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STATE OF ALASKA

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Alaska Department of Fish and Game

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ANNUAL REPORT OF PROGRESS, 1960-1961

FEDERAL AID IN FISH RESTORATION PROJECT F-5-R-2

SPORT FISH INVESTIGATIONS OF ALASKA

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Introduction

This report of progress consists of the Job Completion Reports from the State of Alaska's Federal Aid in Fish Restoration Project F-5-R-2, "Sport Fish Investigations of Alaska".

The current Project is composed of eighteen separate studies and were designed to evaluate the various aspects of the State's recreational fisheries resources. The information gathered will provide the necessary background data for the development of future programs. During the current segment continued emphasis was placed on overall inventorying of accessible waters and the evaluation of general catch data.

Several problems of immediate concern appeared sufficiently defined to warrant independent studies. As a result, two independent creel censuses, one experimental silver salmon egg take and a Resurrection Bay area silver salmon population study were instigated. Data accumulated from prior jobs dealing with the Arctic grayling has resulted in the formulation of three separate investigations during the current segment.

The rapid expansion of Alaska's population is being reflected in the ever increasing numbers of "No Trespassing" signs encountered in the vicinity of population centers. Fortunately, much of Alaska's fishing waters are still in the public domain. An aggressive program of acquiring access to fishing waters, instigated in 1959, was continued during the present segment. Increased emphasis is being placed on this job and the successful continuation of this activity, now and in the immediate future, will forestall many of the serious recreational use problems currently facing other states.

The enclosed progress reports are fragmentary in many respects and the interpretations contained therein are subject to re-evaluation as the work progresses.

ANNUAL REPORT OF PROGRESS
INVESTIGATIONS PROJECTS
COMPLETION OF 1960 - 1961 SEGMENT

State: ALASKA

Project No: F-5-R-2

Name: Sport Fish Investigations
of Alaska

Job No: 1-B

Title: Inventory and Cataloging
of the Sport Fish and
Sport Fish Waters on the
Kenai Peninsula and Prince
William Sound

Period Covered: June 15, 1960 to October 2, 1960.

Abstract:

Biological surveys were conducted on 50 roadside lakes of the Kenai Peninsula during 1960. Species and size composition of resident game fishes were established. Lake depths, configurations and characteristics were recorded. Associated physical, chemical and biological information was noted. Summaries of these data are included in the present report. Arbitrary environmental classifications of these lakes are discussed. Public access problems are noted. Recommendations for future action are included.

Objectives:

The Kenai Peninsula of Alaska is well endowed with fresh water lakes and streams of varying potential for sport fishing use. Due to the limited road system, however, relatively few of these waters are accessible to the average angler.

A definite lack of biological knowledge existed concerning these lakes when the sport fish investigation program was established by this organization in 1959. Species

composition, size composition, lake characteristics and associated data were not available for most of these waters. In order to manage these waters, a lake survey program was initiated in 1960 to obtain basic data on the roadside lakes of the Kenai Peninsula. The objectives of this study were as follows:

1. To determine species composition, relative abundance and age and growth patterns of game fishes in all lakes surveyed.
2. To collect physical, chemical, and biological data to determine the potential of these waters for rearing desirable fish.
3. To make recommendations for the future management of these waters based on the data collected.

