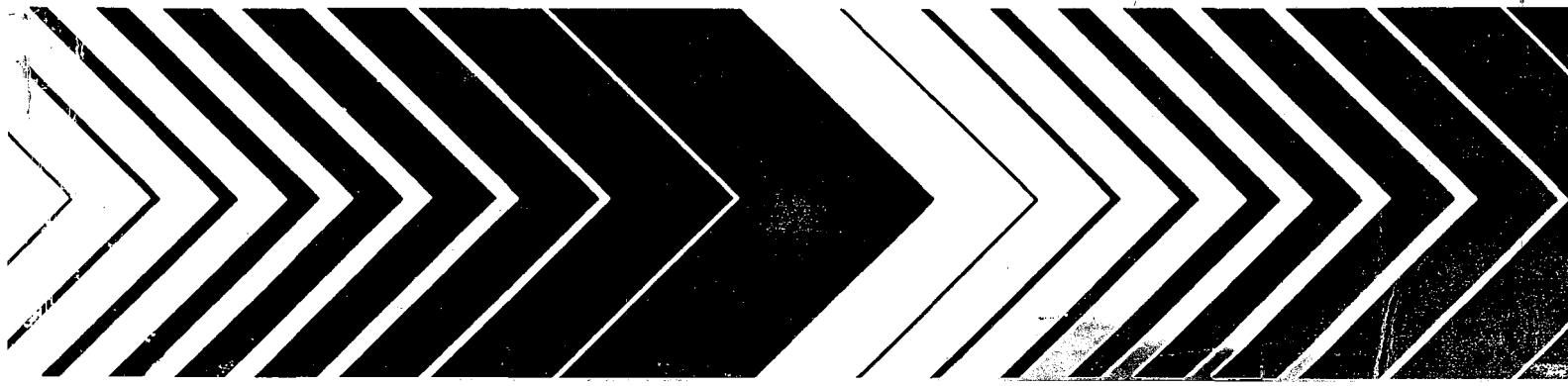

Research and Development



Macroinvertebrate and Zooplankton Data from the Mt. Zirkel Wilderness Area Lakes Survey



MACROINVERTEBRATE AND ZOOPLANKTON DATA FROM THE
MT. ZIRKEL WILDERNESS AREA LAKES SURVEY

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NOTICE

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INTRODUCTION

This data report contains results of macroinvertebrate and zooplankton sampling in two lakes and contiguous streams in the Mt. Zirkel Wilderness Area of Colorado. During July, August and September 1984, Seven Lakes and Lake Elbert, were sampled two to four times as part of the Region 8 high altitude lake acid disposition program. EMSL-LV and LEMSCO support contractors assisted the Region in designing and executing the study.

Sampling and analytical methods are summarized and the results presented in a condensed form in the text and raw data are provided in Appendices A through F.

METHODS

General

The sample numbers, types and dates collected are provided in Table 1. Zooplankton samples were collected at the deepest location (buoy) as were quantitative macroinvertebrate samples (Ekmans). Qualitative macroinvertebrate samples were taken, both from 2 to 3 shoreline locations and within 50 meters of an inlet/outlet confluence with the lake. Detailed methods may be found in Baldigo and Baker (1984).

TABLE 1. MACROINVERTEBRATE AND ZOOPLANKTON REPLICATES AND DATES SAMPLED
DURING THE 1984 MT. ZIRKEL WILDERNESS AREA LAKES SURVEY

Lake/Site	Sample	ID	Dates			
			7/31-8/3	8/21-8/24	9/3-9/6	9/17-9/20
Lake Elbert						26
Inlet	Qual. - Invert.	Q267	0	1	0	0
Outlet						
(Mad Ck.)	Qual. - Invert.	Q268	3	1	1	0
Shoreline	Qual. - Invert.	Q269	2	2	1	3
Limnetic	Quant. - Invert.	E261	5	5	0	3
Limnetic	Zooplankton	Z261	3	3	0	0
Seven Lakes						27
(largest)						
Inlet	Qual. - Invert.	Q277	1	0	0	0
Outlet						
(Big Fork Ck.)	Qual. - Invert.	Q278	2	0	1	0
Shoreline	Qual. - Invert.	Q279	4	4	4	4
Limnetic	Quant. - Invert.	E271	5	5	3	3
Limnetic	Zooplankton	Z271	3	3	0	3

Zooplankton

Three depth integrated samples (vertical net tows) were taken at the deep lake sites to collect zooplankton. A standard, 80-micrometer, Wisconsin plankton net was lowered to the bottom then raised to the surface. Tow depths were recorded. All samples were preserved in a 5-percent formalin solution.

Each zooplankton sample was thoroughly mixed and a one ml subsample removed with a large bore Stempel pipet and placed into a Sedgewick Rafter counting chamber. Enumeration was done under 40X magnification. The entire chamber was counted for each of three replicate 1-ml subsamples. Copepods were

dissected and mounted in Hoyer's mounting media to aid in species identification. Replicate and total counts are expressed as areal estimates (number/m²) based on the known area of the Wisconsin net mouth and volume of the sample.

Macroinvertebrates

Macroinvertebrates were sampled with an Ekman dredge at the deep site in the soft sediment zone in each lake. Sediments and organisms were separated in the field using a 570-micrometer, sieve bottom bucket. All macroinvertebrates were preserved in plastic Whirlpak® bags with 10-percent formalin. Invertebrates in the littoral zone (shore to a depth of 1 meter) were sampled qualitatively with a 570-micrometer mesh triangular kick net. Additionally, in an attempt to qualify species occurring in nearby streams, various samples were collected from inflows and outflows. Standard kick samples were obtained by kicking and dislodging organisms over an approximately 5-meter stretch for 30 seconds, however, some variations occurred due to physical site characteristics.

All invertebrate samples were wet sieved through a 570-micrometer mesh net in the laboratory. Invertebrates retained were picked from associated debris until none could be found during a 5-minute scan. Finally, all collected debris was scanned under 10X magnification to locate any overlooked specimens. Organisms were identified to the lowest taxon possible using current literature. Questionable specimens of each genera and species were confirmed by experts. James Pollard and Gene Wilde (University of Nevada, Las Vegas) counted and identified qualitative invertebrate and zooplankton samples, respectively.

Replicate biological data were compiled via a biological data storage and manipulative computer program maintained at EMSL-Las Vegas. Population indices are compiled in the results section. These include replicate counts, taxa number (richness) and Shannon-Weiner diversity (H') (Shannon and Weaver 1949). Diversity (H') is defined as:

$$H' = \sum_{i=1}^s p_i (\log_2 p_i)$$

where H' = diversity index,

s = number of species,

i = species number ($i=1, 2, 3, \dots, s$)

p_i = proportion of individuals from the total sample belonging to the i th species.

Statistical analyses (ANOVA) can be conducted on these indices and others (e.g. evenness and dominance), however, the lack of consistent replicate numbers reduces the confidence of any conclusions.

RESULTS

Zooplankton

Zooplankton counts and relative abundance data are provided in Appendices A and B, respectively. A summary of site taxa number, counts and diversity is provided in Table 2.

TABLE 2. SUMMARY OF ZOOPLANKTON DATA COMPILED FROM MT. ZIRKEL LAKES
DURING THE 1984 SURVEY

Lake	Date	Replicate	Number of Taxa	Total Count	Diversity
Lake Elbert	07/31	1	11	13,854	2.35
		2	9	15,438	2.16
		3	12	25,604	2.14
	08/23	1	9	758,023	1.99
		2	8	1,015,298	2.05
		3	8	562,869	2.05
Seven Lakes	08/03	1	11	426,703	2.00
		2	10	249,747	2.32
		3	10	190,762	2.30
	08/21	1	9	471,255	1.69
		2	12	350,149	1.79
		3	10	362,699	1.82
	09/18	1	12	201,432	2.03
		2	12	445,529	1.92
		3	10	266,063	1.95

Zooplankton identifications were accomplished using Edmondson (1959) exclusively. The only taxonomic difficulties arose with nauplii and copepodids. For the most part they can probably be considered immatures of adults occurring in the same samples. However, the absence of definitive morphological characters makes accurate species association impossible.

MACROINVERTEBRATES

Qualitative

Qualitative macroinvertebrate data are summarized in Table 3. Shoreline

TABLE 3. QUALITATIVE MACROINVERTEBRATE DATA SUMMARY FROM MT. ZIRKEL LAKES,
1984 SURVEY

Lake Site	Date	Replicate	Number of Taxa	Total Count	Mean Replicate Effort	
					Collected (min.)	ID(hr.)
<u>Lake Elbert</u>						
Outlet	07/31	1	13	1,532	15	18
		2	11	297		
		3	9	436		
Shoreline	07/31	1	19	347	15	10
		2	20	628		
Inlet	08/24	1	7	11	5	1
Outlet	08/24	1	5	8	5	1
Shoreline	08/23	1	9	85	5	3
		2	9	28		
Outlet	09/06	1	7	27	5	1
Shoreline	09/06	1	6	57	5	2
Shoreline	09/20	1	8	93	5	2
		2	16	70	5	
		3	9	18	5	
<u>Seven Lakes</u>						
Inlet	08/03	1	19	1,446	15	12
Outlet	08/03	1	31	1,150	15	14
		2	22	154		
Shoreline	08/02	1	18	139	15	12
		2	14	48		
		3	20	228		
		4	20	1,210		
Shoreline	08/21	1	16	97	5	3
		2	14	140		
		3	8	18		
		4	18	173		
Outlet	09/03	1	11	26	5	1
Shoreline	09/04	1	12	78	5	2
		2	13	85		
		3	12	28		
		4	12	28		
Shoreline	09/17	1	13	39	5	1
		2	9	31		
		3	8	24		
		4	13	95		

and stream qualitative macroinvertebrate counts and relative abundance estimates for Lake Elbert and Seven Lakes are provided in Appendices C and D, respectively. Inconsistencies in the numbers, locations and types of samples collected makes comparisons between sample dates impossible; however, these data establish a baseline which should be of value in future studies to compare counts and species presence/absence.

Quantitative

Quantitative macroinvertebrate data are summarized in Table 4. Actual counts and relative abundance estimates are provided in Appendices E and F, respectively. Additionally, density estimates (#/M²) may be obtained from the appendices by multiplying replicate counts or mean counts by 43.057.

Taxonomic difficulties encountered were typical of remote water bodies with little historical data and undescribed taxa. Except for organisms noted, confidence in taxonomic identifications are high.

Ephemeroptera were identified using keys of Jensen (1966), Edmunds et al. (1977) and Morihara and McCafferty (1980). Many Baetidae were immature, and impossible to identify. Jensen (1966) notes that Siphlonurus occidentalis is very difficult to differentiate from C. columbianus, hence species confidence is marginal.

Plecoptera required use of Bauman, et al. (1977). Genus keys are not available for larvae of Chloroperlidae, hence genera are not differentiated.

TABLE 4. QUANTITATIVE MACROINVERTEBRATE SUMMARY DATA FOR MT. ZIRKEL LAKES,
1984 SURVEY

Lake Site	Date	Replicate	Number of Taxa	Total Count	Diversity
Lake Elbert	07/31	1	3	3	1.58
		2	6	6	2.58
		3	5	5	2.32
		4	1	1	0.0
		5	0	0	0.0
	08/23	1	0	0	0.0
		2	2	3	0.92
		3	3	3	1.58
		4	1	1	0.0
		5	3	8	1.06
	09/21	1	1	1	0.0
		2	1	1	0.0
		3	1	1	0.0
Seven Lakes	08/03	1	8	97	2.21
		2	14	159	2.66
		3	10	136	2.47
		4	14	138	2.70
		5	12	86	2.54
	08/21	1	7	61	1.80
		2	6	45	1.69
		3	6	56	1.65
		4	10	52	2.06
		5	7	61	1.80
	09/04	1	8	91	2.16
		2	10	124	2.25
		3	7	80	2.07
	09/18	1	7	104	2.00
		2	6	107	1.81
		3	5	108	1.28

Hemiptera keys by Hungerford (1948) were used to identify Corixids.

Trichoperans were identified to genus using Wiggins (1979); several were keyed to species by D. Ruiter (Denver, Colorado). Psychoglypha bella species is questionable and has not yet been confirmed.

Non-chironomid Diptera were identified using Johannsen (1934), Peterson (1960), and Hilsenhoff (1975). Chironomid identification was accomplished with keys by Oliver (1978), Simpson and Bode (1980), Simpson, Bode and Albu (1983), and Ferrington (1983). Additional confirmation and species identifications were done using Mashwitz (1975), Soponis (1977), Tilley (1978), Bode (1983), and Simpson et al. (1983). Chironomidae species, for the most part, are questionable, because general and/or different regional keys were used, and no adult associations for the specimens are available from the Rockies. Confidence in chironomid genera identifications is high.

Coleoptera were identified using La Rivers (1954), Edmondson (1959), and Brown (1972).

Collombola and Hydracarina were identified using the keys of Pennak (1978).

Oligochaeta were keyed using Brinkhurst (1975) and Hiltunen and Klemm (1980). Hirudinea were keyed using Klemm (1972). Difficulties arose with Oligochaeta in that Enchytraeidae and immature Tubificidae could not be identified below family levels. Additionally, the majority of oligochaetes were terrestrial, hence were unidentifiable using current aquatic literature.

The fingernail clam, Pisidium sp. was identified using Heard (1975).

The ostracod, Candonia scopulosa has not been confirmed and should be considered questionable.

The biological data fulfill a portion of the original study objectives in that they provide a basis for future reference. The data, however, lack the continuity, which would enable an accurate characterization of ice-free season, invertebrate community succession.

SUGGESTIONS FOR IMPROVING SAMPLING DESIGN

For a variety of reasons, the Region 8 sampling protocol was not rigidly followed in terms of numbers and types of samples collected during each visit to the two lakes. Time constraints, inclement weather and changes in field personnel were the principal reasons for deviations from the sampling plan.

For future sampling it is imperative that the sampling protocol be followed to the extent possible. Weather always poses a potential problem at these high altitudes, with snow storms possible during all months of the year. However, experience gained from the 1984 work will be invaluable in designing a sampling plan that offers high potential for successful execution.

A suggestion for improved field methods for characterizing zooplankton is to provide a one time (3-site) survey in each lake to determine spatial variability. Although within lake spatial variability has been shown to be

insignificant in Flat Tops lakes (Baldugo and Baker 1984), it has not been verified in Mt. Zirkel lakes. Site depth, however, significantly influences species counts and taxa collected, and should be standardized between sites, to the extent possible.

Benthic macroinvertebrate spatial community variations should be more adequately characterized. By simply sampling 3 to 4 sites, once in each lake, with 3 replicates, population indices could be statistically compared to assess site differences. Representativeness of a 1 site (5 replicates), lake invertebrate assessment could be determined. Subsequent sampling design, based on an intensive effort, could be more streamlined and scientifically justifiable.

Streams, being of sufficient flow, and coverage (bottom area), during certain times of the year, should be quantitatively sampled via Surbur, Hess or Portable Invertebrate Box Sampler (PIBS) thus providing an accurate historical reference.

The shoreline qualitative sampling effort should be more regimented, i.e., effort and sites sampled can be made uniform throughout the study. For instance, a collection effort of 5 minutes at each of 3 designated shoreline habitats can be sampled during each visit. Quantifying shoreline samples may not be feasible, however, the possibility should be investigated.

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APPENDIX A

ZOOPLANKTON COUNTS AND ESTIMATES OF RELATIVE ABUNDANCE
FROM LAKE ELBERT

July 31, and August 23, 1984

PROJECT: COLORADO ACID RAIN PROJECT (AP) AREA: LAKE ELBERT, MT. ZIPKEL M.A. (26) DATE: JULY 31, 1984
 STATION: CENTER OF LAKE; DEPTH 11.5M (261) SURSTATION: 1
 SAMPLER TYPE: 80 MICRON MESH FISCHER PLANKTON NET - VERTICLE TOW (53)
 NUMBER OF REPLICATES: 3 FIELD BIOLOGIST: BARRY BALDIGO (21)
 NOTE: NOT APPLICABLE (0)

RAW DATA TABLES

1ST LEVEL REFERENCE 2ND LEVEL REFERENCE GENUS/SPECIES	REPLICATES	COUNTS	TOTAL FOR SP.
CLADOCERA HOLOPODIDIAE HOLOPEDIUM GIBBERUM (31722)	1 - 3	2560.	979. 1355. 4894.
COPEPODA NAUPLIUS (36020)	1 - 3	5723.	6175. 11446. 23344.
CYCLOPODIA CYCLOPS VERNALIS (38250)	1 - 3	226.	452. 377. 1055.
ROTIFERA CYCLOPS COREPODID (38259)	1 - 3	151.	377. 151. 679.
BRACHIONIDAE NOTHOLCA SP. (54205)	1 - 3	75.	0. 151. 226.
KERATELLA QUADRATA (54300)	1 - 3	2033.	4518. 6777. 13328.
KELLICOTTIA LONGISPINA (54300)	1 - 3	301.	151. 753. 1205.
LECARIDAE LECANE SPP. (54660)	1 - 3	0.	0. 75. 75.
SYNCHAETIDAE POLYARTHRA SPP. (55760)	1 - 3	75.	0. 151. 226.
PICESOMA SP. (55800)	1 - 3	75.	75. 75. 225.
TESTUDINELLIDAE POMPHOLIX SULCATA (56070)	1 - 3	301.	75. 151. 527.
CONCHILILIDAE CONUCHILUS UNICORNUS (56463)	1 - 3	2334.	2636. 4142. 9112.
TOTAL FOR 12 SPECIES BY REPLICATES	1 - 3	13854.	15430. 25604.
TOTAL FOR 3 REPLICATES, 12 SPECIES		54896.	

PROJECT: COLORADO ACID RAIN PROJECT (AR) AREA: LAKE ELBERT, MT. ZIRKEL N.A. (24) DATE: JULY 31, 1984
 STATION: CENTER OF LAKE; DEPTH 11.5M (341) SUBSTATION: 1
 SAMPLER TYPE: 80 MICRON MESH WISCONSIN PLANKTON NET - VERTICLE TOW (5)
 NUMBER OF REPLICATES: 3 FIELD BIOLOGIST: BARRY BALDIGO (21)
 NOTE: NOT APPLICABLE (0)

RELATIVE ABUNDANCE DATA TABLES

1ST LEVEL REFERENCE 2ND LEVEL REFERENCE GENUS/SPECIES	REPLICATES	PERCENTAGE COUNTS			TOTAL FOR SP.
CLADOCERA HOLOPEDIIDAE HOLOPEDIUM GIBBERUM (31722)	1 = 3	0.18478	0.06341	0.05292	0.08915
COPEPODA					
NAUCRUS (36020)	1 = 3	0.41309	0.39999	0.44704	0.42524
CYCLOPODIA CYCLOPS VERNALIS (38290)	1 = 3	0.01631	0.02928	0.01472	0.01922
CYCLOPS COPEPODID (38255)	1 = 3	0.01090	0.02442	0.00590	0.01237
ROTIFERA BRACHIONIDAE NOTOCOLCA SP. (54205)	1 = 3	0.00541	0.00000	0.00590	0.00412
KERATELLA QUADRATA (54300)	1 = 3	0.14674	0.29265	0.26469	0.24279
MELLICOTTA LONGISPINA (54300)	1 = 3	0.02173	0.00978	0.02941	0.02195
LECANIDAE LFCANE spp. (54660)	1 = 3	0.00000	0.00000	0.00293	0.00137
SYNCHAETIDAE POLYARTHRA spp. (55760)	1 = 3	0.00541	0.00000	0.00590	0.00412
PLCESOMA spp. (55900)	1 = 3	0.00541	0.00486	0.00293	0.00410
TESTUDIVELLIDAE PUMPHOLYA SULCATA (56070)	1 = 3	0.02173	0.00486	0.00590	0.00960
CUNCCIVILIDAE CONOCHILUS UNICORNIS (56463)	1 = 3	0.16847	0.17075	0.16177	0.16599

PROJECT: COLORADO ACID RAIN PROJECT (AR)
 STATION: CENTER OF LAKE; DEPTH 11.5M (261)
 SAMPLER TYPE: 80 MICRON MESH WISCONSIN PLANKTON NET - VERTICLE TOW (53)
 NUMBER OF REPLICATES: 3 FIELD BIOLOGIST: EPA-DENVER SAMPLING CPER(R1)
 NOTE: NOT APPLICABLE (0)

AREA: LAKE ELBERT, MT. ZIRKEL N.A. (26)
 DATE: AUGUST 23, 1984
 SUBSTATION: 1

RAW DATA TABLES

1ST LEVEL REFERENCE 2ND LEVEL REFERENCE GENUS/SPECIES	REPLICATES	COUNTS	TOTAL FOR SP.
CLADOCERA HOLOPODIDAE HOLOPODIUM GIBBERUM (31722)	1 - 3	87850, 91615, 87223,	266688,
COPEPODA NAUPLIUS (36020)	1 - 3	85340, 99773, 48318,	233431,
CYCLOPODIA EUCYCLOPS AGILIS (38070)	1 - 3	628, 0, 0,	628,
CYCLOPS VERNALIS (38250)	1 - 3	628, 1883, 0,	2511,
CYCLOCPS COPEPODID (38255)	1 - 3	21963, 30748, 21335,	74046,
ROTIFERA BRACHIONIDAE KEFATELLA QUADRATA (54300)	1 - 3	180093, 137422, 119225,	436740,
KELLCOTTIA LONGISPINA (54300)	1 - 3	12550, 15060, 12550,	40160,
LECANIDAE MONOSTYLA SPP. (54570)	1 - 3	0, 628, 0,	628,
SYNCHAETIDAE POLYARTHRA SPP. (55760)	1 - 3	0, 628, 1255,	1883,
CONOCHILIDAE CONOCHILUS UNICORNIS (56463)	1 - 3	368343, 631893, 271080,	1271316,
COLLOTHECA SP. (56465)	1 - 3	628, 5648, 1883,	8159,
TOTAL FOR 11 SPECIES BY REPLICATE:	1 - 3	758023, 1015298, 562869,	
TOTAL FOR 3 REPLICATES, 11 SPECIES:		2336190,	

PROJECT: COLORADO ACID RAIN PROJECT (AR) AREA: LAKE ELBERT, MT. ZIPPERL W.A. (26) DATE: AUGUST 23, 1984
 STATION: CENTER OF LAKE; DEPTH 11.5M (261) SUBSTATION: 1
 SAMPLER TYPE: 60 MICRON MESH WISCONSIN PLANKTON NET - VERTICLE TOW (S3)
 NUMBER OF REPLICATES: 3 FIELD BIOLOGIST: EPA-DENVER SAMPLING CREW (81)
 NOTE: NOT APPLICABLE (0)

RELATIVE ABUNDANCE DATA TABLES

1ST LEVEL REFERENCE	2ND LEVEL REFERENCE	REPLICATES	PERCENTAGE COUNTS	TOTAL FOR SP.
	GENUS/SPECIES			
CLADOCERA				
HCLOPEDIDAE				
HCLOPIDIUM GIBBERUM (31722)		1 - 3	0.11589 0.09023 0.15496	0.11416
CCPEPODA				
NAUPLIUS (36620)		1 - 3	0.11258 0.09027 0.08584	0.09992
CYCLOPODIA				
EUCYCLOPS AGILIS (38070)		1 - 3	0.00083 0.00000 0.00000	0.00027
CYCLOPS VERNALIS (38250)		1 - 3	0.00083 0.00185 0.00000	0.00107
CYCLOPS COPEPODID (38255)		1 - 3	0.02897 0.03020 0.03790	0.03170
ROTIFERA				
BRACHIONIDAE				
KERATELLA QUADRATA (54300)		1 - 3	0.23758 0.13535 0.21182	0.18695
KELLOGGIA LONGISPINA (54380)		1 - 3	0.01656 0.01483 0.02230	0.01719
LECANICAE				
MONOSTYLA SPP. (54570)		1 - 3	0.00000 0.00062 0.00000	0.00027
SYNCHAETIDAE				
POLYAPTHRA SPP. (55760)		1 - 3	0.00000 0.00062 0.00223	0.00081
CONOCHILIDAE				
CONOCHILUS UNICORNUS (56463)		1 - 3	0.48593 0.62237 0.48160	0.54418
COLLOTHECA SP. (56565)		1 - 3	0.00083 0.06556 0.00335	0.00349

