	DOCKET NO. CP17000	DOC NO: USAKE-PT-SRREG-00-
	RESOURCE REPORT NO. 3	000006-000
Alaska LNG	APPENDIX L	April 14, 2017
Project	Part 8 of 10	REVISION: 0
	Public	

Part 8 of 10 of Appendix L of Resource Report No. 3

PUBLIC

APPENDIX L.8 2015 STREAM FISH SURVEY COMPLETIONS REPORT (USAI-UR-SRZZZ-00-000069-000)

Alaska LNG

2015 STREAM FISH SURVEY COMPLETIONS REPORT

USAI-UR-SRZZZ-00-000069-000

Rev	ſ	Date	Revision Description		Originate	or	Reviewer / Endorser	Respo Cod	nse e	Ар	prov er	
А	10/	/20/15	Issued for Review and Comment		Issued for Review and Comment		Issued for Review and Comment K. Holmes					
0	11	/4/15	Issued for Use		K. Holmes							
Docur	ment	Country	Facility	Originator	Discipline	Туре	Sub-Type	Location	See	quence	Identifier	
Contro	ol No.	US	AI	UR	S	R	ZZZ	00	00	00069	000	



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REVISION MODIFICATION LOG

Revision	Section	Description



TABLE OF CONTENTS

1.0	PURP	OSE AN	ID SCOPE	6						
	1.1	Projec	CT DESCRIPTION	6						
	1.2	STUDY	Area	6						
	1.3	1.3 SURVEY OBJECTIVES								
	1.4	REGUL	ATORY REQUIREMENTS	9						
		1.4.1	National Environmental Policy Act	9						
		1.4.2	Federal Energy Regulatory Commission	9						
		1.4.3	Essential Fish Habitat	9						
		1.4.4	Alaska Department of Fish and Game Title 16	10						
2.0	METH	ODS		11						
	2.1	OVERV	IEW	11						
	2.2	STREAM	M SELECTION AND PRIORITIZATION FOR FIELD SURVEY	11						
		2.2.1	Major Land Resource Areas	12						
	2.3	FISH S/	AMPLING STRATEGY	14						
	2.4	STREAM	M CHANNEL CHARACTERIZATIONS	14						
	2.5	WATER	CHEMISTRY	15						
	2.6	D ΑΤΑ C		15						
		2.6.1	Quality Assurance / Quality Control	16						
3.0	RESU	LTS ANI	D ANALYSIS	17						
	3.1	OVERV	IEW	17						
	3.2	FISH S/	AMPLING RESULTS	17						
	3.3	STREAM	INS NOMINATED FOR ADDITION TO THE CATALOG OF ANADROMOUS WATERS	22						
	3.4	SITE DE	ESCRIPTIONS	25						
	3.5	WATER	QUALITY AND CHARACTERISTICS	26						
4.0	CONC	LUSION	l	28						
5.0	ACRO	NYMS A	AND TERMS	29						
6.0	REFE	RENCES)							
7.0	APPE	NDICES.								
	Apper	ndix A –	Alaska Department of Fish And Game – Fish Resource Permit #SF2 and Amendments	015-194						
	Apper	ndix B –	2015 Stream Investigation Field Data Summaries							
	Apper	ndix C –	2015 Stream Investigation Field Data, Photos and Study Area Maps support of Mainline	– in						
	Apper	ndix D –	2015 Stream Investigation Field Data, Photos and Study Area Maps support of PTTL	– in						
	Apper	Appendix E – SF2015-194 Fish Collection Summary Report								
	Apper	Appendix F – 2015 Stream Fish Investigations Field Study Protocols								



LIST OF FIGURES

Figure 1-1. 2015 Southern Study Area with Field Targets and Major Land Resource Ar	reas7
Figure 1-2. 2015 Northern Study Area with Field Targets and Major Land Resource Ar	eas8
Figure 3-1. Locations of Fish Captured or Observed (Nikiski to Livengood)	20
Figure 3-2. Locations of Fish Captured or Observed (Wiseman to Prudhoe Bay)	21

LIST OF TABLES

Table 2-1. Field Target Naming Conventions	11
Table 2-2. Sites Surveyed by Spread and MLRA	12
Table 2-3. Summary of Fish Sampling Gear Types	14
Table 3-1. Sites Surveyed by Spread and MLRA	18
Table 3-3. Streams Nominated for ADF&G Anadromous Waters Inclusion	22
Table 3-4. Nominated Streams Descriptions	23



1.0 PURPOSE AND SCOPE

This 2015 Fish Completions Report summarizes the data collection methods and results of the 2015 Alaska Liquefied Natural Gas Project (LNG; Project) fish study field surveys, as required by Alaska Department of Fish and Game (ADF&G), in compliance with Fish Resource Permit SF2015-194 issued to MacNamara Shoulders on May 20, 2015. A total of 86 streams were surveyed over a three-month period during the summer of 2015. Stream surveys included analysis of fish habitat, fish presence, and water chemistry in streams within the proposed Project footprint.

The ADF&G Fish Resource Permit to conduct the 2015 stream fish field studies is presented in Appendix A. Field data summary tables are presented in Appendix B. Site maps, hardcopy field data forms, quality assurance/quality control (QA/QC) checklists, and photographs for the Mainline and the Point Thomson transmission line are presented in Appendix C and D, respectively. The 2015 Collections Report is presented in Appendix E. The 2015 Stream Fish Investigations Field Study Protocols is presented in Appendix F.

1.1 PROJECT DESCRIPTION

Please see Project Description at the beginning of this Resource Report.

1.2 STUDY AREA

The study area for the 2015 field season spanned the entire Project route, including the PTTL and Mainline construction corridors and accompanying off-right-of-way (Off-ROW) facilities and roads, from the LNG terminal in Nikiski north to Prudhoe Bay and from Prudhoe Bay to Point Thomson (Figures 1-1 and 1-2).

The Project route crosses multiple types of terrain with a range of climatic and physical characteristics. The Project spans from the Southern Alaska Land Resource Region through the Interior to the Northern Alaska Region, as defined by the United States Department of Agriculture (USDA, 2004). Land Resource Regions (LRR) are intended to represent areas of "broad regional climate and climatic conditions, patterns and processes" and then are subdivided into Major Land Resource Areas (MLRAs) to represent areas of "subregional physiographic and geomorphic patterns and processes and general vegetation potentials" (USDA, 2004). The MLRAs crossed by the Project route are displayed on the figures below and described in Section 2.2.

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Figure 1-1. 2015 Southern Study Area with Field Targets and Major Land Resource Areas



Alaska LNG.

Figure 1-2. 2015 Northern Study Area with Field Targets and Major Land Resource Areas



PAGE 9 OF 31

The primary objective of the 2015 stream fish studies was to document fish presence or absence and characterize fish habitat in streams crossed by the Project footprint. Field work was focused on wadeable streams, (i.e., streams shallow enough to be safely sampled without the use of a boat or specialized sampling equipment) where existing fisheries information was incomplete or unavailable.

Specific objectives of the 2015 stream fish survey were to:

- Determine fish presence or absence;
- Document general fish habitat characteristics at crossing sites;
 - o Collect representative water quality parameters important to fish; and
 - Describe streambed substrate, riparian vegetation, and stream channel morphology at each crossing site.

The data collected from the stream fish surveys will be used to support the Project's environmental impact analysis and permitting.

1.4 REGULATORY REQUIREMENTS

Results of this field survey will facilitate the evaluation of project-related direct, indirect, and cumulative impacts under the National Environmental Policy Act (NEPA). All anadromous fish streams in the project area are subject to the Essential Fish Habitat (EFH) provisions of the Magnuson-Stevens Fishery Conservation and Management Act (MFCMA). Documentation of resident and anadromous fish streams within the Project corridor is required as per ADF&G regulatory authority under Alaska Statute (AS) 16.05.841 and 16.05.871.

1.4.1 National Environmental Policy Act

NEPA was enacted in 1969; it requires federal agencies to evaluate the potential environmental impacts of a project or action. All fisheries and fish habitat data collected during the 2015 stream fish surveys will assist federal agencies in evaluating potential project impacts in accordance with NEPA. Literature and all field data will be incorporated into the environmental impact statement required by NEPA.

1.4.2 Federal Energy Regulatory Commission

As the anticipated lead federal agency administering the NEPA process, FERC requires development of Resource Report 3 which describes existing fish, wildlife, and vegetation resources directly and indirectly affected by project development. Resource Report 3 includes analyses of anticipated impacts during construction and operation phases. The report also provides a description of proposed mitigation measures and documents all federal and state consultation occurring throughout the course of the Project.

1.4.3 Essential Fish Habitat

Section 305(b)(1)(D) of the MFCMA requires federal agencies to consult with the National Marine Fisheries Service (NMFS) on all actions that may adversely affect EFH. The designated EFH along the Project route includes all freshwater rivers, streams, and lakes supporting anadromous fish. These waterbodies are identified in the Catalog of Waters Important to the Spawning, Rearing or Migration of Anadromous Fishes (Johnson and Litchfield 2015a, 2015b, 2015c). NMFS is required to make EFH Conservation Recommendations which may include measures to avoid and minimize adverse effects to EFH.

PAGE 10 OF 31

1.4.4 Alaska Department of Fish and Game Title 16

Activities affecting fish streams, such as gravel removal, temporary water withdrawal, utility line crossings, stream diversion, bank stabilization and blasting must be approved by the ADF&G Division of Habitat. Fish and fish habitat are protected under AS 16.05.841 and AS 16.05.871 and require prior notification to "use, divert, obstruct, pollute or change the natural flow or bed" of a specified stream. ADF&G ensures that the proposed activity provides the proper protection of fish and game prior to authorizing the activity. ADF&G requires permit approval for activities within or across fish streams when such activities could impact fish or fish habitat.

2.0 METHODS

2.1 OVERVIEW

Stream surveys were conducted from June 6, 2015 to September 7, 2015 by field biologists who documented fish presence or absence at each survey site using a combination of standardized fish sampling techniques. Field biologists also collected baseline water quality data and characterized existing fish habitat conditions at each survey location. All field data and observations were recorded on hardcopy datasheets, field logbooks, and electronic data forms. Data was uploaded to the Project website and then entered into an Oracle Geodatabase.

This report provides survey results and a discussion of fish observed at each stream surveyed, as part of the ADF&G requirements under Permit SF2015-194 (Appendix A). For further detailed descriptions of survey methods, refer to the 2015 Stream Fish Investigations, Field Study Protocols and Execution Plan included in Appendix F.

2.2 STREAM SELECTION AND PRIORITIZATION FOR FIELD SURVEY

The 2015 fish surveys were conducted at streams with no documented sampling effort along the Project footprint. Multiple public and private datasets were used to map streams along the Project alignments and identify streams with no legacy documented sampling effort. A Project Hydrologic Dataset was created by selecting streams from the National Hydrography Dataset (NHD) intersecting the Project corridor using geospatial analyst tools. Additional streams were added to the dataset by reviewing Project aerial imagery, lidar imagery and the Project wetland stream database. This streams dataset was referenced against existing ADF&G datasets (Catalog of Waters Important for the Spawning, Rearing or Migration of Anadromous Fishes and Alaska Freshwater Fish Inventory Non-Anadromous Sample Locations) (ADF&G, 2015) and other available datasets (TAPS, APP, ASAP) to determine locations of non-anadromous, un-sampled streams that cross the pipeline alignment. Field targets were based on these un-sampled stream locations.

Each field target was assigned a waterbody crossing identification code (ID). Naming conventions of field targets have varied from year to year as the Project route has been refined. Stream field targets were assigned an Alberta Line (AL) ID during the APP legacy project. Stream field target IDs changed to NK during the Alaska LNG Project when the alignment moved towards an LNG facility in Nikiski. Field Naming conventions have generally consisted of an alignment code plus consecutive number but additional identifiers have been required after waterbodies were identified between two consecutive numbers that were already established. Table 2-1 describes waterbody naming conventions:

Area	Naming Convention	Exam ple ID
Cook Inlet to Livengood	NK + unique number	NK001, NK181.2
Livengood to Prudhoe Bay	AL + unique number	AL003, AL003.22
Prudhoe Bay to Point Thomson	PT + unique number	PT010, PT056

Table	2-1.	Field	Target	Naming	Conventions
10010	~		i ai got	i i a i i i i i g	001110110110

The Project corridor was divided into spreads for planning purposes. The Project spreads include Point Thomson to the Prudhoe Bay area (PP), Prudhoe Bay to Atigun Pass (PA), Atigun Pass to Yukon River (AY), Yukon River to Livengood (YL), Livengood to Healy (LH), Healy to Trapper Creek (HT), Trapper Creek to Cook Inlet (TI), and Cook Inlet to Nikiski (IN). Table 2-2



summarizes number of fish sites surveyed in 2015 by spread and in terms of USDA defined MLRAs. Surveyed streams are also related in terms of MLRAs for habitat comparisons and analysis of fish captured by publically established regions. MLRA descriptions are provided in Section 2.2.1.

Spread	MLRA	Fish Sites Surveyed in 2015	Fish Sites by Spread	
IN	Cook Inlet Lowlands	1	1	
ΤI	Cook Inlet Lowlands	34	34	
HT	Cook Inlet Mountains	5	5	
14	Interior Alaska Lowlands	8	16	
LII	Interior Alaska Highlands	8	10	
YL	N/A	N/A	0	
	Interior Alaska Highlands	1	7	
Aĭ	Interior Brooks Range Mountains	6	T	
	Northern Brooks Range Mountains	2		
PA	Arctic Foothills	3	14	
	Arctic Coastal Plain	9		
PP	Arctic Coastal Plain	9	9	
			86	

Table 2-2. Sites Surveyed by Spread and MLRA

2.2.1 Major Land Resource Areas

From south to north by LRR, a brief summary of each MLRA is provided.

Southern Alaska Region:

- **Cook Inlet Lowlands** includes lowlands and low mountain slopes of the Susitna, the western Kenai Peninsula, and the west side of Cook Inlet. The terrain is predominantly a broad expanse of gently sloping to rolling plains and low to moderate relief hills bordered by the lower slopes of nearby mountains. Depressions and shallow basins on plains are spotted with thousands of small to medium-sized lakes and interconnecting wetlands. Most rivers are relatively high gradient with braided floodplains and low to high stream terraces are common alongside. All rivers and streams in this area drain into Cook Inlet. Major rivers include the Susitna and Yentna rivers in the Susitna Valley, the Little Susitna and the Kenai River and Deep Creek on the Kenai Peninsula. The Cook Inlet Lowlands MLRA represents important spawning and rearing habitat for all five species of Pacific salmon. Other fish species common to this MLRA include Dolly Varden, rainbow trout and ninespine stickleback.
- **Cook Inlet Mountains** includes the higher mountains of the Aleutian and Alaska ranges, and the Talkeetna, Kenai, and Chugach mountains that drain into the Cook Inlet Lowlands and Cook Inlet. The terrain consists of rugged, moderate to high mountains with massive valley glaciers and ice fields prominent at upper elevations. The mountains are deeply incised with narrow and broad valleys with braided, high-gradient floodplains.



Rivers in this area drain into the Cook Inlet Lowlands and Cook Inlet. The Little Susitna and major tributaries of the Susitna River all originate from glaciers and mountainous uplands in the area. Some permafrost occurs in the northern portion of the region in small isolated depressions and on north-facing slopes. Important spawning and rearing habitat for Pacific salmon, specifically Coho salmon occurs throughout this MLRA. Other common fish species include Dolly Varden and slimy sculpin.

Interior Alaska Region:

- Interior Alaska Lowlands, which includes the flood plains and terraces along the upper reaches of the Tanana and Kuskokwim Rivers and middle reaches of the Yukon River. In many places, shallow basins and undulating stream terraces are dotted with hundreds of small to medium-sized lakes and interconnecting wetlands. Sloughs, oxbow lakes, and low to high escarpments along river channels are common features. Permafrost is discontinuous. Spawning and rearing habitat can be found in parts of the Interior Alaska Region, especially in tributaries closely connected to the Yukon River. Other common fish species include Alaska blackfish, burbot, slimy sculpin and wood frogs.
- Interior Alaska Highlands. This region includes hills to moderately high mountains and valleys between the Tanana River on the south and the Brooks Range on the north. This MLRA drains into the Bering Sea via the Yukon, Tanana, and Koyukuk rivers. Permafrost is discontinuous and generally absent on floodplains and south facing slopes. Common fish species in this MLRA include Arctic grayling and slimy sculpin.
- Interior Brooks Range Mountains, which includes high mountains and valleys on the southern side of the Brooks Ranges that drain into the Yukon River system. Permafrost is discontinuous. Permafrost close to the surface is generally restricted to finer textured sediments on stream terraces, and swales on hills and footslopes. Common fish species in this MLRA include Arctic grayling and slimy sculpin.

Northern Alaska Region:

- Northern Brooks Range Mountains. This region includes high mountains and valleys on the northern side of the Brooks Range that drain into the Colville River and other Arctic Ocean drainage basins. The valley bottoms of the larger rivers and streams have nearly level flood plains and stream terraces and some rolling uplands. Permafrost is continuous. Common fish species include Arctic grayling, and sculpin.
- Arctic Foothills. The northern portion of this region consists of broad, rounded ridges and mesa-like uplands and the higher southern portion consists of irregular buttes, mesas, and long linear ridges with intervening undulating plains and plateaus. Many streams and river are in swales and valleys between hills. Most rivers are confined to a single moderate gradient, slightly meandering channel with braided sections present across level areas. Permafrost is continuous. Common fish species in this MLRA include Arctic grayling, Arctic char, Dolly Varden, whitefish, burbot, and ninespine stickleback.
- Arctic Coastal Plains. This region consists of lake- and tundra-covered broad plains. Local relief is generally flat and rarely exceeds 100 feet (30 meters) above mean sea level. Beaded drainage (i.e., surface water that flows from one body of water to another) is characteristic of the lakes, ponds, and wetlands in the area. These areas often have saturated soils due to the low relief and presence of permafrost, which restricts vertical drainage. Common fish species in this MLRA include Arctic grayling, Arctic char, Dolly Varden, whitefish, burbot, and ninespine stickleback.



2.3 FISH SAMPLING STRATEGY

For each site, a fish sampling strategy was developed based on stream characteristics to ensure that the appropriate level of effort was made and the proper sampling techniques were applied. A range of gear types was used to ensure representative age class and fish species were surveyed (Table 2-3). All fish resource permit conditions and stipulations were followed.

Upon arriving at the site, field biologists performed visual observations to identify fish presence before deploying sampling gear. Minnow traps were set if water was deep enough for partial immersion of trap openings, including sides of streams, in ponds, or near debris that created pools. Angling was attempted when practicable. A beach seine was deployed in slow-velocity habitats, such as pools and near-shore environments. A fyke net was set when water depth and stream width permitted. Electrofishing was performed only when other methods failed to capture fish, or were not feasible, as it is discouraged per permit stipulations. Additionally per permit stipulations, electrofishing was not conducted if adult salmonids were observed.

Gear Type Used	Life Stage Targeted	Habitat Type Targeted			
Visual observation	All age classes	Pools, riffles and runs; near-shore bank habitats.			
Minnow trap	Fry and juveniles	Undercut banks, overhanging vegetation, large woody debris; submerged vegetation, water velocity shelters, riffles and runs.			
Angling	Adults and juveniles	Undercut banks, pools, riffles and runs.			
Beach seine	All age classes	Slow-water velocity habitats less than 4-feet deep. Pools and near-shore habitats.			
Fyke nets	All age classes	Wide river and stream channels less than 4-feet deep with slow water velocities.			
Backpack electrofisher	All age classes	Undercut banks, overhanging vegetation, large woody debris, submerged vegetation, riffle, run and pool habitats.			

Table 2-3. Summary of Fish Sampling Gear Types

2.4 STREAM CHANNEL CHARACTERIZATIONS

Biologists recorded information about the riparian vegetation along both stream banks for sites exhibiting existing channel characteristics. Riparian vegetation classes were recorded as independent spatially layered percentages based on a visual survey of grasses/sedges, shrubs and trees within a five meter zone from ordinary high-water level. Total vegetation percentages could equal more than 100 percent due to canopy layer overlap. For example, a 10 square meter plot may contain tree leaves and branches in the top canopy layer covering 35 percent of the ground, shrub stems in the middle canopy layer covering 30 percent of the ground (independent of tree cover above), and grasses and sedges in the lowest canopy layering cover 80 percent of the ground (independent of the tree and shrub cover above).

Streambed substrate composition was estimated as a percentage equaling 100 percent. The percentage of organic matter, silt, sand, gravel, cobble, and boulders covering the streambed were determined by visual observation (or by touch in low visibility streams), and recorded for each site. In cases when streambed substrate composition percentages equalled more than 100 percent, data was not changed in office and reported as is.

General aquatic habitat characteristics recorded within each survey area included the presence of sand bars, gravel bars, riffles, pools, undercut banks, large woody debris, overhanging vegetation, emergent vegetation, submerged vegetation, and contiguous wetlands.

Photographs were taken of both banks, the upstream and downstream views of centerline crossing, and entered into the electronic data system. In some cases, supplemental photos were taken of fish captured, habitat types, and other notable features.

Site plan view and profile view sketches were made for each crossing. These illustrate the stream position in relation to the pipeline crossing (PLX), stream width and depth, and the location of fishing efforts. They also served to document the presence of riparian vegetation, overhanging banks, or any other distinctive habitat type located within the survey reach (Appendix C and D).

2.5 WATER CHEMISTRY

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A multi-parameter water quality meter (YSI 556) and turbidimeter (YSI 2100/HACH 2500P) were used to measure water quality parameters. The field crew recorded water temperature (degrees Celsius), pH, dissolved oxygen (DO) (milligrams per liter [mg/L]), specific and ambient conductance (microSiemens per centimeter [μ S/cm]), oxygen reduction potential (ORP) (millivolts [mV]), and turbidity (Nephelometric Turbidity Unit), at each site, while also noting water color, odor, and the presence or absence of sheen.

Temperature, pH, DO, conductance, and ORP, were collected in-situ below the water surface along the edge of each stream. Measurements were collected at PLX with the probe set vertically on the streambed. Sufficient time was allowed for all readings to stabilize prior to recording each parameter value on a hardcopy field form. Turbidity measurements were acquired from water samples collected from the same location.

2.6 DATA COLLECTION

Each survey site was given a unique ID name. This name was composed of the discipline and team number (e.g., fish team 86 = F86); the spread ID in which the target was located (e.g., Prudhoe Bay Area = PA); and a unique three digit number (e.g., 001).

All fish captured were identified to species and measured to the nearest millimeter of total length. In a few cases when numerous fish were captured (generally >15), fish were measured to a generalized measurement category (e.g. 45, 55, 65 mm) to minimize holding time. If identification to species level was uncertain, fish were identified to genus. Fish were released near the point of capture.



Data collection at NK122.1 (F86HT004)

Data were recorded on standardized hardcopy forms. Data were also recorded electronically using ArcPAD 10 on a Panasonic FZ-M1 Toughpad connected to a Trimble R1 GNSS Bluetooth receiver with an electronic data entry system (photo right).



2.6.1 Quality Assurance / Quality Control

The lead biologist (field crew chief) compared hardcopy forms and electronic data for each survey site and completed a fish studies field form QA/QC checklist to confirm that all essential field form elements were completed and within expected ranges. The QA/QC form also confirmed that all protocol deviations were adequately described in detail. Raw field data were then uploaded to the Project SharePoint website for post-field review and analysis. Final data is housed in an Oracle Geodatabase.

Precise geographic coordinates were independently collected by civil surveyors near waterbody crossings. This data was processed separately to verify the accuracy of Global Positioning System coordinates collected by the field crew.

3.0 RESULTS AND ANALYSIS

3.1 OVERVIEW

A total of 86 sites were visited during the 2015 stream fish field surveys. Waterbodies characterized included active streams, dry channels, and wetland complexes.

Eighty sites were determined to exhibit fish habitat characteristics and fishing gear was deployed at 79 sites that contained enough water to survey. Fish sampling results are presented first, followed by site descriptions and water quality results. Summary tables of field data collected is presented in Appendix B. Field data sheets, photos of stream characteristics and notable features (e.g., photo of Coho salmon), and site maps are presented in Appendices C and D. Site data are presented in geographical order from south to north and east to west. The Fish Collections Report, in accordance with the ADF&G requirements, is presented in Appendix E.

3.2 FISH SAMPLING RESULTS

Fishing gear was deployed at 79 sites determined to exhibit fish habitat characteristics and contained enough water for sampling.

Resident fish were captured in all LRRs not surveved. but all MLRAs. Anadromous salmonids were captured only in the Southern Alaska LRR in the Cook Inlet Lowlands and the Cook Inlet Mountains MLRAs. In the Cook Inlet MLRA. Lowlands anadromous salmonids were captured in 9 of the 35 streams surveyed. In the Cook Inlet Mountains MLRA. anadromous salmonids were captured in one of the five streams surveyed. Coho salmon were the most abundant anadromous captured salmonid (n=203). Two possible Chinook smolt were also captured.



Coho salmon fingerlings photographed with underwater camera at NK182.3 (F86TI019)

Key characteristics for identifying fish species are based on differences in the shape, size, and location of parr marks; the shape and coloration of fins; and the shape and coloration of the head and body (ADF&G 2003). However, differences between individual fish and regional characteristics can make it difficult to identify some species, especially Coho and Chinook smolt when body shape and parr marks start developing into their adult bodies as they migrate towards the ocean.

Table 3-1 summarizes number of fish sites, number of fish, and species captured in 2015 by spread and MLRA. Areas where anadromous fish were captured are highlighted.



Spread	MIRA	Sites	Captured	Anadromous	Total Fish	Species Summary
opread		Surveyed	Fish Sites	Fish Sites	Captured	opecies ourinnary
IN	Cook Inlet Lowlands	1	1	0	11	Stickleback 11
τı	Cook Inlet Lowlands	34	27	9	334	Chinook salmon: 2 Coho salmon: 189 Dolly Varden: 49 Rainbow trout: 4 Slimy sculpin: 23 Sculpin: 3 Ninespine stickleback: 41 Threespine stickleback: 1 Wood frog: 17 Unidentified salmonid: 4 Unidentified fish observation: 1
HT	Cook Inlet Mountains	5	1	1	17	Coho salmon: 14 Slimy sculpin: 3
LH	Interior Alaska Lowlands	8	5	0	71	Alaska blackfish: 65 Burbot: 2 Slimy Sculpin: 3 Wood frog: 1
	Interior Alaska Highlands	8	0	0	0	N/A
	Interior Alaska Highlands	1	1	0	3	Slimy sculpin: 3
AT	Interior Brooks Range Mountains	6	2	0	8	Arctic grayling: 6 Slimy sculpin: 2
	Northern Brooks Range Mountains	2	0	0	0	N/A
	Arctic Foothills	3	0	0	0	N/A
PA	Arctic Coastal Plain	9	6	0	355	Arctic grayling: 7 Burbot: 1 Dolly Varden: 7 Ninespine stickleback: 328 Unidentified fish observation: 12
PP	Arctic Coastal Plain	9	8	0	314	Ninespine stickleback 313 Unidentified fish observation: 1
		86	50	10	1,113	

Table 3-1. Sites Surveyed by Spread and MLRA

Fish were captured using minnow traps, angling, electrofishing, and visually observed. Minnow traps were the most effective method of fishing. Minnow traps were deployed at all 79 sites with potential fish habitat, capturing 1,020 of 1,113 fish captured. Forty-one fish were visually observed, with one site where fish were visually observed but not captured by another method of fishing (e.g. NK215). Fourteen fish were captured angling, 14 fish were captured with a hand net and 24 fish were captured while electrofishing. Conversely, minnow traps were deployed more frequently than other methods of fishing but did not always capture all types of fish at a stream. For example, at AL145.3 Arctic grayling were observed and captured angling but not captured in



minnow traps. Table B-1 in Appendix B summarizes fishing methods deployed and fish captured at each stream. Appendix E presents each fish captured including size, life stage and disposition in the format provided by ADF&G.

Figures 3-1 and 3-2 depict where fish were captured by stream target and MLRA from Nikiski to Livengood (3-1) and Wiseman to Prudhoe Bay (3-2).



Figure 3-1. Locations of Fish Captured or Observed (Nikiski to Livengood)

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3.3 STREAMS NOMINATED FOR ADDITION TO THE CATALOG OF ANADROMOUS WATERS

During the 2015 fish field surveys, juvenile Coho and Chinook salmon were captured at 10 streams. Per ADF&G permit stipulation 13, the permit holder will work closely with ADF&G if new anadromous fish species or new life stages of anadromous fish are found for inclusion in the *Catalog of Waters Important for Spawning, Rearing or Migration of Anadromous Fishes*. For permitting purposes, ADF&G's defines anadromous fish to include Coho, Chinook, Pink, Red and Chum salmon, Arctic Char, Dolly Varden, sheefish, smelts, lamprey, whitefish and sturgeon. Dolly Varden were captured during the 2015 stream surveys but after consultation with ADF&G (pers.com. J.Johnson), these sites are likely not anadromous waters and will not be nominated by the Project for inclusion in the Catalog.

All of the 10 anadromous fish-bearing streams where Coho and Chinook salmon were captured will be nominated for inclusion in ADF&G's *Catalog of Waters Important for the Spawning, Rearing or Migration of Anadromous Fishes.* Of these, nine will be new additions to the list and one will be an extended reach of a previously documented salmon presence. Table 3-3 outlines the anadromous streams nominated for inclusion.

Feature ID	Name	MLRA	ADF&G Dataset Recommendation	ADF&G Documented Anadromous Species	Anadromous Species Captured
NK182.3	Unnamed Stream	Cook Inlet Lowlands	New Addition	NA	Coho Salmon
NK182.2	Unnamed Stream	Cook Inlet Lowlands	New Addition	NA	Coho Salmon
NK182.1	Unnamed Stream	Cook Inlet Lowlands	New Addition	NA	Coho Salmon
NK181.4	Unnamed Stream	Cook Inlet Lowlands	New Addition	NA	Coho Salmon
NK181.2	Unnamed Stream	Cook Inlet Lowlands	New Addition	NA	Coho Salmon, ChinookSalmon
NK180	Unnamed Stream	Cook Inlet Lowlands	New Addition	NA	Coho Salmon
NK162.2	Unnamed Stream	Cook Inlet Lowlands	New Addition	NA	Coho Salmon
NK158.2	Unnamed Stream	Cook Inlet Lowlands	New Addition	NA	Coho Salmon
NK158.1	Unnamed Stream	Cook Inlet Lowlands	New Addition	NA	Coho Salmon
NK122.2	Unnamed Tributary to Chulitna River	Cook Inlet Lowlands	Extended Reach (~0.5 mi)	Chum, Coho, Chinook, Pink Salmon	Coho Salmon

Table 3-3. Streams Nominated for ADF&G Anadromous Waters Inclusion

All of these streams had well-defined channel characteristics and flowing water at the time of survey. Detailed field notes for each stream are provided in Table 3-4 below.



NK 18 6 7 20 P-F861 ooking

Pipeline MP 746.6

Table 3-4. Nominated Streams Descriptions			
Photo	Site Identification	Description	
Fastion WFIP2-3 P-F8GT 1019-co2-D5 Carking D5 @ PLX	Unnamed Stream F86Tl019 NK182.3 Pipeline MP 750.8	Meandering stream running through alder/fern corridor with many gravel bars, pools, and undercut banks present. Sand/gravel/cobble substrate and clear water observed. Fish observed throughout reach. Coho and Dolly Varden captured in minnow trap placed at PLX.	
VP. doa_p : D = P px	Unnamed Stream F86Tl018 NK182.2 Pipeline MP 750.4	Meandering stream running through scrub-shrub corridor in small valley with lots of fallen w oody debris. Multiple sections with little w ater and minimal flow w ithin channel. Gravel and cobble substrate with brown algae observed. Fish observed throughout reach. Coho and Dolly Varden captured in minnow trap placed approximately 375 ft dow nstream of PLX.	
	Unnamed Stream F86Tl005 NK182.1 Pipeline MP 749.9	Well-defined channel with riffles/pools and small waterfall-like cascades due to gradient and fallen vegetation. Sand/gravel/cobble substrate and clear water observed. Many Coho and Dolly Varden captured in minnow traps throughout reach.	
	Unnamed Stream F86Tl003 NK181.4 Pipeline MP 748.8	Well-defined, narrow channel running through thick vegetation with constant, steady flow. Gravel substrate and clear water observed. Multiple Coho and Dolly Varden captured in minnow traps throughout reach.	
DLDS 5 g mut	Unnamed Stream F86Tl002 NK181.2 Pipeline MP – Off ROW	Beaver dam controlled stream flow ing east. Beaver dam approximately 150 feet upstream from road crossing to the w est. Stream transitions to meandering stream with gravel substrate running through mixed forest to east of road. Chinook smolt captured in Minnow trap in pool by road. Coho captured w hile electrofishing in dow nstream section of stream.	
	Unnamed Stream F86TI009 NK180	Narrow, shallow stream with well-defined banks running through thick vegetation. Sand and gravel substrate and clear water observed. Coho and Dolly Varden captured in minnow traps upstream of PLX.	



Photo	Site Identification	Description
ESGTIDAL NKIFAJA G/A4/IS 2-RSGTIDALOOLDS Looking DS @ PX	Unnamed Stream F86Tl021 NK162.2 Pipeline MP 722.3	Meandering stream running through fern/alder corridor in small valley. Sand and gravel substrate and clear water observed. Fish observed throughout reach. Coho captured in minnow trap at PLX.
F8GT1031 ArK 155.a. 7/K/15 P-F8GT103L.oo_b5 Lucking DS @ flx	Unnamed Stream F86Tl031 NK158.2 Pipeline MP 705.7	Well-defined stream with steady flow and riffle/pool habitat. Sand/gravel/cobble substrate and clear water with slight tannic tint observed. Fish observed throughout reach. Coho, Rainbow trout and slimy sculpin captured in minnow traps placed throughout reach.
Rofiloza NCIAR.1 P.FBGTIROZLOROLDS Cocking DS @ PX	Unnamed Stream F86Tl032 NK158.1 Pipeline MP 705	Meandering stream running through scrub-shrub corridor in small valley with riffle/pool habitat. Gravel/cobble substrate and clear water observed. Fish observed throughout reach. Coho captured in minnow traps placed throughout reach.
Refizes All Laga Human Truchy Collice RefitTers_Jea.85 Loc KTAIN DS @FDX	Unnamed Tributary to Chulitna River F86HT005 NK122.2 Pipeline MP 615.9	Well defined channel contained within steep banks. Mostly Cobble substrate with organics, gravel, and boulders and clear water observed. Located downstream of beaver pond complex. Coho and slimy sculpin captured in minnow traps throughout reach.



PAGE 25 OF 31

3.4 SITE DESCRIPTIONS

FERC classifies waterbodies with a measured wetted width greater than 100 feet as major rivers, streams 10 to 100 feet wide as intermediate streams, and streams with a wetted width less than 10 feet as minor streams. Streams within each classification type were sampled in 2015. At each stream exhibiting fish-bearing characteristics, the field crew recorded a site description, a diagram for both a cross-sectional and plan view at PLX, and collected physical and water quality attributes. Descriptive field notes were recorded for each location.

The classifications assigned in this report are provided as a general characterization of the streams surveyed but are not intended as a final rating of stream classification. Wetted width was measured during the site visit and assigned a stream classification using FERC's definitions. However, in some cases, streams may fluctuate between two classifications based on local weather and flow regimes. For example, a stream wetted width may meet the minor classification during dry weather conditions, but would be classified as intermediate during breakup or during normal climatic conditions (e.g. NK182.3 pictured below). Alternatively, some braided systems with a poorly-defined main channel may be classified differently if only the main channel was measured.

Sites with no defined channel characteristics or evident connecting hydrology were classified as absent since they were determined not to be waterbodies based on the FERC definition. These sites were generally wetland complexes with minimal to no water at the time of survey. A reduced dataset was collected at these sites having no discernible channels or banks or other hydrogeomorphic features indicative of fish habitat. Fish surveys were performed if there was obvious connectivity to ponded water upstream or downstream of the PLX.

Examples of the stream classifications are shown below. Site NK024 (top left) was characterized as Major and was too deep to wade. AL149.1 (top right) was classified as Intermediate. NK182.3 (bottom left) was classified as Minor, but is an example of how these classifications are based on wetted width, that may result in a different stream classification if sampled during a period of higher flow. If the gravel bar on the right was included in the width, this stream would likely be classified as Intermediate. NK004.3 (bottom right) was classified as absent as there was no defined channel or connecting hydrology.

2015 STREAM FISH SURVEY COMPLETIONS REPORT



Alaska LNG.

NK024 (F94LH014) - Major



NK182.3 (F86Tl019) – Minor



AL149.1 (F86AY001) - Intermediate



NK004.3 (F94LH005) - Absent

There were a total of four streams that met the FERC definition of major rivers; 35 streams that were classified as intermediate; 41 that were classified as minor; and six streams were classified as absent. The four major rivers were all located in the Interior Alaska LRR. Anadromous fish were captured in minor and intermediate streams.

Wetted width ranged from 0.3 to 50 (estimated) meters. Thalweg depth ranged from 0.2 to 2 meters for wadeable streams. Aquatic habitat features greatly varied, such as streambed substrate, presence of riffles or pools, or vegetation presence in and around the stream channel. Water chemistry data was collected at each site, as well as other observations and measurements of water, such as assessments of color, odor, and turbidity.

3.5 WATER QUALITY AND CHARACTERISTICS

At the 80 sites exhibiting possible fish habitat and with sufficient depth for sampling, the color, odor, presence of sheen, water temperature, pH, DO, conductivity, ORP, and turbidity were recorded. Color, odor, and presence of sheen were recorded as qualitative measurements. Water temperature, pH, DO, conductivity, ORP, and turbidity were transcribed quantitatively from on-site instrument measurements.

The results of water quality measurements varied widely depending on conditions at each of the 80 sites. Water quality parameters also varied widely at



Tan-colored water at AL145.3 (F86AY002)



Alaska LNG.

streams where fish were captured. At streams where anadromous salmonids were captured, water parameters were generally more consistent, with higher DO, higher ORP, and less turbidity. Water quality data are presented in Appendix B Table B-2.

Factors responsible for variations may include local geology, flow regime, biological activity, and weather. Differences in flow conditions between the sites are likely responsible for some of the observed variation in water quality. For example, ten sites in the Cook Inlet Basin exhibited pH values of less than five at the time of the surveys. The relatively acidic conditions observed at some of these sites may have been related to low flow or stagnant water conditions at the time of sampling. In addition, variations in water temperature and biological activity may have contributed to the acidic conditions observed at these sites. Any instrument measurement outside of expected range was noted.

A multitude of factors influence both the pH of the analyte water, and the response of the pH probe under field conditions. Temperature and the partial pressures of dissolved gasses influence the pH of the solution, and may change rapidly depending on weather and site conditions. In addition, the sensitivity of the pH probe is temperature dependent. Although the instrument used for pH measurements includes automatic temperature compensation, pH readings are most accurate when the calibration procedure is performed at the same temperature and over the same pH range expected in the analyte water. The pH calibration procedure was not successful in one case immediately before surveying the final six field targets (F86HT001–005 and F86LH001). Per manufacturer recommendations, the pH sensor was cleaned, returned to factory settings, then recalibrated. However, pH calibrations at 7.00 and 10.01 continued to read inaccurately. This was noted in the field logbook, and sampling continued with the inaccurate pH meter. Readings of pH seemed to be above normal for the above six field targets.



4.0 CONCLUSION

The 2015 fish stream studies program focused on waterbodies identified on the Rev.B alignment lacking current fisheries information. Eighty-six field targets were surveyed during the 2015 stream fish survey. Full assessments of habitat, water quality, stream characteristics, and fisheries were conducted at each site as appropriate. Of the 86 streams surveyed, 80 sites were determined to have potential fish habitat and 79 had enough water at the time of survey to sample for fish. Four streams are defined as major rivers by the FERC definition, 35 are defined as intermediate, 41 defined as minor, and six were lacking fish habitat and classified as absent. A total of 1,113 fish were captured or observed at 45 of the 79 sites surveved and five more had frogs observed, but no other fish captured. Fish captured/observed include slimy sculpin, Alaska blackfish, threespine stickleback, ninespine stickleback, northern pike, burbot, pink salmon, coho salmon, rainbow trout, Chinook salmon, Dolly Varden, Arctic grayling, unspecified fish observations and wood frogs. Anadromous salmon were present at a total of 10 streams and will be nominated for inclusion in ADF&G's Catalog of Waters Important for the Spawning. Rearing or Migration of Anadromous Fishes. Of these, nine will be new additions to the list and one will be an extension of a previously documented anadromous reach. The data collected during field investigations will assist in developing stream crossing mitigation measures for specific stream crossing sites. Results from this study will be incorporated to Draft 2 of Resource Report 3 and provided to ADF&G, FERC and other agencies as necessary to assist in overall project permitting.



5.0 ACRONYMS AND TERMS

ADF&G AS DO EFH FERC GTP LNG μS/cm MLRA mg/L NEPA NHD ORP PBU PLX Project PTU QA/QC U.S.	Alaska Department of Fish and Game Alaska Statute dissolved oxygen Essential Fish Habitat Federal Energy Regulatory Commission Gas Treatment Plant liquefied natural gas microSiemens per centimeter Major Land Resource Area milligrams per liter National Environmental Policy Act National Environmental Policy Act National Hydrography Dataset oxygen reduction potential Prudhoe Bay Unit pipeline crossing Alaska LNG Point Thomson Unit quality assurance/quality control United States
QA/QC U.S. USDA	quality assurance/quality control United States U.S. Department of Agriculture



6.0 **REFERENCES**

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Johnson, J. 2015. Personal communication with Macnamara Shoulders on October 14, 2015.

Johnson, J and V. Litchfield (2015a). Catalog of Waters Important for Spawning, Rearing, or Migration of Anadromous Fishes – Arctic Region, Effective June 1, 2015. Alaska Department of Fish and Game, Special Publication No. 15-05, Anchorage.

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7.0 APPENDICES



APPENDIX A – ALASKA DEPARTMENT OF FISH AND GAME – FISH RESOURCE PERMIT #SF2015-194 AND AMENDMENTS



STATE OF ALASKA DEPARTMENT OF FISH AND GAME 333 Raspberry Road ANCHORAGE, ALASKA 99518

Permit No. SF2015-194

Expires: 11/1/2015

FISH RESOURCE PERMIT

(For Scientific/Collection Purposes)

This permit authorizes:

Mac Shoulders

(whose signature is required on page 3 for permit validation)

Of

AECOM

700 G Street, Suite 500, Anchorage, AK 99501 (907) 562-3366 macnamara.shoulders@aecom.com

to conduct the following activities from May 20, 2015 to November 1, 2015 in accordance with AS 16.05.930 and AS 16.05.340(b).

- Purpose: To conduct fisheries baseline studies for the development of engineering design, NEPA documentation, and project permitting for the proposed Alaska LNG Project.
- Location: Streams along the proposed Alaska LNG Project corridor from Prudhoe Bay south to Cook Inlet and the Gas Treatment Plan facility footprint near Prudhoe Bay.
- Species: Local species
- Method of Capture: Backpack electrofisher (Stipulation #12), beach seine, fyke net, hook-and-line (Stipulation #5), minnow trap
- Final Disposition: Any number and species of fish captured in each sampling reach (Stipulation #4) may be identified, measured, and immediately released alive at the capture site. ≤2 individuals of each unknown species may be killed and saved for later identification. All unintended mortalities must be recorded and returned to capture site waters.

COLLECTION REPORT DUE <u>December 1, 2015</u> and **RESEARCH REPORT DUE** <u>May 30, 2016</u>; see <u>Stipulations #2</u> and #3 for more information. Data from such reports are considered public information. Reports must be submitted to the Alaska Department of Fish and Game, Division of Sport Fish-HQ, 333 Raspberry Rd, Anchorage, AK 99518, attention: Scott Ayers (267-2517; <u>dfg.dsf.permitcoordinator@alaska.gov</u>). A report is required whether or not collecting activities were undertaken.

GENERAL CONDITIONS, EXCEPTIONS, AND RESTRICTIONS

- This permit must be carried by person(s) specified during approved activities who shall show it on request to persons authorized to enforce Alaska's fish and game laws. This permit is nontransferable and will be revoked or renewal denied by the Commissioner of Fish and Game if the permittee violates any of its conditions, exceptions, or restrictions. No redelegation of authority may be allowed under this permit unless specifically noted.
- No specimens taken under authority hereof may be sold, bartered, or consumed. All specimens must be deposited in a public museum or a public scientific or educational institution unless otherwise stated herein. Subpermittees shall not retain possession of live animals or other specimens.
- The permittee shall keep records of all activities conducted under authority of this permit, available for inspection at all reasonable hours upon request of any authorized state enforcement officer.
- 4. Permits will not be renewed until detailed reports, as specified in the Stipulations section, have been received by the department.
- UNLESS SPECIFICALLY STATED HEREIN, this permit does not authorize the exportation of specimens or the taking of specimens outside of existing regulations.

Fish Resource Permit Coordinator Division of Sport Fish

Sheila A Cameron for

20 MAY 2015

Date

Director Division of Sport Fish
SF2015-194 continued (page 2 of 3)

Authorized Personnel: The following persons may perform collecting activities under terms of this permit:

Matt Balzarini, James Dietzman, Abigayle Fisher, Mike Hauser, Kim Holmes, Cynthia Kirkham, Adam McCullough, Paul Myerchin, Ryan Rapuzzi, Maria Shepherd, Mac Shoulders, Samantha Simpson, Neil Smith, Kayley Volper, David Waltemyer

Employees and volunteers under the direct supervision of, and in the presence of, one of the authorized personnel listed above may participate in collecting activities under terms of this permit.

Permit Stipulations:

1) The local Area Management Biologist (AMB) must be contacted for final authorization prior to you engaging in any collecting activities. <u>The time/date of this contact must be included in your collections report (using the "data submission form" furnished by ADF&G</u>. AMBs have the right to specify methods for collecting, as well as limiting the collections of any species by number, time, and location.

Audra Brase (459-7244; <u>audra.brase@alaska.gov</u>) – Tanana River (Fairbanks) John Burr (459-7220; <u>john.burr@alaska.gov</u>) – Yukon River (Fairbanks) Sam Ivey (746-6334; <u>samuel.ivey@alaska.gov</u>) – Northern Cook Inlet (Palmer) Brendan Scanlon (459-7268 or 460-7567; <u>brendan.scanlon @alaska.gov</u>) – Northwest/Arctic (Fairbanks)

- 2) A report of collecting activities, referencing this fish resource permit, must be submitted within 30 days after the expiration of this permit. The report, (using a data submission form furnished by ADF&G), shall include all species, numbers, dates, locations of collection (datum/GPS coordinates in the decimal degrees format (dd.ddddd)), and disposition, and if applicable, sex, age, and breeding condition, and lengths and weights of fish handled. It must also include the date/time the local biologist was contacted for final authorization to carry out collecting activities.
- 3) A report of research activities, referencing this fish resource permit, must be submitted within 6 months after the expiration of this permit. This report should present the research conducted in a format similar to a scientific paper including the following: introduction (objective of the study plan and hypothesis), methods, and results. The report is intended to show that the specimens were used in a scientific method, and allows for the evaluation of potential cumulative effects from multiple projects in the same area. A report is required whether or not collecting activities were undertaken.
- 4) One to three reaches of stream should be sampled per system the pipeline will cross. The dimensions of each sampled reach should be stream-width wide by 40 times the stream width.
- 5) A valid Alaska sport-fishing license must be in the possession of any individual using hook-and-line gear.
- 6) An instance of >10% unintended collecting mortality requires sampling at a site to cease and the AMB contacted.
- 7) Fyke/smolt traps must be checked and emptied regularly enough to prevent significant holding pen mortality (Stipulation #6). Catch and mortality must be recorded each time traps are checked.
- 8) Each piece of unattended sampling gear must be: 1) labeled with the permittee's name, telephone number, and permit number, 2) securely tied to substrate, 3) placed in a location where they will not be easily noticed (e.g. under cut banks, in pools away from roads or trails), 4) allowed to soak no more than twenty-four hours at a time, 5) located with GPS coordinates, and 6) accounted for and removed at the conclusion of sampling.
- 9) Salmon eggs used as bait in traps must either be sterilized commercial eggs or, if raw, disinfected prior to use. A 10minute soak in 1/100 Betadyne solution or some other iodophor disinfectant is adequate. Commercial eggs must be placed into a container that does not allow the fish to consume them (e.g., film canister with holes punched in it or a perforated plastic bag).
- **10)** Gloves, boots, and collecting gear should be disinfected between streams to reduce the potential of pathogen transmission. A wash/rinse in 1/100 Betadyne solution is adequate. Felt or absorbent soles on waders and wading boots are prohibited.
- **11)** Please note that wood frogs, and other amphibians, are defined as fish by Alaska law. As such any captures or sightings should be recorded on your fish report, along with GPS locations and photographs if possible.
- 12) Electroshocking is currently discouraged, but not prohibited. <u>Electroshockers may not be used in anadromous waters in the presence of adult salmonids including trout or char</u>. In areas where other means of capture are not feasible, only one pass is allowed. All electroshocked fish should be monitored before release with mortalities or injuries reported on the data submission form. Crew Leaders must have proof of attending formal class/field training as well as ten days of electroshocking experience, while crew members should have formal training.

SF2015-194 continued (page 3 of 3)

- 13) If new anadromous fish species <u>or</u> previously undocumented life stages of anadromous fish are found in permitted streams, rivers, and lakes, the permit holder will work closely with ADF&G to see that information is included in the database for the *Catalog of Waters Important for Spawning, Rearing or Migration of Anadromous Fishes*. Anadromous fish include *Oncorhynchus spp.*, Arctic char, Dolly Varden, sheefish, smelts, lamprey, whitefish, and sturgeon. Please direct questions to J Johnson (907-267-2337; j.johnson@alaska.gov).
- 14) Contact Tammy Davis with the ADF&G Invasive Species Program (907-465-6183 or 1-877-INVASIV), and the nearest AMB (Stipulation #1) within 24 hours should you find any species suspected to be a non-native species during your sampling. If possible the organism should be killed, preserved by freezing or placing into 90% alcohol, and taken to the nearest ADF&G office. Please take a photo of the organism, as well as a photo of the organism in the environment in which it was observed, and note the location with a GPS or by describing it on a map with landmarks.
- **15)** No fish may be possessed live or transported live without a valid Fish Transport Permit (FTP) obtained from the Alaska Department of Fish and Game.
- **16)** A copy of this permit, including any amendments, must be made available at all field collection sites and project sites for inspection upon request by a representative of the department or a law enforcement officer.
- **17)** Issuance of this permit does not absolve the permittee from securing any other required state, federal, or local permits, including securing permissions to trespass on controlled lands.
- 18) Failure to comply with the conditions of this permit will result in the loss of future permitting privileges.
- **19)** PERMIT VALIDATION requires permittee's signature agreeing to abide by permit conditions before beginning collecting activities:

Signature of Permittee

ecc: Audra Brase, Division of Sport Fish, Fairbanks John Burr, Division of Sport Fish, Fairbanks Sam Ivey, Division of Sport Fish, Palmer Brendan Scanlon, Division of Sport Fish, Fairbanks Bonnie Borba, Division of Commercial Fisheries, Fairbanks Jim Menard, Division of Commercial Fisheries, Nome Ethan Ford, Division of Commercial Fisheries, Homer Mike Daigneault, Division of Habitat, Anchorage Jack Winters, Division of Habitat, Fairbanks Shannon Miller, DNR – State Pipeline Coordinator's Office, Anchorage Michelle Morris, Commercial Fisheries Permit Coordinator, Juneau

cc: Alaska Wildlife Troopers, Fairbanks/Palmer



STATE OF ALASKA DEPARTMENT OF FISH AND GAME 333 Raspberry Road ANCHORAGE, ALASKA 99518

Permit No. SF2015-194

Expires 11/1/2015

FISH RESOURCE PERMIT Amendment #1

Mac Shoulders AECOM 700 G Street, Suite 500, Anchorage, AK 99501 <u>macnamara.shoulders@aecom.com</u>

Fish Resource Permit SF2015-194 is amended as follows:

- 1) Adds site NK215 near Nikiski to the list of Locations.
- 2) Adjusts the Permit Stipulations section by adding the following contact to Stipulation #1:

Robert Begich (260-2920 or 398-0138; robert.begich@alaska.gov) - Northern Kenai Peninsula (Soldotna)

This amendment was requested by the Permit Coordinator on June 17, 2015.

All other terms and conditions specified in the Fish Resource Permit remain in effect. A signed copy of this amendment must be attached to a signed copy of the original permit.

