survey Date** 6/12/2002

PIC09004.jpg

PIC09005.jpg

PIC09006.jpg

Station 09A03 **Visit** 1 **Survey Date:** 06/12/2002 **Time:** 11:46 AM

Waterbody Name: Snowshoe Creek (Local Name) **Pipeline Milepost:** 431.19

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	65.12887	-147.97583		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Livengood A-2 **Elevation (m):** 258

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground--VSM 2276675 used to locate station. Station is 11 m south of this VSM.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air: 16	**Water:**			

Qualitative Velocity: N/A **Water Color:**

Stream Stage: Wet, No Defined Channel **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Station is at culvert (length 20.5 m, diameter 0.62 m) outlet. Small trickle flows into culvert inlet; stagnant pool 20 cm in diameter at outlet.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** **# Traps:** 0 **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Not enough water to sample.

Station 09A03 **Visit** 1 **Survey Date** 6/12/2002

PIC09007.jpg

PIC09008.jpg

Station 09A03 **Visit** 2 **Survey Date:** 07/11/2002 **Time:** 10:45 AM

Waterbody Name: Snowshoe Creek (Local Name) **Pipeline Milepost:** 431.19

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	65.12887	-147.97583		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Livengood A-2 **Elevation (m):** 258

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground--VSM 2276675 used to locate station. Station is 11 m south of this VSM.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air: 23	**Water:**			

Qualitative Velocity: N/A **Water Color:** Humic

Stream Stage: Low, Discontinuous Flow **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth		0.05	**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Upstream of the ROW small trickles flow to the culvert from several different channels; one parallels the ROW, another comes from the woods. These channels spread out, creating a wet area with surface water in several spots. Area surrounding the stream is marshy, with lots of tall graminoids. Downstream of culvert there is a small trickle leaving culvert. Horsetails and graminoids cover the trickle of water. Small pools of water form where disturbances create a depression. Water not deep enough to measure water chemistry. Downstream section parallels ROW.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** **# Traps:** 0 **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Water not deep enough to electrofish or set traps. Too much vegetation in what water is present.

Station 09A03 **Visit** 2 **Survey Date** 7/11/2002

PIC26005.jpg

PIC26006.jpg

PIC26007.jpg

Station 09A03 **Visit** 3 **Survey Date:** 08/20/2002 **Time:** 11:23 AM

Waterbody Name: Snowshoe Creek (Local Name) **Pipeline Milepost:** 431.19

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	65.12887	-147.97583		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Livengood A-2 **Elevation (m):** 258

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground--VSM 2276675 used to locate station. Station is 11 m south of this VSM.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air: 11	**Water:**			

Qualitative Velocity: Slow **Water Color:** Muddy

Stream Stage: Low, Discontinuous Flow **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Pictures taken upstream of culvert in the rutted area along ROW where water is pooling, then flowing to culvert. This water is emerges as sheet flow out of the graminoids on the east side. Area is wet from the rains in last few days. From culvert outlet water flows through vegetation paralleling the ROW.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** **# Traps:** 0 **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Not enough water to sample.

Station 09A03 **Visit** 3 **Survey Date** 8/20/2002

PIC54001.jpg

PIC54002.jpg

PIC54003.jpg

Station 09A04 **Visit** 1 **Survey Date:** 06/12/2002 **Time:** 12:44 PM

Waterbody Name: Little Globe Creek (Local Name) **Pipeline Milepost:** 420.7

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 8
	65.24567	-148.14334		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Livengood A-3 **Elevation (m):** 278

Anadromous Waters Catalog Number:

Geographic Comments: Stream crosses Access Road 66-APL-2, 200 m from gate that identifies Little Globe Creek. Elliot Highway MP 35. Downstream from Station 09A06.

Station Characteristics

Temperature (C) **Air:** 16 **Water:** 1.1 **DO (ppm):** 13.61 **Turbidity (NTU)** 13 **Stream Gradient (%):** 2

Qualitative Velocity: N/A **Water Color:** Muddy

Stream Stage: Medium **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**	
Width		1.5	**Dominant:**	Gravel
Thalweg Depth		0.3	**Subdominant:**	Cobble
			Subdominant:	

Survey Team: Doug Lieb, John Wells, Jim Lawlor, Hillary Schaffer

Visit Comments: Station is upstream of LWC of the access road. At LWC the channel width spreads out to 7.5 m. Upstream of LWC channel width is 1.5 m; downstream width is 1 m.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 1E+ **# Traps:** 0 **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments:

Station 09A04 **Visit** 1 **Survey Date** 6/12/2002

PIC09009.jpg

PIC09010.jpg

PIC09011.jpg

Station 09A04 **Visit** 2 **Survey Date:** 07/12/2002 **Time:** 8:20 AM

Waterbody Name: Little Globe Creek (Local Name) **Pipeline Milepost:** 420.7

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 8
	65.24567	-148.14334		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Livengood A-3 **Elevation (m):** 278

Anadromous Waters Catalog Number:

Geographic Comments: Stream crosses Access Road 66-APL-2, 200 m from gate that identifies Little Globe Creek. Elliot Highway MP 35. Downstream from Station 09A06.

Station Characteristics

Temperature (C) **Air:** 17 **Water:** 3.7 **DO (ppm):** 11.63 **Qualitative Velocity:** N/A **Turbidity (NTU)** 32 **Stream Gradient (%):** **Water Color:** Muddy

Stream Stage: Medium **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**
Width		2
Thalweg Depth		0.4

Substrate
Dominant: Gravel
Subdominant: Cobble
Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Picture 1 is LWC. Pictures 2 and 3 are downstream of LWC; 4 and 5 are upstream of LWC. Station is upstream of LWC where channel is deeper and wider. Approximately 20 m upstream of LWC stream takes a bend and becomes shallower and swifter; similar to downstream of the LWC. Lots of woody debris, including some boards, are in the water creating pools.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 194 **# Traps:** 4 **Trap Duration (h):** 1.0

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: No fish observed during electrofishing, and no fish caught in traps. Two minnow traps set upstream; two downstream.

Station 09A04 **Visit** 2 **Survey Date** 7/12/2002

PIC27001.jpg

PIC27002.jpg

PIC27003.jpg

Station 09A04 **Visit** 3 **Survey Date:** 08/18/2002 **Time:** 10:40 AM

Waterbody Name: Little Globe Creek (Local Name) **Pipeline Milepost:** 420.7

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 8
	65.24567	-148.14334		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Livengood A-3 **Elevation (m):** 278

Anadromous Waters Catalog Number:

Geographic Comments: Stream crosses Access Road 66-APL-2, 200 m from gate that identifies Little Globe Creek. Elliot Highway MP 35. Downstream from Station 09A06.

Station Characteristics

Temperature (C) **Air:** 9 **Water:** 2.5 **DO (ppm):** 13.98 **Turbidity (NTU)** 66 **Stream Gradient (%):**

Qualitative Velocity: Fast **Water Color:** Muddy

Stream Stage: High **48 hr. Precipitation/Runoff:** Heavy

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:** Gravel
Thalweg Depth			**Subdominant:** Cobble
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: LWC is washed out and stream is 10 m wide over the access road. Stream is over the banks on both sides of LWC, upstream is deep and wide, flowing through the alders and willows. Downstream the stream is wide and turbulent as flows through the meandering channel and around large trees. The wetted surface averages 3 - 6 m wide, with depths to 1.5 m.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 109 **# Traps:** 4 **Trap Duration (h):** 0.8

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Flood waters create significant sampling difficulties.

Station 09A04 **Visit** 3 **Survey Date** 8/18/2002

PIC53010.jpg

PIC53011.jpg

PIC53012.jpg

Station 09A05 **Visit** 1 **Survey Date:** 06/12/2002 **Time:** 1:21 PM

Waterbody Name: Little Globe Creek (Local Name) **Pipeline Milepost:** 420.63

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	65.24608	-148.14735		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Livengood A-3 **Elevation (m):** 284

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground--VSMs used to locate station. Stream is between 420.63 and 420.62. Containment Spill Sign 7-6 is 20 m north of stream.

Station Characteristics

Temperature (C) **Air:** 16 **Water:** 2.1 **DO (ppm):** 13.38 **Qualitative Velocity:** N/A **Turbidity (NTU)** 0 **Water Color:** Clear **Stream Gradient (%):** 2

Stream Stage: Medium **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**
Width	2	1
Thalweg Depth	0.5	0.08

Substrate

Dominant: Cobble

Subdominant: Gravel

Subdominant:

Survey Team: Doug Lieb, John Wells, Jim Lawlor, Hillary Schaffer

Visit Comments: Station is upstream of LWC where channel emerges from thick willows. Vegetated bank is slightly undercut. Downstream of LWC, stream narrows and flows into willows.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 193 **# Traps:** 0 **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments:

Station 09A05 **Visit** 1 **Survey Date** 6/12/2002

PIC09012.jpg

PIC09013.jpg

Station 09A05 **Visit** 2 **Survey Date:** 07/12/2002 **Time:** 9:36 AM

Waterbody Name: Little Globe Creek (Local Name) **Pipeline Milepost:** 420.63

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	65.24608	-148.14735		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Livengood A-3 **Elevation (m):** 284

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground--VSMs used to locate station. Stream is between 420.63 and 420.62. Containment Spill Sign 7-6 is 20 m north of stream.

Station Characteristics

Temperature (C) **Air:** 17 **Water:** 3.7 **DO (ppm):** 8.9 **Qualitative Velocity:** Medium **Turbidity (NTU)** 7 **Water Color:** Clear **Stream Gradient (%):**

Stream Stage: Low **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**	
Width		1.25	**Dominant:**	Cobble
Thalweg Depth		0.15	**Subdominant:**	Gravel
			Subdominant:	

Survey Team: Doug Lieb, John Wells

Visit Comments: Station is upstream of LWC. Picture 6 is LWC; 7 and 8 are downstream of LWC; 9 and 10 are upstream of LWC. Upstream of LWC the channel is deeply entrenched with lots of woody debris. The banks are covered in moss. Downstream of the LWC, the channel braids. There are a few small riparian paper birches. Away from the influence of the ROW the stream width is 1 m or less.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 126 **# Traps:** 3 **Trap Duration (h):** 0.8

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Electrofished up and downstream in all channels.

Station 09A05 **Visit** 2 **Survey Date** 7/12/2002

PIC27006.jpg

PIC27007.jpg

PIC27008.jpg

Station 09A05 **Visit** 3 **Survey Date:** 08/18/2002 **Time:** 1:55 PM

Waterbody Name: Little Globe Creek (Local Name) **Pipeline Milepost:** 420.63

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	65.24608	-148.14735		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Livengood A-3 **Elevation (m):** 284

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground--VSMs used to locate station. Stream is between 420.63 and 420.62. Containment Spill Sign 7-6 is 20 m north of stream.

Station Characteristics

Temperature (C) **Air:** 9 **Water:** 2 **DO (ppm):** 13.78 **Turbidity (NTU)** 31 **Stream Gradient (%):**

Qualitative Velocity: Fast **Water Color:** Humic

Stream Stage: High **48 hr. Precipitation/Runoff:** Heavy

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:** Cobble
Thalweg Depth			**Subdominant:** Gravel
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Flow across LWC is 6 m wide and 0.30 m deep. Several large riprap rocks have washed down into the middle of the LWC, making driving the LWC hazardous. The stream is flooded over banks and into surrounding forest.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 95 **# Traps:** 4 **Trap Duration (h):** 0.5

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Flood waters create significant sampling difficulties.

Station 09A05 **Visit** 3 **Survey Date** 8/18/2002

PIC53022.jpg

PIC53023.jpg

PIC53024.jpg

Station 09A06 **Visit** 1 **Survey Date:** 06/12/2002 **Time:** 1:58 PM

Waterbody Name: Little Globe Creek (Local Name) **Pipeline Milepost:** 421.37

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	65.23554	-148.15005		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Livengood A-3 **Elevation (m):** 314

Anadromous Waters Catalog Number:

Geographic Comments: Stream crosses ROW at 421.37; determined using VSMs. There is a yellow wooden sign identifying creek with PLMP listing. Upstream of Station 09A04.

Station Characteristics

Temperature (C) **Air:** 16 **Water:** 0.9 **DO (ppm):** 12.93 **Turbidity (NTU)** 110 **Stream Gradient (%):** 1.5

Qualitative Velocity: N/A **Water Color:** Muddy

Stream Stage: Medium **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**	
Width		1	**Dominant:**	Cobble
Thalweg Depth		0.3	**Subdominant:**	Gravel
			Subdominant:	Clay

Survey Team: Doug Lieb, John Wells, Jim Lawlor, Hillary Schaffer

Visit Comments: Station is downstream of LWC. Stream above LWC has been diverted from it's original channel by ice upstream. Flow is now directed down ROW to LWC and then back into main channel. Flow is also diverted from channel into undisturbed vegetation; creating numerous ponds and channels that reconnect at the LWC.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 240 **# Traps:** 0 **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Sampled the main channel and not the diversion water lowing down the road.

Station 09A06 **Visit** 1 **Survey Date** 6/12/2002

PIC09014.jpg

PIC09015.jpg

PIC09016.jpg

Station 09A06 **Visit** 2 **Survey Date:** 07/12/2002 **Time:** 10:45 AM

Waterbody Name: Little Globe Creek (Local Name) **Pipeline Milepost:** 421.37

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	65.23554	-148.15005		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Livengood A-3 **Elevation (m):** 314

Anadromous Waters Catalog Number:

Geographic Comments: Stream crosses ROW at 421.37; determined using VSMs. There is a yellow wooden sign identifying creek with PLMP listing. Upstream of Station 09A04.

Station Characteristics

Temperature (C) **Air:** 17 **Water:** 4.8 **DO (ppm):** 6.97 **Qualitative Velocity:** Medium **Turbidity (NTU)** 26 **Water Color:** Muddy **Stream Gradient (%):**

Stream Stage: Medium **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**
Width		1
Thalweg Depth		0.17

Substrate

Dominant: Cobble
Subdominant: Gravel
Subdominant: Clay

Survey Team: Doug Lieb, John Wells

Visit Comments: The ice present on the first visit is gone. Stream is now in normal channel. Picture 11 is of LWC; 12 and 13 is downstream of LWC; 14 and 17 are upstream and the two different channels. Fifty meters upstream of the LWC the stream forks. The channel paralleling the ROW flows through thick alders and willows and is 0.5 m wide, the other flows from a wetland through a slow and meandering channel that is essentially a series of pools. Both channels are deeply entrenched. Downstream of the LWC the channel is 1 m wide and shallower, with considerable woody debris.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 141 **# Traps:** 3 **Trap Duration (h):** 0.5

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Stream has dense woody debris, making electrofishing difficult. Three minnow traps: 1 downstream, 1 upstream in main channel, and 1 upstream in pools.

Station 09A06 **Visit** 2 **Survey Date** 7/12/2002

PIC27011.jpg

PIC27012.jpg

PIC27013.jpg

Station 09A06 **Visit** 3 **Survey Date:** 08/18/2002 **Time:** 12:56 PM

Waterbody Name: Little Globe Creek (Local Name) **Pipeline Milepost:** 421.37

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	65.23554	-148.15005		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Livengood A-3 **Elevation (m):** 314

Anadromous Waters Catalog Number:

Geographic Comments: Stream crosses ROW at 421.37; determined using VSMs. There is a yellow wooden sign identifying creek with PLMP listing. Upstream of Station 09A04.

Station Characteristics

Temperature (C) **Air:** 9 **Water:** 2.3 **DO (ppm):** 13.11 **Turbidity (NTU)** 74 **Stream Gradient (%):**

Qualitative Velocity: Fast **Water Color:** Muddy

Stream Stage: High **48 hr. Precipitation/Runoff:** Heavy

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width		2	**Dominant:** Cobble
Thalweg Depth			**Subdominant:** Gravel
			Subdominant: Clay

Survey Team: Doug Lieb, John Wells

Visit Comments: Stream is flooded; water flows down the ROW to the LWC as in first visit. Stream is deep, depth not measurable. Flow across LWC is 7 m wide by 0.30 m deep.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 167 **# Traps:** 4 **Trap Duration (h):** 0.5

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Flood waters create significant sampling difficulties.

Station 09A06 **Visit** 3 **Survey Date** 8/18/2002

PIC53017.jpg

PIC53018.jpg

PIC53020.jpg

Station 09A07 **Visit** 1 **Survey Date:** 06/12/2002 **Time:** 4:30 PM

Waterbody Name: Tatalina River Tributary (Local Name) **Pipeline Milepost:** 413.6

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 8
	65.31614	-148.29411		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Livengood B-3 **Elevation (m):** 211

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground--VSM 2183830 used to locate station. Stream is 1/4 mile north of Pump Station 7, access through back gate of facility.

Station Characteristics

Temperature (C) **Air:** 17 **Water:** 4.2 **DO (ppm):** 10.04 **Qualitative Velocity:** N/A **Turbidity (NTU)** 1 **Water Color:** Clear **Stream Gradient (%):** 2.5

Stream Stage: Low **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**
Width	0.5	0.25
Thalweg Depth	0.08	0.34

Substrate

Dominant: Cobble

Subdominant: Organic

Subdominant:

Survey Team: Doug Lieb, John Wells, Jim Lawlor

Visit Comments: Station is upstream of LWC. Flow across LWC is very shallow and wide. Dense woody vegetation along banks.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 111 **# Traps:** 0 **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Aquatic macro-invertebrates collected while electrofishing.

Station 09A07 **Visit** 1 **Survey Date** 6/12/2002

PIC09019.jpg

PIC09020.jpg

PIC09021.jpg

Station 09A07 **Visit** 2 **Survey Date:** 07/12/2002 **Time:** 3:53 PM

Waterbody Name: Tatalina River Tributary (Local Name) **Pipeline Milepost:** 413.6

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 8
	65.31614	-148.29411		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Livengood B-3 **Elevation (m):** 211

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground--VSM 2183830 used to locate station. Stream is 1/4 mile north of Pump Station 7, access through back gate of facility.

Station Characteristics

Temperature (C) **Air:** 22 **Water:** 7.9 **DO (ppm):** 5.45 **Qualitative Velocity:** Slow **Turbidity (NTU)** 15 **Stream Gradient (%):** **Water Color:** Clear

Stream Stage: Low **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**
Width		
Thalweg Depth		0.03

Substrate

Dominant: Cobble

Subdominant: Organic

Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Station is upstream of LWC. Water in LWC not deep enough to take a water depth measurement. Upstream of LWC water was deep enough to take water chemistry readings. Ten meters upstream of LWC, the stream forks into two channels and flow becomes intermittent through the wetland. Downstream of LWC stream is muddy bog for 5 m, then forms a series of pools connected by very shallow trickles of water approximately 0.5 m wide. High density of woody debris downstream. Banks are covered in moss.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 41 **# Traps:** **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Much of channel too shallow to sample.

Station 09A07 **Visit** 2 **Survey Date** 7/12/2002

PIC27022.jpg

PIC27023.jpg

PIC27024.jpg

Station 09A07 **Visit** 3 **Survey Date:** 08/18/2002 **Time:** 8:11 AM

Waterbody Name: Tatalina River Tributary (Local Name) **Pipeline Milepost:** 413.6

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 8
	65.31614	-148.29411		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Livengood B-3 **Elevation (m):** 211

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground--VSM 2183830 used to locate station. Stream is 1/4 mile north of Pump Station 7, access through back gate of facility.

Station Characteristics

Temperature (C) **Air:** 9 **Water:** 3.1 **DO (ppm):** 12.58 **Qualitative Velocity:** Medium **Turbidity (NTU)** 55 **Water Color:** Muddy **Stream Gradient (%):**

Stream Stage: Medium **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**
Width		0.28
Thalweg Depth		0.1

Substrate

Dominant: Cobble

Subdominant: Organic

Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Flow is higher then last visit, flooding banks in places; this time there is substantial channel upstream of LWC. Sheet flow upstream adds to high water. At the LWC, the stream widens to 2 m, yet very shallow. As flow reenters the trees, a more defined, deeper and narrower, channel forms.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 164 **# Traps:** 1 **Trap Duration (h):** 0.5

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Flood waters create significant sampling difficulties.

Station 09A07 **Visit** 3 **Survey Date** 8/18/2002

PIC53001.jpg

PIC53002.jpg

PIC53003.jpg

Station 10A01 **Visit** 1 **Survey Date:** 06/13/2002 **Time:** 12:47 PM

Waterbody Name: Erickson Creek Tributary (Local Name) **Pipeline Milepost:** 387.7

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	65.57648	-148.87297		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Livengood C-4 **Elevation (m):** 257

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground--VSM 2047090 used to locate station. Station at Containment Site 6-25. A very deep and heavily armored LWC.

Station Characteristics

Temperature (C) **DO (ppm):** 7.59 **Turbidity (NTU)** 1 **Stream Gradient (%):** 4.5

Air: **Water:** 6.8 **Qualitative Velocity:** N/A **Water Color:** Humic

Stream Stage: Low, Discontinuous Flow **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:** Organic
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells, Jim Lawlor

Visit Comments: Station is upstream of LWC. Upstream of the LWC the channel is a series of wide and deep pools, which becomes braided near the LWC where it flows through dense willows. The LWC is dry as flow percolates through large angular boulders placed by APSC. The LWC is approximately 4 m deep. This is to accommodate large traffic and high flood waters. Downstream of LWC stream becomes deeply entrenched with highly unstable banks that have large amounts of tree falls that have filled in and created a system of pools with water flowing between them. High amounts of willows and alders mixed in with the black spruce along the streams edge. The downstream banks are collapsing taking the trees along making very large barriers for walking. Lots of flood damaged trees had been carried downstream evident from high water.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 226 **# Traps:** 0 **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Sampling efficiency was poor because of large numbers of trees fallen into stream. Aquatic macro-invertebrates were turned up by electrofisher.

Station 10A01 **Visit** 1 **Survey Date** 6/13/2002

PIC10001.jpg

PIC10002.jpg

PIC10003.jpg

Station 10A01 **Visit** 2 **Survey Date:** 07/13/2002 **Time:** 10:00 AM

Waterbody Name: Erickson Creek Tributary (Local Name) **Pipeline Milepost:** 387.7

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	65.57648	-148.87297		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Livengood C-4 **Elevation (m):** 257

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground--VSM 2047090 used to locate station. Station at Containment Site 6-25. A very deep and heavily armored LWC.

Station Characteristics

Temperature (C) **Air:** 17 **Water:** 5.8 **DO (ppm):** 7.9 **Qualitative Velocity:** Fast **Turbidity (NTU)** 14 **Water Color:** Humic **Stream Gradient (%):**

Stream Stage: Medium **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**
Width		4
Thalweg Depth		0.45

Substrate

Dominant: Organic

Subdominant:

Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Water is 2.5m wide in LWC. Upstream of LWC the stream from a wetland through alders and willows. Upstream of the alders and willows, the stream has a wide and deep channel (0.75 m). Downstream of the LWC, the stream enters a steeply entrenched area with large amounts of woody debris from heavily eroding banks. This debris obscures the channel. This stream at moment is flooded.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 113 **# Traps:** 4 **Trap Duration (h):** 1.0

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Sampling efficiency was poor because of inaccessibility of water. Downstream had steep entrenched and eroding banks 6 m high with dense woody debris wedged into channel.

Station 10A01 **Visit** 2 **Survey Date** 7/13/2002

PIC28001.jpg

PIC28002.jpg

PIC28003.jpg

Station 10A01 **Visit** 3 **Survey Date:** 08/17/2002 **Time:** 12:39 PM

Waterbody Name: Erickson Creek Tributary (Local Name) **Pipeline Milepost:** 387.7

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	65.57648	-148.87297		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Livengood C-4 **Elevation (m):** 257

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground--VSM 2047090 used to locate station. Station at Containment Site 6-25. A very deep and heavily armored LWC.

Station Characteristics

Temperature (C) **Air:** 15 **Water:** 8.4 **DO (ppm):** 5.13 **Qualitative Velocity:** Still **Turbidity (NTU)** 23 **Water Color:** Humic **Stream Gradient (%):**

Stream Stage: Low, Discontinuous Flow **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:** Organic
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: The LWC is completely dry. Multimeter readings taken in pond upstream of LWC; there is no flow between the pond and LWC. Other isolated ponds are further upstream. Downstream of LWC, there is no flow, just puddles.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 50 **# Traps:** 2 **Trap Duration (h):** 0.5

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Electrofished the two ponds that had water. The two traps were also set in the ponds.

Station 10A01 **Visit** 3 **Survey Date** 8/17/2002

PIC52006.jpg

PIC52007.jpg

PIC52008.jpg

Station 10A02 **Visit** 1 **Survey Date:** 06/13/2002 **Time:** 4:52 PM

Waterbody Name: South Fork Fish Creek (Local Name) **Pipeline Milepost:** 297.38

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 8
	66.51041	-150.71664		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Bettles C-2 **Elevation (m):** 328

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground--VSM 1570178 used to locate station. Three plus streams in area called South Fork Fish Creek.

Station Characteristics

Temperature (C) **Air:** 19 **Water:** 7 **DO (ppm):** 6.61 **Qualitative Velocity:** N/A **Turbidity (NTU)** 0 **Stream Gradient (%):** 1 **Water Color:** Clear

Stream Stage: Low, Discontinuous Flow **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m): **OHW** **Wetted**

Width

Thalweg Depth

Substrate

Dominant: Organic

Subdominant:

Subdominant:

Survey Team: Doug Lieb, John Wells, Jim Lawlor

Visit Comments: Station is at culvert. Culvert length 40 m; diameter 0.79 m. The channel has no surface flow. There is water present in small pools at culvert inlet and outlet. Marsh extends upstream and downstream. East of the culvert is discontinuous water for approximately 20 m, then flow goes completely subsurface. Ponded water is stagnant with algae and vascular plants slowly filling in what channel is visible. Channel has heavily vegetated banks. Multimeter readings taken in pool with no surface inlet at east end of culvert.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** **# Traps:** 0 **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Water present is too marshy for sampling.

Station 10A02 **Visit** 1 **Survey Date** 6/13/2002

PIC10006.jpg

PIC10007.jpg

PIC10008.jpg

Station 10A02 **Visit** 2 **Survey Date:** 07/13/2002 **Time:** 9:13 AM

Waterbody Name: South Fork Fish Creek (Local Name) **Pipeline Milepost:** 297.38

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 8
	66.51041	-150.71664		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Bettles C-2 **Elevation (m):** 328

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground--VSM 1570178 used to locate station. Three plus streams in area called South Fork Fish Creek.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air: 15	**Water:**			

Qualitative Velocity: N/A **Water Color:**

Stream Stage: Wet, No Defined Channel **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:** Organic
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Stream has no water present. Water has not flowed here recently enough to create strong evidence of channel morphology. Downstream of the culvert is wet boggy area. Upstream/east of culvert are two pools. The first one is thickly filled with aquatic vegetation; the second is open water. Both pools are too small to set traps and not deep enough for electrofishing.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** 0 **# Traps:** 0 **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Both pools are too small to set traps and not deep enough for electrofishing.

Station 10A02 **Visit** 2 **Survey Date** 7/13/2002

PIC29001.jpg

PIC29002.jpg

PIC29003.jpg

Station 10A02 **Visit** 3 **Survey Date:** 08/15/2002 **Time:** 1:55 PM

Waterbody Name: South Fork Fish Creek (Local Name) **Pipeline Milepost:** 297.38

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 8
	66.51041	-150.71664		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Bettles C-2 **Elevation (m):** 328

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground--VSM 1570178 used to locate station. Three plus streams in area called South Fork Fish Creek.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air: 7	**Water:**			

Qualitative Velocity: N/A **Water Color:**

Stream Stage: Dry, No defined Channel **48 hr. Precipitation/Runoff:** Heavy

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: There is no water present in the culvert. There is no evident channel, area to east is wet bog; to west is grass and sapling trees. No standing pools of water on this visit.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** 0 **# Traps:** 0 **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: No water present.

Station 10A02 **Visit** 3 **Survey Date** 8/15/2002

PIC50015.jpg

PIC50016.jpg

Station 11A01 **Visit** 1 **Survey Date:** 06/14/2002 **Time:** 9:30 AM

Waterbody Name: Beaver Spring (Local Name) **Pipeline Milepost:** 268.43

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	66.88021	-150.52820		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Bettles D-2 **Elevation (m):** 333

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground--VSM 1417312 used to locate station. Culvert is marked with culvert stakes and there is a second high water culvert 10 m south.

Station Characteristics

Temperature (C) **Air:** 13 **Water:** 8 **DO (ppm):** 4.98 **Turbidity (NTU)** 0 **Stream Gradient (%):**

Qualitative Velocity: N/A **Water Color:** Clear

Stream Stage: Wet, No Defined Channel **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells, Jim Lawlor

Visit Comments: Station is at culvert west of Pipeline. A pond with no visible outlet is at the culvert outlet. Upstream of culvert is a 5 m long narrow channel filled with aquatic plants and moss draining a pond with no visible inlet. Water seeps from surrounding marsh. Many vascular aquatic plants in pond. pH meter is not calibrating. Culvert length 10.63 m; diameter 0.61 m.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 151 **# Traps:** 0 **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Electrofished the two ponds on either end of the culvert.

Station 11A01 **Visit** 1 **Survey Date** 6/14/2002

PIC11001.jpg

PIC11002.jpg

PIC11003.jpg

Station 11A01 **Visit** 2 **Survey Date:** 07/14/2002 **Time:** 10:50 AM

Waterbody Name: Beaver Spring (Local Name) **Pipeline Milepost:** 268.43

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	66.88021	-150.52820		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Bettles D-2 **Elevation (m):** 333

Anadromous Waters Catalog Number:

Geographic Comments: At Dalton Highway MP 141 take Access Road 92-APL-2; head north on ROW. Stream flows through culvert between VSMs 1417372 and 1417312.

Station Characteristics

Temperature (C) **Air:** **Water:** 11.6 **DO (ppm):** 3.3 **Qualitative Velocity:** Still **Turbidity (NTU)** 0 **Water Color:** Clear **Stream Gradient (%):**

Stream Stage: Low, Discontinuous Flow **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Stream has no noticeable flow. Water depth in culvert is 0.3 m. The pond west of the culvert is approximately 10 m in diameter. There is no visible flow into this pond from the surrounding muskeg. East of the culvert are two ponds. Discontinuous flow connects these two ponds. The larger pool is approximately 15-20 m long and 10 m wide. This pond a floating moss mat, making electrofishing unfeasible. Further downstream, the pond dwindles to patchy water, wet bog, and black spruce muskeg.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 81 **# Traps:** 4 **Trap Duration (h):** 0.5

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Electrofished both ponds east side of culvert and the one pond west of culvert.

Station 11A01 **Visit** 2 **Survey Date** 7/14/2002

PIC29006.jpg

PIC29007.jpg

PIC29008.jpg

Station 11A01 **Visit** 3 **Survey Date:** 08/15/2002 **Time:** 10:12 AM

Waterbody Name: Beaver Spring (Local Name) **Pipeline Milepost:** 268.43

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	66.88021	-150.52820		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Bettles D-2 **Elevation (m):** 333

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground--VSM 1417312 used to locate station. Culvert is marked with culvert stakes and there is a second high water culvert 10 m south.

Station Characteristics

Temperature (C) **Air:** 6 **Water:** 8.3 **DO (ppm):** 6.6 **Qualitative Velocity:** Slow **Turbidity (NTU)** 0 **Water Color:** Clear **Stream Gradient (%):**

Stream Stage: Low, Discontinuous Flow **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: There is a slight flow through the culvert between the bogs on either side of the ROW. Pond furthest east still has thick mat of moss preventing access to water.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 101 **# Traps:** 3 **Trap Duration (h):** 0.5

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: The ponds have large amounts of vegetation, and the furthest east pond has thick floating moss mat preventing access to water underneath. The pools are also too deep and wide to sample the center.

Station 11A01 **Visit** 3 **Survey Date** 8/15/2002

PIC50008.jpg

PIC50009.jpg

PIC50010.jpg

Station 11A02 **Visit** 1 **Survey Date:** 06/14/2002 **Time:** 10:48 AM

Waterbody Name: 1296363 (Local Name) **Pipeline Milepost:** 245.51

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	67.16560	-150.34494		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Wiseman A-1 **Elevation (m):** 301

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground--VSMs used to locate station. Stream is a block point. Stream goes under Dalton Highway at MP 167. Station 30A01 is downstream on same channel.

Station Characteristics

Temperature (C) **Air:** 15 **Water:** 3.9 **DO (ppm):** 7.5 **Qualitative Velocity:** N/A **Turbidity (NTU)** 2 **Stream Gradient (%):** **Water Color:** Clear

Stream Stage: Medium **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**
Width	9.4	7.4
Thalweg Depth		1

Substrate

Dominant: Cobble

Subdominant: Boulder

Subdominant:

Survey Team: Doug Lieb, John Wells, Jim Lawlor

Visit Comments: Station is located directly underneath pipeline where it crosses the channel. Channel appears to be a slough. At ROW the channel is 7.4 m wide, narrowing to 4.8 m 20 m downstream. Upstream of the pipeline, two culverts direct flow through the Dalton Highway. Both these culverts are completely submersed. Near the culverts, riprap has been placed around the culverts. Culvert lengths are 31.9 m; diameter 1 m. The culverts belong to ADOT/PF. Substrate is cobble and boulder with deposition layer of fine sediment. No current evident since stirred-up sediment remains suspended in place.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 243 **# Traps:** 4 **Trap Duration (h):** 3.1

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Two suspected fishes jumped out of water; 1 possible fish turned by electrofisher, but unable to retrieve because of large amounts of floating debris upstream of Dalton Highway. Channel is very deep, limiting sampling efficiency.

Station 11A02 **Visit** 1 **Survey Date** 6/14/2002

PIC11005.jpg

PIC11006.jpg

PIC11007.jpg

Station 11A02 **Visit** 2 **Survey Date:** 07/15/2002 **Time:** 8:45 AM

Waterbody Name: 1296363 (Local Name) **Pipeline Milepost:** 245.51

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	67.16560	-150.34494		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Wiseman A-1 **Elevation (m):** 301

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground--VSMs used to locate station. Stream is a block point. Stream goes under Dalton Highway at MP 167. Station 30A01 is downstream on same channel.

Station Characteristics

Temperature (C) **Air:** 17 **Water:** 3.7 **DO (ppm):** 5.43 **Qualitative Velocity:** Slow **Turbidity (NTU)** 2 **Stream Gradient (%):** **Water Color:** Clear

Stream Stage: Medium **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: At the station the stream is 4 m wide and deeper than waders. Flow is very slow. A thick layer of fine sediment covers the substrate surface. Upstream of the Dalton Highway, the flow virtually stops, with deposition of fines and soft sediment banks. Organic debris (e.g., branches and leaves) cover much of the water surface. Downstream of the Dalton Highway and pipeline, the stream becomes narrower and shallower. The culverts act as a blockage to fish passage because of flooding that has buried and covered the 2 culverts in mud and wood debris. Fish were seen and captured downstream of these culverts. See site 30A01.

Species: slimy sculpin **Life Stage:** Juvenile/Adult **Life History:** Resident

Count: 1 **Fork lengths (mm):** 33

Gear: Portable Electrofisher **EF Time (s):** 237 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Unknown **Height (m):** **Pool depth (m):**

Comments: This sculpin was caught 20 m upstream of blocked culverts (Station 30A01) in a shallow riffle, immediately upstream of where stream becomes wide and deep and almost still. See Station 30A01 for information on fish caught downstream of the blocked culverts.

Station 11A02 **Visit** 2 **Survey Date** 7/15/2002

PIC30011.jpg

PIC30012.jpg

Station 11A02 **Visit** 3 **Survey Date:** 08/14/2002 **Time:** 11:15 AM

Waterbody Name: 1296363 (Local Name) **Pipeline Milepost:** 245.51

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	67.16560	-150.34494		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Wiseman A-1 **Elevation (m):** 301

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground--VSMs used to locate station. Stream is a block point. Stream goes under Dalton Highway at MP 167. Station 30A01 is downstream on same channel.

Station Characteristics

Temperature (C) **Air:** 5 **Water:** 3.8 **DO (ppm):** 6.23 **Qualitative Velocity:** Slow **Turbidity (NTU)** 2 **Stream Gradient (%):** **Water Color:** Humic

Stream Stage: Medium **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width		4	**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Picture 20 is of blocked culvert's (Station 30A01) downstream of blockpoint. Multimeter readings taken at Dalton Highway culverts. The stream is lower than on last visit. Stream near culverts is too deep to measure thalweg depth. Stream becomes narrow and shallow with mud substrate near the blocked culverts at Station 30A01. Perfuse algal growth on bottom near Dalton Highway culvert and where the stream is deep and still. East of the Dalton Highway ice has formed a thin surface layer.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 256 **# Traps:** 4 **Trap Duration (h):** 0.5

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Majority of stream is too wide and deep for efficient electrofishing. Grayling were observed downstream of the blocked culverts at Station 30A01, downstream from this point.

Station 11A02 **Visit** 3 **Survey Date** 8/14/2002

PIC49016.jpg

PIC49017.jpg

PIC49018.jpg

Station 11A03 **Visit** 1 **Survey Date:** 06/14/2002 **Time:** 12:07 PM

Waterbody Name: Jackson Slough (Local Name) **Pipeline Milepost:** 245.27

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	67.16894	-150.34125		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Wiseman A-1 **Elevation (m):** 305

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground--VSMs used to locate station. Stream flows through culvert under Dalton Highway 20 m downstream of station.

Station Characteristics

Temperature (C) **DO (ppm):** 4.26 **Turbidity (NTU)** 4 **Stream Gradient (%):** 0.5

Air: **Water:** 5.3 **Qualitative Velocity:** N/A **Water Color:** Muddy

Stream Stage: **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells, Jim Lawlor

Visit Comments: Station is downstream of culvert. Water at culvert inlet and outlet is pooled (both 2 m diameter) with a small trickle of water flowing through culvert. There is a small trickle out of the downstream pond. When water in the Koyukuk are high, Jackson Slough is reported to fill up and be rather deep. Culvert length 12.1 m, diameter 1 m. Evidence of flood waters approximately 10 m wide.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 54 **# Traps:** 0 **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Sampled the culvert inlet and outlet ponds; the inlet and outlet flows are not deep enough to sample.

Station 11A03 **Visit** 1 **Survey Date** 6/14/2002

PIC11009.jpg

PIC11010.jpg

PIC11011.jpg

Station 11A03 **Visit** 2 **Survey Date:** 07/15/2002 **Time:** 11:00 AM

Waterbody Name: Jackson Slough (Local Name) **Pipeline Milepost:** 245.27

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	67.16894	-150.34125		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Wiseman A-1 **Elevation (m):** 305

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground--VSMs used to locate station. Stream flows through culvert under Dalton Highway 20 m downstream of station.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air: 18	**Water:**			

Qualitative Velocity: N/A **Water Color:**

Stream Stage: Dry, Defined Channel **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Station is at the culvert. No surface water in channel. Terrestrial vegetation growing in channel.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** **# Traps:** 0 **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: No water, no sampling.

Station 11A03 **Visit** 2 **Survey Date** 7/15/2002

PIC30013.jpg

PIC30014.jpg

PIC30015.jpg

Station 11A03 **Visit** 3 **Survey Date:** 08/14/2002 **Time:** 11:03 AM

Waterbody Name: Jackson Slough (Local Name) **Pipeline Milepost:** 245.27

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	67.16894	-150.34125		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Wiseman A-1 **Elevation (m):** 305

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground--VSMs used to locate station. Stream flows through culvert under Dalton Highway 20 m downstream of station.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air: 5	**Water:**			

Qualitative Velocity: N/A **Water Color:**

Stream Stage: Dry, Defined Channel **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: No water present in culvert or on either side. The channel is overgrown with tall graminoids. On both sides of channel is alders and willows.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** **# Traps:** 0 **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: No water, no sampling.

Station 11A03 **Visit** 3 **Survey Date** 8/14/2002

PIC49014.jpg

PIC49015.jpg

Station 11A04 **Visit** 1 **Survey Date:** 06/14/2002 **Time:** 12:46 PM

Waterbody Name: Jackson Slough (Local Name) **Pipeline Milepost:** 244.84

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	67.17453	-150.33397		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Wiseman A-1 **Elevation (m):** 301

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground--VSM 1292730 used to locate station. Stream flows through culvert under ROW; then 8 m downstream from ROW, stream flows through another culvert under a small hill.