APPENDIX B

ZOOPLANKTON COUNTS AND ESTIMATES OF RELATIVE ABUNDANCE
FROM SEVEN LAKES

August 3, August 21, and September 18, 1984

PAGE 1

PROJECT: COLORADO ACID RAIN PROJECT (CAR) AREA: SEVEN LAKES, MT. ZIPPET M.A. (27) DATE: AUGUST 3, 1984
 STATION: CENTER OF NE BAYSH; DEPTH 6.0M (27)
 SAMPLER TYPE: 8C MICRON MESH WISCONSIN PLANKTON NET - VERTICLE TOW (53)
 NUMBER OF REPLICATES: 3 FIELD RECORDER: BARRY BALDIGO (21)
 NOTES: NOT APPLICABLE (0) SUBSTATION: 1

PAW DATA TABLES

1ST LEVEL REFERENCE 2ND LEVEL REFERENCE GENUS/SPECIES	REPLICATES	COUNTS	TOTAL FOR SP.
CLADOCERA			
HOLOPEDIIDAE			
HOLOPEDIUM GIBBERUM (31722)	1 - 3	71535, 60868, 61495,	193898,
COPEPODA			
NAUPLIUS (36020)	1 - 3	30120, 30748, 17570,	78438,
CALANOIDA			
DIAPTOMUS COPEPODID (37055)	1 - 3	1883, 1255, 1255,	4393,
DIAPTOMUS LINTONI (37065)	1 - 3	1883, 0, 0,	1883,
CYCLOPOIDAE			
EUCYCLOPS AGILIS (38070)	1 - 3	1883, 1255, 1883,	5021,
EUCYCLOPS COPEPODID (38075)	1 - 3	32630, 35140, 35140,	102910,
ROTIFERA			
BRACHIONIDAE			
HEPATELLA COCHLEARIS (54270)	1 - 3	4393, 628, 1255,	6276,
HEPATELLA QUADRATA (54300)	1 - 3	4393, 1255, 1255,	6903,
SYNCHAETIDAE			
POLYARTHRA spp. (55760)	1 - 3	33750, 23845, 11923,	69026,
CONCHILILIDAE			
CONOCHILUS UNICORNIS (56463)	1 - 3	243470, 92243, 58358,	394071,
GASTROPODAE			
ASCOMORPHA sp. (56600)	1 - 3	1255, 2510, 628,	4393,
TOTAL FOR 11 SPECIES BY REPLICATE	1 - 3	426703, 249747, 190762,	
TOTAL FOR 3 REPLICATES, 11 SPECIES		867212,	

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PAGE 1

PROJECT: COLORADO ACID RAIN PROJECT (CAR)
 STATION: CENTER OF NE BAY14, DEPTH 6.0M (271)
 SAMPLER TYPE: 4C MICRON MESH WISCONSIN PLANKTON NET - VERTICLE TOW (53)
 NUMBER OF REPLICATES: 3 FIELD BIOLOGIST: BARRY BALDIGO (21)
 NOTE: NOT APPLICABLE (0)

AREA: SEVEN LAKES, MT. ZIPKEL W.A. (27)
 DATE: AUGUST 3, 1984
 SURSTATION: 1

RELATIVE ABUNDANCE DATA TABLES

1ST LEVEL REFERENCE 2ND LEVEL REFERENCE GENUS/SPECIES	REPLICATES	PERCENTAGE COUNTS	TOTAL FOR SP.
CLADOCERA HOLOPEDIDAE HOLOPEDIUM GIBBERUM (31722)	1 - 3	0.16765 0.24372 0.32237	0.22359
COPEPODA NAUPLIUS (36020)	1 - 3	0.07059 0.12312 0.09210	0.09045
CALANICIA DIAPTONUS COPEPODID (37055) DIAPTONUS LINTONI (37065)	1 - 3	0.00441 0.00503 0.00658	0.00507
CYCLOPODIA FUCYCLOPS AGILIS (38070) EUCYCLOPS COPEPODID (18075)	1 - 3	0.00441 0.00503 0.00987	0.00579
ROTIFERA BRACHIONIDAE KERATELLA COCHLEAPIS (54270) KERATELLA QUADRATA (54300)	1 - 3	0.01030 0.00251 0.00658	0.00724
SYNCHAETIDAE POLYARTHRA spp. (55760)	1 - 3	0.01030 0.00503 0.00658	0.00796
CONCHILIDAE CONUCHILUS UVICORNIS (56463)	1 - 3	0.07794 0.09548 0.06250	0.07960
GASTROPODAE ASCIDIOMORPHA sp. (56600)	1 - 3	0.57058 0.36935 0.30592	0.45441
	1 - 3	0.00294 0.01005 0.00329	0.00307

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PROJECT: COLORADO ACID RAIN PROJECT (AR) AREA: SEVEN LAKES, MT. ZIPKEL P.A. (77) DATE: AUGUST 21, 1984
 STATION: CENTER OF NE BASIN; DEPTH 6.0M (271) SUBSTATION: 1
 SAMPLER TYPE: 86 MICRON MESH WISCONSIN PLANKTON NET - VERTICLE TOW (53)
 NUMBER OF REPLICATES: 3 FIELD BIOLOGIST: EPA-CENVER SAMPLING CREW(B1)
 NOTE: NOT APPLICABLE ()

RAW DATA TABLES

1ST LEVEL REFERENCE 2ND LEVEL REFERENCE GENUS/SPECIES	REPLICATES	COUNTS	TOTAL FOR SP.
CLADOCERA			
HOLOPEDTOAE			
HOLOPEDIUM GRABERUM (31722)	1 - 3	69025, 39533, 50820,	159386.
DAPHNIODE			
DAPHNIA ROSEA (31765)	1 - 3	629, 628, 628,	1884.
COPEPODA			
NAUPLIUS (36020)	1 - 3	92243, 80320, 119853,	292416.
CALANIDA			
DIAPOMUS COPEPODIN (37055)	1 - 3	2510, 1255, 628,	4343.
DIAPOMUS LINTONI (37065)	1 - 3	1255, 628, 2510,	4393.
CYCLOPOIDA			
EUCYCLOPS AGILIS (38070)	1 - 3	0, 628, 0,	628.
EUCYCLOPS CCPEPODID (38075)	1 - 3	3139, 3138, 5020,	11296.
ROTIFERA			
BRACHIONIDAE			
KEPATELLA COCHLEARIS (54270)	1 - 3	1883, 2510, 5648,	10041.
LOPHOCHARIS SP. (54460)	1 - 3	0, 628, 0,	628.
LECANIDIAE			
MONOSTYLA SPP. (54570)	1 - 3	0, 628, 628,	1256.
SYNCHAETIDAE			
POLYARTHRA SPP. (55760)	1 - 3	276729, 197035, 170053,	643816.
CONCHILIIDAE			
CONUCHILUS UNICORNUS (56463)	1 - 3	23845, 23218, 6903,	53966.
TOTAL FOR 12 SPECIES BY REPLICATES	1 - 3	471255, 350149, 362699.	
TOTAL FOR 3 REPLICATES, 12 SPECIES		1194103.	

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PROJECT: COLORADO ACID RAIN PROJECT (AR) AREA: SEVEN LAKES, MT. ZIMBEL M.A. (27) DATE: AUGUST 21, 1984
 STATION: CENTER OF NE BASIN; DEPTH 6.0M (271) SUBSTATION: 1
 SAMPLER TYPE: 8C MICRON MESH WISCONSIN PLANKTON NET + VERTICLE TOW (93)
 NUMBER OF REPLICATES: 3 FIELD BIOLOGIST: EPA-DENVER SAMPLING CREW (81)
 NECT: NOT APPLICABLE (0)

RELATIVE ABUNDANCE DATA TABLES

1ST LEVEL REFERENCE 2ND LEVEL REFERENCE GENUS/SPECIES	REPLICATES	PERCENTAGE COUNTS	TOTAL FOR SP.
CLADOCERA HOLOPEDIIDAE HOLOPEDIUM GIBBERUM (31722)	1 - 3	0.14647 0.11290 0.14014	0.13460
DAPHNIIDAE DAPHNIA ROSEA (31765)	1 - 3	0.00133 0.00179 0.00173	0.00159
COPEPODA NAUPLIUS (36020)	1 - 3	0.19574 0.22939 0.33045	0.24695
CALANICA DIAPTOVUS COPEPODIC (37095)	1 - 3	0.00533 0.00358 0.00173	0.00371
DIAPLOMUS LINTONI (37045)	1 - 3	0.00266 0.00179 0.00692	0.00371
CYCLOPODIA EUCYCLOPS AGILIS (38070)	1 - 3	0.00000 0.00179 0.00000	0.00053
EUCYCLOPS COPEPODIC (38075)	1 - 3	0.00966 0.00896 0.01384	0.00954
ROTIFERA BRACHIOKIDAE KEPATELLA COCHLEARIS (54270)	1 - 3	0.00400 0.00717 0.01597	0.00848
LOPHOCHARIS SP. (54460)	1 - 3	0.00000 0.00179 0.00000	0.00053
LECANOIDAE MONOSTYLIS spp. (54570)	1 - 3	0.00000 0.00179 0.00173	0.00106
SYNCHAETIDAE POLYARTHRA spp. (59760)	1 - 3	0.58722 0.56272 0.46885	0.54372
CONOCHILIDAE CONOCHILUS UNICORNIS (56463)	1 - 3	0.05060 0.06631 0.01903	0.04558

PROJECT: COLORADO ACID RAIN PROJECT (AR) AREA: SEVEN LAKES, MT. ZIRKEL W.R. (27) DATE: SEPTEMBER 18, 1984
 STATION: CENTER OF NE BASIN; DEPTH 6.0M (271) SUBSTATION: 1
 SAMPLER TYPE: 80 MICRON MESH WISCONSIN PLANKTON NET - VERTICLE TOW (53)
 NUMBER OF REPLICATES: 3 FIELD BIOLOGIST: EPA-DENVER SAMPLING CREW(81)
 NOTE: NOT APPLICABLE (0)

RAW DATA TABLES

1ST LEVEL REFERENCE 2ND LEVEL REFERENCE GENUS/SPECIES	REPLICATES	COUNTS	TOTAL FOR SP.
CLADOCERA			
HOLCOPEDIDAE			
HOLCOPEMIDIUM GIBBERUM (31722)	1 - 3	49180,	50820,
DAPHNIIDAE			
DAFPNIA ROSEA (31765)	1 - 3	0,	0,
CHYDORIDAE			
EUPYCERCUS LANELLATUS (32650)	1 - 3	0,	628,
CHYDORUS Sphaericus (33280)	1 - 3	628,	1255,
COPEPODA			
NAUPLIUS (36020)	1 - 3	26983,	67770,
CALANOIDA			
DIAPTOMUS COPEPODID (37055)	1 - 3	628,	628,
DIAPTOMUS LINTONI (37065)	1 - 3	3765,	1255,
CYCLOPODIA			
EUCYCLOPS AGILIS (38070)	1 - 3	628,	628,
EUCYCLOPS COPEPODID (38075)	1 - 3	628,	0,
ROTIFERA			
BRACHIONIDAE			
KEFATELLA COCHLEARIS (54270)	1 - 3	0,	1255,
KEFATELLA QUADRATA (54300)	1 - 3	628,	0,
LECANIDAE			
LECANI LUNA (54640)	1 - 3	0,	628,
LECANI SPP. (54660)	1 - 3	0,	628,
SYNCHAETIDAE			
POLYARTHRA SPP. (55760)	1 - 3	97263,	207703,
TESTUDINELLIDAE			
POMPHOLYX SULCATA (56070)	1 - 3	628,	0,
CONCHILIIDAE			
CONCHILUS UNICORNUS (56463)	1 - 3	23845,	112323,
COLLOTHeca SP. (56565)	1 - 3	628,	0,

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PROJECT: COLORADO ACID RAIN PROJECT (AR) AREA: SEVEN LAKES, MT. ZIPPERL N.A. (27) DATE: SEPTEMBER 18, 1984
STATION: CENTER OF NE BASIN; DEPTH 6.0M (271) SUBSTATION: 1
SAMPLER TYPE: 80 MICRON MESH WISCONSIN PLANKTON NET - VERTICLE TOW (53)
NUMBER OF REPLICATES: 3 FIELD BIOLOGIST: EPA-DENVER SAMPLING CREW (81)
NCTE: NOT APPLICABLE (0)

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PAN DATA TABLES

1ST LEVEL REFERENCE	2ND LEVEL REFERENCE	REPLICATES	COUNTS	TOTAL FOR SP.
	GENUS/SPECIES			
TOTAL FOR 17 SPECIES BY REPLICATE:		1 + 3	201432, 445529, 266063,	
TOTAL FOR 3 REPLICATES, 17 SPECIES:			913024.	

PROJECT: COLORADO ACID RAIN PROJECT (AR) AREA: SEVEN LAKES, MT. ZIPPERL W.A. (27) DATE: SEPTEMBER 18, 1984
 STATION: CENTER OF NE BASIN; DEPTH 6.0M (271) SUBSTATION: 1
 SAMPLER TYPE: 60 MICRON MESH WISCONSIN PLANKTON NET + VERTICLE TOW (53)
 NUMBER OF REPLICATES: 3 FIELD BIOLOGIST: EPA-DENVER SAMPLING CREW(R1)
 NOTE: NOT APPLICABLE (0)

RELATIVE ABUNDANCE DATA TABLES

1ST LEVEL REFERENCE 2ND LEVEL REFERENCE GENUS/SPECIES	REPLICATES	PERCENTAGE COUNTS		TOTAL FOR SP.
CLADOCERA				
HOLOPEDIIDAE				
HOLOPEDIUM GIBBERUM (31722)	1 - 3	0.22429	0.11404	0.14639
DAPHNIDAE				
CAPHNIA ROSEA (31765)	1 - 3	0.00000	0.00000	0.00069
CHYDRIDAE				
EURYCERCUS LANELLATUS (33269)	1 - 3	0.00000	0.00141	0.00069
CHYDRUS Sphaericus (33280)	1 - 3	0.00312	0.00282	0.00344
COPEPODA				
NAUPLIUS (36020)	1 - 3	0.13396	0.15211	0.14295
CALANCIIDAE				
DIAPTOMUS COPEPODID (37055)	1 - 3	0.00312	0.00141	0.00139
DIAPTOMUS LINTONI (37065)	1 - 3	0.01869	0.00282	0.00619
CYCLOPODIA				
EUCYCLOPS AGILIS (38070)	1 - 3	0.00312	0.00141	0.00275
EUCYCLOPS COPEPODID (38075)	1 - 3	0.00312	0.00000	0.00069
POTIFERA				
BRACHIONIDAE				
KERATELLA COCHLEARIS (54270)	1 - 3	0.00000	0.00282	0.00344
KERATELLA QUADRATA (54300)	1 - 3	0.00312	0.00000	0.00069
LECANIDAE				
LECANE LUNA (54640)	1 - 3	0.00000	0.00141	0.00138
LECANE spp. (54660)	1 - 3	0.00000	0.00141	0.00069
SYNCHAETIDAE				
POLYAPTHRA spp. (55760)	1 - 3	0.48266	0.46619	0.47697
TESTUDINELLIDAE				
POPHOLIX SULCATA (56070)	1 - 3	0.00312	0.00000	0.00069
CONCHILIDIIDAE				
CONCHILIGUS UNICRANUS (56163)	1 - 3	0.11839	0.25211	0.20991
COLLOTHRACA spp. (56569)	1 - 3	0.00312	0.00000	0.00069

APPENDIX C

QUALITATIVE MACROINVERTEBRATE (DIP NET) COUNTS AND RELATIVE ABUNDANCE ESTIMATES FROM LAKE ELBERT

Inlet: August 24, 1984

Outlet: July 31, August 24, and September 6, 1984

Shoreline: July 31, August 23, September 6, and September 20, 1984

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PROJECT: COLORADO ACID RAIN PROJECT (AH) AREA: LAKE ELBERT, MI. ZIPKEL W.A. (26) DATE: AUGUST 24, 1984
 STATION: INLET, 50M FROM MOUTH (267) SAMPLER TYPE: QUALITATIVE DIP NET SAMPLE (40) SUBSTATION: 7
 NUMBER OF REPLICATES: 1 FIELD BIOLOGIST: EPA-DENVER SAMPLING CREW(81)
 NOTE: NOT APPLICABLE (0)

RAW DATA TABLES

1ST LEVEL REFERENCE	2ND LEVEL REFERENCE	REPLICATES	COUNTS	TOTAL FOR SP.
	GENUS/SPECIES			
		1 = 1	3.	3.
EPHEMEROPTERA				
	STIPLICNURIDAE			
	AMELETUS SP. (600)	1 = 1	3.	3.
PLECOPTERA				
	CHLOROPERLIDAE			
	-ALL- (4000)	1 = 1	1.	1.
	NEMOURIDAE			
	ZAFARA OREGONENSIS (4100)	1 = 1	3.	3.
TRICHOPTERA				
	LINNEPHILIDAE			
	IMMATURE LINNEPHILIDAE (9568)	1 = 1	1.	1.
	PSYCHOGLYPHA BELLA (9595)	1 = 1	1.	1.
DIPTERA				
	CHIRONOMIDAE, B-FAM OPHIOCLADIINAE			
	PSECTROCLADUS spp. (1361G)	1 = 1	1.	1.
	CHIRONOMIDAE, IRIS DIAMESINAE			
	PSEUDODIAMESA SP. (16500)	1 = 1	1.	1.
TOTAL FOR 7 SPECIES BY REPLICATE		1 = 1	11.	
TOTAL FOR 1 REPLICATES, 7 SPECIES			11.	

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PAGE 1

PROJECT: POLYCARBOXY ACID RAIN PROJECT (AP)
STATION: INLET, 50' FROM MOUTH (267)
SAMPLER TYPE: QUALITATIVE DIP NET SAMPLE (40)
NUMBER OF REPLICATES: 1 FIELD BIOLOGIST: EPA-PEKVER SAMPLING CREW(81)
NOTE: NOT APPLICABLE (0)

AREA: LAKE ELBERT, MT. ZIRKEL M.A. (26) DATE: AUGUST 24, 1984
SUBSTATION: 7

RELATIVE ABUNDANCE DATA TABLES

C-2

1ST LEVEL REFERENCE 2ND LEVEL REFERENCE GENUS/SPECIES	REPLICATES	PERCENTAGE COUNTS	TOTAL FOR SP.
EPHEMEROPTERA BIFLONIATIDAE AMELETUS SP. (600)	1 • 1	0.27273	0.27273
PLECOPTERA CHLOPOPERLIDAE -ALL- (4000)	1 • 1	0.09091	0.09091
NEMOURIDAE ZAFADA OREGONENSIS (4100)	1 • 1	0.27273	0.27273
TRICHOPTERA LIPNEPHILIDAE IMPUTURE LIPNEPHILIDAE (9560) PSYCHOGLYPHA BELLA (9593)	1 • 1 1 • 1	0.09091 0.09091	0.09091 0.09091
DIPTERA CHIRONOMIDAE, 8-FAM CRINOCLADIINAE PSECTROCLADIUS spp. (15610)	1 • 1	0.09091	0.09091
CHIRONOMIDAE, TRIBE DIAMESINAE PSEUDODIAVESA SP. (14500)	1 • 1	0.09091	0.09091

PROJECT: COLOPACO ACIC RAIN PROJECT (AR) AREA: LAKE ELBERT, MT. ZIFFEL W.A. (26) DATE: JULY 31, 1984
 STATION: CUTLET (MAD CREEK); 50' FROM SOURCE, (268) SUBSTATION: 0
 SAMPLER TYPE: QUALITATIVE DIP NET SAMPLE (40)
 NUMBER OF REPLICATES: 3 FIELD BIOLOGIST: BARRY BALDIGO (21)
 NOTE: NOT APPLICABLE (0)

RAW DATA TABLES

1ST LEVEL REFERENCE	2ND LEVEL REFERENCE	REPLICATES	COUNTS	TOTAL FOR SP.
	GENUS/SPECIES			
EPHEMEROPTERA				
BAETIDAE				
-ALL- (1800)		1 - 3	2.	1.
TRICHOPTERA				
LIMNEPHILIDAE				
HESPEROPHYLAX SP. (9560)		1 - 3	2.	2.
DIPTERA				
CHIRONOMIDAE, S-FAMILY TANYPCCINAE				
THIENEWANNIMYIA (GP) (11000)		1 - 3	376.	36.
CHIRONOMIDAE, TRIRE TANYTARSINI				
TANYTARSUS/MICROPSILCTPA COMPLEX (13590)		1 - 3	248.	2.
CHIRONOMIDAE, S-FAM ORTHOCLADINAE				
CYPLOCLAUDIUS SP. (14645)		1 - 3	0.	0.
NAKOCLADIUS SP. (14880)		1 - 3	0.	4.
ORTHOCLADIUS SP. NP. MALCCHI (14895)		1 - 3	400.	144.
SYNORTHOCLADIUS SP. (16010)		1 - 3	49.	20.
CHIRONOMIDAE, TRIRE DIAMESINAE				
DIAMESA SP. NR. LATITARSIS (16200)		1 - 3	64.	12.
SIMULIIDAE				
SIMULITUM SP. (17530)		1 - 3	340.	67.
PRSIMULIUM SP. (17550)		1 - 3	2.	0.
TIPULIDAE				
DICRANOGLA SP. (19560)		1 - 3	0.	0.
COLEOPTERA				
ELMIDAE				
ZAITSEVIA PARVULA (1977C)		1 - 3	0.	0.
HYDRACARINA				
LEBERTIIDAE				
LEBERTIA SP. (21410)		1 - 3	4.	1.
SPERCHONIDAE				
SPERCHON SP. (21510)		1 - 3	6.	6.
PELECYPODA				
SPHAEPTIIDAE				
PISIDIUM SP. (65025)		1 - 3	32.	0.
				148.

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PROJECT: COLCRACO ACID RAIN PROJECT (AR) AREA: LAKE ELBERT, MT. ZIRKEL M.A. (26) DATE: JULY 31, 1984
STATION: OUTLET (MAD CREEK); 30M FROM SOURCE, (268) SUBSTATION: 0
SAMPLER TYPE: QUALITATIVE DIP NET SAMPLE (40)
NUMBER OF REPLICATES: 3 FIELD BIOLOGIST: BARRY BALDIGO (21)
NCTE: NOT APPLICABLE (0)

RAW DATA TABLES

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1ST LEVEL REFERENCE	REPLICATES	COUNTS	TOTAL FOR SP.
2ND LEVEL REFERENCE GENUS/SPECIES			
TOTAL FOR 16 SPECIES BY REPLICATE:	1 + 3	1932, 297,	436.
TOTAL FOR 3 REPLICATES, 16 SPECIES:		2269.	

