MONTANORE PROJECT
Aquatic Biological Interim Monitoring
1992

For:
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By:

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TABLE OF CONTENTS

Page

I. INTRODUCTION 1

A. Purpose 1

B. Acknowledgements 2

II. METHODS--MACROINVERTEBRATES 2

A. Sampling 2

B. Identification and analysis 4

III. METHODS--PERIPHYTON 5

A. Sampling 5

B. Identification and analysis 5

IV. RESULTS 7

A. Description of sampling stations 7

B. Macroinvertebrates 16

1. population composition and density 16

2. functional feeding groups 28

3. diversity/pollution sensitivity values 32

4. comparison of 1989-1992 data 35

5. statistical evaluation of the 1992 data 46

C. Periphyton 46

1. non-diatom algae 46

2. diatom algae 54

V. DISCUSSION/CONCLUSIONS 63

A. Macroinvertebrates 63

B. Periphyton 65

VI. FUTURE MONITORING NEEDS 67

VII. SUMMARY 68

VIII. MACROINVERTEBRATE REFERENCES 70

IX. PERIPHYTON REFERENCES 72

X. APPENDICES 74

TABLES

Page

1. Physical features at the Montanore Project aquatic biological sampling stations, 1992 9

2. Aquatic macroinvertebrates collected from the Montanore Project area, 1992 17

3. Seasonal composition of macroinvertebrates from the Montanore Project area, 1992 21

4. A comparison of benthic populations at station L9 below the Montanore Project mine on Libby Creek to control, reference and downstream stations 23

5. Relative abundance of the most common benthic organisms in the Montanore Project area, 1992 27

6. Taxonomic composition of benthic sample sets in the Montanore Project area, 1992 29

7. Relative percent abundance of functional feeding groups of macroinvertebrates in the Montanore Project area, 1992 31

8. The Shannon Diversity Index (SDI) and ratios of macroinvertebrate functional feeding group abundances in the Montanore Project area, 1992 33

9. A comparison of some parameters from the 1988–1992 aquatic biological monitoring programs for the Montanore Project 36

10. Benthic indicator species and species of special concern in the Montanore Project area 42

11. Comparison of predominant indicator and special concern species (% relative abundance) for aquatic macroinvertebrates in the Montanore Project area, 1988–1992 43

12. Genera of non–diatom algae identified in periphyton samples collected at monitoring stations in the Montanore Project area, 1992 47

13. Dominant non–diatom algae (common or greater in estimated relative abundance) for Libby Creek stations in the Montanore Project area, 1992 49

14. Dominant non–diatom algae (common or greater in estimated relative abundance) for tributary stations in the Montanore Project area, 1992 50

15. A comparison of selected parameters for dominant non–diatom algae from monitoring stations in the Montanore Project area, 1991 and 1992 51

16. Diatom species (Phylum Chrysophyta: Class Bacillariophyceae) identified in periphyton samples collected at monitoring stations in the Montanore Project area, 1992 55

17. Dominant diatom taxa (percent relative abundance 3.0 or greater) and corresponding PRA values at monitoring stations in the Montanore Project area, 1992 57

18. A comparison of community structure parameters for diatoms from monitoring stations in the Montanore Project area, 1992 58

19. A comparison of selected community structure parameters for diatoms from stations in the Montanore Project area, 1991 and 1992 61

FIGURES

Page

1. Biological sampling stations in the Montanore Project area, 1992 3

2. Libby Creek, L10, 12 August 1992 8

3. Libby Creek, L9, 3 May 1991 10

4. Libby Creek, L3, 7 April 1992 11

5. Libby Creek, L1, 22 October 1991 12

6. Little Cherry Creek, LC1, 7 April 1992 13

7. Poorman Creek, Po1, 7 April 1992 14

8. Ramsey Creek, Ra2, 3 May 1991 15

9. Bear Creek, Be2, 7 April 1992 16

APPENDICES

Page

A. Physical habitat assessment data A-1

B. Macroinvertebrate station totals, spring 1992 . . . . . A-10

C. Macroinvertebrate station totals, summer 1992 . . . . . A-43

D. Macroinvertebrate station totals, autumn 1992 . . . . . A–76

E. Macroinvertebrate seasonal totals, 1992 . . . . . A–109
F. Macroinvertebrate annual totals, 1992 . . . . . A–128

G. Seasonal estimated relative abundance of periphyton, 1992 . . . . . A–135

H. Diatom proportional counts, 1992 . . . . . A–142

I. INTRODUCTION

A. Purpose

The Montanore aquatic biological monitoring program was initiated as a baseline assessment in 1988–89 and continued as pre–mine interim monitoring assessments in 1990, 1991 and 1992. The 1992 report addresses these objectives:

- document seasonal physical features of each sampling station;
- document the seasonal diversity and relative abundance of macroinvertebrate species present at each sampling station;
- document seasonal fluctuations in sediment accumulation at the sampling stations;
- document the seasonal diversity and abundance of periphyton populations at each sampling station;
- identify indicator species, marker species and species of special concern within the project area and document the annual population status of those species;
- assess the environmental condition of streams sampled during the field season and indicate any noticeable perturbations;
- compare each new year of monitoring data with the applicable baseline and previous monitoring data to depict any significant annual fluctuations;
- address the issues of fish population status and heavy metal concentration in fish in the project area;
- make annual recommendations for future monitoring needs.

B. Acknowledgements

The 1992 Montanore Project aquatic biological monitoring was funded by Noranda, Inc. Doug Parker, Noranda–Missoula, provided advice on the program and coordinated inter–agency communication. Dan Meyers and Mark Petersmeyer, Noranda, administered the contract from the Libby office. Lynn Haggerty, Noranda–Libby, provided information on access to sample sites. Erich Weber, PhycoLogic, Helena, conducted the periphyton analysis and interpretation. Portions of Weber's report to Westech are excerpted in this report. Bob Wisseman, Oregon and Dr. Daniel Gustafson, Montana State University, provided taxonomic opinions. Kim Rieser assisted with field work and lab analysis. Cathy Bonitz–Eakin and Lillian Yeshe also assisted with lab analysis. Lillian also facilitated final report preparation. As always, Pat Farmer lent a technical ear and moral support. And, a special thanks to Sandi for her faithful support and encouragement. The contributions of all of these people to the Montanore aquatic biological monitoring program are recognized with gratitude.

II. METHODS--MACROINVERTEBRATES

A. Sampling

The eight stations sampled in 1991 were again the focus of the 1992 monitoring effort (Figure 1). Collection methods were similar to those employed in 1992. At each station, four samples were collected with a Hess stream bottom sampler equipped with a 500 micron mesh net and a Dolphin plankton bucket attached to the end of the net. An effort was made to sample riffle/run areas of the streams having similar physical characteristics

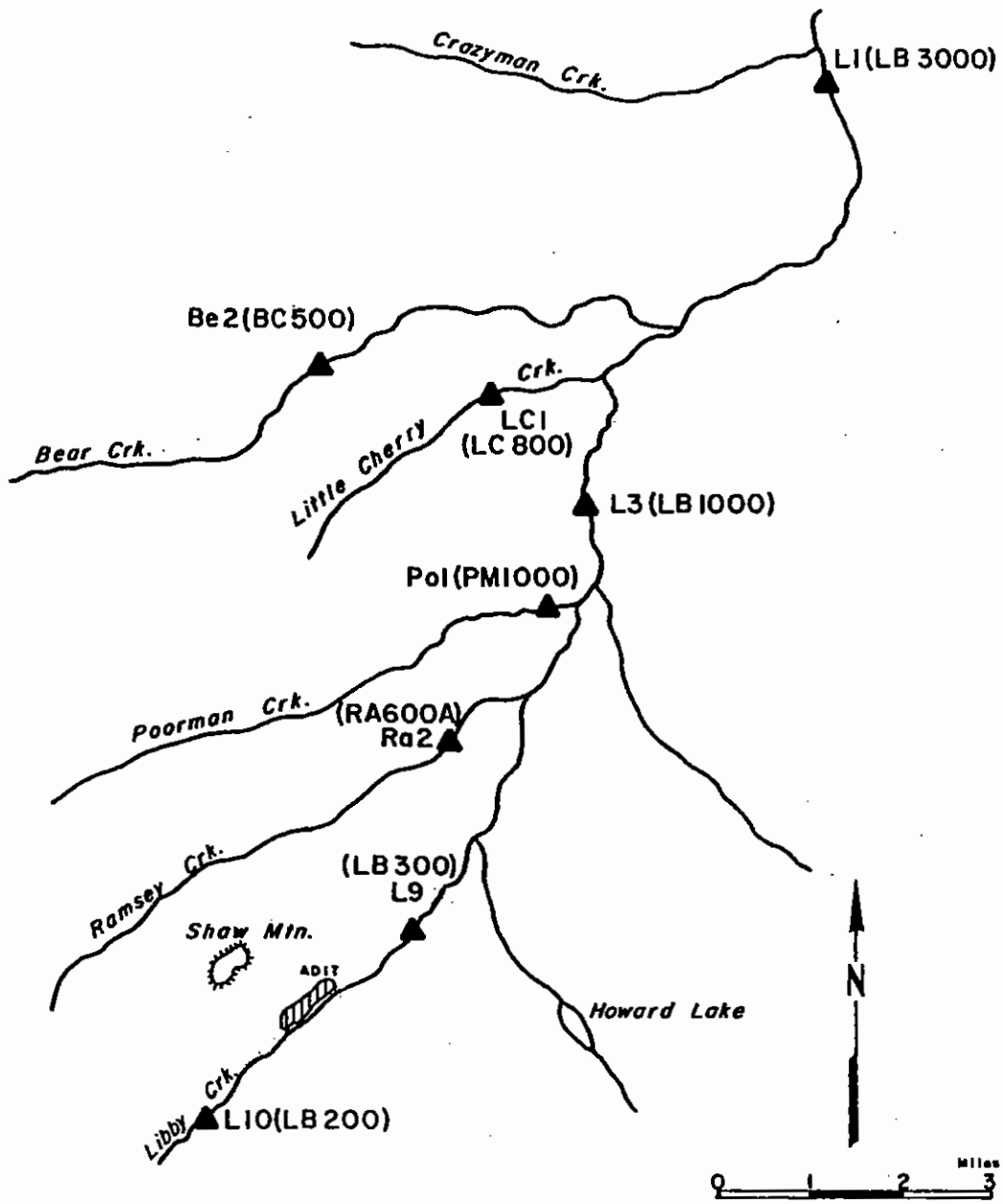

Figure 1. Biological sampling stations in the Montanore Project area, 1992.

of depth, flow rate, and substrate size at each station. Also, a fifth sample was taken with a 500 micron mesh kick net using a timed–traveling collection method. The net was held in place in the stream and organisms were dislodged from the substrate immediately in front of the net for 20 seconds. This procedure was then repeated twice more for a total of 60 seconds of collecting time. Samples were preserved with 10% formalin and transported to the Westech lab for analysis. A total of 96 Hess and 24 kick samples (eight Hess sets of four samples each and one kick sample for 16 sets/season) were collected in 1992.

During the collection period, physical characteristics including air and water temperature, stream width and depth and sediment deposition were noted and photos and/or video film were taken at each site. A complete physical assessment of the site was recorded during the summer sampling run (Appendix A).

B. Identification and analysis

In the lab, benthic samples were stained with rose bengal to expedite sorting. Samples were then poured into a white pan and all organisms visible to the naked eye and then to an illuminated magnifying (.75x) lens were separated from the debris and stored in 70% ethanol. The sample was later placed in a watch glass, examined under a Bausch and Lomb StereoZoom 7 dissecting microscope, and specimens were identified and counted. The entire sample was counted, even for kick samples which averaged 1418 organisms/sample, so that rare taxa were not overlooked.

Specimens were identified to the lowest practical taxon possible depending on stage of development and physical condition of the organisms. A number of keys, listed in the References, were used in the identification process. Representatives of taxonomically questionable species were sent to Bob Wisseman, Oregon or Dan Gustafson, Montana, for verification of identifications.

Raw counts of taxa found in each sample were used in a Lotus program for several statistical calculations. Those metrics are presented in worksheets in the appendices and/or tables of this report and are the basis for the following results, discussion and conclusions.

III. METHODS--PERIPHYTON

A. Sampling

Composite periphyton samples were collected at each site following methods described by Bahls (1992). A conscious effort was made to sample all forms of algae present in approximately the same proportion to one another as they occurred in the particular stream reach. Samples were preserved with Lugol's solution and kept cold until the time of analysis. The samples were delivered to Erich Weber, Helena, for analysis.

B. Identification and analysis

Subsamples of periphyton were examined under 200X and 400X, and all non-diatom algae present were identified to genus. The relative abundance of each genus was

estimated using the following system:

- R (Rare): fewer than one cell per microscope field at 200X, on the average;
- C (Common): at least one, but fewer than five cells per field of view;
- VC (Very Common): between 5 and 25 cells per field of view;
- A (Abundant): greater than 25 cells per field, but numbers within limits reasonably counted;
- VA (Very Abundant): number of cells per field too numerous to count.

The relative abundance of diatom algae (all genera considered collectively) was estimated for comparative purposes.

Each non–diatom genus common or greater in relative abundance was also ranked according to its estimated contribution to the total algal biovolume in the sample. The genus estimated to have the greatest biovolume was ranked number one; the second greatest biovolume was ranked number two, and so on. From these rankings the dominant non–diatom *phylum* was determined by calculating the cumulative weighted rank of genera within each phylum as described by Bahls (1992). Briefly, in a sample with x number of common or greater non–diatom genera, the genus ranked number one in biovolume scored x points, number two, x–1 points, etc. The scores of all genera in each phylum were summed for each site to determine the dominant non–diatom phylum based on estimated relative biovolume.

Permanent diatom mounts for each site were prepared on glass slides after chemically

oxidizing all organic matter from the samples. Each mounted sample was thoroughly scanned at 1000X (oil immersion), and all diatoms identified to species. A proportional count of between 396 and 430 (mean 408) diatom frustules was performed on each diatom mount, and the percent relative abundance of each species calculated. For each diatom association, the total number of species identified, the number of species counted (species richness), the Shannon diversity index and the siltation index were calculated.

IV. RESULTS

A. Description of sampling stations

The Montanore Project is located in the Cabinet Mountains south of Libby in Lincoln and Sanders Counties. Elevation at the sampling stations ranges from approximately 3200–4300'. Average annual precipitation in the area is approximately 80–90 inches. Water levels can vary dramatically from intense spring and fall discharges to minimum summer flows confining benthic populations to the thalweg.

Headwaters of the Libby Creek system are alpine meadow creeks emerging from snow banks at high elevations. These first order streams merge into second and third order tributaries of the Libby Creek system. They are cold rushing conifer forest streams with relatively low primary productivity. Streamside vegetation is relatively dense at all stations and consists mostly of Douglas fir, grand fir, red cedar, lodgepole pine, subalpine fir, and western larch with some cottonwood, alder and willow and a dense understory of shrubs and grasses.

Physical and chemical data for each site is contained in Table 1 and Appendix A. These are essentially nutrient poor waters with relatively low pH's (6.0–8.0). Nitrates were highest at the L9 station below the mine but had diminished to "normal" by the time L1 was reached. Of the tributaries, the Bear Creek station was the most "enriched" with nitrate levels several times higher than at the Poorman, Ramsey, and Little Cherry Creek stations. Each station is described as follows:

Upper Libby Creek, L10(LB–200), Figure 2, is located approximately .6 miles above the mine adit. Streamside vegetation is a dense canopy of conifers, alder, and willow. The stream averaged 10' wide and 10" deep with a flow of 2.0 cfs in August. The water

Figure 2. Libby Creek, L10, 12 August 1992.

Table 1. Physical and chemical features at the Montanore Project aquatic biological sampling stations, 1992.

	Air Temp.°F	Water Temp.°F	Width'(Mean')	Depth"(Mean")	Embedd.	cfs*	pH*	sc*	N*	TDS*	TA*	TH*
STATIONS												
APRIL												
L10	39	37	18-35(25)	0-20(15)	1-5%	19.6	6.2	8.0	0.28	16	4.0	4.0
L9	34	39	15-25(20)	0-24(20)	1-5%	25.1	6.6	10.0	0.95	18	5.0	6.0
L3	43	42	15-35(25)	0-36(24)	10%	77.5	7.1	13.0	0.39	27	12.0	11.0
L1	43	43	60-75(68)	0-30(20)	10%	117.5	7.2	47.0	0.35	27	22.0	20.0
Ra2	52	42	20-35(25)	0-24(12)	7%	5.6	6.1	9.0	0.17	8	6.0	4.0
Po2	45	40	20-35(25)	0-24(16)	5%	17.0	6.8	20.0	0.12	21	8.0	7.0
LC1	42	40	6-20(10)	0-20(10)	30%	1.5	7.3	36.0	0.02	36	17.0	14.0
Be2	46	42	40-70(60)	0-10(6)	12%	27.1	7.3	54.0	0.62	24	24.0	23.0
AUGUST												
L10	72	50	20-30(25)	0-22(18)	<1%	2.0	6.1	14.0	0.13	8	5.0	8.0
L9	70	50	20-30(25)	0-20(15)	<1%	3.2	5.7	36.0	1.3	16	6.0	11.0
L3	49	52	20-40(25)	0-30(20)	<5%	6.6	6.7	63.0	0.21	22	21.0	23.0
L1	64	58	60-75(65)	0-25(15)	<5%	17.7	8.0	103.0	0.12	56	45.0	48.0
Ra2	58	52	20-35(25)	0-20(12)	<1%	3.2	6.3	11.0	0.05	23	4.0	7.0
Po1	61	52	20-25(22)	0-20(15)	<5%	1.5	6.5	44.0	0.05	50	17.0	18.0
LC1	65	53	2-6(3)	0-12(8)	25%	0.2	8.0	95.0	0.03	73	41.0	40.0
Be2	58	53	40-65(50)	0-20(12)	4%	3.7	7.2	85.0	0.12	27	39.0	39.0
OCTOBER												
L10	36	41	5-20(12)	0-22(10)	1-5%	5.7	6.2	15.0	0.16	8	1.0	7.0
L9	37	43	5-28(12)	0-24(14)	5%	7.3	6.0	28.0	0.60	16	2.0	9.0
L3	30	42	12-25(15)	0-20(15)	1-5%	15.5	7.1	45.0	0.24	34	17.0	21.0
L1	32	41	12-27(18)	0-18(14)	1-5%	32.8	7.5	82.0	0.14	37	37.0	37.0
Ra2	38	42	10-30(12)	0-22(15)	5%	2.1	6.6	16.0	0.10	8	4.0	7.0
Po1	35	41	4-15(9)	0-12(7)	1-5%	4.4	6.9	34.0	0.06	30	14.0	14.0
LC1	36	41	3-9(5)	0-10(6)	20%	0.6	7.3	87.0	0.02	54	39.0	39.0
Be2	38	42	8-18(10)	0-18(12)	1-5%	8.3	7.4	76.0	0.20	46	34.0	36.0

*Chen-Northern, Inc. data, pers. comm. Feb. 1993. cfs=discharge, sc=umhos/cm, N=nitrate+nitrite as mg/L of N, tds=total dissolved solids as mg/L, TA=total alkalinity, TH=total hardness

temperature was 51° at 10:00 am. The boulder/cobble substrate hampers Hess sampling at this site but many of the boulders are moveable and the microhabitat under them can be sampled during kick net sampling. The site had an embeddedness rating of <1% in August and the substrate was noticeably coated with long, stringy bright green filamentous algae.

Station L9 on Libby Creek (Figure 3) is located 1.4 miles downstream of station L10 and about .8 miles below the mine adit. Streamside vegetation is again a dense canopy of conifers and a deciduous understory. As with the upper station, much of the stream receives only short periods of direct sunlight. The stream at the L9 site averaged 11 feet

Figure 3. Libby Creek, L9, 3 May 1991.

wide and 7" deep in August. Summer discharge was 3.2 cfs. The cobble/boulder substrate had an embeddedness rating of <1% and also had patches of the green filamentous algae. The water temperature was 49° at 11:15 am. Nitrate levels were highest (1.3 mg/L) at this station.

Station L3 on Libby Creek (Figure 4) is located approximately 4.2 miles downstream of station L9. The stream channel has widened extensively by the time this station is reached and there are numerous small adjacent stream sections in addition to the main channel. Streamside canopy is still dense conifers but more of the stream is open to sunlight because of its width. The main channel averaged 12' wide and 8" deep with a

Figure 4. Libby Creek, L3, 7 April 1992.

discharge of 6.6 cfs in August. Water temperature was 62° at 5:45 pm. The cobble/gravel/boulder substrate had an embeddedness rating of <5% and the filamentous algae was not nearly as noticeable as at the upper two stations.

The lowest Libby Creek station, L1, (Figure 5) is located about 5.5 miles below L3. The dense conifer streamside vegetation is opened by a stream which averaged 22' wide and 12" deep in August. The cobble/boulder substrate had an embeddedness rating of <5%. Water temperature was 65° at 8:15 pm. Summer discharge was 17.7 cfs. This station had the highest specific conductance, 103.0 umhos/cm.

Figure 5. Libby Creek, L1, 22 October 1991.

The Little Cherry Creek station, LC1 (Figure 6) is found about 200 hundred yards downstream of the forest service road, FS 6212. The stream is very small and averaged only 2' wide and 6" deep in August. Discharge at this site was measured several hundred yards downstream in a wider, steeper section. At the point where benthic samples were taken, discharge was approximately 1 cfs in August. Much of the stream is enclosed by a dense conifer forest. The cobble/gravel substrate was covered with a diverse conglomerate of macrophytes and periphyton. The site had an embeddedness rating of 25%. Water temperature was 63° at 3:00 pm.

in Kim's
album

Figure 6. Little Cherry Creek, LC1, 7 April 1992.

The Poorman Creek station, Po1 (Figure 7) is located just downstream of the bridge on FS 278. The dense conifer overstory contains little streambank understory at the sampling site. The stream averaged 9' wide and 8" deep with a flow of 1.5 cfs in August. The boulder/cobble substrate had an embeddedness rating of <5%. Water temperature was 56° at 2:00 pm. Patches of the filamentous algae were noticeable at this station.

in King album

Figure 7. Poorman Creek, Po1, 7 April 1992.

The Ramsey Creek station, Ra2 (Figure 8) is found approximately .7 miles from the main Libby Creek road. Again, much of this station is enclosed by the dense conifer overstory. The stream averaged 12' wide and 8" deep with a flow of 3.2 cfs in August and had a temperature of 55° at 12:30 pm. The cobble/boulder substrate had an embeddedness rating of <1%. Patches of the stringy, green algae were present at this site during August but its abundance in October gave the streambed a green carpeted appearance.

The Bear Creek station, Be2 (Figure 9), is located just upstream of the bridge on FS 278.

Figure 8. Ramsey Creek, Ra2, 3 May 1991.

The stream braids into a couple of channels during low water. The main channel averaged 8' wide and 10" deep in August. Flow was down to 3.7 cfs. Water temperature was 56° at 6:45 pm. An embeddedness rating of <1% was noted in the cobble/gravel/boulder substrate in August.

Figure 9. Bear Creek, Be2, 7 April 1992.

B. Macroinvertebrates

1. population composition and density

Table 2 presents the 89 macroinvertebrate taxa collected from the project area in 1992. This list represents eight more taxa than in 1991 and 18 more than in 1990. Total number of benthic organisms collected from each station appear in Appendix B for April, Appendix C for August and Appendix D for October. Seasonal totals appear in Appendix

Table 2. Aquatic macroinvertebrates collected from the Montanore Project area, 1992.

order	family	genus/species
EPHEMEROPTERA	Baetidae	*Baetis* sp.
		Diphetor sp.
	Ephemerellidae	*Drunella coloradensis/ flavilinea*
		Drunella doddsi
		Drunella grandis
		Drunella spinifera
		Drunella sp.
		Serratella sp.
	Heptageniidae	*Cinygma* sp.
		Cinygmula sp.
		Epeorus sp.
		Heptagenia sp.
		Ironodes sp.
		Leucrocuta sp.
		Nixe sp.
		Rhithrogena sp.
	Leptophlebiidae	*Paraleptophlebia* sp.
	Siphlonuridae	*Ameletus* sp.
PLECOPTERA	Capniidae	Immature
	Chloroperlidae	*Kathroperla perdita*
		Sweltsa/Suwallia sp.
	Leuctridae	*Despaxia augusta*
		Paraleuctra sp.
		Perlomyia utahensis
		Immature
	Nemouridae	*Nemoura* sp.
		Visoka cataractae
		Zapada cinctipes
		Zapada columbiana
		Immature
	Peltoperlidae	*Yoraperla brevis*
	Perlidae	*Acroneuria abnormis*
		Doroneuria theodora
		Hesperoperla pacifica
		Immature
	Perlodidae	*Isoperla* sp.
		Megarcys sp.
		Setvena bradleyi
		Immature
	Taeniopterygidae	*Doddsi occidentalis*
		Taenionema sp.

Table 2. (Continued).

order	family	genus/species
TRICHOPTERA	Brachycentridae	*Micrasema* sp.
	Glossosomatidae	*Anagapetus* sp.
		Glossosoma sp.
	Hydropsychidae	*Arctopsyche grandis*
		Parapsyche elsis
		Immature
	Hydroptilidae	*Agraylea* sp.
		Hydroptila sp.
		Ochrotrichia sp.
	Lepidostomatidae	*Lepidostoma* sp.
	Limnephilidae	*Chyrandra centralis*
		Ecclisomyia sp.
		Neothremma alicia
		Oligophlebodes sp.
		Immature
	Philopotamidae	*Dolophilodes* sp.
		Wormaldia sp.
	Rhyacophilidae	*Rhyacophila Angelita* grp.
		Rhyacophila Betteni grp.
		Rhyacophila Brunnea grp.
		Rhyacophila Hyalinata grp.
		Rhyacophila Iranda grp.
		Rhyacophila Sibirica grp.
		Rhyacophila tucula
		Rhyacophila Vaccua grp.
		Rhyacophila verrula
		Rhyacophila vepulsa
		Rhyacophila verrula
		Rhyacophila sp.
	Pupae	
ANNELIDA	Oligochaeta	
COLEOPTERA	Elmidae	*Heterlimnius* sp.
		Narpus sp.
		Immature
COLLEMBOLA		
DIPTERA	Blephariceridae	*Agathon* sp.
	Ceratopogonidae	
	Chironomidae	
	Empididae	*Chelifera* sp.
		Oreogeton sp.
	Psychodidae	
	Simuliidae	
	Tipulidae	*Antocha* sp.
		Dicranota sp.

Table 2 (Continued).

order	family	genus/species
		Hexatoma sp.
		Tipula sp.
HYDRACARINA		
MOLLUSCA	Ostracoda	
NEMATODA		
TURBELLARIA		
TESTUDINATA	Cheloniidae	*Eretmochelys imbricata*

E and annual totals of taxa are listed in Appendix F.

A total of 69,502 specimens were collected with the 96 Hess and 24 kick samples. The Hess samples accounted for 51% (35,475) of the total and yielded 370 organisms/sample. The kick samples contributed 49% (34,027) of the catch or 1,418 specimens/sample.

On a percentage basis, the total composition of the Hess and kick samples was relatively similar. Mayflies (Ephemeroptera) once again predominated and accounted for 49.7% of the total organisms taken. On an overall basis, *Cinygmula* sp. was the most abundant mayfly (16.6%) with *Baetis* sp. second in abundance (10.1%). Stoneflies (Plecoptera) accounted for 24.8% of the total. *Taenionema* sp. was the most abundant stonefly (7.7%). Caddisflies (Trichoptera) made up 12.4% of the total catch with immature Hydropsychids being the most abundant (3.3%). The Other category made up the remaining 13.1% of the total and chironomids were the most abundant taxa in that group accounting for 9.9% of the total organisms collected.

Seasonal occurrence of the four major groups of benthic organisms is presented in Table 3. The highest density of macroinvertebrates/station occurred in October at all stations except Little Cherry Creek, LC1, where the highest seasonal total was taken with the spring samples. Several of the stations gave higher yields in the spring samples as compared to the summer samples, i.e., kick samples from L10, L3, Po1, Ra2, and Be2

Table 3. Seasonal composition of macroinvertebrates from the Montanore Project area, 1992.

Station	Total Organisms*	Ephemeroptera	Percent of Total* Plecoptera	Trichoptera	Other
SPRING					
L10	652(903)	64.9(62.2)	16.9(21.7)	3.8(3.8)	14.4(12.3)
L9	447(862)	21.5(39.2)	13.4(24.0)	18.6(9.6)	46.5(27.2)
L3	2262(1177)	53.8(58.0)	36.0(20.5)	2.3(7.4)	8.0(14.1)
L1	1871(2415)	64.9(37.3)	22.7(33.6)	4.6(13.2)	7.8(16.0)
LC1	1471(1007)	37.9(46.9)	27.7(21.8)	7.2(5.5)	27.3(25.9)
Po1	780(449)	61.4(49.9)	23.0(34.3)	4.1(9.1)	11.5(6.7)
Ra2	1120(1941)	57.2(48.6)	19.0(16.6)	3.8(7.3)	19.9(27.5)
Be2	2002(1007)	43.0(58.5)	32.8(11.7)	4.6(13.6)	19.7(16.2)
Totals = 10,605(9,761) = 20,366					
SUMMER					
L10	583(677)	49.4)53.6)	18.4(21.4)	7.0(5.6)	25.2(19.4)
L9	794(934)	50.6(63.3)	26.7(18.8)	13.1(7.9)	9.6(10.0)
L3	1919(2034)	46.9(63.2)	19.9(8.1)	20.6(19.0)	12.6(9.7)
L1	1904(1490)	42.7(56.6)	19.1(8.9)	10.5(13.9)	27.7(20.7)
LC1	604(1263)	56.3(64.5)	28.8(19.8)	2.8(3.9)	12.1(11.8)
Po1	495(919)	58.2(65.7)	12.1(13.6)	21.4(15.8)	8.3(4.9)
Ra2	590(935)	35.1(52.0)	30.5(27.3)	19.8(14.9)	14.6(5.9)
Be2	716(1051)	45.4(59.7)	27.8(20.0)	13.4(11.7)	13.4(8.7)
Totals = 7,605(9,303) = 16,908					
AUTUMN					
L10	1787(1657)	34.1(51.5)	46.5(28.2)	8.7(9.5)	10.6(10.8)
L9	959(2208)	37.8(26.0)	50.0(47.7)	8.7(22.5)	3.7(3.7)
L3	3586(1868)	55.2(46.3)	21.1(16.4)	15.5(26.1	8.2(11.2)
L1	2315(2156)	55.6(45.9)	12.1(12.4)	24.6(32.2)	7.7(9.4)
LC1	1140(1046)	59.7(68.6)	16.5(11.5)	12.9(8.2)	11.0(11.7)
Po1	2207(2906)	47.3(37.0)	38.1(42.6)	6.3(8.8)	8.3(11.6)
Ra2	1719(1850)	60.2(51.0)	29.0(21.9)	4.9(11.5)	5.8(15.6)
Be2	2104(2720)	37.0(51.0)	36.9(17.1)	10.9(21.8)	15.3(10.1)
Totals = 15,817(16,411) = 32,228					

TOTAL = 34,027(35,475) = 69,502 = 87%EPT

*first number = kick sample, second number in () = Hess sample

and Hess samples from L10, L1, and Ra2. However, spring sampling occurred just prior to the major spring runoff and no intense fall/winter flooding had occurred in 1991 as in previous years accounting for the higher spring populations.

Mayflies were the dominant group at each station for each sampling period except in April at the Libby Creek station, L9, where the kick sample yielded a preponderance of chironomids and in the fall when the kick samples from L10 and L9 and the Hess samples from L9 and Po1 were dominated by stoneflies, in particular, the winter stonefly, *Taenionema* sp. Although this shift in dominance was again most noticeable at L9, it was not as dramatic as in 1991 when 64% of organisms collected at that station were *Taenionema* sp. compared to 31% in 1992.

A comparison of data from the Libby Creek stations with the control station on Libby Creek (L10) and the reference station on Bear Creek (Be2) exhibits some notable characteristics (Table 4). On an annual basis, L9 below the mine adit is generally most similar in composition and density to the reference station on Bear Creek, Be2. However, as in previous years, benthic populations at L9 were suppressed during the spring sampling. In addition, the pollution tolerant group Chironomidae were dominant at L9 as well as at Be2 in the spring. The mayfly *Cinygmula* sp. was dominant at the other three stations in April. The two lower Libby Creek stations, L3 and L1, usually contained higher benthic populations and showed shifts in dominance compared to the upper station, probably primarily due to the influence of Ramsey and Poorman Creeks.

Table 4. A comparison of benthic populations at station L9 below the Montanore Project mine on Libby Creek to control, reference and downstream stations.

STATION	PREDOMINANT TAXA	TOTAL NO.	% OF TOTAL
SPRING			
Libby Creek, L10 control station above mine	*Cinygmula* sp.	1213	28.3
	Taenionema sp.	476	11.6
	Drunella doddsi	268	6.3
	Chironomidae	251	5.9
	total organisms = 4286		
Libby Creek, L9 below mine	Chironomidae	388	29.6
	Cinygmula sp.	296	22.6
	Sweltsa/Suwallia sp.	166	12.7
	total organisms = 1309		
Libby Creek, L3 downstream of L9	*Cinygmula* sp.	627	18.2
	Epeorus sp.	614	17.9
	Nemouridae	417	12.1
	Baetis sp.	324	9.4
	Doddsia occidentalis	290	8.4
	Chironomidae	278	8.1
	total organisms = 3439		
Libby Creek, L1 downstream of L3	*Cinygmula* sp.	1213	28.3
	Taenionema sp.	476	11.1
	Oligophlebodes sp.	280	6.5
	Drunella doddsi	268	6.3
	Chironomidae	251	5.9
	total organisms = 4286		
Bear Creek, Be2 reference station	Chironomidae	470	15.6
	Epeorus sp.	328	10.9
	Cinygmula sp.	326	10.8
	Drunella sp.	298	9.9
	Nemouridae	278	9.2
	total organisms = 3009		
SUMMER			
L10	*Epeorus* sp.	177	14.0
	Chironomidae	168	13.3
	Cinygmula sp.	154	12.2
	Sweltsa/Suwallia sp.	135	10.7
	total organisms = 1260		
L9	*Rhithrogena* sp.	391	22.6
	Epeorus sp.	307	17.8
	Zapada columbiana	200	11.6
	Drunella doddsi	146	8.4

Table 4. (Continued).

STATION	PREDOMINANT TAXA	TOTAL NO.	% OF TOTAL
	total organisms = 1728		
L3	*Drunella doddsi*	1099	27.8
	Rhithrogena sp.	540	13.7
	Baetis sp.	525	13.3
	Oligophlebodes sp.	400	10.1
	total organisms = 3953		
L1	*Rhithrogena* sp.	846	24.9
	Chironomidae	614	18.1
	Nemouridae	278	8.2
	Baetis sp.	259	7.6
	total organisms = 3394		
Be2	*Rhithrogena* sp.	327	18.5
	Drunella doddsi	258	14.6
	Zapada columbiana	171	9.7
	Sweltsa/Suwallia sp.	130	9.7
	total organisms = 1767		
AUTUMN			
L10	*Cinygmula* sp.	601	17.5
	Taenionema sp.	503	14.6
	Baetis sp.	399	11.6
	Zapada columbiana	341	9.9
	Chironomidae	316	9.2
	total organisms = 3444		
L9	*Taenionema* sp.	1220	38.5
	Glossosoma sp.	466	14.7
	Cinygmula sp.	463	14.6
	Rhithrogena sp.	216	6.8
	total organisms = 3167		
L3	*Baetis* sp.	1132	20.8
	Cinygmula sp.	969	17.8
	Taenionema sp.	570	10.5
	Oligophlebodes sp.	353	6.5
	total organisms = 5454		
L1	*Rhithrogena* sp.	969	21.7
	Hydropsychidae	907	20.3
	Cinygmula sp.	494	22.1
	Baetis sp.	430	9.6
	total organisms = 4471		

Table 4. (Continued).

STATION	PREDOMINANT TAXA	TOTAL NO.	% OF TOTAL
Be2	*Cinygmula* sp.	1010	20.9
	Glossosoma sp.	574	11.9
	Taenionema sp.	535	11.1
	Chironomidae	477	9.9
	Baetis sp.	419	8.7
	total organisms = 4824		

The predominant taxa at the five stations varied noticeably during the summer with the mayflies *Rhithrogena* sp., *Epeorus* sp., and *Drunella doddsi* being the most abundant taxa. During the fall, the mayflies *Cinygmula* sp., *Baetis* sp., and *Rhithrogena* sp. and the stonefly *Taenionema* sp. were the most abundant taxa.

The seasonal relative abundance of the most common benthic organisms collected in 1992 are compared in Table 5. The single most abundant taxa in 1992 was the mayfly *Cinygmula* sp. which predominated the spring and fall samples and was found in 119 of the 120 samples. Chironomidae was the most ubiquitous taxa occurring in all 120 samples. *Baetis* sp. was also a frequent component being found in 116 samples. The mayfly *Rhithrogena* sp. was the most abundant summer taxa.

The most pollution sensitive taxa collected in 1992, in order of decreasing sensitivity, were the Dipteran *Agathon* sp. (five specimens), the Ephemeropteran *Drunella doddsi* (2,840 specimens), the Plecopteran *Acroneuria abnormis* (one specimen), and the Trichopterans *Parapsyche elsis* (476 specimens) and *Neothremma alicia* (nine specimens).

The relative abundance of mayflies (E), stoneflies (P), caddisflies (T), and chironomids (C) depicts the quality of a particular stream. Although EPT taxa have a wide range of pollution tolerance, the presence of a large proportion of these taxa is usually indicative of healthy waters. At the same time, baetid mayflies are considered to be more pollution

Table 5. Relative abundance of the most common benthic organisms in the Montanore Project area, 1992.

Taxa/Season	Group	No.	% of Total	Samples*
SPRING				
Cinygmula sp.	E	4659	22.9	40
Chironomidae	O	2766	13.6	40
Epeorus sp.	E	2075	10.2	40
Nemouridae	P	1285	6.3	20
Baetis sp.	E	1263	6.2	37
Sweltsa/Suwallia sp.	P	1089	5.3	40
SUMMER				
Rhithrogena sp.	E	2677	15.8	36
Chironomidae	O	1677	9.9	40
Baetis sp.	E	1506	8.9	40
Drunella doddsi	E	1479	8.7	37
Epeorus sp.	E	1274	7.5	37
Cinygmula sp.	E	1261	7.5	39
Zapada columbiana	P	1008	6.0	34
Sweltsa/Suwallia sp.	P	926	5.5	40
AUTUMN				
Cinygmula sp.	E	5599	17.4	40
Taenionema sp.	P	4867	15.1	35
Baetis sp.	E	4233	13.1	39
Chironomidae	O	2445	7.6	40
Rhithrogena sp.	E	2406	7.5	37

E = Ephemeroptera, P = Plecoptera, O = Other

* = number out of 40 (spring), 40(summer), 40(autumn), kick and Hess sample sets combined.

tolerant than other mayflies and the Baetidae/Ephemeroptera ratio can characterize water quality. Taxonomic composition of each sample set is shown in Table 6. EPT Total is the number of Ephemeroptera, Plecoptera, and Trichoptera in the sample and EPT % is the percent of Ephemeroptera, Plecoptera, and Trichopteran the total sample. EPT Taxa is the number of Ephemeroptera, Plecoptera, and Trichoptera taxa in the sample set. Baet/Ephem is the ratio of the number of Baetidae compared to the total number of Ephemeroptera in the sample set. Chir % refers to the percentage of chironomids in the total sample set. EPT/Chir is the ratio of the number of EPT compared to the number of chironomids in the sample set.

Only one sample set had a comparatively low EPT %, the L9 spring kick sample, which had 42.3% chironomids. The Baet/Ephem ratio ranged from 0.00 (spring L9 kick sample) to 0.51 (fall Ra2 kick sample). The higher ratios occurred in those sample sets with a low percentage of chironomids and a high EPT % and EPT Total. The EPT/Chir ratio ranged from 1.26 in the spring L9 kick sample to 77.00 in the fall L9 kick sample.

2. functional feeding groups

Benthic taxa were designated as one of six possible functional feeding groups based on the designations in Merritt, et al. (1978) and Wisseman (1990): shredders which are large particle detritivores, scrapers which feed on periphyton, filtering collectors which feed on particles in suspension, gathering collectors which feed on deposited detritus, predators which feed on other invertebrates, and omnivores which feed on a variety of materials.

Table 6. Taxonomic composition of benthic sample sets in the Montanore Project area, 1992.

SAMPLE*	EPT Total	EPT%	EPT Taxa	Baet/Ephem	Chir%	EPT/Chir
SPRING						
L10-k	558	85.6	24	0.20	13.7	6.27
L10-h	792	87.7	26	0.09	5.0	17.6
L9-k	239	53.5	18	0.0	42.3	1.26
L9-h	628	72.9	28	0.01	23.1	3.16
L3-k	2082	92.0	26	0.21	6.7	13.7
L3-h	1011	85.9	30	0.10	10.7	8.02
L1-k	1725	92.2	28	0.11	6.1	15.1
L1-h	2029	84.0	18	0.10	5.7	14.8
LC1-k	1070	72.7	28	0.34	16.8	4.33
LC1-h	746	74.1	27	0.14	18.8	3.95
Po1-k	690	88.5	29	0.22	10.1	8.73
Po1-h	419	93.3	20	0.12	5.1	18.22
Ra2-k	897	80.1	28	0.14	17.1	4.70
Ra2-h	1407	72.5	29	0.04	26.6	2.73
Be2-k	1608	80.3	33	0.06	17.0	4.72
Be2-h	844	83.1	29	0.02	12.8	6.54
SUMMER						
L10-k	436	74.8	18	0.19	16.1	4.64
L10-h	546	80.7	18	0.16	10.9	7.38
L9-k	718	90.4	25	0.13	5.3	17.10
L9-h	841	90.0	22	0.04	4.5	20.02
L3-k	1677	87.4	28	0.28	11.4	7.69
L3-h	1837	90.3	26	0.21	8.2	11.00
L1-k	1376	72.3	27	0.26	17.2	4.20
L1-h	1182	79.3	27	0.05	19.2	4.13
LC1-k	531	87.9	23	0.04	3.6	24.14
LC1-h	1114	88.2	29	0.04	5.5	16.14
Po1-k	454	91.7	18	0.27	7.9	11.64
Po1-h	874	95.1	21	0.15	4.4	21.85
Ra2-k	504	85.4	26	0.47	13.2	6.46
Ra2-h	880	94.1	28	0.17	4.6	20.47
Be2-k	620	86.6	28	0.30	11.2	7.75
Be2-h	960	91.3	32	0.06	5.2	17.45
AUTUMN						
L10-k	1597	89.4	27	0.39	9.5	9.45
L10-h	1478	89.2	27	0.19	8.9	10.05
L9-k	924	96.4	22	0.10	1.3	77.00
L9-h	2126	96.3	29	0.21	1.9	49.44
L3-k	3291	91.8	30	0.45	7.2	12.76
L3-h	1659	88.8	30	0.28	9.6	9.27
L1-k	2136	92.3	33	0.19	4.2	21.80
L1-h	1953	90.6	27	0.19	5.4	16.84
LC1-k	1015	89.0	33	0.05	6.1	14.71
LC1-h	924	88.3	34	0.03	4.5	19.66
Po1-k	2023	91.7	30	0.38	7.4	12.34
Po1-h	2569	88.4	33	0.26	10.8	8.21
Ra2-k	1619	94.2	29	0.51	5.1	18.40
Ra2-h	1562	84.4	31	0.46	14.3	5.89
Be2-k	1783	84.7	34	0.04	11.8	7.19
Be2-h	2446	89.9	35	0.28	8.4	10.68

*k = 1 kick sample, h = 4 Hess samples

Organisms which did not fit one of these designations was grouped as an "unknown" feeder. Table 7 (also see Appendices B–F) separates the macroinvertebrates collected according to percentage of functional feeding group for that sample set.

Scrapers accounted for 42% of the total organisms collected and dominated all but nine sample sets. The most abundant scrapers in the spring samples were *Cinygmula* sp., *Epeorus* sp., and *Taenionema* sp.. Summer scrapers were the highly pollution sensitive mayfly, *Drunella doddsi,* and the more tolerant *Cinygmula* sp. and *Epeorus* sp. The rest of the summer sample sets were dominated by the collector/gatherers *Rhithrogena* sp., the shredders Nemouridae, and the collector/filterers Hydropsychidae. The scraper *Taenionema* sp. was most abundant in the fall samples and predominated six of the 16 sets. The remaining fall sample sets had the collector/gatherers *Rhithrogena* sp. and *Baetis* sp. and the collector/filterers Hydropsychidae as most abundant.

The most frequently collected shredder was the stonefly Nemouridae while *Sweltsa/Suwallia* sp. was the most abundant predator. Omnivores consisted of the caddisfly *Ecclisomyia* sp., the Dipteran *Tipula* sp. and Nematoda but only 69 of these three taxa were collected. The unknown group consisted of the family Chironomidae, mentioned above, and the Trichopteran family Limnephilidae and Trichopteran pupae.

Ratios of some of the functional feeding groups can be useful in characterizing a stream's condition even though trend analysis of these ratios is relatively new in Montana

Table 7. Relative percent abundance of functional feeding groups of macroinvertebrates in the Montanore Project area, 1992.*

STATION	SC	SH	CG	CF	OM	P	UNK
SPRING							
L10-k	50.6	6.8	18.4	1.8	0.0	8.3	13.8
L10-h	60.1	7.1	13.2	0.2	0.0	14.4	5.0
L9-k	28.6	6.0	6.3	2.0	0.0	10.7	46.3
L9-h	43.6	5.0	6.0	1.7	0.0	19.6	24.0
L3-k	47.3	24.1	15.1	0.0	0.0	5.3	8.3
L3-h	57.9	9.5	11.3	1.4	0.0	6.8	13.1
L1-k	55.8	15.3	14.0	0.8	0.0	6.0	8.2
L1-h	61.5	7.0	14.0	1.8	2.0	8.2	5.7
LC1-k	24.8	24.8	24.8	3.1	0.0	5.0	17.6
LC1-h	37.0	13.9	17.5	0.2	0.0	10.7	20.4
Po1-k	56.3	7.7	17.1	0.6	0.0	7.3	11.0
Po1-h	55.2	3.3	17.6	0.0	0.0	18.0	5.8
Ra2-k	49.3	8.1	15.0	1.1	0.0	8.7	17.9
Ra2-h	47.6	6.1	6.7	1.6	0.0	9.6	28.4
Be2-k	40.0	24.4	8.6	1.0	0.0	8.4	17.6
Be2-h	63.0	4.6	6.9	0.9	0.0	8.5	16.2
SUMMER							
L10-k	33.8	8.1	26.4	0.9	0.0	14.8	16.1
L10-h	32.9	9.3	29.8	0.4	0.0	16.5	10.9
L9-k	27.7	16.4	27.0	7.8	0.0	15.7	5.4
L9-h	34.1	10.1	35.4	3.8	0.0	12.1	4.6
L3-k	31.1	17.0	29.4	6.0	0.0	4.4	12.0
L3-h	38.1	1.4	35.8	5.6	0.0	9.6	9.5
L1-k	11.5	15.9	44.5	5.9	0.0	4.5	17.8
L1-h	14.4	0.7	48.9	6.2	0.0	9.7	20.1
LC1-k	46.9	18.9	17.1	0.2	0.0	12.8	4.3
LC1-h	47.1	10.2	20.8	0.2	0.0	15.7	5.9
Po1-k	30.3	10.1	28.3	18.4	0.0	4.7	7.9
Po1-h	30.6	6.0	36.1	13.0	0.0	9.7	4.6
Ra2-k	15.9	23.7	22.2	16.1	0.0	8.6	13.4
Ra2-h	28.1	18.6	28.0	8.3	0.0	11.9	4.9
Be2-k	21.5	23.0	28.6	4.5	0.0	10.1	12.2
Be2-h	37.3	8.9	30.8	1.2	0.0	16.5	5.3
AUTUMN							
L10-k	36.9	18.9	19.8	2.3	0.0	12.9	9.5
L10-h	41.3	9.9	22.9	3.6	0.0	13.3	8.9
L9-k	70.1	3.4	13.1	0.7	0.0	11.4	1.3
L9-h	71.2	2.1	13.7	0.4	0.0	10.6	2.0
L3-k	43.8	7.3	30.0	6.4	0.0	3.9	8.7
L3-h	44.4	4.2	24.1	8.1	0.0	5.9	13.3
L1-k	22.7	3.7	38.9	20.4	0.2	9.2	5.0
L1-h	19.1	3.3	36.6	25.7	0.2	9.0	6.1
LC1-k	35.9	15.6	24.0	4.5	0.0	13.7	6.4
LC1-h	45.9	6.0	24.8	1.0	0.0	16.8	5.5
Po1-k	51.9	5.7	29.0	1.5	0.0	4.2	7.7
Po1-h	56.0	6.4	17.1	2.2	0.0	7.3	11.0
Ra2-k	41.5	9.8	37.8	1.6	0.0	4.0	5.4
Ra2-h	35.0	9.4	31.0	2.9	0.0	7.0	14.7
Be2-k	50.1	12.0	13.1	0.7	0.0	11.8	12.2
Be2-h	52.2	7.3	23.2	0.9	0.0	7.9	8.6

*k = 1 kick sample, h = 4 Hess samples

(Wisseman, 1990). A diverse and abundant scraper community is usually indicative of good water quality. Shredder abundance also usually increases with increasing water quality while an increase in collectors/filterers generally means a stream is declining in quality. Table 8 presents these three ratios for the 48 sample sets. The highest sc/cf ratios (=better quality) occurred in the L10 Hess sample set, in the spring LC1 Hess sample set, in the summer LC1 Hess and kick sample sets, and in the L9 fall Hess sample set. The sc/(sc+cf) ratio varied from 0.43 for the fall L1 kick sample to 0.996 (=better quality) for the spring L10 Hess sample set. The sh/total ratio varied from 0.01 for the L3 and L1 summer Hess samples to 0.25 (=better quality) for the LC1 spring kick sample. All three of these ratios seem somewhat inconsistent when compared to other metrics such as the Shannon Diversity Index (SDI), but may prove valuable in future comparisons.

3. diversity/pollution sensitivity values

The Shannon Diversity Index (SDI) for each sample set is found in Table 8 and Appendices B–F. The higher the SDI the more diverse a community is, and greater diversity is usually equated with increasing water quality. SDI's ranged from 3.01 for the L9 fall Hess sample to 4.10 for the LC1 fall kick sample. All other samples had an SDI of 3.00 or more which is generally considered indicative of good quality. The highest spring SDI was 3.89 for the Be2 kick sample while the highest summer SDI was 3.87 for Ra2 Hess and Be2 kick samples. The SDI for L9 was most notably different from the other Libby Creek stations in October when the Hess sample set had an SDI of 3.06 and

Table 8. The Shannon Diversity Index (SDI) and ratios of macroinvertebrate functional feeding group abundances in the Montanore Project area, 1992.*

STATION	SC/CF	SC/(SC+CF)	SH/TOTAL	SDI
SPRING				
L10-k	27.50	0.96	0.07	3.30
L10-h	276.50	0.996	0.08	3.26
L9-k	14.22	0.93	0.06	3.27
L9-h	25.07	0.96	0.05	3.39
L3-k	------	------	0.24	3.52
L3-h	42.56	0.98	0.10	3.78
L1-k	74.50	0.99	0.15	3.25
L1-h	34.53	0.97	0.07	3.58
LC1-k	7.91	0.89	0.25	3.81
LC1-h	186.50	0.99	0.14	3.88
Po1-k	87.80	0.99	0.08	3.61
Po1-h	------	------	0.03	3.52
Ra2-k	46.00	0.98	0.08	3.59
Ra2-h	30.80	0.97	0.06	3.39
Be2-k	40.00	0.98	0.24	3.89
Be2-h	70.40	0.99	0.05	3.63
kick mean	40.05	0.976	0.18	----
Hess mean	44.99	0.978	0.07	----
total mean	42.51	0.977	0.13	----
SUMMER				
L10-k	39.40	0.98	0.08	3.85
L10-h	74.33	0.99	0.09	3.66
L9-k	3.55	0.78	0.16	3.79
L9-h	9.09	0.90	0.10	3.48
L3-k	5.19	0.84	0.17	3.71
L3-h	6.86	0.87	0.01	3.69
L1-k	1.94	0.67	0.16	3.60
L1-h	2.30	0.70	0.01	3.21
LC1-k	283.00	0.99	0.19	3.11
LC1-h	198.33	0.99	0.10	3.38
Po1-k	1.65	0.62	0.10	3.33
Po1-h	2.36	0.70	0.06	3.34
Ra2-k	0.99	0.50	0.24	3.61
Ra2-h	3.37	0.77	0.19	3.87
Be2-k	4.81	0.83	0.23	3.87
Be2-h	30.15	0.97	0.09	3.73
kick mean	3.72	0.788	0.17	----
Hess mean	6.70	0.87	0.07	----
total mean	5.12	0.837	0.11	----
AUTUMN				
L10-k	16.10	0.94	0.19	3.70
L10-h	11.61	0.92	0.10	3.73
L9-k	96.00	0.99	0.03	3.06
L9-h	174.78	0.99	0.02	3.01

Table 8. (Continued).

STATION	SC/CF	SC/(SC+CF)	SH/TOTAL	SDI
L3-k	6.85	0.87	0.07	3.63
L3-h	5.50	0.85	0.04	3.98
L1-k	1.12	0.53	0.04	3.77
L1-h	0.74	0.43	0.03	3.57
LC1-k	8.02	0.89	0.16	4.10
LC1-h	48.00	0.98	0.06	3.81
Po1-k	33.68	0.97	0.06	3.41
Po1-h	25.42	0.91	0.06	3.42
Ra2-k	26.41	0.93	0.10	3.14
Ra2-h	11.98	0.92	0.09	3.61
Be2-k	70.53	0.99	0.12	3.98
Be2-h	56.76	0.98	0.07	3.62
kick mean	7.72	0.885	0.09	----
Hess mean	8.29	0.89	0.06	----
total mean	8.01	0.889	0.08	----

*k = 1 kick sample, h = 4 Hess samples

the kick sample set had an SDI of 3.01.

Winget's Tolerance Quotient (TQ) and Hilsenhoff's Tolerance Value (TV) are presented in Appendices B–F. The TQ's are an indication of the relative pollution tolerance of a taxon (Winget, et al., 1979). The lowest TQ's are given to taxa considered to be highly sensitive to environmental changes. TQ's ranged from 2–108 for taxa collected in 1992.

TV's are an indication of a taxon's sensitivity to organic and nutrient pollution (Hilsenhoff, 1988) with lowest numbers given to the most sensitive taxa. TV's ranged from 0–10 for 1992 taxa. The source for both of these values for Montana taxa is Wisseman (1990).

Approximately 70% of the total organisms collected had TQ's ranging from 2–48. The most pollution sensitive organism collected in 1992 was the Dipteran *Agathon* sp. There were several pollution tolerant taxa including Chironomidae, Elmidae, Simuliidae, and Turbellaria but they only accounted for 11.6% of the total collection.

4. comparison of 1989–1992 data

Sampling stations and methodologies remained the same in 1992 as in 1991. Table 9 compares the data for the last four years. Kick and Hess sample data are combined in this table.

The table is presented to illustrate the seasonal and annual variation for all the sampling

Table 9. A comparison of some parameters from the 1988-1992 aquatic biological monitoring programs for the Montanore Project.

metrics	L10	L9	L3	L1	LC1	Po1	Ra2	Be
Aug '88								
group totals	E = 162(31%)	E = 245(38%)	E = 279(19%)	E = 339(32%)	E = 52(18%)	E = 89(14%)	E = 105(22%)	E = 158(27%)
	P = 165(31%)	P = 200(31%)	P = 222(15%)	P = 132(12%)	P = 148(51%)	P = 274(44%)	P = 175(36%)	P = 166(29%)
	T = 86(16%)	T = 47(7%)	T = 87(6%)	T = 144(13%)	T = 51(18%)	T = 112(18%)	T = 34(7%)	T = 99(17%)
	O = 118(22%)	O = 156(24%)	O = 890(60%)	O = 458(43%)	O = 40(14%)	O = 145(23%)	O = 172(35%)	O = 156(27%)
tot coll(tot samp)	531(3 Hess)	648(3 Hess)	1478(3 Hess)	1073(3 Hess)	291(3 Hess)	620(3 Hess)	486(3 Hess)	579(3 Hess)
mean no./sample	177	216	493	358	97	207	162	193
chironomid abund.	14%	19%	57%	39%	6%	16%	32%	19%
taxa richness	37	41	46	49	43	51	44	37
dominant taxon	Chloroperlinae (20%)	Chironomidae (19%)	Chironomidae (57%)	Chironomidae (39%)	*Yoraperla brevis* (21%)	Chironomidae (16%)	Chironomidae (32%)	Chironomidae (19%)
EPT richness	25	25	25	49	32	51	44	37
EPT/C	5.75	4.00	0.70	1.45	14.41	4.69	2.04	3.92
mean SDI	4.03	4.06	3.90	4.08	4.38	4.48	4.26	4.12
collectors/gatherers	16.2	18.1	11.9	20.9	19.6	7.8	11.9	15.4
collectors/filterers	0.8	1.4	0.9	1.1	5.8	1.3	0.2	1.0
scrapers	22.1	30.7	15.6	23.2	8.6	13.6	12.8	19.7
shredders	10.2	5.1	1.1	1.7	41.2	31.0	12.8	16.8
Oct '88								
group totals	E = 215(44%)	E = 103(53%)	E = 103(45%)	E = 183(30%)	E = 118(41%)	E = 148(35%)	E = 150(41%)	E = 163(28%)
	P = 194(40%)	P = 67(35%)	P = 72(32%)	P = 166(28%)	P = 106(37%)	P = 178(42%)	P = 125(34%)	P = 285(49%)
	T = 47(10%)	T = 13(7%)	T = 28(13%)	T = 99(16%)	T = 28(10%)	T = 54(13%)	T = 74(20%)	T = 99(17%)
	O = 28(6%)	O = 11(6%)	O = 21(9%)	O = 156(26%)	O = 38(13%)	O = 46(11%)	O = 17(5%)	O = 30(5%)
tot coll(tot samp)	484(3 Hess)	194(3 Hess)	224(3 Hess)	604(3 Hess)	290(3 Hess)	426(3 Hess)	366(3 Hess)	577(3 Hess)
mean no./sample	161	65	75	201	97	142	122	192
chironomid abund.	4%	3%	5%	18%	11%	7%	2%	3%
taxa richness	31	20	30	27	33	31	27	29
dominant taxon	Chloroperlinae (24%)	*Cinygmula* (36%)	*Cinygmula* (27%)	Chironomidae (18%)	*Cinygmula* (21%)	Chloroperlinae (25%)	*Cinygmula* (16%)	Chloroperlinae (17%)
EPT richness	27	16	24	20	26	24	21	23
EPT/C	21.7	30.5	20.3	4.2	7.9	12.3	58.2	34.2
mean SDI	3.62	2.93	3.60	4.06	3.83	3.77	3.75	3.92
collectors/gatherers	22.1	16.0	19.6	17.6	20.7	20.7	24.0	18.2
collectors/filterers	2.3	2.6	3.6	1.0	0.7	1.2	5.2	4.9
scrapers	31.0	65.5	48.2	15.9	23.8	24.2	36.1	23.9
shredders	11.6	0.5	4.5	20.4	22.8	10.8	11.5	27.9
April '89								
group totals	E = 208(36%)	E = 169(55%)	E = 130(39%)	E = 395(61%)	E = 55(9%)	E = 186(22%)	E = 374(33%)	E = 162(36%)
	P = 143(25%)	P = 61(20%)	P = 64(19%)	P = 71(11%)	P = 134(22%)	P = 139(16%)	P = 171(15%)	P = 116(25%)
	T = 13(2%)	T = 7(2%)	T = 13(4%)	T = 60(9%)	T = 32(5%)	T = 25(3%)	T = 46(4%)	T = 14(3%)
	O = 211(37%)	O = 70(23%)	O = 127(38%)	O = 119(19%)	O = 400(64%)	O = 504(59%)	O = 536(48%)	O = 164(36%)
tot coll(tot samp)	575(3 Hess)	307(3 Hess)	334(3 Hess)	645(3 Hess)	621(3 Hess)	854(3 Hess)	1127(3 Hess)	456(3 Hess)
mean no./sample	192	102	111	215	207	285	376	152
chironomid abund.	34%	20%	34%	12%	39%	53%	45%	31%
taxa richness	27	24	31	38	24	29	34	27

Table 9. (Continued).

metrics	L10	L9	L3	L1	LC1	Po1	Ra2	Be2
dominant taxon	Chironomidae (34%)	*Cinygmula* (26%)	Chironomidae (34%)	*Cinygmula* (29%)	Chironomidae (39%)	Chironomidae (53%)	Chironomidae (45%)	Chironomidae (31%)
EPT richness	21	18	24	26	20	23	27	21
EPT/C	1.8	3.9	1.8	6.92	0.92	0.77	1.16	2.09
mean SDI	3.07	3.13	3.26	3.89	2.92	2.75	3.00	3.33
collectors/gatherers	9.8%	14.3%	8.4	14.7%	30.3%	9.0%	11.0%	14.5%
collectors/filterers	0.7%	1.0%	1.2	0.8%	0.6%	0.0%	0.4%	0.7%
scrapers	28.4%	42.7%	34.4	52.9%	6.8%	17.9%	25.8%	26.5
shredders	9.9%	3.6%	7.2	10.7%	13.4%	11.0%	10.7%	9.4%
April '90								
group totals	E = 160(79%)	E = 118(68%)	---	E = 155(48%)	E = 229(66%)	E = 260(73%)	E = 153(79%)	---
	P = 30(15%)	P = 40(23%)	---	P = 33(10%)	P = 66(9%)	P = 43(12%)	P = 23(12%)	---
	T = 4(2%)	T = 2(1%)	---	T = 10(3%)	T = 7(2%)	T = 6(2%)	T = 7(4%)	---
	O = 9(4%)	O = 14(8%)	---	O = 127(39%)	O = 46(13%)	O = 48(13%)	O = 12(6%)	---
tot coll(tot samp)	203(5 Hess)	174(5 Hess)	---	325(5 Hess)	348(5 Hess)	357(5 Hess)	195(5 Hess)	---
mean no./sample	41	35	---	65	70	71	39	---
chironomid abund.	3%	2%	---	26%	4%	9%	3%	---
taxa richness	16	22	---	24	26	24	22	---
dominant taxon	*Epeorus* (27%)	*Cinygmula* (29%)	---	Chironomidae (26%)	*Cinygmula* (37%)	*Epeorus* (49%)	*Cinygmula* (33%)	---
EPT richness	12	14	---	17	19	19	18	---
EPT/C	32.33	40.0	---	2.33	21.57	9.36	36.6	---
mean SDI	2.1	2.2	---	2.5	2.2	1.9	2.1	---
collectors/gatherers	26%	19%	---	20%	16%	15%	13%	---
collectors/filterers	3%	0.6%	---	6%	0.6%	0.8%	0%	---
scrapers	56%	54%	---	37%	59%	61%	68%	---
shredders	7%	11%	---	0.9%	8%	5%	7%	---
August '90								
group totals	E = 249(66%)	E = 275(69%)	E = 387(77%)	E = 728(83%)	---	E = 397(78%)	E = 169(63%)	---
	P = 96(25%)	P = 66(17%)	P = 74(15%)	P = 76(9%)	---	P = 68(13%)	P = 46(17%)	---
	T = 7(2%)	T = 15(4%)	T = 14(3%)	T = 32(4%)	---	T = 19(4%)	T = 20(8%)	---
	O = 28(7%)	O = 45(11%)	O = 26(5%)	O = 38(4%)	---	O = 27(5%)	O = 33(12%)	---
tot coll(tot samp)	380(5 Hess)	401(5 Hess)	501(5 Hess)	874(5 Hess)	---	511(5 Hess)	268(5 Hess)	---
mean no./sample	76	80	100	175	---	102	54	---
chironomid abund.	2%	7%	4%	2%	---	5%	6%	---
taxa richness	23	26	27	33	---	24	30	---
dominant taxon	*Rhithrogena* (31%)	*Rhithrogena* (19%)	*Rhithrogena* (23%)	*Rhithrogena* (23%)	---	*D. doddsi* (23%)	*Cinygmula* (27%)	---
EPT richness	19	18	22	24	---	21	24	---
EPT/C	50.29	13.69	26.39	64.30	---	19.36	15.67	---
mean SDI	2.3	2.5	2.3	2.3	---	2.3	2.7	---
collectors/gatherers	42%	31%	20%	66%	---	31%	21%	---
collectors/filterers	0.3%	0.5%	0.6%	3%	---	2%	3%	---
scrapers	27%	39%	35%	19%	---	48%	46%	---
shredders	4%	3%	2%	3%	---	10%	3%	---

Table 9. (Continued).

metrics	L10	L9	L3	L1	LC1	Po1	Ra2	Be2
October '90								
group totals	E = 197(75%)	E = 284(48%)	E = 411(54%)	E = 784(74%)	E = 664(62%)	E = 212(31%)	E = 283(51%)	---
	P = 39(15%)	P = 216(37%)	P = 287(38%	P = 194(18%)	P = 205(19%)	P = 436(65%)	P = 248(44%)	---
	T = 14(5%)	T = 30(5%)	T = 44(6%)	T = 63(6%)	T = 111(10%)	T = 18(3%)	T = 16(3%)	---
	O = 13(5%)	O = 59(10%)	O = 13(2%)	O = 23(2%)	O = 91(9%)	O = 10(2%)	O = 13(2%)	---
tot coll(tot samp)	263(5 Hess)	589(5 Hess)	755(5 Hess)	1064(5 Hess)	1071(5 Hess)	676(5 Hess)	560(5 Hess)	---
mean no./sample	53	35	151	213	214	135	112	---
chironomid abund.	2%	4%	0.3%	0.3%	1%	0.3%	0%	---
taxa richness	27	35	34	34	35	24	24	---
dominant taxon	*Cinygmula* (43%)	*Cinygmula* (33%)	*Cinygmula* (35%)	*Cinygmula* (49%)	*Baetis* (32%	*Taeniionema* (53%)	*Taeniionema* (33%)	---
EPT richness	23	28	27	27	28	21	19	---
EPT/C	50.00	22.08	371.00	347.00	54.44	111.00	---	---
mean SDI	2.1	2.3	2.5	2.0	2.6	1.8	2.0	---
collectors/gatherers	33%	13%	17%	19%	43%	14%	23%	---
collectors/filterers	1%	1%	0.6%	2%	3%	0.3%	0.9%	---
scrapers	46%	72%	68%	69%	28%	72%	62%	---
shredders	7%	6%	2%	2%	13%	6%	3%	---
May '91								
group totals	E = 570(69%)	E = 144(76%)	E = 513(77%)	E = 710(81%)	E = 118(71%)	E = 438(66%)	E = 939(73%)	E = 1124(82%)
	P = 120(15%)	P = 29(15%)	P = 96(14%)	P = 73(8%)	P = 34(20%)	P = 171(26%)	P = 194(15%)	P = 155(11%)
	T = 23(3%)	T = 6(3%)	T = 4(1%)	T = 47(5%)	T = 7(4%)	T = 22(3%)	T = 35(3%)	T = 53(4%)
	O = 110(13%)	O = 11(6%)	O = 56(8%)	O = 43(5%)	O = 8(5%)	O = 38(6%)	O = 123(10%)	O = 33(2%)
tot coll(tot samp)	823(1 kick, 4 Hess)	190(1 kick, 4 Hess)	669(1 kick, 4 Hess)	873(1 kick, 4 Hess)	167(1 kick, 4 Hess)	669(1 kick, 4 Hess)	1291(1 kick, 4 Hess)	1365(1 kick, 4 Hess)
mean no./sample	165	38	134	175	42	134	258	273
chironomid abund.	6%	1%	7%	0.8%	1%	2%	4%	1%
taxa richness	29	19	25	34	24	25	28	31
dominant taxon	*Cinygmula* (29%)	*Cinygmula* (25%)	*Cinygmula* (31%)	*Cinygmula* (30%)	*Cinygmula* (32%)	*Cinygmula* (23%)	*Baetis* (25%)	*Baetis* (24%)
EPT richness	22	17	19	27	20	22	23	26
EPT/C	14.55	89.50	13.04	118.57	79.50	39.44	21.24	102.46
mean SDI	3.3	3.2	3.1	3.3	3.4	3.6	3.3	3.1
collectors/gatherers	20%	37%	66%	17%	25%	25%	30%	29%
collectors/filterers	0.6%	0%	0.6%	4%	3%	0.9%	6%	1%
scrapers	56%	46%	63%	67%	48%	44%	44%	56%
shredders	5%	4%	3%	4%	16%	17%	9%	7%
August '91								
group totals	E = 1065(54%)	E = 1428(80%)	E = 1873(82%)	E = 1693(83%)	E = 254(44%)	E = 1785(84%)	E = 1065(72%)	E = 2012(83%)
	P = 457(23%)	P = 206(12%)	P = 139(6%)	P = 123(6%)	P = 187(32%)	P = 237(11%)	P = 297(20%)	P = 306(13%)
	T = 56(3%)	T = 39(2%)	T = 120(5%)	T = 82(4%)	T = 89(15%)	T = 45(2%)	T = 67(5%)	T = 59(2%)
	O = 389(20%)	O = 120(7%)	O = 158(7%)	O = 139(7%)	O = 50(9%)	O = 70(3%)	O = 54(4%)	O = 62(3%)
tot coll(tot samp)	1967(1 kick, 4 Hess)	1793(1 kick, 4 Hess)	2290(1 kick, 4 Hess)	2037(1 kick, 4 Hess)	580(1 kick, 4 Hess)	2137(1 kick, 4 Hess)	1483(1 kick, 4 Hess)	2439(1 kick, 4 Hess)
mean no./sample	393	359	458	407	580(1)	427(5)	297(5)	488(5)
chironomid abund.	14%	4%	4%	6%	1%	2%	2%	2%
taxa richness	30	34	33	35	24	31	33	35

Table 9. (Continued).

metrics	L10	L9	L3	L1	LC1	Po1	Ra2	Be2
dominant taxon	*Epeorus* (21%)	*Rhithrogena* (34%)	*Baetis* (35%)	*Baetis* (33%)	*Baetis* (25%)	*Rhithrogena* (29%)	*D. doddsi* (21%)	*D. doddsi* (27%)
EPT richness	22	27	26	28	19	24	26	28
EPT/C	5.56	23.56	21.76	15.95	88.33	46.98	40.83	54.02
mean SDI	3.4	3.1	3.0	3.2	3.4	2.9	3.3	2.9
collectors/gatherers	29%	48%	63%	66%	41%	45%	30%	29%
collectors/filterers	0.8%	0.6%	3%	2%	16%	0.7%	2%	1%
scrapers	29%	32%	20%	19%	6%	39%	43%	54%
shredders	8%	5%	2%	0.9%	23%	5%	9%	5%
October '91								
group totals	E = 1865(61%)	E = 568(13%)	E = 2269(62%)	E = 2292(52%)	E = 418(47%)	E = 1654(34%)	E = 1122(41%)	E = 1673(40%)
	P = 766(25%)	P = 3272(73%)	P = 1096(30%)	P = 1924(43%)	P = 226(25%)	P = 2695(55%)	P = 1287(467%)	P = 2076(50%)
	T = 325(11%)	T = 582(13%)	T = 276(8%)	T = 207(5%)	T = 133(15%)	T = 475(10%)	T = 259(10%)	T = 372(9%)
	O = 107(4%)	O = 36(1%)	O = 48(1%)	O = 31(1%)	O = 116(13%)	O = 45(1%)	O = 54(2%)	O = 57(2%)
tot coll(tot samp)	3063(1 kick, 4 Hess)	4458(1 kick, 4 Hess)	3689(1 kick, 4 Hess)	4454(1 kick, 4 Hess)	893(1 kick, 4 Hess)	4869(1 kick, 4 Hess)	2722(1 kick, 4 Hess)	4178(1 kick, 4 Hess)
mean no./samp	613	892	738	891	179	974	544	836
chironomid abund	0.8%	0%	0.8%	0.1%	2.6%	0.3%	1%	0.4%
taxa richness	39	32	36	37	38	36	34	37
dominant taxon	*Rhithrogena* (20%)	*Taenionema* (64%)	*Cinygmula* (24%)	*Taenionema* (36%)	*Cinygmula* (31%)	*Taenionema* (46%)	*Taenionema* (31%)	*Taenionema* (36%)
EPT richness	30	27	31	31	32	31	29	30
EPT/C	113.69	---	125.55	737.17	33.78	344.57	80.85	228.94
mean SDI	3.7	2.2	3.2	2.9	3.8	2.9	3.4	3.2
collectors/gatherers	30%	3%	32%	29%	25%	16%	26%	25%
collectors/filterers	4%	9%	2%	4%	0%	7%	5%	3%
scrapers	41%	75%	53%	59%	41%	65%	49%	54%
shredders	7%	6%	4%	4%	9%	5%	7%	7%
April '92								
group totals	E = 985(63%)	E = 434(33%)	E = 1899(55%)	E = 2114(49%)	E = 1029(42%)	E = 703(57%)	E = 1585(52%)	E = 1450(48%)
	P = 312(20%)	P = 267(20%)	P = 1056(31%)	P = 1236(29%)	P = 626(25%)	P = 333(27%)	P = 535(18%)	P = 774(26%)
	T = 69(4%)	T = 166(13%)	T = 138(4%)	T = 404(9%)	T = 161(7%)	T = 73(6%)	T = 184(6%)	T = 228(8%)
	O = 205(13%)	O = 442(34%)	O = 346(10%0	O = 532(12%)	O = 662(27%)	O = 120(10%)	O = 757(25%)	O = 557(19%)
tot coll(tot samp)	1571(1 kick, 4 Hess)	1309(1 kick, 4 Hess)	3439(1 kick, 4 Hess)	2478(1 kick, 4 Hess)	1229(1 kick, 4 Hess)	3061(1 kick, 4 Hess)	3009(1 kick, 4 Hess)	
mean no./samp	314	262	688	857	496	246	612	602
chironomid abund	8%	30%	8%	6%	18%	8%	23%	16%
taxa richness	38	37	44	46	40	36	40	46
dominant taxon	*Cinygmula* (38%)	Chironomidae (30%)	*Cinygmula* (18%)	*Cinygmula* (28%)	Chironomidae (18%)	*Cinygmula* (19%)	*Cinygmula* (24%)	*Cinygmula* (20%)
EPT richness	33	30	35	33	31	32	31	36
EPT/C	10.19	2.23	11.13	14.96	4.17	10.87	3.26	5.22
mean SDI	3.38	3.49	3.71	3.80	3.97	3.74	3.52	3.94
collectors/gatherers	15%	6%	14%	14%	22%	17%	10%	8%
collectors filterers	0.9%	2%	0.5%	1%	2%	0.4%	1%	1%
scrapers	56%	39%	51%	59%	30%	56%	48%	48%
shredders	7%	5%	19%	11%	20%	6%	7%	18%

Table 9. (Continued).

metrics	L10	L9	L3	L1	LC1	Po1	Ra2	Be2
August '92								
group totals	E = 651(52%)	E = 993(58%)	E = 2185(55%)	E = 1655(49%)	E = 1155(62%)	E = 892(63%)	E = 693(45%)	E = 952(53%)
	P = 252(20%)	P = 388(23%)	P = 546(14%)	P = 496(15%)	P = 424(23%)	P = 185(13%)	P = 435(29%)	P = 409(23%)
	T = 79(6%)	T = 178(10%)	T = 783(20%)	T = 407(12%)	T = 66(4%)	T = 251(18%)	T = 256(17%)	T = 219(12%)
	O = 278(22%)	O = 169(10%)	O = 434(11%)	O = 836(25%)	O = 222(12%)	O = 86(6%)	O = 141(9%)	O = 187(11%)
tot coll(tot samp)	1260(1 kick, 4 Hess)	1728(1 kick, 4 Hess)	3948(1 kick, 4 Hess)	3394(1 kick, 4 Hess)	1867(1 kick, 4 Hess)	1414(1 kick, 4 Hess)	1525(1 kick, 4 Hess)	1767(1 kick, 4 Hess)
mean no./samp	252	346	790	679	373	283	305	353
chironomid abund	13%	5%	10%	18%	5%	6%	8%	8%
taxa richness	28	35	40	40	36	26	41	43
dominant taxon	*Epeorus* (14%)	*Rhithrogena* (23%)	*D. doddsi* (15%)	*Rhithrogena* (25%)	*Cinygmula* (36%)	*Rhithrogena* (20%)	*Z. columbiana* (14%)	*Rhithrogena* (19%)
EPT richness	20	27	31	32	30	23	32	35
EPT/C	5.85	18.56	9.13	4.17	18.08	16.81	11.44	11.70
mean SDI	3.82	3.70	3.83	3.65	3.34	3.41	3.91	3.96
collectors/gatherers	28%	32%	33%	46%	20%	33%	26%	30%
collectors/filterers	0.6%	6%	6%	6%	0.2%	15%	11%	3%
scrapers	33%	31%	35%	13%	47%	31%	23%	31%
shredders	9%	13%	9%	9%	13%	7%	21%	15%
October '92								
group totals	E = 1464(43%)	E = 937(30%)	E = 2846(52%)	E = 2276(51%)	E = 1398(64%)	E = 2118(41%)	E = 1979(56%)	E = 2164(45%)
	P = 1298(38%)	P = 1533(48%)	P = 1062(19%)	P = 548(12%)	P = 308(14%)	P = 2080(41%)	P = 904(25%)	P = 1242(26%)
	T = 313(9%)	T = 580(18%)	T = 1042(19%)	T = 1265(28%)	T = 233(11%)	T = 394(8%)	T = 298(8%)	T = 823(17%)
	O = 369(11%)	O = 117(4%)	O = 504(9%)	O = 382(9%)	O = 247(11%)	O = 521(10%)	O = 388(11%)	O = 595(12%)
tot coll(tot samp)	3444(1 kick, 4 Hess)	3167(1 kick, 4 Hess)	5454(1 kick, 4 Hess)	4471(1 kick, 4 Hess)	2186(1 kick, 4 Hess)	5113(1 kick, 4 Hess)	3569(1 kick, 4 Hess)	4824(1 kick, 4 Hess)
mean no./samp	689	633	1091	894	437	1023	714	965
chironomid abund	9%	2%	8%	5%	5%	9%	10%	10%
taxa richness	39	37	43	47	48	45	44	48
dominant taxon	*Cinygmula* (18%)	*Taenionema* (39%	*Baetis* (21%)	*Rhithrogena* (22%)	*Cinygmula* (27%)	*Taenionema* (30%)	*Baetis* (27%)	*Cinygmula* (21%)
EPT richness	29	30	33	36	40	35	35	37
EPT/C	9.73	55.45	11.33	19.11	16.72	9.63	9.01	8.87
mean SDI	3.79	3.09	3.81	3.73	4.08	3.48	3.47	3.95
collectors/gatherers	21%	14%	28%	38%	24%	22%	34%	19%
collectors/filterers	3%	0.5%	7%	23%	3%	2%	2%	0.8%
scrapers	39%	71%	44%	4%	41%	54%	38%	51%
shredders	15%	3%	6%	4%	11%	6%	10%	9%

sites. Although seasonal trends are noticeable, each station varies considerably from year to year with respect to diversity and density (Table 9). The relatively sensitive benthic populations in these streams reflect virtually any environmental change, whether it be natural or man-made and that sensitivity is illustrated by Table 9. In general, streams in the project area have increased in diversity and abundance with accompanied shifts in dominance to more pollution sensitive taxa. These changes were enhanced in 1992 at all stations, including L9 which received heavy nutrient loads in 1991 and LC1 (Little Cherry Creek) which annually carries higher sediment loads than any of the other stations.

