LGL
Ecological Research Associates

FINAL REPORT

SPRING 1981 FISHERIES SURVEY AND PROVISIONAL LIST OF WATERBODIES ALONG THE NORTHWEST ALASKAN PIPELINE COMPANY ROUTE: PRUDHOE BAY TO THE YUKON TERRITORY

TO: FLUOR NORTHWEST, INC.
701 DOUGLAS AVE.
FAIRBANKS, ALASKA 99701
CONTRACT NUMBER 4780-9-K201

FOR: NORTHWEST ALASKAN PIPELINE CO.
FAIRBANKS, ALASKA 99701

DECEMBER 1981

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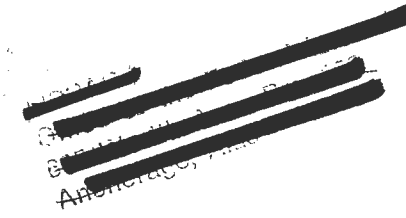
Final Report

Prepared for and Funded by

Northwest Alaskan Pipeline Company

by



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FOREWARD

Northwest Alaskan Pipeline Company, through Fluor Northwest, Inc., has sponsored a number of investigations to delineate fish distribution along the proposed pipeline route and to identify critical fish habitats and activities that are requisite for maintenance of fish populations in the region. Fish utilization of many habitats or streams is highly seasonal; therefore, studies through time are necessary to document changing patterns of fish distribution. Prior to this investigation, fisheries studies conducted by LGL along the proposed pipeline route have taken place in late winter (Ref. 55), spring (Ref. 54), fall (Ref. 57 and 122) and early winter (Ref. 77). The results of these seasonal studies along with all other known information, have been integrated and summarized in order to provide a comprehensive, up to date report on present knowledge of fish populations along the proposed pipeline.

The present report is a continuation of investigations on fish distribution and habitat use in the spring. Recent changes in the pipeline alignment, primarily north of Fairbanks, which introduced new streams to the pipeline route necessitated study, as information on fish in many of these streams was absent.

Consequently, a total of 68 stream crossings were investigated in the spring of 1981. This information is a further contribution toward understanding fish resources along the pipeline route and an aid in resolving potential conflicts between fish resources and pipeline construction and operation.

TABLE OF CONTENTS

Page

Page

LIST OF TABLES

LIST OF FIGURES

ACKNOWLEDGEMENTS

We would like to acknowledge the logistical, permit, and field support by Fluor Northwest, Inc. We would also like to acknowledge the drafting assistance of Robert Furilla and the able assistance of the LGL Alaska Fairbanks office personnel. Financial support for this study was provided by Northwest Alaskan Pipeline Company.

ABSTRACT

The natural gas pipeline proposed by Northwest Alaskan Pipeline Company traverses hundreds of waterbodies in the Beaufort Sea and Yukon River drainages.

This report describes the spring fish use at the 68 proposed crossings or near-crossings of the Northwest Alaskan Gas Pipeline in Alaska selected by Fluor Northwest, Inc. for the 1981 spring Fisheries Investigations. Stream surveys were conducted 21 May-8 June 1981. Biological, chemical and physical data gathered are listed in a stream catalog. The fish species caught were grayling, round whitefish, chum salmon, king salmon, Dolly Varden, burbot, longnose sucker, lake chub, and slimy sculpin.

Fish were observed in 12 of the 68 stream crossings surveyed during the spring period. No fish were caught in the remaining 56; of these 21 were considered to provide suitable habitat and 24 were considered marginal fish habitat. The remaining 11 did not appear to provide any suitable habitat. Evidence of spring spawning was not observed, but spring spawning species were present in 12 of the waterbodies examined. Three streams had potential spawning habitats.

An updated summary of fisheries data for all 399 potential crossings of waterbodies is presented in Appendix II. Sources of information includes reports, unpublished documents, agency memoranda and personal communications.

INTRODUCTION

Northwest Alaskan Pipeline Company proposes to construct the Alaskan segment of a buried pipeline to transport chilled natural gas from the arctic to southern markets. The proposed route of the pipeline parallels the Alyeska Oil Pipeline from Prudhoe Bay to Delta Junction, with some variances, particularly in the vicinity of Fairbanks. From Delta Junction to the Alaska/Canada border the proposed route follows the Haines-Fairbanks Products Pipeline right-of-way.

On 8 May 1981 LGL Alaska Research Associates, Inc. (LGL) was awarded a contract by and through Fluor Northwest, Inc., funded by Northwest Alaskan Pipeline Company to conduct spring fisheries investigations of selected waterbodies along the proposed gasline route. The purpose of our investigations was to assess the spring fish use of the selected waterbodies that would be crossed or potentially affected by the proposed pipeline. This report presents the results of the 1981 spring program. Included in the report are: (1) a spring assessment for each of the waterbodies selected for field investigation in 1981 by Fluor Northwest, Inc.; and (2) a provisional list of 399 waterbodies crossed or potentially affected by the proposed pipeline project with an evaluation of spring fish use for each.

Spring Studies

Objectives and Justification

The objectives of the 1981 spring fisheries investigations were to:

1) Investigate the presence or absence of fish in selected waterbodies and determine the species composition of fish present;

2) Evaluate fish use (i.e. spawning, rearing, migration) of the selected waterbodies;

3) Record those features of the waterbody that may affect fish access in the vicinity of the proposed pipeline crossings (i.e. impassible natural barriers, man-made barriers, discontinuous flow);

4) Measure selected physical and chemical parameters (i.e. temperature, dissolved oxygen, conductivity, pH, color, turbidity, total hardness, nitrate, and orthophosphate); and

5) Evaluate fish habitat present during spring field investigations by recording wetted width, depth, discharge, bottom type, bank stability, riparian vegetation, aquatic vegetation, and cover.

The fish populations occupying waters along the proposed Northwest Alaskan pipeline route typically require a variety of aquatic habitats to complete their life cycles. Several different waterbodies, or different sections of a waterbody, are required by these fish at specific times of the year. For example, a common life history pattern is for a species to overwinter at one location, spawn at another location, and feed at yet another location. These differences are usually governed by the availability of habitat suitable to the specific activity. It therefore becomes necessary to investigate waterbodies during each biologically-important season because fish use generally varies in a waterbody from season to season.

The purpose of the present fisheries program is to document those waterbodies that are important to fish during the spring. At this time of year fish are beginning migration from overwintering areas to their summer feeding and rearing areas. Many summer feeding and rearing areas are located in the upstream portions of drainages that freeze to the bottom in the winter. Some species spawn in the study area during the spring or early summer (i.e. arctic grayling, slimy sculpin, lake chub, longnose sucker, and northern pike) and movements to appropriate areas take place early in the open water season.

Selection of Streams for Field Investigations

The evaluations of fish use for the hundreds of waterbodies crossed by the proposed gas pipeline were based on extensive literature survey, communication with state and federal agencies, and professional experience. Primary sources for literature were published government and consultant reports and file data from the Joint Fish and Wildlife Advisory Team (JFWAT) in Anchorage. Agencies consulted included: State Pipeline Coordinators Office, Alaska Department of Fish and Game, and U.S. Fish and Wildlife Service. Criteria to standardize the evaluation of available fisheries data for the spring season are shown in Table 1.

Waterbodies investigated during the 1981 spring field surveys were selected by Fluor Northwest, Inc. Waterbodies selected were generally those which lacked specific spring data or other seasonal information.

Table 1. Criteria for evaluating available fisheries data for the spring season.

Number*	Spring Criteria
1	Fish Use Area - Waterbody investigated and fish use documented
2	No Fish Use - Waterbody investigated and no fish use documented
3	No Fish Use Inferred - Absence of habitat inferred and supported by indirect evidence: small drainage with negligible, discontinuous, or no flow or fish blockage present.
4	Data Gaps Present - Waterbody investigations lacking or inconclusive: waterbody has not been surveyed for fish use or previous data were inconclusive.

*Cited in Appendix II

Report Format

This report combines historical information together with data generated during the 1981 spring surveys in order to provide a current assessment of spring use of selected waterbodies affected by the Northwest Alaskan Pipeline route. An updated provisional list of 399 waterbodies crossed or potentially affected by the gasline along its route from Prudhoe Bay to the Canadian Border is presented in Appendix II. For each of these waterbodies, sources of available spring fisheries data and the current status of this information are indicated.

Data gathered during the 1981 spring field survey are presented on a waterbody-by-waterbody basis in the Stream Catalog. This information is also presented in a tabular summary of results in Table 2.

STUDY AREA

The route of the proposed Northwest Alaskan pipeline is shown in Figure 1. The field investigations and assessments addressed in this report are from the secton of the pipeline between the Tanana River and Prudhoe Bay. Waterbodies that were investigated to the north of the Prospect Creek are shown in Figure 2. Those between the Prospect Creek and the Tanana River are shown in Figure 3. The variety of habitats traversed by the proposed pipeline ranged from arctic and alpine tundra in the north to low-lying muskeg and marshes in more southern sections. The types of waterbodies encountered ranged from clear, fast-flowing streams and rivers to stagnant, marshy sloughs.

From Prudhoe Bay the proposed pipeline route parallels the Sagavanirktok River, crosses the arctic coastal plain and traverses the northern foothills of the Brooks Range. Approximately 180 km south of Prudhoe Bay, the proposed route proceeds westward toward Toolik Lake, and then southward along the Atigun River to Atigun Pass, the highest point of the route. Large, north slope streams like the Sagavanirktok and Atigun rivers are typically fast-flowing and have wide, braided, gravel floodplains. These larger streams support populations of resident and anadromous fish at different times of the year and are often used as overwintering areas. The proposed route crosses many smaller streams in this area, most of which are tributaries to the Sagavanirktok or Kuparuk rivers or their tributaries. Smaller streams are typically narrow, single channeled, and support fewer fish than larger streams. Some provide spawning and rearing areas for a few species. Flows in these streams can fluctuate significantly depending on snowmelt and precipitation. The surrounding vegetation consists of arctic and alpine tundra which is primarily sedges, willows, and dwarf birch.

Table 2. Summary of spring survey (21 May-8 June 1981) of selected streams in the vicinity of the proposed Northwest Alaskan Pipeline route. Abbreviations used are: NPRX (Northwest Pipeline River and Floodplain Crossing number), BB (burbot), CN (slimy sculpin), DV (Dolly Varden), DS (chum salmon), GR (grayling), KS (king salmon), LC (lake chub), LS (longnose sucker), and RW (round whitefish).

Waterbody	NPRX	Suspected Spring Migration or Movement	Feeding and Rearing Species Present	No Fish Caught			Potential Fish Blocks Present
				Good Habitat Present	Habitat Marginal	Habitat Absent	
Tanana River Side Channel	095-1	X	LS,LC,DS				X
Tributary to French Creek	086-3	X	GR				
Unnamed Creek	086-1					X	
Unnamed Creek	085-2					X	
Moose Creek	085-1	X				X	X
Unnamed Creek	084-5					X	X
Unnamed Creek	084-4					X	
Unnamed Creek	084-1					X	
Tributary to Little Chena River #2	083-4					X	X
Little Chena River	083-3	X	GR,RW				
Iowa Creek	083-2	X	CN,BB				X
Tributary to Smallwood Creek #1	083-1					X	
Tributary to Smallwood Creek #2	082-2				X		X
Smallwood Creek	082-1	X	CN				X
Rose Creek	081-4				X		X
Gilmore Creek	081-3	X		X			X
Pedro Creek	081-2	X	GR				X
Gold Run Creek	081-1					X	X
Fox Creek	080-2					X	X
Globe Creek	075-2	X		X			X
Slate Creek	073-4			X			X
Wilber Creek	073-2	X		X			X
Shorty Creek	072-3			X			X
Unnamed Creek	067-3				X		X
Isom Creek	066-3			X			X
Phelps Creek	062-4	X		X			
Kristie's Creek	055-2				X		X
Caribou Mountain Creek	055-1	X		X			
Middle Fork Fish Creek	053-3	X	CN				
Alder Mountain Creek	053-1	X		X			X
Jim River Slough	048-2					X	X
East Fork Abba-Dabba Creek	047-3	X		X			
Chapman Creek	046-1	X		X			
Tributary to East Fork Spring Slough	044-3	X			X		
Slate Creek	043-9	X	KS,CN,GR				

Table 2 (continued)

Waterbody	NPRX	Suspected Spring Migration or Movement	Feeding and Rearing Species Present	No Fish Caught: Good Habitat Present	No Fish Caught: Habitat Marginal	No Fish Caught: Habitat Absent	Potential Fish Blocks Present
South Fork Sharon Creek	043-1				X		X
Union Gulch Creek	041-3				X		X
Cushing Creek	039-4			X			X
Access Road Creek	038-7				X		
West Fork Sukakpak Creek	038-6				X		
South Fork Airport Creek	037-5				X		X
Middle Fork Airport Creek	037-4				X		X
Airport Creek	037-3				X		
Ugh Creek	036-1				X		X
Buff Creek	035-3				X		
Homewood Spring	034-2	X	GR,DV,CN				X
Overwintering Creek	033-7	X	GR,CN				
Wetfoot Creek	033-2				X		
West Branch of North Fork of Chandalar River	031-3			X			
East Creek	031-2				X		
North Atigun Pass Creek	031-1				X		X
Unnamed Creek	029-3				X		X
Unnamed Creek	029-2		GR				
Bicycle Creek	029-1				X		X
Waterhole Creek	028-2		GR				X
Jill Creek	025-9	X		X			X
Ed Creek	025-7	X		X			X
Mack Creek	025-6				X		X
Terry Creek	025-5	X		X			X
Yan Creek	025-1	X		X			X
Mary Lamb Creek	022-2				X		X
Tributary to Lori Creek	017-2				X		X
Lori Creek	017-1	X		X			X
Unnamed Creek	015-3				X		X
Toolik River Tributary	013-1			X			X
Sand Creek	012-2				X		X
Tributary to Short Creek	007-3	X		X			
Short Creek	007-2	X		X			

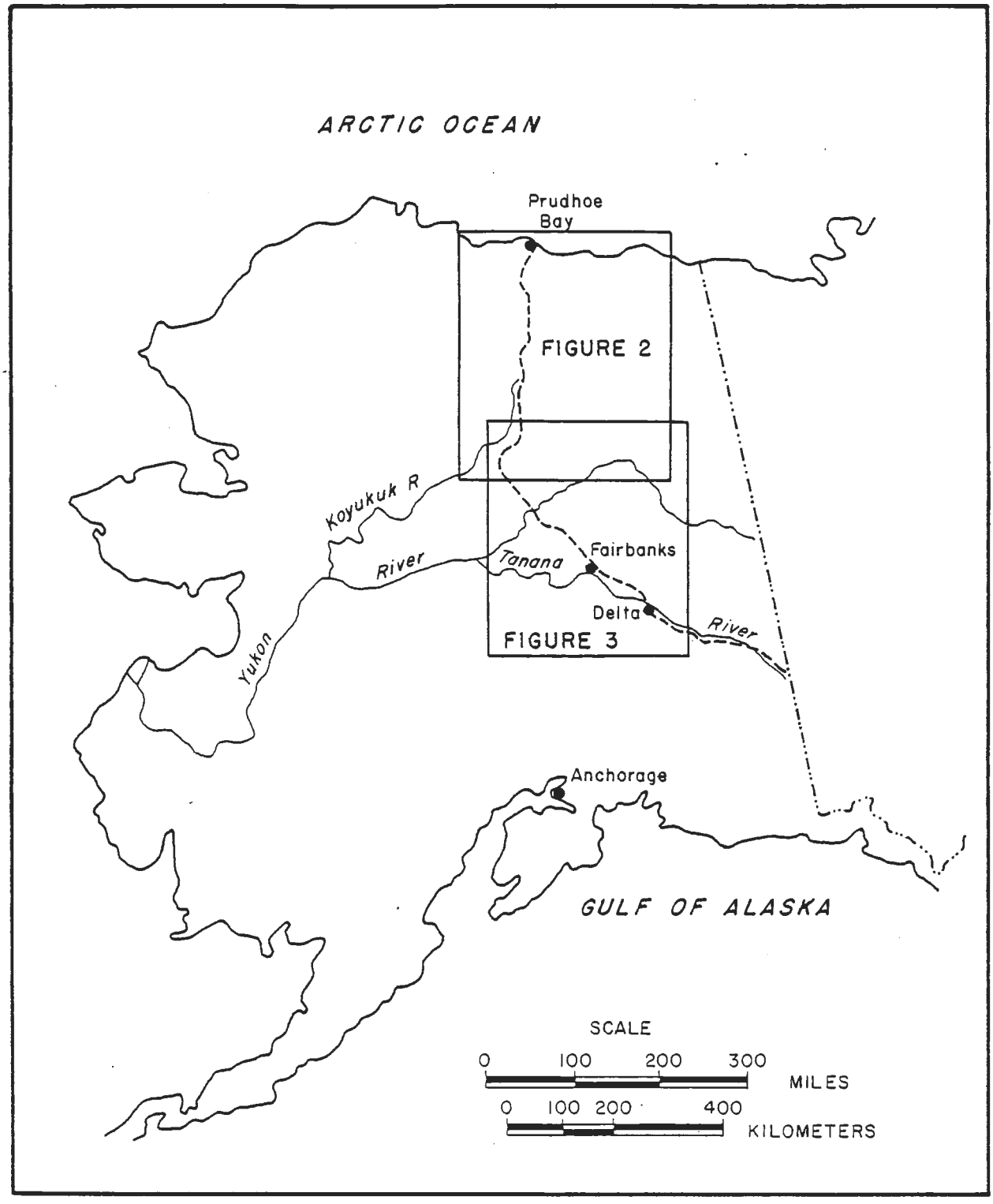

Fig. 1. Route of the proposed Northwest Alaska Pipeline from Prudhoe Bay to the Alaska/Yukon border.

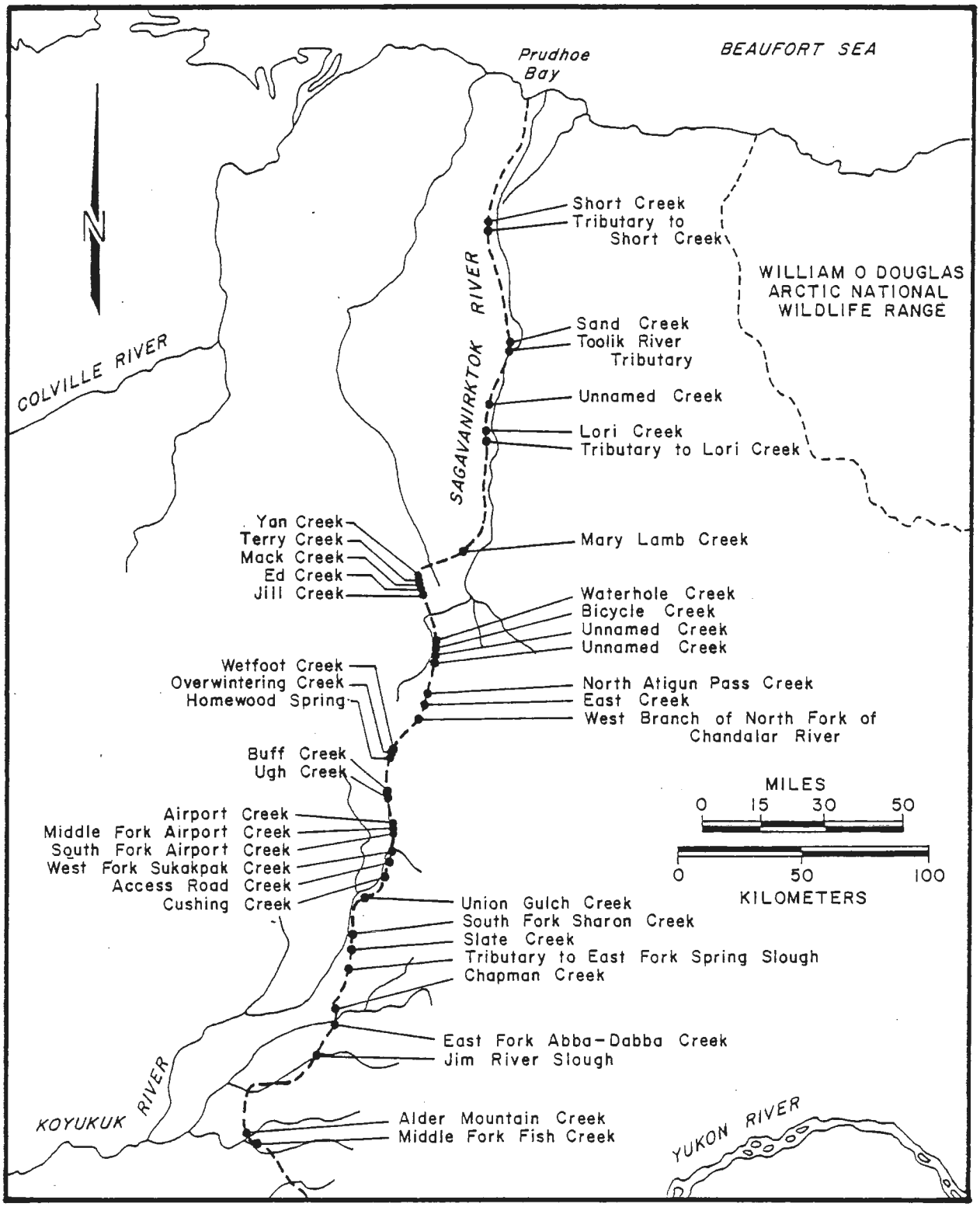

Figure 2. NWA gas pipeline route and sample sites from Prudhoe Bay to Prospect Camp.

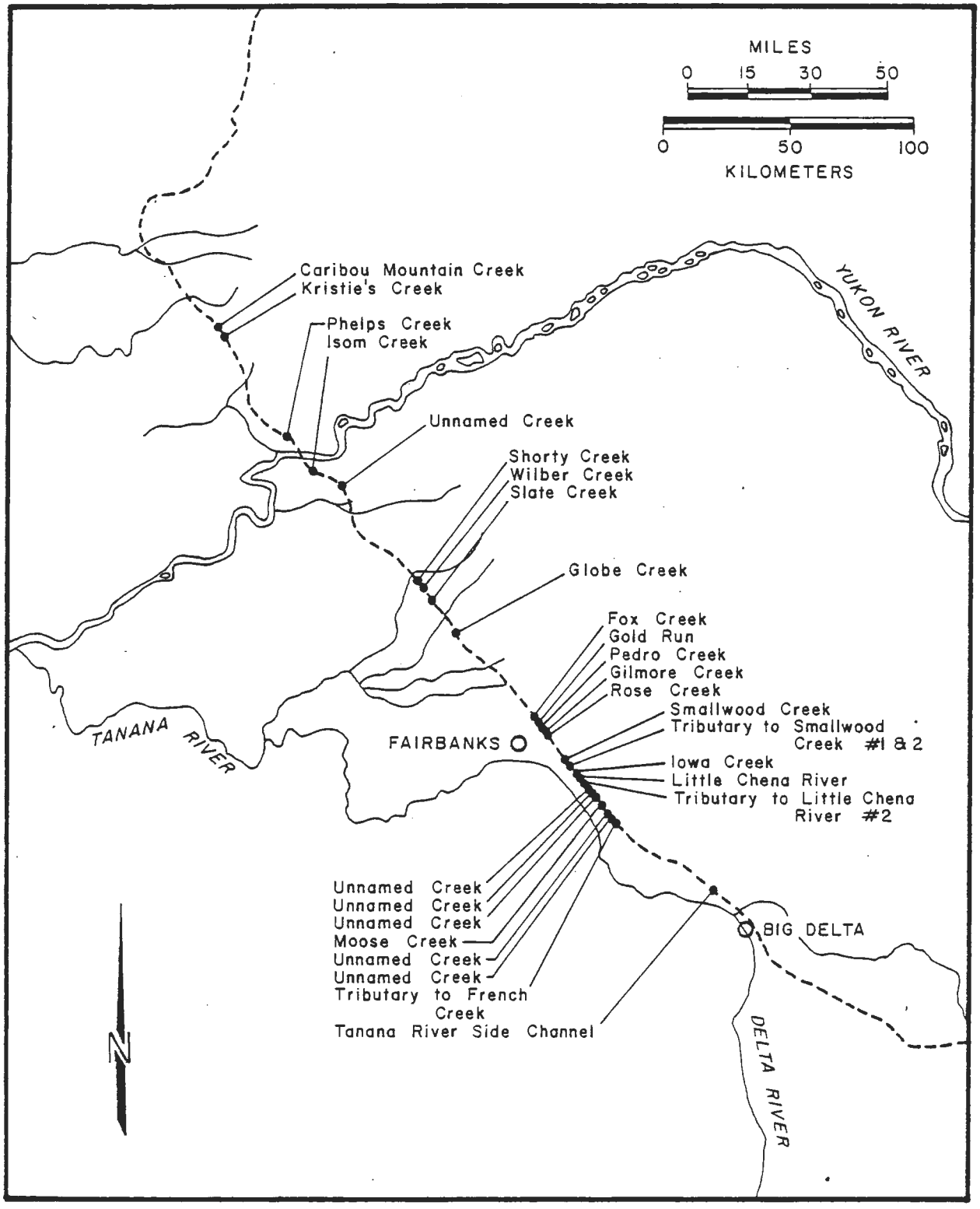

Figure 3. NWA gas pipeline route and sample sites from Prospect Camp to Tanana River.

South of Atigun Pass the route continues through the Brooks Range following the Dietrich and Middle Fork of the Koyukuk rivers. Approximately 200 km south of Atigun Pass the proposed pipeline route departs from the Koyukuk drainage and turns southeasterly to the Yukon River. The larger mountain streams in this area (e.g. the Dietrich River and the South and Middle forks of the Koyukuk river) are mostly clear, fast-flowing, and have braided channels. At lower elevations they become wide, meandering streams. Many of the smaller streams in this area are stained brown with tannins and lignins leached from marshy areas. Larger streams, like the Koyukuk and Jim rivers, support populations of overwintering fish and provide habitat for spawning salmon. Although most small streams do not provide overwintering habitat, they are used as rearing areas by all age classes of fish during open water periods. The higher elevations in this region are predominantly alpine tundra vegetation with areas of stunted spruce, alders, aspens and willows. At lower elevations taiga and muskeg are widespread, but in large river valleys large white spruce and willows are the predominant vegetation.

From the Yukon River crossing, the proposed pipeline route continues southeasterly toward the White Mountains. Approximately 16 km north of Fairbanks the current alignment departs from the Alyeska Oil Pipeline route, and passes through the White Mountains north of the Fairbanks, Wainwright, and Eielson areas. East of Eielson Air Force Base, the proposed pipeline route enters the Tanana River Valley and crosses the river approximately 20 km west of Delta Junction. Most of the waterbodies crossed in the White Mountains are small streams with moderate to steep gradients and dense riparian vegetation consisting of grasses, sedges, willows, alder, birch, and spruce. These streams provide rearing and feeding areas for all age classes of fish during open water periods, but they do not provide overwintering habitat. Streams located within the Tanana River valley are generally small, humic-stained and flow through alternating marshes or muskeg and stands of spruce, birch and willow. Larger streams such as the Chena River, the Little Chena River, and especially the Tanana River are quite turbid during the open water season. These streams provide overwintering habitat for many fish species, but the full extent of use is uncertain.

PATTERNS OF FISH MOVEMENT AND WATERBODY USE

After breakup has occurred, fish use has been observed in waterbodies that range in size from small, beaded tundra streams on the North Slope to large rivers such as the Tanana River and Yukon River. Streams in the study area can be divided into the following three broad categories based primarily on their physical characteristics:

1) Small streams with average widths less than 2 m and depths usually less than 1 m (e.g. Yan Creek, Iowa Creek);

2) Moderate-sized streams with average widths of 2-10 m and depths usually less than 2-3 m (e.g. Slate Creek, Wetfoot Creek);

3) Large streams or rivers with average widths greater than 10 m and depths up to 10 m or more (e.g. Tanana River, Middle Fork Koyukuk River).

Despite their generality the above categories are useful because patterns of fish movement and use in each stream type vary markedly.

Small streams in the study area are usually frozen to the bottom or dry during the winter and stream flow resumes sometime between early April and early June. Substrates of these streams vary a great deal but usually consist of fines and detritus, sand, and gravel. Their waters are usually clear, but may be stained by tanins and lignins leached from surrounding soils. Within the proposed gasline corridor, small streams are used primarily by slimy sculpin and grayling, but whitefish and char may occasionally be present depending on geographical location and the type of habitat present. Adult grayling may move into these streams during spring breakup, spawn, and then move some distance back downstream. During the egg incubation period (early May to early July) juvenile grayling, whitefish and/or char may also move upstream into these areas. After the grayling eggs have hatched the emergent fry remain in the general vicinity until late summer or fall. As fall approaches and water temperatures drop, all fish begin moving downstream to overwintering areas. Unless spring fed, small streams rarely provide spawning habitat for fall spawning species.

Moderate-sized streams also have clear or sometimes humic stained waters. Their substrates vary greatly depending on stream gradient and the surrounding terrain. These streams commonly exhibit alternating stretches of deep, slow-moving water and shallow, fast-flowing riffles. Some pools, especially in lower reaches, may be deep enough to provide overwintering habitat. Within the proposed gasline corridor, moderate-sized streams receive more intense fish use than small streams. These streams generally serve as major spring and fall

migratory routes for many species. Some, especially those with perennial spring sources, may be used for spawning in both the spring and fall. During spring, young-of-the-year of fall spawning species (primarily whitefish and char) and the eggs of spring spawning species (primarily grayling, northern pike, longnose sucker, and slimy sculpin) may be present. By late June or early July, fry of spring spawners have emerged and may remain in the stream until fall. Many streams of this size are used intensively as nursery areas by juvenile fish throughout the open-water period. Adult fish are also commonly present during the open water period. Some of these streams support runs of anadromous species. As fall approaches, fish generally begin migrating downstream to overwintering areas.

Large streams or rivers are usually quite turbid during the open water season due to high sediment loads. Their floodplains are usually braided and consist of gravel, sand, and fines, depending on the origin of the river and its tributaries. These rivers rarely freeze solid and therefore provide year-round habitat for fish, especially crucial overwintering habitat. They are also the primary migratory pathways for all anadromous fish species. During spring, many juvenile salmon migrate downstream to the ocean; others remain in freshwater for one or two years, depending on the species. A variety of freshwater fish species also use large streams as migration routes, spawning sites, and nursery areas year-round.

METHODS

Spring field investigations were conducted between 21 May and 8 June 1981. Two, 2-man field crews surveyed selected streams, generally from south to north, along the proposed Northwest Alaskan Pipeline route. The Prudhoe Bay Road provided access by truck to all the waterbodies surveyed north of the Yukon River. Access to waterbodies surveyed between the Yukon River and the Tanana River was either by Bell 206B Jet Ranger helicopter or by truck, depending on the proximity of useable roads in the vicinity of the proposed pipeline crossing. A total of 18 waterbody surveys were conducted using a helicopter for access.

The series of Northwest Pipeline route sheets used to identify waterbody crossing locations in this report is indicated in Reference 134. A tabular outline summarizing variables, field sampling methods, and units of measurement is given in Table 3.

Table 3. A summary of field sampling methods and units used during the 1981 spring surveys.

Parameter	Method	Units
Fish	electrofisher	fish/electrofishing sec
	seine	fish/m^2 from standardized seine haul
	gill net	fish/hr from standardized gill net set
	dipnet	fish/m^2
	set line	fish/hr
	visual	fish/m
Discharge	Pygmy current meter	m^3/sec
Potential fish blocks	estimated (if present)	verbal and pictorial description
Depth (max, min)	meter stick	cm
Wetted width (max, min)	tape measure	m
Bank stability	estimated	% stable
Substrate	estimated	% fines, sand, gravel, pebble, cobble, boulder
Aquatic vegetation	estimated	presence/absence
Riparian vegetation	estimated	% vegetation type (e.g. willow, spruce)
Cover	estimated	% cover
Temperature	pocket thermometer	° C
pH	Hach field pH meter	pH units
Conductivity	YSI SCT meter	µmhos/cm
Dissolved oxygen	YSI DO_2 meter	mg/ℓ
Turbidity	Hach turbidity meter	NTU
Color	visual comparison	color units
NO_3/N	Hach kit	mg/ℓ N
PO_4	Hach kit	mg/ℓ P
Hardness	Hach kit	mg $CaCO_3$/ℓ
Gradient	estimated	units of convenience

Field Sampling

The waterbodies selected for investigation were examined in the vicinity of the proposed pipeline crossing. Field surveys were generally conducted within 100-200 m upstream and 150-200 m downstream of the proposed crossing. Habitats sampled were those most likely to be used by fish (i.e., calm backwater eddies for juvenile and young-of-the-year fish, deep pools for adult fish, and shallow gravel areas for bottom-dwelling fish). The 1981 spring survey program was similar to the 1980 fall survey format. Data describing the biological, chemical, and physical attributes of streams are presented in the present report.

Fish

A variety of techniques were used to sample fish. In shallow waterbodies a Smith-Root Type VIII-A backpack electroshocker was generally the most effective sampling method. Beach seines of 3.2 mm mesh proved to be effective in slow-flowing, turbid streams. In larger, deeper streams monofilament gillnets (1.2-1.8 cm square mesh) were the most effective means of capturing fish. Dipnets, baited set lines, and visual observations were also used where appropriate.

Captured fish were identified to species, measured, and released. If identification proved to be impossible in the field, representative samples were preserved in 10% formalin for later identification. Fork-lengths were recorded for all species except burbot and slimy sculpin, whose total lengths were measured. Length measurements were recorded to the nearest millimeter. Since age and growth data are not available for the waterbodies investigated, the life history classifications (fry, juvenile, and adult) in this report are professional judgements based on age and growth information for the general region.

Physical and Chemical Measurements

Discharge was determined by measuring the velocity and depth at regular intervals across the stream channel. At each interval (intervals varied with stream width) the velocity was determined using a Gurly Pygmy current meter (the lower detection limit of this meter is approximately 0.005 m/sec). Discharge was calculated using a FORTRAN program on the University of Alaska Honeywell computer system. Velocity and depth measurements have been filed with Fluor Northwest, Inc.

Dissolved oxygen, pH, conductivity, temperature, color, total hardness, nitrate, and orthophosphate were measured whenever free water was present. Each thermometer, pH, DO, and SCT meter was calibrated prior to use in the field. With the exception of conductivity

measurement, the degree of error in measurements was small and within the limits of precision for methods used (Appendix I). Field thermometers, calibrated against an NBS certified thermometer, were accurate within the limits of manufacturer's specifications.

Conductivity measurements are recorded at field temperatures. Conversion of these values to conductivity at standard temperature (25° C) may be accomplished by using calculations provided in the 14th edition of Standard Methods for the Examination of Water and Wastewater.

Water samples for turbidity determinations were collected from each sample site and immediately preserved with mercuric chloride. Turbidities were later determined for these samples in Fairbanks with a previously calibrated turbidimeter (see Appendix I).

Depth and wetted widths were measured to the nearest centimeter and decimeter, respectively. The maximum and minimum values reported reflect variations in the surveyed area.

Bank stability, substrate, aquatic and riparian vegetation, and cover were estimated along transects (usually four) within the surveyed area. These were visual estimates and should be considered only approximations of the conditions at the time of the survey.

Data Limitations

Although a variety of sampling methods were used to collect fish, it is recognized that each method is selective to some degree for different sizes of fish. Gillnets do not capture young-of-the-year fish; beach seines are effective in shallow water but rarely catch large fish. Electroshocking was the most effective means of collecting fish, but it is also limited. Deep water and fast-flowing, turbid water were not effectively sampled using the electroshocker. In most cases, more than one method was employed for sampling. Despite the sampling variability of the different methods, it was felt that by using what appeared to be the appropriate method for the habitat sampled, fish caught were representative of the species present.

RESULTS AND DISCUSSION

Provisional List of Waterbodies

In a large-scale project such as pipeline construction it is essential for reference purposes to maintain an updated list of waterbodies crossed or potentially affected by the project. To date, the provisional list of waterbodies contains 399 entries (Appendix II). Reference 134 provided the basis for this list which includes lotic and lentic habitats known to contain fish or having potential for fish habitation. Some waterbodies have multiple crossings; each crossing is treated as a separate entry in the list.

References that contain information on fish or fish habitat for each waterbody are listed along with the most recent evaluation according to the criteria listed in Table 1. It must be emphasized that this review is an ongoing process. Since our initial examination of existing information, a substantial amount of new data has been gathered. These data, together with field investigations of waterbodies in the study area, have allowed a more realistic appraisal of waterbodies and fish populations along the proposed pipeline route. These updated results indicate that approximately one-third of the waterbodies presently included in the provisional list are used by fish in the spring. There are some "borderline" waterbodies for which data are considered inadequate to confidently classify their use by fish in spring. There are to date 150 such crossings. It is probable that the majority of these waterbodies have a low potential to support fish in the spring due to their small size and variable flows.

General Results of Spring Survey

Fisheries surveys were conducted along the proposed pipeline route from 21 May to 8 June 1981. The waterbodies surveyed included side channels of major rivers, streams, springs, and sloughs. A total of 68 waterbody crossings were investigated. Nine species of fish were collected from 12 waterbodies:

chum salmon (*Oncorhynchus keta*)
king salmon (*Oncorhynchus tshawytscha*)
Dolly Varden (*Salvelinus malma*)
round whitefish (*Prosopium cylindraceum*)
Arctic grayling (*Thymallus arcticus*)
lake chub (*Couesius plumbeus*)
longnose sucker (*Catostomus catostomus*)
burbot (*Lota lota*)
slimy sculpin (*Cottus cognatus*)

The species present and their stream use along the proposed pipeline route are summarized in Table 2 and presented in detail in the Stream Catalog. Grayling were the most frequently encountered species, occurring in eight of the twelve streams that contained fish. Slimy sculpin were the second most frequent species and were found in six streams. The other seven species were only captured once in any of the streams.

Fish use was not documented at the remaining 56 crossings. Twenty-one stream crossings were judged to have good fish habitat present, but 14 of these contained potential fish blocks. In some cases, especially streams north of Atigun Pass, it was thought that fish were still using overwintering areas and upstream, spring migrations had not yet been initiated. Other streams in which habitat was judged to be good may become uninhabitable once spring runoff has declined. The remaining 35 waterbodies had only marginal habitat, or no habitat was present; of these, three streams were completely dry and two were unimproved roads.

Forty-three of the 68 waterbodies investigated were found to have potential fish blocks present in the vicinity of the proposed pipeline crossings. The potential blocks consisted of both natural (log and branch jams, beaver dams, waterfalls, discontinuous flow) and man-made (culverts) obstructions. These barriers varied greatly in permanancy and effectiveness. Detailed descriptions of fish blocks are found in the appropriate stream assessments.

The 12 waterbody crossings found to support fish populations were used for feeding (rearing), migration, and/or spawning by one or more of the above mentioned species. Most of the fish captured were juveniles who were probably using the occupied streams for rearing areas or migration routes to other rearing areas. Spawning was not documented but some streams contained potential spawning habitats. These areas are described in the appropriate stream assessments and are illustrated in the accompanying figures. Data regarding the magnitude and timing of migration and spawning are difficult to obtain without extensive monitoring programs which are beyond the scope of the present study.

The following guidelines were used to classify fish habitat at investigated waterbody crossings:

> Good fish habitat - generally had adequate water depth (15 cm minimum), measureable flow (at least 0.1 m^3/sec), and high dissolved oxygen concentration (5 mg/ℓ minimum), adequate cover, and no major barriers to fish movement.

Marginal fish habitat - generally had water depths less than 15 cm, discontinuous flow, and potential fish blocks were common.

Fish habitat absent - generally had no water or only stagnant water with low dissolved oxygen (< 5 mg/ℓ) and no possible fish access.

Stream Catalog

The purpose of the following stream catalog is to provide ready access to available fisheries data for waterbodies investigated during the 1981 spring survey. For each waterbody listed in the catalog the following information is provided:

Waterbody	-	Location, section surveyed, and applicable identification numbers.
Assessment	-	A brief description of the waterbody and assessment of its potential for fish use.
Fish	-	Description and results of fish sampling efforts.
Physical Conditions	-	Description and results of chemical and physical measurements.

Several reference systems have been used to identify the location of each waterbody along the pipeline route. These are:

NPRX	-	The Northwest Alaskan Pipeline River and Floodplain Crossing numbering system.
NPSI	-	The Northwest Alaskan Pipeline Stream Identification numbering system.
Pipeline Milepost	-	Pipeline mileposts for the Northwest Alaskan Pipeline are indicated on the 1980 Fluor alignment sheet series (Ref. 134).

USGS Map	-	United States Geological Survey maps are the 1:250,000 scale series. Township, range, and section number of sampling locations are indicated.

Abbreviations used in the catalog are:

Identification

NPAS	-	Northwest Alaskan Pipeline Alignment Sheet number.
NPRX	-	Northwest Alaskan Pipeline River and Floodplain Crossing number.
NPSI	-	Northwest Alaskan Pipeline Stream Identification number.

Milepost

AHMP	-	Alaska Highway Milepost
NPMP	-	Northwest Alaskan Pipeline Milepost

Pipeline

TAPS	-	Trans-Alaskan Pipeline System

Fishing Method

EF	-	electrofish
GN	-	gillnet
SL	-	set line
DN	-	dip net

Units

km	-	kilometer
m	-	meter
cm	-	centimeter
mm	-	millimeter
h	-	hour
sec(s)	-	second
ℓ	-	liter
mg	-	milligram

Stream Crossings

CMP	-	Corregated metal pipe
LWC	-	Low water crossing

Other

NA	-	Not applicable
P/A	-	Presence/absence

Abbreviations have been combined to present a simple and concise means of representing sampling gear and fishing effort expended at each sampling location. The type of sampling gear is given first, followed in parentheses by the number of fish captured or observed per unit effort. For example, a gillnet fished for 12 hours capturing 10 fish would be presented as GN(10/12 h). Effort in parentheses is always given as a cumulative total; electrofishing effort refers to the time (in seconds) fished.

SPRING SURVEY FORM

WATERBODY

Waterbody: Tanana River Side Channel Source: Tanana Valley Drainage

Main Drainage: Yukon River Tributary to: Tanana River

Figure: 4 Elevation: 305 m

NPAS: 95 NPMP: 538.7 NPRX: 095-1 AHMP: NA

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

Site Access: Helicopter

Section Surveyed: 150 m upstream to 200 m downstream of proposed pipeline crossing

ASSESSMENT

Tanana River Side Channel is located on the northwest side of the Tanana River. Banks vary from gently sloping sand and fines to actively erroding banks composed of fines. The channel is well defined and the water is turbid. Riparian vegetation consists of spruce, alder, willows, mosses and grasses. The substrate is fines and detritus with some pebbles. Flow was discontinuous as the upstream end of the channel was blocked by debris. Access was still possible by way of the downstream end of the channel. The stream gradient is slight.

Fishing efforts produced five longnose suckers, one lake chub, and 16 chum salmon fry. Excellent fish habitat was present. The Tanana River and its side channels are important to many species of fish as migratory and rearing areas.

FISH

Waterbody: Tanana River Side Channel NPRX: 095-1

Date: 25 May 1981

Fish Present: Yes

Gear/Effort: Seine (22/300 m^2)

Species Present	Quantity		Length (mm)	
	Fry	Other	Fry	Other
longnose sucker	1	4	22	34-52
lake chub		1		55
chum salmon	16		33-42	

PHYSICAL CONDITIONS

Date	25 May 1981
Wetted Width (m)	1.5-15.0
Depth (cm)	2-150
Discharge (m^3/s)	below detection limit
Dissolved Oxygen (mg/ℓ)	8.3
Temperature (° C)	11.0
Conductivity (µmhos/cm)	70
pH (pH units)	7.8
Color (color units)	25
Turbidity (NTU)	2.4
T. Hardness (mg $CaCO_3$/ℓ)	188.1
Nitrate (mg/ℓ N)	below detection limit
Orthophosphate (mg/ℓ P)	below detection limit
Bottom Type (%)	98 fines/detritus, 2 pebble
Bank Stability (%)	100
Aquatic Vegetation (P/A)	A
Riparian Vegetation (%)	25 spruce, 40 alder, 20 willow, 10 mosses, 5 grasses
Cover (%)	1
Fish Block(s)	discontinuous flow

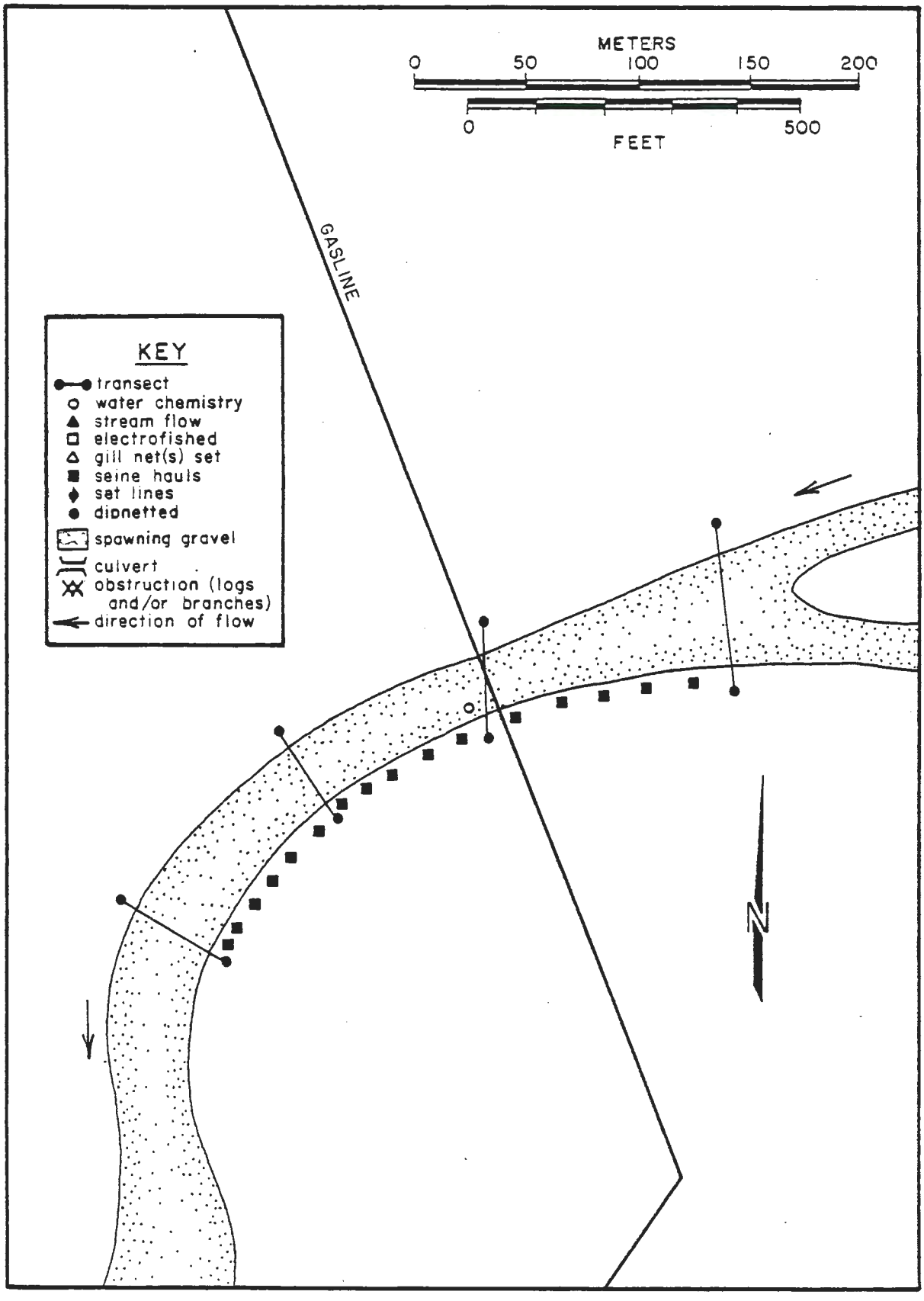

Figure 4. Spring survey. Tanana River Side Channel, 25 May 1981.

SPRING SURVEY FORM

WATERBODY

Waterbody: Tributary to French Creek Source: Muskeg Drainage

Main Drainage: Tanana River Tributary to: French Creek

Figure: 5 Elevation: 171 m

NPAS: 86 NPMP: 485.1 NPRX: 086-3 AHMP: NA

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

Site Access: Helicopter

Section Surveyed: 100 m upstream to 230 m downstream of proposed pipeline crossing

ASSESSMENT

Tributary to French Creek drains a muskeg area and meanders westerly to its confluence with French Creek. This shallow stream flows through alternating pools and narrow channels. Riparian vegetation is composed of alder, grass, horsetails, mosses and willows. The substrate is fines and detritus. The stream gradient is slight.

Fishing efforts produced one grayling which was captured approximately 20 m upstream of the proposed pipeline crossing. Adequate fish habitat was present at this time. This stream probably serves as a spring migration route and rearing area for grayling.

FISH

Waterbody: Tributary to French Creek NPRX: 086-3

Date: 25 May 1981

Fish Present: Yes

Gear/Effort: EF (1/293 sec)

Species Present	Quantity		Length (mm)	
	Fry	Other	Fry	Other
grayling		1		100

PHYSICAL CONDITIONS

Date	25 May 1981
Wetted Width (m)	0.5-2.0
Depth (cm)	25-100
Discharge (m^3/s)	below detection limit
Dissolved Oxygen (mg/ℓ)	9.3
Temperature (° C)	7.0
Conductivity (μmhos/cm)	210
pH (pH units)	7.8
Color (color units)	125
Turbidity (NTU)	17.0
T. Hardness (mg $CaCO_3$/ℓ)	171.0
Nitrate (mg/ℓ N)	below detection limit
Orthophosphate (mg/ℓ P)	below detection limit
Bottom Type (%)	100 fines/detritus
Bank Stability (%)	100
Aquatic Vegetation (P/A)	P
Riparian Vegetation (%)	68 alder, 26 grass, 2 equisetum, 2 mosses, 2 willow
Cover (%)	12
Fish Block(s)	none observed

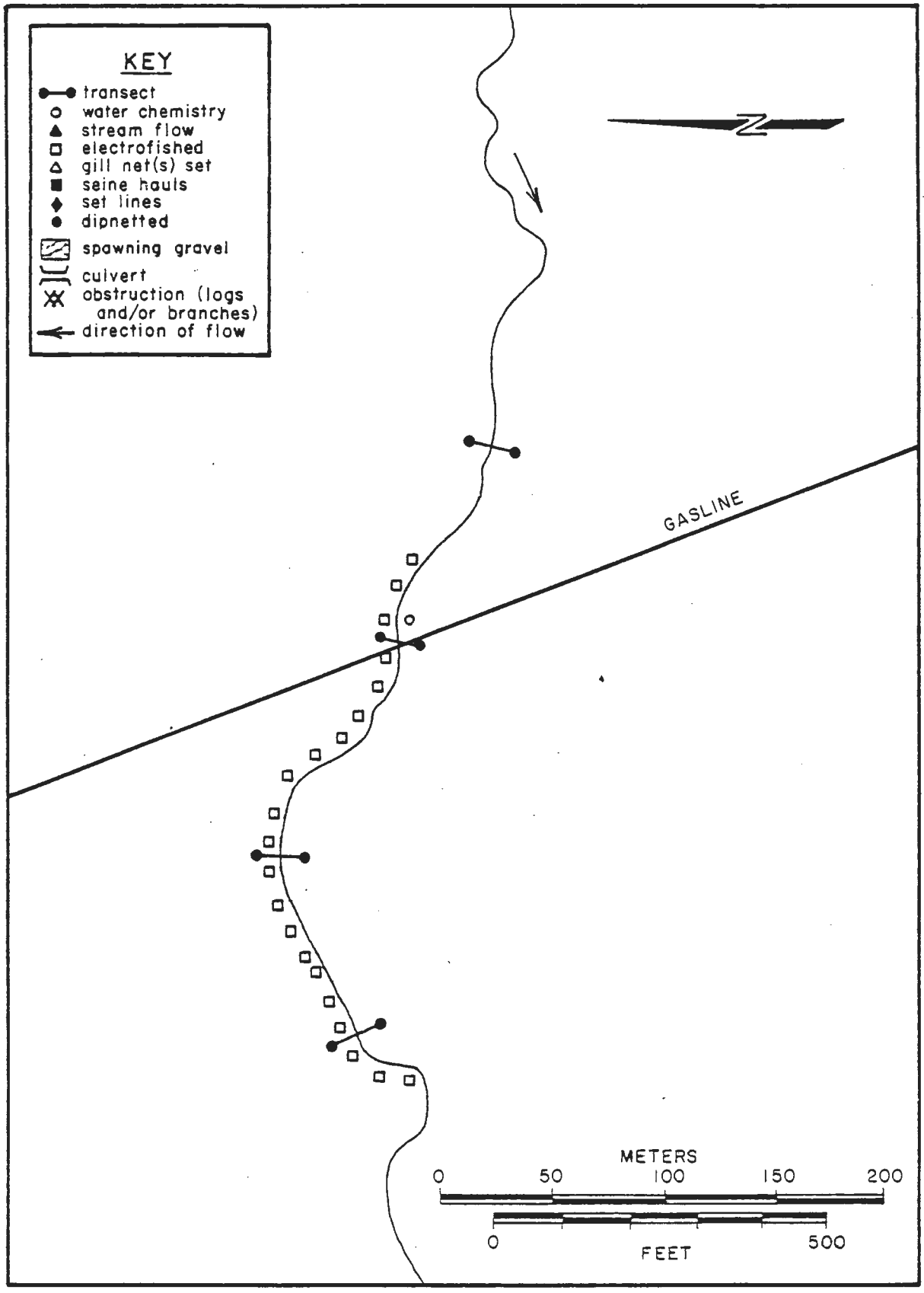

Figure 5. Spring survey. Tributary to French Creek, 25 May 1981.

SPRING SURVEY FORM

WATERBODY

Waterbody: Unnamed Creek Source: NA

Main Drainage: NA Tributary to: NA

Figure: NA Elevation: 168 m

NPAS: 86 NPMP: 483.7 NPRX: 086-1 AHMP: NA

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

Site Access: Helicopter

Section Surveyed: 200 m upstream and 200 m downstream of proposed pipeline crossing

ASSESSMENT

The streambed of Unnamed Creek was dry and overgrown with vegetaiton. Fish habitat is considered to be non-existent throughout the year.

SPRING SURVEY FORM

WATERBODY

Waterbody: Unnamed Creek Source: Muskeg/Taiga Drainage

Main Drainage: NA Tributary to: NA

Figure: NA Elevation: 168 m

NPAS: 85 NPMP: 482.6 NPRX: 085-2 AHMP: NA

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

Site Access: Helicopter

Section Surveyed: 200 m upstream to 200 m downstream of proposed pipeline crossing

ASSESSMENT

The waterbody located at this proposed pipeline crossing no longer exists. The streambed was completely dry and overgrown with vegetation. Fish habitat is considered to be non-existent throughout the year.

SPRING SURVEY FORM

WATERBODY

Waterbody: Moose Creek Source: Muskeg Drainage

Main Drainage: Tanana River Tributary to: Piledriver Slough

Figure: 6 Elevation: 168 m

NPAS: 85 NPMP: 482.0 NPRX: 085-1 AHMP: NA

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

Site Access: Helicopter

Section Surveyed: 100 m upstream to 200 m downstream of proposed pipeline crossing

ASSESSMENT

Moose Creek is a moderate-sized, deep meandering stream that drains a low-lying muskeg area east of Eielson Air Force Base. In the vicinity of the proposed pipeline crossing the stream is confined to a well-defined channel with high banks vegetated with grasses, willows, and birch. The substrate is fines and sand (Ref. 122). The stream gradient is slight.

At the time of the 1981 spring survey, ice cover was still present on Moose Creek although water was flowing over the ice. Since this region of Moose Creek does not have suitable overwintering habitat due to inadequate depth (Ref. 122) fish were probably not present at the time of the survey. A number of fish species are known to occur in this stream during the open water season (Refs. 11, 30, 54, 57, 122). This information suggests that Moose Creek is an important spring migration route and rearing area.

FISH

Waterbody: Moose Creek NPRX: 085-1

Date: 24 May 1981

Fish Present:

Gear/Effort: Moose Creek was nearly completely frozen over

Species Present	Quantity		Length (mm)	
	Fry	Other	Fry	Other

PHYSICAL CONDITIONS

Date	24 May 1981
Wetted Width (m)	0.8-3.0
Depth (cm)	0-15 (on top of ice) ice is 85 cm thick
Discharge (m^3/s)	below detection limits
Dissolved Oxygen (mg/ℓ)	12.2
Temperature (° C)	0.0
Conductivity (μmhos/cm)	51
pH (pH units)	7.2
Color (color units)	80
Turbidity (NTU)	5.8
T. Hardness (mg $CaCO_3$/ℓ)	68.4
Nitrate (mg/ℓ N)	below detection limit
Orthophosphate (mg/ℓ P)	below detection limit
Bottom Type (%)	50 fines, 50 sand*
Bank Stability (%)	100
Aquatic Vegetation (P/A)	A
Riparian Vegetation (%)	40 grass, 10 willow, 50 birch
Cover (%)	0
Fish Block(s)	none observed

* Bottom was obscured by ice cover, data obtained from previous survey (Ref. 122).

