

Public-data File 92-8

**Evaluation of Two Springs at Anchor Point, Alaska,
for Water-Supply Potential**

By

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Alaska Division of Water

April 1992

THIS REPORT HAS NOT BEEN REVIEWED FOR
TECHNICAL CONTENT (EXCEPT AS NOTED IN
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INTRODUCTION

The Alaska Division of Water was requested by the Alaska Division of Parks and Outdoor Recreation (ADPOR) to evaluate two natural springs at Anchor Point, Alaska, for potential use as public water supplies at the Anchor River State Recreation Area. The springs are located on opposite sides of the Anchor River downstream of the new and old Sterling Highway bridges over the river (fig. 1, fig. 2). The north spring is also known as spring number 1 and the south spring is known as spring number 2, or the Steelhead spring. This report presents the results of a one-day water-sampling and reconnaissance trip to the springs, a review of the hydrogeology of the sites, and an evaluation of the suitability of the springs as public water supply sources.

ACKNOWLEDGMENTS

Funding for this study was provided by ADPOR under Reimbursable Services Agreement No. 1027091. Roger MacCampbell and Sid Richards of ADPOR assisted with field logistics.

GEOLOGIC SETTING

The geology of the Anchor Point area is characterized by Quaternary-age glacial and alluvial deposits overlying continental clastic sedimentary rocks (sandstone, siltstone, conglomerate, and coal) of the Tertiary-age Kenai Group (Reger, 1977). Kenai Group rocks are exposed in the lower Anchor River valley and have been penetrated by a number of water wells in the Anchor Point area.

The Anchor River is the predominant geomorphic feature in Anchor Point, occupying a valley approximately 200 to 300 m wide incised approximately 30 to 40 m below the surrounding uplands (fig. 2). The springs emanate from steeply-sloping valley walls and flow overland towards the Anchor River. Uplands near the springs consist of sandy and gravelly glacial outwash (R.D. Reger, oral communication, 1992) underlain by till, glaciomarine or glaciolacustrine deposits, or sedimentary rocks. Gravel pits are located in this outwash unit, and available records show that several wells in the uplands near the springs tap unconfined aquifers less than 20 m deep. An aquifer test has been conducted on one such well (Petrik and Munter, 1991).

WATER QUALITY

Field Sampling Procedures

Although no quality assurance plan was written prior to the sampling trip, field personnel generally followed the sampling procedures of the U.S. Geological Survey (USGS, 1977). Several on-site water quality measurements were made at the two springs. Water temperature, dissolved oxygen concentration, and specific conductance were measured with a Model 4041 Hydrolab that was pre- and post-calibrated in the office according to the instrument's maintenance instructions. The pH of the water was measured with a Beckman Φ 11 Ph meter that was calibrated on-site with standard buffers. Total alkalinity was measured in the field by the incremental titration method with a Hach digital titrator and Beckman Φ 11 pH meter, according to Method 310.1 (pp 310.1-1 to 310.1-3) of the U.S. Environmental Protection Agency (1983).

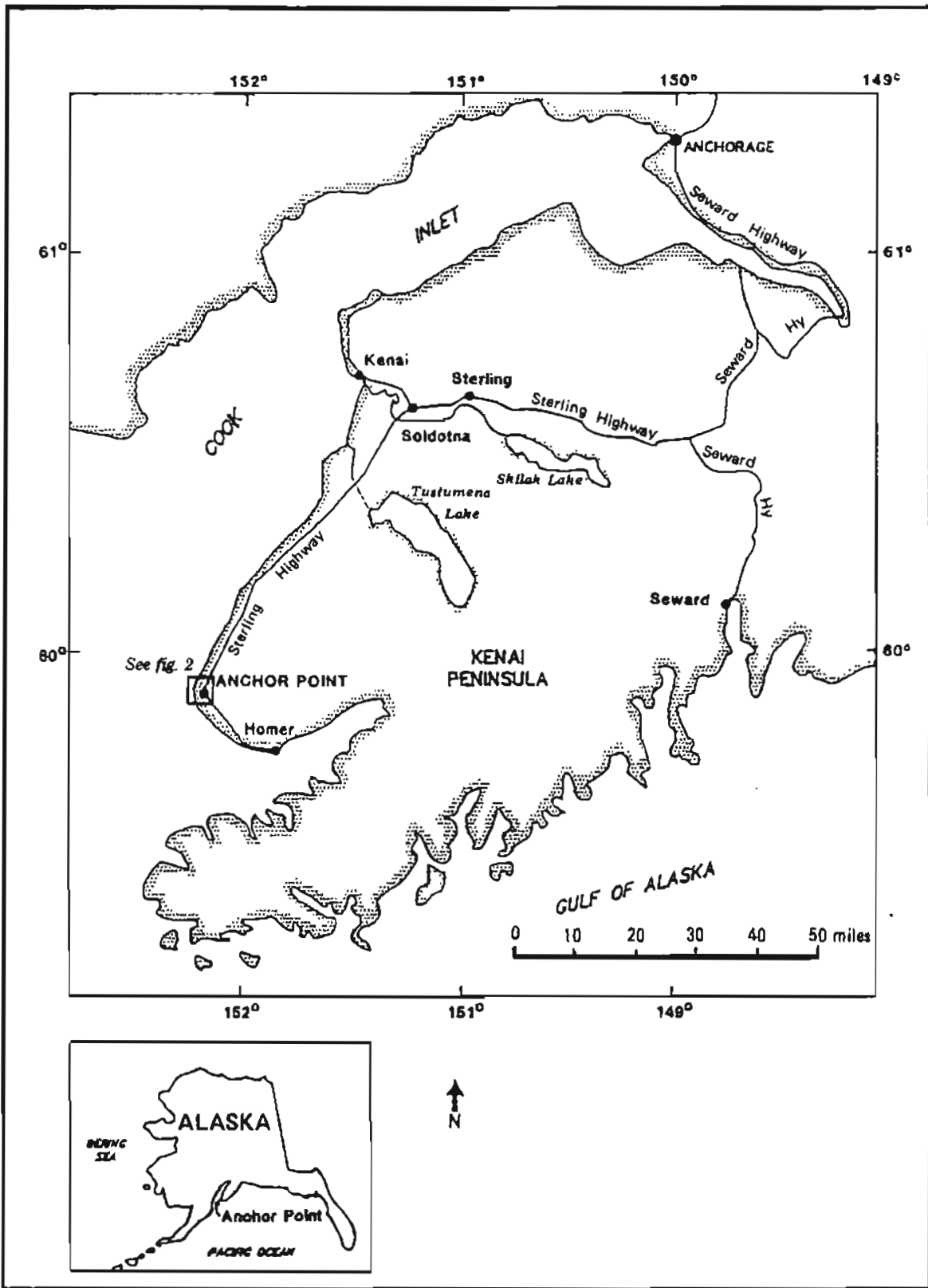


Figure 1. Map showing location of Anchor Point, Alaska. Base map modified from *Ecology and Environment* (1986).

