State of Alaska
Department of Fish and Game
Nomination for Waters
Important to Anadromous Fish

AWC Volume SE SC SW W (AR) IN USGS Quad BEECHEY PT B-3 AND A-3

Anadromous Water Catalog Number of Waterway 330-00-10415-2001-3020

Name of Waterway LITTLE PUTULIGAYUK RIVER USGS name X Local name ____

Addition X Deletion ____ Correction ____ Backup Information X

For Office Use

Nomination # 94 324	A [illegible] — Regional Supervisor — 10-26-93 Date
Revision Year: -94	E Q Wain — 1/26/94
Revision to: Atlas ____ Catalog ____ Both X	D. Crone — Drafted — 2/18/94 Date
Revision Code: A-1	

OBSERVATION INFORMATION

Species	Date(s) Observed	Spawning	Rearing	Migration	Anadromous
BROAD WHITEFISH	7/18-22/93		X	X	X
BROAD WHITEFISH	8/29 TO 9/1/93		X	X	X

IMPORTANT: Provide all supporting documentation that this water body is important for the spawning, rearing or migration of anadromous fish, including: number of fish and life stages observed; sampling methods, sampling duration and area sampled; copies of field notes; etc. Attach a copy of a map showing location of mouth and observed upper extent of each species, as well as any other information such as: specific stream reaches observed as spawning or rearing habitat; locations, types, and heights of any barriers; etc.

Comments: ENCLOSED TRIP REPORTS

ALASKA DEPT. OF FISH & GAME
NOV 08 1993
REGION II HABITAT AND RESTORATION DIVISION

Name of Observer (please print) CARL HEMMING

Date: 10/25/93 Signature: Carl Hemming

Address: 1300 COLLEGE RD.
FBX, AK 99709

This certifies that in my best professional judgement and belief the above information is evidence that this waterbody should be included in or deleted from the Catalog of Waters Important for Spawning, Rearing or Migration of Anadromous Fishes per AS 16.05.870.

Signature of Area Biologist: [signature]