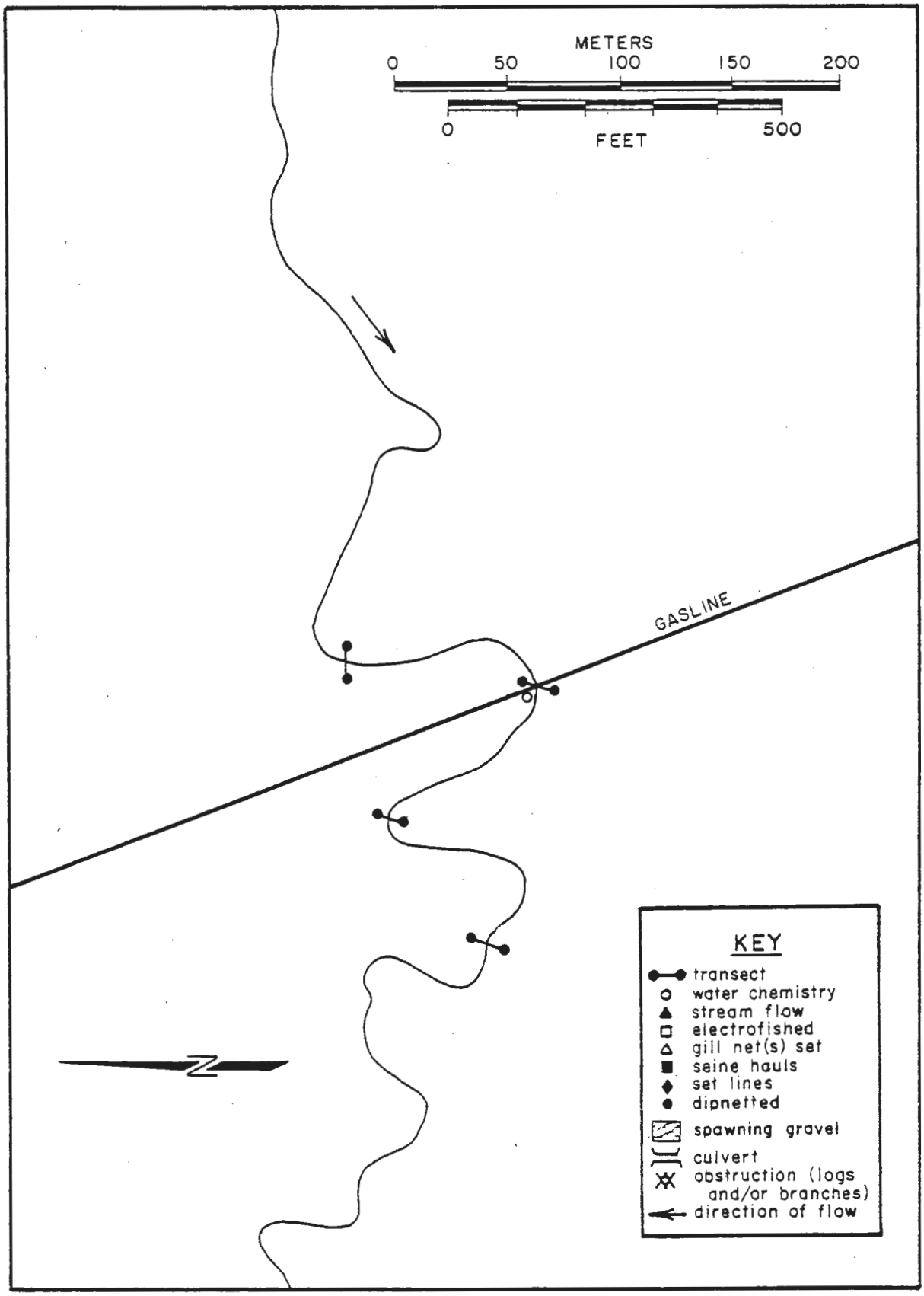

Figure 6. Spring survey. Moose Creek, 24 May 1981.

SPRING SURVEY FORM

WATERBODY

Waterbody: Unnamed Creek Source: Muskeg Drainage

Main Drainage: Tanana River Tributary to: Chena River

Figure: 7 Elevation: 168 m

NPAS: 84 NPMP: 476.3 NPRX: 084-5 AHMP: NA

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

Site Access: Helicopter

Section Surveyed: 100 m upstream to 200 m downstream of proposed pipeline crossing

ASSESSMENT

Unnamed Creek NPMP(476.3) appears to be an old, unused channel of the Chena River. The only water present was approximately 40-150 m upstream of the proposed pipeline crossing. Vegetation consists of grasses, sedges, willows, and birch. The substrate is fines and detritus. Discontinuous flow prevents fish access to the area.

Fish use was not observed during the 1981 spring survey, and no suitable fish habitat was present. The channel may become flooded during periods of exceedingly high water, but this appears to happen very infrequently. This stream should not be considered to be used by fish.

FISH

Waterbody: Unnamed Creek NPRX: 084-5

Date: 24 May 1981

Fish Present: No

Gear/Effort: EF (0/198 sec)

Species Present	Quantity		Length (mm)	
	Fry	Other	Fry	Other

PHYSICAL CONDITIONS

Date	24 May 1981
Wetted Width (m)	0-8.0
Depth (cm)	0-50
Discharge (m^3/s)	below detection limits
Dissolved Oxygen (mg/ℓ)	9.1
Temperature (° C)	9.0
Conductivity (μmhos/cm)	600
pH (pH units)	6.6
Color (color units)	250
Turbidity (NTU)	5.7
T. Hardness (mg $CaCO_3$/ℓ)	36
Nitrate (mg/ℓ N)	below detection limit
Orthophosphate (mg/ℓ P)	below detection limit
Bottom Type (%)	100 fines/detritus
Bank Stability (%)	100
Aquatic Vegetation (P/A)	A
Riparian Vegetation (%)	20 grasses, 30 sedge, 40 willow, 10 paper birch
Cover (%)	0
Fish Block(s)	discontinuous flow and stagnant pools within survey area

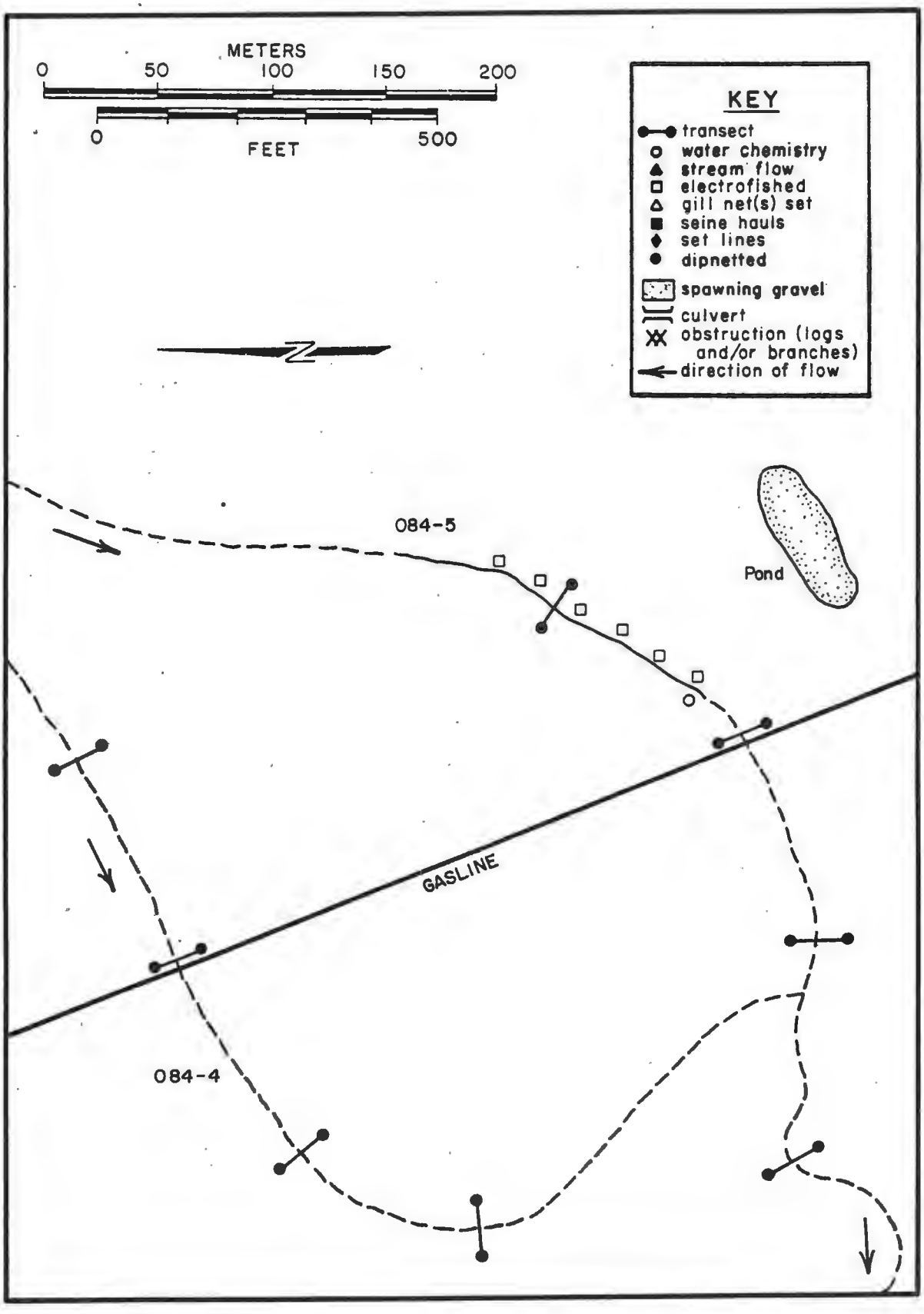

Figure 7. Spring survey. Unnamed Creek (NPMP 476.3) and Unnamed Creek (NPMP 476.1, 24 May 1981.

SPRING SURVEY FORM

WATERBODY

Waterbody: Unnamed Creek Source: Taiga/Muskeg Drainage

Main Drainage: Tanana River Tributary to: Chena River

Figure: 7 Elevation: 168 m

NPAS: 84 NPMP: 476.1 NPRX: 084-4 AHMP: NA

USGS Map Reference: Fairbanks, AK T: 1S R: 3E Sec: 27

Site Access: Helicopter

Section Surveyed: 100 m upstream to 200 m downstream of proposed pipeline crossing

ASSESSMENT

Unnamed Creek (NPMP 476.1) appears to be an old, unused channel of the Chena River. The stream channel is densely vegetated with willows and sedges, and no water was present within the surveyed area. It is possible that water may be present during periods of exceedingly high water, but appeared that this is a very infrequent event. This stream should not be considered to have importance to fish in normal circumstances.

FISH

Waterbody: Unnamed Creek NPRX: 084-4

Date: 24 May 1981

Fish Present: No

Gear/Effort: none - stream bed dry

Species Present	Quantity		Length (mm)	
	Fry	Other	Fry	Other

PHYSICAL CONDITIONS

Date	24 May 1981
Wetted Width (m)	NA
Depth (cm)	NA
Discharge (m^3/s)	NA
Dissolved Oxygen (mg/ℓ)	NA
Temperature (° C)	NA
Conductivity (μmhos/cm)	NA
pH (pH units)	NA
Color (color units)	NA
Turbidity (NTU)	NA
T. Hardness (mg $CaCO_3$/ℓ)	NA
Nitrate (mg/ℓ N)	NA
Orthophosphate (mg/ℓ P)	NA
Bottom Type (%)	NA
Bank Stability (%)	NA
Aquatic Vegetation (P/A)	NA
Riparian Vegetation (%)	50 sedge, 50 willow
Cover (%)	0
Fish Block(s)	stream bed dry

SPRING SURVEY FORM

WATERBODY

Waterbody: Unnamed Creek Source: Muskeg Drainage

Main Drainage: NA Tributary to: NA

Figure: NA Elevation: 165 m

NPAS: 84 NPMP: 475.1 NPRX: 084-1 AHMP: NA

USGS Map Reference: Fairbanks, AK T: 1S R: 3E Sec: 21

Site Access: Helicopter

Section Surveyed: 100 m upstream to 150 m downstream of proposed pipeline crossing

ASSESSMENT

The alignment sheets show a stream crossing at NPMP 475.1. This stream is actually an unimproved road linking two cleared areas. No water is present.

SPRING SURVEY FORM

WATERBODY

Waterbody: Tributary to the Little Chena River #2 Source: Muskeg Drainage

Main Drainage: Chena River Tributary to: Little Chena River

Figure: 8 Elevation: 153 m

NPAS: 83 NPMP: 469.3 NPRX: 083-4 AHMP: NA

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

Site Access: Helicopter

Section Surveyed: 100 m upstream to 200 m downstream of proposed pipeline crossing

ASSESSMENT

Tributary to Little Chena River #2 is a series of ponds, some connected, which lie in an old stream channel. The water in this system was stagnant. Riparian vegetation is composed of sedges, spruce and dwarf birch. The substrate is detritus and fines and the gradient is slight. Potential fish blocks consisted of discontinuous flow and areas of the stream channel overgrown with thick vegetation.

No fish were captured in this area during the 1981 spring survey. Due to discontinuous flow, no fish access is possible to the vicinity of the proposed pipeline crossing and no suitable habitat for fish was present. In general this stream should not be considered to be important to fish, except possibly during periods of high water.

FISH

Waterbody: Tributary to the Little Chena River #2 NPRX: 083-4

Date: 24 May 1981

Fish Present: No

Gear/Effort: EF (0/377 sec), visual (0/50 m)

Species Present	Quantity		Length (mm)	
	Fry	Other	Fry	Other

PHYSICAL CONDITIONS

Date	24 May 1981
Wetted Width (m)	0-10
Depth (cm)	0-20
Discharge (m^3/s)	below detection limit
Dissolved Oxygen (mg/ℓ)	3.5
Temperature (° C)	6.5
Conductivity (µmhos/cm)	35
pH (pH units)	5.9
Color (color units)	325
Turbidity (NTU)	2.5
T. Hardness (mg $CaCO_3$/ℓ)	51
Nitrate (mg/ℓ N)	below detection limit
Orthophosphate (mg/ℓ P)	below detection limit
Bottom Type (%)	100 detritus/fines
Bank Stability (%)	100
Aquatic Vegetation (P/A)	P
Riparian Vegetation (%)	60 sedge, 25 spruce, 15 dwarf birch
Cover (%)	5
Fish Block(s)	several areas of stream bed overgrown with vegetation. Some areas have discontinuous flow

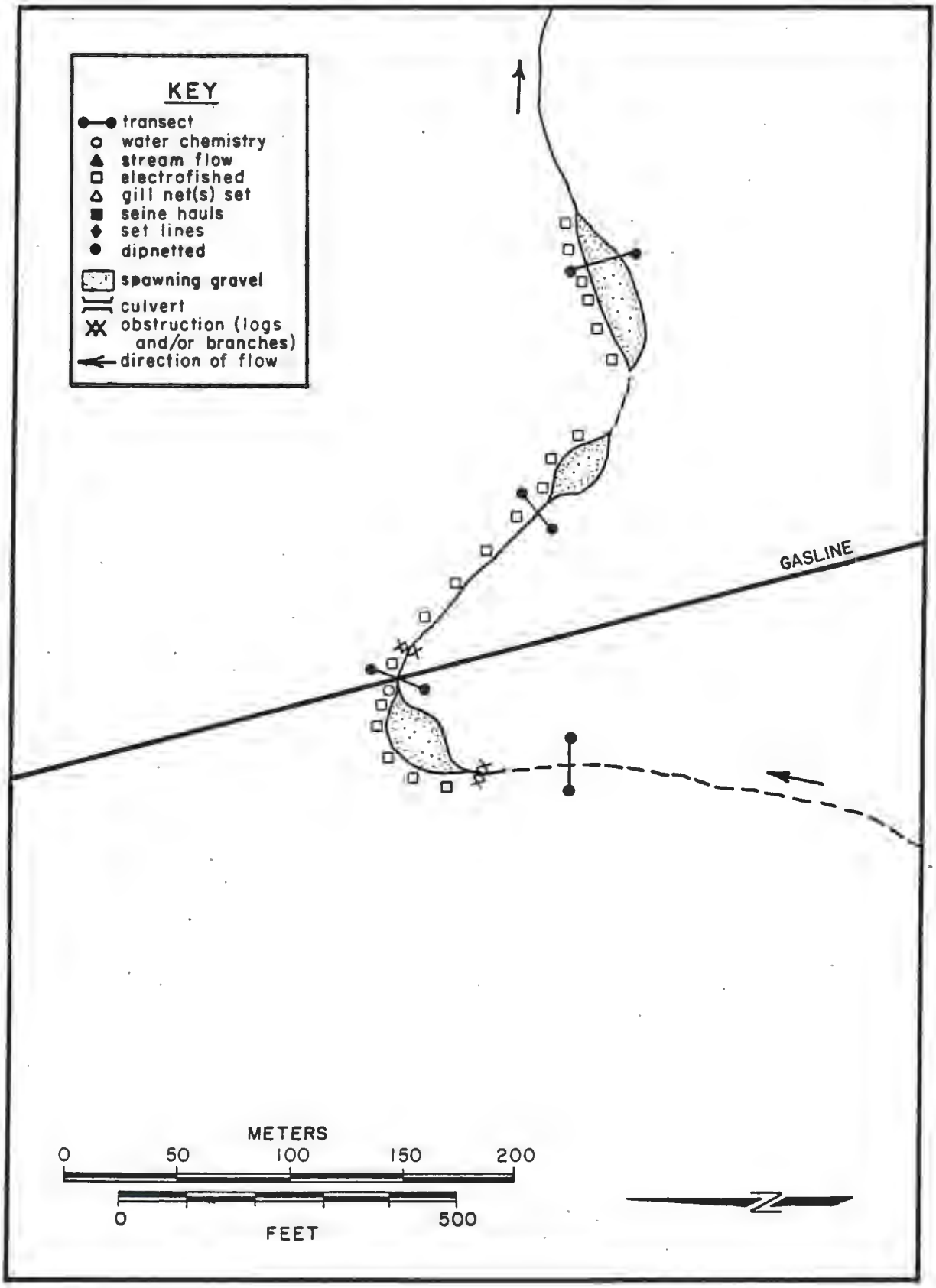

Figure 8. Spring survey. Tributary to Little Chena River #2, 24 May 1981

SPRING SURVEY FORM

WATERBODY

Waterbody: Little Chena River Source: Montane/Taiga Drainage

Main Drainage: Tanana River Tributary to: Chena River

Figure: 9 Elevation: 158 m

NPAS: 83 NPMP: 468.9 NPRX: 083-3 AHMP: NA

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

Site Access: Truck

Section Surveyed: 60 m upstream to 120 m downstream of proposed pipeline crossing

ASSESSMENT

The Little Chena River is a moderately large, meandering stream that flows west from the White Mountains draining many small, clear-water tributaries. Its waters are turbid and are confined by steep high banks. Riparian vegetation consists of birch, willows, roses, and sedges. The substrate is fines and detritus. The stream gradient is slight throughout the surveyed area and no potential fish blocks were observed.

Fishing efforts produced two grayling and two round whitefish. These fish were captured in a gillnet placed approximately 10 m upstream of the proposed pipeline crossing. The Little Chena River probably serves as a spring migration route to clear-water rearing areas for several fish species. Rearing also probably occurs in the river.

FISH

Waterbody: Little Chena River NPRX: 083-3

Date: 8 June 1981

Fish Present: Yes

Gear/Effort: GN (4/12 hr), set line (0/12 hr)

Species Present	Quantity Fry	Quantity Other	Length (mm) Fry	Length (mm) Other
Arctic grayling		2		159,200
round whitefish		2		197,219

PHYSICAL CONDITIONS

Date	8 June 1981
Wetted Width (m)	~ 10-17
Depth (cm)	170-200
Discharge (m^3/s)	5.98 (Ref. 58)
Dissolved Oxygen (mg/ℓ)	8.6
Temperature (° C)	9.5
Conductivity (µmhos/cm)	95
pH (pH units)	8.6
Color (color units)	60
Turbidity (NTU)	25.0
T. Hardness (mg $CaCO_3$/ℓ)	68
Nitrate (mg/ℓ N)	below detection limit
Orthophosphate (mg/ℓ P)	below detection limit
Bottom Type (%)	100 fines/detritus
Bank Stability (%)	77
Aquatic Vegetation (P/A)	A
Riparian Vegetation (%)	13 sedge, 20 wild rose, 37 willow, 30 birch
Cover (%)	0
Fish Block(s)	none observed

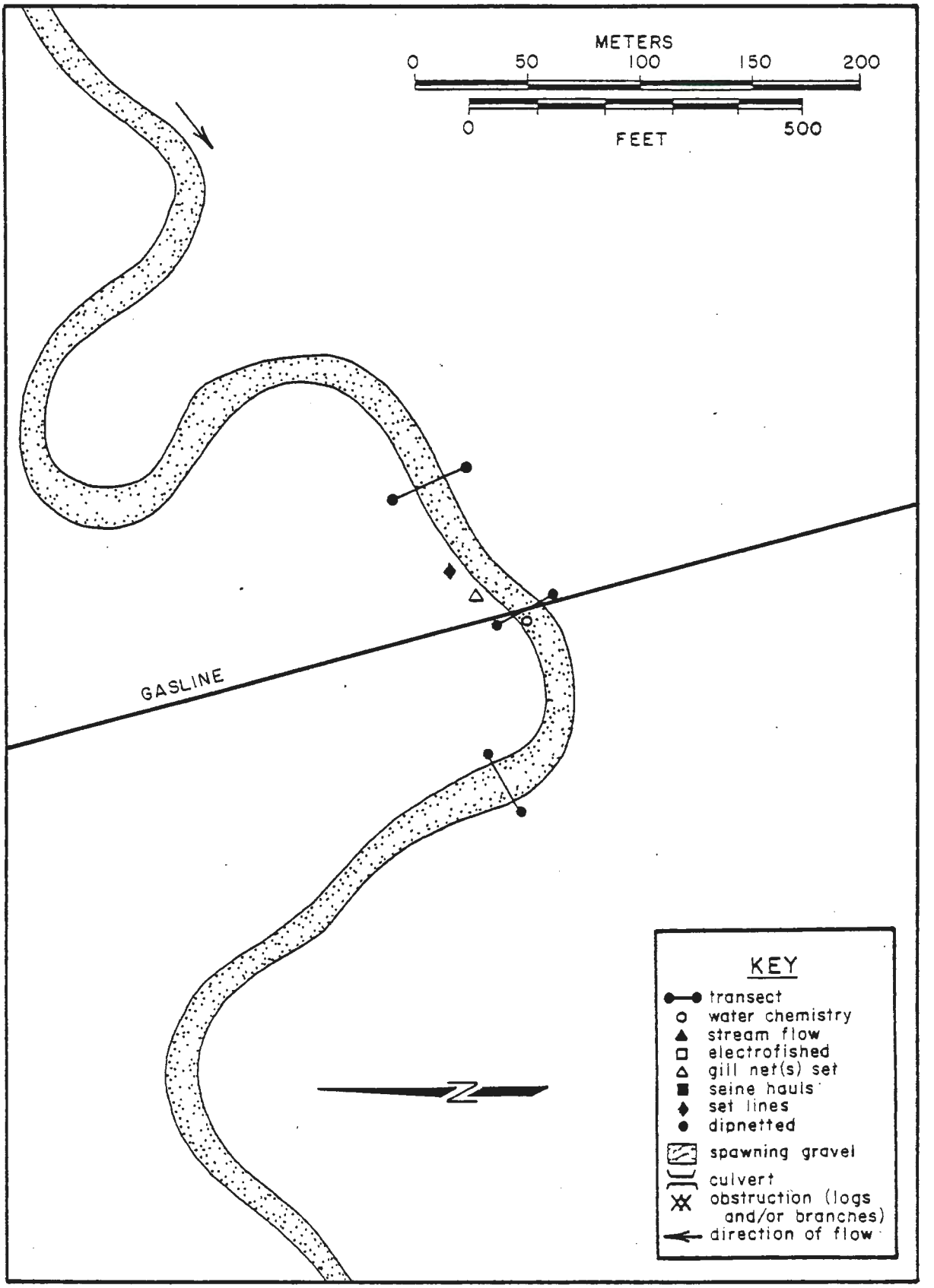

Figure 9. Spring survey. Little Chena River, 8 June 1981.

SPRING SURVEY FORM

WATERBODY

Waterbody: Iowa Creek Source: Muskeg Drainage

Main Drainage: Chena River Tributary to: Little Chena River

Figure: 10 Elevation: 152 m

NPAS: 83 NPMP: 468.3 NPRX: 083-2 AHMP: NA

USGS Map Reference: Fairbanks, AK T: 1N R: 2E Sec: 24

Site Access: Helicopter

Section Surveyed: 100 m upstream to 200 m downstream of proposed pipeline crossing

ASSESSMENT

Iowa Creek is a moderate-sized, fast-flowing stream that drains a muskeg area south of the White Mountains. From the proposed pipeline crossing this stream flows southwesterly approximately 0.5 km to the Little Chena River. Riparian vegetation consists of willows, alders, grasses, and mosses. The substrate is fines and detritus. The stream gradient is slight throughout the surveyed area. Potential fish blocks consisting of several branch and log jams were located upstream of the crossing.

Fishing efforts produced 11 slimy sculpin and two burbot captured downstream of the crossing. This stream provides excellent fish habitat, but access to areas upstream of the crossing may be impossible due to existing blocks. Previous investigations in the fall have observed young-of-the-year grayling (Ref. 122) indicating that Iowa Creek may be used as a rearing area as well as a spawning area. Iowa Creek should be considered as an important stream for several species of fish.

FISH

Waterbody: Iowa Creek NPRX: 083-2

Date: 21 May 1981

Fish Present: Yes

Gear/Effort: EF (13/1562 sec)

Species Present	Quantity Fry	Quantity Other	Length (mm) Fry	Length (mm) Other
slimy sculpin		11		85-115
burbot		2		230,250

PHYSICAL CONDITIONS

Date	21 May 1981
Wetted Width (m)	1.5-2.5
Depth (cm)	30-150
Discharge (m^3/s)	0.1359
Dissolved Oxygen (mg/ℓ)	12.0
Temperature (° C)	1.0
Conductivity (μmhos/cm)	52
pH (pH units)	6.8
Color (color units)	80
Turbidity (NTU)	7.7
T. Hardness (mg $CaCO_3$/ℓ)	68.4
Nitrate (mg/ℓ N)	below detection limit
Orthophosphate (mg/ℓ P)	below detection limit
Bottom Type (%)	100 fines/detritus
Bank Stability (%)	100
Aquatic Vegetation (P/A)	A
Riparian Vegetation (%)	1 mosses, 29 grasses, 10 willow, 60 alder
Cover (%)	5
Fish Block(s)	several branch and log jams located upstream of proposed crossing

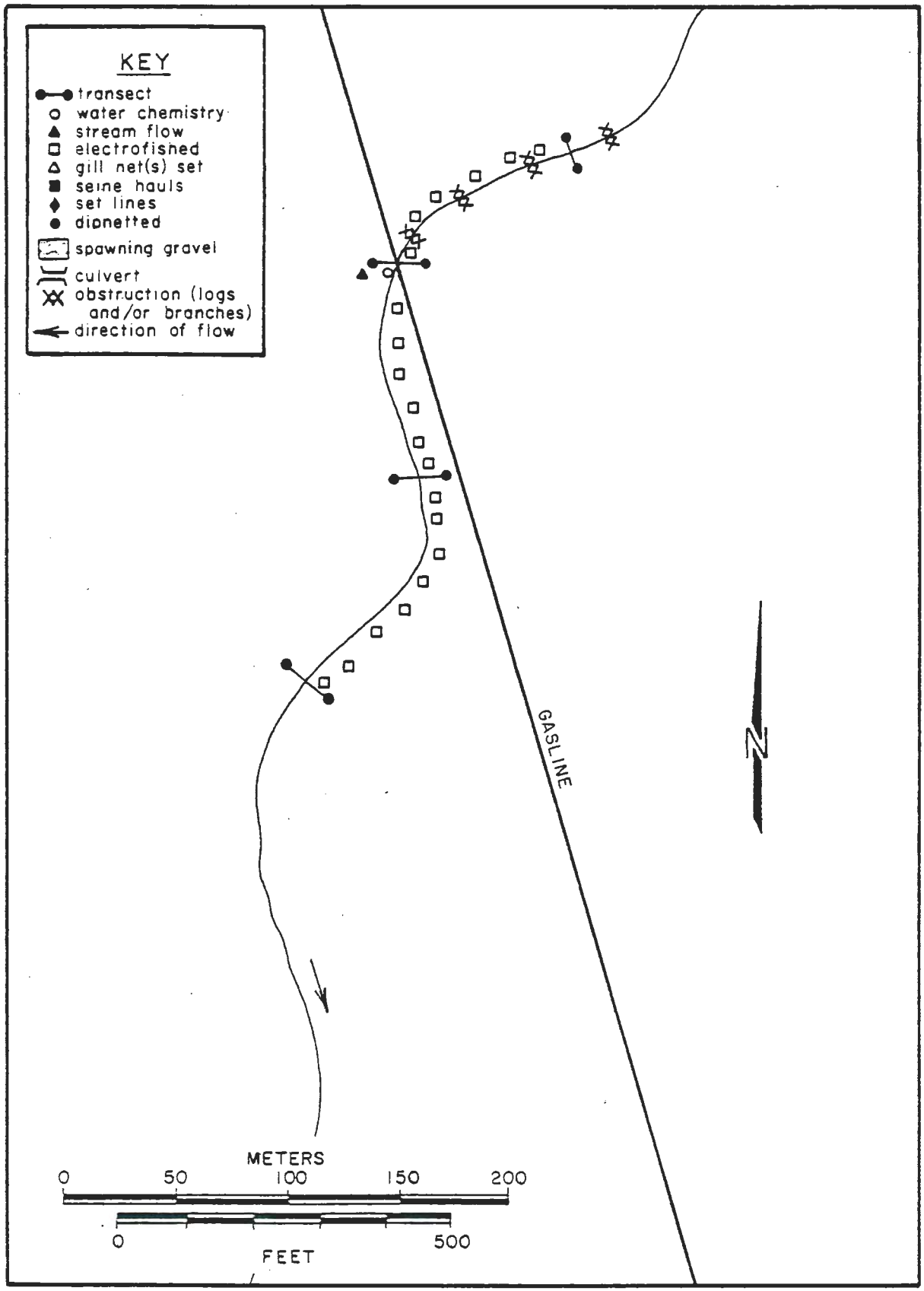

Figure 10. Spring survey. Iowa Creek, 21 May 1981.

SPRING SURVEY FORM

WATERBODY

Waterbody: Tributary to Smallwood Creek #1 Source: Muskeg Drainage

Main Drainage: NA Tributary to: NA

Figure: NA Elevation: 155 m

NPAS: 83 NPMP: 467.8 NPRX: 083-1 AHMP: NA

USGS Map Reference: Fairbanks, AK T: 1N R: 2E Sec: 24

Site Access: Helicopter

Section Surveyed: 200 m upstream to 200 m downstream of proposed pipeline crossing

ASSESSMENT

No stream exists at the location indicated on Rev. 3 Alignment Sheets. A small stream (5 cm wide) drains the area of the proposed crossing and enters Smallwood Creek 300 m downstream of the crossing. There was insufficient surface water within 200 m of the crossing for fish or water samples.

SPRING SURVEY FORM

WATERBODY

Waterbody: Tributary to Smallwood Creek #2 Source: Muskeg/Taiga Drainage

Main Drainage: Chena River Tributary to: Little Chena River

Figure: 11 Elevation: 198 m

NPAS: 82 NPMP: 465.9 NPRX: 082-2 AHMP: NA

USGS Map Reference: Fairbanks, AK T: 1N R: 1E Sec: 14

Site Access: Helicopter

Section Surveyed: 100 m upstream to 200 m downstream of proposed pipeline crossing

ASSESSMENT

Tributary to Smallwood Creek #2 is a small, narrow stream. Riparian vegetation is composed of grasses, alder, spruce, and willows. The substrate is detritus and fines, and the gradient is slight. In the vicinity of the proposed pipeline crossing the stream flows through an open tussock area. Potential fish blocks consisted of numerous branch and log jams downstream of the crossing.

Due to low flows, fish habitat was poor at the time of the survey. No fish were captured. Potential fish blocks may prevent fish access to the crossing. Present information suggests that fish use of this stream near the crossing is very low or non-existent.

FISH

Waterbody: Tributary to Smallwood Creek NPRX: 082-2

Date: 21 May 1981

Fish Present: no

Gear/Effort: EF (0/160 sec)

Species Present	Quantity		Length (mm)	
	Fry	Other	Fry	Other

PHYSICAL CONDITIONS

Date	21 May 1981
Wetted Width (m)	0.2-1.0
Depth (cm)	20-100
Discharge (m^3/s)	below detection limit
Dissolved Oxygen (mg/ℓ)	8.0
Temperature (° C)	3.5
Conductivity (µmhos/cm)	81
pH (pH units)	6.8
Color (color units)	350
Turbidity (NTU)	5.9
T. Hardness (mg $CaCO_3$/ℓ)	103
Nitrate (mg/ℓ N)	below detection limit
Orthophosphate (mg/ℓ P)	below detection limit
Bottom Type (%)	90 detritus, 10 fines
Bank Stability (%)	100
Aquatic Vegetation (P/A)	A
Riparian Vegetation (%)	70 grasses, 20 alder, 5 spruce, 5 willow
Cover (%)	30
Fish Block(s)	numerous branch and log jams located at and downstream of the proposed crossing

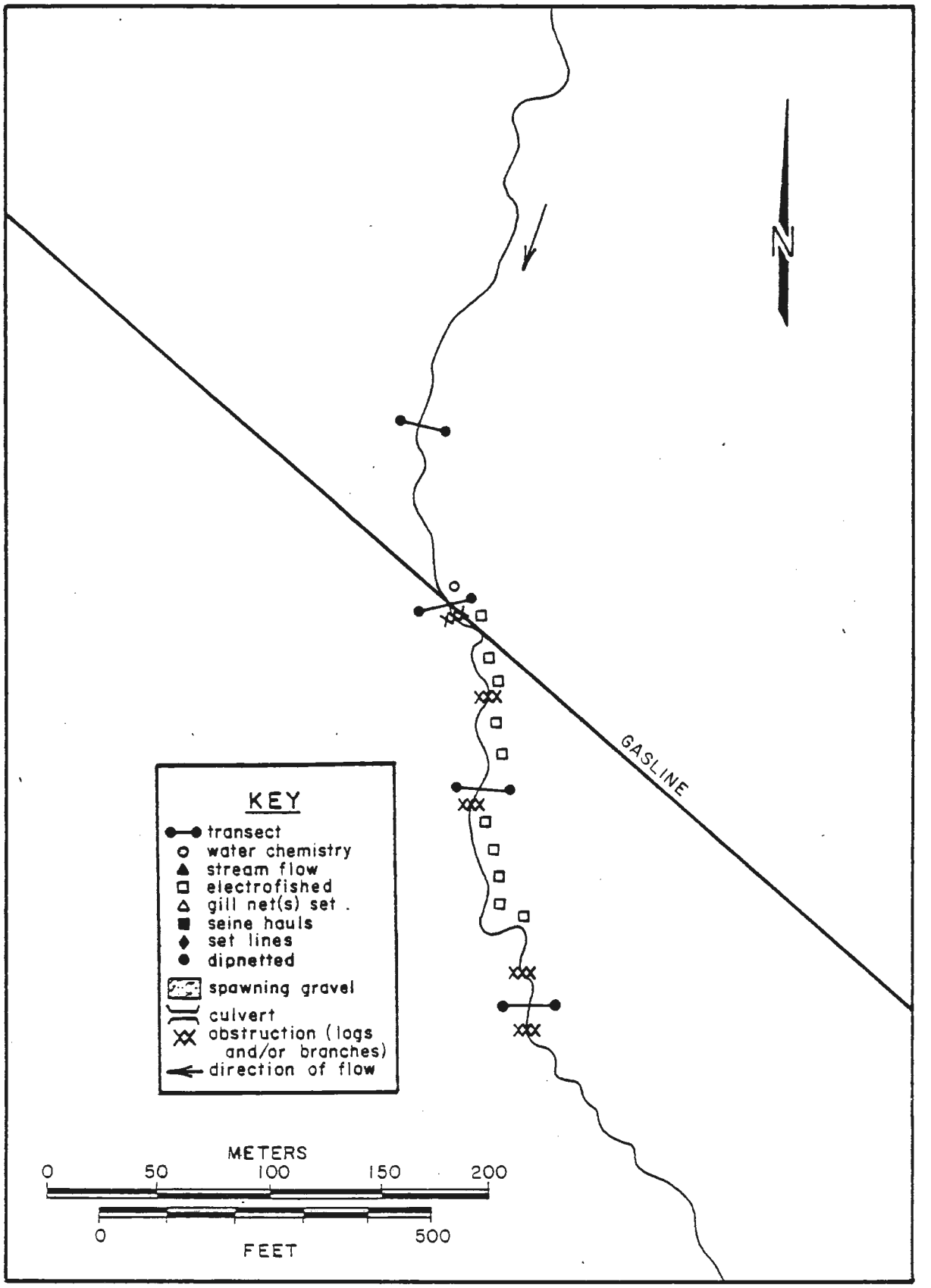

Figure 11. Spring survey. Tributary to Smallwood Creek #2, 21 May 1981.

SPRING SURVEY FORM

WATERBODY

Waterbody: Smallwood Creek Source: Taiga Drainage

Main Drainage: Little Chena River Tributary to: Unnamed Creek

Figure: 12 Elevation: 198 m

NPAS: 82 NPMP: 463.9 NPRX: 082-1 AHMP: NA

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

Site Access: Helicopter

Section Surveyed: 110 m upstream to 175 m downstream of proposed pipeline crossing

ASSESSMENT

Smallwood Creek is a small stream that drains the south slope of Gilmore Dome. Riparian vegetation is composed of grasses, willows, and alder. The substrate is fines, sand, and pebbles. The stream gradient is moderate. Several beaver dams are present upstream of the crossing and are considered fish blocks. Downstream of the crossing the stream is confined to a narrow, uniform channel. Shelf ice was present along much of this portion of the stream.

Fishing efforts produced two slimy sculpin captured downstream of the crossing. This stream may also be used by grayling as a rearing area (Ref. 133). Fish habitat is excellent near the crossing but upstream migration must be limited due to the beaver dams.

FISH

Waterbody: Smallwood Creek NPRX: 082-1

Date: 21 May 1981

Fish Present: Yes

Gear/Effort: EF (2/398 sec)

Species Present	Quantity Fry	Quantity Other	Length (mm) Fry	Length (mm) Other
slimy sculpin		2		~ 50

PHYSICAL CONDITIONS

Date	21 May 1981
Wetted Width (m)	0.5-3.0
Depth (cm)	10-100
Discharge (m^3/s)	0.0603
Dissolved Oxygen (mg/ℓ)	11.9
Temperature (° C)	3.4
Conductivity (μmhos/cm)	64
pH (pH units)	8.2
Color (color units)	90
Turbidity (NTU)	5.3
T. Hardness (mg $CaCO_3$/ℓ)	60
Nitrate (mg/ℓ N)	below detection limit
Orthophosphate (mg/ℓ P)	below detection limit
Bottom Type (%)	5 fines, 15 sand, 80 pebbles
Bank Stability (%)	90
Aquatic Vegetation (P/A)	A
Riparian Vegetation (%)	80 grasses, 15 willow, 5 alder
Cover (%)	20
Fish Block(s)	several beaver dams located upstream of proposed crossing

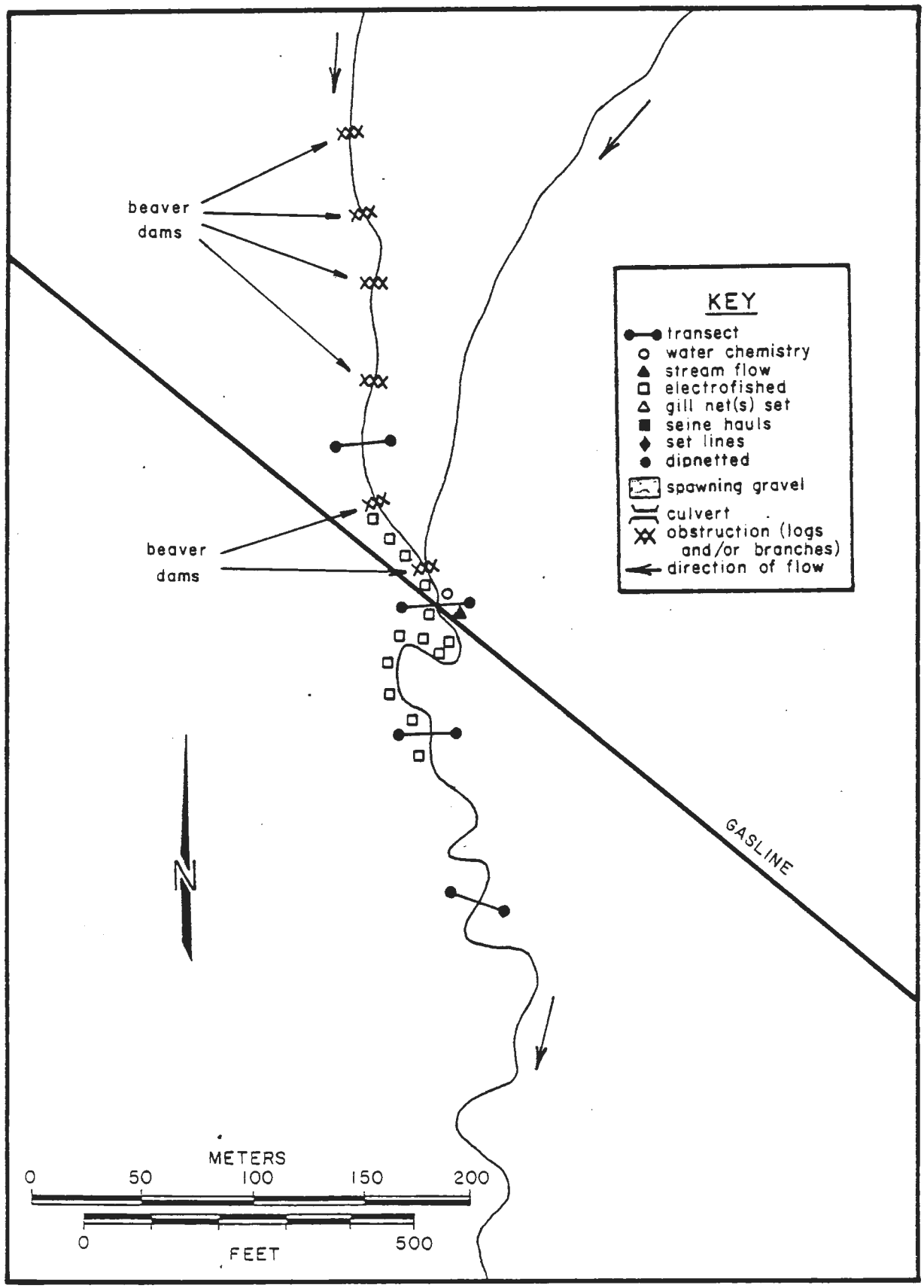

Figure 12. Spring survey. Smallwood Creek, 21 May 1981.

SPRING SURVEY FORM

WATERBODY

Waterbody: Rose Creek Source: Taiga Drainage

Main Drainage: Chatanika River Tributary to: Gilmore Creek

Figure: 13 Elevation: 378 m

NPAS: 81 NPMP: 459.3 NPRX: 081-4 AHMP: NA

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

Site Access: Helicopter

Section Surveyed: 100 m upstream to 200 m downstream of proposed pipeline crossing

ASSESSMENT

Rose Creek is a small stream which joins Gilmore Creek approximately 2 km northwest of the proposed pipeline crossing. Stream flow is discontinuous and riparian vegetation is composed of willows and mosses. The substrate is sand and detritus. The stream gradient is moderate. Snow banks were present along most of the stream in the surveyed area.

No fish use was observed during the 1981 spring survey. Fish habitat was non-existent and due to discontinuous flow fish access was not possible. Fish use of this stream in the vicinity of the crossing is probably non-existent.

FISH

Waterbody: Rose Creek NPRX: 081-4

Date: 23 May 1981

Fish Present: no

Gear/Effort: visual (0/150 m)

Species Present	Quantity		Length (mm)	
	Fry	Other	Fry	Other

PHYSICAL CONDITIONS

Date	23 May 1981
Wetted Width (m)	0-1.0
Depth (cm)	0-50
Discharge (m^3/s)	below detection limits
Dissolved Oxygen (mg/ℓ)	4.2
Temperature (° C)	0.0
Conductivity (μmhos/cm)	800
pH (pH units)	7.0
Color (color units)	80
Turbidity (NTU)	9.3
T. Hardness (mg $CaCO_3$/ℓ)	36
Nitrate (mg/ℓ N)	below detection limit
Orthophosphate (mg/ℓ P)	below detection limit
Bottom Type (%)	20 detritus, 80 sand
Bank Stability (%)	100
Aquatic Vegetation (P/A)	A
Riparian Vegetation (%)	10 mosses, 90 willow
Cover (%)	80
Fish Block(s)	areas of subterranean and discontinuous flow throughout surveyed area

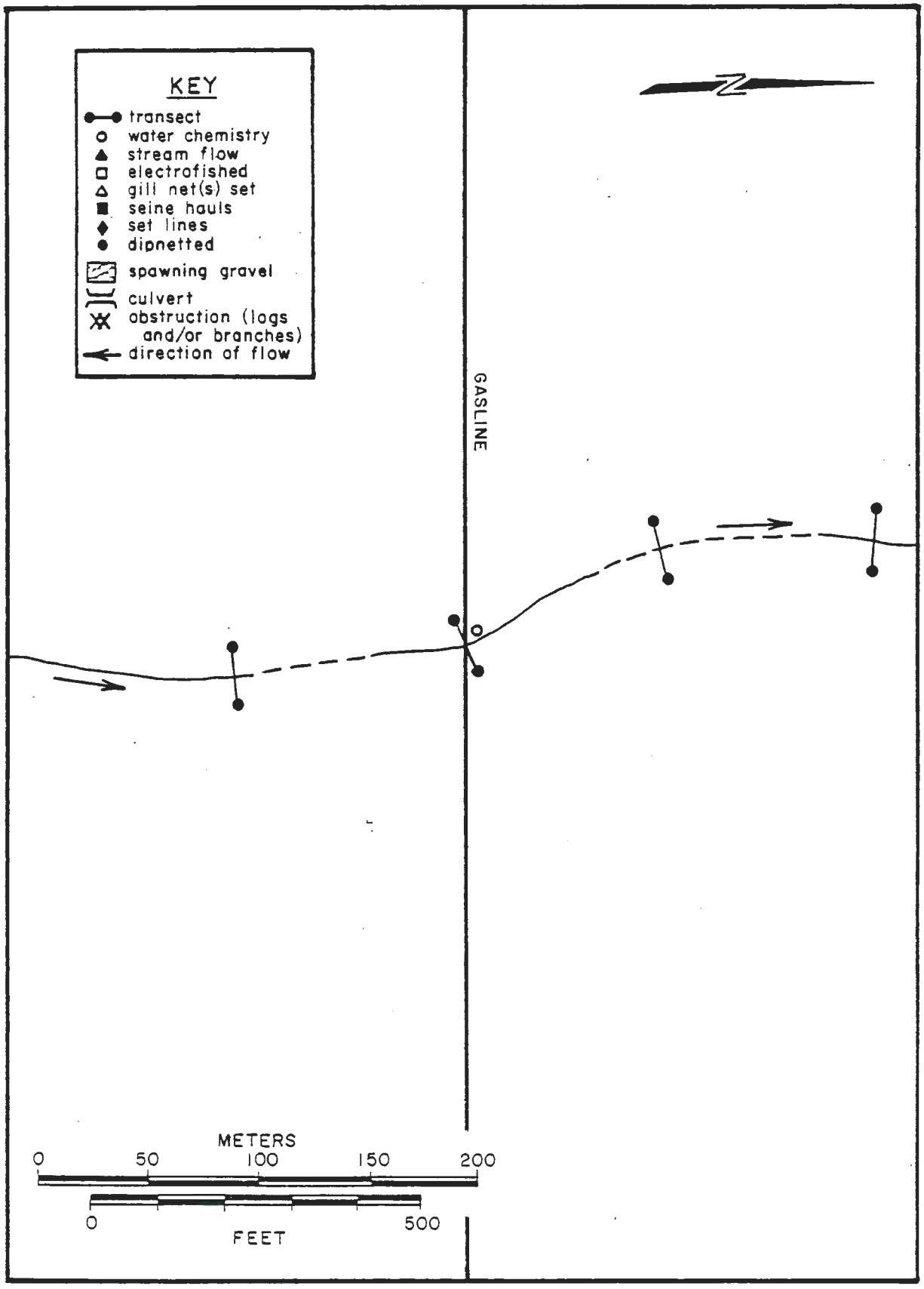

Figure 13. Spring survey. Rose Creek, 23 May 1981.

SPRING SURVEY FORM

WATERBODY

Waterbody: Gilmore Creek Source: Taiga Drainage

Main Drainage: Chatanika River Tributary to: Goldstream Creek

Figure: 14 Elevation: 335 m

NPAS: 81 NPMP: 457.6 NPRX: 081-3 AHMP: NA

USGS Map Reference: Fairbanks, AK T: 2N R: 2E Sec: 27

Site Access: Truck

Section Surveyed: 100 m upstream to 100 m downstream of proposed pipeline crossing

ASSESSMENT

Gilmore Creek is a small, fast-flowing, turbid stream. In the vicinity of the crossing the stream flows adjacent to tailings from previous mining activity. The riparian vegetation consists of willows, alder, grasses, and mosses. The substrate is fines, sand, gravel, pebbles, cobbles, and boulders. The gradient is moderate throughout the surveyed area. Potential fish blocks consisted of branches and debris in the stream both upstream and downstream of the crossing.

Although fishing efforts produced no fish, the presence of fish in Pedro Creek is evidence of fish use in the proximity of the proposed crossing. The fish habitat present was considered to be good. Fish use in this area may increase as spring runoff decreases. Further investigations are needed to accurately assess fish use.

FISH

Waterbody: Gilmore Creek NPRX: 081-3

Date: 26 May 1981

Fish Present: no

Gear/Effort: EF (0/469 sec)

Species Present	Quantity		Length (mm)	
	Fry	Other	Fry	Other

PHYSICAL CONDITIONS

Date	26 May 1981
Wetted Width (m)	1-4
Depth (cm)	25-55
Discharge (m^3/s)	0.1164
Dissolved Oxygen (mg/ℓ)	11.8
Temperature (° C)	5.0
Conductivity (μmhos/cm)	600
pH (pH units)	8.0
Color (color units)	90
Turbidity (NTU)	29.0
T. Hardness (mg $CaCO_3$/ℓ)	68.4
Nitrate (mg/ℓ N)	below detection limit
Orthophosphate (mg/ℓ P)	below detection limit
Bottom Type (%)	40 fines, 10 sand, 13 gravel, 13 pebble, 10 cobble, 14 boulder
Bank Stability (%)	100
Aquatic Vegetation (P/A)	A
Riparian Vegetation (%)	71 willow, 13 alder, 10 grass, 6 mosses
Cover (%)	8
Fish Block(s)	branches in stream channel

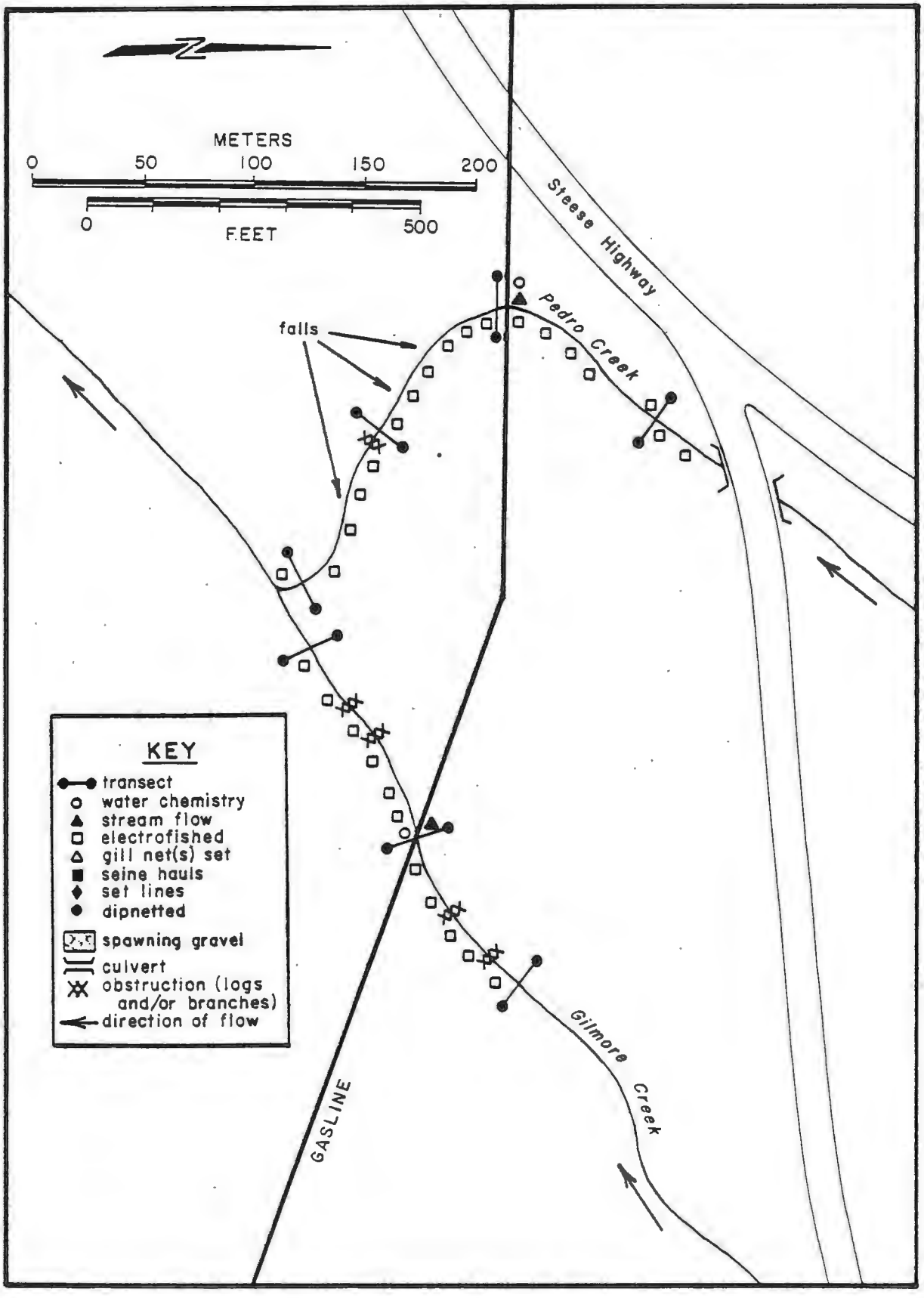

Figure 14. Spring survey. Gilmore Creek and Pedro Creek, 26 May 1981.

SPRING SURVEY FORM

WATERBODY

Waterbody: Pedro Creek Source: Taiga Drainage

Main Drainage: Chatanika River Tributary to: Goldstream Creek

Figure: 14 Elevation: 328 m

NPAS: 81 NPMP: 457.4 NPRX: 081-2 AHMP: NA

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

Site Access: Truck

Section Surveyed: 100 m upstream to 200 m downstream of proposed pipeline crossing

ASSESSMENT

Pedro Creek is a small, fast-flowing, turbid stream which flows generally southwest and parallels the Steese Highway. It joins Gilmore Creek approximately 175 m downstream of the proposed pipeline crossing. In the area of the crossing the stream flows over tailings from previous mining activity. Riparian vegetation consists of willows, alder, aspen, grasses, and mosses. The substrate is fines, sand, gravel, and pebbles. The gradient is moderate. Potential fish blocks consisted of falls and log jams downstream of the crossing. Some shelf ice was remaining on the stream banks throughout the surveyed area.

Fishing efforts resulted in one grayling being captured approximately 150 m downstream of the crossing. Although adequate fish habitat was present at the time of the survey, existing fish blocks may have prevented fish from ascending too far upstream. Fish habitat may improve and fish use may increase when high flows due to spring runoff have decreased. Further investigations are needed to accurately assess fish use.

FISH

Waterbody: Pedro Creek NPRX: 081-2

Date: 26 May 1981

Fish Present: yes

Gear/Effort: EF (1/932 sec)

Species Present	Quantity		Length (mm)	
	Fry	Other	Fry	Other
grayling		1		133

PHYSICAL CONDITIONS

Date	26 May 1981
Wetted Width (m)	0.5-2.5
Depth (cm)	15-80
Discharge (m^3/s)	0.1631
Dissolved Oxygen (mg/ℓ)	11.5
Temperature (° C)	6.5
Conductivity (μmhos/cm)	60
pH (pH units)	7.2
Color (color units)	100
Turbidity (NTU)	21.0
T. Hardness (mg $CaCO_3$/ℓ)	85.5
Nitrate (mg/ℓ N)	below detection limit
Orthophosphate (mg/ℓ P)	below detection limit
Bottom Type (%)	61 fines, 4 sand, 20 gravel, 15 pebble
Bank Stability (%)	100
Aquatic Vegetation (P/A)	A
Riparian Vegetation (%)	74 willow, 9 alder, 7 aspen, 6 grass, 4 mosses
Cover (%)	10
Fish Block(s)	falls and log jams

SPRING SURVEY FORM

WATERBODY

Waterbody: Gold Run Source: Taiga Drainage

Main Drainage: Chatanika River Tributary to: Goldstream Creek

Figure: 15 Elevation: 274 m

NPAS: 81 NPMP: 456.9 NPRX: 081-1 AHMP: NA

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

Site Access: Truck

Section Surveyed: From the proposed crossing to 200 m downstream of crossing

ASSESSMENT

Gold Run is a small stream draining a large, forested hillside north of the proposed pipeline. Riparian vegetation is primarily willows, alder, aspen, and birch. The substrate is fines and detritus and the gradient is steep. The stream channel is undefined and flows over a previously mined area. Numerous branch and log jams constitute potential fish blocks.

No fish were observed during the 1981 spring survey. Fish habitat was poor to non-existent due to low flow and the undefined channel. Fish access is also doubtful because of the same factors. Since suitable habitat is lacking and access questionable, fish use of this stream is probably non-existent.

