

KODIAK (LEAN LAKES PROJECT

FY2001

Final Progress Report

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KODIAK URBAN LAKES PROJECT

FY2001 FINAL PROGRESS REPORT

1.0 INTRODUCTION

1.1 Background

The City of Kodiak is situated on Kodiak Island, about 250 miles south of Anchorage, Alaska. The Kodiak city area contains eight lakes. Of these, seven provide rearing habitat for stocked silver salmon, and the eighth is stocked with rainbow trout. The ninth lake in our present study, Lake Rose Tead, is forty road miles SSE of Kodiak, and has natural runs of red salmon, silver salmon, and pink salmon. In addition to their value as fish habitat, all the lakes in our study are valued for recreational uses and scenic beauty.

Steady growth is changing land use patterns within the watersheds of Kodiak's urban lakes, and this may affect water quality in the streams and lakes. We began a two-year water quality monitoring effort in 1995. During the '95 – '96 project, we collected information on turbidity, fecal coliform bacteria, nutrients, minerals, and other parameters. Additional monitoring was begun in May 2000, and continued through the end of June 2001.

1.2 Kodiak Clean Lakes Project FY2000 - 2001 Accomplishments

The FY2000 and FY2001 Kodiak Clean Lakes Projects were funded by ADEC as Community Water Quality Grants.

During FY2000 we: 1) established a technical advisory committee; 2) produced an ADEC approved Quality Assurance Project Plan (QAPP); 3) produced an ADEC approved Water Quality Sampling Plan; 4) trained water quality sampling technicians and started stream and lake sampling; 5) completed AutoCAD mapping of the Kodiak City study area; and 6) prepared an interim report on our results.

The FY2001 project scope of work included six tasks. Task descriptions and accomplishments are as follows.

Task 1:) Conduct periodic lake monitoring in 8 urban lakes and in Lake Rose Tead:

We sampled periodically at 1 meter depth above the deepest place in each lake, following Alaska Department of Fish & Game (ADF&G) methods. The Kodiak ADF&G limnology lab analyzed our samples for nutrients and biological productivity. We also tested for oxygen concentration, light levels, conductivity, turbidity, and fecal coliform bacteria. Overall sampling completeness was 69% for FY01 and 80% for FY00 and FY01 combined. The completeness goal in the QAPP was 75%. Funding constraints necessitated cutting back sampling at several lakes.

Task 2: Conduct periodic stream monitoring in 3 urban watersheds and in Rose Tead watershed: We tested at 23 stream sampling stations an average of 16 times throughout the year for coliform / E. coli bacteria, turbidity, conductivity, and temperature. Funding constraints necessitated cutting back sampling at the Lake Rose Tead streams, and several seasonal streams stopped flowing during dry weather. Excluding Lake Rose Tead, overall sampling completeness was 82% for FY01 and 84% for FY00 and FY01 combined. The completeness goal in the QAPP was 79%.

Task 3: Conduct intensive stream monitoring in 3 urban watersheds: The purpose of this task was to take “stroboscopic snapshots” of watershed-wide water quality, and to then zoom in to localize anomalies in turbidity and bacterial levels. Our periodic sampling did not reveal indications of major point source pollution. Four intensive sample sets were collected and analyzed; two each in Mission and Lower Island Lake watersheds.

Task 4: Measure the short-term variability of turbidity and fecal coliform bacteria levels during and following rain events using an autosampler: This task was deleted from the workplan per our 1Q’01 progress report due to shortage of funds.

Task 5: Disseminate “white papers” regarding water quality sampling results to policy makers: White paper issues have been discussed with City and Borough engineers, and have been presented to City council and Borough assembly members and City and Borough managers. Copies of white papers are included with the deliverables package.

Task 6: Publicize water quality issues and positive local action: We have only recently started informing local policy makers of water quality issues via “white papers”. KSWCD believes it would be counterproductive to force the hand of local government by taking these issues to the media prematurely. We will support policy makers with information and encourage them to take the lead on the issues presented in the white papers.

2.0 WATER QUALITY MONITORING PROGRAM

2.1 Study Area

The urban Kodiak study area is shown in Figure F-2.1 Kodiak Urban Lakes watershed map. Maps F-5.1A, B, and C show sampling stations utilized during the FY2000-2001 monitoring effort. These same 20 stations were utilized for the 1995 – 1996 sampling project. Figure F-2.2 shows the Lake Rose Tead watershed, which is included in this project. Four stream sampling stations are shown on that map, as well as the limnology sampling station.

2.2 Water Quality Monitoring Objectives

The water quality monitoring component of the Kodiak Clean Lakes Project was designed with two primary goals. First, we monitored **streams** for fecal coliform

bacteria, turbidity, temperature, and conductivity. We conducted **periodic monitoring** throughout the year to establish baseline values and ranges. We conducted **intensive monitoring** in areas of elevated fecal coliforms on several occasions to look for point sources or obvious non-point sources.

Second, we sampled the **lakes** an average of 5 times each between May'00 and June'01. We performed field measurements of water column temperature, Secchi depth clarity, and conductivity, and dissolved oxygen concentration. A surface water sample from each lake sample was analyzed for fecal coliform bacteria. AquaLife delivered water samples to the ADF&G Kodiak limnology lab, and lab personnel performed sample preparation and filtration procedures and then analyzed for nutrients, water chemistry, and zooplankton. The lake work is comparable with similar testing performed by Fish & Game in pristine lakes statewide over the past 15 years.

Sampling sites, sampling schedules, and testing parameters were selected with the objective of inventorying water quality and characterizing the environmental "health" of the eight urban or road-accessible Kodiak lakes and their watersheds.

3.0 WATER QUALITY PARAMETERS

For the periodic stream monitoring, we tested for a limited number of parameters which are most influenced by human impacts. These were:

- Coliform bacteria; Coliform bacteria, and E. coli bacteria in particular, originate from the guts of warm-blooded animals. This includes humans, domestic animals, wild animals, and birds. Elevated levels of coliform bacteria may indicate the presence of sewage leaks or high populations of domestic animals. In any event, fecal material is always high in nutrients, and high coliform levels correlate with nutrient enrichment.
- Turbidity; Turbidity is a measure of the “cloudiness” of water. Cloudiness in streams is usually caused by silt, but it may be caused by microalgae in the water downstream of lakes. Silt absorbs sunlight, which could otherwise produce microalgae. Microalgae form the base of the food chain which feeds salmon and trout, so high turbidity is bad for rearing fish. Human impacts (such as unpaved roads, street sanding, and unvegetated fills) are the major cause of increased turbidity in developed areas. Monitoring turbidity allows us to keep track of the influence of human activities on water clarity.
- Conductivity; Conductivity is a measure of the ionic strength of water. Ions (i.e. charged particles) can come from natural sources as well as from salt, sewage, fertilizer, or other chemicals. Although moderately high conductivity is not necessarily damaging, ADEC considers increasing conductivity to be a good indicator of human impacts.
- Temperature affects the rate of all chemical and biological processes, and is therefore important when interpreting biological data. Temperature measurements also help discriminate between groundwater and surface water. Our conductivity meter automatically displays temperature at the same time as conductivity, so we can monitor temperature with minimal additional expense.
- Flow rate. We measured flow rate because the first three parameters above all vary widely, depending on the time of year and amount of recent precipitation. We can interpret the testing results better if we know how much water is flowing.

For the lake monitoring, we tested for a limited number of parameters related to the fitness of the lakes for rearing salmon or other fish. Fitness for rearing fish is a good measure of the “health” of the lake systems, and has bearing on their recreational and habitat values. ADF&G is expert at making these assessments, and we have adopted the list of parameters which they recommended, and added tests for fecal coliform bacteria, conductivity, pH, and turbidity. The lake parameters were:

- Water column temperature (AquaLife field measurement);
- Water column dissolved oxygen concentration (AquaLife field measurement);
- Water column photosynthetically active radiation (PAR) and/or Secchi clarity (AquaLife field measurement);
- Water column conductivity (AquaLife field measurement);
- Near-surface fecal coliform bacteria (Kodiak city lab analysis);
- Surface and depth pH, alkalinity, true color, total phosphorus (TP), total filterable phosphorus (TFP), filterable reactive phosphorus (FRP) (ADF&G limno lab);
- Surface and depth total ammonia (TA), nitrate + nitrite (N) (ADF&G limno lab);
- Water column Chlorophyll a and Phaeophytin a (ADF&G limno lab);
- Water column zooplankton species abundance, biomass, and size (ADF&G limno lab).

4.0 METHODS

We performed sampling and analysis according to our approved Sampling Plan and Quality Assurance Project Plan. For stream sampling, we used field instruments for all tests except the coliform testing. We utilized Micrology Labs Coliscan EasyGel kits for coliform testing, backed up by membrane filtration tests performed by the Kodiak City Lab. Details of the sampling procedures are set forth in the Sampling Plan. Details of the analytical and QA procedures are explained in the Quality Assurance Project Plan.

To collect a sample, the monitoring technician entered the stream wearing hip boots and positioned himself downstream of the sampling location. Disposable latex gloves were worn for sampling, and a new pair were be used at each site. Samples were collected from the horizontal midline of the flow, and from mid-depth or 3 inches below the surface, whichever was nearer the surface.

For lake testing, we followed sampling and analysis guidelines set forth in ADF&G's Limnology Field and Laboratory Manual: Methods for Assessing Aquatic Production by Koenings, Edmundson, et. al., February 1987. Lake samples were collected from a small boat from a station located at the deepest area of each lake. We collected water from 1 meter depth at all lakes, and from 6 meters as well for Island Lake. Water was collected from the specified depths using a Van Dorn bottle sampler, provided by ADF&G.

Water samples were kept cool (4 degrees C) and out of direct sunlight. Samples were returned to the ADF&G limno lab as soon as practical, and filtration was started within four hours of sample collection. Samples for analysis by the City lab were delivered there within four hours of sample collection, and fecal coliform membrane filtrations were performed within 6 hours of sample collection.

Field measurements of water column temperature, dissolved oxygen concentration, Secchi clarity, and conductivity were performed on station using instruments provided by ADF&G. We also collected zooplankton samples from each lake utilizing two replicate vertical tows of a 20-cm or 50-cm diameter plankton net.

5.0 WATER QUALITY DATA REVIEW: MAY 2000 – JUNE 2001

5.1 PERIODIC STREAM MONITORING

Results of periodic stream monitoring activities are presented in Tables T - 5.1, 5.2, and 5.3. Results for turbidity / conductivity and E. coli bacteria testing are presented graphically in figures F-5-1A,B,C and F-5-2A,B,C, respectively.

The data set is large, representing an average of 16 visits per site over a period of 13-1/2 months. It is clear from inspection of Table T – 5.1 (Results sorted by site) that the data for turbidity and bacteria are highly variable. This is normal, and is caused by the wide variation in surface runoff depending on duration and intensity of rainfall. Bacteria testing is further conflicted by normal variability in sampling and analysis. Conductivity is the most consistent parameter, but it is also somewhat variable, depending on the fraction of groundwater versus surface water flow, and the presence or absence of road salt or seawater.

Widely variable data are difficult to analyze. We have selected the median value as most indicative for E. coli, turbidity, and conductivity. These values, along with arithmetic averages for E. coli, are presented in Table T – 5.3 and in figures F-5-1A,B,C and F-5-2A,B,C.

5.1.1 Turbidity

Inspection of tables T –5.1 and T –5.3 shows relatively high median turbidity and occasionally very high peak turbidity from the sites along Selief Lane, including H1, H2, H3, and H5. A relatively large volume of clear water off the undeveloped mountainside (H4) dilutes this silty water off the unpaved surface of Selief Lane. Downstream lakes help settle that silt, and buffer spikes in turbidity. The mainstem inlet to Island Lake (D1) had a median turbidity of 6.6 NTU.

The Potatopatch / Mission watersheds have much higher average turbidity because there is relatively less undeveloped land in the watersheds. The inlet to Potatopatch Lake (P2) had a median turbidity of 17.3 NTU. The inlet to Mission Lake (M2 / M5) had a median turbidity of 15.5 NTU.

Many extremely high turbidities (>150 NTU) were measured at different sites on different dates. This is most likely due to road drainage or erosion associated with rainfall. The City of Kodiak plans to reconstruct and pave Selief Lane during the summer of 2002. This should greatly improve turbidity excursions due to gravel road runoff in that area once construction is complete.

Turbidity in the Lake Rose Tead watershed was extremely low at about 3 NTU. This is quite a bit less than at H4 (7.7 NTU), the least impacted flow in town. The tributary streams of Rose Tead watershed are unimpacted by development. The geology of that valley has a great deal of granite rock in comparison with shale / siltstone in Kodiak town, and that could also partially explain the difference in turbidity.

5.1.2 Conductivity

Comparison of figures F5-1A, B, and C and inspection of table T –5.1 shows that conductivity is fairly well behaved. It is elevated at the outlets of Mission Lake and Lake Rose Tead due to seawater intrusion. Water from undeveloped areas tends to have lower conductivity, while street runoff tends to have higher conductivity. The flow at I3 is unusually high in conductivity (median 321 uS/cm) compared with other nearby flows.

5.1.3 Bacteria Testing

Comparison of figures F5-2A, B, and C (Upper Island Lake watershed, Lower Island Lake watershed, and Potatopatch/Mission watersheds, respectively) shows that most sites had median *E. coli* levels of 0 cfu/100ml. This indicates that chronic sewage leakage is unlikely throughout most of the watersheds.

We did note possible hot spots at several locations. By far the highest levels were seen at the inlet to Mission Lake (M2 / M5). The outlet of Mission Lake had occasional hits, possibly due to waterfowl, a nearby stable, or the inlet flow. The outlet of Lake Rose Tead had repeated non-zero *E. coli* readings, most likely due to cattle in the area. The Horseshoe Lakes sites (H2, H3, and H5), the Potatopatch inlet sites (P2A, P2B, and P2) had *E. coli* readings consistent with residential neighborhood drainage.

5.2 INTENSIVE STREAM MONITORING

Results from intensive stream monitoring are presented in table T – 5.4 and in figures F – 5.3A, B, C, and D. We tested for total coliforms and *E. coli* only, using the Micrology Labs Coliscan Easygel technique used for periodic monitoring. In the absence of significant construction and earthwork construction activity, we decided that turbidity testing would not be very informative.

The results of the Mission Creek #1 testing were suggestive of a bacteria input between MI5 and MI7. These samples were gathered during a 0.5” rain, but bacteria levels were not especially high. The second round of samples on Mission Creek were gathered during a 1.1” rain. Bacteria levels were consistently higher for these samples, but no major point source was implicated.

After checking the construction plans at the Kodiak City Engineering Department, it became clear that MI4 and MI14 drain the storm sewers for several thousand feet of Mill Bay Road, including the adjacent residential and commercial properties. Elevated *E. coli* at the inlet to Mission Lake may be the result of non-point source pollution from this substantial area.

There is a sanitary sewer adjacent to and beneath Mission Creek from MI5 to MI7. Additional testing during extreme rainfall may be justified to rule out the possibility of contamination from this source.

The results of the Lower Island Lake Watershed #1 testing were inconclusive due to low E. coli bacteria levels. Samples from the Walmart parking lot drainage and from along the Brechan Enterprises Island Lake Road storage yard were unreadable due to high levels of **total** coliforms, but no counts were readable for E. coli.

The second round of samples indicated somewhat elevated E. coli from the drainage behind the Safeway parking lot and from the roadside ditch near Balika Lane. None of the levels are suggestive of a red-hot sewage leak.

There was moderate variability between the 1-ml and 5-ml duplicate Coliscan tests. These sample sizes provide 100:1 and 20:1 dilution, respectively. To increase precision, any future testing should probably employ duplicate samples at each station, and should test for fecal coliforms using membrane filtration at a 10:1 dilution. The cost for membrane filtration by the Kodiak City lab or an off-island commercial lab, however, is around \$20 per sample, excluding sample collection. For comparison, the Coliscan Easygel tests cost around \$2.50 for materials and analysis, excluding sampling time.

We did not pursue intensive sampling in the Potatopatch Lake watershed because our periodic testing was already quite intensive. Much of the drainage system is contained in underground storm sewers. The City frowns on confined space entry into storm sewers for sampling, and it is difficult to collect representative bacterial samples from deep sewers without entering. We did routinely sample in manholes at P2A and P2B using a sampling stick. This was successful because of the unique characteristics of those manholes.

5.3 PERIODIC LAKE MONITORING

Water chemistry results from the ADF&G Kodiak limnology lab are presented in Table T - 5.5. This table includes results from some of the other Kodiak lakes currently being monitored by ADF&G for their salmon enhancement program. Results of field measurements of lake temperature, dissolved oxygen, light levels, and fecal bacteria are presented in Table T - 5.6. Zooplankton biomass results are summarized for 1995, 2000, and 2001 in Table T - 5.7. The complete listing of zooplankton data sheets for those years is presented in Appendix B. Lake and watershed areas, depths, and hydraulic characteristics are presented in Table T - 5.8.

Table T-5.5 shows fairly consistent results for pH and alkalinity. pH was elevated to 9.0 or above for 5 of 6 measurements at Mission Lake, and for 3 of 6 measurements at Potatopatch Lake. This is most likely a result of intense photosynthesis due to nutrient enrichment. These levels may be stressful to coho salmon. There were some lab problems with calibrations for total phosphorus (TP), total filterable phosphorus (TFP), and filterable reactive phosphorus (FRP). Ammonia and nitrate+nitrite varied inversely with Chlorophyll a, with high springtime nitrogen nutrients being absorbed by phytoplankton blooms through the summer.

Table T-5.6 shows that most lakes remain fully mixed throughout the summer, and therefore do not experience low oxygen concentrations at depth. Island Lake and Dark lakes stratify somewhat due to their depth, but oxygen depletion was minor. Mission Lake also stratifies in places due to seawater intrusion, but most of the lake volume remains near oxygen saturation.

The zooplankton counts are voluminous, but their detailed interpretation is best left to specialists. Table T-5.7 summarizes the biomass figures for each lake for 1995, 2000, and 2001. The 1995 and 2000 figures generally represent 4 samples per year, and are directly comparable. The CY2001 figures represent one or two samples, and may not be comparable. Five-fold biomass variations from year to year are common in the shallower lakes. There is no consistent increase or decrease across lakes from year to year, i.e. in 2001 some lakes were had increased biomass and some had decreased biomass in comparison with 2000.

6.0 QUALITY CONTROL

6.1 Turbidity and Conductivity Testing

During FY2000, we sent check samples for turbidity and conductivity to both the Kodiak City lab and to CT&E. Agreement was excellent for conductivity. Additional conductivity check samples run by the City lab have shown similar close agreement with AquaLife field samples.

Agreement was good between the single in-range AquaLife sample and the CT&E sample. We calibrated our field turbidity meter each day with 1 NTU and 20 NTU standard solutions, and found good stability in the instrument between uses.

6.2 Bacteria Testing

We adopted the Coliscan EasyGel system produced by Micrology Labs for enumeration of bacterial contamination. That method provides plate counts of E. coli and total coliforms. Enzyme-sensitive dyes and inhibitors in the medium cause E. coli colonies to appear purple, non-E. coli coliforms to appear pink to magenta, and certain other bacteria appear dark blue.

We submitted split check samples to the City lab at a rate of nearly 30% to correlate our EasyGel with total coliforms and fecal coliforms. The City lab utilized membrane filtration with M-Endo medium for total coliforms, and M-FC medium for fecal coliforms. They could not enumerate E. coli using membrane filtration. E. coli is the predominant member of the fecal coliforms group (Standard Methods, 18th Edition, Section 9222D), and so should be less than or equal to the fecal count for split samples.

We generally had much higher counts for both total coliforms and E. coli/fecals in comparison with City results, although some agreed well and some were lower. We discussed this with the founder of Micrology Labs, and he suggested that the different methods would give different counts, and differences up to 2 to 5-fold would be expected. We had some results which exceeded even this tolerance.

In the course of QA work during FY2000, as well as additional work since, it became apparent that the color differences can be subtle between purple E. coli and dark blue "other bacteria". Some colonies that are dark blue at 24 hours become purple at 48 hours. It may be that some "others" were counted as E. coli early in the project.

We also occasionally noted failure to gel in some samples, and failure to grow in one plate of a duplicate pair. We ran all periodic stream samples in duplicate for FY2001, with one 1 ml and one 5-ml sample. We continued to deliver sample splits to the City lab for fecal coliform membrane filtration analysis. Results are included in tables T-5.1 and T-5.2.

7.0 DATA COMPARISONS – Historical Results and State Standards

Even though we established a substantial database for April 2000 through June 2001, this is basically only one year. We tested at the same stream sites and lakes in 1995 using generally the same methods, but that was basically also only one year. The present data set may not be directly comparable to the 1995 data set due to climatic variations. 1995 was a strong El Nino year, whereas early 2000 was the end of a strong La Nina condition. The winter of 2000-2001 was unusually wet and warm, with virtually no snowfall. The summer of 2001 was unusually dry and sunny, which may have stimulated phytoplankton and aquatic weed production in the lakes.

7.1 COMPARISONS WITH 1995 – 1995 RESULTS

In Section 5 above, we have provided some interpretations of the differences between FY2000 – FY2001 monitoring sites. Appendix C contains the schematic watershed maps from 1995 which show results of fecal coliform and turbidity testing. These may be compared with Figures F-5.1 and F-5.2 from the present study. Appendix D contains a summary of limnology results for 1995 – 1996, Appendix E contains the raw water chemistry results for those years, and Appendix F contains 1995 lake temperature, oxygen concentration, and secchi clarity results.

Most of the relative differences between stream sites and lakes were the same in 1995 – 1996 as at present, because they result from the hydrology and land uses of the watersheds.

The Island Lake watershed had three main issues: 1) turbidity from the unpaved surface and unvegetated ditches of Selief Lane; 2) shallow depth and excessive aquatic weeds in Upper Horseshoe Lake; and 3) occasionally high fecal coliform levels near the Horseshoe Lakes, at the inlet to Beaver Lake, and at the swimming beach at Island Lake. The State of Alaska is preparing a design for the reconstruction and paving of Selief Lane. Provided the design and construction follow appropriate best management practices (BMPs), turbidity should be much reduced from current levels after construction and revegetation is complete in 2003. In 1999 the City of Kodiak upsized driveway culverts along Selief Lane, replaced sewer and water services beneath the drainage creek, and installed a flow control structure / fishpass at the outlet of Upper Horseshoe Lake. This project resolved issue 2) above, and also eliminated two leaking sewer lines in the creek bed which had contaminated the inlet to Beaver Lake.

Our sampling program in 2000 – 2001 no longer found substantial bacterial contamination at the inlet to Beaver Lake (H1). The levels at Island Lake swimming beach (I2) were also greatly reduced for unknown reasons. Continuing contamination at the Horseshoe Lakes (H2, H3, H5) may be due to non-point source pollution from pets or waterfowl. In any event, the reconstruction of sewer and water lines along Selief Lane in 2002 should eliminate any existing defects in the sanitary sewer system.

The Potatopatch watershed (Lilly Lake and Potatopatch Lake) has changed relatively little since 1995 – 1996. Lilly lake remains clear and low in bacteria. Potatopatch Lake

remains very turbid, due most likely to high iron input from the Baranof Park sub-watershed. Potatopatch also is nutrient enriched, and produces intense phytoplankton blooms, as evidenced by occasional high Chlorophyll a concentrations. Relatively high bacteria counts during wet weather at P2, P2A, and P2B are indicative of NPS pollution from residential runoff, as was the case in 1995 – 1996.

The Mission Lake watershed was discovered this year to include more commercial area than previously thought. A substantial fish kill of coho juveniles in August 2000 was concluded by ADF&G to have been caused by a detergent input from an unknown source along Mill Bay Road. Water chemistry results suggest that Mission Lake is phosphorus enriched, which can be caused by detergents. This was the case in 1995 – 1996 due to an upstream car wash, and although the outdoor carwash slab was plumbed to the sanitary sewer, some detergent may still be entering the lake from overspray.

Mission Lake continues to have high pH values during the summer, and the leaking 1965-vintage tide gate continues to allow seawater into the lake on some high tides, resulting in high conductivity and low oxygen at the bottom in the poorly mixed seawater layer.

7.2 COMPARISONS WITH STATE WATER QUALITY STANDARDS

State of Alaska Water Quality Standards are published under 18 AAC 70. There are different requirements for water used for different purposes. The appropriate categories for our lakes appear to be: (B) Water Recreation: i) contact recreation; ii) secondary recreation; and (C) Growth and Propagation of Fish, Shellfish, Other Aquatic Life, and Wildlife.

Our study covered both lakes and streams. Some of the streams might be considered storm sewers, and it is not clear whether perennial storm sewers fall under the water quality regulations. For the purposes of this comparison, we consider the lakes only, although the characteristics of the outlet stream flow may be considered representative of the lake water.

The relevant regulated water quality criteria that we measured are: fecal coliform bacteria, dissolved oxygen, pH, and turbidity.

Fecal coliform bacteria: We had the City lab do fecal coliform analyses on lake surface water from each limnology sampling event. Of the 9 lakes tested, only Lower Horseshoe Lake violated the standard for contact recreation.

Dissolved Oxygen: The most stringent criterion for dissolved oxygen is provided by the Growth and Propagation standard. This requires D.O. to exceed 7 mg/liter in waters used by anadromous and resident fish. All lakes exceeded this requirement with the exception of the deepest few meters of Island Lake and within the seawater lens in Mission Lake.

pH: The standards for both Water Recreation and Growth and Propagation require a pH not less than 6.5 and not more than 8.5. Mission Lake and (to a slightly lesser extent) Potatopatch both had pH normally exceeding 9.0 during the summer.

Turbidity: The standards for both Water Recreation and Growth and Propagation require that, for all lake waters, turbidity may not exceed 5 NTU above natural turbidity. Lower Horseshoe Lake clearly violates this requirement. For Mission Lake and Potatopatch Lake, it may be difficult to determine what the “natural” turbidity might be. Mission and Potatopatch Lakes are both nutrient enriched, and Potatopatch also receives turbidity from the high-iron flow originating at Baranof Park.

8.0 CONCLUSIONS

The FY2000 – FY2001 Kodiak Urban Lakes project developed a large database of stream and lake water quality measurements over a 13-1/2 month period. This augments the database developed during the 1995 – 1996 project.

Our testing revealed patterns similar to those seen in the 1995-1996 study. Planned construction work along Selief Lane promises to make great improvements in turbidity and fecal coliform contamination in the Island Lake watershed.

The current project has reinforced findings of the 1995 –1996 study with regard to the Mission Lake and Potatopatch Lake watersheds. Water quality can be improved there by: 1) replacing the Mission Lake tide gate; 2) rerouting the Baranof Park stormwater; 3) implementing non-point source pollution (NPS) control Best Management Practices (BMPs) in the government public works operations and in public construction; and 4) educating the public concerning drainage and pollution issues.

Task 5 of the current project involves the communication of results to local government officials via “white papers”. The four issues listed above, as well as others, are addressed in that format. The white papers are attached to this report in Appendix A. This task will put water quality monitoring data, as well as recommendations, in the hands of decision-makers, and will perhaps lead to changes where action is merited.

APPENDIX A

WHITE PAPERS

KODIAK (LEAN LAKES PROJECT

**White Papers
on Lake and Stream Water Quality
for Urban Kodiak**

August 2001

Prepared by:
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from the **Alaska Department of Environmental Conservation**

Introduction

The Kodiak urban area includes eight lakes. They are contained in three separate watersheds. Island Lake watershed is around 850 acres in area, and includes Lower Reservoir, Upper and Lower Horseshoe Lakes, Beaver Lake, Dark Lake, and Island Lake. Potatopatch Lake watershed is around 300 acres in area, and includes Lilly Lake and Potatopatch Lake. Mission Lake watershed is around 250 acres in area, and includes only Mission Lake. Most of the rainfall falling on ground bounded by the Borough Building, the Pillar Mountain gravel pit, North Star Elementary, and the KANA building will pass through one of these lakes before it reaches the ocean.

Of our eight lakes, seven provide rearing habitat for silver salmon stocked by ADF&G, and the eighth is stocked with rainbow trout. Prior to the 1950s, all had natural runs of one or more salmon species. In addition to their value as fish habitat, all the lakes in our study are valued for recreational uses and scenic beauty, although some are more valued or more beautiful than others.

Steady growth has changed land use patterns within the watersheds of Kodiak's urban lakes, and this has affected water quality in the streams and lakes. We began a two-year water quality monitoring effort in 1995. During the 1995 – 1996 project, we collected information on turbidity, fecal coliform bacteria, nutrients, minerals, fish growth, and other parameters. Additional monitoring was begun in May 2000, and continued through the end of June 2001.

In the final report for our 1995 – 1996 studies, we made recommendations for improvements. Some of these improvements have been made. Two sewer service pipes, which had been leaking into the stream next to Selief Lane, were replaced. A flow control fishpass was installed at Upper Horseshoe Lake to increase the water depth. Soapy runoff from a carwash was plumbed to the sanitary sewer system.

Other possible improvements have been on the back burner. As part of the final report for the 2000 – 2001 studies, we are bringing our findings and recommendations directly to the policy makers and concerned citizens of Kodiak. The following four pages present an overview of issues affecting each of the three watersheds, plus overall non-point source (NPS) pollution issues affected by public works operations and private citizens' practices.

These pages are intended to encourage thought and discussion. What can we affordably do to maintain or improve the beauty of our lakes, and to ensure that each September will see schools of jumping coho at Mill Bay and Mission beach? There are sources of off-island funding for fish habitat and watershed improvements, and ADEC, ADF&G, and a number of federal agencies support these types of actions. A plan, a proposal, and some persistence could produce a legacy of clean lakes and fish for the future in Kodiak town.

White Paper #1

Water Quality Issues for Selief Lane and the Island Lake watershed.

The Island Lake watershed is the largest and least developed of urban Kodiak's three watersheds. A strong flow of clean water flows off the flanks of Pillar Mountain through Lower Reservoir, and joins water from Horseshoe Lake in the bog behind Selief Lane. From there the stream flows along Selief Lane into Beaver Lake, Dark Lake, and Island Lake.

The major problem area is Horseshoe Lakes and Selief Lane. Most Kodiak rock is very weak, and dirt roads here release silt during use as the road breaks down. Runoff from Selief Lane raises the turbidity (cloudiness) of the stream to very high levels. Turbidity is substantially increased downstream to Dark Lake. Silt in the water clogs pores in the streambed, smothers aquatic insects, shades out microalgae, clogs the gills of fish and freshwater mussels, and looks unattractive. Silt in water is bad.

The State of Alaska DOT&PF is currently in the design process for the reconstruction and paving of Selief Lane. This project is expected to build in summer 2002. The project will include replacement of the sanitary sewer, so there should be no further issues with fecal coliform contamination. This is a golden opportunity to do the job right with regard to water quality and fish habitat.

If the design incorporates proper measures for erosion control, and if construction follows the design, then turbidity throughout the watershed will be much decreased, and fish habitat will be improved. There are three issues here: 1) is the design consistent with local conditions and fish habitat concerns? 2) Should the design include rehabilitation or enhancement of fish habitat damaged by years of siltation? 3) Will erosion control and revegetation aspects of the design be implemented and maintained during and after construction?

Recommendations:

- Ensure that local ADF&G personnel (habitat, comfish research, and sportfish) are involved in review of the design at an early stage.
- Determine whether the construction project should include habitat enhancement, and whether the City can influence the scope of the State DOT design in that regard.
- Investigate whether Federal Natural Resources Conservation Service WHIP program can fund habitat enhancement aspects of construction. This program already contributed \$20,000 toward the 1998 Selief Lane drainage improvements.
- Quality construction and attention to detail cost money, and the installation of erosion control measures is labor intensive. Determine what organization will provide construction management, ensure they are qualified with respect to erosion control, ensure that these aspects of the design are stressed in the specs and the pre-bid conference, and then see that they are accomplished during construction

White Paper #2

Water Quality Issues for Mission Lake watershed.

The elevation of Mission Lake is set at +8.93' above MLLW (mean lower low water sea level) by the lip of the outlet tide gate. High tide exceeds this elevation around 15 times per month. The outlet culvert is rusted away on the bottom, and the flapper valve does not seal well. The tide gate is worn out after 36 years of service. As a consequence, seawater leaks into the lake and collects in the low points.

Seawater has much higher carbonate alkalinity than Kodiak's fresh water, and this provides more carbon dioxide for growth of aquatic plants in the lake. With abundant nitrogen and phosphorus from NPS pollution in the watershed, very high rates of photosynthesis take place in Mission Lake during sunny periods. Withdrawal of carbon dioxide by plants elevates the pH. Four of five pH readings from limnology samples during 2000 – 2001 were at or above 9.0. Mission Lake had similar high pH levels during the 1995 – 96 study.

pH affects fish, and pH above 9 is considered stressful for salmonids. Alaska State Water Quality Standards for water used for the Growth and Propagation of Fish ... require a pH not less than 6.5 and not more than 8.5. Per Len Schwarz of ADF&G Sportfish, recent returns of adult coho salmon to Mission beach have not been good.

An apparent detergent release from somewhere along Mill Bay Road on August 24, 2000 resulted in the kill of an estimated 600 juvenile coho salmon in Mission Creek between the top of Benny Benson Drive and the inlet to the lake. ADF&G Sportfish has annually stocked Mission Lake with coho fingerlings since at least 1990. It appears that a significant fraction choose to rear in the creek instead of in the lake. They are susceptible to non-point pollution as well as recurring toxic spills in the creek.

Norm Sutliff tended to the health of the lake and the maintenance of the tide gate until recent years, when the Kodiak Island Borough began keeping it clear of debris. He commissioned and paid an engineering and consultant firm, PN&D for a tide gate design in June 1998. Mr. Sutliff requested and was subsequently reimbursed the cost of the new tide gate design by the Kodiak Soil and Water Conservation District. The Borough is currently working with the U.S. Natural Resources Conservation Service and Kodiak Soil and Water Conservation District to obtain funding sufficient to cover the estimated \$50,000 construction cost.

Recommendations:

- The City should participate in improvements at Mission Lake even though it is not within City limits. NPS pollution from within City limits causes most of the N and P enrichment in Mission Lake, and this fuels the photosynthesis that elevates pH. Point source pollution from within City limits has caused at least two fish kills since 1995, perhaps exacerbated by the high lake pH causing more fish to inhabit the creek.

- The Borough should seek additional funding to install the new tide gate. The Borough spends considerable labor hours maintaining the tide gate. A new tide gate would reduce labor costs.
- The PN&D design should be modified to prevent out-migration of smolt in the spring at low tide, when stranding and predation are high.

White Paper #3

Water Quality Issues for Potatopatch Lake watershed.

The Potatopatch Lake watershed is the most developed of urban Kodiak's three watersheds. Lilly Lake is fed by runoff from the municipal airport and the wetland to the south adjacent to Mill Bay Road. Water quality and clarity there is quite good, and it supports some large and experienced stocked rainbow trout.

The outlet flow from Lilly Lake goes underground into culverts, and flow from most of the rest of the watershed is underground in storm sewers almost until it enters Potatopatch Lake. The Lilly Lake flow is joined at Simeanoff Street by a side flow from the Baranof Park area, and the combined flow daylights in a gully by 17th Avenue before going under Rezanof Drive and into the lake.

Until the mid-1960s, the Baranof Park area was a shallow lake. After the earthquake, debris was disposed of there, and eventually the area was filled and turned into a park. Because of acid soils in the lakebed, the steel culverts crossing the fill have corroded. Some sections have been replaced, but most of the original pipe is still in place.

This corroded pipe serves a useful purpose. Since the park was formerly a lake, the water table is high. This causes some complaints from the Kodiak Football League, because their field never dries out very well. The leaky storm sewer drains groundwater, and prevents the lake from resurfacing.

Because of acid, low-oxygen conditions and buried metal, the drained groundwater is high in soluble ferrous iron. During the winter of 1999 – 2000, we cooperated with Eric Linscheid's high school on an ASTF grant to measure pH, total iron, turbidity, and conductivity at 6 points in the watershed. We found iron content of water coming out of Baranof Park to be 3.5 to 23 times higher than the water coming out of Lilly Lake.

When the high-iron, low-oxygen water from Baranof Park is oxygenated in the creek and in Potatopatch Lake, the soluble ferrous iron becomes insoluble ferric iron, and it makes little specks of "rust", and settles out. Iron stains can be seen in the culverts and on rocks, and aerial photos of Kodiak show Potatopatch Lake with a reddish-brown color when other lakes are dark blue or green.

We tested the water from the park in July 1995, and did not detect toxic organics or RCRA metals. High iron levels are not toxic, but the iron causes Potatopatch to have chronically high turbidity.

Recommendations:

- East Addition Park storm sewers were recently replaced with plastic pipe after a sinkhole appeared. Planning should begin to address that possibility in Baranof Park.
- The high water table and debris history of the park may require separate collection and disposal of groundwater and storm water if non-leaky storm pipes are installed.
- Investigate disposal of groundwater via siphon or force main through existing storm drains to the ocean at Pearson Cove.
- Investigate disposal of groundwater base flow via sanitary sewer, disposal of peak flows via storm sewer to Potatopatch Lake.

White Paper #4

Water Quality Issues related to non-point source (NPS) pollution BMPs.

Non-point source pollution is pollution that happens over a wide area instead of from a particular spill or pipe. Examples of NPS pollution are bacterial contamination from doogie doo, silt from breakdown of dirt roads, sediment and salt from winter road maintenance, etc. Best Management Practice (BMP) is a catch phrase used to describe a way of performing operations or constructing projects to minimize harm.

Environmental professionals have developed BMPs for use by public works departments for municipal operations. There are other BMPs for construction that may be applied or enforced by building departments. Many of these types of issues are dealt with in publications such as the Erosion Control Journal, or in Internet web sites such as www.salixearthcare.com. There are also specialists within state agencies with knowledge about water quality, erosion control, and revegetation with Alaska plant species.

The keys to erosion control are: 1) do not make cuts or fills too steep; and 2) establish vegetation or armor slopes to immobilize soil. Kodiak sees frequent rains, and bare soil soon washes into streams and lakes unless it is shot rock.

Many folks do not realize that water entering most of our street drains reaches a lake within 15 minutes. A high school benefit car wash in the Safeway parking lot puts suds in Mission Lake at the same time that it cleans momma's SUV.

Recommendations:

- Investigate and apply BMPs for ditch clearing. The BMP for new ditches is to establish vegetation as soon as possible. Recent ditch clearing along Selief Lane and out toward Monashka Bay have stripped all vegetation, and caused substantial erosion to partially fill the ditch. A better approach may be to mow the brush and leave the ground cover.
- Investigate and apply BMPs for road sanding and street cleaning. Is the silt content specification for winter sand optimal for cost and performance? Is the spec enforced? Is the street sweeper efficient and cost-effective? Much of our road dust comes from volcanic ash, and is naturally occurring, but the silt still damages the streams and settles in the lakes.
- Consider enforcing Building Code requirements for slope steepness in construction. When commercial developments include storm water treatment features, ensure they are sited on owned land. Consider enforcing provisions against private encroachments on publicly owned greenbelt or undeveloped land.
- Encourage a Boy Scout / Girl Scout / 4-H type project to label storm drain inlets with information about the lake downstream. This might help raise public awareness and avoid future fish kills.