Table 10 lists indicator species and species of special concern. Taxa selected as indicator species are the predominant organisms in the project area or are taxa which respond fairly quickly to environmental changes. Species of special concern are taxa known to be relatively sensitive to environmental perturbations. Some taxa in Table 10 are listed as both species of special concern and indicators since they are relatively sensitive to fluctuations in the aquatic ecosystem and are also abundant in the project area.

A comparison of the annual relative abundance of predominant species in the project area for the last four years is presented in Table 11. Some specifics are note-worthy: the abundance of Chironomidae at several stations in August 1988 and April of 1989, the predominance of the stonefly, *Yoraperla brevis,* a relatively pollution sensitive taxa (TQ

Table 10. Benthic indicator species and species of special concern in the Montanore Project area.

TAXA	ORDER	DESIGNATION	TQ
Blephariceridae	D	special concern	2
Drunella doddsi	E	special concern	4
Zapada columbiana	P	special concern	16
Doroneuria theodora	P	special concern	18
Arctopsyche grandis	T	special concern	18
Rhyacophila sp.	T	special concern	18
Cinygmula sp.	E	spec. conc./indicator	21
Epeorus sp.	E	spec. conc./indicator	21
Rhithrogena sp.	E	spec. conc./indicator	21
Sweltsa/Suwallia sp.	P	spec. conc./indicator	24
Glossosoma sp.	T	special concern	24
Oligophlebodes sp.	T	special concern	24
Paraleptophlebia sp.	E	special concern	24
Taenionema sp.	P	indicator	48
Baetis sp.	E	indicator	72
Elmidae	C	indicator	108
Chironomidae	D	indicator	108
Simuliidae	D	indicator	108
Turbellaria	Pl	indicator	108

E = Ephemeroptera, P = Plecoptera, T = Trichoptera, D = Diptera, C = Coleoptera, Pl = Planariidae

Table 11. Comparison of predominant indicator and special concern species (% relative abundance) for aquatic macroinvertebrates in the Montanore Project area, 1988–1992.*

STATION	SPECIES COMPOSITION
Aug '88	
L10	Chloroperlinae (20%), Chironomidae (14%), *Rhithrogena* sp. (11%)
L9	Chironomidae (19%), Chloroperlinae (18%), *Rhithrogena* sp. (12%), *Cinygmula* sp. (10%)
L3	Chironomidae (57%), Chloroperlinae (12%), *Rhithrogena* sp. (5%)
L1	Chironomidae (39%), *Cinygmula* sp. (11%), *Rhithrogena* sp. (10%), Chloroperlinae (10%)
LC1	*Yoraperla brevis* (21%), Chloroperlinae (11%), *Zapada columbiana* (8%)
Po1	Chironomidae (16%), *Perlomyia* sp. (15%), *Rhyacophila betteni* (11%), Chloroperlinae (10%)
Ra2	Chironomidae (32%), Chloroperlinae (22%), *Baetis* sp. (7%)
Be2	Chironomidae (19%), *Rhyacophila betteni* (12%), *Zapada columbiana* (10%), Chloroperlinae (9%)
Oct '88	
L10	Chloroperlinae (24%), *Cinygmula* sp. (22%), *Baetis* sp. (11%)
L9	*Cinygmula* sp. (36%), *Doddsia occidentalis* (26%), *Rhithrogena* sp. (11%)
L3	*Cinygmula* sp. (27%), *Doddsia occidentalis* (16%), Chloroperlinae (13%)
L1	Chironomidae (18%), *Rhyacophila betteni* (12%), *Zapada columbiana* (9%)
LC1	*Cinygmula* sp. (21%), Chloroperlinae (15%), *Yoraperla brevis* (11%), Chironomidae (11%)
Po1	Chloroperlinae (25%), *Cinygmula* sp. (13%), *Baetis* sp. (12%)
Ra2	*Cinygmula* sp. (16%), Chloroperlinae (16%), *Baetis* sp. (13%), *Glossosoma* sp. (12%)
Be2	Chloroperlinae (17%), *Perlomyia* sp. (16%)
Ap '89	
L10	Chironomidae (34%), *Cinygmula* sp. (20%), Chloroperlinae (15%)
L9	*Cinygmula* sp. (26%), Chironomidae (20%), Chloroperlinae (15%), *Epeorus* sp. (13%), *Rhithrogena* sp.(11%)
L3	Chironomidae (34%), *Cinygmula* sp. (16%), *Epeorus* sp. (12%), Chloroperlinae (11%)
L1	*Cinygmula* sp. (29%), *Epeorus* sp. (16%), Chironomidae (12%)
LC1	Chironomidae (39%), Simuliidae (23%), Chloroperlinae (9%)
Po1	Chironomidae (53%), *Epeorus* sp. (9%), *Cinygmula* sp. (8%)
Ra2	Chironomidae (45%), *Cinygmula* sp. (12%), *Epeorus* sp. (10%)
Be2	Chironomidae (31%), *Cinygmula* sp. (16%), Chloroperlinae (16%)
April '90	
L10	*Epeorus* sp. (27%), *Baetis* sp. (23%), *Cinygmula* sp. (21%)
L9	*Cinygmula* sp. (29%), *Epeorus* sp. (19%), *Baetis* sp. (12%), Chloroperlinae (10%)
L3	not sampled
L1	Chironomidae (26%), *Cinygmula* sp. (16%), *Epeorus* sp. (11%)
LC1	*Cinygmula* sp. (37%), *Epeorus* sp. (21%)
Po1	*Epeorus* sp. (49%), *Cinygmula* sp. (10%), Chironomidae (9%)
Ra2	*Cinygmula* sp. (33%), *Epeorus* sp. (31%)
Be2	not sampled
Aug '90	
L10	*Rhithrogena* sp. (31%), Chloroperlinae (20%), *Cinygmula* sp. (15%)
L9	*Rhithrogena* sp. (19%), *Cinygmula* sp. (16%), *D. doddsi* (14%)
L3	*Rhithrogena* sp. (23%), *D. doddsi* (20%), *Baetis* sp. (14%)
L1	*Baetis* sp. (39%), *Rhithrogena* sp. (23%)
LC1	not sampled
Po1	*Epeorus* sp. (19%), *Baetis* sp. (19%), *Rhithrogena* sp. (12%)
Ra2	*Cinygmula* sp. (27%), Chloroperlinae (12%), *D. doddsi* (9%)
Be2	not sampled

Table 11. (Continued).

STATION	SPECIES COMPOSITION
Oct '90	
L10	*Cinygmula* sp. (44%), *Baetis* sp. (14%)
L9	*Cinygmula* sp. (33%), *Taenionema* sp. (26%)
L3	*Cinygmula* sp. (35%), *Taenionema* sp. (27%), *Baetis* sp. (19%)
L1	*Cinygmula* sp. (49%), *Taenionema* sp. (11%)
LC1	*Baetis* sp. (32%), *Cinygmula* sp. (20%)
Po1	*Taenionema* sp. (54%), *Cinygmula* sp. (14%)
Ra2	*Taenionema* sp. (33%), *Cinygmula* sp. (25%), *Baetis* sp. (13%)
Be2	not sampled
May '91	
L10	*Cinygmula* sp. (29%), *Epeorus* sp. (23%), *Baetis* sp. (10%)
L9	*Cinygmula* sp. (25%), *Baetis* sp. (20%), *Epeorus* sp. (13%), *Rhithrogena* sp. (12%)
L3	*Cinygmula* sp. (31%), *Epeorus* sp. (21%), *Baetis* sp. (11%)
L1	*Cinygmula* sp. (30%), *Epeorus* sp. (21%), *Baetis* sp. (13%)
LC1	*Cinygmula* sp. (32%), *Baetis* sp. (14%), *Epeorus* sp. (13%)
Po1	*Cinygmula* sp. (23%), *Baetis* sp. (18%), *Epeorus* sp. (16%)
Ra2	*Baetis* sp. (25%), *Epeorus* sp. (19%), *Cinygmula* sp. (19%)
Be2	*Baetis* sp. (24%), *Epeorus* sp. (23%), *Cinygmula* sp. (22%)
Aug '91	
L10	*Epeorus* sp. (21%), *Rhithrogena* sp. (19%), Chironomidae (14%), *Sweltsa/Suwallia* sp. (12%)
L9	*Rhithrogena* sp. (34%), *Epeorus* sp. (18%), *D. doddsi* (13%), *Baetis* sp. (12%)
L3	*Baetis* sp. (35%), *Rhithrogena* sp. (25%)
L1	*Baetis* sp. (33%), *Rhithrogena* sp. (24%)
LC1	*Baetis* sp. (25%), *Zapada columbiana* (22%), *Rhithrogena* sp. (10%)
Po1	*Rhithrogena* sp. (29%), *Epeorus* sp. (21%), *D. doddsi* (17%), *Baetis* sp. (16%)
Ra2	*D. doddsi* (21%), *Rhithrogena* sp. (20%), *Epeorus* sp. (18%)
Be2	*D. doddsi* (27%), *Rhithrogena* sp. (25%), *Epeorus* sp. (24%)
Oct '91	
L10	*Rhithrogena* sp. (20%), *Epeorus* sp. (15%), *Cinygmula* sp. (15%), *Taenionema* sp. (10%)
L9	*Taenionema* sp. (64%)
L3	*Cinygmula* sp. (24%), *Taenionema* sp. (22%), *Baetis* sp. (20%)
L1	*Taenionema* sp. (36%), *Cinygmula* sp. (20%), *Baetis* sp. (14%), *Rhithrogena* sp. (12%)
LC1	*Cinygmula* sp. (31%), *Sweltsa/Suwallia* sp. (13%), *Baetis* sp. (8%)
Po1	*Taenionema* sp. (46%), *Cinygmula* sp. (9%), *Rhithrogena* sp. (8%)
Ra2	*Taenionema* sp. (31%), *Rhithrogena* sp. (15%), *Cinygmula* sp. (11%), *Baetis* sp. (10%)
Be2	*Taenionema* sp. (36%), *Rhithrogena* sp. (15%), *Cinygmula* sp. (11%)
April '92	
L10	*Cinygmula* sp. (38%), *Epeorus* sp. (9%), Chironomidae (9%)
L9	Chironomidae (30%), *Cinygmula* sp. (23%), *Sweltsa/Suwallia* sp. (13%)
L3	*Cinygmula* sp. (18%), *Epeorus* sp. (18%), Nemouridae (12%)
L1	*Cinygmula* sp. (28%), *Taenionema* sp. (11%), Nemouridae (10%)
LC1	Chironomidae (18%), *Cinygmula* sp. (14%), *Epeorus* sp. (10%), *Baetis* sp. (10%)
Po1	*Cinygmula* sp. (19%), *Epeorus* sp. (14%), *D. occidentalis* (12%), *Baetis* sp. (11%)
Ra2	*Cinygmula* sp. (24%), Chironomidae (23%), *Epeorus* sp. (12%)
Be2	*Cinygmula* sp. (20%), Chironomidae (16%), *Epeorus* sp. (11%)
Aug '92	
L10	*Epeorus* sp. (14%), Chironomidae (13%), *Cinygmula* sp. (12%), *Sweltsa/Suwallia* sp. (11%)

Table 11. (Continued).

STATION	SPECIES COMPOSITION
L9	*Rhithrogena* sp. (23%), *Epeorus* sp. (18%), *Z. columbiana* (12%),
L3	*D. doddsi* (15%), *Rhithrogena* sp. (14%), *Baetis* sp. (13%), *Oligophlebodes* sp. (10%)
L1	*Rhithrogena* sp. (25%), Chironomidae (18%)
LC1	*Cinygmula* sp. (36%), *Z. columbiana* (11%), *Drunella* sp. (10%)
Po1	*Rhithrogena* sp.(20%), *D. doddsi* (16%), Hydropshychidae(14%), *Baetis* sp.(12%), *Epeorus* sp. (11%)
Ra2	*Z. columbiana* (14%), *Baetis* sp. (12%), *Rhithrogena* sp. (11%), Hydropsychidae (11%)
Be2	*Rhithrogena* sp. (19%), *D. doddsi* (15%)
Oct '92	
L10	*Cinygmula* sp. (18%), *Taenionema* sp. (15%), *Baetis* sp. (12%)
L9	*Taenionema* sp. (39%), *Cinygmula* sp. (15%), *Glossosoma* sp. (15%)
L3	*Baetis* sp. (21%), *Cinygmula* sp. (18%), *Taenionema* sp. (11%)
L1	*Rhithrogena* sp. (22%), Hydropsychidae (20%), *Cinygmula* sp. (11%), *Baetis* sp. (10%)
LC1	*Cinygmula* sp. (27%), *Diphetor* sp. (8%)
Po1	*Taenionema* sp. (30%), *Cinygmula* sp. (15%), *Baetis* sp. (13%)
Ra2	*Baetis* sp. (27%), *Cinygmula* sp. (19%), *Taenionema* sp. (12%)
Be2	*Cinygmula* sp. (21%), *Glossosoma* sp. (12%), *Taenionema* sp. (11%)

*kick and Hess sample sets combined

= 12) at Little Cherry Creek in August 1988, the prevalence of the stonefly *Taenionema* sp. at the Libby Creek station, L9, in October 1991, the abundance of Chironomidae at that same station, L9, in April 1992, the predominance of *Drunella doddsi* at the Libby Creek, L3, station in August 1992, the dominance of *Zapada columbiana* at the Ramsey Creek station in August 1992, the shift in dominance between L9 and L3, and the abundance of *Baetis* sp. and *Cinygmula* sp. at the Ramsey Creek and Bear Creek stations respectively in October 1992.

5. statistical evaluation of the 1992 data

The mean, standard deviation, coefficient of variation and percent standard error of the mean for each station are presented in the appendices. The percent standard error of the mean, which indicates the variation from the sample mean, was well within the EPA recommended 20% for all sample sets. The coefficient of variation, which indicates whether sample variability is within an acceptable range, was well under the EPA recommended 50% for all sample sets.

C. Periphyton

1. non-diatom algae

A total of 38 genera of non-diatom algae were identified in periphyton samples collected from the Montanore Project area in 1992 (Table 12). This is up from the 24 non-diatom genera found in 1991. The estimated relative abundance values for all non-diatom genera at the eight monitoring sites in April, August and October 1992 are listed in the

Table 12. Genera of non–diatom algae identified in periphyton samples collected at monitoring stations in the Montanore Project area, 1992.

Phylum Chlorophyta
- Order Tetrasporales
  - Family Tetrasporaceae
    - ***Tetraspora***
  - Family Gloeocystaceae
    - ***Gloeocystis***
- Order Chlorococcales
  - Family Chlorococcaceae
    - ***Characium***
    - ***Planktosphaeria***
  - Family Oocystaceae
    - ***Ankistrodesmus***
  - Family Scenedesmaceae
    - ***Scenedesmus***
- Order Uotrichales
  - Family Ulotrichaceae
    - ***Hormidium***
    - ***Ulothrix***
  - Family Microsporaceae
    - ***Microspora***
- Order Chaetophorales
  - Family Chaetophoracaea
    - ***Chaetophora***
    - ***Draparnaldia***
    - ***Gongrosira***
    - ***Protococcus***
    - ***Stigeoclonium***
- Order Oedogoniales
  - Family Oedogoniaceae
    - ***Bulbochaete***
    - ***Oedogonium***
- Order Zygnematales
  - Family Zygnemataceae
    - ***Mougeotia***
    - ***Spirogyra***
    - ***Zygnema***
  - Family Desmidiaceae
    - ***Closterium***
    - ***Comarium***
    - ***Staurastrum***

Phylum Chrysophyta
- Order Chromulinales
  - Family Hydruraceae
    - ***Hydrurus***
    - ***Tribonema***

Phylum Rhodophyta
- Order Nemalionales
  - Family Chantransiaceae
    - ***Audouinella***
  - Family Batrachospermaceae
    - ***Batrachospermum***

Phylum Cyanophyta
- Order Chroococcales
  - Family Chroococcaceae
    - ***Aphanocapsa***
    - ***Merismopedia***
    - ***Microcystis***
- Order Chamaesiphonales
  - Family Chamaesiphonaceae
    - ***Chamaesiphon***
- Order Oscillatoriales
  - Family Oscillatoriaceae
    - ***Lyngbya***
    - ***Oscillatoria***
    - ***Phormidium***
- Order Nostocales
  - Family Nostocaceae
    - ***Nostoc***
  - Family Scytonemataceae
    - ***Tolypothrix***
  - Family Rivulariaceae
    - ***Amphithrix***
    - ***Calothrix***
    - ***Rivularia***

tables in Appendix G.

The dominant non-diatom algae at each site for the three monitoring periods are listed in Tables 13 and 14. Overall, there were 29 dominant genera in the study area in 1992, compared to 19 genera in 1991. The number of dominant genera and the dominant phylum at each site are listed in Table 15 for both 1991 and 1992.

The number of dominant non-diatom taxa at the Libby Creek stations in spring and autumn 1992 increased downstream from L10 to L9, then decreased at L3 and L1, with the fewest taxa found at L1. There was less of a trend seen in the summer, with the fewest taxa present at L9. In 1992, the upper three Libby Creek stations (L10, L9, and L3) showed a general increase in the number of dominant taxa over 1991 during all three seasons. This was particularly evident during the spring, probably due in part to an earlier sampling date (April 1992 vs. May 1991) which may have preceded high-stream flows. The trend at L1, although weaker, was for fewer taxa in 1992.

In 1992, the green algae (phylum Chlorophyta) were dominant at all Libby Creek stations except L1 in the spring and L9 in the summer (Table 15). The blue-green algae (phylum Cyanophyta) were dominant at L1 during the spring, where green algae had dominated in 1991. Green algae were dominant in 1992 at three stations (L10 and L9 spring; L1 summer) that had been dominated by blue-greens in 1991. Bahls (1992) found evidence that blue-green algae (division or phylum Cyanophyta) dominated in mountain streams

Table 13. Dominant non-diatom algae (common or greater in estimated relative abundance) for Libby Creek stations in the Montanore Project area, 1992.*

STATION:	L10			L9			L3			L1		
DATE: GENERA	APR	AUG	OCT	APR	AUG	OCT	APR	AUG	OCT	APR	AUG	OCT
Bacillariophyta (diatoms)												
All genera collectively	VC	VC	VC	A	VC	VC	VC	VC	A	C	VA	A
Chlorophyta (green algae)												
Chaetophora											C	
Cosmarium						C		C	C		C	
Draparnaldia							VC					
Hormidium	VC	VC	VC	VC		VC			VA			
Microspora	C	C	C			C		A				
Planktosphaeria							C					
Spirogyra	VC	A	VC			VC						
Staurastrum								C	C		VC	
Tetraspora				VC								
Ulothrix		C	C	C			C		C		C	VA
Zygnema	A	VA	A		A	A		VC	VC			
Chrysophyta (yellow-green algae)												
Hydrurus				C	VA	A						
Tribonema			VC	C								
Cyanophyta (blue-green algae)												
Aphanocapsa				C			C			VC		
Chamaesiphon		C	A									
Oscillatoria		VC			VC	VA	A	VA	A	A	VA	VA
Rivularia						C						
Rhodophyta (red algae)												
Audouinella									C			

*C = common, VC = very common, A = abundant, VA = very abundant

Table 14. Dominant non-diatom algae (common or greater in estimated relative abundance) for tributary stations in the Montanore Project area, 1992.*

STATION:	LC1			Po1			Ra2			Be2		
DATE:	APR	AUG	OCT	APR	AUG	OCT	APR	AUG	OCT	APR	AUG	OCT
GENERA												
Bacillariophyta (diatoms)												
All genera collectively	VA	A	VC	A	VC	A	VC	A	VC	C	VC	VA
Chlorophyta (green algae)												
Bulbochaete			A									
Chaetophora		VA	VA									
Cosmarium		C	VC									
Draparnaldia	A							VA				
Gloeocystis			C									
Gongrosira										C		C
Hormidium	VA											
Microspora	VC		C				VC					
Mougeotia	VC	A	VC									
Oedogonium		VC	A									
Protococcus										C		
Spirogyra		VC				C						
Staurastrum		VC	VC			C		C				
Ulothrix						C						A
Zygnema	VC	C		VC	VA	VA		VA	VA			
Chrysophyta (yellow-green algae)												
Hydrurus				A	A	VA						A
Tribonema	C											
Cyanophyta (blue-green algae)												
Aphanocapsa				C						A		
Amphithrix								C				
Nostoc		C										
Oscillatoria				VA	VC	A	VA	A	VA	VA	VA	VC
Phormidium			A		C			C				
Tolypothrix		VC	VC									
Rhodophyta (red algae)												
Batrachospermum			VC									

*C = common, VC = very common, A = abundant, VA = very abundant

Table 15. A comparison of selected parameters for dominant non-diatom algae from monitoring stations in the Montanore Project area, 1991 and 1992.

	L10		L9		L3		L1	
	1991	1992	1991	1992	1991	1992	1991	1992
No. Dominant Taxa								
spring	1	4	3	6	1	5	3	2
summer	5	7	3	3	3	5	3	5
autumn	3	7	5	8	7	7	4	2
Dominant Phylum*								
spring	Cyan	Chlor	Cyan	Chlor	Chry	Chlor	Chlor	Cyan
summer	Chlor	Chlor	Cyan	Chry	Chlor	Chlor	Cyan	Chlor
autumn	Chlor	Chlor	Chlor	Chlor	Chlor	Chlor	Chlor	Chlor

	LC1		Po1		Ra2		Be2	
	1991	1992	1991	1992	1991	1992	1991	1992
No. Dominant Taxa								
spring	0	6	2	4	4	2	2	4
summer	3	9	2	4	2	6	2	1
autumn	5	11	4	6	2	2	3	4
Dominant Phylum*								
spring	---	Chlor	Chry	Cyan	Chlor	Cyan	Chry	Cyan
summer	Chlor	Chlor	Cyan	Chlor	Cyan	Chlor	Cyan	Cyan
autumn	Chlor	Chlor	Cyan	Chlor	Chlor	Chlor	Cyan	Cyan

*Based on estimated biovolume contribution of each dominant taxon; see Methods and Appendix A.
Chlor = Chlorophyta; Chry = Chrysophyta; Cyan = Cyanophyta

*Based on estimated biovolume contribution of each dominant taxon; Chlor = Chlorophyta, Chry = Chrysophyta, Cyan = Cyanophyta

where dissolved inorganic nitrogen is often in short supply, due to their ability to fix atmospheric (molecular) nitrogen. Waters having higher concentrations of nitrogen tended to favor green algae (division or phylum Chlorophyta). Dominance by green algae in mountain streams, therefore, may indicate nitrogen enrichment.

The dominant non–diatom genera from Libby Creek stations in 1992 are listed in Table 13. The filamentous green alga *Zygnema* sp. dominated at L10 during all three seasons, and to a lesser extent at L9 and L3 during the summer and autumn, but was conspicuously absent from L1 during all sampling periods. A related taxon, *Spirogyra* sp., was a dominant at L10 during all seasons, but was not significant downstream except at L9 in the autumn. The yellow–green alga *Hydrurus foetidus* was a dominant in Libby Creek only at station L9 in 1992. These taxa are found typically in cold, nutrient–poor waters in western Montana. The blue–green alga *Oscillatoria* sp. dominated at stations L3 and L1 during all seasons, but was relatively unimportant at L10 and L9. This taxon has a broad environmental amplitude, but is generally indicative of moderately high water quality. Several taxa belonging to the order Ulotrichales (*Hormidium* sp., *Ulothrix* sp. and *Microspora* sp.), which are generally indicative of some level of nutrient enrichment, were minor dominants at all Libby Creek stations at least seasonally during 1992.

The number of dominant non–diatom taxa at tributary stations was greatest at LC1 (Little Cherry Creek) during all three seasons (Table 15), and also exceeded taxa numbers at essentially all Libby Creek sites on the same dates. The other tributary stations had taxa

numbers generally comparable to the Libby Creek stations. The number of non–diatom taxa at individual tributary stations in 1992 was generally greater than at the same sites in 1991. This was especially true at LC1 during the spring, where seven taxa were present in 1992, compared to none in 1991. Again, this was probably a result, at least in part, of moving the sampling date in 1992 from May to April to avoid high stream flows.

The green algae (phylum Chlorophyta) were dominant at LC1 during all three seasons in 1992, and dominated at stations Po1 (Poorman Creek) and Ra2 (Ramsey Creek) during the summer and autumn (Table 15). Blue–green algae (phylum Cyanophyta) dominated all seasons at Be2 (Bear Creek), and were dominant at Po1 and Ra2 during the spring of 1992. Compared to 1991, there was no change in the dominant phylum at LC1 and Be2 for all three seasons, but some flip–flop occurred between green and blue–green algae as the dominant phylum at Po1 (summer and autumn) and Ra2 (spring and summer).

At LC1, several genera of green algae were dominant during one or more seasons that did not dominate any of the other tributary or Libby Creek stations. While there are some similarities with the other stations, the number and variety of taxa at LC1 distinguish it from the other stations. The greater abundance of *Zygnema* sp., *Oscillatoria* sp. and *Hydrurus foetidus* at the other three tributary stations, on the other hand, suggest lower nutrient levels and higher water quality than at LC1.

The non-diatom floras from streams in the Montanore Project area reflect differences in water quality and/or physical environment between sites and drainages. These may be due to natural factors (i.e. seasonality, geology, stream order, or stream gradient) as well as anthropogenic impacts such as sedimentation from road building, mining, and logging. The Libby Creek stations have much in common with one another, while the tributary streams have considerably less in common with Libby Creek stations and one another. The tributary streams appear to have an influence on lower Libby Creek stations discernible as changes in the relative abundance of dominant taxa.

2. diatom algae

The estimated abundance values of diatoms (all genera considered collectively) relative to non-diatom algal genera at the eight monitoring sites in April, August, and October 1992 are listed in Appendix G. Diatoms as a group are also ranked with non-diatom genera according to the estimated contribution each made to the total periphyton biovolume in each sample (Appendix G). Diatoms were "dominant algae" (common or greater in estimated relative abundance) in all 24 samples (Tables 13 and 14). They ranked first in estimated biovolume relative to dominant non-diatom algae in only one sample, second in four samples and third in 12 samples. The lowest biovolume ranking for the diatoms in any sample was sixth (Appendix G).

A total of 150 species of diatom algae belonging to 30 genera were identified in periphyton samples collected in the Montanore Project area in 1992 (Table 16). This

Table 16. Diatom species (Phylum Chrysophyta: Class Bacillariophyceae) identified in periphyton samples collected at monitoring stations in the Montanore Project area, 1992.

Order Centrales

Family Coscinodiscaceae

Aulacoseira alpigena
A. distans
A. italica
Melosira varians
Orthoseira dendroteres

Order Pennales

Family Fragilariaceae

Diatoma anceps
D. hyemalis
D. mesodon
Fragilaria brevistriata
F. capucina
F. constricta
F. construens
F. crotonensis
F. leptostauron
F. nanana
F. pinnata
F. tenera
F. ulna
F. virescens
Hannaea arcus
Meridion circulare
Tabellaria flocculosa

Family Eunotiaceae

Eunotia bilunaris
E. glacialis
E. incisa
E. intermedia
E. microcephala
E. minor
E. musicola
E. paludosa
E. praerupta
E. rhomboidea
E. subarcuatoides
E. tenella
E. sp.

Family Achnanthaceae

Achnanthes biasoletiana
A. bioretii
A. chlidanos
A. daonensis
A. flexella
A. helvetica
A. kriegeri
A. laevis
A. lanceolata
A. lapidosa
A. marginulata
A. minutissima
A. nodosa
A. petersenii
A. pusilla
A. rossii
A. subatomoides
Cocconeis placentula
Rhoicosphenia abbreviata

Family Naviculaceae

Amphipleura pellucida
Amphora inariensis
A. pediculus
Anomoeoneis vitrea
Caloneis bacillum
Cymbella affinis
C. amphicephala
C. caespitosa
C. cesatii
C. cistula
C. cymbiformis
C. delicatula
C. gracilis
C. hebridica
C. mesiana
C. microcephala
C. minuta
C. naviculiformis
C. silesiaca
C. sinuata
C. subaequalis
Diatomella balfouriana
Didymosphenia geminata
Diploneis elliptica
Frustulia rhomboides
F. vulgaris
Gomphonema acuminatum
G. angustum
G. clavatum
G. contractum
G. dichotomum
G. micropus
G. minutum
G. olivaceum
G. parvulum
G. procerum
G. pumilum
G. rhombicum
G. sarcophagus
G. truncatum
G. sp.
Navicula accomoda
N. angusta
N. capitata
N. contenta
N. cryptocephala
N. cryptotenella
N. enigmatica
N. gallica
N. gregaria
N. heimansioides
N. ignota
N. lundii
N. menisculus
N. minima
N. minuscula
N. mutica
N. pupula
N. pusio
N. radiosa
N. reichardtiana
N. seibigii
N. suchlandtii
N. tenelloides
N. tridentula
N. tripunctata
Neidium affine
N. dubium
N. hercynicum
Pinnularia legumen
P. subcapitata
P. sp.
Stauroneis anceps
S. kriegerii
S. phoenicenteron

Family Bacillariacea

Nitzschia acidoclinata
N. bryophila
N. dissipata
N. draveillensis
N. flexoides
N. fonticola
N. frustulum
N. gracilis
N. inconspicua
N. lacuum
N. linearis
N. palea
N. paleacea
N. perminuta
N. pumila
N. pura
N. recta
N. vermicularis

Family Epithemiacea

Epithemia adnata
Rhopalodia gibba

Family Surirellaceae

Surirella angusta

compares to 109 species and 27 genera found in 1991. All diatom species present at each of the monitoring locations in April, August and October are listed in the tables in Appendix H, along with proportional count results and percent relative abundance values for each species. The dominant diatom species, defined as those having a relative abundance of 3.0% or greater, are listed in Table 17 for each site and monitoring period. Community structure parameters (species richness, PRA dominant taxon, Shannon diversity index and siltation index) are listed in Table 18.

Diatom species richness and Shannon diversity are measures of the general health of the diatom association and can serve as indicators of environmental stress. For Montana streams in general, unpolluted waters have been found to have diatom species richness values of at least 25, and Shannon diversity values of 3.00 or greater (Bahls, 1979). However, for waters that are naturally poor in algal nutrients, such as the headwater reaches of streams in mountainous northwestern Montana, species richness values of less than 25 are not necessarily indicative of impaired water quality. The environmental requirements and pollution tolerances of the dominant diatom taxa are probably better indicators of water quality in these cases. The addition of moderate levels of inorganic nitrogen can have a "positive impact" on diatoms in mountain streams that are naturally nutrient–poor, actually increasing Shannon diversity.

The siltation index is defined as the total percent relative abundance of *Navicula* and *Nitzschia* species (Bahls, 1993). Species belonging to these genera are biraphidean and

Table 17. Dominant diatom taxa (percent relative abundance 3.0 or greater) and corresponding PRA values at monitoring stations in the Montanore Project area, 1992.

STATION:	L10			L9			L3			L1		
DATE:	APR	AUG	OCT	APR	AUG	OCT	APR	AUG	OCT	APR	AUG	OCT
SPECIES												
Achnanthes biasolettiana									12.8	4.8	4.9	16.9
A. kriegeri	9.0	3.6			3.7							
A. minutissima	46.1	40.6	30.0		32.2	22.8	73.2	77.4	48.6	67.2	52.0	49.8
Aulacosiera alpigena					9.1							
Cymbella affinis												3.6
C. cistula												5.6
C. minuta										6.3	6.8	3.1
C. silesiaca									3.1		5.6	
C. sinuata								3.7				
Diatoma mesodon	19.8	22.6	20.9	51.5	11.8	45.6						
Eunotia minor	4.8											
E. muscicola				18.4	6.4	4.0						
E. subarcuatoides	4.26			16.4	5.2							
Fragilaria capucina	3.5	9.9	9.3		13.3	7.5		4.1	7.5		6.1	3.4
F. ulna											12.0	
Gomphonema micropus							3.8					
G. olivaceum							5.0			5.5		
G. parvulum		7.7	6.9		6.6	4.5						
G. pumilum												4.8
Hannaea arcus		5.1	25.1			4.0	3.51	3.7	15.5		6.6	4.1
Tabellaria flocculosa				4.2								

STATION:	LC1			Po1			Ra2			Be2		
DATE:	APR	AUG	OCT	APR	AUG	OCT	APR	AUG	OCT	APR	AUG	OCT
SPECIES												
Achnanthes biasolettiana												4.4
A. minutissima	5.9	24.2	21.4	27.1	68.2	25.5	48.5	77.1	58.9	47.4	58.9	58.3
A. nodosa		9.6										
Cocconeis placentula	3.4	5.1	4.2				3.5				4.9	
Cymbella cistula												17.2
C. minuta									3.9			
C. silesiaca				6.2						3.7	4.7	
Diatoma mesodon	18.8			11.7	3.4	6.7	32.1	13.2	16.2	13.2	5.4	3.2
Fragilaria capucina	56.5	24.0	47.9	5.5		6.3	4.7		7.7	9.4	5.1	3.6
Gomphonema clavatum			6.1			3.6						
G. micropus										3.2		
Hannaea arcus				46.8	23.2	51.2	4.7		5.3	4.0		7.5
Meridion circulare	6.9										5.9	
Navicula enigmatica		8.8										
Nitzschia acidoclinata										3.0		
N. flexoides		6.1	4.2									

Table 18. A comparison of community structure parameters for diatoms from monitoring stations in the Montanore Project area, 1992.*

STATION:	L10	L9	L3	L1	LC1	Po1	Ra2	Be2
APRIL								
Species Richness	19	13	20	15	18	9	15	23
PRA Predominant Taxon	46.1	51.5	73.2	67.2	56.5	46.8	48.5	47.4
Shannon Diversity	2.67	2.14	2.21	2.02	2.17	2.05	2.06	2.87
Siltation Index	0.00	0.00	0.00	1.50	0.24	0.00	0.00	3.23
AUGUST								
Species Richness	20	22	19	16	30	8	13	28
PRA Predominant Taxon	40.6	32.2	77.4	52.0	24.2	68.2	77.1	58.9
Shannon Diversity	2.73	3.27	1.57	2.49	3.50	1.36	1.30	2.58
Siltation Index	0.00	0.00	0.73	0.00	25.25	0.00	0.00	1.71
OCTOBER								
Species Richness	17	21	24	23	35	11	14	14
PRA Predominant Taxon	30.0	45.6	48.6	49.8	47.9	51.2	58.9	58.3
Shannon Diversity	2.62	2.64	2.97	2.66	2.75	2.08	2.07	2.10
Siltation Index	0.25	0.25	1.21	0.72	8.60	0.00	0.00	0.00

*PRA = percent relative abundance

highly motile, and therefore well adapted to unstable sediment substrates. The siltation index can range from 0 to 100, and should at least suggest the likelihood or not of a sedimentation problem at a site.

In April 1992, diatoms were estimated as very common or abundant relative to non–diatom algae at all Libby Creek and tributary stations except L1 and Be2, where they were common (Tables 13 and 14). During the 1991 spring sampling, which was conducted in May, diatoms were totally absent at two stations (L10 and LC1) and were rare at L9 and L3. The spring 1992 sampling found significantly greater diatom numbers probably because high flushing stream flows were avoided. During August and October, diatoms ranged from very common to very abundant relative to non–diatom algae at all stations (Tables 13 and 14).

Shannon diversity values in April were relatively high at L10 and Be2, approaching 3.0, but at the other Libby Creek and tributary stations were closer to 2.0 (Table 18). The April 1992 values at L9 and L1 were somewhat lower than those from May 1991, but were considerably higher at three tributary sites in 1992 than in 1991.

The predominant diatom species in April at all Libby Creek stations except L9, at Ramsey Creek (Ra2) and Bear Creek (Be2) was *Achnanthes minutissima,* a cosmopolitan species with broad environmental tolerances. *Achnanthes minutissima* is an epiphytic diatom that prefers well–oxygenated water and is sensitive to organic pollution and suspended

sediment. It is generally indicative of good water quality. At Libby Creek station L9, below the Montanore Project adit, the predominant diatom species in April was *Diatom mesodon*. This taxon prefers cold water low in dissolved solids, with low to moderate levels of inorganic nutrients. *Achnanthes minutissima* was present at L9 in April, but at less than 3% relative abundance. Another pollution sensitive diatom, *Hannaea arcus*, was the predominant taxon at Poorman Creek (Po1). The predominant species in April at Little Cherry Creek (LC1) was *Fragilaria capucina,* a form somewhat tolerant of degraded water quality. Little Cherry Creek is known to suffer from elevated levels of sediment resulting from poor logging practices (Farmer, 1992).

In August, Shannon diversity index at L10 was essentially unchanged from April, while at L9 it increased significantly to well above 3.0, indicating some improvement in water quality had occurred at this station. *Achnanthes minutissima* was the predominant species at both stations (and for that matter at <u>all</u> stations) in August, and there were many other similarities between the diatom floras at L10 and L9. While enrichment in the form of nitrates from the Montanore mine adit might be suspected at L9, there is in fact little evidence of this in either the diatom community structure parameters (Table 18) or in the dominant diatom (and non–diatom) algae (Tables 13 and 17). Shannon diversity values at L10 and L9 in August 1992 were very comparable to those from 1991 (Table 19).

The Shannon diversity index at L3 in August was very low, well down from April, but

Table 19. A comparison of selected community structure parameters for diatoms from stations in the Montanore Project area, 1991 and 1992.

	L10		L9		L3		L1	
	1991	1992	1991	1992	1991	1992	1991	1992
Species Richness								
spring	0	19	21	13	0	20	12	15
summer	14	20	21	22	15	19	14	16
autumn	17	17	21	21	17	24	14	23
Shannon Diversity								
spring	---	2.67	2.66	2.14	---	2.21	2.57	2.02
summer	2.93	2.73	3.22	3.27	1.30	1.57	1.41	2.49
autumn	3.39	2.62	3.03	2.64	2.03	2.97	1.36	2.66
Siltation Index								
spring	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.5
summer	0.00	0.00	0.00	0.00	0.00	0.73	0.60	0.00
autumn	0.00	0.25	0.60	0.25	0.49	1.21	0.00	0.72

	LC1		Po1		Ra2		Be2	
	1991	1992	1991	1992	1991	1992	1991	1992
Species Richness								
spring	0	18	9	9	11	15	5	23
summer	23	30	15	8	19	13	26	28
autumn	31	35	17	11	16	14	17	14
Shannon Diversity								
spring	---	2.17	1.26	2.05	1.14	2.06	1.64	2.87
summer	3.62	3.50	1.47	1.36	3.17	1.30	3.13	2.58
autumn	3.49	2.75	2.37	2.08	1.99	2.07	2.17	2.10
Siltation Index								
spring	0.00	0.24	0.00	0.00	0.00	0.00	0.00	3.23
summer	18.09	25.25	0.00	0.00	0.00	0.00	3.20	1.71
autumn	9.91	8.60	1.00	0.00	1.54	0.00	0.75	0.00

slightly higher than in the spring of 1991 (Tables 18 and 19). The diversity values at tributary sites Po1 and Ra2 were also very low in August (Table 18), probably due to naturally-low nutrient levels. Both tributaries enter Libby Creek between L9 and L3, and it appears likely that they strongly influenced conditions at L3. The same type of relationship appears to have had effected station L1 in August. Tributary streams LC1 and Be2 both enter Libby Creek several miles upstream of L1. Nutrient enrichment appears to have had a "positive impact" on diatom diversity at LC1, and to a lesser extent at Be2, and both the diatom and non-diatom algae indicate elevated nutrient levels. The relatively high siltation index at station LC1 suggests sediment was the source of the nutrient enrichment. Diatom diversity and algal taxonomy at Libby Creek station L1 also reflect this enrichment, apparently due, at least in part, to contributions from the tributaries.

In October, the predominant diatom taxa at all stations were the same as in April, with some variation in percent relative abundance (Table 17). The Shannon diversity values were nearly the same at all Libby Creek stations in October (Table 18). Station L10 was essentially unchanged over the three monitoring periods, while the other Libby Creek stations displayed considerable seasonal variation. This was probably due to the greater number of influences on water quality downstream of the headwaters. Station L3 had a much higher Shannon diversity in October than in August. The tributaries Po1 and Ra2 also had significantly higher diversity values in October, and once again may have been a major influence on the water quality (and thereby the diatom community structure) at

Libby Creek station L3. A similar tributary/main stem relationship appears to have occurred at the lower Libby Creek station L1 in October. Shannon diversity values at both L10 and L9 in the autumn of 1992 were somewhat lower than in 1991, while at L3 and L1 the opposite was the case. These differences could be due to any number of factors, and it is doubtful that they are significant. Water quality in upper Libby Creek appears to have been quite good during October of 1992 regardless of subtle differences in diatom community structure between the two years.

V. DISCUSSION/CONCLUSIONS

A. Macroinvertebrates

Aquatic biological sampling in the Montanore Project area in 1992 mostly duplicated the sampling effort of 1991 with respect to stations, frequency of sampling, and the number and type of samples collected at each station. The only difference was the collection of the spring samples in April rather than in May which achieved the goal of pre-runoff sampling in 1992.

The data gathered in 1992 further supported the conclusion that on a specific level, benthic populations for streams in the project area are highly variable and may be dramatically influenced by natural conditions. Density and diversity of benthic taxa have been gradually increasing subsequent to the minimal populations found in 1990 after intense fall 1989 and spring 1990 flooding. Some of these changes have been dramatic while others continue to be subtle population alterations. Streams in the project area can

be nearly sterile after intense hydrologic run-off events and it can require a couple of "normal" seasons to gradually accumulate enough nutrients to support the increased populations found in 1992.

Any nutritional additions to these already somewhat depleted waters can result in noticeable increases and shifts of dominance in the benthic community. Such is the case with Little Cherry Creek which continues to receive sediment runoff from logging operations, and the upper Libby Creek station L9, which was the recipient of additional nitrate loads during mine construction activities. Physical factors also influence community characteristics. For example, a relative depression of benthic abundance in the spring at L9 has been noted. The heavy canopy at that station most likely affects periphyton and thus, macroinvertebrate productivity.

Even though the benthic communities responded to these nutrient influxes by increasing and diversifying, both sites (Little Cherry Creek to a lesser degree) were still populated in 1992 by the more pollution tolerant taxa of mayflies commonly found in pristine waters. The Little Cherry Creek station is further limited by flow whereas the Libby Creek station is a substantially larger stream, capable of diluting incoming potential pollutants in a way that Little Cherry Creek is not able.

The Libby Creek tributaries, Ramsey, Poorman, Little Cherry and Bear Creeks, have an obvious influence on the lower Libby Creek stations L3 and L1 which tend to have higher

densities of benthic taxa. Poorman and Ramsey Creeks had somewhat similar benthic communities while Bear Creek seemed to be more like the Libby Creek station, L9. The

Although tracking of certain taxa is an important aspect of biological monitoring, a better understanding of a particular system, like the Libby Creek drainage, can be achieved by examining the benthos as a whole community. In general, all stations in the project area seemed to be exhibiting at least near maximum densities and diversities of benthic populations in 1992 with communities being dominated by relatively pollution sensitive taxa. The Little Cherry Creek station demonstrated the "poorest" water quality while the upper Libby Creek stations, L10 and L9, were the "cleanest". The two lower Libby Creek stations, L3 and L1 and the tributary stations, Be2, Ra2, and Po1 were relatively similar in level of water quality.

B. Periphyton

Subtle shifts in non–diatom and diatom algae and Shannon diversity values between Libby Creek stations L10 and L9 suggest at most a minor impact below the Montanore Project during 1992. The algal taxa present at both sites are predominantly pollution–sensitive forms, and if higher concentrations of nutrients were available at L9, they do not appear to have had any negative effects on the periphyton.

Libby Creek stations L3 and L1 displayed greater variation in Shannon diversity than the upstream stations L10 and L9, although the algae present were predominantly the same

pollution–sensitive taxa. Stations L3 and L1 appeared to be strongly influenced by the water quality of tributary streams entering Libby Creek and not so much by water quality of upper main stem reaches. Other factors that could effect the lower reaches of Libby Creek could not be ruled out.

Little Cherry Creek apparently had the "poorest" water quality of the four tributary streams monitored. The composition and structure of the non–diatom and diatom algae strongly suggest nutrient enrichment at LC1, apparently due to anthropogenic impacts. However, pollution–sensitive diatoms were not entirely precluded from the site, and the net effect was an increase in diversity, particularly of non–diatom algae preferring higher nutrient levels.

Poorman Creek and Ramsey Creek had much in common with one another and appeared to have very low concentrations of available nutrients that greatly limited algal diversity. Nutrients were probably slightly higher in Bear Creek as evidenced by higher Shannon diversity values. Pollution–sensitive periphytic taxa dominated at all of these stations.

While there were variations, both subtle and dramatic, in dominant benthic taxa and community structure indices during the last four monitoring years, indications are that overall water quality in Libby Creek remains very high, and that activities in the drainage during pre–mine construction and exploration have not adversely affected the stream biota.

VI. FUTURE MONITORING NEEDS

It is obvious after four years of monitoring, that benthic populations in the Montanore Project area will vary at least slightly on an annual basis and additional monitoring of the eight stations will only further substantiate this conclusion and are thus, unnecessary until the operational phase begins. However, since historical activities in the Libby Creek drainage, including nutrient enhancement via the Montanore Project, are continuing to affect that aquatic system, monitoring of the four Libby Creek stations should be continued in 1993. For purposes of this on–going monitoring, the upper Libby Creek station, L10, would serve as both control and reference station while L9 would continue to document the effects of activities immediately above it and data from L3 and L1 would provide continuing documentation of the downstream extent of impacts at L9 and of effects of the four tributaries, Ramsey, Poorman, Little Cherry and Bear Creeks to the Libby Creek system. This reduced, on–going monitoring would duplicate the methods of the last two years with one kick, four Hess and one composite periphyton sample being taken in the spring, summer and fall at each of the four Libby Creek stations.

VII. SUMMARY

A total of 69,502 macroinvertebrate specimens were collected with 96 Hess and 24 kick samples in the Montanore Project area in 1992. In addition, 24 composite periphyton samples collected 38 genera of non–diatom algae and 150 species of diatom algae. These samples revealed that benthic populations were more diverse and abundant than in previous years. A mild hydrologic year combined with timely sampling, yielded these substantial samples.

Mayflies accounted for 49.7% of the total macroinvertebrates taken with the taxa *Cinygmula* sp., a relatively pollution sensitive genera, being most abundant (16.6%). Stoneflies accounted for 24.8% of the total, caddisflies made up 12.4% and the Other category contributed the remaining 13.1%.

Each station was unique however, the Ramsey and Poorman Creek stations were fairly similar in composition, while the Bear Creek and Libby Creek station L9 were somewhat similar. The other three Libby Creek stations and the Little Cherry Creek station were more atypical. In general, density and diversity increased downstream from the upper Libby Creek station L10 to the lower station at L1 with the tributary drainages contributing nutrients to stations L3 and L1. Although the Libby Creek station L9, below the mine, showed the effects of increased nitrates, that station still presented an abundance of fairly pollution tolerant organisms suggesting a relatively minor impact to the stream system,

an impact that could be argued to be favorable.

Little Cherry Creek, due to sedimentation from historical activities as well as to other environmental factors, had the poorest water quality of the eight stations. Structure and composition of the benthic communities revealed a biological diminishment, however, pollution sensitive taxa were not entirely absent at this site and a respectable diversity index of at least 3.1 was obtained. The primary limiting factor at this station seems to be the lack of adequate flushing water in the spring and lack of substantial summer flow necessary to sustain the more sensitive taxa.

Even though variations in dominant benthic taxa and community structure have been noticeable during the last four years of monitoring, overall water quality of the streams in the project area, with the exception of Little Cherry Creek, remains high and increased nutrient loads at L9 did not adversely affect the stream biota in Libby Creek.

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X. APPENDICES A–H

Appendix A. Physical habitat assessment data.

AQUATIC BIOLOGICAL MONITORING-FIELD DATA

GENERAL INFORMATION

Project: MONTANORE	Station No.: LIBBY CRK - L1	Time: 8:15 PM
Date: 12 AUG '92	Photo #: 9+10 (WA)	

PHYSICAL DATA

Air Temperature 71°	Elevation 3000'
Water Temperature 65°	Gradient 3-5%
Stream Width-Range 18-30'	Mean 22'
Stream Depth-Range 4-20"	Mean 12"

Substrate Composition (1= most dominant, 6= least dominant)

boulder= 3	gravel/cobble= 4
cobble/boulder= 1	gravel= 5
cobble= 2	sand/silt= 6

Streambank vegetation (1= most dominant, 5= least dominant)

bare soil= 5	grass/low shrubs= 3
grass= 4	tall shrubs/trees= 1 trees= 2

Embeddedness rating 5

5 - less than 5% of substrate covered by fines
4 - between 5-25% of substrate covered by fines
3 - between 25-50% of substrate covered by fines
2 - between 50-75% of substrate covered by fines
1 - over 75% of substrate covered by fines

Water Clarity: CLEAR

OBSERVATION NOTES

LITTLE VISIBLE STRINGY GREEN ALGAE

Samples Collected: 4 HESS, 1 KICK, 1 PERIPHYTON

Western Technology & Engineering, Inc. 1991

AQUATIC BIOLOGICAL MONITORING-FIELD DATA

GENERAL INFORMATION

Project: MONTANORE	Station No.: LIBBY CRK L3	Time: 5:45 PM
Date: 12 AUG '92	Photo #: 8 (WA) & VIDEO	

PHYSICAL DATA

Air Temperature: 91°	Elevation: 3300'
Water Temperature: 62°	Gradient: 6-8 %
Stream Width-Range: 9-27'	Mean: 12'
Stream Depth-Range: 4-12"	Mean: 8"

Substrate Composition (1= most dominant, 6= least dominant)

boulder= 5	gravel/cobble= 3
cobble/boulder= 2	gravel= 4
cobble= 1	sand/silt= 6

Streambank vegetation (1= most dominant, 5= least dominant)

bare soil= 5	grass/low shrubs= 3
grass= 4	tall shrubs/trees= 2 trees= 1

Embeddedness rating 5

5 - less than 5% of substrate covered by fines
4 - between 5-25% of substrate covered by fines
3 - between 25-50% of substrate covered by fines
2 - between 50-75% of substrate covered by fines
1 - over 75% of substrate covered by fines

Water Clarity: CLEAR

OBSERVATION NOTES

CHANNEL SPLITS A COUPLE OF TIMES, LITTLE VISIBLE STRINGY ALGAE BUT LOTS OF DIATOMS

Samples Collected: 4 HESS, 1 KICK, 1 PERIPHYTON

Western Technology & Engineering, Inc. 1991

AQUATIC BIOLOGICAL MONITORING-FIELD DATA

GENERAL INFORMATION

Project: MONTANORE	Station No.: LIBBY CRK L9	Time: 11:15 AM
Date: 12 AUG '92	Photo #: 3 & 4 (WA) & VIDEO	

PHYSICAL DATA

Air Temperature 59°	Elevation 3800'
Water Temperature 49°	Gradient 4-7%
Stream Width-Range 9-15'	Mean 11'
Stream Depth-Range 3-10"	Mean 7"

Substrate Composition (1= most dominant, 6= least dominant)

boulder= 3	gravel/cobble= 2
cobble/boulder= 1	gravel= 5
cobble= 4	sand/silt= 6

Streambank vegetation (1= most dominant, 5= least dominant)

bare soil= 5	grass/low shrubs= 3
grass= 4	tall shrubs/trees= 2 trees= 1

Embeddedness rating <1%

5 - less than 5% of substrate covered by fines
4 - between 5-25% of substrate covered by fines
3 - between 25-50% of substrate covered by fines
2 - between 50-75% of substrate covered by fines
1 - over 75% of substrate covered by fines

Water Clarity: CLEAR

OBSERVATION NOTES

VERY LITTLE FIL. GREEN ALGAE BUT THE STATION IS ALL SHADED, ARE PATCHES OF DARK BROWN STRINGY ALGAE

Samples Collected: 4 HESS, 1 KICK, 1 PERIPHYTON

Western Technology & Engineering, Inc. 1991

AQUATIC BIOLOGICAL MONITORING-FIELD DATA

GENERAL INFORMATION

Project: MONTANORE	Station No.: LIBBY CRK L10	Time: 10:00 AM
Date: 12 AUG '92	Photo #: #1 (WA) & VIDEO	

PHYSICAL DATA

Air Temperature: 54°	Elevation: 4100'
Water Temperature: 51°	Gradient: 7%
Stream Width-Range: 6-20'	Mean: 10'
Stream Depth-Range: 4-14"	Mean: 10"

Substrate Composition (1= most dominant, 6= least dominant)

boulder= 3	gravel/cobble= 4
cobble/boulder= 1	gravel= 5
cobble= 2	sand/silt= 6

Streambank vegetation (1= most dominant, 5= least dominant)

bare soil= 5	grass/low shrubs= 3
grass= 4	tall shrubs/trees= 2 trees= 1

Embeddedness rating <1%

5 - less than 5% of substrate covered by fines
4 - between 5-25% of substrate covered by fines
3 - between 25-50% of substrate covered by fines
2 - between 50-75% of substrate covered by fines
1 - over 75% of substrate covered by fines

Water Clarity: CLEAR

OBSERVATION NOTES

LOTS (!!) OF FILAMENTOUS, STRINGY BRIGHT GREEN ALGAE - I'VE NEVER SEEN IT LIKE THIS, EVEN AT L9!

Samples Collected: 4 HESS, 1 KICK, 1 PERIPHYTON

Western Technology & Engineering, Inc. 1991

AQUATIC BIOLOGICAL MONITORING-FIELD DATA

GENERAL INFORMATION

Project: MONTANORE	Station No. LC1 LITTLE CHERRY CRK	Time: 3:00 PM
Date: 12 AUG '92	Photo #: #7 (WA) & VIDEO	

PHYSICAL DATA

Air Temperature 86°	Elevation 3400'
Water Temperature 63°	Gradient 4-7%
Stream Width-Range 1-7'	Mean 2'
Stream Depth-Range 1-18"	Mean 6"

Substrate Composition (1= most dominant, 6= least dominant)

boulder= 6	gravel/cobble= 2
cobble/boulder= 3	gravel= 4
cobble= 1	sand/silt= 5

Streambank vegetation (1= most dominant, 5= least dominant)

bare soil= 5	grass/low shrubs= 3
grass= 4	tall shrubs/trees= 2 trees= 1

Embeddedness rating 4

25%

5 - less than 5% of substrate covered by fines
4 - between 5-25% of substrate covered by fines
3 - between 25-50% of substrate covered by fines
2 - between 50-75% of substrate covered by fines
1 - over 75% of substrate covered by fines

Water Clarity: CLEAR

OBSERVATION NOTES

FISH IN THE POOL BELOW THE CULVERT - SAME 6-7", & IN A SMALL POOL DOWNSTREAM - FLOW DOWN TO A TRICKLE - LOTS OF PERIPHYTON → MOSSES, FIL. ALGAE, DIATOMS

Samples Collected:

Western Technology & Engineering, Inc. 1991

AQUATIC BIOLOGICAL MONITORING-FIELD DATA

GENERAL INFORMATION

Project: MONTANORE	Station No.: POORMAN CRK P01	Time: 2:00 PM
Date: 12 AUG '92	Photo #: #6 (WA) & VIDEO	

PHYSICAL DATA

Air Temperature 84°	Elevation 3500'
Water Temperature 56°	Gradient 7 %
Stream Width-Range 6-20'	Mean 9'
Stream Depth-Range 3-18"	Mean 8"

Substrate Composition (1= most dominant, 6= least dominant)

boulder= 4	gravel/cobble= 3
cobble/boulder= 2	gravel= ~~2~~ 5
cobble= 1	sand/silt= 6

Streambank vegetation (1= most dominant, 5= least dominant)

bare soil= 5	grass/low shrubs= 3
grass= 4	tall shrubs/trees= 2 trees= 1

Embeddedness rating 5

5 - less than 5% of substrate covered by fines
4 - between 5-25% of substrate covered by fines
3 - between 25-50% of substrate covered by fines
2 - between 50-75% of substrate covered by fines
1 - over 75% of substrate covered by fines

Water Clarity: CLEAR

OBSERVATION NOTES

SOME GREEN STRINGY & BROWN GELATINOUS ALGAE - ABOUT LIKE R92 -- NOT NEARLY THE FILAMENTOUS GREEN STUFF THAT WAS AT L10

Samples Collected: 4 HESS, 1 KICK, 1 PERIPHYTON

Western Technology & Engineering, Inc. 1991

AQUATIC BIOLOGICAL MONITORING-FIELD DATA

GENERAL INFORMATION

Project	Station No.	Time
MONTANORE	RAMSEY CRK RA2	12:30 PM
Date: 12 AUG '92	Photo #: #5 (WA) & VIDEO	

PHYSICAL DATA

Air Temperature 75°	Elevation 3700'
Water Temperature 55°	Gradient 3-4 %
Stream Width-Range 3-30'	Mean 12'
Stream Depth-Range 1-20"	Mean 8"
Substrate Composition (1= most dominant, 6= least dominant)	
boulder= 3	gravel/cobble= 4
cobble/boulder= 2	gravel= 5
cobble= 1	sand/silt= 6
Streambank vegetation (1= most dominant, 5= least dominant)	
bare soil= 5	grass/low shrubs= 3
grass= 4	tall shrubs/trees= 2 trees= 1

Embeddedness rating <1 %

5 - less than 5% of substrate covered by fines
4 - between 5-25% of substrate covered by fines
3 - between 25-50% of substrate covered by fines
2 - between 50-75% of substrate covered by fines
1 - over 75% of substrate covered by fines

Water Clarity: CLEAR

OBSERVATION NOTES

HARDLY ANY VISIBLE STRINGY ALGAE

Samples Collected: 4 HESS, 1 KICK, 1 PERIPHYTON

Western Technology & Engineering, Inc. 1991

AQUATIC BIOLOGICAL MONITORING-FIELD DATA

GENERAL INFORMATION

Project: MONTANORE	Station No.: Be 2 - Bear Crk	Time: 6:45 PM
Date: 11 AUG '92	Photo #: 1 (WA)	

PHYSICAL DATA

Air Temperature 78°	Elevation 3500'
Water Temperature 56°	Gradient 2-4%
Stream Width-Range 6-20'	Mean 8'
Stream Depth-Range 4-30"	Mean 10"

Substrate Composition (1= most dominant, 6= least dominant)

boulder= 5	gravel/cobble= 2
cobble/boulder= 3	gravel= 4
cobble= 1	sand/silt= 6

Streambank vegetation (1= most dominant, 5= least dominant)

bare soil= 5	grass/low shrubs= 3
grass= 4	tall shrubs/trees= 2 trees= 1

Embeddedness rating 4%

5 - less than 5% of substrate covered by fines
4 - between 5-25% of substrate covered by fines
3 - between 25-50% of substrate covered by fines
2 - between 50-75% of substrate covered by fines
1 - over 75% of substrate covered by fines

Water Clarity: CLEAR

OBSERVATION NOTES

STREAMS AT FALL LEVELS

Samples Collected: 4 HESS, 1 KICK, 1 PERIPHYTON

Western Technology & Engineering, Inc. 1991

Appendix B. Macroinvertebrate station totals, spring 1992.

Macroinvertebrate Data--Montanore, April 1992
Libby Creek, L1 (4 Hess samples), #1

	No.	Percent Total	Total Number	Percent Total	TV	TQ	FFG
Ephemeroptera			900	37.27			
Baetis sp.	87	3.6			5	72	cg
Diphetor sp.	0	0.0			4	72	cg
Caudatella hystrix	0	0.0			1	48	cg
Drunella coloradensis/ flavilinea	3	0.1			0	18	sc
Drunella doddsi	244	10.1			0	4	sc
Drunella grandis	0	0.0			0	24	sc
Drunella spinifera	2	0.1			0	24	pr
Drunella sp.	0	0.0			1	48	sc
Serratella sp.	4	0.2			2	48	cg
Cinygma sp.	0	0.0			2	48	sc
Cinygmula sp.	453	18.8			4	21	sc
Epeorus sp.	48	2.0			0	21	sc
Heptagenia sp.	0	0.0			4	48	sc
Ironodes sp.	0	0.0			3	48	sc
Leucrocuta sp.	0	0.0			1	48	sc
Nixe sp.	0	0.0			2	48	sc
Rhithrogena sp.	59	2.4			4	21	cg
Paraleptophlebia sp.	0	0.0			4	24	cg
Ameletus sp.	0	0.0			0	48	cg
Plecoptera			811	33.58			
Capniidae	0	0.0			1	32	sh
Kathroperla perdita	0	0.0			1	24	cg
Sweltsa/Suwallia sp.	58	2.4			1	24	pr
Despaxia augusta	0	0.0			0	18	sh
Paraleuctra sp.	0	0.0			0	18	sh
Perlomyia sp.	0	0.0			0	18	sh
Leuctridae	0	0.0			0	18	sh
Nemoura sp.	0	0.0			2	24	sh
Visoka cataractae	0	0.0			2	36	sh
Zapada cinctipes	0	0.0			2	16	sh
Zapada columbiana	0	0.0			2	16	sh
Nemouridae	169	7.0			2	36	sh
Yoraperla brevis	0	0.0			1	12	sh
Acroneuria abnormis	0	0.0			0	6	pr
Doroneuria theodora	0	0.0			1	18	pr
Hesperoperla pacifica	0	0.0			2	18	pr
Perlidae	0	0.0			1	24	pr
Isoperla sp.	0	0.0			2	24	pr
Kogotus modestus	0	0.0			2	18	pr
Megarcys sp.	67	2.8			2	24	pr
Setvena bradleyi	0	0.0			2	48	pr
Skwala sp.	0	0.0			2	18	pr
Perlodidae	41	1.7			2	48	pr
Doddsia occidentalis	0	0.0			2	24	sc
Taenionema sp.	476	19.7			2	48	sc
Trichoptera			318	13.17			
Micrasema sp.	0	0.0			1	24	sh
Anagapetus sp.	0	0.0			0	24	sc
Glossosoma sp.	0	0.0			0	24	sc
Arctopsyche grandis	0	0.0			4	18	cf
Hydropsyche sp.	0	0.0			8	108	cg
Parapsyche elsis	14	0.6			4	6	cf
Hydropsychidae	29	1.2			4	108	cf
Agraylea sp.	0	0.0			8	108	cg
Hydroptila sp.	0	0.0			6	108	cg
Ochrotrichia sp.	0	0.0			4	108	cg
Lepidostoma sp.	0	0.0			1	18	sh
Apatania sp.	0	0.0			4	18	sc
Chyrandra centralis	0	0.0			1	18	sh
Ecclisomyia sp.	0	0.0			2	24	cm
Neothremma alicia	0	0.0			4	8	sc
Oligophlebodes sp.	261	10.8			4	24	sc
Limnephilidae	0	0.0			4	108	un

L1-H, #1 (cont.)