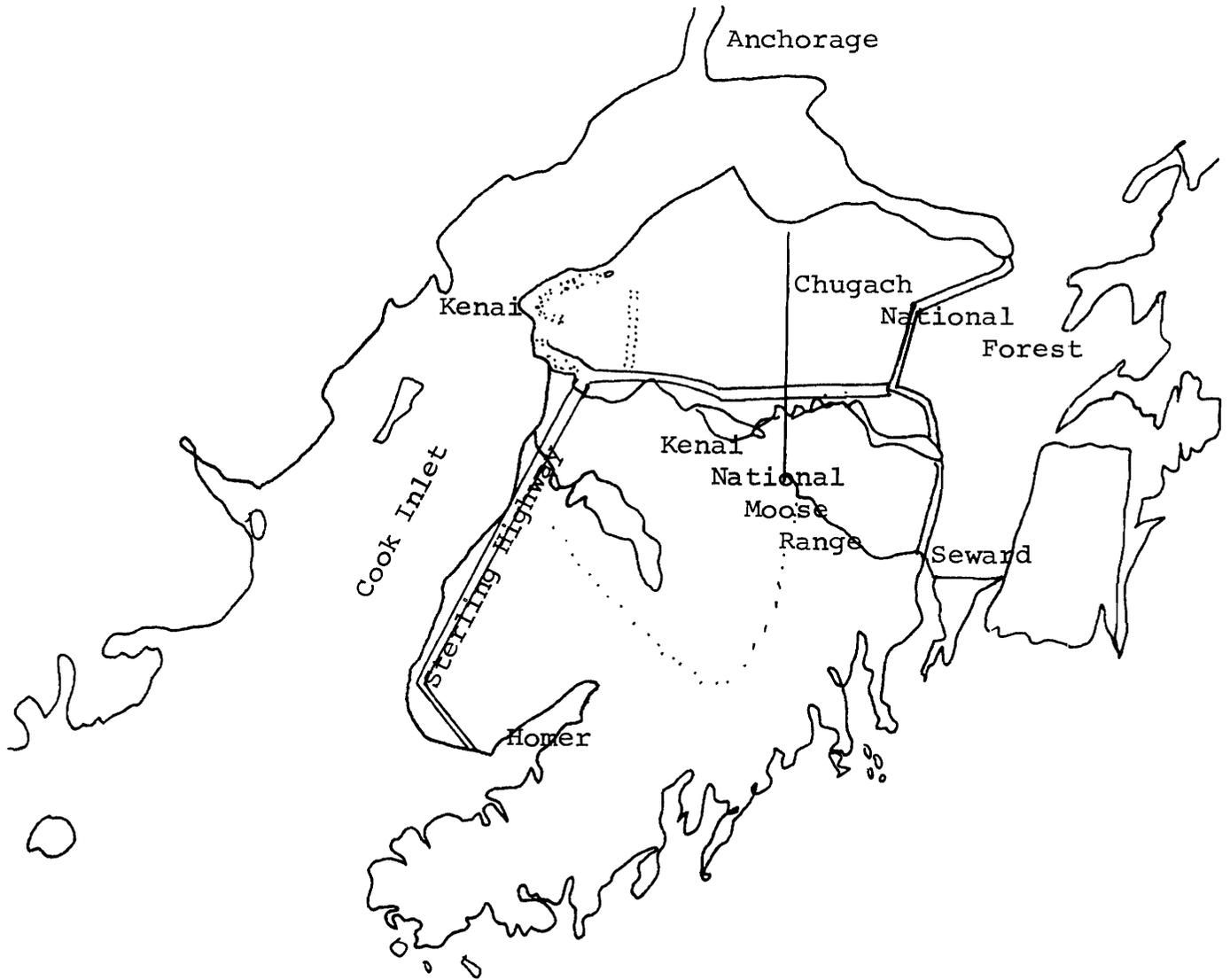
This report summarizes the data collected during the field season of 1960. Figure 1 illustrates the road locations on the Kenai Peninsula. Lakes adjacent to these roads were investigated during this study.

Methods:

A two-man lake survey crew was outfitted with the necessary sampling equipment and billeted in a house trailer. Four base camps were set up: Alcatraz Lake, from June 15 to July 21; Sport Lake, from July 22 to August 16; Johnson Lake, from August 17 to September 14; and Bernice Lake from September 15 to October 1. All of the accessible roadside lakes in the vicinity of the base camp were surveyed.

The following procedures were used on each lake: the lake was reconnoitered by boat, noting shore outline, location and extent of tributary streams, presence of aquatic plants and bottom type; soundings were made (by recording fathometer on larger lakes; by handline on the small, shallow lakes) to determine bottom contours; temperature profiles were established (by means of an electrical resistance thermometer) and chemical analysis of the water was undertaken (including dissolved oxygen, pH, and total alkalinity).

Figure 1. Road Locations on the Kenai Peninsula.



Two or more gill nets were set in each lake to determine what species of fish, if any, were present, and to obtain age-growth and size composition data. All data collected were entered on appropriate forms provided. (Figures 2, 3, 4, 5, and 6).

In general, each gill net was checked approximately 24 hours after being set. Fish captured were weighed to the nearest tenth of a pound, fork-length measured in millimeters and scale samples taken. Sex, condition of gonads, and stomach contents were noted.

Gill nets were fished for varying lengths of time, but an attempt was made to net each lake until an indication of the species and size composition of the fish was obtained. This time varied from less than 50 hours to over 300 hours, depending on the individual lake.