APPENDIX B

1995, 2000, 2001 ZOOPLANKTON

COUNTS

Station: 1
 Depth: 4m
 Year: 1994

Macrozooplankton Density
 (no./m²)

Date: 30-Aug

Seasonal Mean
 (No/m²)

Ergasilus	637	637
Epischura	2,654	2,654
Diaptomus	10,191	10,191
Cyclops	3,822	3,822
Bosmina	1,911	1,911
Ovig Bosmina	212	212
Daphnia l.	106	106
Daphnia g.		
Holopedium		
Chydorinae	present	
Polyphemus		

Total: 19,533

Body Size
 (mm)

SEASONAL MEANS

Ergasilus	0.50
Epischura	0.46
Diaptomus	0.53
Cyclops	0.59
Bosmina	0.37
Ovig Bosmina	0.37
Daphnia l.	0.73
Daphnia g.	
Holopedium	
Chydorinae	0.22
F remus	

Mean Length (mm)	Weighted Length (mm)	Biomass (mg/m ²)	Weighted Biomass (mg/m ²)
0.50	0.50	0.5	0.5
0.46	0.46	1.3	1.3
0.53	0.53	7	7
0.59	0.59	4	4
0.37	0.37	2	2
0.37	0.37	0.3	0.3
0.73	0.73	0.2	0.2
0.22	0.22		
TOTAL:		17	17

Lake: Beaver
 Station: 1
 Depth:
 Year: 1995

Macrozooplankton Density
 (#/m2)

Date:	3-May	22-Jun	30-Jul	29-Aug	16-Oct	Seasonal Mean (No/m2)
Ergasilus		96	1,911			401
Epischura		1,497		1,433		586
Harpact.	32					6
Diaptomus					64	13
Cyclops	127	127	32	159	127	114
Bosmina		1,115	4,363	50,795	510	11,357
Ovig. Bosmina		573	1,401	16,561	32	3,713
Daphnia l.					32	6
Ceriodaphnia			64			13
Holopedium		510	64	318		178
Ovig. Holopedium		96				19
Chydorinae					159	32
					96	19
Polyphemus						0
						Total: 16,459

Body Size
 (mm)

Ergasilus		0.55			
Epischura		0.77	1.06	0.71	
Harpact.	0.90				
Diaptomus					0.81
Cyclops	0.61	0.57	0.96	0.68	0.60
Bosmina		0.32	0.28	0.30	0.59
Ovig. Bosmina		0.37	0.40	0.32	0.38
Daphnia l.					0.56
Ceriodaphnia			0.36		
Holopedium	0.32	0.36	0.46	0.47	
Ovig. holopedium		0.65			
Chydorinae					0.27
					0.34
Polyphemus					

SEASONAL MEANS

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

Lake: Dark
 Station: 1
 Depth:
 Year: 1995

Macrozooplankton Density

(#/m2)

Date:	2-May	25-Jun	28-Jul	29-Aug	16-Oct
Ergasilus		212			
Epischura		6,794	1,699	1,274	64
Diaptomus		24,841	2,972	9,979	127
Ovig. diaptomus				212	
Cyclops	2,166	3,397	26,115	29,511	4,809
Ovig. Cyclops		1,699	637		64
Bosmina	64	5,096	20,170	46,072	510
Ovig Bosmina		212	425	5,732	
Daphnia l.			2,335	5,096	2,994
Ovig. Dap. l.				849	510
Daphnia g.		212	7,431	4,246	
Ovig. dap g.		212	425	425	32
Holopedium	1,083	15,924	1,486	2,335	
Ovig. holopedium		1,699	212	212	
Chydorinae				212	
juvenile calanoida		637	2,335		382

Seasonal Mean
 (No/m2)

42
0
1,966
0
7,584
42
13,200
480
14,382
1,274
2,085
272
2,378
219
4,166
425
42
13
671
Total: 49,240

Body Size (mm)

Ergasilus				
Epischura	1.57	1.31	1.61	1.14
Diaptomus	1.14	1.16	1.27	1.05
Ovig. Diaptomus	1.33	1.32	1.33	
Cyclops	0.83	1.24	0.64	0.65
Ovig. Cyclops		1.37	1.38	1.17
Bosmina	0.32	0.47	0.53	0.49
Ovig. Bosmina		0.37	0.53	0.57
Daphnia l.			0.92	0.77
Ovig Dap. l.			1.38	1.00
Daphnia g		0.99	0.89	0.95
Ovig. Dap. g.		1.40	1.25	1.10
Holopedium	0.33	0.87	0.89	0.83
Ovig. Holopedium		1.05	1.00	0.98
Chydorinae				0.28
juvenile calanoida	0.54	0.50		0.31
				0.61

SEASONAL MEANS

Mean Length (mm)	Weighted Length (mm)	Weighted Biomass (mg/m2)	Weighted Biomass (mg/m2)
1.41	1.53	23	29
1.16	1.18	49	51
1.33	1.33	0.40	0.41
0.80	0.67	29	20
1.31	1.37	3	3
0.45	0.50	27	34
0.49	0.56	3	4
0.73	0.72	5	5
1.06	0.93	1	1
0.94	0.91	5	4
1.04	1.20	1	1
0.73	0.84	22	31
1.01	1.04	5	5
0.28	0.28	0.03	0.03
0.31	0.31	0.01	0.01
0.55	0.52	0.53	0.46
TOTAL:		174	190

Lake: Horseshoe L
 Station: 1
 Depth:
 Year: 1995

Macrozooplankton Density

(#/m2)

Date:	3-May	22-Jun	28-Jul	29-Aug	16-Oct
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Seasonal Mean
(No/m2)

Ergasilus		32				6
Harpact.		127			159	57
Epischura			32			6
Diaptomus					382	76
Cyclops	32	191	2,516	350	7,389	2,096
Ovig. cyclops		127	191			64
Bosmina		478	1,178	2,261		783
Ovig. Bosmina		32	255	828		223
Daphnia l.			350		32	76
Ovig. Daphnia			32			6
Daphnia g.			96			19
Ceriodaphnia				64	32	19
Holopedium			32			6
Chydorinae			860	6,783	1,433	1,815
Ovig. Chydorinae			32	573	32	127
Polyphemus						0

Total: 5,382

Body Size
(mm)

Ergasilus		0.50			
Harpact.		0.64			0.81
Epischura			1.14		
Diaptomus					0.89
Cyclops	0.70	0.89	0.64	1.01	0.70
Ovig. Cyclops		1.01	1.00		
Bosmina		0.27	0.38	0.28	
Ovig. Bosmina		0.44	0.41	0.35	
Daphnia l.			0.87		0.56
Ovig. Dap. l.			1.06		
Daphnia g.			0.77		
Ceriodaphnia				0.75	
Holopedium			0.60		
Chydorinae			0.30	0.30	0.38
Ovig. Chydorinae			0.38	0.53	
Polyphemus					

SEASONAL MEANS

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

Lake: Horseshoe U.
 Station: 1
 Depth:
 Year: 1995

Macrozooplankton Density
 (#/m2)

Date:	3-May	22-Jun	30-Jul	29-Aug	16-Oct	Seasonal Mean (No/m2)
Harpact.	32					6
Epischura		14,331	191	64		2,917
Diaptomus				96	159	51
Cyclops	64		382	573	287	261
Ovig. cyc.			32			6
Bosmina		523,360	29,108	64	955	110,697
Ovig. Bosmina		154,989	1,019		127	31,227
Daphnia l.			32		318	70
Daphnia g.			96			19
ceriodaphnia			8,822	223		1,809
Ovig. cerio.			669	32		140
Chydorinae			2,134	255		478
Ovig. Chydorinae			96	64		32
Polypheumus						0
Total:						147,715

Body Size
 (mm)

Harpact.	0.50				
Epischura		1.50	1.33	2.24	
Diaptomus				0.88	1.04
Cyclops	0.97		1.17	0.71	0.73
Ovig. Cyclops			1.52		
Bosmina		0.35	0.27	0.24	0.44
Ovig. Bosmina		0.41	0.38		0.59
Daphnia l.			0.60		0.91
Daphnia g			0.79		
ceriodaphnia			0.44	0.46	
Ovig. Cerio.			0.65		
Chydorinae			0.33	0.26	
Ovig. Chydorinae			0.44	0.36	
Polypheumus					

SEASONAL MEANS

Mean Length (mm)	Weighted Length (mm)	Biomass (mg/m2)	Weighted Biomass (mg/m2)
0.50	0.50	0.01	0.01
1.69	1.50	58	42
0.96	0.98	0.20	0.21
0.90	0.86	1	1
1.52	1.52	0.06	0.06
0.33	0.35	105	120
0.46	0.41	62	49
0.76	0.88	0.17	0.24
0.79	0.79	0.02	0.02
0.45	0.44	1	3
0.65	0.65	0.25	1
0.30	0.32	0.37	0.45
0.40	0.41	0.05	0.05
TOTAL:		229	216

Lake: ISLAND (Kodiak)

Station: 1

Depth: 6 - 8M

Year: 1995

Macrozooplankton Density
(no./m²)

Date:	25-Jun	28-Jul	29-Aug
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Seasonal Mean
(No/m²)

Ergasilus

Epischura	955	4,936	3,662	3,184
Diaptomus	2,866	3,822	2,548	3,079
Ovig Diaptomus		1,274		425
Cyclops	94,268	23,567	37,102	51,646
Ovig Cyclops	22,293		2,229	8,174
Bosmina	4,777	17,994	28,981	17,251
Ovig Bosmina	318	955	2,229	1,167
Daphnia l.	14,013	9,873	11,624	11,837
Ovig Daphnia l.		1,274	1,752	1,009
Daphnia g.		955	1,274	743
Ovig Daphnia g.		159	159	106
Holopedium	19,746			6,582
Ovig Holopedium	2,548			849
Chydorinae		present	present	

Polyphemus

Total: 106,051

Body Size
(mm)

Ergasilus

Epischura	1.69	1.50	1.46
Diaptomus	1.31	1.13	1.32
Ovig Diaptomus	1.42	1.35	1.30
Cyclops	1.05	0.98	0.57
Ovig Cyclops	1.26		1.18
Bosmina	0.42	0.42	0.41
Ovig Bosmina	0.62	0.59	0.58
Daphnia l.	0.75	0.79	0.79
Ovig Daphnia l.	1.14	1.13	0.88
Daphnia g.		0.88	0.92
Ovig Daphnia g.		1.21	1.28
Holopedium	0.92	0.62	
Ovig Holopedium	1.30		
Chydorinae		0.32	0.36

Polyphemus

SEASONAL MEANS

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

Lake: LILLY
 Station: 1
 Depth: 1 - 2m
 Year: 1995

Macrozooplankton Density
 (no./m²)

Date:	5-May	23-Jun	1-Aug	29-Aug	17-Oct	Seasonal Mean (No/m ²)
Ergasilus	32	32	32	318	32	89
Epischura		1,465	32		191	338
Diaptomus				382		76
Harpacticoida		64	32			19
Cyclops		223	4,586	541	96	1,089
Ovig Cyclops			64		32	19
Bosmina	64	3,248	14,140	25,987	414	8,771
Ovig Bosmina		1,369	5,287	17,166	287	4,822
Daphnia l.			32	159	127	64
Ovig Daphnia l.					64	13
Daphnia galeata			64	159		45
Ceriodaphnia			2,070	1,497	32	720
Ovig Ceriodaphnia			446	382		166
Chydorinae	32	32	3,694	1,083		968
Ovig Chydorinae		32	1,369	159	32	318
Polyphemus						

Total: 17,516

SEASONAL MEANS

	Body Size (mm)					Mean Length (mm)	Weighted Length (mm)	Biomass (mg/m ²)	Weighted Biomass (mg/m ²)
Ergasilus	0.54	0.42	0.40	0.52	0.48	0.47	0.50	0.1	0.1
Epischura		0.84	1.50		0.64	0.99	0.83	1	1
Diaptomus				1.15		1.15	1.15	0.5	0.5
Harpacticoida		0.46	0.40			0.43	0.44	0.01	0.01
Cyclops		0.75	0.85	0.58	0.45	0.66	0.81	2	3
Ovig Cyclops			0.91		0.45				
Bosmina	0.25	0.27	0.25	0.30	0.51	0.32	0.28	8	6
Ovig Bosmina		0.30	0.35	0.66	0.39				
Daphnia l.			0.62	0.70	0.82	0.71	0.74	0.1	0.2
Ovig Daphnia l.					0.94				
Daphnia galeata			0.59	0.57		0.58	0.58	0.02	0.02
Ceriodaphnia			0.43	0.39	1.00	0.61	0.42	1.1	0.5
Ovig Ceriodaphnia			0.64	0.65		0.65	0.64	0.3	0.3
Chydorinae	0.24	0.56	0.50	0.48		0.45	0.49	2	2
Ovig Chydorinae		0.58	0.48	0.48	0.32				
Polyphemus									
TOTAL:								15	13

Lake: **MISSION**
 Station: **1**
 Depth: **1m**
 Year: **1995**

Macrozooplankton Density
 (no./m²)

Date:	4-May	23-Jun	1-Aug	29-Aug	7-Oct
Ergasilus			96		
Epischura		32			
Harpacticus	32	255	32		
Ovig Harpacticus		32			
Cyclops		32	159	32	96
Bosmina		3,312	478	32	32
Ovig Bosmina		510	96		32
Daphnia l.			32		
Daphnia g.					
Ceriodaphnia		32	127		
Chydorinae			64		
Ovig Chydorinae			32		
Neomysis m.		32	32		

Seasonal Mean
 (No/m²)

19
 6
 64
 6
 64
 771
 128
 6

 32

 13
 6
 13

Total: **1,128**

SEASONAL MEANS

	Body Size (mm)				
Ergasilus			0.47		
Epischura		1.18			
Harpacticus	0.56	0.39	0.38		
Ovig Harpacticus		0.40			
Cyclops		0.58	0.76	0.60	0.81
Bosmina		0.35	0.29	0.26	0.50
Ovig Bosmina		0.40	0.31		0.52
Daphnia l.					
Daphnia g.			0.76		
Ceriodaphnia		1.40	0.32		
Chydorinae			0.27		
Ovig Chydorinae			0.36		
Neomysis m.					

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

Lake: **POTATO PATCH**

Station: **1**

Depth: **1m**

Year: **1995**

Macrozooplankton Density
(no./m²)

Date:	26-Jun	1-Aug	29-Aug	17-Oct	Seasonal Mean (No/m ²)
Ergasilus	127			64	48
Epischura	318	32			88
Diaptomus					
Cyclops	64	96	96	96	88
Bosmina	159	127		96	96
Ovig Bosmina	223				56
Daphnia l.					
Daphnia g.					
Holopedium					
Chydorinae		96			24
Neomysis m.		96			24

Total: **423**

SEASONAL MEANS

	<i>Body Size</i> (mm)				Mean Length (mm)	Weighted Length (mm)	Biomass (mg/m ²)	Weighted Biomass (mg/m ²)
Ergasilus	0.53			0.38	0.46	0.48	0.0	0.0
Epischura	1.05	0.88			0.97	1.03	0.4	0.4
Diaptomus								
Cyclops	0.54	0.95	0.77	0.47	0.68	0.70	0.1	0.1
Bosmina	0.27	0.25		0.28	0.27	0.27	0.1	0.1
Ovig Bosmina	0.40				0.40	0.40	0.1	0.1
Daphnia l.								
Daphnia g.								
Holopedium								
Chydorinae		0.49			0.49	0.49	0.1	0.1
Neomysis m.								
TOTAL:							1	1

Lake: **Beaver**
 Station: **1**
 Year: **2000**

Date:	Macrozooplankton Density (no./m ²)				Seasonal Mean (No/m ²)
	5/23	6/26	8/28	9/18	
Ergasilis					
Epischura	16,720	2,102	0	106	4,732
Ovig. Epischura					
Diaptomus					
Cyclops	3,503	6,497	0	6,476	4,119
Ovig. Cyclops					
Harpacticus					
Nauplii	7,643	4,013	1,806	4,777	4,560
Bosmina	2,070	3,631	1,003	1,911	2,154
Ovig. Bosmina	478	955	0	531	491
Daphnia l.	0	764	0	743	377
Ovig. Daphnia l.					
Daphnia g.					
Holopedium					
Ovig. Holopedium	159	0	0	0	40
Immature clad.	159	0	201	0	90
Dipteran	159	0	0	0	40
Kellicottia	318	382	0	5,626	1,582
Asplanchna	796	17,580	7,825	24,522	12,681
Keratella	159	0	201	2,760	780
other rotifers	18,949	443,885	15,248	0	119,521

Total: 151,165

	Body Size (mm)				Mean length (mm)	Weighted mean length (mm)	Biomass (mg/m ²)	Weighted Biomass (mg/m ²)	Group wt'd biomass (mg/m ²)	Group wt'd length (mm)
Ergasilis										
Epischura	0.7	1.16		1.61	1.16	0.75	32.19	9.41		
Ovig. Epischura										
Diaptomus										
Cyclops	0.67	0.66		0.45	0.59	0.40	4.85	2.12		
Ovig. Cyclops										
Harpacticus										
Nauplii										
Bosmina	0.29	0.3	0.3	0.44	0.33	0.23	2.15	1.00		
Ovig. Bosmina	0.42	0.33		0.4	0.38	0.26	0.66	0.30	1.30	0.24
Daphnia l.				0.52	0.52	0.52	0.42	0.97		
Ovig. Daphnia l.										
Daphnia g.										
Holopedium										
Ovig. Holopedium	0.62				0.62	0.62	0.14	0.14		
Chydorinae										
Polyphemus										
TOTAL:							40.42	13.93		

Lake: **Beaver**
 Station: **1**
 Year: **2000**

Macrozooplankton Density
 (no./m³)

Seasonal Mean
 (No/m³)

Date:	5/23	6/26	8/28	9/18	
Ergasilis					
Epischura	8,360	2,102	0	53	2,629
ovig. Epischura					
Diaptomus					
Cyclops	1,752	6,497	0	3,238	2,872
Ovig. Cyclops					
Harpaticus					
Nauplii	3,822	4,013	903	2,389	2,782
Bosmina	1,035	3,631	502	955	1,531
Ovig. Bosmina	239	955	0	265	365
Daphnia l.	0	764	0	372	284
Ovig. Daphnia l.					
Daphnia g.					
Holopedium					
Ovig. Holopedium	80	0	0	0	20
immature clad.	80	0	100	0	45
Dipteran	80	0	0	0	20
Kellicottia	159	382	0	2,813	839
Asplanchna	398	17,580	3,912	12,261	8,538
Keratella	80	0	100	1,380	390
other rotifers	9,475	443,885	7,624	0	115,246

Total: 135,559

Body size (mm)

Ergasilis				
Epischura	0.7	1.16		1.61
ovig. Epischura				
Diaptomus				
Cyclops	0.67	0.66		0.45
Ovig. Cyclops				
Harpaticus				
Nauplii				
Bosmina	0.29	0.3	0.3	0.44
Ovig. Bosmina	0.42	0.33		0.4
Daphnia l.				0.52
Ovig. Daphnia l.				
Daphnia g.				
Holopedium				
Ovig. Holopedium	0.62			
Chydorinae				
Polyphemus				

Mean length (mm)	Weighted mean length (mm)	Biomass (mg/m ³)	Weighted Biomass (mg/m ³)	Group wt'd biomass (mg/m ³)	Group wt'd length (mm)
1.16	0.79	17.88	6.08		
0.59	0.48	3.38	2.11		
0.33	0.25	1.53	0.85		
0.38	0.28	0.49	0.26	1.11	0.26
0.52	0.52	0.32	0.73		
0.62	0.62	0.07	0.07		
TOTAL:		23.68	10.10		

Lake: **Dark**
 Station: **1**
 Year: **2000**

Macrozooplankton Density
 (no./m²)

Date:	5/25	6/27
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Seasonal Mean
 (No/m²)

Ergasilis				
Epischura	16,919	0	8,460	
Ovig. Epischura				
Diaptomus	796	4,538	2,667	
Ovig. Diaptomus	0	239	120	2,787
Cyclops	2,588	16,959	9,774	
Ovig. Cyclops	0	717	359	10,132
Harpacticus				
Nauplii	13,535	717	7,126	
Bosmina	3,782	3,105	3,444	
Ovig. Bosmina	199	478	339	3,782
Daphnia l.	597	10,510	5,554	
Ovig. Daphnia l.	199	1,194	697	6,250
Daphnia g.				
Holopedium	9,554	717	5,136	
Ovig. Holopedium	2,986	478	1,732	6,868
Chydorinae				
Immature Clad.	1,393	239	816	
Kellicottia	52,349	77,150	64,750	
Asplanchna	199	955	577	
Filinia	199	0		
other rotifers	17,715	16,481	17,098	
Sculpin larva	199	0	100	

Total: 128,744

Body Size (mm)

	Mean length (mm)	Weighted mean length (mm)	Biomass (mg/m ²)	Weighted Biomass (mg/m ²)	Group wt'd biomass (mg/m ²)	Group wt'd length (mm)
Ergasilis						
Epischura	0.61	0.61	9.35	9.35		
Ovig. Epischura						
Diaptomus	0.86	1.22	1.04	1.17		
Ovig. Diaptomus		1	1.00	1.00		
Cyclops	0.87	0.97	0.92	0.96		
Ovig. Cyclops		1.22	1.22	1.22	33.98	0.97
Harpacticus						
Nauplii						
Bosmina	0.29	0.36	0.33	0.32		
Ovig. Bosmina	0.42	0.38	0.40	0.39	3.68	0.33
Daphnia l.		0.69	0.69	0.69		
Ovig. Daphnia l.		1.07	1.07	1.07	15.13	0.73
Daphnia g.						
Holopedium	0.75	0.7	0.73	0.75		
Ovig. Holopedium	0.98	0.95	0.97	0.98	47.29	0.80
Chydorinae						
TOTAL:			117.81	127.65		

Lake: **Dark**
 Station: **1**
 Year: **2000**

Macrozooplankton Density
 (no./m³)

Date:	5/25	6/27
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Seasonal Mean
 (No/m³)

Ergasilis				
Epischura	5,640	0	2,820	
ovig. Epischura				
Diaptomus	265	1,513	889	
Ovig. Diaptomus	0	239	120	1,009
Cyclops	863	5,653	3,258	
Ovig. Cyclops	0	239	120	3,378
Harpacticus				
Nauplii	4,512	239	2,376	
Bosmina	1,261	1,035	1,148	
Ovig. Bosmina	66	159	113	1,261
Daphnia l.	199	3,503	1,851	
Ovig. Daphnia l.	66	398	232	2,083
Daphnia g.				
Holopedium	3,185	239	1,712	
Ovig. Holopedium	995	159	577	2,289
Chydorinae				
Immature Clad.	464	80	272	
Kellicottia	17,450	25,717	21,584	
Asplanchna	66	318	192	
Filinia	66	0	33	
other rotifers	5905	5494	5,700	
Sculpin Larva	66	0	33	

Total: 43,027

	Body size (mm)		Mean length (mm)	Weighted mean length (mm)	Biomass (mg/m ³)	Weighted Biomass (mg/m ³)	Group wt'd biomass (mg/m ³)	Group wt'd length (mm)
Ergasilis								
Epischura	0.61		0.61	0.61	3.12	3.12		
ovig. Epischura								
Diaptomus	0.86	1.22	1.04	1.17	4.27	5.90		
Ovig. Diaptomus		1	1.00	1.00	0.51	0.51	6.41	1.15
Cyclops	0.87	0.97	0.92	0.96	9.81	10.67		
Ovig. Cyclops		1.22	1.22	1.22	0.66	0.66	11.33	0.97
Harpacticus								
Nauplii								
Bosmina	0.29	0.36	0.33	0.32	1.09	1.07		
Ovig. Bosmina	0.42	0.38	0.40	0.39	0.17	0.16	1.23	0.33
Daphnia l.		0.69	0.69	0.69	3.81	3.81		
Ovig. Daphnia l.		1.07	1.07	1.07	1.24	1.24	5.04	0.73
Daphnia g.								
Holopedium	0.75	0.7	0.73	0.75	8.90	9.56		
Ovig. Holopedium	0.98	0.95	0.97	0.98	6.03	6.20	15.76	0.80
Chydorinae								
TOTAL:					39.61	42.89		

Lake: Lower Horseshoe
 Station: 1
 Year: 2000

Macrozooplankton Density
 (no./m²)

Date:	5/24	6/26
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Seasonal Mean
 (No/m²)

Ergasilis			
Epischura	398	0	199
Ovig. Epischura			
Diaptomus			
Cyclops	0	1,274	637
Ovig. Cyclops			
Harpacticus			
Nauplii	478	318	398
Bosmina	398	159	279
Ovig. Bosmina	80	53	67
Daphnia l.	0	106	53
Ovig. Daphnia l.			
Daphnia g.			
Holopedium			
Ovig. Holopedium			
Chydorinae			
Oligochaete	80	0	40
Kellicottia	637	955	796
Asplanchna	0	2,548	1,274
Keratella			
Ostracoda	0	212	106

Total: 3,848

		Mean length (mm)	Weighted mean length (mm)	Biomass (mg/m ²)	Weighted Biomass (mg/m ²)	Group wt'd biomass (mg/m ²)	Group wt'd length (mm)
Ergasilis							
Epischura	0.85	0.85	0.85	0.56	0.56		
Ovig. Epischura							
Diaptomus							
Cyclops	0.75	0.75	0.75	1.24	1.24		
Ovig. Cyclops							
Harpacticus							
Nauplii							
Bosmina	0.32	0.32	0.32	0.25	0.25		
Ovig. Bosmina	0.4	0.40	0.40	0.10	0.10	0.35	0.33
Daphnia l.							
Ovig. Daphnia l.							
Daphnia g.							
Holopedium							
Ovig. Holopedium							
Chydorinae							
Polyphemus							
TOTAL:				2.15	2.15		

Lake: Lower Horseshoe
 Station: 1
 Year: 2000

Macrozooplankton Density
 (no./m³)

Date:	5/24	6/26
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Seasonal Mean
 (No/m³)

Ergasilis			
Epischura	796	0	398
ovig. Epischura			
Diaptomus			
Cyclops	0	2,548	1,274
Ovig. Cyclops			
Harpaticus			
Nauplii	955	637	796
Bosmina	796	318	557
Ovig. Bosmina	159	106	133
Daphnia l.	0	212	106
Ovig. Daphnia l.			
Daphnia g.			
Holopedium			
Ovig. Holopedium			
Chydorinae			
Oligochaete	159	0	80
Kellicottia	1,274	1,911	1,593
Asplanchna	0	5,096	2,548
Keratella			
Ostracoda	0	425	213

Total: 7,696

	Mean length (mm)	Weighted mean length (mm)	Biomass (mg/m ³)	Weighted Biomass (mg/m ³)	Group wt'd biomass (mg/m ³)	Group wt'd length (mm)
Ergasilis						
Epischura	0.85	0.85	1.13	1.13		
ovig. Epischura						
Diaptomus						
Cyclops	0.75	0.75	2.48	2.48		
Ovig. Cyclops						
Harpaticus						
Nauplii						
Bosmina	0.32	0.32	0.50	0.50		
Ovig. Bosmina	0.4	0.40	0.20	0.20	0.70	0.33
Daphnia l.						
Ovig. Daphnia l.						
Daphnia g.						
Holopedium						
Ovig. Holopedium						
Chydorinae						
Polyphemus						
TOTAL:			4.30	4.31		

Lake: Upper Horseshoe
 Station: 1
 Year: 2000

Macrozooplankton Density (no./m ²)					Seasonal Mean (No/m ²)
Date:	5/24	6/26	8/30	9/18	
Ergasilis					
Epischura	929	1,433	60	0	606
Ovig. Epischura					
Diaptomus					
Cyclops	265	1,672	1,194	1,863	1,249
Ovig. Cyclops					
Harpaticus	133	0	0	0	33
Nauplii	2,521	239	299	276	834
Bosmina	2,123	11,226	1,851	828	4,007
Ovig. Bosmina	133	717	60	69	245
Daphnia l.	0	239	1,672	2,484	1,099
Ovig. Daphnia l.	0	0	299	207	127
Holopedium	133	0	0	0	33
Ovig. Holopedium					
Immature clad.	265	1,194	0	138	399
Ostracoda	265	955	0	0	305
Chironimidae	0	239	0	0	60
Nematoda	0	239	0	0	60
Kellicottia	663	239	1,015	6,762	2,170
Asplanchna	531	190,366	537	1,311	48,186
Keratella	0	478	18,690	4,623	5,948
other rotifers	2,123	0	239	138	625
Ceratium	0	0	836	0	209

Total: 66,193

Body Size (mm)

Ergasilis				
Epischura	0.68	1.1		
Ovig. Epischura				
Diaptomus				
Cyclops	0.64		0.86	0.71
Ovig. Cyclops				
Harpaticus	0.6			
Nauplii				
Bosmina	0.3	0.33	0.42	0.37
Ovig. Bosmina	0.47	0.37	0.34	0.45
Daphnia l.			0.67	0.52
Ovig. Daphnia l.			0.83	0.68
Daphnia g.				
Holopedium	0.34			
Ovig. Holopedium				
Chydorinae				
Polyphemus				

Mean length (mm)	Weighted mean length (mm)	Biomass (mg/m ²)	Weighted Biomass (mg/m ²)	Group wt'd biomass (mg/m ²)	Group wt'd length (mm)
0.89	0.93	1.96	2.25		
0.74	0.76	2.34	2.49		
0.60	0.60				
0.36	0.34	4.60	4.16		
0.41	0.39	0.38	0.34	4.49	0.34
0.60	0.58	1.64	1.55		
0.76	0.77	0.32	0.33	1.88	0.60
0.34	0.34	0.03	0.03		
TOTAL:		11.25	11.14		

Lake: Upper Horseshoe
 Station: 1
 Year: 2000

Macrozooplankton Density
 (no./m³)

Date:	5/24	6/26	8/30	9/18
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Seasonal Mean
 (No/m³)

Ergasilis					
Epischura	929	1,911	119	0	740
ovig. Epischura					
Diaptomus					
Cyclops	265	2,229	2,389	1,863	1,687
Ovig. Cyclops					
Harpaticus	133	0	0	0	33
Nauplii	2,521	318	597	276	928
Bosmina	2,123	14,968	3,702	828	5,405
Ovig. Bosmina	133	955	119	69	319
Daphnia l.	0	318	3,344	2,484	1,537
Ovig. Daphnia l.	0	0	597	207	201
Holopedium	133	0	0	0	33
Ovig. Holopedium					
Immature clad.	265	1,592	0	138	499
Ostracoda	265	1,274	0	0	385
Chironimidae	0	318	0	0	80
Nematoda	0	318	0	0	80
Kellicottia	663	318	2,030	6,762	2,443
Asplanchna	531	253,822	1,075	1,311	64,185
Keratella	0	637	37,381	4,623	10,660
other rotifers	2,123	0	478	138	685
Ceratium	0	0	1672	0	

Total: 89,898

Body Size (mm)

Ergasilis				
Epischura	0.68	1.1		
ovig. Epischura				
Diaptomus				
Cyclops	0.64		0.86	0.71
Ovig. Cyclops				
Harpaticus	0.6			
Nauplii				
Bosmina	0.3	0.33	0.42	0.37
Ovig. Bosmina	0.47	0.37	0.34	0.45
Daphnia l.			0.67	0.52
Ovig. Daphnia l.			0.83	0.68
Daphnia g.				
Holopedium	0.34			
Ovig. Holopedium				
Chydorinae				
Polyphemus				

Mean length (mm)	Weighted mean length (mm)	Biomass (mg/m ³)	Weighted Biomass (mg/m ³)	Group wt'd biomass (mg/m ³)	Group wt'd length (mm)
0.89	0.96	2.39	2.99		
0.74	0.79	3.16	3.62		
0.60	0.60				
0.36	0.34	6.20	5.80		
0.41	0.38	0.49	0.43	6.23	0.35
0.60	0.61	2.29	2.38		
0.76	0.79	0.50	0.56	2.94	0.62
0.34	0.34	0.03	0.03		
TOTAL:		15.06	15.80		

Lake: **Island**
 Station: **1**
 Year: **2000**

Macrozooplankton Density
 (no./m²)

Date:	5/25	6/27	8/30	9/18
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Seasonal Mean
 (No/m²)

Ergasilis						
Epischura	3,981	9,554	2,030	446	4,003	
Ovig. Epischura	0	1,194	0	0	299	4,301
Diaptomus	0	3,981	0	0	995	
Cyclops	97,134	33,838	279	637	32,972	
Ovig. Cyclops	0	398	0	0	100	33,072
Harpaticus	0	0	0	127	32	
Nauplii	6,768	1,194	4,299	18,025	7,572	
Bosmina	2,787	24,283	1,632	2,166	7,717	
Ovig. Bosmina	265	398	159	382	301	8,018
Daphnia l.	6,568	60,908	1,035	382	17,223	
Ovig. Daphnia l.	2,787	10,748	40	0	3,394	20,617
Daphnia g.						
Holopedium	3,583	1,194	0	0	1,194	
Ovig. Holopedium	1,791	1,194	0	0	746	1,941
Immature clad.	2,986	7,962	80	64	2,773	
Arachnid	0	0	40	0	10	
Kellicottia	483,479	8,758	9,037	6,815	127,022	
Asplanchna	398	0	318	892	402	
Keratella	398	0	0	25	106	
other rotifers	199	0	0	0	50	
Ceratium	398	0	0	0	100	

Total: 207,009

Body Size (mm)

Ergasilis				
Epischura	0.82	1.3	0.97	1.11
Ovig. Epischura		1.46		
Diaptomus		1.23		
Cyclops	0.8	0.91	0.53	0.6
Ovig. Cyclops		1.32		
Harpaticus				0.58
Nauplii				
Bosmina	0.37	0.36	0.32	0.36
Ovig. Bosmina	0.58	0.5	0.36	0.46
Daphnia l.	0.63	0.64	0.52	0.48
Ovig. Daphnia l.	0.94	0.96	0.66	
Daphnia g.				
Holopedium	0.66	0.7		
Ovig. Holopedium	0.89	0.9		
Chydorinae				
Polyphemus				

Mean length (mm)	Weighted mean length (mm)	Biomass (mg/m ²)	Weighted Biomass (mg/m ²)	Group wt'd biomass (mg/m ²)	Group wt'd length (mm)
1.05	1.13	20.69	25.71		
1.46	1.46	3.93	3.93	29.65	1.16
1.23	1.23	7.67	7.67		
0.71	0.83	57.03	78.99		
1.32	1.32	0.65	0.65	79.64	0.83
0.58	0.58				
0.35	0.36	8.72	9.05		
0.48	0.49	0.64	0.67	9.72	0.36
0.57	0.64	23.17	29.71		
0.85	0.96	11.07	14.13	43.84	0.67
0.68	0.67	5.31	5.12		
0.90	0.89	6.49	6.47	11.60	0.76
TOTAL:		145.38	182.11		

Lake: Island
 Station: 1
 Year: 2000

Macrozooplankton Density
 (no./m³)

Seasonal Mean
 (No/m³)

Date:	5/25	6/27	8/30	9/18
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Ergasilis					629	
Epischura	569	1,592	290	64	50	679
ovig. Epischura	0	199	0	0	166	
Diaptomus	0	663	0	0	4,912	
Cyclops	13,876	5,640	40	91	17	4,928
Ovig. Cyclops	0	66	0	0	5	
Harpaticus	0	0	0	18	1,089	
Nauplii	967	199	614	2,575		
Bosmina	398	4,047	233	309	1,247	
Ovig. Bosmina	38	66	23	55	46	1,292
Daphnia l.	938	10,151	148	55	2,823	
Ovig. Daphnia l.	398	1,791	40	0	557	3,380
Daphnia g.						
Holopedium	512	199	0	0	178	
Ovig. Holopedium	256	199	0	0	114	292
Immature clad.	427	1,327	11	9	444	
Arachnid	0	0	6	0	2	
Kellicottia	69,068	1,460	1,291	974	18,198	
Asplanchna	57	0	318	127	126	
Keratella	57	0	0	36	23	
other rotifers	28	0	0	0	7	
Ceratium	57	0	0	0	14	

Total: 30,643

	Body size (mm)			
Ergasilis				
Epischura	0.82	1.3	0.97	1.11
ovig. Epischura		1.46		
Diaptomus		1.23		
Cyclops	0.8	0.91	0.53	0.6
Ovig. Cyclops		1.32		
Harpaticus				0.58
Nauplii				
Bosmina	0.37	0.36	0.32	0.36
Ovig. Bosmina	0.58	0.5	0.36	0.46
Daphnia l.	0.63	0.64	0.52	0.48
Ovig. Daphnia l.	0.94	0.96	0.66	
Daphnia g.				
Holopedium	0.66	0.7		
Ovig. Holopedium	0.89	0.9		
Chydorinae				
Polyphemus				

Mean length (mm)	Weighted mean length (mm)	Biomass (mg/m ³)	Weighted Biomass (mg/m ³)	Group wt'd biomass (mg/m ³)	Group wt'd length (mm)
1.05	1.15	3.25	4.19		
1.46	1.46	0.66	0.66	4.85	1.17
1.23	1.23	1.28	1.28		
0.71	0.83	8.50	11.87		
1.32	1.32	0.11	0.11	11.98	0.83
0.58	0.58				
0.35	0.36	1.41	1.46		
0.48	0.49	0.10	0.10	1.57	0.36
0.57	0.64	3.80	4.88		
0.85	0.95	1.82	2.30	7.18	0.67
0.68	0.67	0.79	0.77		
0.90	0.89	0.99	0.99	1.75	0.76
TOTAL:		22.69	28.60		

Lake: **Lilly**
 Station: **1**
 Year: **2000**

Macrozooplankton Density
 (no./m²)

Seasonal Mean
 (No/m²)

Date:	5/24	6/27	8/30	9/18
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Ergasilis					
Epischura	0	1,672	1,115	2,229	1,254
Ovig. Epischura					
Diaptomus					
Cyclops	54,638	6,210	1,274	7,431	17,388
Ovig. Cyclops					
Harpacticus					
Nauplii	12,241	3,105	1,539	5,202	5,522
Bosmina	9,554	96,975	1,911	3,609	28,012
Ovig. Bosmina	1,791	8,121	106	425	2,611
Daphnia l.	896	0	0	7,431	2,082
Ovig. Daphnia l.	0	0	0	212	53
Daphnia g.					
Holopedium					
Ovig. Holopedium					
Immature clad.	2,389	0	0	0	597
Ostracoda	0	0	106	0	27
Fish	0	0	53	0	13
Kellicottia	35,828	17,436	8,970	38,429	25,166
Asplanchna	2,986	478	4,406	22,824	7,674
Keratella	0	0	0	13,482	
other rotifers	0	29,857	372	5,945	9,044
Ceratium	597	2,150	106	0	713

Total: 100,155

	Body Size (mm)			
Ergasilis				
Epischura	1.43	1.08	1.4	
Ovig. Epischura				
Diaptomus				
Cyclops	0.47	0.71	0.47	0.48
Ovig. Cyclops				
Harpacticus				
Nauplii				
Bosmina	0.28	0.3	0.34	0.43
Ovig. Bosmina	0.41	0.41	0.34	0.35
Daphnia l.	0.86			0.56
Ovig. Daphnia l.				0.72
Daphnia g.				
Holopedium				
Ovig. Holopedium				
Chydorinae				
Polyphemus				

Mean length (mm)	Weighted mean length (mm)	Biomass (mg/m ²)	Weighted Biomass (mg/m ²)	Group wt'd biomass (mg/m ²)	Group wt'd length (mm)
1.30	1.34	11.97	12.93		
0.53	0.49	16.25	13.75		
0.34	0.30	28.88	23.03		
0.38	0.41	3.41	3.99	27.02	0.31
0.71	0.59	4.55	3.07		
0.72	0.72	0.12	0.12	3.19	0.60
TOTAL:		65.19	56.89		

Lake: **Lilly**
 Station: **1**
 Year: **2000**

Macrozooplankton Density
 (no./m³)

Seasonal Mean
 (No/m³)

Date:	5/24	6/27	8/30	9/18
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Ergasilis					627	
Epischura	0	836	557	1,115		
ovig. Epischura						
Diaptomus					8,694	
Cyclops	27,319	3,105	637	3,715		
Ovig. Cyclops						
Harpacticus						
Nauplii	6,121	1,553	770	2,601	2,761	
Bosmina	4,777	48,487	955	1,805	14,006	
Ovig. Bosmina	896	4,061	53	212	1,306	15,312
Daphnia l.	448	0	0	3,715	1,041	
Ovig. Daphnia l.	0	0	0	106	27	1,067
Daphnia g.						
Holopedium						
Ovig. Holopedium						
Immature clad.	1,194	0	0	0	299	
Ostracoda	0	0	53	0	13	
Fish	0	0	27	0	7	
Kellicottia	17,914	8,718	4,485	19,214	12,583	
Asplanchna	1,493	239	2,203	11,412	3,837	
Keratella	0	0	0	6,741	1,685	
Other rotifers	0	14,928	186	2,972	4,522	
Ceratium	299	1075	53	0	357	

Total: 51,763

Body size (mm)

Ergasilis				
Epischura	1.43	1.08	1.4	
ovig. Epischura				
Diaptomus				
Cyclops	0.47	0.71	0.47	0.48
Ovig. Cyclops				
Harpacticus				
Nauplii				
Bosmina	0.28	0.3	0.34	0.43
Ovig. Bosmina	0.41	0.41	0.34	0.35
Daphnia l.	0.86			0.56
Ovig. Daphnia l.				0.72
Daphnia g.				
Holopedium				
Ovig. Holopedium				
Chydorinae				
Polyphemus				

Mean length (mm)	Weighted mean length (mm)	Biomass (mg/m ³)	Weighted Biomass (mg/m ³)	Group wt'd biomass (mg/m ³)	Group wt'd length (mm)
1.30	1.34	5.99	6.46		
0.53	0.49	8.13	6.87		
0.34	0.30	14.44	11.51		
0.38	0.41	1.70	2.00	13.51	0.31
0.71	0.59	2.28	1.54		
0.72	0.72	0.06	0.06	1.60	0.60
TOTAL:		32.59	28.45		

Lake: **Mission**
 Station: **1**
 Year: **2000**

Macrozooplankton Density (no./m ²)				Seasonal Mean (No/m ²)
Date:	5/24	6/26	8/28	
Ergasilis				
Epischura	0	0	1,062	354
Ovig. Epischura				
Diaptomus				
Cyclops	114	100	796	337
Ovig. Cyclops				
Harpaticus				
Nauplii	0	100	133	78
Bosmina	0	100	3,052	1,051
Ovig. Bosmina				
Daphnia l.	0	0	796	265
Ovig. Daphnia l.				
Daphnia g.				
Holopedium				
Ovig. Holopedium				
Adult insect	114	100	0	71
Mysid	0	80	0	27
Kellicottia	1,479	697	2,389	1,522
Asplanchna	227	0	0	76
Keratella	0	0	4,379	1,460
other rotifers	114	0	663	259
Ceratium	114	0	1062	392

