Appendix G:
ADF&G Limnology Lab
Zooplankton analyses

ations: 1
pth: 1m
ar: 1996

Macrozooplankton Density
(no./m²)

te:	29-Jul	Seasonal Mean (No/m²)
panlus		
pischura	64	64
ptotnus		
clops	606	606
mina	892	892
g Bosmina	64	64
phnia l.	96	96
phnia g.		
lepodium		
ydorinae		
phemus		
	Total:	1,721

SEASONAL MEANS

	Body Size (mm)	Mean Length (mm)	Weighted Length (mm)	Biomass (mg/m^2)	Weighted Biomass (mg/m^2)
paulus					
ischura	0.65	0.65	0.65	0.1	0.1
ptomus					
clops	0.67	0.67	0.67	1	1
mina	0.28	0.28	0.28	1	1
g Bosmina	0.44	0.44	0.44	0.1	0.1
phnia l.	0.91	0.91	0.91	0.4	0.4
hnia g					
lepodium					
dorinae					
yphemus					
		TOTAL:		2	2

ation: 1
pth: 1m
ar: 1996

Macrozooplankton Density
(no./m^2)

	29-Jul	Seasonal Mean (No/m^2)
	32	32
		8
		0
	255	255
	368	356
	96	96
		0
		0
		0
		0
		0
Total	753	

Body Size
(mm)

	29-Jul
	0.58
	0.54
	0.33
	0.41

SEASONAL MEANS

Mean Length (mm)	Weighted Length (mm)	Biomass (mg/m^2)	Weighted Biomass (mg/m^2)
0.58	0.58	0.04	0.04
0.54	0.54	0.2	0.2
0.33	0.33	0.3	0.3
0.41	0.41	0.1	0.1
TOTAL:		1	1

ation: 1
epth: 3m
ear: 1996

Macrozooplankton Density

(no./m^3)

te:	29-Jul	Seasonal Mean (no/m^3)
gasilus		
ischura	7,325	7,325
aptomus		
clops		
smina	25,000	25,000
Bosmina	2,707	2,707
phnia l.		
phnia g.	637	637
lopedium		
ydorinae		
lyphemus		
	Total:	35,669

Body Size

(mm)

gasilus	
ischura	0.78
aptomus	
yclops	
smina	0.30
Bosmina	0.32
aphnia l.	
aphnia g	0.64
iopedium	
ydorinae	
lyphemus	

SEASONAL MEANS

Mean Length (mm)	Weighted Length (mm)	Biomass (mg/m^2)	Weighted Biomass (mg/m^2)
0.78	0.78	16	16
0.30	0.30	20	20
0.32	0.32	2	2
0.64	0.64	0.4	0.4
TOTAL:		39	39

tation: 1

epth: 4m

ear: 1996

Macrozooplankton Density

(no./m^3)

ite:	29-Jul	Seasonal Mean (No/m^2)
rgasilus		
pischura	present	
aptomus	29,193	29,193
vig Diaptomus	2,123	2,123
yclops		
osmina	176,226	176,226
vig Bosmina	1,062	1,062
aphnia L.	41,401	41,401
vig Daphnia L.	5,308	5,308
aphnia g.	6,900	6,900
vig Daphnia g.	2,123	2,123
ololopedium	531	531
ydorinae		
ilyphemus		
	Totals:	284,867

Body Size

(mm)

SEASONAL MEANS

		Mean Length (mm)	Weighted Length (mm)	Biomass (mg/m^2)	Weighted Biomass (mg/m^2)
rgasilus					
pischura	1.84	1.84	1.84		
aptomus	1.20	1.20	1.20	210	210
vig Diaptomus	1.19				
yclops					
osmina	0.47	0.47	0.47	365	365
vig Bosmina	0.56	0.56	0.56	3	3
aphnia L.	0.93	0.93	0.93	163	163
vig Daphnia L.	1.13	1.13	1.13	32	32
aphnia g.	1.12	1.12	1.12	25	25
vig Daphnia g.	1.29	1.29	1.29	12	12
ololopedium					
ydorinae					
ilyphemus					
	TOTAL:			810	810

Station: 1
Depth: 8m
Year: 1996

Macrozooplankton Density
(no./m^3)

Date:	30-Jul	Seasonal Mean (No/m^3)
Organism		
Epischura	5,839	5,839
Diaptomus	4,246	4,246
Cyclops	22,293	22,293
Ovig Cyclops	5,308	5,308
Bosmina	51,486	51,486
Ovig Bosmina	1,592	1,592
Daphnia l.	187,373	187,373
Ovig Daphnia l.	14,331	14,331
Daphnia g.	9,554	9,554
Ovig Daphnia g.	2,123	2,123
Holopedium		
Chydorinae		
Polyphemus		
	Total:	####

Body Size
(mm)

SEASONAL MEANS

		Mean Length (mm)	Weighted Length (mm)	Biomass (mg/m^2)	Weighted Biomass (mg/m^2)
Organism					
Epischura	1.51	1.51	1.51	85	85
Diaptomus	1.29	1.29	1.29	37	37
Cyclops	1.08	1.08	1.08	95	95
Ovig Cyclops	1.16	1.16	1.16	26	26
Bosmina	0.45	0.45	0.45	97	97
Ovig Bosmina	0.59	0.59	0.59	5	5
Daphnia l.	0.98	0.98	0.98	825	825
Ovig Daphnia l.	1.08	1.08	1.08	78	78
Daphnia g.	1.17	1.17	1.17	40	40
Ovig Daphnia g.	1.33	1.33	1.33	14	14
Holopedium					
Chydorinae					
Polyphemus					
		TOTAL:		1,302	1,302

Station: 1
Depth: 2m
Year: 1996

Macrozooplankton Density
(no./m^2)

Date:	30-Jul	Seasonal Mean (No/m^2)
Ergasilus		
Epischura	6,051	6,051
Diaptomus		
Cyclops	159	159
Bosmina	40,605	40,605
Ovig Bosina	2,389	2,389
Daphnia l.	present	
Daphnia g.	1,911	1,911
Ovig Daphnia g.	159	159
Leptodora	318	318
Chydorinae		
Polyphemus		
	Total:	51,592

Body Size
(mm)

Ergasilus	
Epischura	1.16
Diaptomus	
Cyclops	1.05
Bosmina	0.30
Ovig Bosina	0.33
Daphnia l.	1.09
Daphnia g.	0.81
Ovig Daphnia g.	1.14
Leptodora	0.55
Chydorinae	
Polyphemus	

SEASONAL MEANS

Mean Length (mm)	Weighted Length (mm)	Biomass (mg/m^2)	Weighted Biomass (mg/m^2)
1.16	1.16	42	42
1.05	1.05	1	1
0.30	0.30	33	33
0.33	0.33	2	2
1.09	1.09		
0.81	0.81	2	2
0.55	0.55	0.4	0.4
TOTAL:		80	80

Lake:

Station: 1

Depth: 1m

Year: 1996

Macrozooplankton Density

(no./m^2)

Date:	30-Jul	Seasonal Mean (No/m^2)
Ergasilus		
Harpacticoida	96	96
Diaptomus	318	318
Cyclops		
Bosmina	1,051	1,051
Ovig Bosmina	64	64
Daphnia l.	350	350
Ovig Daphnia rosea	32	32
Holopedium		
Chydorinae		
Polyphemus		
Total:	1,911	

Body Size

(mm)

Ergasilus	
Harpacticoida	0.53
Diaptomus	1.14
Cyclops	
Bosmina	0.43
Ovig Bosmina	0.58
Daphnia l.	0.78
Ovig Daphnia rosea	1.00
Holopedium	
Chydorinae	
Polyphemus	

SEASONAL MEANS

Mean Length (mm)	Weighted Length (mm)	Biomass (mg/m^2)	Weighted Biomass (mg/m^2)
0.53	0.53	0.1	0.1
1.14	1.14	2	2
0.43	0.43	2	2
0.58	0.58	0.2	0.2
0.78	0.78	1	1
1.00	1.00	0.1	0.1
TOTAL:		5	5

Station: 1

Depth: 1m

Year: 1996

Macrozooplankton Density

(no./m^3)

Date:	30-Jul	Seasonal Mean (No/m^3)
Ergasilus		
Epischura		
Diaptomus		
Cyclops	32	32
Bosmina	318	318
Ovig Bosmina	96	96
Daphnia l.	32	32
Ovig Daphnia l	32	32
Daphnia g.		0
Holopedium		
Chydorinae		
Polyphemus		
	Totals:	510

Body Size

(mm)

SEASONAL MEANS

		Mean Length (mm)	Weighted Length (mm)	Biomass (mg/m^2)	Weighted Biomass (mg/m^2)
Ergasilus					
Epischura					
Diaptomus					
Cyclops	0.70	0.70	0.1	0.1	
Bosmina	0.38	0.38	0.4	0.4	
Ovig.Bosmina	0.37	0.37	0.1	0.1	
Daphnia l.	0.64	0.64	0.1	0.1	
Ovig Daphnia l	0.74	0.74	0.1	0.1	
Daphnia g.					
Holopedium					
Chydorinae					
Polyphemus					
	TOTAL:		1	1	

1
6m
1996

Macrozooplankton Density

(no./m^2)

	30-Jul	Seasonal Mean (No/m^2)
acticus	present	
hura	52,283	52,283
omus		
ps	8,227	8,227
Cyclops	1,062	1,062
ina	62,633	62,633
nia l.	41,136	41,136
Dap l.	20,170	20,170
nia g.	2,654	2,654
Dap g.	present	
pedium	265	265
Holopedium	265	265
durinae		
phemus		

Total: 188,695

Body Size

(mm)

practicus	0.62
schura	0.89
otomus	
clops	0.91
g Cyclops	1.23
mina	0.37
phnia l.	0.68
g Dap l.	0.79
phnia g.	0.85
g Dap g.	0.82
iopedium	0.73
g Holopedium	0.82
ydorinae	
typhemus	

SEASONAL MEANS

Mean Length (mm)	Weighted Length (mm)	Biomass (mg/m^2)	Weighted Biomass (mg/m^2)
0.62	0.62		
0.89	0.89	169	169
0.91	0.91	24	24
1.23	1.23	6	6
0.37	0.37	78	78
0.68	0.68	82	82
0.79	0.79	56	56
0.85	0.85	4	4
0.82	0.82		
0.73	0.73	1	1
0.82	0.82	2	2
TOTAL:		422	422

ke: Horseshoe U.

ation: 1

pth:

ar: 1995

Macrozooplankton Density

(#/m2)

te:	3-May	22-Jun	30-Jul	29-Aug	16-Oct	Seasonal Mean (No/m2)
pact.	32					6
schura		14,331	191	64		2,917
ptomus				96	159	51
clops	64		382	573	287	261
g. cyc.			32			6
smina		523,360	29,108	64	955	110,697
g. Bosmina		154,989	1,019		127	31,227
hnia l.			32		318	70
hnia g.			96			19
odaphnia			8,822	223		1,809
g. cerio.			669	32		140
dorinae			2,134	255		478
g. Chydorinae			96	64		32
yphemus						0
					Total:	147,715

Body Size

(mm)

						SEASONAL MEANS			
						Mean Length (mm)	Weighted Length (mm)	Biomass (mg/m2)	Weighted Biomass (mg/m2)
act.	0.50					0.50	0.50	0.01	0.01
chura		1.50	1.33	2.24		1.69	1.50	58	42
tomus				0.88	1.04	0.96	0.98	0.20	0.21
lops	0.97		1.17	0.71	0.73	0.90	0.86	1	1
. Cyclops			1.52			1.52	1.52	0.06	0.06
nina		0.35	0.27	0.24	0.44	0.33	0.35	105	120
. Bosmina		0.41	0.38		0.59	0.46	0.41	62	49
nia l.			0.60		0.91	0.76	0.88	0.17	0.24
hnia g			0.79			0.79	0.79	0.02	0.02
daphnia			0.44	0.46		0.45	0.44	1	3
. Cerio.			0.65			0.65	0.65	0.25	1
dorinae			0.33	0.26		0.30	0.32	0.37	0.45
. Chydorinae			0.44	0.36		0.40	0.41	0.05	0.05
phemus						#####	#DIV/0!		
						TOTAL:		229	216

cation: 1

epth:

ear: 1995

Macrozooplankton Density

(#/m2)

ate:	3-May	22-Jun	28-Jul	29-Aug	16-Oct	Seasonal Mean (No/m2)
rgasilus		32				6
erpact.		127			159	57
bischura			32			6
laptomus					382	76
yclops	32	191	2,516	350	7,389	2,096
vig. cyclops		127	191			64
osmina		478	1,178	2,261		783
vig. Bosmina		32	255	828		223
aphnia l.			350		32	76
ig. Daphnia			32			6
phnia g.			96			19
eriodaphnia				64	32	19
lopedium			32			6
ydorinae			860	6,783	1,433	1,815
ig. Chydorinae			32	573	32	127
lyphemus						0
					Total:	5,382

Body Size

(mm)

gasilus		0.50				
rpact.		0.64			0.81	
ischura			1.14			
aptomus					0.89	
yclops	0.70	0.89	0.64	1.01	0.70	
ig. Cyclops		1.01	1.00			
smina		0.27	0.38	0.28		
ig. Bosmina		0.44	0.41	0.35		
phnia l.			0.87		0.56	
ig. Dap. l.			1.06			
phnia g			0.77			
riodaphnia				0.75		
lopedium			0.60			
ydorinae			0.30	0.30	0.38	
ig. Chydorinae			0.38	0.53		
lyphemus						

SEASONAL MEANS

Mean Length (mm)	Weighted Length (mm)	Biomass (mg/m2)	Weighted Biomass (mg/m2)
0.50	0.50	0.01	0.01
0.73	0.73	0.10	0.11
1.14	1.14	0.04	0.04
0.89	0.89	0.24	0.24
0.79	0.70	5	4
1.01	1.00	0.23	0.23
0.31	0.31	1	1
0.40	0.37	0.33	0.27
0.72	0.84	0.17	0.24
1.06	1.06	0.03	0.03
0.77	0.77	0.02	0.02
0.75	0.75	0.05	0.05
0.60	0.60	0.02	0.02
0.33	0.31	2	2
0.46	0.52	0.25	0.33
TOTAL:		8	7

Lake: Beaver
Station: 1
Depth:
Year: 1995

Macrozooplankton Density

(#/m2)

Date:	3-May	22-Jun	30-Jul	29-Aug	16-Oct	Seasonal Mean (No/m2)
rgasilus		96	1,911			401
pischura		1,497		1,433		586
arpact.	32					6
laptomus					64	13
yclops	127	127	32	159	127	114
osmina		1,115	4,363	50,795	510	11,357
vig. Bosmina		573	1,401	16,561	32	3,713
aphnia l.					32	6
riodaphnia			64			13
olopedium		510	64	318		178
vig. Holopedium		96				19
ydorinae					159	32
					96	19
yphemus						0
					Total:	16,459

Body Size

(mm)

gasilus		0.55				0.55
ischura		0.77	1.08	0.71		0.85
rpact.	0.90					0.90
ptomus					0.81	0.81
clops	0.61	0.57	0.96	0.68	0.60	0.68
smina		0.32	0.28	0.30	0.59	0.37
g. Bosmina		0.37	0.40	0.32	0.38	0.37
phnia l.					0.56	0.56
riodaphnia			0.36			0.36
lopedium	0.32	0.36	0.46	0.47		0.40
g. Holopedium		0.65				0.65
ydorinae					0.27	0.27
					0.34	0.34
yphemus						#####

SEASONAL MEANS

Mean Length (mm)	Weighted Length (mm)	Biomass (mg/m2)	Weighted Biomass (mg/m2)
0.55	0.55	0.40	0.40
0.85	0.74	2	1
0.90	0.90	0.02	0.02
0.81	0.81	0.03	0.03
0.68	0.64	0.18	0.16
0.37	0.30	14	9
0.37	0.33	5	4
0.56	0.56	0.01	0.01
0.36	0.36	0.01	0.01
0.40	0.41	0.22	0.23
0.65	0.65	0.08	0.08
0.27	0.27	0.02	0.02
0.34	0.34	0.02	0.02
#####	#DIV/0!		
TOTAL:		22	15

ake: Dark

tation: 1

epth:

ear: 1995

Macrozooplankton Density

(#/m2)

ate:	2-May	25-Jun	28-Jul	29-Aug	16-Oct	Seasonal Mean (No/m2)
gasilus		212				42
						0
ischura		6,794	1,699	1,274	64	1,966
						0
aptomus		24,841	2,972	9,979	127	7,584
vig. diaptomus				212		42
yclops	2,166	3,397	26,115	29,511	4,809	13,200
vig. Cyclops		1,699	637		64	480
osmina	64	5,096	20,170	46,072	510	14,382
vig Bosmina		212	425	5,732		1,274
phnia l.			2,335	5,096	2,994	2,085
vig. Dap. l.				849	510	272
phnia g.		212	7,431	4,246		2,378
vig. dap g.		212	425	425	32	219
olopedium	1,083	15,924	1,486	2,335		4,166
vig. holopedium		1,699	212	212		425
ydorinae				212		42
					64	13
venile calanoida		637	2,335		382	671
					Total:	49,240

Body Size

(mm)

						SEASONAL MEANS			
						Mean Length (mm)	Weighted Length (mm)	Biomass (mg/m2)	Weighted Biomass (mg/m2)
gasilus									
ischura		1.57	1.31	1.61	1.14	1.41	1.53	23	29
iptomus		1.14	1.16	1.27	1.05	1.16	1.18	49	51
ig. Diaptomus		1.33	1.32	1.33		1.33	1.33	0.40	0.41
clops	0.83	1.24	0.64	0.62	0.65	0.80	0.67	29	20
g. Cyclops		1.37	1.38		1.17	1.31	1.37	3	3
smina	0.32	0.47	0.53	0.49	0.42	0.45	0.50	27	34
g. Bosmina		0.37	0.53	0.57		0.49	0.56	3	4
hnia l.			0.92	0.77	0.49	0.73	0.72	5	5
g Dap. l.			1.38	1.00	0.81	1.06	0.93	1	1
phnia g		0.99	0.89	0.95		0.94	0.91	5	4
g. Dap. g.		1.40	1.25	1.10	0.40	1.04	1.20	1	1
lopedium	0.33	0.87	0.89	0.83		0.73	0.84	22	31
g. Holopedium		1.05	1.00	0.98		1.01	1.04	5	5
ydorinae				0.28		0.28	0.28	0.03	0.03
					0.31	0.31	0.31	0.01	0.01
anile calanoida		0.54	0.50		0.61	0.55	0.52	0.53	0.46
						TOTAL:		174	190

Lake: ISLAND (KODIAK)
Station: 1
Depth: 6 - 8M
Year: 1995

Macrozooplankton Density
(no./m²)

Date:	25-Jun	28-Jul	29-Aug	Seasonal Mean (No/m²)
rgasilus				
pischura	955	4,936	3,662	3,184
iaptomus	2,866	3,822	2,548	3,079
vig Diaptomus		1,274		425
yclops	94,268	23,567	37,102	51,646
vig Cyclops	22,293		2,229	8,174
osmina	4,777	17,994	28,981	17,251
vig Bosmina	318	955	2,229	1,167
aphnia l.	14,013	9,873	11,624	11,837
vig Daphnia l.		1,274	1,752	1,009
aphnia g.		955	1,274	743
vig Daphnia g.		159	159	106
olopedium	19,746			6,582
vig Holopedium	2,548			849
hydorinae		present	present	
olyphemus				

Total: 106,051

Body Size
(mm)

rgasilus			
pischura	1.69	1.50	1.46
iaptomus	1.31	1.13	1.32
vig Diaptomus	1.42	1.35	1.30
yclops	1.05	0.98	0.57
vig Cyclops	1.26		1.18
osmina	0.42	0.42	0.41
vig Bosmina	0.62	0.59	0.58
aphnia l.	0.75	0.79	0.79
vig Daphnia l.	1.14	1.13	0.88
aphnia g.		0.88	0.92
vig Daphnia g.		1.21	1.28
olopedium	0.92	0.62	
vig Holopedium	1.30		
aydorinae		0.32	0.36
iyphemus			

SEASONAL MEANS

Mean Length (mm)	Weighted Length (mm)	Biomass (mg/m^2)	Weighted Biomass (mg/m^2)
1.55	1.50	50	46
1.25	1.24	25	24
1.36	1.35	4	4
0.87	0.92	137	157
1.22	1.25	45	48
0.42	0.41	28	27
0.60	0.59	4	4
0.78	0.77	31	31
1.05	0.99	5	4
0.90	0.90	1	1
1.25	1.25	1	1
0.77	0.92	40	61
1.30	1.30	18	18
0.34	0.34		
TOTAL:		389	427

ake: LILLY
tation: 1
epth: 1 - 2m
ear: 1995

Macrozooplankton Density

(no./m^2)

ate:	5-May	23-Jun	1-Aug	29-Aug	17-Oct	Seasonal Mean (No/m^2)
gasilus	32	32	32	318	32	89
ischura		1,465	32		191	338
aptomus				382		76
rpacticoida		64	32			19
yclops		223	4,586	541	96	1,089
ig Cyclops			64		32	19
smina	64	3,248	14,140	25,987	414	8,771
ig Bosmina		1,369	5,287	17,166	287	4,822
aphnia l.			32	159	127	64
ig Daphnia l.					64	13
phnia galeata			64	159		45
riodaphnia			2,070	1,497	32	720
ig Ceriodaphnia			446	382		166
ydorinae	32	32	3,694	1,083		968
ig Chydorinae		32	1,369	159	32	318
lyphemus						

Total:	17,516

Body Size

(mm)

gasilus	0.54	0.42	0.40	0.52	0.48
ischura		0.84	1.50		0.64
aptomus				1.15	
rpacticoida		0.46	0.40		
clops		0.75	0.85	0.58	0.45
ig Cyclops			0.91		0.45
smina	0.25	0.27	0.25	0.30	0.51
ig Bosmina		0.30	0.35	0.66	0.39
phnia l.			0.62	0.70	0.82
ig Daphnia l.					0.94
phnia galeata			0.59	0.57	
riodaphnia			0.43	0.39	1.00
ig Ceriodaphnia			0.64	0.65	
ydorinae	0.24	0.56	0.50	0.48	
ig Chydorinae		0.58	0.48	0.48	0.32
yphemus					

SEASONAL MEANS

Mean Length (mm)	Weighted Length (mm)	Biomass (mg/m^2)	Weighted Biomass (mg/m^2)
0.47	0.50	0.1	0.1
0.99	0.83	1	1
1.15	1.15	0.5	0.5
0.43	0.44	0.01	0.01
0.66	0.81	2	3
0.32	0.28	8	6
0.71	0.74	0.1	0.2
0.58	0.58	0.02	0.02
0.61	0.42	1.1	0.5
0.65	0.64	0.3	0.3
0.45	0.49	2	2
TOTAL:		15	13

ıtion: 1
pth: 1m
ar: 1995

Macrozooplankton Density
(no./m^2)

te:	26-Jun	1-Aug	29-Aug	17-Oct	Seasonal Mean (No/m^2)
gasilus	127			64	48
ischura	318	32			88
ptomus					
clops	64	96	96	96	88
mina	159	127		96	96
g Bosmina	223				56
hnia l.					
hnia g.					
opedium					
dorinae		96			24
mysis m.		96			24

Total:	423

Body Size
(mm)

asilus	0.53			0.38
schura	1.05	0.88		
ptomus				
lops	0.54	0.95	0.77	0.47
mina	0.27	0.25		0.28
g Bosmina	0.40			
hnia l.				
hnia g.				
opedium				
dorinae		0.49		
mysis m.				