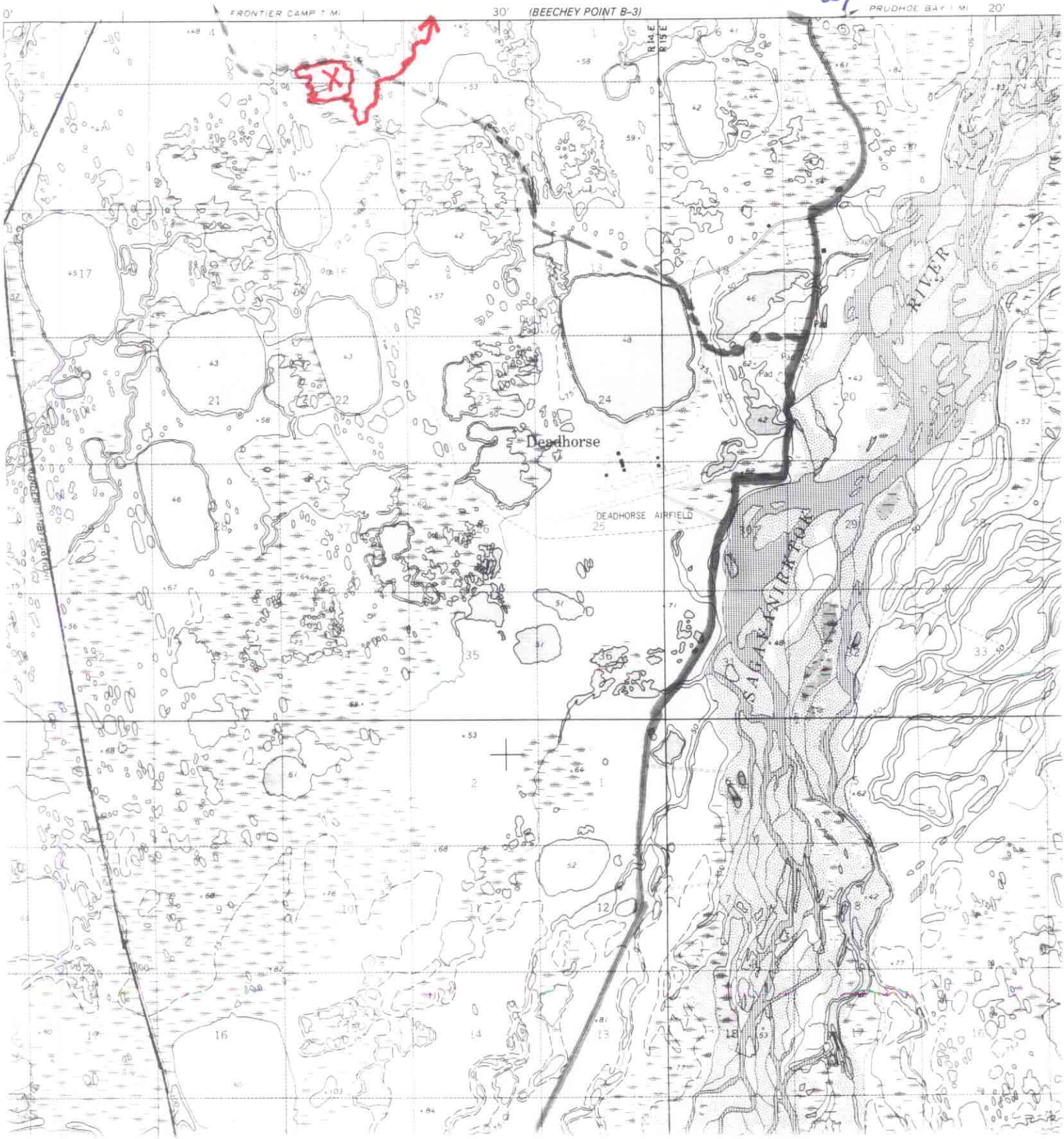
Rev. 7/93

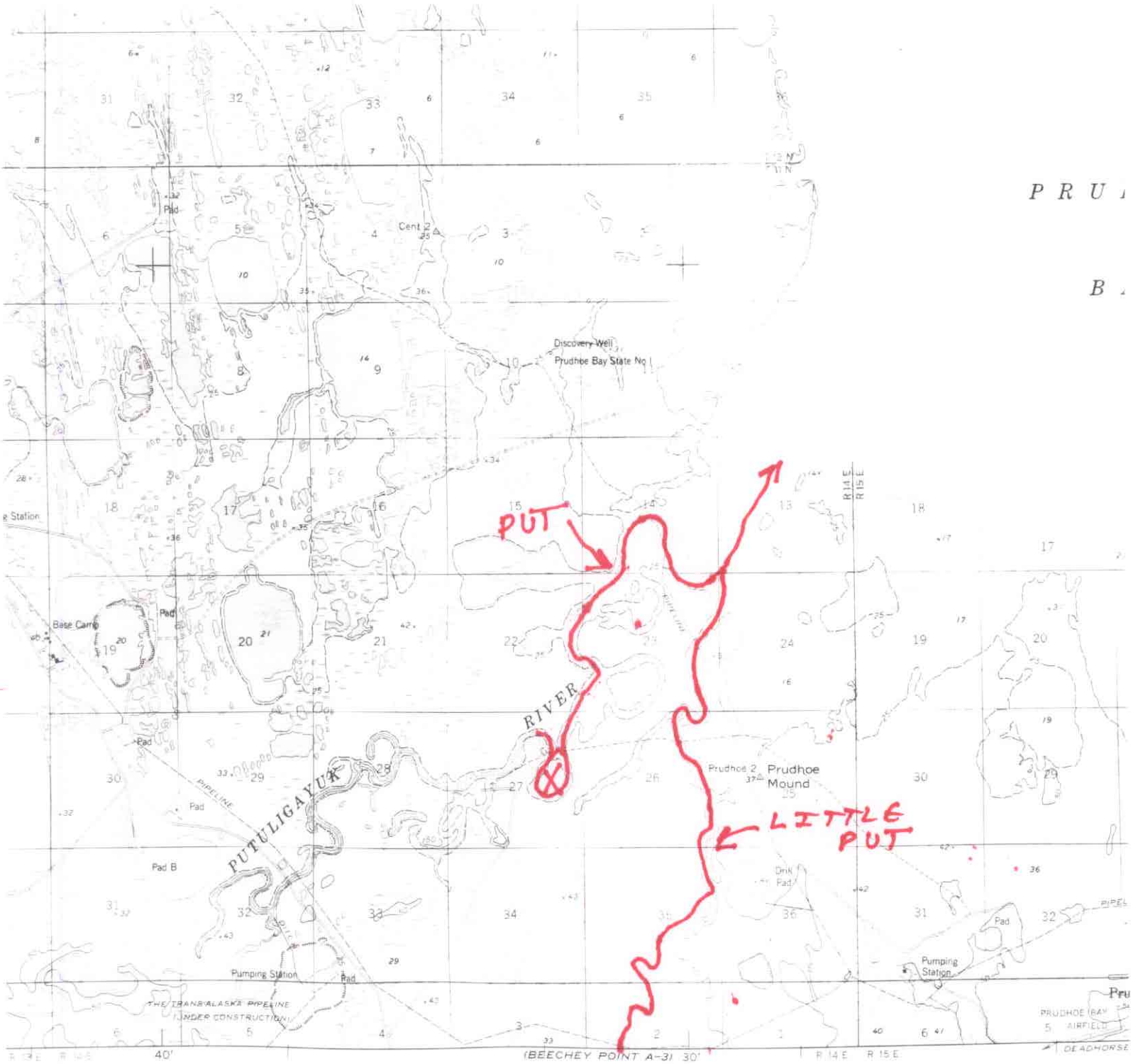
X LAKE JUDITH (SAMPLE SITE)

LITTLE PUT RIVER

BEECHY PT. A-3

EXTEND STREAM 330-00-10415-2001-3020 W/ ACR W





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DEPTH CURVES AND SOUNDINGS IN FEET—DATUM IS MEAN LOWER LOW WATER
SHORELINE SHOWN REPRESENTS THE APPROXIMATE LINE OF MEAN HIGH WATER
THE MEAN RANGE OF TIDE IS APPROXIMATELY 0.5 OF A FOOT

FOR SALE BY U. S. GEOLOGICAL SURVEY
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A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

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BEECHY PT. B-3

X SAMPLE SITE

NORTH SLOPE GRAVEL MINE PROJECT TRIP REPORT

JULY 16-23, 1993

General Comments

Fisheries investigations were conducted in the Kuparuk and Prudhoe Bay oilfields July 16-23, 1993. This trip was the second of three planned for the 1993 field season. Our objectives were to evaluate the experimental Arctic grayling introductions at Kuparuk Mine Site B and D, to monitor fish use of Sag Site C and Put 27, and to gather additional data on fish use of the Little Put River.

Field logistical support including air transportation from Fairbanks to Kuparuk and return, room and board, and a truck were provided by ARCO Alaska Inc. Field assistance was provided by Sheree Warner.