Total: 5,890

Body Size (mm)

	Mean length (mm)	Weighted mean length (mm)	Biomass (mg/m ²)	Weighted Biomass (mg/m ²)	Group wt'd biomass (mg/m ²)	Group wt'd length (mm)
Ergasilis						
Epischura						
Ovig. Epischura						
Diaptomus						
Cyclops	0.58	0.58	0.38	0.38		
Ovig. Cyclops						
Harpaticus						
Nauplii						
Bosmina	0.4	0.40	1.55	1.55		
Ovig. Bosmina						
Daphnia l.	0.74	0.74	0.64	0.64		
Ovig. Daphnia l.						
Daphnia g.						
Holopedium						
Ovig. Holopedium						
Chydorinae						
Polyphemus						
TOTAL:			2.56	2.56		

Lake: Mission
 Station: 1
 Year: 2000

Date:	Macrozooplankton Density (no./m ³)			Seasonal Mean (No/m ³)
	5/24	6/26	8/28	
Ergasilis				
Epischura	0	0	531	177
Ovig. Epischura				
Diaptomus				
Cyclops	114	100	398	204
Ovig. Cyclops				
Harpaticus				
Nauplii	0	100	66	55
Bosmina	0	100	1,526	542
Ovig. Bosmina				
Daphnia l.	0	0	398	133
Ovig. Daphnia l.				
Daphnia g.				
Holopedium				
Ovig. Holopedium				
Adult insect	114	100	0	71
Mysid	0	80	0	27
Kellicottia	1,479	697	1,194	1,123
Asplanchna	227	0	0	76
Keratella	0	0	2,189	730
other rotifers	114	0	332	149
Ceratium	114	0	531	215
Total:				3,501

Body size (mm)

Ergasilis
 Epischura
 ovig. Epischura
 Diaptomus
 Cyclops
 Ovig. Cyclops
 Harpaticus
 Nauplii

 Bosmina
 Ovig. Bosmina
 Daphnia l.
 Ovig. Daphnia l.
 Daphnia g.
 Holopedium
 Ovig. Holopedium
 Chydorinae
 Polyphemus

0.58

0.4

0.74

Mean length (mm)	Weighted mean length (mm)	Biomass (mg/m ³)	Weighted Biomass (mg/m ³)	Group wt'd biomass (mg/m ³)	Group wt'd length (mm)
0.58	0.58	0.23	0.23		
0.40	0.40	0.80	0.80		
0.74	0.74	0.32	0.32		
TOTAL:		1.35	1.35		

Lake: Potato Patch
 Station: 1
 Year: 2000

Macrozooplankton Density (no./m ²)				Seasonal Mean (No/m ²)	
Date:	5/24	6/26	8/28		
Ergasilis					
Epischura	0	0	68	23	
Ovig. Epischura					
Diaptomus					
Cyclops	239	1,221	273	578	
Ovig. Cyclops	0	0	23	8	585
Harpaticus					
Nauplii	239	318	114	224	
Bosmina	0	478	182	220	
Ovig. Bosmina	0	0	23	8	228
Daphnia l.	0	0	205	68	
Ovig. Daphnia l.	0	0	23	8	76
Daphnia g.					
Holopedium					
Ovig. Holopedium					
Chydorinae					
Ostracoda	80	425	23	176	
Kellicottia	398	159	432	330	
Asplanchna	0	212	250	154	
Keratella	0	0	91	30	
midge larvae	0	53	0	18	

Total: 1,843

Body Size (mm)				Mean length (mm)	Weighted mean length (mm)	Biomass (mg/m ²)	Weighted Biomass (mg/m ²)	Group wt'd biomass (mg/m ²)	Group wt'd length (mm)
Ergasilis									
Epischura									
Ovig. Epischura									
Diaptomus									
Cyclops	0.44	0.61	0.5	0.52	0.57	0.51	0.62		
Ovig. Cyclops			1.24	1.24	1.24	0.04	0.04	0.67	0.58
Harpaticus									
Nauplii									
Bosmina		0.28	0.38	0.33	0.31	0.22	0.19		
Ovig. Bosmina			0.32	0.32	0.32	0.01	0.01	0.19	0.31
Daphnia l.			0.52	0.52	0.52	0.08	0.08		
Ovig. Daphnia l.			0.54	0.54	0.54	0.01	0.01	0.09	0.52
Daphnia g.									
Holopedium									
Ovig. Holopedium									
Chydorinae									
Polyphemus									
TOTAL:						0.86	0.95		

Lake: **Potato Patch**
 Station: **1**
 Year: **2000**

Macrozooplankton Density
 (no./m³)

Seasonal Mean
 (No/m³)

Date:	5/24	6/26	8/28		
Ergasilis					
Epischura	0	0	136	45	
ovig. Epischura					
Diaptomus					
Cyclops	239	2,442	546	1,076	
Ovig. Cyclops	0	0	45	15	1,091
Harpaticus					
Nauplii	239	637	227	368	
Bosmina	0	955	364	440	
Ovig. Bosmina	0	0	45	15	455
Daphnia l.	0	0	409	136	
Ovig. Daphnia l.	0	0	45	15	151
Daphnia g.					
Holopedium					
Ovig. Holopedium					
Chydorinae					
Ostracoda	80	849	45	325	
Kellicottia	398	318	864	527	
Asplanchna	0	425	500	308	
Keratella	0	0	182	61	
midge larvae	0	106	0	35	

Total: 3,365

Body size (mm)

Ergasilis			
Epischura			
ovig. Epischura			
Diaptomus			
Cyclops	0.44	0.61	0.5
Ovig. Cyclops			1.24
Harpaticus			
Nauplii			
Bosmina		0.28	0.38
Ovig. Bosmina			0.32
Daphnia l.			0.52
Ovig. Daphnia l.			0.54
Daphnia g.			
Holopedium			
Ovig. Holopedium			
Chydorinae			
Polyphemus			

Mean length (mm)	Weighted mean length (mm)	Biomass (mg/m ³)	Weighted Biomass (mg/m ³)	Group wt'd biomass (mg/m ³)	Group wt'd length (mm)
0.52	0.58	0.94	1.20		
1.24	1.24	0.09	0.09	1.29	0.59
0.33	0.31	0.43	0.37		
0.32	0.32	0.01	0.01	0.39	0.31
0.52	0.52	0.15	0.15		
0.54	0.54	0.02	0.02	0.17	0.52
TOTAL:		1.64	1.84		

Lake: **Rose Tead**
 Station: **1**
 Year: **2000**

Macrozooplankton Density
 (no./m²)

Seasonal Mean
 (No/m²)

Date:	5/25	6/27
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Ergasilis			
Epischura	15,127	119	7,623
Ovig. Epischura			
Diaptomus	3,583	0	1,792
Cyclops	1,393	179	786
Ovig. Cyclops			
Harpaticus	597	0	299
Nauplii	11,146	358	5,752
Bosmina			
Ovig. Bosmina			
Daphnia l.			
Ovig. Daphnia l.	199	0	100
Daphnia g.			
Holopedium			
Ovig. Holopedium			
Chydorinae			
midge larvae	0	60	30
Kellicottia	398	179	289
Asplanchna			
Keratella			
other rotifers			

Total: 16,669

	Body Size (mm)		Mean length (mm)	Weighted mean length (mm)	Biomass (mg/m ²)	Weighted Biomass (mg/m ²)	Group wt'd biomass (mg/m ²)	Group wt'd length (mm)
Ergasilis								
Epischura	0.52	0.55	0.54	0.52	5.81	5.36		
Ovig. Epischura								
Diaptomus	0.94		0.94	0.94	6.47	6.47		
Cyclops	0.5	0.55	0.53	0.51	0.71	0.66		
Ovig. Cyclops								
Harpaticus	0.57		0.57	0.57				
Nauplii								
Bosmina								
Ovig. Bosmina								
Daphnia l.								
Ovig. Daphnia l.	0.92		0.92	0.92	0.38	0.38		
Daphnia g.								
Holopedium								
Ovig. Holopedium								
Chydorinae								
Polyphemus								
TOTAL:					13.37	12.87		

Lake: **Rose Tead**
 Station: **1**
 Year: **2000**

Macrozooplankton Density
 (no./m³)

Date:	5/25	6/27
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Seasonal Mean
 (No/m³)

Ergasilis			
Epischura	3,782	40	1,911
ovig. Epischura			
Diaptomus	896	0	448
Cyclops	348	60	204
Ovig. Cyclops			
Harpacticus	149	0	75
Nauplii	2,787	119	1,453
Bosmina			
Ovig. Bosmina			
Daphnia l.			
Ovig. Daphnia l.	50	0	25
Daphnia g.			
Holopedium			
Ovig. Holopedium			
Chydorinae			
midge larvae	0	20	10
Kellicottia	100	60	80
Asplanchna			
Keratella			
other rotifers			

Total: 4,206

Body size (mm)

Ergasilis		
Epischura	0.52	0.55
ovig. Epischura		
Diaptomus	0.94	
Cyclops	0.5	0.55
Ovig. Cyclops		
Harpacticus	0.57	
Nauplii		

Bosmina		
Ovig. Bosmina		
Daphnia l.		
Ovig. Daphnia l.	0.92	
Daphnia g.		
Holopedium		
Ovig. Holopedium		
Chydorinae		
Polyphemus		

Mean length (mm)	Weighted mean length (mm)	Biomass (mg/m ³)	Weighted Biomass (mg/m ³)	Group wt'd biomass (mg/m ³)	Group wt'd length (mm)
0.54	0.52	1.46	1.34		
0.94	0.94	1.62	1.62		
0.53	0.51	0.18	0.17		
0.57	0.57				
0.92	0.92	0.10	0.10		
TOTAL:		3.35	3.23		

Lake: **Beaver**
 Station: **1**
 Year: **2001**

Macrozooplankton Density
 (no./m²)

Date: 6/5 6/28

Seasonal Mean
 (No/m²) group mean

Ergasilis			7,262	
Epischura	1,985	12,540	0	7,262
Ovig. Epischura	0	0	0	
Diaptomus	0	0	0	0
Ovig. Diaptomus	0	0	4,047	
Cyclops	4,512	3,583	0	4,047
Ovig. Cyclops	0	0		
Harpacticus	0	0	9,737	
Nauplii	5,143	14,331		
Bosmina	632	24,084	12,358	
Ovig. Bosmina	271	9,355	4,813	17,171
Daphnia l.	0	0	0	0
Ovig. Daphnia l.	0	0	0	
Daphnia g.	0	0	0	
Holopedium	0	0	0	0
Ovig. Holopedium	0	0	0	
Chydorinae	0	0	0	
Polyphemus	0	0	45	
Immature Cladocera	90	0		
Sub Total			38,263	
Kellicottia	0	0	0	
Asplanchna	902	1,592	1,247	
Keratella	0	0	0	
Conochilus	48,726	1,996,019	1,022,373	
Filinia	0	0	0	
Ostracoda	0	0	0	
Egg thing	0	0	0	
Ceratium	0	0	0	
other rotifers	0	0	0	
Total:			1,061,883	

	Mean length (mm)	Weighted mean length (mm)	Biomass (mg/m ²)	Weighted Biomass (mg/m ²)	Group wt'd biomass (mg/m ²)	Group wt'd length (mm)
Ergasilis	0.00	0.00				
Epischura	0.90	0.99	0.94	0.98	27.75	30.50
Ovig. Epischura	0.00	0.00	0.00	0.00	0.00	0.49
Diaptomus	0.00	0.00	0.00	0.00	0.00	
Ovig. Diaptomus	0.00	0.00	0.00	0.00	0.00	0.00
Cyclops	0.43	0.66	0.55	0.53	3.99	3.79
Ovig. Cyclops	0.00	0.00	0.00	0.00	0.00	0.27
Harpacticus	0.00	0.00				
Nauplii	0.00	0.00				
Bosmina	0.29	0.27	0.28	0.27	8.46	12.58
Ovig. Bosmina	0.38	0.33	0.36	0.33	5.55	0.30
Daphnia l.	0.00	0.00	0.00	0.00	0.00	
Ovig. Daphnia l.	0.00	0.00	0.00	0.00	0.00	
Daphnia g.	0.00	0.00	0.00	0.00	0.00	
Holopedium	0.00	0.00	0.00	0.00	0.00	
Ovig. Holopedium	0.00	0.00	0.00	0.00	0.00	0.00
Chydorinae	0.00	0.00	0.00	0.00	0.00	
Polyphemus	0.00	0.00				
TOTAL:			45.75	46.87		

Lake: Beaver
 Station: 1
 Year: 2001

Macrozooplankton Density
 (no./m³)

Date:	6/5	6/28
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Ergasilis
 Epischura 1,323 8,360
 ovig. Epischura 0
 Diaptomus 0
 Ovig. Diaptomus 0
 Cyclops 3,008 2,389
 Ovig. Cyclops 0
 Harpacticus
 Nauplii 3,429 9,554

Bosmina 421 16,056
 Ovig. Bosmina 180 6,237
 Daphnia l.
 Ovig. Daphnia l.
 Daphnia g.
 Holopedium
 Ovig. Holopedium
 Chydorinae
 Polyphemus
 Immature Cladocera 60 0

Seasonal Mean
 (No/m³) group mean

4,841
 0 4,841
 0
 0 0
 2,698
 0 2,698
 6,492
 8,239
 3,208 11,447

30
 Sub Total 25,508

Kellicottia
 Asplanchna 602 1,062
 Keratella
 Conochilus 32,484 1,330,679
 Filinia
 Ostracoda
 Egg thing
 Ceratium
 other rotifers

832
 681,582

Total: 707,922

Ergasilis
 Epischura 0.90 0.99
 ovig. Epischura
 Diaptomus
 Ovig. Diaptomus
 Cyclops 0.43 0.66
 Ovig. Cyclops
 Harpacticus
 Nauplii
 Bosmina 0.29 0.27
 Ovig. Bosmina 0.38 0.33
 Daphnia l.
 Ovig. Daphnia l.
 Daphnia g.
 Holopedium
 Ovig. Holopedium
 Chydorinae
 Polyphemus

Mean length (mm)	Weighted mean length (mm)	Biomass (mg/m ³)	Weighted Biomass (mg/m ³)	Group wt'd biomass (mg/m ³)	Group wt'd length (mm)
0.94	0.98	18.50	20.33	20.33	0.98
				0.00	
0.55	0.53	2.66	2.52	2.52	0.53
0.28	0.27	5.64	5.16	8.39	0.30
0.36	0.33	3.70	3.22		
				0.00	
TOTAL:		30.50	31.24		

Lake: **Dark**
 Station: **1**
 Year: **2001**

Macrozooplankton Density
 (no./m²)

Date: 6/5

Ergasilis
 Epischura 100
 Ovig. Epischura 0
 Diaptomus 5,573
 Ovig Diaptomus 0
 Cyclops 5,474
 Ovig. Cyclops 100
 Harpaticus 0
 Nauplii 398

 Bosmina 995
 Ovig. Bosmina 0
 Daphnia l. 100
 Ovig. Daphnia l. 0
 Daphnia g. 0
 Holopedium 14,132
 Ovig. Holopedium 199
 Chydorinae 0
 Polyphemus 0
 Immature Cladocera 0

Kellicottia 697
 Asplanchna 0
 Keratella 0
 Conochilus 0
 Filinia 0
 Ostracoda 0
 Egg thing 0
 Ceratium 0
 other rotifers 0

Seasonal Mean
 (No/m²) group mean

100
 0 100
 5,573
 0 5,573
 5,474
 100 5,573

 398

 995
 0 995
 100
 0 100
 0
 14,132
 199 14,331
 0
 0

Sub Total 27,070

697
 0
 0
 0
 0
 0
 0
 0
 0
 0

Total: 27,767

Body Size (mm)

Ergasilis
 Epischura 0.50
 Ovig. Epischura 0.00
 Diaptomus 0.97
 Ovig. Diaptomus 0.00
 Cyclops 0.64
 Ovig. Cyclops 0.96
 Harpaticus 0.00
 Nauplii 0.00

 Bosmina 0.40
 Ovig. Bosmina 0.00
 Daphnia l. 1.05
 Ovig. Daphnia l. 0.00
 Daphnia g. 0.00
 Holopedium 0.72
 Ovig. Holopedium 0.91
 Chydorinae 0.00
 Polyphemus 0.00

Mean length (mm)	Weighted mean length (mm)	Biomass (mg/m^2)	Weighted Biomass (mg/m^2)	Group wt'd biomass (mg/m^2)	Group wt'd length (mm)
0.50	0.50	0.06	0.06	0.06	0.25
0.00	0.00	0.00	0.00		
0.97	0.97	21.93	21.93	21.93	0.48
0.00	0.00	0.00	0.00		
0.64	0.64	7.61	7.61	7.94	0.80
0.96	0.96	0.33	0.33		
0.00	0.00	0.00	0.00		
0.00	0.00	0.00	0.00		
0.40	0.40	1.47	1.47	1.47	0.20
0.00	0.00	0.00	0.00		
1.05	1.05	0.51	0.51	73.10	0.81
0.00	0.00	0.00	0.00		
0.00	0.00	0.00	0.00		
0.72	0.72	71.30	71.30		
0.91	0.91	1.80	1.80		
0.00	0.00	0.00	0.00		
TOTAL:		105.01	105.01		

Lake: **Dark**
 Station: **1**
 Year: **2001**

Macrozooplankton Density
 (no./m³)

Date: 6/5

Ergasilis
 Epischura 33
 ovig. Epischura 0
 Diaptomus 1,858
 Ovig. Diaptomus 0
 Cyclops 1,825
 Ovig. Cyclops 33
 Harpaticus
 Nauplii 133

 Bosmina 332
 Ovig. Bosmina 0
 Daphnia l. 33
 Ovig. Daphnia l. 0
 Daphnia g.
 Holopedium 4,711
 Ovig. Holopedium 66
 Chydorinae
 Polyphemus
 Immature Cladocera

Seasonal Mean
 (No/m³) group mean

33
 0 33
 1,858
 0 1,858
 1,825
 33 1,858

 133

 332
 0 332
 33
 0 33
 4,711
 66 4,777

Sub Total 9,023

232

Kellicottia 232
 Asplanchna
 Keratella
 Conochilus
 Filinia
 Ostracoda
 Egg thing
 Ceratium
 other rotifers

Total: 9,256

Body Size (mm)

Ergasilis
 Epischura 0.50
 ovig. Epischura
 Diaptomus 0.97
 Ovig. Diaptomus
 Cyclops 0.64
 Ovig. Cyclops 0.96
 Harpaticus
 Nauplii

 Bosmina 0.40
 Ovig. Bosmina
 Daphnia l. 1.05
 Ovig. Daphnia l.
 Daphnia g.
 Holopedium 0.72
 Ovig. Holopedium 0.91
 Chydorinae
 Polyphemus

Mean length (mm)	Weighted mean length (mm)	Biomass (mg/m ³)	Weighted Biomass (mg/m ³)	Group wt'd biomass (mg/m ³)	Group wt'd length (mm)
0.50	0.50	0.02	0.02	0.02	0.50
0.97	0.97	7.31	7.31	7.31	0.97
0.64	0.64	2.54	2.54	2.65	0.80
0.96	0.96	0.11	0.11		
0.40	0.40	0.49	0.49	0.49	0.40
1.05	1.05	0.17	0.17		
0.72	0.72	23.77	23.77	24.37	0.81
0.91	0.91	0.60	0.60		
TOTAL:		35.00	35.00		

Lake: **Lower Horseshoe**
 Station: **1**
 Year: **2001**

Macrozooplankton Density
 (no./m²)

Date: 6/5

Seasonal Mean
 (No/m²) group mean

Ergasilis
 Epischura 0
 Ovig. Epischura 0
 Diaptomus 0
 Ovig Diaptomus 0
 Cyclops 1,008
 Ovig. Cyclops 0
 Harpaticus 0
 Nauplii 106

 Bosmina 0
 Ovig. Bosmina 0
 Daphnia l. 0
 Ovig. Daphnia l. 0
 Daphnia g. 0
 Holopedium 0
 Ovig. Holopedium 0
 Chydorinae 0
 Polyphemus 0
 Immature Cladocera 0

0
 0 0
 0
 0 0
 1,008
 0 1,008

 106

 0
 0 0
 0
 0 0
 0
 0
 0 0
 0

 0
 Sub Total 1,115

Kellicottia 0
 Asplanchna 53
 Keratella 53
 Conochilus 318
 Filinia 0
 Ostracoda 265
 Egg thing 0
 Ceratium 0
 other rotifers 0
 Dipteran larvae 159
 Turbellarian 265
 Hirudinea 318
 Nemertean 53

0
 53
 53
 318
 0
 265
 0
 0
 0

 1,805

Total: 1,805

Body Size (mm)

Ergasilis
 Epischura 0.00
 Ovig. Epischura 0.00
 Diaptomus 0.00
 Ovig. Diaptomus 0.00
 Cyclops 0.48
 Ovig. Cyclops 0.00
 Harpaticus 0.00
 Nauplii 0.00

 Bosmina 0.00
 Ovig. Bosmina 0.00
 Daphnia l. 0.00
 Ovig. Daphnia l. 0.00
 Daphnia g. 0.00
 Holopedium 0.00
 Ovig. Holopedium 0.00
 Chydorinae 0.00
 Polyphemus 0.00

Mean length (mm)	Weighted mean length (mm)	Biomass (mg/m ²)	Weighted Biomass (mg/m ²)	Group wt'd biomass (mg/m ²)	Group wt'd length (mm)
0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00		
0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00		
0.48	0.48	0.76	0.76	0.76	0.24
0.00	0.00	0.00	0.00		
0.00	0.00	0.00			
0.00	0.00	0.00			
0.00	0.00	0.00			
0.00	0.00	0.00			
0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00		
0.00	0.00	0.00	0.00		
0.00	0.00	0.00	0.00		
0.00	0.00	0.00	0.00		
0.00	0.00	0.00	0.00		
TOTAL:		0.76	0.76		

Lake: Lower Horseshoe
 Station: 1
 Year: 2001

Macrozooplankton Density
 (no./m³)

Date: 6/5

Seasonal Mean
 (No/m³) group mean

Ergasilis
 Epischura
 ovig. Epischura
 Diaptomus
 Ovig. Diaptomus
 Cyclops 2,017
 Ovig. Cyclops 0
 Harpaticus
 Nauplii 212

2,017
 0
 2,017
 212

Bosmina
 Ovig. Bosmina
 Daphnia l.
 Ovig. Daphnia l.
 Daphnia g.
 Holopedium
 Ovig. Holopedium
 Chydorinae
 Polyphemus
 Immature Cladocera

Sub Total 2,229

Kellicottia
 Asplanchna 106
 Keratella 106
 Conochilus 637
 Filinia
 Ostracoda 531
 Egg thing
 Ceratium
 other rotifers
 Dipteran larva 318
 Turbellarian 531
 Hirudinea 637
 Nemertean 106

106
 106
 637
 531
 318
 531
 637
 106

Total: 5,202

Body Size (mm)

Ergasilis
 Epischura
 ovig. Epischura
 Diaptomus
 Ovig. Diaptomus
 Cyclops 0.481
 Ovig. Cyclops
 Harpaticus
 Nauplii

Bosmina
 Ovig. Bosmina
 Daphnia l.
 Ovig. Daphnia l.
 Daphnia g.
 Holopedium
 Ovig. Holopedium
 Chydorinae
 Polyphemus

Mean length (mm)	Weighted mean length (mm)	Biomass (mg/m ³)	Weighted Biomass (mg/m ³)	Group wt'd biomass (mg/m ³)	Group wt'd length (mm)
				0.00	
				0.00	
0.48	0.48	1.52	1.52	1.52	0.48
				0.00	
TOTAL:		1.52	1.52		

Lake: **Upper Horseshoe**
 Station: **1**
 Year: **2001**

Macrozooplankton Density
 (no./m²)

Date: 6/5

Ergasilis
 Epischura 119
 Ovig. Epischura 0
 Diaptomus 0
 Ovig. Diaptomus 0
 Cyclops 836
 Ovig. Cyclops 0
 Harpaticus 119
 Nauplii 2,030

Bosmina 40
 Ovig. Bosmina 80
 Daphnia l. 40
 Ovig. Daphnia l. 0
 Daphnia g. 0
 Holopedium 80
 Ovig. Holopedium 0
 Chydorinae 518
 Polyphemus 0
 Immature Cladocera 0

Kellicottia 0
 Asplanchna 5,175
 Keratella 159
 Conochilus 836
 Filinia 0
 Ostracoda 239
 Egg thing 0
 Ceratium 80
 other rotifers 40
 Dipteran larvae 80

Seasonal Mean
 (No/m²) group mean

119
 0 119
 0
 0 0
 836
 0 836

2,030

40
 80 119
 40
 0 40
 0
 80
 0 80
 518

0

Sub Total 3,742

0
 5,175
 159
 836
 0
 239
 0
 80
 40
 80

Total: 10,351

Body Size (mm)

Ergasilis
 Epischura 0.52
 Ovig. Epischura 0.00
 Diaptomus 0.00
 Ovig. Diaptomus 0.00
 Cyclops 0.57
 Ovig. Cyclops 0.00
 Harpaticus 0.00
 Nauplii 0.00

Bosmina 0.27
 Ovig. Bosmina 0.32
 Daphnia l. 0.00
 Ovig. Daphnia l. 0.00
 Daphnia g. 0.00
 Holopedium 0.72
 Ovig. Holopedium 0.00
 Chydorinae 0.26
 Polyphemus 0.00

Mean length (mm)	Weighted mean length (mm)	Biomass (mg/m^2)	Weighted Biomass (mg/m^2)	Group wt'd biomass (mg/m^2)	Group wt'd length (mm)
0.52	0.52	0.08	0.08	0.08	0.26
0.00	0.00	0.00	0.00		
0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00		
0.57	0.57	0.89	0.89	0.89	0.28
0.00	0.00	0.00	0.00		
0.00	0.00	0.00	0.00		
0.00	0.00	0.00	0.00		
0.00	0.00	0.00	0.00		
0.00	0.00	0.00	0.00		
0.27	0.27	0.03	0.03	0.10	0.30
0.32	0.32	0.07	0.07		
0.00	0.00	0.00	0.00		
0.00	0.00	0.00	0.00		
0.00	0.00	0.00	0.00		
0.00	0.00	0.00	0.00		
0.72	0.72	0.40	0.40		
0.00	0.00	0.00	0.00		
0.26	0.26	0.30	0.30		
TOTAL:		1.77	1.77		

Lake: Upper Horseshoe
 Station: 1
 Year: 2001

Macrozooplankton Density
 (no./m³)

Seasonal Mean
 (No/m³) group mean

Date: 6/5

Ergasilis
 Epischura 119
 ovig. Epischura 0
 Diaptomus
 Ovig. Diaptomus
 Cyclops 836
 Ovig. Cyclops 0
 Harpaticus 119
 Nauplii 2,030

119
 0 119
 836
 0 836
 2,030

Bosmina 40
 Ovig. Bosmina 80
 Daphnia l. 40
 Ovig. Daphnia l. 0
 Daphnia g.
 Holopedium 80
 Ovig. Holopedium 0
 Chydorinae 518
 Polyphemus
 Immature Cladocera

40
 80 119
 40
 0 40
 80
 0 80
 518

Sub Total 3,742

Kellicottia
 Asplanchna 5,175
 Keratella 159
 Conochilus 836
 Filinia
 Ostracoda 239
 Egg thing
 Ceratium 80
 other rotifers 40
 Dipteran Larvae 80

5,175
 159
 836
 239
 80
 40
 80

Total: 10,350

Body Size (mm)

Ergasilis
 Epischura 0.52
 ovig. Epischura
 Diaptomus
 Ovig. Diaptomus
 Cyclops 0.57
 Ovig. Cyclops
 Harpaticus
 Nauplii
 Bosmina 0.27
 Ovig. Bosmina 0.32
 Daphnia l.
 Ovig. Daphnia l.
 Daphnia g.
 Holopedium 0.72
 Ovig. Holopedium
 Chydorinae 0.26
 Polyphemus

Mean length (mm)	Weighted mean length (mm)	Biomass (mg/m ³)	Weighted Biomass (mg/m ³)	Group wt'd biomass (mg/m ³)	Group wt'd length (mm)
0.52	0.52	0.08	0.08	0.08	0.52
0.57	0.57	0.89	0.89	0.89	0.57
0.27	0.27	0.03	0.03	0.10	0.30
0.32	0.32	0.07	0.07		
0.72	0.72	0.40	0.40		
0.26	0.26	0.30	0.30		
TOTAL:		1.77	1.77		

Lake: **Island**
 Station: **1**
 Year: **2001**

Macrozooplankton Density
 (no./m²)

Date:	6/6	6/28
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Ergasilis
 Epischura 4,777 6,369
 Ovig. Epischura 0 0
 Diaptomus 3,782 3,782
 Ovig. Diaptomus 0 199
 Cyclops 3 5,175
 Ovig. Cyclops 796 398
 Harpaticus 0 0
 Nauplii 1,194 5,175

Bosmina 13,137 16,720
 Ovig. Bosmina 1,393 2,787
 Daphnia l. 3,782 10,549
 Ovig. Daphnia l. 796 796
 Daphnia g. 0 0
 Holopedium 25,279 4,180
 Ovig. Holopedium 4,777 3,583
 Chydorinae 0 0
 Polyphemus 0 0
 Immature Cladocer: 995 1,791

Kellicottia 3,981 2,787
 Asplanchna 11,146 0
 Keratella 0 0
 Conochilus 1,194 194,666
 Filinia
 Ostracoda
 Egg thing
 Ceratium
 other rotifers

Seasonal Mean
 (No/m²) group mean

5,573
 0 5,573
 3,782
 100 3,881
 2,589
 597 3,186
 3,185
 14,928
 2,090 17,018
 7,166
 796 7,962
 0
 14,729
 4,180 18,909
 0
 1,393

Sub Total 61,108

3,384
 5,573
 0
 97,930

Total: 167,995

Body Size (mm)

Ergasilis
 Epischura 1.45 1.32
 Ovig. Epischura
 Diaptomus 1.11 1.35
 Ovig. Diaptomus
 Cyclops 0.74 0.63
 Ovig. Cyclops 1.33 1.23
 Harpaticus
 Nauplii
 Bosmina 0.40 0.46
 Ovig. Bosmina 0.55 0.46
 Daphnia l. 0.73 0.79
 Ovig. Daphnia l. 1.16 1.37
 Daphnia g.
 Holopedium 0.84 1.00
 Ovig. Holopedium 1.02 1.02
 Chydorinae
 Polyphemus

Mean length (mm)	Weighted mean length (mm)	Biomass (mg/m ²)	Weighted Biomass (mg/m ²)	Group wt'd biomass (mg/m ²)	Group wt'd length (mm)
1.38	1.38	63.18	62.07	62.07	1.38
1.23	1.23	29.15	29.15	30.35	1.34
1.44	1.44	1.20	1.20		
0.68	0.63	4.14	3.52	7.26	0.97
1.28	1.30	3.65	3.75		
0.43	0.43	25.60	26.09	30.77	0.46
0.50	0.49	5.02	4.68		
0.76	0.78	18.27	19.07	25.14	1.02
1.26	1.26	6.07	6.07		
0.92	0.86	136.10	115.69	165.82	0.94
1.02	1.02	50.07	50.13		
TOTAL:		342.45	321.42		

Lake: **Island**
 Station: **1**
 Year: **2001**

Macrozooplankton Density
 (no./m³)

Seasonal Mean
 (No/m³) group mean

Date: 6/6 6/28

Ergasilis
 Epischura 682 910
 ovig. Epischura 0 0
 Diaptomus 540 540
 Ovig. Diaptomus 0 28
 Cyclops 2,815 739
 Ovig. Cyclops 114 57
 Harpaticus 0 0
 Nauplii 171 739

796
 0 796
 540
 14 554
 1,777
 85 1,862
 455

Bosmina 1,877 2,389
 Ovig. Bosmina 199 398
 Daphnia l. 540 1,507
 Ovig. Daphnia l. 114 114
 Daphnia g. 0 0
 Holopedium 3,611 597
 Ovig. Holopedium 682 512
 Chydorinae 0 0
 Polyphemus 0 0
 Immature Cladocera 142 256

2,133
 299 2,431
 1,024
 114 1,137
 0
 2,104
 597 2,701
 0
 0
 199

Sub Total 10,137

Kellicottia 569 398
 Asplanchna 1,592 0
 Keratella 0 0
 Conochilus 171 27,809
 Filinia
 Ostracoda
 Egg thing
 Ceratium
 other rotifers

483
 796
 0
 13,990

Total: 25,407

Body Size (mm)

Ergasilis
 Epischura 1.45 1.32
 ovig. Epischura
 Diaptomus 1.11 1.35
 Ovig. Diaptomus 1.44
 Cyclops 0.74 0.63
 Ovig. Cyclops 1.33 1.23
 Harpaticus
 Nauplii

Bosmina 0.40 0.46
 Ovig. Bosmina 0.55 0.46
 Daphnia l. 0.73 0.79
 Ovig. Daphnia l. 1.16 1.37
 Daphnia g. 0.84 1.00
 Holopedium 1.02 1.02
 Ovig. Holopedium
 Chydorinae
 Polyphemus

Mean length (mm)	Weighted mean length (mm)	Biomass (mg/m ³)	Weighted Biomass (mg/m ³)	Group wt'd biomass (mg/m ³)	Group wt'd length (mm)
1.38	1.38	9.03	8.87	8.87	1.38
1.23	1.23	4.16	4.16	4.34	1.34
1.44	1.44	0.17	0.17		
0.68	0.71	2.84	3.11	3.65	1.01
1.28	1.30	0.52	0.54		
0.43	0.43	3.66	3.73	4.40	0.46
0.50	0.49	0.72	0.67		
0.76	0.78	2.61	2.72	3.59	1.02
1.26	1.26	0.87	0.87		
0.92	0.86	19.44	16.53	23.69	0.94
1.02	1.02	7.15	7.16		
TOTAL:		51.17	48.53		

Lake: **Lilly**
 Station: **1**
 Year: **2001**

Macrozooplankton Density
 (no./m²)

Date:	6/6	6/28
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Ergasilis		
Epischura	80	0
Ovig. Epischura	0	
Diaptomus	80	0
Ovig. Diaptomus	0	
Cyclops	19,506	22,824
Ovig. Cyclops	0	
Harpacticus	0	
Nauplii	2,866	663

Bosmina	33,917	1,858
Ovig. Bosmina	239	0
Daphnia l.	4,299	29,591
Ovig. Daphnia l.	0	796
Daphnia g.	0	
Holopedium	0	
Ovig. Holopedium	0	
Chydorinae	0	
Polyphemus	0	
Immature Cladocer:	398	133

Kellicottia	9,952	796
Asplanchna	159	0
Keratella	0	
Conochilus	0	
Filinia	0	
Ostracoda	318	0
Egg thing	0	
Ceratium	106	531
other rotifers	0	
water mite	0	265

Seasonal Mean
 (No/m²) group mean

40	
0	40
40	
0	40
21,165	
0	21,165
1,765	
17,887	
119	18,007
16,945	
398	17,343
0	
0	
0	0
0	

265

Sub Total 58,625

5,374

80
0
0
0
0
159
0
318
0
133

Total: 64,689

Body Size (mm)

Ergasilis		
Epischura	0.00	
Ovig. Epischura	0.00	
Diaptomus	0.00	
Ovig. Diaptomus	0.00	
Cyclops	0.44	0.53
Ovig. Cyclops	0.00	
Harpacticus	0.00	
Nauplii	0.00	

Bosmina	0.32	0.33
Ovig. Bosmina	0.54	
Daphnia l.	0.66	1.00
Ovig. Daphnia l.	0.00	1.31
Daphnia g.	0.00	
Holopedium	0.00	
Ovig. Holopedium	0.00	
Chydorinae	0.00	
Polyphemus	0.00	

Mean length (mm)	Weighted mean length (mm)	Biomass (mg/m ²)	Weighted Biomass (mg/m ²)	Group wt'd biomass (mg/m ²)	Group wt'd length (mm)
0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00		
0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00		
0.48	0.49	16.05	16.30	16.30	0.24
0.00	0.00	0.00	0.00		
0.00	0.00	0.00	0.00		
0.00	0.00	0.00	0.00		
0.32	0.32	16.98	16.63	16.96	0.43
0.54	0.54	0.33	0.33		
0.83	0.96	52.16	71.24	74.52	1.13
0.65	1.31	0.73	3.28		
0.00	0.00	0.00	0.00		
0.00	0.00	0.00	0.00		
0.00	0.00	0.00	0.00		
0.00	0.00	0.00	0.00		
0.00	0.00	0.00	0.00		
TOTAL:		86.24	107.77		

Lake: Lilly
 Station: 1
 Year: 2001

Macrozooplankton Density
 (no./m³)

Date:	6/6	6/28
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Ergasilis		
Epischura	53	0
ovig. Epischura		0
Diaptomus	53	0
Ovig. Diaptomus		0
Cyclops	13,004	15,216
Ovig. Cyclops		0
Harpacticus		
Nauplii	1,911	442
Bosmina	22,611	1,238
Ovig. Bosmina	159	0
Daphnia l.	2,866	19,728
Ovig. Daphnia l.	0	531
Daphnia g.		
Holopedium		
Ovig. Holopedium		
Chydorinae		
Polyphemus		
Immature Cladocera	265	88
Kellicottia	6,635	531
Asplanchna	106	0
Keratella		
Conochilus		
Filinia		
Ostracoda	212	0
Egg thing		
Ceratium	71	354
other rotifers		
water mite	0	177

Seasonal Mean
 (No/m³) group mean

27	
0	27
27	
0	27
14,110	
0	14,110
1,177	
11,925	
80	12,005
11,297	
265	11,562

177

Sub Total 39,083

3,583
 53

106

212

88

Total: 43,126

Body Size (mm)

Ergasilis		
Epischura		
ovig. Epischura		
Diaptomus		
Ovig. Diaptomus		
Cyclops	0.44	0.53
Ovig. Cyclops		
Harpacticus		
Nauplii		
Bosmina	0.32	0.33
Ovig. Bosmina	0.54	
Daphnia l.	0.66	1.00
Ovig. Daphnia l.		1.31
Daphnia g.		
Holopedium		
Ovig. Holopedium		
Chydorinae		
Polyphemus		

Mean length (mm)	Weighted mean length (mm)	Biomass (mg/m ³)	Weighted Biomass (mg/m ³)	Group wt'd biomass (mg/m ³)	Group wt'd length (mm)
				0.00	
				0.00	
0.48	0.49	10.70	10.87	10.87	0.49
0.32	0.32	11.32	11.09		
0.54	0.54	0.22	0.22	11.30	0.43
0.83	0.96	34.77	47.49		
1.31	1.31	2.19	2.19	49.68	1.13
TOTAL:		59.20	71.85		

Lake: Mission
 Station: 1
 Year: 2001

Macrozooplankton Density
 (no./m²)

Date:	6/6	6/28
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Seasonal Mean
 (No/m²) group mean

16	
16	32
36	
0	36
518	
0	518
159	
729	
40	769
223	
48	271
0	
0	
0	0
0	

Sub Total	1,836
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199
0
0
0
0
0
0
0
0
16

Total:	2,051
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Mean length (mm)	Weighted mean length (mm)	Biomass (mg/m ²)	Weighted Biomass (mg/m ²)	Group wt'd biomass (mg/m ²)	Group wt'd length (mm)
1.45	1.45	0.21	0.21		
1.30	1.30	0.15	0.15	0.36	1.38
1.15	1.14	0.23	0.22		
0.00	0.00	0.00	0.00	0.22	0.57
0.48	0.50	0.39	0.43		
0.55	0.00	0.00	0.00	0.43	0.25
0.00	0.00	0.00	0.00		
0.00	0.00	0.00	0.00		
0.34	0.33	0.74	0.72		
0.40	0.40	0.06	0.06	0.78	0.37
0.86	0.86	0.74	1.65		
0.00	0.00	0.00	0.00		
0.00	0.00	0.00	0.00		
0.00	0.00	0.00	0.00		
0.00	0.00	0.00	0.00		
0.00	0.00	0.00	0.00		
0.00	0.00	0.00	0.00		
TOTAL:		2.51	3.44		

Body Size (mm)

Ergasilis		
Epischura		1.45
Ovig. Epischura		1.3
Diaptomus	1.05	1.25
Ovig. Diaptomus	0.00	
Cyclops	0.44	0.52
Ovig. Cyclops		0.55
Harpacticus	0.00	
Nauplii	0.00	
Bosmina	0.33	0.34
Ovig. Bosmina	0.40	
Daphnia l.		0.86
Ovig. Daphnia l.		1.05
Daphnia g.	0.00	
Holopedium	0.00	
Ovig. Holopedium	0.00	
Chydorinae	0.00	
Polyphemus	0.00	

Lake: **Mission**
 Station: **1**
 Year: **2001**

Macrozooplankton Density
 (no./m³)