Division of Sport Fish

17 JUNE 2015

PERMIT AMENDMENT VALIDATION requires permittee's signature agreeing to abide by conditions of this permit amendment:

Signature of Permittee

ecc: Robert Begich, Division of Sport Fish, Soldotna Ethan Ford, Division of Commercial Fisheries, Homer Mike Daigneault, Division of Habitat, Anchorage

cc: Alaska Wildlife Troopers, Soldotna



APPENDIX B – 2015 STREAM INVESTIGATION FIELD DATA SUMMARIES

Site ID	Pipeline MP	Fish Sampling Method(s) Used	Fish Captured	Total Fish Count
		Cook Inlet to Nikis	ki (IN)	
	-	Cook Inlet Low la	nds	-
NK215	793.6	N/A – not enough water in defined channel to survey for fish but stickleback observed in upstream pond	11 Stickleback captured	11
		Trapper Creek to Cook	i Inlet (П)	
		Cook Inlet Low la	nds	
NK182.3	750.7	Minnow traps, visual observation	43 Coho salmon and 15 Dolly Varden captured	58
NK182.2	750.4	Minnow traps, visual observation	19 Coho salmon and 1 Dolly Varden captured	20
NK182.1	749.9	Minnow traps, visual observation	36 Coho salmon and 12 Dolly Varden captured	48
NK181.4	748.8	Minnow traps, visual observation	7 Coho salmon and 2 Dolly Varden captured	9
NK181.3	748.7	Minnow traps, visual observation	2 Dolly Varden captured	2
NK181.2	745.4	Electrofishing, minnow traps, visual observation	2 Chinooksalmon*, 1 Coho salmon and 1 Threespine stickleback captured and 1 Wood frog observed	5
NK181.1	745.4	Electrofishing, minnow traps, visual observation	1 Wood frog observed	1
NK180	746.6	Electrofishing, minnow traps, visual observation	4 Coho salmon and 2 Dolly Varden observed	6
NK179	744.9	Minnow traps, visual observation	12 Ninespine sticklebackcaptured and 1 Wood frog observed	13
NK176	743.1	Electrofishing, minnow traps, visual observation	20 Ninespine sticklebackcaptured and 3 salmonids and 1 Wood frog observed	24
NK175	740.6	Minnow traps, visual observation	1 Wood frog observed	1
NK174.5	740.4	Electrofishing, minnow traps, visual observation	2 Wood frogs observed	2
NK174.4	740.3	Electrofishing, minnow traps, visual observation	No Fish	0
NK174.2	739.7	Minnow traps, visual observation	No Fish	0
NK174.1	739.6	Minnow traps, visual observation	1 fish observation that could not be positively identified	1
NK173.7	739.3	Electrofishing, minnow traps, visual observation	11 Slimy sculpin captured, 4 more observed, and 2 Wood frog observed	17
NK173.6	738.7	Minnow traps, visual observation	No Fish	0
NK173.5	738.5	Minnow traps, visual observation	3 Slimy sculpin and 1 Dolly Varden captured	4
NK173.4	738.1	Minnow traps, visual observation	1 Wood frog observed	1
NK173.3	737.8	Minnow traps, visual observation	5 Dolly Varden captured	5
NK173.2	737.8	Minnow traps, visual observation	1 Dolly Varden captured	1
NK172.1	736.9	Electrofishing, minnow traps, visual observation	1 Dolly Varden captured and 1 salmonid observed	2
NK171.1	736.5	Minnow traps, visual observation	2 Dolly Varden captured	2
NK170.1	735.4	Minnow traps, visual observation	4 Dolly Varden captured and 1 more observed, and 1 Slimy sculpin captured	6
NK162.2	722.3	Minnow traps, visual observation	13 Coho salmon captured and 3 sculpin observed	16
NK162.1	721.9	Minnow traps, visual observation	No Fish	0

Table B-1. Fish Sampling Methods and Fish Captured by Spread and MLRA

Site ID	Pipeline MP	Fish Sampling Method(s) Used	Fish Captured	Total Fish Count
NK159.3	713.5	Minnow traps, visual observation	9 Ninespine stickleback captured and 1 Wood frog observed	10
NK158.3	706.1	Minnow traps, visual observation	No Fish	0
NK158.2	705.7	Minnow traps, visual observation	36 Coho salmon captured and 1 more observed, and 4 Rainbow trout and 4 Slimy sculpin captured	45
NK158.1	705.0	Minnow traps, visual observation	29 Coho salmon captured	29
NK156.1	688.5	Minnow traps, visual observation	No Fish	0
NK152.1	683.4	Minnow traps, visual observation	No Fish	0
NK151.5	681.8	Minnow traps, visual observation	No Fish	0
NK151.1	679.2	Angling, minnow traps, visual	6 Wood frogs observed	6
	1	Healv to Trapper C	reek	
		Cook Inlet Mount	ains	
NK122.2	615.9	Minnow traps, visual observation	14 Coho salmon and 3 Slimy sculpin captured	17
NK122.1	614.7	Minnow traps, visual observation	No Fish	0
NK112	593.9	Minnow traps, visual observation	No Fish	0
NK111	593.5	Minnow traps, visual observation	No Fish	0
NK110.2	590.5	Minnow traps, visual observation	No Fish	0
		Liv engood to Heal	y (LH)	
	-	Interior Alaska Low	lands	
NK064	508.1	Electrofishing, minnow traps, visual observation	2 Slimy sculpin captured and 1 more observed	3
NK059	495.4	Minnow traps, visual observation	No Fish	0
NK052	476.4	Minnow traps, visual observation	No Fish	0
NK051.2	476.5	Minnow traps, visual observation	35 Alaska blackfish captured	35
NK027	432.8	Minnow traps, visual observation	observed	3
NK026	432.1	Minnow traps, visual observation	18 Alaska blackfish captured	18
NK025	430.8	Minnow traps, visual observation	12 Alaska blacktish captured at nearby pond.	12
NK024	430.7	Minnow traps, visual observation	NoFish	0
NK047	452.0	Interior Alaska Higr	llands	0
NK047	433.9		No Fish	0
NK020.1	420.7	N/A	No Fish	0
NK004.4	407.7	N/A	No Fish	0
NK002.4	405.0	Minnow traps, visual observation	No Fish	0
NK002.3	404.9	Minnow traps, visual observation	No Fish	0
NK002.2	404.8	N/A	No Fish	0
NK002.1	404.2	N/A	No Fish	0
	-	Atigun Pass to Yukon F	River (AY)	
		Interior Alaska High	lands	
AL244.1	281.8	Electrofishing, minnow traps, visual observation	3 Slimy sculpin captured	3
		Interior Brooks Range I	Nountains	
AL209	240.4	Minnow traps, visual observation	No Fish	0
AL151.1	181.5	N/A	No Fish	0
AL149.1	180.8	Electrofishing, minnow traps, visual observation	1 Arctic grayling and 2 Slimy sculpin captured	3
AL145.3	174.7	Angling, minnow traps, visual observation	1 Arctic grayling captured and 4 more observed	5
AL145.2	174.7	Minnow traps, visual observation	No Fish	0
AL145.1	174.6	Minnow traps, visual observation	No Fish	0
	-	Prudhoe Bay to Atigun	Pass (PA)	
		Northern Brooks Range	Mountains	
AL135.1	165.5	Electrofishing, minnow traps, visual observation	No Fish	0

Site ID	Pipeline MP	Fish Sampling Method(s) Used	Fish Captured	Total Fish Count
AL114.9	147.0	Electrofishing, minnow traps, visual observation	No Fish	0
	-	Arctic Foothil	ls	
AL061.3	103.9	Minnow traps, visual observation	No Fish	0
AL050	85.5	Minnow traps, visual observation	No Fish	0
AL035.32	69.8	Minnow traps, visual observation	No Fish	0
	•	Arctic Coastal P	lain	1
AL019.4	43.8	Minnow traps, visual observation	234 Ninespine stickleback captured	234
AL019.12	40.6	Minnow traps, visual observation	No Fish	0
AL015	37.1	Minnow traps, visual observation	No Fish	0
AL005.1	32.7	Minnow traps, visual observation	71 Ninespine stickleback captured	71
AL004.52	17.9	Angling, minnow traps, visual observation	1 Burbot, 2 Ninespine stickleback, 7 Dolly Varden and 7 Arctic grayling captured	17
AL004.51	17.8	Angling, minnow traps, visual observation	12 fish observed - could not capture to positively identify but looked like stickleback	12
AL004.23	14.9	Minnow traps, visual observation	12 Ninespine stickleback captured	12
AL004.22	13.6	Minnow traps, visual observation	9 Ninespine stickleback captured	9
AL003.2	5.1	Angling, minnow traps, visual observation	No Fish	0
	-	Point Thomson to Prudh	ioe Bay (PP)	
		Arctic Coastal P	lain	
PT010	5.9	Minnow traps, visual observation	52 Ninespine stickleback captured	52
PT011	7.1	Minnow traps, visual observation	42 Ninespine stickleback captured	42
PT025	16.9	Minnow traps, visual observation	1 fish observation that could not be positively identified, and 19 Ninespine stickleback captured	20
PT031	19.4	Electrofishing, minnow traps, visual observation	2 Ninespine stickleback captured and 2 more observed	4
PT032	20.4	Angling, minnow traps, visual observation	20 Ninespine sticklebackcaptured	20
PT034	22.3	Minnow traps, visual observation	18 Ninespine sticklebackcaptured	18
PT036	23.4	Minnow traps, visual observation	No Fish	0
PT042	24.8	Minnow traps, visual observation	1 Ninespine stickleback captured	1
PT064	31.8	Minnow traps, visual observation	157 Ninespine stickleback captured	157
				1,113
Chinooksal mark shape	mon*-smolt and spacing	were difficult to positively identify. Speci, anal fin shape and coloration	esidentification was based largely on fis	h size, parr

Table B-2. Field Site Summary and Habitat Rating by Spread and MLRA

Field Target #	Pipeline MP	Stream Classification	Wetted Width (m)	Wetted Width (ft)	Channel Features at PLX	Water Content	Substrate	Water Temp. (°C)	рН	Dissov led Oxygen (mg/l)	Specific / Ambient Conductance ()	Oxygen Reduction Potential (mV)	Turbidity (NTU)	WQ Notes	Fish Captured
							Cool	Inlet to Nikisl	ki (IN)						
							Co	ok Inlet Lowla	nds						
NK215	793.6	Minor	1.7	6	Incised channel meandering from pond to Cook Inlet	Low water - some flow at PLX. Dries up ~20 feet downstream	Sand (8%) Gravel (80%) Cobble (10%) Boulders (2%)							Not enough water in channel to collect WQ	11 Stickleback captured in pond US
							Trapper	Creek to Cook	Inlet (TI)						
							Co	ok Inlet Lowla	nds						
NK182.3	750.7	Minor	0.8	3	Defined meandering channel	Flowing water	Sand (20%) Gravel (63%) Cobble (15%) Boulders (2%)	12.08	6.13	10.32	38/29	361	1.1		43 Coho salmon and 15 Dolly Varden captured
NK182.2	750.4	Minor	0.3	1	Defined meandering channel	Some flow. Stagnant in places with algae growth.	Sand (10%) Gravel (80%) Cobble (10%)	10.28	4.85	6.85	49/36	403	1.4		19 Coho salmon and 1 Dolly Varden captured
NK182.1	749.9	Intermediate	3.8	12	Defined channel	Flowing water	Organics(1%) Silt (20%) Sand (20%) Gravel (30%) Cobble (30%)	7.66	5.89	11.75	41/27	229.9	2.48		36 Coho salmon and 12 Dolly Varden captured
NK181.4	748.8	Minor	0.88	3	Defined channel	Flowing water	Silt (5%) Sand (15%) Gravel (80%)	7.33	5.33	13.39	27/19	501.9	1.82		7 Coho salmon and 2 Dolly Varden captured
NK181.3	748.7	Minor	2.5	8	Defined channel	Flowing water	Organics (5%) Silt (10%) Sand (20%) Gravel (80%) Cobble (20%)	10.89	6.4	11.85	47/34	176.4	3.47		2 Dolly Varden captured
NK181.2	745.4	Intermediate	10.3	34	Beaver dam complex upstream. Defined channel downstream.	Flowing water	Organics (20%) Silt (80%) Sand (10%)	15.48	4.42	9.07	20/16	252.5	1.45		2 Chinook salmon, 1 Coho salmon and 1 Threespine stickleback captured and 1 Wood frog observed
NK181.1	745.4	Intermediate	20.8	68	Stagnant ponds, cross road at PLX; possible oxbow from Theodore River	No flow	Organics (40%) Silt (50%) Sand (10%)	12.98	4.5	6.42	63/48	248.9	4.4		1 Wood frog observed
NK180	746.6	Minor	1.1	4	Defined channel	Shallow flowing water	Silt (5%) Sand (40%) Gravel (60%)	9.71	6.18	11.3	44/31	236	0.4		4 Coho salmon and 2 Dolly Varden observed
NK179	744.9	Minor	0.79	3	Defined channel	Low water, some flow	Organics (20%) Sand (10%) Gravel (80%)	12.94	4.34	6.1	91/70	264	9.99	Water levels seem low. Organic material and mineral/iron material is prevalent on surface	12 Ninespine stickleback captured and 1 Wood frog observed
NK176	743.1	Minor	0.86	3	Beaver complex - goes underground and branches in multiple locations	Some flow	Organics (10%) Silt (50%) Sand (30%) Gravel (10%) Cobble (20%)	17.86	6.59	9	141/122	181.5	7.2		20 Ninespine stickleback captured and 3 salmonids and 1 Wood frog observed
NK175	740.6	Intermediate	3.37	11	Beaver dam complex upstream. Defined channel downstream.	Some flow	Organics (10%) Silt (80%) Sand (10%) Gravel (5%)	12.54	5.95	3.87	128/97	236.8	9.87		1 Wood frog observed
NK174.5	740.4	Minor	0.64	2	Defined channel	Flowing water	Organics (5%) Silt (20%) Sand (50%) Gravel (50%)	9.59	6.16	10.54	130/93	168.4	0.7		2 Wood frog observed

Field Target #	Pipeline MP	Stream Classification	Wetted Width (m)	Wetted Width (ft)	Channel Features at PLX	Water Content	Substrate	Water Temp. (°C)	рН	Dissov led Oxygen (mg/l)	Specific / Ambient Conductance ()	Oxygen Reduction Potential (mV)	Turbidity (NTU)	WQ Notes	Fish Captured
NK174.4	740.3	Minor	0.56	2	Defined channel	Some flow	Organics (5%) Silt (40%) Sand (50%) Gravel (60%)	7.5	5.53	11.89	246/164	222.1	2.95		No Fish
NK174.2	739.7	Minor	0.46	2	Defined channel	Low water, some flow	Organics (5%) Silt (10%) Sand (30%) Gravel (60%)	11.6	4.88	9.35	37/28	216.5	4.34		No Fish
NK174.1	739.6	Minor	0.58	2	Defined channel	Some flow – below bankfull	Organics (10%) Silt (30%) Sand (80%) Gravel (10%)	13.06	5.43	9.9	41/31	187.7	1.52		1 fish observation that could not be positively identified
NK173.7	739.3	Minor	0.46	2	Defined channel	Low water, some flow	Silt (10%) Sand (40%) Gravel (70%)	17.23	6.91	9.63	78/66	117.5	2.25		11 Slimy sculpin captured, 4 more observed, and 2 Wood frog observed
NK173.6	738.7	Minor	0.85	3	Deeply incised, meandering channel; goes underground in places	Flowing water	Organics(5%) Sand (75%) Gravel (20%)	11.67	4.44	9.59	131/97	305.2	2.23		No Fish
NK173.5	738.5	Minor	1.2	4	Incised, meandering channel; beaver dam complex downstream	Flowing water	Silt (5%) Sand (75%) Gravel (20%)	14.21	4.47	8.94	509/404	112.2	3.15		3 Slimy sculpin and 1 Dolly Varden captured
NK173.4	738.1	Minor	0.6	2	Poorly defined channel; goes underground in places	Some flow	Organics (100%)	11.63	4.41	9.38	78/58	295.5	66.6		1 Wood frog observed
NK173.3	737.8	Minor	1.35	4	Defined meandering channel	Shallow flowing water	Organics(10%) Silt (5%) Sand (20%) Gravel (40%) Cobble (50%)	9.39	6.48	11.48	93/65	300.8	6.7		5 Dolly Varden captured
NK173.2	737.8	Minor	1.25	4	Defined channel	Flowing water	Organics (3%) Silt (10%) Sand (20%) Gravel (20%) Cobble (50%) Boulders (3%)	9.42	5.76	12.17	81/57	416.4	1.7		1 Dolly Varden captured
NK172.1	736.9	Minor	1.94	6	Defined channel with steep, undercut banks	Some flow – below bankfull	Organics(1%) Silt (10%) Sand (30%) Gravel (40%) Cobble (50%)	9.4	6.48	10.37	85/59	351.2	3.3		1 Dolly Varden captured and 1 salmonid observed
NK171.1	736.5	Minor	1.07	4	Defined channel	Flowing water	Organics (3%) Silt (5%) Sand (20%) Gravel (40%) Cobble (60%)	9.43	5.65	12.05	95/66	406.3	1.7		2 Dolly Varden captured
NK170.1	735.4	Minor	1.45	5	Defined meandering channel	Flowing water with deep pools	Silt (20%) Sand (20%) Gravel (85%) Cobble (5%)	10.98	5.66	11.18	73/54	148.4	4.01		4 Dolly Varden captured and 1 more observed, and 1 Slimy sculpin captured
NK162.2	722.3	Minor	1.2	4	Defined meandering channel	Flowing water	Organics (10%) Sand (45%) Gravel (40%) Cobble (5%)	12.58	6.65	9.67	68/51	265.9	4.4		13 Coho salmon captured and 3 sculpin observed
NK162.1	721.9	Minor	0.66	2	Defined channel with undercut banks	Low water, some flow	Organics (1%) Silt (20%) Sand (80%)	11.5	6.13	9.16	70/52	291.8	3.4		No Fish

Field Target #	Pipeline MP	Stream Classification	Wetted Width (m)	Wetted Width (ft)	Channel Features at PLX	Water Content	Substrate	Water Temp. (°C)	рН	Dissov led Oxygen (mg/l)	Specific / Ambient Conductance ()	Oxygen Reduction Potential (mV)	Turbidity (NTU)	WQ Notes	Fish Captured
NK159.3	713.5	Minor	0.7	2	Multiple channels at PLX. Well-defined channels upstream and downstream of PLX	Stagnant ponds and intermittent water flow in multple channels near PLX. Flow in defined channels	Organics (100%)	9.06	3.83	8.96	93/65	281.8	2.6	Water quality collected at PLX where water has less flow and more algae growth	9 Ninespine stickleback captured and 1 Wood frog observed
NK158.3	706.1	Minor	1.23	4	Defined at PLX. Beaver complex upstream of PLX.	Low water, some flow	Organics (10%) Silt (60%) Sand (70%) Gravel (5%)	16.51	6.41	7.92	72/60	106.5	8.7		No Fish
NK158.2	705.7	Minor	2.6	9	Defined, slightly meandering channel	Flowing water	Organics (3%) Silt (20%) Sand (30%) Gravel (40%) Cobble (20%)	16.14	6.34	8.96	88/74	171.6	10.3		36 Coho salmon captured and 1 more observed, and 4 Rainbow trout and 4 Slimy sculpin captured
NK158.1	705.0	Intermediate	3.69	12	Defined meandering channel	Flowing water	Organics(1%) Silt (20%) Sand (40%) Gravel (60%) Cobble (50%)	14.39	6.77	9.58	145/116	310.3	5.9		29 Coho salmon captured
NK156.1	688.5	Minor	1.75	6	Defined channel	Low water, some flow	Gravel (1%) Cobble (70%) Boulders (30%)	12.16	5.15	7.73	25/18	12.4	1.21		No Fish
NK152.1	683.4	Minor	2.26	7	Defined channel	Some flow	Organics (10%) Gravel (20%) Cobble (80%)	13.68	5.22	7.48	35/28	403.7	11.2		No Fish
NK151.5	681.8	Minor	1.95	6	Defined at PLX. Beaver complex upstream of PLX.	Low water, stagnant to some flow	Organics (30%) Silt (90%) Sand (20%)	21.18	5.78	5.46	36/33	134.9	6.1		No Fish
NK151.1	679.2	Minor	0.84	3	Defined channel, connects two small lakes	No flow	Organics (30%) Silt (70%)	16.57	4.6	1.05	35/30	200	3.1		6 Wood frogs observed
							Healy	to Trapper Cre	ek (HT)						
							Co	ok Inlet Mount	ains T						
NK122.2	615.9	Minor	1.6	5	Defined channel	Flowing water	Gravel (10%) Cobble (80%) Boulders (10%)	10.13	9.57	9.62	61/43	195.1	2.56	Water quality meter miscalibrated; readings of pH seemed above normal	14 Coho salmon and 3 Slimy sculpin captured
NK122.1	614.7	Intermediate	8.95	29	Channel present; however water is spread onto adjacent grasses creating a stagnant wide pond	Ponded, no flow	Organics (40%) Silt (40%) Gravel (20%)	9.96	9.14	3.34	238/186	279.9	1.74	Water quality meter miscalibrated; readings of pH seemed above normal	No Fish
NK112	593.9	Minor	1.92	6	High gradient defined channel with steep banks	Flowing water	Organics (3%) Sand (5%) Gravel (10%) Cobble (50%) Boulders (35%)	2.62	8.95	14.01	238/136	210.3	0.52	Water quality meter miscalibrated; readings of pH seemed above normal	No Fish
NK111	593.5	Intermediate	5.43	18	High gradient defined channel	Flowing water	Sand (5%) Gravel (10%) Cobble (50%) Boulders (35%)	4.85	8.94	13.13	306/189	190	0.45	Water quality meter miscalibrated; readings of pH seemed above normal	No Fish
NK110.2	590.5	Minor	2.14	7	Defined channel	Flowing water	Sand (10%) Gravel (60%) Cobble (20%) Boulders (10%)	7.6	8.36	11.97	43/29	179.3	4.74	Water quality meter miscalibrated; readings of pH seemed above normal	No Fish

Field Target #	Pipeline MP	Stream Classification	Wetted Width (m)	Wetted Width (ft)	Channel Features at PLX	Water Content	Substrate	Water Temp. (°C)	рН	Dissov led Oxygen (mg/l)	Specific / Ambient Conductance ()	Oxygen Reduction Potential (mV)	Turbidity (NTU)	WQ Notes	Fish Captured
	•		•	•		-	Live	ngood to Heal	y (LH)	•	-		•		
							Interi	or Alaska Low	lands						
NK064	508.1	Intermediate	3.9	13	Defined channel	Some flow	Organics (5%) Cobble (5%) Boulders (90%)	5.98	9.32	10.22	200/127	172.2	1.22	Water quality meter miscalibrated; readings of pH seemed above normal	2 Slimy sculpin captured and 1 more observed
NK059	495.4	Intermediate	4.5	15	Poorly defined, disturbed channel	Flowing water	Organics (5%) Silt (70%) Sand (25%)	12.37	8.08	13.11	472/358	44.1	33.4		No Fish
NK052	476.4	Major	N/A		Defined channel	Flowing brown-silty water	Too deep to wade	9.47	8.08	12.01	478/336	22.7	191		No Fish
NK051.2	476.5	Major	N/A		Defined channel	Some flow of yellow/brown water	Too deep to wade	8.78	6.95	5.92	475/328	98.4	9.27		35 Alaska blackfish captured
NK027	432.8	Intermediate*	N/A		Defined channel	Flowing brown-silty water	Too deep to wade	9.8	7.37	12.4	174/121	150.6	8.64		2 Burbot captured and 1 Wood frog observed
NK026	432.1	Intermediate	6.4	21	Defined channel	No flow, beaver dam at upstream construction corridor boundary	Organics (100%)	11.18	5.47	1.88	44/33	179.8	2.78		18 Alaska blackfish captured
NK025	430.8	Absent	N/A		Old oxbow pondsfrom the Tatalina River to the SW and NE but wetland complex with no defined channel at PLX.	No water at PLX, dry	Organics (100%)	6.19	5.68	0.91	166/106	88.1	6.57	Water quality and fishing effort at edge of channel from pond where water present	12 Alaska blackfish captured
NK024	430.7	Major	N/A		Wide meandering channel	Flowing water, high at time of survey	Too deep to wade	6.26	6.12	11.34	107/69	161.6	264		No Fish
							Interi	or Alaska Higl	hlands			•			
NK047	453.9	Major	N/A		Defined channel	Some flow of brown-silty water	Too deep to wade	11.27	7.66	10.64	280/206	-2.6	5.31		No Fish
NK020.1	426.7	Absent	N/A		Poorly defined drainage channel	No water, dry	Organics (100%)							Water quality not captured - dry channel	No Fish
NK004.4	407.7	Absent	N/A		Poorly defined drainage feature, incised channel at PLX	No water, dry	Organics (100%)							Water quality not captured - dry channel	No Fish
NK004.3	407.6	Absent	N/A		Multiple poorly defined drainage features	No water, dry	Organics (100%)							Water quality not captured - dry channel	No Fish
NK002.4	405.0	Intermediate	3.9	13	Poorly defined, split channels with muddy banks	Some flow	Organics (10%) Silt (20%) Sand (70%)	8.82	7.91	10.9	853/589	-9.6	1.59		No Fish
NK002.3	404.9	Intermediate	3.6	12	Multiplechannels	Flowing water	Organics (90%) Silt (10%)	9.87	8.17	10.48	1073/763	7.7	2.04		No Fish
NK002.2	404.8	Intermediate	5	16	Poorly defined channel	Intermittent water, no flow	Organics (100%)	6.91	6.33	6.78	132/89	66.4	0.72		No Fish
NK002.1	404.2	Absent	N/A		Poorly defined drainage feature	No water, dry	Organics (100%)							Water quality not captured - dry channel	No Fish
							Atigun Pa	ass to Yukon I	River (AY)						
							Interi	or Alaska Higl	hlands						
AL244.1	281.8	Minor	1.05	3	Defined channel	Flowing water	Silt (50%) Sand (20%) Gravel (40%)	5.29	6.55	12.61	103/65	131.7	4.87		3 Slimy sculpin captured
							Interior B	rooks Range	Mountains						
AL209	240.4	Minor	2	7	Channel present but mostly dry. Moss and detritus cover gravel substrate	Dry channel with isolated pools	Organics (70%) Silt (20%) Sand (5%) Gravel (20%)	7.5	4.08	5.43	75/50	154.6	0.97		No Fish

Field Target #	Pipeline MP	Stream Classification	Wetted Width (m)	Wetted Width (ft)	Channel Features at PLX	Water Content	Substrate	Water Temp. (°C)	рН	Dissov led Oxygen (mg/l)	Specific / Ambient Conductance ()	Oxygen Reduction Potential (mV)	Turbidity (NTU)	WQ Notes	Fish Captured
AL151.1	181.5	Absent	N/A		Dry defined drainage feature at PLX; second poorly defined featured ~500 feet NE at PLX -	Discontinuous, shallow, wet patches	N/A							Not enough water in channel to collect WQ	No Fish
AL149.1	180.8	Intermediate	5.2	17	High gradient defined channel	Flowing water	Sand (10%) Gravel (80%) Cobble (20%) Boulders (3%)	7.65	6.59	11.49	337/226	358.3	0.94		1 Arctic grayling and 2 Slimy sculpin captured
AL145.3	174.7	Intermediate*	33	108	Ponded at PLX, channel better defined upstream and downstream	Some flow	Organics (30%) Silt (90%) Sand (1%)	5.53	6.35	11	746/468	173.7	81.4		1 Arctic grayling captured and 4 more observed
AL145.2	174.7	Intermediate	26.1	86	Ponded at PLX, channel better defined upstream.	Some flow	Organics (60%) Silt (90%) Sand (1%)	8.15	6.92	9.96	292/197	81.6	1.43		No Fish
AL145.1	174.6	Minor	0.97	3	Braided system	Mostly dry, very little flow	Organics (40%) Silt (1%) Sand (5%) Gravel (80%) Cobble (5%)	6.75	6.98	7.9	355/231	278.1	0.33		No Fish
							Prudhoe	Bay to Atigun	Pass (PA)						
				-			Northern I	Brooks Range	Mountains	s 		-		-	
AL135.1	165.5	Minor	2.2	7	Braided stream within wide gravel bar	Discontinuous flowing water	Sand (3%) Gravel (40%) Cobble (60%)	5.83	6.09	11.53	200/127	303.1	1.02		No Fish
AL114.9	147.0	Minor	0.75	2	Defined channel	Flowing water	Gravel (60%) Cobble (40%)	0.4	8.45	17.01	377/200	204.6	0.71		No Fish
								Arctic Foothill	S						
AL061.3	103.9	Intermediate	12.21	40	Defined narrow channel in wetland complex	Some flow	Organics (100%)	3.12	2.11	12.21	11/7	359.9	1.26		No Fish
AL050	85.5	Minor	2.85	9	Defined channel	Flowing water	Organics (20%) Gravel (20%) Cobble (50%) Boulders (10%)	4.55	5.58	13	22/13	248	2.24		No Fish
AL035.32	69.8	Intermediate	5.09	17	Depressional wetland complex	Some flow	Organics (100%)	2.34	6.71	13.7	39/23	272.7	2.76		No Fish
					·	•	Ar	ctic Coastal Pl	ain						
AL019.4	43.8	Intermediate	30.2	99	Wide depressional wetland complex	Some flow	Organics (100%)	10.43	5.91	9.9	458/330	68.6	0.74		234 Ninespine stickleback captured
AL019.12	40.6	Intermediate	25.2	83	Wide depressional wetland complex	Some flow	Organics (100%)	12.29	5.17	10.43	556/421	195.8	0.76		No Fish
AL015	37.1	Intermediate	7	23	Discontinuouspoolsin wetlands.complex	None	Organics (100%)	4.62	6.04	13.91	363/223	891.9	0.69		No Fish
AL005.1	32.7	Minor	2.43	8	Defined channel	Flowing water	Organics (70%) Silt (30%)	10.01	7.72	12.17	252/180	189.2	1.64		71 Ninespine stickleback captured
AL004.52	17.9	Intermediate	4.9	16	Poorly defined channel between beaded pools	Some flow, some ponded areas	Organics (20%) Sand (5%) Gravel (95%)	10.89	9.47	12.45	489/357	89.8	2		1 Burbot, 2 Ninespine stickleback, 7 Dolly Varden and 7 Arctic grayling captured
AL004.51	17.8	Intermediate*	47.2	155	Wide, poorly defined channel between beaded pools	Some flow at culvert only	Organics (80%) Silt (20%)	9.67	8.15	11.11	477/337	98	2.42		12 fish observed - could not capture to positively identify but looked like stickleback
AL004.23	14.9	Minor	0.81	3	Defined channel	Flowing water	Organics (20%) Silt (20%) Sand (50%) Gravel (10%)	6.75	6.29	12.49	370/241	206	2.03		12 Ninespine stickleback captured

Field Target #	Pipeline MP	Stream Classification	Wetted Width (m)	Wetted Width (ft)	Channel Features at PLX	Water Content	Substrate	Water Temp. (°C)	рН	Dissov led Oxygen (mg/l)	Specific / Ambient Conductance ()	Oxygen Reduction Potential (mV)	Turbidity (NTU)	WQ Notes	Fish Captured
AL004.22	13.6	Intermediate	14.98	49	Defined channel	Flowing water	Organics (90%) Silt (10%)	7.95	5.43	12.26	325/218	233.5	1.38		9 Ninespine stickleback captured
AL003.2	5.1	Intermediate	8.7	29	Defined channel	Some flow	Organics (40%) Silt (40%) Sand (10%) Gravel (30%)	4.28	5.88	11.88	636/384	245.6	3.96		No Fish
							Point Thomso	n to Prudhoe I	Bay (PP) - F	рШ					
				-			Ar	ctic Coastal P	ain	-					
PT010	5.9	Intermediate	10.2	33	Poorly defined channel in wetland complex; channel better defined upstream	Some flow	Organics (5%) Silt (20%) Sand (10%) Gravel (70%) Cobble (1%)	9.18	7.07	11.46	262/182	201.8	1.12		52 Ninespine stickleback captured
PT011	7.1	Intermediate	3.2	10	Defined channel	Some flow	Organics (90%) Silt (10%)	10.93	7.13	11.83	244/179	196.6	1.14		42 Ninespine stickleback captured
PT025	16.9	Intermediate	6.4	21	Defined channel	Some flow	Organics (10%) Silt (30%) Sand (5%) Gravel (60%)	9.24	7.16	11.77	258/180	218.6	0.8		1 fish observation that could not be positively identified, and 19 Ninespine stickleback captured
PT031	19.4	Intermediate	12.2	40	Defined channel	Flowing water	Organics (60%) Sand (10%) Gravel (40%)	4.06	5.24	13.9	217/128	144.1	0.88		2 Ninespine stickleback captured and 2 more observed
PT032	20.4	Intermediate	13.1	43	Defined channel	Some flow	Organics (20%) Silt (10%) Sand (10%) Gravel (60%)	5.28	8.45	13.06	225/138	4	1.12		20 Ninespine stickleback captured
PT034	22.3	Intermediate	3.25	11	Defined channel	Some flow	Organics (70%) Silt (30%)	4.21	7.2	13.05	161/99	54.1	2.29		18 Ninespine stickleback captured
PT036	23.4	Intermediate	19.8	65	Wide, poorly defined channel between beaded pools	No flow	Organics (50%) Silt (50%)	10.32	4.97	9.92	283/204	136.4	1.9		No Fish
PT042	24.8	Intermediate*	50	164	Wide, poorly defined channel between beaded pools	No flow	Organics (70%) Silt (30%)	11.54	6.78	10.39	302/223	181.4	2.04		1 Ninespine stickleback captured
PT064	31.8	Intermediate	3.4	11	Defined channel	Flowing water	Organics (90%) Silt (10%)	11.4	6.82	11.31	176/130	150.1	1.77		157 Ninespine stickleback captured
m = meter Intermedia	s, N/A = Not / ate*-Wetted	Applicable, PLX = widthStreamclas	= pipeline cross sification listed	sing LasIntermedia	e due to nature of system althoug	nwetted width large er	hough to								



APPENDIX C – 2015 STREAM INVESTIGATION FIELD DATA, PHOTOS AND STUDY AREA MAPS – IN SUPPORT OF MAINLINE

SITE DESCRIPTION	·他们的这些"自己的"		Mel Association "A	
Date: 6 - 27 - 15 Investigate	DIS: EAH NUS	ADF	Team No.: FB6	Feature ID: F8671017
Stream Name: II N'N ANED S	Rec AM			Stream ID: NK215
Pineline Milenost: 7.9.4 } Stream f	ound as expected (Y/N):	V Water of	MS UP DS	Hwy MP (N/A if hell accessed): N/A - He
			do: lot le 10-1	a dadathal
Latitude: 60 75 21.00+3		Longica	131 13	31 727 5 0
Logbook No.: Logbook Page No.: -	32 Total Fish C	aught:	Fish Mortalities:	Total Photos:
US @ CL Pic No.: P-F66 TIOI 7-001-WS Pic I	DCL P-FOUTIONT-00	2-DS RB to LI Pic No.:	P-POINTION -20	13-18 Pic No.: -FOUTOIT-004.
Other P-FB6T1017_005- Pic No(s).: P. FB6T1017_008-	007_POND 010_AERIA	A		
PHYSICAL/ CHEMICAL ATTRIBUTES		Descipitation (
Weather (Describe): Worry along	ly for	Precipitation (Describe): Pante	Direction (mg/l):
Water Temperature (°C):	Air temperature (-C):	st.	pri:	Dissolved Oxygen (mg/).
Specific Conductance(µS/cm): N	Turbidity (NTU):	- A -	OKP (mv):	Uissoived uxygen val: N/A
Ambient Conductance(µS/tm):	Odor	Sheeh (Y/N):	Color:	Last date of Calibration:
Defined Channel (Y/N): Y Notes: M	ased drammal w/	prever (couble -	substrate	Wetted Width (m): 1. + M
FIOW (Y/N): 7 Notes: C	at 0-5 m at RB: Stree	give Water	Aquatic Mabitats	at King manage Deptin (a CL (m): 0.05
100 Grass/Sedge (%) 100 G	rass/Sedge (%)	Organics (%)	Sand Bar	Large Woody Debris
(00 Shrubs (%) 30 s	hrubs (%)	Silt (%)	Mud Bar	Overhanging vegetation
Ø Trees (%) 60 T	rees (%)	Sand (%)	Gravel Bar	Contiguous Wetlands
Diameter DBH (in.)	neter DBH (in.)	O Gravel (%)	Riffles	Emergent Plants
		Cobble (%)	Pools	Submerged Plants
Stream Type:	Y Enhamoral	Boulders (%)	Undercut Bar	iks
STREAM PROFILE: Cross Sectional at Crossing	(include riparian vegetati	on, wetted width, wa	iter depth, substrate, a	nd aquatic fiabitats)
王王王		I.7m	- 0.05 m	
Por T K deter te sect	profiled enterline, dista	ndes from centerline	photo locations, samp	ie locations by gearitype and Kowa
PO e Vier Biller House	DAND DIFT	EB		

Feature ID: F86T1017

	Hook and Line (Y/N):	Beach Seine	(Y/N): Fyke	e Net (Y/N):	Hoop Net (Y/N):
No. of Minnow Traps Set:	Date & Time in:	Date & Time	in: Det	& Time in:	/ Date & Time In: (mtt/dd/www)
Date & Time in:	No. of lines in water:	No. of passes	ii Date	& Time out	Date & Time out:
(mm/dd/yyyy) Date & Time out:	Time lines in water:	Reach Lengt	(m):	h/dd/yyyy) / /	(mm/dd/yyyy)
(mm/dd/yyyy)			and the design will be off whether and		And the sector of the sector o
		d Time:	EF Time (seconds)		E Danah Lanath (m)
Duty Cycle:	Frequency (Hz) :	Waveform:	Same	pling Efficiency (% of	sample reach):
Current (A):	Volts (V):	Power (WV):			(amp x volts)
FISH OBSERVATIONS		Martin Street Martin of		Anders, as said	
ID (Seq. Num) Gear Type	Species	Total Length	Life Stage	Disposition	Picture No.
001-011 1/15 Ob	* sheklehad	$\leq (x u)$	(Suverne of Addit)	Alive	P-FALITIONT ALL STICK
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		N/A	Ŧ		
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	and the second se			-	
NOTES (any additional informatio	n)				
NOTES (any additional information & Shickle back net	n) ted in pond US	of stream	channel		
NOTES (any additional information & shickleback net Simgil inclus	nt ted in pond his ied chauned w	of stream	channel ble gilet		
NOTES (any additional information of shotcleback not Small incis	n) ted in pond his ied chaunel w	of stream gravel/cob	channel ble subst	rate mea	ndering
NOTES (any additional information & Shockleback not Small incis through	red in pond his ied inhauned w glder devil	of stream grabel/cob	channel ble subst	rate mea	ndering
NOTES (any additional information & shickleback net Simall inclis through	n) ted in pond hs ied chaunel w alder (devil	of stream gravel/cob ls club	channel ble subst corridor Pu	rate meanning fre	ndering
NOTES (any additional information & shickleback net Simall inclus through pond he	n) ted in pond his ed chaunel w alder (devil s to Cook	of stream gravel/cob ls club inlet.	channel ble subst corridor ru	rate meanning fro	ndering
NOTES (any additional information & Shekleback net Small incls through pond he & Dirt t	n) ted in pond his ied chaunel w alder (devil s to Cook oud DS W/CI	of stream 1 gravel / cob 1 s club 1 n kt. ulvert - no	channel ble subst corridor ru Water	rate meanning fro	ndering m + (~100')
NOTES (any additional information & sheetleback net Small inclis through pond he & Dirt r Water dr	n) Ted in pond his ied channel w alder (devil s to Cook ood Ds w/cr	of stream 1 gravel / cob 1 s club 1 n kt. 1 vert - no 20' Ds	channel ble subst corridor ru Water Water	rate mea nning fre al culver	ndering m + (~100')
NOTES (any additional information & Shickleback net Small incis through pond he & Dirt r Water dr	n) ted in pond hs ad chauned w alder (devil s to Cook ood Ds w/ca ys up about	of stream / gravel / cob ls club Inlet. ulvert - no zo' Ds	channel ble subst corridor ru Water of inters	rate mea nning fre al culver	ndering m + (~100') proposed access
NOTES (any additional information & Shetcleback net Small incis through pond he & Dirt r Water dr Channel co Sul r	ni ted in pond his alder (devil s to Cook and Ds W/cr ys up about and provide to Ash sample	of stream 1 gravel / cob 1 s club 1 n let. 1 n let. 1 vert - no 20' Ds migration ing now	channel ble subst corridor ru Water of inters corridor ue to (2	rate meanning free al culver ection re- when we-	ndering n + (N100') Proposed access ter is prosent witer
NOTES (any additional information & Shekleback net Small incls through pond he & Dirt r Water dr Channel C Sul r MISCELLANEOUS POINTS (If appli Point ID:	n) Ted in pond his ied channel w alder (devil s to Cook oud DS W) cr ys up about and provide to Ash sample cable)	of stream 1 gravel / cob 1 s club 1 s club	channel ble subst corridor ru Water of inters corridor ue to (a	rate meanning fro al culver ection re when we	ndering m -1 (~100') Proposed access ter is present
NOTES (any additional information & Shickleback net Small incls through pond he & Dirt r Water dr Channel C Sul r MISCELLANEOUS POINTS (If appli Point ID: Point ID:	n) ted in pond hs ad channel w adder (devil s to Cook oud DS W/CA ys up about ould provide to Ash sample icable) Descr	of stream 1 gravel / cob 1 s club 1 s club 1 s club 1 het. 1 lvert - no 20' Ds mignifin ing now -	channel ble subst corridor ru Water of inters corridor lue to la	rate meanning fre	ndering m + (~100') Proposed access ter is prosent

Stream Fish Investigations Field Form QA/QC Checklist

This form is to be completed before leaving the field site.

Feature ID: F86 TI017 FT # NK215 Date: 6.27.15

For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

- Was ADF&G contacted before conducting any work in this area?
- Site Description complete? (Every cell must have entry or N/A)
- Were all photos taken and labeled correctly?

2. Physical/Chemical Attributes

- A Calibration performed prior to sampling?
- Y Physical/Chemical attributes complete? (Every cell must have entry or N/A)
- ☆ Water quality data within expected ranges?
 - pH: 4.0 10.0
 - d NTU: 0 3000
- λ∫[№] □ DO (mg/L): 1.0 15.0
 - Temp.: 1.0 19.0
 - Specific Conductance: 20 1500
- M/A If outside expected ranges, was sample re-taken?
- Are units correct?

3. Stream Profile

- Stream profile view sketch included?
- X Stream profile view captures water depth and wetted width?
- ► Stream profile view captures where efforts were made to capture fish?
- Plan view sketch included?

4. Methods Attributes

- Methods attributes complete? (Every cell must have entry or N/A)
- Were methods used adequate (explanation needed if no methods selected)?

5. Electrofishing Attributes

- ☑ Electrofishing attributes complete? (Every cell must have entry or N/A)
- N Are units correct?

Stream Fish Investigations Field Form QA/QC Checklist

Feature ID: FBGTI017

6. Fish Observations

K Are all fish captured/observed recorded in the Fish Observation table?

►T/A Are units correct? (Total Length (mm))

Were adequate photos taken of fish captured? (Take a photo if in doubt)

7. General

- Feature ID and Field Target # are consistent on data forms, logbook entries, photos, and maps?
- M All additional data in logbook captured on data form and additional photos noted?
- Were all additional comments on stream habitat, etc. recorded on data form?
- Was any gear missing/damaged for this survey or did you have any problems that should require resampling of this stream for an adequate survey effort?

By signing below, I verify that all field data for this site has been verified for accuracy and completeness.

Fisheries BlologIst (print)

Signature

mes

Field Crew Chlef (print)

Signature



P_F86TI017_001_US LOOKING US AT PLX

6/27/2015 NK215



P_F86TI017_002_DS LOOKING DS AT PLX

6/27/2015 NK215



NKAIS 6/27/15 P_F86T1017_004_RB Looking@RB@PLX

P_F86TI017_004_RB LOOKING AT RB AT PLX

6/27/2015 NK215



P_F86TI017_005_POND OVERVIEW PHOTO OF POND 6/27/2015 NK215



P_F86TI017_006_POND OVERVIEW PHOTO OF POND

6/27/2015 NK215



P_F86TI017_007_POND OVERVIEW PHOTO OF POND

6/27/2015 NK215



P_F86TI017_008_AERIAL AERIAL PHOTO

6/27/2015 NK215



P_F86TI017_009_AERIAL AERIAL PHOTO

6/27/2015 NK215



P_F86TI017_010_AERIAL AERIAL PHOTO

6/27/2015 NK215



P_F86TI017_011_STICKLEBACK 6/27/2015 NK215 PHOTO OF NINESPINE STICKLEBACK

			Target Name Featu	e: UNNAME Ire ID: F861	ED STREAN FI017	1		Chukchi S	ARCTIC C	DCEAN Beaufort Sea	
								BERING SEA	Sethel And	SKA Fairbanks chorage GULF OF ALASKA Kodiak	neau
										PACIFIC OCEAN	a second and a local and
			P_FESTION7_0 P_FESTION7_001_U P_FESTION7_001_U P_FESTION7_0 P_	02_15 22_05 82 82 94_R8 F3301017_005	ST (U) NK215 LFOND						
and a start of the second s											Z
LEGEND 2015 Fis F • Species AB AG	h Survey Location Fish Observed No Fish Observed Photo Point Observed Alaska Blackfish Arctic Grayling	BU CH CO DV NS O RT	Burbot Chinook Salmon Coho Salmon Dolly Varden Ninespine Stickleback Other Species Not Listed Rainbow Trout	SA(U) SC(U) SS ST(U) TS OBS	Salmonid (Sculpin (Ur Slimy Scul Stickleback Threespine Fish Obser	Unspeci nspecifie oin (Unspe Sticklet vation, N	fied) d) cified) back lo Specie	es Informatic	0 50 LLLLL ITTT 0 1 Dn	Feet 0 100 150 200 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0
NOTES: Concept Informati	ion - Confidential. Produced by Alas the date of issue; it is considered re	ASKA	LNG The information used to create this product is scale at which the data was created and the	s based on the scale at which	CHECK PROJECTION	ΔΑΤυΜ	2015	ALASKA FISH FIELD SUF	LNG RVEY LOCAT	IONS MAP NUMBER Page 1 of 86	REV.
the map was publ eam assumes no at full scale (100%	ished. This drawing is solely prepare liability to any other party for any re b) in order for the scale to remain con	d for use by the presentations co rect.	e contractual Alaska LNG team partners and the ontained in these drawings. This map must be	ne Alaska LNG printed/viewed	ARC 4 SCALE 1:2,000	DATE 15	Oct 2015	PROJECT NUMBER	orig page size 8.5 X 11		

STTE DESCRIPTION							
Date: 6-27.15 Investigato	IS KAH, NJS, ADF	Team No.: PB6	Feature ID: FB6T1019				
Stream Name: UNNAMED ST	REAM		Stream ID: NK 182.3				
Pipeline Milepost: 750. 8 Stream for	ound as expected (Y/N):		Hwy MP (N/A If hell accessed):				
Matitude: 61° 17' 39 0543'' Mongitude: 151° 02' 48. 5485							
Logbook No.: Logbook Page No.: 3	72-34 Total Fish Caught: 58	Fish Mortalities:	: Ø Hotal Photos: 12				
US @ CL P = F80 T1019 001 US @ Pic No.: P = F80 T1019 001 US Pic N	CL P-P80109-02-05 RB to	LB@ CL 0.: P-PB6T1019-0	103-13 LB to RB@ C - PB6T1019_004-RD				
Other Pic No(s).: P_F8671019_005	-007_HERIM	P-F8672019.	_008 -009_COHO - under water photos				
PHYSICAL/ CHEMICAL ATTRIBUTES							
Weather (Describe): Cloudy	Precipitation	n (Describe): Intern	Discolud Ownen (mg/l): 10 :32				
Water Temperature (°C): 12.08	Air Temperature (°C): 5	pH: (0.1)	Dissolved Oxygen (%): 9(a, d)				
Specific Conductance(µS/cm): 38	Turbidity (N1U):		Last date of Calibration: 4/14/15				
Ambient Conductance(µS/cm):	andaring cheater will can	y lonavel loophi	2 cwlsha Wetted Width (m): 0.9				
Flow (Y/N): Notes:	Flow throughout	11.1.1.10.220	Thalweg Depth @ CL (m):				
Riparian Veg at 0-5 m at LB: Riparian Veg a	at 0-5 m at RB: Stream Substrate:	Aquatic Habitats					
Grass/Sedge (%) Gr	rass/Sedge (%)	6)Sand Bar					
<u></u>	irubs (%)	Mud Bar	<u></u> Overhanging vegetation				
Trees (%)Tr	ees (%) <u>20</u> Sand (%)	K Riffles	Emergent Plants				
N/A Diameter DBH (In.)	Gravel (%)	× Pools	Submerged Plants				
Stream Type:	Z Bouiders (%)Undercut Ba	anks				
PerennialIntermittent							
STREAM PROFILE: Cross Sectional at Crossing (Include Apartan Regelation), well deplay substate and additional at Crossing (Include Apartan Regelation), well deplay substate and additional at Crossing (Include Apartan Regelation), well deplay substate and a deplay							
NORTH:	Contraction of the second	The paper	Put John And And And And And And And And And An				

Feature ID: FB6T1019

METHODS ATTR	IBUTES		的。如果是一個					品质的 田 建立花底 医血
Minnow Traps (Minnow Traps (Y/N): Hook and Line (Y/N):		Beach Sein	Beach Seine (Y/N): Fy		Vet (Y/N):	Hoop Net (Y/N):	
No. of Minnow T	No. of Minnow Traps Set: Date & Time in:		Date & Tim	eth:	Date a	& Time in:	Date & Time in:	
Date P. Time int	(mm/dd/yyyy)		(mm/dd/y	(mm/dd/yyyy)		dd/yyydd	(mm/dd/vyvy)	
(mm/dd/yyyy)	15:30	No. of lines in	I Water.	Market of pass	100-	(mm/	dd/yywy	(mm/dd/vorvy)
Date & Time out (mm/dd/yyyy)	13:15	Time lines in	water:	Reach Len	gth (m):	1/		and the second
ELECTROFISHIN	G ATTRIBUTES		影高级建設		Star 112 - 112	Carlos a		
EF (Y/N):	EF Start Ti	me:	EF End 1	Time:/	EF Time (s	econds):		F Reach Length (m):
Doty Cycle:		Frequency (H	z):	Waveform		Samp	ling Efficiency (% of	f sample reach):
Current (A):		Volts (V):		Power (W)	\sim			(amp x volts)
FISH OBSERVAT	IONS	是如此问题				The second		The properties easy in the
ID (Seq. Num)	Gear Type	Spec	ies	Total Length (mm)	Life Stage (Juvenile or	Adult)	Disposition (Dead or Alive)	Picture No.
001	MT-1	(oho	. 81	Juven	ile	Mive	1 P. FRISTI 019. DIO Cette
002	1		1	.92	1		1	
003				. 82				
004				1-71				
005				· B2				K P. FB671019-011 .Col
000				. 69				
607				.76	-			
008			-	. 75		- 1		
009				- 71		- 4.		
010				.95			2	
01/				-86			1.	
012			4	. 91	V	_	V	
NOTES (any addi	itional information	而没有过来	的國際的自	如此 相利 可 法的 想	的的变形的测	and for		网络和国际公司法国国际同时
	Meand ald Sh1	lering ler/fi	stream	n runni	ing the	roug	h catal she (grav	ate el (sand
Coho observed throughout								
-	Manu	n gran pro	nel bars ent. ronghou	s and	pools /k	and	undre	nt banks
MISCELLANEOUS	S POINTS (if applic	cable)	Constant and	Carl Street		and a start	Contract (State)	
WINDELLOANLOUD			and the second sec	AND DESCRIPTION OF ANY ADDRESS OF ANY	A REAL PROPERTY AND A REAL	ACCORDING NO. OF STREET, STREE	The second s	the second se
Point ID:			Descript	tion:				
Point ID: Point ID:			Descript	tion:				

Feature ID: P86T1019

FISH OBSERVAT	IONS (continued)	品牌的 12% AT 12 WH	The second second		Saut Line and		
ID (Seq. Num)	Gear Type	Species	Total Length	Life Stage	Disposition (Dead or Alive)	Picture No.	
013	MTI	Coho	· B(0	Juvenile	Alive		
014	Inda I	u	1.70		r		
015		Dolly	. 110			A P.F.6651019-012-DOL	
016		Coho	.90			4.	
017			.64				
018			- 80				
10019			.94				
020			1.72	1			
OZI			- 76				
022		A 100	· 58				
023		Y	• 70	0.0			
024		Dolly	· 89.		-		
025		Ocho	. 63				
026		U	. 60				
027		11	.61		_		
Oat		Dolly	. 70				
029		Calio	160				
030		Coho	. 85		1		
031		Dolly	. 65				
032		Opho	. 61	+			
033			· 72		-		
034			. 65				
035			. 61				
034			. 79				
037		V V	.70				
036		Dolly	. 09				
039			1.71				
040		Caho	.80				
041		Dollin	.81				
042		i J	.68				
043		Coho	.71		1		
044	1	Dolly	170				
045		Colo	.65				
046		Dolly	· 88				
047		и	.70				
048		Coho	163				
649		11	.72				
050		Dolly		1 m			
051		Coho	.91				
857		11	160				
159	1	Dolly	1.1		1		
054	Y	11	175	V	V		

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Revision Date: 06/09/2015

Page 3 of

Feature ID: F86T1019

FISH OBSERVAT	TONS (continued)			是他们的方法。	的建設。建設的時	
ID (Seq. Num)	Gear Type	Species	Total Length	Life Stage	Disposition (Dead or Alive)	Picture No.
055	MT-1	Calico	. (. 7	avenie of Addity	Muss	
\$54		ll	.52	1	- AMIC	1
057		U(165			
056	21	Dolly	.70		W	
059	1		1		v	
060		÷				
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Stream Fish Investigations Field Form QA/QC Checklist

This form is to be completed before leaving the field site.

Feature ID: <u>F86T1019</u> FT #<u>NK182.3</u> Date: <u>6/27/15</u> For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

- Was ADF&G contacted before conducting any work in this area?
- Site Description complete? (Every cell must have entry or N/A)
- Were all photos taken and labeled correctly?

2. Physical/Chemical Attributes

- Calibration performed prior to sampling?
- Physical/Chemical attributes complete? (Every cell must have entry or N/A)
- □ Water quality data within expected ranges?
 - 🥳 pH: 4.0 10.0
 - 💢 NTU: 0 3000
 - 🜠 DO (mg/L): 1.0 -- 15.0
 - 💢 Temp.: 1.0 19.0
 - □ Specific Conductance: 20 1500

MAC If outside expected ranges, was sample re-taken?

Are units correct?

3. Stream Profile

- Stream profile view sketch included?
- Stream profile view captures water depth and wetted width?
- $\widecheck{\Delta}$ Stream profile view captures where efforts were made to capture fish?

4. Methods Attributes

- Methods attributes complete? (Every cell must have entry or N/A)
- Were methods used adequate (explanation needed if no methods selected)?

5. Electrofishing Attributes



Electrofishing attributes complete? (Every cell must have entry or N/A) Are units correct?

Stream Fish Investigations Field Form QA/QC Checklist

Feature ID: F86T1019

6. Fish Observations

- 😿 Are all fish captured/observed recorded in the Fish Observation table?
- X Are units correct? (Total Length (mm))
- Were adequate photos taken of fish captured? (Take a photo if in doubt)
- 7. General
 - Feature ID and Field Target # are consistent on data forms, logbook entries, photos, and maps?

All additional data in logbook captured on data form and additional photos noted?

Were all additional comments on stream habitat, etc. recorded on data form?

Was any gear missing/damaged for this survey or did you have any problems that should require resampling of this stream for an adequate survey effort?

By signing below, I verify that all field data for this site has been verified for accuracy and completeness.

