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U.S. Army Environmental Hygiene Agency

FINAL REPORT
RECEIVING WATER BIOLOGICAL STUDY NO. 32-24-H37Y-94
EVALUATION OF WHITE PHOSPHORUS EFFECTS
ON THE AQUATIC ECOSYSTEM
EAGLE RIVER FLATS
FORT RICHARDSON, ALASKA
8-17 MAY, 22 AUGUST - 9 SEPTEMBER 1994

Nationally Recognized as the Center of Matrixed Occupational and Environmental Health Excellence

DEPARTMENT OF THE ARMY
U. S. ARMY ENVIRONMENTAL HYGIENE AGENCY
ABERDEEN PROVING GROUND, MARYLAND 21010-5422

REPLY TO
ATTENTION OF

EXECUTIVE SUMMARY
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1. PURPOSE. The purpose for conducting these studies was two-fold:

a. To determine if white phosphorus (WP) concentrations at Eagle River Flats (ERF) are having an adverse impact on the aquatic biota or bioaccumulating in the aquatic food chain when the ducks and tidal movement have disturbed the sediments.

b. To determine a laboratory-derived no observable effect level (NOEL) concentration for WP in sediment.

2. CONCLUSIONS. The data from these studies indicate that a WP cleanup level would not be driven by effects on benthic macroinvertebrates or bioaccumulation in fish tissue. The benthic macroinvertebrate data indicate that WP is not affecting the diversity, number of species, or number of organisms per unit area in ERF. Out of 86 fish and invertebrate samples analyzed for WP from three studies, there were low levels detected in only three fish samples and one invertebrate sample in the fall 1994 study. One fish sample came from Area A and the rest were from Racine Island. The midge larva Chironomus riparius was the most sensitive species to WP in our sediment toxicity studies. The lowest LC_{50} and the lowest NOEL were 256 μg/kg and 26 μg/kg WP, respectively. There are concentrations above these levels in ERF, but our sampling of the benthic macroinvertebrates found no adverse effects on the community structure.

3. RECOMMENDATION. Use the data collected in this study to help complete the ecological and human health risk assessments.

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b. To determine a laboratory derived no observable effect level (NOEL) concentration for WP.

2. AUTHORITY. Memorandum, USAEHA, HSHB-ME-WM, 17 February 1994, Proposal for Continued Evaluation of White Phosphorus Effects on Aquatic Ecosystem, Eagle River Flats, Fort Richardson, Alaska.

3. REFERENCES. See Appendix A for a list of references.

4. BACKGROUND.

a. Eagle River Flats is an 865 hectare estuarine salt marsh at Fort Richardson, Alaska. The marsh is located north of Anchorage, Alaska and south of Knik Arm in the Cook Inlet. The military has used it as an impact area for artillery training since 1949. Thousands of craters are widely distributed throughout the marsh. Despite heavy anthropogenic disturbance, Eagle River Flats has continued to support large numbers of waterfowl, shorebirds, gulls, terns, and raptors, as well as several mammalian species. Since 1981, waterfowl dieoffs have been reported at ERF. The dieoffs have been especially heavy in the spring and fall when large numbers of migrating waterfowl use the flats as a stopover. Dabbling ducks and swans are the most vulnerable waterfowl.

b. In 1990, the Cold Regions Research Engineering Laboratory (CRREL) determined that waterfowl mortality was caused by ingestion of WP particles found in the bottom sediments of feeding ponds. Even though WP has not been fired into ERF since 1989, waterfowl have

continued to die. Since confirming WP as the toxic agent, much work has been done on its toxicity, food chain effects, analytical methods, basic chemistry, fate and transport, persistence, and cleanup techniques. Much of the work has been centered around the waterfowl due to the dieoffs.

c. It had not been determined if the aquatic ecosystem had been affected by the WP or if there were any other contaminants of concern at ERF. This Agency conducted a study of Eagle River Flats in July 1993 to address these data gaps (reference 22). The WP was not adversely affecting the macroinvertebrate community other than a possible reduction in total number of organisms per unit area at some WP contaminated sites. It was also found that WP was not accumulating in fish (sticklebacks). In addition, the analysis of water and sediment samples for WP, explosives, nutrients, target analytes, and target compounds indicated that WP was the only contaminant of concern.

d. There was however evidence that disturbance of the sediments had the potential for causing adverse effects on the aquatic ecosystem. Sediments from ERF were proven to be highly toxic in laboratory toxicity testing of two aquatic invertebrate species. The concentration of WP in water of the sediment toxicity test was over 1,000 times greater than WP concentrations in the field when sampling over the same undisturbed sediments. Also, when CRREL personnel collected sediments for their drying treatability experiment at Canoe Point, the disturbance increased the water WP concentration by a factor of 100. The water WP concentration in both of these instances far exceeded 0.01 parts per billion, the concentration considered protective of aquatic organisms (reference 4). The undisturbed areas of ERF seldom exceeded this concentration. Therefore, a spring and a fall study was proposed to see if feeding ducks disturb the sediments enough to affect the water WP concentrations and subsequently affect aquatic invertebrate and fish populations. Also, more aquatic toxicity testing was proposed because the sediment tested in 1993 was toxic in all the tested concentrations.

5. STUDY PLAN FOR SPRING 1994 STUDY. This study plan included water, sediment, macroinvertebrate, and fish sampling at 25 sample sites during the spring migration of the waterfowl at ERF. The analytical methods for the chemical analyses are presented in Table B-1. The sampling scheme is presented in Table B-2. In addition, the U.S. Army Environmental Hygiene Agency (USAEHA) was asked to confirm results obtained by the Patuxent Wildlife Research Center (PWRC) during June 1993. They sampled the fish and macroinvertebrates at 25 sample sites at ERF and analyzed them for WP. They detected WP in several samples. However, WP was also detected in several blank samples. Therefore, the results were questionable. Of the 25 PWRC sample sites, 11 were scheduled to be sampled for the same characteristics in our sampling plan. At the remaining 14 sample sites,

WP was the only characteristic investigated in the water, sediment, fish, and macroinvertebrates. Sediment toxicity, field measurements, community structure, and additional chemical analyses were not performed at these 14 sites.

a. Sample Site Locations. Figures 1, 2, and 3 show the sample site locations. These are the same as the USAEHA July 1993 study (reference 22) except there were two more reference locations. One location was at Fire Creek, and the other was at Goose Bay. Also, the Area A sample site locations were moved slightly because no WP was found in the July 1993 study, and contamination is needed to determine impact. Water, sediment, benthic macroinvertebrates, and fish were collected from 25 locations (16 from ponds, 7 from distributaries, and 2 from Eagle River). Duplicate samples were collected from two of these locations (sample sites C2 and C3). The additional 14 sample sites required to confirm PWRC results are also presented in Figure 3 with a P as part of the designator.

(1) Shallow Ponds. There were three sample sites in each of the following ponded areas: Area C, Bread Truck Area, and Goose Bay (reference area). Two sample sites were located in each of the following ponded areas: Area A, Area C/D, and Racine Island. One sample site was at Fire Creek (reference site). These ponded areas were sampled for WP contamination in the water, sediment, macroinvertebrates, and fish. In addition, triplicate quantitative benthic macroinvertebrate samples were collected to determine effects from WP contamination.

(2) Distributaries. Distributaries are gullies connecting the flats to the river through the levee. Seven sample sites were located in the distributaries. The samples were collected during the ebb tide following the first ERF inundating high tide to occur after a period of no inundating tides. This was required to get the worst-case scenario for the amount of WP leaving the flats and entering the Eagle River. The tidal cycle completely drains these distributaries except for a few shallow pools. These pools were not large enough for fish sampling, but they did allow macroinvertebrate sampling.

(3) Eagle River. There were two sample sites on Eagle River. One site was above ERF, and the other was below it. No fish or macroinvertebrates were collected because of habitat differences and lack of organisms. However, the water and sediment samples were collected.

b. Onsite Measurements. The temperature, conductivity, salinity, dissolved oxygen, pH, oxidation reduction potential, and Global Positioning System coordinates were determined at each sample site using instrumentation calibrated daily following manufacturers' instructions.

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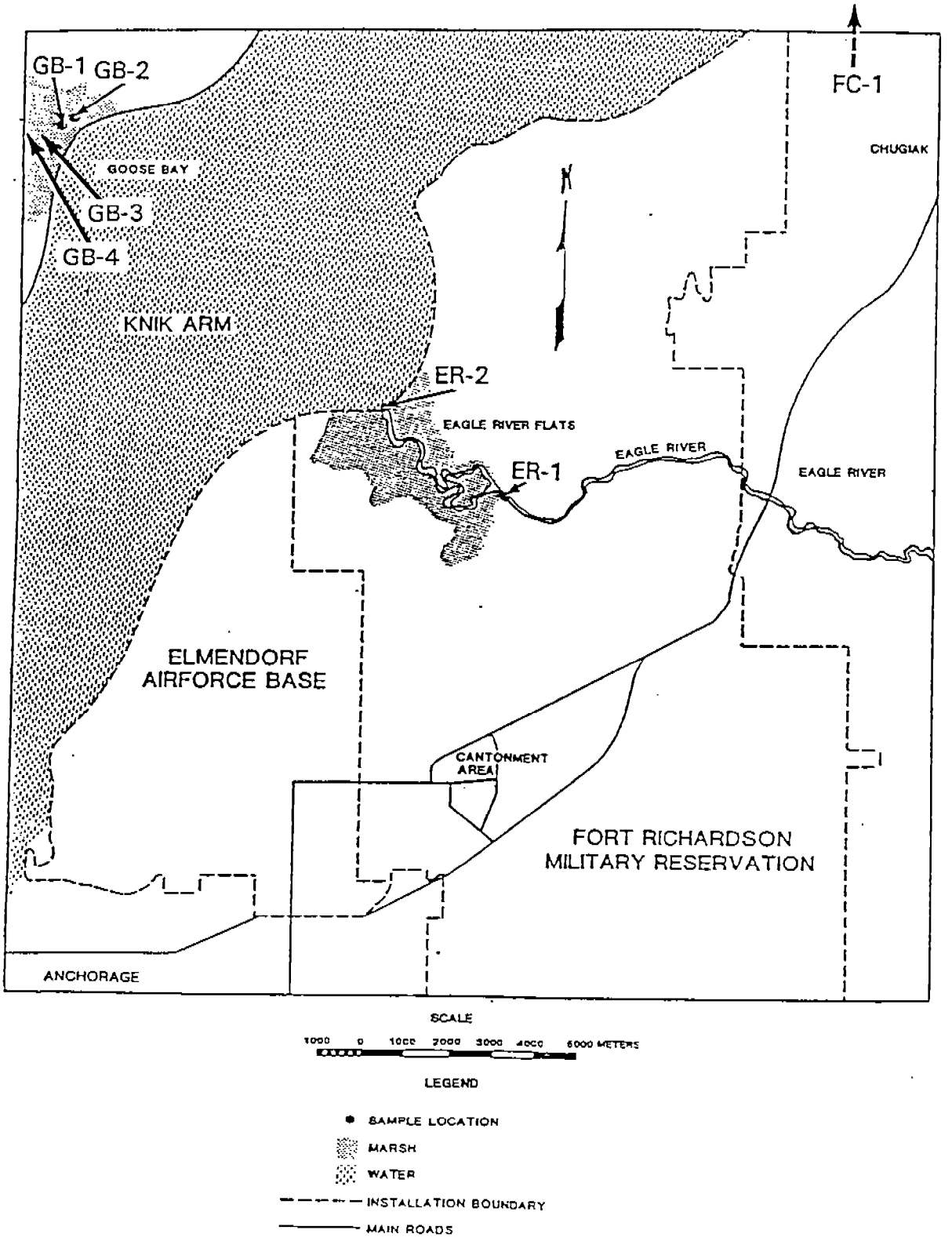

FIGURE 1 SAMPLE SITE LOCATIONS AT EAGLE RIVER FLATS, FORT RICHARDSON, ALASKA.

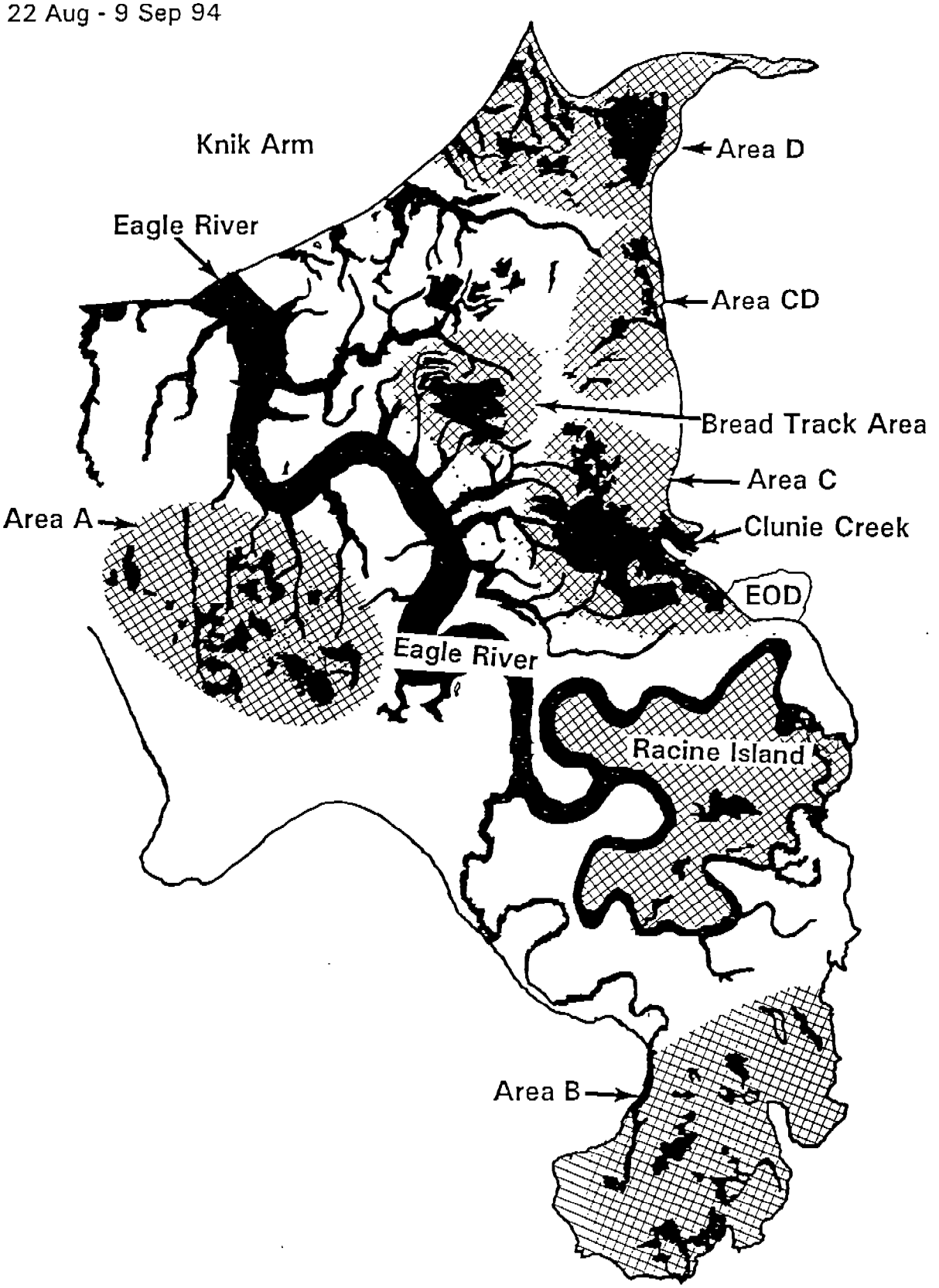

Figure 2. Map of Eagle River Flats showing general sampling areas.

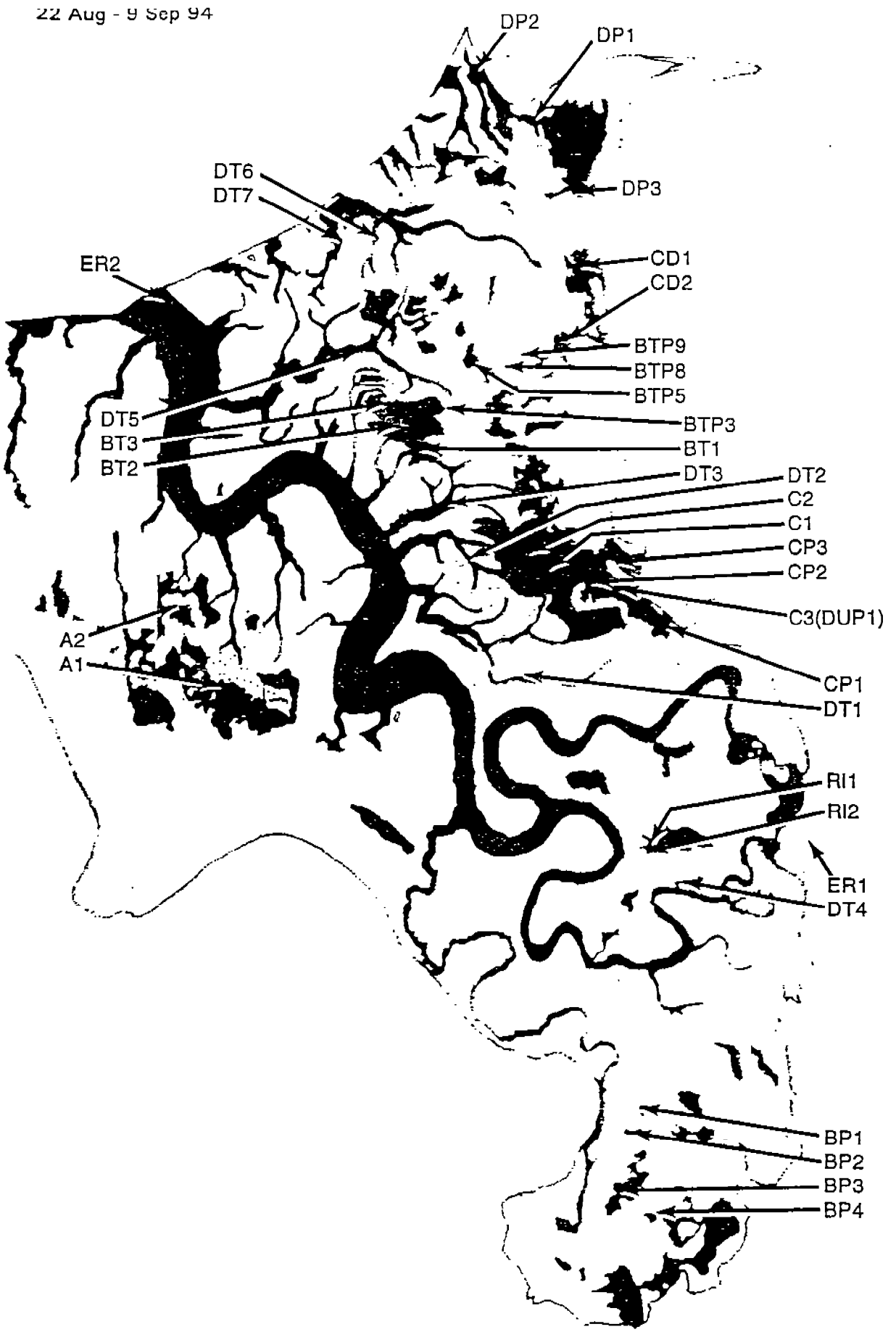

Figure 3. Sample site locations, May 1994, ERF, Fort Richardson Alaska.

c. Water Sampling. The water samples for total WP were collected directly into labeled air-tight (septa topped) sample containers and sealed with no air bubbles present. The water samples for dissolved WP were filtered in the field. The water was pumped through a Tygon® tube and high rate filter directly into the sample container without air contact. The sample container overflowed displacing water that was in contact with the air in the bottle as it was filled. The sample was sealed, without any air bubbles, with a septa top. The additional water samples for nutrients, total organic carbon, total suspended solids, and total dissolved solids were collected directly into labeled sample containers for the different chemical groupings, and preserved as required. The samples were placed in ice chests and covered with ice. The samples were sent to USAEHA's chemical laboratory for analysis. The detection limit for WP in water was about 0.005 μg/L.

d. Sediment Sampling. The sediment sampling was conducted by scraping the top 5 cm of sediment into a sample container. There were three WP sediment samples for each sample site corresponding with the three macroinvertebrate samples. The samples were placed under ice and sent by next day delivery to USAEHA for analysis. The detection limit for WP in sediment was 0.88 μg/kg. There was an additional sediment sample collected at each sample site for sediment toxicity testing and nutrient/total organic matter analysis. These samples consisted of equal portions of sediment collected adjacent to each of the three macroinvertebrate replicate samples.

e. Macroinvertebrate Sampling. Benthic macroinvertebrates (bottom dwelling aquatic insects, crustaceans, and other invertebrates) were collected from all the pond locations including the three reference locations in Goose Bay and one reference location in Fire Creek. Two locations were scheduled for Fire Creek to see if it could be used as a reference site instead of Goose Bay. The habitat and macroinvertebrate populations were entirely different, so Goose Bay was determined to be a more appropriate reference site. Three replicates were collected from each location. A sampling frame that delineates 1 square foot of bottom was placed on the sediment, and all sediment to a depth of 5 cm was scooped into a sieve bucket with a standard No. 30 screen. The sample was washed through the sieve. The organisms and detritus that remained were preserved in 6-10 percent formalin solution with Rose Bengal dye to stain the organisms and aid in later sorting. The organisms were sorted, identified to species when possible, and counted. The diversity ($\overline{H}$), species richness, percent contribution of dominant species, and similarity between samples were calculated according to definitions in paragraph 4e(2), Data Analysis. Another invertebrate sample was

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collected using dip nets or sieve buckets to collect enough organisms for WP analysis. The organisms were washed in distilled water to remove WP particles. They were frozen and sent to the USAEHA laboratory where whole organisms were blended, extracted with isooctane, and analyzed for WP. The detection limit for WP in macroinvertebrates was about 10 μg/kg depending on the quantity of organisms collected.

(1) Rationale for Biological Sampling. It is widely recognized that biota accurately reflect the quality of the environment to which they are subjected. Many biological indices/ indicator organisms have been used to evaluate pollutional stress (references 5, 7, 8, 19, and 21). The usefulness of biota as indicators of environmental quality results from a number of biological characteristics.

(a) Ecological Importance. An ecosystem is a natural unit of living and environmental components which interacts to form a stable system. A change in one component normally disturbs the balance and causes changes throughout the system.

(b) Mobility. Many organisms are either attached to the substrate or have limited mobility. When these organisms are exposed to environmental changes (e.g., pollution), they must adapt or perish. Others that can move about freely normally seek an environment suited for their survival, adapt, or perish. Thus, the organisms present in an ecosystem are dependent on physical, chemical, and biological environmental factors.

(c) Sensitivity to Pollutants. Many members of these communities are very sensitive and vulnerable to physical and/or chemical stresses, and depending on the nature and concentration of pollutants, are often eliminated or reduced in number. Conversely, a limited number of more tolerant species often become relatively or absolutely more abundant. The tolerance level of some of these organisms to certain types of pollutants has been established, and these organisms can be used as indicators of either healthy or polluted conditions (e.g., certain species of mayflies indicate healthy conditions and tubifex worms indicate polluted conditions).

(d) Community Structure. Environmental impact is also reflected by changes in community structure. Communities impacted by environmental stress are typically composed of a small number of species represented by large numbers of individuals (low diversity), whereas those not impacted have many different species with relatively few individuals in a given species (high diversity). Diversity can be quantified using a diversity formula, and resultant values are used to determine whether or not an environmental perturbation is adversely impacting upon the ecosystem and the extent of that impact. This comparative use of community diversity results in a simple and quantitative summary of pollutional impact.

(2) Data Analysis.

(a) Species Diversity. The diversity ($\overline{H}$) was calculated according to Brillouin's (reference 2) Diversity Index as modified by Patten (reference 10), incorporating Stirling's approximation for logarithms of factorials, in order to minimize the bias resulting from rare species (reference 9).

$$\overline{H} = C/N\ [N(1n\ N-1) + 1/2\ 1n\ 2\pi N - \sum_{i=1}^{s} \{n_i(1n\ n_i-1) + 1/2\ 1n\ 2\pi n_i\}]$$

where:

n_i = total number of individuals in the i_{th} species
N = the total number of individuals
C = 1.442695 for conversion of natural logarithms
S = number of species

This treatment results in diversity values ranging from 0 to 3.321928 log N (reference 20).

(b) Species Richness. The total number of species present was used to help compare biological integrity between sample sites.

(c) Percent Contribution of Dominant Taxa. The percent contribution of the dominant taxa was used in comparing equality and similarity between sample sites.

(d) Community Similarity Index. The Pinkham and Pearson Community Similarity Index (reference 14) was used to compare similarity between macroinvertebrate communities.

f. Fish Sampling. Fish were collected from all ponded area sample sites using a dip net when the population was high enough for an adequate sample size to be collected within 2 hours of effort. The fish were washed with distilled water, frozen, and shipped back to USAEHA where whole organisms were blended for WP analysis. The detection limit for fish was about 10 μg/kg. The ninespine stickleback Pungitus pungitus and the threespine stickleback Apeltes quadracus were the only fish species generally found in the ponded areas.

6. STUDY PLAN FOR FALL 1994 STUDY. This study plan was the same as the spring study except there were 42 sample sites with 4 duplicates, and it was conducted during the fall waterfowl migration. It varies from the spring sampling because three replicate

macroinvertebrate samples were collected only from the sites contaminated with WP, and only one from the remaining sample sites. There was a sediment sample collected for WP adjacent to each macroinvertebrate replicate. The sampling scheme is presented in Table B-3. The sample sites marked with an asterisk in Table B-3 had three replicates for sediment WP and macroinvertebrates, and the remaining had one per sample site. The sample site locations are presented in Figure 4. There were four reference sample sites in Goose Bay because Fire Creek was not comparable to ERF. An additional sediment stirring experiment was conducted in this sampling to determine if variability of WP sediment concentrations could be reduced. The method took equal portions of sediment from each of the three traditional subsamples collected at each WP contaminated sample site. Then an equal volume of water from the site was added and the mixture was stirred vigorously. Three separate 40 mL septum vials of the mixture were collected before settling could take place. The entire contents of each vial were weighed and extracted with 10 mL of isooctane using the sediment WP method. The addition of 10 mL of degassed water was not required since water was already added in the sampling process. The extracts were then analyzed on the gas chromatograph.

7. STUDY PLAN FOR SEDIMENT TOXICITY TESTING. White phosphorus contaminated sediment was diluted to several different concentrations with uncontaminated sediment from Goose Bay and sediment toxicity tests were conducted on the amphopod (Hyalella azteca) and the midge larva (Chironomus riparius) using methods described in reference 1. A range finding study was conducted (20 September - 4 October) prior to the definitive sediment toxicity study (18 October - 17 November) so the concentrations would closely bracket the NOEL. The assays were conducted using five replicates of 200 mL of sediment (averaging 372 g) with 800 mL of overlying diluent water. Twenty organisms were exposed in each replicate. The amphopod studies measured survival and reproduction and the midge studies measured survival and emergence. The sediment and water concentrations of WP were monitored during the toxicity studies. Using the information from the range finding study, several different treatments were tested.

a. The first treatment exchanged the water over the sediment twice a week. This method is being experimented with but is not presently in the American Society for Testing and Materials (ASTM) method (reference 1). The philosophy was that this method would allow for a determination of a NOEL for WP based on the sediment, not the water concentration.

b. In the second treatment, the sediment was disturbed to mimic feeding ducks, and the water was not exchanged.

c. In the third treatment, small particles were placed over the sediments. Each particle was 1 μL (1.85 mg WP/372 g sediment or 5 mg/kg).

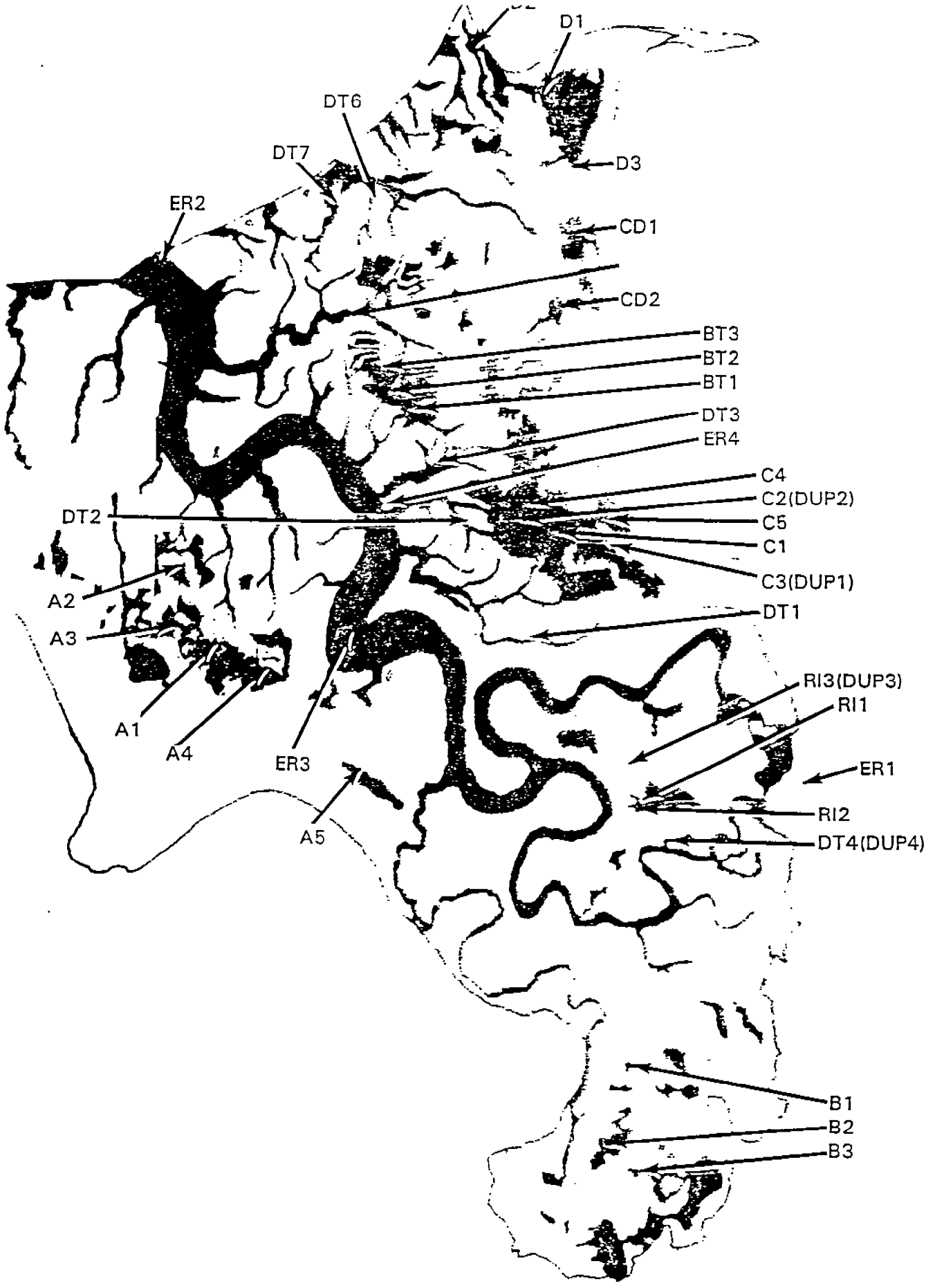


Figure 4. Sample site locations, August-September 1994, ERF, Fort Richardson Alaska.

d. In the fourth treatment, larger particles were placed over the sediment. Each particle was 3 μL (5.3 mg WP/372 g sediment or 14.25 mg/kg).

e. In the fifth treatment, sediments for toxicity testing were collected at each sample site in the spring study at the same time the benthic macroinvertebrates, sediment, and water samples were collected. The test organisms were exposed to this undiluted sediment from each sample site to determine if the test organisms show similar results to that of the benthic macroinvertebrate community integrity analysis.

