

## **Appendix 7.7      Benthic Invertebrate and                                  Zooplankton Data**

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**Appendix 7.7-1**

**Benthic Invertebrate Data  
1996 Stream Survey (artificial substrates)**



**EXPATRIATE WOLVERINE  
WOLVERINE PROJECT**

**Benthic Invertebrate Data for Streams in the Wolverine Area**

Site Location	Nougha Cr @ outlet			Go Creek			Money Cr d/s Go Cr			Nougha Cr @ Hwy			Money Cr u/s Dollar			Wind Cr			
	W1a	W1b	W1c	W12a	W12b	W12c	W14a	W14b	W14c	W21a	W21b	W21c	W23a	W23b	W23c	W26a	W26b	W26c	
Ameletus sp															1			3	
Baetis sp	146	240	60	76	52	169	1082	548	2019	257	219	425	209	1060	63	196	10	179	
Cinygmula sp				2	3	2	42	22	5		6							32	
Ephemerella coloradensis				5		5			3										
Ephemerella doddsi							20	8	23	3	7	7							
Ephemerella inermis	1	4					12	7	23	4	4			2					
Ephemerella grandis							19	7	14	3	6	5	1	32	2				
Epeorus (Iron) albertae										6	1	7							
Epeorus (Iron) longimanus				4	9	14			1	5	14	4		32					
Ephemerella sp							31	5	3	5	22	33	4	1	6	1			
Rhithrogena sp				7	3	17	10	20	39	11	36	15	8	33	19				
Siphonurus sp																	1		
Trichoptera, Unid J				31	14	32							80	160	14	24		64	
Trichoptera pupae			1													1	1		
Agraylea sp			1										1						
Agrypnia sp																			
Arctopsyche sp	5			13	12	32		3	8	41	154	105	16	32			33	2	
Brachycentrus sp				14	5	6	38	38	78	24	58	65	48	79	6	1	2		
Ceraclea sp			1													4	4	1	
Clostoeca sp													1		1				
Dicosmoecus sp				1															
Glossosoma sp		1					8												
Grammotaulius sp																10	15	4	
Hydropsychidae unid J							12	49	17										
Hydropsyche sp	452	576	395				11	8											
Hydroptilidae J		81	64																
Hydroptila sp												1	8	32	1	8			
Micrasema sp				13	20	17	3		11	3	7	9	1			1			
Mystacides sp																			
Psychoglypha sp																1		2	
Rhyacophila sp juv			8								4								
Rhyacophila acropedes/vao		4	2	2			3	2	3	2	2	11		1	1	2			
Rhyacophila (hyalinata?)										2	2	3							
Diptera, Unid adult											1	2		1				1	
Diptera Unid P																			
Tipulidae													1						
Antocha sp											4								
Dicranota sp	1			4									1			1	4	2	
Dolichocheza sp																			
Tipula sp																			
Simuliidae																			
Prosimulium sp				1	1														
Simulium sp L	1773	942	434	4	12	16	3	2	9	692	160	211				2701	2282	5399	
Simulium sp P	984	1320	100		1				1	153	29	230					2	3	
Chironomidae adult																			
Chironomidae pupae	195	584	104	5	20	17	17	20	48	64	40	112	16	33	10	185	369	408	
Chironomidae unid J/D	1978	1584	242	432	203	1238	357	347	1715	443	111	76	2808	1452	264	2740	4999	10543	
Tanypodinae																	1		
Procladius sp					3														
Thienemannimyia sp	781	882	156							2	3	1	26	21	21	78	43	300	
Chironomini																			
Chironomus sp																			
Constempelina sp																			
Cryptochironomus sp							1												
Dicrotendipes sp																10	33	257	
Endochironomus sp																			
Micropsectra sp							1	4								25		290	
Microtendipes sp																			
Pagastiella sp																			
Paracladius sp																			
Paralauterborniella sp																			
Phaenopsectra sp																			
Polypedilum (Polypedilum) sp																			
Rheotanytarsus sp	16										13	10	8	40	16	4	272	449	5344
Stempelina sp																	8		
Stichtochironomus sp																			
Tanytarsus sp																			
Orthoclaidiinae																			
Brillia sp										4	6					1		32	
Cardiocladius sp	4	36	9	52	52	59	79	65	199	39	9	133	335	51					
Corynoneura sp				1	4		1			4	6		32		6	48	32	128	
Cricotopus sp	192	316	84	110	146	268	230	195	581	117	127	132	420	338	217	760	1171	2996	
Eukiefferiella sp	516	968	143	132	61	155	263	128	384	191	122	181	676	329	109	704	1876		
Euryhapsis sp										4	6					1		32	

**EXPATRIATE RESOURCES  
WOLVERINE PROJECT**

**Benthic Invertebrate Data for Streams in the Wolverine Area**

Site Location	Nougha Cr @ outlet			Go Creek			Money Cr d/s Go Cr			Nougha Cr @ Hwy			Money Cr u/s Dollar			Wind Cr		
	W1a	W1b	W1c	W12a	W12b	W12c	W14a	W14b	W14c	W21a	W21b	W21c	W23a	W23b	W23c	W26a	W26b	W26c
Heterotrissocladius sp																		
Synorthocladius sp	28	96	282		15	42	1	8	16	2	10	9			4	81	64	449
Thienemanniella sp				30	4	16	16	20	66	8	42	20	64	112	20	16		64
Diamesinae																		
Monodiamesa sp																		1
Blephariceridae																		
Bibiocephala sp										1								
Ceratopogonidae																		
Palpomyia sp																		1
Deuterophlebiidae																		
Deuterophlebia sp										1								
Empididae pupae									1							1		
Chelifera sp				4	7	1	1		4									
Clinocera sp						1			2			4						1
Weidemannia sp												4						
Psychodidae																		
Pericoma sp				4	2	1				4						2		66
Coleoptera																		
Elmidae, unid J											1							
Optioservus sp												2						
Homoptera																		
Cicadellidae																		1
Hymenoptera Unid A	1												1					2
Lepidoptera L													1					2
Turbellaria unid	7	32	16													48		512