Station Characteristics

Temperature (C) **Air:** 17 **Water:** 8.8 **DO (ppm):** 7.91 **Qualitative Velocity:** N/A **Turbidity (NTU)** 0 **Water Color:** Clear **Stream Gradient (%):** 0.5

Stream Stage: **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**
Width	14	1
Thalweg Depth		11

Substrate

Dominant: Silt

Subdominant:

Subdominant:

Survey Team: Doug Lieb, John Wells, Jim Lawlor

Visit Comments: Station is located upstream of ROW culvert (length 18.1 m, diameter 1 m). A second culvert 8 m upstream is 31.5 m long; this culvert goes through a dike perpendicular to the ROW. There is evidence of flooding above present water level in form of water pools stranded above thalweg depth. Upstream of ROW culvert, the channel is narrow and moderately entrenched with a wide floodplain. Grasses and ferns grow on bank edges. Alders and willows along OHW banks. Substrate is silt deposition most likely from Koyukuk River which drains into slough. At certain flows, water backs up between the two culverts.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 77 **# Traps:** 0 **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments:

Station 11A04 **Visit** 1 **Survey Date** 6/14/2002

PIC11014.jpg

PIC11015.jpg

PIC11016.jpg

Station 11A04 **Visit** 2 **Survey Date:** 07/15/2002 **Time:** 11:12 AM

Waterbody Name: Jackson Slough (Local Name) **Pipeline Milepost:** 244.84

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	67.17453	-150.33397		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Wiseman A-1 **Elevation (m):** 301

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground--VSM 1292730 used to locate station. Stream flows through culvert under ROW; then 8 m downstream from ROW, stream flows through another culvert under a small hill.

Station Characteristics

Temperature (C) **DO (ppm):** 5.63 **Turbidity (NTU)** 0 **Stream Gradient (%):**

Air: 18 **Water:** 8.6 **Qualitative Velocity:** N/A **Water Color:** Clear

Stream Stage: Low, Discontinuous Flow **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Pictures are taken in sequential order from west to east, covering the culvert under the ROW, then the culvert through the dike, to the channel of water found. Surface flow is discontinuous west of the ROW with small standing pools. There are pools of standing water at the outlet of each culvert. The eastern culvert has the largest pool.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 35 **# Traps:** 1 **Trap Duration (h):** 0.3

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: One minnow trap was set in the upstream pool. Thirty meters of discontinuous surface flow upstream of this pool was electro fished.

Station 11A04 **Visit** 2 **Survey Date** 7/15/2002

PIC30016.jpg

PIC30017.jpg

PIC30018.jpg

Station 11A04 **Visit** 3 **Survey Date:** 08/14/2002 **Time:** 10:30 AM

Waterbody Name: Jackson Slough (Local Name) **Pipeline Milepost:** 244.84

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	67.17453	-150.33397		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Wiseman A-1 **Elevation (m):** 301

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground--VSM 1292730 used to locate station. Stream flows through culvert under ROW; then 8 m downstream from ROW, stream flows through another culvert under a small hill.

Station Characteristics

Temperature (C) **Air:** 4.7 **Water:** 2.2 **DO (ppm):** 6.41 **Qualitative Velocity:** Still **Turbidity (NTU)** 1 **Water Color:** Clear **Stream Gradient (%):**

Stream Stage: Dry, Defined Channel **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: There is no water flowing or present in the channel. East of the second culvert, the pool still has small amounts of water. Multimeter readings and minnow trapping conducted in this pool. No pictures other than of pool are taken since nothing has changed since previous visit. Water is very clear; substrate is mud.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Minnow Trap, 1/4 in. Mesh **EF Time (s):** 27 **# Traps:** 1 **Trap Duration (h):** 0.5

Channel: Off Channel (disconnected at inlet and/or outlet)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: One minnow trap set in second culvert pool. Electrofished pool. No other water is present.

Station 11A04 **Visit** 3 **Survey Date** 8/14/2002

PIC49013.jpg

Station 11A05 **Visit** 1 **Survey Date:** 06/14/2002 **Time:** 1:25 PM

Waterbody Name: 1289421.00 (Local Name) **Pipeline Milepost:** 244.21

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	67.18172	-150.32094		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Wiseman A-1 **Elevation (m):** 302

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground--VSM 1289431 (3 m south of stream) used to locate station.

Station Characteristics

Temperature (C) **Air:** 20 **Water:** 2.9 **DO (ppm):** 12.86 **Turbidity (NTU)** 0 **Stream Gradient (%):** 7

Qualitative Velocity: N/A **Water Color:** Clear

Stream Stage: Medium **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**
Width	3	2
Thalweg Depth	1	0.15

Substrate

Dominant: Gravel

Subdominant: Cobble

Subdominant:

Survey Team: Doug Lieb, John Wells, Jim Lawlor

Visit Comments: Station is upstream of LWC. LWC is approximately 25 m upstream from confluence with the Middle Fork Koyukuk River. In this area, the east bank of the Koyukuk River has been extensively armored with riprap. This riprap has degraded and has altered the morphology of stream 1289421.00 (Local Name) between the LWC and the Koyukuk. Large volumes of riprap have fallen into the lowest reaches of the tributary stream and may be blocking seasonal fish passage. A failed culvert in the riprap zone is now smashed and pushed to the side. Tall willows comprise riparian vegetation downstream of LWC.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 154 **# Traps:** 0 **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Waterfall in riprap below LWC: height 0.68 m; pool depth of 0.21 m.

Station 11A05 **Visit** 1 **Survey Date** 6/14/2002

PIC11019.jpg

PIC11020.jpg

PIC11018.jpg

Station 11A05 **Visit** 2 **Survey Date:** 07/15/2002 **Time:** 12:00 PM

Waterbody Name: 1289421.00 (Local Name) **Pipeline Milepost:** 244.21

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	67.18172	-150.32094		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Wiseman A-1 **Elevation (m):** 302

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground--VSM 1289431 (3 m south of stream) used to locate station.

Station Characteristics

Temperature (C) **Air:** 21 **Water:** 4.1 **DO (ppm):** 11.25 **Turbidity (NTU)** 0 **Stream Gradient (%):**

Qualitative Velocity: Medium **Water Color:** Clear

Stream Stage: Medium **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**	
Width		1	**Dominant:**	Gravel
Thalweg Depth		0.13	**Subdominant:**	Cobble
			Subdominant:	Boulder

Survey Team: Doug Lieb, John Wells

Visit Comments: Station is 1 m upstream of LWC. Stream has a well-formed pool-riffle structure upstream of the LWC. Downstream of LWC the stream morphology is degraded because of the failed riprap.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 79 **# Traps:** 2 **Trap Duration (h):** 0.5

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: One trap upstream of LWC; one downstream.

Station 11A05 **Visit** 2 **Survey Date** 7/15/2002

PIC30022.jpg

PIC30023.jpg

PIC30024.jpg

Station 11A05 **Visit** 3 **Survey Date:** 08/14/2002 **Time:** 9:49 AM

Waterbody Name: 1289421.00 (Local Name) **Pipeline Milepost:** 244.21

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	67.18172	-150.32094		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Wiseman A-1 **Elevation (m):** 302

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground--VSM 1289431 (3 m south of stream) used to locate station.

Station Characteristics

Temperature (C) **DO (ppm):** 12.3 **Turbidity (NTU)** 1 **Stream Gradient (%):**

Air: 4 **Water:** 1.6 **Qualitative Velocity:** Slow **Water Color:** Clear

Stream Stage: Low, Discontinuous Flow **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width		0.72	**Dominant:**
Thalweg Depth		0.08	**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Stream parameters taken above LWC. The LWC is broad and shallow. Channel flow is just trickling through the LWC. Two meters downstream from the LWC flow goes subsurface into the large riprap.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 125 **# Traps:** 1 **Trap Duration (h):** 0.4

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Subsurface flow at mouth of stream. Able to electro fished all water because of shallow and narrow width of stream.

Station 11A05 **Visit** 3 **Survey Date** 8/14/2002

PIC49009.jpg

PIC49010.jpg

PIC49011.jpg

Station 11A06 **Visit** 1 **Survey Date:** 06/14/2002 **Time:** 2:52 PM

Waterbody Name: Texas Slough (Local Name) **Pipeline Milepost:** 235.51

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	67.28609	-150.17693		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Wiseman B-1 **Elevation (m):** 333

Anadromous Waters Catalog Number:

Geographic Comments: Use Access Road 98-APL-4 then turn north at PLMP 236; travel 0.5 miles.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air: 20	**Water:**			

Qualitative Velocity: N/A **Water Color:**

Stream Stage: Dry, No defined Channel **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells, Jim Lawlor

Visit Comments: Station is at LWC which has no water present in it. Willows have grown on bottom of channel on either side of the LWC, indicating lack of significant water flow or long-term presence. Dense willow thickets are also present in archaic channels further from the LWC.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** **# Traps:** **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: No water, no sampling.

Station 11A06 **Visit** 1 **Survey Date** 6/14/2002

PIC11022.jpg

PIC11023.jpg

Station 11A06 **Visit** 2 **Survey Date:** 07/16/2002 **Time:** 8:08 AM

Waterbody Name: Texas Slough (Local Name) **Pipeline Milepost:** 235.51

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	67.28609	-150.17693		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Wiseman B-1 **Elevation (m):** 333

Anadromous Waters Catalog Number:

Geographic Comments: Use Access Road 98-APL-4 then turn north at PLMP 236; travel 0.5 miles.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air: 14	**Water:**			

Qualitative Velocity: N/A **Water Color:**

Stream Stage: Dry, No defined Channel **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Station is dry, with no obvious channel morphology, except for the LWC. Tall willows (>1 m) overgrow what would have been the channel.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** **# Traps:** **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: No water, no sampling.

Station 11A06 **Visit** 2 **Survey Date** 7/16/2002

PIC31001.jpg

PIC31002.jpg

PIC31003.jpg

Station 11A06 **Visit** 3 **Survey Date:** 08/13/2002 **Time:** 4:37 PM

Waterbody Name: Texas Slough (Local Name) **Pipeline Milepost:** 235.51

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	67.28609	-150.17693		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Wiseman B-1 **Elevation (m):** 333

Anadromous Waters Catalog Number:

Geographic Comments: Use Access Road 98-APL-4 then turn north at PLMP 236; travel 0.5 miles.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air: 10	**Water:**			

Qualitative Velocity: N/A **Water Color:**

Stream Stage: Dry, No defined Channel **48 hr. Precipitation/Runoff:** Heavy

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: LWC is dry. The channel has been overgrown with willows.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** **# Traps:** 0 **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: No water, no sampling.

Station 11A06 **Visit** 3 **Survey Date** 8/13/2002

PIC48058.jpg

Station 12A01 **Visit** 1 **Survey Date:** 06/15/2002 **Time:** 8:29 AM

Waterbody Name: South Fork Clara Creek (Local Name) **Pipeline Milepost:** 236.84

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 8
	67.26726	-150.17542		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Wiseman B-1 **Elevation (m):** 338

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground--VSM 1250497 used to locate station. Culvert is present with culvert posts. Stream added by Jim Lawlor.

Station Characteristics

Temperature (C) **Air:** 18 **Water:** 3.8 **DO (ppm):** 4.78 **Qualitative Velocity:** N/A **Turbidity (NTU)** 0 **Water Color:** Humic **Stream Gradient (%):**

Stream Stage: Low, Discontinuous Flow **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width		0.5	**Dominant:**
Thalweg Depth		0.02	**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells, Jim Lawlor

Visit Comments: Culvert length 28 m, diameter 0.62 m. Station is downstream of culvert. A trickle of water flows into culvert from boggy area upstream of culvert. Downstream the flow is ponded in a with wet boggy area. The pond water is stagnant.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 31 **# Traps:** 0 **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Not enough water to electrofish in upstream portion. Downstream of culvert was just an isolated pond.

Station 12A01 **Visit** 1 **Survey Date** 6/15/2002

PIC12001.jpg

PIC12004.jpg

PIC12003.jpg

Station 12A02 **Visit** 1 **Survey Date:** 06/15/2002 **Time:** 9:04 AM

Waterbody Name: South Fork Mary Angel Creek (Local Name) **Pipeline Milepost:** 234.31

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 7
	67.30299	-150.17168		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Wiseman B-1 **Elevation (m):** 341

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is below ground, there is a check valve 50 m south of stream. A wooden yellow sign identifies stream.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air: 18	**Water:**			

Qualitative Velocity: N/A **Water Color:**

Stream Stage: Dry, No defined Channel **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells, Jim Lawlor

Visit Comments: Station is at culvert. There is no flow or water present in channel. There is water pooled in culvert. Culvert length is 12 m; diameter 1.3 m. A deep channel has been created at the ROW, indicating stream has had high flow. Channel is now well vegetated with graminoids and willows.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** 0 **# Traps:** 0 **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: No water, no sampling.

Station 12A02 **Visit** 1 **Survey Date** 6/15/2002

PIC12005.jpg

PIC12006.jpg

PIC12007.jpg

Station 12A02 **Visit** 2 **Survey Date:** 07/16/2002 **Time:** 8:19 AM

Waterbody Name: South Fork Mary Angel Creek (Local Name) **Pipeline Milepost:** 234.31

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 7
	67.30299	-150.17168		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Wiseman B-1 **Elevation (m):** 341

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is below ground, there is a check valve 50 m south of stream. A wooden yellow sign identifies stream.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air: 14	**Water:**			

Qualitative Velocity: N/A **Water Color:**

Stream Stage: Dry, No defined Channel **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Stream has no flowing water or any water present at all. Graminoids grow in old channel upstream and downstream near of the culvert. Within 10 m of the culvert, alders and willows grow across entire channel.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** 0 **# Traps:** 0 **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: No water, no sampling.

Station 12A02 **Visit** 2 **Survey Date** 7/16/2002

PIC31004.jpg

PIC31005.jpg

Station 12A02 **Visit** 3 **Survey Date:** 08/13/2002 **Time:** 4:29 PM

Waterbody Name: South Fork Mary Angel Creek (Local Name) **Pipeline Milepost:** 234.31

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 7
	67.30299	-150.17168		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Wiseman B-1 **Elevation (m):** 341

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is below ground, there is a check valve 50 m south of stream. A wooden yellow sign identifies stream.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air: 10	**Water:**			

Qualitative Velocity: N/A **Water Color:**

Stream Stage: Dry, No defined Channel **48 hr. Precipitation/Runoff:** Heavy

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: This stream is dry as in previous visits, the would be channel has been overgrown with alders, willows and thick graminoids.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** 0 **# Traps:** 0 **Trap Duration (h):**

Channel:

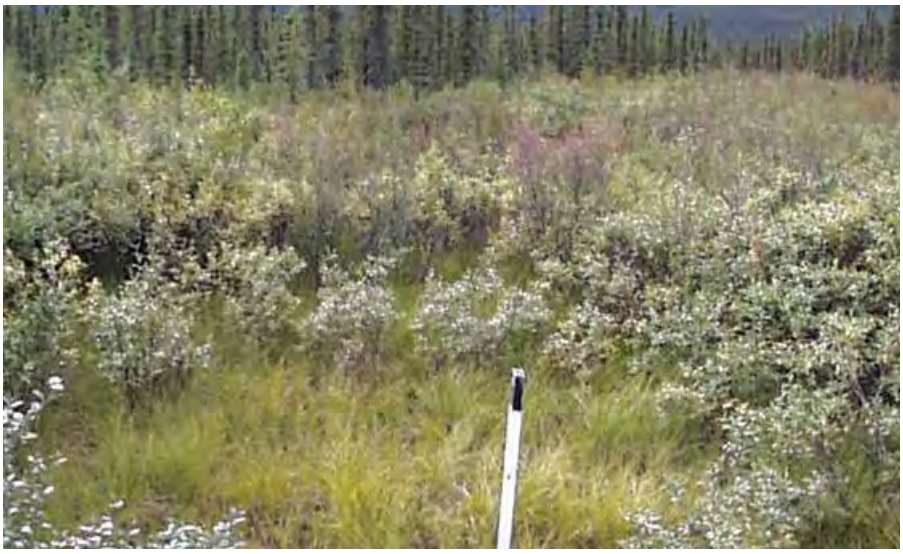
Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: No water, no sampling.

Station 12A02 **Visit** 3 **Survey Date** 8/13/2002

PIC48055.jpg

PIC48056.jpg



PIC48057.jpg

Station 12A03 **Visit** 1 **Survey Date:** 06/15/2002 **Time:** 9:55 AM

Waterbody Name: Pence's Pond (Local Name) **Pipeline Milepost:** 232.79

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	67.32436	-150.16217		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Wiseman B-1 **Elevation (m):** 345

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is below ground. A wooden yellow sign identifies stream. A 1 m high by 2 m wide mound stretches length of ROW 10 m south of stream.

Station Characteristics

Temperature (C) **Air:** 19 **Water:** 11.4 **DO (ppm):** 5.78 **Qualitative Velocity:** N/A **Turbidity (NTU)** 0 **Water Color:** Humic **Stream Gradient (%):**

Stream Stage: Low, Discontinuous Flow **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells, Jim Lawlor

Visit Comments: Culvert length 21.2 m, diameter 1.44 m. There is no flow in the stream, but a well-defined channel was constructed with riprap armor. Vegetation is growing in the channel. Willows and alders are established in the channel. The channel west of the culvert is becoming overgrown. In the channel east of the culvert are a series of shallow pools, each of which are approximately 10 m long, 1 m wide, and 0.2 m deep. Multimeter readings were taken in first pool upstream of the culvert.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 44 **# Traps:** 0 **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Electrofished the standing pools in the bottom of the channel.

Station 12A03 **Visit** 1 **Survey Date** 6/15/2002

PIC12008.jpg

PIC12009.jpg

PIC12010.jpg

Station 12A03 **Visit** 2 **Survey Date:** 07/16/2002 **Time:** 8:44 AM

Waterbody Name: Pence's Pond (Local Name) **Pipeline Milepost:** 232.79

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	67.32436	-150.16217		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Wiseman B-1 **Elevation (m):** 345

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is below ground. A wooden yellow sign identifies stream. A 1 m high by 2 m wide mound stretches length of ROW 10 m south of stream.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air: 16	**Water:**			

Qualitative Velocity: N/A **Water Color:**

Stream Stage: Dry, Defined Channel **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: No surface water is present in the channel or in the culvert. The channel does have a defined morphology. Graminoids and willows are growing across the channel and on the banks. Away from pad, the channel becomes less visible and willows cover the whole area.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** 0 **# Traps:** 0 **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: No water, no sampling.

Station 12A03 **Visit** 2 **Survey Date** 7/16/2002

PIC31006.jpg

PIC31007.jpg

Station 12A03 **Visit** 3 **Survey Date:** 08/13/2002 **Time:** 1:25 PM

Waterbody Name: Pence's Pond (Local Name) **Pipeline Milepost:** 232.79

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	67.32436	-150.16217		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Wiseman B-1 **Elevation (m):** 345

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is below ground. A wooden yellow sign identifies stream. A 1 m high by 2 m wide mound stretches length of ROW 10 m south of stream.

Station Characteristics

Temperature (C)	**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air: 7 **Water:**	**Qualitative Velocity:** N/A	**Water Color:**	

Stream Stage: Dry, Defined Channel **48 hr. Precipitation/Runoff:** Heavy

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Channel is dry, no water present. A channel is evident, though it is becoming heavily overgrown with alders and willows.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** 0 **# Traps:** 0 **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: No water, no sampling.

Station 12A03 **Visit** 3 **Survey Date** 8/13/2002

PIC48031.jpg

PIC48032.jpg

PIC48033.jpg

Station 12A04 **Visit** 1 **Survey Date:** 06/15/2002 **Time:** 10:50 AM

Waterbody Name: Confusion Creek (Local Name) **Pipeline Milepost:** 227.39

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	67.39820	-150.10463		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Wiseman B-1 **Elevation (m):** 371

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground--VSM 1200659 used to locate station. A wooden yellow sign identifies stream.

Station Characteristics

Temperature (C) **Air:** 17 **Water:** 7.1 **DO (ppm):** 7.93 **Qualitative Velocity:** N/A **Turbidity (NTU)** 3 **Water Color:** Clear **Stream Gradient (%):** 1

Stream Stage: Low **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width		0.9	**Dominant:**
Thalweg Depth		0.33	**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells, Jim Lawlor

Visit Comments: Station is downstream of culvert. Culvert length 13.5 m, diameter 1 m. Channel upstream of culvert flows out of a boggy area with an open water pool in middle, down into a narrow channel with shallow water surrounded by riparian willows for 5 m on either side. A 1 m diameter pool at the culvert outlet flows into a channel with surface flow, yet with considerable organic deposition on top of gravel substrate.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 181 **# Traps:** 0 **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments:

Station 12A04 **Visit** 1 **Survey Date** 6/15/2002

PIC12012.jpg

PIC12015.jpg

PIC12014.jpg

Station 12A04 **Visit** 2 **Survey Date:** 07/16/2002 **Time:** 9:10 AM

Waterbody Name: Confusion Creek (Local Name) **Pipeline Milepost:** 227.39

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	67.39820	-150.10463		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Wiseman B-1 **Elevation (m):** 371

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground--VSM 1200659 used to locate station. A wooden yellow sign identifies stream.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air: 19	**Water:**			

Qualitative Velocity: N/A **Water Color:**

Stream Stage: Dry, Defined Channel **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: No surface water is present. Stream has a well defined yet dry channel.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** **# Traps:** **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: No water, no sampling.

Station 12A04 **Visit** 2 **Survey Date** 7/16/2002

PIC31008.jpg

PIC31009.jpg

Station 12A04 **Visit** 3 **Survey Date:** 08/13/2002 **Time:** 1:00 PM

Waterbody Name: Confusion Creek (Local Name) **Pipeline Milepost:** 227.39

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	67.39820	-150.10463		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Wiseman B-1 **Elevation (m):** 371

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground--VSM 1200659 used to locate station. A wooden yellow sign identifies stream.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air: 6.6	**Water:**			

Qualitative Velocity: N/A **Water Color:**

Stream Stage: Dry, Defined Channel **48 hr. Precipitation/Runoff:** Heavy

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: No surface water is present. To the west is a well-defined channel with gravel substrate; to the east is a less well-defined channel through graminoids and willows.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** 0 **# Traps:** 0 **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: No water, no sampling.

Station 12A04 **Visit** 3 **Survey Date** 8/13/2002

PIC48028.jpg

PIC48029.jpg

PIC48030.jpg

Station 12A05 **Visit** 1 **Survey Date:** 06/15/2002 **Time:** 12:03 PM

Waterbody Name: One-O-One Creek (Local Name) **Pipeline Milepost:** 221.77

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	67.46523	-150.01688		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Wiseman B-1 **Elevation (m):** 377

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground--VSM 1170975 used to locate station. Culvert is in dike, not in ROW.

Station Characteristics

Temperature (C) **Air:** 20 **Water:** 11.7 **DO (ppm):** 6.19 **Qualitative Velocity:** N/A **Turbidity (NTU)** 7 **Water Color:** Muddy **Stream Gradient (%):**

Stream Stage: Low, Discontinuous Flow **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells, Jim Lawlor

Visit Comments: Station is upstream of culvert. The predominantly dry channel crosses the ROW and heads towards the Dalton Highway. A 10 m long, 1.5 m wide pool is at the culvert inlet. A second isolated pool is downstream of the culvert. The channel downstream of this second pond is filled with little willow saplings. Culvert length: 24.3 m; diameter 0.2 m.

Species: grayling **Life Stage:** Juvenile/Adult **Life History:** Resident

Count: 7 **Fork lengths (mm):** 62 55 55 54 59

Gear: Portable Electrofisher **EF Time (s):** 174 **# Traps:** 2 **Trap Duration (h):** 0.5

Channel:

Fish Passage Barrier: Unknown **Height (m):** **Pool depth (m):**

Comments: Seven fish were turned with the electrofisher in the downstream pool. Because the pool is very deep and the banks highly unstable and slippery, it was difficult to collect fish from this location.

Station 12A05 **Visit** 1 **Survey Date** 6/15/2002

PIC12018.jpg

PIC12019.jpg

PIC12020.jpg

Station 12A05 **Visit** 2 **Survey Date:** 07/17/2002 **Time:** 8:34 AM

Waterbody Name: One-O-One Creek (Local Name) **Pipeline Milepost:** 221.77

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	67.46523	-150.01688		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Wiseman B-1 **Elevation (m):** 377

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground--VSM 1170975 used to locate station. Culvert is in dike, not in ROW.

Station Characteristics

Temperature (C) **Air:** 18 **Water:** 13.4 **DO (ppm):** 7.3 **Qualitative Velocity:** Still **Turbidity (NTU)** 55 **Water Color:** Muddy **Stream Gradient (%):**

Stream Stage: Low, Discontinuous Flow **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Station was in pool south of the culvert. Both pools (see visit 1) were very muddy. There is no flow. The downstream (north) pool is deeper than 1 m. The upstream pool south of the culvert is 0.18 m deep and 3 m long.

Species: grayling **Life Stage:** Juvenile/Adult **Life History:** Resident

Count: 7 **Fork lengths (mm):** 78 61 89 63 114

Gear: Portable Electrofisher **EF Time (s):** 57 **# Traps:** 0 **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Unknown **Height (m):** **Pool depth (m):**

Comments: Fish were caught in the small pool south (upstream) of the culvert. In the pool north (downstream) of the culvert, two grayling were visually observed but could not be collected. Electrofishing effort only, no minnow trapping.

Station 12A05 **Visit** 2 **Survey Date** 7/17/2002

PIC32001.jpg

PIC32002.jpg

PIC32003.jpg

Station 12A06 **Visit** 1 **Survey Date:** 06/15/2002 **Time:** 1:40 PM

Waterbody Name: Over Creek Complex (Local Name) **Pipeline Milepost:** 219.21

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	67.47565	-149.92795		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Chandalar B-6 **Elevation (m):** 397

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline above ground--VSM 1157403 is 4 m south of stream. Downstream of Station 12A07 and 12A08.

Station Characteristics

Temperature (C) **Air:** 20 **Water:** 7.8 **DO (ppm):** 3.18 **Qualitative Velocity:** N/A **Turbidity (NTU)** 1 **Water Color:** Clear **Stream Gradient (%):** 1

Stream Stage: Medium **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells, Jim Lawlor

Visit Comments: Station is downstream of culvert (length 12 m; diameter 1.6 m). Upstream of culvert is a large pond/slough structure connecting 100 m north to next culvert which is also part of Over Creek complex. This pond is 10 m wide and 100 m long becoming narrow at far end. Surface flow continues 500 m downstream to the confluence with the Middle Fork Koyukuk River 500m downstream. Substrate is organic with aquatic vegetation.

Species: grayling **Life Stage:** Adult **Life History:** Resident

Count: 15 **Fork lengths (mm):**

Gear: Visual Observation, Ground **EF Time (s):** 0 **# Traps:** 0 **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: None **Height (m):** **Pool depth (m):**

Comments: Numerous fish seen surfacing and swimming around. Seen on both sides of culvert and in channel heading toward Koyukuk River.

Station 12A06 **Visit** 1 **Survey Date** 6/15/2002

PIC12027.jpg

PIC12028.jpg

Station 12A06 **Visit** 2 **Survey Date:** 07/17/2002 **Time:** 9:34 AM

Waterbody Name: Over Creek Complex (Local Name) **Pipeline Milepost:** 219.21

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	67.47565	-149.92795		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Chandalar B-6 **Elevation (m):** 397

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline above ground--VSM 1157403 is 4 m south of stream. Downstream of Station 12A07 and 12A08.

Station Characteristics

Temperature (C) **Air:** 18 **Water:** 4.8 **DO (ppm):** 3.42 **Qualitative Velocity:** Slow **Turbidity (NTU)** 19 **Stream Gradient (%):** **Water Color:** Clear

Stream Stage: Medium **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Station is at culvert on east side of ROW. Culvert is between VSM 1157333 and 1157403. This section flows from next culvert (Station 12A07) north on the ROW. At the culvert outlet (west) the channel is wide for 2 m, then narrows and is entrenched with deep holes in the muskeg.

Species: grayling **Life Stage:** Juvenile/Adult **Life History:** Resident

Count: 3 **Fork lengths (mm):** 39

Gear: Portable Electrofisher **EF Time (s):** 212 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: None **Height (m):** **Pool depth (m):**

Comments: The measured grayling was netted downstream of culvert within 1 m of where the stream enters the perimeter of the Middle Fork Koyukuk River floodplain. The other two grayling were visual observations further upstream in wide section of stream. Numerous large grayling seen last visit near ROW not present this visit.

Species: slimy sculpin **Life Stage:** Juvenile/Adult **Life History:** Resident

Count: 9 **Fork lengths (mm):** 86

Gear: Portable Electrofisher **EF Time (s):** 212 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Specific Barrier Unknown **Height (m):** **Pool depth (m):**

Comments: Sculpin difficult to capture electrofishing as they sought cover in substrate.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Minnow Trap, 1/4 in. Mesh **EF Time (s):** **# Traps:** 4 **Trap Duration (h):** 0.8

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: No fish captured with minnow traps.

Station 12A06 **Visit** 2 **Survey Date** 7/17/2002

PIC32006.jpg

PIC32007.jpg

PIC32009.jpg

Station 12A07 **Visit** 1 **Survey Date:** 06/15/2002 **Time:** 2:20 PM

Waterbody Name: Over Creek Tributary (Local Name) **Pipeline Milepost:** 219.08

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	67.92442	-149.92442		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Chandalar B-6 **Elevation (m):** 416

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground--station is between VSMs 1156793 and 1156732. Upstream of Station 12A06.

Station Characteristics

Temperature (C) **DO (ppm):** 6.57 **Turbidity (NTU)** 0 **Stream Gradient (%):** 2.3

Air: 20 **Water:** 13.72 **Qualitative Velocity:** N/A **Water Color:** Clear

Stream Stage: Medium **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells, Jim Lawlor

Visit Comments: Station is upstream of LWC which is widened and has ruts in it. Upstream, the channel heads to culvert under the Dalton Highway. Downstream of the LWC the channel is 0.4 m wide with riparian graminoids. Twenty meters downstream, the channel widens to a pool. This pool is connected via a small channel to another pool which in turn by a small channel is connected to the pool at Station 12A06. Substrate is gravel with cover of organics. Channels between pools averaged 0.5 m deep. Channel morphology varies considerably between pools and channels.

Species: grayling **Life Stage:** Juvenile/Adult **Life History:** Resident

Count: 5 **Fork lengths (mm):**

Gear: Visual Observation, Ground **EF Time (s):** **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Unknown **Height (m):** **Pool depth (m):**

Comments: Length of visually observed grayling appear to range from 100 to 200 cm. Small (recently emergent?) fish were seen but not collected.

Station 12A07 **Visit** 1 **Survey Date** 6/15/2002

PIC12029.jpg

PIC12030.jpg

PIC12031.jpg

Station 12A07 **Visit** 2 **Survey Date:** 07/17/2002 **Time:** 10:50 AM

Waterbody Name: Over Creek Tributary (Local Name) **Pipeline Milepost:** 219.08

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	67.92442	-149.92442		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Chandalar B-6 **Elevation (m):** 416

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground--station is between VSMs 1156793 and 1156732. Upstream of Station 12A06.

Station Characteristics

Temperature (C) **Air:** 23 **Water:** 15.7 **DO (ppm):** 4.32 **Qualitative Velocity:** Slow **Turbidity (NTU)** 0 **Water Color:** Humic **Stream Gradient (%):**

Stream Stage: Medium **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width		0.5	**Dominant:**
Thalweg Depth		0.14	**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Station is upstream of LWC. A small trickle of water flows across the LWC. Directly underneath the pipeline heavy machinery has disturbed the stream bed and left rutted tracks, diverting flow through vegetation and exposed soil.

Species: grayling **Life Stage:** Juvenile/Adult **Life History:** Resident

Count: 40 **Fork lengths (mm):** 34 30 44 27 42 37 27 38 29 33

Gear: Portable Electrofisher **EF Time (s):** 57 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Unknown **Height (m):** **Pool depth (m):**

Comments: Grayling were swimming in small schools in the wider channel sections. The small size of the grayling, and the morphology and vegetation in the channel reduced electrofishing efficiency.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Minnow Trap, 1/4 in. Mesh **EF Time (s):** **# Traps:** 4 **Trap Duration (h):** 0.5

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: No fish captured in traps, 2 were upstream and 2 were downstream.

Station 12A07 **Visit** 2 **Survey Date** 7/17/2002

PIC32010.jpg

PIC32011.jpg

PIC32012.jpg

Station 12A08 **Visit** 1 **Survey Date:** 06/15/2002 **Time:** 2:49 PM

Waterbody Name: Over Creek Complex (Local Name) **Pipeline Milepost:** 219.03

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	67.47720	-149.92310		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Chandalar B-6 **Elevation (m):** 400

Anadromous Waters Catalog Number:

Geographic Comments: Station is between VSMs 1156552 and 1156485. Stream flows through culvert within ROW.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air: 22	**Water:**			

Qualitative Velocity: N/A **Water Color:**

Stream Stage: Dry, No defined Channel **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells, Jim Lawlor

Visit Comments: Station is at culvert. No water is present in the channel. Wide channel is currently filled with graminoids; evidence suggests that channel does contain water during certain periods.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** **# Traps:** **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: No water, no sampling.

Station 12A08 **Visit** 1 **Survey Date** 6/15/2002

PIC12032.jpg

PIC12033.jpg

PIC12034.jpg

Station 12A08 **Visit** 2 **Survey Date:** 07/17/2002 **Time:** 11:55 AM

Waterbody Name: Over Creek Complex (Local Name) **Pipeline Milepost:** 219.03

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	67.47720	-149.92310		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Chandalar B-6 **Elevation (m):** 400

Anadromous Waters Catalog Number:

Geographic Comments: Station is between VSMs 1156552 and 1156485. Stream flows through culvert within ROW.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air: 23	**Water:**			

Qualitative Velocity: N/A **Water Color:**

Stream Stage: Dry, No defined Channel **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Surface water is infrequent enough to allow the establishment of sedges (Eriophorum) across and the length of the channel. A dry pool is approximately 20 m west of ROW, and east of the ROW a band of alders grow along the remnants of the stream channel.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** **# Traps:** **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: No water, no sampling.

Station 12A08 **Visit** 2 **Survey Date** 7/17/2002

PIC32017.jpg

PIC32018.jpg

Station 13A01 **Visit** 1 **Survey Date:** 06/16/2002 **Time:** 8:55 AM

Waterbody Name: Alignment Slough culvert (Local Name) **Pipeline Milepost:** 218.35

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	67.48287	-149.90254		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Chandalar B-6 **Elevation (m):** 413

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground--VSM 1152902 used to locate station.

Station Characteristics

Temperature (C) **Air:** 20 **Water:** 9 **DO (ppm):** 6.41 **Qualitative Velocity:** N/A **Turbidity (NTU)** 0 **Water Color:** Clear **Stream Gradient (%):** 1.3

Stream Stage: Medium **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**
Width	2	1
Thalweg Depth	0.8	0.25

Substrate
Dominant:
Subdominant:
Subdominant:

Survey Team: Doug Lieb, John Wells, Jim Lawlor

Visit Comments: The station is upstream of the culvert in a 1 m wide reach of the channel. Culvert length 18.1 m; diameter 1.5 m. Upstream of culvert the channel is narrow with entrenched and densely vegetated banks. The channel has cut several paths through the wetlands. There is no noticeable flow through the culvert. Downstream of the culvert the channel widens to 2.9 m with depth of 0.69 m and OHW depth of 1 m and width of 3.5 m, also with entrenched and densely vegetated banks. At the culvert outlet is the confluence between a small stream flowing through the willows and wetlands and Alignment Slough. This side stream parallels the ROW from a side dike 100 m north.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 129 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: High and steep stream banks and deep water make for difficult electrofishing.

Station 13A01 **Visit** 1 **Survey Date** 6/16/2002

PIC13001.jpg

PIC13002.jpg

PIC13004.jpg

Station 13A01 **Visit** 2 **Survey Date:** 07/17/2002 **Time:** 12:35 PM

Waterbody Name: Alignment Slough culvert (Local Name) **Pipeline Milepost:** 218.35

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	67.48287	-149.90254		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Chandalar B-6 **Elevation (m):** 413

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground--VSM 1152902 used to locate station.

Station Characteristics

Temperature (C) **Air:** 23 **Water:** 13.2 **DO (ppm):** 6.86 **Qualitative Velocity:** Slow **Turbidity (NTU)** 8 **Water Color:** Clear **Stream Gradient (%):**

Stream Stage: Medium **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width		1.75	**Dominant:**
Thalweg Depth		0.53	**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Station is downstream of the culvert. Water flow is very slow.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 58 **# Traps:** 4 **Trap Duration (h):** 0.5

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Stream is wide and deep enough with soft bottom to prevent wading down the middle of the channel, so only channel margins could be reached from banks. Traps were set upstream and downstream of culvert. No fish were captured in traps.

Station 13A01 **Visit** 2 **Survey Date** 7/17/2002

PIC32019.jpg

PIC32020.jpg

Station 13A01 **Visit** 3 **Survey Date:** 08/13/2002 **Time:** 11:26 AM

Waterbody Name: Alignment Slough culvert (Local Name) **Pipeline Milepost:** 218.35

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	67.48287	-149.90254		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Chandalar B-6 **Elevation (m):** 413

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground--VSM 1152902 used to locate station.

Station Characteristics

Temperature (C) **Air:** 7.1 **Water:** 7.2 **DO (ppm):** 6.3 **Turbidity (NTU)** 6 **Stream Gradient (%):**

Qualitative Velocity: Still **Water Color:** Muddy

Stream Stage: Low, Discontinuous Flow **48 hr. Precipitation/Runoff:** Heavy

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width		1	**Dominant:**
Thalweg Depth		0.2	**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Stream has dense vegetation growing in water and on banks. No flow through the culvert. Surface water is intermittent. Water level is noticeably lower than previous visits.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 195 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Electrofished all water, including isolated pools. Water downstream was slightly muddy.

Station 13A01 **Visit** 3 **Survey Date** 8/13/2002

PIC48018.jpg

PIC48019.jpg

PIC48022.jpg

Station 13A02 **Visit** 1 **Survey Date:** 06/16/2002 **Time:** 9:50 AM

Waterbody Name: Alignment Slough culvert (Local Name) **Pipeline Milepost:** 218.2

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 7
	67.48401	-149.89796		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Chandalar B-6 **Elevation (m):** 396

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground--VSM 1152139 used to locate station.

Station Characteristics

Temperature (C) **Air:** **Water:** 8.5 **DO (ppm):** 6.67 **Qualitative Velocity:** N/A **Turbidity (NTU)** 0 **Water Color:** Humic **Stream Gradient (%):** 0.5

Stream Stage: Medium **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width		4	**Dominant:**
Thalweg Depth		0.43	**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Station is located upstream of culvert (length 15 m, diameter 1.5 m). Stream is wide with organic substrate. Wide marsh/wetlands surround the stream. Downstream of culvert east of ROW is a large pond that flows into the stream.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 160 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments:

Station 13A02 **Visit** 1 **Survey Date** 6/16/2002

PIC13005.jpg

PIC13006.jpg

PIC13007.jpg

Station 13A02 **Visit** 2 **Survey Date:** 07/17/2002 **Time:** 1:20 PM

Waterbody Name: Alignment Slough culvert (Local Name) **Pipeline Milepost:** 218.2

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 7
	67.48401	-149.89796		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Chandalar B-6 **Elevation (m):** 396

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground--VSM 1152139 used to locate station.

Station Characteristics

Temperature (C) **Air:** 28 **Water:** 15.8 **DO (ppm):** 8.09 **Turbidity (NTU)** 4 **Stream Gradient (%):**

Qualitative Velocity: Slow **Water Color:** Clear

Stream Stage: Medium **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width		2.5	**Dominant:**
Thalweg Depth		0.73	**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Station is east (downstream) of culvert. Water has almost no flow. Substrate is mud/organic into which we about 4 inches.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 188 **# Traps:** 4 **Trap Duration (h):** 0.5

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Four minnow traps; 2 upstream, 2 downstream of culvert.

