APPENDIX B

Stream Bioassessment Data

San Diego County: Stream Bioassessment Sampling Sites. May 2002, October 2002, May 2003.

Watershed Name	Receiving Water	Station Identification	Site Description	Station Coordinates
Santa Margarita River	Sandia Creek	REF-SC	Reach consisted of 5 riffles along Sandia Creek Drive	33 25.482' 117 14.942'
Santa Margarita River	De Luz Creek	REF-DLC	Reach consisted of 5 riffles downstream of De Luz Road	33 26.248' 117 19.434'
Santa Margarita River	De Luz Creek	REF-DLC3	Reach consisted of 5 riffles along De Luz-Murietta Road	33 27.574' 117 17.456'
San Luis Rey River	Keys Creek	REF-KC	Reach consisted of 5 riffles at Old Lilac Road	33 26.483' 117 19.434'
San Diego River	Cedar Creek	REF-CC	Reach consisted of 5 riffles upstream of Cedar Creek Road	33 01.514' 116 38.029'
Santa Margarita River	Santa Margarita River	SMR-WGR	Reach consisted of 5 riffles upstream of Willow Glen Road	33 25.614' 117 11.861'
Santa Margarita River	Santa Margarita River	SMR-DLR	Reach consisted of 5 riffles downstream of De Luz Road	33 23.844' 117 15.734'
Santa Margarita River	Santa Margarita River	SMR-CP	Reach consisted of 5 riffles downstream of Santa Margarita Road, Camp Pendleton	33 20.457' 117 19.897'
San Luis Rey River	San Luis Rey River	SLRR-BR	Reach consisted of 2 riffles near the USGS gauging station	33 13.095' 117 21.569'
San Luis Rey River	San Luis Rey River	SLRR-MR	Reach consisted of 3 riffles upstream of Mission Road	33 15.587' 117 14.176'
Carlsbad	Loma Alta Creek	LAC-ECR	Reach consisted of 3 riffles up and downstream of El Camino Real	33 11.995' 117 19.878'
Carlsbad	Loma Alta Creek	LAC-CB	Reach consisted of 5 riffles of College Blvd.	33 12.363' 117 17.087'
Carlsbad	Buena Vista Creek	BVR-ED	Reach consisted of 5 riffles downstream of Santa Fe Av.	33 10.840' 117 19.717'
Carlsbad	Buena Vista Creek	BVR-CB	Reach consisted of 5 riffles downstream of College Blvd.	33 10.809' 117 17.918'
Carlsbad	Agua Hedionda Creek	AHC-MR	Reach consisted of 5 riffles downstream of Melrose Road	33 09.132' 117 14.454'
Carlsbad	Agua Hedionda Creek	AHC-ECR	Reach consisted of 5 riffles downstream of El Camino Real	33 08.940' 117 17.830'
Carlsbad	San Marcos Creek	SMC-M	Reach consisted of 5 riffles upstream of McMahr Road	33 07.831' 117 11.575'
Carlsbad	San Marcos Creek	SMC-SP	Reach consisted of 5 riffles downstream of Santar Place	33 08.501' 117 08.740'
Carlsbad	San Marcos Creek	SMC-RSFR	Rreach consisted of 4 riffles downstream of Rancho Santa Fe Road	33 06.191' 117 13.609'
Carlsbad	San Marcos Creek	SMC-LCCC	Reach consisted of 5 riffles upstream of La Costa Country Club	33 05.466' 117 14.664'
Carlsbad	Encinitas Creek	ENC-GVR	Reach consisted of 3 riffles southwest of El Camino Real and La Costa Blvd	33 04.697' 117 16.000'
Carlsbad	Cottonwood Creek	CC-E	Cottonwood Creek. Reach consisted of 4 riffles downstream of Hwy 101	33 02.905' 117 17.629'
Escondido Creek	Escondido Creek	ESC-HRB	Reach consisted of 5 riffles downstream of Harmony Grove Bridge	33 06.550' 117 06.688'
Escondido Creek	Escondido Creek	ESC-CC	Reach consisted of 5 riffles downstream of Country Club Road	33 05.925 ' 117 07.836'

San Diego County: Stream Bioassessment Sampling Sites. May 2002, October 2002, May 2003.

Watershed Name	Receiving Water	Station Identification	Site Description	Station Coordinates
Escondido Creek	Escondido Creek	ESC-EF	Reach consisted of 5 riffles downstream of the old Elfin Forest Resort	33 04.417' 117 09.853'
Escondido Creek	Escondido Creek	ESC-VC	Reach consisted of 5 riffles in Vista Canyon	33 03.617' 117 10.802'
Escondido Creek	Escondido Creek	ESC-RSFR	Reach consisted of 3 riffles upstream of Rancho Santa Fe Road	33 02.365' 117 13.837'
San Dieguito River	Green Valley Creek	GVC-WB	Reach consisted of 5 riffles downstream of West Bernardo Drive	33 02.625' 117 04.567'
San Dieguito River	San Dieguito River	SD-DDH	Reach consisted of 5 riffles along Del Dios Highway downstream of Lake Hodges	33 02.459' 117 08.595'
Los Peñasquitos Creek	Los Peñasquitos Creek	LPC-CCR	Reach consisted of 5 riffles upstream of Cobblestone Creek Road	32 56.949' 117 04.214'
Los Peñasquitos Creek	Los Peñasquitos Creek	LPC-BMR	Reach consisted of 5 riffles downstream of Black Mountain Road	32 56.349' 117 07.864'
Los Peñasquitos Creek	Los Peñasquitos Creek	CCC-805	Reach consisted of 5 riffles downstream of I-805 at Sorrento Valley Road	32 53.403' 117 12.717'
Mission Bay	Rose Creek	MB-RC	Reach consisted of 5 riffles downstream of Highway 52	32 50.056' 117 13.887'
Mission Bay	Tecolote Creek	TC-TCNP	Reach consisted of 4 riffles downstream of Mt. Acadia Blvd	32 47.874' 117 11.339'
San Diego River	San Diego River	SDR-MT	Reach consisted of 5 riffles in Mission Trails Park	32 49.249' 117 03.866'
San Diego River	San Diego River	SDR-1	San Diego River. Reach consisted of 5 riffles downstream of Mission Valley Golf Course	32 45.736' 117 11.557'
San Diego Bay	Chollas Creek	CC-FB	Reach consisted of 5 riffles downstream of Federal Boulevard	32 43.606' 117 04.219'
Sweetwater River	Sweetwater River	SR-94	Sweetwater River. Reach consisted of 3 riffles at the Highway 94 crossing	32 43.962' 116 56.418'
Sweetwater River	Long Canyon Creek	SR-AD	Reach consisted of 5 riffles in Long Canyon Creek along Acacia Drive	32 39.394' 117 00.800'
Sweetwater River	Sweetwater River	SR-WS	Sweetwater River. Reach consisted of 5 riffles downstream of Bonita Road	32 39.436' 117 02.717'
Tijuana River	Tijuana River	TJ-DM	Tijuana River. Reach consisted of 5 riffles upstream of Dairy Mart Road	32 32.816' 117 03.741'

Stream Bioassessment Sites Sampled May 2002, October 2002, and May 2003.

Appendix B.1 Photos

AHC-ECR. Agua Hedionda Creek-El Camino Real.JPG

AHC-MR. Agua Hedionda Creek-Melrose Drive.JPG

BVR-CB. Buena Vista River-College Blvd.JPG

BVR-SVW. Buena Vista River-South Vista Way.JPG

CC-E. Cottonwood Creek-Encinitas Blvd.JPG

CC-H94. Campo Creek-Highway 94.JPG

Appendix B.1 Photos

CCC-805. Carroll Canyon Creek-805.JPG

CCF-FB. Chollas Creek-Federal Blvd.JPG

ENC-GVR. Encinitas Creek-Green Valley Rd.JPG

ESC-CC. Escondido Creek-Country Club Rd.JPG

ESC-EF. Escondido Creek-Elfin Forest.JPG

ESC-HRB. Escondido Creek-Harmony Grove Bridge.JPG

Appendix B.1 Photos

ESC-RSFR. Escondido Creek-Rancho Santa Fe Rd.JPG

ESC-VC. Escondido Creek-Vista Canyon.JPG

GVC-WB. Green Valley Creek-West Bernardo Rd.JPG

LAC-CB. Loma Alta Creek-College Blvd.JPG

LAC-ECR. Loma Alta Creek-El Camino Real.JPG

LPC-BMR. Los Penasquitos Creek-Black Mountain Rd.JPG

Appendix B.1 Photos

LPC-CCR. Los Penasquitos Creek-Cobblestone Creek Rd.JPG

MB-RC. Rose Creek-Highway 52.JPG

REF-CC. Reference-Cedar Creek.JPG

REF-DLC. Reference-De Luz Creek.JPG

REF-DLC3. Reference-De Luz Creek 3.JPG

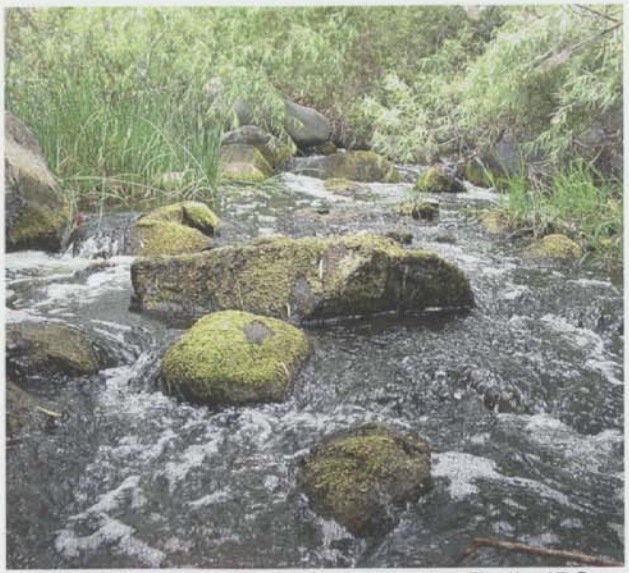
REF-KC. Reference-Keys Creek.JPG

Appendix B.1 Photos

REF-SC. Reference-Sandia Creek.JPG

SD-DDH. San Dieguito River-Del Dios Highway.JPG

SDR-1. San Diego River-1.JPG



SDR-MT. San Diego River-Mission Trails.JPG

SLRR-BR. San Luis Rey River-Benet Rd.JPG

SLRR-MR. San Luis Rey River-Mission Rd.JPG

Appendix B.1 Photos

SMC-LCCC. San Marcos Creek-La Costa Country Club.JPG

SMC-M. San Marcos Creek-McMahr Dr.JPG

SMC-RSFR. San Marcos Creek-Rancho Santa Fe Rd.JPG

SMC-SP. San Marcos Creek-Santar Place.JPG

SMR-CP. Santa Margarita River-Camp Pendleton.JPG

SMR-DLR. Santa Margarita River-De Luz Rd.JPG

Appendix B.1 Photos

SMR-WGR. Santa Margarita River-Willow Glen Rd.JPG

SR-94. Sweetwater River-Highway 94.JPG

SR-AD. Sweetwater River-Acacia Drive.JPG

TC-TCNP. Tecolote Creek-Tecolote Creek Natural Park.JPG

TJ-DM. Tijuana River-Dairy Mart Rd.JPG

Appendix B.2-1: Taxonomic Listing of Benthic Macroinvertebrates Collected May 2002.

(TV = Tolerance Value: range is 0-10; 0 is intolerant to impairment, 10 is highly tolerant to impairment. FFG = Functional Feeding Group: c=collector, cf=collector-filterer, cg=collector-gatherer, mh=macrophyte herbivore, om=omnivore, p=predator, pa= parasite, ph=piercer herbivore, sc=scraper, sh=shredder

	TV	FFG	AHC-ECR			AHC-MR			BVR-CB			BVR-ED			CC-E-US			CCC-805			ENC-GVR			ESC-CC			ESC-EF			ESC-HRB			ESC-RSFR			ESC-VC		
			T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3
PHYLUM ARTHROPODA																																						
Class Insecta																																						
Ephemeroptera																																						
Baetidae	4	cg																																				
Baetis sp	5	cg	36	12	7	20	1	1	148	152	131			58				91	115	151	1			182	136	51	137	121	145	3	6		1	25	27	163	213	171
Fallceon quilleri	4	cg	21	24	16				2	5		2		2				4	6	1				32	49	12	4	3	12	125	85	50				18	14	9
Leptohyphidae																																						
Tricorythodes sp	5	cg																									3	4								1	3
Odonata																																						
Gomphidae																																						
Progomphus sp	1	p																																				
Ceonagrionidae																																						
Argia sp	7	p						1																														
Libellulidae																																						
Brechmorhoga mendax	9	p																																		1		
Plecoptera																																						
Nemouridae																																						
Malenka sp	2	sh																																				
Perlodidae																																						
Isoperla sp	2	p																																				
Hemiptera																																						
Corixidae	10	p																																				
Trichocorixa sp	10	p																																				
Megaloptera																																						
Corydalidae																																						
Neohermes sp	0	p																																				
Trichoptera																																						
Philopotamidae																																						
Wormaldia sp	3	cf																																				
Psychomyiidae																																						
Tinodes sp	2	sc																																				
Hydropsychidae																																						
Cheumatopsyche sp	5	cf																																				
Hydropsyche sp	4	cf								2	1														1	2	36	9	13				1			8	16	9
Hydroptilidae	4	ph																																				1
Hydroptila sp	6	ph							2	4	1			1	37	35		1		9	1									17	20	25	1					
Ochrotrichia sp	4	ph																																				
Neotrichia sp	4	sc																																				
Lepidostomatidae																																						
Lepidostoma sp	1	sh																																				
Brachycentridae																																						
Micrasema sp	1	mh																																				
Helicopsychidae																																						
Helicopsyche sp	3	sc																																				
Polycentropodidae																																						
Polycentropus sp	6	p																																				
Glossosomatidae																																						
Agapetus sp	0	sc																																				
Lepidoptera																																						
Pyralidae	5																																					
Petrophila sp	5	sc																																				
Coleoptera																																						
Curculionidae																																						
Hydrophilidae																																						
Laccobius sp	5	p																																				
Hydrobius sp	8	p																																				
Dryopidae																																						
Helichus sp	5	sh																																				
Psephenidae																																						
Psephenus sp	4	sc																																				
Elmidae																																						
Microcylloepus sp	2	cg																																				
Zaitzevia sp	4	sc																																				
Heterelmis sp	4	cg																																				
Diptera																																						
Chironomidae	6	cg	152	135	117	116	102	223	16	21	32	39	36	182	211	188	230	161	105	89	190	165	161	18	38	15	49	41	61	65	121	118	54	170	121	46	40	64
Dolichopodidae	4	p		1																																		
Muscidae	6	p	1														1																					
Tipulidae																																						
Holorusia sp	5	sh														1		1																				
Tipula sp	4	om	1																																1			
Limonia sp	6	sh																																1				
Psychodidae																																						
Maruina sp	1	sc																																				
Psychoda sp	10	cg																																				
Pericoma sp	4	cg	6	4										1	3										1	1												
Dixidae																																						
Dixa sp	1	cg																																				
Meringodixa sp	2	cg																																				
Simuliidae																																						
Simulium sp	6	cf	36	26	5	2	1		70	107	107	2		1	2	9	17	36	74	41	28	87	63	69	77	224	74	132	85	12	6	5	29	19	64	62	37	26

Appendix B.2-1: Taxonomic Listing of Benthic Macroinvertebrates Collected May 2002.

	TV	FFG	AHC-ECR			AHC-MR			BVR-CB			BVR-ED			CC-E-US			CCC-805			ENC-GVR			ESC-CC			ESC-EF			ESC-HRB			ESC-RSFR			ESC-VC		
			T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3
Ceratopogonidae																																						
Atrichopogon	6	cg																																				
Forcipomyia sp	6	cg			2																																	
Dasyhelea sp	6	cg												1			1															1						
Culicoides sp	6	p																														1						
Bezzia/Palpomyia complex	6	p																																				
Stratiomyidae																																						
Caloparyphus sp	7	cg																												1	2	2			1			
Euparyphus sp	8	cg																													2	1						
Nemotelus sp	8	cg																																				
Empididae																																						
Clinocera sp	6	p																																				
Hemerodromia sp	6	p								1	2																											
Sciomyzidae															2																							
Hedria sp	6	p																																				
Ephydridae																																						
Hydrellia sp	6	sh																																				
Ephydra sp	6	sh																																				
Subphylum Crustacea																																						
Class Arachnida																																						
Acari																																						
Sperchonidae																																						
Sperchon sp	5	p	1						19	8	20														2	2	1	1	2					1	4	8
Hydrachnidae																																						
Hydrachna sp	5	p																															1					
Torrenticolidae																																						
Torrenticola sp	5	p																																				
Hygrobatidae																																						
Atractides sp	5	p	2	5	2																																	
Subphylum Chelicerata																																						
Class Ostracoda	8	cg	8	79	104				1			55	99	10	24	21	5	1	2		5	1								11	5	25						
Class Malacostraca																																						
Amphipoda		cg																1							1								19	12	4	1		
Corophiidae																																						
Monocorophium sp		cf																																				
Gammaridae																																						
Gammarus sp	4	cg																															186	53	70			
Crangonyctidae																																						
Crangonyx sp	4	cg																																				
Hyalellidae																																						
Hyalella sp	8	cg	2	1	5	1			12	5	10	2		1	2	4	1	2	1	1	64	32	88	5	13	3	1	1	1			1	1	4	3		1	
Dacapoda																																						
Atyidae																																						
Syncaris sp		c																																				
Cambaridae	6	sh													1	1					1												1					
Astacidae																																						
Pacifastacus leniusculus	6	om																																				
Class Brachiopoda																																						
Diplostraca																																						
Cladocera	8	c																																				
Class Maxillopoda																																						
Harpacticoida	8	c																																				
Cyclopoida	8	c	5	2				1			1							1	2		4	1	3				4	2			2	7						1
PHYLUM CNIDARA																																						
Class Hydrozoa																																						
Hydroida																																						
Hydridae																																						
Hydra sp	5	p														10						2																
PHYLUM PLATYHELMINTHES																																						
Class Turbelleria																																						
Tricladida																																						
Planariidae	4	p	1			2						1		1		18	14		1					1			1			30	40	25				1	1	
PHYLUM NEMATODA	5	p			4									1																	1	1					
PHYLUM ANNELIDA																																						
Class Oligochaeta	8	cg	20	18	15	173	208	72	12	6	2	202	168	37	12	18	14	2	2		4	10	2	1						32	22	30	2	1	5	12	8	30
Class Hirudinea	10	pa																					1															
PHYLUM MULLUSCA																																						
Class Bivalvia																																						
Veneroida																																						
Corbiculidae																																						
Corbicula fluminea	10	cf	17	19	11				1																									2			2	
Class Gastropoda																																						
Basommatophora																																						
Lymnaeidae																																						
Fossaria sp	6	sc																																				
Ancylidae																																						
Ferrissia sp	6	sc							1																	2								3	1			
Planorbidae																																						
Planorbella sp	7	sc																																				
Physidae																																						
Physa/Physella sp	8	sc	2		5		1	1								5	4		1		10	11	2								1			1			1	

Appendix B.2-1: Taxonomic Listing of Benthic Macroinvertebrates Collected May 2002.

(TV = Tolerance Value: range is 0-10; 0 is int

	TV	FFG	LAC-CB			LAC-ECR			LPC-BMR			LPC-CCR			REF-DLC			REF-KC			REF-SC			SDR-1			SDR-MT			SLRR-BR			SLRR-MR		
			T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3
PHYLUM ARTHROPODA																																			
Class Insecta																		1																	
Ephemeroptera																																			
Baetidae	4	cg																																	
Baetis sp	5	cg							19	22	19	34	52	47	83	13	21	46	7	91	89	62	80				21	16	3	17	22	15	12	24	39
Fallceon quilleri	4	cg							17	14	48	8	4	3		2					5		1				10	5	38	13	5	7			
Leptohyphidae																																			
Tricorythodes sp	5	cg														8	1		7		12	26	23										7	5	5
Odonata																																			
Gomphidae																																			
Progomphus sp	1	p																																1	
Ceonagrionidae																																			
Argia sp	7	p										1	3	3	1		1	2	1	3	1		3				2	7	2						
Libellulidae																																			
Brechmorhoga mendax	9	p																																	
Plecoptera																																			
Nemouridae																																			
Malenka sp	2	sh													2	1	9	3																	
Perlodidae																																			
Isoperla sp	2	p																	14		1	3													
Hemiptera																																			
Corixidae	10	p				2								1											3	131									
Trichocorixa sp	10	p																															1		
Megaloptera																																			
Corydalidae																																			
Neohermes sp	0	p																	1																
Trichoptera																			1																
Philopotamidae																			2																
Wormaldia sp	3	cf														22	5		27																
Psychomyiidae																																			
Tinodes sp	2	sc																			2	5	3												
Hydropsychidae															1					1	1		1												
Cheumatopsyche sp	5	cf															1				15	4	19												
Hydropsyche sp	4	cf													41	6	1	40		16	74	109	86				10	4	7						
Hydroptilidae	4	ph														4	4	1	1	1							2								
Hydroptila sp	6	ph					2	2		1	2				3	2		1		1							2			12	9	15			
Ochrotrichia sp	4	ph														29	20		24		1	1	1												
Neotrichia sp	4	sc																1		1															
Lepidostomatidae																																			
Lepidostoma sp	1	sh																2																	
Brachycentridae																																			
Micrasema sp	1	mh														24	55		12		3	15													
Helicopsychidae																																			
Helicopsyche sp	3	sc													1					1															
Polycentropodidae																																			
Polycentropus sp	6	p																																	
Glossosomatidae																																			
Agapetus sp	0	sc																	1				2												
Lepidoptera																																			
Pyralidae	5																										1								
Petrophila sp	5	sc																																	
Coleoptera																																			
Curculionidae																																			
Hydrophilidae																																			
Laccobius sp	5	p				1																													
Hydrobius sp	8	p															1																		
Dryopidae																																			
Helichus sp	5	sh																	1																
Psephenidae																																			
Psephenus sp	4	sc																			1		2												
Elmidae																																			
Microcylloepus sp	2	cg														1			2		7	3	4												
Zaitzevia sp	4	sc														5	10		25		8	2	11												
Heterelmis sp	4	cg																	1		1		1												
Diptera																																			
Chironomidae	6	cg	110	37	37	99	103	149	121	135	59	98	147	93	55	136	89	67	123	69	68	69	61	10	4	17				167	172	168	154	159	70
Dolichopodidae	4	p																																	
Muscidae	6	p																																	
Tipulidae																																			
Holorusia sp	5	sh											1		1						1														
Tipula sp	4	om											3	4			1	1	2		1	1	1				2		1						
Limonia sp	6	sh													2				1	1															
Psychodidae																																			
Maruina sp	1	sc													1																				
Psychoda sp	10	cg		1																															
Pericoma sp	4	cg		1	1								1				1		1										1						
Dixidae																																			
Dixa sp	1	cg													1	2	2	3	9																
Meringodixa sp	2	cg																		1															
Simuliidae																																			
Simulium sp	6	cf	2			2	184	135	24	55	98	139	52	145	118	3	5	131	3	117		1	6	48		1	52	9		5	54	49	21	14	74

Appendix B.2-1: Taxonomic Listing of Benthic Macroinvertebrates Collected May 2002.