FISH

Waterbody: Gold Run NPRX: 081-1

Date: 8 June 1981

Fish Present: no

Gear/Effort: visual (0/200 m)

Species Present	Quantity		Length (mm)	
	Fry	Other	Fry	Other

PHYSICAL CONDITIONS

Date	8 June 1981
Wetted Width (m)	0.07-0.3
Depth (cm)	3-20
Discharge (m^3/s)	below detection limits
Dissolved Oxygen (mg/ℓ)	9.8
Temperature (° C)	5.9
Conductivity (μmhos/cm)	55
pH (pH units)	8.9
Color (color units)	25
Turbidity (NTU)	1.3
T. Hardness (mg $CaCO_3$/ℓ)	34
Nitrate (mg/ℓ N)	below detection limits
Orthophosphate (mg/ℓ P)	below detection limits
Bottom Type (%)	100 fines/detritus
Bank Stability (%)	100
Aquatic Vegetation (P/A)	P
Riparian Vegetation (%)	5 mosses, 10 sedge, 10 wild rose, 45 willow, 10 alder, 10 aspen, 10 birch
Cover (%)	20
Fish Block(s)	undefined channel and numerous branch and log jams

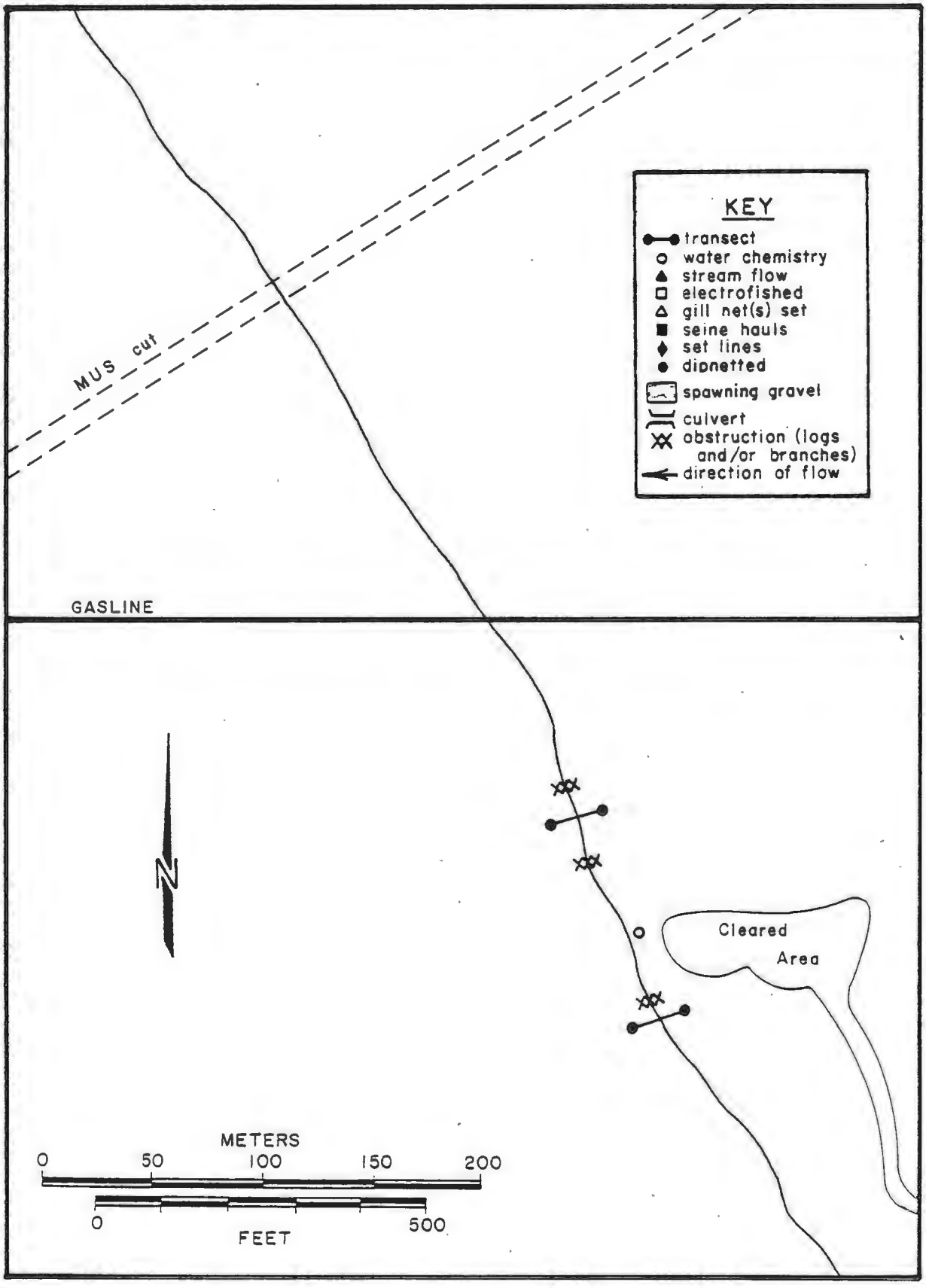

Figure 15. Spring survey. Gold Run, 8 June 1981.

SPRING SURVEY FORM

WATERBODY

Waterbody: Fox Creek Source: Taiga Drainage

Main Drainage: Chatanika River Tributary to: Goldstream Creek

Figure: 16 Elevation: 305 m

NPAS: 80 NPMP: 454.4 NPRX: 080-2 AHMP: NA

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

Site Access: Truck

Section Surveyed: 100 m upstream to 200 m downstream of proposed pipeline crossing

ASSESSMENT

Fox Creek is a small stream that flows southward parallel to the Elliott Highway. At the crossing the stream flows through an area that has been mined. Riparian vegetation is made up of willows, spruce, alder, grasses, and mosses. The substrate is fines and detritus, and the stream gradient is moderate.

At the time of the 1981 spring survey, Fox Creek was still frozen over, but a small amount of water was flowing over the ice. There was no suitable fish habitat present and no fish use was observed. It is possible that this stream is used by fish after breakup, but present data suggest that this stream has little if any fish use near the crossing (Ref. 122).

FISH

Waterbody: Fox Creek NPRX: 080-2

Date: 26 May 1981

Fish Present: no

Gear/Effort: visual (0/300 m)

Species Present	Quantity		Length (mm)	
	Fry	Other	Fry	Other

PHYSICAL CONDITIONS

Date	26 May 1981
Wetted Width (m)	0-10
Depth (cm)	0-8
Discharge (m^3/s)	below detection limit
Dissolved Oxygen (mg/ℓ)	11.6
Temperature (° C)	1.0
Conductivity (μmhos/cm)	30
pH (pH units)	7.0
Color (color units)	125
Turbidity (NTU)	16.0
T. Hardness (mg $CaCO_3$/ℓ)	34.2
Nitrate (mg/ℓ N)	below detection limit
Orthophosphate (mg/ℓ P)	below detection limit
Bottom Type (%)	100 fines/detritus
Bank Stability (%)	100
Aquatic Vegetation (P/A)	P
Riparian Vegetation (%)	68 willow, 15 spruce, 11 grass, 3 mosses, 3 alder
Cover (%)	12
Fish Block(s)	ice in stream bed

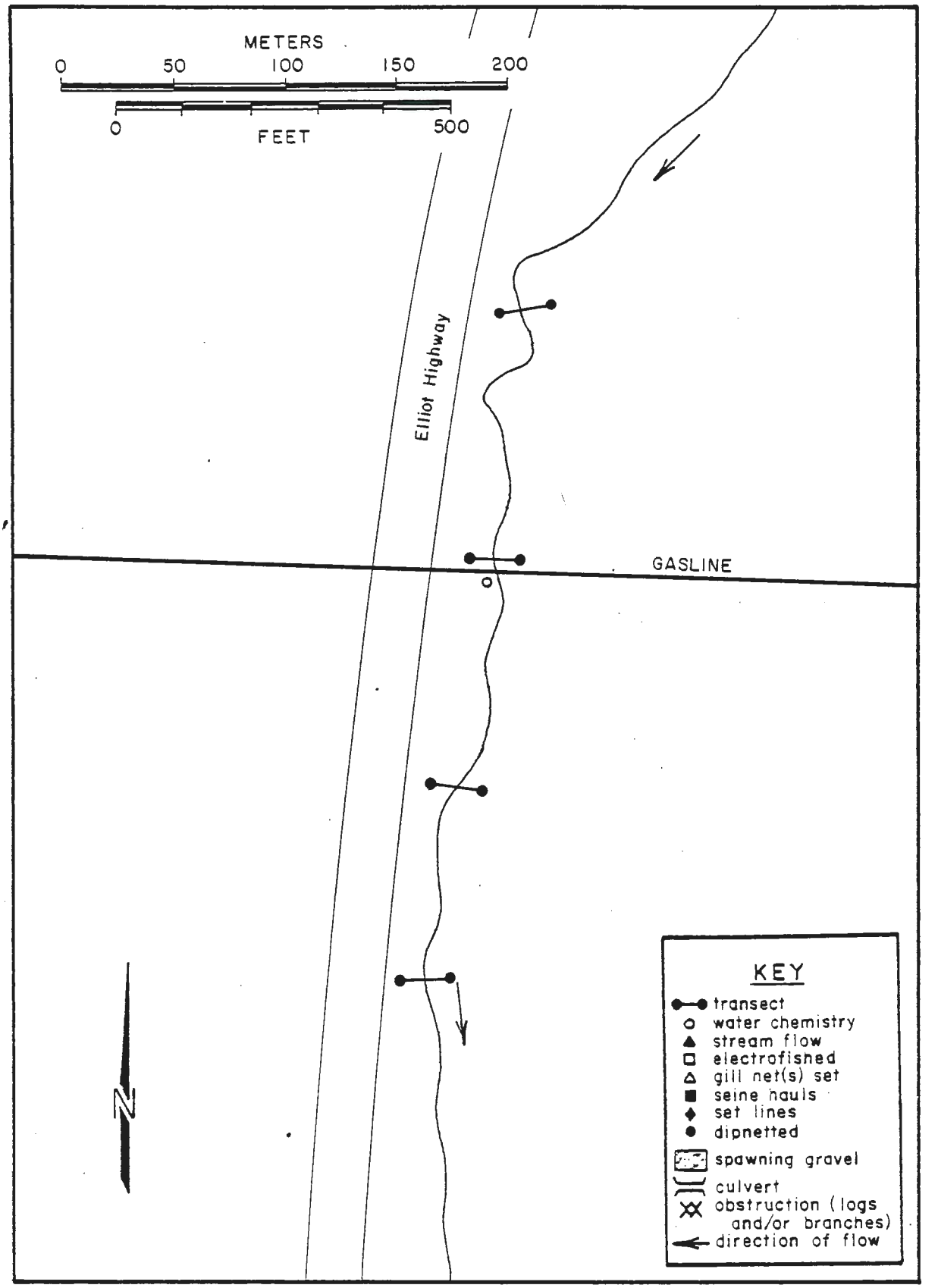

Figure 16. Spring survey. Fox Creek, 26 May 1981.

SPRING SURVEY FORM

WATERBODY

Waterbody: Globe Creek Source: Taiga Drainage

Main Drainage: Tolovana River Tributary to: Tatalina River

Figure: 17 Elevation: 175 m

NPAS: 75 NPMP: 426.3 NPRX: 075-2 AHMP: NA

USGS Map Reference: Livengood, AK T: 5N R: 3W Sec: 9

Site Access: Helicopter

Section Surveyed: 50 m upstream to 200 m downstream of proposed pipeline crossing

ASSESSMENT

Globe Creek is a fast-flowing, humic-stained stream of moderate size. It flows through a well defined channel confined by high banks. Riparian vegetation is composed of alder, willows, grasses, roses, and mosses. The substrate is predominantly pebbles with some cobbles, gravel, sand and fines. The gradient is moderate. Potential fish blocks consisted of a log jam approximately 50 m upstream of the proposed pipeline crossing.

No fish use was observed during the 1981 spring survey even though good fish habitat was present at this time. Fish access to the section of stream adjacent to the proposed pipeline crossing may be limited by several beaver dams sighted from the air approximately 5 km downstream of the crossing. This stream has been reported to provide grayling rearing habitat during the summer (Ref. 11, 30 and 38), but fall investigations also failed to document fish (Ref. 122). Fish use of the stream in spring is low or non-existent.

FISH

Waterbody: Globe Creek NPRX: 075-2

Date: 23 May 1981

Fish Present: no

Gear/Effort: EF (0/1384 sec)

Species Present	Quantity Fry	Quantity Other	Length (mm) Fry	Length (mm) Other

PHYSICAL CONDITIONS

Date	23 May 1981
Wetted Width (m)	2.5-7.0
Depth (cm)	5-150
Discharge (m^3/s)	0.1436
Dissolved Oxygen (mg/ℓ)	10.0
Temperature (° C)	3.0
Conductivity (μmhos/cm)	85
pH (pH units)	7.5
Color (color units)	58
Turbidity (NTU)	3.0
T. Hardness (mg $CaCO_3$/ℓ)	103
Nitrate (mg/ℓ N)	below detection limit
Orthophosphate (mg/ℓ P)	below detection limit
Bottom Type (%)	5 fines, 7 sand, 7 gravel, 80 pebble, 1 cobble
Bank Stability (%)	100
Aquatic Vegetation (P/A)	A
Riparian Vegetation (%)	1 moss, 4 rose, 10 grass, 5 willow, 80 alder
Cover (%)	15
Fish Block(s)	log jam 50 m upstream of proposed crossing

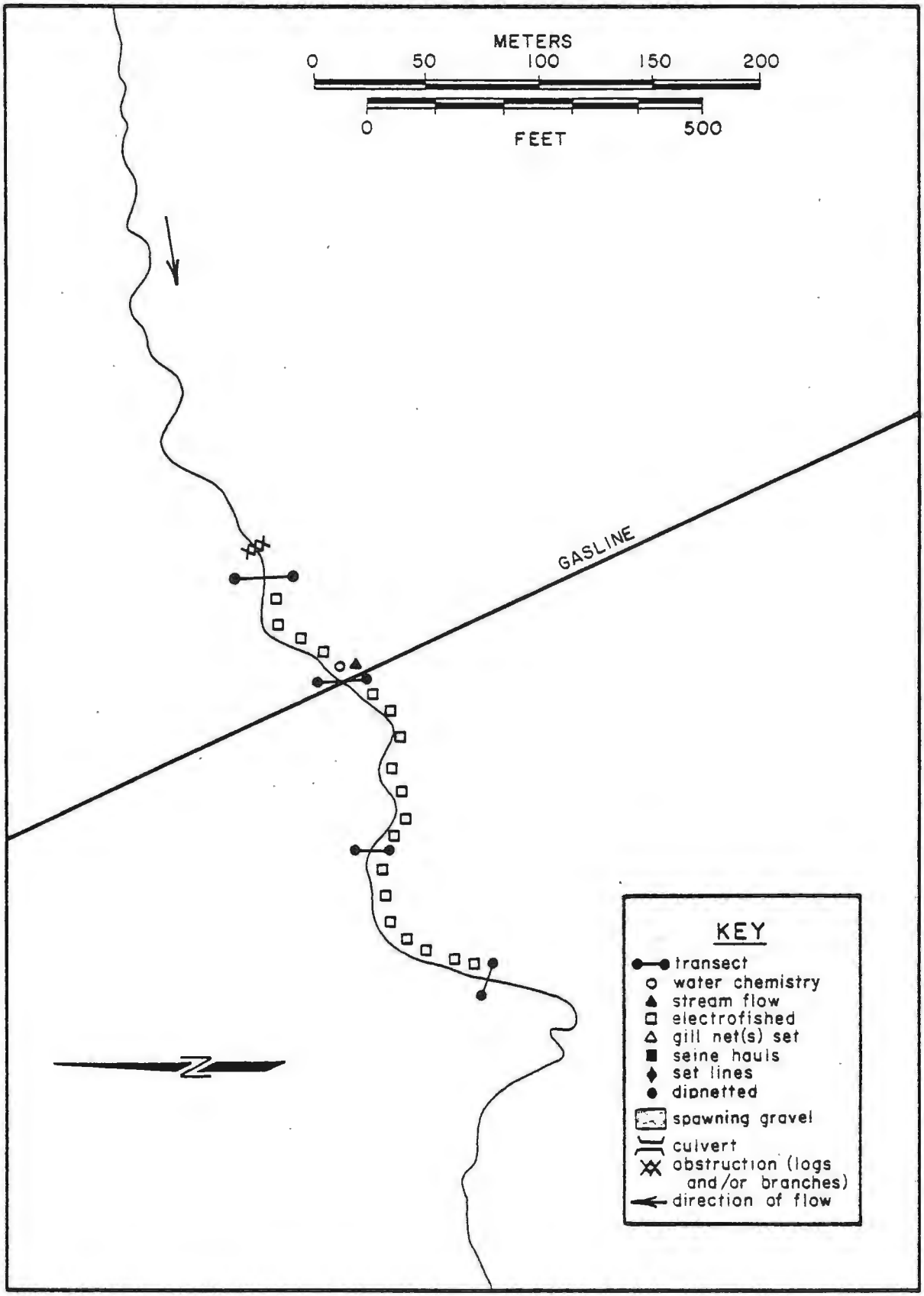

Figure 17. Spring survey. Globe Creek, 23 May 1981.

SPRING SURVEY FORM

WATERBODY

Waterbody: Slate Creek Source: Taiga Drainage

Main Drainage: Chatanika River Tributary to: Tatalina River

Figure: 18 Elevation: 241 m

NPAS: 73 NPMP: 416.6 NPRX: 073-4 AHMP: NA

USGS Map Reference: Livengood, AK T: 6N R: 4W Sec: 5

Site Access: Truck

Section Surveyed: 100 m upstream to 200 m downstream of proposed pipeline crossing

ASSESSMENT

Slate Creek is a small, humic-stained stream draining a taiga area. Riparian vegetation consists of willows, alder, spruce, grasses, birch, and mosses. The substrate is fines and detritus, sand, gravel, pebbles, and cobbles. The gradient is moderate. Numerous log jams upstream and downstream of the crossing form potential fish blocks.

Although adequate fish habitat was present, sampling efforts failed to produce fish during the 1981 spring survey. The numerous log jams probably precluded fish access. Slate Creek has been reported to be a grayling rearing area (Ref. 30), but fishing efforts in the fall 1980 also failed to detect fish (Ref. 122). Fish use of this stream should be considered to be low.

FISH

Waterbody: Slate Creek NPRX: 073-4

Date: 27 May 1981

Fish Present: no

Gear/Effort: EF (0/415 sec)

Species Present	Quantity		Length (mm)	
	Fry	Other	Fry	Other

PHYSICAL CONDITIONS

Date	27 May 1981
Wetted Width (m)	1.0-5.0
Depth (cm)	10-100
Discharge (m^3/s)	0.0145
Dissolved Oxygen (mg/ℓ)	10.4
Temperature (° C)	7.0
Conductivity (μmhos/cm)	105
pH (pH units)	7.0
Color (color units)	10
Turbidity (NTU)	4.2
T. Hardness (mg $CaCO_3$/ℓ)	119.7
Nitrate (mg/ℓ N)	below detection limit
Orthophosphate (mg/ℓ P)	below detection limit
Bottom Type (%)	17 fines/detritus, 10 sand, 36 gravel, 22 pebble, 15 cobble
Bank Stability (%)	97
Aquatic Vegetation (P/A)	A
Riparian Vegetation (%)	28 willow, 35 alder, 23 spruce, 5 grasses, 5 mosses, 4 birch
Cover (%)	20
Fish Block(s)	numerous log jams upstream and downstream of the pipeline crossing

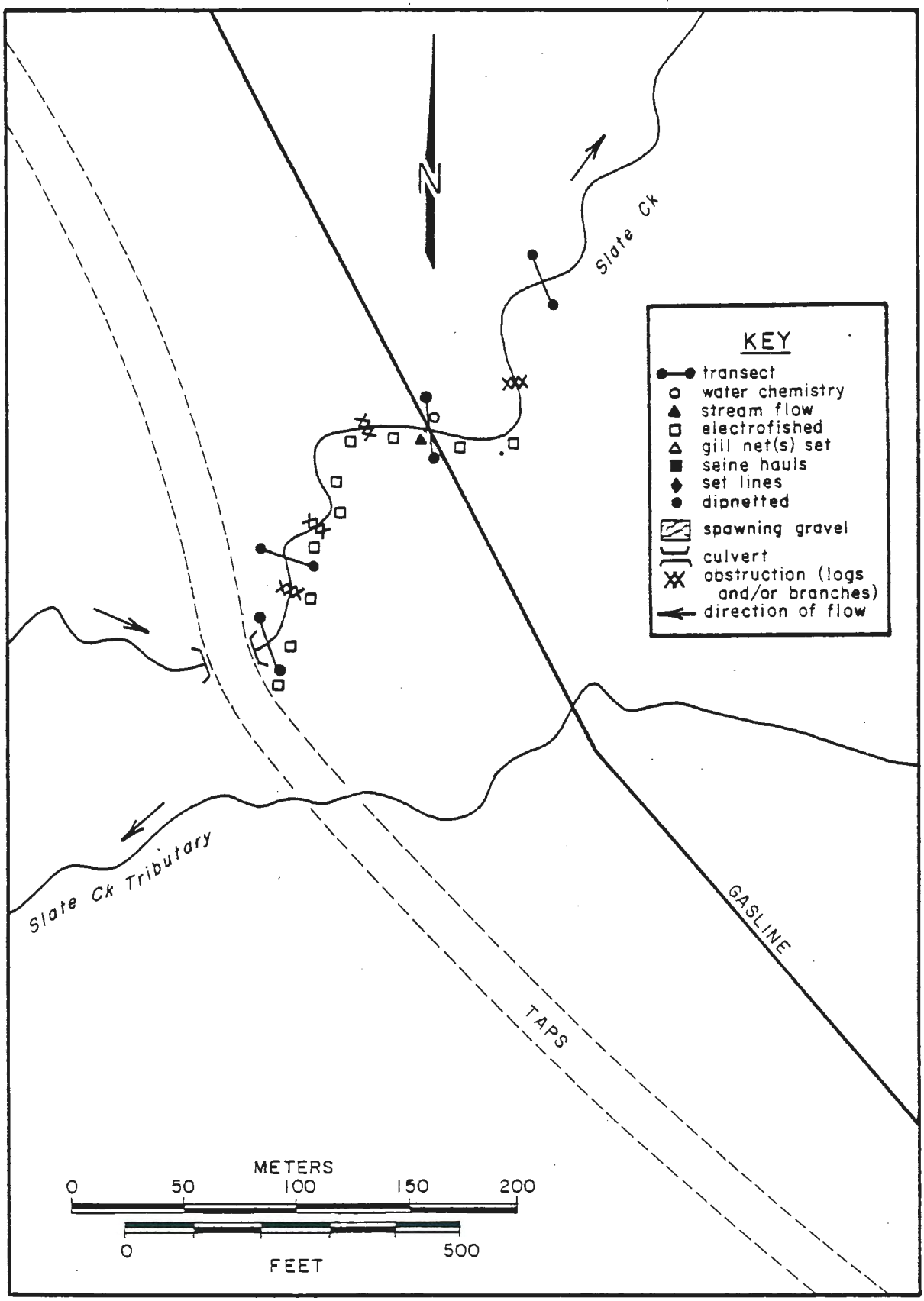

Figure 18. Spring survey. Slate Creek, 27 May 1981.

SPRING SURVEY FORM

WATERBODY

Waterbody: Wilber Creek Source: Taiga Drainage

Main Drainage: Tanana River Tributary to: Tolovana River

Figure: 19 Elevation: 369 m

NPAS: 73 NPMP: 414.0 NPRX: 073-2 AHMP: NA

USGS Map Reference: Livengood, AK T: 7N R: 4W Sec: 30

Site Access: Truck

Section Surveyed: 100 m upstream to 200 m downstream of proposed pipeline crossing

ASSESSMENT

Wilber Creek is a small stream draining a montane, taiga area and flows northeast to the Tolovana River. The stream channel is narrow with banks vegetated with spruce, willows, birch, grasses, and mosses. The substrate is sand, gravel, pebbles, and cobbles and the gradient is slight. Log jams downstream of the proposed pipeline crossing are potential fish blocks.

No fish use was observed during the 1981 spring survey. This stream offers excellent fish habitat, but blocks may preclude fish access. Previous use of this stream in spring by grayling has been reported (Ref. 11), but present evidence suggests that fish use is, at most, low.

FISH

Waterbody: Wilber Creek NPRX: 073-2

Date: 27 May 1981

Fish Present: no

Gear/Effort: EF (0/381 sec); visual (0/100 m)

Species Present	Quantity		Length (mm)	
	Fry	Other	Fry	Other

PHYSICAL CONDITIONS

Date	27 May 1981
Wetted Width (m)	0.5-3.0
Depth (cm)	5-80
Discharge (m^3/s)	0.0075
Dissolved Oxygen (mg/ℓ)	11.0
Temperature (° C)	4.5
Conductivity (μmhos/cm)	225
pH (pH units)	7.4
Color (color units)	150
Turbidity (NTU)	4.0
T. Hardness (mg $CaCO_3$/ℓ)	205.2
Nitrate (mg/ℓ N)	below detection limit
Orthophosphate (mg/ℓ P)	below detection limit
Bottom Type (%)	16 sand, 64 gravel, 18 pebble, 2 cobble
Bank Stability (%)	100
Aquatic Vegetation (P/A)	A
Riparian Vegetation (%)	26 spruce, 46 willow, 16 birch, 9 grasses, 3 mosses
Cover (%)	18
Fish Block(s)	numerous log jams below crossing

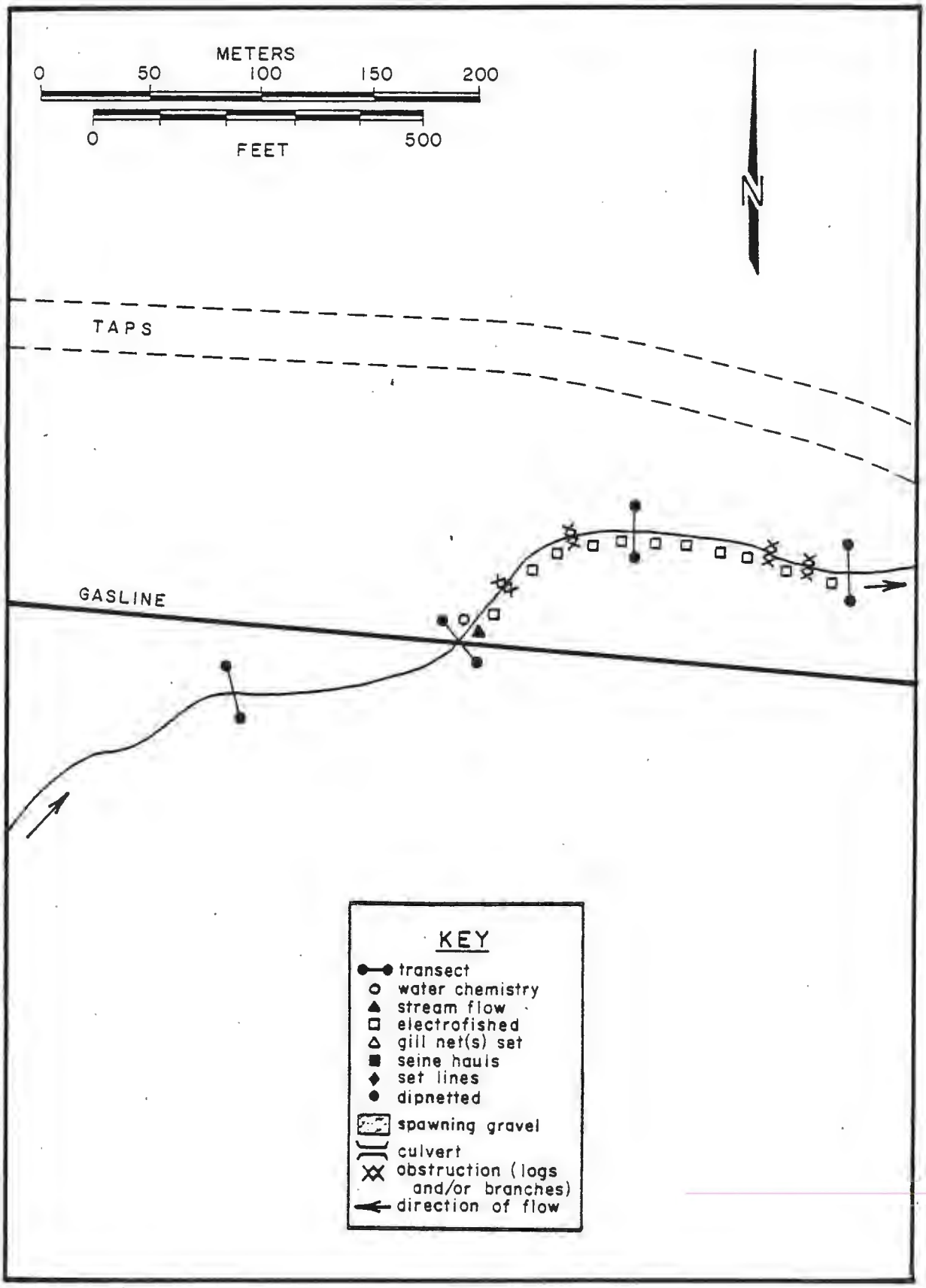

Figure 19. Spring survey. Wilber Creek, 27 May 1981.

SPRING SURVEY FORM

WATERBODY

Waterbody: Shorty Creek Source: Taiga Drainage

Main Drainage: Tanana River Tributary to: Tolovana River

Figure: 20 Elevation: 133 m

NPAS: 72 NPMP: 408.5 NPRX: 072-3 AHMP: NA

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

Site Access: Helicopter

Section Surveyed: 100 m upstream to 100 m downstream of proposed pipeline crossing

ASSESSMENT

Shorty Creek is a small stream that meanders westward in a series of small pools and narrow channels to join the Tolovana River. The moderately high banks are vegetated with spruce, willows, alder, and grasses. The substrate is fines and detritus and the gradient is steep. Potential fish blocks are numerous branch and log jams upstream and downstream of the crossing.

No fish use was observed during the 1981 spring survey. Although fish habitat was generally good, the presence of fish blocks probably precludes fish access to the area of the crossing. The fish use of this stream should be considered low to non-existent.

FISH

Waterbody: Shorty Creek NPRX: 072-3

Date: 23 May 1981

Fish Present: no

Gear/Effort: EF (0/154 sec)

Species Present	Quantity		Length (mm)	
	Fry	Other	Fry	Other

PHYSICAL CONDITIONS

Date	23 May 1981
Wetted Width (m)	0.2-2.0
Depth (cm)	10-80
Discharge (m^3/s)	below detection limit
Dissolved Oxygen (mg/ℓ)	7.0
Temperature (° C)	2.0
Conductivity (μmhos/cm)	500
pH (pH units)	8.0
Color (color units)	250
Turbidity (NTU)	16.0
T. Hardness (mg $CaCO_3$/ℓ)	86
Nitrate (mg/ℓ N)	below detection limit
Orthophosphate (mg/ℓ P)	below detection limit
Bottom Type (%)	5 detritus, 95 fines
Bank Stability (%)	100
Aquatic Vegetation (P/A)	A
Riparian Vegetation (%)	15 grasses, 5 alder, 20 willow, 60 spruce
Cover (%)	10
Fish Block(s)	numerous branch and log jams upstream and downstream of proposed crossing

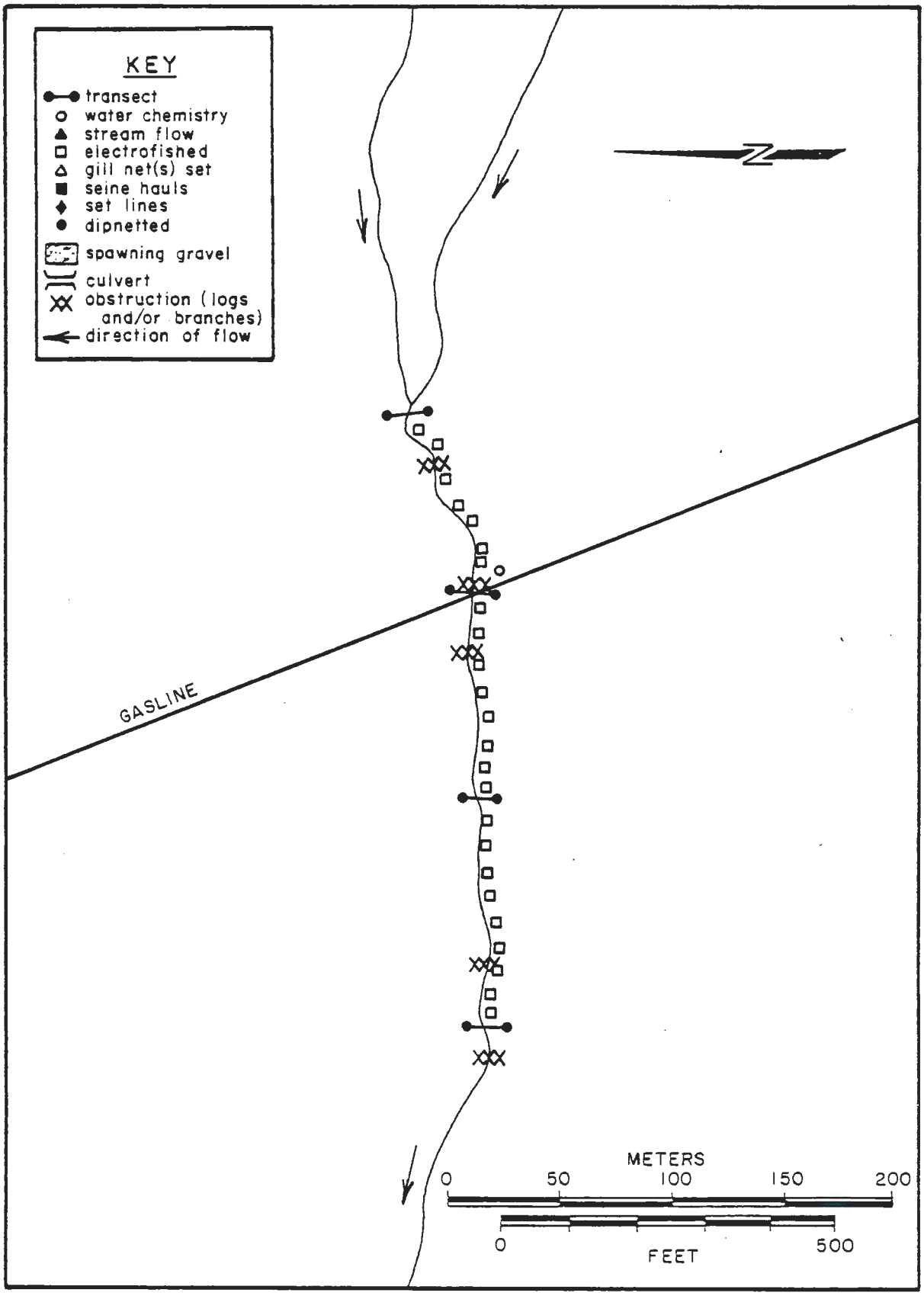

Figure 20. Spring survey. Shorty Creek, 23 May 1981.

SPRING SURVEY FORM

WATERBODY

Waterbody: Unnamed Creek Source: Taiga Drainge

Main Drainage: Yukon River Tributary to: Hess Creek

Figure: 21 Elevation: 198 m

NPAS: 67 NPMP: 379.5 NPRX: 067-3 AHMP: NA

USGS Map Reference: Livengood, AK T: 10N R: 8W Sec: 5

Site Access: Helicopter

Section Surveyed: 100 m upstream to 200 m downstream of proposed pipeline crossing

ASSESSMENT

Unnamed Creek (NPMP 379.5) is a small, narrow stream that meanders through a well-defined channel in alternating chutes and pools. Riparian vegetation is made up of mosses, willows, birch and spruce. The substrate is primarily detritus with a small amount of gravel. The gradient is slight. Numerous log jams and earth dams, both upstream and downstream of the proposed pipeline crossing, are potential fish blocks.

No fish use was observed during the 1981 spring survey. Fish habitat was marginal due to low flows, and the presence of numerous fish blocks precludes fish access to the vicinity of the crossing. Use of this stream by fish is probably low to non-existent.

FISH

Waterbody: Unnamed Creek NPRX: 067-3

Date: 22 May 1981

Fish Present: no

Gear/Effort: EF (0/90 sec), visual (0/100 m)

Species Present	Quantity Fry	Quantity Other	Length (mm) Fry	Length (mm) Other

PHYSICAL CONDITIONS

Date	22 May 1981
Wetted Width (m)	0.1-0.5
Depth (cm)	10-30
Discharge (m^3/s)	below detection limit
Dissolved Oxygen (mg/ℓ)	11.5
Temperature (° C)	1.0
Conductivity (μmhos/cm)	162
pH (pH units)	7.5
Color (color units)	400
Turbidity (NTU)	14.0
T. Hardness (mg $CaCO_3$/ℓ)	154
Nitrate (mg/ℓ N)	below detection limit
Orthophosphate (mg/ℓ P)	below detection limit
Bottom Type (%)	98 detritus, 2 gravel
Bank Stability (%)	100
Aquatic Vegetation (P/A)	A
Riparian Vegetation (%)	25 moss, 50 willow, 20 birch, 5 spruce
Cover (%)	20
Fish Block(s)	numerous branch and log jams and earth dams upstream and downstream of proposed crossing

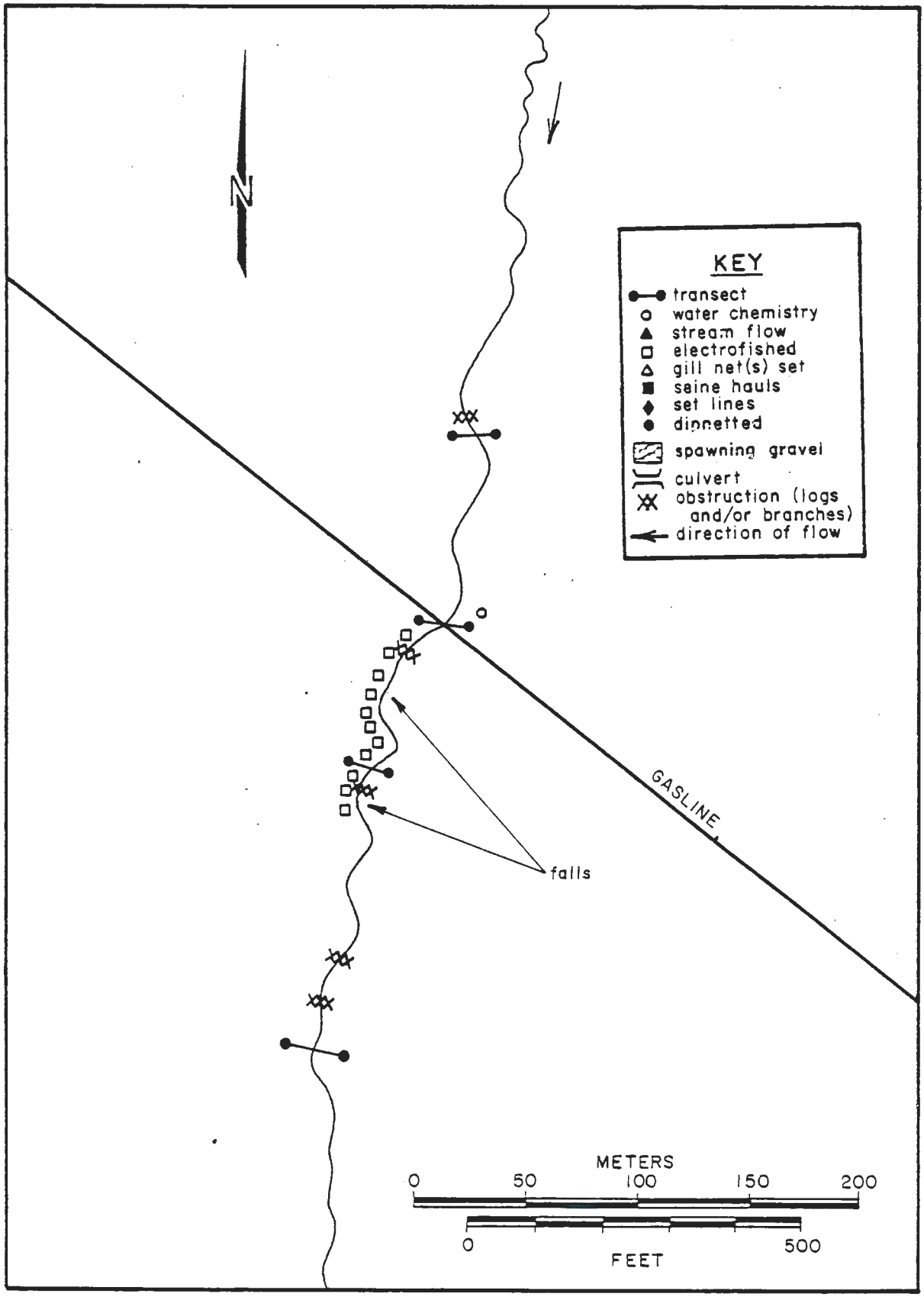

Figure 21. Spring survey. Unnamed Creek (NPMP 379.5), 22 May 1981.

SPRING SURVEY FORM

WATERBODY

Waterbody: Isom Creek Source: Taiga Drainage

Main Drainage: Yukon River Tributary to: Yukon River

Figure: 22 Elevation: 293 m

NPAS: 66 NPMP: 371.4 NPRX: 066-3 AHMP: NA

USGS Map Reference: Livengood, AK T: 11N R: 9W Sec: 8

Site Access: Helicopter

Section Surveyed: 100 m upstream to 200 m downstream of proposed pipeline crossing

ASSESSMENT

Isom Creek is a deep, humic-stained stream with steep banks vegetated with mosses, grasses, willows, alders, and spruce. The substrate is primarily fines and detritus with some sand and gravel. The gradient is slight. Potential fish blocks consist of numerous log jams upstream and downstream of the proposed pipeline crossing. These log jams are the result of bank sloughing causing spruce trees to fall across the stream.

No fish use was observed during the 1981 spring survey. Good fish habitat was present, but the presence of the log jams may have precluded fish access to the area of the crossing. Although use of Isom Creek as a rearing area by grayling has been reported (Ref. 11 and 76), fish use of this stream in spring should be considered low.

FISH

Waterbody: Isom Creek NPRX: 066-3

Date: 22 May 1981

Fish Present: no

Gear/Effort: EF (0/538 sec)

Species Present	Quantity		Length (mm)	
	Fry	Other	Fry	Other

PHYSICAL CONDITIONS

Date	22 May 1981
Wetted Width (m)	0.4-4.0
Depth (cm)	40-170
Discharge (m^3/s)	0.1801
Dissolved Oxygen (mg/ℓ)	12.4
Temperature (° C)	2.0
Conductivity (μmhos/cm)	48
pH (pH units)	6.9
Color (color units)	375
Turbidity (NTU)	7.8
T. Hardness (mg $CaCO_3$/ℓ)	86
Nitrate (mg/ℓ N)	below detection limit
Orthophosphate (mg/ℓ P)	below detection limit
Bottom Type (%)	25 detritus, 65 fines, 5 sand, 5 gravel
Bank Stability (%)	90
Aquatic Vegetation (P/A)	A
Riparian Vegetation (%)	25 mosses, 5 grasses, 10 willow, 30 alder, 30 spruce
Cover (%)	10
Fish Block(s)	several branch and log jams located upstream and downstream of proposed crossing

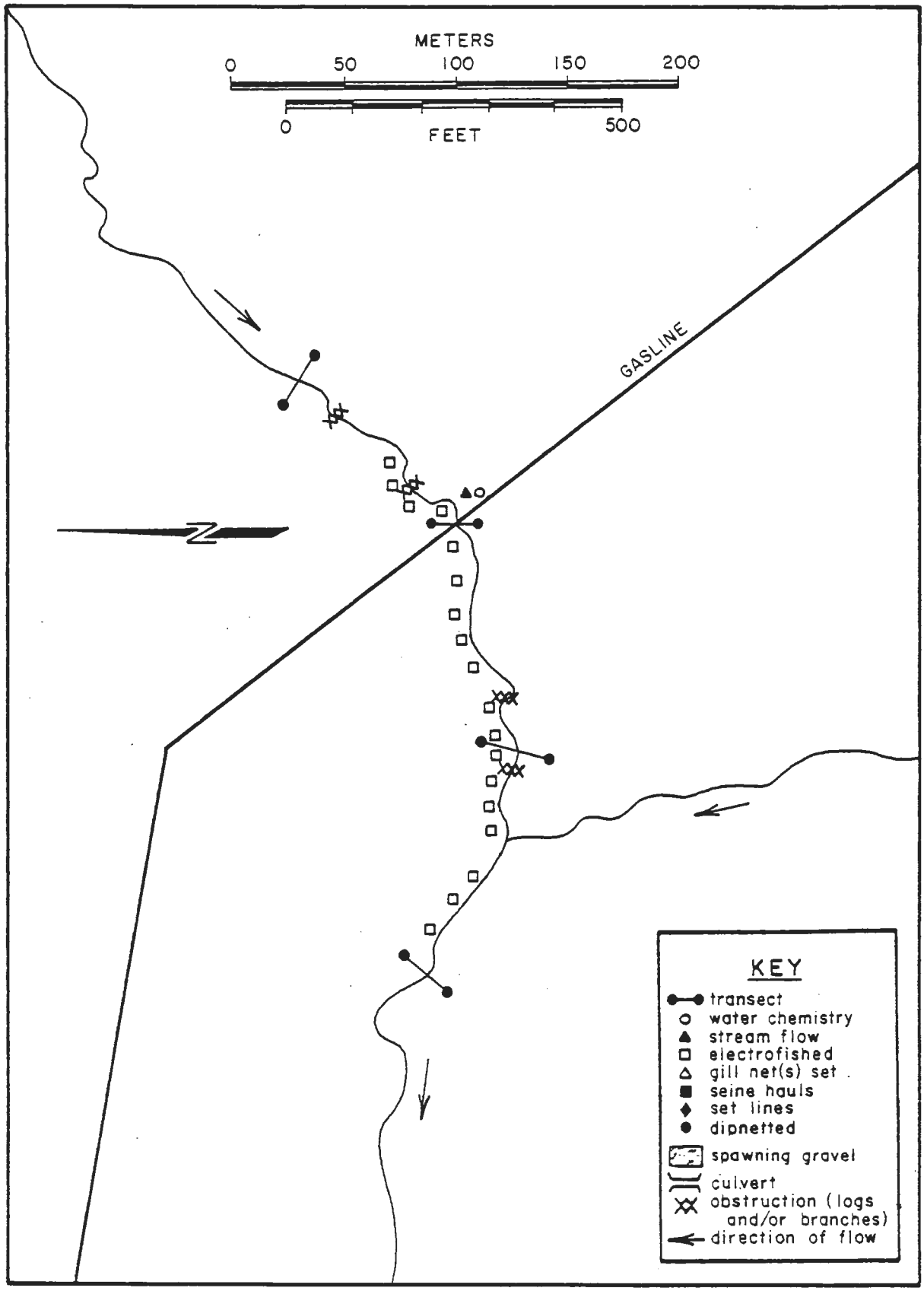

Figure 22. Spring survey. Isom Creek, 22 May 1981.

SPRING SURVEY FORM

WATERBODY

Waterbody: Phelps Creek Source: Taiga Drainage

Main Drainage: Yukon River Tributary to: Ray River

Figure: 23 Elevation: 180 m

NPAS: 62 NPMP: 352.9 NPRX: 062-4 AHMP: NA

USGS Map Reference: Livengood, AK T: 13N R: 11W Sec: 17

Site Access: Truck

Section Surveyed: 100 m upstream to 200 m downstream of proposed pipeline crossing

ASSESSMENT

Phelps Creek is a moderate-sized stream that drains a taiga area approximately 21 km^2 in size. Riparian vegetation is primarily spruce, alder, birch, and grasses. The substrate is mostly cobble with some gravel, pebbles, fines, and sand. The stream gradient is slight throughout the surveyed area. No potential fish blocks were observed in the surveyed area.

No fish use was observed during the 1981 spring survey. Electrofishing efforts were hampered by turbid waters, so fish may have been present but were not visible. Good fish habitat existed throughout the surveyed area. Phelps Creek has been reported as being used by grayling, during the summer and fall (Ref. 11, 30 and 64). Although the present survey failed to document fish presence it is suspected that the stream has some importance to fish in the spring.

FISH

Waterbody: Phelps Creek NPRX: 062-4

Date: 30 May 1981

Fish Present: no

Gear/Effort: EF (0/1146 sec)

Species Present	Quantity		Length (mm)	
	Fry	Other	Fry	Other

PHYSICAL CONDITIONS

Date	30 May 1981
Wetted Width (m)	0.8-6.0
Depth (cm)	20-110
Discharge (m^3/s)	0.2494
Dissolved Oxygen (mg/ℓ)	10.2
Temperature (° C)	3.0
Conductivity (μmhos/cm)	30
pH (pH units)	7.8
Color (color units)	85
Turbidity (NTU)	40.0
T. Hardness (mg $CaCO_3$/ℓ)	34.2
Nitrate (mg/ℓ N)	below detection limit
Orthophosphate (mg/ℓ P)	below detection limit
Bottom Type (%)	5 fines, 1 sand, 14 gravel, 8 pebble, 72 cobble
Bank Stability (%)	100
Aquatic Vegetation (P/A)	A
Riparian Vegetation (%)	33 spruce, 7 willow, 23 alder, 15 birch, 17 grass, 3 rose, 2 mosses
Cover (%)	6
Fish Block(s)	none observed

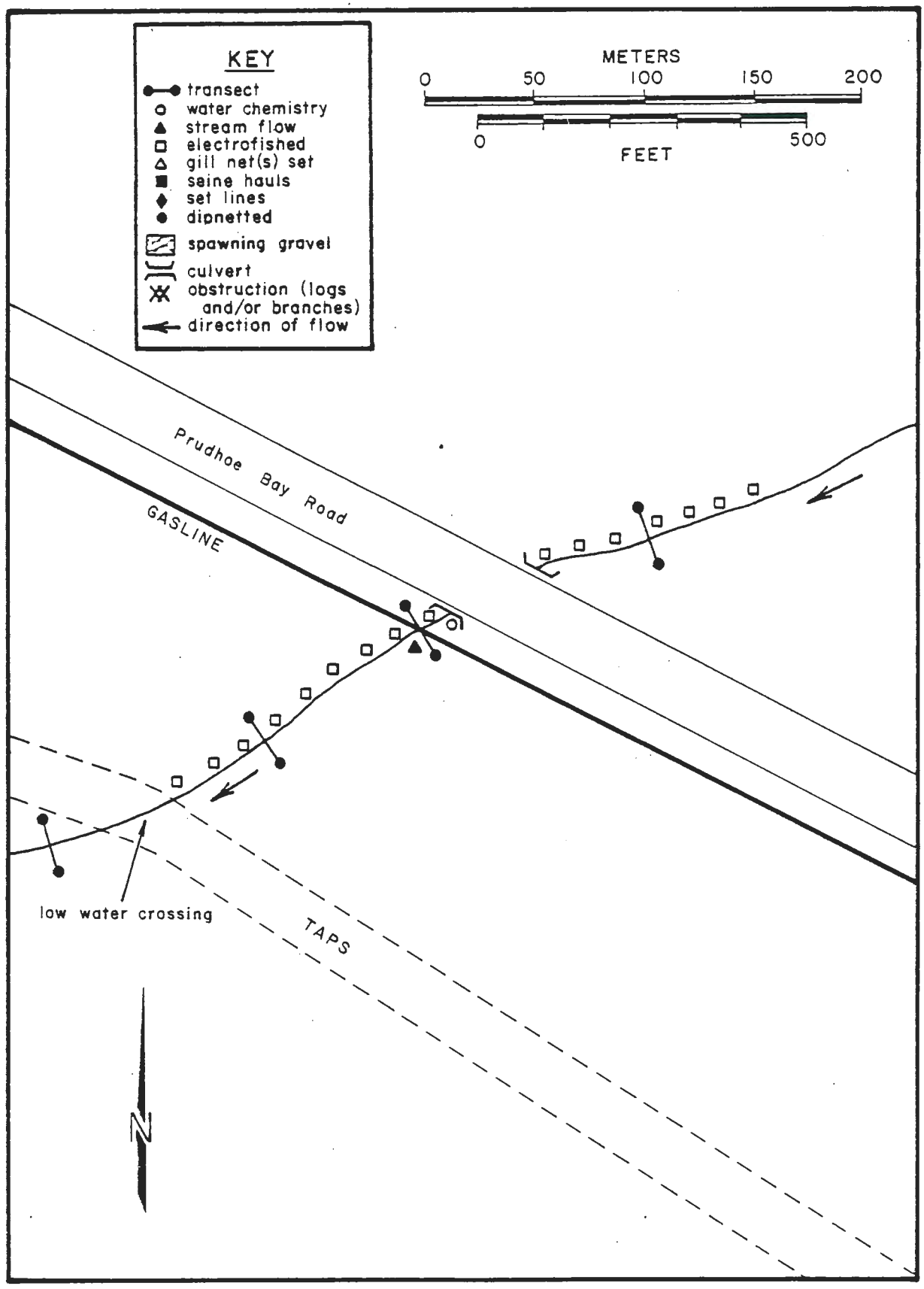

Figure 23. Spring survey. Phelps Creek, 30 May 1981.

SPRING SURVEY FORM

WATERBODY

Waterbody: Kristie's Creek Source: Montane/Taiga Drainge

Main Drainage: Kanuti River Tributary to: Olson's Lake Creek

Figure: 24 Elevation: 427 m

NPAS: 55 NPMP: 316.6 NPRX: 055-2 AHMP: NA

USGS Map Reference: Bettles, AK T: 18N R: 14W Sec: 15

Site Access: Truck

Section Surveyed: 100 m upstream to 200 m downstream of proposed pipeline crossing

ASSESSMENT

Kristie's Creek is a small stream draining a montane, taiga area and flows into Olson's Lake Creek. Riparian vegetation is composed of dense stands of willows, grasses, dwarf birch, and alder. The substrate is fines and detritus, sand, and pebbles. The gradient is slight throughout the surveyed area. The only potential fish block observed was low flow through the Prudhoe Bay Road culvert which slopes uphill.

No fish use was observed during the 1981 spring survey. Due to low flows, fish habitat was poor. Grayling have been observed using this stream in the summer (Ref. 11), but fish use is probably low and restricted to periods of adequate flows.

FISH

Waterbody: Kristie's Creek NPRX: 055-2

Date: 29 May 1981

Fish Present: no

Gear/Effort: EF (0/137 sec)

Species Present	Quantity		Length (mm)	
	Fry	Other	Fry	Other

PHYSICAL CONDITIONS

Date	29 May 1981
Wetted Width (m)	0.1-5.0
Depth (cm)	2-40
Discharge (m^3/s)	0.0010
Dissolved Oxygen (mg/ℓ)	8.9
Temperature (° C)	4.5
Conductivity (μmhos/cm)	10
pH (pH units)	6.2
Color (color units)	100
Turbidity (NTU)	2.2
T. Hardness (mg $CaCO_3$/ℓ)	17.1
Nitrate (mg/ℓ N)	below detection limit
Orthophosphate (mg/ℓ P)	below detection limit
Bottom Type (%)	25 fines/detritus, 62 sand, 13 pebble
Bank Stability (%)	100
Aquatic Vegetation (P/A)	A
Riparian Vegetation (%)	61 willow, 35 grass, 3 dwarf birch, 1 alder
Cover (%)	46
Fish Block(s)	low flows through haul road culvert

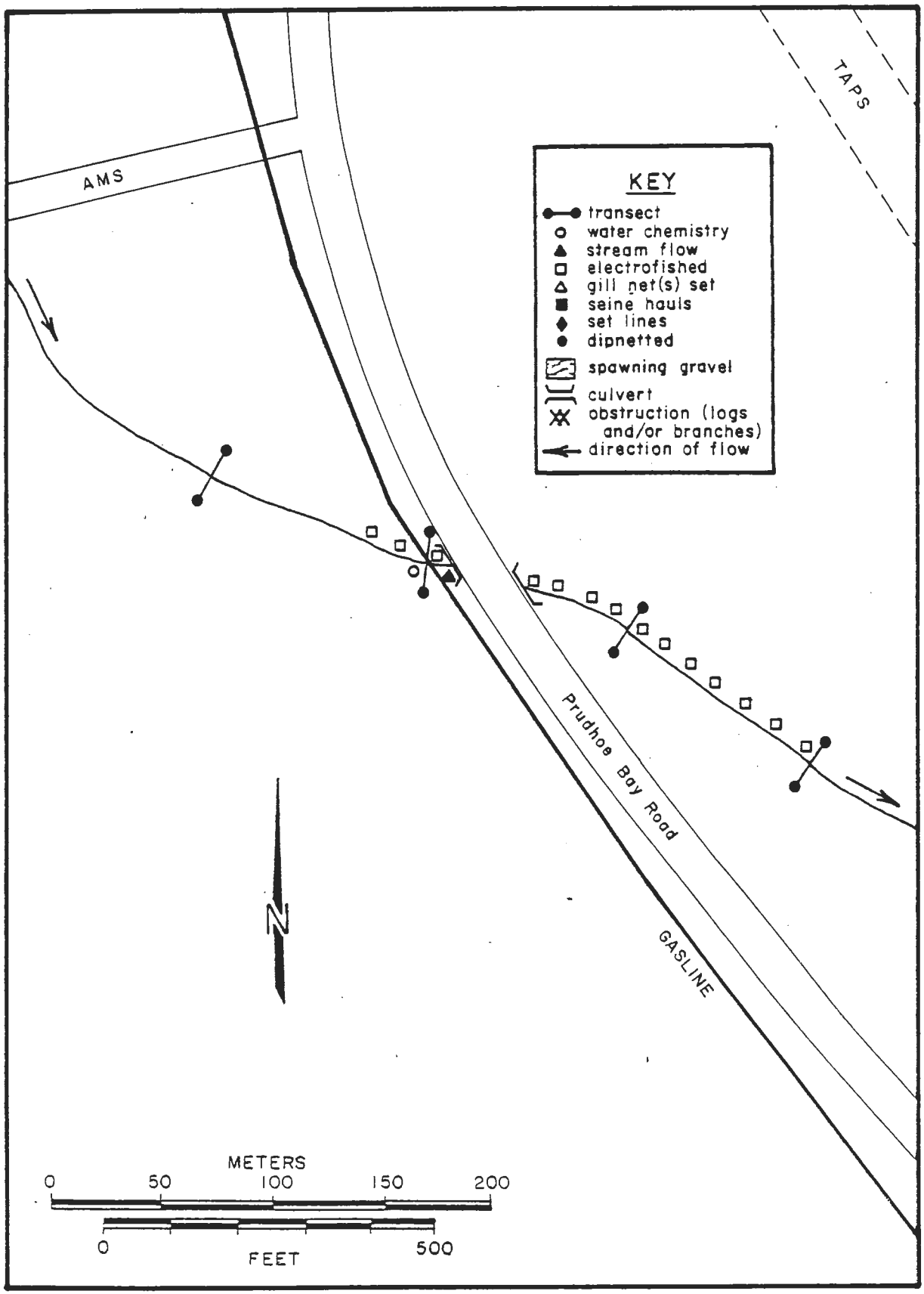

Figure 24. Spring survey. Kristie's Creek, 29 May 1981.

SPRING SURVEY FORM

WATERBODY

Waterbody: Caribou Mountain Creek Source: Montane/Taiga Drainage

Main Drainage: Koyukuk River Tributary to: Kanuti River

Figure: 25 Elevation: 404 m

NPAS: 55 NPMP: 314.1 NPRX: 055-1 AHMP: NA

USGS Map Reference: Bettles, AK T: 18N R: 14W Sec: 4

Site Access: Truck

Section Surveyed: 100 m upstream to 200 m downstream of proposed pipeline crossing

ASSESSMENT

Caribou Mountain Creek is a small stream draining a montane, taiga area. Riparian vegetation is composed of willows, grasses, alder, and mosses. The substrate is predominantly pebbles and gravel with lesser proportions of cobbles, sand, and fines. The gradient is moderate in the surveyed area. No potential fish blocks were observed.

No fish use was observed during the 1981 spring survey. Good fish habitat was present in the surveyed area, but perhaps some fish blocks occur downstream of the surveyed area, or fish had not yet begun migration upstream. Grayling are known to use this stream as a rearing area in June (Ref. 31). Available information indicates that Caribou Mountain Creek could have moderate importance to fish in spring.