8. QUALITY ASSURANCE/QUALITY CONTROL (QA/QC) PLAN. All field sampling followed guidance in USAEHA Sampling Guide to include sampling, handing of samples, preservation, chain of custody, QA/QC, field notebooks, and more (reference 23). The field studies employed duplicate sampling for about every 10 samples. This encompassed all samples for chemical analysis and invertebrate samples for taxa identification. The WP was analyzed by the USAEHA chemical laboratories. The WP analyses employed 1 duplicate, 2 procedural blanks, and 1 spike for every 20 samples. Gas chromatography analysis procedures include five different standards before samples are run to generate a standard curve. There is a known standard for every 10 samples, and a second set of standards after all samples were completed in each session. Field instruments were calibrated according to manufacturers' instructions at the start of each day and checked at the end of each day. The chemical analyses followed methods outlined in Table B-1. Since the USAEHA 1993 study found WP as the only concern (reference 22), chemistries were limited to characteristics of concern for biological communities and, of course, WP. The sediment toxicity tests followed methods outlined in reference 1, and WP analyses for the toxicity tests were conducted at the USAEHA laboratory following the laboratory procedures outlined above. Complete QA/QC data is available for inspection upon request.

9. RESULTS AND DISCUSSION.

a. White Phosphorus. The WP data are presented in Tables C-1, C-2, and C-3.

(1) Water. White phosphorus was not detected in the water samples collected from either the Eagle River or its distributaries in any of the USAEHA studies. All Eagle River and distributary samples were collected on the ebb of the first flooding tide occurring after a period of nonflooding tides. The idea that WP concentrations should be higher in water when ducks are disturbing the sediment was generally true. In contaminated ponded areas, the water WP concentrations were universally higher in the spring 1994 study than in July 1993. In the fall 1994 study, Area A and Racine Island had higher water WP concentrations than in the two previous studies. However, Area C and the Bread Truck Pond water WP concentrations were generally below the detection limit in the fall 1994 while both previous

studies had detectable WP in the water. The reason is unclear. High duck and wind disturbance in the fall 1994 should have caused increased water WP concentrations as was seen in Area A and Racine Island.

(2) Sediment. There was no WP detected in the sediment of the Eagle River in any of the three studies. Although there was no WP detected in the distributaries in July 1993 or in the spring 1994, there was WP detected at sample site DT1 (distributary draining the southern portion of Area C) and in the duplicate sample for DT4 (distributary draining the southern portion of Racine Island) in the fall 1994. The concentration of WP in the sediments of the ponded areas was highest on Racine Island with concentrations as high as 1,800 mg/kg in the sediment that was collected for sediment toxicity testing. The next highest concentrations of WP were found in Area C with concentrations as high as 1,100 mg/kg detected at Canoe Point. Even though ducks readily die in Area C near the pens, WP seldom exceeds 1 mg/kg. In addition, dead birds are often found in the Bread Truck Pond and Area A, but our sediment samples from these areas found the WP concentrations near or below the detection limit (which is less than 1 μg/kg). Area CD-sediment samples were generally below the WP detection limit. However, both sample sites yielded a low μg/kg detection of WP in the fall 1994 sampling. White phosphorus was not detected in any sediment samples from Area B, Area D, or Goose Bay. The heterogeneous distribution of WP makes comparisons of sampling events statistically unsound. However, there is no evidence that the sediment WP concentrations in permanently flooded areas of ERF is decreasing over time.

(3) Water/Sediment Stirring Experiment. A stirring experiment was conducted during the fall study to see if the technique could reduce variability seen in sediment WP concentrations. This variability does not lend itself to statistical analysis that assumes a normal distribution. The log of the WP concentrations comes much closer to a normal distribution. The geometric mean and the standard deviation was calculated for each 10 sets of three subsamples for both the stirring technique and the traditional sampling (Table C-4). For seven sample sets, the geometric mean is larger for the traditional sampling but the situation is opposite for three of the sample sets. Comparing the geometric mean of all 30 subsamples as a data set, the stirring technique is 130 μg/kg and the traditional sampling is 172 μg/kg. However, the 95 percent confidence intervals clearly overlap and a "T" test applied to the logs gives no hint of a significant difference in the means. Though the geometric means are not statistically different, the standard deviations about the means were larger in the traditional sampling in 8 of the 10 data sets, often by rather substantial factors. When the 10 standard deviation estimates, each with 2 degrees of freedom, were pooled to a standard deviation with 20 degrees of freedom, the value for traditional sampling was 0.953 vs. 0.477 for the stirring technique. An "F" test on these values $[(0.953)^2/(0477)^2 = 3.99]$ indicate a significant difference at the 99 percent confidence level. Clearly, the stirring

technique has significantly improved precision without significantly biasing the mean WP concentration estimate. Both methods seemed equally capable of detecting the presence of WP at low concentrations. The stirring technique would lend itself well to compositing several samples over a given area. Then the average concentration could be used to determine the need for remediation of that area or the likelihood of a duck finding WP in that area. The compositing would save time and money and still provided the required amount of information.

(4) Fish and Macroinvertebrates. Of the 86 fish and invertebrate samples analyzed in the past three studies, only four had WP in them (Tables C-1 through C-4). The positive results are presented in Table 1. They are all from the fall 1994 study.

TABLE 1. POSITIVE WP RESULTS FROM 86 TISSUE ANALYSES FROM ERF

Sample Site	Media	WP (μg/kg wet weight)
A4	Fish	67.8
RI1	Fish	24.1
RI2	Fish	82.3
RI2	Invertebrates	67.6

These are fairly low levels and will not threaten human health, birds, or mammals if the fish or invertebrates are eaten. A 1-kg duck would have to eat 82 kg of WP contaminated fish a day to reach a lethal dose of 6.7 mg/kg/day.

b. Field Measurements. The results of five continuous recording multiparameter instruments (Hydrolabs) are presented in Tables C-6 through C-10. The field measurements taken at each sample site are presented in Tables C-11 and C-12. As Figures 5 through 8 show, directly comparing characteristics such as temperature, pH, dissolved oxygen (DO), and even salinity between sample sites must be done with caution because they all can vary with the time of day. All results can increase as the day progresses until late afternoon when they start down again. The pH and DO were higher where algae and aquatic plants were growing. The DO was above saturation at many sample sites. However, the DO was low at Sample Sites C3, RI1 and RI2 in the fall study. The conductivity and salinity measurements vary depending on where in ERF the sample site is located, recent tidal events, and how much evaporation has occurred since the last flooding tide.

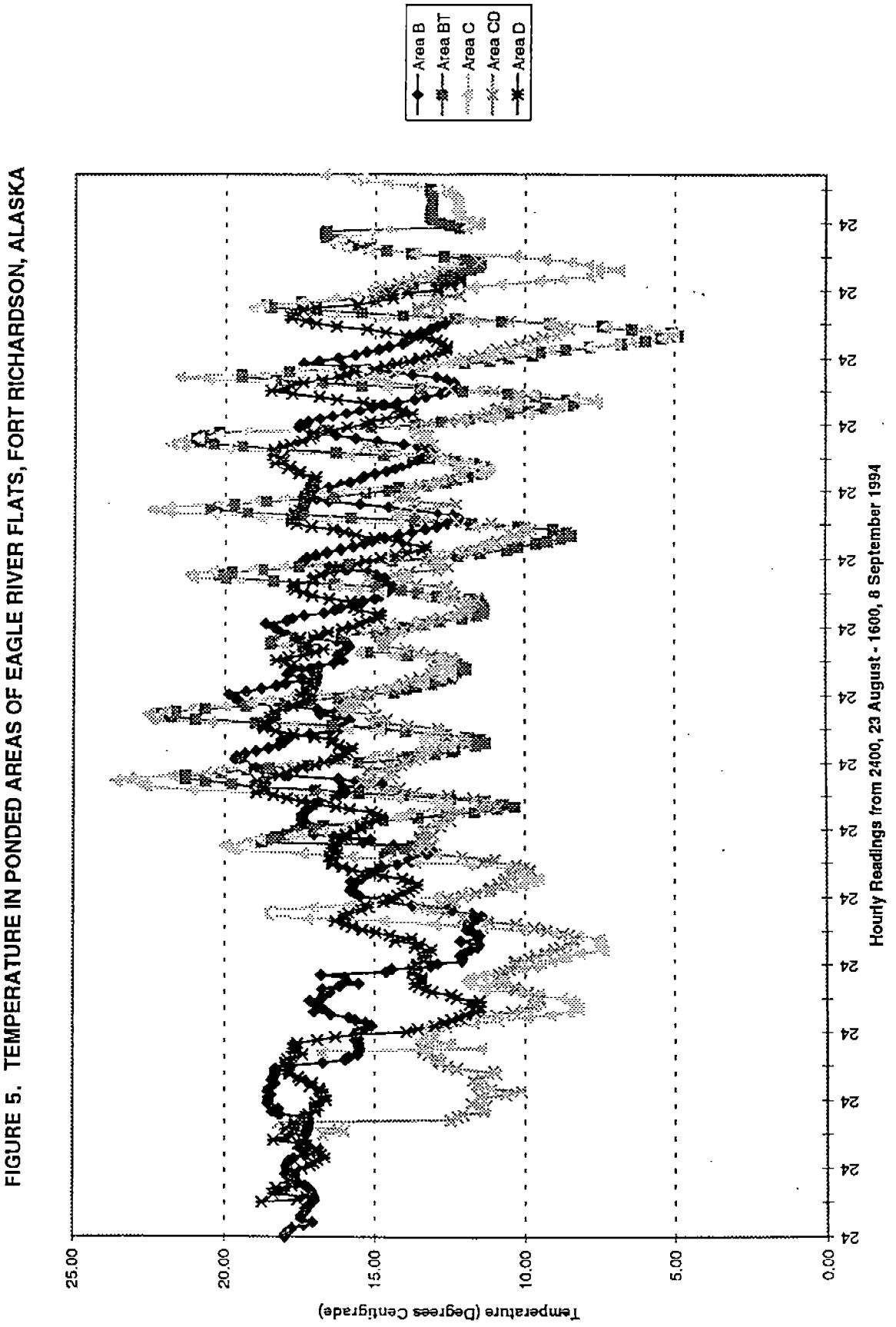


FIGURE 5. TEMPERATURE IN PONDED AREAS OF EAGLE RIVER FLATS, FORT RICHARDSON, ALASKA

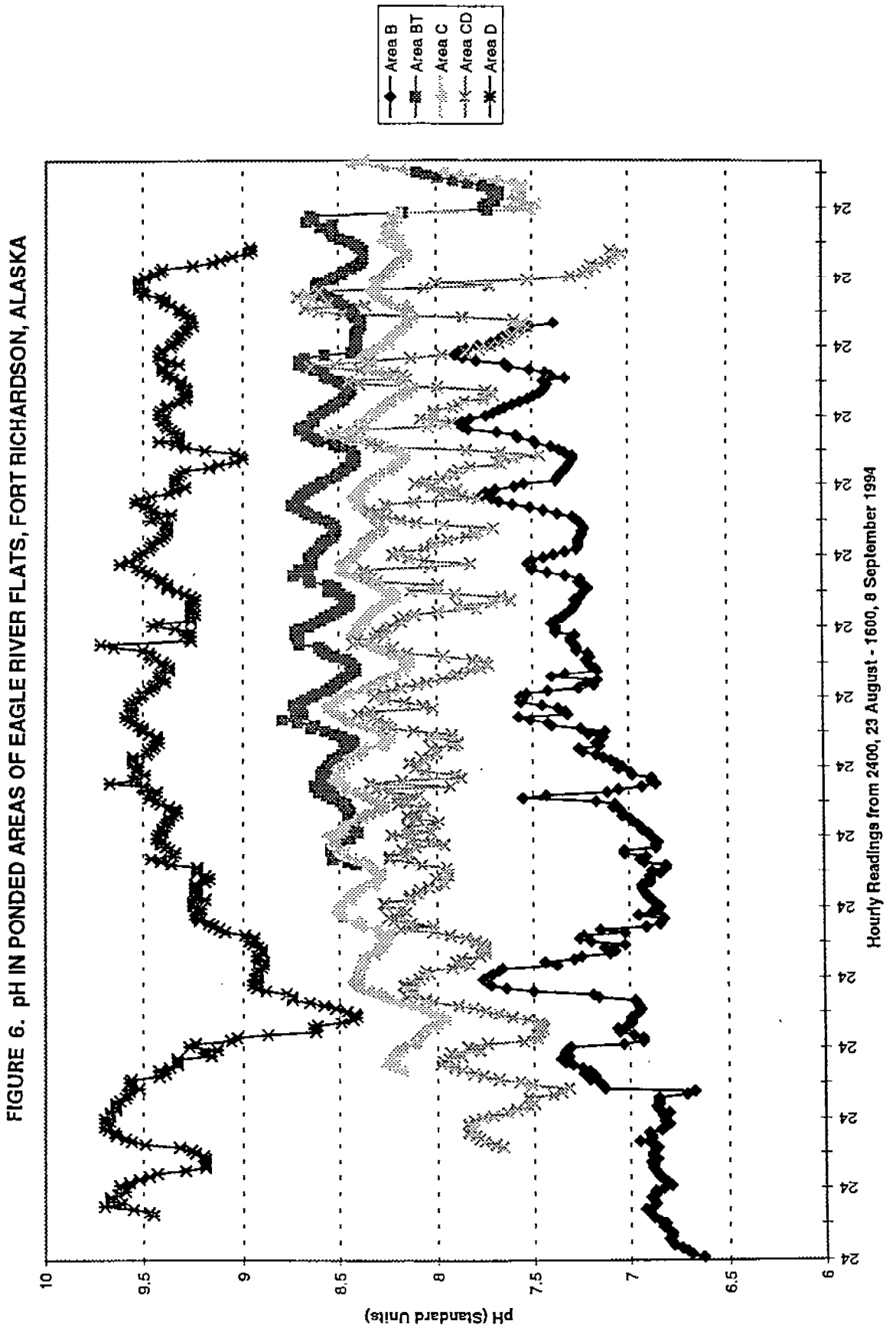


FIGURE 6. pH IN PONDED AREAS OF EAGLE RIVER FLATS, FORT RICHARDSON, ALASKA

FIGURE 7. SALINITY IN PONDED AREAS OF EAGLE RIVER FLATS, FORT RICHARDSON, ALASKA

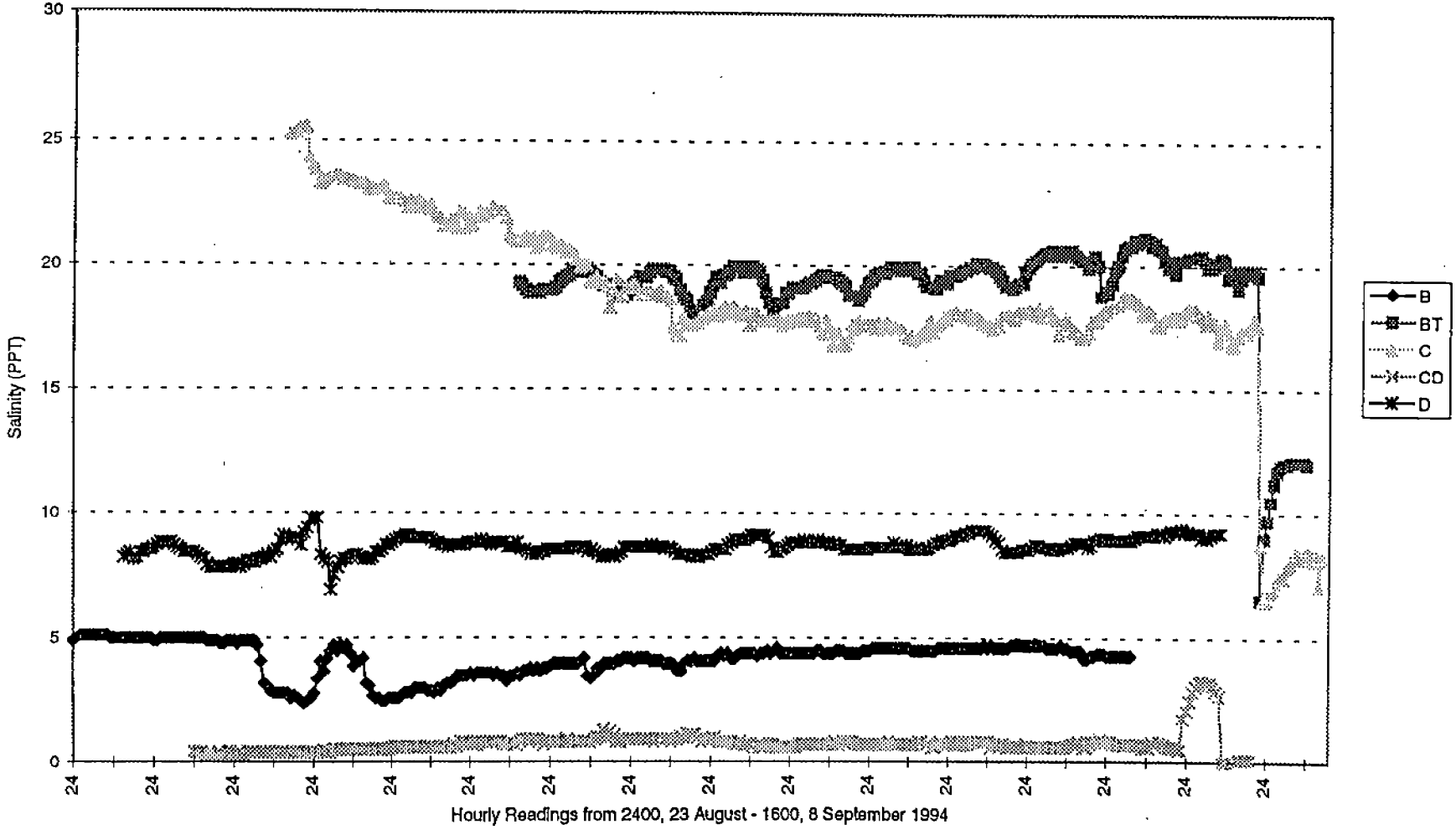
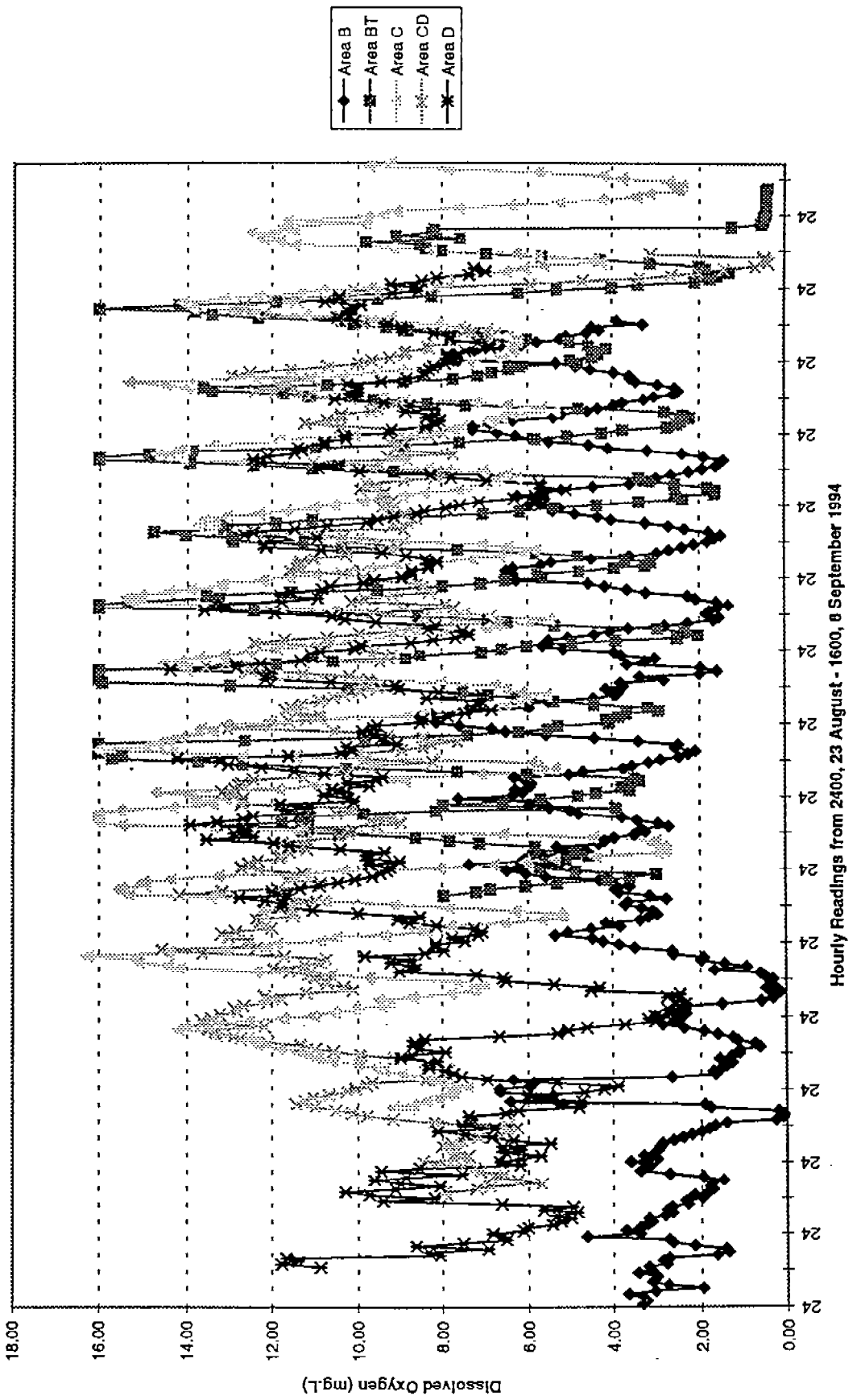


FIGURE 8. DISSOLVED OXYGEN IN PONDED AREAS OF EAGLE RIVER FLATS, FORT RICHARDSON, ALASKA



c. Water Chemistries. The results of the water chemistry analysis are presented in Tables C-13 and C-14. The concentrations of nitrogen and phosphate phosphorus in the water indicate that nitrogen is the limiting nutrient in ERF. Therefore, additional phosphate from WP would not effect the growth of algae and aquatic plants. The total suspended solids results agree with CRREL's findings that moderate solids are coming from Eagle River, and high solids are coming from Knik Arm. It was noted by the study team that solids settle onto ERF rapidly after a flooding tide.

d. Sediment Chemistries. The results of the sediment analysis are presented in Tables C-15 and C-16.

e. Benthic Macroinvertebrates. The summaries of the benthic macroinvertebrate results are presented in Tables C-17 and C-18, and the complete taxonomic data is presented in Appendix D. In the spring study the average diversity, number of species, and number of organisms per sample site in the reference sites were 0.54, 3, and 1,194, respectively, and the WP contaminated sites were 0.54, 3.7, and 1,469, respectively. In the fall study the average diversity, number of species, and number of organisms per sample site in the reference sites were 0.72, 2.5, and 929, respectively, and the WP contaminated sites were 0.53, 3.12, and 2,066, respectively. None of these are statistically different. The trend toward lower numbers of organisms per unit area found in the July 1993 study is reversed in the 1994 studies. There is no evidence that WP is adversely affecting the benthic macroinvertebrate communities in ERF.

f. Sediment Toxicity Testing. The results of the sediment toxicity testing are presented in Appendix E.

(1) The WP concentrations for the sediment toxicity test conducted on the full strength sediments from each sample site is presented in Table C-1. The water WP concentrations at the beginning and the end of the 30-day toxicity tests were fairly high from the Racine Island samples and below detection limits from the remaining samples except for low level detections from sample sites BT3, C2, and C3. The sediment WP concentrations for the sediment toxicity tests would be the average of the three subsamples for the field sampling, since the sediment used in each test was a composite of equal portions from each of these subsamples. The WP in water was higher at field sample sites than in the toxicity tests because water in the ponded areas can be exposed to highly contaminated sediments and then drift to areas that are less contaminated.

(2) The sediment toxicity results from the field references (sites GB1 and GB2) did not compare well with the laboratory control. In the Chironomus tests, DT6 and DUP2 were the only sample sites with survival and emergence results statistically the same as the

laboratory control. In the Chironomus tests, sample sites that had statistically lower survival and/or emergence compared to the field references were DT2, A1, A2, C2, C3, CD1, CD2, RI1, and RI2. No WP was detected at sample sites DT2, A2, CD1, or CD2. It is unknown why these sites indicated toxicity and other sites with WP did not. In the Hyallela tests, DT1, GB2, A1, BT2, and C1 were the only sample sites with survival and reproduction statistically similar to the laboratory control. Sample sites with survival and/or reproduction statistically lower than the reference site were ER2, RI1, and RI2. The only sample sites with an effect on both organisms were RI1 and RI2. These were the only sample sites with high WP concentrations. There was no WP detected at sample site ER2.

(3) A summary of the results from the sediment toxicity tests where WP contaminated sediment was serially diluted is presented in Table 2.

TABLE 2. SUMMARY OF SEDIMENT TOXICITY TESTS

Toxicity Test	LC_{50} WP ng/L	LC_{50} WP µg/kg	LC_{50} % WP Contaminated Sediment	Survival NOEL µg/kg LOEL µg/kg	Chronic NOEL µg/kg LOEL µg/kg
Hyalella azteca Renewal	9022.6	9100.7	7.47	7100 16000	1500 3800
Hyalella azteca Disturbed	7520	6850	5.0	3800 7100	3800 7100
Chironomus riparius Renewal	Not able to calculate	256.2	0.27	26 41	1600 2300
Chironomus riparius Disturbed	484	484.6	0.44	41 1600	41 1600
Chironomus riparius 1 µL WP particles	Not able to calculate	16212	Particles 3.26	10000 20000	0 5000
Chironomus riparius 3 µL WP particles	Not able to calculate	Not able to calculate	Particles < 1	0 14250	0 14250

The WP chemistry data are presented in Tables C-19 and C-20. The sediment used in the toxicity testing came from Racine Island. It is still unknown why organisms can live in the ponds on Racine Island, and the same sediment can kill organisms in the laboratory at diluted

concentrations. It was hoped that the two different tests would answer this question. One test was conducted without renewing the overlying water and disturbing the sediments similar to how ducks would feed. The other test was conducted with renewal of water twice a week and without disturbing the sediment beyond what is required in collecting and diluting the sediment sample. There was little difference in either of these two types of sediment tests both in the WP concentrations in the water or in the toxicity of the WP. The amount of WP dissolved in the water column must quickly reach equilibrium with the amount of WP exposed to the water at the sediment surface; it makes no difference if the water is renewed or not.

(4) The midge larva Chironomus riparius was the most sensitive species to WP in our sediment toxicity tests. The lowest LC_{50} and the lowest NOEL were 256 μg/kg and 26 μg/kg WP, respectively. The lowest LC_{50} and NOEL in the Hyalella azteca sediment toxicity tests was 6,850 μg/kg and 1,500 μg/kg WP, respectively.

10. CONCLUSIONS. The data from these studies indicate that a WP cleanup level would not be driven by effects on benthic macroinvertebrates or bioaccumulation in fish tissue. The benthic macroinvertebrate data indicate that WP is not affecting the diversity, number of species, or number of organisms per unit area in ERF. Out of 86 fish and invertebrate samples analyzed for WP from three studies, there were low levels detected in only three fish samples and one invertebrate sample in the fall 1994 study. One fish sample came from Area A and the rest were from Racine Island. The midge larva Chironomus riparius was the most sensitive species to WP in our sediment toxicity studies. The lowest LC_{50} and the lowest NOEL were 256 μg/kg and 26 μg/kg WP, respectively. There are concentrations above these levels in ERF, but our sampling of the benthic macroinvertebrates found no adverse effect on the community structure.

11. RECOMMENDATION. Use the data collected in this study to help complete the ecological and human health risk assessments.

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APPENDIX A

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APPENDIX B

STUDY PLAN TABLES

Characteristic	Reference	Method
Water		
pH	EPA 360.1*	Electrochemical
Conductivity	EPA 121.1*	Specific Conductance, μmhos at 25 °C
Dissolved Oxygen	EPA 360.1*	Electrochemical membrane
Temperature	EPA 170.1*	Thermometric
Salinity	EPA 121.1*	YSI Conductivity Salinity Meter
Ammonia-Nitrogen	EPA 350.1*	Automated Phenate Following Distillation
Nitrate/Nitrite-Nitrogen	EPA 353.2*	Automated Cadmium Reduction
Total Phosphate-Phosphorus	EPA*	Spectrometric, Ascorbic Acid
Total Dissolved Solids	EPA 120.1*	Gravimetric, dried at 103-105 °C
Total Suspended Solids	EPA 160.2*	Gravimetric, dried at 103-105 °C
White Phosphorus	USAEHA-┼	Gas Chromatography after Extraction with Toluene
Sediments		
Total Organic Matter	CS p. 475=╪	Volatilization at 700 °C
Total Nitrogen	MSA 31-7.1§	Salicylic Acid, H_2SO_4, Distillation, Titration
Ammonia-Nitrogen	SM 417B**	KCl/MgO Distillation, Titration
Total Phosphate-Phosphorus	SM 424c&F**	Perchloric Acid Digestion, Ascorbic Acid
White Phosphorus	USATHAMA-┼	Gas Chromatography after Extraction with Isooctane
Fish		
White Phosphorus	USATHAMA-┼	Gas Chromatography after Extraction with Isooctane
Invertebrates		
White Phosphorus	USATHAMA-┼	Gas Chromatography after Extraction with Isooctane

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TABLE B-2. SAMPLING SCHEME, ERF, FORT RICHARDSON, ALASKA, 8-27 MAY 1994

Parameter	Sample Site ER1	ER2	DT1	DT2	DT3	DT4	DT5	DT6	DT7	A1	A2	DUP1	DUP2
Field Measured Characteristics													
Dissolved Oxygen	w	w	w	w	w	w	w	w	w	w	w	w	w
Salinity	w	w	w	w	w	w	w	w	w	w	w	w	w
Conductivity	w	w	w	w	w	w	w	w	w	w	w	w	w
pH	w	w	w	w	w	w	w	w	w	w	w	w	w
Temperature	w	w	w	w	w	w	w	w	w	w	w	w	w
ORPotential	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws
Chemical Analyses													
Ammonia	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws
Total Nitrogen	s	s	s	s	s	s	s	s	s	s	s	s	s
Total Phosphates	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws
Nitrate/Nitrite-N	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws
Suspended Solids	w	w	w	w	w	w	w	w	w	w	w	w	w
Dissolved Solids	w	w	w	w	w	w	w	w	w	w	w	w	w
T Organic Carbon	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws
White Phosphorus (WP)													
White Phosphorus	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws
Dissolved WP	w	w	w	w	w	w	w	w	w	w	w	w	w
WP Total												f	
WP Total										i	i	i	i
Benthic Macroinvertebrates													
Diversity H	i	i	i	i	i	i	i	i	i	i	i	i	i
Species Richness	i	i	i	i	i	i	i	i	i	i	i	i	i
Taxa Dominance	i	i	i	i	i	i	i	i	i	i	i	i	i
Similarity	i	i	i	i	i	i	i	i	i	i	i	i	i

See footnotes on page B-4.