Date: 6/6 6/28

Ergasilis		
Epischura	0	32
ovig. Epischura	0	32
Diaptomus	80	32
Ovig. Diaptomus		0
Cyclops	478	796
Ovig. Cyclops	0	0
Harpacticus		
Nauplii	318	159
Bosmina	2,468	223
Ovig. Bosmina	159	0
Daphnia l.	0	446
Ovig. Daphnia l.	0	96
Daphnia g.		
Holopedium		
Ovig. Holopedium		
Chydorinae		
Polyphemus		
Immature Cladocera	80	64

Seasonal Mean
 (No/m³) group mean

16	
16	32
56	
0	56
637	
0	637
239	
1,346	
80	1,425
223	
48	271

72

Sub Total 2,732

319

Kellicottia	478	159
Asplanchna		
Keratella		
Conochilus		
Filinia		
Ostracoda		
Egg thing		
Ceratium		
Insects/Spiders	0	32

16

Total: 3,066

Body Size (mm)

Ergasilis		
Epischura		1.45
ovig. Epischura		1.3
Diaptomus	1.05	1.25
Ovig. Diaptomus		
Cyclops	0.44	0.52
Ovig. Cyclops		0.55
Harpacticus		
Nauplii		
Bosmina	0.33	0.34
Ovig. Bosmina	0.4	
Daphnia l.		0.86
Ovig. Daphnia l.		1.05
Daphnia g.		
Holopedium		
Ovig. Holopedium		
Chydorinae		
Polyphemus		

Mean length (mm)	Weighted mean length (mm)	Biomass (mg/m ³)	Weighted Biomass (mg/m ³)	Group wt'd biomass (mg/m ³)	Group wt'd length (mm)
1.45	1.45	0.21	0.21		
1.30	1.30	0.15	0.15	0.36	1.38
1.15	1.11	0.36	0.32	0.32	1.11
0.48	0.49	0.48	0.50		
0.55	0.00	0.00	0.00	0.50	0.24
0.34	0.33	1.37	1.33		
0.40	0.40	0.12	0.12	1.45	0.37
0.86	0.86	0.74	1.65		
TOTAL:		3.41	4.28		

Lake: **Potato Patch**
 Station: **1**
 Year: **2001**

Macrozooplankton Density
 (no./m²)

Date:	6/6	6/28
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Ergasilis		
Epischura	159	0
Ovig. Epischura		0
Diaptomus	106	0
Ovig. Diaptomus		0
Cyclops	9,395	159
Ovig. Cyclops		0
Harpacticus		
Nauplii	4,087	199
Bosmina	1,486	80
Ovig. Bosmina	0	119
Daphnia l.		
Ovig. Daphnia l.		
Daphnia g.		
Holopedium		
Ovig. Holopedium		
Chydorinae		
Polyphemus		
Immature Cladocer:	53	0

Seasonal Mean
 (No/m²) group mean

80	
0	80
53	
0	53
4,777	
0	4,777
2,143	
783	
60	843

27
Sub Total 7,922

Kellicottia	372	40
Asplanchna		
Keratella	53	0
Conochilus		
Filinia		
Ostracoda		
Egg thing		
Ceratium		
other rotifers		
Insects/Spiders	53	159

206

27

106

Total: 8,260

Body Size (mm)

Ergasilis		
Epischura	1.37	
Ovig. Epischura		
Diaptomus	1.11	
Ovig. Diaptomus		
Cyclops	0.44	0.43
Ovig. Cyclops		
Harpacticus		
Nauplii		
Bosmina	0.29	0.28
Ovig. Bosmina		0.37
Daphnia l.		
Ovig. Daphnia l.		
Daphnia g.		
Holopedium		
Ovig. Holopedium		
Chydorinae		
Polyphemus		

Mean length (mm)	Weighted mean length (mm)	Biomass (mg/m ²)	Weighted Biomass (mg/m ²)	Group wt'd biomass (mg/m ²)	Group wt'd length (mm)
1.37	1.37	0.87	0.87	0.87	1.37
1.11	1.11	0.31	0.31	0.31	1.11
0.44	0.44	2.90	2.98	2.98	0.44
0.29	0.29	0.57	0.60	0.67	0.33
0.37	0.37	0.07	0.07		
TOTAL:		4.73	4.83		

Lake: **Potato Patch**
 Station: **1**
 Year: **2001**

Macrozooplankton Density
 (no./m³)

Date: 6/6 6/28

Ergasilis		
Epischura	318	0
ovig. Epischura	0	
Diaptomus	212	0
Ovig. Diaptomus	0	
Cyclops	18,790	212
Ovig. Cyclops	0	
Harpacticus	0	
Nauplii	8,174	265
Bosmina	2,972	106
Ovig. Bosmina	0	159
Daphnia l.	0	
Ovig. Daphnia l.	0	
Daphnia g.	0	
Holopedium	0	
Ovig. Holopedium	0	
Chydorinae	0	
Polyphemus	0	
Immature Cladocera	106	0

Seasonal Mean
 (No/m³) group mean

159	
0	159
106	
0	106
9,501	
0	9,501
4,220	
1,539	
80	1,619
0	
0	0
0	
0	
0	0
0	
0	
53	

Sub Total 15,658

Kellicottia	743	53
Asplanchna	0	
Keratella	106	0
Conochilus	0	
Filinia	0	
Ostracoda	0	
Egg thing	0	
Ceratium	0	
other rotifers	0	
Insects/Spiders	106	212

398
0
53
0
0
0
0
0
0
0
159

Total: 16,268

Body Size (mm)

Ergasilis		
Epischura	1.37	
ovig. Epischura	0.00	
Diaptomus	1.11	
Ovig. Diaptomus	0.00	
Cyclops	0.44	0.43
Ovig. Cyclops	0.00	
Harpacticus	0.00	
Nauplii	0.00	
Bosmina	0.29	0.28
Ovig. Bosmina	0.00	0.37
Daphnia l.	0.00	
Ovig. Daphnia l.	0	
Daphnia g.	0	
Holopedium	0	
Ovig. Holopedium	0	
Chydorinae	0	
Polyphemus	0	

Mean length (mm)	Weighted mean length (mm)	Biomass (mg/m ³)	Weighted Biomass (mg/m ³)	Group wt'd biomass (mg/m ³)	Group wt'd length (mm)
1.37	1.37	1.74	1.74		
0.00	0.00	0.00	0.00	1.74	0.68
1.11	1.11	0.61	0.61		
0.00	0.00	0.00	0.00	0.61	0.56
0.44	0.44	5.77	5.93		
0.00	0.00	0.00	0.00	5.93	0.22
0.00	0.00	0.00	0.00		
0.00	0.00	0.00	0.00		
0.29	0.29	1.12	1.17		
0.19	0.37	0.02	0.10	1.27	0.33
0.00	0.00	0.00	0.00		
0.00	0.00	0.00	0.00		
0.00	0.00	0.00	0.00		
0.00	0.00	0.00	0.00		
0.00	0.00	0.00	0.00		
0.00	0.00	0.00	0.00		
TOTAL:		9.27	9.56		

Lake: **Rose Tead**
 Station: **1**
 Year: **2001**

Macrozooplankton Density
(no./m²)

Date:	6/6	6/29
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Ergasilis
 Epischura 53 669
 Ovig. Epischura 0
 Diaptomus 53 143
 Ovig. Diaptomus 0
 Cyclops 159 2,962
 Ovig. Cyclops 53 0
 Harpaticus 0
 Nauplii 2,123 717

Bosmina 106 191
 Ovig. Bosmina 0
 Daphnia l. 0 96
 Ovig. Daphnia l. 0
 Daphnia g. 0
 Holopedium 0
 Ovig. Holopedium 0
 Chydorinae 0
 Polyphemus 0
 Immature Cladocera 0 48

Kellicottia 106 159
 Asplanchna 0 80
 Keratella 0
 Conochilus 0 62,500
 Filinia 0
 Ostracoda 0
 Egg thing 0
 Ceratium 0
 other rotifers 0

Seasonal Mean
 (No/m²) group mean

361
 0 361
 98
 0 98
 1,561
 27 1,587

1,420

149
 0 149
 48
 0 48
 0
 0
 0 0
 0

24

Sub Total 3,686

133
 40
 0
 31,250
 0
 0
 0
 0
 0

Total: 35,109

Body Size (mm)

Ergasilis
 Epischura 0.45 0.46
 Ovig. Epischura 0.00
 Diaptomus 0.88 0.67
 Ovig. Diaptomus 0.00
 Cyclops 0.43 0.37
 Ovig. Cyclops 0.94
 Harpaticus 0.00
 Nauplii 0.00

Bosmina 0.51 0.31
 Ovig. Bosmina 0.00
 Daphnia l. 0.00 0.76
 Ovig. Daphnia l. 0.00
 Daphnia g. 0.00
 Holopedium 0.00
 Ovig. Holopedium 0.00
 Chydorinae 0.00
 Polyphemus 0.00

Mean length (mm)	Weighted mean length (mm)	Biomass (mg/m ²)	Weighted Biomass (mg/m ²)	Group wt'd biomass (mg/m ²)	Group wt'd length (mm)
0.45	0.46	0.17	0.18	0.18	0.23
0.00	0.00	0.00	0.00		
0.78	0.73	0.21	0.17	0.17	0.36
0.00	0.00	0.00	0.00		
0.40	0.37	0.79	0.68	0.78	0.66
0.94	0.94	0.10	0.10		
0.00	0.00	0.00	0.00		
0.00	0.00	0.00	0.00		
0.41	0.38	0.23	0.20	0.20	0.19
0.00	0.00	0.00	0.00		
0.38	0.76	0.03	0.12		
0.00	-4.00	0.00	0.00		
0.00	-3.00	0.00	0.00		
0.00	-2.00	0.00	0.00		
0.00	-1.00	0.00	0.00		
0.00	0.00	0.00	0.00		
TOTAL:		1.52	1.45		

Lake: Rose Tead
 Station: 1
 Year: 2001

Macrozooplankton Density
 (no./m³)

Date:	6/6	6/29
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Seasonal Mean
 (No/m³) group mean

Ergasilis				
Epischura	12	167	89	
ovig. Epischura		0	0	89
Diaptomus	12	36	24	
Ovig. Diaptomus		0	0	24
Cyclops	35	740	388	
Ovig. Cyclops	12	0	6	394
Harpacticus				
Nauplii	472	179	325	
Bosmina	24	48	36	
Ovig. Bosmina		0	0	36
Daphnia l.	0	24	12	
Ovig. Daphnia l.		0	0	12
Daphnia g.				
Holopedium				
Ovig. Holopedium				
Chydorinae				
Polyphemus				
Immature Cladocera	0	12	6	
			Sub Total	886
Kellicottia	24	40	32	
Asplanchna	0	20	10	
Keratella				
Conochilus	0	15,625	7,813	
Filinia				
Ostracoda				
Egg thing				
Ceratium				
other rotifers				

Total: 8,740

Body Size (mm)

Ergasilis		
Epischura	0.45	0.46
ovig. Epischura		
Diaptomus	0.88	0.67
Ovig. Diaptomus		
Cyclops	0.43	0.37
Ovig. Cyclops	0.94	
Harpacticus		
Nauplii		
Bosmina	0.51	0.31
Ovig. Bosmina		
Daphnia l.		0.76
Ovig. Daphnia l.		
Daphnia g.		
Holopedium		
Ovig. Holopedium		
Chydorinae		
Polyphemus		

Mean length (mm)	Weighted mean length (mm)	Biomass (mg/m ³)	Weighted Biomass (mg/m ³)	Group wt'd biomass (mg/m ³)	Group wt'd length (mm)
0.45	0.46	0.04	0.04	0.04	0.46
0.78	0.72	0.05	0.04	0.04	0.72
0.40	0.37	0.20	0.17	0.19	0.66
0.94	0.94	0.02	0.02		
0.41	0.38	0.06	0.05	0.05	0.38
0.76	0.76	0.03	0.03		
TOTAL:		0.40	0.35		

APPENDIX C

1995-96 FECAL COLIFORM

AND TURBIDITY MAPS

FIGURE 2.1: KODIAK URBAN LAKES

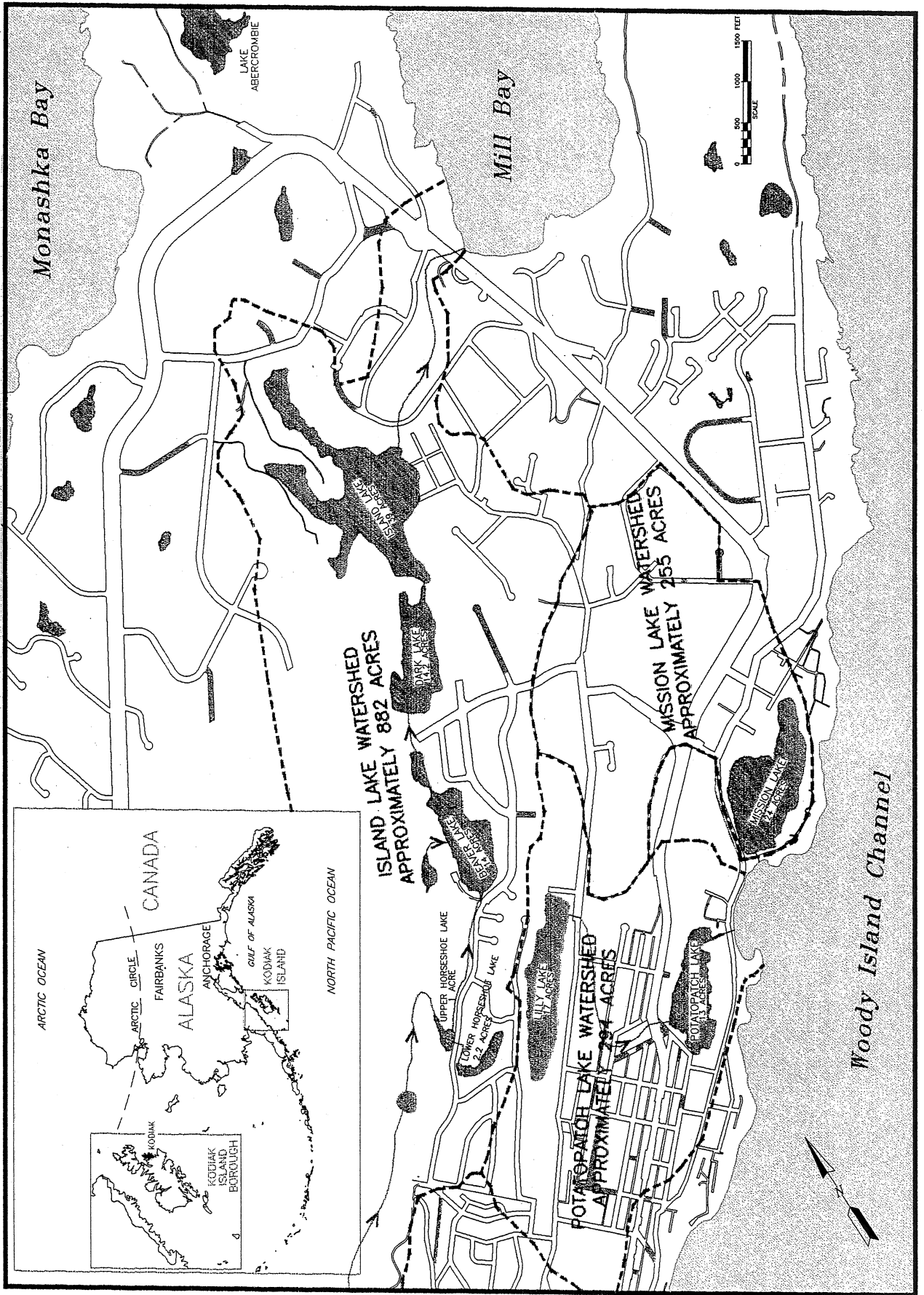


FIGURE 5.1A: TURBIDITY AND CONDUCTIVITY
IN UPPER ISLAND LAKE WATERSHED

ALL RESULTS ARE MEDIAN VALUES.
TURBIDITY IN NTUs,
CONDUCTIVITY IN uS/cm.

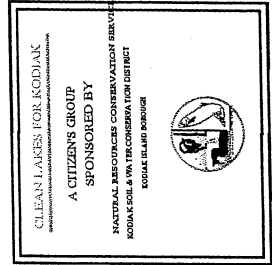
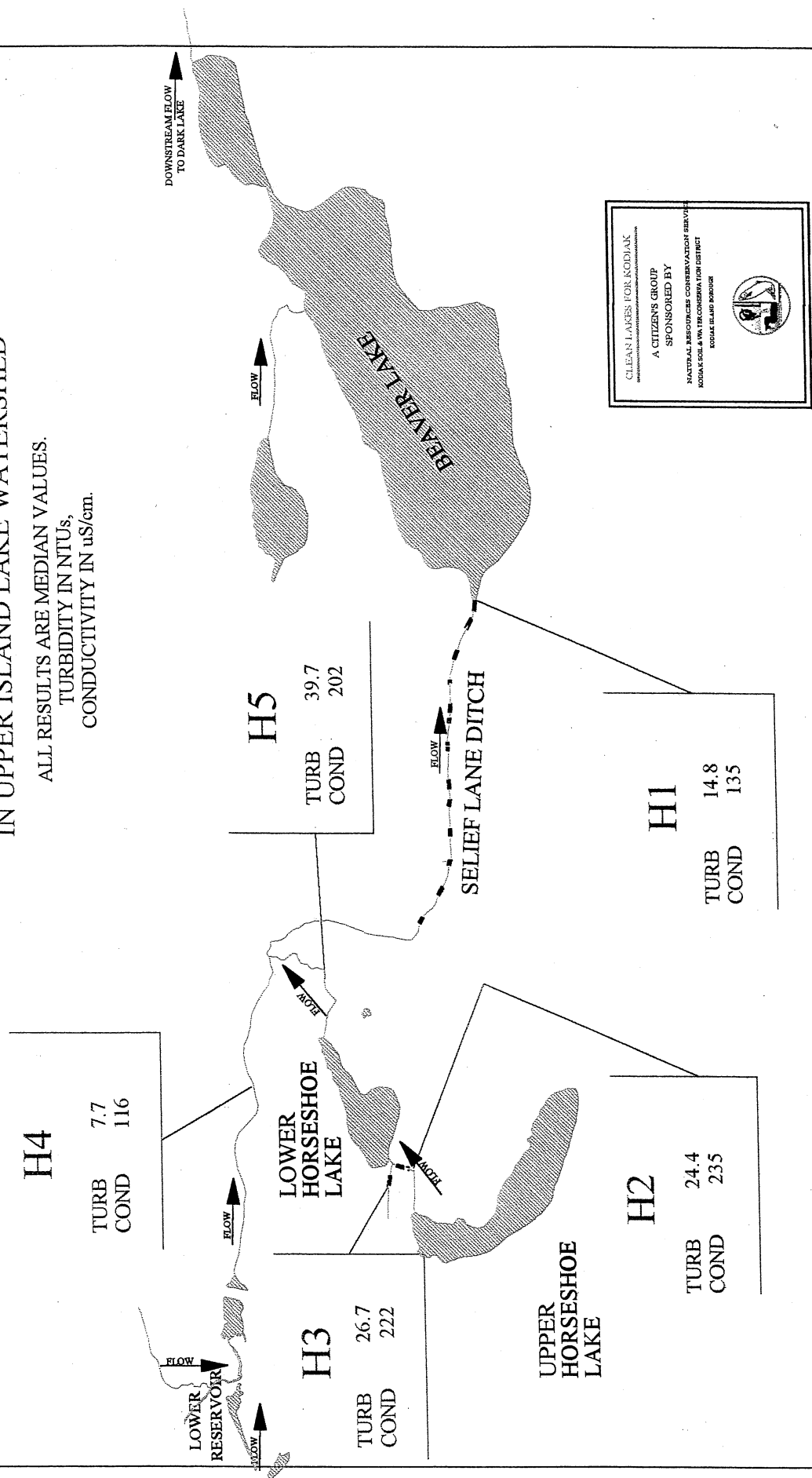
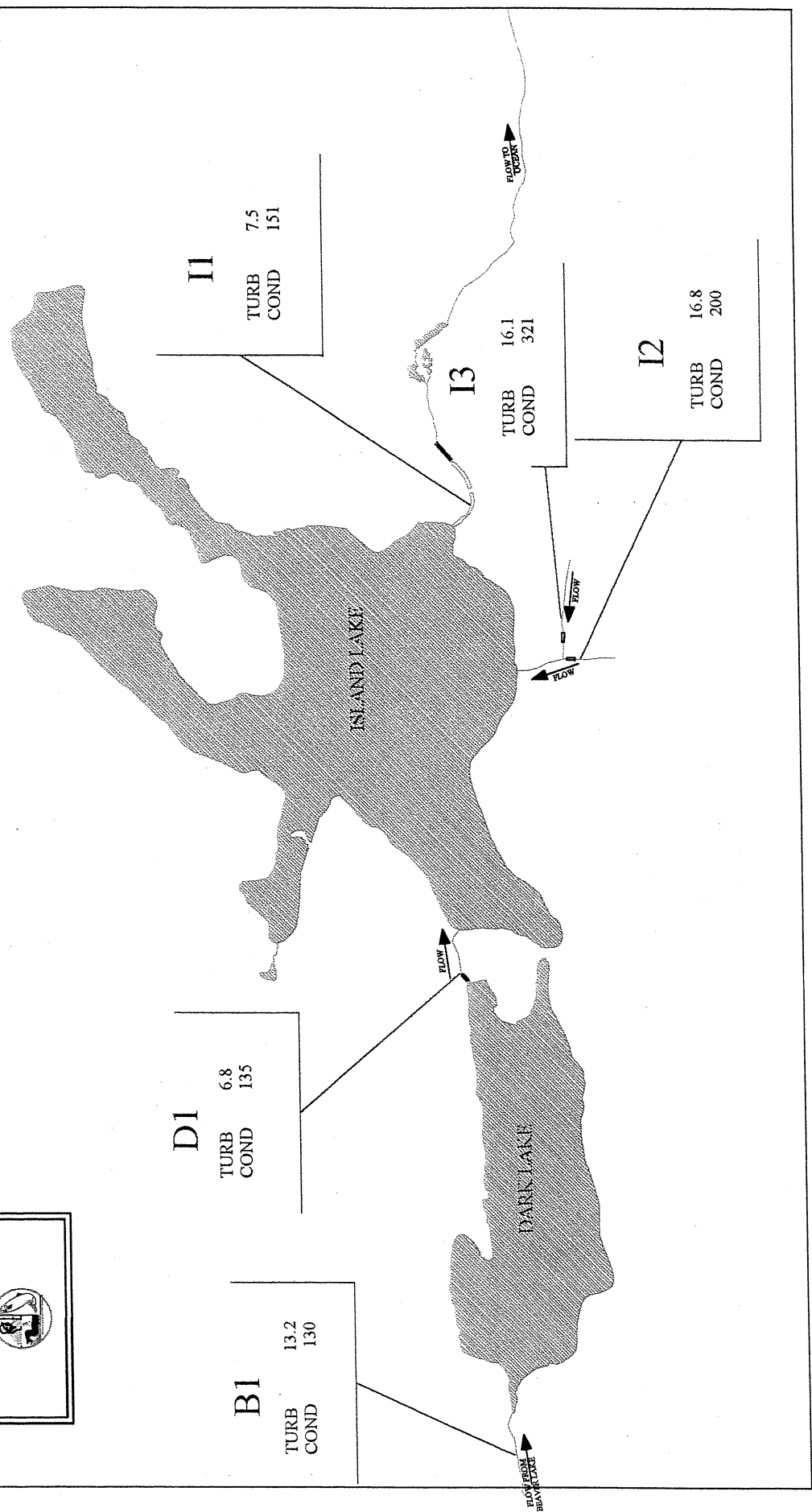
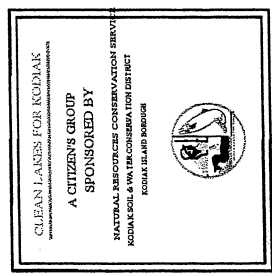


FIGURE F-5. 1B: TURBIDITY AND CONDUCTIVITY
IN LOWER ISLAND LAKE WATERSHED

ALL RESULTS ARE MEDIAN VALUES.
TURBIDITY IN NTUs,
CONDUCTIVITY IN uS/cm.



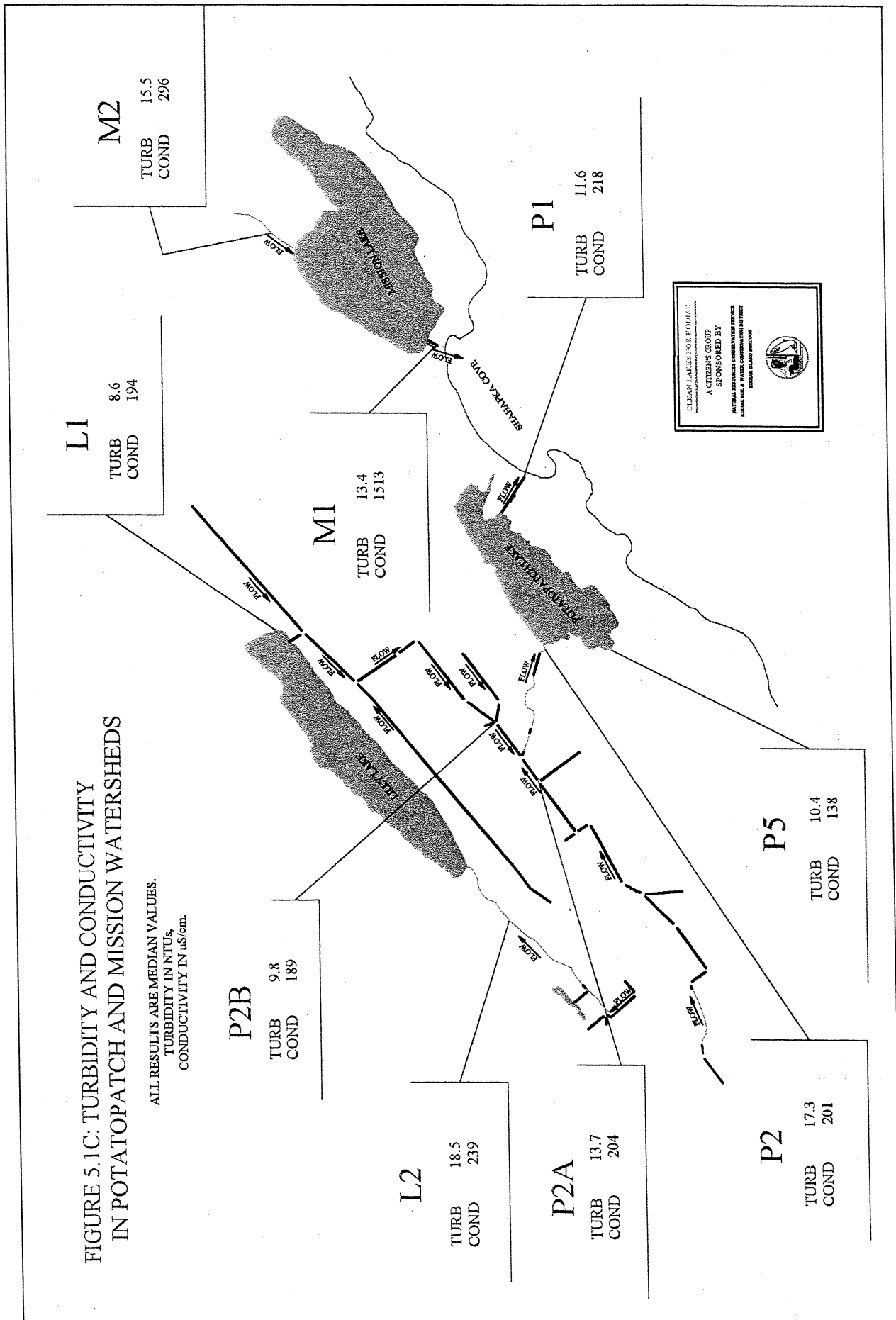
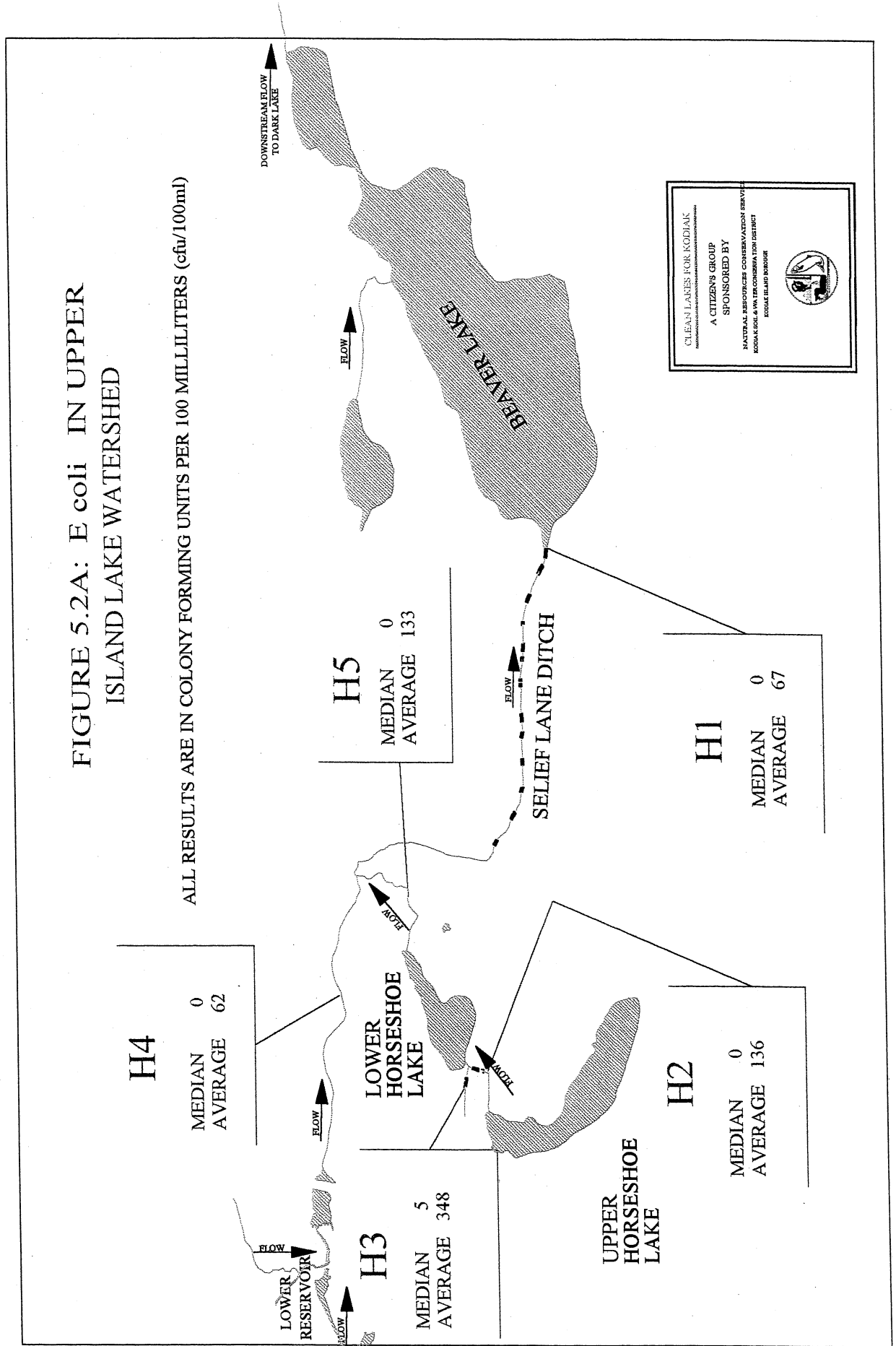


FIGURE 5.2A: E coli IN UPPER
ISLAND LAKE WATERSHED

ALL RESULTS ARE IN COLONY FORMING UNITS PER 100 MILLILITERS (cfu/100ml)



**FIGURE 5.2B: E. Coli IN LOWER
ISLAND LAKE WATERSHED**
ALL RESULTS ARE IN COLONY FORMING UNITS PER 100 MILLILITERS (cfu/100ml)

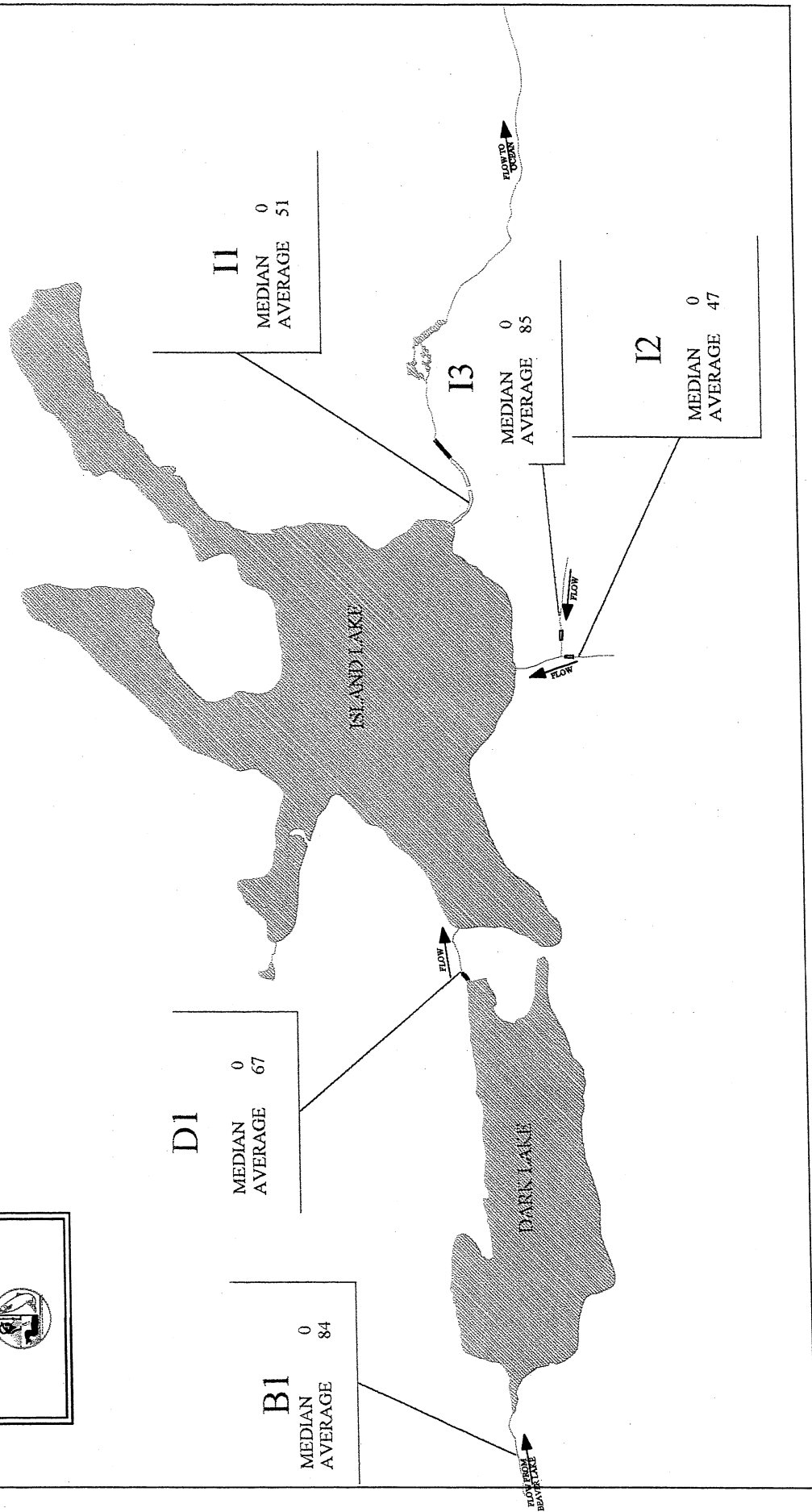
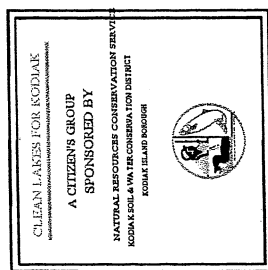
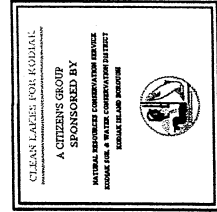
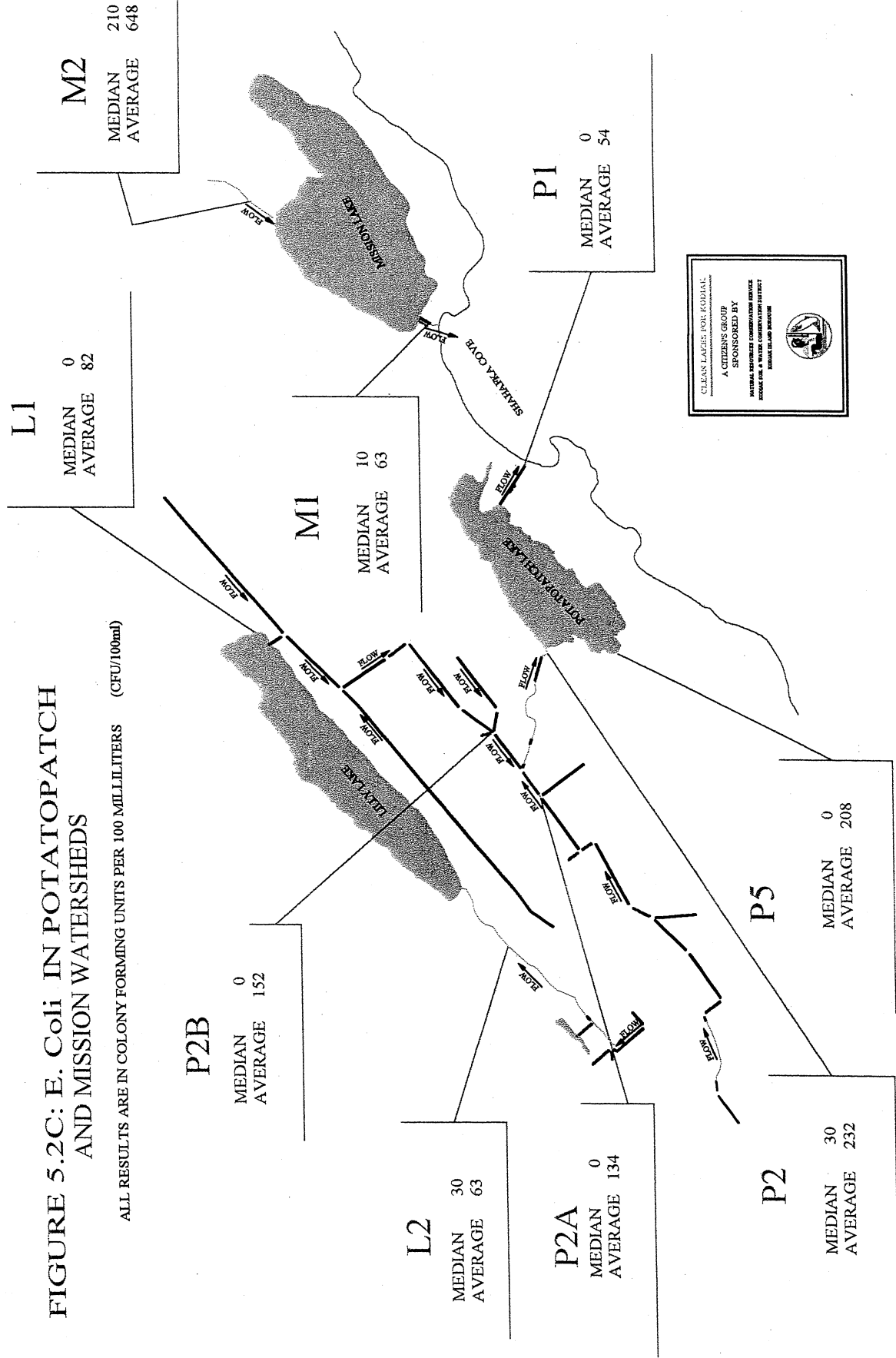


FIGURE 5.2C: E. Coli IN POTATOPATCH
AND MISSION WATERSHEDS

ALL RESULTS ARE IN COLONY FORMING UNITS PER 100 MILLILITERS (CFU/100ml)



APPENDIX D

1995-96 LIMNOLOGICAL

WATER QUALITY SUMMARY

Table 4-5A

Limnological Water Quality Summary

Lake	Specific conductance (umhos/cm)	pH (Units)	Alkalinity (mg/L)	Turbidity (NTU)	Color (Pt units)	Calcium (mg/L)	Iron (ug/L)
Upper Horseshoe	150	6.76	37	7.3	24.8	14.5	2673
Lower Horseshoe	199	6.94	45	48.4	41.8	17.4	4462
Beaver	113	6.82	24	5.2	17.4	9.0	811
Dark	111	6.73	22	3.2	15.3	8.1	576
Island	135	6.81	25	3.9	11.3	10.7	431
Lilly	186	6.98	28	3.8	11.6	10.3	454
Potatopatch	530	7.44	40	15.3	16.2	16.4	1170
Mission	1406	8.34	45	8.2	18.0	21.9	731
Abercrombie	194	6.93	22	1.4	15.9	8.0	193

Table 4-5B

Limnological Water Quality Summary

Lake	Total-P (ug/L P)	Total Kjeldahl nitrogen (ug/L N)	Ammonia (ug/L N)	Nitrate+ nitrite (ug/L N)	Organic carbon (ug/L)	Chloro-phyll a (ug/L)	Phaeo-phytin a (ug/L)	Zooplankn biomass (mg/m^2)	Hydraulic Detention Time (days)
Upper Horseshoe	16	441	36	22	871	1.8	1.1	216	44
Lower Horseshoe	55	475	60	113	1291	1.1	0.8	7	4
Beaver	10	233	13	75	300	1.0	0.5	15	12
Dark	9	212	16	86	187	0.6	0.3	190	23
Island	11	208	13	99	211	0.9	0.4	427	60
Lilly	11	313	20	56	322	2.0	0.7	13	75
Potatopatch	43	487	25	68	659	4.7	1.9	1	10
Mission	33	437	4	8	659	4.5	1.3	1	22
Abercrombie	10	237	6	6	233	0.8	0.3	884	111

APPENDIX E

1995-96 LAKE WATER

CHEMISTRY RESULTS

MEMORANDUM STATE OF ALASKA
DEPARTMENT OF FISH AND GAME FRED DIVISION

TO: Mark Blakeslee

DATE: April 4, 1996

PHONE: 260-2939

FROM: Ginny Litchfield
CFMD - Limnology
Soldotna

SUBJECT: Kodiak Clean Lake Data

I am finally sending this data packet to you, sorry for the delay. Enclosed you will find hard copies of metal, phytoplankton, and water quality data also, a disc containing electronic data in case you were not able to get this information from Steve Honnold. This information is in spreadsheet form as stipulated in the contract. The phytoplankton data is quite extensive, a table is included indicating the edible species as opposed to non-edible. I couldn't find the memo we wrote on Anchorage clean lakes but did include some notations on that project. Let me know if I can be of further help.