The charter flight from Fairbanks was delayed four hours and consequently fish sampling did not begin until July 17. Weather conditions were moderate with temperatures in the 40 to 60° F range, light to moderate winds and overcast or partial cloud cover.

Significant Findings

Kuparuk Mine Site B

We fished three nets in the Kuparuk Mine Site B/East Creek system from July 18 to July 23. Nets were fished in Kuparuk Mine Site B, in the inlet to Mine Site B and upstream of Mine Site B in East Creek. We captured and marked 49 Arctic grayling in July bringing the total marked for the June and July sample periods to 87. We captured large adult fish from the 1989 introduction as well as juvenile fish transplanted in 1992 (Table 1). Ninespine stickleback was the only other species captured in July.

Kuparuk Mine Site D

We fished two nets in Kuparuk Mine Site D from July 17 to July 23. Nets were fished at the access ramp and at the northwest corner of the site. We captured and marked 53 Arctic grayling in July and the total marked in June and July is now 81 (Table 2). Most size classes were represented in the July sample catch. Other species captured included ninespine stickleback and a single 263 mm broad whitefish captured on July 23. The recapture event will be in late August through early September for both Kuparuk Mine Site B and D.

Sag Site C

We fished two nets in Sag Site C from July 17 to July 22. Nets were fished at the access ramp to the site and in the outlet channel. We captured seven species of fish including: Arctic grayling, broad whitefish, burbot, Dolly Varden, ninespine stickleback, round whitefish and slimy sculpin (Table 3). Arctic grayling were most abundant in the sample

catch and both adult and juvenile size class fish were captured. Round whitefish followed Arctic grayling in abundance and the sample catch included large adults as well as juvenile size classes. Five juvenile size class Dolly Varden char were also captured.

Put River System

Two nets were fished in the Put River system from July 17 to July 22. The nets were set at the access ramp to Put 27 and in Lake Judith which is a shallow tundra pond in the Little Put River system, located immediately upstream of the Spine Road crossing. We captured nine species of fish with freshwater, anadromous, and marine life history patterns represented. Fish species captured included: Arctic cisco, Arctic cod, Arctic flounder, broad whitefish, Dolly Varden, Fourhorn sculpin, least cisco, ninespine stickleback and round whitefish (Table 4). We captured all nine species in Put 27 while ninespine stickleback and broad whitefish were captured in Lake Judith. It is interesting to note the relatively large catches of young-of-the-year broad whitefish in Put 27 and the distribution of this species upstream in the Little Put River. These data suggest there is a spawning population of broad whitefish associated with the Put River system in or near Put 27. The species composition found in Put 27 reflect a shift toward marine and anadromous fish. We suspect that increasing salinity levels in Put 27 are driving the change in species composition from freshwater types found in previous sampling toward marine and anadromous life history types.

Table 4. Fish captured in Put River system, July 1993.

Date	Location	Species	Number	Length (mm)	Comments
7/18/93	Lake Judith	Broad whitefish	2	63	
				470	Tag LGLAk 9200503
	Put 27 Mine site	Arctic cisco	2	40	
				92	
		Arctic cod	1	109	mortality
		Arctic flounder	4	55	
			3	57	
				58	
				58	
		Broad whitefish	3	38	
				40	
				42	
		Fourhorn sculpin	3	74	
				85	
				143	
		Ninespine stickleback	52		
		Round whitefish	1	56	
7/19/93	Lake Judith	Ninespine stickleback	79		
	Put 27 Mine Site	Broad whitefish	10	39	
				41	
				42	mortality
				42	
				42	
				43	
				43	
				43	
				43	
				47	
		Fourhorn sculpin	3	65	
				69	
				76	
		Ninespine stickleback	22		
7/20/93	Lake Judith	Ninespine stickleback	48		
	Put 27 Mine Site	Arctic flounder	2	35	
				50	

Table 4. Fish captured in Put River system, July 1993.

Date	Location	Species	Number	Length (mm)	Comments
7/20/93	Put 27 Mine Site	Broad whitefish	64	(37-48)	1 mortality several stressed
		Fourhorn sculpin	7	36	
				40	
				57	
				67	
				75	
				75	
				85	
7/21/93	Lake Judith	Broad whitefish	1	93	mortality
		Ninespine stickleback	79		
	Put 27 Mine Site	Arctic flounder	1	60	
		Broad whitefish	36	(38-47)	mortality (4)
		Fourhorn sculpin	10	60	
				67	
				76	
				76	
				80	
				82	
				82	
				94	
				96	
				107	
		Least cisco	1	81	
		Ninespine stickleback	21		
		Round whitefish	1	90	
7/22/93	Lake Judith	Broad whitefish	3	35	
				42	
				43	
		Ninespine stickleback	37		
	Put 27 Mine Site	Dolly Varden	2	155	
				184	
		Fourhorn sculpin	4	71	
				76	
				80	
				145	
		Round whitefish	2	85	
				84	
		Ninespine stickleback	21		

NORTH SLOPE GRAVEL MINE PROJECT TRIP REPORT

AUGUST 27-SEPTEMBER 3, 1993

General Comments

Fisheries investigations were conducted in the Prudhoe Bay and Kuparuk oilfields August 27 through September 3, 1993. This trip was the last of three planned for the 1993 field season. Our objectives were to evaluate the experimental introduction of Arctic grayling at Kuparuk Mine Site B and D, to recapture and transplant Arctic grayling reared in a shallow tundra pond, to monitor fish use of the Put River system and gather water quality information from the Put 27 Mine Site.

Field logistical support including air transportation from Fairbanks to Kuparuk and return, room and board, and a truck were provided by ARCO Alaska Inc. Field assistance was provided by Sheree Warner and Dave Stoller.