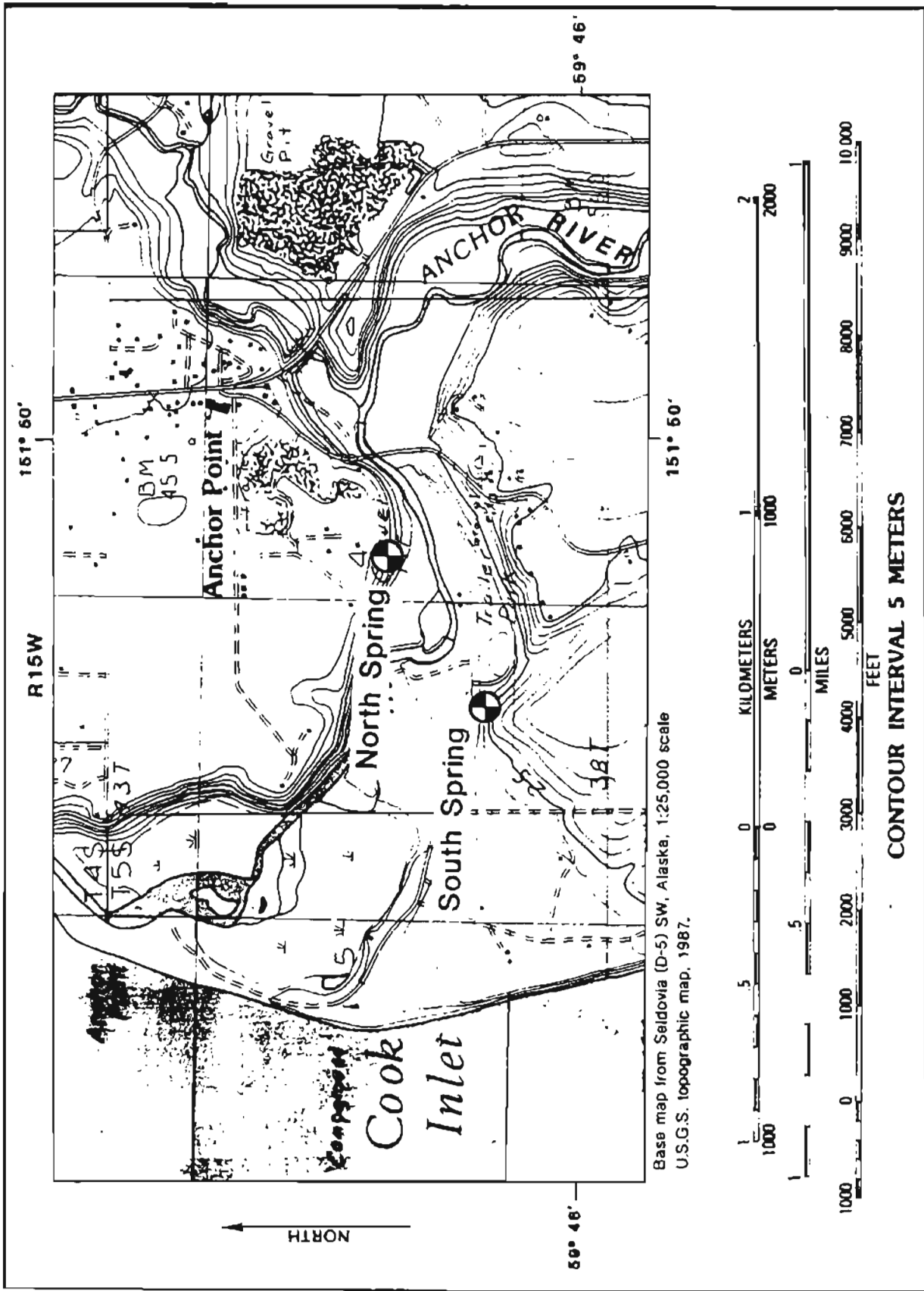


Figure 2. Location map of north and south springs (modified from Petrik and Munter, 1991).

Unfiltered, untreated spring water emanated from a PVC overflow pipe at both springs. Labelled water bottles were filled by holding the bottles below the outlet of the PVC overflow pipe. Water samples requiring on-site preservation were collected in samples bottles that were pre-charged with preservative at Chemical and Geological Laboratory of Alaska. Water samples were immediately placed in coolers filled with blue ice packs and delivered to Chemical and Geological Laboratory of Alaska in Anchorage Alaska by Alaska Division of Parks personnel.

Results and Discussion

Field measurements and notes are shown in Appendix A. The water from both springs appeared to be odorless and colorless, and also showed low-turbidity. Both springs have low water temperature, low specific conductance, low alkalinity, and high dissolved oxygen saturation. Low alkalinity indicates that the springs have a poor ability to neutralize acids. The Beckman pH meter, the most reliable of the two field pH instruments, recorded a pH of 6.6 and 6.25 at the north spring and south spring, respectively. Thus, both springs have acidic water.

Excluding combined radium-226 and 228, gross beta, strontium-90, and tritium, samples were analyzed for all of the water quality contaminants that are listed in the Alaska Drinking Water Regulations, Title 18, Chapter 80.070 of the Alaska Administrative Code (Alaska Department of Environmental Conservation, 1991). The water quality analyses of the two springs are shown in Appendix B.

The laboratory analyses indicate that both springs have good water quality. No water quality contaminant exceeds the primary maximum contaminant concentration level for a public water system listed in the Alaska Drinking Water Regulations 18 ACC 80 (ADEC, 1991). The south spring field pH of 6.25 is the only contaminant that is outside the secondary maximum contaminant concentration level range of 6.5 to 8.5 for a public water system listed in the Alaska Drinking Water Regulations (ADEC, 1991).

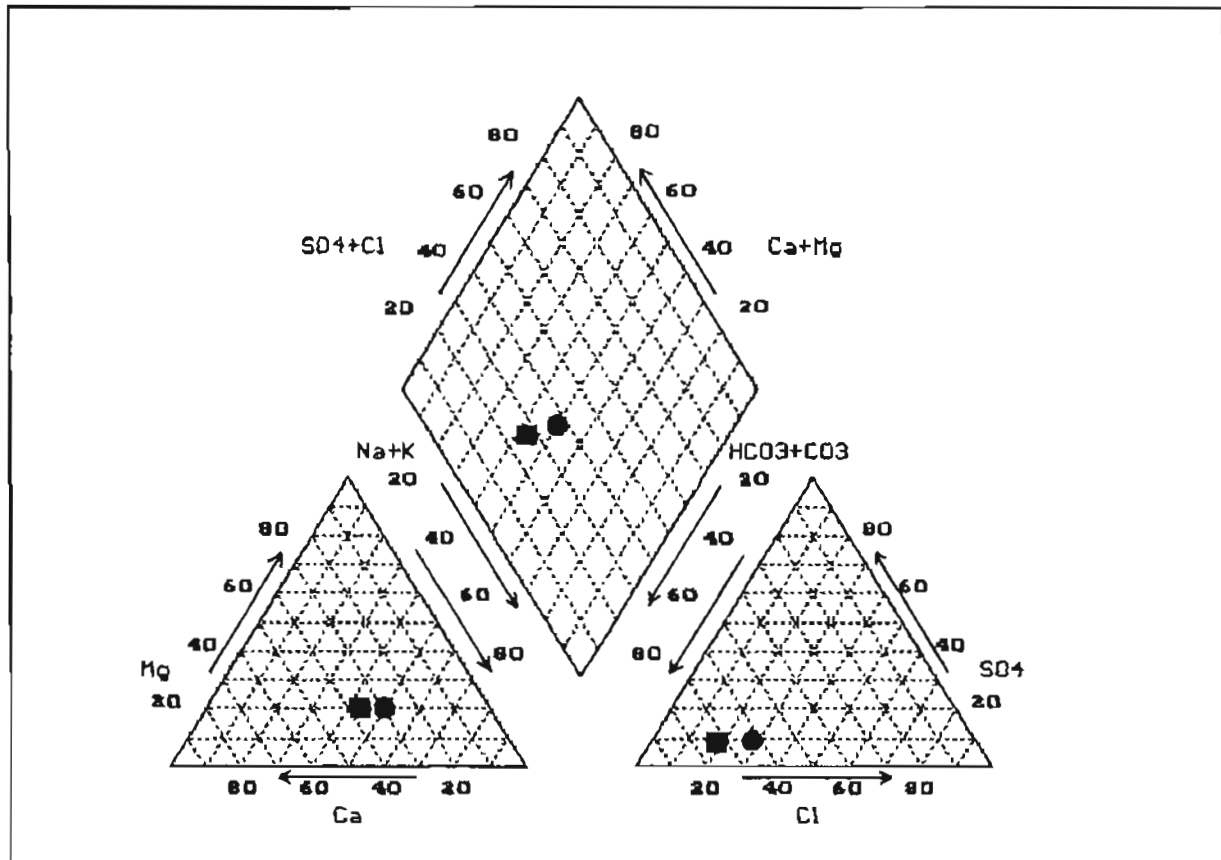
The calculated hardness, based on milliequivalents per liter of calcium and magnesium, is 15 mg/l in the north spring and 24 mg/l in the south spring. Therefore, both springs have soft water (Hem, 1985). The Langlier Index is negative at both springs, indicating that spring water is somewhat corrosive to metal pipes. If metal pipes are used in a water distribution system, the corrosive tendency of the water will deteriorate the metal pipes over time and could produce higher dissolved metal concentrations in the water.