SEASONAL MEANS

Mean Length (mm)	Weighted Length (mm)	Biomass (mg/m^2)	Weighted Biomass (mg/m^2)
0.46	0.48	0.0	0.0
0.97	1.03	0.4	0.4
0.68	0.70	0.1	0.1
0.27	0.27	0.1	0.1
0.40	0.40	0.1	0.1
0.49	0.49	0.1	0.1
TOTAL:	1	1	

ake: **MISSION**
tation: **1**
epth: **1m**
ear: **1995**

Macrozooplankton Density

(no./m^2)

ate:	4-May	23-Jun	1-Aug	29-Aug	7-Oct	Seasonal Mean (No/m^2)
gasilus			96			19
pischura		32				6
rpacticus	32	255	32			64
vig Harpacticus		32				6
yclops		32	159	32	96	64
smina		3,312	478	32	32	771
vig Bosmina		510	96		32	128
aphnia l.			32			6
phnia g.						
riodaphnia		32	127			32
ydorinae			64			13
vig Chydorinae			32			6
omysis m.		32	32			13

Total:	1,128

Body Size

(mm)

gasilus			0.47		
schura		1.18			
rpacticus	0.56	0.39	0.38		
g Harpacticus		0.40			
lops		0.58	0.76	0.60	0.81
smina		0.35	0.29	0.26	0.50
g Bosmina		0.40	0.31		0.52
hnia l.					
phnia g.			0.76		
iodaphnia		1.40	0.32		
ydorinae			0.27		
g Chydorinae			0.36		
mysis m.					

SEASONAL MEANS

Mean Length (mm)	Weighted Length (mm)	Biomass (mg/m^2)	Weighted Biomass (mg/m^2)
0.47	0.47	0.01	0.01
1.18	1.18	0.05	0.05
0.44	0.41	0.04	0.03
0.40	0.40	0.00	0.00
0.69	0.74	0.10	0.12
0.35	0.34	0.86	0.82
0.76	0.76		
0.86	0.54	0.11	0.04
0.27	0.27	0.01	0.01
TOTAL:		1	1

Lake: Abercrombie

Station: 1

Depth:

Year: 1995

Macrozooplankton Density

(#/m2)

Date:	5-May	26-Jun	30-Jul	29-Aug	17-Oct	Seasonal Mean (No/m2)
Argasilus						0
Epischura		1,699	2,654	2,548	637	1,508
Haptomus						0
Cyclops	248,833	74,734	178,344	84,501	90,446	135,372
Nauplii. Cyc.	3,397	2,548	27,070	6,369		7,877
Bosmina	6,794	27,177	66,879	25,478	6,688	26,603
Nauplii. Bos.		849		425	637	382
Daphnia l.	116,349	309,987	38,747	6,794	2,548	94,885
Nauplii. Dap. l.	10,191	1,699	4,246			3,227
Daphnia g.			1,592	30,573	18,471	10,127
Nauplii. Dap. g.				8,917	1,592	2,102
Holopedium		849	26,540	16,136		8,705
Nauplii. Holopedium			3,185	2,123		1,062
Leptodorinae						0
Polyphemus						0
					Total:	291,849

Body Size

(mm)

						SEASONAL MEANS			
						Mean Length (mm)	Weighted Length (mm)	Biomass (mg/m2)	Weighted Biomass (mg/m2)
Argasilus									
Epischura		1.61	1.63	1.51	1.43	1.55	1.57	23	24
Haptomus									
Cyclops	0.86	0.99	0.82	0.81	0.82	0.86	0.85	353	346
Nauplii. Cyc.	1.27	1.10	1.05	1.08	1.06	1.11	1.08	36	33
Bosmina	0.43	0.43	0.49	0.52	0.47	0.47	0.48	55	58
Nauplii. Bosmina		0.62	0.58	0.56	0.58	0.58	0.59	1	1
Daphnia l.	0.71	0.87	0.99	0.82	0.86	0.85	0.84	307	299
Nauplii. Dap. l.	0.89	0.92	0.87	0.89		0.89	0.89	12	11
Daphnia g		1.32	1.23	0.96	1.02	1.13	0.99	38	25
Nauplii. Dap. g.		1.27	1.37	1.25	1.19	1.27	1.24	12	11
Holopedium		0.52	0.88	0.79	0.57	0.69	0.84	40	65
Nauplii. Holopedium			0.98	0.96		0.97	0.97	11	11
Leptodorinae									
Polyphemus									
						TOTAL:		887	884

Appendix H:
ADF&G Limnology Lab
lake summaries

STATE OF ALASKA

DEPARTMENT OF FISH AND GAME

DIVISION OF COMMERCIAL FISHERIES
MANAGEMENT AND DEVELOPMENT

MEMORANDUM

TONY KNOWLES, GOVERNOR

LIMNOLOGY UNIT
34828 Kalifornsky Rd., Suite B
SOLDOTNA, AK 99669
PHONE: (907) 260-2917 or 262-9360
FAX: (907) 262-7646
Jime@fishgame.state.ak.us

June 7, 1996

To: Steve Honnold
Fishery Biologist
CFMD
Kodiak

Subject: Clean Lakes

From: Jim Edmundson
Limnologist
CFMD
Soldotna

File:

I received a call 05 June from Mark Blakesly concerning the limnology of the Kodiak Clean Lakes. Basically, he wanted to confirm some of his interpretations of the data. In particular, we discussed criteria for trophic classification, lake typology, macrophytes and nutrients, and the likelihood of algal blooms or oxygen depletion in some of the lakes and their effects on fish. Mark seemed quite knowledgeable of the data. Apparently, he will be presenting the limnological results at a meeting with the Kodiak Borough (?) shortly. In any event, he has already summarized the limnological information (morphometry, seasonal means, trends etc.) so I have not duplicated his efforts here. However, as per your earlier email, I have provided you a brief interpretation of the salient limnological features of the nine study lakes. I understand that some (maybe all?) of these lakes have abundant macrophytes. It is important to know that high 'aquatic weed' biomass is common in shallow lakes with relatively clear water and organic rich sediments. In general, high nutrient loading does not cause excessive macrophyte growth, good light conditions within the littoral zone do. High nutrients (phosphorus) cause algal blooms which tend to shade out rooted vegetation. Thus, lakes with abundant populations of rooted or floating vascular plants can have low nutrient levels. I don't know in which of these lakes macrophytes are important or a nuisance, so keep that in mind with these brief summaries.

Upper and Lower Horseshoe Lakes

I understand the water quality concerns for Upper and Lower Horseshoe lakes is silt loading from surface runoff. Indeed, turbidity is very high (mean 41.8 NTU) in the lower lake. The upper lake is much less silty, but still exhibits appreciable turbidity levels (mean 7.3 NTU). The turbidity is clearly inorganic in nature since algal biomass, as indexed by chlorophyll concentration, is very low in both lakes (mean <2 ug L^{-1}). State of Alaska water quality criteria stipulates that turbidity may not exceed 5 NTU for all lake waters and for drinking water supplies, water recreation (e.g., swimming), and propagation of fish. Both lakes also highly colored (>20 Pt units). Since turbidity and color both act to decrease light penetration, Lower Horseshoe Lake in particular has very poor water clarity as evidenced by the secchi disk depth which averaged only 0.3 m. In addition, elevated color indicates the presence of large amounts of organic material in the water column. Lower Horseshoe Lake, which had the highest color (mean 42 Pt units), also had the highest concentration of particulate organic carbon (mean 1,291 ug L^{-1}) compared with the other study lakes. It is also known that inorganic (sediment or glacial) silt particles are comprised of large amounts of phosphorus (and iron) and phosphorus. It is not surprising then that total phosphorus (mean 55 ug L^{-1}) and iron concentration (mean 4,462 ug L^{-1}) are also very high.

Beaver Lake

Beaver Lake exhibits slightly elevated turbidity (mean 5.2 NTU) and some color (mean 17 Pt units); however, the levels are well within the range of 'natural' lakes. There is no indication of algal blooms and since the lake is too shallow to stratify (mean depth 1.2 m), there is no dissolved oxygen depletion within the water column (at least during the summer). Total phosphorus concentration averaged 10 ug L^{-1} which is probably biased high due to turbidity. Correcting for turbidity would lower the phosphorus value to ~7 ug L^{-1} which characterizes this lake as oligotrophic. There is a seasonal cycle for inorganic nitrogen levels in that both ammonia and nitrate are rapidly assimilated in the spring and remain depleted until production declines in the fall. That is, this lake becomes deficient in nitrogen. In contrast, reactive silicon levels ranged between 3,000 and 4,000 ug L^{-1} and exhibited no periodicity indicating low assimilation by diatoms. Beaver Lake also has a very short water retention time (12 days). Consequently, chlorophyll concentrations were low (mean 1 ug L^{-1}) and also indicates the oligotrophic nature of this lake oligotrophic.

Dark Lake

Dark Lake is characterized as having slightly elevated turbidity (mean 3.9 NTU) and color (mean 15 Pt units). Over the season, the secchi disk depth ranged from ~1 to 4 m suggesting variable loading of light-attenuating substances. Although there is a decrease in temperature with depth, the lake did not really stratify. However, low dissolved oxygen concentrations (< 5 mg L^{-1}) were found near the bottom (3 m). This is probably not a major problem for fish in that dissolved oxygen depletion is confined to a relatively small portion of the total lake volume. It appears that inorganic nitrogen is rapidly assimilated as nitrate concentrations decrease markedly during the summer. Yet, nitrate and ammonia reserves are not completely exhausted. The seasonal mean total phosphorus (mean 9 ug L^{-1}) and chlorophyll (mean 0.6 ug L^{-1}) concentration are indicative of oligotrophy.

Island Lake

Of the nine study lakes, Island Lake is the largest and deepest and the only one to undergo thermal stratification. During June - August, a thermocline was present at a depth of ~4 to 6 m. In mid-summer, dissolved oxygen concentrations below a depth of ~6 m decreased to <5 mg L^{-1} which is considered harmful to salmonids. Although hypolimnetic oxygen depletion is often associated with eutrophic waters, total phosphorus (mean 11 ug L^{-1}) and chlorophyll (mean 0.9 ug L^{-1}) concentrations fall within the mesotrophic and oligotrophic categories, respectively. The low chlorophyll levels may reflect increased zooplanktivory since this lake has a relatively large zooplankton biomass (mean 427 mg m^{-1}). Island Lake has some turbidity (mean 3.9 NTU), but little color (mean 11 Pt units) and would therefore be classified as 'clear'. Secchi disk transparency averaged 2.7 m which equates to a photic (EZD) depth of 5 or 6 m. Essentially, the EZD extends to the bottom.

Lilly Lake

Lilly Lake has turbidity (mean 3.8 NTU), but it is not excessive (i.e. >5 NTU). The turbidity appears to be of an inorganic nature (i.e., silt) since total iron concentrations (mean 454 ug L^{-1}) appear to track that of turbidity rather well, whereas, chlorophyll levels were fairly consistent and low averaging ~2 ug L^{-1}. The nutrient budget shows a deficiency in inorganic nitrogen. That is, by June available nitrogen is totally depleted (below our analytical detection limits) and nitrate and ammonia nitrogen concentrations remain depleted until October.

Potatopatch Lake

Potato Patch lake is relatively high in dissolved solids particularly in May and June as conductivity approached 1,000 umhos cm^{-1}. The lake is also quite turbid (mean 15 NTU), which I presume is inorganic given the very high iron concentrations (mean 1,170 ug L^{-1}). It appears from these data that this lake experience an algal bloom in early August when chlorophyll concentration exceeded 10 ug L^{-1}. If dead algae (i.e., phaeophytin) are considered, the total pigment concentration was ~16 ug L^{-1}. Subsequent decomposition of large amounts of algae could lead to dissolved oxygen particularly in stratified lakes. However, Potatopatch Lake is very shallow (mean depth <1 m) and has a fast flushing rate (16 yr^{-1}) most likely is continually mixed. Indeed, there is no temperature stratification and throughout the season dissolved oxygen levels usually exceeded 10 mg L^{-1}.

Mission Lake

Mission Lake also has a very high specific conductance which exceeded 2,000 umhos cm^{-1} on at least two occasions. That is, there is a large amount of dissolved solids present in the water. For example, calcium concentrations averaged 22 ug L^{-1} which is about twice that of the other lakes. Total phosphorus levels were very high and averaged 33 ug L^{-1}. Mission Lake also experienced a phytoplankton bloom in late August as evidenced by the chlorophyll concentration of 10.6 ug L^{-1}. Even in October, chlorophyll concentrations still exceeded 4 ug L^{-1} which indicates a considerable amount of algal production. Again, with decomposition this could promote undesirable conditions (e.g., low dissolved oxygen, odors, etc.) in the lake. On the last sampling date (October 17), dissolved oxygen levels near the bottom were measured at 3 mg L^{-1}, well below that which is considered safe for salmonids.

Abercrombie Lake

Abercrombie Lake is the second largest lake in terms of volume. There is a gradual decrease in temperature with depth, but no definite thermocline. In July and August concentrations of dissolved oxygen were very low (<2 mg L^{-1}) near the bottom. The lake has some organic stain as color averaged 16 Pt units. There was no appreciable turbidity (mean 1.4 NTU). As such, the secchi disk was usually visible at or near the bottom. Inorganic nitrogen levels were below analytical detection limit for most of the season. In addition, total phosphorus and chlorophyll concentration averaged 10 ug L^{-1} and 0.8 ug L^{-1}, respectively. The nutrient conditions characterize this lake as oligotrophic. Interestingly, Abercrombie Lake has the highest zooplankton biomass (mean 884 mg m^{-2}) of the nine study lakes.

Appendix I:
Len Schwartz (ADF&G Sportfish)
memo on March 1996
Mission Lake fish trapping

STATE OF ALASKA

TONY KNOWLES, GOVERNOR

DEPARTMENT OF FISH AND GAME

DIVISION OF SPORT FISH

211 Mission Road
Kodiak, Alaska 99615
PHONE: (907) 486-1878
FAX: (907) 486-1869

MEMORANDUM

TO:Files

FROM :Len Schwarz

DATE:March 7, 1996

SUBJECT:Mission lake coho fry

On Thursday March 7 at 2 pm, Norm Sutliff, Chris Clevenger and myself went out to Mission Lake and checked 4 minnow traps baited with salmon eggs that Norm had set at 4 pm the previous day. Below is the results of the trapping:

Holes 1, 2, and 3 (located approximately 100 feet directly in front of Norm's dock.

Hole	Depth	# coho	#sticlelback	reading depth	temp	saturation	mg/lt
1	3.5	2	75	1.5 feet	2.8c	65%	8.6
				3.0 feet	3.9c	60%	7.9
				bottom	4.7c	0	0
2	4 feet	6	175	1.5 feet	4.9	78%	10.5
3	5 feet	0	150	2.5 feet	5.4	84%	10.5
				4.5 feet	6.2	98%	11.7
Hole 4 (located 300 feet infront of the outlet culvert)							
4	4 feet	0	25	2 feet	5.8	83%	10.1

There was about 6 inches of ice on the lake. The coho were stocked on August 7, 1995 and weighed an average of 2.1 grams. Fish stocked were the progeny of Buskin River coho which were raised at the Pillar Creek hatchery. A total of 20,280 fingerlings were stocked into Mission Lake in 1995. Below is the length and weight info on the smolt

Length(mm)	Weight(gr)
95	10.2
115	14.6
125	18.7
98	11.0
105	10.2
105	13.8
110	13.1
108	11.3

One March 8, the traps were check again and then taken out of the water. The following is the results of the March 8 trapping:

Hole #1 3 coho 35 stickelback
Hole #2 10 coho 50 stickelback
Hole #3 1 coho 75 stickelback
Hole #4 0 coho 25 stickelback

Length (mm)	Weight (gr.)
118	19.1
112	15.3
99	11.0
100	13.2
90	9.0
95	9.4
105	13.2
108	15.4
115	14.2
118	17.8
94	7.5

(3 fish were released without being measured)

A random sample of 10 fish were selected and aged . All fish were the same age. They were the fish that were stocked on August 7, 1995. The following are the length and weights of the fish that were age: 105mm13.8gr, 108mm15.4gr, 90mm9.0gr, 100mm13.2gr, 108mm15.4gr, 95mm9.4gr, 115mm14.2gr, 105mm10.2gr, 105mm13.2gr, 99mm11.0gr.

To summarize, the average fish length for captured fish was 106mm, the avearge weight was 13 grams. This is excellent growth and these fish will probably all go to sea this June. About half the rearing coho in Buskin Lake go to sea after spending one year in fresh water, the other half spend 2 years. It would not be surprising that in Mission Lake the fish get big enough to smolt after one year. The lake is shallow and close to the sea so it probably stays fairly warm and is obviously productive judging from the abundance of plants and fish growth (coho reaching smolt size after one year and the abundance of stickelback).

The following explanation may help to understand the relevance of saturation and the Mg/lt reading. The Mg/lt or parts per million reading refers to how much oxygen the water is holding. Fish do good if the mg/lt reading is above 6, if the reading drops below 3 it is lethal.

The saturation level refers to how much oxygen the water can hold at a give temperature and pressure. If the is no biological demand for the oxygen then the reading would be at 100. If there is a biological demand such as fish using the oxygen and biological breakdown of decaying plants etc, the oxygen demand would cause the saturation to be less than 100%

We did not have a Ph meter or a salinity meter but these parameters have been measured by people doing lake studies under the clean lakes program. Chris Clevenger consulted 4 different books regarding PH levels. The books put acceptable Ph levels for fish at between 6.2 to 9.2 for continuous exposure. Levels above 9.2 or below 4.8 were listed as lethal for trout but it also stated that some fish species can withstand Ph levels as high as 10.2. An important thing to remember is that fish have the ability to move from areas with poor environmental conditions to areas with better conditions. This is

obviously happening now where coho and stickelback or probably not on the bottom of the lake where there is no oxygen. The same thing may hold true ph levels in the lake.
I have not seen any salinity readings for the lake but if salt water is mixing in Mission Lake it is not necessarily bad for the rearing coho. Fish often do fine in brackish water and lagoons. I believe Lake Rose Tead may be an example of a lake where salt water mixes with the lake but produces excellent coho smolt that achieve smolt size after one year. Again, salt water mixing would tend to form a situation where there would be a fresh water lens on top and fish could chose to stay on top to avoid excessive salinity.