Weather conditions included subfreezing and near freezing temperatures, snow and light to moderate winds. Shelf ice was forming on smaller lakes and ponds. At the end of the sample period all equipment was moved to Red Barn for winter storage.

Significant Findings

Tundra Pond Rearing Experiment

Between June 20 and June 24 we captured 255 Arctic grayling from the Kuparuk River and introduced these fish to a two acre shallow tundra pond located north of the Spine Road near the eastern boundary of the Kuparuk River Unit. These fish had a mean length of 65 mm when released in the tundra pond. Two fyke traps were fished in the tundra pond on August 29 through September 1 and 95% (242) of the grayling were recaptured (Table 1). At recapture the pond reared Arctic grayling averaged 126 mm in length. This experiment demonstrates a high rate of survival and substantial increase in length among Arctic grayling reared in a tundra pond. The growth rate among pond reared Arctic grayling approached 1 mm/day during the 70 day rearing period.

Kuparuk Mine Site B

Fyke nets were fished at three locations in the East Creek / Kuparuk Mine Site B system on August 28 through September 2, 1993. We recaptured 85 Arctic grayling from the 1989 and 1992 transplant introductions. Of the 85 Arctic grayling captured 22 were marked fish (Table 2). Young of the year Arctic grayling were also captured at each of the three net sites. Daily catches of young-of-the-year fish ranged from 170 to 475 (Table 4). The data collected at Kuparuk Mine Site B indicate that approximately 70% of the grayling introduced to the site survived to early fall 1993. The large catches of young-of-the-year Arctic grayling indicate reproductive success among the introduced fish.

Kuparuk Mine Site D

We fished two fyke traps in Kuparuk Mine Site D and recaptured 154 Arctic grayling from the 1992 transplant introduction (Table 3). Of the 154 fish captured 22 were marked. Young-of-the-year Arctic grayling were also captured at each net site. Daily catches of young-of-the-year fish ranged from 33 to a high of 81 (Table 4). These data indicate that approximately 80% of the fish introduced in 1992 survived to early fall 1993. The presence of young-of-the-year Arctic grayling indicate reproductive success among fish introduced in 1992.

Put River System

Two fyke traps were fished in the Put River system from august 28 to September 1, 1993. The nets were fished in Put 27 at the access ramp and in a large tundra lake (Lake Judith) in the Little Put drainage located upstream of the Spine Road near Drill Site 14.

We captured broad whitefish, Dolly Varden and ninespine stickleback in Lake Judith (Table 5). Ninespine stickleback were captured most frequently. Daily catches of broad whitefish ranged from 7 to 28 fish and consisted of juvenile size classes (63-88 mm). Two juvenile size class Dolly Varden were also captured in Lake Judith. We captured seven species of fish in Put 27 including marine, anadromous and fresh water life history types. Species captured included: anadromous arctic cisco, broad whitefish, least cisco, ninespine stickleback, and rainbow smelt, marine fourhorn sculpin, and freshwater Arctic grayling. Ninespine stickleback and fourhorn sculpin were most frequently captured. The daily catch of broad whitefish ranged from 2 to 10 fish and consisted of juvenile size class fish (55-80 mm).

Put 27 Gill Net Sampling

Experimental gill nets were fished at two locations in Put 27 on August 29 to 30. The nets were fished at the access ramp to the site and at the inlet channel. At the access ramp we captured five adult broad whitefish (429-485 mm). At the inlet channel the catch included three adult broad whitefish (454-483 mm), seven adult least cisco (297-358 mm) and a single 144 mm Dolly Varden One adult broad whitefish and two least cisco had LGL tags from marine monitoring studies (Table 6). The catch result indicate colonization of Put 27 by anadromous broad whitefish and least cisco.

Water Quality sampling Put 27

Conductivity was measured at the water surface and at two meter intervals through the water column to 12 m near the bottom of the basin. The surface water and two meter conductivity measurements were 5830 umhos/cm while measurements at four meters through 12 meters ranged between 13,800 and 14,000 umhos/cm. These measurements indicate intermediate salinity concentrations favored by some species of anadromous whitefish. The fish sampling results indicate colonization and use of Put 27 by adult and juvenile broad whitefish and adult least cisco.

Table 5. Fish captured in Put River system, August-September, 1993.

Date	Location	Species	Number	Length (mm)	Comments
8/29/93	Lake Judith	Broad whitefish	7	(65-88)	
		Ninespine stickleback	89		
	Put 27	Broad whitefish	10	(60-77)	
		Fourhorn sculpin	70	(51-113)	
		Least cisco	1	326	
		Ninespine stickleback	42		
		Rainbow smelt	1	66	
8/30/93	Lake Judith	Broad whitefish	28	(63-85)	1 mortality
		Dolly Varden	1	166	
		Ninespine stickleback	143		estimate
	Put 27	Broad whitefish	5	(55-69)	
		Fourhorn sculpin	106	(41-92)	
		Least cisco	2	207	
				280	
		Ninespine stickleback	143		estimate
8/31/93	Lake Judith	Broad whitefish	9	(64-69)	4 mortality
		Dolly Varden	1	80	
		Ninespine stickleback	143		estimate
	Put 27	Arctic cisco	1	155	
		Broad whitefish	2	64	
				72	
		Fourhorn sculpin	112		
		Ninespine stickleback	61		
9/1/93	Lake Judith	Broad whitefish	11	(61-79)	
		Ninespine stickleback	50		
	Put 27	Arctic grayling	1	191	
		Broad whitefish	4	(65-67)	
		Fourhorn sculpin	133		
		Ninespine stickleback	143		estimate

Table 6. Gill net catch in Put 27, August 30, 1993.