PROJECT: COLORADO ACIC RAIN PROJECT (AR) AREA: LAKE ELBERT, MT. ZIRKEL W.A. (26) DATE: JULY 31, 1984
 STATION: OUTLET (MAD CREEK); 50M FROM SOURCE. (260) SUBSTATION: 0
 SAMPLER TYPE: QUALITATIVE DIP NET SAMPLE (40)
 NUMBER OF REPLICATES: 3 FIELD BIOLOGIST: BARRY BALDIGO (21)
 NOTE: NOT APPLICABLE (0)

RELATIVE ABUNDANCE DATA TABLES

1ST LEVEL REFERENCE	2ND LEVEL REFERENCE	REPLICATES	PERCENTAGE COUNTS	TOTAL FOR SP.
	GENUS/SPECIES			
EHMERICPTERA				
BAETIDAE				
-ALL- (1800)		1 - 3	0.00131 0.00337 0.00000	0.00132
TRICHOPTERA				
LIMNEPHILIDAE				
HESPEROPHYLAX SP. (9560)		1 - 3	0.00131 0.00000 0.00459	0.00177
DIPTERA				
CHIRONOMIDAE, S-FAMILY TANYPOGONINAE				
THIENEMANNIMYIA (GP) (11000)		1 - 3	0.24543 0.12121 0.04587	0.19073
CHIRONOMIDAE, TRIBE TANYTARSINI				
TANYTARSIUS/MICROPECTRA COMPLEX (13580)		1 - 3	0.16100 0.00673 0.29358	0.16689
CHIRONOMIDAE, S-FAM OTHOCLADIINAE				
DIFLCLADIUS SP. (14645)		1 - 3	0.00522 0.00000 0.00000	0.00353
ANOCLADIUS SP. (14860)		1 - 3	0.00000 0.01347 0.00000	0.00177
OTHOCLADIUS SP. NP. MALECHI (14895)		1 - 3	0.26110 0.48485 0.25688	0.28962
SYNTHONOCLEADIUS SP. (16010)		1 - 3	0.03133 0.09428 0.00000	0.03355
CHIRONOMIDAE, TRIBE DIAMESINAE				
DIAMESA SP. NR. LATITARSIS (16200)		1 - 3	0.04178 0.04040 0.01835	0.03709
SIMULIIDAE				
SIMULIUM SP. (17530)		1 - 3	0.22193 0.22559 0.09862	0.19868
PARSIMULIUM SP. (17550)		1 - 3	0.00131 0.00000 0.00000	0.00088
TIPIULIDAE				
DICRANOXA SP. (18560)		1 - 3	0.00000 0.00000 0.00229	0.00044
COLEOPTERA				
ELMIDAE				
ZAITZEVIA PARVULA (19770)		1 - 3	0.00000 0.00337 0.00000	0.00044
HYDRACAPTRA				
LEPTPTIDAE				
LIPPERTIA SP. (21410)		1 - 3	0.00261 0.00337 0.00000	0.00221
SPERCHONIDAE				
SPERCHON SP. (21510)		1 - 3	0.00392 0.00337 0.01376	0.00574
PELECYPTERA				
SFHALPITIDAE				
PISIDIUM SP. (65025)		1 - 3	0.02089 0.00000 0.26606	0.06534

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PROJECT: COLORADO ACID RAIN PROJECT (CAR)
 STATION: CUTLET (MAD CREEK); 90M FROM SOURCE. (268)
 SAMPLER TYPE: QUALITATIVE DIP NET SAMPLE (40)
 NUMBER OF REPLICATES: 1 FIELD BIOLOGIST: EPA-DENVER SAMPLING CREW (81)
 NOTE: NOT APPLICABLE (0)

DATES: AUGUST 24, 1984
 SUBSTATIONS: 0

PAW DATA TABLES

1ST LEVEL REFERENCE 2ND LEVEL REFERENCE GENUS/SPECIES	REPLICATES	COUNTS	TOTAL FOR SP.
EPHEMEROPTERA SIPHONURIDAE SIPHONURUS OCCIDENTALIS (659)	1 • 1	2.	2.
BAETIDAE BAETIS BICAUDATUS (1300)	1 • 1	1.	1.
DIPTERA CHIRONOMIDAE, S-PAM ORTHOCLACIINAE DIPLOCLOADIUS SP. (14645) PSECTROCLADIUS spp. (15610)	1 • 1 1 • 1	1. 1.	1. 1.
SIMULIIDAE SIMULIUM SP. (17530)	1 • 1	3.	3.
TOTAL FOR 5 SPECIES BY REPLICATES	1 • 1	8.	
TOTAL FOR 1 REPLICATES, 5 SPECIES!		8.	

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PROJECT: COLORADO ACID RAIN PROJECT (CAR) AREA: LAKE ELBERT, MT. ZIRKEL W.A. (26) DATE: AUGUST 24, 1984
STATION: OUTLET (MAD CREEK); 50M FROM SOURCE, (268) SUBSTATION: 8
SAMPLER TYPE: QUALITATIVE DIP NET SAMPLE (40)
NUMBER OF REPLICATES: 1 FIELD BIOLOGIST: EPA-DENVER SAMPLING CREW(81)
NOTE: NOT APPLICABLE (0)

RELATIVE ABUNDANCE DATA TABLES

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1ST LEVEL REFERENCE 2ND LEVEL REFERENCE GENUS/SPECIES	REPLICATES	PERCENTAGE COUNTS	TOTAL FOR SP.
EPHEMEROPTERA SIPHONURIDAE SIPHONOPUS OCCIDENTALIS (655)	1 - 1	0.25000	0.25000
BAETIDAE BAETIS BICAUDATUS (1300)	1 - 1	0.12500	0.12500
DIPTERA CHIRONOMIDAE, 6-FAM CRITHOCLOADIINAE CIFLOCLOADIUS SP. (14645)	1 - 1	0.12500	0.12500
	1 - 1	0.12500	0.12500
SIMULIIDAE SIMULIUM SP. (17530)	1 - 1	0.37500	0.37500

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PROJECT: COLORADO ACID RAIN PROJECT (AP) AREA: LAKE ELBERT, MT. ZIRKEL W.A. (26)
 STATION: CUTLET (MAD CREEK); 50M FROM SOURCE, (268) DATE: SEPTEMBER 6, 1984
 SAMPLER TYPE: QUALITATIVE DIP NET SAMPLE (40) SUBSTATION: 1
 NUMBER OF REPLICATES: 1 FIELD BIOLOGIST: EPA-DENVER SAMPLING CREW (81)
 NOTE: NOT APPLICABLE (0)

RAW DATA TABLES

1ST LEVEL REFERENCE	2ND LEVEL REFERENCE	REPLICATES	COUNTS	TOTAL FOR SP.
	GENUS/SPECIES			
PHHEMEROPTERA				
SIPHONURIDAE	SIPHONURUS OCCIDENTALIS (655)	1 - 1	1.	1.
LPPTCPHLEBIIDAE	PAFALEPTCPHLEBITA SP. (1010)	1 - 1	4.	4.
PLECOPTERA				
FEPLOIDAE	HESPEROPERLA PACIFICA (3530)	1 - 1	3.	3.
MEMOURICAE	AMPHINENURA SP. (4140)	1 - 1	4.	4.
DIPTERA				
CHIRONOMIDAE, S-FAMILY TANYPCEINAE	THIENEMANNINTIA (GP) (11000)	1 - 1	13.	13.
CHIRONOMIDAE, S-FAM OPTHOCOLIDINAE	EUREFERIILLA BAVARICA (GP) (14680)	1 - 1	1.	1.
OLIGOCHAETA	OLIGOCHARTA + ALL (59010)	1 - 1	1.	1.
TOTAL FOR 7 SPECIES BY REPLICATES:		1 - 1	27.	
TOTAL FOR 1 REPLICATES, 7 SPECIES:			27.	

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PROJECT: COLORADO ACID RAIN PROJECT (AR) AREA: LAKE ELBERT, MT. ZIPREL W.A. (261) DATE: SEPTEMBER 6, 1984
 STATION: OUTLET (MAD CREEK), 50M FROM SOURCE, (260) SUBSTATION: 1
 SAMPLER TYPE: QUALITATIVE DIP NET SAMPLE (40)
 NUMBER OF REPLICATES: 1 FIELD BIOLOGIST: EPA-CENTER SAMPLING CREW(81)
 NOTE: NOT APPLICABLE (0)

RELATIVE ABUNDANCE DATA TABLES

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1ST LEVEL REFERENCE	2ND LEVEL REFERENCE	REPLICATES	PERCENTAGE COUNTS	TOTAL FOR SF.
	GENUS/SPECIES			
EPHEMEROPTERA	SIPHONURIDAE			
	SIPHONURUS OCCIDENTALIS (655)	1 - 1	0.03704	0.03704
LEPTOPHLEBIIDAE	PARALEPTOPHLEBIA SP. (1010)	1 - 1	0.14815	0.14815
PLECOPTERA	PERLIDAE			
	HESPEROPERLA PACIFICA (3530)	1 - 1	0.11111	0.11111
NEMOURICAE	AMPHINEMURA SP. (4190)	1 - 1	0.14815	0.14815
DIPTERA	CHIRONOMIDAE, S-FAMILY TANYPODINAE			
	THIENEMANNIVIA (GP) (11000)	1 - 1	0.48148	0.48148
	CHIRONOMIDAE, S-FAMILY ORTHOCLADIINAE			
	EUKIEFERIELLA RAVANICA (GP) (14680)	1 - 1	0.03704	0.03704
OLIGOCHAETA	OLIGOCHAETA - ALL (59010)	1 - 1	0.03704	0.03704

PROJECT: COLORADIAN RAIN PROJECT (SP)
 STATION: SHORELINE/LITTORAL TO 1' DEPTH (269)
 SAMPLER TYPE: QUALITATIVE DIP NET SAMPLE (40)
 NUMBER OF REPLICATES: 2 FIELD BIOLOGIST: RANDY BALDIGO (21)
 NOTE: NOT APPLICABLE (0)

AREA: LAKE ELBERT, MT. ZERKEL N.A. (26) DATE: JULY 31, 1984
 SUBSTATION: 1

RAW DATA TABLES

1ST LEVEL REFERENCE	2ND LEVEL REFERENCE	REPLICATES	COUNTS	TOTAL FOR SP.
	GENUS/SPECIES			
EPHEMEROPTERA				
SIPHONURIDAE				
APELETUS SP. (600)	1 = 2	2.	2.	4.
SIPHONURUS OCCIDENTALIS (655)	1 = 2	200.	10.	210.
PLECOPTERA				
NEOURICAE				
ZAFACA OREGONENSIS (4100)	1 = 2	0.	6.	6.
TRICHOPTERA				
LIMNEPHILIDAE				
HESPEROPHYLAX SP. (9560)	1 = 2	0.	0.	0.
LIMNEPHILUS SP. (9567)	1 = 2	10.	0.	10.
PSYCHOGLYPHA BELLA (9595)	1 = 2	0.	4.	4.
DIPTERA				
CHIRONOMIDAE, S-FAMILY TANYPCCINAE				
ABLABESMYIA PARAJANTA (10665)	1 = 2	0.	2.	2.
PRCCADIUS SP. NR. RIPARIUS (10960)	1 = 2	0.	2.	2.
CHIRONOMIDAE, TRIBE CHIRONOMINI				
CHIRONOMUS spp. (12250)	1 = 2	2.	0.	2.
DICROTENDIPE SP. (12410)	1 = 2	4.	0.	4.
POLYPEDOILUM FALLAX (GP) (12640)	1 = 2	0.	78.	78.
CHIRONOMIDAE, TRIBE TANTYTARSINI				
PARATANTYTARSUS SP. (13750)	1 = 2	2.	2.	4.
LENZIELLA SP. (13900)	1 = 2	2.	0.	2.
CHIRONOMIDAE, S-FAM. ORTHOCLADIINAE				
-ALL- (14110)	1 = 2	4.	6.	10.
CORYNOEURA SP (14415)	1 = 2	2.	0.	2.
CHICOTOPUS INTERSECTUS (14575)	1 = 2	0.	22.	30.
DIXIDAE				
CIXIA SP. (18110)	1 = 2	2.	0.	2.
COLEOPTERA				
ELMIDAE				
ZAITZEVIA PAPVILLA (19770)	1 = 2	2.	0.	2.
GYTISCIDAE				
HYGROPORUS HYGROTUS COMPLEX (20462)	1 = 2	0.	6.	6.
HYDRACARINA				
LEBERTIIDAE				
LEBERTIA SP. (21410)	1 = 2	2.	14.	16.

PROJECT: COLORADO ACIO RAIN PROJECT (ARI) AREA: LAKE ELSBERT, MT. ZIPKEL M.A. (26) DATE: JULY 31, 1964
 STATION: SHORELINE/LITTORAL TO 1 M DEPTH (269) SUBSTATION: 1
 SAMPLER TYPE: QUALITATIVE DIP NET SAMPLE (40)
 NUMBER OF REPLICATES: 2 FIELD BIOLOGIST: BARRY BALDIGO (21)
 NOTE: NOT APPLICABLE (0)

RAW DATA TABLES

1ST LEVEL REFERENCE	2ND LEVEL REFERENCE	GENUS/SPECIES	REPLICATES	COUNTS	TOTAL FOR SP.
HYDRACARINA					
	SPIECHONIDAE				
	SPIECHON SP. (21510)		1 - 2	68.	130.
	SPIECHONOPSIS VERRUCOSA (21551)		1 - 2	0.	26.
	APPENDIPIDAE				
	APPENDURUS SP. (21600)		1 - 2	0.	6.
COPEPODA					
	CYCLOPODIA				
	MACROCYCLOPS ALBIDUS (39110)		1 - 2	30.	170.
NEMATODA					
	NEMATODA - ALL (50610)		1 - 2	2.	0.
OLIGOCHAETA					
	CLIGOCHAETA - ALL (59010)		1 - 2	14.	64.
	ENCHYTRAEIDAE				
	ENCHYTRAEIDAE - POSS (61001)		1 - 2	0.	6.
HIRUDINEA					
	GLOSSIPHONIIDAE				
	GLASSIPHONIA COMPLANATA (62590)		1 - 2	0.	6.
PELECYPODA					
	SPHAERIIDAE				
	PIEIDIUM SP. (65025)		1 - 2	2.	68.
TOTAL FOR 29 SPECIES BY REPLICATES			1 - 2	374.	628.
TOTAL FOR 2 REPLICATES, 29 SPECIES:				1002.	

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PROJECT: COLORADO ACID RAIN PROJECT (CAR) AREA: LAKE ELEPHANT MT. ZIFFEL W.A. (26) DATE: JULY 31, 1984
 STATION: SHOPLINE/LITTORAL TO 1 M DEPTH (249) SUBSTATION: 1
 SAMPLE TYPE: QUALITATIVE DIP NET SAMPLE (40)
 NUMBER OF REPLICATES: 2 FIELD BIOLOGIST: BARRY BALDIGO (21)
 NOTE: NOT APPLICABLE (0)

RELATIVE ABUNDANCE DATA TABLES

1ST LEVEL PREFERENCE 2ND LEVEL PREFERENCE GENUS/SPECIES	REPLICATES	PERCENTAGE COUNTS	TOTAL FOR SP.
EPHEMEROPTERA SIPHONURIDAE ANELETUS SP. (600) SIPHONURUS OCCIDENTALIS (655)	1 - 2	0.00535 0.00318	0.00399
	1 - 2	0.55615 0.01592	0.21756
PLECOPTERA NEOURIDAE ZAFADA OREGONENSIS (4100)	1 - 2	0.00000 0.00955	0.00599
TRICHOPTERA LIPNEPHILIDAE HEPEROPHYLAX SP. (3560) LIPNEPHILUS SP. (9567) PSYCHOCLYPHE BELLA (9595)	1 - 2	0.02139 0.00000	0.00798
	1 - 2	0.02674 0.00000	0.00998
	1 - 2	0.00000 0.00637	0.00399
DIPTERA CHIRONOMIDAE, 3-FAMILY TANYPOCINAE ABLAESMYIA PAPAJANTA (16665) PPCLADIUS SP. NR. RIPARIUS (10960)	1 - 2	0.00000 0.00318	0.00200
	1 - 2	0.00000 0.00318	0.00200
CHIRONOMIDAE, TRIRE CHIRONOMINI CHIRONOMUS spp. (12250) DICROTENDIPES sp. (12410) POLYPEDILUM FALLAX (GP) (12640)	1 - 2	0.00535 0.00000	0.00200
	1 - 2	0.01070 0.00000	0.00399
	1 - 2	0.00000 0.12420	0.07784
CHIRONOMIDAE, TRIRE TANYTARSINI PAPATANYTARSUS SP. (13750) LENZTELLA SP. (13990)	1 - 2	0.00535 0.00318	0.00399
	1 - 2	0.00535 0.00000	0.00200
CHIRONOMIDAE, 3-FAM CRIPOCLADINAE -ALL- (14110) COPYNCHEURA SP (14415) CPICOTOPUS INTERSECTUS (14575)	1 - 2	0.01070 0.00955	0.00994
	1 - 2	0.00535 0.00000	0.00200
	1 - 2	0.02139 0.03503	0.02994
DIXIDAE CIRIA SP. (18110)	1 - 2	0.00535 0.00000	0.00200
COLEOPTERA ELMIDAE ZAITZEVIA PARVULA (19770)	1 - 2	0.00535 0.00000	0.00200
CYANISCIDAE HYDROPODUS HYGROTUS COMPLEX (20462)	1 - 2	0.00000 0.00955	0.00599
HYDRACARINA LEPTOPIIDAE LEPERITA SP. (21410)	1 - 2	0.00535 0.02229	0.01597

PROJECT: COLORADO ACID RAIN PROJECT (CAR)
 STATION: SHORELINE/LITTORAL TO 1 M DEPTH (269)
 SAMPLER TYPE: QUALITATIVE DIP NET SAMPLE (40)
 NUMBER OF REPLICATES: 2 FIELD BIOLOGIST: BARRY BALDWIN (21)
 NOTE: NOT APPLICABLE (0)

LOCATION: LAKE ELBERT, MT. ZIRKEL M.A. (26)
 DATE: JULY 31, 1984
 SUBSTATION: 1

RELATIVE ABUNDANCE DATA TABLES

1ST LEVEL REFERENCE	2ND LEVEL REFERENCE	REPLICATES	PERCENTAGE COUNTS	TOTAL FOR SP.
GENUS/SPECIES				
HYDRACARINA				
SPICHONIDAE				
SPICHRON SP. (21510)		1 - 2	0.18182 0.20701	0.19760
SPICHONOPSIS VERRUCOSA (21551)		1 - 2	0.00000 0.04140	0.02595
APPENDIPODA				
APPENDIUS SP. (21600)		1 - 2	0.00000 0.00955	0.00599
CCPEPODA				
CYCLOPODIA				
MACROCYCLOPS ALRIDUS (38110)		1 - 2	0.08021 0.27070	0.19960
NEMATODA				
NEMATODA - ALL (50610)		1 - 2	0.00535 0.00000	0.00200
OLIGOCHAETA				
OLIGOCHAETA - ALL (59010)		1 - 2	0.03743 0.10191	0.07784
ENCHYTRAEIDAE				
ENCHYTRAEIDAE - POSS (61001)		1 - 2	0.00000 0.00955	0.00599
HIRUDINEA				
GLCSSIPHONIIDAE				
GLCSSIPHONIA COMPLANATA (62590)		1 - 2	0.00000 0.00955	0.00599
PELECYPODA				
Sphaeriidae				
PISIDIUM SP. (65025)		1 - 2	0.00535 0.10510	0.06786

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PROJECT: COLCHACO ACID RAIN PROJECT (APP) AREA: LAKE ELBERT, MI. ZIRKEL N.A. (26) DATE: AUGUST 23, 1994
 STATION: SHORELINE/LITTORAL TO 1 M DEPTH (269) SUBSTATION: 1
 SAMPLER TYPE: QUALITATIVE DIP NET SAMPLE (40)
 NUMBER OF REPLICATES: 2 FIELD BIOLOGIST: EPA-DENVER SAMPLING CREW(81)
 NOTE: NOT APPLICABLE (0)

RAW DATA TABLES

1ST LEVEL PREFERENCE	2ND LEVEL PREFERENCE	REPLICATES	COUNTS	TOTAL FOR SP.
	GENUS/SPECIES			
EPHEMEROPTERA				
SIPHONURIDAE				
.SIPHONONUS OCCIDENTALIS (655)		1 + 2	23.	7.
TRICHOPTERA				
LINNEPHILIDAE				
YESPEROPHYLAX SP. (9560)		1 + 2	1.	0.
DIPTERA				
CHIRONOMIDAE, TRIBE CHIRONOMINI				
DICROTENDIOPEN SP. (12410)		1 + 2	10.	0.
CHIRONOMIDAE, TRIBE TANYTARSINI				
TANYTARSUS SP. 1 (13700)		1 + 2	5.	1.
CHIPOVOKIDAE, 5-FAM ORTHOCLADIINAE				
HETEPOTRISSCLADIUS SP. (14810)		1 + 2	0.	1.
PSECTROCLADIUS spp. (13610)		1 + 2	0.	1.
COLEOPTERA				
HYDSCICAE				
AGabus sp. (20459)		1 + 2	0.	1.
OLIGOCHAETA				
OLIGOCHAETA - ALL (5901C)		1 + 2	14.	5.
NADIDAE				
SPECARIA JOSINAE (59024)		1 + 2	4.	0.
UNCINATIS UNCINATA (59025)		1 + 2	25.	0.
TUBIFICIDAE				
IMMATURE TUBIFICIDAE - b,G,C,C. (60000)		1 + 2	0.	2.
IMMATURE TUBIFICIDAE - b,C,C. (60010)		1 + 2	0.	2.
ENchytraeidae				
ENchytraeidae - PCSS (61001)		1 + 2	2.	0.
PELECYPODA				
SPHAEPIIDAE				
DISIDIUM SP. (65025)		1 + 2	1.	0.

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PROJECT: COLORADO ACID RAIN PROJECT (AR)
STATION: SHORELINE/EXTENTAL TO 1 M DEPTH (269)
SAMPLER TYPE: QUALITATIVE DIP NET SAMPLE (40)
NUMBER OF REPLICATES: 2 FIELD BIOLOGIST: EPA-DENVER SAMPLING CREW(81)
NOTE: NOT APPLICABLE (0)

AREA: LAKE ELBERT, MT. ZIRKEL W.A. (26)
DATE: AUGUST 23, 1984
SUBSTATION: 1

RAW DATA TABLES

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1ST LEVEL REFERENCE 2ND LEVEL REFERENCE GENUS/SPECIES	REPLICATES	COUNTS	TOTAL FOR SP.
TOTAL FOR 14 SPECIES BY REPLICATE:	1 + 2	85.	20.
TOTAL FOR 2 REPLICATES, 14 SPECIES:		113.	