Station 13A02 **Visit** 2 **Survey Date** 7/17/2002

PIC32021.jpg

PIC32022.jpg

Station 13A02 **Visit** 3 **Survey Date:** 08/13/2002 **Time:** 10:45 AM

Waterbody Name: Alignment Slough culvert (Local Name) **Pipeline Milepost:** 218.2

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 7
	67.48401	-149.89796		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Chandalar B-6 **Elevation (m):** 396

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground--VSM 1152139 used to locate station.

Station Characteristics

Temperature (C) **Air:** 7 **Water:** 7.4 **DO (ppm):** 5.34 **Turbidity (NTU)** 0 **Stream Gradient (%):**

Qualitative Velocity: Slow **Water Color:** Clear

Stream Stage: Medium **48 hr. Precipitation/Runoff:** Heavy

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width		3	**Dominant:**
Thalweg Depth		0.41	**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Stream is wide (3 m) and deep. To the west the stream has anastomosed sections with tussocks across the channel.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 192 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

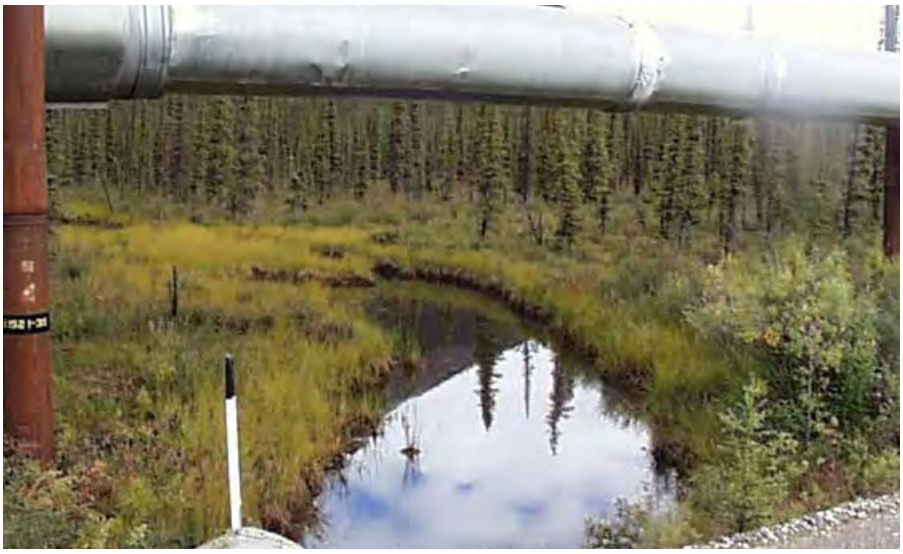
Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Width and depth of wetted channel and soft substrate prevented complete electrofishing coverage of stream.

Station 13A02 **Visit** 3 **Survey Date** 8/13/2002

PIC48013.jpg

PIC48014.jpg



PIC48015.jpg

Station 13A03 **Visit** 1 **Survey Date:** 06/16/2002 **Time:** 10:14 AM

Waterbody Name: Alignment Slough LWC (Local Name) **Pipeline Milepost:** 218.15

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	67.48472	-149.89656		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Chandalar B-6 **Elevation (m):** 402

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground--VSM 1151835 used to locate station.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air: 25	**Water:**			

Qualitative Velocity: N/A **Water Color:**

Stream Stage: Dry, No defined Channel **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells, Jim Lawlor

Visit Comments: Station is at LWC. No water present; no evidence of any recent significant flow. No defined channel on either side of ROW. Short alders are growing in the depression that may once have been an active channel.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** **# Traps:** **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: No water, no sampling.

Station 13A03 **Visit** 1 **Survey Date** 6/16/2002

PIC13009.jpg

PIC13010.jpg

PIC13011.jpg

Station 13A03 **Visit** 2 **Survey Date:** 07/17/2002 **Time:** 2:11 PM

Waterbody Name: Alignment Slough LWC (Local Name) **Pipeline Milepost:** 218.15

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	67.48472	-149.89656		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Chandalar B-6 **Elevation (m):** 402

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground--VSM 1151835 used to locate station.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air: 25	**Water:**			

Qualitative Velocity: N/A **Water Color:**

Stream Stage: Dry, No defined Channel **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: No water is present at the LWC, as in Visit 1. Little evidence of a recently active channel. East of ROW short shrub alders grow in what most likely was a past channel. West of the ROW the channel is not apparent at all.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** **# Traps:** **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: No water, no sampling.

Station 13A03 **Visit** 2 **Survey Date** 7/17/2002

PIC32023.jpg

PIC32024.jpg

Station 13A03 **Visit** 3 **Survey Date:** 08/13/2002 **Time:** 10:15 AM

Waterbody Name: Alignment Slough LWC (Local Name) **Pipeline Milepost:** 218.15

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	67.48472	-149.89656		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Chandalar B-6 **Elevation (m):** 402

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground--VSM 1151835 used to locate station.

Station Characteristics

Temperature (C) **Air:** 6.3 **Water:** 6.3 **DO (ppm):** 8.94 **Turbidity (NTU)** 0 **Stream Gradient (%):**

Qualitative Velocity: Still **Water Color:** Clear

Stream Stage: Dry, No defined Channel **48 hr. Precipitation/Runoff:** Heavy

Channel Dimensions (m): **OHW** **Wetted**

Width

Thalweg Depth

Substrate

Dominant:

Subdominant:

Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: LWC has 2 puddles. The LWC is slightly elevated above what would be that channel on either side of the ROW. The LWC itself is just a dip in the ROW. East of the LWC is an isolated pool that at high water may connect to the LWC. There is appears to be no connection to the next Alignment Slough location at Station 13A02.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 40 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Electrofished the isolated pool east of the ROW.

Station 13A03 **Visit** 3 **Survey Date** 8/13/2002

PIC48009.jpg

PIC48010.jpg

PIC48011.jpg

Station 13A04 **Visit** 1 **Survey Date:** 06/16/2002 **Time:** 10:30 AM

Waterbody Name: Alignment Slough culvert (Local Name) **Pipeline Milepost:** 218.07

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	67.48558	-149.89467		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Chandalar B-6 **Elevation (m):** 403

Anadromous Waters Catalog Number:

Geographic Comments: Stream is between VSMs 1151469 and 1151409. Stream flows through culvert in dike. Downstream from Station 13A05.

Station Characteristics

Temperature (C) **Air:** 23 **Water:** 7.8 **DO (ppm):** 8.44 **Qualitative Velocity:** N/A **Turbidity (NTU)** 0 **Water Color:** Clear **Stream Gradient (%):** 0.5

Stream Stage: Low **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width		2.5	**Dominant:**
Thalweg Depth		0.27	**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells, Jim Lawlor

Visit Comments: Station is upstream of culvert (length 21.7 m, diameter 1.2 m). From the culvert outlet a small trickle of water 0.3 m wide and 0.08 m deep emerges and meanders through the taiga, forming periodic pools. These pools have no discernable flow; small flow only where water emerges from culvert. Upstream of the culvert is a pond with an inlet connected to the culvert at 218 PLMP. Water in pool has no apparent flow.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 100 **# Traps:** **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments:

Station 13A04 **Visit** 1 **Survey Date** 6/16/2002

PIC13012.jpg

PIC13013.jpg

PIC13014.jpg

Station 13A04 **Visit** 2 **Survey Date:** 07/17/2002 **Time:** 2:21 PM

Waterbody Name: Alignment Slough culvert (Local Name) **Pipeline Milepost:** 218.07

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	67.48558	-149.89467		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Chandalar B-6 **Elevation (m):** 403

Anadromous Waters Catalog Number:

Geographic Comments: Stream is between VSMs 1151469 and 1151409. Stream flows through culvert in dike. Downstream from Station 13A05.

Station Characteristics

Temperature (C) **Air:** 25 **Water:** 11.4 **DO (ppm):** 5.94 **Qualitative Velocity:** N/A **Turbidity (NTU)** 30 **Stream Gradient (%):** **Water Color:** Muddy

Stream Stage: Low, Discontinuous Flow **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Station is east of the culvert and dike (through which the culvert passes). The water is very muddy with ferric-colored algae on the rocks. West of the culvert the channel has very little surface water for 10 m, is discontinuous for 15 m, standing water into the taiga for 15 m, then disappears.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 25 **# Traps:** 4 **Trap Duration (h):** 0.5

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Electrofished on both sides of culvert. Limited channel width and depth allowed access to most of wetted channel.

Station 13A04 **Visit** 2 **Survey Date** 7/17/2002

PIC32025.jpg

PIC32026.jpg

PIC32027.jpg

Station 13A04 **Visit** 3 **Survey Date:** 08/13/2002 **Time:** 9:48 AM

Waterbody Name: Alignment Slough culvert (Local Name) **Pipeline Milepost:** 218.07

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	67.48558	-149.89467		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Chandalar B-6 **Elevation (m):** 403

Anadromous Waters Catalog Number:

Geographic Comments: Stream is between VSMs 1151469 and 1151409. Stream flows through culvert in dike. Downstream from Station 13A05.

Station Characteristics

Temperature (C) **Air:** 8 **Water:** 7.2 **DO (ppm):** 5.99 **Qualitative Velocity:** Slow **Turbidity (NTU)** 1 **Stream Gradient (%):** **Water Color:** Clear

Stream Stage: Low, Discontinuous Flow **48 hr. Precipitation/Runoff:** Heavy

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width		2	**Dominant:**
Thalweg Depth		0.49	**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Multimeter reading upstream of culvert. Upstream of the culvert the channel is wide and shallow and heads into a narrower channel connecting to 13A05. Substrate is organic with surface layer of rust-colored sediment. To west/downstream side of culvert the stream is a trickle through a poorly defined channel. Further downstream, surface flow is discontinuous. Water flow on downstream side is greater than on pervious 2 visits.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 187 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Electrofished all surface water upstream and downstream of culvert.

Station 13A04 **Visit** 3 **Survey Date** 8/13/2002

PIC48005.jpg

PIC48006.jpg

PIC48007.jpg

Station 13A05 **Visit** 1 **Survey Date:** 06/16/2002 **Time:** 11:15 AM

Waterbody Name: Alignment Slough culvert (Local Name) **Pipeline Milepost:** 218

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	67.48616	-149.89235		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Chandalar B-6 **Elevation (m):** 403

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground with orange PLMP marker at ROW (culvert) crossing. Upstream from Station 13A04.

Station Characteristics

Temperature (C) **Air:** 23 **Water:** 5.7 **DO (ppm):** 8.16 **Qualitative Velocity:** N/A **Turbidity (NTU)** 0 **Water Color:** Humic **Stream Gradient (%):** 0.5

Stream Stage: Low, Discontinuous Flow **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width		1	**Dominant:**
Thalweg Depth		0.5	**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells, Jim Lawlor

Visit Comments: Station is east (downstream) of culvert. Culvert length 31.6 m; 1.2 m diameter. No water enters culvert. The archaic channel once carried much more flow than at present.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 115 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Sampled only east of culvert.

Station 13A05 **Visit** 1 **Survey Date** 6/16/2002

PIC13015.jpg

PIC13018.jpg

PIC13017.jpg

Station 13A05 **Visit** 2 **Survey Date:** 07/17/2002 **Time:** 3:00 PM

Waterbody Name: Alignment Slough culvert (Local Name) **Pipeline Milepost:** 218

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	67.48616	-149.89235		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Chandalar B-6 **Elevation (m):** 403

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground with orange PLMP marker at ROW (culvert) crossing. Upstream from Station 13A04.

Station Characteristics

Temperature (C) **Air:** 25 **Water:** 7.5 **DO (ppm):** 7.4 **Qualitative Velocity:** Still **Turbidity (NTU)** 25 **Stream Gradient (%):** **Water Color:** Muddy

Stream Stage: Low, Discontinuous Flow **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width		0.5	**Dominant:**
Thalweg Depth		0.4	**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Station is east (downstream) of the culvert. Downstream, the channel connects through a marsh, with small trickles of surface water, to Station 13A04 which is approximately 120 m southwest of this site. West of the culvert are two isolated pools in the historic channel.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 35 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Electrofished in the small short channel east of the culvert and the 2 ponds to the west. All waters accessible.

Station 13A05 **Visit** 2 **Survey Date** 7/17/2002

PIC32029.jpg

PIC32030.jpg

Station 13A05 **Visit** 3 **Survey Date:** 08/13/2002 **Time:** 9:23 AM

Waterbody Name: Alignment Slough culvert (Local Name) **Pipeline Milepost:** 218

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	67.48616	-149.89235		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Chandalar B-6 **Elevation (m):** 403

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground with orange PLMP marker at ROW (culvert) crossing. Upstream from Station 13A04.

Station Characteristics

Temperature (C) **Air:** 8 **Water:** 8.4 **DO (ppm):** 7.79 **Turbidity (NTU)** 4 **Stream Gradient (%):**

Qualitative Velocity: Slow **Water Color:** Clear

Stream Stage: Low, Discontinuous Flow **48 hr. Precipitation/Runoff:** Heavy

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width		0.75	**Dominant:**
Thalweg Depth		0.42	**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: The marsh west (upstream) of the culvert has more water than previous visits; likely a result of recent heavy rains. Multimeter readings taken on west side in marsh pond. Channel morphology measured on east side near culvert as in previous visits. Stream vegetation grows down to waters edge and in the standing water. Snow dusts the surrounding hills.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 125 **# Traps:** **Trap Duration (h):**

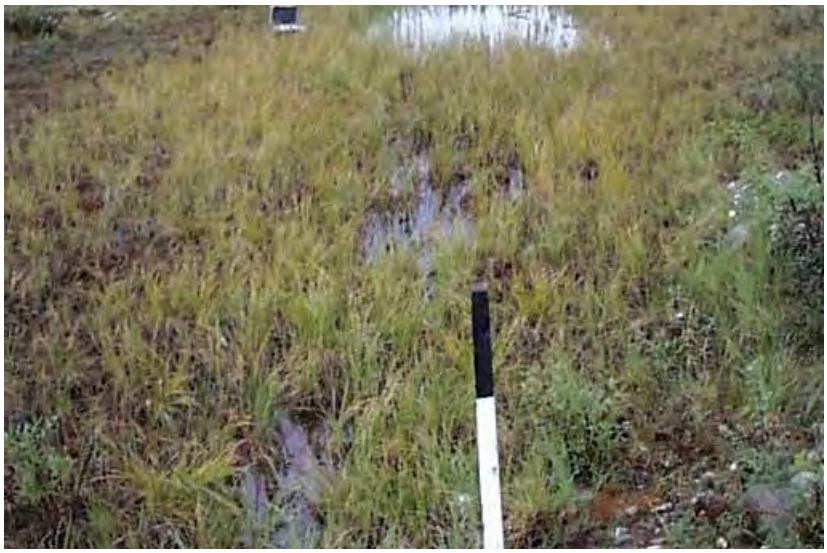
Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Electrofished from halfway between stations 13A04 and 13A05 to upstream of culvert where surface water becomes discontinuous.

Station 13A05 **Visit** 3 **Survey Date** 8/13/2002

PIC48001.jpg



PIC48002.jpg

PIC48003.jpg

Station 13A06 **Visit** 1 **Survey Date:** 06/16/2002 **Time:** 12:30 PM

Waterbody Name: Cushing Creek (Local Name) **Pipeline Milepost:** 216.3

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	67.50560	-149.85988		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Chandalar C-6 **Elevation (m):** 415

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground--stream (LWC) is immediately south of VSM 1142019.

Station Characteristics

Temperature (C) **DO (ppm):** 8.39 **Turbidity (NTU)** 0 **Stream Gradient (%):** 1.5

Air: **Water:** 9.7 **Qualitative Velocity:** N/A **Water Color:** Humic

Stream Stage: Low **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:** Gravel
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells, Jim Lawlor

Visit Comments: Station is upstream of LWC. Stream morphology has been locally altered by the construction and maintenance of the LWC. The channel across the LWC is much broader and shallower than up and downstream and has slower current velocities--leading to sediment deposition. Just above LWC, directly underneath the pipeline, riprap has been placed to armor the LWC; some of this material has failed and slumped into the channel. Jim Lawlor (APSC) dug out channel last August downstream of LWC. Upstream of LWC at the Dalton Highway the stream is a small riffle with gravel bottom. Immediately upstream of LWC stream is narrow (0.5 m wide) with pool depths greater than 1 m. Downstream of LWC the channel is narrow (0.2 m) and anastomoses. Pools of stagnate water with ferric coloring are present.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 234 **# Traps:** **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments:

Station 13A06 **Visit** 1 **Survey Date** 6/16/2002

PIC13019.jpg

PIC13024.jpg

PIC13021.jpg

Station 13A06 **Visit** 2 **Survey Date:** 07/18/2002 **Time:** 9:40 AM

Waterbody Name: Cushing Creek (Local Name) **Pipeline Milepost:** 216.3

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	67.50560	-149.85988		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Chandalar C-6 **Elevation (m):** 415

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground--stream (LWC) is immediately south of VSM 1142019.

Station Characteristics

Temperature (C) **Air:** **Water:** 10.4 **DO (ppm):** 5.98 **Turbidity (NTU)** 5 **Stream Gradient (%):**

Qualitative Velocity: Slow **Water Color:** Humic

Stream Stage: Low **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**
Width		2
Thalweg Depth		0.31

Substrate

Dominant: Gravel

Subdominant:

Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Station is upstream of LWC. Substrate is gravel with thick surficial layer of sediment deposition. Heavy disturbance from riprap falling into the stream above the LWC, causing slowing of stream and loss of bed load. LWC is very wide pool with deep mud in it.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 81 **# Traps:** 4 **Trap Duration (h):** 0.5

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: No fish turned by electrofisher or captured in minnow traps. The traps were set 2 upstream and 2 downstream of the LWC.

Station 13A06 **Visit** 2 **Survey Date** 7/18/2002

PIC33001.jpg

PIC33002.jpg

PIC33003.jpg

Station 13A06 **Visit** 3 **Survey Date:** 08/11/2002 **Time:** 4:49 PM

Waterbody Name: Cushing Creek (Local Name) **Pipeline Milepost:** 216.3

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	67.50560	-149.85988		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Chandalar C-6 **Elevation (m):** 415

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground--stream (LWC) is immediately south of VSM 1142019.

Station Characteristics

Temperature (C) **Air:** **Water:** 10.5 **DO (ppm):** 4.47 **Turbidity (NTU)** 64 **Stream Gradient (%):**

Qualitative Velocity: Slow **Water Color:** Muddy

Stream Stage: Low, Discontinuous Flow **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**
Width		1
Thalweg Depth		0.15

Substrate

Dominant: Gravel

Subdominant:

Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: LWC was repaired earlier today; the suspended mud in the water could result from this activity and the recent rains. Riprap has fallen into the stream under the pipeline upstream of the LWC, slowing channel flow, leading to sediment deposition.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 120 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Downstream of LWC the narrow stream flows through dense riparian grasses and alders, making electrofishing access difficult.

Station 13A06 **Visit** 3 **Survey Date** 8/11/2002

PIC47017.jpg

PIC47018.jpg

PIC47019.jpg

Station 13A07 **Visit** 1 **Survey Date:** 06/16/2002 **Time:** 2:16 PM

Waterbody Name: Marsh Creek (Local Name) **Pipeline Milepost:** 210.56

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	67.58170	-149.81017		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Chandalar C-6 **Elevation (m):** 435

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground and stream LWC is between VSMs 1111862 and 1111792.

Station Characteristics

Temperature (C) **Air:** **Water:** 12.8 **DO (ppm):** 8.25 **Qualitative Velocity:** N/A **Turbidity (NTU)** 0 **Water Color:** Clear **Stream Gradient (%):** 1.5

Stream Stage: Low **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**
Width	2.5	1.5
Thalweg Depth	0.5	0.08

Substrate

Dominant:

Subdominant:

Subdominant:

Survey Team: Doug Lieb, John Wells, Jim Lawlor

Visit Comments: LWC has vehicle ruts that have created pools 0.5 m in diameter. Some channel armoring under the pipeline has fallen into the stream. Extending downstream 0.8 km from the ROW are a series of eight pools constructed by APSC. The intent was to create fish habitat. Pools are 3 m in diameter and range from 1 to 2 m deep. Upstream of LWC, riparian vegetation is closed black spruce forest. The 1 m wide channel extends for 20 m until it disappears into graminoids. Downstream of the LWC the riparian vegetation is alder, willow, and small cottonwoods. Above LWC stream is stable well vegetated and moderately entrenched. Multimeter readings were taken directly downstream of the LWC.

Species: longnose sucker **Life Stage:** Juvenile/Adult **Life History:** Resident

Count: 3 **Fork lengths (mm):** 70 88

Gear: Portable Electrofisher **EF Time (s):** 415 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Specific Barrier Unknown **Height (m):** **Pool depth (m):**

Comments: Four total fish were seen, including one suspected sculpin. Both captured longnose sucker's were collected in first pool immediately downstream of the LWC.

Station 13A07 **Visit** 1 **Survey Date** 6/16/2002

PIC13025.jpg

PIC13026.jpg

PIC13027.jpg

Station 13A07 **Visit** 2 **Survey Date:** 07/18/2002 **Time:** 12:20 PM

Waterbody Name: Marsh Creek (Local Name) **Pipeline Milepost:** 210.56

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	67.58170	-149.81017		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Chandalar C-6 **Elevation (m):** 435

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground and stream LWC is between VSMs 1111862 and 1111792.

Station Characteristics

Temperature (C) **Air:** 28 **Water:** 11.9 **DO (ppm):** 7.28 **Qualitative Velocity:** Slow **Turbidity (NTU)** 7 **Water Color:** Clear **Stream Gradient (%):**

Stream Stage: Medium **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width		0.75	**Dominant:**
Thalweg Depth		0.14	**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Station is 2 m downstream of LWC. The LWC has a shallow flow across it. Upstream the stream is heavily vegetated with graminoids growing in the channel. Continuing upstream, for 20 m the stream is 1+ m wide then narrows and flows out of a marsh with very little open (shallow) water. Stream reopens into normal channel after 10 m. Downstream of the LWC, the channel flows for 10 m through a riprapped, constructed channel underneath the pipeline, then into a series of constructed pools. These pools average 3 m diameter and greater than 1.5 m deep. After the series of pools, the channel resumes and to the confluence with the Middle Fork Koyukuk River 0.8 km downstream.

Species: slimy sculpin **Life Stage:** Juvenile/Adult **Life History:** Resident

Count: 18 **Fork lengths (mm):** 70 70 57 65 59 50

Gear: Portable Electrofisher **EF Time (s):** 240 **# Traps:** 4 **Trap Duration (h):** 1.0

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: None **Height (m):** **Pool depth (m):**

Comments: Sculpin were all caught downstream of LWC. The behavior, morphology, and substrate selection of sculpin make them more difficult to capture than many other species.

Species: grayling **Life Stage:** Juvenile/Adult **Life History:** Resident

Count: 4 **Fork lengths (mm):** 23 30 32 29

Gear: Portable Electrofisher **EF Time (s):** 240 **# Traps:** **Trap Duration (h):** 1.0

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: None **Height (m):** **Pool depth (m):**

Comments: Grayling were swimming in small schools at the inlets of the constructed pools. The pools were large enough to provide refuge from the electrofisher, lowering efficiency. All captured downstream of the LWC.

Station 13A07 **Visit** 2 **Survey Date** 7/18/2002

PIC33006.jpg

PIC33007.jpg

PIC33008.jpg

Station 14A01 **Visit** 1 **Survey Date:** 06/17/2002 **Time:** 8:45 AM

Waterbody Name: Marsh Creek (Local Name) **Pipeline Milepost:** 210.43

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	67.58360	-149.80823		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Chandalar C-6 **Elevation (m):** 454

Anadromous Waters Catalog Number:

Geographic Comments: LWC is between VSMs 1111082 and 1111022. LWC no longer present, only remnants on sides of ROW.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air: 15	**Water:**	**Qualitative Velocity:** N/A	**Water Color:**	

Stream Stage: Medium **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width		1	**Dominant:**
Thalweg Depth		0.26	**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells, Jim Lawlor

Visit Comments: Station is in middle of ROW where a LWC should be present. The stream once crossed the ROW at this point but does no longer. Instead, the channel turns upstream of the ROW and heads south where it connects with Marsh Creek at Station 13A07. Stream has a gravel substrate with organic deposition. Drive lane is 0.7 m above water level.

Species: general fish observation, no species information **Life Stage:** Juvenile/Adult **Life History:** Unknown

Count: 2 **Fork lengths (mm):**

Gear: Visual Observation, Ground **EF Time (s):** **# Traps:** **Trap Duration (h):**

Channel:

Fish Passage Barrier: Unknown **Height (m):** **Pool depth (m):**

Comments: Two fish were visually observed from stream bank. 70 mm in length.

Station 14A01 **Visit** 1 **Survey Date** 6/17/2002

PIC14001.jpg

PIC14002.jpg

Station 14A01 **Visit** 2 **Survey Date:** 07/18/2002 **Time:** 1:45 PM

Waterbody Name: Marsh Creek (Local Name) **Pipeline Milepost:** 210.43

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	67.58360	-149.80823		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Chandalar C-6 **Elevation (m):** 454

Anadromous Waters Catalog Number:

Geographic Comments: LWC is between VSMs 1111082 and 1111022. LWC no longer present, only remnants on sides of ROW.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air:	**Water:**			

Qualitative Velocity: N/A **Water Color:** Clear

Stream Stage: Medium **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells, Jim Lawlor

Visit Comments: Stream does not cross ROW. No LWC structure is present. On west side of ROW is evidence of an archaic channel. he stream now turns at the ROW and angles away until it reaches a dike with culvert in it (Station 33A01). No electrofishing or water chemistry measurements conducted.

Species: slimy sculpin **Life Stage:** Juvenile/Adult **Life History:** Resident

Count: 1 **Fork lengths (mm):**

Gear: Visual Observation, Ground **EF Time (s):** **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Specific Barrier Unknown **Height (m):** **Pool depth (m):**

Comments: Estimate at 3 cm long. Visual observation of sculpin occurred directly adjacent to where the LWC would have been.

Station 14A01 **Visit** 2 **Survey Date** 7/18/2002

PIC33017.jpg

PIC33018.jpg

Station 14A01 **Visit** 3 **Survey Date:** 08/09/2002 **Time:** 11:17 AM

Waterbody Name: Marsh Creek (Local Name) **Pipeline Milepost:** 210.43

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	67.58360	-149.80823		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Chandalar C-6 **Elevation (m):** 454

Anadromous Waters Catalog Number:

Geographic Comments: LWC is between VSMs 1111082 and 1111022. LWC no longer present, only remnants on sides of ROW.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air: 13	**Water:**			

Qualitative Velocity: Slow **Water Color:** Clear

Stream Stage: Low, Discontinuous Flow **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: As in prior visits, the stream does not cross, but parallels the ROW. It flows to Marsh Creek which crosses the ROW both to the north and south. Stream immediately adjacent to the LWC is now dry. 10 m further north in the channel, however, is a large pool. Another 10 m further north, water flows in the channel. This channel is 0.75 m wide and 0.10 m deep.

Species: grayling **Life Stage:** Juvenile/Adult **Life History:** Resident

Count: 3 **Fork lengths (mm):**

Gear: Visual Observation, Ground **EF Time (s):** **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Specific Barrier Unknown **Height (m):** **Pool depth (m):**

Comments: The size of all grayling (FL = 50, 50, 190 mm) were estimated by visual observation from the bank. Largest grayling were in first pool upstream of station, then small grayling in flowing stream not connected to the first pool.

Species: slimy sculpin **Life Stage:** Juvenile/Adult **Life History:** Resident

Count: 4 **Fork lengths (mm):** 50 50 45 45

Gear: Visual Observation, Ground **EF Time (s):** **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Specific Barrier Unknown **Height (m):** **Pool depth (m):**

Comments: The size of all sculpin (FL = 45, 45, 50, 50 mm) were estimated by visual observation from the bank. Sculpin were in first pool and flowing channel.

Station 14A01 **Visit** 3 **Survey Date** 8/9/2002

PIC46018.jpg

PIC46019.jpg

Station 14A02 **Visit** 1 **Survey Date:** 06/17/2002 **Time:** 9:10 AM

Waterbody Name: Marsh Creek (Local Name) **Pipeline Milepost:** 210.23

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 7
	67.58636	-149.80611		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Chandalar C-6 **Elevation (m):** 432

Anadromous Waters Catalog Number:

Geographic Comments: Culvert is between VSMs 1110003 and 1109943. Pipeline is above ground.

Station Characteristics

Temperature (C) **Air:** 18 **Water:** 7.8 **DO (ppm):** 2.95 **Qualitative Velocity:** Still **Turbidity (NTU)** 0 **Water Color:** Clear **Stream Gradient (%):** 0.8

Stream Stage: Low, Discontinuous Flow **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**
Width		1.5
Thalweg Depth		0.14

Substrate

Dominant: Cobble

Subdominant:

Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Station is upstream of culvert. At culvert inlet the channel is dry. Standing water is in the channel 10 m further upstream. This channel (ranging up to 1.5 m wide) extends at least 200 m. Approximately midway through the culvert water percolates in and flows to the outlet. Two m after emerging from the culvert, the surface flow disappears into a gravel pile and does not reemerge. Slightly visible channel is apparent further downslope, but is overgrown with forbs and small alders. Substrate is cobble with organic covering.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 103 **# Traps:** **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments:

Station 14A02 **Visit** 1 **Survey Date** 6/17/2002

PIC14003.jpg

PIC14004.jpg

PIC14005.jpg

Station 14A02 **Visit** 2 **Survey Date:** 07/18/2002 **Time:** 2:30 PM

Waterbody Name: Marsh Creek (Local Name) **Pipeline Milepost:** 210.23

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 7
	67.58636	-149.80611		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Chandalar C-6 **Elevation (m):** 432

Anadromous Waters Catalog Number:

Geographic Comments: Culvert is between VSMs 1110003 and 1109943. Pipeline is above ground.

Station Characteristics

Temperature (C) **Air:** 28 **Water:** 7.9 **DO (ppm):** 1.98 **Qualitative Velocity:** Slow **Turbidity (NTU)** 0 **Water Color:** Clear **Stream Gradient (%):**

Stream Stage: Low, Discontinuous Flow **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width		1	**Dominant:**
Thalweg Depth		0.19	**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Station is at pool at culvert outlet, which has a small trickle of inlet flow. Downstream a dry channel reach is followed by a pool with standing water followed by another dry channel reach. Upstream of the ROW no flow enters the culvert. Further upstream are a series of pools with no evident flow.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 61 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Size and depth of pools allow complete electrofishing access to all water. No water deep enough for minnow traps.

Station 14A02 **Visit** 2 **Survey Date** 7/18/2002

PIC33019.jpg

PIC33020.jpg

PIC33021.jpg

Station 14A02 **Visit** 3 **Survey Date:** 08/09/2002 **Time:** 11:02 AM

Waterbody Name: Marsh Creek (Local Name) **Pipeline Milepost:** 210.23

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 7
	67.58636	-149.80611		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Chandalar C-6 **Elevation (m):** 432

Anadromous Waters Catalog Number:

Geographic Comments: Culvert is between VSMs 1110003 and 1109943. Pipeline is above ground.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air: 13	**Water:**			

Qualitative Velocity: N/A **Water Color:**

Stream Stage: Dry, Defined Channel **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Channel is dry, no surface water is present. A defined channel remains.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** **# Traps:** **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: No water, no sampling.

Station 14A02 **Visit** 3 **Survey Date** 8/9/2002

PIC46016.jpg

PIC46017.jpg

Station 14A03 **Visit** 1 **Survey Date:** 06/17/2002 **Time:** 10:06 AM

Waterbody Name: N.F. Sukakpak Creek (Local Name) **Pipeline Milepost:** 209.02

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	67.60258	-149.79077		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Chandalar C-6 **Elevation (m):** 428

Anadromous Waters Catalog Number:

Geographic Comments: Stream between VSMs 1103643 and 1103583.

Station Characteristics

Temperature (C) **Air:** **Water:** 10.3 **DO (ppm):** 4.31 **Turbidity (NTU)** 2 **Stream Gradient (%):**

Qualitative Velocity: N/A **Water Color:** Clear

Stream Stage: Low, Discontinuous Flow **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**
Width		0.75
Thalweg Depth		0.25

Substrate

Dominant: Sand/Silt/Clay

Subdominant:

Subdominant:

Survey Team: Doug Lieb, John Wells, Jim Lawlor

Visit Comments: Station is east of LWC. In the general vicinity there is no defined natural channel, only a slow flow, funneled through the LWC, between the two marshes on either side of the ROW. A pool has formed in the LWC ruts. Immediately on either side of the LWC is a short channel 0.75 m wide and 0.25 m deep.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 215 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Both marshes were electro fished. Efficiency was low because unconsolidated sediments made wading difficult. At present water levels there is no migratory connection across the ROW between the two opposing marshes.

Station 14A03 **Visit** 1 **Survey Date** 6/17/2002

PIC14007.jpg

PIC14008.jpg

PIC14009.jpg

Station 14A03 **Visit** 2 **Survey Date:** 07/18/2002 **Time:** 3:15 PM

Waterbody Name: N.F. Sukakpak Creek (Local Name) **Pipeline Milepost:** 209.02

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	67.60258	-149.79077		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Chandalar C-6 **Elevation (m):** 428

Anadromous Waters Catalog Number:

Geographic Comments: Stream between VSMs 1103643 and 1103583.

Station Characteristics

Temperature (C) **Air:** 29 **Water:** 19.6 **DO (ppm):** 3.45 **Turbidity (NTU)** 6 **Stream Gradient (%):**

Qualitative Velocity: Slow **Water Color:** Clear

Stream Stage: Low **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**
Width		0.4
Thalweg Depth		0.22

Substrate

Dominant: Sand/Silt/Clay

Subdominant:

Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Station is 1 m upstream of LWC, which is widened and forming a pool. There is no real evidence of a natural channel though; the LWC itself is the only channel structure in the area. On both sides of the ROW are wetlands, with a mudflat to the east and a marsh to the west.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 46 **# Traps:** 1 **Trap Duration (h):** 0.3

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Electrofishing efficiency is poor because of wide expanse of the marshes and the difficulty of walking through the unconsolidated fines. Sampled perimeters of marshes and LWC.

Station 14A03 **Visit** 2 **Survey Date** 7/18/2002

PIC33024.jpg

PIC33025.jpg

PIC33026.jpg

Station 14A03 **Visit** 3 **Survey Date:** 08/09/2002 **Time:** 10:10 AM

Waterbody Name: N.F. Sukakpak Creek (Local Name) **Pipeline Milepost:** 209.02

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	67.60258	-149.79077		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Chandalar C-6 **Elevation (m):** 428

Anadromous Waters Catalog Number:

Geographic Comments: Stream between VSMs 1103643 and 1103583.

Station Characteristics

Temperature (C) **Air:** 10 **Water:** 8.8 **DO (ppm):** 4.81 **Qualitative Velocity:** Still **Turbidity (NTU)** 1 **Water Color:** Clear **Stream Gradient (%):**

Stream Stage: Low, Discontinuous Flow **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**
Width		
Thalweg Depth		

Substrate
Dominant: Sand/Silt/Clay
Subdominant:
Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Multimeter readings taken in pond in a small hole just deep enough for multimeter. The water level has dropped considerably since Visit 2. Ponds on west side have dried up except for a small puddle; on east side the marsh pond is significantly reduced. No continuous flow connects the two sides of the ROW. Most of pond on east is very shallow and very soft, unconsolidated organic and mud substrate. Water throughout the marsh is less than 25 cm deep. Most of the water at marsh margins are extremely shallow.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 126 **# Traps:** **Trap Duration (h):**

Channel: Side Channel (connected to main channel at inlet and outlet)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Substrate is so soft, and pond is so wide that we are unable to sample anything father than a meter from shore; even that is difficult since even there we sink into the substrate up to our knees.

Station 14A03 **Visit** 3 **Survey Date** 8/9/2002

PIC46011.jpg

PIC46012.jpg

PIC46013.jpg

Station 14A04 **Visit** 1 **Survey Date:** 06/17/2002 **Time:** 11:30 AM

Waterbody Name: Eva Creek (Local Name) **Pipeline Milepost:** 205.73

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	67.64252	-149.75380		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Chandalar C-6 **Elevation (m):** 452

Anadromous Waters Catalog Number:

Geographic Comments: Stream is between VSMs 1086330 and 1086260.

Station Characteristics

Temperature (C) **Air:** **Water:** 6 **DO (ppm):** 11.77 **Turbidity (NTU)** 2 **Stream Gradient (%):** 2.5

Qualitative Velocity: Medium **Water Color:** Clear

Stream Stage: Medium **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**
Width	6	1.3
Thalweg Depth	0.6	0.13

Substrate

Dominant: Cobble

Subdominant:

Subdominant:

Survey Team: Doug Lieb, John Wells, Jim Lawlor, Kate Montgomery

Visit Comments: Station is downstream of LWC. LWC is approximately 50 m upstream from Dalton Highway culvert and approximately 100 m from confluence with the Middle Fork Koyukuk River. Stream has a wide alluvial floodplain. Upstream of LWC for 50 m stream flows though a 4 m (bankfull) wide channel then broadens to a 50 m wide alluvial floodplain.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 261 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Electrofished from Dalton Highway upstream. Current was fast; reducing sampling efficiency.

Station 14A04 **Visit** 1 **Survey Date** 6/17/2002

PIC14013.jpg

PIC14014.jpg

PIC14015.jpg

Station 14A04 **Visit** 2 **Survey Date:** 07/18/2002 **Time:** 4:04 PM

Waterbody Name: Eva Creek (Local Name) **Pipeline Milepost:** 205.73

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	67.64252	-149.75380		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Chandalar C-6 **Elevation (m):** 452

Anadromous Waters Catalog Number:

Geographic Comments: Stream is between VSMs 1086330 and 1086260.

Station Characteristics

Temperature (C) **Air:** 29 **Water:** 16 **DO (ppm):** 8.76 **Qualitative Velocity:** Fast **Turbidity (NTU)** 20 **Water Color:** Clear **Stream Gradient (%):**

Stream Stage: Medium **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**
Width		1.2
Thalweg Depth		0.13

Substrate

Dominant: Cobble

Subdominant: Gravel

Subdominant: Boulder

Survey Team: Doug Lieb, John Wells

Visit Comments: Station is 1 m upstream of LWC. The LWC is in good shape; not pooling from vehicle traffic. Flow through the Dalton Highway pipe arch culvert downstream is very shallow (approximately 3 cm deep). At this culvert outlet is a deep pool, but the culvert is not bedded and has a tailwater depth of only 3 to 6 cm. The stream has many pocket water pools behind boulders scattered throughout the surveyed stream length. Upstream several hundred meters from the LWC the flow is actively undercutting the banks and trees are falling into the channel

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Species: grayling **Life Stage:** Juvenile/Adult **Life History:** Resident

Count: 1 **Fork lengths (mm):** 205

Gear: Portable Electrofisher **EF Time (s):** 278 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Unknown **Height (m):** **Pool depth (m):**

Comments: Grayling was netted in pool at outlet of Dalton Highway culvert downstream of the LWC. Efficiency was reduced because of high velocities.

Species: slimy sculpin **Life Stage:** Juvenile/Adult **Life History:** Resident

Count: 2 **Fork lengths (mm):** 56 60

Gear: Portable Electrofisher **EF Time (s):** 278 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Unknown **Height (m):** **Pool depth (m):**

Comments: Sculpin were caught downstream of the Dalton Highway culvert.

Species: Dolly Varden **Life Stage:** Juvenile/Adult **Life History:** Unknown

Count: 2 **Fork lengths (mm):** 145

Gear: Portable Electrofisher **EF Time (s):** 278 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Unknown **Height (m):** **Pool depth (m):**

Comments: Dolly Varden was captured 500 m upstream of LWC in section of undercut bank. Another was turned but not netted in high velocity current 250 m upstream of LWC.