Dolophilodes sp.	0	0.0			2	24	cf
Wormaldia sp.	0	0.0			3	24	cf
Polycentropus sp.	0	0.0			6	72	pr
Rhyacophila Angelita grp.	0	0.0			0	18	pr
Rhyacophila Betteni grp.	0	0.0			0	18	pr
Rhyacophila Bif./Color. grp.	0	0.0			0	18	pr
Rhyacophila Brunnea grp.	0	0.0			0	18	pr
Rhyacophila hyalinata	8	0.3			0	18	pr
Rhyacophila iranda	0	0.0			0	18	pr
Rhyacophila Sibirica grp.	0	0.0			0	18	pr
Rhyacophila tucula	0	0.0			0	18	pr
Rhyacophila vaccua	0	0.0			0	18	pr
Rhyacophila verrula	0	0.0			0	18	pr
Rhyacophila vepulsa	0	0.0			0	18	pr
Rhyacophila sp.	6	0.2			0	18	pr
Trichopteran pupae	0	0.0			nn	nn	un
Other			386	15.98			
Annelida(Oligochaeta)	0	0.0			5	108	cg
Coleoptera(Elmidae)					4	108	cg
Cleptelmis sp.	0	0.0			4	108	cg
Heterlimnius sp.	0	0.0			4	108	cg
Lara sp.	0	0.0			4	108	sh
Narpus sp.	0	0.0			4	108	cg
Zaitzevia sp.	0	0.0			4	108	cg
Elmidae	0	0.0			4	108	cg
Diptera							
Agathon sp.	0	0.0			0	2	sc
Ceratopogonidae	3	0.1			6	108	pr
Chironomidae	137	5.7			6	108	un
Chelifera sp.	0	0.0			6	95	pr
Oreogeton sp.	2	0.1			6	95	pr
Psychodidae	0	0.0			10	36	cg
Simuliidae	174	7.2			6	108	cg
Antocha sp.	0	0.0			3	24	cg
Dicranota sp.	4	0.2			3	24	pr
Hexatoma sp.	1	0.0			2	36	pr
Pedicia sp.	0	0.0			3	36	pr
Tipula sp.	1	0.0			4	36	om
Hydracarina	5	0.2			5	108	pr
Mollusca	2	0.1			8	108	cg
Nematoda	44	1.8			5	108	om
Turbellaria	13	0.5			4	108	cg

TOTAL NUMBER =	2415
TOTAL TAXA =	29
STD =	77.8
MEAN =	604
SDI =	3.58
% SE Mean =	6
% Coef. Var.=	13
B/E =	0.10
EPT Abund =	2029
EPT/Chiron =	14.81
EPT % =	84.02
EPT taxa =	18
c/f tot =	43
c/f % =	1.78
c/g tot =	339
c/g % =	14.04
sh tot =	169
sh % =	7.00
sc tot =	1485
sc % =	61.49
p tot =	197
p% =	8.16
om tot =	45
om % =	1.86
unk tot =	137
unk% =	5.67
sc/cf =	34.53
sc/(sc+cf) =	0.972
sh/total =	0.070

Macroinvertebrate Data--Montanore, April 1992
Libby Creek, L1 (1 kick sample), #2

	No.	Percent Total	Total Number	Percent Total	TV	TQ	FFG
Ephemeroptera			1214	64.89			
Baetis sp.	136	7.3			5	72	cg
Diphetor sp.	0	0.0			4	72	cg
Caudatella hystrix	0	0.0			1	48	cg
Drunella coloradensis/ flavilinea	1	0.1			0	18	sc
Drunella doddsi	24	1.3			0	4	sc
Drunella grandis	0	0.0			0	24	sc
Drunella spinifera	2	0.1			0	24	pr
Drunella sp.	80	4.3			1	48	sc
Serratella sp.	72	3.8			2	48	cg
Cinygma sp.	0	0.0			2	48	sc
Cinygmula sp.	760	40.6			4	21	sc
Epeorus sp.	104	5.6			0	21	sc
Heptagenia sp.	0	0.0			4	48	sc
Ironodes sp.	0	0.0			3	48	sc
Leucrocuta sp.	0	0.0			1	48	sc
Nixe sp.	0	0.0			2	48	sc
Rhithrogena sp.	20	1.1			4	21	cg
Paraleptophlebia sp.	12	0.6			4	24	cg
Ameletus sp.	3	0.2			0	48	cg
Plecoptera			425	22.72			
Capniidae	4	0.2			1	32	sh
Kathroperla perdita	0	0.0			1	24	cg
Sweltsa/Suwallia sp.	69	3.7			1	24	pr
Despaxia augusta	15	0.8			0	18	sh
Paraleuctra sp.	0	0.0			0	18	sh
Perlomyia sp.	0	0.0			0	18	sh
Leuctridae	0	0.0			0	18	sh
Nemoura sp.	12	0.6			2	24	sh
Visoka cataractae	8	0.4			2	36	sh
Zapada cinctipes	0	0.0			2	16	sh
Zapada columbiana	1	0.1			2	16	sh
Nemouridae	246	13.1			2	36	sh
Yoraperla brevis	0	0.0			1	12	sh
Acroneuria abnormis	0	0.0			0	6	pr
Doroneuria theodora	0	0.0			1	18	pr
Hesperoperla pacifica	0	0.0			2	18	pr
Perlidae	1	0.1			1	24	pr
Isoperla sp.	14	0.7			2	24	pr
Kogotus modestus	0	0.0			2	18	pr
Megarcys sp.	0	0.0			2	24	pr
Setvena bradleyi	0	0.0			2	48	pr
Skwala sp.	0	0.0			2	18	pr
Perlodidae	0	0.0			2	48	pr
Doddsia occidentalis	55	2.9			2	24	sc
Taenionema sp.	0	0.0			2	48	sc
Trichoptera			86	4.60			
Micrasema sp.	1	0.1			1	24	sh
Anagapetus sp.	0	0.0			0	24	sc
Glossosoma sp.	0	0.0			0	24	sc
Arctopsyche grandis	0	0.0			4	18	cf
Hydropsyche sp.	0	0.0			8	108	cg
Parapsyche elsis	14	0.7			4	6	cf
Hydropsychidae	0	0.0			4	108	cf
Agraylea sp.	0	0.0			8	108	cg
Hydroptila sp.	0	0.0			6	108	cg
Ochrotrichia sp.	0	0.0			4	108	cg
Lepidostoma sp.	0	0.0			1	18	sh
Apatania sp.	0	0.0			4	18	sc
Chyrandra centralis	0	0.0			1	18	sh
Ecclisomyia sp.	0	0.0			2	24	om
Neothremma alicia	0	0.0			4	8	sc
Oligophlebodes sp.	19	1.0			4	24	sc
Limnephilidae	39	2.1			4	108	un

L1-k, #2 (cont.)

Dolophilodes sp.	0	0.0			2	24	cf
Wormaldia sp.	0	0.0			3	24	cf
Polycentropus sp.	0	0.0			6	72	pr
Rhyacophila Angelita grp.	0	0.0			0	18	pr
Rhyacophila Betteni grp.	1	0.1			0	18	pr
Rhyacophila Bif./Color. grp.	0	0.0			0	18	pr
Rhyacophila Brunnea grp.	8	0.4			0	18	pr
Rhyacophila hyalinata	0	0.0			0	18	pr
Rhyacophila iranda	0	0.0			0	18	pr
Rhyacophila Sibirica grp.	0	0.0			0	18	pr
Rhyacophila tucula	0	0.0			0	18	pr
Rhyacophila vaccua	0	0.0			0	18	pr
Rhyacophila verrula	0	0.0			0	18	pr
Rhyacophila vepulsa	0	0.0			0	18	pr
Rhyacophila sp.	4	0.2			0	18	pr
Trichopteran pupae	0	0.0			nn	nn	un
Other			146	7.80			
Annelida(Oligochaeta)	10	0.5			5	108	cg
Coleoptera(Elmidae)					4	108	cg
Cleptelmis sp.	0	0.0			4	108	cg
Heterlimnius sp.	2	0.1			4	108	cg
Lara sp.	0	0.0			4	108	sh
Narpus sp.	0	0.0			4	108	cg
Zaitzevia sp.	0	0.0			4	108	cg
Elmidae	0	0.0			4	108	cg
Diptera							
Agathon sp.	0	0.0			0	2	sc
Ceratopogonidae	2	0.1			6	108	pr
Chironomidae	114	6.1			6	108	un
Chelifera sp.	0	0.0			6	95	pr
Oreogeton sp.	10	0.5			6	95	pr
Psychodidae	0	0.0			10	36	cg
Simuliidae	6	0.3			6	108	cg
Antocha sp.	0	0.0			3	24	cg
Dicranota sp.	1	0.1			3	24	pr
Hexatoma sp.	0	0.0			2	36	pr
Pedicia sp.	0	0.0			3	36	pr
Tipula sp.	0	0.0			4	36	cm
Hydracarina	0	0.0			5	108	pr
Mollusca	0	0.0			8	108	cg
Nematoda	0	0.0			5	108	cm
Turbellaria	1	0.1			4	108	cg

TOTAL NUMBER =	1871
TOTAL TAXA =	36
STD =	81.8
MEAN =	1871
SDI =	3.25
% SE Mean =	4
% Coef. Var.=	4
B/E =	0.11
EPT Abund =	1725
EPT/Chiron =	15.13
EPT % =	92.20
EPT taxa =	28
c/f tot =	14
c/f % =	0.75
c/g tot =	262
c/g % =	14.00
sh tot =	287
sh % =	15.34
sc tot =	1043
sc % =	55.75
p tot =	112
p% =	5.99
cm tot =	0
cm % =	0.00
unk tot =	153
unk% =	8.18
sc/cf =	74.50
sc/(sc+cf) =	0.987
sh/total =	0.153

Macroinvertebrate Data--Montanore, April 1992
Libby Creek, L3 (4 Hess samples), #3

	No.	Percent Total	Total Number	Percent Total	TV	TQ	FFG
Ephemeroptera			683	58.03			
Baetis sp.	66	5.6			5	72	cg
Diphetor sp.	0	0.0			4	72	cg
Caudatella hystrix	0	0.0			1	48	cg
Drunella coloradensis/ flavilinea	0	0.0			0	18	sc
Drunella doddsi	71	6.0			0	4	sc
Drunella grandis	0	0.0			0	24	sc
Drunella spinifera	0	0.0			0	24	pr
Drunella sp.	49	4.2			1	48	sc
Serratella sp.	24	2.0			2	48	cg
Cinygma sp.	0	0.0			2	48	sc
Cinygmula sp.	285	24.2			4	21	sc
Epeorus sp.	152	12.9			0	21	sc
Heptagenia sp.	0	0.0			4	48	sc
Ironodes sp.	0	0.0			3	48	sc
Leucrocuta sp.	0	0.0			1	48	sc
Nixe sp.	0	0.0			2	48	sc
Rhithrogena sp.	32	2.7			4	21	cg
Paraleptophlebia sp.	2	0.2			4	24	cg
Ameletus sp.	2	0.2			0	48	cg
Plecoptera			241	20.48			
Capniidae	2	0.2			1	32	sh
Kathroperla perdita	0	0.0			1	24	cg
Sweltsa/Suwallia sp.	15	1.3			1	24	pr
Despaxia augusta	0	0.0			0	18	sh
Paraleuctra sp.	0	0.0			0	18	sh
Perlomyia sp.	0	0.0			0	18	sh
Leuctridae	0	0.0			0	18	sh
Nemoura sp.	27	2.3			2	24	sh
Visoka cataractae	0	0.0			2	36	sh
Zapada cinctipes	0	0.0			2	16	sh
Zapada columbiana	0	0.0			2	16	sh
Nemouridae	77	6.5			2	36	sh
Yoraperla brevis	0	0.0			1	12	sh
Acroneuria abnormis	0	0.0			0	6	pr
Doroneuria theodora	2	0.2			1	18	pr
Hesperoperla pacifica	0	0.0			2	18	pr
Perlidae	6	0.5			1	24	pr
Isoperla sp.	2	0.2			2	24	pr
Kogotus modestus	0	0.0			2	18	pr
Megarcys sp.	2	0.2			2	24	pr
Setvena bradleyi	0	0.0			2	48	pr
Skwala sp.	0	0.0			2	18	pr
Perlodidae	0	0.0			2	48	pr
Doddsia occidentalis	108	9.2			2	24	sc
Taenionema sp.	0	0.0			2	48	sc
Trichoptera			87	7.39			
Micrasema sp.	1	0.1			1	24	sh
Anagapetus sp.	0	0.0			0	24	sc
Glossosoma sp.	2	0.2			0	24	sc
Arctopsyche grandis	0	0.0			4	18	cf
Hydropsyche sp.	0	0.0			8	108	cg
Parapsyche elsis	16	1.4			4	6	cf
Hydropsychidae	0	0.0			4	108	cf
Agraylea sp.	1	0.1			8	108	cg
Hydroptila sp.	0	0.0			6	108	cg
Ochrotrichia sp.	0	0.0			4	108	cg
Lepidostoma sp.	5	0.4			1	18	sh
Apatania sp.	0	0.0			4	18	sc
Chyrandra centralis	0	0.0			1	18	sh
Ecclisomyia sp.	0	0.0			2	24	cm
Neothremma alicia	0	0.0			4	8	sc
Oligophlebodes sp.	13	1.1			4	24	sc
Limnephilidae	28	2.4			4	108	un

L3-H, #3 (cont.)

Dolophilodes sp.	0	0.0			2	24	cf
Wormaldia sp.	0	0.0			3	24	cf
Polycentropus sp.	0	0.0			6	72	pr
Rhyacophila Angelita grp.	1	0.1			0	18	pr
Rhyacophila Betteni grp.	1	0.1			0	18	pr
Rhyacophila Bif./Color. grp.	0	0.0			0	18	pr
Rhyacophila Brunnea grp.	7	0.6			0	18	pr
Rhyacophila hyalinata	0	0.0			0	18	pr
Rhyacophila iranda	0	0.0			0	18	pr
Rhyacophila Sibirica grp.	0	0.0			0	18	pr
Rhyacophila tucula	0	0.0			0	18	pr
Rhyacophila vaccua	0	0.0			0	18	pr
Rhyacophila verrula	0	0.0			0	18	pr
Rhyacophila vepulsa	10	0.8			0	18	pr
Rhyacophila sp.	2	0.2			0	18	pr
Trichopteran pupae	0	0.0			nn	nn	un
Other			166	14.10			
Annelida(Oligochaeta)	2	0.2			5	108	cg
Coleoptera(Elmidae)					4	108	cg
Cleptelmis sp.	0	0.0			4	108	cg
Heterlimnius sp.	2	0.2			4	108	cg
Lara sp.	0	0.0			4	108	sh
Narpus sp.	0	0.0			4	108	cg
Zaitzevia sp.	0	0.0			4	108	cg
Elmidae	0	0.0			4	108	cg
Diptera							
Agathon sp.	1	0.1			0	2	sc
Ceratopogonidae	0	0.0			6	108	pr
Chironomidae	126	10.7			6	108	un
Chelifera sp.	0	0.0			6	95	pr
Oreogeton sp.	7	0.6			6	95	pr
Psychodidae	0	0.0			10	36	cg
Simuliidae	2	0.2			6	108	cg
Antocha sp.	0	0.0			3	24	cg
Dicranota sp.	21	1.8			3	24	pr
Hexatoma sp.	4	0.3			2	36	pr
Pedicia sp.	0	0.0			3	36	pr
Tipula sp.	1	0.1			4	36	cm
Hydracarina	0	0.0			5	108	pr
Mollusca	0	0.0			8	108	cg
Nematoda	0	0.0			5	108	cm
Turbellaria	0	0.0			4	108	cg

TOTAL NUMBER =	1177
TOTAL TAXA =	39
STD =	37.5
MEAN =	294
SDI =	3.78
% SE Mean =	6
% Coef. Var.=	13
B/E =	0.10
EPT Abund =	1011
EPT/Chiron =	8.02
EPT % =	85.90
EPT taxa =	30
c/f tot =	16
c/f % =	1.36
c/g tot =	133
c/g % =	11.30
sh tot =	112
sh % =	9.52
sc tot =	681
sc % =	57.86
p tot =	80
p% =	6.80
cm tot =	1
cm % =	0.08
unk tot =	154
unk% =	13.08
sc/cf =	42.56
sc/(sc+cf) =	0.977
sh/total =	0.095

Macroinvertebrate Data--Montanore, April 1992
Libby Creek, L3 (1 kick sample), #4

	No.	Percent Total	Total Number	Percent Total	TV	TQ	FFG
Ephemeroptera			1216	53.76			
Baetis sp.	258	11.4			5	72	cg
Diphetor sp.	0	0.0			4	72	cg
Caudatella hystrix	0	0.0			1	48	cg
Drunella coloradensis/ flavilinea	0	0.0			0	18	sc
Drunella doddsi	54	2.4			0	4	sc
Drunella grandis	0	0.0			0	24	sc
Drunella spinifera	4	0.2			0	24	pr
Drunella sp.	30	1.3			1	48	sc
Serratella sp.	28	1.2			2	48	cg
Cinygma sp.	0	0.0			2	48	sc
Cinygmula sp.	342	15.1			4	21	sc
Epeorus sp.	462	20.4			0	21	sc
Heptagenia sp.	0	0.0			4	48	sc
Ironodes sp.	0	0.0			3	48	sc
Leucrocuta sp.	0	0.0			1	48	sc
Nixe sp.	0	0.0			2	48	sc
Rhithrogena sp.	28	1.2			4	21	cg
Paraleptophlebia sp.	5	0.2			4	24	cg
Ameletus sp.	5	0.2			0	48	cg
Plecoptera			815	36.03			
Capniidae	9	0.4			1	32	sh
Kathroperla perdita	0	0.0			1	24	cg
Sweltsa/Suwallia sp.	68	3.0			1	24	pr
Despaxia augusta	15	0.7			0	18	sh
Paraleuctra sp.	0	0.0			0	18	sh
Perlomyia sp.	0	0.0			0	18	sh
Leuctridae	0	0.0			0	18	sh
Nemoura sp.	160	7.1			2	24	sh
Visoka cataractae	8	0.4			2	36	sh
Zapada cinctipes	0	0.0			2	16	sh
Zapada columbiana	10	0.4			2	16	sh
Nemouridae	340	15.0			2	36	sh
Yoraperla brevis	0	0.0			1	12	sh
Acroneuria abnormis	0	0.0			0	6	pr
Doroneuria theodora	0	0.0			1	18	pr
Hesperoperla pacifica	0	0.0			2	18	pr
Perlidae	6	0.3			1	24	pr
Isoperla sp.	14	0.6			2	24	pr
Kogotus modestus	0	0.0			2	18	pr
Megarcys sp.	3	0.1			2	24	pr
Setvena bradleyi	0	0.0			2	48	pr
Skwala sp.	0	0.0			2	18	pr
Perlodidae	0	0.0			2	48	pr
Doddsia occidentalis	182	8.0			2	24	sc
Taenionema sp.	0	0.0			2	48	sc
Trichoptera			51	2.25			
Micrasema sp.	2	0.1			1	24	sh
Anagapetus sp.	0	0.0			0	24	sc
Glossosoma sp.	0	0.0			0	24	sc
Arctopsyche grandis	0	0.0			4	18	cf
Hydropsyche sp.	0	0.0			8	108	cg
Parapsyche elsis	0	0.0			4	6	cf
Hydropsychidae	0	0.0			4	108	cf
Agraylea sp.	0	0.0			8	108	cg
Hydroptila sp.	0	0.0			6	108	cg
Ochrotrichia sp.	3	0.1			4	108	cg
Lepidostoma sp.	0	0.0			1	18	sh
Apatania sp.	0	0.0			4	18	sc
Chyrandra centralis	0	0.0			1	18	sh
Ecclisomyia sp.	0	0.0			2	24	om
Neothremma alicia	0	0.0			4	8	sc
Oligophlebodes sp.	0	0.0			4	24	sc
Limnephilidae	35	1.5			4	108	un

L3-k, #4 (cont.)

Dolophilodes sp.	0	0.0			2	24	cf
Wormaldia sp.	0	0.0			3	24	cf
Polycentropus sp.	0	0.0			6	72	pr
Rhyacophila Angelita grp.	0	0.0			0	18	pr
Rhyacophila Betteni grp.	0	0.0			0	18	pr
Rhyacophila Bif./Color. grp.	0	0.0			0	18	pr
Rhyacophila Brunnea grp.	9	0.4			0	18	pr
Rhyacophila hyalinata	0	0.0			0	18	pr
Rhyacophila iranda	0	0.0			0	18	pr
Rhyacophila Sibirica grp.	0	0.0			0	18	pr
Rhyacophila tucula	0	0.0			0	18	pr
Rhyacophila vaccua	0	0.0			0	18	pr
Rhyacophila verrula	0	0.0			0	18	pr
Rhyacophila vepulsa	2	0.1			0	18	pr
Rhyacophila sp.	0	0.0			0	18	pr
Trichopteran pupae	0	0.0			nn	nn	un
Other			180	7.96			
Annelida(Oligochaeta)	0	0.0			5	108	cg
Coleoptera(Elmidae)					4	108	cg
Cleptelmis sp.	0	0.0			4	108	cg
Heterlimnius sp.	0	0.0			4	108	cg
Lara sp.	0	0.0			4	108	sh
Narpus sp.	0	0.0			4	108	cg
Zaitzevia sp.	0	0.0			4	108	cg
Elmidae	0	0.0			4	108	cg
Diptera							
Agathon sp.	0	0.0			0	2	sc
Ceratopogonidae	0	0.0			6	108	pr
Chironomidae	152	6.7			6	108	un
Chelifera sp.	0	0.0			6	95	pr
Oreogeton sp.	5	0.2			6	95	pr
Psychodidae	0	0.0			10	36	cg
Simuliidae	15	0.7			6	108	cg
Antocha sp.	0	0.0			3	24	cg
Dicranota sp.	8	0.4			3	24	pr
Hexatoma sp.	0	0.0			2	36	pr
Pedicia sp.	0	0.0			3	36	pr
Tipula sp.	0	0.0			4	36	om
Hydracarina	0	0.0			5	108	pr
Mollusca	0	0.0			8	108	cg
Nematoda	0	0.0			5	108	om
Turbellaria	0	0.0			4	108	cg

TOTAL NUMBER =	2262
TOTAL TAXA =	30
STD =	74.5
MEAN =	2262
SDI =	3.52
% SE Mean =	3
% Coef. Var.=	3
B/E =	0.21
EPT Abund =	2082
EPT/Chiron =	13.70
EPT % =	92.04
EPT taxa =	26
c/f tot =	0
c/f % =	0.00
c/g tot =	342
c/g % =	15.12
sh tot =	544
sh % =	24.05
sc tot =	1070
sc % =	47.30
p tot =	119
p% =	5.26
om tot =	0
om % =	0.00
unk tot =	187
unk% =	8.27
sc/cf =	---
sc/(sc+cf) =	---
sh/total =	0.240

Macroinvertebrate Data--Montanore, April 1992
Libby Creek, L9 (4 Hess samples), #5

	No.	Percent Total	Total Number	Percent Total	TV	TQ	FFG
Ephemeroptera			338	39.21			
Baetis sp.	5	0.6			5	72	cg
Diphetor sp.	0	0.0			4	72	cg
Caudatella hystrix	0	0.0			1	48	cg
Drunella coloradensis/ flavilinea	0	0.0			0	18	sc
Drunella doddsi	11	1.3			0	4	sc
Drunella grandis	0	0.0			0	24	sc
Drunella spinifera	0	0.0			0	24	pr
Drunella sp.	24	2.8			1	48	sc
Serratella sp.	0	0.0			2	48	cg
Cinygma sp.	0	0.0			2	48	sc
Cinygmula sp.	244	28.3			4	21	sc
Epeorus sp.	28	3.2			0	21	sc
Heptagenia sp.	0	0.0			4	48	sc
Ironodes sp.	0	0.0			3	48	sc
Leucrocuta sp.	0	0.0			1	48	sc
Nixe sp.	0	0.0			2	48	sc
Rhithrogena sp.	24	2.8			4	21	cg
Paraleptophlebia sp.	0	0.0			4	24	cg
Ameletus sp.	2	0.2			0	48	cg
Plecoptera			207	24.01			
Capniidae	0	0.0			1	32	sh
Kathroperla perdita	0	0.0			1	24	cg
Sweltsa/Suwallia sp.	133	15.4			1	24	pr
Despaxia augusta	0	0.0			0	18	sh
Paraleuctra sp.	1	0.1			0	18	sh
Perlomyia sp.	0	0.0			0	18	sh
Leuctridae	1	0.1			0	18	sh
Nemoura sp.	6	0.7			2	24	sh
Visoka cataractae	11	1.3			2	36	sh
Zapada cinctipes	0	0.0			2	16	sh
Zapada columbiana	0	0.0			2	16	sh
Nemouridae	23	2.7			2	36	sh
Yoraperla brevis	0	0.0			1	12	sh
Acroneuria abnormis	0	0.0			0	6	pr
Doroneuria theodora	0	0.0			1	18	pr
Hesperoperla pacifica	0	0.0			2	18	pr
Perlidae	1	0.1			1	24	pr
Isoperla sp.	0	0.0			2	24	pr
Kogotus modestus	0	0.0			2	18	pr
Megarcys sp.	4	0.5			2	24	pr
Setvena bradleyi	1	0.1			2	48	pr
Skwala sp.	0	0.0			2	18	pr
Perlodidae	0	0.0			2	48	pr
Doddsia occidentalis	26	3.0			2	24	sc
Taenionema sp.	0	0.0			2	48	sc
Trichoptera			83	9.63			
Micrasema sp.	0	0.0			1	24	sh
Anagapetus sp.	12	1.4			0	24	sc
Glossosoma sp.	19	2.2			0	24	sc
Arctopsyche grandis	0	0.0			4	18	cf
Hydropsyche sp.	0	0.0			8	108	cg
Parapsyche elsis	2	0.2			4	6	cf
Hydropsychidae	13	1.5			4	108	cf
Agraylea sp.	0	0.0			8	108	cg
Hydroptila sp.	0	0.0			6	108	cg
Ochrotrichia sp.	0	0.0			4	108	cg
Lepidostoma sp.	1	0.1			1	18	sh
Apatania sp.	0	0.0			4	18	sc
Chyrandra centralis	0	0.0			1	18	sh
Ecclisomyia sp.	0	0.0			2	24	om
Neothremma alicia	0	0.0			4	8	sc
Oligophlebodes sp.	10	1.2			4	24	sc
Limnephilidae	8	0.9			4	108	un

L9-H, #5 (cont.)

Dolophilodes sp.	0	0.0			2	24	cf
Wormaldia sp.	0	0.0			3	24	cf
Polycentropus sp.	0	0.0			6	72	pr
Rhyacophila Angelita grp.	1	0.1			0	18	pr
Rhyacophila Betteni grp.	15	1.7			0	18	pr
Rhyacophila Bif./Color. grp.	0	0.0			0	18	pr
Rhyacophila Brunnea grp.	0	0.0			0	18	pr
Rhyacophila hyalinata	1	0.1			0	18	pr
Rhyacophila iranda	0	0.0			0	18	pr
Rhyacophila Sibirica grp.	0	0.0			0	18	pr
Rhyacophila tucula	0	0.0			0	18	pr
Rhyacophila vaccua	1	0.1			0	18	pr
Rhyacophila verrula	0	0.0			0	18	pr
Rhyacophila vepulsa	0	0.0			0	18	pr
Rhyacophila sp.	0	0.0			0	18	pr
Trichopteran pupae	0	0.0			nn	nn	un
Other			234	27.15			
Annelida(Oligochaeta)	16	1.9			5	108	cg
Coleoptera(Elmidae)					4	108	cg
Cleptelmis sp.	0	0.0			4	108	cg
Heterlimnius sp.	0	0.0			4	108	cg
Lara sp.	0	0.0			4	108	sh
Narpus sp.	0	0.0			4	108	cg
Zaitzevia sp.	0	0.0			4	108	cg
Elmidae	0	0.0			4	108	cg
Diptera							
Agathon sp.	2	0.2			0	2	sc
Ceratopogonidae	0	0.0			6	108	pr
Chironomidae	199	23.1			6	108	un
Chelifera sp.	0	0.0			6	95	pr
Oreogeton sp.	6	0.7			6	95	pr
Psychodidae	0	0.0			10	36	cg
Simuliidae	2	0.2			6	108	cg
Antocha sp.	0	0.0			3	24	cg
Dicranota sp.	6	0.7			3	24	pr
Hexatoma sp.	0	0.0			2	36	pr
Pedicia sp.	0	0.0			3	36	pr
Tipula sp.	0	0.0			4	36	om
Hydracarina	0	0.0			5	108	pr
Mollusca	0	0.0			8	108	cg
Nematoda	0	0.0			5	108	om
Turbellaria	3	0.3			4	108	cg

TOTAL NUMBER =	862
TOTAL TAXA =	35
STD =	33.8
MEAN =	216
SDI =	3.39
% SE Mean =	8
% Coef. Var.=	16
B/E =	0.01
EPT Abund =	628
EPT/Chiron =	3.16
EPT % =	72.85
EPT taxa =	28
c/f tot =	15
c/f % =	1.74
c/g tot =	52
c/g % =	6.03
sh tot =	43
sh % =	4.99
sc tot =	376
sc % =	43.62
p tot =	169
p% =	19.61
om tot =	0
om % =	0.00
unk tot =	207
unk% =	24.01
sc/cf =	25.07
sc/(sc+cf) =	0.962
sh/total =	0.050

Macroinvertebrate Data--Montanore, April 1992
Libby Creek, L9 (1 kick sample), #6

	No.	Percent Total	Total Number	Percent Total	TV	TQ	FFG
Ephemeroptera			96	21.48			
Baetis sp.	0	0.0			5	72	cg
Diphetor sp.	0	0.0			4	72	cg
Caudatella hystrix	0	0.0			1	48	cg
Drunella coloradensis/ flavilinea	0	0.0			0	18	sc
Drunella doddsi	6	1.3			0	4	sc
Drunella grandis	0	0.0			0	24	sc
Drunella spinifera	0	0.0			0	24	pr
Drunella sp.	15	3.4			1	48	sc
Serratella sp.	0	0.0			2	48	cg
Cinygma sp.	0	0.0			2	48	sc
Cinygmula sp.	52	11.6			4	21	sc
Epeorus sp.	15	3.4			0	21	sc
Heptagenia sp.	0	0.0			4	48	sc
Ironodes sp.	0	0.0			3	48	sc
Leucrocuta sp.	0	0.0			1	48	sc
Nixe sp.	0	0.0			2	48	sc
Rhithrogena sp.	2	0.4			4	21	cg
Paraleptophlebia sp.	0	0.0			4	24	cg
Ameletus sp.	6	1.3			0	48	cg
Plecoptera			60	13.42			
Capniidae	0	0.0			1	32	sh
Kathroperla perdita	0	0.0			1	24	cg
Sweltsa/Suwallia sp.	33	7.4			1	24	pr
Despaxia augusta	0	0.0			0	18	sh
Paraleuctra sp.	0	0.0			0	18	sh
Perlomyia sp.	0	0.0			0	18	sh
Leuctridae	0	0.0			0	18	sh
Nemoura sp.	0	0.0			2	24	sh
Visoka cataractae	8	1.8			2	36	sh
Zapada cinctipes	7	1.6			2	16	sh
Zapada columbiana	0	0.0			2	16	sh
Nemouridae	4	0.9			2	36	sh
Yoraperla brevis	0	0.0			1	12	sh
Acroneuria abnormis	0	0.0			0	6	pr
Doroneuria theodora	0	0.0			1	18	pr
Hesperoperla pacifica	0	0.0			2	18	pr
Perlidae	0	0.0			1	24	pr
Isoperla sp.	0	0.0			2	24	pr
Kogotus modestus	0	0.0			2	18	pr
Megarcys sp.	0	0.0			2	24	pr
Setvena bradleyi	0	0.0			2	48	pr
Skwala sp.	0	0.0			2	18	pr
Perlodidae	0	0.0			2	48	pr
Doddsia occidentalis	8	1.8			2	24	sc
Taenionema sp.	0	0.0			2	48	sc
Trichoptera			83	18.57			
Micrasema sp.	0	0.0			1	24	sh
Anagapetus sp.	25	5.6			0	24	sc
Glossosoma sp.	7	1.6			0	24	sc
Arctopsyche grandis	0	0.0			4	18	cf
Hydropsyche sp.	0	0.0			8	108	cg
Parapsyche elsis	9	2.0			4	6	cf
Hydropsychidae	0	0.0			4	108	cf
Agraylea sp.	0	0.0			8	108	cg
Hydroptila sp.	0	0.0			6	108	cg
Ochrotrichia sp.	9	2.0			4	108	cg
Lepidostoma sp.	8	1.8			1	18	sh
Apatania sp.	0	0.0			4	18	sc
Chyrandra centralis	0	0.0			1	18	sh
Ecclisomyia sp.	0	0.0			2	24	om
Neothremma alicia	0	0.0			4	8	sc
Oligophlebodes sp.	0	0.0			4	24	sc
Limnephilidae	18	4.0			4	108	un

L9-k, #6 (cont.)

Dolophilodes sp.	0	0.0			2	24	cf
Wormaldia sp.	0	0.0			3	24	cf
Polycentropus sp.	0	0.0			6	72	pr
Rhyacophila Angelita grp.	0	0.0			0	18	pr
Rhyacophila Betteni grp.	7	1.6			0	18	pr
Rhyacophila Bif./Color. grp.	0	0.0			0	18	pr
Rhyacophila Brunnea grp.	0	0.0			0	18	pr
Rhyacophila hyalinata	0	0.0			0	18	pr
Rhyacophila iranda	0	0.0			0	18	pr
Rhyacophila Sibirica grp.	0	0.0			0	18	pr
Rhyacophila tucula	0	0.0			0	18	pr
Rhyacophila vaccua	0	0.0			0	18	pr
Rhyacophila verrula	0	0.0			0	18	pr
Rhyacophila vepulsa	0	0.0			0	18	pr
Rhyacophila sp.	0	0.0			0	18	pr
Trichopteran pupae	0	0.0			nn	nn	un
Other			208	46.53			
Annelida(Oligochaeta)	8	1.8			5	108	cg
Coleoptera(Elmidae)					4	108	cg
Cleptelmis sp.	0	0.0			4	108	cg
Heterlimnius sp.	0	0.0			4	108	cg
Lara sp.	0	0.0			4	108	sh
Narpus sp.	0	0.0			4	108	cg
Zaitzevia sp.	0	0.0			4	108	cg
Elmidae	0	0.0			4	108	cg
Diptera							
Agathon sp.	0	0.0			0	2	sc
Ceratopogonidae	0	0.0			6	108	pr
Chironomidae	189	42.3			6	108	un
Chelifera sp.	0	0.0			6	95	pr
Oreogeton sp.	2	0.4			6	95	pr
Psychodidae	0	0.0			10	36	cg
Simuliidae	0	0.0			6	108	cg
Antocha sp.	0	0.0			3	24	cg
Dicranota sp.	6	1.3			3	24	pr
Hexatoma sp.	0	0.0			2	36	pr
Pedicia sp.	0	0.0			3	36	pr
Tipula sp.	0	0.0			4	36	om
Hydracarina	0	0.0			5	108	pr
Mollusca	0	0.0			8	108	cg
Nematoda	0	0.0			5	108	om
Turbellaria	3	0.7			4	108	cg

TOTAL NUMBER =	447
TOTAL TAXA =	23
STD =	19.9
MEAN =	447
SDI =	3.27
% SE Mean =	4
% Coef. Var.=	4
B/E =	0.00
EPT Abund =	239
EPT/Chiron =	1.26
EPT % =	53.47
EPT taxa =	18
c/f tot =	9
c/f % =	2.01
c/g tot =	28
c/g % =	6.26
sh tot =	27
sh % =	6.04
sc tot =	128
sc % =	28.64
p tot =	48
p% =	10.74
om tot =	0
om % =	0.00
unk tot =	207
unk% =	46.31
sc/cf =	14.22
sc/(sc+cf) =	0.934
sh/total =	0.060

Macroinvertebrate Data--Montanore, April 1992
Libby Creek, L10 (4 Hess samples), #7

	No.	Percent Total	Total Number	Percent Total	TV	TQ	FFG
Ephemeroptera			562	61.15			
Baetis sp.	48	5.2			5	72	cg
Diphetor sp.	0	0.0			4	72	cg
Caudatella hystrix	0	0.0			1	48	cg
Drunella coloradensis/ flavilinea	0	0.0			0	18	sc
Drunella doddsi	3	0.3			0	4	sc
Drunella grandis	0	0.0			0	24	sc
Drunella spinifera	0	0.0			0	24	pr
Drunella sp.	40	4.4			1	48	sc
Serratella sp.	0	0.0			2	48	cg
Cinygma sp.	0	0.0			2	48	sc
Cinygmula sp.	393	42.8			4	21	sc
Epeorus sp.	62	6.7			0	21	sc
Heptagenia sp.	0	0.0			4	48	sc
Ironodes sp.	0	0.0			3	48	sc
Leucrocuta sp.	0	0.0			1	48	sc
Nixe sp.	0	0.0			2	48	sc
Rhithrogena sp.	13	1.4			4	21	cg
Paraleptophlebia sp.	0	0.0			4	24	cg
Ameletus sp.	3	0.3			0	48	cg
Plecoptera			202	21.98			
Capniidae	19	2.1			1	32	sh
Kathroperla perdita	1	0.1			1	24	cg
Sweltsa/Suwallia sp.	95	10.3			1	24	pr
Despaxia augusta	1	0.1			0	18	sh
Paraleuctra sp.	0	0.0			0	18	sh
Perlomyia sp.	0	0.0			0	18	sh
Leuctridae	27	2.9			0	18	sh
Nemoura sp.	6	0.7			2	24	sh
Visoka cataractae	6	0.7			2	36	sh
Zapada cinctipes	0	0.0			2	16	sh
Zapada columbiana	0	0.0			2	16	sh
Nemouridae	4	0.4			2	36	sh
Yoraperla brevis	7	0.8			1	12	sh
Acroneuria abnormis	0	0.0			0	6	pr
Doroneuria theodora	0	0.0			1	18	pr
Hesperoperla pacifica	0	0.0			2	18	pr
Perlidae	0	0.0			1	24	pr
Isoperla sp.	0	0.0			2	24	pr
Kogotus modestus	0	0.0			2	18	pr
Megarcys sp.	2	0.2			2	24	pr
Setvena bradleyi	0	0.0			2	48	pr
Skwala sp.	0	0.0			2	18	pr
Perlodidae	1	0.1			2	48	pr
Doddsia occidentalis	33	3.6			2	24	sc
Taenionema sp.	0	0.0			2	48	sc
Trichoptera			44	4.79			
Micrasema sp.	0	0.0			1	24	sh
Anagapetus sp.	2	0.2			0	24	sc
Glossosoma sp.	7	0.8			0	24	sc
Arctopsyche grandis	0	0.0			4	18	cf
Hydropsyche sp.	0	0.0			8	108	cg
Parapsyche elsis	2	0.2			4	6	cf
Hydropsychidae	0	0.0			4	108	cf
Agraylea sp.	2	0.2			8	108	cg
Hydroptila sp.	0	0.0			6	108	cg
Ochrotrichia sp.	0	0.0			4	108	cg
Lepidostoma sp.	0	0.0			1	18	sh
Apatania sp.	0	0.0			4	18	sc
Chyrandra centralis	0	0.0			1	18	sh
Ecclisomyia sp.	0	0.0			2	24	cm
Neothremma alicia	3	0.3			4	8	sc
Oligophlebodes sp.	10	1.1			4	24	sc
Limnephilidae	0	0.0			4	108	un

L10-H, #7 (cont.)

Dolophilodes sp.	0	0.0			2	24	cf
Wormaldia sp.	0	0.0			3	24	cf
Polycentropus sp.	0	0.0			6	72	pr
Rhyacophila Angelita grp.	0	0.0			0	18	pr
Rhyacophila Betteni grp.	14	1.5			0	18	pr
Rhyacophila Bif./Color. grp.	0	0.0			0	18	pr
Rhyacophila Brunnea grp.	0	0.0			0	18	pr
Rhyacophila hyalinata	1	0.1			0	18	pr
Rhyacophila iranda	0	0.0			0	18	pr
Rhyacophila Sibirica grp.	0	0.0			0	18	pr
Rhyacophila tucula	0	0.0			0	18	pr
Rhyacophila vaccua	0	0.0			0	18	pr
Rhyacophila verrula	3	0.3			0	18	pr
Rhyacophila vepulsa	0	0.0			0	18	pr
Rhyacophila sp.	0	0.0			0	18	pr
Trichopteran pupae	0	0.0			nn	nn	un
Other			111	12.08			
Annelida(Oligochaeta)	52	5.7			5	108	cg
Coleoptera(Elmidae)					4	108	cg
Cleptelmis sp.	0	0.0			4	108	cg
Heterlimnius sp.	0	0.0			4	108	cg
Lara sp.	0	0.0			4	108	sh
Narpus sp.	0	0.0			4	108	cg
Zaitzevia sp.	0	0.0			4	108	cg
Elmidae	0	0.0			4	108	cg
Diptera							
Agathon sp.	0	0.0			0	2	sc
Ceratopogonidae	2	0.2			6	108	pr
Chironomidae	45	4.9			6	108	un
Chelifera sp.	0	0.0			6	95	pr
Oreogeton sp.	4	0.4			6	95	pr
Psychodidae	0	0.0			10	36	cg
Simuliidae	0	0.0			6	108	cg
Antocha sp.	0	0.0			3	24	cg
Dicranota sp.	8	0.9			3	24	pr
Hexatoma sp.	0	0.0			2	36	pr
Pedicia sp.	0	0.0			3	36	pr
Tipula sp.	0	0.0			4	36	om
Hydracarina	0	0.0			5	108	pr
Mollusca	0	0.0			8	108	cg
Nematoda	0	0.0			5	108	om
Turbellaria	0	0.0			4	108	cg

TOTAL NUMBER =	919
TOTAL TAXA =	33
STD =	41.3
MEAN =	230
SDI =	3.26
% SE Mean =	9
% Coef. Var.=	18
B/E =	0.09
EPT Abund =	808
EPT/Chiron =	17.96
EPT % =	87.92
EPT taxa =	28
c/f tot =	2
c/f % =	0.22
c/g tot =	119
c/g % =	12.95
sh tot =	70
sh % =	7.62
sc tot =	553
sc % =	60.17
p tot =	130
p% =	14.15
om tot =	0
om % =	0.00
unk tot =	45
unk% =	4.90
sc/cf =	276.50
sc/(sc+cf) =	0.996
sh/total =	0.076

Macroinvertebrate Data--Montanore, April 1992
Libby Creek, L10 (1 kick sample), #8

	No.	Percent Total	Total Number	Percent Total	TV	TQ	FFG
Ephemeroptera			423	64.88			
Baetis sp.	84	12.9			5	72	cg
Diphetor sp.	0	0.0			4	72	cg
Caudatella hystrix	0	0.0			1	48	cg
Drunella coloradensis/ flavilinea	0	0.0			0	18	sc
Drunella doddsi	4	0.6			0	4	sc
Drunella grandis	0	0.0			0	24	sc
Drunella spinifera	0	0.0			0	24	pr
Drunella sp.	20	3.1			1	48	sc
Serratella sp.	0	0.0			2	48	cg
Cinygma sp.	0	0.0			2	48	sc
Cinygmula sp.	209	32.1			4	21	sc
Epeorus sp.	75	11.5			0	21	sc
Heptagenia sp.	0	0.0			4	48	sc
Ironodes sp.	0	0.0			3	48	sc
Leucrocuta sp.	0	0.0			1	48	sc
Nixe sp.	0	0.0			2	48	sc
Rhithrogena sp.	18	2.8			4	21	cg
Paraleptophlebia sp.	0	0.0			4	24	cg
Ameletus sp.	13	2.0			0	48	cg
Plecoptera			110	16.87			
Capniidae	21	3.2			1	32	sh
Kathroperla perdita	0	0.0			1	24	cg
Sweltsa/Suwallia sp.	43	6.6			1	24	pr
Despaxia augusta	0	0.0			0	18	sh
Paraleuctra sp.	0	0.0			0	18	sh
Perlomyia sp.	0	0.0			0	18	sh
Leuctridae	5	0.8			0	18	sh
Nemoura sp.	0	0.0			2	24	sh
Visoka cataractae	10	1.5			2	36	sh
Zapada cinctipes	0	0.0			2	16	sh
Zapada columbiana	2	0.3			2	16	sh
Nemouridae	0	0.0			2	36	sh
Yoraperla brevis	6	0.9			1	12	sh
Acroneuria abnormis	0	0.0			0	6	pr
Doroneuria theodora	0	0.0			1	18	pr
Hesperoperla pacifica	0	0.0			2	18	pr
Perlidae	0	0.0			1	24	pr
Isoperla sp.	0	0.0			2	24	pr
Kogotus modestus	0	0.0			2	18	pr
Megarcys sp.	4	0.6			2	24	pr
Setvena bradleyi	0	0.0			2	48	pr
Skwala sp.	0	0.0			2	18	pr
Perlodidae	0	0.0			2	48	pr
Doddsia occidentalis	19	2.9			2	24	sc
Taenionema sp.	0	0.0			2	48	sc
Trichoptera			25	3.83			
Micrasema sp.	0	0.0			1	24	sh
Anagapetus sp.	0	0.0			0	24	sc
Glossosoma sp.	2	0.3			0	24	sc
Arctopsyche grandis	0	0.0			4	18	cf
Hydropsyche sp.	0	0.0			8	108	cg
Parapsyche elsis	10	1.5			4	6	cf
Hydropsychidae	0	0.0			4	108	cf
Agraylea sp.	1	0.2			8	108	cg
Hydroptila sp.	0	0.0			6	108	cg
Ochrotrichia sp.	0	0.0			4	108	cg
Lepidostoma sp.	0	0.0			1	18	sh
Apatania sp.	0	0.0			4	18	sc
Chyrandra centralis	0	0.0			1	18	sh
Ecclisomyia sp.	2	0.3			2	24	cm
Neothremma alicia	1	0.2			4	8	sc
Oligophlebodes sp.	0	0.0			4	24	sc
Limnephilidae	1	0.2			4	108	un

L10-k, #8)cont.)

Dolophilodes sp.	0	0.0			2	24	cf
Wormaldia sp.	2	0.3			3	24	cf
Polycentropus sp.	0	0.0			6	72	pr
Rhyacophila Angelita grp.	0	0.0			0	18	pr
Rhyacophila Betteni grp.	5	0.8			0	18	pr
Rhyacophila Bif./Color. grp.	0	0.0			0	18	pr
Rhyacophila Brunnea grp.	1	0.2			0	18	pr
Rhyacophila hyalinata	0	0.0			0	18	pr
Rhyacophila iranda	0	0.0			0	18	pr
Rhyacophila Sibirica grp.	0	0.0			0	18	pr
Rhyacophila tucula	0	0.0			0	18	pr
Rhyacophila vaccua	0	0.0			0	18	pr
Rhyacophila verrula	0	0.0			0	18	pr
Rhyacophila vepulsa	0	0.0			0	18	pr
Rhyacophila sp.	0	0.0			0	18	pr
Trichopteran pupae	0	0.0			nn	nn	un
Other			94	14.42			
Annelida(Oligochaeta)	4	0.6			5	108	cg
Coleoptera(Elmidae)					4	108	cg
Cleptelmis sp.	0	0.0			4	108	cg
Heterlimnius sp.	0	0.0			4	108	cg
Lara sp.	0	0.0			4	108	sh
Narpus sp.	0	0.0			4	108	cg
Zaitzevia sp.	0	0.0			4	108	cg
Elmidae	0	0.0			4	108	cg
Diptera							
Agathon sp.	0	0.0			0	2	sc
Ceratopogonidae	0	0.0			6	108	pr
Chironomidae	89	13.7			6	108	un
Chelifera sp.	0	0.0			6	95	pr
Oreogeton sp.	1	0.2			6	95	pr
Psychodidae	0	0.0			10	36	cg
Simuliidae	0	0.0			6	108	cg
Antocha sp.	0	0.0			3	24	cg
Dicranota sp.	0	0.0			3	24	pr
Hexatoma sp.	0	0.0			2	36	pr
Pedicia sp.	0	0.0			3	36	pr
Tipula sp.	0	0.0			4	36	om
Hydracarina	0	0.0			5	108	pr
Mollusca	0	0.0			8	108	cg
Nematoda	0	0.0			5	108	om
Turbellaria	0	0.0			4	108	cg

TOTAL NUMBER =	652
TOTAL TAXA =	27
STD =	25.3
MEAN =	652
SDI =	3.30
% SE Mean =	4
% Coef. Var.=	4
B/E =	0.20
EPT Abund =	558
EPT/Chiron =	6.27
EPT % =	85.58
EPT taxa =	24
c/f tot =	12
c/f % =	1.84
c/g tot =	120
c/g % =	18.40
sh tot =	44
sh % =	6.75
sc tot =	330
sc % =	50.61
p tot =	54
p% =	8.28
om tot =	2
om % =	0.31
unk tot =	90
unk% =	13.80
sc/cf =	27.50
sc/(sc+cf) =	0.965
sh/total =	0.067

Macroinvertebrate Data--Montanore, April 1992
Little Cherry Creek, LC1 (4 Hess samples), #9

	No.	Percent Total	Total Number	Percent Total	TV	TQ	FFG
Ephemeroptera			472	46.87			
Baetis sp.	64	6.4			5	72	cg
Diphetor sp.	0	0.0			4	72	cg
Caudatella hystrix	0	0.0			1	48	cg
Drunella coloradensis/ flavilinea	0	0.0			0	18	sc
Drunella doddsi	8	0.8			0	4	sc
Drunella grandis	0	0.0			0	24	sc
Drunella spinifera	7	0.7			0	24	pr
Drunella sp.	28	2.8			1	48	sc
Serratella sp.	2	0.2			2	48	cg
Cinygma sp.	0	0.0			2	48	sc
Cinygmula sp.	171	17.0			4	21	sc
Epeorus sp.	139	13.8			0	21	sc
Heptagenia sp.	0	0.0			4	48	sc
Ironodes sp.	0	0.0			3	48	sc
Leucrocuta sp.	4	0.4			1	48	sc
Nixe sp.	0	0.0			2	48	sc
Rhithrogena sp.	0	0.0			4	21	cg
Paraleptophlebia sp.	23	2.3			4	24	cg
Ameletus sp.	26	2.6			0	48	cg
Plecoptera			219	21.75			
Capniidae	7	0.7			1	32	sh
Kathroperla perdita	0	0.0			1	24	cg
Sweltsa/Suwallia sp.	73	7.2			1	24	pr
Despaxia augusta	0	0.0			0	18	sh
Paraleuctra sp.	0	0.0			0	18	sh
Perlomyia sp.	0	0.0			0	18	sh
Leuctridae	11	1.1			0	18	sh
Nemoura sp.	54	5.4			2	24	sh
Visoka cataractae	33	3.3			2	36	sh
Zapada cinctipes	0	0.0			2	16	sh
Zapada columbiana	1	0.1			2	16	sh
Nemouridae	34	3.4			2	36	sh
Yoraperla brevis	0	0.0			1	12	sh
Acroneuria abnormis	0	0.0			0	6	pr
Doroneuria theodora	2	0.2			1	18	pr
Hesperoperla pacifica	0	0.0			2	18	pr
Perlidae	3	0.3			1	24	pr
Isoperla sp.	0	0.0			2	24	pr
Kogotus modestus	0	0.0			2	18	pr
Megarcys sp.	0	0.0			2	24	pr
Setvena bradleyi	0	0.0			2	48	pr
Skwala sp.	0	0.0			2	18	pr
Perlodidae	0	0.0			2	48	pr
Doddsia occidentalis	1	0.1			2	24	sc
Taenionema sp.	0	0.0			2	48	sc
Trichoptera			55	5.46			
Micrasema sp.	0	0.0			1	24	sh
Anagapetus sp.	0	0.0			0	24	sc
Glossosoma sp.	22	2.2			0	24	sc
Arctopsyche grandis	0	0.0			4	18	cf
Hydropsyche sp.	0	0.0			8	108	cg
Parapsyche elsis	0	0.0			4	6	cf
Hydropsychidae	2	0.2			4	108	cf
Agraylea sp.	1	0.1			8	108	cg
Hydroptila sp.	0	0.0			6	108	cg
Ochrotrichia sp.	0	0.0			4	108	cg
Lepidostoma sp.	0	0.0			1	18	sh
Apatania sp.	0	0.0			4	18	sc
Chyrandra centralis	0	0.0			1	18	sh
Ecclisomyia sp.	0	0.0			2	24	om
Neothremma alicia	0	0.0			4	8	sc
Oligophlebodes sp.	0	0.0			4	24	sc
Limnephilidae	16	1.6			4	108	un

LC1-H, #9 (cont.)

Dolophilodes sp.	0	0.0			2	24	cf
Wormaldia sp.	0	0.0			3	24	cf
Polycentropus sp.	0	0.0			6	72	pr
Rhyacophila Angelita grp.	0	0.0			0	18	pr
Rhyacophila Betteni grp.	3	0.3			0	18	pr
Rhyacophila Bif./Color. grp.	0	0.0			0	18	pr
Rhyacophila Brunnea grp.	2	0.2			0	18	pr
Rhyacophila hyalinata	0	0.0			0	18	pr
Rhyacophila iranda	0	0.0			0	18	pr
Rhyacophila Sibirica grp.	0	0.0			0	18	pr
Rhyacophila tucula	0	0.0			0	18	pr
Rhyacophila vaccua	0	0.0			0	18	pr
Rhyacophila verrula	0	0.0			0	18	pr
Rhyacophila vepulsa	9	0.9			0	18	pr
Rhyacophila sp.	0	0.0			0	18	pr
Trichopteran pupae	0	0.0			nn	nn	un
Other			261	25.92			
Annelida(Oligochaeta)	16	1.6			5	108	cg
Coleoptera(Elmidae)					4	108	cg
Cleptelmis sp.	0	0.0			4	108	cg
Heterlimnius sp.	29	2.9			4	108	cg
Lara sp.	0	0.0			4	108	sh
Narpus sp.	0	0.0			4	108	cg
Zaitzevia sp.	0	0.0			4	108	cg
Elmidae	0	0.0			4	108	cg
Diptera							
Agathon sp.	0	0.0			0	2	sc
Ceratopogonidae	2	0.2			6	108	pr
Chironomidae	189	18.8			6	108	un
Chelifera sp.	0	0.0			6	95	pr
Oreogeton sp.	3	0.3			6	95	pr
Psychodidae	0	0.0			10	36	cg
Simuliidae	0	0.0			6	108	cg
Antocha sp.	0	0.0			3	24	cg
Dicranota sp.	4	0.4			3	24	pr
Hexatoma sp.	0	0.0			2	36	pr
Pedicia sp.	0	0.0			3	36	pr
Tipula sp.	0	0.0			4	36	om
Hydracarina	0	0.0			5	108	pr
Mollusca	0	0.0			8	108	cg
Nematoda	3	0.3			5	108	om
Turbellaria	15	1.5			4	108	cg

TOTAL NUMBER =	1007
TOTAL TAXA =	35
STD =	30.5
MEAN =	252
SDI =	3.88
% SE Mean =	6
% Coef. Var.=	12
B/E =	0.14
EPT Abund =	746
EPT/Chiron =	3.95
EPT % =	74.08
EPT taxa =	27
c/f tot =	2
c/f % =	0.20
c/g tot =	176
c/g % =	17.48
sh tot =	140
sh % =	13.90
sc tot =	373
sc % =	37.04
p tot =	108
p% =	10.72
om tot =	3
om % =	0.30
unk tot =	205
unk% =	20.36
sc/cf =	186.50
sc/(sc+cf) =	0.995
sh/total =	0.139

Macroinvertebrate Data--Montanore, April 1992
Little Cherry Creek, LC1 (1 kick sample), #10

	No.	Percent Total	Total Number	Percent Total	TV	TQ	FFG
Ephemeroptera			557	37.87			
Baetis sp.	189	12.8			5	72	cg
Diphetor sp.	0	0.0			4	72	cg
Caudatella hystrix	0	0.0			1	48	cg
Drunella coloradensis/ flavilinea	0	0.0			0	18	sc
Drunella doddsi	19	1.3			0	4	sc
Drunella grandis	0	0.0			0	24	sc
Drunella spinifera	4	0.3			0	24	pr
Drunella sp.	23	1.6			1	48	sc
Serratella sp.	8	0.5			2	48	cg
Cinygma sp.	0	0.0			2	48	sc
Cinygmula sp.	179	12.2			4	21	sc
Epeorus sp.	116	7.9			0	21	sc
Heptagenia sp.	0	0.0			4	48	sc
Ironodes sp.	0	0.0			3	48	sc
Leucrocuta sp.	4	0.3			1	48	sc
Nixe sp.	0	0.0			2	48	sc
Rhithrogena sp.	5	0.3			4	21	cg
Paraleptophlebia sp.	8	0.5			4	24	cg
Ameletus sp.	2	0.1			0	48	cg
Plecoptera			407	27.67			
Capniidae	15	1.0			1	32	sh
Kathroperla perdita	0	0.0			1	24	cg
Sweltsa/Suwallia sp.	38	2.6			1	24	pr
Despaxia augusta	0	0.0			0	18	sh
Paraleuctra sp.	0	0.0			0	18	sh
Perlomyia sp.	0	0.0			0	18	sh
Leuctridae	10	0.7			0	18	sh
Nemoura sp.	156	10.6			2	24	sh
Visoka cataractae	8	0.5			2	36	sh
Zapada cinctipes	0	0.0			2	16	sh
Zapada columbiana	4	0.3			2	16	sh
Nemouridae	171	11.6			2	36	sh
Yoraperla brevis	0	0.0			1	12	sh
Acroneuria abnormis	0	0.0			0	6	pr
Doroneuria theodora	1	0.1			1	18	pr
Hesperoperla pacifica	0	0.0			2	18	pr
Perlidae	4	0.3			1	24	pr
Isoperla sp.	0	0.0			2	24	pr
Kogotus modestus	0	0.0			2	18	pr
Megarcys sp.	0	0.0			2	24	pr
Setvena bradleyi	0	0.0			2	48	pr
Skwala sp.	0	0.0			2	18	pr
Perlodidae	0	0.0			2	48	pr
Doddsia occidentalis	0	0.0			2	24	sc
Taenionema sp.	0	0.0			2	48	sc
Trichoptera			106	7.21			
Micrasema sp.	1	0.1			1	24	sh
Anagapetus sp.	0	0.0			0	24	sc
Glossosoma sp.	23	1.6			0	24	sc
Arctopsyche grandis	0	0.0			4	18	cf
Hydropsyche sp.	0	0.0			8	108	cg
Parapsyche elsis	46	3.1			4	6	cf
Hydropsychidae	0	0.0			4	108	cf
Agraylea sp.	0	0.0			8	108	cg
Hydroptila sp.	0	0.0			6	108	cg
Ochrotrichia sp.	0	0.0			4	108	cg
Lepidostoma sp.	0	0.0			1	18	sh
Apatania sp.	0	0.0			4	18	sc
Chyrandra centralis	0	0.0			1	18	sh
Ecclisomyia sp.	0	0.0			2	24	om
Neothremma alicia	0	0.0			4	8	sc
Oligophlebodes sp.	0	0.0			4	24	sc
Limnephilidae	12	0.8			4	108	un

LC1-k, #10 (cont.)

Dolophilodes sp.	0	0.0			2	24	cf
Wormaldia sp.	0	0.0			3	24	cf
Polycentropus sp.	0	0.0			6	72	pr
Rhyacophila Angelita grp.	0	0.0			0	18	pr
Rhyacophila Betteni grp.	11	0.7			0	18	pr
Rhyacophila Bif./Color. grp.	0	0.0			0	18	pr
Rhyacophila Brunnea grp.	7	0.5			0	18	pr
Rhyacophila hyalinata	0	0.0			0	18	pr
Rhyacophila iranda	0	0.0			0	18	pr
Rhyacophila Sibirica grp.	0	0.0			0	18	pr
Rhyacophila tucula	0	0.0			0	18	pr
Rhyacophila vaccua	0	0.0			0	18	pr
Rhyacophila verrula	0	0.0			0	18	pr
Rhyacophila vepulsa	2	0.1			0	18	pr
Rhyacophila sp.	4	0.3			0	18	pr
Trichopteran pupae	0	0.0			nn	nn	un
Other			401	27.26			
Annelida(Oligochaeta)	12	0.8			5	108	cg
Coleoptera(Elmidae)					4	108	cg
Cleptelmis sp.	0	0.0			4	108	cg
Heterlimnius sp.	23	1.6			4	108	cg
Lara sp.	0	0.0			4	108	sh
Narpus sp.	0	0.0			4	108	cg
Zaitzevia sp.	0	0.0			4	108	cg
Elmidae	0	0.0			4	108	cg
Diptera							
Agathon sp.	0	0.0			0	2	sc
Ceratopogonidae	0	0.0			6	108	pr
Chironomidae	247	16.8			6	108	un
Chelifera sp.	0	0.0			6	95	pr
Oreogeton sp.	2	0.1			6	95	pr
Psychodidae	0	0.0			10	36	cg
Simuliidae	98	6.7			6	108	cg
Antocha sp.	0	0.0			3	24	cg
Dicranota sp.	0	0.0			3	24	pr
Hexatoma sp.	0	0.0			2	36	pr
Pedicia sp.	0	0.0			3	36	pr
Tipula sp.	0	0.0			4	36	cm
Hydracarina	0	0.0			5	108	pr
Mollusca	0	0.0			8	108	cg
Nematoda	0	0.0			5	108	cm
Turbellaria	19	1.3			4	108	cg

TOTAL NUMBER =	1471
TOTAL TAXA =	34
STD =	43.7
MEAN =	1471
SDI =	3.81
% SE Mean =	3
% Coef. Var.=	3
B/E =	0.34
EPT Abund =	1070
EPT/Chiron =	4.33
EPT % =	72.74
EPT taxa =	28
c/f tot =	46
c/f % =	3.13
c/g tot =	364
c/g % =	24.75
sh tot =	365
sh % =	24.81
sc tot =	364
sc % =	24.75
p tot =	73
p% =	4.96
cm tot =	0
cm % =	0.00
unk tot =	259
unk% =	17.61
sc/cf =	7.91
sc/(sc+cf) =	0.888
sh/total =	0.248

Macroinvertebrate Data--Montanore, April 1992
Poorman Creek, Pol (4 Hess samples), #11

	No.	Percent Total	Total Number	Percent Total	TV	TQ	FFG
Ephemeroptera			224	49.89			
Baetis sp.	26	5.8			5	72	cg
Diphetor sp.	0	0.0			4	72	cg
Caudatella hystrix	0	0.0			1	48	cg
Drunella coloradensis/ flavilinea	0	0.0			0	18	sc
Drunella doddsi	14	3.1			0	4	sc
Drunella grandis	0	0.0			0	24	sc
Drunella spinifera	0	0.0			0	24	pr
Drunella sp.	9	2.0			1	48	sc
Serratella sp.	0	0.0			2	48	cg
Cinygma sp.	0	0.0			2	48	sc
Cinygmula sp.	97	21.6			4	21	sc
Epeorus sp.	30	6.7			0	21	sc
Heptagenia sp.	0	0.0			4	48	sc
Ironodes sp.	0	0.0			3	48	sc
Leucrocuta sp.	0	0.0			1	48	sc
Nixe sp.	0	0.0			2	48	sc
Rhithrogena sp.	43	9.6			4	21	cg
Paraleptophlebia sp.	0	0.0			4	24	cg
Ameletus sp.	5	1.1			0	48	cg
Plecoptera			154	34.30			
Capniidae	2	0.4			1	32	sh
Kathroperla perdita	0	0.0			1	24	cg
Sweltsa/Suwallia sp.	63	14.0			1	24	pr
Despaxia augusta	0	0.0			0	18	sh
Paraleuctra sp.	0	0.0			0	18	sh
Perlomyia sp.	0	0.0			0	18	sh
Leuctridae	11	2.4			0	18	sh
Nemoura sp.	0	0.0			2	24	sh
Visoka cataractae	2	0.4			2	36	sh
Zapada cinctipes	0	0.0			2	16	sh
Zapada columbiana	0	0.0			2	16	sh
Nemouridae	0	0.0			2	36	sh
Yoraperla brevis	0	0.0			1	12	sh
Acroneuria abnormis	0	0.0			0	6	pr
Doroneuria theodora	0	0.0			1	18	pr
Hesperoperla pacifica	0	0.0			2	18	pr
Perlidae	1	0.2			1	24	pr
Isoperla sp.	0	0.0			2	24	pr
Kogotus modestus	0	0.0			2	18	pr
Megarcys sp.	2	0.4			2	24	pr
Setvena bradleyi	0	0.0			2	48	pr
Skwala sp.	0	0.0			2	18	pr
Perlodidae	0	0.0			2	48	pr
Doddsia occidentalis	73	16.3			2	24	sc
Taenionema sp.	0	0.0			2	48	sc
Trichoptera			41	9.13			
Micrasema sp.	0	0.0			1	24	sh
Anagapetus sp.	0	0.0			0	24	sc
Glossosoma sp.	25	5.6			0	24	sc
Arctopsyche grandis	0	0.0			4	18	cf
Hydropsyche sp.	0	0.0			8	108	cg
Parapsyche elsis	0	0.0			4	6	cf
Hydropsychidae	0	0.0			4	108	cf
Agraylea sp.	0	0.0			8	108	cg
Hydroptila sp.	0	0.0			6	108	cg
Ochrotrichia sp.	0	0.0			4	108	cg
Lepidostoma sp.	0	0.0			1	18	sh
Apatania sp.	0	0.0			4	18	sc
Chyrandra centralis	0	0.0			1	18	sh
Ecclisomyia sp.	0	0.0			2	24	om
Neothremma alicia	0	0.0			4	8	sc
Oligophlebodes sp.	0	0.0			4	24	sc
Limnephilidae	3	0.7			4	108	un

Pol-H, #11 (cont.)

Dolophilodes sp.	0	0.0			2	24	cf
Wormaldia sp.	0	0.0			3	24	cf
Polycentropus sp.	0	0.0			6	72	pr
Rhyacophila Angelita grp.	1	0.2			0	18	pr
Rhyacophila Betteni grp.	10	2.2			0	18	pr
Rhyacophila Bif./Color. grp.	0	0.0			0	18	pr
Rhyacophila Brunnea grp.	0	0.0			0	18	pr
Rhyacophila hyalinata	0	0.0			0	18	pr
Rhyacophila iranda	0	0.0			0	18	pr
Rhyacophila Sibirica grp.	0	0.0			0	18	pr
Rhyacophila tucula	0	0.0			0	18	pr
Rhyacophila vaccua	1	0.2			0	18	pr
Rhyacophila verrula	0	0.0			0	18	pr
Rhyacophila vepulsa	1	0.2			0	18	pr
Rhyacophila sp.	0	0.0			0	18	pr
Trichopteran pupae	0	0.0			nn	nn	un
Other			30	6.68			
Annelida(Oligochaeta)	0	0.0			5	108	cg
Coleoptera(Elmidae)					4	108	cg
Cleptelmis sp.	0	0.0			4	108	cg
Heterlimnius sp.	1	0.2			4	108	cg
Lara sp.	0	0.0			4	108	sh
Narpus sp.	0	0.0			4	108	cg
Zaitzevia sp.	0	0.0			4	108	cg
Elmidae	0	0.0			4	108	cg
Diptera							
Agathon sp.	0	0.0			0	2	sc
Ceratopogonidae	0	0.0			6	108	pr
Chironomidae	23	5.1			6	108	un
Chelifera sp.	0	0.0			6	95	pr
Oreogeton sp.	0	0.0			6	95	pr
Psychodidae	0	0.0			10	36	cg
Simuliidae	4	0.9			6	108	cg
Antocha sp.	0	0.0			3	24	cg
Dicranota sp.	2	0.4			3	24	pr
Hexatoma sp.	0	0.0			2	36	pr
Pedicia sp.	0	0.0			3	36	pr
Tipula sp.	0	0.0			4	36	om
Hydracarina	0	0.0			5	108	pr
Mollusca	0	0.0			8	108	cg
Nematoda	0	0.0			5	108	om
Turbellaria	0	0.0			4	108	cg

TOTAL NUMBER =	449
TOTAL TAXA =	24
STD =	14.8
MEAN =	112
SDI =	3.52
% SE Mean =	7
% Coef. Var.=	13
B/E =	0.12
EPT Abund =	419
EPT/Chiron =	18.22
EPT % =	93.32
EPT taxa =	20
c/f tot =	0
c/f % =	0.00
c/g tot =	79
c/g % =	17.59
sh tot =	15
sh % =	3.34
sc tot =	248
sc % =	55.23
p tot =	81
p% =	18.04
om tot =	0
om % =	0.00
unk tot =	26
unk% =	5.79
sc/cf =	---
sc/(sc+cf) =	---
sh/total =	0.033

Macroinvertebrate Data--Montanore, April 1992
Poorman Creek, P01 (1 kick sample), #12

	No.	Percent Total	Total Number	Percent Total	TV	TQ	FFG
Ephemeroptera			479	61.41			
Baetis sp.	104	13.3			5	72	cg
Diphetor sp.	0	0.0			4	72	cg
Caudatella hystrix	0	0.0			1	48	cg
Drunella coloradensis/ flavilinea	0	0.0			0	18	sc
Drunella doddsi	19	2.4			0	4	sc
Drunella grandis	0	0.0			0	24	sc
Drunella spinifera	0	0.0			0	24	pr
Drunella sp.	53	6.8			1	48	sc
Serratella sp.	1	0.1			2	48	cg
Cinygma sp.	0	0.0			2	48	sc
Cinygmula sp.	141	18.1			4	21	sc
Epeorus sp.	141	18.1			0	21	sc
Heptagenia sp.	0	0.0			4	48	sc
Ironodes sp.	0	0.0			3	48	sc
Leucrocuta sp.	0	0.0			1	48	sc
Nixe sp.	0	0.0			2	48	sc
Rhithrogena sp.	12	1.5			4	21	cg
Paraleptophlebia sp.	1	0.1			4	24	cg
Ameletus sp.	7	0.9			0	48	cg
Plecoptera			179	22.95			
Capniidae	1	0.1			1	32	sh
Kathroperla perdita	0	0.0			1	24	cg
Sweltsa/Suwallia sp.	30	3.8			1	24	pr
Despaxia augusta	0	0.0			0	18	sh
Paraleuctra sp.	0	0.0			0	18	sh
Perlomyia sp.	0	0.0			0	18	sh
Leuctridae	1	0.1			0	18	sh
Nemoura sp.	24	3.1			2	24	sh
Visoka cataractae	0	0.0			2	36	sh
Zapada cinctipes	0	0.0			2	16	sh
Zapada columbiana	0	0.0			2	16	sh
Nemouridae	34	4.4			2	36	sh
Yoraperla brevis	0	0.0			1	12	sh
Acroneuria abnormis	0	0.0			0	6	pr
Doroneuria theodora	2	0.3			1	18	pr
Hesperoperla pacifica	2	0.3			2	18	pr
Perlidae	4	0.5			1	24	pr
Isoperla sp.	0	0.0			2	24	pr
Kogotus modestus	0	0.0			2	18	pr
Megarcys sp.	3	0.4			2	24	pr
Setvena bradleyi	0	0.0			2	48	pr
Skwala sp.	0	0.0			2	18	pr
Perlodidae	2	0.3			2	48	pr
Doddsia occidentalis	76	9.7			2	24	sc
Taenionema sp.	0	0.0			2	48	sc
Trichoptera			32	4.10			
Micrasema sp.	0	0.0			1	24	sh
Anagapetus sp.	0	0.0			0	24	sc
Glossosoma sp.	7	0.9			0	24	sc
Arctopsyche grandis	0	0.0			4	18	cf
Hydropsyche sp.	0	0.0			8	108	cg
Parapsyche elsis	1	0.1			4	6	cf
Hydropsychidae	4	0.5			4	108	cf
Agraylea sp.	0	0.0			8	108	cg
Hydroptila sp.	0	0.0			6	108	cg
Ochrotrichia sp.	0	0.0			4	108	cg
Lepidostoma sp.	0	0.0			1	18	sh
Apatania sp.	0	0.0			4	18	sc
Chyrandra centralis	0	0.0			1	18	sh
Ecclisomyia sp.	0	0.0			2	24	om
Neothremma alicia	0	0.0			4	8	sc
Oligophlebodes sp.	2	0.3			4	24	sc
Limnephilidae	7	0.9			4	108	un

Pol-k, #12 (cont.)