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PROJECT: COLORADO ACID RAIN PROJECT (AR)
 STATION: SURFACE/LITTORAL TO 1 M DEPTH (269)
 SAMPLE TYPE: QUALITATIVE DIP NET SAMPLE (40)
 NUMBER OF REPLICATES: 2 FIELD BIOLOGISTS: EPA-DENVER SAMPLING CRE4(81)
 NOTE: NOT APPLICABLE (0)

AREA: LAKE ELBERT, MT. ZIPPERL N.A. (26)

DATE: AUGUST 23, 1984
 SUBSTATION: 1

RELATIVE ABUNDANCE DATA TABLES

1ST LEVEL PREFERENCE	2ND LEVEL PREFERENCE	GENUS/SPECIES	REPLICATES	PERCENTAGE COUNTS	TOTAL FOR SP.
EPHEMEROPTERA	SIPHONURIDAES	SIPHONURUS OCCIDENTALIS (695)	1 - 2	0.27059 0.25000	0.26549
TRICHOPTERA	LIMNEPHILIDAE	HELEOPHYLAX SP. (9560)	1 - 2	0.01176 0.00000	0.00885
DIPTERA	CHIRONOMIDAE, TRIBE CHIRONOMIKI	DICROTENDIPES SF. (12410)	1 - 2	0.11765 0.28571	0.15929
	CHIRONOMIDAE, TRIBE TANTTARSINI	TANTTARSUS SP. I (11700)	1 - 2	0.05882 0.03571	0.05310
	CHIRONOMIDAE, S-FAM ORTHOCLADIINAE	HETEROTRISOCCLADIUS SP. (14810)	1 - 2	0.00000 0.03571	0.00885
		PSECTROCLADIUS spp. (15610)	1 - 2	0.00000 0.03571	0.00885
COLEOPTERA	DTISCIDAE	AGABUS SP. (20459)	1 - 2	0.00000 0.03571	0.00885
OLIGOCHAETA					
	OLIGOCHAETA - ALL (99010)		1 - 2	0.16471 0.17897	0.16814
	NAUDICAE				
	SPECARIA JOSINAE (59024)		1 - 2	0.04706 0.00000	0.03540
	UNCINATIS UNCINATA (59029)		1 - 2	0.29412 0.20000	0.22124
	TUBIFICIDAE				
	IMMATURE TUBIFICIDAE - b.o.c.c. (60000)		1 - 2	0.00000 0.07143	0.01770
	IMMATURE TUBIFICIDAE - b.c.c. (60010)		1 - 2	0.00000 0.07143	0.01770
	ENchytraeidae				
	ENchytraeidae - PGSS (61001)		1 - 2	0.02353 0.00000	0.01770
PELECYPODA	Sphaeridae	PISIDIUM SP. (65025)	1 - 2	0.01176 0.00000	0.00885

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PROJECT: COLORADO ACID RAIN PROJECT (AP) AREA: LAKE ELBERT, MT. ZIPKEL N.A. (26) DATE: SEPTEMBER 6, 1984
 STATION: SHOPLINE/LITTORAL TO 1 M DEPTH (269) SUBSTATION: 9
 SAMPLER TYPE: QUALITATIVE DIP NET SAMPLE (40)
 NUMBER OF REPLICATES: 1 FIELD BIOLOGIST: EPA-DENVER SAMPLING CREW (81)
 NOTE: NOT APPLICABLE (0)

RAW DATA TABLES

1ST LEVEL REFERENCE 2ND LEVEL REFERENCE GENUS/SPECIES	REPLICATES	COUNTS	TOTAL FOR SP.
EPHEMEROPTERA SIPHONURIDAE SIPHONURUS OCCIDENTALIS (655)	1 - 1	1.	1.
TRICHOPTERA PHYLLOPODIODAE HIVALOPSYCHE PHRYGANEA (8625)	1 - 1	1.	1.
DIPTERA CHIRONOMIDAE, S-FAMILY TANYPOCINAE PRCCLAUDIUS SP. NR. RIPARIUS (10960)	1 - 1	2.	2.
CHIRONOMIDAE, TRIBE CHIRONOMINI DICROTENIDES SP. (12410)	1 - 1	44.	44.
CHIRONOMIDAE, TRIBE TANYTARSINI TANYTARSUS SP. 1 (13700)	1 - 1	1.	1.
OLIGOCHAETA			
OLIGOCHAETA - ALL (59010)	1 - 1	0.	0.
TOTAL FOR 6 SPECIES BY REPLICATE:	1 - 1	57.	
TOTAL FOR 1 REPLICATES, 6 SPECIES:		57.	

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PROJECT: COLORADO ACID RAIN PROJECT (AP) AREA: LAKE ELMER, MT. ZIPKEL N.A. (26) DATE: SEPTEMBER 6, 1984
STATIONS: SHOVELINE/LITTORAL TO 1 M DEPTH (269) SUBSTATION: 9
SAMPLER TYPE: QUALITATIVE DIF NFT SAMPLE (40)
NUMBER OF REPLICATES: 1 FIELD BIOLOGISTS: EPA-DENVER SAMPLING CPER(81)
NOTE: NOT APPLICABLE (0)

RELATIVE ABUNDANCE DATA TABLES

1ST LEVEL REFERENCE 2ND LEVEL REFERENCE GENUS/SPECIES	REPLICATES	PERCENTAGE COUNTS	TOTAL FOR SP.
EPHEMEROPTERA STIHLONURIDAE SIHLONURUS OCCIDENTALIS (655)	1 = 1	0.01754	0.01754
TRICHOPTERA RHACOPHILIDAE RHACOPHYCHE PHRYGANEA (8625)	1 = 1	0.01754	0.01754
DIPTERA CHIRONOMIDAE, S-FAMILY TANYPODINAE PRECLADIUS SP. NP. RIPARIUS (10960)	1 = 1	0.03509	0.03509
CHIRONOMIDAE, TRIBE CHIRONOMINI DICRISTENCIPIIS SP. (12410)	1 = 1	0.77193	0.77193
CHIRONOMIDAE, TRIBE TANYTARSINI TANYTARBUS SP. I (13700)	1 = 1	0.01754	0.01754
OLIGOCHEATA - ALL (99010)	1 = 1	0.14035	0.14035

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PROJECT: COLORADO ACID RAIN PROJECT (ARP)
 STATION: SHORELINE/LITTORAL TO 1 M DEPTH (269)
 SAMPLER TYPE: QUALITATIVE DIP NET SAMPLE (40)
 NUMBER OF REPLICATES: 3 FIELD BIOLOGIST: EPA-DENVER SAMPLING CREW(81)
 NOTE: NOT APPLICABLE (0)

AREA: LAKE ELBERT, MT. ZIPPEL N.A. (26) DATE: SEPTEMBER 20, 1984
 SUBSTATION: 1

RAW DATA TABLES

1ST LEVEL REFERENCE 2ND LEVEL REFERENCE GENUS/SPECIES	REPLICATES	COUNTS	TOTAL FOR SP.
EPHEMEROPTERA SIPHONURIDAE SIPHONURUS OCCIDENTALIS (655)	1 - 3	0, 0, 1,	1,
PLECOPTERA NEMOURIDAE ZAFADA OREGONENSIS (4100)	1 - 3	0, 1, 0,	1,
TRICHOPTERA LIMNEOPHYLIIDAE VESPEROPHYLAX SP. (9560) PSYCHOGLYPHA BELLA (9595)	1 - 3	0, 1, 1, 0,	2, 1,
DIPTERA CHIRONOMIDAE, S-FAMILY TANYPOCINAE PROCLADIUS SP. NR. RIPARIUS (10960)	1 - 3	2, 9, 1,	12,
CHIRONOMIDAE, TRIBE CHIRONOMINI DICRATIODES SP. (12410)	1 - 3	57, 13, 1,	71,
POLYPEDILUM SP. (12601)	1 - 3	3, 15, 0,	18,
CHIRONOMIDAE, TRIBE TANYTARSINI TANYTARSUS SP. 1 (13700)	1 - 3	0, 1, 0,	1,
PAPATAVYTARSIUS SP. (13750)	1 - 3	0, 3, 0,	3,
CHIRONOMIDAE, S-FAM CRYPTOCLADIINAE PECTROCLADIUS spp. (15610)	1 - 3	2, 3, 0,	5,
CHIRONOMIDAE, TRIBE DIAPTERINAE POTTHASTI SP. (16400)	1 - 3	0, 1, 0,	1,
CHIRONOMIDAE, TRIBE PRODIAMESINAE PRODIAMESA SP. (17000)	1 - 3	0, 1, 0,	1,
COLEOPTERA DYTISCIDAE DIPLOCTENES SP. (20440) ACABUS SP. (20454)	1 - 3	1, 0, 0, 1,	1, 2,
CLADOCERA CHYDRIDAE EURYCERCUS LAMELLATUS (32680)	1 - 3	13, 2, 0,	15,
OLIGOCHAETA ALL (59010)	1 - 3	3, 13, 3,	19,

PAGE 2

PROJECT: COLORADO ACID RAIN PROJECT (AP) AREA: LAKE ELBERT, MT. ZIPCODE 80442 (26) DATE: SEPTEMBER 20, 1984
STATION: SHORELINE/LITTORAL TO 1 M DEPTH (269) SUPERSTATION: 1
SAMPLER TYPE: QUALITATIVE DIP NET SAMPLE (40)
NUMBER OF REPLICATES: 3 FIELD BiLOGIST: EPA-DENVER SAMPLING CREW(81)
NCTE: NOT APPLICABLE (0)

RAW DATA TABLES

1ST LEVEL REFERENCE 2ND LEVEL REFERENCE GENUS/SPECIES	REPLICATES	CCUNTS	TOTAL FOR SP.
OLIGOCHARTA NAIIDIIDAE SPECARIA JOSHINAE (59021)	1 - 3	0.	3.
HIRUDINEA GLOSAEPPONIIDAE HELIODELLA STAGNALIS (62610)	1 - 3	0.	2.
PELECYPODA SPHAERIIDAE PIZIDINUM SP. (65025)	1 - 3	12.	6.
TOTAL FOR 19 SPECIES BY REPLICATE	1 - 3	93.	18.
TOTAL FOR 3 REPLICATES, 19 SPECIES		181.	

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PAGE 1

PROJECT: COLORADO ACID RAIN PROJECT (AP)
 STATION: SHORELINE/LITTORAL TO 1 M DEPTH (269)
 SAMPLER TYPE: QUALITATIVE DIP NET SAMPLE (40)
 NUMBER OF REPLICATES: 3
 NOTE: NOT APPLICABLE (0)

AREA: LAKE ELBERT, MT. ZIPPERL W.A. (26)

DATE: SEPTEMBER 20, 1984
 SUBSTATION: 1

RELATIVE ABUNDANCE DATA TABLES

1ST LEVEL REFERENCE 2ND LEVEL REFERENCE GENUS/SPECIES	REPLICATES	PERCENTAGE COUNTS	TOTAL FOR SP.
EPHEMEROPTERA SIPHONURIDAE SIPHONURUS OCCIDENTALIS (655)	1 = 3	0.00000 0.00000 0.05556	0.00552
PLECOPTERA NEMOURIDAE ZAFARA OREGONENSIS (4100)	1 = 3	0.00000 0.01429 0.00000	0.00552
TRICHOPTERA LIMNEOPHYLIDAE HESPEROPHYLAX SP. (9560)	1 = 3	0.00000 0.01429 0.05556	0.01105
	1 = 3	0.00000 0.01429 0.00000	0.00552
DIPTERA CHIRONOMIDAE, S-FAMILY TANYPCCINAE PROCLADIUS SP., NR. RIPARIUS (10960)	1 = 3	0.02151 0.12857 0.05556	0.06630
CHIRONOMIDAE, TRIBE CHIRONOMINI DICROTENCIPEL SP. (12410)	1 = 3	0.61290 0.18571 0.05556	0.39227
	1 = 3	0.03226 0.21429 0.00000	0.09445
CHIRONOMIDAE, TRIBE TANYTARSINI TANYTARSUS SP. 1 (13700)	1 = 3	0.00000 0.01429 0.00000	0.00552
PAPATANYTARSUS SP. (13750)	1 = 3	0.00000 0.04295 0.00000	0.01657
CHIRONOMIDAE, S-FAMILY OPIHOCLACIINAE OPIETROCLADIUS spp. (15610)	1 = 3	0.02151 0.04286 0.00000	0.02762
CHIRONOMIDAE, TRIBE DIAMESINAE POTTHASTI SP. (16400)	1 = 3	0.00000 0.01429 0.00000	0.00552
CHIRONOMIDAE, TRIBE PRODIAMESINAE PRODIAMESA SP. (17000)	1 = 3	0.00000 0.01429 0.00000	0.00552
COLEOPTERA DYTISCIDAE MERGECTES SP. (20440)	1 = 3	0.01075 0.00000 0.00000	0.00552
AGABUS SP. (20459)	1 = 3	0.00000 0.01429 0.05556	0.01105
CLADOCERA CHYDRIDAE EUPYCERCUS LAMELLATUS (32650)	1 = 3	0.13978 0.02857 0.00000	0.00287
OLIGOCHAETA - ALL (59010)	1 = 3	0.03226 0.18571 0.16667	0.10497

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PROJECT: COLORADO ACID RAIN PROJECT (CR)
STATION: SHORELINE/LITTORAL TO 1 M DEPTH (269)
SAMPLER TYPE: QUALITATIVE DIP NET SAMPLE (40)
NUMBER OF REPLICATES: 3 FIELD BIOLOGIST: EPA-DENVER SAMPLING CREW (91)
NOTE: NOT APPLICABLE (0)

AREA: LAKE ELBERT, MT. ZIRKEL W.A. (26) DATE: SEPTEMBER 20, 1983
SUBSTATION: 1

RELATIVE ABUNDANCE DATA TABLES

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1ST LEVEL REFERENCE 2ND LEVEL REFERENCE GENUS/SPECIES	REPLICATES	PERCENTAGE COUNTS	TOTAL FOR SP.
OLIGONCHAETA NAUDIIDAE SPECARIA JOSIMAE (59024)	1 - 3	0.00000 0.04286 0.11111	0.02762
MICRODINEA GLOSSIPHONIIDAE HELODELLA STAGNALIS (62610)	1 - 3	0.00000 0.02857 0.11111	0.02210
PELECYPODA BRACHERIIDAE PISIDIUM SP. (65025)	1 - 3	0.12903 0.00000 0.33333	0.09945

APPENDIX D

QUALITATIVE MACROINVERTEBRATE (DIP NET) COUNTS AND RELATIVE ABUNDANCE ESTIMATES FROM SEVEN LAKES

Inlet: August 3, 1984

Outlet: August 3, and September 3, 1984

Shoreline: August 2, August 21, September 4, and September 27, 1984

PROJECT: COLORADO ACID RAIN PROJECT (AR)
 STATION: INLET, 10 M FROM MOUTH (277)
 SAMPLER TYPE: QUALITATIVE DIP NET SAMPLE (40)
 NUMBER OF REPLICATES: 1 FIELD PICLOGIST: BARRY BALDIGO (21)
 NOTE: NOT APPLICABLE (0)

AREA: SEVEN LAKES, MT. ZIRKEL N.A. (27)

DATE: AUGUST 3, 1984
 SUBSTATION: 1

PAN DATA TABLES

1ST LEVEL REFERENCE 2ND LEVEL REFERENCE GENUS/SPECIES	REPLICATES	COUNTS	TOTAL FOR SP.
TRICHOPTERA LIMNEPHILIDAE HESPEROPHYLAX SP. (9560)	1 + 1	6.	6.
DIPTERA CHIRONOMIDAE CHIRONOMIDAE - ALL (10510)	1 + 1	16.	16.
CHIRONOMIDAE, TRIBE CHIRONOMINI POLYPEDILUM SP. (12601)	1 + 1	16.	16.
CHIRONOMIDAE, TRIBE TANYTARSINI TANYTARSIS SP. 1 (13700)	1 + 1	1132.	1132.
CEPATOCOENIDAE -ALL- (18010)	1 + 1	2.	2.
COLEOPTERA DYTISCIDAE AGabus SP. (20459)	1 + 1	6.	6.
COLLEMBOLA ISOTOMURUS PALUSTRIS (21110)	1 + 1	2.	2.
CLADOCERA CHYDRIDAE EURYCERCUS LAPILLATUS (32650)	1 + 1	2.	2.
COPEPODA CYCLOPOIDA MACROCYCLOPS ALBICUS (38110)	1 + 1	2.	2.
NEMATODA NEMATODA - ALL (50610)	1 + 1	2.	2.
OLIGOCHAETA OLIGUCHAETA - ALL (59010)	1 + 1	204.	204.
NAIIDAE NAIIDAE - ALL (49020)	1 + 1	2.	2.
NAIS SP. NR. COMMUNIS (59022)	1 + 1	2.	2.
NAIS SP. NR. ALPINA (59023)	1 + 1	6.	6.
SPECARIA JOSTNAE (59024)	1 + 1	2.	2.
TUBIFICIDAE TUBIFACIE TUBIFICIDAE - K.C.C.C. (60000)	1 + 1	10.	10.

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PROJECT: COLCPACU ACID RAIN PROJECT (SP)
STATION: INLET; 10 M FROM MOUTH (277)
SAMPLE TYPE: QUALITATIVE DIP NET SAMPLE (40)
NUMBER OF REPLICATES: 1 FIELD BIOLOGIST: BARRY PALDIGO (21)
NOTE: NOT APPLICABLE (0)

AREA: SEVEN LAKES, MT. ZIFFEL W.A. (27)

DATE: AUGUST 3, 1984
SUBSTATION: 1

PAN DATA TABLES

1ST LEVEL REFERENCE 2ND LEVEL REFERENCE GENUS/SPECIES	REPLICATES	COUNTS	TOTAL FOR SP.
OLIGOCHAETA TUBIFICIDAE IMMATURE TUBIFICIDAE = W.C.C. (60010)	1 • 1	2.	2.
MICRUDINES EPPODELLIDAE CINA PARVA (62559)	1 • 1	28.	28.
GLOSSIPHONIIDAE GLOSSIPHONIA COMPLANATA (62590)	1 • 1	4.	4.
TOTAL FOR 19 SPECIES BY REPLICATE	1 • 1	1446.	
TOTAL FOR 1 REPLICATES, 19 SPECIES		1446.	

D-2

PROJECT: COLEPACO ACID RAIN PROJECT (APP)
 STATIONS: INLET, 10 M FROM MOUTH (277)
 SAMPLER TYPE: QUALITATIVE DIP NET SAMPLE (40)
 NUMBER OF REPLICATES: 1 FIELD BIOLOGIST: BARRY BALDIGO (21)
 NOTE: NOT APPLICABLE (0)

AREA: SEVEN LAKES, MT. ZIRKEL W.A. (27)

DATE: AUGUST 3, 1984
SUBSTATIONS: 1

RELATIVE ABUNDANCE DATA TABLES

1ST LEVEL REFERENCE 2ND LEVEL REFERENCE GENUS/SPECIES	REPLICATES	PERCENTAGE COUNTS	TOTAL FOR SP.
TRICHOPTERA LIMNephiliDAE · HESPEROPHYLAX SP. (9560)	1 - 1	0.00415	0.00415
DIPTERA CHIRONOMIDAE CHIRONOMIDAE - ALL (10510)	1 - 1	0.01107	0.01107
CHIRONOMIDAE, TRIBE CHIRONCHINI POLYPEOLUM SP. (12601)	1 - 1	0.01107	0.01107
CHIRONOMIDAE, TRIBE TANYTARSINI TANYTAPSUS SP. 1 (13700)	1 - 1	0.78285	0.78285
CERATOPCGONIDAE -ALL- (18010)	1 - 1	0.00138	0.00138
COLEOPTERA DYTISCIDAE AGabus SP. (20459)	1 - 1	0.00415	0.00415
COLLEMBOLA			
ISCHOMURUS PALUSTRIS (21110)	1 - 1	0.00138	0.00138
CLADOCERA CHYDRIDAE EUPYCERCUS LAMELLATUS (32650)	1 - 1	0.00138	0.00138
COPEPODA CYCLOPOIDA MACROCYCLOPS ALBIVIS (38110)	1 - 1	0.00138	0.00138
HEMATOPHA			
NEAVODA - ALL (50610)	1 - 1	0.00138	0.00138
OLIGCHAETA OLIGOCHAETA - ALL (59010)	1 - 1	0.14108	0.14108
NAUCIDIACE			
NAUCIDIADAE - ALL (59020)	1 - 1	0.00138	0.00138
NAUCIS SP., NR. COMMUNIS (59022)	1 - 1	0.00138	0.00138
NAUCIS SP., NR. ALPINA (59023)	1 - 1	0.00415	0.00415
SPECARIA JUSTINAE (59024)	1 - 1	0.00138	0.00138
TURIFICIDAE TURIFICIDAE - N.C.C. (60000)	1 - 1	0.00692	0.00692

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PROJECT: COLORADO ACID RAIN PROJECT (CAR)
STATION: INLET, 10 M FROM MOUTH (277)
SAMPLER TYPE: QUALITATIVE DIP NET SAMPLE (40)
NUMBER OF REPLICATES: 1 FIELD BIOLOGIST: BARRY BALDIGO (21)
NOTE: NOT APPLICABLE (0)

AREA: SEVEN LAKES, MT, ZIPPEL H.A. (27)
DATE: AUGUST 3, 1984
SUBSTATION: 1

RELATIVE ABUNDANCE DATA TABLES

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1ST LEVEL REFERENCE 2ND LEVEL REFERENCE GENUS/SPECIES	REPLICATES	PERCENTAGE COUNTS	TOTAL FOR SP.
OLIGOCHAETA TUBIFICIDAE IMMATURE TUBIFICIDAE - N.C.C. (60010)	1 = 1	0.00130	0.00130
HIRUDINEA ERPORDELLIDAE DINA PARVA (62555) GLOSSIPHONIIDAE GLOSSIPHONIA COMPLANATA (62590)	1 = 1	0.01936	0.01936
	1 = 1	0.00277	0.00277

PROJECT: COLCRACO ACID RAIN PROJECT (AR) AREA: SEVEN LAKES, MT. ZEPPEL W.A. (27) DATE: AUGUST 3, 1984
 STATION: CUTLET, CRIG FORK CREEK; 10M FROM SOURCE (278) SUBSTATION: 1
 SAMPLER TYPE: QUALITATIVE DIP NET SAMPLE (40)
 NUMBER OF REPLICATES: 2 FIELD BIOLOGIST: BARRY BALDIGO (21)
 NOTE: NOT APPLICABLE (0)

RAW DATA TABLES

1ST LEVEL REFERENCE 2ND LEVEL REFERENCE GENUS/SPECIES	REPLICATES	COUNTS	TOTAL FOR SP.
PLECOPTERA CHLOROPERLIDAE -ALL- (4000)	1 + 2	0.	1.
TRICHOPTERA LIMNEPHILIDAE HESPEROPHYLAX SF. (9560) INNATURE LIMNEPHILIDAE (9568)	1 + 2	14. 0.	18. 2.
PHRYGANEIDAE ACRYPNIA STRAMINEA (9900)	1 + 2	0.	2.
DIPTERA CHIRONOMIDAE CHIRONOMIDAE - ALL (1051C) CHIRONOMIDAE, S-FAMILY TANYPCCINAE ABLABESMYIA PARAJANTA (10665) PPCLADYTUS SP. NP. RIPARIUS (10960)	1 + 2	64. 8. 32.	64. 10. 32.
CHIRONOMIDAE, TRIBE CHIRONOMINI DICROTENDIPEZ SP. (12410) ENDOCHEIRONOMUS SP. (12460) PARACHIRONOMUS SP. (1259C) POLYPEDILUM FALLAX (GP) (12640)	1 + 2	104. 8. 0.	112. 9. 2.
CHIRONOMIDAE, TRIBE TANYTARSINI TANYTARSUS/MICROPECTRA COMPLEX (13580) PAPATANYTARSUS SP. (13750)	1 + 2	64. 8.	68. 8.
CHIRONOMIDAE, S-FAM CRIHOCLADIINAE -ALL- (14110) CGYNUONEURA SP (14415) FURIEFFERIELLA CLAPIRENTHS (GP) (14700) PSECTROCLADIUS spp. (15610)	1 + 2	0. 296. 80. 0.	1. 295. 84. 0.
CHIRONOMIDAE, TRIBE DIAMESIINAE PSUDONIDIAMESA SF. (16900)	1 + 2	96.	96.
STOMIIDAE SIMULIUM TUBEROSUM/VENUSTUM (17535)	1 + 2	126.	126.
CERATOPOGONIDAE PALPOMYIA GROUP (18040)	1 + 2	2.	2.
COLEOPTERA DYTISCIDAE DIPLONECTES SP. (20340)	1 + 2	0.	2.