Station 14A04 **Visit** 2 **Survey Date** 7/18/2002

PIC33030.jpg

PIC33031.jpg

PIC33032.jpg

Station 14A05 **Visit** 1 **Survey Date:** 06/17/2002 **Time:** 1:08 PM

Waterbody Name: Steep Creek (Local Name) **Pipeline Milepost:** 191.8

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	67.82820	-149.83499		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Chandalar D-6 **Elevation (m):** 520

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is below ground. From PLMP 192 drive 0.2 miles. Wide alluvial fan.

Station Characteristics

Temperature (C) **Air:** 18 **Water:** 7.6 **DO (ppm):** 11.3 **Qualitative Velocity:** Medium **Turbidity (NTU)** 34 **Water Color:** Glacial, Low Turbidity **Stream Gradient (%):** 2.5

Stream Stage: Medium **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**
Width	100	2
Thalweg Depth		0.19

Substrate

Dominant: Cobble

Subdominant: Gravel

Subdominant: Boulder

Survey Team: Doug Lieb, John Wells, Kate Montgomery

Visit Comments: Station is at the ROW. The stream forms a block point. The Dalton Highway is over 300 m upstream of station. Stream flows through highway prism in three large culverts. Stream has one main channel with several small braids. Heavy bedload transport and active deltaic channel movement.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 234 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Fast velocity and turbid water reduce sampling efficiency.

Station 14A05 **Visit** 1 **Survey Date** 6/17/2002

PIC14016.jpg

PIC14017.jpg

PIC14018.jpg

Station 14A05 **Visit** 2 **Survey Date:** 07/19/2002 **Time:** 12:05 PM

Waterbody Name: Steep Creek (Local Name) **Pipeline Milepost:** 191.8

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	67.82820	-149.83499		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Chandalar D-6 **Elevation (m):** 520

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is below ground. From PLMP 192 drive 0.2 miles. Wide alluvial fan.

Station Characteristics

Temperature (C) **Air:** 25 **Water:** 12.5 **DO (ppm):** 9.87 **Qualitative Velocity:** Fast **Turbidity (NTU)** 24 **Water Color:** Clear **Stream Gradient (%):**

Stream Stage: Medium **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**
Width		2
Thalweg Depth		0.2

Substrate

Dominant: Cobble

Subdominant: Gravel

Subdominant: Boulder

Survey Team: Doug Lieb, John Wells

Visit Comments: Station is just upstream of LWC. The braided channel flows through a broad uncontrolled alluvial delta. The channel velocity is swift and riffle-dominated; no deep pools are present.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 143 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Electrofished main channel without any fish observations. Current velocity and turbulence made sampling difficult.

Station 14A05 **Visit** 2 **Survey Date** 7/19/2002

PIC34013.jpg

PIC34014.jpg

PIC34015.jpg

Station 14A05 **Visit** 3 **Survey Date:** 08/07/2002 **Time:** 10:20 AM

Waterbody Name: Steep Creek (Local Name) **Pipeline Milepost:** 191.8

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	67.82820	-149.83499		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Chandalar D-6 **Elevation (m):** 520

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is below ground. From PLMP 192 drive 0.2 miles. Wide alluvial fan.

Station Characteristics

Temperature (C) **Air:** 11 **Water:** 5 **DO (ppm):** 13.33 **Qualitative Velocity:** Fast **Turbidity (NTU)** 16 **Water Color:** Clear **Stream Gradient (%):**

Stream Stage: Low **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**
Width		2
Thalweg Depth		0.11

Substrate

Dominant: Cobble

Subdominant: Gravel

Subdominant: Boulder

Survey Team: Doug Lieb, John Wells

Visit Comments: Station upstream of LWC. Water level is less than on previous visits.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 271 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Electrofished all channels. Current velocity and turbulence make sampling difficult. Stream not deep enough to sink minnow traps.

Station 14A05 **Visit** 3 **Survey Date** 8/7/2002

PIC44011.jpg

PIC44012.jpg

PIC44013.jpg

Station 14A06 **Visit** 1 **Survey Date:** 06/17/2002 **Time:** 2:28 PM

Waterbody Name: Ruff Creek (Local Name) **Pipeline Milepost:** 190.39

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 9
	67.84846	-149.83139		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Chandalar D-6 **Elevation (m):** 553

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is below ground. Access via 106-APL/AMS-2B. Drive south on ROW until reaching wide alluvial plain. Station 75 m north of RGV 35.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air: 20	**Water:**			

Qualitative Velocity: N/A **Water Color:**

Stream Stage: Dry, Defined Channel **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:** Cobble
Thalweg Depth			**Subdominant:** Gravel
			Subdominant:

Survey Team: Doug Lieb, John Wells, Kate Montgomery

Visit Comments: Station is at LWC on the ROW. No surface water is present. Surface flow goes subsurface 0.8 km upstream of station. Active channel flows through a broad, uncontrolled delta. Bulldozer tracks and tall constructed banks are present upstream near Dalton Highway; work most likely performed by ADOT/PF for to protect road. Spur dikes upstream of the Dalton highway channel flow through three large culverts.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** **# Traps:** **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: No water, no sampling.

Station 14A06 **Visit** 1 **Survey Date** 6/17/2002

PIC14020.jpg

PIC14021.jpg

PIC14023.jpg

Station 14A06 **Visit** 2 **Survey Date:** 07/19/2002 **Time:** 1:04 PM

Waterbody Name: Ruff Creek (Local Name) **Pipeline Milepost:** 190.39

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 9
	67.84846	-149.83139		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Chandalar D-6 **Elevation (m):** 553

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is below ground. Access via 106-APL/AMS-2B. Drive south on ROW until reaching wide alluvial plain. Station 75 m north of RGV 35.

Station Characteristics

Temperature (C)	**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air: 25 **Water:**	**Qualitative Velocity:** N/A	**Water Color:**	

Stream Stage: Dry, Defined Channel **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:** Cobble
Thalweg Depth			**Subdominant:** Gravel
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: A defined, but dry, channel is present.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** **# Traps:** **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: No water, no sampling.

Station 14A06 **Visit** 2 **Survey Date** 7/19/2002

PIC34016.jpg

PIC34017.jpg

Station 14A06 **Visit** 3 **Survey Date:** 08/07/2002 **Time:** 10:05 AM

Waterbody Name: Ruff Creek (Local Name) **Pipeline Milepost:** 190.39

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 9
	67.84846	-149.83139		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Chandalar D-6 **Elevation (m):** 553

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is below ground. Access via 106-APL/AMS-2B. Drive south on ROW until reaching wide alluvial plain. Station 75 m north of RGV 35.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air: 11	**Water:**			

Qualitative Velocity: N/A **Water Color:**

Stream Stage: Dry, Defined Channel **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:** Cobble
Thalweg Depth			**Subdominant:** Gravel
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Station is at the LWC. Still dry and no water present as in past 2 visits.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** **# Traps:** **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: No water, no sampling.

Station 14A06 **Visit** 3 **Survey Date** 8/7/2002

PIC44010.jpg

Station 14A07 **Visit** 1 **Survey Date:** 06/17/2002 **Time:** 3:20 PM

Waterbody Name: Oskar's Eddy (Local Name) **Pipeline Milepost:** 178.8

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 7
	68.00546	-149.74368		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Philip Smith Mtn A-5 **Elevation (m):** 706

Anadromous Waters Catalog Number:

Geographic Comments: Stream crosses ROW between VSMs 943968 and 944038.

Station Characteristics

Temperature (C) **Air:** 18 **Water:** 6.6 **DO (ppm):** 11.67 **Qualitative Velocity:** Fast **Turbidity (NTU)** 20 **Water Color:** Clear **Stream Gradient (%):** 3

Stream Stage: Medium **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**
Width		2
Thalweg Depth		0.18

Substrate

Dominant: Cobble

Subdominant: Gravel

Subdominant:

Survey Team: Doug Lieb, John Wells, Kate Montgomery

Visit Comments: Station is located downstream of LWC at edge of ROW. Upstream and downstream of the LWC, channel widths range from 2 - 2.5 m; at the LWC the channel widens to 5 m. Both upstream and downstream of the LWC, vortex rock weirs have been installed to focus stream flow and provide pools. The individual steps upstream of the LWC appear appropriate for fish passage; however the two downstream steps may hinder movement during certain discharges. The first step downstream from the LWC is 0.90 m high, with a pool depth of 0.80 m. The next step 11.4 m further downstream is 0.48 m high, with pool depth of 0.87 m.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 268 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Waterfall measurements are in visit comments.

Station 14A07 **Visit** 1 **Survey Date** 6/17/2002

PIC14025.jpg

PIC14029.jpg

PIC14027.jpg

Station 14A07 **Visit** 2 **Survey Date:** 07/19/2002 **Time:** 1:40 PM

Waterbody Name: Oskar's Eddy (Local Name) **Pipeline Milepost:** 178.8

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 7
	68.00546	-149.74368		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Philip Smith Mtn A-5 **Elevation (m):** 706

Anadromous Waters Catalog Number:

Geographic Comments: Stream crosses ROW between VSMs 943968 and 944038.

Station Characteristics

Temperature (C) **Air:** 28 **Water:** 10.7 **DO (ppm):** 10.18 **Qualitative Velocity:** Fast **Turbidity (NTU)** 0 **Water Color:** Clear **Stream Gradient (%):**

Stream Stage: Medium **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**
Width		3
Thalweg Depth		0.18

Substrate

Dominant: Cobble

Subdominant: Gravel

Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Station is upstream of LWC.

Species: grayling **Life Stage:** Juvenile/Adult **Life History:** Resident

Count: 1 **Fork lengths (mm):** 205

Gear: Portable Electrofisher **EF Time (s):** 148 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Unknown **Height (m):** **Pool depth (m):**

Comments: Collected in the deep pool below the downstream-most constructed vortex rock weir. The pool is 17 m downstream of the LWC.

Station 14A07 **Visit** 2 **Survey Date** 7/19/2002

PIC34018.jpg

PIC34019.jpg

PIC34020.jpg

Station 15A01 **Visit** 1 **Survey Date:** 06/18/2002 **Time:** 10:36 AM

Waterbody Name: Dietrich Spur Dike 5 (Local Name) **Pipeline Milepost:** 194

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	67.77625	-149.79266		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Chandalar D-6 **Elevation (m):** 492

Anadromous Waters Catalog Number:

Geographic Comments: At RGV 35A the road ends, walk south until reaching dikes. There are 16 total dikes, numbered from the south.

Station Characteristics

Temperature (C) **Air:** **Water:** 10.1 **DO (ppm):** 8.13 **Qualitative Velocity:** Slow **Turbidity (NTU)** 3 **Water Color:** Clear **Stream Gradient (%):**

Stream Stage: Low, Continuous Surface Flow **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width		1	**Dominant:**
Thalweg Depth		0.02	**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells, Ken Wilson

Visit Comments: Station is located upstream of Dike 5 at the culvert inlet. Only a trickle of water flows into the culvert; water flows below culvert as well. Water flow is slow and braided with several large pools upstream. Downstream, flow through the culvert empties directly into the Dietrich River. Upstream, this channel passes through dikes 6, 7, 8, and 9. Further east on Dike 5 is a second culvert. Water associated with this culvert is not directly connected to the first culvert. Pools north of the second (eastern) culvert were also electrofished.

Species: slimy sculpin **Life Stage:** Juvenile/Adult **Life History:** Resident

Count: 2 **Fork lengths (mm):** 80 27

Gear: Portable Electrofisher **EF Time (s):** 104 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Unknown **Height (m):** **Pool depth (m):**

Comments: Fish caught in an alcove upstream of Dike 5. Caught all fish seen. Also electro fished waters adjacent to the second (eastern) Dike 5 culvert for 58 s; stunning, but not capturing several fish small enough to slip through net mesh.

Station 15A01 **Visit** 1 **Survey Date** 6/18/2002

PIC15006.jpg

PIC15007.jpg

PIC15008.jpg

Station 15A01 **Visit** 2 **Survey Date:** 07/19/2002 **Time:** 10:00 AM

Waterbody Name: Dietrich Spur Dike 5 (Local Name) **Pipeline Milepost:** 194

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	67.77625	-149.79266		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Chandalar D-6 **Elevation (m):** 492

Anadromous Waters Catalog Number:

Geographic Comments: At RGV 35A the road ends, walk south until reaching dikes. There are 16 total dikes, numbered from the south.

Station Characteristics

Temperature (C) **Air:** 20 **Water:** 17.6 **DO (ppm):** 5.67 **Qualitative Velocity:** Still **Turbidity (NTU)** 0 **Stream Gradient (%):** **Water Color:** Clear

Stream Stage: Low, Discontinuous Flow **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: No flowing water at station. An isolated residual pool (5 m diameter x 0.20 m deep) occupies the otherwise dry channel upstream of the dike. Very small fry were observed in pool. There are two very small pools between stations 15A01 and 15A02 (230 m north). Fish were observed in these pools as well.

Species: grayling **Life Stage:** Juvenile/Adult **Life History:** Resident

Count: 25 **Fork lengths (mm):** 29 28 21 24 24 19

Gear: Dip Net **EF Time (s):** **# Traps:** **Trap Duration (h):**

Channel:

Fish Passage Barrier: Unknown **Height (m):** **Pool depth (m):**

Comments: Electrofishing marginal because of small size of target fish. Last 2 fish are from pond 20 m from first large pond.

Station 15A01 **Visit** 2 **Survey Date** 7/19/2002

PIC34001.jpg

PIC34002.jpg

PIC34003.jpg

Station 15A02 **Visit** 1 **Survey Date:** 06/18/2002 **Time:** 11:35 AM

Waterbody Name: Dietrich Spur Dike 6 (Local Name) **Pipeline Milepost:** 194

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	67.77830	-149.79282		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Chandalar D-6 **Elevation (m):** 496

Anadromous Waters Catalog Number:

Geographic Comments: At RGV 35A, walk south until reaching dikes. This dike is next dike directly north of Dike 5. Dikes before Dike 5 do not have culverts in them.

Station Characteristics

	Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
	Air:	**Water:**			

Qualitative Velocity: N/A **Water Color:** Clear

Stream Stage: Low **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:** Gravel
Thalweg Depth			**Subdominant:** Sand
			Subdominant:

Survey Team: Doug Lieb, John Wells, Ken Wilson

Visit Comments: No multimeter readings taken because of limited helicopter availability and because readings were taken 230 m downstream at Station 15A01. The station was in a large pool (4m by 6m) at the Dike 6 culvert outlet. The outlet channel (connecting to 15A01) is 1 - 1.5 m wide with shallow braided reaches. Upstream of the culvert the channel was narrow and deep with riprap surrounding the culvert (48") openings. North (upstream) of dike, surface flow was discontinuous for 340 m; the periodic residual pools all had small fish.

Species: grayling **Life Stage:** Juvenile/Adult **Life History:** Resident

Count: 1 **Fork lengths (mm):** 137

Gear: Portable Electrofisher **EF Time (s):** 151 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: None **Height (m):** **Pool depth (m):**

Comments: Fish caught upstream of culvert. Small grayling seen in isolated residual pools upstream of dike (see Visit Comments).

Station 15A02 **Visit** 1 **Survey Date** 6/18/2002

PIC15010.jpg

PIC15011.jpg

Station 15A02 **Visit** 2 **Survey Date:** 07/19/2002 **Time:** 10:30 AM

Waterbody Name: Dietrich Spur Dike 6 (Local Name) **Pipeline Milepost:** 194

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	67.77830	-149.79282		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Chandalar D-6 **Elevation (m):** 496

Anadromous Waters Catalog Number:

Geographic Comments: At RGV 35A, walk south until reaching dikes. This dike is next dike directly north of Dike 5. Dikes before Dike 5 do not have culverts in them.

Station Characteristics

Temperature (C) **Air:** 20 **Water:** 14.7 **DO (ppm):** 5.42 **Qualitative Velocity:** N/A **Turbidity (NTU)** 0 **Water Color:** Clear **Stream Gradient (%):**

Stream Stage: Low, Discontinuous Flow **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**
Width		
Thalweg Depth		0.14

Substrate

Dominant: Gravel

Subdominant: Sand/Silt/Clay

Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: No continuous surface flow; no flow into the culvert. Only very small residual pools remain in channel upstream and downstream of dike.

Species: grayling **Life Stage:** Juvenile/Adult **Life History:** Resident

Count: 15 **Fork lengths (mm):** 29 32 24 22 20

Gear: Dip Net **EF Time (s):** **# Traps:** **Trap Duration (h):**

Channel:

Fish Passage Barrier: Unknown **Height (m):** **Pool depth (m):**

Comments: Grayling were netted from the culvert outlet pool.

Station 15A02 **Visit** 2 **Survey Date** 7/19/2002

PIC34005.jpg

PIC34006.jpg

PIC34007.jpg

Station 15A03 **Visit** 1 **Survey Date:** 06/18/2002 **Time:** 3:36 PM

Waterbody Name: Beaver Brook (Local Name) **Pipeline Milepost:** 176.6

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 7
	68.02911	-149.69536		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Philip Smith Mtn A-5 **Elevation (m):** 749

Anadromous Waters Catalog Number:

Geographic Comments: Stream flows parallel to Access Road 108-APL-8. Stream crosses under Dalton Highway at access road. Pipeline is underground and surfaces 50 m north.

Station Characteristics

Temperature (C) **Air:** 16 **Water:** 6.5 **DO (ppm):** 10.71 **Qualitative Velocity:** Medium **Turbidity (NTU)** 2 **Water Color:** Clear **Stream Gradient (%):**

Stream Stage: Medium **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**
Width	8	2.5
Thalweg Depth	1.5	0.15

Substrate
Dominant: Cobble
Subdominant: Boulder
Subdominant:

Survey Team: Doug Lieb, John Wells, Ken Wilson

Visit Comments: Station is at old LWC which is no longer maintained. The stream is eroding the access road; upstream of station the stream has severed the access road. Apparent active lateral channel migration and large discharge fluctuations. Stream gradient is estimated at 5%. Dalton Highway culvert 25 m downstream of station has two culverts, only one of which has water flow. Other culvert has no surface flow with bed material filling 1/4 of depth.

Species: Dolly Varden **Life Stage:** Juvenile/Adult **Life History:** Unknown

Count: 1 **Fork lengths (mm):** 190

Gear: Portable Electrofisher **EF Time (s):** 325 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Unknown **Height (m):** **Pool depth (m):**

Comments: Dolly Varden collected downstream of Dalton Highway.

Station 15A03 **Visit** 1 **Survey Date** 6/18/2002

PIC15013.jpg

PIC15014.jpg

PIC15015.jpg

Station 15A03 **Visit** 2 **Survey Date:** 07/19/2002 **Time:** 3:04 PM

Waterbody Name: Beaver Brook (Local Name) **Pipeline Milepost:** 176.6

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 7
	68.02911	-149.69536		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Philip Smith Mtn A-5 **Elevation (m):** 749

Anadromous Waters Catalog Number:

Geographic Comments: Stream flows parallel to Access Road 108-APL-8. Stream crosses under Dalton Highway at access road. Pipeline is underground and surfaces 50 m north.

Station Characteristics

Temperature (C) **Air:** 27 **Water:** 11.8 **DO (ppm):** 9.77 **Qualitative Velocity:** Fast **Turbidity (NTU)** 0 **Stream Gradient (%):** **Water Color:** Clear

Stream Stage: Medium **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**
Width		1.75
Thalweg Depth		0.16

Substrate
Dominant: Cobble
Subdominant: Boulder
Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Station is at the old, non-maintained LWC. The current is swift; the channel forms an extended riffle with infrequent pools. Willows and cottonwoods grow in the floodplain. A 3 m outlet pool is below the Dalton Highway culvert with flow. This culvert is full of large-sized bedload, making fish passage difficult.

Species: Dolly Varden **Life Stage:** Juvenile/Adult **Life History:** Unknown

Count: 5 **Fork lengths (mm):** 200 172

Gear: Portable Electrofisher **EF Time (s):** 198 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Unknown **Height (m):** **Pool depth (m):**

Comments: Two Dolly Varden were stunned but not collected in the Dalton Highway outlet pool. Three Dolly Varden (2 collected, one stunned only) were identified upstream of LWC. The two collected fish were in two pools 50 and 200 m upstream of LWC.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Minnow Trap, 1/4 in. Mesh **EF Time (s):** **# Traps:** 1 **Trap Duration (h):** 0.5

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: No fish caught in trap at the LWC.

Station 15A03 **Visit** 2 **Survey Date** 7/19/2002

PIC34025.jpg

Station 15A04 **Visit** 1 **Survey Date:** 06/18/2002 **Time:** 4:25 PM

Waterbody Name: Tributaries of NF of WF Chandalar River (Local Name) **Pipeline Milepost:** 168.94

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	68.10799	-149.52710		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Philip Smith Mtn A-5 **Elevation (m):** 1063

Anadromous Waters Catalog Number:

Geographic Comments: Stream is 11 m north of 169 orange PLMP.

Station Characteristics

Temperature (C) **Air:** 15 **Water:** 6.6 **DO (ppm):** 10.25 **Turbidity (NTU)** 11 **Stream Gradient (%):**

Qualitative Velocity: Medium **Water Color:** Clear

Stream Stage: Low **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**
Width	2.5	1.25
Thalweg Depth	1.5	0.11

Substrate

Dominant: Sand/Silt/Clay

Subdominant: Gravel

Subdominant: Cobble

Survey Team: Doug Lieb, John Wells, Ken Wilson

Visit Comments: Station is downstream of LWC. LWC is unmaintained. There have been 4 LWCs, but three have been filled. Whole area is a broad alluvial delta with active lateral channel migration. Gradient is estimated at 2.5%.

Species: grayling **Life Stage:** Juvenile/Adult **Life History:** Resident

Count: 1 **Fork lengths (mm):** 220

Gear: Portable Electrofisher **EF Time (s):** 341 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Unknown **Height (m):** **Pool depth (m):**

Comments: Grayling collected downstream of LWC at confluence with another tributary flowing from the north. Upstream of LWC a fish was stunned, but not caught because of vegetation and a large boulder.

Station 15A04 **Visit** 1 **Survey Date** 6/18/2002

PIC15016.jpg

PIC15017.jpg

PIC15018.jpg

Station 15A04 **Visit** 2 **Survey Date:** 07/20/2002 **Time:** 8:50 AM

Waterbody Name: Tributaries of NF of WF Chandalar River (Local Name) **Pipeline Milepost:** 168.94

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	68.10799	-149.52710		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Philip Smith Mtn A-5 **Elevation (m):** 1063

Anadromous Waters Catalog Number:

Geographic Comments: Stream is 11 m north of 169 orange PLMP.

Station Characteristics

Temperature (C) **Air:** 20 **Water:** 3.6 **DO (ppm):** 11.14 **Qualitative Velocity:** Medium **Turbidity (NTU)** 23 **Water Color:** Clear **Stream Gradient (%):**

Stream Stage: Medium **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**
Width		1
Thalweg Depth		0.1

Substrate

Dominant: Sand/Silt/Clay

Subdominant: Gravel

Subdominant: Cobble

Survey Team: Doug Lieb, John Wells

Visit Comments: Station is upstream of LWC. Since last visit, maintenance work has been conducted, flattening a section visible in the pictures. LWC remains in good shape. Approximately 10 m downstream from the LWC is a confluence with a stream paralleling the Dalton Highway. There are two more adjacent LWC channels (Stations 35A01 and 35A02) flowing into the stream parallel to the Dalton Highway.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 191 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Electrofished both stream paralleling ROW and the tributary stream to upstream of the LWC. Upstream of the LWC one of the channels is covered by willows, making it too difficult to reach water with electrofisher.

Station 15A04 **Visit** 2 **Survey Date** 7/20/2002

PIC35001.jpg

PIC35002.jpg

PIC35003.jpg

Station 15A04 **Visit** 3 **Survey Date:** 08/05/2002 **Time:** 8:45 AM

Waterbody Name: Tributaries of NF of WF Chandalar River (Local Name) **Pipeline Milepost:** 168.94

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	68.10799	-149.52710		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Philip Smith Mtn A-5 **Elevation (m):** 1063

Anadromous Waters Catalog Number:

Geographic Comments: Stream is 11 m north of 169 orange PLMP.

Station Characteristics

Temperature (C) **Air:** 5 **Water:** 3 **DO (ppm):** 10.75 **Qualitative Velocity:** Medium **Turbidity (NTU)** **Water Color:** Clear **Stream Gradient (%):**

Stream Stage: Medium **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width		1	**Dominant:**
Thalweg Depth		0.11	**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Station is upstream of LWC. A pool is beginning to form in the LWC as a result of vehicle traffic.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 218 **# Traps:** 2 **Trap Duration (h):** 1.3

Channel: Main Channel (>50% of water flow)

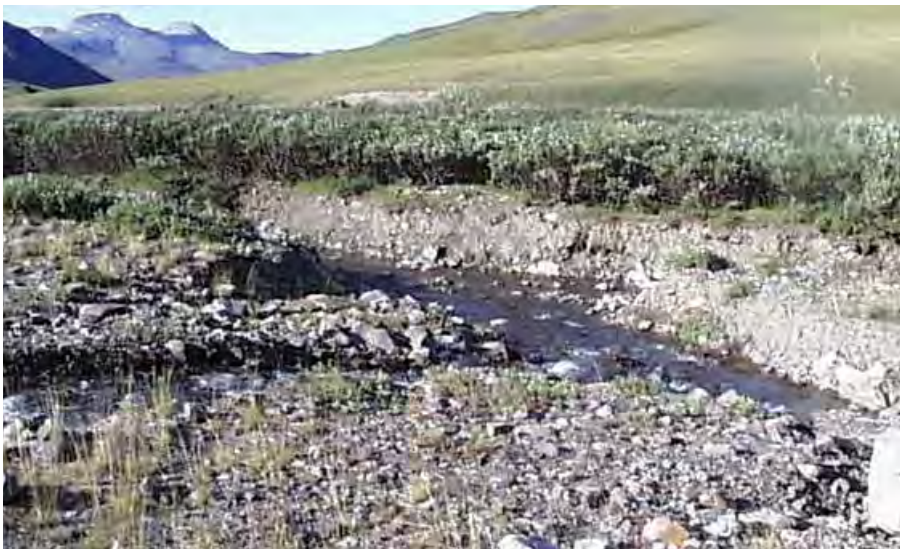
Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Electrofished all channels. Grayling were observed and collected in the North Fork of the West Fork Chandalar River (see Station 35A02 comments).

Station 15A04 **Visit** 3 **Survey Date** 8/5/2002

PIC42001.jpg

PIC42002.jpg



PIC42003.jpg

Station 16A01 **Visit** 1 **Survey Date:** 06/19/2002 **Time:** 1:08 PM

Waterbody Name: Tyler Creek (Local Name) **Pipeline Milepost:** 153.6

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	68.29276	-149.36674		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Philip Smith Mtn B-4 **Elevation (m):** 855

Anadromous Waters Catalog Number:

Geographic Comments: Stream is between VSMs 811012 and 810947.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air: 11	**Water:**			

Qualitative Velocity: N/A **Water Color:**

Stream Stage: Dry, Defined Channel **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:** Cobble
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells, Ken Wilson

Visit Comments: Station is at LWC. No surface water is present in the LWC, which is elevated above channel bed height. There is a well defined channel 4 m wide. Banks show evidence of active erosion.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** **# Traps:** **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: No water, no sampling.

Station 16A01 **Visit** 1 **Survey Date** 6/19/2002

PIC16001.jpg

PIC16002.jpg

PIC16003.jpg

Station 16A01 **Visit** 2 **Survey Date:** 07/20/2002 **Time:** 12:23 PM

Waterbody Name: Tyler Creek (Local Name) **Pipeline Milepost:** 153.6

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	68.29276	-149.36674		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Philip Smith Mtn B-4 **Elevation (m):** 855

Anadromous Waters Catalog Number:

Geographic Comments: Stream is between VSMs 811012 and 810947.

Station Characteristics

Temperature (C) **Air:** 23 **Water:** 10.3 **DO (ppm):** 7.66 **Qualitative Velocity:** Slow **Turbidity (NTU)** 2 **Water Color:** Clear **Stream Gradient (%):**

Stream Stage: Low, Discontinuous Flow **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**
Width		0.73
Thalweg Depth		0.08

Substrate

Dominant: Cobble

Subdominant:

Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Station is downstream of LWC. The channel has a low surface flow upstream and downstream of the LWC, but the flow percolates through the LWC bed material. Two hundred m upstream of the LWC the channel forks and flow is subsurface in both channels.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 112 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Electrofished all waters because of narrow and shallow channel.

Station 16A01 **Visit** 2 **Survey Date** 7/20/2002

PIC35011.jpg

PIC35012.jpg

PIC35015.jpg

Station 16A01 **Visit** 3 **Survey Date:** 08/04/2002 **Time:** 11:01 AM

Waterbody Name: Tyler Creek (Local Name) **Pipeline Milepost:** 153.6

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	68.29276	-149.36674		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Philip Smith Mtn B-4 **Elevation (m):** 855

Anadromous Waters Catalog Number:

Geographic Comments: Stream is between VSMs 811012 and 810947.

Station Characteristics

Temperature (C) **Air:** 17 **Water:** 8 **DO (ppm):** 6.75 **Turbidity (NTU)** **Stream Gradient (%):**

Qualitative Velocity: Slow **Water Color:** Clear

Stream Stage: Low, Discontinuous Flow **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**	
Width		0.75	**Dominant:**	Cobble
Thalweg Depth		0.1	**Subdominant:**	Gravel
			Subdominant:	Boulder

Survey Team: Doug Lieb, John Wells

Visit Comments: LWC is dry and looks as if it has been filled in. Upstream of LWC channel is dry. Downstream of LWC water begins to flow on surface. Large volume of riprap around the ROW creating artificial banks. Channel parameters and multimeter readings taken downstream of LWC where water is present. Channel is 3 m wide with 0.5 m high banks, with very little currently occupied by water. Tall willows grow along the banks.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 106 **# Traps:** 1 **Trap Duration (h):** 0.3

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Electrofished all sufficiently deep water. Minnow trap put in only pool deep enough; 2 m downstream of LWC.

Station 16A01 **Visit** 3 **Survey Date** 8/4/2002

PIC41013.jpg

PIC41014.jpg

PIC41015.jpg

Station 16A02 **Visit** 1 **Survey Date:** 06/19/2002 **Time:** 1:21 PM

Waterbody Name: One-One-Two Creek (Local Name) **Pipeline Milepost:** 153.46

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	68.29462	-149.36526		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Philip Smith Mtn B-4 **Elevation (m):** 852

Anadromous Waters Catalog Number:

Geographic Comments: Stream is between VSMs 810353 and 810288.

Station Characteristics

Temperature (C) **DO (ppm):** 5.47 **Turbidity (NTU)** 0 **Stream Gradient (%):** 0

Air: 12 **Water:** 7.9 **Qualitative Velocity:** N/A **Water Color:**

Stream Stage: Dry, Defined Channel **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:** Cobble
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells, Ken Wilson

Visit Comments: Channel surface flow upstream and downstream of the LWC is intermittent. Small pools have formed in LWC ruts. Multimeter readings conducted in residual pools as not enough water at LWC.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 131 **# Traps:** **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Electrofished two pools downstream of LWC.

Station 16A02 **Visit** 1 **Survey Date** 6/19/2002

PIC16004.jpg

PIC16005.jpg

PIC16008.jpg

Station 16A02 **Visit** 2 **Survey Date:** 07/20/2002 **Time:** 12:57 PM

Waterbody Name: One-One-Two Creek (Local Name) **Pipeline Milepost:** 153.46

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	68.29462	-149.36526		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Philip Smith Mtn B-4 **Elevation (m):** 852

Anadromous Waters Catalog Number:

Geographic Comments: Stream is between VSMs 810353 and 810288.

Station Characteristics

Temperature (C) **Air:** 23 **Water:** 12.9 **DO (ppm):** 6.19 **Turbidity (NTU)** 0 **Stream Gradient (%):**

Qualitative Velocity: Slow **Water Color:** Clear

Stream Stage: Low, Discontinuous Flow **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**
Width		0.25
Thalweg Depth		0.05

Substrate

Dominant: Cobble

Subdominant:

Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Station is downstream of LWC. Surface flow in channel is discontinuous, with only surface flow for 5 m on either side of ROW. Channel joins Tyler Creek (local name). Water surface across the LWC is broad and shallow, with sand deposition.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 18 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: All water present was electro fished; not deep enough water to set minnow trap.

Station 16A02 **Visit** 2 **Survey Date** 7/20/2002

PIC35017.jpg

PIC35018.jpg

PIC35019.jpg

Station 16A02 **Visit** 3 **Survey Date:** 08/04/2002 **Time:** 10:39 AM

Waterbody Name: One-One-Two Creek (Local Name) **Pipeline Milepost:** 153.46

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	68.29462	-149.36526		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Philip Smith Mtn B-4 **Elevation (m):** 852

Anadromous Waters Catalog Number:

Geographic Comments: Stream is between VSMs 810353 and 810288.

Station Characteristics

Temperature (C) **Air:** 17 **Water:** 9.9 **DO (ppm):** 6.06 **Turbidity (NTU)** **Stream Gradient (%):**

Qualitative Velocity: Slow **Water Color:** Clear

Stream Stage: Low, Discontinuous Flow **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**
Width		0.25
Thalweg Depth		0.05

Substrate

Dominant: Gravel

Subdominant: Cobble

Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Station is downstream of LWC. Very little water is flowing in channel. LWC forms a pool filled with sediment. Surface flow goes subsurface before reaching Tyler Creek 10 m from the LWC. Defined channel does not extend far upstream from LWC. The area upstream of LWC is marshy wet tundra. Upstream of Station 16A04.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 34 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Electrofished all water present.

Station 16A02 **Visit** 3 **Survey Date** 8/4/2002

PIC41010.jpg

PIC41011.jpg

PIC41012.jpg

Station 16A03 **Visit** 1 **Survey Date:** 06/19/2002 **Time:** 1:49 PM

Waterbody Name: Tyler Creek (Local Name) **Pipeline Milepost:** 153.33

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	68.29663	-149.36424		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Philip Smith Mtn B-4 **Elevation (m):** 851

Anadromous Waters Catalog Number:

Geographic Comments: Stream is between VSMs 809628 and 809558.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air: 12	**Water:**			

Qualitative Velocity: N/A **Water Color:**

Stream Stage: Dry, Defined Channel **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells, Ken Wilson

Visit Comments: Station is at LWC. No water is present. Channel morphology indicates recent flows.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** **# Traps:** **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: No water, no sampling.

Station 16A03 **Visit** 1 **Survey Date** 6/19/2002

PIC16010.jpg

PIC16011.jpg

Station 16A03 **Visit** 2 **Survey Date:** 07/20/2002 **Time:** 1:21 PM

Waterbody Name: Tyler Creek (Local Name) **Pipeline Milepost:** 153.33

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	68.29663	-149.36424		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Philip Smith Mtn B-4 **Elevation (m):** 851

Anadromous Waters Catalog Number:

Geographic Comments: Stream is between VSMs 809628 and 809558.

Station Characteristics

Temperature (C) **Air:** 23 **Water:** 12.5 **DO (ppm):** 7.7 **Turbidity (NTU)** 0 **Stream Gradient (%):**

Qualitative Velocity: Slow **Water Color:** Clear

Stream Stage: Low **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width		1	**Dominant:** Cobble
Thalweg Depth		0.22	**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Station is upstream of LWC. At the LWC the water diverts from the original channel and flows down the ROW. The flow eventually spills of the off the ROW and returns to the normal channel.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 79 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

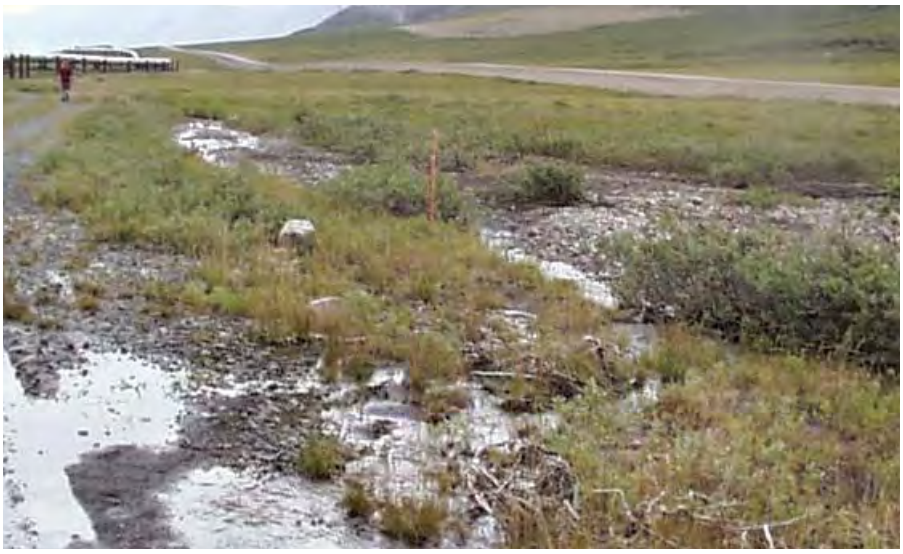
Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Sampled the stream halfway to Station 16A04 (same stream). No water deep enough for minor traps.

Station 16A03 **Visit** 2 **Survey Date** 7/20/2002

PIC35021.jpg

PIC35022.jpg



PIC35023.jpg

Station 16A03 **Visit** 3 **Survey Date:** 08/04/2002 **Time:** 9:58 AM

Waterbody Name: Tyler Creek (Local Name) **Pipeline Milepost:** 153.33

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	68.29663	-149.36424		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Philip Smith Mtn B-4 **Elevation (m):** 851

Anadromous Waters Catalog Number:

Geographic Comments: Stream is between VSMs 809628 and 809558.

Station Characteristics

Temperature (C) **Air:** 17 **Water:** 7.8 **DO (ppm):** 8.43 **Qualitative Velocity:** Slow **Turbidity (NTU)** **Water Color:** Clear **Stream Gradient (%):**

Stream Stage: Low **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width		1	**Dominant:** Gravel
Thalweg Depth		0.07	**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Station is upstream of unmaintained LWC. The LWC is elevated above the adjacent ROW, causing the flow to divert along the ROW before returning to the original channel east of the ROW.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 118 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Potential electrofishing efficiency high because of accessible habitat and good visibility.

Station 16A03 **Visit** 3 **Survey Date** 8/4/2002

PIC41007.jpg

PIC41008.jpg

PIC41009.jpg

Station 16A04 **Visit** 1 **Survey Date:** 06/19/2002 **Time:** 2:04 PM

Waterbody Name: Tyler Creek (Local Name) **Pipeline Milepost:** 153.26

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	68.29765	-149.36403		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Philip Smith Mtn B-4 **Elevation (m):** 839

Anadromous Waters Catalog Number:

Geographic Comments: Stream is between VSMs 809209 and 809149.

Station Characteristics

Temperature (C) **Air:** 12 **Water:** 10.5 **DO (ppm):** 7.84 **Qualitative Velocity:** N/A **Turbidity (NTU)** 1 **Water Color:** Clear **Stream Gradient (%):** 0.8

Stream Stage: Low, Discontinuous Flow **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**
Width	2	1
Thalweg Depth	0.5	0.09

Substrate

Dominant: Cobble

Subdominant:

Subdominant:

Survey Team: Doug Lieb, John Wells, Ken Wilson

Visit Comments: Station is upstream of LWC. Surface channel flow is discontinuous. Residual pools remain downstream of the LWC. Upstream the channel parallels the ROW to Station 16A03.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Electrofished the residual pools and other surface water.

Station 16A04 **Visit** 1 **Survey Date** 6/19/2002

PIC16012.jpg

PIC16013.jpg

PIC16014.jpg

Station 16A04 **Visit** 2 **Survey Date:** 07/20/2002 **Time:** 1:50 PM

Waterbody Name: Tyler Creek (Local Name) **Pipeline Milepost:** 153.26

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	68.29765	-149.36403		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Philip Smith Mtn B-4 **Elevation (m):** 839

Anadromous Waters Catalog Number:

Geographic Comments: Stream is between VSMs 809209 and 809149.