FISH

Waterbody: Caribou Mountain Creek NPRX: 055-1

Date: 29 May 1981

Fish Present: no

Gear/Effort: EF (0/817 sec)

Species Present	Quantity Fry	Quantity Other	Length (mm) Fry	Length (mm) Other

PHYSICAL CONDITIONS

Date	29 May 1981
Wetted Width (m)	0.3-6.0
Depth (cm)	10-80
Discharge (m^3/s)	0.0217
Dissolved Oxygen (mg/ℓ)	12.4
Temperature (° C)	2.5
Conductivity (µmhos/cm)	24
pH (pH units)	7.4
Color (color units)	80
Turbidity (NTU)	6.1
T. Hardness (mg $CaCO_3$/ℓ)	26
Nitrate (mg/ℓ N)	below detection limit
Orthophosphate (mg/ℓ P)	below detection limit
Bottom Type (%)	7 cobble, 35 pebble, 43 gravel, 14 sand, 1 fines
Bank Stability (%)	100
Aquatic Vegetation (P/A)	P
Riparian Vegetation (%)	58 willow, 34 grass, 7 alder, 1 moss
Cover (%)	10
Fish Block(s)	none observed

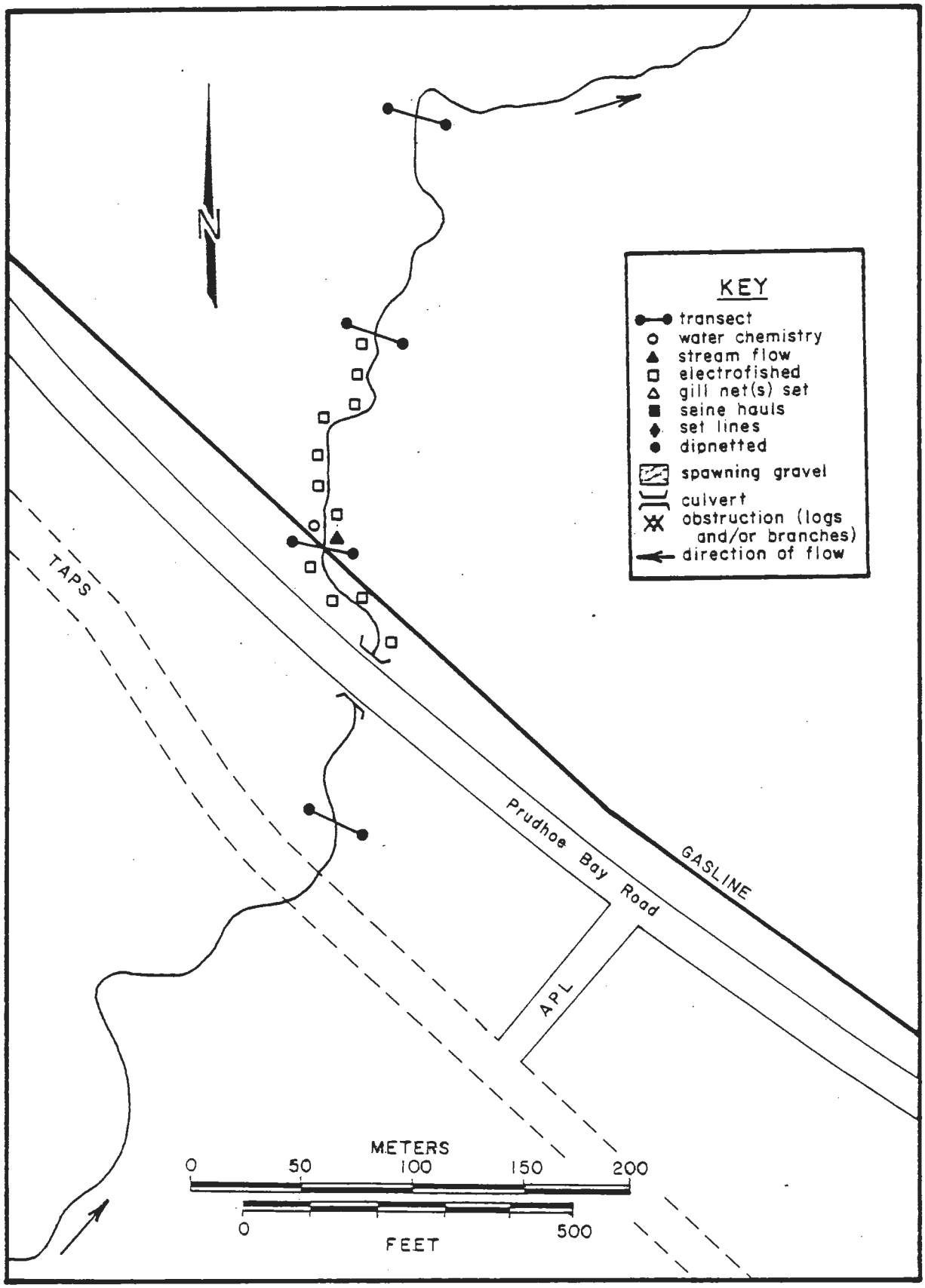

Figure 25. Spring survey. Caribou Mountain Creek, 29 May 1981.

SPRING SURVEY FORM

WATERBODY

Waterbody: Middle Fork Fish Creek Source: Montane/Taiga Drainage

Main Drainage: South Fork Koyukuk River Tributary to: Fish Creek

Figure: 26 Elevation: 309 m

NPAS: 53 NPMP: 304.0 NPRX: 053-3 AHMP: NA

USGS Map Reference: Bettles, AK T: 20N R: 15W Sec: 26

Site Access: Truck

Section Surveyed: 100 m upstream to 200 m downstream of proposed pipeline crossing

ASSESSMENT

Middle Fork Fish Creek is a small, fast-flowing stream draining a montane, taiga area. Riparian vegetation is composed of willows, spruce, grasses, mosses, and birch. The substrate is cobbles, pebbles, and gravels with some fines and sand. The stream gradient is steep throughout the surveyed area. No potential fish blocks were observed in the surveyed area.

Fishing efforts produced nine slimy sculpin, captured throughout the surveyed area. This stream is a rearing area for grayling and round whitefish during the summer and fall (Ref. 11 and 30). It is possible that these species also use this stream in the spring as a migration route to areas upstream and as a rearing area.

FISH

Waterbody: Middle Fork Fish Creek NPRX: 053-3

Date: 29 May 1981

Fish Present: yes

Gear/Effort: EF (9/1144 sec)

Species Present	Quantity Fry	Quantity Other	Length (mm) Fry	Length (mm) Other
slimy sculpin		9		39-94

PHYSICAL CONDITIONS

Date	29 May 1981
Wetted Width (m)	2.0-12.0
Depth (cm)	25-125
Discharge (m^3/s)	1.0114
Dissolved Oxygen (mg/ℓ)	10.0
Temperature (° C)	3.5
Conductivity (μmhos/cm)	11
pH (pH units)	6.1
Color (color units)	20
Turbidity (NTU)	1.2
T. Hardness (mg $CaCO_3$/ℓ)	12.0
Nitrate (mg/ℓ N)	below detection limit
Orthophosphate (mg/ℓ P)	below detection limit
Bottom Type (%)	56 cobble, 24 pebble, 11 gravel, 4 sand, 5 fines/detritus
Bank Stability (%)	100
Aquatic Vegetation (P/A)	P
Riparian Vegetation (%)	81 willow, 5 spruce, 9 grass, 2 mosses, 3 birch
Cover (%)	5
Fish Block(s)	none observed

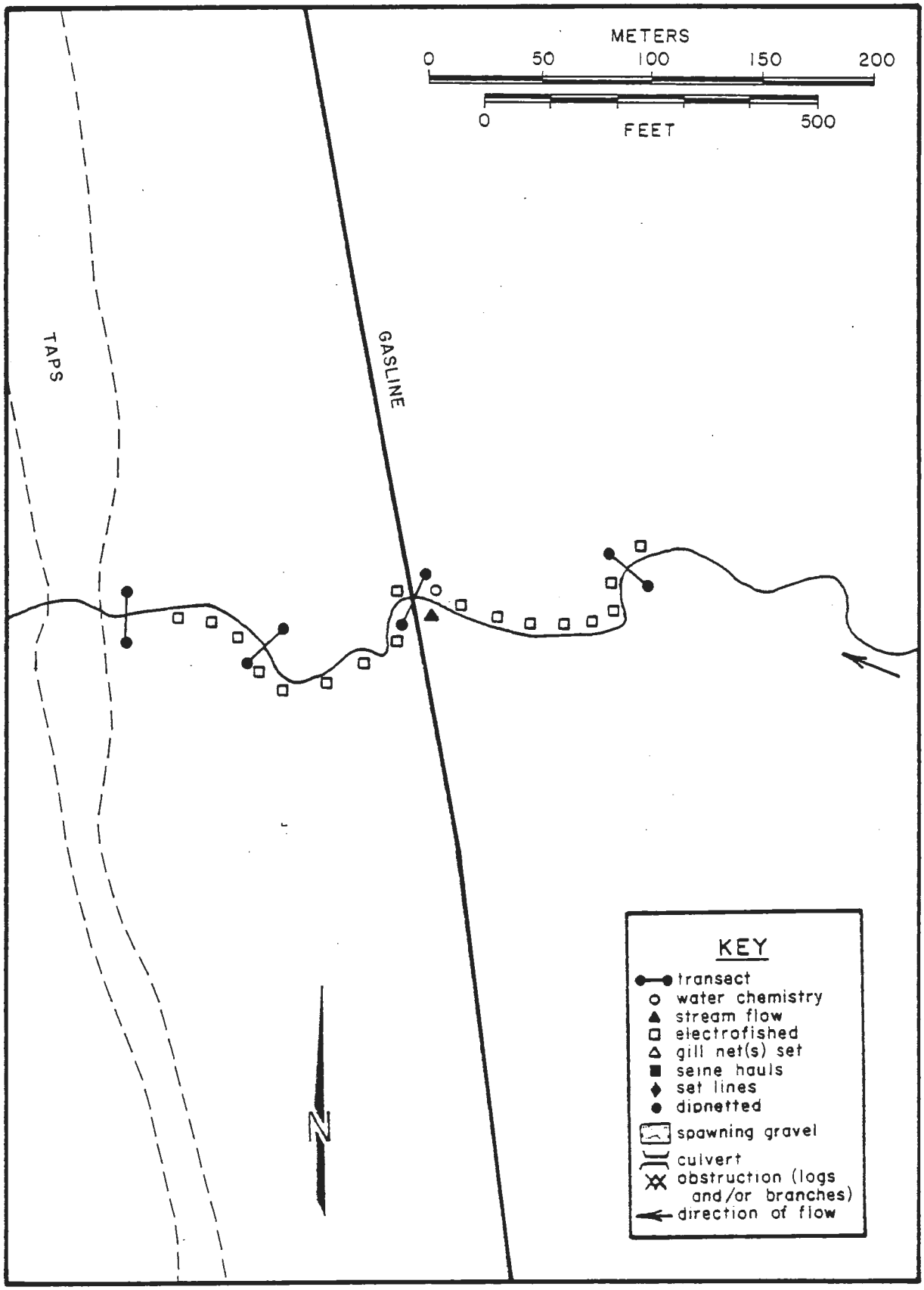

Figure 26. Spring survey. Middle Fork Fish Creek, 29 May 1981.

SPRING SURVEY FORM

WATERBODY

Waterbody: Alder Mountain Creek Source: Montane/Taiga Drainage

Main Drainage: South Fork Koyukuk River Tributary to: Fish Creek

Figure: 27 Elevation: 457 m

NPAS: 53 NPMP: 300.7 NPRX: 053-1 AHMP: NA

USGS Map Reference: Bettles, AK T: 20N R: 15W Sec: 11

Site Access: Truck

Section Surveyed: 100 m upstream to 200 m downstream of proposed pipeline crossing

ASSESSMENT

Alder Mountain Creek is a small stream draining a montane, taiga area east of the proposed pipeline and flows westward to join Fish Creek. Riparian vegetation consists of willows, spruce, grasses, mosses, and alder. The substrate is predominantly fines and detritus, and cobbles with some gravel and pebbles. The gradient is moderate. Potential fish blocks consist of several falls and log jams upstream and downstream of the crossing.

No fish use was observed during the 1981 spring survey. Although adequate fish habitat was present, access is probably limited by falls and log jams. Slimy sculpin have been reported to use Alder Mountain Creek during the summer, and grayling and round whitefish may also use this stream during open water periods (Ref. 11 and 30).

FISH

Waterbody: Alder Mountain Creek NPRX: 053-1

Date: 29 May 1981

Fish Present: no

Gear/Effort: EF (0/202 sec)

Species Present	Quantity		Length (mm)	
	Fry	Other	Fry	Other

PHYSICAL CONDITIONS

Date	29 May 1981
Wetted Width (m)	0.2-3.0
Depth (cm)	5-60
Discharge (m^3/s)	0.0119
Dissolved Oxygen (mg/ℓ)	12.8
Temperature (° C)	1.0
Conductivity (μmhos/cm)	10
pH (pH units)	6.4
Color (color units)	90
Turbidity (NTU)	2.7
T. Hardness (mg $CaCO_3$/ℓ)	17.1
Nitrate (mg/ℓ N)	below detection limit
Orthophosphate (mg/ℓ P)	below detection limit
Bottom Type (%)	55 fines/detritus, 2 gravel, 13 pebble, 30 cobble
Bank Stability (%)	100
Aquatic Vegetation (P/A)	P
Riparian Vegetation (%)	84 willow, 4 spruce, 7 grass, 4 mosses, 1 alder
Cover (%)	36
Fish Block(s)	numerous falls (20-50 cm high) and log jams upstream and downstream of the pipeline

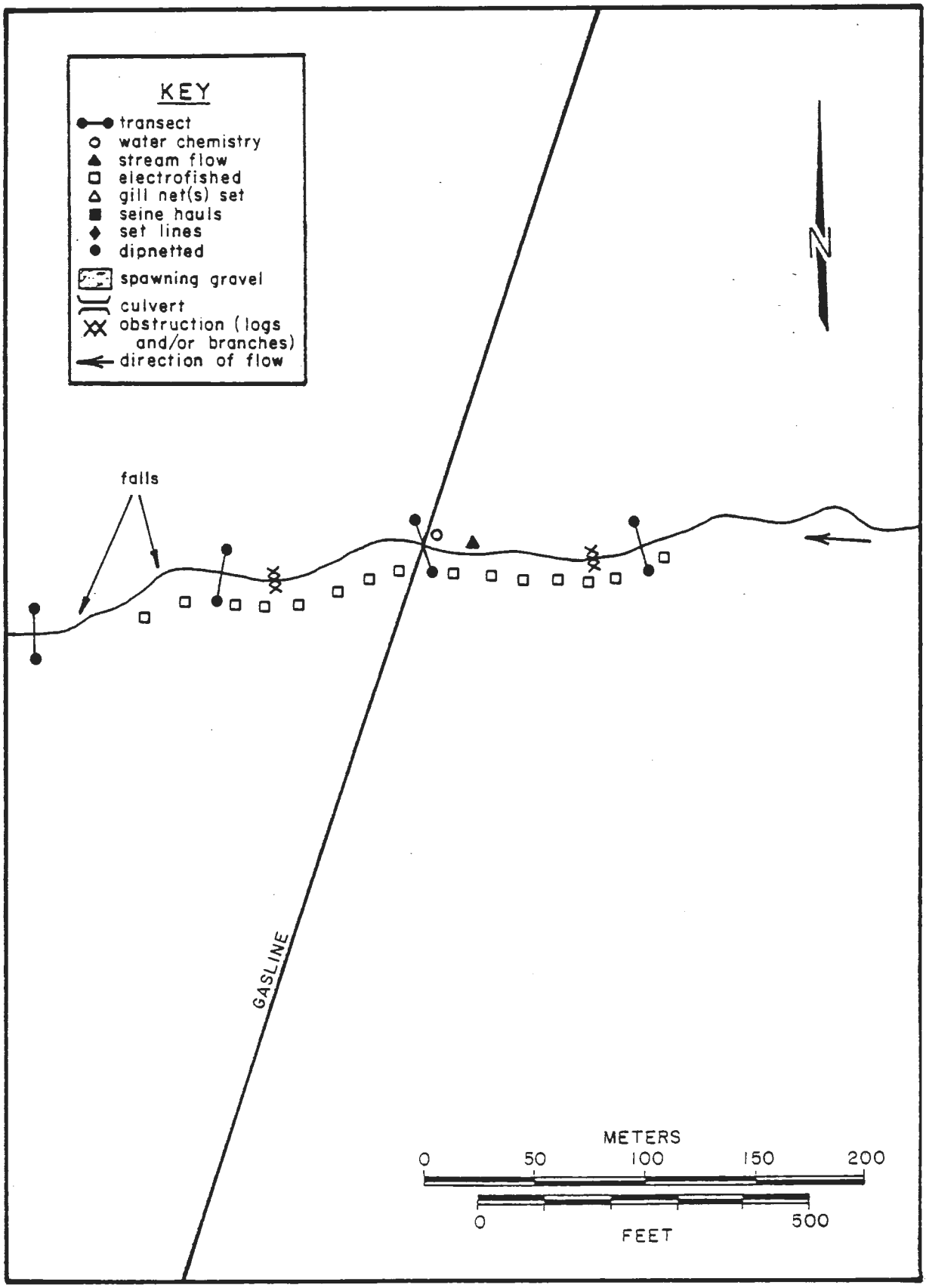

Figure 27. Spring survey. Alder Mountain Creek, 29 May 1981.

SPRING SURVEY FORM

WATERBODY

Waterbody: Jim River Slough Source: Taiga Drainge

Main Drainage: South Fork Koyukuk River Tributary to: Jim River

Figure: 28 Elevation: 340 m

NPAS: 48 NPMP: 275.0 NPRX: 048-2 AHMP: NA

USGS Map Reference: Bettles, AK T: 24N R: 14W Sec: 24

Site Access: Truck

Section Surveyed: 100 m upstream to 200 m downstream of proposed pipeline crossing

ASSESSMENT

The Jim River Slough is a small slough near the Jim River. There was little water present at the time of the survey, and flow was discontinuous. Riparian vegetation consists of sedges, spruce, willows, and mosses. The substrate is largely detritus with some pebbles and cobbles. The gradient is slight throughout the surveyed area. Newly formed skim ice was present on all areas where water was found.

No fish use was observed during the 1981 spring survey. Fish access to this area is only likely to occur during periods of high water in the Jim River, if at all. Very little potential fish habitat is present, and fish use is probably non-existent in normal conditions.

FISH

Waterbody: Jim River Slough NPRX: 48-2

Date: 22 May 1981

Fish Present: no

Gear/Effort: EF (0/80 sec); visual (0/220 m)

Species Present	Quantity		Length (mm)	
	Fry	Other	Fry	Other

PHYSICAL CONDITIONS

Date	22 May 1981
Wetted Width (m)	0-8.5
Depth (cm)	0-38
Discharge (m^3/s)	below detection limit
Dissolved Oxygen (mg/ℓ)	10.3
Temperature (° C)	3.0
Conductivity (μmhos/cm)	43
pH (pH units)	6.8
Color (color units)	50
Turbidity (NTU)	7.3
T. Hardness (mg $CaCO_3$/ℓ)	34.2
Nitrate (mg/ℓ N)	below detection limit
Orthophosphate (mg/ℓ P)	below detection limit
Bottom Type (%)	88 detritus, 6 pebble, 6 cobble
Bank Stability (%)	100
Aquatic Vegetation (P/A)	P
Riparian Vegetation (%)	38 sedge, 30 spruce, 25 willow, 7 mosses
Cover (%)	23
Fish Block(s)	discontinuous flow

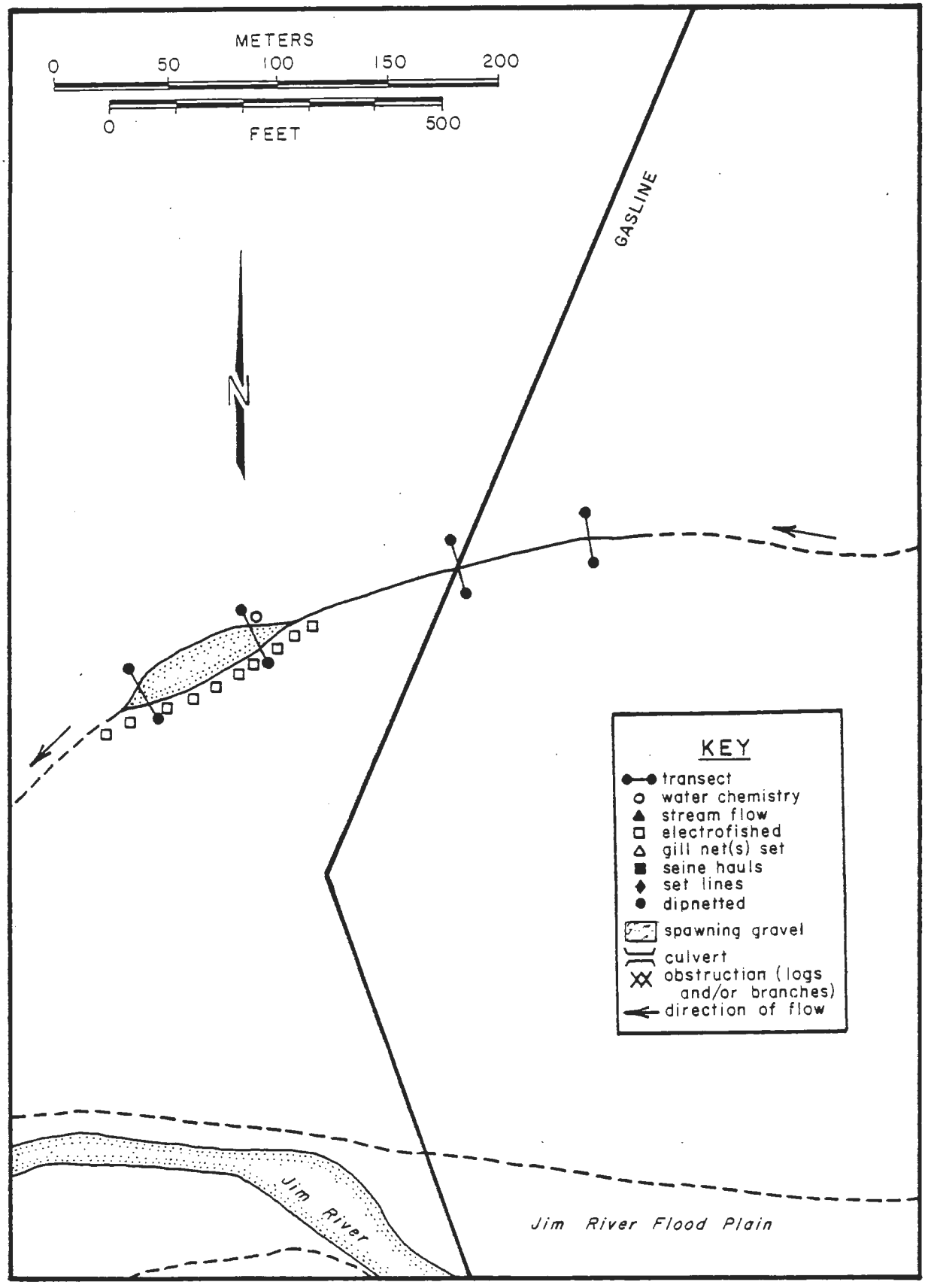

Figure 28. Spring survey. Jim River Slough, 22 May 1981.

SPRING SURVEY FORM

WATERBODY

Waterbody: East Fork Abba-Dabba Creek Source: Montane/Taiga Drainage

Main Drainage: South Fork Koyukuk River Tributary to: Abba-Dabba Creek

Figure: 29 Elevation: 381 m

NPAS: 47 NPMP: 267.0 NPRX: 047-3 AHMP: NA

USGS Map Reference: Bettles, AK T: 25N R: 13W Sec: 24

Site Access: Truck

Section Surveyed: 100 m upstream to 200 m downstream of proposed pipeline crossing

ASSESSMENT

East Fork Abba-Dabba Creek is a small, fast-flowing stream with clear water. The banks are vegetated with sedges, willows, spruce, and alder. The substrate is boulders and cobbles. The stream gradient is steep throughout the surveyed area. No potential fish blocks were observed.

No fish use was observed during the 1981 spring survey although good fish habitat was present throughout the surveyed area. No fish use has been previously documented for this stream.

FISH

Waterbody: East Fork Abba-Dabba Creek NPRX: 47-3

Date: 22 May 1981

Fish Present: no

Gear/Effort: EF (0/533 sec); visual (0/150 m)

Species Present	Quantity		Length (mm)	
	Fry	Other	Fry	Other

PHYSICAL CONDITIONS

Date	22 May 1981
Wetted Width (m)	1.9-4.0
Depth (cm)	13-46
Discharge (m^3/s)	0.3461
Dissolved Oxygen (mg/ℓ)	12.0
Temperature (° C)	2.5
Conductivity (μmhos/cm)	10
pH (pH units)	7.6
Color (color units)	80
Turbidity (NTU)	11.0
T. Hardness (mg $CaCO_3$/ℓ)	17.1
Nitrate (mg/ℓ N)	below detection limit
Orthophosphate (mg/ℓ P)	below detection limit
Bottom Type (%)	65 boulder, 35 cobble
Bank Stability (%)	100
Aquatic Vegetation (P/A)	A
Riparian Vegetation (%)	45 sedge, 38 willow, 12 spruce, 5 alder
Cover (%)	6
Fish Block(s)	none observed

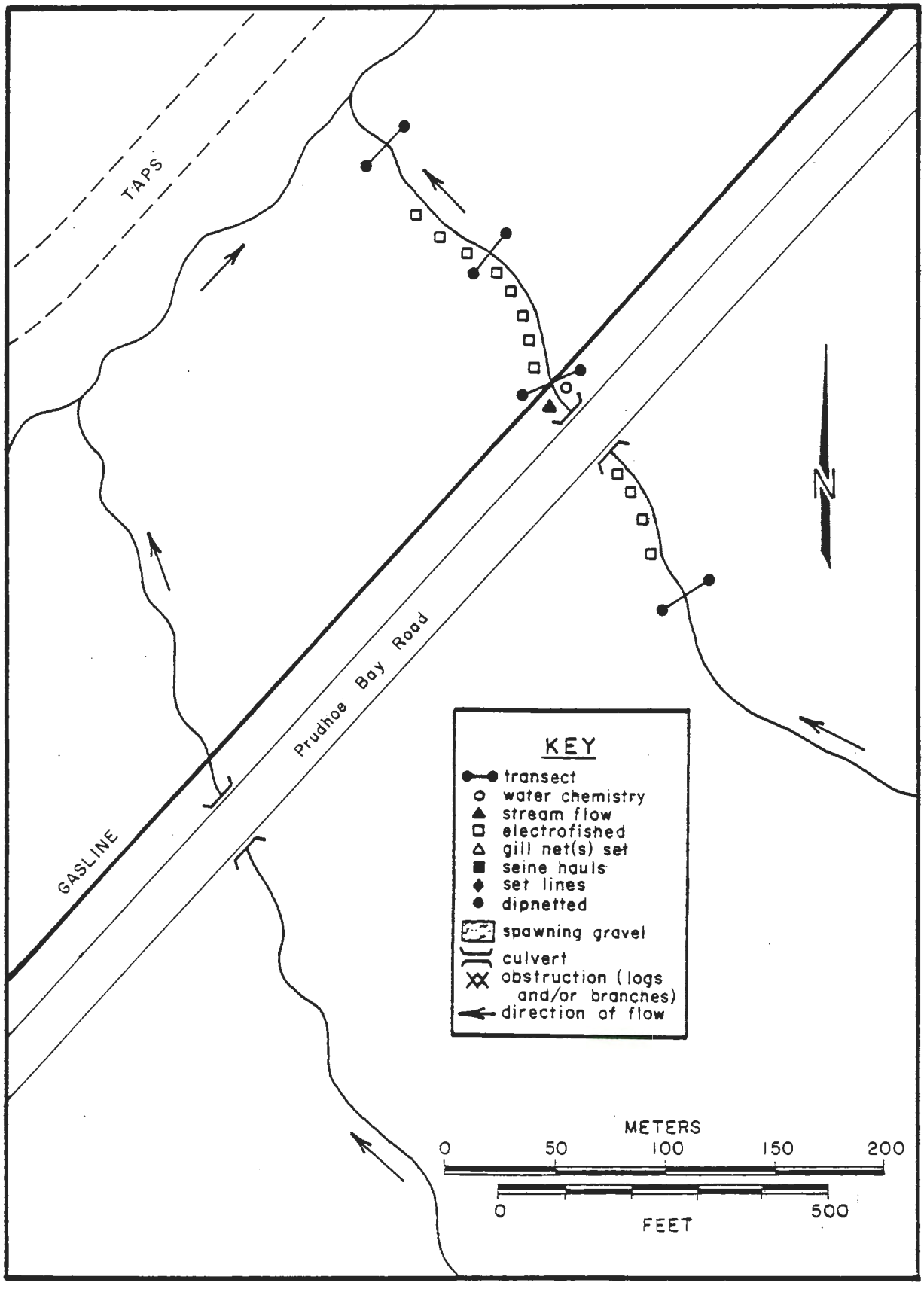

Figure 29. Spring survey. East Fork Abba-Dabba Creek, 22 May 1981.

SPRING SURVEY FORM

WATERBODY

Waterbody: Chapman Creek Source: Taiga/Muskeg Drainage

Main Drainage: Yukon River Tributary to: Middle Fork Koyukuk River

Figure: 30 Elevation: 335 m

NPAS: 46 NPMP: 258.3 NPRX: 046-1 AHMP: NA

USGS Map Reference: Wiseman, AK T: 26N R: 13W Sec: 11

Site Access: Truck

Section Surveyed: 150 m upstream to 150 m downstream of proposed pipeline crossing

ASSESSMENT

Chapman Creek is a moderate-sized, humic-stained stream draining a muskeg and taiga area. It flows through deep, incised channels with occasional large pools. Riparian vegetation is composed of willows and sedges with some scattered spruce. The substrate is fines and detritus, and cobbles. The gradient is moderate in the surveyed area. No potential fish blocks were observed.

No fish use was observed during the 1981 spring survey, even though good fish habitat was present. Use of this stream by several species has been reported (Ref. 20 and 21), but only during the summer. Perhaps fish use is subsequent to the decrease in water levels after spring run-off, or spring upstream migrations had not yet begun.

FISH

Waterbody: Chapman Creek NPRX: 046-1

Date: 22 May 1981

Fish Present: no

Gear/Effort: GN (0/18 hr); visual (0/50 m)

Species Present	Quantity		Length (mm)	
	Fry	Other	Fry	Other

PHYSICAL CONDITIONS

Date	22 May 1981
Wetted Width (m)	1.0-12
Depth (cm)	100-200
Discharge (m^3/s)	0.3523
Dissolved Oxygen (mg/ℓ)	9.6
Temperature (° C)	6.0
Conductivity (μmhos/cm)	33
pH (pH units)	8.3
Color (color units)	100
Turbidity (NTU)	12.0
T. Hardness (mg $CaCO_3$/ℓ)	34.2
Nitrate (mg/ℓ N)	below detection limit
Orthophosphate (mg/ℓ P)	below detection limit
Bottom Type (%)	85 detritus/fines, 15 cobble
Bank Stability (%)	100
Aquatic Vegetation (P/A)	P
Riparian Vegetation (%)	70 willow, 28 sedge, 2 spruce
Cover (%)	25
Fish Block(s)	none observed

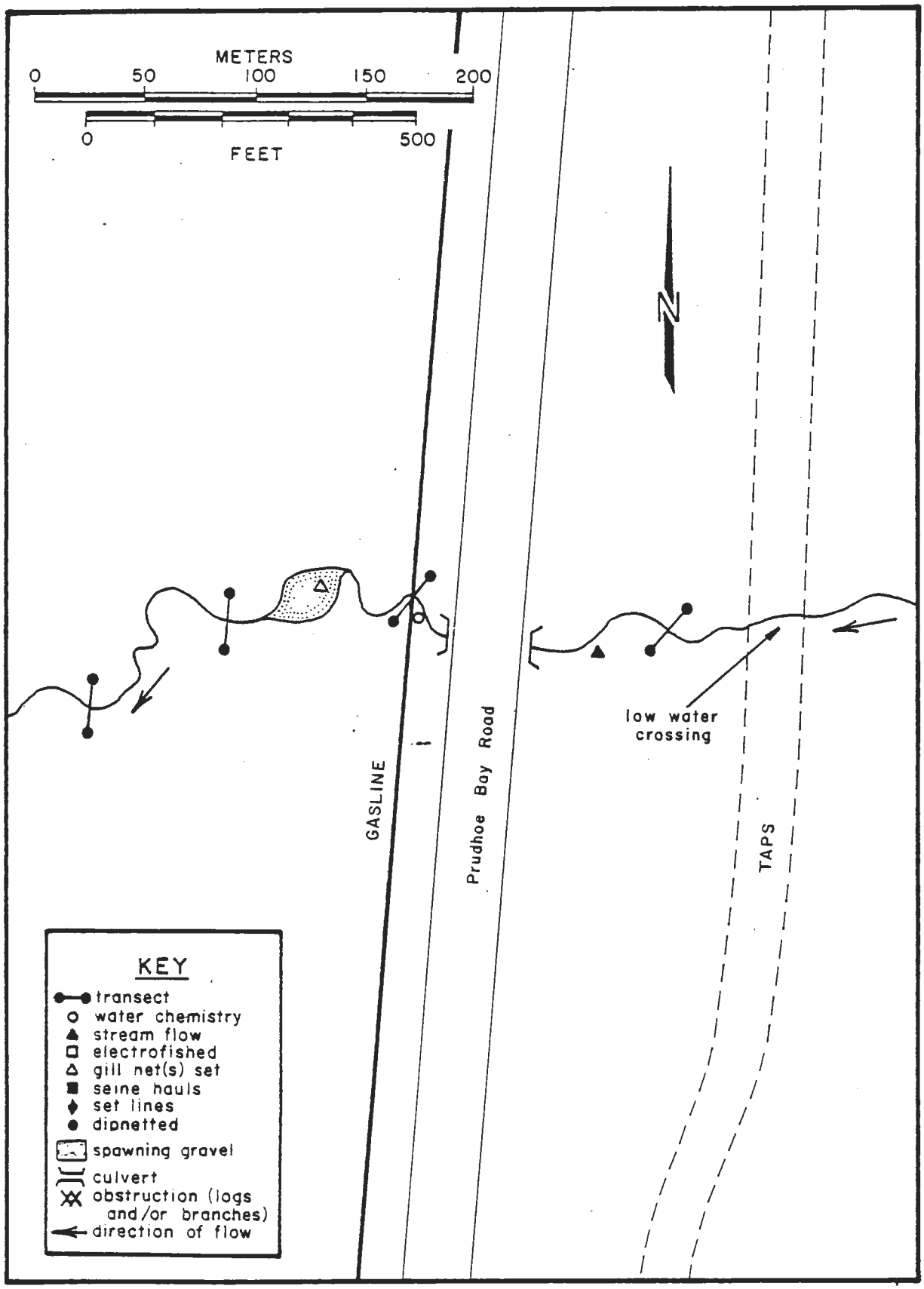

Figure 30. Spring survey. Chapman Creek, 22 May 1981.

SPRING SURVEY FORM

WATERBODY

Waterbody: Tributary to East Fork Spring Slough Source: Taiga/Muskeg Drainage

Main Drainage: Yukon River Tributary to: Middle Fork Koyukuk River

Figure: 31 Elevation: 309 m

NPAS: 44 NPMP: 247.0 NPRX: 044-3 AHMP: NA

USGS Map Reference: Wiseman, AK T: 28N R: 12W Sec: 21

Site Access: Truck

Section Surveyed: 100 m upstream to 200 m downstream of proposed pipeline crossing

ASSESSMENT

Tributary to East Fork Spring slough is a small, clear spring-fed stream that drains a low, muskeg/taiga area. The channel is poorly defined and flooding was present over most of the surveyed area. Riparian vegetation is composed of willows, sedges, spruce, and mosses. The substrate is predominantly fines and detritus except upstream of the crossing where the stream flows along side of the Prudhoe Bay Road. Here the substrate is sand, gravel and pebbles. Upstream of the proposed crossing the gradient is moderate to steep. Downstream of the crossing the gradient is slight. No potential fish blocks were observed.

No fish use was observed during the 1981 spring survey. The habitat present was marginal and flow was very low. Grayling have been reported using this stream for rearing and migration in the spring (Ref. 11). Fish use of this stream in spring is probably low.

FISH

Waterbody: Tributary to East Fork Spring Slough NPRX: 044-3

Date: 23 May 1981

Fish Present: no

Gear/Effort: EF (0/106 sec); visual (0/200 m)

Species Present	Quantity		Length (mm)	
	Fry	Other	Fry	Other

PHYSICAL CONDITIONS

Date	23 May 1981
Wetted Width (m)	0.75-20
Depth (cm)	5-50
Discharge (m^3/s)	below detection limit
Dissolved Oxygen (mg/ℓ)	10.0
Temperature (° C)	5.0
Conductivity (μmhos/cm)	155
pH (pH units)	8.2
Color (color units)	150
Turbidity (NTU)	20.0
T. Hardness (mg $CaCO_3$/ℓ)	153.9
Nitrate (mg/ℓ N)	below detection limit
Orthophosphate (mg/ℓ P)	below detection limit
Bottom Type (%)	75 fines/detritus, 2 sand, 10 gravel, 13 pebble
Bank Stability (%)	100
Aquatic Vegetation (P/A)	P
Riparian Vegetation (%)	48 willow, 37 sedge, 14 spruce, 1 moss
Cover (%)	25
Fish Block(s)	none observed

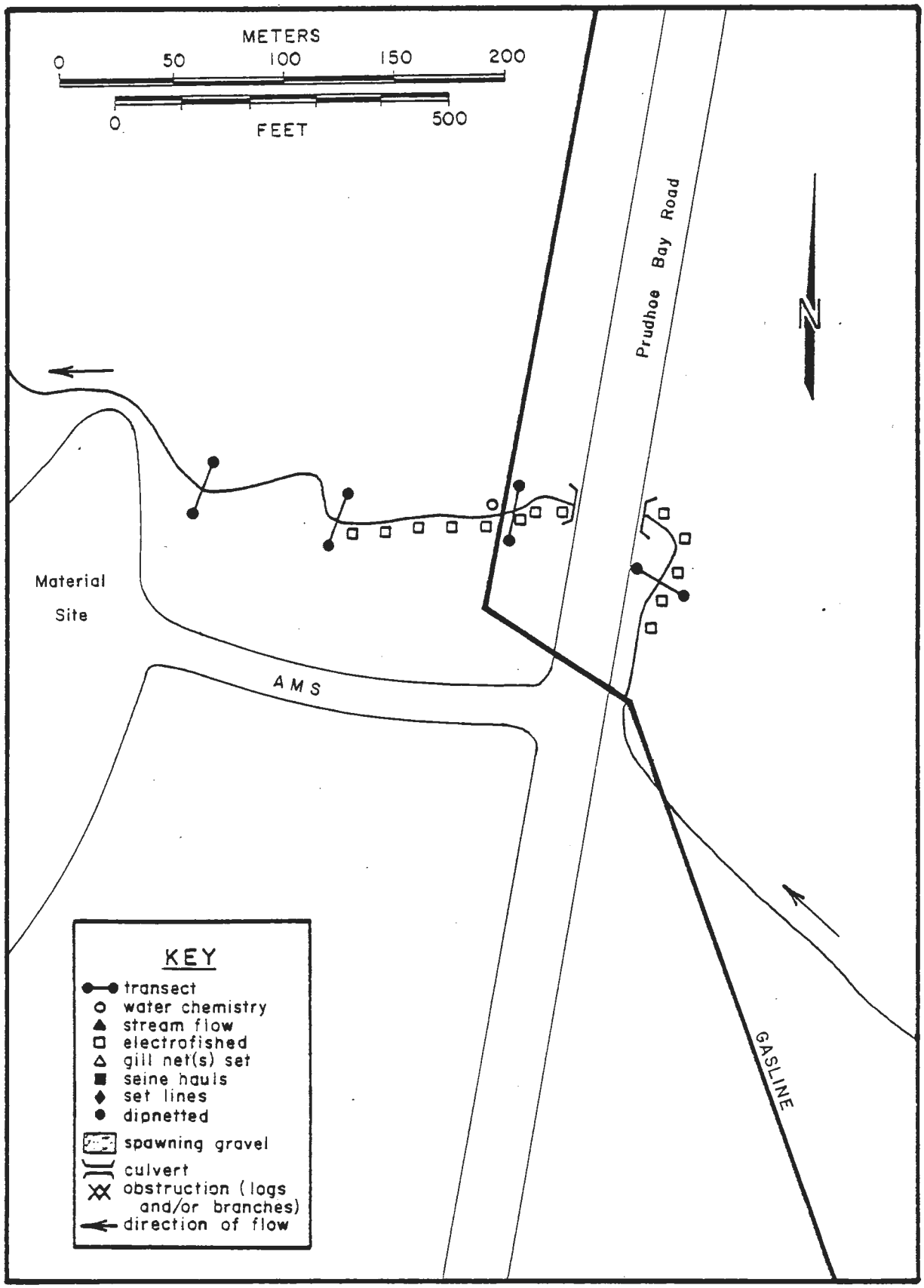

Figure 31. Spring survey. Tributary to East Fork Spring Slough, 23 May 1981.

SPRING SURVEY FORM

WATERBODY

Waterbody: Slate Creek Source: Montane/Taiga Drainage

Main Drainage: Yukon River Tributary to: Middle Fork Koyukuk River

Figure: 32 Elevation: 357 m

NPAS: 43 NPMP: 245.0 NPRX: 043-9 AHMP: NA

USGS Map Reference: Wiseman, AK T: 28N R: 12W Sec: 15

Site Access: Truck

Section Surveyed: 120 m upstream to 200 m downstream of proposed pipeline crossing

ASSESSMENT

Slate Creek is a large, fast-flowing stream which meanders westerly to the Middle Fork of the Koyukuk River. Riparian vegetation is composed of willows, spruce, aspen, birch, and sedges. The substrate is sand, gravel, pebbles, and cobbles. The stream gradient is moderate throughout the surveyed area.

Fishing efforts in Slate Creek produced two king salmon fry, one grayling, and four slimy sculpin. At the time of the survey the stream water level was high but well within the banks. Due to high water velocities and turbidity, it is doubtful if many fish were using this stream at the time of the survey.

Slate Creek is an important area to many species of fish during the summer and fall (Ref. 11, 20, 30, 34 and 76). Spring use is probably limited until spring run-off decreases and the water is lower. Spawning gravels are present throughout the surveyed area.

FISH

Waterbody: Slate Creek NPRX: 043-9

Date: 23 May 1981

Fish Present: yes

Gear/Effort: GN (0/18 hr); EF (6/1001 sec); visual (1/100 m)

Species Present	Quantity Fry	Quantity Other	Length (mm) Fry	Length (mm) Other
king salmon	2		70-72	
grayling		1		250
slimy sculpin		4		70-80

PHYSICAL CONDITIONS

Date	23 May 1981
Wetted Width (m)	13-20
Depth (cm)	100-150
Discharge (m^3/s)	2.7381
Dissolved Oxygen (mg/ℓ)	11.6
Temperature (° C)	1.0
Conductivity (μmhos/cm)	38
pH (pH units)	9.0
Color (color units)	90
Turbidity (NTU)	18.0
T. Hardness (mg $CaCO_3$/ℓ)	34.2
Nitrate (mg/ℓ N)	below detection limit
Orthophosphate (mg/ℓ P)	below detection limit
Bottom Type (%)	9 sand, 28 gravel, 46 pebble, 17 cobble
Bank Stability (%)	98
Aquatic Vegetation (P/A)	A
Riparian Vegetation (%)	65 willow, 25 spruce, 5 aspen, 3 birch, 2 sedge
Cover (%)	1
Fish Block(s)	none observed

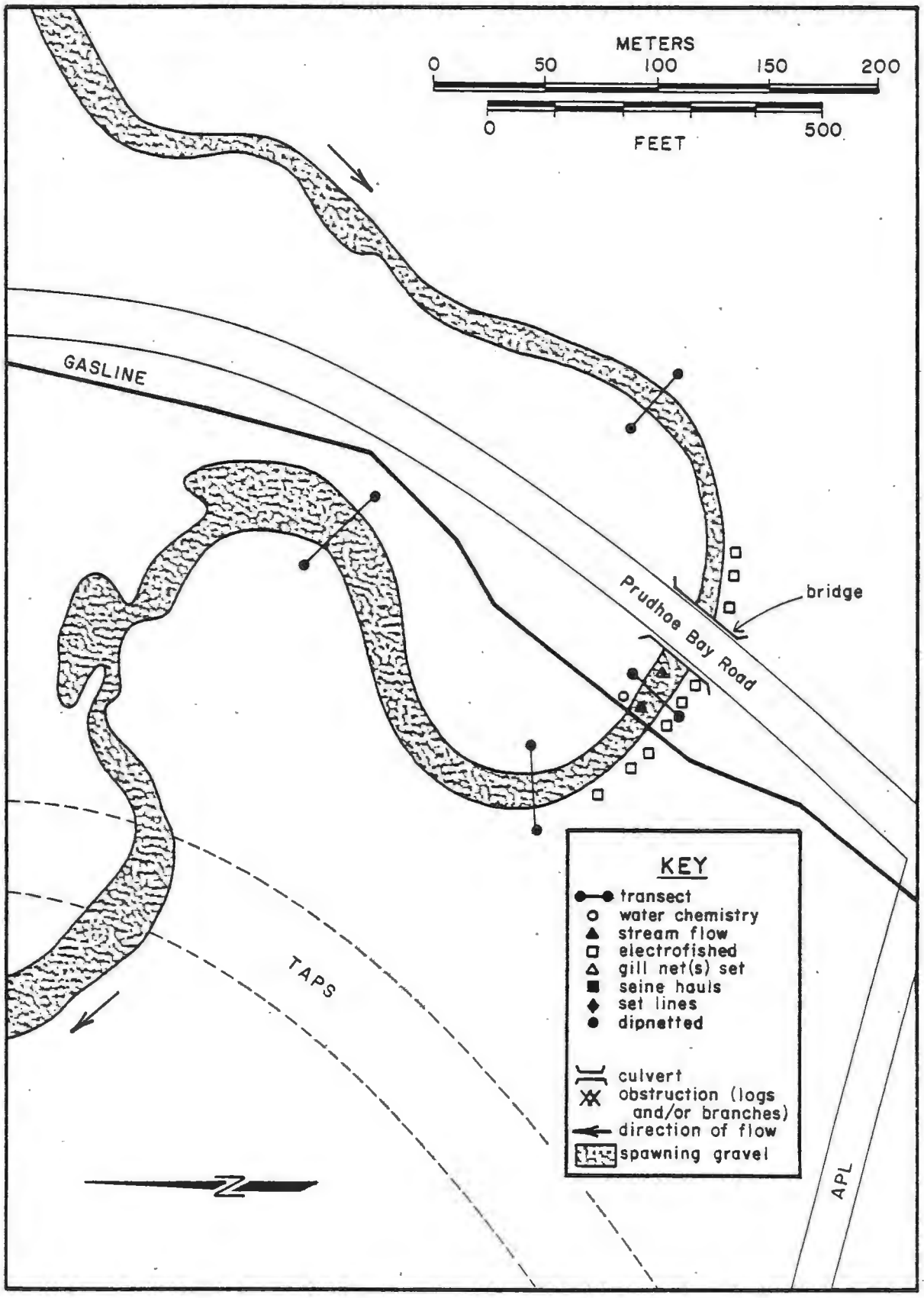

Figure 32. Spring survey. Slate Creek, 23 May 1981.

SPRING SURVEY FORM

WATERBODY

Waterbody: South Fork Sharon Creek Source: Taiga Drainage

Main Drainage: Yukon River Tributary to: Middle Fork Koyukuk River

Figure: 33 Elevation: 364 m

NPAS: 43 NPMP: 240.8 NPRX: 043-1 AHMP: NA

USGS Map Reference: Wiseman, AK T: 29N R: 12W Sec: 26

Site Access: Truck

Section Surveyed: 150 m upstream to 150 m downstream of proposed pipeline crossing

ASSESSMENT

South Fork Sharon Creek is a stagnant slough confluent with the Middle Fork of the Koyukuk River. Riparian vegetation is composed of sedges, spruce, and willows. The substrate is fines and detritus. The stream gradient is slight. Discontinuous flow constitutes a potential fish block.

No fish use was observed during the 1981 spring survey. At this time the only potential fish habitat observed in the survey area was two small ponds. The rest of the streambed is a sedge-willow marsh. Due to discontinuous flow it is doubtful that fish access is possible to the area of the crossing. The fish use potential of this stream is probably non-existent.

FISH

Waterbody: South Fork Sharon Creek NPRX: 043-1

Date: 23 May 1981

Fish Present: no

Gear/Effort: visual (0/200 m)

Species Present	Quantity		Length (mm)	
	Fry	Other	Fry	Other

PHYSICAL CONDITIONS

Date	23 May 1981
Wetted Width (m)	0-10
Depth (cm)	0-50
Discharge (m^3/s)	below detection limit
Dissolved Oxygen (mg/ℓ)	6.4
Temperature (° C)	16.0
Conductivity (μmhos/cm)	90
pH (pH units)	8.5
Color (color units)	150
Turbidity (NTU)	11.0
T. Hardness (mg $CaCO_3$/ℓ)	85.5
Nitrate (mg/ℓ N)	below detection limit
Orthophosphate (mg/ℓ P)	below detection limit
Bottom Type (%)	100 detritus/fines
Bank Stability (%)	100
Aquatic Vegetation (P/A)	P
Riparian Vegetation (%)	56 sedge, 24 spruce, 20 willow
Cover (%)	73
Fish Block(s)	discontinuous flow

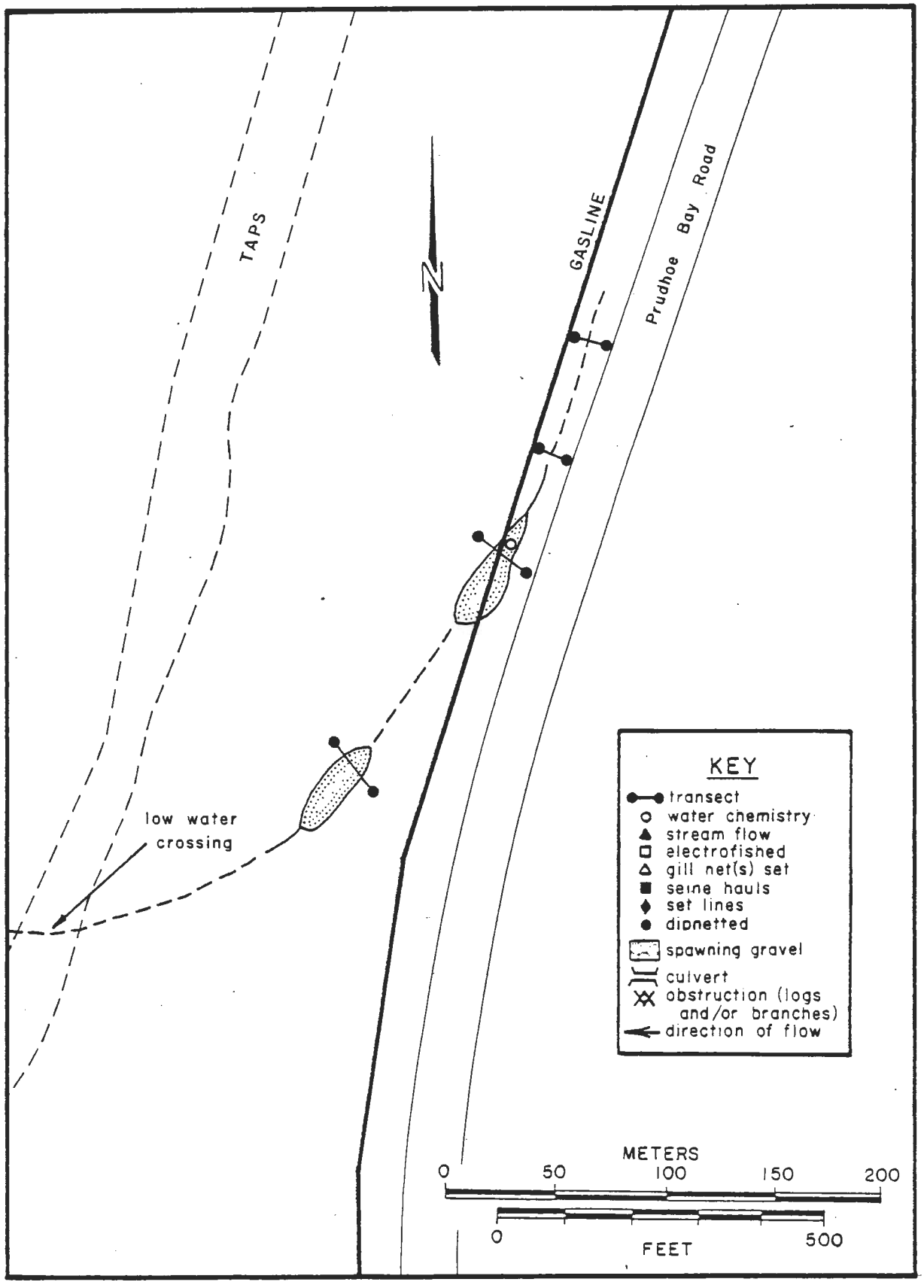

Figure 33. Spring survey. South Fork Sharon Creek, 23 May 1981.

SPRING SURVEY FORM

WATERBODY

Waterbody: Union Gulch Creek Source: Taiga Drainage

Main Drainage: Yukon River Tributary to: Middle Fork Koyukuk River

Figure: 34 Elevation: 369 m

NPAS: 41 NPMP: 230.3 NPRX: 041-3 AHMP: NA

USGS Map Reference: Wiseman, AK T: 30N R: 11W Sec: 7

Site Access: Truck

Section Surveyed: 150 m upstream to 200 m downstream of proposed pipeline crossing

ASSESSMENT

Union Gulch Creek is a small slough near the Middle Fork of the Koyukuk River. Riparian vegetation consists of willows, mosses, spruce, and sedges. The substrate is predominantly fines and detritus with some gravel and cobbles. The gradient is slight throughout the surveyed area. Fish blocks consist of discontinuous flow and lack of a culvert where the stream crosses the Prudhoe Bay Road.

No fish use was observed during the 1981 spring survey. This stream presented very poor habitat for fish, and access is questionable. Its importance to fish is considered to be low or non-existent.

FISH

Waterbody: Union Gulch Creek NPRX: 041-3

Date: 24 May 1981

Fish Present: no

Gear/Effort: visual (0/100 m)

Species Present	Quantity		Length (mm)	
	Fry	Other	Fry	Other

PHYSICAL CONDITIONS

Date	24 May 1981
Wetted Width (m)	0-2.5
Depth (cm)	0-52
Discharge (m^3/s)	below detection limit
Dissolved Oxygen (mg/ℓ)	8.2
Temperature (° C)	14.0
Conductivity (μmhos/cm)	700
pH (pH units)	8.4
Color (color units)	100
Turbidity (NTU)	33.0
T. Hardness (mg $CaCO_3$/ℓ)	632.7
Nitrate (mg/ℓ N)	below detection limit
Orthophosphate (mg/ℓ P)	below detection limit
Bottom Type (%)	88 fines/detritus, 6 gravel, 6 cobble
Bank Stability (%)	100
Aquatic Vegetation (P/A)	P
Riparian Vegetation (%)	35 willow, 35 mosses, 25 spruce, 5 sedge
Cover (%)	5
Fish Block(s)	discontinuous flow; no culvert where haul road crosses creek

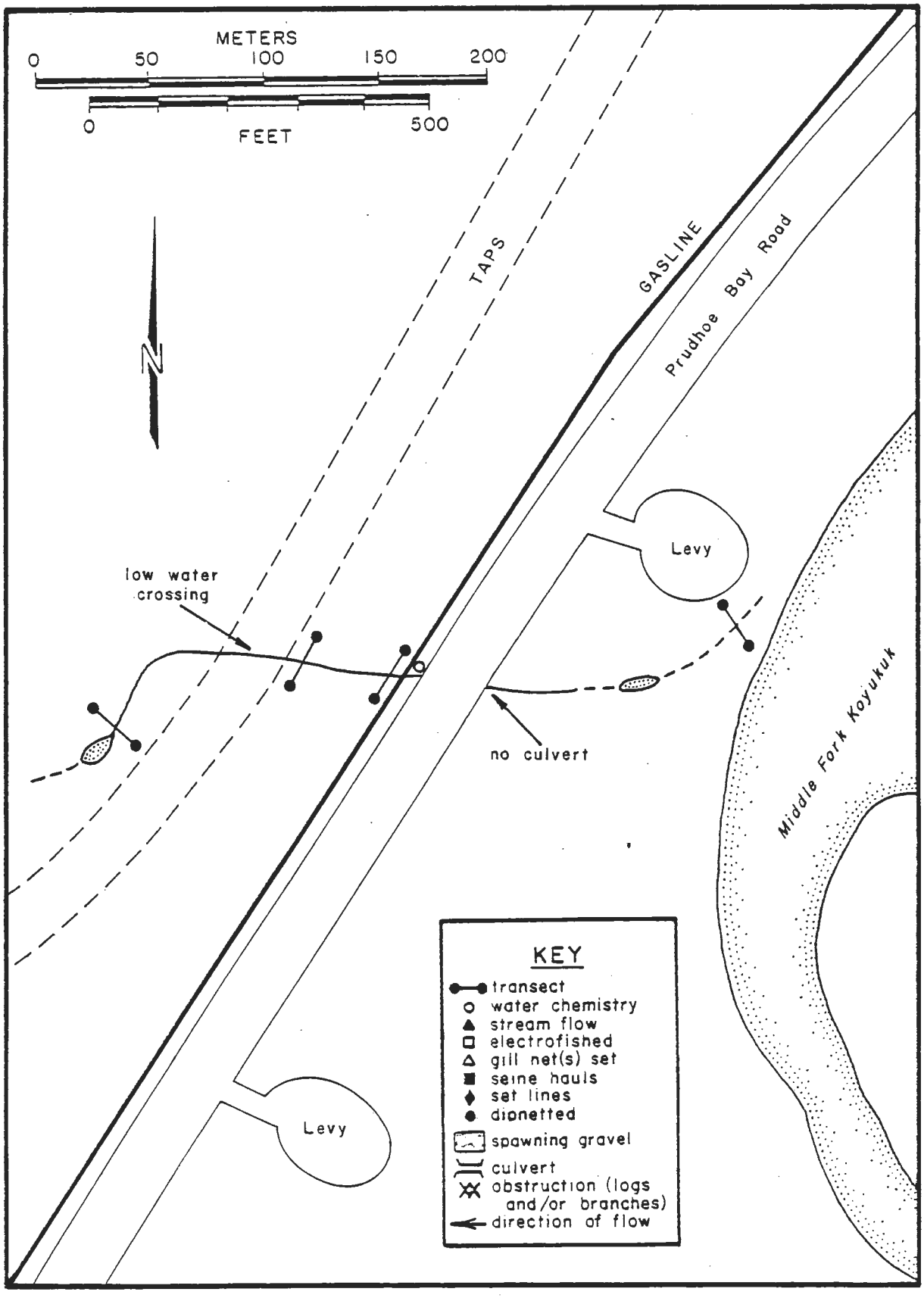

Figure 34. Spring survey. Union Gulch Creek, 24 May 1981.