PROJECT: COLORADO ACID RAIN PROJECT (SP)
 STATION: CUTLETS (BIG FORK CREEK), LOW FROM SOURCE (27A) AREA: SEVEN LAKES, MT. ZIPKEE M.A. (27)
 SAMPLER TYPE: QUALITATIVE DIP NET SAMPLE (40)
 NUMBER OF REPLICATES: 2 FIELD BIOLOGIST: HARRY RALDIGO (21)
 NOTE: NOT APPLICABLE (0)

DATE: AUGUST 3, 1984
 SUBSTATION: 1

RAW DATA TABLES

1ST LEVEL REFERENCE 2ND LEVEL REFERENCE GENUS/SPECIES	REPLICATES	COUNTS	TOTAL FOR SP.
COLEOPTERA			
DYTISCIDAE			
AGABUS SP. (20459)	1 • 2	0.	0.
HYGROPODUS HYGROTUS COMPLEX (20462)	1 • 2	12.	20.
DEPONCTES/CREOCYTES COMPLEX (20464)	1 • 2	0.	1.
HYDRACARINA			
LIEERTIDIACE			
LEBEPTIA SP. (21410)	1 • 2	18.	0.
SPERCHONICAE			
SPERCHON SP. (21510)	1 • 2	26.	31.
DIPTERA			
CHIRONOMIDAE, S-FAM ORTHOCLADIINAE			
POPELIA SP. (21740)	1 • 2	6.	6.
CLADOCERA			
CHYDRIDAE			
EUPYCERCUS LAMELLATUS (32650)	1 • 2	14.	23.
COPEPODA			
CYCLOPODIA			
MACROCYCLOPS ALBICUS (30110)	1 • 2	68.	75.
NEMATODA			
HEPATOPA - ALL (50410)	1 • 2	2.	2.
OLIGOCHAETA			
OLIGOCHAETA - ALL (59010)	1 • 2	16.	16.
NAUDIIDA			
NAUDIS SP. NR. COMMUNIS (59022)	1 • 2	6.	6.
NAUDIS SP. NR. ALPINA (59023)	1 • 2	10.	10.
SPECARIA JOSTNAE (59024)	1 • 2	8.	8.
ENchytraeidae			
ENchytraeidae - POSS (61001)	1 • 2	6.	6.
MIRIDINEA			
EPPODELLIIDAE			
DINA PARVA (62555)	1 • 2	24.	29.
GLASSIPHIOMIDIAD			
GLASSIPHIOMIA COMPLANATA (62590)	1 • 2	12.	15.

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PROJECT: COLORADO ACID RAIN PROJECT (AR) AREA: SEVEN LAKES, MT. ZEPPEL M.A. (27) DATE: AUGUST 3, 1984
STATION: OUTLET; (BIG FORK CREEK); 10M FROM SOURCE (278) SUBSTATION: 1
SAMPLER TYPE: QUALITATIVE DIP NET SAMPLE (40)
NUMBER OF REPLICATES: 2 FIELD BIOLOGIST: BARRY BALDIGO (21)
NOTE: NOT APPLICABLE (0)

RAW DATA TABLES

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1ST LEVEL REFERENCE 2ND LEVEL REFERENCE GENUS/SPECIES	REPLICATES	COUNTS	TOTAL FOR SP.
PELECYPODA SPHAERIIDAE PISIDIUM SP. (65025)	1 - 2	2.	0.
TOTAL FOR 38 SPECIES BY REPLICATE:	1 - 2	1150.	154.
TOTAL FOR 2 REPLICATES, 38 SPECIES:		1304.	

PROJECT: COLORADO ACID RAIN PROJECT (AR) AREA: SEVEN LAKES, MT. ZIRKEL M.A. (27) DATE: AUGUST 3, 1984
 STATION: CUTLETS (BIG FORK CREEK); 10' FROM SOURCE (270) SUBSTATIONS: 1
 SAMPLER TYPE: QUALITATIVE DIP NET SAMPLE (40)
 NUMBER OF REPLICATES: 2 FIELD BIOLOGIST: RARRY BALDIGO (31)
 NOTE: NOT APPLICABLE (0)

RELATIVE ABUNDANCE DATA TABLES

1ST LEVEL REFERENCE 2ND LEVEL REFERENCE GENUS/SPECIES	REPLICATES	PERCENTAGE COUNTS	TOTAL FUR SP.
PLECOPTERA CULICOPERLIDAE -ALL- (4000)	1 - 2	0.00000 0.00649	0.00077
TRICHOPTERA LIMNEPHILIDAE HESPEROPHILAX SP. (9560) IMMATURE LIMNEPHILIDAE (9560)	1 - 2	0.01217 0.11688	0.02454
PHRYGANIIDAE AGRYPNIA STRAMINEA (9900)	1 - 2	0.00000 0.01299	0.00153
DIPTERA CHIRONOMIDAE CHIRONOMIDAE - ALL (10510)	1 - 2	0.03565 0.00000	0.04908
CHIRONOMIDAE, 3-FAMILY TANYTARSINAE ARALRESMIA PARVJANTA (10665)	1 - 2	0.00696 0.01299	0.00767
PHCLADUS SP. MR. RIPARIUS (10960)	1 - 2	0.02783 0.00000	0.02454
CHIRONOMIDAE, TRIBE CHIRONOMINI DICOETENDIPIES SP. (12410)	1 - 2	0.09043 0.05195	0.00589
ENOPCHIRONOMUS SP. (12460)	1 - 2	0.00696 0.00649	0.00690
PAPACHIRONOMUS SP. (12590)	1 - 2	0.00000 0.01299	0.00153
POLYPERILEUM FALLAX (GP) (12640)	1 - 2	0.00000 0.00649	0.00077
CHIRONOMIDAE, TRIBE TANYTARSINI TANYTARSUS/MICROPECTRA COMPLEX (13990)	1 - 2	0.05965 0.02597	0.05215
PAPATANYTARSUS SP. (1175C)	1 - 2	0.00696 0.00000	0.00513
CHIRONOMIDAE, 3-FAM ORNITHOCLADEINAE -ALL- (14110)	1 - 2	0.00000 0.00649	0.00077
COPYVONEURA SP. (14419)	1 - 2	0.25739 0.01948	0.42929
FURIEFFERIELLA CLARIPENNIS (GP) (14700)	1 - 2	0.06957 0.02597	0.06442
PECTRANCLADIUS SPP. (15610)	1 - 2	0.00696 0.00000	0.00013
CHIRONOMIDAE, TRIBE DIAMESIINAE PSYUDONIAMESA SP. (16500)	1 - 2	0.00348 0.00000	0.07362
STYLICERAE STYLUM TERRICOSUM/VENUSTUM (17535)	1 - 2	0.10957 0.38312	0.14187
CERATOPOGONIDAE PALPOMYIA GROUP (18040)	1 - 2	0.00174 0.00000	0.00153
COLEOPTERA DTISCIDAE DEPONECTES SP. (20440)	1 - 2	0.00174 0.00000	0.00153

PROJECT: COLORADO ACID RAIN PROJECT (ARP) AREA: SEVEN LAKES, MT. ZIRKEL W.A. (27) DATE: AUGUST 3, 1984
 STATION: OUTLET; (BIG FORK CREEK); 10M FROM SOURCE (274) SUBSTATION: 1
 SAMPLER TYPE: QUALITATIVE DIP NET SAMPLE (40)
 NUMBER OF REPLICATES: 2 FIELD BIOLOGIST: BARRY BALDIGO (21)
 NOTES: NOT APPLICABLE (0)

RELATIVE ABUNDANCE DATA TABLES

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1ST LEVEL REFERENCE	2ND LEVEL REFERENCE	REPLICATES	PERCENTAGE COUNTS	TOTAL FOR SP.
	GENUS/SPECIES			
COLEOPTERA				
DYTISCIDAE				
AGabus SP. (20459)		1 - 2	0.00696 0.00000	0.00613
HYGROPOCUS HYGROTUS COMPLEX (20462)		1 - 2	0.01043 0.05195	0.01534
DEFONNETES/CREODYTES COMPLEX (20464)		1 - 2	0.00000 0.00649	0.00077
HYDRACARINA				
LEPTOPODIAE				
LEPTORIA SP. (21410)		1 - 2	0.01565 0.05195	0.01994
SPERCHONIIDAE				
SPERCHON SP. (21510)		1 - 2	0.02261 0.03247	0.02377
DIPTERA				
CHIRONOMIDAE, 5-FAM OPHOCOLADINAE				
FOPELIA SP. (21740)		1 - 2	0.00522 0.00000	0.00460
CLADOCERA				
CHYCORIDAE				
EUPYCERCUS LAMELLATUS (32650)		1 - 2	0.01217 0.05844	0.01764
COPEPODA				
CYCLOPODIA				
MACROCYCLOPS ALBIDUS (38110)		1 - 2	0.05913 0.04549	0.05752
NEMATODA				
NEMATODA - ALL (50610)		1 - 2	0.00174 0.00000	0.00153
OLIGOCHAETA				
OLIGOCHAETA - ALL (59010)		1 - 2	0.01391 0.00000	0.01227
NAIDIDAE				
NAIS SP. NR. CONVUNIS (59022)		1 - 2	0.00522 0.00000	0.00460
NAIS SP. NR. ALPINA (59023)		1 - 2	0.00870 0.00000	0.00767
SPECARTIA JOSTNAE (59024)		1 - 2	0.00696 0.00000	0.00613
ENCHYTHRAEIDAE				
ENCHYTHRAEIDAE - POSS (61001)		1 - 2	0.00522 0.00000	0.00460
HIRUDINEA				
ERPICOELLIIDAE				
DIMA PARVA (62555)		1 - 2	0.02087 0.03247	0.02224
GLOSSIPHONIIDAE				
GLOSSIPHONIA COMPLANATA (62590)		1 - 2	0.01043 0.01948	0.01150

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PROJECT: COLORADO ACID RAIN PROJECT (AR) AREA: SEVEN LAKES, MT. ZIRKEL M.L. (27) DATE: AUGUST 3, 1984
STATION: CUTLET (BIG FORK CREEK); 10P FROM SOURCE (278) SUBSTATION: 1
SAMPLER TYPE: QUALITATIVE DIP NET SAMPLE (40)
NUMBER OF REPLICATES: 2 FIELD BIOLOGIST: BARRY BALDIGO (21)
NOTE: NOT APPLICABLE (0)

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RELATIVE ABUNDANCE DATA TABLES

1ST LEVEL REFERENCE
2ND LEVEL REFERENCE
GENUS/SPECIES

REPLICATES ¹	PERCENTAGE COUNTS	TOTAL FOR SP.
1 = 2 0.00174 0.00000	0.00153	

PELICYPODA
SPHAERIIDAE
PISIDIUM SP. (69025)

PROJECT: COLORADO ACID RAIN PROJECT (AR)
 STATION: OUTLET, (BIG FORK CREEK); 10Y FROM SOURCE (278) AREA: SEVEN LAKES, MT. ZIRKEL W.A. (27)
 SAMPLER TYPE: QUALITATIVE DIP NET SAMPLE (40)
 NUMBER OF REPLICATES: 1 FIELD BIOLOGIST: EPA-DENVER SAMPLING CREW(81)
 NOTE: NOT APPLICABLE (0) DATED: SEPTEMBER 3, 1984
 SUBSTATION: 1

RAW DATA TABLES

1ST LEVEL REFERENCE 2ND LEVEL REFERENCE GENUS/SPECIES	REPLICATES	COUNTS	TOTAL FOR SP.
PLECOPTERA PERLICAE HESPEROPERLA PACIFICA (3530)	1 + 1	1.	1.
NEMOURICAE ZAFADA OREGONENSIS (4100)	1 + 1	1.	1.
TRICHOPTERA LYNNEPHILIDAE HESPEROPHYLAX SP. (9560)	1 + 1	6.	6.
LYNNEPHILUS SP. (9567)	1 + 1	7.	7.
PHRYCANEIDAE AGFYPNIA STRAMINEA (9900)	1 + 1	1.	1.
DIPTERA TIPULIDAE DICRANOXA SP. (18560)	1 + 1	1.	1.
COLEOPTERA DYTISCIDAE OXYDYTES SP. (20410)	1 + 1	1.	1.
HYDROCAPTINA LEPTIIDIAD LERERIA SP. (21410)	1 + 1	1.	1.
SPECCHONIIDAE SPECCHON SP. (21510)	1 + 1	1.	1.
CLADOCERA CHYDRIDAE EURYCEPUS LAMELLATUS (32650)	1 + 1	1.	1.
HIRUDINEA GLASSIPHONIIDAE GLASSIPHONIA COMPLANATA (62590)	1 + 1	5.	5.
TOTAL FOR 11 SPECIES BY REPLICATES:	1 + 1	26.	
TOTAL FOR 1 REPLICATES, 11 SPECIES:		26.	

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PROJECT: COLICACID RAIN PROJECT (APR) DATE: SEPTEMBER 3, 1984
 STATION: CUTLE11 (BIG FORK CREEK); 10' FROM SOURCE (270) SUBSTATION: 1
 SAMPLER TYPE: QUALITATIVE DIP NET SAMPLE (40)
 NUMBER OF REPLICATES: 1 FIELD BIOLOGIST: EPA-DENVER SAMPLING CREW(81)
 NOTES: NOT APPLICABLE (0)

RELATIVE ABUNDANCE DATA TABLES

1ST LEVEL REFERENCE	2ND LEVEL REFERENCE	REPLICATES	PERCENTAGE COUNTS	TOTAL FOR SP.
	GENUS/SPECIES			
PLECOPTERA				
PENILOIDAE				
HESPEROPERLA PACIFICA (3530)		1 + 1	0.03846	0.03846
HEPLOCYPTERAE				
ZAFADA OREGONENSIS (4100)		1 + 1	0.03846	0.03846
TRICHOPTERA				
LIMNEPHILIDAE				
HESPEROPHYLAX SP. (9560)		1 + 1	0.23077	0.23077
LIMNEPHILUS SP. (9567)		1 + 1	0.26923	0.26923
PHRYGANEIDAE				
AGYPNIA STRAMINEA (9900)		1 + 1	0.03846	0.03846
DIPTERA				
TIPULIDAE				
DICRANOXA SP. (18560)		1 + 1	0.03846	0.03846
COLEOPTERA				
DTISCIDAE				
OPODYTES SP. (20410)		1 + 1	0.03846	0.03846
HYDROCARPINA				
LEBEPTIIDAE				
LEBERTIA SP. (21410)		1 + 1	0.03846	0.03846
SPERCHONIDAE				
SPERCHON SP. (21510)		1 + 1	0.03846	0.03846
CLADOCERA				
CHYGCRIDAE				
EUFYCERCUS LAMELLATUS (32690)		1 + 1	0.03846	0.03846
MIRIDINA				
GLASSIPHONIIDAE				
GLASSIPHONTA COMPLANATA (62390)		1 + 1	0.19231	0.19231

PROJECT: COLORADO ACID RAIN PROJECT (AR) AREA: SEVEN LAKES, MT. ZIRKEL M.A. (27) DATE: AUGUST 2, 1984
 STATION: SHORELINE/LITTORAL TO 1 M DEPTH (279) SUBSTITUTION: 1
 SAMPLER TYPE: QUALITATIVE DIP NET SAMPLE (40)
 NUMBER OF REPLICATES: 4 FIELD BiLOGIST: BARRY BALDIGO (21)
 NOTE: NOT APPLICABLE (0)

RAW DATA TABLES

1ST LEVEL REFERENCE 2ND LEVEL REFERENCE GENUS/SPECIES	REPLICATES	COUNTS	TOTAL FOR SP.
EHENOPTERA MAYTIDAE CALLIBAETIS COLORADENSIS (1712)	1 - 4	1. 1. 2. 10.	22.
HEMIPTERA NOTONECTIDAE NOTONECTA SP. (6250)	1 - 4	0. 0. 0. 2.	2.
TRICHOPTERA LIMNEPHILIDAE ASYNARCHUS NIGRICULUS (9513) HEPEROPHYLAX SP. (9560) PSYCHOGLYPHA BELLA (9595)	1 - 4	0. 0. 17. 0.	2. 3. 17.
PHRYGANEIDAE AGRYPNTA STRAMINEA (9900)	1 - 4	1. 2. 4. 66.	73.
DIPTERA CHIRONOMIDAE CHIRONOMIDAE - ALL (1051C) CHIRONOMIDAE, S-FAMILY TANYPYCINAE ABLAESMYIA PAPAJANTA (10665) PPCLADIUS SP. NR. RIPARIUS (10960)	1 - 4	6. 27. 1. 0.	56. 71. 4.
CHIRONOMIDAE, TRIBE CHIRONOMINI CHIRONOMUS spp. (12250) DICROTENDIPES SP. (12410) FEDCCHIRCHOMUS SP. (1246C) PELVIPEDILUM SP. (12601)	1 - 4	24. 16. 16. 0.	0. 52. 1. 1.
CHIRONOMIDAE, TRIBE TANYTARSINI TANYTARSUS SP. 1 (13700) PAPATANYTARSUS SP. (13750)	1 - 4	0. 19.	0. 4.
CHIRONOMIDAE, S-FAM CRINOCLACINAE -ALL- (14110) COPHONEURA SP (14415) CRICOTOPUS PATENS (14577) CRICOTOPUS TRIFASCIA (GP) (14620)	1 - 4	1. 1. 2. 1.	0. 0. 0. 0.
COLEOPTERA DYTISCIDAE DYTCHECTES SP. (20440)	1 - 4	0. 1. 1. 4.	6.

PROJECT: COLORADO ACID RAIN PROJECT (CAR)
 STATION: SHORELINE/LETTUCE TO 1 M DEPTH (279)
 SAMPLER TYPE: QUALITATIVE DIP NET SAMPLE (40)
 NUMBER OF REPLICATES: 4 FIELD BiLOGGIST: BARRY BALDIGO (21)
 NOTE: NOT APPLICABLE (0)

AREA: SEVEN LAKES, MT. ZIRKEL M.A. (27)
 DATE: AUGUST 2, 1984
 SUBSTATION: 1

RAW DATA TABLES

1ST LEVEL REFERENCE	2ND LEVEL REFERENCE	REPLICATES	COUNTS	TOTAL FOR SP.
	GENUS/SPECIES			
COLEOPTERA				
DYTISCIDAE				
ACROBIA SP. (20459)		1 = 4	1.	1.
DEPONECTES/OPENDYTES COMPLEX (20484)		1 = 4	0.	0.
HYDRACARINA				
LEPTOPODIIDAE				
LEPERTIA SP. (21410)		1 = 4	11.	11.
SPIECHONIDAE				
SPIECHON SP. (21510)		1 = 4	0.	0.
ARACHNIDA				
ARACHNUS SP. (21600)		1 = 4	0.	0.
DIPTERA				
CHIRONOMIDAE, S-FAM ORTHOCLADIINAE				
FORELIA SP. (21740)		1 = 4	0.	0.
CLADOCERA				
CHYDRORIDAE				
EUPYCERUS LAMELLATUS (32650)		1 = 4	0.	0.
COPEPODA				
CYCLOPOIDAE				
MACROCYCLOPS ALBICUS (38110)		1 = 4	4.	4.
OLIGOCHAETA				
OLIGOCHAETA - ALL (59010)		1 = 4	0.	0.
TUBIFICIDAE				
IMMATURE TUBIFICTORE - N.O.C.C. (60000)		1 = 4	0.	0.
HIRUDINES				
ERPOBELLIDAE				
DINA PARVA (42555)		1 = 4	0.	0.
GLORSIPPONIDAE				
GLORSIPPONIA COMPLANATA (62590)		1 = 4	0.	0.
PELICYCECA				
SPHAERIIDAE				
PISTIUM SP. (65029)		1 = 4	3.	3.

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PROJECT: COLCRACO ACID RAIN PROJECT (AP) AREA: SEVEN LAKES, MT. ZIRKEL W.A. (27) DATE: AUGUST 2 , 1984
STATION: SHORELINE/LITTOPAL TO 1 M DEPTH (279) SUBSTATION: 1
SAMPLER TYPE: QUALITATIVE DIP NET SAMPLE (40)
NUMBER OF REPLICATES: 4 FIELD BIOLOGIST: BARRY BALDIGO (21)
NOTE: NOT APPLICABLE (0)

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RAW DATA TABLES

1ST LEVEL REFERENCE	2ND LEVEL REFERENCE	REPLICATES	COUNTS	TOTAL FOR SP.
	GENUS/SPECIES			
TOTAL FOR 33 SPECIES BY REPLICATES		1 + 4	139,	40,
			228,	1210,
TOTAL FOR 4 REPLICATES, 33 SPECIES:			1625,	

PROJECT: COLORADO ACID RAIN PROJECT (CAR)
 STATION: SHORELINE/LITTORAL TO 1 M DEPTH (279)
 SAMPLER TYPE: QUALITATIVE DIP NET SAMPLE (40)
 NUMBER OF REPLICATES: 4 FIELD BIOLOGISTS: BARRY BALDIGO (21)
 NOTE: NOT APPLICABLE (0)

AREA: SEVEN LAKES, MT. ZIRKEL W.A. (27)
 DATE: AUGUST 2, 1984
 SUBSTATION: 1

RELATIVE ABUNDANCE DATA TABLES

1ST LEVEL REFERENCE	2ND LEVEL REFERENCE	REPLICATES	PERCENTAGE COUNTS	TOTAL FOR SP.
	GENUS/SPECIES			
EPHEMEROPTERA				
BAETIDAE				
CALLIBAETIS COLORADENSIS (1712)		1 - 4	0.00719 0.02083 0.00877 0.01488	0.01354
HEMIPTERA				
NEMATOCERTIDAE				
NOTONECTA SP. (6250)		1 - 4	0.00000 0.00000 0.00000 0.00165	0.00123
TRICHOPTERA				
LIMNEPHILIDAE				
ASYNARCHUS NIGRICULUS (9513)		1 - 4	0.00000 0.04167 0.00000 0.00000	0.00123
HESPEROPHLAX SP. (9560)		1 - 4	0.00000 0.04167 0.00439 0.00000	0.00165
PSYCHOGLYPHA BELLA (9595)		1 - 4	0.00000 0.35417 0.00000 0.00000	0.01046
PHRYGANEIDAE				
AGRYPNIA STRAMINEA (9900)		1 - 4	0.00719 0.04167 0.01754 0.05495	0.04492
DIPTERA				
CHIRONOMIDAE				
CHIRONOMIDAE - ALL (10910)		1 - 4	0.04317 0.00000 0.03509 0.04628	0.04309
CHIRONOMIDAE, S-FAMILY TANYPODINAE				
ABLABESMYIA PARBANTIA (10665)		1 - 4	0.19424 0.06292 0.00439 0.03306	0.04169
PPCCALDIUS SP. MR. RIPARIUS (10960)		1 - 4	0.00719 0.00000 0.01316 0.00000	0.00246
CHIRONOMIDAE, TRIBE CHIRONOMINI				
CHIRONOMUS SP. (12250)		1 - 4	0.17266 0.00000 0.00000 0.00000	0.01477
DICROTENCIPIES SP. (12410)		1 - 4	0.11511 0.10417 0.22807 0.01983	0.03989
ENOCCHIRONOMUS SP. (12460)		1 - 4	0.11511 0.00000 0.00439 0.09917	0.08131
POLYPERILUM SP. (12601)		1 - 4	0.00000 0.00000 0.00439 0.00000	0.00062
CHIRONOMIDAE, TRIBE TANYTARSINI				
TANYTARSUS SP. I (11700)		1 - 4	0.00000 0.00000 0.00000 0.12562	0.09354
PARATANYTARSUS SP. (13750)		1 - 4	0.10791 0.08333 0.14912 0.00000	0.03262
CHILOPODA, S-FAM CRTHOCCLADIINAE				
-ALL- (14110)		1 - 4	0.06719 0.00000 0.00000 0.00000	0.00062
COYMOEURIA SP (14415)		1 - 4	0.00719 0.02093 0.00000 0.00661	0.00615
CHICOTOPUS PATENS (14577)		1 - 4	0.01439 0.00000 0.00000 0.00000	0.00123
SPICOTOPUS TRIFASCIA (GP) (14620)		1 - 4	0.00719 0.00000 0.00000 0.00000	0.00062
COLEOPTERA				
DYTSICIDAE				
DEFICECTES SP. (70440)		1 - 4	0.00000 0.02063 0.00439 0.00331	0.00369