Received 4/10/96

[illegible]

[illegible]

Lake	Date	Depth	Specific conductance (umhos/cm)	pH (Units)	Alkalinity (mg/L)	Turb. (NTU)	Color (Pt units)	Calcium (mg/L)	Mag- nesium (mg/L)	Iron (ug/L)	Total Solids (mg/L)	Total Diss. Solids (mg/L)
Dark	5/2/95	1	123	6.6	21.5	5.5	13	8.6	2.0	1010	80	74
Dark	5/2/95	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dark	5/2/95	3	122	6.4	21.3	7.8	11	8.6	2.0	900	83	77
Dark	6/26/95	1	132	7.0	20.1	1.0	10	8.3	1.9	276	77	66
Dark	6/26/95	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dark	6/26/95	4	125	7.2	21.5	1.2	10	8.3	1.9	314	74	66
Dark	7/28/95	1	111	6.7	29.4	2.1	17	8.1	1.6	362	70	64
Dark	7/28/95	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dark	7/28/95	4	113	6.4	19.9	2.8	13	8.1	1.6	380	70	56
Dark	8/30/95	1	111	7.0	23.3	1.0	18	9.1	1.5	344	77	62
Dark	8/30/95	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dark	8/30/95	4	112	6.7	24.6	2.2	19	9.1	1.5	510	77	72
Dark	10/16/95	1	92	6.8	20.1	3.1	17	6.2	1.4	694	52	63
Dark	10/16/95	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dark	10/16/95	4	92	6.8	19.3	2.9	20	7.1	1.4	673	56	58
Lower Horseshoe	5/3/95	1	263	7.4	51.2	16.7	22	27.7	3.3	1481	193	152
Lower Horseshoe	6/23/95	1	181	6.8	37.3	85.3	13	8.3	1.9	5814	160	90
Lower Horseshoe	7/28/95	1	200	6.8	55.2	12.0	31	17.6	3.1	2723	141	116
Lower Horseshoe	8/29/95	1	184	6.8	44.4	42.0	116	20.2	2.6	7476	195	174
Lower Horseshoe	10/16/95	1	166	6.9	38.8	86.0	27	13.3	2.9	4817	157	105
Upper Horseshoe	5/3/95	1	165	6.7	37.8	20.7	13	15.3	2.6	3907	115	86
Upper Horseshoe	6/23/95	1	154	6.8	30.4	3.0	15	14.6	1.4	998	92	79
Upper Horseshoe	7/30/95	1	142	6.5	38.3	3.5	24	13.8	1.6	1923	86	80
Upper Horseshoe	8/29/95	1	149	6.8	40.0	4.1	48	15.6	1.5	3357	77	91
Upper Horseshoe	10/16/95	1	138	7.0	37.1	5.3	24	13.3	2.1	3182	105	96

Location	Date	Depth (m)	Total P (ug/L P)	Total filterable-P (ug/L P)	Filterable reactive-P (ug/L P)	Total Kjeldahl nitrogen (ug/L N)	Ammon. (ug/L N)	Nitrate+ nitrite (ug/L N)	Reactive silicon (ug/L Si)	Organic carbon (ug/L)	Chloro-phylla (ug/L)	Phaeo-phytina (ug/L)
Dark	5/2/95	1	8.6	8.6	5.9	199.0	39.2	152.0	3364	267	0.65	0.22
Dark	5/2/95	2	NA	NA	NA	NA	NA	NA	NA	NA	0.50	0.24
Dark	5/2/95	3	11.8	4.5	4.2	213.3	48.8	154.9	3364	199	0.42	0.22
Dark	6/26/95	1	6.9	2.4	2.6	192.7	4.5	80.9	3027	NA	NA	NA
Dark	6/26/95	2	NA	NA	NA	NA	NA	NA	NA	NA	0.64	0.19
Dark	6/26/95	4	8.1	2.2	2.7	180.7	8.2	79.4	2854	169	0.71	0.35
Dark	7/28/95	1	9.7	4.2	3.0	211.8	<1.7	45.3	3063	169	0.46	0.32
Dark	7/28/95	2	NA	NA	NA	NA	NA	NA	NA	NA	0.34	0.38
Dark	7/28/95	4	8.3	2.4	2.2	202.2	9.9	51.2	2617	184	0.58	0.47
Dark	8/30/95	1	5.8	3.0	2.8	200.6	4.5	26.1	2926	142	0.68	0.30
Dark	8/30/95	2	NA	NA	NA	NA	NA	NA	NA	NA	0.43	0.31
Dark	8/30/95	4	8.6	3.3	2.9	235.6	15.2	27.5	2792	169	0.42	0.38
Dark	10/16/95	1	8.6	3.3	2.7	236.8	15.2	117.9	4292	175	1.02	0.47
Dark	10/16/95	2	NA	NA	NA	NA	NA	NA	NA	NA	0.54	0.36
Dark	10/16/95	4	7.9	3.0	4.0	231.3	12.0	123.8	4317	212	0.92	0.51
L. Horseshoe	5/3/95	1	26.1	3.9	2.5	349.6	23.3	134.8	2368	814	1.90	0.75
L. Horseshoe	6/23/95	1	84.9	3.8	3.2	416.7	18.2	148.4	2046	1556	1.43	0.66
L. Horseshoe	7/28/95	1	22.5	6.4	4.0	520.3	103.5	80.3	2210	642	0.59	1.11
L. Horseshoe	8/29/95	1	67.4	15.9	10.7	535.3	10.5	41.8	1869	1799	0.64	0.87
L. Horseshoe	10/16/95	1	71.9	6.0	4.8	551.6	146.4	161.2	3074	1646	0.81	0.76
U. Horseshoe	5/3/95	1	18.3	3.7	3.1	400.0	5.3	51.5	2108	1286	3.09	1.33
U. Horseshoe	6/23/95	1	14.0	4.0	1.8	349.5	5.3	<4.0	203	556	2.03	1.18
U. Horseshoe	7/30/95	1	13.5	6.0	3.1	432.3	26.9	4.6	663	584	1.06	0.97
U. Horseshoe	8/29/95	1	17.4	6.4	5.7	526.5	10.4	<4.0	741	985	1.57	1.24
U. Horseshoe	10/16/95	1	15.7	4.5	3.8	498.4	132.8	45.5	2726	942	1.40	0.80

Lake	Date	Depth	Specific conductance	pH	Alkalinity	Turb.	Color	Calcium	Mag- nesium	Iron	Total Solids	Total Diss. Solids
		(m)	(umhos/cm)	(Units)	(mg/L)	(NTU)	(Pt units)	(mg/L)	(mg/L)	(ug/L)	(mg/L)	(mg/L)
Island	5/1/95	1	130	7.0	22.7	5.5	12	11.5	3.4	756	88	83
Island	5/1/95	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Island	5/1/95	7	133	6.6	28.0	7.0	14	10.6	2.0	659	93	90
Island	6/26/95	1	122	6.8	20.2	1.5	8	10.1	1.9	244	91	75
Island	6/26/95	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Island	6/26/95	7	152	6.7	25.6	4.8	8	11.1	1.9	401	94	83
Island	6/28/95	1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Island	6/28/95	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Island	7/28/95	1	135	7.0	26.3	2.2	9	11.0	1.9	347	88	76
Island	7/28/95	7	155	6.6	27.3	5.0	6	11.9	2.9	322	98	89
Island	8/30/95	1	137	7.2	27.8	1.3	8	11.8	1.5	172	55	82
Island	8/30/95	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Island	8/30/95	7	153	6.6	28.5	2.1	4	11.8	2.6	138	68	83
Island	10/16/95	1	117	6.9	24.7	3.7	22	8.8	1.4	573	68	74
Island	10/16/95	2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Island	10/16/95	6	113	6.9	24.2	3.9	20	8.8	<0.3	618	65	77
Lilly	5/5/95	1	270	6.8	25.6	5.2	12	11.5	2.0	527	142	130
Lilly	6/26/95	1	199	7.0	26.0	1.9	6	10.1	1.9	183	108	96
Lilly	8/1/95	1	167	6.9	31.5	3.4	13	10.0	1.6	306	95	87
Lilly	8/30/95	1	164	7.0	31.5	3.1	13	10.9	1.5	306	93	94
Lilly	10/17/95	1	131	7.2	27.3	5.3	14	8.8	2.9	946	76	71
Mission	5/4/95	1	2330	7.5	33.2	6	NA	26.7	37.9	575	1278	NA
Mission	6/23/95	1	1022	9.0	47.3	9.0	12	19.5	15.4	691	542	530
Mission	6/26/95	1-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mission	6/26/95	2-2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Mission	8/1/95	1	537	9.1	49.5	8.2	17	16.7	10.7	570	302	288
Mission	8/29/95	1	679	8.6	50.5	3.7	23	18.3	14.7	306	368	351
Mission	10/17/95	1	2460	7.5	43.0	13.9	20	28.4	54.8	1515	1364	1321
Potato Patch	5/4/95	1	980	7.5	36.6	12.4	11	21.0	15.9	861	530	491
Potato Patch	6/26/95	1	823	7.1	42.4	17.8	10	18.6	12.2	1480	443	397
Potato Patch	8/1/95	1	379	8.4	43.0	11.9	12	14.7	7.7	858	201	182
Potato Patch	8/29/95	1	263	7.2	39.7	22.0	31	14.6	4.8	1564	167	153
Potato Patch	10/17/95	1	205	7.0	36.3	12.4	17	13.3	2.1	1086	98	110

Lake	Date	Depth	Total P	Total filterable-P	Filterable reactive-P	Total Kjeldahl nitrogen	Ammon.	Nitrate + nitrite	Reactive silicon	Organic carbon	Chlorophyll a	Phaeophytin a
		(m)	(ug/L P)	(ug/L P)	(ug/L P)	(ug/L N)	(ug/L N)	(ug/L N)	(ug/L Si)	(ug/L)	(ug/L)	(ug/L)
Island	5/1/95	1	10.0	4.5	3.3	201.4	<1.7	143.1	3090	497	1.85	0.63
Island	5/1/95	2	NA	NA	NA	NA	NA	NA	NA	NA	0.94	0.41
Island	5/1/95	7	10.3	5.5	4.0	169.5	7.6	151.4	3264	337	1.31	0.85
Island	6/26/95	1	7.9	1.9	1.8	167.9	<1.7	69.7	2866	151	0.61	0.21
Island	6/26/95	2	NA	NA	NA	NA	NA	NA	NA	NA	0.62	0.25
Island	6/26/95	7	15.8	2.9	2.3	222.9	15.6	118.8	3274	202	0.77	0.51
Island	7/28/95	1	5.4	2.6	1.8	192.6	2.1	28.1	2752	121	0.62	0.27
Island	7/28/95	2	NA	NA	NA	NA	NA	NA	NA	NA	0.61	0.34
Island	7/28/95	7	16.0	3.9	2.5	269.9	45.0	105.2	2929	193	0.73	0.47
Island	8/30/95	1	5.6	2.5	1.6	186.3	<1.7	12.2	2792	127	1.07	0.48
Island	8/30/95	2	NA	NA	NA	NA	NA	NA	NA	NA	1.11	0.44
Island	8/30/95	7	7.5	3.0	2.1	163.2	11.6	149.9	3204	202	0.86	0.66
Island	10/16/95	1	14.6	3.7	2.5	243.1	21.0	109.0	3956	127	0.62	0.30
Island	10/16/95	2	NA	NA	NA	NA	NA	NA	NA	NA	0.47	0.28
Island	10/16/95	6	11.9	4.2	3.0	248.6	20.2	107.5	3932	148	0.56	0.37
Lilly	5/5/95	1	8.1	4.6	2.1	275.5	36.5	143.1	1622	297	0.95	0.55
Lilly	6/26/95	1	11.4	3.0	1.4	278.6	<1.7	<4.0	1248	368	3.35	0.73
Lilly	8/1/95	1	8.8	3.1	2.6	281.4	<1.7	<4.0	1164	368	1.76	0.70
Lilly	8/30/95	1	10.5	4.2	2.0	332.3	6.6	<4.0	996	276	1.84	1.03
Lilly	10/17/95	1	16.8	4.4	2.1	387.9	53.6	129.8	1854	302	1.90	0.71
Mission	5/4/95	1	29.5	NA	NA	412.1	NA	NA	2340	648	1.64	1.07
Mission	6/23/95	1	32.0	7.6	1.3	432.3	<1.7	12.7	1130	NA	NA	NA
Mission	6/26/95	1-2	NA	NA	NA	NA	NA	NA	NA	300	1.67	0.54
Mission	6/26/95	2-2	NA	NA	NA	NA	NA	NA	NA	231	0.72	0.18
Mission	8/1/95	1	32.8	7.5	3.2	426.5	<1.7	<4.0	3008	689	4.23	1.25
Mission	8/29/95	1	42.4	10.9	4.3	517.5	<1.7	<4.0	2245	698	10.56	1.83
Mission	10/17/95	1	28.0	5.7	2.5	396.6	14.1	14.2	3472	600	4.54	1.73
Potato Patch	5/4/95	1	27.0	4.0	1.3	391.9	20.5	117.9	1400	612	2.29	1.04
Potato Patch	6/26/95	1	43.2	6.2	2.0	497.1	47.2	32.0	1210	471	1.74	0.58
Potato Patch	8/1/95	1	54.7	6.3	2.6	588.2	<1.7	9.1	1899	1094	10.83	4.66
Potato Patch	8/29/95	1	57.1	15.0	6.0	614.5	50.0	38.6	1244	531	4.78	1.88
Potato Patch	10/17/95	1	31.0	5.4	2.1	343.3	3.8	143.9	1773	589	3.98	1.23

Site	Date	Site	Depth	Specific conductance (umhos/cm)	pH	Alkalinity (mg/L)	urbidit (NTU)	Color (Pt units)	Calcium (mg/L)	Magnesium (mg/L)	Iron (ug/L)	Total-P (ug/L P)	Total filter- able-P (ug/L P)	Filterable reactive-P (ug/L P)	Total Kjeld- nitrogen (ug/L N)	Ammonia (ug/L N)	Nitrate+ nitrite (ug/L N)	Reactive silicon (ug/L Si)	Organic carbon (ug/L)	Chloro- phylla (ug/L)	Phaeo- phylla (ug/L)
oroshoe U	07/29/96	1	1	158	6.8	36.4	4.3	57	14.8	2.4	790	7.6	8.3	9.2	516.2	1.0	2.9	874	787	3.89	1.18
oroshoe L	07/29/96	1	1	252	7.0	55.5	30.6	54	21.3	3.1	1246	23.6	14.1	11.4	698.5	135.2	59.3	2075	1136	1.80	2.68
river	07/29/96	1	1	128	6.7	29.4	6.0	29	10.1	1.8	739	14.4	8.8	7.1	305.2	12.8	50.8	2944	588	2.30	0.87
river	07/29/96	1	2																	2.31	0.89
atk	07/29/96	1	1	131	7.0	24.0	2.5	15	10.1	1.8	232	11.8	3.2	1.9	271.4	8.6	18.2	2006	242	0.63	0.33
atk	07/29/96	1	2																	0.49	0.33
atk	07/29/96	1	4	128	6.8	24.7	22.3	18	9.1	1.8	3134	45.8	4.0	2.4	379.1	19.1	35.1	2075	437	1.26	0.92
land	07/30/96	1	1	151	7.2	29.1	1.3	9	11.0	1.8	84	5.4	3.4	1.9	167.2	2.0	7.2	1895	204	1.01	0.30
land	07/30/96	1	2																	0.46	0.42
land	07/30/96	1	7	152	6.7	29.2	2.9	9	12.0	1.8	153	14.1	2.3	1.4	245.7	48.8	76.7	3175	201	2.06	1.22
lly	07/30/96	1	1	244	7.1	32.7	1.3	17	12.0	1.8	96	9.8	6.8	3.7	301.3	1.7	3.9	664	350	2.72	1.02
State Patch	07/30/96	1	1	240	9.4	45.5	9.5	24	13.8	3.1	1116	31.4	7.2	3.1	467.0	1.7	22.4	2156	743	2.76	0.73
iston	07/30/96	1	1	4430	9.7	50.0	2.1	15	50.4	79.2	85	16.5	4.7	1.9	317.8	1.7	1.2	1332	404	2.26	0.51
bercrombie	07/30/96	1	1	194	7.2	26.1	1.9	10	8.2	3.1	44	8.2	2.5	1.4	213.5	2.8	2.4	2420	235	1.87	0.04
bercrombie	07/30/96	1	2																	1.59	0.74
bercrombie	07/30/96	1	5	193	7.2	25.9	2.2	11	9.1	3.1	434	11.7	11.2	8.5	239.9	1.4	1.0	2490	217	2.07	0.48

APPENDIX F

**1995-96 LAKE TEMPERATURE,
OXYGEN, SCCHI CLARITY RESULTS**

Appendix F

Secchi Disc Depths for Kodiak Clean Lakes, 1995

Abercrombie, Sta 1				Beaver, Sta 1				Dark, Sta 1			
Dis	Re			Dis	Re			Dis	Re		
5-May	4.5	4		22-Jun	1.25	1.25		25-Jun	2.75	2.75	
26-Jun	4.5	4.5		30-Jul	1.75	1.5		28-Jul	3.25	3.25	
30-Jul	5	5		29-Aug	0.75	0.75		30-Aug	4	4	
30-Aug	4.5	4.5		16-Oct	1	1		16-Oct	1.75	1.75	
17-Oct	3	3									
Horseshoe, Lower, Sta 1				Horseshoe, Upper, Sta 1				Island, Sta 1			
Dis	Re			Dis	Re			Dis	Re		
22-Jun	0.25	0.25		22-Jun	1	1		25-Jun	2.75	2.6	
28-Jul	0.3	0.3		30-Jul	1	1		28-Jul	3	3	
29-Aug	0.3	0.3		29-Aug	1	1		30-Aug	3	3	
16-Oct	0.15	1.5		16-Oct	1	1		16-Oct	2	2	
Lilly, Sta 1				Mission, Sta 1				Potato Patch, Sta 1			
Dis	Re			Dis	Re			Dis	Re		
5-May	2	2		4-May	1.2	1.2		4-May	0.6	0.5	
23-Jun	1.5	1.5		23-Jun	0.75	0.75		23-Jun	0.5	0.5	
1-Aug	2	2		1-Aug	0.7	0.7		1-Aug	0.6	0.6	
30-Aug	2	2		29-Aug	0.75	0.75		29-Aug	0.5	0.5	
17-Oct	1.5	1.5		17-Oct	0.75	0.5		17-Oct	0.5	0.5	

Appendix F

1995 Temperature and Oxygen for Kodiak Clean Lakes

Lilly, Sta 1

Temperature		Dissolved Oxygen				
		5-May	23-Jun	1-Aug	30-Aug	17-Oct
0	10.5	13.7	16	15.2	6.5	
0.5	11	13.7	16.2	15.2	6.5	
1	11	13.7	16.2	15	6.5	
1.5	11	13.6	16.2	14.9	6.5	
2	11	13.5	16	14.9	6.5	
2.5	11	13.5	15.8			
Average	10.9	13.6	16.1	15.0	6.5	

Mission, Sta 1

Temperature		Dissolved Oxygen				
		4-May	23-Jun	1-Aug	29-Aug	17-Oct
0	13	13.2	16.2	14.1	7	
0.5	13	13.1	16.2	14.1	7	
1	13	13	16.2	14.1	9	
1.5	12.3	13	14.2			
Average	12.8	13.1	16.2	14.1	7.7	

Potato Patch, Sta 1

Temperature		Dissolved Oxygen				
		4-May	23-Jun	1-Aug	29-Aug	17-Oct
0	10	12.9	16	13.8	7.5	
0.5	10	12.7	16	13.8	6.5	
1	10	12.5	16	13.6	6.5	
1.5					6.5	
Average	10.0	12.7	16.0	13.7	6.8	

Appendix F

1995 Temperature and Oxygen for Kodiak Clean Lakes

Horseshoe, Upper, Sta 1

	Temperature				Dissolved Oxygen			
	22-Jun	30-Jul	29-Aug	16-Oct	22-Jun	30-Jul	29-Aug	16-Oct
0	13	14.9	15.2	7	10.6	10.1	9.2	12.2
0.5	13	14.1	13.3	7	10.1	10.1	8.5	12.2
1	13	14.1	13.3	7	10	9.7	1.7	12.2
1.5								
2								
Average	13.0	14.4	13.9	7.0				

Island, Sta 1

	Temperature				Dissolved Oxygen			
	25-Jun	28-Jul	30-Aug	16-Oct	25-Jun	28-Jul	30-Aug	16-Oct
0	15.5	15.7	15.1	7	9.9	9.8	10.4	12.2
0.5	15.5	15.8	15	7	9.9	9.7	10.2	12.2
1	15.5	15.8	14.9	7	9.8	9.8	10.1	12.1
1.5	15.5	15.7	14.8	7	9.7	9.7	9.8	12.1
2	15.5	15.7	14.8	7	9.7	9.7	9.9	12.1
2.5	14	15.7	14.7	7	9.6	9.4	9.6	12.1
3	13.8	14.6	14.6	7	9.7	9.8	9.5	12
3.5	13.3	13.8	14.5	7	9.7	9.8	9.6	12
4	12.6	13.3	13	7	9.8	9.5	9	12
4.5	11.9	11.1	12	7	9.7	8	6.9	12
5	11.2	10.1	9.5	7	9.7	6.7	4.6	11.7
6	9.3	8.7	9.5	7	9.7	4.3	1	11.5
7	8.3	7.8	8.4	7	6	1.7	0.2	2
8	6.9	7.3	8.5	7	2	0.5	0.2	2
9	6.6	7.1		7	0.1	0.2		2
Average	12.4	12.5	12.8	7.0				

Appendix F

1995 Temperature and Oxygen for Kodiak Clean Lakes

Dark, Sta 1		Dissolved Oxygen			
Temperature		25-Jun	28-Jul	30-Aug	16-Oct
0	16.3	15.7	14.3	6.7	12.3
0.5	16.3	15.8	14.5	6.6	12.3
1	14.7	15.8	14.5	6.6	12.3
1.5	14.5	15.7	14.5	6.6	12.3
2	14.1	14	14.4	6.6	12.3
2.5	13.7	12.8	14.4	6.6	12.3
3	13.2	12.5	14.3	6.6	12.4
3.5	12.7	11.6	13.5	6.6	12.3
4	12	11.2	12.7	6.6	12.3
4.5	10.8	10.7	12.1	6.6	6
5	10.5				
Average	13.5	13.6	13.9	6.6	

Horseshoe, Lower, Sta 1		Dissolved Oxygen			
Temperature		22-Jun	28-Jul	29-Aug	16-Oct
0	13	14.7	15.4	6	12.5
0.5	11.5	14	13.2	6	11.5
1	11.5				
1.5					
2					
Average	12.0	14.4	14.3	6.0	

Appendix F

temp-DO, data

1995 Temperature and Oxygen for Kodiak Clean Lakes

Abercrombie, Sta 1

	Temperature					Dissolved Oxygen				
	5-May	26-Jun	30-Jul	30-Aug	17-Oct	5-May	26-Jun	30-Jul	30-Aug	17-Oct
0	8	14.5	16.2	15.6	7	0	10.1	9.8	10.1	12.2
0.5	8	14.6	16.1	15.4	7	0.5	9.9	9.8	9.9	12.2
1	8	14.6	15.9	15.1	7	1	9.8	9.6	10.2	12.2
1.5	8	14.5	15.5	14.9	7	1.5	9.7	9.6	9.9	12.2
2	8	14.5	15.5	14.8	7	2	9.7	9.7	9.9	12.2
2.5	8	14.1	15.4	14.7	7	2.5	9.6	9.5	10	12.2
3	8	13.7	15.2	14.6	7	3	9.8	9.7	9.7	12.2
3.5	8	13.3	14.8	14.6	7	3.5	9.4	9.9	9.7	12.2
4	8	13.1	13.8	14.3	7	4	9.5	9	9.6	12.2
4.5	7.5	12.7	13.2	14.3	7	4.5	9.5	8.6	9.2	12.2
5	7.5	12.1	12	13.1	7	5	9.7	6.8	5.3	12
6	6	10.8	11	11.8	7	6	9.5	4.3	0.6	12
7	5.25	10.8	10.4	10.9	7	7	8.7	2.2	0.3	7.8
8		10.4				8	6.4			
9		10.5				9	5.8			
10		10.4				10	5.3			
Average	7.6	12.8	14.2	14.2	7					

Beaver, Sta 1

	Temperature					D.O.				
	6-Jun	30-Jul	29-Aug	16-Oct		6-Jun	29-Aug	30-Jul	16-Oct	
0	12.5	14.6	14.2	6.5		0		10.1	12.3	
0.5	12.5	14	14	6.2		0.5		10.2	12.1	
1	12.5	13.8	13.5	6		1		10.2	8.9	12
1.5	12.5	12.7	13.2	6		1.5		10.1	8.7	12
2	12	12.1	12.7	6		2		10	7.2	11.9
2.5	11.5	11.5	11.9	6		2.5		8	3.1	11.3
3		11.2				3		4.5		
Average	12.3	12.8	13.3	6.1						

TABLE T-5.1
2000-2001 STEAM MONITORING
RESULTS BY SITE

TABLE T - 5.1: Kodiak Urban Lakes FY 2000 - 2001 Stream Monitoring Results

Site	Date	2-day precip inches	5-day precip inches	City TC cfu/100ml	City FC cfu/100ml	TC (1ml) cfu/100ml	TC (5ml) cfu/100ml	EC (1ml) cfu/100ml	EC (5ml) cfu/100ml	Turb. NTU	Cond. uS/cm	Temp. degC
B1	5/11/00	0.00	0.32	#	<100	500	1380	0	240	13.2	139	15.1
B1	5/18/00	0.37	0.60	#	30	NR	NR	NR	NR	5.6	138	11.8
B1	6/16/00	0.10	1.06	#		4000?	2400?	300?	200?	4.5	127	14.9
B1	7/19/00	0.43	0.74	#	60	14400	TNTC	1200	200?	40.9	126	15.1
B1	7/27/00	0.00	0.08	#		NS	NS	NS	NS	3.5	125	15.4
B1	8/9/00	0.00	0.02	#		8100	TNTC	0	0	2.0	136	18.0
B1	8/22/00	0.00	0.04	#		5500	4000	0	80	24.9	125	2.0
B1	11/29/00	0.16	1.15	#		800	400	0	0	78.4	143	1.8
B1	1/30/01	0.32	1.05	#		1000	760	100	40	49.2	113	2.4
B1	3/28/01	0.03	4.46	#		0	0	0	0	19.8	137	4.5
B1	4/6/01	0.00	0.86	#		3400	1400	300	0	26.9	138	6.8
B1	4/23/01	0.30	0.95	#		900	600	0	20	13.8	130	11.2
B1	5/14/01	0.10	0.19	#		1300	1400	0	20	11.4	128	9.0
B1	5/21/01	1.90	2.20	#		0	0	0	0	5.1	129	11.9
B1	6/4/01	1.67	1.67	#		4000	1600	0	0	7.4	140	14.4
B1	6/20/01	0.11	0.13	#								
				Median		1150	1070	0	0	13.2	130	
				Average		3325	1154	133	36			
				Std. Devn.		4108	1103	332	69			

TABLE T - 5.1: Kodiak Urban Lakes FY 2000 - 2001 Stream Monitoring Results

Site	Date	2-day precip inches	5-day precip inches	City TC cfu/100ml	City FC cfu/100ml	TC (1ml) cfu/100ml	TC (5ml) cfu/100ml	EC (1ml) cfu/100ml	EC (5ml) cfu/100ml	Turb. NTU	Cond. uS/cm	Temp. degC
D1	5/12/00	0.00	0.07	#		0	240	0	0	11.6	144	10.9
D1	6/15/00	0.14	1.20	#		NR	NR	NR	NR	2.2	132	14.2
D1	6/30/00	0.33	0.93	#		2000	440	0	120	4.1	133	15.0
D1	7/19/00	0.43	0.74	#		1500?	760?	300?	60?	2.4	129	16.2
D1	7/27/00	0.00	0.08	#		800	700	0	600	3.2	130	15.8
D1	8/5/00	0.04	0.83	#		100	1500	0	0	1.5	129	17.3
D1	8/23/00	0.00	0.03	#		300	480	0	0	2.4	133	14.4
D1	9/27/00	0.01	0.59	#		500	240	0	0	3.1	136	9.7
D1	10/18/00	0.11	0.80	#		1300	400	0	0	5.7	131	6.1
D1	11/28/00	0.68	1.32	#		1000	800	0	60	35.4	129	3.3
D1	11/28/00	0.68	1.32	#		1000	800	0	60	35.4	129	3.1
D1	1/29/01	0.18	1.29	#		1400	600	0	0	28.0	127	1.7
D1	2/22/01	0.00	1.27	#		400	520	0	0	24.3	143	1.7
D1	3/27/01	0.46	5.13	#		500	520	0	0	82.1	142	3.1
D1	4/5/01	0.06	0.86	#		100	440	0	0	23.7	138	3.7
D1	4/23/01	0.30	0.95	#		200	180	100	0	15.6	135	7.5
D1	5/14/01	0.10	0.19	#		100	180	0	0	6.8	132	9.8
D1	5/22/01	1.02	1.98	#		1700	720	0	0	23.6	135	11.9
D1	6/21/01	0.09	0.14	#		0	240	0	0	6.7	132	18.4
				Median	500	480	0	0	0	6.8	132	
				Average	671	529	6	49				
				Std. Devn.	611	315	24	141				

TABLE T - 5.1: Kodiak Urban Lakes FY 2000 - 2001 Stream Monitoring Results

Site	Date	2-day precip inches	5-day precip inches	City TC cfu/100ml	City FC cfu/100ml	TC (1ml) cfu/100ml	TC (5ml) cfu/100ml	EC (1ml) cfu/100ml	EC (5ml) cfu/100ml	Turb. NTU	Cond. uS/cm	Temp. degC
H1	5/11/00	0.00	0.32	#	1	900	320	200	20	9.4	154	11.2
H1	5/18/00	0.37	0.60	#	12	8600	32000	400	0	82.4/C165	152/C155	9.8
H1	6/12/00	0.75	1.24	#	73	2600	1800	100	160	10.4	131	14.0
H1	7/1/00	0.03	0.39	#	56	24000?	4000?	4000?	500?	14.8	85	13.0
H1	7/19/00	0.43	0.74	#	100	2700	Conf.	600	240	34.2	80	18.0
H1	7/27/00	0.00	0.08	#	100	1400	1760	0	0	10.0	138	12.7
H1	8/5/00	0.04	0.83	#		NS	NS	NS	NS	6.1	146	16.7
H1	8/21/00	0.01	0.04	#		NS	NS	NS	NS	6.3	134	11.9
H1	9/5/00	0.00	0.00	#		NS	NS	NS	NS	7.4	90	7.6
H1	10/16/00	0.68	1.21	#		2700	3400	0	20	18.3	133	2.2
H1	11/26/00	0.47	1.24	#		1400	800	0	20	29.3	159	0.7
H1	1/30/01	0.32	1.05	#		200	220	100	20	16.1	148	1.3
H1	2/22/01	0.00	1.27	#		0	0	0	0	26.7	159	2.8
H1	2/23/01	0.00	0.10	#		600	320	0	0	22.6	122	2.9
H1	3/28/01	0.03	4.46	#		400	400	0	0	30.8	49	3.1
H1	4/6/01	0.00	0.86	#		NS	NS	NS	NS	9.3	141	5.7
H1	4/20/01	0.47	0.48	#		700	600	0	0	8.6	135	8.6
H1	5/14/01	0.10	0.19	#		900	600	0	0	400.0	129	7.5
H1	5/21/01	1.90	2.20	#		5000	TNTC	100	160	29.9	164	11.0
H1	6/7/01	0.17	2.17	#		3300	TNTC	0	0	8.9	135	NR
H1	6/20/01	0.11	0.13	#		TNTC	TNTC	0	0			
Median												
Average												
Std. Devn.												
						1400	600	0	0	14.8	135	
						2093	3518	94	40			
						2192	8637	168	73			

TABLE T - 5.1: Kodiak Urban Lakes FY 2000 - 2001 Stream Monitoring Results

Site	Date	2-day precip inches	5-day precip inches	City TC cfu/100ml	City FC cfu/100ml	TC (1ml) cfu/100ml	TC (5ml) cfu/100ml	EC (1ml) cfu/100ml	EC (5ml) cfu/100ml	Turb. NTU	Cond. uS/cm	Temp. degC
H2	5/11/00	0.00	0.32	#	<100		9000			22.9	289	10.3
H2	5/18/00	0.37	0.60	#	<10	7300	4000	0	360	28.5	279	10.6
H2	6/13/00	0.91	1.51	#		200	680	0	20	13.2	250	16.4
H2	7/11/00	0.03	0.39	#		8000?	1720?	2400?	80?	30.0	351	12.5
H2	7/20/00	0.17	0.72	#	TNTC	8100	TNTC	0	0	11.9	222	13.7
H2	8/5/00	0.04	0.83	#		NS	NS	NS	NS	13.2	185	23.5
H2	8/21/00	0.01	0.04	#		800	1200	0	100	14.8	212	7.4
H2	9/27/00	0.01	0.59	#		1900	2000	200	120	19.2	210	7.6
H2	10/18/00	0.11	0.80	#		5800	TNTC	500	TNTC	400.0	744	4.8
H2	11/27/00	0.52	1.49	#		1800	60	0	0	13.3	234	2.2
H2	1/30/01	0.32	1.05	#		400	200	100	0	28.3	240	4.2
H2	2/23/01	0.00	0.10	#		1000	520	0	0	90.4	617	4.6
H2	3/28/01	0.03	4.46	#		NS	NS	NS	NS	30.0	236	5.7
H2	4/6/01	0.00	0.86	#		800	700	0	0	152.0	203	5.8
H2	4/20/01	0.47	0.48	#		1200	1500	700	1400	11.6	204	9.3
H2	5/14/01	0.10	0.19	#	>1600	5000	TNTC	100	60	166.0	187	8.1
H2	5/21/01	1.90	2.20	#		8800	TNTC	0	0	26.0	207	11.8
H2	6/7/01	0.17	2.17	#		2500	800	0	0	7.3	295	12.7
H2	6/20/01	0.11	0.13	#								
Median												
Average												
Std. Devn.												
						1850	800	0	0	24.4	235	
						3257	1878	114	158			
						2970	2483	210	371			

TABLE T - 5.1: Kodiak Urban Lakes FY 2000 - 2001 Stream Monitoring Results

Site	Date	2-day precip inches	5-day precip inches	City TC cfu/100ml	City FC cfu/100ml	TC (1ml) cfu/100ml	TC (5ml) cfu/100ml	EC (1ml) cfu/100ml	EC (5ml) cfu/100ml	Turb. NTU	Cond. uS/cm	Temp. degC
H3	5/11/00	0.00	0.32	#		2200	140	200	40	13.2	266	15.2
H3	6/12/00	0.75	1.24	#	conf	30000	32000	7300	0	++/C3720	278/C286	11.3
H3	7/11/00	0.03	0.39	#		5200	1560	400	20	14.8	218	17.3
H3	7/19/00	0.43	0.74	#	TNTC	20000?	12000?	2400?	1600?	251.0	187	14.2
H3	8/5/00	0.04	0.83	#		2300	2400	100	0	89.5	284	13.1
H3	8/21/00	0.01	0.04	#		NS	NS	NS	NS	400.0	311	17.3
H3	9/27/00	0.01	0.59	#		1500	600	0	240	12.9	271	8.1
H3	10/18/00	0.11	0.80	#		3000	3000	100	240	14.3	257	6.2
H3	11/27/00	0.52	1.49	#		10000	TNTC	1100	TNTC	400.0	700	4.8
H3	1/30/01	0.32	1.05	#		200	240	0	0	10.4	223	1.8
H3	2/23/01	0.00	0.10	#		400	520	0	0	37.6	222	3.5
H3	3/28/01	0.03	4.46	#		2000	580	0	20	26.7	196	3.4
H3	4/6/01	0.00	0.86	#		NS	NS	NS	NS	52.3	235	5.0
H3	4/20/01	0.47	0.48	#		600	760	0	20	12.8	220	6.8
H3	5/14/01	0.10	0.19	#		600	1000	0	0	14.3	196	13.2
H3	5/21/01	1.90	2.20	#		TNTC	TNTC	500	120	400.0	120	8.0
H3	6/7/01	0.17	2.17	#		4000	TNTC	0	0	32.5	176	11.3
H3	6/20/01	0.11	0.13	#		2000	TNTC	0	0	15.2	196	11.9
Median210076001026.7222 Average4571389164750 Std. Devn.74688930180283												

TABLE T - 5.1: Kodiak Urban Lakes FY 2000 - 2001 Stream Monitoring Results

Site	Date	2-day precip inches	5-day precip inches	#	City TC cfu/100ml	City FC cfu/100ml	TC (1ml) cfu/100ml	TC (5ml) cfu/100ml	EC (1ml) cfu/100ml	EC (5ml) cfu/100ml	Turb. NTU	Cond. uS/cm	Temp. degC
H4	5/11/00	0.00	0.32	#			1000	1080	100	80	4.5	133	11.8
H4	6/13/00	0.91	1.51	#			2700	2220	900	100	6.8	113	8.9
H4	7/1/00	0.03	0.39	#			1800	1440	0	0	3.2	108	14.4
H4	7/20/00	0.17	0.72	#			6000?	CONF	2300?	400?	4.1	117	10.6
H4	7/27/00	0.00	0.08	#	30	20	1100	4800	200	60	11.6	83	16.5
H4	8/5/00	0.04	0.83	#			400	2080	0	40	3.1	114	13.2
H4	8/22/00	0.00	0.04	#			2000	1440	0	40	6.5	123	17.5
H4	9/27/00	0.01	0.59	#			400	440	0	20	5.5	128	5.7
H4	10/22/00	1.10	1.11	#			1800	120	0	0	3.7	111	6.5
H4	11/27/00	0.52	1.49	#			600	800	0	0	24.6	108	6.2
H4	1/30/01	0.32	1.05	#			300	20	0	0	15.8	130	0.6
H4	2/23/01	0.00	0.10	#			200	140	0	20	37.1	128	3.4
H4	3/28/01	0.03	4.46	#			300	120	0	0	9.6	125	4.5
H4	4/6/01	0.00	0.86	#			400	400	0	0	33.6	122	5.4
H4	4/20/01	0.47	0.48	#			500	CONF.	0	0	5.4	121	9.4
H4	5/14/01	0.10	0.19	#			4000	TNTC	100	460	104.5	110	6.9
H4	5/21/01	1.90	2.20	#			3200	TNTC	0	0	17.7	116	11.2
H4	6/7/01	0.17	2.17	#			0	TNTC	0	0	8.6	100	12.1
H4	6/20/01	0.11	0.13	#									
FLOODED - NO SAMPLES OR MSMTS.													
					Median		600	620	0	0	7.7	116	
					Average		1218	1162	76	48			
					Std. Devn.		1180	1274	213	107			