	TV	FFG	LAC-CB			LAC-ECR			LPC-BMR			LPC-CCR			REF-DLC			REF-KC			REF-SC			SDR-1			SDR-MT			SLRR-BR			SLRR-MR		
			T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3
Ceratopogonidae																																			
Atrichopogon	6	cg																	1																
Forcipomyia sp	6	cg																																	
Dasyhelea sp	6	cg										1																							
Culicoides sp	6	p																																	
Bezzia/Palpomyia complex	6	p												3	1	19	23	3	11	3	1	1				1									
Stratiomyidae																																			
Caloparyphus sp	7	cg																	2								5	1	1						
Euparyphus sp	8	cg										1					1		1	2															
Nemotelus sp	8	cg					1																												
Empididae												1																							
Clinocera sp	6	p						1																									1		1
Hemerodromia sp	6	p												1		2		1	1	1													2	4	1
Sciomyzidae																																			
Hedria sp	6	p																																	
Ephydridae													1																						1
Hydrellia sp	6	sh																			1														
Ephydra sp	6	sh																								4									
Subphylum Crustacea																																			
Class Arachnida																																			
Acari																																			
Sperchonidae																																			
Sperchon sp	5	p						2					1		2	23	16	2	6	2	10	3	1				104	153	107		1			1	
Hydrachnidae																																			
Hydrachna sp	5	p											1																						
Torrenticolidae																																			
Torrenticola sp	5	p														1				1															
Hygrobatidae																																			
Atractides sp	5	p													1	4		2			4	2	1												
Subphylum Chelicerata																																			
Class Ostracoda	8	cg	19	3	1	132	12	8	10	9	8	1	25	1		2	7	2				3		1		16		1	1			2		2	
Class Malacostraca																																			
Amphipoda		cg		1																			1		2						2	1	4	15	55
Corophiidae																																			
Monocorophium sp		cf																						215											
Gammaridae																																			
Gammarus sp	4	cg																																	
Crangonyctidae																																			
Crangonyx sp	4	cg																															38	45	53
Hyalellidae																																			
Hyalella sp	8	cg	4	1	1	21	4	15	53	56	56	6	2	4		1	5	6			1			8	287	30			1	85	32	42	17	21	19
Dacapoda																																			
Atyidae																																			
Syncaris sp		c																						1											
Cambaridae	6	sh		1					1																1										1
Astacidae																																			
Pacifastacus leniusculus	6	om																																	
Class Brachiopoda																																			
Diplostraca																																			
Cladocera	8	c																							16										
Class Maxillopoda																																			
Harpacticoida	8	c			2																														
Cyclopoida	8	c			2	19	1	3	2		1		6											2	4	10					1			
PHYLUM CNIDARA																																			
Class Hydrozoa																																			
Hydroida																																			
Hydridae																																			
Hydra sp	5	p																																	
PHYLUM PLATYHELMINTHES																																			
Class Turbelleria																																			
Tricladida																																			
Planariidae	4	p	5											1		1				1	2		2	18			65	79	119						
PHYLUM NEMATODA	5	p		15	24				2		2	2	1	1																					
PHYLUM ANNELIDA																																			
Class Oligochaeta	8	cg	53	221	182	21		1	15	3	2	2	4	6			2	3	2	7	2					5				1		3	18	2	
Class Hirudinea	10	pa																																	
PHYLUM MULLUSCA																																			
Class Bivalvia																																			
Veneroida																																			
Corbiculidae																																			
Corbicula fluminea	10	cf							13		4	1	2	3							3		1	18			17	1	10	4			18	1	
Class Gastropoda																																			
Basommatophora																																			
Lymnaeidae																																			
Fossaria sp	6	sc	1																																
Ancylidae																																			
Ferrissia sp	6	sc																																	
Planorbidae																																			
Planorbella sp	7	sc									2																	7	1						
Physidae																																			
Physa/Physella sp	8	sc	79	6	23	8	2	1	2	2		1					2	1	1							83			1						

Appendix B.2-1: Taxonomic Listing of Benthic Macroinvertebrates Collected May 2002.

(TV = Tolerance Value: range is 0-10; 0 is int

	TV	FFG	SMC-LCCC			SMC-M			SMC-RSFR			SMC-SP			SR-94			SR-WS			TC-TCNP		
			T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3
PHYLUM ARTHROPODA																							
Class Insecta																							
Ephemeroptera																							
Baetidae	4	cg	1																				
Baetis sp	5	cg	214	189	187	59	56	45	93	31	22	25	22	10									
Fallceon quilleri	4	cg	35	1	9		2	1		1	1	32	10	2	15	18							
Leptohyphidae																							
Tricorythodes sp	5	cg																					
Odonata																							
Gomphidae																							
Progomphus sp	1	p																					
Ceonagrionidae																							
Argia sp	7	p									4												
Libellulidae																							
Brechmorhoga mendax	9	p																					
Plecoptera																							
Nemouridae																							
Malenka sp	2	sh																					
Perlodidae																							
Isoperla sp	2	p																					
Hemiptera																							
Corixidae	10	p															1	49	11				
Trichocorixa sp	10	p													7	2		9					
Megaloptera																							
Corydalidae																							
Neohermes sp	0	p																					
Trichoptera																							
Philopotamidae																							
Wormaldia sp	3	cf																					
Psychomyiidae																							
Tinodes sp	2	sc																					
Hydropsychidae																							
Cheumatopsyche sp	5	cf	1	2	1																		
Hydropsyche sp	4	cf		8	2																		
Hydroptilidae	4	ph																					
Hydroptila sp	6	ph	2	2	2				5		1	1	1	7			1		29	2			
Ochrotrichia sp	4	ph																					
Neotrichia sp	4	sc																					
Lepidostomatidae																							
Lepidostoma sp	1	sh																					
Brachycentridae																							
Micrasema sp	1	mh																					
Helicopsychidae																							
Helicopsyche sp	3	sc																					
Polycentropodidae																							
Polycentropus sp	6	p	1																				
Glossosomatidae																							
Agapetus sp	0	sc																					
Lepidoptera																							
Pyralidae	5																						
Petrophila sp	5	sc		2																			
Coleoptera									1														
Curculionidae																2							
Hydrophilidae																							
Laccobius sp	5	p															1						
Hydrobius sp	8	p																					
Dryopidae																							
Helichus sp	5	sh																					
Psephenidae																							
Psephenus sp	4	sc																					
Elmidae																							
Microcylloepus sp	2	cg																					
Zaitzevia sp	4	sc																					
Heterelmis sp	4	cg																					
Diptera																							
Chironomidae	6	cg	13	70	28	190	118	176	88	59	60	40	42	13	104	182	190	120	193	176	204	230	260
Dolichopodidae	4	p																					
Muscidae	6	p																			1		
Tipulidae																							
Holorusia sp	5	sh							1														
Tipula sp	4	om					1										1		8				
Limonia sp	6	sh																			1		
Psychodidae																							
Maruina sp	1	sc																					
Psychoda sp	10	cg															1						
Pericoma sp	4	cg													1	2	5						
Dixidae																							
Dixa sp	1	cg																					
Meringodixa sp	2	cg																					
Simuliidae																							
Simulium sp	6	cf	36	41	67	39	113	60	43	114	69	124	202	270	37	41	47	3	8	59	2	9	5

Appendix B.2-1: Taxonomic Listing of Benthic Macroinvertebrates Collected May 2002.

	TV	FFG	SMC-LCCC			SMC-M			SMC-RSFR			SMC-SP			SR-94			SR-WS			TC-TCNP		
			T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3
Ceratopogonidae																							
Atrichopogon	6	cg																					
Forcipomyia sp	6	cg																					
Dasyhelea sp	6	cg																					
Culicoides sp	6	p																8	18	2			
Bezzia/Palpomyia complex	6	p														1							
Stratiomyidae																					1		
Caloparyphus sp	7	cg																					
Euparyphus sp	8	cg																					
Nemotelus sp	8	cg													1								
Empididae																							
Clinocera sp	6	p																					
Hemerodromia sp	6	p														1							
Sciomyzidae																							
Hedria sp	6	p															2						
Ephydridae																1			1				
Hydrellia sp	6	sh																					
Ephydra sp	6	sh																					
Subphylum Crustacea																							
Class Arachnida																							
Acari																							
Sperchonidae																							
Sperchon sp	5	p		1						3	2			1	19	16	2						
Hydrachnidae																							
Hydrachna sp	5	p																					
Torrenticolidae																							
Torrenticola sp	5	p																					
Hygrobatidae																							
Atractides sp	5	p																					
Subphylum Chelicerata																							
Class Ostracoda	8	cg													1	2	14	25	10	26	9	47	5
Class Malacostraca																							
Amphipoda		cg					1																
Corophiidae																							
Monocorophium sp		cf																					
Gammaridae																							
Gammarus sp	4	cg																					
Crangonyctidae																							
Crangonyx sp	4	cg																					
Hyalellidae																							
Hyalella sp	8	cg	17		17	17	12	22	70	95	120	78	30		7	23	27	34	24	32		1	
Dacapoda																							
Atyidae																							
Syncaris sp		c																					
Cambaridae	6	sh	1	1							1		1										
Astacidae																							
Pacifastacus leniusculus	6	om															1			1			
Class Brachiopoda																							
Diplostraca																							
Cladocera	8	c																					
Class Maxillopoda																							
Harpacticoida	8	c																					
Cyclopoida	8	c									1	1			1	7	1	1				4	
PHYLUM CNIDARA																							
Class Hydrozoa																							
Hydroida																							
Hydridae																							
Hydra sp	5	p																					
PHYLUM PLATYHELMINTHES																							
Class Turbelleria																							
Tricladida																							
Planariidae	4	p				1					20					1							
PHYLUM NEMATODA	5	p																					
PHYLUM ANNELIDA																							
Class Oligochaeta	8	cg		1		3			6	6	3	6			5	1	1	32	6	3	85	14	29
Class Hirudinea	10	pa																					
PHYLUM MULLUSCA																							
Class Bivalvia																							
Veneroida																							
Corbiculidae																							
Corbicula fluminea	10	cf				3	2	4	4	1													
Class Gastropoda																							
Basommatophora																							
Lymnaeidae																							
Fossaria sp	6	sc																					
Ancylidae																							
Ferrissia sp	6	sc				2	1	1				7	2										
Planorbidae																							
Planorbella sp	7	sc									2												
Physidae																							
Physa/Physella sp	8	sc				1	2	1				1			12	2	16	17	8	1	1		

Appendix B.2-2: Taxonomic Listing of Benthic Macroinvertebrates Collected October 2002.

(TV = Tolerance Value: range is 0-10; 0 is intolerant to impairment, 10 is highly tolerant to impairment. FFG = Functional Feeding Group: c=collector, cf=collector-filterer, cg=collector-gatherer, mh=macrophyte herbivore, om=omnivore, p=predator, pa= parasite, ph=piercer herbivore, sc=scraper, sh=shredder.)

	TV	FFG	AHC-ECR			AHC-MR			BVR-CB			CCC-805			ESC-EF			ESC-HRB			GVC-WB			LAC-ECR			LPC-BMR			MB-RC			REF-DLC3			REF-KC		
			T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3
PHYLUM ARTHROPODA																																						
Class Insecta																																						
Ephemeroptera																																						
Baetidae	4	cg				1																																
Baetis sp	5	cg				1			81	105	76	62	15	74	15	40	20				2	2	3				21	6	16	1			23	36	14	4	58	48
Fallceon quilleri	4	cg		2	2	5					1	84	79	52				55	14	19			1				8	11	59	1		1						
Leptohyphidae																																						
Tricorythodes sp	5	cg														1																						
Caenidae																																						
Caenis sp	7	cg																																				
Odonata																																						
Aeshindae																																						
Anax walsinghami	8	p																												1								
Libellulidae																																						
Brechmorhoga mendax	9	p										2	1																									
Libellula	9	p																					1															
Cordulegastridae																																						
Cordulegaster dorsalis	3	p																													2							
Calopterygidae																																						
Hetaerina americana	6	p													1													1						2				
Coenagrionidae	9	p										1																										
Enallagma sp	9	p																																				
Argia sp	7	p				34	5				12	3	8	2	11	2	8		2						30	15	20	11	13		3		2	9	3	23	9	37
Plecoptera																																						
Nemouridae																																						
Malenka sp	2	sh																																1	1	6	9	2	5
Hemiptera																																						
Corixidae																																						
Trichocorixa sp	10	p	1																							2												
Trichoptera																																						
Philopotamidae																																						
Wormaldia sp	3	cf																																2	1	4	4	1	2
Tinodes sp	2	sc															1																	15	13	1			
Hydropsychidae	4	cf																																				
Cheumatopsyche	5	cf													6	9	6																	5	3	4			
Hydropsyche sp	4	cf							122	44	34				55	124	112				3						3							159	107	176	102	103	117
Hydroptilidae	4	ph																	2																				1
Hydroptila sp	6	ph		2		1	1		16	24	5	8	6	23	3	3	3		1	3					9		1	1				2					
Ochrotrichia sp	4	ph																																2	7	2			
Neotrichia sp	4	sc																																			2		
Lepidostomatidae																																						
Lepidostoma sp	1	sh																																			7	6	15
Brachycentridae																																						
Micrasema sp	1	mh																																	3	1			
Lepidoptera																																					1		
Pyralidae																																			1				
Parapoynx sp	5	sh																																			2		
Petrophila sp	5	sc								3						2																							
Nepticulidae		s																																				
Coleoptera																																						
Hydrophilidae	5	p																																				
Tropisternus sp	5	p																																1					
Dryopidae																																						
Helichus sp	5	sh																																				
Postelichus	5	sh																	1																				
Psephenidae																																						
Psephenus sp	4	sc																																				
Elmidae	4	cg																																				
Microcylloepus sp	2	cg																																8	18	5			
Zaitzevia sp	4	sc																																23	12	1			
Heterelmis sp	4	cg																																3	3	5			
Diptera																																						
Tipulidae	3																							1														
Holorusia sp	5	sh						1														2												1			1		
Tipula sp	4	om				1																																2
Limonia sp	6	sh											1	5									6											3					
Ormosia sp	3	cg																																4					
Dicranota sp	3	p																																			1		
Psychodidae																																						
Psychoda sp	10	cg																	1																				
Pericoma sp	4	cg															1		1	1	2	1	1	1		1				2		1						
Dixidae																																						
Dixa sp	1	cg																																			5		
Meringodixa sp	2	cg																																					2
Culicidae																																						
Culex sp	8	cg																			2	1																
Thaumaleidae		sc																					1															
Simuliidae	6	cf																																				
Prosimulium sp	3	cf																																				
Simulium sp	6	cf	1	3	1	3			2		44	6	5	6	33	33	56			4	11	37	28	2	65	3	27	5	104	33	9	4	40	30	63	91	102	45

Appendix B.2-2: Taxonomic Listing of Benthic Macroinvertebrates Collected October 2002.

	TV	FFG	AHC-ECR			AHC-MR			BVR-CB			CCC-805			ESC-EF			ESC-HRB			GVC-WB			LAC-ECR			LPC-BMR			MB-RC			REF-DLC3			REF-KC		
			T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3
Ceratopogonidae																																						
Atrichopogon sp	6	cg																				2										1						
Dasyhelea sp	6	cg			1															2		7	1	11							2	4					
Culicoides sp	6	p																		1				1													
Stilobezzia sp	6	p																				1															
Bezzia/Palpomyia complex	6	p	2																											1	5	7						
Chironomidae	6	cg	8	6	7	6	8	4	71	116	76	14	35	28	136	72	94	36	113	82	14	30	46	65	155	31	19	2	18	170	10	66	14	9	15	26	3	4
Stratiomyidae																																						
Caloparyphus sp	7	cg										5	1	23	1	1	1	1	9	2				1											1		3	3
Euparyphus sp	8	cg																	1	1																		
Myxosargus sp	8	cg																																				
Nemotelus sp	8	cg	2	2	5																						1		1									
Tabanidae																																						
Silvius sp	8	p																																		1		
Empididae	6	p																																				1
Chelifera/Metachela sp	6	p																																				
Hemerodromia sp	6	p									3	1		1	1	5					1													1	2			
Sciomyzidae	6	p												2																	1							
Ephydridae	6																		1	1																		
Muscidae	6	p															2				1	1	4									1						
Limnophora sp																																						
Subphylum Chelicerata																																						
Class Arachnida																																						
Acari																																						
Arrenuridae																																						
Arrenurus sp	5	p																																				1
Sperchonidae																																						
Sperchon sp	5	p				2			19	19	20	29	18	27	20	8	7										2		2				4	14		9	4	5
Hydryphantidae																																						
Thyopsoides sp								1																														
Hygrobatidae																																						
Atractides sp	5	p			1																															2		
Subphylum Crustacea																																						
Class Ostracoda	8	cg			7							1	7	14				12		49	1		10	41	11			11	1	9	34	6						1
Class Malacostraca																																						
Amphipoda		cg											1	1						1				1			3	1	1		1	1						
Corophiidae																																						
Monocorophium sp		cf																																				
Hyalellidae																																						
Hyalella sp	8	cg		1	3	8	48	1	1	2	5	2	81	33		1		146	64	98	7	3	5	124	17	8	116	227	54		14	110	8	33	2			
Crangonyctidae																																						
Crangonyx sp	4	cg																																				
Decapoda	6	sh																							1							1						
Atyidae																																						
Syncaris sp		c																																			
Astacidae																																						
Pacifastacus leniusculus	6	om											1									1	2					1			1						
Cambaridae	6	sh				1		2																														
Procambarus sp	6	sh		2	2						1											1			1	2	1	1			3	3						
PHYLUM CNIDARA																																						
Class Hydrozoa																																						
Hydroida																																						
Hyridae																																						
Hydra sp	5	p																1												2							
PHYLUM PLATYHELMINTHES																																						
Class Turbellaria																																						
Tricladida																																						
Planariidae	4	p	7	15	26	25	87	3		1	8	71	24	8	8	6	2	29	81	31					1		17	1	17				3			3	1	2
PHYLUM NEMATODA	5	p	47	69	53						4	5	6	3							9			2	1		4	2	10	5	96	8					1	
PHYLUM NEMERTEA																																						
Class Enopla																																						
Hoplonemertea																																						
Tertastemmatidae																																						
Prostoma sp		p																									1											
PHYLUM ANNELIDA																																						
Class Oligochaeta	8	cg	205	79	83	18	13	60			13	7	2	2	2			20	10	1	33	4	23	42	11	3	1	5	6	47	37	12		4			3	6
Class Hirudinida																																						
Arynchobdellida																																						
Erpobdellidae																																						
Erpobdella sp	8	p																7	1																			
PHYLUM MOLLUSCA																																						
Class Gastropoda																																						
Pulmonata																																						
Pleuroceridae																																						
Phytia myosotis		sc																																				
Basommatophora																																						
Lymnaeidae																																						
Fossaria sp	6	sc														2			1			3	6	16						3	4	4			4			
Ancylidae																																						
Ferrissia sp	6	sc									1																								1			
Planorbidae																																						
Planorbella sp	7	sc																										1										
Physidae																																						
Physa/Physella sp	8	sc	1	14	24								2			2			3			5	4	24	38	75	2	1				1	43	30				10	5	2
Corbiculidae																																						
Corbicula fluminea	10	cf	16	70	62	1					3			1	8		1										56	10	2									

Appendix B.2-2: Taxonomic Listing of Benthic Macroinvertebrates Collected October 2002.

(TV = Tolerance Value: range is 0-10; 0 is in

	TV	FFG	REF-SC			SD-DDH			SDR-1			SDR-MT			SLRR-BR			SLRR-MR			SMC-LCCC			SMR-DLR			SMR-WGR			SR-AD			TC-TCNP		
			T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3
PHYLUM ARTHROPODA																																			
Class Insecta																																			
Ephemeroptera																																			
Baetidae	4	cg																						2											
Baetis sp	5	cg	52	101	23	82	45	2				1				9	19	12	9	3		88	63	101	203	100	74	129	37						
Fallceon quilleri	4	cg	3	3	1	4	20	3						7	1	35	48				1	13	31	35	8	5									
Leptohyphidae																																			
Tricorythodes sp	5	cg		2																					3										
Caenidae																																			
Caenis sp	7	cg						26		15																									
Odonata																																			
Aeshindae																																			
Anax walsinghami	8	p																																	
Libellulidae																																			
Brechmorhoga mendax	9	p																																	
Libellula	9	p																																	
Cordulegastridae																																			
Cordulegaster dorsalis	3	p																													1				
Calopterygidae																																			
Hetaerina americana	6	p	2																																
Coenagrionidae	9	p																																	
Enallagma sp	9	p																																	1
Argia sp	7	p	9	19	7	1	4	24				26	9	40	2		1				32	3	5	7	3		2	2	1	9	3	1	36	3	6
Plecoptera																																			
Nemouridae																																			
Malenka sp	2	sh																																	
Hemiptera																																			
Corixidae																																			
Trichocorixa sp	10	p																																	
Trichoptera																																			
Philopotamidae																																			
Wormaldia sp	3	cf																						1											
Tinodes sp	2	sc	2	5	7	7	1															14	5		8										
Hydropsychidae	4	cf																																	
Cheumatopsyche	5	cf	3	1		1		1														41	11		2	3	2		6						
Hydropsyche sp	4	cf	136	82	65	13	15											3				57	20	3	48	177	145	109	183						
Hydroptilidae	4	ph										13	2			1																	2		
Hydroptila sp	6	ph				53	3									27	46				2	20	25								3	16	47	21
Ochrotrichia sp	4	ph	8	15	16																			1	2		10	10	5						
Neotrichia sp	4	sc																																	
Lepidostomatidae																																			
Lepidostoma sp	1	sh																																	
Brachycentridae																																			
Micrasema sp	1	mh	1	1	8																														
Lepidoptera																																			
Pyralidae																																			
Parapoynx sp	5	sh																									1	1							
Petrophila sp	5	sc		1			1															3	11				1								
Nepticulidae		s											1																						
Coleoptera																								1											
Hydrophilidae	5	p																	1																
Tropisternus sp	5	p																																	
Dryopidae																																			
Helichus sp	5	sh			1																														
Postelichus	5	sh																																	
Psephenidae																																			
Psephenus sp	4	sc	11	5	13																						1								
Elmidae	4	cg		2																							2								
Microcylloepus sp	2	cg	18	4	16																						5		10						
Zaitzevia sp	4	sc	13	4	48																														
Heterelmis sp	4	cg	11	4	11																														
Diptera																																			
Tipulidae	3																																		
Holorusia sp	5	sh		3									5	3																			1	2	1
Tipula sp	4	om		1	1							1	2	6			2					1											1		
Limonia sp	6	sh										5	35			1			1			2	3										10		
Ormosia sp	3	cg																																	
Dicranota sp	3	p																																	
Psychodidae																																			
Psychoda sp	10	cg																												2					
Pericoma sp	4	cg						1		1		6	6	2																1		1			1
Dixidae																																			
Dixa sp	1	cg																																	
Meringodixa sp	2	cg																																	
Culicidae																																			
Culex sp	8	cg																																	
Thaumaleidae		sc																																	
Simuliidae	6	cf																									1	1							
Prosimulium sp	3	cf																						2											
Simulium sp	6	cf	12	19	6	36	199	123	251	22	247		1	1		140	86	39	25	10	14	17	58	122	2	17	52	35	43	3	2	3			

Appendix B.2-2: Taxonomic Listing of Benthic Macroinvertebrates Collected October 2002.