Fisheries Biologist (print)

Signature

Field Crew Chief (print)

× blAn

Signature

F86T1019 NK182.3 6/28/15 P_F86T1019_001_US Looking US @ PLX

P_F86TI019_001_US LOOKING UP AT PLX

6/28/2015 NK182.3



P_F86TI019_002_DS LOOKING DS AT PLX

F8GT1019 NK182.3 G/28/15 P_F8GT1019_003_1B Looking@(B@PLX

P_F86TI019_003_LB LOOKING AT LB AT PLX 6/28/2015 NK182.3



P_F86TI019_004_RB LOOKING AT RB AT PLX



P_F86TI019_005_AERIAL AERIAL PHOTO 6/28/2015 NK182.3



P_F86TI019_006_AERIAL AERIAL PHOTO



P_F86TI019_007_AERIAL AERIAL PHOTO

6/28/2015 NK182.3



P_F86TI019_008_COHO 6/2 UNDERWATER PHOTO OF COHO SALMON



P_F86TI019_009_COHO 6/28/2015 UNDERWATER PHOTO OF COHO SALMON



P_F86TI019_010_COHO 6/28/2015 UNDERWATER PHOTO OF COHO SALMON

/28/2015 NK182.3

NK182.3


P_F86TI019_011_COHO PHOTO OF COHO SALMON 6/28/2015 NK182.3



P_F86TI019_012_DOLLY PHOTO OF DOLLY VARDEN

6/28/2015 NK182.3



SITE DESCRIPTION			
Date: 6-27.15 In	vestigators: KAH, NJS, ADF	Team No.: FBio	Feature ID: FBGT1018
Stream Name: UNNAMET	STRUTAM	·4	Stream ID: NK 82.2
Pipeline Milepost: 7 50, 4	Stream found as expected (Y/N): V		Hwy MP (N/A if heli accessed):
Latitude: G1º 17' 00 S	2.0100"	ongitude: 151° O	2' 27.1205"
Logbook No.: 4 Logbook Page	e No.: 27 - 21 Total Fish Caught: 7	Fish Mortalities:	Total Photos: 1 to
US @ CL Pic No.: CPBC 10 (0_001_LLS	DS @ CL R Pic No.: P Pic No.: P	B to LB@ CL. c No.: CF66R015-00	3-LD LB to RB@CL Pic No.: POUTIOIS. act RE
Other P_F86T1018 Pic No(s).:	-005-007_AERIAL		
PHYSICAL/ CHEMICAL ATTRIBUTES			
Weather (Describe):	1 Precipita	tion (Describe):	Rath
Water Temperature (°C): 10, 28	Air Temperature (°C): 1/5	pH: 4.85	Dissolved Oxygen (mg/l): 6.85
Specific Conductance(µS/cm): 40	Turbidity (NTU):	ORP (mV): 423.	Dissolved Oxygen (%): 59,9
Ambient Conductance(µS/cm): 3(Odor: Sheen (Y/N):	V Color: year	Last date of Calibration: 6/26/15
Defined Channel (Y/N): Y N	otes: Mendening stream w/3	ravel recuble sub	Wetted Width (m): 0.3m
Flow (Y/N): Y N	otes: With plow - store bring at	the growing where	Thalweg Depth @ CL (m): 500. M
Riparian Veg at 0-5 m at LB: Ripari	an Veg at 0-5 m at RB: Stream Substrate:	Aquatic Habitats	¥
Grass/Sedge (%)	Grass/Sedge (%) Organics	s (%)Sand Bar	Large Woody Debris
	Shrubs (%)	Mud Bar	Overnanging vegetation
Trees (%)	Trees (%)Sand (%)	Gravel Bar	
Diameter DBH (in.)	Diameter DBH (in.)	6)Riffles	Emergent Plants
Stream Type:	entEphemeralBoulders	%) A Pools (%) D Undercut Ban	ks
O.Im 8.3 ml	depth Netating Enclude ripartan vegetadori, wered wid depth Netating Enclude ripartan vegetadori, wered wid depth Soft	an, water beptin, substrate; an	
NORTH: MT-1 set	2376' From PLX DS	lersdor HHH	pit

Feature ID: PB6 T1018

METHODS ATT	RIBUTES		推进方向计	"你"了心动了	新新学家 的	國家皆具	家族新聞		然后,以后于 自己的问题。
Minnow Traps (Y/N):	Hook and Line (Y/N):			ok and Line (Y/N): Beach Seine (Y/N): Fyke Net (Y/N):				
No. of Minnow	Traps Set:	Date 8	Time in:	· ·	Date & Time fi	n:	Date 8	Time in	Date & Time in:
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(mm/dd/yyyy)	14:20	110.01	mics in water	14	A		(mm/c	id/yyyy)	(mm/dd/yyyy)
Date & Time ou (mm/dd/yyyy)	tw 28/15	Time I	nes in water:	· ·	Reach Length	(m)	/	- 1	n man a const
ELECTROFISHIN	G ATTRIBUTES	d'a fil		Stin 1	in home the state	(DU) B2 T	Taller .	的建筑成为印度	REPAIRS AND
EF (Y/N):	EF Start Ti	me:		EF End Time:	1	EF Time	e (seconds):	-E	F Reach Length (m):>>
Duty Cycle:		Freque	ency (Hz):	A	Waveform:	5	Sampl	ing Efficiency (% of	sample reach):
Current (A):		-Volts (∀):	14	Power (W);				(amp x volts)
FISH OBSERVAT	TONS			東京に開始の	and the devel		物的建筑的	加加。	
ID (Seq. Num)	Gear Type		Species		Fotal Length (mm)	Life Stag	e or Adult)	Disposition (Dead or Alive)	Picture No.
.001	Minnow 7	hap-1	Coloo		80	Inve	nile	Mive	# P. FBL TIDIS DOS C
002	1	- 1 -	1		72	1		1	
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005					58				
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007					62				
005				•	62				
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010			_	-	60				
011		_			64				
012			U.	•	62	V		V	
NOTES (any add	itional information	n). 19	他们在这	的影响影响的影响	「「「なる」」			許導入ない。	
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	Short	side	of ch	annel	w/ hoge	grav	rd ba	is and	pools
F	ish obse	ned	throw	Shout		1.			
N	of Much Seemin	Pli Ng u	w espe	algae	e growt	seet h	sur -	almost s	staghaut
MISCELLANEOU	S POINTS (if appli	cable)	建設建設	Self-					国家的第三个部分 同时常常
Point ID:			-	Description:					(
Point ID:				Description:					
Field	1 A A	-	Fi	eld Scientis	t/	C	1	Technical	
Crew Chief:	AVA	5V	1	echnician: _	and	a Int	A	Lead:	

Feature ID: FB6T1018

FISH OBSERVATIONS (continued) **Total Length** Disposition Life Stage **Picture No.** Species (Juvenile or Adult) ID (Seq. Num) Gear Type (Dead or Alive) (mm) 21 P.FBGTIOIB-DO-DOLLY Dolly Varden 8383 Invenile. Alive MT-1 013 55 Colio 014 11 60 015 0 1 72 . 016 . 59 017 55 . 018. 57 019 # P-FB6 TIO18.009-CONO 53 V 020 -

Revision Date: 06/09/2015

Page 3 of 3

Feature ID:

FISH OBSERVAT	TONS (continued)	今日 なんない 気があってい	合适为 如 加 加 加			- Levens Warry Arts
NQ (Seq. Num)	Gear Type	Species	Total Length	Life Stage	Disposition	Picture No.
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Stream Fish Investigations Field Form QA/QC Checklist

This form is to be completed before leaving the field site. FT # NK182.2

Date: 6/27/15

For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

Feature ID: F86T1018

- Was ADF&G contacted before conducting any work in this area?
- Site Description complete? (Every cell must have entry or N/A)
- Were all photos taken and labeled correctly?

2. Physical/Chemical Attributes

- Selibration performed prior to sampling?
- Physical/Chemical attributes complete? (Every cell must have entry or N/A)
- Water quality data within expected ranges?
 - pH: 4.0 10.0
 - NTU: 0 3000
 - DO (mg/L): 1.0 15.0
 - **Temp.:** 1.0 19.0
 - Špecific Conductance: 20 1500

MAIf outside expected ranges, was sample re-taken?

Mare units correct?

3. Stream Profile

- T Stream profile view sketch included?
- Stream profile view captures water depth and wetted width?
- Stream profile view captures where efforts were made to capture fish?
- M Plan view sketch included?

4. Methods Attributes

- Methods attributes complete? (Every cell must have entry or N/A)
- Were methods used adequate (explanation needed if no methods selected)?

5. Electrofishing Attributes



- Electrofishing attributes complete? (Every cell must have entry or N/A)
- Are units correct?

Stream Fish Investigations Field Form QA/QC Checklist

Feature ID: F86T1018

6. Fish Observations

- Are all fish captured/observed recorded in the Fish Observation table?
- ▶ Are units correct? (Total Length (mm))
- Were adequate photos taken of fish captured? (Take a photo if in doubt)

7. General

- Feature ID and Field Target # are consistent on data forms, logbook entries, photos, and maps?
- All additional data in logbook captured on data form and additional photos noted?
- 5 Were all additional comments on stream habitat, etc. recorded on data form?
- Was any gear missing/damaged for this survey or did you have any problems that should require resampling of this stream for an adequate survey effort?

By signing below, I verify that all field data for this site has been verified for accuracy and completeness.

Fisheries Biologist (print)

Signature

nei

Fleid Crew Chief (print)

(butte

Skynature



P_F86TI018_001_US LOOKING US AT PLX

6/28/2015 NK182.2



P_F86TI018_002_DS LOOKING DS AT PLX

6/28/2015 NK182.2

F86T1018 NK 182.2 6/28/15 P_F86T1018_003_LB Looking@(B@PLX

P_F86TI018_003_LB LOOKING AT LB AT PLX

6/28/2015 NK182.2



P_F86TI018_004_RB LOOKING AT RB AT PLX 6/28/2015 NK182.2



P_F86TI018_005_AERIAL AERIAL PHOTO

6/28/2015 NK182.2



P_F86TI018_006_AERIAL AERIAL PHOTO

6/28/2015 NK182.2



P_F86TI018_007_AERIAL AERIAL PHOTO 6/28/2015 NK182.2



P_F86TI018_008_COHO PHOTO OF COHO SALMON 6/28/2015 NK182.2



P_F86TI018_009_COHO PHOTO OF COHO SALMON

6/28/2015 NK182.2



P_F86TI018_010_DOLLY PHOTO OF DOLLY VARDEN

6/28/2015 NK182.2

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LEGEND)											
2015 Fis	h Survey Location	BU	Burbot	SA(U)	Salmonid (Unspecified	d)			Foot		
F	Fish Observed	СН	Chinook Salmon	SC(U)	Sculpin (Ur	nspecified)			0 5	0 100 150	0 200	
F	No Fish Observed		Cono Salmon Dolly Varden	55 ST(I)	Slimy Sculp Stickleback	oin (I Inspecifi	ed)			<u></u>		
	Photo Point	NS	Ninespine Stickleback	TS	Threespine	Sticklebac	:k		0 1	0 20 30 40	0 50	
Species	Alaska Blackfish	0	Other Species Not Listed	OBS	Fish Obser	vation, No	Specie	s Informatic	n	Meters		
AG	Arctic Grayling	RT	Rainbow Trout									
-	Δ Ι	ASKA	ING	٦	DRAWN				ING			_
NOTES	AL.	AURA	LING	l	ICS		2015 F	ALASKA FISH FIELD SUF	RVEY LOCAT	IONS		
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the map was publ team assumes no at full scale (100%	Isned. This drawing is solely prepare liability to any other party for any re b) in order for the scale to remain col	ed for use by th presentations c rrect.	e contractual Alaska LNG team partners and the ontained in these drawings. This map must be p	e Alaska LNG printed/viewed	TCS SCALE	DATE	P		ORIG.PAGE SIZE	i age 5		•
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SITE DESCRIPTION							
Date: 6 9 2015 Investigators	SCS KAH NO	55 Team No.: F	86 Feature	D: F'86T1005			
Stream Name: Unruned Str	Ram		Stream I	D: NK182 1			
Pipeline Milepost: 749,9 Stream fou	nd as expected (Y/N):		Hwy MP	(N/A if heli accessed):			
Latitude: 61° 18' 14, 393	2 N	Longitude:	Longitude: 151°01'50,5890 101				
Logbook No.: Logboo	k Page No.: Ø	Total Fish Caught:	Total Fish Caught: 48 Fish Mortalities: 07				
US@CLP.F8671005-001_45 DS@C	La caltions pool	RB to LB@ CL	05 007 0	LB to RB@ CL			
Dic No.: Pic No.: P- F86T1005- 00	- Aus	0 > Pic No.: P_ F86710	05-003-LB	Pic No.: P.F. 8671005-004_ RIS			
Pic No(s): acrial down: P-F86TI	005-006-ADS	underwater sam	in school:	P-F8671005-012-F			
Weather (Describe):		Precipitation (Describe):		97 70			
Water Temperature (°C): 7,66	Air Temperature (°C):	nH S. P	a Disco	hed Ovygon (mg/l)			
Specific Conductance(µS/cm):	Turbidity (NTU): 2 4	P Color: Cl					
Ambient Conductance(µS/cm): 2 7	Odor: ADIA	Sheen (V/N):	N/ Last	late of Calibration:			
Channel Features (describe): MPAndering	Small ensented	Water Content (describe):					
Wetted Width (m): 3.8m	, the rescales	Thalweg Depth @ CL (m):	11.5" 12	,29m)			
Riparian Veg at 0-5 m at LB: Riparian Veg at 0	-5 m at RB: Stream Sub	strate: Aquatic Habi	tats				
<u>C</u> Grass/Sedge (%) <u>60</u> Gras	s/Sedge (%)	Organics (%)Sand	Bar	Large Woody Debris			
$\frac{70}{40}$ Shrubs (%) $\frac{100}{40}$ Shru	bs (%) $\frac{a}{1}$ s	ilt (%)Mud	Bar	Overhanging vegetation			
5 ¹¹ Diameter DBH 5 ¹¹ Diam	$\frac{d(0)}{2}$	and (%) Grave	Bar	Contiguous Wetlands			
		Cobble (%)		Emergent Plants			
Flow Type:				Submerged Plants			
Perennial Intermittent			cut Banks				
STREAM PROFILE: Cross Sectional at Crossing (inc	_EphemeralE	ted width, water depth, subs	cut Banks rate, and aquatic	iabitats)			
STREAM PROFILE: Plan View (include direction of	Ephemerale	ted width, water depth, subs	cut Banks	iabitats)			
STREAM PROFILE: Cross Sectional at Crossing. (ind	EphemeralE Lude riparian vegetation, wet 3. 8 m 0.24 m Javel Javel Javel P /P MT& P P /P MT& P / PLX	ted width, water depth, subs	cut Banks rate, and aquation rat	iabilitats)			

Feature ID: _________5671005

	: V	Hook and Line (Y/N):	Beach Seine (Y/N	1): , A	Fyke Net (Y/N):	Hoop Net (Y/N):
No. of Minnow Tran	s Set: 7	Date & Time in:	NP	Date & Time in:	Nri	Date & Tir	/ V / 7	Date & Time In:
	3	(mm/dd/yyyy) (mm/		(mm/dd/yyyy)	y) (mm/dd/yyyy		yyy)	(mm/dd/yyyy)
Date & Time in: 6 (% (mm/dd/ww)	1545	No. of lines in wate	r:	No. of passes:	0	Date & Tir (mm/dd/y	ne out: yyy)	Date & Time out: (mm/dd/yyyy)
Date & Time out: 6	19/15	Time lines in water		Reach Length (m):		/	and the second second
(mm/dd/yyyy)	12.45	1. 新水市 · 新水子 · 市内市中	The state of the state of the		de states en alte			
	FE Start Ti	me:	EF End Time:		EF Time (se	conds):	EF	Reach Length (m):
Duty Cycle:		Frequency (Hz) :	1	Waveform:		Sampling	Efficiency (% of s	ample reach):
Current (A):		Volts (V):	~	Power (W):	-			(amp x volt
FISH OBSERVATION	IS							
Gear Type	Speci	es	Total Length (n	nm)	Life Stag	ge e or Adult)	Disposition (Dead or Alive	e) Picture No.
MT (1)	(p	ho	74		June	nile	Mive	* F86T1005-007_
1	10	t	75			1	1	na
			81					KP. F8671005_008-
4		14	62					na
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NOTES (any addition	nal informatio	() () ()	45 54					
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Feature ID: ____

F8671005

Gear Type	Species	Total Length (mm)	Life Stage (Juvenile or Adult)	Disposition (Dead or Alive)	Picture No.
MT(I)	Coho	70	Juvenile	Alive	Mone
1	Dolly Varden	77			
		80			
Y	Coho	62	4	1	V
MT (2)	D. 11 y Varden	144	Jusvenile/Adu	1-1	*P-F86T1005_00
1	1	72	Invénile		none
	Coho	104	1		*P-F86T1005-00
	(1	65	2 (to)		none
	U	72			
	Н	70			
	Dolly Varden	80			
	Coho	63			
	11	61			
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Stream Fish Investigations Field Form QA/QC Checklist

This form is to be completed before leaving the field site.

Feature ID: F86T1005 FT # <u>NK182-1</u> Date: <u>692015</u> For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

- Was ADF&G contacted before conducting any work in this area?
- Site Description complete? (Every cell must have entry or N/A)
- Were all photos taken and labeled correctly?

2. Physical/Chemical Attributes

- Calibration performed prior to sampling?
- ☑ Physical/Chemical attributes complete? (Every cell must have entry or N/A)
- ☑ Water quality data within expected ranges?
 - ⊠ pH: 4.0 10.0
 - ☑ NTU: 0 3000
 - DO (mg/L): 1.0 15.0
 - Temp.: 1.0 19.0
 - Specific Conductance: 20 1500
- $\mathcal{N} \land \Box$ If outside expected ranges, was sample re-taken?
 - Are units correct?

3. Stream Profile

- Stream profile view sketch included?
- Stream profile view captures water depth and wetted width?
- Stream profile view captures where efforts were made to capture fish?
- Plan view sketch included?

4. Methods Attributes

- Methods attributes complete? (Every cell must have entry or N/A)
- Were methods used adequate (explanation needed if no methods selected)?

5. Electrofishing Attributes

- Electrofishing attributes complete? (Every cell must have entry or N/A)
- ☑ Are units correct?

Stream Fish Investigations Field Form QA/QC Checklist

Feature ID: F86T1005

6. Fish Observations

- X Are all fish captured/observed recorded in the Fish Observation table?
- ☑ Are units correct? (Total Length (mm))
- Were adequate photos taken of fish captured? (Take a photo if in doubt)

7. General

- Feature ID and Field Target # are consistent on data forms, logbook entries, photos, and maps?
- I All additional data in logbook captured on data form and additional photos noted?
- B Were all additional comments on stream habitat, etc. recorded on data form?
- *N*𝒫 □ Was any gear missing/damaged for this survey or did you have any problems that should require resampling of this stream for an adequate survey effort?

By signing below, I verify that all field data for this site has been verified for accuracy and completeness.

Fisherles Biologist (print)

Skynature

Sam Simpson

Field Crew Chief (print)

Х Signature



P_F86TI005_001_US LOOKING US AT PLX

6/9/2015 NK182.1



P_F86TI005_002_DS LOOKING DS AT PLX

6/9/2015 NK182.1



P_F86TI005_003_LB LOOKING AT LB AT PLX

6/9/2015 NK182.1



P_F86TI005_004_RB LOOKING AT RB AT PLX



P_F86TI005_005_AUS AERIAL PHOTO LOOKING US

6/9/2015 NK182.1



P_F86TI005_006_ADS AERIAL PHOTO LOOKING DS



P_F86TI005_007_F PHOTO OF COHO SALMON

6/9/2015 NK182.1



P_F86TI005_008_F PHOTO OF COHO SALMON



P_F86TI005_010_F PHOTO OF COHO SALMON



NK182.1

P_F86TI005_011_F 6/9/2015 UNDERWATER PHOTO OF COHO SALMON



P_F86TI005_012_F 6/9/2015 NK182.1 UNDERWATER PHOTO OF JUVENILE SALMONIDS



SITE DESCRIPTION			· · · · · · · · · · · · · · · · · · ·		
Date: 6770015 Investigators	SUS NJJS, KAH		Team No.: F86	Feature I	D: F8671003
Stream Name: Manamed Stream	n		1.0	Stream II	»: NK-181.4
Pipeline Milepost: 748, 8 Stream four	nd as expected (Y/N):	1	1	Hwy MP	(N/A if heli accessed): Λ/A
Latitude: 6/° 18' 53,8219	N	Longitud	le: 151° 00	135	5,9835 W
Logbook No.: Logboo	k Page No.: 8 - 9	Total Fis	h Caught: 9	Fish Mortalities:	
US@CL P_F86T1003_001_45 DS@C	LP_F8671003-002. DS	RB to LB	@ CL	10	LB to RB@ CL
Other arrive working us = P-F	1003 - 005-ALS	I Pic No.:	P-18011003-00.	<u>- LD</u>	Pic No.: P-FROTIOUS-001-KD
PIC NO(S).: COMICAL ATTRIBUTES	SOTI 003_ DOE_ HOS			N.C. Martin	
Weather (Describe): putty Cloudy	Pr	recipitation (D	escribe): none	INCOMENTS AND INCOMENTS	111 40/
Water Temperature (°C): 7,33	Air Temperature (°C):	1	pH: 5,33	Disso	lved Oxygen (mg/l): 12, 29
Specific Conductance(µS/cm): 27	Turbidity (NTU): 1 8		Color: Clear	ORP	(mV): 50/9
Ambient Conductance(µS/cm): 9	Odor: none		Sheen (Y/N): A)	Last	date of Calibration: 6/6/2015
Channel Features (describe): nalow mean	Lenna, Stendy Klow	Water Conten	t (describe):		6/ 6/ 6/ 6/ 5
Wetted Width (m):)' '''	Thalweg Dept	h @ CL (m):	0.18	m
Riparian Veg at 0-5 m at LB: Riparian Veg at 0	-5 m at RB: Stream Subs	trate:	Aquatic Habitats		
Grass/Sedge (%)GOGrass	5/Sedge (%)O	organics (%)	Sand Bar		Large Woody Debris
$\frac{70}{200}$ Shrubs (%) $\frac{80}{200}$ Shrub	os (%) <u></u> Si	lt (%)	Mud Bar		Overhanging vegetation
(O Trees (%) (O Trees	$(\%) \qquad 15 \text{ sa}$	and (%)	Gravel Bar		Contiguous Wetlands
Diameter DBH	eter DBH	ravel (%)	Riffles		Emergent Plants
Flow Type:	Co	obble (%)	Pools		Submerged Plants
PerennialIntermittent	_EphemeralBo	oulders (%)	XUndercut Bar	iks	
STREAM PROFILE: Cross Sectional at Crossing (inc	lude riparian vegetation, weth	ed width, wat	er depth, substrate, a	nd aquatic	habitats)
: Elpra		Gladel OD " 20	Scat / Sitt	X	0.18 m @ Tralueg
STREAM PROFILE: Plan View (include direction of i	0 - 8 8 y	h ww	noto locations, samp	e location:	by gear type and ROW)

Feature ID: F86 T100 3

METHODS ATTRIBUTE	S				In The Low			
Minnow Traps (Y/N):	Y	Hook and Line (Y/N): N/A	Beach Seine (Y/N	1): A (A	Fyke Net (Y/N): A/A	Hoop Net (Y/N):
No. of Minnow Traps S	iet: 7	Date & Time In:	IVIN	Date & Time in:		Date & Tin	ne in:	Date & Time In:
and a straight	5	(mm/dd/yyyy)	NA	(mm/dd/yyyy)	IV IN	(mm/dd/y	VVV) NA	(mm/dd/yyyy) /V A
(mm/dd/yyyy)	12015	No. of lines in wate	er: NA No. or passes:		NA	(mm/dd/y	yyy) NA	(mm/dd/yyyy) A/A
Date & Time out: 6	8 2015	Time lines in water:	NA	Reach Length (m	» NA		NA	NA
ELECTROFISHING ATT	RIBUTES			(新聞):西國市区為	1.217.220			
EF (Y/N): NA	EF Start Ti	me: NA	EF End Time:	NA	EF Time (see	conds): /	VA EFR	each Length (m): NA
Duty Cycle:	1A	Frequency (Hz) :	NA	Waveform:	NA	Sampling E	Efficiency (% of sa	mple reach): NA
Current (A):	NA	Volts (V):	NA	Power (W):	NA		NA	(amp x volts)
FISH OBSERVATIONS				和正治理能相			2012年1月1日日	
Gear Type	Speci	es	Total Length (mr	n)	Life Stag (Juvenile	e or Adult)	Disposition (Dead or Alive)	Picture No.
minnow trai	trap dolly under		180	mm	adu	It/inv	alive	* P. FSETICO3 _ 007-
MT	coho		70	nm	juu	unte	live	* P-F86T1003-008-F
MT	coho		72	lmm	1 jui	18 rile	alive	none
Mt	Coho		76		24	venile	alive	none
MT	C	oho	12		jus	reale	alive	none
MT	C	ho	80		- 2111	verilo.	alive	none
MT	(oho	27	+ \$1	.2"	vénilo .	aline	none
MT		coha- DV	-	- 71	0	w, ile	alive	*P ESETIDO3 MA E
					Ju		ALIVE	
NOTES (any additional	informatio	n)	國國國民國的國	A CONTRACTOR OF THE		的法规制度	化学和世界地	2010年代日本1月1日日本
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Point ID:	ars (ir appli	cable)	Description	A/1		in the second	1976年代7月16年代	
Point ID:		MA	Description:	///	1			
Foint ID:		IVP	Field Scientist	N	ł .	Te	chnical	
Crew Chief:	.Sih (SM	Technician:	N.SM	ith.	Lea	ad: <u> </u>	Holmes

Stream Fish Investigations Field Form QA/QC Checklist

This form is to be completed before leaving the field site.

Feature ID: <u>F86 T1003</u> FT # <u>NK181.4</u> Date: <u>6/8/2015</u> For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

- ➢ Was ADF&G contacted before conducting any work in this area?
- Bite Description complete? (Every cell must have entry or N/A)
- Were all photos taken and labeled correctly?

2. Physical/Chemical Attributes

- Calibration performed prior to sampling?
- ↗ Physical/Chemical attributes complete? (Every cell must have entry or N/A)
- Mater quality data within expected ranges?
 - 🕅 pH: 4.0 10.0
 - D NTU: 0 3000
 - DO (mg/L): 1.0 15.0
 - Temp.: 1.0 19.0
 - Specific Conductance: 20 1500
- □ If outside expected ranges, was sample re-taken?
- ☑ Are units correct?

3. Stream Profile

- Stream profile view sketch included?
- Stream profile view captures water depth and wetted width?
- Stream profile view captures where efforts were made to capture fish?
- Plan view sketch included?

4. Methods Attributes

- Methods attributes complete? (Every cell must have entry or N/A)
- B Were methods used adequate (explanation needed if no methods selected)?

5. Electrofishing Attributes

- □ Electrofishing attributes complete? (Every cell must have entry or N/A)
- □ Are units correct?

Stream Fish Investigations Field Form QA/QC Checklist

Feature ID: F8h T1003

6. Fish Observations

- Are all fish captured/observed recorded in the Fish Observation table?
- Are units correct? (Total Length (mm))
- X Were adequate photos taken of fish captured? (Take a photo if in doubt)

7. General

- Feature ID and Field Target # are consistent on data forms, logbook entries, photos, and maps?
- X All additional data in logbook captured on data form and additional photos noted?
- Were all additional comments on stream habitat, etc. recorded on data form?
- NO Was any gear missing/damaged for this survey or did you have any problems that should require resampling of this stream for an adequate survey effort?

By signing below, I verify that all field data for this site has been verified for accuracy and completeness.

Fisheries Biologist (print)

Signature

Sam Sir

Field Crew Chief (print)

Signature



P_F86TI003_001_US LOOKING US AT PLX

6/8/2015 NK181.4



P_F86TI003_002_DS LOOKING DS AT PLX



P_F86TI003_003_LB LOOKING AT LB AT PLX

6/8/2015 NK181.4



P_F86TI003_004_RB LOOKING AT RB AT PLX



P_F86TI003_005_AUS AERIAL PHOTO LOOKING US

6/8/2015 NK181.4



P_F86TI003_006_ADS AERIAL PHOTO LOOKING DS



P_F86TI003_007_F PHOTO OF DOLLY VARDEN

6/8/2015 NK181.4





P_F86TI003_009_F PHOTO OF DOLLY VARDEN

	Target Name:	UNNAMED	STREAM			ARCTIC O	CEAN	
	Feature	ID: F86T10	03		Chukchi S	ea man	Beaufort Sea	
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					BERING SEA	and the second	GULF OF ALASKA Kodiak	
		and the second			and		PACIFIC OCEAN	
		7-1		C. C. Manus				
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	P_F3371003_00	A_RB	AL.	3		No.		4
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	Carlor Carlo			Star 1		1		N.
2015 Fish Survey Location BU Burbo	t	SA(U) S	almonid (Un	specified)				
F Fish Observed CH Chino	ok Salmon	SC(U) S	culpin (Unsp	ecified)		0 50	Feet	0
F No Fish Observed CO Coho	Salmon Varden	SS S	limy Sculpin	Inspecified				0
Photo Point NS Nines	pine Stickleback	TS T	hreespine St	ickleback		0 10) 20 30 40 50	
AB Alaska Blackfish	Species Not Listed	OBS F	ish Observat	ion, No Specie	es Informatio	n	Meters	
AG Arctic Grayling RT Rainb	ow Trout	,						
ALASKA LNG	3			2015	ALASKA FISH FIELD SUR	LNG VEY LOCATI	ONS	
IOTES: concept Information - Confidential. Produced by Alaska LNG team. The informat illected data on the date of issues it is considered with the contrast the scale of the	tion used to create this product is ba	sed on the	PROJECTION DATE	JM CONTRACTOR NA	ME		MAP NUMBER	REV.
he map was published. This drawing is solely prepared for use by the contractual aam assumes no liability to any other party for any representations contained in the tull scale (100%) in order for the scale to remain correct.	I Alaska LNG team partners and the A hese drawings. This map must be prin	laska LNG ted/viewed	AK 4	NAD83	AECOM PROJECT NUMBER	ORIG.PAGE SIZE	Page 7 of 86	A
,,		APP R.	1:2,000	15 Oct 2015	26221392	8.5 X 11		

I:26221163 SCLNG Studies\10 - Geospatial\10.06 - MXD\2015 Reporting\Fish\Alaska_LNG_2015_Fisheries_Appendix.mxd
STREAM FISH INVESTIGATION DATA FORM

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SITE DESCRIPTION		Contraction of the		
Date: 672015 Inves	stigators: SCS, NJS	KAH	Team No.: F86	Feature ID: F86T1004
Stream Name: Unnamed	Stram			Stream ID: NK181.3
Pipeline Milepost: 748,7 Stre	eam found as expected (Y/N):	×		Hwy MP (N/A if heli accessed):
Latitude: 6/° 18' 58.	2301 N	Longitu	de: 1<1° 00	25,7305 4)
Logbook No.:	Logbook Page No.: Q - Q	Total Fi	sh Caught:	Fish Mortalities:
US@CL P_ F86+1004-001-US	DS@CL P FKGT1004_D	DA DS RB to LI	3@ CL	LB to BB@ CL
Pic No.: Other Accial US: P FEDTIC	Pic No.:	Pic No.	P-F86XT1004-00	23-LB Pic No .: P-F86XT1004-004-RB
Pic No(s) .: alrial DS: P_F36TIC	004-006-ADS P.	F86T1004_C	07-F; P-FS6T100	4-00 8-F1 P-F86T1004-009-F
PHYSICAL/ CHEMICAL ATTRIBUTES	The Astronometry American	2. OK. MARCHINE	1. 1. 中国的部分的运用	· · · · · · · · · · · · · · · · · · ·
Weather (Describe): Sunny		Precipitation (I	Describe): nons	2 106.3%
Water Temperature (°C): (10, 8	89 Air Temperature (°C):	21	рн: 6,4	Dissolved Oxygen (mg/l): 11-85
Specific Conductance(µS/cm): 47	Turbidity (NTU):	3,47	Color: Clear	ORP (mV): 176.4
Ambient Conductance(µS/cm): 34	Odor: Non	e	Sheen (Y/N):	Last date of Calibration: 6/6/2015
Channel Features (describe):	of, steady flaw	Water Conte	nt (describe):	
Wetted Width (m):	L5	Thalweg Dep	th @ CL (m):	0.15
20 Grass/Sadge (%) 40	Grace/Sodge (%)	Substrate:	Aquatic Habitats	+ Large Mandy Dahuia
TO shruhe (%)		Organics (%)	Saliu Bai	
$\frac{10}{10} \operatorname{Troos}(\%) = \frac{10}{30}$		SIIT (%)		Overhanging vegetation
3" Disperter DDU 12"	litees (%)	Sand (%)	Gravel Bar	Contiguous wetlands
	Diameter DBH 80	Gravel (%)	Riffles	Emergent Plants
Flow Type:	-20	Cobble (%)	Pools	Submerged Plants
PerennialIntermittent	Ephemeral	Boulders (%)	Undercut Bank	S
STREAM PROFILE: Cross Sectional at Cross	sing. (include riparian vegetation	, wetted width, wa	ter depth, substrate, and	aquatic habitats)
Traluxy sis	Ilustpools Sand/silt 2,5m	Greel/cobble	1	APAR VY
CTORAM DOORUG Day How for help the	where of the construction of the second	of friend south of Hard		
NORTH:	mt p	45m 45m	ρLX →	Wearning of East the sun Korn
Revision Date: 3/19/2015	P= P MT:	hoto locator minnow tra	P	Page 1 of 🔀

STREAM FISH INVESTIGATION DATA FORM

METHODS ATTRIBUTES			of site to be the				
Minnow Traps (Y/N):	Hook and Line (Y/N): NA	Beach Seine (Y/N)	A	Fyke Net (Y/N): NA	Hoop Net (Y/N):
No. of Minnow Traps Set:	3 Date & Time in: (mm/dd/www)	MA	Date & Time In: (mm/dd/ww)	VA	Date & Tin	ne in: vvv) NA	Date & Time in: (mm/dd/vvvv)
Date & Time in: 6 7	15 No. of lines in wate	" NA	No. of passes:	IA	Date & Tir	ne out:	Date & Time out:
Date & Time out: 6 8 1	5 Time lines in water	NIA	Reach Length (m):	NA	ι (mm/αα/γ	A/A	
(mm/dd/yyyy) (360	TES STATE TO SALE			正规想出出	for named at		CARLY IN APPENDIX SHE FOR EAST
	Start Time: NA	EF End Time:	NAT	EF Time (se	conds):	NA EF Re	ach Length (m): NA
Duty Cycle:	Frequency (Hz) :	NA	Waveform:	NA	Sampling	Efficiency (% of sam	ple reach): 11A
Current (A):	Volts (V):	VA	Power (W):	NA			(amp x volts)
FISH OBSERVATIONS						Dispesialen	
Gear Type	Species	Total Length (m	m)	(Juvenile	e or Adult)	(Dead or Alive)	Picture No.
Minnow Trap	Dolly Varden	130		JUNI	adult	alive	* P_ F86T1004-010-F
Miknow Trap	Dolly Varden	120		juv	adult	alive	none
	(
						-	
				-			
NOTES (any additional info	rmation)	ALCONTRACTOR AND		PAT S ARAT	"学业性物质问题	4. 开于10公司所	
- Visha	ally observed	large	Schools	(N)	20 +) - ()	uvernice
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2 N C	man, lipely	CONCO.	loor un	centra	AV	PICOTOS	Ó
)	1		
sha	llas meand	ering str	ran W	11	fle /por	d hubita	it, gravel
6.0		N	Plaite	0		h.((no reartation.
DOI.	s w/ m	real in S	and/silt.	Over	hangin	g 7 part	of the offertille
- 1.1	all defined	chann	el.				
00							
MISCELLANEOUS POINTS ((if applicable)	建生物的发展	这个时候,你们	了版人	権が認知	the state of the state of the	住在であるとないいが
Point ID:	NA	Description:	N	A		_	
Point ID:	NA	Description:	٨	IA			
Field	SUDI	Field Scientist	$ \Lambda < .$	11	Те	chnical	Holusts
Crew Chief:	JIMY Son	i ecnnician:	10.20	IIIN	Le	ad:	1010000

This form is to be completed before leaving the field site.

Feature ID: F8671004 FT # <u>NK181</u> Date: <u>6/8/15</u> For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

K Was ADF&G contacted before conducting any work in this area?

Site Description complete? (Every cell must have entry or N/A)

K Were all photos taken and labeled correctly?

2. Physical/Chemical Attributes

- X Calibration performed prior to sampling?
- Physical/Chemical attributes complete? (Every cell must have entry or N/A)

Water quality data within expected ranges?

ърН: 4.0 – 10.0

🕅 NTU: 0 – 3000

DO (mg/L): 1.0 – 15.0

Temp.: 1.0 – 19.0

Specific Conductance: 20 - 1500

NA If outside expected ranges, was sample re-taken?

Are units correct?

3. Stream Profile

Stream profile view sketch included?

Stream profile view captures water depth and wetted width?

Stream profile view captures where efforts were made to capture fish?

Plan view sketch included?

4. Methods Attributes

Methods attributes complete? (Every cell must have entry or N/A)

Were methods used adequate (explanation needed if no methods selected)?

5. Electrofishing Attributes

A PElectrofishing attributes complete? (Every cell must have entry or N/A)
A Are units correct?

Feature ID: F8GT1004

6. Fish Observations

Are all fish captured/observed recorded in the Fish Observation table?

Are units correct? (Total Length (mm))

Were adequate photos taken of fish captured? (Take a photo if in doubt)

7. General

Feature ID and Field Target # are consistent on data forms, logbook entries, photos, and maps?

All additional data in logbook captured on data form and additional photos noted?

Were all additional comments on stream habitat, etc. recorded on data form?

Was any gear missing/damaged for this survey or did you have any problems that should require resampling of this stream for an adequate survey effort?

By signing below, I verify that all field data for this site has been verified for accuracy and completeness.

net

Fisheries Biologist (print)

Signature

Field Crew Chlef (print)

Signature





P_F86TI004_003_LB LOOKING AT LB AT PLX

6/8/2015 NK181.3



P_F86TI004_004_RB LOOKING AT RB AT PLX 6/8/2015 NK181.3



P_F86TI004_005_AUS AERIAL PHOTO LOOKING US

6/8/2015 NK181.3



P_F86TI004_006_ADS AERIAL PHOTO LOOKING DS



P_F86TI004_007_F 6/8/2015 UNDERWATER PHOTO OF COHO SALMON



P_F86TI004_008_F 6/8 UNDERWATER PHOTO OF COHO SALMON

6/8/2015 NK181.3

NK181.3



P_F86TI004_009_F 6/8/2015 UNDERWATER PHOTO OF COHO SALMON



P_F86TI004_010_F PHOTO OF DOLLY VARDEN

6/8/2015 NK181.3

NK181.3



arrial ubstreami P_FSbT1002_005_AUS arrial downstream: P_FSbT1002_006-ADS

STREAM FISH INVESTIGATION DATA FORM

SITE DESCRIPTION	the scs		
Date: 6/6 Investig	itors: KH, SS NS, To	Team No.: FS6	Feature ID: F86 TT00-2
Stream Name: 11 an a med	ream	100	Stream ID: 1/K 181 7
Pipeline Milepost: 745 4 Stream	found as expected (Y/N):		HWW MP (N/A if heli accessed):
Latitude: 61° 16'26.07	ON	Longitude: 150°	54' 42 5924 14)
Logbook No.: 1 eol Lo	gbook Page No.: 5-3	Total Fish Caught 4 + 1	Fish Mortalities:
US@CL P FRITING DS	@CLD FRATIMON	RB to LB@ CL	R LB to RB@ CL
Other	No.: 1-1001100-	Pic. No.: P_ F86 11002_	D PICNO: P-F86TIODZAKK
	office provide	ang 25) + 60-8	(factual gracing U.S.)
Weather (Describe): $\sum \omega \cap \cap V$		recipitation (Describe):	
Water Temperature (°C): 15-48	Air Temperature (°C):	21 pH: 4.42	Dissolved Oxygen (mg/l): 9 0 7
Specific Conductance(µS/cm):	Turbidity (NTU):	5 Color: ten	ORP (mV): 25.2 C
Ambient Conductance(µS/cm): 16	Odor: none	Sheen (Y/N): N	Last date of Calibration: 6/5 TTT
Channel Features (describe): 1.66 / 000	habitat, beaver camile	Water Content (describe): -	~/> 111
Wetted Width (m): 10, 3	m	Thalweg Depth @ CL (m): 5	64. (1.52 m)
Riparian Veg at 0-5 m at LB: Riparian Ve	at 0-5 m at RB: Stream Sub	strate: Aquatic Habitats	
$\begin{array}{ c c } \hline \hline$	Grass/Sedge (%)	Drganics (%)Sand Bar	Large Woody Debris
$\frac{10}{40}$	Shrubs (%) $\underline{0}$	ilt (%)Mud Bar	Overhanging vegetation
$\begin{array}{ c c c c c }\hline \hline -\frac{70}{12} \text{ ("rees (%))} \\\hline \hline -\frac{50}{2} \hline \hline \\ \hline & 30 \\\hline \hline & 91 \\\hline \hline \hline \hline & 91 \\\hline \hline \hline \hline \hline & 91 \\\hline \hline \hline$	Piemetes DBH	and (%)Gravel Bar	Contiguous Wetlands
		iravel (%)	Emergent Plants
Flow Type:		opple (%)	
PerennialIntermittent	Ephemeral		
V V V V	(1/)(1) II.sam Is 6+.	V X der	Submerged veg
STREAM PROFILE: Plan View (include direction NORTH:	10, 3 m not flow, centerline, distances fro why hearn	mcenterline, prioto locations, samp	Me locations by gear type and ROW) Braided narrow downstream into Theodore River

nargin

Questionable Salmonia photos: P-FS671002-008-F Same Bish (127mm) P-FS671002-009-F P-FS671002-009-F

STREAM FISH INVESTIGATION DATA FORM

Feature ID: F86 TF002

METHODS ATTRIBUTES						1 STARTY			
Minnow Traps (Y/N):	Y Hook a	and Line (Y/N):	Beach Seine (Y/N):	/	Fyke Net (Y/N):	Hoop Net (Y/	N):
No. of Minnow Traps Set:	3 Date 8	Time in:	1	Date & Time in:	110	Date & Tir	ne in:	Date & Time	In: NA
Date & Time in: 3, 45 P	n No. of	lines in wate	r:	No. of passes:	NA	Date & Tir	ne out:	Date & Time	out:
(mm/dd/yyyy) 6/61	15 Timed	nes in water	MA	Reach Length (m):	NA	(mm/dd/y	vvv) NH	(mm/dd/yyyy	NA
(mm/dd/yyyy) 6/71	15	ines in water.	NA	Action senger (m)	NA		VA	1	NA
ELECTROFISHING ATTRIB	UTES	が豊富にあ	Republic And Providence of	清晰和高品質					Bring Bring Br
EF (Y/N): EF	Start Time:	550	EF End Time:	1615	EF Time (see	conds):	LIF EF Re	each Length (m):	76.2 250
Duty Cycle: 25	Freque Volts (ency (Hz) :	60	Power (W):	1-0	Sampling	Efficiency (% of sar	nple reach):	(amp x volts)
0.4	Bere Deplembres	500	O Brawnar an Michael		200	Same Internet and	A CONTRACT OF A CONTRACT		NEW YORK STATE
FISH OBSERVATIONS	國國和於國際的	All Room Party		· · · · · · · · · · · · · · · · · · ·	Life Stage	e and a second	Disposition		(1)(2)(1)(2)(1)(2)(1)
Gear Түре	Species		Total Length (mr	n)	(Juvenile	or Adult)	(Dead or Alive)	Picture No.	CONTINUE OF
glectrogisher	Coho .	•	65 mm	1. 5	Juven	ile	Hlive	#1-16	See to 0
Mihrow Trap	Chihook-	1 1	lat mm	(juv)	Pre-S	molt	Hlive	37-47	margin
minnow trap	Stickle	back	Dt mm		Haul	r F	+INVe	none	P.FSETICCA_OIL
net l-R	troa Chinhold	1	N SU M	m (int)	Denc	<u>_</u>	Alive	none:	abitar to k
minnail wat	SAT CLORE		140 m	a tang	PICSA	1011	alive	Tost Defo	re photos ioph
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NOTES (any additional inf	ormation)	和目前中海	出来的 化合物 化合物	新生产的 建合金 经利	Sector and	17月1人11月2月	建設可信用	4.100000000	他用 些出版目的形式
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a sub	merged	free	+ (a	me apa	17, -	TRAM	only	recover	ed
A	hall u	1 th	e trap	· twill	totity	AD	FAG	Tried V	60
l one i	D	6	but	Jater (1)A	5 4		20 (1)	T 1- 1	
recove	(the	1 trap			1	d d		> feet	
	(ra	16 gth	2)					10	
		•							
MISCELLANEOUS POINTS	(if applicable)	E Kaller	さんかけたが正	Materia and State of an	1214174	and the second		1942 (1912 SALES SA)	
Point ID: Cal	In 1A	and the second s	Description	Lactor.	orte 1	P	(upstream of	(culvert)	IAT
Point ID:	N/-N		Description	AIN	TICHT	Dane	wormy, cap	rarea ny	
Field	IVIN		Field Scientist	1.4	<u>.</u>	Te	chnical		(
Crew Chief:,	Simpsi	~	Technician:	N. Smi	th	Lea	ad:	Schult	7
	1								

This form is to be completed before leaving the field site.

Feature ID: F86T1002 FT # <u>MK181.</u> Date: <u>6/7/2015</u> For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

- ☑ Was ADF&G contacted before conducting any work in this area?
- Site Description complete? (Every cell must have entry or N/A)
- Mere all photos taken and labeled correctly?

2. Physical/Chemical Attributes

- Ճ Calibration performed prior to sampling?
- Physical/Chemical attributes complete? (Every cell must have entry or N/A)
- Water quality data within expected ranges?
 - Ø pH: 4.0 − 10.0
 - 🛛 NTU: 0 3000
 - DO (mg/L): 1.0 15.0
 - ☑ Temp.: 1.0 19.0
 - ☑ Specific Conductance: 20 1500
- □ If outside expected ranges, was sample re-taken?
- ☑ Are units correct?

3. Stream Profile

- Stream profile view sketch included?
- In Stream profile view captures water depth and wetted width?
- Stream profile view captures where efforts were made to capture fish?
- Dran view sketch included?

4. Methods Attributes

- Methods attributes complete? (Every cell must have entry or N/A)
- Were methods used adequate (explanation needed if no methods selected)?

5. Electrofishing Attributes

- ➢ Electrofishing attributes complete? (Every cell must have entry or N/A)
- Are units correct?

Feature ID: F867002

6. Fish Observations

- ✗ Are all fish captured/observed recorded in the Fish Observation table?
- Are units correct? (Total Length (mm))
- 1 Were adequate photos taken of fish captured? (Take a photo if in doubt)

7. General

- Feature ID and Field Target # are consistent on data forms, logbook entries, photos, and maps?
- X All additional data in logbook captured on data form and additional photos noted?
- Were all additional comments on stream habitat, etc. recorded on data form?
- Was any gear missing/damaged for this survey or did you have any problems that should require resampling of this stream for an adequate survey effort?

By signing below, I verify that all field data for this site has been verified for accuracy and completeness.

Fisheries Biologist (print)

Signature

Field Crew Chlef (print)

Skanature



P_F86TI002_001_US LOOKING US AT OFF-ROW TARGET

6/7/2015 NK181.2



P_F86TI002_002_DS LOOKING DS AT OFF-ROW TARGET



P_F86TI002_004_RB LOOKING AT RB AT OFF-ROW TARGET



P_F86TI002_005_AUS AERIAL PHOTO LOOKING US

6/7/2015 NK181.2



P_F86TI002_006_ADS AERIAL PHOTO LOOKING DS



P_F86TI002_007_F PHOTO OF COHO SALMON 6/7/2015 NK181.2



 P_F86TI002_008_F
 6/7/2015
 NK181.2

 POSSIBLE CHINOOK SALMON, SAME FISH AS 009 & 010



 P_F86TI002_009_F
 6/7/2015
 NK181.2

 POSSIBLE CHINOOK SALMON, SAME FISH AS 008 & 010



P_F86TI002_010_F 6/7/2015 NK181.2 POSSIBLE CHINOOK SALMON, SAME FISH AS 008 & 009



P_F86TI002_011_FR PHOTO OF WOOD FROG

6/7/2015 NK181.2

			Target Name Featur	: UNNAN re ID: F8	AED S	STREAM 2		14 - 20.	Chukchi S Nom BERING SEA	ARCTIC O	CEAN Beaufort Sea Noe Bay SKA Fairbanks chorage GULF OF ALASKA Kodiak PACIFIC OCEAN	uneau
			P_F3371002_001		P_F3	9 60'12 '	des D					
			P_F8371002_00 P_F83		NK1	81.2						
												Z
LEGEND 2015 Fish Su F Fish F No Pho Species Obs AB Ala AG Arc	arvey Location h Observed Fish Observed oto Point served ska Blackfish tic Grayling	BU CH CO DV NS O RT	Burbot Chinook Salmon Coho Salmon Dolly Varden Ninespine Stickleback Other Species Not Listed Rainbow Trout	SA(U) SC(U) SS ST(U) TS OBS	Sal Scu Slir Stic Thr Fis	Imonid (Urs ulpin (Uns my Sculpir ckleback (reespine S h Observa	nspecified pecified Unspec Stickleba ation, No	ed)) ified) ack o Specie	es Informatic	0 50 [] [TTT] 0 1	Feet 0 100 150 20 11111111111111111111111111111111111	00 J
NOTES: Concept Information - Co	AL/	ASKA	LNG The information used to create this product is	based on the	DRAWN ICS CHECK	PROJECTION D	ATUM	2015	ALASKA FISH FIELD SUF	LNG RVEY LOCAT	IONS MAP NUMBER	REV.
collected data on the data the map was published. T team assumes no liability at full scale (100%) in ord	e of issue; it is considered rel This drawing is solely prepare to any other party for any rej ler for the scale to remain con	liable only at the ed for use by the presentations co rect.	scale at which the data was created and the s contractual Alaska LNG team partners and the ntained in these drawings. This map must be p	scale at which e Alaska LNG printed/viewed	DESIGN TCS APPR.	AK 4	NAD83	ct 2015	AECOM PROJECT NUMBER 26221392	ORIG PAGE SIZE 8.5 X 11	Page 2 of 86	А

aerial apstream: P_F86T1001_005-AUS aerial downstream: P_F86T1001_006-ADS STREAM FISH INVESTIGATION DATA FORM SKS , KAK MJS , FCS

SAMPING PLAND P_FSGT1001_007_EF

SITE DESCRIPTION			
Date: 6/6/2015	Investigators: SS, KH NS	TS Team No.: F&G F	eature ID: FRG TTOOL
Stream Name:	named Stream		tream ID: $\Lambda / V / Q / I$
Pipeline Milepost: 745	4 Stream found as expected (Y/N):	4	WW MP (N/A if heli accessed): 4/A
Latitude: //º /]	100 7522 N	longitude: 150° Fr/1	
		Total Side Country	<u>1.2070 (_)</u>
	$\frac{1}{10000000000000000000000000000000000$	PR to IR® CI	Hish Mortalities: NA 004
Pic No.: 186_T100	1-45 Pic No.: B-F86-TION	105 Pic No .: P- F862 T100	LB PICNO.: P.FSS_TIDOL-R.B
Pic No(s).: 440/Sa	apting aerial upstream	n: 26-28, 31	aenal DS: 29,30
PHYSICAL/ CHEMICAL ATTRIB	UTES		
Weather (Describe):	ny w minor clouds	Precipitation (Describe): None	6.0-310
Water Temperature (°C):	Air Temperature (°C):	18 pH: 4.5	Dissolved Oxygen (mg/l): 6.42
Specific Conductance(µS/cm):		f. 4 Color: brown	ORP (mV): 248.9
Channel Features (describe):	1: 48 ASIS Daor: Sulfur	Water Content (describe):	Last date of Calibration: 6/5 by 777
Wetted Width (m): 20	2.8	Thalweg Depth @ CL (m):	2411 (0.610)
Riparian Veg at 0-5 m at LB:	Riparlan Veg at 0-5 m at RB: Stream S	ubstrate: Aquatic Habitats	(arer in)
Grass/Sedge (%)	<u>80</u> Grass/Sedge (%) <u>40</u>	Organics (%)Sand Bar	Large Woody Debris
$\frac{\alpha O}{60} \text{ Shrubs (\%)}$	$\frac{60}{80} \text{Shrubs}(\%) = 50$	_Silt (%)Mud Bar	Overhanging vegetation
Diameter DBH	10^{11} Diameter DBH	Gravel Bar Gravel (%)Gravel Bar	Contiguous Wetlands
Elow Type:		Cobble (%)	\underline{X} Submerged Plants
X Perennial	Intermittent Enhemeral	Boulders (%)Undercut Banks	
CTORNAL DODDELLC CON CONT			and the second
the wood	WIND MMM MM	M WARD MM	WM inwith P
birch	mud		Isubreged Jrass
500			k
F	20,	8 M WW	1.
STREAM PROFILE: Plan View	include direction of flow, centerline, distances	from centerline, photo locations, sample lo	ocations by gear type and ROW)
\uparrow		66	
		Theodore R	iver
	Cend H	2° take	
		Part Quiking	the second se
N	EFS	M + 10111	A. A
	- The	Photo	
	- Charles	Points + 685	APP PN 2 chart
	1	tainer	ut now targer
	Plant	location	4
	7100	1	
			1

Revision Date: 3/19/2015

Page 1 of ____

STREAM FISH INVESTIGATION DATA FORM

Minnow Traps (Y/N):	Hook and Line (Y/N): MA Beach Selne (Y/N):	Fyke Net (Y/N):A	Hoop Net (Y/N):
No. of Minnow Traps Set:	Date & Time in: (mm/dd/yyyy)	NA Date & Time II (mm/dd/yyyy	n: NA	Date & Tin (mm/dd/y	ne in: vvv) NA	Date & Time in: MA
Date & Time In: (mm/dd/yyyy) 6/6/2	No. of lines in wate	r: / N A No. of passes	NA	Date & Tin (mm/dd/y	www.NP	Date & Time out: (mm/dd/yyyy) NA
Date & Time out: (mm/dd/yyyy) 6/7/20	Time lines in water:	NA Reach Length	(m):	1	NA	NA
ELECTROFISHING ATTRIBUT	TES				· Elan	
EF (Y/N): Y EF S	Start Time: 13 40	EF End Time: 1410	EF Time (see	conds):	04 EF Rea	ach Length (m): (50) 5006
Current (A):	Volts (V): 35	O = SOO Power (W):	HIDE HIDE	Sampling I	Triclency (% of sam	pie reach): 700 (amp x volts)
FISH OBSERVATIONS			920-	000		S. A. W. S.
Gear Type	Species	Total Length (mm)	Life Stage (Juvenile	or Adult)	Disposition (Dead or Alive)	Picture No.
observation	600	n/A	Adu	(+	Alive	N/A
			_			
			_			- t.
1						
NUMBER OF STREET, STREET, STREET, ST		A STATE OF STATE	Income of the other		Te da la conce	
NOTES Jany additional into	rmation	es altraine and a line of a line of a			X Constanting and the	and the second
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	part of	backwash from	Theador			
	- an cull	ent, crosses	rond			
	/10 0000	/			,	01
	- no flow	but water is	likely	preser	A annu	ally
	V	I. obia 29	Coade		MSIZTS	57
-	- Water ovi	y since of	1000 -	70		0
	Small iso	lated patche	S - ot	hern	rse ch	annel
	from aer	hal is re	Castivel	y d	M	
MISCELLANEOUS POINTS (if applicable)	(四)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)(1)		- ALENA	A PARA	
Point ID: N	А	Description: NA				,
Point ID:	4	Description: NA				
Crew Chief:	mpson	Field Scientist/ Technician: N. Smith	h	Teo Lea	hnical d:	Schultz

Feature ID: F86TI001

+

This form is to be completed before leaving the field site.

Date: 6/7/2015 Feature ID: F86 TF 00/ FT #NK181.1

For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

- λ Was ADF&G contacted before conducting any work in this area?
- Site Description complete? (Every cell must have entry or N/A)
- Were all photos taken and labeled correctly?

2. Physical/Chemical Attributes

- Physical/Chemical attributes complete? (Every cell must have entry or N/A)
- Water quality data within expected ranges?
 - Ø pH: 4.0 10.0
 - Ø NTU: 0 3000
 - ௺ DO (mg/L): 1.0 15.0
 - ☑ Temp.: 1.0 19.0
 - ☑ Specific Conductance: 20 1500
- If outside expected ranges, was sample re-taken?
- Nor Are units correct?

3. Stream Profile

- Stream profile view sketch included?
- D Stream profile view captures water depth and wetted width?
- ℰ Stream profile view captures where efforts were made to capture fish?
- # Plan view sketch included?

4. Methods Attributes

- Methods attributes complete? (Every cell must have entry or N/A)
- ☞ Were methods used adequate (explanation needed if no methods selected)?

5. Electrofishing Attributes

- ∠ Electrofishing attributes complete? (Every cell must have entry or N/A)
- Are units correct?