**Appendix 7.7-2**

**Benthic Invertebrate Data  
1997 Stream Survey (natural substrates)**

## Benthic Invertebrate Data at Wolverine Creek, 1997

	May			July			September		
	W9-A	W9-B	W9-C	W9a	W9b	W9c	W9a	W9b	W9c
<b>PHYLUM ARTHROPODA</b>									
<b>Class Insecta</b>									
Order Ephemeroptera									
Family Siphonuridae									
Ameletus sp		1				1			2
Family Leptophlebiidae									
Paraleptophlebia sp							1		
Family Baetidae									
Baetis sp	4		1	3	7	25			
Order Plecoptera									
Plecoptera Unid J							49	75	54
Family Leuctridae									
Despaxia sp							6	11	13
Perlomyia sp					1	4			
Family Chloroperlidae									
Sweltsa sp gp				1	1	1	1	4	8
Family Neumoridae									
Zapada sp		1			1	1	3	1	
Order Trichoptera									
Trichoptera Unid J							3		5
Family Limnephilidae									
Pseudostenophylax edwardsi								2	
Imania sp		1				1			
Order Diptera									
Diptera Unid A							1		
Family Chironomidae									
Chironomidae A						3			
Chironomidae Pupae				2	5	1	4		1
Chironomidae Unid J		3					57	70	77
Sub Family Orthocladiinae									
Cardiocladius sp						1	30	24	13
Cricotopus sp		1		3	4	9	31	36	37
Eukiefferiella sp	14	6	8	90	67	75		3	
Synorthocladius sp								1	1
Thienemannimyia sp				1			1		
Zalutschia sp							1		
Sub Family Diamesinae									
Diamesa sp	19	1	7	21	27	23	180	243	73
Family Ceratopogonidae									
Culicoides sp								1	
Stilobezzia sp		1							
Family Empididae									
Chelifera sp									1
Clinocera sp								1	1
Weidemannia sp							4		
Family Ephydriidae J							8	5	
Family Simuliidae									
Prosimulium sp L							2	5	
Simulium sp		1							

## Benthic Invertebrate Data at Wolverine Creek, 1997

	May			July			September		
	W9-A	W9-B	W9-C	W9a	W9b	W9c	W9a	W9b	W9c
Order Colimbola									
Colembola Unid Dam									1
Family Isotomidae									
Isotoma sp			2	1	1				1
Isotomurus palustris				1					
Order Thysanoptera A								1	1
Order Homoptera									
Family Aphididae		1							
<b>Class Arachnida</b>									
Order Aranaea		3					1		
Order Hydracarina									
Hydracarina Unid J							1	3	1
Brachypoda sp							1		
Unioncola sp							1		
Wandesia sp				6		17		1	1
Oribatei	1	1	1		1		3		
<b>Class Crustacea</b>									
Order Amphipoda									
Family Talitrida									
Hyaella azteca (dried)	1								
Sub Class Ostracoda									
Cypria sp							1		
Sub Class Copepoda									
Cyclopoida		1			1		5	1	1
Harpacticoida							28	2	3
<b>PHYLUM ANNELIDA</b>									
<b>Class Oligochaeta</b>									
Order Haplotaxidae									
Family Enchytraeidae		2				1	4		1
<b>PHYLUM NEMATODA</b>		2				2	4	3	7
<b>PHYLUM PLATYHELMINTHE</b>									
<b>Class Turbellaria</b>							1	1	2
<b>Total per sample</b>	39	26	19	129	116	165	432	494	305
<b>Taxonomic Richness/Sample</b>	5	15	5	10	11	15	28	22	23
<b>Total for W9</b>	84			410			1231		



**Appendix 7.7-3**

**Benthic Invertebrate Data  
1996 Lake Survey**

EXPATRIATE RESOURCES LTD.  
WOLVERINE PROJECT

Benthic Invertebrate Data for Lakes in the Wolverine Area

Site Location	Little Jimmy L.			Wolverine Lake			Wolverine Lake			Wolverine Lake			Little Wolverine L.		
Site Number	M1a	M1b	M1c	W3a	W3b	W3c	W5a	W5b	W5c	W7a	W7b	W7c	W10a	W10b	W10c
Cnidaria															
Hydra sp						2		9							
Bryozoa Unid															
Cristatella mucedo													P	P	P
Porifera															
Spongilla lacustris													P	P	P
Tardigrada															
Bivalvia															
Pisidium sp	70	3	44	12	18	17	25	80	27	64	52	95	107	16	94
Sphaerium sp	6		7			15			1	8	3	5	421	195	93
Gastropoda															
Gyraulus parvus						1							5		1
Stagnicola arctica				2	1										4
Valvata sincera			1	3	22	48	3	8	26		1	18	4	4	13
Nematoda	870	65	429	67	61	58	689	865	460	104	311	746	303	62	411
Hirudinea															
Dina sp (D parva?)													10	4	1
Erpobdella sp															
Helobdella stagnicola													2		1
Oligochaeta															
Chaetogaster sp	8	4	14		3	9	48	192	36		112	32	72	28	32
Nais sp								1			1		4	8	
Slavina appendiculata						1								2	8
Enchytraeidae	8			1	1	4			4			8	72	7	1
Lumbriculus variegatus	3	2	1			3						2	13	9	4
Tubificidae unid J	116	155	194	14	23	151	85	37	65	28	73	46	406	45	178
Cladocera															
Alona sp	3	10	171	2	6	113	249	56	24	32	169	192	352	110	8
Allonella sp															
Camptocercus rectirostris					2	1				4	8	8			
Ceriodaphnia reticulata		3	1		2			2					4	6	1
Chydorus sphaericus				10	2	15	3280	144	36				8		8
Daphnia sp															
Eurycercus (Bullatifrons) sp													14	17	
Ilyocryptus sordidus										4					
Copepoda															
Calanoida	8	6	6	3	2	2		8	8		32			2	
Cyclopoida		2	30	3	3	34	16	72	16	4	32	8		8	17
Harpacticoida	97	38	490	25	49	48	192	240	140	128	456	560	32	22	24
Amphipoda															
Gammarus lacustris						1									2
Hyalella azteca	26	23	74		1	9			4	6	11	6	108	187	22
Ostracoda Unid		1		20	6	8		184	64	4	56	32	44		2
Candona sp	14	7	89	14	13	111	33	112	9		16	64	44	22	54
Cypria sp	23	15	177	102	133	263	60	360	56	36	76	32	36	12	16
Hydracarina, unid J/D				2	3	2	1	40	13			8			
Arrenurus sp									1						
Frontipodia sp			4	1				8							
Lebertia sp	1				2	1		1							
Sperchon sp															
Torrenticola sp															