TABLE T - 5.1: Kodiak Urban Lakes FY 2000 - 2001 Stream Monitoring Results

Site	Date	2-day precip inches	5-day precip inches	City TC cfu/100ml	City FC cfu/100ml	TC (1ml) cfu/100ml	TC (5ml) cfu/100ml	EC (1ml) cfu/100ml	EC (5ml) cfu/100ml	Turb. NTU	Cond. uS/cm	Temp. degC
H5	5/11/00	0.00	0.32	#		35000	20000	400	120	36.7	269	22.5
H5	6/13/00	0.91	1.51	#		4000	4940	1600	1160	127.0	208	10.2
H5	7/1/00	0.03	0.39	#		2200	3360	0	80	39.7	204	22.0
H5	7/20/00	0.17	0.72	TNTC	4	3400?	2600?	900?	500?	24.2	209	12.8
H5	7/27/00	0.00	0.08	#	100	10500	3200	0	80	16.5	197	21.2
H5	8/5/00	0.04	0.83	#		3200	2400	0	0	54.8	191	17.5
H5	8/22/00	0.00	0.04	#		1200	TNTC	0	0	10.8	245	22.4
H5	9/27/00	0.01	0.59	#		1500	7400	200	140	400.0	161	5.6
H5	11/27/00	0.52	1.49	#		3000	TNTC	100	TNTC	45.0	194	5.2
H5	1/30/01	0.32	1.05	#		1100	680	0	0	32.8	258	1.1
H5	2/23/01	0.00	0.10	#		500	480	0	40	60.7	231	3.8
H5	3/28/01	0.03	4.46	#		700	1600	0	0	60.6	230	7.5
H5	4/6/01	0.00	0.86	#		600	tntc	0	0	10.2	202	6.7
H5	4/20/01	0.47	0.48	#		2500	800	0	40	22.8	178	15.6
H5	5/14/01	0.10	0.19	#		TNTC	TNTC	100	80	172.5	171	7.2
H5	5/21/01	1.90	2.20	#		4000	TNTC	0	0	73.5	200	15.1
H5	6/7/01	0.17	2.17	#		12000	6400	0	0	18.7	97	12.6
H5	6/20/01	0.11	0.13	#								
						Median	3200	0	40	39.7	202	
						Average	4660	150	116			
						Std. Devn.	5329	389	283			

TABLE T - 5.1: Kodiak Urban Lakes FY 2000 - 2001 Stream Monitoring Results

Site	Date	2-day precip inches	5-day precip inches	City TC cfu/100ml	City FC cfu/100ml	TC (1ml) cfu/100ml	TC (5ml) cfu/100ml	EC (1ml) cfu/100ml	EC (5ml) cfu/100ml	Turb. NTU	Cond. uS/cm	Temp. degC
11	5/12/00	0.00	0.07	#		800	140	0	0	5.6	165	11.0
11	6/16/00	0.10	1.06	#		NR	NR	NR	NR	2.2	153	12.6
11	7/1/00	0.03	0.39	#		0	560	0	200	2.0	146	15.8
11	7/19/00	0.43	0.74	#		5400?	600?	700?	60?	2.5	148	16.7
11	7/27/00	0.00	0.08	#		2200	1460	0	20	27.8	148	16.8
11	8/5/00	0.04	0.83	#		1500	760	0	0	1.5	147	17.3
11	8/23/00	0.00	0.03	#		600	960	0	0	1.9	156	13.3
11	9/28/00	0.00	0.16	#		1700	280	0	0	7.9	158	7.9
11	10/19/00	0.01	0.79	#		0	640	1400	0	4.8	142	6.7
11	11/29/00	0.16	1.15	#		2200	1000	0	0	14.2	153	2.1
11	12/28/00	1.17	4.39	#		500	600	0	0	33.5	150	3.8
11	1/29/01	0.18	1.29	#		500	560	0	0	22.8	147	2.5
11	2/22/01	0.00	1.27	#		500	120	0	0	18.7	155	1.7
11	3/27/01	0.46	5.13	#		400	280	100	100	70.3	154	3.6
11	4/5/01	0.06	0.86	#		320	0	0	20	26.3	153	4.0
11	4/18/01	0.00	0.01	#		100	280	0	0	18.7	149	8.0
11	5/14/01	0.10	0.19	#		900	400	0	0	5.7	149	11.6
11	5/22/01	1.02	1.98	#		400	520	0	0	17.9	179	12.6
11	6/4/01	1.67	1.67	#		0	0	0	0	5.5	151	13.6
11	6/21/01	0.09	0.14	#		0	0	0	0	7.1	155	NR
Median												
Average						500	460	0	0	7.5	151	
Std. Devn.						701	476	83	19			
						706	384	320	50			

TABLE T - 5.1: Kodiak Urban Lakes FY 2000 - 2001 Stream Monitoring Results

Site	Date	2-day precip inches	5-day precip inches	City TC cfu/100ml	City FC cfu/100ml	TC (1ml) cfu/100ml	TC (5ml) cfu/100ml	EC (1ml) cfu/100ml	EC (5ml) cfu/100ml	Turb. NTU	Cond. uS/cm	Temp. degC
12	5/12/00	0.00	0.07	#		200	500	0	60	10.2	399	7.9
12	6/14/00	0.36	1.42	#	30	1800	900	100	100	13.3	341	11.1
12	6/30/00	0.33	0.93	#		2800	4640	400	640	21.5	358	12.5
12	7/19/00	0.43	0.74	#		5000?	2000?	1500?	400?	26.3	324	12.8
12	7/27/00	0.00	0.08	#		2800	TNTC	0	120	21.3	385	15.8
12	8/5/00	0.04	0.83	#		500	1620	0	0	3.2	204	14.1
12	8/22/00	0.00	0.04	#								
12	10/18/00	0.11	0.80	#		900	920	0	0	20.4	195	7.9
12	11/29/00	0.16	1.15	#		800	480	0	100	6.4	188	4.4
12	12/28/00	1.17	4.39	#		800	920	0	0	80.7	160	5.3
12	1/27/01	0.55	1.70	#		200	100	0	0	5.4	178	3.5
12	2/22/01	0.00	1.27	#		300	20	0	0	33.8	208	2.7
12	3/23/01	0.67	0.67	#		3000	960	0	100	10.6	202	3.0
12	4/5/01	0.06	0.86	#		100	100	0	0	25.4	198	3.9
12	4/18/01	0.00	0.01	#		600	380	0	0	4.2	195	6.0
12	5/14/01	0.10	0.19	#		600	460	0	0	GREEN	SLIME	NS
12	5/22/01	1.02	1.98	#		200	300	0	0	23.2	177	9.0
12	6/4/01	1.67	1.67	#		0	200	0	60	112.0	180	9.6
12	6/20/01	0.11	0.13	#		NS	NS	0	0	7.4	140	14.4
12	6/21/01	0.09	0.14	#		0	0	0	0	4.8	210	11.2
All dried up, no measurements available												
				Median	600	470	0	0	0	16.8	200	
				Average	918	781	28	66				
				Std. Devn.	997	1084	93	146				

TABLE T - 5.1: Kodiak Urban Lakes FY 2000 - 2001 Stream Monitoring Results

Site	Date	2-day precip inches	5-day precip inches	City TC cfu/100ml	City FC cfu/100ml	TC (1ml) cfu/100ml	TC (5ml) cfu/100ml	EC (1ml) cfu/100ml	EC (5ml) cfu/100ml	Turb. NTU	Cond. uS/cm	Temp. degC
I3	5/12/00	0.00	0.07	#		0	100	0	0	4.1	261	7.8
I3	6/14/00	0.36	1.42	#	50	900	600	0	0	11.4	212	9.4
I3	6/30/00	0.33	0.93	#		5200	880	1000	140	5.5	188	11.9
I3	7/19/00	0.43	0.74	#		5000?	1400?	1100?	540?	29.7	191	11.5
I3	7/27/00	0.00	0.08	#		4000	1400	1000	200	400.0	215	11.9
I3	8/5/00	0.04	0.83	#		600	1040	0	0	9.7	362	14.7
I3	8/22/00	0.00	0.04	#		800	TNTC	0	0	8.6	409	15.6
I3	9/27/00	0.01	0.59	#		500	460	0	0	10.5	263	7.9
I3	10/18/00	0.11	0.80	#		3400	NS	0	NS	25.5	337	6.3
I3	11/28/00	0.68	1.32	#		2500	1520	100	80	17.4	344	2.8
I3	12/28/00	1.17	4.39	#		2300	4000	0	60	193.0	214	5.0
I3	1/29/01	0.18	1.29	#		100	700	0	0	14.3	307	2.2
I3	2/22/01	0.00	1.27	#		2000	20	0	0	41.7	353	0.7
I3	3/23/01	0.67	0.67	#		300	400	0	0	19.8	373	7.0
I3	4/5/01	0.06	0.86	#		300	260	0	60	45.6	350	2.1
I3	4/18/01	0.00	0.01	#		900	500	0	0	12.7	335	5.4
I3	5/14/01	0.10	0.19	#		2500	1400	0	0	13.4	468	10.7
I3	5/22/01	1.02	1.98	#		2000	TNTC	0	20	46.1	631	9.2
I3	6/4/01	1.67	1.67	#		TNTC	conf.	200	320	128.5	204	10.1
I3	6/21/01	0.09	0.14	#		0	400	0	0	14.7	57	10.6
Median9006000016.1321 Average157291212149 Std. Devn.147194230586												

TABLE T - 5.1: Kodiak Urban Lakes FY 2000 - 2001 Stream Monitoring Results

Site	Date	2-day precip inches	5-day precip inches	City TC cfu/100ml	City FC cfu/100ml	TC (1ml) cfu/100ml	TC (5ml) cfu/100ml	EC (1ml) cfu/100ml	EC (5ml) cfu/100ml	Turb. NTU	Cond. uS/cm	Temp. degC
L1	5/10/00	0.00	0.40	#		1400	380	600	0	4.5	231	12.3
L1	6/14/00	0.36	1.42	#		9300	5920	0	160	7.2	215	12.8
L1	6/29/00	0.33	0.93	#	110	5800	4960	0	0	4.4	195	16.9
L1	7/18/00	0.43	0.74	#	120	3800	TNTC	0	120	3.1	198	16.9
L1	7/26/00	0.00	0.25	#	1100	7300	2000	0	0	15.4	194	20.3
L1	8/7/00	0.00	0.13	#		100	0	0	0	3.0	195	18.1
L1	8/21/00	0.01	0.04	#		2800	540	0	40	4.6	203	12.2
L1	9/27/00	0.01	0.59	#		2500	500	0	0	4.7	191	7.3
L1	10/17/00	0.21	1.31	#		2200	2400	0	20	12.0	160	4.5
L1	11/25/00	0.64	1.81	#		3000	3080	100	1440	14.9	172	3.6
L1	12/27/00	0.56	4.12	#		1600	600	0	220	56.8	181	2.2
L1	1/31/01	0.74	0.91	#		400	300	100	20	55.0	204	2.4
L1	2/21/01	0.00	1.57	#		1600	520	0	0	29.9	198	4.0
L1	3/22/01	0.00	0.00	#		100	540	0	120	94.0	286	7.7
L1	4/4/01	0.06	0.86	#		2500	800	0	0	8.6	182	8.0
L1	4/21/01	0.65	0.65	#		0	0	0	0	10.9	176	9.8
L1	5/10/01	0.01	0.54	#		2500	1200	100	60	13.3	178	9.8
L1	5/21/01	1.90	2.20	#		0	60	0	0	6.0	174	13.9
L1	6/4/01	1.67	1.67	#		6400	TNTC	0	0	6.5	176	11.5
L1	6/20/01	0.11	0.13	#								
All dried up, no measurements available												
Median												
Average												
Std. Devn.												

TABLE T - 5.1: Kodiak Urban Lakes FY 2000 - 2001 Stream Monitoring Results

Site	Date	2-day precip inches	5-day precip inches	City TC cfu/100ml	City FC cfu/100ml	TC (1ml) cfu/100ml	TC (5ml) cfu/100ml	EC (1ml) cfu/100ml	EC (5ml) cfu/100ml	Turb. NTU	Cond. uS/cm	Temp. degC
L2	5/10/00	0.00	0.40	#		1000	160	100	20	7.3	276	12.8
L2	6/14/00	0.36	1.42	#		11100	5840	0	200	12.6	240	11.6
L2	6/29/00	0.33	0.93	#		4300	8000	400	160	400.0	214	14.8
L2	7/18/00	0.43	0.74	#	2500	8400	6240	300	80	63.2	239	13.8
L2	7/26/00	0.00	0.25	#	100	5700	2920	700	20	18.5	365	19.7
L2	8/21/00	0.01	0.04	#		2200	1000	0	400	6.3	408	6.5
L2	9/27/00	0.01	0.59	#		1800	840	0	240	7.0	239	7.8
L2	10/19/00	0.01	0.79	#		0	0	0	0	62.0	151	4.7
L2	11/25/00	0.64	1.81	#		4000	2400	0	180	8.1	102	5.4
L2	12/27/00	0.56	4.12	#		10000	TNTC	600	TNTC	400.0	194	1.6
L2	1/31/01	0.74	0.91	#		300	300	0	0	89.0	276	2.0
L2	2/21/01	0.00	1.57	#		600	220	0	0	13.2	281	1.2
L2	3/22/01	0.00	0.00	#		500	280	0	60	19.8	188	6.4
L2	4/4/01	0.06	0.86	#		1500	1400	100	120	14.7	227	6.9
L2	4/21/01	0.65	0.65	#		0	40	0	0	7.2	241	8.2
L2	5/10/01	0.01	0.54	#		20000	TNTC	0	120	146.5	111	8.3
L2	5/21/01	1.90	2.20	#		600	TNTC	0	0	222.0	79	10.9
L2	6/4/01	1.67	1.67	#		NS	TNTC	0	0	NR	302	13.2
L2	6/21/01	0.09	0.14	#								
All dried up, no measurements available												
						1800	1000	0	60	18.5	239	
						4235	2117	122	94			
						5345	2570	217	110			
						Median						
						Average						
						Std. Devn.						

TABLE T - 5.1: Kodiak Urban Lakes FY 2000 - 2001 Stream Monitoring Results

Site	Date	2-day precip inches	5-day precip inches	City TC cfu/100ml	City FC cfu/100ml	TC (1ml) cfu/100ml	TC (5ml) cfu/100ml	EC (1ml) cfu/100ml	EC (5ml) cfu/100ml	Turb. NTU	Cond. uS/cm	Temp degC
M1	5/10/00	0.00	0.40	#	100	300	240	0	60	4.3	2760	13.8
M1	6/13/00	0.91	1.51	#		4100	2700	500	200	19.8	274	10.6
M1	6/28/00	0.04	1.67	#		2100	1420	200	200	26.2	1545	18.3
M1	7/18/00	0.43	0.74	#		600	760	100	60	27.8	3070	15.2
M1	7/26/00	0.00	0.25	#		did not gel	did not gel	did not gel	did not gel	4.1	2845	16.8
M1	8/3/00	0.51	1.08	#		did not gel	did not gel	did not gel	did not gel	5.5	2955	17.0
M1	8/21/00	0.01	0.04	#		0	60	0	0	3.8	319	16.9
M1	9/6/00	0.01	0.00	#		NS	NS	NS	NS	6.7	3255	13.6
M1	10/16/00	0.68	1.21	#		0	TNTC	0	TNTC	20.7	1480	7.1
M1	11/26/00	0.47	1.24	#		1100	800	0	20	128.0	431	3.6
M1	12/27/00	0.56	4.12	#		1500	1000	0	20	38.3	328	3.6
M1	1/31/01	0.74	0.91	#		1200	520	0	0	19.6	366	1.7
M1	2/21/01	0.00	1.57	#		1000	60	0	0	30.3	865	2.5
M1	3/22/01	0.00	0.00	#		100	100	0	20	11.0	2300	1.3
M1	4/4/01	0.06	0.86	#		100	140	0	20	3.5	1167	7.1
M1	4/23/01	0.30	0.95	#		0	60	0	0	14.2	1339	8.6
M1	5/10/01	0.01	0.54	#		0	0	0	0	12.7	2355	10.0
M1	5/22/01	1.02	1.98	#	>1600	3000	TNTC	500	200	31.6	3495	10.9
M1	6/7/01	0.17	2.17	#		200	200	0	0	4.2	406	13.0
M1	6/21/01	0.09	0.14	#		300	TNTC	0	0	11.9	4825	19.2
						Median	220	0	20	13.4	1513	
						Average	918	76	50			
						Std. Devn.	1148	163	74			

TABLE T - 5.1: Kodiak Urban Lakes FY 2000 - 2001 Stream Monitoring Results

Site	Date	2-day precip inches	5-day precip inches	City TC cfu/100ml	City FC cfu/100ml	TC (1ml) cfu/100ml	TC (5ml) cfu/100ml	EC (1ml) cfu/100ml	EC (5ml) cfu/100ml	Turb. NTU	Cond. uS/cm	Temp. degC
M2	5/10/00	0.00	0.40	#	1100	1100	1940	0	100	7.4	294	14.3
M2	6/12/00	0.75	1.24	#	conf	30000	12000	5600	1380	178.0	230	9.7
M2	6/28/00	0.04	1.67	#		10000	6400	2000	1200	18.7	251	14.2
M2	7/18/00	0.43	0.74	#		TNTC	6480	TNTC	200	3.3	3.43?	11.3
M2	7/26/00	0.00	0.25	#		4100	TNTC	200	100	10.7	319	12.2
M2	8/21/00	0.01	0.04	#		1500	460	900	300	15.5	323	13.0
M5	9/6/00	0.01	0.00	#		NS	NS	NS	NS	15.5	318	11.5
M5	10/16/00	0.68	1.21	#		6000	3200	800	1080	21.3	296	7.3
M5	12/27/00	0.56	4.12	#		500	1860	0	0	10.8	263	4.4
M5	1/31/01	0.74	0.91	#		1400	1400	100	20	32.7	217	1.7
M5	2/21/01	0.00	1.57	#		200	360	0	20	12.3	318	1.6
M5	3/22/01	0.00	0.00	#		600	560	100	80	7.8	312	0.9
M5	4/4/01	0.06	0.86	#		900	1220	700	880	46.3	273	6.6
M5	4/23/01	0.30	0.95	#		600	1000	0	220	12.4	302	5.9
M5	5/14/01	0.10	0.19	#		6000	tntc	3400	tntc	6.9	308	5.9
M5	5/21/01	1.90	2.20	#	>1600	8000	TNTC	300	140	246.5	208	8.0
M5	6/4/01	1.67	1.67	#		1200	1060	500	420	119.0	184	10.6
M5	6/21/01	0.09	0.14	#		8400	TNTC	0	0	20.1	327	13.1
				Median	180	1450	1400	250	170	15.5	296	
				Average		5031	2918	913	384			
				Std. Devn.		7190	3281	1499	456			

TABLE T - 5.1: Kodiak Urban Lakes FY 2000 - 2001 Stream Monitoring Results

Site	Date	2-day precip inches	5-day precip inches	City TC cfu/100ml	City FC cfu/100ml	TC (1ml) cfu/100ml	TC (5ml) cfu/100ml	EC (1ml) cfu/100ml	EC (5ml) cfu/100ml	Turb. NTU	Cond. uS/cm	Temp degC	
P1	5/10/00	0.00	0.40	#	<100	<10	400	240	0	140	6.3	252	12.1
P1	6/12/00	0.75	1.24	#			1500	840	0	0	11.6	271	11.3
P1	6/28/00	0.04	1.67	#			1100	1040	0	140	18.6	201	20.6
P1	7/18/00	0.43	0.74	#			5000	2480	300	200	8.2	224	16.3
P1	7/26/00	0.00	0.25	#			did not gel	did not gel	did not gel	did not gel	6.2	231	19.4
P1	8/3/00	0.51	1.08	#			did not gel	did not gel	did not gel	did not gel	9.9	4	15.8
P1	8/21/00	0.01	0.04	#			600	360	100	0	5.0	37	16.6
P1	9/6/00	0.01	0.00	#			NS	NS	NS	NS	4.9	370	13.6
P1	10/16/00	0.68	1.21	#			1000	0	0	0	11.3	214	7.6
P1	11/26/00	0.47	1.24	#			2900	1300	100	280	3.0	174	45.8
P1	1/31/01	0.74	0.91	#			2000	500	100	140	34.1	499	2.3
P1	2/21/01	0.00	1.57	#			500	NS	100	NS	34.8	408	3.8
P1	3/23/01	0.67	0.67	#			400	600	0	0	41.7	241	1.8
P1	4/6/01	0.00	0.86	#			400	260	0	0	29.1	234	6.1
P1	4/23/01	0.30	0.95	#			100	180	0	0	22.0	206	8.5
P1	5/10/01	0.01	0.54	#			0	0	0	0	23.7	218	8.6
P1	5/22/01	1.02	1.98	#	>1600	20	2000	8000	0	60	18.3	203	11.0
P1	6/7/01	0.17	2.17	#			700	800	0	0	9.7	209	13.4
P1	6/21/01	0.09	0.14	#			200	120	0	0	11.7	215	17.5
Median													
Average													
Std. Devn.													
						650	550	0	0	11.6	218		
						1175	1115	44	64				
						1285	1942	79	89				

TABLE T - 5.1: Kodiak Urban Lakes FY 2000 - 2001 Stream Monitoring Results

Site	Date	2-day precip inches	5-day precip inches	City TC cfu/100ml	City FC cfu/100ml	TC (1ml) cfu/100ml	TC (5ml) cfu/100ml	EC (1ml) cfu/100ml	EC (5ml) cfu/100ml	Turb. NTU	Cond. uS/cm	Temp. degC
P2	5/10/00	0.00	0.40	#		1200	400	100	20	10.7	230	11.0
P2	6/13/00	0.91	1.51	#	80	11200	9960	2000	300	19.1	207	9.6
P2	6/29/00	0.33	0.93	#	2000	9800	TNTC	500	240	172.0	160	13.2
P2	7/18/00	0.43	0.74	#		12500	8000	300	300	75.7	200	13.8
P2	7/26/00	0.00	0.25	#		4200	TNTC	400	160	14.1	209	14.2
P2	8/7/00	0.00	0.13	#		0	40	0	0	11.6	205	16.7
P2	8/21/00	0.01	0.04	#		500	960	0	0	12.4	192	14.3
P2	9/6/00	0.01	0.00	#		NS	NS	NS	NS	15.5	191	15.5
P2	10/17/00	0.21	1.31	#		3000	1100	0	0	9.5	209	8.4
P2	11/25/00	0.64	1.81	#		10000	TNTC	1900	TNTC	55.8	157	5.4
P2	12/27/00	0.56	4.12	#		900	2000	0	860	13.5	193	4.2
P2	1/31/01	0.74	0.91	#		NS	2000	NS	220	404.0	150	1.9
P2	2/21/01	0.00	1.57	#		200	280	100	0	10.2	214	3.9
P2	3/23/01	0.67	0.67	#		0	560	0	0	63.3	219	2.5
P2	4/4/01	0.06	0.86	#		400	520	0	0	31.1	203	5.6
P2	4/23/01	0.30	0.95	#		300	600	0	0	10.6	200	7.1
P2	5/10/01	0.01	0.54	#	>230	0	0	0	0	8.1	217	8.0
P2	5/21/01	1.90	2.20	#	<10	TNTC	TNTC	200	420	236.5	130	8.8
P2	6/4/01	1.67	1.67	#	190	500	TNTC	100	240	190.0	92	11.5
P2	6/21/01	0.09	0.14	#		2000	3240	0	0	41.5	203	13.3
				Median	900	780	50	10	17.3	201		
				Average	3335	2119	311	153				
				Std. Devn.	4354	2954	598	219				

TABLE T - 5.1: Kodiak Urban Lakes FY 2000 - 2001 Stream Monitoring Results

Site	Date	2-day precip inches	5-day precip inches	City TC cfu/100ml	City FC cfu/100ml	TC (1ml) cfu/100ml	TC (5ml) cfu/100ml	EC (1ml) cfu/100ml	EC (5ml) cfu/100ml	Turb. NTU	Cond. uS/cm	Temp. degC
P2A	5/11/00	0.00	0.32	#		700	3000	200	160	6.4	236	12.6
P2A	6/14/00	0.36	1.42	#	90	2600	4000	500	0	13.9	203	13.1
P2A	6/29/00	0.33	0.93	#		6300	TNTC	400	0	13.6	199	16.7
P2A	7/18/00	0.43	0.74	#		MANHOLE ACCESS HAS BEEN PAVED OVER!!! FOUND NEW MH.						
P2A	8/7/00	0.00	0.13	#		100	120	0	0	64.7	329	13.9
P2A	8/21/00	0.01	0.04	#		1600	720	0	0	NO FLOW NO FLOW NO FLOW		
P2A	9/29/00	0.00	0.02	#		2000	1240	0	40	6.4	191	9.5
P2A	11/25/00	0.64	1.81	#		5700	TNTC	600	TNTC	20.6	164	5.0
P2A	12/27/00	0.56	4.12	#		1700	2400	0	1200	13.9	184	4.0
P2A	1/31/01	0.74	0.91	#		3600	2220	200	60	400.0	123	1.8
P2A	3/23/01	0.67	0.67	#		200	240	0	0	8.3	325	3.5
P2A	4/4/01	0.06	0.86	#		200	760	0	0	38.6	293	6.0
P2A	4/23/01	0.30	0.95	#		200	420	0	0	8.2	205	7.5
P2A	5/10/01	0.01	0.54	#	<10	0	0	0	0	11.4	292	7.2
P2A	6/4/01	1.67	1.67	#		NS	NS	NS	NS	manhole sampler broken		
						Median	760	0	0	13.7	204	
						Average	1375	146	122			
						Std. Devn.	1272	210	328			

TABLE T - 5.1: Kodiak Urban Lakes FY 2000 - 2001 Stream Monitoring Results

Site	Date	2-day precip inches	5-day precip inches	City TC cfu/100ml	City FC cfu/100ml	TC (1ml) cfu/100ml	TC (5ml) cfu/100ml	EC (1ml) cfu/100ml	EC (5ml) cfu/100ml	Turb. NTU	Cond. uS/cm	Temp. degC
P2B	5/11/00	0.00	0.32	#	#	1200	2980	0	160	8.1	215	12.6
P2B	6/13/00	0.91	1.51	#	20000	9600	6000	2300	0	142 / C47	165/C170	11.1
P2B	6/29/00	0.33	0.93	#		3800	TNTC	0	0	18.6	193	16.1
P2B	7/18/00	0.43	0.74	#	4600	12300	TNTC	400	200	91.2	184	14.5
P2B	7/26/00	0.00	0.25	#	70	3900	2560	300	180	24.1	187	20.2
P2B	8/7/00	0.00	0.13	#		600	840	0	0	4.8	187	16.9
P2B	8/21/00	0.01	0.04	#		900	640	0	0	7.3	146	15.3
P2B	9/29/00	0.00	0.02	#		700	680	0	20	8.1	358	11.1
P2B	10/17/00	0.21	1.31	#		4000	1600	100	0	4.5	193	8.1
P2B	11/25/00	0.64	1.81	#		6500	4000	200	500	22.7	188	4.8
P2B	12/27/00	0.56	4.12	#		800	640	0	0	7.7	270	5.3
P2B	1/31/01	0.74	0.91	#		2600	2020	0	180	400.0	163	1.7
P2B	2/21/01	0.00	1.57	#		NS	NS	NS	NS	Manhole frozen shut		
P2B	3/23/01	0.67	0.67	#		600	460	0	0	8.4	199	3.0
P2B	4/4/01	0.06	0.86	#		500	700	0	0	36.5	189	5.7
P2B	4/23/01	0.30	0.95	#		200	720	0	20	11.2	182	7.4
P2B	6/4/01	1.67	1.67	#		NS	NS	NS	NS	manhole sampler broken		
						Median	840	0	0	9.8	189	
						Average	1834	220	84			
						Std. Devn.	1607	569	135			

TABLE T - 5.1: Kodiak Urban Lakes FY 2000 - 2001 Stream Monitoring Results

Site	Date	2-day precip inches	5-day precip inches	City TC cfu/100ml	City FC cfu/100ml	TC (1ml) cfu/100ml	TC (5ml) cfu/100ml	EC (1ml) cfu/100ml	EC (5ml) cfu/100ml	Turb. NTU	Cond. uS/cm	Temp. degC
P5	5/10/00	0.00	0.40	#		0	60	0	0	3.1	163	10.0
P5	6/13/00	0.91	1.51	#	410	3300	1040	300	NA	8.1 / C4.0	141/C140	10.0
P5	6/29/00	0.33	0.93	#	2300	4900	TNTC	300	380	134.0	114	11.4
P5	7/18/00	0.43	0.74	#		0	740	0	0	7.4	129	11.6
P5	7/26/00	0.00	0.25	#		5400	TNTC	600	0	10.4	130	13.8
P5	8/7/00	0.00	0.13	#		0	20	0	20	3.2	132	15.2
P5	8/21/00	0.01	0.04	#		0	180	0	0	4.0	115	30.8
P5	9/6/00	0.01	0.00	#		NS	NS	NS	NS	4.2	118	14.6
P5	10/17/00	0.21	1.31	#		100	180	0	20	2.7	15	9.4
P5	11/25/00	0.64	1.81	#		6000	TNTC	3200	TNTC	21.5	173	5.7
P5	12/27/00	0.56	4.12	#		CONF	300	CONF	40	5.6	209	5.0
P5	1/31/01	0.74	0.91	#		TNTC	TNTC	TNTC	TNTC	400.0	276	2.1
P5	2/21/01	0.00	1.57	#		0	220	0	0	11.2	197	3.0
P5	3/22/01	0.00	0.00	#		100	40	0	0	5.5	170	4.3
P5	4/4/01	0.06	0.86	#		400	0	0	0	37.4	163	4.4
P5	4/23/01	0.30	0.95	#		100	20	0	0	6.3	143	6.8
P5	5/10/01	0.01	0.54	#		400	800	0	0	14.7	151	7.5
P5	5/21/01	1.90	2.20	#		TNTC	TNTC	800	240	270.0	66.7.5	8.5
P5	6/4/01	1.67	1.67	#		2300	TNTC	600	510	142.0	87	11.1
P5	6/21/01	0.09	0.14	#		1200	1840	0	0	18.7	117	12.8
Median												
Average												
Std. Devn.												

TABLE T - 5.1: Kodiak Urban Lakes FY 2000 - 2001 Stream Monitoring Results

Site	Date	2-day precip inches	5-day precip inches	City TC cfu/100ml	City FC cfu/100ml	TC (1ml) cfu/100ml	TC (5ml) cfu/100ml	EC (1ml) cfu/100ml	EC (5ml) cfu/100ml	Turb. NTU	Cond. uS/cm	Temp. degC
R1	5/12/00	0.00	0.07	#		did not gel	did not gel	did not gel	did not gel	2.9	40	8.6
R1	6/15/00	0.14	1.20	#		100	80	0	0	3.5	35	6.8
R1	7/6/00	0.02	0.14	#	<10	1000	840	0	0	1.0	35	12.4
R1	7/22/00	0.26	0.86	#		All dried up, no measurements available						
R1	10/1/00	0.06	0.06	#		400	300	0	0	1.5	44	8.1
R1	2/24/01	0.00	0.00	#		0	CONF	0	CONF	27.5	45	1.7
						Median	250	300	0	2.9	40	
						Average	375	407	0			
						Std. Devn.	390	319	0			
R2	5/12/00	0.00	0.07	#		did not gel	did not gel	did not gel	did not gel	2.5	40	10.4
R2	6/15/00	0.14	1.20	#		200	220	0	0	1.4	37	7.6
R2	7/6/00	0.02	0.14	#	20	200	400	0	20	1.0	36	12.6
R2	7/22/00	0.26	0.86	#	<1	NS	NS	NS	NS	28.1	37	11.4
R2	8/1/00	0.53	0.65	#		0	440	0	0	5.1	38	10.4
R2	8/12/00	0.00	0.00	#		0	460	0	0	1.1	37	17.8
R2	8/27/00	0.14	0.00	#		NS	NS	NS	NS	2.9	39	11.8
R2	10/25/00	0.45	1.55	#		1000	540	0	20	2.6	42	6.5
R2	2/24/01	0.00	0.00	#		100	360	0	0	17.0	46	2.1
						Median	150	420	0	2.6	38	
						Average	250	403	0			
						Std. Devn.	345	99	0			

TABLE T - 5.1: Kodiak Urban Lakes FY 2000 - 2001 Stream Monitoring Results

Site	Date	2-day precip inches	5-day precip inches	City TC cfu/100ml	City FC cfu/100ml	TC (1ml) cfu/100ml	TC (5ml) cfu/100ml	EC (1ml) cfu/100ml	EC (5ml) cfu/100ml	Turb. NTU	Cond. uS/cm	Temp. degC
R3	5/12/00	0.00	0.07	#		did not gel	did not gel	did not gel	did not gel	2.6	51	8.0
R3	6/15/00	0.14	1.20	#		100	200	0	0	2.4	44	7.3
R3	7/6/00	0.02	0.14	#	1	did not gel	did not gel	did not gel	did not gel	6.2	41	12.6
R3	7/22/00	0.26	0.86	#	10	did not gel	did not gel	did not gel	did not gel	All dried up, no measurements available		
R3	2/24/01	0.00	0.00	#		NS	NS	NS	NS	DRY	DRY	DRY
						Median	100	200	0	2.6	44	
						Average	100	200	0			
						Std. Devn.	0	0	0			
R4	5/12/00	0.00	0.07	#		did not gel	did not gel	did not gel	did not gel	3.7	103	14.4
R4	6/15/00	0.14	1.20	#		600	500	0	0	2.5	188	9.4
R4	7/6/00	0.02	0.14	#		1100	5000	800	100	1.5	528	20.4
R4	7/22/00	0.26	0.86	#		NS	NS	NS	NS	3.5	685	15.0
R4	8/1/00	0.53	0.65	#		1000	900	100	60	2.5	780	16.2
R4	8/12/00	0.00	0.00	#		200	280	0	0	2.3	1173	22.3
R4	8/27/00	0.14	0.00	#		NS	NS	NS	NS	4.8	1503	15.4
R4	10/1/00	0.06	0.06	#		200	320	0	20	1.7	724	10.5
R4	10/25/00	0.45	1.55	#		1100	460	0	40	5.2	455	7.4
R4	2/24/01	0.00	0.00	#		2200	400	100	20	5.6	201	2.6
						Median	1000	460	20	3.0	607	
						Average	914	1123	34			
						Std. Devn.	638	1594	33			

TABLE T-5.2
2000-2001 STEAM MONITORING
RESULTS BY DATE

Table T - 5.2: 2000 - 2001 Stream Monitoring Results by date

Site	Date	2-day precip inches	5-day precip inches	City TC cfu/100ml	City FC cfu/100ml	TC (1ml) cfu/100ml	TC (5ml) cfu/100ml	EC (1ml) cfu/100ml	EC (5ml) cfu/100ml	Turb. NTU	Cond. uS/cm	Temp. degC
L1	5/10/00	0.00	0.40			1400	380	600	0	4.45	231	12.3
L2	5/10/00	0.00	0.40			1000	160	100	20	7.3	276	12.8
M1	5/10/00	0.00	0.40	100	<10	300	240	0	60	4.3	2760	13.8
M2	5/10/00	0.00	0.40	1100	10	1100	1940	0	100	7.35	294	14.25
P1	5/10/00	0.00	0.40	<100	<10	400	240	0	140	6.3	252	12.1
P2	5/10/00	0.00	0.40			1200	400	100	20	10.7	230	11
P5	5/10/00	0.00	0.40			0	60	0	0	3.1	163	10
B1	5/11/00	0.00	0.32	<100	1	500	1380	0	240	13.2	139	15.1
H1	5/11/00	0.00	0.32	<100	1	900	320	200	20	9.35	154	11.2
H2	5/11/00	0.00	0.32	<100	<1		9000			22.9	289	10.3
H3	5/11/00	0.00	0.32			2200	140	200	40	13.2	266	15.2
H4	5/11/00	0.00	0.32			1000	1080	100	80	4.5	133	11.8
H5	5/11/00	0.00	0.32			35000	20000	400	120	36.7	269	22.5
P2A	5/11/00	0.00	0.32			700	3000	200	160	6.4	236	12.6
P2B	5/11/00	0.00	0.32			1200	2980	0	160	8.1	215	12.6
D1	5/12/00	0.00	0.07			0	240	0	0	11.6	144	10.9
I1	5/12/00	0.00	0.07			800	140	0	0	5.55	165	11
I2	5/12/00	0.00	0.07			200	500	0	60	10.2	399	7.9
I3	5/12/00	0.00	0.07			0	100	0	0	4.1	261	7.8
R1	5/12/00	0.00	0.07			did not gel	did not gel	did not gel	did not gel	2.85	39.5	8.6
R2	5/12/00	0.00	0.07			did not gel	did not gel	did not gel	did not gel	2.45	40.2	10.4
R3	5/12/00	0.00	0.07			did not gel	did not gel	did not gel	did not gel	2.6	51.4	8
R4	5/12/00	0.00	0.07			did not gel	did not gel	did not gel	did not gel	3.7	103.2	14.4
B1	5/18/00	0.37	0.60	30	1							
H1	5/18/00	0.37	0.60	10	12							
H2	5/18/00	0.37	0.60	<10	1							
H1	6/12/00	0.75	1.24	3700	73	8600	32000	400	0	82.4/C165	152/C155	9.8
H3	6/12/00	0.75	1.24	conf	540	30000	32000	7300	0	++/C3720	278/C286	11.3
M2	6/12/00	0.75	1.24	conf	2920	30000	12000	5600	1380	178	230	9.7
P1	6/12/00	0.75	1.24			1500	840	0	0	11.6	271	11.3
H2	6/13/00	0.91	1.51			7300	4000	0	360	28.5	279	10.6
H4	6/13/00	0.91	1.51			2700	2220	900	100	6.8	113	8.9
H5	6/13/00	0.91	1.51			4000	4940	1600	1160	127	208	10.2
M1	6/13/00	0.91	1.51			4100	2700	500	200	19.8	274	10.6

Table T - 5.2: 2000 - 2001 Stream Monitoring Results by date

Site	Date	2-day precip inches	5-day precip inches	City TC cfu/100ml	City FC cfu/100ml	TC (1ml) cfu/100ml	TC (5ml) cfu/100ml	EC (1ml) cfu/100ml	EC (5ml) cfu/100ml	Turb. NTU	Cond. uS/cm	Temp. degC
P2	6/13/00	0.91	1.51	conf	80	11200	9960	2000	300	19.1	207	9.6
P2B	6/13/00	0.91	1.51	20000	2000	9600	6000	2300	0	142 / C47	165/C170	11.1
P5	6/13/00	0.91	1.51	410	110	3300	1040	300	NA	8.1 / C4.0	141/C140	10
I2	6/14/00	0.36	1.42	30	<10	1800	900	100	100	13.25	341	11.1
I3	6/14/00	0.36	1.42	50	<10	900	600	0	0	11.4	212	9.4
L1	6/14/00	0.36	1.42			9300	5920	0	160	7.15	215	12.75
L2	6/14/00	0.36	1.42			11100	5840	0	200	12.6	240	11.6
P2A	6/14/00	0.36	1.42	90	<10	2600	4000	500	0	13.85	202.8	13.1
D1	6/15/00	0.14	1.20			NR	NR	NR	NR	2.2	132	14.2
R1	6/15/00	0.14	1.20			100	80	0	0	3.5	35.2	6.8
R2	6/15/00	0.14	1.20			200	220	0	0	1.4	37.1	7.6
R3	6/15/00	0.14	1.20			100	200	0	0	2.4	44.1	7.25
R4	6/15/00	0.14	1.20			600	500	0	0	2.5	188	9.4
B1	6/16/00	0.10	1.06			NR	NR	NR	NR	5.6	138	11.8
I1	6/16/00	0.10	1.06			NR	NR	NR	NR	2.2	153	12.6
M1	6/28/00	0.04	1.67			2100	1420	200	200	26.2	1545	18.3
M2	6/28/00	0.04	1.67			10000	6400	2000	1200	18.7	251	14.2
P1	6/28/00	0.04	1.67	110	11	1100	1040	0	140	18.6	201	20.6
L1	6/29/00	0.33	0.93			5800	4960	0	0	4.4	195	16.9
L2	6/29/00	0.33	0.93	2000	260	4300	8000	400	160	FFF	214	14.8
P2	6/29/00	0.33	0.93			9800	TNTC	500	240	172	160	13.2
P2A	6/29/00	0.33	0.93			6300	TNTC	400	0	13.6	199	16.7
P2B	6/29/00	0.33	0.93			3800	TNTC	0	0	18.6	193	16.1
P5	6/29/00	0.33	0.93	2300	280	4900	TNTC	300	380	134	114	11.4
D1	6/30/00	0.33	0.93			2000	440	0	120	4.1	133	15
I2	6/30/00	0.33	0.93			2800	4640	400	640	21.5	358	12.5
I3	6/30/00	0.33	0.93			5200	880	1000	140	5.5	188	11.9
H1	7/1/00	0.03	0.39			2600	1800	100	160	10.4	131	14
H2	7/1/00	0.03	0.39			200	680	0	20	13.2	250	16.4
H3	7/1/00	0.03	0.39			5200	1560	400	20	14.8	218	17.3
H4	7/1/00	0.03	0.39			1800	1440	0	0	3.2	108	14.4
H5	7/1/00	0.03	0.39			2200	3360	0	80	39.7	203.5	22
I1	7/1/00	0.03	0.39			0	560	0	200	2	146	15.8
R1	7/6/00	0.02	0.14	<10	<1	1000	840	0	0	1	35.2	12.4

Table T - 5.2: 2000 - 2001 Stream Monitoring Results by date

Site	Date	2-day precip inches	5-day precip inches	City TC cfu/100ml	City FC cfu/100ml	TC (1ml) cfu/100ml	TC (5ml) cfu/100ml	EC (1ml) cfu/100ml	EC (5ml) cfu/100ml	Turb. NTU	Cond. uS/cm	Temp. degC
R2	7/6/00	0.02	0.14	20	<1	200	400	0	20	1	36.4	12.6
R3	7/6/00	0.02	0.14	10	<1	did not gel	did not gel	did not gel	did not gel	6.2	41.3	12.6
R4	7/6/00	0.02	0.14	120	60	1100	5000	800	100	1.5	528	20.35
L1	7/18/00	0.43	0.74	2500	290	3800	TNTC	0	120	3.05	197.5	16.9
L2	7/18/00	0.43	0.74			8400	6240	300	80	63.2	239	13.8
M1	7/18/00	0.43	0.74			600	760	100	60	27.8	3.07?	15.15
M2	7/18/00	0.43	0.74			TNTC	6480	TNTC	200	3.27	3.43?	11.3
P1	7/18/00	0.43	0.74			5000	2480	300	200	8.15	224	16.25
P2	7/18/00	0.43	0.74			12500	8000	300	300	75.7	199.5	13.75
P2A	7/18/00	0.43	0.74	4600	1120	12300	TNTC	400	200	91.2	184	14.5
P2B	7/18/00	0.43	0.74			0	740	0	0	7.35	128.5	11.55
P5	7/18/00	0.43	0.74			4000?	2400?	300?	200?	4.5	126.6	14.85
B1	7/19/00	0.43	0.74	60	24	1500?	760?	300?	60?	2.4	129.4	16.2
D1	7/19/00	0.43	0.74	70	56	24000?	4000?	4000?	500?	14.75	85.35	12.95
H1	7/19/00	0.43	0.74	TNTC	221	20000?	12000?	2400?	1600?	251	186.6	14.2
H3	7/19/00	0.43	0.74			5400?	600?	700?	60?	2.45	148.1	16.65
I1	7/19/00	0.43	0.74			5000?	2000?	1500?	400?	26.25	324	12.75
I2	7/19/00	0.43	0.74			5000?	1400?	1100?	540?	29.65	190.5	11.45
I3	7/19/00	0.43	0.74			8000?	1720?	2400?	80?	30	351	12.45
H2	7/20/00	0.17	0.72	TNTC	21	6000?	CONF	2300?	400?	4.1	116.7	10.6
H4	7/20/00	0.17	0.72			3400?	2600?	900?	500?	24.15	209	12.8
H5	7/20/00	0.17	0.72	TNTC	4							
R1	7/22/00	0.26	0.86			NS	NS	NS	NS	28.1	37.1	11.35
R2	7/22/00	0.26	0.86			NS	NS	NS	NS	28.1	37.1	11.35
R3	7/22/00	0.26	0.86			NS	NS	NS	NS	28.1	37.1	11.35
R4	7/22/00	0.26	0.86			NS	NS	NS	NS	28.1	37.1	11.35
L1	7/26/00	0.00	0.25	1100	3	7300	2000	0	0	15.35	194.1	20.3
L2	7/26/00	0.00	0.25	100	9	5700	2920	700	20	18.45	365	19.7
M1	7/26/00	0.00	0.25			did not gel	did not gel	did not gel	did not gel	4.1	2.845	16.8
M2	7/26/00	0.00	0.25			4100	TNTC	200	100	10.65	319	12.15
P1	7/26/00	0.00	0.25			did not gel	did not gel	did not gel	did not gel	6.2	230.5	19.4
P2	7/26/00	0.00	0.25			4200	TNTC	400	160	14.1	209	14.15
P2B	7/26/00	0.00	0.25	70	1	3900	2560	300	180	24.05	187	20.2
P5	7/26/00	0.00	0.25			5400	TNTC	600	0	10.35	130	13.8

MANHOLE ACCESS HAS BEEN PAVED OVER!!! FOUND NEW MH.