Feature ID: F86T1001

6. Fish Observations

- Are all fish captured/observed recorded in the Fish Observation table?
- Are units correct? (Total Length (mm))
- *NA* □ Were adequate photos taken of fish captured? (Take a photo if in doubt)

7. General

- Feature ID and Field Target # are consistent on data forms, logbook entries, photos, and maps?
- 图 All additional data in logbook captured on data form and additional photos noted?
- Were all additional comments on stream habitat, etc. recorded on data form?

NO Mas any gear missing/damaged for this survey or did you have any problems that should require resampling of this stream for an adequate survey effort?

By signing below, I verify that all field data for this site has been verified for accuracy and completeness.

Smith fal

Fisheries Biologist (print)

Signature

So

Field Crew Chief (print)

Signature



P_F86TI001_002_DS LOOKING DS AT OFF-ROW TARGET



LOOKING AT RB AT OFF-ROW TARGET



P_F86TI001_005_AUS AERIAL PHOTO LOOKING US

6/7/2015 NK181.1



P_F86TI001_006_ADS AERIAL PHOTO LOOKING DS



P_F86TI001_007_EF 6/7/2015 PHOTO OF THE CREW ELECTROFISHING

	-	-						1					
			Target Name	UNNAM	IED S	TREAM				ARCTIC 0	DCEAN		
			Featur	re ID: F86	61100	1			Chukchi :	Sea m	Beauj	fort Sea	
									. {	Prudh	ioe Bay	T	
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									RUSSER E	- <u>,</u> ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		USA	
									Nom Nom	کۆ	Fairban	ks	
100										Bethel And	chorage		
100									9¢	کھ ک	مر المرجع م من المرجع م	Las a Juli	neau
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									BERING SEA		Kodiak		1 860
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LEGEN	D												
2015 Fi	sh Survev Location	BU	Burbot	SA(U)	Sal	monid (l	Jnspecifie	ed)					
F	Fish Observed	СН	Chinook Salmon	SC(I)	Sci	Ilpin (Lin	specified)			Fe	et	
-		<u> </u>	Coho Salmon	<pre></pre>	Clin		in	/		0 50	0 10	00 150 20	0
F	No Fish Observed		Dolly Vardon	55 ST(1)	011		(Linenee)	ifiad)			1111		
•	Photo Point				300		Chickler	nieu)			0 20	30 40 50	
Specie	s Observed	C	Ninespine Stickleback		inr	eespine	SUCKIEDA	auk Orani	a later of	01	u ∠u Me	ters	
AB	Alaska Blackfish		Other Species Not Listed	OR2	FIS	I Ubser	ation, No	Specie	es informatio	n			
AG	Arctic Grayling	КI	Rainbow Trout										
				T	DRAWN								
	AL	ASKA	LNG		ICS			2015	ALASKA FISH FIELD SUI	LNG RVEY LOCAT	IONS		
NOTES: Concept Inform	ation - Confidential Produced by Ale	ska I NG team	The information used to create this product in	based on the	CHECK	PROJECTION	DATUM	CONTRACTOR NAM	ЛЕ			IAP NUMBER	REV.
collected data o	on the date of issue; it is considered re ublished. This drawing is solely prepar	eliable only at the	e scale at which the data was created and the s e contractual Alaska I NG team partners and the	scale at which	DESIGN	AK 4	NAD83	, INNE I UR NAI	AECON	1	Ň	Page 3 of 86	A
team assumes at full scale (100	no liability to any other party for any re 0%) in order for the scale to remain co	epresentations co rrect.	ontained in these drawings. This map must be p	printed/viewed	TCS	SCALE	DATE	1	PROJECT NUMBER	ORIG.PAGE SIZE			1
					APP R.	1:2,000	15 O	ct 2015	26221392	8.5 X 11			
										1			

STREAM FISH INVESTIGATION DATA FORM

SITE DESCRIPTION		法皇朝代 <u>法</u> 理想了。 <u>马</u> 王	
Date: 6/11/2015 Investigato	DIS: SCS FAH NJS	Team No.: F86 Fe	eature ID: F86T1009
Stream Name: 1/2 pamed 5	tream	SI	tream ID: NKI 80
Pipeline Milepost: 7411 6 Stream f	ound as expected (Y/N): V	н	wy MP (N/A if heli accessed):
		zitude: ISO° 57	129 4310 42
	/ - 17 Total Fich Caughty /o	Fish Mortalities:	A Total Photos: 17
Pic No.: P-F86T/009-001-W Pic N	10 :: P-F86T1009-002-DS Pics	No .: P-F1671009-003-	B Pic No.: P.F86T1009-004_RB
Other P_ F867 1009- 005-AU	s: aerial upstream		
Pic No(s) .: P- F86 T1009 _ 006 - AI	ss: aerial downstream		
PHYSICAL/ CHEMICAL ATTRIBUTES			
Weather (Describe): SUMMY	Precipitatio	on (Describe): none	
Water Temperature (°C): 9,71	Air Temperature (°C):	pH: 6,18	Dissolved Oxygen (mg/l): \ (, 30
Specific Conductance(µS/cm): 44	Turbidity (NTU): 0.4	ORP (mV): 236.0	Dissolved Oxygen (%): 99,5
Ambient Conductance(µS/cm): 3/	Odor: None Sheen (Y/N): N	/ Color: clear	Last date of Calibration: 6/10/2015
Defined Channel (Y/N): Y Notes:	effed banks, shallows	kady flow	Wetted Width (m):
Flow (Y/N): Notes: G	hallow steady blow	Aquatic Habitate	Thalweg Depth @ CL (m): , 08
Kiparian Veg at 0-5 m at LB: Kiparian Kiparian Veg at 0-5 m at LB: Kiparian Kipari	rass/Sedge (%)	Sand Bar	Large Woody Debris
50 Shrubs (%) 40 st	nrubs (%)	Mud Bar	→ Overhanging vegetation
20 Trees (%) 10 Tr	rees (%) <u>40</u> Sand (%)	Gravel Bar	Contiguous Wetlands
<u>6</u> ^{''} Diameter DBH (in.) <u>3</u> ^{''} Diam	neter DBH (in.) <u>60</u> Gravel (%)	<u> </u>	Emergent Plants
Stream Type:	Cobble (%)	<u> </u>	Submerged Plants
PerennialIntermittent	EphemeralØBoulders (9	6) Undercut Banks	
Aentiscus ABER W	L. I m	a-d/gracel subst	ferns devilsclub alders
NORTH:	of flow, centerline; distances from centerly flow Flow P P P P P P P P P	ine, photo locations, sample i	ecations by gear type and ROW) P=photo (acetion MT=minicon HT=p EF = electrog ships GBOVT

STREAM FISH INVESTIGATION DATA FORM

Feature ID: F867009

	HOOK and Line (1/14).	A/ A Beach Seine	(Y/N): / Fyka	e Net (Y/N):	Hoop Net (Y/N):
No. of Minnow Traps Set:	Date & Time in:	Date & Time	in: Dat	e & Time in:	Date & Time in:
Date & Time in: 6/11/15	No. of lines in water:	No. of passe	s: Dat	e & Time out:	Date & Time out: /
(mm/dd/yyy) 1445 Date & Time out: (c (12) 15 (mm/dd/yyyy) 115	Time lines in water:	Reach Lengt	h (m):	n/dd/yyyy)	(mm/dd/yyyy)
ELECTROFISHING ATTRIBUTES	建制的用料的用油量的 。	这些这些是想的在他的时候	新教用使用外科 科研		
EF (Y/N): TEF Star	rt Time: 1450	EF End Time: 1510	EF Time (seconds)): 142 EF	Reach Length (m): 46
Duty Cycle: 25	Frequency (Hz) : 6	O Waveform:	PDC Sam	pling Efficiency (% of	sample reach): 75
Current (A): J. 2	Volts (V): 500	Power (W):	100		(amp x volts)
FISH OBSERVATIONS	Constant south works		n - nais ar side an sa sh	ala subality a sub-	
ID (Seq. Num) Gear Type	Species	Total Length (mm) (mr	Life Stage	Disposition (Dead or Alive)	Picture No.
OD MINNOV	V Trap Dolly Va	rden 8.411 (214	1) contradult	Alive	4 P F8671009.007_F
002 4	() Coho	4.3"(10	1) Sulv.	U	* P_ F86T 1009 008 F
003 11	u	4.3 /10	1) iuv.	11	+P-F86T1009_009_F
004 MT-2	Dolly	6. 75 %	71 Juv/adult	L1	* P_F86T1009_010_F
005 11	Coho	4.1" (104	juv,	1(*P-F86T1009-011-F
004 11	U.	3.5" (89) juv.	16	* P_F86T1009-012-F
	<u> </u>		1	1	
		/			
		and the first state of the stat	N		
NOTES (any additional informa	ition)	24. 新国省会和国家的联盟			
- DV and	coho can	ght in m	Mnow to	aps	
1.2	L. CADE ICA	d w/ elle	to hishih	3	
- no fis	n capitio		U C	7	
	0	las	U		1
- Marcon	shallow th	Anne in a	111-defined	bants	alin
			V		,
dense	vigetact on				
	\vee				
	1				
Terror and the second					
MISCELLANEOUS POINTS (if an	oplicable)	27. Add 100 (Add 1. A		中心的 的最高级	141-2427 127114 12421
Point ID:	4	Description: NA			
Point ID: N	Ą	Description: NA	1		
		Id Calculates II	1	Technical	
Field	Fie	a scientist/	AA	recificat	

This form is to be completed before leaving the field site.

Feature ID: <u>F8671009</u> FT # <u>NK180</u> Date: <u>6/11/2015</u>

For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

- Was ADF&G contacted before conducting any work in this area?
- Site Description complete? (Every cell must have entry or N/A)
- Were all photos taken and labeled correctly?

2. Physical/Chemical Attributes

- Q Calibration performed prior to sampling?
- Physical/Chemical attributes complete? (Every cell must have entry or N/A)
- Mater quality data within expected ranges?
 - □ pH: 4.0 10.0
 - □ NTU: 0 3000
 - □ DO (mg/L): 1.0 15.0
 - □ Temp.: 1.0 19.0
 - □ Specific Conductance: 20 1500
- N^{II} If outside expected ranges, was sample re-taken?
 - Are units correct?

3. Stream Profile

- B Stream profile view sketch included?
- Stream profile view captures water depth and wetted width?
- ☆ Stream profile view captures where efforts were made to capture fish?
- Plan view sketch included?

4. Methods Attributes

- B Methods attributes complete? (Every cell must have entry or N/A)
- Were methods used adequate (explanation needed if no methods selected)?

5. Electrofishing Attributes

- Electrofishing attributes complete? (Every cell must have entry or N/A)
- agreen arrest and the second secon

8677009 Feature ID:

6. Fish Observations

- Are all fish captured/observed recorded in the Fish Observation table?
- Are units correct? (Total Length (mm))
- K Were adequate photos taken of fish captured? (Take a photo if in doubt)

7. General

- Feature ID and Field Target # are consistent on data forms, logbook entries, photos, and maps?
- Were all additional comments on stream habitat, etc. recorded on data form?

Was any gear missing/damaged for this survey or did you have any problems that should require resampling of this stream for an adequate survey effort? NA

By signing below, I verify that all field data for this site has been verified for accuracy and completeness.

Fisheries Blologist (print)

Signature

X San Silm OK or

Field Crew Chief (print)

Signature





P_F86TI009_003_LB LOOKING AT LB AT PLX

6/11/2015 NK180



P_F86TI009_004_RB LOOKING AT RB AT PLX

6/11/2015 NK180


P_F86TI009_005_AUS AERIAL PHOTO LOOKING US 6/11/2015 NK180



P_F86TI009_006_ADS AERIAL PHOTO LOOKING DS



P_F86TI009_007_F PHOTO OF DOLLY VARDEN

6/11/2015 NK180



P_F86TI009_008_F PHOTO OF COHO SALMON



P_F86TI009_009_F PHOTO OF COHO SALMON

6/11/2015 NK180



P_F86TI009_010_F PHOTO OF DOLLY VARDEN



P_F86TI009_011_F PHOTO OF COHO SALMON

6/11/2015 NK180



P_F86TI009_012_F PHOTO OF COHO SALMON

	Target Name: Featur	UNNAM e ID: F86	ED STREAI STI009	И		Chukchi S	ARCTIC OC	CEAN Beaufort Sea De Bay	
					10° - 44	BERING SEA	ALAS	SKA airbanks orage <i>GULF OF ALASKA</i> Kodiak PACIFIC OCEAN	ineau
									a strain a series
	P_FEETTOOD_002_1 P_FEETTOOD_004_1 P_FEETTOOD		P_FERTION	<u>001U3</u>			All all a		
									Contraction of the
LEGEND2015 Fish Survey LocationBUFFish ObservedCHFNo Fish ObservedDV•Photo PointNSSpecies ObservedONSABAlaska BlackfishOAGArctic GraylingRT	Burbot Chinook Salmon Coho Salmon Dolly Varden Ninespine Stickleback Other Species Not Listed Rainbow Trout	SA(U) SC(U) SS ST(U) TS OBS	Salmonid Sculpin (U Slimy Scu Sticklebac Threespin Fish Obse	(Unspecified Inspecified Ipin Ik (Unspec Ick (Unspec Stickleba Irvation, No	ed)) ified) ack o Specie	es Informatic	0 50 LLLLL (TTTTT) 0 10	Feet 100 150 20 11111111111111111111111111111111111	0
ALASK	A LNG	[DRAWN ICS		2015	ALASKA FISH FIELD SUF		DNS	
Concept Information - Confidential. Produced by Alaska LNG tear collected data on the date of issue; it is considered reliable only at the map was published. This drawing is solely prepared for use by team assumes no liability to any other party for any representations at full scale (100%) in order for the scale to remain correct.	h. The information used to create this product is the scale at which the data was created and the st the contractual Alaska LNG team partners and the contractual Alaska LNG team partners and the contained in these drawings. This map must be provided in the second state of the second	based on the cale at which Alaska LNG rinted/viewed	PROJECTION PROJECTION AK 4 SCALE AJPR. 1:2,000	DATUM NAD83 DATE 15 O	contractor nai	AE AECOM PROJECT NUMBER 26221392	orig page size 8.5 X 11	MAP NUMBER Page 9 of 86	REV.

SHEUESCRIPTION	
Date: 6/17/2015 Investigat	ors: SCS NJS ADF Team No.: F86 Feature ID: F8677013
Stream Name: Unnamed	Chream Stream ID: NK 179
Pipeline Milepost: 744, 9 Stream 1	found as expected (Y/N): Hwy MP (N/A If heli accessed): MA
Latitude: (1°20'28 33	(98" N) Longitude: 150°54'35.6168 41
Logbook No.: Logbook Page No.:	24-24 Total Fish Caught: 13 Fish Mortalities: Total Photos: 10
US @ CL DS (@ CL RB to LB@ CL LB to RB@ CL
Pic No.: 9-F8071013-001-US Pict	No: P-F8611013_002-05 Pic No: P-F8611013_005-05 Pic No: P-F8611015_007-000
Other alling: 1-180	General Stream prioro.
Pic No(s) .: Arrial down.	P_F86T1013_006_ADS P_F8671013_010_S
PHYSICAL/ CHEMICAL ATTRIBUTES	
Weather (Describe): Survey hor	AisTennegeture (90)
Water Temperature (°C): [2.92]	Air temperature (°C): \mathcal{A}
Specific Conductance(µS/cm): 9	Turbidity (NTO): 1 , 1 , 5 , 0 , 7 , 269 Dissolved Oxygen (M). 98710
Amblent Conductance(µs/cm): 70	Wetted Width (m): 79
Flow (Y/N): Notes:	very Slow, lots of muck / organic matter Thalweg Depth @ CL (m): 0.31
Riparian Veg at 0-5 m at LB: Riparlan Veg	at 0-5 m at RB: Stream Substrate: Aquatic Habitats
Grass/Sedge (%)G	Grass/Sedge (%)Organics (%)Sand BarLarge Woody Debris
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	Shrubs (%) Mud Bar Overnanging vegetation
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$	meter DBH (in) 80 Gravel (%) X Emergent Plants
	Cobble (%) Cobble (%)
Stream Type:	Enhamoral Boulders (%) Undercut Banks
Perenniaiintermittent	
Criticality and their or and a contained as a second	
alders perns grass s	79 m <u>Io.31m</u> <u>Sravel bar</u> grass large commond
alders perns grass s	79 m <u>Io.31m</u> Gravel bar grass large compressed with side substrate not flow, centerline, distances from centerline, photo locations, sample locations by gear type and ROW).
alders ferns grass s STREAM PROFILE: Plan View (include direction NORTH:	79 m I.o. 31 m Sravel bas dent grass approved with side substrate not flow, centerline, distances from centerline, photo locations, sample locations by gear type and ROW)
alders ferns grass 5	79 m I or sim bravel bar grass large common of flow, centerline, distances from centerline, photo locations, sample locations by gear type and ROW) flow
CILLES PERIS Grass S STREAM PROFILE: Plan View (include direction NORTH:	79 m I.o. Alm Stavel bar Grass Large Commond Will side substrate not flow, centerline, distances from centerline, photo locations, sample locations by gear type and ROW) flow
alders perns grass 3 STREAM PROFILE: Plan View (include direction NORTH:	79 m To. 31m Sravel bas gass large added the side substrate a of flow, centerline, distances from centerline, photo locations, sample locations by gear type and ROW) flow flow
alders perns grass s STREAM PROFILE: Plan Miew (include direction NORTH:	79 m I.o. sim bravel bar den + large cobridged with side interior sidestrone contentine, photo locations, sample locations by gear type and ROW) flow fl
alders perns grass s stream profile: plan Miew (include direction NORTH:	79 m To an oravel bas dent to a second difficulture substrate another and the second difficulture photo locations, sample locations by gear type and ROW? The second difficulture of the second difficulture o

Feature ID: F8671013

METHODS ATTR	RIBUTES		和認識的認識			the state of the state of the state		
Minnow Traps (Y/N):	ook and Line (Y/N):	Beach Seine	(Y/N):	e Net (Y/N):	Hoop Net (Y/N):		
No. of Minnow 1	Traps Set: 3 Da	nte & Time in: nm/dd/yyyy)	Date & Time i (mm/dd/yyy	In: Date y) (mn	e & Time in: n/dd/yyyy)	Date & Time In: (mm/dd/yyyy)		
Date & Time In:	6/16/2015 No	o. of lines in water:	No. of passes	: Date	e & Time out	Date & Time out		
Date & Time out (mm/dd/yyyy)	t: 6/17/2015 Th	me lines in water:	Reach Length	1 (m):		(IIIII) GU/ YYYY /		
ELECTROFISHIN	G ATTRIBUTES			The second second				
EF (Y/N):	EF Start Time:	EF End Tin	ne:	EF Time (seconds)	: _ E	F Reach Length (m):		
Duty Cycle:	Fr	equency (Hz) :	Waveform:	Sam	pling Efficiency (% of	f sample reach):		
Current (A):	Va	olts (V):	Power (W):	~		(amp x volts)		
FISH OBSERVAT	FISH OBSERVATIONS							
ID (Seq. Num)	Gear Type	Species	Total Length (mm)	Life Stage (Juvenile or Adult)	Disposition (Dead or Alive)	Picture No.		
001	MT I	9spile stitleba	K 58	Juddult	alive	AP.F86T1018-0075F		
002	MTI	Y.	60	" adult	alive	P- F8677013_008-F		
003	MTZ	11	52	ADULT	ALIVE	NA		
004	MT2	//	62	* ADULT	Alive	NA		
005	MTZ	11	63	"AOULT	ALIVE	NA		
006	V131055	wood frog	na	adult	- alive	8P-F8671013_009_F		
007	MT 3	1 spile stidebac	<u>k60</u>	"adult	11	Na		
008	MTS	'()	57	(())	11	Na		
009	MIZ		50	« (,	11	NA		
010	M7 5		50	ll it		NA		
	1173	1	66	rant		NA		
Uld	M17		_ 50	own bourt		No		
NOTES (any add	itional information)	9 so me stickly	(ct. 51	w adult	alive	nla		
	10(1)	(1)		0-1				
- observ	ed 2 f	nogi caught	12 "	7spike sti	cklebact	S in MT.		
- strea	in toi	> muchy	for	EF-6	ad visit	ility.		
. Apped	and to	be well	Below	norma	I wate	er ldepth +		
biou	v. Orga	ric mater	in a	ad mil	erall,	ron material		
	PAL ON	evaluat an	the ci	uchace	+ with	in the		
10 0	rig r	is in the	pravel.	band he	a wind	and the tota		
Subs	trate, con		Ja plan	und il	is cape	ison in mile		
up half the width of the channel in some areas.								
MISCELLANEOUS	S POINTS (if applicable	1975年1月1日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日		構成したな言語				
Point ID:	MA	Description	n: NA					
Point ID:	NA	Description	NA	~ I/	1.2			
Field	CA	Field Scient	tist/ dilib	IN	Technical			
Crew Chief:	7	Technician	- fill	XIY	Lead:			
	0		24	V				

This form is to be completed before leaving the field site.

Date: 6/17/2015

For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

Feature ID: F8677 013

Was ADF&G contacted before conducting any work in this area?

FT # /\

- In Site Description complete? (Every cell must have entry or N/A)
- Were all photos taken and labeled correctly?

2. Physical/Chemical Attributes

- Calibration performed prior to sampling?
- Depresentation of N/A) Physical/Chemical attributes complete? (Every cell must have entry or N/A)
- > Water quality data within expected ranges?
 - □ pH: 4.0 10.0
 - □ NTU: 0 3000
 - □ DO (mg/L): 1.0 15.0
 - □ Temp.: 1.0 19.0
 - □ Specific Conductance: 20 1500
- If outside expected ranges, was sample re-taken?
- Are units correct?

3. Stream Profile

- Stream profile view sketch included?
- Stream profile view captures water depth and wetted width?
- Stream profile view captures where efforts were made to capture fish?
- ₽ Plan view sketch included?

4. Methods Attributes

- Methods attributes complete? (Every cell must have entry or N/A)
- Were methods used adequate (explanation needed if no methods selected)?

5. Electrofishing Attributes

- Electrofishing attributes complete? (Every cell must have entry or N/A)
- Are units correct?

Feature ID: F867703

6. Fish Observations

- Are all fish captured/observed recorded in the Fish Observation table?
- ☑ Are units correct? (Total Length (mm))
- Were adequate photos taken of fish captured? (Take a photo if in doubt)

7. General

- All additional data in logbook captured on data form and additional photos noted?
- Were all additional comments on stream habitat, etc. recorded on data form?
- Was any gear missing/damaged for this survey or did you have any problems that should require resampling of this stream for an adequate survey effort?

By signing below, I verify that all field data for this site has been verified for accuracy and completeness.

Fisherles Biologist (print)

SIgnature

D

Field Crew Chief (print)

Х Signature



P_F86TI013_001_US LOOKING US AT PLX

6/17/2015 NK179



P_F86TI013_002_DS LOOKING DS AT PLX





P_F86TI013_005_AUS AERIAL PHOTO LOOKING US

6/17/2015 NK179



P_F86TI013_006_ADS AERIAL PHOTO LOOKING DS



P_F86TI013_007_F PHOTO OF NINESPINE STICKLEBACK



P_F86TI013_008_F PHOTO OF NINESPINE STICKLEBACK



P_F86TI013_009_F PHOTO OF WOOD FROG 6/17/2015 NK179



P_F86TI013_010_S GENERAL STREAM PHOTO



SITE DESCRIPTION	到出现其他的自己的问题。目前在自己的问题,并且
Date: 6/30/2015 Investigators: SCS NTS ADF	Team No.: F8 6 Feature ID: F8671023
Stream Name: Unnamed Stream	Stream ID: NK176
Pipeline Milepost: 743.1 Stream found as expected (Y/N): Y - Stream	Hwy MP (N/A if heli accessed): heli
Latitude: Longit	ude:
Logbook No.: Logbook Page No.: 37-39 Total Fish Caught: 24	Fish Mortalities: Total Photos:
US @ CL DS @ CL RB to I	LB to RB@ CL D. P. TIP23 - 003 LB Pic No.: P. 18 (TIO23 - 004 - RB)
PICNO. 12 CONTRACT PICNO. 17 CONTRACTOR OF THE NO.	
Pic No(s): $P = F = 867003 = 0.06 = A ERIAL$	
Weather (Describe): 51/ 0014 Precipitation	(Describe): hood
Water Temperature (°C): 17,86 Air Temperature (°C): 24	pH: 6,59 Dissolved Oxygen (mg/l): 9,00
Specific Conductance(µS/cm):	ORP (mV): 181, 5 Dissolved Oxygen (%): 94, 6
Ambient Conductance(µS/cm): 122 Odor: NSNQ Sheen (Y/N): N	Color: $c(lar)$ Last date of Calibration: $6/29/15$
Defined Channel (Y/N): N Notes: branched due to beauer a	wetted Width (m): 0.86
Flow (Y/N): Y Notes: light flow present	Thalweg Depth @ CL (m): 0, 86 0. [[
Riparlan Veg at 0-5 m at LB: Riparlan Veg at 0-5 m at RB: Stream Substrate:	Sand Bar X Large Woody Debris
$\frac{-100}{3} \text{ shrubs (\%)} \qquad \frac{-30}{20} \text{ shrubs (\%)} \qquad \frac{-100}{50} \text{ silt (\%)}$	Mud Bar
0 Trees (%) 0 Trees (%) 30 Sand (%)	Gravel Bar Contiguous Wetlands
Diameter DBH (in.) 10 Diameter DBH (in.) 10 Gravel (%)	RifflesEmergent Plants
Stream Type: 20 Cobble (%)	Pools Submerged Plants
X PerennialIntermittentEphemeralBoulders (%)	Undercut Banks
STREAM PROFILE: Cross Sectional at Crossing (include riparian vegetation, wetted width, w	vater depth, substrate, and aquatic habitats)
STREAM PROFILE: Cross Sectional at Crossing (include riparian vegetation, wetted width, w	spruce grass
STREAM PROFILE: Cross Sectional at Crossing (include riparian vegetation, wetted width, w	sprince
STREAM PROFILE: Cross Sectional at Crossing (include riparian vegetation, wetted width, w	sprince grass
STREAM PROFILE: Cross Sectional at Crossing (include riparian vegetation), wetted width, w	sprince grass
STREAM PROFILE: Cross Sectional at Crossing (include riparian vegetation, wetted width, v or a 55 Homs UMAN 0.86 m wide	sprince grass
STREAM PROFILE: Cross Sectional at Crossing (include riparian vegetation, wetted width, v Orass Herns UMU 0.86 in wide (orble / Stard + mide	sprince grass I 0-11 deptn - beaver complex leads
STREAM PROFILE: Cross Sectional at Crossing (include riparian vegetation, wetted width, v or a 55 He ms dum (b) (b) (b) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c	Spruce grass I 0.11 depth Lo.11 depth Lo.11 depth Lo.11 depth Lo.11 depth Lo.11 depth Lo.11 depth Lo.11 depth Lo.11 depth
STREAM PROFILE: Plan View Include direction of flow, centerline, distances from centerline	sprince grass I 0.11 depth beaver complex leads to multiple channels + strangers undergrand
STREAM PROFILE: Plan View (include direction of flow, centerline, distances from centerline NORTH:	sprince grass I 0-11 depth e, photo locations, sample locations by gear type and ROW) PLX
STREAM PROFILE: Plan View (include direction of flow, centerline, distances from centerline NORTH:	sprince grass JUNA I 0-11 depth e, photo locations, sample locations by gear type and ROW) MARK Hom Hom Hom Hom Hom Hom Hom Hom
STREAM PROFILE: Plan View (include direction of flow, centerline, distances from centerline NORTH:	exter depth, substrate, and aquatic habitats) Sprince grass I D-11 depth E) photo locations, sample locations by gear type and ROW) PLX 46m 46m
STREAM PROFILE: Plan View (include direction of flow, centerline, distances from centerline NORTH: A A A A A A A A A A A A A A A A A A A	e, photo locations, sample locations by gear type and ROW)
STREAM PROFILE: Plan Niew (include direction of flow, centerline; distances from centerline) NORTH: A flow A flow	exter depth, substrate, and aquatic habitats) Sprince grass I 0-11 depth E 0-11 depth e photo locations, sample locations by gear type and ROW) PX 46m 46m 46m 46m 46m 46m 46m 46m
STREAM PROFILE: Cross Sectional at Crossing (include riparian vegetation, wetted width, v	exter depth, substrate, and aquatic habitats) Sprince grass I or 11 depth E or 11 depth exter complex leads Ho multiple channels + Strangers undergrand PLX 46m 46m 46m 46m
STREAM PROFILE: Cross Sectional at Crossing (include riparian vegetation, wetted width, v	e photo locations, sample locations by gear type and ROW)
STREAM PROFILE: Cross Sectional at Crossing (include riparian vegetation, wetted width, v	exter depth, substrate, and aquatic habitats) Sprice grass JO-11 depth E o-11 depth beaver complex leads to multiple channels + strangers underfound PLX 46m 46m 46m 46m 46m 46m 46m 46m
STREAM PROFILE: Plan View (Include direction to flow, centerline, distances from centerline) NORTH: + flow + f	exter depth, substrate, and aquatic habitats) Sprince grass Jon Ce grass Lonit deeth beaver complex leads to multiple channels + strangers underground e. photo locations, sample locations by gear type and ROW) PLX 46m 46m 46m 46m 46m 46m 46m 46m

Feature ID: F8671023

METHODS ATTR	RIBUTES	Hook and Line (V/N):	Reach Soine ()		Not (V/N):	Have Not (V/NI)	
initiation ridpo (Y.	Mook and Line (17/1). MA	Deach Deine (NA	M	ANDOPNET	
No. of Minnow	Traps Set:	Date & Time in: (mm/dd/vvvv)	Date & Time In: (mm/dd/vvvv) (e & Time in: u/dd/vvvv)	Date & Time In: (mm/dd/www)	
Date & Time in:	6/30/15	No. of lines in water:	No. of passes:	Date	e & Time out:	Date & Time out:	
(mm/dd/yyyy)	1600	Time lines in water:	Reach Length	(mm	1/dd/yyyy)	(mm/dd/yyyy)	
(mm/dd/yyyy)	1100		incusin sengen	- IT UNIT REPORT	1	unanti daricenti	
ELECTROFISHIN	G ATTRIBUTES	國制作的國家有關		地面的问题。			
EF (Y/N):	EF Start Tim	e: 500 EF End Ti	me: 1535	EF Time (seconds)	: 093 EI	F Reach Length (m): 9]	
Duty Cycle:	25	Frequency (Hz): 60	Waveform:	PDC Sam	pling Efficiency (% of	sample reach): /00	
content (A). F Voits (V). 360 Power (VV). 510 (amp x voits)							
FISH OBSERVAT	TONS	entration content volume					
ID (Seq. Num)	Gear Type	Species	(mm)	(Juvenile or Adult)	(Dead or Alive)	Picture No.	
(101	EF	Millespile Stict lobie	45	juvenile	alve	* P.F.86T1023-007.95	
002	EF	1.1	12	juverile	alive	× P-F8671023.008.95	
003	ter	71	48	juvenile	alive	nla	
004	EF	11	52	adult	alive	nla	
005	vis.obs	unk salmonid	ha	juv/adult	alve	NA	
006	EF/VISA	al unt. salmond	na	U.	alve	na	
007	EF/VISUA	I wat salmond	na		alive	n/a	
008	Minnow	Imp Nine Spine Stickleber	46	Invenile	alive	NIA	
009			48	Jupehlile	alive	NIA	
010			52	JUL ALIT	alive	NIA	
01			47	Juvenile	à	NIA	
North	n	20 Fair 19 19 19 19 19 19 19 19 19 19 19 19 19	Contraction of the second second	Jurenile	Dend		
INOTES (any add	(uonal information)					J FF	
- Salmi	onid DV	r skinon) viska	ily observe	of with a	and Withou	NT LF	
×	(3 +	otal). Did not	capture a	"/ EF. All	three were	approx rouma.	
	χ.	1 1 1 0				(
- moved	origina	I target appro	X 100 fee	+ NW b	leause the	2 new) target	
1. Dre	d the	more suitable	fish L	ebitat. ol.	d sarget	was stagnant	
Counce	a the	1 1 1000 1 2	water in	Leaver	complex	Area - stream	
w	spots o	6 dryness. L		Alima	a de	area strong	
5.00	underson	at + branches	in mo	itple.	Sporsw	1.5	
you	chara 1	I shallow water	+ mosil	ly muddy	Substra	Je,	
-nanow	Sacres			í (
Incaster					100 ANI (100 100 100 100 100 100 100 100 100 10		
MISCELLANEOUS	S POINTS (if applica	ble)	not which is the		下的情况是必须	"非常论"的感觉是是能	
Point ID:	NA	Descriptio	n: NA				
Point ID:	NA	Descriptio	n: N	4			
Field	C .	Field Scier	itist/ unnel	A IA	Technical		
crew Chief:	XX	Technician	:7 Uen	on	Lead:		

Feature ID: FRODO23

FISH OBSERVAT	TONS (continued)			建治病人的治疗		
ID (Seq. Num)	Gear Type	Species	Total Length (mm)	Life Stage (Juvenile or Adult)	Disposition (Dead or Alive)	Picture No.
013	Minnon Trap	Ninespine Steklela	50	JUV/ Aluit	Alive	NA
014	ιl	4	42	Javentle	et 👘	ί(
015	11	4	46	11	L(L (
016	11	-1	47	11	C(11
017		Li li	46	st	<u>u</u>	1
018			51	JUN/ALJIF	ti	11
019	Lt		51	1	LI	ι(
020	11	11	42	Jurchila		1
021	Ц	11	43	ι(11	(1
022	. (L L	46	11	11	
023	11	1	54	Jnv/ Adult	(41
024	W13.065	upped frog	nla	adult	alive	na
			1			
	V					
-		· · · · · · · · · · · · · · · · · · ·				
						1
	*					
	•					

Page A of 3

This form is to be completed before leaving the field site.

Date: 6/30/15 Feature ID: F8671023 FT # NK176 For all items not checked, please provide detailed explanation in the notes section of data form. 1. Site Description Was ADF&G contacted before conducting any work in this area? Site Description complete? (Every cell must have entry or N/A) Were all photos taken and labeled correctly? 2. Physical/Chemical Attributes Calibration performed prior to sampling? Physical/Chemical attributes complete? (Every cell must have entry or N/A) Water quality data within expected ranges? 🎽 pH: 4.0 – 10.0 A NTU: 0 - 3000 ₩ DO (mg/L): 1.0 – 15.0 **Temp**.: 1.0 – 19.0

Specific Conductance: 20 - 1'500

NZ# If outside expected ranges, was sample re-taken?

X Are units correct?

3. Stream Profile

- Stream profile view sketch included?
- Stream profile view captures water depth and wetted width?
- X Stream profile view captures where efforts were made to capture fish?
- S Plan view sketch included?

4. Methods Attributes

- Methods attributes complete? (Every cell must have entry or N/A)
- Were methods used adequate (explanation needed if no methods selected)?

5. Electrofishing Attributes

Electrofishing attributes complete? (Every cell must have entry or N/A)

Are units correct?

Feature ID: F8GT1023

6. Fish Observations

S Are all fish captured/observed recorded in the Fish Observation table?

Are units correct? (Total Length (mm))

Were adequate photos taken of fish captured? (Take a photo if in doubt)

7. General

- Feature ID and Field Target # are consistent on data forms, logbook entries, photos, and maps?
- All additional data in logbook captured on data form and additional photos noted?

Was any gear missing/damaged for this survey or did you have any problems that should require resampling of this stream for an adequate survey effort?

By signing below, I verify that all field data for this site has been verified for accuracy and completeness.

ml

Fisheries Biologist (print)

× and St

Signature

Fleld Crew Chief (print)

Signature

Х



P_F86TI023_002_DS LOOKING DS AT PLX

F86T1023 NK176 6/30/2015 P_F86TI023_003_LB Looking@LB @PLX IL CONTRACTOR P_F86TI023_003_LB 6/30/2015 **NK176** LOOKING AT LB AT PLX F86TI023 NK176 6/30/2015 P_F86TI023_004-RB Looking@RB @PLX ALESCO STAR

P_F86TI023_004_RB LOOKING AT RB AT PLX



P_F86TI023_005_AERIAL AERIAL PHOTO

6/30/2015 NK176



P_F86TI023_006_AERIAL AERIAL PHOTO



P_F86TI023_007_9S PHOTO OF NINESPINE STICKLEBACK

6/30/2015 NK176



P_F86TI023_008_9S PHOTO OF NINESPINE STICKLEBACK

			Target Name Featur	: UNNAM	IED STI 6TI023	REAM			Chukebi	ARCTIC (OCEAN Beaufort Sea		
		1		0.10.10	011020				Спикст	Prud	hoe Bay		
1990 (A		N.S.					17.5		1	1			
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2015 Fi	sh Survey Location	BU	Burbot	SA(U)	Salm	onid (U	nspecifie	ed)			Faat		
F	Fish Observed	СН	Chinook Salmon	SC(U)	Sculp	oin (Uns	pecified))		0 5	reet 0 100 1	50 200)
F	No Fish Observed		Coho Salmon	SS	Slimy	Sculpi	n 'I Inon o -:	fied)					
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Species	Observed	0	Other Species Not Listed	OBS	Fish (Observa	ation. No	Specie	s Informatio	on	Meters		
AB	Alaska Blackfish	RT	Rainbow Trout				, -	•					
AG					DRAWN								
	AL	ASKA	LNG		ICS			2015	ALASKA FISH FIELD SUI	LNG RVEY LOCAT	TIONS		
NOTES: Concept Informa	ation - Confidential. Produced by Ala	aska LNG team.	The information used to create this product is	based on the	CHECK	JECTION	DATUM	CONTRACTOR NAM	E		MAP NUMBER		REV.
the map was put team assumes n	o liability to any other party for any n	enable only at the red for use by th epresentations of	e scale at which the data was created and the s e contractual Alaska LNG team partners and the ontained in these drawings. This map must be p	e Alaska LNG rinted/viewed	TCS	AK 4	NAD83			ORIG PAGE CITE	Page	11 of 86	A
at full scale (100	%) in order for the scale to remain co	prrect.			APPR.	- 1:2,000	15 Oc	ct 2015	26221392	8.5 X 11			
					<u> </u>								

SITE DESCRIPTION	如此 ^{我们} 在这些你们的。"		
Date: 6/10/2015 Investigato	IS: KAY SCSNAS	Team No.: F86 Fe	ature ID: F8677008
Stream Name:	Stream	St	ream ID: NK175
Pipeline Milepost: 740 C Stream fo	ound as expected (Y/N): V	H	wy MP (N/A if hell accessed): NA
Institudes (10.22) CU 0.02		de: 150° 48	39,6135 W
	3 VI Tatal Elch Caught M/ Proo	Eish Mortalities	Total Photos:
Logbook No.: Logbook Page No.:	Sec. BB to L	alle CL	LB to RB@ CL
Pic No.: P-F86T1008_001-US Pic N	0.: P_F8671008_002_05 Pic No.	P_F8671008_003_	LB Pic No.: P-F86T1008_004-RB
Other Pic No(s) .: aerial downstrea	P- F86T1008_005-AUS m- P_F86T1008_006-A	05	
PHYSICAL/ CHEMICAL ATTRIBUTES			
Weather (Describe): Sanny	Precipitation (Describe): non	2
Water Temperature (°C): 12.54	Air Temperature (°C): 3	pH: 5.95	Dissolved Oxygen (mg/l): 3.87
Specific Conductance(µS/cm): 1ス8	Turbldity (NTU): 9.87	ORP (mV): 236.8	Dissolved Oxygen (%): 37,9
Ambient Conductance(µS/cm): 97	Odor: Anoxic Sheen (Y/N): N	Color: brown	Last date of Calibration: 6/9/15
Defined Channel (Y/N): Notes: M	ore defined DS away from	m beaver dam	Thalweg Denth @ CL (m): 0.85
Flow (Y/N): Notes: 5	at 0-5 m at RB: Stream Substrate:	Aquatic Habitats	
80 Grass/Sedge (%) 70 G	rass/Sedge (%) (O Organics (%)	Sand Bar	Large Woody Debris
<u>60</u> Shrubs (%) <u>70</u> Sh	nrubs (%) <u>80</u> Silt (%)	Mud Bar	Overhanging vegetation
<u>40</u> Trees (%) <u>50</u> Tr	rees (%)Sand (%)	Gravel Bar	Contiguous Wetlands
Diameter DBH (in.) Diar	neter DBH (In.) Gravel (%)	Riffles	Emergent Plants
Stream Type:	Cobble (%)	Pools	_ <u>X_</u> Submerged Plants
PerennialIntermittent	Ephemeral Boulders (%)	Undercut Banks	
Contract of the second second second	lindude unation versitation, wetted width, w	ater depth, substrate, and	aquatic habitats)
Submerged/emergent	Include riparian vegetation, wetted width, w 3, 37 m Io. 25 m mod	ater depth, substrate, and	Beaver complet US. Defined Channel DS.
STREAM PROFILE: Cross Sectional at Crossing Submerged/emergent vi STREAM PROFILE: Plan View (include direction NORTH: Po Abm Abm Abm Abm Abm Abm Abm Abm	(Include riparian vegetation, wetted width, w 3, 37 m Io. 25 m rowd eq., a of flow, centerline, distances from centerline a bes ver da flow TSlands flow TSlands pp	photo locations, sample	equaticitabilitits) WWW Beaver complet US. Defined Channel DS. positions by gear (ype and ROW)

Feature ID: F8677008

METHODS ATTR Minnow Traps (No. of Minnow Date & Time in: (mm/dd/yyyy) Date & Time our (mm/dd/yyyy)	Alburtes Y/N): Y/N):	Hook and Line (Y/N): Date & Time in: (mm/dd/yyyy) No. of lines in water: Time lines in water:	A Beach Sein Date &Tim (mm/dd/y No. of pass Reach Len	e (Y/N): <u>4/A</u> e In: vvv) ses: gth (m):	Fyke Net (Y/N): Date & Time in: (mm/dd/yyyy) Date & Time out: (mm/dd/yyyy)	Hoop Net (Y/N): //A Date & Time In: (mm/dd/yyyy) Date & Time out: (mm/dd/yyyy)
EF (Y/N): N	EF Start Tim		End Time:	EF Time (se	conds):	EF Reach Length (m):
Current (A):		Volts (V):	Power (W)	/	Sampling Efficiency (% o	of sample reach): (amp/x volt:
FISH OBSERVAT ID (Seq. Num)	Gear Type	Species	Total Length (mm)	Life Stage	Disposition (Dead or Alive)	Picture No.
		s. (nog		aduls	t alove	Maj
- 0 - - - d	ne from site is multiple tussoc own str t le	g observa s a larg e small k/shrub eam, c ss thepac influe	ton e beaver chann island hannel hed by ned	comple; els sa s becom beau	r w/ bla eparated es nor a er pond	oded veg by e defined
AISCELLANEOU:	S POINTS (if applica	ble)	scription: N/Λ		the states	
oint ID:	NA	De	scription: //	A,	1	
Field Crew Chief:	S	Field Tech	Scientist/	2 fast	Technical Lead:	0

This form is to be completed before leaving the field site.

Feature ID: <u>F8671008</u> FT #<u>NY175</u> Date: <u>6/14/2015</u>

For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

- Was ADF&G contacted before conducting any work in this area?
- Site Description complete? (Every cell must have entry or N/A)
- Were all photos taken and labeled correctly?

2. Physical/Chemical Attributes

- Calibration performed prior to sampling?
- b Water quality data within expected ranges?
 - □ pH: 4.0 10.0
 - □ NTU: 0 3000
 - □ DO (mg/L): 1.0 15.0
 - □ Temp.: 1.0 19.0
 - □ Specific Conductance: 20 1500
- □ If outside expected ranges, was sample re-taken?
- Are units correct?

3. Stream Profile

- D Stream profile view sketch included?
- Stream profile view captures water depth and wetted width?
- Stream profile view captures where efforts were made to capture fish?
- Plan view sketch included?

4. Methods Attributes

- Dethods attributes complete? (Every cell must have entry or N/A)
- Were methods used adequate (explanation needed if no methods selected)?

5. Electrofishing Attributes

- Are units correct?

Feature ID: F8677008

6. Fish Observations

- Are all fish captured/observed recorded in the Fish Observation table?
- Are units correct? (Total Length (mm))
- Were adequate photos taken of fish captured? (Take a photo if in doubt)

7. General

- Feature ID and Field Target # are consistent on data forms, logbook entries, photos, and maps?
- All additional data in logbook captured on data form and additional photos noted?
- Were all additional comments on stream habitat, etc. recorded on data form?
- Was any gear missing/damaged for this survey or did you have any problems that should require resampling of this stream for an adequate survey effort?

By signing below, I verify that all field data for this site has been verified for accuracy and completeness.

Fisheries Biologist (print)

SIgnature

Field Crew Chief (print)

Signature



P_F86TI008_001_US LOOKING US AT PLX

6/14/2015 NK175



P_F86TI008_002_DS LOOKING DS AT PLX

6/14/2015 NK175





P_F86TI008_005_AUS AERIAL PHOTO LOOKING US

6/14/2015 NK175



P_F86TI008_006_ADS AERIAL PHOTO LOOKING DS

		Target Name: Featur	: UNNAM re ID: F8	AED S 6T100	STREAM 8	M 094		Chukchi S	ARCTIC O	CEAN Beaufort Sea	
	4							BERING SEA	ALA Bethel And	SKA Fairbanks chorage <i>GULF OF ALASKA</i> Kodiak	eau
										PACIFIC OCEAN	
		P_F367T003_f N P_F367T003_604_F	002_DS IK175 RB	/₽ 20 0	F83511008_000	3.113					a state of the sta
		P_FSSTIDDS									
											大の語言大学
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LEGEND 2015 Fish Survey Location	BU	Burbot	SA(II)	Sal	monid (Lin	Ispecifi	ed)				
F Fish Observed	CH	Chinook Salmon	SC(U)	Sci	ulpin (Unst	Decified	l)			Feet	
F No Fish Observed	СО	Coho Salmon	SS	Slir	ny Sculpin	1	-		0 50 Lilii) 100 150 200)
Photo Point	DV	Dolly Varden	ST(U)	Stie	ckleback (l	Unspec	ified)				
Species Observed	NS	Ninespine Stickleback		Th	eespine S	tickleb	ack o Socoli	o Informatio	U 1	0 ∠0 30 40 50 Meters	
AB Alaska Blackfish	RT	Rainbow Trout	003	гIS	n Observa	uon, N	o specie	s mornatio	ווע		
AG Arctic Grayling											
ALA	ASKA	LNG		ICS			2015	ALASKA FISH FIELD SUF	LNG RVEY LOCAT	IONS	
NOTES: Concept Information - Confidential. Produced by Alask collected data on the date of issue: it is considered reli	a LNG team. T able only at the	The information used to create this product is a scale at which the data was created and the scale at which the data was created and the scale at th	based on the	СНЕСК	PROJECTION DA	NTUM	CONTRACTOR NAI	ME		MAP NUMBER	REV.
the map was published. This drawing is solely prepare team assumes no liability to any other party for any rep at full scale (100%) in order for the scale to remain corr	for use by the resentations co	e contractual Alaska LNG team partners and the ntained in these drawings. This map must be p	e Alaska LNG rinted/viewed	APPR.	AK 4 scale 1:2,000	DATE 15 C	Oct 2015	AECON PROJECT NUMBER 26221392	ORIG.PAGE SIZE	Page 12 of 86	A

Date: 6/10/15 Investigators: 505, KAA, NJS	Team No.: F86	Feature ID: F8671007
Stream Name: Unamed Stream		Stream ID: NK174,5
Pipeline Milepost: 740, 4 Stream found as expected (Y/N): Y		Hwy MP (N/A If hell accessed): NA
Latitude: 41°22'58,4768 N Longitu	de: 150° 48	(25,9201 6)
Logbook No.: Logbook Page No.: 3-18 Total Fish Caught: 55 2	Fish Mortalities:	Total Photos: 7
US @ CL DS @ CL RB to LI	3@ CL	LB to RB@ CL
Pic No.: P-F8.6T1007-001-US Pic No.: P-F86T1007-002 DS Pic No.:	P-18671007-0	23_LP Pic No.: P-F86T1207_034_RIS
Other P-F8611007-005-Aus - acrial ystram		
Pic No(s): P-F&I TOOP-006-ADS - aerial dawnstre	am	
PHYSICAL/ CHEMICAL ATTRIBUTES		
Weather (Describe): Parthy cloudy Precipitation (Describe): Non	a cure
Water Temperature (°C): 9,59 Air Temperature (°C): 20	pH: 6.16	Dissolved Oxygen (mg/l):
Specific Conductance(µS/cm): 30 Turbldity (NTU): 0,70	ORP (mV): 168.4	Dissolved Oxygen (%): 93.8
Ambient Conductance(µS/cm): 9,3 Odor: 1000 Sheen (Y/N): N	Color: Clear	Last date of Calibration: 6/9/20/5
Defined Channel (Y/N): Notes: Well below bunching	N	Thalwee Denth @ CI (m): 2
Riparian Veg at 0-5 m at LB: Riparian Veg at 0-5 m at RB: Stream Substrate:	Aquatic Habitats	Insure Bochen G or finth 3
Grass/Sedge (%) Grass/Sedge (%) Organics (%)	Sand Bar	Large Woody Debris
20_Shrubs (%) 10_2 Shrubs (%) _20_Slit (%)	Mud Bar	Overhanging vegetation
$\frac{50}{24}$ Trees (%) $\frac{40}{24}$ Trees (%) $\frac{50}{24}$ Sand (%)	Gravel Bar	Contiguous Wetlands
Diameter DBH (in.)Diameter DBH (in.)Gravel (%)	Riffles	Emergent Plants
Stream Type:	Pools	Submerged Plants
PerennialIntermittentEphemeralBoulders (%)	_ <u></u> Ondercut bain	N3
STREAM PROFILE: Cross Sectional at Crossing functude riparian vegetation, wetted width, wa	iter depth, substrate, an	d aquatic habitats)
	1 11 11 120	h Du i hai
E JE ZIMAYAN VA	NE MISI	P Both banks :
EBERT MAKE	1 Kep	P. Both banks : Jense herb layer
EPERINA MAR	1 Vep	P Both banks : Jense herb layer - alder trees
EPER Mar No	A A A A A A A A A A A A A A A A A A A	P Both banks : Jense herb layer - alder trees
EPER C.64 m	We we	P Both banks : Jense herb layer - alder trees - not many shrubs
EPERMINE O.64 m	We p	P Both banks : Jense herb layer - alder trees - not many shrubs
CPC/MARK O.64 m Gravei sand Sh	imegal overhang	P Both banks: Jense herb layer - alder trees - not many shrubs mg woody debris
CPC Martine O.64 m Gravei sand Sh	imegad overhang	P Both banks: Jense herb layer - alder trees - not many shrubs mg woody debris
STREAM PROFILE: Plan View (include direction of flow, centerline, distances from centerline)	bine gad over hang	P Both banks: Jense herb layer - alder trees - not many shrubs Mg woody Jebns
STREAM PROFILE: Plan View (include direction of flow, centerline, distances from centerline NORTH:	I muged overhang	P Both banks: Jense herb layer - alder trees - not many shrubs Mg woody Jebns e locations by gear type and ROW)
STREAM PROFILE: Plan View (include direction of flow, centerline, distances from centerline Plow J	bine gad over hang	P Both banks : Jense herb layer - alder trees - not many shrubs Mg wood y Jebn's e locations by gear type and ROW!
STREAM PROEILE: Plan View (include direction of flow, centerline, distances from centerline NORTH: Flow	Integral overhang	P Both banks: Jense herb layer - alder trees - not many shrubs Mg woody Jebns elocations by gear type and ROW)
STREAM PROFILE: Plan View (include direction of flow, centerline, distances from centerline NORTH: Flow J MT3	bine gad over hang	P Both banks: Jense herb layer - alder trees - not many shrubs Mg wood y Jebns e locations by gear type and ROW!
STREAM PROFILE: Plan View (include direction of flow, centerline, distances from centerline NORTH:	photo locations, sample	P Both banks: Jense herb layer - alder trees - not many shrubs Mg wood y debns elocations by gear type and ROW)
STREAM PROFILE: Plan View (include direction of flow, centerline, distances from centerline NORTH: Hben Read Hben Read Read Read Read Read Read Read Read	photo locations, sample	P Both banks: Jense herb layer - alder trees - not many shrubs Mg wood y Jebns e locations by gear type and ROW)
STREAM PROFILE: Plan View Include direction of flow, centerline, distances from centerline NORTH: How J How J How J How J How J	EF	P Both banks: Jense herb layer - alder trees - not many shrubs Mg wood y debns elocations by gear type and ROW!
STREAM PROFILE: Plan View (include direction of flow, centerline, distances from centerline NORTH:	photo locations, sample	P Both banks: Jense herb layer - alder trees - not many shrubs Mg wood y Jebns e locations by gear type and ROW)
STREAM PROFILE: Plan View (Include direction of flow, centerline, distances from centerline NORTH:	EF	P. Both banks: Jense herb layer - alder trees - not many shrubs Mg wood y debris e locations by gear type and ROW!
STREAM PROFILE: Plan View (include direction of flow, centerline, distances from centerline NORTH:	photo locations, sample	P Both banks: Jense herb layer - alder trees - not many shrubs Mg wood y Jebns e locations by gear type and ROW)

Feature ID: FR6T1007

Current (A) Call Control (M) Call C	METHODS ATTE Minnow Traps (No. of Minnow Date & Time in: (mm/dd/yyyy) Date & Time out (mm/dd/yyyy) ELECTROFISHIN EF (Y/N): Duty Cycle	HBUTES Y/N: $YTraps Set: 3b/10/2015142014201420EF Start Tir25$	Hook and Line (Y/N): Date & Time in: (mm/dd/yyyy) No. of lines in water: Time lines in water: me: 345 EF Er Erequency (Hz):	A Beach Sein Date & Tim (mm/dd/y No. of pass Reach Leng Ind Time: 405	e (Y/N): NA e In: vvv) es: pth (m): EF Time (seco	Fyke Net (Y/N): Date & Time In: (mm/dd/yyyy) Date & Time out: (mm/dd/yyyy) Date & Time out: (mm/dd/yyyy) Date & Time out: (mm/dd/yyyy) Exampling Efficiency (W = 5)	Hoop Net (Y/N): A A/A Date & Time in: (mm/dd/yyyy) /. Date & Time out: (mm/dd/yyyy) EF Reach Length (m): 6 /
PSH DISERVATIONS ID (See, Num) Gear Type Species Total Length (Imm) Life Stage (Journal of Alive) Picture No. 092 v.3. pbs 609 v.a. adult alur # P.F.S.64.002.007 of F 092 v.3. pbs 609 v.a. adult alur # P.F.S.64.002.007 of F 092 v.3. pbs 609 v.a. adult alur # P.F.S.64.002.007 of F 092 v.3. pbs 609 v.a. adult alur # P.F.S.64.002.007 of F 092 v.3. pbs 609 v.a. adult alur # P.F.S.64.002.007 of F 092 v.3. pbs 609 v.a. adult alur # P.F.S.64.002.007 of F 092 v.3. pbs 709 v.a. adult alur # P.F.S.64.002.007 of F - MT I and MT2 were faper form bears - MT J bad no fish + was intend + Soakhy - Shallow narrow stream surrounded by dense Werbeens vegetatom - Baar pad DS of DS corndor MISCELLANEOUS POINTS (fapplicable) Point ID: NA Description: NA	Current (A):	2.1	Volts (V):	Power (W)	1050	Sampling Efficiency (% of	(amp x volts)
NOTES (Any Reditional information) - two frog observations - MT I and MT2 were fragerit from bears - MT I and MT2 were fragerit from bears - MT J and MT bears - MT J and MT bears - MT J be	FISH OBSERVAT	CONS Gear Type V、S、 bb5 V、S、 bb5	Species Front	Total Length (mm) Ma Ma	Life Stage (Juvenile or Ac adult adult	cuit) Disposition (Dead or Alive) t alive t alive	Picture No. # P_F86+1007_007_FF
NOTES (any additional information) - two frog observations - MT I and MT2 were report from bears - MT J and MT2 were report from bears - MT J had no fish + was intact + Soaking - shallow narrow stream surrounded by dense heibaceons vegetation - Beaver point DS of DS corridor MISCELLANEOUS POINTS ((rapplicable) Point ID: NA Description: NA							
- Beauer pand DS of DS corridor MISCELLANEOUS POINTS (If applicable) Point ID: NA Description: NA	NOTES (any add - tw - N - M - She	tional information o $frogT$ IT JT JT Jhf $hhhhhhhh$	and MT2 and MT2 and no row streams vealta	uere 1 fish + 1 hm Sur	apart 1 was in rounded	from bear tact t by de	-s Soakhy nse
	- Bea MISCELLANEOUS Point ID:	S POINTS (if applic	able)	DS cor	A		

This form is to be completed before leaving the field site.