Station Characteristics

Temperature (C) **Air:** 21 **Water:** 10.8 **DO (ppm):** 6.87 **Turbidity (NTU)** 2 **Stream Gradient (%):**

Qualitative Velocity: Slow **Water Color:** Clear

Stream Stage: Low **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**
Width		1.2
Thalweg Depth		0.13

Substrate

Dominant: Cobble

Subdominant: Sand

Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Station is upstream of LWC. Surface water is very shallow. Station is on same stream as Station 16A03. Substrate of many pools is sand.

Species: grayling **Life Stage:** Juvenile/Adult **Life History:** Resident

Count: 2 **Fork lengths (mm):** 112 68

Gear: Portable Electrofisher **EF Time (s):** 85 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Specific Barrier Unknown **Height (m):** **Pool depth (m):**

Comments: Grayling were collected in first big pool downstream of LWC. Pool substrate was sand. An algal film covered the pool.

Station 16A04 **Visit** 2 **Survey Date** 7/20/2002

PIC35024.jpg

PIC35025.jpg

PIC35026.jpg

Station 16A05 **Visit** 1 **Survey Date:** 06/19/2002 **Time:** 2:29 PM

Waterbody Name: One 53-mile Creek (Local Name) **Pipeline Milepost:** 153.03

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 7
	68.30078	-149.36211		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Philip Smith Mtn B-4 **Elevation (m):** 852

Anadromous Waters Catalog Number:

Geographic Comments: Stream is between VSMs 808068 and 808015.

Station Characteristics

Temperature (C) **Air:** 12 **Water:** 5.3 **DO (ppm):** 8.04 **Turbidity (NTU)** 2 **Stream Gradient (%):**

Qualitative Velocity: N/A **Water Color:** Clear

Stream Stage: Low, Continuous Surface Flow **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells, Ken Wilson

Visit Comments: Station is upstream of LWC. The stream flows out of a Dalton Highway culvert 10 m east of the ROW. Good flow emerges from culvert, then anastomoses through dense willows and other vegetation before narrowing at the LWC. Downstream of the LWC the channel dissipates into a marsh.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 87 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Electrofished from downstream marsh upstream to Dalton Highway culvert, including some side braids.

Station 16A05 **Visit** 1 **Survey Date** 6/19/2002

PIC16015.jpg

PIC16016.jpg

PIC16017.jpg

Station 16A06 **Visit** 1 **Survey Date:** 06/19/2002 **Time:** 3:18 PM

Waterbody Name: Waterhole Creek (Local Name) **Pipeline Milepost:** 152.19

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 11
	68.31288	-149.35779		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Philip Smith Mtn B-4 **Elevation (m):** 844

Anadromous Waters Catalog Number:

Geographic Comments: Stream is between VSMs 803572 and 803507.

Station Characteristics

Temperature (C) **Air:** 12 **Water:** 5.7 **DO (ppm):** 10.23 **Qualitative Velocity:** N/A **Turbidity (NTU)** 1 **Water Color:** Feric **Stream Gradient (%):** 2

Stream Stage: Medium **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**
Width		0.9
Thalweg Depth		0.06

Substrate

Dominant: Gravel

Subdominant: Cobble

Subdominant:

Survey Team: Doug Lieb, John Wells, Ken Wilson

Visit Comments: A slight ferric color is present, rust-tinting the substrate. Station is upstream of LWC. The stream flows through two Dalton Highway culverts 50 m upstream of the LWC. Downstream of the highway the channel diverts into two channels; then rejoins to form a deep, narrow, highly vegetated channel for 30 m before reaching the LWC. Downstream of the LWC, the stream widens and deepens for 20 m, then anastomoses. Further downstream the braided channels rejoin to one deep, narrow and highly vegetated.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 251 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments:

Station 16A06 **Visit** 1 **Survey Date** 6/19/2002

PIC16018.jpg

PIC16019.jpg

PIC16020.jpg

Station 16A06 **Visit** 2 **Survey Date:** 07/20/2002 **Time:** 2:57 PM

Waterbody Name: Waterhole Creek (Local Name) **Pipeline Milepost:** 152.19

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 11
	68.31288	-149.35779		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Philip Smith Mtn B-4 **Elevation (m):** 844

Anadromous Waters Catalog Number:

Geographic Comments: Stream is between VSMs 803572 and 803507.

Station Characteristics

Temperature (C) **Air:** **Water:** 10.7 **DO (ppm):** 8.56 **Turbidity (NTU)** 6 **Stream Gradient (%):**

Qualitative Velocity: Medium **Water Color:** Clear

Stream Stage: Low **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**	
Width		0.65	**Dominant:**	Gravel
Thalweg Depth		0.08	**Subdominant:**	Cobble
			Subdominant:	

Survey Team: Doug Lieb, John Wells

Visit Comments: Station is upstream of LWC. Rocks in the LWC have ferric coloration. The water itself does not have an obvious rusty tint. Stream is very narrow through the LWC and upstream of the LWC. One hundred meters downstream of the LWC the stream flows into the Atigun River.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 137 **# Traps:** 2 **Trap Duration (h):** 0.5

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Electrofished from confluence with the Atigun River to the Dalton Highway. Dense willow riparian growth made access difficult to some channel reaches. Placed one minnow trap downstream and one upstream.

Station 16A06 **Visit** 2 **Survey Date** 7/20/2002

PIC35038.jpg

PIC35035.jpg

PIC35036.jpg

Station 16A06 **Visit** 3 **Survey Date:** 08/04/2002 **Time:** 8:24 AM

Waterbody Name: Waterhole Creek (Local Name) **Pipeline Milepost:** 152.19

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 11
	68.31288	-149.35779		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Philip Smith Mtn B-4 **Elevation (m):** 844

Anadromous Waters Catalog Number:

Geographic Comments: Stream is between VSMs 803572 and 803507.

Station Characteristics

Temperature (C) **Air:** 14 **Water:** 6.8 **DO (ppm):** 7.68 **Qualitative Velocity:** Medium **Turbidity (NTU)** **Water Color:** Clear **Stream Gradient (%):**

Stream Stage: Low **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**	
Width		1	**Dominant:**	Gravel
Thalweg Depth		0.13	**Subdominant:**	Cobble
			Subdominant:	

Survey Team: Doug Lieb, John Wells

Visit Comments: Station is downstream of LWC in first deep section. Covering the gravel/cobble substrate is layer of ferric-colored fines. Water level in LWC is very low; the LWC is unmaintained with considerable sediment filling the LWC and riprap is displaced. Water level is less than during previous visits.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 189 **# Traps:** 2 **Trap Duration (h):** 1.0

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Dense riparian growth limited access to some channel reaches.

Station 16A06 **Visit** 3 **Survey Date** 8/4/2002

PIC41001.jpg

PIC41002.jpg

PIC41003.jpg

Station 16A07 **Visit** 1 **Survey Date:** 06/19/2002 **Time:** 5:22 PM

Waterbody Name: Margaret's Marsh (Local Name) **Pipeline Milepost:** 104.65

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 7
	68.83922	-148.82849		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Philip Smith Mtn D-4 **Elevation (m):** 423

Anadromous Waters Catalog Number:

Geographic Comments: PLMP for stream is incorrect. Actual is 104.65 not 104.1 (located mileage by driving to 105 and using vehicle odometer). LWC is 400 m south of Pump Station 3 South Gate.

Station Characteristics

Temperature (C) **Air:** 10 **Water:** 2.1 **DO (ppm):** 7.6 **Qualitative Velocity:** N/A **Turbidity (NTU)** 4 **Water Color:** Clear **Stream Gradient (%):** 0.3

Stream Stage: Dry, Defined Channel **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width		0.25	**Dominant:**
Thalweg Depth		0.4	**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells, Ken Wilson

Visit Comments: Station is located at LWC. No surface water is present in the LWC, nor to west (upstream) of LWC. West of the LWC the channel is 1 m wide and 0.5 m deep with cobble substrate. Subsurface water flow can be heard. East of the LWC, the channel is well-defined, with dense riparian willow growth. Approximately 30 m east of LWC, surface water appears. This surface flow continues to the Pump Station 3 access road. Channel gets larger and more structured as it approaches the access road. Area soils are saturated.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 141 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Electrofished downstream from the LWC.

Station 16A07 **Visit** 1 **Survey Date** 6/19/2002

PIC16024.jpg

PIC16022.jpg

PIC16023.jpg

Station 16A07 **Visit** 2 **Survey Date:** 07/21/2002 **Time:** 10:20 AM

Waterbody Name: Margaret's Marsh (Local Name) **Pipeline Milepost:** 104.65

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 7
	68.83922	-148.82849		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Philip Smith Mtn D-4 **Elevation (m):** 423

Anadromous Waters Catalog Number:

Geographic Comments: PLMP for stream is incorrect. Actual is 104.65 not 104.1 (located mileage by driving to 105 and using vehicle odometer). LWC is 400 m south of Pump Station 3 South Gate.

Station Characteristics

Temperature (C) **Air:** 20 **Water:** 7.3 **DO (ppm):** 9.18 **Qualitative Velocity:** Slow **Turbidity (NTU)** 0 **Water Color:** Clear **Stream Gradient (%):**

Stream Stage: Low, Discontinuous Flow **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**
Width		
Thalweg Depth		

Substrate

Dominant: Cobble

Subdominant: Organic

Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: No surface flow at the LWC, but subsurface flow is audible. Multimeter readings conducted at Pump Station 3 access road culvert. Twenty meters downstream of the LWC surface water appears in the channel, slowly become more evident. Soils are saturated, with standing water. Channel width and depth varies with large pools and very narrow deep reaches. Pictures include the dry LWC and the Pump Station access road culvert.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 317 **# Traps:** 4 **Trap Duration (h):** 1.3

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Electrofished from large pool downstream of Pump Station access road upstream to limit of channel surface flow.

Station 16A07 **Visit** 2 **Survey Date** 7/21/2002

PIC36007.jpg

PIC36008.jpg

PIC36009.jpg

Station 16A07 **Visit** 3 **Survey Date:** 08/02/2002 **Time:** 2:20 PM

Waterbody Name: Margaret's Marsh (Local Name) **Pipeline Milepost:** 104.65

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 7
	68.83922	-148.82849		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Philip Smith Mtn D-4 **Elevation (m):** 423

Anadromous Waters Catalog Number:

Geographic Comments: PLMP for stream is incorrect. Actual is 104.65 not 104.1 (located mileage by driving to 105 and using vehicle odometer). LWC is 400 m south of Pump Station 3 South Gate.

Station Characteristics

Temperature (C) **Air:** 20 **Water:** 10.8 **DO (ppm):** 8.72 **Qualitative Velocity:** Slow **Turbidity (NTU)** **Stream Gradient (%):** **Water Color:** Clear

Stream Stage: Low, Discontinuous Flow **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Multimeter readings and channel parameters measured at Pump Station 3 access road culvert. No surface flow at the ROW LWC. Substrate of the stream ranges from organic, mud, sand, to cobble. The stream has beaded pool/riffle structure. The stream angles toward the Dalton Highway for approximately 1 km, then passes through a culvert below the highway.

Species: ninespine stickleback **Life Stage:** Juvenile/Adult **Life History:** Unknown

Count: 25 **Fork lengths (mm):** 50 50 53 43 47 49

Gear: Portable Electrofisher **EF Time (s):** 819 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Unknown **Height (m):** **Pool depth (m):**

Comments: Ninespine stickleback were captured in a large pond on the channel approximately halfway between the Pump Station Access Road and the Dalton Highway culvert. Moss had formed a mat around the edge of this pond; the stickleback were down in and immediately adjacent to this moss. Many were seen, but not captured.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Minnow Trap, 1/4 in. Mesh **EF Time (s):** **# Traps:** 6 **Trap Duration (h):** 2.0

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: One trap each was set in following locations: large pond downstream of PS 3, the junction of the main channel, side channel downstream of the PS3 access road, and main channel above the junction but below the PS3 access road.

Station 16A07 **Visit** 3 **Survey Date** 8/2/2002

PIC39017.jpg

PIC39018.jpg

PIC39019.jpg

Station 17A01 **Visit** 1 **Survey Date:** 06/20/2002 **Time:** 12:08 PM

Waterbody Name: Unnamed Lake (Local Name) **Pipeline Milepost:** 11.1

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	70.10534	-148.59747		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Beechey Point A-3 **Elevation (m):** 34

Anadromous Waters Catalog Number:

Geographic Comments: Stream is between VSMs 58558 and 58498. Reach via Access Road 135-APL-3.

Station Characteristics

Temperature (C) **Air:** 14 **Water:** 6.2 **DO (ppm):** 8.48 **Qualitative Velocity:** Fast **Turbidity (NTU)** 0 **Water Color:** Clear **Stream Gradient (%):** 1

Stream Stage: Medium **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**
Width		1.5
Thalweg Depth		0.46

Substrate

Dominant: Gravel

Subdominant: Organic

Subdominant:

Survey Team: Doug Lieb, John Wells, Ken Wilson

Visit Comments: Station is upstream of LWC. Wide, shallow water is pooled in the LWC. Downstream of the LWC the channel narrows to 1.5 m and deepens, flowing 10 m to Unnamed Lake. Upstream of the LWC is an anastomizing channel with numerous deep and narrow channels. Main channel is 1.5m wide. Substrate of main channel is gravel and organic; substrate of side channels are organic.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 348 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Sampled from lake upstream, including side channels.

Station 17A01 **Visit** 1 **Survey Date** 6/20/2002

PIC17004.jpg

PIC17005.jpg

PIC17006.jpg

Station 17A01 **Visit** 2 **Survey Date:** 07/22/2002 **Time:** 10:28 AM

Waterbody Name: Unnamed Lake (Local Name) **Pipeline Milepost:** 11.1

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	70.10534	-148.59747		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Beechey Point A-3 **Elevation (m):** 34

Anadromous Waters Catalog Number:

Geographic Comments: Stream is between VSMs 58558 and 58498. Reach via Access Road 135-APL-3.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)** 2	**Stream Gradient (%):**
Air: 15	**Water:** 14.2	**Qualitative Velocity:** Medium	**Water Color:** Clear	

Stream Stage: Medium **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width		1	**Dominant:**
Thalweg Depth		0.26	**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Station is downstream of LWC. Water in LWC is very wide and shallow. Vegetation grows across the stream bed.

Species: ninespine stickleback **Life Stage:** Juvenile/Adult **Life History:** Unknown

Count: 15 **Fork lengths (mm):** 26 82 80 78 74

Gear: Portable Electrofisher **EF Time (s):** 231 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Unknown **Height (m):** **Pool depth (m):**

Comments: All fish were caught above the LWC in the stream bed vegetation.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Minnow Trap, 1/4 in. Mesh **EF Time (s):** **# Traps:** 4 **Trap Duration (h):** 0.5

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Two traps were set upstream of LWC within the stream bed vegetation. One was set between LWC and the lake, and one in the lake itself.

Station 17A01 **Visit** 2 **Survey Date** 7/22/2002

PIC37001.jpg

PIC37002.jpg

PIC37003.jpg

Station 17A02 **Visit** 1 **Survey Date:** 06/20/2002 **Time:** 1:35 PM

Waterbody Name: Grayling Gulch (Local Name) **Pipeline Milepost:** 5.1

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	70.18854	-148.65169		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Beechey Point A-3 **Elevation (m):** 16

Anadromous Waters Catalog Number:

Geographic Comments: Large metal bridge passes over Grayling Gulch. A white metal sign identifies stream and PLMP.

Station Characteristics

Temperature (C) **Air:** 5 **Water:** 5.2 **DO (ppm):** 8.69 **Qualitative Velocity:** Medium **Turbidity (NTU)** 0 **Water Color:** Clear **Stream Gradient (%):** 0.5

Stream Stage: Medium **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**
Width		5
Thalweg Depth		

Substrate

Dominant: Gravel

Subdominant: Organic

Subdominant:

Survey Team: Doug Lieb, John Wells, Ken Wilson

Visit Comments: Station is located underneath bridge. Stream is 5 m wide and greater than 2 m deep. Snow and ice remain in the channel and on the stream banks, providing melt water and cooling the water temperature. Channel has large alcoves and off-channel pools.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 331 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Electrofished main channel and large alcove pool to north. Because of deep channel, only stream margins could be sampled.

Station 17A02 **Visit** 1 **Survey Date** 6/20/2002

PIC17007.jpg

PIC17008.jpg

PIC17009.jpg

Station 17A02 **Visit** 2 **Survey Date:** 07/22/2002 **Time:** 11:53 AM

Waterbody Name: Grayling Gulch (Local Name) **Pipeline Milepost:** 5.1

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	70.18854	-148.65169		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Beechey Point A-3 **Elevation (m):** 16

Anadromous Waters Catalog Number:

Geographic Comments: Large metal bridge passes over Grayling Gulch. A white metal sign identifies stream and PLMP.

Station Characteristics

Temperature (C) **Air:** 15 **Water:** 15.6 **DO (ppm):** **Turbidity (NTU)** 2 **Stream Gradient (%):**

Qualitative Velocity: Medium **Water Color:** Clear

Stream Stage: Medium **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**
Width		
Thalweg Depth		

Substrate

Dominant: Gravel

Subdominant:

Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Station south of bridge. Dissolved oxygen sensor not working. Stream width ranges between 2 - 5 m. Thalweg depth is immeasurable because of depth. Water level is lower then first visit. Near bridge is a pond draining into the stream. This was also electrofished.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 421 **# Traps:** 4 **Trap Duration (h):** 0.8

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Stream width and depth restricted electrofishing to stream margins. One trap upstream, two downstream of bridge, and one under bridge. No fish were observed.

Station 17A02 **Visit** 2 **Survey Date** 7/22/2002

PIC37009.jpg

PIC37010.jpg

PIC37011.jpg

Station 17A02 **Visit** 3 **Survey Date:** 08/01/2002 **Time:** 3:30 PM

Waterbody Name: Grayling Gulch (Local Name) **Pipeline Milepost:** 5.1

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	70.18854	-148.65169		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Beechey Point A-3 **Elevation (m):** 16

Anadromous Waters Catalog Number:

Geographic Comments: Large metal bridge passes over Grayling Gulch. A white metal sign identifies stream and PLMP.

Station Characteristics

Temperature (C) **Air:** 16 **Water:** 12.8 **DO (ppm):** 9.56 **Turbidity (NTU)** **Stream Gradient (%):**

Qualitative Velocity: Medium **Water Color:** Clear

Stream Stage: Medium **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Station was upstream of bridge. Water level has continued to drop. Stream still has very deep channel too deep to measure. The pond under the bridge no longer has a surface connection to the main channel.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 202 **# Traps:** 3 **Trap Duration (h):** 1.0

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Two traps were set downstream of bridge, one beneath the bridge. A seine was fished upstream of the bridge, covering the full width of the stream over a 50 m long reach. Electrofishing effectiveness was poor because of width and depth of stream; electro fished both upstream and downstream of bridge.

Station 17A02 **Visit** 3 **Survey Date** 8/1/2002

PIC38001.jpg

PIC38002.jpg

PIC38003.jpg

Station 17A03 **Visit** 1 **Survey Date:** 06/20/2002 **Time:** 2:00 PM

Waterbody Name: Edge Lakes (Local Name) **Pipeline Milepost:** 4.12

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	70.20267	-148.66002		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Beechey Point A-3 **Elevation (m):** 15

Anadromous Waters Catalog Number:

Geographic Comments: LWC between VSMs 21796 and 21736.

Station Characteristics

Temperature (C) **DO (ppm):** 11.62 **Turbidity (NTU)** 0 **Stream Gradient (%):**

Air: 4 **Water:** 7 **Qualitative Velocity:** Still **Water Color:** Clear

Stream Stage: Medium **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m): **OHW** **Wetted**

Width

Thalweg Depth

Substrate

Dominant: Gravel

Subdominant: Organic

Subdominant:

Survey Team: Doug Lieb, John Wells, Ken Wilson

Visit Comments: Station at west edge of LWC. This LWC connects two lakes. Flow created in part by the wind (which is driving snow). LWC is 5 m wide; 0.2 m deep.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 154 **# Traps:** **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Electrofished in LWC and margins of the two lakes. Efficiency poor because of unconfined escape habitat.

Station 17A03 **Visit** 1 **Survey Date** 6/20/2002

PIC17012.jpg

PIC17013.jpg

PIC17014.jpg

Station 17A03 **Visit** 2 **Survey Date:** 07/22/2002 **Time:** 1:13 PM

Waterbody Name: Edge Lakes (Local Name) **Pipeline Milepost:** 4.12

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	70.20267	-148.66002		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Beechey Point A-3 **Elevation (m):** 15

Anadromous Waters Catalog Number:

Geographic Comments: LWC between VSMs 21796 and 21736.

Station Characteristics

Temperature (C) **DO (ppm):** **Turbidity (NTU)** 0 **Stream Gradient (%):**

Air: 11 **Water:** 15.4 **Qualitative Velocity:** Still **Water Color:** Clear

Stream Stage: Medium **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m): **OHW** **Wetted** **Substrate**

Width **Dominant:**

Thalweg Depth **Subdominant:**

Survey Team: Doug Lieb, John Wells **Subdominant:**

Visit Comments: Station is in lake west of the LWC. The LWC is 10 m wide. Lake margin substrate is gravel on an unconsolidated organic mat.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 200 **# Traps:** 4 **Trap Duration (h):** 0.5

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Electrofished around lake margins and through the LWC. We set four minnow traps (two in each lake); nothing collected.

Station 17A03 **Visit** 2 **Survey Date** 7/22/2002

PIC37013.jpg

PIC37014.jpg

PIC37015.jpg

Station 17A03 **Visit** 3 **Survey Date:** 08/01/2002 **Time:** 3:15 PM

Waterbody Name: Edge Lakes (Local Name) **Pipeline Milepost:** 4.12

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	70.20267	-148.66002		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Beechey Point A-3 **Elevation (m):** 15

Anadromous Waters Catalog Number:

Geographic Comments: LWC between VSMs 21796 and 21736.

Station Characteristics

Temperature (C) **DO (ppm):** 8.62 **Turbidity (NTU)** **Stream Gradient (%):**

Air: 16 **Water:** 13.4 **Qualitative Velocity:** Still **Water Color:** Clear

Stream Stage: Medium **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m): **OHW** **Wetted** **Substrate**

Width **Dominant:**

Thalweg Depth **Subdominant:**

Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: No visible difference from Visit 2.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Minnow Trap, 1/4 in. Mesh **EF Time (s):** **# Traps:** 4 **Trap Duration (h):** 1.8

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Two minnow traps in each of the two lakes. Did not electrofish because of the poor sampling conditions.

Station 17A03 **Visit** 1 **Survey Date** 8/01/2002

No Photo Available

Station 17A04 **Visit** 1 **Survey Date:** 06/20/2002 **Time:** 2:25 PM

Waterbody Name: Edge Lakes (Local Name) **Pipeline Milepost:** 3.91

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	70.20570	-148.66171		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Beechey Point A-3 **Elevation (m):** 3

Anadromous Waters Catalog Number:

Geographic Comments: LWC is between VSMs 20662 and 20602. Original LWC was listed as 3.99 but no LWC at that location; this is nearest one. (Edge Lakes)

Station Characteristics

Temperature (C) **DO (ppm):** 9.5 **Turbidity (NTU)** 17 **Stream Gradient (%):**

Air: 5 **Water:** 6.7 **Qualitative Velocity:** N/A **Water Color:** Clear

Stream Stage: Medium **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:** Gravel
Thalweg Depth			**Subdominant:** Organic
			Subdominant:

Survey Team: Doug Lieb, John Wells, Ken Wilson

Visit Comments: LWC connects a marsh with open water to a small lake/marsh area. Organic precipitate in the water. LWC is 3 m wide and 0.2 m deep.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 153 **# Traps:** **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Electrofished marsh, LWC, and margins of small lake.

Station 17A04 **Visit** 1 **Survey Date** 6/20/2002

PIC17015.jpg

PIC17016.jpg

PIC17017.jpg

Station 17A04 **Visit** 2 **Survey Date:** 07/22/2002 **Time:** 2:00 PM

Waterbody Name: Edge Lakes (Local Name) **Pipeline Milepost:** 3.91

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	70.20570	-148.66171		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Beechey Point A-3 **Elevation (m):** 3

Anadromous Waters Catalog Number:

Geographic Comments: LWC is between VSMs 20662 and 20602. Original LWC was listed as 3.99 but no LWC at that location; this is nearest one. (Edge Lakes)

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air: 11	**Water:** 14.6			

Qualitative Velocity: Still **Water Color:** Muddy

Stream Stage: Medium **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Station is underneath pipeline. Water is extremely muddy. Both west and east of the LWC are marshes with dense vegetation. Surface flow through the marshes is discontinuous. LWC is 3 m wide, 0.10 m deep. Turbidity and DO sensor not working.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 172 **# Traps:** 2 **Trap Duration (h):** 0.5

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Electrofished the LWC and the two pools on either side.

Station 17A04 **Visit** 2 **Survey Date** 7/22/2002

PIC37019.jpg

PIC37020.jpg

PIC37021.jpg

Station 17A04 **Visit** 3 **Survey Date:** 08/01/2002 **Time:** 2:45 PM

Waterbody Name: Edge Lakes (Local Name) **Pipeline Milepost:** 3.91

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	70.20570	-148.66171		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Beechey Point A-3 **Elevation (m):** 3

Anadromous Waters Catalog Number:

Geographic Comments: LWC is between VSMs 20662 and 20602. Original LWC was listed as 3.99 but no LWC at that location; this is nearest one. (Edge Lakes)

Station Characteristics

Temperature (C) **Air:** 16 **Water:** 16.1 **DO (ppm):** 7.15 **Turbidity (NTU)** **Stream Gradient (%):**

Qualitative Velocity: N/A **Water Color:** Muddy

Stream Stage: Low, Discontinuous Flow **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: LWC is wide and full of muddy water. The LWC connects two marshes, with a pond in the eastern marsh. Minnow traps set in the LWC and in the two marshes.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 150 **# Traps:** 3 **Trap Duration (h):** 2.5

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Electrofishing efficiency reduced because of excessive width and depth of east side pond. Minnow traps were set in this pond and in small stagnant pond on west side and one trap in the LWC.

Station 17A04 **Visit** 3 **Survey Date** 8/1/2002

PIC38004.jpg

PIC38005.jpg

Station 18A01 **Visit** 1 **Survey Date:** 07/02/2002 **Time:** 11:55 AM

Waterbody Name: Unnamed Creek (Local Name) **Pipeline Milepost:** 787.8

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	61.04411	-146.02821		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Valdez A-6 **Elevation (m):** 72

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is below ground. A steel bridge with white metal sign identifies stream and PLMP.

Station Characteristics

Temperature (C) **Air:** **Water:** 4 **DO (ppm):** 13.05 **Turbidity (NTU)** 230 **Stream Gradient (%):** 1.3

Qualitative Velocity: Fast **Water Color:** Glacial, High Turbidity

Stream Stage: Medium **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**
Width		21
Thalweg Depth		

Substrate

Dominant: Cobble

Subdominant: Boulder

Subdominant: Gravel

Survey Team: Doug Lieb, John Wells, David Schmidt

Visit Comments: Site is at bridge. Stream is too fast and deep to acquire depth.

Species: general fish observation, no species information **Life Stage:** Juvenile/Adult **Life History:** Unknown

Count: 4 **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 402 **# Traps:** **Trap Duration (h):**

Channel: Side Channel (connected to main channel at inlet and outlet)

Fish Passage Barrier: Unknown **Height (m):** **Pool depth (m):**

Comments: These fish were stunned, but not collected, so ID not certain. Fish appeared similar to the collected juvenile coho salmon.

Species: coho salmon **Life Stage:** Juvenile **Life History:** Anadromous

Count: 5 **Fork lengths (mm):** 95 66 100 84 117

Gear: Portable Electrofisher **EF Time (s):** 402 **# Traps:** **Trap Duration (h):**

Channel: Side Channel (connected to main channel at inlet and outlet)

Fish Passage Barrier: Unknown **Height (m):** **Pool depth (m):**

Comments: Fish collected in off-channel habitats.

Species: Dolly Varden **Life Stage:** Juvenile/Adult **Life History:** Unknown

Count: 1 **Fork lengths (mm):** 136

Gear: Minnow Trap, 1/4 in. Mesh **EF Time (s):** **# Traps:** 4 **Trap Duration (h):** 2.5

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Unknown **Height (m):** **Pool depth (m):**

Comments: Collected in minnow trap furthest upstream in pool at confluence of two braids.

Station 18A01 **Visit** 1 **Survey Date** 7/2/2002

PIC18001.jpg

PIC18002.jpg

PIC18003.jpg

Station 19A01 **Visit** 1 **Survey Date:** 07/03/2002 **Time:** 11:15 AM

Waterbody Name: Squirrel Creek **Pipeline Milepost:** 717.28

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 8
	61.68864	-145.20419		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Valdez C-4 **Elevation (m):** 533

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground. Orange sign at station identifies stream as a summer blockpoint. Access is through 16-APL-1.

Station Characteristics

Temperature (C) **Air:** 18 **Water:** 8.2 **DO (ppm):** **Turbidity (NTU)** 13 **Stream Gradient (%):** 1.3

Qualitative Velocity: Fast **Water Color:** Clear

Stream Stage: Medium **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**
Width		3
Thalweg Depth		0.25

Substrate

Dominant: Cobble
Subdominant: Gravel
Subdominant: Boulder

Survey Team: Doug Lieb, John Wells, Dennis Gnath

Visit Comments: Station is at LWC. Stream is good fish habitat has lots of overhanging alders and wood debris in the stream creating slower water pools.

Species: coho salmon **Life Stage:** Juvenile **Life History:** Anadromous

Count: 11 **Fork lengths (mm):** 76 77 58 69 59 57

Gear: Portable Electrofisher **EF Time (s):** 275 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Unknown **Height (m):** **Pool depth (m):**

Comments: Coho salmon were all collected downstream of the LWC in slower water associated with woody debris. Velocity was fast and turbulent, reducing electrofishing efficiency.

Species: Dolly Varden **Life Stage:** Juvenile/Adult **Life History:** Unknown

Count: 9 **Fork lengths (mm):** 128 99 77 81 84 56 50

Gear: Portable Electrofisher **EF Time (s):** 275 **# Traps:** 2 **Trap Duration (h):** 1.0

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Unknown **Height (m):** **Pool depth (m):**

Comments: Largest Dolly Varden collected in minnow trap at LWC.

Species: slimy sculpin **Life Stage:** Juvenile/Adult **Life History:** Resident

Count: 3 **Fork lengths (mm):** 70 53 42

Gear: Portable Electrofisher **EF Time (s):** 275 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Unknown **Height (m):** **Pool depth (m):**

Comments: Sculpins were collected upstream of LWC.

Station 19A01 **Visit** 1 **Survey Date** 7/3/2002

PIC19001.jpg

PIC19002.jpg

PIC19003.jpg

Station 21A01 **Visit** 1 **Survey Date:** 07/06/2002 **Time:** 11:05 AM

Waterbody Name: Phelan Creek Tributary (Local Name) **Pipeline Milepost:** 597.88

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	63.26649	-145.71840		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Mt Hayes B-4 **Elevation (m):** 1048

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground, stream is between VSMs 3156837 and 3156777. PLMP on fish list is incorrect, it is not 597.90 but 597.88. Access road is 36-APL-1A.

Station Characteristics

Temperature (C) **Air:** 10 **Water:** 9 **DO (ppm):** 8.14 **Qualitative Velocity:** Medium **Turbidity (NTU)** 0 **Water Color:** Clear **Stream Gradient (%):** 0.5

Stream Stage: Medium **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**
Width		1
Thalweg Depth		0.22

Substrate

Dominant: Gravel

Subdominant: Cobble

Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Station is at edge of pond immediately upstream of LWC. Upstream of pond channel is narrow and deep and anastomosed. Channel originates from lake 0.2 km upstream of LWC. Downstream of LWC channel forms one channel (averaging 0.5 m - 1 m wide); gradient and flow increase. At LWC, the channel width widens to 4 m.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 265 **# Traps:** 4 **Trap Duration (h):** 1.5

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Electrofished upstream and downstream of LWC, including selected side pools and channels. Minnow traps were evenly distributed up and downstream of LWC. One trap set in upstream lake.

Station 21A01 **Visit** 1 **Survey Date** 7/6/2002

PIC21001.jpg

PIC21002.jpg

PIC21003.jpg

Station 21A01 **Visit** 2 **Survey Date:** 08/25/2002 **Time:** 2:05 PM

Waterbody Name: Phelan Creek Tributary (Local Name) **Pipeline Milepost:** 597.88

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	63.26649	-145.71840		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Mt Hayes B-4 **Elevation (m):** 1048

Anadromous Waters Catalog Number:

Geographic Comments: Pipeline is above ground, stream is between VSMs 3156837 and 3156777. PLMP on fish list is incorrect, it is not 597.90 but 597.88. Access road is 36-APL-1A.

Station Characteristics

Temperature (C) **Air:** 16 **Water:** 10 **DO (ppm):** 10.31 **Turbidity (NTU)** 1 **Stream Gradient (%):**

Qualitative Velocity: Medium **Water Color:** Humic

Stream Stage: Medium **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width		1	**Dominant:**
Thalweg Depth		0.3	**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Multimeter readings taken upstream of LWC. Channel upstream of LWC has many pools and braids (pictures 24, 25). Multiple channels originate from the upstream lake, all connecting into a single channel at the pond immediately upstream of the LWC.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 265 **# Traps:** 5 **Trap Duration (h):** 0.8

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Set minnow traps upstream and downstream of LWC, distributed evenly between main channel and off-channel pools and side channels.

Station 21A01 **Visit** 2 **Survey Date** 8/25/2002

PIC57022.jpg

PIC57023.jpg

PIC57024.jpg

Station 25A01 **Visit** 1 **Survey Date:** 07/10/2002 **Time:** 1:10 PM

Waterbody Name: Dome Creek **Pipeline Milepost:** 438.4

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	65.07515	-147.74654		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Livengood A-2 **Elevation (m):** 179

Anadromous Waters Catalog Number:

Geographic Comments: Take Access Road 63-APL-2 from Elliot Highway. Dome Creek is first bridge on access road. White sign identifies stream and PLMP.

Station Characteristics

Temperature (C) **Air:** 23 **Water:** 5.7 **DO (ppm):** 5.85 **Qualitative Velocity:** Slow **Turbidity (NTU)** 28 **Water Color:** Clear **Stream Gradient (%):** 0.5

Stream Stage: Medium **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**
Width		15
Thalweg Depth		0.23

Substrate
Dominant: Cobble
Subdominant: Gravel
Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Station is under bridge. Flow is slow under bridge; 200 m upstream channel narrows to 6 m and velocity increases.

Species: chinook salmon **Life Stage:** Juvenile **Life History:** Anadromous
Count: 9 **Fork lengths (mm):** 45 40 46
Gear: Portable Electrofisher **EF Time (s):** 299 **# Traps:** **Trap Duration (h):**
Channel: Main Channel (>50% of water flow)
Fish Passage Barrier: Unknown **Height (m):** **Pool depth (m):**
Comments: Efficiency limited because of small size of fish, surface turbulence, and in-water debris. All were collected upstream of bridge in narrower channel and swifter current.

Species: chum salmon **Life Stage:** Juvenile **Life History:** Anadromous
Count: 2 **Fork lengths (mm):** 32 37
Gear: Portable Electrofisher **EF Time (s):** 299 **# Traps:** **Trap Duration (h):**
Channel: Main Channel (>50% of water flow)
Fish Passage Barrier: Unknown **Height (m):** **Pool depth (m):**
Comments: Collected upstream of bridge in swifter current.

Species: slimy sculpin **Life Stage:** Juvenile/Adult **Life History:** Resident
Count: 9 **Fork lengths (mm):** 100 62 65 51
Gear: Portable Electrofisher **EF Time (s):** 299 **# Traps:** **Trap Duration (h):**
Channel: Main Channel (>50% of water flow)
Fish Passage Barrier: Unknown **Height (m):** **Pool depth (m):**
Comments: Two of nine sculpin collected downstream of bridge.

Species: longnose sucker **Life Stage:** Juvenile **Life History:** Unknown
Count: 12 **Fork lengths (mm):** 34 43 42 42 45
Gear: Portable Electrofisher **EF Time (s):** 299 **# Traps:** **Trap Duration (h):**
Channel: Main Channel (>50% of water flow)
Fish Passage Barrier: Unknown **Height (m):** **Pool depth (m):**
Comments: All were collected upstream of bridge, one was seen downstream of bridge.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A
Count: **Fork lengths (mm):**
Gear: Minnow Trap, 1/4 in. Mesh **EF Time (s):** **# Traps:** 4 **Trap Duration (h):** 1.7
Channel: Main Channel (>50% of water flow)
Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**
Comments: Two minnow traps upstream; two downstream of bridge.

Station 25A01 **Visit** 1 **Survey Date** 7/10/2002

PIC25009.jpg

PIC25010.jpg

PIC25011.jpg

Station 25A02 **Visit** 1 **Survey Date:** 07/10/2002 **Time:** 3:35 PM

Waterbody Name: Vault Creek **Pipeline Milepost:** 438.4

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 7
	65.06844	-147.75612		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Livengood A-2 **Elevation (m):** 161

Anadromous Waters Catalog Number:

Geographic Comments: Take Access Road 63-APL-2 from Elliot Highway to second bridge--this is Vault Creek.

Station Characteristics

Temperature (C) **DO (ppm):** 5.13 **Turbidity (NTU)** 69 **Stream Gradient (%):** 0.5

Air: 23 **Water:** 10.7 **Qualitative Velocity:** Slow **Water Color:** Feric

Stream Stage: Medium **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width		15	**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Station is below bridge. Stream is slow moving, meandering, ferric in color, and has a pronounced foul odor. A beaver dam 200 m upstream of bridge has impounded a sizable pool. Channel is too deep and wide for thalweg depth measurement.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 145 **# Traps:** 4 **Trap Duration (h):** 0.8

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Stream is wide and deep with steep undercut banks; making electrofishing difficult. Two minnow traps set upstream, two downstream of bridge. No fish observations.

Station 25A02 **Visit** 1 **Survey Date** 7/10/2002

PIC25017.jpg

PIC25018.jpg

PIC25019.jpg

Station 26A01 **Visit** 1 **Survey Date:** 07/11/2002 **Time:** 12:30 PM

Waterbody Name: South Fork Aggie Creek (Local Name) **Pipeline Milepost:** 424.44

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	65.19360	-148.12773		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Livengood A-3 **Elevation (m):** 398

Anadromous Waters Catalog Number:

Geographic Comments: Access through 65-APL-2--head south on ROW. A yellow wooden sign lists name "South Aggie Creek" on sign. Stream flows between VSMs 2241016 and 2241077.

Station Characteristics

Temperature (C) **Air:** **Water:** 2.7 **DO (ppm):** 11.78 **Qualitative Velocity:** Fast **Turbidity (NTU)** **Water Color:** Clear **Stream Gradient (%):** 2

Stream Stage: Medium **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width		1	**Dominant:**
Thalweg Depth		0.18	**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Station is upstream of LWC. Upstream the channel under the pipeline has a wide section were it has 2 different inlets into the main channel. Upstream of the two inlets the main channel gets narrow, deep and has the DA4 appearance. Stream is 1m wide at LWC and stays approx 1m wide downstream. appearance and gains steeper gradient, ripple dominated flow, average 1m width, shallow with no entrenchment, and gravel, cobble with some boulders for substrate which results in E3 channel code.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 190 **# Traps:** 3 **Trap Duration (h):** 0.8

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Two minnow traps set upstream, one downstream. Potential electrofishing efficiency high.

Station 26A01 **Visit** 1 **Survey Date** 7/11/2002

PIC26011.jpg

PIC26012.jpg

PIC26013.jpg

Station 26A02 **Visit** 1 **Survey Date:** 07/11/2002 **Time:** 2:00 PM

Waterbody Name: North Fork Aggie Creek (Local Name) **Pipeline Milepost:** 423.68

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 7
	65.20369	-148.13681		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Livengood A-3 **Elevation (m):** 406

Anadromous Waters Catalog Number:

Geographic Comments: Access via 65-APL-2, then head north. Stream crosses between VSMs 2237066 and 2237006 and 2236946. There are three VSMs because stream has two channels that go into the LWC.