EXPATRIATE RESOURCES LTD.  
WOLVERINE PROJECT

Benthic Invertebrate Data for Lakes in the Wolverine Area

Site Location	Little Jimmy L.			Wolverine Lake			Wolverine Lake			Wolverine Lake			Little Wolverine L.		
	M1a	M1b	M1c	W3a	W3b	W3c	W5a	W5b	W5c	W7a	W7b	W7c	W10a	W10b	W10c
Oribatei															
Plecoptera, Unid J/D															
Capnia sp												1			
Isoperla sp															
Podmosta sp															
Malenka sp															
Megarcys sp															
Skwala curvata															
Skwala paralella															
Sweltsa sp gp															
Taenionema sp															
Zapada sp															
Ephemeroptera															
Ameletus sp															
Baetis sp					1										
Cinygmula sp															
Ephemerella coloradensis															
Ephemerella doddsi															
Ephemerella inermis															
Ephemerella grandis															
Epeorus (Iron) albertae															
Epeorus (Iron) longimanus															
Ephemerella sp															
Rhithrogena sp															
Siphonurus sp															
Trichoptera, Unid J				1	1	3							5		
Trichoptera pupae	1														
Agrylea sp													4		
Agrypnia sp															1
Arctopsyche sp				1											
Brachycentrus sp															
Ceraclea sp					1				1				1	1	
Clostoeca sp	3									1			3		
Dicosmoecus sp															
Glossosoma sp															
Grammotaulius sp															
Hydropsychidae unid J															
Hydropsyche sp															
Hydroptilidae J				24											
Hydroptila sp															
Micrasema sp															
Mystacides sp	2		1						1						4
Psychoglypha sp															
Rhyacophila sp juv															
Rhyacophila acropedes/vao															
Rhyacophila (hyalinata?)															
Diptera, Unid adult															
Diptera Unid P															
Tipulidae															
Antocha sp															
Dicranota sp															
Dolichopeza sp															1
Tipula sp													1		
Simuliidae															
Prosimulium sp															
Simulium sp L						1						4			
Simulium sp P															
Chironomidae adult				1											
Chironomidae pupae			1					37	5	2		16	8	8	4
Chironomidae unid J/D	150	20	239	34	48	34		354	289	412		252	920	1161	874

EXPATRIATE RESOURCES LTD.  
WOLVERINE PROJECT

Benthic Invertebrate Data for Lakes in the Wolverine Area

Site Location	Little Jimmy L.			Wolverine Lake			Wolverine Lake			Wolverine Lake			Little Wolverine L.		
	M1a	M1b	M1c	W3a	W3b	W3c	W5a	W5b	W5c	W7a	W7b	W7c	W10a	W10b	W10c
Tanypodinae															
Procladius sp	23	10	22	10	13	12	13	10	49	40	7	41	23	14	53
Thienemannimyia sp	1		6	1	4	1			9	12	50	66	6	8	11
Chironomini															
Chironomus sp			1												
Constempelina sp			1												
Cryptochironomus sp													9	1	11
Dicortendipes sp			6			1					2		89	107	190
Endochironomus sp													1	1	
Micropsectra sp		35	69												
Microtendipes sp	349	17	6	5	16	4			117	4	1		79	16	30
Pagastiella sp															16
Paracladius sp				1			1	8	1						
Paralauterborniella sp				1						4	8	1			
Phaenopsectra sp	10	6	21	4	8	4	2	3	33	2	12	1	2	4	
Polypedilum (Polypedilum) sp				1	11	2		8	11	10	10		6		3
Rheotanytarsus sp	8	2	58	14	43	70	336	133	207	49	24	26	10	4	8
Stempelina sp								8							
Stichtochironomus sp										2	10	2	4		
Tanytarsus sp	4			1	2	4	4	8	7	47	106	84	16	8	8
Orthocladiinae															
Brillia sp															
Cardiocladius sp															
Corynoneura sp													12		
Cricotopus sp				1	5	5	2	16					1	3	
Eukiefferiella sp				1	2	1	1	8							1
Euryhopsis sp															
Heterotrissocladius sp							1								
Synorthocladius sp													54	17	
Thienemanniella sp															
Diamesinae															
Monodiamesa sp															
Blephariceridae															
Bibiocephala sp															
Ceratopogonidae															
Palpomyia sp							1						10	2	7
Deuterophlebiidae															
Deuterophlebia sp															
Empididae pupae															
Chelifera sp							1	9	1	1					
Clinocera sp															
Weidemannia sp															
Psychodidae															
Pericoma sp															
Coleoptera															
Elmidae, unid J															
Optioservus sp															
Homoptera															
Cicadellidae															
Hymenoptera Unid A															
Lepidoptera L															
Turbellaria unid	2	3	12	2	1	3	5	79	1	4	97	37	64	66	

**Appendix 7.7-4**

**Zooplankton Data  
1996 Data**

**EXPATRIATE RESOURCES LTD.  
WOLVERINE PROJECT**

**Zooplankton Data for Lakes in the Wolverine Area**

**MEASUREMENTS OF ADULT COPEPODA**

**LITTLE JIMMY LAKE**

Date:		HETEROCOPE septentrionalis.		DIAPTOMUS pabilofensis	
LAKE	NO.	SIZE microns	SIZE microns	SIZE microns	SIZE microns
JIMMY		female	male	female	male
#1 VERT HAUL	1	2,693.9	2,734.7	1,326.5	1,163.3
	2	2,551.3	2,489.8	1,367.3	1,183.7
	3	2,734.9	2,428.6	1,265.3	1,285.7
	4	2,816.6	2,816.3	1,306.1	1,142.8
	5	2,857.4	2,653.0	1,326.5	1,183.7
	6	2,837.0	2,591.8	1,265.3	1,183.7
	7	2,837.0	2,734.7	1,326.5	1,122.4
	8	2,571.7	2,755.1	1,285.7	1,163.3
	9	2,877.8	2,836.7	1,367.3	1,183.7
	10	2,796.2	2,775.5	1,408.2	1,244.9
AVER		<b>2757.36</b>	<b>2681.61</b>	<b>1324.48</b>	<b>1185.70</b>