TABLE B-2. SAMPLING SCHEME, ERF, FORT RICHARDSON, ALASKA, 8-27 MAY 1994 (Continued)

Parameter	Sample Site													
	BT1	BT2	BT3	C1	C2	C3	RI1	RI2	CD1	CD2	GB1	GB2	GB3	FC1
Field Measured Characteristics														
Dissolved Oxygen	w	w	w	w	w	w	w	w	w	w	w	w	w	w
Salinity	w	w	w	w	w	w	w	w	w	w	w	w	w	w
Conductivity	w	w	w	w	w	w	w	w	w	w	w	w	w	w
pH	w	w	w	w	w	w	w	w	w	w	w	w	w	w
Temperature	w	w	w	w	w	w	w	w	w	w	w	w	w	w
ORPotential	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws
Chemical Analyses														
Ammonia	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws
Total Nitrogen	s	s	s	s	s	s	s	s	s	s	s	s	s	s
Total Phosphates	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws
Nitrate/Nitrite-N	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws
Suspended Solids	w	w	w	w	w	w	w	w	w	w	w	w	w	w
Dissolved Solids	w	w	w	w	w	w	w	w	w	w	w	w	w	w
T Organic Carbon	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws
White Phosphorus														
White Phosphorus	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws
Dissolved WP	w	w	w	w	w	w	w	w	w	w	w	w	w	w
WP Total						f			f	f				
WP Total	i	i	i	i	i	i	i	i	i	i	i	i		i
Benthic Macroinvertebrates														
Diversity H	i	i	i	i	i	i	i	i	i	i	i	i	i	i
Species Richness	i	i	i	i	i	i	i	i	i	i	i	i	i	i
Taxa Dominance	i	i	i	i	i	i	i	i	i	i	i	i	i	i
Similarity	i	i	i	i	i	i	i	i	i	i	i	i	i	i

w = Water sample collected and analyzed.
s = Sediment sample collected and analyzed.
f = Fish sample collected and analyzed.
i = Invertebrates collected and analyzed.

TABLE B-3. SAMPLING SCHEME, ERF, FORT RICHARDSON, ALASKA, AUGUST/SEPTEMBER 1994

Parameter	Sample Site ER1	ER2	ER3	ER4	DT1	DT2	DT3	DT4	DT5	DT6	DT7	A1*	A2*	A3*
Field Measured Characteristics														
Dissolved Oxygen	w	w	w	w	w	w	w	w	w	w	w	w	w	w
Salinity	w	w	w	w	w	w	w	w	w	w	w	w	w	w
Conductivity	w	w	w	w	w	w	w	w	w	w	w	w	w	w
pH	w	w	w	w	w	w	w	w	w	w	w	w	w	w
Temperature	w	w	w	w	w	w	w	w	w	w	w	w	w	w
ORPotential	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws
Chemical Analyses														
Ammonia	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws
Total Nitrogen	s	s	s	s	s	s	s	s	s	s	s	s	s	s
Total Phosphates	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws
Nitrate/Nitrite-N	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws
Suspended Solids	w	w	w	w	w	w	w	w	w	w	w	w	w	w
Dissolved Solids	w	w	w	w	w	w	w	w	w	w	w	w	w	w
T Organic Carbon	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws
White Phosphorus														
White Phosphorus	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws
Dissolved WP	w	w	w	w	w	w	w	w	w	w	w	w	w	w
WP Total					f							f	f	f
WP Total														
Benthic Macroinvertebrates														
Diversity H	i	i	i	i	i	i	i	i	i	i	i	i	i	i
Species Richness	i	i	i	i	i	i	i	i	i	i	i	i	i	i
Taxa Dominance	i	i	i	i	i	i	i	i	i	i	i	i	i	i
Similarity	i	i	i	i	i	i	i	i	i	i	i	i	i	i

See footnotes on page B-7.

TABLE B-3. SAMPLING SCHEME, ERF, FORT RICHARDSON, ALASKA, AUGUST/SEPTEMBER 1994
(Continued)

Parameter	Sample Site A4*	A5*	B1	B2	B3	BT1*	BT2*	BT3*	C1*	C2*	C3*	C4*	C5*	4DUPs*
Field Measured Characteristics														
Dissolved Oxygen	w	w	w	w	w	w	w	w	w	w	w	w	w	w
Salinity	w	w	w	w	w	w	w	w	w	w	w	w	w	w
Conductivity	w	w	w	w	w	w	w	w	w	w	w	w	w	w
pH	w	w	w	w	w	w	w	w	w	w	w	w	w	w
Temperature	w	w	w	w	w	w	w	w	w	w	w	w	w	w
ORPotential	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws
Chemical Analyses														
Ammonia	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws
Total Nitrogen	s	s	s	s	s	s	s	s	s	s	s	s	s	s
Total Phosphates	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws
Nitrate/Nitrite-N ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	
Suspended Solids	w	w	w	w	w	w	w	w	w	w	w	w	w	w
Dissolved Solids	w	w	w	w	w	w	w	w	w	w	w	w	w	w
T Organic Carbon	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws
White Phosphorus														
White Phosphorus	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws
Dissolved WP	w	w	w	w	w	w	w	w	w	w	w	w	w	w
WP Total	f	f	f	f	f	f	f			f	f		f	f
WP Total											i		i	i
Benthic Macroinvertebrates														
Diversity H	i	i	i	i	i	i	i	i	i	i	i	i	i	i
Species Richness	i	i	i	i	i	i	i	i	i	i	i	i	i	i
Taxa Dominance	i	i	i	i	i	i	i	i	i	i	i	i	i	i
Similarity	i	i	i	i	i	i	i	i	i	i	i	i	i	i

See footnotes on page B-7.

TABLE B-3. SAMPLING SCHEME, ERF, FORT RICHARDSON, ALASKA, AUGUST/SEPTEMBER 1994 (Continued)

Parameter	Sample Site											
	CD1*	CD2*	D1	D2	D3	RI1*	RI2*	RI3*	GB1	GB2	GB3	GB4
Field Measured Characteristics												
Dissolved Oxygen	w	w	w	w	w	w	w	w	w	w	w	w
Salinity	w	w	w	w	w	w	w	w	w	w	w	w
Conductivity	w	w	w	w	w	w	w	w	w	w	w	w
pH	w	w	w	w	w	w	w	w	w	w	w	w
Temperature	w	w	w	w	w	w	w	w	w	w	w	w
ORPotential	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws
Chemical Analyses												
Ammonia	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws
Total Nitrogen	s	s	s	s	s	s	s	s	s	s	s	s
Total Phosphates	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws
Nitrate/Nitrite-N	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws
Suspended Solids	w	w	w	w	w	w	w	w	w	w	w	w
Dissolved Solids	w	w	w	w	w	w	w	w	w	w	w	w
T Organic Carbon	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws
White Phosphorus												
White Phosphorus	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws	ws
Dissolved WP	w	w	w	w	w	w	w	w	w	w	w	w
WP Total	f	f	f	f	f	f	f			f	f	f
WP Total		i				i	i					
Benthic Macroinvertebrates												
Diversity H	i	i	i	i	i	i	i	i	i	i	i	i
Species Richness	i	i	i	i	i	i	i	i	i	i	i	i
Taxa Dominance	i	i	i	i	i	i	i	i	i	i	i	i
Similarity	i	i	i	i	i	i	i	i	i	i	i	i

* These sample sites will have three replicate macroinvertebrate and sediment white phosphorus samples collected. The remaining sites will have one macroinvertebrate and sediment white phosphorus sample collected.

w = Water sample collected and analyzed.
s = Sediment sample collected and analyzed.
f = Fish sample collected and analyzed.
i = Invertebrate sample collected and analyzed.

APPENDIX C

CHEMICAL, FIELD, AND MACROINVERTEBRATE DATA TABLES

TABLE C-1. RESULTS OF WHITE PHOSPHORUS ANALYSIS, EAGLE RIVER FLATS, FORT RICHARDSON, ALASKA, 8-27 MAY 1994

Sample	Field Sampling		30 Day Sediment Bioassay (Water)				Field Sampling µg/kg wet weight				
Site	WP in Water ng/L		Day 1 WP ng/L		Day 30 WP ng/L		Sediment			Fish	Invert-ebrates
	Dissolved	Total	Dissolved	Total	Dissolved	Total	A	B	C		
A1	<4.8	<4.8	<4.8	<4.8	<5.5	<5.5	<0.88	1.7	<0.88	NC	<37
A2	<4.8	<4.8	<4.8	<4.8	<5.5	<5.5	<0.88	<0.88	<0.88	NC	<16
BT1	13	14	<4.8	<4.8	<5.5	<5.5	<0.88	<0.88	2.8	NC	<18
BT2	9.9	11	<4.8	<4.8	<5.5	<5.5	4.3	<0.88	1.2	NC	<15
BT3	5.7	8.4	<4.8	<4.8	11	16	<0.88	15	<0.88	NC	<13
C1	17	24	<4.8	<4.8	<5.5	<5.5	<0.88	<0.88	<0.88	NC	<14
C2	29	35	<4.8	11	<5.5	<5.5	96	1500	860	NC	<18
DUP2*	5.9	7.1	23.0†	<4.8	<5.5	<5.5	11.0	8.9	54	NC	<17
C3	<4.8	<4.8	8.6	8.4	<5.5	<5.5	3000	4.5	64	<25	<23
DUP1*	<4.8	<4.8	16.0†	<4.8	<5.5	<5.5	27	2.3	2.8	<25	<12
CD1	<4.8	<4.8	<4.8	<4.8	<5.5	<5.5	<0.88	<0.88	<0.88	<15	<12
CD2	<4.8	<4.8	<4.8	<4.8	<5.5	<5.5	<0.88	<0.88	<0.88	<17	<15
RI1	100	110	1100	1500	1700	2100	28	620000	2.2	NC	<13
RI2	330	460	<4.8	920	1100	560	180	5800	140000	NC	<20
RI2B	4600	5300									
FC1	<4.8	<4.8	‡	‡	‡	‡	<0.88	<0.88	<0.88	NC	<11
GB1	<4.8	<4.8	120.0†	<4.8	<5.5	<5.5	<0.88	<0.88	<0.88	NC	<21
GB2	<4.8	<4.8	370.0†	<4.8	§	<5.5	<0.88	<0.88	<0.88	NC	<14
GB3	<4.8	<4.8	‡	‡	‡	‡	<0.88	<0.88	<0.88	NC	NC
ER1	<4.8	<4.8	20.0†	<4.8	<5.5	<5.5	<0.88	<0.88	<0.88	NC	NC
ER2	<4.8	<4.8	<4.8	<4.8	§	<5.5	<0.88	<0.88	<0.88	NC	NC
DT1	<4.8	<4.8	<4.8	<4.8	<5.5	<5.5	<0.88	<0.88	<0.88	NC	NC
DT2	<4.8	<4.8	<4.8	<4.8	§	<5.5	<0.88	<0.88	<0.88	NC	NC
DT3	<4.8	<4.8	<4.8	<4.8	§	§	<0.88	<0.88	<0.88	NC	NC
DT4	<4.8	<4.8	<4.8	<4.8	<5.5	<5.5	<0.88	<0.88	<0.88	NC	NC
DT5	<4.8	<4.8	<4.8	<4.8	<5.5	<5.5	<0.88	<0.88	<0.88	NC	NC
DT6	<4.8	<4.8	<4.8	<4.8	<5.5	<5.5	<0.88	<0.88	<0.88	NC	NC
DT7	§	<4.8	570.0†	<4.8	<5.5	<5.5	<0.88	<0.88	<0.88	NC	NC

* DUP1 is a duplicate sample for C3 and DUP2 is a duplicate sample for C2.
† These samples all had WP detected in the filtered sample and not in the total sample. Likely, the contract laboratory cross contaminated these samples when filtering.
‡ These reference sites were not used in the toxicity study.
§ The sample containers were broken in shipment.
NC Not collected because organisms were too scarce to collect in less than 2 hours effort.

TABLE C-2. RESULTS OF WHITE PHOSPHORUS ANALYSIS, EAGLE RIVER FLATS, FORT RICHARDSON, ALASKA, 9-11 MAY 1994*

	Water ng/L		µg/kg wet weight		
Sample Site	Dissolved WP	Total WP	Sediment WP	Fish WP	Invert. WP
BP1	<4.8	<4.8	<0.88	<90	<40
BP2	<4.8	<4.8	<0.88	NC	<12
BP3	<4.8	<4.8	<0.88	<25	<21
BP4	<4.8	<4.8	<0.88	<14	<13
BTP3	<4.8	<4.8	<0.88	NC	<31
BTP5	<4.8	<4.8	<0.88	<14	<180
BTP8	<4.8	<4.8	<0.88	NC	<12
BTP9	<4.8	<4.8	<0.88	NC	<14
CP1	<4.8	<4.8	<0.88	NC	<27
CP2	12	12	<0.88	NC	<31
CP3	<4.8	<4.8	<0.88	NC	<12
DP1	<4.8	<4.8	<0.88	<21	<23
DP2	<4.8	<4.8	<0.88	<31	<220
DP3	<4.8	<4.8	<0.88	<90	<12

* This is a confirmation sampling of Patuxent Wildlife Research Center sample sites presenting only sample sites that were not already being sampled for the USAEHA study.

NC Not collected because organisms were to scarce to collect in less than 2 hours effort.

TABLE C-3. RESULTS OF WP ANALYSIS, EAGLE RIVER FLATS, FORT RICHARDSON, ALASKA, 22 AUGUST - 9 SEPTEMBER 1994

Sample Site	Water ng/L		Sediment WP µg/kg			Water/ Sediment WP µg/kg			WP IN TISSUE µg/kg	
	Diss. WP	Total WP	A	B	C	A	B	C	Fish	Inverte-brates
A1	<5.1	<5.1	0.57	0.60	0.92	<0.17	<0.17	<0.17	<3.7	NC
A2	9.8	66	0.20	<0.19	<0.19	0.25	<0.17	<0.17	<3.7	NC
A3	<5.1	16	<0.18	<0.18	<0.19	0.17	<0.17	<0.17	<3.7	NC
A4	<5.1	39	<0.18	<0.18	<0.18	<0.16	<0.16	<0.16	67.8	NC
A5	<5.1	<5.1	0.25	<0.19	<0.18	<0.16	<0.16	<0.16	<18	NC
B1	<5.0	<5.0	<0.21						<18	NC
B2	<5.0	<5.0	<0.22						<3.7	NC
B3	<5.0	<5.0	<0.22						<18	NC
BT1	6.6	<4.9	<0.92	<0.92	<0.92	1.7	1.8	1.8	<18	NC
BT2	<4.9	<4.9	2.4	<0.93	<0.93	0.57	1.0	1.9	<18	NC
BT3	<4.9	<4.9	<0.93	<0.19	0.47	0.26	0.32	<0.16	NC	NC
C1	*	<5.1	4.2	9.0	3.7	0.77	0.29	<0.17	NC	NC
C2	<5.1	<5.1	19	160	660	170	92	200	<18	NC
DUP2†	<5.1	<5.1	940	76	6.1	68	39	19	<18	NC
C3	*	<5.1	23	3400	12000	270	590	6.0	<18	<3.7
DUP1†	<5.1	<5.1	1100000	95000	2900	82000	52000	35000	<18	<3.7
C4	<5.1	<5.1	12	12	57	9.7	6.6	6.3	NC	NC
C5	<5.1	<5.1	<92	<92	<92	0.47	<0.19	<0.19	<18	<5.4
CD1	<5.1	<5.1	<0.22	<0.22	2.8	0.43	<0.19	<0.19	<18	NC
CD2	<5.1	<5.1	<0.21	<0.22	3.0	<0.18	<0.18	<0.18	<18	<3.7
D1	<5.0	<5.0	<0.22						<18	NC
D2	<5.0	<5.0	<0.21						<18	NC
D3	<5.0	<5.0	<0.22						<18	NC
GB1	<5.1	<4.9	<0.19						NC	NC
GB2	<5.1	<4.9	<0.93						<18	NC
GB3	<5.1	<4.9	0.47						<18	NC
GB4	<5.1	<4.9	0.70						<18	NC
RI1	<5.1	660	20	70	10	370	14000	5300	24.1	<11
RI2	4500	4400	210	42000	260000	7000	32000	4900	82.3	67.6
RI3	8.7	<4.9	330	360	33	49	43	45	NC	NC
DUP3†	13	9.1	16	10	2	10	16	18	NC	NC
ER1	<5.0	<5.0	<0.19						NC	NC

TABLE C-3. RESULTS OF WP ANALYSIS, EAGLE RIVER FLATS, FORT RICHARDSON, ALASKA, 22 AUGUST - 9 SEPTEMBER 1994 (Continued)

Sample Site	Water ng/L		Sediment WP µg/kg			Water/ Sediment WP µg/kg			WP IN TISSUE µg/kg	
	Diss. WP	Total WP	A	B	C	A	B	C	Fish	Inverte-brates
ER2	<5.0	<5.0	<0.19						NC	NC
ER3	<5.0	<5.0	<0.19						NC	NC
ER4	<5.0	<5.0	<0.19						NC	NC
DT1	<5.0	<5.0	0.48						<18	NC
DT2	<5.0	<5.0	<0.19						NC	NC
DT3	<5.0	<5.0	<0.19						NC	NC
DT4	<5.0	<5.0	<0.19						NC	NC
DUP4‡	<5.0	<5.0	0.83						NC	NC
DT5	<5.0	<5.0	<0.19						NC	NC
DT6	<5.0	<5.0	<0.19						NC	NC
DT7	<5.0	<5.0	<0.19						NC	NC

* Sample bottle broken in shipment.
‡ DUP1, DUP2, DUP3, and DUP4 are duplicate samples for C3, C2, RI3, and DT4, respectively.
NC Not collected because organisms were too scarce to collect in less than 1 hour effort.

TABLE C-4. ORGANISMS ANALYZED FOR WP, EAGLE RIVER FLATS, FORT RICHARDSON, ALASKA, SPRING AND FALL 1994 SAMPLING

Sample Site	Invertebrates Spring	Fish Spring	Invertebrates Fall	Fish Fall
A1	Chironomus	NC	NC	Stickleback
A2	Chironomus	NC	NC	Stickleback
A3			NC	Stickleback
A4			NC	Stickleback
A5			NC	Stickleback
BP1-B1	Chironomus	3 9-Spine Sticklebacks	NC	Stickleback
BP2-B2	30 Dragonflies 10 Damselflies	NC	NC	Sticklebacks
BP3	8 Dragonflies 9 Damselfies	6 9-Spine 3 3-Spine Sticklebacks		
BP4-B3	30 Dragonflies 30 Damselflies	30 3-Spine 12 9-Spine Sticklebacks	NC	Sticklebacks
BT1	Chironomus	NC	NC	Sticklebacks
BT2	Chironomus	NC	NC	Sticklebacks
BT3	Chironomus	NC	NC	NC
C1	Chironomus	NC	NC	NC
C2	Chironomus	NC	NC	Sticklebacks
DUP2	Chironomus	NC	NC	Sticklebacks
C3	20 Dragonflies 100 Damselflies	2 3-Spine Sticklebacks	Dragonflies Damselflies	Sticklebacks
DUP1	30 Dragonflies 36 Damselflies	2 3-Spine Sticklebacks	Dragonflies Damselflies	Sticklebacks
C4			NC	NC
CP3-C5	3 Cadisflies 8 Dragonflies 4 Snails 100 Damselflies	NC	Dragonflies Damselflies	Sticklebacks

TABLE C-4. ORGANISMS ANALYZED FOR WP, EAGLE RIVER FLATS, FORT RICHARDSON, ALASKA, SPRING AND FALL 1994 SAMPLING (Continued)

Sample Site	Invertebrates Spring	Fish Spring	Invertebrates Fall	Fish Fall
CP1	4 Cadisflies 2 Snails 1 Mousie 3 Dranonflies 80 Damselflies	NC		
CP2	2 Mousies 5 Chironomus 100 Damselflies	NC		
CD1	20 Dragonflies 30 Damselflies	Several mixed Sticklebacks	NC	Sticklebacks
CD2	20 Dragonflies 30 Damselflies	Several mixed Sticklebacks	Dragonflies Damselflies	Sticklebacks
DP1-D1	3 Dragonflies 40 Chironomus 23 Damselfies	2 3-Spine 1 9-Spine Sticklebacks	NC	Sticklebacks
DP2-D2	2 Mousies	1 3-Spine 1 9 Spine Sticklebacks	NC	Sticklebacks
DP3-D3	17 Dragonflies 25 Damselflies 2 Amphopods	1 3-Spine Stickleback	NC	Sticklebacks
FC1	20 Damselflies	NC	Damselflies Dragonflies	NC
GB1	Chironomus	NC	NC	NC
GB2	Chironomus	NC	NC	Sticklebacks
GB3	NC	NC	NC	Sticklebacks
GB4			NC	Sticklebacks
RI1	10 Dragonflies 30 Damselflies	NC	Dramselfies Dragonflies	Sticklebacks
RI2	10 Dragonflies 40 Damselflies	NC	Damselflies Dragonflies	Sticklebacks
RI3			NC	NC
DUP3			NC	NC
ER1			NC	NC
ER2			NC	NC
ER3			NC	NC

TABLE C-4. ORGANISMS ANALYZED FOR WP, EAGLE RIVER FLATS, FORT RICHARDSON, ALASKA, SPRING AND FALL 1994 SAMPLING (Continued)

Sample Site	Invertebrates Spring	Fish Spring	Invertebrates Fall	Fish Fall
ER4			NC	NC
DT1			NC	Sticklebacks
DT2			NC	NC
DT3			NC	NC
DT4			NC	NC
DUP4			NC	NC
DT5			NC	NC
DT6			NC	NC
DT7			NC	NC

NC - Not Collected because organisms were too scarce.
Blank cells indicate that there was no sampling at this location during that study.
Each Chironomus sample was hundreds of organisms.
In the Fall study, stickleback samples were a mixture of 9-Spine (being the most plentiful) and 3-Spine.

TABLE C-5. COMPARISON OF GEOMETRIC MEANS AND STANDARD DEVIATIONS OF LOGS OF WP CONCENTRATIONS FOR TWO SAMPLING METHODS

Sample Site	Traditional Sampling		Stirring Technique	
	Geometric Mean µg/kg	Standard Deviation of logs	Geometric Mean µg/kg	Standard Deviation of Logs
C1	52	0.209	0.34	0.333
C2	126	0.776	146	0.178
DUP2	76	1.094	37	0.278
C3	980	1.437	98	1.066
DUP1	67100	1.296	53100	0.185
C4	20	0.391	7.4	0.103
RI1	24	0.428	3010	0.817
RI2	13200	1.607	10300	0.433
RI3	158	0.588	46	0.029
DUP3	69	0.474	14	0.135
All 30 Samples as a Group	172	1.539	130	1.559
95 % Confidence limits Based on Log Normal for Geometric Mean	46 to 646		34 to 498	
Pooled Standard Deviation of Logs with 20 Degrees of Freedom		0.953		0.477

TABLE C-6. HYDROLAB RESULTS FROM AREA B, ERP, FORT RICHARDSON ALASKA, 23 AUGUST - 6 SEPTEMBER 1994

Date	Time	Temp	pH	SpCond	Salin	DO	DO	Batt
MMDDYY	HHMMSS	degC	units	mS/cm	ppt	%Sat	mg/l	volts
82394	180000	17.80	6.75	9.24	5.2	31.3	2.88	12.6
82394	190000	17.97	6.79	9.23	5.2	36.5	3.34	12.5
82394	200000	17.95	6.82	9.21	5.2	35.6	3.26	12.6
82394	210000	17.82	6.83	9.16	5.2	36.2	3.33	12.4
82394	220000	17.73	6.81	9.09	5.1	39.8	3.66	12.4
82394	230000	17.34	6.66	8.91	5.0	32.8	3.05	12.3
82494	0	17.05	6.63	8.78	4.9	21.0	1.96	12.3
82494	10000	17.41	6.69	8.95	5.0	29.8	2.76	12.2
82494	20000	17.41	6.71	9.05	5.1	33.6	3.12	12.2
82494	30000	17.33	6.74	9.06	5.1	33.1	3.07	12.1
82494	40000	17.26	6.78	9.08	5.1	32.5	3.02	12.1
82494	50000	17.27	6.79	9.13	5.1	37.0	3.44	12.1
82494	60000	17.14	6.80	9.09	5.1	33.8	3.15	12.1
82494	70000	17.07	6.79	9.12	5.1	34.3	3.20	12.0
82494	80000	16.98	6.79	9.09	5.1	30.0	2.80	12.0
82494	90000	16.99	6.81	9.07	5.1	30.6	2.86	12.1
82494	100000	17.04	6.83	9.04	5.1	29.2	2.73	12.2
82494	110000	17.07	6.82	8.96	5.0	17.5	1.63	12.2
82494	120000	17.16	6.85	8.89	5.0	14.6	1.36	12.3
82494	130000	17.29	6.88	8.85	5.0	15.2	1.42	12.3
82494	140000	17.53	6.89	8.84	5.0	23.4	2.16	12.3
82494	150000	17.78	6.90	8.87	5.0	28.8	2.65	12.3
82494	160000	17.75	6.92	8.84	5.0	29.7	2.73	12.3
82494	170000	17.94	6.88	8.94	5.0	50.2	4.61	12.3
82494	180000	17.83	6.87	8.85	5.0	37.0	3.40	12.2
82494	190000	17.89	6.88	8.87	5.0	40.4	3.71	12.2
82494	200000	17.90	6.89	8.89	5.0	36.9	3.39	12.2
82494	210000	17.83	6.87	8.88	5.0	35.2	3.23	12.2
82494	220000	17.80	6.87	8.91	5.0	34.0	3.13	12.2
82494	230000	17.66	6.83	8.86	5.0	34.6	3.19	12.2
82594	0	17.31	6.79	8.71	4.9	30.4	2.83	12.1
82594	10000	17.34	6.81	8.76	4.9	28.6	2.66	12.1
82594	20000	17.43	6.83	8.86	5.0	29.8	2.76	12.2
82594	30000	17.41	6.85	8.87	5.0	28.8	2.67	12.1
82594	40000	17.38	6.86	8.90	5.0	24.9	2.31	12.1
82594	50000	17.34	6.87	8.91	5.0	25.2	2.34	12.1
82594	60000	17.34	6.88	8.93	5.0	21.4	1.98	12.1
82594	70000	17.26	6.88	8.94	5.0	23.1	2.15	12.1
82594	80000	17.24	6.89	8.96	5.0	19.7	1.83	12.1
82594	90000	17.19	6.86	8.94	5.0	18.5	1.73	12.1
82594	100000	17.17	6.88	8.91	5.0	19.2	1.79	12.1
82594	110000	17.17	6.88	8.89	5.0	18.6	1.74	12.1
82594	120000	17.19	6.87	8.88	5.0	15.8	1.48	12.1
82594	130000	17.31	6.86	8.83	5.0	21.0	1.95	12.2
82594	140000	18.12	6.89	8.89	5.0	29.8	2.72	12.3
82594	150000	18.38	6.95	8.91	5.0	37.3	3.39	12.2
82594	160000	18.18	6.89	8.69	4.9	36.0	3.29	12.2
82594	170000	18.45	6.89	8.70	4.9	34.7	3.15	12.2
82594	180000	18.53	6.90	8.70	4.9	39.7	3.60	12.2

TABLE C-6. HYDROLAB RESULTS FROM AREA B, ERP, FORT RICHARDSON ALASKA, 23 AUGUST - 6 SEPTEMBER 1994

Date	Time	Temp	pH	SpCond	Salin	DO	DO	Batt
MMDDYY	HHMMSS	degC	units	mS/cm	ppt	%Sat	mg/l	volts
82594	190000	18.50	6.84	8.64	4.9	33.2	3.01	12.2
82594	200000	18.52	6.82	8.60	4.8	36.3	3.30	12.2
82594	210000	18.43	6.80	8.58	4.8	33.4	3.04	12.2
82594	220000	18.52	6.82	8.66	4.9	32.7	2.97	12.3
82594	230000	18.48	6.82	8.67	4.9	32.3	2.93	12.1
82694	0	18.41	6.83	8.68	4.9	31.7	2.88	12.1
82694	10000	18.29	6.80	8.60	4.8	28.9	2.63	12.1
82694	20000	18.38	6.85	8.71	4.9	26.5	2.41	12.1
82694	30000	18.33	6.86	8.72	4.9	24.3	2.21	12.2
82694	40000	18.28	6.85	8.72	4.9	21.9	1.99	12.1
82694	50000	18.29	6.85	8.76	4.9	19.9	1.81	12.1
82694	60000	18.28	6.85	8.78	4.9	18.3	1.67	12.1
82694	70000	17.75	6.71	8.43	4.7	15.2	1.40	12.1
82694	80000	16.70	6.67	7.31	4.1	2.6	0.25	12.1
82694	90000	15.98	7.13	5.73	3.2	0.9	0.08	12.2
82694	100000	15.84	7.14	5.58	3.1	0.8	0.07	12.2
82694	110000	15.56	7.16	5.27	2.9	2.0	0.19	12.2
82694	120000	15.53	7.21	5.13	2.8	18.2	1.78	12.2
82694	130000	15.49	7.18	5.05	2.8	19.5	1.91	12.2
82694	140000	15.53	7.24	5.04	2.8	65.7	6.43	12.2
82694	150000	15.53	7.21	5.09	2.8	58.4	5.71	12.2
82694	160000	15.64	7.25	5.03	2.8	55.4	5.41	12.2
82694	170000	15.58	7.30	4.82	2.6	68.2	6.67	12.2
82694	180000	15.64	7.34	4.85	2.7	68.3	6.68	12.2
82694	190000	15.54	7.36	4.75	2.6	61.0	5.98	12.2
82694	200000	15.33	7.32	4.60	2.5	59.6	5.87	12.2
82694	210000	15.11	7.34	4.41	2.4	64.2	6.36	12.2
82694	220000	15.29	7.33	4.55	2.5	27.0	2.66	12.1
82694	230000	15.64	7.31	4.74	2.6	16.9	1.66	12.1
82794	0	15.84	7.03	5.03	2.8	17.5	1.70	12.1
82794	10000	16.45	6.93	6.12	3.4	15.8	1.51	12.0
82794	20000	16.99	6.93	7.27	4.1	14.8	1.39	12.0
82794	30000	16.68	6.98	6.72	3.7	13.1	1.25	12.0
82794	40000	16.87	7.05	7.56	4.2	16.5	1.55	11.9
82794	50000	16.99	7.06	8.04	4.5	13.5	1.27	11.9
82794	60000	17.12	7.01	8.34	4.7	11.6	1.09	11.9
82794	70000	16.72	6.99	8.07	4.5	11.4	1.08	11.9
82794	80000	16.67	6.99	8.32	4.7	6.5	0.62	11.9
82794	90000	16.46	6.99	8.24	4.6	7.6	0.72	11.9
82794	100000	16.70	6.97	8.44	4.7	11.9	1.12	11.9
82794	110000	16.15	6.95	7.84	4.4	12.9	1.24	11.9
82794	120000	15.53	6.94	7.07	3.9	16.4	1.60	11.9
82794	130000	15.93	6.95	7.34	4.1	20.0	1.92	11.9
82794	140000	15.98	6.96	7.30	4.1	24.7	2.38	11.9
82794	150000	16.75	6.97	7.54	4.2	30.3	2.86	11.9
82794	160000	14.63	7.16	5.88	3.2	26.4	2.62	11.9
82794	170000	14.44	7.19	5.55	3.1	24.7	2.47	11.9
82794	180000	13.14	7.50	4.87	2.7	29.4	3.03	11.9
82794	190000	12.91	7.64	4.81	2.6	22.5	2.33	11.9