SPRING SURVEY FORM

WATERBODY

Waterbody: Cushing Creek Source: Montane/Taiga Drainage

Main Drainage: Yukon River Tributary to: Middle Fork Koyukuk River

Figure: 35 Elevation: 402 m

NPAS: 39 NPMP: 222.9 NPRX: 039-4 AHMP: NA

USGS Map Reference: Chandalar, AK T: 31N R: 10W Sec: 18

Site Access: Truck

Section Surveyed: 150 m upstream to 150 m downstream of proposed pipeline crossing

ASSESSMENT

Cushing Creek is a small stream draining a montane, taiga area. It flows westerly in a defined channel through small pools and falls. Riparian vegetation consists of sedges, dwarf birch, and willows. The substrate is predominantly fines, sand, and gravel with some pebbles and cobbles in the vicinity of the Prudhoe Bay Road. The gradient is steep upstream of the proposed pipeline crossing and moderate downstream of the crossing. Potential fish blocks consist of several falls upstream from the crossing and one fall downstream.

No fish use was observed during the 1981 spring survey. The numerous falls on this stream may prevent fish access to the proposed crossing area. Otherwise, fish habitat was adequate. No information on fish use is presently available for this stream.

FISH

Waterbody: Cushing Creek NPRX: 039-4

Date: 24 May 1981

Fish Present: no

Gear/Effort: EF (0/263 sec), visual (0/120 m)

Species Present	Quantity		Length (mm)	
	Fry	Other	Fry	Other

PHYSICAL CONDITIONS

Date	24 May 1981
Wetted Width (m)	0.5-6.0
Depth (cm)	9-100
Discharge (m^3/s)	0.0593
Dissolved Oxygen (mg/ℓ)	10.4
Temperature (° C)	5.5
Conductivity (µmhos/cm)	71
pH (pH units)	8.8
Color (color units)	175
Turbidity (NTU)	14.0
T. Hardness (mg $CaCO_3$/ℓ)	68.4
Nitrate (mg/ℓ N)	below detection limit
Orthophosphate (mg/ℓ P)	below detection limit
Bottom Type (%)	37 fines, 6 sand, 31 gravel, 13 pebble, 13 cobble
Bank Stability (%)	94
Aquatic Vegetation (P/A)	P
Riparian Vegetation (%)	50 sedge, 28 dwarf birch, 22 willow
Cover (%)	32
Fish Block(s)	numerous falls (20-80 cm) above crossing and one fall (~ 40 cm) below crossing

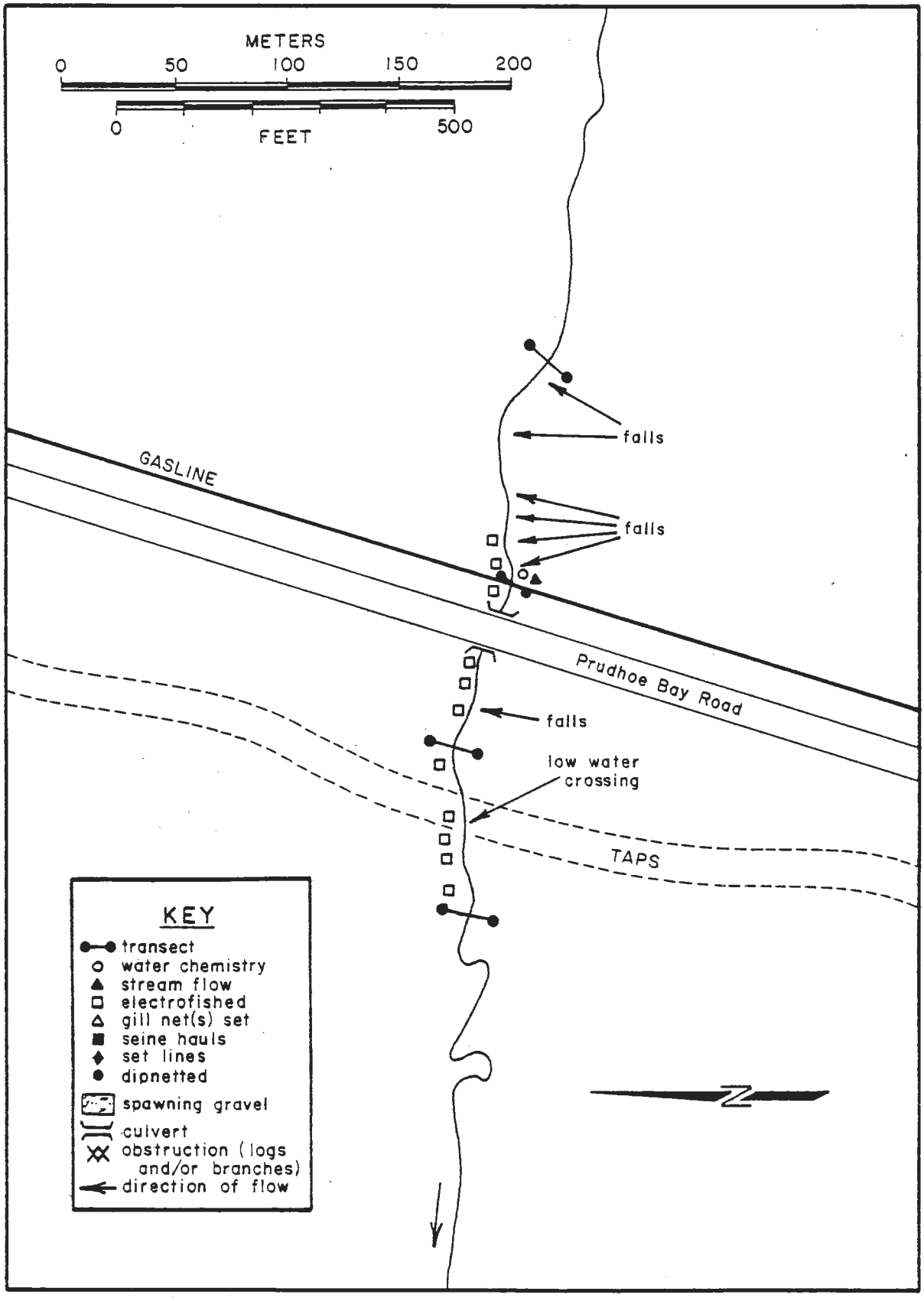

Figure 35. Spring survey. Cushing Creek, 24 May 1981.

SPRING SURVEY FORM

WATERBODY

Waterbody: Access Road Creek Source: Montane/Taiga Drainage

Main Drainage: Middle Fork Koyukuk River Tributary to: West Fork Sukakpak Creek

Figure: 36 Elevation: 424 m

NPAS: 38 NPMP: 216.2 NPRX: 038-7 AHMP: NA

USGS Map Reference: Chandalar, AK T: 32N R: 10W Sec: 16

Site Access: Truck

Section Surveyed: 150 m upstream to 200 m downstream of proposed pipeline crossing

ASSESSMENT

Access Road Creek is a small stream of montane taiga origin. It drains into a small lake immediately west of the Prudhoe Bay Road. This stream flows through a muskeg area vegetated with sedges, willows, dwarf birch, spruce, and mosses. The substrate is predominantly fines and detritus with some sand, gravel, and pebbles in the vicinity of the Prudhoe Bay Road. The gradient is slight throughout the surveyed area.

No fish use was observed during the 1981 spring survey. The fish habitat in this area is poor to non-existent. Only the small lake provides any reasonable fish habitat. Spring fish use has been reported for this stream (Ref. 11), but fish use is probably low and restricted to periods of adequate flow.

FISH

Waterbody: Access Road Creek NPRX: 038-7

Date: 25 May 1981

Fish Present: no

Gear/Effort: EF (0/343 sec); visual (0/100 m)

Species Present	Quantity Fry	Quantity Other	Length (mm) Fry	Length (mm) Other

PHYSICAL CONDITIONS

Date	25 May 1981
Wetted Width (m)	0.45-45.0
Depth (cm)	10-78
Discharge (m^3/s)	0.0226
Dissolved Oxygen (mg/ℓ)	11.4
Temperature (° C)	5.0
Conductivity (μmhos/cm)	325
pH (pH units)	8.4
Color (color units)	55
Turbidity (NTU)	10.0
T. Hardness (mg $CaCO_3$/ℓ)	324.9
Nitrate (mg/ℓ N)	below detection level
Orthophosphate (mg/ℓ P)	below detection level
Bottom Type (%)	92 fines/detritus, 3 sand, 3 gravel, 2 pebble
Bank Stability (%)	100
Aquatic Vegetation (P/A)	P
Riparian Vegetation (%)	70 sedge, 18 willow, 8 dwarf birch, 2 spruce, 2 mosses
Cover (%)	29
Fish Block(s)	none observed

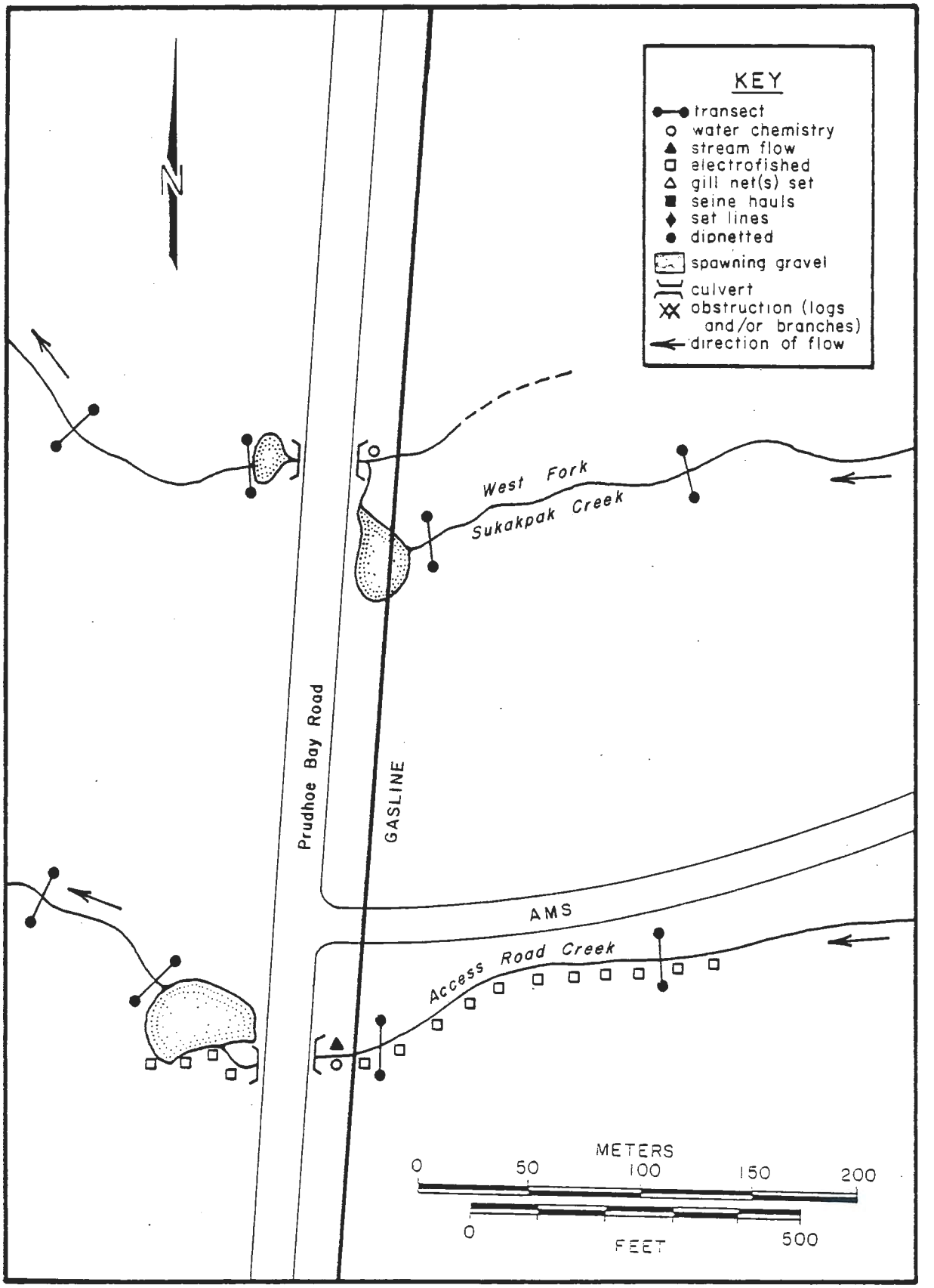

Figure 36. Spring survey. Access Road Creek and West Fork Sukakpak Creek, 25 May 1981.

SPRING SURVEY FORM

WATERBODY

Waterbody: West Fork Sukakpak Creek Source: Montane/Taiga Drainage

Main Drainage: Yukon River Tributary to: Middle Fork Koyukuk River

Figure: 36 Elevation: 420 m

NPAS: 38 NPMP: 216.0 NPRX: 038-6 AHMP: NA

USGS Map Reference: Chandalar, AK T: 32N R: 10W Sec: 16

Site Access: Truck

Section Surveyed: 120 m upstream to 150 m downstream of proposed pipeline crossing

ASSESSMENT

West Fork Sukakpak Creek is a small stream that has a well-defined channel with banks vegetated by sedges, willows, dwarf birch, and spruce. The substrate is predominantly fines and detritus with some sand, gravel, and pebbles in the vicinity of the Prudhoe Bay Road. The gradient is slight throughout the surveyed area. No potential fish blocks were observed in the surveyed area.

No fish use was observed during the 1981 spring survey. Aside from the ponds adjacent to the Prudhoe Bay Road the stream offers only poor fish habitat, primarily due to low flows. Spring fish use has been reported for this stream (Ref. 11), but present data indicate that fish use is probalby low and restricted to periods of adequate flow.

FISH

Waterbody: West Fork Sukakpak Creek NPRX: 038-6

Date: 25 May 1981

Fish Present: no

Gear/Effort: visual (0/250 m)

Species Present	Quantity		Length (mm)	
	Fry	Other	Fry	Other

PHYSICAL CONDITIONS

Date	25 May 1981
Wetted Width (m)	0.3-5
Depth (cm)	5-80
Discharge (m^3/s)	below detection limit
Dissolved Oxygen (mg/ℓ)	8.4
Temperature (° C)	11.5
Conductivity (μmhos/cm)	350
pH (pH units)	8.4
Color (color units)	40
Turbidity (NTU)	15.0
T. Hardness (mg $CaCO_3$/ℓ)	290.7
Nitrate (mg/ℓ N)	below detection limit
Orthophosphate (mg/ℓ P)	below detection limit
Bottom Type (%)	80 fines/detritus, 2 sand, 10 gravel, 8 pebble
Bank Stability (%)	100
Aquatic Vegetation (P/A)	P
Riparian Vegetation (%)	91 sedge, 5 willow, 3 dwarf birch, 1 spruce
Cover (%)	12
Fish Block(s)	none observed

SPRING SURVEY FORM

WATERBODY

Waterbody: South Fork Airport Creek Source: Montane/Taiga Drainage

Main Drainage: Middle Fork Koyukuk River Tributary to: Dietrich River

Figure: 37 Elevation: 457 m

NPAS: 37 NPMP: 209.4 NPRX: 037-5 AHMP: NA

USGS Map Reference: Chandalar, AK T: 33N R: 10W Sec: 24

Site Access: Truck

Section Surveyed: 100 m upstream to 200 m downstream of proposed pipeline crossing

ASSESSMENT

South Fork Airport Creek is a small stream confined by low banks vegetated with sedges, dwarf brich, willows, and spruce. The substrate is predominantly fines and detritus with some cobbles, pebbles, and gravels in the area adjacent to the Prudhoe Bay Road. The stream gradient is slight and potential fish blocks consisted of a perched culvert at the Prudhoe Bay Road.

No fish use was observed during the 1981 spring survey. Due to low flows, fish habitat was poor to non-existent. No fish use has been documented for this stream and fish use is probably low and restricted to periods of adequate flow.

FISH

Waterbody: South Fork Airport Creek NPRX: 037-5

Date: 26 May 1981

Fish Present: no

Gear/Effort: visual (0/150 m)

Species Present	Quantity		Length (mm)	
	Fry	Other	Fry	Other

PHYSICAL CONDITIONS

Date	26 May 1981
Wetted Width (m)	0-2.0
Depth (cm)	0-32
Discharge (m^3/s)	0.0002
Dissolved Oxygen (mg/ℓ)	10.0
Temperature (° C)	6.5
Conductivity (μmhos/cm)	315
pH (pH units)	8.5
Color (color units)	65
Turbidity (NTU)	10.0
T. Hardness (mg $CaCO_3$/ℓ)	273.6
Nitrate (mg/ℓ N)	below detection limit
Orthophosphate (mg/ℓ P)	below detection limit
Bottom Type (%)	75 fines/detritus, 13 cobble, 6 pebble, 6 gravel
Bank Stability (%)	100
Aquatic Vegetation (P/A)	P
Riparian Vegetation (%)	69 sedge, 13 dwarf birch, 11 willow, 7 spruce
Cover (%)	55
Fish Block(s)	perched culvert (50 cm) at haul road crossing

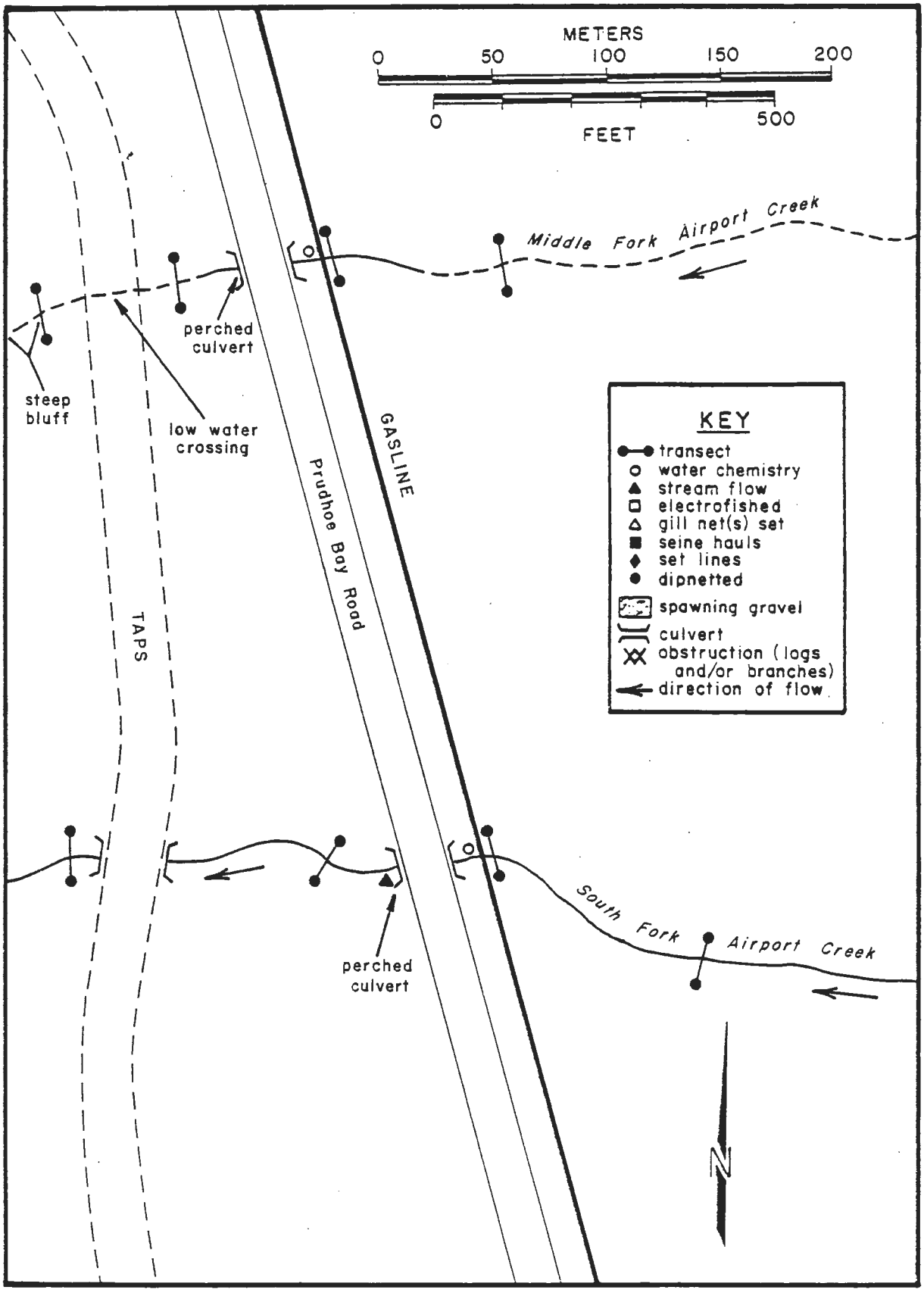

Figure 37. Spring survey. South Fork Airport Creek and Middle Fork Airport Creek, 26 May 1981.

SPRING SURVEY FORM

WATERBODY

Waterbody: Middle Fork Airport Creek Source: Montane/Taiga Drainage

Main Drainage: Middle Fork Koyukuk River Tributary to: Dietrich River

Figure: 37 Elevation: 455 m

NPAS: 37 NPMP: 209.2 NPRX: 037-4 AHMP: NA

USGS Map Reference: Chandalar, AK T: 33N R: 10W Sec: 13

Site Access: Truck

Section Surveyed: 100 m upstream to 150 m downstream of proposed pipeline crossing

ASSESSMENT

Middle Fork Airport Creek is a small stream confined by low banks vegetated with sedges, willows, spruce, dwarf birch, and rhododendron. The substrate is predominantly fines and detritus with some cobble downstream of the TAPS crossing. The gradient is slight in the area of the proposed pipeline crossing. Potential fish blocks consist of the Prudhoe Bay Road culvert being perched and plugged with ice, and a short, steep section (45°, 10 m high) approximately 130 m downstream of the crossing. Flow was discontinuous throughout the surveyed area.

No fish use was observed during the 1981 spring survey. Due to low flows fish habitat was poor to non-existent. The steep section probably precludes any fish access to areas upstream of that point. It is doubtful that this stream is ever used by fish at any time in the vicinity of the crossing due to existing fish blocks.

FISH

Waterbody: Middle Fork Airport Creek NPRX: 037-4

Date: 26 May 1981

Fish Present: no

Gear/Effort: visual (0/100 m)

Species Present	Quantity		Length (mm)	
	Fry	Other	Fry	Other

PHYSICAL CONDITIONS

Date	26 May 1981
Wetted Width (m)	0-50
Depth (cm)	0-85
Discharge (m^3/s)	below detection limit
Dissolved Oxygen (mg/ℓ)	6.6
Temperature (° C)	11.0
Conductivity (µmhos/cm)	610
pH (pH units)	8.6
Color (color units)	325
Turbidity (NTU)	16
T. Hardness (mg $CaCO_3$/ℓ)	598.5
Nitrate (mg/ℓ N)	below detection limit
Orthophosphate (mg/ℓ P)	below detection limit
Bottom Type (%)	88 fines/detritus, 12 cobble
Bank Stability (%)	100
Aquatic Vegetation (P/A)	P
Riparian Vegetation (%)	75 sedge, 10 spruce, 9 willow, 4 dwarf birch, 2 rhododendron
Cover (%)	64
Fish Block(s)	culvert perched (30 cm) and plugged with ice; steep (~ 45°, 10 m) bluff 130 m downstream of crossing

SPRING SURVEY FORM

WATERBODY

Waterbody: Airport Creek Source: Montane/Taiga Drainage

Main Drainage: Middle Fork Koyukuk River Tributary to: Dietrich River

Figure: 38 Elevation: 455 m

NPAS: 37 NPMP: 208.5 NPRX: 037-3 AHMP: NA

USGS Map Reference: Chandalar, AK T: 33N R: 10W Sec: 14

Site Access: Truck

Section Surveyed: 150 m upstream to 200 m downstream of proposed pipeline crossing

ASSESSMENT

Airport Creek is a small stream confined by low banks vegetated with sedges, willows, mosses, spruce, and dwarf birch. The substrate is predominantly fines and detritus with some sand, gravel, and cobbles in the vicinity of the Prudhoe Bay Road. The stream gradient is slight throughout the surveyed area and no potential fish blocks were observed.

No fish use was observed during the 1981 spring survey. Fish habitat was poor, due to low flows. Dolly Varden and grayling have been documented in this stream (Ref. 11 and 30), but fish use is probably low and restricted to periods of adequate flow.

FISH

Waterbody: Airport Creek NPRX: 037-3

Date: 27 May 1981

Fish Present: no

Gear/Effort: EF (0/224 sec); visual (0/100 m)

Species Present	Quantity		Length (mm)	
	Fry	Other	Fry	Other

PHYSICAL CONDITIONS

Date	27 May 1981
Wetted Width (m)	0.37-3.0
Depth (cm)	5-37
Discharge (m^3/s)	0.0134
Dissolved Oxygen (mg/ℓ)	8.5
Temperature (° C)	8.3
Conductivity (μmhos/cm)	140
pH (pH units)	8.6
Color (color units)	90
Turbidity (NTU)	4.0
T. Hardness (mg $CaCO_3$/ℓ)	119.7
Nitrate (mg/ℓ N)	below detection limit
Orthophosphate (mg/ℓ P)	below detection limit
Bottom Type (%)	75 fines/detritus, 15 gravel, 7 cobble, 3 sand
Bank Stability (%)	100
Aquatic Vegetation (P/A)	P
Riparian Vegetation (%)	55 sedge, 19 willow, 15 mosses, 6 spruce, 5 dwarf birch
Cover (%)	11
Fish Block(s)	none observed

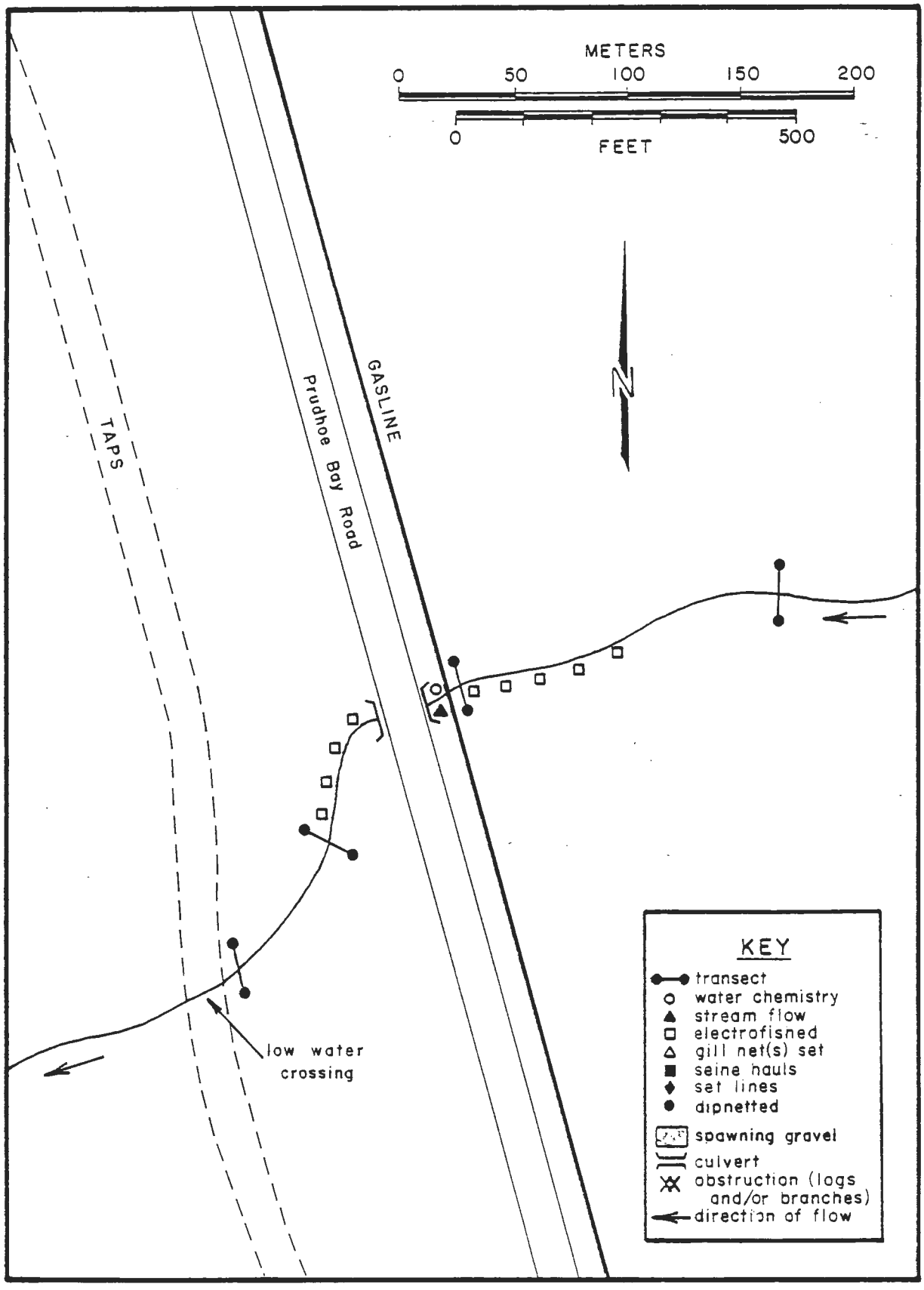

Figure 38. Spring survey. Airport Creek, 27 May 1981.

SPRING SURVEY FORM

WATERBODY

Waterbody: Ugh Creek Source: Montane Drainage

Main Drainage: Middle Fork Koyukuk River Tributary to: Dietrich River

Figure: 39 Elevation: 518 m

NPAS: 36 NPMP: 202.3 NPRX: 036-1 AHMP: NA

USGS Map Reference: Chandalar, AK T: 34N R: 10W Sec: 15

Site Access: Truck

Section Surveyed: 150 m upstream to 200 m downstream of proposed pipeline crossing

ASSESSMENT

Ugh Creek is a fast-flowing, mountain stream that flows westerly through braided channels to join the Dietrich River. Riparian vegetation consists of willow, spruce, mosses, and dwarf birch. The substrate is predominantly boulders, cobbles, and pebbles with some gravel, sand, and fines. The stream gradient is steep throughout the surveyed area. From the proposed pipeline crossing to approximately 200 m downstream the stream is channelized with rip-rap. A considerable amount of shelf ice was present upstream of the Prudhoe Bay Road. Potential fish blocks consisted of a very steep area with terraced falls approximately 100 m long and 200 m downstream of the crossing. This section of the stream is in a material site.

No fish use was observed during the 1981 spring survey. Due to channelization, fish habitat downstream of the proposed pipeline crossing is poor. Also, high water velocities and the steep terraced falls portion of the stream may preclude fish access to the area of the crossing. Grayling and slimy sculpin have been documented to occur in this stream (Ref. 11 and 30), but use if probably restricted to downstream areas near the TAPS crossing.

FISH

Waterbody: Ugh Creek NPRX: 036-1

Date: 27 May 1981

Fish Present: no

Gear/Effort: DN (0/30 m^2)

Species Present	Quantity Fry	Quantity Other	Length (mm) Fry	Length (mm) Other

PHYSICAL CONDITIONS

Date	27 May 1981
Wetted Width (m)	1.3-2.3
Depth (cm)	11-25
Discharge (m^3/s)	0.2179
Dissolved Oxygen (mg/ℓ)	10.6
Temperature (° C)	5.5
Conductivity (μmhos/cm)	205
pH (pH units)	8.4
Color (color units)	> 500
Turbidity (NTU)	18.0
T. Hardness (mg $CaCO_3$/ℓ)	188.1
Nitrate (mg/ℓ N)	below detection limit
Orthophosphate (mg/ℓ P)	below detection limit
Bottom Type (%)	10 fines, 10 sand, 10 gravel, 20 pebble, 42 cobble, 8 boulder
Bank Stability (%)	98
Aquatic Vegetation (P/A)	A
Riparian Vegetation (%)	67 willow, 13 spruce, 13 mosses, 7 dwarf birch
Cover (%)	0
Fish Block(s)	steep, channelized, terraced section ~ 200 m below crossing

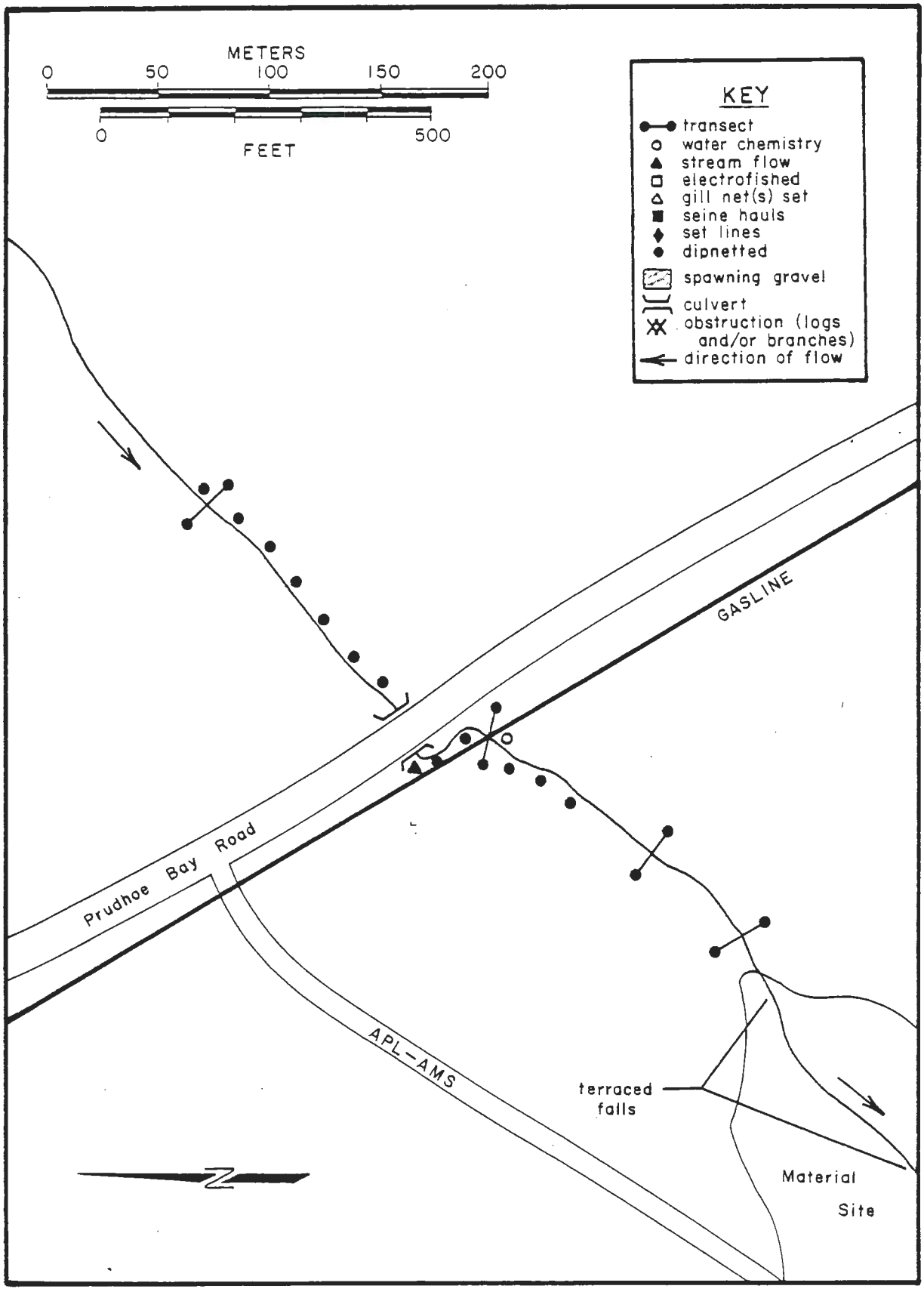

Figure 39. Spring survey. Ugh Creek, 27 May 1981.

SPRING SURVEY FORM

WATERBODY

Waterbody: Buff Creek Source: Montane Drainage

Main Drainage: Middle Fork Koyukuk River Tributary to: Dietrich River

Figure: 40 Elevation: 533 m

NPAS: 35 NPMP: 196.8 NPRX: 035-3 AHMP: NA

USGS Map Reference: Chandalar, AK T: 35N R: 10W Sec: 21

Site Access: Truck

Section Surveyed: 150 m upstream to 200 m downstream of proposed pipeline crossing

ASSESSMENT

Buff Creek is a fast-flowing, mountain stream that flows westerly through braided channels. It joins the Dietrich River approximately 0.5 km downstream of the proposed pipeline crossing. Riparian vegetation consists of willow, spruce and aspen. The substrate is boulders and cobbles and the stream gradient is steep throughout the surveyed area. No potential fish blocks were observed.

No fish use was observed during the 1981 spring survey. At the time water velocities were high and the water was quite turbid. These factors may have precluded fish use at this time as well as making fish capture difficult. Overall fish habitat was marginal. Grayling have been previously reported in this stream (Ref. 11 and 30), but actual documentation is not available.

FISH

Waterbody: Buff Creek NPRX: 035-3

Date: 28 May 1981

Fish Present: no

Gear/Effort: DN (0/15 m^2)

Species Present	Quantity		Length (mm)	
	Fry	Other	Fry	Other

PHYSICAL CONDITIONS

Date	28 May 1981
Wetted Width (m)	3-10
Depth (cm)	15-50
Discharge (m^3/s)	1.2521
Dissolved Oxygen (mg/ℓ)	10.8
Temperature (° C)	6.5
Conductivity (µmhos/cm)	240
pH (pH units)	8.6
Color (color units)	> 500
Turbidity (NTU)	94.0
T. Hardness (mg $CaCO_3$/ℓ)	239.4
Nitrate (mg/ℓ N)	below detection limit
Orthophosphate (mg/ℓ P)	below detection limit
Bottom Type (%)	75 boulder, 25 cobble
Bank Stability (%)	72
Aquatic Vegetation (P/A)	A
Riparian Vegetation (%)	74 willow, 18 spruce, 8 aspen
Cover (%)	1
Fish Block(s)	none observed

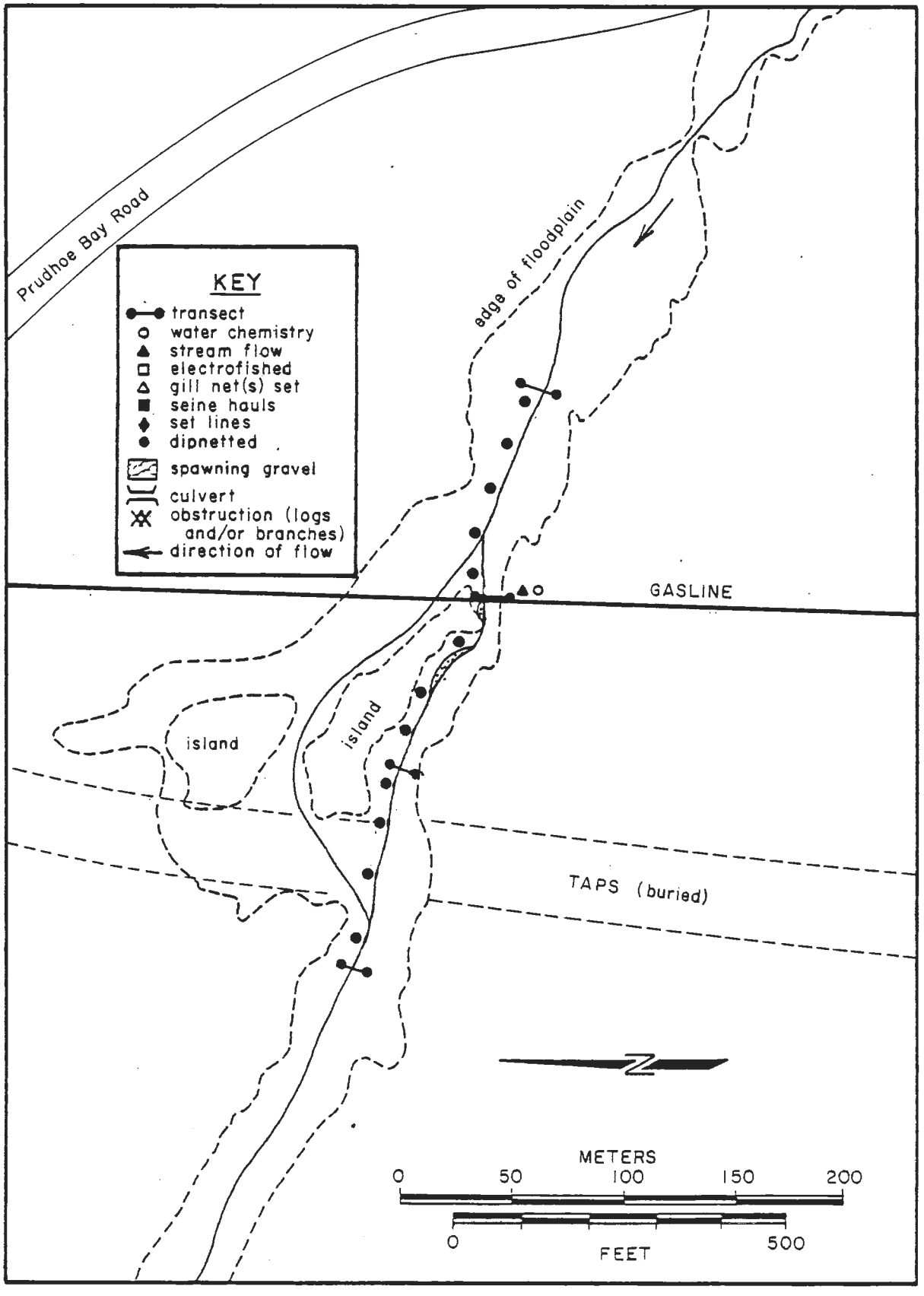

Figure 40. Spring survey. Buff Creek, 28 May 1981.

SPRING SURVEY FORM

WATERBODY

Waterbody: Homewood Spring Source: Montane Drainage

Main Drainage: Middle Fork Koyukuk River Tributary to: Dietrich River

Figure: 41 Elevation: 640 m

NPAS: 34 NPMP: 188.4-188.7 NPRX: 034-2 AHMP: NA

USGS Map Reference: Chandalar, AK T: 36N R: 10W Sec: 10

Site Access: Truck

Section Surveyed: 100 m upstream to 400 m downstream of proposed pipeline crossing

ASSESSMENT

Homewood Spring originates from several spring sources approximately 170 m east of the vicinity of the proposed pipeline crossing. These springs form a shallow, braided stream that flows approximately 0.5 km before entering the Dietrich River. Riparian vegetation is composed of willows, spruce, ledum, sedges, and mosses. The substrate consists of all size fractions from fines to boulders. Potential fish blocks consist of a section of steep, terraced falls immediately upstream of the northernmost crossing. Dwonstream of the falls the gradient is slight and upstream of that point the gradient is steep.

Homewood Spring provides excellent habitat for fish at this time of year. From the falls to the culvert under the Prudhoe Bay Road, the stream bed has potential spawning gravel. Fishing efforts resulted in 17 grayling, eight Dolly Varden and one slimy sculpin. This section of the stream is considered to be an important feeding and rearing area for these species during the spring.

FISH

Waterbody: Homewood Spring NPRX: 034-2

Date: 28 May 1981

Fish Present: yes

Gear/Effort: EF (9/848 sec); visual (17/200 m)

Species Present	Quantity Fry	Quantity Other	Length (mm) Fry	Length (mm) Other
grayling		17		100-200
slimy sculpin		1		105
Dolly Varden		8		118-177

PHYSICAL CONDITIONS

Date	28 May 1981
Wetted Width (m)	1.5-8.5
Depth (cm)	2-45
Discharge (m^3/s)	0.1582
Dissolved Oxygen (mg/ℓ)	10.3
Temperature (° C)	6.0
Conductivity (μmhos/cm)	170
pH (pH units)	8.6
Color (color units)	50
Turbidity (NTU)	14.0
T. Hardness (mg $CaCO_3$/ℓ)	153.9
Nitrate (mg/ℓ N)	below detection limit
Orthophosphate (mg/ℓ P)	below detection limit
Bottom Type (%)	19 fines, 14 sand, 14 gravel, 22 pebble, 24 cobble, 7 boulder
Bank Stability (%)	99
Aquatic Vegetation (P/A)	A
Riparian Vegetation (%)	62 willow, 15 spruce, 10 ledum, 8 sedge, 5 mosses
Cover (%)	4
Fish Block(s)	steep, terraced falls at northernmost crossing

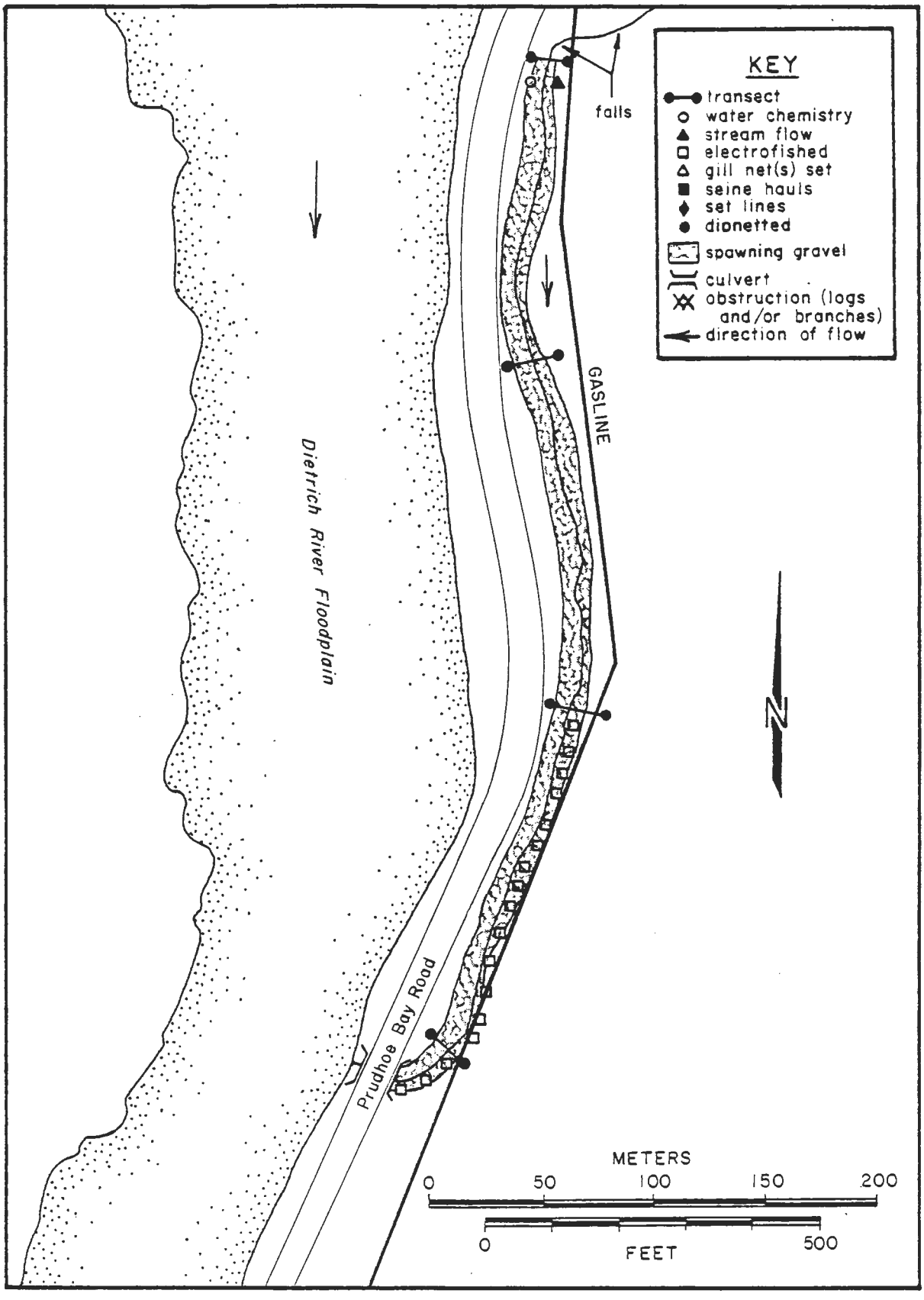

Figure 41. Spring survey. Homewood Spring, 28 May 1981.

SPRING SURVEY FORM

WATERBODY

Waterbody: Overwintering Creek Source: Montane Drainage

Main Drainage: Middle Fork Koyukuk River Tributary to: Dietrich River

Figure: 42 Elevation: 695 m

NPAS: 33 NPMP: 186.9 NPRX: 033-7 AHMP: NA

USGS Map Reference: Chandalar, AK T: 37N R: 10W Sec: 35

Site Access: Truck

Section Surveyed: 100 m upstream to 170 m downstream of proposed pipeline crossing

ASSESSMENT

Overwintering Creek is a small, spring-fed stream that lies in the Dietrich River floodplain. Upstream of the proposed pipeline crossing, the stream is a flooded, marshy area. Downstream of the Prudhoe Bay Road the stream is confined to a well defined channel. Riparian vegetation is sedges, willows, mosses, and some spruce. The substrate is varied, and consists of fines and detritus, sand, gravel, pebbles, cobbles, and boulders. Upstream of the crossing the gradient is slight; downstream of the crossing the gradient is moderate. No potential fish blocks were observed in the surveyed area.

Overwintering Creek provides good fish habitat in spring. Fishing efforts yielded three grayling and ten slimy sculpin. The grayling were captured in the flooded area upstream of the crossing, while the slimy sculpin were mainly confined to the faster-flowing area downstream of the Prudhoe Bay Road. Potential sculpin spawning gravels exist downstream of the Prudhoe Bay Road to the Dietrich River. Previous documentation of fish use of this stream exists (Ref. 11, 30 and 40). This stream is considered to be important to fish in spring as well as all other portions of the year.

FISH

Waterbody: Overwintering Creek NPRX: 033-7

Date: 29 May 1981

Fish Present: yes

Gear/Effort: EF (6/457 sec); visual (7/100 m)

Species Present	Quantity		Length (mm)	
	Fry	Other	Fry	Other
grayling		3		50-130
slimy sculpin		10		40-103

PHYSICAL CONDITIONS

Date	29 May 1981
Wetted Width (m)	0.9-9.5
Depth (cm)	5-85
Discharge (m^3/s)	0.0886
Dissolved Oxygen (mg/ℓ)	8.5
Temperature (° C)	9.8
Conductivity (μmhos/cm)	245
pH (pH units)	8.6
Color (color units)	50
Turbidity (NTU)	1.5
T. Hardness (mg $CaCO_3$/ℓ)	171.0
Nitrate (mg/ℓ N)	below detection limit
Orthophosphate (mg/ℓ P)	below detection limit
Bottom Type (%)	30 fines/detritus, 5 sand, 10 gravel, 30 pebble, 19 cobble, 6 boulder
Bank Stability (%)	100
Aquatic Vegetation (P/A)	P
Riparian Vegetation (%)	50 sedge, 25 willow, 20 mosses, 5 spruce
Cover (%)	2
Fish Block(s)	none observed

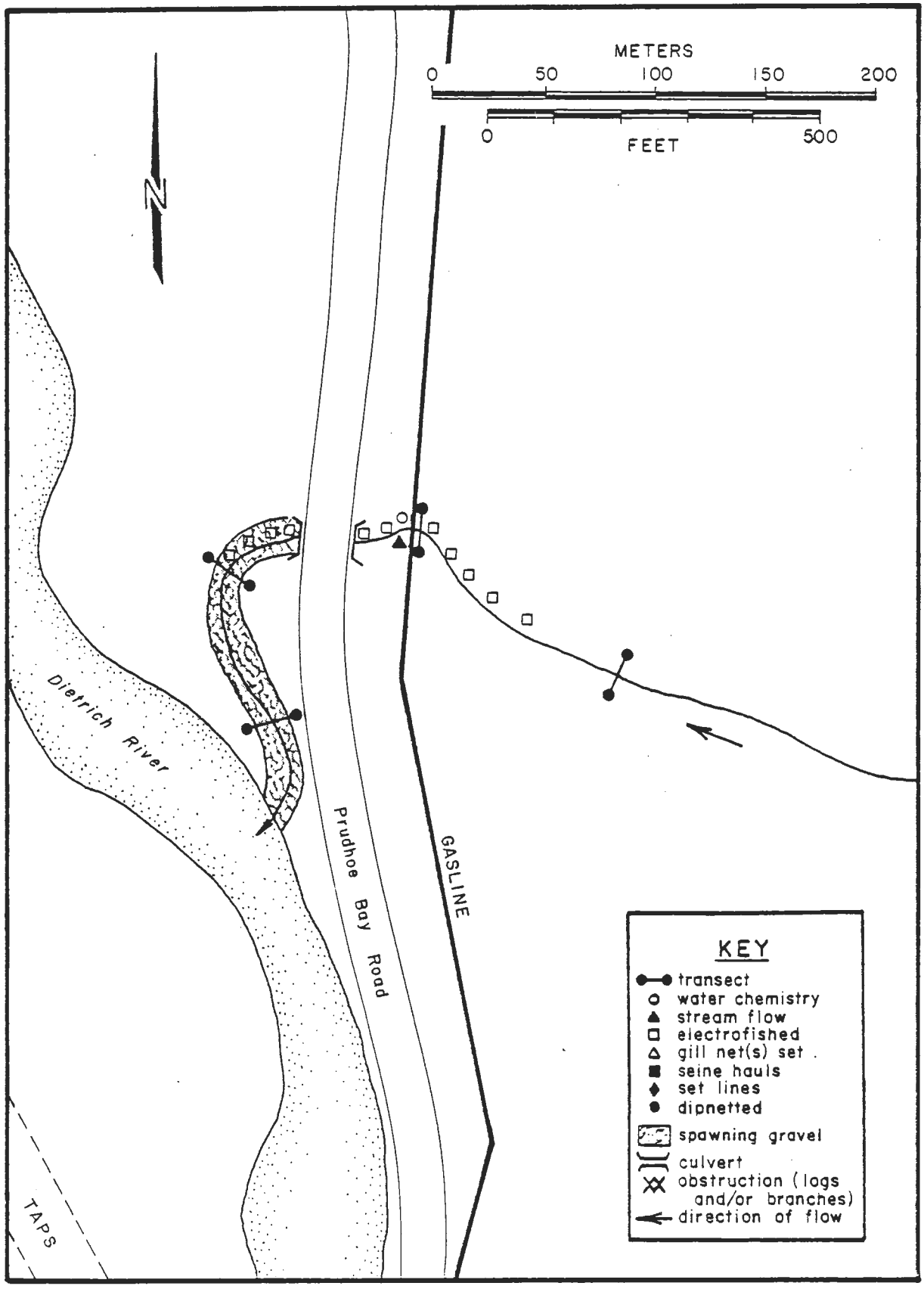

Figure 42. Spring survey. Overwintering Creek, 29 May 1981.

SPRING SURVEY FORM

WATERBODY

Waterbody: Wetfoot Creek Source: Montane Drainage/Spring-fed

Main Drainage: Middle Fork Koyukuk River Tributary to: Dietrich River

Figure: 43 Elevation: 710 m

NPAS: 33 NPMP: 184.0 NPRX: 033-2 AHMP: NA

USGS Map Reference: Philip Smith Mountains, AK T: 16S R: 10E Sec: 36

Site Access: Truck

Section Surveyed: 150 m upstream to 70 m downstream of proposed pipeline crossing

ASSESSMENT

Wetfoot Creek is a moderate-sized, spring-fed stream that originates in the Endicott Mountains and flows southeasterly to join the Dietrich River approximately 150 m downstream of the proposed pipeline crossing. The stream is confined to a braided channel with banks and islands vegetated with willow, spruce, and alder. The substrate is primarily boulders and cobbles with some pebbles. The gradient is steep throughout the surveyed area. No potential fish blocks were observed. Approximately 130 m upstream from the crossing the stream has diverged and cut a new channel down an AMS road.

No fish use was observed during the 1981 spring survey. Fish habitat was marginal at this time due to high water velocities, a lack of backwater areas, and high turbidity. Fish use has been documented for the fall (Ref. 122), and fish probably use this stream after spring runoff has subsided. The documented species include grayling, Dolly Varden, and round whitefish.

FISH

Waterbody: Wetfoot Creek NPRX: 033-2

Date: 29 May 1981

Fish Present: no

Gear/Effort: DN (0/40 m^2)

Species Present	Quantity		Length (mm)	
	Fry	Other	Fry	Other

PHYSICAL CONDITIONS

Date	29 May 1981
Wetted Width (m)	2-15
Depth (cm)	20-95
Discharge (m^3/s)	2.8581
Dissolved Oxygen (mg/ℓ)	11.6
Temperature (° C)	2.8
Conductivity (μmhos/cm)	105
pH (pH units)	8.6
Color (color units)	> 500
Turbidity (NTU)	94.0
T. Hardness (mg $CaCO_3$/ℓ)	85.5
Nitrate (mg/ℓ N)	below detection limit
Orthophosphate (mg/ℓ P)	below detection limit
Bottom Type (%)	7 pebble, 43 cobble, 50 boulder
Bank Stability (%)	88
Aquatic Vegetation (P/A)	A
Riparian Vegetation (%)	67 willow, 17 spruce, 16 alder
Cover (%)	0
Fish Block(s)	none observed

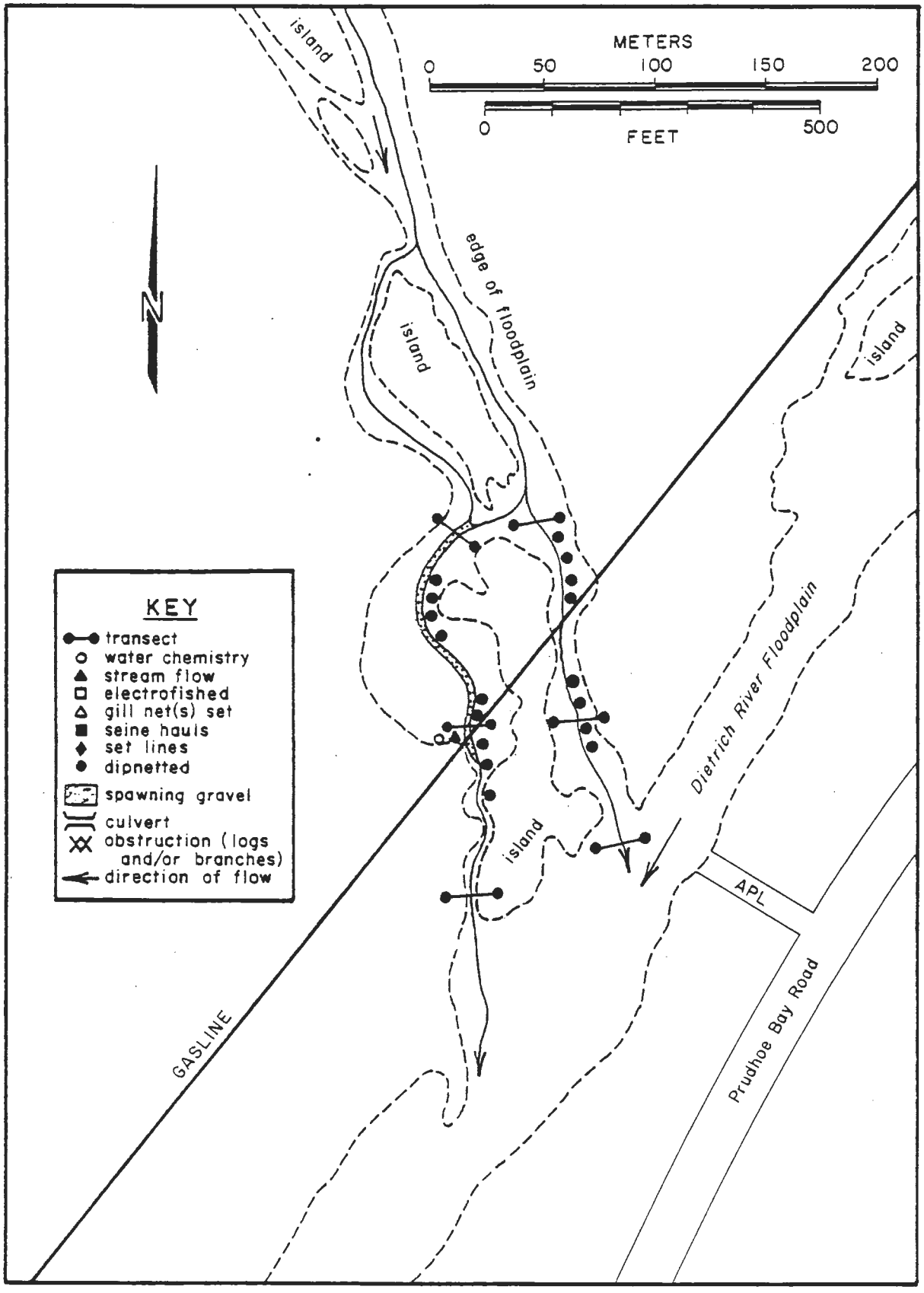

Figure 43. Spring survey. Wetfoot Creek, 29 May 1981.