Net Location	Species	Length (mm)	Comments
Access Ramp	Broad whitefish	429	tag scar / retained
		444	released
		456	released
		461	White tag # 92 LGL 00523 / released
		485	retained
Inlet Channel	Broad whitefish	454	released
		483	released
		465	retained
	Dolly Varden	144	released
	Least cisco	297	tag # 92 LGL 15436 / retained
		309	released
		320	released
		340	retained
		346	retained
		357	Yellow tag # 93 LGL 10971 / retained
		358	retained

State of Alaska
Department of Fish and Game
Nomination for Waters
Important to Anadromous Fish

AWC Volume SE SC SW W (AR) IN USGS Quad BEECHEY PT B-3 AND A-3

Anadromous Water Catalog Number of Waterway 330-00-10415-2001-3020-0010

Name of Waterway LITTLE PUTULIGAYUK RIVER USGS name X Local name ___

Addition X Deletion ___ Correction ___ Backup Information X

For Office Use

Nomination # 94 324	[signature] Regional Supervisor	10-26-93 Date
Revision Year: 94	[signature]	1/26/94
Revision to: Atlas ___ Catalog ___ Both X	J. Drone Drafted	2/18/94 Date
Revision Code: A-2		

OBSERVATION INFORMATION

Species	Date(s) Observed	Spawning	Rearing	Migration	Anadromous
BROAD WHITEFISH	7/18-22/93		X	X	X
BROAD WHITEFISH	8/29 TO 9/1/93		X	X	X

IMPORTANT: Provide all supporting documentation that this water body is important for the spawning, rearing or migration of anadromous fish, including: number of fish and life stages observed; sampling methods, sampling duration and area sampled; copies of field notes; etc. Attach a copy of a map showing location of mouth and observed upper extent of each species, as well as any other information such as: specific stream reaches observed as spawning or rearing habitat; locations, types, and heights of any barriers; etc.

Comments: ENCLOSED TRIP REPORTS

ALASKA DEPT. OF FISH & GAME
NOV 0 8 1993
REGION II HABITAT AND RESTORATION

Name of Observer (please print) CARL HEMMING

Date: 10/25/93 Signature: Carl Hemming

Address: 1300 COLLEGE RD.
FBX, AK 99709

This certifies that in my best professional judgement and belief the above information is evidence that this waterbody should be included in or deleted from the Catalog of Waters Important for Spawning, Rearing or Migration of Anadromous Fishes per AS 16.05.870.

Signature of Area Biologist: [signature]

Rev. 7/93

X LAKE JUDITH (SAMPLE SITE)

LITTLE PUT RIVER

BEECHY PT. A-3

ADD LAKE

330-00-10415-2001-

3020-0010

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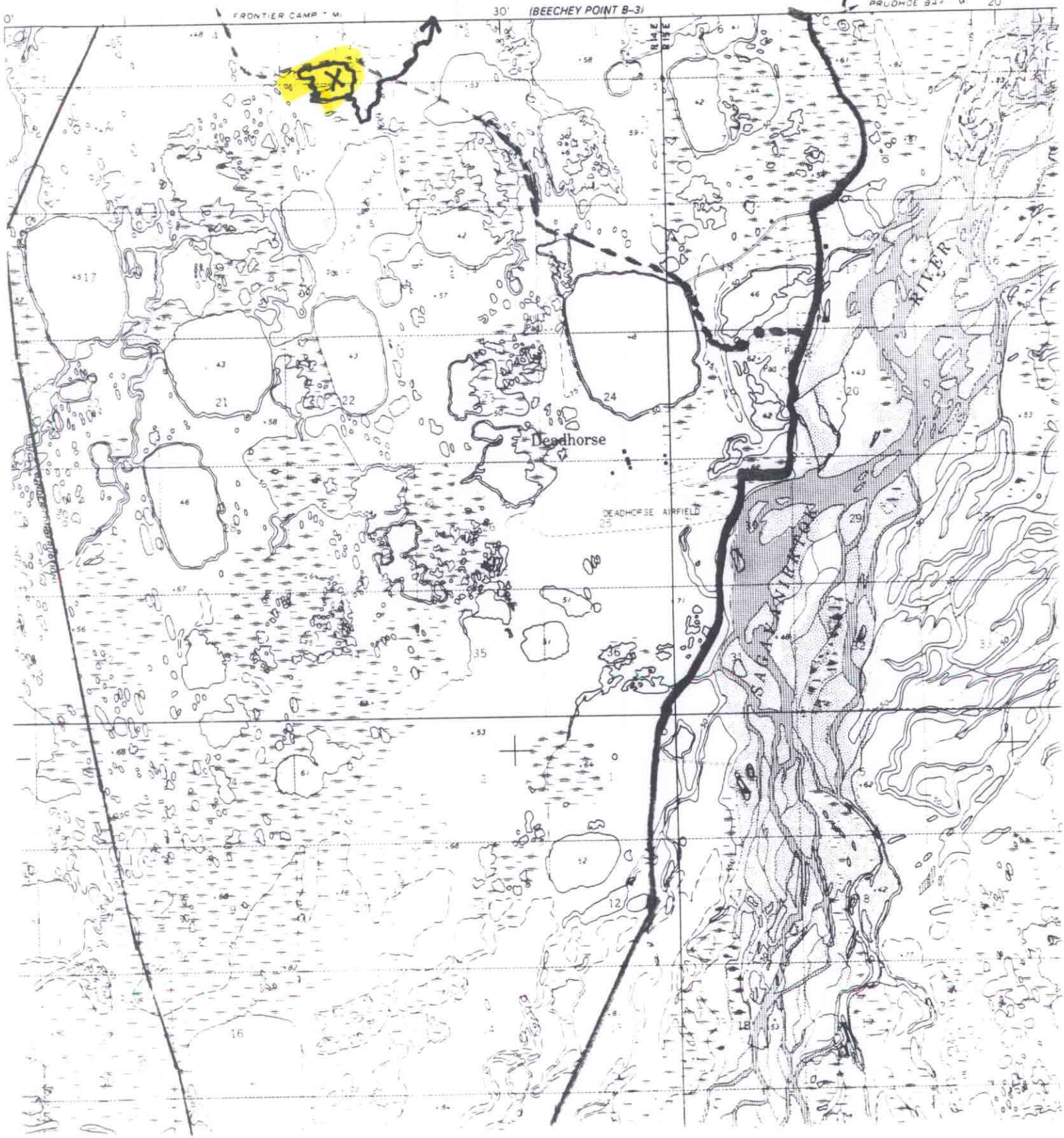