	TV	FFG	REF-SC			SD-DDH			SDR-1			SDR-MT			SLRR-BR			SLRR-MR			SMC-LCCC			SMR-DLR			SMR-WGR			SR-AD			TC-TCNP		
			T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3
Ceratopogonidae																																			
Atrichopogon sp	6	cg	1				2																1				1							1	
Dasyhelea sp	6	cg										75	14	5									1				1			2			12	21	16
Culicoides sp	6	p																												1					
Stilobezzia sp	6	p																																	
Bezzia/Palpomyia complex	6	p										9	6								1									1		1	2	12	2
Chironomidae	6	cg	3	3	6	12	9	71	9	84		80	113	110	11	56	61	11	1	7	47	33	49	23	20	7	5	10	5	61	24	43	23	57	67
Stratiomyidae																																			
Caloparyphus sp	7	cg		1								3	3	1								2	8							87	9	1	4	1	1
Euparyphus sp	8	cg																												7					
Myxosargus sp	8	cg																1																	
Nemotelus sp	8	cg										1		1																					
Tabanidae																																			
Silvius sp	8	p																																	
Empididae	6	p														3														9					
Chelifera/Metachela sp	6	p														1																			
Hemerodromia sp	6	p	2	4			3					10	15	1		1	7						3							13					
Sciomyzidae	6	p																																	
Ephydridae	6																																		
Muscidae	6	p											3																						
Limnophora sp																																1			
Subphylum Chelicerata																																			
Class Arachnida																																			
Acari																																			
Arrenuridae																																			
Arrenurus sp	5	p			1																														
Sperchonidae																																			
Sperchon sp	5	p	6	15	52	1	1	2				16	15	7							2	5	6					3		2					
Hydryphantidae																																			
Thyopsoides sp																																			
Hygrobatidae																																			
Atractides sp	5	p																																	
Subphylum Crustacea																																			
Class Ostracoda	8	cg				2	1					7	18	2	3															16	24	190	2	10	20
Class Malacostraca																																			
Amphipoda		cg							2	3		1			5		2	51	43	50	4														
Corophiidae																																			
Monocorophium sp		cf								4																									
Hyalellidae																																			
Hyalella sp	8	cg	1			6	2	32	33	157	53	21	9	53	124	23	27	48	32	32	65			1									3		
Crangonyctidae																																			
Crangonyx sp	4	cg																117	171	190															
Decapoda	6	sh													2																					
Atyidae																																			
Syncaris sp		c							2																										
Astacidae																																			
Pacifastacus leniusculus	6	om						1		1		3		7	1				2	1	1						1						3	1	1
Cambaridae	6	sh																																	
Procambarus sp	6	sh								1		5			3						1												4	2	4
PHYLUM CNIDARA																																			
Class Hydrozoa																																			
Hydroida																																			
Hyridae																																			
Hydra sp	5	p								1											146														
PHYLUM PLATYHELMINTHES																																			
Class Turbellaria																																			
Tricladida																																			
Planariidae	4	p	2	14	10	89	3		6	6	3	9	5					1			25	3	3				1	2	8						
PHYLUM NEMATODA	5	p	1		1			5				5	2		1			1					2										44	135	128
PHYLUM NEMERTEA																																			
Class Enopla																																			
Hoplonemertea																																			
Tertastemmatidae																																			
Prostoma sp		p											4																						
PHYLUM ANNELIDA																																			
Class Oligochaeta	8	cg			1			1	1	3		1	17	5	124	2	4	4	10	7	2	1	3		3			2	2	1		1	3		4
Class Hirudinida																																			
Arynchobdellida																																			
Erpobdellidae																																			
Erpobdella sp	8	p																																	
PHYLUM MOLLUSCA																																			
Class Gastropoda																																			
Pulmonata																																			
Pleuroceridae																																			
Phytia myosotis		sc			1																														
Basommatophora																																			
Lymnaeidae																																			
Fossaria sp	6	sc										1	1														2								
Ancylidae																																			
Ferrissia sp	6	sc																																	
Planorbidae																																			
Planorbella sp	7	sc											4																						
Physidae																																			
Physa/Physella sp	8	sc										2	1	1							9									80	225	58			4
Corbiculidae																																			
Corbicula fluminea	10	cf	6	2	4			5	1	8	2	2			12	2		17	5	9	17	1		1					1						

Appendix B.2-3: Taxonomic Listing of Benthic Macroinvertebrates Collected May 2003.

(TV = Tolerance Value: range is 0-10; 0 is intolerant to impairment, 10 is highly tolerant to impairment. FFG = Functional Feeding Group: c=collector, cf=collector-filterer, cg=collector-gatherer, mh=macrophyte herbivore, om=omnivore, p=predator, pa= parasite, ph=piercer herbivore, sc=scraper, sh=shredder.)

	TV	FFG	AHC-ECR			AHC-MR			CCC-805			CC-FB			CC-H94			ESC-EF			ESC-HRB			GVC-WB			LPC-CCR			MB-RC			REF-CC			REF-DLC		
			T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3
PHYLUM ARTHROPODA																																						
Class Insecta																																						
Ephemeroptera																																						
Baetidae	4	cg																																				
Baetis sp	5	cg	13	10	2	170	73	146	78	60	64	5	19	14	1	2	2	79	82	117	23		4	43	56	38	107	113	26	145	178	186	5	3	4	76	102	59
Callibaetis sp	9	cg											16																									
Fallceon quilleri	4	cg	67	48	38	3	2		15	1	4	58	102	90		4		15	13	26	196	184	206	6	5	8	32	9	1	5	1			1		6		1
Leptohyphidae																																						
Paraleptophlebia sp	4	cg																															1					
Tricorythodes sp	5	cg																		2															2			1
Ephemerellidae																																						
Serratella sp	2	cg																															1	2				
Caenidae																																						
Caenis sp	7	cg																																				
Odonata																																						
Libellulidae																																						
Brechmorhoga mendax	9	p												1																								
Calopterygidae																																						
Hetaerina americana	6	p																																				
Coenagrionidae	9	p										1											1															
Enallagma sp	9	p										2																										
Argia sp	7	p				18			2			140	7	9					2	1							1	4	5	1	7	3				4		1
Plecoptera																																	4	2	1			
Nemouridae																																						
Malenka sp	2	sh																															2	1	7	6	2	
Perlodidae																																						
Isoperla sp	2	p													1																		8	3	9	2	3	1
Hemiptera																																						
Corixidae	10	p																																				
Megaloptera																																						
Corydalidae	0	p																																				1
Neohermes sp	0	p																															1		2		1	2
Rhyacophilidae																																						
Trichoptera																																						
Rhyacophila sp	0	p																															1		1			
Philopotamidae																																						
Wormaldia sp	3	cf																																		1	2	1
Psychomyiidae																																						
Tinodes sp	2	sc																																				
Hydropsychidae	4	cf																																		1		
Cheumatopsyche sp	5	cf																1																		2	1	5
Hydropsyche sp	4	cf																25	35	11								2	5							7	8	19
Hydroptilidae																																						
Hydroptila sp	6	ph	23	20	12					2	8	1	2	1	11	4	2	2	1	3	45	17	16	4	2	1	23	1		18	42	16						
Ochrotrichia sp	4	ph																																		4	3	4
Oxyethira sp	3	ph								1					7	7																						
Lepidostomatidae																																						
Lepidostoma sp	1	sh																																			1	
Brachycentridae																																						
Micrasema sp	1	mh																																		32	11	4
Glossosomatidae																																						
Agapetus sp	0	sc																																				1
Coleoptera																																						
Dytiscidae	5	p														1																						
Agabinus sp		p																															3					
Rhantus sp	5	p											2																									
Desmopachria sp	5	p													1																							
Laccophilus sp	5	p														1																			1			
Hydrotupes palpalis	5	p																																	1			
Stictotarsus sp	5	p																																1				
Hydrophilidae	5	p	1																																			
Laccobius sp	5	p		2							1																											
Hydrochus sp	5							1																										2	4			
Psephenus sp	4	sc																																				
Elmidae	4	cg																																		1		
Microcylloepus sp	2	cg																																				
Zaitzevia sp	4	sc																																				
Heterelmis sp	4	cg																																			1	
Diptera																																						
Tipulidae																																						
Holorusia sp	5	sh													1																	1						
Tipula sp	4	om					2	1																				2										
Limonia sp	6	sh										1																					1					
Psychodidae																																						
Maruina sp	1	sc																																			1	
Pericoma sp	4	cg	1	4	4																																	
Tanyderidae																																						
Protanyderus sp	1																																				1	
Dixidae																																						
Dixa sp	1	cg																															1		1			
Dixella sp	2	cg													2																			1				
Meringodixa sp	2	cg																															7		6			

Appendix B.2-3: Taxonomic Listing of Benthic Macroinvertebrates Collected May 2003.

	TV	FFG	AHC-ECR			AHC-MR			CCC-805			CC-FB			CC-H94			ESC-EF			ESC-HRB			GVC-WB			LPC-CCR			MB-RC			REF-CC			REF-DLC		
			T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3
Culicidae																																						
Anopheles sp	8	cg																																				
Culex sp	8	cg																																				
Simuliidae																																						
Simulium sp	6	cf	47	19	38	1			102	88	165	26	2	38		1	7	159	167	62	5		2	220	194	217	114	37	173	73	13	57	20	13	16	28	99	98
Ceratopogonidae																																						
Dasyhelea sp	6	cg											1								1																	
Culicoides sp	6	p																																				
Probezzia sp	6	p																																				
Bezzia/Palpomyia complex	6	p																										1	3							2		4
Chironomidae	6	cg	94	119	117	47	53	118	76	147	61	49	66	146	230	256	195	20	6	15	15	9	15	16	23	26	14	80	57	25	16	16	234	239	217	119	63	76
Stratiomyidae	6	cg																																				
Caloparyphus sp	7	cg			2								2	1									1				1											
Euparyphus sp	8	cg											1										1															
Nemotelus sp	8	cg						1																														
Empididae	6	p																																				
Clinocera sp	6	p													1																							
Chelifera/Metachela sp	6	p													1																					1		
Hemerodromia sp	6	p						1									1										1							1		1		
Dolichopodidae	4	p	2	4	1															1													1		1			
Sciomyzidae	6	p					1								1															1					1			
Ephydridae	6			1				2								1						1															
Muscidae	6	p	2	1	1					6		3	1	6	3		1										1						4	4				
Subphylum Chelicerata																																						
Class Arachnida																																						
Acari																																						
Sperchonidae																																						
Sperchon sp	5	p	5				2	1		1								2	5	2		1					6	1	3	2					2	3	1
Hygrobatidae																																						
Atractides sp	8	p		1												1																			3		1
Mesobates sp	8	p																																	1	6			
Subphylum Crustacea																																						
Class Malacostraca																																						
Amphipoda		cg																		5		4	1					1		1								
Corophiidae																																						
Monocorophium sp		cf					1																															
Hyalellidae																																						
Hyalella sp	8	cg	1	4	6	4	1	1										2		55	3	27	37	18	7	3	1	4	4	5	12	28				3		2
Crangonyctidae																																						
Crangonyx sp	4	cg																		6																		
Decapoda	6	sh									1									2										1	4							
Cambaridae	6	sh																																				
Procambarus sp	8	sh																																				
Procambarus clarkii	8	sh																																				
Ostracoda	8	cg	28	29	56		4			2	2		5		4		2				9	15		1	13	9	7	40	6	22	32	7						1
PHYLUM PLATYHELMINTHES																																						
Class Turbellaria																																						
Tricladida																																						
Planariidae	4	p	2	2	8	4		2	2		1										12	27	14				2	3	10									
PHYLUM CNIDARA																																						
Class Hydrozoa																																						
Hydroida																																						
Hyridae																																						
Hydra sp	5	p					60	9				6										1												6	32	18			
PHYLUM ANNELIDA																																						
Oligochaeta	8	cg	13	29	3	33	111	15	21	6		4	1	1	17	6	3	1		1		1	7	3	2	4		2	3	8		9	9	6	8	10	3	17
Hirudinida																																						
Arynchobdellida																																						
Erpobdellidae																																						
Erpobdella sp	8	p																				4	1															
PHYLUM MOLLUSCA																																						
Class Gastropoda																																						
Basommatophora																																						
Lymnaeidae																																						
Fossaria sp	6	sc																																				
Ancylidae																																						
Ferrissia sp	6	sc																																				
Planorbidae																																						
Planorbella sp	7	sc																																				
Physidae																																						
Physa/Physella sp	8	sc	3	2	2	27	15	5				23	77	5	17	16	97							2	1	1						1				1		2
Class Bivalvia																																						
Veneroida																																						
Corbiculidae																																						
Corbicula fluminea	10	cf	4	9	8																								1									

Appendix B.2-3: Taxonomic Listing of Benthic Macroinvertebrates Collected May 2003.

(TV = Tolerance Value: range is 0-10; (

	TV	FFG	REF-SC			SD-DDH			SDR-1			SDR-MT			SLRR-BR			SLRR-MR			SMR-CP			SMR-WGR			SR-WS			TC-TCNP			TJ-DM		
			T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3
PHYLUM ARTHROPODA																																			
Class Insecta																																			
Ephemeroptera																																			
Baetidae	4	cg																					3												
Baetis sp	5	cg	108	75	47	158	187	35	1			17	37	13	4	26	14	110	95	68	74	7	18	136	85	178	8		1		2	1			
Callibaetis sp	9	cg																																	
Fallceon quilleri	4	cg	3	2	7	7	7					53	52	17		3	1	3		1	3	115	177				1								
Leptohyphidae																																			
Paraleptophlebia sp	4	cg																																	
Tricorythodes sp	5	cg	1															1				3	2												
Ephemerellidae																																			
Serratella sp	2	cg																																	
Caenidae																																			
Caenis sp	7	cg						1																											
Odonata																																			
Libellulidae																																			
Brechmorhoga mendax	9	p																																	
Calopterygidae																																			
Hetaerina americana	6	p																						1											
Coenagrionidae	9	p				1																										1			
Enallagma sp	9	p																																	
Argia sp	7	p	1	1	5			8					2																	20	7	8			
Plecoptera			1																																
Nemouridae																																			
Malenka sp	2	sh	5		8																														
Perlodidae																																			
Isoperla sp	2	p	1																																
Hemiptera																																			
Corixidae	10	p																					9				1								
Megaloptera																																			
Corydalidae	0	p																																	
Neohermes sp	0	p																																	
Rhyacophilidae																																			
Trichoptera																																			
Rhyacophila sp	0	p																																	
Philopotamidae																																			
Wormaldia sp	3	cf																																	
Psychomyiidae																																			
Tinodes sp	2	sc			1																														
Hydropsychidae	4	cf	3																		1														
Cheumatopsyche sp	5	cf	6	1	11			1																4	9	9									
Hydropsyche sp	4	cf																			1		1	5	14	13									
Hydroptilidae																																			
Hydroptila sp	6	ph	21	11	43	12	3	7	2	1	1	81	27	10						2	1	1	1	1	1	3	2	1		21	35	85			
Ochrotrichia sp	4	ph			1																														
Oxyethira sp	3	ph																																	
Lepidostomatidae																																			
Lepidostoma sp	1	sh																																	
Brachycentridae																																			
Micrasema sp	1	mh	4		3																														
Glossosomatidae																																			
Agapetus sp	0	sc																																	
Coleoptera																																			
Dytiscidae	5	p																																1	
Agabinus sp		p																																	
Rhantus sp	5	p																																	
Desmopachria sp	5	p																																	
Laccophilus sp	5	p																																	
Hydrotupes palpalis	5	p																																	
Stictotarsus sp	5	p																																	
Hydrophilidae	5	p																																	
Laccobius sp	5	p																																	
Hydrochus sp	5																																		
Psephenus sp	4	sc	1																																
Elmidae	4	cg																																	
Microcylloepus sp	2	cg	1	2	3																														
Zaitzevia sp	4	sc	3		1																														
Heterelmis sp	4	cg	2	2																															
Diptera																																			
Tipulidae																																			
Holorusia sp	5	sh																												2					
Tipula sp	4	om																				1										1			
Limonia sp	6	sh																																	
Psychodidae																																			
Maruina sp	1	sc																																	
Pericoma sp	4	cg						2										2	1			4												1	
Tanyderidae																																			
Protanyderus sp	1																																		
Dixidae																																			
Dixa sp	1	cg																																	
Dixella sp	2	cg						1																											
Meringodixa sp	2	cg																																	

Appendix B.2-3: Taxonomic Listing of Benthic Macroinvertebrates Collected May 2003.

	TV	FFG	REF-SC			SD-DDH			SDR-1			SDR-MT			SLRR-BR			SLRR-MR			SMR-CP			SMR-WGR			SR-WS			TC-TCNP			TJ-DM		
			T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3	T1	T2	T3
Culicidae																																			
Anopheles sp	8	cg																					2												
Culex sp	8	cg																																1	
Simuliidae																																			
Simulium sp	6	cf	14	37	20	38	87	112	34	62	42	128	207	266	128	59	250	32	106	48	205	7	2	96	181	48	85	1	11	136	242	130		4	1
Ceratopogonidae																																			
Dasyhelea sp	6	cg																				1					2								
Culicoides sp	6	p																1																	
Probezzia sp	6	p																															21	1	1
Bezzia/Palpomyia complex	6	p		1	2																1	7							4					
Chironomidae	6	cg	115	172	145	54	18	125	5	13	5	11	7	4	102	135	44	119	73	145	6	58	53	42	25	43	85	50	70	54	26	27	112	239	150
Stratiomyidae	6	cg																																	
Caloparyphus sp	7	cg																				1	1							1					
Euparyphus sp	8	cg																																	
Nemotelus sp	8	cg																																	
Empididae	6	p			1																														
Clinocera sp	6	p																																	
Chelifera/Metachela sp	6	p																1		1															
Hemerodromia sp	6	p																														1			
Dolichopodidae	4	p																		1	1	3					1						19	1	3
Sciomyzidae	6	p																																	
Ephydridae	6																																7	1	
Muscidae	6	p				1	1											1	1	2		2							2						
Subphylum Chelicerata																																			
Class Arachnida																																			
Acari																																			
Sperchonidae																																			
Sperchon sp	5	p	5	1	3			3				2	2	1							2		3	10	5	10					1				
Hygrobatidae																																			
Atractides sp	8	p	1		1														1	1	1		2												
Mesobates sp	8	p																																	
Subphylum Crustacea																																			
Class Malacostraca																																			
Amphipoda		cg							49	11	12							4	3	1								12							
Corophiidae																																			
Monocorophium sp		cf							195	200	216																								
Hyalellidae																																			
Hyalella sp	8	cg						1	3	5	6				24	9	4	21	9	13							7	3	29			1			
Crangonyctidae																																			
Crangonyx sp	4	cg																4	1	2															
Decapoda	6	sh																										12	12	10	1				
Cambaridae	6	sh																												2					
Procambarus sp	8	sh																									1								
Procambarus clarkii	8	sh														1						1					1								
Ostracoda	8	cg				30	15	3	1		1	3	2		1			1		3		1					29	47	27	27	2	12	45	11	
PHYLUM PLATYHELMINTHES																																			
Class Turbellaria																																			
Tricladida																																			
Planariidae	4	p		1	4				6	9	24	8							1							1									
PHYLUM CNIDARA																																			
Class Hydrozoa																																			
Hydroida																																			
Hyridae																																			
Hydra sp	5	p			1							3			1												1		1						
PHYLUM ANNELIDA																																			
Oligochaeta	8	cg	3	1	3				1	8	1	1			49	29	4	5	6	6	2	97	29	8	1	7	90	190	154		1		106	50	120
Hirudinida																																			
Arynchobdellida																																			
Erpobdellidae																																			
Erpobdella sp	8	p																																	
PHYLUM MOLLUSCA																																			
Class Gastropoda																																			
Basommatophora																																			
Lymnaeidae																																			
Fossaria sp	6	sc																															1		
Ancylidae																																			
Ferrissia sp	6	sc													3																				
Planorbidae																																			
Planorbella sp	7	sc				2		1																											
Physidae																																			
Physa/Physella sp	8	sc													6	1							1				3			25	3	40	15	1	28
Class Bivalvia																																			
Veneroida																																			
Corbiculidae																																			
Corbicula fluminea	10	cf						1	1			3			2	6		4	7																

Appendix B.3-1: Ranked Abundance of Benthic Macroinvertebrates. May 2002.

NAME	AHC-ECR	AHC-MR	BVR-CB	BVR-ED	CCC-805	CC-E	ENC-GVR	ESC-CC	ESC-EF	ESC-HRB	ESC-RSFR	ESC-VC	LAC-CB	LAC-ECR	LPC-BMR	LPC-CCR
Chironomidae	404	441	69	257	355	629	516	71	151	304	345	150	184	351	315	338
Simulium sp	67	3	284	3	151	28	178	370	291	23	112	125	2	321	177	336
Baetis sp	55	22	431	58	357		1	369	403	9	53	547			60	133
Oligochaeta	53	453	20	407	4	44	16	1		84	8	50	456	22	20	12
Hyalella sp	8	1	27	3	4	14	184	21	3	1	8	1	6	40	165	12
Ostracoda	191		1	164	3	100	6			41			23	152	27	27
Fallceon quilleri	61		7	4	11			93	19	260		41			79	15
Sperchon sp	1		47					4	4			13		2		1
Hydropsyche sp			3					3	58		1	33				
Planariidae	1	2		2	1	32		1	1	95		2	5			1
Physa sp	7	2			1	9	23			1	1	1	108	11	4	1
Gammarus sp											309					
Hydroptila sp			7	1	10	72	1			62	1			4	3	
Monocorophium sp																
Corixidae														2		1
Corbicula fluminea	47		1								2	2			17	6
Crangonyx sp																
Amphipod, unid.					1			1			35	1	1			
Micrasema sp																
Tricorythodes sp									7			4				
Cyclopoida	7	1	1		3		8		6	9		1	2	23	3	6
Ochrotrichia sp																
Zaitzevia sp																
Nematoda	4			1						2			39		4	4
Wormaldia sp																
Bezzia/Palpomyia complex																3
Cheumatopsyche sp																
Argia sp		1														7
Pericoma sp	10			1		3		2					2			1
Culicoides sp										1						
Tipula sp	1										1					7
Atractides sp	9															
Ferrissia sp			1					2			4					
Trichocorixa sp																
Isoperla sp																
Dixa sp																
Hemerodromia sp			3													1
Microcylloepus sp																
Cladocera																
Caloparyphus sp										5		1				
Malenka sp																
Cambaridae						4	1				1		1		1	
Hydroptilidae												1				
Hydra sp						10	2									
Planorbella sp															2	
Tinodes sp																
Euparyphus sp										3						1
Holorusia sp					1	1										1
Limonia sp											1					
Dasyhelea sp				1		1				1						1
Ephydra sp																
Ephydridae																1
Hydropsychidae																
Agapetus sp																
Clinocera sp														1		
Heterelmis sp																
Muscidae	1					1										

Appendix B.3-1: Ranked Abundance of Benthic Macroinvertebrates. May 2002.