Water-type classification of the two springs, based on major ionic compositions, is shown in a trilinear diagram (fig. 3). The springs have a similar water type. Both springs are classified as mixed-cation bicarbonate water because no one cation predominates. The total dissolved solid concentration in the north spring (44 mg/l) is only slightly lower than in the south spring (69 mg/l). These low dissolved solid concentrations in both springs suggest a short residence time of water in the aquifer.

INTERPRETATION OF SOURCES OF SPRING DISCHARGES

Both the north and south springs discharge ground water from shallow unconfined aquifers underlying upland areas immediately upslope of the respective springs. The springs occupy logical points of discharge for local ground-water flow systems in the aquifers, and the water chemistry is characteristic of shallow ground water with relatively short

residence time in the flow system. Recharge for the south spring occurs south of the spring, and recharge for the north spring occurs north of the spring. Most recharge of the ground-water systems supplying these springs probably occurs within 1 km of each spring. The sparsity of wells in the area for mapping the water table, however, precludes a more exact delineation of recharge areas.



EXPLANATION

- south spring (south side of Anchor River)
- north spring (north side of Anchor River)

Figure 3. Water type classification of two springs at Anchor Point, Alaska. See figure 2 for locations of springs.

The south spring is located about 35 m in elevation below the top of the bluff south of the spring. The north spring is located about 10 to 15 m in elevation below the top of the bluff north of the spring. These distances are good estimates of the maximum depths of the aquifers supplying the respective springs.

SUITABILITY OF THE SPRINGS FOR WATER-SUPPLY DEVELOPMENT

The north and south springs were estimated to be discharging approximately 1.6 and 0.56 l/s (or 36,000 and 13,000 gallons per day), respectively, on February 4, 1992. Although no other discharge estimates are available, the observed discharges are probably typical of

wintertime low flows, and could be used for water-system design purposes. Current water quality is acceptable for drinking water purposes.

The aquifers supplying the springs may be vulnerable to contamination because of their shallow depth and absence of confining units. Kenai Peninsula Borough plat maps show the presence of numerous platted lots that are upgradient and within 0.5 km of the south spring. These lots are long-term potential sources of contamination. Upgradient of the north spring, lower density development has occurred close to the springs. Further north (greater than 0.5 km to the north), denser development has occurred.

The potential for contamination of both springs is similar to potential contamination threats to ground-water wells throughout similarly developed areas on the Kenai Peninsula where water table aquifers are widely used. Although development structures and monitoring of the springs may best be designed by considering the springs themselves as surface water, long-term protection of recharge areas for the springs is probably best accomplished by regarding the spring water as ground water because ground water is what feeds the spring discharges.

Two known sources of benzene contamination occur north of the Anchor River at Anchor Point. ADEC (1988) delineated a benzene plume northeast of the north spring that appears to be too far east to present a threat to water quality of the north spring. Rozak and ACES (1992) show a plume located about 0.9 km north of the north spring. The leading edge of the plume is currently, as of 1992, about 60 m from the source of contamination. This plume could be in the recharge area for the north spring, but is probably far enough away that dilution and degradation of the harmful contaminants in the plume would occur before they reach the north spring. These two plumes illustrate that older developed areas located north of the north spring may have a greater potential for contamination of ground-water from fuel components or other contaminants than newer residential areas to the south.

REFERENCES CITED

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Rozak, Ronald T., Consulting Engineer, and Alaska Construction and Engineering Surveying (ACES), 1992, Site assessment and cleanup plan of portions of tracts 7B and 7C, S.J. Chapman addn. no. 14, filed as plat #86-32 in the Homer Recording District, and also a portion of the NE1/4, NW1/4, sec. 4, T.5S., R.15W., S.M., AK: unpublished map from Alaska Department of Environmental Conservation (Soldotna) files, 1 sheet, scale 1:480.

U.S. Environmental Protection Agency, 1983, Methods for chemical analysis of water and wastes: U.S. Environmental Protection Agency, EPA-600/4-79-020, 1 volume.

U.S. Geological Survey, 1977, National handbook of recommended methods for water-data acquisition: U.S. Geological Survey, Office of Water Data Coordination, Reston, VA, 2 volumes.

APPENDIX A

Field Data Sheets

STATE OF ALASKA - DEPARTMENT OF NATURAL RESOURCES
 Division of Geological & Geophysical Surveys
 PO BOX 772116, Eagle River AK 99577-2116 - Ph. (907) 696-0070

Div
Notes Sid Richards
 Roger McCampbell

WATER QUALITY FIELD NOTES - GROUND WATER

"Anchor River State Recreation Area"

Location/Project: Anchor River State Park Spring Evaluation Date: 2-4-92 Collected by: Munker & Maurer

Well Owner: Bruce Kyttonen (H.K.) Weather conditions: ~20° cloudy -6°C -7.5°C

Use of well: None Well name: Steelhead Spring - south side #2 (SOUTH SPRING)

Sampling equipment (for measuring water level, purging, sampling and filtering - include model if appropriate):

Hydratub B / 12.3 volts 2950 barometric pressure

Casing material: PVC 4' x 3" Time sample withdrawn: 1130 HRS / 1143 HRS / DO = 9.8 1108

Casing diameter: _____ 0% DO saturation P = 7390
 Field water temperature (°C)/time: 2.6°C / 1103 AM

Casing condition: used Field conductivity (uncorrected)/time: 110/104

Total depth to water (m): surface Field conductivity (slope corrected): 100

Depth to bottom of well (m): _____ Field pH (standard units)/time: 6.9 / 1105

Volume of H₂O in well (gal): _____ Turbidity (Y/N): N

Pressure tank volume (gal): _____ Color (Y/N): N Odor (Y/N): N (No taste)

Volume to be purged (4 X vol. in well): _____ Hach Iron: _____ mg/l Hach Nitrate: _____ mg/l

Time purging began: _____ Time purging completed: _____ Hach Hardness: _____ mg/l as CaCO₃

Purged Dry? (Y/N): _____ Well cap and lock replaced? (Y/N): _____

Some All bottles precharged w/ preservative

Bottle No:							1139 HRS	1140	1141
Analysis:	Inorganic + Ca, Mg	Sec. Contaminants	Inorganics + Si	Sec. Contaminants	Gross Alpha	THM	Herbicides	Pesticides	Vol. Organics
Treatment:	unfiltered, HNO ₃ well-mixed	unfiltered, acidified	field-filtered, acidified	field-filtered, unacidified					
volume (ml)	125						1l. Amber	1l. Amber	25ml
preservative	HNO ₃	HNO ₃	None	None		Non-Salts			HCl

Total Coliform
 Raw water
 1000 ml
 NONE

Alkalinity: Sample size 100 ml; H₂SO₄ N° 0.16 (factor 0.1) Instruments (Na₂SO₃) Beckman/digital

TITER (digits)	pH	TITER (digits)	pH	TITER (digits)	pH	TITER (digits)	pH
5.62 initial reading		150 ml	5.68	360 ml	5.36	425	3.65
Temp: 6.7°C @ 1209		180 ml	5.68	390 ml	4.54	430	3.59
		210 ml	5.59	395 ml	4.53	435	3.51
0	5.69	230 ml	5.59	400 ml	4.28	440	3.44
30 ml	5.71	250 ml	5.57	405 ml	4.14		
60 ml	5.74	280 ml	5.56	410 ml	4.05		
90 ml	5.72	310 ml	5.54	415 ml	3.90		
120 ml	5.71	331 ml	5.49	420 ml	3.89		

finish 1221
 Alkalinity = 39 mg/L as CaCO₃

COMMENTS: Discharge measured w/ 3 lb coffee can out of pipe. Filled in 10.4 sec, filled twice (29.72 - 7.98) ÷ 2. Pipe captures approx. 50% of flow.