TABLE C-6. HYDROLAB RESULTS FROM AREA B, ERP, FORT RICHARDSON ALASKA, 23 AUGUST - 6 SEPTEMBER 1994

Date	Time	Temp	pH	SpCond	Salin	DO	DO	Batt
MMDDYY	HHMMSS	degC	units	mS/cm	ppt	%Sat	mg/l	volts
82794	200000	12.10	7.72	4.74	2.6	25.0	2.64	11.8
82794	210000	12.08	7.74	4.59	2.5	24.5	2.59	11.8
82794	220000	12.15	7.76	4.65	2.5	14.2	1.49	11.8
82794	230000	12.00	7.73	4.69	2.6	5.4	0.57	11.8
82894	0	11.82	7.71	4.71	2.6	3.0	0.31	11.7
82894	10000	11.58	7.68	4.70	2.6	2.8	0.30	11.7
82894	20000	11.53	7.66	4.82	2.6	1.3	0.14	11.7
82894	30000	12.12	7.38	5.00	2.7	4.3	0.45	11.6
82894	40000	11.56	7.44	5.02	2.8	2.8	0.30	11.6
82894	50000	11.51	7.29	5.12	2.8	3.2	0.35	11.5
82894	60000	11.69	7.25	5.17	2.8	3.0	0.31	11.5
82894	70000	11.92	7.10	5.40	3.0	4.6	0.49	11.5
82894	80000	11.87	7.07	5.47	3.0	5.5	0.59	11.5
82894	90000	11.89	7.13	5.53	3.0	15.8	1.67	11.5
82894	100000	11.76	7.02	5.52	3.0	8.6	0.91	11.6
82894	110000	11.59	7.20	5.29	2.9	13.4	1.43	11.6
82894	120000	11.43	7.26	5.27	2.9	18.5	1.98	11.7
82894	130000	11.75	7.24	5.19	2.8	18.1	1.92	11.7
82894	140000	12.44	7.02	5.46	3.0	25.1	2.62	11.8
82894	150000	12.47	7.15	5.23	2.9	25.3	2.64	11.9
82894	160000	13.76	6.91	5.55	3.1	34.4	3.49	11.9
82894	170000	14.73	6.84	5.83	3.2	38.8	3.85	11.9
82894	180000	14.71	6.83	5.83	3.2	42.4	4.21	11.9
82894	190000	15.49	6.82	5.98	3.3	45.7	4.46	11.9
82894	200000	15.63	6.95	6.30	3.5	55.1	5.35	11.9
82894	210000	15.79	6.88	6.27	3.5	52.0	5.04	11.8
82894	220000	15.74	6.85	6.29	3.5	46.3	4.49	11.8
82894	230000	15.68	6.84	6.34	3.5	39.3	3.82	11.7
82994	0	15.77	6.86	6.43	3.6	42.7	4.14	11.6
82994	10000	15.43	6.88	6.40	3.5	34.6	3.38	11.6
82994	20000	15.35	6.90	6.47	3.6	32.5	3.18	11.6
82994	30000	15.15	6.91	6.51	3.6	30.4	2.99	11.6
82994	40000	14.91	6.92	6.52	3.6	31.2	3.08	11.6
82994	50000	14.76	6.93	6.51	3.6	33.8	3.34	11.5
82994	60000	14.27	6.93	6.42	3.6	37.1	3.71	11.5
82994	70000	13.79	6.89	6.37	3.5	36.1	3.65	11.5
82994	80000	13.87	6.89	6.49	3.6	27.5	2.77	11.5
82994	90000	13.64	6.89	6.38	3.5	31.1	3.15	11.5
82994	100000	13.27	6.84	6.26	3.5	37.6	3.85	11.5
82994	110000	13.07	6.88	5.93	3.3	38.2	3.93	11.6
82994	120000	14.10	6.81	6.40	3.5	35.9	3.61	11.7
82994	130000	14.38	6.81	6.41	3.5	39.9	3.98	11.7
82994	140000	15.38	6.92	6.48	3.6	44.0	4.30	11.7
82994	150000	15.14	6.94	6.34	3.5	56.8	5.58	11.8
82994	160000	16.31	6.91	6.67	3.7	63.2	6.05	11.9
82994	170000	17.00	7.02	6.60	3.7	68.9	6.50	11.8
82994	180000	17.11	7.02	6.87	3.8	66.1	6.22	11.9
82994	190000	17.00	6.86	6.75	3.7	78.2	7.37	11.9
82994	200000	17.43	6.86	6.82	3.8	65.8	6.15	11.9

TABLE C-6. HYDROLAB RESULTS FROM AREA B, ERF, FORT RICHARDSON ALASKA, 23 AUGUST - 6 SEPTEMBER 1994

Date	Time	Temp	pH	SpCond	Salin	DO	DO	Batt
MMDDYY	HHMMSS	degC	units	mS/cm	ppt	%Sat	mg/l	volts
82994	210000	17.27	6.85	6.74	3.7	64.7	6.06	11.8
82994	220000	17.38	6.87	6.83	3.8	60.3	5.64	11.8
82994	230000	17.39	6.89	6.92	3.8	54.8	5.12	11.6
83094	0	17.39	6.90	6.98	3.9	49.5	4.62	11.7
83094	10000	17.26	6.93	7.12	4.0	56.8	5.31	11.7
83094	20000	17.24	6.94	7.15	4.0	46.0	4.31	11.6
83094	30000	17.09	6.95	7.16	4.0	44.4	4.17	11.6
83094	40000	17.00	6.98	7.19	4.0	42.0	3.96	11.6
83094	50000	16.84	6.99	7.22	4.0	37.0	3.49	11.5
83094	60000	16.49	7.03	7.23	4.0	34.2	3.25	11.5
83094	70000	16.18	7.03	7.21	4.0	34.8	3.33	11.4
83094	80000	15.97	7.04	7.27	4.0	28.1	2.71	11.4
83094	90000	15.98	7.08	7.41	4.1	30.7	2.95	11.5
83094	100000	16.03	7.07	7.45	4.2	35.7	3.43	11.6
83094	110000	14.77	7.17	6.30	3.5	38.2	3.78	11.7
83094	120000	15.60	7.55	6.07	3.4	49.1	4.78	11.8
83094	130000	16.19	7.43	6.36	3.5	51.9	4.98	11.8
83094	140000	17.86	7.11	6.77	3.8	59.2	5.48	11.9
83094	150000	18.37	7.05	6.90	3.8	65.0	5.96	11.9
83094	160000	18.72	6.93	7.19	4.0	62.2	5.65	11.9
83094	170000	18.94	6.86	7.11	4.0	84.3	7.62	11.9
83094	180000	19.27	6.88	7.10	4.0	70.8	6.36	11.9
83094	190000	19.39	6.88	7.16	4.0	68.3	6.12	11.9
83094	200000	19.65	6.98	7.38	4.1	70.6	6.29	11.8
83094	210000	19.60	6.99	7.43	4.1	66.6	5.94	11.8
83094	220000	19.31	7.05	7.45	4.2	65.9	5.91	11.7
83094	230000	18.93	7.03	7.53	4.2	67.0	6.06	11.6
83194	0	18.52	7.06	7.57	4.2	69.3	6.32	11.5
83194	10000	18.18	7.09	7.44	4.1	54.6	5.01	11.5
83194	20000	17.99	7.13	7.50	4.2	50.7	4.67	11.5
83194	30000	18.08	7.17	7.53	4.2	40.6	3.74	11.5
83194	40000	17.81	7.24	7.58	4.2	38.3	3.54	11.5
83194	50000	17.13	7.26	7.61	4.2	33.7	3.16	11.4
83194	60000	16.45	7.15	7.42	4.1	30.4	2.89	11.4
83194	70000	16.13	7.17	7.41	4.1	25.8	2.47	11.4
83194	80000	15.83	7.15	7.33	4.1	23.4	2.26	11.4
83194	90000	15.88	7.13	7.33	4.1	21.8	2.10	11.4
83194	100000	15.83	7.21	7.23	4.0	26.6	2.56	11.5
83194	110000	16.25	7.12	7.12	4.0	26.0	2.49	11.6
83194	120000	16.78	7.25	7.27	4.0	35.9	3.40	11.6
83194	130000	16.26	7.40	6.94	3.9	46.1	4.41	11.7
83194	140000	16.88	7.42	6.69	3.7	58.8	5.56	11.8
83194	150000	17.85	7.51	6.68	3.7	70.4	6.53	11.8
83194	160000	19.08	7.57	7.20	4.0	76.0	6.85	11.8
83194	170000	19.54	7.32	7.32	4.1	85.0	7.59	11.8
83194	180000	19.70	7.33	7.33	4.1	91.5	8.14	11.8
83194	190000	19.85	7.37	7.61	4.2	95.4	8.46	11.8
83194	200000	19.28	7.45	7.33	4.1	94.9	8.52	11.7
83194	210000	18.76	7.56	7.29	4.1	90.9	8.25	11.7

TABLE C-6. HYDROLAB RESULTS FROM AREA B, ERF, FORT RICHARDSON ALASKA, 23 AUGUST - 6 SEPTEMBER 1994

Date	Time	Temp	pH	SpCond	Salin	DO	DO	Batt
MMDDYY	HHMMSS	degC	units	mS/cm	ppt	%Sat	mg/l	volts
83194	220000	18.26	7.55	7.31	4.1	80.2	7.35	11.6
83194	230000	17.95	7.56	7.28	4.1	64.7	5.97	11.5
90194	0	17.38	7.53	7.35	4.1	65.1	6.08	11.4
90194	10000	17.41	7.42	7.44	4.1	59.2	5.52	11.4
90194	20000	17.89	7.26	7.66	4.3	48.1	4.43	11.2
90194	30000	17.80	7.18	7.88	4.4	42.4	3.92	11.4
90194	40000	17.07	7.22	7.69	4.3	41.0	3.85	11.4
90194	50000	16.84	7.16	7.84	4.4	43.8	4.13	11.4
90194	60000	16.35	7.40	7.56	4.2	39.3	3.75	11.4
90194	70000	16.06	7.33	7.54	4.2	39.6	3.80	11.4
90194	80000	16.15	7.16	7.74	4.3	29.4	2.82	11.4
90194	90000	16.20	7.17	7.88	4.4	35.2	3.36	11.4
90194	100000	16.08	7.20	7.86	4.4	20.9	2.00	11.4
90194	110000	15.94	7.21	7.87	4.4	16.5	1.59	11.4
90194	120000	15.84	7.22	7.83	4.4	20.6	1.98	11.4
90194	130000	15.91	7.20	7.79	4.4	38.1	3.66	11.3
90194	140000	16.25	7.21	7.78	4.3	33.9	3.24	11.4
90194	150000	17.19	7.27	7.91	4.4	32.3	3.02	11.5
90194	160000	17.90	7.27	7.95	4.4	41.2	3.79	11.5
90194	170000	18.14	7.28	8.01	4.5	43.0	3.94	11.5
90194	180000	18.25	7.30	7.95	4.4	56.3	5.15	11.6
90194	190000	18.35	7.30	8.04	4.5	61.9	5.65	11.5
90194	200000	18.62	7.28	8.13	4.6	60.5	5.49	11.5
90194	210000	17.92	7.38	7.89	4.4	59.6	5.49	11.4
90194	220000	17.72	7.38	7.89	4.4	54.4	5.03	11.3
90194	230000	17.34	7.38	7.94	4.4	47.3	4.41	11.3
90294	0	16.68	7.40	7.92	4.4	42.9	4.05	11.2
90294	10000	16.31	7.38	7.93	4.4	38.1	3.62	11.2
90294	20000	16.12	7.35	7.92	4.4	29.0	2.78	11.0
90294	30000	15.60	7.33	7.92	4.4	23.4	2.26	11.1
90294	40000	15.40	7.31	7.91	4.4	17.2	1.67	11.1
90294	50000	15.00	7.29	7.90	4.4	15.8	1.54	11.0
90294	60000	14.81	7.28	7.90	4.4	18.6	1.83	11.0
90294	70000	14.65	7.27	7.94	4.4	17.9	1.77	11.0
90294	80000	14.52	7.28	7.97	4.5	16.0	1.58	11.0
90294	90000	14.41	7.25	7.96	4.5	13.3	1.32	11.1
90294	100000	14.78	7.24	7.95	4.4	16.3	1.60	11.1
90294	110000	14.66	7.23	7.90	4.4	21.2	2.09	11.2
90294	120000	14.68	7.21	7.93	4.4	22.9	2.26	11.2
90294	130000	14.96	7.23	7.94	4.4	32.8	3.22	11.2
90294	140000	15.24	7.26	7.97	4.5	37.5	3.65	11.2
90294	150000	15.91	7.25	7.97	4.5	43.3	4.16	11.3
90294	160000	16.51	7.33	7.96	4.5	48.0	4.55	11.4
90294	170000	17.42	7.42	7.93	4.4	67.5	6.28	11.5
90294	180000	17.39	7.50	7.91	4.4	70.2	6.54	11.5
90294	190000	17.23	7.50	7.93	4.4	68.0	6.35	11.4
90294	200000	16.95	7.52	7.94	4.4	69.2	6.50	11.4
90294	210000	16.57	7.50	7.95	4.4	67.0	6.35	11.2
90294	220000	16.13	7.44	8.00	4.5	59.4	5.68	11.0

TABLE C-6. HYDROLAB RESULTS FROM AREA B, ERF, FORT RICHARDSON ALASKA, 23 AUGUST - 6 SEPTEMBER 1994

Date	Time	Temp	pH	SpCond	Salin	DO	DO	Batt
MMDDYY	HHMMSS	degC	units	mS/cm	ppt	%Sat	mg/l	volts
90294	230000	15.72	7.39	8.01	4.5	56.3	5.43	11.0
90394	0	15.36	7.33	8.04	4.5	46.2	4.48	10.8
90394	10000	15.10	7.27	8.14	4.6	36.7	3.59	10.8
90394	20000	14.68	7.26	8.14	4.6	30.1	2.96	10.7
90394	30000	14.22	7.26	8.16	4.6	27.0	2.69	10.6
90394	40000	13.77	7.26	8.16	4.6	23.8	2.39	10.6
90394	50000	13.32	7.25	8.15	4.6	20.9	2.12	10.5
90394	60000	12.93	7.24	8.15	4.6	17.7	1.81	10.5
90394	70000	12.58	7.24	8.15	4.6	16.0	1.65	10.4
90394	80000	12.28	7.23	8.15	4.6	14.3	1.49	10.4
90394	90000	12.21	7.24	8.16	4.6	17.1	1.78	10.6
90394	100000	12.38	7.25	8.16	4.6	22.5	2.33	10.8
90394	110000	12.90	7.27	8.18	4.6	26.4	2.70	11.0
90394	120000	13.69	7.29	8.16	4.6	32.1	3.23	11.1
90394	130000	14.56	7.37	8.08	4.5	40.7	4.02	11.2
90394	140000	15.49	7.44	8.04	4.5	44.6	4.32	11.3
90394	150000	16.53	7.51	8.02	4.5	51.4	4.87	11.3
90394	160000	16.93	7.60	8.08	4.5	57.5	5.40	11.4
90394	170000	17.37	7.67	8.07	4.5	56.2	5.23	11.3
90394	180000	17.27	7.71	8.08	4.5	64.1	5.98	11.3
90394	190000	16.99	7.76	8.08	4.5	61.4	5.76	11.2
90394	200000	16.52	7.74	8.11	4.5	59.0	5.59	11.1
90394	210000	16.13	7.69	8.14	4.6	65.4	6.24	11.0
90394	220000	15.81	7.59	8.17	4.6	58.2	5.60	11.0
90394	230000	15.46	7.54	8.20	4.6	53.7	5.19	10.8
90494	0	15.36	7.38	8.28	4.6	45.6	4.43	10.8
90494	10000	15.00	7.37	8.28	4.6	36.7	3.59	10.7
90494	20000	14.63	7.36	8.28	4.6	34.0	3.35	10.6
90494	30000	14.35	7.35	8.28	4.6	30.0	2.98	10.5
90494	40000	14.10	7.33	8.29	4.6	26.5	2.64	10.5
90494	50000	13.87	7.32	8.29	4.6	22.3	2.24	10.5
90494	60000	13.60	7.31	8.28	4.6	19.2	1.93	10.5
90494	70000	13.42	7.30	8.28	4.6	16.0	1.61	10.5
90494	80000	13.26	7.29	8.28	4.6	14.8	1.51	10.5
90494	90000	13.12	7.29	8.30	4.6	13.9	1.42	10.5
90494	100000	13.22	7.33	8.29	4.6	18.7	1.90	10.6
90494	110000	13.58	7.36	8.30	4.7	23.7	2.39	10.7
90494	120000	14.06	7.40	8.29	4.6	31.9	3.19	10.8
90494	130000	14.92	7.48	8.30	4.7	41.8	4.09	11.1
90494	140000	15.64	7.49	8.28	4.6	46.9	4.53	11.0
90494	150000	16.29	7.57	8.27	4.6	57.9	5.50	11.0
90494	160000	16.86	7.58	8.26	4.6	63.0	5.92	11.1
90494	170000	17.18	7.68	8.26	4.6	67.4	6.29	11.1
90494	180000	17.51	7.83	8.29	4.6	72.3	6.71	11.1
90494	190000	17.46	7.86	8.32	4.7	78.4	7.28	11.1
90494	200000	17.21	7.88	8.35	4.7	77.9	7.27	11.0
90494	210000	16.82	7.86	8.37	4.7	73.3	6.89	10.8
90494	220000	16.39	7.82	8.38	4.7	67.0	6.36	10.6
90494	230000	15.95	7.74	8.39	4.7	56.3	5.39	10.4

TABLE C-6. HYDROLAB RESULTS FROM AREA B, ERP, FORT RICHARDSON ALASKA, 23 AUGUST - 6 SEPTEMBER 1994

Date	Time	Temp	pH	SpCond	Salin	DO	DO	Batt
MMDDYY	HHMMSS	degC	units	mS/cm	ppt	%Sat	mg/l	volts
90594	0	15.51	7.70	8.40	4.7	53.7	5.19	10.3
90594	10000	15.10	7.67	8.41	4.7	46.9	4.57	10.2
90594	20000	14.70	7.64	8.40	4.7	43.9	4.32	10.1
90594	30000	14.27	7.60	8.38	4.7	39.8	3.95	10.1
90594	40000	13.69	7.56	8.35	4.7	37.3	3.75	10.0
90594	50000	13.32	7.52	8.33	4.7	32.2	3.27	9.9
90594	60000	12.81	7.49	8.29	4.6	29.5	3.03	9.8
90594	70000	12.63	7.46	8.28	4.6	25.2	2.59	9.7
90594	80000	12.25	7.44	8.29	4.6	23.9	2.49	9.7
90594	90000	12.33	7.43	8.29	4.6	24.7	2.56	9.8
90594	100000	12.35	7.42	8.31	4.7	28.5	2.95	10.0
90594	110000	12.61	7.44	8.30	4.6	33.6	3.46	10.2
90594	120000	12.95	7.33	8.19	4.6	35.0	3.58	10.4
90594	130000	13.78	7.40	8.05	4.5	35.9	3.60	10.6
90594	140000	14.44	7.43	8.01	4.5	40.0	3.96	10.7
90594	150000	15.32	7.51	7.99	4.5	46.3	4.50	10.8
90594	160000	16.06	7.62	8.01	4.5	50.7	4.85	10.9
90594	170000	17.35	7.64	7.60	4.2	57.1	5.33	10.9
90594	180000	16.85	7.79	7.55	4.2	80.9	7.62	10.8
90594	190000	16.21	7.86	7.63	4.3	79.9	7.63	10.7
90594	200000	15.66	7.90	7.75	4.3	79.8	7.71	10.6
90594	210000	15.28	7.88	7.89	4.4	74.1	7.21	10.4
90594	220000	14.88	7.84	7.87	4.4	67.2	6.59	10.2
90594	230000	14.55	7.78	7.79	4.4	62.1	6.15	10.0
90694	0	14.10	7.71	7.73	4.3	57.9	5.79	9.9
90694	10000	13.95	7.67	7.70	4.3	52.2	5.23	9.7
90694	20000	13.81	7.65	7.70	4.3	50.5	5.08	9.5
90694	30000	13.60	7.61	7.70	4.3	45.5	4.60	9.3
90694	40000	13.49	7.60	7.70	4.3	42.5	4.30	9.1
90694	50000	13.16	7.54	7.73	4.3	43.8	4.47	9.0
90694	60000	12.93	7.51	7.72	4.3	32.2	3.30	8.8
90694	70000	12.68	7.39	7.71	4.3	37.8	3.89	8.8

TABLE C-7. HYDROLAB RESULTS FROM BREAD TRUCK POND, ERF, FORT RICHARDSON ALASKA, 29 AUGUST - 8 SEPTEMBER 1994

Date	Time	Temp	pH	SpCond	Salin	DO	DO	Batt
MMDDYY	HHMMSS	degC	units	mS/cm	ppt	%Sat	mg/l	volts
82994	140000	14.46	8.41	31.0	19.3	96.6	8.72	12.4
82994	150000	15.89	8.45	30.9	19.2	81.8	7.17	12.4
82994	160000	18.08	8.53	30.6	19.0	99.5	8.35	12.5
82994	170000	18.46	8.53	30.5	18.9	99.6	8.30	12.4
82994	180000	18.68	8.53	30.5	18.9	98.4	8.16	12.4
82994	190000	18.75	8.54	30.5	18.9	86.9	7.20	12.4
82994	200000	18.56	8.52	30.5	18.9	82.7	6.88	12.3
82994	210000	18.24	8.51	30.6	19.0	72.3	6.05	12.3
82994	220000	17.89	8.47	30.6	19.0	62.8	5.29	12.2
82994	230000	17.60	8.44	30.7	19.0	48.4	4.10	12.2
83094	0	17.00	8.45	30.6	19.0	41.9	3.60	12.2
83094	10000	16.68	8.40	30.8	19.1	34.8	3.00	12.1
83094	20000	15.21	8.47	31.0	19.3	54.7	4.86	12.1
83094	30000	14.73	8.44	31.3	19.4	63.6	5.71	12.1
83094	40000	13.55	8.42	31.4	19.5	57.3	5.27	12.1
83094	50000	12.66	8.45	31.6	19.6	59.0	5.52	12.0
83094	60000	11.66	8.45	31.8	19.8	53.1	5.08	12.0
83094	70000	10.92	8.44	31.7	19.7	46.8	4.55	11.9
83094	80000	10.31	8.44	31.9	19.9	49.4	4.86	11.9
83094	90000	10.70	8.45	31.7	19.8	59.4	5.81	11.9
83094	100000	11.37	8.46	31.8	19.8	60.5	5.82	12.0
83094	110000	12.47	8.46	31.6	19.7	75.8	7.13	12.1
83094	120000	14.04	8.49	31.6	19.6	86.0	7.82	12.1
83094	130000	15.50	8.53	31.3	19.5	97.8	8.62	12.1
83094	140000	16.95	8.56	31.1	19.3	121.6	10.42	12.2
83094	150000	18.97	8.60	31.0	19.2	137.0	11.28	12.3
83094	160000	19.75	8.53	31.0	19.2	137.3	11.13	12.2
83094	170000	20.65	8.62	30.9	19.2	166.7	13.28	12.2
83094	180000	21.29	8.59	30.8	19.1	149.3	11.76	12.2
83094	190000	21.29	8.57	30.8	19.1	143.6	11.31	12.2
83094	200000	20.11	8.58	30.2	18.7	137.9	11.13	12.1
83094	210000	19.25	8.59	30.2	18.7	119.8	9.84	12.1
83094	220000	18.49	8.58	30.3	18.8	97.7	8.14	12.0
83094	230000	17.17	8.56	30.7	19.0	45.7	3.91	12.0
83194	0	15.53	8.55	31.0	19.2	90.2	7.97	11.9
83194	10000	14.10	8.53	31.1	19.3	72.2	6.57	11.9
83194	20000	13.91	8.53	31.3	19.5	62.3	5.68	11.9
83194	30000	12.99	8.50	31.4	19.5	51.6	4.80	11.8
83194	40000	12.41	8.48	31.4	19.5	46.3	4.36	11.8
83194	50000	12.30	8.46	31.7	19.7	38.0	3.59	11.8
83194	60000	11.62	8.46	31.8	19.8	39.2	3.76	11.8
83194	70000	11.31	8.44	31.8	19.8	37.2	3.58	11.8
83194	80000	11.47	8.42	31.8	19.8	35.2	3.38	11.8
83194	90000	11.87	8.43	31.7	19.8	36.6	3.48	11.8
83194	100000	12.62	8.48	31.7	19.7	64.0	6.00	11.9
83194	110000	13.97	8.52	31.7	19.7	84.0	7.64	11.9
83194	120000	14.80	8.57	31.4	19.5	114.5	10.25	11.9
83194	130000	16.38	8.64	31.3	19.4	146.2	12.67	12.0
83194	140000	18.96	8.62	30.6	19.0	166.4	13.73	12.1

TABLE C-7. HYDROLAB RESULTS FROM BREAD TRUCK POND, ERF, FORT RICHARDSON ALASKA, 29 AUGUST - 8 SEPTEMBER 1994

Date	Time	Temp	pH	SpCond	Salin	DO	DO	Batt
MMDDYY	HHMMSS	degC	units	mS/cm	ppt	%Sat	mg/l	volts
83194	150000	20.97	8.71	30.3	18.7	197.7	15.69	12.0
83194	160000	21.76	8.79	30.1	18.6	197.6	15.46	12.1
83194	170000	22.08	8.72	29.5	18.2	99999.0	99999.00	12.2
83194	180000	21.64	8.68	28.8	17.7	99999.0	99999.00	12.1
83194	190000	20.67	8.71	29.0	17.9	99999.0	99999.00	12.0
83194	200000	19.28	8.71	29.1	17.9	99999.0	99999.00	12.0
83194	210000	17.95	8.73	29.8	18.4	149.5	12.62	12.0
83194	220000	17.22	8.69	30.1	18.6	114.8	9.83	11.9
83194	230000	16.17	8.67	30.5	18.9	84.8	7.40	11.8
90194	0	15.21	8.63	31.0	19.2	69.8	6.21	11.9
90194	10000	14.36	8.61	31.3	19.5	61.0	5.52	11.8
90194	20000	13.96	8.56	31.1	19.3	57.8	5.27	11.8
90194	30000	13.60	8.54	31.4	19.6	44.1	4.05	11.8
90194	40000	13.10	8.52	31.6	19.6	44.4	4.12	11.8
90194	50000	12.81	8.50	31.7	19.7	41.1	3.84	11.8
90194	60000	12.43	8.48	32.0	19.9	39.1	3.67	11.7
90194	70000	12.38	8.46	31.9	19.9	31.1	2.93	11.7
90194	80000	12.25	8.44	31.9	19.9	33.6	3.17	11.7
90194	90000	11.95	8.41	31.7	19.7	46.4	4.41	11.7
90194	100000	12.07	8.41	31.7	19.7	56.8	5.38	11.7
90194	110000	12.26	8.43	31.9	19.9	66.1	6.24	11.7
90194	120000	12.54	8.44	31.9	19.9	73.9	6.93	11.7
90194	130000	12.89	8.46	31.9	19.8	80.7	7.51	11.8
90194	140000	13.91	8.52	31.7	19.7	112.1	10.21	11.8
90194	150000	15.24	8.56	31.2	19.4	146.0	12.97	11.8
90194	160000	16.90	8.58	30.4	18.9	185.2	15.93	11.8
90194	170000	17.62	8.60	29.9	18.5	99999.0	99999.00	11.9
90194	180000	18.44	8.70	29.4	18.1	99999.0	99999.00	11.9
90194	190000	18.32	8.70	29.8	18.4	99999.0	99999.00	11.9
90194	200000	17.69	8.71	30.0	18.5	99999.0	99999.00	11.8
90194	210000	16.01	8.72	29.9	18.5	146.0	12.82	11.8
90194	220000	14.93	8.72	30.5	18.9	132.7	11.89	11.7
90194	230000	14.68	8.70	30.5	18.9	117.2	10.56	11.7
90294	0	14.00	8.65	30.8	19.1	97.1	8.86	11.7
90294	10000	13.40	8.62	30.7	19.1	92.0	8.51	11.6
90294	20000	12.82	8.59	30.8	19.1	75.5	7.07	11.6
90294	30000	12.08	8.57	30.8	19.1	69.4	6.61	11.5
90294	40000	11.59	8.54	30.9	19.2	62.5	6.01	11.5
90294	50000	11.39	8.51	31.1	19.3	51.1	4.93	11.5
90294	60000	11.33	8.48	31.0	19.3	40.5	3.91	11.5
90294	70000	11.39	8.45	31.3	19.4	26.0	2.50	11.5
90294	80000	11.44	8.44	31.4	19.5	21.0	2.02	11.5
90294	90000	11.51	8.44	31.5	19.6	24.3	2.33	11.3
90294	100000	11.82	8.46	31.5	19.6	30.9	2.95	11.5
90294	110000	12.92	8.49	31.3	19.5	57.2	5.34	11.7
90294	120000	13.56	8.55	31.3	19.5	70.3	6.46	11.7
90294	130000	14.11	8.51	31.4	19.5	76.2	6.92	11.7
90294	140000	14.96	8.55	31.2	19.4	95.9	8.56	11.7
90294	150000	16.32	8.64	31.0	19.3	120.7	10.48	11.9

TABLE C-7. HYDROLAB RESULTS FROM BREAD TRUCK POND, ERF, FORT RICHARDSON ALASKA, 29 AUGUST - 8 SEPTEMBER 1994

Date	Time	Temp	pH	SpCond	Salin	DO	DO	Batt
MMDDYY	HHMMSS	degC	units	mS/cm	ppt	%Sat	mg/l	volts
90294	160000	18.36	8.65	30.9	19.2	148.8	12.41	11.8
90294	170000	19.97	8.73	30.4	18.8	99999.0	99999.00	11.8
90294	180000	20.20	8.70	30.3	18.8	99999.0	99999.00	11.8
90294	190000	19.78	8.70	30.3	18.8	189.0	15.35	11.8
90294	200000	18.73	8.65	30.1	18.6	159.3	13.23	11.8
90294	210000	17.49	8.63	30.3	18.8	159.1	13.53	11.7
90294	220000	15.83	8.65	30.6	19.0	131.1	11.52	11.6
90294	230000	14.43	8.65	31.1	19.3	105.4	9.52	11.5
90394	0	13.22	8.63	31.3	19.4	86.1	7.98	11.5
90394	10000	12.23	8.62	31.5	19.6	74.9	7.08	11.4
90394	20000	11.46	8.60	31.6	19.7	67.7	6.51	11.4
90394	30000	10.56	8.59	31.6	19.7	57.6	5.65	11.3
90394	40000	10.20	8.58	31.7	19.7	58.2	5.75	11.3
90394	50000	9.59	8.56	31.8	19.8	47.5	4.76	11.2
90394	60000	9.20	8.53	31.9	19.9	38.9	3.93	11.2
90394	70000	8.73	8.52	32.0	19.9	31.6	3.23	11.2
90394	80000	8.38	8.51	31.9	19.9	30.1	3.10	11.2
90394	90000	8.56	8.52	31.8	19.8	36.0	3.70	11.3
90394	100000	9.03	8.52	32.0	19.9	47.1	4.78	11.4
90394	110000	10.18	8.54	31.8	19.8	59.3	5.86	11.5
90394	120000	11.77	8.57	31.8	19.8	79.7	7.61	11.6
90394	130000	13.68	8.61	31.9	19.9	113.2	10.36	11.6
90394	140000	15.79	8.65	31.7	19.7	128.8	11.27	11.7
90394	150000	17.42	8.67	31.6	19.7	152.3	12.90	11.8
90394	160000	19.23	8.71	31.2	19.4	158.0	12.93	11.8
90394	170000	20.51	8.74	30.9	19.2	175.6	14.03	11.8
90394	180000	20.25	8.71	30.9	19.2	183.8	14.75	11.8
90394	190000	19.68	8.70	30.8	19.1	163.3	13.27	11.7
90394	200000	18.58	8.69	30.8	19.1	157.2	13.05	11.7
90394	210000	17.27	8.67	31.2	19.4	139.8	11.90	11.6
90394	220000	16.30	8.65	31.1	19.3	127.2	11.05	11.6
90394	230000	15.29	8.62	31.1	19.3	97.2	8.62	11.5
90494	0	14.54	8.59	31.5	19.6	78.2	7.03	11.5
90494	10000	14.21	8.58	31.6	19.6	68.2	6.18	11.4
90494	20000	13.24	8.54	31.5	19.6	58.2	5.38	11.4
90494	30000	12.63	8.51	31.6	19.7	46.2	4.33	11.4
90494	40000	12.28	8.50	31.8	19.8	35.8	3.37	11.3
90494	50000	11.89	8.47	31.9	19.8	24.9	2.37	11.3
90494	60000	11.41	8.46	32.0	19.9	26.3	2.53	11.4
90494	70000	11.44	8.43	32.0	19.9	16.9	1.63	11.3
90494	80000	11.25	8.41	32.2	20.1	16.7	1.61	11.3
90494	90000	11.34	8.41	32.2	20.0	18.8	1.80	11.3
90494	100000	11.67	8.41	32.2	20.1	26.8	2.56	11.3
90494	110000	12.31	8.43	32.1	20.0	33.1	3.12	11.4
90494	120000	13.15	8.43	31.9	19.9	36.5	3.38	11.4
90494	130000	14.70	8.49	32.0	19.9	78.4	7.01	11.5
90494	140000	16.27	8.52	31.7	19.8	105.3	9.13	11.6
90494	150000	18.08	8.60	31.5	19.6	132.0	11.04	11.6
90494	160000	19.40	8.62	31.2	19.4	152.3	12.42	11.7