Date:		HETEROCOPE septentrionalis.		DIAPTOMUS pabilofensis	
LAKE	NO.	SIZE microns	SIZE microns	SIZE microns	SIZE microns
JIMMY		female	male	female	male
#2 VERT HAUL	1	2,734.7	3,020.4	1,306.1	1,224.5
	2	2,816.6	2,653.0	1,224.5	1,183.7
	3	2,775.8	2,959.2	1,285.7	1,224.5
	4	2,734.9	2,897.9	1,285.7	1,285.7
	5	2,755.4	2,755.1	1,306.1	1,204.1
	6	2,653.3	2,714.3	1,285.7	1,163.3
	7	2,755.4	2,714.3	1,306.1	1,183.7
	8	3,122.7	2,653.0	1,265.3	1,244.9
	9	2,816.6	3,061.2	1,367.3	1,163.3
	10	2,775.8	2,795.9	1,326.5	1,204.1
AVER		<b>2794.10</b>	<b>2822.43</b>	<b>1295.91</b>	<b>1208.15</b>

Date:		HETEROCOPE septentrionalis.		DIAPTOMUS pabilofensis	
LAKE	NO.	SIZE microns	SIZE microns	SIZE microns	SIZE microns
JIMMY		female	male	female	male
#3 VERT HAUL	1	2,591.8	2,816.3	1,326.5	1,265.3
	2	2,796.2	2,755.1	1,346.9	1,326.5
	3	2,877.8	2,755.1	1,265.3	1,265.3
	4	2,918.6	2,693.9	1,387.7	1,183.7
	5	2,571.7	3,061.2	1,326.5	1,142.8
	6	2,755.4	2,836.7	1,346.9	1,142.8
	7	2,775.8	2,795.9	1,285.7	1,163.3
	8	3,122.7	2,897.9	1,367.3	1,122.4
	9	2,959.5	3,000.0	1,346.9	1,183.7
	10	2,775.8	2,897.9	1,285.7	1,142.8
AVER		<b>2814.51</b>	<b>2851.00</b>	<b>1328.56</b>	<b>1193.87</b>

Date:		HETEROCOPE septentrionalis.		DIAPTOMUS pabilofensis	
LAKE	NO.	SIZE microns	SIZE microns	SIZE microns	SIZE microns
JIMMY		female	male	female	male
#4 VERT HAUL	1	2,918.3	2,653.0	1,367.3	1,224.5
	2	2,959.5	2,816.3	1,346.9	1,224.5
	3	2,755.4	2,734.7	1,326.5	1,163.3
	4	2,959.5	2,755.1	1,265.3	1,142.8
	5	2,796.2	2,755.1	1,265.3	1,183.7
	6	2,714.5	2,714.3	1,367.3	1,244.9
	7	2,734.9	2,795.9	1,387.7	1,224.5
	8	2,694.1	2,795.9	1,346.9	1,183.7
	9	2,979.9	2,857.1	1,265.3	1,224.5
	10	2,755.4	2,755.1	1,265.3	1,224.5
AVER		<b>2826.76</b>	<b>2763.24</b>	<b>1320.40</b>	<b>1204.07</b>

Date:		HETEROCOPE septentrionalis.		DIAPTOMUS pabilofensis	
LAKE	NO.	SIZE microns	SIZE microns	SIZE microns	SIZE microns
JIMMY		female	male	female	male
#5 VERT HAUL	1	2,653.0	2,571.4	1,387.7	1,306.1
	2	2,714.5	2,755.1	1,408.2	1,244.9
	3	2,775.8	2,693.9	1,326.5	1,183.7
	4	2,837.0	2,653.0	1,428.6	1,142.8
	5	2,694.1	2,673.4	1,387.7	1,265.3
	6	2,898.2	2,755.1	1,449.0	1,224.5
	7	2,877.8	2,857.1	1,346.9	1,285.7
	8	2,694.1	2,714.3	1,387.7	1,224.5
	9	2,551.3	2,857.1	1,408.2	1,183.7
	10	2,857.4	2,795.9	1,367.3	1,204.1
AVER		<b>2755.32</b>	<b>2732.63</b>	<b>1389.78</b>	<b>1226.52</b>

**EXPATRIATE RESOURCES LTD.  
WOLVERINE PROJECT**

**Zooplankton Data for Lakes in the Wolverine Area**

**ZOOPLANKTON ANALYSIS**

Site: LITTLE JIMMY LAKE  
Date: 22-Aug-92

Phylum *	Subclass **	Order	Suborder	Species	stage	JIMMY	JIMMY	JIMMY	JIMMY	JIMMY		
						08-22-92	08-22-92	08-22-92	08-22-92	08-22-92		
						HAUL	HAUL	HAUL	HAUL	HAUL		
						#1	#2	#3	#4	#5		
						NR /SAMPLE	NR /SAMPLE	NR /SAMPLE	NR /SAMPLE	NR /SAMPLE		
COPEPODA**	CYCLOPOIDA			CYCLOPS scutifer	fem & eggs							
					fem no eggs	112	64	448	576			
					male							
					cop	26,720	22,848	35,328	56,576	22,656		
					<b>Total</b>	<b>26,832</b>	<b>22,912</b>	<b>35,776</b>	<b>57,152</b>	<b>22,656</b>		
	CALANOIDA	HETEROCOPE septentrionalis			female	64	260	236	176	260		
					male	68	288	252	156	288		
					<b>Total</b>	<b>132</b>	<b>548</b>	<b>488</b>	<b>332</b>	<b>548</b>		
		DIAPTOMUS pribilofensis				fem & eggs	120	128	128	768	384	
						fem no eggs	6,080	11,904	18,752	20,736	12,288	
						male	3,392	9,536	8,704	12,288	12,928	
		DIAPTOMUS ashlandi				fem & eggs						
						fem no eggs						
						male						
		TOTAL DIAPTOMUS copepodites	cop	4,032	2,048	3,584	3,328	2,944				
			<b>Total</b>	<b>13,624</b>	<b>23,616</b>	<b>31,168</b>	<b>37,120</b>	<b>28,544</b>				
		<b>Total nauplii</b>					<b>nauplii</b>	<b>25,408</b>	<b>23,616</b>	<b>50,240</b>	<b>62,848</b>	<b>20,800</b>
		<b>TOTAL COPEPODA (excluding nauplii)</b>						<b>40,588</b>	<b>47,076</b>	<b>67,432</b>	<b>94,604</b>	<b>51,748</b>
		ROTIFERA *	PLOIMA			KELICOTTIA		960	1,600	3,712	4,416	896
		POLYARTHRA										
FLOSCULARIACEAE	CONOCHILUS unicornis (colonies)	140				496	128	432				
<b>TOTAL ROTIFERA(excluding Conochilus colonies)</b>						<b>960</b>	<b>1,600</b>	<b>3,712</b>	<b>4,416</b>	<b>896</b>		
loose DIAPTOMUS eggs						4,608	9,728	12,480	19,392	11,840		