Spring had been evaluated 3' wide 2' long 2" deep, water ~ 1 ft below original LS w/ down and over flow pipe pH = 6.25 @ 2.2°C w/ Beckman 1233

WATER QUALITY FIELD NOTES - GROUND WATER

w/ Sid Richards
 or Roger Mac Campbell

Location/Project: Anchor River State Barona Spring #1 Date: 2-4-92 Collected by: Munster Mauer

Well Owner: Div of Parks Weather conditions: -25° cloudy breezy -4°

Use of well: Domestic summer only maybe Well name: Div Parks Spring No. 1 (NORTH SPRING)

Sampling equipment (for measuring water level, purging, sampling and filtering - include model if appropriate): _____

HydroLab B 12.3 volts Bar. Pressure = 29.95

Casing material: 4" PVC 10' long Time sample withdrawn: 1443-1453 DO = 12.3

Casing diameter: _____ % D.O. saturation = 88% Field water temperature (°C)/time: 2.2°C / 1417

Casing condition: OK Field conductivity (uncorrected)/time: 85 / 1419

Total depth to water (ft): _____ Field conductivity (slope corrected): 75

Depth to bottom of well (ft): _____ Field pH (standard units)/time: HydroLab 6.5

Volume of H₂O in well (gal): _____ Turbidity (Y/N): N

Pressure tank volume (gal): _____ Color (Y/N): N Odor (Y/N): N

Volume to be purged (4 X vol. in well): _____ Hach Iron: _____ mg/l Hach Nitrate: _____ mg/l

Time purging began: _____ Time purging completed: _____ Hach Hardness: _____ mg/l as CaCO₃

Purged Dry? (Y/N): _____ Well cap and lock replaced? (Y/N): _____

Some bottles precharged w/ preservative

Bottle No:	1490	1441	1442	1443	6 ROS	1446	1447	1449	1451	145
Analysis:	Iron, w/ Ca, Mg, K	Sec Contain. Metals	Sec Contain. Si	Sec Contain.	ALPHA	THM	Residual	Residual	Residual	Total Diss. Sol.
Treatment:	unfiltered, well-mixed	unfiltered, acidified	field filtered, acidified	field filtered, unacidified		raw	raw	raw		
volume (ml)										
preservative	HNO ₃	HNO ₃	None	None	NONE	Na ₂ SO ₃	NONE	NONE	HCL	NONE

Alkalinity: Sample size 100 ml; H₂SO₄ 0.16N (factor 0.1) Instruments Beckman digital titrator

TITER (digits)	pH	TITER (digits)	pH	TITER (digits)	pH	TITER (digits)	pH
initial	5.73	210	5.31	280	3.75		
@ 1515		240	4.32	285	3.70		
30ml	5.73	245	4.17	290	3.67		
60ml	5.72	250	4.10				
90ml	5.69	255	4.04				
120ml	5.66	260	3.96				
150ml	5.62	265	3.89				
180ml	5.52	270	3.83				

Alkalinity = 23 mg/l
as CaCO₃

COMMENTS: No water rights? - was filled but full / spring basin 6' wide 4' long 1-2' deep
w/ wood frame & pre-pipe overflows pH = 6.6 w/ Beckman pH @ 1437
Estimated pipe discharge = 10 gpm (not measured)
Sampled from side Pipe @ = approx. 40% of total flow
Basin bottom is gravel w/ some silt in ravine

APPENDIX B

Laboratory Results

(Note: Steelhead spring = south spring
and Division of Parks spring #1 = north spring)



CHEMICAL & GEOLOGICAL LABORATORY

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO.

5630 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343 FAX: (907) 561-5301

ANALYSIS RESULTS for INVOICE # 50905
 Chemlab Ref. # 92.0440 Sample # 1 Matrix: WATER

Client Sample ID : STEELHEAD SPRING ANCHOR POINT
 PWSID : UA
 Collected : FEB 4 92 @ 11:32 hrs.
 Received : FEB 5 92 @ 09:10 hrs.
 Preserved with : AS REQUIRED

Client Name : AK PARKS
 Client Acct : AKDPKAP
 BPO# : PO# : NONE RECEIVED
 Req# :
 Ordered By : SID RICHARDS

Analysis Completed : FEB 13 92
 Laboratory Supervisor : STEPHEN C. EDE
 Released By : *Stephen C. Ede*

Send Reports to:
 1) AK PARKS
 2)

Parameter	Results	Units	Method	Allowable Limits
INORGANIC CHEMICALS/TITLE 18	n/a	n/a		n/a
ARSENIC	ND(0.0005)	mg/l	ASTM D2972	0.05 maximum
BARIUM	ND(0.050)	mg/l	EPA 200.7	1.0 maximum
CADMIUM	ND(0.0005)	mg/l	EPA 213.2	0.010 maximum
CHROMIUM	ND(0.005)	mg/l	EPA 218.2	0.05 maximum
FLUORIDE	ND(0.10)	mg/l	EPA 340.3	2.4 maximum
LEAD	N(0.005)	mg/l	EPA 239.2	0.05 maximum
MERCURY	ND(0.0002)	mg/l	SM14 301AVI	0.002 maximum
NYTRATE-N	ND(0.10)	mg/l	EPA 353.2	10 maximum
SELENIUM	ND(0.0005)	mg/l	ASTM D3859	0.01 maximum
SILVER	ND(0.001)	mg/l	EPA 272.2	0.05 maximum
TURBIDITY	0.08	NTU	EPA 180.1	1.0 maximum
CALCIUM	6.1	mg/l	EPA 200.7*ICP	
MAGNESIUM	2.1	mg/l	EPA 200.7*ICP	
POTASSIUM	1.1	mg/l	EPA 200.7*ICP	
SILICON	8.7	mg/l	EPA 200.7*ICP	

Sample ROUTINE SAMPLE COLLECTED BY: MARY A. MAURER.

Remarks:

16 Tests Performed * See Special Instructions Above UA-Unavailable
 ND- None Detected ** See Sample Remarks Above
 NA- Not Analyzed LT-Less Than, GT-Greater Than





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5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343 FAX: (907) 561-5301

ANALYSIS RESULTS for INVOICE # 50903

Chemlab Ref.# 92.0440 Sample # 2 Matrix: WATER

Client Sample ID : STEELHEAD SPRING ANCHOR POINT
PWSID : UA
Collected : FEB 4 92 @ hrs.
Received : FEB 5 92 @ 09:10 hrs.
Preserved with : AS REQUIRED

Client Name : AK PAKES

Client Acct : AKDPKAP

IPQS :

POS : NONE RECEIVED

Req# :

Ordered By : SID RICHARDS

Analysis Completed : FEB 12 92

Laboratory Supervisor : STEPHEN C. EDE

Released By :

Send Reports to:

1) AK PAKES

2)

Parameter	Results	Units	Method	Allowable Limits
ORGANIC CHEMICALS-TITLE 18	n/a	n/a		n/a
ENDRIN	ND(0.0002)	mg/l	EPA 508	0.0002 maxi
LINDANE	ND(0.0002)	mg/l	EPA 508	0.004 maxi
METHOXYCHLOR	ND(0.002)	mg/l	EPA 508	0.1 maximum
TOXAPHENE	ND(0.002)	mg/l	EPA 508	0.005 maxi
2,4-D	ND(0.002)	mg/l	EPA 515.1	0.1 maximum
2,4,5-TP SILVEX	ND(0.0002)	mg/l	EPA 515.1	0.01 maximum

Sample ROUTINE SAMPLE COLLECTED BY: MARY A. MAURER.