TABLE C-7. HYDROLAB RESULTS FROM BREAD TRUCK POND, ERF, FORT RICHARDSON ALASKA, 29 AUGUST - 8 SEPTEMBER 1994

Date	Time	Temp	pH	SpCond	Salin	DO	DO	Batt
MMDDYY	HHMMSS	degC	units	mS/cm	ppt	%Sat	mg/l	volts
90494	170000	20.39	8.66	31.0	19.2	174.1	13.94	11.7
90494	180000	20.85	8.65	31.0	19.2	99999.0	99999.00	11.7
90494	190000	20.97	8.70	30.8	19.1	99999.0	99999.00	11.7
90494	200000	20.76	8.69	31.0	19.2	186.9	14.86	11.7
90494	210000	20.22	8.66	31.0	19.3	172.8	13.87	11.6
90494	220000	16.67	8.62	31.1	19.3	127.2	10.97	11.5
90494	230000	15.14	8.63	31.7	19.7	100.0	8.87	11.4
90594	0	13.67	8.62	32.0	19.9	82.9	7.58	11.3
90594	10000	12.79	8.59	32.2	20.1	62.3	5.81	11.2
90594	20000	11.84	8.57	32.4	20.2	53.1	5.04	11.2
90594	30000	11.17	8.54	32.5	20.3	43.9	4.23	11.1
90594	40000	10.51	8.52	32.7	20.4	38.2	3.74	11.1
90594	50000	9.84	8.49	32.8	20.5	27.5	2.72	11.0
90594	60000	9.27	8.47	32.8	20.5	24.9	2.51	10.9
90594	70000	8.48	8.46	32.9	20.6	23.6	2.41	10.9
90594	80000	8.30	8.44	32.6	20.4	21.5	2.22	10.9
90594	90000	8.56	8.43	32.6	20.4	23.1	2.36	11.0
90594	100000	9.62	8.44	32.7	20.4	27.9	2.78	11.1
90594	110000	10.55	8.47	33.0	20.6	48.9	4.77	11.2
90594	120000	12.06	8.50	32.9	20.5	78.6	7.42	11.3
90594	130000	13.51	8.55	32.9	20.6	91.2	8.34	11.4
90594	140000	15.42	8.57	32.7	20.4	109.4	9.61	11.5
90594	150000	16.76	8.57	32.6	20.3	129.9	11.11	11.6
90594	160000	18.27	8.62	32.4	20.2	141.2	11.72	11.6
90594	170000	19.42	8.66	32.4	20.2	165.4	13.41	11.6
90594	180000	19.46	8.70	32.0	19.9	167.8	13.62	11.6
90594	190000	17.83	8.70	32.3	20.1	127.6	10.69	11.5
90594	200000	15.60	8.67	32.6	20.4	101.9	8.92	11.5
90594	210000	13.55	8.57	32.1	20.0	84.3	7.73	11.4
90594	220000	12.00	8.43	30.3	18.8	74.8	7.15	11.3
90594	230000	11.16	8.41	30.7	19.0	70.3	6.83	11.2
90694	0	10.52	8.40	30.5	18.9	65.3	6.44	11.1
90694	10000	9.72	8.40	31.1	19.3	61.7	6.18	11.1
90694	20000	9.46	8.41	31.7	19.8	47.8	4.80	11.0
90694	30000	8.61	8.41		20.0	48.6	4.98	10.8
90694	40000	7.76	8.41	32.6	20.4	42.7	4.45	10.7
90694	50000	6.69	8.40	33.1	20.7	40.5	4.31	10.7
90694	60000	5.93	8.39	33.2	20.8	40.1	4.35	10.6
90694	70000	5.42	8.38	33.3	20.8	37.5	4.12	10.5
90694	80000	4.87	8.38	33.6	21.0	40.7	4.53	10.5
90694	90000	5.08	8.38	33.4	20.9	45.2	5.00	10.7
90694	100000	6.37	8.41	33.5	21.0	56.2	6.03	10.8
90694	110000	7.32	8.42	33.7	21.1	62.9	6.59	11.0
90694	120000	9.13	8.43	33.5	21.0	70.1	7.04	11.1
90694	130000	10.75	8.44	33.2	20.8	90.7	8.80	11.2
90694	140000	12.33	8.47	33.4	20.9	99.6	9.32	11.3
90694	150000	14.09	8.50	33.1	20.7	111.8	10.09	11.4
90694	160000	15.45	8.50	33.0	20.6	118.2	10.37	11.4
90694	170000	16.91	8.55	32.4	20.2	144.3	12.31	11.4

TABLE C-7. HYDROLAB RESULTS FROM BREAD TRUCK POND, ERF, FORT RICHARDSON ALASKA, 29 AUGUST - 8 SEPTEMBER 1994

Date	Time	Temp	pH	SpCond	Salin	DO	DO	Batt
MMDDYY	HHMMSS	degC	units	mS/cm	ppt	%Sat	mg/l	volts
90694	180000	18.43	8.58	31.9	19.9	161.6	13.40	11.4
90694	190000	18.60	8.59	32.0	19.9	167.3	13.82	11.4
90694	200000	17.42	8.61	31.7	19.7	99999.0	99999.00	11.3
90694	210000	15.61	8.61	32.4	20.2	161.9	14.19	11.2
90694	220000	15.03	8.60	32.3	20.2	134.1	11.90	11.0
90694	230000	14.64	8.54	32.4	20.2	106.5	9.53	10.9
90794	0	14.28	8.52	32.5	20.3	91.5	8.24	10.7
90794	10000	14.00	8.48	32.6	20.3	68.8	6.23	10.7
90794	20000	13.74	8.47	32.5	20.3	58.1	5.30	10.6
90794	30000	12.99	8.43	32.6	20.4	43.2	4.00	10.6
90794	40000	12.68	8.40	32.7	20.4	36.5	3.40	10.5
90794	50000	12.40	8.38	32.4	20.2	22.5	2.11	10.5
90794	60000	12.14	8.37	32.0	19.9	18.4	1.74	10.4
90794	70000	11.80	8.37	32.0	19.9	16.5	1.57	10.3
90794	80000	11.53	8.37	32.1	20.0	13.4	1.28	10.3
90794	90000	11.47	8.37	32.2	20.1	19.3	1.85	10.4
90794	100000	11.67	8.39	32.6	20.3	21.0	2.00	10.6
90794	110000	12.02	8.41	32.4	20.2	33.1	3.13	10.7
90794	120000	12.71	8.44	31.4	19.5	45.5	4.26	10.8
90794	130000	13.81	8.49	31.8	19.8	62.0	5.66	10.9
90794	140000	14.63	8.52	31.7	19.7	77.6	6.96	10.9
90794	150000	15.20	8.53	30.8	19.1	90.0	8.01	10.9
90794	160000	15.74	8.54	31.3	19.5	95.6	8.39	11.0
90794	170000	16.22	8.59	31.8	19.8	98.1	8.51	10.9
90794	180000	16.29	8.53	31.6	19.7	113.1	9.81	10.9
90794	190000	16.63	8.66	31.8	19.8	88.0	7.57	10.9
90794	200000	16.65	8.62	31.7	19.8	105.6	9.09	10.9
90794	210000	16.60	8.64	31.5	19.6	95.5	8.23	10.8
90794	220000	12.20	8.17	11.4	6.5	79.5	8.17	10.8
90794	230000	12.53	7.73	15.5	9.0	12.3	1.23	10.8
90894	0	12.86	7.75	16.5	9.7	5.3	0.53	10.7
90894	10000	13.10	7.73	17.8	10.5	4.9	0.48	10.7
90894	20000	13.20	7.69	18.9	11.2	4.7	0.46	10.6
90894	30000	13.17	7.70	19.6	11.7	4.5	0.44	10.6
90894	40000	13.14	7.67	20.0	11.9	4.4	0.42	10.6
90894	50000	13.12	7.67	20.2	12.0	4.4	0.42	10.6
90894	60000	13.10	7.71	20.2	12.0	4.4	0.42	10.5
90894	70000	13.10	7.76	20.3	12.1	4.2	0.41	10.5
90894	80000	13.10	7.83	20.4	12.1	4.2	0.41	10.5
90894	90000	13.10	7.91	20.4	12.1	4.2	0.41	10.5
90894	100000	13.12	7.99	20.3	12.1	4.2	0.41	10.5
90894	110000	13.15	8.05	20.3	12.1	4.2	0.41	10.5
90894	120000	13.20	8.10	20.2	12.0	4.0	0.39	10.6

TABLE C-8. HYDROLAB RESULTS FROM AREA C, ERF, FORT RICHARDSON, ALASKA, 26 AUGUST - 8 SEPTEMBER 1994

Date	Time	Temp	pH	SpCond	Salin	DO	DO	Batt
MMDDYY	HHMMSS	degC	units	mS/cm	ppt	%Sat	mg/l	volts
82694	160000	14.67	8.18	39.50	25.2	91.8	7.96	12.7
82694	170000	14.59	8.22	39.60	25.2	101.0	8.77	12.7
82694	180000	14.47	8.26	39.60	25.3	105.4	9.18	12.7
82694	190000	13.99	8.24	39.90	25.5	99.1	8.70	12.7
82694	200000	13.73	8.23	39.90	25.5	95.0	8.39	12.7
82694	210000	13.46	8.22	40.00	25.5	91.3	8.11	12.7
82694	220000	13.35	8.22	38.20	24.3	87.4	7.84	12.6
82694	230000	13.30	8.20	37.70	24.0	86.3	7.76	12.6
82794	0	13.21	8.18	37.60	23.8	85.6	7.72	12.4
82794	10000	13.07	8.12	36.70	23.2	81.6	7.41	12.6
82794	20000	12.61	8.11	36.80	23.3	87.4	8.01	12.5
82794	30000	11.73	8.10	37.00	23.4	88.7	8.28	12.4
82794	40000	10.89	8.09	37.10	23.5	90.3	8.59	12.4
82794	50000	9.93	8.07	37.10	23.5	92.3	8.97	12.3
82794	60000	9.16	8.06	37.20	23.6	95.1	9.40	12.4
82794	70000	8.49	8.02	37.10	23.5	95.7	9.61	12.3
82794	80000	8.18	8.00	37.00	23.4	98.7	9.99	12.4
82794	90000	8.16	7.96	37.00	23.4	104.6	10.59	12.3
82794	100000	8.31	7.99	36.90	23.4	108.4	10.94	12.3
82794	110000	8.43	8.02	36.90	23.3	111.0	11.17	12.3
82794	120000	8.72	8.06	36.80	23.3	114.2	11.42	12.3
82794	130000	9.52	8.09	36.70	23.2	120.5	11.84	12.3
82794	140000	10.24	8.14	36.60	23.2	127.2	12.30	12.3
82794	150000	11.35	8.20	36.70	23.2	131.3	12.38	12.3
82794	160000	11.27	8.25	36.40	23.0	132.5	12.53	12.3
82794	170000	11.89	8.28	36.40	23.0	142.4	13.29	12.3
82794	180000	11.97	8.31	36.30	23.0	143.5	13.36	12.3
82794	190000	11.81	8.35	36.40	23.0	151.7	14.18	12.3
82794	200000	11.40	8.40	36.50	23.1	149.2	14.06	12.3
82794	210000	10.75	8.42	36.50	23.1	138.6	13.26	12.2
82794	220000	10.08	8.43	36.00	22.7	128.9	12.54	12.2
82794	230000	9.62	8.42	35.80	22.6	119.4	11.75	12.2
82894	0	9.46	8.41	35.90	22.6	111.8	11.04	12.2
82894	10000	9.10	8.40	35.80	22.6	105.9	10.55	12.2
82894	20000	8.74	8.40	35.90	22.6	100.4	10.08	12.1
82894	30000	8.58	8.40	35.70	22.5	93.6	9.44	12.2
82894	40000	8.13	8.39	35.40	22.3	90.9	9.27	12.0
82894	50000	7.32	8.38	35.60	22.5	91.6	9.51	12.0
82894	60000	7.38	8.38	35.40	22.3	83.9	8.71	12.0
82894	70000	7.41	8.37	35.70	22.5	75.3	7.80	12.0
82894	80000	7.45	8.32	35.70	22.5	70.1	7.26	12.0
82894	90000	7.45	8.31	35.50	22.4	69.6	7.22	12.0
82894	100000	8.17	8.28	35.30	22.2	69.1	7.04	12.0
82894	110000	9.00	8.29	35.50	22.4	76.6	7.66	12.1
82894	120000	10.06	8.26	35.10	22.1	99.9	9.76	12.1
82894	130000	11.40	8.26	34.60	21.8	111.7	10.62	12.2
82894	140000	12.99	8.30	34.70	21.8	134.8	12.37	12.2
82894	150000	14.72	8.24	34.30	21.5	160.1	14.18	12.3
82894	160000	17.19	8.31	34.30	21.6	171.8	14.45	12.3

TABLE C-8. HYDROLAB RESULTS FROM AREA C, ERF, FORT RICHARDSON, ALASKA, 26 AUGUST - 8 SEPTEMBER 1994

Date	Time	Temp	pH	SpCond	Salin	DO	DO	Batt
MMDDYY	HHMMSS	degC	units	mS/cm	ppt	%Sat	mg/l	volts
82894	170000	18.48	8.39	34.60	21.7	184.3	15.09	12.3
82894	180000	18.43	8.42	34.50	21.7	185.1	15.18	12.3
82894	190000	18.45	8.41	34.10	21.4	198.0	16.26	12.3
82894	200000	17.01	8.49	35.10	22.1	171.3	14.43	12.4
82894	210000	15.82	8.50	34.90	22.0	151.4	13.07	12.3
82894	220000	14.87	8.52	34.00	21.4	137.1	12.11	12.3
82894	230000	13.57	8.50	34.70	21.8	130.9	11.86	12.2
82994	0	12.91	8.51	34.30	21.5	118.0	10.86	12.1
82994	10000	12.11	8.49	34.80	21.9	112.6	10.52	12.1
82994	20000	11.24	8.44	35.10	22.1	98.5	9.38	12.1
82994	30000	10.39	8.45	34.90	21.9	86.3	8.38	12.1
82994	40000	10.06	8.44	35.10	22.1	88.3	8.63	12.0
82994	50000	9.70	8.42	35.00	22.0	79.0	7.79	12.0
82994	60000	9.51	8.39	35.50	22.3	66.3	6.55	12.0
82994	70000	10.00	8.32	35.10	22.1	58.0	5.67	12.0
82994	80000	9.85	8.33	35.10	22.1	52.7	5.17	12.0
82994	90000	10.13	8.31	35.00	22.1	53.9	5.26	12.0
82994	100000	10.58	8.30	34.70	21.8	65.2	6.31	12.1
82994	110000	11.86	8.29	33.80	21.2	83.0	7.84	12.1
82994	120000	13.65	8.33	33.50	21.0	100.7	9.15	12.1
82994	130000	14.59	8.35	33.40	20.9	120.6	10.75	12.2
82994	140000	15.75	8.36	33.50	20.9	154.5	13.43	12.2
82994	150000	17.36	8.39	33.40	20.9	181.9	15.31	12.2
82994	160000	19.65	8.44	33.70	21.1	192.7	15.47	12.3
82994	170000	19.89	8.49	33.50	21.0	194.2	15.54	12.3
82994	180000	19.98	8.50	33.70	21.1	187.4	14.96	12.3
82994	190000	19.29	8.48	33.10	20.7	184.9	14.99	12.3
82994	200000	18.79	8.53	33.20	20.8	175.4	14.36	12.3
82994	210000	17.76	8.54	33.60	21.1	159.0	13.26	12.2
82994	220000	17.40	8.52	33.70	21.1	133.8	11.24	12.2
82994	230000	16.71	8.52	33.60	21.1	121.1	10.32	12.2
83094	0	15.57	8.56	33.20	20.8	92.4	8.07	12.0
83094	10000	15.84	8.50	33.10	20.7	78.3	6.81	12.1
83094	20000	15.51	8.48	33.30	20.8	69.3	6.06	12.1
83094	30000	15.07	8.48	33.10	20.7	60.5	5.35	12.1
83094	40000	14.29	8.47	32.80	20.5	48.9	4.40	12.1
83094	50000	14.05	8.43	33.00	20.6	32.9	2.97	12.0
83094	60000	13.85	8.38	32.90	20.5	30.8	2.80	12.0
83094	70000	13.00	8.39	32.30	20.2	30.6	2.84	12.0
83094	80000	12.59	8.34	31.90	19.9	32.6	3.05	11.9
83094	90000	12.60	8.30	32.10	20.0	32.4	3.03	12.0
83094	100000	13.02	8.27	32.10	20.0	47.9	4.44	12.2
83094	110000	14.24	8.29	31.10	19.3	72.7	6.60	12.2
83094	120000	16.64	8.32	31.10	19.3	131.8	11.37	12.2
83094	130000	19.13	8.36	31.30	19.5	163.1	13.37	12.3
83094	140000	21.11	8.38	31.10	19.3	195.9	15.46	12.3
83094	150000	22.61	8.42	31.10	19.3	99999.0	99999.00	12.3
83094	160000	22.72	8.48	30.90	19.2	99999.0	99999.00	12.3
83094	170000	23.58	8.47	29.70	18.3	99999.0	99999.00	12.3

TABLE C-8. HYDROLAB RESULTS FROM AREA C, ERF, FORT RICHARDSON, ALASKA, 26 AUGUST - 8 SEPTEMBER 1994

Date	Time	Temp	pH	SpCond	Salin	DO	DO	Batt
MMDDYY	HHMMSS	degC	units	mS/cm	ppt	%Sat	mg/l	volts
83094	180000	23.13	8.51	30.70	19.0	99999.0	99999.00	12.3
83094	190000	21.76	8.53	31.30	19.4	199.3	15.52	12.3
83094	200000	20.62	8.50	30.20	18.7	179.3	14.34	12.3
83094	210000	20.16	8.50	30.40	18.8	166.0	13.38	12.2
83094	220000	19.41	8.50	30.70	19.1	168.5	13.77	12.2
83094	230000	17.89	8.51	30.80	19.1	155.3	13.08	12.2
83194	0	16.64	8.50	31.00	19.2	161.4	13.93	12.1
83194	10000	15.91	8.47	30.70	19.1	167.8	14.72	12.1
83194	20000	15.04	8.45	30.40	18.8	132.3	11.83	12.1
83194	30000	14.56	8.45	30.40	18.9	122.4	11.05	12.0
83194	40000	13.37	8.41	30.50	18.9	111.9	10.37	12.0
83194	50000	13.39	8.39	30.50	18.9	96.0	8.88	12.0
83194	60000	12.48	8.38	30.30	18.8	98.2	9.28	12.0
83194	70000	13.35	8.28	30.40	18.8	76.6	7.10	12.0
83194	80000	13.11	8.27	30.70	19.0	61.5	5.72	12.0
83194	90000	13.32	8.26	30.20	18.7	57.7	5.36	12.0
83194	100000	13.25	8.24	30.20	18.7	61.8	5.75	12.0
83194	110000	14.85	8.24	30.10	18.6	65.6	5.90	12.1
83194	120000	15.90	8.30	28.40	17.5	92.3	8.18	12.0
83194	130000	17.67	8.32	28.00	17.2	148.4	12.70	12.2
83194	140000	20.50	8.38	28.10	17.2	177.6	14.36	12.2
83194	150000	22.38	8.46	29.10	17.9	99999.0	99999.00	12.2
83194	160000	22.22	8.45	28.70	17.6	191.6	14.95	12.2
83194	170000	22.52	8.49	28.60	17.6	189.1	14.67	12.2
83194	180000	21.97	8.52	28.60	17.6	183.8	14.41	12.2
83194	190000	21.14	8.55	28.80	17.7	177.7	14.15	12.2
83194	200000	19.98	8.56	29.00	17.9	169.0	13.75	12.2
83194	210000	19.08	8.56	29.10	17.9	161.7	13.39	12.2
83194	220000	18.54	8.53	29.30	18.0	163.5	13.67	12.1
83194	230000	17.84	8.50	29.40	18.1	154.3	13.07	12.1
90194	0	16.91	8.49	29.40	18.2	139.3	12.03	12.0
90194	10000	15.74	8.45	29.10	18.0	122.6	10.86	12.0
90194	20000	14.71	8.35	29.10	18.0	97.8	8.86	12.0
90194	30000	14.33	8.37	29.60	18.3	92.2	8.40	12.0
90194	40000	13.47	8.34	29.60	18.3	81.4	7.56	12.0
90194	50000	13.39	8.30	29.40	18.1	72.7	6.76	12.0
90194	60000	12.79	8.28	29.60	18.3	69.2	6.52	12.0
90194	70000	12.45	8.23	29.50	18.2	65.5	6.22	12.0
90194	80000	12.45	8.21	29.20	18.0	63.6	6.05	12.0
90194	90000	12.56	8.17	29.20	18.0	58.7	5.56	12.0
90194	100000	12.58	8.16	29.40	18.1	64.8	6.14	12.0
90194	110000	12.66	8.16	28.60	17.6	68.9	6.53	12.0
90194	120000	12.76	8.14	29.10	18.0	71.9	6.79	12.0
90194	130000	12.94	8.15	29.10	18.0	85.5	8.04	12.0
90194	140000	14.34	8.20	28.90	17.8	109.3	9.98	12.0
90194	150000	15.53	8.25	28.90	17.8	133.3	11.87	12.0
90194	160000	16.92	8.28	28.90	17.8	147.4	12.75	12.1
90194	170000	17.79	8.33	28.90	17.8	164.8	14.01	12.1
90194	180000	18.06	8.36	28.90	17.8	166.8	14.11	12.1

TABLE C-8. HYDROLAB RESULTS FROM AREA C, ERF, FORT RICHARDSON, ALASKA, 26 AUGUST - 8 SEPTEMBER 1994

Date	Time	Temp	pH	SpCond	Salin	DO	DO	Batt
MMDDYY	HHMMSS	degC	units	mS/cm	ppt	%Sat	mg/l	volts
90194	190000	18.01	8.40	28.90	17.8	171.8	14.55	12.1
90194	200000	17.38	8.43	28.90	17.8	165.0	14.14	12.1
90194	210000	16.50	8.43	28.60	17.6	156.9	13.71	12.0
90194	220000	15.97	8.42	28.70	17.7	148.5	13.11	12.0
90194	230000	15.41	8.40	28.80	17.8	140.2	12.52	12.0
90294	0	14.92	8.40	28.90	17.8	131.5	11.87	11.9
90294	10000	14.48	8.39	28.90	17.8	121.4	11.05	11.9
90294	20000	13.70	8.37	29.00	17.9	110.8	10.26	11.9
90294	30000	13.14	8.36	29.10	17.9	104.9	9.82	11.8
90294	40000	12.45	8.35	29.10	17.9	97.4	9.26	11.8
90294	50000	12.32	8.34	29.00	17.9	90.7	8.65	11.8
90294	60000	11.97	8.32	28.90	17.8	81.9	7.87	11.8
90294	70000	11.91	8.29	29.00	17.9	72.5	6.98	11.8
90294	80000	11.91	8.27	28.60	17.6	69.6	6.71	11.8
90294	90000	12.07	8.24	28.20	17.3	62.1	5.98	11.8
90294	100000	12.73	8.21	28.90	17.8	57.9	5.48	11.8
90294	110000	13.37	8.25	28.50	17.6	73.3	6.84	11.9
90294	120000	14.80	8.23	27.50	16.8	82.1	7.47	11.9
90294	130000	15.62	8.29	28.20	17.3	118.2	10.54	11.9
90294	140000	16.24	8.32	28.20	17.3	134.1	11.80	11.9
90294	150000	17.73	8.35	27.40	16.8	161.7	13.85	12.0
90294	160000	19.51	8.35	27.40	16.8	184.8	15.27	12.0
90294	170000	21.07	8.43	27.80	17.1	192.0	15.37	12.0
90294	180000	21.20	8.49	28.60	17.6	189.5	15.08	12.0
90294	190000	20.45	8.49	28.50	17.5	178.6	14.43	12.0
90294	200000	19.08	8.48	28.90	17.8	168.2	13.94	12.1
90294	210000	18.06	8.49	28.60	17.6	155.8	13.19	12.0
90294	220000	16.88	8.47	28.60	17.6	151.7	13.15	11.9
90294	230000	15.57	8.43	28.60	17.6	137.1	12.22	11.8
90394	0	14.64	8.43	28.70	17.7	127.8	11.61	11.8
90394	10000	14.27	8.42	28.40	17.5	119.9	10.99	11.7
90394	20000	13.24	8.41	28.80	17.7	108.5	10.15	11.7
90394	30000	12.21	8.39	28.40	17.5	101.3	9.71	11.6
90394	40000	11.55	8.37	28.70	17.6	93.4	9.07	11.6
90394	50000	11.26	8.37	28.70	17.7	82.7	8.09	11.5
90394	60000	10.77	8.34	28.70	17.6	73.6	7.28	11.5
90394	70000	10.65	8.33	28.50	17.5	67.1	6.65	11.4
90394	80000	10.50	8.29	28.40	17.5	61.2	6.09	11.4
90394	90000	10.29	8.27	28.50	17.5	58.3	5.83	11.6
90394	100000	10.58	8.28	28.20	17.3	65.2	6.49	11.8
90394	110000	11.64	8.30	27.80	17.1	72.7	7.07	11.9
90394	120000	14.24	8.31	28.00	17.2	96.6	8.88	11.9
90394	130000	16.57	8.32	27.80	17.0	113.7	9.96	12.0
90394	140000	18.79	8.35	27.90	17.1	137.6	11.52	12.0
90394	150000	20.41	8.37	27.90	17.2	156.1	12.65	12.0
90394	160000	21.90	8.40	28.10	17.2	170.5	13.42	12.0
90394	170000	22.43	8.39	28.60	17.6	176.9	13.75	12.0
90394	180000	21.88	8.40	28.90	17.8	170.2	13.35	12.0
90394	190000	20.15	8.43	28.30	17.4	167.3	13.61	12.0

TABLE C-8. HYDROLAB RESULTS FROM AREA C, ERF, FORT RICHARDSON, ALASKA, 26 AUGUST - 8 SEPTEMBER 1994

Date	Time	Temp	pH	SpCond	Salin	DO	DO	Batt
MMDDYY	HHMMSS	degC	units	mS/cm	ppt	%Sat	mg/l	volts
90394	200000	18.98	8.42	28.50	17.6	157.4	13.09	11.9
90394	210000	18.01	8.40	28.80	17.7	145.1	12.29	11.9
90394	220000	17.45	8.39	29.00	17.9	136.3	11.66	11.9
90394	230000	16.80	8.37	29.00	17.9	127.2	11.03	11.8
90494	0	16.16	8.37	29.20	18.0	120.2	10.55	11.8
90494	10000	15.44	8.34	29.20	18.0	110.7	9.86	11.7
90494	20000	13.80	8.33	29.30	18.1	103.1	9.51	11.7
90494	30000	13.12	8.31	29.20	18.0	95.3	8.93	11.6
90494	40000	12.79	8.29	29.10	18.0	89.2	8.41	11.7
90494	50000	12.20	8.24	29.10	18.0	79.8	7.62	11.6
90494	60000	11.47	8.22	29.20	18.0	76.4	7.42	11.6
90494	70000	11.32	8.22	29.00	17.9	72.3	7.05	11.6
90494	80000	11.17	8.20	29.00	17.9	68.6	6.71	11.6
90494	90000	11.50	8.17	29.00	17.9	64.4	6.25	11.6
90494	100000	11.88	8.16	28.70	17.7	67.4	6.50	11.6
90494	110000	12.81	8.19	28.60	17.6	74.4	7.03	11.7
90494	120000	14.16	8.22	28.80	17.7	90.8	8.33	11.7
90494	130000	15.87	8.27	28.40	17.5	116.6	10.33	11.8
90494	140000	18.12	8.30	28.80	17.7	150.0	12.67	11.9
90494	150000	19.96	8.35	28.60	17.6	173.1	14.11	11.9
90494	160000	21.42	8.40	29.20	18.0	183.4	14.50	11.7
90494	170000	21.78	8.41	29.20	18.0	186.9	14.68	11.9
90494	180000	21.49	8.44	29.20	18.0	180.7	14.26	11.9
90494	190000	20.93	8.44	29.10	17.9	176.3	14.08	11.9
90494	200000	20.27	8.39	29.20	18.0	165.5	13.38	12.0
90494	210000	19.29	8.37	29.30	18.1	144.7	11.92	11.9
90494	220000	17.10	8.39	29.40	18.1	137.3	11.81	11.7
90494	230000	15.92	8.36	29.30	18.1	114.2	10.07	11.6
90594	0	14.39	8.33	29.40	18.2	95.2	8.67	11.6
90594	10000	12.04	8.33	29.30	18.1	80.5	7.72	11.5
90594	20000	11.14	8.31	29.40	18.1	77.0	7.53	11.5
90594	30000	10.83	8.28	29.60	18.3	69.0	6.78	11.4
90594	40000	9.88	8.27	29.20	18.0	68.8	6.93	11.3
90594	50000	9.07	8.23	29.30	18.1	64.3	6.60	11.3
90594	60000	8.87	8.23	29.40	18.2	61.8	6.37	11.2
90594	70000	8.74	8.18	29.30	18.1	51.7	5.34	11.2
90594	80000	7.54	8.15	29.00	17.9	53.3	5.67	11.2
90594	90000	7.61	8.16	28.10	17.3	60.9	6.49	11.3
90594	100000	8.31	8.12	28.70	17.7	68.9	7.20	11.4
90594	110000	9.70	8.15	29.00	17.9	87.8	8.88	11.6
90594	120000	11.54	8.18	28.80	17.8	97.1	9.42	11.7
90594	130000	14.62	8.22	28.20	17.4	109.0	9.92	11.8
90594	140000	17.02	8.21	28.20	17.4	127.1	11.00	11.9
90594	150000	18.52	8.29	28.20	17.3	166.8	14.02	11.9
90594	160000	20.57	8.35	27.80	17.1	179.6	14.51	11.9
90594	170000	21.53	8.35	27.90	17.1	193.4	15.34	11.8
90594	180000	20.03	8.33	28.30	17.4	151.9	12.38	11.8
90594	190000	17.50	8.34	28.90	17.8	121.1	10.36	11.8
90594	200000	15.38	8.38	29.00	17.8	107.2	9.57	11.8