NAME	AHC-ECR	AHC-MR	BVR-CB	BVR-ED	CCC-805	CC-E	ENC-GVR	ESC-CC	ESC-EF	ESC-HRB	ESC-RSFR	ESC-VC	LAC-CB	LAC-ECR	LPC-BMR	LPC-CCR
Psephenus sp																
Curculionidae																
Forcipomyia sp	2															
Harpacticoida													2			
Hedria sp																
Helicopsyche sp																
Hydrachna sp											1					1
Laccobius sp														1		
Lepidostoma sp																
Nemotelus sp														1		
Neotrichia sp																
Pacifasticus leniusculus																
Petrophila sp																
Philopotamidae																
Psychoda sp													1			
Sciomyzidae						2										
Torrenticola sp																
Atrichopogon																
Baetidae																
Brechmorhoga mendax												1				
Coleoptera																
Dolichopodidae	1															
Empididae																
Fossaria sp													1			
Helichus sp																
Hirudinea							1									
Hydrellia sp																
Hydrobius sp																
Insecta																
Maruina sp																
Meringodixa sp																
Neohermes sp																
Polycentropus sp																
Progomphus sp																
Pyralidae																
Stratiomyidae																
Syncaris sp																
Trichoptera																
Grand Total	930	926	902	902	902	950	937	938	943	902	883	974	833	931	877	917

Appendix B.3-1: Ranked Abundance of Benthic Macroinvertebrates. May 2002.

NAME	REF-DLC	REF-KC	REF-SC	SDR-1	SDR-MT	SLRR-BR	SLRR-MR	SMC-LCC	SMC-M	SMC-RSF	SMC-SP	SR-94	SR-WS	TC-TCNP	Grand Total
Chironomidae	280	259	198	31		507	383	111	484	207	95	476	489	694	9094
Simulium sp	126	251	7	49	61	108	109	144	212	226	596	125	70	16	4571
Baetis sp	117	144	231		40	54	75	590	160	146	57				4112
Oligochaeta	2	12	2	5		4	20	1	3	15	6	7	41	128	1896
Hyalella sp	6	6	1	325	1	159	57	34	51	285	108	57	90	1	1679
Ostracoda	9	2	3	17	2	2	2					17	61	61	911
Fallceon quilleri	2		6		53	25		45	3	2	44	33			803
Sperchon sp	41	10	14		364	1	1	1		5	1	37			547
Hydropsyche sp	48	56	269		21			10							502
Planariidae	1	1	4	18	263				1	20		1			452
Physa sp	2	2		83	1				4		1	30	26	1	319
Gammarus sp															309
Hydroptila sp	5	2			2	36		6		6	9	1	31		259
Monocorophium sp				215											215
Corixidae				134								1	60		198
Corbicula fluminea			4	18	28	4	19		9	5					162
Crangonyx sp							136								136
Amphipod, unid.			1	2		3	74		1						120
Micrasema sp	79	12	18												110
Tricorythodes sp	9	7	61				17								105
Cyclopoida				16		1				1	1	9	1	4	103
Ochrotrichia sp	49	24	3												76
Zaitzevia sp	15	25	21												61
Nematoda															54
Wormaldia sp	27	27													54
Bezzia/Palpomyia complex	43	17	2	1								1			50
Cheumatopsyche sp	1		38					4							43
Argia sp	2	6	4		11					4					35
Pericoma sp	1	1			1							8			30
Culicoides sp													28		29
Tipula sp	1	3	3		3				1			1	8		29
Atractides sp	5	2	7												23
Ferrissia sp									4		9				20
Trichocorixa sp							1					9	9		19
Isoperla sp		14	4												18
Dixa sp	5	12													17
Hemerodromia sp	2	3				7						1			17
Microcylloepus sp	1	2	14												17
Cladocera				16											16
Caloparyphus sp		2			7										15
Malenka sp	12	3													15
Cambaridae				1			1	2		1	1				14
Hydroptilidae	8	3			2										14
Hydra sp															12
Planorbella sp					8					2					12
Tinodes sp			10												10
Euparyphus sp	1	3													8
Holorusia sp	1		1							1					6
Limonia sp	2	2												1	6
Dasyhelea sp															4
Ephydra sp				4											4
Ephydridae							1					1	1		4
Hydropsychidae	1	1	2												4
Agapetus sp		1	2												3
Clinocera sp						2									3
Heterelmis sp		1	2												3
Muscidae														1	3

Appendix B.3-1: Ranked Abundance of Benthic Macroinvertebrates. May 2002.

NAME	REF-DLC	REF-KC	REF-SC	SDR-1	SDR-MT	SLRR-BR	SLRR-MR	SMC-LCC	SMC-M	SMC-RSF	SMC-SP	SR-94	SR-WS	TC-TCNP	Grand Total
Psephenus sp			3												3
Curculionidae												2			2
Forcipomyia sp															2
Harpacticoida															2
Hedria sp												2			2
Helicopsyche sp	1	1													2
Hydrachna sp															2
Laccobius sp												1			2
Lepidostoma sp		2													2
Nemotelus sp												1			2
Neotrichia sp		2													2
Pacifasticus leniusculus												1	1		2
Petrophila sp								2							2
Philopotamidae		2													2
Psychoda sp												1			2
Sciomyzidae															2
Torrenticola sp	1	1													2
Atrichopogon		1													1
Baetidae								1							1
Brechmorhoga mendax															1
Coleoptera										1					1
Dolichopodidae															1
Empididae	1														1
Fossaria sp															1
Helichus sp		1													1
Hirudinea															1
Hydrellia sp			1												1
Hydrobius sp	1														1
Insecta		1													1
Maruina sp	1														1
Meringodixa sp		1													1
Neohermes sp		1													1
Polycentropus sp								1							1
Progomphus sp							1								1
Pyralidae					1										1
Stratiomyidae														1	1
Syncaris sp				1											1
Trichoptera		1													1
Grand Total	909	930	936	936	869	913	897	952	933	927	928	823	916	908	27424

Appendix B.3-2: Ranked Abundance of Benthic Macroinvertebrates. October 2002.

NAME	AHC-ECR	AHC-MR	BVR-CB	CCC-805	ESC-EF	ESC-HRB	GVC-WB	LAC-ECR	LPC-BMR	MB-RC	REF-DLC3	REF-KC	REF-SC	SD-DDH	SDR-1	SDR-MT	SLRR-BR
Chironomidae	21	18	263	77	302	231	90	251	39	246	38	33	12	92	93	303	128
Simulium sp	5	3	46	17	122	4	76	70	136	46	133	238	37	358	520	2	226
Hydropsyche sp			200		291		3		3		442	322	283	28			
Hyalella sp	4	57	8	116	1	308	15	149	397	124	43		1	40	243	83	174
Baetis sp		1	262	151	75		7		43	1	73	110	176	129		1	28
Oligochaeta	367	91	13	11	2	31	60	56	12	96	4	9	1	1	4	23	130
Planariidae	48	115	9	103	16	141		1	35		3	6	26	92	15	14	
Physa sp	39			2	5	9	137	3		74		17				4	
Nematoda	169		4	14			9	3	16	109		1	2	5		7	1
Fallceon quilleri	4	5	1	215		88	1		78	2			7	27		7	84
Argia sp		39	12	13	21	2		45	44	3	14	69	35	29		75	3
Ostracoda	7			22		61	11	52	12	49		1		3		27	3
Crangonyx sp																	
Hydroptila sp	2	2	45	37	9	4		9	2	2				56			73
Sperchon sp		2	58	74	35				4		18	18	73	4		38	
Corbicula fluminea	148	1	3	1	9				68				12	5	11	2	14
Dasyhelea sp	1					2	8	11		6						94	
Caloparyphus sp				29	3	12		1			1	6	1			7	
Amphipod, unid.				2		1		1	5	2					5	1	7
Hydra sp						1				2					1		
Cheumatopsyche sp					21						12		4	2			
Zaitzevia sp											36		65				
Microcylloepus sp											31		38				
Tinodes sp					1						29		14	8			
Ochrotrichia sp											11		39				
Hemerodromia sp			3	2	6		1				3		6	3		26	8
Limonia sp				6			6			3						40	1
Bezzia/Palpomyia complex	2									13						15	
Fossaria sp					3		25			11	4					2	
Caenis sp														26	15		
Heterelmis sp											11		26				
Procambarus sp	4		1				1	3	2	6					1	5	3
Pericoma sp					1	2	4	2		3				1	1	14	
Psephenus sp													29				
Pacifasticus leniusculus				1			1	2	1	1				1	1	10	1
Lepidostoma sp												28					
Malenka sp											8	16					
Petrophila sp			3		2								1	1			
Hydroptilidae						2						1				15	1
Holorusia sp		1					2			1		1	3			8	
Tipula sp		1										2	2			9	2
Wormaldia sp											7	7					
Micrasema sp											4		10				
Empididae												1					3
Nemotelus sp	9								2							2	
Muscidae					2		6			1						3	
Atrichopogon							2			1			1	2			
Euparyphus sp						2											
Erpobdella sp						8											
Hetaerina americana					1				1		2		2				
Tricorythodes sp					1								2				
Dixa sp												5					
Planorbella sp									1							4	
Prostoma sp									1							4	
Decapoda								1		1							2
Elmidae													2				
Monocorophium sp															4		
Ormosia sp										4							
Paraponyx sp												2					
Atractides sp	1											2					
Baetidae		1															
Brechmorhoga mendax				3													
Cambaridae		3															

Appendix B.3-2: Ranked Abundance of Benthic Macroinvertebrates. October 2002.

NAME	AHC-ECR	AHC-MR	BVR-CB	CCC-805	ESC-EF	ESC-HRB	GVC-WB	LAC-ECR	LPC-BMR	MB-RC	REF-DLC3	REF-KC	REF-SC	SD-DDH	SDR-1	SDR-MT	SLRR-BR
Cordulegaster dorsalis										2							
Culex							3										
Culicoides sp						1		1									
Psychoda sp						1											
Sciomyzidae				2						1							
Trichocorixa sp	1							2									
Arrenurus sp												1	1				
Ephydridae						2											
Ferrissia sp			1								1						
Meringodixa sp												2					
Neotrichia sp												2					
Prosimulium sp																	
Simuliidae																	
Syncaris sp															2		
Anax walsinghami										1							
Chelifera/Metachela sp																	1
Coenagrionidae				1													
Coleoptera																	
Dicranota sp												1					
Enallagma sp																	
Helichus sp													1				
Hydrophilidae sp																	
Lepidoptera												1					
Libellula sp							1										
Limnophora sp																	
Myxosargus sp																	
Nepticulidae																1	
Phytia myosotis													1				
Postelichus						1											
Pyralidae											1						
Silvius sp												1					
Stilobezzia sp							1										
Thaumaleidae							1										
Thyopsoides sp		1															
Tipulidae								1									
Tropisternus sp											1						
Grand Total	832	341	932	899	929	914	471	664	902	811	930	903	913	913	916	846	893

Appendix B.3-2: Ranked Abundance of Benthic Macroinvertebrates. October 2002.

NAME	SLRR-MR	SMC-LCCC	SMR-DLR	SMR-WGR	SR-AD	TC-TCNP	Grand Total
Chironomidae	19	129	50	20	128	147	2730
Simulium sp	74	89	141	130	8		2481
Hydropsyche sp	3	77	228	437			2317
Hyalella sp	112	65	1			3	1944
Baetis sp	24	151	404	240			1876
Oligochaeta	21	6	3	4	2	7	954
Planariidae	1	31		11			667
Physa sp		9			363	4	666
Nematoda		2				307	649
Fallceon quilleri		45	48				612
Argia sp		40	10	5	13	45	517
Ostracoda					230	32	510
Crangonyx sp	478						478
Hydroptila sp		47			3	84	375
Sperchon sp		13		3	2		342
Corbicula fluminea	31	18	1	1			325
Dasyhelea sp		1		1	2	49	175
Caloparyphus sp		10			97	6	173
Amphipod, unid.	144	4					172
Hydra sp		146					150
Cheumatopsyche sp		52	5	8			104
Zaitzevia sp							101
Microcylloepus sp				15			84
Tinodes sp		19	8				79
Ochrotrichia sp			3	25			78
Hemerodromia sp		3			13		74
Limonia sp	1	5				10	72
Bezzia/Palpomyia complex		1			2	16	49
Fossaria sp				2			47
Caenis sp							41
Heterelmis sp							37
Procambarus sp		1				10	37
Pericoma sp					2	1	31
Psephenus sp				1			30
Pacifasticus leniusculus	3	1		1		5	29
Lepidostoma sp							28
Malenka sp							24
Petrophila sp		14		1			22
Hydroptilidae						2	21
Holorusia sp						4	20
Tipula sp		1				1	18
Wormaldia sp			1				15
Micrasema sp							14
Empididae					9		13
Nemotelus sp							13
Muscidae							12
Atrichopogon		1		1		1	9
Euparyphus sp					7		9
Erpobdella sp							8
Hetaerina americana							6
Tricorythodes sp			3				6
Dixa sp							5
Planorbella sp							5
Prostoma sp							5
Decapoda							4
Elmidae				2			4
Monocorophium sp							4
Ormosia sp							4
Paraponyx sp				2			4
Atractides sp							3
Baetidae			2				3
Brechmorhoga mendax							3
Cambaridae							3

Appendix B.3-2: Ranked Abundance of Benthic Macroinvertebrates. October 2002.

NAME	SLRR-MR	SMC-LCCC	SMR-DLR	SMR-WGR	SR-AD	TC-TCNP	Grand Total
Cordulegaster dorsalis					1		3
Culex							3
Culicoides sp					1		3
Psychoda sp					2		3
Sciomyzidae							3
Trichocorixa sp							3
Arrenurus sp							2
Ephydridae							2
Ferrissia sp							2
Meringodixa sp							2
Neotrichia sp							2
Prosimulium sp			2				2
Simuliidae				2			2
Syncaris sp							2
Anax walsinghami							1
Chelifera/Metachela sp							1
Coenagrionidae							1
Coleoptera			1				1
Dicranota sp							1
Enallagma sp						1	1
Helichus sp							1
Hydrophilidae sp	1						1
Lepidoptera							1
Libellula sp							1
Limnophora sp					1		1
Myxosargus sp	1						1
Nepticulidae							1
Phytia myosotis							1
Postelichus							1
Pyralidae							1
Silvius sp							1
Stilobezzia sp							1
Thaumaleidae							1
Thyopsoides sp							1
Tipulidae							1
Tropisternus sp							1
Grand Total	913	981	911	912	886	735	19347

Appendix B.3-3: Ranked Abundance for Benthic Macroinvertebrates. May 2003.

NAME	AHC-ECR	AHC-MR	CCC-805	CC-FB	CC-H94	ESC-EF	ESC-HRB	GVC-WB	LPC-CCR	MB-RC	REF-CC	REF-DLC	REF-SC	SD-DDH	SDR-1	SDR-MT	SLRR-BR
Chironomidae	330	218	284	261	681	41	39	65	151	57	690	258	432	197	23	22	281
Simulium sp	104	1	355	66	8	388	7	631	324	143	49	225	71	237	138	601	437
Baetis sp	25	389	202	38	5	278	27	137	246	509	12	237	230	380	1	67	44
Fallceon quilleri	153	5	20	250	4	54	586	19	42	6	1	7	12	14		122	4
Oligochaeta	45	159	27	6	26	2	8	9	5	17	23	30	7		10	1	82
Hydroptila sp	55		10	4	17	6	78	7	24	76			75	22	4	118	
Monocorophium sp		1													611		
Ostracoda	113	4	4	5	6		24	23	53	61		1		48	2	5	1
Physa/Physella sp	7	47		105	130			4		1		3					7
Hyalella sp	11	6				57	67	28	9	45		5		1	14		37
Argia sp		18	2	156		3			10	11		5	7	8		2	
Hydropsyche sp						71			7			34					
Planariidae	12	6	3				53		15				5		39	8	
Hydra sp		69		6			1				56		1			3	1
Amphipod, unid.						5	5		1	1					72		
Sperchon sp	5	3	1			9	1		10	2		6	9	3		5	
Micrasema sp												47	7				
Cheumatopsyche sp						1						8	18	1			
Corbicula fluminea	21								1					1	1	3	8
Decapoda			1			2				5							
Muscidae	4		6	10	4				1		8			2			
Dolichopodidae	7					1					2						
Malenka sp											10	8	13				
Isoperla sp					1						20	6	1				
Bezzia/Palpomyia complex									4			6	3				
Probezzia sp																	
Pericoma sp	9													2			
Callibaetis sp				16													
Oxyethira sp			1		14												
Atractides sp	1				1							4	2				
Crangonyx sp						6											
Ephydridae	1	2			1		1										
Meringodixa sp											13						
Ochrotrichia sp												11	1				
Tricorythodes sp						2						3	1				
Caloparyphus sp	2			3			1		1								
Corixidae																	
Plecoptera											7		1				
Hydrochus sp		1									6						
Mesobates sp											7						
Tipula sp		2	1						2								
Hemerodromia sp		1			1				1		1	1					
Microcylloepus sp													6				
Neohermes sp											3	3					
Dasyhelea sp				1			1										
Erpobdella sp							5										
Heterelmis sp												1	4				
Hydropsychidae												1	3				
Chelifera/Metachela sp					1							1					
Coenagrionidae				1			1							1			
Dixella sp					2						1			1			
Holorusia sp					1					1							
Sciomyzidae		1			1					1		1					
Wormaldia sp												4					
Zaitzevia sp													4				
Agabinus sp											3						
Baetidae																	
Ferrissia sp																	3
Laccobius sp	2		1														

Appendix B.3-3: Ranked Abundance for Benthic Macroinvertebrates. May 2003.

NAME	AHC-ECR	AHC-MR	CCC-805	CC-FB	CC-H94	ESC-EF	ESC-HRB	GVC-WB	LPC-CCR	MB-RC	REF-CC	REF-DLC	REF-SC	SD-DDH	SDR-1	SDR-MT	SLRR-BR
Planorbella sp														3			
Procambarus clarkii																	1
Serratella sp											3						
Anopheles sp																	
Cambaridae																	
Dixa sp											2						
Dytiscidae					1												
Enallagma sp				2													
Euparyphus sp				1			1										
Laccophilus sp					1						1						
Limonia sp				1							1						
Rhantus sp				2													
Rhyacophila sp											2						
Agapetus sp												1					
Brechmorhoga mendax				1													
Caenis sp														1			
Clinocera sp					1												
Corydalidae												1					
Culex																	
Culicoides sp																	
Desmopachria sp					1												
Elmidae												1					
Empididae													1				
Fossaria sp																	
Hetaerina americana																	
Hydrophilidae sp	1																
Hydrotupes palpalis											1						
Lepidostoma sp												1					
Maruina sp												1					
Nemotelus sp		1															
Paraleptophlebia sp											1						
Procambarus sp																	
Protanyderus sp												1					
Psephenus sp													1				
Stictotarsus sp											1						
Tinodes sp													1				
Grand Total	908	934	918	935	908	926	906	923	907	936	924	922	916	922	915	957	906

Appendix B.3-3: Ranked Abundance for Benthic Macroinvertebrates. May 2003.

NAME	SLRR-MR	SMR-CP	SMR-WGR	SR-WS	TC-TCNP	TJ-DM	Grand Total
Chironomidae	337	117	110	205	107	501	5407
Simulium sp	186	214	325	97	508	5	5120
Baetis sp	273	99	399	9	3		3610
Fallceon quilleri	4	295		1			1599
Oligochaeta	17	128	16	434	1	276	1329
Hydroptila sp	2	3	5	3	141		650
Monocorophium sp							612
Ostracoda	4	1		103	41	56	555
Physa/Physella sp		1		3	68	44	420
Hyalella sp	43			39	1		363
Argia sp					35		257
Hydropsyche sp		2	32				146
Planariidae	1		1				143
Hydra sp				2			139
Amphipod, unid.	8			12			104
Sperchon sp		5	25		1		85
Micrasema sp							54
Cheumatopsyche sp			22				50
Corbicula fluminea	11						46
Decapoda				24	11		43
Muscidae	4	2		2			43
Dolichopodidae	1	4		1		23	39
Malenka sp							31
Isoperla sp							28
Bezzia/Palpomyia complex		8		4			25
Probezzia sp						23	23
Pericoma sp	3	4				1	19
Callibaetis sp							16
Oxyethira sp							15
Atractides sp	2	3					13
Crangonyx sp	7						13
Ephydridae						8	13
Meringodixa sp							13
Ochrotrichia sp							12
Tricorythodes sp	1	5					12
Caloparyphus sp		2			1		10
Corixidae		9		1			10
Plecoptera							8
Hydrochus sp							7
Mesobates sp							7
Tipula sp		1			1		7
Hemerodromia sp					1		6
Microcylloepus sp							6
Neohermes sp							6
Dasyhelea sp		1		2			5
Erpobdella sp							5
Heterelmis sp							5
Hydropsychidae		1					5
Chelifera/Metachela sp	2						4
Coenagrionidae					1		4
Dixella sp							4
Holorusia sp					2		4
Sciomyzidae							4
Wormaldia sp							4
Zaitzevia sp							4
Agabinus sp							3
Baetidae		3					3
Ferrissia sp							3
Laccobius sp							3

Appendix B.3-3: Ranked Abundance for Benthic Macroinvertebrates. May 2003.

NAME	SLRR-MR	SMR-CP	SMR-WGR	SR-WS	TC-TCNP	TJ-DM	Grand Total
Planorbella sp							3
Procambarus clarkii		1		1			3
Serratella sp							3
Anopheles sp		2					2
Cambaridae					2		2
Dixa sp							2
Dytiscidae						1	2
Enallagma sp							2
Euparyphus sp							2
Laccophilus sp							2
Limonia sp							2
Rhantus sp							2
Rhyacophila sp							2
Agapetus sp							1
Brechmorhoga mendax							1
Caenis sp							1
Clinocera sp							1
Corydalidae							1
Culex						1	1
Culicoides sp	1						1
Desmopachria sp							1
Elmidae							1
Empididae							1
Fossaria sp						1	1
Hetaerina americana			1				1
Hydrophilidae sp							1
Hydrotupes palpalis							1
Lepidostoma sp							1
Maruina sp							1
Nemotelus sp							1
Paraleptophlebia sp							1
Procambarus sp				1			1
Protanyderus sp							1
Psephenus sp							1
Stictotarsus sp							1
Tinodes sp							1
Grand Total	907	911	936	944	925	940	21226

Appendix B.4-1: Top Five Most Abundant Taxa for Benthic Macroinvertebrates Collected May 2002.