In some instances minnow traps were used to obtain juvenile specimens and spot sampling with rotenone was used.

Results:

A total of 50 roadside lakes were inventoried during the 1960 field season.

A summary of the data collected is listed in Table 1. Complete sets of data for each lake are on file in the Seward and Juneau offices of the Sport Fish Division, Alaska Department of Fish and Game.

Discussion:

A brief look at the data presented in Table 1 will show that while there are many lakes adjacent to the Sterling Highway, few of these lakes sustain fish populations of a size that would provide good sport fishing.

In general, the lakes which provided the higher gill net yields are located on the eastern side of the peninsula. In fact, few of the roadside lakes west of the Moose River bridge have fish populations of any number present.

Table 1.

Name of Lake	Area	Surface Acres	Maximum Depth	Species	Catch Per Hour	Mean Length	Mean Weight	pH	Total Alk. (ppm)	Survey Date
A-1 (Rock)	O St H	20	13'	None	0	----	----	7.7	390	6/25/60
A-2	St H	140	3'	RT, SK, SB	2.1	9.5" (RT)	.56	7.7	350	7/ 6/60
A-4	St H	75	16'	RT, SK, SB	.27	14.4" (RT)	1.26	7.5	390	7/ 6/60
A-6 (Kelly)	St H	95	48'	RT, SK, SB	.18	11.1" (RT)	.68	7.7	400	7/ 9/60
A-7	St H	170	45'	RT, SK, SB	.68	12.8" (RT)	.88	7.7	380	7/11/60
Lower										
Alcatraz	O St H	150	94'	RT, SB	.18	12.4	.84	6.5	285	6/16/60
Upper										
Alcatraz	O St H	30	25'	RT, DV	.43	9.8	.41	6.5	500	6/17/60
Aqua-linda	St H	30	10'	SB	---	---	---	7.2	40	8/21/60
Bear	Seward	410	60'	DV, SS, RS, RT, SB	4.36	10.4 (DV)	---	6.8	---	10/ 9/59
Beluga	Homer	200	16'	RT	.30	5.3	---	6.5	---	9/ 5/59
Bernice	N K R	180	9'	SB	---	---	---	7.0	---	9/20/60
Cohoe	St H	140	12'	DV, SB	.004	23.4	4.95	7.5	---	8/30/60
DeLong	St H	220	35'	DV	.01	20.4	3.67	6.2	30	7/27/60
Encelewski	St H	100	16'	SB	---	---	----	---	10	9/12/60
Engineer	O St H	240	18'	RT, DV, SS, SB	.028	16.7	2.75	7.7	170	6/21/60
Hidden	O St H	1,920	145	SB, DV, LT, RS, RT, SS	.23	14.5	1.53	7.7	440	6/23/60
Highland	Cohoe Rd	20	26	DV	.007	19.4	2.65	6.2	10	9/ 4/60
Jean	St H	140	75	RT, DV, RS, SB	.21 (RT DV)	12.8	.87	7.2	500	6/29/60
Upper Jean	St H	50	50	RT, SB	.03	9.6	.47	7.5	530	7/15/60
Jerome	Seward	25	15	DV	.08	8.7	.29	7.7	220	7/15/60
Johnson	St H	90	15	SS, SB	.02	10.7	.62	7.0	170	8/15/60
Joseph #1	St H	20	35	DV, RT, SB	.03	8.1	.20	6.7	20	8/18/60
Joseph #2	St H	55	48	SB	---	---	---	6.2	40	8/19/60
McLane	K R	30	20	DV, RT, SB	.08	12.9	1.05	7.2	90	8/22/60
M-1	St H	40	14	-----	---	---	---	6.5	30	8/ 4/60

Table 1. (Continued)