Remarks:

7 Tests Performed

* See Special Instructions Above

UA-Unavailable

ND- None Detected

** See Sample Remarks Above

NA- Not Analyzed

LT-Less Than, GT-Greater Than



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ANALYSIS RESULTS for INVOICE # 50903

Chemlab Ref. # 92.0440 Sample # 3 Matrix: WATER

Client Sample ID : STEELHEAD SPRING ANCHOR POINT
PWSID : UA
Collected : FEB 4 92 @ 11:33 hrs.
Received : FEB 5 92 @ 09:10 hrs.
Preserved with : AS REQUIRED

Client Name : AK PARKS
Client Acct : AKDPKAP
BPO# :
Req# :
Ordered By : SID RICHARDS

PO# : NONE RECEIVED

Analysis Completed : FEB 13 92
Laboratory Supervisor : STEPHEN C. EDE
Released By : *Stephen C. Ede*

Send Reports to:
1) AK PARKS
2)

Parameter	Results	Units	Method	Allowable Limits
SECOND CONTAMINANTS-TITLE 18	n/a	n/a		n/a
CHLORIDE	7.1	mg/l	SM16ED407A	250
TRUE COLOR	LT 5	PCU	SM16ED204A	15 units
COPPER	ND(0.013)	mg/l	EPA200.7A	1
LANGLIER INDEX @ 40 degrees F	-2.61		SM14ED203	
LANGLIER INDEX @ 140 degrees F	-1.53		SM14ED203	
FLUORIDE	ND(0.10)	mg/l	EPA340.3	4.0
FOAMING AGENT, MBAS	ND(0.10)	mg/l	SM16ED512B	0.5
IRON	0.036	mg/l	EPA200.7A	0.3
MANGANESE	ND(0.013)	mg/l	EPA200.7A	0.05
ODOR	NO ODOR	TCM	SM16ED207	3
pH	6.90	units	EPA150.1	6.5 - 8.5
SODIUM	7.7	mg/l	EPA200.7A	250
SULFATE	4.4	mg/l	EPA375.4	250
TOTAL DISSOLVED SOLIDS	69	mg/l	EPA160.1	500
ZINC	ND(0.025)	mg/l	EPA200.7A	5

Sample ROUTINE SAMPLE COLLECTED BY: MARY A. MAURER. DUPLICATE TAG MARKED
Remarks: SAMPLED AT 1131 HRS. NEGATIVE LANGLIER INDEX INDICATES CORROSIVE TENDANCIES.

16 Tests Performed * See Special Instructions Above UA-Unavailable
 ND- None Detected ** See Sample Remarks Above
 NA- Not Analyzed LT-Less Than, GT-Greater Than





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5833 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 582-2343 FAX: (907) 581-5301

ANALYSIS RESULTS for INVOICE # 50903
Chemlab Ref. # 92.0440 Sample # 4 Matrix: WATER

Client Sample ID : STEELHEAD SPRING ANCHOR POINT
PWSID : UA
Collected : FEB 4 92 @ 11:35 hrs.
Received : FEB 5 92 @ 09:10 hrs.
Preserved with : AS REQUIRED

Client Name : AK PARKS
Client Acct : AKDPKAP
BPO# :
Req# :
PO# : WORK RECEIVED
Ordered by : SID RICHARDS

Analysis Completed : FEB 6 92
Laboratory Supervisor : STEPHEN C. EDE
Released By : *Stephen C. Ede*

Send Reports to:
1) AK PARKS
2)

Parameter	Results	Units	Method	Allowable Limits
TOTAL TRIHALOMETHANES	n/a	n/a	EPA 501.1	n/a
CHLOROFORM	ND(0.0010)	mg/l	EPA501.1	
BROMODICHLOROMETHANE	ND(0.0010)	mg/l	EPA501.1	
CHLORODIBROMOMETHANE	ND(0.0010)	mg/l	EPA501.1	
BROMOFORM	ND(0.0010)	mg/l	EPA501.1	
TOTAL TRIHALOMETHANES	ND(0.0010)	mg/l	EPA501.1	0.10 mg/l

Sample ROUTINE SAMPLE COLLECTED BY: MARY A. MAURER.
Remarks:

6 Tests Performed	* See Special Instructions Above	UA-Unavailable
ND- None Detected	** See Sample Remarks Above	
NA- Not Analyzed	LT-Less Than, GT-Greater Than	





CHEMICAL & GEOLOGICAL LABORATORY

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO.

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ANALYSIS RESULTS for INVOICE # 50903
Chemlab Ref. # 92.0440 Sample # 5 Matrix: WATER

Client Sample ID : STEELHEAD SPRING ANCHOR POINT
PWSID : UA
Collected : FEB 4 92 @ hrs.
Received : FEB 5 92 @ 09:10 hrs.
Preserved with : AS REQUIRED

Client Name : JAK PARKS
Client Acct : AKDPEAP
BPO# :
Req# :
Ordered By : SID RICHARDS

PO# : NONE RECEIVED

Analysis Completed : FEB 6 92
Laboratory Supervisor : STEPHEN C. EDL
Released By : *Stephen C. Edl*

Send Reports to:
1) JAK PARKS
2)

Parameter	Results	Units	Method	Allowable Limits
VOLATILE ORGANIC CHEMICALS	n/a	n/a	EPA 502.2/524.2	n/a
1,1,1 TRICHLOROETHANE	ND(0.0010)	mg/L	EPA 502.2/524.2	0.200
1,1 DICHLOROETHYLENE	ND(0.0010)	mg/L	EPA 502.2/524.2	0.0070
1,2 DICHLOROETHANE	ND(0.0010)	mg/L	EPA 502.2/524.2	0.0050
CARBON TETRACHLORIDE	ND(0.0010)	mg/L	EPA 502.2/524.2	0.0050
VINYL CHLORIDE	ND(0.0010)	mg/L	EPA 502.2/524.2	0.0010
BENZENE	ND(0.0010)	mg/L	EPA 502.2/524.2	0.0050
1,4-DICHLOROBENZENE	ND(0.0010)	mg/L	EPA 502.2/524.2	0.0750
TRICHLOROETHYLENE	ND(0.0010)	mg/L	EPA 502.2/524.2	0.0050
THM	ND(0.0010)	mg/L	EPA 502.2/524.2	0.100
BROMOBENZENE	ND(0.0010)	mg/L	EPA 502.2/524.2	
BROMOCHLOROMETHANE	ND(0.0010)	mg/L	EPA 502.2/524.2	
BROMODICHLOROMETHANE	ND(0.0010)	mg/L	EPA 502.2/524.2	
BROMOFORM	ND(0.0010)	mg/L	EPA 502.2/524.2	
BROMOMETHANE	ND(0.0010)	mg/L	EPA 502.2/524.2	
n-BUTYLBENZENE	ND(0.0010)	mg/L	EPA 502.2/524.2	
SEC-BUTYLBENZENE	ND(0.0010)	mg/L	EPA 502.2/524.2	
TERT-BUTYLBENZENE	ND(0.0010)	mg/L	EPA 502.2/524.2	
CHLOROBENZENE	ND(0.0010)	mg/L	EPA 502.2/524.2	
CHLORODIBROMOMETHANE	ND(0.0010)	mg/L	EPA 502.2/524.2	
CHLOROETHANE	ND(0.0010)	mg/L	EPA 502.2/524.2	
CHLOROFORM	ND(0.0010)	mg/L	EPA 502.2/524.2	
CHLOROMETHANE	ND(0.0010)	mg/L	EPA 502.2/524.2	
1,2 DIBROMO-3-CHLOROPROPANE	ND(0.0010)	mg/L	EPA 502.2/524.2	
o-CHLOROTOLUENE	ND(0.0010)	mg/L	EPA 502.2/524.2	
p-CHLOROTOLUENE	ND(0.0010)	mg/L	EPA 502.2/524.2	
DIBROMOMETHANE	ND(0.0010)	mg/L	EPA 502.2/524.2	
m-DICHLOROBENZENE	ND(0.0010)	mg/L	EPA 502.2/524.2	
o-DICHLOROBENZENE	ND(0.0010)	mg/L	EPA 502.2/524.2	
DICHLORODIFLUOROMETHANE	ND(0.0010)	mg/L	EPA 502.2/524.2	
1,1-DICHLOROETHANE	ND(0.0010)	mg/L	EPA 502.2/524.2	
cis-1,2-DICHLOROETHYLENE	ND(0.0010)	mg/L	EPA 502.2/524.2	
trans-1,2-DICHLOROETHYLENE	ND(0.0010)	mg/L	EPA 502.2/524.2	
DICHLOROMETHANE	ND(0.0010)	mg/L	EPA 502.2/524.2	