Station	1st	2nd	3rd	4th	5th
AHC-ECR	Chironomidae 43%	Ostracoda 21%	Simulium sp 7%	Fallceon quilleri 7%	Baetis sp 6%
AHC-MR	Oligochaeta 49%	Chironomidae 48%	Baetis sp 2%	Simulium sp 0%	Physa sp 0%
BVR-CB	Baetis sp 48%	Simulium sp 31%	Chironomidae 8%	Sperchon sp 5%	Hyalella sp 3%
BVR-ED	Oligochaeta 45%	Chironomidae 28%	Ostracoda 18%	Baetis sp 6%	Fallceon quilleri 0%
CCC-805	Baetis sp 40%	Chironomidae 39%	Simulium sp 17%	Fallceon quilleri 1%	Hydroptila sp 1%
CC-E	Chironomidae 66%	Ostracoda 11%	Hydroptila sp 8%	Oligochaeta 5%	Planariidae 3%
ENC-GVR	Chironomidae 55%	Hyalella sp 20%	Simulium sp 19%	Physa sp 2%	Oligochaeta 2%
ESC-CC	Simulium sp 39%	Baetis sp 39%	Fallceon quilleri 10%	Chironomidae 8%	Hyalella sp 2%
ESC-EF	Baetis sp 43%	Simulium sp 31%	Chironomidae 16%	Hydropsyche sp 6%	Fallceon quilleri 2%
ESC-HRB	Chironomidae 34%	Fallceon quilleri 29%	Planariidae 11%	Oligochaeta 9%	Hydroptila sp 7%
ESC-RSFR	Chironomidae 39%	Gammarus sp 35%	Simulium sp 13%	Baetis sp 6%	Amphipod, unid. 4%
ESC-VC	Baetis sp 56%	Chironomidae 15%	Simulium sp 13%	Oligochaeta 5%	Fallceon quilleri 4%
LAC-CB	Oligochaeta 55%	Chironomidae 22%	Physa sp 13%	Nematoda 5%	Ostracoda 3%
LAC-ECR	Chironomidae 38%	Simulium sp 34%	Ostracoda 16%	Hyalella sp 4%	Cyclopoida 2%
LPC-BMR	Chironomidae 36%	Simulium sp 20%	Hyalella sp 19%	Fallceon quilleri 9%	Baetis sp 7%
LPC-CCR	Chironomidae 37%	Simulium sp 37%	Baetis sp 15%	Ostracoda 3%	Fallceon quilleri 2%
REF-DLC	Chironomidae 31%	Simulium sp 14%	Baetis sp 13%	Micrasema sp 9%	Ochrotrichia sp 5%
REF-KC	Chironomidae 28%	Simulium sp 27%	Baetis sp 15%	Hydropsyche sp 6%	Wormaldia sp 3%
REF-SC	Hydropsyche sp 29%	Baetis sp 25%	Chironomidae 21%	Tricorythodes sp 7%	Cheumatopsyche sp 4%
SDR-1	Hyalella sp 35%	Monocorophium sp 23%	Corixidae 14%	Physa sp 9%	Simulium sp 5%
SDR-MT	Sperchon sp 42%	Planariidae 30%	Simulium sp 7%	Fallceon quilleri 6%	Baetis sp 5%
SLRR-BR	Chironomidae 56%	Hyalella sp 17%	Simulium sp 12%	Baetis sp 6%	Hydroptila sp 4%
SLRR-MR	Chironomidae 43%	Crangonyx sp 15%	Simulium sp 12%	Baetis sp 8%	Amphipod, unid. 8%
SMC-LCCC	Baetis sp 62%	Simulium sp 15%	Chironomidae 12%	Fallceon quilleri 5%	Hyalella sp 4%
SMC-M	Chironomidae 52%	Simulium sp 23%	Baetis sp 17%	Hyalella sp 5%	Corbicula fluminea 1%
SMC-RSFR	Hyalella sp 31%	Simulium sp 24%	Chironomidae 22%	Baetis sp 16%	Planariidae 2%
SMC-SP	Simulium sp 64%	Hyalella sp 12%	Chironomidae 10%	Baetis sp 6%	Fallceon quilleri 5%
SR-94	Chironomidae 58%	Simulium sp 15%	Hyalella sp 7%	Sperchon sp 4%	Fallceon quilleri 4%
SR-WS	Chironomidae 53%	Hyalella sp 10%	Simulium sp 8%	Ostracoda 7%	Corixidae 7%
TC-TCNP	Chironomidae 76%	Oligochaeta 14%	Ostracoda 7%	Simulium sp 2%	Cyclopoida 0%

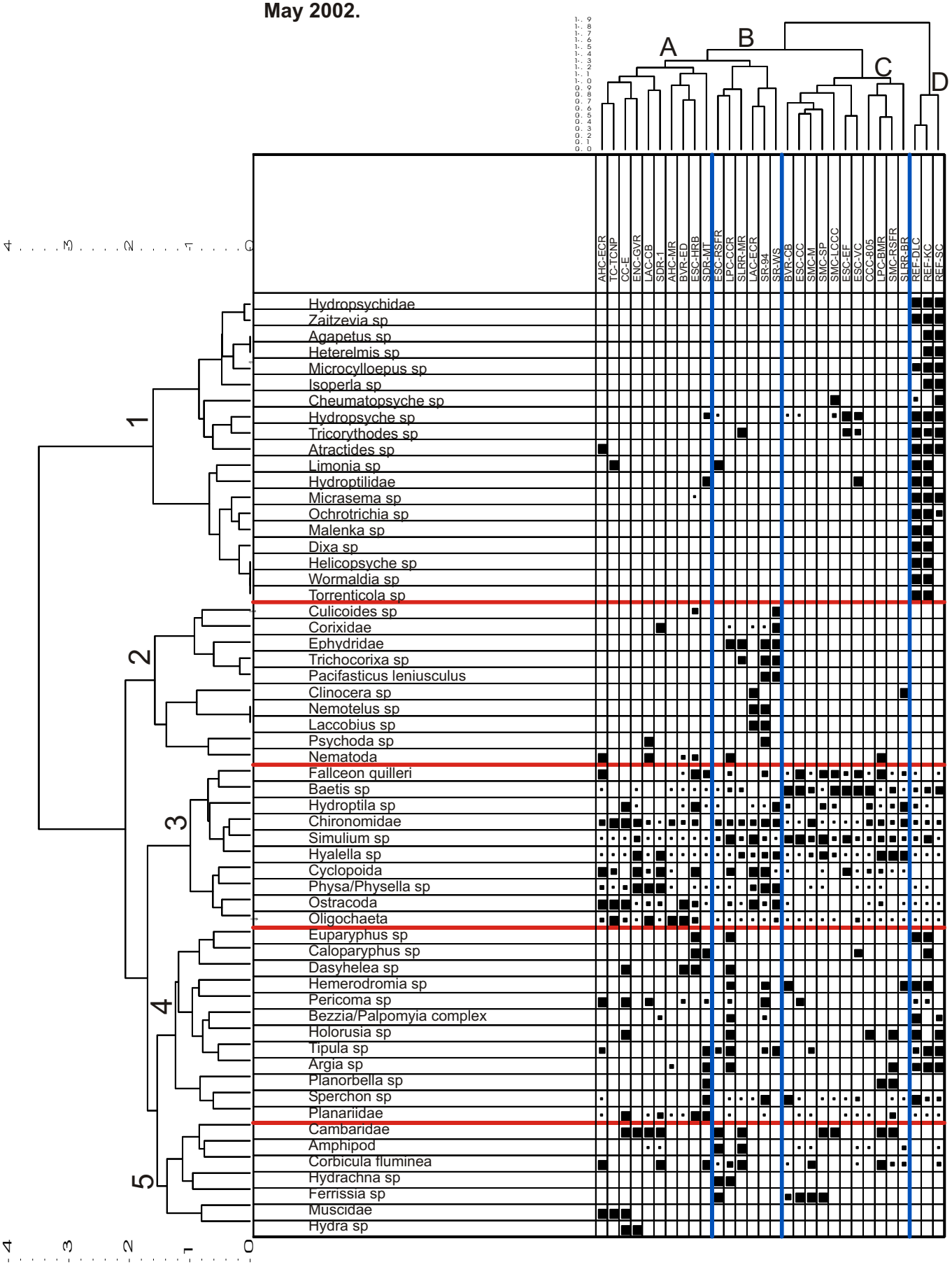
Appendix B.4-2: Top Five Abundant Taxa for Benthic Macroinvertebrates Collected October 2002.

Station	1st	2nd	3rd	4th	5th
AHC-ECR	Oligochaeta 44%	Nematoda 20%	Corbicula fluminea 18%	Planariidae 6%	Physa/Physella sp 5%
AHC-MR	Planariidae 34%	Oligochaeta 27%	Hyalella sp 17%	Argia sp 11%	Chironomidae 5%
BVR-CB	Chironomidae 28%	Baetis sp 28%	Hydropsyche sp 21%	Sperchon sp 6%	Simulium sp 5%
CCC-805	Fallceon quilleri 24%	Baetis sp 17%	Hyalella sp 13%	Planariidae 11%	Chironomidae 9%
ESC-EF	Chironomidae 33%	Hydropsyche sp 31%	Simulium sp 13%	Baetis sp 8%	Sperchon sp 4%
ESC-HRB	Hyalella sp 34%	Chironomidae 25%	Planariidae 15%	Fallceon quilleri 10%	Ostracoda 7%
GVC-WB	Physa/Physella sp 29%	Chironomidae 19%	Simulium sp 16%	Oligochaeta 13%	Fossaria sp 5%
LAC-ECR	Chironomidae 38%	Hyalella sp 22%	Simulium sp 11%	Oligochaeta 8%	Ostracoda 8%
LPC-BMR	Hyalella sp 44%	Simulium sp 15%	Fallceon quilleri 9%	Corbicula fluminea 8%	Argia sp 5%
MB-RC	Chironomidae 30%	Hyalella sp 15%	Nematoda 13%	Oligochaeta 12%	Physa/Physella sp 9%
REF-DLC3	Hydropsyche sp 48%	Simulium sp 14%	Baetis sp 8%	Hyalella sp 5%	Chironomidae 4%
REF-KC	Hydropsyche sp 36%	Simulium sp 26%	Baetis sp 12%	Argia sp 8%	Chironomidae 4%
REF-SC	Hydropsyche sp 31%	Baetis sp 19%	Sperchon sp 8%	Zaitzevia sp 7%	Ochrotrichia sp 4%
SD-DDH	Simulium sp 39%	Baetis sp 14%	Chironomidae 10%	Planariidae 10%	Hydroptila sp 6%
SDR-1	Simulium sp 57%	Hyalella sp 27%	Chironomidae 10%	Caenis sp 2%	Planariidae 2%
SDR-MT	Chironomidae 36%	Dasyhelea sp 11%	Hyalella sp 10%	Argia sp 9%	Limonia sp 5%
SLRR-BR	Simulium sp 25%	Hyalella sp 19%	Oligochaeta 15%	Chironomidae 14%	Fallceon quilleri 9%
SLRR-MR	Crangonyx sp 52%	Amphipod, unid. 16%	Hyalella sp 12%	Simulium sp 8%	Corbicula fluminea 3%
SMC-LCCC	Baetis sp 15%	Hydra sp 15%	Chironomidae 13%	Simulium sp 9%	Hydropsyche sp 8%
SMR-DLR	Baetis sp 44%	Hydropsyche sp 25%	Simulium sp 15%	Chironomidae 5%	Fallceon quilleri 5%
SMR-WGR	Hydropsyche sp 48%	Baetis sp 26%	Simulium sp 14%	Ochrotrichia sp 3%	Chironomidae 2%
SR-AD	Physa/Physella sp 41%	Ostracoda 26%	Chironomidae 14%	Caloparyphus sp 11%	Argia sp 1%
TC-TCNP	Nematoda 42%	Chironomidae 20%	Hydroptila sp 11%	Dasyhelea sp 7%	Argia sp 6%

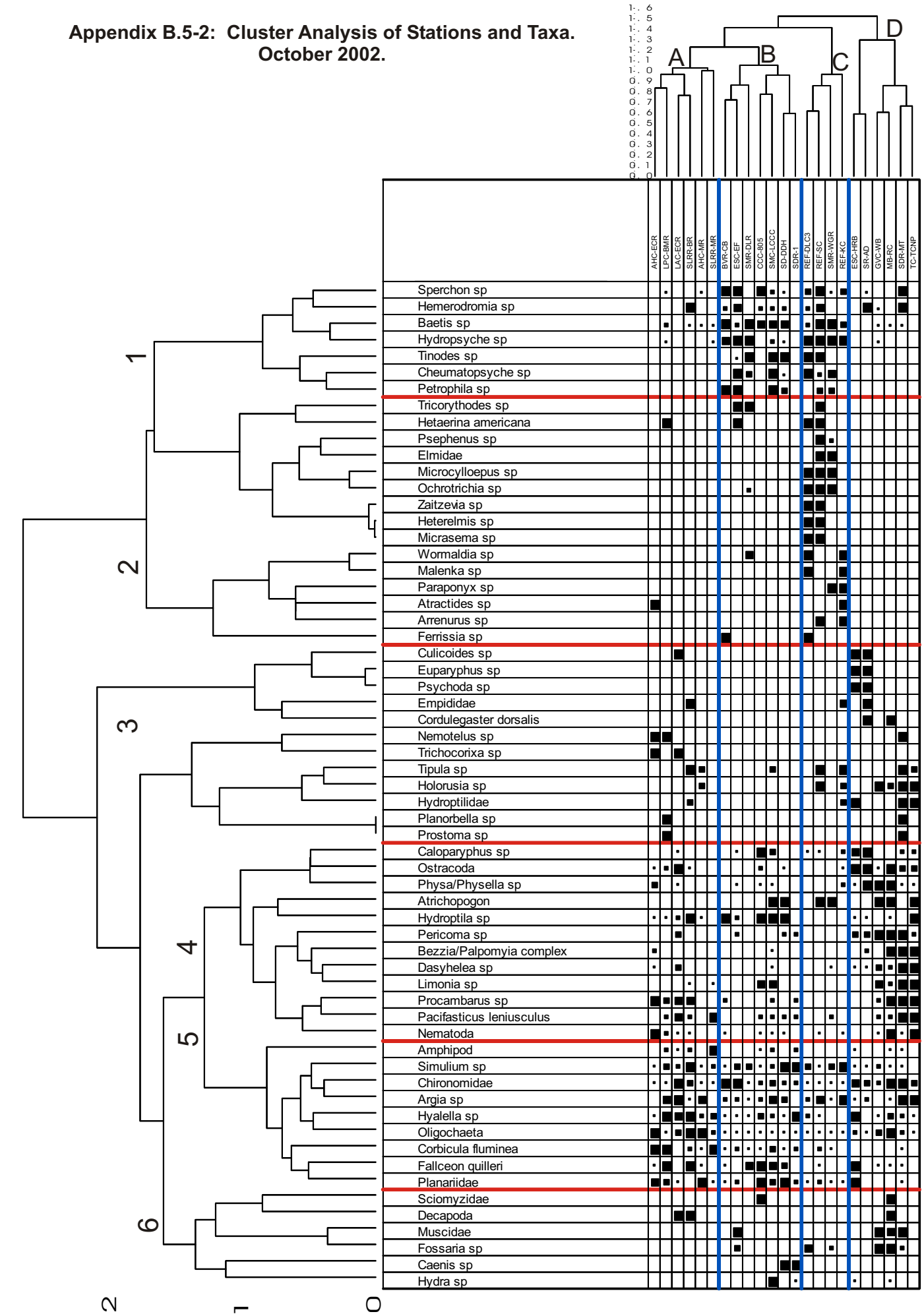
Appendix B.4-3: Top Five Most Abundant Taxa for Benthic Macroinvertebrates Collected May 2003.

Station	1st	2nd	3rd	4th	5th
AHC-ECR	Chironomidae 36%	Fallceon quilleri 17%	Ostracoda 12%	Simulium sp 11%	Hydroptila sp 6%
AHC-MR	Baetis sp 42%	Chironomidae 23%	Oligochaeta 17%	Hydra 7%	Physa/Physella sp 5%
CCC-805	Simulium sp 39%	Chironomidae 31%	Baetis sp 22%	Oligochaeta 3%	Fallceon quilleri 2%
CC-FB	Chironomidae 28%	Fallceon quilleri 27%	Argia sp 17%	Physa/Physella sp 11%	Simulium sp 7%
CC-H94	Chironomidae 75%	Physa/Physella sp 14%	Oligochaeta 3%	Hydroptila sp 2%	Oxyethira sp 2%
ESC-EF	Simulium sp 42%	Baetis sp 30%	Hydropsyche sp 8%	Hyalella sp 6%	Fallceon quilleri 6%
ESC-HRB	Fallceon quilleri 65%	Hydroptila sp 9%	Hyalella sp 7%	Planariidae 6%	Chironomidae 4%
GVC-WB	Simulium sp 68%	Baetis sp 15%	Chironomidae 7%	Hyalella sp 3%	Ostracoda 2%
LPC-CCR	Simulium sp 36%	Baetis sp 27%	Chironomidae 17%	Ostracoda 6%	Fallceon quilleri 5%
MB-RC	Baetis sp 54%	Simulium sp 15%	Hydroptila sp 8%	Ostracoda 7%	Chironomidae 6%
REF-CC	Chironomidae 75%	Hydra sp 6%	Simulium sp 5%	Oligochaeta 2%	Isoperla sp 2%
REF-DLC	Chironomidae 28%	Baetis sp 26%	Simulium sp 24%	Micrasema sp 5%	Hydropsyche sp 4%
REF-SC	Chironomidae 47%	Baetis sp 25%	Hydroptila sp 8%	Simulium sp 8%	Cheumatopsyche sp 2%
SD-DDH	Baetis sp 41%	Simulium sp 26%	Chironomidae 21%	Ostracoda 5%	Hydroptila sp 2%
SDR-1	Monocorophium sp 67%	Simulium sp 15%	Amphipod, unid. 8%	Planariidae 4%	Chironomidae 3%
SDR-MT	Simulium sp 63%	Fallceon quilleri 13%	Hydroptila sp 12%	Baetis sp 7%	Chironomidae 2%
SLRR-BR	Simulium sp 48%	Chironomidae 31%	Oligochaeta 9%	Baetis sp 5%	Hyalella sp 4%
SLRR-MR	Chironomidae 37%	Baetis sp 30%	Simulium sp 21%	Hyalella sp 5%	Oligochaeta 2%
SMR-CP	Fallceon quilleri 32%	Simulium sp 23%	Oligochaeta 14%	Chironomidae 13%	Baetis sp 11%
SMR-WGR	Baetis sp 43%	Simulium sp 35%	Chironomidae 12%	Hydropsyche sp 3%	Sperchon sp 3%
SR-WS	Oligochaeta 46%	Chironomidae 22%	Ostracoda 11%	Simulium sp 10%	Hyalella sp 4%
TC-TCNP	Simulium sp 55%	Hydroptila sp 15%	Chironomidae 12%	Physa/Physella sp 7%	Ostracoda 4%
TJ-DM	Chironomidae 53%	Oligochaeta 29%	Ostracoda 6%	Physa/Physella sp 5%	Dolichopodidae 2%

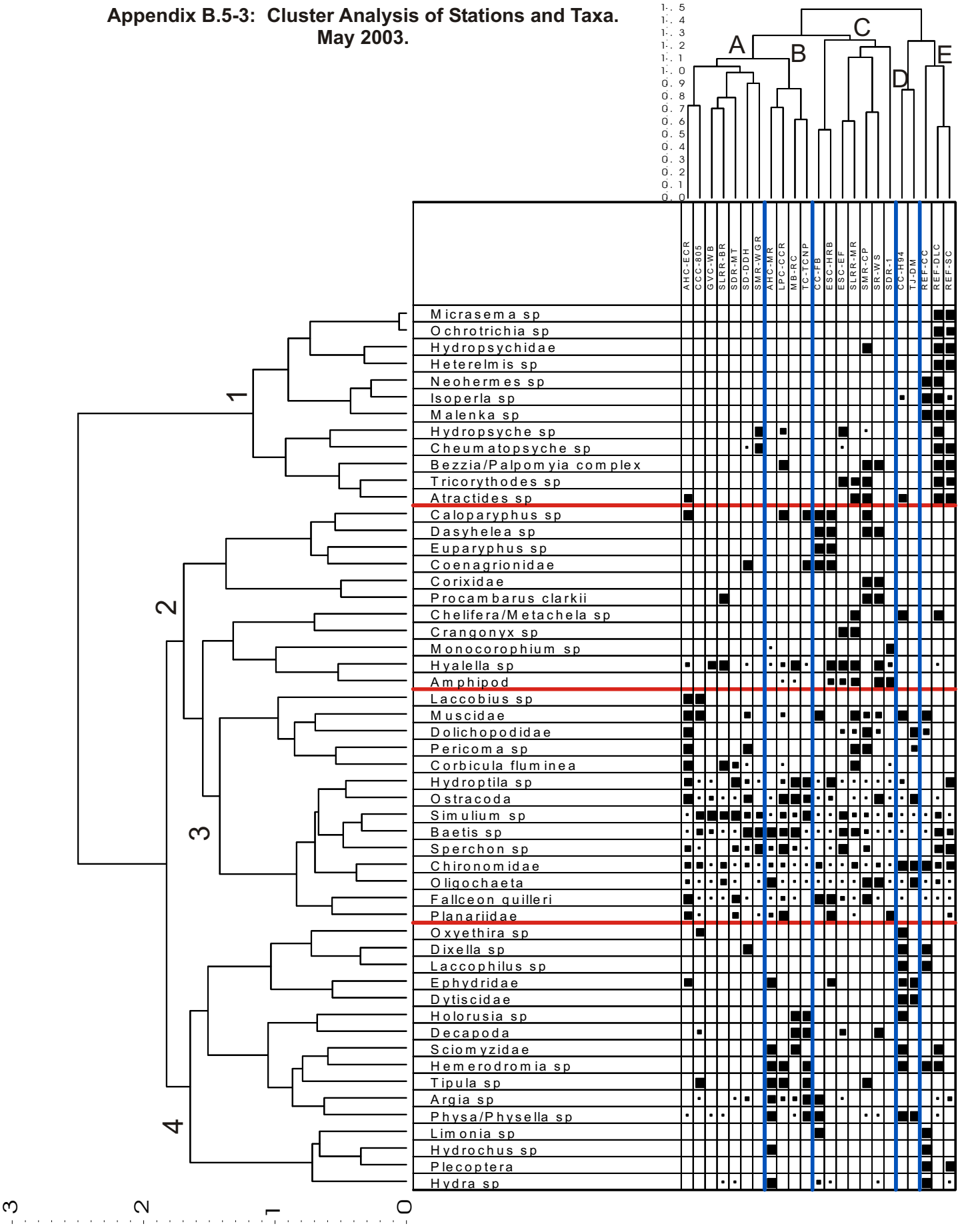
Appendix B.5-1: Cluster Analysis of Stations and Taxa.
May 2002.



Appendix B.5-2: Cluster Analysis of Stations and Taxa. October 2002.



Appendix B.5-3: Cluster Analysis of Stations and Taxa. May 2003.



Appendix B.6-1: Biological Metric Calculations for Benthic Macroinvertebrates Collected May 2002.