Name of Lake	Surface Area	Maximum Acres	Maximum Depth	Species	Catch Per Hour	Mean Length	Mean Weight	pH	Total Alk. (ppm)	Survey Date
M-2	St H	165	20	RT, SS, SB	.20	12.5	.93	6.7	40	8/ 6/60
M-3	St H	120	30	RT, SS, SB	.14	11.3	.75	6.2	60	8/ 9/60
M-4	St H	85	30	RT	.004	8.7	.30	6.7	30	8/ 9/60
M-5	St H	45	10	SB	---	----	---	6.7	30	8/11/60
Ophar	St H	70	36	-----	---	----	---	---	10	9/11/60
Porcupine	St H	30	27	RT, SB	2.7	9.9	---	---	10	9/ 9/60
Porcupine#1	St H	40	23	RT, SB	.22	10.9	.58	6.2	--	8/26/60
Porcupine#2	St H	50	18	RT, SB	.12	11.6	.94	7.2	--	8/27/60
Porcupine#3	St H	20	27	RT, SB	.24	9.5	.42	6.5	--	8/26/60
Pennoyer	St H	30	8	-----	---	----	---	7.2	70	8/16/60
Pollard	St H	100	25	DV, RS, SB	.01	7.2 (DV)	.17	6.72	300	8/21/60
Reeder	St H	15	25	DV, SS, SB	.19	10.7	.35	6.5	10	9/ 6/60
Lower										
Salamatoff	N K R	160	--	DV, RT, SB	.26	13.2	1.18	7.0	0	9/22/60
Upper										
Salamatoff	N K R	200	--	RT, SB	.20	11.2	.80	7.0	--	9/26/60
Scout	St H	110	25	RT, SB	.003	8.4	.25	7.0	110	7/26/60
Upper Slikok	St H	30	15	SB	---	----	---	7.3	20	8/16/60
Sport	St H	75	20	RT, SB	.13	14.3	1.32	6.7	40	7/29/60
Lower Summit	Seward	55	12	DV	2.61	8.7	0.26	7.25	170	7/12/60
Upper Summit	Seward	240	76	DV, SB	0.49	8.6	0.25	7.25	170	7/ 1/60
Swan	St H	20	23	SB	0.00	----	---	7.5	5	9/ 9/60
Swanson #1	S R R	165	25	RB	0.225	13.5	1.25	7.5	110	7/23/60
Swanson #2	S R R	255	100	DV	0.159	13.3	0.84	7.0	100	7/25/60
Swanson #4	S R R	140	55	----	----	----	---	7.8	100	8/ 2/60
Triangle	St H	280	10	SB	----	----	---	7.0	60	7/19/60
Trap	St H	200	7	SB	----	----	---	7.75	--	8/29/60

Table 1. (Continued)

Name of Lake	Area	Surface Maximum		Species	Catch			pH	Total Alk. (ppm)	Survey Date
		Acres	Depth		Per Hour	Mean Length	Mean Weight			
Whisper	St H	150	20	SB	--	----	---	7.25	50	8/5/60
Woody's Lake	St H	50	15	DV, SB	0.015	11.1	0.55	7.00	10	9/4/60

KEY:

Species

RT = Rainbow
 DV = Dolly Varden
 SS = Silver Salmon
 SB = Stickleback
 RS = Red Salmon
 SK = Sucker

Area

O St H = Old Sterling Highway
 St H = Sterling Highway
 N K R = North Kenai Road
 K R = Kasilof Road
 S R R = Swanson River Road

Figure 2.

STATE OF ALASKA
 DEPARTMENT OF FISH AND GAME
 DIVISION OF SPORT FISHERIES

LAKE SURVEY LAKE SUMMARY

Lake..... Lower Alcatraz T..... R..... Sec..... M.....

1. OTHER NAMES OF LAKE _____
 2. ACCESSIBILITY (how reached, condition of roads) Via Old Sterling Highway (Gravel), _____ miles
 from Junction of New Sterling Highway at Mile ELEVATION _____
 3. OUTLET (immediate and main drainage) Drains to Skilak Lake (intermittent) blocked by dam.
 PERMANANCY Intermittent SIZE _____
 4. DAM IN OUTLET None DISTANCE FROM LAKE _____ HEIGHT _____
 EFFECT ON LEVEL _____ OWNER _____
 EFFECT ON FISH MOVEMENTS _____
 5. INLETS (name, size & permanency) One small inlet on east side of lake draining from Upper
Alcatraz Lake DRAINAGE AREA _____
 6. POLLUTION (kind, source, severity) None
 7. IMMEDIATE SHORE (topography, soil, cover) Small rolling hills; in Kenai Burn Area.
 8. SURROUNDING COUNTRY (topography, soil, cover) _____
 9. USE (private, public, semi-private) Public PUBLIC FISHING SITE Entire Lake
 10. APPROXIMATE NUMBER OF COTTAGES None HOMES None RESORTS None BOAT LIVERIES None
 11. FISHING: GENERAL REPUTATION _____
 HISTORY: _____
- REPORTED BY _____
12. INTENSITY (heavy, medium, light) Light SUMMER Light WINTER Unknown
 OTHER USES _____
13. AREA (est.) 150 Acres SHORE DEVELOPMENT _____ MAXIMUM DEPTH 94 feet
 14. AREA OF VEGETATION (acres) less than 1/2 acre PER CENT SHOAL (less than 15 ft.) 20%
 15. SLOPE AT DROP-OFF (gradual, steep) Very steep
 16. BOTTOM SOIL: SHOAL Rubble DEEP WATER Mud
 17. COLOR Clear SECCHI DISK (range) _____ TURBIDITY _____