Dolophilodes sp.	0	0.0			2	24	cf
Wormaldia sp.	0	0.0			3	24	cf
Polycentropus sp.	0	0.0			6	72	pr
Rhyacophila Angelita grp.	0	0.0			0	18	pr
Rhyacophila Betteni grp.	7	0.9			0	18	pr
Rhyacophila Bif./Color. grp.	0	0.0			0	18	pr
Rhyacophila Brunnea grp.	1	0.1			0	18	pr
Rhyacophila hyalinata	0	0.0			0	18	pr
Rhyacophila iranda	1	0.1			0	18	pr
Rhyacophila Sibirica grp.	0	0.0			0	18	pr
Rhyacophila tucula	0	0.0			0	18	pr
Rhyacophila vaccua	0	0.0			0	18	pr
Rhyacophila verrula	0	0.0			0	18	pr
Rhyacophila vepulsa	2	0.3			0	18	pr
Rhyacophila sp.	0	0.0			0	18	pr
Trichopteran pupae	0	0.0			nn	nn	un
Other			90	11.54			
Annelida(Oligochaeta)	0	0.0			5	108	cg
Coleoptera(Elmidae)					4	108	cg
Cleptelmis sp.	0	0.0			4	108	cg
Heterlimnius sp.	0	0.0			4	108	cg
Lara sp.	0	0.0			4	108	sh
Narpus sp.	0	0.0			4	108	cg
Zaitzevia sp.	0	0.0			4	108	cg
Elmidae	0	0.0			4	108	cg
Diptera							
Agathon sp.	0	0.0			0	2	sc
Ceratopogonidae	0	0.0			6	108	pr
Chironomidae	79	10.1			6	108	un
Chelifera sp.	0	0.0			6	95	pr
Oreogeton sp.	0	0.0			6	95	pr
Psychodidae	0	0.0			10	36	cg
Simuliidae	8	1.0			6	108	cg
Antocha sp.	0	0.0			3	24	cg
Dicranota sp.	3	0.4			3	24	pr
Hexatoma sp.	0	0.0			2	36	pr
Pedicia sp.	0	0.0			3	36	pr
Tipula sp.	0	0.0			4	36	om
Hydracarina	0	0.0			5	108	pr
Mollusca	0	0.0			8	108	cg
Nematoda	0	0.0			5	108	om
Turbellaria	0	0.0			4	108	cg

TOTAL NUMBER =	780
TOTAL TAXA =	32
STD =	25.1
MEAN =	780
SDI =	3.61
% SE Mean =	3
% Coef. Var.=	3
B/E =	0.22
EPT Abund =	690
EPT/Chiron =	8.73
EPT % =	88.46
EPT taxa =	29
c/f tot =	5
c/f % =	0.64
c/g tot =	133
c/g % =	17.05
sh tot =	60
sh % =	7.69
sc tot =	439
sc % =	56.28
p tot =	57
p% =	7.31
om tot =	0
om % =	0.00
unk tot =	86
unk% =	11.03
sc/cf =	87.80
sc/(sc+cf) =	0.989
sh/total =	0.077

Macroinvertebrate Data--Montanore, April 1992
Ramsey Creek, Ra2 (4 Hess samples), #13

	No.	Percent Total	Total Number	Percent Total	TV	TQ	FFG
Ephemeroptera			944	48.63			
Baetis sp.	41	2.1			5	72	cg
Diphetor sp.	0	0.0			4	72	cg
Caudatella hystrix	0	0.0			1	48	cg
Drunella coloradensis/ flavilinea	0	0.0			0	18	sc
Drunella doddsi	40	2.1			0	4	sc
Drunella grandis	0	0.0			0	24	sc
Drunella spinifera	0	0.0			0	24	pr
Drunella sp.	77	4.0			1	48	sc
Serratella sp.	0	0.0			2	48	cg
Cinygma sp.	0	0.0			2	48	sc
Cinygmula sp.	472	24.3			4	21	sc
Epeorus sp.	239	12.3			0	21	sc
Heptagenia sp.	0	0.0			4	48	sc
Ironodes sp.	0	0.0			3	48	sc
Leucrocuta sp.	0	0.0			1	48	sc
Nixe sp.	0	0.0			2	48	sc
Rhithrogena sp.	51	2.6			4	21	cg
Paraleptophlebia sp.	0	0.0			4	24	cg
Ameletus sp.	24	1.2			0	48	cg
Plecoptera			322	16.59			
Capniidae	5	0.3			1	32	sh
Kathroperla perdita	0	0.0			1	24	cg
Sweltsa/Suwallia sp.	145	7.5			1	24	pr
Despaxia augusta	0	0.0			0	18	sh
Paraleuctra sp.	0	0.0			0	18	sh
Perlomyia sp.	2	0.1			0	18	sh
Leuctridae	25	1.3			0	18	sh
Nemoura sp.	7	0.4			2	24	sh
Visoka cataractae	42	2.2			2	36	sh
Zapada cinctipes	0	0.0			2	16	sh
Zapada columbiana	0	0.0			2	16	sh
Nemouridae	34	1.8			2	36	sh
Yoraperla brevis	3	0.2			1	12	sh
Acroneuria abnormis	0	0.0			0	6	pr
Doroneuria theodora	0	0.0			1	18	pr
Hesperoperla pacifica	0	0.0			2	18	pr
Perlidae	6	0.3			1	24	pr
Isoperla sp.	0	0.0			2	24	pr
Kogotus modestus	0	0.0			2	18	pr
Megarcys sp.	3	0.2			2	24	pr
Setvena bradleyi	0	0.0			2	48	pr
Skwala sp.	0	0.0			2	18	pr
Perlodidae	2	0.1			2	48	pr
Doddsia occidentalis	48	2.5			2	24	sc
Taenionema sp.	0	0.0			2	48	sc
Trichoptera			141	7.26			
Micrasema sp.	0	0.0			1	24	sh
Anagapetus sp.	0	0.0			0	24	sc
Glossosoma sp.	47	2.4			0	24	sc
Arctopsyche grandis	0	0.0			4	18	cf
Hydropsyche sp.	0	0.0			8	108	cg
Parapsyche elsis	18	0.9			4	6	cf
Hydropsychidae	12	0.6			4	108	cf
Agraylea sp.	0	0.0			8	108	cg
Hydroptila sp.	0	0.0			6	108	cg
Ochrotrichia sp.	0	0.0			4	108	cg
Lepidostoma sp.	0	0.0			1	18	sh
Apatania sp.	0	0.0			4	18	sc
Chyrandra centralis	1	0.1			1	18	sh
Ecclisomyia sp.	0	0.0			2	24	om
Neothremma alicia	0	0.0			4	8	sc
Oligophlebodes sp.	0	0.0			4	24	sc
Limnephilidae	36	1.9			4	108	un

Ra2-H, #13 (cont.)

Dolophilodes sp.	0	0.0			2	24	cf
Wormaldia sp.	0	0.0			3	24	cf
Polycentropus sp.	0	0.0			6	72	pr
Rhyacophila Angelita grp.	0	0.0			0	18	pr
Rhyacophila Betteni grp.	15	0.8			0	18	pr
Rhyacophila Bif./Color. grp.	0	0.0			0	18	pr
Rhyacophila Brunnea grp.	3	0.2			0	18	pr
Rhyacophila hyalinata	0	0.0			0	18	pr
Rhyacophila iranda	0	0.0			0	18	pr
Rhyacophila Sibirica grp.	0	0.0			0	18	pr
Rhyacophila tucula	0	0.0			0	18	pr
Rhyacophila vaccua	1	0.1			0	18	pr
Rhyacophila verrula	0	0.0			0	18	pr
Rhyacophila vepulsa	7	0.4			0	18	pr
Rhyacophila sp.	1	0.1			0	18	pr
Trichopteran pupae	0	0.0			nn	nn	un
Other			534	27.51			
Annelida(Oligochaeta)	8	0.4			5	108	cg
Coleoptera(Elmidae)					4	108	cg
Cleptelmis sp.	0	0.0			4	108	cg
Heterlimnius sp.	2	0.1			4	108	cg
Lara sp.	0	0.0			4	108	sh
Narpus sp.	0	0.0			4	108	cg
Zaitzevia sp.	0	0.0			4	108	cg
Elmidae	0	0.0			4	108	cg
Diptera							
Agathon sp.	1	0.1			0	2	sc
Ceratopogonidae	0	0.0			6	108	pr
Chironomidae	516	26.6			6	108	un
Chelifera sp.	0	0.0			6	95	pr
Oreogeton sp.	1	0.1			6	95	pr
Psychodidae	0	0.0			10	36	cg
Simuliidae	4	0.2			6	108	cg
Antocha sp.	0	0.0			3	24	cg
Dicranota sp.	0	0.0			3	24	pr
Hexatoma sp.	0	0.0			2	36	pr
Pedicia sp.	0	0.0			3	36	pr
Tipula sp.	0	0.0			4	36	om
Hydracarina	2	0.1			5	108	pr
Mollusca	0	0.0			8	108	cg
Nematoda	0	0.0			5	108	om
Turbellaria	0	0.0			4	108	cg

TOTAL NUMBER =	1941
TOTAL TAXA =	36
STD =	74.3
MEAN =	485
SDI =	3.39
% SE Mean =	8
% Coef. Var.=	15
B/E =	0.04
EPT Abund =	1407
EPT/Chiron =	2.73
EPT % =	72.49
EPT taxa =	29
c/f tot =	30
c/f % =	1.55
c/g tot =	130
c/g % =	6.70
sh tot =	119
sh % =	6.13
sc tot =	924
sc % =	47.60
p tot =	186
p% =	9.58
om tot =	0
om % =	0.00
unk tot =	552
unk% =	28.44
sc/cf =	30.80
sc/(sc+cf) =	0.969
sh/total =	0.061

Macroinvertebrate Data--Montanore, April 1992
Ramsey Creek, Ra2 (1 kick sample), #14

	No.	Percent Total	Total Number	Percent Total	TV	TQ	FFG
Ephemeroptera			641	57.23			
Baetis sp.	91	8.1			5	72	cg
Diphetor sp.	0	0.0			4	72	cg
Caudatella hystrix	0	0.0			1	48	cg
Drunella coloradensis/ flavilinea	0	0.0			0	18	sc
Drunella doddsi	15	1.3			0	4	sc
Drunella grandis	0	0.0			0	24	sc
Drunella spinifera	0	0.0			0	24	pr
Drunella sp.	77	6.9			1	48	sc
Serratella sp.	2	0.2			2	48	cg
Cinygma sp.	0	0.0			2	48	sc
Cinygmula sp.	275	24.6			4	21	sc
Epeorus sp.	136	12.1			0	21	sc
Heptagenia sp.	0	0.0			4	48	sc
Ironodes sp.	0	0.0			3	48	sc
Leucrocuta sp.	0	0.0			1	48	sc
Nixe sp.	0	0.0			2	48	sc
Rhithrogena sp.	16	1.4			4	21	cg
Paraleptophlebia sp.	0	0.0			4	24	cg
Ameletus sp.	29	2.6			0	48	cg
Plecoptera			213	19.02			
Capniidae	7	0.6			1	32	sh
Kathroperla perdita	0	0.0			1	24	cg
Sweltsa/Suwallia sp.	76	6.8			1	24	pr
Despaxia augusta	0	0.0			0	18	sh
Paraleuctra sp.	0	0.0			0	18	sh
Perlomyia sp.	0	0.0			0	18	sh
Leuctridae	5	0.4			0	18	sh
Nemoura sp.	14	1.3			2	24	sh
Visoka cataractae	23	2.1			2	36	sh
Zapada cinctipes	0	0.0			2	16	sh
Zapada columbiana	0	0.0			2	16	sh
Nemouridae	40	3.6			2	36	sh
Yoraperla brevis	1	0.1			1	12	sh
Acroneuria abnormis	0	0.0			0	6	pr
Doroneuria theodora	1	0.1			1	18	pr
Hesperoperla pacifica	0	0.0			2	18	pr
Perlidae	2	0.2			1	24	pr
Isoperla sp.	0	0.0			2	24	pr
Kogotus modestus	0	0.0			2	18	pr
Megarcys sp.	4	0.4			2	24	pr
Setvena bradleyi	0	0.0			2	48	pr
Skwala sp.	0	0.0			2	18	pr
Perlodidae	0	0.0			2	48	pr
Doddsia occidentalis	40	3.6			2	24	sc
Taenionema sp.	0	0.0			2	48	sc
Trichoptera			43	3.84			
Micrasema sp.	0	0.0			1	24	sh
Anagapetus sp.	0	0.0			0	24	sc
Glossosoma sp.	9	0.8			0	24	sc
Arctopsyche grandis	0	0.0			4	18	cf
Hydropsyche sp.	0	0.0			8	108	cg
Parapsyche elsis	9	0.8			4	6	cf
Hydropsychidae	3	0.3			4	108	cf
Agraylea sp.	0	0.0			8	108	cg
Hydroptila sp.	0	0.0			6	108	cg
Ochrotrichia sp.	0	0.0			4	108	cg
Lepidostoma sp.	0	0.0			1	18	sh
Apatania sp.	0	0.0			4	18	sc
Chyrandra centralis	1	0.1			1	18	sh
Ecclisomyia sp.	0	0.0			2	24	om
Neothremma alicia	0	0.0			4	8	sc
Oligophlebodes sp.	0	0.0			4	24	sc
Limnephilidae	9	0.8			4	108	un

Ra2-k #14 (cont.)

Dolophilodes sp.	0	0.0			2	24	cf
Wormaldia sp.	0	0.0			3	24	cf
Polycentropus sp.	0	0.0			6	72	pr
Rhyacophila Angelita grp.	0	0.0			0	18	pr
Rhyacophila Betteni grp.	8	0.7			0	18	pr
Rhyacophila Bif./Color. grp.	0	0.0			0	18	pr
Rhyacophila Brunnea grp.	1	0.1			0	18	pr
Rhyacophila hyalinata	0	0.0			0	18	pr
Rhyacophila iranda	0	0.0			0	18	pr
Rhyacophila Sibirica grp.	0	0.0			0	18	pr
Rhyacophila tucula	0	0.0			0	18	pr
Rhyacophila vaccua	0	0.0			0	18	pr
Rhyacophila verrula	0	0.0			0	18	pr
Rhyacophila vepulsa	1	0.1			0	18	pr
Rhyacophila sp.	2	0.2			0	18	pr
Trichopteran pupae	0	0.0			nn	nn	un
Other			223	19.91			
Annelida(Oligochaeta)	4	0.4			5	108	cg
Coleoptera(Elmidae)					4	108	cg
Cleptelmis sp.	0	0.0			4	108	cg
Heterlimnius sp.	0	0.0			4	108	cg
Lara sp.	0	0.0			4	108	sh
Narpus sp.	0	0.0			4	108	cg
Zaitzevia sp.	0	0.0			4	108	cg
Elmidae	0	0.0			4	108	cg
Diptera							
Agathon sp.	0	0.0			0	2	sc
Ceratopogonidae	0	0.0			6	108	pr
Chironomidae	191	17.1			6	108	un
Chelifera sp.	0	0.0			6	95	pr
Oreogeton sp.	0	0.0			6	95	pr
Psychodidae	26	2.3			10	36	cg
Simuliidae	0	0.0			6	108	cg
Antocha sp.	2	0.2			3	24	cg
Dicranota sp.	0	0.0			3	24	pr
Hexatoma sp.	0	0.0			2	36	pr
Pedicia sp.	0	0.0			3	36	pr
Tipula sp.	0	0.0			4	36	om
Hydracarina	0	0.0			5	108	pr
Mollusca	0	0.0			8	108	cg
Nematoda	0	0.0			5	108	om
Turbellaria	0	0.0			4	108	cg

TOTAL NUMBER =	1120
TOTAL TAXA =	32
STD =	38.0
MEAN =	1120
SDI =	3.59
% SE Mean =	3
% Coef. Var.=	3
B/E =	0.14
EPT Abund =	897
EPT/Chiron =	4.70
EPT % =	80.09
EPT taxa =	28
c/f tot =	12
c/f % =	1.07
c/g tot =	170
c/g % =	15.18
sh tot =	91
sh % =	8.13
sc tot =	552
sc % =	49.29
p tot =	95
p% =	8.48
om tot =	0
om % =	0.00
unk tot =	200
unk% =	17.86
sc/cf =	46.00
sc/(sc+cf) =	0.979
sh/total =	0.081

Macroinvertebrate Data--Montanore, April 1992
Bear Creek, Be2 (4 Hess samples), #15

	No.	Percent Total	Total Number	Percent Total	TV	TQ	FFG
Ephemeroptera			589	58.49			
Baetis sp.	11	1.1			5	72	cg
Diphetor sp.	0	0.0			4	72	cg
Caudatella hystrix	0	0.0			1	48	cg
Drunella coloradensis/ flavilinea	0	0.0			0	18	sc
Drunella doddsi	20	2.0			0	4	sc
Drunella grandis	0	0.0			0	24	sc
Drunella spinifera	0	0.0			0	24	pr
Drunella sp.	110	10.9			1	48	sc
Serratella sp.	0	0.0			2	48	cg
Cinygma sp.	0	0.0			2	48	sc
Cinygmula sp.	260	25.8			4	21	sc
Epeorus sp.	153	15.2			0	21	sc
Heptagenia sp.	0	0.0			4	48	sc
Ironodes sp.	0	0.0			3	48	sc
Leucrocuta sp.	0	0.0			1	48	sc
Nixe sp.	0	0.0			2	48	sc
Rhithrogena sp.	29	2.9			4	21	cg
Paraleptophlebia sp.	0	0.0			4	24	cg
Ameletus sp.	6	0.6			0	48	cg
Plecoptera			118	11.72			
Capniidae	1	0.1			1	32	sh
Kathroperla perdita	0	0.0			1	24	cg
Sweltsa/Suwallia sp.	51	5.1			1	24	pr
Despaxia augusta	5	0.5			0	18	sh
Paraleuctra sp.	0	0.0			0	18	sh
Perlomyia sp.	0	0.0			0	18	sh
Leuctridae	2	0.2			0	18	sh
Nemoura sp.	4	0.4			2	24	sh
Visoka cataractae	29	2.9			2	36	sh
Zapada cinctipes	0	0.0			2	16	sh
Zapada columbiana	3	0.3			2	16	sh
Nemouridae	0	0.0			2	36	sh
Yoraperla brevis	2	0.2			1	12	sh
Acroneuria abnormis	0	0.0			0	6	pr
Doroneuria theodora	1	0.1			1	18	pr
Hesperoperla pacifica	0	0.0			2	18	pr
Perlidae	3	0.3			1	24	pr
Isoperla sp.	0	0.0			2	24	pr
Kogotus modestus	0	0.0			2	18	pr
Megarcys sp.	4	0.4			2	24	pr
Setvena bradleyi	0	0.0			2	48	pr
Skwala sp.	0	0.0			2	18	pr
Perlodidae	2	0.2			2	48	pr
Doddsia occidentalis	11	1.1			2	24	sc
Taenionema sp.	0	0.0			2	48	sc
Trichoptera			137	13.60			
Micrasema sp.	0	0.0			1	24	sh
Anagapetus sp.	0	0.0			0	24	sc
Glossosoma sp.	58	5.8			0	24	sc
Arctopsyche grandis	0	0.0			4	18	cf
Hydropsyche sp.	0	0.0			8	108	cg
Parapsyche elsis	4	0.4			4	6	cf
Hydropsychidae	5	0.5			4	108	cf
Agraylea sp.	0	0.0			8	108	cg
Hydroptila sp.	0	0.0			6	108	cg
Ochrotrichia sp.	0	0.0			4	108	cg
Lepidostoma sp.	0	0.0			1	18	sh
Apatania sp.	0	0.0			4	18	sc
Chyrandra centralis	0	0.0			1	18	sh
Ecclisomyia sp.	0	0.0			2	24	cm
Neothremma alicia	0	0.0			4	8	sc
Oligophlebodes sp.	22	2.2			4	24	sc
Limnephilidae	34	3.4			4	108	un

Be2-H, #15 (cont.)

Dolophilodes sp.	0	0.0			2	24	cf
Wormaldia sp.	0	0.0			3	24	cf
Polycentropus sp.	0	0.0			6	72	pr
Rhyacophila Angelita grp.	1	0.1			0	18	pr
Rhyacophila Betteni grp.	4	0.4			0	18	pr
Rhyacophila Bif./Color. grp.	0	0.0			0	18	pr
Rhyacophila Brunnea grp.	0	0.0			0	18	pr
Rhyacophila hyalinata	0	0.0			0	18	pr
Rhyacophila iranda	0	0.0			0	18	pr
Rhyacophila Sibirica grp.	0	0.0			0	18	pr
Rhyacophila tucula	0	0.0			0	18	pr
Rhyacophila vaccua	0	0.0			0	18	pr
Rhyacophila verrula	0	0.0			0	18	pr
Rhyacophila vepulsa	8	0.8			0	18	pr
Rhyacophila sp.	1	0.1			0	18	pr
Trichopteran pupae	0	0.0			nn	nn	un
Other			163	16.19			
Annelida(Oligochaeta)	4	0.4			5	108	cg
Coleoptera(Elmidae)					4	108	cg
Cleptelmis sp.	0	0.0			4	108	cg
Heterlimnius sp.	16	1.6			4	108	cg
Lara sp.	0	0.0			4	108	sh
Narpus sp.	0	0.0			4	108	cg
Zaitzevia sp.	0	0.0			4	108	cg
Elmidae	0	0.0			4	108	cg
Diptera							
Agathon sp.	0	0.0			0	2	sc
Ceratopogonidae	0	0.0			6	108	pr
Chironomidae	129	12.8			6	108	un
Chelifera sp.	5	0.5			6	95	pr
Oreogeton sp.	1	0.1			6	95	pr
Psychodidae	0	0.0			10	36	cg
Simuliidae	1	0.1			6	108	cg
Antocha sp.	0	0.0			3	24	cg
Dicranota sp.	4	0.4			3	24	pr
Hexatoma sp.	1	0.1			2	36	pr
Pedicia sp.	0	0.0			3	36	pr
Tipula sp.	0	0.0			4	36	om
Hydracarina	0	0.0			5	108	pr
Mollusca	0	0.0			8	108	cg
Nematoda	0	0.0			5	108	om
Turbellaria	2	0.2			4	108	cg

TOTAL NUMBER =	1007
TOTAL TAXA =	38
STD =	34.7
MEAN =	252
SDI =	3.63
% SE Mean =	7
% Coef. Var.=	14
B/E =	0.02
EPT Abund =	844
EPT/Chiron =	6.54
EPT % =	83.81
EPT taxa =	29
c/f tot =	9
c/f % =	0.89
c/g tot =	69
c/g % =	6.85
sh tot =	46
sh % =	4.57
sc tot =	634
sc % =	62.96
p tot =	86
p% =	8.54
om tot =	0
om % =	0.00
unk tot =	163
unk% =	16.19
sc/cf =	70.44
sc/(sc+cf) =	0.986
sh/total =	0.046

Macroinvertebrate Data--Montanore, April 1992
Bear Creek, Be2 (1 kick sample), #16

	No.	Percent Total	Total Number	Percent Total	TV	TQ	FFG
Ephemeroptera			861	43.01			
Baetis sp.	53	2.6			5	72	cg
Diphetor sp.	0	0.0			4	72	cg
Caudatella hystrix	0	0.0			1	48	cg
Drunella coloradensis/ flavilinea	0	0.0			0	18	sc
Drunella doddsi	43	2.1			0	4	sc
Drunella grandis	0	0.0			0	24	sc
Drunella spinifera	2	0.1			0	24	pr
Drunella sp.	188	9.4			1	48	sc
Serratella sp.	1	0.0			2	48	cg
Cinygma sp.	0	0.0			2	48	sc
Cinygmula sp.	326	16.3			4	21	sc
Epeorus sp.	175	8.7			0	21	sc
Heptagenia sp.	0	0.0			4	48	sc
Ironodes sp.	0	0.0			3	48	sc
Leucrocuta sp.	0	0.0			1	48	sc
Nixe sp.	0	0.0			2	48	sc
Rhithrogena sp.	53	2.6			4	21	cg
Paraleptophlebia sp.	7	0.3			4	24	cg
Ameletus sp.	13	0.6			0	48	cg
Plecoptera			656	32.77			
Capniidae	23	1.1			1	32	sh
Kathroperla perdita	0	0.0			1	24	cg
Sweltsa/Suwallia sp.	99	4.9			1	24	pr
Despaxia augusta	19	0.9			0	18	sh
Paraleuctra sp.	0	0.0			0	18	sh
Perlomyia sp.	0	0.0			0	18	sh
Leuctridae	0	0.0			0	18	sh
Nemoura sp.	109	5.4			2	24	sh
Visoka cataractae	44	2.2			2	36	sh
Zapada cinctipes	0	0.0			2	16	sh
Zapada columbiana	8	0.4			2	16	sh
Nemouridae	278	13.9			2	36	sh
Yoraperla brevis	7	0.3			1	12	sh
Acroneuria abnormis	0	0.0			0	6	pr
Doroneuria theodora	0	0.0			1	18	pr
Hesperoperla pacifica	0	0.0			2	18	pr
Perlidae	21	1.0			1	24	pr
Isoperla sp.	4	0.2			2	24	pr
Kogotus modestus	0	0.0			2	18	pr
Megarcys sp.	2	0.1			2	24	pr
Setvena bradleyi	1	0.0			2	48	pr
Skwala sp.	0	0.0			2	18	pr
Perlodidae	4	0.2			2	48	pr
Doddsia occidentalis	37	1.8			2	24	sc
Taenionema sp.	0	0.0			2	48	sc
Trichoptera			91	4.55			
Micrasema sp.	0	0.0			1	24	sh
Anagapetus sp.	0	0.0			0	24	sc
Glossosoma sp.	23	1.1			0	24	sc
Arctopsyche grandis	0	0.0			4	18	cf
Hydropsyche sp.	0	0.0			8	108	cg
Parapsyche elsis	11	0.5			4	6	cf
Hydropsychidae	9	0.4			4	108	cf
Agraylea sp.	0	0.0			8	108	cg
Hydroptila sp.	0	0.0			6	108	cg
Ochrotrichia sp.	0	0.0			4	108	cg
Lepidostoma sp.	0	0.0			1	18	sh
Apatania sp.	0	0.0			4	18	sc
Chyrandra centralis	0	0.0			1	18	sh
Ecclisomyia sp.	0	0.0			2	24	cm
Neothremma alicia	0	0.0			4	8	sc
Oligophlebodes sp.	8	0.4			4	24	sc
Limnephilidae	11	0.5			4	108	un

Be2-k, #16 (cont.)

Dolophilodes sp.	0	0.0			2	24	cf
Wormaldia sp.	0	0.0			3	24	cf
Polycentropus sp.	0	0.0			6	72	pr
Rhyacophila Angelita grp.	0	0.0			0	18	pr
Rhyacophila Betteni grp.	7	0.3			0	18	pr
Rhyacophila Bif./Color. grp.	0	0.0			0	18	pr
Rhyacophila Brunnea grp.	11	0.5			0	18	pr
Rhyacophila hyalinata	0	0.0			0	18	pr
Rhyacophila iranda	0	0.0			0	18	pr
Rhyacophila Sibirica grp.	0	0.0			0	18	pr
Rhyacophila tucula	0	0.0			0	18	pr
Rhyacophila vaccua	0	0.0			0	18	pr
Rhyacophila verrula	0	0.0			0	18	pr
Rhyacophila vepulsa	8	0.4			0	18	pr
Rhyacophila sp.	3	0.1			0	18	pr
Trichopteran pupae	0	0.0			nn	nn	un
Other			394	19.68			
Annelida(Oligochaeta)	3	0.1			5	108	cg
Coleoptera(Elmidae)					4	108	cg
Cleptelmis sp.	0	0.0			4	108	cg
Heterlimnius sp.	6	0.3			4	108	cg
Lara sp.	0	0.0			4	108	sh
Narpus sp.	0	0.0			4	108	cg
Zaitzevia sp.	0	0.0			4	108	cg
Elmidae	0	0.0			4	108	cg
Diptera							
Agathon sp.	0	0.0			0	2	sc
Ceratopogonidae	0	0.0			6	108	pr
Chironomidae	341	17.0			6	108	un
Chelifera sp.	0	0.0			6	95	pr
Oreogeton sp.	0	0.0			6	95	pr
Psychodidae	0	0.0			10	36	cg
Simuliidae	8	0.4			6	108	cg
Antocha sp.	2	0.1			3	24	cg
Dicranota sp.	7	0.3			3	24	pr
Hexatoma sp.	0	0.0			2	36	pr
Pedicia sp.	0	0.0			3	36	pr
Tipula sp.	0	0.0			4	36	cm
Hydracarina	0	0.0			5	108	pr
Mollusca	0	0.0			8	108	cg
Nematoda	0	0.0			5	108	cm
Turbellaria	27	1.3			4	108	cg

TOTAL NUMBER =	2002
TOTAL TAXA =	40
STD =	60.2
MEAN =	2002
SDI =	3.89
% SE Mean =	3
% Coef. Var.=	3
B/E =	0.06
EPT Abund =	1608
EPT/Chiron =	4.72
EPT % =	80.32
EPT taxa =	33
c/f tot =	20
c/f % =	1.00
c/g tot =	173
c/g % =	8.64
sh tot =	488
sh % =	24.38
sc tot =	800
sc % =	39.96
p tot =	169
p% =	8.44
cm tot =	0
cm % =	0.00
unk tot =	352
unk% =	17.58
sc/cf =	40.00
sc/(sc+cf) =	0.976
sh/total =	0.244

Appendix C. Macroinvertebrate station totals, summer 1992.

Macroinvertebrate Data--Montanore, August 1992
Libby Creek, L1 (4 Hess samples), #17

	No.	Percent Total	Total Number	Percent Total	TV	TQ	FFG
Ephemeroptera			843	56.58			
Baetis sp.	45	3.0			5	72	cg
Diphetor sp.	0	0.0			4	72	cg
Caudatella hystrix	0	0.0			1	48	cg
Drunella coloradensis/ flavilinea	4	0.3			0	18	sc
Drunella doddsi	26	1.7			0	4	sc
Drunella grandis	0	0.0			0	24	sc
Drunella spinifera	3	0.2			0	24	pr
Drunella sp.	0	0.0			1	48	sc
Serratella sp.	20	1.3			2	48	cg
Cinygma sp.	0	0.0			2	48	sc
Cinygmula sp.	62	4.2			4	21	sc
Epeorus sp.	33	2.2			0	21	sc
Heptagenia sp.	0	0.0			4	48	sc
Ironodes sp.	0	0.0			3	48	sc
Leucrocuta sp.	0	0.0			1	48	sc
Nixe sp.	0	0.0			2	48	sc
Rhithrogena sp.	550	36.9			4	21	cg
Paraleptophlebia sp.	94	6.3			4	24	cg
Ameletus sp.	6	0.4			0	48	cg
Plecoptera			132	8.86			
Capniidae	2	0.1			1	32	sh
Kathroperla perdita	0	0.0			1	24	cg
Sweltsa/Suwallia sp.	98	6.6			1	24	pr
Despaxia augusta	0	0.0			0	18	sh
Paraleuctra sp.	0	0.0			0	18	sh
Perlomyia sp.	0	0.0			0	18	sh
Leuctridae	5	0.3			0	18	sh
Nemoura sp.	0	0.0			2	24	sh
Visoka cataractae	0	0.0			2	36	sh
Zapada cinctipes	0	0.0			2	16	sh
Zapada columbiana	3	0.2			2	16	sh
Nemouridae	0	0.0			2	36	sh
Yoraperla brevis	0	0.0			1	12	sh
Acroneuria abnormis	0	0.0			0	6	pr
Doroneuria theodora	1	0.1			1	18	pr
Hesperoperla pacifica	0	0.0			2	18	pr
Perlidae	2	0.1			1	24	pr
Isoperla sp.	0	0.0			2	24	pr
Kogotus modestus	0	0.0			2	18	pr
Megarcys sp.	1	0.1			2	24	pr
Setvena bradleyi	0	0.0			2	48	pr
Skwala sp.	0	0.0			2	18	pr
Perlodidae	20	1.3			2	48	pr
Doddsia occidentalis	0	0.0			2	24	sc
Taenionema sp.	0	0.0			2	48	sc
Trichoptera			207	13.89			
Micrasema sp.	0	0.0			1	24	sh
Anagapetus sp.	0	0.0			0	24	sc
Glossosoma sp.	8	0.5			0	24	sc
Arctopsyche grandis	0	0.0			4	18	cf
Hydropsyche sp.	0	0.0			8	108	cg
Parapsyche elsis	14	0.9			4	6	cf
Hydropsychidae	79	5.3			4	108	cf
Agraylea sp.	0	0.0			8	108	cg
Hydroptila sp.	0	0.0			6	108	cg
Ochrotrichia sp.	0	0.0			4	108	cg
Lepidostoma sp.	0	0.0			1	18	sh
Apatania sp.	0	0.0			4	18	sc
Chyrandra centralis	0	0.0			1	18	sh
Ecclisomyia sp.	0	0.0			2	24	om
Neothremma alicia	0	0.0			4	8	sc
Oligophlebodes sp.	81	5.4			4	24	sc
Limnephilidae	5	0.3			4	108	un

L1-H, #17 (cont.)

Dolophilodes sp.	0	0.0			2	24	cf
Wormaldia sp.	0	0.0			3	24	cf
Polycentropus sp.	0	0.0			6	72	pr
Rhyacophila Angelita grp.	0	0.0			0	18	pr
Rhyacophila Betteni grp.	4	0.3			0	18	pr
Rhyacophila Bif./Color. grp.	0	0.0			0	18	pr
Rhyacophila Brunnea grp.	3	0.2			0	18	pr
Rhyacophila hyalinata	0	0.0			0	18	pr
Rhyacophila iranda	0	0.0			0	18	pr
Rhyacophila Sibirica grp.	0	0.0			0	18	pr
Rhyacophila tucula	0	0.0			0	18	pr
Rhyacophila vaccua	0	0.0			0	18	pr
Rhyacophila verrula	0	0.0			0	18	pr
Rhyacophila vepulsa	0	0.0			0	18	pr
Rhyacophila sp.	5	0.3			0	18	pr
Trichopteran pupae	8	0.5			nn	nn	un
Other			308	20.67			
Annelida(Oligochaeta)	4	0.3			5	108	cg
Coleoptera(Elmidae)					4	108	cg
Cleptelmis sp.	0	0.0			4	108	cg
Heterlimnius sp.	9	0.6			4	108	cg
Lara sp.	0	0.0			4	108	sh
Narpus sp.	0	0.0			4	108	cg
Zaitzevia sp.	0	0.0			4	108	cg
Elmidae	0	0.0			4	108	cg
Diptera							
Agathon sp.	0	0.0			0	2	sc
Ceratopogonidae	1	0.1			6	108	pr
Chironomidae	286	19.2			6	108	un
Chelifera sp.	0	0.0			6	95	pr
Oreogeton sp.	1	0.1			6	95	pr
Psychodidae	0	0.0			10	36	cg
Simuliidae	1	0.1			6	108	cg
Antocha sp.	0	0.0			3	24	cg
Dicranota sp.	0	0.0			3	24	pr
Hexatoma sp.	2	0.1			2	36	pr
Pedicia sp.	0	0.0			3	36	pr
Tipula sp.	0	0.0			4	36	om
Hydracarina	4	0.3			5	108	pr
Mollusca	0	0.0			8	108	cg
Nematoda	0	0.0			5	108	om
Turbellaria	0	0.0			4	108	cg

TOTAL NUMBER =	1490
TOTAL TAXA =	35
STD =	63.4
MEAN =	373
SDI =	3.21
% SE Mean =	9
% Coef. Var.=	17
B/E =	0.05
EPT Abund =	1182
EPT/Chiron =	4.13
EPT % =	79.33
EPT taxa =	27
c/f tot =	93
c/f % =	6.24
c/g tot =	729
c/g % =	48.93
sh tot =	10
sh % =	0.67
sc tot =	214
sc % =	14.36
p tot =	145
p% =	9.73
om tot =	0
om % =	0.00
unk tot =	299
unk% =	20.07
sc/cf =	2.30
sc/(sc+cf) =	0.697
sh/total =	0.007

Macroinvertebrate Data--Montanore, August 1992
Libby Creek, L1 (1 kick sample), #18

	No.	Percent Total	Total Number	Percent Total	TV	TQ	FFG
Ephemeroptera			812	42.65			
Baetis sp.	214	11.2			5	72	cg
Diphetor sp.	0	0.0			4	72	cg
Caudatella hystrix	0	0.0			1	48	cg
Drunella coloradensis/ flavilinea	9	0.5			0	18	sc
Drunella doddsi	26	1.4			0	4	sc
Drunella grandis	0	0.0			0	24	sc
Drunella spinifera	0	0.0			0	24	pr
Drunella sp.	0	0.0			1	48	sc
Serratella sp.	34	1.8			2	48	cg
Cinygma sp.	0	0.0			2	48	sc
Cinygmula sp.	12	0.6			4	21	sc
Epeorus sp.	115	6.0			0	21	sc
Heptagenia sp.	0	0.0			4	48	sc
Ironodes sp.	0	0.0			3	48	sc
Leucrocuta sp.	0	0.0			1	48	sc
Nixe sp.	0	0.0			2	48	sc
Rhithrogena sp.	296	15.5			4	21	cg
Paraleptophlebia sp.	102	5.4			4	24	cg
Ameletus sp.	4	0.2			0	48	cg
Plecoptera			364	19.12			
Capniidae	0	0.0			1	32	sh
Kathroperla perdita	0	0.0			1	24	cg
Sweltsa/Suwallia sp.	50	2.6			1	24	pr
Despaxia augusta	0	0.0			0	18	sh
Paraleuctra sp.	0	0.0			0	18	sh
Perlomyia sp.	0	0.0			0	18	sh
Leuctridae	0	0.0			0	18	sh
Nemoura sp.	0	0.0			2	24	sh
Visoka cataractae	2	0.1			2	36	sh
Zapada cinctipes	0	0.0			2	16	sh
Zapada columbiana	22	1.2			2	16	sh
Nemouridae	278	14.6			2	36	sh
Yoraperla brevis	0	0.0			1	12	sh
Acroneuria abnormis	0	0.0			0	6	pr
Doroneuria theodora	2	0.1			1	18	pr
Hesperoperla pacifica	0	0.0			2	18	pr
Perlidae	2	0.1			1	24	pr
Isoperla sp.	0	0.0			2	24	pr
Kogotus modestus	0	0.0			2	18	pr
Megarcys sp.	8	0.4			2	24	pr
Setvena bradleyi	0	0.0			2	48	pr
Skwala sp.	0	0.0			2	18	pr
Perlodidae	0	0.0			2	48	pr
Doddsia occidentalis	0	0.0			2	24	sc
Taenionema sp.	0	0.0			2	48	sc
Trichoptera			200	10.50			
Micrasema sp.	0	0.0			1	24	sh
Anagapetus sp.	0	0.0			0	24	sc
Glossosoma sp.	2	0.1			0	24	sc
Arctopsyche grandis	15	0.8			4	18	cf
Hydropsyche sp.	0	0.0			8	108	cg
Parapsyche elsis	0	0.0			4	6	cf
Hydropsychidae	89	4.7			4	108	cf
Agraylea sp.	0	0.0			8	108	cg
Hydroptila sp.	0	0.0			6	108	cg
Ochrotrichia sp.	0	0.0			4	108	cg
Lepidostoma sp.	0	0.0			1	18	sh
Apatania sp.	0	0.0			4	18	sc
Chyrandra centralis	0	0.0			1	18	sh
Ecclisomyia sp.	0	0.0			2	24	cm
Neothremma alicia	0	0.0			4	8	sc
Oligophlebodes sp.	55	2.9			4	24	sc
Limnephilidae	5	0.3			4	108	un

L1-k (#18 (cont.)

Dolophilodes sp.	9	0.5			2	24	cf
Wormaldia sp.	0	0.0			3	24	cf
Polycentropus sp.	0	0.0			6	72	pr
Rhyacophila Angelita grp.	1	0.1			0	18	pr
Rhyacophila Betteni grp.	2	0.1			0	18	pr
Rhyacophila Bif./Color. grp.	0	0.0			0	18	pr
Rhyacophila Brunnea grp.	15	0.8			0	18	pr
Rhyacophila hyalinata	0	0.0			0	18	pr
Rhyacophila iranda	0	0.0			0	18	pr
Rhyacophila Sibirica grp.	0	0.0			0	18	pr
Rhyacophila tucula	0	0.0			0	18	pr
Rhyacophila vaccua	0	0.0			0	18	pr
Rhyacophila verrula	0	0.0			0	18	pr
Rhyacophila vepulsa	0	0.0			0	18	pr
Rhyacophila sp.	2	0.1			0	18	pr
Trichopteran pupae	5	0.3			nn	nn	un
Other			528	27.73			
Annelida(Oligochaeta)	0	0.0			5	108	cg
Coleoptera(Elmidae)					4	108	cg
Cleptelmis sp.	0	0.0			4	108	cg
Heterlimnius sp.	2	0.1			4	108	cg
Lara sp.	0	0.0			4	108	sh
Narpus sp.	0	0.0			4	108	cg
Zaitzevia sp.	0	0.0			4	108	cg
Elmidae	0	0.0			4	108	cg
Diptera							
Agathon sp.	0	0.0			0	2	sc
Ceratopogonidae	0	0.0			6	108	pr
Chironomidae	328	17.2			6	108	un
Chelifera sp.	0	0.0			6	95	pr
Oreogeton sp.	0	0.0			6	95	pr
Psychodidae	0	0.0			10	36	cg
Simuliidae	195	10.2			6	108	cg
Antocha sp.	0	0.0			3	24	cg
Dicranota sp.	0	0.0			3	24	pr
Hexatoma sp.	3	0.2			2	36	pr
Pedicia sp.	0	0.0			3	36	pr
Tipula sp.	0	0.0			4	36	om
Hydracarina	0	0.0			5	108	pr
Mollusca	0	0.0			8	108	cg
Nematoda	0	0.0			5	108	om
Turbellaria	0	0.0			4	108	cg

TOTAL NUMBER =	1904
TOTAL TAXA =	31
STD =	60.0
MEAN =	1904
SDI =	3.60
% SE Mean =	3
% Coef. Var.=	3
B/E =	0.26
EPT Abund =	1376
EPT/Chiron =	4.20
EPT % =	72.27
EPT taxa =	27
c/f tot =	113
c/f % =	5.93
c/g tot =	847
c/g % =	44.49
sh tot =	302
sh % =	15.86
sc tot =	219
sc % =	11.50
p tot =	85
p% =	4.46
om tot =	0
om % =	0.00
unk tot =	338
unk% =	17.75
sc/cf =	1.94
sc/(sc+cf) =	0.660
sh/total =	0.159

Macroinvertebrate Data--Montanore, August 1992
Libby Creek, L3 (4 Hess samples), #19

	No.	Percent Total	Total Number	Percent Total	TV	TQ	FFG
Ephemeroptera			1286	63.38			
Baetis sp.	269	13.3			5	72	cg
Diphetor sp.	0	0.0			4	72	cg
Caudatella hystrix	0	0.0			1	48	cg
Drunella coloradensis/ flavilinea	3	0.1			0	18	sc
Drunella doddsi	351	17.3			0	4	sc
Drunella grandis	0	0.0			0	24	sc
Drunella spinifera	1	0.0			0	24	pr
Drunella sp.	0	0.0			1	48	sc
Serratella sp.	35	1.7			2	48	cg
Cinygma sp.	0	0.0			2	48	sc
Cinygmula sp.	91	4.5			4	21	sc
Epeorus sp.	157	7.7			0	21	sc
Heptagenia sp.	0	0.0			4	48	sc
Ironodes sp.	0	0.0			3	48	sc
Leucrocuta sp.	0	0.0			1	48	sc
Nixe sp.	0	0.0			2	48	sc
Rhithrogena sp.	347	17.1			4	21	cg
Paraleptophlebia sp.	19	0.9			4	24	cg
Ameletus sp.	13	0.6			0	48	cg
Plecoptera			164	8.08			
Capniidae	0	0.0			1	32	sh
Kathroperla perdita	0	0.0			1	24	cg
Sweltsa/Suwallia sp.	88	4.3			1	24	pr
Despaxia augusta	0	0.0			0	18	sh
Paraleuctra sp.	0	0.0			0	18	sh
Perlomyia sp.	0	0.0			0	18	sh
Leuctridae	4	0.2			0	18	sh
Nemoura sp.	0	0.0			2	24	sh
Visoka cataractae	0	0.0			2	36	sh
Zapada cinctipes	0	0.0			2	16	sh
Zapada columbiana	7	0.3			2	16	sh
Nemouridae	0	0.0			2	36	sh
Yoraperla brevis	0	0.0			1	12	sh
Acroneuria abnormis	0	0.0			0	6	pr
Doroneuria theodora	0	0.0			1	18	pr
Hesperoperla pacifica	0	0.0			2	18	pr
Perlidae	7	0.3			1	24	pr
Isoperla sp.	0	0.0			2	24	pr
Kogotus modestus	0	0.0			2	18	pr
Megarcys sp.	46	2.3			2	24	pr
Setvena bradleyi	0	0.0			2	48	pr
Skwala sp.	0	0.0			2	18	pr
Perlodidae	12	0.6			2	48	pr
Doddsia occidentalis	0	0.0			2	24	sc
Taenionema sp.	0	0.0			2	48	sc
Trichoptera			387	19.07			
Micrasema sp.	18	0.9			1	24	sh
Anagapetus sp.	0	0.0			0	24	sc
Glossosoma sp.	0	0.0			0	24	sc
Arctopsyche grandis	7	0.3			4	18	cf
Hydropsyche sp.	0	0.0			8	108	cg
Parapsyche elsis	0	0.0			4	6	cf
Hydropsychidae	106	5.2			4	108	cf
Agraylea sp.	37	1.8			8	108	cg
Hydroptila sp.	0	0.0			6	108	cg
Ochrotrichia sp.	0	0.0			4	108	cg
Lepidostoma sp.	0	0.0			1	18	sh
Apatania sp.	0	0.0			4	18	sc
Chyrandra centralis	0	0.0			1	18	sh
Ecclisomyia sp.	1	0.0			2	24	om
Neothremma alicia	0	0.0			4	8	sc
Oligophlebodes sp.	173	8.5			4	24	sc
Limnephilidae	24	1.2			4	108	un

L1-H, #19 (cont.)

Dolophilodes sp.	0	0.0			2	24	cf
Wormaldia sp.	0	0.0			3	24	cf
Polycentropus sp.	0	0.0			6	72	pr
Rhyacophila Angelita grp.	0	0.0			0	18	pr
Rhyacophila Betteni grp.	0	0.0			0	18	pr
Rhyacophila Bif./Color. grp.	0	0.0			0	18	pr
Rhyacophila Brunnea grp.	2	0.1			0	18	pr
Rhyacophila hyalinata	0	0.0			0	18	pr
Rhyacophila iranda	0	0.0			0	18	pr
Rhyacophila Sibirica grp.	0	0.0			0	18	pr
Rhyacophila tucula	0	0.0			0	18	pr
Rhyacophila vaccua	0	0.0			0	18	pr
Rhyacophila verrula	0	0.0			0	18	pr
Rhyacophila vepulsa	0	0.0			0	18	pr
Rhyacophila sp.	17	0.8			0	18	pr
Trichopteran pupae	2	0.1			nn	nn	un
Other			192	9.46			
Annelida(Oligochaeta)	0	0.0			5	108	cg
Coleoptera(Elmidae)					4	108	cg
Cleptelmis sp.	0	0.0			4	108	cg
Heterlimnius sp.	0	0.0			4	108	cg
Lara sp.	0	0.0			4	108	sh
Narpus sp.	0	0.0			4	108	cg
Zaitzevia sp.	0	0.0			4	108	cg
Elmidae	0	0.0			4	108	cg
Diptera							
Agathon sp.	0	0.0			0	2	sc
Ceratopogonidae	3	0.1			6	108	pr
Chironomidae	167	8.2			6	108	un
Chelifera sp.	0	0.0			6	95	pr
Oreogeton sp.	0	0.0			6	95	pr
Psychodidae	0	0.0			10	36	cg
Simuliidae	0	0.0			6	108	cg
Antocha sp.	0	0.0			3	24	cg
Dicranota sp.	3	0.1			3	24	pr
Hexatoma sp.	15	0.7			2	36	pr
Pedicia sp.	0	0.0			3	36	pr
Tipula sp.	0	0.0			4	36	om
Hydracarina	1	0.0			5	108	pr
Mollusca	0	0.0			8	108	cg
Nematoda	0	0.0			5	108	om
Turbellaria	3	0.1			4	108	cg

TOTAL NUMBER =	2029
TOTAL TAXA =	32
STD =	62.6
MEAN =	507
SDI =	3.69
% SE Mean =	6
% Coef. Var.=	12
B/E =	0.21
EPT Abund =	1837
EPT/Chiron =	11.00
EPT % =	90.54
EPT taxa =	26
c/f tot =	113
c/f % =	5.57
c/g tot =	723
c/g % =	35.63
sh tot =	29
sh % =	1.43
sc tot =	775
sc % =	38.20
p tot =	195
p% =	9.61
om tot =	1
om % =	0.05
unk tot =	193
unk% =	9.51
sc/cf =	6.86
sc/(sc+cf) =	0.873
sh/total =	0.014

Macroinvertebrate Data--Montanore, August 1992
Libby Creek, L3 (1 kick sample), #20

	No.	Percent Total	Total Number	Percent Total	TV	TQ	FFG
Ephemeroptera			899	46.85			
Baetis sp.	256	13.3			5	72	cg
Diphetor sp.	0	0.0			4	72	cg
Caudatella hystrix	0	0.0			1	48	cg
Drunella coloradensis/ flavilinea	5	0.3			0	18	sc
Drunella doddsi	223	11.6			0	4	sc
Drunella grandis	0	0.0			0	24	sc
Drunella spinifera	4	0.2			0	24	pr
Drunella sp.	0	0.0			1	48	sc
Serratella sp.	49	2.6			2	48	cg
Cinygma sp.	0	0.0			2	48	sc
Cinygmula sp.	15	0.8			4	21	sc
Epeorus sp.	127	6.6			0	21	sc
Heptagenia sp.	0	0.0			4	48	sc
Ironodes sp.	0	0.0			3	48	sc
Leucrocuta sp.	0	0.0			1	48	sc
Nixe sp.	0	0.0			2	48	sc
Rhithrogena sp.	193	10.1			4	21	cg
Paraleptophlebia sp.	16	0.8			4	24	cg
Ameletus sp.	11	0.6			0	48	cg
Plecoptera			382	19.91			
Capniidae	0	0.0			1	32	sh
Kathroperla perdita	0	0.0			1	24	cg
Sweltsa/Suwallia sp.	41	2.1			1	24	pr
Despaxia augusta	0	0.0			0	18	sh
Paraleuctra sp.	0	0.0			0	18	sh
Perlomyia sp.	0	0.0			0	18	sh
Leuctridae	7	0.4			0	18	sh
Nemoura sp.	0	0.0			2	24	sh
Visoka cataractae	3	0.2			2	36	sh
Zapada cinctipes	0	0.0			2	16	sh
Zapada columbiana	32	1.7			2	16	sh
Nemouridae	278	14.5			2	36	sh
Yoraperla brevis	0	0.0			1	12	sh
Acroneuria abnormis	0	0.0			0	6	pr
Doroneuria theodora	0	0.0			1	18	pr
Hesperoperla pacifica	0	0.0			2	18	pr
Perlidae	5	0.3			1	24	pr
Isoperla sp.	0	0.0			2	24	pr
Kogotus modestus	0	0.0			2	18	pr
Megarcys sp.	5	0.3			2	24	pr
Setvena bradleyi	0	0.0			2	48	pr
Skwala sp.	0	0.0			2	18	pr
Perlodidae	11	0.6			2	48	pr
Doddsia occidentalis	0	0.0			2	24	sc
Taenionema sp.	0	0.0			2	48	sc
Trichoptera			396	20.64			
Micrasema sp.	7	0.4			1	24	sh
Anagapetus sp.	0	0.0			0	24	sc
Glossosoma sp.	0	0.0			0	24	sc
Arctopsyche grandis	2	0.1			4	18	cf
Hydropsyche sp.	0	0.0			8	108	cg
Parapsyche elsis	1	0.1			4	6	cf
Hydropsychidae	111	5.8			4	108	cf
Agraylea sp.	24	1.3			8	108	cg
Hydroptila sp.	0	0.0			6	108	cg
Ochrotrichia sp.	0	0.0			4	108	cg
Lepidostoma sp.	0	0.0			1	18	sh
Apatania sp.	0	0.0			4	18	sc
Chyrandra centralis	0	0.0			1	18	sh
Ecclisomyia sp.	0	0.0			2	24	om
Neothremma alicia	0	0.0			4	8	sc
Oligophlebodes sp.	227	11.8			4	24	sc
Limnephilidae	12	0.6			4	108	un

L3-k, #20 (cont.)

Dolophilodes sp.	0	0.0			2	24	cf
Wormaldia sp.	1	0.1			3	24	cf
Polycentropus sp.	0	0.0			6	72	pr
Rhyacophila Angelita grp.	0	0.0			0	18	pr
Rhyacophila Betteni grp.	0	0.0			0	18	pr
Rhyacophila Bif./Color. grp.	0	0.0			0	18	pr
Rhyacophila Brunnea grp.	0	0.0			0	18	pr
Rhyacophila hyalinata	0	0.0			0	18	pr
Rhyacophila iranda	0	0.0			0	18	pr
Rhyacophila Sibirica grp.	6	0.3			0	18	pr
Rhyacophila tucula	0	0.0			0	18	pr
Rhyacophila vaccua	0	0.0			0	18	pr
Rhyacophila verrula	0	0.0			0	18	pr
Rhyacophila vepulsa	0	0.0			0	18	pr
Rhyacophila sp.	5	0.3			0	18	pr
Trichopteran pupae	0	0.0			nn	nn	un
Other			242	12.61			
Annelida(Oligochaeta)	0	0.0			5	108	cg
Coleoptera(Elmidae)					4	108	cg
Cleptelmis sp.	0	0.0			4	108	cg
Heterlimnius sp.	0	0.0			4	108	cg
Lara sp.	0	0.0			4	108	sh
Narpus sp.	0	0.0			4	108	cg
Zaitzevia sp.	0	0.0			4	108	cg
Elmidae	5	0.3			4	108	cg
Diptera							
Agathon sp.	0	0.0			0	2	sc
Ceratopogonidae	0	0.0			6	108	pr
Chironomidae	218	11.4			6	108	un
Chelifera sp.	0	0.0			6	95	pr
Oreogeton sp.	2	0.1			6	95	pr
Psychodidae	0	0.0			10	36	cg
Simuliidae	2	0.1			6	108	cg
Antocha sp.	0	0.0			3	24	cg
Dicranota sp.	1	0.1			3	24	pr
Hexatoma sp.	5	0.3			2	36	pr
Pedicia sp.	0	0.0			3	36	pr
Tipula sp.	0	0.0			4	36	cm
Hydracarina	0	0.0			5	108	pr
Mollusca	0	0.0			8	108	cg
Nematoda	0	0.0			5	108	cm
Turbellaria	9	0.5			4	108	cg

TOTAL NUMBER =	1919
TOTAL TAXA =	35
STD =	57.2
MEAN =	1919
SDI =	3.71
% SE Mean =	3
% Coef. Var.=	3
B/E =	0.28
EPT Abund =	1677
EPT/Chiron =	7.69
EPT % =	87.39
EPT taxa =	28
c/f tot =	115
c/f % =	5.99
c/g tot =	565
c/g % =	29.44
sh tot =	327
sh % =	17.04
sc tot =	597
sc % =	31.11
p tot =	85
p% =	4.43
cm tot =	0
cm % =	0.00
unk tot =	230
unk% =	11.99
sc/cf =	5.19
sc/(sc+cf) =	0.838
sh/total =	0.170

Macroinvertebrate Data--Montanore, August 1992
Libby Creek, L9 (4 Hess samples), #21

	No.	Percent Total	Total Number	Percent Total	TV	TQ	FFG
Ephemeroptera			591	63.28			
Baetis sp.	26	2.8			5	72	cg
Diphetor sp.	0	0.0			4	72	cg
Caudatella hystrix	0	0.0			1	48	cg
Drunella coloradensis/ flavilinea	7	0.7			0	18	sc
Drunella doddsi	97	10.4			0	4	sc
Drunella grandis	0	0.0			0	24	sc
Drunella spinifera	0	0.0			0	24	pr
Drunella sp.	0	0.0			1	48	sc
Serratella sp.	0	0.0			2	48	cg
Cinygma sp.	0	0.0			2	48	sc
Cinygmula sp.	31	3.3			4	21	sc
Epeorus sp.	163	17.5			0	21	sc
Heptagenia sp.	0	0.0			4	48	sc
Ironodes sp.	0	0.0			3	48	sc
Leucrocuta sp.	0	0.0			1	48	sc
Nixe sp.	0	0.0			2	48	sc
Rhithrogena sp.	267	28.6			4	21	cg
Paraleptophlebia sp.	0	0.0			4	24	cg
Ameletus sp.	0	0.0			0	48	cg
Plecoptera			176	18.84			
Capniidae	0	0.0			1	32	sh
Kathroperla perdita	0	0.0			1	24	cg
Sweltsa/Suwallia sp.	51	5.5			1	24	pr
Despaxia augusta	0	0.0			0	18	sh
Paraleuctra sp.	0	0.0			0	18	sh
Perlomyia sp.	0	0.0			0	18	sh
Leuctridae	0	0.0			0	18	sh
Nemoura sp.	0	0.0			2	24	sh
Visoka cataractae	4	0.4			2	36	sh
Zapada cinctipes	0	0.0			2	16	sh
Zapada columbiana	84	9.0			2	16	sh
Nemouridae	0	0.0			2	36	sh
Yoraperla brevis	6	0.6			1	12	sh
Acroneuria abnormis	0	0.0			0	6	pr
Doroneuria theodora	1	0.1			1	18	pr
Hesperoperla pacifica	0	0.0			2	18	pr
Perlidae	1	0.1			1	24	pr
Isoperla sp.	0	0.0			2	24	pr
Kogotus modestus	0	0.0			2	18	pr
Megarcys sp.	4	0.4			2	24	pr
Setvena bradleyi	0	0.0			2	48	pr
Skwala sp.	0	0.0			2	18	pr
Perlodidae	25	2.7			2	48	pr
Doddsia occidentalis	0	0.0			2	24	sc
Taenionema sp.	0	0.0			2	48	sc
Trichoptera			74	7.92			
Micrasema sp.	0	0.0			1	24	sh
Anagapetus sp.	0	0.0			0	24	sc
Glossosoma sp.	19	2.0			0	24	sc
Arctopsyche grandis	0	0.0			4	18	cf
Hydropsyche sp.	0	0.0			8	108	cg
Parapsyche elsis	7	0.7			4	6	cf
Hydropsychidae	28	3.0			4	108	cf
Agraylea sp.	0	0.0			8	108	cg
Hydroptila sp.	0	0.0			6	108	cg
Ochrotrichia sp.	0	0.0			4	108	cg
Lepidostoma sp.	0	0.0			1	18	sh
Apatania sp.	0	0.0			4	18	sc
Chyrandra centralis	0	0.0			1	18	sh
Ecclisomyia sp.	0	0.0			2	24	om
Neothremma alicia	0	0.0			4	8	sc
Oligophlebodes sp.	0	0.0			4	24	sc
Limnephilidae	0	0.0			4	108	un

L9-H, #21 (cont.)

Dolophilodes sp.	0	0.0			2	24	cf
Wormaldia sp.	0	0.0			3	24	cf
Polycentropus sp.	0	0.0			6	72	pr
Rhyacophila Angelita grp.	0	0.0			0	18	pr
Rhyacophila Betteni grp.	7	0.7			0	18	pr
Rhyacophila Bif./Color. grp.	0	0.0			0	18	pr
Rhyacophila Brunnea grp.	0	0.0			0	18	pr
Rhyacophila hyalinata	3	0.3			0	18	pr
Rhyacophila iranda	0	0.0			0	18	pr
Rhyacophila Sibirica grp.	3	0.3			0	18	pr
Rhyacophila tucula	0	0.0			0	18	pr
Rhyacophila vaccua	0	0.0			0	18	pr
Rhyacophila verrula	0	0.0			0	18	pr
Rhyacophila vepulsa	0	0.0			0	18	pr
Rhyacophila sp.	6	0.6			0	18	pr
Trichopteran pupae	1	0.1			nn	nn	un
Other			93	9.96			
Annelida(Oligochaeta)	27	2.9			5	108	cg
Coleoptera(Elmidae)					4	108	cg
Cleptelmis sp.	0	0.0			4	108	cg
Heterlimnius sp.	0	0.0			4	108	cg
Lara sp.	0	0.0			4	108	sh
Narpus sp.	0	0.0			4	108	cg
Zaitzevia sp.	0	0.0			4	108	cg
Elmidae	0	0.0			4	108	cg
Diptera							
Agathon sp.	1	0.1			0	2	sc
Ceratopogonidae	0	0.0			6	108	pr
Chironomidae	42	4.5			6	108	un
Chelifera sp.	0	0.0			6	95	pr
Oreogeton sp.	9	1.0			6	95	pr
Psychodidae	0	0.0			10	36	cg
Simuliidae	0	0.0			6	108	cg
Antocha sp.	0	0.0			3	24	cg
Dicranota sp.	2	0.2			3	24	pr
Hexatoma sp.	1	0.1			2	36	pr
Pedicia sp.	0	0.0			3	36	pr
Tipula sp.	0	0.0			4	36	om
Hydracarina	0	0.0			5	108	pr
Mollusca	0	0.0			8	108	cg
Nematoda	0	0.0			5	108	om
Turbellaria	11	1.2			4	108	cg

TOTAL NUMBER =	934
TOTAL TAXA =	29
STD =	33.8
MEAN =	234
SDI =	3.48
% SE Mean =	7
% Coef. Var.=	14
B/E =	0.04
EPT Abund =	841
EPT/Chiron =	20.02
EPT % =	90.04
EPT taxa =	22
c/f tot =	35
c/f % =	3.75
c/g tot =	331
c/g % =	35.44
sh tot =	94
sh % =	10.06
sc tot =	318
sc % =	34.05
p tot =	113
p% =	12.10
om tot =	0
om % =	0.00
unk tot =	43
unk% =	4.60
sc/cf =	9.09
sc/(sc+cf) =	0.901
sh/total =	0.101

Macroinvertebrate Data--Montanore, August 1992
Libby Creek, L9 (1 kick sample), #22

	No.	Percent Total	Total Number	Percent Total	TV	TQ	FFG
Ephemeroptera			402	50.63			
Baetis sp.	54	6.8			5	72	cg
Diphetor sp.	0	0.0			4	72	cg
Caudatella hystrix	0	0.0			1	48	cg
Drunella coloradensis/ flavilinea	3	0.4			0	18	sc
Drunella doddsi	49	6.2			0	4	sc
Drunella grandis	0	0.0			0	24	sc
Drunella spinifera	0	0.0			0	24	pr
Drunella sp.	0	0.0			1	48	sc
Serratella sp.	3	0.4			2	48	cg
Cinygma sp.	0	0.0			2	48	sc
Cinygmula sp.	21	2.6			4	21	sc
Epeorus sp.	144	18.1			0	21	sc
Heptagenia sp.	0	0.0			4	48	sc
Ironodes sp.	0	0.0			3	48	sc
Leucrocuta sp.	0	0.0			1	48	sc
Nixe sp.	0	0.0			2	48	sc
Rhithrogena sp.	124	15.6			4	21	cg
Paraleptophlebia sp.	1	0.1			4	24	cg
Ameletus sp.	3	0.4			0	48	cg
Plecoptera			212	26.70			
Capniidae	0	0.0			1	32	sh
Kathroperla perdita	0	0.0			1	24	cg
Sweltsa/Suwallia sp.	39	4.9			1	24	pr
Despaxia augusta	8	1.0			0	18	sh
Paraleuctra sp.	0	0.0			0	18	sh
Perlomyia sp.	0	0.0			0	18	sh
Leuctridae	0	0.0			0	18	sh
Nemoura sp.	0	0.0			2	24	sh
Visoka cataractae	2	0.3			2	36	sh
Zapada cinctipes	0	0.0			2	16	sh
Zapada columbiana	116	14.6			2	16	sh
Nemouridae	0	0.0			2	36	sh
Yoraperla brevis	4	0.5			1	12	sh
Acroneuria abnormis	0	0.0			0	6	pr
Doroneuria theodora	0	0.0			1	18	pr
Hesperoperla pacifica	0	0.0			2	18	pr
Perlidae	4	0.5			1	24	pr
Isoperla sp.	0	0.0			2	24	pr
Kogotus modestus	0	0.0			2	18	pr
Megarcys sp.	18	2.3			2	24	pr
Setvena bradleyi	0	0.0			2	48	pr
Skwala sp.	0	0.0			2	18	pr
Perlodidae	21	2.6			2	48	pr
Doddsia occidentalis	0	0.0			2	24	sc
Taenionema sp.	0	0.0			2	48	sc
Trichoptera			104	13.10			
Micrasema sp.	0	0.0			1	24	sh
Anagapetus sp.	0	0.0			0	24	sc
Glossosoma sp.	3	0.4			0	24	sc
Arctopsyche grandis	0	0.0			4	18	cf
Hydropsyche sp.	0	0.0			8	108	cg
Parapsyche elsis	7	0.9			4	6	cf
Hydropsychidae	55	6.9			4	108	cf
Agraylea sp.	0	0.0			8	108	cg
Hydroptila sp.	0	0.0			6	108	cg
Ochrotrichia sp.	0	0.0			4	108	cg
Lepidostoma sp.	0	0.0			1	18	sh
Apatania sp.	0	0.0			4	18	sc
Chyrandra centralis	0	0.0			1	18	sh
Ecclisomyia sp.	0	0.0			2	24	om
Neothremma alicia	0	0.0			4	8	sc
Oligophlebodes sp.	0	0.0			4	24	sc
Limnephilidae	0	0.0			4	108	un

L9-k, #22 (cont.)