There is a very successful sport fishery which occurs along Mission beach which fishes on adult coho which are returning to either Mission or Potato Patch Lake or both. The presence of adult fish indicate that these lakes are successfully rearing coho smolt. The current stocking program is very cheap. Chris Clevenger, myself and two other staff members assist in the egg take from Buskin Lake which takes two or three days. After this the eggs are reared to fingerling size at the Kodiak Aquaculture hatchery at Pillar Creek. The personnel that tend to the coho are already tending millions of sockeye so the coho do not generate a lot of extra expense. The extra expense that is generated is picked up by the Aquaculture association. The way to keep this program cost effective is to keep it as simple as it is. Once the department gets involved with monitoring water quality, fish growth, estimating survival from fry to adult, personnel costs go up and the cost benefit ratio goes down. For these reason the sport fish division does not plan to spend staff time monitoring these parameters in the 25 lakes we stock annually. That is not to say that this information is not important, helpful, useful, and interesting to our division because it is. It is also not to say that this information is not useful for other reasons than fish concerns. However other division projects (Karluk steelhead, Kodiak King salmon, Buskin King salmon stocking, Buskin River Weir, Kodiak Island Access projects, Fishery monitoring duties, etc.) simply have a higher priority and the Kodiak sport fish office (which is staffed by only one biologist for 6 months of the year and is responsible for Kodiak Island, the Alaska Peninsula, and the Aleutian Islands) will concentrate on the projects listed above and will not be able to continue collecting the information listed above on a regular basis.

Appendix J:
Baranof Park stormwater toxics analytical results

CT&E Environmental Services Inc.

CT&E Ref.#	963467001	**Client PO#**	
Client Name	Kodiak Quality Control	**Printed Date/Time**	08/15/96 17:48
Project Name/#	USCG - Simeanoff Samples	**Collected Date/Time**	07/31/96 00:00
Client Sample ID	Sample 1	**Received Date/Time**	08/01/96 08:20
Matrix	Water (Surface, Eff., Ground)	**Technical Director**	
Ordered By			
PWSID		**Released By**	

Sample Remarks:

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Semivolatiles by GC/MS								
N-Nitrosodimethylamine	0.0050U	0.0050	mg/L	SW846-8270		08/06/96	08/07/96	GMK
Pyridine	0.0050U	0.0050	mg/L	SW846-8270		08/06/96	08/07/96	GMK
Aniline	0.0050U	0.0050	mg/L	SW846-8270		08/06/96	08/07/96	GMK
Phenol	0.0050U	0.0050	mg/L	SW846-8270		08/06/96	08/07/96	GMK
Bis(2-Chloroethyl)ether	0.0050U	0.0050	mg/L	SW846-8270		08/06/96	08/07/96	GMK
2-Chlorophenol	0.0050U	0.0050	mg/L	SW846-8270		08/06/96	08/07/96	GMK
1,3-Dichlorobenzene	0.0050U	0.0050	mg/L	SW846-8270		08/06/96	08/07/96	GMK
1,4-Dichlorobenzene	0.0050U	0.0050	mg/L	SW846-8270		08/06/96	08/07/96	GMK
Benzyl alcohol	0.0050U	0.0050	mg/L	SW846-8270		08/06/96	08/07/96	GMK
1,2-Dichlorobenzene	0.0050U	0.0050	mg/L	SW846-8270		08/06/96	08/07/96	GMK
2-Methylphenol (o-Cresol)	0.0050U	0.0050	mg/L	SW846-8270		08/06/96	08/07/96	GMK
bis(2-chloroisopropyl)ether	0.0050U	0.0050	mg/L	SW846-8270		08/06/96	08/07/96	GMK
4-Methylphenol (p-Cresol)	0.0050U	0.0050	mg/L	SW846-8270		08/06/96	08/07/96	GMK
N-Nitroso-di-n-propylamine	0.0050U	0.0050	mg/L	SW846-8270		08/06/96	08/07/96	GMK
Hexachloroethane	0.0050U	0.0050	mg/L	SW846-8270		08/06/96	08/07/96	GMK
Nitrobenzene	0.0050U	0.0050	mg/L	SW846-8270		08/06/96	08/07/96	GMK
Isophorone	0.0050U	0.0050	mg/L	SW846-8270		08/06/96	08/07/96	GMK
2-Nitrophenol	0.0050U	0.0050	mg/L	SW846-8270		08/06/96	08/07/96	GMK
2,4-Dimethylphenol	0.0050U	0.0050	mg/L	SW846-8270		08/06/96	08/07/96	GMK
Benzoic acid	0.020U	0.020	mg/L	SW846-8270		08/06/96	08/07/96	GMK
Bis(2-Chloroethoxy)methane	0.0050U	0.0050	mg/L	SW846-8270		08/06/96	08/07/96	GMK
1,2,4-Trichlorobenzene	0.0050U	0.0050	mg/L	SW846-8270		08/06/96	08/07/96	GMK
Naphthalene	0.0050U	0.0050	mg/L	SW846-8270		08/06/96	08/07/96	GMK
4-Chloroaniline	0.0050U	0.0050	mg/L	SW846-8270		08/06/96	08/07/96	GMK
Hexachlorobutadiene	0.0050U	0.0050	mg/L	SW846-8270		08/06/96	08/07/96	GMK
4-Chloro-3-methylphenol	0.0050U	0.0050	mg/L	SW846-8270		08/06/96	08/07/96	GMK
2,4-Dichlorophenol	0.0050U	0.0050	mg/L	SW846-8270		08/06/96	08/07/96	GMK
2-Methylnaphthalene	0.0050U	0.0050	mg/L	SW846-8270		08/06/96	08/07/96	GMK
Hexachlorocyclopentadiene	0.0050U	0.0050	mg/L	SW846-8270		08/06/96	08/07/96	GMK
2,4,6-Trichlorophenol	0.0050U	0.0050	mg/L	SW846-8270		08/06/96	08/07/96	GMK

CT&E Environmental Services Inc.

CT&E Ref.#	963467001	Client PO#	
Client Name	Kodiak Quality Control	Printed Date/Time	08/15/96 17:48
Project Name/#	USCG - Simeanoff Samples	Collected Date/Time	07/31/96 00:00
Client Sample ID	Sample 1	Received Date/Time	08/01/96 08:20
Matrix	Water (Surface, Eff., Ground)	Technical Director	
Ordered By			
PWSID		Released By	Shawn Paxton

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
2,4,5-Trichlorophenol	0.0050U	0.0050	mg/L	SW846-8270		08/06/96	08/07/96	GMK
2-Chloronaphthalene	0.0050U	0.0050	mg/L	SW846-8270		08/06/96	08/07/96	GMK
2-Nitroaniline	0.0050U	0.0050	mg/L	SW846-8270		08/06/96	08/07/96	GMK
Acenaphthylene	0.0050U	0.0050	mg/L	SW846-8270		08/06/96	08/07/96	GMK
2,6-Dinitrotoluene	0.0050U	0.0050	mg/L	SW846-8270		08/06/96	08/07/96	GMK
3-Nitroaniline	0.0050U	0.0050	mg/L	SW846-8270		08/06/96	08/07/96	GMK
Acenaphthene	0.0050U	0.0050	mg/L	SW846-8270		08/06/96	08/07/96	GMK
2,4-Dinitrophenol	0.050U	0.050	mg/L	SW846-8270		08/06/96	08/07/96	GMK
4-Nitrophenol	0.050U	0.050	mg/L	SW846-8270		08/06/96	08/07/96	GMK
Dibenzofuran	0.0050U	0.0050	mg/L	SW846-8270		08/06/96	08/07/96	GMK
2,4-Dinitrotoluene	0.0050U	0.0050	mg/L	SW846-8270		08/06/96	08/07/96	GMK
Diethylphthalate	0.0050U	0.0050	mg/L	SW846-8270		08/06/96	08/07/96	GMK
4-Chlorophenyl-phenylether	0.0050U	0.0050	mg/L	SW846-8270		08/06/96	08/07/96	GMK
Fluorene	0.0050U	0.0050	mg/L	SW846-8270		08/06/96	08/07/96	GMK
4-Nitroaniline	0.0050U	0.0050	mg/L	SW846-8270		08/06/96	08/07/96	GMK
2-Methyl-4,6-dinitrophenol	0.020U	0.020	mg/L	SW846-8270		08/06/96	08/07/96	GMK
N-Nitrosodiphenylamine	0.0050U	0.0050	mg/L	SW846-8270		08/06/96	08/07/96	GMK
4-Bromophenyl-phenylether	0.0050U	0.0050	mg/L	SW846-8270		08/06/96	08/07/96	GMK
Hexachlorobenzene	0.0050U	0.0050	mg/L	SW846-8270		08/06/96	08/07/96	GMK
Pentachlorophenol	0.020U	0.020	mg/L	SW846-8270		08/06/96	08/07/96	GMK
Phenanthrene	0.0050U	0.0050	mg/L	SW846-8270		08/06/96	08/07/96	GMK
Anthracene	0.0050U	0.0050	mg/L	SW846-8270		08/06/96	08/07/96	GMK
Di-n-butylphthalate	0.0050U	0.0050	mg/L	SW846-8270		08/06/96	08/07/96	GMK
Fluoranthene	0.0050U	0.0050	mg/L	SW846-8270		08/06/96	08/07/96	GMK
Pyrene	0.0050U	0.0050	mg/L	SW846-8270		08/06/96	08/07/96	GMK
Azobenzene	0.0050U	0.0050	mg/L	SW846-8270		08/06/96	08/07/96	GMK
Butylbenzylphthalate	0.0050U	0.0050	mg/L	SW846-8270		08/06/96	08/07/96	GMK
3,3-Dichlorobenzidine	0.0050U	0.0050	mg/L	SW846-8270		08/06/96	08/07/96	GMK
Benzo(a)Anthracene	0.0050U	0.0050	mg/L	SW846-8270		08/06/96	08/07/96	GMK
Chrysene	0.0050U	0.0050	mg/L	SW846-8270		08/06/96	08/07/96	GMK
bis(2-Ethylhexyl)phthalate	0.0050U	0.0050	mg/L	SW846-8270		08/06/96	08/07/96	GMK
Di-n-Octylphthalate	0.0050U	0.0050	mg/L	SW846-8270		08/06/96	08/07/96	GMK
Benzo(b)Fluoranthene	0.0050U	0.0050	mg/L	SW846-8270		08/06/96	08/07/96	GMK

CT&E Environmental Services Inc.

CT&E Ref.#	963467002	**Client PO#**	
Client Name	Kodiak Quality Control	**Printed Date/Time**	08/15/96 17:49
Project Name/#	USCG - Simeanoff Samples	**Collected Date/Time**	07/31/96 00:00
Client Sample ID	Sample 2	**Received Date/Time**	08/01/96 08:20
Matrix	Water (Surface, Eff., Ground)	**Technical Director**	
Ordered By			
PWSID		**Released By**	

Sample Remarks:

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
VOA by GC/MS Method SW8260								
Bromochloromethane	0.0010U	0.0010	mg/L	SW846-8260			08/12/96	MCM
Dichlorodifluoromethane	0.0010U	0.0010	mg/L	SW846-8260			08/12/96	MCM
Chloromethane	0.0010U	0.0010	mg/L	SW846-8260			08/12/96	MCM
Vinyl chloride	0.0010U	0.0010	mg/L	SW846-8260			08/12/96	MCM
Bromomethane	0.0010U	0.0010	mg/L	SW846-8260			08/12/96	MCM
Chloroethane	0.0010U	0.0010	mg/L	SW846-8260			08/12/96	MCM
Trichlorofluoromethane	0.0010U	0.0010	mg/L	SW846-8260			08/12/96	MCM
1,1-Dichloroethene	0.0010U	0.0010	mg/L	SW846-8260			08/12/96	MCM
Carbon disulfide	0.0010U	0.0010	mg/L	SW846-8260			08/12/96	MCM
Methylene chloride	0.010U	0.010	mg/L	SW846-8260			08/12/96	MCM
trans-1,2-Dichloroethene	0.0010U	0.0010	mg/L	SW846-8260			08/12/96	MCM
1,1-Dichloroethane	0.0010U	0.0010	mg/L	SW846-8260			08/12/96	MCM
2-Butanone (MEK)	0.010U	0.010	mg/L	SW846-8260			08/12/96	MCM
2,2-Dichloropropane	0.0010U	0.0010	mg/L	SW846-8260			08/12/96	MCM
cis-1,2-Dichloroethene	0.0010U	0.0010	mg/L	SW846-8260			08/12/96	MCM
Chloroform	0.0010U	0.0010	mg/L	SW846-8260			08/12/96	MCM
1,1,1-Trichloroethane	0.0010U	0.0010	mg/L	SW846-8260			08/12/96	MCM
Carbon tetrachloride	0.0010U	0.0010	mg/L	SW846-8260			08/12/96	MCM
Benzene	0.0010U	0.0010	mg/L	SW846-8260			08/12/96	MCM
1,2-Dichloroethane	0.0010U	0.0010	mg/L	SW846-8260			08/12/96	MCM
Trichloroethene	0.0010U	0.0010	mg/L	SW846-8260			08/12/96	MCM
1,2-Dichloropropane	0.0010U	0.0010	mg/L	SW846-8260			08/12/96	MCM
Dibromomethane	0.0010U	0.0010	mg/L	SW846-8260			08/12/96	MCM
Bromodichloromethane	0.0010U	0.0010	mg/L	SW846-8260			08/12/96	MCM
cis-1,3-Dichloropropene	0.0010U	0.0010	mg/L	SW846-8260			08/12/96	MCM
Toluene	0.0065	0.0010	mg/L	SW846-8260			08/12/96	MCM
trans-1,3-Dichloropropene	0.0010U	0.0010	mg/L	SW846-8260			08/12/96	MCM
1,1,2-Trichloroethane	0.0010U	0.0010	mg/L	SW846-8260			08/12/96	MCM
Tetrachloroethene	0.0010U	0.0010	mg/L	SW846-8260			08/12/96	MCM
1,3-Dichloropropane	0.0010U	0.0010	mg/L	SW846-8260			08/12/96	MCM

CT&E Environmental Services Inc.

CT&E Ref.#	963467002	Client PO#	
Client Name	Kodiak Quality Control	Printed Date/Time	08/15/96 17:49
Project Name/#	USCG - Simeanoff Samples	Collected Date/Time	07/31/96 00:00
Client Sample ID	Sample 2	Received Date/Time	08/01/96 08:20
Matrix	Water (Surface, Eff., Ground)	Technical Director	
Ordered By			
PWSID		Released By	

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Dibromochloromethane	0.0010U	0.0010	mg/L	SW846-8260			08/12/96	MCM
1,2-Dibromoethane	0.0010U	0.0010	mg/L	SW846-8260			08/12/96	MCM
Chlorobenzene	0.0010U	0.0010	mg/L	SW846-8260			08/12/96	MCM
1,1,1,2-Tetrachloroethane	0.0010U	0.0010	mg/L	SW846-8260			08/12/96	MCM
Ethylbenzene	0.0014	0.0010	mg/L	SW846-8260			08/12/96	MCM
P & M -Xylene	0.0045	0.0010	mg/L	SW846-8260			08/12/96	MCM
o-Xylene	0.0021	0.0010	mg/L	SW846-8260			08/12/96	MCM
Styrene	0.0010U	0.0010	mg/L	SW846-8260			08/12/96	MCM
Bromoform	0.0010U	0.0010	mg/L	SW846-8260			08/12/96	MCM
Isopropylbenzene (Cumene)	0.0010U	0.0010	mg/L	SW846-8260			08/12/96	MCM
Bromobenzene	0.0010U	0.0010	mg/L	SW846-8260			08/12/96	MCM
1,1,2,2-Tetrachloroethane	0.0010U	0.0010	mg/L	SW846-8260			08/12/96	MCM
1,2,3-Trichloropropane	0.0010U	0.0010	mg/L	SW846-8260			08/12/96	MCM
n-Propylbenzene	0.0010U	0.0010	mg/L	SW846-8260			08/12/96	MCM
2-Chlorotoluene	0.0010U	0.0010	mg/L	SW846-8260			08/12/96	MCM
4-Chlorotoluene	0.0010U	0.0010	mg/L	SW846-8260			08/12/96	MCM
1,3,5-Trimethylbenzene	0.0010U	0.0010	mg/L	SW846-8260			08/12/96	MCM
tert-Butylbenzene	0.0010U	0.0010	mg/L	SW846-8260			08/12/96	MCM
1,2,4-Trimethylbenzene	0.00099J	0.0010	mg/L	SW846-8260			08/12/96	MCM
sec-Butylbenzene	0.0010U	0.0010	mg/L	SW846-8260			08/12/96	MCM
1,3-Dichlorobenzene	0.0010U	0.0010	mg/L	SW846-8260			08/12/96	MCM
p-Isopropyltoluene	0.0010U	0.0010	mg/L	SW846-8260			08/12/96	MCM
1,4-Dichlorobenzene	0.0010U	0.0010	mg/L	SW846-8260			08/12/96	MCM
1,2-Dichlorobenzene	0.0010U	0.0010	mg/L	SW846-8260			08/12/96	MCM
n-Butylbenzene	0.0010U	0.0010	mg/L	SW846-8260			08/12/96	MCM
1,2-Dibromo-3-chloropropane	0.0010U	0.0010	mg/L	SW846-8260			08/12/96	MCM
1,2,4-Trichlorobenzene	0.0010U	0.0010	mg/L	SW846-8260			08/12/96	MCM
Hexachlorobutadiene	0.0010U	0.0010	mg/L	SW846-8260			08/12/96	MCM
Naphthalene	0.0020	0.0010	mg/L	SW846-8260			08/12/96	MCM
1,2,3-Trichlorobenzene	0.0010U	0.0010	mg/L	SW846-8260			08/12/96	MCM

CT&E Environmental Services Inc.

CT&E Ref.#	963467003	Client PO#	
Client Name	Kodiak Quality Control	Printed Date/Time	08/15/96 17:49
Project Name/#	USCG - Simeanoff Samples	Collected Date/Time	07/31/96 00:00
Client Sample ID	Sample 3	Received Date/Time	08/01/96 08:20
Matrix	Water (Surface, Eff., Ground)	Technical Director	
Ordered By			
PWSID		Released By	Shawn Paxton

Sample Remarks:

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Total Petroleum Hydrocarbons	0.200U	0.200	mg/L	EPA 418.1			08/06/96	SMK

CT&E Environmental Services Inc.

CT&E Ref.#	963467004	**Client PO#**	
Client Name	Kodiak Quality Control	**Printed Date/Time**	08/15/96 17:49
Project Name/#	USCG - Simeanoff Samples	**Collected Date/Time**	07/31/96 00:00
Client Sample ID	Sample 4	**Received Date/Time**	08/01/96 08:20
Matrix	Water (Surface, Eff., Ground)	**Technical Director**	
Ordered By			
PWSID		**Released By**	

Sample Remarks:

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Diesel Range Organics	0.149	0.105	mg/L	AK102 DRO		08/05/96	08/06/96	WAA

CT&E Environmental Services Inc.

CT&E Ref.#	963467005	Client PO#	
Client Name	Kodiak Quality Control	Printed Date/Time	08/15/96 17:49
Project Name/#	USCG - Simeanoff Samples	Collected Date/Time	07/31/96 00:00
Client Sample ID	Sample 5	Received Date/Time	08/01/96 08:20
Matrix	Water (Surface, Eff., Ground)	Technical Director	
Ordered By			
PWSID		Released By	

Sample Remarks:

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Arsenic	0.00556U	0.00556	mg/L	SW846-7060		08/02/96	08/03/96	KGF
Selenium	0.00556U	0.00556	mg/L	SW846-7740		08/02/96	08/03/96	KGF
Silver	0.00111U	0.00111	mg/L	SW846-7761		08/02/96	08/03/96	KGF
Cadmium	0.000744	0.000556	mg/L	SW846-7131		08/02/96	08/03/96	KGF
Chromium	0.00556U	0.00556	mg/L	SW846-7191		08/02/96	08/03/96	KGF
Lead	0.014	0.00556	mg/L	SW846-7421		08/02/96	08/03/96	KGF
Mercury by Cold Vapor	0.000500U	0.000500	mg/L	SW846-7470		08/02/96	08/02/96	WTA
Barium	0.0326	0.0222	mg/L	SW846-6010		08/02/96	08/08/96	GCP
Iron	15.9	0.0556	mg/L	SW846-6010		08/02/96	08/08/96	GCP

CT&E Environmental Services Inc.