TABLE C-8. HYDROLAB RESULTS FROM AREA C, ERF, FORT RICHARDSON, ALASKA, 26 AUGUST - 8 SEPTEMBER 1994

Date	Time	Temp	pH	SpCond	Salin	DO	DO	Batt
MMDDYY	HHMMSS	degC	units	mS/cm	ppt	%Sat	mg/l	volts
90594	210000	13.63	8.37	29.00	17.9	96.6	8.96	11.7
90594	220000	12.58	8.35	29.40	18.1	88.5	8.38	11.6
90594	230000	12.14	8.32	29.40	18.2	77.3	7.39	11.5
90694	0	11.16	8.28	29.80	18.4	74.2	7.23	11.5
90694	10000	10.53	8.24	29.80	18.4	67.8	6.71	11.4
90694	20000	9.83	8.24	29.90	18.5	65.4	6.57	11.3
90694	30000	9.13	8.24	30.00	18.5	62.2	6.35	11.1
90694	40000	7.76	8.22	30.30	18.7	60.8	6.39	11.0
90694	50000	6.89	8.19	30.30	18.8	59.3	6.37	10.9
90694	60000	6.41	8.18	30.00	18.6	57.4	6.24	10.9
90694	70000	5.37	8.17	30.20	18.7	56.3	6.27	10.8
90694	80000	5.03	8.15	30.00	18.6	57.7	6.49	10.8
90694	90000	5.13	8.15	29.90	18.5	60.2	6.76	11.0
90694	100000	5.88	8.12	29.40	18.1	62.9	6.95	11.2
90694	110000	7.23	8.15	29.50	18.2	70.5	7.54	11.5
90694	120000	9.19	8.14	29.50	18.2	79.0	8.06	11.6
90694	130000	11.74	8.18	29.40	18.1	100.1	9.66	11.6
90694	140000	14.75	8.16	28.60	17.6	101.9	9.24	11.6
90694	150000	16.37	8.25	28.70	17.6	128.1	11.22	11.7
90694	160000	17.97	8.28	28.90	17.8	146.7	12.42	11.6
90694	170000	18.89	8.30	29.00	17.9	166.8	13.87	11.5
90694	180000	19.05	8.32	29.00	17.9	168.7	13.98	11.5
90694	190000	18.72	8.34	29.10	18.0	169.3	14.12	11.7
90694	200000	17.40	8.31	29.20	18.0	153.6	13.15	11.7
90694	210000	16.38	8.30	29.10	17.9	141.0	12.33	11.5
90694	220000	15.66	8.30	29.10	18.0	127.9	11.35	11.3
90694	230000	14.18	8.31	29.40	18.2	118.4	10.83	11.2
90794	0	12.93	8.29	29.60	18.3	103.4	9.71	11.1
90794	10000	11.75	8.26	29.30	18.1	86.1	8.30	11.0
90794	20000	10.82	8.24	29.60	18.3	80.0	7.87	10.9
90794	30000	9.54	8.23	29.20	18.0	71.9	7.30	10.9
90794	40000	8.72	8.22	29.10	18.0	67.7	7.00	10.8
90794	50000	7.79	8.19	28.70	17.7	61.6	6.52	10.7
90794	60000	7.51	8.19	29.10	18.0	57.0	6.07	10.7
90794	70000	6.81	8.15	28.80	17.8	51.7	5.60	10.6
90794	80000	7.50	8.16	28.80	17.7	39.8	4.24	10.6
90794	90000	7.84	8.18	27.80	17.0	41.7	4.43	10.7
90794	100000	8.43	8.21	28.40	17.5	55.3	5.77	11.0
90794	110000	9.32	8.19	28.70	17.7	61.5	6.28	11.1
90794	120000	10.34	8.27	28.30	17.4	82.6	8.26	11.2
90794	130000	13.69	8.19	27.60	16.9	98.7	9.19	11.3
90794	140000	15.21	8.22	27.40	16.8	127.1	11.47	11.2
90794	150000	15.96	8.25	28.00	17.2	133.4	11.82	11.2
90794	160000	16.22	8.24	28.30	17.4	138.8	12.22	11.3
90794	170000	16.34	8.25	28.30	17.4	135.7	11.91	11.3
90794	180000	16.21	8.25	28.30	17.4	141.7	12.47	11.3
90794	190000	15.76	8.22	28.80	17.7	129.8	11.51	11.2
90794	200000	15.21	8.20	29.00	17.9	130.8	11.73	11.2
90794	210000	14.61	8.23	28.60	17.6	108.4	9.85	11.2

TABLE C-8. HYDROLAB RESULTS FROM AREA C, ERF, FORT RICHARDSON, ALASKA, 26 AUGUST - 8 SEPTEMBER 1994

Date	Time	Temp	pH	SpCond	Salin	DO	DO	Batt
MMDDYY	HHMMSS	degC	units	mS/cm	ppt	%Sat	mg/l	volts
90794	220000	11.97	8.20	14.90	8.7	114.1	11.62	11.1
90794	230000	11.60	7.51	11.42	6.5	94.2	9.80	11.0
90894	0	11.52	7.61	11.39	6.5	90.2	9.41	11.0
90894	10000	11.89	7.48	11.86	6.8	88.1	9.09	11.0
90894	20000	12.20	7.55	12.08	6.9	74.3	7.61	10.9
90894	30000	12.22	7.60	12.58	7.2	62.7	6.41	10.9
90894	40000	12.25	7.55	12.83	7.4	51.1	5.22	10.9
90894	50000	12.29	7.58	12.95	7.4	41.6	4.24	10.9
90894	60000	12.24	7.56	13.56	7.8	34.0	3.46	10.8
90894	70000	12.24	7.55	13.70	7.9	31.0	3.15	10.8
90894	80000	12.30	7.60	14.25	8.2	24.5	2.48	10.8
90894	90000	12.37	7.69	14.51	8.4	24.6	2.49	10.8
90894	100000	12.53	7.81	14.15	8.2	23.9	2.41	10.8
90894	110000	12.65	7.88	14.37	8.3	26.9	2.71	10.8
90894	120000	12.91	7.96	14.51	8.4	37.9	3.78	10.8
90894	130000	13.70	8.17	14.55	8.4	42.9	4.21	10.9
90894	140000	14.63	8.27	13.99	8.1	59.8	5.77	11.0
90894	150000	15.59	8.44	14.36	8.3	83.3	7.86	11.1
90894	160000	16.71	8.49	14.23	8.2	100.1	9.23	11.0

TABLE C-9. HYDROLAB RESULTS FROM AREA CD, ERF, FORT RICHARDSON, ALSASKA, 25 AUGUST - 7 SEPTEMBER 1994

Date	Time	Temp	pH	SpCond	Salin	DO	DO	Batt
MMDDYY	HHMMSS	degC	units	uS/cm	ppt	%Sat	mg/l	volts
82594	120000	16.67	6.67	820	0.4	81.2	7.88	14.7
82594	130000	16.68	6.66	791	0.4	81.8	7.94	14.7
82594	140000	11.47	7.66	689	0.4	66.3	7.21	14.7
82594	150000	13.20	7.70	677	0.3	66.1	6.91	14.7
82594	160000	12.49	7.76	672	0.3	53.5	5.69	14.6
82594	170000	12.47	7.78	670	0.3	58.8	6.25	14.6
82594	180000	12.26	7.80	668	0.3	64.0	6.84	14.6
82594	190000	12.06	7.84	653	0.3	61.1	6.56	14.6
82594	200000	11.39	7.81	693	0.4	65.5	7.14	14.6
82594	210000	11.37	7.83	673	0.3	66.6	7.26	14.5
82594	220000	11.29	7.84	694	0.4	69.0	7.53	14.5
82594	230000	11.77	7.81	680	0.4	78.3	8.46	14.5
82694	0	11.38	7.77	673	0.3	70.9	7.73	14.5
82694	10000	11.49	7.71	672	0.3	67.8	7.38	14.5
82694	20000	10.62	7.64	659	0.3	69.5	7.71	14.5
82694	30000	10.13	7.59	627	0.3	68.2	7.66	14.5
82694	40000	11.13	7.52	735	0.4	73.0	8.00	14.4
82694	50000	11.56	7.50	766	0.4	71.7	7.79	14.4
82694	60000	11.61	7.52	768	0.4	69.4	7.53	14.5
82694	70000	11.72	7.53	753	0.4	66.2	7.16	14.4
82694	80000	11.41	7.40	764	0.4	61.0	6.64	14.3
82694	90000	10.96	7.36	755	0.4	59.3	6.53	14.4
82694	100000	11.04	7.32	750	0.4	57.1	6.27	14.4
82694	110000	12.26	7.51	715	0.4	60.4	6.46	14.4
82694	120000	12.59	7.57	736	0.4	77.2	8.19	14.4
82694	130000	12.80	7.68	752	0.4	86.9	9.17	14.4
82694	140000	12.90	7.76	758	0.4	92.9	9.78	14.4
82694	150000	12.97	7.81	773	0.4	96.5	10.14	14.4
82694	160000	13.23	7.87	782	0.4	100.6	10.51	14.4
82694	170000	13.35	7.91	786	0.4	105.4	10.99	14.3
82694	180000	13.43	7.98	798	0.4	109.9	11.44	14.3
82694	190000	13.38	7.97	781	0.4	107.8	11.23	14.3
82694	200000	13.27	7.94	788	0.4	105.7	11.04	14.3
82694	210000	13.17	7.87	796	0.4	101.9	10.67	14.3
82694	220000	12.99	7.93	687	0.4	97.5	10.25	14.3
82694	230000	13.16	7.78	749	0.4	96.0	10.05	14.3
82794	0	13.13	7.84	694	0.4	93.5	9.80	14.3
82794	10000	13.11	7.74	719	0.4	92.3	9.68	14.3
82794	20000	12.84	7.55	830	0.4	79.8	8.41	14.2
82794	30000	12.56	7.48	891	0.5	74.1	7.86	14.2
82794	40000	12.00	7.49	833	0.4	74.5	8.00	14.2
82794	50000	11.45	7.47	857	0.4	72.2	7.85	14.2
82794	60000	10.93	7.45	894	0.5	72.0	7.92	14.2
82794	70000	10.42	7.46	881	0.5	73.1	8.14	14.2
82794	80000	10.04	7.47	889	0.5	74.9	8.41	14.2
82794	90000	9.70	7.53	886	0.5	80.8	9.15	14.2
82794	100000	9.58	7.61	901	0.5	87.5	9.94	14.1
82794	110000	9.49	7.68	925	0.5	92.8	10.56	14.1
82794	120000	9.50	7.75	954	0.5	96.5	10.98	14.1

TABLE C-9. HYDROLAB RESULTS FROM AREA CD, ERF, FORT RICHARDSON, ALSASKA, 25 AUGUST - 7 SEPTEMBER 1994

Date	Time	Temp	pH	SpCond	Salin	DO	DO	Batt
MMDDYY	HHMMSS	degC	units	uS/cm	ppt	%Sat	mg/l	volts
82794	130000	9.69	7.81	971	0.5	100.0	11.33	14.1
82794	140000	9.90	7.89	1005	0.5	107.3	12.09	14.1
82794	150000	10.29	8.02	1015	0.5	113.9	12.72	14.1
82794	160000	10.36	8.06	1035	0.5	115.7	12.90	14.1
82794	170000	10.75	8.16	1035	0.5	120.7	13.33	14.1
82794	180000	10.85	8.13	1025	0.5	122.6	13.51	14.1
82794	190000	10.72	8.12	1014	0.5	109.9	12.15	14.1
82794	200000	10.85	8.15	1034	0.5	123.6	13.62	14.1
82794	210000	10.69	8.17	1041	0.5	123.6	13.68	14.1
82794	220000	10.49	8.13	1041	0.5	120.7	13.42	14.0
82794	230000	10.31	8.09	1049	0.5	118.4	13.21	14.0
82894	0	10.27	8.07	1083	0.6	114.8	12.83	14.0
82894	10000	10.31	8.04	1135	0.6	115.7	12.91	14.0
82894	20000	9.86	8.06	1088	0.6	112.2	12.65	14.0
82894	30000	9.62	7.92	1120	0.6	106.6	12.09	14.0
82894	40000	9.31	7.83	1115	0.6	103.1	11.78	13.9
82894	50000	9.00	7.90	1126	0.6	105.8	12.17	13.8
82894	60000	8.80	7.87	1122	0.6	96.8	11.20	13.9
82894	70000	8.57	7.78	1135	0.6	87.0	10.11	13.9
82894	80000	8.29	7.75	1137	0.6	88.2	10.33	13.9
82894	90000	8.33	7.75	1142	0.6	91.7	10.72	13.8
82894	100000	8.49	7.75	1142	0.6	92.3	10.76	13.9
82894	110000	8.70	7.77	1141	0.6	95.0	11.01	13.9
82894	120000	9.26	7.80	1130	0.6	97.3	11.13	13.9
82894	130000	9.69	7.85	1130	0.6	102.3	11.59	13.9
82894	140000	10.29	7.93	1133	0.6	107.2	11.96	13.9
82894	150000	11.21	8.02	1153	0.6	103.0	11.25	14.0
82894	160000	12.05	8.19	1176	0.6	101.4	10.87	14.0
82894	170000	12.00	8.02	1184	0.6	100.1	10.74	14.0
82894	180000	12.67	8.13	1217	0.6	110.9	11.71	14.0
82894	190000	13.13	8.22	1272	0.7	130.4	13.64	14.0
82894	200000	13.55	8.25	1208	0.6	140.6	14.57	14.0
82894	210000	12.77	8.19	1481	0.8	117.3	12.35	14.0
82894	220000	12.31	8.16	1513	0.8	118.2	12.57	14.0
82894	230000	12.58	8.18	1490	0.8	118.6	12.55	13.9
82994	0	12.08	8.26	1352	0.7	121.5	13.01	13.9
82994	10000	11.64	8.27	1356	0.7	122.0	13.19	13.9
82994	20000	11.18	8.14	1341	0.7	117.6	12.85	13.8
82994	30000	11.14	8.14	1493	0.8	109.8	12.00	13.8
82994	40000	10.86	8.10	1493	0.8	110.5	12.15	13.8
82994	50000	10.70	8.09	1472	0.8	111.2	12.28	13.8
82994	60000	10.63	8.04	1536	0.8	111.7	12.35	13.8
82994	70000	10.44	7.96	1558	0.8	103.6	11.51	13.8
82994	80000	10.39	7.97	1529	0.8	102.8	11.44	13.8
82994	90000	9.80	8.01	1440	0.8	108.3	12.22	13.7
82994	100000	9.99	7.94	1383	0.7	102.9	11.55	13.8
82994	110000	10.29	7.94	1374	0.7	103.9	11.58	13.8
82994	120000	11.41	7.97	1520	0.8	101.0	10.97	13.8
82994	130000	10.98	7.95	1352	0.7	105.6	11.59	13.8

TABLE C-9. HYDROLAB RESULTS FROM AREA CD, ERF, FORT RICHARDSON, ALSASKA, 25 AUGUST - 7 SEPTEMBER 1994

Date	Time	Temp	pH	SpCond	Salin	DO	DO	Batt
MMDDYY	HHMMSS	degC	units	uS/cm	ppt	%Sat	mg/l	volts
82994	140000	12.08	8.08	1353	0.7	132.4	14.17	13.8
82994	150000	12.97	8.14	1441	0.8	125.6	13.17	13.8
82994	160000	13.58	8.24	1621	0.9	114.5	11.84	13.8
82994	170000	13.40	8.24	1767	0.9	104.6	10.86	13.8
82994	180000	13.10	8.15	1740	0.9	104.0	10.87	13.8
82994	190000	13.40	8.18	1767	0.9	112.2	11.65	13.8
82994	200000	13.48	8.11	1718	0.9	110.8	11.48	13.8
82994	210000	13.48	7.96	1573	0.8	109.0	11.30	13.8
82994	220000	13.02	8.03	1374	0.7	117.6	12.32	13.8
82994	230000	13.35	8.13	1526	0.8	122.3	12.71	13.8
83094	0	13.32	8.23	1574	0.8	120.6	12.54	13.8
83094	10000	12.81	8.03	1474	0.8	117.0	12.31	13.8
83094	20000	12.96	8.14	1538	0.8	112.8	11.83	13.7
83094	30000	12.47	8.15	1445	0.8	111.0	11.77	13.7
83094	40000	12.58	8.01	1599	0.8	109.4	11.57	13.7
83094	50000	12.54	7.99	1609	0.9	105.6	11.18	13.7
83094	60000	12.19	8.10	1582	0.8	105.6	11.26	13.7
83094	70000	11.49	8.15	1509	0.8	108.5	11.76	13.6
83094	80000	10.88	8.11	1420	0.8	101.6	11.17	13.6
83094	90000	11.04	8.06	1453	0.8	95.1	10.42	13.6
83094	100000	11.32	8.07	1467	0.8	93.5	10.17	13.6
83094	110000	11.71	8.20	1566	0.8	93.8	10.11	13.7
83094	120000	12.54	8.14	1466	0.8	106.0	11.22	13.7
83094	130000	13.66	8.20	1717	0.9	92.5	9.54	13.7
83094	140000	14.71	8.09	1894	1.0	89.3	9.00	13.7
83094	150000	14.16	8.24	1791	1.0	95.1	9.70	13.8
83094	160000	15.12	8.31	2353	1.3	91.8	9.15	13.8
83094	170000	15.46	7.93	1737	0.9	105.9	10.50	13.8
83094	180000	15.12	8.34	2295	1.2	102.5	10.22	13.8
83094	190000	14.48	8.18	1972	1.1	99.3	10.06	13.8
83094	200000	14.33	7.87	1485	0.8	124.8	12.71	13.8
83094	210000	15.22	7.90	1575	0.8	127.0	12.68	13.8
83094	220000	14.58	8.06	1674	0.9	125.2	12.66	13.7
83094	230000	14.15	8.11	1647	0.9	126.4	12.91	13.7
83194	0	13.98	8.10	1686	0.9	128.7	13.18	13.7
83194	10000	13.65	8.14	1611	0.9	124.6	12.87	13.7
83194	20000	13.45	8.06	1680	0.9	123.2	12.78	13.7
83194	30000	13.51	8.08	1698	0.9	122.5	12.69	13.6
83194	40000	13.29	8.00	1758	0.9	119.5	12.43	13.6
83194	50000	12.99	8.00	1760	0.9	107.5	11.25	13.6
83194	60000	12.61	8.03	1753	0.9	97.1	10.26	13.6
83194	70000	11.95	7.91	1545	0.8	97.6	10.47	13.5
83194	80000	12.10	7.89	1670	0.9	90.4	9.66	13.6
83194	90000	11.95	7.92	1681	0.9	89.2	9.56	13.6
83194	100000	12.58	8.04	1705	0.9	77.8	8.23	13.7
83194	110000	12.89	7.92	1664	0.9	93.5	9.81	13.6
83194	120000	12.89	8.12	1420	0.8	108.8	11.43	13.6
83194	130000	13.91	8.23	1609	0.9	97.2	9.98	13.7
83194	140000	15.11	8.25	1614	0.9	89.6	8.97	13.7

TABLE C-9. HYDROLAB RESULTS FROM AREA CD, ERF, PORT RICHARDSON, ALASKA, 25 AUGUST - 7 SEPTEMBER 1994

Date	Time	Temp	pH	SpCond	Salin	DO	DO	Batt
MMDDYY	HHMMSS	degC	units	uS/cm	ppt	%Sat	mg/l	volts
83194	150000	14.59	8.26	1885	1.0	83.7	8.45	13.7
83194	160000	15.01	8.30	1854	1.0	82.7	8.28	13.7
83194	170000	14.99	8.32	2056	1.1	76.3	7.63	13.7
83194	180000	16.13	8.40	2090	1.1	86.4	8.44	13.7
83194	190000	16.08	8.34	2071	1.1	95.1	9.30	13.7
83194	200000	15.76	8.02	1698	0.9	107.1	10.56	13.7
83194	210000	15.41	8.07	1593	0.8	131.2	13.04	13.7
83194	220000	15.93	8.16	1698	0.9	122.4	12.03	13.7
83194	230000	15.58	8.26	1747	0.9	117.2	11.60	13.7
90194	0	15.33	8.32	1748	0.9	112.6	11.20	13.7
90194	10000	15.08	8.27	1787	1.0	108.9	10.89	13.6
90194	20000	14.53	8.23	1539	0.8	112.8	11.43	13.6
90194	30000	14.12	8.18	1551	0.8	114.3	11.68	13.6
90194	40000	14.05	8.10	1551	0.8	112.8	11.55	13.6
90194	50000	13.83	8.05	1543	0.8	109.8	11.30	13.6
90194	60000	13.50	7.97	1496	0.8	105.1	10.90	13.5
90194	70000	13.12	7.91	1412	0.7	101.2	10.58	13.6
90194	80000	13.01	7.89	1412	0.7	98.4	10.31	13.5
90194	90000	13.02	7.82	1426	0.8	95.0	9.95	13.5
90194	100000	12.74	7.77	1389	0.7	90.5	9.54	13.5
90194	110000	12.50	7.73	1316	0.7	89.2	9.45	13.5
90194	120000	12.36	7.75	1249	0.7	91.1	9.70	13.5
90194	130000	12.45	7.81	1225	0.6	91.6	9.73	13.5
90194	140000	13.11	7.96	1237	0.7	97.3	10.18	13.5
90194	150000	13.55	8.15	1232	0.6	108.7	11.27	13.5
90194	160000	13.99	8.23	1191	0.6	121.7	12.49	13.6
90194	170000	14.66	8.22	1251	0.7	134.1	13.56	13.5
90194	180000	14.72	8.43	1272	0.7	129.5	13.07	13.7
90194	190000	14.71	8.40	1238	0.7	93.9	9.49	13.6
90194	200000	14.82	8.31	1178	0.6	92.2	9.29	13.5
90194	210000	14.53	8.26	1222	0.6	90.6	9.19	13.6
90194	220000	14.18	8.30	1168	0.6	93.8	9.59	13.5
90194	230000	14.05	8.25	1220	0.6	107.0	10.96	13.5
90294	0	13.60	8.23	1205	0.6	103.1	10.67	13.5
90294	10000	13.34	8.18	1201	0.6	119.1	12.40	13.5
90294	20000	13.08	8.19	1229	0.6	111.6	11.69	13.5
90294	30000	12.77	8.17	1244	0.7	101.5	10.70	13.4
90294	40000	12.30	8.11	1266	0.7	93.5	9.96	13.6
90294	50000	11.96	7.99	1252	0.7	85.5	9.18	13.4
90294	60000	12.18	7.79	1388	0.7	82.1	8.77	13.4
90294	70000	11.95	7.89	1356	0.7	78.3	8.40	13.4
90294	80000	11.83	7.71	1372	0.7	61.5	6.62	13.4
90294	90000	11.69	7.61	1350	0.7	71.3	7.70	13.4
90294	100000	11.57	7.66	1346	0.7	77.7	8.42	13.4
90294	110000	12.36	7.90	1343	0.7	90.7	9.65	13.4
90294	120000	12.45	8.13	1301	0.7	84.1	8.93	13.4
90294	130000	12.67	7.99	1340	0.7	73.0	7.71	13.4
90294	140000	12.59	7.99	1421	0.8	74.8	7.91	13.4
90294	150000	13.63	8.30	1337	0.7	98.1	10.15	13.4

TABLE C-9. HYDROLAB RESULTS FROM AREA CD, ERP, FORT RICHARDSON, ALSASKA, 25 AUGUST - 7 SEPTEMBER 1994

Date	Time	Temp	pH	SpCond	Salin	DO	DO	Batt
MMDDYY	HHMMSS	degC	units	uS/cm	ppt	%Sat	mg/l	volts
90294	160000	14.06	8.33	1493	0.8	96.0	9.82	13.5
90294	170000	15.24	8.36	1435	0.8	92.1	9.19	13.4
90294	180000	14.31	8.37	1502	0.8	81.4	8.29	13.5
90294	190000	13.86	8.37	1494	0.8	80.2	8.24	13.5
90294	200000	12.94	8.03	1369	0.7	80.6	8.46	13.5
90294	210000	12.56	7.82	1261	0.7	81.0	8.58	13.5
90294	220000	12.90	8.06	1237	0.7	93.8	9.86	13.4
90294	230000	13.32	8.14	1345	0.7	94.8	9.87	13.4
90394	0	12.99	8.22	1362	0.7	98.8	10.36	13.1
90394	10000	12.56	8.19	1408	0.7	109.3	11.57	13.3
90394	20000	12.07	8.06	1408	0.7	106.5	11.40	13.3
90394	30000	11.67	8.02	1405	0.7	105.2	11.36	13.3
90394	40000	11.16	8.01	1365	0.7	103.6	11.32	13.3
90394	50000	10.97	7.94	1360	0.7	100.2	11.01	13.2
90394	60000	10.88	7.84	1439	0.8	93.4	10.27	13.2
90394	70000	10.16	7.80	1343	0.7	91.2	10.21	13.3
90394	80000	10.34	7.78	1384	0.7	83.0	9.24	13.1
90394	90000	9.92	7.70	1390	0.7	80.5	9.06	13.1
90394	100000	9.79	7.96	1390	0.7	84.5	9.54	13.2
90394	110000	9.98	8.10	1291	0.7	92.8	10.42	13.2
90394	120000	11.10	8.18	1253	0.7	94.1	10.31	13.3
90394	130000	12.31	8.25	1312	0.7	102.3	10.89	13.3
90394	140000	13.41	8.30	1366	0.7	118.9	12.35	13.3
90394	150000	14.19	8.34	1521	0.8	87.4	8.92	13.3
90394	160000	14.29	8.25	1492	0.8	90.6	9.22	13.4
90394	170000	13.71	8.26	1412	0.7	85.5	8.82	13.4
90394	180000	12.90	8.11	1290	0.7	81.8	8.60	13.4
90394	190000	12.29	7.78	1196	0.6	81.2	8.65	13.4
90394	200000	13.68	7.86	1148	0.6	85.9	8.88	13.4
90394	210000	14.30	7.98	1359	0.7	90.7	9.25	13.3
90394	220000	13.98	7.89	1446	0.8	91.9	9.42	13.4
90394	230000	13.95	8.03	1385	0.7	88.8	9.11	13.3
90494	0	13.82	8.11	1416	0.7	89.2	9.19	13.3
90494	10000	13.52	8.05	1425	0.8	90.8	9.41	13.3
90494	20000	13.22	7.97	1423	0.8	90.8	9.47	13.3
90494	30000	12.89	7.91	1418	0.8	88.9	9.34	13.2
90494	40000	12.47	7.90	1364	0.7	93.7	9.94	13.2
90494	50000	12.08	7.88	1345	0.7	89.1	9.54	13.2
90494	60000	12.06	7.82	1355	0.7	91.8	9.83	13.2
90494	70000	12.20	7.66	1429	0.8	83.2	8.88	13.2
90494	80000	12.06	7.68	1441	0.8	76.2	8.15	13.2
90494	90000	12.21	7.59	1504	0.8	74.4	7.93	13.2
90494	100000	12.23	7.46	1523	0.8	74.0	7.89	13.2
90494	110000	12.48	7.66	1522	0.8	90.9	9.64	13.2
90494	120000	12.59	7.84	1511	0.8	89.7	9.49	13.3
90494	130000	13.01	8.29	1173	0.6	105.0	11.02	13.2
90494	140000	14.09	8.33	1266	0.7	86.2	8.82	13.3
90494	150000	14.72	8.46	1285	0.7	92.2	9.31	13.3
90494	160000	15.31	8.43	1262	0.7	77.5	7.73	13.3

TABLE C-9. HYDROLAB RESULTS FROM AREA OD, ERP, FORT RICHARDSON, ALASKA, 25 AUGUST - 7 SEPTEMBER 1994

Date	Time	Temp	pH	SpCond	Salin	DO	DO	Batt
MMDDYY	HHMMSS	degC	units	uS/cm	ppt	%Sat	mg/l	volts
90494	170000	13.07	8.54	1293	0.7	84.6	8.85	13.3
90494	180000	13.63	8.51	1221	0.6	88.3	9.13	13.4
90494	190000	13.41	8.39	1199	0.6	86.3	8.97	13.4
90494	200000	13.23	8.04	1075	0.6	88.6	9.25	13.4
90494	210000	13.27	7.95	1090	0.6	84.8	8.85	13.4
90494	220000	13.56	7.92	1151	0.6	80.0	8.29	13.3
90494	230000	13.73	8.08	1215	0.6	77.0	7.95	13.3
90594	0	13.27	8.01	1253	0.7	81.2	8.46	13.2
90594	10000	12.52	8.01	1204	0.6	98.2	10.41	13.2
90594	20000	12.13	8.01	1167	0.6	104.9	11.23	13.2
90594	30000	11.66	7.91	1146	0.6	99.0	10.71	13.1
90594	40000	11.26	7.88	1145	0.6	95.1	10.38	13.1
90594	50000	10.95	7.85	1126	0.6	94.3	10.37	13.1
90594	60000	10.88	7.75	1191	0.6	88.2	9.70	13.0
90594	70000	10.29	7.70	1152	0.6	85.4	9.53	13.0
90594	80000	10.42	7.71	1162	0.6	80.5	8.95	13.0
90594	90000	10.20	7.74	1218	0.6	81.6	9.13	13.0
90594	100000	10.19	7.99	1180	0.6	91.1	10.19	13.0
90594	110000	10.18	8.39	1075	0.6	99.6	11.15	13.1
90594	120000	11.03	8.45	1124	0.6	108.7	11.93	13.1
90594	130000	12.51	8.15	1345	0.7	116.9	12.39	13.1
90594	140000	13.46	8.17	1260	0.7	110.7	11.49	13.2
90594	150000	14.58	8.21	1473	0.8	117.1	11.85	13.2
90594	160000	14.84	8.39	1480	0.8	116.2	11.70	13.2
90594	170000	15.58	8.64	1138	0.6	111.9	11.10	13.3
90594	180000	15.01	8.51	1125	0.6	128.9	12.95	13.3
90594	190000	14.39	8.34	1242	0.7	123.1	12.52	13.3
90594	200000	14.08	8.13	1439	0.8	112.8	11.55	13.3
90594	210000	13.46	7.97	1554	0.8	103.3	10.71	13.3
90594	220000	13.09	7.84	1634	0.9	95.7	10.00	13.3
90594	230000	12.17	7.77	1485	0.8	90.5	9.67	13.2
90694	0	12.01	7.71	1423	0.8	86.3	9.25	13.1
90694	10000	11.50	7.67	1425	0.8	82.0	8.89	13.1
90694	20000	11.06	7.63	1370	0.7	80.9	8.87	13.0
90694	30000	10.95	7.61	1375	0.7	75.5	8.30	13.0
90694	40000	10.46	7.60	1346	0.7	75.2	8.36	13.0
90694	50000	10.15	7.54	1355	0.7	63.6	7.12	12.9
90694	60000	9.67	7.56	1280	0.7	62.8	7.11	12.9
90694	70000	9.39	7.52	1303	0.7	60.1	6.85	12.9
90694	80000	8.90	7.55	1278	0.7	63.3	7.30	12.8
90694	90000	8.80	7.59	1266	0.7	64.5	7.45	12.8
90694	100000	8.44	7.86	1304	0.7	75.9	8.85	12.8
90694	110000	8.67	8.48	1182	0.6	85.3	9.89	12.9
90694	120000	9.13	8.60	1146	0.6	90.3	10.36	13.0
90694	130000	10.49	8.67	1087	0.6	93.5	10.39	13.0
90694	140000	12.23	8.36	1451	0.8	114.4	12.20	13.1
90694	150000	12.92	8.55	1412	0.7	121.6	12.77	13.1
90694	160000	13.61	8.63	1462	0.8	124.9	12.92	13.2
90694	170000	13.60	8.71	1294	0.7	122.2	12.64	13.2

TABLE C-9. HYDROLAB RESULTS FROM AREA CD, ERF, FORT RICHARDSON, ALSASKA, 25 AUGUST - 7 SEPTEMBER 1994

Date	Time	Temp	pH	SpCond	Salin	DO	DO	Batt
MMDDYY	HHMMSS	degC	units	uS/cm	ppt	%Sat	mg/l	volts
90694	180000	13.58	8.65	1187	0.6	110.2	11.41	13.2
90694	190000	12.95	8.60	1119	0.6	114.8	12.06	13.2
90694	200000	12.80	8.06	1074	0.6	97.1	10.24	13.2
90694	210000	13.06	7.72	1044	0.5	91.0	9.54	13.1
90694	220000	12.18	8.00	1029	0.5	94.5	10.10	13.1
90694	230000	15.09	7.52	3371	1.8	82.2	8.17	13.0
90794	0	15.01	7.30	3795	2.1	59.9	5.95	13.0
90794	10000	14.85	7.23	4586	2.5	46.9	4.67	13.0
90794	20000	14.25	7.21	5229	2.9	33.6	3.38	12.9
90794	30000	13.93	7.16	5706	3.1	26.1	2.63	12.9
90794	40000	13.67	7.19	5952	3.3	19.9	2.02	12.9
90794	50000	13.20	7.11	5905	3.3	13.9	1.42	12.8
90794	60000	12.96	7.08	5756	3.2	6.6	0.68	12.8
90794	70000	12.76	7.06	5731	3.2	3.5	0.37	12.8
90794	80000	12.46	7.03	5632	3.1	4.3	0.45	12.7
90794	90000	12.36	7.09	5344	2.9	4.5	0.47	12.7