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ANALYSIS RESULTS for INVOICE # 50903 *de*
Chemlab Ref. # 92.0440 Sample # 5 Matrix: WATER

1,2-DICHLOROPROPANE	ND(0.0010)	mg/L	EPA 502.2/524.2
1,3-DICHLOROPROPANE	ND(0.0010)	mg/L	EPA 502.2/524.2
2,2-DICHLOROPROPANE	ND(0.0010)	mg/L	EPA 502.2/524.2
1,1-DICHLOROPROPENE	ND(0.0010)	mg/L	EPA 502.2/524.2
1,3-DICHLOROPROPENE	ND(0.0010)	mg/L	EPA 502.2/524.2
ETHYLBENZENE	ND(0.0010)	mg/L	EPA 502.2/524.2
ETHYLENE DIBROMIDE (EDB)	ND(0.0010)	mg/L	EPA 502.2/524.2
FLUOROTRICHLOROMETHANE	ND(0.0010)	mg/L	EPA 502.2/524.2
HEXACHLOROBUTADIENE	ND(0.0010)	mg/L	EPA 502.2/524.2
ISOPROPYLBENZENE	ND(0.0010)	mg/L	EPA 502.2/524.2
p-ISOPROPYLTOLUENE	ND(0.0010)	mg/L	EPA 502.2/524.2
NAPHTHALENE	ND(0.0010)	mg/L	EPA 502.2/524.2
n-PROPYLBENZENE	ND(0.0010)	mg/L	EPA 502.2/524.2
STYRENE	ND(0.0010)	mg/L	EPA 502.2/524.2
1,1,1,2-TETRACHLOROETHANE	ND(0.0010)	mg/L	EPA 502.2/524.2
1,1,1,2-TETRACHLOROETHANE	ND(0.0010)	mg/L	EPA 502.2/524.2
TETRACHLOROETHYLENE	ND(0.0010)	mg/L	EPA 502.2/524.2
TOLUENE	ND(0.0010)	mg/L	EPA 502.2/524.2
1,2,3-TRICHLOROBENZENE	ND(0.0010)	mg/L	EPA 502.2/524.2
1,2,4-TRICHLOROBENZENE	ND(0.0010)	mg/L	EPA 502.2/524.2
1,1,2-TRICHLOROETHANE	ND(0.0010)	mg/L	EPA 502.2/524.2
1,2,3-TRICHLOROPROPANE	ND(0.0010)	mg/L	EPA 502.2/524.2
1,2,4-TRIMETHYLBENZENE	ND(0.0010)	mg/L	EPA 502.2/524.2
1,3,5-TRIMETHYLBENZENE	ND(0.0010)	mg/L	EPA 502.2/524.2
p & m XYLENE	ND(0.0010)	mg/L	EPA 502.2/524.2
o-XYLENE	ND(0.0010)	mg/L	EPA 502.2/524.2

Sample ROUTINE SAMPLE COLLECTED BY: MARY A. MAURER.

Remarks:

60 Tests Performed

ND- None Detected

NA- Not Analyzed

* See Special Instructions Above

** See Sample Remarks Above

LT-Less Than, GT-Greater Than

UA-Unavailable



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ANALYSIS RESULTS for INVOICE # 50903
Chemlab Ref. # 92.0440 Sample # 6 Matrix: WATER

Client Sample ID : STEELHEAD SPRING ANCHOR POINT
PWSID : UA
Collected : 0 hrs.
Received : FEB 5 92 @ 09:10 hrs.
Preserved with : AS REQUIRED

Client Name : AK PARKS
Client Acct : AEDPKAP
BPO# : PO# : NONE RECEIVED
Req# :
Ordered By : SID RICHARDS

Analysis Completed :
Laboratory Supervisor : STEPHEN C. EDE
Released By : *Stephen C. Ede*

Send Reports to:
1) AK PARKS
2)

Parameter	Results	Units	Method	Allowable Limits
TOTAL COLIFORM	0	col/100 ml		

Sample ROUTINE SAMPLE COLLECTED BY: MARY A. MAURER. NO TAG FOR THIS SAMPLE.
Remarks:

1 Tests Performed	" See Special Instructions Above	UA-Unavailable
ND- None Detected	** See Sample Remarks Above	
NA- Not Analyzed	LT-Less Than, GT-Greater Than	





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ANALYSIS RESULTS for INVOICE # 50903
Chemlab Ref.# 92.0440 Sample # 7 Matrix: WATER

Client Sample ID : STEELHEAD SPRING ANCHOR POINT
PWSID : UA
Collected : FEB 4 92 @ 11:34 hrs.
Received : FEB 5 92 @ 09:10 hrs.
Preserved with : AS REQUIRED

Client Name : AK PARKS
Client Acct : AKDPKAP
BPO# : PO# : NONE RECEIVED
Req# :
Ordered By : SID RICHARDS

Analysis Completed : MAR 7 92
Laboratory Supervisor : STEPHEN C. EDE
Released By : *(Signature)*

Send Reports to:
1) AK PARKS
2)

Parameter	Results	Units	Method	Allowable Limits
GROSS ALPHA	0.2 +/- 0.3	pCi/L	EPA 900.0	15

RECEIVED
MAR 25 1992

D.P.O.R.
DESIGN & CONSTRUCTION

Sample ROUTINE SAMPLE COLLECTED BY: MARY A. MAURER.
Remarks: SAMPLE ANALYZED BY CH2M HILL, REDDING, CALIFORNIA.

1 Tests Performed * See Special Instructions Above UA-Unavailable
 ND- None Detected ** See Sample Remarks Above
 NA- Not Analyzed LI-Less Than, GT-Greater Than





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ANALYSIS RESULTS for INVOICE # 50903
Chemlab Ref.# 92.0440 Sample # 8 Matrix: WATER

Client Sample ID : DIV. PARKS SPRING #1 ANCHOR POINT
PWSID : UA
Collected : FEB 4 92 @ 14:42 hrs.
Received : FEB 5 92 @ 09:10 hrs.
Preserved with : AS REQUIRED

Client Name : AK PARKS
Client Acct : AKDPKAP
BPO# : PO# : NONE RECEIVED
Req# :
Ordered By : SID RICHARDS

Analysis Completed : FEB 13 92
Laboratory Supervisor : STEPHEN C. EDE
Released By : *Stephen C. Ede*

Send Reports to:
1) AK PARKS
2)

Parameter	Results	Units	Method	Allowable Limits
INORGANIC CHEMICALS/TITLE 18	n/a	n/a		n/a
ARSENIC	ND(0.0005)	mg/l	ASTM D2972	0.05 maximum
BARIUM	ND(0.050)	mg/l	EPA 200.7	1.0 maximum
CADMIUM	ND(0.0005)	mg/l	EPA 213.2	0.010 maximum
CHROMIUM	ND(0.005)	mg/l	EPA 218.2	0.05 maximum
FLUORIDE	ND(0.10)	mg/l	EPA 340.3	2.4 maximum
LEAD	ND(0.005)	mg/l	EPA 239.2	0.05 maximum
MERCURY	ND(0.0002)	mg/l	SM14 301AVI	0.002 maximum
NITRATE-N	0.66	mg/l	EPA 353.2	10 maximum
SELENIUM	ND(0.0005)	mg/l	ASTM D3859	0.01 maximum
SILVER	ND(0.001)	mg/l	EPA 272.2	0.05 maximum
TURBIDITY	0.09	NTU	EPA 180.1	1.0 maximum
CALCIUM	3.6	mg/l	EPA 200.7*ICP	
MAGNESIUM	1.5	mg/l	EPA 200.7*ICP	
POTASSIUM	1.1	mg/l	EPA 200.7*ICP	
SILICON	6.2	mg/l	EPA 200.7*ICP	

Sample ROUTINE SAMPLE COLLECTED BY: MARY A. MAUBER.
Remarks:

16 Tests Performed	" See Special Instructions Above	UA-Unavailable
ND- None Detected	** See Sample Remarks Above	
NA- Not Analyzed	LT-Less Than, GT-Greater Than	





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ANALYSIS RESULTS for INVOICE # 50903
Chemlab Ref.# 92.0440 Sample # 9 Matrix: WATER