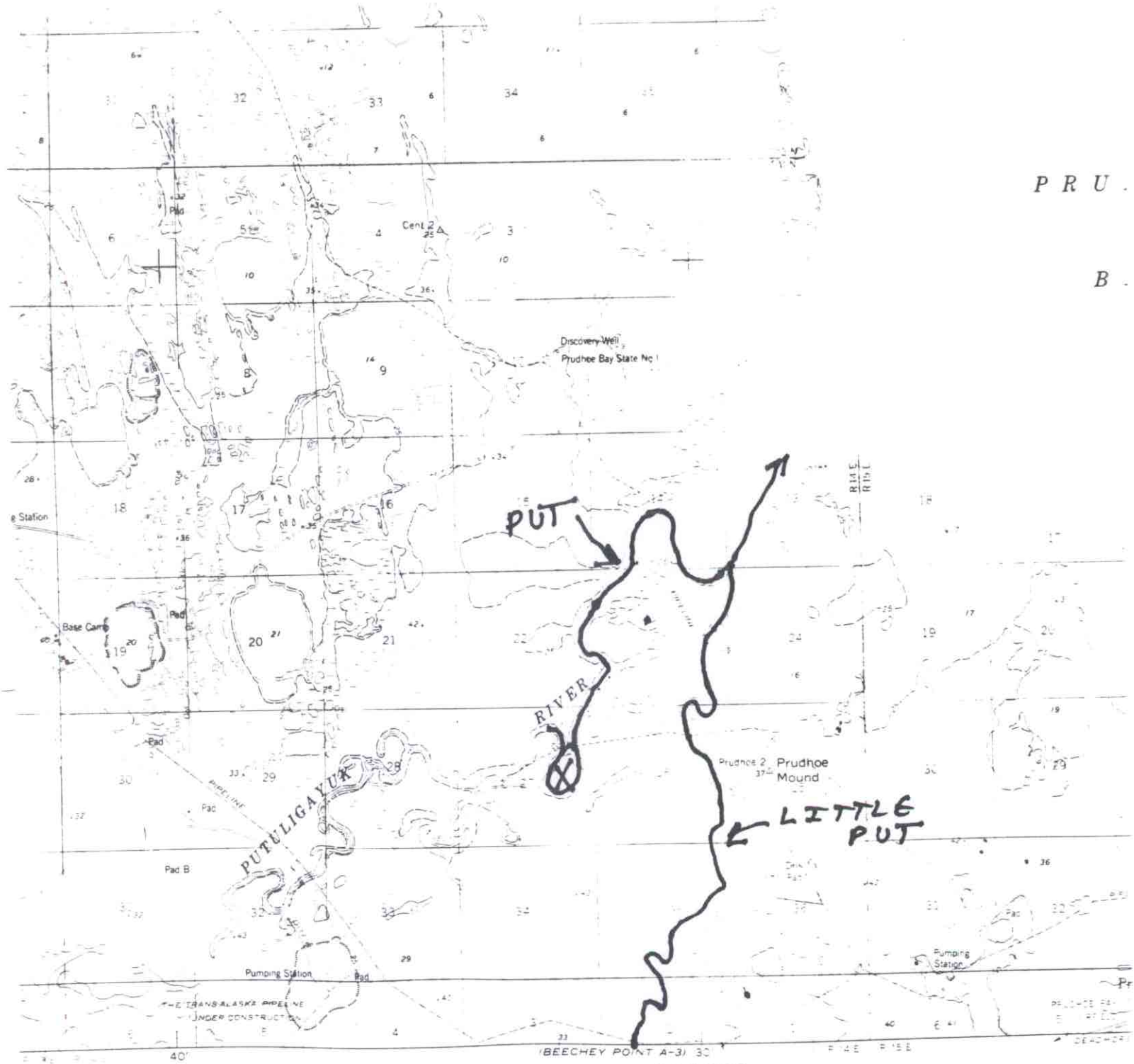

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BEECHY PT. B-3

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NORTH SLOPE GRAVEL MINE PROJECT TRIP REPORT

JULY 16-23, 1993

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Significant Findings

Kuparuk Mine Site B

We fished three nets in the Kuparuk Mine Site B/East Creek system from July 18 to July 23. Nets were fished in Kuparuk Mine Site B, in the inlet to Mine Site B and upstream of Mine Site B in East Creek. We captured and marked 49 Arctic grayling in July bringing the total marked for the June and July sample periods to 87. We captured large adult fish from the 1989 introduction as well as juvenile fish transplanted in 1992 (Table 1). Ninespine stickleback was the only other species captured in July.