TABLE C-10. HYDROLAB RESULTS FROM AREA D, ERP, FORT RICHARDSON, ALSASKA, 24 AUGUST - 7 SEPTEMBER 1994

Date	Time	Temp	pH	SpCond	Salin	DO	DO	Batt
MMDDYY	HHMMSS	degC	units	uS/cm	ppt	%Sat	mg/l	volts
82494	150000	17.96	9.45	14172	8.2	116.3	10.45	14.5
82494	160000	18.15	9.47	14323	8.3	116.7	10.44	14.7
82494	170000	18.73	9.55	14442	8.4	123.0	10.87	14.7
82494	180000	17.54	9.70	14080	8.1	125.4	11.36	14.7
82494	190000	17.24	9.61	14152	8.2	124.9	11.39	14.7
82494	200000	18.36	9.67	14501	8.4	131.0	11.66	14.7
82494	210000	17.97	9.67	14502	8.4	90.0	8.07	14.6
82494	220000	18.24	9.63	14669	8.5	93.5	8.34	14.6
82494	230000	17.73	9.59	14691	8.5	77.2	6.95	14.6
82594	0	17.85	9.61	14819	8.6	96.1	8.63	14.6
82594	10000	17.70	9.62	15024	8.7	83.6	7.52	14.6
82594	20000	17.74	9.57	15155	8.8	72.6	6.52	14.6
82594	30000	17.62	9.52	15156	8.8	73.5	6.63	14.5
82594	40000	17.62	9.47	15156	8.8	76.0	6.85	14.5
82594	50000	17.39	9.43	15096	8.8	67.7	6.13	14.5
82594	60000	17.12	9.29	14925	8.7	66.0	6.01	14.5
82594	70000	17.00	9.19	14897	8.6	59.4	5.43	14.5
82594	80000	16.86	9.19	14662	8.5	56.9	5.22	14.5
82594	90000	16.64	9.19	14507	8.4	53.9	4.97	14.5
82594	100000	16.75	9.19	14446	8.4	58.0	5.34	14.5
82594	110000	16.85	9.20	14494	8.4	52.6	4.83	14.5
82594	120000	16.91	9.24	14493	8.4	61.6	5.64	14.5
82594	130000	17.23	9.26	14386	8.3	54.2	4.94	14.5
82594	140000	17.52	9.32	14189	8.2	73.1	6.63	14.5
82594	150000	18.33	9.49	13944	8.1	105.5	9.42	14.5
82594	160000	17.91	9.56	13639	7.9	91.0	8.20	14.4
82594	170000	17.77	9.59	13590	7.8	107.6	9.73	14.4
82594	180000	17.64	9.64	13561	7.8	113.5	10.29	14.4
82594	190000	17.91	9.65	13609	7.8	101.3	9.13	14.4
82594	200000	17.65	9.68	13541	7.8	89.0	8.06	14.4
82594	210000	17.64	9.70	13522	7.8	99.4	9.01	14.4
82594	220000	17.31	9.69	13564	7.8	105.5	9.62	14.4
82594	230000	17.25	9.67	13496	7.8	97.0	8.87	14.4
82694	0	17.15	9.70	13629	7.9	82.5	7.55	14.4
82694	10000	16.95	9.67	13622	7.9	102.9	9.46	14.4
82694	20000	16.94	9.67	13529	7.8	93.0	8.55	14.4
82694	30000	16.84	9.64	13758	7.9	67.4	6.21	14.3
82694	40000	16.93	9.64	13786	8.0	72.7	6.68	14.3
82694	50000	16.59	9.64	13811	8.0	66.8	6.18	14.3
82694	60000	16.69	9.62	13929	8.0	61.9	5.71	14.3
82694	70000	16.71	9.59	14067	8.1	71.0	6.55	14.3
82694	80000	16.78	9.58	14059	8.1	67.0	6.17	14.3
82694	90000	16.81	9.57	14148	8.2	72.0	6.62	14.3
82694	100000	17.12	9.52	14292	8.3	59.9	5.47	14.3
82694	110000	17.04	9.56	14240	8.2	69.5	6.36	14.3
82694	120000	17.42	9.57	14502	8.4	75.8	6.87	14.3
82694	130000	17.52	9.56	14610	8.5	82.5	7.47	14.3
82694	140000	17.81	9.42	15352	8.9	90.4	8.11	14.3
82694	150000	17.84	9.39	15682	9.1	76.0	6.80	14.3

TABLE C-10. HYDROLAB RESULTS FROM AREA D, ERF, FORT RICHARDSON, ALSASKA, 24 AUGUST - 7 SEPTEMBER 1994

Date	Time	Temp	pH	SpCond	Salin	DO	DO	Batt
MMDDYY	HHMMSS	degC	units	uS/cm	ppt	%Sat	mg/l	volts
82694	160000	17.86	9.42	15484	9.0	84.1	7.54	14.3
82694	170000	17.94	9.37	15483	9.0	82.2	7.35	14.3
82694	180000	17.94	9.33	15483	9.0	81.7	7.31	14.3
82694	190000	17.87	9.33	15352	8.9	82.5	7.39	14.3
82694	200000	17.72	9.33	14958	8.7	72.7	6.54	14.2
82694	210000	17.37	9.16	15818	9.2	69.1	6.24	14.2
82694	220000	17.62	9.20	16079	9.4	53.5	4.80	14.2
82694	230000	17.67	9.13	16671	9.8	59.1	5.29	14.2
82794	0	17.60	9.27	16606	9.7	52.9	4.74	14.2
82794	10000	17.55	9.24	16672	9.8	66.3	5.95	14.2
82794	20000	16.89	9.06	14272	8.3	65.6	6.02	14.2
82794	30000	16.29	9.03	13940	8.1	50.0	4.66	14.2
82794	40000	15.52	8.87	13790	8.0	44.4	4.20	14.1
82794	50000	13.96	8.62	12025	6.9	39.5	3.89	14.1
82794	60000	13.56	8.63	13077	7.5	53.8	5.33	14.1
82794	70000	13.00	8.61	13495	7.8	69.6	6.96	14.1
82794	80000	12.70	8.49	13861	8.0	75.2	7.56	14.1
82794	90000	12.44	8.43	14048	8.1	76.6	7.75	14.1
82794	100000	12.17	8.41	14085	8.1	78.1	7.95	14.1
82794	110000	11.98	8.42	14189	8.2	81.4	8.31	14.0
82794	120000	11.65	8.46	14313	8.3	81.2	8.35	14.0
82794	130000	11.53	8.52	14261	8.3	78.7	8.11	14.0
82794	140000	11.47	8.58	14135	8.2	87.1	9.00	14.0
82794	150000	11.83	8.65	14089	8.1	85.2	8.73	14.0
82794	160000	11.50	8.74	13992	8.1	76.9	7.94	14.0
82794	170000	12.27	8.74	14058	8.1	84.2	8.54	14.0
82794	180000	12.45	8.77	14107	8.2	86.1	8.70	14.0
82794	190000	13.08	8.88	14449	8.4	87.0	8.66	14.0
82794	200000	13.31	8.93	14446	8.4	85.1	8.42	14.0
82794	210000	13.53	8.95	14674	8.5	67.9	6.68	14.0
82794	220000	13.66	8.92	15013	8.7	54.2	5.31	13.9
82794	230000	13.44	8.94	15024	8.7	51.3	5.05	14.0
82894	0	13.44	8.92	15157	8.8	46.7	4.60	13.9
82894	10000	13.58	8.93	15283	8.9	37.9	3.72	13.9
82894	20000	13.76	8.92	15406	9.0	31.0	3.03	13.9
82894	30000	13.71	8.90	15475	9.0	32.6	3.19	13.7
82894	40000	13.63	8.89	15546	9.1	31.0	3.03	13.8
82894	50000	13.58	8.89	15548	9.1	27.2	2.66	13.8
82894	60000	13.38	8.92	15427	9.0	27.8	2.74	13.8
82894	70000	13.41	8.93	15491	9.0	25.9	2.54	13.8
82894	80000	13.26	8.90	15500	9.0	23.8	2.35	13.8
82894	90000	13.29	8.90	15498	9.0	26.1	2.57	13.8
82894	100000	13.11	8.92	15442	9.0	27.8	2.76	13.8
82894	110000	13.66	8.95	15411	9.0	25.2	2.46	13.8
82894	120000	13.51	8.97	15353	8.9	45.8	4.50	13.8
82894	130000	14.32	8.94	15180	8.8	44.6	4.30	13.8
82894	140000	13.77	8.99	15073	8.8	55.0	5.38	13.8
82894	150000	14.50	9.09	14937	8.7	67.8	6.53	13.8
82894	160000	14.97	9.12	14928	8.7	69.2	6.60	13.9

TABLE C-10. HYDROLAB RESULTS FROM AREA D, ERF, FORT RICHARDSON, ALSASKA, 24 AUGUST - 7 SEPTEMBER 1994

Date	Time	Temp	pH	SpCond	Salin	DO	DO	Batt
MMDDYY	HHMMSS	degC	units	uS/cm	ppt	%Sat	mg/l	volts
82894	170000	15.40	9.15	14884	8.6	76.4	7.21	13.9
82894	180000	15.74	9.17	14933	8.7	96.1	9.02	13.9
82894	190000	15.94	9.22	14978	8.7	92.4	8.63	13.9
82894	200000	16.29	9.23	15048	8.7	94.4	8.75	13.9
82894	210000	15.94	9.24	14908	8.7	99.0	9.24	13.9
82894	220000	16.01	9.23	15055	8.7	93.7	8.74	13.9
82894	230000	15.85	9.21	15125	8.8	105.2	9.84	13.8
82994	0	15.42	9.25	15138	8.8	89.2	8.42	13.8
82994	10000	15.22	9.25	15210	8.8	84.1	7.96	13.8
82994	20000	15.29	9.19	15208	8.8	86.3	8.16	13.8
82994	30000	14.72	9.23	15229	8.9	85.1	8.15	13.8
82994	40000	14.40	9.23	15110	8.8	77.5	7.47	13.7
82994	50000	14.25	9.24	15116	8.8	80.3	7.77	13.7
82994	60000	14.06	9.24	15059	8.7	73.8	7.17	13.7
82994	70000	13.86	9.24	15135	8.8	72.5	7.07	13.7
82994	80000	13.72	9.19	15142	8.8	74.1	7.25	13.7
82994	90000	13.59	9.17	15083	8.8	82.9	8.14	13.7
82994	100000	13.91	9.19	15066	8.8	90.2	8.79	13.7
82994	110000	14.09	9.23	14845	8.6	93.3	9.07	13.7
82994	120000	14.72	9.23	14888	8.6	88.9	8.53	13.7
82994	130000	15.14	9.23	14893	8.6	105.2	10.00	13.7
82994	140000	15.74	9.36	15062	8.8	117.9	11.05	13.8
82994	150000	16.04	9.41	14698	8.5	126.6	11.81	13.8
82994	160000	16.38	9.46	14660	8.5	126.8	11.75	13.8
82994	170000	16.36	9.35	14433	8.4	131.1	12.16	13.8
82994	180000	16.37	9.34	14390	8.3	137.5	12.75	13.8
82994	190000	16.48	9.37	14470	8.4	125.8	11.64	13.8
82994	200000	16.22	9.39	14377	8.3	129.0	12.00	13.8
82994	210000	16.31	9.41	14474	8.4	122.2	11.35	13.8
82994	220000	16.39	9.41	14551	8.4	117.8	10.91	13.8
82994	230000	16.31	9.43	14622	8.5	112.7	10.46	13.8
83094	0	16.22	9.42	14634	8.5	108.2	10.06	13.8
83094	10000	16.01	9.40	14639	8.5	103.5	9.66	13.7
83094	20000	15.91	9.40	14681	8.5	101.2	9.47	13.7
83094	30000	15.94	9.39	14710	8.5	99.7	9.32	13.7
83094	40000	15.65	9.38	14698	8.5	98.2	9.24	13.7
83094	50000	15.45	9.37	14704	8.5	103.0	9.73	13.7
83094	60000	15.44	9.37	14774	8.6	95.4	9.01	13.7
83094	70000	15.24	9.35	14760	8.6	102.3	9.71	13.6
83094	80000	14.95	9.33	14730	8.5	102.7	9.81	13.6
83094	90000	14.79	9.34	14746	8.6	97.8	9.37	13.7
83094	100000	14.94	9.37	14830	8.6	108.9	10.40	13.7
83094	110000	15.10	9.41	14576	8.4	121.7	11.59	13.7
83094	120000	15.82	9.43	14644	8.5	127.5	11.95	13.7
83094	130000	16.27	9.47	14570	8.4	145.8	13.54	13.7
83094	140000	17.04	9.45	14349	8.3	135.9	12.43	13.7
83094	150000	17.40	9.43	14097	8.2	141.8	12.89	13.7
83094	160000	17.89	9.49	14222	8.2	139.6	12.55	13.8
83094	170000	18.35	9.50	14309	8.3	142.0	12.65	13.8

TABLE C-10. HYDROLAB RESULTS FROM AREA D, ERP, PORT RICHARDSON, ALASKA, 24 AUGUST - 7 SEPTEMBER 1994

Date	Time	Temp	pH	SpCond	Salin	DO	DO	Batt
MMDDYY	HHMMSS	degC	units	uS/cm	ppt	%Sat	mg/l	volts
83094	180000	18.92	9.67	14409	8.3	158.3	13.93	13.8
83094	190000	18.64	9.55	14240	8.2	150.0	13.29	13.8
83094	200000	18.69	9.53	14378	8.3	143.3	12.67	13.8
83094	210000	18.66	9.49	14467	8.4	140.6	12.44	13.8
83094	220000	18.91	9.53	14798	8.6	129.1	11.35	13.7
83094	230000	18.59	9.53	14892	8.6	132.4	11.71	13.7
83194	0	18.15	9.52	14798	8.6	124.5	11.11	13.7
83194	10000	17.91	9.55	14809	8.6	131.4	11.79	13.7
83194	20000	17.69	9.55	14777	8.6	111.9	10.09	13.7
83194	30000	17.37	9.55	14833	8.6	112.7	10.22	13.7
83194	40000	16.97	9.48	14749	8.6	117.9	10.78	13.6
83194	50000	16.64	9.47	14774	8.6	111.5	10.27	13.6
83194	60000	16.26	9.45	14911	8.7	114.1	10.59	13.6
83194	70000	16.17	9.44	14893	8.6	104.7	9.73	13.6
83194	80000	15.99	9.42	14897	8.6	109.7	10.23	13.6
83194	90000	15.89	9.43	14870	8.6	102.4	9.57	13.6
83194	100000	15.74	9.43	14705	8.5	100.3	9.41	13.6
83194	110000	16.17	9.47	14843	8.6	115.9	10.78	13.6
83194	120000	16.39	9.50	14591	8.5	124.0	11.48	13.6
83194	130000	16.36	9.50	14473	8.4	132.0	12.24	13.7
83194	140000	16.96	9.52	14320	8.3	141.9	13.01	13.5
83194	150000	17.67	9.55	14312	8.3	146.3	13.22	13.7
83194	160000	18.28	9.57	14270	8.3	159.4	14.22	13.7
83194	170000	18.68	9.59	14309	8.3	131.2	11.61	13.7
83194	180000	18.71	9.55	14191	8.2	117.3	10.38	13.7
83194	190000	18.61	9.56	14210	8.2	114.2	10.12	13.7
83194	200000	18.32	9.56	14240	8.2	115.1	10.26	13.7
83194	210000	18.49	9.57	14359	8.3	102.1	9.07	13.7
83194	220000	18.27	9.55	14349	8.3	105.2	9.39	13.7
83194	230000	18.30	9.53	14408	8.3	106.1	9.45	13.6
90194	0	18.06	9.51	14498	8.4	107.3	9.60	13.6
90194	10000	17.69	9.50	14593	8.5	109.6	9.89	13.6
90194	20000	17.49	9.47	14584	8.5	106.3	9.63	13.6
90194	30000	17.07	9.45	14609	8.5	104.4	9.54	13.6
90194	40000	17.12	9.44	14737	8.5	93.5	8.53	13.6
90194	50000	17.44	9.39	15030	8.7	93.4	8.45	13.6
90194	60000	17.25	9.41	15164	8.8	86.5	7.86	13.6
90194	70000	17.25	9.42	15230	8.9	82.2	7.46	13.6
90194	80000	17.08	9.41	15228	8.9	75.1	6.84	13.6
90194	90000	17.03	9.37	15295	8.9	80.3	7.32	13.6
90194	100000	16.97	9.37	15366	8.9	78.2	7.14	13.6
90194	110000	16.93	9.39	15498	9.0	77.6	7.09	13.6
90194	120000	16.91	9.40	15564	9.1	91.6	8.36	13.5
90194	130000	16.90	9.44	15565	9.1	77.5	7.07	13.5
90194	140000	17.28	9.46	15555	9.1	89.2	8.08	13.5
90194	150000	17.74	9.47	15682	9.1	100.6	9.02	13.5
90194	160000	17.98	9.50	15615	9.1	102.2	9.12	13.6
90194	170000	18.25	9.65	15482	9.0	119.5	10.62	13.6
90194	180000	17.86	9.72	14864	8.6	135.3	12.15	13.6

TABLE C-10. HYDROLAB RESULTS FROM AREA D, ERP, PORT RICHARDSON, ALASKA, 24 AUGUST - 7 SEPTEMBER 1994

Date	Time	Temp	pH	SpCond	Salin	DO	DO	Batt
MMDDYY	HHMMSS	degC	units	uS/cm	ppt	%Sat	mg/l	volts
90194	190000	17.35	9.26	14503	8.4	132.8	12.07	13.6
90194	200000	16.94	9.27	14478	8.4	131.1	12.01	13.6
90194	210000	16.69	9.29	14591	8.5	156.3	14.39	13.6
90194	220000	17.22	9.26	14805	8.6	141.0	12.83	13.5
90194	230000	17.28	9.34	14939	8.7	135.0	12.26	13.5
90294	0	17.59	9.45	15094	8.8	125.6	11.33	13.5
90294	10000	17.46	9.42	15162	8.8	122.1	11.04	13.5
90294	20000	16.83	9.26	15104	8.8	121.0	11.09	13.5
90294	30000	16.53	9.26	15175	8.8	118.0	10.87	13.5
90294	40000	16.07	9.24	15252	8.9	108.1	10.06	13.3
90294	50000	15.72	9.25	15129	8.8	105.8	9.92	13.4
90294	60000	15.49	9.26	15202	8.8	92.8	8.74	13.4
90294	70000	15.29	9.26	15142	8.8	86.8	8.21	13.4
90294	80000	14.92	9.25	15221	8.9	80.4	7.67	13.4
90294	90000	14.82	9.24	15159	8.8	77.1	7.37	13.4
90294	100000	14.89	9.26	15090	8.8	78.7	7.51	13.4
90294	110000	15.52	9.29	15135	8.8	88.4	8.32	13.4
90294	120000	15.68	9.33	15060	8.7	86.7	8.14	13.4
90294	130000	15.55	9.38	15068	8.8	101.7	9.57	13.4
90294	140000	15.79	9.38	14962	8.7	110.0	10.30	13.4
90294	150000	16.49	9.41	14935	8.7	114.8	10.60	13.5
90294	160000	17.06	9.40	14675	8.5	130.6	11.93	13.5
90294	170000	17.35	9.46	14671	8.5	149.6	13.59	13.5
90294	180000	17.65	9.48	14668	8.5	144.9	13.08	13.5
90294	190000	17.72	9.51	14697	8.5	148.2	13.35	13.5
90294	200000	17.67	9.53	14717	8.5	130.5	11.77	13.5
90294	210000	17.04	9.62	14596	8.5	119.6	10.93	13.5
90294	220000	17.00	9.57	14669	8.5	129.0	11.80	13.5
90294	230000	16.80	9.53	14702	8.5	126.0	11.57	13.4
90394	0	16.49	9.52	14767	8.6	117.1	10.82	13.4
90394	10000	16.14	9.50	14755	8.6	114.2	10.63	13.4
90394	20000	16.16	9.47	14863	8.6	106.0	9.86	13.3
90394	30000	15.59	9.46	14878	8.6	102.0	9.60	13.3
90394	40000	15.29	9.45	14878	8.6	94.7	8.97	13.3
90394	50000	14.82	9.42	14854	8.6	91.0	8.71	13.3
90394	60000	14.32	9.40	14835	8.6	90.2	8.72	13.2
90394	70000	13.94	9.39	15065	8.8	85.4	8.32	13.2
90394	80000	13.43	9.38	14819	8.6	84.2	8.31	13.2
90394	90000	13.29	9.38	14806	8.6	81.8	8.10	13.2
90394	100000	13.96	9.38	14882	8.6	86.1	8.39	13.3
90394	110000	14.29	9.39	14916	8.7	91.4	8.85	13.3
90394	120000	15.00	9.46	14709	8.5	98.9	9.43	13.3
90394	130000	15.62	9.44	14719	8.5	115.3	10.85	13.5
90394	140000	16.01	9.36	14798	8.6	130.1	12.14	13.4
90394	150000	16.38	9.45	14710	8.5	131.6	12.19	13.3
90394	160000	17.09	9.47	14714	8.5	131.8	12.03	13.4
90394	170000	17.59	9.49	14708	8.5	121.1	10.94	13.4
90394	180000	17.76	9.54	14796	8.6	140.5	12.65	13.4
90394	190000	17.77	9.52	14974	8.7	138.3	12.44	13.4

TABLE C-10. HYDROLAB RESULTS FROM AREA D, ERF, FORT RICHARDSON, ALSASKA, 24 AUGUST - 7 SEPTEMBER 1994

Date	Time	Temp	pH	SpCond	Salin	DO	DO	Batt
MMDDYY	HHMMSS	degC	units	uS/cm	ppt	%Sat	mg/l	volts
90394	200000	17.67	9.46	15090	8.8	127.3	11.46	13.4
90394	210000	17.64	9.37	15156	8.8	118.9	10.71	13.4
90394	220000	17.49	9.34	15227	8.9	108.2	9.78	13.4
90394	230000	17.37	9.29	15290	8.9	105.2	9.53	13.4
90494	0	17.37	9.34	15356	8.9	101.0	9.14	13.4
90494	10000	17.34	9.34	15427	9.0	95.0	8.60	13.3
90494	20000	17.32	9.34	15559	9.1	92.9	8.41	13.3
90494	30000	17.29	9.32	15625	9.1	87.2	7.90	13.4
90494	40000	17.17	9.31	15692	9.1	83.4	7.57	13.4
90494	50000	17.12	9.29	15759	9.2	78.5	7.13	13.3
90494	60000	17.10	9.17	15825	9.2	69.6	6.32	13.3
90494	70000	17.02	9.12	15892	9.3	64.1	5.83	13.3
90494	80000	17.00	9.04	15893	9.3	61.4	5.59	13.2
90494	90000	17.03	9.00	15958	9.3	55.9	5.08	13.2
90494	100000	16.93	9.01	15960	9.3	62.3	5.67	13.3
90494	110000	17.51	9.04	16018	9.3	63.5	5.72	13.3
90494	120000	17.47	9.19	15821	9.2	77.2	6.96	13.3
90494	130000	17.88	9.29	15685	9.1	86.9	7.78	13.3
90494	140000	17.81	9.34	15286	8.9	92.1	8.26	13.3
90494	150000	18.30	9.42	15087	8.8	112.0	9.96	13.3
90494	160000	18.01	9.32	14626	8.5	121.7	10.91	13.3
90494	170000	18.11	9.32	14547	8.4	116.7	10.43	13.4
90494	180000	18.39	9.34	14546	8.4	138.0	12.27	13.4
90494	190000	18.32	9.36	14497	8.4	139.8	12.45	13.4
90494	200000	18.35	9.38	14477	8.4	135.9	12.10	13.4
90494	210000	18.03	9.39	14557	8.4	128.1	11.47	13.4
90494	220000	17.81	9.40	14582	8.5	125.6	11.30	13.3
90494	230000	17.41	9.41	14733	8.5	125.6	11.39	13.3
90594	0	17.13	9.39	14727	8.5	118.3	10.79	13.3
90594	10000	17.02	9.42	14798	8.6	117.7	10.76	13.2
90594	20000	17.02	9.41	14926	8.7	112.4	10.27	13.3
90594	30000	16.53	9.39	14964	8.7	111.8	10.31	13.2
90594	40000	15.92	9.38	14829	8.6	99.3	9.28	13.2
90594	50000	15.32	9.32	14768	8.6	97.1	9.20	13.1
90594	60000	15.17	9.29	14852	8.6	88.3	8.39	13.1
90594	70000	14.64	9.28	14712	8.5	84.6	8.13	13.1
90594	80000	14.19	9.30	14731	8.5	82.9	8.04	13.1
90594	90000	13.76	9.28	14692	8.5	85.7	8.39	13.1
90594	100000	14.11	9.29	14785	8.6	84.0	8.16	13.1
90594	110000	14.29	9.31	14777	8.6	91.6	8.87	13.2
90594	120000	14.94	9.31	14880	8.6	85.6	8.16	13.2
90594	130000	15.40	9.35	14933	8.7	92.8	8.76	13.2
90594	140000	16.25	9.38	15111	8.8	101.2	9.38	13.3
90594	150000	16.84	9.37	15100	8.8	115.1	10.54	13.3
90594	160000	17.74	9.40	15155	8.8	111.9	10.06	13.3
90594	170000	18.45	9.40	15086	8.8	115.0	10.20	13.3
90594	180000	17.99	9.32	14893	8.6	111.7	10.00	13.3
90594	190000	17.79	9.36	15023	8.7	111.1	9.98	13.3
90594	200000	17.37	9.41	15224	8.9	113.0	10.24	13.3

TABLE C-10. HYDROLAB RESULTS FROM AREA D, ERP, FORT RICHARDSON, ALASKA, 24 AUGUST - 7 SEPTEMBER 1994

Date	Time	Temp	pH	SpCond	Salin	DO	DO	Batt
MMDDYY	HHMMSS	degC	units	uS/cm	ppt	%Sat	mg/l	volts
90594	210000	16.74	9.42	15299	8.9	103.0	9.45	13.3
90594	220000	16.16	9.41	15382	9.0	95.3	8.85	13.3
90594	230000	15.97	9.40	15452	9.0	90.8	8.46	13.3
90694	0	15.67	9.36	15394	9.0	89.7	8.41	13.2
90694	10000	15.02	9.35	15284	8.9	87.3	8.30	13.2
90694	20000	14.69	9.33	15297	8.9	85.5	8.19	13.2
90694	30000	14.29	9.32	15314	8.9	82.0	7.92	13.1
90694	40000	13.87	9.31	15334	8.9	80.4	7.83	13.0
90694	50000	13.53	9.29	15352	8.9	79.0	7.76	13.1
90694	60000	13.13	9.28	15375	8.9	79.6	7.88	13.0
90694	70000	12.75	9.25	15332	8.9	74.6	7.45	12.9
90694	80000	12.63	9.26	15473	9.0	68.6	6.87	12.9
90694	90000	12.60	9.26	15542	9.1	68.8	6.89	12.9
90694	100000	12.78	9.27	15596	9.1	71.8	7.16	13.0
90694	110000	12.95	9.29	15652	9.1	78.5	7.80	13.1
90694	120000	13.34	9.31	15628	9.1	79.1	7.79	13.1
90694	130000	14.02	9.32	15658	9.1	84.5	8.19	13.1
90694	140000	14.67	9.36	15628	9.1	93.2	8.92	13.1
90694	150000	15.27	9.39	15804	9.2	95.0	8.97	13.2
90694	160000	16.27	9.39	15771	9.2	100.4	9.29	13.2
90694	170000	16.94	9.41	15692	9.1	110.3	10.06	13.2
90694	180000	17.31	9.49	15818	9.2	115.9	10.48	13.2
90694	190000	17.76	9.50	15880	9.3	113.8	10.20	13.2
90694	200000	17.82	9.52	15945	9.3	114.6	10.25	13.2
90694	210000	17.73	9.52	16016	9.3	113.2	10.14	13.2
90694	220000	17.38	9.52	16081	9.4	109.9	9.92	13.2
90694	230000	16.97	9.52	15827	9.2	118.1	10.76	13.1
90794	0	15.57	9.49	15992	9.3	111.5	10.46	13.1
90794	10000	14.99	9.44	15748	9.2	109.8	10.43	13.0
90794	20000	14.42	9.41	15772	9.2	95.6	9.19	13.0
90794	30000	14.50	9.40	15834	9.2	89.4	8.57	13.0
90794	40000	13.96	9.25	15396	9.0	89.3	8.68	12.9
90794	50000	12.93	9.15	15587	9.1	92.8	9.22	12.9
90794	60000	12.91	9.11	15521	9.0	85.3	8.48	12.9
90794	70000	12.50	9.05	15615	9.1	81.0	8.12	12.9
90794	80000	12.17	8.97	15706	9.2	72.8	7.36	12.8
90794	90000	12.16	8.95	15707	9.2	69.2	6.99	12.9
90794	100000	12.72	8.96	15800	9.2	72.7	7.25	12.9

TABLE C-11. FIELD MEASUREMENTS, EAGLE RIVER FLATS, FORT RICHARDSON, ALASKA, 8-27 MAY 1994

Sample Site	Date MMDDYY	Time HHMM	Temperature ° C	pH S. Units	Conductivity µmohs/cm	Salinity ppt	DO mg/L	ORP
A1	052094	0900	9.7	6.9	23000	14	7.5	106
A2	052094	1130	12.2	6.6	27400	18	8.8	85
BT1	051694	1200	16.2	6.6	21500	13	16.3	209
BT2	051694	1400	18.3	7.5	21500	13	16.3	92
BT3	051694	1630	22.0	7.5	22000	14	11.4	45
C1	051394	0930	7.9	6.4	15310	9.1	10.4	126
C2	051394	1030	8.4	6.6	15650	9.2	10.5	67
DUP2*	052094	1300	13.0	7.1	17800	11	12.2	110
C3	051494	1100	13.4	7.2	7150	4.0	11.6	113
DUP1*	051494	1100	13.2	7.2	7140	4.0	11.2	152
CD1	051294	1700	15.4	6.5	3950	3.1	12.2	17
CD2	051294	1900	14.9	6.7	4100	2.2	12.5	38
FC1	051894	1400	12.4	6.5	14250	8.1	9.3	104
GB1	052194	1400	17.2	6.3	42100	29	9.9	91
GB2	052194	1145	11.5	6.9	26400	17	7.5	80
GB3	052194	1545	18.7	7.8	37300	25	12.2	60
RI1	051994	1300	10.6	6.2	25100	16	10.6	25
RI2	051994	1100	12.3	6.5	25900	16	13.3	47
ER1	052394	1830	10.4	7.2	230	0.12	14.8	-
ER2	052494	1230	8.1	6.6	26060	3.5	10.8	43
DT1	052494	1000	7.9	6.6	24100	15	10.6	140
DT2	052494	1030	8.6	6.4	24100	17	10.7	152
DT3	052494	1700	17.4	6.6	26000	17	9.5	113
DT4	052394	1330	16.2	6.2	8020	4.6	9.9	60
DT5	052494	1600	16.8	6.6	25200	16	9.1	112
DT6	052494	1445	15.7	6.8	28000	18	10.9	35
DT7	052494	1330	14.6	6.6	27700	18	9.9	154

* DUP1 is a duplicate sample for C3 and DUP2 is a duplicate sample for C2.