1
20
1

18. DEPTH RANGE WHERE TEMPERATURE IS BELOW 70⁰F. AND O₂ ABOVE 4 PPM. Entire
TOTAL ALKALINITY _____
19. COVER (kind, abundance) _____
20. VEGETATION (type, abundance) _____
21. FOOD (abundance, dominant organisms): PLANKTON
BOTTOM: SHOAL _____ DEPTHS _____
VEGETATION _____
22. SPAWNING GROUNDS (summarize observations and reports) RB spawning area unknown at present;
inlet appears to be only suitable area, though very limited in area; outlet appears
unsuitable near lake

23. PREDATORS (kind and abundance) _____
24. SEVERITY OF FISH LOSSES _____ CAUSE _____
25. SPECIES PRESENT: GAME FISH _____
Rainbow Catch per hour = 0.189
Mean size = 12.2 inches
Size range = 7.3 to 19.3 inches
Mean weight = 0.84 lbs.
Weight Range = 0.1 to 2.5 lbs.
- OTHER FISH Most common food item in fish examined were stickleback

26. CONTINUATIONS (use item numbers): _____

27. PREPARED BY Kubik & Reynolds DATE OF SURVEY June 16, 17, 18, 1960

Figure 3.

ALASKA
DEPARTMENT OF FISH AND GAME
SPORT FISH DIVISION

BOTTOM CONTOURS
FORMS

NAME OF LAKE: Lower Alcatraz LOCATION: Mi. 75 Old Sterling Hiway
 WEATHER: _____ ACREAGE: 150 (est.)
 WIND: _____ AIR TEMP: _____
 DATE: June 16, 1960 LOCATION OF SOUNDINGS: See Below