Feature ID: F8671007 FT # NK174.5 Date: 6/14/2015For all items not checked, please provide detailed explanation in the notes section of data

1. Site Description

form.

- Was ADF&G contacted before conducting any work in this area?
- b Site Description complete? (Every cell must have entry or N/A)
- Were all photos taken and labeled correctly?

2. Physical/Chemical Attributes

- Calibration performed prior to sampling?
- heta Physical/Chemical attributes complete? (Every cell must have entry or N/A)
- U Water quality data within expected ranges?
 - □ pH: 4.0 10.0
 - □ NTU: 0 3000
 - □ DO (mg/L): 1.0 15.0
 - □ Temp.: 1.0 19.0
 - □ Specific Conductance: 20 1500
- If outside expected ranges, was sample re-taken?
- Are units correct?

3. Stream Profile

- Stream profile view sketch included?
- Stream profile view captures water depth and wetted width?
- Stream profile view captures where efforts were made to capture fish?
- Plan view sketch included?

4. Methods Attributes

- Methods attributes complete? (Every cell must have entry or N/A)
- Were methods used adequate (explanation needed if no methods selected)?

5. Electrofishing Attributes

- Difference Electrofishing attributes complete? (Every cell must have entry or N/A)
- Are units correct?
Feature ID: F8677007

6. Fish Observations

- Are all fish captured/observed recorded in the Fish Observation table?
- Are units correct? (Total Length (mm))
- Were adequate photos taken of fish captured? (Take a photo if in doubt)

7. General

105

- Feature ID and Field Target # are consistent on data forms, logbook entries, photos, and maps?
- All additional data in logbook captured on data form and additional photos noted?
- Were all additional comments on stream habitat, etc. recorded on data form?
- Was any gear missing/damaged for this survey or did you have any problems that should require resampling of this stream for an adequate survey effort?

By signing below, I verify that all field data for this site has been verified for accuracy and completeness.

Fisheries Biologist (print)

SIgnature

N

Field Crew Chlef (print)

Signature



P_F86TI007_002_DS LOOKING DS AT PLX



P_F86TI007_003_LB LOOKING AT LB AT PLX

6/14/2015 NK174.5



P_F86TI007_004_RB LOOKING AT RB AT PLX

6/14/2015 NK174.5



P_F86TI007_005_AUS AERIAL PHOTO LOOKING US 6/14/2015 NK174.5



P_F86TI007_006_ADS AERIAL PHOTO LOOKING DS



P_F86TI007_007_FR PHOTO OF WOOD FROG



SITE DESCRIPTION	· 出版:「一個」 一個」 一個」 一個」 一個」 一個」 一個」 一個」	新学校	all the section						
Date: 6/10/2015 Investigate	ors: SLS, KAH.	NJS	Team No.: F86	Feature ID: F86 T1006					
Stream Name: Unnamed	stream			Stream ID: NK 174.4					
Pipeline Milepost: $740,3$ Stream f	ound as expected (Y/N):	Y		Hwy MP (N/A if heli accessed): 1/A					
Latitude: 61° 23' 00.687	9 N	Longitu	de: 150°4	81 18,8544 W					
Logbook No.: Logbook Page No.: 3 - 8 Total Fish Caught: O Fish Mortalities: Total Photos: 6									
US@CL Pic No.: P-F86T1006-001-US Pic No.: P-F86T1006-002-DS Pic No.: P-F86T1006-003_LB LB to RB@CL Pic No.: P-F86T1006-004-RR									
Other alrial upstream :	P-F86T1006-00	5-Aus							
Pic No(s) .: aerial lownstrea	m = P-F86T1001	6.006 AZ	>5						
PHYSICAL/ CHEMICAL ATTRIBUTES									
Weather (Describe): Sunny		Precipitation (Describe): no	me					
Water Temperature (°C): 7,5	Air Temperature (°C):	17	pH: 5-165	53 Dissolved Oxygen (mg/l): 11, 89					
Specific Conductance(µS/cm): 246	Turbidity (NTU): 2	.95	ORP (mV): 222	Dissolved Oxygen (%): 99,4					
Ambient Conductance(µS/cm): 164	Odor: none She	een (Y/N): N	Color: clear	- Last date of Calibration: 6/09/15					
Defined Channel (Y/N): Notes: 5	hallow w/ whater	below ba	AKfull	Wetted Width (m): 56					
Flow (Y/N): Notes:	510W at 0-5 m at RB: Stream 9	ubstrate:	Aquatic Habitats	inaiweg Deptn @ CL (m):					
90 Grass/Sedge (%) 80 G	rass/Sedge (%) 5	Organics (%)	Sand Bar	Large Woody Debris					
$\frac{20}{40}$ Shrubs (%) $\frac{40}{5}$ Shrubs (%)	nrubs (%) 40	_Silt (%)	Mud Bar	Overhanging vegetation					
<u>50</u> Trees (%) <u>40</u> T	rees (%) 50	Sand (%)	Gravel Bar	Contiguous Wetlands					
Dlameter DBH (in.)Dlameter DBH (in.)	neter DBH (in.) 60	_Gravel (%)		Emergent Plants					
Stream Type:	_0_	Cobble (%)	Pools	Submerged Plants					
PerennialIntermittent	Ephemeral	Boulders (%)	Undercut Ba	nks					
STREAM PROFILE: Cross Sectional at Crossing (include riparian vegetation, wetted width, water depth, substrate, and aquatic fiabilitats)									
NORTH: A Plan cmr3	P	P P F	PLX 4	bm					

Feature ID: F86T1006

lo. of Minnow Pate & Time in: nm/dd/yyyy) Pate & Time ou	Traps Set: - 6/10/2015 - 1315 - 14/2015	Hook and Line (Y/N): Date & Time in: (mm/dd/yyyy) No. of lines in water: Time lines In water:	NA	Beach Seine (Date &Time I (mm/dd/yyy) No. of passes Reach Length	(Y/N): ,,	Fyke Net (Y/N): Date & Time in: (mm/dd/yyyy) Date & Time out: (mm/dd/yyyy)		Hoop Net (Y/N): Date & Time In: (mm/dd/yyyy) Date & Time out: (mm/dd/yyyy)	
nm/dd/yyyy)	1400	國國語書語的語言語言語				GROUPLAN		The second s	
F (Y/N):	EF Start Ti	me: 1245	EF End Time:	1305	EF Time (se	conds):	125 E	F Reach Length (m): 30.5	
uty Cycle:	25	Frequency (Hz) :	60	Waveform:	PDC	Sampl	ing Efficiency (% of	sample reach): 100	
urrent (A):	0.9	Volts (V): 400	- 500	Power (W):	360 -	450		(amp x vo	
SH OBSERVAT	TIONS	Real and the second							
(Seq. Num)	Gear Type	Species		fotal Length mm)	Life Stage (Juvenile or)	Adult)	Disposition (Dead or Alive)	Picture No.	
-001-	vis. obs	s. breg		n/a	adal	*	alive	ATA SIS	
	1	- 0	1		1			1	
			1						
						1			
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_									
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OTES (any add	litional information	States Salar and			in the second second	14	PARTY CONTRACTOR		
- fr - tr - SRP	no mil	al observe mon tro well-def	Pt de	scs Stoyed Channel	by bee	r rs;	NE of	empty target (KAM too	
- (a	nverages		74,5	+ 17	s do	UNSY	NRAM		
ISCELLANEOU	IS POINTS (if applic	cable)					AUT A		
pint ID: F	DOILTXX	<u></u>	Description:	Well-der	wed St	Hean	~ IVE of	Jarget 174,4	

This form is to be completed before leaving the field site.

Feature ID: $\underline{F84} \pm 1006$ FT # $\underline{M} \underline{K} \pm 74.4$ Date: $\underline{b} \pm 14 \pm 2015$ For all items not checked, please provide detailed explanation in the notes section of data

1. Site Description

form.

- Was ADF&G contacted before conducting any work in this area?
- \boxtimes Site Description complete? (Every cell must have entry or N/A)
- Were all photos taken and labeled correctly?

2. Physical/Chemical Attributes

- Calibration performed prior to sampling?
- か Physical/Chemical attributes complete? (Every cell must have entry or N/A)
- ☑ Water quality data within expected ranges?
 - □ pH: 4.0 10.0
 - □ NTU: 0 3000
 - □ DO (mg/L): 1.0 15.0
 - □ Temp.: 1.0 19.0
 - □ Specific Conductance: 20 1500
- ✓ □ If outside expected ranges, was sample re-taken?
 - Are units correct?

3. Stream Profile

- ☆ Stream profile view sketch included?
- atural for the second state is the second s
- \bigtriangledown Stream profile view captures where efforts were made to capture fish?
- Plan view sketch included?

4. Methods Attributes

- Methods attributes complete? (Every cell must have entry or N/A)
- Were methods used adequate (explanation needed if no methods selected)?

5. Electrofishing Attributes

- Electrofishing attributes complete? (Every cell must have entry or N/A)
- Are units correct?

Feature ID: F867006

6. Fish Observations

- Are all fish captured/observed recorded in the Fish Observation table?
- Are units correct? (Total Length (mm))
- B Were adequate photos taken of fish captured? (Take a photo if in doubt)

7. General

11

- Feature ID and Field Target # are consistent on data forms, logbook entries, photos, and maps?
- All additional data in logbook captured on data form and additional photos noted?

Were all additional comments on stream habitat, etc. recorded on data form?

Was any gear missing/damaged for this survey or did you have any problems that should require resampling of this stream for an adequate survey effort?

By signing below, I verify that all field data for this site has been verified for accuracy and completeness.

Fisheries Biologist (print)

Signature

Field Crew Chief (print)

Signature



P_F86TI006_001_US LOOKING US AT PLX

6/14/2015 NK174.4



P_F86TI006_002_DS LOOKING DS AT PLX



P_F86TI006_003_LB LOOKING AT LB AT PLX

6/14/2015 NK174.4



P_F86TI006_004_RB LOOKING AT RB AT PLX



P_F86TI006_005_AUS AERIAL PHOTO LOOKING US

6/14/2015 NK174.4



P_F86TI006_006_ADS AERIAL PHOTO LOOKING DS



NOTES: Concept Information - Confidential. Produced by Alaska LNG team. The information used to create this product is based on the collected data on the date of issue; it is considered reliable only at the scale at which the data was created and the scale at which the map was published. This drawing is solely prepared for use by the contractual Alaska LNG team partners and the Alaska LNG team assumes no liability to any other party for any representations contained in these drawings. This map must be printed/viewed at full scale (100%) in order for the scale to remain correct.

DRAWN ICS CHECK	ALASKA LNG 2015 FISH FIELD SURVEY LOCATIONS										
	PROJECTION	DATUM	CONTRACTOR NAI	ME	MAP NUMBER	REV.					
TCS	AK 4	NAD83		AECON		Page 14 of 86	А				
	SCALE	DATE		PROJECT NUMBER	ORIG.PAGE SIZE						
APP R.	1:2,000	15 O	ct 2015	26221392							

SITE DESCRIPTION		此业和	就是安排自计。							
Date: 6/15/2015 Investigate	ors: SCS NJS KA	H ADF	Team No.: F86	Feature ID: F8671010						
Stream Name:	Cteen	1		Stream ID: N/K 174.2						
Pipeline Milepost: 7.39 2 Stream f	ound as expected (Y/N):	Y		Hwy MP (N/A If heli accessed):						
Latitude: 61° 231 17, 2842 N Longitude: 150° 47' 23, 6624 W										
	C 10 Total Fish Courd	at CX	Fich Mortalities	A //A Total Photos:						
Logbook No.: Logbook Page No.:		RB to II		LB to BB@ CL						
Pic No.: P-F86T 1010_001_US Pict	No.: P-F8671010-00	2-DS Pic No .:	P. F86T1010-00:	3-LB PICNO .: P-F86T1010-004-RB						
Other alrial upstream = P-F8671010-005-AUS										
Pic No(s) .: aeril Langrea	m: P_F86T1010-	006 - ADS	5							
PHYSICAL/ CHEMICAL ATTRIBUTES										
Weather (Describe): Sunny, h	ot	Precipitation (Describe): Nons	2						
Water Temperature (°C): 11.6	Air Temperature (°C):	22	рн: 4.88	Dissolved Oxygen (mg/l): 9.35						
Specific Conductance(µS/cm): 37	Turbidity (NTU):	34	ORP (mV): 216.	5 Dissolved Oxygen (%): 55.5						
Amblent Conductance(µS/cm): 28	Odor: None Shi	een (Y/N): N	Color: (loar	Last date of Calibration: 6/11/2015						
Defined Channel (Y/N): Notes:	Very little wa	44		Wetted Width (m): 46 Thalway Denth @ Cl (m): 04						
Flow (Y/N): Notes: Riparian Veg at 0-5 m at LB: Riparian Veg	at 0-5 m at RB: Stream	Substrate:	Aquatic Habitats							
70 Grass/Sedge (%) 70 G	Grass/Sedge (%) 5	Organics (%)	Sand Bar	Large Woody Debris						
70 Shrubs (%) 70 s	hrubs (%) 10	Silt (%)	Mud Bar	Overhanging vegetation						
<u>20</u> Trees (%) <u>20</u> T	rees (%) <u>30</u>	Sand (%)	Gravel Bar	Contiguous Wetlands						
5_Diameter DBH (in.) 5_Dia	meter DBH (in.) 60	Gravel (%)	Riffles	\underline{X} Emergent Plants						
Stream Type:	-0	_Cobble (%)	Pools	Submerged Plants						
PerennlalIntermittent	Ephemeral	Boulders (%)	Undercut Bar	iks						
STREAM PROFILE: Cross Sectional at Crossing	(include riparian vegetation,	weited width, wa	iter depth, substrate, a	nd aquatic habitats)						
C V.VIII	(P)	M	Elen	100158						
S RANK	Co	XX	AAS	- Sprint trees						
ZIZY GULT		ANY	1-47	- Gren / Ho						
1 to Sult		/ Y WI		- alter 1 slack						
	1 .46m		t	- rose dominant sara						
	a let of a parts	I.OYm d	opth	- horse-tail						
	grace / sand			-fern therbs						
				- GEASS +						
				- Nettle						
STREAM PROFILE: Plan View (include directio	n of flow, centerline, distance	s from centerline	, photo locations, samp	le locations by gear type and ROW)						
NORTH:	low		/							
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46m y	- 46m									

Minnow Traps ((Y/N):	Hook and Line (Y/N)	NA	Beach Seine (Y	/N): Δ Δ	Fyke N	et (Y/N): ∧ /	Hoop Net (Y/N):
to. of Minnow	Traps Set: 3	Date & Time in: (mm/dd/yyyy)	1	Date &Time in (mm/dd/yyyy)	:	Date &	Time in:	Date & Time in: (mm/dd/yyyy)
Date & Time in: mm/dd/ww/)	6/14/2015	No. of lines in water		No. of passes:		Date & Time out:		Date & Time out:
Date & Time ou	1:6/15/2015	Time lines in water:		Reach Length	(m):	(inity of		
LECTROFISHIN	IG ATTRIBUTES	的《书本》 《自己	新一教 的此	的问题的 科	林田市 (3)		()任命书書()	
F (Y/N):	EF Start T	ime:	EF End Time:	1	EF Time (se	econds)		EF Reach Length (m):
urrent (A):	/	Frequency (Hz) : Volts (V):		Power (W):		Sampli	ng Efficiency (% o	of sample reach): (amp x vo
ISH OBSERVAT	TIONS		THE REAL PROPERTY.					
) (Seq. Num)	Gear Type	Species	т ()	otal Length mm)	Life Stage (Juvenile or	Adult)	Disposition (Dead or Alive)	Picture No.
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OTES (any add	itional informatio	U LAN AND AND AND AND AND AND AND AND AND A		[37] [2] [2] [2] [3] [3] [3] [3] [3] [3] [3] [3] [3] [3			的海上,由于	
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	Well	are Direct.		1.40	- 14		1 h	. andar he
	There	is	flow -	+ wate	1 44	thong	IT KN	a contract tend
	b. F	much	1 the	chan	nel's	is	dried	out +
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	Can SI	3,73 00	graver	DAIS	- P10	1-5	J	0 - 0
	them	P						
IISCELLANEOU	S POINTS (if appli	cable)		and the state	的原则			
IISCELLANEOU	S POINTS (if appli	cable)	Description:	NA				

This form is to be completed before leaving the field site.

Feature ID: F86 7 1010 FT # NK(74, 2 Date: 6/16/2

For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

- Was ADF&G contacted before conducting any work in this area?
- Site Description complete? (Every cell must have entry or N/A)
- Ø Were all photos taken and labeled correctly?

2. Physical/Chemical Attributes

- M Calibration performed prior to sampling?
- Physical/Chemical attributes complete? (Every cell must have entry or N/A)
- Water quality data within expected ranges?

pH: 4.0 - 10.0

V NTU: 0 - 3000

₩ Temp.: 1.0 – 19.0

Specific Conductance: 20 - 1500

 $\mathcal{N} \bowtie$ If outside expected ranges, was sample re-taken?

Are units correct?

3. Stream Profile

- Stream profile view sketch included?
- X Stream profile view captures water depth and wetted width?
- Stream profile view captures where efforts were made to capture fish?
- A Plan view sketch included?

4. Methods Attributes

- ⅋ Methods attributes complete? (Every cell must have entry or N/A)
- Were methods used adequate (explanation needed if no methods selected)?

5. Electrofishing Attributes

- Electrofishing attributes complete? (Every cell must have entry or N/A)
- $\mathbf{A}_{\mathbf{k}}$ Are units correct?

Feature ID: F86T1010

6. Fish Observations

- Are all fish captured/observed recorded in the Fish Observation table?
- Were adequate photos taken of fish captured? (Take a photo if in doubt)

7. General

- Feature ID and Field Target # are consistent on data forms, logbook entries, photos, and maps?
- 1 All additional data in logbook captured on data form and additional photos noted?
- Sk. Were all additional comments on stream habitat, etc. recorded on data form?
- Was any gear missing/damaged for this survey or did you have any problems that should require resampling of this stream for an adequate survey effort?

By signing below, I verify that all field data for this site has been verified for accuracy and completeness.

Fisheries Biologist (print)

Signature

Field Crew Chlef (print)

Skinature



P_F86TI010_001_US LOOKING US AT PLX

6/15/2015 NK174.2



P_F86TI010_002_DS LOOKING DS AT PLX

6/15/2015 NK174.2





P_F86TI010_004_RB LOOKING AT RB AT PLX



P_F86TI010_005_AUS AERIAL PHOTO LOOKING US

6/15/2015 NK174.2



P_F86TI010_006_ADS AERIAL PHOTO LOOKING DS

and the			Target Name Featu	e: UNNAN ure ID: F8	MED S 6TI01	TREAM 0			Chukchi S	ARCTIC O	CEAN Beaufort Sea	
								12° - A	BERING SEA	ALA Bethel And	Fairbanks borage GULF OF ALASKA Kodiak PACIFIC OCEAN	uneau
								PJF PJF2 P	a 2001/002 E FSGUIDALOO2 P.FSGUIDALOO P.FSGUIDALOO		oes NK174.1	
			P_FEETIDIQ NI P_FEETIDIQ	002.08 K174.2		EETTD10_003	_LB 001_U3					
		1 24										
												× A
LEGEN 2015 Fi F • Species	D sh Survey Location Fish Observed No Fish Observed Photo Point	BU CH CO DV NS	Burbot Chinook Salmon Coho Salmon Dolly Varden Ninespine Stickleback	SA(U) SC(U) SS ST(U) TS	Sal Scu Slir Stic Thr	monid (Un ulpin (Unsp ny Sculpin ckleback (L reespine St	specifie becified) Jnspeci tickleba	ed)) fied) ick		0 50 LIIII IIIII 0 1	Feet 0 100 150 20 0 100 150 20 0 100 150 20 0 20 30 40 50	00 J
AB AG	Alaska Blackfish Arctic Grayling	O RT	Other Species Not Listed Rainbow Trout	OBS	Fis	h Observat	tion, No) Specie	es Informatio	on	Meters	
NOTES:	AL	ASKA	LNG		ICS CHECK			2015	ALASKA FISH FIELD SUF	LNG RVEY LOCAT	IONS	
Concept Inform collected data of the map was put team assumes i	ation - Confidential. Produced by Ala: on the date of issue; it is considered re ublished. This drawing is solely prepare no liability to any other party for any re	ska LNG team. liable only at th ed for use by th presentations c	The information used to create this product i e scale at which the data was created and the e contractual Alaska LNG team partners and to ontained in these drawings. This map must be	is based on the e scale at which the Alaska LNG e printed/viewed	DESIGN	AK 4	NAD83	CONTRACTOR NAM		ORIG.PAGE SIZE	MAP NUMBER Page 15 of 86	REV.
at full scale (100	u%) in order for the scale to remain co	rrect.			APP R.	1:2,000	15 Oc	ct 2015	26221392	8.5 X 11		

SITE DESCRIPTION	中国 的复数加速度 建设 如果	学校的复数的 中心								
Date: 6/15/2015 Investigato	ITS SS NJS KAH ADF	Team No.: F86 F	eature ID: F86T/011							
Stream Name: 11 a na we d	Stream	St	tream ID: AIK174.1							
Pipeline Milepost: 7.39 6 Stream for	ound as expected (Y/N):	Ĥ	wy MP (N/A If hell accessed): NA							
Latitude: 61° 23' 19.5254 N Longitude: 150° 47' 14.8541										
Logbook No: Logbook Page No: 18-20 Total Fish Caught: Xr (C) Fish Mortalities: 4/Ar Total Photos: /										
Logoook rage rot. D - CO Total Fish Caught. C Fish Wortanties. N - Total Fish Caught.										
Pic No.: P-F86T1011-001-US Pic No.: P-F86T1011-002-DS Pic No.: P-F86T1011-003-LB Pic No.: P-F86T1011-004-RB										
Other aertal upstream. P-FB6TIOII_005-AUS										
Pic No(s) .: aerial damstre	2am P-F86T1011-00	6-ADS								
PHYSICAL/ CHEMICAL ATTRIBUTES										
Weather (Describe): Sunny,	hof Precipitation (Describe): none	9,90							
Water Temperature (°C): 13.06	Air Temperature (°C): 22	рн: 5,43	Dissolved Oxygen (mg/l):							
Specific Conductance(µS/cm): 4(Turbldity (NTU): 1.52	ORP (mV): 187,7	Dissolved Oxygen (%): 99,4							
Ambient Conductance(µS/cm): 3	Odor: NONQ Sheen (Y/N): N	Color: Clear	Last date of Calibration: 6///2015							
Defined Channel (Y/N): Notes:	well below bankfull		Thalweg Depth @ Cl (m): ~ 1.2							
Riparlan Veg at 0-5 m at LB: Riparlan Veg a	at 0-5 m at RB: Stream Substrate:	Aquatic Habitats	manweg beput @ cz (m): 7):13							
60 Grass/Sedge (%) 70 Gr	rass/Sedge (%) <u>/0</u> Organics (%)	Sand Bar	Large Woody Debris							
70 Shrubs (%)	arubs (%) <u>30</u> silt (%)	Mud Bar	Overhanging vegetation							
<u>20</u> Trees (%) <u>30</u> Tr	rees (%) <u>\$0</u> Sand (%)	Gravel Bar	Contiguous Wetlands							
Diameter DBH (in.)Diam	neter DBH (in.) Gravel (%)		Emergent Plants							
Stream Type:	Cobble (%)	Pools	Submerged Plants							
PerennialIntermittent	EphemeralBoulders (%)	Undercut Banks								
STREAM PROFILE: Cross Sectional at Crossing	(include riparian vegetation, wetted width, wa	l iter depth, substrate, and	aquatic habitats)							
- F	CRAR COSEM	-Orl3m dipth gravel	horsetail lem srass nettle alders birch							
NORTH:	Ion now, centerline, distances from centerline,	PINOTO TOCATIONS, SAMPLE	46m							

٠

Feature ID: _________

	Y/N):	Hook and Line (Y/N):	/	each Seine (Y/N	I): /	Fyke N	let (Y/N):	Hoop Net (Y/N):	
No. of Minnow	Traps Set: 3	Date & Time in:		Date & Time in:	1	Date 8	Time/in:	Date & Time in:	
Date & Time in:	6/14/2015	No. of lines in water:	1	to. of passes:	1 9.05	Date 8	k Time out:	Date & Time out:	
mm/dd/yyyy) Date & Time ou	1545 t:6/15/2015	Time lines in water:	F	leach Length (m		(mm/dd//yyyy)		(mm/dd/yyyy)	
mm/dd/yyyy)	1300	in a still appendix of the second water	a service in the second		J.L.	Contractor Sold	and the second second second		
	G ATTRIBUTES	mo:	E End Times		EE Time /	aconda'u		Baseb Langth (m)	
Outy Cycle:		Frequency (Hz) :	r chu rhhe;	Naveform:	EF fille (:	Sampl	ing Efficiency (% of	sample reach):	
Current (A):	1	Volts (V):	F	ower (W):	-	<u>.</u>		(amp x v	
ISH OBSERVAT	TONS	Market Barkston		and dreads		West R		A CALLER AND AND A CALLER	
D (Seq. Num)	Gear Type	Species	Total	Length	Life Stage	Adult)	Disposition	Picture No.	
001	vis. obs	unk	n	la	JUNEM	lile lad.	alie	na	
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	ither the fail with the	A State of the sector is	201 N 10 10 10		111-011-14-1	and the second	HELDER NO. 12 10 10		
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iotes (any add - no - not - thic	Captured Bish (enough K over	possible Sm water p hanging h	for Es	F vm/h	erb	5			
iotes (any add - no - not - thic	Captured Bish (enough K over	possible Sm water p hanging i	for Et	F vm/h	erb	5			
iotes (any add - no - not - thic	Captured Bish (enough K over	possible Sm water p hanging 1	for E	F im/h	erb	5			
IOTES (any add - NO - NO - M. C	captured bish (enough & over	possible Sm Water p hanging h	for E	F im/h	erb	5			
NOTES (any add - M O - M O - MO - MO	captured bish (enough k over	possible Sm water p hanging h	for Et regotat	F m/h	erb	5			
NOTES (any add - NO - NO - NO - Mic Miscellaneou roint ID: roint ID:	Captured Bish (enough K over	possible Sm Water p hanging 1	for Et regulat escription:	F m/h	erb	5			
AISCELLANEOU voint ID: voint ID: Field	Captured Bish (enough K over SPOINTS (If applie N D N F	possible Sm Water p hanging b banging b banging b b b Field	for Et regetat escription: escription:	F m/h NA	erb.	5	Technical		

This form is to be completed before leaving the field site.

Feature ID: F86T1011 FT # NE 174. Date: 6/16/2015

For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

- Was ADF&G contacted before conducting any work in this area?
- ↓ Were all photos taken and labeled correctly?

2. Physical/Chemical Attributes

- □ Calibration performed prior to sampling?
- Physical/Chemical attributes complete? (Every cell must have entry or N/A)
- Water quality data within expected ranges?
 - ₩ pH: 4.0 10.0
 - **V** NTU: 0 3000
 - **DO** (mg/L): 1.0 15.0
 - **V**, Temp.: 1.0 19.0
 - Specific Conductance: 20 1500
- If outside expected ranges, was sample re-taken?
- B Are units correct?

3. Stream Profile

- Stream profile view sketch included?
- ☑ Stream profile view captures water depth and wetted width?
- ₯ Stream profile view captures where efforts were made to capture fish?
- Sc Plan view sketch included?

4. Methods Attributes

- Methods attributes complete? (Every cell must have entry or N/A)
- Were methods used adequate (explanation needed if no methods selected)?

5. Electrofishing Attributes

- Electrofishing attributes complete? (Every cell must have entry or N/A)
- \square_{Λ} Are units correct?

Feature ID: F8677011

6. Fish Observations

- (A) Are all fish captured/observed recorded in the Fish Observation table?
- Were adequate photos taken of fish captured? (Take a photo if in doubt)

7. General

F

Feature ID and Field Target # are consistent on data forms, logbook entries, photos, and maps?

I All additional data in logbook captured on data form and additional photos noted?

Were all additional comments on stream habitat, etc. recorded on data form?

Was any gear missing/damaged for this survey or did you have any problems that should require resampling of this stream for an adequate survey effort?

By signing below, I verify that all field data for this site has been verified for accuracy and completeness.

Fisheries Biologist (print)

Signature

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Field Crew Chlef (print)

Signature



P_F86TI011_001_US LOOKING US AT PLX

6/15/2015 NK174.1



P_F86TI011_002_DS LOOKING DS AT PLX

6/15/2015 NK174.1



P_F86TI011_004_RB LOOKING AT RB AT PLX



P_F86TI011_005_AUS AERIAL PHOTO LOOKING US 6/15/2015 NK174.1



P_F86TI011_006_ADS AERIAL PHOTO LOOKING DS



NOTES: Concept Information - Confidential. Produced by Alaska LNG team. The information used to create this product is based on the collected data on the date of issue; it is considered reliable only at the scale at which the may was published. This drawing is solely prepared for use by the contractual Alaska LNG team partners and the Alaska LNG team partners and team partners and theAlaska LNG team partners and the Alaska

SITE DESCRIPTION		Anton Des Statut	and the same dami law	- intel	law has been a subserver to be					
Date: 6/16/2015 Investigators	: SCS KAH I	NJS ADF	Team No.: [86	Feature I	D: F86T1012					
Stream Name: Talka River				Stream II	NK 173.7					
Pipeline Milepost: 729 3 Stream fou	nd as expected (Y/N):	X NI-	con notes	Hwy MP	(N/A if heli accessed): A/A					
Latitude: 61° 23' 77 821	1" NI	Longitu	de: 1500 2	16	47 0167" 41					
Logbook No.: Logboo	k Page No.: 20-2	3 Total Fi	ish Caught: 17	P	Fish Mortalities:					
		RB to L	B@CL	-	LB to RB@ CL					
Dither P_F867012-005-Aus = Levine upstream [Total of 2003-LB] Pic No.: P-F8671012-004-KB										
Pic No(s): P-F86T1012-005-ADS: acrial downstream Total photos: 9										
PHYSICAL/ CHEMICAL ATTRIBUTES	Service and the service of the	PROPERTY AND		1						
Water Temperature (Sch. 17.2.3	A1- T- (00)	Precipitation (Describe):	l	> 100.1%					
Water remperature (-C): 17, 23	Air Temperature (°C):	35	рн: 6.91	Disso	lived Oxygen (mg/l): 9,63					
Specific Conductance(µS/cm): 48		23	Color: clear	ORP	(mv): 117.5					
Channel Features (describe): 1. 1. 1. 4.	Lau)	Water Conte	sneen (Y/N): AO	Last	ate of Calibration: 6/11/2015					
Wetted Width (m):		Thalweg Den	th @ CL (m):	100	1 100, MUDITUT					
Riparian Veg at 0-5 m at LB: Riparian Veg at 0	-5 m at RB: Stream	Substrate:	Aquatic Habitats	1 11						
60 Grass/Sedge (%) 50 Gras	s/Sedge (%) Ø	Organics (%)	Sand Bar		Large Woody Debris					
<u>50</u> Shrubs (%) <u>50</u> Shru	bs (%) 10	Silt (%)	Mud Bar		Overhanging vegetation					
<u>10</u> Trees (%) <u>10</u> Trees	s (%) 40	Sand (%)	Gravel Bar		Contiguous Wetlands					
<u>3</u> " Diameter DBH <u>3</u> " Diam	neter DBH 70	Gravel (%)			Emergent Plants					
Flow Type:		Cobble (%)	Pools		Submerged Plants					
PerennialIntermittent	Ephemeral	Boulders (%)	Undercut Ban	ks						
STREAM PROFILE: Cross Sectional at Crossing (inc	lude riparian vegetation	, wetted width, wa	ter depth, substrate, an	d aquatic	habitats)					
STREAM PROFILE: Cross Sectional at Crossing (ind	Hand Contraction	sandy gr	ter depth substrate, and the the the the tep banks us /pools; 100 usel	and a guatic	a (ders breweed fern srass fose					
STREAM PROFILE: Cross Sectional at Crossing (inc STREAM PROFILE: Plan View (include direction of MORTH:	Row, centerline, distance	ske	ter depth; substrate, and ter depth; substrate,	d aquatic	by gear type and ROW)					
STREAM PROFILE: Cross Sectional at Crossing (International Stream Profile: Plan View (Include direction of NORTH: NORTH: That flow That flow	lude riparian vegetation	es from centerline	ter depth, substrate, and ter depth, substrate, and the depth, substrate,	daquatic	a (ders breweed fern Srass fose (der Srass fose (der					

Feature ID: F8677012

Minnow Traps (Y/N):	Hook	and Line (Y/N):	/ A	Beach Seine (Y/	N): A/A	Fyke Net ((/N):	Hoop Net (Y/N):
No. of Minnow Traps Set	Date	& Time in:	A	Date & Time in:	/v/	Date & Tin	ne In:	Date & Time in:
) (mm/	(dd/yyyy)	1-	(mm/dd/yyyy)		(mm/dd/y	yyy)	(mm/dd/yyyy)
Date & Time in: 6/15	15 No. 0	f lines in water:		No. of passes:		Date & Tin (mm/dd/v	ne out:	(mm/dd/yyyy)
Date & Time out: 6/0	15 Time	lines in water:	1	Reach Length (r	n):	1 1 1 11		The second second second
(mm/dd/yÿyy) 1130	CLERING IN STREET, SHE	Weiters Are Statistics	ANT HANKING M	Collector and Collection of Collection	a another states and	a should be and	THE REAL PROPERTY OF	I CONTRACTOR OF A CONTRACT OF
ELECTROFISHING ATTRI	BUTES					San Stand and		telle and an arrest and
EF (Y/N):	F Start Time:	230 EF	End Time:	1310	EF Time (se	conds): JC	15 EF Ke	each Length (m):
Current (A): / 2	Volts	(V): //00		Power (W):	DC			(amp x voli
1,3	and the second second	900	Contract Mathematica	THE WE PART THAT	5		CONTRACTOR OF THE OWNER	
FISH OBSERVATIONS			K A CO		Life Stag		Disposition	
Gear Type	Species	Tota	Length (m	m)	(Juvenile	e or Adult)	(Dead or Alive)	Picture No.
Dot vis obs	, vood	100	nla		adu	lt	alive	P-F8671012.007-F
MinnowThe	Slimy	saulpin	76	2	adu	It	abue	ma
MF2 1	Slimy	Supph	76		adus	H	alive	* PLF8671012.00
MT2	Simy	Sulpin	69		adu	It	alive	n/a
MT2	ul		72	,	adal	Ut-	alve	n/a,
vis.obs.	boot	6100	nl	A	Ren	Ut	alive	no
MT 3	sliky S	delph	61		adul	t	alive	n/a
EF	Slimy.	Schlpin	6:	2	AD	NLT	Alive	NA
EF	Slimits	Cutpin	48		ADI	ALT/JUV	AUNTE	*P_F86T1012-009_
EF	SLIMUS SCI	ilpin	39		Jerven	ile	ALIVE	NA
EF	SLimy Sc	in pin	55		AOV	12T/Jur	ALIVE	NA
EF	Slimys	Culpin	75	5	ADU	IT	ALIVE	NA
NOTES (any additional in	formation)	SAL PROPERTY OF			生命律道的 学生	分别的企识	地)等的应用 用	
oblease	d 2	frogs:	raug	ht s	they so	culpi	when A	NY
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- EF - 4	18 mm Som	loin had a	Loris	necmen	lime b	www.	rellases	all e.
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	muddy	+ no	+ lik	ely to	hold	C RISI	h. Watci	analing (P)
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MISCELLANEOUS POINT	S (if applicable)	のないない	に経営	Agenti Actives		the alternation		
Point ID: F86	_	De	escription:	muddy si	te just	east 1	Jun 1	kiver .
Point ID:	na	De	escription		na		U	
Field	-	Field	Scientist	1 1100	CI	Те	chnical	
Crew Chief:	V	Tech	nician: _	Max	ma	Lea	ad:	
	1							

Feature ID: F86TI012

FISH OBSERVAT	IONS (continued)		是它的自然思想。	月29日20月1日日前		(A)(4)的现在分词
ID (Seq. Num)	Gear Type	Species	Total Length (mm)	Life Stage (Juvenile or Adult)	Disposition (Dead or Allve)	Picture No. /NOTES
013	EFIVISUAL	5 Limy Sculpin	NA	ADULT	Alive	Visual onthe na
OIU	EF/Visual	Slimy Schlipin	WA	HDULT	Alive	VisotAt only na
015	EF/VisuAU	Slimit Sculpin	NTA	AOULT	ALIVE	Hisard only na
016	FFIVISUAL	Stimy Sewlow	NA	ADULT	Alive	Visnal On The na
017	ËF	Stimu Sculpin	69	Solutt	ALIVE	na
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Page t of **3**

This form is to be completed before leaving the field site.

Feature ID: F867012 FT # <u>NC73</u>. F Date: <u>6/16(3015</u> For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

- Was ADF&G contacted before conducting any work in this area?
- Site Description complete? (Every cell must have entry or N/A)
- Were all photos taken and labeled correctly?

2. Physical/Chemical Attributes

- M Calibration performed prior to sampling?
- Physical/Chemical attributes complete? (Every cell must have entry or N/A)
- Water quality data within expected ranges?
 - □ pH: 4.0 10.0
 - □ NTU: 0 3000
 - □ DO (mg/L): 1.0 15.0
 - □ Temp.: 1.0 19.0
 - □ Specific Conductance: 20 1500
- If outside expected ranges, was sample re-taken?
- Are units correct?

3. Stream Profile

- Stream profile view sketch included?
- Stream profile view captures water depth and wetted width?
- Stream profile view captures where efforts were made to capture fish?
- Plan view sketch included?

4. Methods Attributes

- Methods attributes complete? (Every cell must have entry or N/A)
- Were methods used adequate (explanation needed if no methods selected)?

5. Electrofishing Attributes

- Electrofishing attributes complete? (Every cell must have entry or N/A)
- Are units correct?

Feature ID: F867012

6. Fish Observations

- Are all fish captured/observed recorded in the Fish Observation table?
- Are units correct? (Total Length (mm))
- Were adequate photos taken of fish captured? (Take a photo if in doubt)

7. General

- Feature ID and Field Target # are consistent on data forms, logbook entries, photos, and maps?
- All additional data in logbook captured on data form and additional photos noted?
- Was any gear missing/damaged for this survey or did you have any problems that should require resampling of this stream for an adequate survey effort?

By signing below, I verify that all field data for this site has been verified for accuracy and completeness.

Fisheries Biologist (print)

Signature

Field Crew Chlef (print)

Signature



P_F86TI012_002_DS LOOKING DS AT PLX

6/15/2015 NK173.7


P_F86TI012_004_RB LOOKING AT RB AT PLX 6/15/2015 NK173.7



P_F86TI012_005_AUS AERIAL PHOTO LOOKING US

6/15/2015 NK173.7



P_F86TI012_006_ADS AERIAL PHOTO LOOKING DS



P_F86TI012_007_FR PHOTO OF WOOD FROG

6/15/2015 NK173.7



P_F86TI012_008_F PHOTO OF SLIMY SCULPIN



P_F86TI012_009_F PHOTO OF SLIMY SCULPIN

			Target N	ame: IVAN			0	ARCTIC 0	PCEAN Reaufort Sea
		24 44	realu	IE ID. FOO	11012		Chukchi Se	Prudh	noe Bay
	ALL PROPERTY	A.A.A.A		19912		al last	15	70	
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				3025		10° - 4.	A AND MARK	,	PACIFIC OCEAN
The state	Presidente de la constante de	160	ALL REAL PROPERTY			Cit State			
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			P1F86/II012		P_F:611012_001	LUS		and the second	
19.04			NK	173.7 🛑	<mark>9</mark> 5,0	144	高い相同	137	Salt Andrews
	ALCEN HE S		the state of the	B Park	P_F36T1012_00	318			
	The party set			100	P_FE6TI012_004_R	В	22 .		
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		-	Contraction of the second			Sec.	Sa yes Ch		Ņ
	PART BUCK				all a second				
			and the second second	12262.00	19 12 1	Conde State	100		
LEGEN	D				.				
2015 Fi	Sh Survey Location	СН	Burbot Chinook Salmon	SA(U) SC(L)	Salmonid (Uns	pecified)			Feet
	No Fish Observed	CO	Coho Salmon	SS S	Slimy Sculpin	onicaj		0 50	0 100 150 200
•	Photo Point	DV	Dolly Varden	ST(U)	Stickleback (Ur	nspecified)			
Species	Observed	NS	Ninespine Stickleback	TS	Threespine Stic	ckleback		0 1	0 20 30 40 50 Meters
AB	Alaska Blackfish	U RT	Other Species Not Listed	OB2	Fish Observation	on, No Specie	es Information	n	
AG	Arctic Grayling	13.1		r					
	AL	ASKA	LNG		ICS	2015	ALASKA L	.NG √EY LOCAT	IONS
NOTES: Concept Information	ation - Confidential. Produced by Ala	ska LNG team.	The information used to create this product is	based on the	PROJECTION DATUM	CONTRACTOR NAM	ИЕ		MAP NUMBER REV.
collected data or he map was pul eam assumes r	n the date of issue; it is considered re blished. This drawing is solely prepar o liability to any other party for any re	enable only at the ed for use by the presentations of	e scale at which the data was created and the e contractual Alaska LNG team partners and the contained in these drawings. This map must be p	e Alaska LNG printed/viewed	TCS AK 4 N	AD83		RIG PAGE SIZE	Page 17 of 86 A
at full scale (100	%) in order for the scale to remain co	rrect.			APPR. 1:2,000	15 Oct 2015	26221392	8.5 X 11	
					=				

SITE DESCRIPTION	新闻集团的新闻集团的		
Date: 6. 18. 15 Invest	Bators: EAH NJS. ADF	Team No.: F86	Feature ID: F86 T1014
Stream Name: Unngmed	stream		Stream ID: NK173.6
Pipeline Milepost: 738.7 Street	am found as expected (Y/N):		Hwy MP (N/A if heli accessed); Heli
Latitude: 61° 23' 41.	0821.11 Longit	ude: 150° 45	' 49.21921'
Logbook No.: Logbook Page No	.: 27-30 Total Fish Caught: Ø	Fish Mortalities:	D Total Photos: 7
US @ CL Pic No.: P-FEOTIOI4_001_US	RB to Pic No.: P. FBL TIOT 4_002 DE Pic No	LB@ CL .: P-F66T1014.0	11 LB to RB@ CL B Pic No.: P-FB671014-004-19
Other Pic No(s).: P. F8671014-	05_AEPIAL, P_FEGTION	4-006-AERIAL	-, P-FB6T1014_007_NERIA
PHYSICAL/ CHEMICAL ATTRIBUTES		Name and Annual States and	
Weather (Describe): Sunny	Precipitation	(Describe):	e put
Water Temperature (°C): 1(.67	Air Temperature (°C):	pH: 4.44	Dissolved Oxygen (mg/l):
Specific Conductance(µS/cm): [3]	Turbidity (NTU): 2, 43	ORP (mV): 305.2	Dissolved Oxygen (%): 08.5
Amblent Conductance(µS/cm):	Odor: N Sheen (Y/N): N	Color: Clear	Last date of Calibration: 6 · 1 + · 15
Defined Channel (Y/N): Notes	Incised channel withany	meanaers cop	Thalwag Denth @ Cl (m): 24 0 2
Riparian Veg at 0-5 m at LB: Riparian V	/eg at 0-5 m at RB: Stream Substrate:	Aquatic Habitats	THOME DEPTH & CL (III)
Grass/Sedge (%)	_Grass/Sedge (%) 5 Organics (%)	Sand Bar	Large Woody Debris
(00 Shrubs (%) 100	Shrubs (%)Silt (%)	Mud Bar	<u> </u>
50 WAL Trees (%) 10		Gravel Bar	Contiguous Wetlands
Diameter DBH (in.)	Diameter DBH (in.) 20 Gravel (%)	<u> </u>	Emergent Plants
Stream Type:	Cobble (%)	Pools	Submerged Plants
Perennial Intermittent	EphemeralBoulders (%)	Undercut Ban	ks
STREAM PROFILE: Cross Sectional at Cross	ing (include riparian vegetation, wetted width, v	vater depth, substrate, an	d aquatic fiabitats)
	は れ		
	HAN. ATTACK	1111	
	1-0.2m dep	th	
in the second second second	0.85m	in the second	
STREAM PROFILE: Plan View (include direc	tion of flow, centerline, distances from centerlin	e, photo locations, sample	e locations by gear type and ROW)
NORTH	stranger of the		hand
	J'S DP	MA	1 Cont
	AN MESSER		K
long front			Altro
Mar de	CL.		13
			-

ALL AND

Feature ID: F8671014

METHODS ATTR	IBUTES	Hook and Line (Y/N):	Beach Seine	(Y/N):	Fyke Net (Y/N):	Hoop Net (Y/N):
No. of Minnow T	Traps Set: 3	Date & Time in: (mm/dd/yyyy)	Date & Time (mm/dd/yy)	in: y)	Date & Time in: (mm/dd/yyyy)	/ Date & Time In: (mm/dd/yyyy)
(mm/dd/yyyy) Date & Time out (mm/dd/yyyy)	11:00	Time lines in water:	Reach Lengt	h (m):	(mm/dd/yyyy)	(Imm/dd/yyyy)
ELECTROFISHING	S ATTRIBUTES		在1873年期11月		We have the	
EF (Y/N):	EF Start T	ime: EF Enc	Timer	EF Time (seco	nds):	F Reach Length (m):>
Outy Cycle:	/	Volts (V):	Waveform: Power (W):		Sampling Efficiency (% of	sample reach): (amp x volts
			Constitution of the second states	THE SHEET STREET BOOK	Marine Agente Marine	STATUTE PROFESSION PROPERTY AND
D (Seq. Num)	Gear Type	Specles	Total Length (mm)	Life Stage (Juvenile or Ad	Disposition (Dead or Alive)	Picture No.
		7.0				
	•		-			
		NI	1			S
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	TU	unough ist.				
				0	ch a CEPT	ple of
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	1.		L Lot	1 Ellan	Julia P	-fluck
	PU	les-nour-1 (to toll c	1/190en	CANBILS	,
	V	egetative			5	
	Gra	ul & sand	sulstra	te -	No fish	Canglet
AISCELLANEOU:	S POINTS (if appl	icable)		的这种知识	進行核制就設置	1日本市場では1日日日日日日日
Point ID:		Descri	ption:			
Point ID:	ſ	Descri	ption:	~ · ·		
Field Crew Chief:	tint	Field Sc Technic	ientist/Well	that	Technical Lead:	1

Stream Fish Investigations Field Form QA/QC Checklist

This form is to be completed before leaving the field site.

Feature ID: F86 TLO14 FT # NK173.6 Date: 6.18.15

For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

- Was ADF&G contacted before conducting any work in this area?
- Site Description complete? (Every cell must have entry or N/A)
- Were all photos taken and labeled correctly?

2. Physical/Chemical Attributes

- Solution performed prior to sampling?
- D Physical/Chemical attributes complete? (Every cell must have entry or N/A)
- Water quality data within expected ranges?
 - Ø pH: 4.0 − 10.0
 - 📆 NTU: 0 3000
 - **X** DO (mg/L): 1.0 15.0
 - \Lambda Temp.: 1.0 19.0
 - Specific Conductance: 20 1500

► If outside expected ranges, was sample re-taken?

Are units correct?

3. Stream Profile

- Stream profile view sketch included?
- Stream profile view captures water depth and wetted width?
- Stream profile view captures where efforts were made to capture fish?
- Dean view sketch included?

4. Methods Attributes

- Methods attributes complete? (Every cell must have entry or N/A)
- Were methods used adequate (explanation needed if no methods selected)?

5. Electrofishing Attributes

▲ Electrofishing attributes complete? (Every cell must have entry or N/A)
★ Are units correct?

Stream Fish Investigations Field Form QA/QC Checklist

Feature ID: FBGT1014

6. Fish Observations

- 🗹 Are all fish captured/observed recorded in the Fish Observation table?
- ⊷tth Are units correct? (Total Length (mm))
- Here adequate photos taken of fish captured? (Take a photo if in doubt)

7. General

- Feature ID and Field Target # are consistent on data forms, logbook entries, photos, and maps?
- X All additional data in logbook captured on data form and additional photos noted?
- Were all additional comments on stream habitat, etc. recorded on data form?
- A Go Was any gear missing/damaged for this survey or did you have any problems that should require resampling of this stream for an adequate survey effort?

By signing below, I verify that all field data for this site has been verified for accuracy and completeness.

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Fisheries Biologist (print)

Signature

Field Crew Chlef (print)

Signature

2 . 1 .