CT&E Ref.#	963467006	**Client PO#**	
Client Name	Kodiak Quality Control	**Printed Date/Time**	08/15/96 17:49
Project Name/#	USCG - Simeanoff Samples	**Collected Date/Time**	07/31/96 00:00
Client Sample ID	Sample 6	**Received Date/Time**	08/01/96 08:20
Matrix	Water (Surface, Eff., Ground)	**Technical Director**	
Ordered By			
PWSID		**Released By**	

Sample Remarks:

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Total Dissolved Solids	141	20.0	mg/L	SM 2540C			08/05/96	WEP

CT&E Environmental Services Inc.

CT&E Ref.#	963467007	**Client PO#**	
Client Name	Kodiak Quality Control	**Printed Date/Time**	08/15/96 17:49
Project Name/#	USCG - Simeanoff Samples	**Collected Date/Time**	07/31/96 00:00
Client Sample ID	Sample 7	**Received Date/Time**	08/01/96 08:20
Matrix	Water (Surface, Eff., Ground)	**Technical Director**	
Ordered By			
PWSID		**Released By**	

Sample Remarks:

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Chloride	29.6	0.200	mg/L	EPA 300.0			08/02/96	MCE
Sulfate	11.3	0.200	mg/L	EPA 300.0			08/02/96	MCE

CT&E Environmental Services Inc.

CT&E Ref.#	963467008	**Client PO#**	
Client Name	Kodiak Quality Control	**Printed Date/Time**	08/15/96 17:49
Project Name/#	USCG - Simeanoff Samples	**Collected Date/Time**	07/31/96 00:00
Client Sample ID	Sample 8	**Received Date/Time**	08/01/96 08:20
Matrix	Water (Surface, Eff., Ground)	**Technical Director**	
Ordered By			
PWSID		**Released By**	

Sample Remarks:

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Ammonia-N	2.59	0.200	mg/L	EPA 350.2			08/06/96	ESC
Total Organic Carbon	7.5	0.500	mg/L	EPA 415.1		08/12/96	08/12/96	EMM
Total Kjeldahl Nitrogen	3.62	1.00	mg/L	EPA 351.3			08/09/96	ESC

CT&E Environmental Services Inc.

CT&E Ref.#	963467010	**Client PO#**	
Client Name	Kodiak Quality Control	**Printed Date/Time**	08/15/96 17:49
Project Name/#	USCG - Simeanoff Samples	**Collected Date/Time**	07/31/96 00:00
Client Sample ID	Sample 10	**Received Date/Time**	08/01/96 08:20
Matrix	Water (Surface, Eff., Ground)	**Technical Director**	
Ordered By			
PWSID		**Released By**	Shawn Paton

Sample Remarks:

Parameter	Results	PQL	Units	Method	Allowable Limits	Prep Date	Analysis Date	Init
Total Phosphorous	0.0620	0.0100	mg/L	EPA 365.2			08/06/96	WEP

Appendix K:
Tidewater lakes outlet salinity results, March - April 1996

CITY OF KODIAK
LABORATORY

486-8076

CHLORIDE ANALYSIS FOR CLEAN LAKES FOR KODIAK

SAMPLE LOCATION: MISSION LAKE AREA

LOCATION	DATE	RESULTS Mg/L
MISSION BEACH SALT H2O	3-09-96	27500
MISSION OUTLET	3-23-96	650
MISSION OUTLET	3-25-96	1250
MISSION	3-27-96	1200
MISSION	3-31-96	1270
MISSION	4-03-96	1150
MISSION	4-04-96	1000
MISSION OUTLET	4-12-96	1420
MISSION	4-16-96	1200

SAMPLE LOCATION: POTATO PATCH LAKE AREA

LOCATION	DATE	RESULTS Mg/L
POTATO PATCH OUTLET	3-23-96	375
POTATO PATCH OUTLET	3-25-96	450
POTATO PATCH	3-27-96	475
POTATO PATCH	3-31-96	600
POTATO PATCH	4-03-96	800
POTATO PATCH	4-04-96	525
POTATO PATCH	4-12-96	350
POTATO PATCH	4-16-96	163

SAMPLE LOCATION: LILLY LAKE AREA

LOCATION	DATE	RESULTS Mg/L
LILLY LAKE	4-03-96	105
LILLY LAKE	4-04-96	110
LILLY LAKE	4-12-96	100

LAB.REF. # 96-179 ANALYZED BY:KEN WOLKOFF

CITY OF KODIAK
LABORATORY

CHLORIDE ANALYSIS FOR CLEAN LAKES FOR KODIAK
SAMPLE LOCATION: POTATO PATCH LAKE
DATE: 3/21/96
RESULTS: 560 Mg/L CHLORIDE

SAMPLE LOCATION: MISSION LAKE
DATE: 3/21/96
RESULTS: 750Mg/L CHLORIDE

ANALYZED BY KEN WOLKOFF 3/21/96

SAMPLES TAKEN BY MARK BLAKESLEE 3/21/96

LABORATORY REF.# 96-133

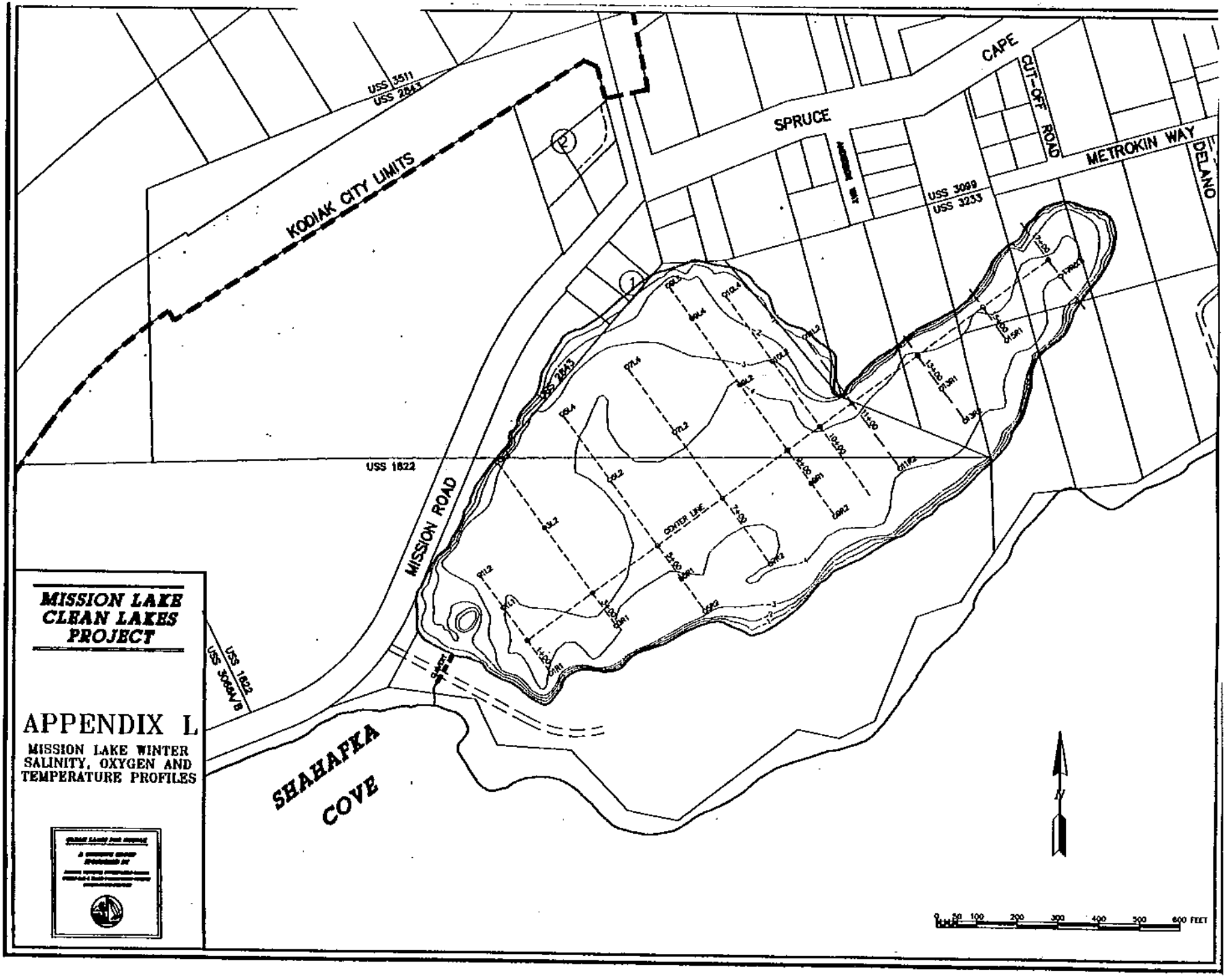
Appendix L:
Mission Lake winter salinity, oxygen, and temperature profiles

Station	Ice	Top Sed.	Bot Sed.	Sediment	Depth	O2	Temp C	S ppt
1R1	8	48	76	28	12	11.5	1.9	2.2
					24	11.6	3.8	3.1
					36	9	4	5
					48	2.8	4.1	17.2
1CL	5.75	44	61.5	17.5	12	12.1	3.4	1.9
					24	11.6	5	2.8
					36	12.5	4.8	4.5
					40	7.7		7.5
					44	4.1	4.2	13
1L1	4.5	54	67.5	13.5	12	12.7	3.4	2
					24	11.8	5.8	4
					36	11.4	4.9	5.8
					48	2.3	5.2	20.2
1L2	4.25	42.25	51.75	9.5	12	11.5	5	2.2
					24	12.3	7	3.5
					36	9.1	6.1	5.1
					42.25	2.7	5.3	11
3R1	10.25	43.5	68	24.5	12	10.9	1.8	2.3
					24	12.1	3.8	3
					36	9.8	4.3	5
					43.5	2.3	4.3	11.5
3CL	8.25	36	44	8	12	13.4	3.8	2
					24	13.3	5.7	3
					36	6.6	5.4	5.5
3L2	5	32	48	16	12	11.3	4.5	1.9
					24	12	6.8	2.9
					32	10.7	6.8	4.1
3L4	5.5	19	25.25	6.25	12	9.5	2.1	1.8
					19	9.6	3.6	2
5R2	13.5	36	48	12	12	11.2	0.9	2
					24	9.8	1.6	2.5
					36	2.8	3.3	4.2
5R1	9.25	37	46.5	9.5	12	12.8	2.2	1.8
					24	13	4.1	2.4
					36	7.3	4.9	5.2
5CL	8.5	44	48	4	12	11.1	2.4	1.8
					24	10.7	5.1	2.5
					36	12	5.5	5
					44	3.2	5.4	13.5

5L2	6	43.5	54	10.5	12	11.7	4.2	1.8
					24	8.6	5.9	2.6
					36	9.7	6	4.8
					43.5	2.7	5.5	12
5L4	5.75	37	45	8	12	11	2.8	1.6
					24	11.3	5.3	2.7
					36	5	5.6	5.3
7R2	9.5	41	50.5	9.5	12	12	0.9	1.9
					24	11.4	3	2.3
					36	3.4	3.5	5.3
					41	2.5	3.8	6.8
7CL	8.5	45	56	11	12	11.3	1.9	1.6
					24	9.4	5	2.8
					36	14.4	5.5	5.3
					45	4.6	5.5	14
7L2	6.75	42	52.5	10.5	12	12.3	2.4	1.3
					24	7.3	5.2	2.5
					36	9.3	5.8	5.2
					42	3.7	5.9	9.1
7L4	5.5	37	50	13	12	12.5	2.6	1.2
					24	9.9	5.3	2.2
					36	3.5	5.6	4.9
9R2	11	42	54.5	12.5	12	11.3	0.8	1.8
					24	10.5	2.9	2.6
					36	8.9	4.2	5
					42	2.3	4.7	9
					47	3.4	4.7	11.5
9R1	9.75	43	55	12	12	12.5	1.3	1.8
					24	15.5	3.9	2.7
					36	17.8	5.5	5.8
					43	7.2	5.6	10
9CL	9	46	76	30	12	10.9	1.6	1.8
					24	12.9	4.1	2.5
					36	14.3	5.8	5.5
					42	14	6.1	9
					46	11.3	6.1	14.8
9L2	7	34.5	49	14.5	12	12	2.4	1.8
					24	7.7	5.3	2.7
					34.5	6.3	5.9	4
9L4	7	25	48	23	12	12.8	2.1	1.6

					24	5.7	5	2.5
9L5	5.75	24	42	18	12	11.9	2.3	1.8
					24	7.2	4.1	2.3
10L2	7.5	24	44	20	12	12.6	1.9	1.8
					24	9.6	4.8	2.6
10L4	3.5	7	31	24	7	12.7	11.3	1.5
11R2	10	48	62.5	14.5	12	11.6	1	1.8
					24	12.8	2.6	2.2
					36	15.3	5.2	5.5
					42	15.5		8.8
					48	8	6	12.2
11CL	9.25	31	38	7	12	10.5	1.5	1.8
					24	11.1	3.9	2.2
					31	9.1	4.9	3
11L2	6.25	12	30	18	12	12.5	1.7	1.6
13R2	8.5	52.5	61.5	9	12	11.1	2.1	1.8
					24	9.7	4.4	2.5
					36	12.8	5.6	5.2
					48	14.4	6.3	12.8
					52.5	12.7	6.3	13.5
13R1	8	46.6	56	9.4	12	11.5	2.3	1.6
					24	9.5	4.7	2.2
					36	17	6.7	6
					46.5	13	7	12
13CL	7.25	42	50	8	12	11.2	1.5	1.6
					24	10.4	5.2	2.8
					36	12.6	6.4	5.2
					42	11.5	6.8	7.9
15CL	6	42	49	7	12	10.5	1.9	1.2
					24	10.7	4.5	2
					36	11.9	6.1	4.8
					42	11.1	6.3	7.1
15R1	7.25	44.5	111	66.5	12	10.2	1.9	1.5
					24	10.6	4.4	2.2
					36	10.2	5.4	5.1
					44.5	3	5.7	9.9

17CL	7.75	38	140	102	12	9.5	1.1	1.8
					24	9.5	3.5	2.5
					36	7.2	4.9	5.2
17R0.5	9.25	37	128	91	12	10.2	1	1.9
					24	10.4	3.1	2.8
					36	5	4.4	5.5


MISSION LAKE
CLEAN LAKES
PROJECT
APPENDIX L
MISSION LAKE WINTER SALINITY, OXYGEN AND TEMPERATURE PROFILES
KODIAK CITY LIMITS
USS 3511
USS 2843
USS 1822
USS 5066AV5
USS 3099
USS 3233
SPRUCE
CAPE
CUT-OFF ROAD
METROKIN WAY
DELANO
MISSION ROAD
CENTER LINE
SHAHAFKA
COVE
0 50 100 200 300 400 500 600 FEET

Appendix M:
Mission Lake outlet structure study
by RA Jones, Consulting Engineer

Rolland A. Jones

CONSULTING ENGINEER

P. O. Box 375

Kodiak, Alaska
(907) 486-4181

April 15, 1997

Clean Lakes for Kodiak
710 Mill Bay Road
Kodiak, Alaska 99615

Attn: Bud Cassidy

Subject: Mission Lake Outlet Study

Dear Bud:

Based upon your request we have conducted a study of various outlet locations and requirements for Mission Lake. Enclosed are the results. The study included:

1. Review of the existing outlet facility.
2. Review of alternative outlet locations.
3. Preliminary facility design considerations for the outlet locations.
4. Estimation of costs for the outlet locations.

Thank you for this opportunity to participate in planning for improvements to the Mission Lake Outlet requirements.

Very Truly yours,

Rolland A. Jones

Rolland A. Jones, P.E.
Consulting Engineer

SPILLWAY STUDY
FOR
MISSION LAKE
KODIAK, ALASKA

April, 1997

INTRODUCTION:

This report presents the results of our study of the spillway system for Mission Lake. In addition to the existing system two additional locations for a spillway system were examined. The locations studied are shown on the enclosed drawing. Estimated construction costs are included for all locations.

AREA DESCRIPTION:

The Mission Lake Drainage Basin begins with slow drainage along Mill Bay Road in the Safeway Mall area. Drainage improvements consist of a storm drain system along Mill Bay Road in the above area and road system culverts scattered throughout the Basin area. No drainage easements exist for any of the drainage routes. Drainage route legality exists only by flow in Natural Water Courses. The Basin area is approximately 4,000 feet in length and is 280 acres in area. Development consists of Commercial (Safeway Mall Area), Schools, Open Spaces and Residential Units.

PROJECT DESCRIPTION:

It is understood that the proposed project is to consist of an upgrade of the spillway for Mission Lake. For this purpose the existing system and two (2) alternative locations were considered as follows:

1. Existing spillway system (Site A). The existing spillway consists of an 8 foot diameter concrete overflow inlet connected to a 30" diameter culvert pipe. A 5 foot diameter CMP standpipe is installed at mid-length of the 30" culvert pipe. The project at this site would consist of replacing 50 Lin. Ft. of 30" culvert pipe from the standpipe to the outfall. A concrete bulkhead would be constructed at the outfall. This spillway system would be approximately the same as presently exists with the same pipe invert elevation.
2. Site B. The project at this site would consist of concrete inlet structure, 118 Lin. Ft. of Spillway Pipe and a concrete outfall bulkhead. The Outfall for this site would be in what appears to be the original location of the Lake drainage outlet. The natural ground contour at this location should remain stable thus limiting the movement of beach sand into the outfall.
3. Site C. The project at this site would consist of concrete inlet structure, 138 Lin. Ft. of Spillway Pipe and a concrete outfall bulkhead. The natural ground contour at this location should remain stable and is also protected by the reef adjacent to the outfall.

ESTIMATED CONSTRUCTION COSTS:

A-SITE.

Connect to existing Standpipe	$3,000.00
Remove existing 30" CMP	2,500.00
Furnish & Install 30" X 50lf CMP	7,250.00
P.C.C. Outfall Headwall	4,200.00
Replacement of Gate Posts	2,000.00
TOTAL	$18,950.00

B-SITE.

P.C.C. Overflow Spillway	$6,630.00
Furnish & Install 30" X 118 lf CMP	17,110.00
Furnish & Install 36" X 22" X 118 lf CMP Arch Pipe	14,000.00
P.C.C. Outfall Headwall	5,600.00
TOTAL	$43,340.00

C-SITE.

P.C.C. Overflow Spillway	$6,630.00
Furnish & Install 30" X 142lf CMP	20,590.00
Furnish & Install 36" X 22" X 142 lf CMP Arch Pipe	15,000.00
P.C.C. Outfall Headwall	5,600.00
TOTAL	$47,820.00

Cost Estimate Notes: CMP costs for all sites were based on using a 30" diameter CMP as per the existing spillway installation. Preliminary analysis indicates that the 30" diameter CMP is undersized. An additional outfall pipe has been included in the cost estimate in anticipation of the need for additional flow capacity. The Storage Ponding of Mission Lake provides flood control; however the adjacent property owner's indicate that the water level fluctuates rapidly during times of high rainfall and flooding of houses could occur if the Outfall were plugged during a flood time. The existing Spillway Facility was installed in 1964 and has been maintained by local residents with property adjacent to the lakeshore. Final Spillway design of all of the above sites should include a drainage basin study and recommended Outfall Pipe size.