TABLE C-12. FIELD MEASUREMENTS, EAGLE RIVER FLATS, FORT RICHARDSON, ALASKA, 22 AUGUST - 9 SEPTEMBER 1994

Sample Site	Date MMDDYY	Time HHMM	Temperature ° C	pH S. Units	Conductivity µmohs/cm	Salinity ppt	DO mg/L	ORP
A1	090194	0930	12.8	7.6	32300	20.1	7.4	-50
A2	090194	1330	14.1	8.2	40650	26.0	10.6	78
A3	090194	1430	14.9	7.85	35250	22.2	9.3	99
A4	090194	1030	12.7	7.9	33000	20.6	9.4	16
A5	090194	1200	13.1	8.1	30900	19.2	9.0	85
B1	082394	1400	19.0	9.2	14600	3.8	22.2	30
B2	082394	1500	16.6	7.3	7800	3.6	12.6	85
B3	082394	1700	16.9	7.3	3670	1.5	8.7	65
BT1	082994	1100	12.9	8.0	29200	18.0	11.4	24
BT2	082994	1230	13.2	7.6	30800	19.0	16.5	9
BT3	082994	1340	16.1	7.6	33000	21.0	15.0	27
C1	082694	1630	14.8	9.1	35300	23.0	9.9	-17
C2	082694	1430	14.6	9.1	39200	25.0	10.9	28
DUP2*	082694	1430	14.6	9.1	39100	25.0	11.0	28
C3	082594	1600	16.8	7.8	10580	5.3	3.8	-34
DUP1*	082594	1600	16.6	7.8	10560	5.3	3.8	-34
C4	082694	1330	14.8	8.5	37100	24.0	9.3	125
C5	082694	1100	15.2	8.5	3540	1.9	7.1	24
CD1	082594	1130	14.8	9.3	550	0.28	16.5	-8
CD2	082594	1245	12.9	8.9	1150	0.20	9.2	18
D1	082494	1300	16.3	9.1	24100	13.0	15.5	172
D2	082494	1400	20.6	8.8	8460	3.2	15.0	100
D3	082494	1200	14.5	8.3	26400	16.0	12.9	425
GB1	083094	1325	19.9	-	28600	18.0	-	84
GB2	083094	1430	18.1	6.4	16300	9.7	-	80
GB3	083094	1245	17.4	8.5	27200	17.0	-	93
GB4	083094	1130	16.1	9.9	26500	18.0	23.8	76
RI1	083194	1435	15.5	6.8	10130	5.9	4.8	77
RI2	083194	1100	15.7	7.8	9060	5.1	4.0	131
RI3	083194	1500	19.3	7.9	15310	9.0	15.0	10

TABLE C-12. FIELD MEASUREMENTS, EAGLE RIVER FLATS, FORT RICHARDSON, ALASKA, 22 AUGUST - 9 SEPTEMBER 1994 (Continued)

Sample Site	Date MMDDYY	Time HHMM	Temperature ° C	pH S. Units	Conductivity µmohs/cm	Salinity ppt	DO mg/L	ORP
DUP3*	083194	1500	19.3	7.9	15390	8.8	15.0	20
ER1	090894	1700	+	+	100	0.10	+	249
ER2	090894	1530	+	+	930	0.50	+	156
ER3	090894	1700	+	+	600	0.35	+	147
ER4	090894	1350	+	+	1100	0.57	+	123
DT1	090894	1500	+	+	9200	5.2	+	150
DT2	090894	1415	+	+	9700	5.4	+	124
DT3	090894	1300	12.37	7.74	9600	5.9	5.6	65
DT4	090894	1600	+	+	3400	1.8	+	154
DUP4*	090894	1600	+	+	3400	1.8	+	154
DT5	090894	1230	+	+	12000	6.7	+	-
DT6	090894	1100	+	+	9900	5.5	+	160
DT7	090894	1145	+	+	10000	5.8	+	67

* DUP1, DUP2, DUP3, and DUP4 are duplicate samples for C3, C2, RI3, and DT4, respectively.
+ Data was lost due to a malfunctioning field instrument.

TABLE C-13. RESULTS OF WATER ANALYSIS, EAGLE RIVER FLATS, FORT RICHARDSON, ALASKA, 8-27 MAY 1994

Sample Site	Lab. Cond. µmohs/cm	NH_3-N mg/L	NO_3+NO_2-N mg/L	PO_4-P mg/L	TDS mg/L	TSS mg/L	TOC mg/L
A1	23000	0.31	<0.05	0.06	14000	12	5.7
A2	27000	0.31	<0.05	0.06	18000	5.4	5.0
BT1	22000	0.27	<0.05	0.19	13000	20	6.4
BT2	22000	0.28	<0.05	0.13	13000	14	6.4
BT3	23000	0.30	<0.05	0.17	14000	24	6.1
C1	16000	0.56	<0.05	0.06	9100	7.2	5.8
C2	15000	0.56	<0.05	0.05	9200	7.2	5.9
DUP2	18000	0.28	<0.05	0.11	11000	14	7.5
C3	7400	0.23	<0.05	0.06	4000	2.7	5.4
DUP1	7200	0.25	<0.05	0.04	4000	3.0	5.3
CD1	4000	0.55	<0.05	<0.02	3100	2.7	2.2
CD2	4100	<0.40	0.05	0.02	2200	2.4	1.7
FC1	14000	0.30	<0.05	0.03	8100	2.0	4.9
GB1	44000	0.30	<0.05	0.11	29000	14	5.1
GB2	27000	0.25	<0.05	0.16	17000	23	6.6
GB3	38000	0.41	<0.05	0.08	25000	15	6.9
RI1	26000	0.40	<0.05	0.06	16000	5.1	4.5
RI2	26000	0.26	<0.05	0.09	16000	4.9	6.1
ER1	180	0.32	0.45	0.03	124	7.6	2.4
ER2	6300	0.38	0.39	6.4	3500	4800	4.2
DT1	24000	0.31	0.22	0.33	15000	130	2.1
DT2	27000	0.27	0.18	0.17	17000	61	1.9
DT3	26000	0.33	0.06	0.24	17000	89	3.6
DT4	8100	0.31	<0.05	0.05	4600	16	4.0
DT5	25000	0.26	0.08	0.73	16000	560	3.9
DT6	24000	0.25	0.08	0.04	18000	7.2	2.4
DT7	28000	0.41	<0.05	0.06	18000	32	1.8

TABLE C-14. RESULTS OF WATER ANALYSIS, EAGLE RIVER FLATS, FORT RICHARDSON, ALASKA, 22 AUGUST - 9 SEPTEMBER 1994

Sample Site	Lab. Cond. µmohs/cm	NH_3-N mg/L	NO_3+NO_2-N mg/L	PO_4-P mg/L	TDS mg/L	TSS mg/L	TOC mg/L
A1	32000	0.30	<0.05	0.24	20000	100	9.7
A2	40000	0.35	<0.05	0.09	26000	19	8.8
A3	35700	0.35	<0.05	0.06	22000	9.4	9.0
A4	32000	0.30	<0.05	0.14	21000	35	8.7
A5	30000	0.23	<0.05	0.15	19000	22	8.4
B1	6800	0.15	<0.05	0.06	3800	5.0	11
B2	6300	0.24	<0.05	0.05	3600	6.0	8.7
B3	2800	0.25	<0.05	0.04	1500	<1.0	8.5
BT1	29000	0.36	<0.05	0.11	18000	21	9.5
BT2	30000	0.27	<0.05	0.12	19000	34	10
BT3	33000	0.32	<0.05	0.23	21000	34	9.7
C1	35000	0.22	<0.05	0.15	23000	38	14
C2	38000	0.28	<0.05	0.13	25000	2.7	9.9
DUP2	39000	0.21	<0.05	0.11	25000	43	10
C3	9400	0.20	<0.05	0.04	5300	3.7	10
DUP1	9300	0.12	<0.05	<0.02	5300	27	10
C4	37000	0.21	<0.05	0.19	24000	94	10
C5	3500	0.24	<0.05	0.24	1900	16	7.1
CD1	540	0.16	<0.05	<0.02	280	<1.0	4.2
CD2	410	0.20	<0.05	<0.02	200	<1.0	3.7
D1	23000	0.27	<0.05	0.02	13000	5.5	6.7
D2	5700	0.20	<0.05	<0.02	3200	8.7	6.2
D3	26000	0.28	<0.05	0.02	16000	1.2	5.9
GB1	28000	0.31	<0.05	0.05	18000	4.0	6.7
GB2	16000	0.31	<0.05	0.05	9700	5.8	7.6
GB3	27000	0.45	<0.05	0.05	17000	4.0	8.3
GB4	29000	0.36	<0.05	0.08	18000	5.6	7.8
RI1	10000	0.45	<0.05	0.07	5900	3.8	14
RI2	9000	0.49	<0.05	0.06	5100	5.5	13
RI3	15000	0.46	<0.05	0.07	9000	5.0	16

TABLE C-14. RESULTS OF WATER ANALYSIS, EAGLE RIVER FLATS, FORT RICHARDSON, ALASKA, 22 AUGUST - 9 SEPTEMBER 1994 (Continued)

Sample Site	Lab. Cond. µmohs/cm	NH_3-N mg/L	NO_3+NO_2-N mg/L	PO_4-P mg/L	TDS mg/L	TSS mg/L	TOC mg/L
DUP3	15000	0.41	<0.05	0.08	8800	5.8	16
ER1	100	0.22	0.12	0.09	100	26	2.0
ER2	930	<0.2	0.12	1.6	500	1300	2.9
ER3	600	1.1	0.09	0.85	350	830	2.0
ER4	1100	0.22	0.12	1.1	570	850	2.2
DT1	9200	0.23	0.07	0.09	5200	20	3.6
DT2	9700	<0.20	0.06	0.07	5400	25	2.7
DT3	10000	0.28	<0.05	0.23	5900	150	3.9
DT4	3400	0.32	<0.05	0.06	1800	23	*
DUP4	3400	0.25	<0.05	0.06	1800	28	*
DT5	12000	0.27	<0.05	0.55	6700	430	4.3
DT6	9900	0.22	0.05	0.12	5500	53	2.4
DT7	10000	0.33	0.05	0.66	5800	470	3.0

* Samples broken in laboratory.

TABLE C-15. RESULTS OF SEDIMENT ANALYSIS, EAGLE RIVER FLATS, FORT RICHARDSON, ALASKA, 8-27 MAY 1994

Sample Site	Moisture Percent	TOM Percent	NH_3-N mg/kg	Total Nitrogen mg/kg	Total PO_4-P mg/kg
A1	48	5.6	11	1500	840
A2	47	5.1	<10	1400	820
BT1	43	4.6	<10	1300	880
BT2	44	4.6	13	1400	810
BT3	43	4.4	11	1300	830
C1	47	4.9	14	1400	870
C2	44	4.7	23	3700	930
DUP2	42	4.5	29	1000	900
C3	73	8.6	61	1100	910
DUP1	67	8.1	32	3100	930
CD1	70	7.8	50	3100	780
CD2	62	8.7	31	3000	830
FC1	54	5.5	22	1900	800
GB1	29	3.1	<10	440	1000
GB2	40	4.6	12	1000	880
GB3	36	4.0	<10	820	950
RI1	58	6.2	27	2300	1000
RI2	48	5.4	20	2100	1000
ER1	32	3.4	<10	610	960
ER2	25	2.4	<10	310	780
DT1	50	5.0	60	1100	950
DT2	36	3.9	<10	690	900
DT3	38	3.8	<10	550	920
DT4	38	3.9	<10	760	940
DT5	35	3.7	<10	630	920
DT6	32	3.9	<10	720	900
DT7	38	3.8	<10	560	790

TABLE C-16. RESULTS OF SEDIMENT ANALYSIS, EAGLE RIVER FLATS, FORT RICHARDSON, ALASKA, 22 AUGUST - 9 SEPTEMBER 1994

Sample Site	Moisture Percent	TOM Percent	NH_3-N mg/kg	Total Nitrogen mg/kg	Total PO_4-P mg/kg
A1	46	5.0	17	1600	940
A2	43	5.3	<10	1500	950
A3	53	6.8	18	2200	970
A4	47	5.3	22	1000	980
A5	42	4.7	19	1100	1000
B1	44	4.6	11	1500	970
B2	48	5.1	13	1600	950
B3	49	5.1	26	1600	980
BT1	43	5.0	17	1200	980
BT2	45	5.4	24	1200	990
BT3	47	5.8	32	1200	1000
C1	47	5.6	17	1300	1000
C2	42	4.8	15	1100	1000
DUP2	46	5.1	28	1300	1000
C3	64	10	38	4100	1100
DUP1	66	11	37	4000	1300
C4	37	4.6	16	1000	1000
C5	71	12	64	4200	1000
CD1	73	9.5	51	4300	920
CD2	62	10	28	2900	920
D1	49	5.7	10	1600	970
D2	65	8.1	24	2900	920
D3	47	5.1	7.8	1400	1000
GB1	29	3.1	<10	590	1100
GB2	41	4.6	<10	1100	970
GB3	37	3.9	<10	830	1100
GB4	-	-	-	-	-
RI1	55	5.9	34	2000	1200
RI2	51	5.7	28	1400	1100
RI3	42	4.9	32	1400	1000

TABLE C-16. RESULTS OF SEDIMENT ANALYSIS, EAGLE RIVER FLATS, FORT RICHARDSON, ALASKA, 22 AUGUST - 9 SEPTEMBER 1994 (Continued)

Sample Site	Moisture Percent	TOM Percent	NH_3-N mg/kg	Total Nitrogen mg/kg	Total PO_4-P mg/kg
DUP3	47	5.1	33	1500	1000
ER1	17	2.8	<10	680	750
ER2	26	2.2	<10	530	930
ER3	23	3.5	<10	760	970
ER4	33	3.3	<10	760	990
DT1	40	4.1	<10	880	970
DT2	42	3.8	13	970	1000
DT3	38	3.7	<10	780	1000
DT4	43	4.0	<10	750	990
DUP4	31	4.2	<10	880	1100
DT5	30	3.9	<10	880	1000
DT6	40	4.0	<10	740	1000
DT7	40	3.6	<10	820	1100

TABLE C-17. SUMMARY OF BENTHIC MACROINVERTEBRATE RESULTS, EAGLE RIVER FLATS, FORT RICHARDSON, ALASKA, 8-27 MAY 1994

Sample Site		Number of Species	Number of Individuals	Diversity H	Sediment WP µg/kg
A1	A	3	38	0.28	<0.88
	B	2	100	0.17	1.7
	C	2	36	0.15	<0.88
Total		4	174	0.24	
A2	A	2	215	0.10	<0.88
	B	3	209	0.14	<0.88
	C	1	249	0.00	<0.88
Total		3	673	0.09	
BT1	A	4	452	0.14	<0.88
	B	3	600	0.04	<0.88
	C	3	537	0.03	2.8
Total		4	1589	0.08	
BT2	A	2	769	0.01	4.3
	B	3	580	0.03	<0.88
	C	2	444	0.05	1.2
Total		3	1793	0.03	
BT3	A	1	849	0.00	<0.88
	B	3	563	0.18	15
	C	3	743	0.07	<0.88
Total		4	2455	0.08	
C1	A	1	393	0.00	<0.88
	B	1	748	0.00	<0.88
	C	1	302	0.00	<0.88
Total		1	1443	0.00	
C2	A	2	1098	0.02	96
	B	2	1609	0.01	1500
	C	2	1264	0.03	860
Total		3	3971	0.02	
DUP2	A	1	1698	0.000	<0.88
	B	1	1036	0.000	<0.88
	C	2	1587	0.007	<0.88
Total		2	4321	0.003	
C3	A	3	6	1.11	3000
	B	4	14	1.26	4.5
	C	2	2	0.59	64
Total		5	22	1.65	
DUP1	A	1	3	0.00	27
	B	2	5	0.49	2.3
	C	4	9	1.29	2.8
Total		4	17	1.40	

TABLE C-17. SUMMARY OF BENTHIC MACROINVERTEBRATE RESULTS, EAGLE RIVER FLATS, FORT RICHARDSON, ALASKA, 8-27 MAY 1994 (Continued)

Sample Site	Number of Species	Number of Individuals	Diversity H	Sediment WP µg/kg
CD1 A	5	27	1.52	<0.88
B	2	10	0.80	<0.88
C	2	28	0.89	<0.88
Total	5	65	1.50	
CD2 A	3	8	0.95	<0.88
B	3	22	0.92	<0.88
C	5	18	1.47	<0.88
Total	6	48	1.46	
FC1 A	1	1	0.00	<0.88
B	0	0	0.00	<0.88
C	3	13	1.17	<0.88
Total	3	14	1.21	
GB1 A	3	411	0.82	<0.88
B	4	921	0.85	<0.88
C	4	578	0.92	<0.88
Total	4	1910	0.88	
GB2 A	2	801	0.02	<0.88
B	1	884	0.00	<0.88
C	3	995	0.03	<0.88
Total	3	2680	0.02	
GB3 A	1	23	0.00	<0.88
B	2	16	0.26	<0.88
C	1	134	0.00	<0.88
Total	2	173	0.04	
RI1 A	2	13	0.83	28
B	2	2	0.59	620000
C	3	85	0.22	2.2
Total	3	100	0.50	
RI2 A	3	165	0.37	180
B	4	65	0.89	5800
C	4	17	1.35	140000
Total	5	247	1.35	

TABLE C-17. SUMMARY OF BENTHIC MACROINVERTEBRATE RESULTS, EAGLE RIVER FLATS, FORT RICHARDSON, ALASKA, 8-27 MAY 1994 (Continued)

Sample Site	Number of Species	Number of Individuals	Diversity H	Sediment WP µg/kg
DT1 A	4	59	1.07	<0.88
B	4	60	1.03	<0.88
C	4	29	1.23	<0.88
Total	5	148	1.21	
DT2 A	1	9	0.00	<0.88
B	4	149	0.35	<0.88
C	2	99	0.07	<0.88
Total	4	257	0.25	
DT3 A	0	0	0.00	<0.82
B	1	2	0.00	<0.88
C	0	0	0.00	<0.88
Total	1	2	0.00	
DT4 A	2	7	0.64	<0.88
B	3	7	0.99	<0.88
C	4	13	1.30	<0.88
Total	6	27	1.87	
DT6 A	1	1	0.00	<0.88
B	3	15	0.87	<0.88
C	2	3	0.57	<0.88
Total	4	19	1.29	
DT7 A	2	3	0.57	<0.88
B	0	0	0.00	<0.88
C	0	0	0.00	<0.88
Total	2	3	0.57	

TABLE C-18. SUMMARY OF BENTHIC MACROINVERTEBRATE RESULTS, EAGLE RIVER FLATS, FORT RICHARDSON, ALASKA, 22 AUGUST - 9 SEPTEMBER 1994

Sample Site		Number of Species	Number of Individuals	Diversity H	Sediment WP µg/kg
A1	A	2	404	0.02	0.57
	B	1	989	0.00	0.60
	C	2	1811	0.01	0.92
Total		2	3204	0.01	
A2	A	1	1938	0.00	0.20
	B	1	2300	0.00	<0.19
	C	2	2167	0.03	<0.19
Total		2	6405	0.01	
A3	A	1	24	0.00	<0.18
	B	1	624	0.00	<0.18
	C	2	300	0.26	<0.19
Total		2	1165	0.09	
A4	A	2	1889	0.01	<0.18
	B	1	2300	0.00	<0.18
	C	1	2160	0.00	<0.18
Total		2	6349	0.00	
A5	A	1	2580	0.00	0.25
	B	1	3415	0.00	<0.19
	C	2	2479	0.04	<0.18
Total		2	8474	0.01	
B1		3	129	0.11	<0.21
B2		3	36	0.29	<0.22
B3		2	1165	0.09	<0.22
Total		4	1330	0.12	
BT1	A	3	236	0.07	<0.92
	B	4	522	0.46	<0.92
	C	2	517	0.12	<0.92
Total		5	1275	0.28	
BT2	A	3	396	0.28	2.4
	B	2	155	0.16	<0.93
	C	2	240	0.90	<0.93
Total		3	791	0.90	
BT3	A	4	157	0.73	<0.93
	B	4	822	0.16	<0.19
	C	2	440	0.16	0.47
Total		4	1419	0.26	

TABLE C-18. SUMMARY OF BENTHIC MACROINVERTEBRATE RESULTS, EAGLE RIVER FLATS, FORT RICHARDSON, ALASKA, 22 AUGUST - 9 SEPTEMBER 1994 (Continued)

Sample Site	Number of Species	Number of Individuals	Diversity H	Sediment WP µg/kg
C1 A	2	182	0.69	4.2
B	1	92	0.00	9.0
C	2	327	0.09	3.7
Total	2	602	0.34	
C2 A	2	721	0.03	19
B	2	772	0.04	160
C	3	59	0.48	660
Total	3	1552	0.07	
DUP2 A	4	50	1.07	940
B	2	238	0.26	76
C	2	550	0.03	6.1
Total	4	838	0.24	
C3 A	0	0	0.00	23
B	2	3	0.57	3400
C	2	6	0.45	12000
Total	3	9	0.71	
DUP1 A	2	2	0.59	1100000
B	3	6	1.02	95000
C	1	3	0.00	2900
Total	4	11	1.24	
C4 A	2	825	0.01	12
B	2	1834	0.06	12
C	2	627	0.08	57
Total	2	3286	0.06	
C5 A	1	12	0.00	<0.92
B	1	10	0.00	<0.92
C	1	8	0.00	<0.92
Total	1	30	0.00	
CD1 A	1	1	0.00	<0.22
B	3	10	0.67	<0.22
C	2	6	0.66	2.8
Total	5	17	1.50	
CD2 A	4	12	0.89	<0.21
B	3	12	0.61	<0.22
C	4	6	1.30	3.0
Total	6	30	1.46	

TABLE C-18. SUMMARY OF BENTHIC MACROINVERTEBRATE RESULTS, EAGLE RIVER FLATS, FORT RICHARDSON, ALASKA, 22 AUGUST - 9 SEPTEMBER 1994 (Continued)

Sample Site	Number of Species	Number of Individuals	Diversity H	Sediment WP µg/kg
D1	2	8	0.61	<0.22
D2	1	46	0.00	<0.21
D3	1	111	0.00	<0.22
Total	2	165	0.08	
RI1 A	2	7	0.42	20
B	0	0	0.00	70
C	1	2	0.00	10
Total	3	9	0.91	
RI2 A	2	78	0.08	210
B	0	0	0.00	42000
C	3	95	1.23	260000
Total	3	173	0.89	
RI3 A	2	1505	0.22	330
B	3	1694	0.11	360
C	2	1175	0.31	33
Total	3	4374	0.21	
DUP3 A	2	2398	0.24	16
B	2	1200	0.24	10
C	1	324	0.00	2
Total	2	3922	0.22	
GB1	4	57	1.63	<0.19
GB2	2	1353	0.01	<0.93
GB3	3	321	1.22	0.47
GB4	1	1984	0.00	0.70
DT1	5	76	1.38	0.48
DT2	2	1706	0.01	<0.19
DT3	4	188	1.52	<0.19
DT4	4	62	1.19	<0.19
DUP4*	4	50	1.35	0.83
DT5	3	51	0.87	<0.19
DT6	3	149	0.97	<0.19
DT7	2	8	0.61	<0.19

TABLE C-19. WHITE PHOSPHORUS RESULTS FROM RANGE FINDING SEDIMENT TOXICITY TESTS, 20 SEPTEMBER - 4 OCTOBER 1994

% WP Contaminated Sediment Renewal	Day 0 Water White Phosphorus ng/L Dissolved	Day 0 Water White Phosphorus ng/L Total	Day 14 Water White Phosphorus ng/L Dissolved	Day 14 Water White Phosphorus ng/L Total	Sediment WP µg/kg
0	22	<5	12	<5	10
0.1	220	<5	16	56	290
1	830	1200	41	810	2300
10	8500	15000	23000	11000	210000
100	42000	28000	20000	80000	1800000
Disturbed 0	<5	7.3	14	<5	3
0.1	74	40	*	87	1100
1	*	420	1300	240	4300
10	5300	3900	7200	17000	1300000
100	36000	9300	25000	7300	1500000
No. Small Particles 0	6	<5	<5	12	260
1	110	92	5.8	<5	11
10	300	540	80	120	61
20	1900	1900	290	1300	180
40	4200	1300	940	4000	40000
No. Large Particles 0	<5	<5	<5	<5	21
1	220	180	61	380	107
5	600	97	260	640	68
10	1900	800	510	3000	2000
20	2600	1300	370	380	130000

* Sample broken in shipment.

TABLE C-20. WHITE PHOSPHORUS RESULTS FROM 30-DAY SEDIMENT TOXICITY TESTS, 18 OCTOBER - 17 NOVEMBER 1994

% WP Contaminated Sediment	Day 0 Water WP ng/L Dissolved*	Day 0 Water WP ng/L Total	Day 7 Water WP ng/L Total	Day 14 Water WP ng/L Total	Day 21 Water WP ng/L Total	Day 30 Water WP ng/L Dissolved*	Day 30 Water WP ng/L Total	Sediment WP µg/kg Day 0	Sediment WP µg/kg Day 30*
Renewal Hyalella									
0	37	65	<5	<5	<5	<5	<5	11	<0.18
0.2	58	40	28	19	9	<5	<5	170	34
0.6	190	370	30	38	16	12	11	1500	1100
1.8	960	5000	92	120	62	88	110	3800	670
5.4	5800	10000	940	850	660	480	470	7100	6100
16.2	9400	12000	5400	1000	3000	1800	2100	16000	64000
Disturbed Hyalella									
0	68	52	<5	<5	<5	<5	<5	11	5.8
0.2	125	69	<5	7	<5	5.1	5.8	170	45
0.6	600	540	19	7.3	14	<5	11	1500	110
1.8	4800	5800	210	140	*	140	62	3800	410
5.4	5400	6100	1450	960	530	560	490	7100	1300
16.2	24000	20000	4300	3900	880	2100	2700	16000	2500
Renewal Chironomus									
0	*	24	<5	<5	<5	<5	<5	11	<0.18
0.02	*	25	<5	<5	<5	<5	<5	12	1.1
0.06	*	42	<5	<5	<5	<5	<5	26	5.2
0.18	*	*	27	20	11	<5	85	41	16
0.54	*	*	41	39	9	<5	<5	1600	63
1.62	690	540	48	43	37	5.6	<5	2300	130
Disturbed Chironomus									
0	33	43	<5	<5	<5	<5	<5	11	<0.18
0.02	<5	<5	<5	<5	<5	<5	<5	12	0.26
0.06	37	32	<5	<5	<5	<5	<5	26	2
0.18	300	190	<5	<5	5.2	<5	<5	41	28
0.54	690	740	22	37	36	14	16	1600	83
1.62	1500	350	80	160	35	20	22	2300	390
No. Small Particles									
0	48	30	<5	<5	<5	<5	<5	0	0.25
1	210	79	58	<5	<5	<5	<5	5000	5.4

TABLE C-20. WHITE PHOSPHORUS RESULTS FROM 30-DAY SEDIMENT TOXICITY TESTS, 18 OCTOBER - 17 NOVEMBER 1994 (Continued)

% WP Contaminated Sediment	Day 0 Water WP ng/L Dissolved*	Day 0 Water WP ng/L Total	Day 7 Water WP ng/L Total	Day 14 Water WP ng/L Total	Day 21 Water WP ng/L Total	Day 30 Water WP ng/L Dissolved*	Day 30 Water WP ng/L Total	Sediment WP µg/kg Day 0	Sediment WP µg/kg Day 30*
2	240	46	67	43	26	14	7	10000	18
4	283	240	180	210	45	15	25	20000	120
8	1600	1200	1000	710	370	79	140	40000	57000
16	4350	2600	1400	1200	690	600	790	80000	110000
No. Large Particles 0	<5	8	<5	<5	<5	<5	<5	0	<0.18
1	*	60	31	6.8	13	19	12	14250	13
2	253	*	460	93	150	57	110	28500	53
4	1000	1400	420	652	260	72	200	57000	44
8	1900	2100	2200	1245	240	490	490	114000	110
16	*	3800	1400	1400	1300	2100	400	228000	380

* Sample broken in shipment.

APPENDIX D

TAXONOMIC LISTING

Benthic Macroinvertebrate Samples from
Fort Richardson, Alaska
May 13-24, 1994

TAXONOMIC LISTING

Species	Site A-1-A	A-1-B	A-1-C
ANNELIDA			
Oligochaeta			
Naididae			
Nais variablis	1		
INSECTA			
Diptera			
Chironomidae			
Chironomus salinarius	36	97	35
Ceratopogonidae			
Culicoides sp. A	1		1
Empidae			
Rhamphamyia sp.		3	

Species	Site A-2-A	A-2-B	A-2-C
INSECTA			
Diptera			
Chironomidae			
Chironomus salinarius	212	205	249
Ceratopogonidae			
Culicoides sp. A		3	
Empidae			
Rhamphamyia sp.	3	1	

Species	Site C-1-A	C-1-B	C-1-C
INSECTA			
Diptera			
Chironomidae			
Chironomus salinarius	393	748	302

Species	Site C-2-A	C-2-B	C-2-C
INSECTA			
Diptera			
Chironomidae			
Chironomus salinarius	1096	1608	1260
Chironomus plumosus	2		
Empidae			
Rhamphamyia sp.		1	4

Species	Site C-3-A	C-3-B	C-3-C
ANNELIDA			
Oligochaeta			
Naididae			
Nais variablis			1
GASTROPODA			
Physidae			
Physella gyrina	2	1	
INSECTA			
Diptera			
Chironomidae			
Chironomus salinarius	2	2	1
Eukiefferiella sp.	2	8	
Ceratopogonidae			
Culicoides sp. A		3	

Species	Site Dup-1-A	Dup-1-B	Dup-1-C
GASTROPODA			
Physidae			
Physella gyrina		4	1
INSECTA			
Diptera			
Chironomidae			
Chironomus salinarius	3	1	4
Eukiefferiella sp.			3
Ceratopogonidae			
Culicoides sp. A			1

Species	Site Dup-2-A	Dup-2-B	Dup-2-C
BIVALVIA			
Sphaeridae			
Sphaerium sp.			1
INSECTA			
Diptera			
Chironomidae			
Chironomus salinarius	1698	1036	1586

Species	Site RI-1-A	RI-1-B	RI-1-C
INSECTA			
Diptera			
Chironomidae			
Cryptochironomus digitatus	6	1	1
Ceratopogonidae			
Culicoides sp. A	7	1	82
Culicoides sp. B			2

Species	Site RI-2-A	RI-2-B	RI-2-C
ANNELIDA			
Oligochaeta			
Naididae			
Nais variablis			1
INSECTA			
Diptera			
Chironomidae			
Chironomus salinarius	9	10	7
Eukiefferiella sp.	154	3	
Ceratopogonidae			
Culicoides sp. A	2	51	7
Culicoides sp. B		1	2

Species	Site GB-1-A	GB-1-B	GB-1-C
BIVALVIA			
Sphaeridae			
Sphaerium sp.		5	2
INSECTA			
Diptera			
Chironomidae			
Chironomus salinarius	311	692	398
Ceratopogonidae			
Culicoides sp. A	98	223	177
Empidae			
Rhamphamyia sp.	2	1	1

Species	Site GB-2-A	GB-2-B	GB-2-C
INSECTA			
Diptera			
Chironomidae			
Chironomus salinarius	799	884	992
Cryptochironomus digitatus			2
Ceratopogonidae			
Culicoides sp. A	2		1

Species	Site GB-3-A	GB-3-B	GB-3-C
INSECTA			
Diptera			
Chironomidae			
Chironomus salinarius	23	15	134
Ceratopogonidae			
Culicoides sp. A		1	

Species	Site DT-1-A	DT-1-B	DT-1-C
ANNELIDA			
Oligochaeta			
Naididae			
Nais variablis	17	11	5
CRUSTACEA			
Amphipoda			
Gammarus lacustris			3
INSECTA			
Coleoptera			
Dytiscidae			
Hygrotus sp.	1	1	
Hydrophilidae			
Hydranea sp.	39	44	19
Diptera			
Chironomidae			
Parachironomus sp.	2	4	2