**EXPATRIATE RESOURCES LTD.  
WOLVERINE PROJECT**

**Zooplankton Data for Lakes in the Wolverine Area**

**MEASUREMENTS AND REPRODUCTIVE CONDITION**

**LITTLE WOLVERINE LAKE**

Date: 19-Aug-92		<b>BOSMINA longispina</b>			
LAKE	SIZE UNITS	SIZE microns	STAGE (1-5)	NR EGGS	
LITTLE WOLVERINE #1 VERT HAUL	32.0	653.1	1	1	
	34.0	693.9	1	1	
	32.0	653.1	1	1	
	36.0	734.7	3	3	
	33.0	673.5	1	1	
	29.0	591.8	1	1	
	33.0	673.5	1	1	
	32.5	663.3	1	1	
	31.0	632.6	1	1	
	32.0	653.1	1	1	
					<b>667.63</b>

Date: 19-Aug-92		<b>BOSMINA longispina</b>			
LAKE	SIZE UNITS	SIZE microns	STAGE (1-5)	NR EGGS	
LITTLE WOLVERINE #4 VERT HAUL	35.0	714.3	1	1	
	32.0	653.1	1	1	
	33.0	673.5	1	1	
	33.0	673.5	1	1	
	31.0	632.6	1	1	
	32.0	653.1	1	1	
	32.0	653.1	1	1	
	33.0	673.5	1	1	
	29.0	591.8	1	1	
	30.0	612.2	1	1	
					<b>664.72</b>

Date: 19-Aug-92		<b>BOSMINA longispina</b>			
LAKE	SIZE UNITS	SIZE microns	STAGE (1-5)	NR EGGS	
LITTLE WOLVERINE #2 VERT HAUL	35.0	714.3	1	1	
	35.0	714.3	1	1	
	34.0	693.9	1	1	
	32.0	653.1	1	1	
	32.0	653.1	1	1	
	32.0	653.1	1	1	
	31.0	632.6	1	1	
	33.0	673.5	1	1	
	34.0	693.9	1	1	
	34.0	693.9	1	1	
					<b>673.46</b>

Date: 19-Aug-92		<b>BOSMINA longispina</b>			
LAKE	SIZE UNITS	SIZE microns	STAGE (1-5)	NR EGGS	
LITTLE WOLVERINE #5 VERT HAUL	32.0	653.1	1	1	
	32.0	653.1	1	1	
	31.0	632.6	1	1	
	30.0	612.2	1	1	
	30.0	612.2	1	1	
	28.0	571.4	1	1	
	31.0	632.6	1	1	
	32.0	653.1	1	1	
	32.0	653.1	1	1	
	32.0	653.1	1	1	
	31.0	632.6	1	1	
					<b>623.90</b>

Date: 19-Aug-92		<b>BOSMINA longispina</b>			
LAKE	SIZE UNITS	SIZE microns	STAGE (1-5)	NR EGGS	
LITTLE WOLVERINE #3 VERT HAUL	32.5	663.3	1	1	
	33.0	673.5	1	1	
	30.0	612.2	1	1	
	29.5	602.0	1	1	
	32.0	653.1	1	1	
	30.0	612.2	1	1	
	32.0	653.1	1	1	
	35.0	714.3	1	1	
	33.5	683.7	1	1	
	28.0	571.4	1	1	
					<b>638.48</b>



EXPATRIATE RESOURCES LTD.  
WOLVERINE PROJECT

Zooplankton Data for Lakes in the Wolverine Area

ZOOPLANKTON ANALYSIS

Site: LITTLE WOLVERINE  
Date: 19-Aug-92

Phylum * Subclass ** Order	Suborder	Species	stage	L.WOLVERINE	L.WOLVERINE	L.WOLVERINE	L.WOLVERINE	L.WOLVERINE	
				08-19-92	08-19-92	08-19-92	08-19-92	08-19-92	
				HAUL #1	HAUL #2	HAUL #3	HAUL #4	HAUL #5	
				NR /SAMPLE	NR /SAMPLE	NR /SAMPLE	NR /SAMPLE	NR /SAMPLE	
CLADOCERA		EUBOSMINA longispina	fem & eggs	656	348	56	8	12	
			fem no eggs	480	124	52	8	8	
			small	208	196	28	24		
			male	912	376	80	28	44	
			<b>Total</b>	<b>2,256</b>	<b>1,044</b>	<b>216</b>	<b>68</b>	<b>64</b>	
			ACROPERUS harpae		8				
			ALONA sp.		4				
			CERIODAPHNIA pulchella		32	12	24	20	88
			CHYDORUS sphaericus			20	12	20	72
			EURYCERCUS lamellatus						12
			SIMOCEPHALUS vetulus				1		36
			DAPHNIA pulex	fem & eggs		4	2		
				fem no eggs	16			8	
		small					1		
		male							
		<b>Total</b>	<b>16</b>	<b>4</b>	<b>2</b>	<b>8</b>	<b>1</b>		
COPEPODA**	CYCLOPOIDA	CYCLOPS scutifer	fem & eggs	32	8		11	4	
			fem no eggs	704	188	240	464	88	
			male	576	96	56	320	36	
			cop	14,496	4,336	2,220	7,056	680	
			<b>Total</b>	<b>15,808</b>	<b>4,628</b>	<b>2,516</b>	<b>7,851</b>	<b>808</b>	
	CALANOIDA	HETEROCOPE septentrionalis	female	34	13	6	3		
			male	35	37	54	1	1	
			<b>Total</b>	<b>69</b>	<b>50</b>	<b>60</b>	<b>4</b>	<b>1</b>	
		DIAPTOMUS pribilofensis	fem & eggs	80		4	4		
			fem no eggs	624	84	112	34	28	
			male	2,336	380	732	11	16	
			TOTAL DIAPTOMUS copepodites	8,480	2,596	936	480	684	
			<b>Total</b>	<b>11,520</b>	<b>3,060</b>	<b>1,784</b>	<b>529</b>	<b>728</b>	
<b>Total nauplii</b>			<b>nauplii</b>	<b>4,432</b>	<b>6,688</b>	<b>6,992</b>	<b>2,896</b>	<b>1,320</b>	
<b>TOTAL CLADOCERA and COPEPODA(excluding nauplii)</b>				<b>29,701</b>	<b>8,830</b>	<b>4,615</b>	<b>8,500</b>	<b>1,810</b>	
ROTIFERA * PLOIMA		KERATELLA cochlearis		64	48	16			
		KERATELLA quadrata		64	16				
		KELICOTTIA	8,672	13,616	12,880	24,224	57,600		
		POLYARTHRA	64	144	224	16			
FLOSCULARIACEAE		CONOCHILUS unicornis (colonies)				12			
		<b>TOTAL ROTIFERA (excluding CONOCHILUS colonies)</b>	<b>8,736</b>	<b>13,888</b>	<b>13,168</b>	<b>24,256</b>	<b>57,600</b>		