PROJECT: COLORADO ACID RAIN PROJECT (AR)
 STATION: SHORELINE/LITTORAL TO 1 M DEPTH (279)
 SAMPLER TYPE: QUALITATIVE DIP NET SAMPLE (40)
 NUMBER OF REPLICATES: 4 FIELD BIOLOGIST: BARRY BALDIGO (21)
 NOTE: NOT APPLICABLE (0)

AREA: SEVEN LAKES, MT. ZIRKEL W.A. (27) DATE: AUGUST 2, 1984
 SUBSTATION: 1

RELATIVE ABUNDANCE DATA TABLES

1ST LEVEL REFERENCE 2ND LEVEL REFERENCE GENUS/SPECIES	REPLICATES	PERCENTAGE COUNTS	TOTAL FOR SP.
COLEOPTERA DYTISCIDAE AGABUS SP. (20459) DEFONECTES/GRENODYTES COMPLEX (20484)	1 - 4	0.00719 0.00000 0.08772 0.00000	0.01292
		0.00000 0.00000 0.02193 0.00000	0.00308
HYDRACARINA LEBERTIIDAE LEBERTIA SP. (21410)	1 - 4	0.07914 0.02083 0.10088 0.02149	0.03754
SPICHONIIDAE SPICHON SP. (21510)	1 - 4	0.05755 0.00000 0.03947 0.00165	0.01169
ARRENURIDAE ARRENURUS SP. (21600)	1 - 4	0.00000 0.00000 0.00000 0.00165	0.00123
DIPTERA CHIRONOMIDAE, S-FAM ORTHOCLADIINAE FORELIA SP. (21740)	1 - 4	0.00000 0.00000 0.00000 0.00165	0.00123
CLADOCERA CHYDOPICAE EUPYCERCUS LAMELLATUS (32650)	1 - 4	0.00000 0.00000 0.00000 0.39174	0.29169
COPEPODA CYCLOCPOIDA MACROCYCLOPS ALBIDUS (38110)	1 - 4	0.02878 0.00000 0.03509 0.14711	0.11692
OLIGOCHAETA GLIGOCHAETA - ALL (59010)	1 - 4	0.00000 0.00000 0.02193 0.02149	0.01909
TUBIFICIDAE INNATURE TUBIFICIDAE - H.C.C.C. (60000)	1 - 4	0.00000 0.00000 0.00439 0.00000	0.00062
HIRUDINES ERPGBELLIDAE DINA PARVA (62355)	1 - 4	0.00000 0.02083 0.00439 0.00165	0.00246
GLASSIPHONIDAE GLASSIPHONIA COMPLANATA (62590)	1 - 4	0.00000 0.02083 0.00000 0.00496	0.00431
PELECYPODA SPHARIIDAE PISIDIUM SP. (65025)	1 - 4	0.02158 0.14583 0.21053 0.00165	0.03692

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PROJECT: CORPACO ACID RAIN PROJECT (AR) AREA: SEVEN LAKES, MT. ZIPKEL 6,4. (27) DATE: AUGUST 21, 1984
 STATION: SHORELINE/LITTORAL TO 1 M. DEPTH (379) SUBSTATION: 1
 SAMPLER TYPE: QUANTITATIVE DIP NET SAMPLE (10)
 NUMBER OF REPLICATES: 4 FIELD BIOLOGIST: EPA-CENTER SAMPLING CREW (81)
 NCEI: NOT APPLICABLE (0)

RAW DATA TABLES

1ST LEVEL REFERENCE 2ND LEVEL REFERENCE GENUS/SPECIES	REPLICATES	COUNTS	TOTAL FOR SP.
EPHEMEROPTERA BAETIDAE <i>CALLIBAETIS COLORADENSIS</i> (1712)	1 - 4	10, 1, 3,	16,
HEMIPTERA COPTOPODIDAE -ALL- (6010)	1 - 4	0, 0, 1, 0,	1,
TRICHOPTERA LIMNEPHILIDAE <i>HEPEROPHYLLAX</i> SP. (9560) <i>LIMNEPHILUS EXTERNUS</i> (9563) <i>LIMNEPHILUS</i> SP. (9567) <i>PSYCHOGLYYPHA BELLA</i> (9595) PHRYGANEIDAE <i>ACYPNIA STRAMINEA</i> (9900)	1 - 4	0, 0, 1, 0, 0, 0, 2, 0, 0, 0, 0, 0, 0, 0, 0, 0, 5,	7, 2, 1, 5, 22,
DIPTERA CHIRONOMIDAE <i>CHIRONUMIDA</i> - ALL (10510) CHIRONOMIDAE, 8-FAMILY TANYPODINAE <i>PACCLADIUS</i> SP. NY, <i>RIPARIUS</i> (10960) CHIRONOMIDAE, TRIBE CHIRONOMINI <i>CHIRONOMUS</i> spp. (12750) <i>DICROTENIDES</i> SP. (12410) <i>ENEOCHIRONOMUS</i> SP. (12460) <i>MICROTENDIPES</i> SP. (12520) CHIRONOMIDAE, TRIBE TANYPODINAE <i>PATAHATYRUS</i> SP. (13750) <i>LENZIELLA</i> SP. (13990) CHACURITOAE <i>CHAORORUS TRIUITATUS</i> (17920)	1 - 4	0, 0, 0, 0, 0, 0, 12, 0, 0, 2, 0, 0, 2, 0, 0, 0, 0, 0, 1,	12, 2, 2, 1, 50, 20, 11, 4, 7, 1,
COLEOPTERA DYTISCIDAE <i>OXYDYTES</i> SP. (20410) <i>DEPUNCTES</i> SP. (20440) <i>AGAMUS</i> SP. (20459) <i>DEPUNCTES/OXYDYTES</i> COMPLEX (20484)	1 - 4	0, 0, 6, 0, 0, 0, 2, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0,	6, 4, 2, 19, 4,

PROJECT: COLCPACO ACID RAIN PROJECT (AR) AREA: SEVEN LAKES, MI. ZIPKEL N.A. (27) DATE: AUGUST 21, 1984
 STATION: SHORELINE/LITTORAL TO 1 M DEPTH (279) SUBSTATION: 1
 SAMPLER TYPE: QUALITATIVE DIP NET SAMPLE (40)
 NUMBER OF REPLICATES: 4 FIELD BIOLOGIST: EPA-DENVER SAMPLING CREW (81)
 NOTE: NOT APPLICABLE (0)

RAW DATA TABLES

1ST LEVEL REFERENCE 2ND LEVEL REFERENCE GENUS/SPECIES	REPLICATES	CCOUNTS	TOTAL FOR SP.
COLEOPTERA MELILOCIDAE •ALL• (20790)	1 - 4	0.	0.
HYDROCARINA LEBERTIIDAE LEBERTIA SP. (21410)	1 - 4	1.	1.
SPERCHONIIDAE SPERCHON SP. (21510)	1 - 4	0.	0.
CLADOCERA CHYDRIDAE EURYCERCUS LAMELLATUS (32650)	1 - 4	32.	84.
COPEPODA CYCLOPOPODA MACROCYCLOPS ALBICUS (38110)	1 - 4	0.	0.
OLIGOCHAETA OLIGOCHAETA - ALL (59010)	1 - 4	3.	3.
NAIDIDAE SPECARIA JOSINNE (59024)	1 - 4	7.	7.
HIRUDINEA ERRIBCELLIDAE CINA PARVA (62555)	1 - 4	0.	0.
GLOSSIPHONIIDAE GLOSSIPHONIA COMPLANATA (62520)	1 - 4	1.	1.
PELICYPODA SPHAERIDIIDAE PISIDIUM SP. (65025)	1 - 4	11.	11.
TOTAL FOR 30 SPECIES BY REPLICATES	1 - 4	97.	140.
TOTAL FOR 4 REPLICATES, 30 SPECIES		429.	173.

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PROJECT: COLCRADOC ACID RAIN PROJECT (CAR)
 STATION: SHORELINE/LITTORAL TO 1 M DEPTH (279)
 SAMPLER TYPE: QUALITATIVE DIP NET SAMPLE (40)
 NUMBER OF REPLICATES: 4 FIELD BIOLOGIST: EPA-DENVER SAMPLING CREW(81)
 NOTE: NOT APPLICABLE (0)

ADDRESS: SEVEN LAKES, MT. ZIPKEL N.A. (27)
 DATE: AUGUST 21, 1984
 SUBSTATION: 1

RELATIVE ABUNDANCE DATA TABLES

1ST LEVEL REFERENCE	2ND LEVEL REFERENCE	REPLICATES	PERCENTAGE COUNTS			TOTAL FOR SP.		
	GENUS/SPECIES		1 - 4	0.02062	0.07143	0.03556	0.01734	0.03738
PHENOPTERA								
BAETIDAE								
CALLIBAETIS COLCRADENSIS (1712)		1 - 4	0.02062	0.07143	0.03556	0.01734		0.03738
HEMIPTERA								
CORIXIDAE								
-ALL- (6010)		1 - 4	0.00000	0.00000	0.05556	0.00000		0.00234
TRICHOPITRA								
LIMNEPHILIDAE								
HESPEROPHYTLAX SP. (9560)		1 - 4	0.00000	0.00000	0.38889	0.00000		0.01636
LINNEPHILUS EXTERNUUS (9563)		1 - 4	0.00000	0.00000	0.11111	0.00000		0.00467
LINNEPHILUS SP. (9547)		1 - 4	0.00000	0.00714	0.00000	0.00000		0.00234
PSYCHOGLYYPHA BELLA (9595)		1 - 4	0.02062	0.02143	0.00000	0.00000		0.01168
PHRYGANEIDAE								
AGRYPNIA STRANINGERI (9900)		1 - 4	0.05155	0.05000	0.00000	0.05780		0.05140
DIPTERA								
CHIPOGNATHIDAE								
CHIRONOMIDAE - ALL (10510)		1 - 4	0.00000	0.00000	0.00000	0.06936		0.02804
CHIRONOMIDAE, S-FAMILY TANYPODINAE								
PRACLADUS SP. NR. RIPARIUS (10960)		1 - 4	0.00000	0.00000	0.00000	0.01156		0.00467
CHIRONOMOIDAE, TRIBE CHIRONOMINI								
CHIRONOMUS spp. (12250)		1 - 4	0.01031	0.00000	0.00000	0.00000		0.00234
DICHOTENCIPIES SP. (12410)		1 - 4	0.12371	0.00000	0.11111	0.20909		0.11682
ENDOCHIRONOMUS SP. (12160)		1 - 4	0.03093	0.02143	0.00000	0.00092		0.04673
MIPROTENCIPIES SP. (12520)		1 - 4	0.02062	0.00000	0.00000	0.05202		0.02570
CHIPOGNATHIDAE, TRIBE TANYPHARINI								
PARATANYPHARUS SP. (13750)		1 - 4	0.04124	0.00000	0.00000	0.00000		0.00935
LEYZIELLA SP. (13990)		1 - 4	0.00000	0.00000	0.00000	0.04646		0.01636
CHAOPORIDAE								
CHAOPORUS TRISETOSUS (17920)		1 - 4	0.00000	0.00000	0.00000	0.00578		0.00234
COLEOPTERA								
Dytiscidae								
DREPONITES SP. (20410)		1 - 4	0.00000	0.04296	0.00000	0.00000		0.01402
DEFUNCTES SP. (20440)		1 - 4	0.01031	0.01429	0.00000	0.00578		0.00935
AGabus SP. (20459)		1 - 4	0.10309	0.05000	0.00000	0.01156		0.04439
DEFUNCTES/DREPONITES COMPLEX (20484)		1 - 4	0.00000	0.00000	0.05556	0.01734		0.00935

PROJECT: COLORADO ACID RAIN PROJECT (API) AREA: SEVEN LAKES, MT. ZIRKEL W.A. (27) DATE: AUGUST 21, 1984
 STATION: SHRELINE/LITTORAL TO 1 M DEPTH (279) SUBSTATION: 1
 SAMPLER TYPE: QUALITATIVE DIP NET SAMPLE (40)
 NUMBER OF REPLICATES: 4 FIELD BIOLOGIST: EPA-DENVER SAMPLING CREW(81)
 NOTE: NOT APPLICABLE (0)

RELATIVE ABUNDANCE DATA TABLES

1ST LEVEL REFERENCE	2ND LEVEL REFERENCE	REPLICATES	PERCENTAGE COUNTS			TOTAL FOR SP.
	GENUS/SPECIES		1 -	4	0.00000	
COLEOPTERA						
MELCOIDAE						
-ALL- (20790)		1 -	4	0.00000	0.00714	0.00000
HYDRACARINA						
LERPIDIIDAE						
LERPEDIA SP. (21410)		1 -	4	0.01031	0.07857	0.00000
SPERCHONIDAE						
SPERCHON SP. (21510)		1 -	4	0.00000	0.02143	0.00000
CLADOCERA						
CHYDRICAE						
EUPICERCUS LAMELLATUS (32650)		1 -	4	0.32990	0.60000	0.00000
COPEPODA						
CYCLOPOIDAE						
MACROCYCLOPS ALBICUS (38110)		1 -	4	0.00000	0.00714	0.00000
OLIGOCHAETA						
OLIGOCHAETA - ALL (59010)		1 -	4	0.03093	0.00000	0.16667
NAUDIDAE						
SPECARIA JOSINAE (59024)		1 -	4	0.07216	0.00000	0.00000
HIRUDINEA						
EPICODELLIDAE						
DIMA PARVA (62555)		1 -	4	0.00000	0.00000	0.05556
GLOSSIPHONTIDAE						
GLASSIPHONIA COMPLANATA (62590)		1 -	4	0.01031	0.00000	0.00578
PELUCYPDCA						
SONGERIIDAE						
PIEDIUM SP. (65025)		1 -	4	0.11340	0.00714	0.01734
						0.03505

PROJECT: COLORADO ACID RAIN PROJECT (AP) AREA: SEVEN LAKES, MT. ZIRKEL M.R. (27) DATE: SEPTEMBER 4, 1984
 STATION: SHOULINE/LITTORAL TO 1 M DEPTH (279) SUBSTATION: 1
 SAMPLER TYPE: QUALITATIVE DIP NET SAMPLE (40)
 NUMBER OF REPLICATES: 4 FIELD BIOLOGIST: EPA-DENVER SAMPLING CREW(81)
 NOTE: NOT APPLICABLE (0)

RAW DATA TABLES

1ST LEVEL REFERENCE	2ND LEVEL REFERENCE	REPLICATES	COUNTS	TOTAL FOR SP.
	GENUS/SPECIES			
EPHEMEROPTERA				
BAETIDAE				
CALLIBAETIS COLORADENSIS (1717)		1 - 4	9.	37.
HEMIPTERA				
COPTOIDEAE				
ARCTOCORIS AUTILIS (6011)		1 - 4	0.	1.
TRICHOPTERA				
LIPNHEPHILIDAE				
HESPEROPHYLAX SP. (9560)		1 - 4	1.	0.
LIPNHEPHILUS SP. (9567)		1 - 4	9.	0.
PHRYGANEIDAE				
ACRYPNIA STRAMINEA (9900)		1 - 4	17.	2.
DIPTERA				
CHIRONOMIDAE				
CHIRONOMIDAE - ALL (10510)		1 - 4	0.	0.
CHIRONOMIDAE, S-FAMILY TANYTARSIINAE				
PRECLADINIS SP. MR. RIPARTUS (10960)		1 - 4	0.	1.
CHIRONOMIDAE, TRIBE CHIRONOMINI				
DICROTENDIPES SP. (12410)		1 - 4	24.	0.
ENOCOCHIRONOMUS SP. (12460)		1 - 4	0.	2.
MICROTENDIPES SP. (12520)		1 - 4	0.	0.
POLYPERILUM TRIGONUM (13020)		1 - 4	0.	0.
CHIRONOMIDAE, TRIBE TANYTARSIINI				
PARATANYTARSUS SP. (13750)		1 - 4	0.	1.
COLEOPTERA				
CITISCIDAE				
DEPOWETES SP. (20440)		1 - 4	3.	3.
AGabus SP. (20459)		1 - 4	1.	0.
DEPOWETES/CRENIDYES COMPLEX (20404)		1 - 4	1.	3.
HYDROPHILIDAE				
SEROSUS SP. (20800)		1 - 4	0.	0.
HYDRACARINA				
LEBERTIIDAE				
LEBERTIA SP. (21410)		1 - 4	1.	1.
SPHENCHONIDAE				
SPHENCHON SP. (21510)		1 - 4	0.	0.

PROJECT: COLORADO ACID RAIN PROJECT (CAR) AREA: SEVEN LAKES, MT. ZIPKEL W.A. (27)
 STATION: SHORELINE/LITTORAL TO 1 M DEPTH (279) DATE: SEPTEMBER 4, 1984
 SAMPLER TYPE: QUALITATIVE DIP NET SAMPLE (40) SUBSTATION: 1
 NUMBER OF REPLICATES: 4 FIELD BIOLOGIST: EPA-DENVER SAMPLING CREW(81)
 NOTE: NOT APPLICABLE (0)

RAW DATA TABLES

1ST LEVEL REFERENCE 2ND LEVEL REFERENCE GENUS/SPECIES	REPLICATES	COUNTS	TOTAL FOR SP.
CLADOCERA CHYDRIDAE EURYCERCUS LANELLATUS (32650)	1 - 4	7.	24.
OLIGOCHAETA OLIGOCHAETA - ALL (59010)	1 - 4	1.	2.
HIPUDINEA EROPCBBELLIDAE DINA PARVA (62555)	1 - 4	0.	1.
GLASSIPHONIIDAE GLASSIPHONTA COMPLANATA (62590)	1 - 4	0.	2.
PELECYPODA SPHAGENIIDAE PISIDIUM SP. (65025)	1 - 4	0.	9.
TOTAL FOR 23 SPECIES BY REPLICATES	1 - 4	78.	85.
TOTAL FOR 4 REPLICATES, 23 SPECIES		278.	87.

D-23

PROJECT: COLORADO ACID RAIN PROJECT (AR) AREA: SEVEN LAKES, MT. ZIRKEL N.A. (27) DATED: SEPTEMBER 4, 1984
 STATION: SNAGLINE/LITTORAL TO 1 M DEPTH (278) SUBSTATION: 1
 SAMPLER TYPE: QUALITATIVE DIP NET SAMPLE (40)
 NUMBER OF REPLICATES: 4 FIELD BIOLOGIST: EPA-DENVER SAMPLING CREW (81)
 NOTE: NOT APPLICABLE (0)

RELATIVE ABUNDANCE DATA TABLES

1ST LEVEL REFERENCE 2ND LEVEL REFERENCE GENUS/SPECIES	REPLICATES	PERCENTAGE COUNTS			TOTAL FOR SP.
EPHEMEROPTERA BAETIDAE CALLIBAETIS COLORADENSIS (1712)	1 - 4	0.11538	0.43529	0.03571	0.51724
HEMIPTERA CORIXIDAE ARCTOCORIS AUSTRIACUS (6011)	1 - 4	0.00000	0.01176	0.00000	0.00360
TRICHOPOIPTERA LIMNEPHILIDAE HISPEDOPHYLAX SP. (9560)	1 - 4	0.01282	0.00000	0.00000	0.00360
		0.06410	0.00000	0.00000	0.01799
PHRYGANEIDAE AGYRPHTIA STRAMINEA (9900)	1 - 4	0.21795	0.02353	0.46429	0.13309
DIPTERA CHIRONOMIDAE CHIRONOMIDAE - ALL (10510)	1 - 4	0.00000	0.00000	0.00000	0.00360
CHIRONOMIDAE, S-FAMILY TANYCEINAE PACCLADIUS SP. NR. RIPARIUS (10960)	1 - 4	0.10256	0.00000	0.03571	0.08046
CHIRONOMIDAE, TRIBE CHIRONOMINI DICROTENIDIPES SP. (12410)	1 - 4	0.30769	0.00000	0.03571	0.03446
ENOTACHONOMUS SP. (12460)	1 - 4	0.00000	0.00000	0.07143	0.01149
MICROTENDIPES SP. (12520)	1 - 4	0.00000	0.02353	0.00000	0.00719
POLYPEDILUM TRIGONUM (13020)	1 - 4	0.00000	0.01176	0.00000	0.00360
CHIRONOMIDAE, TRIBE TANYTARSINI PARATANTYRASUS SP. (11790)	1 - 4	0.00000	0.00000	0.03571	0.00360
COLEOPTERA DTYTISCIDAE DEPONECTES SP. (20440)	1 - 4	0.03846	0.03529	0.03571	0.05747
ACROBIS SP. (20459)	1 - 4	0.01292	0.00000	0.00000	0.01439
DEPONECTES/OREODYTES COMPLEX (20484)	1 - 4	0.01282	0.03529	0.00000	0.01439
HYDRAENIDAE ZEROSUS SP. (20800)	1 - 4	0.00000	0.00000	0.00000	0.00360
HYDROCARINA LIBERTIIDAE LEPTPTIA SP. (21410)	1 - 4	0.01282	0.01176	0.03571	0.01149
SPIRONCHONIDAE SPIRONCHON SP. (21510)	1 - 4	0.00000	0.01176	0.00000	0.00360

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PROJECT: COLICRATO ACID RAIN PROJECT (AR) AREA: SEVEN LAKES, MT. ZIPKEL W.A. (27) DATE: SEPTEMBER 4, 1984
STATION: SHORELINE/LITTORAL TO 1 M DEPTH (279) SUBSTATION: 1
SAMPLE TYPE: QUALITATIVE DIP NET SAMPLE (40)
NUMBER OF REPLICATES: 4 FIELD BIOLOGIST: EPA-DENVER SAMPLING CREW (81)
NCIEF: NOT APPLICABLE (0)

RELATIVE ABUNDANCE DATA TABLES

1ST LEVEL REFERENCE	2ND LEVEL REFERENCE	REPLICATES	PERCENTAGE COUNTS	TOTAL FOR SP.
	GENUS/SPECIES			
CLADOCERA				
CHYDRORICAE				
EUPYCERUS LAMELLATUS (32650)		1 - 4	0.08974 0.28235 0.07143 0.16092	0.16906
OLIGOCHAETA				
OLIGOCHAITA - ALL (59010)		1 - 4	0.01292 0.02353 0.00000 0.01149	0.01439
HIRUDINAE				
ERPODELLIIDAE				
DINA PARVA (62555)		1 - 4	0.00000 0.01176 0.03571 0.00000	0.00719
GLCSSIPHONIIDAE				
GLCSSIPHONIA COMPLANATA (62590)		1 - 4	0.00000 0.00000 0.07143 0.00000	0.00719
PELECYPODA				
SPHAERIIDIAE				
PISIDIUM SP. (65025)		1 - 4	0.00000 0.08235 0.07143 0.00000	0.03237

D-25

PROJECT: COLORADO ACID RAIN PROJECT (AP)
 STATION: SHALLOW/LITTORAL TO 1 M DEPTH (279)
 SAMPLER TYPE: QUALITATIVE DIP NET SAMPLE (40)
 NUMBER OF REPLICATES: 4 FIELD BIOLOGIST: EPA-DEVER SAMPLING CREW(81)
 NOTE: NOT APPLICABLE (0)

AREA: SEVEN LAKES, MT. ZIRKEL N.A. (27)
 DATE: SEPTEMBER 17, 1984
 SUBSTATION: 1

RAW DATA TABLES

1ST LEVEL REFERENCE 2ND LEVEL REFERENCE GENUS/SPECIES	REPLICATES	COUNTS	TOTAL FOR SP.
HEMIMERGOTERA BAETIDAE CALLIBAETIS COLORADENSIS (1712)	1 - 4	4.	0.
HEMIPTERA CERATOPHIDA ARCTOCORIS AUTILIS (6011)	1 - 4	1.	0.
HEMIPTERA NOTONECTIDAE NOTONECTA SP. (6290)	1 - 4	1.	0.
TRICHOPTERA LIMNEPHILIDAE HESPEROPHYLAX SP. (9560)	1 - 4	0.	2.
TRICHOPTERA LIMNEPHILIDAE LIMNEPHILUS SP. (9567)	1 - 4	0.	1.
TRICHOPTERA PHRYGANIIDAE AGGYPNIA STRAMINEA (9900)	1 - 4	3.	9.
DIPTERA CHIRONOMIDAE, S-FAMILY TANYPODINAE PPCLADIUS SP. NR. RIPARIUS (10960)	1 - 4	2.	4.
DIPTERA CHIRONOMIDAE, TRIRE CHIRONOMINI CHIRONOMUS spp. (12250)	1 - 4	0.	0.
DIPTERA DICROTENDIPEA SP. (12410)	1 - 4	16.	0.
DIPTERA EMEOCHIRONOMUS SP. (12460)	1 - 4	1.	3.
DIPTERA MICROTENDIPEA SP. (12520)	1 - 4	2.	0.
COLEOPTERA DYTISCIDAE OREOCYTES SP. (20410)	1 - 4	0.	1.
COLEOPTERA DYTISCIDAE LACCORNIS SP. (20439)	1 - 4	0.	1.
COLEOPTERA DYTISCIDAE DEFONCTES SP. (20440)	1 - 4	0.	7.
HYDROPHILIDAE TRICPISTERNUS LATERALIS (20852)	1 - 4	1.	0.
HYDROCARINA LIMPETTIDAE LEPERITA SP. (21110)	1 - 4	0.	1.
CLADOCERA CHYPOPODIAE EUFYCOPUS LAMELLATUS (32650)	1 - 4	1.	25.