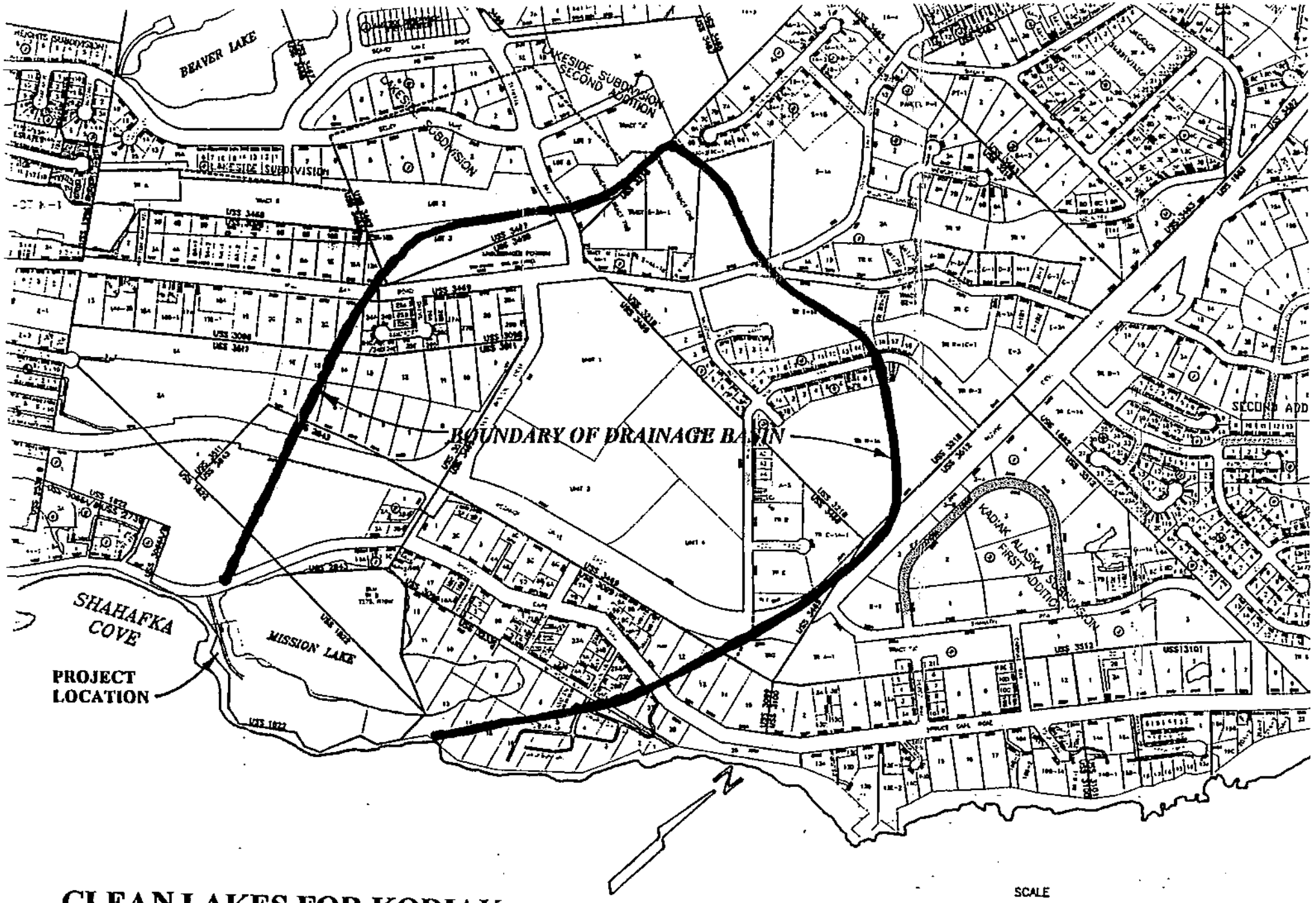
CONCLUSIONS AND RECOMMENDATIONS

No legal Right-of-Way exists for any of the proposed spillway locations including the existing facility. Right-of-Way should be acquired for the selected as finally selected.

Construction Permits from the Corps of Engineers will be required for the work at all sites.

A drainage study for the Mission Lake area should be made. Data from this study would then be incorporated in the final design of the Spillway Facility.

Site B or C should be selected for the revised spillway location. Site C is recommended due to the location of the reef and the lessor amount of beach sands for movement into the Outfall Pipe. An Arch Pipe was selected for the added Outfall Pipe at these locations in order to raise the invert of the second pipe further above the level of the surface of the beach sand.



CLEAN LAKES FOR KODIAK
MISSION LAKE DRAINAGE BASIN

RAJ APRIL 15, 1997

S T O R M S E W E R D E T A I L E D R E P O R T

E 1		
ine description	=	
ownstream line number	=	0
W INFO:		
ncremental area	=	280.00 ac
unoff coefficient	=	0.350
nlet time	=	120.00 min
nlet intensity	=	0.73 in/h
ncremental CIA	=	71.84 cfs
nput flow	=	0.00 cfs
eighted coefficient	=	0.350
ime of concentration	=	120.00 min
otal intensity	=	0.73 in/h
otal CIA	=	71.84 cfs
otal flow	=	71.84 cfs
kipped flow	=	0.00 cfs
E INFO:		
ipe length	=	96.00 ft
lan length	=	100.00 ft
ipe diameter	=	30.00 in
ipe type	=	Circular
ipe n-value	=	0.013
apacity at invert slope	=	35.51 cfs
nvert elevation upstream	=	10.50 ft
nvert elevation downstream	=	9.75 ft
nvert slope	=	0.750 %
im elevation upstream	=	13.60 ft
im elevation downstream	=	9.75 ft
at. ground slope	=	3.850 %
rown elevation upstream	=	13.00 ft
rown elevation downstream	=	12.25 ft
RAULIC INFO:		
ydraulic grade elev. upstrm	=	18.34 ft
ydraulic grade elev. dwnstrm	=	12.20 ft
ydraulic grade slope	=	6.15 %
nergy grade elev. upstream	=	21.67 ft
nergy grade elev. downstream	=	15.86 ft
nergy grade slope	=	6.113 %
ritical depth	=	29.35 in
epth upstream	=	30.00 in
epth downstream	=	29.35 in
elocity upstream	=	14.63 ft/s
elocity downstream	=	14.71 ft/s
rea upstream	=	4.91 ft2
rea downstream	=	4.88 ft2
j (JLC)	=	1.000
alculated junction loss	=	6.149
ST INFO:		

Appendix N:
CLK and KWWA newspaper articles

Kodiak Daily Mirror

VOL. 57 NO. 127 | FRIDAY, JUNE 27, 1997 | KODIAK, ALASKA | 36 PAGES | 50 CENTS

TV SPOTLIGHT

Tyson to process flatfish

Rebuild plans still on hold

By NELL WAAGE PARKER
Mirror Writer

The Tyson Seafood Group management is still assessing the situation at its fire-damaged Kodiak plant, a company spokesman said.

Assessments of damage from insurance adjustors were just received this week, said Dave Benson of Tyson Seafoods in Seattle.

But while they decide what to do with the main plant, the company is preparing for some limited processing in an adjacent building.

"We are going to do flatfish (sole) in the building starting July 1, so that is a good sign, I think," Benson said.

Tyson anticipates using 125 employees for the operation, which may last as long as eight weeks, depending on halibut bycatch.

The damage assessment has been slow going, Benson said, in part because of heat damage to plastic parts in plant machinery.

The fire, which smoldered in stored cardboard boxes for 23 hours, started April 3.

The operation was partially housed in the hull of a WWII-era Liberty Ship "Star of Kodiak," which had been permanently beached along the channel. The plant was one of the largest on Alaska's Gulf Coast and the second-largest in Kodiak. The conflagration started after hot welding slag fell onto a conveyor belt in a freezer.

The damage resulted in the layoff of most of the plant's 400 employees, although about half were hired back for a while to help with cleanup. The 15 boats that had supplied product were without markets for a short time.

It's a heat wave ...

Mickey Chya, 3, right, has his toy umbrella along when he cools off in Lake Gertrude at Fort Abercrombie. Playing in the sand nearby is Mickey's friend Derick Hochmuth, 4.

Nell Waage Parker photos

Ok to swim in Island, Gertrude lakes

By NELL WAAGE PARKER
Mirror Writer

If your kids have been swimming in some of the local lakes, don't panic.

A two and a half-year testing program has not revealed serious pollution in Island Lake or Lake Gertrude (at Fort Abercrombie), said environmental engineer Mark Blakeslee, who spent two years conducting tests on Kodiak's urban lakes.

Those are the two lakes commonly used for swimming and other "contact recreation" near town. Island Lake is in a populated area, while Lake Gertrude is [illegible]

Lake Gertrude is very clean, Blakeslee said.

While some samples taken at a small stream emptying into Island Lake showed a significantly high fecal coliform count after heavy rains, he said, counts from all but one test taken from the lake itself did not contain amounts in excess of the maximum recommended by the DEC in water used for contact recreation. That one high sample was after a heavy rainfall.

"I see no particular risk of swimming in Island Lake," Blakeslee said. "But I would stay out of the creek, especially after a heavy rain." He recommends staying 50 to 100 feet from the creek, which drains from a populated area.

Blakeslee recommends monthly monitoring by the city or borough at the island Lake site, however.

"There is some room for investigation, but no room for alarm," he said.

The high levels of fecal coliform detected in the stream could be due to dogs using the banks to defecate or it could indicate a sewage leak somewhere along the drainage, he said.

Fecal coliforms are microscopic animals that live in the intestines of warm-blooded animals and are in their feces. While not disease-causing themselves, they indicate the presence of feces which may or may not be disease-causing, Blakeslee said.

Besides fecal coliforms, the study looked at turbidity, salinity, mineral content and fish health in eight urban lakes. These are Upper Horseshoe, Lower Horseshoe, Beaver, Dark, Island, Lilly, Potato Patch and Mission. Tests from Lake Gertrude provided a reference from a lake in an undeveloped area.

The research effort was launched two and a half years ago by residents who were concerned about pollution, fish and wildlife health and habitat, weed growth and sea water leakage in lakes near their homes. The study was funded with a $96,000 grant from the U.S. Department of Agriculture's Natural Resources Conservation Service.

Lake shore homeowners worked in conjunction with the Kodiak Soil and Water Conservation District to form the Clean Lakes for Kodiak Committee. They in turn hired Blakeslee to do the analysis.

Other recommendations of the study include [illegible] into Upper and Lower Horseshoe lakes, preserving the remaining wetlands, widening the ditch and replacing the culvert between the lakes, which will deepen Upper Horseshoe.

The high iron content discovered in Potato Patch Lake is not dangerous, but makes the water reddish and unsightly, Blakeslee reports. The likely cause is ground water coming from underneath Baranof Park, formerly a city landfill which contains metal debris. The study recommends replacing a culvert system so that drainage from the old dump is diverted into the ocean instead of the lake.

Global warming may threaten Pacific Northwest salmon

. CORVALLIS, Ore. (AP) — The greatest threat to Pacific Northwest salmon may be global warming, despite the best conservation efforts.

Scientists gathered for the 78th annual meeting of the Pacific Division of the American Association for the Advancement of Science said the short-term outlook for the already-depleted migratory fish was poor because it has

"In the past we always emphasized hatcheries, dams, and fishing pressure as the only important factors in salmon conservation, but that was shortsighted. This problem involved environmental changes literally Pacific Rim in scope," said Daniel Bottom, salmon conservation manager for the Oregon State University Center for the Analysis of Environmental Change.

closer to the surface, the overall food supply, inland temperatures, snowpacks and stream flows.

A small shift in temperature could reduce the Pacific Northwest snowpack and result in wetter winters and drier summers. A light snowpack would mean rain would quickly run off mountainsides in winter and there would be little melting snow in summer to provide water when skies turn dry.

identified what appears to be a significant turning point in 1976, marking a long, downward spiral in ocean conditions and onshore weather patterns salmon need to thrive.

In the two decades since then, a low-pressure system that forms over the Aleutian Islands each winter has been more intense than usual, enhancing salmon fisheries in Alaska and British Columbia

raises more questions about links to a changing global climate, Bottom said.

Salmon are a cold water fish that range over most of the North Pacific, from the Northwest to Alaska, Japan and Russia. They spend most of their adult lives in the ocean, returning to fresh water only to spawn.

A global climate shift would affect salmon on both sides of the

Letter to the editor

Beaver Lake educational

To the editor:

In the Feb. 7 Mirror article "Lake Land Sale Talk Stirs the Neighbors," an assembly member stated that the land around Beaver Lake should be sold to create a tax base to fund education.

To lay the blame on the backs of educators for selling environmentally sensitive lands was an unfortunate comment. I believe that if I took each educator on this tour of the area they would say "no" to selling the land in the name of education.

My field trip begins at the deep stream on the north end of Beaver Lake which connects to Dark Lake. Reminders of past beaver activity will be apparent as we pass a small cluster of knawed tree stumps before heading south along the peaceful lake bank. Eventually we will leave Beaver Lake and take a short hike along Selief Lane to follow the anadromous stream along the roadside which soon loops behind private homes. Once there, the natural scene will open into a broad expanse of true wetlands, supporting Coho salmon and waterfowl. The trip will be an education in itself.

Farther south sits Horseshoe Lake. This is another educational opportunity because the poor conditions of this lake, which was cut in half by Selief Lane, clearly demonstrate the negative impacts of filling in from road runoff and uncontrolled development.

If the assembly member's comments are true, then in the name of education we should destroy this environment to pay for the costs of education so students can read of living watersheds in books.

—Rick Hoffman

City officials say Mission Lake safe

Officials say Mission Lake is safe for human contact again, less than a week after a faulty city pump leaked sewage into the water.

John Sullivan, public works director, said coliform levels in the water have been safe for several days. The lake had been closed to the public since Friday.

Sullivan said the lake is now safe for fishing, kayaking and other water sports. He recommends people still avoid swimming in the water until the area gets some rainfall.

The sewage spill occurred Friday morning, when a pump station near the lake shut down due to an electrical problem.

By the time workers brought the pump station back on line, some sewage leaked into the water.

Concert tonight

Angela Smoldon, music instructor, announces an all-band (sixth-through-senior) pops concert for the whole family, 7 p.m. tonight at the auditorium.

A $1 admission fee will go toward student activities.

ational study uses Kenai streams

AI (AP) — A team of seven
s from across the country is
into Kenai Peninsula streams
ith. The group hopes to find
ays here that are clean
to provide baselines for na
mpling guidelines.

e Major, a biologist with
vironmental and Natural
es Institute of the Univer
Alaska Anchorage, and
Barbour, director of eco
sciences from Tetra Tech,
scientific consulting firm
land, are leading the team.

"Kenai Peninsula Bio
ing Study" is checking 25
il clean water, wadeable
Major said. Several are
on Kenai River tributaries.

At each they will collect insects from 20 spots along 100 meters of stream, including riffles, pools, overhanging banks and other habitat.

Back in the lab after the field season, they will randomly select 300 organisms from each site, identify them to the family or genus level, and calculate the percentages of each type of insect. The project measures the diversity of the species, not how many insects an area produces.

Major said the team is working to develop a protocol for agencies and groups collecting aquatic insects anywhere in the country for water quality studies.

Protocols are sets of instructions scientists follow when collecting data, so that results can be standardized and compared to other studies.

Although aquatic insect species differ from place to place, the groups represented are remarkably consistent throughout the nation, Barbour said, so the Alaska results will help researchers as far away as Florida.

Major's team is in the early stages of working with the Salamatof Native Association and Chugachmiut to develop tribal monitoring programs. They are also interested in developing simplified sampling protocols for volunteer monitors and for teachers to use for class projects.

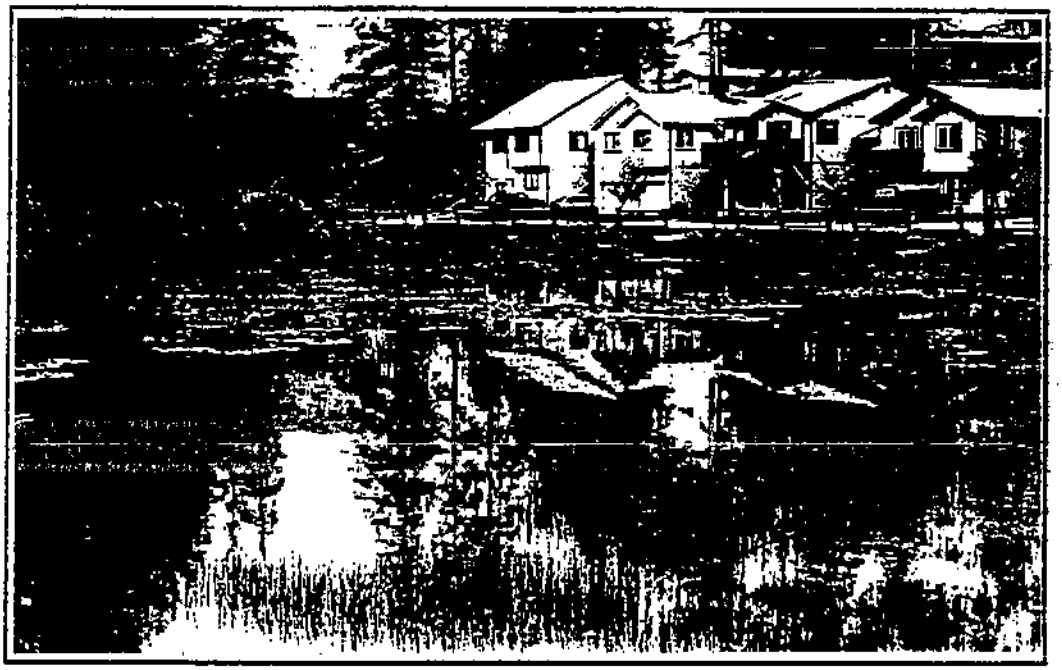
AASWCD News

Alaska Association of Soil and Water Conservation Districts *June 1997*

Kodiak district examines urban lakes

By Janet Shapley

Stocked Coho salmon and trout are faring well, but some of the lakes near the city of Kodiak would benefit from clean-up measures. A long-term study identified possible sewage leaks near a popular swimming beach, silt from a well-traveled dirt road clouding lake water, and iron-laden ground water flowing from a former landfill into a city lake as problems that should be addressed.



Houses border Upper Horseshoe Lake.

Kodiak residents launched an extensive research effort two and a half years ago because of concerns about pollution, fish and wildlife health and habitat, weed growth and seawater leakage in seven urban lakes where they live and play. Funded with a $95,000 grant from the U.S. Department of Agriculture's Natural Resources Conservation Service, the Clean Lakes for Kodiak technical analysis was completed this month.

Lakeshore homeowners worked in conjunction with the Kodiak Soil and Water Conservation District to form the Clean Lakes for Kodiak committee, which hired Aqualife environmental engineer Mark Blakeslee to do the analysis. Over a thousand water samples were taken from the lakes and creeks emptying into the lakes and tested for fecal coliforms, turbidity, salinity, mineral content and more. Thousands of fish were trapped in the lakes and weighed and measured.

State and federal agencies provided technical support throughout the project., in sample collections and testing, recording and interpreting data, mapping the lakes and identifying the watersheds. A watershed is the catchment area above the lake where all rain and snow that falls will flow downhill and into the lake.

Island Lake Watershed including Upper and Lower Horseshoe Lakes, Beaver Lake, Dark Lake and Island Lake was studied, as was the watershed containing Lilly Lake, which houses the the city's float plane facility, and Potatopatch Lake.

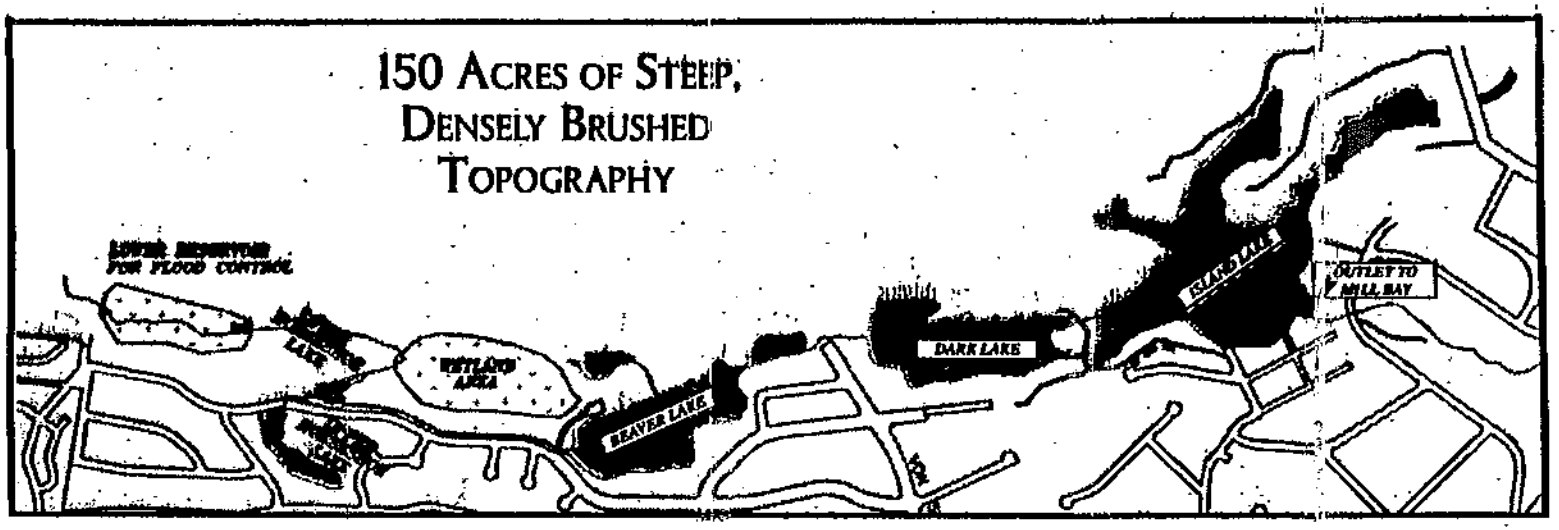
Continued on Page 3

News From Omar

Fellow Conservationists,

I can hardly believe that a month has almost

A WATERSHED IN KODIAK



Knowing what our watersheds provide helps us to appreciate their value.