BENTHIC ORGANISMS: (and loose eggs)					
loose DIAPTOMUS eggs		496	28	16	26
CLADOCERA ephippium eggs					5
CHIRONOMIDAE larvae					262
HYDRA					14
MITE					8
OSTRACODA					8

EXPATRIATE RESOURCES LTD.  
WOLVERINE PROJECT

Zooplankton Data for Lakes in the Wolverine Area

MEASUREMENTS OF ADULT COPEPODA

LITTLE WOLVERINE LAKE

Date:		HETEROCOPE septentrionalis.		DIAPTOMUS pribilofensis	
LAKE	NO.	SIZE microns	SIZE microns	SIZE microns	SIZE microns
		female	male	female	male
L. WOLVERINE #1 VERT HAUL	1	3,142.8	3,000.0	1,510.2	1,387.7
	2	2,959.5	3,020.4	1,612.2	1,408.2
	3	3,204.4	3,224.5	1,510.2	1,387.7
	4	3,102.3	2,938.8	1,530.6	1,489.8
	5	3,162.6	3,142.8	1,510.2	1,387.7
	6	3,143.1	3,163.2	1,591.8	1,387.7
	7	3,306.4	2,897.9	1,510.2	1,387.7
	8	3,081.9	2,857.1	1,530.6	1,449.0
	9	2,979.9	3,061.2	1,591.8	1,469.4
	10	3,061.5	3,102.0	1,612.2	1,428.6
AVER		3114.54	3040.79	1551.01	1418.36

Date:		HETEROCOPE septentrionalis.		DIAPTOMUS pribilofensis	
LAKE	NO.	SIZE microns	SIZE microns	SIZE microns	SIZE microns
		female	male	female	male
L. WOLVERINE #2 VERT HAUL	1	2,857.1	3,142.8	1,510.2	1,489.8
	2	3,224.8	2,795.9	1,510.2	1,367.3
	3	2,918.6	2,857.1	1,428.6	1,408.2
	4	3,143.1	2,714.3	1,489.8	1,449.0
	5	3,081.9	2,857.1	1,530.6	1,326.5
	6	2,796.2	2,857.1	1,530.6	1,326.5
	7	3,041.1	2,775.5	1,428.6	1,326.5
	8	2,857.4	2,897.9	1,510.2	1,306.1
	9	3,143.1	2,979.6	1,449.0	1,326.5
	10	3,020.7	2,693.9	1,428.6	1,408.2
AVER		3008.41	2857.12	1481.62	1373.46

Date:		HETEROCOPE septentrionalis.		DIAPTOMUS pribilofensis	
LAKE	NO.	SIZE microns	SIZE microns	SIZE microns	SIZE microns
		female	male	female	male
L. WOLVERINE #3 VERT HAUL	1	3,224.5	3,020.4	1,571.4	1,367.3
	2	3,102.3	3,040.8	1,489.8	1,428.6
	3	2,979.9	3,000.0	1,551.0	1,428.6
	4	2,959.5	2,918.3	1,489.8	1,449.0
	5	3,061.5	3,040.8	1,530.6	1,387.7
	6	3,102.3	2,755.1	1,489.8	1,367.3
	7		2,836.7	1,591.8	1,428.6
	8		2,959.2	1,632.6	1,428.6
	9		3,020.4	1,693.9	1,387.7
	10		3,224.5	1,489.8	1,367.3
AVER		3071.65	2981.61	1553.05	1404.07

Date:		HETEROCOPE septentrionalis.		DIAPTOMUS pribilofensis	
LAKE	NO.	SIZE microns	SIZE microns	SIZE microns	SIZE microns
		female	male	female	male
L. WOLVERINE #4 VERT HAUL	1	3,061.2	2,816.3	1,632.6	1,489.8
	2	3,041.1		1,591.8	1,428.6
	3	2,857.4		1,612.2	1,469.4
	4			1,632.6	1,469.4
	5			1,489.8	1,489.8
	6			1,632.6	1,489.8
	7			1,571.4	1,367.3
	8			1,530.6	1,387.7
	9			1,489.8	1,489.8
	10			1,693.9	1,469.4
AVER		2986.56	2816.30	1587.74	1455.09

Date:		HETEROCOPE septentrionalis.		DIAPTOMUS pribilofensis	
LAKE	NO.	SIZE microns	SIZE microns	SIZE microns	SIZE microns
		female	male	female	male
L. WOLVERINE #5 VERT HAUL	1			1,551.0	1,428.6
	2			1,551.0	1,326.5
	3			1,530.6	1,387.7
	4			1,591.8	1,367.3
	5			1,571.4	1,489.8
	6			1,489.8	1,489.8
	7			1,632.6	1,469.4
	8			1,530.6	1,387.7
	9			1,571.4	1,367.3
	10			1,612.2	1,408.2
AVER				1563.25	1412.23