P_F86TI014_001_US LOOKING US AT PLX

6/18/2015 NK173.6



P_F86TI014_002_DS LOOKING DS AT PLX



P_F86TI014_003_LB LOOKINH AT LB AT PLX

LOOKING AT RB AT PLX

6/18/2015 NK173.6





AERIAL PHOTO



P_F86TI014_006_AERIAL **AERIAL PHOTO**

6/18/2015 NK173.6



P_F86TI014_007_AERIAL AERIAL PHOTO

			Target Name Featur	: UNNAN re ID: F8	MED S 6TI01	TREAM			Chukchi S	ARCTIC C	DCEAN Beaufort Sea	
							「二日」	40° - 44 - 0	BERING SEA	Sethel An	GULF OF ALASKA Kodiak	neau
			P_F8311014_002	NK173.6 DS		P_FE6TI014_	001_US					
			P_F86T1014	003 LB	P	FEETTIO14 <u>.00</u>	4 RB					
								and the second se				がた何の
LEGEND 2015 Fig			Durbat	S A(L)					14			Z
2015 Fis	n Survey Location	СП RO	Burbot	SA(U)	Sal	monid (Un	specifie	ed)			Feet	
F	Fish Observed	СП	Coho Salmon	50(U) 55	SCL	npin (Unsp ny Sculpin	ecified)		0 5	0 100 150 200	0
F	No Fish Observed	DV	Dolly Varden	ST(U)	Stic	ckleback (L	Jnspec	ified)				
Species	Photo Point	NS	Ninespine Stickleback	ΤS	Thr	eespine S	tickleba	, ack		0 1	0 20 30 40 50	
AB	Alaska Blackfish	0	Other Species Not Listed	OBS	Fis	h Observat	tion, No	o Specie	es Informatio	n	Meters	
AG	Arctic Gravling	RT	Rainbow Trout									
	AL	ASKA	LNG		ICS			2015	ALASKA FISH FIELD SUF	LNG RVEY LOCAT	IONS	
NOTES: Concept Informat	ion - Confidential. Produced by Alas	ska LNG team.	The information used to create this product is	based on the	СНЕСК	PROJECTION DAT	'UM	CONTRACTOR NAI	ME		MAP NUMBER	REV.
collected data on the map was publ team assumes no at full scale (100%	the date of issue; it is considered re ished. This drawing is solely prepare liability to any other party for any re 6) in order for the scale to remain con	liable only at the ed for use by th presentations c rect.	e scale at which the data was created and the s e contractual Alaska LNG team partners and the ontained in these drawings. This map must be p	scale at which e Alaska LNG printed/viewed	DESIGN TCS APPR.	AK 4	NAD83	ot 2015		ORIG.PAGE SIZE	Page 18 of 86	A
						1:2,000	15 0	ct 2015	26221392	ö.5 X 11		

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SITE DESCRIPTION			的第三人称单数 的第三人称单数
Date: 6-18-15 Investig	ators: KAH, NUS, ADF	Team No.: P86 F	eature ID: F86T1015
Stream Name: Unnamed	stream	Si	tream ID: NK173.5
Pipeline Milepost: 738.5 Stream	n found as expected (Y/N): 🖌	Н	wy MP (N/A If heli accessed):
Latitude: 61° 23' 45.	8860 " Long	gitude: 150° 45	129.9850"
Logbook No.: Logbook Page No.	27-30 Total Fish Caught: 4	Fish Mortalities:	Total Photos: 1.2
US @ CL	RBt	OLB@CL	LB to RB@CL
Other P_F66 T1015_005-01 Pic No(s)	7- AERIAL		
PHYSICAL/ CHEMICAL ATTRIBUTES			
Weather (Describe): SUNNY	Precipitatio	on (Describe): None	
Water Temperature (°C): 14.21	Air Temperature (°C): 24	pH: 4,47	Dissolved Oxygen (mg/l): 8-94
Specific Conductance(µS/cm): 509	Turbidity (NTU): 3,15	ORP (mV): 112.2	Dissolved Oxygen (%): 88.
Ambient Conductance(µS/cm): 404	Odor: N Sheen (Y/N): N	Color: Cleat	Last date of Calibration: 6-14-15
Defined Channel (Y/N): Notes:	Incisca channel, meande	ting sitream	Thalweg Depth @ CL (m): 0 0/
Riparian Veg at 0-5 m at JB 2 Riparian Ve	g at 0-5 m at RB/B Stream Substrate:	Aquatic Habitats	11000 cg coper e co (10). D. D. D.
TO SO Grass/Sedge (%) 50	Grass/Sedge (%) Ø Organics (%)Sand Bar	Large Woody Debris
60 Shrubs (%) 80	_Shrubs (%)	-X_Mud Bar	Overhanging vegetation
Trees (%)	_Trees (%)	Gravel Bar	Contiguous Wetlands
<u>MA</u> Diameter DBH (in.) <u>NA</u> D	iameter DBH (in.) Gravel (%)	<u>X</u> _Riffles	Emergent Plants
Stream Type: X Perennial Intermittent	Cobble (%) Boulders (%)	() Pools () Undercut Banks	Submerged Plants
STREAM PROFILE: Cross Sectional at Crossin	g (include riparian vegetation, wetted width,	water depth, substrate, and	aquatic habitats)
all solution	L.Zm	0.06m	
STREAM PROFILE: Plan View (include direct NORTH: DS Corridor	ion of flow, centerline, distances from centerl we have the flow of the flow	ine, photo locations, sample,	A Contractions by gear type and ROW)

Feature ID: F86T1015

Minow Tage (1/N): Hook and the (1/N): Beach Sane (1/N): Hook and the (1/N): a. of Minow Tage Str. Constant of the str. Date & Time in: Date & Time in: Date & Time in: a. of Minow Tage Str. Constant of the str. Date & Time in: Date & Time in: Date & Time in: base & Time in: Constant of the str. Date & Time in: Date & Time in: Date & Time in: and Constant of the str. No. of Insis in water: Time face of the str. Date & Time in: and Str. Time face on the str. Time face on the str. Date & Time in: and Constant on the str. Time face on the str. Time face on the str. and the str. Time face on the str. Time face on the str. Time face on the str. and the str. Time face on the str. Time face on the str. Time face on the str. and the str. Time face on the str. Time face on the str. Time face on the str. and the str. Time face on the str. Time face on the str. Time face on the str. and the str. Time face on the str. Time face on the str. Time face on the str. and the str. Time face on the str. Time face on the str. Time face on the str. and the str. Species Time face on the str. Time face	METHODS ATTR	IBUTES						素的版合	学校中国中的	國為印度因為
ac of Minow Traps Set	Minnow Traps ((/N): Y -	Hook	and Line (Y/N):	Beach Seine (Y/N):	Fyke N	let (Y/N):	Hoop Net ()	/N):
Date & Time & U/B/15 The Base in water (Mind Day Vir) Mark & Time & U/B/15 Time Base in water (Mind Day Vir) Time Base in water (Mind Day Vir) Time Base in water (Mind Day Vir) Time Base in water (Mind Day Vir) EF CMU EF Conserved A finance (Mind Day Vir) EF CMU EF Conserved A finance (Mind Day Vir) EF CMU EF Conserved A finance (Mind Day Vir) Disea in the out: (Mind Day Vir) Mind Day Vir) EF CMU EF Conserved A finance (Mind Day Vir) Mind Day Vir) EF CMU EF Conserved A finance (Mind Day Vir) Mind Day Vir) Mind Day Vir) EF CMU EF Conserved A finance (Mind Day Vir) Mind Day Vir) Mind Day Vir) Mind Day Vir) EF CMU EF Conserved A finance (Mind Day Vir) Mind Day Vir) Mind Day Vir) Mind Day Vir) Mind Day Vir) Mind Day Vir) EF CMU EF Conserved A finance (Mind Day Vir) Mind Day	No. of Minnow 1	Traps Set:	Date 8	k Time in:	Date & Time I	n:	Date 8	a Time in:	Date & Time	e In:
minited Myory 1, 19:30 Beach Length (m): Imm/dd/yogy 1, 115 Time langt in water: Reach Length (m): Imm/dd/yogy 1, 115 EF Time langt (m): EF	Date & Time in:	6/18/15	No. of	lines in water:	No. of passes		Date 8	Time out:	A Date & Tim	e out:
ministry (13:15) LECTOROSAING ATTRUITES FEFUNI: ESSANTING: EFSINALTING: EFEND TIME: EFEND TIME (SECOND): EFFERENT TANGET (M): DIS (CVC): ESSANTING: Second EFEND Time: EFEND (M): ESSANTING: SAMPTING EFFERENT TANGET (M): DIS CONSTITUTES DIS CONTROL GEOR TYPE Second Total Length Use Stage: Use of the Disposition OCI MINITUM TRUE Second Total Length Use Stage: Use of the Disposition OCI MINITUM TRUE Second Total Length Use Stage: Use of the Disposition OCI MINITUM TRUE Second Total Length Use Stage: Use of the Disposition OCI MINITUM TRUE Second Total Length Use Stage: Use of the Disposition OCI MINITUM TRUE Second Total Length Use Stage: Use of the Disposition OCI MINITUM TRUE Second Total Length Use Stage: Use of the Disposition OCI MINITUM TRUE Second Total Length Use Stage: Use of the Disposition OCI MINITUM TRUE Second Total Length Use Stage: Use of the Disposition OCI MINITUM TRUE Second Total Length Use Stage: Use of the Disposition OCI MINITUM TRUE Second Total Length Use Stage: Use of the Disposition OCI MINITUM TRUE SECOND IN THE DISPOSITION OF THE DISPOSITION OF THE DISPOSITION OF THE DISPOSITION DISPOSITION CONSTRUCTION DISPOSITION TRUE SECOND IN THE DISPOSITION OF	(mm/dd/yyyy) Date & Time out	13:30	Time I	ines in water:	Reach Length	(m):	(mm/c	HAVY be	/ (mm/dd/yy	M
Deterministic EF and Time: EF Time (seconds): EF Added English (m): UVC Cole: Frequency (th): Sampting Efficiency (to of sample reach): (amp x volts) Strip Construction: Note (th): Note (th): (amp x volts) OBGE, Num Gear Type Species Total Length Uto Stage: Disposition 001 Minin UV Teop S1:muy sculpin S7 Howey (h): Expect (th): Peture No. 002	(mm/dd/yyyy)	13-15		gies in water.	1 Medicin congen	Time >	1	- A	1927	1
F(V): EE stations EP find Time: EP time (scond): EP execution: Dury Cycle: Voite V/V: Support: [Endersy! (% of sample reach): (amp x volt) SDI DESERVATIONS Deserving: If the scond of the	ELECTROFISHIN	G ATTRIBUTES	in dented					的情况的思想		
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003 " " AS " ALL " A " - DO IS 004 MT-3 Polly Vorden 145 Juvini le Alive # " - DII-5 0015 (monstant) mandom multiplication mandom multiplication Incised A channel running furough alder & mses consider Vegetation less deuse lus near 150' consider w/ increased grass & farm Old dry channel near us corridor Old dry channel near us corridor Gravel bars & small pools throughout 3 slimy sculpin caught at Plx & I Delly Varden caught in US MT along W/dead shrew in trap (P_PE6TDI5_012_Shrew) HISCELLANEOUS POINTS (If applicable) ont ID: Description: Field Scientist/ M. Technical	002	1. // 1/ / 100	ump	sting soutpin	46	Juvenile	v <u>y</u> (*1	1)() Ve	1-1-1061 10	DAG SON
004 MT-3 Polly Varden 145 Juvinile Alive & DII- D	003	V		it	45	(/			* "	-010 5
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In US M(oiling W/dead shrew in frap (p_FB6T015_012_shrew) AISCELLANEOUS POINTS (If applicable) oint ID: Description: oint ID: Description: Field Field Scientist/ MILLAGE Technical				acpiri chagini	a 14	` \ 	Delly	VAIOLE	, in the second s	1
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Field Scientist/ 011. Technical	Point ID:			Descriptio	n:	1	~			
	Field	01	1	Field Scien	tist/ MIL	LK		Technical		

Stream Fish Investigations Field Form QA/QC Checklist

This form is to be completed before leaving the field site.

Feature ID: <u>F66T1015</u> FT # <u>N \times 173.5</u> Date: <u>6.16.15</u> For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

- X Was ADF&G contacted before conducting any work in this area?
- Site Description complete? (Every cell must have entry or N/A)
- Were all photos taken and labeled correctly?

2. Physical/Chemical Attributes

- Calibration performed prior to sampling?
- A Physical/Chemical attributes complete? (Every cell must have entry or N/A)
- Water quality data within expected ranges?
 - 💢 pH: 4.0 10.0
 - 述 NTU: 0 3000
 - 🕅 DO (mg/L): 1.0 15.0
 - ₩ Temp.: 1.0 19.0
 - X Specific Conductance: 20 1500

If outside expected ranges, was sample re-taken?

M Are units correct?

3. Stream Profile

- Stream profile view sketch included?
- 🕱 Stream profile view captures water depth and wetted width?
- Stream profile view captures where efforts were made to capture fish?
- X Plan view sketch included?

4. Methods Attributes

- Methods attributes complete? (Every cell must have entry or N/A)
- Were methods used adequate (explanation needed if no methods selected)?

5. Electrofishing Attributes

15 Electrofishing attributes complete? (Every cell must have entry or N/A)

r-☐ ► Are units correct?

Stream Fish Investigations Field Form QA/QC Checklist

Feature ID: FBGT1015

6. Fish Observations

- Are all fish captured/observed recorded in the Fish Observation table?
 - Were adequate photos taken of fish captured? (Take a photo if in doubt)
- 7. General
 - Feature ID and Field Target # are consistent on data forms, logbook entries, photos, and maps?
 - All additional data in logbook captured on data form and additional photos noted?
 - 1/2 Were all additional comments on stream habitat, etc. recorded on data form?
 - Was any gear missing/damaged for this survey or did you have any problems that should require resampling of this stream for an adequate survey effort?

By signing below, I verify that all field data for this site has been verified for accuracy and completeness.

Fisherles Biologist (print)

Signature

Field Crew Chlef (print)

CALA

Signature



P_F86TI015_001_US LOOKING US AT PLX

6/18/2015 NK173.5



P_F86TI015_002_DS LOOKING DS AT PLX





P_F86TI015_005_AERIAL AERIAL PHOTO 6/18/2015 NK173.5



P_F86TI015_006_AERIAL AERIAL PHOTO



P_F86TI015_007_AERIAL AERIAL PHOTO 6/18/2015 NK173.5



P_F86TI015_008_SCULPIN PHOTO OF SLIMY SCULPIN



P_F86TI015_010_SCULPIN PHOTO OF SLIMY SCULPIN



P_F86TI015_011_DOLLY PHOTO OF DOLLY VARDEN

6/18/2015 NK173.5



P_F86TI015_012_SHREW 6/18/2015 NK173.5 PHOTO OF DEAD SHREW IN MINNOW TRAP 3

		Target Name Featu	: UNNAM re ID: F86	1ED S 6TI01	STREAM 5			Chukchi S	ARCTIC O	CEAN Beaufort Sea 00 Bay
								Nom	ALA	SKA Fairbanks shorage GULF OF ALASKA
				and the second se			*** - # ₁ .	BERING SEA	And a start	Kodiak PACIFIC OCEAN
		P_FEETIDLE_00	316							
	-	NK P_F3371015_001 P_F3371015_002 P_	173.5 LUS LRB FESTIOIS (SS V					
			5 . N							
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	DU			•		.,.				
2015 Fish Survey Location	СН RO	Burbot Chinook Salmon	5A(U) SC(U)	Sa	Imonid (Uns ulpin (Unsp	specifie ecified	ed))			Feet
F No Fish Observed	CO	Coho Salmon	SS	Slii	my Sculpin		,		0 50) 100 150 200
Photo Point	DV	Dolly Varden	ST(U)	Sti	ckleback (U	Inspeci	fied)			
Species Observed	NS	Ninespine Stickleback	۲S OPS	Th	reespine St	ickleba	ick	o Information	01	0 20 30 40 50 Meters
AB Alaska Blackfish	RT	Ciner Species Not Listed Rainbow Trout	OR2	FIS	n Observat	ion, NC	Specie	es informatio	וונ	-
AG Arctic Grayling			I	DB 444						
AL	ASKA	LNG		CHECK			2015	ALASKA FISH FIELD SUF	LNG RVEY LOCAT	IONS
Concept Information - Confidential. Produced by Ala collected data on the date of issue; it is considered in the map was published. This drawing is solely prepar	ska LNG team. eliable only at the ed for use by th	The information used to create this product is e scale at which the data was created and the e contractual Alaska LNG team partners and the restricted the scale.	based on the scale at which e Alaska LNG	DESIGN TCS	PROJECTION DATE AK 4	MAD83	CONTRACTOR NAI	AECOM		MAP NUMBER REV. Page 19 of 86 A
team assumes no liability to any other party for any re at full scale (100%) in order for the scale to remain co	epresentations co rrect.	ontained in these drawings. This map must be p	onnted/viewed	APPR.	scale 1:2,000	DATE 15 O	ct 2015	PROJECT NUMBER	ORIG.PAGE SIZE 8.5 X 11	

SITE DESCRIPTION		新新学校的	
Date: 4.19.15 Investigators:	AH NUS, ADF	Team No.: PB6	Feature ID: FBGT1016
Stream Name: UNNAMED STREE	MA		Stream ID: NK173.4
Pipeline Milepost: 728. Stream found as	s expected (Y/N):		Hwy MP (N/A If heli accessed): Hal
Latitude: 610 0 24' 06.9	1203 11 Longitud	le: 150° 4	5 28.6581"
Logbook No.: Logbook Page No.: 27-	3D Total Fish Caught:	Fish Mortalities:	D Total Photos: 7
US @ CL P. FOUTION ON US PIC NO.: P.		P. FOL TOlle	DOB-CA LB to RB@ CL POOTIOL6_001-RB
Other Pic No(s).: P_F86T1016_005-00	DE-AERIAL		
PHYSICAL/ CHEMICAL ATTRIBUTES		the state of the state of the	
Weather (Describe): SUNNY	Precipitation (D	escribe): NON	e kot
Water Temperature (°C): 11.63 Air Te	Temperature (°C): 24	pH: 4.41	Dissolved Oxygen (mg/l): 9.84 7.3
Specific Conductance(µS/cm): 78 Turbi	pidity (NTU): 66.6	ORP (mV): 295.5	Dissolved Oxygen (%): 20.949, 80.3
Ambient Conductance(µS/cm): 58 Odor	T: NONE Sheen (Y/N): N	Color: Clear	Last date of Calibration: 6 -13 - 15
Defined Channel (Y/N): N Notes: Poorly	defined Channel hard to fol	low w/in Vog -1	The wetted Width (m): 0.4
Flow (Y/N): Notes: Come	Tlow thronghout mas	Aquatic Habitats	
(D) Grass/Sedge (%) (O D Grass/Sedge (%)	edge (%) 100 Organics (%)	Sand Bar	Large Woody Debris
10 Shrubs (%) 30 Shrubs (%)	%) Ø silt (%)	Mud Bar	Overhanging vegetation
(00 Trees (%) 40 Trees (%)	\vec{O} Sand (%)	Gravel Bar	Contiguous Wetlands
Z Diameter DBH (in.) Diameter DB	DBH (in.) (7) Gravel (%)	Riffles	Emergent Plants
	Cobble (%)	Pools	
Stream Type:	Boulders (%)	Undercut Bar	nks
STREAM PROFILE: Plan View (include direction of flow)	w centerline, distances from centerline,	0.05m de	epth The locations by gear type and ROW)
NORTH:	The state of the s	PASE PUN	Clon Non Non Non Non Non Non Non Non Non N

Feature ID: F8671016

Ainnow Traps (lo. of Minnow Date & Time in: mm/dd/yyyy) Date & Time ou mm/dd/yyyy)	Y/N): Cut Traps Set: 2 10 10 15 15:50 15:50 15:00 GATTRIBUTES	Hook and Line (Y/N) Date & Time in: (mm/dd/yyyy) No. of lines in water Time lines in water:		each Seine (Y/N): nate &Time In: nm/dd/syyy) lo. of passes: each Length (m):	Fyken Date & (mm/d Date & (mm/d	Let (Y/N): a Time In: dd/yyyy) a Time out: dd/yyyy)	Hoop Net (Y/N): Date & Time In: (mm/dd/yyyy) Date & Time out: (mm/dd/yyyy)	
F (Y/N):	EF Start Ti	me:	EF End Time:	EF Time	(seconds):	E	Reach Length (m):	0.000000000000
Outy Cycle: Current (A):		Frequency (Hz) : Volts (V):	PIK F	ower (W):	Sampl	ing Efficiency (% of	sample reach): (amp	x volts)
ISH OBSERVAT	TONS	流行了容易的						
D (Seq. Num)	Gear Type	Species	Total (mm	Length Life Stage (Juvenile	e or Adult)	Disposition (Dead or Alive)	Picture No.	
001	Vis ob:	s Wood	Frog N	A Adul	ł	Alive	* P_FBGTIOL6	_007
		-	1		-			
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OTES (any add	l Itional information	n) size or let a		一人时间没有正式的。	5位出 33		都是我的 的 有不安全很高的	SCHOOL ST
Po ru C	orly dofi anning al old dry a . ~ loc near	ned stream ong edge channel at o' to wa DS com	of bird of bird tauget a set. st dor boun	intermittent forost nd second ream cham dary) with chann nels	erganic ul w/wn Converge	substrate	
	S POINTS (if appli	cable)						
AISCELLANEOU			I Description:					
oint ID: F8	56710161	1	Description.	y channel o	it taky	of locatio	M	

Stream Fish Investigations Field Form QA/QC Checklist

This form is to be completed before leaving the field site.

Feature ID: F86T1016 FT # 173.4 Date: 6.19.15 For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

- "☆ Was ADF&G contacted before conducting any work in this area?
- Site Description complete? (Every cell must have entry or N/A)
- ☞ Were all photos taken and labeled correctly?

2. Physical/Chemical Attributes

- ✗ Calibration performed prior to sampling?
- Physical/Chemical attributes complete? (Every cell must have entry or N/A)
- Water quality data within expected ranges?
 - ₩ pH: 4.0 10.0
 - 🗹 NTU: 0 3000
 - DO (mg/L): 1.0 15.0
 - ĭ⊈ Temp.: 1.0 19.0
 - Specific Conductance: 20 1500

rts/ → If outside expected ranges, was sample re-taken?

Are units correct?

3. Stream Profile

- Stream profile view sketch included?
- Stream profile view captures water depth and wetted width?
- X Stream profile view captures where efforts were made to capture fish?
- Plan view sketch included?

4. Methods Attributes

- Methods attributes complete? (Every cell must have entry or N/A)
- ₩ Were methods used adequate (explanation needed if no methods selected)?

5. Electrofishing Attributes

➢ Electrofishing attributes complete? (Every cell must have entry or N/A)
 , ↓ Are units correct?

Stream Fish Investigations Field Form QA/QC Checklist

Feature ID: F86 TIOLL

6. Fish Observations

X Are all fish captured/observed recorded in the Fish Observation table?

► Are units correct? (Total Length (mm))

 H_{A} Were adequate photos taken of fish captured? (Take a photo if in doubt)

7. General

- Feature ID and Field Target # are consistent on data forms, logbook entries, photos, and maps?
- All additional data in logbook captured on data form and additional photos noted?
- K Were all additional comments on stream habitat, etc. recorded on data form?
- Was any gear missing/damaged for this survey or did you have any problems that should require resampling of this stream for an adequate survey effort?

By signing below, I verify that all field data for this site has been verified for accuracy and completeness.

Fisheries Biologist (print)

Signature

Field Crew Chlef (print)

× Gato

Signature



LOOKING US AT PLX

P_F86TI016_002_DS LOOKING DS AT PLX



 ECONING AT LD AT TEX

 Image: Construct of the text of text

P_F86TI016_004_RB LOOKING AT RB AT PLX



P_F86TI016_005_AERIAL AERIAL PHOTO

6/19/2015 NK173.4



P_F86TI016_006_AERIAL AERIAL PHOTO



P_F86TI016_007_FROG PHOTO OF WOOD FROG

			Target Name: Featur	: UNNAMEI re ID: F86TI	D STREAM 016		Chukchi S	ARCTIC O	CEAN Beaufort Sea	
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			N. N. N. N.				Nom	i) F	Fairbanks	
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LEGEN 2015 Fis	D sh Survey Location	BU	Burbot	SA(U)	Salmonid (Uns	specified)				
F	Fish Observed	СН	Chinook Salmon	SC(U)	Sculpin (Unsp	ecified)		0 50	Feet	0
F	No Fish Observed	CO DV	Coho Salmon Dolly Varden	SS ST(U)	Slimy Sculpin Stickleback (U	Inspecified)				0
Species	Photo Point	NS	Ninespine Stickleback	TS TS	Threespine St	ickleback		0 10	0 20 30 40 50	
AB	Alaska Blackfish	0 RT	Other Species Not Listed	OBS	Fish Observat	ion, No Speci	es Informatio	n	Meters	
AG	Arctic Grayling	1 X 1		I,						
	AL	ASKA	LNG		S sck	201	ALASKA 5 FISH FIELD SUF	LNG RVEY LOCATI	ONS	
NOTES: Concept Informa collected data or	tion - Confidential. Produced by Ala- the date of issue; it is considered re	ska LNG team. T liable only at the	The information used to create this product is I scale at which the data was created and the s	based on the	PROJECTION DATL	IM CONTRACTOR N	AME		MAP NUMBER Page 20 of 86	REV.
eam assumes n at full scale (100	o liability to any other party for any re %) in order for the scale to remain co	presentations co rrect.	с ооппасциан мазка LNG team partners and the intained in these drawings. This map must be p	rinted/viewed	SCALE	DATE	PROJECT NUMBER	ORIG.PAGE SIZE		1
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SITE DESCRIPTION	HALL HALL HALL HALL HALL	· · · · · · · · · · · · · · ·	17-22-2000年1月1日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日日
Date: - 7 1 / 2015 Investigato	ors: SCS NJS ADF	Team No.: 786 Featu	re ID: \$8671025
Stream Name: Unnamed 2	stream.	Stream	mID: NK173,3
Pipeline Milepost: 737.8 Stream for	ound as expected (Y/N):	Hwy	MP (N/A if heli accessed):
Latitude: 61° 24' 16,4	1925" N Longitu	de: 150° 45	03,2953" W
Logbook No.: Logbook Page No.: 3	9-4/1 Total Fish Caught: 5	Fish Mortalities:	Total Photos:
US @ CL CS 611025 ml US DS @	PCL RB to L	B@CL	LB to RB@ CL B Pic No: P-F867025 -DOV R
P F867025-005-A	ERIAL	CALING STOPPEN	
Pic No(s).: P-5867035-006. A	ERIAL		
		The second s	AS 2012 (2) - 2017 PERSONAL PROPERTY AND AND
Weather (Describe):	Precipitation (Describe): light	rain
Water Temperature (°C): 9,39	Air Temperature (°C):	pH: 6. 48 D	Dissolved Oxygen (mg/l): 11, 48
Specific Conductance(µS/cm): 93	Turbidity (NTU): 6.7	ORP (mV): 300,8 C	Dissolved Oxygen (%): 100.3
Ambient Conductance(µS/cm): 65	Odor: Mone Sheen (Y/N): N	Color: Cleal L	ast date of Calibration: 6/30/15
Defined Channel (Y/N): Y Notes: p	meandering slightly	1226	Wetted Width (m): 1, 3 5
Flow (Y/N): Notes: Riparian Veg at 0-5 m at LB: Riparian Veg at	at 0-5 m at RB: Stream Substrate:	Aquatic Habitats	Thaiweg Depth @ CL (m): 08
<u>90</u> Grass/Sedge (%) <u>90</u> G	irass/Sedge (%)Organics (%)	Sand Bar	$\underline{\hspace{1.5cm}}^{\hspace{1.5cm}}$ Large Woody Debris
<u>60</u> Shrubs (%) <u>40</u> sl	hrubs (%) <u>5</u> Silt (%)	Mud Bar	$\underline{}$ Overhanging vegetation
Trees (%) Tr	rees (%) Sand (%)	$\underline{}$ Gravel Bar	Contiguous Wetlands
<u> </u>	meter DBH (in.)Gravel (%)		Emergent Plants
Stream Type:	Cobble (%)	Pools	Submerged Plants
PerennialIntermittent	EphemeralBouiders (%)		
STREAM PROFILE: Cross Sectional at Crossing	(include ripatian vegetation, wetted width, w	ater depth, substrate, and aqu	atic fiabitats)
Paideo	1.35	HARD Com	chtrees
	Cobbin/gravel Sand/silf		Bons by and time and BOMB
STREAM PROFILE: Plan View (include direction	iof flow, centerline, distances from centerline	photo locations, sample loca	tions by gear type and ROW)

Minnow Traps (Y/N):	Hooka	and Line (Y/N):	Beach Seine	(Y/N):	Fyke f	Net (Y/N):	Hoop Net (Y/N):
No. of Minnow	Traps Set: 3	Date 8 (mm/c	Time in:	Date &Time (mm/dd/yyy	n: A	Date &	& Time in: dd/yyyy)	Date & Time In: (mm/dd/yyyy)
Date & Time in: (mm/dd/yyyy)	112015	No. of	lines in water:	No. of passes		Date 8 (mm/	& Time out: dd/yyyy)	Date & Time out: (mm/dd/yyyy)
Date & Time ou	t: 7/2/2015	Time li	nes in water:	Reach Lengt	n (m):		115	and same
ELECTROFISHIN	G ATTRIBUTES				动的中心 不		~ 出现 医输出后部	
:F (Y/N):	EF Start Ti	me:	EF End T	īme;	EF Time (se	conds):	E	F Reach Length (m):
Outy Cycle:	1	Freque	ency (Hz) :	Waveform:		Samp	ling Efficiency (% of	sample reach):
Current (A):	1	Volts (V):	Power (W):			1	(amp x volts)
ISH OBSERVAT	TONS	没望的能			116- Cto		Plane states	
) (Seq. Num)	Gear Type	5.5	Species	(mm)	(Juvenile or /	Adult)	(Dead or Alive)	Picture No. P.F86T1025_00
001	Minhow	[vap]	Polly Varden	84	Juveni	10	Alive	+=2 * 3
200	~ 1 /	MTI	()	86	11		ti	V/A
003	1/ /	MT2	//	82	. 11		1/	* P_F86T1025_009_DV
DO4	11	MT2	- 1/	87	11		11 -	* NA
005	1.1	MT2	1/	95	11		11	*P_F86T025_010-DV
TTES (any add	itional information	ri) A	h mitreu	1 traps				
5 DV	caugh			1 . /		1.		
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-5 DV S-HIRAN Veg C C C C C C C C C C C C C C C C C C C	caughi not jetatity eca: S own St Spoints (it appli	the rea	connect Descript	ble from t with	Ait-	r p	vick s larg	er NE 173.2
This form is to be completed before leaving the field site.

Feature ID: F86T1025 FT # NK173.3 Date: 7/1/15For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

- ★ Was ADF&G contacted before conducting any work in this area?
- Site Description complete? (Every cell must have entry or N/A)
- Were all photos taken and labeled correctly?

2. Physical/Chemical Attributes

- Calibration performed prior to sampling?
- Physical/Chemical attributes complete? (Every cell must have entry or N/A)
- K Water quality data within expected ranges?
 - 💉 pH: 4.0 10.0
 - 🔀 NTU: 0 3000
 - 💢 DO (mg/L): 1.0 15.0
 - 🔀 Temp.: 1.0 19.0
 - Specific Conductance: 20 1500
- NAX If outside expected ranges, was sample re-taken?
 - X Are units correct?

3. Stream Profile

- Stream profile view sketch included?
- Stream profile view captures water depth and wetted width?
- Stream profile view captures where efforts were made to capture fish?
- Plan view sketch included?

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NA Electrofishing attributes complete? (Every cell must have entry or N/A) Are units correct?

Feature ID: F86T1025

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By signing below, I verify that all field data for this site has been verified for accuracy and completeness.

mitl

Fisheries Biologist (print)

Signature

Fleld Crew Chlef (print)

Signature



P_F86TI025_001_US LOOKING US AT PLX

7/2/2015 NK173.3



P_F86TI025_002_DS LOOKING DS AT PLX

7/2/2015 NK173.3



P_F86TI025_003_LB LOOKING AT LB AT PLX

7/2/2015 NK173.3



P_F86TI025_004_RB LOOKING AT RB AT PLX 7/2/2015 NK173.3



P_F86TI025_005_AERIAL **AERIAL PHOTO**

7/2/2015 NK173.3



P_F86TI025_006_AERIAL **AERIAL PHOTO**

7/2/2015

NK173.3



P_F86TI025_007_AERIAL AERIAL PHOTO

7/2/2015 NK173.3



P_F86TI025_008_DV PHOTO OF DOLLY VARDEN 7/2/2015 NK173.3



P_F86TI025_009_DV PHOTO OF DOLLY VARDEN

7/2/2015 NK173.3



P_F86TI025_010_DV PHOTO OF DOLLY VARDEN 7/2/2015 NK173.3



STREAM FISH INVESTIGATION DATA FORM

STE DESCRIPTION	the factor is a set			
Date: A 7/1/2015 Investigat	ors: $S(C \Lambda Y)$	SC ANE	Team No.: Il Fe	ature ID: FRGTADU
	O -	JS MUL	100	roam ID: AIV 1727
Stream Name: Unnamed	stream	1/	51	ream 10: 104 173. 2
Pipeline Milepost: 737. Stream	found as expected (Y/N):	: Y	H	wy MP (N/A if heli accessed): heli
Latitude: 61° 24' 18.18	77" N	Longitud	de: 150° 44'	58.0836" W
Logbook No.: Logbook Page No.:	39-40 Total Fish	Caught:	Fish Mortalities:	Total Photos:
US @ CL DS (Pic No.: P-FUENDAY-001-US Pic	@ CL No.: P-F867024-	RB to LB	P-1867024-00	13 10 Pic No.: P-F X61102 4-004 K
P-F86T1024-005-A	ERIAL			
Pic No(s) .: P-E8671024-006.	AERIAL			
P-F867024 00	7-AERIAL		No. 1 (Constantin Loss - a des	MANY INC. STREET, BAUMAN IN THE REPORT OF THE
PHYSICAL/ CHEMICAL ATTRIBUTES		ast Procinitation (f		
weather (Describe):	Dudy overce	Precipitation (L	Describe): 11gh I	Direction day was from 12/2
Water Temperature (°C): 9,92	Air Temperature (°C):		рн:) <i>+</i> +6	Dissolved Oxygen (mg/l): 2.7 +
specific Conductance(µS/cm):	Turbidity (NTU):	1. F	OKP (mV): 416.4	Dissolved Oxygen (%): 106, 3
Ambient Conductance(µS/cm): 67	Odor: None	Sheen (Y/N):	Color: r (or (Last date of Calibration: 6/30/2015
Letined Channel (Y/N): Y Notes:	SWITUMACUA 6	y and veg	- Tanun	Thalwag Dopth @ CL (m):
Riparian Veg at 0-5 m at LB: Riparian Veg	at 0-5 m at RB: 1 Stre	am Substrate:	Aquatic Habitats	
95 Grass/Sedge (%) 90 G	rass/Sedge (%)	3 Organics (%)	Sand Bar	$\underline{\times}$ Large Woody Debris
<u>5</u> Shrubs (%) <u>10</u> s	hrubs (%)	() Silt (%)	Mud Bar	Overhanging vegetation
/ <u>/</u> Trees (%) /T	rees (%)	20 Sand (%)	Gravel Bar	Contiguous Wetlands
12 Diameter DBH (in.) 5_Diam	meter DBH (in.)	Q Gravel (%)	$\underline{\times}$ Riffles	Emergent Plants
Stroam Type:	5	50 Cobble (%)	\underline{X} Pools	Submerged Plants
	Ephemeral	<u>3</u> Boulders (%)	Undercut Banks	
		an international and a second s		
STREAM PROFILE: Cross Sectional at Crossing	(include riparian vegetat	tion, Wetted width, wat	ter depth, substrate, and a	quatic habitats)
STREAM PROFILE: Cross Sectional at Crossing	(include riparian vegetat	tion, wetted width, wat	ter depth, substrate, and a	quartic habitats) car pansnip.
STREAM PROFILE: Cross Sectional at Crossing	(include riparian vegetat	tion, wetted width, war	ter depth, substrate, and a	quartic habitats) can panonip. Jem
STREAM PROFILE: Cross Sectional at Crossing	(include riparian vegetat	tion, wetted width, war	ter depth, substrate, and a	quartic habitrats) Car panonip. fern bitch
STREAM PROFILE: Cross Sectional at Crossing Section of the Construction of the Constru	(include riparian vegetat	tion, wetted width, wat	ter depth, substrate, and a	quatic habitats) car pansnip. -fern birch
STREAM PROFILE: Cross Sectional at Crossing fer in the sector of the se	(include riparian vegetat	tion, wetted width, wat	ter depth, substrate, and a	quartic habitrats) Car parron P. fern birch
STREAM PROFILE: Cross Sectional at Crossing Sector Reports Control of Control	(include riparian vegetat	tion, wetted width, wat	ter depth, substrate, and a	qualité habiters) car parismip. - fern birch
STREAM PROFILE: Cross Sectional at Crossing Sector Research Republic Concerned Republic Horse-tail Republic	(include riparian vegetat	tion, wetted width, wat	ter depth, substrate, and a	quatic habitats) car parismip. -fern birch
STREAM PROFILE: Cross Sectional at Crossing ferner ferner for the ferner harse-taul	Cinclude riparian vegetat	m wite I c	ter depth, substrate, and a	quartic frabilitats) Car parron P Jem birch
STREAM PROFILE: Cross Sectional at Crossing Sector Reserves Control of Contro	(include riparian vegetat	m wike I co	ter depth, substrate, and a	quartic habitrats) can panonip. fern birch
STREAM PROFILE: Plan View (include direction	(include riparian vegetat	m wite I c I cobbilgravel 1/sil4	photo locations, sample lo	eations by gear type and ROW)
STREAM PROFILE: Cross Sectional at Crossing Sector Read Stream Control of Co	(include riparian vegetat	m wike I control of the second	ter depth, substrate, and a WWWWWWW D-2D M deep photo locations, sample lo 1 pict	can participation participation of the participatio
STREAM PROFILE: Cross Sectional at Crossing Sector of the sector of the	(include riparian vegetat	m wike I c I cobkelsravel 1/si/4 Ances from centerline, 96 m	photo locations, sample for	eations by gear type and ROW)
STREAM PROFILE: Cross Sectional at Crossing Sector of the sector of the	(include riparian vegetat	m wike I contentine, Tooble for a vet 1/51/4 ances from centerline, 96 m flow -3	photo locations, sample for	caw particle fabilitats) Caw parton P ferm birch Cations by gear type and ROW) — Y 6m — //
STREAM PROFILE: Plan View (include direction NORTH:	(include riparian vegetat	m wike I c I contract of the second s	photo locations, sample lo	caw parsmip. ferm birch - Y6m
STREAM PROFILE: Cross Sectional at Crossing Sector of the sector of the	(include riparian vegetat	m wite width, wat m wite I c I coblic for aver 1/si /4 ances from centerline, 1/6 m flow ->	photo locations, sample for	caw parsmip. form birch - Y6m - Y7m - Y
STREAM PROFILE: Plan View (include direction NORTH:	(include riparian vegetat	m wike I co I cobble for a vet 1/si / f f b w - >	photo locations, sample for	caw parsmip. ferm birch - Y6m - Y7m - Y
STREAM PROFILE: Plan View (include direction NORTH:	(include riparian vegetat	m wike I c I contract of the second s	photo locations, sample lo	caw partsmip. form birch - Y6m - Y7m -
STREAM PROFILE: Cross Sectional at Crossing Sector of the sector of the	(include riparian vegetat	m wite width, wat m wite I c I coblic for aver 1/si /4 Ances from centerline, 96 m flow ->	photo locations, sample for	caw partsmip. form birch Stons by gear type and ROW) - Y6m - Y7m - Y7m - Y6m - Y7m -
STREAM PROFILE: Plan View (include direction NORTH:	Include riparian vegetat	m wike I c I cobble havet d / si 14 ances from centerline, f / 6 m f w ->	photo locations, sample lo	cations by gear type and ROW)
STREAM PROFILE: Cross Sectional at Crossing Sector of the sector of the	(include riparian vegetat	m wike I contentine, Toobticlaravel 1/sitt flow ->	photo locations, sample to	caw partsmip. form form birch YEm YEm Arta
STREAM PROFILE: Cross Sectional at Crossing Sector of the sector of the	Cinclude riparian vegetat	mwike I co Icobkelsravel 1/5114 ances from centerline, 96 m fbw ->	photo locations, sample for PP ATA NK (173, 3	caw partsmp. form birch - Yen - Y

8

STREAM FISH INVESTIGATION DATA FORM

Feature ID: F867024

METHODS ATTR	RIBUTES					His Wit		in the second second of the
Minnow Traps (Y/N): Hook and Line (Y/N):			-	Beach Seine (Y/N):			let (Y/N):7	Hoop Net (Y/N):
No. of Minnow	No. of Minnow Traps Set: 3 Date & Time in:			Date & Time in:			Time in:	Date & Time In:
Date & Time in:	7/1/2015	(mm/dd/yyyy) No. of lines in water:		(mm/dd/yyyy) No. of passes:		Date 8	Time out:	(mm/dd/yyyy) Date & Time out:
(mm/dd/yyyy)	1415	Time lines in water:	_	Reach Length /r	m): /	(mm/c	Id/www)	(mm/dd/yyyy)
(mm/dd/yyyy)	1015	Time mes m water.	1	Negen cengu (i			1	visual inter
ELECTROFISHIN	G ATTRIBUTES		的語言就這些		影得影响			建设当然的主要问题
EF (Y/N):	EF Start T	ime:	EF End Time:	Wayoform:	EF Time (se	econds):	Efficiency (% of	F Reach Length (m):
Current (A):	/	Volts (V):		Power (W):		Janihi	ing ediciency (% of	(amp x volts
EISH OBSERVAT	TONS		a server the server the		State of the second second	R'Y AND		
ID (Seq. Num)	Gear Type	Species	т ()	otal Length	Life Stage (Juvenile or	Adult)	Disposition (Dead or Alive)	Picture No.
001	MT	2 Dolly	arden	105	invenil	l	alive	*P-FR6T1024-008.
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- 7)	1.5 5	indu / 1			nais		10.07	- 1
		NKF	+3.5					
+00	dense	vea. 1	ON EF					
MISCELLANEOU	IS POINTS (if appl	icable)			Land - Hand	SAL 1	and the second second	
Point ID:	NA	4	Description:	Λ	1A			
Point ID:	\bigwedge	VA	Description:	NA.				
Field	C.	-	Field Scientis	1 Citan	I.E.	T	Technical	
Crew Chief:		D	ecnnician: _	7000	1 most	4	read:	

This form is to be completed before leaving the field site. Date: 7/1/15

For all items not checked, please provide detailed explanation in the notes section of data form.

FT# NK173.2

1. Site Description

Feature ID: F86T1024

- Was ADF&G contacted before conducting any work in this area?
- Site Description complete? (Every cell must have entry or N/A)
- X Were all photos taken and labeled correctly?

2. Physical/Chemical Attributes

- S Calibration performed prior to sampling?
- Physical/Chemical attributes complete? (Every cell must have entry or N/A)

Water quality data within expected ranges?

- 🏹 pH: 4.0 10.0
- X NTU: 0 3000
- 🕱 DO (mg/L): 1.0 15.0
- **√** Temp.: 1.0 19.0
- Specific Conductance: 20 1500

∧tfAlf outside expected ranges, was sample re-taken?

Are units correct?

3. Stream Profile

Stream profile view sketch included?

- X Stream profile view captures water depth and wetted width?
- Stream profile view captures where efforts were made to capture fish?
- Plan view sketch included?

4. Methods Attributes

- K Methods attributes complete? (Every cell must have entry or N/A)
- Were methods used adequate (explanation needed if no methods selected)?

5. Electrofishing Attributes

□_Λ, Electrofishing attributes complete? (Every cell must have entry or N/A) Are units correct?

Feature ID: F86T1024

6. Fish Observations

- Are all fish captured/observed recorded in the Fish Observation table?
- X Are units correct? (Total Length (mm))
- Were adequate photos taken of fish captured? (Take a photo if in doubt)
- 7. General
 - Feature ID and Field Target # are consistent on data forms, logbook entries, photos, and maps?

X All additional data in logbook captured on data form and additional photos noted?

Were all additional comments on stream habitat, etc. recorded on data form?

NOS Was any gear missing/damaged for this survey or did you have any problems that should require resampling of this stream for an adequate survey effort?

By signing below, I verify that all field data for this site has been verified for accuracy and completeness.

Neal Smith

Fisheries Biologist (print)

Signature

ield Crew Chlef (print)

Signature



P_F86TI024_001_US LOOKING US AT PLX

LOOKING DS AT PLX

7/2/2015 NK173.2







P_F86TI024_005_AERIAL AERIAL PHOTO 7/2/2015 NK173.2



P_F86TI024_006_AERIAL AERIAL PHOTO

7/2/2015 NK173.2



P_F86TI024_007_AERIAL AERIAL PHOTO

7/2/2015 NK173.2



7/2/2015 NK173.2



STREAM FISH INVESTIGATION DATA FORM

SITE DESCRIPTION		1. 我们在我们就把你们的问题。在这些是这些问题,我们就是我们的
Date: 7 (3 2015 Investigat	ors: SCS NJS ADF	Team No.: F86 Feature ID: AFF F86T1026
Stream Name: Unnamed	tream	Stream ID: NK 178,1
Pipeline Milepost: 736.9 Stream	found as expected (Y/N):	Hwy MP (N/A if heli accessed):
Latitude: 61° X 241 43,1	6155" N Longitu	ide: 150° 43' 43, 1504'' W
Logbook No.: Logbook Page No.:	4-42 Total Fish Caught: 2	Fish Mortalities: Total Photos:
US@CL DS Pic No.: 8-98611026-001-US Pic	@ CL No.: P.F 8671026-002-DS RB to LI Pic No.:	B@ CL P-F8671026-003-LB Pic No.; P-F8671026-004-RB
Other $P = F 8 b T 10 26 - 00$ Pic No(s).: $P = F 8 b T 10 26 - 006$	5-AERIAL P-F86TTO. - AERIAL	26-007_ AERIAL
PHYSICAL/CHEMICAL ATTRIBUTES		
Weather (Describe): Sunny	Precipitation (Describe): None
Water Temperature (°C): 9.4	Air Temperature (°C): 19	pH: 1,48 Dissolved Oxygen (mg/l): 0,34
Specific Conductance(µS/cm): 85	Turbidity (NTU): 3.5	ORP (mV): 35/. 2 Dissolved Oxygen (%): 70. 7
Ambient Conductance(µS/cm): 59	Odor: NONC Sheen (Y/N): N	Color: Clear Last date of Calibration: 7/1/20/5
Defined Channel (Y/N): Y Notes:	contailed within steep bank	Station wetted width (m): 94 the second sec
Riparlan Veg at 0-5 m at LB: Riparlan Veg	at 0-5 m at RB: Stream Substrate:	Aquatic Habitats
70 Grass/Sedge (%) 80	Grass/Sedge (%) Organics (%)	Sand BarLarge Woody Debris
25 Shrubs (%) 15	Shrubs (%)	Mud BarOverhanging vegetation
<u>/0</u> Trees (%) <u>5</u>	Frees (%) <u>30</u> Sand (%)	Gravel Bar Contiguous Wetlands
Diameter DBH (in.) Dia	meter DBH (in.) <u>40</u> Gravel (%)	RifflesEmergent Plants
Stroom Type:	<u>Cobble (%)</u>	PoolsSubmerged Plants
Stream Type:	Enhemeral Boulders (%)	Undercut Banks
STREAM PROFILE: Cross Sectional at Crossing	(include riparian vegetation, wetted width, wa	ater depth, substrate, and aquatic habitats)
	filewed filewed gravel/cobbe	45% grade steep undercut banks 0.8 m
NORTH:	herbacetous ber ber philippe ber philippe herbacetous	PLX MT3

STREAM FISH INVESTIGATION DATA FORM

Feature ID: <u>F8671026</u>

Minnow Traps (Y/N):	Hook	and Line (Y/N):	Bea	ch Seine ()	/N):	Fyke 1	let (Y/N):	ALA	Hoop Net (Y/N):
No. of Minnow	Traps Set:	Date & Time in: Date & Time in: Date & Time in: Date & Time in:		k Time in:	101	Date & Time in:				
Date & Time in:	(mm/dd/yyyy)		dd/yyyy)	(mr	n/dd/yyyy)	-	(mm/	dd/yyyy) & Time out:		(mm/dd/yyyy) Date & Time out:
(mm/dd/yyyy)	1400	Ture		0.0	- pubbesi		(mm/	dd/yyyy)		(mm/dd/yyyy)
(mm/dd/yyyy)	1000	l lime i	ines in water:	Rea	cn Length	(m):	18	Y		and the second
ELECTROFISHIN	IG ATTRIBUTES	Mer En		त्र । १९ धी _व न्द्र । १९११		初四 南部学	刻潮遠		金沙市	
EF (Y/N):	EF Start Ti	me:	EF End Tir	ne: //-	20	EF Time ((seconds):	327	EF Rea	ach Length (m): 9 /
Duty Cycle: Current (A):	25	Freque Volts (ency (Hz): 60 V): 2 5 2 /// 0	Wa Pov	veform: ¥ ver (W): 1	DC 15/2	Samp	ing Efficiency	(% of sam	ple reach): amp x volts
	0.5	ACCUT NAME	550/900	SHALL SHA	Inca Section	7-120	D .	m	The Distance in the	
ID (Seq. Num)	Gear Type	2.112	Species	Total Le	ngth	Life Stage		Disposition		cture No
2001		T. A	Delle Vindero	(mm)		(Juvenile c	or Adult)	(Dead or A	live)	l (de De de esta
207	Viewal	IVAP1	1/ NK Salmutinin	101	NR	Juven /	116	Alice	2	N/A
1	1	21	1	- 14	1			14010	0	1
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NOTES (any add	litional informatio	in the second		这些新门 市			16 Parket		拉品牌	新闻的资源 。2017年1月
- nº bi - well - herb	sh cap- lisnally defined	wred ob: St	i w/ EF: but served during ream cont	ere EF. a.wed	tanta tanta tanta tanta	ownd(n mid(n nd c	Jap Jap	unde unde	Inshed Inclu Mean	" and was t banks.
		C								
				No.	_	-	a Waltzphie	STER IN ST		
AISCELLANEOU	S POINTS (If anoth	able	2011年1月1日日1月1日日日日日日日日日日日日日日日日日日日日日日日日日日日日	5-11-1103	20. 8 a mar 20	Mr. Sale tool		And I am weather the second	23 y Jones de	A SHARE OF THE STATE OF THE STATE
AISCELLANEOU	S POINTS (if appli	table)	Descriptio	n:	NN		** *** -1	A DE A	行民门的	
AISCELLANEOU oint ID:	S POINTS (if appli	able)	Descriptio	n: n:	NA			1. A		

This form is to be completed before leaving the field site.

3/2015 Feature ID: F 8677026 Date: 7 FT# NK(72.1

For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

- Was ADF&G contacted before conducting any work in this area?
- Site Description complete? (Every cell must have entry or N/A)
- ☑ Were all photos taken and labeled correctly?

2. Physical/Chemical Attributes

- Calibration performed prior to sampling?
- ▷ Physical/Chemical attributes complete? (Every cell must have entry or N/A)
- Water quality data within expected ranges?
 - Ø pH: 4.0 10.0
 - 80 NTU: 0 3000
 - ☑ DO (mg/L): 1.0 15.0
 - t≩ Temp.: 1.0 19.0
 - Specific Conductance: 20 1500
- N If outside expected ranges, was sample re-taken?
 - **√** Are units correct?

3. Stream Profile

- Stream profile view sketch included?
- Stream profile view captures water depth and wetted width?
- Stream profile view captures where efforts were made to capture fish?
- Dean view sketch included?

4. Methods Attributes

- Methods attributes complete? (Every cell must have entry or N/A)
- Were methods used adequate (explanation needed if no methods selected)?

5. Electrofishing Attributes

- Electrofishing attributes complete? (Every cell must have entry or N/A)
- Are units correct?

Feature ID: 18671026

6. Fish Observations

- Are all fish captured/observed recorded in the Fish Observation table?
- ✿ Are units correct? (Total Length (mm))
- Were adequate photos taken of fish captured? (Take a photo if in doubt)

7. General

- Feature ID and Field Target # are consistent on data forms, logbook entries, photos, and maps?
- № All additional data in logbook captured on data form and additional photos noted?
- → Were all additional comments on stream habitat, etc. recorded on data form?
- Was any gear missing/damaged for this survey or did you have any problems that should require resampling of this stream for an adequate survey effort?

By signing below, I verify that all field data for this site has been verified for accuracy and completeness.