Kuparuk Mine Site D

We fished two nets in Kuparuk Mine Site D from July 17 to July 23. Nets were fished at the access ramp and at the northwest corner of the site. We captured and marked 53 Arctic grayling in July and the total marked in June and July is now 81 (Table 2). Most size classes were represented in the July sample catch. Other species captured included ninespine stickleback and a single 263 mm broad whitefish captured on July 23. The recapture event will be in late August through early September for both Kuparuk Mine Site B and D.

Sag Site C

We fished two nets in Sag Site C from July 17 to July 22. Nets were fished at the access ramp to the site and in the outlet channel. We captured seven species of fish including: Arctic grayling, broad whitefish, burbot, Dolly Varden, ninespine stickleback, round whitefish and slimy sculpin (Table 3). Arctic grayling were most abundant in the sample

catch and both adult and juvenile size class fish were captured. Round whitefish followed Arctic grayling in abundance and the sample catch included large adults as well as juvenile size classes. Five juvenile size class Dolly Varden char were also captured.

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Two nets were fished in the Put River system from July 17 to July 22. The nets were set at the access ramp to Put 27 and in Lake Judith which is a shallow tundra pond in the Little Put River system, located immediately upstream of the Spine Road crossing. We captured nine species of fish with freshwater, anadromous, and marine life history patterns represented. Fish species captured included: Arctic cisco, Arctic cod, Arctic flounder, broad whitefish, Dolly Varden, Fourhorn sculpin, least cisco, ninespine stickleback and round whitefish (Table 4). We captured all nine species in Put 27 while ninespine stickleback and broad whitefish were captured in Lake Judith. It is interesting to note the relatively large catches of young-of-the-year broad whitefish in Put 27 and the distribution of this species upstream in the Little Put River. These data suggest there is a spawning population of broad whitefish associated with the Put River system in or near Put 27. The species composition found in Put 27 reflect a shift toward marine and anadromous fish. We suspect that increasing salinity levels in Put 27 are driving the change in species composition from freshwater types found in previous sampling toward marine and anadromous life history types.

Table 4. Fish captured in Put River system, July 1993.

Date	Location	Species	Number	Length (mm)	Comments
7/18/93	Lake Judith	Broad whitefish	2	63 470	Tag LGLAk 9200503
	Put 27 Mine site	Arctic cisco	2	40 92	
		Arctic cod	1	109	mortality
		Arctic flounder	4	55	
			3	57 58 58	
		Broad whitefish	3	38 40 42	
		Fourhorn sculpin	3	74 85 143	
		Ninespine stickleback	52		
		Round whitefish	1	56	
7/19/93	Lake Judith	Ninespine stickleback	79		
	Put 27 Mine Site	Broad whitefish	10	39 41 42 42 42 43 43 43 43 47	mortality
		Fourhorn sculpin	3	65 69 76	
		Ninespine stickleback	22		
7/20/93	Lake Judith	Ninespine stickleback	48		
	Put 27 Mine Site	Arctic flounder	2	35 50	

Table 4. Fish captured in Put River system, July 1993.

Date	Location	Species	Number	Length (mm)	Comments
7/20/93	Put 27 Mine Site	Broad whitefish	64	(37-48)	1 mortality several stressed
		Fourhorn sculpin	7	36	
				40	
				57	
				67	
				75	
				75	
				85	
7/21/93	Lake Judith	Broad whitefish	1	93	mortality
		Ninespine stickleback	79		
	Put 27 Mine Site	Arctic flounder	1	60	
		Broad whitefish	36	(38-47)	mortality (4)
		Fourhorn sculpin	10	60	
				67	
				76	
				76	
				80	
				82	
				82	
				94	
				96	
				107	
		Least cisco	1	81	
		Ninespine stickleback	21		
		Round whitefish	1	90	
7/22/93	Lake Judith	Broad whitefish	3	35	
				42	
				43	
		Ninespine stickleback	37		
	Put 27 Mine Site	Dolly Varden	2	155	
				184	
		Fourhorn sculpin	4	71	
				76	
				80	
				145	
		Round whitefish	2	85	
				84	
		Ninespine stickleback	21		

NORTH SLOPE GRAVEL MINE PROJECT TRIP REPORT

AUGUST 27-SEPTEMBER 3, 1993

General Comments

Fisheries investigations were conducted in the Prudhoe Bay and Kuparuk oilfields August 27 through September 3, 1993. This trip was the last of three planned for the 1993 field season. Our objectives were to evaluate the experimental introduction of Arctic grayling at Kuparuk Mine Site B and D, to recapture and transplant Arctic grayling reared in a shallow tundra pond, to monitor fish use of the Put River system and gather water quality information from the Put 27 Mine Site.

Field logistical support including air transportation from Fairbanks to Kuparuk and return, room and board, and a truck were provided by ARCO Alaska Inc. Field assistance was provided by Sheree Warner and Dave Stoller.

Weather conditions included subfreezing and near freezing temperatures, snow and light to moderate winds. Shelf ice was forming on smaller lakes and ponds. At the end of the sample period all equipment was moved to Red Barn for winter storage.

Significant Findings

Tundra Pond Rearing Experiment

Between June 20 and June 24 we captured 255 Arctic grayling from the Kuparuk River and introduced these fish to a two acre shallow tundra pond located north of the Spine Road near the eastern boundary of the Kuparuk River Unit. These fish had a mean length of 65 mm when released in the tundra pond. Two fyke traps were fished in the tundra pond on August 29 through September 1 and 95% (242) of the grayling were recaptured (Table 1). At recapture the pond reared Arctic grayling averaged 126 mm in length. This experiment demonstrates a high rate of survival and substantial increase in length among Arctic grayling reared in a tundra pond. The growth rate among pond reared Arctic grayling approached 1 mm/day during the 70 day rearing period.