SPRING SURVEY FORM

WATERBODY

Waterbody: West Branch of North Fork of Chandalar River Source: Montane Drainage

Main Drainage: Yukon River Tributary to: Chandalar River

Figure: 44 Elevation: 1146 m

NPAS: 31 NPMP: 175.4 NPRX: 031-3 AHMP: NA

USGS Map Reference: Philip Smith Mountain, AK T: 15S R: 11E Sec: 26

Site Access: Truck

Section Surveyed: 100 m upstream to 200 m downstream of proposed pipeline crossing

ASSESSMENT

The West Branch of North Fork of Chandalar River is a moderate-sized, fast flowing stream confined to a braided channel with banks sparsely vegetated with willows. The substrate is predominantly boulders and cobbles with some pebbles and gravel and the stream gradient is steep throughout the surveyed area. No potential fish blocks were observed.

No fish use was observed during the 1981 spring survey. Fish habitat was adequate at this time, but high water velocities may have made sampling efforts less effective. High water velocities may have also limited fish access or use in the surveyed portion of the stream. No additional information is available for this stream

FISH

Waterbody: West Branch of North Fork of Chandalar River NPRX: 031-3

Date: 30 May 1981

Fish Present: no

Gear/Effort: DN (0/30 m^2); visual (0/300 m)

Species Present	Quantity Fry	Quantity Other	Length (mm) Fry	Length (mm) Other

PHYSICAL CONDITIONS

Date	30 May 1981
Wetted Width (m)	2.5-5.0
Depth (cm)	15-70
Discharge (m^3/s)	1.4204
Dissolved Oxygen (mg/ℓ)	11.0
Temperature (° C)	2.0
Conductivity (µmhos/cm)	60
pH (pH units)	8.2
Color (color units)	50
Turbidity (NTU)	12.0
T. Hardness (mg $CaCO_3$/ℓ)	51.3
Nitrate (mg/ℓ N)	below detection limit
Orthophosphate (mg/ℓ P)	below detection limit
Bottom Type (%)	38 boulder, 36 cobble, 18 pebble, 8 gravel
Bank Stability (%)	100
Aquatic Vegetation (P/A)	A
Riparian Vegetation (%)	100 willow
Cover (%)	0
Fish Block(s)	none observed

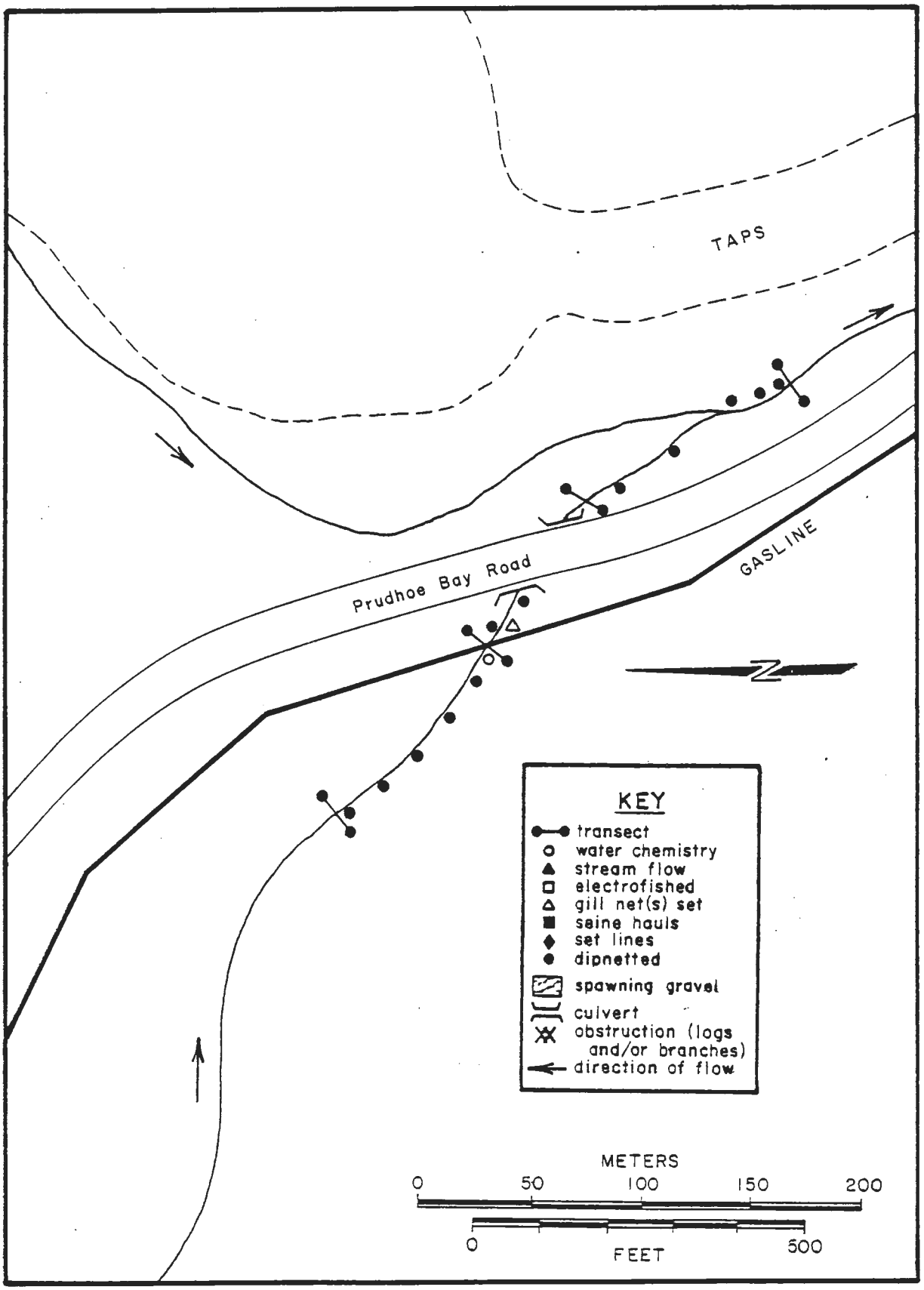

Figure 44. Spring survey. West Branch of North Fork of Chandalar River, 30 May 1981.

SPRING SURVEY FORM

WATERBODY

Waterbody: East Creek Source: Montane Drainage

Main Drainage: Sagavanirktok River Tributary to: Atigun River

Figure: 45 Elevation: 1158 m

NPAS: 31 NPMP: 171.8 NPRX: 031-2 AHMP: NA

USGS Map Reference: Philip Smith Mountains, AK T: 15S R: 12E Sec: 19

Site Access: Truck

Section Surveyed: 150 m upstream to 170 m downstream of proposed pipeline crossing

ASSESSMENT

East Creek is a moderate-sized, fast-flowing stream flowing northward, and confined to a braided channel. Its banks are sparsely vegetated with sedges, mosses, and other alpine tundra flora. The substrate is predominantly pebbles, cobbles, and gravel with some sand. The stream gradient is steep throughout the surveyed area. No potential fish blocks were observed. Some shelf ice was present in the area immediately upstream and downstream of the proposed pipeline crossing.

No fish use was observed during the 1981 spring survey. Fish habitat was poor to marginal at this time. High instream water velocities and a lack of backwater areas may preclude fish use at this time of year. No information on fish use is available for this stream.

FISH

Waterbody: East Creek NPRX: 031-2

Date: 30 May 1981

Fish Present: no

Gear/Effort: visual (0/250 m)

Species Present	Quantity Fry	Quantity Other	Length (mm) Fry	Length (mm) Other

PHYSICAL CONDITIONS

Date	30 May 1981
Wetted Width (m)	1.7-9.5
Depth (cm)	5-50
Discharge (m^3/s)	0.5466
Dissolved Oxygen (mg/ℓ)	12.8
Temperature (° C)	-0.5
Conductivity (μmhos/cm)	52
pH (pH units)	8.8
Color (color units)	50
Turbidity (NTU)	13.0
T. Hardness (mg $CaCO_3$/ℓ)	51.3
Nitrate (mg/ℓ N)	below detection limit
Orthophosphate (mg/ℓ P)	below detection limit
Bottom Type (%)	8 sand, 30 gravel, 42 pebble, 20 cobble
Bank Stability (%)	98
Aquatic Vegetation (P/A)	A
Riparian Vegetation (%)	75 sedge, 13 mosses, 12 alpine tundra
Cover (%)	1
Fish Block(s)	none observed

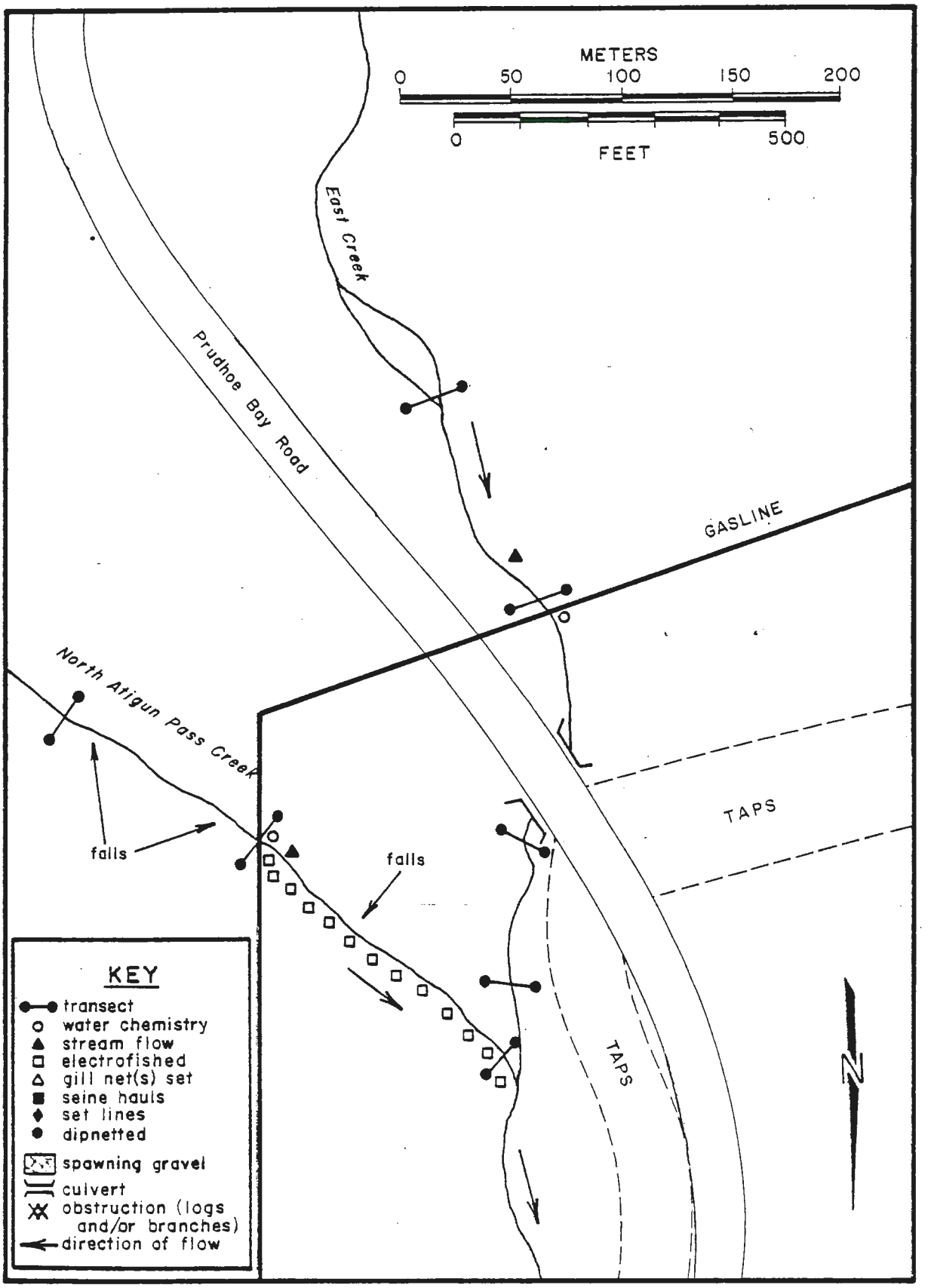

Figure 45. Spring survey. East Creek and North Atigun Pass Creek, 30 May 1981.

SPRING SURVEY FORM

WATERBODY

Waterbody: North Atigun Pass Creek Source: Montane Drainage

Main Drainage: Sagavanirktok River Tributary to: Atigun River

Figure: 45 Elevation: 1160 m

NPAS: 31 NPMP: 171.6 NPRX: 031-1 AHMP: NA

USGS Map Reference: Philip Smith Mountains, AK T: 15S R: 12E Sec: 18

Site Access: Truck

Section Surveyed: 100 m upstream to 100 m downstream of proposed pipeline crossing

ASSESSMENT

North Atigun Pass Creek is a moderate-size, fast-flowing stream confined to a briaded channel with low banks sparsely vegetated with mosses and grasses (revegetated). The substrate is predominantly gravel, pebbles, and cobbles with lesser proportions of boulders and sand. The stream gradient is steep throughout the surveyed area. Potential fish blocks consist of small falls upstream and downstream of the crossing. A small amount of ice was remaining on the banks. This stream joins East Creek approximately 160 m downstream of the proposed pipeline crossing.

No fish use was observed during the 1981 spring survey. Fish habitat was marginal at this time. High instream water velocities may preclude fish use during this time of year. No fish use has been previously documented in this stream.

FISH

Waterbody: North Atigun Pass Creek NPRX: 031-1

Date: 31 May 1981

Fish Present: no

Gear/Effort: EF (0/454 sec); visual (0/100 m)

Species Present	Quantity		Length (mm)	
	Fry	Other	Fry	Other

PHYSICAL CONDITIONS

Date	31 May 1981
Wetted Width (m)	0.8-7.2
Depth (cm)	7-45
Discharge (m^3/s)	0.1352
Dissolved Oxygen (mg/ℓ)	13.4
Temperature (° C)	0.8
Conductivity (μmhos/cm)	32
pH (pH units)	9.2
Color (color units)	20
Turbidity (NTU)	5.6
T. Hardness (mg $CaCO_3$/ℓ)	34.2
Nitrate (mg/ℓ N)	below detection limit
Orthophosphate (mg/ℓ P)	below detection limit
Bottom Type (%)	4 sand, 33 gravel, 33 pebble, 20 cobble, 10 boulder
Bank Stability (%)	100
Aquatic Vegetation (P/A)	A
Riparian Vegetation (%)	50 mosses, 50 grass (revegetated)
Cover (%)	0
Fish Block(s)	none observed

SPRING SURVEY FORM

WATERBODY

Waterbody: Unnamed Creek Source: Montane Drainage

Main Drainage: Sagavanirktok River Tributary to: Atigun River

Figure: 46 Elevation: 856 m

NPAS: 29 NPMP: 160.0 NPRX: 029-3 AHMP: NA

USGS Map Reference: Philip Smith Mountains, AK T: 13S R: 12E Sec: 21

Site Access: Truck

Section Surveyed: 100 m upstream to 150 m downstream of proposed pipeline crossing

ASSESSMENT

Unnamed Creek (NPMP 160.0) is a small stream of montane/tundra origin. The streambed is a marshy area vegetated with willows and sedges. The substrate is mainly fines and cobbles with lesser proportions of gravels, pebbles, and boulders. The gradient is moderate throughout the surveyed area. Potential fish blocks consisted of falls immediately upstream and downstream of the proposed pipeline crossing. Flow becomes discontinuous approximately 40 m upstream from the crossing.

No fish use was observed during the 1981 spring survey and fish habitat was marginal to poor at this time. No additional information exists for this stream.

FISH

Waterbody: Unnamed Creek NPRX: 029-3

Date: 31 May 1981

Fish Present: no

Gear/Effort: EF (0/182 sec); visual (0/75 m)

Species Present	Quantity		Length (mm)	
	Fry	Other	Fry	Other

PHYSICAL CONDITIONS

Date	31 May 1981
Wetted Width (m)	0-4.2
Depth (cm)	0-32
Discharge (m^3/s)	below detection limit
Dissolved Oxygen (mg/ℓ)	10.2
Temperature (° C)	7.5
Conductivity (μmhos/cm)	150
pH (pH units)	9.0
Color (color units)	75
Turbidity (NTU)	18.0
T. Hardness (mg $CaCO_3$/ℓ)	136.8
Nitrate (mg/ℓ N)	below detection limit
Orthophosphate (mg/ℓ P)	below detection limit
Bottom Type (%)	45 fines, 3 gravel, 15 pebble, 22 cobble, 15 boulder
Bank Stability (%)	100
Aquatic Vegetation (P/A)	P
Riparian Vegetation (%)	73 willow, 27 sedge
Cover (%)	20
Fish Block(s)	terraced falls above and below crossing

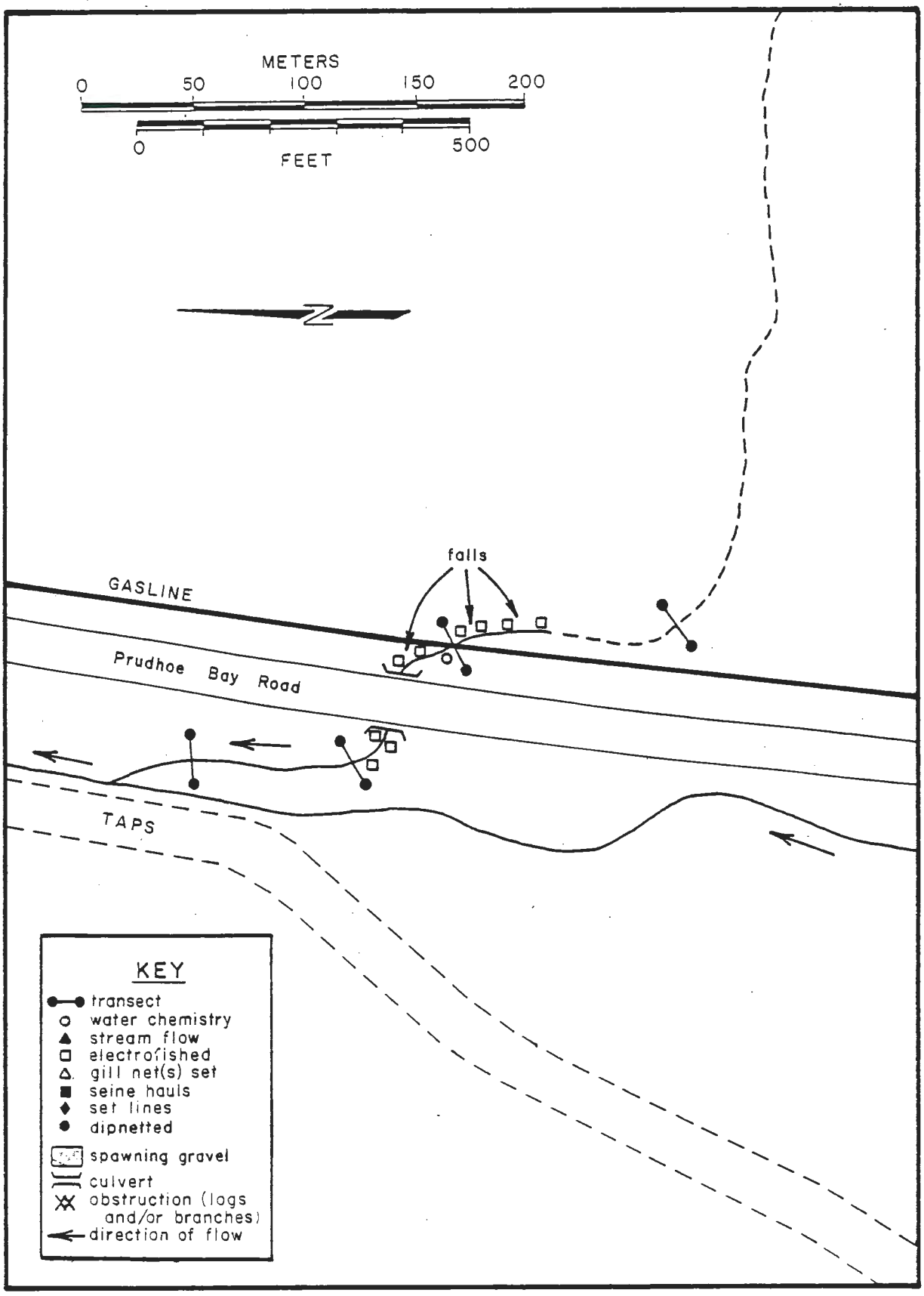

Figure 46. Spring survey. Unnamed Creek (NPMP 160.0), 31 May 1981.

SPRING SURVEY FORM

WATERBODY

Waterbody: Unnamed Creek Source: Montane/Tundra Drainage

Main Drainage: Sagavanirktok River Tributary to: Atigun River

Figure: 47 Elevation: 845 m

NPAS: 29 NPMP: 159.6 NPRX: 029-2 AHMP: NA

USGS Map Reference: Philip Smith Mountains, AK T: 13S R: 12E Sec: 21

Site Access: Truck

Section Surveyed: 100 m upstream to 180 m downstream of proposed pipeline crossing

ASSESSMENT

Unnamed Creek (NPMP 159.6) is a small stream that flows westerly over an alluvial fan to join the Atigun River. The stream bed is a wide marshy area and flow was very low. The stream bed and banks are vegetated with sedges and willows. The substrate is predominantly fines and detritus with small proportions of large size fractions present. No potential fish blocks were observed. Stream gradient was slight throughout the surveyed area.

Due to low flow, fish habitat in this stream was marginal at the time of the survey. However, six grayling were observed in a small pond fed by the stream just north of the low water crossing on the TAPS pad, Although instream fish habitat was marginal, the pond may be used as a rearing area. Grayling have been previously documented in this stream (Ref. 128).

FISH

Waterbody: Unnamed Creek NPRX: 029-2

Date: 1 June 1981

Fish Present: yes

Gear/Effort: visual (6/280 m)

Species Present	Quantity Fry	Quantity Other	Length (mm) Fry	Length (mm) Other
grayling		6		80-160

PHYSICAL CONDITIONS

Date	1 June 1981
Wetted Width (m)	0.65-15.0
Depth (cm)	5-44
Discharge (m^3/s)	below detection limit
Dissolved Oxygen (mg/ℓ)	9.5
Temperature (° C)	5.5
Conductivity (μmhos/cm)	75
pH (pH units)	9.0
Color (color units)	30
Turbidity (NTU)	2.4
T. Hardness (mg $CaCO_3$/ℓ)	68.4
Nitrate (mg/ℓ N)	below detection limit
Orthophosphate (mg/ℓ P)	below detection limit
Bottom Type (%)	78 fines/detritus, 5 gravel, 7 pebble, 7 cobble, 3 boulder
Bank Stability (%)	100
Aquatic Vegetation (P/A)	P
Riparian Vegetation (%)	80 sedge, 20 willow
Cover (%)	70
Fish Block(s)	none observed

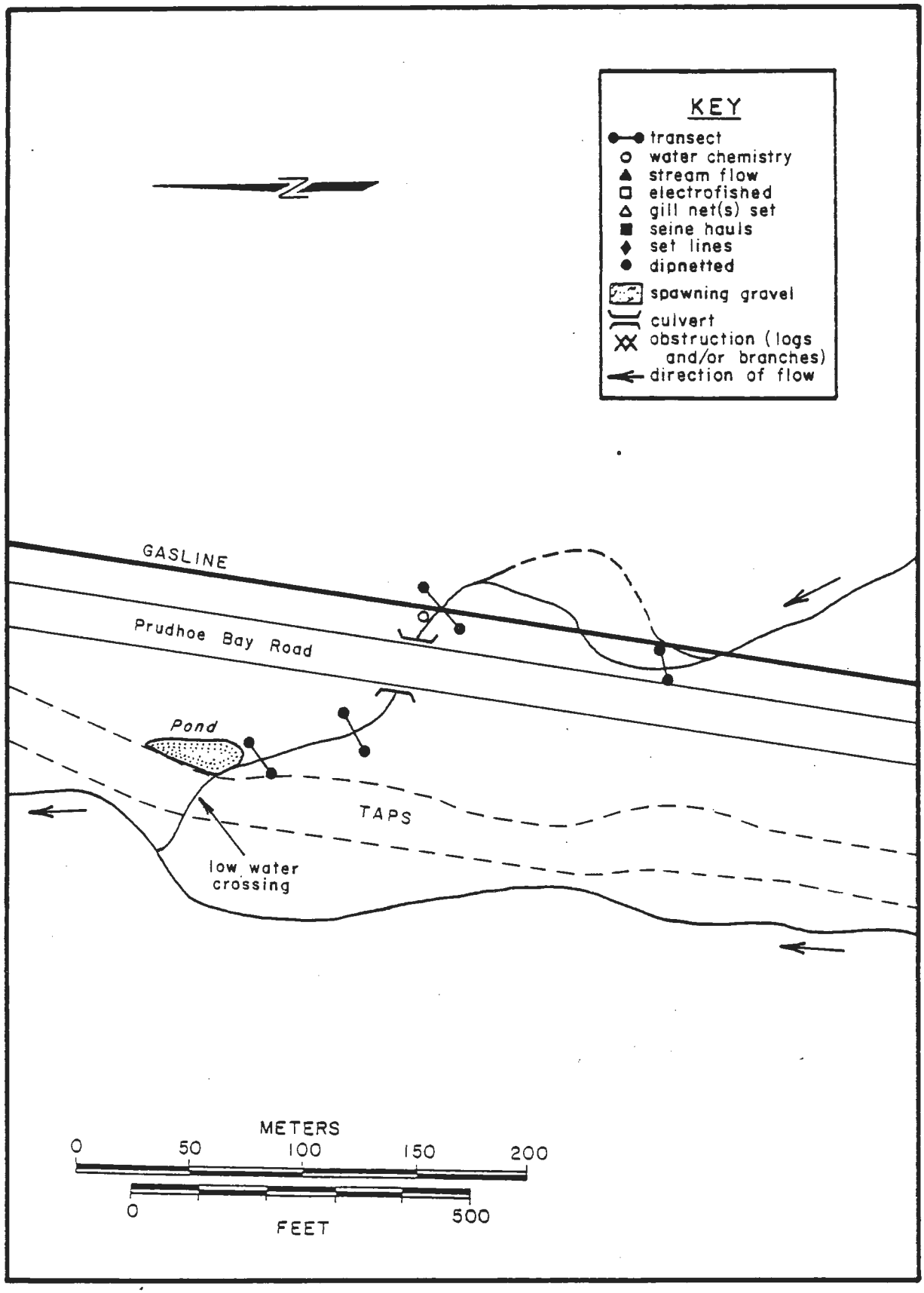

Figure 47. Spring survey. Unnamed Creek (NPMP 159.6), 1 June 1981.

SPRING SURVEY FORM

WATERBODY

Waterbody: Bicycle Creek Source: Montane/Tundra Drainage

Main Drainage: Sagavanirktok River Tributary to: Atigun River

Figure: 48 Elevation: 846 m

NPAS: 29 NPMP: 159.5 NPRX: 029-1 AHMP: NA

USGS Map Reference: Philip Smith Mountains, AK T: 13S R: 12E Sec: 21

Site Access: Truck

Section Surveyed: 150 m upstream to 160 m downstream of proposed pipeline crossing

ASSESSMENT

Bicycle Creek is a small stream that flows over an alluvial fan to join the Atigun River just west of the Prudhoe Bay Road. The stream is confined to a well defined channel east of the TAPS pad. West of this point the channel becomes less distinct. The stream banks are vegetated with sedges, willows, and mosses. The substrate is predominantly fines and detritus with some of the larger size fractions present. Potential fish blocks consist of falls approximately 110-150 m upstream of the crossing. The stream gradient is moderate throughout the surveyed area.

No fish use was observed during the 1981 spring survey. Fish habitat was generally poor at this time. Grayling have been documented in Bicycle Creek (Ref. 128), and the stream may be used as a rearing area by this species to a limited extent.

FISH

Waterbody: Bicycle Creek NPRX: 029-1

Date: 1 June 1981

Fish Present: no

Gear/Effort: EF (0/220 sec); visual (0/50 m)

Species Present	Quantity		Length (mm)	
	Fry	Other	Fry	Other

PHYSICAL CONDITIONS

Date	1 June 1981
Wetted Width (m)	0.6-12
Depth (cm)	4-37
Discharge (m^3/s)	0.0110
Dissolved Oxygen (mg/ℓ)	14.0
Temperature (° C)	1.0
Conductivity (μmhos/cm)	35
pH (pH units)	9.1
Color (color units)	30
Turbidity (NTU)	17.0
T. Hardness (mg $CaCO_3$/ℓ)	34.2
Nitrate (mg/ℓ N)	below detection limit
Orthophosphate (mg/ℓ P)	below detection limit
Bottom Type (%)	48 fines/detritus, 2 sand, 12 gravel, 9 pebble, 9 cobble, 20 boulder
Bank Stability (%)	100
Aquatic Vegetation (P/A)	P
Riparian Vegetation (%)	70 sedge, 25 willow, 5 mosses
Cover (%)	8
Fish Block(s)	falls (110-150 m upstream of crossing)

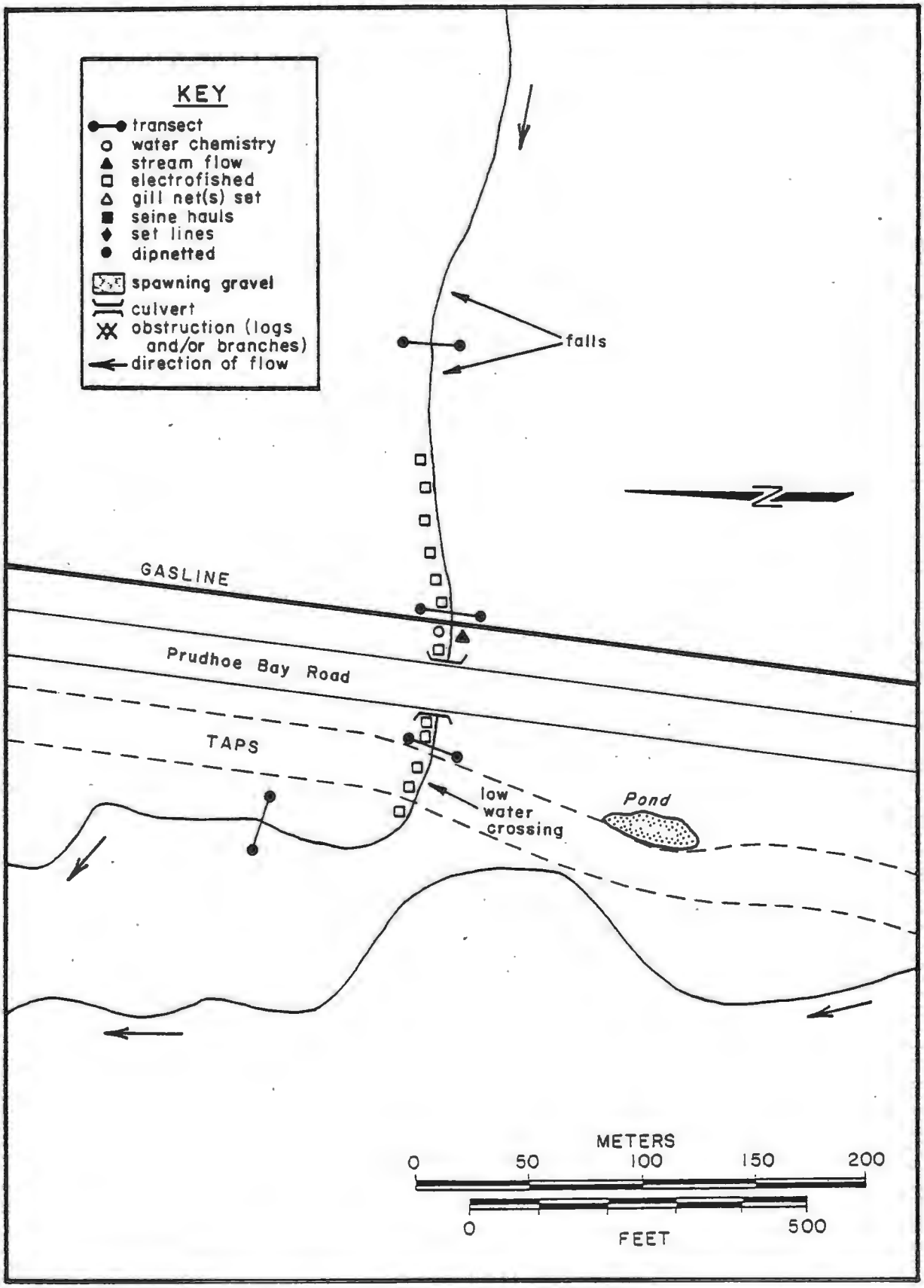

Figure 48. Spring survey. Bicycle Creek, 1 June 1981.

SPRING SURVEY FORM

WATERBODY

Waterbody: Waterhole Creek Source: Montane/Tundra Drainage

Main Drainage: Sagavanirktok River Tributary to: Atigun River

Figure: 49 Elevation: 853 m

NPAS: 28 NPMP: 158.8 NPRX: 028-2 AHMP: NA

USGS Map Reference: Philip Smith Mountains, AK T: 13S R: 12E Sec: 21

Site Access: Truck

Section Surveyed: 100 m upstream to 200 m downstream of proposed pipeline crossing

ASSESSMENT

Waterhole Creek is a small stream draining a montane/tundra area and flows into the Atigun River. Stream flow is subterranean until it emerges approximately 20 m downstream of the proposed pipeline crossing. From this point the stream is confined to a well defined channel whose banks are vegetated with sedges, willows, and mosses. The substrate is predominantly cobbles and boulders with some pebbles, gravel and sand. The only potential fish blocks were the discontinuous flow observed just downstream of the crossing, and a series of terraced falls downstream of the low water crossing on the TAPS pad. There was some shelf ice remaining on the stream banks approximately 200 m downstream of the crossing. The gradient is steep throughout the surveyed area.

Waterhole Creek provides good fish habitat and potential grayling spawning gravels exist downstream of the falls below the TAPS pad. Fishing efforts produced two adult grayling. Both fish were caught downstream from the TAPS pad. This stream has also been documented as a rearing area for grayling (Ref. 128).

FISH

Waterbody: Waterhole Creek NPRX: 028-2

Date: 1 June 1981

Fish Present: yes

Gear/Effort: EF (2/406 sec); visual (0/75 m)

Species Present	Quantity		Length (mm)	
	Fry	Other	Fry	Other
grayling		2		290,300

PHYSICAL CONDITIONS

Date	1 June 1981
Wetted Width (m)	1.2-10.4
Depth (cm)	5-70
Discharge (m^3/s)	0.1468
Dissolved Oxygen (mg/ℓ)	11.2
Temperature (° C)	2.0
Conductivity (μmhos/cm)	100
pH (pH units)	8.3
Color (color units)	10
Turbidity (NTU)	0.9
T. Hardness (mg $CaCO_3$/ℓ)	85.5
Nitrate (mg/ℓ N)	below detection limit
Orthophosphate (mg/ℓ P)	below detection limit
Bottom Type (%)	3 sand, 7 gravel, 20 pebble, 40 cobble, 30 boulder
Bank Stability (%)	100
Aquatic Vegetation (P/A)	A
Riparian Vegetation (%)	50 sedge, 40 willow, 10 mosses
Cover (%)	0
Fish Block(s)	discontinuous flow - stream emerges ~ 20 m downstream of crossing; terraced falls below TAPS pad

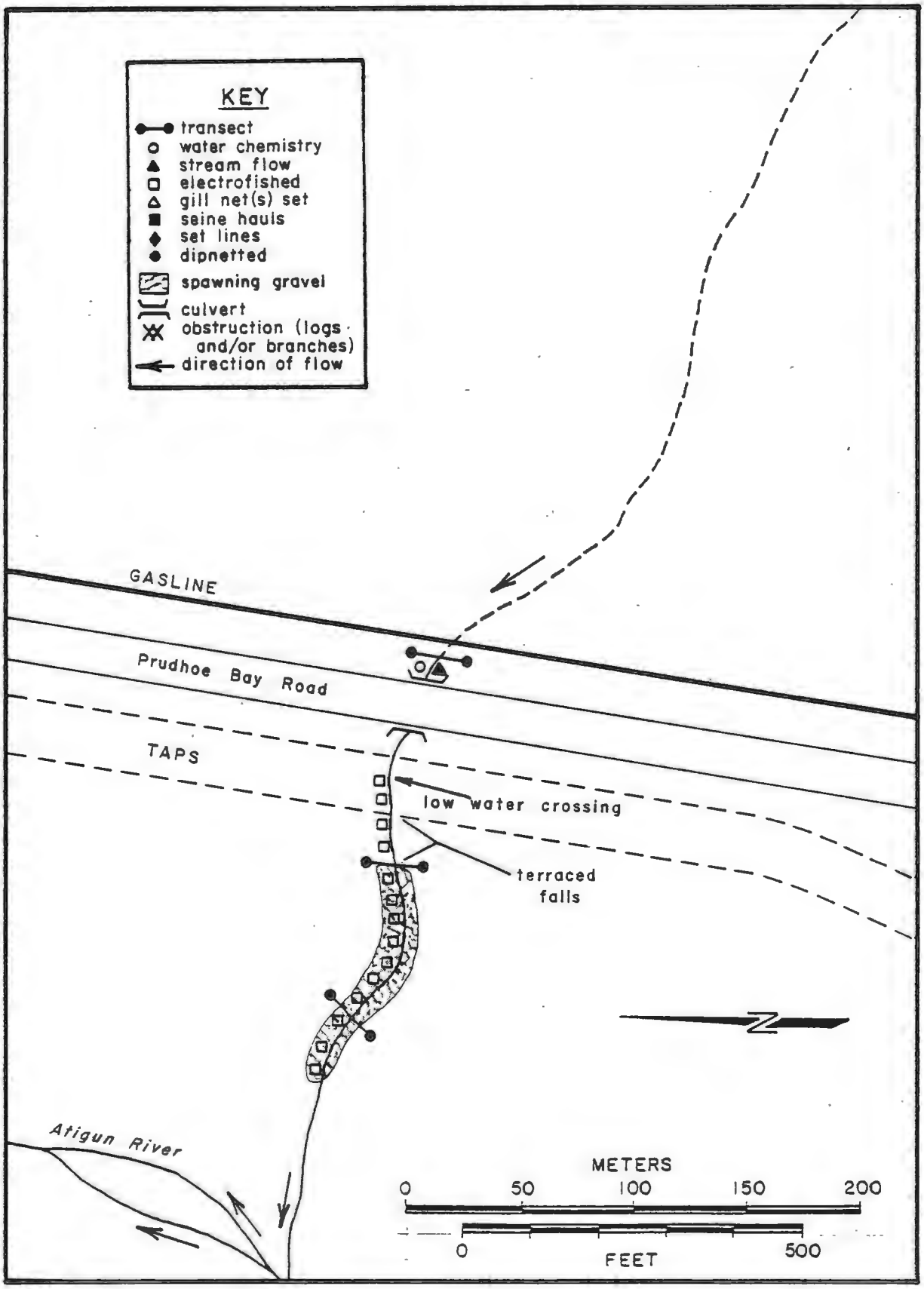

Figure 49. Spring survey. Waterhole Creek, 1 June 1981.

SPRING SURVEY FORM

WATERBODY

Waterbody: Jill Creek Source: Tundra Drainage

Main Drainage: Colville River Tributary to: Itkillik River

Figure: 50 Elevation: 905 m

NPAS: 25 NPMP: 141.6 NPRX: 025-9 AHMP: NA

USGS Map Reference: Philip Smith Mountains, AK T: 10S R: 11E Sec: 26

Site Access: Truck

Section Surveyed: 120 m upstream to 170 m downstream of proposed pipeline crossing

ASSESSMENT

Jill Creek is a small, beaded tundra stream drainaing a wet tundra area. Riparian vegetation is predominantly sedges with some willows. The substrate is fines and detritus. The stream gradient is moderate throughout the surveyed area. Potential fish blocks consist of small falls above and below the crossing, usually spilling into deep pools.

Although no fish use was observed during the 1981 spring survey, Jill Creek can be considered good fish habitat throughout the surveyed area. Grayling have been documented in Jill Creek during the summer (Ref. 30 and 128).

FISH

Waterbody: Jill Creek NPRX: 025-9

Date: 31 May 1981

Fish Present: no

Gear/Effort: EF (0/710 sec)

Species Present	Quantity Fry	Quantity Other	Length (mm) Fry	Length (mm) Other

PHYSICAL CONDITIONS

Date	31 May 1981
Wetted Width (m)	0.6-3.8
Depth (cm)	10-170
Discharge (m^3/s)	0.0294
Dissolved Oxygen (mg/ℓ)	10.6
Temperature (° C)	5.0
Conductivity (μmhos/cm)	18
pH (pH units)	8.3
Color (color units)	75
Turbidity (NTU)	5.0
T. Hardness (mg $CaCO_3$/ℓ)	17.1
Nitrate (mg/ℓ N)	below detection limit
Orthophosphate (mg/ℓ P)	below detection limit
Bottom Type (%)	100 fines/detritus
Bank Stability (%)	100
Aquatic Vegetation (P/A)	P
Riparian Vegetation (%)	75 sedge, 25 willow
Cover (%)	12
Fish Block(s)	falls above and below crossing

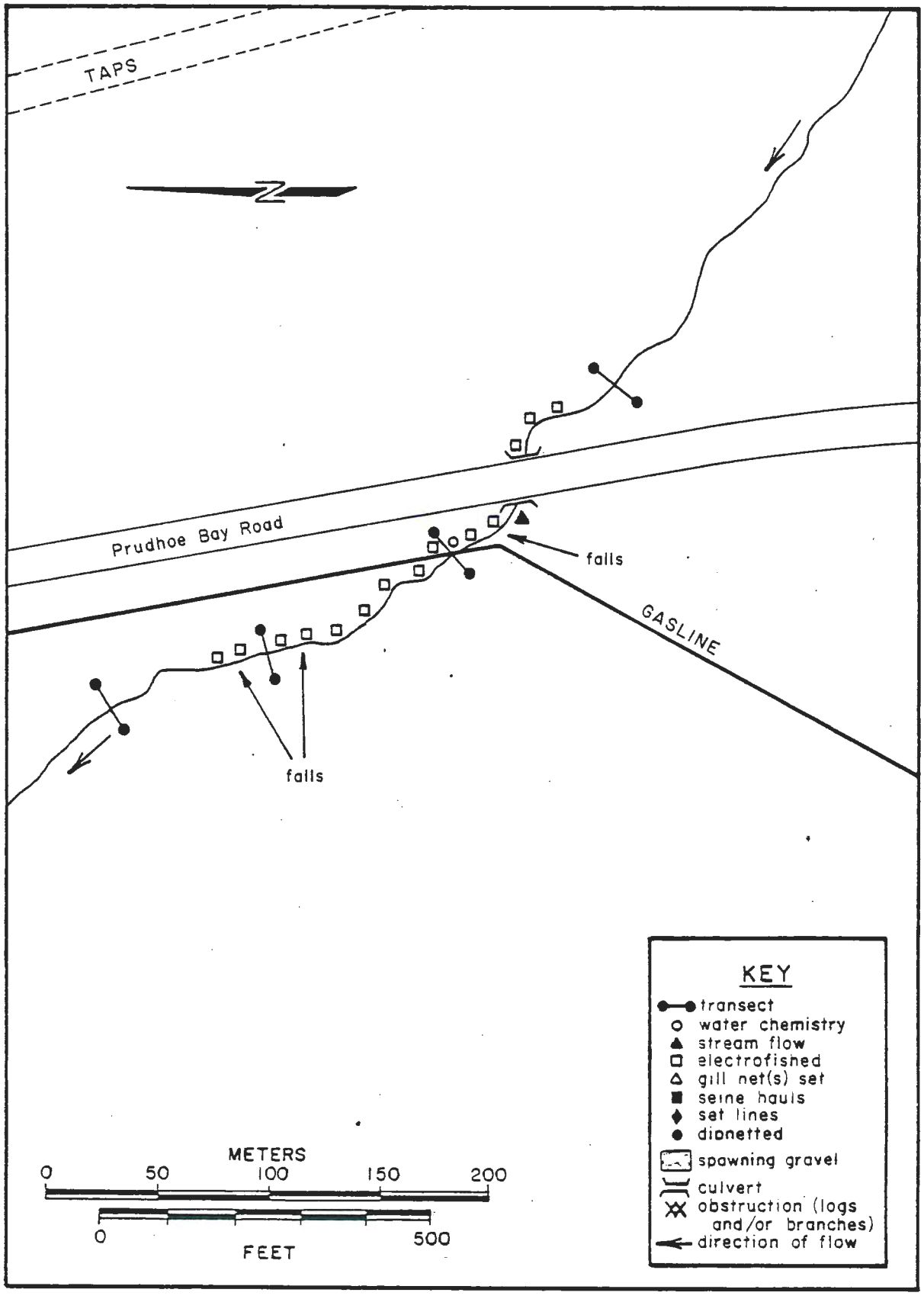

Figure 50. Spring survey. Jill Creek, 31 May 1981.

SPRING SURVEY FORM

WATERBODY

Waterbody: Ed Creek Source: Tundra Drainage

Main Drainage: Kuparuk River Tributary to: Toolik Lake

Figure: 51 Elevation: 896 m

NPAS: 25 NPMP: 140.9 NPRX: 025-7 AHMP: NA

USGS Map Reference: Philip Smith Mountains, AK T: 10S R: 11E Sec: 26

Site Access: Truck

Section Surveyed: 100 m upstream to 150 m downstream of proposed pipeline crossing

ASSESSMENT

Ed Creek is a small, beaded tundra stream that drains a tundra marshland. The channel is not well defined and the banks are vegetated by sedges and willows. The substrate is primarily gravel and fines with some sand and pebbles. The gradient is moderate throughout the surveyed area. Potential fish blocks consist of falls created by an erosion control structure at the downstream end of the Prudhoe Bay Road culvert.

No fish use was observed during the 1981 spring survey. Fish habitat was good, and fish use has been documented for this stream in summer (Ref. 123). Ed Creek is probably used by grayling as a rearing area during the open water period. Fish access to this stream may have been limited at the time of the survey by ice conditions in overwintering areas (i.e. Toolik Lake). Shore-fast ice in the lake may prevent fish access to the stream mouth.

FISH

Waterbody: Ed Creek NPRX: 025-7

Date: 2 June 1981

Fish Present: no

Gear/Effort: EF (0/265 sec), visual (0/150 m)

Species Present	Quantity		Length (mm)	
	Fry	Other	Fry	Other

PHYSICAL CONDITIONS

Date	2 June 1981
Wetted Width (m)	0.25-7.5
Depth (cm)	7-180
Discharge (m^3/s)	0.0422
Dissolved Oxygen (mg/ℓ)	10.3
Temperature (° C)	3.5
Conductivity (μmhos/cm)	11
pH (pH units)	8.7
Color (color units)	40
Turbidity (NTU)	7.7
T. Hardness (mg $CaCO_3$/ℓ)	17.1
Nitrate (mg/ℓ N)	below detection limit
Orthophosphate (mg/ℓ P)	below detection limit
Bottom Type (%)	26 fines, 9 sand, 57 gravel, 8 pebble
Bank Stability (%)	100
Aquatic Vegetation (P/A)	P
Riparian Vegetation (%)	24 willow, 76 sedge
Cover (%)	22
Fish Block(s)	falls (~ 30 cm) created by erosion control structure at haul road culvert

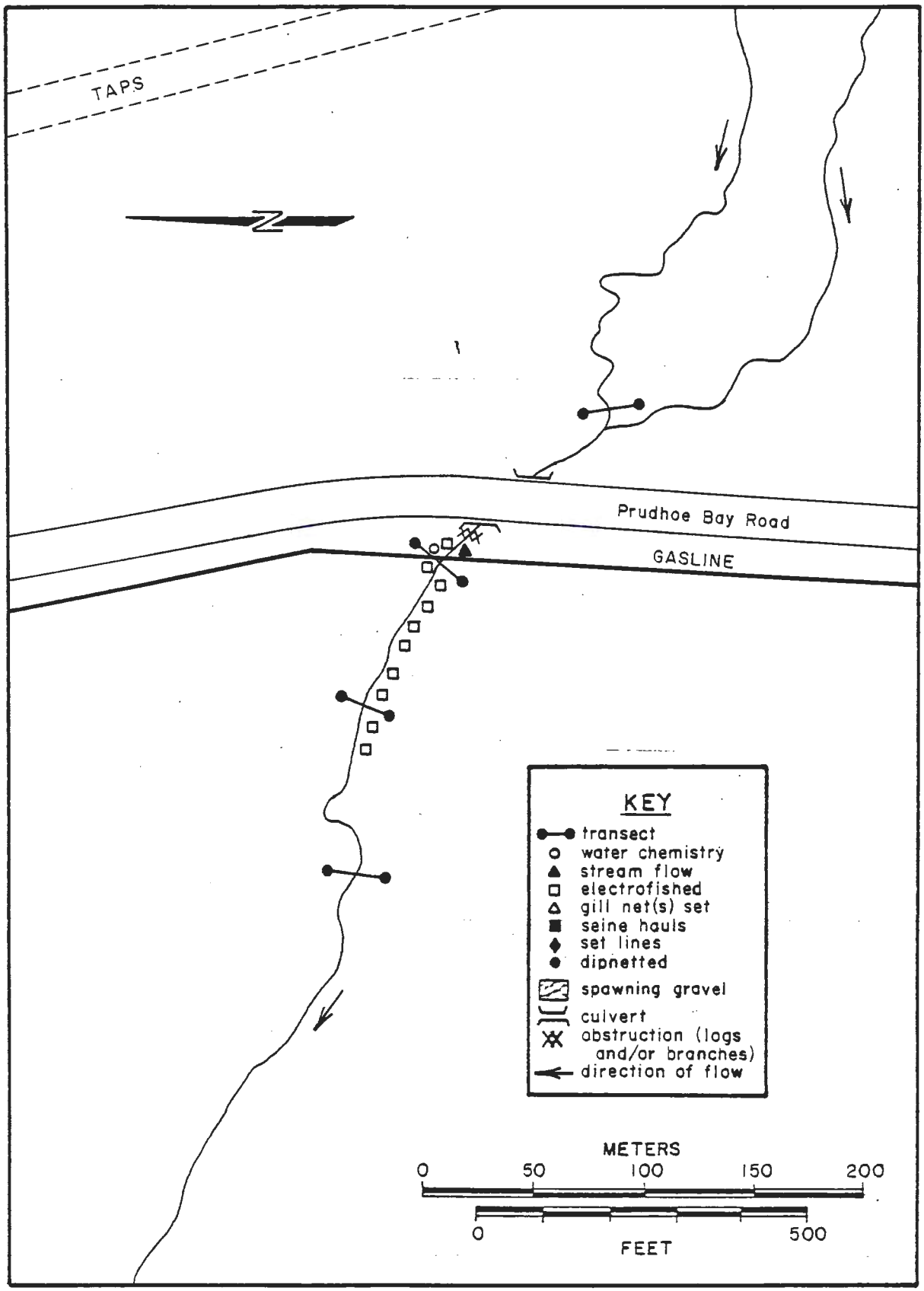

Figure 51. Spring survey. Ed Creek, 2 June 1981.

SPRING SURVEY FORM

WATERBODY

Waterbody: Mack Creek Source: Tundra Drainage

Main Drainage: Kuparuk River Tributary to: Ed Creek

Figure: 52 Elevation: 896 m

NPAS: 25 NPMP: 140.6 NPRX: 025-6 AHMP: NA

USGS Map Reference: Philip Smith Mountains, AK T: 10S R: 11E Sec: 26

Site Access: Truck

Section Surveyed: 110 m upstream to 175 m downstream of proposed pipeline crossing

ASSESSMENT

Mack Creek is a small, beaded tundra stream draining a tundra marshland. It flows through an incised channel whose banks are vegetated with sedges, willows, and mosses. The substrate is fines and detritus. The gradient is moderate throughout the surveyed area. Potential fish blocks consist of a loss of a defined channel approximately 100 m downstream of the proposed pipeline crossing. At this point the stream flows out over the tundra. Skim ice was present in areas of low flow or standing water.

No fish use was observed during the 1981 spring survey and fish habitat was marginal at that time. Grayling have been observed in Mack Creek in August (Ref. 123). Fish use in this stream is probably low and restricted to areas downstream of the surveyed area.

FISH

Waterbody: Mack Creek NPRX: 025-6

Date: 2 June 1981

Fish Present: no

Gear/Effort: EF (0/456 sec); visual (0/70 m)

Species Present	Quantity		Length (mm)	
	Fry	Other	Fry	Other

PHYSICAL CONDITIONS

Date	2 June 1981
Wetted Width (m)	0.2-10
Depth (cm)	3-120
Discharge (m^3/s)	0.0078
Dissolved Oxygen (mg/ℓ)	12.2
Temperature (° C)	0.0
Conductivity (μmhos/cm)	15
pH (pH units)	8.2
Color (color units)	45
Turbidity (NTU)	3.7
T. Hardness (mg $CaCO_3$/ℓ)	34.2
Nitrate (mg/ℓ N)	below detection limit
Orthophosphate (mg/ℓ P)	below detection limit
Bottom Type (%)	100 fines/detritus
Bank Stability (%)	100
Aquatic Vegetation (P/A)	P
Riparian Vegetation (%)	71 sedge, 21 willow, 8 mosses
Cover (%)	12
Fish Block(s)	channel becomes undefined (flows over tundra) ~ 100 m downstream of crossing

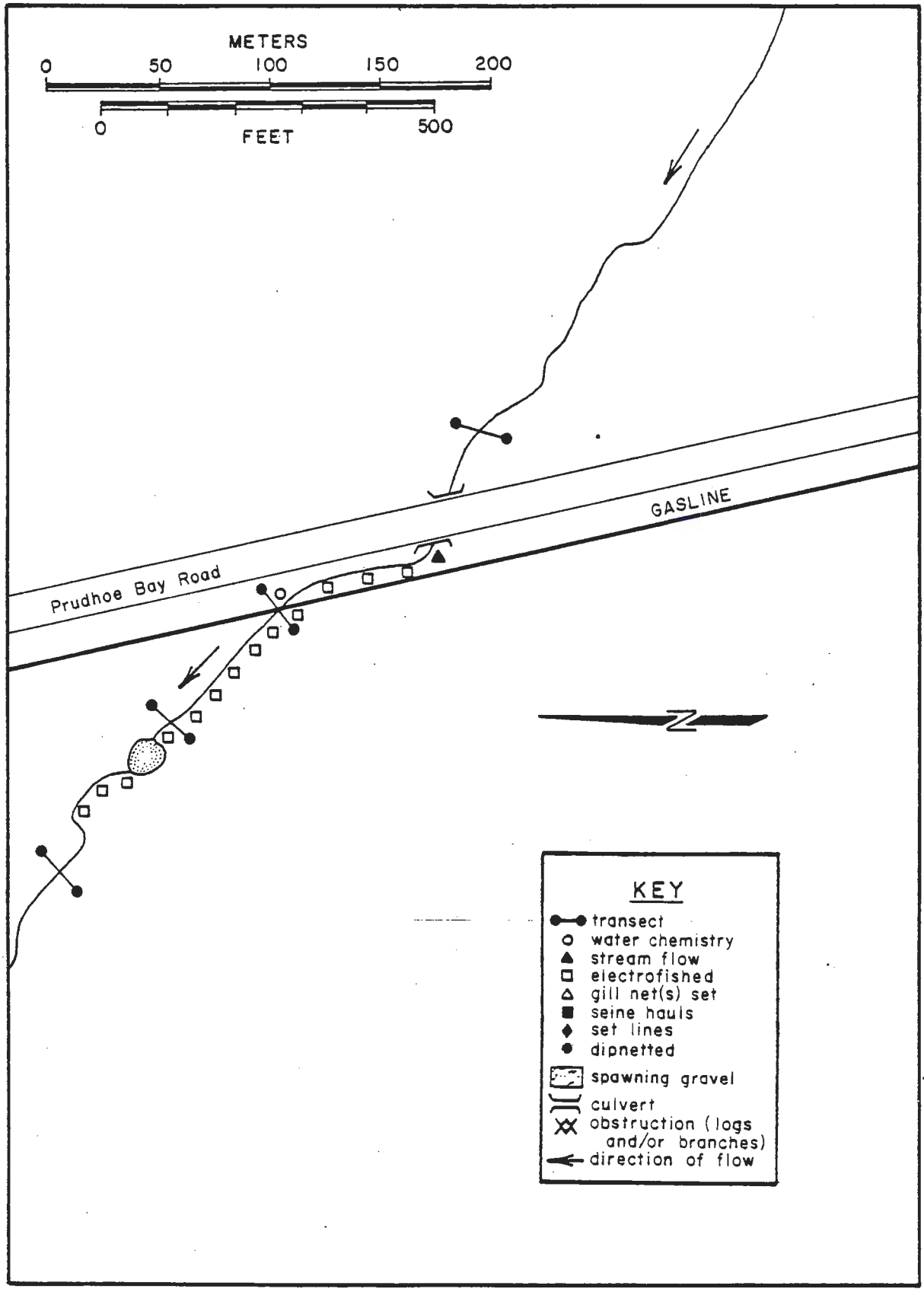

Figure 52. Spring survey. Mack Creek, 2 June 1981.