Fisheries Biologist (print)

Skinature

Field Crew Chief (print)

Signature





NK 172.1 7/3/15 P_F86T1026_002_DS Looking DS @ PLX 7/3/2015 NK172.1

P_F86TI026_002_DS LOOKING DS AT PLX



P_F86TI026_003_LB LOOKING AT LB AT PLX

7/3/2015 NK172.1



P_F86TI026_004_RB LOOKING AT RB AT PLX

7/3/2015 NK172.1



P_F86TI026_005_AERIAL AERIAL PHOTO

7/3/2015 NK172.1



P_F86TI026_006_AERIAL AERIAL PHOTO

7/3/2015 NK172.1



P_F86TI026_007_AERIAL AERIAL PHOTO

7/3/2015 NK172.1



P_F86TI026_008_DV PHOTO OF DOLLY VARDEN 7/3/2015 NK172.1



STREAM FISH INVESTIGATION DATA FORM

Date: 7.3 20.5 Investigator: SCS N.S.S. N.S.F. Team No.: Stream No.: Stream No.: No. M.A. Stream No.: No. M.A. Stream No.: No. M.A. No.: No:: No:: <th>SITE DESCRIPTION</th> <th>the second second second</th> <th></th> <th>和新闻的是是是的问题。在于日本的问题是</th>	SITE DESCRIPTION	the second second second		和新闻的是是是的问题。 在于日本的问题是
Stream Name: Introduct of Stream Number of Stream Numer of Stream Numbe	Date: 752015 Investigato	ors: SIS NJS ADF	Team No.: F 86	Feature ID: F8677027
Pipeline Milegost: 736.6 Stream found is expected (Y/h): N Longbook: Fish Mortalities: Provide: 1/2 Total Phate: 1/2	Stream Name: Unangened S	tream		Stream ID: NK 171.1
Latitude: 6 1* 2 4 1 50 5 16 3 rd A total total 2 Logbook No.: Logbook Page No.: 4 4 - 4 7 Total Fish Cought: 2 Fish Mortalities: 0 Total Photos: 1 Use 0 1. Press 1 Minima Page 1 and 1 memory 2 Press 1 Minima Page 1 and 1 memory 2 Press 1 Minima Page 1 and 1 memory 2 Press 2 Minima Page 2 Minim	Pipeline Milepost: 736.6 Stream for	ound as expected (Y/N): N - See	notes	Hwy MP (N/A if heli accessed):
Lindbox No: Logbox No: Logbox No: Total Photos: Intel® Call Lindbox No: Logbox No: Step Call Pith Mortalities: It to the Noise Call Pith No: No: Step Call Pith Mortalities: It to the Noise Call Pith No: No: Step Call Step Call Step Call Step Call Pith No: No: Step Call	Latitude: 61* 241 50 5153	311 N	Longitude: 150° 43	3'22,7837" W
US 8 CL PR Mail DB 9 CL PR Mail	Logbook No.: Logbook Page No.: 4	4-47 Total Fish Caught:	2 Fish Mortalities:	Total Photos:
PR: No: 1 CS: 101:01 - 0.01, MEXIL PP: No: 1 CS: 101:01 - 0.02, MEXIL Other P. 178:01:03 - 0.02, MEXIL Precision 23 - 0.02, MEXIL Precision 23 - 0.02, MEXIL Other P. 178:01:03 - 0.02, MEXIL Precision 23 - 0.02, MEXIL Precision 23 - 0.02, MEXIL Weather (Describe): P. 178:01:03 - 0.02, MEXIL Precipitation 23 - 0.02, MEXIL Precipitation 23 - 0.02, MEXIL Weather (Describe): P. 100:03 - 0.02, MEXIL Precipitation 02 - 0.02, MEXIL Precipitation 02 - 0.02, MEXIL Weather (Describe): P. 100:03 - 0.02, MEXIL Precipitation 02 - 0.02, MEXIL Precipitation 02 - 0.02, MEXIL Weather (Describe): P. 11:01:02, MEXIL Precipitation 02 - 0.02, MEXIL Precipitation 02 - 0.02, MEXIL Weather (MIX): Metric Tomerature (°C): Q. 0.02, MEXIL Precipitation 02 - 0.02, MEXIL Beend Channel (VIX): Notes: Contr. Apr.Q. Steen (Y/N): A 0.02, MEXIL Precipitation 02 - 0.02, MEXIL Bernical Channel (VIX): Notes: Contr. Apr.Q. Steen (Y/N): MEXIL Method 02 - 0.02, MEXIL Bernical Channel (VIX): Notes: Contributer (MEXIL): Method 02 - 0.02, MEXIL Steen (Y/N): MEXIL Bernical (VIX): Notes: Contr. Apr.Q.<	US @ CL DS @	PCL CL	RB to LB@ CL	LB to RB@ CL
Other Predition 2 + cost, APRIM. Predition 0 + cost, a constraint, Predition 0 + cost, Predition 0 + cost	Pic No.: - 1567102 += 00 - 45 Pic N	10: 1-19600-1-00-10	Pic No .: P-1861100 7-00	13-LD Pic No.: 1-1861 0 24 - 00 1-00
Preck (Price Price Pric	Other 6-(3671027-006 AFRI	AL P-18610-11-11	[P-F86002	7-009-0LUNKI71.1
BYASICAL ATABUTES Precipitation (Describe): Model Weather (Describe): Model Precipitation (Describe): Dot 0 Specific Conductance(LS/cm): G Odor A// Temperature (°C): A// Temperature (°	PIC NO(S) .: P-F8671 007-007-AL	ERYAL	misc pho	ato @ old NKI71.1
Weather (Describe): Most of Construction (Cost of Cost o	PHYSICAL/ CHEMICAL ATTRIBUTES			
Water Temperature (*C): Q PH: Y Q Disolved Dxygen (%): Q Q PH: Y Q PH: Y Q Disolved Dxygen (%): Q Q PH: Y Q PH: Y Q PH: Q Q PH: Y Q PH: Q Q PH:	Weather (Describe): Mostly Clow	Prec Prec	pitation (Describe): None	1 - 1 - 10 - 10 - 05
Specific Conductance(LS/cm): G Odd <	Water Temperature (°C): 9,43	Air Temperature (°C):	pH: 5,65	Dissolved Oxygen (mg/l): 12.05
Ambient Canductance(Light(m): G.G. Oddr: A_C/AS. Sheen (V/N): A) Color: A_C/AS. Sheen (V/N): A) Wetted Width (m): I	Specific Conductance(µS/cm): 95	Turbidity (NTU):	ORP (mV): 406, 2	Dissolved Oxygen (%): 105.1
Defined Channel (Y/N): Y Rotes: Construct and Mill: Log Channel (Y/N): Y Rotes: Construct and Mill: Log Channel (Y/N): Y Rotes: Construct and A Rote (Construct and K) (Constr	Ambient Conductance(µS/cm): 66	Odor: NONE Sheen (Y/	1): N Color: None	Last date of Calibration: 4/4/2015
Proverting: Provest Construction Provest	Defined Channel (Y/N): Notes:	Consistint riffle	100 K	Thalweg Denth @ Cl (m): 7 / /
Image: Construction of the second of the	Riparian Veg at 0-5 m at LB: Riparlan Veg at 0-5 m at LB:	at 0-5 m at RB: Stream Substra	te: Aquatic Habitats	manag ochini e oc (m). () = /]
Image: Shrubs (%) Im	100 Grass/Sedge (%) 100 G	rass/Sedge (%) 3 Org	anics (%)Sand Bar	Large Woody Debris
Image: Stream Type: Image: Stream Type:	Ø Shrubs (%) Ø_Sl	hrubs (%) 5 _Silt (%)Mud Bar	Overhanging vegetation
MA Diameter DBH (in.) MA Diameter DBH (in.) 40 Gravel (%) X Riffles Emergent Plants Stream Type: Perennial Intermittent Ephemeral Boulders (%) X Undercut Banks Submerged Plants Stream Type: Perennial Intermittent Ephemeral Boulders (%) X Undercut Banks Stream Profile Crossing (include riparian vegetation, watted width, water depth, substrate, and aquatic babitats) X Undercut Banks Stream Profile Intermittent Intermittent Intermittent Intermittent Stream Profile Crossing (include riparian vegetation, water depth, substrate, and aquatic babitats) X Intermittent Stream Profile Profile Intermittent Intermittent Intermittent Intermittent Stream Profile Plant Intermittent Intermittent Intermittent Intermittent Intermittent Stream Profile Plant Intermittent Intermittent Intermittent Intermittent Intermittent Stream Profile Plant Intermittent Intermittent Intermittent Intermittent Intermittent<		rees (%)	(%)Gravel Bar	Contiguous Wetlands
Stream Type:		neter DBH (in.) <u>40</u> Grav	el (%) <u> </u>	Emergent Plants
PerennialEphemeralEphemeralBoulders (%)LUndercut Banks STREAM PROFILE: Cross Sectional at Crossing (Induce Apartam vegetation, worked width, water depth, substrate, and aquatic fiabilities) at	Stream Type:	<u>60</u> _Cobl	ole (%)	Submerged Plants
STREAM PROFILE: Cross Sectional as Crossing (include riparian vegetation) wated width, water depth, substrate, and aquatic flabilities) a) p(1	Perennial Intermittent	EphemeralBoul	ders (%) <u> </u>	ks
STREAM PROFILE: Plan Niew Include direction of How, centerline, distances from centerline, photo locations, sample locations by geat type and ROW) NORTH:	alt AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA	1.07 m Loot 002 sand grave	Do.11 m deep	ARAI
NORTH: A A A A A A A A A A A A A	STREAM PROFILE: Plan View (include direction	of flow, centerline, distances from a	enterline, photo locations, sampl	e locations by gear type and ROW)
	NORTH: flow >	MT P P TTM	old target old target mise. Pt	hot to scale not to scale P= Photom

STREAM FISH INVESTIGATION DATA FORM

Feature ID: <u>F867027</u>

No of Minow Type Set. 3 Date & Time In: (mm/dd/ywy) Date & Time In: (Date O Time In:	Net (Y/N):	Hoop Ne	íA	let (Y/N):	Fyke N	N): NA	Beach Seine (\	NA	nd Line (Y/N):	Hook a	BUTES (N):	METHODS ATTR Minnow Traps (Y		
Date & Time Dit: 7/5/6/07 No. of lines in water: No. of passes: Date & Time Dit: (mm/dd/ywy) mm/dd/ywy) Date & Time Dites in water: Reach Length (m): (mm/dd/ywy) Date & Time Dit: 1/6/50/05 Time Dies in water: Reach Length (m): (mm/dd/ywy) Date & Time Dit: 1/6/50/05 Time Dies in water: Reach Length (m): Date & Time Dit: 1/6/50/05 Time Dies in water: Reach Length (m): Date & Time Dit: 1/6/50/05 Dies Time: EF End Time: EF Time (seconds): EF Reach Length (m): Date & Time Dit: 1/6/50/05 Dies Time: Description: Grad Length (m): Date & Time Dies Time: Description: Grad Length (m): Dies Num Geer Type Species (months): Description: Grad Length (m): Dies Num Geer Type Species (months): Dies Num Geer Type Species (months): - Months: Species (months): - Months: Species (months): - Mich Harget (months): - Caught two Delly Varden h minnew traps Months: Die Mich Harget (months): - Caught two Delly Varden h minnew traps - Caught two Delly Varden h minnew traps	k Time In: Id/yyyy)	Date & T (mm/dd/	1	k Time in: Id/yyyy)	Date 8 (mm/o		Date &Time in (mm/dd/yyyy)	1	. Time in: d/уууу)	No. of Minnow Traps Set: 3 Date & Time in: (mm/dd/yyyy)				
Date & Time lines in water: Park & Time lines in water: Frequency (R): PEF NAT TIME: Frequency (R): Prequency (R): Prequ	k Time out: dd/yyyy)	Date & T (mm/dd/	/	k Time out: Jd/yyyy)	Date 8 (mm/c		No. of passes:		lines in water:	No. of	7/5/2015)ate & Time in: mm/dd/yyyy)		
ECROPOSITIVA ATTRIBUTES FV/NE NA EFStart Time: EFEnd Time: EFTind (Seconds): EFReach Length (M): why Cycle: Prequency (M2: Waveform: Sampling Efficiency (% of sample reach). Power (W): Sampling Efficiency (% of sample reach). SGE OSSERVATIONS DISER, NUM GENT Type Species Total Length Uffe Stage Total Length Uffe Stage Total Length Uffe Stage DISER NUM GENT Type Species Total Length Uffe Stage OFFICE Sawyadduonal Information - Moved target Was similar to others we sampled The area; grave 1/cobble, steady GINU, enough to set - caught two Dolly Variden In MIMOND traffs - MIMOND traffs - MIMOND THE DISTINGT TO Shall target too Shallow + Marrow	man (l	l		m): /	Reach Length		nes in water:	Time li	7/6/2015	ate & Time out mm/dd/yyyy)		
P(N): NA EF Start Time: EF End Time: EF Time (seconds): EF Reach Length (m): vty Cycle: Prequency (hg): Value of the image of the imag	an a				新州市 市		心法担 任				ATTRIBUTES	LECTROFISHING		
19 Cycle: requery (no: volta (no: sampling enclery (volta and per reach)) 19 Color (volta (v): Power (volta) 19 Color (volta (v): Power (volta) 19 Color (volta (v): Power (volta) 19 Color (volta (v): Power (volta) 10 Color (volta (volta)) 10 Color (volta (volta)) 10 Color (volta) 10 Color (v	th (m):	Reach Length	EF	Efficience	conds):	EF Time (se	Maunforday	EF End Time:	1	me:	EF Start Ti	(Y/N): /V		
BEDISTRYATIONS (See, Num) Gear Type Specks Total Length (Inm) (JUNENDE Adult) Bigosition (Dead or Alive) 101 MINATOR D Delly Varden 90 juvenie alive #P.F.850027 102 MT 1 Delly Varden 90 juvenie alive #P.F.850027 102 MT 1 Delly Varden 90 juvenie alive #P.F.850027 102 MT 1 Delly Varden Misc, PH at old taget (and photo) 102 Misc the area; grave 1/cobble, steady flow, enough to set 102 Misc the area; grave 1/cobble, steady flow, enough to set 102 Misc the area; grave 1/cobble, steady flow, enough to set 102 Misc the area; grave 1/cobble, steady flow, enough to set 103 Misc the area; grave 1/cobble, steady flow, enough to set 103 Misc the area; grave 1/cobble, steady flow, enough to set 103 Misc the area; grave 1/cobble, steady flow, enough to set 103 Misc the area; grave 1/cobble, steady flow, enough to set 104 Millie Millie Misc the Area to a shallow the set 105 Millie Mil	(amp x volts)	sample reach):	y (% 01 s	ing enciency	Sampi	-	Power (W):		/):	Volts (/	irrent (A):		
(See, Num) Geer Type Species Total Length (International Constraints) Disposition (Dead or Allive) Picture No. (Dead or Allive) Picture Picture No. (Dead or Allive) Picture No. (Dead or Alli	anti-ou-ballellin			-18 ⁻	NI WERE					为中的	ONS	SH OBSERVATI		
OI MAINTIN Dolly Varden 163 What alve \$P. F8002 202 MT Dolly Under 90 juvenie alve \$P. F80027 100 100	D.	Picture No.	on Alive)	Disposition	Adult)	Life Stage	otal Length	To	Specles	Calls and subscreep	Gear Type	(Seq. Num)		
TTES GAVEAGENER MT 1 Dolly Under 90 juvenie alive #2690027 TTES GAVEAGENER MOVED target approximately 600' to the southwe original target was the narrow + challow/w. to sample, rook mise, PH at old target (and photo) New target was similar to others we sampled the area; gravel/cobble, steady flow, enough to set caught two Dolly Varden in minnow traps (Anoto ±+: PERGTOTE 007.0000K171.1 SECLANEOUS POINTS ((tapplicable) int D: old NK171.1 (Photo Description: Original target too shallow + narrow http:// Alicen. Description: Alicenter of the shallow + narrow	NO27,000-DV	& P # 860		alte	et	Juvlada	163	sidon	Dolly Vo	62	MARTICA	101		
TTES (any additional (information)) TTES (any additional (information)) Moved target approximately 600' to the southive original target was the narrow + shallowfor to sample, took mise, PH at old target (and photo) New target was similar to others we sampled the area; gravel/cobble, steady flow, enough to set caught two Dolly Varden in minnow traffs	1027-011-DI	* P. F9670	,	alve	le	juven	90	Nden	Dolly V.	1	MTI	162		
Test any addicoust information)		1	-		-				,			1-		
TES (any additional information) moved target approximately 600' to the southwe original target was too narrow + shallow(n. to sample, rook mise, PH at old target (and photo) New target was similar to others we sampled the area; gravel/cobble, steady flow, enough to set caught two Delly Varden in minnow traps (Anoto #: RESETION OF CONKITL.) SCELLANEOUS POINTS (if applicable) nt ID: old NK(171,1] (Photo Englishing of All target too shallow + narrow nt ID: old NK(171,1] (Photo Englishing of All target too shallow + narrow nt ID: old NK(171,1] (Photo Englishing of All target too shallow + narrow nt ID: old NK(171,1] (Photo Englishing of All target too shallow + narrow nt ID: old NK(171,1] (Photo Englishing of All target too shallow + narrow		1					-							
TES (any additional information) TES (any additional information) moved target approximately 600' to the southine original target was the narrow + shallow(n. to sample, took mise, PH at old target (and photo) New target was similar to others we sampled the area; gravel/cobble, steady flow, enough to set caught two Dolly Varden in minnow traps Photo #: P.F86T1027.007.000/171.1 SCELLANEOUS POINTS (it applicable) Int ID: pld NK171.1 (Photo Internet Description: Original target too shallow + marrow Int ID: pld NK171.1 (Photo Internet Description: Original target too shallow + marrow Description: AIA										1				
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Page 71 of 88 A		5 150 Z	

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This form is to be completed before leaving the field site.

Date: 1

For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

Feature ID: F8677027

₩ Was ADF&G contacted before conducting any work in this area?

FT#NK(7()

-) Site Description complete? (Every cell must have entry or N/A)
- Were all photos taken and labeled correctly?

2. Physical/Chemical Attributes

- Description performed prior to sampling?
- D Physical/Chemical attributes complete? (Every cell must have entry or N/A)
- X Water quality data within expected ranges?
 - 🕅 pH: 4.0 10.0
 - ₪ NTU: 0 3000
 - ▷ DO (mg/L): 1.0 15.0
 - ⊠ Temp.: 1.0 19.0
 - ☑ Specific Conductance: 20 1500
 - If outside expected ranges, was sample re-taken?
 - 1 Are units correct?

3. Stream Profile

- Stream profile view sketch included?
- Difference Stream profile view captures water depth and wetted width?
- Stream profile view captures where efforts were made to capture fish?
- Plan view sketch included?

4. Methods Attributes

- D Methods attributes complete? (Every cell must have entry or N/A)
- > Were methods used adequate (explanation needed if no methods selected)?

5. Electrofishing Attributes

- Electrofishing attributes complete? (Every cell must have entry or N/A)
- Are units correct?

Feature ID: 7861

6. Fish Observations

- Are all fish captured/observed recorded in the Fish Observation table?
- ☆ Are units correct? (Total Length (mm))
- Were adequate photos taken of fish captured? (Take a photo if in doubt)

7. General

- Feature ID and Field Target # are consistent on data forms, logbook entries, photos, and maps?
- X All additional data in logbook captured on data form and additional photos noted?
- Were all additional comments on stream habitat, etc. recorded on data form?
- Was any gear missing/damaged for this survey or did you have any problems that should require resampling of this stream for an adequate survey effort?

By signing below, I verify that all field data for this site has been verified for accuracy and completeness.

Fisheries Biologist (print)

Signature

Field Crew Chief (print)

Signature



P_F86TI027_001_US LOOKING US AT PLX

LOOKING DS AT PLX

7/5/2015 NK171.1







P_F86TI027_005_AERIAL **AERIAL PHOTO**

7/5/2015 NK171.1



P_F86TI027_006_AERIAL **AERIAL PHOTO**

7/5/2015

NK171.1



P_F86TI027_007_AERIAL AERIAL PHOTO 7/5/2015 NK171.1



P_F86TI027_008_AERIAL AERIAL PHOTO 7/5/2015 NK

NK171.1



P_F86TI027_009_OLDNK171.1 7/5/2015 NK171.1 MISCELLANEOUS PHOTO AT OLD NK171.1



P_F86TI027_010_DV PHOTO OF DOLLY VARDEN 7/5/2015 NK171.1


P_F86TI027_011_DV PHOTO OF DOLLY VARDEN

7/5/2015 NK171.1



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NOTES: Concept Information - Confidential. Produced by Alaska LNG team. The information used to create this product is based on the collected data on the date of issue; it is considered reliable only at the scale at which the data was created and the scale at which the data was created and the scale at which the data was created and the scale at which the data was created and the scale at which the data was created and the scale at which the data was created and the scale at which the data was created and the scale at which the data was created and the scale at which the data was created and the scale at which the data was created and the scale at which the data was created and the scale at which the map was published. This drawing is solely prepared for use by the contractual Alaska LNG team partners and the Ala

SITE DESCRIPTION				And the last state from the same the
Date: 7/10/2015 Invest	gators: SCS NISS	ADE	Team No.: F86 F	eature ID: F867035
Stream Name: Viologing	Stann	11-21	s	tream ID: NK 17D-1
Disalina Milanasti 725 (1) Stra	m found as expected (V/N):	Y		two MP (N/A if heli accessed): lo al
Pipeline Milepost. 155.9 Stiel				
Latitude: 61° 25° 28.	1281 N	Longitud	le: 150 - 71	31.8953 VV
Logbook No.: Logbook Page No	.: 54-35 Total Fish C	Caught: 6	Fish Mortalities:	Total Photos:
Pic No.: P. 1061035_001-45	Pic No.: P-F8611035-	and DS Pic No .:	P-18677035-00	DEL PIC NO.: P-F8677035-004-RB
Other 8-F86T1035-005	- AERIAL	P-F8677039	5-007-AER	IAL
Pic No(s) .: P_F861035-006	- AERIAL			
PHYSICAL/ CHEMICAL ATTRIBUTES		No In Contract		
Weather (Describe): Pa	rthy cloudy	Precipitation (I	Describe):	me
Water Temperature (°C): 10, 98	Air Temperature (°C):	19	рн: 5,66	Dissolved Oxygen (mg/l): //,/8
Specific Conductance(µS/cm): 7.3	Turbidity (NTU): 🖌	1.01	ORP (mV): 148, 4	Dissolved Oxygen (%): 101.0
Ambient Conductance(µS/cm): 5 L	Odor: NML	Sheen (Y/N): N	Color: Clear	Last date of Calibration: 7/8/2015
Defined Channel (Y/N): Notes	: meanders \$45 5	southwest 13	Bacta from nor	the to Wetted Width (m): 1, 45
Flow (Y/N): Notes	: rithle w/ re	latively dief	pools	Thalweg Depth @ CL (m): , 7
Riparian Veg at 0-5 m at LB: Riparian	/eg at 0-5 m at RB: Strea	am Substrate:	Aquatic Habitats	
$\frac{D \mathcal{I}}{D \mathcal{I}} = \frac{D \mathcal{I}}{Grass/Sedge(\%)} = \frac{D \mathcal{I}}{D \mathcal{I}}$	Grass/Sedge (%)	Organics (%)	Sand Bar	
$\frac{10}{5}$ Shrubs (%) $\frac{10}{40}$		Silt (%)	Widd Bar	
3 Diameter DBH (in)	Diameter DBH (in.)	5 Gravel (%)	Riffles	Emergent Plants
		5 Cobble (%)	Pools	Submerged Plants
Stream Type:	Enhamonal A	Boulders (%)	Undercut Bank	s
	Epnemeral	<u> </u>		
outon applied to the second of	gravel gravel bar	45 m wide	alders bill grasses I.O.17 m du	ich grap 2ep
NORTH:	X = 30	10 1001	cora plor	7/
Stream weards through corr and plans	ide from to	All all	PLX PLX Stions	H-THR

Feature ID: F86 71035

METHODS ATTR Minnow Traps (*	RIBUTES Y/N):	Hooka	ind Line (Y/N): NA	Beach Seine (Y	IN: NA	Fyke N	let (Y/N):	Hoop Net (Y/N):
No. of Minnow 1	Traps Set: 3	Date 8	Time in:	Date & Time In	: /	Date 8	Time in:	Date & Time in:
Date & Time In:	7/9/2015	No. of	lines in water:	No. of passes:		Date 8	k Time out:	Date & Time out:
(mm/dd/yyyy) Date & Time out (mm/dd/yyyy)	1515 t: 7/10/2015 1230	Time li	nes in water:	Reach Length	(m):	(mm/c	(yyyy)	(mm/dd/yyyy)
ELECTROFISHIN	G ATTRIBUTES	the file				a land	. der singers	
EF (Y/N):	EF Start Ti	me:	EF End Tin	ne:	EF Time (see	conds):		EF Reach Length (m):
Duty Cycle:		Freque	ency (Hz) :	Waveform:		Sampl	ing Efficiency (%	of sample reach):
Current (A):	-	Volts (v):	Power (W):				(amp x volts)
FISH OBSERVAT	TONS	The Party					《祝日、	
ID (Seq. Num)	Gear Type		Species Varden	Total Length (mm)	Life Stage (Juvenile or A	Adult)	Disposition (Dead or Alive	Picture No.
001	V15.065	4	Vatard Salasain	NA	inven	·(2	alive	* P_F8671035-008-DV
00)	Minhow Tra	P	Dolly Varden	104			EV.	XP_FX677035_009-DV
003	11		Sculpin (slimy)	94	Adu	14	LV	*P-F8671035-010-Sup
004	U		Dolly Varden	165	Jovenile /	Adult	11	* F86T1035_011_DV
005	11		ιt	104	Juvenily	2	11	na
006	11		11	135	Juvenile /	Abolt	11-	n/a
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MISCELLANEOU	S POINTS (if applic	able)	San A Market	Selling and the	and the set	Listor 1	A STATE OF	
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oint ID:	14	VA	Description	1:	NA			
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This form is to be completed before leaving the field site. TIO3S FT # NK (70.1 Date: 7/10/2015

For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

Feature ID: F86T1035

- Was ADF&G contacted before conducting any work in this area?
- Site Description complete? (Every cell must have entry or N/A)
- Were all photos taken and labeled correctly?

2. Physical/Chemical Attributes

- >>> Calibration performed prior to sampling?
- Physical/Chemical attributes complete? (Every cell must have entry or N/A)

Water quality data within expected ranges?

- þ pH: 4.0 10.0
- D NTU: 0 3000
- DO (mg/L): 1.0 15.0
- 🖞 Temp.: 1.0 19.0
- Specific Conductance: 20 1500

NA It outside expected ranges, was sample re-taken?

Are units correct?

3. Stream Profile

- Stream profile view sketch included?
- Stream profile view captures water depth and wetted width?
- Stream profile view captures where efforts were made to capture fish?
- Plan view sketch included?

4. Methods Attributes

- S Methods attributes complete? (Every cell must have entry or N/A)
- Were methods used adequate (explanation needed if no methods selected)?

5. Electrofishing Attributes

Electrofishing attributes complete? (Every cell must have entry or N/A) Are units correct?

Feature ID: F86T1035

6. Fish Observations

- & Are all fish captured/observed recorded in the Fish Observation table?
- Are units correct? (Total Length (mm))
- Were adequate photos taken of fish captured? (Take a photo if in doubt)
- 7. General
 - Feature ID and Field Target # are consistent on data forms, logbook entries, photos, and maps?
 - R All additional data in logbook captured on data form and additional photos noted?
 - Were all additional comments on stream habitat, etc. recorded on data form?
- We Was any gear missing/damaged for this survey or did you have any problems that should require resampling of this stream for an adequate survey effort?

By signing below, I verify that all field data for this site has been verified for accuracy and completeness.

Fisheries Biologist (print)

Skynature

Fleid Crew Chief (print)

Signature



P_F86TI035_002_DS LOOKING DS AT PLX





P_F86TI035_005_AERIAL AERIAL PHOTO 7/9/2015 NK170.1



P_F86TI035_006_AERIAL AERIAL PHOTO

7/9/2015 NK170.1



P_F86TI035_007_AERIAL AERIAL PHOTO

7/9/2015 NK170.1



P_F86TI035_008_DV 7/9/2015 UNDERWATER PHOTO OF DOLLY VARDEN

015 NK170.1



P_F86TI035_009_DV PHOTO OF DOLLY VARDEN

7/9/2015 NK170.1



P_F86TI035_010_SCULPIN PHOTO OF SLIMY SCULPIN 7/9/2015 NK170.1



P_F86TI035_011_DV PHOTO OF DOLLY VARDEN 7/9/2015 NK170.1

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⊢ No Fish Observed			55 CT(1)	SII	ny Scuipin	Incn -	ific d)			
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Species Observed	NS C	Ninespine Stickleback	15	[hr	reespine S	tickleba	ICK		υ 1	0 20 30 40 50 Meters
AB Alaska Blackfish	0	Other Species Not Listed	OBS	Fis	h Observa	tion, No	o Specie	es Informatio	n	MOLOIO
AG Arctic Gravling	RT	Rainbow Trout								
AL	ASKA	LNG					2015			IONS
NOTES:				CHECK			2015			
Concept Information - Confidential. Produced by Ala collected data on the date of issue; it is considered re	ska LNG team.	The information used to create this product is scale at which the data was created and the	based on the scale at which				CONTRACTOR NAM			MAP NUMBER REV.
the map was published. This drawing is solely prepar earn assumes no liability to any other party for any re	ed for use by the presentations co	e contractual Alaska LNG team partners and th intained in these drawings. This map must be p	e Alaska LNG printed/viewed	TCS	AK 4	INAD83		AECOM PROJECT NUMBER	ORIG.PAGE SI7F	
at full scale (100%) in order for the scale to remain co	rrect.			APP R.	1.2 000	15.0	ct 2015	26221302	85 X 11	
					1.2,000	150		2022 1332	0.0 / 11	

SITE DESCRIPTION	自己的问题	制制品品	
Date: 6/29/15 Investigators: EAH, NJS, ADF, SCS	Team No.: FBG	Feature ID: Fe	671021
Stream Name: UNNAMED STREAM		Stream ID: N	K162.2
Pipeline Milepost: 722.3 Stream found as expected (Y/N): Y		Hwy MP (N/A if	hell accessed): HELI
Latitude: 61° 34' 35.6140" N Longitu	de: 150° 31'	44.2393	" W
Logbook No.: Logbook Page No.: 35-34 Total Fish Caught: 16	Fish Mortalities:	Ø	Total Photos: 9
US@CL DOL WD PIC NO. P. POUTOZI OD L DO PIC NO.	BOCL PROTIDEN	LB to	RB@CL
P-FBOTLDZI-005-MERIAL	15.00	E FIG IN	
Pic No(s) .: L-FSOTLOZI-ODO-AERIAL			
P-PBUTLOZI-007-AERING			and the state of the state of the state of the
Weather (Describe): Partly daudy Precipitation (Describe): NONE		
Water Temperature (°C): 12,5% Air Temperature (°C): 14	pH: 6.65	Dissolved O	xygen (mg/l): 9.67
Specific Conductance(µS/cm): 68 Turbidity (NTU): 4,4	ORP (mV): 745.9	Dissolved O	kygen (%): 90.7
Ambient Conductance(µS/cm): 51 Odor: NoNE Sheen (Y/N): N	Color: Cleat	Last date of	Callbration: 628/15
Defined Channel (Y/N): Y Notes: Meandering stream channel	» gravel/sand	Subsha ewett	ed Width (m): 3/15" 1.2 M
Flow (Y/N): Y Notes: Plan throughout	1	• Thal	veg Depth @ CL (m): 5.5" 0 . [] M
Riparian Veg at 0-5 m at LB: Riparian Veg at 0-5 m at RB: Stream Substrate: Image: Image of the stream Substrate (%) Image of the stream Substrate (%) Image of the stream Substrate (%)	Aquatic Habitats	k	Large Weedy Debris
40 Shruhe (%) 70 Shruhe (%) 00 organics (%)			Large woody Debris
D Trees (%) (5 Trees (%) 45 Sand (%)	Cravel Bar		Contiguous Wetlands
N/A Diameter DBH (in.) 12 Diameter DBH (in.) 40 Gravel (%)	X Riffles		Emergent Plants
Stream Tunoi 5 Cobble (%)			Submerged Plants
V Perennial Intermittent Enhemeral Boulders (%)	Undercut Ban	iks	
	A	Taring manufacture and the second	
STREAM PROFILE: Plan View (include direction of flow, centerline, distances from centerline,	i m	e locations by get	at type and ROW)
NORTH:	XTT STORE	A	Cravel Bar t

Feature ID: FB6T1021

finnow Traps (Y/N):	Hook and Line (Y/N):	Beach Sein	e (Y/N): Fyke	Net (Y/N):	Hoop Net (Y/N):
o. of Minnow	Traps Set:	Date & Time in: (mm/dd/yyyy)	Date &Tim	e in: Date (mm	& Time in /dd/yyyy)	Date & Time in: (mm/dd/yyyy)
ate & Time in:	6/29/15	No. of lines in water:	No. of pas	ses: Date (mm	& Time out: N	Date & Time out:
ate & Time ou nm/dd/yyyy)	14:00	Time lines in water:	Reach Len	gth (m):		
LECTROFISHIN	G ATTRIBUTES				在利用的品牌	
F (Y/N):	EF Start Ti	me: EF	End Time:	EF Time (seconds):	aling Efficiency 1% of	F Reach Length (m):
urrent (A):		Volts (V):	Power (W	. Jang	sing chickency (ve of	(amp x volts)
	NOT	As when we have the set	A PRIMARY PROPERTY			
) (Seq. Num)	Gear Type	Species	Total Length (mm)	Life Stage (Juvenile or Adult)	Disposition (Dead or Alive)	Picture No.
001	VISObs	Sculpin X	3 (95) NA	nla	Alive	n/a
002	MT-1	Coho	56	juvenile	1	in/x
003	MT-1	Coho	61	1		*P.FB071021_008_x
04	1	1	84			nla
005			72			
006			70			
607			81			
908	1		72			
009			70			
0(0			68			
011			85	1	V	
0127	Y		+1			V
013	heandering fern/all hany Col in (Set I I 36 mm 39 mm	stream w/gr der Corridor no & Sculpi Connecting : NT while @ Coho Alive Coho Alive	avel/sand su in small n observed stream DS site to c \$ Photo P-Fi	bottate runni Valley fhroughout near 22 hapactorize 3671021-009.	size of conto	ngh f coho
014-					IN A STATE	
OI4 -	IS POINTS (if appli	cable)	CONTRACTOR OF THE PROPERTY	AND A DESCRIPTION OF A	the second part of the second second	CARL PROPERTY AND A REAL MACRANE
OLH -	IS POINTS (if appli NA	cable)	escription:	NA		
OIH - IISCELLANEOU Dint ID: Dint ID:		cable) Dr	escription:	N/A MA-		

This form is to be completed before leaving the field site.

Feature ID: PB6T1021 FT # NK162.2 Date: 6/29/15

For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

- Was ADF&G contacted before conducting any work in this area?
- VI Site Description complete? (Every cell must have entry or N/A)
- Were all photos taken and labeled correctly?

2. Physical/Chemical Attributes

- Calibration performed prior to sampling?
- D Physical/Chemical attributes complete? (Every cell must have entry or N/A)
- X Water quality data within expected ranges?
 - **%** pH: 4.0 10.0
 - ₩ NTU: 0 3000
 - Y⁄⊠ DO (mg/L): 1.0 15.0
 - 🕅 Temp.: 1.0 19.0
 - Specific Conductance: 20 1500
- K If outside expected ranges, was sample re-taken?
- Are units correct?

3. Stream Profile

- ✓ Stream profile view sketch included?
- M Stream profile view captures water depth and wetted width?
- D Stream profile view captures where efforts were made to capture fish?
- Plan view sketch included?

4. Methods Attributes

- Methods attributes complete? (Every cell must have entry or N/A)
- Were methods used adequate (explanation needed if no methods selected)?

5. Electrofishing Attributes

Electrofishing attributes complete? (Every cell must have entry or N/A)

Feature ID: FB6 TI021

6. Fish Observations

- Are all fish captured/observed recorded in the Fish Observation table?
- Are units correct? (Total Length (mm))
- \mathfrak{V} Were adequate photos taken of fish captured? (Take a photo if in doubt)

7. General

- 🖄 Feature ID and Field Target # are consistent on data forms, logbook entries, photos, and maps?
- All additional data in logbook captured on data form and additional photos noted?
- ★ Were all additional comments on stream habitat, etc. recorded on data form?
- \mathcal{W} Was any gear missing/damaged for this survey or did you have any problems that should require resampling of this stream for an adequate survey effort?

By signing below, I verify that all field data for this site has been verified for accuracy and completeness.

Fisheries Biologist (print)

Signature

Field Crew Chief (print)

Signature



P_F86TI021_002_DS LOOKING DS AT PLX 6/29/2015 NK162.2



P_F86TI021_003_LB LOOKING AT LB AT PLX 6/29/2015 NK162.2



P_F86TI021_004_RB LOOKING AT RB AT PLX 6/29/2015 NK162.2



P_F86TI021_005_AERIAL AERIAL PHOTO

6/29/2015 NK162.2



P_F86TI021_006_AERIAL AERIAL PHOTO

6/29/2015 NK162.2



P_F86TI021_007_AERIAL AERIAL PHOTO

6/29/2015 NK162.2



P_F86TI021_008_COHO PHOTO OF COHO SALMON

6/29/2015 NK162.2



P_F86TI021_009_COHO PHOTO OF COHO SALMON 6/29/2015 NK162.2



ALASKA LNG	ICS			2015	ALASKA FISH FIELD SUI	LNG RVEY LOCATI	IONS		
NOTES:	CHECK								
Concept Information - Confidential. Produced by Alaska LNG team. The information used to create this product is based on the		PROJECTION	DATUM	CONTRACTOR NA	ME			MAP NUMBER	REV.
collected data on the date of issue; it is considered reliable only at the scale at which the data was created and the scale at which the map was published. This drawing is solely prepared for use by the contractual Alaska LNG team partners and the Alaska LNG team contracts and the scale of the contract team of the contract of the scale of the scale at which team of the scale of the scale of the contract of the scale of the sca	TCS	AK 4	NAD83		AECON	1		Page 26 of 86	A
team assumes no liability to any other party for any representations contained in these drawings. This map must be printed-viewed at full scale (100%) in order for the scale to remain correct.	APP R.	scale 1:2,000	DATE 15 C	Oct 2015	PROJECT NUMBER 26221392	ORIG.PAGE SIZE 8.5 X 11			
		1							

	時間に対応につい	a spinster				
Date: 6.29.15 Investigat	ors: KAH, N.	JS, ADF. S	cs	Team No.: PB6	Feature ID	FOGTIOZZ
Stream Name: UNNAMED ST	RETM	. ,			Stream ID:	NKIWZI
Pipeline Milepost: 1219 Stream	ound as expected ((Y/N): Y			Hwy MP (I	N/A if heli accessed): HEL
Latitude: 11° 34' 55, 817	8"N		Longitude	: 150° 31	' 32.	4503 " W
Logbook No.: A Logbook Page No.:	6-27 Total	Fish Caught:	a	Fish Mortalities:	NA	Total Photos: 7
US @ CL DS	@ CL		RB to LB@			LB to RB@ CL
Pic No .: P-F86T1022-001-US Pic	No .: 1 F861100	12-002-DS	Pic No.: F	-18611022-01	03-65	Pic No.: M-186 10 204-04-KD
Other P-FB0T1022-005-	TERIAL					
Pic No(s) .: 1-FB0 (1022-007-	MERIAL					
PHYSICAL/ CHEMICAL ATTRIBUTES		The All State			and the second	
Weather (Describe): Partly clo	ndy	Precip	oitation (De	escribe): None	1	10
Water Temperature (°C): 11.5	Air Temperature	e (°C): 14	-	pH: 6.13	Dissol	ved Oxygen (mg/l): 9.16
Specific Conductance(µS/cm): 70	Turbidity (NTU):	3.4		ORP (mV): 291.8	3 Dissol	ved Oxygen (%): 84.3
Ambient Conductance(µS/cm): 52	Odor: NENE	Sheen (Y/N)): N	Color: Clear	Last d	Wetted Width (m): 0 1 (
Elow (Y/N): Y Notes:	UNVERENT I	LAC' hard	to Ain	d places has a	IT	Thalweg Depth @ CL (m): 05
Riparian Veg at 0-5 m at LB: Riparian Veg	at 0-5 m at RB:	Stream Substrat	ie:	Aquatic Habitats	11 1	
<u>90</u> Grass/Sedge (%) <u>80</u>	irass/Sedge (%)	۱Orgar	nics (%)	Sand Bar		$\underline{\mathcal{X}}_{}$ Large Woody Debris
10 Shrubs (%) 20	hrubs (%)	_ <u>20_</u> Silt (%	5)	Mud Bar		Overhanging vegetation
Trees (%)	rees (%)	SoSand ((%)	Gravel Bar		Contiguous Wetlands
<u>5</u> Diameter DBH (in.) <u>0</u> Dia	meter DBH (in.)	Grave	l (%)	Riffles		Emergent Plants
Stream Type:		Cobble	e (%)	Pools	nks	Submerged Plants
XPerennialIntermittent	Ephemeral	Bould	ers (%)		IIKJ	
STREAM PROFILE: Cross Sectional at Crossing	(include riparian ve	egetation, wetted w	vidth, wate	er depth, substrate, a	nd aquatic i	nabitats)
STREAM PROFILE: Cross Sectional at Crossing	(include riparian ve	egetation, wetted w	vidth, wate	er depth, substrate, a	nd aquatic i	nabitats)
ALLOIS	(include riparian vo	egetation, wetted w	vidth, wate	er dépth, substrate, a	ind aquatic l I Jers VCh	abitats)
STREAM PROFILE: Cross Sectional at Crossing	(include riparian ve	egetation, wetted w	vidih, wate	er depth, substrate, a	ind aquatic i I Jers VCH	abitats)
STREAM PROFILE: Cross Sectional at Crossing Alder S Jern Actoss	(include riparian v	egetation, wetted w	vidth, wate	er dépth, substrate, a Bland Bland Bland bland Bland Bland fe	nd aquatic i I Jers rch	abitats)
STREAM PROFILE: Cross Sectional at Crossing Alder S Jern Jernss	(include riparian ve	egetation, wetted w	vidith, wate	er depth, substrate, a BAB a bi fe de	nd aquadic l I Jers rch rch	club
STREAM PROFILE: Cross Sectional at Crossing alders fern grass nettles dep	(include riparian ve	egetation, wetted w	vidih; wate	er depth, substrate, a bi bi fe da	nd aquatic (IJers Wrch Irn Irn I's III (0	club
STREAM PROFILE: Cross Sectional at Crossing alders Jern Jernss netfles Lep 0,05	Cinclude riparian ve	egetation, wetted w	vidih, wate	er depth, substrate, s	nd aquatic l I Jars rch rch r i I s i f l la	club
STREAM PROFILE: Cross Sectional at Crossing alders Jern Jernss Nettles Lep 0,0:	(include riparian ve	egetation, wetted w	vidith; wate	er depth, substrate, a bi bi fe da Ne	nd aquatic (IJers WCH INN INN IS INN IS	club
STREAM PROFILE: Cross Sectional at Crossing alders Jern Jernss netfles tep 0,05	Cinclude riparian ve	egetation, wetted w	vidih, wate	er depth, substrate, a bi bi fc da Ne	nd aquatic l I Jers rch rch rul is I fl le	club
STREAM PROFILE: Cross Sectional at Crossing (Ldoi S Jern Jernss Meth (25 STREAM PROFILE: Plan Mew (Include direction)	(include riparian ve	egetation, wetted w	enterline, p	er depth, substrate, a BIR B BIR B BIR BIR BIR BIR BIR BIR BIR BIR BIR BI	ind aquatic (luns) with with with le	club by gear type and ROW)
STREAM PROFILE: Cross Sectional at Crossing (16015 1617 1617 1617 1617 1617 1615 1617 1	(include riparian v.	egetation, wetted w	enterline, p	er depth, substrate, s	ind aquatic (l Jers vrch vrch vri l 's i f l le	club by gear type and ROW)
STREAM PROFILE: Cross Sectional at Crossing (16015 1617 1	(include riparian ve	egetation, wetted w	interline, p	er depth, substrate, a bi bi fe da Me	nd aquatic (luns) rch rch run (~s run (~s run (~s run (~s) run (~s)	club by gear type and ROW)
STREAM PROFILE: Cross Sectional at Crossing (Local S Jerra Jerra Jerra Jerra STREAM PROFILE: Plan View (Include direction NORTH: The flore Market Construction of the section Market Construction of the section of the section NORTH: The section of the section of the section of the section Market Construction of the section	(include riparian ve	egetation, wetted w	interfine, p	er depth, substrate, a bi bi fc da ve	ind aquatic (luns) with with with s influe	club by gear type and ROW)
STREAM PROFILE: Cross Sectional at Crossing (Loc S Grass Netles STREAM PROFILE: Plan View (include direction NORTH: A Chore Market Cost	(include riparian ve	egetation, wetted w Sand/silt	enterline, p	er depth, substrate, a bi bi fe da Ne	nd aquatic (IJers YCH YCH YUITS YTTC Ne locations	club by gear type and ROW)
STREAM PROFILE: Cross Sectional at Crossing (Local S Jerra Jerra Jerra Jerra Jerra STREAM PROFILE: Plan View Include direction NORTH: T Close	(include riparian v.	egetation, wetted w	interline, p	er depth, substrate, a bi fc da Ne	ind aquatic (I Jers with with infield ale, locations	club by gear type and ROW()
STREAM PROFILE: Cross Sectional at Crossing (1 dor S Grass Netl(05 STREAM PROFILE: Plan View (include direction NORTH: M M M M M M M M M M M M M	(include riparian ve	egetation, wetted w	interline, p	er depth, substrate, a bi fe da photo locations, sam	nd aquatic (IJers YCH YCH YCH YCH YCH YCH YCH YCH YCH YCH	club by gear type and ROW)
STREAM PROFILE: Cross Sectional at Crossing (16015 1617 1	(include riparian v.	egetation, wetted w Sand silt	interfine, p	er depth, substrate, a bi fc da ve	ind aquatic (I Jers vrch vrch vrl's i fl (e)[e, locations	club by gear type and ROW()
STREAM PROFILE: Cross Sectional at Crossing Aldors Grass Nettles STREAM PROFILE: Plan View (include direction NORTH: A M M M M M M M M M M M M M	(include riparian v.	egetation, wetted w Send / silt	interline, p	an depth, substrate, a bit fe da Ne	nd aquatic (I Jers rch rch rific iff (e ne locations	club by gear type and ROW)
STREAM PROFILE: Cross Sectional at Crossing (16015 1617 1	(include riparian y	egetation, wetted w Sand silt	interline, p	er depth, substrate, a bi fe da Ne	ind aquatic (I Jers inch inch inch infis iffle iffle	club by gear type and ROW()
STREAM PROFILE: Cross Sectional at Crossing Aldor S Grass Netfles STREAM PROFILE: Plan View (include direction NORTH: A M M M M M M M M M M M M M	Tinclusie riparian ve	egetation, wetted w Sand silt	interline, p	photo locations, sam	ind aquatic (I Jers vch vch vil's vil's vil's vil's vil's	club by gear type and ROW)

Feature ID: PBGTL022

Minnow Traps (RIBUTES Y/N):	Hook and Line (Y/N):	Beach Sei	ne (Y/N):	Fyke Net (Y/N):		Hoop Net (Y/N):
No. of Minnow Date & Time In: (mm/dd/yyyy) Date & Time ou (mm/dd/yyyy)	Traps Set: 3 6 (2) (15 5:15 15:15 10 (5	Date & Time in: (mm/dd/yyyy) No. of lines in water: Time lines in water:	Date &Tin (mm/dd/) No. of par Reach Ler	ne in: ses: gth (m):	Date & Time in: (mm/dd/yyyy) Date & Time ou (mm/dd/yyyy)		Date & Time In: (mm/dd/yyyy) Date & Time out: (mm/dd/yyyy)
LECTROFISHIN	IG ATTRIBUTES	al date of the second	and the second second		新教育部制度		
F (Y/N):	EF Start Ti	me:	EF End Time:	EF Time (se	conds):	EFR	each Length (m):
Duty Cycle:		Frequency (Hz)	VA Waveform	n:	Sampling Efficie	ncy (% of sa	mple reach):
unent (A):		vonsty)			and the second se	and the second second	
ISH OBSERVAT	TIONS		Total Length	Life Stage	Dispos	ition	
D (Seq. Num)	Gear Type	Species	(mm)	(Juvenile or	Adult) (Dead	or Alive)	Picture No.
	1	1		11.000			
						-	
						-	
_							
	1	1		-		+	
INTER 1	maanuurant	a share the second		NI DINE DOMESTICS	SHIE MELTINGS	In the local day	
- du - sh	phild cl allow very	cangut nannel water- dense v	or obs contained not enci getation	whith whith	dense v for Ei	iegestad E t	r Iso
	Contraction in the	cable)	金派馬橋的"加下包	the former of the		in same	A STATE WALL AND MANY
	IS POINTS (if appli		Description	ALA			and the second second second
viiscellaneou 'oint ID:			Description:	NA			the of the second second

This form is to be completed before leaving the field site.

Feature ID: <u>FOUTIOZZ</u> FT <u>#NK/62</u> I Date: <u>6.29.15</u> For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

- Was ADF&G contacted before conducting any work in this area?
- $\mathbb{N}_{\mathcal{K}}$ Site Description complete? (Every cell must have entry or N/A)
- Were all photos taken and labeled correctly?

2. Physical/Chemical Attributes

- Calibration performed prior to sampling?
- A Physical/Chemical attributes complete? (Every cell must have entry or N/A)
- Mater quality data within expected ranges?
 - Ъ pH: 4.0 − 10.0
 - ≥ NTU: 0 3000
 - Èr DO (mg/L): 1.0 − 15.0
 - 8 Temp.: 1.0 19.0
 - Specific Conductance: 20 1500
- $|\lambda|$ If outside expected ranges, was sample re-taken?
 - Are units correct?

3. Stream Profile

- Stream profile view sketch included?
- Dr Stream profile view captures water depth and wetted width?
- Stream profile view captures where efforts were made to capture fish?
- Plan view sketch included?

4. Methods Attributes

- Methods attributes complete? (Every cell must have entry or N/A)
- abla' Were methods used adequate (explanation needed if no methods selected)?

5. Electrofishing Attributes

- Electrofishing attributes complete? (Every cell must have entry or N/A)
- Are units correct?

Feature ID: F867022

6. Fish Observations

- Are all fish captured/observed recorded in the Fish Observation table?
- Are units correct? (Total Length (mm))
- Were adequate photos taken of fish captured? (Take a photo if in doubt)

7. General

NA

- R Feature ID and Field Target # are consistent on data forms, logbook entries, photos, and maps?
- All additional data in logbook captured on data form and additional photos noted?
- P Were all additional comments on stream habitat, etc. recorded on data form?

 $M \not\models \chi$ Was any gear missing/damaged for this survey or did you have any problems that should require resampling of this stream for an adequate survey effort?

By signing below, I verify that all field data for this site has been verified for accuracy and completeness.

Fisheries Biologist (print)

Signature

Field Crew Chief (print)

Signature



LOOKING DS AT PLX





P_F86TI022_005_AERIAL AERIAL PHOTO

6/30/2015 NK162.1



P_F86TI022_006_AERIAL AERIAL PHOTO

6/30/2015 NK162.1



P_F86TI022_007_AERIAL AERIAL PHOTO 6/30/2015 NK162.1



SITE DESCRIPTION			
Date: 6/29/15 Investigat	OFS HAL NIS ADP, SCS	Team No.: PBio Fe	eature ID: POGTOZO
Stream Name: UNNAMED TRIBU	ITARY TO EROTO SU	subit st	ream ID: NK159.3
Pipeline Milepost: 713.5 Stream 1	found as expected (Y/N): γ_{-} Doesn	T CEEM TO BS H	wy MP (N/A if heli accessed): HELT
Latitude: 61° 41' 28.2667"	N	gitude: 150° 27'	14,0392" W
Logbook No.: Logbook Page No.:	35-37 Total Fish Caught:	Fish Mortalities:	2 Total Photos:
US@CLP PAINTIDZO, OOLUS DS(@ CL CEALTINZO -007 bS RBt	o LB@ CL	LB to RB@ CL
PICNO: PICTOR PICT			A PICNOW CONTRACT A PICK
Pic No(s).: 0 CHW T1070-006	AERIAL P_F807102	CO_DOT. PERCIPC	
PHYSICAL/ CHEMICAL ATTRIBUTES			
Weather (Describe): PARTLY CLO	WDY Precipitatio	on (Describe): NONE	
Water Temperature (°C): 9.06	Air Temperature (°C):	pH: 3,83	Dissolved Oxygen (mg/l): 8.96
Specific Conductance(µS/cm): 93	Turbidity (NTU): 2.4	ORP (mV): 281,8	Dissolved Oxygen (%): 77.7
Ambient Conductance(µS/cm): 65	Odor: Sulcure Sheen (Y/N): N	Color: CLEAR	Last date of Calibration: 6 78 iS
Defined Channel (Y/N): Notes: 5	tream some to discontinue	DS	Wetted Width (m): 2 0.7
Riparlan Veg at 0-5 m at LB: Riparlan Veg	at 0-5 m at RB: Stream Substrate:	Aquatic Habitats	
85 Grass/Sedge (%) 85 G	irass/Sedge (%) 100 Organics (%)Sand Bar	Large Woody Debris
<u>75</u> Shrubs (%) <u>65</u> s	hrubs (%)	Mud Bar	Overhanging vegetation
<u>30</u> Trees (%) <u>30</u> T	rees (%)Sand (%)	Gravel Bar	Contiguous Wetlands
Diameter DBH (in.)4Diar	meter DBH (in.)Gravel (%)	Riffles	Emergent Plants
Stream Type:	Cobble (%)	Pools	Submerged Plants
Perennial X Intermittent	Ephemeral Boulders (*	()OIIdercut ballks	Print and a state of the state of the
STREAM PROFILE: Cross Sectional at Crossing	(include riparian vegetation, wetted width;	, water depth, substrate, and i	aquatic habitats)
STREAM PROFILE: Cross Sectional at Crossing	(include riparian vegetation, wetted width)	water depth, substrate, and	aquatic fiabilitats)
STREAM PROFILE: Cross Sectional at Crossing	Include riparian vegetation, wetted width	water depth, substrate, and a	ocations by gear type and ROW)
STREAM PROFILE: Cross Sectional at Crossing	Include riparian vegetation, wetted width	water depth, substrate, and a	equatic habitats)
STREAM PROFILE: Cross Sectional at Crossing	(include riparian vegetation, wetted width)	water depth, substrate, and .	ocations by gear type and ROW) MT-3 (mis sight to SW iF (mis sight to SW iF (mis sight to SW iF (mis sight to SW iF (mis sight to SW iF) pit marked Scale
STREAM PROFILE: Cross Sectional at Crossing	Include riparian vegetation, wetted width	water depth, substrate, and a	aquatic habitats)
STREAM PROFILE: Cross Sectional at Crossing	Include riparian vegetation, wetted width	water depth, substrate, and .	ocations by geat type and ROW)
STREAM PROFILE: Cross Sectional at Crossing	Include riparian vegetation, wetted width	water depth, substrate, and a	Decations by gear type and ROW) WIT-3 sikk to SW iF (This sikk to SW i
STREAM PROFILE: Cross Sectional at Crossing	Include riparian vegetation, wetted width	water depth, substrate, and a	aquatic habitats)
STREAM PROFILE: Cross Sectional at Crossing	Include riparian vegetation, wetted width	water depth, substrate, and	Deations by gear type and ROW) WITT Stifk to SW TF (This sifk to SW TF NISO' to SW TF put mer scale Put mer wer wer
STREAM PROFILE: Cross Sectional at Crossing	Include riparian vegetation, wetted width	water depth, substrate, and	aquatic fiabilitats)
STREAM PROFILE: Cross Sectional at Crossing	Include riparian vegetation, wetted width	water depth, substrate, and a	ocations by gear type and ROW) WIT-3 sikk to SW iF (This sikk to SW iF

Feature ID: FOGTIOZO

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winnow iraps (Y/N): V	Hook a	and Line (Y/N):		Beach Seine	(Y/N):	FykeN	let (Y/N):	Hoop Net	(Y/N):
No. of Minnow	Traps Set:	Date 8	& Time in:		Date & Time	n:	Date 8	Time in:) Date & Ti	ne in:
1	3	(mm/c	dd/yyyy)	IN	(mm/dd/yyy	1	(mm/c	Id/yyyy)	/ (mm/dd/)	(777)
Date & Time in: (mm/dd/yyyy)	10:30	No. of	lines in water:	- 11	No. of passes	~	Date 8 (mm/c	Time out:	A Date & Th	me out:
Date & Time out	16130115	Time I	ines in water:		Reach Length	ı (m):		- Con		
	CATTRIBUTES	N-PORTA	COLUMN A MUST	いとないの	A CONTRACTOR	manger and the			A REAL PROPERTY OF	CONTRACTOR NEW CONTRACTOR
FF (Y/N):	EF Start Tir	me:		FE End Tim	e:	FE Time (se	conds):		FE Reach Length (m):
Duty Cycle:		Freque	ency (Hz) :	1	Waveform:		Sampli	ing Efficiency (% o	of sample reach):	
Current (A):	1	Volts (V):		Power (W);				,	(amp x volts)
FISH OBSERVAT	IONS		NUMBER OF STREET	The Set of		THE PREMIT		The second second	who will have the set	Contraction of the local division of the loc
ID (See Num)	Goor Tyme	WEALST AS	Species.	·····································	Total Length	Life Stage	12.2.2.3(0)	Disposition	Disture No.	
ib (Seq. Nulli)	Gear Type		species		(mm)	(Juvenile or /	Adult)	(Dead or Alive)	Picture No.	the -
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This form is to be completed before leaving the field site.

Feature ID: <u>P86 T1° 20</u> FT #<u>NKIS9</u>. 3 Date: <u>6(36(2015</u>) For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

- Was ADF&G contacted before conducting any work in this area?
- Site Description complete? (Every cell must have entry or N/A)
- Were all photos taken and labeled correctly?

2. Physical/Chemical Attributes

- Calibration performed prior to sampling?
- → Physical/Chemical attributes complete? (Every cell must have entry or N/A)
- Water quality data within expected ranges?

(D) pH: 4.0 – 10.0

- 🕅 NTU: 0 3000
- 🖄 DO (mg/L): 1.0 15.0
- X Temp.: 1.0 19.0

Specific Conductance: 20 - 1500

L If outside expected ranges, was sample re-taken?

Are units correct?

3. Stream Profile

- X Stream profile view sketch included?
- Stream profile view captures water depth and wetted width?
- Stream profile view captures where efforts were made to capture fish?

Dean view sketch included?

4. Methods Attributes

- ∑ Methods attributes complete? (Every cell must have entry or N/A)
- Were methods used adequate (explanation needed if no methods selected)?

5. Electrofishing Attributes

Electrofishing attributes complete? (Every cell must have entry or N/A)

Feature ID: P86 TI 0 ZO

6. Fish Observations

- M Are all fish captured/observed recorded in the Fish Observation table?
- ☑ Are units correct? (Total Length (mm))
- Were adequate photos taken of fish captured? (Take a photo if in doubt)

7. General

- Feature ID and Field Target # are consistent on data forms, logbook entries, photos, and maps?
- All additional data in logbook captured on data form and additional photos noted?
- Were all additional comments on stream habitat, etc. recorded on data form?
- Was any gear missing/damaged for this survey or did you have any problems that should require resampling of this stream for an adequate survey effort?

By signing below, I verify that all field data for this site has been verified for accuracy and completeness.

Smith

Fisheries Biologist (print)

Signature

X Sam Sin

Field Crew Chief (print)

Signature


P_F86TI020_001_US LOOKING US AT PLX

LOOKING DS AT PLX

6/29/2015 NK159.3





P_F86TI020_003_LB LOOKING AT LB AT PLX

6/29/2015 NK159.3





P_F86TI020_005_AERIAL AERIAL PHOTO

6/29/2015 NK159.3



P_F86TI020_006_AERIAL AERIAL PHOTO 6/29/2015 NK159.3



P_F86TI020_007_AERIAL AERIAL PHOTO

6/29/2015 NK159.3



P_F86TI020_008_9S PHOTO OF NINESPINE STICKLEBACK

6/29/2015 NK159.3



P_F86TI020_009_9S PHOTO OF NINESPINE STICKLEBACK



P_F86TI020_010_9S PHOTO OF NINESPINE STICKLEBACK 6/29/2015 NK159.3

6/29/2015

NK159.3



SITE DESCRIPTION	
Date: 7/5/2015 Investigators: SCS NJS ADF	Team No.: F86 Feature ID: F8677028
Stream Name: Unnamed Stream	Stream ID: NK 158, 3
Pipeline Milepost: 706 [Stream found as expected (Y/N):	Hwy MP (N/A if heli accessed):
Latitude: $(a1^{\circ} 4b' b_{\circ} 7745'' N)$ Longitud	de: 150° 21' 30,4911 " W
Logbook No.: Logbook Page No.: 45-47 Total Fish Caught:	Fish Mortalities: AJA Total Photos: 7
US @ CL RB to LE	3@ CL
Pic No.: P-F8677028.00. W Pic No.: P-F8611028.02-05 Pic No.:	P-18610+8-003-00 Pic No.: 1-186100-8-004.KD
Other P-FSLTDOJS. 006 - AERIAL	
PIC NO(S) .: P- 1867028_007_ AERIAL	
PHYSICAL/ CHEMICAL ATTRIBUTES	
Weather (Describe): Sunny Precipitation (I	Describe): A ONL
Water Temperature (°C): Air Temperature (°C):	pH: (0, 9) Dissolved Oxygen (mg/): 7. (4
Specific Conductance(µS/cm): 7 Urbidity (NTU): 0.7	Color: chart chinted Last date of Calibration: 7/4//C
Defined Channel (Y/N): V Notes: A chief @ +A cast Beauer por	ds 115 Wetted Width (m): 1, 23
Flow (Y/N): Y Notes: Yery minimal / Trafit	Thalweg Depth @ CL (m): • 20
Riparian Veg at 0-5 m at LB: Riparian Veg at 0-5 m at RB: Stream Substrate:	Aquatic Habitats
Grass/Sedge (%) Grass/Sedge (%) Organics (%)	Sand BarLarge Woody Debris
	Mud BarOverhanging Vegetation
$\frac{1}{3} \text{ Diameter DBH (in)} = \frac{1}{10} \text{ Diameter DBH (in)} = \frac{1}{5} \text{ Gravel (%)}$	Kiffles Kiffles
	PoolsSubmerged Plants
Stream Type: Berennial Intermittent Enhemeral Boulders (%)	Undercut Banks
	the distribution of a second statements (addition in)
I I I I I I I I I I I I I I I I I I I	M STRSSES Shrabs/alders Sprace
NORTH: NORTH: NORTH: NOT +to State Gale Ga	46 PK CO PO PARA PK

Feature ID: _______8671028

Minnow Traps (No. of Minnow Date & Time in: (mm/dd/yyyy) Date & Time ou (mm/dd/yyyy)	RIBUTES (Y/N): Traps Set: 3 : $7/5 2015$ 1400 Jt: $7/6 2015$ 150	Hook and Line (Y/N): Date & Time in: (mm/dd/yyyy) No. of lines in water: Time lines in water:	Beach Seine Date & Time (mm/dd/yy No. of passe Reach Leng	e (Y/N): h (n: yy) 25: th (m): P (Y/N): (n C (n): C (n	vke Net (Y/N): N/A ate & Time in: nm/dd/yyyy) ate & Time out: nm/dd/yyyy)	Hoop Net (Y/N): Date & Time In: (mm/dd/yyyy) Date & Time out: (mm/dd/yyyy)
ELECTROFISHIN EF (Y/N): Duty Cycle: Current (A):	VG ATTRIBUTES	ne: El Frequency (Hz) : Volts (V):	End Time: Waveform: Power (W):	EF Time (second	is): E Empling Efficiency (% of	F Reach Length (m): sample reach): (amp x volts)
FISH OBSERVA	TIONS					ante entre la la la
ID (Seq. Num)	Gear Type	Species	Total Length (mm)	Life Stage (Juvenile or Adul	t) (Dead or Alive)	Picture No.
NOTES (any add - no - soft - Jens - stre 1	ditional Information bish bottom se overhu Lebris eam cov arge be	Campt stream W/ anging vege ntained w eaver comp	minimal tation, al It banks lex upst-	water a dens + . but a ream	nd flow submerger ppears t	l woody o be a
	IS POINTS (if applir	able)				
MISCELLANEOU	as route in apple					
MISCELLANEOU Point ID:	NA	D	escription: NA			

Stream Fish Investigations Field Form QA/QC Checklist

This form is to be completed before leaving the field site.