Dolophilodes sp.	0	0.0			2	24	cf
Wormaldia sp.	0	0.0			3	24	cf
Polycentropus sp.	0	0.0			6	72	pr
Rhyacophila Angelita grp.	0	0.0			0	18	pr
Rhyacophila Betteni grp.	29	3.7			0	18	pr
Rhyacophila Bif./Color. grp.	0	0.0			0	18	pr
Rhyacophila Brunnea grp.	2	0.3			0	18	pr
Rhyacophila hyalinata	2	0.3			0	18	pr
Rhyacophila iranda	0	0.0			0	18	pr
Rhyacophila Sibirica grp.	0	0.0			0	18	pr
Rhyacophila tucula	0	0.0			0	18	pr
Rhyacophila vaccua	0	0.0			0	18	pr
Rhyacophila verrula	0	0.0			0	18	pr
Rhyacophila vepulsa	0	0.0			0	18	pr
Rhyacophila sp.	5	0.6			0	18	pr
Trichopteran pupae	1	0.1			nn	nn	un
Other			76	9.57			
Annelida(Oligochaeta)	10	1.3			5	108	cg
Coleoptera(Elmidae)					4	108	cg
Cleptelmis sp.	0	0.0			4	108	cg
Heterlimnius sp.	0	0.0			4	108	cg
Lara sp.	0	0.0			4	108	sh
Narpus sp.	0	0.0			4	108	cg
Zaitzevia sp.	0	0.0			4	108	cg
Elmidae	0	0.0			4	108	cg
Diptera							
Agathon sp.	0	0.0			0	2	sc
Ceratopogonidae	0	0.0			6	108	pr
Chironomidae	42	5.3			6	108	un
Chelifera sp.	0	0.0			6	95	pr
Oreogeton sp.	3	0.4			6	95	pr
Psychodidae	0	0.0			10	36	cg
Simuliidae	0	0.0			6	108	cg
Antocha sp.	0	0.0			3	24	cg
Dicranota sp.	1	0.1			3	24	pr
Hexatoma sp.	0	0.0			2	36	pr
Pedicia sp.	0	0.0			3	36	pr
Tipula sp.	0	0.0			4	36	om
Hydracarina	1	0.1			5	108	pr
Mollusca	0	0.0			8	108	cg
Nematoda	0	0.0			5	108	om
Turbellaria	19	2.4			4	108	cg

TOTAL NUMBER =	794
TOTAL TAXA =	31
STD =	24.0
MEAN =	794
SDI =	3.79
% SE Mean =	3
% Coef. Var.=	3
B/E =	0.13
EPT Abund =	718
EPT/Chiron =	17.10
EPT % =	90.43
EPT taxa =	25
c/f tot =	62
c/f % =	7.81
c/g tot =	214
c/g % =	26.95
sh tot =	130
sh % =	16.37
sc tot =	220
sc % =	27.71
p tot =	125
p% =	15.74
om tot =	0
om % =	0.00
unk tot =	43
unk% =	5.42
sc/cf =	3.55
sc/(sc+cf) =	0.780
sh/total =	0.164

Macroinvertebrate Data--Montanore, August 1992
Libby Creek, L10 (4 Hess samples), #23

	No.	Percent Total	Total Number	Percent Total	TV	TQ	FFG
Ephemeroptera			363	53.62			
Baetis sp.	57	8.4			5	72	cg
Diphetor sp.	0	0.0			4	72	cg
Caudatella hystrix	0	0.0			1	48	cg
Drunella coloradensis/ flavilinea	2	0.3			0	18	sc
Drunella doddsi	36	5.3			0	4	sc
Drunella grandis	0	0.0			0	24	sc
Drunella spinifera	0	0.0			0	24	pr
Drunella sp.	0	0.0			1	48	sc
Serratella sp.	0	0.0			2	48	cg
Cinygma sp.	0	0.0			2	48	sc
Cinygmula sp.	95	14.0			4	21	sc
Epeorus sp.	85	12.6			0	21	sc
Heptagenia sp.	0	0.0			4	48	sc
Ironodes sp.	0	0.0			3	48	sc
Leucrocuta sp.	0	0.0			1	48	sc
Nixe sp.	0	0.0			2	48	sc
Rhithrogena sp.	88	13.0			4	21	cg
Paraleptophlebia sp.	0	0.0			4	24	cg
Ameletus sp.	0	0.0			0	48	cg
Plecoptera			145	21.42			
Capniidae	4	0.6			1	32	sh
Kathroperla perdita	0	0.0			1	24	cg
Sweltsa/Suwallia sp.	81	12.0			1	24	pr
Despaxia augusta	0	0.0			0	18	sh
Paraleuctra sp.	0	0.0			0	18	sh
Perlomyia sp.	0	0.0			0	18	sh
Leuctridae	0	0.0			0	18	sh
Nemoura sp.	0	0.0			2	24	sh
Visoka cataractae	1	0.1			2	36	sh
Zapada cinctipes	0	0.0			2	16	sh
Zapada columbiana	45	6.6			2	16	sh
Nemouridae	0	0.0			2	36	sh
Yoraperla brevis	13	1.9			1	12	sh
Acroneuria abnormis	0	0.0			0	6	pr
Doroneuria theodora	0	0.0			1	18	pr
Hesperoperla pacifica	0	0.0			2	18	pr
Perlidae	0	0.0			1	24	pr
Isoperla sp.	0	0.0			2	24	pr
Kogotus modestus	0	0.0			2	18	pr
Megarcys sp.	0	0.0			2	24	pr
Setvena bradleyi	0	0.0			2	48	pr
Skwala sp.	0	0.0			2	18	pr
Perlodidae	1	0.1			2	48	pr
Doddsia occidentalis	0	0.0			2	24	sc
Taenionema sp.	0	0.0			2	48	sc
Trichoptera			38	5.61			
Micrasema sp.	0	0.0			1	24	sh
Anagapetus sp.	0	0.0			0	24	sc
Glossosoma sp.	5	0.7			0	24	sc
Arctopsyche grandis	0	0.0			4	18	cf
Hydropsyche sp.	0	0.0			8	108	cg
Parapsyche elsis	3	0.4			4	6	cf
Hydropsychidae	0	0.0			4	108	cf
Agraylea sp.	13	1.9			8	108	cg
Hydroptila sp.	0	0.0			6	108	cg
Ochrotrichia sp.	0	0.0			4	108	cg
Lepidostoma sp.	0	0.0			1	18	sh
Apatania sp.	0	0.0			4	18	sc
Chyrandra centralis	0	0.0			1	18	sh
Ecclisomyia sp.	0	0.0			2	24	cm
Neothremma alicia	0	0.0			4	8	sc
Oligophlebodes sp.	0	0.0			4	24	sc
Limnephilidae	0	0.0			4	108	un

L10-H, #23 (cont.)

Dolophilodes sp.	0	0.0			2	24	cf
Wormaldia sp.	0	0.0			3	24	cf
Polycentropus sp.	0	0.0			6	72	pr
Rhyacophila Angelita grp.	0	0.0			0	18	pr
Rhyacophila Betteni grp.	0	0.0			0	18	pr
Rhyacophila Bif./Color. grp.	0	0.0			0	18	pr
Rhyacophila Brunnea grp.	0	0.0			0	18	pr
Rhyacophila hyalinata	2	0.3			0	18	pr
Rhyacophila iranda	0	0.0			0	18	pr
Rhyacophila Sibirica grp.	1	0.1			0	18	pr
Rhyacophila tucula	0	0.0			0	18	pr
Rhyacophila vaccua	0	0.0			0	18	pr
Rhyacophila verrula	0	0.0			0	18	pr
Rhyacophila vepulsa	0	0.0			0	18	pr
Rhyacophila sp.	14	2.1			0	18	pr
Trichopteran pupae	0	0.0			nn	nn	un
Other			131	19.35			
Annelida(Oligochaeta)	34	5.0			5	108	cg
Coleoptera(Elmidae)					4	108	cg
Cleptelmis sp.	0	0.0			4	108	cg
Heterlimnius sp.	0	0.0			4	108	cg
Lara sp.	0	0.0			4	108	sh
Narpus sp.	0	0.0			4	108	cg
Zaitzevia sp.	0	0.0			4	108	cg
Elmidae	0	0.0			4	108	cg
Diptera							
Agathon sp.	0	0.0			0	2	sc
Ceratopogonidae	0	0.0			6	108	pr
Chironomidae	74	10.9			6	108	un
Chelifera sp.	0	0.0			6	95	pr
Oreogeton sp.	6	0.9			6	95	pr
Psychodidae	0	0.0			10	36	cg
Simuliidae	0	0.0			6	108	cg
Antocha sp.	0	0.0			3	24	cg
Dicranota sp.	5	0.7			3	24	pr
Hexatoma sp.	2	0.3			2	36	pr
Pedicia sp.	0	0.0			3	36	pr
Tipula sp.	0	0.0			4	36	om
Hydracarina	0	0.0			5	108	pr
Mollusca	0	0.0			8	108	cg
Nematoda	0	0.0			5	108	om
Turbellaria	10	1.5			4	108	cg

TOTAL NUMBER =	677
TOTAL TAXA =	24
STD =	20.0
MEAN =	169
SDI =	3.66
% SE Mean =	6
% Coef. Var.=	12
B/E =	0.16
EPT Abund =	546
EPT/Chiron =	7.38
EPT % =	80.65
EPT taxa =	18
c/f tot =	3
c/f % =	0.44
c/g tot =	202
c/g % =	29.84
sh tot =	63
sh % =	9.31
sc tot =	223
sc % =	32.94
p tot =	112
p% =	16.54
om tot =	0
om % =	0.00
unk tot =	74
unk% =	10.93
sc/cf =	74.33
sc/(sc+cf) =	0.987
sh/total =	0.093

Macroinvertebrate Data--Montanore, August 1992
Libby Creek, L10 (1 kick sample), #24

	No.	Percent Total	Total Number	Percent Total	TV	TQ	FFG
Ephemeroptera			288	49.40			
Baetis sp.	54	9.3			5	72	cg
Diphetor sp.	0	0.0			4	72	cg
Caudatella hystrix	0	0.0			1	48	cg
Drunella coloradensis/ flavilinea	3	0.5			0	18	sc
Drunella doddsi	39	6.7			0	4	sc
Drunella grandis	0	0.0			0	24	sc
Drunella spinifera	0	0.0			0	24	pr
Drunella sp.	0	0.0			1	48	sc
Serratella sp.	0	0.0			2	48	cg
Cinygma sp.	0	0.0			2	48	sc
Cinygmula sp.	59	10.1			4	21	sc
Epeorus sp.	92	15.8			0	21	sc
Heptagenia sp.	0	0.0			4	48	sc
Ironodes sp.	0	0.0			3	48	sc
Leucrocuta sp.	0	0.0			1	48	sc
Nixe sp.	0	0.0			2	48	sc
Rhithrogena sp.	25	4.3			4	21	cg
Paraleptophlebia sp.	0	0.0			4	24	cg
Ameletus sp.	16	2.7			0	48	cg
Plecoptera			107	18.35			
Capniidae	7	1.2			1	32	sh
Kathroperla perdita	0	0.0			1	24	cg
Sweltsa/Suwallia sp.	54	9.3			1	24	pr
Despaxia augusta	0	0.0			0	18	sh
Paraleuctra sp.	0	0.0			0	18	sh
Perlomyia sp.	0	0.0			0	18	sh
Leuctridae	8	1.4			0	18	sh
Nemoura sp.	0	0.0			2	24	sh
Visoka cataractae	0	0.0			2	36	sh
Zapada cinctipes	0	0.0			2	16	sh
Zapada columbiana	21	3.6			2	16	sh
Nemouridae	0	0.0			2	36	sh
Yoraperla brevis	11	1.9			1	12	sh
Acroneuria abnormis	0	0.0			0	6	pr
Doroneuria theodora	0	0.0			1	18	pr
Hesperoperla pacifica	0	0.0			2	18	pr
Perlidae	0	0.0			1	24	pr
Isoperla sp.	0	0.0			2	24	pr
Kogotus modestus	0	0.0			2	18	pr
Megarcys sp.	0	0.0			2	24	pr
Setvena bradleyi	0	0.0			2	48	pr
Skwala sp.	0	0.0			2	18	pr
Perlodidae	6	1.0			2	48	pr
Doddsia occidentalis	0	0.0			2	24	sc
Taenionema sp.	0	0.0			2	48	sc
Trichoptera			41	7.03			
Micrasema sp.	0	0.0			1	24	sh
Anagapetus sp.	0	0.0			0	24	sc
Glossosoma sp.	4	0.7			0	24	sc
Arctopsyche grandis	0	0.0			4	18	cf
Hydropsyche sp.	0	0.0			8	108	cg
Parapsyche elsis	5	0.9			4	6	cf
Hydropsychidae	0	0.0			4	108	cf
Agraylea sp.	14	2.4			8	108	cg
Hydroptila sp.	0	0.0			6	108	cg
Ochrotrichia sp.	0	0.0			4	108	cg
Lepidostoma sp.	0	0.0			1	18	sh
Apatania sp.	0	0.0			4	18	sc
Chyrandra centralis	0	0.0			1	18	sh
Ecclisomyia sp.	0	0.0			2	24	om
Neothremma alicia	0	0.0			4	8	sc
Oligophlebodes sp.	0	0.0			4	24	sc
Limnephilidae	0	0.0			4	108	un

L10-k, #24 (cont.)

Dolophilodes sp.	0	0.0			2	24	cf
Wormaldia sp.	0	0.0			3	24	cf
Polycentropus sp.	0	0.0			6	72	pr
Rhyacophila Angelita grp.	0	0.0			0	18	pr
Rhyacophila Betteni grp.	0	0.0			0	18	pr
Rhyacophila Bif./Color. grp.	0	0.0			0	18	pr
Rhyacophila Brunnea grp.	0	0.0			0	18	pr
Rhyacophila hyalinata	0	0.0			0	18	pr
Rhyacophila iranda	0	0.0			0	18	pr
Rhyacophila Sibirica grp.	2	0.3			0	18	pr
Rhyacophila tucula	0	0.0			0	18	pr
Rhyacophila vaccua	0	0.0			0	18	pr
Rhyacophila verrula	0	0.0			0	18	pr
Rhyacophila vepulsa	0	0.0			0	18	pr
Rhyacophila sp.	16	2.7			0	18	pr
Trichopteran pupae	0	0.0			nn	nn	un
Other			147	25.21			
Annelida(Oligochaeta)	28	4.8			5	108	cg
Coleoptera(Elmidae)					4	108	cg
Cleptelmis sp.	0	0.0			4	108	cg
Heterlimnius sp.	0	0.0			4	108	cg
Lara sp.	0	0.0			4	108	sh
Narpus sp.	0	0.0			4	108	cg
Zaitzevia sp.	0	0.0			4	108	cg
Elmidae	0	0.0			4	108	cg
Diptera							
Agathon sp.	0	0.0			0	2	sc
Ceratopogonidae	1	0.2			6	108	pr
Chironomidae	94	16.1			6	108	un
Chelifera sp.	0	0.0			6	95	pr
Oreogeton sp.	0	0.0			6	95	pr
Psychodidae	0	0.0			10	36	cg
Simuliidae	6	1.0			6	108	cg
Antocha sp.	0	0.0			3	24	cg
Dicranota sp.	7	1.2			3	24	pr
Hexatoma sp.	0	0.0			2	36	pr
Pedicia sp.	0	0.0			3	36	pr
Tipula sp.	0	0.0			4	36	om
Hydracarina	0	0.0			5	108	pr
Mollusca	0	0.0			8	108	cg
Nematoda	0	0.0			5	108	om
Turbellaria	11	1.9			4	108	cg

TOTAL NUMBER =	583
TOTAL TAXA =	24
STD =	16.7
MEAN =	583
SDI =	3.85
% SE Mean =	3
% Coef. Var.=	3
B/E =	0.19
EPT Abund =	436
EPT/Chiron =	4.64
EPT % =	74.79
EPT taxa =	18
c/f tot =	5
c/f % =	0.86
c/g tot =	154
c/g % =	26.42
sh tot =	47
sh % =	8.06
sc tot =	197
sc % =	33.79
p tot =	86
p% =	14.75
om tot =	0
om % =	0.00
unk tot =	94
unk% =	16.12
sc/cf =	39.40
sc/(sc+cf) =	0.975
sh/total =	0.081

Macroinvertebrate Data--Montanore, August 1992
Little Cherry Creek, LC1 (4 Hess samples), #25

	No.	Percent Total	Total Number	Percent Total	TV	TQ	FFG
Ephemeroptera			815	64.53			
Baetis sp.	30	2.4			5	72	cg
Diphetor sp.	0	0.0			4	72	cg
Caudatella hystrix	0	0.0			1	48	cg
Drunella coloradensis/ flavilinea	2	0.2			0	18	sc
Drunella doddsi	4	0.3			0	4	sc
Drunella grandis	0	0.0			0	24	sc
Drunella spinifera	40	3.2			0	24	pr
Drunella sp.	163	12.9			1	48	sc
Serratella sp.	8	0.6			2	48	cg
Cinygma sp.	0	0.0			2	48	sc
Cinygmula sp.	421	33.3			4	21	sc
Epeorus sp.	1	0.1			0	21	sc
Heptagenia sp.	0	0.0			4	48	sc
Ironodes sp.	0	0.0			3	48	sc
Leucrocuta sp.	0	0.0			1	48	sc
Nixe sp.	0	0.0			2	48	sc
Rhithrogena sp.	4	0.3			4	21	cg
Paraleptophlebia sp.	61	4.8			4	24	cg
Ameletus sp.	81	6.4			0	48	cg
Plecoptera			250	19.79			
Capniidae	1	0.1			1	32	sh
Kathroperla perdita	0	0.0			1	24	cg
Sweltsa/Suwallia sp.	103	8.2			1	24	pr
Despaxia augusta	1	0.1			0	18	sh
Paraleuctra sp.	0	0.0			0	18	sh
Perlomyia sp.	0	0.0			0	18	sh
Leuctridae	0	0.0			0	18	sh
Nemoura sp.	0	0.0			2	24	sh
Visoka cataractae	13	1.0			2	36	sh
Zapada cinctipes	2	0.2			2	16	sh
Zapada columbiana	112	8.9			2	16	sh
Nemouridae	0	0.0			2	36	sh
Yoraperla brevis	0	0.0			1	12	sh
Acroneuria abnormis	0	0.0			0	6	pr
Doroneuria theodora	0	0.0			1	18	pr
Hesperoperla pacifica	0	0.0			2	18	pr
Perlidae	2	0.2			1	24	pr
Isoperla sp.	0	0.0			2	24	pr
Kogotus modestus	0	0.0			2	18	pr
Megarcys sp.	1	0.1			2	24	pr
Setvena bradleyi	0	0.0			2	48	pr
Skwala sp.	0	0.0			2	18	pr
Perlodidae	15	1.2			2	48	pr
Doddsia occidentalis	0	0.0			2	24	sc
Taenionema sp.	0	0.0			2	48	sc
Trichoptera			49	3.88			
Micrasema sp.	0	0.0			1	24	sh
Anagapetus sp.	0	0.0			0	24	sc
Glossosoma sp.	4	0.3			0	24	sc
Arctopsyche grandis	0	0.0			4	18	cf
Hydropsyche sp.	0	0.0			8	108	cg
Parapsyche elsis	1	0.1			4	6	cf
Hydropsychidae	2	0.2			4	108	cf
Agraylea sp.	0	0.0			8	108	cg
Hydroptila sp.	0	0.0			6	108	cg
Ochrotrichia sp.	0	0.0			4	108	cg
Lepidostoma sp.	0	0.0			1	18	sh
Apatania sp.	0	0.0			4	18	sc
Chyrandra centralis	0	0.0			1	18	sh
Ecclisomyia sp.	0	0.0			2	24	om
Neothremma alicia	0	0.0			4	8	sc
Oligophlebodes sp.	0	0.0			4	24	sc
Limnephilidae	2	0.2			4	108	un

LC1-H, #25 (cont.)

Dolophilodes sp.	0	0.0			2	24	cf
Wormaldia sp.	0	0.0			3	24	cf
Polycentropus sp.	0	0.0			6	72	pr
Rhyacophila Angelita grp.	0	0.0			0	18	pr
Rhyacophila Betteni grp.	1	0.1			0	18	pr
Rhyacophila Bif./Color. grp.	0	0.0			0	18	pr
Rhyacophila Brunnea grp.	1	0.1			0	18	pr
Rhyacophila hyalinata	0	0.0			0	18	pr
Rhyacophila iranda	1	0.1			0	18	pr
Rhyacophila Sibirica grp.	0	0.0			0	18	pr
Rhyacophila tucula	0	0.0			0	18	pr
Rhyacophila vaccua	0	0.0			0	18	pr
Rhyacophila verrula	0	0.0			0	18	pr
Rhyacophila vepulsa	33	2.6			0	18	pr
Rhyacophila sp.	0	0.0			0	18	pr
Trichopteran pupae	4	0.3			nn	nn	un
Other			149	11.80			
Annelida(Oligochaeta)	15	1.2			5	108	cg
Coleoptera(Elmidae)					4	108	cg
Cleptelmis sp.	0	0.0			4	108	cg
Heterlimnius sp.	62	4.9			4	108	cg
Lara sp.	0	0.0			4	108	sh
Narpus sp.	0	0.0			4	108	cg
Zaitzevia sp.	0	0.0			4	108	cg
Elmidae	0	0.0			4	108	cg
Diptera							
Agathon sp.	0	0.0			0	2	sc
Ceratopogonidae	0	0.0			6	108	pr
Chironomidae	69	5.5			6	108	un
Chelifera sp.	0	0.0			6	95	pr
Oreogeton sp.	0	0.0			6	95	pr
Psychodidae	0	0.0			10	36	cg
Simuliidae	1	0.1			6	108	cg
Antocha sp.	0	0.0			3	24	cg
Dicranota sp.	1	0.1			3	24	pr
Hexatoma sp.	0	0.0			2	36	pr
Pedicia sp.	0	0.0			3	36	pr
Tipula sp.	0	0.0			4	36	om
Hydracarina	0	0.0			5	108	pr
Mollusca	0	0.0			8	108	cg
Nematoda	0	0.0			5	108	om
Turbellaria	1	0.1			4	108	cg

TOTAL NUMBER =	1263
TOTAL TAXA =	35
STD =	48.4
MEAN =	316
SDI =	3.38
% SE Mean =	8
% Coef. Var.=	15
B/E =	0.04
EPT Abund =	1114
EPT/Chiron =	16.14
EPT % =	88.20
EPT taxa =	29
c/f tot =	3
c/f % =	0.24
c/g tot =	263
c/g % =	20.82
sh tot =	129
sh % =	10.21
sc tot =	595
sc % =	47.11
p tot =	198
p% =	15.68
om tot =	0
om % =	0.00
unk tot =	75
unk% =	5.94
sc/cf =	198.33
sc/(sc+cf) =	0.995
sh/total =	0.102

Macroinvertebrate Data--Montanore, August 1992
Little Cherry Creek, LC1 (1 kick sample), #26

	No.	Percent Total	Total Number	Percent Total	TV	TQ	FFG
Ephemeroptera			340	56.29			
Baetis sp.	15	2.5			5	72	cg
Diphetor sp.	0	0.0			4	72	cg
Caudatella hystrix	0	0.0			1	48	cg
Drunella coloradensis/ flavilinea	1	0.2			0	18	sc
Drunella doddsi	2	0.3			0	4	sc
Drunella grandis	0	0.0			0	24	sc
Drunella spinifera	8	1.3			0	24	pr
Drunella sp.	31	5.1			1	48	sc
Serratella sp.	2	0.3			2	48	cg
Cinygma sp.	0	0.0			2	48	sc
Cinygmula sp.	246	40.7			4	21	sc
Epeorus sp.	0	0.0			0	21	sc
Heptagenia sp.	0	0.0			4	48	sc
Ironodes sp.	0	0.0			3	48	sc
Leucrocuta sp.	0	0.0			1	48	sc
Nixe sp.	0	0.0			2	48	sc
Rhithrogena sp.	0	0.0			4	21	cg
Paraleptophlebia sp.	15	2.5			4	24	cg
Ameletus sp.	20	3.3			0	48	cg
Plecoptera			174	28.81			
Capniidae	0	0.0			1	32	sh
Kathroperla perdita	0	0.0			1	24	cg
Sweltsa/Suwallia sp.	51	8.4			1	24	pr
Despaxia augusta	2	0.3			0	18	sh
Paraleuctra sp.	0	0.0			0	18	sh
Perlomyia sp.	0	0.0			0	18	sh
Leuctridae	0	0.0			0	18	sh
Nemoura sp.	0	0.0			2	24	sh
Visoka cataractae	11	1.8			2	36	sh
Zapada cinctipes	8	1.3			2	16	sh
Zapada columbiana	93	15.4			2	16	sh
Nemouridae	0	0.0			2	36	sh
Yoraperla brevis	0	0.0			1	12	sh
Acroneuria abnormis	0	0.0			0	6	pr
Doroneuria theodora	0	0.0			1	18	pr
Hesperoperla pacifica	0	0.0			2	18	pr
Perlidae	2	0.3			1	24	pr
Isoperla sp.	0	0.0			2	24	pr
Kogotus modestus	0	0.0			2	18	pr
Megarcys sp.	0	0.0			2	24	pr
Setvena bradleyi	0	0.0			2	48	pr
Skwala sp.	0	0.0			2	18	pr
Perlodidae	7	1.2			2	48	pr
Doddsia occidentalis	0	0.0			2	24	sc
Taenionema sp.	0	0.0			2	48	sc
Trichoptera			17	2.81			
Micrasema sp.	0	0.0			1	24	sh
Anagapetus sp.	0	0.0			0	24	sc
Glossosoma sp.	3	0.5			0	24	sc
Arctopsyche grandis	0	0.0			4	18	cf
Hydropsyche sp.	0	0.0			8	108	cg
Parapsyche elsis	0	0.0			4	6	cf
Hydropsychidae	1	0.2			4	108	cf
Agraylea sp.	0	0.0			8	108	cg
Hydroptila sp.	0	0.0			6	108	cg
Ochrotrichia sp.	0	0.0			4	108	cg
Lepidostoma sp.	0	0.0			1	18	sh
Apatania sp.	0	0.0			4	18	sc
Chyrandra centralis	0	0.0			1	18	sh
Ecclisomyia sp.	0	0.0			2	24	om
Neothremma alicia	0	0.0			4	8	sc
Oligophlebodes sp.	0	0.0			4	24	sc
Limnephilidae	2	0.3			4	108	un

LC1, #26 (cont.)

Dolophilodes sp.	0	0.0			2	24	cf
Wormaldia sp.	0	0.0			3	24	cf
Polycentropus sp.	0	0.0			6	72	pr
Rhyacophila Angelita grp.	0	0.0			0	18	pr
Rhyacophila Betteni grp.	0	0.0			0	18	pr
Rhyacophila Bif./Color. grp.	0	0.0			0	18	pr
Rhyacophila Brunnea grp.	2	0.3			0	18	pr
Rhyacophila hyalinata	0	0.0			0	18	pr
Rhyacophila iranda	0	0.0			0	18	pr
Rhyacophila Sibirica grp.	0	0.0			0	18	pr
Rhyacophila tucula	0	0.0			0	18	pr
Rhyacophila vaccua	0	0.0			0	18	pr
Rhyacophila verrula	0	0.0			0	18	pr
Rhyacophila vepulsa	5	0.8			0	18	pr
Rhyacophila sp.	2	0.3			0	18	pr
Trichopteran pupae	2	0.3			nn	nn	un
Other			73	12.09			
Annelida(Oligochaeta)	7	1.2			5	108	cg
Coleoptera(Elmidae)					4	108	cg
Cleptelmis sp.	0	0.0			4	108	cg
Heterlimnius sp.	44	7.3			4	108	cg
Lara sp.	0	0.0			4	108	sh
Narpus sp.	0	0.0			4	108	cg
Zaitzevia sp.	0	0.0			4	108	cg
Elmidae	0	0.0			4	108	cg
Diptera							
Agathon sp.	0	0.0			0	2	sc
Ceratopogonidae	0	0.0			6	108	pr
Chironomidae	22	3.6			6	108	un
Chelifera sp.	0	0.0			6	95	pr
Oreogeton sp.	0	0.0			6	95	pr
Psychodidae	0	0.0			10	36	cg
Simuliidae	0	0.0			6	108	cg
Antocha sp.	0	0.0			3	24	cg
Dicranota sp.	0	0.0			3	24	pr
Hexatoma sp.	0	0.0			2	36	pr
Pedicia sp.	0	0.0			3	36	pr
Tipula sp.	0	0.0			4	36	cm
Hydracarina	0	0.0			5	108	pr
Mollusca	0	0.0			8	108	cg
Nematoda	0	0.0			5	108	cm
Turbellaria	0	0.0			4	108	cg

TOTAL NUMBER =	604
TOTAL TAXA =	26
STD =	27.0
MEAN =	604
SDI =	3.11
% SE Mean =	4
% Coef. Var.=	4
B/E =	0.04
EPT Abund =	531
EPT/Chiron =	24.14
EPT % =	87.91
EPT taxa =	23
c/f tot =	1
c/f % =	0.17
c/g tot =	103
c/g % =	17.05
sh tot =	114
sh % =	18.87
sc tot =	283
sc % =	46.85
p tot =	77
p% =	12.75
cm tot =	0
cm % =	0.00
unk tot =	26
unk% =	4.30
sc/cf =	283.00
sc/(sc+cf) =	0.996
sh/total =	0.189

Macroinvertebrate Data--Montanore, August 1992
Poorman Creek, Pol (4 Hess samples), #27

	No.	Percent Total	Total Number	Percent Total	TV	TQ	FFG
Ephemeroptera			604	65.72			
Baetis sp.	89	9.7			5	72	cg
Diphetor sp.	0	0.0			4	72	cg
Caudatella hystrix	0	0.0			1	48	cg
Drunella coloradensis/ flavilinea	2	0.2			0	18	sc
Drunella doddsi	163	17.7			0	4	sc
Drunella grandis	0	0.0			0	24	sc
Drunella spinifera	0	0.0			0	24	pr
Drunella sp.	0	0.0			1	48	sc
Serratella sp.	1	0.1			2	48	cg
Cinygma sp.	0	0.0			2	48	sc
Cinygmula sp.	38	4.1			4	21	sc
Epeorus sp.	78	8.5			0	21	sc
Heptagenia sp.	0	0.0			4	48	sc
Ironodes sp.	0	0.0			3	48	sc
Leucrocuta sp.	0	0.0			1	48	sc
Nixe sp.	0	0.0			2	48	sc
Rhithrogena sp.	228	24.8			4	21	cg
Paraleptophlebia sp.	0	0.0			4	24	cg
Ameletus sp.	5	0.5			0	48	cg
Plecoptera			125	13.60			
Capniidae	5	0.5			1	32	sh
Kathroperla perdita	5	0.5			1	24	cg
Sweltsa/Suwallia sp.	38	4.1			1	24	pr
Despaxia augusta	0	0.0			0	18	sh
Paraleuctra sp.	0	0.0			0	18	sh
Perlomyia sp.	0	0.0			0	18	sh
Leuctridae	0	0.0			0	18	sh
Nemoura sp.	0	0.0			2	24	sh
Visoka cataractae	3	0.3			2	36	sh
Zapada cinctipes	0	0.0			2	16	sh
Zapada columbiana	47	5.1			2	16	sh
Nemouridae	0	0.0			2	36	sh
Yoraperla brevis	0	0.0			1	12	sh
Acroneuria abnormis	0	0.0			0	6	pr
Doroneuria theodora	1	0.1			1	18	pr
Hesperoperla pacifica	0	0.0			2	18	pr
Perlidae	4	0.4			1	24	pr
Isoperla sp.	0	0.0			2	24	pr
Kogotus modestus	0	0.0			2	18	pr
Megarcys sp.	22	2.4			2	24	pr
Setvena bradleyi	0	0.0			2	48	pr
Skwala sp.	0	0.0			2	18	pr
Perlodidae	0	0.0			2	48	pr
Doddsia occidentalis	0	0.0			2	24	sc
Taenionema sp.	0	0.0			2	48	sc
Trichoptera			145	15.78			
Micrasema sp.	0	0.0			1	24	sh
Anagapetus sp.	0	0.0			0	24	sc
Glossosoma sp.	0	0.0			0	24	sc
Arctopsyche grandis	0	0.0			4	18	cf
Hydropsyche sp.	0	0.0			8	108	cg
Parapsyche elsis	4	0.4			4	6	cf
Hydropsychidae	115	12.5			4	108	cf
Agraylea sp.	0	0.0			8	108	cg
Hydroptila sp.	0	0.0			6	108	cg
Ochrotrichia sp.	0	0.0			4	108	cg
Lepidostoma sp.	0	0.0			1	18	sh
Apatania sp.	0	0.0			4	18	sc
Chyrandra centralis	0	0.0			1	18	sh
Ecclisomyia sp.	0	0.0			2	24	om
Neothremma alicia	0	0.0			4	8	sc
Oligophlebodes sp.	0	0.0			4	24	sc
Limnephilidae	0	0.0			4	108	un

Pol-H, #27 (cont.)

Dolophilodes sp.	0	0.0			2	24	cf
Wormaldia sp.	0	0.0			3	24	cf
Polycentropus sp.	0	0.0			6	72	pr
Rhyacophila Angelita grp.	0	0.0			0	18	pr
Rhyacophila Betteni grp.	0	0.0			0	18	pr
Rhyacophila Bif./Color. grp.	0	0.0			0	18	pr
Rhyacophila Brunnea grp.	1	0.1			0	18	pr
Rhyacophila hyalinata	0	0.0			0	18	pr
Rhyacophila iranda	0	0.0			0	18	pr
Rhyacophila Sibirica grp.	0	0.0			0	18	pr
Rhyacophila tucula	0	0.0			0	18	pr
Rhyacophila vaccua	23	2.5			0	18	pr
Rhyacophila verrula	0	0.0			0	18	pr
Rhyacophila vepulsa	0	0.0			0	18	pr
Rhyacophila sp.	0	0.0			0	18	pr
Trichopteran pupae	2	0.2			nn	nn	un
Other			45	4.90			
Annelida(Oligochaeta)	0	0.0			5	108	cg
Coleoptera(Elmidae)					4	108	cg
Cleptelmis sp.	0	0.0			4	108	cg
Heterlimnius sp.	4	0.4			4	108	cg
Lara sp.	0	0.0			4	108	sh
Narpus sp.	0	0.0			4	108	cg
Zaitzevia sp.	0	0.0			4	108	cg
Elmidae	0	0.0			4	108	cg
Diptera							
Agathon sp.	0	0.0			0	2	sc
Ceratopogonidae	0	0.0			6	108	pr
Chironomidae	40	4.4			6	108	un
Chelifera sp.	0	0.0			6	95	pr
Oreogeton sp.	0	0.0			6	95	pr
Psychodidae	0	0.0			10	36	cg
Simuliidae	0	0.0			6	108	cg
Antocha sp.	0	0.0			3	24	cg
Dicranota sp.	0	0.0			3	24	pr
Hexatoma sp.	0	0.0			2	36	pr
Pedicia sp.	0	0.0			3	36	pr
Tipula sp.	0	0.0			4	36	om
Hydracarina	0	0.0			5	108	pr
Mollusca	0	0.0			8	108	cg
Nematoda	1	0.1			5	108	om
Turbellaria	0	0.0			4	108	cg

TOTAL NUMBER =	919
TOTAL TAXA =	24
STD =	32.4
MEAN =	230
SDI =	3.34
% SE Mean =	7
% Coef. Var.=	14
B/E =	0.15
EPT Abund =	874
EPT/Chiron =	21.85
EPT % =	95.10
EPT taxa =	21
c/f tot =	119
c/f % =	12.95
c/g tot =	332
c/g % =	36.13
sh tot =	55
sh % =	5.98
sc tot =	281
sc % =	30.58
p tot =	89
p% =	9.68
om tot =	1
om % =	0.11
unk tot =	42
unk% =	4.57
sc/cf =	2.36
sc/(sc+cf) =	0.703
sh/total =	0.060

Macroinvertebrate Data--Montanore, August 1992
Poorman Creek, Pol (1 kick sample), #28

	No.	Percent Total	Total Number	Percent Total	TV	TQ	FFG
Ephemeroptera			288	58.18			
Baetis sp.	79	16.0			5	72	cg
Diphetor sp.	0	0.0			4	72	cg
Caudatella hystrix	0	0.0			1	48	cg
Drunella coloradensis/ flavilinea	6	1.2			0	18	sc
Drunella doddsi	59	11.9			0	4	sc
Drunella grandis	0	0.0			0	24	sc
Drunella spinifera	0	0.0			0	24	pr
Drunella sp.	0	0.0			1	48	sc
Serratella sp.	2	0.4			2	48	cg
Cinygma sp.	0	0.0			2	48	sc
Cinygmula sp.	9	1.8			4	21	sc
Epeorus sp.	74	14.9			0	21	sc
Heptagenia sp.	0	0.0			4	48	sc
Ironodes sp.	0	0.0			3	48	sc
Leucrocuta sp.	0	0.0			1	48	sc
Nixe sp.	0	0.0			2	48	sc
Rhithrogena sp.	59	11.9			4	21	cg
Paraleptophlebia sp.	0	0.0			4	24	cg
Ameletus sp.	0	0.0			0	48	cg
Plecoptera			60	12.12			
Capniidae	5	1.0			1	32	sh
Kathroperla perdita	0	0.0			1	24	cg
Sweltsa/Suwallia sp.	5	1.0			1	24	pr
Despaxia augusta	0	0.0			0	18	sh
Paraleuctra sp.	0	0.0			0	18	sh
Perlomyia sp.	0	0.0			0	18	sh
Leuctridae	0	0.0			0	18	sh
Nemoura sp.	0	0.0			2	24	sh
Visoka cataractae	0	0.0			2	36	sh
Zapada cinctipes	0	0.0			2	16	sh
Zapada columbiana	45	9.1			2	16	sh
Nemouridae	0	0.0			2	36	sh
Yoraperla brevis	0	0.0			1	12	sh
Acroneuria abnormis	0	0.0			0	6	pr
Doroneuria theodora	3	0.6			1	18	pr
Hesperoperla pacifica	0	0.0			2	18	pr
Perlidae	0	0.0			1	24	pr
Isoperla sp.	0	0.0			2	24	pr
Kogotus modestus	0	0.0			2	18	pr
Megarcys sp.	2	0.4			2	24	pr
Setvena bradleyi	0	0.0			2	48	pr
Skwala sp.	0	0.0			2	18	pr
Perlodidae	0	0.0			2	48	pr
Doddsia occidentalis	0	0.0			2	24	sc
Taenionema sp.	0	0.0			2	48	sc
Trichoptera			106	21.41			
Micrasema sp.	0	0.0			1	24	sh
Anagapetus sp.	0	0.0			0	24	sc
Glossosoma sp.	2	0.4			0	24	sc
Arctopsyche grandis	0	0.0			4	18	cf
Hydropsyche sp.	0	0.0			8	108	cg
Parapsyche elsis	5	1.0			4	6	cf
Hydropsychidae	86	17.4			4	108	cf
Agraylea sp.	0	0.0			8	108	cg
Hydroptila sp.	0	0.0			6	108	cg
Ochrotrichia sp.	0	0.0			4	108	cg
Lepidostoma sp.	0	0.0			1	18	sh
Apatania sp.	0	0.0			4	18	sc
Chyrandra centralis	0	0.0			1	18	sh
Ecclisomyia sp.	0	0.0			2	24	om
Neothremma alicia	0	0.0			4	8	sc
Oligophlebodes sp.	0	0.0			4	24	sc
Limnephilidae	0	0.0			4	108	un

Pol-k, #28 (cont.)

Dolophilodes sp.	0	0.0			2	24	cf
Wormaldia sp.	0	0.0			3	24	cf
Polycentropus sp.	0	0.0			6	72	pr
Rhyacophila Angelita grp.	0	0.0			0	18	pr
Rhyacophila Betteni grp.	0	0.0			0	18	pr
Rhyacophila Bif./Color. grp.	0	0.0			0	18	pr
Rhyacophila Brunnea grp.	2	0.4			0	18	pr
Rhyacophila hyalinata	0	0.0			0	18	pr
Rhyacophila iranda	0	0.0			0	18	pr
Rhyacophila Sibirica grp.	0	0.0			0	18	pr
Rhyacophila tucula	0	0.0			0	18	pr
Rhyacophila vaccua	9	1.8			0	18	pr
Rhyacophila verrula	0	0.0			0	18	pr
Rhyacophila vepulsa	0	0.0			0	18	pr
Rhyacophila sp.	2	0.4			0	18	pr
Trichopteran pupae	0	0.0			nn	nn	un
Other			41	8.28			
Annelida(Oligochaeta)	0	0.0			5	108	cg
Coleoptera(Elmidae)					4	108	cg
Cleptelmis sp.	0	0.0			4	108	cg
Heterlimnius sp.	0	0.0			4	108	cg
Lara sp.	0	0.0			4	108	sh
Narpus sp.	0	0.0			4	108	cg
Zaitzevia sp.	0	0.0			4	108	cg
Elmidae	0	0.0			4	108	cg
Diptera							
Agathon sp.	0	0.0			0	2	sc
Ceratopogonidae	0	0.0			6	108	pr
Chironomidae	39	7.9			6	108	un
Chelifera sp.	0	0.0			6	95	pr
Oreogeton sp.	0	0.0			6	95	pr
Psychodidae	0	0.0			10	36	cg
Simuliidae	0	0.0			6	108	cg
Antocha sp.	0	0.0			3	24	cg
Dicranota sp.	0	0.0			3	24	pr
Hexatoma sp.	0	0.0			2	36	pr
Pedicia sp.	0	0.0			3	36	pr
Tipula sp.	0	0.0			4	36	om
Hydracarina	0	0.0			5	108	pr
Mollusca	0	0.0			8	108	cg
Nematoda	2	0.4			5	108	om
Turbellaria	0	0.0			4	108	cg

TOTAL NUMBER =	495
TOTAL TAXA =	20
STD =	16.6
MEAN =	495
SDI =	3.33
% SE Mean =	3
% Coef. Var.=	3
B/E =	0.27
EPT Abund =	454
EPT/Chiron =	11.64
EPT % =	91.72
EPT taxa =	18
c/f tot =	91
c/f % =	18.38
c/g tot =	140
c/g % =	28.28
sh tot =	50
sh % =	10.10
sc tot =	150
sc % =	30.30
p tot =	23
p% =	4.65
om tot =	2
om % =	0.40
unk tot =	39
unk% =	7.88
sc/cf =	1.65
sc/(sc+cf) =	0.622
sh/total =	0.101

Macroinvertebrate Data--Montanore, August 1992
Ramsey Creek, Ra2 (4 Hess samples), #29

	No.	Percent Total	Total Number	Percent Total	TV	TQ	FFG
Ephemeroptera			486	51.98			
Baetis sp.	84	9.0			5	72	cg
Diphetor sp.	0	0.0			4	72	cg
Caudatella hystrix	0	0.0			1	48	cg
Drunella coloradensis/ flavilinea	0	0.0			0	18	sc
Drunella doddsi	116	12.4			0	4	sc
Drunella grandis	0	0.0			0	24	sc
Drunella spinifera	2	0.2			0	24	pr
Drunella sp.	0	0.0			1	48	sc
Serratella sp.	9	1.0			2	48	cg
Cinygma sp.	0	0.0			2	48	sc
Cinygmula sp.	62	6.6			4	21	sc
Epeorus sp.	55	5.9			0	21	sc
Heptagenia sp.	0	0.0			4	48	sc
Ironodes sp.	0	0.0			3	48	sc
Leucrocuta sp.	0	0.0			1	48	sc
Nixe sp.	0	0.0			2	48	sc
Rhithrogena sp.	151	16.1			4	21	cg
Paraleptophlebia sp.	0	0.0			4	24	cg
Ameletus sp.	7	0.7			0	48	cg
Plecoptera			255	27.27			
Capniidae	7	0.7			1	32	sh
Kathroperla perdita	2	0.2			1	24	cg
Sweltsa/Suwallia sp.	73	7.8			1	24	pr
Despaxia augusta	21	2.2			0	18	sh
Paraleuctra sp.	0	0.0			0	18	sh
Perlomyia sp.	0	0.0			0	18	sh
Leuctridae	0	0.0			0	18	sh
Nemoura sp.	0	0.0			2	24	sh
Visoka cataractae	51	5.5			2	36	sh
Zapada cinctipes	0	0.0			2	16	sh
Zapada columbiana	95	10.2			2	16	sh
Nemouridae	0	0.0			2	36	sh
Yoraperla brevis	0	0.0			1	12	sh
Acroneuria abnormis	0	0.0			0	6	pr
Doroneuria theodora	0	0.0			1	18	pr
Hesperoperla pacifica	0	0.0			2	18	pr
Perlidae	4	0.4			1	24	pr
Isoperla sp.	0	0.0			2	24	pr
Kogotus modestus	0	0.0			2	18	pr
Megarcys sp.	1	0.1			2	24	pr
Setvena bradleyi	0	0.0			2	48	pr
Skwala sp.	0	0.0			2	18	pr
Perlodidae	1	0.1			2	48	pr
Doddsia occidentalis	0	0.0			2	24	sc
Taenionema sp.	0	0.0			2	48	sc
Trichoptera			139	14.87			
Micrasema sp.	0	0.0			1	24	sh
Anagapetus sp.	0	0.0			0	24	sc
Glossosoma sp.	28	3.0			0	24	sc
Arctopsyche grandis	0	0.0			4	18	cf
Hydropsyche sp.	0	0.0			8	108	cg
Parapsyche elsis	3	0.3			4	6	cf
Hydropsychidae	75	8.0			4	108	cf
Agraylea sp.	0	0.0			8	108	cg
Hydroptila sp.	0	0.0			6	108	cg
Ochrotrichia sp.	0	0.0			4	108	cg
Lepidostoma sp.	0	0.0			1	18	sh
Apatania sp.	0	0.0			4	18	sc
Chyrandra centralis	0	0.0			1	18	sh
Ecclisomyia sp.	0	0.0			2	24	om
Neothremma alicia	0	0.0			4	8	sc
Oligophlebodes sp.	2	0.2			4	24	sc
Limnephilidae	2	0.2			4	108	un

Ra2-H, #29 (cont.)

Dolophilodes sp.	0	0.0			2	24	cf
Wormaldia sp.	0	0.0			3	24	cf
Polycentropus sp.	0	0.0			6	72	pr
Rhyacophila Angelita grp.	1	0.1			0	18	pr
Rhyacophila Betteni grp.	22	2.4			0	18	pr
Rhyacophila Bif./Color. grp.	0	0.0			0	18	pr
Rhyacophila Brunnea grp.	0	0.0			0	18	pr
Rhyacophila hyalinata	2	0.2			0	18	pr
Rhyacophila iranda	0	0.0			0	18	pr
Rhyacophila Sibirica grp.	0	0.0			0	18	pr
Rhyacophila tucula	0	0.0			0	18	pr
Rhyacophila vaccua	0	0.0			0	18	pr
Rhyacophila verrula	0	0.0			0	18	pr
Rhyacophila vepulsa	2	0.2			0	18	pr
Rhyacophila sp.	1	0.1			0	18	pr
Trichopteran pupae	1	0.1			nn	nn	un
Other			55	5.88			
Annelida(Oligochaeta)	3	0.3			5	108	cg
Coleoptera(Elmidae)					4	108	cg
Cleptelmis sp.	0	0.0			4	108	cg
Heterlimnius sp.	5	0.5			4	108	cg
Lara sp.	0	0.0			4	108	sh
Narpus sp.	0	0.0			4	108	cg
Zaitzevia sp.	0	0.0			4	108	cg
Elmidae	0	0.0			4	108	cg
Diptera							
Agathon sp.	0	0.0			0	2	sc
Ceratopogonidae	1	0.1			6	108	pr
Chironomidae	43	4.6			6	108	un
Chelifera sp.	0	0.0			6	95	pr
Oreogeton sp.	1	0.1			6	95	pr
Psychodidae	0	0.0			10	36	cg
Simuliidae	0	0.0			6	108	cg
Antocha sp.	0	0.0			3	24	cg
Dicranota sp.	0	0.0			3	24	pr
Hexatoma sp.	0	0.0			2	36	pr
Pedicia sp.	0	0.0			3	36	pr
Tipula sp.	0	0.0			4	36	om
Hydracarina	0	0.0			5	108	pr
Mollusca	0	0.0			8	108	cg
Nematoda	1	0.1			5	108	om
Turbellaria	1	0.1			4	108	cg

TOTAL NUMBER =	935
TOTAL TAXA =	35
STD =	26.0
MEAN =	234
SDI =	3.87
% SE Mean =	6
% Coef. Var.=	11
B/E =	0.17
EPT Abund =	880
EPT/Chiron =	20.47
EPT % =	94.12
EPT taxa =	28
c/f tot =	78
c/f % =	8.34
c/g tot =	262
c/g % =	28.02
sh tot =	174
sh % =	18.61
sc tot =	263
sc % =	28.13
p tot =	111
p% =	11.87
om tot =	1
om % =	0.11
unk tot =	46
unk% =	4.92
sc/cf =	3.37
sc/(sc+cf) =	0.771
sh/total =	0.186

Macroinvertebrate Data--Montanore, August 1992
Ramsey Creek, Ra2 (1 kick sample), #30

	No.	Percent Total	Total Number	Percent Total	TV	TQ	FFG
Ephemeroptera			207	35.08			
Baetis sp.	97	16.4			5	72	cg
Diphetor sp.	0	0.0			4	72	cg
Caudatella hystrix	0	0.0			1	48	cg
Drunella coloradensis/ flavilinea	4	0.7			0	18	sc
Drunella doddsi	30	5.1			0	4	sc
Drunella grandis	0	0.0			0	24	sc
Drunella spinifera	2	0.3			0	24	pr
Drunella sp.	0	0.0			1	48	sc
Serratella sp.	2	0.3			2	48	cg
Cinygma sp.	0	0.0			2	48	sc
Cinygmula sp.	16	2.7			4	21	sc
Epeorus sp.	31	5.3			0	21	sc
Heptagenia sp.	0	0.0			4	48	sc
Ironodes sp.	0	0.0			3	48	sc
Leucrocuta sp.	0	0.0			1	48	sc
Nixe sp.	0	0.0			2	48	sc
Rhithrogena sp.	18	3.1			4	21	cg
Paraleptophlebia sp.	3	0.5			4	24	cg
Ameletus sp.	4	0.7			0	48	cg
Plecoptera			180	30.51			
Capniidae	0	0.0			1	32	sh
Kathroperla perdita	0	0.0			1	24	cg
Sweltsa/Suwallia sp.	24	4.1			1	24	pr
Despaxia augusta	6	1.0			0	18	sh
Paraleuctra sp.	0	0.0			0	18	sh
Perlomyia sp.	0	0.0			0	18	sh
Leuctridae	0	0.0			0	18	sh
Nemoura sp.	0	0.0			2	24	sh
Visoka cataractae	19	3.2			2	36	sh
Zapada cinctipes	0	0.0			2	16	sh
Zapada columbiana	115	19.5			2	16	sh
Nemouridae	0	0.0			2	36	sh
Yoraperla brevis	0	0.0			1	12	sh
Acroneuria abnormis	0	0.0			0	6	pr
Doroneuria theodora	0	0.0			1	18	pr
Hesperoperla pacifica	0	0.0			2	18	pr
Perlidae	2	0.3			1	24	pr
Isoperla sp.	0	0.0			2	24	pr
Kogotus modestus	0	0.0			2	18	pr
Megarcys sp.	3	0.5			2	24	pr
Setvena bradleyi	0	0.0			2	48	pr
Skwala sp.	0	0.0			2	18	pr
Perlodidae	3	0.5			2	48	pr
Doddsia occidentalis	0	0.0			2	24	sc
Taenionema sp.	8	1.4			2.	48	sc
Trichoptera			117	19.83			
Micrasema sp.	0	0.0			1	24	sh
Anagapetus sp.	0	0.0			0	24	sc
Glossosoma sp.	0	0.0			0	24	sc
Arctopsyche grandis	0	0.0			4	18	cf
Hydropsyche sp.	0	0.0			8	108	cg
Parapsyche elsis	3	0.5			4	6	cf
Hydropsychidae	92	15.6			4	108	cf
Agraylea sp.	0	0.0			8	108	cg
Hydroptila sp.	0	0.0			6	108	cg
Ochrotrichia sp.	0	0.0			4	108	cg
Lepidostoma sp.	0	0.0			1	18	sh
Apatania sp.	0	0.0			4	18	sc
Chyrandra centralis	0	0.0			1	18	sh
Ecclisomyia sp.	0	0.0			2	24	om
Neothremma alicia	0	0.0			4	8	sc
Oligophlebodes sp.	5	0.8			4	24	sc
Limnephilidae	0	0.0			4	108	un

Ra2-k, #30 (cont.)

Dolophilodes sp.	0	0.0			2	24	cf
Wormaldia sp.	0	0.0			3	24	cf
Polycentropus sp.	0	0.0			6	72	pr
Rhyacophila Angelita grp.	0	0.0			0	18	pr
Rhyacophila Betteni grp.	12	2.0			0	18	pr
Rhyacophila Bif./Color. grp.	0	0.0			0	18	pr
Rhyacophila Brunnea grp.	2	0.3			0	18	pr
Rhyacophila hyalinata	1	0.2			0	18	pr
Rhyacophila iranda	0	0.0			0	18	pr
Rhyacophila Sibirica grp.	0	0.0			0	18	pr
Rhyacophila tucula	0	0.0			0	18	pr
Rhyacophila vaccua	0	0.0			0	18	pr
Rhyacophila verrula	0	0.0			0	18	pr
Rhyacophila vepulsa	0	0.0			0	18	pr
Rhyacophila sp.	1	0.2			0	18	pr
Trichopteran pupae	1	0.2			nn	nn	un
Other			86	14.58			
Annelida(Oligochaeta)	0	0.0			5	108	cg
Coleoptera(Elmidae)					4	108	cg
Cleptelmis sp.	0	0.0			4	108	cg
Heterlimnius sp.	2	0.3			4	108	cg
Lara sp.	0	0.0			4	108	sh
Narpus sp.	0	0.0			4	108	cg
Zaitzevia sp.	0	0.0			4	108	cg
Elmidae	0	0.0			4	108	cg
Diptera							
Agathon sp.	0	0.0			0	2	sc
Ceratopogonidae	0	0.0			6	108	pr
Chironomidae	78	13.2			6	108	un
Chelifera sp.	0	0.0			6	95	pr
Oreogeton sp.	0	0.0			6	95	pr
Psychodidae	0	0.0			10	36	cg
Simuliidae	5	0.8			6	108	cg
Antocha sp.	0	0.0			3	24	cg
Dicranota sp.	1	0.2			3	24	pr
Hexatoma sp.	0	0.0			2	36	pr
Pedicia sp.	0	0.0			3	36	pr
Tipula sp.	0	0.0			4	36	om
Hydracarina	0	0.0			5	108	pr
Mollusca	0	0.0			8	108	cg
Nematoda	0	0.0			5	108	om
Turbellaria	0	0.0			4	108	cg

TOTAL NUMBER =	590
TOTAL TAXA =	30
STD =	19.4
MEAN =	590
SDI =	3.61
% SE Mean =	3
% Coef. Var.=	3
B/E =	0.47
EPT Abund =	504
EPT/Chiron =	6.46
EPT % =	85.42
EPT taxa =	26
c/f tot =	95
c/f % =	16.10
c/g tot =	131
c/g % =	22.20
sh tot =	140
sh % =	23.73
sc tot =	94
sc % =	15.93
p tot =	51
p% =	8.64
om tot =	0
om % =	0.00
unk tot =	79
unk% =	13.39
sc/cf =	0.99
sc/(sc+cf) =	0.497
sh/total =	0.237

Macroinvertebrate Data--Montanore, August 1992
Bear Creek, Be2 (4 Hess samples), #31

	No.	Percent Total	Total Number	Percent Total	TV	TQ	FFG
Ephemeroptera			627	59.66			
Baetis sp.	40	3.8			5	72	cg
Diphetor sp.	0	0.0			4	72	cg
Caudatella hystrix	0	0.0			1	48	cg
Drunella coloradensis/ flavilinea	5	0.5			0	18	sc
Drunella doddsi	211	20.1			0	4	sc
Drunella grandis	0	0.0			0	24	sc
Drunella spinifera	1	0.1			0	24	pr
Drunella sp.	0	0.0			1	48	sc
Serratella sp.	2	0.2			2	48	cg
Cinygma sp.	0	0.0			2	48	sc
Cinygmula sp.	62	5.9			4	21	sc
Epeorus sp.	53	5.0			0	21	sc
Heptagenia sp.	0	0.0			4	48	sc
Ironodes sp.	0	0.0			3	48	sc
Leucrocuta sp.	0	0.0			1	48	sc
Nixe sp.	0	0.0			2	48	sc
Rhithrogena sp.	248	23.6			4	21	cg
Paraleptophlebia sp.	3	0.3			4	24	cg
Ameletus sp.	2	0.2			0	48	cg
Plecoptera			210	19.98			
Capniidae	1	0.1			1	32	sh
Kathroperla perdita	0	0.0			1	24	cg
Sweltsa/Suwallia sp.	103	9.8			1	24	pr
Despaxia augusta	0	0.0			0	18	sh
Paraleuctra sp.	0	0.0			0	18	sh
Perlomyia sp.	0	0.0			0	18	sh
Leuctridae	23	2.2			0	18	sh
Nemoura sp.	0	0.0			2	24	sh
Visoka cataractae	22	2.1			2	36	sh
Zapada cinctipes	0	0.0			2	16	sh
Zapada columbiana	36	3.4			2	16	sh
Nemouridae	0	0.0			2	36	sh
Yoraperla brevis	11	1.0			1	12	sh
Acroneuria abnormis	1	0.1			0	6	pr
Doroneuria theodora	0	0.0			1	18	pr
Hesperoperla pacifica	0	0.0			2	18	pr
Perlidae	6	0.6			1	24	pr
Isoperla sp.	0	0.0			2	24	pr
Kogotus modestus	0	0.0			2	18	pr
Megarcys sp.	3	0.3			2	24	pr
Setvena bradleyi	0	0.0			2	48	pr
Skwala sp.	0	0.0			2	18	pr
Perlodidae	2	0.2			2	48	pr
Doddsia occidentalis	0	0.0			2	24	sc
Taenionema sp.	2	0.2			2	48	sc
Trichoptera			123	11.70			
Micrasema sp.	0	0.0			1	24	sh
Anagapetus sp.	0	0.0			0	24	sc
Glossosoma sp.	19	1.8			0	24	sc
Arctopsyche grandis	0	0.0			4	18	cf
Hydropsyche sp.	0	0.0			8	108	cg
Parapsyche elsis	1	0.1			4	6	cf
Hydropsychidae	12	1.1			4	108	cf
Agraylea sp.	0	0.0			8	108	cg
Hydroptila sp.	0	0.0			6	108	cg
Ochrotrichia sp.	0	0.0			4	108	cg
Lepidostoma sp.	0	0.0			1	18	sh
Apatania sp.	0	0.0			4	18	sc
Chyrandra centralis	0	0.0			1	18	sh
Ecclisomyia sp.	0	0.0			2	24	om
Neothremma alicia	0	0.0			4	8	sc
Oligophlebodes sp.	40	3.8			4	24	sc
Limnephilidae	0	0.0			4	108	un

Be2-H, #31 (cont.)

Dolophilodes sp.	0	0.0			2	24	cf
Wormaldia sp.	0	0.0			3	24	cf
Polycentropus sp.	0	0.0			6	72	pr
Rhyacophila Angelita grp.	0	0.0			0	18	pr
Rhyacophila Betteni grp.	34	3.2			0	18	pr
Rhyacophila Bif./Color. grp.	0	0.0			0	18	pr
Rhyacophila Brunnea grp.	1	0.1			0	18	pr
Rhyacophila hyalinata	3	0.3			0	18	pr
Rhyacophila iranda	0	0.0			0	18	pr
Rhyacophila Sibirica grp.	0	0.0			0	18	pr
Rhyacophila tucula	1	0.1			0	18	pr
Rhyacophila vaccua	0	0.0			0	18	pr
Rhyacophila verrula	0	0.0			0	18	pr
Rhyacophila vepulsa	7	0.7			0	18	pr
Rhyacophila sp.	4	0.4			0	18	pr
Trichopteran pupae	1	0.1			nn	nn	un
Other			91	8.66			
Annelida(Oligochaeta)	1	0.1			5	108	cg
Coleoptera(Elmidae)					4	108	cg
Cleptelmis sp.	0	0.0			4	108	cg
Heterlimnius sp.	22	2.1			4	108	cg
Lara sp.	0	0.0			4	108	sh
Narpus sp.	0	0.0			4	108	cg
Zaitzevia sp.	0	0.0			4	108	cg
Elmidae	0	0.0			4	108	cg
Diptera							
Agathon sp.	0	0.0			0	2	sc
Ceratopogonidae	0	0.0			6	108	pr
Chironomidae	55	5.2			6	108	un
Chelifera sp.	0	0.0			6	95	pr
Oreogeton sp.	1	0.1			6	95	pr
Psychodidae	0	0.0			10	36	cg
Simuliidae	0	0.0			6	108	cg
Antocha sp.	0	0.0			3	24	cg
Dicranota sp.	2	0.2			3	24	pr
Hexatoma sp.	0	0.0			2	36	pr
Pedicia sp.	0	0.0			3	36	pr
Tipula sp.	0	0.0			4	36	om
Hydracarina	4	0.4			5	108	pr
Mollusca	0	0.0			8	108	cg
Nematoda	0	0.0			5	108	om
Turbellaria	6	0.6			4	108	cg

TOTAL NUMBER =	1051
TOTAL TAXA =	39
STD =	35.1
MEAN =	263
SDI =	3.73
% SE Mean =	7
% Coef. Var.=	13
B/E =	0.06
EPT Abund =	960
EPT/Chiron =	17.45
EPT % =	91.34
EPT taxa =	32
c/f tot =	13
c/f % =	1.24
c/g tot =	324
c/g % =	30.83
sh tot =	93
sh % =	8.85
sc tot =	392
sc % =	37.30
p tot =	173
p% =	16.46
om tot =	0
om % =	0.00
unk tot =	56
unk% =	5.33
sc/cf =	30.15
sc/(sc+cf) =	0.968
sh/total =	0.088

Macroinvertebrate Data--Montanore, August 1992
Bear Creek, Be2 (1 kick sample), #32

	No.	Percent Total	Total Number	Percent Total	TV	TQ	FFG
Ephemeroptera			325	45.39			
Baetis sp.	97	13.5			5	72	cg
Diphetor sp.	0	0.0			4	72	cg
Caudatella hystrix	0	0.0			1	48	cg
Drunella coloradensis/ flavilinea	2	0.3			0	18	sc
Drunella doddsi	47	6.6			0	4	sc
Drunella grandis	0	0.0			0	24	sc
Drunella spinifera	0	0.0			0	24	pr
Drunella sp.	0	0.0			1	48	sc
Serratella sp.	9	1.3			2	48	cg
Cinygma sp.	0	0.0			2	48	sc
Cinygmula sp.	21	2.9			4	21	sc
Epeorus sp.	66	9.2			0	21	sc
Heptagenia sp.	0	0.0			4	48	sc
Ironodes sp.	0	0.0			3	48	sc
Leucrocuta sp.	0	0.0			1	48	sc
Nixe sp.	0	0.0			2	48	sc
Rhithrogena sp.	79	11.0			4	21	cg
Paraleptophlebia sp.	4	0.6			4	24	cg
Ameletus sp.	0	0.0			0	48	cg
Plecoptera			199	27.79			
Capniidae	2	0.3			1	32	sh
Kathroperla perdita	0	0.0			1	24	cg
Swoltsa/Suwallia sp.	27	3.8			1	24	pr
Despaxia augusta	6	0.8			0	18	sh
Paraleuctra sp.	0	0.0			0	18	sh
Perlomyia sp.	0	0.0			0	18	sh
Leuctridae	9	1.3			0	18	sh
Nemoura sp.	0	0.0			2	24	sh
Visoka cataractae	11	1.5			2	36	sh
Zapada cinctipes	0	0.0			2	16	sh
Zapada columbiana	135	18.9			2	16	sh
Nemouridae	0	0.0			2	36	sh
Yoraperla brevis	2	0.3			1	12	sh
Acroneuria abnormis	0	0.0			0	6	pr
Doroneuria theodora	0	0.0			1	18	pr
Hesperoperla pacifica	0	0.0			2	18	pr
Perlidae	5	0.7			1	24	pr
Isoperla sp.	0	0.0			2	24	pr
Kogotus modestus	0	0.0			2	18	pr
Megarcys sp.	2	0.3			2	24	pr
Setvena bradleyi	0	0.0			2	48	pr
Skwala sp.	0	0.0			2	18	pr
Perlodidae	0	0.0			2	48	pr
Doddsia occidentalis	0	0.0			2	24	sc
Taenionema sp.	0	0.0			2	48	sc
Trichoptera			96	13.41			
Micrasema sp.	0	0.0			1	24	sh
Anagapetus sp.	0	0.0			0	24	sc
Glossosoma sp.	6	0.8			0	24	sc
Arctopsyche grandis	0	0.0			4	18	cf
Hydropsyche sp.	0	0.0			8	108	cg
Parapsyche elsis	4	0.6			4	6	cf
Hydropsychidae	28	3.9			4	108	cf
Agraylea sp.	0	0.0			8	108	cg
Hydroptila sp.	0	0.0			6	108	cg
Ochrotrichia sp.	0	0.0			4	108	cg
Lepidostoma sp.	0	0.0			1	18	sh
Apatania sp.	0	0.0			4	18	sc
Chyrandra centralis	0	0.0			1	18	sh
Ecclisomyia sp.	1	0.1			2	24	om
Neothremma alicia	0	0.0			4	8	sc
Oligophlebodes sp.	12	1.7			4	24	sc
Limnephilidae	2	0.3			4	108	un

Be2-k, #32 (cont.)

Dolophilodes sp.	0	0.0			2	24	cf
Wormaldia sp.	0	0.0			3	24	cf
Polycentropus sp.	0	0.0			6	72	pr
Rhyacophila Angelita grp.	0	0.0			0	18	pr
Rhyacophila Betteni grp.	26	3.6			0	18	pr
Rhyacophila Bif./Color. grp.	0	0.0			0	18	pr
Rhyacophila Brunnea grp.	7	1.0			0	18	pr
Rhyacophila hyalinata	1	0.1			0	18	pr
Rhyacophila iranda	0	0.0			0	18	pr
Rhyacophila Sibirica grp.	0	0.0			0	18	pr
Rhyacophila tucula	0	0.0			0	18	pr
Rhyacophila vaccua	0	0.0			0	18	pr
Rhyacophila verrula	0	0.0			0	18	pr
Rhyacophila vepulsa	4	0.6			0	18	pr
Rhyacophila sp.	0	0.0			0	18	pr
Trichopteran pupae	5	0.7			nn	nn	un
Other			96	13.41			
Annelida(Oligochaeta)	3	0.4			5	108	cg
Coleoptera(Elmidae)					4	108	cg
Cleptelmis sp.	0	0.0			4	108	cg
Heterlimnius sp.	7	1.0			4	108	cg
Lara sp.	0	0.0			4	108	sh
Narpus sp.	0	0.0			4	108	cg
Zaitzevia sp.	0	0.0			4	108	cg
Elmidae	0	0.0			4	108	cg
Diptera							
Agathon sp.	0	0.0			0	2	sc
Ceratopogonidae	0	0.0			6	108	pr
Chironomidae	80	11.2			6	108	un
Chelifera sp.	0	0.0			6	95	pr
Oreogeton sp.	0	0.0			6	95	pr
Psychodidae	0	0.0			10	36	cg
Simuliidae	3	0.4			6	108	cg
Antocha sp.	0	0.0			3	24	cg
Dicranota sp.	0	0.0			3	24	pr
Hexatoma sp.	0	0.0			2	36	pr
Pedicia sp.	0	0.0			3	36	pr
Tipula sp.	0	0.0			4	36	om
Hydracarina	0	0.0			5	108	pr
Mollusca	0	0.0			8	108	cg
Nematoda	0	0.0			5	108	om
Turbellaria	3	0.4			4	108	cg

TOTAL NUMBER =	716
TOTAL TAXA =	33
STD =	21.2
MEAN =	716
SDI =	3.87
% SE Mean =	3
% Coef. Var.=	3
B/E =	0.30
EPT Abund =	620
EPT/Chiron =	7.75
EPT % =	86.59
EPT taxa =	28
c/f tot =	32
c/f % =	4.47
c/g tot =	205
c/g % =	28.63
sh tot =	165
sh % =	23.04
sc tot =	154
sc % =	21.51
p tot =	72
p% =	10.06
om tot =	1
om % =	0.14
unk tot =	87
unk% =	12.15
sc/cf =	4.81
sc/(sc+cf) =	0.828
sh/total =	0.230

Appendix D. Macroinvertebrate station totals, autumn 1992.

Macroinvertebrate Data--Montanore, October 1992
Libby Creek, L1 (4 Hess samples), #33

	No.	Percent Total	Total Number	Percent Total	TV	TQ	FFG
Ephemeroptera			990	45.92			
Baetis sp.	185	8.6			5	72	cg
Diphetor sp.	0	0.0			4	72	cg
Caudatella hystrix	0	0.0			1	48	cg
Drunella coloradensis/ flavilinea	0	0.0			0	18	sc
Drunella doddsi	41	1.9			0	4	sc
Drunella grandis	1	0.0			0	24	sc
Drunella spinifera	0	0.0			0	24	pr
Drunella sp.	47	2.2			1	48	sc
Serratella sp.	1	0.0			2	48	cg
Cinygma sp.	0	0.0			2	48	sc
Cinygmula sp.	181	8.4			4	21	sc
Epeorus sp.	0	0.0			0	21	sc
Heptagenia sp.	0	0.0			4	48	sc
Ironodes sp.	0	0.0			3	48	sc
Leucrocuta sp.	0	0.0			1	48	sc
Nixe sp.	0	0.0			2	48	sc
Rhithrogena sp.	499	23.1			4	21	cg
Paraleptophlebia sp.	35	1.6			4	24	cg
Ameletus sp.	0	0.0			0	48	cg
Plecoptera			268	12.43			
Capniidae	45	2.1			1	32	sh
Kathroperla perdita	0	0.0			1	24	cg
Sweltsa/Suwallia sp.	144	6.7			1	24	pr
Despaxia augusta	14	0.6			0	18	sh
Paraleuctra sp.	0	0.0			0	18	sh
Perlomyia sp.	0	0.0			0	18	sh
Leuctridae	0	0.0			0	18	sh
Nemoura sp.	0	0.0			2	24	sh
Visoka cataractae	0	0.0			2	36	sh
Zapada cinctipes	7	0.3			2	16	sh
Zapada columbiana	2	0.1			2	16	sh
Nemouridae	0	0.0			2	36	sh
Yoraperla brevis	0	0.0			1	12	sh
Acroneuria abnormis	0	0.0			0	6	pr
Doroneuria theodora	0	0.0			1	18	pr
Hesperoperla pacifica	0	0.0			2	18	pr
Perlidae	2	0.1			1	24	pr
Isoperla sp.	10	0.5			2	24	pr
Kogotus modestus	0	0.0			2	18	pr
Megarcys sp.	2	0.1			2	24	pr
Setvena bradleyi	0	0.0			2	48	pr
Skwala sp.	0	0.0			2	18	pr
Perlodidae	1	0.0			2	48	pr
Doddsia occidentalis	0	0.0			2	24	sc
Taenionema sp.	41	1.9			2	48	sc
Trichoptera			695	32.24			
Micrasema sp.	4	0.2			1	24	sh
Anagapetus sp.	0	0.0			0	24	sc
Glossosoma sp.	19	0.9			0	24	sc
Arctopsyche grandis	45	2.1			4	18	cf
Hydropsyche sp.	0	0.0			8	108	cg
Parapsyche elsis	0	0.0			4	6	cf
Hydropsychidae	509	23.6			4	108	cf
Agraylea sp.	0	0.0			8	108	cg
Hydroptila sp.	0	0.0			6	108	cg
Ochrotrichia sp.	0	0.0			4	108	cg
Lepidostoma sp.	0	0.0			1	18	sh
Apatania sp.	0	0.0			4	18	sc
Chyrandra centralis	0	0.0			1	18	sh
Ecclisomyia sp.	0	0.0			2	24	om
Neothremma alicia	0	0.0			4	8	sc
Oligophlebodes sp.	82	3.8			4	24	sc
Limnephilidae	15	0.7			4	108	un

L1-H, #33 (cont.)