	AHC-ECR		AHC-MR		BVR-CB		BVR-ED		CC-E		CCC-805		ENC-GVR		ESC-CC	
	Mean	CV (%)	Mean	CV (%)	Mean	CV (%)	Mean	CV (%)	Mean	CV (%)	Mean	CV (%)	Mean	CV (%)	Mean	CV (%)
Taxa Richness	13.3	17.3	5.7	10.2	10.3	5.6	7.3	61.5	9.7	11.9	9.0	29.4	8.3	18.3	8.3	18.3
Cumulative Taxa	19		9		14		12		15		13		12		12	
Ephemeropteran Taxa	2.0	0.0	1.0	0.0	1.7	34.6	1.0	100.0	0.0		2.0	0.0	0.3	173.2	2.0	0.0
Plecopteran Taxa	0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0	
Trichopteran Taxa	0.0		0.0		1.7	34.6	0.3	173.2	0.7	86.6	0.7	86.6	0.3	173.2	0.7	86.6
EPT Taxa	2.0	0.0	1.0	0.0	3.3	17.3	1.3	114.6	0.7	86.6	2.7	21.7	0.7	173.2	2.7	21.7
Cumulative EPT	2		1		4		3		1		3		2		3	
Dipteran Taxa	4.0	25.0	1.7	34.6	2.7	21.7	2.3	65.5	3.7	15.7	2.3	24.7	2.0	0.0	2.7	21.7
Non Insect Taxa	7.3	20.8	2.7	21.7	4.3	35.3	3.7	41.7	5.3	28.6	4.0	66.1	5.7	10.2	3.0	33.3
% EPT	12%	43.3	2%	149.0	50%	11.2	7%	165.2	7%	86.9	42%	28.3	0%	173.2	50%	51.2
Sensitive EPT %	0%		0%		0%		0%		0%		0%		0%		0%	
Shannon Diversity	1.7	5.6	0.8	22.2	1.4	4.2	1.0	11.7	1.2	27.5	1.2	7.9	1.2	3.4	1.2	23.7
Tolerance Value	6.5	5.7	7.0	6.1	5.6	0.8	7.2	13.1	6.3	2.2	5.6	2.0	6.5	2.1	5.4	5.1
% Dominant Taxa	43%		49%		48%		45%		66%		40%		55%		39%	
% Chironomidae	43%	11.0	48%	48.1	8%	33.0	29%	98.6	67%	16.9	39%	31.5	55%	10.7	8%	50.6
% Intolerant	0%		0%		0%		0%		0%		0%		0%		0%	
% Tolerant	34%	45.4	49%	44.4	6%	54.3	63%	64.4	17%	35.7	2%	70.9	25%	26.0	2%	68.0
% Grazer	0%		0%		1%	62.7	0%	173.2	7%	86.9	1%	148.6	0%	173.2	0%	
% Collector Gatherer	84%	7.1	99%	0.3	62%	8.4	99%	0.7	84%	7.6	82%	7.7	77%	12.0	59%	48.1
% Collector Filterer	12%	49.4	0%	99.9	32%	18.4	0%	99.2	3%	85.9	17%	38.5	19%	50.3	40%	71.7
% Predator	2%	12.0	0%	98.4	6%	41.9	0%	100.8	5%	82.5	0%	173.2	0%	173.2	1%	33.8
% Shredder	0%		0%		0%		0%		1%	90.6	0%	173.2	0%	173.2	0%	
% Scraper	1%	110.0	0%	86.7	0%	173.2	0%		1%	86.8	0%	173.2	2%	65.1	0%	173.2
% Other	0%	173.2	0%		1%	62.7	0%	173.2	7%	86.9	1%	148.6	0%	86.6	0%	
Estimated Abundance	2768		1929		1273		2964		6574		1246		4021		4012	

Appendix B.6-1: Biological Metric Calculations for Benthic Macroinvertebrates Collected May 2002.

	ESC-EF		ESC-HRB		ESC-RSFR		ESC-VC		LAC-CB		LAC-ECR		LPC-BMR		LPC-CCR	
	Mean	CV (%)	Mean	CV (%)	Mean	CV (%)	Mean	CV (%)	Mean	CV (%)	Mean	CV (%)	Mean	CV (%)	Mean	CV (%)
Taxa Richness	8.7	17.6	12.3	16.9	10.3	11.2	11.0	15.7	9.0	11.1	9.0	11.1	11.0	15.7	15.0	13.3
Cumulative Taxa	10		17		16		17		15		13		14		24	
Ephemeropteran Taxa	2.0	0.0	1.7	34.6	1.0	0.0	2.0	0.0	0.0		0.0		2.0	0.0	2.0	0.0
Plecopteran Taxa	0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0	
Trichopteran Taxa	1.0	0.0	1.3	43.3	0.7	173.2	1.3	43.3	0.0		0.7	86.6	0.7	86.6	0.0	
EPT Taxa	3.0	0.0	3.0	33.3	1.7	69.3	3.3	17.3	0.0		0.7	86.6	2.7	21.7	2.0	0.0
Cumulative EPT	3		4		3		4		0		1		3		2	
Dipteran Taxa	2.0	0.0	4.3	35.3	2.7	21.7	2.3	24.7	2.3	24.7	2.7	21.7	2.0	0.0	5.0	20.0
Non Insect Taxa	3.0	33.3	5.0	34.6	6.0	16.7	4.3	35.3	6.7	8.7	5.0	20.0	6.3	32.9	6.7	17.3
% EPT	51%	15.0	37%	32.1	6%	72.7	64%	10.9	0%		0%	86.6	16%	36.8	16%	12.7
Sensitive EPT %	0%		0%	173.2	0%		0%		0%		0%		0%		0%	
Shannon Diversity	1.4	7.1	1.7	4.8	1.3	11.9	1.4	4.9	1.1	25.7	1.2	21.2	1.7	8.6	1.5	9.8
Tolerance Value	5.4	2.1	5.5	6.7	5.2	9.3	5.4	2.3	7.4	3.3	6.5	10.5	6.3	3.7	6.0	1.2
% Dominant Taxa	43%		34%		39%		56%		55%		38%		36%		37%	
% Chironomidae	16%	19.0	34%	30.4	39%	51.4	15%	26.5	22%	70.3	38%	21.7	36%	39.7	37%	26.7
% Intolerant	0%		0%	173.2	0%		0%		0%		0%		0%		0%	
% Tolerant	1%	67.6	16%	38.1	2%	45.9	6%	58.1	72%	18.1	27%	124.7	27%	22.3	7%	67.1
% Grazer	0%		7%	19.4	0%	173.2	0%	173.2	0%		0%	86.6	0%	99.6	0%	
% Collector Gatherer	62%	11.8	79%	1.5	86%	8.3	82%	5.7	81%	15.0	61%	42.5	76%	14.3	59%	26.4
% Collector Filterer	37%	19.5	3%	50.4	13%	58.6	16%	34.9	0%	173.2	34%	88.5	22%	49.0	37%	45.7
% Predator	1%	34.6	11%	18.7	0%	173.2	2%	47.3	5%	65.9	1%	86.7	0%	86.8	2%	52.6
% Shredder	0%		0%		0%	86.6	0%		0%	173.2	0%		0%	173.2	0%	173.2
% Scraper	0%		0%	173.2	1%	125.5	0%	173.2	13%	107.3	1%	104.4	1%	4.1	0%	173.2
% Other	0%		7%	19.4	0%	86.6	0%	173.2	0%		0%	86.6	0%	99.6	1%	88.7
Estimated Abundance	4007		4317		1369		3968		4245		2429		1422		1831	

Appendix B.6-1: Biological Metric Calculations for Benthic Macroinvertebrates Collected May 2002.

	REF-DLC		REF-KC		REF-SC		SDR-1		SDR-MT		SLRR-BR		SLRR-MR		SMC-LCCC	
	Mean	CV (%)	Mean	CV (%)	Mean	CV (%)	Mean	CV (%)	Mean	CV (%)	Mean	CV (%)	Mean	CV (%)	Mean	CV (%)
Taxa Richness	21.3	18.9	23.3	25.1	21.7	20.8	8.7	17.6	12.7	12.1	10.3	5.6	10.3	24.4	9.7	15.8
Cumulative Taxa	37		44		30		17		18		14		15		14	
Ephemeropteran Taxa	1.3	43.3	1.0	0.0	1.7	34.6	0.0		2.0	0.0	2.0	0.0	1.0	0.0	2.3	24.7
Plecopteran Taxa	1.0	0.0	0.7	86.6	0.7	86.6	0.0		0.0		0.0		0.0		0.0	
Trichopteran Taxa	5.3	21.7	6.0	16.7	5.7	10.2	0.0		1.7	69.3	1.0	0.0	0.0		3.0	0.0
EPT Taxa	7.7	19.9	7.7	15.1	8.0	12.5	0.0		3.7	31.5	3.0	0.0	1.0	0.0	5.3	10.8
Cumulative EPT	12		16		10		0		5		3		1		7	
Dipteran Taxa	6.7	22.9	8.0	33.1	4.0	25.0	2.3	65.5	3.0	33.3	3.7	15.7	2.3	24.7	2.3	24.7
Non Insect Taxa	4.3	48.0	4.3	35.3	4.7	32.7	5.7	20.4	5.0	40.0	3.7	15.7	5.3	47.2	2.0	50.0
% EPT	39%	12.0	32%	9.2	62%	2.9	0%		14%	30.3	13%	7.6	8%	49.8	69%	12.8
Sensitive EPT %	13%	87.3	7%	150.3	4%	89.8	0%		0%		0%		0%		0%	
Shannon Diversity	2.0	18.2	1.9	17.3	2.0	7.0	1.0	53.3	1.5	16.9	1.4	4.2	1.6	8.1	1.2	2.2
Tolerance Value	4.9	8.6	5.3	10.0	4.8	3.1	7.4	22.7	4.9	5.8	6.3	3.0	5.8	6.1	5.3	2.1
% Dominant Taxa	31%		28%		29%		35%		42%		56%		43%		62%	
% Chironomidae	31%	42.8	30%	45.6	21%	6.5	3%	66.4	0%		56%	2.3	43%	42.3	12%	79.6
% Intolerant	11%	99.6	5%	129.6	5%	56.1	0%		0%		0%		0%	173.2	0%	
% Tolerant	2%	140.2	3%	45.4	1%	74.8	66%	74.9	4%	72.3	19%	51.6	11%	59.0	4%	79.2
% Grazer	18%	84.4	8%	149.3	6%	21.8	0%		0%	173.2	4%	24.8	0%		1%	43.1
% Collector Gatherer	48%	10.3	49%	16.0	55%	5.6	40%	113.5	12%	30.4	83%	10.1	85%	10.3	82%	6.2
% Collector Filterer	22%	117.1	35%	62.0	34%	11.9	29%	172.2	13%	99.2	12%	66.4	14%	65.3	17%	32.7
% Predator	11%	71.5	6%	79.7	4%	54.2	17%	140.4	74%	18.4	1%	46.5	0%	99.9	0%	86.6
% Shredder	2%	84.2	1%	75.3	0%	173.2	1%	127.0	0%		0%		0%	173.2	0%	86.6
% Scraper	2%	86.0	4%	142.3	4%	46.6	9%	173.2	1%	121.4	0%		0%		0%	173.2
% Other	16%	86.3	5%	146.1	3%	99.8	0%		1%	137.8	4%	24.8	0%		1%	1.3
Estimated Abundance	1655		1249		3482		2443		1940		2904		1678		5731	

Appendix B.6-1: Biological Metric Calculations for Benthic Macroinvertebrates Collected May 2002.

	SMC-M		SMC-RSFR		SMC-SP		SR-94		SR-WS		TC-TCNP	
	Mean	CV (%)	Mean	CV (%)	Mean	CV (%)	Mean	CV (%)	Mean	CV (%)	Mean	CV (%)
Taxa Richness	9.0	11.1	10.0	26.5	8.0	25.0	14.7	15.7	10.0	10.0	6.0	33.3
Cumulative Taxa	12		16		12		24		14		10	
Ephemeropteran Taxa	1.7	34.6	1.7	34.6	2.0	0.0	0.7	86.6	0.0		0.0	
Plecopteran Taxa	0.0		0.0		0.0		0.0		0.0		0.0	
Trichopteran Taxa	0.0		0.7	86.6	1.0	0.0	0.3	173.2	0.7	86.6	0.0	
EPT Taxa	1.7	34.6	2.3	24.7	3.0	0.0	1.0	0.0	0.7	86.6	0.0	
Cumulative EPT	2		3		3		2		1		0	
Dipteran Taxa	2.3	24.7	2.3	24.7	2.0	0.0	5.3	21.7	3.7	31.5	3.0	57.7
Non Insect Taxa	5.0	20.0	4.7	44.6	3.0	66.7	6.7	8.7	4.7	12.4	3.0	33.3
% EPT	17%	13.0	17%	78.6	12%	52.2	4%	81.5	3%	156.0	0%	
Sensitive EPT %	0%		0%		0%		0%		0%		0%	
Shannon Diversity	1.2	5.7	1.5	6.5	1.1	52.4	1.5	9.4	1.5	18.6	0.7	27.9
Tolerance Value	6.0	1.1	6.5	3.1	6.1	2.6	6.2	2.5	6.8	9.5	6.4	3.1
% Dominant Taxa	52%		31%		64%		58%		53%		76%	
% Chironomidae	52%	22.8	22%	23.3	10%	50.3	57%	11.3	53%	21.2	76%	13.0
% Intolerant	0%		0%		0%		0%		0%		0%	
% Tolerant	7%	25.1	33%	22.4	12%	112.3	16%	23.0	32%	66.3	22%	46.9
% Grazer	0%		1%	131.8	1%	116.8	0%	173.2	3%	156.0	0%	
% Collector Gatherer	75%	16.5	71%	15.2	33%	74.4	72%	9.8	74%	5.2	97%	1.5
% Collector Filterer	24%	51.8	25%	44.9	65%	38.5	15%	13.2	8%	133.7	2%	65.3
% Predator	0%	173.2	3%	147.4	0%	173.2	7%	73.7	11%	101.5	0%	173.2
% Shredder	0%		0%	86.6	0%	173.2	0%		0%		0%	173.2
% Scraper	1%	21.5	0%	173.2	1%	124.3	4%	72.1	3%	94.6	0%	173.2
% Other	0%	173.2	1%	131.8	1%	116.8	0%	173.2	4%	153.3	0%	
Estimated Abundance	2440		1911		3006		550		1716		2229	

Appendix B.6-2: Biological Metric Calculations for Benthic Macroinvertebrates Collected October 2002.

	AHC-ECR		AHC-MR		BVR-CB		CCC-805		ESC-EF		ESC-HRB		GVC-WB		LAC-ECR	
	Mean	CV (%)	Mean	CV (%)	Mean	CV (%)	Mean	CV (%)	Mean	CV (%)	Mean	CV (%)	Mean	CV (%)	Mean	CV (%)
Taxa Richness	12.0	16.7	9.0	48.4	10.3	47.7	17.3	6.7	15.3	7.5	13.7	29.6	15.0	6.7	11.3	27.0
Cumulative Taxa	17		16		17		22		22		22		24		20	
Ephemeropteran Taxa	0.7	86.6	1.0	173.2	1.3	43.3	2.0	0.0	1.0	0.0	1.0	0.0	1.3	43.3	0.0	
Plecopteran Taxa	0.0		0.0		0.0		0.0		0.0		0.0		0.0		0.0	
Trichopteran Taxa	0.3	173.2	0.7	86.6	2.0	0.0	1.0	0.0	3.3	17.3	1.0	100.0	0.3	173.2	0.3	173.2
EPT Taxa	1.0	100.0	1.7	124.9	3.3	17.3	3.0	0.0	4.3	13.3	2.0	50.0	1.7	34.6	0.3	173.2
Cumulative EPT	2		4		4		3		5		3		3		1	
Dipteran Taxa	3.7	15.7	2.0	50.0	2.3	24.7	4.7	24.7	4.7	12.4	5.3	57.3	7.3	7.9	4.0	66.1
Non Insect Taxa	7.0	28.6	4.7	32.7	4.3	74.2	7.7	19.9	4.7	32.7	5.7	10.2	5.7	10.2	6.0	44.1
% EPT	1%	101.5	3%	153.8	54%	29.7	45%	20.7	43%	37.0	10%	65.2	3%	61.5	1%	173.2
Sensitive EPT %	0%		0%		0%		0%		0%	173.2	0%		0%		0%	
Shannon Diversity	1.5	29.8	1.3	47.9	1.7	22.2	2.1	8.0	1.8	3.9	1.7	6.1	2.0	7.4	1.5	3.6
Tolerance Value	7.4	0.6	6.5	14.9	5.3	6.5	5.4	10.5	5.3	6.2	6.4	6.6	6.9	2.7	6.8	7.8
% Dominant Taxa	44%		34%		28%		24%		33%		34%		29%		38%	
% Chironomidae	3%	9.8	5%	6.9	28%	27.2	9%	42.9	33%	33.6	25%	50.1	18%	29.7	40%	39.6
% Intolerant	0%		0%		0%		0%		0%	173.2	0%		0%		0%	
% Tolerant	69%	11.3	49%	63.8	3%	141.5	17%	78.6	2%	102.0	46%	37.7	48%	25.7	35%	90.6
% Grazer	0%	173.2	1%	91.9	5%	68.0	4%	73.8	1%	25.0	1%	86.6	0%	173.2	1%	173.2
% Collector Gatherer	49%	44.6	56%	52.2	59%	19.2	69%	14.0	42%	19.1	81%	12.4	44%	19.0	76%	24.1
% Collector Filterer	19%	60.8	1%	173.2	27%	48.1	2%	14.7	48%	25.5	0%	173.2	17%	50.3	9%	123.8
% Predator	27%	23.6	40%	74.5	9%	56.9	24%	51.3	9%	46.9	17%	55.5	4%	100.5	13%	100.9
% Shredder	0%	86.7	2%	128.6	0%	173.2	1%	131.0	0%		0%	173.2	2%	56.6	1%	130.0
% Scraper	5%	87.8	0%		0%	113.6	0%	173.2	1%	40.3	1%	87.9	33%	27.6	0%	100.8
% Other	0%	173.2	1%	114.9	5%	62.8	4%	69.1	1%	2.4	1%	86.6	0%	173.2	1%	128.1
Estimated Abundance	1015		115		1301		508		2760		3549		157		750	

Appendix B.6-2: Biological Metric Calculations for Benthic Macroinvertebrates Collected October 2002.

	LPC-BMR		MB-RC		REF-DLC3		REF-KC		REF-SC		SD-DDH		SDR-1		SDR-MT	
	Mean	CV (%)	Mean	CV (%)	Mean	CV (%)	Mean	CV (%)	Mean	CV (%)	Mean	CV (%)	Mean	CV (%)	Mean	CV (%)
Taxa Richness	16.0	6.3	16.7	28.4	18.7	8.2	17.3	16.7	22.7	5.1	14.0	7.1	8.3	54.1	21.7	18.7
Cumulative Taxa	21		28		25		28		32		22		14		31	
Ephemeropteran Taxa	2.0	0.0	1.0	100.0	1.0	0.0	1.0	0.0	2.0	0.0	2.3	24.7	0.3	173.2	0.7	86.6
Plecopteran Taxa	0.0		0.0		1.0	0.0	1.0	0.0	0.0		0.0		0.0		0.0	
Trichopteran Taxa	1.0	100.0	0.3	173.2	5.7	10.2	3.7	15.7	4.7	12.4	2.7	57.3	0.0		0.7	86.6
EPT Taxa	3.0	33.3	1.3	86.6	7.7	7.5	5.7	10.2	6.7	8.7	5.0	20.0	0.3	173.2	1.3	43.3
Cumulative EPT	4		3		8		7		7		7		1		3	
Dipteran Taxa	2.7	21.7	6.3	50.8	3.3	34.6	5.3	39.0	4.7	44.6	3.3	45.8	2.0	50.0	10.0	17.3
Non Insect Taxa	9.0	0.0	8.0	25.0	3.0	0.0	5.0	20.0	5.0	40.0	4.7	24.7	6.0	50.0	9.3	32.7
% EPT	14%	69.1	1%	92.1	63%	10.0	54%	19.6	58%	26.9	30%	69.3	2%	173.2	3%	73.0
Sensitive EPT %	0%		0%		5%	21.7	6%	41.3	3%	79.6	1%	142.1	0%		0%	
Shannon Diversity	1.7	30.2	1.7	22.9	1.9	19.0	1.8	11.0	2.2	9.1	1.6	16.4	0.9	53.1	2.1	15.3
Tolerance Value	7.0	13.8	6.7	5.4	4.6	4.0	5.0	2.4	4.5	5.2	5.7	12.3	6.6	7.7	6.2	3.6
% Dominant Taxa	44%		30%		48%		36%		31%		39%		57%		36%	
% Chironomidae	4%	73.1	30%	98.0	4%	24.8	4%	117.7	1%	45.0	10%	115.6	10%	148.7	36%	24.5
% Intolerant	0%		0%	173.2	8%	46.5	6%	46.0	7%	52.3	1%	142.1	0%		0%	
% Tolerant	55%	59.1	43%	45.4	5%	120.2	3%	15.9	2%	54.6	5%	117.4	28%	83.2	17%	40.0
% Grazer	0%	86.6	0%	173.2	9%	70.8	0%	99.6	17%	66.4	7%	153.8	0%		2%	138.9
% Collector Gatherer	65%	31.3	65%	37.9	22%	48.6	18%	32.3	29%	33.0	35%	28.7	39%	102.6	67%	9.4
% Collector Filterer	23%	68.7	6%	99.3	64%	26.6	63%	11.3	37%	37.2	43%	61.6	58%	70.1	0%	36.3
% Predator	11%	47.4	17%	125.5	4%	81.1	11%	49.0	16%	52.0	15%	92.9	2%	38.9	21%	14.1
% Shredder	0%	86.6	1%	109.3	1%	108.2	5%	42.6	0%	113.1	0%		0%	173.2	6%	110.6
% Scraper	0%	173.2	11%	78.8	8%	66.2	2%	80.5	12%	79.3	1%	120.4	0%		1%	73.4
% Other	0%	1.5	0%	173.2	2%	88.0	0%	173.2	6%	48.2	6%	155.0	0%	173.2	4%	57.5
Estimated Abundance	798		662		4012		1151		2461		2578		5050		309	

Appendix B.6-2: Biological Metric Calculations for Benthic Macroinvertebrates Collected October 2002.