Kuparuk Mine Site B

Fyke nets were fished at three locations in the East Creek / Kuparuk Mine Site B system on August 28 through September 2, 1993. We recaptured 85 Arctic grayling from the 1989 and 1992 transplant introductions. Of the 85 Arctic grayling captured 22 were marked fish (Table 2). Young of the year Arctic grayling were also captured at each of the three net sites. Daily catches of young-of-the-year fish ranged from 170 to 475 (Table 4). The data collected at Kuparuk Mine Site B indicate that approximately 70% of the grayling introduced to the site survived to early fall 1993. The large catches of young-of-the-year Arctic grayling indicate reproductive success among the introduced fish.

Kuparuk Mine Site D

We fished two fyke traps in Kuparuk Mine Site D and recaptured 154 Arctic grayling from the 1992 transplant introduction (Table 3). Of the 154 fish captured 22 were marked. Young-of-the-year Arctic grayling were also captured at each net site. Daily catches of young-of-the-year fish ranged from 33 to a high of 81 (Table 4). These data indicate that approximately 80% of the fish introduced in 1992 survived to early fall 1993. The presence of young-of-the-year Arctic grayling indicate reproductive success among fish introduced in 1992.

Put River System

Two fyke traps were fished in the Put River system from august 28 to September 1, 1993. The nets were fished in Put 27 at the access ramp and in a large tundra lake (Lake Judith) in the Little Put drainage located upstream of the Spine Road near Drill Site 14.

We captured broad whitefish, Dolly Varden and ninespine stickleback in Lake Judith (Table 5). Ninespine stickleback were captured most frequently. Daily catches of broad whitefish ranged from 7 to 28 fish and consisted of juvenile size classes (63-88 mm). Two juvenile size class Dolly Varden were also captured in Lake Judith. We captured seven species of fish in Put 27 including marine, anadromous and fresh water life history types. Species captured included: anadromous arctic cisco, broad whitefish, least cisco, ninespine stickleback, and rainbow smelt, marine fourhorn sculpin, and freshwater Arctic grayling. Ninespine stickleback and fourhorn sculpin were most frequently captured. The daily catch of broad whitefish ranged from 2 to 10 fish and consisted of juvenile size class fish (55-80 mm).

Put 27 Gill Net Sampling

Experimental gill nets were fished at two locations in Put 27 on August 29 to 30. The nets were fished at the access ramp to the site and at the inlet channel. At the access ramp we captured five adult broad whitefish (429-485 mm). At the inlet channel the catch included three adult broad whitefish (454-483 mm), seven adult least cisco (297-358 mm) and a single 144 mm Dolly Varden One adult broad whitefish and two least cisco had LGL tags from marine monitoring studies (Table 6). The catch result indicate colonization of Put 27 by anadromous broad whitefish and least cisco.

Water Quality sampling Put 27

Conductivity was measured at the water surface and at two meter intervals through the water column to 12 m near the bottom of the basin. The surface water and two meter conductivity measurements were 5830 umhos/cm while measurements at four meters through 12 meters ranged between 13,800 and 14,000 umhos/cm. These measurements indicate intermediate salinity concentrations favored by some species of anadromous whitefish. The fish sampling results indicate colonization and use of Put 27 by adult and juvenile broad whitefish and adult least cisco.

Table 5. Fish captured in Put River system, August-September, 1993.

Date	Location	Species	Number	Length (mm)	Comments
8/29/93	Lake Judith	Broad whitefish	7	(65-88)	
		Ninespine stickleback	89		
	Put 27	Broad whitefish	10	(60-77)	
		Fourhorn sculpin	70	(51-113)	
		Least cisco	1	326	
		Ninespine stickleback	42		
		Rainbow smelt	1	66	
8/30/93	Lake Judith	Broad whitefish	28	(63-85)	1 mortality
		Dolly Varden	1	166	
		Ninespine stickleback	143		estimate
	Put 27	Broad whitefish	5	(55-69)	
		Fourhorn sculpin	106	(41-92)	
		Least cisco	2	207	
				280	
		Ninespine stickleback	143		estimate
8/31/93	Lake Judith	Broad whitefish	9	(64-69)	4 mortality
		Dolly Varden	1	80	
		Ninespine stickleback	143		estimate
	Put 27	Arctic cisco	1	155	
		Broad whitefish	2	64	
				72	
		Fourhorn sculpin	112		
		Ninespine stickleback	61		
9/1/93	Lake Judith	Broad whitefish	11	(61-79)	
		Ninespine stickleback	50		
	Put 27	Arctic grayling	1	191	
		Broad whitefish	4	(65-67)	
		Fourhorn sculpin	133		
		Ninespine stickleback	143		estimate

Table 6. Gill net catch in Put 27, August 30, 1993.

Net Location	Species	Length (mm)	Comments
Access Ramp	Broad whitefish	429	tag scar / retained
		444	released
		456	released
		461	White tag # 92 LGL 00523 / released
		485	retained
Inlet Channel	Broad whitefish	454	released
		483	released
		465	retained
	Dolly Varden	144	released
	Least cisco	297	tag # 92 LGL 15436 / retained
		309	released
		320	released
		340	retained
		346	retained
		357	Yellow tag # 93 LGL 10971 / retained
		358	retained