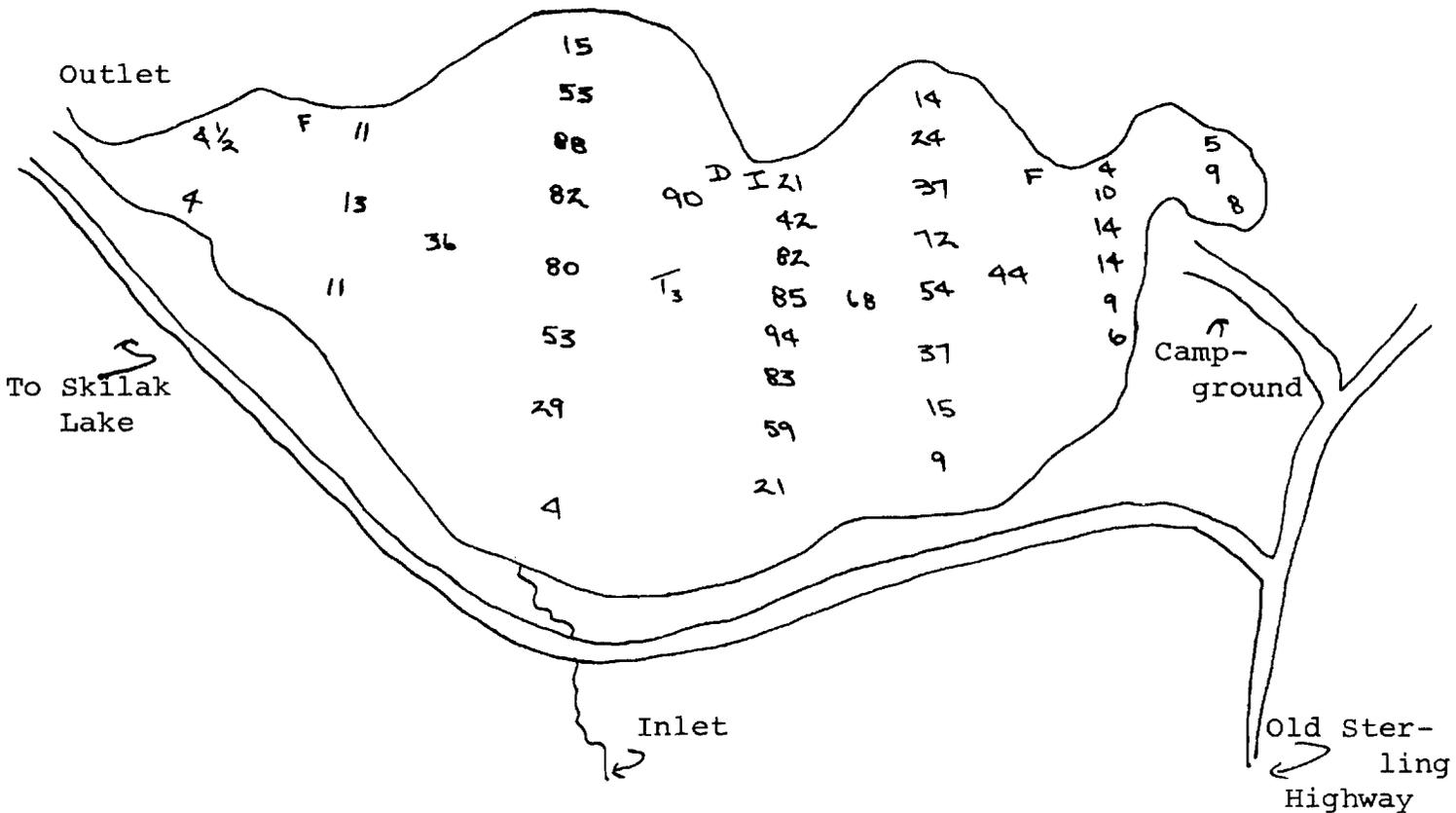


Figure 4.

ALASKA
DEPARTMENT OF FISH AND GAME
SPORT FISH DIVISION

WATER ANALYSIS FORM

NAME OF LAKE: Lower Alcatraz LOCATION: T: _____ R: _____ S: _____

DESCRIPTION: _____ MILE: _____

SURFACE ACREAGE: 150 TOPOGRAPHY: _____

MAXIMUM DEPTH: 94 feet MEAN DEPTH: _____ WEATHER Clear

DEPTH AT SAMPLE STATION: 82 feet AIR TEMP: 65°F WATER TEMP: _____

SNOW COVER DEPTH: _____ WATER COLOR: Clear

ICE THICKNESS: _____

Sample Number	Date of Sample	Dissolved Oxygen	pH	Alkalinity			Total Alkalinity	CO ₂	Other
				Pp	MO	OH			
1-8	6/16/60	6.4 (50')	7.5	0	285	0	285		
2-166	6/16/60	8.5 (25')	6.5	0	270	0	270		
3-167	6/16/60	7.7 (Sur)	7.7	0	270	0	270		

Determined By: Kubik

Figure 5.

ALASKA
DEPARTMENT OF FISH AND GAME
SPORT FISH DIVISION

LAKE SURVEY
FORM

TEMP PROFILE
DATA

NAME OF LAKE: Lower Alcatraz LOCATION: _____ T: _____ R: _____ S: _____

WEATHER: Clear AIR TEMPERATURE: 65° F

WIND: None SURFACE TEMPERATURE: 61° F DATE: 6/16/60

LOCATIONS OF PROFILES (INDICATE ON MAP): _____

Reading #	Depth	Temp °F	Reading #	Depth	Temp °F
1	84 feet	41	15	42 feet	42.5
2	81	41	16	39	43.0
3	78	41	17	36	44
4	75	41	18	33	45
5	72	41	19	30	47
6	69	41.5	20	27	49
7	66	41.5	21	24	53.5
8	63	41.5	22	21	56
9	60	41.5	23	18	57.5
10	57	41.5	24	15	58
11	54	41.5	25	12	58.5
12	51	41.5	26	9	59
13	48	42.0	27	6	60
14	45	42.5	28	3	60.5
			29	Surface	61

Figure 6.