Feature ID: F867026 FT # NK158.3 Date: 7/6/2015

For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

- Was ADF&G contacted before conducting any work in this area?
- Site Description complete? (Every cell must have entry or N/A)
- Were all photos taken and labeled correctly?

2. Physical/Chemical Attributes

- ✗ Calibration performed prior to sampling?
- X Physical/Chemical attributes complete? (Every cell must have entry or N/A)
- ℬ Water quality data within expected ranges?
 - f pH: 4.0 − 10.0
 - ₩ NTU: 0 3000
 - ▶ DO (mg/L): 1.0 15.0
 - ∱ Temp.: 1.0 19.0
 - Specific Conductance: 20 1500
- $N \to T$ If outside expected ranges, was sample re-taken?
 - Are units correct?

3. Stream Profile

- Stream profile view sketch included?
- X Stream profile view captures water depth and wetted width?
- K Stream profile view captures where efforts were made to capture fish?
- ☑ Plan view sketch included?

4. Methods Attributes

- ★ Methods attributes complete? (Every cell must have entry or N/A)
- ☆ Were methods used adequate (explanation needed if no methods selected)?

5. Électrofishing Attributes

- Electrofishing attributes complete? (Every cell must have entry or N/A)
- Are units correct?

Stream Fish Investigations Field Form QA/QC Checklist

Feature ID:

6. Fish Observations

- Are all fish captured/observed recorded in the Fish Observation table?
- Are units correct? (Total Length (mm))
- Were adequate photos taken of fish captured? (Take a photo if in doubt)

7. General

- Feature ID and Field Target # are consistent on data forms, logbook entries, photos, and maps?
- R All additional data in logbook captured on data form and additional photos noted?
- D Were all additional comments on stream habitat, etc. recorded on data form?
- Was any gear missing/damaged for this survey or did you have any problems that should require resampling of this stream for an adequate survey effort?

By signing below, I verify that all field data for this site has been verified for accuracy and completeness.

Fisheries Biologist (print)

Signature

Field Crew Chlef (print)

Signature



P_F86TI028_001_US LOOKING US AT PLX

7/5/2015 NK158.3







P_F86TI028_005_AERIAL AERIAL PHOTO

7/5/2015 NK158.3



P_F86TI028_006_AERIAL AERIAL PHOTO



P_F86TI028_007_AERIAL AERIAL PHOTO

and the	1221930	der an	Target Name	: UNNAM	IED S	TREAM				ARCTIC (DCEAN	
ANT -	and the second	we "	Featur	re ID: F86	5TI02	8		1	Chukchi S	iea	Beaufort Sea	
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	Fish Observed	CH	Chinook Salmon	SC(I)	Sci	ilipin (Unsp	ecified)			Feet	
L L	No Fich Observed	CO	Coho Salmon	SS	Slir	ny Sculpin	2 emou,	/		0 5	0 100 150 20	00
	Photo Point	DV	Dolly Varden	ST(U)	Stic	kleback (U	nspeci	fied)		ПШ		1
Specie	s Observed	NS	Ninespine Stickleback	ΤS	Thr	eespine St	ickleba	ick		0 1	0 20 30 40 50	
AB	Alaska Blackfish	0	Other Species Not Listed	OBS	Fisl	n Observat	ion, Nc	Specie	es Informatio	n	10161619	
AG	Arctic Grayling	КI	Rainbow Trout									
	AL	ASKA	LNG		DRAWN ICS				ALASKA	LNG		
NOTES:			The lafe-method is the second second		СНЕСК			2015	FISH FIELD SUR	VEY LOCAT		
Concept Inform collected data on he map was put	ation - Contidential. Produced by Ala: on the date of issue; it is considered re iblished. This drawing is solely prepare	sка LNG team. eliable only at th ed for use by th	I ne information used to create this product is e scale at which the data was created and the s the contractual Alaska LNG team partners and the	pased on the scale at which e Alaska LNG	DESIGN	AK 4	MAD83	CONTRACTOR NAM	AECOM		Page 29 of 86	REV.
eam assumes at full scale (100	no liability to any other party for any re 0%) in order for the scale to remain co	presentations c rrect.	ontained in these drawings. This map must be p	printed/viewed	APPR.	SCALE	DATE		PROJECT NUMBER	ORIG.PAGE SIZE		_1
						1:2,000	15 Oc	ct 2015	26221392	8.5 X 11		

SITE DESCRIPTION:	
Date: 7(8/2015 Investigators: SCS NJS ADF	Team No.: F86 Feature ID: F8671031
Stream Name: Unnamed Stream	Stream ID: NK 158, 2
Pipeline Mllepost: 705.7 Stream found as expected (Y/N):	Hwy MP (N/A if heli accessed):
Latitude: 61° 111'28 3040" N Longitu	de: 150° 21'33.1053" 41
Loghook No: L Loghook Page No.: 49 -5/ Total Fish Caught: Def U	SF Fish Mortalities: Total Photos: 13
US @ CL DS @ CL RB to LI	B@ CL LB to RB@ CL
Pic No.: P-F8671031-001-US Pic No.: P-F867103(-002-DS Pic No.:	P-F8671031-005-00 Pic No.: P48611031-004-KB
Other P-F8677031-005. AERIAC F-F8617001-00	- MERINE
Pic No(s) .: P-F86T1031-006. AERIAL	
PHYSICAL/ CHEMICAL ATTRIBUTES	
Weather (Describe): RVE(CAST Precipitation (Describe): 1 and Caro
Water Temperature (°C): 16,14 Air Temperature (°C): 2	pH: 6,340 Dissolved Oxygen (mg/l): 8,76
Specific Conductance(µS/cm): 88 Turbidity (NTU): /0, 3	ORP (mV): 17/, 6 Dissolved Oxygen (%): 91, 2
Ambient Conductance(µS/cm): 74 Odor: A Ove Sheen (Y/N): N	Color: CIECT W trate Last date of Calibration: 4/6/2015
Defined Channel (Y/N): Notes: sightly meandering	Thelway Depth @ Cl (m): 4 0//
Flow (Y/N): Notes: Steady (160 Pool	Aquatic Habitats
A Grass/Sedge (%) 40 Grass/Sedge (%) 3 Organics (%)	Sand Bar
$\frac{1}{50} \text{ Shrubs (%)} \qquad \frac{1}{80} Shru$	Mud Bar Overhanging vegetation
Trees (%) 5 Trees (%) 30 Sand (%)	Contiguous Wetlands
N/A Diameter DBH (in.) 5 Diameter DBH (in.) 40 Gravel (%)	Riffles
Stream Type: Perennial Intermittent Enhemeral Boulders (%)	Undercut Banks
STREAM PROFILE: Cross Sectional at Crossing, linclude riparian vegetation, waited width, w	ater depth, substrate, and aquatic habitats)
A I devised for the stances from centerline, distances from centerline, distances from centerline, distances from centerline	I D. 24 m underwarter grass
NORTH: / HL DO PLX	46m -
Fland	
min p	MIS
MT2 TP	1
	1.
P	

Page 1 of 3

Feature ID: <u>F867703</u>

No. of Minov Treps Set: Date & Time In: Date & Time In: Date & Time In: Date & Time In: Imm/dd/yyyy Hom/dd/yyyy Hom/dd/yyyy Hom/dd/yyyy Date & Time In: Minodof Yyyy Date & Time In: Date & Time In: Imm/dd/yyyy Ho. of lines in water: No. of passes: Date & Time out: Date & Time out: Imm/dd/yyyy Hom/dd/yyyy Hom/dd/yyyy Hom/dd/yyyy Hom/dd/yyyy Date & Time out: Time lines in water: Reach Length (m): Date & Time out: Imm/dd/yyyy Hom/dd/yyyy Hom/dd/yyyy Hom/dd/yyyy Date & Time out: Time lines in water: Reach Length (m): Date & Time out: Imm/dd/yyyy Hom/dd/yyyy Hom/dd/yyyy Hom/dd/yyyy Hom/dd/yyyy	;Minnow Traps ((V/N): Y	Hook and	Line (Y/N):	NA	Beach Sei	ne (Y/N): N	'A	Fyke I	Net (Y/N):	N/-	Hoop Net ((/N): NA
Date & Time In: Time In: Time In: Time In: Date & Time out: Inter & Time out: Time Inter in water: Reach Length (m): Date & Time out: Inter & Other Inter & Time out: Time Inter in water: Reach Length (m): Date & Time out: Inter & Other Inter & Time out: Time Inter in water: Reach Length (m): Date & Time out: Inter & Other Inter & Time out: Inter & Time Inter EF Find Inter: EF Time (seconds); EF Reach Length (m): Inter & Time out: Inter & Time Inter Inter & Time Inter Inter & Time Inter Inter & Time out: Inter & Time Inter Inter & Time Inter Inter & Time Inter Inter & Time out: Inter & Time Inter Inter & Time Inter Inter & Time Inter Inter & Time Inter Inter & Time Inter Inter & Time Inter Inter & Time Inter Inter & Time Inter Inter & Time Inter Inter & Time Inter Inter & Time Inter Inter & Time Inter Inter & Time Inter Inter & Time Inter Inter & Time Inter Inter & Time Inter Inter & Time Inter Inter & Time Inter Inter & Time Inter Inter & Time Inter Inter & Time Inter Inter & Time Inter Inter & Time Inter Inter & Time Inter Inter & Time Inter Inter &	No. of Minnow	Traps Set:	Date & Tin (mm/dd/y	ne in: ww)	1	Date & Tir	ne in:	1.	Date a	& Time in: dd/ww)	,	Date & Tim	e in:
Inn/dd/wyy) 1300 Time lines in water: Reach Length (m): (mn/dd/wyy) (mn/dd/wyy) ELECTROPISHING ATTRIBUTES ELECTROPISHING ATTRI	Date & Time in:	7/7/2015	No. of line	s in water:	1	No. of pas	sses:	1	Date	& Time ou	t:	Date & Tim	e out:
mm/dd/yyy/ mean angle (m) EECTOOSCHING ATTRUITES EF (M): N EF Start Time: EF End Time: EF RMD: N Dity Cycle: Prequency (H1): Duty Cycle: Sampling Efficiency (S of sample reach: Current (A): Volts (V): Disposition (mm) Disposition Peture No. OOL N'IS. obs COMD N/A OO2 MT 2 OD3 MT 2 (a,b)ab Trout 145 OO3 MT 2 (a,b)ab Trout 145 OO4 MT 2 (a,b)ab Trout 155 (b)ab Trout 155 (c)ab 3 10 (a)ab 4 (c)b 3 (c)ab 3 10 (c)ab 3 10 (c)ab 3 10 (c)ab 5 10 </td <td>(mm/dd/yyyy) Date & Time ou</td> <td>1430</td> <td>Time lines</td> <td>in water</td> <td></td> <td>Reach Ler</td> <td>agth (m):</td> <td></td> <td>(mm/</td> <td>dd/yyyy)</td> <td></td> <td>(mm/dd/yy</td> <td>(W)</td>	(mm/dd/yyyy) Date & Time ou	1430	Time lines	in water		Reach Ler	agth (m):		(mm/	dd/yyyy)		(mm/dd/yy	(W)
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pstlogsenvariants 10 (See, Num) Gener Type Species Total Length (Imm) Disposition Picture No. 10 (115. obs COND N/R JUV OLAR TRUE NO. 002 MT 2 COND 7/R JUV OLAR P. P. (8,671031-008.00) 002 MT 2 COND 7/R JUV ALVE P. (8,671031-008.00) 003 MT 2 CALLER TOWN 145 JUL/ACULT 11 N/A 004 MT 2 CALLER TOWN 165 SILV/ACULT 11 N/A 005 MT 2 CALLER SO JUV A P. (8,671031-012-00 006 JUV A P. (8,671031-012-00 007 MT 2 CALLER SO JUV A P. (8,671031-012-00 008 S COLD 62 JUV A P. (8,671031-012-00 008 S COLD 62 JUV A P. (8,671031-012-00 009 S COLD 62 JUV A P. (8,671031-012-0 009 S COLD 62 JUV A P. (8,6710-0 009 S COLD 62 JUV A P. (8,67	Current (A):	L	Volts (V):	1		Power (W	2:	_		/			(amp x vo
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005 Mil 2 randow trout 145 invladult 11 M RAA 004 MT 2 randow trout 136 invladult 11 M REGIONALOUR 004 MT 2 randow trout 165 rive/adult 11 M REGIONALOUR 004 MT 2 randow trout 165 rive/adult 11 M REGIONALOUR 005 r rock 0 62 rive 12 regional of 2 0064 r rock 0 62 rive 12 regional of 2 007 r rock 0 68 r rock 0 009 r rock 0	002	MT 2	6	no		17	Ju	V .		chi	e	F-F86710	31.009.00
HOS MI2 Parble trout 136 surfadult II * P.P.860032000 DOY MT2 Parble trout 165 Rim/Adult P.P.860032010.R DOY COLO 62 JUV P.P.86003201.012.C DOY COLO 62 JUV P.P.860032012.C DOY COLO 62 JUV P.P.860032012.C DOY COLO 62 JUV P.P.860032012.C DOY COLO 63 JUV P.P.860032012.C DOY COLO 53 JUV P.P.860032012.C DOY COLO 63 JUV P.P.860032012.C DOY COLO 53 JUV P.S. NOTES (ANY Additional information) - VISMAILY Observed both possible stick (ebict + possible sclashids Jater determined to be colo (toot underwater) Judo Judo Judo Stream W. Steady Blaw + riff U.P.001 habitat	003	MIZ	ra	the bour	rout	145	jul	adul	t			x n/a	
VOY MT 2 (aibow trant 165 (iw / adult) \$PE +86T1031_0112_0 2064 (Coho 62 Juv) \$PE +86T1031_012_0 2064 (Coho 62 Juv) \$PE +86T1031_012_0 2077 (Coho 53) 208 5 (Cho 68) 209 5 (Cho 53) 209 5 (Coho 53) 209 5 (Coho 53) 209 5 (Coho 53) 200 5 (Coho 68) 209 5 (Coho 53) 200 5 (Coho 53) 200 5 (Coho 68) 200 5 (Coho 53) 200 5 (Coho 53) 200 5 (Coho 53) 200 5 (Coho 68) 200 5 (Coho 53) 200	005	MIZ	ra	, Lbau 7	rout	136	Au	lady	It	1	1 1	P. F86770	31-010-R
Alter determined to be constant proto	204	MTQ	6	inbow	Trant	165	Suu	[adu	dt			* Y_F86T10	31-011-R
NOTES (any additional information) - visinally observed both possible stick(eback + possible sclannids (ater determined to be conformation) - captured cono, DV, + Slimy sculpin in MT well defined stream w/ steady flow + riff(/pool habitat	904	6 1		ohe		30	``	uv				na	1 1
Notes (and cond) - captured cond, DV, + Slimy Sculpin in MT well defined Stream w/ steady flow + right/pool habitat	01967			Cohe	>	62	-	uv			-	P-F867703	51-012-(
ops s (oho 53 00 s (oho 53 010 Coho 53 011 Coho 53 01	ORT			Coh.	D	59		-				nla	
NOTES (any additional information) - visually observed both possible stickleback + possible selvanids (ater determined to be cons (took underwater) - captured cons, DV, + Slimy sculpin in MT - well defined stream w/ steady flow + right/pool habitat	0018	5		Coho	_	68		-					
Notes (any additional information) - visually observed both possible stick (eback + possible selawids later determined to be cono (took underwater) - captured cono, DV, + Slimy sculpin in MT - well defined stream w/ steady flow + right/pool habitat	907		-	(Dh	0	53		-					
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	NOTES (any add	itional information	DE CENTRE	1218-141		人名 南亚 2010		制加速	and here	27月1日	24	在 的东西和"这个	
	MISCELLANEOUS Point ID:	itional information ily obser hand define htat spoints (if applic	ni ved coho d	both lar Dr Stree	pos Jer da am Description	sible extern, slimy w/s	stickle hed fead	ebr to M	ct. be pih Bl.	+ p co h	ho (n MI + r	ile sela Poot under ph.	wids water)

Feature ID: <u>F86763</u>

FISH OBSERVAT	IONS (continued)	新闻的 和中国的中国的中国的中国	相對相關的自己的			
ID (Seq. Num)	Gear Type	Species	Total Length (mm)	Life Stage (Juvenile or Adult)	Disposition (Dead or Alive)	Picture No.
0121	mt2	Coho	55.	sinvente	alive	1/9
2131	(Coho	50	Jil II		
0X4 c		Coho	51	¥.		
0145		S/my scaloin	75	adult		
OIB		Coho	50	MPLICO		
0[7]	V mT2	Cohio	66	Justenie	Y	V
018	MTT 3	coho	75	NURA 10		nla
09			62			
120			45	V		
921/15		V	59	juvenile		
022/49		Callbour tout	80	juvenile		
0 3		coho	100	juvenile		
0/2.Y		Slimy Sulpin	80	adult	·	
4251		coho 1	50	juvende		
226/1		coho	48	juvenile		
027		coho	49	juvenile		
02/8.42	V	Slimy sculpin	80	adult		
OPA	MT3	Simy sculph	60	invenile adi	elf	
080'	MT3	coho	56	uvenile		-
031	MT1	coho	99	Juvenile		1.11
032/	Mtj	coho	140	Tuvenile		
03/3	1	Coho	'93	juvenile	1	
ORY SC		Caho	97	0		
135		coho	50		V	
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NGA		1	47			
178 5	5		53			1
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Page # of 3

Stream Fish Investigations Field Form QA/QC Checklist

This form is to be completed before leaving the field site.

Date: 7 8/2015

For all items not checked, please provide detailed explanation in the notes section of data form.

FT#NK158,2

1. Site Description

Feature ID: FRLTIPS1

- Was ADF&G contacted before conducting any work in this area?
- Site Description complete? (Every cell must have entry or N/A)
- K Were all photos taken and labeled correctly?

2. Physical/Chemical Attributes

- K Calibration performed prior to sampling?
- Physical/Chemical attributes complete? (Every cell must have entry or N/A)
- S Water quality data within expected ranges?
 - び pH: 4.0 10.0
 - 🕅 NTU: 0 3000
 - ₩ DO (mg/L): 1.0 15.0
 - 🕱 Temp.: 1.0 19.0
 - Specific Conductance: 20 1500

 \mathbb{M}^{1} If outside expected ranges, was sample re-taken?

Are units correct?

3. Stream Profile

- Stream profile view sketch included?
- Stream profile view captures water depth and wetted width?
- Stream profile view captures where efforts were made to capture fish?
- Plan view sketch included?

4. Methods Attributes

- Methods attributes complete? (Every cell must have entry or N/A)
- ♂ Were methods used adequate (explanation needed if no methods selected)?

5. Electrofishing Attributes

Electrofishing attributes complete? (Every cell must have entry or N/A)

Are units correct?

Stream Fish Investigations Field Form QA/QC Checklist

61103 Feature ID:

6. Fish Observations

- Are all fish captured/observed recorded in the Fish Observation table?
- Are units correct? (Total Length (mm))
- Were adequate photos taken of fish captured? (Take a photo if in doubt)

7. General

- Feature ID and Field Target # are consistent on data forms, logbook entries, photos, and maps?
- All additional data in logbook captured on data form and additional photos noted?
- X Were all additional comments on stream habitat, etc. recorded on data form?
- NOK Was any gear missing/damaged for this survey or did you have any problems that should require resampling of this stream for an adequate survey effort?

By signing below, I verify that all field data for this site has been verified for accuracy and completeness.

Fisheries Biologist (print)

Signature

X Ula

Sily

Field Crew Chlef (print)

Skinature



P_F86TI031_002_DS LOOKING DS AT PLX



P_F86TI031_004_RB LOOKING AT RB AT PLX



P_F86TI031_005_AERIAL AERIAL PHOTO

7/8/2015 NK158.2



P_F86TI031_006_AERIAL AERIAL PHOTO



P_F86TI031_007_AERIAL AERIAL PHOTO

7/8/2015 NK158.2



P_F86TI031_008_COHO 7/8/2015 UNDERWATER PHOTO OF COHO SALMON

5 NK158.2



P_F86TI031_009_COHO PHOTO OF COHO SALMON

7/8/2015 NK158.2



P_F86TI031_010_RT PHOTO OF RAINBOW TROUT



P_F86TI031_011_RT PHOTO OF RAINBOW TROUT 7/8/2015 NK158.2



P_F86TI031_012_COHO PHOTO OF COHO SALMON



P_F86TI031_013_COHO PHOTO OF COHO SALMON

		Target Nam	ne: UNNAN	IED S	TREAM				ARCTIC (DCEAN	nt Coa	
A CASE AND A		Feat	ure ID: F86	01103	1			Chukchi S	Prudr	beaujo	n seu	
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LEGEND	DII	Purbot	SA(II)	Sal	monid /l.ln	onooifio	(d)					
F Fish Observed	СН	Chinook Salmon	SA(U) SC(U)	Sa	ilpin (Unsp	ecified)	a)			Fee	et	
F No Fish Observed	CO	Coho Salmon	SS	Slir	ny Sculpin				0 50 Luuul) 10 1111	0 150 20)0
Photo Point	DV NS	Dolly Varden Ninespine Stickleback	TS	Stic	kleback (L eespine St	Inspeci ickleba	fied) ck		0 1	ווווווו 0 20	30 40 50	
AB Alaska Blackfish	0	Other Species Not Liste	d OBS	Fis	h Observat	ion, No	Specie	es Informatio	n	Mete	ers	
AG Arctic Grayling	RT	Rainbow Trout										
AL	ASKA	LNG		ICS			2015	ALASKA FISH FIELD SUR	LNG VEY LOCAT	IONS		
NOTES: Concept Information - Confidential. Produced by Ala	ska LNG team.	The information used to create this produc	t is based on the	CHECK	PROJECTION DAT	UM	CONTRACTOR NAM			MAF	P NUMBER	REV.
he map was published. This drawing is solely prepar eam assumes no liability to any other party for any re t full scale (100%) in order for the scale to remain or	ed for use by th epresentations or prect.	e contractual Alaska LNG team partners and ontained in these drawings. This map must l	d the Alaska LNG be printed/viewed	TCS	AK 4	NAD83		AECOM PROJECT NUMBER	ORIG.PAGE SIZE		Page 30 of 86	A
				APP R.	1:2,000	15 Oc	t 2015	26221392	8.5 X 11			

SITE DESCRIPTION		这些人的问题的 ———————————————————————————————————	
Date: 7 812015 Investigato	DIS: SCS NJS ADF	Team No.: F86 Fe	eature ID: F8677032
Stream Name: Unnamed	Stram	St	ream ID: NK 158, 1
Pipeline Milepost: 705.0 Stream f	ound as expected (Y/N):	H	wy MP (N/A If heli accessed): heli
Latitude: 61° 47 04 1603	Longitu	de: 150° 21'	20. 1622" W/
Logbook No.: Logbook Page No.:	51-52 Total Fish Caught: 29	Fish Mortalities:	Total Photos: 9
US @ CL	CL Calman 222 RB to LE	3@ CL	LB to RB@ CL
Pic No.: P-P8011032-00-43 Pic N	Pic No.: Pic No.: Pic No.:	2007_ ASP	A
Other Pic No(s): $P(RLTh 37 OD($	ASPIAI	Care (a l') Care	
1210000		and the second second	
PHYSICAL/ CHEMICAL ATTRIBUTES	Precipitation (Describe):	0
Water Temperature (°C): 14.39	Air Temperature (°C): 19	Describe). MORC	Dissolved Oxygen (mg/l): 9 58
Specific Conductance(µS/cm): 145	Turbidity (NTU): 5, 9	ORP (mV): 3/0,3	Dissolved Oxygen (%): 93.X
Ambient Conductance(µS/cm):	Odor: Nove Sheen (Y/N): N	Color: NONO	Last date of Calibration: 7/7/2-d5
Defined Channel (Y/N): Notes:	meandering, in	small valle	Wetted Width (m): 3,69
Flow (Y/N): Notes:	rikle/0001 -1	A swette Ushitete	Thalweg Depth @ CL (m):
Riparian Veg at U-5 m at LB: Riparian Ripar	ass/Sedge (%)	Aquatic Habitats	
95 Shrubs (%) 80 sh	arubs (%) 20 silt (%)	Mud Bar	Overhanging vegetation
10Trees (%)	rees (%) <u>40</u> Sand (%)	Gravel Bar	Contiguous Wetlands
<u> </u>	neter DBH (in.) <u>60</u> Gravel (%)		Emergent Plants
Stream Type:	<u></u> Cobble (%)	Pools	Submerged Plants
PerennialIntermittent	EphemeralBoulders (%)	Undercut Banks	
STREAM PROFILE: Plan View (include direction	Copple/gravel Sar	choto locations, sample in	Aquatic habitats) Add a low birch grass 1058 bushes 1058 bushes
MORTH:	ele de port	12	MT3 Flow

Feature ID: F8671032

9

METHODS ATTR	IBUTES	Hook an	d Line (Y/N):		Beach Seine	(Y/N): A	Evkel	Net (Y/N).	Hoop Net ()	
			NA				Date	NA		NA
No. of Minnow I	Traps Set: 3	(mm/dd,	ime in: /yyyy)	1	(mm/dd/yyy	in: y)	(mm/	& Time in: dd/yyyy)	(mm/dd/yy	e In: yy)
Date & Time in: (mm/dd/www)	782015	No. of lin	nes in water:	1	No. of passes	5:	Date (& Time out:	Date & Tim	e out:
Date & Time out (mm/dd/yyyy)	782015	Time line	es in water:	1	Reach Length	h (m):			-sign -	of exerts
ELECTROFISHIN	G ATTRIBUTES	國常為		際:該提出		如何是自己的	小型 国			Star Parts
EF (Y/N):	EF Start Tir	me:		EF End Time:	1 Marine Barran	EF Time (se	condş):-	E E	F Reach Length (m):
Current (A):	/	Volts (V)	:		Power (W):	_	Samp	ing Emelency (% of	sample reach):	(amp x volts)
FISH OBSERVAT	IONS			and simply in the second second		R. M. P. Marken				
ID (Seq. Num)	Gear Type	SAME DECEM	Specles		Total Length (mm)	Life Stage	Adult)	Disposition (Dead or Alive)	Picture No.	Constant Sector
001	Dipnet		coho		39	SUNRY	ile	alle	*P-F867103	32-008-004
002	Minnow Tr	ap 1	Coho		GЧ	Juren	le.	Alive	NIA	_
003	LL		LL	1	61	11	_	11	1	_
004	11		11		55	11		11		
605	11		(1		45	11		11	V	
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007			11		65	11		- 11	MA	
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007	1)				50	11				
010	11	-			50	11		11		
012	MinnowTR	ap2	h		H2	11		11		
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Point ID:	//	AIA		Description	1.1	٨	-			
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Crew Chief:	C	6	Te	eiu scientis echnician:	qui	1 JSK	(Lead:		
	X	S L			000		-			

FISH OBSERVAT	IONS (continued)					
ID (Seq. Num)	Gear Type	Species	Total Length (mm)	Life Stage (Juvenile or Adult)	Disposition (Dead or Alive)	Picture No.
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017	11	11	70	1)	11	
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021	12	1.	62	11		
022	13	11	58	11	11	
023	11	11	5.3	11		
024	11	1	34		11	
025	11	- 11	43	//	11	
026	11	11	58	11	//	
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Feature ID:

FISH OBSERVAT	IONS (continued)		x中国的国国		the second and the second	
ID (Seq. Num)	Gear Type	Species	Total Length	Life Stage	Disposition	Picture No.
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Page 4 of

Stream Fish Investigations Field Form QA/QC Checklist

This form is to be completed before leaving the field site.

Feature ID: F867/32 FT #<u>AIK 158.</u> Date: <u>782015</u> For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

- ☆ Was ADF&G contacted before conducting any work in this area?
- Site Description complete? (Every cell must have entry or N/A)
- & Were all photos taken and labeled correctly?

2. Physical/Chemical Attributes

- Calibration performed prior to sampling?
- Description of N/A) Physical/Chemical attributes complete? (Every cell must have entry or N/A)
- Water quality data within expected ranges?
 - 🖳 pH: 4.0 10.0
 - ▶ NTU: 0 3000
 - ▶ DO (mg/L): 1.0 15.0
 - № Temp.: 1.0 19.0
 - Specific Conductance: 20 1500

∧JIA If outside expected ranges, was sample re-taken?

✗ Are units correct?

3. Stream Profile

- Stream profile view captures water depth and wetted width?
- ★ Stream profile view captures where efforts were made to capture fish?
- Plan view sketch included?

4. Methods Attributes

- Bethods attributes complete? (Every cell must have entry or N/A)
- K Were methods used adequate (explanation needed if no methods selected)?

5. Electrofishing Attributes

- Electrofishing attributes complete? (Every cell must have entry or N/A)
- Are units correct?

Stream Fish Investigations Field Form QA/QC Checklist

817032 Feature ID: F

6. Fish Observations

- Are all fish captured/observed recorded in the Fish Observation table?
- I Are units correct? (Total Length (mm))
- Were adequate photos taken of fish captured? (Take a photo if in doubt)

7. General

- Feature ID and Field Target # are consistent on data forms, logbook entries, photos, and maps?
- All additional data in logbook captured on data form and additional photos noted?
- Were all additional comments on stream habitat, etc. recorded on data form?
- Was any gear missing/damaged for this survey or did you have any problems that should require resampling of this stream for an adequate survey effort?

By signing below, I verify that all field data for this site has been verified for accuracy and completeness.

Fisheries Biologist (print)

Signature

Field Crew Chief (print)

Signature



P_F86TI032_001_US LOOKING US AT PLX

LOOKING DS AT PLX

7/8/2015 NK158.1





P_F86TI032_003_LB LOOKING AT LB AT PLX

7/8/2015 NK158.1



P_F86TI032_004_RB LOOKING AT RB AT PLX


P_F86TI032_005_AERIAL AERIAL PHOTO

7/8/2015 NK158.1



P_F86TI032_006_AERIAL AERIAL PHOTO 7/8/2015 NK158.1



P_F86TI032_007_AERIAL AERIAL PHOTO

7/8/2015 NK158.1



P_F86TI032_008_COHO PHOTO OF COHO SALMON 7/8/2015 NK158.1



P_F86TI032_009_COHO PHOTO OF COHO SALMON 7/8/2015 NK158.1

	160 1		Target Name Featur	: UNNAMI re ID: F86	ED STF TI032	REAM		Chukchi S	ARCTIC C	DCEAN Beaufort Sea	
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2015 Fi	sh Survey Location	BU	Burbot	SA(U)	Salmo	onid (Unsj	pecified)				
F	Fish Observed	СН	Chinook Salmon	SC(U)	Sculp	in (Unspe	cified)		0 5	Feet 0 100 150 200	r
F	No Fish Observed		Coho Salmon	SS ST(L)	Slimy	Sculpin					
•	Photo Point	NS	Ninespine Stickleback	TS	Three	враск (Ur spine Stir	ispecified) ckleback		0 1	0 20 30 40 50	
Species	Alaska Blackfich	0	Other Species Not Listed	OBS	Fish C	Observatio	on, No Spec	ies Informatio	on	Meters	
AG	Arctic Grayling	RT	Rainbow Trout								
	Al	ASKA	LNG	٢	DRAWN ICS			ALASKA	LNG		
NOTES:				L	СНЕСК		20	15 FISH FIELD SUF		IONS	
Concept Information collected data or he map was put	ation - Confidential. Produced by Ala: n the date of issue; it is considered re blished. This drawing is solely prepar	ska LNG team. liable only at the	The information used to create this product is e scale at which the data was created and the e contractual Alaska LNG team partners and the	based on the scale at which e Alaska LNG	DESIGN	AK 4 N	AD83	AECOM	1	Page 31 of 86	REV. A
eam assumes n at full scale (100	to liability to any other party for any re %) in order for the scale to remain co	presentations c rrect.	ontained in these drawings. This map must be p	printed/viewed	APPR. SCALE		DATE	PROJECT NUMBER	ORIG. PAGE SIZE		I
				L	1	:2,000	15 Oct 2015	26221392	8.5 X 11		

SITE DESCRIPTION		A.H. A. States and A. S.	
Date: 7/10/2015 Investigator	rs: SCS NJS ADF	Team No.: F86 Fe	eature ID: F8671034
Stream Name: 114 named Stream	im	St	ream ID: NK-156.(
Pipeline Milepost: 688.5 Stream fo	ound as expected (Y/N):	H	wy MP (N/A if heli accessed): heli
Latitude: 610 59' 53.54	t70" N Longitur	de: 150° 11'5	52.3871 " W
Logbook No.: Logbook Page No.: 5	3-55 Total Fish Caught:	Fish Mortalities:	NA Total Photos: 7
US @ CL Pic No.: P-FOST1034-201-US DS @ Pic No.: P-FOST1034-201-US Pic No.	0: P-F867034-002-55 RB to LE Pic No .:	P-1807031-003-	LB LB to RB@ CL Pic No.: P-18671034_004-PP
Other P. F867034-005- Pic No(s).: P. F867034-	AERIAL P-F86 006-AERIAL	TO34_007_,	AERIAL
PHYSICAL/ CHEMICAL ATTRIBUTES			
Weather (Describe): Porty Cl	Precipitation (I	Describe):	
Water Temperature (°C): 12.16	Air Temperature (°C): Q	pH: 5, 5	Dissolved Oxygen (mg/l): 7,75
Specific Conductance(µS/cm): 25	Turbidity (NTU):	ORP (mV): 2, 9	Dissolved Oxygen (%): 41.8
Ambient Conductance(µS/cm):	Odor: None Sheen (Y/N): N	Color: Clear	Last date of Calibration: 7/8/2015
Defined Channel (Y/N): Y Notes:	very low water never		Thalweg Depth @ Cl (m): 09
Riparian Veg at 0-5 m at LB: Riparian Veg a	t 0-5 m at RB: Stream Substrate:	Aquatic Habitats	
50 Grass/Sedge (%) 60 Gr	ass/Sedge (%) DOrganics (%)	Sand Bar	Large Woody Debris
<u>50</u> Shrubs (%) <u>40</u> Sh	rubs (%)	Mud Bar	Overhanging vegetation
<u>30</u> Trees (%) 3 Trees (%)	ees (%)	Gravel Bar	Contiguous Wetlands
<u> </u>	neter DBH (in.) Gravel (%)		Emergent Plants
Stream Type:	70 Cobble (%)	Pools	Submerged Plants
A Perennial Intermittent	Ephemeral <u>30</u> Boulders (%)	Undercut Banks	
		the death and death and	average of the first between the
spice alders glob	Alder Al	An doep	All spruce birch forest
NORTH: Partidor 46 m edge mtr3	PLX PP MT P	25 m MT	corridor edge <flaw< td=""></flaw<>

Feature ID: F867034

METHODS ATT	RIBUTES	的现在分词是有可以	2000月11日。11日1日			Contractor to the State Ball		
Minnow Traps (Y/N):		Hook and Line (Y/N):	MA Beach Sein	ne (Y/N):	Fyke Net (Y/N):	Hoop Net (Y/N):		
No. of Minnow	Traps Set: 3	Date & Time in:	Date & Tim	ie in:	Date & Time in:	Date & Time In:		
Date & Time in: 97/01/2015		(mm/dd/yyyy)	(mm/dd/y	YYY)	(mm/dd/yyyy)	(mm/dd/yyyy)		
(mm/dd/yyyy)	1230	No. of filles in water.			(mm/dd/yyyy)	(mm/dd/yyyy)		
Date & Time ou (mm/dd/yyyy)	1030	Time lines in water:	Reach Len	gth (m):		where di lood e		
ELECTROFISHIN	IG ATTRIBUTES							
EF (Y/N): 🔨	√ EF Start Ti	me: E	F End Time:	EF Time (sec	conds):	F Reach Length (m):		
Duty Cycle:	1	Frequency (Hz) :	Waveform		Sampling Efficiency (% o	f sample reach):		
Current (A):	1	voits (v):	Power(W)	:	~	(amp x voits)		
FISH OBSERVAT	nons		Tatal Leasth	Life Stage	Discostation			
ID (Seq. Num)	Gear Type	Species	(mm)	(Juvenile or A	Adult) (Dead or Alive)	Picture No.		
NA	1			1				
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NOTES (any add	litional informatio			新闻·罗·和马		的原则和这些人的思想和		
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	(J						
MISCELLANEOU	IS POINTS (if appli	cable)			de al company	and an an address of the state of the		
Point ID:		A/A [escription: Λ/Λ			and the state of the state of the state		
Point ID:			escription: //	7				
Field		Fiel	d Scientist/	Att	Technical			
Crew Chief:		Тес	hnician:	aday	Lead:			
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 This form is to be completed before leaving the field site.

 Feature ID: F86T1034

 FT #<u>NK15</u>6.1 Date: 7/10/2015

For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

- Was ADF&G contacted before conducting any work in this area?
- Site Description complete? (Every cell must have entry or N/A)
- Were all photos taken and labeled correctly?

2. Physical/Chemical Attributes

- Scalibration performed prior to sampling?
- Physical/Chemical attributes complete? (Every cell must have entry or N/A)

Water quality data within expected ranges?

- pH: 4.0 10.0
- D NTU: 0 3000
- DO (mg/L): 1.0 15.0
- D Temp.: 1.0 19.0
- Specific Conductance: 20 1500
- N A If outside expected ranges, was sample re-taken?
 - ✗ Are units correct?

3. Stream Profile

- Stream profile view sketch included?
- Stream profile view captures water depth and wetted width?
- Stream profile view captures where efforts were made to capture fish?
- Plan view sketch included?

4. Methods Attributes

- S Methods attributes complete? (Every cell must have entry or N/A)
- >>> Were methods used adequate (explanation needed if no methods selected)?

5. Electrofishing Attributes



Electrofishing attributes complete? (Every cell must have entry or N/A) Are units correct?

Feature ID: F86 T1034

6. Fish Observations

- Are all fish captured/observed recorded in the Fish Observation table?
- > Are units correct? (Total Length (mm))
- Were adequate photos taken of fish captured? (Take a photo if in doubt)

7. General

- Feature ID and Field Target # are consistent on data forms, logbook entries, photos, and maps?
- All additional data in logbook captured on data form and additional photos noted?
- X Were all additional comments on stream habitat, etc. recorded on data form?
- Was any gear missing/damaged for this survey or did you have any problems that should require resampling of this stream for an adequate survey effort?

By signing below, I verify that all field data for this site has been verified for accuracy and completeness.

Fisheries Biologist (print)

Signature

Field Crew Chief (print)

Signature



P_F86TI034_001_US LOOKING US AT PLX

7/9/2015 NK156.1



P_F86TI034_002_DS LOOKING DS AT PLX

7/9/2015 NK156.1





P_F86TI034_005_AERIAL AERIAL PHOTO 7/9/2015 NK156.1



P_F86TI034_006_AERIAL AERIAL PHOTO 7/9/2015 NK156.1



P_F86TI034_007_AERIAL AERIAL PHOTO 7/9/2015 NK156.1

			Target Name: Featur	: UNNAM re ID: F86	IED S STI034	TREAM	4		Chukchi S	ARCTIC (DCEAN Beaufort Sea		
									BERING SEA	Bethel An	Fairbanks clorage GULF OF ALASKA Kodiak	Juneau	
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2015 Fis	sh Survey Location	BU	Burbot	SA(U)	Sal	monid (Un	specifie	ed)					
F	Fish Observed	СН	Chinook Salmon	SC(U)	Scu	ılpin (Unsp	ecified))		0 5	Feet	200	
F	No Fish Observed		Coho Salmon	SS	Slin	ny Sculpin		<i>C</i> = 1)					
•	Photo Point	UV NS	Dolly Varden	51(U) TS	Stic	KIEDACK (L	inspeci ickleba	ried) ick		וווון 1 1	0 20 30 40	50	
Species	Observed	0	Other Species Not Listed	OBS	Fisł	n Observat	ion. No	o Specie	s Informatio	on Či	Meters		
AB	Alaska Blackfish	RT	Rainbow Trout	-			,						
AG	Arctic Grayling	ASKA	ING		DRAWN				AI ASKA	LNG			
NOTES	ΛL	AUNA	LNV		CHECK			2015	FISH FIELD SUF	RVEY LOCAT	IONS		
Concept Informa collected data or the map was pub team assumes n	tion - Confidential. Produced by Ala the date of issue; it is considered re blished. This drawing is solely prepar o liability to any other party for any re	ska LNG team. eliable only at the ed for use by the epresentations co	The information used to create this product is l a scale at which the data was created and the s e contractual Alaska LNG team partners and the ontained in these drawings. This map must be p	based on the scale at which Alaska LNG rinted/viewed	DESIGN TCS	PROJECTION DAT	NAD83	CONTRACTOR NAM		ORIG PAGE SITE	Page 32 o	f 86 A	1
at full scale (100	%) in order for the scale to remain co	rrect.			APP R.	1:2,000	15 Oc	ct 2015	26221392	8.5 X 11			

SITE DESCRIPTION		是我是这些"正"。								
Date: 7/9/2015 Investigato	ors: SCS NJS ADF	Team No.: F86 Fe	vature ID: F8671633							
Stream Name: Unnamed	Stream	St	ream ID: NK 152.1							
Pipeline Milepost: 683.4 Stream for	ound as expected (Y/N):	H	wy MP (N/A if heli accessed):							
Latitude: 62° 03'58, 8168	Latitude: 62° 02'58 8168" N Longitude: 150° 12' 29 3119" W									
Logbook No.:) Logbook Page No.: 5	2-53 Total Fish Caught:	Fish Mortalities: /	$\Lambda \Lambda$ Total Photos: 7							
US @ CL DS @	CLO CLO RB to LI	B@CL	LB to RB@ CL							
Pic No.: P-F6611033-001-03 Pic N	A COLL O SUDDZZ	207 ACR.M	Pic No.: P-F 8611033-007-50							
Other 1-F8611033-005-	MERIAL P-F8611035.	- OUF_ AERIAL								
PIC NO(S).: V- (867033.006	- AERIAL									
PHYSICAL/ CHEMICAL ATTRIBUTES	· · · · · · · · · · · · · · · · · · ·	and a life of the second second								
Weather (Describe): Shany	Precipitation (Describe): none	Disselved Owners (mg //) 7 1/P							
Water Temperature (°C): 3, 6 8	Air Temperature (°C):	ph: 5. 22	Dissolved Oxygen (mg/i): 7, 48							
Specific Conductance(µS/cm): 35		Color: 0 Ca: 2.2	Last date of Calibration: 75,0							
Defined Channel (Y/N): Notes:	notra had much la multan chi	who who	Wetted Width (m): 2. 2/2							
Flow (Y/N): Notes:	Very light, dark wat	er	Thalweg Depth @ CL (m): 36							
Riparian Veg at 0-5 m at LB: Riparian Veg a	at 0-5 m at RB: () Stréam Substrate:	Aquatic Habitats								
<u>40</u> Grass/Sedge (%) <u>40</u> Gr	rass/Sedge (%) Organics (%)	Sand Bar	Large Woody Debris							
-50 Shrubs (%) -70 Sh	nrubs (%)	Mud Bar	Overhanging vegetation							
C Trees (%) C Tree	rees (%) Sand (%)	Graver bar								
		X Pools	Submerged Plants							
Stream Type:	Enhamoral Boulders (%)	Undercut Banks								
		Junear Street Hard Street Street	Latitation and Million Million							
	dwarb bivch/willow overharging 2.26m Pool I.3 Cable	ibm under algal	grass naterial							
NORTH: Plan View (include direction NORTH: Plan Plan Plan Plan Plan	PLX PLX PLX	Photo locations, sample is								

Feature ID: _______ F 8677.033

METHODS ATTR	RIBUTES	Hock and Line (V/		Reach Soine ()	(/N)	L Fulko N	lot (Y/N):	
			N. N	Deach Sente (1	N.	Fykelk	Net (1719).	
No. of Minnow 1	Traps Set: 3	(mm/dd/yyyy)	1	(mm/dd/yyyy)		Date 8	k Time in: dd/yyyy)	Date & Time In: (mm/dd/yyyy) /
Date & Time in: 7/8 2015 No. of		No. of lines in wat	er: /	No. of passes:	No. of passes:		& Time out:	Date & Time out:
Date & Time out:7/1/2015 Time lines in wate			r: /	Reach Length	(m): /		/	and an motor
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FISH OBSERVAT	TONS						Diana Jalan	The state of the state of the state
ID (Seq. Num)	Gear Type	Species		(mm)	(Juvenile or	Adult)	(Dead or Alive)	Picture No.
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Revision Date	: 06/09/2015	2						Page 2 of 2

This form is to be completed before leaving the field site.

Feature ID: <u>F867033</u> FT # <u>F8671033</u> Date: <u>H10/2015</u> For all items not checked, please provide detailed explanation in the notes section of data

form.

1. Site Description

- ☆ Was ADF&G contacted before conducting any work in this area?
- Site Description complete? (Every cell must have entry or N/A)
- ➢ Were all photos taken and labeled correctly?

2. Physical/Chemical Attributes

- Z Calibration performed prior to sampling?
- Physical/Chemical attributes complete? (Every cell must have entry or N/A)
- Water quality data within expected ranges?
 - d pH: 4.0 − 10.0
 - NTU: 0 3000
 - DO (mg/L): 1.0 15.0
 - Temp.: 1.0 19.0
 - b Specific Conductance: 20 1500
- If outside expected ranges, was sample re-taken?
- Are units correct?

3. Stream Profile

- Discrete Stream profile view sketch included?
- Stream profile view captures water depth and wetted width?
- ➔ Stream profile view captures where efforts were made to capture fish?
- > Plan view sketch included?

4. Methods Attributes

- In the text of text of

5. Electrofishing Attributes

Electrofishing attributes complete? (Every cell must have entry or N/A)

Are units correct?

Feature ID:

6. Fish Observations

- Are all fish captured/observed recorded in the Fish Observation table?
- Are units correct? (Total Length (mm))
- Were adequate photos taken of fish captured? (Take a photo if in doubt)

7. General

- Feature ID and Field Target # are consistent on data forms, logbook entries, photos, and maps?
- All additional data in logbook captured on data form and additional photos noted?
- Was any gear missing/damaged for this survey or did you have any problems that should require resampling of this stream for an adequate survey effort?

By signing below, I verify that all field data for this site has been verified for accuracy and completeness.

Fisheries Biologist (print)

Signature

Field Crew Chlef (print)

Signature



P_F86TI033_001_US LOOKING US AT PLX

7/9/2015 NK152.1







P_F86TI033_005_AERIAL **AERIAL PHOTO**

7/9/2015 NK152.1



P_F86TI033_006_AERIAL **AERIAL PHOTO**

7/9/2015

NK152.1



P_F86TI033_007_AERIAL AERIAL PHOTO 7/9/2015 NK152.1

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F	No Fish Observed		Cono Salmon Dolly Varden	ST(U)	Siir	ny Scuipin :kleback (U	nspecif	ied)				
• Orașe la	Photo Point	NS	Ninespine Stickleback	TS	Thr	eespine Sti	ickleba	ck		0 1	10 20 30 40 50	
Species	Alaska Blackfish	Ο	Other Species Not Listed	OBS	Fisl	h Observati	ion, No	Specie	es Informatio	on	Meters	
AG	Arctic Grayling	RT	Rainbow Trout									
	Δ1	ASKA	ING		DRAWN					LNG		
NOTES:					СНЕСК			2015	FISH FIELD SUF	RVEY LOCAT	FIONS	
Concept Informa collected data on	tion - Confidential. Produced by Ala the date of issue; it is considered r	aska LNG team. reliable only at the	The information used to create this product is e scale at which the data was created and the s	based on the scale at which	DESIGN	AK 4	MAD83	CONTRACTOR NAM	AECON	1	MAP NUMBER Page 33 of 86	REV.
team assumes no at full scale (1009	o liability to any other party for any r %) in order for the scale to remain co	representations co prrect.	ontained in these drawings. This map must be p	e Alaska LNG printed/viewed	TCS	SCALE	DATE		PROJECT NUMBER	ORIG. PAGE SIZE		1
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SITE DESCRIPTION			
Date: 7/6/2015 Investigato	ors: SCS NSS ADF	Team No.: F96 F	eature ID: F867029
Stream Name: Unnamed St	tream	Si	tream ID: NK (S(.5)
Pipeline Milepost: 691,8 Stream for	ound as expected (Y/N):	н	wy MP (N/A If heli accessed):
Latitude: 62° 05' 20.077	S' N Longitu	de: 150° 121	49.9815 " W
Logbook No.: Logbook Page No.; 4	6-47 Total Fish Caught:	Fish Mortalities:	MA Total Photos: 6
US @ CL (ShT) Day DN US DS @	PCL RB to L	Be CL	B to RB@CL
PICNO PICNO PICN	2 (A1	1118011001200	PIC NO.: 1 1 05 1 02 1000 1. 100
Other $1 = 1001100 q_{-}000000000000000000000000000000000000$	CPILI		
1-1001001-006-A			
PHYSICAL/ CHEMICAL ATTRIBUTES	Procipitation (Describe):	A ()
Water Temperature (°C): 21 ± 2	Air Temperature (°C):	nH: 5.78	Dissolved Oxygen (mg/l): 5 4 G
Specific Conductance/uS/cm): 3 C	Turbidity (NTU): G	ORP (mV): 134.9	Dissolved Oxygen (%): 6 2 51
Ambient Conductance(uS/cm): 22	Odor: 0000 Sheen (Y/N): N	Color: Char; brown	Last date of Calibration: 7/4/15
Defined Channel (Y/N): Y Notes: h	eaver pond upstream	1 / TMT	Wetted Width (m): 95
Flow (Y/N): Notes:	lear low, almost stagn	ant	Thalweg Depth @ CL (m):
Riparian Veg at 0-5 m at LB: Riparian Veg a	at 0-5 m at RB: Stream Substrate:	Aquatic Habitats	F.
Grass/Sedge (%)Gr	rass/Sedge (%)Organics (%)	Sand Bar	
Trees (%)	$\frac{70}{20}$ Silt (%)	Gravel Bar	Contiguous Wetlands
A/A Diameter DBH (in.)	neter DBH (in.) Gravel (%)	Riffles	Emergent Plants
Stroom Type:	Cobble (%)	Pools	Submerged Plants
Perennial Intermittent	EphemeralBoulders (%)	Undercut Banks	
	design and the second state of the second stat	ter dopth substrate and	agentic familiate)
AR AR	Dob4 m L Mud75il4 Bothm	All a deres All de rue Willows Inderwater gross	\$ \$ \$ spruce borest
STREAM PROFILE: Plan View (Include direction	of flow, centerline, distances from centerline,	Photo locations, sample I	ocations by gear type and ROW) Beaver pond MTI flow 46m

Feature ID: <u>F867039</u>

METHODS ATT	RIBUTES			and the second	[[1]] 新闻·新闻	深。 月 月1日日	Theory and the state of the state
:Minnow Traps (Y/N):	Hook and Line (Y/N)	· INA	Beach Seine (Y	N: NIA Fyke N	Net (Y/N):	Hoop Net (Y/N):
No. of Minnow Traps Set: Date & Time in:				Date &Time in:		LV 1/ & Time in:	Date & Time In:
Date & Time in:	7/5/2015	No. of lines in water	:	No. of passes:	Date &	& Time out:	Date & Time out:
(mm/dd/yyyy)	1620	Time lines in water:		Reach Length	(mm/c	dd/yyyy)	(mm/dd/yyyy)
(mm/dd/yyyy)	1400	Time mes in water.		neach center	and the second second	11	Window I Window
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FISH OBSERVAT	TIONS		To	otal Length	Life Stage	Disposition	
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This form is to be completed before leaving the field site. 12015

Feature ID: F867029 FT # NK (51.5 Date: 7/6

For all items not checked, please provide detailed explanation in the notes section of data form.

1. Site Description

- ☆ Was ADF&G contacted before conducting any work in this area?
- ℜ Site Description complete? (Every cell must have entry or N/A)
- Were all photos taken and labeled correctly?

2. Physical/Chemical Attributes

- ☑ Calibration performed prior to sampling?
- X Physical/Chemical attributes complete? (Every cell must have entry or N/A)
- Ø Water quality data within expected ranges?
 - Ď pH: 4.0 − 10.0
 - ѝ NTU: 0 3000
 - ⊠ DO (mg/L): 1.0 15.0

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- ☑ Specific Conductance: 20 1500
- > temp likely outside & was temp relieve and water is Those and water is If outside expected ranges, was sample re-taken?
- \square Are units correct?

3. Stream Profile

- X Stream profile view sketch included?
- Stream profile view captures water depth and wetted width?
- Stream profile view captures where efforts were made to capture fish?
- Plan view sketch included?

4. Methods Attributes

- Methods attributes complete? (Every cell must have entry or N/A)
- ₿ Were methods used adequate (explanation needed if no methods selected)?

5. Electrofishing Attributes

- □ Electrofishing attributes complete? (Every cell must have entry or N/A)
- Are units correct?

Feature ID: 186

6. Fish Observations

- Are all fish captured/observed recorded in the Fish Observation table?
- Are units correct? (Total Length (mm))
- Were adequate photos taken of fish captured? (Take a photo if in doubt)

7. General

- Feature ID and Field Target # are consistent on data forms, logbook entries, photos, and maps?
- All additional data in logbook captured on data form and additional photos noted?

Was any gear missing/damaged for this survey or did you have any problems that should require resampling of this stream for an adequate survey effort?

By signing below, I verify that all field data for this site has been verified for accuracy and completeness.

Fisheries Biologist (print)

Signature

Field Crew Chief (print)

Signature