**EXPATRIATE RESOURCES LTD.  
WOLVERINE PROJECT**

**Zooplankton Data for Lakes in the Wolverine Area**

**MEASUREMENTS OF ADULT COPEPODA**

**WOLVERINE LAKE**

Date:		HETEROCOPE septentrionalis.		DIAPTOMUS pribilofensis		DIAPTOMUS ashlandi	
LAKE	NO.	SIZE microns female	SIZE microns male	SIZE microns female	SIZE microns male	SIZE microns female	SIZE microns male
WOLVERINE #1 VERT HAUL	1	3,326.5	3,020.4	1,387.7	1,326.5	714.3	836.7
	2	3,122.7	2,795.9	1,469.4	1,265.3	775.5	857.1
	3	3,102.3	3,061.2	1,469.4	1,163.3	816.3	816.3
	4	2,755.4	3,102.0	1,449.0	1,265.3	816.3	816.3
	5	3,306.4	3,020.4	1,469.4	1,244.9	755.1	734.7
	6	3,061.5	3,122.4	1,510.2	1,367.3	775.5	795.9
	7	3,163.6	3,081.6	1,510.2	1,244.9	775.5	816.3
	8	3,306.4	2,816.3	1,346.9	1,265.3	857.1	836.7
	9	3,163.6	3,061.2	1,428.6	1,102.0	836.7	734.7
	10	3,306.4	3,163.2	1,428.6	1,265.3	816.3	816.3
AVER		<b>3161.48</b>	<b>3024.47</b>	<b>1446.93</b>	<b>1251.01</b>	<b>793.87</b>	<b>806.12</b>

Date:		HETEROCOPE septentrionalis.		DIAPTOMUS pribilofensis		DIAPTOMUS ashlandi	
LAKE	NO.	SIZE microns female	SIZE microns male	SIZE microns female	SIZE microns male	SIZE microns female	SIZE microns male
WOLVERINE #2 VERT HAUL	1	2,775.5	3,000.0	1,591.8	1,265.3	795.9	857.1
	2	3,000.3	2,734.7	1,408.2	1,265.3	836.7	755.1
	3	3,061.5	2,795.9	1,489.8	1,367.3	775.5	816.3
	4	3,102.3	2,816.3	1,367.3	1,367.3	877.5	734.7
	5	3,000.3	2,897.9	1,449.0	1,326.5	816.3	795.9
	6	2,796.2	3,204.1	1,530.6	1,326.5	795.9	795.9
	7	3,020.7	2,857.1	1,530.6	1,367.3	816.3	816.3
	8	3,163.6	3,000.0	1,469.4	1,285.7	816.3	734.7
	9	2,796.2	3,061.2	1,489.8	1,428.6	836.7	857.1
	10	3,143.1	3,102.0	1,408.2	1,428.6	898.0	755.1
AVER		<b>2985.96</b>	<b>2946.92</b>	<b>1473.46</b>	<b>1342.85</b>	<b>826.52</b>	<b>791.83</b>

Date:		HETEROCOPE septentrionalis.		DIAPTOMUS pribilofensis		DIAPTOMUS ashlandi	
LAKE	NO.	SIZE microns female	SIZE microns male	SIZE microns female	SIZE microns male	SIZE microns female	SIZE microns male
WOLVERINE #3 VERT HAUL	1	2,877.5	3,224.5	1,326.5	1,326.5	816.3	775.5
	2	3,102.3	2,857.1	1,428.6	1,346.9	836.7	816.3
	3	3,204.4	2,836.7	1,387.7	1,285.7	775.5	795.9
	4	2,857.4	3,020.4	1,387.7	1,346.9	816.3	734.7
	5	2,877.5	2,877.5	1,387.7	1,326.5	755.1	734.7
	6	2,795.9	2,795.9	1,428.6	1,367.3	755.1	755.1
	7	2,755.1	2,755.1	1,387.7	1,224.5	816.3	816.3
	8	2,857.1	2,857.1	1,428.6	1,183.7	816.3	775.5
	9	2,755.1	2,755.1	1,469.4	1,204.1	755.1	755.1
	10	2,755.1	2,755.1	1,367.3	1,285.7	795.9	755.1
AVER		<b>3010.40</b>	<b>2903.04</b>	<b>1399.99</b>	<b>1289.79</b>	<b>793.87</b>	<b>771.42</b>

Date:		HETEROCOPE septentrionalis.		DIAPTOMUS pribilofensis		DIAPTOMUS ashlandi	
LAKE	NO.	SIZE microns female	SIZE microns male	SIZE microns female	SIZE microns male	SIZE microns female	SIZE microns male
WOLVERINE #4 VERT HAUL	1	2,857.1	3,346.9	1,428.6	1,367.3	816.3	816.3
	2	3,265.6	3,163.2	1,510.2	1,387.7	775.5	734.7
	3	2,959.5	2,938.8	1,449.0	1,265.3	836.7	734.7
	4	2,959.5	3,102.0	1,469.4	1,183.7	734.7	775.5
	5	2,939.0	3,163.2	1,489.8	1,163.3	775.5	795.9
	6	3,081.9	3,183.6	1,551.0	1,183.7	775.5	734.7
	7	3,020.7	3,040.8	1,510.2	1,326.5	755.1	795.9
	8	3,020.7	2,897.9	1,469.4	1,367.3	816.3	755.1
	9	3,061.5	3,020.4	1,428.6	1,183.7	755.1	734.7
	10	3,061.5	3,061.2	1,428.6	1,387.7	755.1	775.5
AVER		<b>3022.69</b>	<b>3091.81</b>	<b>1473.46</b>	<b>1281.62</b>	<b>779.59</b>	<b>765.30</b>

Date:		HETEROCOPE septentrionalis.		DIAPTOMUS pribilofensis		DIAPTOMUS ashlandi	
LAKE	NO.	SIZE microns female	SIZE microns male	SIZE microns female	SIZE microns male	SIZE microns female	SIZE microns male
WOLVERINE #5 VERT HAUL	1	3,367.3	3,061.2	1,510.2	1,367.3	898.0	877.5
	2	3,000.3	3,142.8	1,408.2	1,346.9	857.1	755.1
	3	3,449.3	2,938.8	1,387.7	1,285.7	857.1	734.7
	4	3,061.5	2,959.2	1,428.6	1,285.7	755.1	755.1
	5	3,102.3	3,163.2	1,387.7	1,265.3	775.5	775.5
	6	3,143.1	3,142.8	1,428.6	1,387.7	795.9	755.1
	7	3,367.7	3,020.4	1,306.1	1,163.3	775.5	714.3
	8	3,000.3	2,897.9	1,346.9	1,183.7	795.9	755.1
	9	3,204.4	2,959.2	1,367.3	1,204.1	775.5	734.7
	10	3,163.6	2,938.8	1,367.3	1,265.3	816.3	836.7
AVER		<b>3185.97</b>	<b>3022.42</b>	<b>1393.87</b>	<b>1275.50</b>	<b>810.20</b>	<b>769.38</b>