Dolophilodes sp.	0	0.0			2	24	cf
Wormaldia sp.	0	0.0			3	24	cf
Polycentropus sp.	0	0.0			6	72	pr
Rhyacophila Angelita grp.	0	0.0			0	18	pr
Rhyacophila Betteni grp.	4	0.2			0	18	pr
Rhyacophila Bif./Color. grp.	0	0.0			0	18	pr
Rhyacophila Brunnea grp.	16	0.7			0	18	pr
Rhyacophila hyalinata	0	0.0			0	18	pr
Rhyacophila iranda	0	0.0			0	18	pr
Rhyacophila Sibirica grp.	0	0.0			0	18	pr
Rhyacophila tucula	0	0.0			0	18	pr
Rhyacophila vaccua	0	0.0			0	18	pr
Rhyacophila verrula	0	0.0			0	18	pr
Rhyacophila vepulsa	0	0.0			0	18	pr
Rhyacophila sp.	1	0.0			0	18	pr
Trichopteran pupae	0	0.0			nn	nn	un
Other			203	9.42			
Annelida(Oligochaeta)	20	0.9			5	108	cg
Coleoptera(Elmidae)					4	108	cg
Cleptelmis sp.	0	0.0			4	108	cg
Heterlimnius sp.	8	0.4			4	108	cg
Lara sp.	0	0.0			4	108	sh
Narpus sp.	0	0.0			4	108	cg
Zaitzevia sp.	0	0.0			4	108	cg
Elmidae	0	0.0			4	108	cg
Diptera							
Agathon sp.	0	0.0			0	2	sc
Ceratopogonidae	2	0.1			6	108	pr
Chironomidae	116	5.4			6	108	un
Chelifera sp.	0	0.0			6	95	pr
Oreogeton sp.	0	0.0			6	95	pr
Psychodidae	1	0.0			10	36	cg
Simuliidae	0	0.0			6	108	cg
Antocha sp.	30	1.4			3	24	cg
Dicranota sp.	5	0.2			3	24	pr
Hexatoma sp.	5	0.2			2	36	pr
Pedicia sp.	0	0.0			3	36	pr
Tipula sp.	0	0.0			4	36	om
Hydracarina	2	0.1			5	108	pr
Mollusca	0	0.0			8	108	cg
Nematoda	5	0.2			5	108	om
Turbellaria	9	0.4			4	108	cg

TOTAL NUMBER =	2156
TOTAL TAXA =	38
STD =	76.4
MEAN =	539
SDI =	3.57
% SE Mean =	7
% Coef. Var.=	14
B/E =	0.19
EPT Abund =	1953
EPT/Chiron =	16.84
EPT % =	90.58
EPT taxa =	27
c/f tot =	554
c/f % =	25.70
c/g tot =	788
c/g % =	36.55
sh tot =	72
sh % =	3.34
sc tot =	412
sc % =	19.11
p tot =	194
p% =	9.00
om tot =	5
om % =	0.23
unk tot =	131
unk% =	6.08
sc/cf =	0.74
sc/(sc+cf) =	0.427
sh/total =	0.033

Macroinvertebrate Data--Montanore, October 1992
Libby Creek, L1 (1 kick sample), #34

	No.	Percent Total	Total Number	Percent Total	TV	TQ	FFG
Ephemeroptera			1286	55.55			
Baetis sp.	245	10.6			5	72	cg
Diphetor sp.	0	0.0			4	72	cg
Caudatella hystrix	0	0.0			1	48	cg
Drunella coloradensis/ flavilinea	0	0.0			0	18	sc
Drunella doddsi	18	0.8			0	4	sc
Drunella grandis	2	0.1			0	24	sc
Drunella spinifera	0	0.0			0	24	pr
Drunella sp.	111	4.8			1	48	sc
Serratella sp.	3	0.1			2	48	cg
Cinygma sp.	0	0.0			2	48	sc
Cinygmula sp.	313	13.5			4	21	sc
Epeorus sp.	2	0.1			0	21	sc
Heptagenia sp.	0	0.0			4	48	sc
Ironodes sp.	0	0.0			3	48	sc
Leucrocuta sp.	0	0.0			1	48	sc
Nixe sp.	0	0.0			2	48	sc
Rhithrogena sp.	470	20.3			4	21	cg
Paraleptophlebia sp.	121	5.2			4	24	cg
Ameletus sp.	1	0.0			0	48	cg
Plecoptera			280	12.10			
Capniidae	19	0.8			1	32	sh
Kathroperla perdita	0	0.0			1	24	cg
Sweltsa/Suwallia sp.	131	5.7			1	24	pr
Despaxia augusta	8	0.3			0	18	sh
Paraleuctra sp.	0	0.0			0	18	sh
Perlomyia sp.	0	0.0			0	18	sh
Leuctridae	0	0.0			0	18	sh
Nemoura sp.	0	0.0			2	24	sh
Visoka cataractae	2	0.1			2	36	sh
Zapada cinctipes	50	2.2			2	16	sh
Zapada columbiana	0	0.0			2	16	sh
Nemouridae	0	0.0			2	36	sh
Yoraperla brevis	0	0.0			1	12	sh
Acroneuria abnormis	0	0.0			0	6	pr
Doroneuria theodora	5	0.2			1	18	pr
Hesperoperla pacifica	7	0.3			2	18	pr
Perlidae	5	0.2			1	24	pr
Isoperla sp.	0	0.0			2	24	pr
Kogotus modestus	0	0.0			2	18	pr
Megarcys sp.	10	0.4			2	24	pr
Setvena bradleyi	0	0.0			2	48	pr
Skwala sp.	0	0.0			2	18	pr
Perlodidae	4	0.2			2	48	pr
Doddsia occidentalis	0	0.0			2	24	sc
Taenionema sp.	39	1.7			2	48	sc
Trichoptera			570	24.62			
Micrasema sp.	7	0.3			1	24	sh
Anagapetus sp.	0	0.0			0	24	sc
Glossosoma sp.	10	0.4			0	24	sc
Arctopsyche grandis	31	1.3			4	18	cf
Hydropsyche sp.	0	0.0			8	108	cg
Parapsyche elsis	41	1.8			4	6	cf
Hydropsychidae	398	17.2			4	108	cf
Agraylea sp.	0	0.0			8	108	cg
Hydroptila sp.	0	0.0			6	108	cg
Ochrotrichia sp.	0	0.0			4	108	cg
Lepidostoma sp.	0	0.0			1	18	sh
Apatania sp.	0	0.0			4	18	sc
Chyrandra centralis	0	0.0			1	18	sh
Ecclisomyia sp.	0	0.0			2	24	om
Neothremma alicia	0	0.0			4	8	sc
Oligophlebodes sp.	31	1.3			4	24	sc
Limnephilidae	17	0.7			4	108	un

L1-k, #34 (cont.)

Dolophilodes sp.	1	0.0			2	24	cf
Wormaldia sp.	0	0.0			3	24	cf
Polycentropus sp.	0	0.0			6	72	pr
Rhyacophila Angelita grp.	0	0.0			0	18	pr
Rhyacophila Betteni grp.	6	0.3			0	18	pr
Rhyacophila Bif./Color. grp.	0	0.0			0	18	pr
Rhyacophila Brunnea grp.	24	1.0			0	18	pr
Rhyacophila hyalinata	0	0.0			0	18	pr
Rhyacophila iranda	0	0.0			0	18	pr
Rhyacophila Sibirica grp.	1	0.0			0	18	pr
Rhyacophila tucula	0	0.0			0	18	pr
Rhyacophila vaccua	0	0.0			0	18	pr
Rhyacophila verrula	0	0.0			0	18	pr
Rhyacophila vepulsa	3	0.1			0	18	pr
Rhyacophila sp.	0	0.0			0	18	pr
Trichopteran pupae	0	0.0			nn	nn	un
Other			179	7.73			
Annelida(Oligochaeta)	25	1.1			5	108	cg
Coleoptera(Elmidae)					4	108	cg
Cleptelmis sp.	0	0.0			4	108	cg
Heterlimnius sp.	5	0.2			4	108	cg
Lara sp.	0	0.0			4	108	sh
Narpus sp.	0	0.0			4	108	cg
Zaitzevia sp.	0	0.0			4	108	cg
Elmidae	0	0.0			4	108	cg
Diptera							
Agathon sp.	0	0.0			0	2	sc
Ceratopogonidae	0	0.0			6	108	pr
Chironomidae	98	4.2			6	108	un
Chelifera sp.	0	0.0			6	95	pr
Oreogeton sp.	0	0.0			6	95	pr
Psychodidae	0	0.0			10	36	cg
Simuliidae	0	0.0			6	108	cg
Antocha sp.	16	0.7			3	24	cg
Dicranota sp.	4	0.2			3	24	pr
Hexatoma sp.	9	0.4			2	36	pr
Pedicia sp.	0	0.0			3	36	pr
Tipula sp.	0	0.0			4	36	om
Hydracarina	3	0.1			5	108	pr
Mollusca	0	0.0			8	108	cg
Nematoda	5	0.2			5	108	om
Turbellaria	14	0.6			4	108	cg

TOTAL NUMBER =	2315
TOTAL TAXA =	42
STD =	74.0
MEAN =	2315
SDI =	3.77
% SE Mean =	3
% Coef. Var.=	3
B/E =	0.19
EPT Abund =	2136
EPT/Chiron =	21.80
EPT % =	92.27
EPT taxa =	33
c/f tot =	471
c/f % =	20.35
c/g tot =	900
c/g % =	38.88
sh tot =	86
sh % =	3.71
sc tot =	526
sc % =	22.72
p tot =	212
p% =	9.16
om tot =	5
om % =	0.22
unk tot =	115
unk% =	4.97
sc/cf =	1.12
sc/(sc+cf) =	0.528
sh/total =	0.037

Macroinvertebrate Data--Montanore, October 1992
Libby Creek, L3 (4 Hess samples), #35

	No.	Percent Total	Total Number	Percent Total	TV	TQ	FFG
Ephemeroptera			865	46.31			
Baetis sp.	246	13.2			5	72	cg
Diphetor sp.	0	0.0			4	72	cg
Caudatella hystrix	0	0.0			1	48	cg
Drunella coloradensis/ flavilinea	0	0.0			0	18	sc
Drunella doddsi	120	6.4			0	4	sc
Drunella grandis	0	0.0			0	24	sc
Drunella spinifera	2	0.1			0	24	pr
Drunella sp.	73	3.9			1	48	sc
Serratella sp.	3	0.2			2	48	cg
Cinygma sp.	0	0.0			2	48	sc
Cinygmula sp.	291	15.6			4	21	sc
Epeorus sp.	13	0.7			0	21	sc
Heptagenia sp.	0	0.0			4	48	sc
Ironodes sp.	0	0.0			3	48	sc
Leucrocuta sp.	0	0.0			1	48	sc
Nixe sp.	0	0.0			2	48	sc
Rhithrogena sp.	106	5.7			4	21	cg
Paraleptophlebia sp.	11	0.6			4	24	cg
Ameletus sp.	0	0.0			0	48	cg
Plecoptera			307	16.43			
Capniidae	18	1.0			1	32	sh
Kathroperla perdita	0	0.0			1	24	cg
Sweltsa/Suwallia sp.	66	3.5			1	24	pr
Despaxia augusta	0	0.0			0	18	sh
Paraleuctra sp.	0	0.0			0	18	sh
Perlomyia sp.	0	0.0			0	18	sh
Leuctridae	3	0.2			0	18	sh
Nemoura sp.	0	0.0			2	24	sh
Visoka cataractae	9	0.5			2	36	sh
Zapada cinctipes	12	0.6			2	16	sh
Zapada columbiana	37	2.0			2	16	sh
Nemouridae	0	0.0			2	36	sh
Yoraperla brevis	0	0.0			1	12	sh
Acroneuria abnormis	0	0.0			0	6	pr
Doroneuria theodora	2	0.1			1	18	pr
Hesperoperla pacifica	0	0.0			2	18	pr
Perlidae	7	0.4			1	24	pr
Isoperla sp.	2	0.1			2	24	pr
Kogotus modestus	0	0.0			2	18	pr
Megarcys sp.	0	0.0			2	24	pr
Setvena bradleyi	0	0.0			2	48	pr
Skwala sp.	0	0.0			2	18	pr
Perlodidae	2	0.1			2	48	pr
Doddsia occidentalis	0	0.0			2	24	sc
Taenionema sp.	149	8.0			2	48	sc
Trichoptera			487	26.07			
Micrasema sp.	0	0.0			1	24	sh
Anagapetus sp.	0	0.0			0	24	sc
Glossosoma sp.	7	0.4			0	24	sc
Arctopsyche grandis	31	1.7			4	18	cf
Hydropsyche sp.	0	0.0			8	108	cg
Parapsyche elsis	0	0.0			4	6	cf
Hydropsychidae	120	6.4			4	108	cf
Agraylea sp.	67	3.6			8	108	cg
Hydroptila sp.	0	0.0			6	108	cg
Ochrotrichia sp.	0	0.0			4	108	cg
Lepidostoma sp.	0	0.0			1	18	sh
Apatania sp.	0	0.0			4	18	sc
Chyrandra centralis	0	0.0			1	18	sh
Ecclisomyia sp.	0	0.0			2	24	om
Neothremma alicia	0	0.0			4	8	sc
Oligophlebodes sp.	177	9.5			4	24	sc
Limnephilidae	69	3.7			4	108	un

L3-H, #35 (cont.)

Dolophilodes sp.	0	0.0			2	24	cf
Wormaldia sp.	0	0.0			3	24	cf
Polycentropus sp.	0	0.0			6	72	pr
Rhyacophila Angelita grp.	2	0.1			0	18	pr
Rhyacophila Betteni grp.	2	0.1			0	18	pr
Rhyacophila Bif./Color. grp.	0	0.0			0	18	pr
Rhyacophila Brunnea grp.	4	0.2			0	18	pr
Rhyacophila hyalinata	0	0.0			0	18	pr
Rhyacophila iranda	0	0.0			0	18	pr
Rhyacophila Sibirica grp.	0	0.0			0	18	pr
Rhyacophila tucula	0	0.0			0	18	pr
Rhyacophila vaccua	0	0.0			0	18	pr
Rhyacophila verrula	0	0.0			0	18	pr
Rhyacophila vepulsa	0	0.0			0	18	pr
Rhyacophila sp.	8	0.4			0	18	pr
Trichopteran pupae	0	0.0			nn	nn	un
Other			209	11.19			
Annelida(Oligochaeta)	0	0.0			5	108	cg
Coleoptera(Elmidae)					4	108	cg
Cleptelmis sp.	0	0.0			4	108	cg
Heterlimnius sp.	7	0.4			4	108	cg
Lara sp.	0	0.0			4	108	sh
Narpus sp.	1	0.1			4	108	cg
Zaitzevia sp.	0	0.0			4	108	cg
Elmidae	2	0.1			4	108	cg
Diptera							
Agathon sp.	0	0.0			0	2	sc
Ceratopogonidae	0	0.0			6	108	pr
Chironomidae	179	9.6			6	108	un
Chelifera sp.	0	0.0			6	95	pr
Oreogeton sp.	2	0.1			6	95	pr
Psychodidae	0	0.0			10	36	cg
Simuliidae	0	0.0			6	108	cg
Antocha sp.	1	0.1			3	24	cg
Dicranota sp.	1	0.1			3	24	pr
Hexatoma sp.	9	0.5			2	36	pr
Pedicia sp.	0	0.0			3	36	pr
Tipula sp.	0	0.0			4	36	om
Hydracarina	1	0.1			5	108	pr
Mollusca	0	0.0			8	108	cg
Nematoda	0	0.0			5	108	om
Turbellaria	6	0.3			4	108	cg

TOTAL NUMBER =	1868
TOTAL TAXA =	40
STD =	50.8
MEAN =	467
SDI =	3.98
% SE Mean =	5
% Coef. Var.=	11
B/E =	0.28
EPT Abund =	1659
EPT/Chiron =	9.27
EPT % =	88.81
EPT taxa =	30
c/f tot =	151
c/f % =	8.08
c/g tot =	450
c/g % =	24.09
sh tot =	79
sh % =	4.23
sc tot =	830
sc % =	44.43
p tot =	110
p% =	5.89
om tot =	0
om % =	0.00
unk tot =	248
unk% =	13.28
sc/cf =	5.50
sc/(sc+cf) =	0.846
sh/total =	0.042

Macroinvertebrate Data--Montanore, October 1992
Libby Creek, L3 (1 kick sample), #36

	No.	Percent Total	Total Number	Percent Total	TV	TQ	FFG
Ephemeroptera			1981	55.24			
Baetis sp.	886	24.7			5	72	cg
Diphetor sp.	0	0.0			4	72	cg
Caudatella hystrix	0	0.0			1	48	cg
Drunella coloradensis/ flavilinea	0	0.0			0	18	sc
Drunella doddsi	119	3.3			0	4	sc
Drunella grandis	0	0.0			0	24	sc
Drunella spinifera	4	0.1			0	24	pr
Drunella sp.	101	2.8			1	48	sc
Serratella sp.	10	0.3			2	48	cg
Cinygma sp.	0	0.0			2	48	sc
Cinygmula sp.	678	18.9			4	21	sc
Epeorus sp.	74	2.1			0	21	sc
Heptagenia sp.	0	0.0			4	48	sc
Ironodes sp.	0	0.0			3	48	sc
Leucrocuta sp.	0	0.0			1	48	sc
Nixe sp.	0	0.0			2	48	sc
Rhithrogena sp.	93	2.6			4	21	cg
Paraleptophlebia sp.	11	0.3			4	24	cg
Ameletus sp.	5	0.1			0	48	cg
Plecoptera			755	21.05			
Capniidae	11	0.3			1	32	sh
Kathroperla perdita	0	0.0			1	24	cg
Sweltsa/Suwallia sp.	62	1.7			1	24	pr
Despaxia augusta	0	0.0			0	18	sh
Paraleuctra sp.	0	0.0			0	18	sh
Perlomyia sp.	0	0.0			0	18	sh
Leuctridae	0	0.0			0	18	sh
Nemoura sp.	0	0.0			2	24	sh
Visoka cataractae	8	0.2			2	36	sh
Zapada cinctipes	30	0.8			2	16	sh
Zapada columbiana	193	5.4			2	16	sh
Nemouridae	0	0.0			2	36	sh
Yoraperla brevis	0	0.0			1	12	sh
Acroneuria abnormis	0	0.0			0	6	pr
Doroneuria theodora	1	0.0			1	18	pr
Hesperoperla pacifica	0	0.0			2	18	pr
Perlidae	11	0.3			1	24	pr
Isoperla sp.	7	0.2			2	24	pr
Kogotus modestus	0	0.0			2	18	pr
Megarcys sp.	7	0.2			2	24	pr
Setvena bradleyi	0	0.0			2	48	pr
Skwala sp.	0	0.0			2	18	pr
Perlodidae	4	0.1			2	48	pr
Doddsia occidentalis	0	0.0			2	24	sc
Taenionema sp.	421	11.7			2	48	sc
Trichoptera			555	15.48			
Micrasema sp.	20	0.6			1	24	sh
Anagapetus sp.	0	0.0			0	24	sc
Glossosoma sp.	0	0.0			0	24	sc
Arctopsyche grandis	98	2.7			4	18	cf
Hydropsyche sp.	0	0.0			8	108	cg
Parapsyche elsis	0	0.0			4	6	cf
Hydropsychidae	131	3.7			4	108	cf
Agraylea sp.	50	1.4			8	108	cg
Hydroptila sp.	0	0.0			6	108	cg
Ochrotrichia sp.	0	0.0			4	108	cg
Lepidostoma sp.	0	0.0			1	18	sh
Apatania sp.	0	0.0			4	18	sc
Chyrandra centralis	0	0.0			1	18	sh
Ecclisomyia sp.	0	0.0			2	24	om
Neothremma alicia	0	0.0			4	8	sc
Oligophlebodes sp.	176	4.9			4	24	sc
Limnephilidae	54	1.5			4	108	un

L3-k, #36 (cont.)

Dolophilodes sp.	0	0.0			2	24	cf
Wormaldia sp.	0	0.0			3	24	cf
Polycentropus sp.	0	0.0			6	72	pr
Rhyacophila Angelita grp.	0	0.0			0	18	pr
Rhyacophila Betteni grp.	6	0.2			0	18	pr
Rhyacophila Bif./Color. grp.	0	0.0			0	18	pr
Rhyacophila Brunnea grp.	18	0.5			0	18	pr
Rhyacophila hyalinata	0	0.0			0	18	pr
Rhyacophila iranda	0	0.0			0	18	pr
Rhyacophila Sibirica grp.	0	0.0			0	18	pr
Rhyacophila tucula	0	0.0			0	18	pr
Rhyacophila vaccua	0	0.0			0	18	pr
Rhyacophila verrula	0	0.0			0	18	pr
Rhyacophila vepulsa	0	0.0			0	18	pr
Rhyacophila sp.	2	0.1			0	18	pr
Trichopteran pupae	0	0.0			nn	nn	un
Other			295	8.23			
Annelida(Oligochaeta)	0	0.0			5	108	cg
Coleoptera(Elmidae)					4	108	cg
Cleptelmis sp.	0	0.0			4	108	cg
Heterlimnius sp.	11	0.3			4	108	cg
Lara sp.	0	0.0			4	108	sh
Narpus sp.	0	0.0			4	108	cg
Zaitzevia sp.	0	0.0			4	108	cg
Elmidae	0	0.0			4	108	cg
Diptera							
Agathon sp.	0	0.0			0	2	sc
Ceratopogonidae	0	0.0			6	108	pr
Chironomidae	258	7.2			6	108	un
Chelifera sp.	0	0.0			6	95	pr
Oreogeton sp.	3	0.1			6	95	pr
Psychodidae	0	0.0			10	36	cg
Simuliidae	0	0.0			6	108	cg
Antocha sp.	1	0.0			3	24	cg
Dicranota sp.	4	0.1			3	24	pr
Hexatoma sp.	9	0.3			2	36	pr
Pedicia sp.	0	0.0			3	36	pr
Tipula sp.	0	0.0			4	36	cm
Hydracarina	2	0.1			5	108	pr
Mollusca	0	0.0			8	108	cg
Nematoda	0	0.0			5	108	cm
Turbellaria	7	0.2			4	108	cg

TOTAL NUMBER =	3586
TOTAL TAXA =	38
STD =	122.7
MEAN =	3586
SDI =	3.63
% SE Mean =	3
% Coef. Var.=	3
B/E =	0.45
EPT Abund =	3291
EPT/Chiron =	12.76
EPT % =	91.77
EPT taxa =	30
c/f tot =	229
c/f % =	6.39
c/g tot =	1074
c/g % =	29.95
sh tot =	262
sh % =	7.31
sc tot =	1569
sc % =	43.75
p tot =	140
p% =	3.90
cm tot =	0
cm % =	0.00
unk tot =	312
unk% =	8.70
sc/cf =	6.85
sc/(sc+cf) =	0.873
sh/total =	0.073

Macroinvertebrate Data--Montanore, October 1992
Libby Creek, L9 (4 Hess samples), #37

	No.	Percent Total	Total Number	Percent Total	TV	TQ	FFG
Ephemeroptera			575	26.04			
Baetis sp.	119	5.4			5	72	cg
Diphetor sp.	0	0.0			4	72	cg
Caudatella hystrix	0	0.0			1	48	cg
Drunella coloradensis/ flavilinea	0	0.0			0	18	sc
Drunella doddsi	35	1.6			0	4	sc
Drunella grandis	0	0.0			0	24	sc
Drunella spinifera	0	0.0			0	24	pr
Drunella sp.	16	0.7			1	48	sc
Serratella sp.	0	0.0			2	48	cg
Cinygma sp.	0	0.0			2	48	sc
Cinygmula sp.	247	11.2			4	21	sc
Epeorus sp.	7	0.3			0	21	sc
Heptagenia sp.	0	0.0			4	48	sc
Ironodes sp.	0	0.0			3	48	sc
Leucrocuta sp.	0	0.0			1	48	sc
Nixe sp.	0	0.0			2	48	sc
Rhithrogena sp.	149	6.7			4	21	cg
Paraleptophlebia sp.	0	0.0			4	24	cg
Ameletus sp.	2	0.1			0	48	cg
Plecoptera			1054	47.74			
Capniidae	10	0.5			1	32	sh
Kathroperla perdita	1	0.0			1	24	cg
Sweltsa/Suwallia sp.	115	5.2			1	24	pr
Despaxia augusta	14	0.6			0	18	sh
Paraleuctra sp.	0	0.0			0	18	sh
Perlomyia sp.	0	0.0			0	18	sh
Leuctridae	0	0.0			0	18	sh
Nemoura sp.	0	0.0			2	24	sh
Visoka cataractae	5	0.2			2	36	sh
Zapada cinctipes	0	0.0			2	16	sh
Zapada columbiana	14	0.6			2	16	sh
Nemouridae	0	0.0			2	36	sh
Yoraperla brevis	4	0.2			1	12	sh
Acroneuria abnormis	0	0.0			0	6	pr
Doroneuria theodora	0	0.0			1	18	pr
Hesperoperla pacifica	0	0.0			2	18	pr
Perlidae	10	0.5			1	24	pr
Isoperla sp.	0	0.0			2	24	pr
Kogotus modestus	0	0.0			2	18	pr
Megarcys sp.	31	1.4			2	24	pr
Setvena bradleyi	0	0.0			2	48	pr
Skwala sp.	0	0.0			2	18	pr
Perlodidae	1	0.0			2	48	pr
Doddsia occidentalis	0	0.0			2	24	sc
Taenionema sp.	849	38.5			2	48	sc
Trichoptera			497	22.51			
Micrasema sp.	0	0.0			1	24	sh
Anagapetus sp.	0	0.0			0	24	sc
Glossosoma sp.	418	18.9			0	24	sc
Arctopsyche grandis	0	0.0			4	18	cf
Hydropsyche sp.	0	0.0			8	108	cg
Parapsyche elsis	2	0.1			4	6	cf
Hydropsychidae	7	0.3			4	108	cf
Agraylea sp.	0	0.0			8	108	cg
Hydroptila sp.	0	0.0			6	108	cg
Ochrotrichia sp.	0	0.0			4	108	cg
Lepidostoma sp.	0	0.0			1	18	sh
Apatania sp.	0	0.0			4	18	sc
Chyrandra centralis	0	0.0			1	18	sh
Ecclisomyia sp.	0	0.0			2	24	cm
Neothremma alicia	0	0.0			4	8	sc
Oligophlebodes sp.	1	0.0			4	24	sc
Limnephilidae	1	0.0			4	108	un

L9-H, #37 (cont.)

Dolophilodes sp.	0	0.0			2	24	cf
Wormaldia sp.	0	0.0			3	24	cf
Polycentropus sp.	0	0.0			6	72	pr
Rhyacophila Angelita grp.	2	0.1			0	18	pr
Rhyacophila Betteni grp.	51	2.3			0	18	pr
Rhyacophila Bif./Color. grp.	0	0.0			0	18	pr
Rhyacophila Brunnea grp.	0	0.0			0	18	pr
Rhyacophila hyalinata	1	0.0			0	18	pr
Rhyacophila iranda	7	0.3			0	18	pr
Rhyacophila Sibirica grp.	0	0.0			0	18	pr
Rhyacophila tucula	0	0.0			0	18	pr
Rhyacophila vaccua	0	0.0			0	18	pr
Rhyacophila verrula	0	0.0			0	18	pr
Rhyacophila vepulsa	3	0.1			0	18	pr
Rhyacophila sp.	4	0.2			0	18	pr
Trichopteran pupae	0	0.0			nn	nn	un
Other			82	3.71			
Annelida(Oligochaeta)	21	1.0			5	108	cg
Coleoptera(Elmidae)					4	108	cg
Cleptelmis sp.	0	0.0			4	108	cg
Heterlimnius sp.	0	0.0			4	108	cg
Lara sp.	0	0.0			4	108	sh
Narpus sp.	0	0.0			4	108	cg
Zaitzevia sp.	0	0.0			4	108	cg
Elmidae	0	0.0			4	108	cg
Diptera							
Agathon sp.	0	0.0			0	2	sc
Ceratopogonidae	0	0.0			6	108	pr
Chironomidae	43	1.9			6	108	un
Chelifera sp.	0	0.0			6	95	pr
Oreogeton sp.	4	0.2			6	95	pr
Psychodidae	0	0.0			10	36	cg
Simuliidae	0	0.0			6	108	cg
Antocha sp.	0	0.0			3	24	cg
Dicranota sp.	4	0.2			3	24	pr
Hexatoma sp.	0	0.0			2	36	pr
Pedicia sp.	0	0.0			3	36	pr
Tipula sp.	0	0.0			4	36	om
Hydracarina	0	0.0			5	108	pr
Mollusca	0	0.0			8	108	cg
Nematoda	0	0.0			5	108	om
Turbellaria	10	0.5			4	108	cg

TOTAL NUMBER =	2208
TOTAL TAXA =	34
STD =	98.3
MEAN =	552
SDI =	3.01
% SE Mean =	9
% Coef. Var.=	18
B/E =	0.21
EPT Abund =	2126
EPT/Chiron =	49.44
EPT % =	96.29
EPT taxa =	29
c/f tot =	9
c/f % =	0.41
c/g tot =	302
c/g % =	13.68
sh tot =	47
sh % =	2.13
sc tot =	1573
sc % =	71.24
p tot =	233
p% =	10.55
om tot =	0
om % =	0.00
unk tot =	44
unk% =	1.99
sc/cf =	174.78
sc/(sc+cf) =	0.994
sh/total =	0.021

Macroinvertebrate Data--Montanore, October 1992
Libby Creek, L9 (1 kick sample), #38

	No.	Percent Total	Total Number	Percent Total	TV	TQ	FFG
Ephemeroptera			362	37.75			
Baetis sp.	37	3.9			5	72	cg
Diphetor sp.	0	0.0			4	72	cg
Caudatella hystrix	0	0.0			1	48	cg
Drunella coloradensis/ flavilinea	0	0.0			0	18	sc
Drunella doddsi	23	2.4			0	4	sc
Drunella grandis	0	0.0			0	24	sc
Drunella spinifera	1	0.1			0	24	pr
Drunella sp.	2	0.2			1	48	sc
Serratella sp.	0	0.0			2	48	cg
Cinygma sp.	0	0.0			2	48	sc
Cinygmula sp.	216	22.5			4	21	sc
Epeorus sp.	12	1.3			0	21	sc
Heptagenia sp.	0	0.0			4	48	sc
Ironodes sp.	0	0.0			3	48	sc
Leucrocuta sp.	0	0.0			1	48	sc
Nixe sp.	0	0.0			2	48	sc
Rhithrogena sp.	67	7.0			4	21	cg
Paraleptophlebia sp.	0	0.0			4	24	cg
Ameletus sp.	4	0.4			0	48	cg
Plecoptera			479	49.95			
Capniidae	2	0.2			1	32	sh
Kathroperla perdita	0	0.0			1	24	cg
Sweltsa/Suwallia sp.	49	5.1			1	24	pr
Despaxia augusta	7	0.7			0	18	sh
Paraleuctra sp.	0	0.0			0	18	sh
Parlomyia sp.	0	0.0			0	18	sh
Leuctridae	0	0.0			0	18	sh
Nemoura sp.	0	0.0			2	24	sh
Visoka cataractae	6	0.6			2	36	sh
Zapada cinctipes	0	0.0			2	16	sh
Zapada columbiana	18	1.9			2	16	sh
Nemouridae	0	0.0			2	36	sh
Yoraperla brevis	0	0.0			1	12	sh
Acroneuria abnormis	0	0.0			0	6	pr
Doroneuria theodora	0	0.0			1	18	pr
Hesperoperla pacifica	0	0.0			2	18	pr
Perlidae	5	0.5			1	24	pr
Isoperla sp.	0	0.0			2	24	pr
Kogotus modestus	0	0.0			2	18	pr
Megarcys sp.	14	1.5			2	24	pr
Setvena bradleyi	0	0.0			2	48	pr
Skwala sp.	0	0.0			2	18	pr
Perlodidae	7	0.7			2	48	pr
Doddsia occidentalis	0	0.0			2	24	sc
Taenionema sp.	371	38.7			2	48	sc
Trichoptera			83	8.65			
Micrasema sp.	0	0.0			1	24	sh
Anagapetus sp.	0	0.0			0	24	sc
Glossosoma sp.	48	5.0			0	24	sc
Arctopsyche grandis	0	0.0			4	18	cf
Hydropsyche sp.	0	0.0			8	108	cg
Parapsyche elsis	7	0.7			4	6	cf
Hydropsychidae	0	0.0			4	108	cf
Agraylea sp.	0	0.0			8	108	cg
Hydroptila sp.	0	0.0			6	108	cg
Ochrotrichia sp.	0	0.0			4	108	cg
Lepidostoma sp.	0	0.0			1	18	sh
Apatania sp.	0	0.0			4	18	sc
Chyrandra centralis	0	0.0			1	18	sh
Ecclisomyia sp.	0	0.0			2	24	cm
Neothremma alicia	0	0.0			4	8	sc
Oligophlebodes sp.	0	0.0			4	24	sc
Limnephilidae	0	0.0			4	108	un

L9-k, # 38 (cont.)

Dolophilodes sp.	0	0.0			2	24	cf
Wormaldia sp.	0	0.0			3	24	cf
Polycentropus sp.	0	0.0			6	72	pr
Rhyacophila Angelita grp.	0	0.0			0	18	pr
Rhyacophila Betteni grp.	19	2.0			0	18	pr
Rhyacophila Bif./Color. grp.	0	0.0			0	18	pr
Rhyacophila Brunnea grp.	0	0.0			0	18	pr
Rhyacophila hyalinata	7	0.7			0	18	pr
Rhyacophila iranda	0	0.0			0	18	pr
Rhyacophila Sibirica grp.	0	0.0			0	18	pr
Rhyacophila tucula	0	0.0			0	18	pr
Rhyacophila vaccua	0	0.0			0	18	pr
Rhyacophila verrula	0	0.0			0	18	pr
Rhyacophila vepulsa	0	0.0			0	18	pr
Rhyacophila sp.	2	0.2			0	18	pr
Trichopteran pupae	0	0.0			nn	nn	un
Other			35	3.65			
Annelida(Oligochaeta)	4	0.4			5	108	cg
Coleoptera(Elmidae)					4	108	cg
Cleptelmis sp.	0	0.0			4	108	cg
Heterlimnius sp.	1	0.1			4	108	cg
Lara sp.	0	0.0			4	108	sh
Narpus sp.	0	0.0			4	108	cg
Zaitzevia sp.	0	0.0			4	108	cg
Elmidae	0	0.0			4	108	cg
Diptera							
Agathon sp.	0	0.0			0	2	sc
Ceratopogonidae	0	0.0			6	108	pr
Chironomidae	12	1.3			6	108	un
Chelifera sp.	0	0.0			6	95	pr
Oreogeton sp.	0	0.0			6	95	pr
Psychodidae	0	0.0			10	36	cg
Simuliidae	0	0.0			6	108	cg
Antocha sp.	0	0.0			3	24	cg
Dicranota sp.	3	0.3			3	24	pr
Hexatoma sp.	0	0.0			2	36	pr
Pedicia sp.	0	0.0			3	36	pr
Tipula sp.	0	0.0			4	36	om
Hydracarina	2	0.2			5	108	pr
Mollusca	0	0.0			8	108	cg
Nematoda	0	0.0			5	108	om
Turbellaria	13	1.4			4	108	cg

TOTAL NUMBER =	959
TOTAL TAXA =	28
STD =	43.3
MEAN =	959
SDI =	3.06
% SE Mean =	5
% Coef. Var.=	5
B/E =	0.10
EPT Abund =	924
EPT/Chiron =	77.00
EPT % =	96.35
EPT taxa =	22
c/f tot =	7
c/f % =	0.73
c/g tot =	126
c/g % =	13.14
sh tot =	33
sh % =	3.44
sc tot =	672
sc % =	70.07
p tot =	109
p% =	11.37
om tot =	0
om % =	0.00
unk tot =	12
unk% =	1.25
sc/cf =	96.00
sc/(sc+cf) =	0.990
sh/total =	0.034

Macroinvertebrate Data--Montanore, October 1992
Libby Creek, L10 (4 Hess samples), #39

	No.	Percent Total	Total Number	Percent Total	TV	TQ	FFG
Ephemeroptera			854	51.54			
Baetis sp.	164	9.9			5	72	cg
Diphetor sp.	0	0.0			4	72	cg
Caudatella hystrix	0	0.0			1	48	cg
Drunella coloradensis/ flavilinea	0	0.0			0	18	sc
Drunella doddsi	27	1.6			0	4	sc
Drunella grandis	0	0.0			0	24	sc
Drunella spinifera	0	0.0			0	24	pr
Drunella sp.	15	0.9			1	48	sc
Serratella sp.	0	0.0			2	48	cg
Cinygma sp.	0	0.0			2	48	sc
Cinygmula sp.	398	24.0			4	21	sc
Epeorus sp.	62	3.7			0	21	sc
Heptagenia sp.	0	0.0			4	48	sc
Ironodes sp.	0	0.0			3	48	sc
Leucrocuta sp.	0	0.0			1	48	sc
Nixe sp.	0	0.0			2	48	sc
Rhithrogena sp.	176	10.6			4	21	cg
Paraleptophlebia sp.	1	0.1			4	24	cg
Ameletus sp.	11	0.7			0	48	cg
Plecoptera			467	28.18			
Capniidae	21	1.3			1	32	sh
Kathroperla perdita	1	0.1			1	24	cg
Sweltsa/Suwallia sp.	146	8.8			1	24	pr
Despaxia augusta	41	2.5			0	18	sh
Paraleuctra sp.	0	0.0			0	18	sh
Perlomyia sp.	1	0.1			0	18	sh
Leuctridae	0	0.0			0	18	sh
Nemoura sp.	0	0.0			2	24	sh
Visoka cataractae	11	0.7			2	36	sh
Zapada cinctipes	0	0.0			2	16	sh
Zapada columbiana	82	4.9			2	16	sh
Nemouridae	0	0.0			2	36	sh
Yoraperla brevis	8	0.5			1	12	sh
Acroneuria abnormis	0	0.0			0	6	pr
Doroneuria theodora	0	0.0			1	18	pr
Hesperoperla pacifica	0	0.0			2	18	pr
Perlidae	3	0.2			1	24	pr
Isoperla sp.	0	0.0			2	24	pr
Kogotus modestus	0	0.0			2	18	pr
Megarcys sp.	2	0.1			2	24	pr
Setvena bradleyi	0	0.0			2	48	pr
Skwala sp.	0	0.0			2	18	pr
Perlodidae	2	0.1			2	48	pr
Doddsia occidentalis	0	0.0			2	24	sc
Taenionema sp.	149	9.0			2	48	sc
Trichoptera			157	9.47			
Micrasema sp.	0	0.0			1	24	sh
Anagapetus sp.	34	2.1			0	24	sc
Glossosoma sp.	0	0.0			0	24	sc
Arctopsyche grandis	0	0.0			4	18	cf
Hydropsyche sp.	0	0.0			8	108	cg
Parapsyche elsis	14	0.8			4	6	cf
Hydropsychidae	45	2.7			4	108	cf
Agraylea sp.	3	0.2			8	108	cg
Hydroptila sp.	0	0.0			6	108	cg
Ochrotrichia sp.	0	0.0			4	108	cg
Lepidostoma sp.	0	0.0			1	18	sh
Apatania sp.	0	0.0			4	18	sc
Chyrandra centralis	0	0.0			1	18	sh
Ecclisomyia sp.	0	0.0			2	24	cm
Neothremma alicia	0	0.0			4	8	sc
Oligophlebodes sp.	0	0.0			4	24	sc
Limnephilidae	0	0.0			4	108	un

L10-H, #39 (cont.)

Dolophilodes sp.	0	0.0			2	24	cf
Wormaldia sp.	0	0.0			3	24	cf
Polycentropus sp.	0	0.0			6	72	pr
Rhyacophila Angelita grp.	0	0.0			0	18	pr
Rhyacophila Betteni grp.	53	3.2			0	18	pr
Rhyacophila Bif./Color. grp.	0	0.0			0	18	pr
Rhyacophila Brunnea grp.	0	0.0			0	18	pr
Rhyacophila hyalinata	1	0.1			0	18	pr
Rhyacophila iranda	7	0.4			0	18	pr
Rhyacophila Sibirica grp.	0	0.0			0	18	pr
Rhyacophila tucula	0	0.0			0	18	pr
Rhyacophila vaccua	0	0.0			0	18	pr
Rhyacophila verrula	0	0.0			0	18	pr
Rhyacophila vepulsa	0	0.0			0	18	pr
Rhyacophila sp.	0	0.0			0	18	pr
Trichopteran pupae	0	0.0			nn	nn	un
Other			179	10.80			
Annelida(Oligochaeta)	10	0.6			5	108	cg
Coleoptera(Elmidae)					4	108	cg
Cleptelmis sp.	0	0.0			4	108	cg
Heterlimnius sp.	0	0.0			4	108	cg
Lara sp.	0	0.0			4	108	sh
Narpus sp.	0	0.0			4	108	cg
Zaitzevia sp.	0	0.0			4	108	cg
Elmidae	0	0.0			4	108	cg
Diptera							
Agathon sp.	0	0.0			0	2	sc
Ceratopogonidae	1	0.1			6	108	pr
Chironomidae	147	8.9			6	108	un
Chelifera sp.	0	0.0			6	95	pr
Oreogeton sp.	5	0.3			6	95	pr
Psychodidae	0	0.0			10	36	cg
Simuliidae	0	0.0			6	108	cg
Antocha sp.	0	0.0			3	24	cg
Dicranota sp.	0	0.0			3	24	pr
Hexatoma sp.	0	0.0			2	36	pr
Pedicia sp.	1	0.1			3	36	pr
Tipula sp.	1	0.1			4	36	cm
Hydracarina	0	0.0			5	108	pr
Mollusca	0	0.0			8	108	cg
Nematoda	0	0.0			5	108	cm
Turbellaria	14	0.8			4	108	cg

TOTAL NUMBER =	1657
TOTAL TAXA =	34
STD =	52.4
MEAN =	414
SDI =	3.73
% SE Mean =	6
% Coef. Var.=	13
B/E =	0.19
EPT Abund =	1478
EPT/Chiron =	10.05
EPT % =	89.20
EPT taxa =	27
c/f tot =	59
c/f % =	3.56
c/g tot =	380
c/g % =	22.93
sh tot =	164
sh % =	9.90
sc tot =	685
sc % =	41.34
p tot =	221
p% =	13.34
cm tot =	1
cm % =	0.06
unk tot =	147
unk% =	8.87
sc/cf =	11.61
sc/(sc+cf) =	0.921
sh/total =	0.099

Macroinvertebrate Data--Montanore, October 1992
Libby Creek, L10 (1 kick sample), #40

	No.	Percent Total	Total Number	Percent Total	TV	TQ	FFG
Ephemeroptera			610	34.14			
Baetis sp.	235	13.2			5	72	cg
Diphetor sp.	0	0.0			4	72	cg
Caudatella hystrix	0	0.0			1	48	cg
Drunella coloradensis/ flavilinea	0	0.0			0	18	sc
Drunella doddsi	22	1.2			0	4	sc
Drunella grandis	0	0.0			0	24	sc
Drunella spinifera	0	0.0			0	24	pr
Drunella sp.	21	1.2			1	48	sc
Serratella sp.	0	0.0			2	48	cg
Cinygma sp.	0	0.0			2	48	sc
Cinygmula sp.	203	11.4			4	21	sc
Epeorus sp.	25	1.4			0	21	sc
Heptagenia sp.	0	0.0			4	48	sc
Ironodes sp.	0	0.0			3	48	sc
Leucrocuta sp.	0	0.0			1	48	sc
Nixe sp.	0	0.0			2	48	sc
Rhithrogena sp.	86	4.8			4	21	cg
Paraleptophlebia sp.	4	0.2			4	24	cg
Ameletus sp.	14	0.8			0	48	cg
Plecoptera			831	46.50			
Capniidae	12	0.7			1	32	sh
Kathroperla perdita	0	0.0			1	24	cg
Sweltsa/Suwallia sp.	128	7.2			1	24	pr
Despaxia augusta	21	1.2			0	18	sh
Paraleuctra sp.	0	0.0			0	18	sh
Perlomyia sp.	0	0.0			0	18	sh
Leuctridae	0	0.0			0	18	sh
Nemoura sp.	0	0.0			2	24	sh
Visoka cataractae	23	1.3			2	36	sh
Zapada cinctipes	0	0.0			2	16	sh
Zapada columbiana	259	14.5			2	16	sh
Nemouridae	0	0.0			2	36	sh
Yoraperla brevis	19	1.1			1	12	sh
Acroneuria abnormis	0	0.0			0	6	pr
Doroneuria theodora	0	0.0			1	18	pr
Hesperoperla pacifica	0	0.0			2	18	pr
Perlidae	4	0.2			1	24	pr
Isoperla sp.	0	0.0			2	24	pr
Kogotus modestus	0	0.0			2	18	pr
Megarcys sp.	7	0.4			2	24	pr
Setvena bradleyi	0	0.0			2	48	pr
Skwala sp.	0	0.0			2	18	pr
Perlodidae	4	0.2			2	48	pr
Doddsia occidentalis	0	0.0			2	24	sc
Taenionema sp.	354	19.8			2	48	sc
Trichoptera			156	8.73			
Micrasema sp.	0	0.0			1	24	sh
Anagapetus sp.	30	1.7			0	24	sc
Glossosoma sp.	0	0.0			0	24	sc
Arctopsyche grandis	0	0.0			4	18	cf
Hydropsyche sp.	0	0.0			8	108	cg
Parapsyche elsis	16	0.9			4	6	cf
Hydropsychidae	25	1.4			4	108	cf
Agraylea sp.	3	0.2			8	108	cg
Hydroptila sp.	0	0.0			6	108	cg
Ochrotrichia sp.	0	0.0			4	108	cg
Lepidostoma sp.	0	0.0			1	18	sh
Apatania sp.	0	0.0			4	18	sc
Chyrandra centralis	0	0.0			1	18	sh
Ecclisomyia sp.	0	0.0			2	24	om
Neothremma alicia	5	0.3			4	8	sc
Oligophlebodes sp.	0	0.0			4	24	sc
Limnephilidae	0	0.0			4	108	un

L10-k, #40 (cont.)

Dolophilodes sp.	0	0.0			2	24	cf
Wormaldia sp.	0	0.0			3	24	cf
Polycentropus sp.	0	0.0			6	72	pr
Rhyacophila Angelita grp.	0	0.0			0	18	pr
Rhyacophila Betteni grp.	63	3.5			0	18	pr
Rhyacophila Bif./Color. grp.	0	0.0			0	18	pr
Rhyacophila Brunnea grp.	0	0.0			0	18	pr
Rhyacophila hyalinata	1	0.1			0	18	pr
Rhyacophila iranda	8	0.4			0	18	pr
Rhyacophila Sibirica grp.	0	0.0			0	18	pr
Rhyacophila tucula	0	0.0			0	18	pr
Rhyacophila vaccua	0	0.0			0	18	pr
Rhyacophila verrula	0	0.0			0	18	pr
Rhyacophila vepulsa	0	0.0			0	18	pr
Rhyacophila sp.	5	0.3			0	18	pr
Trichopteran pupae	0	0.0			nn	nn	un
Other			190	10.63			
Annelida(Oligochaeta)	3	0.2			5	108	cg
Coleoptera(Elmidae)					4	108	cg
Cleptelmis sp.	0	0.0			4	108	cg
Heterlimnius sp.	0	0.0			4	108	cg
Lara sp.	0	0.0			4	108	sh
Narpus sp.	0	0.0			4	108	cg
Zaitzevia sp.	0	0.0			4	108	cg
Elmidae	0	0.0			4	108	cg
Diptera							
Agathon sp.	0	0.0			0	2	sc
Ceratopogonidae	0	0.0			6	108	pr
Chironomidae	169	9.5			6	108	un
Chelifera sp.	0	0.0			6	95	pr
Oreogeton sp.	5	0.3			6	95	pr
Psychodidae	0	0.0			10	36	cg
Simuliidae	2	0.1			6	108	cg
Antocha sp.	0	0.0			3	24	cg
Dicranota sp.	2	0.1			3	24	pr
Hexatoma sp.	0	0.0			2	36	pr
Pedicia sp.	0	0.0			3	36	pr
Tipula sp.	0	0.0			4	36	om
Hydracarina	3	0.2			5	108	pr
Mollusca	0	0.0			8	108	cg
Nematoda	0	0.0			5	108	om
Turbellaria	6	0.3			4	108	cg

TOTAL NUMBER =	1787
TOTAL TAXA =	34
STD =	56.4
MEAN =	1787
SDI =	3.70
% SE Mean =	3
% Coef. Var.=	3
B/E =	0.39
EPT Abund =	1597
EPT/Chiron =	9.45
EPT % =	89.37
EPT taxa =	27
c/f tot =	41
c/f % =	2.29
c/g tot =	353
c/g % =	19.75
sh tot =	334
sh % =	18.69
sc tot =	660
sc % =	36.93
p tot =	230
p% =	12.87
om tot =	0
om % =	0.00
unk tot =	169
unk% =	9.46
sc/cf =	16.10
sc/(sc+cf) =	0.942
sh/total =	0.187

Macroinvertebrate Data--Montanore, October 1992
Little Cherry Creek, LC1 (4 Hess samples), #41

	No.	Percent Total	Total Number	Percent Total	TV	TQ	FFG
Ephemeroptera			718	68.64			
Baetis sp.	18	1.7			5	72	cg
Diphetor sp.	84	8.0			4	72	cg
Caudatella hystrix	0	0.0			1	48	cg
Drunella coloradensis/ flavilinea	0	0.0			0	18	sc
Drunella doddsi	1	0.1			0	4	sc
Drunella grandis	0	0.0			0	24	sc
Drunella spinifera	64	6.1			0	24	pr
Drunella sp.	41	3.9			1	48	sc
Serratella sp.	0	0.0			2	48	cg
Cinygma sp.	7	0.7			2	48	sc
Cinygmula sp.	346	33.1			4	21	sc
Epeorus sp.	4	0.4			0	21	sc
Heptagenia sp.	0	0.0			4	48	sc
Ironodes sp.	2	0.2			3	48	sc
Leucrocuta sp.	0	0.0			1	48	sc
Nixe sp.	67	6.4			2	48	sc
Rhithrogena sp.	4	0.4			4	21	cg
Paraleptophlebia sp.	64	6.1			4	24	cg
Ameletus sp.	16	1.5			0	48	cg
Plecoptera			120	11.47			
Capniidae	7	0.7			1	32	sh
Kathroperla perdita	0	0.0			1	24	cg
Sweltsa/Suwallia sp.	65	6.2			1	24	pr
Despaxia augusta	1	0.1			0	18	sh
Paraleuctra sp.	0	0.0			0	18	sh
Perlomyia sp.	0	0.0			0	18	sh
Leuctridae	0	0.0			0	18	sh
Nemoura sp.	0	0.0			2	24	sh
Visoka cataractae	12	1.1			2	36	sh
Zapada cinctipes	22	2.1			2	16	sh
Zapada columbiana	0	0.0			2	16	sh
Nemouridae	0	0.0			2	36	sh
Yoraperla brevis	1	0.1			1	12	sh
Acroneuria abnormis	0	0.0			0	6	pr
Doroneuria theodora	1	0.1			1	18	pr
Hesperoperla pacifica	0	0.0			2	18	pr
Perlidae	0	0.0			1	24	pr
Isoperla sp.	5	0.5			2	24	pr
Kogotus modestus	0	0.0			2	18	pr
Megarcys sp.	0	0.0			2	24	pr
Setvena bradleyi	0	0.0			2	48	pr
Skwala sp.	0	0.0			2	18	pr
Perlodidae	6	0.6			2	48	pr
Doddsia occidentalis	0	0.0			2	24	sc
Taenionema sp.	0	0.0			2	48	sc
Trichoptera			86	8.22			
Micrasema sp.	20	1.9			1	24	sh
Anagapetus sp.	0	0.0			0	24	sc
Glossosoma sp.	12	1.1			0	24	sc
Arctopsyche grandis	0	0.0			4	18	cf
Hydropsyche sp.	0	0.0			8	108	cg
Parapsyche elsis	4	0.4			4	6	cf
Hydropsychidae	0	0.0			4	108	cf
Agraylea sp.	2	0.2			8	108	cg
Hydroptila sp.	1	0.1			6	108	cg
Ochrotrichia sp.	0	0.0			4	108	cg
Lepidostoma sp.	0	0.0			1	18	sh
Apatania sp.	0	0.0			4	18	sc
Chyrandra centralis	0	0.0			1	18	sh
Ecclisomyia sp.	0	0.0			2	24	om
Neothremma alicia	0	0.0			4	8	sc
Oligophlebodes sp.	0	0.0			4	24	sc
Limnephilidae	10	1.0			4	108	un

LC1-H, #41 (cont.)

Dolophilodes sp.	0	0.0			2	24	cf
Wormaldia sp.	6	0.6			3	24	cf
Polycentropus sp.	0	0.0			6	72	pr
Rhyacophila Angelita grp.	0	0.0			0	18	pr
Rhyacophila Betteni grp.	5	0.5			0	18	pr
Rhyacophila Bif./Color. grp.	0	0.0			0	18	pr
Rhyacophila Brunnea grp.	5	0.5			0	18	pr
Rhyacophila hyalinata	0	0.0			0	18	pr
Rhyacophila iranda	0	0.0			0	18	pr
Rhyacophila Sibirica grp.	3	0.3			0	18	pr
Rhyacophila tucula	0	0.0			0	18	pr
Rhyacophila vaccua	0	0.0			0	18	pr
Rhyacophila verrula	0	0.0			0	18	pr
Rhyacophila vepulsa	14	1.3			0	18	pr
Rhyacophila sp.	4	0.4			0	18	pr
Trichopteran pupae	0	0.0			nn	nn	un
Other			122	11.66			
Annelida(Oligochaeta)	28	2.7			5	108	cg
Coleoptera(Elmidae)					4	108	cg
Cleptelmis sp.	0	0.0			4	108	cg
Heterlimnius sp.	41	3.9			4	108	cg
Lara sp.	0	0.0			4	108	sh
Narpus sp.	0	0.0			4	108	cg
Zaitzevia sp.	0	0.0			4	108	cg
Elmidae	0	0.0			4	108	cg
Diptera							
Agathon sp.	0	0.0			0	2	sc
Ceratopogonidae	0	0.0			6	108	pr
Chironomidae	47	4.5			6	108	un
Chelifera sp.	0	0.0			6	95	pr
Oreogeton sp.	0	0.0			6	95	pr
Psychodidae	0	0.0			10	36	cg
Simuliidae	0	0.0			6	108	cg
Antocha sp.	0	0.0			3	24	cg
Dicranota sp.	3	0.3			3	24	pr
Hexatoma sp.	1	0.1			2	36	pr
Pedicia sp.	0	0.0			3	36	pr
Tipula sp.	1	0.1			4	36	om
Hydracarina	0	0.0			5	108	pr
Mollusca	0	0.0			8	108	cg
Nematoda	0	0.0			5	108	om
Turbellaria	1	0.1			4	108	cg

TOTAL NUMBER =	1046
TOTAL TAXA =	41
STD =	37.6
MEAN =	262
SDI =	3.81
% SE Mean =	7
% Coef. Var.=	14
B/E =	0.03
EPT Abund =	924
EPT/Chiron =	19.66
EPT % =	88.34
EPT taxa =	34
c/f tot =	10
c/f % =	0.96
c/g tot =	259
c/g % =	24.76
sh tot =	63
sh % =	6.02
sc tot =	480
sc % =	45.89
p tot =	176
p% =	16.83
om tot =	1
om % =	0.10
unk tot =	57
unk% =	5.45
sc/cf =	48.00
sc/(sc+cf) =	0.980
sh/total =	0.060

Macroinvertebrate Data--Montanore, October 1992
Little Cherry Creek, LC1 (1 kick sample), #42

	No.	Percent Total	Total Number	Percent Total	TV	TQ	FFG
Ephemeroptera			680	59.65			
Baetis sp.	36	3.2			5	72	cg
Diphetor sp.	92	8.1			4	72	cg
Caudatella hystrix	0	0.0			1	48	cg
Drunella coloradensis/ flavilinea	0	0.0			0	18	sc
Drunella doddsi	3	0.3			0	4	sc
Drunella grandis	0	0.0			0	24	sc
Drunella spinifera	62	5.4			0	24	pr
Drunella sp.	55	4.8			1	48	sc
Serratella sp.	0	0.0			2	48	cg
Cinygma sp.	0	0.0			2	48	sc
Cinygmula sp.	250	21.9			4	21	sc
Epeorus sp.	2	0.2			0	21	sc
Heptagenia sp.	38	3.3			4	48	sc
Ironodes sp.	0	0.0			3	48	sc
Leucrocuta sp.	0	0.0			1	48	sc
Nixe sp.	54	4.7			2	48	sc
Rhithrogena sp.	0	0.0			4	21	cg
Paraleptophlebia sp.	79	6.9			4	24	cg
Ameletus sp.	9	0.8			0	48	cg
Plecoptera			188	16.49			
Capniidae	7	0.6			1	32	sh
Kathroperla perdita	0	0.0			1	24	cg
Sweltsa/Suwallia sp.	38	3.3			1	24	pr
Despaxia augusta	0	0.0			0	18	sh
Paraleuctra sp.	0	0.0			0	18	sh
Perlomyia sp.	0	0.0			0	18	sh
Leuctridae	0	0.0			0	18	sh
Nemoura sp.	0	0.0			2	24	sh
Visoka cataractae	1	0.1			2	36	sh
Zapada cinctipes	121	10.6			2	16	sh
Zapada columbiana	8	0.7			2	16	sh
Nemouridae	0	0.0			2	36	sh
Yoraperla brevis	1	0.1			1	12	sh
Acroneuria abnormis	0	0.0			0	6	pr
Doroneuria theodora	1	0.1			1	18	pr
Hesperoperla pacifica	0	0.0			2	18	pr
Perlidae	1	0.1			1	24	pr
Isoperla sp.	3	0.3			2	24	pr
Kogotus modestus	0	0.0			2	18	pr
Megarcys sp.	1	0.1			2	24	pr
Setvena bradleyi	0	0.0			2	48	pr
Skwala sp.	0	0.0			2	18	pr
Perlodidae	6	0.5			2	48	pr
Doddsia occidentalis	0	0.0			2	24	sc
Taenionema sp.	0	0.0			2	48	sc
Trichoptera			147	12.89			
Micrasema sp.	40	3.5			1	24	sh
Anagapetus sp.	0	0.0			0	24	sc
Glossosoma sp.	7	0.6			0	24	sc
Arctopsyche grandis	0	0.0			4	18	cf
Hydropsyche sp.	0	0.0			8	108	cg
Parapsyche elsis	7	0.6			4	6	cf
Hydropsychidae	42	3.7			4	108	cf
Agraylea sp.	0	0.0			8	108	cg
Hydroptila sp.	1	0.1			6	108	cg
Ochrotrichia sp.	0	0.0			4	108	cg
Lepidostoma sp.	0	0.0			1	18	sh
Apatania sp.	0	0.0			4	18	sc
Chyrandra centralis	0	0.0			1	18	sh
Ecclisomyia sp.	0	0.0			2	24	cm
Neothremma alicia	0	0.0			4	8	sc
Oligophlebodes sp.	0	0.0			4	24	sc
Limnephilidae	4	0.4			4	108	un

LC1-k, #42 (cont.)

Dolophilodes sp.	2	0.2			2	24	cf
Wormaldia sp.	0	0.0			3	24	cf
Polycentropus sp.	0	0.0			6	72	pr
Rhyacophila Angelita grp.	0	0.0			0	18	pr
Rhyacophila Betteni grp.	9	0.8			0	18	pr
Rhyacophila Bif./Color. grp.	0	0.0			0	18	pr
Rhyacophila Brunnea grp.	8	0.7			0	18	pr
Rhyacophila hyalinata	0	0.0			0	18	pr
Rhyacophila iranda	0	0.0			0	18	pr
Rhyacophila Sibirica grp.	0	0.0			0	18	pr
Rhyacophila tucula	0	0.0			0	18	pr
Rhyacophila vaccua	0	0.0			0	18	pr
Rhyacophila verrula	0	0.0			0	18	pr
Rhyacophila vepulsa	15	1.3			0	18	pr
Rhyacophila sp.	12	1.1			0	18	pr
Trichopteran pupae	0	0.0			nn	nn	un
Other			125	10.96			
Annelida(Oligochaeta)	9	0.8			5	108	cg
Coleoptera(Elmidae)					4	108	cg
Cleptelmis sp.	0	0.0			4	108	cg
Heterlimnius sp.	25	2.2			4	108	cg
Lara sp.	0	0.0			4	108	sh
Narpus sp.	0	0.0			4	108	cg
Zaitzevia sp.	0	0.0			4	108	cg
Elmidae	0	0.0			4	108	cg
Diptera							
Agathon sp.	0	0.0			0	2	sc
Ceratopogonidae	0	0.0			6	108	pr
Chironomidae	69	6.1			6	108	un
Chelifera sp.	0	0.0			6	95	pr
Oreogeton sp.	0	0.0			6	95	pr
Psychodidae	0	0.0			10	36	cg
Simuliidae	3	0.3			6	108	cg
Antocha sp.	0	0.0			3	24	cg
Dicranota sp.	0	0.0			3	24	pr
Hexatoma sp.	0	0.0			2	36	pr
Pedicia sp.	0	0.0			3	36	pr
Tipula sp.	0	0.0			4	36	cm
Hydracarina	0	0.0			5	108	pr
Mollusca	0	0.0			8	108	cg
Nematoda	0	0.0			5	108	cm
Turbellaria	19	1.7			4	108	cg

TOTAL NUMBER =	1140
TOTAL TAXA =	38
STD =	32.1
MEAN =	1140
SDI =	4.10
% SE Mean =	3
% Coef. Var.=	3
B/E =	0.05
EPT Abund =	1015
EPT/Chiron =	14.71
EPT % =	89.04
EPT taxa =	33
c/f tot =	51
c/f % =	4.47
c/g tot =	273
c/g % =	23.95
sh tot =	178
sh % =	15.61
sc tot =	409
sc % =	35.88
p tot =	156
p% =	13.68
cm tot =	0
cm % =	0.00
unk tot =	73
unk% =	6.40
sc/cf =	8.02
sc/(sc+cf) =	0.889
sh/total =	0.156

Macroinvertebrate Data--Montanore, October 1992
Poorman Creek, Pol (4 Hess samples), #43

	No.	Percent Total	Total Number	Percent Total	TV	TQ	FFG
Ephemeroptera			1075	36.99			
Baetis sp.	282	9.7			5	72	cg
Diphetor sp.	0	0.0			4	72	cg
Caudatella hystrix	0	0.0			1	48	cg
Drunella coloradensis/ flavilinea	0	0.0			0	18	sc
Drunella doddsi	99	3.4			0	4	sc
Drunella grandis	0	0.0			0	24	sc
Drunella spinifera	2	0.1			0	24	pr
Drunella sp.	18	0.6			1	48	sc
Serratella sp.	4	0.1			2	48	cg
Cinygma sp.	0	0.0			2	48	sc
Cinygmula sp.	452	15.6			4	21	sc
Epeorus sp.	24	0.8			0	21	sc
Heptagenia sp.	0	0.0			4	48	sc
Ironodes sp.	0	0.0			3	48	sc
Leucrocuta sp.	0	0.0			1	48	sc
Nixe sp.	1	0.0			2	48	sc
Rhithrogena sp.	186	6.4			4	21	cg
Paraleptophlebia sp.	3	0.1			4	24	cg
Ameletus sp.	4	0.1			0	48	cg
Plecoptera			1239	42.64			
Capniidae	32	1.1			1	32	sh
Kathroperla perdita	0	0.0			1	24	cg
Sweltsa/Suwallia sp.	123	4.2			1	24	pr
Despaxia augusta	50	1.7			0	18	sh
Paraleuctra sp.	0	0.0			0	18	sh
Perlomyia sp.	0	0.0			0	18	sh
Leuctridae	0	0.0			0	18	sh
Nemoura sp.	0	0.0			2	24	sh
Visoka cataractae	12	0.4			2	36	sh
Zapada cinctipes	7	0.2			2	16	sh
Zapada columbiana	85	2.9			2	16	sh
Nemouridae	0	0.0			2	36	sh
Yoraperla brevis	0	0.0			1	12	sh
Acroneuria abnormis	0	0.0			0	6	pr
Doroneuria theodora	15	0.5			1	18	pr
Hesperoperla pacifica	6	0.2			2	18	pr
Perlidae	0	0.0			1	24	pr
Isoperla sp.	0	0.0			2	24	pr
Kogotus modestus	0	0.0			2	18	pr
Megarcys sp.	7	0.2			2	24	pr
Setvena bradleyi	0	0.0			2	48	pr
Skwala sp.	0	0.0			2	18	pr
Perlodidae	12	0.4			2	48	pr
Doddsia occidentalis	0	0.0			2	24	sc
Taenionema sp.	890	30.6			2	48	sc
Trichoptera			255	8.77			
Micrasema sp.	0	0.0			1	24	sh
Anagapetus sp.	0	0.0			0	24	sc
Glossosoma sp.	140	4.8			0	24	sc
Arctopsyche grandis	0	0.0			4	18	cf
Hydropsyche sp.	0	0.0			8	108	cg
Parapsyche elsis	62	2.1			4	6	cf
Hydropsychidae	2	0.1			4	108	cf
Agraylea sp.	0	0.0			8	108	cg
Hydroptila sp.	0	0.0			6	108	cg
Ochrotrichia sp.	0	0.0			4	108	cg
Lepidostoma sp.	0	0.0			1	18	sh
Apatania sp.	0	0.0			4	18	sc
Chyrandra centralis	0	0.0			1	18	sh
Ecclisomyia sp.	0	0.0			2	24	cm
Neothremma alicia	0	0.0			4	8	sc
Oligophlebodes sp.	3	0.1			4	24	sc
Limnephilidae	6	0.2			4	108	un

Pol-H, #43 (cont.)

Dolophilodes sp.	0	0.0			2	24	cf
Wormaldia sp.	0	0.0			3	24	cf
Polycentropus sp.	0	0.0			6	72	pr
Rhyacophila Angelita grp.	3	0.1			0	18	pr
Rhyacophila Betteni grp.	26	0.9			0	18	pr
Rhyacophila Bif./Color. grp.	0	0.0			0	18	pr
Rhyacophila Brunnea grp.	1	0.0			0	18	pr
Rhyacophila hyalinata	0	0.0			0	18	pr
Rhyacophila iranda	0	0.0			0	18	pr
Rhyacophila Sibirica grp.	4	0.1			0	18	pr
Rhyacophila tucula	0	0.0			0	18	pr
Rhyacophila vaccua	0	0.0			0	18	pr
Rhyacophila verrula	0	0.0			0	18	pr
Rhyacophila vepulsa	2	0.1			0	18	pr
Rhyacophila sp.	6	0.2			0	18	pr
Trichopteran pupae	0	0.0			nn	nn	un
Other			337	11.60			
Annelida(Oligochaeta)	13	0.4			5	108	cg
Coleoptera(Elmidae)					4	108	cg
Cleptelmis sp.	0	0.0			4	108	cg
Heterlimnius sp.	1	0.0			4	108	cg
Lara sp.	0	0.0			4	108	sh
Narpus sp.	0	0.0			4	108	cg
Zaitzevia sp.	0	0.0			4	108	cg
Elmidae	0	0.0			4	108	cg
Diptera							
Agathon sp.	0	0.0			0	2	sc
Ceratopogonidae	0	0.0			6	108	pr
Chironomidae	313	10.8			6	108	un
Chelifera sp.	0	0.0			6	95	pr
Oreogeton sp.	2	0.1			6	95	pr
Psychodidae	0	0.0			10	36	cg
Simuliidae	1	0.0			6	108	cg
Antocha sp.	1	0.0			3	24	cg
Dicranota sp.	3	0.1			3	24	pr
Hexatoma sp.	1	0.0			2	36	pr
Pedicia sp.	0	0.0			3	36	pr
Tipula sp.	0	0.0			4	36	om
Hydracarina	0	0.0			5	108	pr
Mollusca	0	0.0			8	108	cg
Nematoda	0	0.0			5	108	om
Turbellaria	2	0.1			4	108	cg

TOTAL NUMBER =	2906
TOTAL TAXA =	42
STD =	108.9
MEAN =	727
SDI =	3.42
% SE Mean =	7
% Coef. Var.=	15
B/E =	0.26
EPT Abund =	2569
EPT/Chiron =	8.21
EPT % =	88.40
EPT taxa =	33
c/f tot =	64
c/f % =	2.20
c/g tot =	497
c/g % =	17.10
sh tot =	186
sh % =	6.40
sc tot =	1627
sc % =	55.99
p tot =	213
p% =	7.33
om tot =	0
om % =	0.00
unk tot =	319
unk% =	10.98
sc/cf =	25.42
sc/(sc+cf) =	0.962
sh/total =	0.064

Macroinvertebrate Data--Montanore, October 1992
Poorman Creek, Pol (1 kick sample), #44

	No.	Percent Total	Total Number	Percent Total	TV	TQ	FFG
Ephemeroptera			1043	47.26			
Baetis sp.	393	17.8			5	72	cg
Diphetor sp.	92	4.2			4	72	cg
Caudatella hystrix	0	0.0			1	48	cg
Drunella coloradensis/ flavilinea	0	0.0			0	18	sc
Drunella doddsi	69	3.1			0	4	sc
Drunella grandis	0	0.0			0	24	sc
Drunella spinifera	0	0.0			0	24	pr
Drunella sp.	19	0.9			1	48	sc
Serratella sp.	15	0.7			2	48	cg
Cinygma sp.	0	0.0			2	48	sc
Cinygmula sp.	321	14.5			4	21	sc
Epeorus sp.	12	0.5			0	21	sc
Heptagenia sp.	0	0.0			4	48	sc
Ironodes sp.	0	0.0			3	48	sc
Leucrocuta sp.	0	0.0			1	48	sc
Nixe sp.	0	0.0			2	48	sc
Rhithrogena sp.	76	3.4			4	21	cg
Paraleptophlebia sp.	0	0.0			4	24	cg
Ameletus sp.	46	2.1			0	48	cg
Plecoptera			841	38.11			
Capniidae	17	0.8			1	32	sh
Kathroperla perdita	0	0.0			1	24	cg
Sweltsa/Suwallia sp.	44	2.0			1	24	pr
Despaxia augusta	12	0.5			0	18	sh
Paraleuctra sp.	0	0.0			0	18	sh
Perlomyia sp.	0	0.0			0	18	sh
Leuctridae	0	0.0			0	18	sh
Nemoura sp.	0	0.0			2	24	sh
Visoka cataractae	13	0.6			2	36	sh
Zapada cinctipes	10	0.5			2	16	sh
Zapada columbiana	74	3.4			2	16	sh
Nemouridae	0	0.0			2	36	sh
Yoraperla brevis	0	0.0			1	12	sh
Acroneuria abnormis	0	0.0			0	6	pr
Doroneuria theodora	2	0.1			1	18	pr
Hesperoperla pacifica	0	0.0			2	18	pr
Perlidae	7	0.3			1	24	pr
Isoperla sp.	0	0.0			2	24	pr
Kogotus modestus	0	0.0			2	18	pr
Megarcys sp.	4	0.2			2	24	pr
Setvena bradleyi	0	0.0			2	48	pr
Skwala sp.	0	0.0			2	18	pr
Perlodidae	6	0.3			2	48	pr
Doddsia occidentalis	0	0.0			2	24	sc
Taenionema sp.	652	29.5			2	48	sc
Trichoptera			139	6.30			
Micrasema sp.	0	0.0			1	24	sh
Anagapetus sp.	0	0.0			0	24	sc
Glossosoma sp.	71	3.2			0	24	sc
Arctopsyche grandis	0	0.0			4	18	cf
Hydropsyche sp.	0	0.0			8	108	cg
Parapsyche elsis	34	1.5			4	6	cf
Hydropsychidae	0	0.0			4	108	cf
Agraylea sp.	0	0.0			8	108	cg
Hydroptila sp.	0	0.0			6	108	cg
Ochrotrichia sp.	0	0.0			4	108	cg
Lepidostoma sp.	0	0.0			1	18	sh
Apatania sp.	0	0.0			4	18	sc
Chyrandra centralis	0	0.0			1	18	sh
Ecclisomyia sp.	0	0.0			2	24	om
Neothremma alicia	0	0.0			4	8	sc
Oligophlebodes sp.	1	0.0			4	24	sc
Limnephilidae	5	0.2			4	108	un

Pol-k, #44 (cont.)