Station Characteristics

Temperature (C) **Air:** 23 **Water:** 3.1 **DO (ppm):** 11.85 **Qualitative Velocity:** Fast **Turbidity (NTU)** **Water Color:** Clear **Stream Gradient (%):** 3

Stream Stage: Medium **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width		0.5	**Dominant:**
Thalweg Depth		0.15	**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Station is upstream of LWC.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 105 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Electrofished downstream and all four channels upstream. The stream was not deep enough to set a minnow trap.

Station 26A02 **Visit** 1 **Survey Date** 7/11/2002

PIC26016.jpg

PIC26017.jpg

PIC26018.jpg

Station 26A02 **Visit** 2 **Survey Date:** 08/18/2002 **Time:** 3:00 PM

Waterbody Name: North Fork Aggie Creek (Local Name) **Pipeline Milepost:** 423.68

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 7
	65.20369	-148.13681		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Livengood A-3 **Elevation (m):** 406

Anadromous Waters Catalog Number:

Geographic Comments: Access via 65-APL-2, then head north. Stream crosses between VSMs 2237066 and 2237006 and 2236946. There are three VSMs because stream has two channels that go into the LWC.

Station Characteristics

Temperature (C) **Air:** 9 **Water:** 1.9 **DO (ppm):** 13.91 **Turbidity (NTU)** 3 **Stream Gradient (%):**

Qualitative Velocity: Fast **Water Color:** Clear

Stream Stage: High **48 hr. Precipitation/Runoff:** Heavy

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width		1	**Dominant:**
Thalweg Depth		0.25	**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: LWC has been washed out; a plunge pool is now present in the middle of LWC. Downstream the stream has flooded over banks and into the willows and alders on edge of creek.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 118 **# Traps:** 4 **Trap Duration (h):** 0.5

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: High discharge reduced sampling efficiency.

Station 26A02 **Visit** 2 **Survey Date** 8/18/2002

PIC53027.jpg

PIC53028.jpg

PIC53029.jpg

Station 27A01 **Visit** 1 **Survey Date:** 07/12/2002 **Time:** 1:40 PM

Waterbody Name: Shorty Creek **Pipeline Milepost:** 400.5

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 7
	65.44205	-148.59299		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Livengood B-4 **Elevation (m):** 188

Anadromous Waters Catalog Number:

Geographic Comments: Access through Elliot Highway (west of Dalton Highway intersection); take first access road to south. Stream flows through culvert (not LWC) between VSMs 2114630 and 2114699. A yellow wooden sign identifies stream and PLMP.

Station Characteristics

Temperature (C) **Air:** 22 **Water:** 5.2 **DO (ppm):** 9.1 **Qualitative Velocity:** Medium **Turbidity (NTU)** 18 **Water Color:** Clear **Stream Gradient (%):** 2

Stream Stage: Low **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**	
Width		0.75	**Dominant:**	Cobble
Thalweg Depth		0.12	**Subdominant:**	Gravel
			Subdominant:	

Survey Team: Doug Lieb, John Wells

Visit Comments: Station is upstream of culvert. The culvert is a smooth bore pipe (11.9 m long; 0.9 m diameter). Picture 20 is downstream, 21 is upstream. Downstream of culvert substrate has a rust color that upstream substrate does not have. Woody debris in channel both up and downstream.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 126 **# Traps:** 1 **Trap Duration (h):** 0.8

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Only one location (upstream of ROW) suitable to set minnow trap.

Station 27A01 **Visit** 1 **Survey Date** 7/12/2002

PIC27021.jpg

PIC27019.jpg

PIC27020.jpg

Station 27A01 **Visit** 2 **Survey Date:** 08/17/2002 **Time:** 1:59 PM

Waterbody Name: Shorty Creek **Pipeline Milepost:** 400.5

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 7
	65.44205	-148.59299		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Livengood B-4 **Elevation (m):** 188

Anadromous Waters Catalog Number:

Geographic Comments: Access through Elliot Highway (west of Dalton Highway intersection); take first access road to south. Stream flows through culvert (not LWC) between VSMs 2114630 and 2114699. A yellow wooden sign identifies stream and PLMP.

Station Characteristics

Temperature (C) **Air:** 15 **Water:** 4.7 **DO (ppm):** 13.47 **Qualitative Velocity:** Fast **Turbidity (NTU)** 75 **Water Color:** Muddy **Stream Gradient (%):**

Stream Stage: Medium **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**
Width		1.75
Thalweg Depth		0.15

Substrate

Dominant: Gravel

Subdominant: Cobble

Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Water has an orange tint, more apparent downstream of the culvert (pipe). Discharge is greater than first visit; water muddy. The stream is entrenched with sections of undercut banks. Riffle-pool channel structure. Multimeter is taken downstream along with thalweg and channel width. Upstream of culvert the wetted thalweg depth is 0.20 m and the channel 1 m wide.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 255 **# Traps:** 4 **Trap Duration (h):** 0.5

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Fast and muddy water reduced sampling effectiveness.

Station 27A01 **Visit** 2 **Survey Date** 8/17/2002

PIC52010.jpg

PIC52011.jpg

PIC52013.jpg

Station 28A01 **Visit** 1 **Survey Date:** 07/13/2002 **Time:** 1:15 PM

Waterbody Name: Isom Creek Tributary (Local Name) **Pipeline Milepost:** 362.14

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	65.79913	-149.52773		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Livengood D-6 **Elevation (m):** 307

Anadromous Waters Catalog Number:

Geographic Comments: Access is Dalton Highway MP 48 onto 77-APL-1, then turn south until reaching 362.14. Stream flows through culvert adjacent to VSM 1912105.

Station Characteristics

Temperature (C) **Air:** 21 **Water:** 6.4 **DO (ppm):** 9.58 **Qualitative Velocity:** N/A **Turbidity (NTU)** 37 **Water Color:** Clear **Stream Gradient (%):** 3

Stream Stage: Medium **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width		0.5	**Dominant:**
Thalweg Depth		0.25	**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Culvert is 27.6 m long; 1.5 m diameter. Culvert outlet is perched 0.48 m. Pool depth at base of perched culvert is 0.45 m. Both upstream and downstream of culvert the channel is anastomizing through dense alders and willows. Channel has a riffle-pool structure.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 84 **# Traps:** 3 **Trap Duration (h):** 2.8

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Two minnow traps set upstream, one set downstream. Electrofishing was difficult because of dense alder and willow growth and frequent woody debris hanging over or in stream.

Station 28A01 **Visit** 1 **Survey Date** 7/13/2002

PIC28009.jpg

PIC28010.jpg

PIC28012.jpg

Station 28A01 **Visit** 2 **Survey Date:** 08/17/2002 **Time:** 10:10 AM

Waterbody Name: Isom Creek Tributary (Local Name) **Pipeline Milepost:** 362.14

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	65.79913	-149.52773		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Livengood D-6 **Elevation (m):** 307

Anadromous Waters Catalog Number:

Geographic Comments: Access is Dalton Highway MP 48 onto 77-APL-1, then turn south until reaching 362.14. Stream flows through culvert adjacent to VSM 1912105.

Station Characteristics

Temperature (C) **Air:** 14 **Water:** 4.4 **DO (ppm):** 12.93 **Turbidity (NTU)** 51 **Stream Gradient (%):**

Qualitative Velocity: Medium **Water Color:** Muddy

Stream Stage: Medium **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width		1	**Dominant:**
Thalweg Depth		0.22	**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Multimeter readings taken upstream of culvert. Area has appearances of past wildfire; west of ROW canopy vegetation is dead spruce. Culvert outlet is still perched.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 155 **# Traps:** 4 **Trap Duration (h):** 0.8

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Dense vegetation impedes electrofishing.

Station 28A01 **Visit** 2 **Survey Date** 8/17/2002

PIC52005.jpg

PIC52002.jpg

PIC52003.jpg

Station 28A02 **Visit** 1 **Survey Date:** 07/13/2002 **Time:** 3:20 PM

Waterbody Name: Eight-O Creek (Local Name) **Pipeline Milepost:** 337.55

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	66.02095	-150.09425		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Bettles A-1 **Elevation (m):** 167

Anadromous Waters Catalog Number:

Geographic Comments: At Dalton Highway MP 72 take Access Road 80-APL-3A; turn south on ROW and at bottom of hill is stream. Stream is between VSMs 1782232 and 1782302.

Station Characteristics

Temperature (C) **Air:** **Water:** 7.7 **DO (ppm):** 9.18 **Qualitative Velocity:** N/A **Turbidity (NTU)** 13 **Water Color:** Humic **Stream Gradient (%):** 1.5

Stream Stage: Low **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width		2	**Dominant:**
Thalweg Depth		0.1	**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Station is upstream of LWC. Most of channel stream is 1 m or less wide; wider and shallower near the LWC.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 181 **# Traps:** 4 **Trap Duration (h):** 0.8

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Set two traps upstream and two traps downstream.

Station 28A02 **Visit** 1 **Survey Date** 7/13/2002

PIC28013.jpg

PIC28014.jpg

PIC28015.jpg

Station 28A02 **Visit** 2 **Survey Date:** 08/16/2002 **Time:** 1:20 PM

Waterbody Name: Eight-O Creek (Local Name) **Pipeline Milepost:** 337.55

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	66.02095	-150.09425		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Bettles A-1 **Elevation (m):** 167

Anadromous Waters Catalog Number:

Geographic Comments: At Dalton Highway MP 72 take Access Road 80-APL-3A; turn south on ROW and at bottom of hill is stream. Stream is between VSMs 1782232 and 1782302.

Station Characteristics

Temperature (C) **Air:** 12 **Water:** 6.2 **DO (ppm):** 10.11 **Turbidity (NTU)** 1 **Stream Gradient (%):**

Qualitative Velocity: Slow **Water Color:** Humic

Stream Stage: Low **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**	
Width		1	**Dominant:**	Gravel
Thalweg Depth		0.16	**Subdominant:**	Sand
			Subdominant:	

Survey Team: Doug Lieb, John Wells

Visit Comments: Channel parameters and multimeter readings taken upstream of LWC. Upstream and downstream of LWC the channel anastomoses through trees and shrubs. Many of the alders are dead. There are stagnant, ferric pools downstream not currently connected to the main channel.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 131 **# Traps:** 3 **Trap Duration (h):** 0.8

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: No fish observed.

Station 28A02 **Visit** 2 **Survey Date** 8/16/2002

PIC51017.jpg

PIC51018.jpg

PIC51020.jpg

Station 28A03 **Visit** 1 **Survey Date:** 07/13/2002 **Time:** 4:55 PM

Waterbody Name: No Name Creek **Pipeline Milepost:** 329.29

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 8
	66.12561	-150.13925		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Bettles A-1 **Elevation (m):** 178

Anadromous Waters Catalog Number:

Geographic Comments: At Dalton Highway MP 80 take Access Road 82-APL-2; turn south on ROW; stream flows under first bridge. White metal sign on bridge identifies stream as both "No Name" and "North Fork Ray River". USGS maps identify stream as "No Name Creek". The stream is between VSMs 1738704 and 1738634.

Station Characteristics

Temperature (C) **Air:** 23 **Water:** 11.8 **DO (ppm):** 7.88 **Qualitative Velocity:** Medium **Turbidity (NTU)** 2 **Water Color:** Humic **Stream Gradient (%):** 1

Stream Stage: Medium **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width		15	**Dominant:** Gravel
Thalweg Depth			**Subdominant:** Cobble
			Subdominant: Boulder

Survey Team: Doug Lieb, John Wells

Visit Comments: Station under bridge. Channel has pool-riffle structure; some stream reaches well above wader depth, others very shallow riffles.

Species: grayling **Life Stage:** Juvenile/Adult **Life History:** Resident

Count: 10 **Fork lengths (mm):**

Gear: Visual Observation, Ground **EF Time (s):** **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Unknown **Height (m):** **Pool depth (m):**

Comments: Observed grayling estimated lengths ranged from 13 to 26 cm. To avoid injury, did not attempt to electrofish any of the large grayling.

Species: general fish observation, no species information **Life Stage:** Not Applicable **Life History:** Unknown

Count: 3 **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 342 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Unknown **Height (m):** **Pool depth (m):**

Comments: Five fish 5 cm or smaller were stunned with the electrofisher. These fish were not caught because electrofisher voltage was set low to avoid harm to the large grayling present or because inwater debris prevented capture.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Minnow Trap, 1/4 in. Mesh **EF Time (s):** **# Traps:** 4 **Trap Duration (h):** 1.0

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Two minnow traps set upstream; two downstream.

Station 28A03 **Visit** 1 **Survey Date** 7/13/2002

PIC28020.jpg

PIC28021.jpg

PIC28022.jpg

Station 28A03 **Visit** 2 **Survey Date:** 08/16/2002 **Time:** 10:00 AM

Waterbody Name: No Name Creek **Pipeline Milepost:** 329.29

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 8
	66.12561	-150.13925		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Bettles A-1 **Elevation (m):** 178

Anadromous Waters Catalog Number:

Geographic Comments: At Dalton Highway MP 80 take Access Road 82-APL-2; turn south on ROW; stream flows under first bridge. White metal sign on bridge identifies stream as both "No Name" and "North Fork Ray River". USGS maps identify stream as "No Name Creek". The stream is between VSMs 1738704 and 1738634.

Station Characteristics

Temperature (C) **Air:** 11 **Water:** 7.1 **DO (ppm):** 11.97 **Qualitative Velocity:** Medium **Turbidity (NTU)** 16 **Water Color:** Humic **Stream Gradient (%):**

Stream Stage: Medium **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**	
Width			**Dominant:**	Sand/Silt/Clay
Thalweg Depth			**Subdominant:**	Gravel
			Subdominant:	Cobble

Survey Team: Doug Lieb, John Wells

Visit Comments: Water level appears lower then during first visit. Banks are steep cut banks, with vegetation growing down to water.

Species: grayling **Life Stage:** Juvenile/Adult **Life History:** Resident
Count: 23 **Fork lengths (mm):** 54 52 119 50 47 47 200
Gear: Portable Electrofisher **EF Time (s):** 467 **# Traps:** **Trap Duration (h):**
Channel: Main Channel (>50% of water flow)
Fish Passage Barrier: Unknown **Height (m):** **Pool depth (m):**
Comments: Electrofished selected reaches with reasonable access.

Species: slimy sculpin **Life Stage:** Juvenile/Adult **Life History:** Resident
Count: 1 **Fork lengths (mm):** 82
Gear: Portable Electrofisher **EF Time (s):** 467 **# Traps:** **Trap Duration (h):**
Channel: Main Channel (>50% of water flow)
Fish Passage Barrier: Unknown **Height (m):** **Pool depth (m):**
Comments:

Species: burbot **Life Stage:** Juvenile/Adult **Life History:** Resident
Count: 1 **Fork lengths (mm):** 305
Gear: Dip Net **EF Time (s):** **# Traps:** **Trap Duration (h):**
Channel: Main Channel (>50% of water flow)
Fish Passage Barrier: Unknown **Height (m):** **Pool depth (m):**
Comments: Collected in shallows near stream bank.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A
Count: **Fork lengths (mm):**
Gear: Minnow Trap, 1/4 in. Mesh **EF Time (s):** **# Traps:** 4 **Trap Duration (h):** 1.5
Channel: Main Channel (>50% of water flow)
Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**
Comments: No fish in minnow traps.

Station 28A03 **Visit** 2 **Survey Date** 8/16/2002

PIC51001.jpg

PIC51002.jpg

PIC51003.jpg

Station 29A02 **Visit** 1 **Survey Date:** 07/14/2002 **Time:** 12:19 PM

Waterbody Name: Wards Wallow/Grayling Lake inlet (Local Name) **Pipeline Milepost:** 260.55

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	66.96053	-150.39296		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Bettles D-1 **Elevation (m):** 406

Anadromous Waters Catalog Number:

Geographic Comments: At Dalton Highway MP 151 take Access Road 93-APL-4; head south. Station is between VSMs 1380961 and 1381021. There is no LWC visible, no stream crosses ROW.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air:	**Water:**			

Qualitative Velocity: N/A **Water Color:**

Stream Stage: Dry, No defined Channel **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Station is at PLMP 260.55 where LWC should be. There is no installed LWC, no water, no defined channel, or any evidence of water flowing across the ROW. West of the ROW are several small isolated water pools.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** **# Traps:** **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: No water, no sampling.

Appendix C1.-Page 530 of 674.

Station 29A02 **Visit** 1 **Survey Date** 7/14/2002

PIC29013.jpg

Station 29A02 **Visit** 2 **Survey Date:** 08/15/2002 **Time:** 9:45 AM

Waterbody Name: Wards Wallow/Grayling Lake inlet (Local Name) **Pipeline Milepost:** 260.55

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	66.96053	-150.39296		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Bettles D-1 **Elevation (m):** 406

Anadromous Waters Catalog Number:

Geographic Comments: At Dalton Highway MP 151 take Access Road 93-APL-4; head south. Station is between VSMs 1380961 and 1381021. There is no LWC visible, no stream crosses ROW.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air: 6	**Water:**			

Qualitative Velocity: N/A **Water Color:**

Stream Stage: Dry, No defined Channel **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: LWC is not present, there is no evidence of a channel. Picture 7 shows at front of truck where the LWC should be.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** **# Traps:** **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: No water, no sampling.

Station 29A02 **Visit** 2 **Survey Date** 8/15/2002

PIC50007.jpg

Station 29A03 **Visit** 1 **Survey Date:** 07/14/2002 **Time:** 12:34 PM

Waterbody Name: Grayling Lake inlet (Local Name) **Pipeline Milepost:** 260.57

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 8
	66.96933	-150.36612		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Bettles D-1 **Elevation (m):** 421

Anadromous Waters Catalog Number:

Geographic Comments: At Dalton Highway MP 151 take Access Road 93-APL-4; head south on ROW. Station is between VSMs 1375797 and 1375856. There is no installed LWC present and no defined or evidence of water crossing ROW.

Station Characteristics

Temperature (C) **Air:** **Water:** **DO (ppm):** **Turbidity (NTU)** **Stream Gradient (%):**

Qualitative Velocity: N/A **Water Color:**

Stream Stage: Dry, No defined Channel **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m): **OHW** **Wetted**

Width

Thalweg Depth

Substrate

Dominant:

Subdominant:

Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Station is at the PLMP of 260.57, were the LWC is listed. There is no water nor any evidence of past water flow across the ROW. No installed LWC is evident. No measurements were taken.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** **# Traps:** **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: No water, no sampling.

Station 29A03 **Visit** 1 **Survey Date** 7/14/2002

PIC29014.jpg

Station 29A03 **Visit** 2 **Survey Date:** 08/15/2002 **Time:** 9:36 AM

Waterbody Name: Grayling Lake inlet (Local Name) **Pipeline Milepost:** 260.57

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 8
	66.96933	-150.36612		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Bettles D-1 **Elevation (m):** 421

Anadromous Waters Catalog Number:

Geographic Comments: At Dalton Highway MP 151 take Access Road 93-APL-4; head south on ROW. Station is between VSMs 1375797 and 1375856. There is no installed LWC present and no defined or evidence of water crossing ROW.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air: 6	**Water:**			

Qualitative Velocity: N/A **Water Color:**

Stream Stage: Dry, No defined Channel **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: There is no channel, and no evidence of a LWC. Picture 6 shows at front of truck where the LWC should be.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** **# Traps:** **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: No water, no sampling.

Station 29A03 **Visit** 2 **Survey Date** 8/15/2002

PIC50006.jpg

Station 30A01 **Visit** 1 **Survey Date:** 07/15/2002 **Time:** 9:00 AM

Waterbody Name: 1296363 (Local Name) **Pipeline Milepost:** 245.6

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 7
	67.16461	-150.34688		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Wiseman A-1 **Elevation (m):** 304

Anadromous Waters Catalog Number:

Geographic Comments: Station is approximately 140 m south of the block point at Station 11A02. This is a dike that extends west of ROW with two 1.5 m wide culverts in it. Station is downstream from Station 11A02.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air:	**Water:**			

Qualitative Velocity: Medium **Water Color:** Clear

Stream Stage: Medium **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:** Gravel
Thalweg Depth			**Subdominant:** Silt/Clay
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Multimeter readings and gradient not taken (see Station 11A02, Visit 2). Two 1.5 m diameter, 21 m long culverts pass through dike. These culvert inlets are blocked by an ephemeral wood/debris jam (pictures 1 - 3). Some riprap has fallen into the culvert outlet pool. Flow upstream of the culverts is slow, leading to sediment and debris deposition.

Species: slimy sculpin **Life Stage:** Juvenile/Adult **Life History:** Resident

Count: 12 **Fork lengths (mm):** 45 34 37 41 29

Gear: Portable Electrofisher **EF Time (s):** 131 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Human, Culvert **Height (m):** **Pool depth (m):**

Comments: All sculpin were collected downstream of the culverts. Seven were visually observed only, to avoid electrofishing stress.

Species: chinook salmon **Life Stage:** Juvenile **Life History:** Anadromous

Count: 11 **Fork lengths (mm):** 45 44 44 42 50 46 39

Gear: Portable Electrofisher **EF Time (s):** 131 **# Traps:** 1 **Trap Duration (h):** 0.8

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Human, Culvert **Height (m):** **Pool depth (m):**

Comments: One chinook (first fork length) was collected in a minnow trap set in the culvert outlet pool. Other chinooks were collected in the deep sections of the stream among the roots and vegetation under the undercut banks.

Species: grayling **Life Stage:** Juvenile/Adult **Life History:** Resident

Count: 1 **Fork lengths (mm):**

Gear: Visual Observation, Ground **EF Time (s):** **# Traps:** **Trap Duration (h):** 0.8

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Human, Culvert **Height (m):** **Pool depth (m):**

Comments: Grayling (estimated length 15 - 18 cm) observed in culvert outlet pool. Did not attempt to electrofish this fish.

Station 30A01 **Visit** 1 **Survey Date** 7/15/2002

PIC30001.jpg

PIC30002.jpg

PIC30005.jpg

Station 30A02 **Visit** 1 **Survey Date:** 07/15/2002 **Time:** 1:25 PM

Waterbody Name: Rosie Creek **Pipeline Milepost:** 242.89

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 7
	67.19688	-150.29195		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Wiseman A-1 **Elevation (m):** 319

Anadromous Waters Catalog Number:

Geographic Comments: At Dalton Highway MP 167 take Access Road 97-APL-1, head north. Rosie Creek is first creek after PLMP 243 heading north. A wooden yellow sign identifies Rosie Creek and PLMP. Another branch of Rosie Creek is south of PLMP 243.

Station Characteristics

Temperature (C) **Air:** 21 **Water:** 9.4 **DO (ppm):** 7.6 **Turbidity (NTU)** 8 **Stream Gradient (%):**

Qualitative Velocity: Medium **Water Color:** Clear

Stream Stage: Medium **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**	
Width		2.5	**Dominant:**	Cobble
Thalweg Depth		0.2	**Subdominant:**	Gravel
			Subdominant:	Silt/Clay

Survey Team: Doug Lieb, John Wells

Visit Comments: Stream meanders with undercut banks and overhanging shrubs and trees. There are many deep pools over wader depth associated with shallow riffles. One hundred m upstream of LWC is an off-channel pool 20 m long, 4 m wide, deeper than waders (Pool A, see species comments). Another 100 m upstream of Pool A the stream forks, one a dry channel with gravel and cobble substrate; the other a slow, deep channel. Channel width ranges from 1 m to greater than 4 m.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Minnow Trap, 1/4 in. Mesh **EF Time (s):** 289 **# Traps:** 4 **Trap Duration (h):** 1.5

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Minnow traps were set two upstream and two downstream. No fish captured.

Species: grayling **Life Stage:** Juvenile/Adult **Life History:** Resident

Count: 30 **Fork lengths (mm):** 58 62

Gear: Portable Electrofisher **EF Time (s):** 289 **# Traps:** **Trap Duration (h):** 1.5

Channel: Side Channel (connected to main channel at inlet and outlet)

Fish Passage Barrier: Unknown **Height (m):** **Pool depth (m):**

Comments: A school of 30 observed swimming in Pool A (see Station Comments). Two collected with electrofisher for positive ID.

Species: chinook salmon **Life Stage:** Juvenile **Life History:** Anadromous

Count: 4 **Fork lengths (mm):** 44

Gear: Portable Electrofisher **EF Time (s):** 289 **# Traps:** **Trap Duration (h):** 1.5

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Unknown **Height (m):** **Pool depth (m):**

Comments: Chinook captured at inlet to Pool A upstream of LWC. Fish were in a school of four. Three darted away--small size makes them difficult to stun.

Species: slimy sculpin **Life Stage:** Juvenile/Adult **Life History:** Resident

Count: 10 **Fork lengths (mm):** 50 98 50 48 86

Gear: Portable Electrofisher **EF Time (s):** 289 **# Traps:** **Trap Duration (h):** 1.5

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Unknown **Height (m):** **Pool depth (m):**

Comments: Sculpin were observed down and upstream of the LWC.

Station 30A02 **Visit** 1 **Survey Date** 7/15/2002

PIC30024.jpg

PIC30025.jpg

PIC30027.jpg

Station 31A01 **Visit** 1 **Survey Date:** 07/16/2002 **Time:** 9:40 AM

Waterbody Name: Hammond River **Pipeline Milepost:** 222.28

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	67.46215	-150.03629		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Wiseman B-1 **Elevation (m):** 394

Anadromous Waters Catalog Number: 334-40-11000-2125-3912-4135

Geographic Comments: At Dalton Highway MP 190 take Access Road 101-APL-1, head north on ROW until reaching block point.

Station Characteristics

Temperature (C) **Air:** 21 **Water:** 10.1 **DO (ppm):** 9.86 **Qualitative Velocity:** Fast **Turbidity (NTU)** 26 **Water Color:** Clear **Stream Gradient (%):** 0.5

Stream Stage: Medium **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:** Cobble
Thalweg Depth			**Subdominant:** Gravel
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Station is under pipeline bridge. River is extensively braided; individual channels range from 5 m to 20 m wide. Unable to measure Thalweg depth in main channel. Extensive riprap along banks near pipeline and highway section of stream. Several of the smaller channels have cut banks with overhanging root masses creating excellent cover for rearing fish.

Species: chum salmon **Life Stage:** Juvenile **Life History:** Anadromous

Count: 6 **Fork lengths (mm):** 48

Gear: Portable Electrofisher **EF Time (s):** 461 **# Traps:** **Trap Duration (h):**

Channel: Side Channel (connected to main channel at inlet and outlet)

Fish Passage Barrier: Unknown **Height (m):** **Pool depth (m):**

Comments: Captured upstream of station along edge of side channel, in the vegetation and debris of a cut bank.

Species: slimy sculpin **Life Stage:** Juvenile/Adult **Life History:** Resident

Count: 12 **Fork lengths (mm):** 64 81 44 45 48 43 30 39

Gear: Portable Electrofisher **EF Time (s):** 461 **# Traps:** **Trap Duration (h):**

Channel: Side Channel (connected to main channel at inlet and outlet)

Fish Passage Barrier: Unknown **Height (m):** **Pool depth (m):**

Comments: Sculpins were captured along edge of the main channel and on side channels. Because of speed and depth of main channel, electrofishing was limited to side channels and edges of the main channel.

Species: longnose sucker **Life Stage:** Juvenile/Adult **Life History:** Resident

Count: 1 **Fork lengths (mm):** 65

Gear: Portable Electrofisher **EF Time (s):** 461 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Unknown **Height (m):** **Pool depth (m):**

Comments: Collected on edge of the main channel in a shallow riffle.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Minnow Trap, 1/4 in. Mesh **EF Time (s):** **# Traps:** 4 **Trap Duration (h):** 2.0

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Two minnow traps were set upstream, one in the main channel, one in a side channel. The two set downstream were both in the main channel.

Station 31A01 **Visit** 1 **Survey Date** 7/16/2002

PIC31010.jpg

PIC31011.jpg

PIC31012.jpg

Station 31A02 **Visit** 1 **Survey Date:** 07/16/2002 **Time:** 1:00 PM

Waterbody Name: Confederate Gulch **Pipeline Milepost:** 223.18

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 14
	67.45462	-150.05959		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Wiseman B-1 **Elevation (m):** 385

Anadromous Waters Catalog Number:

Geographic Comments: At Dalton Highway MP 190 take Access Road 101-APL-1, head south. Channel is between VSMs 1178399 and 1178470.

Station Characteristics

Temperature (C)	**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air: 22 **Water:**			

Qualitative Velocity: N/A **Water Color:**

Stream Stage: Dry, Defined Channel **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: No water is present in the LWC. Recent surface flows are evident. The channel is filled with vegetation, some of which is laid down as if by water. East of LWC is what appears to be a seasonal marsh. West of the ROW the channel flows from alders and willows.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** **# Traps:** **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: No water, no sampling.

Station 31A02 **Visit** 1 **Survey Date** 7/16/2002

PIC31017.jpg

PIC31018.jpg

PIC31019.jpg

Station 31A02 **Visit** 2 **Survey Date:** 08/13/2002 **Time:**

Waterbody Name: Confederate Gulch **Pipeline Milepost:** 223.18

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 14
	67.45462	-150.05959		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Wiseman B-1 **Elevation (m):** 385

Anadromous Waters Catalog Number:

Geographic Comments: At Dalton Highway MP 190 take Access Road 101-APL-1, head south. Channel is between VSMs 1178399 and 1178470.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air:	**Water:**			

Qualitative Velocity: N/A **Water Color:**

Stream Stage: Dry, Defined Channel **48 hr. Precipitation/Runoff:** N/A

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Drove by LWC; because of construction on pipeline directly over the stream could not stop for detailed examination. Stream was dry as in first visit.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** **# Traps:** **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: No water, no sampling.

Station 31A02 **Visit** 1 **Survey Date** 8/13/2002

No Photo Available

Station 31A03 **Visit** 1 **Survey Date:** 07/16/2002 **Time:** 1:33 PM

Waterbody Name: Union Gulch **Pipeline Milepost:** 224.23

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 7
	67.44183	-150.07988		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Wiseman B-1 **Elevation (m):** 382

Anadromous Waters Catalog Number:

Geographic Comments: At Dalton Highway MP 190 take Access Road 101-APL-1, turn south. Stream (LWC) is between VSMs 1183878 and 1183948. The stream list appears incorrect listing Union Gulch at PLMP 223.67. The correct PLMP of 224.23 acquired from Alyeska data was used to locate this stream.

Station Characteristics

Temperature (C) **Air:** 28 **Water:** 12.5 **DO (ppm):** 8.26 **Turbidity (NTU)** 22 **Stream Gradient (%):** 0.8

Qualitative Velocity: Slow **Water Color:** Clear

Stream Stage: Medium **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**	
Width		1	**Dominant:**	Gravel
Thalweg Depth		0.16	**Subdominant:**	Organic
			Subdominant:	

Survey Team: Doug Lieb, John Wells

Visit Comments: Station is upstream of LWC. The channel at the LWC is spreading out and ruts have formed. Upstream of the LWC the channel is 3 m wide and slow moving, with instream debris and an organic substrate. Downstream of the LWC the channel is narrower and shallower, but with several pools 1 m or greater in depth. Here the substrate is gravel with organic deposition.

Species: slimy sculpin **Life Stage:** Juvenile/Adult **Life History:** Resident

Count: 5 **Fork lengths (mm):** 48 39 64

Gear: Portable Electrofisher **EF Time (s):** 98 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Unknown **Height (m):** **Pool depth (m):**

Comments: Sculpin were collected downstream of the LWC. One was observed upstream of the LWC, but not collected.

Species: grayling **Life Stage:** Juvenile/Adult **Life History:** Resident

Count: 25 **Fork lengths (mm):** 30 29 24 38 28 31 26 26

Gear: Portable Electrofisher **EF Time (s):** 98 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Unknown **Height (m):** **Pool depth (m):**

Comments: The small grayling were all collected downstream of the LWC in a large pool 1.5 m deep. A 10 cm grayling was also observed in the same pool. Upstream of the LWC were 5 or 6 larger grayling ranging between 13 - 20 cm long. These were visually identified only.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Minnow Trap, 1/4 in. Mesh **EF Time (s):** **# Traps:** 4 **Trap Duration (h):** 1.3

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Two traps were set upstream in large pool. Two were set downstream, one in the pool with the small grayling.

Station 31A03 **Visit** 1 **Survey Date** 7/16/2002

PIC31020.jpg

PIC31021.jpg

PIC31022.jpg

Station 33A01 **Visit** 1 **Survey Date:** 07/18/2002 **Time:** 1:35 PM

Waterbody Name: Marsh Creek culvert in dike (Local Name) **Pipeline Milepost:** 210.51

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 8
	67.58238	-149.80894		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Chandalar C-6 **Elevation (m):** 431

Anadromous Waters Catalog Number:

Geographic Comments: Take Access Road 103-APL-1A, then head north. Dike is directly perpendicular to VSM 1111502.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air:	**Water:**			

Qualitative Velocity: N/A **Water Color:** Clear

Stream Stage: Low **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: This station was added solely to mark the location of the almost perched Marsh Creek culvert between stations 13A07 and 14A01. The stream is 1 m wide up to the dike culvert. The culvert is not bedded and only the top 2 - 3 cm of water flows through the culvert. Downstream of the culvert the stream is slower and broader to Station 13A07.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** **# Traps:** **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments:

Station 33A01 **Visit** 1 **Survey Date** 7/18/2002

PIC33014.jpg

PIC33015.jpg

PIC33016.jpg

Station 35A01 **Visit** 1 **Survey Date:** 07/20/2002 **Time:** 9:40 AM

Waterbody Name: N.F. of W.F. of Chandalar River Tributary (Local Name) **Pipeline Milepost:** 169.1

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 7
	68.10740	-149.52641		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Philip Smith Mtn A-5 **Elevation (m):** 1069

Anadromous Waters Catalog Number:

Geographic Comments: Access through 110-APL-1 at Dalton Highway MP 242. Head south: station is at second LWC; 54 m south of 169 PLMP sign.

Station Characteristics

Temperature (C) **Air:** 20 **Water:** 4.1 **DO (ppm):** 9.69 **Qualitative Velocity:** Medium **Turbidity (NTU)** 0 **Water Color:** Clear **Stream Gradient (%):** 5

Stream Stage: Low **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**
Width		0.75
Thalweg Depth		0.13

Substrate

Dominant: Cobble

Subdominant:

Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Station is immediately upstream of the ROW. Upstream of the LWC the channel descends at a high gradient, the flow is entrenched within multiple channels and deep pools are spaced throughout. Downstream of LWC, the stream spreads into a shallow wide pool and trickles down to the a fork of the upper Chandalar river.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 95 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Ready access to all potential fish habitats.

Station 35A01 **Visit** 1 **Survey Date** 7/20/2002

PIC35005.jpg

PIC35006.jpg

PIC35007.jpg

Station 35A01 **Visit** 2 **Survey Date:** 08/05/2002 **Time:** 10:30 AM

Waterbody Name: N.F. of W.F. of Chandalar River Tributary (Local Name) **Pipeline Milepost:** 169.1

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 7
	68.10740	-149.52641		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Philip Smith Mtn A-5 **Elevation (m):** 1069

Anadromous Waters Catalog Number:

Geographic Comments: Access through 110-APL-1 at Dalton Highway MP 242. Head south: station is at second LWC; 54 m south of 169 PLMP sign.

Station Characteristics

Temperature (C) **Air:** 6 **Water:** 4.5 **DO (ppm):** 8.73 **Turbidity (NTU)** **Stream Gradient (%):**

Qualitative Velocity: Medium **Water Color:** Clear

Stream Stage: Medium **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width		0.4	**Dominant:** Cobble
Thalweg Depth		0.18	**Subdominant:** Boulder
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Station is in pool upstream of LWC. Flow downstream percolates through the substrate before reaching the upper fork of the Chandalar River.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 134 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: No fish were observed in the tributary, however, fish were seen and captured in the upper Chandalar River.

Station 35A01 **Visit** 2 **Survey Date** 8/5/2002

PIC42007.jpg

PIC42008.jpg

PIC42009.jpg

Station 35A02 **Visit** 1 **Survey Date:** 07/20/2002 **Time:** 10:17 AM

Waterbody Name: N.F. of W.F. of Chandalar River Tributary (Local Name) **Pipeline Milepost:** 169.2

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 7
	68.10689	-149.52600		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Philip Smith Mtn A-5 **Elevation (m):** 1068

Anadromous Waters Catalog Number:

Geographic Comments: Access through 110-APL-1at Dalton Highway MP 242. Head south: station is at third LWC; 102 m past PLMP 169 sign.

Station Characteristics

Temperature (C) **Air:** 20 **Water:** 4.7 **DO (ppm):** 10.97 **Qualitative Velocity:** Fast **Turbidity (NTU)** 0 **Water Color:** Clear **Stream Gradient (%):**

Stream Stage: Medium **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**
Width		1
Thalweg Depth		0.14

Substrate

Dominant: Cobble

Subdominant: Boulder

Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Station is upstream of the LWC. The pictures cover the LWC, and downstream to the confluence with the upper fork of the Chandalar River. The stream flows through multiple channels within an alluvial delta.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 105 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Electrofished from upper fork of the Chandalar River, up through the tributary past the LWC, to a point 500 m upstream. No fish observed.

Station 35A02 **Visit** 1 **Survey Date** 7/20/2002

PIC35008.jpg

PIC35009.jpg

PIC35010.jpg

Station 35A02 **Visit** 2 **Survey Date:** 08/05/2002 **Time:** 10:46 AM

Waterbody Name: N.F. of W.F. of Chandalar River Tributary (Local Name) **Pipeline Milepost:** 169.2

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 7
	68.10689	-149.52600		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Philip Smith Mtn A-5 **Elevation (m):** 1068

Anadromous Waters Catalog Number:

Geographic Comments: Access through 110-APL-1at Dalton Highway MP 242. Head south: station is at third LWC; 102 m past PLMP 169 sign.

Station Characteristics

Temperature (C) **Air:** 7 **Water:** 5.3 **DO (ppm):** 10.44 **Turbidity (NTU)** **Stream Gradient (%):**

Qualitative Velocity: Medium **Water Color:** Clear

Stream Stage: Medium **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**
Width		1
Thalweg Depth		0.18

Substrate

Dominant: Cobble

Subdominant: Boulder

Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Station is upstream of the LWC. The LWC is washed out and multiple channels cross the ROW, then flow to the Chandalar River fork. The stream has many pocket water pools associated with instream boulders.

Species: grayling **Life Stage:** Juvenile/Adult **Life History:** Resident

Count: 2 **Fork lengths (mm):** 165

Gear: Portable Electrofisher **EF Time (s):** 164 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Unknown **Height (m):** **Pool depth (m):**

Comments: One fish was observed in the upper fork of the Chandalar River downstream of this tributary; another fish was captured in the Chandalar River fork between the confluence of this tributary and the tributary on which Station 35A01 is located.

Station 35A02 **Visit** 2 **Survey Date** 8/5/2002

PIC42013.jpg

PIC42011.jpg

PIC42012.jpg

Station 35A03 **Visit** 1 **Survey Date:** 07/20/2002 **Time:** 2:30 PM

Waterbody Name: Bicycle Creek (Local Name) **Pipeline Milepost:** 152.83

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 7
	68.30362	-149.36151		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Philip Smith Mtn B-4 **Elevation (m):** 862

Anadromous Waters Catalog Number:

Geographic Comments: Take Access Road 112-APL-3A, turn south. Station is between VSMs 806987 and 806921.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air: 20	**Water:**			

Qualitative Velocity: N/A **Water Color:**

Stream Stage: Dry, No defined Channel **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: The LWC is apparent but demonstrates no recent evidence of water. Immediately east of the LWC is small stagnant water pool, not deep enough to shock. The LWC looks very flat and would create a pool if any water was present. The flow through the culvert in the adjacent access road is very ferric-stained. There is standing, isolated water in the tundra between the LWC and the two culverts, but no surface flow.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** **# Traps:** **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Not enough water to sample.