	SLRR-BR		SLRR-MR		SMC-LCCC		SMR-DLR		SMR-WGR		SR-AD		TC-TCNP	
	Mean	CV (%)	Mean	CV (%)	Mean	CV (%)	Mean	CV (%)	Mean	CV (%)	Mean	CV (%)	Mean	CV (%)
Taxa Richness	12.0	8.3	10.3	14.8	17.3	8.8	10.0	36.1	13.3	30.3	11.3	39.8	14.3	4.0
Cumulative Taxa	21		14		28		17		21		19		20	
Ephemeropteran Taxa	1.7	34.6	1.0	0.0	1.7	34.6	2.3	24.7	1.0	0.0	0.0		0.0	
Plecopteran Taxa	0.0		0.0		0.0		0.0		0.0		0.0		0.0	
Trichopteran Taxa	1.0	100.0	0.3	173.2	3.0	57.7	3.0	33.3	2.7	21.7	0.3	173.2	1.3	43.3
EPT Taxa	2.7	57.3	1.3	43.3	4.7	49.5	5.3	21.7	3.7	15.7	0.3	173.2	1.3	43.3
Cumulative EPT	4		2		6		8		4		1		2	
Dipteran Taxa	3.7	68.6	2.7	43.3	5.7	44.4	2.3	24.7	4.3	58.1	6.7	60.6	6.3	24.1
Non Insect Taxa	5.0	69.3	6.0	0.0	6.0	57.7	1.0	100.0	3.0	0.0	3.0	33.3	5.3	21.7
% EPT	21%	91.2	3%	66.5	43%	90.4	77%	32.7	78%	4.3	0%	173.2	12%	34.3
Sensitive EPT %	0%		0%		2%	112.5	1%	145.1	0%		0%		0%	
Shannon Diversity	1.6	19.0	1.5	17.8	2.1	10.7	1.2	18.2	1.4	7.0	1.3	43.1	1.8	11.6
Tolerance Value	6.5	17.8	5.2	6.4	5.5	11.3	4.9	9.3	4.6	3.6	7.5	5.1	5.8	3.7
% Dominant Taxa	25%		52%		15%		44%		48%		41%		42%	
% Chironomidae	14%	63.6	2%	79.5	13%	19.4	6%	51.9	2%	43.3	14%	42.9	19%	24.3
% Intolerant	0%		0%		2%	112.5	1%	173.2	2%	100.7	0%	173.2	0%	
% Tolerant	37%	127.9	18%	23.4	9%	157.4	1%	91.5	1%	91.9	68%	41.1	6%	59.0
% Grazer	8%	93.8	0%		9%	81.5	1%	150.1	3%	39.3	0%	173.2	12%	34.3
% Collector Gatherer	62%	43.0	87%	7.9	43%	22.1	56%	37.7	31%	46.3	53%	56.6	33%	16.3
% Collector Filterer	27%	81.2	12%	57.3	25%	60.5	41%	56.4	63%	23.5	1%	19.9	0%	
% Predator	2%	45.4	0%	86.6	22%	134.6	1%	105.6	2%	49.0	5%	129.9	51%	3.9
% Shredder	1%	133.6	0%	173.2	1%	55.5	0%		0%	86.6	0%		3%	43.8
% Scraper	0%		0%		4%	39.0	1%	173.2	0%	173.2	41%	77.2	0%	173.2
% Other	8%	91.6	0%	101.1	5%	74.2	0%	99.8	3%	36.4	0%	173.2	13%	33.5
Estimated Abundance	479		1323		1014		771		1578		1571		460	

Appendix B.6-3: Biological Metric Calculations for Benthic Macroinvertebrates Collected May 2003.

	AHC-ECR		AHC-MR		CC-FB		CC-H94		CCC-805		ESC-EF		ESC-HRB		GVC-WB	
	Mean	CV (%)	Mean	CV (%)	Mean	CV (%)	Mean	CV (%)	Mean	CV (%)	Mean	CV (%)	Mean	CV (%)	Mean	CV (%)
Taxa Richness	16.0	6.3	11.0	18.2	13.0	15.4	12.0	25.0	9.0	11.1	11.0	32.8	11.3	18.4	9.0	0.0
Cumulative Taxa	20		19		20		22		15		16		18		9	
Ephemeropteran Taxa	2.0	0.0	1.7	34.6	2.3	24.7	1.3	43.3	2.0	0.0	2.0	0.0	1.7	34.6	2.0	0.0
Plecopteran Taxa	0.0		0.0		0.0		0.3	173.2	0.0		0.0		0.0		0.0	
Trichopteran Taxa	1.0	0.0	0.0		1.0	0.0	1.7	34.6	1.0	100.0	2.3	24.7	1.0	0.0	1.0	0.0
EPT Taxa	3.0	0.0	1.7	34.6	3.3	17.3	3.3	34.6	3.0	33.3	4.3	13.3	2.7	21.7	3.0	0.0
Cumulative EPT	3		2		4		5		4		5		3		3	
Dipteran Taxa	5.7	10.2	3.0	57.7	4.7	24.7	4.7	44.6	2.7	21.7	2.3	24.7	3.0	33.3	2.0	0.0
Non Insect Taxa	6.7	8.7	5.7	27.0	2.7	21.7	3.0	0.0	2.7	21.7	3.3	75.5	5.3	47.2	4.0	0.0
% EPT	26%	31.7	43%	40.5	33%	38.7	5%	63.1	25%	21.6	44%	13.0	76%	11.1	18%	15.9
Sensitive EPT %	0%		0%		0%		2%	87.2	0%	173.2	0%		0%		0%	
Shannon Diversity	1.9	4.3	1.4	13.8	1.6	10.1	0.9	18.0	1.3	10.4	1.5	20.1	1.3	4.7	1.1	5.9
Tolerance Value	6.0	3.5	6.0	6.6	5.9	6.8	6.3	5.3	5.8	0.7	5.5	2.4	4.8	2.4	5.9	0.4
% Dominant Taxa	36%		42%		28%		75%		39%		42%		65%		68%	
% Chironomidae	36%	13.5	24%	56.4	28%	59.5	75%	15.1	31%	46.2	4%	52.5	4%	24.1	7%	24.7
% Intolerant	0%		0%		0%		1%	173.2	0%		0%		0%		0%	
% Tolerant	22%	22.9	23%	73.2	15%	108.0	18%	76.3	3%	96.3	6%	160.1	12%	58.2	7%	17.4
% Grazer	6%	29.9	0%		0%	45.7	3%	78.4	1%	111.1	1%	50.1	9%	61.1	1%	64.0
% Collector Gatherer	76%	6.0	84%	10.1	62%	37.1	80%	16.2	58%	23.8	48%	46.2	84%	5.5	30%	12.9
% Collector Filterer	14%	29.0	0%	86.7	7%	83.6	1%	141.1	39%	34.6	50%	45.6	1%	107.5	68%	5.5
% Predator	4%	9.9	10%	78.4	18%	137.0	1%	67.5	1%	56.1	1%	57.4	7%	58.3	0%	
% Shredder	0%		0%		0%	173.2	0%	173.2	0%	173.2	0%	173.2	0%		0%	
% Scraper	1%	23.7	5%	71.4	11%	109.0	14%	105.5	0%		0%		0%		0%	41.6
% Other	6%	29.9	0%	173.2	0%	45.7	3%	78.4	1%	90.3	1%	50.1	9%	61.1	1%	64.0
Estimated Abundance	983		3884		841		8125		2849		3571		3943		11556	

Appendix B.6-3: Biological Metric Calculations for Benthic Macroinvertebrates Collected May 2003.

	LPC-CCR		MB-RC		REF-CC		REF-DLC		REF-SC		SD-DDH		SDR-1		SDR-MT	
	Mean	CV (%)	Mean	CV (%)	Mean	CV (%)	Mean	CV (%)	Mean	CV (%)	Mean	CV (%)	Mean	CV (%)	Mean	CV (%)
Taxa Richness	13.7	8.4	10.7	19.5	17.0	5.9	21.0	17.2	17.7	22.9	10.0	36.1	9.3	16.4	8.3	30.2
Cumulative Taxa	19		15		26		32		26		17		11		12	
Ephemeropteran Taxa	2.0	0.0	1.7	34.6	1.3	43.3	1.7	34.6	2.0	0.0	2.0	0.0	0.3	173.2	2.0	0.0
Plecopteran Taxa	0.0		0.0		3.0	0.0	1.7	34.6	1.3	114.6	0.0		0.0		0.0	
Trichopteran Taxa	1.3	43.3	1.0	0.0	0.7	86.6	6.0	0.0	3.7	41.7	1.3	43.3	1.0	0.0	1.0	0.0
EPT Taxa	3.3	17.3	2.7	21.7	5.0	0.0	9.3	6.2	7.0	37.8	3.3	17.3	1.3	43.3	3.0	0.0
Cumulative EPT	4		3		6		12		11		5		2		3	
Dipteran Taxa	4.0	25.0	2.7	21.7	5.7	20.4	4.3	35.3	3.0	33.3	3.3	17.3	2.0	0.0	2.0	0.0
Non Insect Taxa	5.3	21.7	4.3	35.3	2.7	21.7	4.3	48.0	3.7	31.5	2.7	78.1	6.0	16.7	3.0	88.2
% EPT	35%	61.8	63%	14.1	6%	39.2	40%	17.7	40%	27.6	45%	58.6	1%	71.4	32%	56.4
Sensitive EPT %	0%		0%		4%	63.3	7%	75.3	2%	87.3	0%		0%		0%	
Shannon Diversity	1.6	9.0	1.5	7.6	1.1	6.8	1.8	10.1	1.6	19.0	1.3	12.9	1.1	4.6	1.1	43.1
Tolerance Value	5.7	4.1	5.7	0.1	5.7	2.2	5.3	4.9	5.5	2.9	5.7	4.0	5.2	1.9	5.7	2.5
% Dominant Taxa	36%		54%		75%		28%		47%		41%		67%		63%	
% Chironomidae	17%	67.1	6%	28.9	75%	2.1	28%	31.8	47%	18.7	22%	84.2	3%	59.0	2%	49.8
% Intolerant	0%		0%		6%	65.4	7%	67.7	3%	70.7	0%	173.2	0%		0%	
% Tolerant	8%	90.6	13%	12.2	2%	21.4	4%	74.5	1%	49.8	6%	78.5	3%	38.7	1%	123.1
% Grazer	3%	162.2	8%	59.3	0%		6%	68.7	10%	63.0	2%	62.7	0%	45.6	12%	97.0
% Collector Gatherer	56%	45.3	74%	6.7	80%	2.7	59%	15.2	76%	11.3	70%	19.0	13%	45.8	23%	44.7
% Collector Filterer	37%	64.4	15%	65.6	5%	22.3	30%	51.1	10%	23.4	26%	49.1	82%	5.0	63%	34.3
% Predator	5%	48.7	2%	46.9	10%	30.6	4%	29.1	3%	67.6	2%	119.0	4%	73.3	2%	106.8
% Shredder	0%		1%	88.5	1%	85.7	1%	98.9	1%	92.3	0%		0%		0%	
% Scraper	0%		0%	173.2	0%		1%	70.9	1%	101.2	0%	99.8	0%		0%	
% Other	3%	143.5	8%	59.3	0%		6%	74.1	9%	64.4	2%	62.7	0%	45.6	12%	97.0
Estimated Abundance	2181		2101		1151		1306		5737		6493		11277		7363	

Appendix B.6-3: Biological Metric Calculations for Benthic Macroinvertebrates Collected May 2003.

	SLRR-BR		SLRR-MR		SMR-CP		SMR-WGR		SR-WS		TC-TCNP		TJ-DM	
	Mean	CV (%)	Mean	CV (%)	Mean	CV (%)	Mean	CV (%)	Mean	CV (%)	Mean	CV (%)	Mean	CV (%)
Taxa Richness	8.3	25.0	13.7	11.2	14.3	14.5	8.7	6.7	11.0	32.8	10.3	5.6	8.3	30.2
Cumulative Taxa	12		19		24		10		19		17		12	
Ephemeropteran Taxa	1.7	34.6	1.7	34.6	2.3	24.7	1.0	0.0	1.0	100.0	0.7	86.6	0.0	
Plecopteran Taxa	0.0		0.0		0.0		0.0		0.0		0.0		0.0	
Trichopteran Taxa	0.0		0.3	173.2	2.0	50.0	3.0	0.0	0.7	86.6	1.0	0.0	0.0	
EPT Taxa	1.7	34.6	2.0	50.0	4.3	26.6	4.0	0.0	1.7	69.3	1.7	34.6	0.0	
Cumulative EPT	2		3		6		4		3		2		0	
Dipteran Taxa	2.0	0.0	5.0	20.0	5.7	50.9	2.0	0.0	3.3	34.6	3.3	34.6	5.0	34.6
Non Insect Taxa	4.7	53.9	6.3	9.1	3.3	17.3	2.3	24.7	5.7	20.4	4.0	25.0	3.0	33.3
% EPT	6%	86.3	31%	20.3	44%	44.9	49%	31.7	1%	132.9	16%	71.0	0%	
Sensitive EPT %	0%		0%		0%		0%		0%		0%		0%	
Shannon Diversity	1.2	34.3	1.5	3.9	1.3	27.1	1.3	7.0	1.5	16.1	1.4	29.6	1.1	35.9
Tolerance Value	6.3	4.1	5.8	0.8	5.5	7.4	5.5	2.7	7.2	5.1	6.3	3.2	6.7	4.5
% Dominant Taxa	48%		37%		32%		43%		46%		55%		53%	
% Chironomidae	32%	56.8	37%	34.1	13%	73.1	12%	29.5	22%	25.5	12%	47.8	54%	40.2
% Intolerant	0%		0%		0%		0%		0%		0%		0%	
% Tolerant	15%	77.9	8%	18.8	15%	102.0	2%	71.9	61%	29.7	12%	73.4	40%	42.8
% Grazer	0%		0%	173.2	0%	1.8	1%	69.3	0%	99.9	15%	72.0	0%	
% Collector Gatherer	51%	53.9	77%	17.4	72%	52.2	56%	35.0	85%	15.8	17%	55.9	89%	9.2
% Collector Filterer	48%	58.6	22%	62.6	24%	161.6	40%	52.5	10%	141.4	55%	33.6	1%	124.0
% Predator	0%	173.2	1%	34.2	3%	45.0	3%	40.2	1%	106.0	4%	54.0	2%	116.5
% Shredder	0%		0%		0%		0%		3%	76.3	2%	157.3	0%	
% Scraper	1%	143.9	0%		0%	173.2	0%		0%	173.2	7%	81.9	5%	92.5
% Other	0%		0%	173.2	0%	41.6	1%	69.3	0%	99.9	15%	72.7	0%	
Estimated Abundance	783		1149		2204		4592		1265		1907		3004	

Appendix B.7-1: Physical Habitat Quality Scores. May 2002.

Measure	SLRR-BR	SLRR-MR	LAC-ECR	LAC-CB	BVR-ED	BVR-CB	AHC-MR	AHC-ECR	SMC-M	SMC-SP	SMC-RSFR	SMC-LCCC
1. Instream Cover	6	2	4	1	2	17	10	6	7	13	14	17
2. Embeddedness	3	1	3	1	2	18	16	1	5	15	10	18
3. Velocity / Depth Regimes	6	4	5	1	3	17	11	9	8	14	12	18
4. Sediment Deposition	10	3	4	1	6	17	12	3	9	17	9	18
5. Channel Flow	14	17	9	7	16	16	13	15	14	15	14	11
6. Channel Alteration	17	16	7	4	1	12	18	12	12	15	17	19
7. Riffle Frequency	2	3	2	1	1	14	11	10	6	7	11	9
8. Bank Stability	14	16	12	14	20	18	14	12	16	16	16	16
9. Vegetation Protection	16	18	14	10	0	13	16	16	16	12	18	10
10. Riparian Vegetative Zone	16	16	6	4	2	6	14	11	9	2	12	18
Total	**104**	**96**	**66**	**44**	**53**	**148**	**135**	**95**	**102**	**126**	**133**	**154**

Measure	ENC-GVR	CC-E	ESC-CC	ESC-HRB	ESC-EF	ESC-RSFR	ESC-VC	LPC-CCR	LPC-BMR	CCC-805	TC-TCNP	SDR-MT
1. Instream Cover	8	12	13	11	16	7	17	14	8	14	12	18
2. Embeddedness	5	9	12	12	14	4	15	16	3	15	13	17
3. Velocity / Depth Regimes	7	8	13	17	18	8	17	15	8	13	7	13
4. Sediment Deposition	5	11	12	10	15	3	15	17	9	15	8	16
5. Channel Flow	6	14	17	16	16	16	17	15	12	15	8	14
6. Channel Alteration	7	7	13	8	16	18	18	17	18	8	17	18
7. Riffle Frequency	4	13	10	9	14	3	18	13	4	14	4	15
8. Bank Stability	16	6	14	14	16	16	18	16	18	16	12	16
9. Vegetation Protection	14	10	16	8	16	16	18	16	16	6	16	18
10. Riparian Vegetative Zone	10	3	8	4	16	8	16	10	18	7	16	15
Total	**77**	**93**	**128**	**109**	**157**	**99**	**169**	**149**	**114**	**108**	**113**	**160**

Measure	SDR-1	SR-WS	SR-94	REF-SC	REF-DLC	REF-KC
1. Instream Cover	7	6	6	17	18	14
2. Embeddedness	2	4	3	17	16	10
3. Velocity / Depth Regimes	7	8	8	18	17	16
4. Sediment Deposition	4	5	4	16	17	12
5. Channel Flow	15	6	5	17	15	15
6. Channel Alteration	15	18	17	13	18	13
7. Riffle Frequency	2	4	3	16	17	10
8. Bank Stability	14	14	16	17	17	16
9. Vegetation Protection	16	14	16	18	18	18
10. Riparian Vegetative Zone	12	14	16	13	18	10
Total	**94**	**93**	**94**	**162**	**171**	**134**

Appendix B.7-2: Physical Habitat Quality Scores. October 2002.

Measure	SMR-WGR	SMR-DLR	SLRR-MR	SLRR-BR	LAC-ECR	BVR-CB	AHC-MR	AHC-ECR	ESC-HRB	ESC-EF	GVC-WB	SD-DDH
1. Instream Cover	19	13	4	9	7	19	12	8	10	18	14	16
2. Embeddedness	17	13	1	4	10	17	13	2	10	19	16	16
3. Velocity / Depth Regimes	18	16	8	5	12	18	12	8	10	17	14	13
4. Sediment Deposition	17	14	4	5	6	14	8	3	7	17	16	17
5. Channel Flow	15	17	10	10	8	15	8	12	15	15	14	12
6. Channel Alteration	19	15	13	17	7	9	16	12	6	17	13	19
7. Riffle Frequency	16	14	6	3	5	17	11	11	3	15	12	9
8. Bank Stability	18	18	16	14	14	18	14	16	14	18	13	18
9. Vegetation Protection	18	18	17	16	6	8	14	17	8	17	14	18
10. Riparian Vegetative Zone	18	15	17	16	4	2	12	7	4	14	12	18
Total	**175**	**153**	**96**	**99**	**79**	**137**	**120**	**71**	**87**	**167**	**138**	**156**

Measure	SMC-LCCC	LPC-BMR	CCC-805	MB-RC	TC-TCNP	SDR-MT	SDR-1	SR-AD	REF-KC	REF-DLC3	REF-SC
1. Instream Cover	19	11	13	12	8	18	6	3	15	18	18
2. Embeddedness	18	10	14	12	11	16	4	4	15	17	17
3. Velocity / Depth Regimes	16	13	11	13	11	18	3	4	14	18	18
4. Sediment Deposition	18	11	15	16	9	15	5	19	13	16	17
5. Channel Flow	12	15	9	8	7	6	14	7	14	15	14
6. Channel Alteration	18	18	13	15	18	18	12	1	15	16	18
7. Riffle Frequency	12	8	15	6	7	14	2	3	13	18	16
8. Bank Stability	18	16	16	16	14	18	16	10	14	17	18
9. Vegetation Protection	18	16	13	18	16	18	16	4	16	16	18
10. Riparian Vegetative Zone	18	15	8	14	14	18	14	9	12	17	14
Total	**167**	**133**	**127**	**130**	**115**	**159**	**92**	**64**	**141**	**168**	**168**

Appendix B.7-3: Physical Habitat Quality Scores. May 2003.

Measure	SMR-WGR	SMR-CP	SLRR-MR	SLRR-BR	AHC-MR	AHC-ECR	ESC-HRB	ESC-EF	GVC-WB	SD-DDH	LPC-CCR	CCC-805
1. Instream Cover	17	10	8	6	13	6	11	18	16	15	16	17
2. Embeddedness	16	4	2	6	12	2	13	13	16	17	16	17
3. Velocity / Depth Regimes	19	14	10	6	13	8	14	19	13	13	15	15
4. Sediment Deposition	16	4	5	5	16	3	10	13	15	17	14	16
5. Channel Flow	18	18	17	16	14	12	17	17	15	15	16	16
6. Channel Alteration	19	18	17	18	19	13	8	20	10	20	16	8
7. Riffle Frequency	15	6	6	15	9	6	10	17	14	7	10	16
8. Bank Stability	18	10	14	16	16	14	16	18	16	18	16	14
9. Vegetation Protection	18	16	18	18	12	12	16	18	14	4	16	14
10. Riparian Vegetative Zone	18	19	17	18	16	10	8	19	10	15	10	10
Total	**174**	**119**	**114**	**124**	**140**	**86**	**123**	**172**	**139**	**141**	**145**	**143**

Measure	MB-RC	TC-TCNP	SDR-MT	SDR-1	CC-FB	SR-WS	CC-H94	TJ-DM	REF-SC	REF-DLC	REF-CC
1. Instream Cover	14	12	18	6	15	7	10	7	16	19	19
2. Embeddedness	16	14	13	2	14	4	6	4	15	17	18
3. Velocity / Depth Regimes	13	13	19	14	12	10	12	6	19	18	14
4. Sediment Deposition	12	14	17	3	18	4	12	3	13	17	19
5. Channel Flow	12	9	17	18	6	12	6	7	18	16	10
6. Channel Alteration	16	19	19	18	10	20	14	13	14	19	19
7. Riffle Frequency	13	6	14	3	18	3	8	5	18	19	19
8. Bank Stability	16	16	18	18	14	12	16	8	18	18	18
9. Vegetation Protection	18	18	18	18	12	16	16	16	17	17	18
10. Riparian Vegetative Zone	12	12	17	14	9	18	16	12	15	18	20
Total	**142**	**133**	**170**	**114**	**128**	**106**	**116**	**81**	**163**	**178**	**174**

Appendix B.8-1: Water Quality Data. May 2002.