1. **Drinking water supply for area residents**
2. **Flood protection for residents**
3. **Abundant wildlife habitat and fish spawning**
4. **Recreational value in boating, fishing**
5. **Area for solitude and reflective thinking**
6. **Natural beauty**
7. **Attractive to tourists**

A watershed system is an interlacing unit of all things present in the system, such as people, chemicals, and biology. The characteristics of watershed interaction is dependent upon variables, including the ratio of drainage area to lake area, how is land used, climate, soils, forestry, topography as well as conservation measures.

KODIAK WETLANDS AND WATERSHED ASSOCIATION

The purpose of KWWA is the evaluation, protection and restoration of Kodiak wetlands and watersheds areas.

KWWA, 1958 Selief Lane, Kodiak, AK 99615 • Financial Donations Needed

Homeowners organize to save neighborhood lakes

By SUE JEFFREY
Mirror Writer

Some neighbors in the Selief Lane area are organizing to halt further development on Beaver Lake.

Residents were spurred into action recently when they learned the Kodiak Island Borough may put public property on the lake up for sale. The group, Kodiak Wetlands and Watershed Association, will focus on the watershed in the Selief Lane area which encompasses Horseshoe and Beaver lakes and adjacent wetlands.

"Our organization plans a scientific approach...to learn about the impacts of urban activity upon this chain of lakes that support fish and wildlife," says Kathy Colwell, president of the association and a city council member.

Colwell, who lives in the area and owns undeveloped property on Horseshoe Lake, says the lakes are filling with silt from unpaved Selief Lane.

"Our goals include restoring Horseshoe Lake, protecting the wetlands west of Selief Lane and ensuring that if private development in the Beaver Lake area occurs, it is without further degradation of the lake environment," Colwell says.

Specifically, the group wants Horseshoe Lake deepened to improve its appearance and recreational value; Selief Lane paved and its ditch and culverts enlarged; and the drainage system of the wetlands to the west of Selief behind the Elderberry Heights subdivision upgraded to stop flooding of houses in the area.

Beaver Lake is the catch basin for the Pillar Mountain watershed because it is the lowest spot in the region, according to the "Selief Lane Drainage Report" prepared for the city and borough by Mark Blakeslee. The flooding along Selief Lane is primarily caused by undersized culverts.

Kathy Colwell

Blakeslee said drainage improvements would cost up to $238,259, including $6,000 to raise the elevation of the Horseshoe Lake outlet culvert 6-12 inches, the easiest way to deepen it.

The Alaska Dept. of Fish & Game annually stocks Island Lake with coho, or silver, salmon for sportfishing on Mill Bay. As part of his study, Blakeslee conducted fish trappings in Horseshoe, Beaver and Island Lakes and the Selief Lane ditch and found juvenile coho salmon throughout the system. Spawning adult cohos were also found at the outlets of Beaver, Dark and Island Lakes.

To improve fish habitat, salmon biologists suggested enlarging culverts, replacing soft sediments from silting with a 24-inch layer of washed gravel and slide-sloping the Selief Lane ditch to decrease siltation. Blakeslee estimated the work would cost about $33,000.

Even with drainage upgrades and road paving, Colwell's group would oppose development of property on Beaver Lake.

"A proper buffer depth around the lake has not been determined. With our high winds, is a 50-foot green belt enough? Or 100 feet?" says Colwell. "Reducing the natural habitat around the lake would increase the noise. And with buildings on the property, the land will have less absorption capability and thus increase more run-off into the lake."

Colwell says the group is not wholly anti-development.

"It has consistently supported residential development of wooded property along Selief which is currently zoned light industrial," she says. We just oppose development of land right next to the lake."

At a recent borough meeting, assembly member Dr. Bob Johnson said the borough is considering selling the Beaver Lake property because many people at the Town Meeting last fall said they wanted the borough to free up borough lands for economic development.

That coupled with the pressure to fund increasing costs with decreasing revenues is causing the assembly to look for new revenue sources, borough assembly member Wayne Stevens says.

"We're constantly faced with the attitude of 'not in my back yard'—don't do any development, don't raise my taxes but fund education," said Stevens, who lives on Selief Lane.

"Where do you draw the line? We want growth and we want it to be a nice community. There are ways to do development and still have a green belt and public access to the lakes," he said.

The Beaver Lake property is public land, which allows public buildings such as libraries, churches, fire stations, hospitals, nursing homes, schools and utility installations.

Because it is public land, the entire community will have opportunities to testify at Planning & Zoning and borough assembly public hearings before any development, rezoning or land sale occurs.

Colwell's association is hiring an independent consultant to evaluate the area and "do what we hoped government would do."

The next KWWA meeting is Monday, April 7. To fund the studies, Colwell, vice president Donene Tweten and secretary-treasurer Ellen Cloudy are encouraging people to join the watershed and wetlands association and pay a $25 membership fee.

"Every neighborhood needs some open space," Colwell says.

Notice of Transfer of Liquor License

ISMAEL G. RUIZ
(Present licensee)

D/B/A: LA FIESTA
(Name of Establishment)

located at: 1517 MILL BAY ROAD, KODIAK
(Premises Address & City)

is applying for transfer of a: BEER & WINE SEC.04.11.100
(Type of License and Statute Reference Number)

(Applicant name(s))

to: MARTHA GARCIA
(New Licensee(s))

D/B/A: MARTHA'S PLACE
(City of delivery)

located at: _____
(City of delivery)

Community pride at stake in annual spring cleanup

By JEFF RICHARDSON
Mirror Writer

Kodiak will wage its annual war against litter Saturday, when hundreds of residents will unite to scour the town for Spring Clean Up Day.

The yearly attack on accumulated trash will start at 9 a.m. in the Kodiak High School parking lot.

From there, volunteers will disperse from Bell's Flats to Monashka Bay to pick up loose debris, ranging from pop cans to junked couches.

Wayne Stevens, Kodiak Chamber of Commerce executive director, said the event has become a successful but frustrating community clean-up exercise.

In previous years, Stevens said as many as 4,500 bags of garbage have been collected from area roads.

"It's a bigger problem than a handful of people can solve," he said. "It's a community problem and it takes a community to do it."

Members of the Kiwanis Club and Chamber of Commerce Litter Committee will be at the high school Saturday morning to pass out trash bags and assign areas to clean.

"You can do it a couple of ways," said Jeff Harman, a co-chairman in the effort. "You can just get some bags and we'll send you somewhere, or you can do your favorite neighborhood or favorite beach."

Volunteers are also needed to be "swampers," who ride in cleanup trucks and pick up filled garbage bags.

If the weather is cooperative, Stevens said 400-500 people should participate in the event. A free lunch of hot dogs and refreshments is provided at the high school for volunteers.

The Chamber is also asking for donations to continue the clean up, which has been a Kodiak tradition for more than 10 years. To contribute, fill out the "Litter Bug" donation form in the *Mirror* and return it to the Chamber of Commerce Litter Committee.

Moneys raised are used as matching funds for grants from the City of Kodiak, Kodiak Island Borough, BP Alaska and Alaskans for Litter Prevention and Recycling.

There will also be several alternative programs for Spring Clean Up Day.

The borough will provide a free hazardous waste disposal program at the high school from 9 a.m.-3 p.m. for residents to clean out unwanted household items that may be harmful to the environment. Those items include bug spray, drain cleaners, used oil, paint, weed killer, furniture polish and batteries of all types.

Borough residents may also sign up from May 5-16 for free towing and disposal of junked automobiles. For more information, call Tom Bouillion at 486-9361.

Those who participate in the traditional litter pickup on Saturday are encouraged to make it a family affair.

With more people involved, Stevens hopes fewer people will litter the rest of the year.

With hundreds of volunteers and $10,000 or more spent on the project, litter has become an expensive and time-consuming problem in Kodiak. Stevens hopes increasing awareness will make it a smaller one.

Pat Branson photo

Ellen Cloudy and son Wallace spend Saturday cleaning up the banks of Beaver Lake on Selief Lane

KWAA cleanup

Members of the Kodiak Wetlands and Watershed Association (KWWA) started cleaning up lake banks and near-shore lake bottoms last weekend.

The gathered 43 bags of trash. Most debris was found near the two dumpsters on the north and south ends of Beaver Lake. From Horseshoe Lake came a car battery, carpet pad, ironing board, tires and defunct bicycles.

"Horseshoe Lake always accumulates a lot of trash due to the dumpster located on the bank's edge and the fact that the area is highly developed," said Kathy Colwell, president of KWWA. "Even though Horseshoe Lake is a fraction the size of Beaver Lake, the trash collected was equitable."

The workers said they enjoyed the two-day outing.

"Observing the geese, fish, shells of fresh water clams and the quiet walk by the lakeside made the hard work a pleasant experience," said Ellen Cloudy.

Students assisting in study of Kodiak lakes

y GLORIA CANTENS
lirror Writer

Students from Kodiak High chool took time out from classes st week to run a trap line — shtraps that is.

The students, from Jane isemann's Fisheries Science ass were helping biologist Bruce ort, who is providing contract chnical help on the Clean Lakes oject.

Together, they collected smolt/ y to determine the quality of fish several local lakes. The health a lake's fish are a good mea- re of water quality and habitat.

Students retrieved traps, which ere baited with slotted cans of m, and then weighed and mea- ed the anesthetized fish.

Classroom labs with Short and ark Blakeslee, who does field rk and administers funding for ean Lakes for Kodiak, taught em the necessary skills.

The project is targeting Potato ch Lake, Mission Lake, Lilly ke, Horseshoe Lake, Beaver ke, Dark Lake, Island Lake and ercrombie Lake and is part of an Lakes for Kodiak's efforts improve the quality of local es.

Blakeslee said they found a sur- ingly high number of coho mon along Selief Lane.

"But surprisingly few coho in sion and Potato Patch lakes — of sticklebacks and a few mon," he said.

He said that the temperatures Potato Patch and Mission Lakes e about 50 degrees Farenheit the shallows, while Dark and nd Lakes were about 40 de-

hort said the lakes will be ampled during the summer to mpensate for the effects of wa- ter temperature on catch rates.

"Cool temperatures tend to make them less active," he said.

Blakeslee said they found a weed-growth problem in Mission Lake and have contacted a specialist in Oregon for help in managing the problem.

"You can dredge or you can make the lake so deep the plants don't get any light or poison them with herbicides specific to that plant that won't hurt animal life," he said.

But weeds, he said also provide good cover for fish.

"It's a dilemma between aesthetic value and habitat," he said.

The next step is to calculate condition factors for these fish — the ratio of length to volume.

"Some lakes didn't have very many fish in them, but in some the fish we caught looked like they were in pretty good condition," Short said.

Blakeslee said silver salmon in some lakes seemed to divide into two groups. Those concentrating in the middle of the lake feed on plankton while those along the shore feed on insects and whatever else is available.

"The silvers probably aren't in the middle of the lakes yet because there's not enough plankton bloom," Blakeslee said.

Water samples have been tested for bacteria levels, which Blakeslee said were high in Dark and Beaver Lakes. Sampling will continue through the summer.

"Even though the water is clear there could be some contamination."

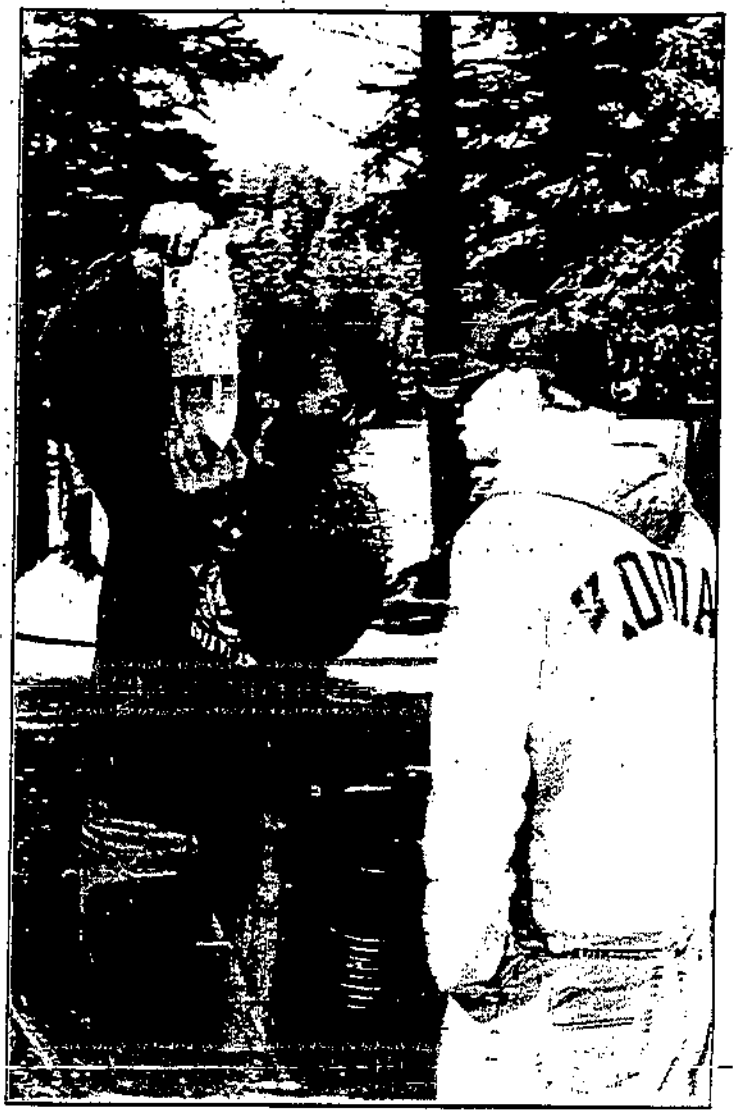
"With Potato Patch (Lake) there [illegible] that comes into it," he said. "It's at the highest risk."

Short said it is too early to draw any conclusions from the data.

"We'll be gathering information all summer," he said. "I just put some more traps out last night to see what an overnight soak would do."

Kathy Colwell, who is in charge of lake cleanup and riparian planting for the group, recently purchased Horseshoe Lake.

"It's in very poor condition," she said. "Any more development would cause further deterioration of the lake."



Gloria Cantens photo

Biologist Bruce Short holds up fish taken from a trap at Island Lake while Kodiak High School student Brian Large looks on. Students from Jane Eisemann's Fisheries Science class are helping Short collect information about Kodiak's Lakes as part of their class work.

Fish Trapping

By GLORIA CANTENS
Mirror Writer

Students from Kodiak High School took time out from classes last week to run a trap line — fishtraps that is.

The students, from Jane Eisemann's Fisheries Science class were helping biologist Bruce Short, who is providing contract technical help on the Clean Lakes project.

Together, they collected smolt/fry to determine the quality of fish in several local lakes. The health of a lake's fish are a good measure of water quality and habitat.

Students retrieved traps, which were baited with slotted cans of corn, and then weighed and measured the anesthetized fish.

Classroom labs with Short and Mark Blakeslee, who does field work and administers funding for Clean Lakes for Kodiak, taught them the necessary skills.

The project is targeting Island Lake, Dark Lake, Potato Patch Lake, Horseshoe Lake, Beaver Lake and Abercrombie Lake and is part of Clean Lakes for Kodiak's efforts to improve the quality of local lakes.

Blakeslee said they found a surprisingly high number of fish along Selief Lane.

"But surprisingly few fish in Mission and Potato Patch lakes — a few sticklebacks and a few salmon," he said.

He said that Potato Patch and Mission Lakes were about 50 degrees in the shallows, while Dark and Island Lakes were about 40 degrees.

Short said the lakes will be resampled during the summer to compensate for the effects of water temperature on catch rates.

"Cool temperatures tend to make the less active," he said.

Blakeslee said they found a weed-growth problem in Mission Lake and have contacted a specialist in Oregon for help in managing the problem.

"You can dredge or you can make the lake so deep the plants don't get any light or poison them with herbicides specific to that plant that won't hurt animal life," he said.

But weeds, he said, also provide good cover for fish.

"It's a dilemma between aesthetic value and habitat," he said.

The next step is to calculate condition factors for these fish — the ratio of length to volume.

"Some lakes didn't have very many fish in them, but in some the fish we caught looked like they were in pretty good condition," Short said.

Blakeslee said silver salmon in some lakes seemed to divide into two groups. Those concentrating in the middle of the lake feed on plankton while those along the shore feed on insects and whatever else is available.

"The silvers probably aren't in the middle of the lakes yet because there's not enough plankton bloom," Blakeslee said.

Water samples also will be tested for bacteria levels and contamination, which Blakeslee said appeared high in Dark and Beaver Lakes.

"Even though water quality appears to be good there could be some contamination."

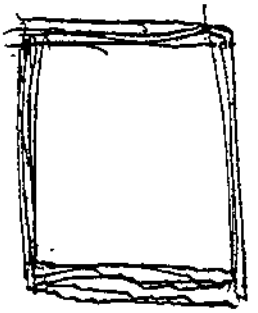
"With Mission (Lake) there isn't any forest to filter any water that comes into it," he said.

Short said it is too early to draw any conclusions from the data.

"We'll be gathering information all summer," he said. "I just put some more traps out last night to see what an overnight soak would do."

Kathy Colwell, who is in charge of lake clean-up and upland planting for the group, recently purchased Horseshoe Lake.

"It's in very poor condition," she said. "Any more development would cause further deterioration of the lake."



Priscilla Messner

Alaska, Inc.

The rapid development of waterfront property has accelerated the aging of many of Kodiak's lakes, once havens for thousands of fish. (Marion Stirrup)

City's Growth Damages Lakes

KODIAK—There are more than 30 small lakes and ponds in and around Kodiak, remnants of the last Ice Age, which left depressions and low spots filled with fresh water. But the very existence of the area's ponds and lakes is threatened, according to Gene Gade, Cooperative Extension Service agent in Kodiak.

"There has probably been as much change in these bodies of water during this century as in the 10 millenia since the ice departed," says Gade. Some of this change is the result of slow geological and ecological processes as well as natural disasters. The 1912 eruption of Novarupta deposited up to 18 inches of ash on the ground, leaving only the spruce trees and the hardier shrubs to survive, and the Alaska Earthquake of 1964 caused land masses in the area to subside by 2 to 6 feet.

But much of the change is due to the relatively recent introduction of human activity. Land fills, street runoff and septic tank drainage are a few of the problems that have caused the rapid acceleration of the natural aging process, or eutrophication of water bodies.

One such lake in the Kodiak area, Mission Lake, once reared thousands of salmon, supplied drinking water to local residents and provided year-round recreation. Today, its waters are choked with pondweed during the summer months and not a single coho fingerling can be found, despite ADF&G's effort to stock the lake with 12,000 coho fry in 1984. A group of alarmed citizens contacted Gade, who made a preliminary investigation, and paid for water sampling fees. A Lake Task Force has since been formed to educate the public about the condition of Kodiak's lakes and to determine solutions to the problem.

Noticeably lacking in the zoning codes were regulations that addressed the specific treatment of surface water such as street runoff, drainage and small streams. Therefore, members of the task force recommended the following requirements to the planning and zoning commission: 10-foot setbacks from original shorelines to provide a greenbelt or buffer zone, nonremoval of existing trees and shrubs that serve as filter systems and prevent erosion of embankments, justification of extending shorelines with fill material, and tie-in to existing city waste disposal lines for all residents.

Change is slow but evident. As a result of public comment, plans to subdivide nearby Beaver Lake, which supports rainbow trout, do not allow lots to extend to the waterfront and call for a park to extend around the perimeter; ADF&G intends to continue stocking Mission Lake with coho while maintaining a wait-and-see attitude about further encroachment of pondweed; and the Island Lake area, once deemed the worst in the state for septic pollution, has rebounded with vast improvements since hooking up to the Island Lake Sewer and Water Project.

"The key is to minimize impact brought about by development," stressed Gade, and as monies become available for expansion of sewer and water projects, the reduction of effluent reaching Kodiak's lakes will help bring the rate of eutrophication to a more natural process.—*Marion Stirrup*

Bean Agency Merges With Evans/Kraft

ANCHORAGE—Bean Public Relations merged with a Salt Lake City-based advertising agency last August, according to company officials. Evans Communications Inc. and its subsidiary, Evans/Kraft of Seattle, bought Bean Public Relations for an undisclosed price.

Jon L. Johnson, Evans Communications president and chief executive, told the *Anchorage Daily News* the company was interested in buying an Alaska advertising agency in part because of a directive by then-Gov. Bill Sheffield to award state contracts to Alaska companies when possible. Evans/Kraft has held the Alaska Seafood Marketing Institute's advertising contract for the past five years.

Bean Public Relations merged with Evans/Kraft to form Evans/Kraft Bean, which will provide public relations and advertising services for its Alaska clients, including ASMI's promotion and marketing operations. Dave Bean, president of Bean Public Relations, will serve as president of Evans/Kraft Bean and expects to employ eight people in Seattle and 12 in Anchorage.