Station 35A03 **Visit** 1 **Survey Date** 7/20/2002

PIC35033.jpg

PIC35034.jpg

Station 35A03 **Visit** 2 **Survey Date:** 08/04/2002 **Time:** 9:42 AM

Waterbody Name: Bicycle Creek (Local Name) **Pipeline Milepost:** 152.83

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 7
	68.30362	-149.36151		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Philip Smith Mtn B-4 **Elevation (m):** 862

Anadromous Waters Catalog Number:

Geographic Comments: Take Access Road 112-APL-3A, turn south. Station is between VSMs 806987 and 806921.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air: 17	**Water:**			

Qualitative Velocity: N/A **Water Color:**

Stream Stage: Dry, No defined Channel **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: The LWC is dry. The small stagnant pool east (upstream) of the LWC remains, it is not deep enough to sample. Downstream of the LWC is patch of low willows surrounding what would have been a channel.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** **# Traps:** **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Not enough water to sample.

Station 35A03 **Visit** 2 **Survey Date** 8/4/2002

PIC41005.jpg

PIC41006.jpg

Station 36A01 **Visit** 1 **Survey Date:** 07/21/2002 **Time:** 8:38 AM

Waterbody Name: Ed's Creek (Local Name) **Pipeline Milepost:** 134.33

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	68.54856	-149.47934		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Philip Smith Mtn C-5 **Elevation (m):** 917

Anadromous Waters Catalog Number:

Geographic Comments: At Dalton Highway MP 279 take Access Road 115-APL-3, head south on ROW. Stream (LWC) is between VSMs 709205 and 709275.

Station Characteristics

Temperature (C) **Air:** 17 **Water:** 7.5 **DO (ppm):** 9.81 **Qualitative Velocity:** Medium **Turbidity (NTU)** 7 **Water Color:** Clear **Stream Gradient (%):** 2

Stream Stage: Low **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**
Width		0.75
Thalweg Depth		0.16

Substrate
Dominant: Gravel
Subdominant:
Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Station is downstream of LWC. Upstream 5 m from the LWC the flow goes subterranean. Upstream further a channel remains evident but is soon covered by large boulders. Intermittently spaced are holes through which flowing water is visible. The course of the subsurface flow remains audible. Downstream of the LWC the stream is narrow and shallow for 10 m, then the channel widens and deepens and large deep pools begin to appear.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 117 **# Traps:** 1 **Trap Duration (h):** 0.5

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Electrofished all potential habitat from large downstream pools upstream to end of surface water.

Station 36A01 **Visit** 1 **Survey Date** 7/21/2002

PIC36001.jpg

PIC36002.jpg

PIC36006.jpg

Station 36A01 **Visit** 2 **Survey Date:** 08/03/2002 **Time:** 10:50 AM

Waterbody Name: Ed's Creek (Local Name) **Pipeline Milepost:** 134.33

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	68.54856	-149.47934		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Philip Smith Mtn C-5 **Elevation (m):** 917

Anadromous Waters Catalog Number:

Geographic Comments: At Dalton Highway MP 279 take Access Road 115-APL-3, head south on ROW. Stream (LWC) is between VSMs 709205 and 709275.

Station Characteristics

Temperature (C) **Air:** 21 **Water:** 6.3 **DO (ppm):** 8.29 **Qualitative Velocity:** Slow **Turbidity (NTU)** **Water Color:** Clear **Stream Gradient (%):**

Stream Stage: Low, Discontinuous Flow **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width		0.9	**Dominant:**
Thalweg Depth		0.09	**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: The LWC is dry. Upstream water is audibly percolating through the large-grained porous substrate. Surface flow begins 2 m downstream of the LWC. Downstream the channel anastomoses through the tundra. There are several 2 - 3 m diameter pools.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 112 **# Traps:** 2 **Trap Duration (h):** 0.3

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Electrofished all surface channels and pools. Minnow traps were set in the main channel and one was set in the one the large pools downstream of the LWC.

Station 36A01 **Visit** 2 **Survey Date** 8/3/2002

PIC40018.jpg

PIC40019.jpg

PIC40020.jpg

Station 39A01 **Visit** 1 **Survey Date:** 08/02/2002 **Time:** 9:50 AM

Waterbody Name: 3 LWC's on Access RD 125-APL-3 (Local Name) **Pipeline Milepost:** 73.2

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 7
	69.25861	-148.76414		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Sagavanirktok B-3 **Elevation (m):** 258

Anadromous Waters Catalog Number:

Geographic Comments: At Dalton Highway MP 342 take Access Road 125-APL-3, the LWCs are on the access road.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air: 16	**Water:**			

Qualitative Velocity: N/A **Water Color:**

Stream Stage: Dry, No defined Channel **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Access road was washed out in spring Sagavanirktok River flood. In June and July the access road was reconstructed, so we were unable to survey until this date. All but one of the LWCs in access road have been filled in. The one not filled in was furthest east and not washed out by flood. The LWC is dry and no water is in channel to the south. There is no channel to the North.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** **# Traps:** **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: No water, no sampling.

Station 39A01 **Visit** 1 **Survey Date** 8/2/2002

PIC39001.jpg

PIC39002.jpg

PIC39003.jpg

Station 39A02 **Visit** 1 **Survey Date:** 08/02/2002 **Time:** 10:50 AM

Waterbody Name: Basset Creek (Local Name) **Pipeline Milepost:** 100.89

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 7
	68.88841	-148.87471		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Philip Smith Mtn D-4 **Elevation (m):** 430

Anadromous Waters Catalog Number:

Geographic Comments: At Dalton Highway MP 317 take Access Road 121-APL-1A, head south. Station is 9 m north of VSM 533738.

Station Characteristics

Temperature (C) **DO (ppm):** 5.45 **Turbidity (NTU)** **Stream Gradient (%):** 1

Air: 22 **Water:** 14.1 **Qualitative Velocity:** Still **Water Color:** Humic

Stream Stage: Low, Discontinuous Flow **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Station is downstream of LWC. The LWC is almost completely void of surface water, there is residual water and mud indicating recent presence of water. Both downstream and upstream of the LWC are small pools before water disappears into vegetation. Beyond the pools the channel merges into wetlands. Downslope 25 m are two pools 2 m and 1 m in diameter, both very deep. Soils in the area are saturated.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 56 **# Traps:** 1 **Trap Duration (h):** 0.3

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Minnow trap set in 2 m diameter pool.

Station 39A02 **Visit** 1 **Survey Date** 8/2/2002

PIC39008.jpg

PIC39009.jpg

PIC39010.jpg

Station 39A03 **Visit** 1 **Survey Date:** 08/02/2002 **Time:** 12:45 PM

Waterbody Name: Shifish Creek (Local Name) **Pipeline Milepost:** 114.86

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	68.72086	-149.01552		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Philip Smith Mtn C-4 **Elevation (m):** 635

Anadromous Waters Catalog Number:

Geographic Comments: At Dalton Highway MP 301 take Access Road 119-APL-1, head north on ROW. Stream LWC is between VSMs 606494 and 606434.

Station Characteristics

Temperature (C) **Air:** 21 **Water:** 9.9 **DO (ppm):** 10.07 **Qualitative Velocity:** Medium **Turbidity (NTU)** **Water Color:** Clear **Stream Gradient (%):** 1

Stream Stage: Medium **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**	
Width		1.5	**Dominant:**	Organic
Thalweg Depth		0.2	**Subdominant:**	Gravel
			Subdominant:	Cobble

Survey Team: Doug Lieb, John Wells

Visit Comments: Station is upstream of LWC in pool where two channels meet. The stream is anastomizing, with channels ranging from under 1 m to 2 m.

Species: Dolly Varden **Life Stage:** Juvenile/Adult **Life History:** Unknown

Count: 3 **Fork lengths (mm):** 129 143 150

Gear: Portable Electrofisher **EF Time (s):** 356 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Unknown **Height (m):** **Pool depth (m):**

Comments: All 3 fish were collected upstream of the LWC.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Minnow Trap, 1/4 in. Mesh **EF Time (s):** **# Traps:** 4 **Trap Duration (h):** 0.8

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Two traps set upstream, one in each of the channels. Downstream two traps were set in main channel.

Station 39A03 **Visit** 1 **Survey Date** 8/2/2002

PIC39014.jpg

PIC39015.jpg

PIC39013.jpg

Station 40A01 **Visit** 1 **Survey Date:** 08/03/2002 **Time:** 9:00 AM

Waterbody Name: Yan Creek (Local Name) **Pipeline Milepost:** 130.38

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	68.60363	-149.51393		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Philip Smith Mtn C-5 **Elevation (m):** 889

Anadromous Waters Catalog Number:

Geographic Comments: At Dalton Highway MP 283 take Access Road 116-APL-1, head north on ROW. Stream is between VSMs 688360 and 688420.

Station Characteristics

Temperature (C) **Air:** 19 **Water:** 7.2 **DO (ppm):** 6.35 **Qualitative Velocity:** N/A **Turbidity (NTU)** **Water Color:** Clear **Stream Gradient (%):**

Stream Stage: Low, Discontinuous Flow **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: LWC is dry; no obvious evidence of recent surface flow. Upstream of the LWC a channel present, but with no surface water. Downstream of the LWC large boulders mark the stream course. Two small pools, each 1 m in diameter and 0.26 m deep, are 10 m downstream of LWC; multimeter readings were taken here. Subsurface water is periodically evident in channel substrate crevices.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 56 **# Traps:** **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Electrofished the pools downstream of the LWC. Was able to reach all water but rocks created crevices fish could have hid underneath.

Station 40A01 **Visit** 1 **Survey Date** 8/3/2002

PIC40012.jpg

PIC40013.jpg

PIC40014.jpg

Station 40A02 **Visit** 1 **Survey Date:** 08/03/2002 **Time:** 9:50 AM

Waterbody Name: Moss Creek (Local Name) **Pipeline Milepost:** 132.95

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	68.56759	-149.49367		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Philip Smith Mtn C-5 **Elevation (m):** 898

Anadromous Waters Catalog Number:

Geographic Comments: At Dalton Highway MP 283 take Access Road 116-APL-1, head south on ROW. LWC of stream is between VSMs 701958 and 702028.

Station Characteristics

Temperature (C) **Air:** 20 **Water:** 9.9 **DO (ppm):** 7.98 **Qualitative Velocity:** Slow **Turbidity (NTU)** **Water Color:** Clear **Stream Gradient (%):** 3.5

Stream Stage: Low, Discontinuous Flow **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**
Width		0.65
Thalweg Depth		0.09

Substrate

Dominant: Cobble

Subdominant: Boulder

Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Station is downstream of LWC, water was just deep enough to submerge the multimeter probe. Flow percolates through the LWC. Upstream of the LWC the stream is anastomosed. Currently upstream of the LWC surface flow is intermittent for approximately 50 m. Downstream of the LWC the stream is anastomosed, with discontinuous channel structure through sedge marsh.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 127 **# Traps:** 1 **Trap Duration (h):** 0.5

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Electrofished the main channel and all side channels; efficiency was limited because of poorly structured channel morphology and discontinuous surface flow.

Station 40A02 **Visit** 1 **Survey Date** 8/3/2002

PIC40016.jpg

PIC40017.jpg

Station 40A03 **Visit** 1 **Survey Date:** 08/03/2002 **Time:** 11:28 AM

Waterbody Name: Tributary Jill Creek (Local Name) **Pipeline Milepost:** 134.85

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	68.54137	-149.47394		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Philip Smith Mtn C-5 **Elevation (m):** 919

Anadromous Waters Catalog Number:

Geographic Comments: At Dalton Highway MP 279 take Access Road 115-APL-3, head south. LWC of stream is between VSMs 711974 and 712034.

Station Characteristics

Temperature (C) **Air:** 21 **Water:** 9.3 **DO (ppm):** 8.38 **Qualitative Velocity:** Slow **Turbidity (NTU)** **Water Color:** Clear **Stream Gradient (%):** 3

Stream Stage: Low, Discontinuous Flow **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**	
Width		0.25	**Dominant:**	Gravel
Thalweg Depth		0.15	**Subdominant:**	Organic
			Subdominant:	

Survey Team: Doug Lieb, John Wells

Visit Comments: Station is upstream of LWC. The current flow is but a trickle of water through the vegetation. Stream anastomoses through riparian sedge marsh.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 103 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Electrofishing limited as much of channel too shallow.

Station 40A03 **Visit** 1 **Survey Date** 8/3/2002

PIC40022.jpg

PIC40023.jpg

PIC40024.jpg

Station 42A01 **Visit** 1 **Survey Date:** 08/05/2002 **Time:** 11:36 AM

Waterbody Name: Truck Stop Creek (Local Name) **Pipeline Milepost:** 175.56

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 9
	68.03517	-149.65685		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Philip Smith Mtn A-5 **Elevation (m):** 792

Anadromous Waters Catalog Number:

Geographic Comments: At Dalton Highway MP 235 take Access Road 108-APL-6, head north on ROW.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air: 13	**Water:**			

Qualitative Velocity: N/A **Water Color:**

Stream Stage: Dry, Defined Channel **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:** Gravel
Thalweg Depth			**Subdominant:** Sand
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Channel currently dry; evidence of flashy flows. The banks are undercut and unstable.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** **# Traps:** **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: No water, no sampling.

Station 42A01 **Visit** 1 **Survey Date** 8/5/2002

PIC42014.jpg

PIC42015.jpg

PIC42016.jpg

Station 42A02 **Visit** 1 **Survey Date:** 08/05/2002 **Time:** 11:45 AM

Waterbody Name: Truck Stop Creek (Local Name) **Pipeline Milepost:** 175.76

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 9
	68.03313	-149.66278		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Philip Smith Mtn A-5 **Elevation (m):** 783

Anadromous Waters Catalog Number:

Geographic Comments: At Dalton Highway MP 235 take Access Road 108-APL-6, head north.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air: 14	**Water:**			

Qualitative Velocity: N/A **Water Color:**

Stream Stage: Dry, No defined Channel **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: LWC is gradual dip in ROW, a puddle remains downstream from the LWC. Only a very poorly defined channel exists. Vegetation has overgrown the channel.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** **# Traps:** **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: No water, no sampling.

Station 42A02 **Visit** 1 **Survey Date** 8/5/2002

PIC42017.jpg

PIC42018.jpg

PIC42019.jpg

Station 42A03 **Visit** 1 **Survey Date:** 08/05/2002 **Time:** 12:00 PM

Waterbody Name: Truck Stop Creek (Local Name) **Pipeline Milepost:** 175.81

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 8
	68.03255	-149.66481		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Philip Smith Mtn A-5 **Elevation (m):** 780

Anadromous Waters Catalog Number:

Geographic Comments: At Dalton Highway MP 235 take Access Road 108-APL-6, head north.

Station Characteristics

Temperature (C) **Air:** 15 **Water:** 6.4 **DO (ppm):** 9.38 **Turbidity (NTU)** **Stream Gradient (%):** 1

Qualitative Velocity: Slow **Water Color:** Clear

Stream Stage: Low **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**
Width		0.3
Thalweg Depth		0.16

Substrate

Dominant: Gravel

Subdominant: Organic

Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Station is upstream of the LWC. Flow across the LWC forms 3 m wide, very shallow pool. The stream is mostly single-channeled with periodic anastomizing.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 118 **# Traps:** 1 **Trap Duration (h):** 0.5

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Minnow trap was set pool upstream of LWC. Electrofished all water present.

Station 42A03 **Visit** 1 **Survey Date** 8/5/2002

PIC42020.jpg

PIC42021.jpg

PIC42022.jpg

Station 42A04 **Visit** 1 **Survey Date:** 08/05/2002 **Time:** 1:04 PM

Waterbody Name: Truck Stop Creek (Local Name) **Pipeline Milepost:** 176.03

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	68.03132	-149.67220		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Philip Smith Mtn A-5 **Elevation (m):** 775

Anadromous Waters Catalog Number:

Geographic Comments: At Dalton Highway MP 235 take Access Road 108-APL-6, head north. Station is between VSMs 929467 and 929423. Location is just north of set of 4 VSMs surrounded in riprap armor. This is not PLMP listed on BLM list, there is no evidence of LWC or water at all.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air: 16	**Water:**			

Qualitative Velocity: N/A **Water Color:**

Stream Stage: Dry, No defined Channel **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: No LWC is evident, only a slight dip in the ROW that periodically collects puddles. There is set of 4 VSMs that have riprap armor surrounding them.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** **# Traps:** **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: No water, no sampling.

Station 42A04 **Visit** 1 **Survey Date** 8/5/2002

PIC42023.jpg

PIC42024.jpg

PIC42025.jpg

Station 43A01 **Visit** 1 **Survey Date:** 08/06/2002 **Time:** 9:50 AM

Waterbody Name: One-Seven-Six mile Creek (Local Name) **Pipeline Milepost:** 176.11

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	68.03075	-149.67484		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Philip Smith Mtn A-5 **Elevation (m):** 777

Anadromous Waters Catalog Number:

Geographic Comments: At Dalton Highway MP 235 take Access Road 108-APL-6, head north. Station is at first stream. The ROW crossing is a wide LWC between VSMs 929903 and 929843.

Station Characteristics

Temperature (C) **Air:** 3 **Water:** 2.6 **DO (ppm):** 12.77 **Qualitative Velocity:** Slow **Turbidity (NTU)** 5 **Water Color:** Clear **Stream Gradient (%):** 0.8

Stream Stage: Medium **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**
Width		1
Thalweg Depth		0.15

Substrate

Dominant: Gravel

Subdominant: Sand/Silt/Clay

Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Pictures 1 - 4 are downstream; 5 and 6 are upstream of LWC. Stream appears to flow into Truck Stop Creek (Local Name) upstream of the Dalton Highway. Stream has a pool-riffle structure; silt/organic substrates in the pools, gravel in the riffles.

Species: grayling **Life Stage:** Juvenile/Adult **Life History:** Resident

Count: 14 **Fork lengths (mm):** 160 206 176

Gear: Portable Electrofisher **EF Time (s):** 209 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Unknown **Height (m):** **Pool depth (m):**

Comments: Grayling were collected upstream of the LWC. Ten were observed in a large wide pool 20 m upstream from the ROW.

Station 43A01 **Visit** 1 **Survey Date** 8/6/2002

PIC43001.jpg

PIC43002.jpg

PIC43003.jpg

Station 43A02 **Visit** 1 **Survey Date:** 08/06/2002 **Time:** 11:15 AM

Waterbody Name: Bear Track Creek (Local Name) **Pipeline Milepost:** 177.95

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	68.01548	-149.72632		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Philip Smith Mtn A-5 **Elevation (m):** 719

Anadromous Waters Catalog Number:

Geographic Comments: Take Access Road 108-APL-5, head south on ROW just before reaching 178 PLMP sign.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air: 9	**Water:**			

Qualitative Velocity: N/A **Water Color:**

Stream Stage: Dry, Defined Channel **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: LWC identified by riprap but is level with adjacent ROW. On either side of the LWC is a dry channel.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** **# Traps:** **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: No water, no sampling.

Station 43A02 **Visit** 1 **Survey Date** 8/6/2002

PIC43008.jpg

PIC43009.jpg

PIC43010.jpg

Station 43A03 **Visit** 1 **Survey Date:** 08/06/2002 **Time:** 11:48 AM

Waterbody Name: Beaver Dam Brook (Local Name) **Pipeline Milepost:** 185.18

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	67.92335	-149.82484		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Chandalar D-6 **Elevation (m):** 586

Anadromous Waters Catalog Number:

Geographic Comments: At Dalton Highway MP 227 take Access Road 107-APL-4, head south. Station is at first culvert.

Station Characteristics

Temperature (C) **DO (ppm):** 13.37 **Turbidity (NTU)** 0 **Stream Gradient (%):** 0.5

Air: 10 **Water:** 2.9 **Qualitative Velocity:** Medium **Water Color:** Clear

Stream Stage: Medium **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width		1	**Dominant:**
Thalweg Depth		0.09	**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Station is upstream of culvert. Culvert length 88.6 m; diameter 0.64 m. Upstream of the culvert the stream is narrow and shallow, with moss growing in the water, and organic deposition on top of gravel substrate. Approximately 50 m upstream the channel narrows (0.25 m) with very little surface flow. Downstream of the culvert the stream is 2 m wide and deepens, with a gravel substrate and a pool-riffle pattern.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 212 **# Traps:** 4 **Trap Duration (h):** 1.0

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Electrofished all waters. Set two minnow traps upstream of LWC; two downstream.

Station 43A03 **Visit** 1 **Survey Date** 8/6/2002

PIC43011.jpg

PIC43015.jpg

PIC43013.jpg

Station 43A04 **Visit** 1 **Survey Date:** 08/06/2002 **Time:** 1:05 PM

Waterbody Name: Beaver Dam Brook (Local Name) **Pipeline Milepost:** 185.27

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	67.92162	-149.82396		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Chandalar D-6 **Elevation (m):** 590

Anadromous Waters Catalog Number:

Geographic Comments: At Dalton Highway MP 227 take Access Road 107-APL-4, head south. Stream is second culvert after 185 PLMP sign.

Station Characteristics

Temperature (C) **Air:** 12 **Water:** 6.2 **DO (ppm):** 10.64 **Qualitative Velocity:** Slow **Turbidity (NTU)** 0 **Stream Gradient (%):** 0.5 **Water Color:** Clear

Stream Stage: Low, Discontinuous Flow **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**
Width		1
Thalweg Depth		0.1

Substrate

Dominant: Organic

Subdominant: Gravel

Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Station is upstream of culvert. Culvert length 55.9 m, diameter 0.63 m. Culvert passes under ROW and the Dalton Highway. Eighty meters upstream of the ROW, the flow is subsurface in a defined channel. Downstream of the culvert the stream is 3 m wide and 0.5 m deep. At culvert outlet, the stream flows into channel on which Station 43A03 is located. Substrate downstream of LWC is soft whitish fines on top of gravel.

Species: grayling **Life Stage:** Juvenile/Adult **Life History:** Resident

Count: 1 **Fork lengths (mm):**

Gear: Visual Observation, Ground **EF Time (s):** **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Specific Barrier Unknown **Height (m):** **Pool depth (m):**

Comments: Observed fish (estimate length 25 cm) downstream of LWC in reach parallel to Dalton Highway. Electrofished upstream to limit of surface flow.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 209 **# Traps:** 3 **Trap Duration (h):** 0.5

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: One minnow trap upstream and two downstream of culvert.

Station 43A04 **Visit** 1 **Survey Date** 8/6/2002

PIC43016.jpg

PIC43017.jpg

PIC43018.jpg

Station 43A05 **Visit** 1 **Survey Date:** 08/06/2002 **Time:** 2:16 PM

Waterbody Name: Beaver Dam Brook (Local Name) **Pipeline Milepost:** 185.46

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 7
	67.91912	-149.82257		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Chandalar D-6 **Elevation (m):** 585

Anadromous Waters Catalog Number:

Geographic Comments: At Dalton Highway MP 227 take Access Road 107-APL-4, head south on ROW. Station is at third culvert. Dalton Highway is 10 m east of ROW; highway and ROW form essentially one big road.

Station Characteristics

Temperature (C) **Air:** 11 **Water:** 12.4 **DO (ppm):** 8.28 **Qualitative Velocity:** Slow **Turbidity (NTU)** 10 **Stream Gradient (%):** 0.5 **Water Color:** Clear

Stream Stage: Low **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**
Width		1
Thalweg Depth		0.12

Substrate

Dominant: Sand/Silt/Clay

Subdominant: Gravel

Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Station is at culvert (length 61.5 m, diameter 0.63 m). Culvert inlet is perched. Channel parameters measured downstream of culvert. Downstream of the culvert the channel has a mud and gravel substrate and a pool-riffle pattern. Upstream of culvert the stream is a small trickle 0.38 m wide and 0.05 m deep with mud substrate. Eighty meters upstream flow goes subsurface.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 167 **# Traps:** 2 **Trap Duration (h):** 0.5

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Minnow traps set downstream, water not deep enough upstream. One set at mouth of culvert, second set in stream downstream of confluence. Electrofished from downstream of second minnow trap upstream past ROW to limit of surface flow.

Station 43A05 **Visit** 1 **Survey Date** 8/6/2002

PIC43023.jpg

PIC43024.jpg

PIC43028.jpg

Station 43A06 **Visit** 1 **Survey Date:** 08/06/2002 **Time:** 3:30 PM

Waterbody Name: Tracy's Trickle/Unnamed Creek #1 (Local Name) **Pipeline Milepost:** 187.46

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	67.89091	-149.81956		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Chandalar D-6 **Elevation (m):** 569

Anadromous Waters Catalog Number:

Geographic Comments: Between Dalton Highway MP 225 and 224.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air:	**Water:**			

Qualitative Velocity: N/A **Water Color:**

Stream Stage: Dry, Defined Channel **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Station is at the two culverts under the Dalton Highway. No water is present, but a well-defined channel is. Station was accessed from the Dalton Highway. There is no driving on the ROW to the stream, which is surrounded by block points. This stream is a block point too. On APSC aerial photo the stream is listed as Unnamed Creek #1.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** **# Traps:** **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: No water, no sampling.

Station 43A06 **Visit** 1 **Survey Date** 8/6/2002

PIC43030.jpg

PIC43031.jpg

Station 44A01 **Visit** 1 **Survey Date:** 08/07/2002 **Time:** 9:36 AM

Waterbody Name: One-O Six Creek (Local Name) **Pipeline Milepost:** 188.35

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	67.87799	-149.82260		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Chandalar D-6 **Elevation (m):** 555

Anadromous Waters Catalog Number:

Geographic Comments: Between Dalton Highway MP 225 and 225. Station is 0.35 miles south of the 188 PLMP marker on the Dalton Highway. There is a small dirt road just south of the creek.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air: 11	**Water:**			

Qualitative Velocity: N/A **Water Color:**

Stream Stage: Dry, No defined Channel **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Station is at the edge of the Dalton Highway. There is no clearly defined channel and no surface water upstream of the culvert. Downstream of the culvert is evidence of a channel, but currently water here appears stagnant, with no inflow.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** **# Traps:** **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Not enough water to electrofish or set traps.

Station 44A01 **Visit** 1 **Survey Date** 8/7/2002

PIC44001.jpg

PIC44002.jpg

PIC44004.jpg

Station 44A02 **Visit** 1 **Survey Date:** 08/07/2002 **Time:** 9:45 AM

Waterbody Name: One-O Six Creek (Local Name) **Pipeline Milepost:** 189.26

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	67.86478	-149.82582		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Chandalar D-6 **Elevation (m):** 542

Anadromous Waters Catalog Number:

Geographic Comments: At Dalton Highway MP 223 take Access Road 106-APL-2B. Stream is the block point directly adjacent south of the access road.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air: 11	**Water:**			

Qualitative Velocity: N/A **Water Color:**

Stream Stage: Dry, Defined Channel **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: The channel is dry, but a channel is evident, on both sides of the Dalton Highway. At the ROW block point there is standing water among the riprap.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** **# Traps:** **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Not enough water to electrofish or set traps.

Station 44A02 **Visit** 1 **Survey Date** 8/7/2002

PIC44005.jpg

PIC44006.jpg

PIC44007.jpg

Station 44A03 **Visit** 1 **Survey Date:** 08/07/2002 **Time:** 1:00 PM

Waterbody Name: One-Nine-Eight Creek (Local Name) **Pipeline Milepost:** 198.03

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	67.74479	-149.76434		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Chandalar C-6 **Elevation (m):** 482

Anadromous Waters Catalog Number:

Geographic Comments: At Dalton Highway MP 215 take Access Road 105-APL-2, head south. Stream is between VSMs 1045589 and 1045649.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air:	**Water:**			

Qualitative Velocity: N/A **Water Color:**

Stream Stage: Dry, Defined Channel **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Stream bed is dry, but evidence of periodic flow exists.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** **# Traps:** **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: No water, no sampling.

Station 44A03 **Visit** 1 **Survey Date** 8/7/2002

PIC44014.jpg

PIC44015.jpg

PIC44016.jpg

Station 45A01 **Visit** 1 **Survey Date:** 08/08/2002 **Time:** 9:42 AM

Waterbody Name: Middle Fork Airport Creek (Local Name) **Pipeline Milepost:** 202.85

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	67.67778	-149.72415		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Chandalar C-6 **Elevation (m):** 458

Anadromous Waters Catalog Number:

Geographic Comments: At Dalton Highway MP 210 take Access Road 104-APL-3, head north on ROW. LWC is between VSMs 1071084 and 1071019.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air: 9	**Water:**			

Qualitative Velocity: Slow **Water Color:** Feric

Stream Stage: Low, Discontinuous Flow **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Station is at the LWC, which has a very limited surface flow. Upstream of the LWC are only small isolated pools, no defined channel. Downstream of the LWC there is no, or a very poorly defined channel draining into a bog. No water deep enough for multimeter readings.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** **# Traps:** **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Water is not deep enough to electrofish or to set minnow traps.

Station 45A01 **Visit** 1 **Survey Date** 8/8/2002

PIC45001.jpg

PIC45002.jpg

PIC45005.jpg

Station 45A02 **Visit** 1 **Survey Date:** 08/08/2002 **Time:** 10:00 AM

Waterbody Name: South Fork Airport Creek (Local Name) **Pipeline Milepost:** 202.99

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	67.67579	-149.72392		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Chandalar C-6 **Elevation (m):** 459

Anadromous Waters Catalog Number:

Geographic Comments: At Dalton Highway MP 210 take Access Road 104-APL-3, head north. Culvert is between VSMs 1071808 and 1071743.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air: 10	**Water:**			

Qualitative Velocity: Still **Water Color:** Feric

Stream Stage: Low, Discontinuous Flow **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Culvert length 30.8 m, diameter 1.2 m. There is a defined, but vegetated channel. Ferric-tinged water is present in a small pool at the culvert inlet. Further upstream and downstream water is in isolated pools, no surface flow.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** **# Traps:** **Trap Duration (h):**

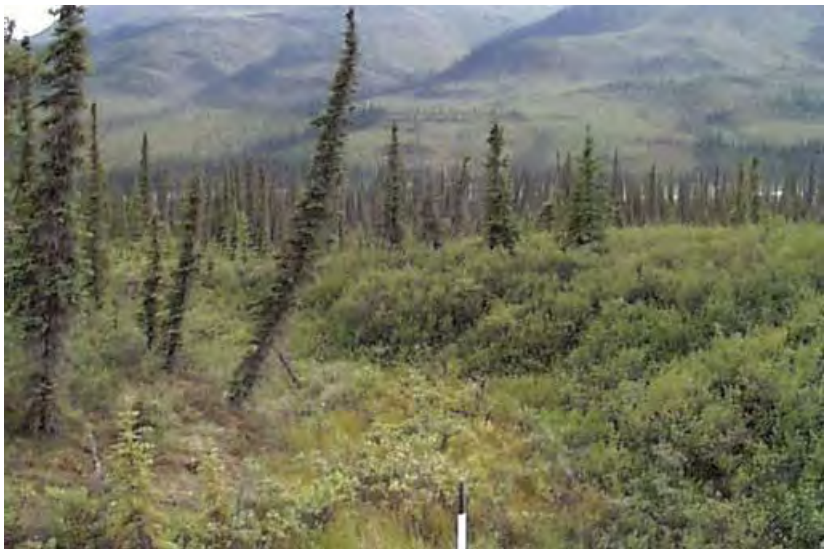
Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Not enough water to sample.

Station 45A02 **Visit** 1 **Survey Date** 8/8/2002

PIC45006.jpg



PIC45007.jpg

PIC45008.jpg

Station 45A03 **Visit** 1 **Survey Date:** 08/08/2002 **Time:** 10:30 AM

Waterbody Name: 1415 Lake Outlet (Local Name) **Pipeline Milepost:** 204.8

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	67.65061	-149.72556		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Chandalar C-6 **Elevation (m):** 445

Anadromous Waters Catalog Number:

Geographic Comments: At Dalton Highway MP 208 take Access Road 104-APL-1A, head north on ROW. LWC is between VSMs 1081362 and 1081287.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air: 10	**Water:**			

Qualitative Velocity: N/A **Water Color:**

Stream Stage: Dry, Defined Channel **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Channel is dry, but defined. The channel extends downslope 20 m from the LWC to large dry lake.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** **# Traps:** **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: No water, no sampling.

Station 45A03 **Visit** 1 **Survey Date** 8/8/2002

PIC45010.jpg

PIC45011.jpg

PIC45012.jpg

Station 45A04 **Visit** 1 **Survey Date:** 08/08/2002 **Time:** 11:00 AM

Waterbody Name: Two-O-Six Mile Creek (Local Name) **Pipeline Milepost:** 206.46

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 7
	67.63520	-149.77173		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Chandalar C-6 **Elevation (m):** 436

Anadromous Waters Catalog Number:

Geographic Comments: On Access Road RGV37, head north. LWC is between VSMs 1090164 and 1090099.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air: 10	**Water:**			

Qualitative Velocity: N/A **Water Color:**

Stream Stage: Dry, Defined Channel **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: LWC is dry; with no dominant continuous channel structure. Sheet flow periodically appears to flow from the upslope wetland across/through the LWC to the downslope dense willow and alder thicket.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

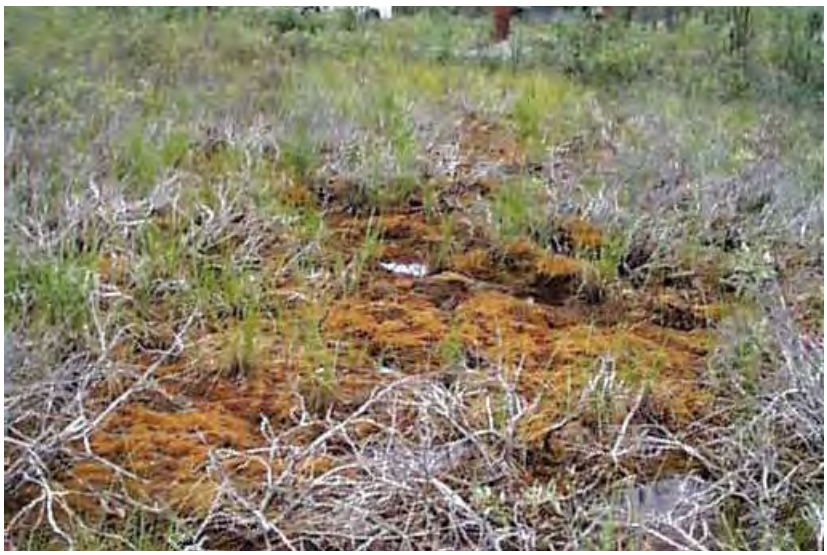
Gear: None **EF Time (s):** **# Traps:** **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: No water is present. Small standing water in wetland to west not deep enough for sampling.

Station 45A04 **Visit** 1 **Survey Date** 8/8/2002



PIC45014.jpg

PIC45017.jpg

PIC45016.jpg

Station 45A05 **Visit** 1 **Survey Date:** 08/08/2002 **Time:** 11:15 AM

Waterbody Name: Two-O-Six Mile Creek (Local Name) **Pipeline Milepost:** 206.53

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 8
	67.63454	-149.77335		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Chandalar C-6 **Elevation (m):** 440

Anadromous Waters Catalog Number:

Geographic Comments: On Access Road RGV37, head north on ROW. LWC is between VSMs 1090520 and 1090454.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air: 10	**Water:**			

Qualitative Velocity: N/A **Water Color:**

Stream Stage: Dry, Defined Channel **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: LWC is dry and on both sides of LWC the channel is dry. Ten meters upslope (west) from the LWC is a dry (seasonal?) pond. Downslope (east) of the LWC, water (when present) appears to sheet flow through dense tussocky alder and willow growth.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** **# Traps:** **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: No water, no sampling.

Station 45A05 **Visit** 1 **Survey Date** 8/8/2002

PIC45018.jpg

PIC45019.jpg

PIC45020.jpg

Station 45A06 **Visit** 1 **Survey Date:** 08/08/2002 **Time:** 11:28 AM

Waterbody Name: Millie's Meander (Local Name) **Pipeline Milepost:** 206.9

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 8
	67.62968	-149.77954		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Chandalar C-6 **Elevation (m):** 435

Anadromous Waters Catalog Number:

Geographic Comments: On Access Road RGV37, head north on ROW. LWC is between VSMs 1092440 and 1092375.

Station Characteristics

Temperature (C) **DO (ppm):** 8.54 **Turbidity (NTU)** 0 **Stream Gradient (%):**

Air: 10 **Water:** 10 **Qualitative Velocity:** N/A **Water Color:** Clear

Stream Stage: Dry, Defined Channel **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Station is in small pool west of the LWC. The LWC is dry as is the area east of the LWC. West of the LWC is a bog pool (diameter 15 m, depth 0.10 m); however this water has no evident surface connection to the channel. Downslope (east) the channel disappears into the alders and willows.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 104 **# Traps:** **Trap Duration (h):**

Channel: Off Channel (disconnected at inlet and/or outlet)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Electrofished the bog pool west of the LWC.

Station 45A06 **Visit** 1 **Survey Date** 8/8/2002

PIC45022.jpg

PIC45023.jpg

PIC45024.jpg

Station 45A07 **Visit** 1 **Survey Date:** 08/08/2002 **Time:** 11:55 AM

Waterbody Name: Millie's Meander (Local Name) **Pipeline Milepost:** 207.1

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 8
	67.62726	-149.78349		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Chandalar C-6 **Elevation (m):** 434

Anadromous Waters Catalog Number:

Geographic Comments: On Access Road RGV37, head north on ROW. LWC is between VSMs 1093461 and 1093520.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air: 10	**Water:**			

Qualitative Velocity: N/A **Water Color:**

Stream Stage: Dry, No defined Channel **48 hr. Precipitation/Runoff:** None/Trace

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: LWC is dry, to the east and west of LWC the area is dry also. East of the LWC is evidence of multiple channels meandering through the alders and willows. West of the LWC is no real channel--whole area overgrown with alders and willows.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** **# Traps:** **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: No water, no sampling.

Station 45A07 **Visit** 1 **Survey Date** 8/8/2002

PIC45026.jpg

PIC45027.jpg

PIC45028.jpg

Station 46A01 **Visit** 1 **Survey Date:** 08/09/2002 **Time:** 8:50 AM

Waterbody Name: Wayback Creek (Local Name) **Pipeline Milepost:** 207.76

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	67.61920	-149.79529		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Chandalar C-6 **Elevation (m):** 438

Anadromous Waters Catalog Number:

Geographic Comments: At Dalton Highway MP 206 take Access Road RGV-37-S (103-APL-4), head south on ROW. Stream is 0.1 miles beyond where pipeline goes underground. A yellow and blue wooden sign identifies the stream and PLMP at the LWC.

Station Characteristics

Temperature (C) **DO (ppm):** 6.65 **Turbidity (NTU)** 0 **Stream Gradient (%):**

Air: 9 **Water:** 9 **Qualitative Velocity:** N/A **Water Color:** Clear

Stream Stage: Dry, Defined Channel **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:** Gravel
Thalweg Depth			**Subdominant:** Sand/Silt/Clay
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: LWC and adjacent channel are dry. There is defined channel east and west of the LWC. The channel has vegetation covering whole channel, and no substrate visible, suggesting some time has past since water consistently flowed. Forty meters east of the LWC is an oxbow pond 100 m long and up to 1 m deep. Pond water is very clear; visibility good. The pond is 0.5 m below the lowest point of the channel. Picture 5 of pond. Substrate was gravel, with surface fines.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 256 **# Traps:** 2 **Trap Duration (h):** 0.5

Channel: Off Channel (disconnected at inlet and/or outlet)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Electrofished the whole oxbow pond; excessive depth limited coverage. Two minnow traps set at either end of the pond.