SPRING SURVEY FORM

WATERBODY

Waterbody: Terry Creek Source: Tundra Drainage

Main Drainage: Kuparuk River Tributary to: Ed Creek

Figure: 53 Elevation: 841 m

NPAS: 25 NPMP: 139.9 NPRX: 025-5 AHMP: NA

USGS Map Reference: Philip Smith Mountains, AK T: 10S R: 11E Sec: 23

Site Access: Truck

Section Surveyed: 150 m upstream to 300 m downstream of proposed pipeline crossing

ASSESSMENT

Terry Creek is a small, beaded tundra stream that drains a tundra marshland area. The banks are vegetated primarily by sedges with some willows. The substrate is mostly cobbles with near equal proportions of fines, sand, gravel, pebbles, and boulders. The gradient is moderate throughout the surveyed area. Potential fish blocks consists of falls approximately 30 and 80 m downstream of the proposed pipeline crossing, and a series of falls approximately 300 m downstream of the crossing.

No fish use was observed during the 1981 spring survey although good fish habitat exists. Fish access to the stream may have been limited at the time of the survey by ice conditions in overwintering areas (i.e. Toolik Lake) and by falls located downstream of the crossing. Use of this stream by grayling during the open-water period of the year has been documented (Ref. 11, 30 and 64).

FISH

Waterbody: Terry Creek NPRX: 025-5

Date: 2 June 1981

Fish Present: no

Gear/Effort: EF (0/279 sec); visual (0/55 m)

Species Present	Quantity		Length (mm)	
	Fry	Other	Fry	Other

PHYSICAL CONDITIONS

Date	2 June 1981
Wetted Width (m)	0.3-19.0
Depth (cm)	6-110
Discharge (m^3/s)	0.0575
Dissolved Oxygen (mg/ℓ)	12.2
Temperature (° C)	1.0
Conductivity (μmhos/cm)	12
pH (pH units)	8.1
Color (color units)	55
Turbidity (NTU)	2.4
T. Hardness (mg $CaCO_3$/ℓ)	17.1
Nitrate (mg/ℓ N)	below detection limit
Orthophosphate (mg/ℓ P)	below detection limit
Bottom Type (%)	10 fines, 7 sand, 10 gravel, 5 pebble, 60 cobble, 8 boulder
Bank Stability (%)	100
Aquatic Vegetation (P/A)	P
Riparian Vegetation (%)	89 sedge, 11 willow
Cover (%)	7
Fish Block(s)	falls ~ 35 cm high, ~ 30 m below crossing; ~ 120 cm high, ~ 80 m below crossing; series of falls ~ 300 m below crossing

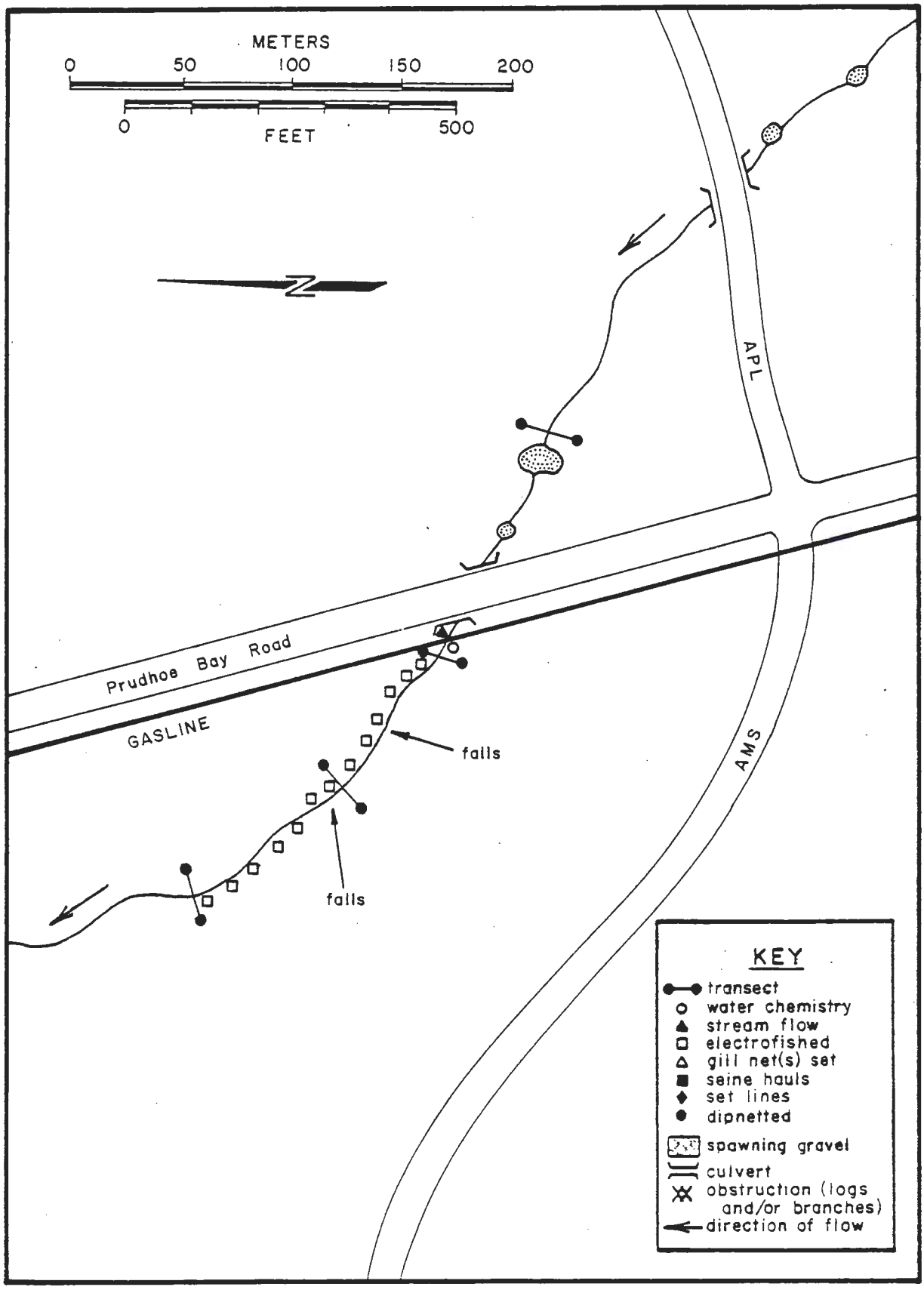

Figure 53. Spring survey. Terry Creek, 2 June 1981.

SPRING SURVEY FORM

WATERBODY

Waterbody: Yan Creek Source: Tundra Drainage

Main Drainage: Kuparuk River Tributary to: Toolik Lake

Figure: 54 Elevation: 837 m

NPAS: 25 NPMP: 137.0 NPRX: 025-1 AHMP: NA

USGS Map Reference: Philip Smith Mountains, AK T: 10S R: 11E Sec: 3

Site Access: Truck

Section Surveyed: 120 m upstream to 200 m downstream of proposed pipeline crossing

ASSESSMENT

Yan Creek is a small, beaded tundra stream that drains a wet tundra area. The banks are vegetated primarily with sedges with some willows and mosses. The substrate is mainly fines and detritus with scattered areas of pebbles, cobbles, and boulders. The gradient is moderate throughout the surveyed area, and the stream is confined to a well defined channel. Potential fish blocks consist of a rocky, riffle area approximately 200 m downstream of the crossing which may impede fish movement during periods of low flow.

Fish use was not observed during the 1981 spring survey. Good fish habitat existed throughout the surveyed area, especially downstream of the proposed crossing. Fish access to the stream may have been limited at the time of the survey by ice conditions in overwintering areas (i.e. Toolik Lake). Use of this stream by slimy sculpin has been documented (Ref. 11).

FISH

Waterbody: Yan Creek NPRX: 025-1

Date: 3 June 1981

Fish Present: no

Gear/Effort: EF (0/587 sec); visual (0/50 m)

Species Present	Quantity		Length (mm)	
	Fry	Other	Fry	Other

PHYSICAL CONDITIONS

Date	3 June 1981
Wetted Width (m)	0.25-6.5
Depth (cm)	7-200
Discharge (m^3/s)	0.0113
Dissolved Oxygen (mg/ℓ)	12.8
Temperature (° C)	1.0
Conductivity (μmhos/cm)	30
pH (pH units)	8.8
Color (color units)	40
Turbidity (NTU)	1.6
T. Hardness (mg $CaCO_3$/ℓ)	51.3
Nitrate (mg/ℓ N)	below detection limit
Orthophosphate (mg/ℓ P)	below detection limit
Bottom Type (%)	75 fines/detritus, 5 pebble, 15 cobble, 5 boulder
Bank Stability (%)	100
Aquatic Vegetation (P/A)	P
Riparian Vegetation (%)	92 sedge, 5 mosses, 3 willow
Cover (%)	7
Fish Block(s)	rocky riffle area ~ 200 m below crossing, potential low water fish block

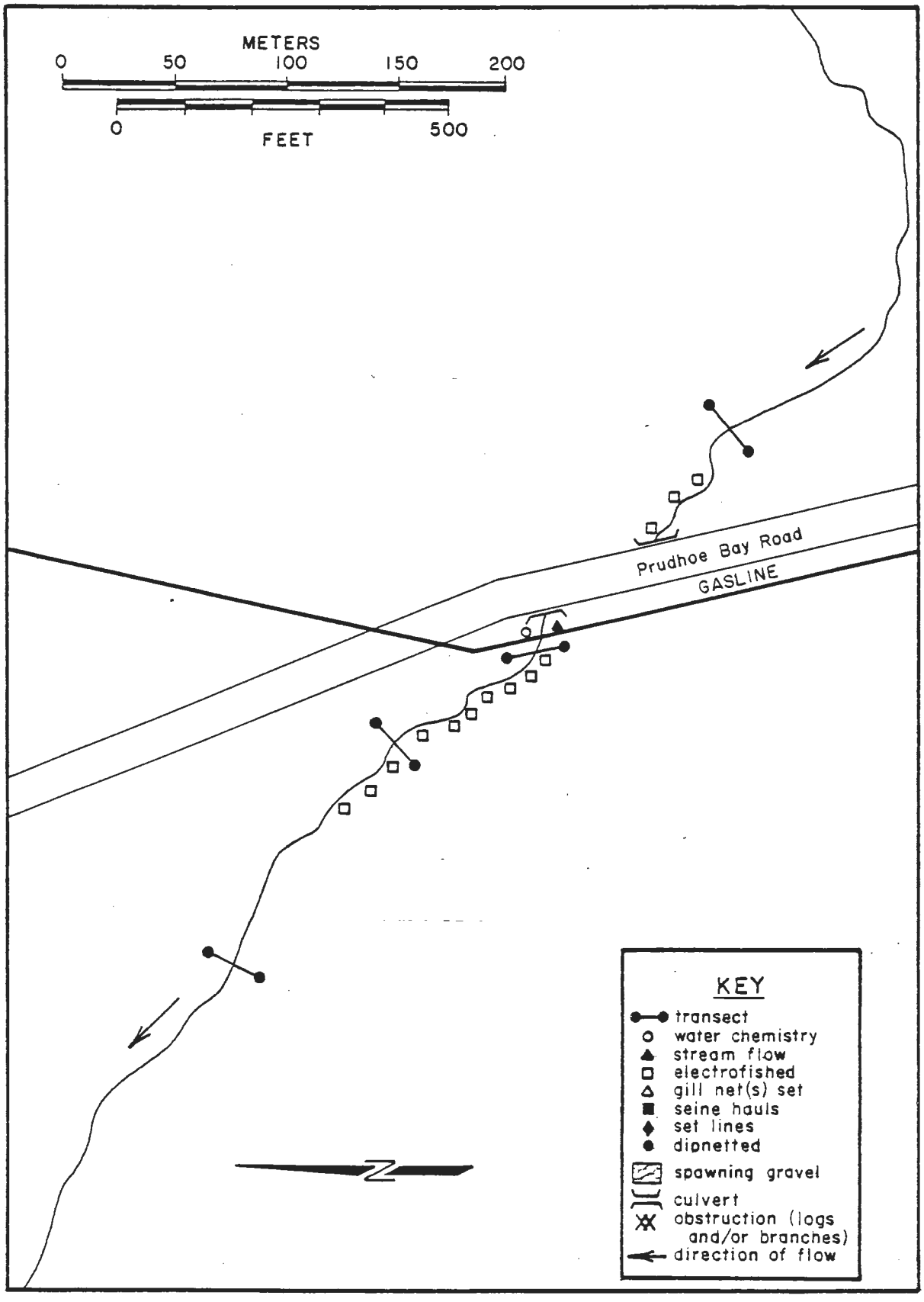

Figure 54. Spring survey. Yan Creek, 3 June 1981.

SPRING SURVEY FORM

WATERBODY

Waterbody: Mary Lamb Creek Source: Tundra Drainage

Main Drainage: Kuparuk River Tributary to: Toolik River

Figure: 55 Elevation: 777 m

NPAS: 22 NPMP: 125.0 NPRX: 022-2 AHMP: NA

USGS Map Reference: Philip Smith Mountains, AK T: 9S R: 13E Sec: 8

Site Access: Truck

Section Surveyed: 100 m upstream to 100 m downstream of proposed pipeline crossing

ASSESSMENT

Mary Lamb Creek is a small tundra stream which drains several ponds just north of the TAPS pad. The stream is confined to a broad marshy area which is heavily vegetated by sedges. The substrate is fines and detritus. The gradient is slight throughout the surveyed area. The broad marshy area has no defined channels and flow is discontinuous. The water present was mostly stagnant and confined to a few ponds and the area just north of the Prudhoe Bay Road which was disturbed by the Alyeska gas line installation.

Fish use was not observed during the 1981 spring survey, and fish use of this area is highly unlikely. Low and discontinuous flow preclude fish access and fish habitat was poor to non-existent throughout the surveyed area.

FISH

Waterbody: Mary Lamb Creek NPRX: 022-2

Date: 3 June 1981

Fish Present: no

Gear/Effort: visual (0/300 m)

Species Present	Quantity		Length (mm)	
	Fry	Other	Fry	Other

PHYSICAL CONDITIONS

Date	3 June 1981
Wetted Width (m)	0-4
Depth (cm)	0-35
Discharge (m^3/s)	below detection limit
Dissolved Oxygen (mg/ℓ)	2.25
Temperature (° C)	3.5
Conductivity (μmhos/cm)	268
pH (pH units)	7.8
Color (color units)	80
Turbidity (NTU)	9.4
T. Hardness (mg $CaCO_3$/ℓ)	256.5
Nitrate (mg/ℓ N)	below detection limit
Orthophosphate (mg/ℓ P)	below detection limit
Bottom Type (%)	100 fines/detritus
Bank Stability (%)	100
Aquatic Vegetation (P/A)	P
Riparian Vegetation (%)	100 sedge
Cover (%)	98
Fish Block(s)	discontinuous flow; no defined channel

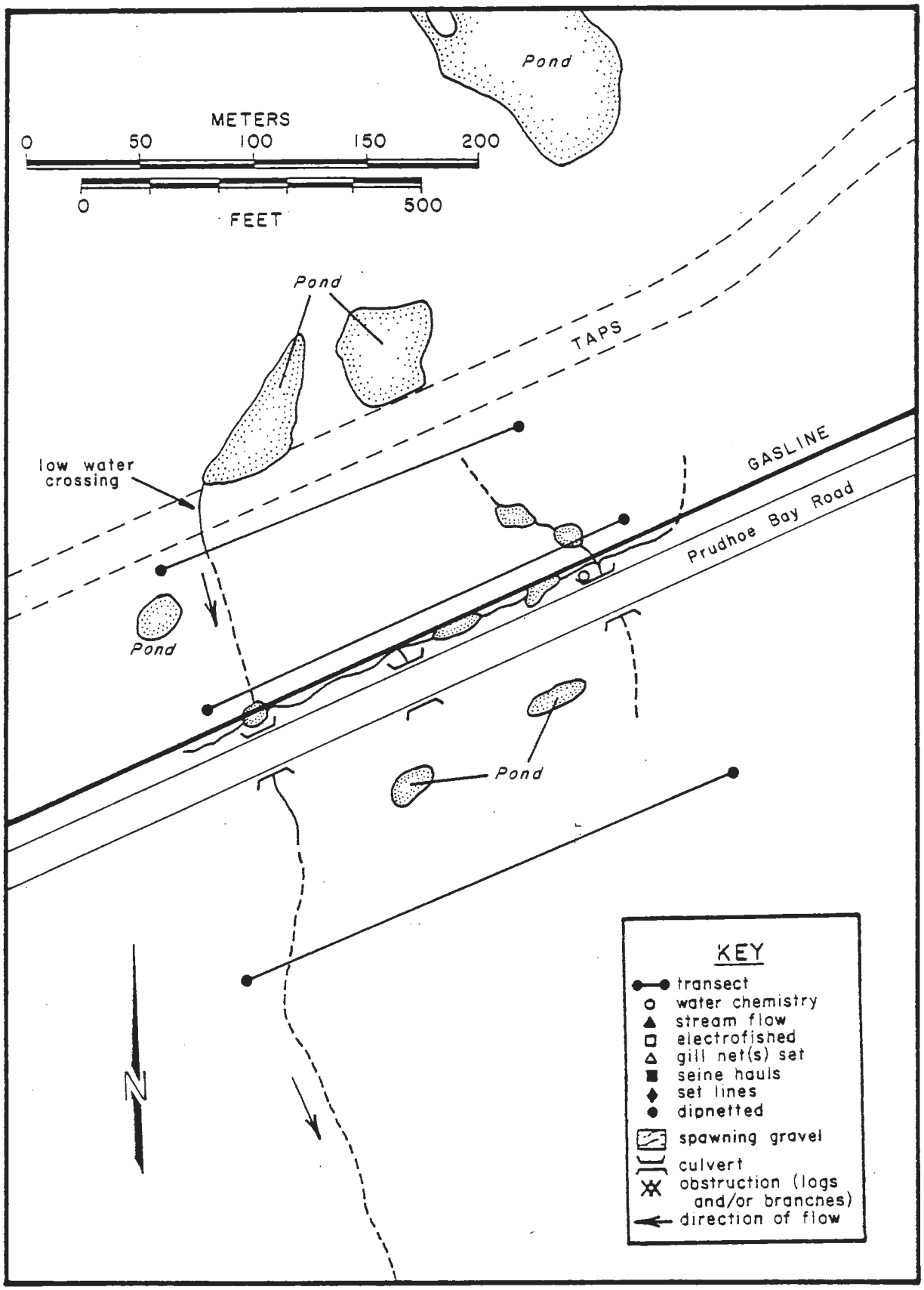

Figure 55. Spring survey. Mary Lamb Creek, 3 June 1981.

SPRING SURVEY FORM

WATERBODY

Waterbody: Tributary to Lori Creek Source: Tundra Drainage

Main Drainage: Sagavanirktok River Tributary to: Lori Creek

Figure: 56 Elevation: 375 m

NPAS: 17 NPMP: 94.7 NPRX: 017-2 AHMP: NA

USGS Map Reference: Sagavanirktok, AK T: 4S R: 14E Sec: 31

Site Access: Truck

Section Surveyed: 150 m upstream to 150 m downstream of proposed pipeline crossing

ASSESSMENT

Tributary to Lori Creek is a small, beaded tundra stream draining a small area between Lori Creek and the Prudhoe Bay Road. The stream flows through a marshy area which averages approximately 10 m in width and is heavily vegetated with sedges and willows. The substrate is fines and detritus and the stream gradient is moderate throughout the surveyed area. Ice approximately 1 cm thick was present on the pools just upstream from the proposed pipeline crossing.

Fish use not observed during the 1981 spring survey. Low flows, lack of a well defined channel, and thick vegetation probably precludes fish access to this area. Fish habitat was generally poor throughout the surveyed area.

FISH

Waterbody: Tributary to Lori Creek NPRX: 017-2

Date: 4 June 1981

Fish Present: no

Gear/Effort: DN (0/20 m^2); visual (0/250 m)

Species Present	Quantity Fry	Quantity Other	Length (mm) Fry	Length (mm) Other

PHYSICAL CONDITIONS

Date	4 June 1981
Wetted Width (m)	0-3.5
Depth (cm)	0-75
Discharge (m^3/s)	below detection limit
Dissolved Oxygen (mg/ℓ)	7.8
Temperature (° C)	0.7
Conductivity (µmhos/cm)	40
pH (pH units)	7.8
Color (color units)	75
Turbidity (NTU)	2.2
T. Hardness (mg $CaCO_3$/ℓ)	68.4
Nitrate (mg/ℓ N)	below detection limit
Orthophosphate (mg/ℓ P)	below detection limit
Bottom Type (%)	100 fines/detritus
Bank Stability (%)	100
Aquatic Vegetation (P/A)	P
Riparian Vegetation (%)	58 sedge, 42 willow
Cover (%)	91
Fish Block(s)	undefined channel, low flow

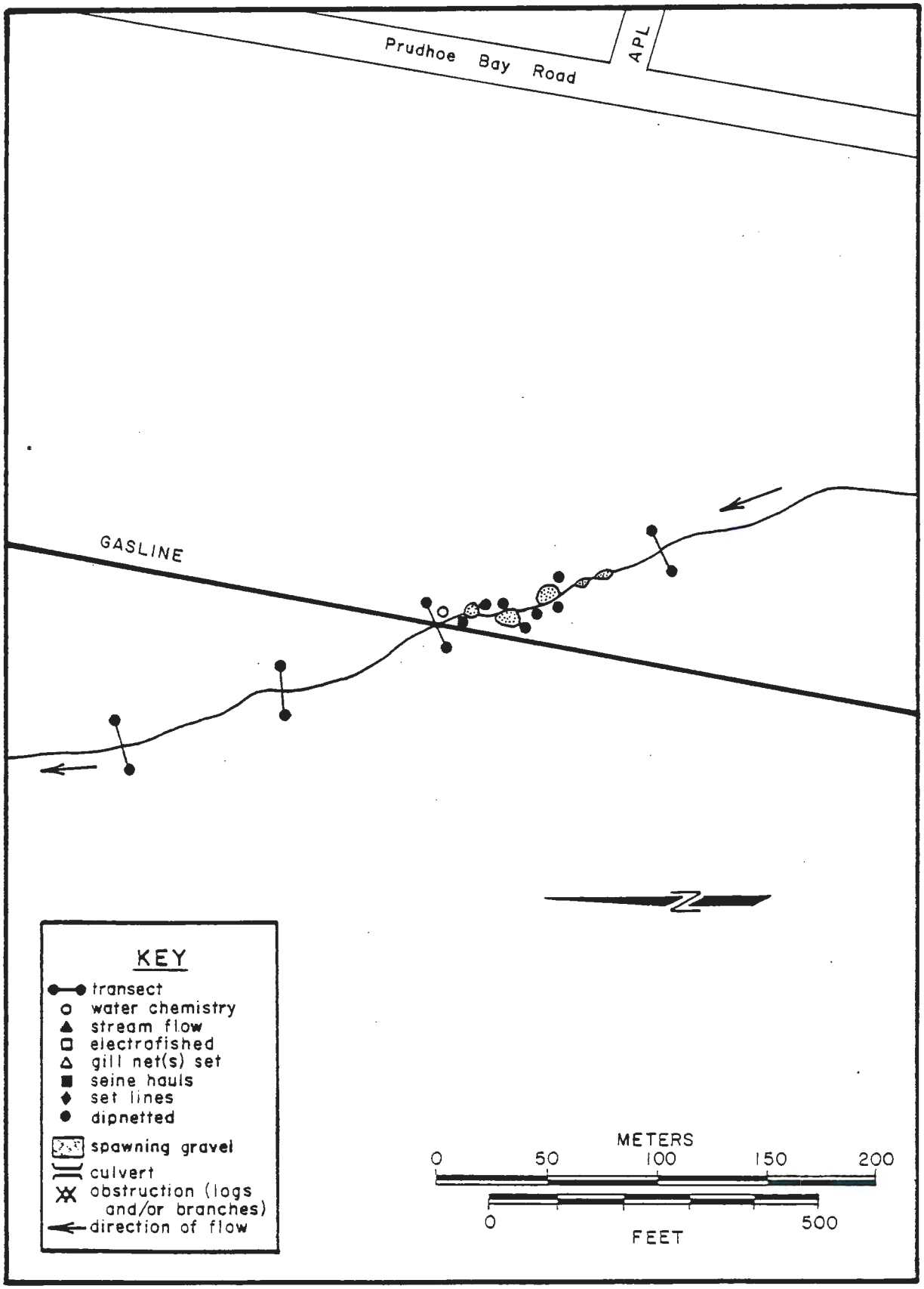

Figure 56. Spring survey. Tributary to Lori Creek, 4 June 1981.

SPRING SURVEY FORM

WATERBODY

Waterbody: Lori Creek Source: Tundra Drainage

Main Drainage: Sagavanirktok River Tributary to: Sagavanirktok River

Figure: 57 Elevation: 360 m

NPAS: 17 NPMP: 93.6 NPRX: 017-1 AHMP: NA

USGS Map Reference: Sagavanirktok, AK T: 4S R: 14E Sec: 29,30

Site Access: Truck

Section Surveyed: 110 m upstream to 200 m downstream of proposed pipeline crossing

ASSESSMENT

Lori Creek is a small, beaded tundra stream which drains a small lake west of the proposed pipeline and flows north where it joins the Sagavanirktok River. The stream occupies a fairly well defined channel with banks vegetated with sedges and willows. The substrate is fines and detritus and the gradient is slight throughout the surveyed area. Potential fish blocks consist of narrow, fast-flowing chutes and marshy areas with undefined channels between some pools. Marshy areas with undefined channels are likely due to the higher flows during spring breakup.

Fish use was not documented in Lori Creek during the 1981 spring survey, although good fish habitat was present. Summer use of this stream by both adult and juvenile grayling has been documented (Ref. 11 and 30). Lori Creek probably provides good fish habitat throughout the open water period.

FISH

Waterbody: Lori Creek NPRX: 017-1

Date: 4 June 1981

Fish Present: no

Gear/Effort: GN (0/22 hr); visual (0/150 m)

Species Present	Quantity		Length (mm)	
	Fry	Other	Fry	Other

PHYSICAL CONDITIONS

Date	4 June 1981
Wetted Width (m)	1.5-20.0
Depth (cm)	12-200
Discharge (m^3/s)	0.0297
Dissolved Oxygen (mg/ℓ)	10.6
Temperature (° C)	1.7
Conductivity (μmhos/cm)	10
pH (pH units)	8.0
Color (color units)	100
Turbidity (NTU)	1.3
T. Hardness (mg $CaCO_3$/ℓ)	17.1
Nitrate (mg/ℓ N)	below detection limit
Orthophosphate (mg/ℓ P)	below detection limit
Bottom Type (%)	100 fines/detritus
Bank Stability (%)	100
Aquatic Vegetation (P/A)	P
Riparian Vegetation (%)	62 sedge, 38 willow
Cover (%)	19
Fish Block(s)	undefined channel and narrow chutes between pools

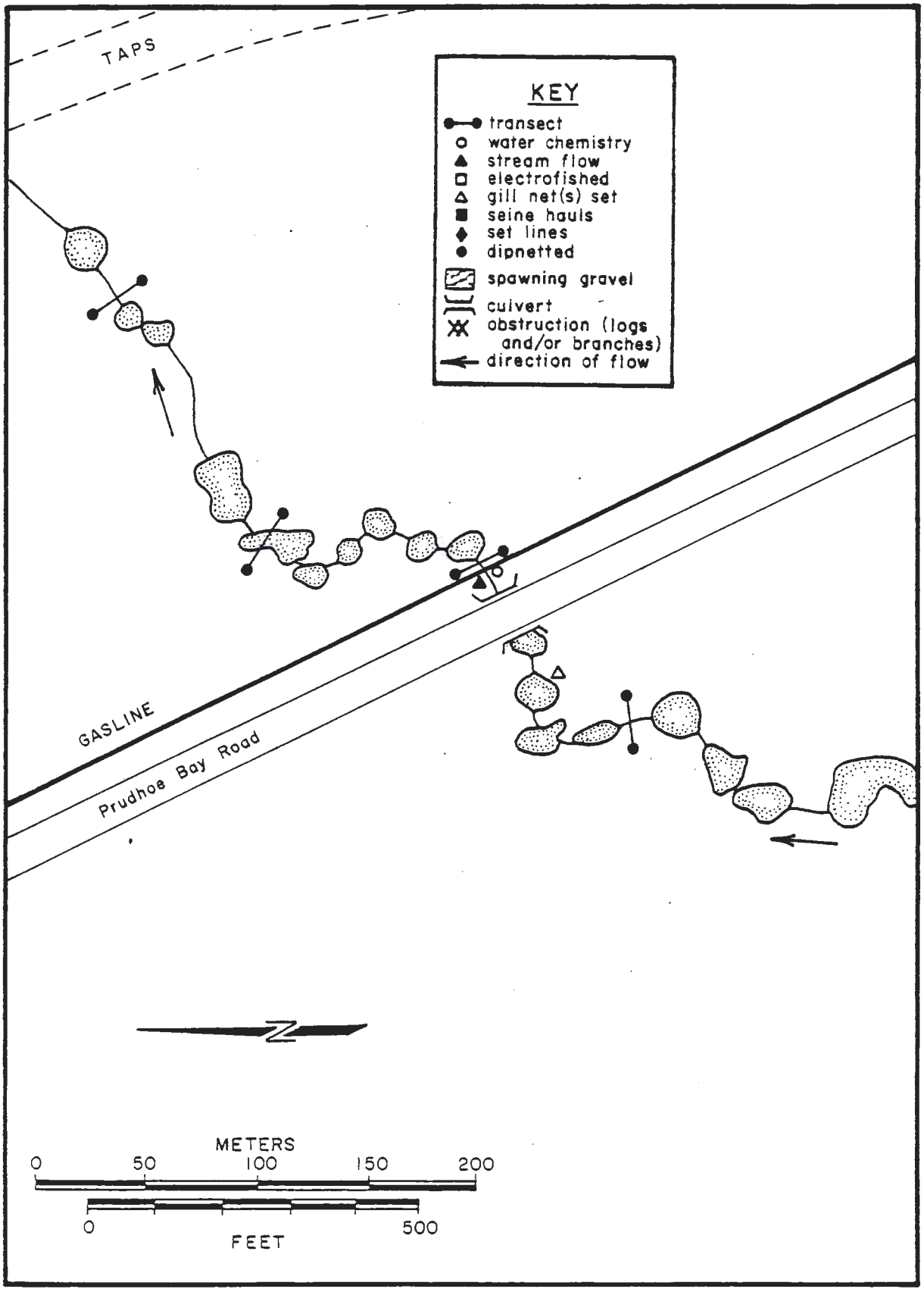

Figure 57. Spring survey. Lori Creek, 4 June 1981.

SPRING SURVEY FORM

WATERBODY

Waterbody: Unnamed Creek Source: Tundra Drainage

Main Drainage: Sagavanirktok River Tributary to: Sagavanirktok River

Figure: 58 Elevation: 312 m

NPAS: 15 NPMP: 86.4 NPRX: 015-3 AHMP: NA

USGS Map Reference: Sagavanirktok, AK T: 3S R: 14E Sec: 19

Site Access: Truck

Section Surveyed: 150 m upstream to 175 m downstream of proposed pipeline crossing

ASSESSMENT

Unnamed Creek (NPMP 86.4) is a small tundra stream which drains a small lake approximately 1 km west of the proposed pipeline crossing. The stream is confined by low banks vegetated by sedges and willows. The substrate is fines and detritus and the gradient is slight. Potential fish blocks consist of falls approximately 100 m downstream of the crossing, and a marshy area with no defined channel upstream of the crossing. Skim ice was present on the pools and other areas of quiet water.

Fish use was not observed during the 1981 spring survey. At the time of the survey, the stream fish habitat was marginal. Summer use by grayling has been documented (Ref. 30), but fish use is probably confined to that part of the stream downstream of the crossing.

FISH

Waterbody: Unnamed Creek NPRX: 015-3

Date: 5 June 1981

Fish Present: no

Gear/Effort: DN (0/50 m^2); visual (0/120 m)

Species Present	Quantity		Length (mm)	
	Fry	Other	Fry	Other

PHYSICAL CONDITIONS

Date	5 June 1981
Wetted Width (m)	0.9-11.3
Depth (cm)	8-60
Discharge (m^3/s)	below detection limit
Dissolved Oxygen (mg/ℓ)	9.4
Temperature (° C)	0.8
Conductivity (μmhos/cm)	11
pH (pH units)	7.4
Color (color units)	90
Turbidity (NTU)	1.1
T. Hardness (mg $CaCO_3$/ℓ)	17.1
Nitrate (mg/ℓ N)	below detection limit
Orthophosphate (mg/ℓ P)	below detection limit
Bottom Type (%)	100 fines/detritus
Bank Stability (%)	100
Aquatic Vegetation (P/A)	P
Riparian Vegetation (%)	58 sedge, 42 willow
Cover (%)	14
Fish Block(s)	falls (~ 10 cm) 100 m below crossing; undefined channel above crossing

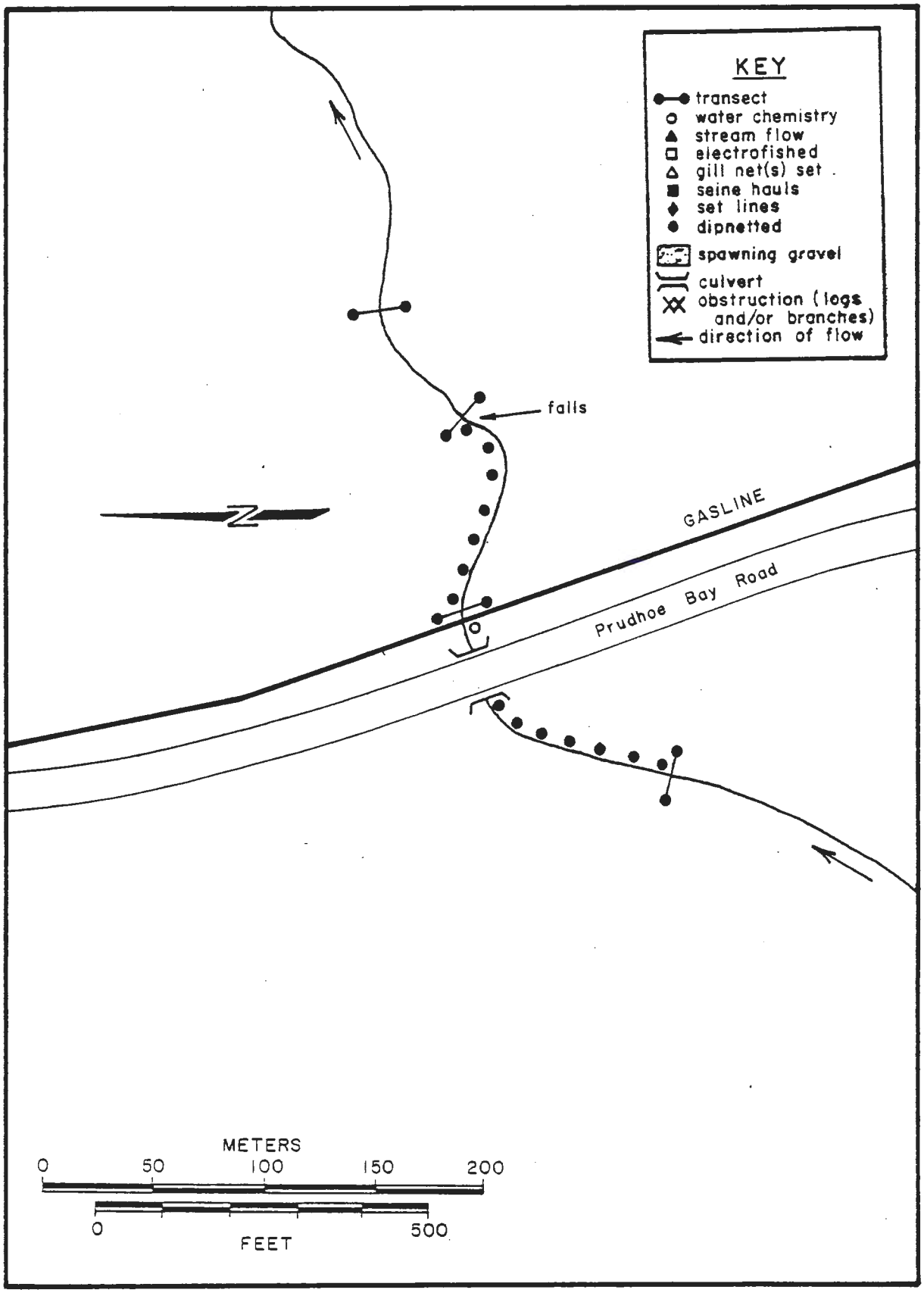

Figure 58. Spring survey. Unnamed Creek (NPMP 86.4), 5 June 1981.

SPRING SURVEY FORM

WATERBODY

Waterbody: Toolik River Tributary Source: Tundra Drainage

Main Drainage: Kuparuk River Tributary to: Toolik River

Figure: 59 Elevation: 227 m

NPAS: 13 NPMP: 69.6 NPRX: 013-1 AHMP: NA

USGS Map Reference: Sagavanirktok, AK T: 1N R: 14E Sec: 32

Site Access: Truck

Section Surveyed: 150 m upstream to 300 m downstream of proposed pipeline crossing

ASSESSMENT

Toolik River Tributary is a small, beaded tundra stream draining the Sagwon Bluffs uplands. The stream lies in a small valley and is confined by low banks vegetated with sedges and willows. The substrate is principally fines and detritus, but gravel and pebbles with some cobble are found near the Prudhoe Bay Road. The gradient is moderate throughout the surveyed area. Potential fish blocks exist in the form of falls upstream of the crossing, and rip-rap blocking the upstream end of the culvert at the Purdhoe Bay Road. Approximately 300 m downstream, at the confluence with the Toolik River, a steep (30°, 2 m drop) vegetated slope may restrict fish access to this stream.

Fish use was not observed during the 1981 spring survey. This stream provides good fish habitat at this time of year, but the existing block at the confluence with the Toolik River may preclude fish access to the stream.

FISH

Waterbody: Toolik River Tributary NPRX: 013-1

Date: 5 June 1981

Fish Present: no

Gear/Effort: EF (0/331 sec); visual (0/50 m)

Species Present	Quantity		Length (mm)	
	Fry	Other	Fry	Other

PHYSICAL CONDITIONS

Date	5 June 1981
Wetted Width (m)	0.4-12.5
Depth (cm)	6-125
Discharge (m^3/s)	0.0113
Dissolved Oxygen (mg/ℓ)	11.8
Temperature (° C)	1.2
Conductivity (μmhos/cm)	10
pH (pH units)	7.2
Color (color units)	100
Turbidity (NTU)	2.0
T. Hardness (mg $CaCO_3$/ℓ)	17.1
Nitrate (mg/ℓ N)	below detection limit
Orthophosphate (mg/ℓ P)	below detection limit
Bottom Type (%)	75 fines/detritus, 12 gravel, 10 pebble, 3 cobble
Bank Stability (%)	100
Aquatic Vegetation (P/A)	P
Riparian Vegetation (%)	78 sedge, 22 willow
Cover (%)	44
Fish Block(s)	~ 30° slope with no define channel at confluence with Toolik River (~ 300 m downstream); falls (45 cm) 50 m upstream from crossing; rip-rap plugging upstream end of haul road culvert

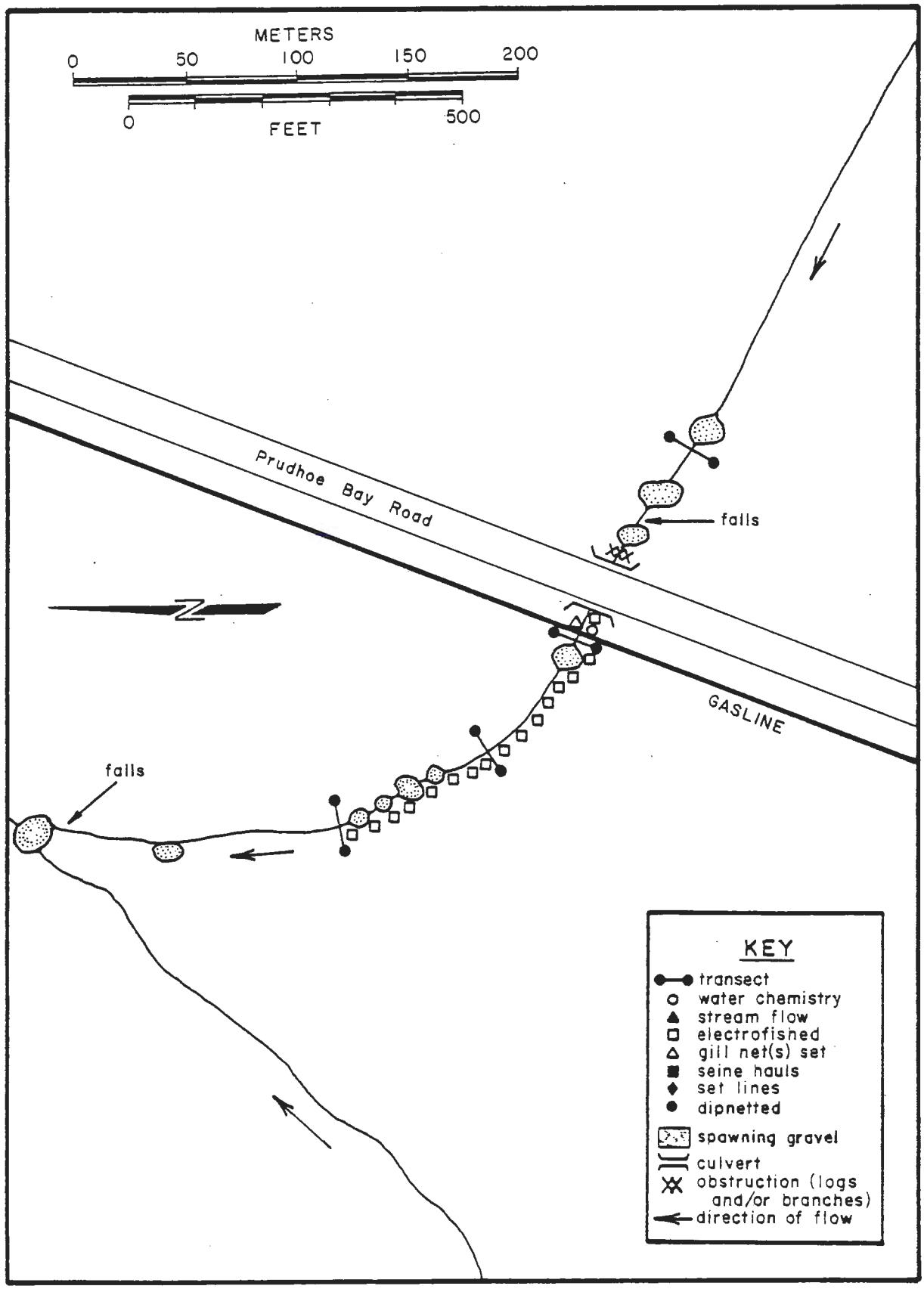

Figure 59. Spring survey. Toolik River Tributary, 5 June 1981.

SPRING SURVEY FORM

WATERBODY

Waterbody: Sand Creek Source: Tundra Drainage

Main Drainage: Kuparuk River Tributary to: Toolik River

Figure: 60 Elevation: 244 m

NPAS: 12 NPMP: 67.8 NPRX: 012-2 AHMP: NA

USGS Map Reference: Sagavanirktok, AK T: 1N R: 14E Sec: 28

Site Access: Truck

Section Surveyed: 150 m upstream to 150 m downstream of proposed pipeline crossing

ASSESSMENT

Sand Creek is a small tundra stream draining the Sagwon Bluffs uplands. The stream lies in a small valley and is confined by low banks vegetated with willows and tundra vegetation. The substrate is mainly fines and detritus with areas of sand and gravel. In the vicinity of the proposed pipeline crossing the stream occupies a narrow (~ 0.4 m) channel with a moderate gradient. Upstream from the crossing the stream flows through a marshy tundra wetland. Downstream from the crossing (~ 150 m) the channel becomes indistinct as it spreads out through willows and sedges. Potential fish blocks were present. Small falls were found upstream of the crossing and the culvert at the Prudhoe Bay Road is perched (30 cm).

Fish use was not observed during the sring 1981 survey and use is probably low or non-existent due to lack of suitable habitat.

FISH

Waterbody: Sand Creek NPRX: 012-2

Date: 6 June 1981

Fish Present: no

Gear/Effort: DN (0/40 m^2); visual (0/130 m)

Species Present	Quantity Fry	Quantity Other	Length (mm) Fry	Length (mm) Other

PHYSICAL CONDITIONS

Date	6 June 1981
Wetted Width (m)	0.3-5.2
Depth (cm)	5-35
Discharge (m^3/s)	0.0036
Dissolved Oxygen (mg/ℓ)	11.6
Temperature (° C)	0.8
Conductivity (μmhos/cm)	23
pH (pH units)	8.2
Color (color units)	125
Turbidity (NTU)	2.3
T. Hardness (mg $CaCO_3$/ℓ)	34.2
Nitrate (mg/ℓ N)	below detection limit
Orthophosphate (mg/ℓ P)	below detection limit
Bottom Type (%)	75 fines/detritus, 7 sand, 15 gravel, 3 pebble
Bank Stability (%)	100
Aquatic Vegetation (P/A)	P
Riparian Vegetation (%)	42 sedge, 52 willow, 2 mosses, 4 tundra vegetation
Cover (%)	27
Fish Block(s)	perched culvert at haul road; falls above crossing

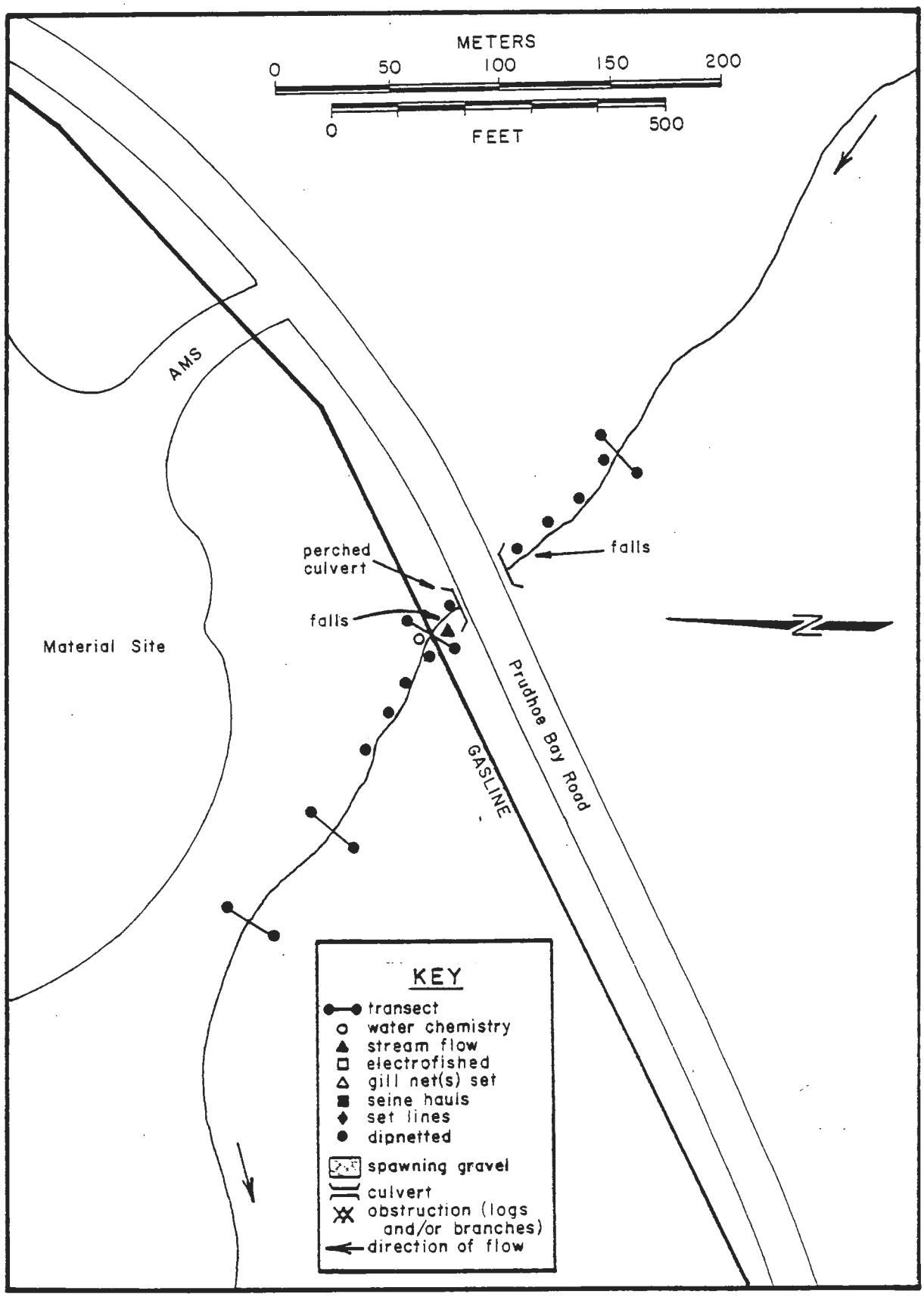

Figure 60. Spring survey. Sand Creek, 6 June 1981.

SPRING SURVEY FORM

WATERBODY

Waterbody: Tributary to Short Creek Source: Tundra Drainage

Main Drainage: Sagavanirktok River Tributary to: Short Creek

Figure: 61 Elevation: 88 m

NPAS: 7 NPMP: 38.6 NPRX: 007-3 AHMP: NA

USGS Map Reference: Sagavanirktok, AK T: 5N R: 14E Sec: 7

Site Access: Truck

Section Surveyed: 150 m upstream to 175 m downstream of proposed pipeline crossing

ASSESSMENT

Tributary to Short Creek is a small tundra stream which flows into Short Creek approximately 350 m downstream from the Prudhoe Bay Road. This stream is confined by low banks vegetated with willows and tundra vegetation. The substrate is fines and detritus. In the vicinity of the proposed pipeline crossing the stream bed is a wide, marshy area which is heavily vegetated by sedges. The stream gradient is slight.

No fish use was observed during the 1981 spring survey. Like Short Creek, adequate fish habitat existed at the time of the survey, as flow was adequate, but lower flows may render fish habitat marginal or non-existent.

FISH

Waterbody: Tributary to Short Creek NPRX: 007-3

Date: 6 June 1981

Fish Present: no

Gear/Effort: EF (0/441 sec)

Species Present	Quantity		Length (mm)	
	Fry	Other	Fry	Other

PHYSICAL CONDITIONS

Date	6 June 1981
Wetted Width (m)	2.5-110
Depth (cm)	13-55
Discharge (m^3/s)	0.1360
Dissolved Oxygen (mg/ℓ)	11.8
Temperature (° C)	9.5
Conductivity (μmhos/cm)	185
pH (pH units)	8.0
Color (color units)	40
Turbidity (NTU)	2.5
T. Hardness (mg $CaCO_3$/ℓ)	153.9
Nitrate (mg/ℓ N)	below detection limit
Orthophosphate (mg/ℓ P)	below detection limit
Bottom Type (%)	100 fines/detritus
Bank Stability (%)	100
Aquatic Vegetation (P/A)	P
Riparian Vegetation (%)	65 sedge, 35 willow
Cover (%)	30
Fish Block(s)	none observed

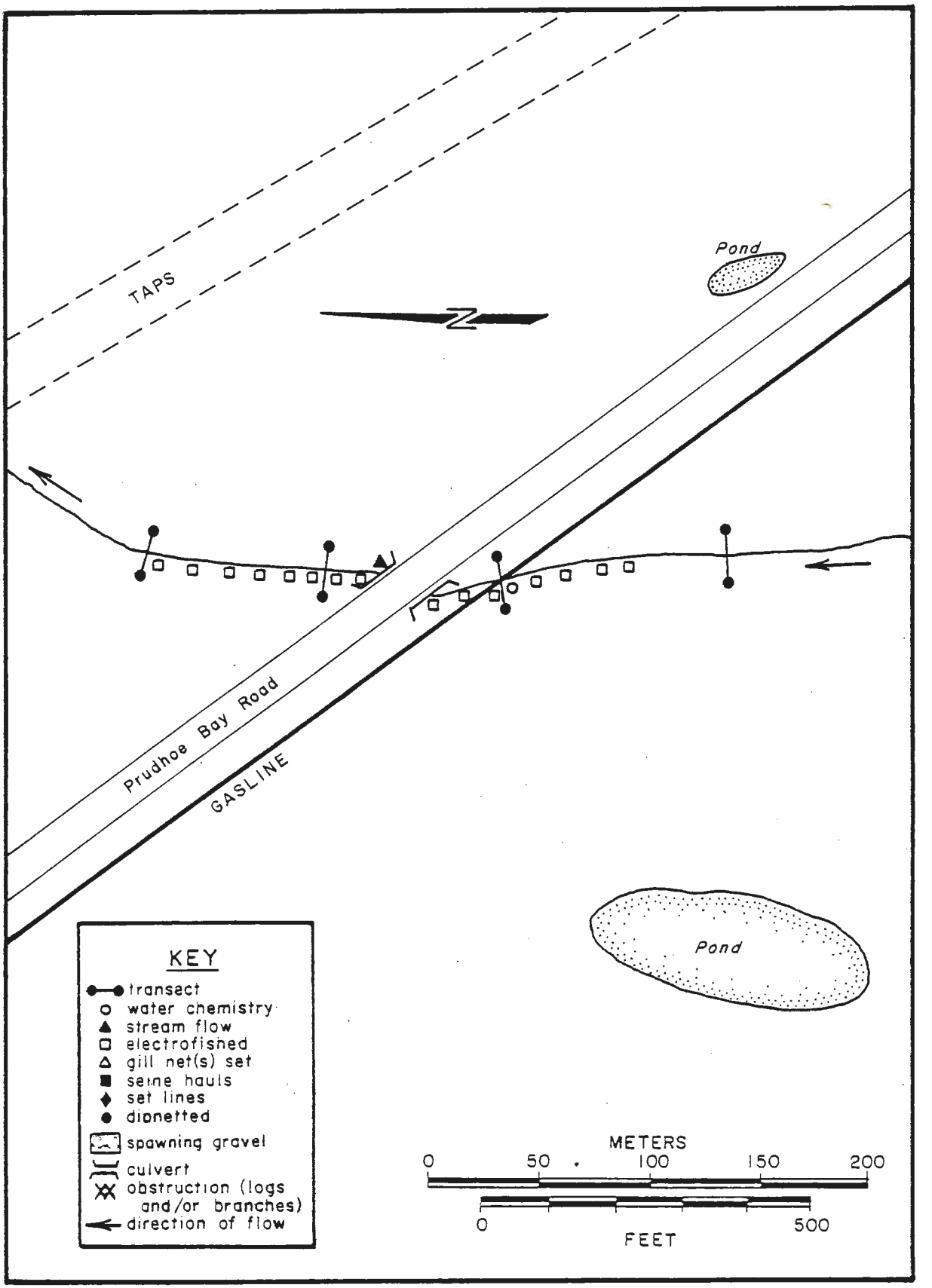

Figure 61. Spring survey. Tributary to Short Creek, 6 June 1981.

SPRING SURVEY FORM

WATERBODY

Waterbody: Short Creek Source: Tundra Drainage

Main Drainage: Sagavanirktok River Tributary to: Sagavanirktok River

Figure: 62 Elevation: 88 m

NPAS: 7 NPMP: 38.4 NPRX: 007-2 AHMP: NA

USGS Map Reference: Sagavanirktok, AK T: 5N R: 14E Sec: 7

Site Access: Truck

Section Surveyed: 120 m upstream to 160 m downstream of proposed pipeline crossing

ASSESSMENT

Short Creek (previously Sagavanirktok Side Channel) is a small tributary to the Sagavanirktok River confined by low banks vegetated with willows and tundra flora. The substrate is fines and detritus. In the vicinity of the proposed pipeline crossing the stream bed is a wide, marshy area which is heavily vegetated by sedges. Throughout the surveyed area the stream gradient is slight. The water was high, but well within the stream banks.

Fish use was not observed during the spring 1981 survey. Although adequate fish habitat existed at this time, lower flows may render fish habitat marginal or non-existent. No fish use has been documented for this stream, but use is probably low and principally during high water periods.