Parameter	pH	Specific Conductance (mS/cm)	Water Temperature (C)	Dissolved Oxygen (mg/l)	Average Depth (cm)	Average Velocity (ft/sec)	Elevation (ft above sea level)
SLRR-BR	7.7	2.42	18.0	7.40	13.5	2.7	10
SLRR-MR	7.9	2.30	16.0	8.93	23.7	1.0	70
LAC-ECR	7.8	3.26	14.1	8.03	8.5	0.7	80
LAC-CB	7.6	4.07	16.0	9.50	10.2	1.1	280
BVR-CB	7.7	1.71	16.6	6.76	16.1	2.3	40
BVR-ED	8.5	1.83	19.0	18.24	11.4	1.4	320
AHC-MR	7.3	1.57	13.5	5.94	5.9	1.6	360
AHC-ECR	7.6	2.35	17.5	9.35	11.8	1.2	40
SMC-M	7.8	1.72	15.5	7.23	13.5	1.7	520
SMC-SP	7.7	1.50	15.7	7.05	13.5	1.9	640
SMC-RSFR	7.9	1.80	16.3	9.39	10.2	2.1	360
SMC-LCCC	8.2	1.80	18.6	18.04	16.9	2.5	80
ENC-GVR	7.8	4.30	18.1	11.10	5.9	1.2	40
CC-E	7.4	4.70	15.1	8.20	9.1	1.4	40
ESC-HRB	8.0	1.70	15.9	7.23	22.0	2.3	630
ESC-CC	8.0	1.70	17.0	10.47	13.5	2.2	560
ESC-EF	8.3	1.70	16.5	11.59	17.8	3.0	360
ESC-RSFR	7.9	2.00	16.2	8.52	13.5	1.5	40
ESC-VC	8.2	1.60	16.6	12.38	13.5	2.3	240
LPC-CCR	7.5	2.06	15.7	7.35	6.8	1.2	440
LPC-BMR	7.5	1.68	16.1	7.23	13.5	1.5	280
CCC-805	7.8	2.36	22.2	8.04	16.1	2.7	80
TC-TCNP	7.0	4.50	14.1	7.00	5.9	0.6	140
SDR-MT	7.9	3.61	20.0	8.64	7.6	1.7	180
SDR-1	7.6	3.20	23.0	8.10	15.2	0.8	10
SR-94	7.8	2.46	22.0	8.31	6.8	1.1	320
SR-WS	7.9	4.22	21.0	8.13	3.8	0.9	40
REF-SC	8.1	1.40	14.4	11.08	19.7	2.9	440
REF-DLC	7.7	1.50	17.0	8.92	6.8	2.2	280
REF-KC	7.9	2.40	13.5	10.42	9.3	2.5	280

Appendix B.8-2: Water Quality Data. October 2002.

Parameter	pH	Specific Conductance (mS/cm)	Water Temperature (C)	Dissolved Oxygen (mg/l)	Average Depth (cm)	Average Velocity (ft/sec)	Elevation (ft above sea level)
SMR-WGR	8.4	0.90	18.3	18.02	16.9	2.5	500
SMR-DLR	8.2	1.13	13.9	9.15	22.1	1.8	275
SLRR-MR	8.2	1.95	16.9	9.15	18.6	1.1	70
SLRR-BR	8.0	1.76	16.5	6.85	13.5	1.7	10
LAC-ECR	8.3	3.10	16.4	11.30	6.8	1.4	80
BVR-CB	8.6	1.50	17.1	10.90	13.5	2.5	40
AHC-MR	7.9	2.90	17.2	7.58	4.2	0.9	360
AHC-ECR	8.5	2.90	18.9	11.01	6.8	1.0	40
ESC-HRB	8.7	1.70	18.4	10.94	20.3	5.9	630
ESC-EF	8.9	1.70	17.0	9.93	12.9	2.1	360
GVC-WB	8.4	1.68	19.1	18.00	12.7	1.8	340
SD-DDH	8.1	2.20	17.8	11.80	7.6	1.5	170
SMC-LCCC	8.4	1.90	18.4	9.90	11.0	2.5	80
LPC-BMR	8.2	2.90	17.3	7.21	15.2	2.1	280
CCC-805	8.2	3.63	20.0	9.80	11.0	1.6	80
MB-RC	8.1	2.50	17.4	16.70	7.6	1.3	65
TC-TCNP	7.6	5.00	16.9	4.61	3.4	0.7	55
SDR-MT	7.8	3.12	18.2	3.80	6.8	1.5	180
SDR-1	8.0	2.10	19.0	2.10	12.7	1.6	10
SR-AD	8.9	3.60	16.4	14.30	5.1	2.4	215
REF-KC	8.4	2.30	16.0	8.54	12.7	1.8	280
REF-DLC3	8.5	1.12	16.9	17.40	14.4	2.3	540
REF-SC	8.6	1.70	16.2	11.54	17.8	3.0	440

Appendix B.8-3: Water Quality Data. May 2003.

Parameter	pH	Specific Conductance (mS/cm)	Water Temperature (C)	Chlorophyll (mg/l)	Turbidity (NTU)	Dissolved Oxygen (mg/l)	Average Depth (cm)	Average Velocity (ft/sec)	Elevation (ft above sea level)
SMR-WGR	8.7	1.00	24.3	15.0	7.7	11.0	22.0	3.7	500
SMR-CP	8.1	1.32	18.8	3.4	9.4	10.4	23.7	2.6	110
SLRR-MR	8.0	2.34	17.1	3.7	18.4	8.9	23.7	2.0	70
SLRR-BR	7.9	2.42	17.1	4.5	13.5	7.6	18.6	1.6	10
AHC-MR	7.8	2.10	17.5	4.3	14.7	8.6	8.5	1.7	360
AHC-ECR	8.5	2.81	22.3	3.0	7.2	13.4	10.1	1.5	40
ESC-HRB	8.4	1.95	20.1	3.8	8.1	14.6	22.0	2.5	630
ESC-EF	8.6	2.02	19.3	2.5	7.3	11.8	15.2	2.6	360
GVC-WB	7.8	2.40	20.1	3.1	8.8	7.0	14.4	1.7	340
SD-DDH	7.6	2.47	19.5	4.9	7.2	5.7	6.8	1.9	170
LPC-CCR	7.9	2.92	18.8	3.8	7.9	8.5	5.1	1.5	440
CCC-805	8.3	3.11	23.4	4.2	7.4	10.2	10.2	1.9	80
MB-RC	7.7	3.93	18.8	1.8	8.9	6.9	7.6	1.4	65
TC-TCNP	7.7	5.25	19.9	1.9	8.1	8.1	5.1	1.6	55
SDR-MT	8.1	1.44	20.9	3.6	8.2	10.4	20.3	3.0	180
SDR-1	7.6	2.56	22.5	3.5	8.2	4.0	17.8	2.6	10
CC-FB	7.8	4.95	19.1	5.9	8.0	7.3	8.5	1.3	220
SR-WS	7.5	4.12	19.3	12.4	18.4	4.7	12.7	1.1	40
CC-H94	7.3	2.28	17.4	5.0	7.6	1.5	3.4	0.4	2180
TJ-DM	8.0	3.20	19.5	30.5	56.2	4.4	4.2	0.8	25
REF-SC	8.4	1.62	17.0	4.2	13.3	9.9	35.5	4.0	440
REF-DLC	8.3	1.50	19.7	4.6	7.5	10.3	11.7	2.7	280
REF-CC	7.7	0.58	15.0	0.9	6.6	7.5	7.6	1.6	3500

Appendix B.9-1: IBI Metric Values and Scores. May 2002.

	Metric Values							IBI Scores							
STATION	% CF+CG	% Non-Insect Taxa	% Tolerant Taxa	Coleoptera Taxa	Predator Taxa	% Intolerant Individuals	EPT Taxa	% CF+CG	% Non-Insect Taxa	% Tolerant Taxa	Coleoptera Taxa	Predator Taxa	% Intolerant Individuals	EPT Taxa	Total IBI
REF-KC	85%	18%	12%	3	7	6%	12	3	7	8	5	4	2	6	35
REF-DLC	71%	24%	21%	2	7	11%	9	6	6	5	4	4	3	5	33
REF-SC	89%	25%	11%	4	6	5%	10	2	6	8	7	3	1	5	32
SMC-LCCC	98%	17%	8%	0	1	0%	7	0	7	9	0	0	0	4	20
SDR-MT	26%	44%	25%	0	3	0%	4	10	1	4	0	0	0	2	17
SR-94	89%	32%	47%	1	5	0%	2	2	4	0	2	2	0	1	11
ESC-EF	98%	40%	20%	0	2	0%	3	0	2	5	0	0	0	2	9
ESC-CC	99%	50%	17%	0	2	0%	3	0	0	6	0	0	0	2	8
ESC-HRB	84%	46%	31%	0	2	0%	3	3	1	2	0	0	0	2	8
SR-WS	81%	36%	55%	0	3	0%	1	4	3	0	0	0	0	1	8
SMC-RSFR	96%	47%	27%	1	3	0%	3	0	0	3	2	0	0	2	7
SDR-1	71%	75%	50%	0	2	0%	0	6	0	0	0	0	0	0	6
SLRR-BR	94%	36%	36%	0	2	0%	3	1	3	0	0	0	0	2	6
AHC-MR	99%	43%	29%	0	2	0%	1	0	1	3	0	0	0	1	5
CC-E	84%	58%	33%	0	3	0%	1	3	0	1	0	0	0	1	5
ESC-RSFR	99%	67%	25%	0	1	0%	1	0	0	4	0	0	0	1	5
SMC-SP	98%	55%	27%	0	1	0%	3	0	0	3	0	0	0	2	5
LAC-CB	81%	73%	45%	0	2	0%	0	4	0	0	0	0	0	0	4
LPC-CCR	97%	50%	35%	0	5	0%	2	0	0	1	0	2	0	1	4
SLRR-MR	99%	50%	29%	0	3	0%	1	0	0	3	0	0	0	1	4
BVR-CB	95%	54%	38%	0	2	0%	3	1	0	0	0	0	0	2	3
ESC-VC	98%	47%	33%	0	3	0%	4	0	0	1	0	0	0	2	3
LAC-ECR	95%	45%	64%	0	2	0%	1	1	1	0	0	0	0	1	3
CCC-805	98%	58%	42%	0	1	0%	3	0	0	0	0	0	0	2	2
LPC-BMR	98%	58%	50%	0	1	0%	3	0	0	0	0	0	0	2	2
AHC-ECR	97%	50%	38%	0	3	0%	2	0	0	0	0	0	0	1	1
BVR-ED	100%	50%	38%	0	1	0%	2	0	0	0	0	0	0	1	1
ENC-GVR	97%	60%	50%	0	1	0%	2	0	0	0	0	0	0	1	1
SMC-M	99%	50%	40%	0	0	0%	2	0	0	0	0	0	0	1	1
TC-TCNP	99%	57%	57%	0	0	0%	0	0	0	0	0	0	0	0	0

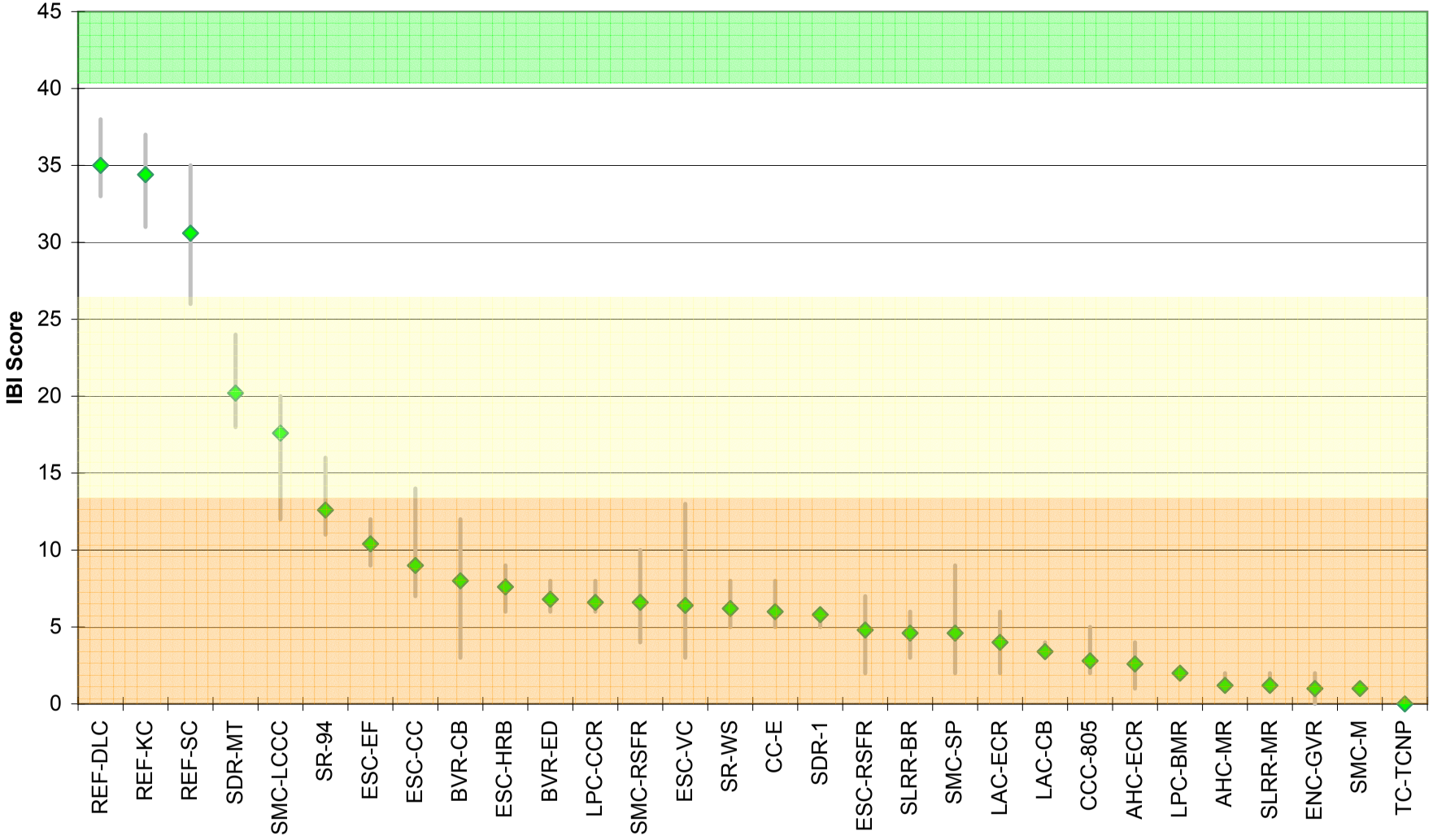
Appendix B.9-2: IBI Metric Values and Scores. October 2002.

	Metric Values							IBI Scores							
STATION	% CF+CG	% Non-Insect Taxa	% Tolerant Taxa	Coleoptera Taxa	Predator Taxa	% Intolerant Individuals	EPT Taxa	% CF+CG	% Non-Insect Taxa	% Tolerant Taxa	Coleoptera Taxa	Predator Taxa	% Intolerant Individuals	EPT Taxa	Total IBI
REF-SC	67%	30%	11%	5	7	6%	7	6	4	8	8	4	2	4	36
REF-DLC3	85%	23%	9%	4	6	8%	7	3	6	9	7	3	2	4	34
SMR-DLR	97%	7%	7%	1	1	1%	7	0	10	9	2	0	0	4	25
REF-KC	83%	29%	14%	0	5	4%	6	3	5	7	0	2	1	3	21
GVC-WB	59%	33%	25%	0	5	0%	3	8	4	4	0	2	0	2	20
MB-RC	71%	40%	16%	0	6	0%	3	6	2	7	0	3	0	2	20
SMC-LCCC	66%	43%	17%	0	6	2%	6	7	1	6	0	3	0	3	20
SMR-WGR	95%	32%	11%	3	3	2%	4	1	4	8	5	0	0	2	20
AHC-MR	52%	44%	19%	0	4	0%	4	9	1	6	0	1	0	2	19
SDR-MT	68%	45%	21%	0	8	0%	3	6	1	5	0	5	0	2	19
TC-TCNP	35%	35%	25%	0	4	0%	2	10	3	4	0	1	0	1	19
SD-DDH	78%	37%	21%	0	5	1%	6	4	3	5	0	2	0	3	17
SR-AD	52%	27%	33%	0	5	0%	0	9	5	1	0	2	0	0	17
CCC-805	72%	45%	30%	0	7	0%	3	5	1	2	0	4	0	2	14
ESC-HRB	80%	37%	32%	1	4	0%	3	4	3	2	2	1	0	2	14
ESC-EF	90%	39%	22%	0	4	0%	5	2	2	5	0	1	0	3	13
BVR-CB	86%	47%	20%	0	5	0%	3	3	0	5	0	2	0	2	12
SLRR-BR	89%	45%	20%	0	5	0%	3	2	1	5	0	2	0	2	12
LAC-ECR	90%	41%	24%	0	4	0%	1	2	2	4	0	1	0	1	10
AHC-ECR	65%	53%	47%	0	4	0%	2	7	0	0	0	1	0	1	9
LPC-BMR	89%	59%	29%	0	5	0%	3	2	0	3	0	2	0	2	9
SLRR-MR	99%	50%	25%	1	1	0%	2	0	0	4	2	0	0	1	7
SDR-1	98%	73%	27%	0	1	0%	1	0	0	3	0	0	0	1	4

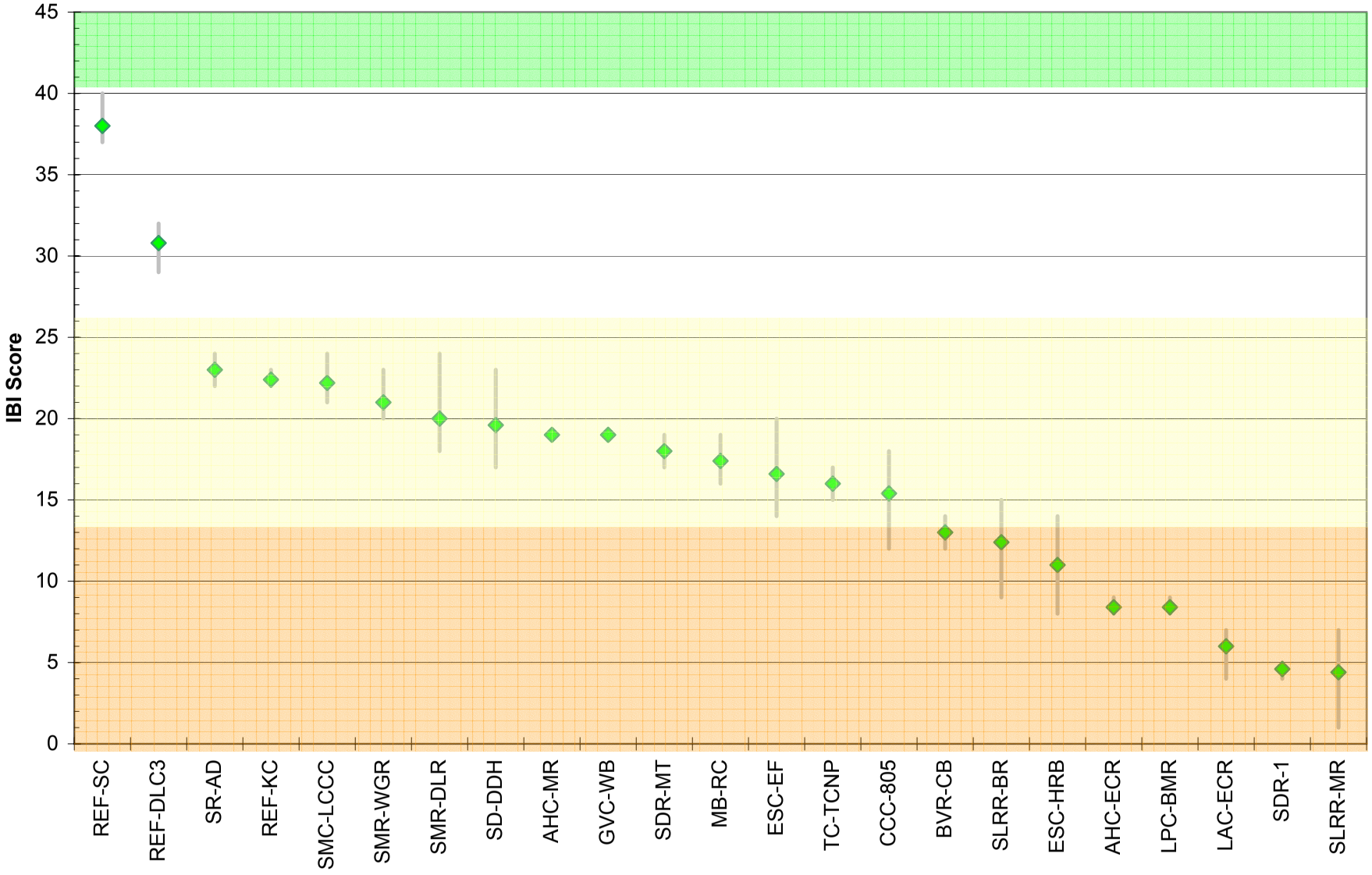
Appendix B.9-3: IBI Metric Values and Scores. May 2003.

	Metric Values							IBI Scores							
STATION	% CF+CG	% Non-Insect Taxa	% Tolerant Taxa	Coleoptera Taxa	Predator Taxa	% Intolerant Individuals	EPT Taxa	% CF+CG	% Non-Insect Taxa	% Tolerant Taxa	Coleoptera Taxa	Predator Taxa	% Intolerant Individuals	EPT Taxa	Total IBI
REF-CC	88%	10%	5%	4	7	4%	5	2	9	10	7	4	1	3	36
REF-SC	85%	20%	5%	3	6	4%	8	3	7	10	5	3	1	4	33
REF-DLC	88%	22%	15%	1	9	7%	10	2	6	7	2	6	2	5	30
CC-H94	81%	22%	17%	1	7	1%	5	4	6	6	2	4	0	3	25
AHC-ECR	88%	40%	25%	2	7	0%	3	2	2	4	4	4	0	2	18
CC-FB	69%	21%	42%	0	6	0%	4	6	6	0	0	3	0	2	17
LPC-CCR	94%	29%	18%	0	6	0%	4	1	5	6	0	3	0	2	17
SMR-CP	95%	26%	22%	0	6	0%	6	1	5	5	0	3	0	3	17
CCC-805	97%	36%	14%	1	5	0%	4	0	3	7	2	2	0	2	16
TC-TCNP	71%	33%	25%	0	3	0%	1	6	4	4	0	0	0	1	15
SMR-WGR	96%	33%	11%	0	2	0%	4	0	4	8	0	0	0	2	14
SD-DDH	96%	27%	20%	0	4	0%	4	0	5	5	0	1	0	2	13
ESC-EF	98%	43%	14%	0	2	0%	5	0	1	7	0	0	0	3	11
AHC-MR	85%	47%	29%	1	4	0%	2	3	0	3	2	1	0	1	10
MB-RC	89%	42%	25%	0	1	0%	3	2	2	4	0	0	0	2	10
SDR-MT	86%	50%	25%	0	4	0%	3	3	0	4	0	1	0	2	10
ESC-HRB	84%	50%	31%	0	4	0%	3	3	0	2	0	1	0	2	8
SLRR-MR	98%	47%	24%	0	5	0%	3	0	0	4	0	2	0	2	8
SR-WS	95%	44%	25%	0	3	0%	3	1	1	4	0	0	0	2	8
TJ-DM	90%	40%	30%	0	1	0%	0	2	2	2	0	0	0	0	6
GVC-WB	99%	44%	44%	0	0	0%	3	0	1	0	0	0	0	2	3
SDR-1	96%	67%	33%	0	1	0%	1	0	0	1	0	0	0	1	2
SLRR-BR	99%	64%	45%	0	0	0%	2	0	0	0	0	0	0	1	1

Appendix B.10-1: Subsample Variability of 500 Randomly Selected Organisms (n=5). May 2002.



Appendix B.10-2: Subsample Variability of 500 Randomly Selected Organisms (n=5). October 2002.



Appendix B.10-3: Subsample Variability of 500 Randomly Selected Organisms (n=5). May 2003.