GILL NET SET RECORD

SET NO. 1 LAKE Lower Alcatraz LOCATION OF LAKE _____
 WEATHER Clear LOCATION OF SET(Station) 1
 AIR TEMP 56°F WATER _____ TYPE OF BOTTOM Gravel to Rubble
 NET TYPE Gill LENGTH 125' TYPE OF SET: Floater
 MESH SIZE 3/4, 1, 1-1/2, 2" DEPTH 6 ft. SET: TIME 0930 DATE 6/16/60
 OBSERVER Dunn REMARKS _____ LIFT: TIME 0900 DATE 6/17/60
 _____ DEPTH OF SET 14' to 10'

CATCH

No.	Species	L	W	Sex	Scale No.	Remarks
1	RB	19.6	2.5	♀ M	LA-1	12 Mature SB in stomach
2	RB	10.5	0.5	♂	LA-2	
3	RB	12.8	0.9	♀ I	LA-3	SB in stomach
4	RB	9.0	0.4	♀ I	LA-4	SB in stomach
5	RB	11.6	0.7	♀ I	LA-5	SB in stomach
6						
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It is the writer's feeling, obtained from observations of these lakes, that the waters under discussion may be generally classified into three broad categories, as follows:

1. The lakes found on the eastern side of the peninsula (i.e., Alcatraz Lakes, Seven Lakes Basin, Hidden Lake, Jean Lake, Summit Lakes, etc.) containing self-sustaining populations of trout. These lakes are, in general, oligotrophic in nature with adequate spawning facilities for trout populations, and, in general, are not dependent upon anadromous populations.
2. Those lakes located north of the Sterling Highway in the Kenai Flats area which include large eutrophic lakes with spawning facilities either limited or entirely lacking. While recruitment in this situation may not be a continuing occurrence, these lakes will, in general, support trout populations when introduced. It may be theorized that due to the very flat topography of the land, intermittent spawning may occur during certain years of heavy rainfall. This could occur by raising water levels to allow fish to migrate from one lake to another or from streams to lakes, or by opening up adequate spawning areas not normally present at the usual water levels.
3. A final arbitrary ecological classification is made of the lakes paralleling the Sterling Highway between Soldotna and Ninilchik. These lakes are, in general, small, shallow, landlocked lakes, with abundant aquatic vegetation. Little evidence of natural trout populations was found. Most of the trout found in the lakes of this area can be traced to introductions by local residents. Little natural spawning facilities are present and many of the lakes in this area may be subject to winter kill.

At present the area of highest sport fishing potential lies in the Kenai National Moose Range Recreational Area (Jean Lake, Hidden Lake, Alcatraz Lakes, etc.). This is the only area where lake sport fishing is present in measurable amounts.

The lakes in the Soldotna-Kenai area offer a potential for development in the future. Those lakes in the Kasilof area do not, with available management practices, offer much potential.

Another problem of immediate importance is that of public access to fishing waters. In fact, this problem may be stated as being critical at present.

The land of the upper Kenai Peninsula is controlled almost in its entirety by the Federal Government. The U.S. Forest Service controls all land east of the Russian River. The Kenai National Moose Range administers all land west of the Russian River south to the Kasilof River, including the moose range areas opened to homesteading. Only the land south of the Kasilof River, between the Forest Service Boundary and Cook Inlet is public domain administered by the State of Alaska. (Figure 1). However, access is a problem in that area because of the lack of roads.

Whereas public land or public use sites are present on many of the lakes in question, the major problem is the actual access to the lake. Most of the available roads to these lakes are privately owned and posted against public entry. This is most strikingly demonstrated in the Kasilof area, where the numerous "No Trespassing" signs remind one of the more populated areas of the United States rather than the "wilderness" of Alaska. This problem is critical also in the Island Lake area, north of Kenai.

This problem can be solved only by direct negotiation, a costly and time-consuming process.

Since the policy of the Alaska Department of Fish and Game is to manage only waters with public access, any development program will be hampered until access blocks are eliminated.

Recommendations:

Based on the knowledge available at present, it is recommended that:

1. Lake and stream inventory work be continued as new waters become accessible through road development.

2. As time and money become available, increased emphasis be placed upon right-of-way and public access negotiation.
3. That development be undertaken in the immediate future on Bernice Lake, Johnson Lake and Scout Lake. These three lakes, while definitely not of the highest potential for development, are the only waters on the west side of the peninsula where public access and public campgrounds are available. At present, none of these lakes provide a sport fishery.

Submitted by:

Approved by:

J. R. Dunn
Fishery Biologist
15 May 1961

Alex H. McRea
D-J Coordinator

E. S. Marvich, Chief
Sport Fish Division