Table T - 5.2: 2000 - 2001 Stream Monitoring Results by date

Site	Date	2-day precip inches	5-day precip inches	City TC cfu/100ml	City FC cfu/100ml	TC (1ml) cfu/100ml	TC (5ml) cfu/100ml	EC (1ml) cfu/100ml	EC (5ml) cfu/100ml	Turb. NTU	Cond. uS/cm	Temp. degC
B1	7/27/00	0.00	0.08			14400	TNTC	1200	200	40.9	251.3	15.1
D1	7/27/00	0.00	0.08			800	700	0	600	3.2	130	15.8
H1	7/27/00	0.00	0.08	170	100	2700	Conf.	600	240	34.2	80.2	17.95
H4	7/27/00	0.00	0.08	30	20	1100	4800	200	60	11.6	83.15	16.45
H5	7/27/00	0.00	0.08	100	66	10500	3200	0	80	16.5	197.25	21.15
I1	7/27/00	0.00	0.08			2200	1460	0	20	27.75	148.3	16.75
I2	7/27/00	0.00	0.08			2800	TNTC	0	120	21.3	384.5	15.8
I3	7/27/00	0.00	0.08			4000	1400	1000	200	FFF	215	11.9
R2	8/1/00	0.53	0.65			0	440	0	0	5.05	38.4	10.4
R4	8/1/00	0.53	0.65			1000	900	100	60	2.45	7.8	16.15
M1	8/3/00	0.51	1.08			did not gel	did not gel	did not gel	did not gel	5.5	2.955	16.95
P1	8/3/00	0.51	1.08			100	1500	0	0	9.85	4.42	15.8
D1	8/5/00	0.04	0.83			1400	1760	0	0	1.5	128.8	17.3
H1	8/5/00	0.04	0.83			8100	TNTC	0	0	9.95	137.6	12.7
H2	8/5/00	0.04	0.83			2300	2400	100	0	11.85	221.5	13.7
H3	8/5/00	0.04	0.83			400	2080	0	40	89.5	284	13.05
H4	8/5/00	0.04	0.83			3200	2400	0	0	3.05	113.85	13.15
H5	8/5/00	0.04	0.83			1500	760	0	0	54.8	191	17.5
I1	8/5/00	0.04	0.83			500	1620	0	0	1.5	147.3	17.3
I2	8/5/00	0.04	0.83			600	1040	0	0	3.15	204	14.1
I3	8/5/00	0.04	0.83			100	0	0	0	9.7	361.5	14.7
L1	8/7/00	0.00	0.13			0	40	0	0	2.95	195.2	18.1
P2	8/7/00	0.00	0.13			100	120	0	0	11.55	204.5	16.7
P2A	8/7/00	0.00	0.13			600	840	0	0	64.65	329	13.9
P2B	8/7/00	0.00	0.13			0	20	0	20	4.75	186.8	16.9
P5	8/7/00	0.00	0.13			NS	NS	NS	NS	3.2	131.85	15.15
B1	8/9/00	0.00	0.02			0	460	0	0	3.45	125	15.4
R2	8/12/00	0.00	0.00			200	280	0	0	1.05	37	17.75
R4	8/12/00	0.00	0.00			NS	NS	NS	NS	2.25	117.25	22.3
H1	8/21/00	0.01	0.04			NS	NS	NS	NS	6.05	146.4	16.7
H2	8/21/00	0.01	0.04			NS	NS	NS	NS	13.2	184.6	23.5
H3	8/21/00	0.01	0.04			NS	NS	NS	NS	FFF	310.5	17.3
L1	8/21/00	0.01	0.04									
L2	8/21/00	0.01	0.04									

----- All dried up, no measurements available -----
 ----- All dried up, no measurements available -----

Table T - 5.2: 2000 - 2001 Stream Monitoring Results by date

Site	Date	2-day precip inches	5-day precip inches	City TC cfu/100ml	City FC cfu/100ml	TC (1ml) cfu/100ml	TC (5ml) cfu/100ml	EC (1ml) cfu/100ml	EC (5ml) cfu/100ml	Turb. NTU	Cond. uS/cm	Temp. degC
M1	8/21/00	0.01	0.04	0	60	0	60	0	0	3.8	318.5	16.85
M2	8/21/00	0.01	0.04	1500	460	900	300	0	0	15.5	322.5	12.95
P1	8/21/00	0.01	0.04	600	360	100	0	100	0	4.95	37.15	16.55
P2	8/21/00	0.01	0.04	500	960	0	0	0	0	12.35	191.95	14.25
P2A	8/21/00	0.01	0.04	1600	720	0	0	0	0	NO FLOW NO FLOW NO FLOW		
P2B	8/21/00	0.01	0.04	900	640	0	0	0	0	7.3	146.3	15.25
P5	8/21/00	0.01	0.04	0	180	0	0	0	0	4	115.35	30.8
B1	8/22/00	0.00	0.04	8100	TNTC	0	0	0	0	1.95	135.55	17.95
H4	8/22/00	0.00	0.04	2000	1440	0	40	0	40	6.45	122.8	17.5
H5	8/22/00	0.00	0.04	1200	TNTC	0	0	0	0	10.75	244.5	22.35
I2	8/22/00	0.00	0.04	All dried up, no measurements available								
I3	8/22/00	0.00	0.04	800	TNTC	0	0	0	0	8.6	409	15.55
D1	8/23/00	0.00	0.03	300	480	0	0	0	0	2.4	132.8	14.35
I1	8/23/00	0.00	0.03	600	960	0	0	0	0	1.85	155.7	13.25
R2	8/27/00	0.14	0.00	NS	NS	NS	NS	NS	NS	2.85	39.05	11.75
R4	8/27/00	0.14	0.00	NS	NS	NS	NS	NS	NS	4.8	15.025	15.4
H1	9/5/00	0.00	0.00	NS	NS	NS	NS	NS	NS	6.3	133.95	11.85
M1	9/6/00	0.01	0.00	NS	NS	NS	NS	NS	NS	6.65	3.255	13.55
M5	9/6/00	0.01	0.00	NS	NS	NS	NS	NS	NS	15.45	318	11.5
P1	9/6/00	0.01	0.00	NS	NS	NS	NS	NS	NS	4.85	369.5	13.6
P2	9/6/00	0.01	0.00	NS	NS	NS	NS	NS	NS	15.5	191.15	15.48
P5	9/6/00	0.01	0.00	NS	NS	NS	NS	NS	NS	4.2	117.5	14.6
D1	9/27/00	0.01	0.59	500	240	0	0	0	0	3.05	135.65	9.65
H2	9/27/00	0.01	0.59	800	1200	0	100	0	100	14.8	211.5	7.35
H3	9/27/00	0.01	0.59	1500	600	0	240	0	240	12.85	271	8.05
H4	9/27/00	0.01	0.59	400	440	0	20	0	20	5.5	127.65	5.65
H5	9/27/00	0.01	0.59	1500	7400	200	140	0	140	FFF	160.6	5.6
I3	9/27/00	0.01	0.59	500	460	0	0	0	0	10.45	263	7.85
L1	9/27/00	0.01	0.59	2800	540	0	40	0	40	4.6	202.5	12.2
L2	9/27/00	0.01	0.59	2200	1000	0	400	0	400	6.3	407.5	6.45
I1	9/28/00	0.00	0.16	1700	280	0	0	0	0	7.9	157.9	7.9
P2A	9/29/00	0.00	0.02	2000	1240	0	40	0	40	6.4	191	9.5
P2B	9/29/00	0.00	0.02	700	680	0	20	0	20	8.1	358	11.1
R1	10/1/00	0.06	0.06	400	300	0	0	0	0	1.5	44.3	8.1

Table T - 5.2: 2000 - 2001 Stream Monitoring Results by date

Site	Date	2-day precip inches	5-day precip inches	City TC cfu/100ml	City FC cfu/100ml	TC (1ml) cfu/100ml	TC (5ml) cfu/100ml	EC (1ml) cfu/100ml	EC (5ml) cfu/100ml	Turb. NTU	Cond. uS/cm	Temp. degC
R4	10/1/00	0.06	0.06			200	320	0	20	1.7	7.24	10.45
H1	10/16/00	0.68	1.21			2700	3400	0	20	7.4	90	7.6
M1	10/16/00	0.68	1.21			0	TNTC	0	TNTC	20.7	1480	7.1
M5	10/16/00	0.68	1.21			6000	3200	800	1080	21.3	296	7.3
P1	10/16/00	0.68	1.21			1000	0	0	0	11.3	214	7.6
L1	10/17/00	0.21	1.31			2500	500	0	0	4.7	191.1	7.3
P2	10/17/00	0.21	1.31			3000	1100	0	0	9.5	209	8.4
P2B	10/17/00	0.21	1.31			4000	1600	100	0	4.5	192.7	8.1
P5	10/17/00	0.21	1.31			100	180	0	20	2.7	15.35	9.4
D1	10/18/00	0.11	0.80			1300	400	0	0	5.7	131.2	6.1
H2	10/18/00	0.11	0.80			1900	2000	200	120	19.2	210	7.6
H3	10/18/00	0.11	0.80			3000	3000	100	240	14.3	257	6.2
I2	10/18/00	0.11	0.80			900	920	0	0	20.4	195.4	7.9
I3	10/18/00	0.11	0.80			3400	NS	0	NS	25.5	337	6.3
I1	10/19/00	0.01	0.79			0	640	1400	0	4.8	142.2	6.7
L2	10/19/00	0.01	0.79			1800	840	0	240	7	239	7.8
H4	10/22/00	1.10	1.11			1800	120	0	0	3.7	110.9	6.5
R2	10/25/00	0.45	1.55			1000	540	0	20	2.6	42.2	6.5
R4	10/25/00	0.45	1.55			1100	460	0	40	5.2	4.55	7.4
L1	11/25/00	0.64	1.81			2200	2400	0	20	12	159.6	4.5
L2	11/25/00	0.64	1.81			0	0	0	0	62	151.2	4.7
P2	11/25/00	0.64	1.81			10000	TNTC	1900	TNTC	55.8	157.2	5.4
P2A	11/25/00	0.64	1.81			5700	TNTC	600	TNTC	20.6	163.6	5
P2B	11/25/00	0.64	1.81			6500	4000	200	500	22.7	188.4	4.8
P5	11/25/00	0.64	1.81			6000	TNTC	3200	TNTC	21.5	172.5	5.7
H1	11/26/00	0.47	1.24			1400	800	0	20	18.3	133	2.2
M1	11/26/00	0.47	1.24			1100	800	0	20	128	431	3.6
P1	11/26/00	0.47	1.24			2900	1300	100	280	3	174.1	45.8
H2	11/27/00	0.52	1.49			5800	TNTC	500	TNTC	FFF	744	4.8
H3	11/27/00	0.52	1.49			10000	TNTC	1100	TNTC	FFF	700	4.8
H4	11/27/00	0.52	1.49			600	800	0	0	24.6	108	6.2
H5	11/27/00	0.52	1.49			3000	TNTC	100	TNTC	45	194	5.2
D1	11/28/00	0.68	1.32			1000	800	0	60	35.4	129	3.3
D1	11/28/00	0.68	1.32			1000	800	0	60	35.35	129	3.1

Table T - 5.2: 2000 - 2001 Stream Monitoring Results by date

Site	Date	2-day precip inches	5-day precip inches	City TC cfu/100ml	City FC cfu/100ml	TC (1ml) cfu/100ml	TC (5ml) cfu/100ml	EC (1ml) cfu/100ml	EC (5ml) cfu/100ml	Turb. NTU	Cond. uS/cm	Temp. degC
I3	11/28/00	0.68	1.32			2500	1520	100	80	17.4	344	2.8
B1	11/29/00	0.16	1.15			5500	4000	0	80	24.9	125.3	2
I1	11/29/00	0.16	1.15			2200	1000	0	0	14.2	152.7	2.1
I2	11/29/00	0.16	1.15			800	480	0	100	6.4	188	4.4
L1	12/27/00	0.56	4.12			3000	3080	100	1440	14.9	171.6	3.6
L2	12/27/00	0.56	4.12			4000	2400	0	180	8.1	102	5.4
M1	12/27/00	0.56	4.12			1500	1000	0	20	38.3	328	3.6
M5	12/27/00	0.56	4.12			500	1860	0	0	10.8	263	4.4
P2	12/27/00	0.56	4.12			900	2000	0	860	13.5	192.9	4.2
P2A	12/27/00	0.56	4.12			1700	2400	0	1200	13.9	183.7	4
P2B	12/27/00	0.56	4.12			800	640	0	0	7.7	270	5.3
P5	12/27/00	0.56	4.12			CONF	300	CONF	40	5.6	208.5	5
I1	12/28/00	1.17	4.39			500	600	0	0	33.5	149.7	3.8
I2	12/28/00	1.17	4.39			800	920	0	0	80.7	160.1	5.3
I3	12/28/00	1.17	4.39			2300	4000	0	60	193	214	5
I2	12/27/01	0.55	1.70			200	100	0	0	5.4	177.7	3.5
D1	12/29/01	0.18	1.29			1400	600	0	0	28	127.4	1.7
I1	12/29/01	0.18	1.29			500	560	0	0	22.8	146.9	2.5
I3	12/29/01	0.18	1.29			100	700	0	0	14.3	307	2.2
B1	1/30/01	0.32	1.05			800	400	0	0	78.4	143.2	1.8
H1	1/30/01	0.32	1.05			200	220	100	20	29.3	159.1	0.7
H2	1/30/01	0.32	1.05			1800	60	0	0	13.3	234	2.2
H3	1/30/01	0.32	1.05			200	240	0	0	10.4	223	1.8
H4	1/30/01	0.32	1.05			300	20	0	0	15.8	130.2	0.6
H5	1/30/01	0.32	1.05			1100	680	0	0	32.8	258	1.1
L1	1/31/01	0.74	0.91			1600	600	0	220	56.8	180.9	2.2
L2	1/31/01	0.74	0.91			10000	TNTC	600	TNTC	FFF	194.3	1.6
M1	1/31/01	0.74	0.91			1200	520	0	0	19.6	365.5	1.7
M5	1/31/01	0.74	0.91			1400	1400	100	20	32.7	217	1.7
P1	1/31/01	0.74	0.91			2000	500	100	140	34.1	499	2.3
P2	1/31/01	0.74	0.91			NS	2000	NS	220	404	149.8	1.9
P2A	1/31/01	0.74	0.91			3600	2220	200	60	FFF	122.7	1.8
P2B	1/31/01	0.74	0.91			2600	2020	0	180	FFF	163	1.7
P5	1/31/01	0.74	0.91			TNTC	TNTC	TNTC	TNTC	FFF	276	2.1

Table T - 5.2: 2000 - 2001 Stream Monitoring Results by date

Site	Date	2-day precip inches	5-day precip inches	City TC cfu/100ml	City FC cfu/100ml	TC (1ml) cfu/100ml	TC (5ml) cfu/100ml	EC (1ml) cfu/100ml	EC (5ml) cfu/100ml	Turb. NTU	Cond. uS/cm	Temp. degC
L1	2/21/01	0.00	1.57			400	300	100	20	55	204	2.4
L2	2/21/01	0.00	1.57			300	300	0	0	89	276	2
M1	2/21/01	0.00	1.57			1000	60	0	0	30.3	365	2.5
M5	2/21/01	0.00	1.57			200	360	0	20	12.3	318	1.6
P1	2/21/01	0.00	1.57			500	NS	100	NS	34.8	408	3.8
P2	2/21/01	0.00	1.57			200	280	100	0	10.2	214	3.9
P2B	2/21/01	0.00	1.57			NS	NS	NS	NS	Manhole frozen shut		
P5	2/21/01	0.00	1.57			0	220	0	0	11.2	197.4	3
D1	2/22/01	0.00	1.27			400	520	0	0	24.3	143	1.7
H1	2/22/01	0.00	1.27			0	0	0	0	16.1	148.2	1.3
I1	2/22/01	0.00	1.27			500	120	0	0	18.7	154.8	1.7
I2	2/22/01	0.00	1.27			300	20	0	0	33.8	208	2.7
I3	2/22/01	0.00	1.27			2000	20	0	0	41.7	353	0.7
H1	2/23/01	0.00	0.10			600	320	0	0	26.7	159.1	2.8
H2	2/23/01	0.00	0.10			400	200	100	0	28.3	240	4.2
H3	2/23/01	0.00	0.10			400	520	0	0	37.6	222	3.5
H4	2/23/01	0.00	0.10			200	140	0	20	37.1	127.6	3.4
H5	2/23/01	0.00	0.10			500	480	0	40	60.7	231	3.8
R1	2/24/01	0.00	0.00			0	CONF	0	CONF	27.5	44.7	1.7
R2	2/24/01	0.00	0.00			100	360	0	0	17	46.4	2.1
R3	2/24/01	0.00	0.00			NS	NS	NS	NS	DRY	DRY	DRY
R4	2/24/01	0.00	0.00			2200	400	100	20	5.6	201	2.6
L1	3/22/01	0.00	0.00			1600	520	0	0	29.9	197.6	4
L2	3/22/01	0.00	0.00			600	220	0	0	13.2	281	1.2
M1	3/22/01	0.00	0.00			100	100	0	20	11	2.3	1.3
M5	3/22/01	0.00	0.00			600	560	100	80	7.8	312	0.9
P5	3/22/01	0.00	0.00			100	40	0	0	5.5	170	4.3
I2	3/23/01	0.67	0.67			3000	960	0	100	10.6	202	3
I3	3/23/01	0.67	0.67			300	400	0	0	19.8	373	7
P1	3/23/01	0.67	0.67			400	600	0	0	41.7	241	1.8
P2	3/23/01	0.67	0.67			0	560	0	0	63.3	219	2.5
P2A	3/23/01	0.67	0.67			200	240	0	0	8.3	325	3.5
P2B	3/23/01	0.67	0.67			600	460	0	0	8.4	199.3	3
D1	3/27/01	0.46	5.13			500	520	0	0	82.1	142	3.1

Table T - 5.2: 2000 - 2001 Stream Monitoring Results by date

Site	Date	2-day precip inches	5-day precip inches	City TC cfu/100ml	City FC cfu/100ml	TC (1ml) cfu/100ml	TC (5ml) cfu/100ml	EC (1ml) cfu/100ml	EC (5ml) cfu/100ml	Turb. NTU	Cond. uS/cm	Temp. degC
I1	3/27/01	0.46	5.13			400	280	100	100	70.3	154	3.6
B1	3/28/01	0.03	4.46			1000	760	100	40	49.2	113.2	2.4
H1	3/28/01	0.03	4.46			400	400	0	0	22.6	122	2.9
H2	3/28/01	0.03	4.46			1000	520	0	0	90.4	617	4.6
H3	3/28/01	0.03	4.46			2000	580	0	20	26.7	195.6	3.4
H4	3/28/01	0.03	4.46									
H5	3/28/01	0.03	4.46									
L1	4/4/01	0.06	0.86			100	540	0	120	94	285.5	7.65
L2	4/4/01	0.06	0.86			500	280	0	60	19.8	187.95	6.35
M1	4/4/01	0.06	0.86			100	140	0	20	3.46	116.7	7.1
M5	4/4/01	0.06	0.86			900	1220	700	880	46.25	273	6.55
P2	4/4/01	0.06	0.86			400	520	0	0	31.1	202.5	5.6
P2A	4/4/01	0.06	0.86			200	760	0	0	38.6	292.5	6
P2B	4/4/01	0.06	0.86			500	700	0	0	36.5	188.65	5.7
P5	4/4/01	0.06	0.86			400	0	0	0	37.35	163.21	4.35
D1	4/5/01	0.06	0.86			100	440	0	0	23.7	137.8	3.65
I1	4/5/01	0.06	0.86			320	0	0	20	26.25	153.15	3.95
I2	4/5/01	0.06	0.86			100	100	0	0	25.35	197.85	3.9
I3	4/5/01	0.06	0.86			300	260	0	60	45.55	350	2.1
B1	4/6/01	0.00	0.86			0	0	0	0	19.75	137.45	4.45
H1	4/6/01	0.00	0.86			NS	NS	NS	NS	30.8	49.25	3.1
H2	4/6/01	0.00	0.86			NS	NS	NS	NS	29.95	236	5.65
H3	4/6/01	0.00	0.86			NS	NS	NS	NS	52.25	235	4.95
H4	4/6/01	0.00	0.86			300	120	0	0	9.6	124.5	4.5
H5	4/6/01	0.00	0.86			700	1600	0	0	60.6	230	7.5
P1	4/6/01	0.00	0.86			400	260	0	0	29.05	233.5	6.05
I1	4/18/01	0.00	0.01			100	280	0	0	18.7	149.25	8
I2	4/18/01	0.00	0.01			600	380	0	0	4.15	194.65	6
I3	4/18/01	0.00	0.01			900	500	0	0	12.7	334.5	5.35
H1	4/20/01	0.47	0.48			700	600	0	0	9.25	141.4	5.65
H2	4/20/01	0.47	0.48			800	700	0	0	152	202.5	5.8
H3	4/20/01	0.47	0.48			600	760	0	20	12.8	220	6.8
H4	4/20/01	0.47	0.48			400	400	0	0	33.6	121.8	5.4
H5	4/20/01	0.47	0.48			600	tnic	0	0	10.15	202	6.7

Table T - 5.2: 2000 - 2001 Stream Monitoring Results by date

Site	Date	2-day precip inches	5-day precip inches	City TC cfu/100ml	City FC cfu/100ml	TC (1ml) cfu/100ml	TC (5ml) cfu/100ml	EC (1ml) cfu/100ml	EC (5ml) cfu/100ml	Turb. NTU	Cond. uS/cm	Temp. degC
L1	4/21/01	0.65	0.65			2500	800	0	0	8.6	182.05	7.95
L2	4/21/01	0.65	0.65			1500	1400	100	120	14.7	226.5	6.85
B1	4/23/01	0.30	0.95			3400	1400	300	0	26.85	138.05	6.8
D1	4/23/01	0.30	0.95			200	180	100	0	15.6	135.45	7.45
M1	4/23/01	0.30	0.95			0	60	0	0	14.2	133.9	8.6
M5	4/23/01	0.30	0.95			600	1000	0	220	12.35	301.5	5.85
P1	4/23/01	0.30	0.95			100	180	0	0	22	205.5	8.5
P2	4/23/01	0.30	0.95			300	600	0	0	10.55	199.65	7.05
P2A	4/23/01	0.30	0.95			200	420	0	0	8.15	204.5	7.45
P2B	4/23/01	0.30	0.95			200	720	0	20	11.2	181.95	7.35
P5	4/23/01	0.30	0.95			100	20	0	0	6.25	143.35	6.8
L1	5/10/01	0.01	0.54			0	0	0	0	10.9	175.6	9.75
L2	5/10/01	0.01	0.54			0	40	0	0	7.2	241	8.15
M1	5/10/01	0.01	0.54			0	0	0	0	12.65	2.355	9.95
P1	5/10/01	0.01	0.54	>230	<10	0	0	0	0	23.7	218	8.6
P2	5/10/01	0.01	0.54			0	0	0	0	8.1	216.5	8
P2A	5/10/01	0.01	0.54	<10	10	0	0	0	0	11.4	291.5	7.15
P5	5/10/01	0.01	0.54			400	800	0	0	14.65	150.7	7.5
B1	5/14/01	0.10	0.19			900	600	0	20	13.8	129.65	11.2
D1	5/14/01	0.10	0.19			100	180	0	0	6.8	132.1	9.8
H1	5/14/01	0.10	0.19	<10	<10	900	600	0	0	8.55	134.55	8.6
H2	5/14/01	0.10	0.19	>1600	1140	1200	1500	700	1400	11.6	204	9.3
H3	5/14/01	0.10	0.19			600	1000	0	0	14.3	195.8	13.15
H4	5/14/01	0.10	0.19			500	conf.	0	0	5.4	120.65	9.35
H5	5/14/01	0.10	0.19			2500	800	0	40	22.75	178.3	15.6
I1	5/14/01	0.10	0.19			900	400	0	0	5.7	148.55	11.6
I2	5/14/01	0.10	0.19			600	460	0	0	GREEN	SLIME	NS
I3	5/14/01	0.10	0.19			2500	1400	0	0	13.35	468	10.65
M5	5/14/01	0.10	0.19			6000	tntc	3400	tntc	6.9	308	5.9
B1	5/21/01	1.90	2.20			1300	1400	0	20	11.4	128.4	9
H1	5/21/01	1.90	2.20			5000	TNTC	100	160	FFF	128.8	7.5
H2	5/21/01	1.90	2.20			5000	TNTC	100	60	166	187.05	8.05
H3	5/21/01	1.90	2.20			TNTC	TNTC	500	120	FFF	120.25	8
H4	5/21/01	1.90	2.20			4000	TNTC	100	460	104.5	110.25	6.9

Table T - 5.2: 2000 - 2001 Stream Monitoring Results by date

Site	Date	2-day precip inches	5-day precip inches	City TC cfu/100ml	City FC cfu/100ml	TC (1ml) cfu/100ml	TC (5ml) cfu/100ml	EC (1ml) cfu/100ml	EC (5ml) cfu/100ml	Turb. NTU	Cond. uS/cm	Temp. degC
H5	5/21/01	1.90	2.20			TNTC	TNTC	100	80	172.5	170.75	7.15
L1	5/21/01	1.90	2.20			2500	1200	100	60	13.3	177.85	9.8
L2	5/21/01	1.90	2.20			20000	TNTC	0	120	146.5	110.65	8.3
M5	5/21/01	1.90	2.20	>1600	180	8000	TNTC	300	140	246.5	208	8
P2	5/21/01	1.90	2.20	>1600	190	TNTC	TNTC	200	420	236.5	129.6	8.75
P5	5/21/01	1.90	2.20			TNTC	TNTC	800	240	270	66.7.5	8.5
D1	5/22/01	1.02	1.98			1700	720	0	0	23.55	135	11.85
I1	5/22/01	1.02	1.98			400	520	0	0	17.85	179	12.55
I2	5/22/01	1.02	1.98			200	300	0	0	23.15	177	8.95
I3	5/22/01	1.02	1.98			2000	TNTC	0	20	46.1	631	9.2
M1	5/22/01	1.02	1.98	>1600	50	3000	TNTC	500	200	31.6	3.495	10.85
P1	5/22/01	1.02	1.98	>1600	20	2000	8000	0	60	18.3	202.5	10.95
B1	6/4/01	1.67	1.67			0	0	0	0	5.1	128.9	11.85
I1	6/4/01	1.67	1.67			0	0	0	0	5.45	150.6	13.55
I2	6/4/01	1.67	1.67			0	200	0	60	112	180.3	9.6
I3	6/4/01	1.67	1.67			TNTC	conf.	200	320	128.5	203.5	10.05
L1	6/4/01	1.67	1.67			0	60	0	0	6	174.05	13.85
L2	6/4/01	1.67	1.67			600	TNTC	0	0	222	79.05	10.85
M5	6/4/01	1.67	1.67			1200	1060	500	420	119	184	10.55
P2	6/4/01	1.67	1.67			500	TNTC	100	240	190	92.3	11.45
P2A	6/4/01	1.67	1.67			NS	NS	NS	NS	manhole sampler broken		
P2B	6/4/01	1.67	1.67			NS	NS	NS	NS	manhole sampler broken		
P5	6/4/01	1.67	1.67			2300	TNTC	600	510	142	86.65	11.05
H1	6/7/01	0.17	2.17			3300	TNTC	0	0	29.85	163.5	10.95
H2	6/7/01	0.17	2.17			8800	TNTC	0	0	25.95	206.5	11.75
H3	6/7/01	0.17	2.17			4000	TNTC	0	0	32.5	176	11.25
H4	6/7/01	0.17	2.17			3200	TNTC	0	0	17.7	116.15	11.15
H5	6/7/01	0.17	2.17			4000	TNTC	0	0	73.5	199.55	15.1
M1	6/7/01	0.17	2.17			200	200	0	0	4.2	406	13
P1	6/7/01	0.17	2.17			700	800	0	0	9.7	209	13.4
B1	6/20/01	0.11	0.13			4000	1600	0	0	7.4	139.6	14.4
H1	6/20/01	0.11	0.13			TNTC	TNTC	0	0	8.9	135.3	NR
H2	6/20/01	0.11	0.13			2500	800	0	0	7.3	295	12.7
H3	6/20/01	0.11	0.13			2000	TNTC	0	0	15.2	195.8	11.9

Table T - 5.2: 2000 - 2001 Stream Monitoring Results by date

Site	Date	2-day precip inches	5-day precip inches	City TC cfu/100ml	City FC cfu/100ml	TC (1ml) cfu/100ml	TC (5ml) cfu/100ml	EC (1ml) cfu/100ml	EC (5ml) cfu/100ml	Turb. NTU	Cond. uS/cm	Temp. degC
H4	6/20/01	0.11	0.13			0	TNTC	0	0	8.6	99.5	12.05
H5	6/20/01	0.11	0.13			12000	6400	0	0	18.7	97.1	12.6
I2	6/20/01	0.11	0.13			NS	NS	0	0	7.4	139.6	14.4
L1	6/20/01	0.11	0.13			6400	TNTC	0	0	6.5	176.4	11.5
D1	6/21/01	0.09	0.14			0	240	0	0	6.65	131.5	18.35
I1	6/21/01	0.09	0.14			0	0	0	0	7.1	154.7	NR
I2	6/21/01	0.09	0.14			0	0	0	0	4.8	210	11.2
I3	6/21/01	0.09	0.14			0	400	0	0	14.7	57	10.6
L2	6/21/01	0.09	0.14			NS	TNTC	0	0	NR	302	13.2
M1	6/21/01	0.09	0.14			300	TNTC	0	0	11.85	4.825	19.15
M5	6/21/01	0.09	0.14			8400	TNTC	0	0	20.05	327	13.1
P1	6/21/01	0.09	0.14			200	120	0	0	11.65	214.5	17.45
P2	6/21/01	0.09	0.14			2000	3240	0	0	41.5	202.5	13.3
P5	6/21/01	0.09	0.14			1200	1840	0	0	18.7	116.65	12.8

TABLE T-5.3
2000-2001 STEAM MONITORING
SUMMARY

Table T - 5.3: 2000 - 2001 Periodic Stream Monitoring Summary

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SITE	turb median (ntu)	cond median (uS/cm)	E. coli median (cfu/100ml)	E. coli average (cfu/100ml)	EC - 1 ml median (cfu/100ml)	EC - 5 ml median (cfu/100ml)	EC - 1 ml average (cfu/100ml)	EC - 5 ml average (cfu/100ml)
B1	13.2	130	0	85	0	0	133	36
D1	6.6	132	0	28	0	0	6	49
H1	14.8	135	0	67	0	0	94	40
H2	24.4	235	0	136	0	0	114	158
H3	26.7	222	5	349	0	10	647	50
H4	7.7	116	0	62	0	0	76	48
H5	39.7	202	0	133	0	0	150	116
I1	7.5	151	0	51	0	0	83	19
I2	16.8	200	0	47	0	0	28	66
I3	16.1	321	0	85	0	0	121	49
L1	8.6	194	0	82	0	0	47	116
L2	18.5	239	30	108	0	60	122	94
M1	13.4	1513	10	63	0	20	76	50
M2/M5	15.5	296	210	649	250	170	913	384
P1	11.6	218	0	54	0	0	44	64
P2	17.3	201	30	232	50	10	311	153
P2A	13.7	204	0	134	0	0	146	122
P2B	9.8	189	0	152	0	0	220	84
P5	10.4	138	0	209	0	0	341	76
R1	2.9	40	0	0	0	0	0	0
R2	2.6	38	0	4	0	0	0	7
R3	2.6	44	0	0	0	0	0	0
R4	3	607	10	89	0	20	143	34

clk stream 00&01 median avg.xls

TABLE T-5.4
2000-2001 INTENSIVE STEAM MONITORING
RESULTS

Table T - 5.4: FY2001 Intensive Stream Monitoring Results

Page 1 of 1

Site	Date	TC - 1 ml (cfu/100ml)	TC - 5 ml (cfu/100ml)	EC - 1 ml (cfu/100ml)	EC - 5 ml (cfu/100ml)
MI1	11/25/00		650		0
MI2	11/25/00		720		20
MI3	11/25/00		820		10
MI4	11/25/00		1970		150
MI5	11/25/00		1740		90
MI6	11/25/00		1150		40
MI7	11/25/00		1370		140
MI8	11/25/00		770		70
M5	11/25/00		*		80
MI9	11/25/00		1150		110
* High variability between two samples					
MI14	8/20/01			500	360
MI13	8/20/01			100	240
MI15	8/20/01			400	420
MI15.5	8/20/01			100	100
MI16	8/20/01			400	580
MI17	8/20/01			400	480
MI18	8/20/01			200	100
M5	8/20/01			400	420
M2	8/20/01			200	220
II3	11/29/00		TNTC TC		TNTC TC
II4	11/29/00		TNTC TC		TNTC TC
II2	11/28/00		1300		150
II1	11/28/00		650		0
I2	11/29/00	800	480	0	100
I3	11/28/00	2500	1520	100	80
I1	11/29/00	2200	1000	0	0
II10	8/20/01			300	460
II11	8/20/01			200	140
II12	8/20/01			300	180
II13	8/20/01			100	220
II14	8/20/01			100	60
II15	8/20/01			0	360
I2	8/20/01			0	400
II20	8/20/01			400	460
II19	8/20/01			400	220
II18	8/20/01			200	340
II16	8/20/01			100	140
I3	8/20/01			300	140

TC = Total Coliform

EC = E. coli

TNTC = too numerous to count

cfu = colony forming units (bacteria)

TABLE T-5.5
2000-2001 LAKE WATER CHEMISTRY
RESULTS

Table T-5.5: 2000 - 2001 Lake Water Chemistry Results

pg 1

Near Island Limnology Lab												
Lake	Date	Sta	Water Sample Depth	Zool Depth (m)	Secchi	pH	Alkalinity(mg/L)	Total P (ug/L P)	TFP (ug/L P)	FRP (ug/L P)	Comments	
Beaver	5/24/00	1	1 m	2	1.00	7.6	14.0	2.4	1.3	3.2	TP, TFP Poor standards	
Beaver	6/26/00	1	1 m	1	0.60	7.4	17.0	102.6	1.9	1.8		
Beaver	8/29/00	1	1 m	2	1.80	7.4	22.5	51.6	2.8	1.1		
Beaver	9/18/00	1	1 m	2	1.50	7.4	20.5	14.9	3.7	0.4		
Beaver	6/5/01	1	1 m	1.5	0.75	7.4	18.5	29.2	6.2	3.4		
Beaver	6/28/01	1	1 m	1.5	2.00	7.4	27.0	11.8	9.7	5.7		
Mean					1.3	7.4	19.9	35.4	4.3	2.6		
STDV					0.6	0.1	4.5	37.1	3.2	1.9		
Dark	5/25/00	1	1 m	3	3.00	7.6	14.0	2.2	0.8	6.6	TP, TFP Poor standards	
Dark	6/27/00	1	1 m	3	2.50	7.6	15.5	107.7	4.8	1.9		
Dark	6/5/01	1	1 m	3	2.50	7.5	15.0	10.6	17.2	3.0		
Mean					2.7	7.6	14.8	40.2	7.6	3.8		
STDV					0.3	0.1	0.8	58.6	8.6	2.5		
Horseshoe L.	5/24/00	1	.5 m	0.5	1.20	7.5	24.5	4.3	2.2	1.6	TP, TFP Poor standards/Muddy water	
Horseshoe L.	6/26/00	1	.5 m	0.5	0.20	7.2	21.5	263.8	133.6	17.1		
Horseshoe L.	6/5/01	1	.5 m	0.5	0.10	7.1	33.0	124.9	8.5	6.1		
Mean					0.5	7.3	26.3	131.0	48.1	8.3		
STDV					0.6	0.2	6.0	129.9	74.1	8.0		
Horseshoe U.	5/24/00	1	1 m	1	0.25	7.3	14.0	3.3	1.1	2.3	TP, TFP Poor standards/Muddy water	
Horseshoe U.	6/26/00	1	1 m	0.75	1.00	7.2	17.3	62.7	1.1	3.4		
Horseshoe U.	8/30/00	1	1 m	0.5	1.00	7.0	24.5	50.5	3.1	1.3		
Horseshoe U.	9/18/00	1	1 m	1	1.20	7.4	22.5	12.9	7.0	1.3		
Horseshoe U.	6/5/01	1	1 m	1	1.00	7.1	21.0	13.8	5.5	2.7		
Mean					0.9	7.2	19.9	28.6	3.6	2.2		
STDV					0.4	0.2	4.2	26.2	2.6	0.9		
Island	5/25/00	1	1 m	7	3.50	7.5	17.0	1.5	0.8	3.7		
Island	6/27/00	1	1 m	6	3.85	7.7	17.5	19.9	2.6	2.6		
Island	8/30/00	1	1 m	7	3.30	7.5	20.5	25.5	1.0	0.9		
Island	9/18/00	1	1 m	7	2.75	7.5	19.5	11.1	8.6	5.7		
Island	6/6/01	1	1 m	7	4.00	7.5	17.5	15.4	12.1	14.0		
Island	6/28/01	1	1 m	7	3.50	7.7	26.0	18.0	4.7	3.4		
Mean					3.5	7.6	19.7	15.2	5.0	5.1		
STDV					0.4	0.1	3.4	8.3	4.5	4.7		