Client Sample ID : DIV. PAKES SPRING #1 ANCHOR POINT
PWSID : UA
Collected : 4 hrs.
Received : FEB 5 92 4 09:10 hrs.
Preserved with : AS REQUIRED

Client Name : AK PAKES
Client Acct : AKDPKAP
BPO# : PO# : NONE RECEIVED
Req# :
Ordered By : SID RICHARDS

Analysis Completed : FEB 12 92
Laboratory Supervisor : STEPHEN C. EDE
Released By : *Stephen C. Ede*

Send Reports to:
1) AK PAKES
2)

Parameter	Results	Units	Method	Allowable Limits
ORGANIC CHEMICALS-TITLE 18	n/a	n/a		n/a
ENDRIN	ND(0.0002)	mg/l	EPA 508	0.0002 maxi
LINDANE	ND(0.0002)	mg/l	EPA 508	0.004 maxi
METHOXYCHLOR	ND(0.002)	mg/l	EPA 508	0.1 maximum
TOXAPHENE	ND(0.002)	mg/l	EPA 508	0.005 maxi
2,4-D	ND(0.002)	mg/l	EPA 515.1	0.1 maximum
2,4,5-TP SILVEX	ND(0.0002)	mg/l	EPA 515.1	0.01 maxi

Sample ROUTINE SAMPLE COLLECTED BY: MARY A. MAURER. NO TAG FOR THIS SAMPLE.
Remarks:

7 Tests Performed	* See Special Instructions Above	UA-Unavailable
ND- None Detected	** See Sample Remarks Above	
NA- Not Analyzed	LT-Less Than, GT-Greater Than	



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ANALYSIS RESULTS for INVOICE # 50901

Chemlab Ref. # 92.0440 Sample # 10 Matrix: WATER

Client Sample ID : DIV. PARKS SPRING #1 ANCHOR POINT
PWSID : UA
Collected : FEB 4 92 @ 14:41 hrs.
Received : FEB 5 92 @ 09:10 hrs.
Preserved with : AS REQUIRED

Client Name : AK PARKS
Client Acct : AKDPKAP
BPO# : PO# : NONE RECEIVED
Req# :
Ordered By : SID RICHARDS

Analysis Completed : FEB 13 92
Laboratory Supervisor : STEPHEN C. EDE
Released By : *Stephen C. Ede*

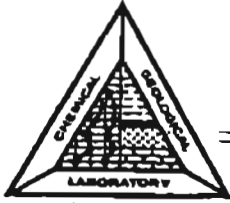
Send Reports to:
1) AK PARKS
2)

Parameter	Results	Units	Method	Allowable Limits
SECOND CONTAMINANTS-TITLE 18	n/a	n/a		n/a
CHLORIDE	6.8	mg/l	SM16ED407A	250
TRUE COLOR	LT 5	PCU	SM16ED204A	15 units
COPPER	ND(0.013)	mg/l	EPA200.7A	1
LANGLIER INDEX @ 40 degrees F	-2.06		SM14ED209	
LANGLIER INDEX @ 140 degrees F	-3.14		SM14ED203	
FLOURIDE	ND(0.10)	mg/l	EPA340.3	4.0
FOAMING AGENT, MBAS	ND(0.10)	mg/l	SM16ED512B	0.5
IRON	ND(0.025)	mg/l	EPA200.7A	0.3
MANGANESE	ND(0.013)	mg/l	EPA200.7A	0.05
ODOR	NO ODOR	TOM	SM16ED207	3
pH	6.37	units	EPA150.1	6.5 - 8.5
SODIUM	6.4	mg/l	EPA200.7A	250
SULFATE	3.2	mg/l	EPA375.4	250
TOTAL DISSOLVED SOLIDS	44	mg/l	EPA160.1	500
ZINC	ND(0.025)	mg/l	EPA200.7A	5

Sample ROUTINE SAMPLE COLLECTED BY: MARY A. MAURER. DUPLICATE TAG MARKED
Remarks: SAMPLED AT 1443 HRS.

16 Tests Performed	* See Special Instructions Above	UA-Unavailable
ND- None Detected	** See Sample Remarks Above	
NA- Not Analyzed	LT-Less Than, GT-Greater Than	





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ANALYSIS RESULTS for INVOICE # 50903

Chemlab Ref. # 92.0440 Sample # 11 Matrix: WATER

Client Sample ID : DIV. PAKS SPRING #1 ANCHOR POINT
PWSID : UA
Collected : FEB 4 92 @ 14:46 hrs.
Received : FEB 5 92 @ 09:10 hrs.
Preserved with : AS REQUIRED

Client Name : AK PAKS
Client Acct : AKDPKAP
BPG# : PO# : NONE RECEIVED
Req# :
Ordered By : SID RICHARDS

Analysis Completed : FEB 6 92
Laboratory Supervisor : STEPHEN C. YDE
Released By : *Stephen C. Yde*

Send Reports to:
1) AK PAKS
2)

Parameter	Results	Units	Method	Allowable Limits
TOTAL TRIHALOMETHANES	n/a	n/a	EPA 501.1	n/a
CHLOROFORM	ND(0.0010)	mg/l	EPA501.1	
BROMODICHLOROMETHANE	ND(0.0010)	mg/l	EPA501.1	
CHLORODIBROMOMETHANE	ND(0.0010)	mg/l	EPA501.1	
BROMOFORM	ND(0.0010)	mg/l	EPA501.1	
TOTAL TRIHALOMETHANES	ND(0.0010)	mg/l	EPA501.1	0.10 mg/l

Sample ROUTINE SAMPLE COLLECTED BY: MARY A. MAURER.

Remarks:

6 Tests Performed * See Special Instructions Above UA-Unavailable
 ND- None Detected ** See Sample Remarks Above
 NA- Not Analyzed LI-Less Than, GI-Greater Than



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ANALYSIS RESULTS for INVOICE # 50903
 Chemlab Ref. # 92.0440 Sample # 12 Matrix: WATER

Client Sample ID : DIV. PARKS SPRING #1 ANCHOR POINT
 PWSID : UA
 Collected : FEB 4 92 @ 14:51 hrs.
 Received : FEB 5 92 @ 09:10 hrs.
 Preserved with : AS REQUIRED

Client Name : AK PARKS
 Client Acct : AKDPKAP
 BPO# :
 Req# :
 Ordered By : SID RICHARDS

PO# : NONE RECEIVED

Analysis Completed : FEB 6 92
 Laboratory Supervisor : STEPHEN C. EDE
 Released By : *Stephen C. Ede*

Send Reports to:
 1) AK PARKS
 2)