Dolophilodes sp.	0	0.0			2	24	cf
Wormaldia sp.	0	0.0			3	24	cf
Polycentropus sp.	0	0.0			6	72	pr
Rhyacophila Angelita grp.	4	0.2			0	18	pr
Rhyacophila Betteni grp.	17	0.8			0	18	pr
Rhyacophila Bif./Color. grp.	0	0.0			0	18	pr
Rhyacophila Brunnea grp.	2	0.1			0	18	pr
Rhyacophila hyalinata	0	0.0			0	18	pr
Rhyacophila iranda	0	0.0			0	18	pr
Rhyacophila Sibirica grp.	1	0.0			0	18	pr
Rhyacophila tucula	0	0.0			0	18	pr
Rhyacophila vaccua	0	0.0			0	18	pr
Rhyacophila verrula	0	0.0			0	18	pr
Rhyacophila vepulsa	1	0.0			0	18	pr
Rhyacophila sp.	3	0.1			0	18	pr
Trichopteran pupae	0	0.0			nn	nn	un
Other			184	8.34			
Annelida(Oligochaeta)	7	0.3			5	108	cg
Coleoptera(Elmidae)					4	108	cg
Cleptelmis sp.	0	0.0			4	108	cg
Heterlimnius sp.	5	0.2			4	108	cg
Lara sp.	0	0.0			4	108	sh
Narpus sp.	0	0.0			4	108	cg
Zaitzevia sp.	0	0.0			4	108	cg
Elmidae	0	0.0			4	108	cg
Diptera							
Agathon sp.	0	0.0			0	2	sc
Ceratopogonidae	1	0.0			6	108	pr
Chironomidae	164	7.4			6	108	un
Chelifera sp.	0	0.0			6	95	pr
Oreogeton sp.	0	0.0			6	95	pr
Psychodidae	0	0.0			10	36	cg
Simuliidae	3	0.1			6	108	cg
Antocha sp.	0	0.0			3	24	cg
Dicranota sp.	1	0.0			3	24	pr
Hexatoma sp.	0	0.0			2	36	pr
Pedicia sp.	0	0.0			3	36	pr
Tipula sp.	0	0.0			4	36	cm
Hydracarina	0	0.0			5	108	pr
Mollusca	0	0.0			8	108	cg
Nematoda	0	0.0			5	108	cm
Turbellaria	3	0.1			4	108	cg

TOTAL NUMBER =	2207
TOTAL TAXA =	37
STD =	83.5
MEAN =	2207
SDI =	3.41
% SE Mean =	4
% Coef. Var.=	4
B/E =	0.38
EPT Abund =	2023
EPT/Chiron =	12.34
EPT % =	91.66
EPT taxa =	30
c/f tot =	34
c/f % =	1.54
c/g tot =	640
c/g % =	29.00
sh tot =	126
sh % =	5.71
sc tot =	1145
sc % =	51.88
p tot =	93
p% =	4.21
cm tot =	0
cm % =	0.00
unk tot =	169
unk% =	7.66
sc/cf =	33.68
sc/(sc+cf) =	0.971
sh/total =	0.057

Macroinvertebrate Data--Montanore, October 1992
Ramsey Creek, Ra2 (4 Hess samples), #45

	No.	Percent Total	Total Number	Percent Total	TV	TQ	FFG
Ephemeroptera			944	51.03			
Baetis sp.	436	23.6			5	72	cg
Diphetor sp.	0	0.0			4	72	cg
Caudatella hystrix	0	0.0			1	48	cg
Drunella coloradensis/ flavilinea	0	0.0			0	18	sc
Drunella doddsi	22	1.2			0	4	sc
Drunella grandis	0	0.0			0	24	sc
Drunella spinifera	9	0.5			0	24	pr
Drunella sp.	15	0.8			1	48	sc
Serratella sp.	2	0.1			2	48	cg
Cinygma sp.	0	0.0			2	48	sc
Cinygmula sp.	334	18.1			4	21	sc
Epeorus sp.	18	1.0			0	21	sc
Heptagenia sp.	0	0.0			4	48	sc
Ironodes sp.	0	0.0			3	48	sc
Leucrocuta sp.	0	0.0			1	48	sc
Nixe sp.	0	0.0			2	48	sc
Rhithrogena sp.	83	4.5			4	21	cg
Paraleptophlebia sp.	0	0.0			4	24	cg
Ameletus sp.	25	1.4			0	48	cg
Plecoptera			405	21.89			
Capniidae	11	0.6			1	32	sh
Kathroperla perdita	0	0.0			1	24	cg
Sweltsa/Suwallia sp.	83	4.5			1	24	pr
Despaxia augusta	29	1.6			0	18	sh
Paraleuctra sp.	0	0.0			0	18	sh
Perlomyia sp.	0	0.0			0	18	sh
Leuctridae	25	1.4			0	18	sh
Nemoura sp.	0	0.0			2	24	sh
Visoka cataractae	46	2.5			2	36	sh
Zapada cinctipes	1	0.1			2	16	sh
Zapada columbiana	61	3.3			2	16	sh
Nemouridae	0	0.0			2	36	sh
Yoraperla brevis	0	0.0			1	12	sh
Acroneuria abnormis	0	0.0			0	6	pr
Doroneuria theodora	0	0.0			1	18	pr
Hesperoperla pacifica	0	0.0			2	18	pr
Perlidae	1	0.1			1	24	pr
Isoperla sp.	0	0.0			2	24	pr
Kogotus modestus	0	0.0			2	18	pr
Megarcys sp.	1	0.1			2	24	pr
Setvena bradleyi	0	0.0			2	48	pr
Skwala sp.	0	0.0			2	18	pr
Perlodidae	3	0.2			2	48	pr
Doddsia occidentalis	0	0.0			2	24	sc
Taenionema sp.	144	7.8			2	48	sc
Trichoptera			213	11.51			
Micrasema sp.	0	0.0			1	24	sh
Anagapetus sp.	0	0.0			0	24	sc
Glossosoma sp.	112	6.1			0	24	sc
Arctopsyche grandis	0	0.0			4	18	cf
Hydropsyche sp.	0	0.0			8	108	cg
Parapsyche elsis	54	2.9			4	6	cf
Hydropsychidae	0	0.0			4	108	cf
Agraylea sp.	12	0.6			8	108	cg
Hydroptila sp.	0	0.0			6	108	cg
Ochrotrichia sp.	0	0.0			4	108	cg
Lepidostoma sp.	0	0.0			1	18	sh
Apatania sp.	0	0.0			4	18	sc
Chyrandra centralis	0	0.0			1	18	sh
Ecclisomyia sp.	0	0.0			2	24	cm
Neothremma alicia	0	0.0			4	8	sc
Oligophlebodes sp.	2	0.1			4	24	sc
Limnephilidae	6	0.3			4	108	un

Ra2-H, #45 (cont.)

Dolophilodes sp.	0	0.0			2	24	cf
Wormaldia sp.	0	0.0			3	24	cf
Polycentropus sp.	0	0.0			6	72	pr
Rhyacophila Angelita grp.	4	0.2			0	18	pr
Rhyacophila Betteni grp.	16	0.9			0	18	pr
Rhyacophila Bif./Color. grp.	0	0.0			0	18	pr
Rhyacophila Brunnea grp.	1	0.1			0	18	pr
Rhyacophila hyalinata	0	0.0			0	18	pr
Rhyacophila iranda	0	0.0			0	18	pr
Rhyacophila Sibirica grp.	0	0.0			0	18	pr
Rhyacophila tucula	0	0.0			0	18	pr
Rhyacophila vaccua	0	0.0			0	18	pr
Rhyacophila verrula	0	0.0			0	18	pr
Rhyacophila vepulsa	1	0.1			0	18	pr
Rhyacophila sp.	4	0.2			0	18	pr
Trichopteran pupae	1	0.1			nn	nn	un
Other			288	15.57			
Annelida(Oligochaeta)	5	0.3			5	108	cg
Coleoptera(Elmidae)					4	108	cg
Cleptelmis sp.	0	0.0			4	108	cg
Heterlimnius sp.	6	0.3			4	108	cg
Lara sp.	0	0.0			4	108	sh
Narpus sp.	0	0.0			4	108	cg
Zaitzevia sp.	0	0.0			4	108	cg
Elmidae	0	0.0			4	108	cg
Diptera							
Agathon sp.	0	0.0			0	2	sc
Ceratopogonidae	1	0.1			6	108	pr
Chironomidae	265	14.3			6	108	un
Chelifera sp.	2	0.1			6	95	pr
Oreogeton sp.	0	0.0			6	95	pr
Psychodidae	0	0.0			10	36	cg
Simuliidae	3	0.2			6	108	cg
Antocha sp.	1	0.1			3	24	cg
Dicranota sp.	4	0.2			3	24	pr
Hexatoma sp.	0	0.0			2	36	pr
Pedicia sp.	0	0.0			3	36	pr
Tipula sp.	0	0.0			4	36	om
Hydracarina	0	0.0			5	108	pr
Mollusca	0	0.0			8	108	cg
Nematoda	0	0.0			5	108	om
Turbellaria	1	0.1			4	108	cg

TOTAL NUMBER =	1850
TOTAL TAXA =	40
STD =	63.0
MEAN =	463
SDI =	3.61
% SE Mean =	7
% Coef. Var.=	14
B/E =	0.46
EPT Abund =	1562
EPT/Chiron =	5.89
EPT % =	84.43
EPT taxa =	31
c/f tot =	54
c/f % =	2.92
c/g tot =	574
c/g % =	31.03
sh tot =	173
sh % =	9.35
sc tot =	647
sc % =	34.97
p tot =	130
p% =	7.03
om tot =	0
om % =	0.00
unk tot =	272
unk% =	14.70
sc/cf =	11.98
sc/(sc+cf) =	0.923
sh/total =	0.094

Macroinvertebrate Data--Montanore, October 1992
Ramsey Creek, Ra2 (1 kick sample), #46

	No.	Percent Total	Total Number	Percent Total	TV	TQ	FFG
Ephemeroptera			1035	60.21			
Baetis sp.	532	30.9			5	72	cg
Diphetor sp.	0	0.0			4	72	cg
Caudatella hystrix	0	0.0			1	48	cg
Drunella coloradensis/ flavilinea	0	0.0			0	18	sc
Drunella doddsi	11	0.6			0	4	sc
Drunella grandis	0	0.0			0	24	sc
Drunella spinifera	0	0.0			0	24	pr
Drunella sp.	3	0.2			1	48	sc
Serratella sp.	2	0.1			2	48	cg
Cinygma sp.	0	0.0			2	48	sc
Cinygmula sp.	359	20.9			4	21	sc
Epeorus sp.	23	1.3			0	21	sc
Heptagenia sp.	0	0.0			4	48	sc
Ironodes sp.	1	0.1			3	48	sc
Leucrocuta sp.	0	0.0			1	48	sc
Nixe sp.	0	0.0			2	48	sc
Rhithrogena sp.	80	4.7			4	21	cg
Paraleptophlebia sp.	0	0.0			4	24	cg
Ameletus sp.	24	1.4			0	48	cg
Plecoptera			499	29.03			
Capniidae	5	0.3			1	32	sh
Kathroperla perdita	0	0.0			1	24	cg
Swoltsa/Suwallia sp.	49	2.9			1	24	pr
Despaxia augusta	19	1.1			0	18	sh
Paraleuctra sp.	0	0.0			0	18	sh
Perlomyia sp.	0	0.0			0	18	sh
Leuctridae	0	0.0			0	18	sh
Nemoura sp.	0	0.0			2	24	sh
Visoka cataractae	24	1.4			2	36	sh
Zapada cinctipes	3	0.2			2	16	sh
Zapada columbiana	117	6.8			2	16	sh
Nemouridae	0	0.0			2	36	sh
Yoraperla brevis	1	0.1			1	12	sh
Acroneuria abnormis	0	0.0			0	6	pr
Doroneuria theodora	3	0.2			1	18	pr
Hesperoperla pacifica	0	0.0			2	18	pr
Perlidae	0	0.0			1	24	pr
Isoperla sp.	0	0.0			2	24	pr
Kogotus modestus	0	0.0			2	18	pr
Megarcys sp.	5	0.3			2	24	pr
Setvena bradleyi	0	0.0			2	48	pr
Skwala sp.	0	0.0			2	18	pr
Perlodidae	0	0.0			2	48	pr
Doddsia occidentalis	0	0.0			2	24	sc
Taenionema sp.	273	15.9			2	48	sc
Trichoptera			85	4.94			
Micrasema sp.	0	0.0			1	24	sh
Anagapetus sp.	0	0.0			0	24	sc
Glossosoma sp.	37	2.2			0	24	sc
Arctopsyche grandis	0	0.0			4	18	cf
Hydropsyche sp.	0	0.0			8	108	cg
Parapsyche elsis	6	0.3			4	6	cf
Hydropsychidae	21	1.2			4	108	cf
Agraylea sp.	0	0.0			8	108	cg
Hydroptila sp.	0	0.0			6	108	cg
Ochrotrichia sp.	0	0.0			4	108	cg
Lepidostoma sp.	0	0.0			1	18	sh
Apatania sp.	0	0.0			4	18	sc
Chyrandra centralis	0	0.0			1	18	sh
Ecclisomyia sp.	0	0.0			2	24	om
Neothremma alicia	0	0.0			4	8	sc
Oligophlebodes sp.	6	0.3			4	24	sc
Limnephilidae	4	0.2			4	108	un

Ra2-k, #46 (cont.)

Dolophilodes sp.	0	0.0			2	24	cf
Wormaldia sp.	0	0.0			3	24	cf
Polycentropus sp.	0	0.0			6	72	pr
Rhyacophila Angelita grp.	2	0.1			0	18	pr
Rhyacophila Betteni grp.	5	0.3			0	18	pr
Rhyacophila Bif./Color. grp.	0	0.0			0	18	pr
Rhyacophila Brunnea grp.	0	0.0			0	18	pr
Rhyacophila hyalinata	0	0.0			0	18	pr
Rhyacophila iranda	0	0.0			0	18	pr
Rhyacophila Sibirica grp.	0	0.0			0	18	pr
Rhyacophila tucula	0	0.0			0	18	pr
Rhyacophila vaccua	0	0.0			0	18	pr
Rhyacophila verrula	0	0.0			0	18	pr
Rhyacophila vepulsa	1	0.1			0	18	pr
Rhyacophila sp.	2	0.1			0	18	pr
Trichopteran pupae	1	0.1			nn	nn	un
Other			100	5.82			
Annelida(Oligochaeta)	1	0.1			5	108	cg
Coleoptera(Elmidae)					4	108	cg
Cleptelmis sp.	0	0.0			4	108	cg
Heterlimnius sp.	4	0.2			4	108	cg
Lara sp.	0	0.0			4	108	sh
Narpus sp.	0	0.0			4	108	cg
Zaitzevia sp.	0	0.0			4	108	cg
Elmidae	0	0.0			4	108	cg
Diptera							
Agathon sp.	0	0.0			0	2	sc
Ceratopogonidae	0	0.0			6	108	pr
Chironomidae	88	5.1			6	108	un
Chelifera sp.	0	0.0			6	95	pr
Oreogeton sp.	0	0.0			6	95	pr
Psychodidae	0	0.0			10	36	cg
Simuliidae	5	0.3			6	108	cg
Antocha sp.	0	0.0			3	24	cg
Dicranota sp.	1	0.1			3	24	pr
Hexatoma sp.	0	0.0			2	36	pr
Pedicia sp.	0	0.0			3	36	pr
Tipula sp.	0	0.0			4	36	cm
Hydracarina	0	0.0			5	108	pr
Mollusca	0	0.0			8	108	cg
Nematoda	0	0.0			5	108	cm
Turbellaria	1	0.1			4	108	cg

TOTAL NUMBER =	1719
TOTAL TAXA =	35
STD =	70.1
MEAN =	1719
SDI =	3.14
% SE Mean =	4
% Coef. Var.=	4
B/E =	0.51
EPT Abund =	1619
EPT/Chiron =	18.40
EPT % =	94.18
EPT taxa =	29
c/f tot =	27
c/f % =	1.57
c/g tot =	649
c/g % =	37.75
sh tot =	169
sh % =	9.83
sc tot =	713
sc % =	41.48
p tot =	68
p% =	3.96
cm tot =	0
cm % =	0.00
unk tot =	93
unk% =	5.41
sc/cf =	26.41
sc/(sc+cf) =	0.964
sh/total =	0.098

Macroinvertebrate Data--Montanore, October 1992
Bear Creek, Be2 (4 Hess samples), #47

	No.	Percent Total	Total Number	Percent Total	TV	TQ	FFG
Ephemeroptera			1386	50.96			
Baetis sp.	391	14.4			5	72	cg
Diphetor sp.	0	0.0			4	72	cg
Caudatella hystrix	0	0.0			1	48	cg
Drunella coloradensis/ flavilinea	0	0.0			0	18	sc
Drunella doddsi	64	2.4			0	4	sc
Drunella grandis	0	0.0			0	24	sc
Drunella spinifera	3	0.1			0	24	pr
Drunella sp.	33	1.2			1	48	sc
Serratella sp.	13	0.5			2	48	cg
Cinygma sp.	0	0.0			2	48	sc
Cinygmula sp.	661	24.3			4	21	sc
Epeorus sp.	30	1.1			0	21	sc
Heptagenia sp.	0	0.0			4	48	sc
Ironodes sp.	2	0.1			3	48	sc
Leucrocuta sp.	0	0.0			1	48	sc
Nixe sp.	0	0.0			2	48	sc
Rhithrogena sp.	179	6.6			4	21	cg
Paraleptophlebia sp.	5	0.2			4	24	cg
Ameletus sp.	5	0.2			0	48	cg
Plecoptera			466	17.13			
Capniidae	14	0.5			1	32	sh
Kathroperla perdita	0	0.0			1	24	cg
Sweltsa/Suwallia sp.	99	3.6			1	24	pr
Despaxia augusta	49	1.8			0	18	sh
Paraleuctra sp.	0	0.0			0	18	sh
Perlomyia sp.	0	0.0			0	18	sh
Leuctridae	1	0.0			0	18	sh
Nemoura sp.	0	0.0			2	24	sh
Visoka cataractae	27	1.0			2	36	sh
Zapada cinctipes	7	0.3			2	16	sh
Zapada columbiana	84	3.1			2	16	sh
Nemouridae	0	0.0			2	36	sh
Yoraperla brevis	16	0.6			1	12	sh
Acroneuria abnormis	0	0.0			0	6	pr
Doroneuria theodora	5	0.2			1	18	pr
Hesperoperla pacifica	0	0.0			2	18	pr
Perlidae	4	0.1			1	24	pr
Isoperla sp.	0	0.0			2	24	pr
Kogotus modestus	0	0.0			2	18	pr
Megarcys sp.	1	0.0			2	24	pr
Setvena bradleyi	0	0.0			2	48	pr
Skwala sp.	0	0.0			2	18	pr
Perlodidae	10	0.4			2	48	pr
Doddsia occidentalis	0	0.0			2	24	sc
Taenionema sp.	149	5.5			2	48	sc
Trichoptera			594	21.84			
Micrasema sp.	0	0.0			1	24	sh
Anagapetus sp.	0	0.0			0	24	sc
Glossosoma sp.	473	17.4			0	24	sc
Arctopsyche grandis	0	0.0			4	18	cf
Hydropsyche sp.	0	0.0			8	108	cg
Parapsyche elsis	25	0.9			4	6	cf
Hydropsychidae	0	0.0			4	108	cf
Agraylea sp.	0	0.0			8	108	cg
Hydroptila sp.	0	0.0			6	108	cg
Ochrotrichia sp.	0	0.0			4	108	cg
Lepidostoma sp.	0	0.0			1	18	sh
Apatania sp.	0	0.0			4	18	sc
Chyrandra centralis	0	0.0			1	18	sh
Ecclisomyia sp.	0	0.0			2	24	om
Neothremma alicia	0	0.0			4	8	sc
Oligophlebodes sp.	7	0.3			4	24	sc
Limnephilidae	4	0.1			4	108	un

Be2-H, #47 (cont.)

Dolophilodes sp.	0	0.0			2	24	cf
Wormaldia sp.	0	0.0			3	24	cf
Polycentropus sp.	0	0.0			6	72	pr
Rhyacophila Angelita grp.	10	0.4			0	18	pr
Rhyacophila Betteni grp.	41	1.5			0	18	pr
Rhyacophila Bif./Color. grp.	0	0.0			0	18	pr
Rhyacophila Brunnea grp.	6	0.2			0	18	pr
Rhyacophila hyalinata	11	0.4			0	18	pr
Rhyacophila iranda	0	0.0			0	18	pr
Rhyacophila Sibirica grp.	2	0.1			0	18	pr
Rhyacophila tucula	0	0.0			0	18	pr
Rhyacophila vaccua	0	0.0			0	18	pr
Rhyacophila verrula	0	0.0			0	18	pr
Rhyacophila vepulsa	5	0.2			0	18	pr
Rhyacophila sp.	10	0.4			0	18	pr
Trichopteran pupae	0	0.0			nn	nn	un
Other			274	10.07			
Annelida(Oligochaeta)	25	0.9			5	108	cg
Coleoptera(Elmidae)					4	108	cg
Cleptelmis sp.	0	0.0			4	108	cg
Heterlimnius sp.	0	0.0			4	108	cg
Lara sp.	0	0.0			4	108	sh
Narpus sp.	0	0.0			4	108	cg
Zaitzevia sp.	0	0.0			4	108	cg
Elmidae	0	0.0			4	108	cg
Diptera							
Agathon sp.	0	0.0			0	2	sc
Ceratopogonidae	1	0.0			6	108	pr
Chironomidae	229	8.4			6	108	un
Chelifera sp.	4	0.1			6	95	pr
Oreogeton sp.	0	0.0			6	95	pr
Psychodidae	0	0.0			10	36	cg
Simuliidae	1	0.0			6	108	cg
Antocha sp.	1	0.0			3	24	cg
Dicranota sp.	0	0.0			3	24	pr
Hexatoma sp.	2	0.1			2	36	pr
Pedicia sp.	0	0.0			3	36	pr
Tipula sp.	0	0.0			4	36	cm
Hydracarina	0	0.0			5	108	pr
Mollusca	0	0.0			8	108	cg
Nematoda	0	0.0			5	108	cm
Turbellaria	11	0.4			4	108	cg

TOTAL NUMBER =	2720
TOTAL TAXA =	43
STD =	93.6
MEAN =	680
SDI =	3.62
% SE Mean =	7
% Coef. Var.=	14
B/E =	0.28
EPT Abund =	2446
EPT/Chiron =	10.68
EPT % =	89.93
EPT taxa =	35
c/f tot =	25
c/f % =	0.92
c/g tot =	631
c/g % =	23.20
sh tot =	198
sh % =	7.28
sc tot =	1419
sc % =	52.17
p tot =	214
p% =	7.87
cm tot =	0
cm % =	0.00
unk tot =	233
unk% =	8.57
sc/cf =	56.76
sc/(sc+cf) =	0.983
sh/total =	0.073

Macroinvertebrate Data--Montanore, October 1992
Bear Creek, Be2 (1 kick sample), #48

	No.	Percent Total	Total Number	Percent Total	TV	TQ	FFG
Ephemeroptera			778	36.98			
Baetis sp.	28	1.3			5	72	cg
Diphetor sp.	0	0.0			4	72	cg
Caudatella hystrix	0	0.0			1	48	cg
Drunella coloradensis/ flavilinea	0	0.0			0	18	sc
Drunella doddsi	92	4.4			0	4	sc
Drunella grandis	0	0.0			0	24	sc
Drunella spinifera	6	0.3			0	24	pr
Drunella sp.	99	4.7			1	48	sc
Serratella sp.	5	0.2			2	48	cg
Cinygma sp.	0	0.0			2	48	sc
Cinygmula sp.	349	16.6			4	21	sc
Epeorus sp.	17	0.8			0	21	sc
Heptagenia sp.	0	0.0			4	48	sc
Ironodes sp.	1	0.0			3	48	sc
Leucrocuta sp.	0	0.0			1	48	sc
Nixe sp.	0	0.0			2	48	sc
Rhithrogena sp.	152	7.2			4	21	cg
Paraleptophlebia sp.	9	0.4			4	24	cg
Ameletus sp.	20	1.0			0	48	cg
Plecoptera			776	36.88			
Capniidae	9	0.4			1	32	sh
Kathroperla perdita	0	0.0			1	24	cg
Sweltsa/Suwallia sp.	108	5.1			1	24	pr
Despaxia augusta	10	0.5			0	18	sh
Paraleuctra sp.	0	0.0			0	18	sh
Perlomyia sp.	0	0.0			0	18	sh
Leuctridae	0	0.0			0	18	sh
Nemoura sp.	0	0.0			2	24	sh
Visoka cataractae	60	2.9			2	36	sh
Zapada cinctipes	6	0.3			2	16	sh
Zapada columbiana	146	6.9			2	16	sh
Nemouridae	0	0.0			2	36	sh
Yoraperla brevis	21	1.0			1	12	sh
Acroneuria abnormis	0	0.0			0	6	pr
Doroneuria theodora	7	0.3			1	18	pr
Hesperoperla pacifica	0	0.0			2	18	pr
Perlidae	11	0.5			1	24	pr
Isoperla sp.	0	0.0			2	24	pr
Kogotus modestus	0	0.0			2	18	pr
Megarcys sp.	4	0.2			2	24	pr
Setvena bradleyi	0	0.0			2	48	pr
Skwala sp.	0	0.0			2	18	pr
Perlodidae	8	0.4			2	48	pr
Doddsia occidentalis	0	0.0			2	24	sc
Taenionema sp.	386	18.3			2	48	sc
Trichoptera			229	10.88			
Micrasema sp.	0	0.0			1	24	sh
Anagapetus sp.	0	0.0			0	24	sc
Glossosoma sp.	101	4.8			0	24	sc
Arctopsyche grandis	0	0.0			4	18	cf
Hydropsyche sp.	0	0.0			8	108	cg
Parapsyche elsis	4	0.2			4	6	cf
Hydropsychidae	11	0.5			4	108	cf
Agraylea sp.	0	0.0			8	108	cg
Hydroptila sp.	0	0.0			6	108	cg
Ochrotrichia sp.	0	0.0			4	108	cg
Lepidostoma sp.	0	0.0			1	18	sh
Apatania sp.	0	0.0			4	18	sc
Chyrandra centralis	0	0.0			1	18	sh
Ecclisomyia sp.	0	0.0			2	24	cm
Neothremma alicia	0	0.0			4	8	sc
Oligophlebodes sp.	13	0.6			4	24	sc
Limnephilidae	8	0.4			4	108	un

Be2-k, #48 (cont.)

Dolophilodes sp.	0	0.0			2	24	cf
Wormaldia sp.	0	0.0			3	24	cf
Polycentropus sp.	0	0.0			6	72	pr
Rhyacophila Angelita grp.	0	0.0			0	18	pr
Rhyacophila Betteni grp.	0	0.0			0	18	pr
Rhyacophila Bif./Color. grp.	0	0.0			0	18	pr
Rhyacophila Brunnea grp.	11	0.5			0	18	pr
Rhyacophila hyalinata	4	0.2			0	18	pr
Rhyacophila iranda	4	0.2			0	18	pr
Rhyacophila Sibirica grp.	51	2.4			0	18	pr
Rhyacophila tucula	0	0.0			0	18	pr
Rhyacophila vaccua	0	0.0			0	18	pr
Rhyacophila verrula	0	0.0			0	18	pr
Rhyacophila vepulsa	1	0.0			0	18	pr
Rhyacophila sp.	21	1.0			0	18	pr
Trichopteran pupae	0	0.0			nn	nn	un
Other			321	15.26			
Annelida(Oligochaeta)	7	0.3			5	108	cg
Coleoptera(Elmidae)					4	108	cg
Cleptelmis sp.	0	0.0			4	108	cg
Heterlimnius sp.	30	1.4			4	108	cg
Lara sp.	0	0.0			4	108	sh
Narpus sp.	0	0.0			4	108	cg
Zaitzevia sp.	0	0.0			4	108	cg
Elmidae	0	0.0			4	108	cg
Diptera							
Agathon sp.	0	0.0			0	2	sc
Ceratopogonidae	0	0.0			6	108	pr
Chironomidae	248	11.8			6	108	un
Chelifera sp.	0	0.0			6	95	pr
Oreogeton sp.	0	0.0			6	95	pr
Psychodidae	0	0.0			10	36	cg
Simuliidae	0	0.0			6	108	cg
Antocha sp.	9	0.4			3	24	cg
Dicranota sp.	8	0.4			3	24	pr
Hexatoma sp.	0	0.0			2	36	pr
Pedicia sp.	0	0.0			3	36	pr
Tipula sp.	0	0.0			4	36	om
Hydracarina	4	0.2			5	108	pr
Mollusca	0	0.0			8	108	cg
Nematoda	0	0.0			5	108	om
Turbellaria	15	0.7			4	108	cg

TOTAL NUMBER =	2104
TOTAL TAXA =	41
STD =	61.9
MEAN =	2104
SDI =	3.98
% SE Mean =	3
% Coef. Var.=	3
B/E =	0.04
EPT Abund =	1783
EPT/Chiron =	7.19
EPT % =	84.74
EPT taxa =	34
c/f tot =	15
c/f % =	0.71
c/g tot =	275
c/g % =	13.07
sh tot =	252
sh % =	11.98
sc tot =	1058
sc % =	50.29
p tot =	248
p% =	11.79
om tot =	0
om % =	0.00
unk tot =	256
unk% =	12.17
sc/cf =	70.53
sc/(sc+cf) =	0.986
sh/total =	0.120

Appendix E. Macroinvertebrate seasonal totals, 1992.

Macroinvertebrate Data--Montanore, Seasonal Totals
April 1992 (32 Hess samples), #49

	No.	Percent Total	Total Number	Percent Total	TV	TQ	FFG
Ephemeroptera			4712	48.27			
Baetis sp.	348	3.6			5	72	cg
Diphetor sp.	0	0.0			4	72	cg
Caudatella hystrix	0	0.0			1	48	cg
Drunella coloradensis/ flavilinea	3	0.0			0	18	sc
Drunella doddsi	411	4.2			0	4	sc
Drunella grandis	0	0.0			0	24	sc
Drunella spinifera	9	0.1			0	24	pr
Drunella sp.	337	3.5			1	48	sc
Serratella sp.	30	0.3			2	48	cg
Cinygma sp.	0	0.0			2	48	sc
Cinygmula sp.	2375	24.3			4	21	sc
Epeorus sp.	851	8.7			0	21	sc
Heptagenia sp.	0	0.0			4	48	sc
Ironodes sp.	0	0.0			3	48	sc
Leucrocuta sp.	4	0.0			1	48	sc
Nixe sp.	0	0.0			2	48	sc
Rhithrogena sp.	251	2.6			4	21	cg
Paraleptophlebia sp.	25	0.3			4	24	cg
Ameletus sp.	68	0.7			0	48	cg
Plecoptera			2268	23.24			
Capniidae	36	0.4			1	32	sh
Kathroperla perdita	1	0.0			1	24	cg
Sweltsa/Suwallia sp.	633	6.5			1	24	pr
Despaxia augusta	6	0.1			0	18	sh
Paraleuctra sp.	1	0.0			0	18	sh
Perlomyia sp.	2	0.0			0	18	sh
Leuctridae	77	0.8			0	18	sh
Nemoura sp.	98	1.0			2	24	sh
Visoka cataractae	123	1.3			2	36	sh
Zapada cinctipes	0	0.0			2	16	sh
Zapada columbiana	173	1.8			2	16	sh
Nemouridae	172	1.8			2	36	sh
Yoraperla brevis	12	0.1			1	12	sh
Acroneuria abnormis	0	0.0			0	6	pr
Doroneuria theodora	5	0.1			1	18	pr
Hesperoperla pacifica	0	0.0			2	18	pr
Perlidae	20	0.2			1	24	pr
Isoperla sp.	2	0.0			2	24	pr
Kogotus modestus	0	0.0			2	18	pr
Megarcys sp.	84	0.9			2	24	pr
Setvena bradleyi	1	0.0			2	48	pr
Skwala sp.	0	0.0			2	18	pr
Perlodidae	46	0.5			2	48	pr
Doddsia occidentalis	300	3.1			2	24	sc
Taenionema sp.	476	4.9			2	48	sc
Trichoptera			896	9.18			
Micrasema sp.	1	0.0			1	24	sh
Anagapetus sp.	14	0.1			0	24	sc
Glossosoma sp.	180	1.8			0	24	sc
Arctopsyche grandis	0	0.0			4	18	cf
Hydropsyche sp.	0	0.0			8	108	cg
Parapsyche elsis	56	0.6			4	6	cf
Hydropsychidae	61	0.6			4	108	cf
Agraylea sp.	4	0.0			8	108	cg
Hydroptila sp.	0	0.0			6	108	cg
Ochrotrichia sp.	0	0.0			4	108	cg
Lepidostoma sp.	6	0.1			1	18	sh
Apatania sp.	0	0.0			4	18	sc
Chyrandra centralis	1	0.0			1	18	sh
Ecclisomyia sp.	0	0.0			2	24	om
Neothremma alicia	3	0.0			4	8	sc
Oligophlebodes sp.	306	3.1			4	24	sc
Limnephilidae	125	1.3			4	108	un

Ap-H, #49 (cont.)

Dolophilodes sp.	0	0.0			2	24	cf
Wormaldia sp.	0	0.0			3	24	cf
Polycentropus sp.	0	0.0			6	72	pr
Rhyacophila Angelita grp.	4	0.0			0	18	pr
Rhyacophila Betteni grp.	62	0.6			0	18	pr
Rhyacophila Bif./Color. grp.	0	0.0			0	18	pr
Rhyacophila Brunnea grp.	12	0.1			0	18	pr
Rhyacophila hyalinata	10	0.1			0	18	pr
Rhyacophila iranda	0	0.0			0	18	pr
Rhyacophila Sibirica grp.	0	0.0			0	18	pr
Rhyacophila tucula	0	0.0			0	18	pr
Rhyacophila vaccua	3	0.0			0	18	pr
Rhyacophila verrula	3	0.0			0	18	pr
Rhyacophila vepulsa	35	0.4			0	18	pr
Rhyacophila sp.	10	0.1			0	18	pr
Trichopteran pupae	0	0.0			nn	nn	un
Other			1885	19.31			
Annelida(Oligochaeta)	98	1.0			5	108	cg
Coleoptera(Elmidae)					4	108	cg
Cleptelmis sp.	0	0.0			4	108	cg
Heterlimnius sp.	50	0.5			4	108	cg
Lara sp.	0	0.0			4	108	sh
Narpus sp.	0	0.0			4	108	cg
Zaitzevia sp.	0	0.0			4	108	cg
Elmidae	0	0.0			4	108	cg
Diptera							
Agathon sp.	4	0.0			0	2	sc
Ceratopogonidae	7	0.1			6	108	pr
Chironomidae	1364	14.0			6	108	un
Chelifera sp.	5	0.1			6	95	pr
Oreogeton sp.	24	0.2			6	95	pr
Psychodidae	0	0.0			10	36	cg
Simuliidae	187	1.9			6	108	cg
Antocha sp.	0	0.0			3	24	cg
Dicranota sp.	49	0.5			3	24	pr
Hexatoma sp.	6	0.1			2	36	pr
Pedicia sp.	0	0.0			3	36	pr
Tipula sp.	2	0.0			4	36	om
Hydracarina	7	0.1			5	108	pr
Mollusca	2	0.0			8	108	cg
Nematoda	47	0.5			5	108	om
Turbellaria	33	0.3			4	108	cg

TOTAL NUMBER =	9761
TOTAL TAXA =	66
STD =	296.2
MEAN =	305
SDI =	4.15
% SE Mean =	xxx
% Coef. Var.=	xxx
B/E =	0.07
EPT Abund =	7876
EPT/Chiron =	5.77
EPT % =	80.69
EPT taxa =	51
c/f tot =	117
c/f % =	1.20
c/g tot =	1097
c/g % =	11.24
sh tot =	708
sh % =	7.25
sc tot =	5264
sc % =	53.93
p tot =	1037
p% =	10.62
om tot =	49
om % =	0.50
unk tot =	1489
unk% =	15.25
sc/cf =	44.99
sc/(sc+cf) =	0.978
sh/total =	0.073

Macroinvertebrate Data--Montanore, Seasonal Totals
April 1992 (8 kick samples), #50

	No.	Percent Total	Total Number	Percent Total	TV	TQ	FFG
Ephemeroptera			5487	51.74			
Baetis sp.	915	8.6			5	72	cg
Diphetor sp.	0	0.0			4	72	cg
Caudatella hystrix	0	0.0			1	48	cg
Drunella coloradensis/ flavilinea	1	0.0			0	18	sc
Drunella doddsi	184	1.7			0	4	sc
Drunella grandis	0	0.0			0	24	sc
Drunella spinifera	12	0.1			0	24	pr
Drunella sp.	486	4.6			1	48	sc
Serratella sp.	112	1.1			2	48	cg
Cinygma sp.	0	0.0			2	48	sc
Cinygmula sp.	2284	21.5			4	21	sc
Epeorus sp.	1224	11.5			0	21	sc
Heptagenia sp.	0	0.0			4	48	sc
Ironodes sp.	0	0.0			3	48	sc
Leucrocuta sp.	4	0.0			1	48	sc
Nixe sp.	0	0.0			2	48	sc
Rhithrogena sp.	154	1.5			4	21	cg
Paraleptophlebia sp.	33	0.3			4	24	cg
Ameletus sp.	78	0.7			0	48	cg
Plecoptera			2865	27.02			
Capniidae	80	0.8			1	32	sh
Kathroperla perdita	0	0.0			1	24	cg
Sweltsa/Suwallia sp.	456	4.3			1	24	pr
Despaxia augusta	49	0.5			0	18	sh
Paraleuctra sp.	0	0.0			0	18	sh
Perlomyia sp.	0	0.0			0	18	sh
Leuctridae	21	0.2			0	18	sh
Nemoura sp.	475	4.5			2	24	sh
Visoka cataractae	109	1.0			2	36	sh
Zapada cinctipes	7	0.1			2	16	sh
Zapada columbiana	25	0.2			2	16	sh
Nemouridae	1113	10.5			2	36	sh
Yoraperla brevis	14	0.1			1	12	sh
Acroneuria abnormis	0	0.0			0	6	pr
Doroneuria theodora	4	0.0			1	18	pr
Hesperoperla pacifica	2	0.0			2	18	pr
Perlidae	38	0.4			1	24	pr
Isoperla sp.	32	0.3			2	24	pr
Kogotus modestus	0	0.0			2	18	pr
Megarcys sp.	16	0.2			2	24	pr
Setvena bradleyi	1	0.0			2	48	pr
Skwala sp.	0	0.0			2	18	pr
Perlodidae	6	0.1			2	48	pr
Doddsia occidentalis	417	3.9			2	24	sc
Taenionema sp.	0	0.0			2	48	sc
Trichoptera			517	4.88			
Micrasema sp.	4	0.0			1	24	sh
Anagapetus sp.	25	0.2			0	24	sc
Glossosoma sp.	71	0.7			0	24	sc
Arctopsyche grandis	0	0.0			4	18	cf
Hydropsyche sp.	0	0.0			8	108	cg
Parapsyche elsis	86	0.8			4	6	cf
Hydropsychidae	30	0.3			4	108	cf
Agraylea sp.	1	0.0			8	108	cg
Hydroptila sp.	0	0.0			6	108	cg
Ochrotrichia sp.	12	0.1			4	108	cg
Lepidostoma sp.	8	0.1			1	18	sh
Apatania sp.	0	0.0			4	18	sc
Chyrandra centralis	1	0.0			1	18	sh
Ecclisomyia sp.	2	0.0			2	24	om
Neothremma alicia	1	0.0			4	8	sc
Oligophlebodes sp.	29	0.3			4	24	sc
Limnephilidae	132	1.2			4	108	un

Ap-k, #50 (cont.)

Dolophilodes sp.	0	0.0			2	24	cf
Wormaldia sp.	2	0.0			3	24	cf
Polycentropus sp.	0	0.0			6	72	pr
Rhyacophila Angelita grp.	0	0.0			0	18	pr
Rhyacophila Betteni grp.	46	0.4			0	18	pr
Rhyacophila Bif./Color. grp.	0	0.0			0	18	pr
Rhyacophila Brunnea grp.	38	0.4			0	18	pr
Rhyacophila hyalinata	0	0.0			0	18	pr
Rhyacophila iranda	1	0.0			0	18	pr
Rhyacophila Sibirica grp.	0	0.0			0	18	pr
Rhyacophila tucula	0	0.0			0	18	pr
Rhyacophila vaccua	0	0.0			0	18	pr
Rhyacophila verrula	0	0.0			0	18	pr
Rhyacophila vepulsa	15	0.1			0	18	pr
Rhyacophila sp.	13	0.1			0	18	pr
Trichopteran pupae	0	0.0			nn	nn	un
Other			1736	16.37			
Annelida(Oligochaeta)	41	0.4			5	108	cg
Coleoptera(Elmidae)					4	108	cg
Cleptelmis sp.	0	0.0			4	108	cg
Heterlimnius sp.	31	0.3			4	108	cg
Lara sp.	0	0.0			4	108	sh
Narpus sp.	0	0.0			4	108	cg
Zaitzevia sp.	0	0.0			4	108	cg
Elmidae	0	0.0			4	108	cg
Diptera							
Agathon sp.	0	0.0			0	2	sc
Ceratopogonidae	2	0.0			6	108	pr
Chironomidae	1402	13.2			6	108	un
Chelifera sp.	0	0.0			6	95	pr
Oreogeton sp.	20	0.2			6	95	pr
Psychodidae	0	0.0			10	36	cg
Simuliidae	161	1.5			6	108	cg
Antocha sp.	2	0.0			3	24	cg
Dicranota sp.	27	0.3			3	24	pr
Hexatoma sp.	0	0.0			2	36	pr
Pedicia sp.	0	0.0			3	36	pr
Tipula sp.	0	0.0			4	36	om
Hydracarina	0	0.0			5	108	pr
Mollusca	0	0.0			8	108	cg
Nematoda	0	0.0			5	108	om
Turbellaria	50	0.5			4	108	cg

TOTAL NUMBER =	10605
TOTAL TAXA =	58
STD =	326.3
MEAN =	1326
SDI =	3.90
% SE Mean =	xxx
% Coef. Var.=	xxx
B/E =	0.17
EPT Abund =	8869
EPT/Chiron =	6.33
EPT % =	83.63
EPT taxa =	49
c/f tot =	118
c/f % =	1.11
c/g tot =	1590
c/g % =	14.99
sh tot =	1906
sh % =	17.97
sc tot =	4726
sc % =	44.56
p tot =	729
p% =	6.87
om tot =	2
om % =	0.02
unk tot =	1534
unk% =	14.46
sc/cf =	40.05
sc/(sc+cf) =	0.976
sh/total =	0.180

Macroinvertebrate Data--Montanore, Seasonal Totals
April 1992 (8 kick, 32 Hess samples), #51

	No.	Percent Total	Total Number	Percent Total	TV	TQ	FFG
Ephemeroptera			10199	50.08			
Baetis sp.	1263	6.2			5	72	cg
Diphetor sp.	0	0.0			4	72	cg
Caudatella hystrix	0	0.0			1	48	cg
Drunella coloradensis/ flavilinea	4	0.0			0	18	sc
Drunella doddsi	595	2.9			0	4	sc
Drunella grandis	0	0.0			0	24	sc
Drunella spinifera	21	0.1			0	24	pr
Drunella sp.	823	4.0			1	48	sc
Serratella sp.	142	0.7			2	48	cg
Cinygma sp.	0	0.0			2	48	sc
Cinygmula sp.	4659	22.9			4	21	sc
Epeorus sp.	2075	10.2			0	21	sc
Heptagenia sp.	0	0.0			4	48	sc
Ironodes sp.	0	0.0			3	48	sc
Leucrocuta sp.	8	0.0			1	48	sc
Nixe sp.	0	0.0			2	48	sc
Rhithrogena sp.	405	2.0			4	21	cg
Paraleptophlebia sp.	58	0.3			4	24	cg
Ameletus sp.	146	0.7			0	48	cg
Plecoptera			5133	25.20			
Capniidae	116	0.6			1	32	sh
Kathroperla perdita	1	0.0			1	24	cg
Sweltsa/Suwallia sp.	1089	5.3			1	24	pr
Despaxia augusta	55	0.3			0	18	sh
Paraleuctra sp.	1	0.0			0	18	sh
Perlomyia sp.	2	0.0			0	18	sh
Leuctridae	98	0.5			0	18	sh
Nemoura sp.	573	2.8			2	24	sh
Visoka cataractae	232	1.1			2	36	sh
Zapada cinctipes	7	0.0			2	16	sh
Zapada columbiana	198	1.0			2	16	sh
Nemouridae	1285	6.3			2	36	sh
Yoraperla brevis	26	0.1			1	12	sh
Acroneuria abnormis	0	0.0			0	6	pr
Doroneuria theodora	9	0.0			1	18	pr
Hesperoperla pacifica	2	0.0			2	18	pr
Perlidae	58	0.3			1	24	pr
Isoperla sp.	34	0.2			2	24	pr
Kogotus modestus	0	0.0			2	18	pr
Megarcys sp.	100	0.5			2	24	pr
Setvena bradleyi	2	0.0			2	48	pr
Skwala sp.	0	0.0			2	18	pr
Perlodidae	52	0.3			2	48	pr
Doddsia occidentalis	717	3.5			2	24	sc
Taenionema sp.	476	2.3			2	48	sc
Trichoptera			1413	6.94			
Micrasema sp.	5	0.0			1	24	sh
Anagapetus sp.	39	0.2			0	24	sc
Glossosoma sp.	251	1.2			0	24	sc
Arctopsyche grandis	0	0.0			4	18	cf
Hydropsyche sp.	0	0.0			8	108	cg
Parapsyche elsis	142	0.7			4	6	cf
Hydropsychidae	91	0.4			4	108	cf
Agraylea sp.	5	0.0			8	108	cg
Hydroptila sp.	0	0.0			6	108	cg
Ochrotrichia sp.	12	0.1			4	108	cg
Lepidostoma sp.	14	0.1			1	18	sh
Apatania sp.	0	0.0			4	18	sc
Chyrandra centralis	2	0.0			1	18	sh
Ecclisomyia sp.	2	0.0			2	24	cm
Neothremma alicia	4	0.0			4	8	sc
Oligophlebodes sp.	335	1.6			4	24	sc
Limnephilidae	257	1.3			4	108	un

Ap-k-h, #51 (cont.)

Dolophilodes sp.	0	0.0			2	24	cf
Wormaldia sp.	2	0.0			3	24	cf
Polycentropus sp.	0	0.0			6	72	pr
Rhyacophila Angelita grp.	4	0.0			0	18	pr
Rhyacophila Betteni grp.	108	0.5			0	18	pr
Rhyacophila Bif./Color. grp.	0	0.0			0	18	pr
Rhyacophila Brunnea grp.	50	0.2			0	18	pr
Rhyacophila hyalinata	10	0.0			0	18	pr
Rhyacophila iranda	1	0.0			0	18	pr
Rhyacophila Sibirica grp.	0	0.0			0	18	pr
Rhyacophila tucula	0	0.0			0	18	pr
Rhyacophila vaccua	3	0.0			0	18	pr
Rhyacophila verrula	3	0.0			0	18	pr
Rhyacophila vepulsa	50	0.2			0	18	pr
Rhyacophila sp.	23	0.1			0	18	pr
Trichopteran pupae	0	0.0			nn	nn	un
Other			3621	17.78			
Annelida(Oligochaeta)	139	0.7			5	108	cg
Coleoptera(Elmidae)					4	108	cg
Cleptelmis sp.	0	0.0			4	108	cg
Heterlimnius sp.	81	0.4			4	108	cg
Lara sp.	0	0.0			4	108	sh
Narpus sp.	0	0.0			4	108	cg
Zaitzevia sp.	0	0.0			4	108	cg
Elmidae	0	0.0			4	108	cg
Diptera							
Agathon sp.	4	0.0			0	2	sc
Ceratopogonidae	9	0.0			6	108	pr
Chironomidae	2766	13.6			6	108	un
Chelifera sp.	5	0.0			6	95	pr
Oreogeton sp.	44	0.2			6	95	pr
Psychodidae	0	0.0			10	36	cg
Simuliidae	348	1.7			6	108	cg
Antocha sp.	2	0.0			3	24	cg
Dicranota sp.	76	0.4			3	24	pr
Hexatoma sp.	6	0.0			2	36	pr
Pedicia sp.	0	0.0			3	36	pr
Tipula sp.	2	0.0			4	36	om
Hydracarina	7	0.0			5	108	pr
Mollusca	2	0.0			8	108	cg
Nematoda	47	0.2			5	108	om
Turbellaria	83	0.4			4	108	cg

TOTAL NUMBER =	20366
TOTAL TAXA =	73
STD =	607.0
MEAN =	509
SDI =	4.13
% SE Mean =	xxx
% Coef. Var.=	xxx
B/E =	0.12
EPT Abund =	16745
EPT/Chiron =	6.05
EPT % =	82.22
EPT taxa =	57
c/f tot =	235
c/f % =	1.15
c/g tot =	2687
c/g % =	13.19
sh tot =	2614
sh % =	12.84
sc tot =	9990
sc % =	49.05
p tot =	1766
p% =	8.67
om tot =	51
om % =	0.25
unk tot =	3023
unk% =	14.84
sc/cf =	42.51
sc/(sc+cf) =	0.977
sh/total =	0.128

Macroinvertebrate Data--Montanore, Seasonal Totals
August 1992 (32 Hess samples), #52

	No.	Percent Total	Total Number	Percent Total	TV	TQ	FFG
Ephemeroptera			5615	60.36			
Baetis sp.	640	6.9			5	72	cg
Diphetor sp.	0	0.0			4	72	cg
Caudatella hystrix	0	0.0			1	48	cg
Drunella coloradensis/ flavilinea	25	0.3			0	18	sc
Drunella doddsi	1004	10.8			0	4	sc
Drunella grandis	0	0.0			0	24	sc
Drunella spinifera	47	0.5			0	24	pr
Drunella sp.	163	1.8			1	48	sc
Serratella sp.	75	0.8			2	48	cg
Cinygma sp.	0	0.0			2	48	sc
Cinygmula sp.	862	9.3			4	21	sc
Epeorus sp.	625	6.7			0	21	sc
Heptagenia sp.	0	0.0			4	48	sc
Ironodes sp.	0	0.0			3	48	sc
Leucrocuta sp.	0	0.0			1	48	sc
Nixe sp.	0	0.0			2	48	sc
Rhithrogena sp.	1883	20.2			4	21	cg
Paraleptophlebia sp.	177	1.9			4	24	cg
Ameletus sp.	114	1.2			0	48	cg
Plecoptera			1457	15.66			
Capniidae	20	0.2			1	32	sh
Kathroperla perdita	7	0.1			1	24	cg
Sweltsa/Suwallia sp.	635	6.8			1	24	pr
Despaxia augusta	22	0.2			0	18	sh
Paraleuctra sp.	0	0.0			0	18	sh
Perlomyia sp.	0	0.0			0	18	sh
Leuctridae	32	0.3			0	18	sh
Nemoura sp.	0	0.0			2	24	sh
Visoka cataractae	94	1.0			2	36	sh
Zapada cinctipes	2	0.0			2	16	sh
Zapada columbiana	429	4.6			2	16	sh
Nemouridae	0	0.0			2	36	sh
Yoraperla brevis	30	0.3			1	12	sh
Acroneuria abnormis	1	0.0			0	6	pr
Doroneuria theodora	3	0.0			1	18	pr
Hesperoperla pacifica	0	0.0			2	18	pr
Perlidae	26	0.3			1	24	pr
Isoperla sp.	0	0.0			2	24	pr
Kogotus modestus	0	0.0			2	18	pr
Megarcys sp.	78	0.8			2	24	pr
Setvena bradleyi	0	0.0			2	48	pr
Skwala sp.	0	0.0			2	18	pr
Perlodidae	76	0.8			2	48	pr
Doddsia occidentalis	0	0.0			2	24	sc
Taenionema sp.	2	0.0			2	48	sc
Trichoptera			1162	12.49			
Micrasema sp.	18	0.2			1	24	sh
Anagapetus sp.	0	0.0			0	24	sc
Glossosoma sp.	83	0.9			0	24	sc
Arctopsyche grandis	7	0.1			4	18	cf
Hydropsyche sp.	0	0.0			8	108	cg
Parapsyche elsis	33	0.4			4	6	cf
Hydropsychidae	417	4.5			4	108	cf
Agraylea sp.	50	0.5			8	108	cg
Hydroptila sp.	0	0.0			6	108	cg
Ochrotrichia sp.	0	0.0			4	108	cg
Lepidostoma sp.	0	0.0			1	18	sh
Apatania sp.	0	0.0			4	18	sc
Chyrandra centralis	0	0.0			1	18	sh
Ecclisomyia sp.	1	0.0			2	24	om
Neothremma alicia	0	0.0			4	8	sc
Oligophlebodes sp.	296	3.2			4	24	sc
Limnephilidae	33	0.4			4	108	un

Aug-H, #52 (cont.)

Dolophilodes sp.	0	0.0			2	24	cf
Wormaldia sp.	0	0.0			3	24	cf
Polycentropus sp.	0	0.0			6	72	pr
Rhyacophila Angelita grp.	1	0.0			0	18	pr
Rhyacophila Betteni grp.	68	0.7			0	18	pr
Rhyacophila Bif./Color. grp.	0	0.0			0	18	pr
Rhyacophila Brunnea grp.	8	0.1			0	18	pr
Rhyacophila hyalinata	10	0.1			0	18	pr
Rhyacophila iranda	1	0.0			0	18	pr
Rhyacophila Sibirica grp.	4	0.0			0	18	pr
Rhyacophila tucula	1	0.0			0	18	pr
Rhyacophila vaccua	23	0.2			0	18	pr
Rhyacophila verrula	0	0.0			0	18	pr
Rhyacophila vepulsa	42	0.5			0	18	pr
Rhyacophila sp.	47	0.5			0	18	pr
Trichopteran pupae	19	0.2			nn	nn	un
Other			1069	11.49			
Annelida(Oligochaeta)	84	0.9			5	108	cg
Coleoptera(Elmidae)					4	108	cg
Cleptelmis sp.	0	0.0			4	108	cg
Heterlimnius sp.	102	1.1			4	108	cg
Lara sp.	0	0.0			4	108	sh
Narpus sp.	0	0.0			4	108	cg
Zaitzevia sp.	0	0.0			4	108	cg
Elmidae	5	0.1			4	108	cg
Diptera							
Agathon sp.	1	0.0			0	2	sc
Ceratopogonidae	5	0.1			6	108	pr
Chironomidae	776	8.3			6	108	un
Chelifera sp.	0	0.0			6	95	pr
Oreogeton sp.	18	0.2			6	95	pr
Psychodidae	0	0.0			10	36	cg
Simuliidae	2	0.0			6	108	cg
Antocha sp.	0	0.0			3	24	cg
Dicranota sp.	13	0.1			3	24	pr
Hexatoma sp.	20	0.2			2	36	pr
Pedicia sp.	0	0.0			3	36	pr
Tipula sp.	0	0.0			4	36	om
Hydracarina	9	0.1			5	108	pr
Mollusca	0	0.0			8	108	cg
Nematoda	2	0.0			5	108	om
Turbellaria	32	0.3			4	108	cg

TOTAL NUMBER =	9303
TOTAL TAXA =	59
STD =	261.3
MEAN =	291
SDI =	4.13
% SE Mean =	xxx
% Coef. Var.=	xxx
B/E =	0.11
EPT Abund =	8234
EPT/Chiron =	10.61
EPT % =	88.51
EPT taxa =	46
c/f tot =	457
c/f % =	4.91
c/g tot =	3171
c/g % =	34.09
sh tot =	647
sh % =	6.95
sc tot =	3061
sc % =	32.90
p tot =	1136
p% =	12.21
om tot =	3
om % =	0.03
unk tot =	828
unk% =	8.90
sc/cf =	6.70
sc/(sc+cf) =	0.870
sh/total =	0.070

Macroinvertebrate Data--Montanore, Seasonal Totals
August 1992 (8 kick samples), #53

	No.	Percent Total	Total Number	Percent Total	TV	TQ	FFG
Ephemeroptera			3561	46.82			
Baetis sp.	866	11.4			5	72	cg
Diphetor sp.	0	0.0			4	72	cg
Caudatella hystrix	0	0.0			1	48	cg
Drunella coloradensis/ flavilinea	33	0.4			0	18	sc
Drunella doddsi	475	6.2			0	4	sc
Drunella grandis	0	0.0			0	24	sc
Drunella spinifera	14	0.2			0	24	pr
Drunella sp.	31	0.4			1	48	sc
Serratella sp.	101	1.3			2	48	cg
Cinygma sp.	0	0.0			2	48	sc
Cinygmula sp.	399	5.2			4	21	sc
Epeorus sp.	649	8.5			0	21	sc
Heptagenia sp.	0	0.0			4	48	sc
Ironodes sp.	0	0.0			3	48	sc
Leucrocuta sp.	0	0.0			1	48	sc
Nixe sp.	0	0.0			2	48	sc
Rhithrogena sp.	794	10.4			4	21	cg
Paraleptophlebia sp.	141	1.9			4	24	cg
Ameletus sp.	58	0.8			0	48	cg
Plecoptera			1678	22.06			
Capniidae	14	0.2			1	32	sh
Kathroperla perdita	0	0.0			1	24	cg
Sweltsa/Suwallia sp.	291	3.8			1	24	pr
Despaxia augusta	22	0.3			0	18	sh
Paraleuctra sp.	0	0.0			0	18	sh
Perlomyia sp.	0	0.0			0	18	sh
Leuctridae	24	0.3			0	18	sh
Nemoura sp.	0	0.0			2	24	sh
Visoka cataractae	48	0.6			2	36	sh
Zapada cinctipes	8	0.1			2	16	sh
Zapada columbiana	579	7.6			2	16	sh
Nemouridae	556	7.3			2	36	sh
Yoraperla brevis	17	0.2			1	12	sh
Acroneuria abnormis	0	0.0			0	6	pr
Doroneuria theodora	5	0.1			1	18	pr
Hesperoperla pacifica	0	0.0			2	18	pr
Perlidae	20	0.3			1	24	pr
Isoperla sp.	0	0.0			2	24	pr
Kogotus modestus	0	0.0			2	18	pr
Megarcys sp.	38	0.5			2	24	pr
Setvena bradleyi	0	0.0			2	48	pr
Skwala sp.	0	0.0			2	18	pr
Perlodidae	48	0.6			2	48	pr
Doddsia occidentalis	0	0.0			2	24	sc
Taenionema sp.	8	0.1			2	48	sc
Trichoptera			1077	14.16			
Micrasema sp.	7	0.1			1	24	sh
Anagapetus sp.	0	0.0			0	24	sc
Glossosoma sp.	20	0.3			0	24	sc
Arctopsyche grandis	17	0.2			4	18	cf
Hydropsyche sp.	0	0.0			8	108	cg
Parapsyche elsis	25	0.3			4	6	cf
Hydropsychidae	462	6.1			4	108	cf
Agraylea sp.	38	0.5			8	108	cg
Hydroptila sp.	0	0.0			6	108	cg
Ochrotrichia sp.	0	0.0			4	108	cg
Lepidostoma sp.	0	0.0			1	18	sh
Apatania sp.	0	0.0			4	18	sc
Chyrandra centralis	0	0.0			1	18	sh
Ecclisomyia sp.	1	0.0			2	24	cm
Neothremma alicia	0	0.0			4	8	sc
Oligophlebodes sp.	299	3.9			4	24	sc
Limnephilidae	21	0.3			4	108	un

Aug-k, (8 kick samples), #53

Dolophilodes sp.	9	0.1			2	24	cf
Wormaldia sp.	1	0.0			3	24	cf
Polycentropus sp.	0	0.0			6	72	pr
Rhyacophila Angelita grp.	1	0.0			0	18	pr
Rhyacophila Betteni grp.	69	0.9			0	18	pr
Rhyacophila Bif./Color. grp.	0	0.0			0	18	pr
Rhyacophila Brunnea grp.	30	0.4			0	18	pr
Rhyacophila hyalinata	4	0.1			0	18	pr
Rhyacophila iranda	0	0.0			0	18	pr
Rhyacophila Sibirica grp.	8	0.1			0	18	pr
Rhyacophila tucula	0	0.0			0	18	pr
Rhyacophila vaccua	9	0.1			0	18	pr
Rhyacophila verrula	0	0.0			0	18	pr
Rhyacophila vepulsa	9	0.1			0	18	pr
Rhyacophila sp.	33	0.4			0	18	pr
Trichopteran pupae	14	0.2			nn	nn	un
Other			1289	16.95			
Annelida(Oligochaeta)	48	0.6			5	108	cg
Coleoptera(Elmidae)					4	108	cg
Cleptelmis sp.	0	0.0			4	108	cg
Heterlimnius sp.	55	0.7			4	108	cg
Lara sp.	0	0.0			4	108	sh
Narpus sp.	0	0.0			4	108	cg
Zaitzevia sp.	0	0.0			4	108	cg
Elmidae	5	0.1			4	108	cg
Diptera							
Agathon sp.	0	0.0			0	2	sc
Ceratopogonidae	1	0.0			6	108	pr
Chironomidae	901	11.8			6	108	un
Chelifera sp.	0	0.0			6	95	pr
Oreogeton sp.	5	0.1			6	95	pr
Psychodidae	0	0.0			10	36	cg
Simuliidae	211	2.8			6	108	cg
Antocha sp.	0	0.0			3	24	cg
Dicranota sp.	10	0.1			3	24	pr
Hexatoma sp.	8	0.1			2	36	pr
Pedicia sp.	0	0.0			3	36	pr
Tipula sp.	0	0.0			4	36	om
Hydracarina	1	0.0			5	108	pr
Mollusca	0	0.0			8	108	cg
Nematoda	2	0.0			5	108	om
Turbellaria	42	0.6			4	108	cg

TOTAL NUMBER =	7605
TOTAL TAXA =	57
STD =	188.6
MEAN =	951
SDI =	4.27
% SE Mean =	xxx
% Coef. Var.=	xxx
B/E =	0.24
EPT Abund =	6316
EPT/Chiron =	7.01
EPT % =	83.05
EPT taxa =	45
c/f tot =	514
c/f % =	6.76
c/g tot =	2359
c/g % =	31.02
sh tot =	1275
sh % =	16.77
sc tot =	1914
sc % =	25.17
p tot =	604
p% =	7.94
om tot =	3
om % =	0.04
unk tot =	936
unk% =	12.31
sc/cf =	3.72
sc/(sc+cf) =	0.788
sh/total =	0.168

Macroinvertebrate Data--Montanore, Seasonal Totals
August 1992 (8 kick, 32 Hess samples), #54

	No.	Percent Total	Total Number	Percent Total	TV	TQ	FFG
Ephemeroptera			9176	54.27			
Baetis sp.	1506	8.9			5	72	cg
Diphetor sp.	0	0.0			4	72	cg
Caudatella hystrix	0	0.0			1	48	cg
Drunella coloradensis/ flavilinea	58	0.3			0	18	sc
Drunella doddsi	1479	8.7			0	4	sc
Drunella grandis	0	0.0			0	24	sc
Drunella spinifera	61	0.4			0	24	pr
Drunella sp.	194	1.1			1	48	sc
Serratella sp.	176	1.0			2	48	cg
Cinygma sp.	0	0.0			2	48	sc
Cinygmula sp.	1261	7.5			4	21	sc
Epeorus sp.	1274	7.5			0	21	sc
Heptagenia sp.	0	0.0			4	48	sc
Ironodes sp.	0	0.0			3	48	sc
Leucrocuta sp.	0	0.0			1	48	sc
Nixe sp.	0	0.0			2	48	sc
Rhithrogena sp.	2677	15.8			4	21	cg
Paraleptophlebia sp.	318	1.9			4	24	cg
Ameletus sp.	172	1.0			0	48	cg
Plecoptera			3135	18.54			
Capniidae	34	0.2			1	32	sh
Kathroperla perdita	7	0.0			1	24	cg
Sweltsa/Suwallia sp.	926	5.5			1	24	pr
Despaxia augusta	44	0.3			0	18	sh
Paraleuctra sp.	0	0.0			0	18	sh
Perlomyia sp.	0	0.0			0	18	sh
Leuctridae	56	0.3			0	18	sh
Nemoura sp.	0	0.0			2	24	sh
Visoka cataractae	142	0.8			2	36	sh
Zapada cinctipes	10	0.1			2	16	sh
Zapada columbiana	1008	6.0			2	16	sh
Nemouridae	556	3.3			2	36	sh
Yoraperla brevis	47	0.3			1	12	sh
Acroneuria abnormis	1	0.0			0	6	pr
Doroneuria theodora	8	0.0			1	18	pr
Hesperoperla pacifica	0	0.0			2	18	pr
Perlidae	46	0.3			1	24	pr
Isoperla sp.	0	0.0			2	24	pr
Kogotus modestus	0	0.0			2	18	pr
Megarcys sp.	116	0.7			2	24	pr
Setvena bradleyi	0	0.0			2	48	pr
Skwala sp.	0	0.0			2	18	pr
Perlodidae	124	0.7			2	48	pr
Doddsia occidentalis	0	0.0			2	24	sc
Taenionema sp.	10	0.1			2	48	sc
Trichoptera			2239	13.24			
Micrasema sp.	25	0.1			1	24	sh
Anagapetus sp.	0	0.0			0	24	sc
Glossosoma sp.	103	0.6			0	24	sc
Arctopsyche grandis	24	0.1			4	18	cf
Hydropsyche sp.	0	0.0			8	108	cg
Parapsyche elsis	58	0.3			4	6	cf
Hydropsychidae	879	5.2			4	108	cf
Agraylea sp.	88	0.5			8	108	cg
Hydroptila sp.	0	0.0			6	108	cg
Ochrotrichia sp.	0	0.0			4	108	cg
Lepidostoma sp.	0	0.0			1	18	sh
Apatania sp.	0	0.0			4	18	sc
Chyrandra centralis	0	0.0			1	18	sh
Ecclisomyia sp.	2	0.0			2	24	cm
Neothremma alicia	0	0.0			4	8	sc
Oligophlebodes sp.	595	3.5			4	24	sc
Limnephilidae	54	0.3			4	108	un

Aug-k-H, #54 (cont.)

Dolophilodes sp.	9	0.1			2	24	cf
Wormaldia sp.	1	0.0			3	24	cf
Polycentropus sp.	0	0.0			6	72	pr
Rhyacophila Angelita grp.	2	0.0			0	18	pr
Rhyacophila Betteni grp.	137	0.8			0	18	pr
Rhyacophila Bif./Color. grp.	0	0.0			0	18	pr
Rhyacophila Brunnea grp.	38	0.2			0	18	pr
Rhyacophila hyalinata	14	0.1			0	18	pr
Rhyacophila iranda	1	0.0			0	18	pr
Rhyacophila Sibirica grp.	12	0.1			0	18	pr
Rhyacophila tucula	1	0.0			0	18	pr
Rhyacophila vaccua	32	0.2			0	18	pr
Rhyacophila verrula	0	0.0			0	18	pr
Rhyacophila vepulsa	51	0.3			0	18	pr
Rhyacophila sp.	80	0.5			0	18	pr
Trichopteran pupae	33	0.2			nn	nn	un
Other			2358	13.95			
Annelida(Oligochaeta)	132	0.8			5	108	cg
Coleoptera(Elmidae)					4	108	cg
Cleptelmis sp.	0	0.0			4	108	cg
Heterlimnius sp.	157	0.9			4	108	cg
Lara sp.	0	0.0			4	108	sh
Narpus sp.	0	0.0			4	108	cg
Zaitzevia sp.	0	0.0			4	108	cg
Elmidae	10	0.1			4	108	cg
Diptera							
Agathon sp.	1	0.0			0	2	sc
Ceratopogonidae	6	0.0			6	108	pr
Chironomidae	1677	9.9			6	108	un
Chelifera sp.	0	0.0			6	95	pr
Oreogeton sp.	23	0.1			6	95	pr
Psychodidae	0	0.0			10	36	cg
Simuliidae	213	1.3			6	108	cg
Antocha sp.	0	0.0			3	24	cg
Dicranota sp.	23	0.1			3	24	pr
Hexatoma sp.	28	0.2			2	36	pr
Pedicia sp.	0	0.0			3	36	pr
Tipula sp.	0	0.0			4	36	om
Hydracarina	10	0.1			5	108	pr
Mollusca	0	0.0			8	108	cg
Nematoda	4	0.0			5	108	om
Turbellaria	74	0.4			4	108	cg

TOTAL NUMBER =	16908
TOTAL TAXA =	62
STD =	430.3
MEAN =	423
SDI =	4.29
% SE Mean =	xxx
% Coef. Var.=	xxx
B/E =	0.16
EPT Abund =	14550
EPT/Chiron =	8.68
EPT % =	86.05
EPT taxa =	49
c/f tot =	971
c/f % =	5.74
c/g tot =	5530
c/g % =	32.71
sh tot =	1922
sh % =	11.37
sc tot =	4975
sc % =	29.42
p tot =	1740
p% =	10.29
om tot =	6
om % =	0.04
unk tot =	1764
unk% =	10.43
sc/cf =	5.12
sc/(sc+cf) =	0.837
sh/total =	0.114

Macroinvertebrate Data--Montanore, Seasonal Totals
October 1992 (32 Hess samples), #55

	No.	Percent Total	Total Number	Percent Total	TV	TQ	FFG
Ephemeroptera			7407	45.13			
Baetis sp.	1841	11.2			5	72	cg
Diphetor sp.	84	0.5			4	72	cg
Caudatella hystrix	0	0.0			1	48	cg
Drunella coloradensis/ flavilinea	0	0.0			0	18	sc
Drunella doddsi	409	2.5			0	4	sc
Drunella grandis	1	0.0			0	24	sc
Drunella spinifera	80	0.5			0	24	pr
Drunella sp.	258	1.6			1	48	sc
Serratella sp.	23	0.1			2	48	cg
Cinygma sp.	7	0.0			2	48	sc
Cinygmula sp.	2910	17.7			4	21	sc
Epeorus sp.	158	1.0			0	21	sc
Heptagenia sp.	0	0.0			4	48	sc
Ironodes sp.	4	0.0			3	48	sc
Leucrocuta sp.	0	0.0			1	48	sc
Nixe sp.	68	0.4			2	48	sc
Rhithrogena sp.	1382	8.4			4	21	cg
Paraleptophlebia sp.	119	0.7			4	24	cg
Ameletus sp.	63	0.4			0	48	cg
Plecoptera			4326	26.36			
Capniidae	158	1.0			1	32	sh
Kathroperla perdita	2	0.0			1	24	cg
Sweltsa/Suwallia sp.	841	5.1			1	24	pr
Despaxia augusta	198	1.2			0	18	sh
Paraleuctra sp.	0	0.0			0	18	sh
Perlomyia sp.	1	0.0			0	18	sh
Leuctridae	29	0.2			0	18	sh
Nemoura sp.	0	0.0			2	24	sh
Visoka cataractae	122	0.7			2	36	sh
Zapada cinctipes	56	0.3			2	16	sh
Zapada columbiana	365	2.2			2	16	sh
Nemouridae	0	0.0			2	36	sh
Yoraperla brevis	29	0.2			1	12	sh
Acroneuria abnormis	0	0.0			0	6	pr
Doroneuria theodora	23	0.1			1	18	pr
Hesperoperla pacifica	6	0.0			2	18	pr
Perlidae	27	0.2			1	24	pr
Isoperla sp.	17	0.1			2	24	pr
Kogotus modestus	0	0.0			2	18	pr
Megarcys sp.	44	0.3			2	24	pr
Setvena bradleyi	0	0.0			2	48	pr
Skwala sp.	0	0.0			2	18	pr
Perlodidae	37	0.2			2	48	pr
Doddsia occidentalis	0	0.0			2	24	sc
Taenionema sp.	2371	14.4			2	48	sc
Trichoptera			2984	18.18			
Micrasema sp.	24	0.1			1	24	sh
Anagapetus sp.	34	0.2			0	24	sc
Glossosoma sp.	1181	7.2			0	24	sc
Arctopsyche grandis	76	0.5			4	18	cf
Hydropsyche sp.	0	0.0			8	108	cg
Parapsyche elsis	161	1.0			4	6	cf
Hydropsychidae	683	4.2			4	108	cf
Agraylea sp.	84	0.5			8	108	cg
Hydroptila sp.	1	0.0			6	108	cg
Ochrotrichia sp.	0	0.0			4	108	cg
Lepidostoma sp.	0	0.0			1	18	sh
Apatania sp.	0	0.0			4	18	sc
Chyrandra centralis	0	0.0			1	18	sh
Ecclisomyia sp.	0	0.0			2	24	om
Neothremma alicia	0	0.0			4	8	sc
Oligophlebodes sp.	272	1.7			4	24	sc
Limnephilidae	111	0.7			4	108	un

Oct-H, #55 (cont.)