FISH

Waterbody: Short Creek NPRX: 007-2

Date: 6 June 1981

Fish Present: no

Gear/Effort: EF (0/408 sec)

Species Present	Quantity		Length (mm)	
	Fry	Other	Fry	Other

PHYSICAL CONDITIONS

Date	6 June 1981
Wetted Width (m)	0.85-55
Depth (cm)	11-42
Discharge (m^3/s)	0.0172
Dissolved Oxygen (mg/ℓ)	10.0
Temperature (° C)	10.9
Conductivity (μmhos/cm)	175
pH (pH units)	8.2
Color (color units)	45
Turbidity (NTU)	2.0
T. Hardness (mg $CaCO_3$/ℓ)	153.9
Nitrate (mg/ℓ N)	below detection limit
Orthophosphate (mg/ℓ P)	below detection limit
Bottom Type (%)	100 fines/detritus
Bank Stability (%)	100
Aquatic Vegetation (P/A)	P
Riparian Vegetation (%)	68 sedge, 32 willow
Cover (%)	10
Fish Block(s)	none observed

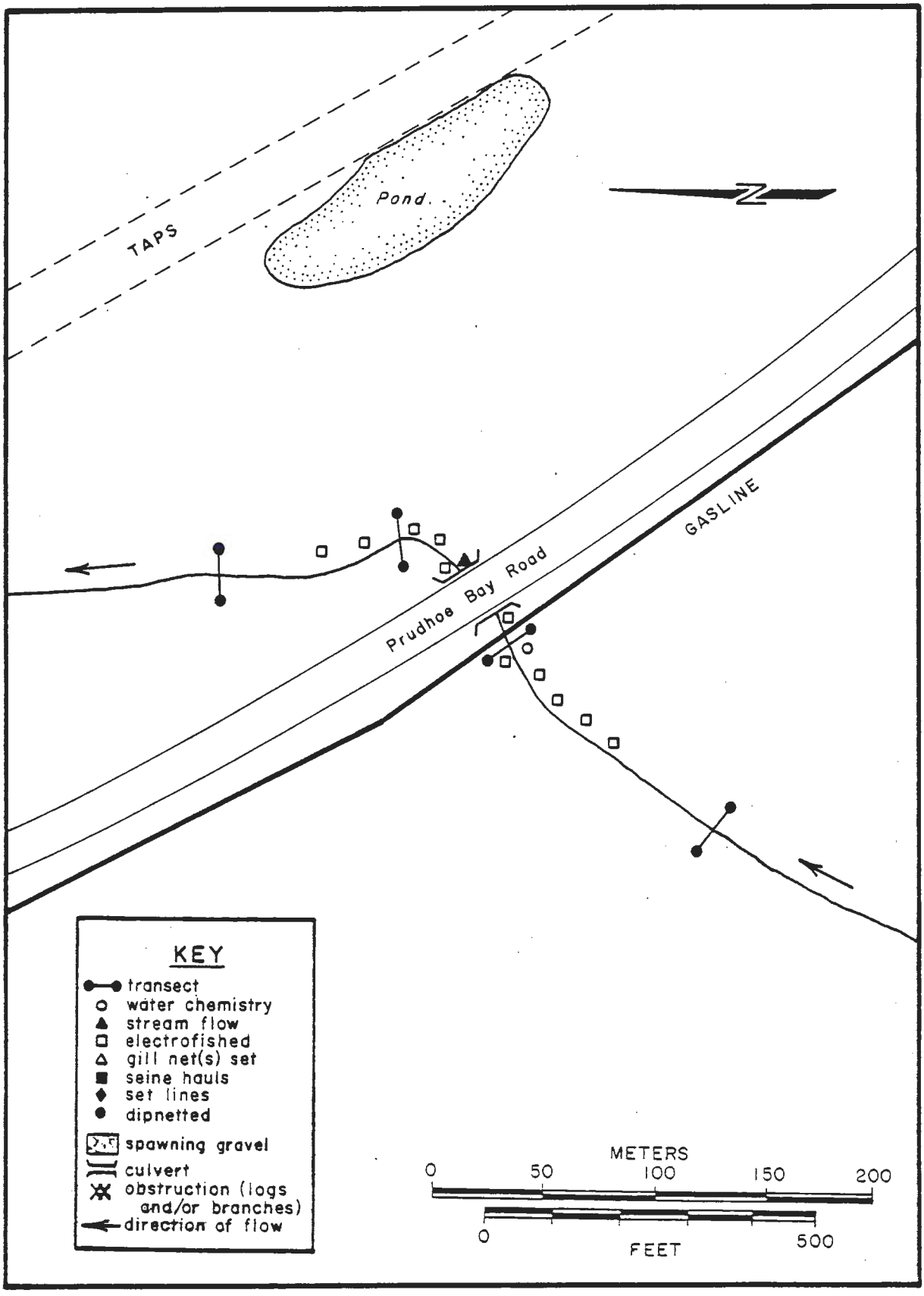

Figure 62. Spring survey. Short Creek, 6 June 1981.

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APPENDIX I

Calibration of Field Equipment

and

Accuracy of Measurements

NORTHERN TESTING LABORATORIES, INC.

600 UNIVERSITY PLAZA WEST, SUITE A FAIRBANKS, ALASKA 99701 907-479-3115

May 26, 1981

LGL Alaska
P.O. Box 80607
College, Alaska 99708

Attention: Dave Schmidt

Dear Sir,

On May 11, 1981 our laboratory received the following meters for calibration: 2 YSI salinity-conductivity-temperature meters, 1 Hach turbidimeter, 1 HF turbidimeter, 2 Hach pH-meters, 2 YSI dissolved oxygen meters, and 3 field thermometers.

All of the meters were calibrated and are in good working order with the exception of the HF turbidimeter which we were unable to calibrate due to erratic and unreliable readings. The standards for the Hach turbidimeter are no longer useable and need to be replaced. Also, the salinity-conductivity-temperature probe marked #1 gives low conductivity readings and has a defective temperature sensor.

All of the calibrations were performed according to Standard Methods for Water and Wastewater, 14th edition where applicable, and otherwise by the manufacterers instructions. If you have any questions regarding the procedures used, please call us at 479-3115.

Very truly yours

NORTHERN TESTING LABORATORIES, INC.

Carol J. Garrison

Carol J. Garrison
Chemist

CJG/deb

APPENDIX II

Provisional List of Waterbodies Crossed or Potentially Affected by the Northwest Alaska Pipeline Route

APPENDIX II. Provisional list of 399 waterbodies crossed or potentially affected by the Northwest Alaskan Pipeline including an evaluation of existing spring fisheries data for each. Data sources (see Literature Reviewed) and spring critera (see Table 1) are listed by number. Primary data sources are underlined. Abbreviations: NPRX (Northwest Pipeline and Floodplain crossing), NPSI (Northwest Pipeline Stream Identification Number), NPAS (Northwest Pipeline Alignment Sheet), NPMP (Northwest Pipeline Milepost), AHMP (Alaska Highway Milepost), Alyeska AS (Alyeska Alignment Sheet), Sta. (Station). Reference 134 identified the alignment sheet series used.

Waterbody	NPRX	NPSI	NPAS	NPMP	AHMP	Alyeska AS	Alyeska Pipe Station	Haul Road Station	Spring Criteria	References
Unnamed Creek	131-2	6-227.03	131	740.6	1222.2				2	2,30,54,76,118
Scottie Creek	131-1	6-227	131	739.4	1223.4				1	5,6,7,8,9,10,17,22,26,29,30,54,55,57,59,60,72,73,76,77,118,123
Desper Creek	130-1	6-226	130	737.4	1225.6				4	5,6,7,9,10,17,26,29,30,54,55,57,60,68,72,73,76,118,121
Unnamed Creek	129-5	6-225.01	129	732.5	1232.1				2	2,30,54,76,118
Sweetwater Creek	129-4	6-225	129	730.2	1234.2				2	2,9,29,30,54,57,59,60,72,73,76,118
Unnamed Creek	129-3	6-224	129	729.7	1234.7				2	2,29,30,54,59,60,73,76,118
Unnamed Creek	129-2	6-223	129	728.6	1235.9				3	2,29,30,54,76,118
Unnamed Creek	129-1	6-222	129	728.2	1236.3				3	2,27,30,54,57,59,60,76,118
Unnamed Creek	128-2	6-221	128	724.2	1240.6				3	2
Unnamed Creek	128-1	6-220	128	723.6	1241.2				3	2
Gardiner Creek	127-1	6-219	127	718.5	1246.7				1	5,6,7,8,9,10,17,22,26,29,30,54,57,59,60,68,72,73,76,118
Tenmile Creek	126-1	6-218	126	712.5	1252.8				2	2,5,6,9,10,17,26,29,30,54,57,59,60,73,118
Silver Creek	125-1	6-217	125	706.5	1258.7				4	2,5,6,9,10,26,29,30,54,59,60,73,76,118,121
Unnamed Creek	124-3	6-216.01	124	703.5	1262.3				2	2,30,54,76,118
Lethe Creek	124-2	6-216	124	701.0	1266.5				4	2,29,30,54,57,59,60,72,76,118,123
Beaver Creek	124-1	6-215	124	699.2	1268.0				1	5,6,7,8,9,10,17,22,26,29,30
Unnamed Creek	123-2	6-214.01	123	697.0	1270.4				2	2,30,54,76,118
Unnamed Creek	123-1	6-213.01	123	694.6	1273.0				3	2,30,59,60,76,118
Unnamed Creek	122-2	6-213	122	690.1	1278.3				2	2,9,29,30,60,76,118
Bitters Creek	122-1	6-212	122	688.2	1280.2				1	5,6,9,10,26,29,30,54,57,59,60,69,72,73,76,118

Provisional List of Waterbodies (continued)

Waterbody	NPRX	NPSI	NPAS	NPMP	AHMP	Alyeska AS	Alyeska Pipe Station	Haul Road Station	Spring Criteria	References
Unnamed Creek	121-2	6-210.02	121	685.5	1283.2				4	2,30,76,118
Unnamed Creek	121-1	6-210.01	121	683.5	1285.4				4	2,30,76,118
Unnamed Creek	119-2	6-210	119	672.6	1296.7				3	2,29,30,76,118
Unnamed Creek	119-1	6-209	119	671.4	1297.9				3	2,29,30,59,60,76,118
Tanana River	118-2	6-207	118	666.0	1303.3				1	3,5,6,7,9,10,13,17,22,26,29,30,54,57,60,69,72,76,118
Tanana Overflow	118-1	6-206	118	663.8	1305.6				2	2
Tok River	117-2	6-205	117	659.9	1309.4				1	3,5,6,7,9,10,17,22,26,29,30,54,55,57,59,60,72,73,76,118
Tok Overflow	117-1	6-204	117	657.6-658.0	1311.4				2	2
Crystal Slough Creek	114-1	6-203.03	114	640.7	1328.2				1	2,9,26,30,54,55,57,60,73,76,118
Unnamed Creek	113-4	6-203.01	113	639.2	1329.5				3	2,30,60,76,118
Unnamed Creek	113-3	6-203	113	638.2	1330.5				2	2,30,54,59,60,76,118
Moon Lake Tributary #1	113-2	6-202	113	636.9	1331.9				2	2,6,29,30,59,69,76,118
Moon Lake Tributary #2	113-2	6-202	113	636.9	1331.9				2	2,6,29,30,59,69,76,118
Yerrick Creek	113-1	6-201	113	634.7	1333.7				1	3,5,6,7,8,9,10,17,22,26,29,54,55,57,64,68,69,72,73,76,77,118
Unnamed Creek	112-10	6-200.01	112	632.5	1336.9				2	2,29,30,54,59,60,69,76,118
Unnamed Creek	112-9	6-200	112	632.5	1336.9				2	2,29,30,54,59,60,69,76,118
Cathedral Rapids Creek #1	112-8	6-199	112	630.9	1338.1				2	2,4,7,22,29,30,60,68,69,73,118
Cathedral Rapids Creek #2	112-7	6-198	112	630.3	1338.7				2	2,4,7,22,29,30,59,60,68,69,76,118
Cathedral Rapids Creek #3	112-6	6-197B	112	630.2	1338.7				2	2,4,7,22,29,30,59,60,68,69,76,118
Cathedral Rapids Creek #4	112-5	6-197A	112	630.2	1338.8				2	2,4,7,22,29,30,59,60,68,69,76,118
Cathedral Rapids Creek #5	112-4	6-197	112	630.1	1338.9				3	2,4,7,22,30,60,68,69,76,118
Cathedral Rapids Creek #6	112-3	6-196	112	629.9	1339.0				2	2,4,7,22,29,30,59,60,68,69,76,118
Cathedral Rapids Creek #7	112-2	6-195	112	629.7	1339.2				2	2,4,7,22,29,30,60,68,69,76,118
Unnamed Creek	112-1	6-193	112	628.9	1339.8				2	2,5,6,10,26,29,30,54,57,69,72,76,118
Unnamed Creek	111-6	6-192.01	111	628.4	1340.5				2	2,30,54,76,118

Provisional List of Waterbodies (continued)

Waterbody	NPRX	NPSI	NPAS	NPMP	AHMP	Alyeska AS	Alyeska Pipe Station	Haul Road Station	Spring Criteria	References
Unnamed Creek	111-5	6-192	111	628.0	1340.9				2	2
Sheep Creek	111-4	6-191	111	626.8-627.0	1342.2				3	3,5,6,7,8,10,22,29,30,54,68 69,72,76,118
Unnamed Creek	111-3	6-190	111	625.4	1343.7				2	2,29,30,54,76,118
Unnamed Creek	111-2	6-189	111	624.9	1344.0				2	2
Unnamed Creek	111-1	5-188	111	623.6	1345.3				2	2
Robertson River	110-4	5-187	110	621.2-621.5	1347.6				1	3,5,6,7,8,9,10,17,22,26,29, 30,54,55,57,73,75,76,77,118
Unnamed Creek	110-3	5-186	110	619.7	1349.3				2	2
Unnamed Creek	110-2	5-185.03	110	618.9	1350.1				2	2,30,54,76,118
Unnamed Creek	110-1	5-185.02	110	618.7	1350.2				2	2,30,54,76,118
Unnamed Creek	109-2	5-185.01	109	616.8	1352.3				2	2,30,54,76,118
Bear Creek	109-1	5-185	109	611.6	1357.3				1	3,5,6,7,8,9,10,17,22,26,29, 30,54,55,57,59,60,69,72,73, 76,77,118
Chief Creek	108-4	5-184	108	610.3	1358.6				3	3,5,6,7,8,9,10,17,22,26,29, 30,54,55,57,59,60,72,76,118
Unnamed Creek	108-3	5-183	108	607.1	1361.7				3	2,5,26,29,30,54,76,118
Unnamed Creek	108-2	5-182.01	108	606.8	1362.0				2	2,5,30,54,76,118
Unnamed Creek	108-1	5-182	108	605.8	1363.5				2	2
Unnamed Creek	107-2	5-181	107	604.8	1364.4				3	2,29,30,54,59,60,73,76,118
Sam Creek	107-1	5-180	107	603.3	1365.9				2	3,5,6,7,8,9,10,26,30,54,55, 76,118
Unnamed Creek	106-3	5-179	106	600.1	1369.1				2	3,5,6,9,10,26,29,30,54,57,59, 60,73,76,118
Berry Creek	106-2	5-178	106	597.9	1371.4				1	3,5,6,7,8,9,10,22,29,30,54, 57,59,60,69,72,73,76,77,118
Sears Creek	106-1	5-177	106	594.8	1374.4				1	3,5,6,7,8,9,10,17,22,29,30, 54,57,59,60,64,69,72,76,77,118
Unnamed Creek	105-2	5-176.01	105	592.3	1377.0				2	2,30,54,76,118
Dry Creek	105-1	5-176	105	591.2	1378.1				2	3,5,6,7,8,9,10,22,29,30,54,57, 59,60,68,69,72,73,76,118
Johnson River	104-1	5-175	104	588.6-588.8	1380.5				4	3,5,6,7,8,9,10,17,22,26,29,30, 54,57,60,69,72,73,76,77,118
Little Gerstle River	103-2	5-174	103	581.0	1388.4				1	3,5,6,7,8,9,10,17,22,26,29,30, 72,73,76,77,118
Dougherty Creek	103-1	5-173	103	579.0	1390.4				2	

Provisional List of Waterbodies (continued)

Waterbody	NPRX	NPSI	NPAS	NPMP	AHMP	Alyeska AS	Alyeska Pipe Station	Haul Road Station	Spring Criteria	References
Gerstle River	102-1	5-172	102	576.3-576.7	1393.0				4	3,5,6,7,8,9,10,17,22,26,29,30,54,57,72,73,76,118
Sawmill Creek	100-2	5-171	100	565.4	1403.9				2	3,5,6,7,8,9,10,29,30,54,76,118
Rhoads Creek	100-1	5-170	100	561.2	1407.6				2	3,5,6,9,10,29,30,54,76,118
Granite Creek	099-1	5-169	99	559.4	1409.2				2	3,5,6,7,9,10,22,29,30,54,76,118
Tanana River	096-1	5-166	96	539.3	NA	47	9215+00		1	3,5,11,13,15,16,27,29,30,32,57,76,118
Tanana River Side Channel	095-1	5-165.01	95	538.7	NA	47			1	3,11,13,30,42,43,57,76,77,118,122,135
Shaw Creek	093-2	5-165	93	527.4	NA	49	9789+15		1	3,5,11,29,30,57,65,76,77,118
Lower Rosa Creek	093-1	5-164	93	526.4	NA	49	9800+40		1	5,11,29,30,76,122
Rosa Creek #2	092-12	5-162	92	521.5	NA		10110+50		3	5,11,29,30,76,118
Rosa Creek #3	092-11	5-161.09	92	521.4	NA	50	10142+74		3	5,11,29,30,57,76,118
Rosa Creek #4	092-10	5-161.08	92	520.4	NA	50	10165+25		3	5,11,29,30,57,76,118
Rosa Creek #5	092-9	5-161.07	92	520.1	NA	50	10165+25		3	5,11,29,30,57,76,118
Rosa Creek #6	092-8	5-161.06	92	519.9	NA	50			3	
East Fork Minton Creek #6	092-7	5-161.05	92	518.7	NA	51	10244+06		2	
East Fork Minton Creek #5	092-6	5-161.04	92	518.3	NA	51	10258+12		2	
South Fork Minton Creek	092-5	5-161.032	92	518.2	NA	51			2	5,11,29,30,118
South Fork Minton Creek	092-4	5-161.031	92	518.0	NA	51			2	
East Fork Minton Creek #4	092-3	5-161.03	92	517.8	NA	51	10298+63		2	5,11,29,30,32,54,66,76,118
East Fork Minton Creek #3	092-2	5-161.02	92	517.4	NA	51	10305+90		3	5,11,29,30,32,54,66,76,118
East Fork Minton Creek #2	092-1	5-161.01	92	517.1	NA	51	10316+00		3	5,11,29,30,32,54,66,76,118
East Fork Minton Creek #1	091-6	5-161	91	517.0	NA				4	121
West Fork Minton Creek #1	091-5	5-160.02	91	516.0	NA	51	10393+01		3	5,11,30,32,54,76,118
West Fork Minton Creek #2	091-4	5-160.01	91	515.5	NA	51	10394+88		3	5,11,30,32,54,76,118
Gold Run Creek	091-3	5-160	91	514.3	NA	51	10487+62		2	3,5,11,29,30,54,76,118
Small Creek	091-2	5-159.02	91	512.9	NA	52	10561+41		2	11,30,54,57,76,118
Tributary to Small Creek	091-1	5-159.01	91	512.3	NA	52	10589+47		2	11,30,76,118
Redmond Creek	090-1	5-159	90	507.3	NA	53	10855+33		1	3,5,11,14,25,29,30,32,35,38,54,55,57,76,77,118
Tributary to Salcha River	089-3	4-158.03	89	504.5	NA	53	11037+79		2	11,30,54,76,118
Third Slough	089-2	4-158.04	89	503.9	NA	53A			4	
Salcha River	089-1	4-158	89	503.5	NA	53A	19+00		1	3,5,11,13,14,25,29,30,32,35,38,76,118,123
Two-Nineteen Creek	088-4	4-175.01	88	499.8	NA	54	223+50		3	11,30,54,76,118

Provisional List of Waterbodies (continued)

Waterbody	NPRX	NPSI	NPAS	NPMP	AHMP	Alyeska AS	Alyeska Pipe Station	Haul Road Station	Spring Criteria	References
Little Salcha River	088-3	4-157	88	498.2	NA	54	281+71		1	3,5,11,13,29,30,31,38,55,57,76,77,83,118
Tributary to Little Salcha River	088-2	4-156.05	88	497.3	NA	54	345+50		3	11,30,54,76,118
Tributary to Million Dollar Creek	088-1	4-156.04	88	495.7	NA	54	417+00		2	11,29,30,31,54,76,118
Million Dollar Creek	087-2	4-156.03	87	493.4	NA	54	545+00		1	5,11,29,30,31,57,64,76,118,126
French Creek	087-1	4-155	87	489.9	NA	55	643+55		4	3,5,11,19,29,30,31,38,55,57,76,77,118
Knokanpeover Creek	086-5	4-154	86	487.5	NA	56	809+40		1	3,5,11,19,29,30,31,57,76,118
Drainage Ditch	FH-086-2	4-148.07	86	486.9	NA				4	122
Tributary to French Creek	086-4	4-148.06	86	485.6	NA				2	122
Tributary to French Creek	086-3	4-148.05	86	485.1	NA				1	122,135
Tributary to French Creek	086-2	4-148.04	86	484.7					2	122
Unnamed Creek	086-1	4-148.03	86	483.7	NA				2	135
Unnamed Creek	085-2	4-148.02	85	482.6	NA				2	135
Moose Creek	085-1	4-148	85	482.0	NA				4	5,11,29,30,31,38,54,57,76,77,118,122,135
Unnamed Creek	084-5	4-144.04	84	476.3	NA				2	135
Unnamed Creek	084-4	4-144.03	84	476.1	NA				2	135
Chena River Side Channel	084-3	4-144.02	84	475.8	NA				3	122
Chena River	084-2	4-144	84	475.3	NA				1	3,5,11,13,17,27,29,30,31,38,59,76,118
Unnamed Creek	084-1	4-140.14	84	475.1	NA				2	135
Potlatch Creek	083-6	4-140.13	83	472.7	NA				2	122
Tributary to Little Chena River #1	083-5	4-140.12	83	469.9	NA				2	122
Tributary to Little Chena River #2	083-4	4-140.11	83	469.2	NA				2	135
Little Chena River	083-3	4-140.10	83	468.9	NA				1	122,135
Iowa Creek	083-2	4-140.09	83	468.3	NA				1	122,135
Tributary to Smallwood Creek #1	083-1	4-140.081	83	467.8	NA				2	135
Tributary to Smallwood Creek #2	082-2	4-140.08	82	465.9	NA				3	122,135
Smallwood Creek	082-1	4-140.07	82	463.9	NA				1	122,135

Provisional List of Waterbodies (continued)

Waterbody	NPRX	NPSI	NPAS	NPMP	AHMP	Alyeska AS	Alyeska Pipe Station	Haul Road Station	Spring Criteria	References
Nugget Creek Tributary	081-5	4-140.06	81	460.5	NA				4	122
Rose Creek	081-4	4-140.05	81	459.3	NA				2	135
Gilmore Creek	081-3	4-140.04	81	457.6	NA				4	135
Pedro Creek	081-2	4-140.03	81	457.4	NA				1	135
Gold Run Creek	081-1	4-140.02	81	456.9	NA				2	135
Fox Creek	080-2	4-140.01	80	454.4	NA				3	122,135
Treasure Creek	080-1	4-140	80	450.1	NA	62	659+43		3	3,5,11,17,29,30,54,57,76,118
Chatanika River	079-4	4-139	79	446.5	NA	63	873+63		1	3,5,11,17,29,30,31,39,76,81, 84,89,113,118
Shocker Creek	079-3	4-138	79	445.3	NA	63	914+00		1	5,11,29,30,54,57,76,118
Unnamed Tributary to Shocker Creek #1	079-2	4-137.06	79	445.0	NA	63			3	30,54,76,118
Unnamed Tributary to Shocker Creek #2	079-1	4-137.05	79	444.8	NA	63			3	30,54,76,118
Unnamed Tributary to Chatanika River #1	078-5	4-137.03	78	443.3	NA	63	1025+70		3	11,30,76,118
Unnamed Tributary to Chatanika River #2	078-4	4-137.02	78	443.2	NA	63	1027+70		3	11,30,76,118
Unnamed Tributary to Chatanika River #3	078-3	4-137.01	78	443.1	NA	63	1032+20		3	11,30,76,118
Washington Creek	078-2	4-137	78	439.8	NA	64	1209+62		1	1,3,5,11,17,29,30,31,38,54, 57,76,77,118
Unnamed Tributary to Washington Creek	078-1	4-136.01	78	439.6	NA	64	1220+00		4	11,30,76,118
South Fork Aggie Creek	076-5	4-136	76	432.5	NA	64	1595+00		3	1,3,5,11,17,29,30,31,38,54, 57,76,118
North Fork Aggie Creek	076-4	4-135	76	431.7	NA	65	1635+00		3	1,3,5,11,17,29,30,31,38,48, 54,57,76,118
Tributary to Little Globe Creek	076-3	4-134.01	76	430.0	NA	66	1740+00		4	11,30,76,118
Little Globe Creek	076-2	4-134	76	429.0	NA	66	1759+00		4	11,17,29,30,67,76,118,122
Unnamed Tributary to Little Globe Creek	076-1	4-133.01	76	428.9	NA	66	1796+00		4	11,30,76,118
Globe Creek	075-2	4-133	75	426.3	NA	66	1966+75		4	1,3,5,11,17,29,30,38,48,66, 76,118,121,122,135
Unnamed Tributary to Globe Creek	075-1	4-132.02	75	425.3	NA	67	1988+88		4	11,30,66,76,118
Unnamed Tributary to Tatalina River	074-2	4-132.01	74	422.0	NA	67	2167+00		4	11,30,48,76,118
Tatalina River	074-1	4-132	74	421.0	NA	67	2241+80		1	1,3,4,11,17,29,30,48,76,118, 121

Provisional List of Waterbodies (continued)

Waterbody	NPRX	NPSI	NPAS	NPMP	AHMP	Alyeska AS	Alyeska Pipe Station	Haul Road Station	Spring Criteria	References
Tributary to Slate Creek	073-5	4-131.01	73	416.8	NA	68	2456+31		4	11,30,76,118,122
Slate Creek	073-4	4-131	73	416.6	NA	68	2459+35		4	3,5,11,17,29,30,38,48,76,118,121,122,135
Ski Jump Ramp Creek	073-3	4-130	73	414.9	NA	68	2550+00		4	11,20,30,76,122
Wilber Creek	073-2	4-129	73	414.0	NA	68	2608+00		1	3,5,11,17,29,30,48,76,118,135
Tributary to Wilber Creek	073-1	4-128.04	73	412.7	NA	69	2666+35		4	11,30,76,118,122
Shorty Creek	072-3	4-128.03	72	408.5	NA	69	2855+73		3	11,30,76,118,122,135
Tributary to Tolovana River	072-2	4-128.01	72	407.5	NA	70	2924+55		2	11,30,76,118,122
Tolovana River	072-1	4-128	72	407.0	NA	70	2957+90		4	1,3,5,11,13,17,20,30,31,48,57,74,76,118,121
Unnamed Tributary to West Fork Tolovana River	071-2	4-127.01	71	403.9	NA	70	3122+16		4	11,30,76,118,122
Lost Creek	071-1	4-127	71	400.7	NA	71	104+33		1	3,5,11,17,29,30,31,48,76,118,121,122,123
Erickson Creek Tributary	070-1	4-126	70	396.3	NA	72	337+66		3	3,11,29,30,76,118,121
West Fork Erickson Creek	069-1	4-125	69	393.0	NA	72,73	513+62		4	3,5,11,17,29,30,31,48,76,118,122,123
Hess Creek Oxbow	068-5	4-123.05	68	387.0	NA	73	800+20		3	11,17,30,76,118,122
Hess Creek	068-4	4-123A.04	68	386.8	NA	73,74W	820+00		1	1,3,5,11,17,29,30,31,48,70,76,118,121
Hess Creek Tributary			68	386.4					2	122
Hess Creek and Tributary from Fish and Mastadon Creek	068-3	4-123.03	68	386-387.3	NA	73	829+65		4	3,5,11,29,30,31,48,76,118
Two-Bank Creek	068-2	4-123.02	68	382.4	NA	74	1040+40		4	11,30,76,118,122
Unnamed Creek	068-1	4-123.01	68	381.8	NA	74	1071+47		4	11,30,76,118,122
Two-Bit Creek	067-5	4-123	67	381.4	NA	74	1096+85		4	11,29,30,76,118,122
Unnamed Creek	067-4	3-122.05	67	380.2	NA	75	1150+15		4	11,17,30,76,118
Unnamed Creek	067-3	3-122.04	67	379.5	NA	75	1181+44		3	11,30,76,118,122,135
Hot Cat Creek	067-2	3-122.03	67	378.5	NA	75	1242+94		3	5,11,17,30,31,48,61,76,118,121,122
Unnamed Creek	067-1	3-122.02	67	375.9	NA	75	1367+33		4	11,17,30,76,118,122
Unnamed Creek	066-4	3-122.01	66	374.3	NA	75	1447+20		4	11,17,30,76,118,122
Isom Creek	066-3	3-122	66	371.4	NA	76	1642+50		4	3,5,11,29,30,31,48,76,118,122,135

Provisional List of Waterbodies (continued)

Waterbody	NPRX	NPSI	NPAS	NPMP	AHMP	Alyeska AS	Alyeska Pipe Station	Haul Road Station	Spring Criteria	References
Tributary to Isom Creek	066-2	3-121.02	66	370.6	NA	76	1649+50		4	3,5,11,17,29,30,31,48,76, 118,122
Tributary to Isom Creek	066-1	3-121.01	66	370.4-370.5	NA				4	
Tributary to Isom Creek	065-1	3-121	65	369.4	NA	76	1682+08		4	11,30,76,118
Yukon River	064-2	3-120	64	361.3-361.7	NA	77-78	58+00		1	1,3,4,11,13,17,20,21,29,30, 38,48,76,118
Burbot Creek	064-1	3-119	64	359.3	NA	78	158+21	1HR168+10	4	5,11,20,21,29,30,48,76,118
Woodchopper Creek	063-1	3-118	63	358.4	NA	78	215+30	1HR215+20	1	5,11,20,21,29,30,48,76,118
Phelps Creek	062-4	3-117	62	352.9	NA	79	508+70	1HR501+00	4	5,11,20,21,29,30,48,64,76,118,135
Unnamed Creek	062-3	3-116	62	351.1	NA	79	600+50	1HR578+10	4	122
Unnamed Creek	062-2	3-115	62	350.0	NA	80	665+00	1HR661+20	4	122
Stumblin Creek	062-1	3-114	62	348.6	NA	80	736+00	1HR736+12	4	122
Unnamed Creek	061-3	3-113	62	347.3	NA	80	811+25	1HR812+00	4	
Unnamed Creek	061-2	3-112	61	345.4	NA	80	899+00	1HR892+15	4	11,17,20,21,29,119,122
Fort Hamlin Hills Creek	061-1	3-111	61	344.1	NA	81	971+50	1HR1011+08	1	5,11,20,21,29,30,45,61,70,76, 118
Knowater Creek	060-2	3-110.01	60	341.3	NA	81	1123+25	1HR1158+45	4	11,20,21,30,76,118,122
North Fork Ray River	060-1	3-110	60	337.9	NA	82	58+49	1HR1337+34	1	1,5,11,17,20,21,29,30,38,48, 55,64,74,76,77,118
Fed Creek	059-1	3-109	59	333.2	NA	82	270+25	1HR1600+24	4	11,29,30,48,76,118,121,122
South Branch West Fork Dall River	057-3	3-108	57	325.8	NA	84	673+00	1HR2001+50	1	1,5,11,20,21,29,30,38,48,76, 118
Middle Branch West Fork Dall River	057-2	3-107	57	323.4	NA	84	798+00	1HR2125+39	1	1,5,11,20,21,29,30,38,48,76, 118
Smoky Creek	057-1	3-106.02	57	322.7	NA	84	818+75	1HR2163+02	3	11,20,21,30,76,118,121,122
Unnamed Creek	056-3	3-106.01	56	321.1	NA	85	915+75	1HR2245+45	3	11,20,21,30,76,118,121,122
Finger Mountain Creek	056-2	3-106	56	320.2	NA	85	961+66	1HR2291+88	1	5,11,20,29,30,48,76,118
Unnamed Creek	056-1	3-105.01	56	319.8	NA	85		1HR2312+24	4	
Olson's Lake Creek	055-3	3-105	55	316.9	NA	85	1149+38	1HR2469+77	1	5,11,29,30,48,70,76,118
Kristie's Creek	055-2	3-104.01	55	316.6	NA	85		1HR2485+18	4	11,135
Caribou Mountain Creek	055-1	3-104	55	314.1	NA	86	56+03	1HR2609+50	1	5,11,29,30,31,48,76,118,135

Provisional List of Waterbodies (continued)

Waterbody	NPRX	NPSI	NPAS	NPMP	AHMP	Alyeska AS	Alyeska Pipe Station	Haul Road Station	Spring Criteria	References
Kanuti River	054-4	3-103	54	311.0	NA	86	231+00	1HR2777+75	1	1,3,5,11,13,17,20,21,29,30, 31,32,37,55,67,74,76,118
Netsch's Creek Tributary #1	054-3	3-102	54	309.1	NA	87	331+60	1HR2875+90	4	11,29,30,76,118,122
Netsch's Creek Tributary #2	054-2	3-101	54	308.7	NA	87	349+00	1HR2894+95	4	11,29,30,76,118
Netsch's Creek Tributary #3	054-1	3-100.01	54	308.5	NA	87	370+80	1HR2944+05	4	11,30,76,118
South Fork Fish Creek	053-4	3-100	53	305.0	NA	87	520+50	1HR3255	1	1,3,5,11,20,21,29,30,48,76, 118
Middle Fork Fish Creek	053-3	3-99	53	304.0	NA	87	577+90	1HR3255	1	1,3,5,11,20,21,29,30,48,76, 118,135
Fish Creek	053-2	3-98	53	302.3	NA	88W	653+50	1HR3255+12	1	1,3,5,11,17,20,21,29,30,34, 37,38,48,55,64,67,76,118,123
Alder Mountain Creek	053-1	3-97	53	300.7	NA	88W	742+50	2HR115+00	4	5,11,20,21,29,30,48,76,118,135
Pung's Crossing Creek #1	052-4	3-96.01	52	297.6	NA	89	932+40	2HR363+36	1	5,11,20,21,30,76,118
South Fork Bonanza Creek	052-3	3-95	52	293.8	NA	89	1123+60	2HR550+59	1	1,3,5,11,17,20,21,29,30,31, 34,47,38,55,76,77,118
Grizzly Creek	052-2	3-94.03	52	293.7	NA	89		2HR545	4	11,118,122
Unnamed Bonanza Creek Channel	052-1	3-94.02	52	293.7	NA	89	1128+60	2HR547	4	11,20,21,30,76,118,122
Oxbow Lake System	051-5	3-94.01	51	293.2	NA	89	1148+00	2HR561+64	1	11,20,30,48,76,118,122
North Fork Bonanza Creek	051-4	3-94	51	292.2	NA	89	1208+32	2HR606+69	4	1,3,5,11,17,20,21,29,30,31, 34,38,45,67,76,118,121,123
South Fork Little Nasty Creek	051-3	3-93	51	289.9	NA	90	1327+15	2HR759+84	4	5,11,20,21,29,30,48,67,76, 118,121
Little Nasty Creek	051-2	3-92	51	289.7	NA	90	1340+25	2HR767+82	1	1,5,11,20,21,24,30,48,61,64, 76,118,123
North Fork Little Nasty Creek	051-1	3-91.02	51	289.6	NA	90	1344+10	2HR767	4	11,118,122
Catch 22 Springs	FH-050-2	3-91.01	50	285.3	NA	91			4	122
Prospect Creek	050-3	3-91	50	285.3	NA	91	1590+00	2HR1099+52	1	1,3,5,11,17,20,21,29,30,31, 34,37,38,43,55,70,74,76,77, 118
Unnamed Creek	050-2	3-90.05	50	284.6	NA	91			4	
Unnamed Creek	050-1	3-90.04	50	282.1	NA	91			4	
Douglas Creek	049-2	3-89	49	278.4	NA	92	330+00	2HR1470+34	4	1,3,5,11,17,20,21,29,30,34, 48,62,74,76,118,121
Unnamed Creek	049-1	3-87.03	49	276.6	NA	92			4	
Jim River	048-3	3-87	48	275.2	NA	92	453+50	2HR1579+80	1	1,3,5,11,13,17,20,21,30,34, 38,48,62,76,118,123
Jim River Slough	048-2	3-86.06	48	275.0	NA	92			2	135

Provisional List of Waterbodies (continued)

Waterbody	NPRX	NPSI	NPAS	NPMP	AHMP	Alyeska AS	Alyeska Pipe Station	Haul Road Station	Spring Criteria	References
Inlet to Grayling Lake	048-1	3-86.05	48	270.4	NA	93	758+70	2HR1893+22	4	
Ward's Wallow	047-6	3-86.04	47	269.8	NA	93	798+30	2HR1926+00	4	122
Grayling Lake Inlet	047-5	3-86.02	47	269.3	NA	93	849+00	2HR1949+14	1	11,20,21,30,48,70,76,118
Elwood Creek	047-4	3-86.01	47	267.6	NA	94	884+20	2HR2017	4	
East Fork Abba-Dabba Creek	047-3	3-86.005	47	267.0	NA	94		2HR2069+59	4	135
Abba-Dabba Creek	047-2	3-86	47	266.5	NA	94	963+28	2HR2098+18	1	1,5,11,20,21,29,30,48,61, 64,74,75,76,77,122
South Fork Koyukuk River	047-1	3-85	47	264.4	NA	94-95	1073+00	2HR2206+88	1	
South Fork Koyukuk River	046-4	3-85	46	264.3	NA	94-95	1073+00	2HR2206+88	4	1,3,5,11,13,17,20,21,29,30, 48,76,118
Crossroads Creek #1	046-3	3-82.03	46	259.5	NA	95	222+50	3HR129+23	4	11,20,21,29,30,76,118,122
Crossroads Creek #2	046-2	3-82.02	46	259.4	NA	95	288+75	3HR129+58	4	11,20,21,29,30,76,118
Chapman Creek	046-1	3-81	46	258.3	NA	96	295+17	3HR205+23	4	1,5,11,20,21,29,30,48,76,118,1
South Fork Windy Arm Creek	045-7	3-80	45	257.3	NA	96	343+75	3HR255+64	1	1,11,20,21,29,30,48,76,118,121
North Fork Windy Arm Creek	045-6	3-79	45	256.0	NA	96	417+25	3HR326+94	1	1,5,11,20,21,29,30,48,64,74, 76,118
Unnamed Creek	045-5	3-78.01	45	255.1	NA	96	458+70	3HR369+59	4	11,20,21,30,76,118,121
Trent's Trickle	045-4	3-78	45	254.0	NA	96	518+39	3HR413+47	1	5,11,20,21,29,30,48,61,62,70, 76,118,122
Jackson's Slough East Channel #1	045-3	3-77.02	45	253.3	NA	97	555+85	3HR452+15	1	5,11,30,34,48,61,62,64,76,118, 123
Jackson's Slough Cross Channel	045-2	3-77.01	45	253.0	NA	97	570+70	3HR464+00	1	5,11,29,30,34,48,61,62,66,74, 76,118,123
Jackson's Slough East Channel #2	045-1	3-77	45	252.8	NA	97	593+00	3HR483+00	1	5,11,30,34,48,61,62,64,76,118. 123
Cathedral Mountain Creek	044-6	3-75	44	251.8	NA	97	626+40	3HR528+26	4	11,122
Rosie Creek	044-5	3-74	44	250.5	NA	97	666+00	3HR599+00	1	3,5,11,17,20,21,29,30,31,48, 74,76,77,118
First Creek	044-4	3-72.06	44	248.1	NA	97		3HR727+14	1	11,20,21,30,76,118
Tributary to East Fork Spring Slough	044-3	3-72.04	44	247.0	NA	97-98	835+50	3HR776+84	1	5,11,30,76,118,135
Tributary to Spring Slough #1	044-2	3-72.03	44	246.8	NA	98		3HR783+98	1	5,11,30,76,118
Tributary to Spring Slough #2	044-1	3-72.02	44	246.7	NA	98		3HR790+14	1	5,11,30,76,118
Tributary to Spring Slough #3	043-10	3-72.01	43	246.5	NA	98		3HR797+60	1	5,11,30,48,76,118

Provisional List of Waterbodies (continued)

Waterbody	NPRX	NPSI	NPAS	NPMP	AHMP	Alyeska AS	Alyeska Pipe Station	Haul Road Station	Spring Criteria	References
Slate Creek	043-9	3-72	43	245.0	NA	98	976+83	3HR876+86	1	1,3,4,11,17,20,21,29,30,31, 34,38,76,118,122,123,135
Calf Creek	043-8	3-71	43	244.3		98	1004+75	3HR910+70	1	5,11,29,30,31,48,76,118
South Fork Clara Creek Overflow	043-7	3-70.01	43	244.0	NA	98	1015+80	3HR925+49	1	5,11,29,30,31,48,76,118
Clara Creek Overflow	043-6	3-70	43	243.9	NA	98	1019+50	3HR933+34	1	5,11,29,30,31,48,64,76,118
Clara Creek	043-5	3-69	43	243.8	NA	98	1036+20	3HR941+85	1	5,11,17,29,30,31,34,48,76,118
Unnamed Creek	043-4		43	241.8	NA	98			4	
South Fork Mary Angel Creek	043-3	3-65	43	241.5	NA	98-99	4+30	3HR1052+04	1	5,11,29,30,31,48,64,76,118
Mary Angel Creek	043-2	3-63.04	43	241.4	NA	99	8+40	3HR1055+57	1	5,11,30,34,48,61,64,70,74,76, 118,123
South Fork Sharon Creek	043-1	3-63.03	43	240.8	NA	99	38+70	3HR1076+29	2	5,11,30,76,118,135
Marion Creek	042-6	3-63	42	240.3	NA	99	59+85	3HR1114+14	1	1,3,5,11,20,21,29,30,31,34,38, 48,74,76,118,122
North Marion Creek Overflow #1	042-5	3-62.04	42	240.2	NA	99	68+80	3HR115	4	11,30,76,118,122
North Marion Creek Overflow #2	042-4	3-62.03	42	240.1	NA	99	70+75	3HR1120+33	4	11,30,76,118
North Marion Creek Overflow #3	042-3	3-62.02	42	240.0	NA	99	87+00	3HR1122+90	4	11,30,76,118
Pence's Pond Creek	042-2	3-62.01	42	239.9	NA	99	85+50	3HR1143+81	1	5,11,20,21,30,31,48,76,118
Dry Gulch	042-1	3-62	42	236.3	NA	99	265+00	3HR1335+38	4	
South Fork Confusion Creek	041-8	3-61.03	41	234.1	NA	100	369+00	3HR1439+92	4	5,11,20,30,31,48,76,77,118
Confusion Creek	041-7	3-61.02	41	233.9	NA	100	391+70	3HR1443	1	5,11,20,30,31,48,76,118
Middle Fork Confusion Creek	041-6	3-61.015	41	233.8	NA			3HR1443+50	4	
Minnie Creek	041-5	3-61	41	232.3	NA	100	454+46	3HR1519+34	1	1,3,5,11,17,20,21,29,30,34, 38,48,76,118,123
Middle Fork Koyukuk River	041-4	3-60.19	41	231.2	NA	100	495+50	3HR1588+80	1	1,3,5,11,13,17,20,21,30,76, 118,123
Union Gulch Creek	041-3	3-60.17	41	230.3	NA	100	536+00	3HR1600	2	5,11,20,21,30,48,76,118,135
Confederate Gulch Creek	041-2	3-60.16	41	229.8	NA	100	590+75	3HR1655+00	1	11,30,76,118
Hammond River	041-1	3-60	41	229.0	NA	101	635+60	3HR1711+42	1	1,5,11,13,20,21,29,30,38,48, 55,67,76,118,132
Middle Fork Koyukuk River	040-8	2-60.13	40	228.8	NA	101	651+50	3HR1726+35	1	1,5,11,13,20,21,29,30,38,48, 76,118
One-O-One Creek	040-7	2-60.122	40	228.6	NA	101	663+45	3HR1734+29	1	

Provisional List of Waterbodies (continued)

Waterbody	NPRX	NPSI	NPAS	NPMP	AHMP	Alyeska AS	Alyeska Pipe Station	Haul Road Station	Spring Criteria	References
Coon Gulch Creek	040-6	2-60.121	40	228.1	NA			3HR1758	1	
Richardson's Slough	040-5	2-60.12	40	226.1	NA	101	778+30	3HR1861+03	1	5,11,30,48,76,118
Over Creek #4	040-4	2-60.07	40	225.7	NA	101	805+39	3HR1896+30	1	1,11,30,48,76,118
Nugget Creek	040-3	2-60	40	224.2	NA	101	886+60	3HR1969+70	4	5,11,20,21,30,34,48,76,118, 121
Wolf Pup Creek	040-2	2-59	40	223.7	NA	102	906+50	3HR1990+56	4	5,11,20,30,34,48,76,118,121
Sheep Creek	040-1	2-53	40	223.2	NA	102	933+00	3HR2018+85	1	5,11,20,21,29,30,34,48,76, 118
Cushing Creek	039-4	2-52.01	39	222.9	NA	102	948+60	3HR2033+06	4	5,11,20,30,48,76,118,122,135
Gold Creek	039-3	2-52	39	222.4	NA	102	976+00	3HR2059+11	1	3,5,11,17,20,21,29,30,31, 34,64,76,118,121
Linda Creek	039-2	2-51	39	221.9	NA	102	1001+18	3HR2087+21	4	5,11,17,20,21,29,30,31,34, 48,76,118,121
Valve Site Creek	039-1	2-49.07	39	219.7	NA	102	1121+05	3HR2203+04	3	11,20,30,76,118
Sukakpak Creek	038-8	2-49.03	38	216.5	NA	103	1305+00	3HR2373+80	1	5,11,20,21,30,31,61,62,76, 118,123
Access Road Creek	038-7	2-49.026	38	216.2	NA	103		3HR2387+57	1	11,135
West Fork Sukakpak Creek	038-6	2-49.025	38	216.0	NA	102		3HR2395	1	11,135
Middle Fork Koyukuk River	038-5	2-49	38	214.3-214.6	NA	103	1361+45	3HR2440+47	1	1,3,5,13,17,20,21,29,30,31, 38,48,74,76,118,123
Millie's Meander	038-4	2-48.03	38	214.0	NA	103	1418+76	3HR2489+68	1	11,30,31,48,64,70,76,118, 121
Eva's Alv	038-3	2-48.01	38	212.4	NA	103	1507+08	3HR2583+84	2	11,20,30,48,76,118,121
Dietrich River (Lower)	038-2	2-48	38	212.1-212.3	NA	104	1526+55	3HR2604+66	1	1,3,5,11,17,20,21,29,30,31, 37,38,48,61,62,76,77,118
1415 Lake Outlet	038-1	2-46.01	38	211.5	NA	104	1556+18	3HR2631+80	4	11,30,76,118,121
Brockman Creek	037-7	2-46	37	210.6	NA	104	1581+87	3HR2662+07	4	11,20,21,29,30,48,64,76,118
South Fork Airport Creek	037-5	2-45.03	37	209.4	NA	104	1637+70	3HR2728+26	3	11,20,30,76,118,123,135
Middle Fork Airport Creek	037-4	2-45.02	37	209.2	NA	104			2	135
Airport Creek	037-3	2-45.01	37	208.5	NA	104	1681+92	3HR2775+58	1	11,20,30,48,76,118,135
Disaster Creek	037-2	2-45	37	207.8	NA	104	1719+41	3HR2809+90	4	3,5,11,20,30,48,64,76,118
Unnamed Creek	037-1	2-43.07	37	207.5	NA	104	1736+51	3HR2826+88	4	11,30,76,118
Snowden Creek	036-4	2-43	36	205.0	NA	105	1870+20	3HR2959+42	1	3,5,11,17,20,21,29,30,34,48, 64,76,118,122

Provisional List of Waterbodies (continued)

Waterbody	NPRX	NPSI	NPAS	NPMP	AHMP	Alyeska AS	Alyeska Pipe Station	Haul Road Station	Spring Criteria	References
Snowden Pond Inlet	036-3	2-41.04	36	204.4	NA	105		3HR2988+41	4	
Number Lake Creek	036-2	2-41.03	36	203.7	NA	105	1941+95	4HR3026+13	1	1,5,11,20,30,48,76,118,121
Ugh Creek	036-1	2-41	36	202.3	NA	105	2011+00	4HR3103+51	1	11,20,30,48,76,118,135
Steep Creek	035-4	2-39	35	198.3	NA	106	2235+00	4HR3309+86	4	11,29,30,76,118,121,122
Buff Creek	035-3	2-38	35	196.8	NA	106	52+10	4HR3375+85	4	11,29,30,76,118,121,122,135
Burger's Bayou	035-2	2-36.02	35	196.3	NA	106	72+50	4HR3414+01	1	1,5,11,20,30,48,76,77,118,122
Tracy's Trickle	035-1	2-36	35	193.9		107	212+40	4HR3543+02	4	11,30,76,118,122
Unnamed Creek	034-8	2-34.07	34	192.9	NA	107			4	
Beaver Dam Brook #1	034-7	2-34.05	34	192.4	NA	107	295+10	4HR255+58	1	11,30,76,118,122
Beaver Dam Brook #2	034-6	2-34.04	34	192.0	NA	107	321+32	4HR280+97	4	11,30,76,118,122
Beaver Dam Brook #3	034-5	2-34.03	34	191.8	NA	107	329+88	4HR290+66	4	11,30,76,118,122
Beaver Dam Brook #4	034-4	2-34.02	34	191.8	NA	107	334+05	4HR293+50	4	11,30,76,118,122
Nutirwik Creek	034-3	2-34	34	190.8	NA	107	375+54	4HR343+00	1	3,5,11,17,20,21,30,38,48, 64,67,76,118,122
Homewood Spring	034-2	2-32.05	34	188.4	NA	107	496+00	4HR470+00	1	30,41,76,118,122,135
Unnamed Creek	034-1	2-33	34	187.8	NA	108	525+75	4HR496+86	4	
Overwintering Creek	033-7	2-32.02	33	186.8	NA	108		4HR553+73	1	11,30,40,41,64,76,118,135
Nina Creek	033-6	2-31.01	33	186.0	NA	108		4HR592+16	4	
Oskar's Eddy	033-5	2-31	33	185.1	NA	108	662+80	4HR632+98	1	5,11,30,87,118
Unnamed Creek	033-4	2-30.02	33	184.9	NA	108	675+00	4HR649+00	4	11,20,30,76,118
Dietrich River	033-3	2-30.03	33	184.5	NA	108			4	1,3,5,11,21,30,31,62,76,77,119
Dietrich River Floodplain	033-1	2-29.03	33	182.1-183.3	NA	109			4	1,3,5,11,20,30,31,62,76,118, 121,126
Dietrich River Floodplain	032-3	2-29.02	32	181.8-182.1	NA	109			4	1,3,5,11,20,30,62,118,122,126
Unnamed Creek	032-2	2-28.02	32	177.4	NA	109			4	
Unnamed Creek	032-1	2-28.01	32	177.0	NA	109			4	
West Branch of North Fork Chandalar River	031-3	2-28	31	175.4	NA	109	55+00-78+72		4	1,3,5,11,20,21,30,42,64,76, 77,118,135
East Creek	031-2	2-27.04	31	171.8	NA	110		5HR1427	4	1,3,5,11,30,31,48,67,76,118,13
North Atigun Pass Creek	031-1	2-27.03	31	171.7	NA	110		5HR1449+51	3	135
Unnamed Creek	030-2	2-27.02	30	168.6	NA				4	
Unnamed Creek	030-1	2-27.01	30	165.5	NA				4	
Who Creek	029-9	2-26	29	163.8	NA	111	673+00	5HR520+00	4	11,30,76,118

Provisional List of Waterbodies (continued)

Waterbody	NPRX	NPSI	NPAS	NPMP	AHMP	Alyeska AS	Alyeska Pipe Station	Haul Road Station	Spring Criteria	References
Mickey's 6:30 Creek	029-8	2-25.03	29	163.6	NA	111-112	678+30	5HR541+88	3	11,30,76,118
Whybother Creek	029-7	2-25.02	29	163.5	NA	112		5HR550+80	3	11,30,76,118
Named Creek	029-6	2-25.01	29	163.2	NA	112	681+00	5HR552+37	3	11,30,76,118
Trevor Creek	029-5	2-25	29	160.6	NA	112	837+00	5HR709+72	1	11,30,48,64,70,76,118,123
Tyler Creek	029-4	2-24.03	29	160.5	NA	112	881+00	5HR717+90	1	11,30,48,78,118,121
Unnamed Creek	029-3	2-24.008	29	160.0	NA	112			4	135
Unnamed Creek	029-2	2-24.007	29	159.6	NA	112			1	135
Bicycle Creek	029-1	2-24.006	29	159.5	NA	112			4	135
Waterhole Creek	028-2	2-24.005	28	158.8	NA	112	924+83	5HR801+90	1	135
Roche Moutonee	028-1	2-24	28	154.1	NA	113	1170+91	5HR1053+28	1	3,11,30,48,57,62,64,76,118
Leentha Creek	027-4	2-23.015	27	152.8	NA	113-114		5HR1122+00	1	11,121
Holden Creek	027-3	2-23.01	27	151.8	NA	114	30+44	5HR1176+47	1	11,30,48,62,64,76,118,121,123
Tad Creek	027-2	2-22.04	27	151.7	NA	114	44+00	5HR1169	2	11,118,121
Atigun River	027-1	2-22	27	148.4	NA	114	20+94	5HR1364+44	1	1,3,5,11,30,31,48,76,77,118
Jill Creek	025-9	2-21.11	25	141.6	NA	115	380+60	6HR229+00	4	11,30,48,64,76,118,121,122,135
Jill Creek Tributary	025-8	2-21.10	25	141.5	NA	115	395+24	6HR234+75	4	11,30,48,76,118
Ed Creek	025-7	2-21.09	25	140.9	NA	115	421+74	6HR436+25	4	11,20,30,48,76,118,121,122,123
Mack Creek	025-6	2-21.08	25	140.6	NA	115	438+29	6HR452+00	4	11,30,48,76,118,122,123,135
Terry Creek	025-5	2-21.07	25	139.9	NA	115	466+12	6HR490+00	4	11,30,48,64,76,118,135
Moss Creek	025-4	2-21.06	25	139.4	NA	115	494+00	6HR500+41	4	11,30,48,76,118
Hallock Creek	025-3	2-21.05	25	139.3	NA	115	504+27	6HR512+00	3	11,30,48,76,118
Clawsod Creek	025-2	2-21.045	25	137.6	NA	115	586+37	6HR607+00	4	
Yan Creek	025-1	2-21.04	25	137.0	NA	115	629+06	6HR641+00	4	11,30,48,76,118,122,135
Kuparuk River	024-1	2-21	24	132.6	NA	117	842+00	6HR936+50	1	1,3,5,11,29,30,36,48,64,67,76,118
East Fork Kuparuk River	023-3	1-20.01	23	130.6	NA	117	921+55	6HR911+80	4	5,11,30,48,64,76,118,121
Toolik River	023-2	1-20	23	130.0	NA	117	968+30	6HR948+50	4	3,5,11,29,30,48,64,76,118,121,122
East Fork Toolik River	023-1	1-19.01	23	129.6	NA	117	973+30	6HR970+25	4	11,30,48,76,118,121,122
Mary Lamb Creek	022-2	1-19.005	22	125.0	NA	117	1037+00	6HR1011+00	2	135
Oksrukuyik Creek	022-1	1-19	22	124.0	NA	118	1325+64	6HR1285+32	1	1,3,5,11,29,30,48,50,57,64,76,118
Lower Oksrukuyik Creek	020-1	1-18.01	20	110.3	NA	120	895+76	6HR2109+00	1	1,11,30,48,57,64,70,76,77,118,123,124

Provisional List of Waterbodies (continued)

Waterbody	NPRX	NPSI	NPAS	NPMP	AHMP	Alyeska AS	Alyeska Pipe Station	Haul Road Station	Spring Criteria	References
Rudy Creek	019-6	1-17	19	108.6	NA	120	947+99	6HR2153	1	3,11,29,30,48,76,118,121,122
Bassett Creek	019-5	1-16.03	19	107.0	NA	121	1029+20	6HR2228+14	4	11,30,48,76,118
Dennis Creek	019-4	1-16.02	19	106.9	NA	121	1033+60	6HR2234+80	1	11,30,48,76,118,121,122
Climb Creek	019-3	1-16.01	19	106.3	NA	121	1060+34	6HR2262+60	1	11,30,38,64,76,118,121
Poison Pipe Creek	019-2	1-16	19	106.1	NA	121	1077+10	6HR2318+92	1	11,29,30,48,76,118
Polygon Creek	019-1	1-15	19	105.1	NA	121	1125+00	6HR2351+97	1	11,30,48,64,76,118,122
Gustafson Gulch	018-4	1-14	18	102.3	NA	122	1280+00	6HR2517+85	1	11,30,48,63,76,118,121,122
Arthur Creek	018-3	1-13	18	101.9	NA	122	1297+50	6HR2536+20	1	11,20,30,48,63,64,71,118,122
Sagavanirktok River Side Channel	018-2	1-12.05	18	99.7	NA	122	1424+79	6HR2657+20	1	11,30,48,64,76,118,121
Sagavanirktok River Side Channel	018-1	1-12.04	18	99.1	NA	122	1445+85	6HR2684+43	1	11,30,48,76,118,121
Stump Creek	017-3	1-12.02	17	97.4	NA	122	1499+00	6HR2770+86	4	11,30,48,57,63,76,118
Tributary to Lori Creek	017-2	1-12.015	17	94.7	NA	123			2	135
Lori Creek	017-1	1-12.01	17	93.6	NA	123	1719+50	6HR2974+15	4	11,30,48,63,70,76,118,121,135
Charlotte Creek	016-3	1-12	16	91.5	NA	123	20+12	6HR3083+19	1	11,29,30,64,76,118,122
Happy Valley Camp Creek	016-2	1-11	16	87.6	NA	124		6HR3259+77	1	3,5,11,29,30,48,63,64,76, 118,122
Milke Creek	016-1	1-10	16	87.1	NA	124		6HR3281+77	1	3,11,29,30,48,63,64,76,118
Unnamed Creek	015-3	1-9.5	15	86.4	NA	124	256+83	6HR3332	4	30,135
Stout Creek	015-2	1-9	15	83.6	NA	124	441+00	6HR3471+69	1	11,30,48,64,70,76,118,122
Spoiled Mary Creek	015-1	1-8	15	82.4	NA	125	493+95	6HR3535+62	1	11,29,30,48,76,118,122
Mark Creek	014-1	1-7	14	76.5	NA	126	791+40	6HR3840+11	1	3,11,42,43,76,118
Toolik River Tributary	013-1	1-5.49	13	69.6	NA	126W		6HR4198+97	4	11,30,42,43,76,118,135
Sand Creek	012-2	1-5.485	12	67.8	NA	126W			4	135
Unnamed Creek	012-1	1-5.48	12	64.3	NA	126W		6HR4481+00	4	11,30,42,43,76,118,122
Lake 802	010-1	1-5.295	10	54.4	NA	129		7HR802	4	
East Fork Sylvia Creek	007-5	1-5.055	7	39.3	NA	132	1286+60	7HR1608+94	3	11,118,122
Sylvia Creek	007-4	1-5.05	7	39.0	NA	132	1315+25	7HR1624+77	1	11,30,48,76,118
Tributary to Short Creek	007-3	1-5.045	7	38.6	NA	132	4829+00	7HR1645+56	3	135
Short Creek	007-2	1-5.02	7	38.4	NA	132	4822+81	7HR1655+59	4	11,30,48,76,118,135
Telma Creek	007-1	1-5.01	7	35,8	NA	132	4951+44		4	11,30,48,76,118,122
Pescado Creek	005-2	1-4.07	5	27.4	NA	134		7HR2232+40	4	122

Provisional List of Waterbodies (continued)

Waterbody	NPRX	NPSI	NPAS	NPMP	AHMP	Alyeska AS	Alyeska Pipe Station	Haul Road Station	Spring Criteria	References
Unnamed Lake	005-1	1-4.06	5	26.7	NA	135		7HR2482+36	4	11,30,76,118
Low-Life Creek	004-2	1-3.05	4	23.0	NA	135	806	7HR2412+36	4	122
Unnamed Lake	004-1	1-3.04	4	17.5	NA				4	
Unnamed Lake	003-1	1-3.03	3	12.5	NA	137				
Little Putuligayuk River	002-1	1-3	2	9.4	NA	137	1478+52		4	3,11,30,48,57,76,118,121,122
Putuligayuk River	001-1	1-1	1	3.2	NA	138			4	27,30,40,48,56,76,118,121