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PROJECT: COLORADO ACID RAIN PROJECT (AP) AREA: SEVEN LAKES, MT. ZIRKEL M.A. (27) DATE: SEPTEMBER 17, 1984
STATION: SHALLOW/LITTORAL TO 1' DEPTH (279) SUBSTATION: 1
SAMPLER TYPE: QUALITATIVE DIP NET SAMPLE (40)
NUMBER OF REPLICATES: 4 FIELD BIOLOGIST: EPA-DENVER SAMPLING CREW(B1)
NOTE: NOT APPLICABLE (0)

RAW DATA TABLES

D-27

1ST LEVEL REFERENCE 2ND LEVEL REFERENCE GENUS/SPECIES	REPLICATES	COUNTS	TOTAL FOR SP.
OLIGOCHAETA OLIGOCHAETA - ALL (59010)	1 - 4	1.	0.
NAUDICAE NAUDIDAE - ALL (59020)	1 - 4	0.	0.
HIRUDINEA ERPORDELLIDAE DINA PARVA (62555)	1 - 4	3.	1.
GLOSSIPHONIDAE GLASSIPHONIA COMPLANATA (62590)	1 - 4	0.	1.
PELECYPODA SPHAERIIDA PISIDIUM SP. (65025)	1 - 4	0.	2.
TOTAL FOR 22 SPECIES BY REPLICATE:	1 - 4	39.	95.
TOTAL FOR 4 REPLICATES, 22 SPECIES:		189.	

PROJECT: COLCPACO ACID RAIN PROJECT (SR)
 STATION: SHOVELINE/LITTORAL TU 1 M DEPTH (279)
 SAMPLER TYPE: QUALITATIVE DIP NET SAMPLE (40)
 NUMBER OF REPLICATES: 4 FIELD PICLOGISTS: EPA-DENVER SAMPLING CREW(81)
 NOTE: NOT APPLICABLE (0) AREA: SEVEN LAKES, MT. ZIPKEL N.A. (27)
 DATE: SEPTEMBER 17, 1984
 SUBSTATION: 1

RELATIVE ABUNDANCE DATA TABLES

1ST LEVEL REFERENCE 2ND LEVEL REFERENCE GENUS/SPECIES	REPLICATES	PERCENTAGE COUNTS	TOTAL FOR SP.
EPHEMEROPTERA			
BAETIDAE			
CALLIBAETIS COLOPARENDSIS (1712)	1 - 4	0.10256 0.25806 0.00000 0.27368	0.20106
HEMIPTERA			
COPIXIDAE			
APCIOMORISA SUTILIS (6011)	1 - 4	0.02564 0.00000 0.00000 0.02105	0.01587
NOTONECTIDAE			
NOTONECTA SP. (6250)	1 - 4	0.02564 0.00000 0.00000 0.00000	0.00529
TRICHOPTERA			
LIMNEPHILIDAE			
HESPEROPHYLAX SP. (9560)	1 - 4	0.00000 0.06452 0.08333 0.00000	0.02116
LIMNEPHILUS SP. (9567)	1 - 4	0.00000 0.00000 0.04167 0.00000	0.00529
PHRYGANEIDAE			
AGYPYRHA STRAMINEA (9900)	1 - 4	0.07692 0.29032 0.62500 0.20000	0.24339
DIPTERA			
CHIRONOMIDAE, S-FAMILY TANYPODINAE			
PRCCLAUDIUS SP. NR. PIPARIUS (10460)	1 - 4	0.05128 0.12903 0.00000 0.05263	0.05820
CHIRONOMIDAE, TRIBE CHIRONOMINI			
CHIRONOMUS spp. (12250)	1 - 4	0.00000 0.00000 0.00000 0.01053	0.00529
DICTROTENDIPES SP. (12410)	1 - 4	0.46154 0.00000 0.00000 0.03158	0.11111
ENOCOCHIRONOMUS SP. (12460)	1 - 4	0.02564 0.09677 0.04167 0.05263	0.05291
MICROCTENDIPES SP. (12520)	1 - 4	0.05128 0.00000 0.00000 0.00000	0.01059
COLEOPTERA			
DTISSCTAE			
OHEODYTES SP. (20410)	1 - 4	0.00000 0.00000 0.04167 0.00000	0.00529
LACCOPNIS SP. (20435)	1 - 4	0.00000 0.01226 0.00000 0.00000	0.00529
CEFORCTES SP. (20440)	1 - 4	0.00000 0.00000 0.04167 0.06316	0.03714
HYCOPHILIDAE			
TRICPISTERNIUS LATERALIS (200921)	1 - 4	0.02564 0.00000 0.00000 0.00000	0.00529
HYDROCARINA			
LEPTPTSIDAE			
LEPTPTIA SP. (21410)	1 - 4	0.02564 0.00000 0.00000 0.01053	0.01059
GLAUCERA			
CHYDRICAE			
EUFYCLOCUS LANELLATUS (32650)	1 - 4	0.02564 0.03226 0.00000 0.24211	0.13228

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PROJECT: COLORADO ACID RAIN PROJECT (AP) AREA: SEVEN LAKES, MT. ZIRKEL N.A. (27) DATE: SEPTEMBER 17, 1984
 STATION: SHORELINE/LITTORAL TO 1 M DEPTH (279) SUBSTATION: 1
 SAMPLER TYPE: QUALITATIVE DIP NET SAMPLE (40)
 NUMBER OF REPLICATES: 4 FIELD BIOLOGIST: EPA-DENVER SAMPLING CREW(81)
 NOTE: NOT APPLICABLE (0)

RELATIVE ABUNDANCE DATA TABLES

1ST LEVEL PREFERENCE 2ND LEVEL PREFERENCE GENUS/SPECIES	REPLICATES	PERCENTAGE COUNTS	TOTAL FOR SP.
OLIGOCHAETA OLIGOCHEATA = ALL (59010)	1 - 4	0.02564 0.00000 0.00000 0.01053	0.01058
NAUDICAE NAUDIDAE = ALL (59020)	1 - 4	0.00000 0.00000 0.00000 0.01053	0.00529
HIRUDIMEA ERPOBELLIDAE CINA PARVA (62555)	1 - 4	0.07692 0.03226 0.08333 0.00600	0.03175
GLOSSIPHONIIDAЕ GLOSSIPHONIA COMPLANATA (62590)	1 - 4	0.00060 0.00000 0.04167 0.00000	0.00529
PELECYPODA SPHAERIIDAE PISIDIUM SP. (65025)	1 - 4	0.00000 0.06452 0.00000 0.02105	0.02116

APPENDIX E

QUANTITATIVE MACROINVERTEBRATE (EKMAN) COUNTS AND
ESTIMATES OF RELATIVE ABUNDANCE FROM LAKE ELBERT

July 31, August 23, and September 20, 1984

PROJECT: COLCPACO ACID RAIN PROJECT (AR)
 STATION: CENTER OF LAKE; DEPTH 11.5M (26)
 SAMPLER TYPE: ECKMAN DREDGE BOTTOM GRAB (60)
 NUMBER OF REPLICATES: 5 FIELD BIOLOGIST: BARRY BALDIGO (21)
 NOTE: NOT APPLICABLE (0)

AREA: LAKE ELBERT, MT. ZIEKEL N.A. (26)

DATE: JULY 31, 1984
SUBSTATION: 1

RAW DATA TABLES

1ST LEVEL REFERENCE 2ND LEVEL REFERENCE GENUS/SPECIES	REPLICATES	COUNTA	TOTAL FCP SP.
EPHEMEROPTERA SIPHONURIDAE SIPHONURUS OCCIDENTALIS (655)	1 - 5	1.	0.
DIPTERA CHIRONOMIDAE, TRIBE CHIRONOMIRI CHIRONOMUS SP. 1 (12255)	1 - 5	0.	1.
CHIRONOMIDAE, TRIBE TANYTARSINI TANYTARSUS SP. 2 (13701)	1 - 5	1.	0.
CHIRONOMIDAE, S-FAM ORTHOCLADINAE CPICOTOPUS INTERSECTUS (14575)	1 - 5	0.	0.
CPICOTOPUS PATENS (14577)	1 - 5	0.	0.
ORTHOCLADIUS CONGBRINUS (14880)	1 - 5	1.	0.
SYNORTHOCLASTUS SP. (16010)	1 - 5	0.	0.
SIMULIIDAE SIMULIUM TUBEROSUM/VENUSTUM (17535)	1 - 5	0.	1.
COPEPODA CYCLOPODIA MACROCYCLOPS ALBICUS (38110)	1 - 5	1.	0.
NEMATODA NEMATODA - ALL (50610)	1 - 5	0.	0.
OLIGOCHAETA TUBIFICIDAE IMMATURE TUBIFICIDAE - W.G.C.C. (60000)	1 - 5	0.	1.
LIMNOPILUS SPIRALIS (60020) (60020)	1 - 5	1.	0.
MISCELLANEOUS LAREL CATEGORY			
NO SPECIES FOUND IN THIS REPLICATE. (99999)	1 - 5	0.	0.
TOTAL FOR 13 SPECIES BY REPLICATE:	1 - 5	3.	6.
TOTAL FOR 5 REPLICATES, 13 SPECIES:		15.	

PROJECT: COLORADO ACID RAIN PROJECT (CR)
 STATION: CENTER OF LAKE; DEPTH 11.5M (261)
 SAMPLER TYPE: ECHMAN GREIGE BOTTOM GRAB (60)
 NUMBER OF REPLICATES: 5 FIELD MICROLOGIST: MARRY MALDIGO (21)
 NOTE: NOT APPLICABLE (0)

AREA: LAKE ELBERT, MT. ZIFFEL A.D. (261)
 DATE: JULY 31, 1984
 SUBSTATION: 1

RELATIVE ABUNDANCE DATA TABLES

1ST LEVEL PREFERENCE 2ND LEVEL PREFERENCE GENUS/SPECIES	REPLICATES	PERCENTAGE COUNTS	TOTAL FOR SP.
EPHEMEROPTERA SIPHONURIDAES SIPHONURUS OCCIDENTALIS (655)	1 - 5	0.33333 0.00000 0.00000 1.00000 0.00000 0.13333	
DIPTERA CHIRONOMIDAE, TRIBE CHIRONOMINI CHIRONOMUS SP. 1 (12255)	1 - 5	0.00000 0.16667 0.00000 0.00000 0.00000 0.06667	
CHIRONOMIDAE, TRIBE TANYIAPSINI TANYIARUS SP. 2 (13701)	1 - 5	0.33333 0.00000 0.00000 0.00000 0.00000 0.06667	
CHIRONOMIDAE, S-PAM ORTHOCLADINAE CRICOTOPUS INTERSECUS (1475)	1 - 5	0.00000 0.16667 0.00000 0.00000 0.00000 0.06667	
CRICOTOPUS PATENS (14577)	1 - 5	0.00000 0.00000 0.20000 0.00000 0.00000 0.06667	
ORTHOCLADEUS CONSORCIUS (14880)	1 - 5	0.00000 0.16667 0.00000 0.00000 0.00000 0.06667	
SYNORTHOCLADUS SP. (16010)	1 - 5	0.00000 0.16667 0.00000 0.00000 0.00000 0.06667	
SIMULIIDAE SIMULIUM TUBEROSUM/VENUSTUM (17535)	1 - 5	0.00000 0.00000 0.20000 0.00000 0.00000 0.06667	
COPROPODA CYCLOPOIDA MACROCYCLOPS ALRICUS (38110)	1 - 5	0.33333 0.00000 0.00000 0.00000 0.00000 0.06667	
NEMATODA NEATOGNA = ALL (50610)	1 - 5	0.00000 0.00000 0.20000 0.00000 0.00000 0.06667	
OLIGOCHAETA TURIFICIDAE IMMATURE TURIFICIDAE = W.C.C.C. (60000)	1 - 5	0.00000 0.16667 0.20000 0.00000 0.00000 0.13333	
LIPNOCHILOPS SPITALUS (60020) (60020)	1 - 5	0.00000 0.16667 0.20000 0.00000 0.00000 0.13333	
MISCELLANEOUS LABEL CATEGORY			
NO SPECIES FOUND IN THIS REPLICATE. (99999)	1 - 5	0.00000 0.00000 0.00000 0.00000 0.00000 0.00000	

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PROJECT: COLCPACO ACID RAIN PROJECT (AR) AREA: LAKE ELBERT, MT. ZIPPER M.A. (26) DATE: AUGUST 23, 1984
 STATION: CENTER OF LAKE; DEPTH 11.5M (261) SUBSTATION: 1
 SAMPLER TYPE: ECKMAN DREDGE BOTTOM GRAB (60)
 NUMBER OF REPLICATES: 5 FIELD BIOLOGIST: EPA-DENVER SAMPLING CREW(81)
 NOTE: NOT APPLICABLE (0)

RAW DATA TABLES

1ST LEVEL REFERENCE 2ND LEVEL REFERENCE GENUS/SPECIES	REPLICATES	COUNTS	TOTAL FOR SP.
EPHEMEROPTERA SIPHONURIDAe SIPHONURUS OCCIDENTALIS (655)	1 - 5	0.	0.
DIPTERA CHIRONOMOIDAE, S-FAMILY TANYPOCINAE PROCLADLIUS SP. NR. RIPARIUS (10960)	1 - 5	0.	1.
CHIRONOMOIDAE, TRIBE CHIRONOMINI CHIRONOMUS SP. 1 (12255)	1 - 5	0.	0.
CHIRONOMOIDAE, S-FAM OPTHOCLASTINAE OPTHOCЛАCIUS CONSORATINUS (14880)	1 - 5	0.	1.
HYDRACARINA LEEBEPTIIDAe LEEBEPTIA SP. (21410)	1 - 5	1.	0.
CLADOCERA HOLCOPEDIIDAe HOLOPEDIUM GIBBERUM (31722)	1 - 5	2.	1.
MISCELLANEOUS LABEL CATEGORY			
NO SPECIES FOUND IN THIS REPLICATE. (99999)	1 - 5	0.	0.
TOTAL FOR 7 SPECIES BY REPLICATES:	1 - 5	0.	3.
TOTAL FOR 5 REPLICATES, 7 SPECIES:		15.	

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PROJECT: COLORADO ACID RAIN PROJECT (CAR)
 STATION: CENTER OF LAKE; DEPTH 11.5M (26)
 SAMPLER TYPE: ECKMAN DREDGE BOTTOM GRAB (60)
 NUMBER OF REPLICATES: 5
 NOTE: NOT APPLICABLE (0)

SAMPLE: LAKE ELBERT, MT. ZIPPERL W.A. (26)

DATE: AUGUST 23, 1984
BURNSTATION: 1

RELATIVE ABUNDANCE DATA TABLES

1ST LEVEL REFERENCE 2ND LEVEL REFERENCE GENUS/SPECIES	REPLICATES	PERCENTAGE COUNTS	TOTAL FOR SP.
EPHEMEROPTERA SIPOHONURIDAE SIPOHONUPUS OCCIDENTALIS (455)	1 - 5	0.00000 0.00000 0.00000 0.00000 0.75000	0.40000
DIPTERA CHIRONOMIDAE, 8-FAMILY TANYPCCINAE PRECLADIUS SP. NR. RIPARIUS (10960)	1 - 5	0.00000 0.00000 0.33333 0.00000 0.12500	0.13333
CHIRONOMIDAE, TRIME CHIRONOMINI CHIRONOMUS SP. 1 (12255)	1 - 5	0.00000 0.00000 0.00000 0.00000 0.12500	0.06667
CHIRONOMIDAE, 3-FAM CRITHOCCLACIINAE ORTHOCLACIUS CONSORINUS (14880)	1 - 5	0.00000 0.00000 0.33333 0.00000 0.00000	0.06667
HYDACARINA LEBERTIIDAE LEBERTIA SP. (21410)	1 - 5	0.00000 0.33333 0.00000 0.00000 0.00000	0.06667
CLADOCERA HOLOPEDIDAE HOLOPEDIUM GIBRERUM (31722)	1 - 5	0.00000 0.66667 0.33333 1.00000 0.00000	0.26667
MISCELLANEOUS LABEL CATEGORY			
NO SPECIES FOUND IN THIS REPLICATE. (99999)	1 - 5	0.00000 0.00000 0.00000 0.00000 0.00000	0.00000

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PROJECT: COLORADO ACID RAIN PROJECT (AR) AREA: LAKE ELBERT, MT. ZIFFEL W.A. (26) DATE: SEPTEMBER 20, 1984
STATION: CENTER OF LAKE; DEPTH 11.5M (261) SUBSTATION: 1
SAMPLER TYPE: ECKMAN DREDGE ACTION GRAB (60)
NUMBER OF REPLICATES: 3 FIELD BIOLOGIST: EPA-DENVER SAMPLING CREW(01)
NOTE: NOT APPLICABLE (0)

RAW DATA TABLES

1ST LEVEL REFERENCE 2ND LEVEL REFERENCE GENUS/SPECIES	REPLICATES	COUNTS	TOTAL FOR SP.
DIPTERA CHIRONOMIDAE, S-FAMILY TANYPCCINAE PRCCCLADIUS SP. NR. RIPARIUS (10960)	1 - 3	0.	1.
CLADOCERA HOLCOPEDIIDAE HOLCOPEODIUM GIBBERUM (31722)	1 - 3	1.	0.
TOTAL FOR 2 SPECIES BY REPLICATE:	1 - 3	1.	1.
TOTAL FOR 3 REPLICATES, 2 SPECIES:		3.	

PAGE 1

PROJECT: COLORADO ACID RAIN PROJECT (AR)
STATION: CENTER OF LAKE; DEPTH 11.9M (26)
SAMPLER TYPE: ECKMAN DREDGE BOTTOM GRAB (60)
NUMBER OF REPLICATES: 3
NOTE: NOT APPLICABLE (0)

AREA: LAKE ELBERT, MT. ZIPKEL W.A. (26)
FIELD BIOLOGISTS: EPA-DENVER SAMPLING CPER(01)

DATE: SEPTEMBER 20, 1984
SUBSTATION: 1

RELATIVE ABUNDANCE DATA TABLES

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1ST LEVEL REFERENCE 2ND LEVEL REFERENCE GENUS/SPECIES	REPLICATES	PERCENTAGE COUNTS	TOTAL FOR SP.
DIPTERA CHIRONOMIDAE, S-FAMILY TANYPODINAE PRACLADUS SP. sp., RIPARIUS (10960)	1 = 3	0.00000 1.00000 1.00000	0.06667
CLADOCERA HOLOPEDIIDAE HOLOPEDIUM GIBBERUM (31722)	1 = 3	1.00000 0.00000 0.00000	0.33333

APPENDIX F

QUANTITATIVE MACROINVERTEBRATE (EKMAN) COUNTS AND
ESTIMATES OF RELATIVE ABUNDANCE FROM SEVEN LAKES

August 3, August 21, September 4, and September 19, 1984

PROJECT: COLLAGEN ACID PAIN PROJECT (AP)
 STATION: CENTER OF NE BASIN, DEPTH 6.0M (27)
 SAMPLER TYPE: ECKMAN DREDGE BOTTOM GRAB (60)
 NUMBER OF REPLICATES: 5
 NOTES: NOT APPLICABLE (0)

AREA: SEVEN LAKES, MT. ZIRKEL M.A. (27)

DATE: AUGUST 3, 1984
 SUBSTATION: 1

RAW DATA TABLES

1ST LEVEL REFERENCE 2ND LEVEL REFERENCE GENUS/SPECIES	REPLICATES	COUNTS	TOTAL FOR SP.
DIPLOPODA			
CHILOPODIAE, S-FAMILY TANYPOCCINAE			
BLABESMYIA PARAJANTA (10665)	1 - 5	4.	13.
PRACLADUS SP., NP. RIPARIUS (10960)	1 - 5	2.	19.
CHILOPODIAE, TRIBE CHIRONOMINI			
CHIRONOMUS SP., 1 (12255)	1 - 5	20.	152.
DICRISTENIPES SP. (12410)	1 - 5	1.	3.
CLADOPHILWA SP. (13400)	1 - 5	0.	5.
CHILOPODIAE, TRIBE TANYTARSINI			
TANYTARSUS SP., 1 (13700)	1 - 5	41.	196.
TANYTARSUS SP., 2 (13701)	1 - 5	9.	85.
LENZIELLA SP. (13990)	1 - 5	0.	2.
CHILOPODIAE, S-FAM CPTHOCLADIINAE			
CRICOTOPUS PATENS (14577)	1 - 5	0.	3.
HYDRACARINA			
LEBERTIIDAE			
LEBERTIA SP. (21410)	1 - 5	0.	4.
APPENNUFIDA			
APPENURUS SF. (21600)	1 - 5	0.	2.
CLADOCERA			
HOLOPEDIDAE			
HOLOPEDIUM GIBBERUM (31722)	1 - 5	0.	10.
OSTRACODA			
CYPRIDAE			
CANOCNA SCOPULOSA (33600)	1 - 5	0.	5.
COPEPODA			
CALANICCA			
DIAPTOMUS COPEPODID (37055)	1 - 5	0.	1.
CYCLOPODIA			
MACROCYCLOPS ALBIDUS (38110)	1 - 5	0.	3.
HEMATOCA			
HEMATODA - ALL (50610)	1 - 5	0.	1.
OLIGochaeta			
NAUDIDA			
NAUDIUS spp. (59021)	1 - 5	1.	3.