Parameter	Results	Units	Method	Allowable Limits
VOLATILE ORGANIC CHEMICALS	n/a	n/a	EPA 502.2/524.2	n/a
1,1,1 TRICHLOROETHANE	ND(0.0010)	mg/L	EPA 502.2/524.2	0.200
1,1 DICHLOROETHYLENE	ND(0.0010)	mg/L	EPA 502.2/524.2	0.0070
1,2 DICHLOROETHANE	ND(0.0010)	mg/L	EPA 502.2/524.2	0.0050
CARBON TETRACHLORIDE	ND(0.0010)	mg/L	EPA 502.2/524.2	0.0050
VINYL CHLORIDE	ND(0.0010)	mg/L	EPA 502.2/524.2	0.0010
BENZENE	ND(0.0010)	mg/L	EPA 502.2/524.2	0.0050
1,4-DICHLOROBENZENE	ND(0.0010)	mg/L	EPA 502.2/524.2	0.0750
TRICHLOROETHYLENE	ND(0.0010)	mg/L	EPA 502.2/524.2	0.0050
TYM	ND(0.0010)	mg/L	EPA 502.2/524.2	0.100
BROMOBENZENE	ND(0.0010)	mg/L	EPA 502.2/524.2	
BROMOCHLOROMETHANE	ND(0.0010)	mg/L	EPA 502.2/524.2	
BROMODICHLOROMETHANE	ND(0.0010)	mg/L	EPA 502.2/524.2	
BROMOFORM	ND(0.0010)	mg/L	EPA 502.2/524.2	
BROMOMETHANE	ND(0.0010)	mg/L	EPA 502.2/524.2	
n-BUTYLBENZENE	ND(0.0010)	mg/L	EPA 502.2/524.2	
SEC-BUTYLBENZENE	ND(0.0010)	mg/L	EPA 502.2/524.2	
TERT-BUTYLBENZENE	ND(0.0010)	mg/L	EPA 502.2/524.2	
CHLOROBENZENE	ND(0.0010)	mg/L	EPA 502.2/524.2	
CHLORODIBROMOMETHANE	ND(0.0010)	mg/L	EPA 502.2/524.2	
CHLOROETHANE	ND(0.0010)	mg/L	EPA 502.2/524.2	
CHLOROFORM	ND(0.0010)	mg/L	EPA 502.2/524.2	
CHLOROMETHANE	ND(0.0010)	mg/L	EPA 502.2/524.2	
1,2 DIBROMO-3-CHLOROPROPANE	ND(0.0010)	mg/L	EPA 502.2/524.2	
o-CHLOROTOLUENE	ND(0.0010)	mg/L	EPA 502.2/524.2	
p-CHLOROTOLUENE	ND(0.0010)	mg/L	EPA 502.2/524.2	
DIBROMOMETHANE	ND(0.0010)	mg/L	EPA 502.2/524.2	
m-DICHLOROBENZENE	ND(0.0010)	mg/L	EPA 502.2/524.2	
o-DICHLOROBENZENE	ND(0.0010)	mg/L	EPA 502.2/524.2	
DICHLORODIFLUOROMETHANE	ND(0.0010)	mg/L	EPA 502.2/524.2	
1,1-DICHLOROETHANE	ND(0.0010)	mg/L	EPA 502.2/524.2	
cis-1,2-DICHLOROETHYLENE	ND(0.0010)	mg/L	EPA 502.2/524.2	
trans-1,2-DICHLOROETHYLENE	ND(0.0010)	mg/L	EPA 502.2/524.2	
DICHLOROMETHANE	ND(0.0010)	mg/L	EPA 502.2/524.2	





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ANALYSIS RESULTS for INVOICE # 50903 *SK*
Chemlab Ref. # 92.0440 Sample # 12 Matrix: WATER

1,2-DICHLOROPROPANE	ND(0.0010)	ng/L	EPA 502.2/524.2
1,3-DICHLOROPROPANE	ND(0.0010)	ng/L	EPA 502.2/524.2
2,2-DICHLOROPROPANE	ND(0.0010)	ng/L	EPA 502.2/524.2
1,1-DICHLOROPROPENE	ND(0.0010)	ng/L	EPA 502.2/524.2
1,3-DICHLOROPROPENE	ND(0.0010)	ng/L	EPA 502.2/524.2
ETHYLENE	ND(0.0010)	ng/L	EPA 502.2/524.2
ETHYLENE DIBROMIDE (EDB)	ND(0.0010)	ng/L	EPA 502.2/524.2
FLUOROTRICHLOROMETHANE	ND(0.0010)	ng/L	EPA 502.2/524.2
HEXACHLOROBUTADIENE	ND(0.0010)	ng/L	EPA 502.2/524.2
ISOPROPYLBENZENE	ND(0.0010)	ng/L	EPA 502.2/524.2
p-ISOPROPYLTOLUENE	ND(0.0010)	ng/L	EPA 502.2/524.2
NAPHTHALENE	ND(0.0010)	ng/L	EPA 502.2/524.2
m-PROPYLBENZENE	ND(0.0010)	ng/L	EPA 502.2/524.2
STYRENE	ND(0.0010)	ng/L	EPA 502.2/524.2
1,1,1,2-TETRACHLOROETHANE	ND(0.0010)	ng/L	EPA 502.2/524.2
1,1,1,2-TETRACHLOROETHANE	ND(0.0010)	ng/L	EPA 502.2/524.2
TETRACHLOROETHYLENE	ND(0.0010)	ng/L	EPA 502.2/524.2
TOLUENE	ND(0.0010)	ng/L	EPA 502.2/524.2
1,2,3-TRICHLOROBENZENE	ND(0.0010)	ng/L	EPA 502.2/524.2
1,2,4-TRICHLOROBENZENE	ND(0.0010)	ng/L	EPA 502.2/524.2
1,1,2-TRICHLOROETHANE	ND(0.0010)	ng/L	EPA 502.2/524.2
1,2,3-TRICHLOROPROPANE	ND(0.0010)	ng/L	EPA 502.2/524.2
1,2,4-TRIMETHYLBENZENE	ND(0.0010)	ng/L	EPA 502.2/524.2
1,3,5-TRIMETHYLBENZENE	ND(0.0010)	ng/L	EPA 502.2/524.2
p & m XYLENE	ND(0.0010)	ng/L	EPA 502.2/524.2
o-XYLENE	ND(0.0010)	ng/L	EPA 502.2/524.2

Sample ROUTINE SAMPLE COLLECTED BY: MARY A. MAURER.

Remarks:

60 Tests Performed

ND- None Detected

NA- Not Analyzed

* See Special Instructions Above

** See Sample Remarks Above

LT-Less Than, GT-Greater Than

UA-Unavailable





CHEMICAL & GEOLOGICAL LABORATORY

A DIVISION OF COMMERCIAL TESTING & ENGINEERING CO.

6633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343 FAX: (907) 561-5301

ANALYSIS RESULTS for INVOICE # 50903
Chemlab Ref. # 92.0440 Sample # 13 Matrix: WATER

Client Sample ID : DIV. PARKS SPRING #1 ANCHOR POINT
PWSID : UA
Collected : 0 hrs.
Received : FEB 5 92 @ 09:10 hrs.
Preserved with : AS REQUIRED

Client Name : AK PARKS
Client Acct : AKDPEAP
BPOS :
Req# :
Ordered By : SID RICHARDS
POS : NONE RECEIVED

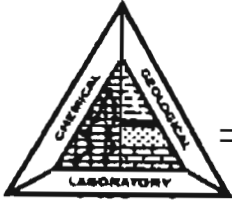
Analysis Completed : FEB 6 92
Laboratory Supervisor : STEPHEN C. EDE
Released By : *Stephen C. Ede*

Send Reports to:
1) AK PARKS
2)

Parameter	Results	Units	Method	Allowable Limits
TOTAL COLIFORM		0 col/100 ml		

Sample ROUTINE SAMPLE COLLECTED BY: MARY A. MAURER.
Remarks:

I Tests Performed	* See Special Instructions Above	UA-Unavailable
ND- None Detected	** See Sample Remarks Above	
NA- Not Analyzed	LT-Less Than, GT-Greater Than	



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5633 B STREET ANCHORAGE, ALASKA 99518 TELEPHONE (907) 562-2343 FAX: (907) 561-5301

ANALYSIS RESULTS for INVOICE # 50903
Chemlab Ref. # 92.0440 Sample # 14 Matrix: WATER

Client Sample ID : DIV. PARKS SPRING #1 ANCHOR POINT
PWSID : UA
Collected : FEB 4 92 @ 14:44 hrs.
Received : FEB 5 92 @ 09:10 hrs.
Preserved with : AS REQUIRED

Client Name : AK PARKS
Client Acct : AKDPKAP
BPO# : PO# : NONE RECEIVED
Req# :
Ordered By : SID RICHARDS

Analysis Completed : MAR 9 92
Laboratory Supervisor : STEPHEN C. EDZ
Released By : *C. Jones*

Send Reports to:
1.) AK PARKS
2.)

Parameter	Results	Units	Method	Allowable Limits
GROSS ALPHA	0.0 +/- 0.1	pCi/L	EPA 900.0	15

Sample ROUTINE SAMPLE COLLECTED BY: MARY A. MAURER.
Remarks: SAMPLE ANALYZED BY CH2M HILL, REDDING, CALIFORNIA.

1 Tests Performed	* See Special Instructions Above	UA-Unavailable
ND- None Detected	** See Sample Remarks Above	
NA- Not Analyzed	LI-Less Than, GT-Greater Than	