Table T-5.5: 2000 - 2001 Lake Water Chemistry Results

pg 2

Near Island Limnology Lab												
Lake	Date	Sta	Water Sample Depth	Color	TKN (ug/L N)	Ammonia (ug/L N)	Nitrate + Nitrite (ug/L N)	Chloro-phyll a (ug/L)	Phaeo-phytin a (ug/L)	Comments		
Beaver	5/24/00	1	1 m	6.3	na	61.5	140.9	0.04	7.69			
Beaver	6/26/00	1	1 m	8.1	na	14.0	25.2	3.20	0.04			
Beaver	8/29/00	1	1 m	6.3	na	4.5	1.0	2.67	0.03			
Beaver	9/18/00	1	1 m	22.6	na	22.3	3.6	1.60	0.64			
Beaver	6/5/01	1	1 m	3.3		10.6	69.1	1.75	0.04			
Beaver	6/28/01	1	1 m	9.3		6.4	1.0	0.96	0.38			
Mean						19.9	40.1	1.7	1.5			
STDV						21.3	55.9	1.1	3.1			
Dark	5/25/00	1	1 m	5.1	na	41.2	101.9	0.32	0.58			
Dark	6/27/00	1	1 m	2.1	na	103.7	40.9	1.60	0.04			
Dark	6/5/01	1	1 m	2.1		197.1	101.0	1.92	0.10			
Mean						114.0	81.3	1.3	0.2			
STDV						78.5	35.0	0.8	0.3			
Horseshoe L.	5/24/00	1	.5 m	5.1	na	35.3	90.8	5.13	0.04			
Horseshoe L.	6/26/00	1	.5 m	18.4	na	68.6	199.1	0.04	2.24			
Horseshoe L.	6/5/01	1	.5 m	21.4		121.7	193.0	3.84	0.04			
Mean						75.2	161.0	3.0	0.8			
STDV						43.6	60.8	2.6	1.3			
Horseshoe U.	5/24/00	1	1 m	6.3	na	41.2	29.7	7.18	0.04			
Horseshoe U.	6/26/00	1	1 m	8.7	na	4.0	54.2	3.20	0.04			
Horseshoe U.	8/30/00	1	1 m	14.2	na	3.8	1.0	2.14	1.60			
Horseshoe U.	9/18/00	1	1 m	15.4	na	18.6	7.0	3.84	1.09			
Horseshoe U.	6/5/01	1	1 m	3.3		39.5	1.0	3.84	1.09			
Mean						21.4	18.6	4.0	0.8			
STDV						18.3	23.2	1.9	0.7			
Island	5/25/00	1	1 m	2.1	na	18.7	158.4	0.04	2.56			
Island	6/27/00	1	1 m	0.2	na	47.6	59.4	1.92	0.04			
Island	8/30/00	1	1 m	1.5	20.5	3.0	5.1	1.92	0.03			
Island	9/18/00	1	1 m	0.0	na	8.0	8.4	1.60	0.42			
Island	6/6/01	1	1 m	2.1		17.1	117.1	1.28	0.29			
Island	6/28/01	1	1 m	5.1		6.3	1.0	1.28	0.29			
Mean					20.5	16.8	58.2	1.3	0.6			
STDV					#DIV/0!	16.3	66.5	0.7	1.0			

NH4, Poor Standard

NH4, Poor Standard

Table T-5.5: 2000 - 2001 Lake Water Chemistry Results

pg 3

Near Island Limnology Lab											
Lake	Date	Sta	Water Sample Depth	Zool Depth (m)	Secchi	pH	Alkalinity(mg/L)	Total P (ug/L P)	TFP (ug/L P)	FRP (ug/L P)	Comments
Island	5/25/00	1	6 m	7	3.50	7.1	14.5	2.6	1.0	4.2	TP,TFP Poor standards
Island	6/27/00	1	6 m	6	3.85	7.5	18.0	35.4	7.8	3.7	TP,TFP Poor standards
Island	6/6/01	1	6 m	7	4.00	7.2	18.0	15.1	8.7	14.5	
Mean					3.8	7.3	16.8	17.7	5.8	7.5	
STDV					0.3	0.2	2.0	16.6	4.2	6.1	
Lilly	5/24/00	1	1 m	2	2.25	7.5	18.0	2.2	1.0	1.4	
Lilly	6/27/00	1	1 m	2	2.50	7.4	17.5	105.5	5.5	2.7	
Lilly	8/30/00	1	1 m	2	1.90	7.4	21.0	55.0	1.7	1.0	
Lilly	9/18/00	1	1 m	2	1.80	7.7	20.5	18.1	6.2	2.1	
Lilly	6/6/01	1	1 m	1.5	2.00	7.5	18.0	19.3	5.2	4.1	
Lilly	6/28/01	1	1 m	1.5	2.00	7.8	20.5	13.2	5.0	2.1	
Mean					2.1	7.6	19.3	35.6	4.1	2.2	
STDV					0.3	0.2	1.6	38.6	2.2	1.1	
Mission	5/24/00	1	1 m	1	1.00	8.3	26.0	5.1	2.4	0.5	
Mission	6/26/00	1	1 m	1	0.60	9.1	24.0	30.6	1.9	4.7	
Mission	8/29/00	1	1 m	0.5	0.75	9.8	27.0	73.2	16.4	1.7	
Mission	9/18/00	1	1 m	na	0.90	9.4	31.5	50.5	4.5	1.0	
Mission	6/6/01	1	1 m	0.5	1.00	9.0	30.5	22.1	6.9	19.7	
Mission	6/28/01	1	.5m	0.5	1.00	10.0	40.5	23.2	6.6	2.8	
Mean					0.9	9.3	29.9	34.1	6.5	5.1	
STDV					0.2	0.6	5.9	24.1	5.3	7.3	
Potato Patch	5/25/00	1	1 m	1	1.00	9.6	25.0	3.5	1.0	3.7	
Potato Patch	6/26/00	1	1 m	0.5	0.50	8.2	20.0	63.8	0.5	2.3	
Potato Patch	8/29/00	1	1 m	0.5	0.75	9.3	28.0	134.4	23.2	1.6	
Potato Patch	9/18/00	1	1 m	na	0.75	7.9	28.0	44.6	10.3	3.5	
Potato Patch	6/6/01	1	1 m	0.5	0.60	8.4	26.0	44.1	9.1	14.9	
Potato Patch	6/28/01	1	.5m	0.75	1.00	9.3	28.0	56.4	10.8	8.0	
Mean					0.8	8.8	25.8	57.8	9.2	5.7	
STDV					0.2	0.7	3.1	42.9	8.3	5.0	
Rose Tead	5/25/00	1	1 m	4	3.00	7.4	7.0	1.5	1.1	2.4	
Rose Tead	6/27/00	1	1 m	3.5	3.50	7.2	7.0	25.1	0.8	4.5	
Rose Tead	6/6/01	1	1 m	4.5	3.00	7.3	7.5	25.8	13.8	15.0	
Rose Tead	6/29/01	1	1 m	4	1.75	7.9	8.1	12.8	3.5	2.1	
Mean					2.8	7.4	7.4	16.3	4.8	6.0	
STDV					0.7	0.3	0.5	11.5	6.1	6.1	

Table T-5.5: 2000 - 2001 Lake Water Chemistry Results

pg 4

Near Island Limnology Lab											
Lake	Date	Sta	Water Sample Depth	Color	TKN (ug/L N)	Ammonia (ug/L N)	Nitrate + Nitrite (ug/L N)	Chloro-phyll a (ug/L)	Phaeo-phytin a (ug/L)	Comments	
Island	5/25/00	1	6 m	3.3	na	19.8	90.1	1.60	1.54	NH4, Poor Standard	
Island	6/27/00	1	6 m	1.5	na	285.1	72.7	1.92	0.04		
Island	6/6/01	1	6 m	1.5		33.5	190.1	1.28	0.74		
Mean						112.8	117.6	1.6	0.8		
STDV						149.4	63.4	0.3	0.8		
Lilly	5/24/00	1	1 m	2.7	na	17.1	62.2	2.24	0.22		
Lilly	6/27/00	1	1 m	1.5	na	4.4	75.4	2.24	0.04		
Lilly	8/30/00	1	1 m	3.9	na	75.5	1.0	4.12	0.69		
Lilly	9/18/00	1	1 m	8.1	na	20.7	1.0	4.81	0.43		
Lilly	6/6/01	1	1 m	1.5		18.0	1.0	1.92	0.04		
Lilly	6/28/01	1	1 m	5.7		4.7	1.0	1.60	0.19		
Mean						23.4	23.6	2.8	0.3		
STDV						26.5	35.3	1.3	0.3		
Mission	5/24/00	1	1 m	6.3	na	39.0	4.3	3.20	0.04	Stream Contaminated?	
Mission	6/26/00	1	1 m	4.5	na	7.9	4.5	8.33	4.23		
Mission	8/29/00	1	1 m	9.3	na	17.9	1.0	6.94	1.28		
Mission	9/18/00	1	1 m	14.2	na	27.0	1.0	6.41	1.67		
Mission	6/6/01	1	1 m	3.9		14.2	1.0	2.88	0.48		
Mission	6/28/01	1	.5m	6.3		4.2	1.0	1.92	0.10		
				7.4		18.4	2.1	4.9	1.3		
				3.8		12.9	1.8	2.6	1.6		
Potato Patch	5/25/00	1	1 m	4.5	na	36.9	47.6	2.24	0.67		
Potato Patch	6/26/00	1	1 m	8.7	na	21.8	16.9	17.25	5.18		
Potato Patch	8/29/00	1	1 m	8.7	na	4.7	5.8	12.82	3.63		
Potato Patch	9/18/00	1	1 m	7.5	na	42.9	7.4	6.41	1.44		
Potato Patch	6/6/01	1	1 m	3.3		18.9	1.0	7.69	1.73		
Potato Patch	6/28/01	1	.5m	27.5		8.4	1.0	17.39	3.75		
				10.0		22.3	13.3	10.6	2.7		
				8.8		15.2	17.8	6.2	1.7		
Rose Tead	5/25/00	1	1 m	0.8	na	12.9	195.5	0.64	0.04	NH4, Poor Standard	
Rose Tead	6/27/00	1	1 m	0.0	na	55.3	94.8	0.64	0.04		
Rose Tead	6/6/01	1	1 m	0.8		30.5	162.6	1.28	0.96		
Rose Tead	6/29/01	1	1 m	6.9		7.2	19.5	7.48	1.50		
				2.1		26.5	118.1	2.5	0.6		
				3.2		21.6	78.0	3.3	0.7		

Table T-5.5: 2000 - 2001 Lake Water Chemistry Results

pg 5

Near Island Limnology Lab

Lake	Date	Sta	Water Sample Depth	Zool Depth (m)	Secchi	pH	Alkalinity(mg/L)	Total P (ug/L P)	TFP (ug/L P)	FRP (ug/L P)	Comments
Afognak	5/15/00	1	1m	28	4.13	6.8	13.0	13.3	4.9	1.3	pH & Alc bad
	6/20/00	1	1m	17	3.75	7.3	7.0	6.0	3.8	4.5	
	8/2/00	1	1m	17.5	2.37	7.0	7.5	14.8	3.9	0.5	
	9/20/00	1	1m	18.5	3.25	7.1	8.0	8.3	2.0	1.9	
	10/11/00	1	1m	17	3.50	7.3	8.0	5.2	0.9	0.8	
	5/7/01	1	1m	19	4.25	6.5	7.5	2.4	8.8	10.4	
	6/10/01	1	1m	18	5.75	7.5	8.0	9.3	6.3	11.8	
	7/16/01	1	1m	17	3.50	7.4	13.0	4.7	0.8	1.5	
	Mean				3.8	7.1	8.7	9.5	3.1	1.8	
	STDV				0.7	0.2	2.4	4.3	1.6	1.6	
Malina L.	5/15/00	1	1m	10.5	4.00	6.9	13.0	24.2	12.4	2.2	pH & Alc bad
	6/20/00	1	1m	10	7.75	7.7	13.5	10.9	7.1	1.2	
	8/2/00	1	1m	10	3.50	7.5	14.0	11.3	6.3	1.7	
	9/20/00	1	1m	13	6.50	7.5	14.0	8.7	3.5	2.7	
	10/11/00	1	1m	10	5.00	7.6	15.0	10.0	1.5	0.5	
	5/7/01	1	1m	11	7.75	6.6	8.5	1.7	2.4	1.8	
	5/15/01	1	1m	10	5.88	7.5	15.0	3.6	1.0	1.5	
	6/10/01	1	1m	9	7.50	7.7	16.0	16.0	3.9	5.0	
	7/8/01	1	1m	9	3.75	7.6	22.0	14.0	2.9	2.8	
	Mean				5.4	7.4	13.9	13.0	6.2	1.7	
	STDV				1.8	0.3	0.7	6.3	4.1	0.9	
Waterfall B.	5/23/00	1	1m	12	6.25	7.3	10.0	1.1	1.0	0.9	
	7/10/00	1	1m	12	5.75	7.5	10.2	7.4	1.1	0.5	
	8/23/00	1	1m	11	7.00	7.7	15.5	3.6	2.0	3.4	
	10/5/00	1	1m	12	3.13	7.4	15.0	7.4	7.3	5.2	
	6/18/01	1	1m	12	8.78	7.6	11.0	11.1	3.3	4.7	
	Mean				5.5	7.5	12.7	4.9	2.9	2.5	
	STDV				1.7	0.2	3.0	3.1	3.0	2.2	
	5/23/00	1	1m	15	3.75	7.3	6.5	2.4	1.5	0.5	
	7/10/00	1	1m	15.5	3.00	7.4	12.0	7.7	2.2	0.5	
	8/23/00	1	1m	15	3.00	7.4	11.5	4.2	5.2	3.8	
Waterfall L.	10/5/00	1	1m	16	3.38	7.2	12.5	6.3	6.8	8.3	
	5/15/01	1	1m	15	4.25	7.3	7.5	22.6	7.1	5.9	
	6/18/01	1	1m	12	4.75	7.6	11.5	12.5	5.7	12.4	
	7/23/01	1	1m	13	4.75	7.5	15.0	6.2	1.7	0.5	
	Mean				3.3	7.3	10.6	5.2	3.9	3.3	
	STDV				0.4	0.1	2.8	2.3	2.5	3.7	

Table T-5.5: 2000 - 2001 Lake Water Chemistry Results

pg 6

Near Island Limnology Lab										
Lake	Date	Sta	Water Sample Depth	Color	TKN (ug/L N)	Ammonia (ug/L N)	Nitrate + Nitrite (ug/L N)	Chloro-phyll a (ug/L)	Phaeo-phythin a (ug/L)	Comments
Afognak	5/15/00	1	1 m	na	25.4	30.5	197.5	1.28	0.06	TKN sample old
Afognak	6/20/00	1	1 m	1.5	na	22.7	85.3	1.60	0.42	
Afognak	8/2/00	1	1 m	na	47.2	6.5	107.9	4.81	1.70	
Afognak	9/20/00	1	1 m	na	na	31.3	75.1	1.60	1.09	
Afognak	10/11/00	1	1 m	na	96.9	5.9	127.4	2.88	2.05	
Afognak	5/7/01	1	1 m	na	77.5	8.5	153.0	2.24	0.45	
Afognak	6/10/01	1	1 m	na		2.5	109.9	2.88	0.04	
Afognak	7/16/01	1	1 m	na		2.7	11.1	2.88	0.26	
Mean					56.5	19.4	118.6	2.4	1.1	
STDV					36.6	12.5	48.5	1.5	0.8	
Malina L.	5/15/00	1	1 m	na	189.0	17.1	198.5	1.28	0.29	
Malina L.	6/20/00	1	1 m	na	na	43.0	196.7	0.64	0.04	
Malina L.	8/2/00	1	1 m	na	na	26.1	179.0	3.20	1.06	
Malina L.	9/20/00	1	1 m	na	na	25.8	141.5	2.88	0.70	
Malina L.	10/11/00	1	1 m	na	na	7.6	125.1	0.96	0.61	
Malina L.	5/7/01	1	1 m	na	21.4	2.8	189.9	1.60	0.64	
Malina L.	5/15/01	1	1 m	na		2.5	185.5	1.28	0.06	
Malina L.	6/10/01	1	1 m	na		5.6	85.2	2.24	0.04	
Malina L.	7/8/01	1	1 m	na		14.4	106.0	2.88	0.48	
Mean					189.0	23.9	168.2	1.8	0.5	
STDV					#DIV/0!	13.1	33.2	1.2	0.4	
Waterfall B.	5/23/00	1	1 m	na	na	14.5	152.4	0.32	0.54	
Waterfall B.	7/10/00	1	1 m	na	135.3 / 140	27.8	29.2	4.49	0.04	
Waterfall B.	8/23/00	1	1 m	na	na	3.0	4.7	0.64	0.04	
Waterfall B.	10/5/00	1	1 m	na	na	8.0	32.9	0.64	0.48	
Waterfall B.	6/18/01	1	1 m	na	81.3	2.3	1.0	0.04	0.22	
Mean						13.3	54.8	1.5	0.3	
STDV						10.7	66.3	2.0	0.3	
Waterfall L.	5/23/00	1	1 m	na	na	10.7	179.9	0.32	0.35	
Waterfall L.	7/10/00	1	1 m	na	66.4 / < 60	26.1	98.7	0.04	0.45	
Waterfall L.	8/23/00	1	1 m	na	na	2.3	1.0	2.56	1.03	
Waterfall L.	10/5/00	1	1 m	na	n	1.8	19.9	1.92	0.04	
Waterfall L.	5/15/01	1	1 m	na	84.5	3.6	59.9	0.96	0.38	
Waterfall L.	6/18/01	1	1 m	na		2.9	14.3	0.96	0.61	
Waterfall L.	7/23/01	1	1 m	na		3.5	1.0	1.60	0.87	
Mean						10.2	74.9	1.2	0.5	
STDV						11.3	81.8	1.2	0.4	

Table T-5.5: 2000 - 2001 Lake Water Chemistry Results

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Near Island Limnology Lab

Lake	Date	Sta	Water Sample Depth	Zool Depth (m)	Secchi	pH	Alkalinity(mg/L)	Total P (ug/L P)	TFP (ug/L P)	FRP (ug/L P)	Comments
Kitoi	5/15/00	1	1m	24	3.50	6.8	17.0	12.3	11.5	2.2	
Kitoi	7/5/00	1	1m	25.5	3.75	7.9	17.8	2.4	0.6	0.5	
Kitoi	8/14/00	1	1m	25	1.25	9.5	18.5	29.5	4.1	2.4	
Kitoi	10/11/00	1	1m	24	2.00	7.5	9.0	21.3	2.0	0.7	
Kitoi	5/15/01	1	1m	22	3.75	7.6	18.5	13.0	2.7	2.8	
Kitoi	6/27/01	1	1m	23	3.75	7.9	20.0	18.4	8.9	8.8	
Kitoi	7/16/01	1	1m	23.5	3.75	7.7	27.8	14.9	3.5	0.5	
Mean					2.6	7.9	15.6	16.4	4.6	1.5	
STDV					1.2	1.1	4.4	11.7	4.9	1.0	
Laura	5/23/00	1	1m	34	3.63	7.3	6.0	1.8	1.3	1.4	
Laura	7/10/00	1	1m	33.5	1.75	7.6	9.5	6.6	0.5	0.5	
Laura	8/23/00	1	1m	34.5	4.00	7.3	8.5	6.7	6.0	4.5	
Laura	10/5/00	1	1m	34	3.38	7.0	9.5	7.7	5.8	4.9	
Laura	5/15/01	1	1m	34	3.25	7.2	8.5	10.7	6.3	4.2	
Laura	6/18/01	1	1m	32.5	3.25	7.5	7.5	11.2	9.7	10.6	
Laura	7/23/01	1	1m	33.5	3.00	7.4	10.5	10.9	3.1	2.2	
Mean					3.2	7.3	8.4	5.7	3.4	2.8	
STDV					1.0	0.2	1.7	2.6	2.9	2.2	
Saltry	5/5/00	1	1m	32	2.75	6.8	15.0	4.2	4.2	1.5	
Mean											
STDV											
Spiridon	5/22/00	1	1m	na	8.50	7.5	12.0	3.4	1.2	0.5	
Spiridon	6/20/00	1	1m	50	8.75	7.7	14.0	6.5	0.5	0.9	
Spiridon	7/24/00	1	1m	50	11.50	7.7	13.5	14.4	8.6	0.9	
Spiridon	8/25/00	1	1m	52	9.00	7.6	12.0	7.5	6.3	5.5	
Spiridon	10/6/00	1	1m	50	8.50	7.3	15.0	3.2	0.6	3.9	
Spiridon	5/2/01	1	1m	50	7.38	6.9	13.5	2.1	1.6	0.7	
Spiridon	6/11/01	1	1m	50	10.75	7.6	16.5	10.3	3.5	5.3	
Spiridon	7/18/01	1	1m	50	15.25	7.8	22.0	3.0	1.7	0.9	
Mean					9.3	7.6	13.3	7.0	3.4	2.3	
STDV					1.3	0.2	1.3	4.5	3.8	2.2	

pH & Alc bad

Table T-5.5: 2000 - 2001 Lake Water Chemistry Results

pg 8

Near Island Limnology Lab											
Lake	Date	Sta	Water Sample Depth	Color	TKN (ug/L N)	Ammonia (ug/L N)	Nitrate + Nitrite (ug/L N)	Chloro-phyll a (ug/L)	Phaeo-phyth a (ug/L)	Comments	
Kitoi	5/15/00	1	1 m	na	28.9	18.7	181.7	1.28	0.29		
Kitoi	7/5/00	1	1 m	na	70.7 / < 60	15.0	30.8	3.20	1.06		
Kitoi	8/14/00	1	1 m	na	67.8	2.9	1.0	24.35	5.70		
Kitoi	10/11/00	1	1 m	na	39.4	0.2	1.0	3.52	0.96		
Kitoi	5/15/01	1	1 m	na	105.7	1.2	34.2	1.60	0.42		
Kitoi	6/27/01	1	1 m	na		6.4	1.0	2.24	0.22		
Kitoi	7/16/01	1	1 m	na		12.3	1.0	3.84	0.87		
Mean					45.4	9.2	53.6	8.1	2.0		
STDV					20.1	9.0	86.5	10.9	2.5		
Laura	5/23/00	1	1 m	na	20.8	17.7	111.6	0.96	0.83		
Laura	7/10/00	1	1 m	na	na / 60	26.1	8.8	4.81	2.60		
Laura	8/23/00	1	1 m	na	na	4.1	5.4	1.28	0.29		
Laura	10/5/00	1	1 m	na	na	4.7	9.0	3.20	0.38		
Laura	5/15/01	1	1 m	na	29.1	1.3	8.5	1.60	0.42		
Laura	6/18/01	1	1 m	na		2.9	1.0	1.92	0.77		
Laura	7/23/01	1	1 m	na		2.1	1.0	3.84	1.99		
Mean					13.2		33.7	2.6	1.0		
STDV					10.7		52.0	1.8	1.1		
Saltry	5/5/00	1	1 m	na	na	11.9	na	0.32	0.34		
Spiridon	5/22/00	1	1 m	na	na	18.2	196.1	0.64	0.48		
Spiridon	6/20/00	1	1 m	na	na	17.7	196.7	0.32	0.80		
Spiridon	7/24/00	1	1 m	na	na	2.0	197.2	0.64	0.04		
Spiridon	8/25/00	1	1 m	na	na	4.4	195.0	0.64	0.04		
Spiridon	10/6/00	1	1 m	na	na	1.0	192.6	0.64	0.48		
Spiridon	5/2/01	1	1 m	na		12.5	192.8	0.96	0.16		
Spiridon	6/11/01	1	1 m	na		1.4	184.0	0.64	0.04		
Spiridon	7/18/01	1	1 m	na		4.6	192.5	0.64	0.04		
Mean					8.7		195.5	0.6	0.4		
STDV					8.6		1.8	0.1	0.3		

TABLE T-5.6
2000-2001 LAKE TEMPERATURE, OXYGEN,
LIGHT, FECAL BACTERIA
RESULTS

Table T - 5.6: 2000 - 2001 Lake Temperature, Oxygen, Light, and Fecal Bacteria Results

BEAVER

Date	5/24/00 station 1				6/25/00 station 1				8/29/00 station 1				9/18/00 station 1					
Depth (m)	Temp	D.O.	Light		Depth (m)	Temp	D.O.	Light		Depth (m)	Temp	D.O.	Light		Depth (m)	Temp	D.O.	Light
Incidence					Incidence					Incidence					Incidence			
Surface	10.6	11	390		Surface	13	9	800		Surface	0.5				Surface	0.5		
0.5	10.6	11	70		0.5	13	8.9	170		0.5	1				1			
1	10.6	11	100		1	13	8.8	80		1	1.5				1.5			
1.5	10.3	10.9	57		1.5	12.1	8.7	30		1.5	2				2			
2	10	10.9	32		2	11.5	8.6	8		2	2.5				2.5			
2.5	9.7	10.7	15		2.5					2.5	3				3			
3					3					3	3.5				3.5			
3.5					3.5					3.5	4				4			
4					4					4	4.5				4.5			
4.5					4.5					4.5	5				5			
5					5					5	6				6			
6					6					6								
mean secchi 1					mean secchi 0.6					fecal coli (cfu/100ml) 9					fecal coli (cfu/100ml) <10			

fecal coli (cfu/100ml)
<10

fecal coli (cfu/100ml)
<10

mean secchi
0.6

mean secchi
1

BEAVER

Date	6/5/01 station 1				6/28/01 station 1				station 1				
	Depth (m)	Temp	D.O.	Light	Depth (m)	Temp	D.O.	Light	Depth (m)	Temp	D.O.	Light	
Incidence				1100									
Surface		11.4	10.8	560		19.1	9.5	3300					
0.5		11.4	10.8	230		19.1	9.3	2000		0.5			
1		11.4	10.9	90		19	9.1	1400		1			
1.5		11.4	10.9	53		18.8	8.8	1100		1.5			
2		11.1	11	25		18.8	8.9	650		2			
2.5										2.5			
3										3			
3.5										3.5			
4										4			
4.5										4.5			
5										5			
6										6			
					turbidity 10.2 NTU								

mean secchi
2 (on bottom)

mean secchi
fecal coli (cfu/100ml)
<10

mean secchi
0.75

mean secchi
fecal coli (cfu/100ml)
<10

turbidity 10.2 NTU

Table T - 5.6: 2000 - 2001 Lake Temperature, Oxygen, Light, and Fecal Bacteria Results

Date	5/25/00 station 1				6/27/00 station 1				station 1				
	Depth (m)	Temp	D.O.	Light	D. (m)	Temp	D.O.	Light	D. (m)	Temp	D.O.	Light	
Incidence Surface	6500	11.9	10.7	6500	Incl.	13.9	10.3	2500	Incl.	0.5	13.0	10.0	2500
	3500	11.8	10.7	3500									
	0.5	11.7	10.8	1700	1	13.8	9.9	500	1	13.8	9.9	500	
	1.5	11.6	10.8	10	1.5	13.6	9.6	480	1.5	13.6	9.6	480	
	2	11.6	10.12	600	2	13.5	9.5	380	2	13.5	9.5	380	
	2.5	11.5	10.1	620	2.5	13.5	9.9	310	2.5	13.5	9.9	310	
	3	10	8.1	500	3	13.3	9.8	230	3	13.3	9.8	230	
	3.5	9.7	7.3	340	3.5	13.2	9.2	170	3.5	13.2	9.2	170	
	4.5	9.4	6.1		4.5	13.1	9.2		4.5	13.1	9.2		
	5				5				5				
6				6				6					

mean secchi	fecal coli (cfu/100ml)	mean secchi	fecal coli (cfu/100ml)
3	<1	2.5	2

Date	6/5/01			
	station 1	station 1	station 1	station 1
	Temp	D.O.	Light	
Depth (m)				
Incidence	12.3	10.3	800	
Surface	12.3	10.2	250	
0.5	12.3	6.1	150	
1	12.3	10.2	110	
1.5	12.3	9.9	80	
2	12.3	9.9	60	
2.5	11.6	10.5	40	
3	10.8	10	35	
3.5				
4				
4.5				
5				
5.5				
6				

mean secchi	fecal coli (cfu/100ml)	mean secchi
2.5	<10	

Table T - 5.6: 2000 - 2001 Lake Temperature, Oxygen, Light, and Fecal Bacteria Results

LOWER HORSESHOE

Date	5/24/00 station 1				6/26/00 station 1				station 1			
	Depth (m)	Temp	D.O.	Light	Depth (m)	Temp	D.O.	Light	Depth (m)	Temp	D.O.	Light
Incidence Surface	0.5	8.8	11.4	560	Incidence Surface	0.5	12.1	10.6	1200	Incidence Surface	0.5	
	1	8.4	11.4	290		1	10.8	9.3	500		1	
	1.5	8.1	11.4	40		1.5	10.7	5.9	<0.1		1.5	
	2					2					2	
	2.5					2.5					2.5	
	3					3					3	
Incidence Surface	3.5				Incidence Surface	3.5				Incidence Surface	3.5	
	4					4					4	
	4.5					4.5					4.5	
	5					5					5	
	6					6					6	

mean secchi 0.25 fecal coli (cfu/100ml) 2

mean secchi 0.2 fecal coli (cfu/100ml) 236

LOWER HORSESHOE

Date		6/5/01 station 1		
Depth (m)	Temp	D.O.	Light	
Incidence			1400	
Surface			700	
0.5	9.9	11.4	10	
1	10	11.3		
1.5				
2				
2.5				
3				
3.5				
4				
4.5				
5				
6				

mean secchi 0.1 fecal coli (cfu/100ml) 120

Table T - 5.6: 2000 - 2001 Lake Temperature, Light, and Fecal Bacteria Results

Date	5/24/00 station 1			6/26/00 station 1			8/30/00 station 1			9/18/00 station 1		
	Temp	D.O.	Light	Temp	D.O.	Light	Temp	D.O.	Light	Temp	D.O.	Light
Depth (m)												
Incidence			430			1800						
Surface	10.6	11.1	170			900						
0.5	10.4	11.1	100	0.5	12.5	10.2	0.5					
1	10.1	11	50	1	12.5	10.2	1					
1.5				1.5	12.4	10	1.5					
2				2			2					
2.5				2.5			2.5					
3				3			3					
3.5				3.5			3.5					
4				4			4					
4.5				4.5			4.5					
5				5			5					
6				6			6					

fecal coli (cfu/100ml)
<10

fecal coli (cfu/100ml) 50

fecal coli (cfu/100ml) 20

fecal coli (cfu/100ml)

Date	Depth (m)	Temp	D.O.	station 1	Light
	Incidence				
	0.5	11.5	10.9		1400
	1	11.5	10.9		780
	1.5	11.5	10.8		230
	2				150
	2.5				
	3				
	3.5				
	4				
	4.5				
	5				
	6				

fecal coli (cfu/100ml)
<10

mean secchi

Table T - 5.6: 2000 - 2001 Lake Temperature, Oxygen, Light, and Fecal Bacteria Results

ISLAND									
Date	5/25/00 station 1			6/27/00 station 1			8/30/00 station 1		
Depth (m)	Temp	D.O.	Light	Depth (m)	Temp	D.O.	Depth (m)	Temp	D.O.
Incidence				Incidence			Incidence		
Surface	11.8	10.7	5000	Surface	13.6	10	Surface	15.2	9.9
0.5	11.6	10.6	2700	0.5	13.4	10	0.5	15.2	9.9
1	11.4	10.7	2000	1	13.3	10.1	1	15	9.8
1.5	11.1	10.8	1000	1.5	13.3	9.9	1.5	15	9.8
2	10.9	10.7	800	2	13.3	9.9	2	14.9	9.8
2.5	10.8	10.7	650	2.5	13.2	9.9	2.5	14.9	9.6
3	10.7	10.7	550	3	13.1	9.8	3	14.9	9.4
3.5	10.7	10.7	420	3.5	13	9	3.5	14.8	9.4
4	10.2	10.7	360	4	12.8	9.1	4	14.8	9.4
4.5	9.7	10.7	220	4.5	12.4	9	4.5	14.8	9.4
5	2.3	10.7	150	5	12	8.9	5	14.8	9.3
6	6.3	8.4	70	6	9.6	8.1	6	13.8	4.2
7	5.9	7.3	30	7	7.6	5.4	7	10.9	0.6
8				8			8	9.4	0.2
9				9			9		
10				10			10		
	mean secchi		fecal coli (cfu/100ml)	mean secchi		fecal coli (cfu/100ml)	mean secchi		fecal coli (cfu/100ml)
	3.5		<1	3.85		8	3.375		30

ISLAND									
Date	6/6/01 station 1			6/28/01 station 1			9/18/00 station 1		
Depth (m)	Temp	D.O.	Light	Depth (m)	Temp	D.O.	Depth (m)	Temp	D.O.
Incidence				Incidence			Incidence		
Surface	12.1	10.7	1200	Surface	19.3	9.7	Surface	11.5	10.9
0.5	12.1	10.6	1500	0.5	19.2	9.6	0.5	11.4	10.9
1	12	10.4	800	1	19.2	9.3	1	11.3	10.9
1.5	12	10.4	690	1.5	19.1	9.3	1.5	11.3	10.8
2	12	10.4	750	2	18.9	9.4	2		
2.5	11.9	10.2	620	2.5	18.4	9.5	2.5		
3	11.9	10.3	530	3	17.6	9.9	3		
3.5	11.7	10.3	440	3.5	16.4	10.3	3.5		
4	11.2	10.3	350	4	15	10.9	4		
4.5	10	10.6	280	4.5	13.5	11.3	4.5		
5	9.5	10.8	200	5	12.1	10.7	5		
6	7.9	9	190	6	9.8	7.6	6		
7	7.2	7.4	150	7	8.7	5.3	7		
8	6.8	6.2	70	8	8.2	2.2	8		
9			30	9			9		
10				10			10		
	mean secchi		fecal coli (cfu/100ml)	mean secchi		fecal coli (cfu/100ml)	mean secchi		fecal coli (cfu/100ml)
	4		<10	3.5		<10	2.75		<10

Table T - 5.6: 2000 - 2001 Lake Temperature, Oxygen, Light, and Fecal Bacteria Results

LILLY

Date	5/24/00 station 1				6/27/00 station 1				8/30/00 station 1				9/18/00 station 1			
Depth (m)	Temp	D.O.	Light		Temp	D.O.	Light		Temp	D.O.	Light		Temp	D.O.	Light	
Incidence																
Surface	12.7	10.5	1000		13.7	10.2	3000		14.7	10.1	3500		10.4	11.1	950	
0.5	12.6	10.4	750		13.7	10.2	800		14.7	10.1	1500		10.4	11.2	360	
1	12.2	10.3	320		13.6	10.2	500		14.7	9.7	800		10.5	10.6	160	
1.5	12.1	10.3	300		13.5	9.9	450		14.7	9.7	500		10.5	10.6	100	
2	12.1	10.3	280		13.5	10.1	350		14.7	9.5	380		10.4	10.4	50	
2.5					2.5		250		14.8	8.9	210		10.4	10.4	25	
3					3				3							
3.5					3.5				3.5							
4					4				4							
mean secchi				2.25	mean secchi				1.9	mean secchi				1.8	fecal coli (cfu/100ml)	
				<1					10					<10		

LILLY

Date	6/6/01 station 1				6/28/01 station 1			
Depth (m)	Temp	D.O.	Light		Temp	D.O.	Light	
Incidence								
Surface	12.6	10.7	4300		20.7	7	7300	
0.5	12.6	10.7	1700		20.7	7.1	3700	
1	12.6	10.6	900		20.5	7.3	2800	
1.5	12.6	10.7	550		20.3	7.6	2200	
2	12.6	10.5	540		20.3	7.8	1400	
2.5			460				1200	
3								clearest ever seen
3.5								
4								
mean secchi				2	mean secchi			
				on bottom				
				<10				
				10				

Table T - 5.6: 2000 - 2001 Lake Temperature, Oxygen, Light, and Fecal Bacteria Results

MISSION

Date	5/24/00 station 1				6/26/00 station 1				8/29/00 station 1				9/18/00 station 1				
Depth (m)	Temp	D.O.	Light		Depth (m)	Temp	D.O.	Light	Depth (m)	Temp	D.O.	Light	Depth (m)	Temp	D.O.	Light	
Incidence					Incidence				Incidence				Incidence				
Surface	13.6	10.4	800		Surface	14.3	10.1	1800	Surface	15	10	2800	Surface	9.6	11.3	700	
0.5	12.2	10.4	600		0.5	14.3	10.6	1000	0.5	15.2	10.2	900	0.5	9.6	11.1	430	
1	13.6	7.7	400		1	14.3	10.6	300	1	15	8.8	500	1	9.7	10.2	160	
1.5	14.3	5.8	120		1.5			100	1.5	14.8	6.1	70	1.5			75	
2	15.1	4.8	50		2				2				2				
2.5					2.5				2.5				2.5				
3					3				3				3				
3.5					3.5				3.5				3.5				
4					4				4				4				
mean secchi				1.00	mean secchi				0.6	mean secchi				mean secchi			
				fecal coli (cfu/100ml)					15								
				2					<10								

MISSION

Date	6/6/01 station 1				6/28/01 station 1			
Depth (m)	Temp	D.O.	Light		Depth (m)	Temp	D.O.	Light
Incidence					Incidence			
Surface	13.5	12.3	6500		Surface	21.1	10	5100
0.5	13.4	12.2	3200		0.5	21.1	10	3800
1	13.3	13.2	1800		1	22.3	9.7	2800
1.5					1.5			1000
2					2			
2.5					2.5			
3					3			
3.5					3.5			
4					4			
mean secchi				1.0	mean secchi			
				fecal coli (cfu/100ml)				
				10				
				on bottom				

fecal coli (cfu/100ml)
<10

mean secchi
0.9

mean secchi
0.6

mean secchi
1.0

mean secchi
1.0

on bottom

Table T - 5.6: 2000 - 2001 Lake Temperature, Oxygen, Light, and Fecal Bacteria Results

POTATO PATCH

Date	5/25/00 station 1				6/26/00 station 1				8/29/00 station 1				9/18/00 station 1			
Depth (m)	Temp	D.O.	Light		Temp	D.O.	Light		Temp	D.O.	light		Temp	D.O.	Light	
Incidence			5000				2200				4000				880	
Surface	15.1	9.9	2200				1100				1800				360	
0.5	14.7	10	800				240				500				170	
1	12.8	9.2	570		0.5	13.3	10.3	9	0.5	15.5	9.9		9.8	11.2	10.1	30
1.5					1	13.3	10.4		1	15.2	10.2		9.8	11.2		
2					1.5	12.9			1.5	15	7.4		9.6	10.1		
2.5					2				2		4.5					
3					2.5				2.5							
3.5					3				3							
4					3.5				3.5							
					4				4							
	mean secchi		fecal coli (cfu/100ml)		mean secchi		fecal coli (cfu/100ml)		mean secchi		fecal coli (cfu/100ml)		mean secchi		fecal coli (cfu/100ml)	
	1		<1		0.5		24		0.75		<10		0.75		<10	

POTATO PATCH

Date	6/6/01 station 1				6/28/01 station 1			
Depth (m)	Temp	D.O.	Light		Temp	D.O.	Light	
Incidence			7800				5500	
Surface	13.1	12.8	3800				2800	
0.5	13.1	12.7	900		0.5	19.4	10.7	
1	13.1	12.6	350		1	19.4	10.5	1200
1.5					1.5	19.2	9.8	400
2					2			
2.5					2.5			
3					3			
3.5					3.5			
4					4			
	mean secchi		fecal coli (cfu/100ml)		mean secchi		fecal coli (cfu/100ml)	
	0.6		<10				20	

turbidity 12.0 NTU

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9/12/94	station 1	D.O.	Salinity
Temp	Depth (m)		

TABLE T-5.7
1995-1996, 2000-2001 ZOOPLANKTON, BIOMASS
SUMMARY

TABLE T-5.8
LAKE AND WATERSHED
CHARACTERISTICS

Table T-5.8: Lake and Watershed Characteristics

Lake	Watershed Area (acres)	Lake Area (acres)	Lake Volume (acre-ft)	Mean Lake Depth (feet)	Mean Annual Flow (cfs)	Water Detn. Time (days)
Upper Horseshoe	10	2.6	5.4	2.0	0.05	54
Lower Horseshoe	37	1.2	1.8	1.5	0.19	5
Beaver	421	14	57	4.0	2.37	12
Dark	495	14	129	8.9	2.80	23
Island	745	39	506	13.0	4.26	60
Lilly	95	17	76	4.6	0.51	75
Potatopatch	298	13	32	2.5	1.66	10
Mission	281	22	66	3.0	1.56	21
Abercrombie	200	19	242	13.0	1.10	111