Dolophilodes sp.	0	0.0			2	24	cf
Wormaldia sp.	6	0.0			3	24	cf
Polycentropus sp.	0	0.0			6	72	pr
Rhyacophila Angelita grp.	21	0.1			0	18	pr
Rhyacophila Betteni grp.	198	1.2			0	18	pr
Rhyacophila Bif./Color. grp.	0	0.0			0	18	pr
Rhyacophila Brunnea grp.	33	0.2			0	18	pr
Rhyacophila hyalinata	13	0.1			0	18	pr
Rhyacophila iranda	14	0.1			0	18	pr
Rhyacophila Sibirica grp.	9	0.1			0	18	pr
Rhyacophila tucula	0	0.0			0	18	pr
Rhyacophila vaccua	0	0.0			0	18	pr
Rhyacophila verrula	0	0.0			0	18	pr
Rhyacophila vepulsa	25	0.2			0	18	pr
Rhyacophila sp.	37	0.2			0	18	pr
Trichopteran pupae	1	0.0			nn	nn	un
Other			1694	10.32			
Annelida(Oligochaeta)	122	0.7			5	108	cg
Coleoptera(Elmidae)					4	108	cg
Cleptelmis sp.	0	0.0			4	108	cg
Heterlimnius sp.	63	0.4			4	108	cg
Lara sp.	0	0.0			4	108	sh
Narpus sp.	1	0.0			4	108	cg
Zaitzevia sp.	0	0.0			4	108	cg
Elmidae	2	0.0			4	108	cg
Diptera							
Agathon sp.	0	0.0			0	2	sc
Ceratopogonidae	5	0.0			6	108	pr
Chironomidae	1339	8.2			6	108	un
Chelifera sp.	6	0.0			6	95	pr
Oreogeton sp.	13	0.1			6	95	pr
Psychodidae	1	0.0			10	36	cg
Simuliidae	5	0.0			6	108	cg
Antocha sp.	34	0.2			3	24	cg
Dicranota sp.	20	0.1			3	24	pr
Hexatoma sp.	18	0.1			2	36	pr
Pedicia sp.	0	0.0			3	36	pr
Tipula sp.	2	0.0			4	36	om
Hydracarina	4	0.0			5	108	pr
Mollusca	0	0.0			8	108	cg
Nematoda	5	0.0			5	108	om
Turbellaria	54	0.3			4	108	cg

TOTAL NUMBER =	16411
TOTAL TAXA =	69
STD =	466.6
MEAN =	513
SDI =	4.12
% SE Mean =	xxx
% Coef. Var.=	xxx
B/E =	0.25
EPT Abund =	14717
EPT/Chiron =	10.99
EPT % =	89.68
EPT taxa =	52
c/f tot =	926
c/f % =	5.64
c/g tot =	3881
c/g % =	23.65
sh tot =	982
sh % =	5.98
sc tot =	7673
sc % =	46.76
p tot =	1491
p% =	9.09
om tot =	7
om % =	0.04
unk tot =	1451
unk% =	8.84
sc/cf =	8.29
sc/(sc+cf) =	0.892
sh/total =	0.060

Macroinvertebrate Data--Montanore, Seasonal Totals
October 1992 (8 kick samples), #56

	No.	Percent Total	Total Number	Percent Total	TV	TQ	FFG
Ephemeroptera			7775	49.16			
Baetis sp.	2392	15.1			5	72	cg
Diphetor sp.	184	1.2			4	72	cg
Caudatella hystrix	0	0.0			1	48	cg
Drunella coloradensis/ flavilinea	0	0.0			0	18	sc
Drunella doddsi	357	2.3			0	4	sc
Drunella grandis	2	0.0			0	24	sc
Drunella spinifera	73	0.5			0	24	pr
Drunella sp.	411	2.6			1	48	sc
Serratella sp.	35	0.2			2	48	cg
Cinygma sp.	0	0.0			2	48	sc
Cinygmula sp.	2689	17.0			4	21	sc
Epeorus sp.	167	1.1			0	21	sc
Heptagenia sp.	38	0.2			4	48	sc
Ironodes sp.	2	0.0			3	48	sc
Leucrocuta sp.	0	0.0			1	48	sc
Nixe sp.	54	0.3			2	48	sc
Rhithrogena sp.	1024	6.5			4	21	cg
Paraleptophlebia sp.	224	1.4			4	24	cg
Ameletus sp.	123	0.8			0	48	cg
Plecoptera			4649	29.39			
Capniidae	82	0.5			1	32	sh
Kathroperla perdita	0	0.0			1	24	cg
Sweltsa/Suwallia sp.	609	3.9			1	24	pr
Despaxia augusta	77	0.5			0	18	sh
Paraleuctra sp.	0	0.0			0	18	sh
Perlomyia sp.	0	0.0			0	18	sh
Leuctridae	0	0.0			0	18	sh
Nemoura sp.	0	0.0			2	24	sh
Visoka cataractae	137	0.9			2	36	sh
Zapada cinctipes	220	1.4			2	16	sh
Zapada columbiana	815	5.2			2	16	sh
Nemouridae	0	0.0			2	36	sh
Yoraperla brevis	42	0.3			1	12	sh
Acroneuria abnormis	0	0.0			0	6	pr
Doroneuria theodora	19	0.1			1	18	pr
Hesperoperla pacifica	0	0.0			2	18	pr
Perlidae	44	0.3			1	24	pr
Isoperla sp.	17	0.1			2	24	pr
Kogotus modestus	0	0.0			2	18	pr
Megarcys sp.	52	0.3			2	24	pr
Setvena bradleyi	0	0.0			2	48	pr
Skwala sp.	0	0.0			2	18	pr
Perlodidae	39	0.2			2	48	pr
Doddsia occidentalis	0	0.0			2	24	sc
Taenionema sp.	2496	15.8			2	48	sc
Trichoptera			1964	12.42			
Micrasema sp.	67	0.4			1	24	sh
Anagapetus sp.	30	0.2			0	24	sc
Glossosoma sp.	274	1.7			0	24	sc
Arctopsyche grandis	129	0.8			4	18	cf
Hydropsyche sp.	0	0.0			8	108	cg
Parapsyche elsis	115	0.7			4	6	cf
Hydropsychidae	628	4.0			4	108	cf
Agraylea sp.	53	0.3			8	108	cg
Hydroptila sp.	1	0.0			6	108	cg
Ochrotrichia sp.	0	0.0			4	108	cg
Lepidostoma sp.	0	0.0			1	18	sh
Apatania sp.	0	0.0			4	18	sc
Chyrandra centralis	0	0.0			1	18	sh
Ecclisomyia sp.	0	0.0			2	24	om
Neothremma alicia	5	0.0			4	8	sc
Oligophlebodes sp.	227	1.4			4	24	sc
Limnephilidae	92	0.6			4	108	un

Oct-k, #56 (cont.)

Dolophilodes sp.	3	0.0			2	24	cf
Wormaldia sp.	0	0.0			3	24	cf
Polycentropus sp.	0	0.0			6	72	pr
Rhyacophila Angelita grp.	6	0.0			0	18	pr
Rhyacophila Betteni grp.	125	0.8			0	18	pr
Rhyacophila Bif./Color. grp.	0	0.0			0	18	pr
Rhyacophila Brunnea grp.	63	0.4			0	18	pr
Rhyacophila hyalinata	5	0.0			0	18	pr
Rhyacophila iranda	19	0.1			0	18	pr
Rhyacophila Sibirica grp.	53	0.3			0	18	pr
Rhyacophila tucula	0	0.0			0	18	pr
Rhyacophila vaccua	0	0.0			0	18	pr
Rhyacophila verrula	0	0.0			0	18	pr
Rhyacophila vepulsa	21	0.1			0	18	pr
Rhyacophila sp.	47	0.3			0	18	pr
Trichopteran pupae	1	0.0			nn	nn	un
Other			1429	9.03			
Annelida(Oligochaeta)	56	0.4			5	108	cg
Coleoptera(Elmidae)					4	108	cg
Cleptelmis sp.	0	0.0			4	108	cg
Heterlimnius sp.	81	0.5			4	108	cg
Lara sp.	0	0.0			4	108	sh
Narpus sp.	0	0.0			4	108	cg
Zaitzevia sp.	0	0.0			4	108	cg
Elmidae	0	0.0			4	108	cg
Diptera							
Agathon sp.	0	0.0			0	2	sc
Ceratopogonidae	1	0.0			6	108	pr
Chironomidae	1106	7.0			6	108	un
Chelifera sp.	0	0.0			6	95	pr
Oreogeton sp.	8	0.1			6	95	pr
Psychodidae	0	0.0			10	36	cg
Simuliidae	13	0.1			6	108	cg
Antocha sp.	26	0.2			3	24	cg
Dicranota sp.	23	0.1			3	24	pr
Hexatoma sp.	18	0.1			2	36	pr
Pedicia sp.	0	0.0			3	36	pr
Tipula sp.	0	0.0			4	36	om
Hydracarina	14	0.1			5	108	pr
Mollusca	0	0.0			8	108	cg
Nematoda	5	0.0			5	108	om
Turbellaria	78	0.5			4	108	cg

TOTAL NUMBER =	15817
TOTAL TAXA =	61
STD =	459.6
MEAN =	1977
SDI =	4.14
% SE Mean =	xxx
% Coef. Var.=	xxx
B/E =	0.31
EPT Abund =	14388
EPT/Chiron =	13.01
EPT % =	90.97
EPT taxa =	49
c/f tot =	875
c/f % =	5.53
c/g tot =	4290
c/g % =	27.12
sh tot =	1440
sh % =	9.10
sc tot =	6752
sc % =	42.69
p tot =	1256
p% =	7.94
om tot =	5
om % =	0.03
unk tot =	1199
unk% =	7.58
sc/cf =	7.72
sc/(sc+cf) =	0.885
sh/total =	0.091

Macroinvertebrate Data--Montanore, Seasonal Totals
October 1992 (8 kick, 32 Hess samples), #57

	No.	Percent Total	Total Number	Percent Total	TV	TQ	FFG
Ephemeroptera			15182	47.11			
Baetis sp.	4233	13.1			5	72	cg
Diphetor sp.	268	0.8			4	72	cg
Caudatella hystrix	0	0.0			1	48	cg
Drunella coloradensis/ flavilinea	0	0.0			0	18	sc
Drunella doddsi	766	2.4			0	4	sc
Drunella grandis	3	0.0			0	24	sc
Drunella spinifera	153	0.5			0	24	pr
Drunella sp.	669	2.1			1	48	sc
Serratella sp.	58	0.2			2	48	cg
Cinygma sp.	7	0.0			2	48	sc
Cinygmula sp.	5599	17.4			4	21	sc
Epeorus sp.	325	1.0			0	21	sc
Heptagenia sp.	38	0.1			4	48	sc
Ironodes sp.	6	0.0			3	48	sc
Leucrocuta sp.	0	0.0			1	48	sc
Nixe sp.	122	0.4			2	48	sc
Rhithrogena sp.	2406	7.5			4	21	cg
Paraleptophlebia sp.	343	1.1			4	24	cg
Ameletus sp.	186	0.6			0	48	cg
Plecoptera			8975	27.85			
Capniidae	240	0.7			1	32	sh
Kathroperla perdita	2	0.0			1	24	cg
Sweltsa/Suwallia sp.	1450	4.5			1	24	pr
Despaxia augusta	275	0.9			0	18	sh
Paraleuctra sp.	0	0.0			0	18	sh
Perlomyia sp.	1	0.0			0	18	sh
Leuctridae	29	0.1			0	18	sh
Nemoura sp.	0	0.0			2	24	sh
Visoka cataractae	259	0.8			2	36	sh
Zapada cinctipes	276	0.9			2	16	sh
Zapada columbiana	1180	3.7			2	16	sh
Nemouridae	0	0.0			2	36	sh
Yoraperla brevis	71	0.2			1	12	sh
Acroneuria abnormis	0	0.0			0	6	pr
Doroneuria theodora	42	0.1			1	18	pr
Hesperoperla pacifica	6	0.0			2	18	pr
Perlidae	71	0.2			1	24	pr
Isoperla sp.	34	0.1			2	24	pr
Kogotus modestus	0	0.0			2	18	pr
Megarcys sp.	96	0.3			2	24	pr
Setvena bradleyi	0	0.0			2	48	pr
Skwala sp.	0	0.0			2	18	pr
Perlodidae	76	0.2			2	48	pr
Doddsia occidentalis	0	0.0			2	24	sc
Taenionema sp.	4867	15.1			2	48	sc
Trichoptera			4948	15.35			
Micrasema sp.	91	0.3			1	24	sh
Anagapetus sp.	64	0.2			0	24	sc
Glossosoma sp.	1455	4.5			0	24	sc
Arctopsyche grandis	205	0.6			4	18	cf
Hydropsyche sp.	0	0.0			8	108	cg
Parapsyche elsis	276	0.9			4	6	cf
Hydropsychidae	1311	4.1			4	108	cf
Agraylea sp.	137	0.4			8	108	cg
Hydroptila sp.	2	0.0			6	108	cg
Ochrotrichia sp.	0	0.0			4	108	cg
Lepidostoma sp.	0	0.0			1	18	sh
Apatania sp.	0	0.0			4	18	sc
Chyrandra centralis	0	0.0			1	18	sh
Ecclisomyia sp.	0	0.0			2	24	om
Neothremma alicia	5	0.0			4	8	sc
Oligophlebodes sp.	499	1.5			4	24	sc
Limnephilidae	203	0.6			4	108	un

Oct-k-H, #57 (cont.)

Dolophilodes sp.	3	0.0			2	24	cf
Wormaldia sp.	6	0.0			3	24	cf
Polycentropus sp.	0	0.0			6	72	pr
Rhyacophila Angelita grp.	27	0.1			0	18	pr
Rhyacophila Betteni grp.	323	1.0			0	18	pr
Rhyacophila Bif./Color. grp.	0	0.0			0	18	pr
Rhyacophila Brunnea grp.	96	0.3			0	18	pr
Rhyacophila hyalinata	18	0.1			0	18	pr
Rhyacophila iranda	33	0.1			0	18	pr
Rhyacophila Sibirica grp.	62	0.2			0	18	pr
Rhyacophila tucula	0	0.0			0	18	pr
Rhyacophila vaccua	0	0.0			0	18	pr
Rhyacophila verrula	0	0.0			0	18	pr
Rhyacophila vepulsa	46	0.1			0	18	pr
Rhyacophila sp.	84	0.3			0	18	pr
Trichopteran pupae	2	0.0			nn	nn	un
Other			3123	9.69			
Annelida(Oligochaeta)	178	0.6			5	108	cg
Coleoptera(Elmidae)					4	108	cg
Cleptelmis sp.	0	0.0			4	108	cg
Heterlimnius sp.	144	0.4			4	108	cg
Lara sp.	0	0.0			4	108	sh
Narpus sp.	1	0.0			4	108	cg
Zaitzevia sp.	0	0.0			4	108	cg
Elmidae	2	0.0			4	108	cg
Diptera							
Agathon sp.	0	0.0			0	2	sc
Ceratopogonidae	6	0.0			6	108	pr
Chironomidae	2445	7.6			6	108	un
Chelifera sp.	6	0.0			6	95	pr
Oreogeton sp.	21	0.1			6	95	pr
Psychodidae	1	0.0			10	36	cg
Simuliidae	18	0.1			6	108	cg
Antocha sp.	60	0.2			3	24	cg
Dicranota sp.	43	0.1			3	24	pr
Hexatoma sp.	36	0.1			2	36	pr
Pedicia sp.	0	0.0			3	36	pr
Tipula sp.	2	0.0			4	36	om
Hydracarina	18	0.1			5	108	pr
Mollusca	0	0.0			8	108	cg
Nematoda	10	0.0			5	108	om
Turbellaria	132	0.4			4	108	cg

TOTAL NUMBER =	32228
TOTAL TAXA =	72
STD =	916.6
MEAN =	806
SDI =	4.17
% SE Mean =	xxx
% Coef. Var.=	xxx
B/E =	0.28
EPT Abund =	29105
EPT/Chiron =	11.90
EPT % =	90.31
EPT taxa =	55
c/f tot =	1801
c/f % =	5.59
c/g tot =	8171
c/g % =	25.35
sh tot =	2422
sh % =	7.52
sc tot =	14425
sc % =	44.76
p tot =	2747
p% =	8.52
om tot =	12
om % =	0.04
unk tot =	2650
unk% =	8.22
sc/cf =	8.01
sc/(sc+cf) =	0.889
sh/total =	0.075

Appendix F. Macroinvertebrate annual totals, 1992.

Macroinvertebrate Data--Montanore, Annual Totals
96 Hess samples, #58

	No.	Percent Total	Total Number	Percent Total	TV	TQ	FFG
Ephemeroptera			17734	49.99			
Baetis sp.	2829	8.0			5	72	cg
Diphetor sp.	84	0.2			4	72	cg
Caudatella hystrix	0	0.0			1	48	cg
Drunella coloradensis/ flavilinea	28	0.1			0	18	sc
Drunella doddsi	1824	5.1			0	4	sc
Drunella grandis	1	0.0			0	24	sc
Drunella spinifera	136	0.4			0	24	pr
Drunella sp.	758	2.1			1	48	sc
Serratella sp.	128	0.4			2	48	cg
Cinygma sp.	7	0.0			2	48	sc
Cinygmula sp.	6147	17.3			4	21	sc
Epeorus sp.	1634	4.6			0	21	sc
Heptagenia sp.	0	0.0			4	48	sc
Ironodes sp.	4	0.0			3	48	sc
Leucrocuta sp.	4	0.0			1	48	sc
Nixe sp.	68	0.2			2	48	sc
Rhithrogena sp.	3516	9.9			4	21	cg
Paraleptophlebia sp.	321	0.9			4	24	cg
Ameletus sp.	245	0.7			0	48	cg
Plecoptera			8051	22.69			
Capniidae	214	0.6			1	32	sh
Kathroperla perdita	10	0.0			1	24	cg
Sweltsa/Suwallia sp.	2109	5.9			1	24	pr
Despaxia augusta	226	0.6			0	18	sh
Paraleuctra sp.	1	0.0			0	18	sh
Perlomyia sp.	3	0.0			0	18	sh
Leuctridae	138	0.4			0	18	sh
Nemoura sp.	98	0.3			2	24	sh
Visoka cataractae	339	1.0			2	36	sh
Zapada cinctipes	58	0.2			2	16	sh
Zapada columbiana	967	2.7			2	16	sh
Nemouridae	172	0.5			2	36	sh
Yoraperla brevis	71	0.2			1	12	sh
Acroneuria abnormis	1	0.0			0	6	pr
Doroneuria theodora	31	0.1			1	18	pr
Hesperoperla pacifica	6	0.0			2	18	pr
Perlidae	73	0.2			1	24	pr
Isoperla sp.	19	0.1			2	24	pr
Kogotus modestus	0	0.0			2	18	pr
Megarcys sp.	206	0.6			2	24	pr
Setvena bradleyi	1	0.0			2	48	pr
Skwala sp.	0	0.0			2	18	pr
Perlodidae	159	0.4			2	48	pr
Doddsia occidentalis	300	0.8			2	24	sc
Taeniopsma sp.	2849	8.0			2	48	sc
Trichoptera			5042	14.21			
Micrasema sp.	43	0.1			1	24	sh
Anagapetus sp.	48	0.1			0	24	sc
Glossosoma sp.	1444	4.1			0	24	sc
Arctopsyche grandis	83	0.2			4	18	cf
Hydropsyche sp.	0	0.0			8	108	cg
Parapsyche elsis	250	0.7			4	6	cf
Hydropsychidae	1161	3.3			4	108	cf
Agraylea sp.	138	0.4			8	108	cg
Hydroptila sp.	1	0.0			6	108	cg
Ochrotrichia sp.	0	0.0			4	108	cg
Lepidostoma sp.	6	0.0			1	18	sh
Apatania sp.	0	0.0			4	18	sc
Chyrandra centralis	1	0.0			1	18	sh
Ecclisomyia sp.	1	0.0			2	24	cm
Neothremma alicia	3	0.0			4	8	sc
Oligophlebodes sp.	874	2.5			4	24	sc
Limnephilidae	269	0.8			4	108	un

Hess, #58 (cont.)

Dolophilodes sp.	0	0.0			2	24	cf
Wormaldia sp.	6	0.0			3	24	cf
Polycentropus sp.	0	0.0			6	72	pr
Rhyacophila Angelita grp.	26	0.1			0	18	pr
Rhyacophila Betteni grp.	328	0.9			0	18	pr
Rhyacophila Bif./Color. grp.	0	0.0			0	18	pr
Rhyacophila Brunnea grp.	53	0.1			0	18	pr
Rhyacophila hyalinata	33	0.1			0	18	pr
Rhyacophila iranda	15	0.0			0	18	pr
Rhyacophila Sibirica grp.	13	0.0			0	18	pr
Rhyacophila tucula	1	0.0			0	18	pr
Rhyacophila vaccua	26	0.1			0	18	pr
Rhyacophila verrula	3	0.0			0	18	pr
Rhyacophila vepulsa	102	0.3			0	18	pr
Rhyacophila sp.	94	0.3			0	18	pr
Trichopteran pupae	20	0.1			nn	nn	un
Other			4648	13.10			
Annelida(Oligochaeta)	304	0.9			5	108	cg
Coleoptera(Elmidae)					4	108	cg
Cleptelmis sp.	0	0.0			4	108	cg
Heterlimnius sp.	215	0.6			4	108	cg
Lara sp.	0	0.0			4	108	sh
Narpus sp.	1	0.0			4	108	cg
Zaitzevia sp.	0	0.0			4	108	cg
Elmidae	7	0.0			4	108	cg
Diptera							
Agathon sp.	5	0.0			0	2	sc
Ceratopogonidae	17	0.0			6	108	pr
Chironomidae	3479	9.8			6	108	un
Chelifera sp.	11	0.0			6	95	pr
Oreogeton sp.	55	0.2			6	95	pr
Psychodidae	1	0.0			10	36	cg
Simuliidae	194	0.5			6	108	cg
Antocha sp.	34	0.1			3	24	cg
Dicranota sp.	82	0.2			3	24	pr
Hexatoma sp.	44	0.1			2	36	pr
Pedicia sp.	0	0.0			3	36	pr
Tipula sp.	4	0.0			4	36	om
Hydracarina	20	0.1			5	108	pr
Mollusca	2	0.0			8	108	cg
Nematoda	54	0.2			5	108	om
Turbellaria	119	0.3			4	108	cg

TOTAL NUMBER =	35475
TOTAL TAXA =	86
STD =	911.6
MEAN =	370
SDI =	4.39
% SE Mean =	xxx
% Coef. Var.=	xxx
B/E =	0.16
EPT Abund =	30827
EPT/Chiron =	8.86
EPT % =	86.90
EPT taxa =	67
c/f tot =	1500
c/f % =	4.23
c/g tot =	8149
c/g % =	22.97
sh tot =	2337
sh % =	6.59
sc tot =	15998
sc % =	45.10
p tot =	3664
p% =	10.33
om tot =	59
om % =	0.17
unk tot =	3768
unk% =	10.62
sc/cf =	10.67
sc/(sc+cf) =	0.914
sh/total =	0.066

Macroinvertebrate Data--Montanore, Annual Totals
24 kick samples, #59

	No.	Percent Total	Total Number	Percent Total	TV	TQ	FFG
Ephemeroptera			16823	49.44			
Baetis sp.	4173	12.3			5	72	cg
Diphetor sp.	184	0.5			4	72	cg
Caudatella hystrix	0	0.0			1	48	cg
Drunella coloradensis/ flavilinea	34	0.1			0	18	sc
Drunella doddsi	1016	3.0			0	4	sc
Drunella grandis	2	0.0			0	24	sc
Drunella spinifera	99	0.3			0	24	pr
Drunella sp.	928	2.7			1	48	sc
Serratella sp.	248	0.7			2	48	cg
Cinygma sp.	0	0.0			2	48	sc
Cinygmula sp.	5372	15.8			4	21	sc
Epeorus sp.	2040	6.0			0	21	sc
Heptagenia sp.	38	0.1			4	48	sc
Ironodes sp.	2	0.0			3	48	sc
Leucrocuta sp.	4	0.0			1	48	sc
Nixe sp.	54	0.2			2	48	sc
Rhithrogena sp.	1972	5.8			4	21	cg
Paraleptophlebia sp.	398	1.2			4	24	cg
Ameletus sp.	259	0.8			0	48	cg
Plecoptera			9192	27.01			
Capniidae	176	0.5			1	32	sh
Kathroperla perdita	0	0.0			1	24	cg
Sweltsa/Suwallia sp.	1356	4.0			1	24	pr
Despaxia augusta	148	0.4			0	18	sh
Paraleuctra sp.	0	0.0			0	18	sh
Perlomyia sp.	0	0.0			0	18	sh
Leuctridae	45	0.1			0	18	sh
Nemoura sp.	475	1.4			2	24	sh
Visoka cataractae	294	0.9			2	36	sh
Zapada cinctipes	235	0.7			2	16	sh
Zapada columbiana	1419	4.2			2	16	sh
Nemouridae	1669	4.9			2	36	sh
Yoraperla brevis	73	0.2			1	12	sh
Acroneuria abnormis	0	0.0			0	6	pr
Doroneuria theodora	28	0.1			1	18	pr
Hesperoperla pacifica	2	0.0			2	18	pr
Perlidae	102	0.3			1	24	pr
Isoperla sp.	49	0.1			2	24	pr
Kogotus modestus	0	0.0			2	18	pr
Megarcys sp.	106	0.3			2	24	pr
Setvena bradleyi	1	0.0			2	48	pr
Skwala sp.	0	0.0			2	18	pr
Perlodidae	93	0.3			2	48	pr
Doddsia occidentalis	417	1.2			2	24	sc
Taenionema sp.	2504	7.4			2	48	sc
Trichoptera			3558	10.46			
Micrasema sp.	78	0.2			1	24	sh
Anagapetus sp.	55	0.2			0	24	sc
Glossosoma sp.	365	1.1			0	24	sc
Arctopsyche grandis	146	0.4			4	18	cf
Hydropsyche sp.	0	0.0			8	108	cg
Parapsyche elsis	226	0.7			4	6	cf
Hydropsychidae	1120	3.3			4	108	cf
Agraylea sp.	92	0.3			8	108	cg
Hydroptila sp.	1	0.0			6	108	cg
Ochrotrichia sp.	12	0.0			4	108	cg
Lepidostoma sp.	8	0.0			1	18	sh
Apatania sp.	0	0.0			4	18	sc
Chyrandra centralis	1	0.0			1	18	sh
Ecclisomyia sp.	3	0.0			2	24	om
Neothremma alicia	6	0.0			4	8	sc
Oligophlebodes sp.	555	1.6			4	24	sc
Limnephilidae	245	0.7			4	108	un

kick, #59 (cont.)

Dolophilodes sp.	12	0.0			2	24	cf
Wormaldia sp.	3	0.0			3	24	cf
Polycentropus sp.	0	0.0			6	72	pr
Rhyacophila Angelita grp.	7	0.0			0	18	pr
Rhyacophila Betteni grp.	240	0.7			0	18	pr
Rhyacophila Bif./Color. grp.	0	0.0			0	18	pr
Rhyacophila Brunnea grp.	131	0.4			0	18	pr
Rhyacophila hyalinata	9	0.0			0	18	pr
Rhyacophila iranda	20	0.1			0	18	pr
Rhyacophila Sibirica grp.	61	0.2			0	18	pr
Rhyacophila tucula	0	0.0			0	18	pr
Rhyacophila vaccua	9	0.0			0	18	pr
Rhyacophila verrula	0	0.0			0	18	pr
Rhyacophila vepulsa	45	0.1			0	18	pr
Rhyacophila sp.	93	0.3			0	18	pr
Trichopteran pupae	15	0.0			nn	nn	un
Other			4454	13.09			
Annelida(Oligochaeta)	145	0.4			5	108	cg
Coleoptera(Elmidae)					4	108	cg
Cleptelmis sp.	0	0.0			4	108	cg
Heterlimnius sp.	167	0.5			4	108	cg
Lara sp.	0	0.0			4	108	sh
Narpus sp.	0	0.0			4	108	cg
Zaitzevia sp.	0	0.0			4	108	cg
Elmidae	5	0.0			4	108	cg
Diptera							
Agathon sp.	0	0.0			0	2	sc
Ceratopogonidae	4	0.0			6	108	pr
Chironomidae	3409	10.0			6	108	un
Chelifera sp.	0	0.0			6	95	pr
Oreogeton sp.	33	0.1			6	95	pr
Psychodidae	0	0.0			10	36	cg
Simuliidae	385	1.1			6	108	cg
Antocha sp.	28	0.1			3	24	cg
Dicranota sp.	60	0.2			3	24	pr
Hexatoma sp.	26	0.1			2	36	pr
Pedicia sp.	0	0.0			3	36	pr
Tipula sp.	0	0.0			4	36	cm
Hydracarina	15	0.0			5	108	pr
Mollusca	0	0.0			8	108	cg
Nematoda	7	0.0			5	108	cm
Turbellaria	170	0.5			4	108	cg

TOTAL NUMBER =	34027
TOTAL TAXA =	76
STD =	850.3
MEAN =	1418
SDI =	4.45
% SE Mean =	xxx
% Coef. Var.=	xxx
B/E =	0.25
EPT Abund =	29573
EPT/Chiron =	8.67
EPT % =	86.91
EPT taxa =	63
c/f tot =	1507
c/f % =	4.43
c/g tot =	8239
c/g % =	24.21
sh tot =	4621
sh % =	13.58
sc tot =	13392
sc % =	39.36
p tot =	2589
p% =	7.61
cm tot =	10
cm % =	0.03
unk tot =	3669
unk% =	10.78
sc/cf =	8.89
sc/(sc+cf) =	0.899
sh/total =	0.136

Macroinvertebrate Data--Montanore, Annual Totals
24 kick, 96 Hess samples, #60

	No.	Percent Total	Total Number	Percent Total	TV	TQ	FFG
Ephemeroptera			34557	49.72			
Baetis sp.	7002	10.1			5	72	cg
Diphetor sp.	268	0.4			4	72	cg
Caudatella hystrix	0	0.0			1	48	cg
Drunella coloradensis/ flavilinea	62	0.1			0	18	sc
Drunella doddsi	2840	4.1			0	4	sc
Drunella grandis	3	0.0			0	24	sc
Drunella spinifera	235	0.3			0	24	pr
Drunella sp.	1686	2.4			1	48	sc
Serratella sp.	376	0.5			2	48	cg
Cinygma sp.	7	0.0			2	48	sc
Cinygmula sp.	11519	16.6			4	21	sc
Epeorus sp.	3674	5.3			0	21	sc
Heptagenia sp.	38	0.1			4	48	sc
Ironodes sp.	6	0.0			3	48	sc
Leucrocuta sp.	8	0.0			1	48	sc
Nixe sp.	122	0.2			2	48	sc
Rhithrogena sp.	5488	7.9			4	21	cg
Paraleptophlebia sp.	719	1.0			4	24	cg
Ameletus sp.	504	0.7			0	48	cg
Plecoptera			17243	24.81			
Capniidae	390	0.6			1	32	sh
Kathroperla perdita	10	0.0			1	24	cg
Sweltsa/Suwallia sp.	3465	5.0			1	24	pr
Despaxia augusta	374	0.5			0	18	sh
Paraleuctra sp.	1	0.0			0	18	sh
Perlomyia sp.	3	0.0			0	18	sh
Leuctridae	183	0.3			0	18	sh
Nemoura sp.	573	0.8			2	24	sh
Visoka cataractae	633	0.9			2	36	sh
Zapada cinctipes	293	0.4			2	16	sh
Zapada columbiana	2386	3.4			2	16	sh
Nemouridae	1841	2.6			2	36	sh
Yoraperla brevis	144	0.2			1	12	sh
Acroneuria abnormis	1	0.0			0	6	pr
Doroneuria theodora	59	0.1			1	18	pr
Hesperoperla pacifica	8	0.0			2	18	pr
Perlidae	175	0.3			1	24	pr
Isoperla sp.	68	0.1			2	24	pr
Kogotus modestus	0	0.0			2	18	pr
Megarcys sp.	312	0.4			2	24	pr
Setvena bradleyi	2	0.0			2	48	pr
Skwala sp.	0	0.0			2	18	pr
Perlodidae	252	0.4			2	48	pr
Doddsia occidentalis	717	1.0			2	24	sc
Taenionema sp.	5353	7.7			2	48	sc
Trichoptera			8600	12.37			
Micrasema sp.	121	0.2			1	24	sh
Anagapetus sp.	103	0.1			0	24	sc
Glossosoma sp.	1809	2.6			0	24	sc
Arctopsyche grandis	229	0.3			4	18	cf
Hydropsyche sp.	0	0.0			8	108	cg
Parapsyche elsis	476	0.7			4	6	cf
Hydropsychidae	2281	3.3			4	108	cf
Agraylea sp.	230	0.3			8	108	cg
Hydroptila sp.	2	0.0			6	108	cg
Ochrotrichia sp.	12	0.0			4	108	cg
Lepidostoma sp.	14	0.0			1	18	sh
Apatania sp.	0	0.0			4	18	sc
Chyrandra centralis	2	0.0			1	18	sh
Ecclisomyia sp.	4	0.0			2	24	cm
Neothremma alicia	9	0.0			4	8	sc
Oligophlebodes sp.	1429	2.1			4	24	sc
Limnephilidae	514	0.7			4	108	un

Ann-Bk, #60 (cont.)

Dolophilodes sp.	12	0.0			2	24	cf
Wormaldia sp.	9	0.0			3	24	cf
Polycentropus sp.	0	0.0			6	72	pr
Rhyacophila Angelita grp.	33	0.0			0	18	pr
Rhyacophila Betteni grp.	568	0.8			0	18	pr
Rhyacophila Bif./Color. grp.	0	0.0			0	18	pr
Rhyacophila Brunnea grp.	184	0.3			0	18	pr
Rhyacophila hyalinata	42	0.1			0	18	pr
Rhyacophila iranda	35	0.1			0	18	pr
Rhyacophila Sibirica grp.	74	0.1			0	18	pr
Rhyacophila tucula	1	0.0			0	18	pr
Rhyacophila vaccua	35	0.1			0	18	pr
Rhyacophila verrula	3	0.0			0	18	pr
Rhyacophila vepulsa	147	0.2			0	18	pr
Rhyacophila sp.	187	0.3			0	18	pr
Trichopteran pupae	35	0.1			nn	nn	un
Other			9102	13.10			
Annelida(Oligochaeta)	449	0.6			5	108	cg
Coleoptera(Elmidae)					4	108	cg
Cleptelmis sp.	0	0.0			4	108	cg
Heterlimnius sp.	382	0.5			4	108	cg
Lara sp.	0	0.0			4	108	sh
Narpus sp.	1	0.0			4	108	cg
Zaitzevia sp.	0	0.0			4	108	cg
Elmidae	12	0.0			4	108	cg
Diptera							
Agathon sp.	5	0.0			0	2	sc
Ceratopogonidae	21	0.0			6	108	pr
Chironomidae	6888	9.9			6	108	un
Chelifera sp.	11	0.0			6	95	pr
Oreogeton sp.	88	0.1			6	95	pr
Psychodidae	1	0.0			10	36	cg
Simuliidae	579	0.8			6	108	cg
Antocha sp.	62	0.1			3	24	cg
Dicranota sp.	142	0.2			3	24	pr
Hexatoma sp.	70	0.1			2	36	pr
Pedicia sp.	0	0.0			3	36	pr
Tipula sp.	4	0.0			4	36	om
Hydracarina	35	0.1			5	108	pr
Mollusca	2	0.0			8	108	cg
Nematoda	61	0.1			5	108	om
Turbellaria	289	0.4			4	108	cg

TOTAL NUMBER =	69502
TOTAL TAXA =	89
STD =	1733.3
MEAN =	579
SDI =	4.47
% SE Mean =	xxx
% Coef. Var.=	xxx
B/E =	0.20
EPT Abund =	60400
EPT/Chiron =	8.77
EPT % =	86.90
EPT taxa =	70
c/f tot =	3007
c/f % =	4.33
c/g tot =	16388
c/g % =	23.58
sh tot =	6958
sh % =	10.01
sc tot =	29390
sc % =	42.29
p tot =	6253
p% =	9.00
om tot =	69
om % =	0.10
unk tot =	7437
unk% =	10.70
sc/cf =	9.77
sc/(sc+cf) =	0.907
sh/total =	0.100

Appendix G. Seasonal estimated relative abundance of periphyton, 1992.

Estimated relative abundance and biovolume contribution rank ( ) of diatoms and genera of non-diatom algae in periphyton samples collected during 1992 Montanore Project biological monitoring. R=rare; C=common; VC=very common; A=abundant; VA=very abundant

Sampling Date: April 1992 Stream Name: Site Number: ID Number:	Libby Cr. L10 P004D	Libby Cr. L9 P003D	Libby Cr. L3 P002D	Libby Cr. L1 P001D
Bacillariophyta (diatoms)				
All genera collectively	VC (4)	A (2)	VC (3)	C (3)
Chlorophyta (green algae)				
Draparnaldia			VC (1)	
Hormidium	VC (3)	VC (3)		
Microspora	C (5)	R	R	
Planktosphaeria			C (5)	
Spirogyra	VC (2)	R		
Staurastrum		R		
Tetraspora		VC (1)		
Ulothrix	R	C (4)	C (4)	R
Zygnema	A (1)			
Chrysophyta (yellow-green algae)				
Hydrurus		C (5)		
Tribonema		C (6)		
Cyanophyta (blue-green algae)				
Aphanocapsa		C (7)	C (6)	VC (2)
Oscillatoria			A (2)	A (1)
Phormidium	R			
Rhodophyta (red algae)				
Audouinella	R			R

Moss present in L1(?), L9 and L10.

Estimated relative abundance and biovolume contribution rank ( ) of diatoms and genera of non-diatom algae in periphyton samples collected during 1992 Montanore Project biological monitoring. R=rare; C=common; VC=very common; A=abundant; VA=very abundant

Sampling Date: August 1992 Stream Name: Site Number: ID Number:	Libby Cr. L10 P004E	Libby Cr. L9 P003E	Libby Cr. L3 P002E	Libby Cr. L1 P001E
Bacillariophyta (diatoms)				
All genera collectively	VC (4)	VC (4)	VC (4)	VA (2)
Chlorophyta (green algae)				
Chaetophora			R	C (5)
Cosmarium			C (6)	C (6)
Hormidium	VC (3)	R		
Microspora	C (6)		A (1)	
Scenedesmus		R		
Spirogyra	A (2)			
Staurastrum			C (5)	VC (3)
Ulothrix			R	C (4)
Zygnema	VA (1)	A (2)	VC (3)	
Chrysophyta (yellow-green algae)				
Hydrurus		VA (1)		
Cyanophyta (blue-green algae)				
Aphanocapsa		R		
Chamaesiphon	C (7)	R		
Lyngbya	R			
Oscillatoria	VC (5)	VC (3)	VA (2)	VA (1)
Phormidium	R	R		

Moss present in L10.

Estimated relative abundance and biovolume contribution rank ( ) of diatoms and genera of non-diatom algae in periphyton samples collected during 1992 Montanore Project biological monitoring. R=rare; C=common; VC=very common; A=abundant; VA=very abundant

Sampling Date: October 1992 Stream Name: Site Number: ID Number:	Libby Cr. L10 P004F	Libby Cr. L9 P003F	Libby Cr. L3 P002F	Libby Cr. L1 P001F
Bacillariophyta (diatoms)				
All genera collectively	VC (3)	VC (6)	A (2)	A (3)
Chlorophyta (green algae)				
Ankistrodesmus			R	
Cosmarium		C (9)	C (6)	R
Draparnaldia	R	R		
Hormidium	VC (4)	VC (5)	VA (1)	
Microspora	C (7)	C (7)		
Mougeotia	R		R	
Spirogyra	VC (2)	VC (4)	R	
Staurastrum			C (5)	R
Stigeoclonium			R	
Tetraspora		R		
Ulothrix		R	C (7)	VA (1)
Zygnema	A (1)	A (3)	VC (4)	
Chrysophyta (yellow-green algae)				
Hydrurus	R	A (2)		
Tribonema	VC (5)			
Cyanophyta (blue-green algae)				
Aphanocapsa		R		R
Chamaesiphon	A (6)			
Merismopedia			R	
Oscillatoria	R	VA (1)	A (3)	VA (2)
Rivularia		C (8)	R	
Rhodophyta (red algae)				
Audouinella		R	C (8)	

Moss present in L3, L9 and L10.

Estimated relative abundance and biovolume contribution rank ( ) of diatoms and genera of non-diatom algae in periphyton samples collected during 1992 Montanore Project biological monitoring. R=rare; C=common; VC=very common; A=abundant; VA=very abundant

Sampling Date: April 1992 Stream Name: Site Number: ID Number:	L.Cherry Cr. LC1 P005D	Poorman Cr. Po1 P008D	Ramsey Cr. Ra2 P007D	Bear Cr. Be2 P006D
Bacillariophyta (diatoms)				
All genera collectively	VA (3)	A (3)	VC (3)	C (5)
Chlorophyta (green algae)				
Draparnaldia	A (1)			
Gloeocystis				R
Gongrosira				C (4)
Hormidium	VA (2)			
Microspora	VC (6)		VC (2)	
Mougeotia	VC (4)			
Oedogonium	R			
Protococcus				C (3)
Staurastrum	R			
Zygnema	VC (5)			
Chrysophyta (yellow-green algae)				
Hydrurus		A (2)	R	
Tribonema	C (7)			
Cyanophyta (blue-green algae)				
Aphanocapsa		C (4)		A (2)
Oscillatoria	R	VA (1)	VA (1)	VA (1)
Phormidium				R

Moss present in LC1.

Estimated relative abundance and biovolume contribution rank ( ) of diatoms and genera of non-diatom algae in periphyton samples collected during 1992 Montanore Project biological monitoring. R=rare; C=common; VC=very common; A=abundant; VA=very abundant

Sampling Date: August 1992 Stream Name: Site Number: ID Number:	L.Cherry Cr. LC1 P005E	Poorman Cr. Po1 P008E	Ramsey Cr. Ra2 P007E
Bacillariophyta (diatoms)			
All genera collectively	A (3)	VC (3)	A (3)
Chlorophyta (green algae)			
Bulbochaete	R		
Chaetophora	VA (1)		
Closterium	R		
Cosmarium	C (9)		R
Draparnaldia			VA (1)
Hormidium	R		R
Microspora	R		R
Mougeotia	A (2)		
Oedogonium	VC (4)		
Spirogyra	VC (5)		
Staurastrum	VC (8)		C (5)
Zygnema	C (7)	VA (1)	VA (2)
Chrysophyta (yellow-green algae)			
Hydrurus		A (2)	R
Cyanophyta (blue-green algae)			
Amphitrix			C (6)
Calothrix	R		
Nostoc	C (10)		
Oscillatoria		VC (4)	A (4)
Phormidium		C (5)	C (7)
Tolypothrix	VC (6)		
Rhodophyta (red algae)			
Audouinella	R		

Moss present in LC1 and Be2.

Estimated relative abundance and biovolume contribution rank ( ) of diatoms and genera of non-diatom algae in periphyton samples collected during 1992 Montanore Project biological monitoring. R=rare; C=common; VC=very common; A=abundant; VA=very abundant

Sampling Date: October 1992 Stream Name: Site Number: ID Number:	L.Cherry Cr. LC1 P005F	Poorman Cr. Po1 P008F	Ramsey Cr. Ra2 P007F	Bear Cr. Be2 P006F
Bacillariophyta (diatoms)				
All genera collectively	VC (6)	A (3)	VC (3)	VA (1)
Chlorophyta (green algae)				
Bulbochaete	A (3)			
Chaetophora	VA (2)			
Closterium	R		R	
Cosmarium	VC (9)			
Draparnaldia		R		
Gloeocystis	C (12)			
Gongrosira				C (5)
Hormidium	R	R		
Microspora	C (11)	R		
Mougeotia	VC (4)			R
Oedogonium	A (1)			
Spirogyra	R	C (5)		
Staurastrum	VC (10)	C (7)	R	
Ulothrix		C (6)		A (2)
Zygnema	R	VA (1)	VA (1)	
Chrysophyta (yellow-green algae)				
Hydrurus	R	VA (2)	R	A (3)
Cyanophyta (blue-green algae)				
Microcystis				R
Oscillatoria	R	A (4)	VA (2)	VC (4)
Phormidium	A (8)			
Tolypothrix	VC (5)			
Rhodophyta (red algae)				
Audouinella	R			
Batrachospermum	VC (7)			

Moss present in LC1.

Appendix H. Diatom proportional counts, 1992.

Diatom proportional count data, 1992 Montanore Project aquatic biological monitoring.
N= number of frustules counted; PRA= percent relative abundance.
"p" indicates species seen during floristic scan but not during count.
Species in parentheses are synonyms used in 1991 report.

Sampling date: April 1992

Stream name:	Libby Cr.		Libby Cr.		Libby Cr.		Libby Cr.	
Site number:	L10		L9		L3		L1	
ID number:	P004D		P003D		P002D		P001D	
SPECIES	N	PRA	N	PRA	N	PRA	N	PRA
Achnanthes biasolettiana (A. deflexa)							19	4.76
A. bioretii					5	1.25	p	
A. chlidanos (A. species 2)	1	0.25						
A. daonensis (A. marginulata)	p		p		3	0.75	p	
A. helvetica	p							
A. kriegeri (A. species 1)	36	9.02	10	2.49				
A. laevis (A. lapponica)					2	0.50	p	
A. lanceolata	p		p		p		3	0.75
A. lapidosa (A. subrostrata)	p							
A. marginulata	2	0.50					p	
A. minutissima	184	46.12	10	2.49	292	73.18	268	67.17
A. nodosa	3							
A. pusilla (A. linearis)	p				1	0.25		
Amphora inariensis							p	
Aulacosiera alpigena	4	1.00	p		1	0.25		
Cocconeis placentula					2	0.50	6	1.50
Cymbella amphicephala			p					
C. cesatii	p				p			
C. cistula					5	1.25	1	0.25
C. delicatula							p	
C. gracilis	3		p					
C. minuta					9	2.26	25	6.27
C. silesiaca	3	0.75	1	0.25	4	1.00	9	2.26
C. sinuata					1	0.25	1	0.25
Diatoma anceps	3	0.75	p					
D. mesodon	79	19.80	207	51.49	7	1.75	11	2.76
Eunotia bilunaris	1	0.25	1	0.25				
E. glacialis			p					
E. minor	19	4.76	2	0.50	3	0.75		
E. muscicola	3	0.75	74	18.41				
E. paludosa	4	1.00						
E. praerupta			1	0.25				
E. subarcuatoides	17	4.26	66	16.42	p		p	
Fragilaria capucina	14	3.51	7	1.74	9	2.26	11	2.76
F. leptostauron							p	
F. ulna					2	0.50	p	
Frustulia rhomboides			p					
Gomphonema clavatum	p							
G. micropus (G. angustatum)					15	3.76	10	2.51
G. olivaceum					20	5.01	22	5.51
G. parvulum	9	2.26	2	0.50	2	0.50	p	
Hannaea arcus	7	1.75	p		14	3.51	7	1.75
Meridion circulare	7	1.75	4	1.00	2	0.50	1	0.25

Sampling date: April 1992 (cont.)	Libby Cr. L10		Libby Cr. L9		Libby Cr. L3		Libby Cr. L1	
SPECIES	N	PRA	N	PRA	N	PRA	N	PRA
Navicula accomoda							p	
N. angusta	p							
N. cryptotenella							p	
N. gallica			p					
N. ignota							p	
N. minuscula							p	
N. suchlandtii			p		p			
N. tenelloides							p	
Nitzschia dissipata							p	
N. fonticola							p	
N. inconspicua							p	
N. linearis					p		p	
N. perminuta					p			
N. pura					p		6	1.50
Tabellaria flocculosa	p		17	4.23				
Frustules Counted:		399		402		399		400
Total Species:		28		24		27		34
Species Counted:		19		13		20		15
Shannon Diversity:		2.67		2.14		2.21		2.02
Siltation Index:		0.00		0.00		0.00		1.50

Diatom proportional count data, 1992 Montanore Project aquatic biological monitoring.
N= number of frustules counted; PRA= percent relative abundance.
"p" indicates species seen during floristic scan but not during count.
Species in parentheses are synonyms used in 1991 report.

Sampling date: August 1992								
Stream name:	Libby Cr.		Libby Cr.		Libby Cr.		Libby Cr.	
Site number:	L10		L9		L3		L1	
ID number:	P004E		P003E		P002E		P001E	
SPECIES	N	PRA	N	PRA	N	PRA	N	PRA
Achnanthes biasolettiana (A. deflexa)					1	0.24	20	4.88
A. chlidanos	2	0.48	1	0.25				
A. daonensis (A. marginulata)	2	0.48	11	2.70	p		1	0.24
A. helvetica			5	1.23				
A. kriegeri (A. species 1)	15	3.61	15	3.69				
A. laevis (A.lapponica)					1	0.24	p	
A. lanceolata	p		p		4	0.97	p	
A. marginulata			3	0.74			p	
A. minutissima	169	40.63	131	32.19	318	77.37	213	51.95
A. nodosa	1	0.24	2	0.49				
A. pusilla (A. linearis)					p			
Amphora pediculus					p			
Anomoeoneis vitrea	p							
Aulacosiera alpigena	3	0.72	37	9.09	p			
A. distans	p		1	0.25				
Cocconeis placentula			p		5	1.22	2	0.49
Cymbella affinis							5	1.22
C. cesatii	p		p					
C. cistula							1	0.24
C. cymbiformis							p	
C. gracilis	3	0.72	1	0.25				
C. mesiana							p	
C. minuta			3	0.74	7	1.70	28	6.83
C. naviculiformis			p					
C. silesiaca	7	1.68	2	0.49	5	1.22	23	5.61
C. sinuata					15	3.65	4	0.98
Diatoma anceps	2	0.48	7	1.72				
D. mesodon	94	22.60	48	11.79	1	0.24	p	
Eunotia bilunaris	p							
E. microcephala			p					
E. minor	7	1.68	3	0.74	3	0.73		
E. muscicola	1	0.24	26	6.39				
E. paludosa	1	0.24						
E. praerupta	1	0.24	p					
E. rhomboidea			p					
E. subarcuatoides	5	1.20	21	5.16				
E. tenella			p					
Fragilaria capucina	41	9.86	54	13.27	17	4.14	25	6.10
F. crotonensis					1	0.24		
F. leptostauron					1	0.24	p	
F. ulna					10	2.43	49	11.95
F. virescens					p			
Frustulia rhomboides			p					

Sampling date: August 1992 (cont.)	Libby Cr. L10		Libby Cr. L9		Libby Cr. L3		Libby Cr. L1	
SPECIES	N	PRA	N	PRA	N	PRA	N	PRA
Gomphonema clavatum	3	0.72			p		3	0.73
G. micropus (G. angustatum)					p		1	0.24
G. minutum							p	
G. olivaceum					2	0.49	7	1.71
G. parvulum	32	7.69	27	6.63	p		1	0.24
G. pumilum	p				2	0.49	p	
Hannaea arcus	21	5.05	4	0.98	15	3.65	27	6.59
Meridion circulare	6	1.44	2	0.49	p			
Navicula angusta	p							
N. contenta			p					
N. cryptocephala	p				p			
N. cryptotenella					p		p	
N. gallica								
N. gregaria							p	
N. menisculus					p		p	
N. reichardtiana (N. species 2)							p	
N. tridentula							p	
Nitzschia bryophila							p	
N. dissipata	p				2	0.49		
N. palea			p		p			
N. pura					1	0.24	p	
Pinnularia subcapitata			p					
P. sp.	p							
Tabellaria flocculosa	p		3	0.74	p			
Frustules Counted:		416		407		411		410
Total Species:		31		34		33		32
Species Counted:		20		22		19		16
Shannon Diversity:		2.73		3.27		1.57		2.49
Siltation Index:		0.00		0.00		0.73		0.00

Diatom proportional count data, 1992 Montanore Project aquatic biological monitoring.
N= number of frustules counted; PRA= percent relative abundance.
"p" indicates species seen during floristic scan but not during count.
Species in parentheses are synonyms used in 1991 report.

Sampling date: October 1992								
Stream name:	Libby Cr.		Libby Cr.		Libby Cr.		Libby Cr.	
Site number:	L10		L9		L3		L1	
ID number:	P004F		P003F		P002F		P001F	
SPECIES	N	PRA	N	PRA	N	PRA	N	PRA
Achnanthes biasolettiana (A. deflexa)					53	12.80	70	16.91
A. bioretii					p		1	0.24
A. chlidanos	p							
A. daonensis (A. marginulata)	p		1	0.25	2	0.48	1	0.24
A. helvetica	p		1	0.25				
A. kriegeri (A. species 1)	8	1.97	8	2.01				
A. laevis (A.lapponica)					p		p	
A. lanceolata	p				p		p	
A. lapidosa (A. subrostrata)	p				p			
A. marginulata	p		p		p			
A. minutissima	122	29.98	91	22.81	201	48.55	206	49.76
A. nodosa	1	0.25	p					
A. pusilla (A. linearis)			p					
A. subatomoides	p							
Amphora pediculus							p	
Amphipleura pellucida							p	
Aulacosiera alpigena	3	0.74	4	1.00	p		p	
A. distans	p		p		p			
A. italica					p			
Cocconeis placentula					1	0.24	4	0.97
Cyclotella meneghiniana			p					
Cymbella affinis							15	3.62
C. cesatii	p		1	0.25	2	0.48	p	
C. cistula					p		23	5.56
C. gracilis	1	0.25	2	0.50				
C. mesiana					1	0.24		
C. microcephala							1	0.24
C. minuta	1	0.25	3	0.75	9	2.17	13	3.14
C. silesiaca	2	0.49	4	1.00	13	3.14	7	1.69
C. sinuata					3	0.72	1	0.24
C. subaequalis					p		p	
Diatoma anceps	p		p					
D hyemalis			4	1.00	p		p	
D. mesodon	85	20.88	182	45.61	9	2.17	p	
Diatomella balfouriana	p							
Didymosphenia geminata					p			
Diploneis elliptica	p							
Eunotia glacialis			p		p			
E. intermedia	p							
E. minor	4	0.98	4	1.00	1	0.24		
E. muscicola	2	0.49	16	4.01	p			
E. subarcuatoides	6	1.47	6	1.50				
E. tenella			p					

Sampling date: October 1992 (cont.)	Libby Cr. L10		Libby Cr. L9		Libby Cr. L3		Libby Cr. L1	
SPECIES	N	PRA	N	PRA	N	PRA	N	PRA
Fragilaria capucina	38	9.34	30	7.52	31	7.49	14	3.38
F. constricta	p							
F. crotonensis					4	0.97		
F. leptostauron					p		2	0.48
F. pinnata					p			
F. ulna					3	0.72	5	1.21
Frustulia rhomboides	p		p		p			
Gomphonema clavatum	p		1	0.25	2	0.48	p	
G. micropus (G. angustatum)					p		p	
G. minutum							8	1.93
G. olivaceum					3	0.72	1	0.24
G. parvulum	28	6.88	18	4.51	3	0.72	p	
G. procerum							1	0.24
G. pumilum					2	0.48	20	4.83
G. rhombicum							1	0.24
G. sp.	p							
Hannaea arcus	102	25.06	16	4.01	64	15.46	17	4.11
Melosira varians					p			
Meridion circulare	2	0.49	2	0.50	1	0.24	p	
Navicula cryptocephala			p		1	0.24	p	
N. cryptotenella			1	0.25	1	0.24	p	
N. gallica	p							
N. lundii (N. species 1)	p				p			
N. minima							p	
N. minuscula							1	0.24
N. mutica	1	0.25						
N. radiosa					p			
N. tenelloides							p	
N. tripunctata							p	
Neidium dubium	p							
Nitzschia dissipata			p		p			
N. fonticola					p		p	
N. lacuum							p	
N. palea			p				1	0.24
N. perminuta					p			
N. pura					3	0.72	1	0.24
Pinnularia subcapitata			p					
Rhoicosphenia abbreviata					p			
Stauroneis kriegerii			p					
Tabellaria flocculosa	1	0.25	4	1.00	1	0.24	p	
Frustules Counted:		407		399		414		414
Total Species:		37		35		49		44
Species Counted:		17		21		24		23
Shannon Diversity:		2.62		2.64		2.97		2.66
Siltation Index:		0.25		0.25		1.21		0.72

Diatom proportional count data, 1992 Montanore Project aquatic biological monitoring.
N= number of frustules counted; PRA= percent relative abundance.
"p" indicates species seen during floristic scan but not during count.
Species in parentheses are synonyms used in 1991 report.

Sampling date: April 1992								
Stream name:	L. Cherry Cr.		Poorman Cr.		Ramsey Cr.		Bear Cr.	
Site number:	LC1		Po1		Ra2		Be2	
ID number:	P005D		P008D		P007D		P006D	
SPECIES	N	PRA	N	PRA	N	PRA	N	PRA
Achnanthes biasolettiana (A. deflexa)							9	2.23
A. bioretii							p	
A. chlidanos (A. species 2)					2	0.50	1	0.25
A. daonensis (A. marginulata)	p				p		1	0.25
A. kriegeri (A. species 1)					p			
A. laevis (A.lapponica)							1	0.25
A. lanceolata	1	0.24			p		p	
A. lapidosa (A. subrostrata)			2	0.50				
A. minutissima	24	5.87	109	27.11	195	48.51	191	47.39
A. nodosa	1	0.24	p		2	0.50		
A. petersenii							3	0.74
A. pusilla (A. linearis)	p						1	0.25
A. subatomoides	p						p	
Aulacosiera alpigena					1	0.25	p	
A. distans					1	0.25		
A. italica					p		p	
Cocconeis placentula	14	3.42					7	1.74
Cymbella amphicephala					p		2	0.50
C. cistula	3	0.73						
C. gracilis	2	0.49						
C. microcephala							1	0.25
C. minuta			5	1.24	14	3.48	1	0.25
C. silesiaca			25	6.22	3	0.75	15	3.72
C. sinuata			3	0.75			4	0.99
Diatoma anceps					p			
D. mesodon	77	18.83	47	11.69	129	32.09	53	13.15
Diploneis elliptica	p							
Epithemia adnata	1	0.24						
Eunotia bilunaris	p							
E. glacialis	1	0.24						
E. incisa	p						p	
E. minor	4	0.98			3	0.75		
E. muscicola	7	1.71			1	0.25	p	
E. praerupta	p				p			
E. subarcuatoides	p				1	0.25		
E. sp.			p					
Fragilaria capucina	231	56.48	22	5.47	19	4.73	38	9.43
F. construens							p	
F. leptostauron							p	
F. pinnata							p	
F. ulna	5	1.22						
Frustulia vulgaris							p	
Gomphonema acuminatum	1	0.24						
G. angustum	p							

Sampling date: April 1992 (cont.)	L. Cherry Cr. LC1		Poorman Cr. Po1		Ramsey Cr. Ra2		Bear Cr. Be2	
SPECIES	N	PRA	N	PRA	N	PRA	N	PRA
Gomphonema clavatum	1	0.24						
G. micropus (G. angustatum)							13	3.23
G. olivaceum							11	2.73
G. parvulum	7	1.71	1	0.25	8	1.99	3	0.74
G. pumilum	p							
G. sarcophagus							10	2.48
G. truncatum	p							
Hannaea arcus			188	46.77	19	4.73	16	3.97
Meridion circulare	28	6.85			4	1.00	9	2.23
Navicula cryptocephala	1	0.24						
N. cryptotenella	p							
N. ignota							p	
N. radiosa	p							
N. suchlandtii	p							
Neidium affine							p	
Nitzschia acidoclinata							12	2.98
N. dissipata							1	0.25
N. gracilis							p	
N. palea	p							
N. paleacea	p		p					
Pinnularia subcapitata					p			
Stauroneis anceps							p	
S. phoenicenteron							p	
Surirella angusta							p	
Tabellaria flocculosa					p		p	
Frustules Counted:		409		402		402		403
Total Species:		34		12		24		41
Species Counted:		18		9		15		23
Shannon Diversity:		2.17		2.05		2.06		2.87
Siltation Index:		0.24		0.00		0.00		3.23

Diatom proportional count data, 1992 Montanore Project aquatic biological monitoring.
N= number of frustules counted; PRA= percent relative abundance.
"p" indicates species seen during floristic scan but not during count.
Species in parentheses are synonyms used in 1991 report.

Sampling date: August 1992								
Stream name:	L. Cherry Cr.		Poorman Cr.		Ramsey Cr.		Bear Cr.	
Site number:	LC1		Po1		Ra2		Be2	
ID number:	P005E		P008E		P007E		P006E	
SPECIES	N	PRA	N	PRA	N	PRA	N	PRA
Achnanthes biasolettiana (A. deflexa)							6	1.47
A. bioretii							p	
A. daonensis (A. marginulata)	1	0.25	p		1	0.24	2	0.49
A. helvetica			p		p			
A. laevis (A.lapponica)							1	0.24
A. lanceolata	p				p		1	0.24
A. lapidosa (A. subrostrata)							p	
A. laterostrata							p	
A. minutissima	96	24.24	279	68.22	316	77.07	241	58.92
A. nodosa	38	9.60			1	0.24	p	
A. pusilla (A. linearis)	5	1.26					1	0.24
A. rossii							p	
A. subatomoides					p		p	
Amphora inariensis	p							
A. pediculus							2	0.49
Amphipleura pellucida							3	0.73
Aulacosiera alpigena					4	0.98		
A. distans					1	0.24		
Caloneis bacillum							p	
Cocconeis placentula	20	5.05	p				20	4.89
Cymbella caespitosa							2	0.49
C. cistula	2	0.51					3	0.73
C. gracilis	2	0.51			2	0.49		
C. microcephala							p	
C. minuta			4	0.98	4	0.98	2	0.49
C. silesiaca	p		1	0.24	p		19	4.65
C. sinuata	p		4	0.98			6	1.47
Diatoma hyemalis					p		1	0.24
D. mesodon	4	1.01	14	3.42	54	13.17	22	5.38
Epithemia adnata	3	0.76						
Eunotia bilunaris	p							
E. glacialis	1	0.25						
E. minor	2	0.51	p		3	0.73	2	0.49
E. muscicola	2	0.51			p		p	
E. praerupta	p							
E. subarcuatoides	p				4	0.98	p	
Fragilaria brevistriata							p	
F. capucina	95	23.99	8	1.96	8	1.95	21	5.13
F. construens							p	
F. leptostauron							p	
F. ulna	p						p	
Frustulia rhomboides	7	1.77	p				p	
Gomphonema acuminatum	p						1	0.24
G. clavatum	8	2.02						

Sampling date: August 1992 (cont.)	L. Cherry Cr. LC1		Poorman Cr. Po1		Ramsey Cr. Ra2		Bear Cr. Be2	
SPECIES	N	PRA	N	PRA	N	PRA	N	PRA
Gomphonema dichotomum	1	0.25	p					
G. micropus (G. angustatum)			4	0.98			5	1.22
G. olivaceum							7	1.71
G. parvulum	7	1.77	p		10	2.44	p	
G. pumilum	2	0.51					p	
G. sarcophagus							p	
G. truncatum	p							
Hannaea arcus			95	23.23	2	0.49	10	2.44
Meridion circulare	p						24	5.87
Navicula cryptocephala	6	1.52					p	
N. cryptotenella	1	0.25					1	0.24
N. enigmatica	35	8.84						
N. gregaria	p							
N. lundii (N. species 1)	p							
N. pupula							p	
N. pusio	p							
N. radiosa	3	0.76					1	0.24
N. seibigii							p	
Nitzschia acidoclinata	8	2.02						
N. dissipata	11	2.78			p		p	
N. flexoides	24	6.06						
N. frustulum	2	0.51						
N. linearis	2	0.51						
N. palea	5	1.26					1	0.24
N. paleacea	p							
N. punila	2	0.51						
N. pura	p						1	0.24
N. recta							3	0.73
N. vermicularis	1	0.25						
Orthoseira dendroteres			p					
Pinnularia sp.							p	
Rhopalodia gibba	p							
Stauroneis phoenicenteron							p	
Tabellaria flocculosa	p				p			
Frustules Counted:		396		409		410		409
Total Species:		48		16		21		52
Species Counted:		30		8		13		28
Shannon Diversity:		3.50		1.36		1.30		2.58
Siltation Index:		25.25		0.00		0.00		1.71

Diatom proportional count data, 1992 Montanore Project aquatic biological monitoring.
N= number of frustules counted; PRA= percent relative abundance.
"p" indicates species seen during floristic scan but not during count.
Species in parentheses are synonyms used in 1991 report.

Sampling date: October 1992

Stream name:	L. Cherry Cr.		Poorman Cr.		Ramsey Cr.		Bear Cr.	
Site number:	LC1		Po1		Ra2		Be2	
ID number:	P005F		P008F		P007F		P006F	
SPECIES	N	PRA	N	PRA	N	PRA	N	PRA
Achnanthes biasolettiana (A. deflexa)							18	4.37
A. bioretii			p					
A. chlidanos (A. species 2)					p			
A. daonensis (A. marginulata)			1	0.24	p		p	
A. flexella							p	
A. helvetica					p			
A. kriegeri (A. species 1)					2	0.48		
A. laevis (A.lapponica)			p				p	
A. lanceolata	2	0.47	p		p			
A. lapidosa (A. subrostrata)	p		p		p			
A. minutissima	92	21.40	106	25.48	244	58.94	240	58.25
A. nodosa	1	0.23	p					
A. pusilla (A. linearis)	1	0.23						
A. subatomoides	1	0.23						
Amphora inariensis			p					
A. pediculus	p		p					
Amphipleura pellucida							p	
Aulacosiera alpigena					5	1.21		
A. distans					p		p	
Cocconeis placentula	18	4.19	p				2	0.49
Cymbella amphicephala							p	
C. cesatii			p					
C. cistula	3	0.70					71	17.23
C. gracilis	1	0.23	p		2	0.48		
C. minuta			12	2.88	16	3.86	4	0.97
C. naviculiformis	p				p			
C. silesiaca	p		9	2.16	7	1.69	6	1.46
C. sinuata	1	0.23	4	0.96			p	
Diatoma anceps					p			
D hyemalis					2	0.48	p	
D. mesodon	1	0.23	28	6.73	67	16.18	13	3.16
Epithemia adnata	1	0.23						
Eunotia bilunaris	p							
E. glacialis	2	0.47						
E. intermedia	p							
E. minor	7	1.63	p		1	0.24		
E. muscicola	p				p			
E. subarcuatoides					1	0.24		
Fragilaria capucina	206	47.91	26	6.25	32	7.73	15	3.64
F. construens			p					
F. crotonensis					p		p	
F. leptostauron							p	
F. nanana					p			
F. tenera			1	0.24				

Sampling date: October 1992 (cont.)	L. Cherry Cr. LC1		Poorman Cr. Po1		Ramsey Cr. Ra2		Bear Cr. Be2	
SPECIES	N	PRA	N	PRA	N	PRA	N	PRA
Fragilaria ulna	11	2.56	p				1	0.24
Frustulia rhomboides	1	0.23	p		1	0.24		
F. vulgaris	p							
Gomphonema acuminatum	3	0.70	p					
G. clavatum	26	6.05	15	3.61	p		p	
G. contraturris	1	0.23						
G. micropus (G. angustatum)			1	0.24			2	0.49
G. olivaceum							1	0.24
G. parvulum	5	1.16	p		12	2.90	2	0.49
G. pumilum	6	1.40	p				6	1.46
G. rhombicum	1	0.23						
G. sarcophagus							p	
G. truncatum	1	0.23						
Hannaea arcus			213	51.20	22	5.31	31	7.52
Meridion circulare	1	0.23			p		p	
Navicula capitata							p	
N. cryptocephala	1	0.23						
N. cryptotenella	p						p	
N. enigmatica	3	0.70						
N. heimansioides	p				p			
N. minuscula							p	
N. radiosa	1	0.23					p	
N. suchlandtii	1	0.23						
Neidium affine					p			
N. hercynicum					p			
Nitzschia acidoclinata	2	0.47			p			
N. dissipata	6	1.40			p		p	
N. draveillensis	1	0.23					p	
N. flexoides	18	4.19					p	
N. gracilis	p							
N. linearis	p							
N. palea	2	0.47					p	
N. paleacea	p						p	
N. pumila	1	0.23						
N. pura			p				p	
N. recta			p					
N. vermicularis	1	0.23						
Pinnularia legumen	p							
Stauroneis anceps	p							
Surirella angusta	p							
Tabellaria flocculosa	p				p			
Frustules Counted:		430		416		414		412
Total Species:		52		30		33		37
Species Counted:		35		11		14		14
Shannon Diversity:		2.75		2.08		2.07		2.10
Siltation Index:		8.60		0.00		0.00		0.00