A news release from Bean Public Relations reports Evans Communications is the 50th largest advertising agency in the United States with capitalized billings of $130 million, and the fourth largest Western-based advertising agency, with offices in Portland, Oregon; San Francisco and Los Angeles, California; Phoenix, Arizona; Denver, Colorado; and Atlanta, Georgia, as well as Salt Lake City, Seattle and now Anchorage.

Appendix O:
Clean Lakes for Kodiak
Board of Directors and Bylaws

CLEAN LAKES FOR KODIAK
By-Laws

ARTICLE I
NAME

The name of this group is Clean Lakes for Kodiak

ARTICLE II
PURPOSE

The purpose of the organization is the protection, evaluation, and restoration of the Kodiak urban lake system

ARTICLE III
BOARD OF DIRECTORS

SECTION 1. The affairs of Clean Lakes for Kodiak shall be managed by the board of directors

SECTION 2. The board of directors shall be elected by register voters of the Kodiak Island Borough who are present at the annual meeting of Clean Lakes for Kodiak.

SECTION 3. The directors of Clean Lakes for Kodiak shall serve for a two year term. They may be appointed or elected at the annual meeting.

SECTION 4. Removal of directors by directors. Any director who fails to attend three consecutive meetings of the board of directors without good cause shown may be removed as director by the vote of a majority of the remaining directors.

SECTION 5. Vacancies. A vacancy occurring in the board of directors shall be filled by the affirmative vote of a majority of the remaining directors for the unexpired portion of the term.

SECTION 6. Compensation. Directors shall not receive any compensation for their services as directors except for board approved expenses associated with travel.

SECTION 9. Each director shall be responsible to represent the lake for which he or she was elected to represent. At each meeting each director shall report about the health of the lake and any problem. Each report shall become a permanent record and stored in the proper lakes folder and in the computer. A formal report about each lake will be drafted each year.

ARTICLE V
MEETINGS

SECTION 1. Meeting will be set by the board of director. Special meeting may be called by the chairman or by three board members. All regular meetings shall be held within the boundaries of the Kodiak Island Borough. Only the business specified on the agenda may be transacted at a special meeting.

SECTION 2. The proceedings of all meetings shall be governed by Roberts Rules of Order. (Common Sense).

SECTION 3. Sub-committees appointed by the chairman will be scheduled by that subcommittee.

SECTION 4. A simple majority of the seated board members shall constitute a quorum.

SECTION 5. All meetings shall be open to the public except as allowed by the open meetings act.

SECTION 6. The manner and procedure of notice shall be adopted by the resolution of the board.

ARTICLE VI
AMENDMENTS

The by-laws may be amended at any regular meeting of the Board of Directors at which a quorum is present by a vote of the majority of the directors present, provided that the amendment has been submitted in writing to the directors at least 15 days prior to the meeting.

The By-laws were adopted at a regular meeting of Clean Lakes for Kodiak - 1/4/96

Appendix P:
CLK / SWCD / KIB / NRCS
Cooperative Agreement and Funding

United States
Department of
Agriculture

Natural
Resources
Conservation
Service

949 E 36th Avenue - Suite 400
Anchorage, AK 99508-4362
Telephone: (907) 271-2424

September 30, 1996

Bud Cassidy
Kodiak SWCD
710 Mill Bay Road
Kodiak, AK 99615

Re: Extension - Clean Lakes for Kodiak

Dear Mr. Cassidy,

We agree to the extension of Clean Lakes for Kodiak agreement to December 31, 1996, without additional funds. In so doing, you may bill as appropriate until that date.

Any questions you have may be directed to Jim Schmidt at (907) 271-2424.

CHARLES W. BELL
State Conservationist

cc: Sandy Degner-Crusch, Budget Officer, Spokane WA

2 7 1995

United States Department of Agriculture
Natural Resources Conservation Service
949 East 36 Ave.
Anchorage, Alaska
99508
(907) 271-2424

November 22, 1995

Bud Cassidy
Kodiak Soil and Water LConservation Distirict
Kodiak Island Borough
710 Mill Bay Road
Kodiak, AK 99615

Dear Mr. Cassidy,

Relative to Cooperative Agreement 68-0150-4-061, this letter serves to formally extend the Agreement from October 1, 1995 to September 30, 1996.

The Cooperative Agreement is amended as follows:

Section II "The Borough agrees:" change the following items:

H. "Request funds to cover the Services's share of the agreement by submitting a properly completed from SF 270 not to exceed $39,520 during federal FY 96." ✗

Section III "The Service agrees:" change the following item:

B. To provide the Borough with funding to pay for agreement items II A, B, D, E and F not to exceed $39,520 during the federal FY 96."

All other terms and conditions remain the same.

If you concur with the extension, please sign below and return to this office.

Thank you for your cooperation and leadership in this project.

Sincerely,

Steve Probst
State Conservationist

✗ 13,020 Rollover fr. FFY95
+ 26,520 FFY96 new funds.
39,520.

Our Budget - 24,000 FFY94
42,500 FFY95
FFY96

Bud Cassidy
Kodiak Island Borough
Kodiak Soil and Water Conservation District

United States Department of Agriculture

Natural Resources Conservation Service

949 E 36th Avenue - Suite 400
Anchorage, AK 99508-4362
Telephone: (907) 271-2424

Subject: Cooperative Agreement-"Clean Lakes for Kodiak"

Date: March 8, 1995

To: Bud Cassidy
Kodiak Soil and Water Conservation District
Kodiak Island Borough

Enclosed are three copies of amendment no. 2 to cooperative agreement no. 68-0150-4-061. Amendment no. 2 provides the Borough with additional funding in federal FY 1995 to carry out items, as identified in the agreement. This increases total funding during this fiscal year that USDA Natural Resources Conservation Service will provide from $42,500 to $60,500. Please have the Kodiak Island Borough Mayor and the Director of the Kodiak Soil and Water Conservation District approve and sign each of the three attached amendments. Return one fully executed copy for our files and keep the other two for the Borough and District.

Steve Probst
State Conservationist

3 Enclosures

cc. Mark Rivas

AGREEMENT NO. 68-0150-4-061
AMENDMENT NO. 2

COOPERATIVE AGREEMENT
between
KODIAK SOIL AND WATER CONSERVATION DISTRICT,
KODIAK ISLAND BOROUGH
and the
UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

AMENDMENT NO. 2 (TWO)

RELATIVE TO: This amendment to the identified cooperative agreement is made and entered into this 3rd day of MARCH 1995; by and between the Kodiak Soil and Water Conservation District (hereinafter called the "District"), Kodiak Island Borough (hereinafter called the "Borough"), and the USDA Natural Resources Conservation Service (hereinafter called the "Service").

Amend as follows:

Under Section II "The Borough agrees:" change the following items:

"H. Request funds to cover the Service's share of the agreement by submitting a properly completed form SF 270 not to exceed $60,500 during federal FY 1995."

Under Section III "The Service agrees:" change the following item:

"B. To provide the Borough with funding to pay for agreement items II A,B,D,E and F not to exceed $60,500 during federal FY 1995."

IN WITNESS WHEREOF, THE PARTIES HEREBY EXECUTE THIS AMENDMENT:

KODIAK SOIL AND WATER CONSERVATION DISTRICT

By: Joni Burton

Title: District Chairman

Date: 4/6/95

KODIAK ISLAND BOROUGH

By: Jerome N. Selby

Title: Borough Mayor

Date: 3/14/95

UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

By:

Title: State Conservationist

Date: 3/8/95

AGREEMENT NO. 68-0150-4-061
AMENDMENT NO. 1

COOPERATIVE AGREEMENT
between
KODIAK SOIL AND WATER CONSERVATION DISTRICT,
KODIAK ISLAND BOROUGH
and the
UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

AMENDMENT NO. 1 (ONE)

RELATIVE TO: This amendment to the identified cooperative agreement is made and entered into this 26th day of September 1994; by and between the Kodiak Soil and Water Conservation District (hereinafter called the "District"), Kodiak Island Borough (hereinafter called the "Borough"), and the USDA Soil Conservation Service (hereinafter called the "Service").

Amend as follows:

Page 2

Under Section I "The District agrees:" change the following items:

"D. To procure needed equipment and supplies including computer hardware and software needed to carry out this planning process."

"F. Request funds to cover the Service's share of the agreement by submitting a properly completed form SF 270 not to exceed $2,500 during federal FY 1995."

Delete Item H - (this item is redundant since it is contained in the special provisions found in appendix A).

Under Section II "The Borough agrees:" change the following items:

"H. Request funds to cover the Service's share of the agreement by submitting a properly completed form SF 270 not to exceed $42,500 during federal FY 1995."

Delete Item J - (this item is redundant since it is contained in the special provisions found in appendix A).

Under Section III "The Service agrees:" change the following item:

"B. To provide the Borough with funding to pay for agreement items II A,B,D,E and F not to exceed $42,500 during federal FY 1995."

"C. To reimburse the District for expenses incurred to pay for agreement item I D not to exceed $2,500 during federal FY 1995".

IN WITNESS WHEREOF, THE PARTIES HEREBY EXECUTE THIS AMENDMENT:

KODIAK SOIL AND WATER CONSERVATION DISTRICT
By: _____

Title: **District Chairman**
Date: 9/26/94

KODIAK ISLAND BOROUGH
By: _____

Title: **Borough Mayor**
Date: 7/26/94

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
By: _____

Title: **State Conservationist**
Date: 10/20/94

Agreement No. 68-0150-4-061

COOPERATIVE AGREEMENT
between
KODIAK SOIL AND WATER CONSERVATION DISTRICT,
KODIAK ISLAND BOROUGH
and the
UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

Relative to: The support and management of the "Clean Lakes for Kodiak" project.

Authority: Public Law 74-96, 16 U.S.C. 590a-f

THIS AGREEMENT, is made and entered into this 14th day of June 1994, by and between the Kodiak Soil and Water Conservation District (hereinafter called the "District"), Kodiak Island Borough (hereinafter called the "Borough") and the Soil Conservation Service of the United States Department of Agriculture.

Purpose:

The District, Borough and Service have a common objective of restoring the water quality, wildlife habitat, and anadromous fish habitat of three chains of lakes on Kodiak Island in the vicinity of the rural community of Kodiak. These three agencies along with several state agencies are coordinating efforts to protect and enhance these lakes so they will continue to provide quality of life amenities to people living on Kodiak Island. These lakes besides being an integral part of everyday life for the people of Kodiak are part of the scenic background of the community that draws tourists and sportsmen from around the world to enjoy this unique, pristine setting. The local community hopes to use this project to heighten people's awareness of their community and environment.

The need for a local person to facilitate the planning and implementation of a clean lakes program in Kodiak was recognized by all entities as an essential element to a successful project. The District will lead the local effort; however, to expedite the hiring of a local facilitator, the Borough will initially administer a part time, temporary position. The intent is at a later date this position will become the District's

Therefore, the District, Borough and Service deem it mutually advantageous to cooperate in this undertaking, and hereby agree as follows:

I. The District agrees:

A. To provide the leadership to coordinate the development and implementation of a "Clean Lakes for Kodiak" hydrologic unit plan.
B. To guide and facilitate the development of the plan through a local citizen's watershed management committee.

C. To provide supervision of the part time employee inconjunction with the local citizen's watershed management committee. The District also agrees to pursue creating this as their own job position.
D. To procure needed equipment including computer hardware and software needed to carry out this planning process.
E. To coordinate efforts with other local, state, federal and tribal entities who have an interest in this project.
F. To bill Service monthly on Standard Form 270 for costs incurred as per item I D of this agreement not to exceed $5,000 during federal FY 1994.
G. To comply with all requirements of the Special Provisions which are included in Attachment A.
H. To comply with all of the provisions of Office of Management and Budget (OMB) Circular A-102 and audit guidelines of Circular A-128, an regulation of the Secretary of Agriculture, a-f, 7CFR 3016.

II. The Borough agrees:

A. To administer a part time, temporary employee (until the District has acquired their own capability) to facilitate the coordination and planning necessary to implement this project inconjunction with the District, Service, Borough and a local citizens watershed management committee.
B. To provide necessary administrative oversight to maintain the part time position.
C. To furnish technical staff from the Borough's Mayor's Office to assist in data collection, planning and implementation of the "Clean Lakes for Kodiak" project.
D. To provide office space for the part time employee.
E. To furnish telephone, copier, cartographic products, other services and supplies needed by the part time employee.
F. To provide access to Borough vehicles for official business use.
G. To participate as an active member on the local watershed management committee for this project.
H. To bill Service monthly on Standard Form 270 to assist paying costs incurred as per items II A,B,D,E, and F of this agreement not to exceed $24,000 during federal FY 1994.
I. To comply with all requirements of the Special Provisions which are included in Attachment A.
J. To comply with all of the provisions of Office of Management and Budget (OMB) Circular A-102 and audit guidelines of Circular A-128, an regulation of the Secretary of Agriculture, a-f, 7CFR 3016.

III. The Service agrees:

A. To provide technical assistance in planning, resource inventory and assessment, project formulation and implementation in order to facilitate this process.
B. To provide the Borough with funding to pay for agreement items II A,B,D,E and F not exceed $24,000 during federal FY 1994.
C. To reimburse the District for expenses incurred to pay for agreement item I C not to exceed $5,000 during federal FY 1994.

IV. It is mutually agreed:

A. The primary of purpose of this agreement is to solve the problems identified and to meet the local objectives as outlined in the USDA Water Quality Plan, "Clean Lakes for Kodiak- Hydrologic Unit Plan, Kodiak, Alaska", data March 28, 1994.
B. To give the Service or the Comptroller General, through any authorized representative, access to and the right to examine all records, books, papers or documents related to this agreement.
C. This agreement may be modified by the State Conservationist acting for the Service, by the Chairman acting for the District, and by the mayor for the Borough.
D. This agreement shall be effective on the date of the last signature and shall continue in effect through 30 September 1994. It may be renewed for subsequent fiscal year by an exchange of correspondence between the State Conservationist for the Service, the Chairman for the District, and the mayor for the Borough.
E. This agreement may be terminated by either party upon 30 day written notice. It will be reviewed annually and revised or amended as needed. Additional items and costs will be set for remaining fiscal years during these annual reviews.
F. It is the intent of the Service, District, and Borough to fulfill their respective obligations under this agreement. However, commitments cannot be made beyond the period for which funds have been appropriated. In the event that funds from which the Service, District, or Borough may fulfill its obligations are not appropriated, this agreement will automatically terminate. In the event this agreement is terminated for any reason, the financial obligations of the parties will be as set forth in OMB Circular A-102.
G. No member of, or delegate to, Congress, or resident commissioner after his election or appointment, and either before or after he has qualified, and no officer, agent, or employee of the government shall be admitted to arise therefrom. The provision herein with respect to the interest or members of, or delegates to, Congress, and resident commissioners shall

not be construed to extend to any incorporated company where such agreement is made for the general benefit of such incorporated company.

H. This program will be conducted in compliance with the nondiscrimination provisions as contained in Title VI and VII of the Civil Rights Act of 1964 as amended, the Civil Rights Restoration Act of 1987 (Pub. Law 100-259) and other nondiscrimination statutes; namely, Section 504 of the Rehabilitation Act of 1973, Title IX of the Education Amendments of 1972, the Age Discrimination Act of 1975, and in accordance with the regulations of the Secretary of Agriculture (7CFR-15, Subparts A & B) ~~which provide that~~ no person in the United States shall on the grounds of race, color, national origin, age sex, religion, marital status, or handicap/disability be excluded from participation in, be denied the benefits of, or be otherwise excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity receiving federal financial and/or technical assistance from the Department of Agriculture or any agency thereof.

IN WITNESS WHEREOF the District, Borough and Service executed this agreement as of the date first above written.

KODIAK SOIL AND WATER CONSERVATION DISTRICT
By: Jani Burton
Title: **District Chairman**
Date: 6/1/94

KODIAK ISLAND BOROUGH
By: M-Selig
Title: **Borough Mayor**
Date: 6/2/94
ATTEST: Donna F. Smith

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
By:
Title: **State Conservationist**
Date: 6/14/94

ATTACHMENT A - SPECIAL PROVISIONS

I. DRUG-FREE WORKPLACE CERTIFICATION

II. CERTIFICATION REGARDING LOBBYING

III. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, AND OTHER RESPONSIBILITY MATTERS - PRIMARY COVERED TRANSACTIONS

IV. CLEAN AIR AND WATER CERTIFICATION

V. ASSURANCES AND COMPLIANCE

VI. EXAMINATION OF RECORDS

ATTACHMENT A - SPECIAL PROVISIONS

The signatories agree to comply with the following special provisions which are hereby attached to this agreement.

I. Drug-Free Workplace

By signing this agreement, the sponsors are providing the certification set out below. If it is later determined that the sponsors knowingly rendered a false certification, or otherwise violates the requirements of the Drug-Free Workplace Act, the Service, in addition to any other remedies available to the Federal Government, may take action authorized under the Drug-Free Workplace Act.

Controlled substance means a controlled substance in Schedules I through V of the Controlled Substances Act (21 U.S.C. 812) and as further defined by regulation (21 CFR 1308.11 through 1308.15);

Conviction means a finding of (including a plea of nolo contendere) or imposition of sentence, or both, by any judicial body charged with the responsibility to determine violations of the Federal or State criminal drug statutes;

Criminal drug statute means a Federal or non-Federal criminal statute involving the manufacturing, distribution, dispensing, use, or possession of any controlled substance;

Employee means the employee of a grantee directly engaged in the performance of work under a grant, including: (i) All direct charge employees; (ii) All indirect charge employees unless their impact or involvement is insignificant to the performance of the grant; and, (iii) Temporary personnel and consultants who are directly engaged in the performance of work under the grant and who are on the grantee's payroll. This definition does not include workers not on the payroll of the grantee (e.g., volunteers, even if used to meet a matching requirements; consultants or independent contractors not on the grantees' payroll; or employees of subrecipients or subcontractors in covered workplaces).

Certification:

A. The sponsors certify that it will or will continue to provide a drug-free workplace by:

(a) Publishing a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in the grantee's workplace and specifying the actions that will be taken against employees for violation of such prohibition;

(b) Establishing an ongoing drug-free awareness program to inform employees about--

(1) The danger of drug abuse in the workplace;

(2) The grantee's policy of maintaining a drug-free workplace;

(3) Any available drug counseling, rehabilitation, and employee assistance programs; and

(4) The penalties that may be imposed upon employees for drug abuse violations occurring in the workplace;

(c) Making it a requirement that each employee to be engaged in the performance of the grant be given a copy of the statement required by paragraph (a);

(d) Notifying the employee in the statement required by paragraph (a) that, as a condition of employment under the grant, the employee will --

(1) Abide by the terms of the statement; and

(2) Notifying the employer in writing of his or her conviction for a violation of a criminal drug statute occurring in the workplace no later than five calendar days after such a conviction;

(e) Notifying the Service in writing, within ten calendar days after receiving notice under paragraph (d)(2) from an employee or otherwise receiving actual notice of such conviction. Employers of convicted employees must provide notice, including position title, to every grant officer or other designee on whose grant activity the convicted employee was working, unless the Federal agency has designated a central point for the receipt of such notices. Notice shall include the identification number(s) of each affected grant;

(f) Taking one of the following actions, within 30 calendar days of receiving notice under paragraph (d)(2), with respect to any employee who is so convicted --

(1) Taking appropriate personnel action against such an employee, up to and including termination, consistent with the requirements of the Rehabilitation Act of 1973, as amended; or

(2) Requiring such employee to participate satisfactorily in a drug abuse assistance or rehabilitation program approved for such purposes by a Federal, State or local health, law enforcement, or other appropriate agency;

(g) Making a good faith effort to continue to maintain a drug-free workplace through implementation of paragraphs (a), (b), (c), (d), (e) and (f).

(h) Agencies shall keep the original of all disclosure reports in the official files of the agency.

B. The sponsors may provide a list of the site(s) for the performance of work done in connection with a specific project or other agreement.

II. Certification Regarding Lobbying (7 CFR 3018) (Applicable if this agreement exceeds $100,000) - The sponsors certify to the best of their knowledge and belief, that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the sponsors, to any person for influencing or attempting to influence an officer or employee of an agency, Member of Congress, and officer or employer of Congress, or a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress, in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form - LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

(3) The sponsors shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, Title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

III. Certification Regarding Debarment, Suspension, and Other Responsibility Matters - Primary Covered Transactions, (7 CFR 3017)

(1) The sponsors certify to the best of its knowledge and belief, that it and its principals:

(a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;

(b) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, state or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

(c) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (1)(b) of this certification; and

(d) Have not within a three-year period preceding this application/proposal has one or more public transactions (Federal, State or local) terminated for cause or default.

(2) Where the primary sponsor is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this agreement.