Station 46A01 **Visit** 1 **Survey Date** 8/9/2002

PIC46001.jpg

PIC46002.jpg

PIC46005.jpg

Station 46A02 **Visit** 1 **Survey Date:** 08/09/2002 **Time:** 9:57 AM

Waterbody Name: Two-O-Eight Creek (Local Name) **Pipeline Milepost:** 208.63

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	67.60807	-149.78876		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Chandalar C-6 **Elevation (m):** 427

Anadromous Waters Catalog Number:

Geographic Comments: At Dalton Highway MP 204/205 take Access Road 103-APL-3, head south on ROW. Station is at culvert between VSMs 1101498 and 1101558; making PLMP 208.625 not 208.63.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air: 10	**Water:**			

Qualitative Velocity: N/A **Water Color:**

Stream Stage: Dry, No defined Channel **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: No surface water present. Surface water if/when present does not appear to be contained within a defined channel. Picture 10 shows east side of culvert. Culvert length 24.5 m; diameter 0.61 m. Culvert outlet and inlet has thick moss growing around and 0.10 m down inside of barrel, also suggesting lack of frequent significant flows.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** **# Traps:** **Trap Duration (h):**

Channel:

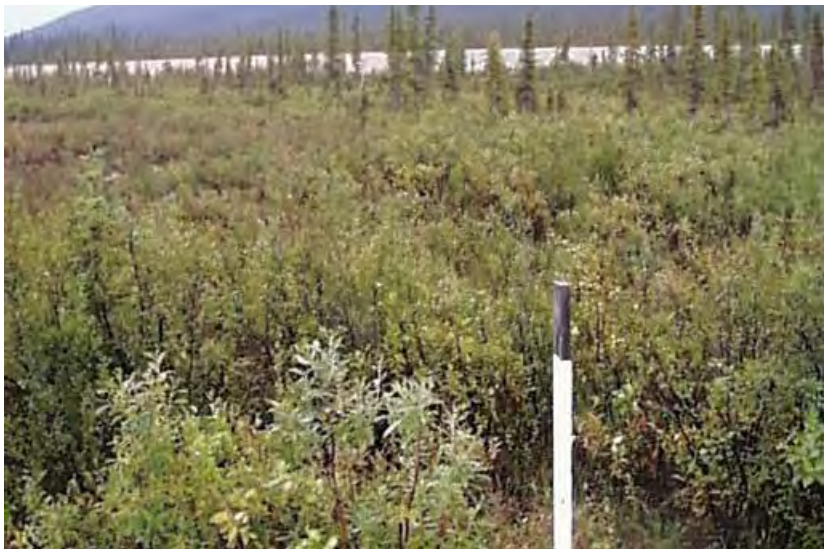
Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: No water, no sampling.

Station 46A02 **Visit** 1 **Survey Date** 8/9/2002

PIC46006.jpg

PIC46007.jpg



PIC46008.jpg

Station 47A01 **Visit** 1 **Survey Date:** 08/11/2002 **Time:** 2:25 PM

Waterbody Name: Spoiled Creek (Local Name) **Pipeline Milepost:** 212.66

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	67.55573	-149.84642		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Chandalar C-6 **Elevation (m):** 413

Anadromous Waters Catalog Number:

Geographic Comments: At Dalton Highway MP 200 take Access Road 102-APL-5, head north on ROW. LWC is between VSMs 1122854 and 1122798.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air:	**Water:**			

Qualitative Velocity: N/A **Water Color:**

Stream Stage: Dry, No defined Channel **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells, Anne Beesley

Visit Comments: LWC is dry and grass is growing between the tire ruts. On either side of LWC the channel is overgrown with vegetation. To the west is a dry pond.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** **# Traps:** **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: No water, no sampling.

Station 47A01 **Visit** 1 **Survey Date** 8/11/2002

PIC47001.jpg

PIC47002.jpg

PIC47003.jpg

Station 47A02 **Visit** 1 **Survey Date:** 08/11/2002 **Time:** 2:50 PM

Waterbody Name: Spoiled Creek (Local Name) **Pipeline Milepost:** 212.79

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 8
	67.55411	-149.85001		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Chandalar C-6 **Elevation (m):** 413

Anadromous Waters Catalog Number:

Geographic Comments: At Dalton Highway MP 200 take Access Road 102-APL-5, head north on ROW. Culvert is between VSMs 1123580 and 1123521.

Station Characteristics

Temperature (C) **Air:** **Water:** 8.3 **DO (ppm):** 1.98 **Qualitative Velocity:** Still **Turbidity (NTU)** 50 **Water Color:** Clear **Stream Gradient (%):**

Stream Stage: Low, Discontinuous Flow **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells, Anne Beesley

Visit Comments: No apparent flow through the culvert (length 27.2 m; diameter 0.62 m). Water is present in bogs on both sides of the ROW; water is clear, but organic substrate has layer of ferric-colored precipitate. Eastern end of culvert is blocked with red spill containment board and riprap.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

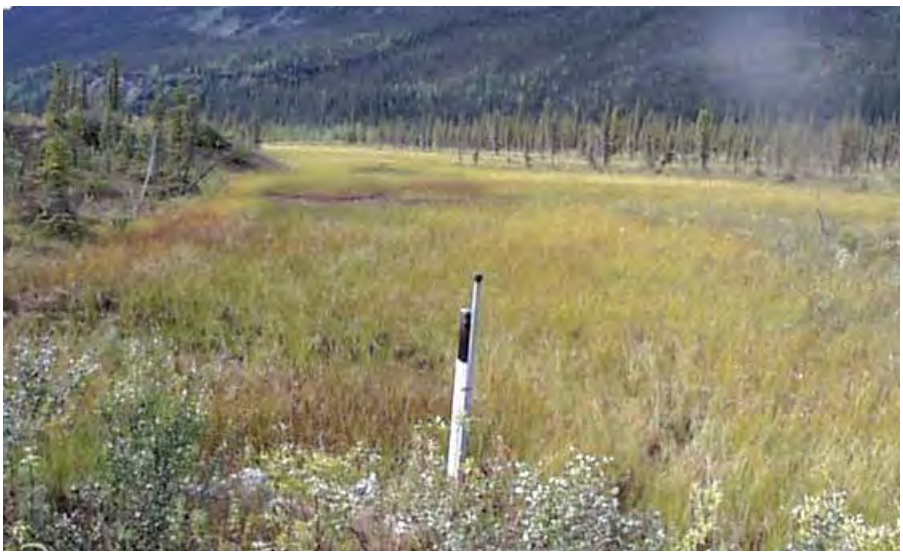
Gear: Portable Electrofisher **EF Time (s):** 142 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

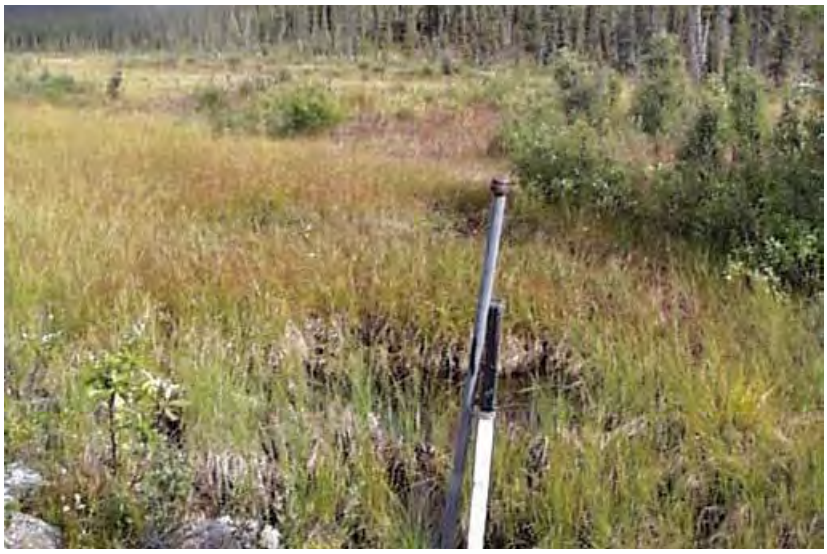
Comments: Water is densely vegetated, bog; electrofishing effectiveness limited.

Station 47A02 **Visit** 1 **Survey Date** 8/11/2002



PIC47004.jpg

PIC47005.jpg



PIC47006.jpg

Station 47A03 **Visit** 1 **Survey Date:** 08/11/2002 **Time:** 3:33 PM

Waterbody Name: Koyukuk Slough (Local Name) **Pipeline Milepost:** 212.89

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 8
	67.55289	-149.85146		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Chandalar C-6 **Elevation (m):** 410

Anadromous Waters Catalog Number:

Geographic Comments: At Dalton Highway MP 200 take Access Road 102-APL-5, head north on ROW. LWC is between VSMs 1124001 and 1124071.

Station Characteristics

Temperature (C) **DO (ppm):** 10.13 **Turbidity (NTU)** 0 **Stream Gradient (%):**

Air: **Water:** 13.7 **Qualitative Velocity:** Still **Water Color:** Clear

Stream Stage: Low, Discontinuous Flow **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells, Anne Beesley

Visit Comments: LWC is dry. East of the LWC the channel is evident for 2 m to a wide dry pond and a bog. West of the ROW, any historic channel is overgrown with forbs and shrubs. Substrate of bog pond on the east is organic, many water beetles present.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 121 **# Traps:** **Trap Duration (h):**

Channel: Off Channel (disconnected at inlet and/or outlet)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Electrofished bog pond east of the LWC. Large area of water and ground very soft.

Station 47A03 **Visit** 1 **Survey Date** 8/11/2002

PIC47008.jpg

PIC47009.jpg

PIC47010.jpg

Station 47A04 **Visit** 1 **Survey Date:** 08/11/2002 **Time:** 4:00 PM

Waterbody Name: Valve Site Creek (Local Name) **Pipeline Milepost:** 213.03

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	67.55089	-149.85184		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Chandalar C-6 **Elevation (m):** 423

Anadromous Waters Catalog Number:

Geographic Comments: At Dalton Highway MP 200 take Access Road 102-APL-5, head north on ROW. Culvert is between VSMs 1124831 and 1124772.

Station Characteristics

Temperature (C) **DO (ppm):** 5.45 **Turbidity (NTU)** 1 **Stream Gradient (%):** 2

Air: **Water:** 11.1 **Qualitative Velocity:** Slow **Water Color:**

Stream Stage: Low, Discontinuous Flow **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells, Anne Beesley

Visit Comments: Culvert length 24 m; diameter 0.61 m. Flow not continuous; forming a series of channel pools, some of which are connected, other are not. Upstream of culvert no substantial channel evident; a small pool exists at the culvert inlet. The culvert outlet is significantly perched. Surface flow disappears 100 m downstream of culvert; however, channel structure and bank erosion suggest that channel does periodically carry substantially greater flow.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 52 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Electrofished all contiguous pools.

Station 47A04 **Visit** 1 **Survey Date** 8/11/2002

PIC47012.jpg

PIC47013.jpg

PIC47015.jpg

Station 48A01 **Visit** 1 **Survey Date:** 08/13/2002 **Time:** 12:48 PM

Waterbody Name: North Fork Confusion Creek (Local Name) **Pipeline Milepost:** 226.96

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	67.40411	-150.09933		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Wiseman B-1 **Elevation (m):** 374

Anadromous Waters Catalog Number:

Geographic Comments: At Dalton Highway MP 187 take Access Road 100-APL/AMS-2, head south on ROW. North of station is VSM 1198318--to south pipeline goes underground.

Station Characteristics

Temperature (C)	**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air: 6.6 **Water:**			

Qualitative Velocity: N/A **Water Color:**

Stream Stage: Dry, No defined Channel **48 hr. Precipitation/Runoff:** Heavy

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Culvert length 24.9 m; diameter 0.78 m. No water flowing or present adjacent to culvert.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** **# Traps:** **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: No water, no sampling.

Station 48A01 **Visit** 1 **Survey Date** 8/13/2002

PIC48023.jpg

PIC48027.jpg

PIC48026.jpg

Station 48A02 **Visit** 1 **Survey Date:** 08/13/2002 **Time:** 1:39 PM

Waterbody Name: Marion Creek **Pipeline Milepost:** 233.21

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 7
	67.31802	-150.16803		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Wiseman B-1 **Elevation (m):** 334

Anadromous Waters Catalog Number: 334-40-11000-2125-3912-4112

Geographic Comments: At Dalton Highway MP 182 take Access Road 99-APL-3, head south. Marion Creek is a block point, with a yellow sign identifying stream.

Station Characteristics

Temperature (C) **Air:** 8 **Water:** 6.5 **DO (ppm):** 13.61 **Turbidity (NTU)** 2 **Stream Gradient (%):** 0.8

Qualitative Velocity: Fast **Water Color:** Clear

Stream Stage: Medium **48 hr. Precipitation/Runoff:** Heavy

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**	
Width		5	**Dominant:**	Gravel
Thalweg Depth			**Subdominant:**	Cobble
			Subdominant:	Boulder

Survey Team: Doug Lieb, John Wells

Visit Comments: Adjacent to the ROW, stream banks have been stabilized with willow cuttings; other channel engineering work (e.g., vortex rock weirs) has been done to control flow.

Species: chinook salmon **Life Stage:** Juvenile **Life History:** Anadromous

Count: 3 **Fork lengths (mm):** 54 54 55

Gear: Portable Electrofisher **EF Time (s):** 250 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Unknown **Height (m):** **Pool depth (m):**

Comments: Captured one chinook in deep, fast moving water downstream of a vortex rock weir. One chinook was captured in slow water under a cut bank. Third chinook collected behind a boulder in a shallow pool.

Species: general fish observation, no species information **Life Stage:** Not Applicable **Life History:** Unknown

Count: 2 **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Unknown **Height (m):** **Pool depth (m):**

Comments: Fish were stunned but not netted. Appearance similar to chinook, but no positive identification.

Station 48A02 **Visit** 1 **Survey Date** 8/13/2002

PIC48034.jpg

PIC48035.jpg

PIC48037.jpg

Station 48A03 **Visit** 1 **Survey Date:** 08/13/2002 **Time:** 2:49 PM

Waterbody Name: Sharon Creek (Local Name) **Pipeline Milepost:** 233.38

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	67.31655	-150.16960		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Wiseman B-1 **Elevation (m):** 334

Anadromous Waters Catalog Number:

Geographic Comments: South of Marion Creek take Access Road 99-APL-1, head south on ROW. Culvert is directly in front of first gate allowing access to ROW.

Station Characteristics

Temperature (C) **Air:** 7.8 **Water:** 8.7 **DO (ppm):** 7.35 **Turbidity (NTU)** 5 **Stream Gradient (%):** 0.3

Qualitative Velocity: Still **Water Color:** Clear

Stream Stage: Medium **48 hr. Precipitation/Runoff:** Heavy

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width		3	**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Stream has two culverts (length 24.7 m, diameter 0.76 m) passing underneath the ROW. Stream is wide and slow, with an organic layer on top of a gravel substrate. Stream is too deep to measure thalweg depth east of the culverts where multimeter reading were conducted. Woody (spruce and alder) debris in stream. There is a rust color to substrate near the culverts.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 222 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Some portions of stream too deep to electrofish.

Station 48A03 **Visit** 1 **Survey Date** 8/13/2002

PIC48040.jpg

PIC48041.jpg

PIC48043.jpg

Station 48A04 **Visit** 1 **Survey Date:** 08/13/2002 **Time:** 3:38 PM

Waterbody Name: Sharon Creek (Local Name) **Pipeline Milepost:** 233.54

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	67.31397	-150.17163		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Wiseman B-1 **Elevation (m):** 341

Anadromous Waters Catalog Number:

Geographic Comments: At Dalton Highway MP 182 take Access Road 99-APL-1, head south on ROW to second stream. A yellow sign identifies stream and PLMP.

Station Characteristics

Temperature (C) **Air:** 14.5 **Water:** 8.5 **DO (ppm):** 9.74 **Turbidity (NTU)** 3 **Stream Gradient (%):**

Qualitative Velocity: Still **Water Color:** Clear

Stream Stage: Medium **48 hr. Precipitation/Runoff:** Heavy

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width		3	**Dominant:**
Thalweg Depth		1	**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Two culverts (length 15.8 m; diameter 0.73 m). West of the culverts is a beaver dam and pond. Historic channelization efforts apparent in area. Past high water events have undermined riparian spruces.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 209 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Beaver pond/stream is very wide and deep; difficult sampling.

Station 48A04 **Visit** 1 **Survey Date** 8/13/2002

PIC48044.jpg

PIC48045.jpg

PIC48047.jpg

Station 48A05 **Visit** 1 **Survey Date:** 08/13/2002 **Time:** 4:18 PM

Waterbody Name: South Fork Sharon Creek (Local Name) **Pipeline Milepost:** 233.66

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	67.31238	-150.17276		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Wiseman B-1 **Elevation (m):** 339

Anadromous Waters Catalog Number:

Geographic Comments: At Dalton Highway MP 182 take Access Road 99-APL-1, head south on ROW. A yellow wood sign identifies stream and PLMP.

Station Characteristics

Temperature (C)	**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air: 10.3 **Water:**			

Qualitative Velocity: N/A **Water Color:**

Stream Stage: Dry, No defined Channel **48 hr. Precipitation/Runoff:** Heavy

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: On both sides of the culvert no water present in the dried out graminoid bog. The ROW has a culvert (length 12.4 m; diameter 0.61 m). No apparent connection to Sharon Creek (Stations 48A03 and 48A04).

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** **# Traps:** **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: No water, no sampling.

Station 48A05 **Visit** 1 **Survey Date** 8/13/2002

PIC48050.jpg

PIC48051.jpg

PIC48052.jpg

Station 48A06 **Visit** 1 **Survey Date:** 08/13/2002 **Time:** 4:48 PM

Waterbody Name: Clara Creek **Pipeline Milepost:** 236.45

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	67.27274	-150.17529		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Wiseman B-1 **Elevation (m):** 328

Anadromous Waters Catalog Number:

Geographic Comments: From Access Road 98-APL-4 head south on ROW. Culvert is between VSMs 1248425 and 1248490.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air: 10	**Water:**			

Qualitative Velocity: N/A **Water Color:** Feric

Stream Stage: Dry, Defined Channel **48 hr. Precipitation/Runoff:** Heavy

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Culvert at ROW (length 12.2 m; diameter 0.61 m). There are several small puddles west of culvert with highly ferric water and fluffy iron-colored sediment.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** **# Traps:** **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Too little water to warrant sampling.

Station 48A06 **Visit** 1 **Survey Date** 8/13/2002

PIC48059.jpg

PIC48060.jpg

PIC48062.jpg

Station 49A01 **Visit** 1 **Survey Date:** 08/14/2002 **Time:** 9:00 AM

Waterbody Name: Horseshoe Slough (Local Name) **Pipeline Milepost:** 239.1

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	67.24189	-150.22058		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Wiseman A-1 **Elevation (m):** 314

Anadromous Waters Catalog Number:

Geographic Comments: From Access Road 98-APL-1 head north. Culvert is between VSMs 1262504 and 1262444.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air: 2.7	**Water:**			

Qualitative Velocity: N/A **Water Color:**

Stream Stage: Dry, No defined Channel **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Culvert at ROW (length 12.2 m; diameter 0.62 m). No water is present, the area is well overgrown with tall alders, willows and forbs. Culvert openings are buried half the diameter of the barrel.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** **# Traps:** **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: No water, no sampling.

Station 49A01 **Visit** 1 **Survey Date** 8/14/2002

PIC49001.jpg

PIC49002.jpg

PIC49003.jpg

Station 49A02 **Visit** 1 **Survey Date:** 08/14/2002 **Time:** 9:18 AM

Waterbody Name: Horseshoe Slough (Local Name) **Pipeline Milepost:** 239.26

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	67.23987	-150.22385		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Wiseman A-1 **Elevation (m):** 320

Anadromous Waters Catalog Number:

Geographic Comments: From Access Road 98-APL-1, head south. Culvert is between VSMs 1263344 and 1263276.

Station Characteristics

Temperature (C)		**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air: 3.8	**Water:**			

Qualitative Velocity: N/A **Water Color:**

Stream Stage: Dry, Defined Channel **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Culvert at ROW (length 12.2 m; diameter 1.2 m). The channel is dry, but a wide moss-filled relict channel is present.

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** **# Traps:** **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: No water, no sampling.

Station 49A02 **Visit** 1 **Survey Date** 8/14/2002

PIC49005.jpg

PIC49008.jpg

PIC49007.jpg

Station 49A03 **Visit** 1 **Survey Date:** 08/14/2002 **Time:** 12:10 PM

Waterbody Name: Ninety-Six Creek (Local Name) **Pipeline Milepost:** 247.4

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	67.14024	-150.35464		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Wiseman A-1 **Elevation (m):** 333

Anadromous Waters Catalog Number:

Geographic Comments: At Dalton Highway MP 166 take Access Road 96-APL-3, head south. Culvert is between VSMs 1306245 and 1306304.

Station Characteristics

Temperature (C) **Air:** 6.6 **Water:** 8.8 **DO (ppm):** 8.35 **Qualitative Velocity:** Slow **Turbidity (NTU)** 13 **Water Color:** Clear **Stream Gradient (%):** 1

Stream Stage: Low **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width		0.7	**Dominant:**
Thalweg Depth		0.2	**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Downstream of the culvert the stream forms a large pond extending to the Dalton Highway and to the adjacent access road. Water flows to the pond from the north along the highway. Dead trees and shrubs along pond margins suggest water level is rising. Upstream of culvert the channel anastomoses through the muskeg. Channel parameters and multimeter readings measured upstream of culvert.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 154 **# Traps:** 4 **Trap Duration (h):** 1.0

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Pond was too large and deep to electrofish anything but out edges, severely limiting efficiency. Upstream of culvert had 100% coverage.

Station 49A03 **Visit** 1 **Survey Date** 8/14/2002

PIC49023.jpg

PIC49024.jpg

PIC49025.jpg

Station 49A04 **Visit** 1 **Survey Date:** 08/14/2002 **Time:** 1:40 PM

Waterbody Name: South Fork Windy Arm Creek (Local Name) **Pipeline Milepost:** 249.59

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	67.10967	-150.34135		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Wiseman A-1 **Elevation (m):** 334

Anadromous Waters Catalog Number:

Geographic Comments: At Dalton Highway MP 163 take Access Road 96-APL-2A, head north on ROW. Culvert is between VSMs 1317864 and 1317809.

Station Characteristics

Temperature (C) **DO (ppm):** 9.48 **Turbidity (NTU)** 0 **Stream Gradient (%):** 0.5

Air: 9.5 **Water:** 4.7 **Qualitative Velocity:** Medium **Water Color:** Clear

Stream Stage: Low, Discontinuous Flow **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Upstream and downstream of culvert (length 25 m; diameter 1.2 m) are 5 m long sections of open water, then sedge bog with standing water.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 31 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Electrofished the only open water not overgrown with sedges.

Station 49A04 **Visit** 1 **Survey Date** 8/14/2002

PIC49031.jpg

PIC49035.jpg

PIC49033.jpg

Station 49A05 **Visit** 1 **Survey Date:** 08/14/2002 **Time:** 2:20 PM

Waterbody Name: Crossroads Creek (Local Name) **Pipeline Milepost:** 251.69

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 8
	67.07990	-150.34734		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Wiseman A-1 **Elevation (m):** 347

Anadromous Waters Catalog Number:

Geographic Comments: At Dalton Highway MP 162 take Access Road 96-APL-1, head south on ROW. Culvert is between VSMs 1328901 and 1328972.

Station Characteristics

Temperature (C) **Air:** 14.2 **Water:** 8 **DO (ppm):** 10.73 **Turbidity (NTU)** 1 **Stream Gradient (%):** 0.5

Qualitative Velocity: Slow **Water Color:** Clear

Stream Stage: Medium **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Culvert at ROW (length 14.8 m; diameter 0.95 m). Station is in a wetland with open patches of water (average 3 m wide). Only a 0.25 m wide trickle flows into the culvert. Downstream of the culvert the channel opens to a pool spread out against the ROW.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 131 **# Traps:** 4 **Trap Duration (h):** 0.5

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Open water in wetland are wide and deep, making full electrofishing coverage difficult.

Station 49A05 **Visit** 1 **Survey Date** 8/14/2002

PIC49037.jpg

PIC49038.jpg

PIC49039.jpg

Station 49A06 **Visit** 1 **Survey Date:** 08/14/2002 **Time:** 3:05 PM

Waterbody Name: Crossroads Creek (Local Name) **Pipeline Milepost:** 251.72

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	67.07950	-150.34727		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Wiseman A-1 **Elevation (m):** 351

Anadromous Waters Catalog Number:

Geographic Comments: At Dalton Highway MP 162 take Access Road 96-APL-1, head south. LWC is between VSMs 1329032 and 1329087.

Station Characteristics

Temperature (C) **DO (ppm):** 5.85 **Turbidity (NTU)** 0 **Stream Gradient (%):** 0.5

Air: 14 **Water:** 5.9 **Qualitative Velocity:** Slow **Water Color:** Clear

Stream Stage: Low, Discontinuous Flow **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Discontinuous flow across LWC with puddles in ruts. Downstream of LWC water spreads in a shallow sedge bog with no open pools. Upstream of LWC there are open pools in sedge bog.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 42 **# Traps:** 1 **Trap Duration (h):** 0.3

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments:

Station 49A06 **Visit** 1 **Survey Date** 8/14/2002

PIC49040.jpg

PIC49041.jpg

PIC49042.jpg

Station 49A07 **Visit** 1 **Survey Date:** 08/14/2002 **Time:** 3:35 PM

Waterbody Name: Crossroads Creek (Local Name) **Pipeline Milepost:** 251.79

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	67.07853	-150.34711		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Wiseman A-1 **Elevation (m):** 351

Anadromous Waters Catalog Number:

Geographic Comments: At Dalton Highway MP 162 take Access Road 96-APL-1, head south on ROW. Culvert is between VSMs 1329397 and 1329453.

Station Characteristics

Temperature (C) **Air:** 14 **Water:** 8.9 **DO (ppm):** 1.63 **Qualitative Velocity:** N/A **Turbidity (NTU)** 3 **Water Color:** Clear **Stream Gradient (%):** 0.5

Stream Stage: Low, Discontinuous Flow **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Culvert at ROW (length 12.1 m; diameter 0.61 m). Downstream of culvert water spreads out into dense tall willows and alders; no open water present. Upstream of culvert is sedge bog, with shallow open water pools.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 47 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Electrofished all open water. Water too shallow for minnow trapping.

Station 49A07 **Visit** 1 **Survey Date** 8/14/2002

PIC49043.jpg

PIC49047.jpg

PIC49045.jpg

Station 49A08 **Visit** 1 **Survey Date:** 08/14/2002 **Time:** 4:00 PM

Waterbody Name: Crossroads Creek (Local Name) **Pipeline Milepost:** 251.9

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	67.07694	-150.34628		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Wiseman A-1 **Elevation (m):** 351

Anadromous Waters Catalog Number:

Geographic Comments: At Dalton Highway MP 162 take Access Road 96-APL-1, head south on ROW. Culvert crosses ROW at 45 degree angle between VSMs 1330003 and 1330063.

Station Characteristics

Temperature (C) **Air:** 14 **Water:** 9.4 **DO (ppm):** 7.9 **Qualitative Velocity:** Slow **Turbidity (NTU)** 26 **Water Color:** Clear **Stream Gradient (%):** 0.5

Stream Stage: Medium **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Culvert at ROW (length 34.7 m; diameter 0.62 m). Near culvert water is ferric in color with rust precipitate floating in water. Downstream of culvert the water color clears and has flow. Of all the adjacent stations (49A05, 49A06, 49A07), this has the most stream-like channel. In areas water flows through alders and willows and forbs, completely obscuring any channel. Upstream of culvert the water is more spread out in vegetation, presenting no real channel, except immediately adjacent to the culvert. Downstream for 50 m is at least 2 m wide of open water, over wader deep, before flowing into vegetation.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 134 **# Traps:** 2 **Trap Duration (h):** 0.8

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments:

Station 49A08 **Visit** 1 **Survey Date** 8/14/2002

PIC49048.jpg

PIC49049.jpg

PIC49050.jpg

Station 50A01 **Visit** 1 **Survey Date:** 08/15/2002 **Time:** 9:00 AM

Waterbody Name: Elwood Creek (Local Name) **Pipeline Milepost:** 259.91

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	66.97543	-150.34763		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Bettles D-1 **Elevation (m):** 407

Anadromous Waters Catalog Number:

Geographic Comments: At Dalton Highway MP 154 take Access Road 94-APL-1A, head south on ROW. LWC is between VSMs 1372304 and 1372364.

Station Characteristics

Temperature (C) **Air:** 6 **Water:** 6.7 **DO (ppm):** 3.98 **Qualitative Velocity:** Slow **Turbidity (NTU)** 0 **Water Color:** Clear **Stream Gradient (%):**

Stream Stage: Low, Discontinuous Flow **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width		0.4	**Dominant:**
Thalweg Depth		0.05	**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: LWC has very little water in it, creating small puddles. Downstream of the LWC a pool has formed. From this pool water flows north then east downslope. Dense, tall alders grow over the stream for 100 m, then channel flows into a sedge wetland with one solitary pool of water. Upstream of the LWC the stream is small surface trickle for 5 m, then goes subsurface into sphagnum.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 50 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Much of the small stream is concealed by dense alders, making extensive sampling difficult.

Station 50A01 **Visit** 1 **Survey Date** 8/15/2002

PIC50001.jpg

PIC50005.jpg

PIC50003.jpg

Station 50A02 **Visit** 1 **Survey Date:** 08/15/2002 **Time:** 12:20 PM

Waterbody Name: Oxbow Lake System (Local Name) **Pipeline Milepost:** 285.53

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	66.66724	-150.65855		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Bettles C-2 **Elevation (m):** 268

Anadromous Waters Catalog Number:

Geographic Comments: At Dalton Highway MP 125 take Access Road 89-APL-4, head north on ROW. Station is at first culvert. A yellow wooden sign identifies stream and PLMP.

Station Characteristics

Temperature (C) **Air:** 7 **Water:** 8.6 **DO (ppm):** 7.11 **Qualitative Velocity:** Still **Turbidity (NTU)** 0 **Water Color:** Clear **Stream Gradient (%):** 0

Stream Stage: Medium **48 hr. Precipitation/Runoff:** Heavy

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Culvert at ROW (length 12.2 m; diameter 1.5 m). Waterbody is a 20 m wide oxbow pond historically originating from North Fork Bonanza Creek. No apparent flow.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 201 **# Traps:** 4 **Trap Duration (h):** 0.8

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Access to open water difficult.

Station 50A02 **Visit** 1 **Survey Date** 8/15/2002

PIC50011.jpg

PIC50012.jpg

PIC50013.jpg

Station 50A03 **Visit** 1 **Survey Date:** 08/15/2002 **Time:** 2:45 PM

Waterbody Name: Eight-Five Creek (Local Name) **Pipeline Milepost:** 312.99

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	66.32739	-150.41927		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Bettles B-1 **Elevation (m):** 526

Anadromous Waters Catalog Number:

Geographic Comments: At Dalton Highway MP 98 take Access Road 85-APL-1, head south on ROW. LWC is between VSMs 1652564 and 1652633.

Station Characteristics

Temperature (C) **Air:** 6.5 **Water:** 5 **DO (ppm):** 12.8 **Turbidity (NTU)** 0 **Stream Gradient (%):** 1.5

Qualitative Velocity: Medium **Water Color:** Clear

Stream Stage: Medium **48 hr. Precipitation/Runoff:** Heavy

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**	
Width		1	**Dominant:**	Sand/Silt/Clay
Thalweg Depth		0.2	**Subdominant:**	Gravel
			Subdominant:	Cobble

Survey Team: Doug Lieb, John Wells

Visit Comments: LWC has tire ruts forming and small pieces of riprap (0.10 m diameter) are building up in the LWC. Stream has many sections of shallow water mixed in with deep holes. Multimeter readings and channel parameters measured upstream of LWC.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 164 **# Traps:** 4 **Trap Duration (h):** 0.5

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Twenty meter reach has steep banks with riparian willows covering the channel, making electrofishing difficult.

Station 50A03 **Visit** 1 **Survey Date** 8/15/2002

PIC50017.jpg

PIC50018.jpg

PIC50019.jpg

Station 50A04 **Visit** 1 **Survey Date:** 08/15/2002 **Time:** 1:55 PM

Waterbody Name: Smokey Creek (Local Name) **Pipeline Milepost:** 314.81

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	66.30431	-150.39029		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Bettles B-1 **Elevation (m):** 496

Anadromous Waters Catalog Number:

Geographic Comments: From Access Road 84-APL-2, head north. LWC is between VSMs 1662242 and 1662172.

Station Characteristics

Temperature (C) **Air:** 6.5 **Water:** 4.5 **DO (ppm):** 11.33 **Turbidity (NTU)** 25 **Stream Gradient (%):** 1.3

Qualitative Velocity: Medium **Water Color:** Feric

Stream Stage: Low **48 hr. Precipitation/Runoff:** Heavy

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**	
Width		1.6	**Dominant:**	Sand/Silt/Clay
Thalweg Depth		0.19	**Subdominant:**	Gravel
			Subdominant:	Cobble

Survey Team: Doug Lieb, John Wells

Visit Comments: Water is pooling in LWC. Water color is ferric with high turbidity. Stream upstream and downstream channel flows right through the willows, stems come right up out of the stream.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 116 **# Traps:** 3 **Trap Duration (h):** 0.5

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Riparian willow growth was sufficiently dense to limit electrofishing access.

Station 50A04 **Visit** 1 **Survey Date** 8/15/2002

PIC50021.jpg

PIC50022.jpg

PIC50023.jpg

Station 51A01 **Visit** 1 **Survey Date:** 08/16/2002 **Time:** 12:30 PM

Waterbody Name: Knowater Creek (Local Name) **Pipeline Milepost:** 333.29

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 5
	66.07081	-150.16010		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Bettles A-1 **Elevation (m):** 177

Anadromous Waters Catalog Number:

Geographic Comments: From Access Road 81-APL-3, head south. LWC is between VSMs 1759763 and 1759763. This is equivalent to PLMP 333.288 and 333.299.

Station Characteristics

Temperature (C)	**DO (ppm):**	**Turbidity (NTU)**	**Stream Gradient (%):**
Air: 12 **Water:**	**Qualitative Velocity:** N/A	**Water Color:**	

Stream Stage: Dry, No defined Channel **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width			**Dominant:**
Thalweg Depth			**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: The LWC is evident from the small riprap used and a slight channel for 6 m to the east where it disappears in the dense alder, willow, and spruce. West of the LWC is a pond originating from stream immediately to the south (see Station 51A02--which could be the correct creek if PLMP was listed wrong).

Species: no collection effort **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: None **EF Time (s):** **# Traps:** **Trap Duration (h):**

Channel:

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: No water, no sampling.

Station 51A01 **Visit** 1 **Survey Date** 8/16/2002

PIC51010.jpg

PIC51011.jpg

PIC51012.jpg

Station 51A02 **Visit** 1 **Survey Date:** 08/16/2002 **Time:** 12:30 PM

Waterbody Name: **Pipeline Milepost:** 333.3

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	66.07060	-150.15994		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Bettles A-1 **Elevation (m):** 178

Anadromous Waters Catalog Number:

Geographic Comments: From Access Road 81-APL-3, head south. LWC is between VSMs 1759822 and 1759882. This is equivalent to PLMP 333.299 and 333.311. Knowater Creek was dry so not sure if the fish stream list PLMP was incorrect so did this station as a backup as there is water in the LWC.

Station Characteristics

Temperature (C) **Air:** 12 **Water:** 8.3 **DO (ppm):** 9.22 **Qualitative Velocity:** Slow **Turbidity (NTU)** 0 **Water Color:** Humic **Stream Gradient (%):** 0.5

Stream Stage: Low **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**	
Width		0.73	**Dominant:**	Cobble
Thalweg Depth		0.08	**Subdominant:**	Sand/Silt/Clay
			Subdominant:	

Survey Team: Doug Lieb, John Wells

Visit Comments: LWC has small flow across it. Upstream of LWC the stream is narrow with dense riparian willow growth obscuring the stream. Downstream of LWC is a large pool, with several very deep spots. A channel flows from the north side of the pool for 20 m and then goes subsurface. Considerable algal growth in pool.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 71 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Electrofished the pool next to ROW and the channel upstream as far as obscuring riparian growth allowed.

Station 51A02 **Visit** 1 **Survey Date** 8/16/2002

PIC51013.jpg

PIC51014.jpg

PIC51016.jpg

Station 53A01 **Visit** 1 **Survey Date:** 08/18/2002 **Time:** 9:32 AM

Waterbody Name: Globe Creek Tributary (Local Name) **Pipeline Milepost:** 417

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 7
	65.28407	-148.21182		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Livengood B-3 **Elevation (m):** 188

Anadromous Waters Catalog Number:

Geographic Comments: At Dalton Highway MP 42 take Access Road 67-APL-1, head south on ROW. LWC is between VSMs 2201751 and 2201806.

Station Characteristics

Temperature (C) **Air:** 9 **Water:** 2 **DO (ppm):** 13.71 **Turbidity (NTU)** 118 **Stream Gradient (%):** 1

Qualitative Velocity: Medium **Water Color:** Muddy

Stream Stage: Medium **48 hr. Precipitation/Runoff:** Heavy

Channel Dimensions (m):	**OHW**	**Wetted**	**Substrate**
Width		2	**Dominant:**
Thalweg Depth		1	**Subdominant:**
			Subdominant:

Survey Team: Doug Lieb, John Wells

Visit Comments: Upstream of LWC the channel is deep and has several locations where side channels are flowing in out of the woods, most likely generated from recent rains. LWC is washed out, water flows unconfined across the ROW. Downstream of the LWC the stream returns to the original channel meandering through the forest in a entrenched channel with woody debris. In many sections of stream, the current water level is over waist deep.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Portable Electrofisher **EF Time (s):** 131 **# Traps:** 4 **Trap Duration (h):** 0.5

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Water is very turbid from the heavy rains of the last 4-5 days. In-water visibility very poor. Lots of wood debris in water.

Station 53A01 **Visit** 1 **Survey Date** 8/18/2002

PIC53006.jpg

PIC53007.jpg

PIC53008.jpg

Station 56A01 **Visit** 1 **Survey Date:** 08/24/2002 **Time:** 11:50 AM

Waterbody Name: Darling Creek **Pipeline Milepost:** 573.63

Station Coordinates (decimal degrees)	**Latitude**	**Longitude**	**Datum:** NAD83	**GPS Error (m):** 6
	63.58213	-145.87225		

Coordinate Determination Method: Non-Differential GPS Field Measurement

USGS Quadrangle: Mt Hayes C-4 **Elevation (m):** 641

Anadromous Waters Catalog Number:

Geographic Comments: From Access Road 40-APL-4, head south on ROW. A brown sign identifies stream and PLMP. Station is at first alluvial fan on access road. Fifty meters downstream from Station 06A08.

Station Characteristics

Temperature (C) **Air:** 14 **Water:** 7.5 **DO (ppm):** 12.05 **Turbidity (NTU)** 2 **Stream Gradient (%):** 2.3

Qualitative Velocity: Fast **Water Color:** Clear

Stream Stage: Medium **48 hr. Precipitation/Runoff:** Moderate

Channel Dimensions (m):	**OHW**	**Wetted**
Width		2
Thalweg Depth		0.25

Substrate

Dominant: Gravel

Subdominant: Cobble

Subdominant: Boulder

Survey Team: Doug Lieb, John Wells, Alison Kelley

Visit Comments: Vortex rock weirs installed in channel to control flow; creating several waterfalls. First waterfall is 38 m downstream of LWC, with a height of 0.75 m, pool depth of 0.65 m. Second waterfall is immediately below the LWC, with a height of 0.55 m. The associated pool is 1 m downstream of waterfall, with a depth of 0.45 m. There are two other waterfalls of lesser dimensions. Channel braids across unconfined alluvial delta. The stream is mostly an extended riffle with pocket pools behind large boulders.

Species: grayling **Life Stage:** Juvenile/Adult **Life History:** Resident

Count: 1 **Fork lengths (mm):** 117

Gear: Portable Electrofisher **EF Time (s):** 381 **# Traps:** **Trap Duration (h):**

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Specific Barrier Unknown **Height (m):** **Pool depth (m):**

Comments: Grayling collected below first waterfall in small pool. Stream is swift and turbulent, reducing sampling efficiency.

Species: no fish collected or observed **Life Stage:** Not Applicable **Life History:** N/A

Count: **Fork lengths (mm):**

Gear: Minnow Trap, 1/4 in. Mesh **EF Time (s):** **# Traps:** 4 **Trap Duration (h):** 0.8

Channel: Main Channel (>50% of water flow)

Fish Passage Barrier: Not applicable **Height (m):** **Pool depth (m):**

Comments: Minnow traps were set upstream and downstream in sufficiently deep pools associated with vortex rock weirs.

Station 56A01 **Visit** 1 **Survey Date** 8/24/2002

PIC56013.jpg

PIC56014.jpg

PIC56015.jpg