EXPATRIATE RESOURCES LTD.  
WOLVERINE PROJECT

Zooplankton Data for Lakes in the Wolverine Area

ZOOPLANKTON ANALYSIS

Site: WOLVERINE lake  
Date: 19-Aug-92

Phylum * Subclass ** Order	Suborder	Species	stage	WOLVERINE	WOLVERINE	WOLVERINE	WOLVERINE	WOLVERINE		
				08-19-92	08-19-92	08-19-92	08-19-92	08-19-92		
				HAUL	HAUL	HAUL	HAUL	HAUL		
				#1	#2	#3	#4	#5		
				NR /SAMPLE	NR /SAMPLE	NR /SAMPLE	NR /SAMPLE	NR /SAMPLE		
CLADOCERA		EUBOSMINA longispina	fem & eggs	72						
			fem no eggs	84	24			16		
			small							
			male	24	8					
			<b>Total</b>	<b>180</b>	<b>32</b>			<b>16</b>		
			ALONA sp.							
			CERIODAPHNIA pulchella		32					
			CHYDORUS sphaericus		4		8			
			EURYCEERCUS lamellatus							
			SIMOCEPHALUS vetulus							
			DAPHNIA pulex	fem & eggs	2	7				
				fem no eggs	28	4	4	16	21	
		small	20	16			12			
		male								
		<b>Total</b>	<b>50</b>	<b>27</b>	<b>4</b>	<b>16</b>	<b>33</b>			
COPEPODA**	CYCLOPOIDA	CYCLOPS scutifer	fem & eggs		16		32			
			fem no eggs	112	272	48	272	256		
			male			4				
			<b>Total</b>	<b>4,320</b>	<b>6,784</b>	<b>1,392</b>	<b>9,952</b>	<b>4,848</b>		
	CALANOIDA	HETEROCOPE septentrionalis	female	57	26	4	42	67		
			male	12	15	8	44	76		
			<b>Total</b>	<b>69</b>	<b>41</b>	<b>12</b>	<b>86</b>	<b>143</b>		
		DIAPTOMUS pribilofensis	fem & eggs	32	8	4	16	16		
			fem no eggs	976	488	304	1,648	880		
			male	592	376	224	608	800		
		DIAPTOMUS ashlandi	fem & eggs		4					
			fem no eggs	48	72	96	128	96		
			male	448	80	64	96	64		
		TOTAL DIAPTOMUS copepodites	cop	8,192	3,920	3,776	29,904	24,816		
			<b>Total</b>	<b>10,288</b>	<b>4,948</b>	<b>4,468</b>	<b>32,400</b>	<b>26,672</b>		
		<b>Total nauplii</b>			<b>nauplii</b>	<b>1,472</b>	<b>1,840</b>	<b>368</b>	<b>2,656</b>	<b>1,280</b>
		<b>TOTAL CLADOCERA and COPEPODA(excluding nauplii)</b>				<b>15,055</b>	<b>12,120</b>	<b>5,936</b>	<b>42,758</b>	<b>31,968</b>
		ROTIFERA * PLOIMA		KERATELLA cochlearis		80	64	32	240	32
KELLICOTTIA				18,736	4,112	3,728	15,424	4,464		
POLYARTHRA				16						
FLOSCULARIACEAE	CONOCHILUS unicornis (colonies)				32				48	
<b>TOTAL ROTIFERA (excluding CONOCHILUS colonies)</b>			<b>18,832</b>	<b>4,176</b>	<b>3,760</b>	<b>15,664</b>	<b>4,496</b>			
<b>BENTHIC ORGANISMS:</b>				<b>252</b>	<b>96</b>	<b>60</b>	<b>256</b>	<b>432</b>		
loose DIAPTOMUS eggs										
CLADOCERA ephippium eggs							28			
Chironimidae							144			
Hydra							299			
Oligochaeta							90			

EXPATRIATE RESOURCES LTD.  
WOLVERINE PROJECT

Zooplankton Data for Lakes in the Wolverine Area

MEASUREMENTS AND REPRODUCTIVE CONDITION

WOLVERINE LAKE

Date: 19-Aug-92		spp.				BOSMINA longispina			
LAKE	NO	DAPHNIA pulex				BOSMINA longispina			
		SIZE UNITS	SIZE microns	STAGE (1-5)	NR EGGS	SIZE UNITS	SIZE microns	STAGE (1-5)	NR EGGS
WOLVERINE #1 VERT HAUL	1	95.0	1,938.8	1	2	29.0	591.8	1	1
	2	110.0	2,245.1	1	3	30.0	612.2	1	1
	3					31.0	632.6	1	1
	4					32.0	653.1	1	1
	5					28.0	571.4	1	1
	6					31.0	632.6	1	1
	7					30.0	612.2	1	1
	8					29.0	591.8	1	1
	9					28.0	571.4	1	1
	10					30.0	612.2	1	1
AVER.		2091.93				615.16			

Date: 19-Aug-92		spp.				BOSMINA longispina			
LAKE	NO	DAPHNIA pulex				BOSMINA longispina			
		SIZE UNITS	SIZE microns	STAGE (1-5)	NR EGGS	SIZE UNITS	SIZE microns	STAGE (1-5)	NR EGGS
WOLVERINE #2 VERT HAUL	1	106.0	2,163.2	1	3				
	2	105.0	2,143.1	2	3				
	3	98.0	2,000.2	3	2				
	4	125.0	2,551.3	3	3				
	5	107.0	2,183.9	1	3				
	6	101.0	2,061.4	3	4				
	7	100.0	2,041.0	1	2				
	8								
	9								
	10								
AVER.		2163.43							

THERE ARE NO MORE CLADOCERANS WITH EGGS IN THE SAMPLES