IV. Clean Air and Water Certification

(Applicable if this agreement exceed $100,000, or a facility to be used has been the subject of a conviction under the Clean Air Act (42 U.S.C. 1857c-8(c)(1) or the Federal Water Pollution Control Act (33 U.S.C. 1319(c)) and is listed by EPA, or is not otherwise exempt.)

The project sponsoring organization(s) signatory to this agreement certifies as follows:

(a) Any facility to be utilized in the performance of this proposed agreement is _____, is not _____, listed on the Environmental Protection Agency List of Violating Facilities.

(b) To promptly notify the State Administrative Officer prior to the signing of this agreement by SCS, of the receipt of any communication from the Director, Office of Federal Activities, U.S. Environmental Protection Agency, indicating that any facility which he proposes to use for the performance of the agreement is under consideration to be listed on the Environmental Protection Agency List of Violating Facilities.

(c) To include substantially this certification, including this subparagraph (c), in every nonexempt subagreement.

CLEAN AIR AND WATER CLAUSE

(Applicable only if the agreement exceeds $100,000, or a facility to be used has been the subject of a conviction under the Clean Air Act (42 U.S.C. 1857c-8(c)(1) or the Federal Water Pollution Control Act (33 U.S.C. (1319(c)) and is listed by EPA or the agreement is not otherwise exempt.)

A. The project sponsoring organization(s) signatory to this agreement agrees as follows:

(1) To comply with all the requirements of section 114 of the Clean Air Act as amended (42 U.S.C. 1857, et seq., as amended by Public Law 91-604) and section 308 of the Federal Water Pollution Control Act (33 U.S.C. 1251 et. seq., as amended by Public Law 92-500), respectively, relating to inspection, monitoring, entry, reports, and information, as well as other requirements specified in section 114 and section 308 of the Air Act and the Water Act, respectively, and all regulations and guidelines issued thereunder before the signing of this agreement by SCS.

(2) That no portion of the work required by this agreement will be performed in a facility listed on the Environmental Protection Agency List of Violating Facilities on the date when this agreement was signed by SCS unless and until the EPA eliminates the name of such facility or facilities from such listing.

(3) To use their best efforts to comply with clean air standards and clean water standards at the facilities in which the agreement is being performed.

(4) To insert the substance of the provisions of this clause in any nonexempt subagreement, including this subparagraph A.(4).

B. The terms used in this clause have the following meanings:

(1) The term "Air Act" means the Clean Air Act, as amended (42 U.S.C. 1857 et seq., as amended by Public Law 91-604).

(2) The term "Water Act" means Federal Water Pollution Control Act, as amended (33 U.S.C. 1251 et seq., as amended by Public Law 92-500).

(3) The term "clean air standards" means any enforceable rules, regulations, guidelines, standards, limitations, orders, controls, prohibitions, or other requirements which are contained in, issued under, or otherwise adopted pursuant to the Air Act or Executive Order 11738, an applicable implementation plan as described in section 110(d) of the Clean Air Act (42 U.S.C. 1857c-5(d)), and approved implementation procedure or plan under section 111(c) or section 111(d), respectively, of the Air Act (42 U.S.C. 1857c-6(c) or (d)), or an approved implementation procedure under section 112(d) of the Air Act (42 U.S.C. 1857c-7(d)).

(4) The term "clean water standards" means any enforceable limitation, control, condition, prohibition, standards, or other requirement which is promulgated pursuant to the Water Act or contained in a permit issued to a discharger by the Environmental Protection Agency or by a State under an approved program, as authorized by section 402 of the Water Act (33 U.S.C. 1342), or by a local government to ensure compliance with pretreatment regulations as required by section 307 of the Water Act (3 U.S.C. 1317).

(5) The term "compliance" means compliance with clean air or water standards. Compliance shall also mean compliance with the scheduled or plan ordered or approved by a court of competent jurisdiction, the Environmental Protection Agency or any air or water pollution control issued pursuant thereto.

(6) The term "facility" means any building, plant, installation, structure, mine, vessel or other floating craft, location or site of operations, owned leased, or supervised by a sponsor, to be utilized in the performance of an agreement or subagreement. Where a location or site of operations contains or includes more than one building, plant, installation, or structure, the entire location shall be deemed to be a facility except where the Director, Office of Federal Activities, Environmental Protection Agency, determines that independent facilities are collocated in one geographical area.

V. Assurances and Compliance

As a condition of the grant or cooperative agreement, the recipient assures and certifies that it is in compliance with and will comply in the course of the agreement with all applicable laws, regulations, Executive Orders and other generally applicable requirements, including those set out in 7 CFR 3015, 3016, 3017 and 3018 which hereby are incorporated in this agreement by reference, and such other statutory provisions as are specifically set forth herein.

VI. Examination of Records

Give the Service or the Comptroller General, through any authorized representative, access to and the right to examine all records, books, papers, or documents related to this agreement. Retain all records related to this agreement for a period of three years after completion of the terms of this agreement in accordance with the applicable OMB Circular.

Chris -
Additional Info.

Summary Report by Account

8/1/94 Through 1/23/97

3/10/97
Clean Lakes

Category Description	Clean Lakes	
INCOME/EXPENSE		
EXPENSES		
Administration		5,487.88
Ads		417.46
Auto:		
Mileage	80.33	
TOTAL Auto		80.33
Conferences		183.00
Equipment		5,152.38
Office		661.20
Payroll		13,716.78
Photography		2,205.00
Rent Paid		5,200.00
Secretarial		933.17
Supplies		35.05
Technical Srvcs		37,867.60
Telephone, Bus		45.65
Travel		1,409.58
Water Samples		22,730.34
TOTAL EXPENSES		96,125.42
TOTAL INCOME/EXPENSE		-96,125.42
Balance Forward		
Clean Lakes		0.00
TOTAL Balance Forward		0.00
OVERALL TOTAL		-96,125.42

Transaction Report by Category

8/1/94 Through 1/23/97

Date	Num	Description	Memo	Category	Clr	Amount
	INCOME/EXPENSE					
	EXPENSES					
	Administration					
9/13/94		Administration...		Administration		-720.00
11/22/...	17272	State of Alaska		Administration		-1,977.88
12/6/96		Kodiak Island ...		Administration		-2,790.00
	TOTAL Administration					-5,487.88
	Ads					
8/29/94	12520	Kodiak Publis...		Ads		-160.00
12/20/...	13866	Kodiak Publis...		Ads		-257.46
	TOTAL Ads					-417.46
	Auto:					
	Mileage					
6/20/95	15608	Bruce Short		Auto:Mileage		-45.24
1/30/96	17858	Bruce Short		Auto:Mileage		-22.04
7/31/96	22440	Bruce Short		Auto:Mileage		-5.22
8/21/96	22629	Bruce Short		Auto:Mileage		-7.83
	TOTAL Mileage					-80.33
	TOTAL Auto					-80.33
	Conferences					
9/20/94	12778	Washington U...	Sept. 28...	Conferences		-183.00
10/25/...	13138	AK Soil	AASW...	Conferences		-62.50
11/14/...		AK Soil	Ck #13...	Conferences		62.50
	TOTAL Conferences					-183.00
	Equipment					
10/18/...	13104	Marsh-McBirn...	Flow M...	Equipment		-3,976.43
3/20/95	14760	Bruce Short		Equipment		-277.49
4/11/95	14895	Continental W...	Petri Slide	Equipment		-124.35
4/11/95	14897	Cuba	Mesh W...	Equipment		-379.90
4/11/95	14952	VWR	Scale Sli...	Equipment		-394.21
	TOTAL Equipment					-5,152.38
	Office					
1/30/95	14195	Frontier	WordPe...	Office		-135.00
3/8/95		Kodiak Island ...	Copies	Office		-10.75
4/26/95		Kodiak Island ...	Copies	Office		-19.20
5/18/95		Kodiak Island ...	Copies	Office		-64.60
6/12/95		Kodiak Island ...	Copies	Office		-17.05
7/5/95		Kodiak Island ...	Copies	Office		-46.10
9/5/95		Kodiak Island ...	Copies	Office		-0.45
12/8/95		Kodiak Island ...	Copies	Office		-4.70

Transaction Report by Category

8/1/94 Through 1/23/97

Date	Num	Description	Memo	Category	Clr	Amount
12/26/...	17556	Myra Buck	Quicken...	Office		-34.99
4/9/96	38	Kodiak Island ...	Copies-...	Office		-25.86
6/1/96		Kodiak Island ...	Copies	Office		-66.90
7/1/96		Kodiak Island ...	Copies	Office		-48.70
7/1/96		Kodiak Island ...	Copies	Office		-158.00
8/1/96		Kodiak Island ...	Copies	Office		-0.20
10/1/96		Kodiak Island ...	Copies	Office		-14.40
12/23/...		Kodiak Island ...	Copies	Office		-14.30
		TOTAL Office				-661.20
		Payroll				
8/13/94		Temporary Help		Payroll		-1,901.13
8/13/94		Unemploymen...		Payroll		-37.64
8/13/94		FICA Taxes		Payroll		-145.44
9/10/94		Temporary Help		Payroll		-189.52
9/10/94		Unemploymen...		Payroll		-3.75
9/10/94		FICA Taxes		Payroll		-14.50
9/10/94		Workers Com...		Payroll		-9.19
9/14/94		CDD Wages P...	091294	Payroll		-32.46
9/30/94		Fin Wages		Payroll		-97.49
10/28/...		Allocated Salar...	Attend ...	Payroll		-929.72
11/5/94		Temporary Help		Payroll		-307.97
11/5/94		Unemploymen...		Payroll		-6.10
11/5/94		FICA Taxes		Payroll		-23.56
11/5/94		Workers Com...		Payroll		-14.94
11/19/...		Temporary Help		Payroll		-568.56
11/19/...		Unemploymen...		Payroll		-11.26
11/19/...		FICA Taxes		Payroll		-43.49
11/19/...		Workers Com...		Payroll		-27.58
12/3/94		Temporary Help		Payroll		-379.04
12/3/94		Unemploymen...		Payroll		-2.50
12/3/94		FICA Taxes		Payroll		-29.00
12/3/94		Workers Com...		Payroll		-18.38
1/14/95		Temporary Help		Payroll		-387.04
1/14/95		Unemploymen...		Payroll		-7.90
1/14/95		FICA Taxes		Payroll		-29.61
1/14/95		Workers Com...		Payroll		-18.77
2/11/95		Temporary Help		Payroll		-217.71
2/11/95		Unemploymen...		Payroll		-4.44
2/11/95		FICA Taxes		Payroll		-16.66
2/11/95		Workers Com...		Payroll		-10.56
3/11/95		Temporary Help		Payroll		-1,082.50
3/11/95		Unemploymen...		Payroll		-22.08
3/11/95		FICA Taxes		Payroll		-82.82
3/11/95		Workers Com...		Payroll		-52.50
3/25/95		Temporary Help		Payroll		-193.52
3/25/95		Unemploymen...		Payroll		-3.95
3/25/95		FICA Taxes		Payroll		-14.81
3/25/95		Workers Com...		Payroll		-9.39
4/5/95		CDD Wages P...	032595	Payroll		-98.68
4/13/95		CDD Wages P...	040895	Payroll		-222.03
4/22/95		Temporary Help		Payroll		-459.61
4/22/95		Unemploymen...		Payroll		-9.38
4/22/95		FICA Taxes		Payroll		-35.16
4/22/95		Workers Com...		Payroll		-22.29
4/27/95		CDD Wages P...	042295	Payroll		-167.22
5/11/95		CDD Wages P...	050695	Payroll		-185.03
5/20/95		Temporary Help		Payroll		-1,620.73

Transaction Report by Category

8/1/94 Through 1/23/97

Date	Num	Description	Memo	Category	Clr	Amount
5/20/95		Unemploymen...		Payroll		-33.06
5/20/95		FICA Taxes		Payroll		-123.99
5/20/95		Workers Com...		Payroll		-78.61
6/14/95		CDD Wages P...	060595	Payroll		-37.01
6/30/95		CDD Wages P...	0695	Payroll		-37.13
7/1/95		Temporary Help		Payroll		-604.75
7/1/95		Unemploymen...		Payroll		-12.34
7/1/95		FICA Taxes		Payroll		-46.26
7/1/95		Workers Com...		Payroll		-0.27
7/29/95		Salaries		Payroll		-490.21
7/29/95		FICA Taxes		Payroll		-36.83
7/29/95		Retirement		Payroll		-56.72
7/29/95		Workers Com...		Payroll		-2.35
8/12/95		Salaries		Payroll		-260.75
8/12/95		FICA Taxes		Payroll		-19.59
8/12/95		Group Insurance		Payroll		-40.19
8/12/95		Retirement		Payroll		-30.17
8/12/95		Workers Com...		Payroll		-1.25
8/26/95		Salaries		Payroll		-229.46
8/26/95		FICA Taxes		Payroll		-17.24
8/26/95		Retirement		Payroll		-26.55
8/26/95		Workers Com...		Payroll		-1.10
12/16/...		Salaries		Payroll		-448.98
12/16/...		FICA Taxes		Payroll		-33.76
12/16/...		Group Insurance		Payroll		-65.90
12/16/...		Retirement		Payroll		-50.56
12/16/...		Workers Com...		Payroll		-2.16
4/6/96		Salaries		Payroll		-42.76
4/6/96		Unemploymen...		Payroll		-1.03
4/6/96		FICA Taxes		Payroll		-3.21
4/6/96		Retirement		Payroll		-4.95
4/6/96		Workers Com...		Payroll		-0.21
5/1/96		Salaries		Payroll		-203.11
5/1/96		Unemploymen...		Payroll		-4.48
5/1/96		FICA Taxes		Payroll		-15.26
5/1/96		Group Insurance		Payroll		-30.62
5/1/96		Retirement		Payroll		-23.50
5/1/96		Workers Com...		Payroll		-0.97
6/1/96		Salaries		Payroll		-288.63
6/1/96		Unemploymen...		Payroll		-6.37
6/1/96		FICA Taxes		Payroll		-21.69
6/1/96		Group Insurance		Payroll		-16.11
6/1/96		Retirement		Payroll		-33.40
6/1/96		Workers Com...		Payroll		-1.38
7/1/96		Workers Com...	Addt'l 6/...	Payroll		-1.12
9/1/96		Salaries		Payroll		-346.67
9/1/96		FICA Taxes		Payroll		-26.07
9/1/96		Group Insurance		Payroll		-45.47
9/1/96		Retirement		Payroll		-38.27
9/1/96		Workers Com...		Payroll		-1.70
		TOTAL Payroll				-13,716.78
		Photography				
9/27/94	12815	Kodiak Map	Air Phot...	Photography		-2,000.00
11/14/...	13363	Aero Map US	Color Sl...	Photography		-205.00
		TOTAL Photography				-2,205.00

Transaction Report by Category

8/1/94 Through 1/23/97

Date	Num	Description	Memo	Category	Clr	Amount
		Rent Paid				
9/14/94		Kodiak Island ...	August ...	Rent Paid		-400.00
11/3/94		Kodiak Island ...	October	Rent Paid		-200.00
11/4/94		Kodiak Island ...	Novem...	Rent Paid		-200.00
12/5/94		Kodiak Island ...	December	Rent Paid		-200.00
1/4/95		Kodiak Island ...	January	Rent Paid		-200.00
2/15/95		Kodiak Island ...	February	Rent Paid		-200.00
3/1/95		Kodiak Island ...	March	Rent Paid		-200.00
4/3/95		Kodiak Island ...	April	Rent Paid		-200.00
5/9/95		Kodiak Island ...	May	Rent Paid		-200.00
6/6/95		Kodiak Island ...	June	Rent Paid		-200.00
7/18/95		Kodiak Island ...	July	Rent Paid		-200.00
8/8/95		Kodiak Island ...	August	Rent Paid		-200.00
9/2/95		Kodiak Island ...	Septem...	Rent Paid		-200.00
10/11/...		Kodiak Island ...	October	Rent Paid		-200.00
11/6/95		Kodiak Island ...	Novem...	Rent Paid		-200.00
12/13/...		Kodiak Island ...	December	Rent Paid		-200.00
1/5/96		Kodiak Island ...	January	Rent Paid		-200.00
2/2/96		Kodiak Island ...	February	Rent Paid		-200.00
3/1/96		Kodiak Island ...	March	Rent Paid		-200.00
4/1/96		Kodiak Island ...	April	Rent Paid		-200.00
5/1/96		Kodiak Island ...	May	Rent Paid		-200.00
6/1/96		Kodiak Island ...	May	Rent Paid		-200.00
7/1/96		Kodiak Island ...		Rent Paid		-200.00
8/1/96		Kodiak Island ...		Rent Paid		-200.00
9/1/96		Kodiak Island ...		Rent Paid		-200.00
		TOTAL Rent Paid				-5,200.00
		Secretarial				
3/5/96	18112	Myra Buck		Secretarial		-316.58
7/17/96	22283	Myra Buck		Secretarial		-172.68
8/6/96	22455	Jennifer Dann...		Secretarial		-50.37
11/19/...	23540	Gale Gardner		Secretarial		-93.54
1/23/97	24211	The Bottom Li...		Secretarial		-300.00
		TOTAL Secretarial				-933.17
		Supplies				
1/30/96	17858	Bruce Short	Fish Tac	Supplies		-19.05
7/31/96	22440	Bruce Short	Stakes ...	Supplies		-16.00
		TOTAL Supplies				-35.05
		Technical Srvcs				
3/20/95	14760	Bruce Short	Flow M...	Technical Srvcs		-1,658.25
5/16/95	15276	Bruce Short		Technical Srvcs		-2,117.19
6/20/95	15608	Bruce Short		Technical Srvcs		-2,292.44
6/30/95	15886	Bruce Short		Technical Srvcs		-1,072.01
10/2/95	16668	Aqualife		Technical Srvcs		-3,210.00
10/2/95	16715	Bruce Short		Technical Srvcs		-2,696.71
1/30/96	17858	Bruce Short	100 hou...	Technical Srvcs		-1,650.00
7/9/96	22212	Aqualife		Technical Srvcs		-8,250.00
7/17/96	22279	Aqualife		Technical Srvcs		-3,015.00
7/31/96	22440	Bruce Short	19 hour...	Technical Srvcs		-313.50
8/21/96	22629	Bruce Short	25 hour...	Technical Srvcs		-412.50

Transaction Report by Category
8/1/94 Through 1/23/97

Date	Num	Description	Memo	Category	Clr	Amount
8/27/96	22643	Aqualife		Technical Srvcs		-1,650.00
8/27/96	22656	Helga Descloux	Historic...	Technical Srvcs		-500.00
1/14/97	24076	Aqualife		Technical Srvcs		-3,510.00
1/22/97	24183	Roiland Jones		Technical Srvcs		-3,000.00
1/22/97	24187	Kodiak Greens		Technical Srvcs		-2,520.00
		TOTAL Technical Srvcs				-37,867.60
		Telephone, Bus				
10/25/...		Kodiak Island ...	First Qu...	Telephone, Bus		-44.84
9/25/95	16587	Alascom, I		Telephone, Bus		-0.81
		TOTAL Telephone, Bus				-45.65
		Travel				
9/20/94	12732	Bud Cassidy	Sept. 26...	Travel		-157.00
10/4/94	12879	Highliner	Trip to ...	Travel		-640.00
10/4/94	12908	WC Bell	Hotel	Travel		-201.78
10/25/...	13150	Mark Blakeslee	AASW...	Travel		-52.00
10/25/...	13205	Wedgewood H...	AASW...	Travel		-64.80
11/15/...	13364	Highliner	Round ...	Travel		-294.00
		TOTAL Travel				-1,409.58
		Water Samples				
11/13/...	17194	Elemental Ana...		Water Samples		-1,080.00
4/9/96	21281	Eco-Logic	36 @ $75	Water Samples		-2,700.00
4/23/96	21449	State of Alaska	Analysis	Water Samples		-1,615.21
6/1/96	21921	State of Alaska	Analysis	Water Samples		-7,174.13
6/13/96	21858	City of Kodiak		Water Samples		-260.00
6/30/96	22315	State of Alaska	Analysis	Water Samples		-3,947.80
8/21/96	22594	ERA Aviation	Shipping	Water Samples		-80.00
8/21/96	22633	State of Alaska	Analysis	Water Samples		-1,523.20
10/24/...	23280	City of Kodiak		Water Samples		-110.00
1/14/97	24109	Kodiak Region...		Water Samples		-4,240.00
		TOTAL Water Samples				-22,730.34
		TOTAL EXPENSES				-96,125.42
		TOTAL INCOME/EXPENSE				-96,125.42
		Balance Forward				
		Clean Lakes				
8/1/94		Opening Balan...		[Clean Lakes]	R	0.00
		TOTAL Clean Lakes				0.00
		TOTAL Balance Forward				0.00
		OVERALL TOTAL				-96,125.42