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PROJECT: COLCRACO ACID RAIN PROJECT (AP) AREA: SEVEN LAKES, MT. ZIPKEL N.B. (27) DATE: AUGUST 3, 1994
STATION: CENTER OF NE BASIN; DEPTH 6.0M (27)
SAMPLER TYPE: ECKMAN DREDGE BOTTOM GRAB (60)
NUMBER OF REPLICATES: 3 FIELD BIOCLOGIST: BARRY BALDIGO (21)
NOTE: NOT APPLICABLE (0) SUBSTATION: 1

RAW DATA TABLES

F-2	1ST LEVEL REFERENCE 2ND LEVEL REFERENCE GENUS/SPECIES	REPLICATES	COUNTS	TOTAL FOR SP.
	OLIGOCHAETA ENCHYTRAEIDAE ENCHYTRAEIDAE - POSS (61001)	1 - 5	0.	0.
	HIPPODINEA ERPODELLIDAE DINA PARVA (62955)	1 - 5	0.	0.
	PELECYPODA SPHAERIIDAE PIEZIDIUM SP. (65029)	1 - 5	19. 22. 27. 24. 14.	106.
	TOTAL FOR 20 SPECIES BY REPLICATE:	1 - 5	97. 159. 136. 130. 86.	
	TOTAL FOR 5 REPLICATES, 20 SPECIES:		616.	

PROJECT: COLORADO ACID RAIN PROJECT (AP)
 STATION: CENTER OF ME BASIN; DEPTH 6.0M (271)
 SAMPLER TYPE: ECKMAN DREDGE BRITCH GRAB (60)
 NUMBER OF REPLICATES: 5
 FIELD BIOLOGIST: BARRY BALDIGO (21)
 NOTE: NOT APPLICABLE (0)

AREA: SEVEN LAKES, MT. ZIRKEL M.A. (27)

DATE: AUGUST 3, 1984
 SUBSTATION: 1

RELATIVE ABUNDANCE DATA TABLES

1ST LEVEL REFERENCE 2ND LEVEL REFERENCE GENUS/SPECIES	REPLICATES	PERCENTAGE COUNTS				TOTAL FOR SP.	
DIPTERA							
CHIRONOPHIDAE, S-FAMILY TANYPTERICINAE							
ABIBABESMYIA PARAJANTA (10669)	1 - 5	0.04124	0.01258	0.02941	0.01449	0.01163	0.02110
PPCLADIUS SP. NR. RIPARIUS (10940)	1 - 5	0.02062	0.04403	0.02941	0.02899	0.02326	0.03094
CHIRONOMIDAE, TRIBE CHIRONOMINI							
CHIRONOMUS SP. 1 (12255)	1 - 5	0.20619	0.25157	0.27941	0.23913	0.24419	0.24675
DICROTENIDES SP. (12410)	1 - 5	0.01031	0.00629	0.00735	0.00000	0.00000	0.00497
CLADOPELMA SP. (13400)	1 - 5	0.00000	0.01258	0.01471	0.00725	0.00000	0.00812
CHIRONOMIDAE, TRIBE TANYTARSINI							
TANYTARSUS SP. 1 (13700)	1 - 5	0.42268	0.24528	0.27941	0.33333	0.37209	0.31818
TANYTARSUS SP. 2 (13701)	1 - 5	0.69278	0.23270	0.13971	0.09420	0.08140	0.13799
LENZIELLA SP. (13990)	1 - 5	0.00000	0.00000	0.00000	0.00725	0.01163	0.00325
CHIRONOMIDAE, S-FAM ORTHOCLACIINAE							
CRICOTOPUS PATENS (14577)	1 - 5	0.00000	0.00629	0.00000	0.00725	0.01163	0.00487
HYDACARINA							
LEBERTIIDAE							
LEBERTIA SP. (21410)	1 - 5	0.00000	0.01258	0.00000	0.00000	0.02326	0.00649
ARPNURIDAE							
ARPNURUS SP. (21600)	1 - 5	0.00000	0.00000	0.00000	0.01449	0.00000	0.00325
CLADOCERA							
HOLCOPEDIIDAE							
HOLCOPEDIUM GIBBERUM (31722)	1 - 5	0.00000	0.00000	0.01471	0.03623	0.03488	0.01623
OSTRACODA							
CYPRIDAE							
CANONDA SCOPULOSA (33600)	1 - 5	0.00000	0.01258	0.00000	0.02174	0.00000	0.00812
COPEPODA							
CALANOIDA							
DIAPTOMUS COPEPODOID (37055)	1 - 5	0.00000	0.00000	0.00000	0.00000	0.01163	0.00162
CYCLOCPOIDA							
MACROCYCLOPS ALBIDUS (38110)	1 - 5	0.00000	0.00629	0.00000	0.01449	0.00000	0.00487
NEMATODA							
HEPATODA = ALL (50610)	1 - 5	0.00000	0.00629	0.00000	0.00000	0.00000	0.00162
OLIGOCHAETA							
NAUDIDAE							
NAUDS spp. (59021)	1 - 5	0.01031	0.01258	0.00000	0.00000	0.00000	0.00487

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PROJECT: COLORADO ACID RAIN PROJECT (AP)
STATION: CENTER OF MC BASTIN; DEPTH 6.0M (271)
SAMPLER TYPE: ECKMAN DREDGE BOTTOM GRAB (60)
NUMBER OF REPLICATES: 5
NOTE: NOT APPLICABLE (0)

AREA: SEVEN LAKES, MT. ZIPPER M.A. (271)

DATE: AUGUST 3, 1984
SUBSTATION: 1

RELATIVE ABUNDANCE DATA TABLES

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1ST LEVEL REFERENCE 2ND LEVEL REFERENCE GENUS/SPECIES	REPLICATES	PERCENTAGE COUNTS	TOTAL FOR SP.
OLIGOCHAETA ENCHYTRAEIDAE ENCHYTRAEIDAE - POSS (61001)	1 - 5	0.00000 0.00000 0.00735 0.00000 0.00000	0.00162
HIRUDINEA ERPOBELLIDAE DIXA PARVA (62555)	1 - 5	0.00000 0.00000 0.00000 0.00725 0.01163	0.00325
PELECYPODA SPHAERIIDAE PISIDIUM SP. (65025)	1 - 5	0.19588 0.13834 0.19853 0.17391 0.16279	0.17200

PROJECT: COLORADO ACID RAIN PROJECT (AR)
 STATION: CENTER OF NE BASIN; DEPTH 6.0M (271)
 SAMPLER TYPE: ECKMAN DREDGE BOTTOM GRAB (60)
 NUMBER OF REPLICATES: 5 FIELD BIOLOGIST: EPA-DENVER SAMPLING CREW(AI)
 NOTES: NOT APPLICABLE (0)

AREA: SEVEN LAKES, MT. ZIRKEL W.A. (27)
 DATE: AUGUST 21, 1984
 SUBSTATION: 1

RAW DATA TABLES

1ST LEVEL REFERENCE 2ND LEVEL REFERENCE GENUS/SPECIES	REPLICATES	COUNTS	TOTAL FOR SP.
TRICHOPTERA PHRYGANEIDAE AGRYPNIA STRAMINEA (9900)	1 - 5	0, 0, 0, 1,	1.
DIPTERA CHIRONOMIDAE, S-FAMILY TANYPOCINAE PRECLADIUS SP. NF, RIPARIUS (10960)	1 - 5	3, 1, 2, 2,	1, 9.
CHIRONOMIDAE, TRIBE CHIRONOMINI CHIRONOMUS SP. 1 (12255)	1 - 5	29, 18, 23, 24,	22, 116.
DICROTENCIPIES SP. (12410)	1 - 5	0, 0, 0, 1,	0.
CHIRONOMIDAE, TRIBE TANYTARSINI TANYTARSUS SP. 1 (13700)	1 - 5	22, 21, 26, 18,	29, 116.
TANYTARSUS SP. 2 (13701)	1 - 5	1, 0, 0, 0,	0.
LENZIELLA SP. (13990)	1 - 5	0, 0, 1, 0,	1.
CHIRONOMIDAE, S-FAN ORTHOCLADINAE CRICOTOPUS PATENS (14577)	1 - 5	0, 0, 0, 1,	1.
CHAOBORIDAE CHAOBORUS TRIUTTATUS (17920)	1 - 5	0, 0, 0, 1,	1.
HYDRACAPINA LEBERTIIDAE LEBERTIA SP. (21410)	1 - 5	0, 0, 0, 0,	3, 3.
APRENUPIDAE APRENUPUS SP. (21600)	1 - 5	0, 0, 1, 1,	0, 2.
CLAOCERA DAPHNIIDAE CERIODAPHNIA LATICAUCATA (32060)	1 - 5	1, 0, 0, 0,	0, 1.
CHYDRIDAE EUPYCERCUS LANELLATUS (32650)	1 - 5	0, 0, 0, 0,	1, 1.
COPEPODA CYCLOCPOIDA MACROCYCLOPS ALBICUS (38110)	1 - 5	1, 2, 0, 1,	0, 4.
HIRUDINEA EPPOBCELLIDAE DINA PARVA (62559)	1 - 5	0, 1, 0, 0,	0, 1.
PELECYPODA SPHAERIIDIAE PISIOUM SP. (65025)	1 - 5	4, 2, 3, 2,	4, 15.

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PROJECT: COLORADO ACID RAIN PROJECT (AR)
STATION: CENTER OF ME BASIN; DEPTH 8.0M (27')
SAMPLER TYPE: ECKMAN DREDGE BOTTOM GRAB (60)
NUMBER OF REPLICATES: 5 FIELD BIOLOGIST: EPA-DENVER SAMPLING CREW(81)
NOTE: NOT APPLICABLE (0)

AREA: SEVEN LAKES, MT. ZIRKEL M.A. (27)
DATE: AUGUST 21, 1984
SUBSTATION: 1

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RAW DATA TABLES

1ST LEVEL REFERENCE 2ND LEVEL REFERENCE GENUS/SPECIES	REPLICATES	COUNTS	TOTAL FOR SP.
TOTAL FOR 16 SPECIES BY REPLICATES	1 + 5	61, 45, 56, 52,	61,
TOTAL FOR 5 REPLICATES, 16 SPECIES:		275,	

PROJECT: COLORADO ACID RAIN PROJECT (AP) AREA: SEVEN LAKES, MT. ZINKEL N.A. (27) DATES: AUGUST 21, 1984
 STATION: CENTER OF NE BASIN; DEPTH 6.0M (271) SUBSTATION: 1
 SAMPLER TYPE: ECKMAN DREDGE BOTTOM GRAB (60)
 NUMBER OF REPLICATES: 3 FIELD BIOLOGIST: EPA-DENVER SAMPLING CREW(81)
 NOTE: NOT APPLICABLE (0)

RELATIVE ABUNDANCE DATA TABLES

1ST LEVEL REFERENCE	2ND LEVEL REFERENCE	REPLICATES	PERCENTAGE COUNTS			TOTAL FOR SP.	
	GENUS/SPECIES		1	2	3	4	5
TRICHOPTERA							
	PHRYGANEIDAE						
	AGRYPHIA STRAMINEA (9900)	1 - 5	0.00000	0.00000	0.00000	0.01923	0.00000
DIPTERA							
	CHIRONOMIDAE, S-FAMILY TANYPODINAE	1 - 5	0.04918	0.02222	0.03571	0.03846	0.01639
	PACCLADIUS SP. NR. RIPARIUS (10960)						
	CHIRONOMIDAE, TRIBE CHIRONOMINI	1 - 5	0.47541	0.40000	0.41071	0.46154	0.36066
	CHIRONOMUS SP. 1 (12255)						
	DICROTENDIPES SP. (12410)	1 - 5	0.00000	0.00000	0.00000	0.01923	0.00000
	CHIRONOMIDAE, TRIBE TANYTARSINI	1 - 5	0.36066	0.46667	0.46429	0.34615	0.47541
	TANYTARSUS SP. 1 (13700)						
	TANYTARSUS SP. 2 (13701)	1 - 5	0.01639	0.00000	0.00000	0.00000	0.00000
	LENZIELLA SP. (13990)	1 - 5	0.00000	0.00000	0.01786	0.00000	0.01639
	CHIRONOMIDAE, S-FAM ORTHOCLOADIINAE	1 - 5	0.00000	0.00000	0.00000	0.01923	0.00000
	CRICOTOPUS PATENS (14977)						
	CHAOBORIDAE	1 - 5	0.00000	0.00000	0.00000	0.01923	0.00000
	CHAOBORUS TRIULITATUS (17920)						
HYDROCARINA							
	LEBERTIIDAE	1 - 5	0.00000	0.00000	0.00000	0.00000	0.04918
	LEBERTIA SP. (21410)						
	ARRENURIDAE	1 - 5	0.00000	0.00000	0.01786	0.01923	0.00000
	ARRENURUS SP. (21600)						
CLADOCERA							
	DAPHNIIDAE	1 - 5	0.01639	0.00000	0.00000	0.00000	0.00000
	CERIODAPHNIA LATICAUDATA (32060)						
	CHYGROICEAE	1 - 5	0.00000	0.00000	0.00000	0.00000	0.01639
	EUPYCERCUS LANELLATUS (32650)						
COPEPODA							
	CYCLOCOPODA	1 - 5	0.01639	0.04444	0.00000	0.01923	0.00000
	MICRACYCLOPS ALBATUS (38110)						
HIRUDINEA							
	ERPOBDELLIDAE	1 - 5	0.00000	0.02222	0.00000	0.00000	0.00000
	DINA PARVA (62555)						
PELAEYCOPDA							
	Sphaeritidae	1 - 5	0.06557	0.04444	0.05357	0.03846	0.06557
	PISIDIUM SP. (65025)						

PROJECT: COLORADO ACID RAIN PROJECT (CAR)
 STATION: CENTER OF NE BASIN, DEPTH 6.0M (271)
 SAMPLER TYPE: ECKMAN DREDGE BOTTOM GRAB (60)
 NUMBER OF REPLICATES: 3
 NOTES: NOT APPLICABLE (0)

AREA: SEVEN LAKES, MT. ZIPKEL 4.B. (27)

DATE: SEPTEMBER 4, 1984
 SUBSTATION: 1

RAW DATA TABLES

1ST LEVEL REFERENCE 2ND LEVEL REFERENCE GENUS/SPECIES	REPLICATES	COUNTS	TOTAL FOR SP.
TRICHOPTERA PHRYGANEIDAE ACGPYRNIA STRAMINEA (9900)	1 + 3	0, 1, 0,	1,
DIPTERA CHIRONOMOIDAE, S-FAMILY TANYPODINAE PRECLADIUS SP. MR, RIPARIUS (10960)	1 + 3	5, 0, 6,	10,
CHIRONOMOIDAE, TRIBE CHIRONOMINI CHIRONOMUS SP. 1 (12255) MICROTENDIPES SP. 1 (12929) CLADOPELMA SP. (13400)	1 + 3	20, 1, 3,	24,
CHIRONOMOIDAE, TRIBE TANYPODINAE TANYTARSUS SP. 1 (13700) LENZIELLA SP. (13990)	1 + 3	33, 1, 2,	36,
CHIRONOMOIDAE, S-FAM ORTHOCLADIINAE -ALL- (14110)	1 + 3	1, 0, 0,	1,
HYDROCAPINA ARRENURIDAE ARRENURUS SP. (21600)	1 + 3	0, 1, 0,	1,
DIPTERA CHIRONOMOIDAE, S-FAM ORTHOCLADIINAE POFELIA SP. (21740)	1 + 3	0, 1, 0,	1,
CLADOCERA BIOIDAE LATONA SETIFERA (31605)	1 + 3	0, 0, 1,	1,
OLIGOCHAETA TUBIFICIDAE IMMATURE TUBIFICIDAE - N.C.C. (60010)	1 + 3	0, 2, 1,	3,
PELAEYCIDA SPHAERIITIDAE DISIDIUM SP.-(69025)	1 + 3	10, 30, 14,	62,
TOTAL FOR 13 SPECIES BY REPLICATES	1 + 3	91, 124, 80,	
TOTAL FOR 3 REPLICATES, 13 SPECIES		295,	

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PROJECT: COLORADO ACID RAIN PROJECT (AP)
 STATION: CENTER OF NE BASIN; DEPTH 6.0M (271)
 SAMPLER TYPE: ECKMAN DREDGE BOTTOM GRAB (60)
 NUMBER OF REPLICATES: 3 FIELD BIOLOGIST: EPA-DENVER SAMPLING CREW(81)
 NOTE: NOT APPLICABLE (0)

AREA: SEVEN LAKES, MT. ZIRKEL M.A. (27) DATE: SEPTEMBER 6, 1984
 SUBSTATION: 1

RELATIVE ABUNDANCE DATA TABLES

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1ST LEVEL REFERENCE 2ND LEVEL REFERENCE GENUS/SPECIES	REPLICATES	PERCENTAGE COUNTS	TOTAL FOR SP.
TRICHOPTERA PHRYGANEIDAE AGRPYNIA STRAMINEA (9900)	1 - 3	0.00000 0.00806 0.00000	0.00339
DIPTERA CHIRONOMIDAE, S-FAMILY TANYPCCINAE PRCCLADIUS SP. NR. RIPARIUS (10960)	1 - 3	0.05495 0.06452 0.07500	0.06441
CHIRONOMIDAE, TRIBE CHIRONCHINI CHIRONOMUS SP. 1 (12255)	1 - 3	0.30769 0.30645 0.36250	0.32203
MICROTENDIPIES SP. 1 (12525)	1 - 3	0.01099 0.00000 0.00000	0.00339
CLADOPELMA SP. (13400)	1 - 3	0.04396 0.02419 0.00000	0.02373
CHIRONOMIDAE, TRIBE TANYTARSINI TANYTARSUS SP. 1 (13700)	1 - 3	0.34264 0.31452 0.33750	0.33559
LENZIELLA SP. (13990)	1 - 3	0.01099 0.00806 0.02500	0.01356
CHIRONOMIDAE, S-FAM ORTHOCLADIINAE -ALL- (14110)	1 - 3	0.01099 0.00000 0.00000	0.00339
HYDRACARINA ARRENURIDAE ARRENURUS SP. (21600)	1 - 3	0.00000 0.00806 0.00000	0.00339
DIPTERA CHIRONOMIDAE, S-FAM ORTHOCLADIINAE POPELIA SP. (21740)	1 - 3	0.06000 0.00806 0.00000	0.00339
CLADOCERA BIDICAE LATOMA SETIFERA (31605)	1 - 3	0.00000 0.00000 0.01250	0.00339
OLIGOCHAETA TUBIFICIDAE IMMATURE TUBIFICIDAE - N.C.C. (60010)	1 - 3	0.00000 0.01613 0.01250	0.01017
PELECYPODA SPHAERITIDAE PISIDIUM SP. (65025)	1 - 3	0.19780 0.24194 0.17500	0.21017

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PROJECT: COLORADO ACID RAIN PROJECT (AR)
 STATION: CENTER OF NE BATH; DEPTH 6.0M (271)
 SAMPLER TYPE: ECKMAN DREDGE BOTTOM GRAB (60)
 NUMBER OF REPLICATES: 3 FIELD BIOLOGIST: EPA-DENVER SAMPLING CREW(81)
 NOTE: NOT APPLICABLE (0)

AREA: SEVEN LAKES, MT. ZIFFEL W.R. (27)
 DATE: SEPTEMBER 10, 1984
 SUBSTATION: 1

RAW DATA TABLES

1ST LEVEL REFERENCE 2ND LEVEL PREFERENCE GENUS/SPECIES	REPLICATES	COUNTS	TOTAL FOR SP.
DIPTERA			
CHIRONOMIDAE, S-FAMILY TANYPOCIINAE PPCCLAUDUS SP. NR. RIPARIUS (10960)	1 + 3	4.	5.
CHIRONOMIDAE, TRIBE CHIRONOMINI CHIRONOMUS SP. 1 (12255)	1 + 3	48.	41.
PHAENOPSECTRA SP. (13360)	1 + 3	0.	1.
CLADOPELWA SP. (13400)	1 + 3	2.	0.
CHIRONOMIDAE, TRIBE TANYTARSINI TANYTARSUS SP. 1 (11700)	1 + 3	26.	42.
HYDROCARINA LEBERTIIDAE LEBERTIA SP. (21410)	1 + 3	1.	1.
DIPTERA			
CHIRONOMIDAE, S-FAM ORTHOCLADIINAE POPELIA SP. (21740)	1 + 3	0.	1.
CLADOCERA			
CHYDRORICAE EUPYCERCUS LAMELLATUS (32690)	1 + 3	4.	0.
PELECYPODA			
SPHAERIIDAE PISIDIUM SP. (69029)	1 + 3	19.	17.
TOTAL FOR 9 SPECIES BY REPLICATES	1 + 3	104.	107.
TOTAL FOR 3 REPLICATES, 9 SPECIES			319.

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PROJECT: COLORADO ACID RAIN PROJECT (SP)
STATION: CENTER OF ME BASIN; DEPTH 6.0M (271)
SAMPLER TYPE: ECKMAN DREDGE BOTTOM GRAB (60)
NUMBER OF REPLICATES: 3 FIELD BIOLOGIST: EPA-DENVER SAMPLING CREW(81)
NOTE: NOT APPLICABLE (0)

AREA: SEVEN LAKES, MT. ZIONEL W.A. (27)
DATE: SEPTEMBER 18, 1984
SUBSTATION: 1

RELATIVE ABUNDANCE DATA TABLES

1ST LEVEL REFERENCE 2ND LEVEL REFERENCE GENUS/SPECIES	REPLICATES	PERCENTAGE COUNTS	TOTAL FOR SP.
DIPTERA CHIRONOMIDAE, S-FAMILY TANYPODINAE PRCCADIUS SP. MR. RIPARIUS (10960)	1 - 3	0.03846 0.04673 0.00926	0.03135
CHIRONOMIDAE, TRIBE CHIRONOMINI CHIRONOMUS SP. 1 (12255)	1 - 3	0.46154 0.38318 0.69444	0.51411
PHAENOPSECTRA SP. (13360)	1 - 3	0.00000 0.00935 0.00000	0.00313
CLADOPELMA SP. (13400)	1 - 3	0.01923 0.00000 0.00000	0.00627
CHIRONOMIDAE, TRIBE TANYTARSINI TANYTARSUS SP. 1 (13700)	1 - 3	0.25000 0.39292 0.17593	0.27273
HYDRACARINA LEBERTIIDAE LEBERTIA SP. (21410)	1 - 3	0.00962 0.00935 0.00000	0.00627
DIPTERA CHIRONOMIDAE, S-FAM ORTHOCLADIINAE POPELIA SP. (21740)	1 - 3	0.00000 0.00000 0.00926	0.00313
CLADOCERA CHILOCRIDAE EURYCERCUS LAMELLATUS (32650)	1 - 3	0.03846 0.00000 0.00000	0.01254
PELECYPODA SPHAERIDIIDAE PISIDIUM SP. (69029)	1 - 3	0.18269 0.15888 0.11111	0.15047