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State of New Mexico
ENVIRONMENT DEPARTMENT
DOE OVERSIGHT BUREAU
P.O. Box 1663, MS/J-993
Los Alamos, New Mexico 87545



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GARY JOHNSON
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PETER MAGGIORE
ACTING SECRETARY

January 6, 1999

Joe Vozella, DOE/AIP/POC
Department of Energy
Los Alamos Area Office
MS: A316
Los Alamos, NM 87545

Re: Aquatic Macroinvertebrate Species Lists and Comparisons of Community Metrics for Upper Los Alamos, Sandia, Pajarito, and Valle Canyons

Dear Mr. Vozella:

The New Mexico Environment Department (NMED) Department of Energy Oversight Bureau (DOE OB) has compiled data from quantitative benthic samples collected during 1996 & 1997 in three watersheds at Los Alamos National Laboratory. The watersheds are:

- Upper Los Alamos Canyon, above the reservoir (1997 data not previously released)
- Upper Sandia Canyon, in wetlands and approximately 1 mile below wetlands [1996 data, previously released. Includes new data on Chironomidae taxa (identified to genus level)]
- Upper Cañon de Valle, near MDA P [1997 data, previously released. Includes new data on Chironomidae taxa (identified to genus level)]

Data from quantitative samples collected in Los Alamos Canyon (above the reservoir, 1997) are utilized as the reference conditions for comparisons of community metrics in Sandia, Pajarito, and Valle canyons. A species list is provided which includes the most current NMED data from these watersheds and data from Upper Pajarito Canyon (collected in 1994) and Los Alamos Canyon (below reservoir, 1993). A narrative evaluation of the community metric comparisons is in preparation and will be submitted upon completion of peer review.

These data and community metric comparisons are provided to DOE for review prior to release to NMED SWQB, U.S. Fish & Wildlife, and interested members of the public. Please contact Ralph Ford-Schmid at 827-1536 if you have any questions about this data.

Sincerely,

Steve Yanicak,
Point of Contact/LANL,
NMED, DOE OB

SY: rfs

cc: with enclosures

John Parker, Chief, NMED, DOE OB
Steve Rae, LANL, ESH-18, MS K490
Gil Gonzales, LANL, FSH-20, MS 887



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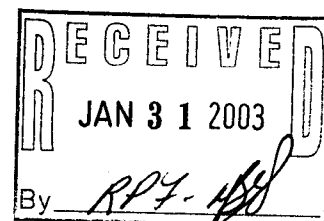


Table Community Metrics Comparing Upper Los Alamos (LA 13.0) vs Upper Sandia Canyon (SA7.5, SA 7.6, SA 10.1, SA 10.3)

Metric	Stations				
	LA 13.0	SA 7.53	SA 7.64	SA 10.1	SA 10.3
Calculated Value					
Standing Crop (No./m2)	10914	1814	1962	13947	1442
No. of Taxa	42	10	10	26	17
BCI(CTQd)	71.4	97.8	99.5	103.5	106.1
HBI	6.05	4.51	4.80	7.91	7.75
EPT Index	18	3	3	1	0
EPT/EPT + Chiron.	0.25	1.00	0.99	0.01	0.00
Community Loss	0	3.80	3.80	1.31	2.18
% Dominant Taxon	32	49	52	56	22
Diversity	3.07	1.57	2.06	2.13	3.44
Scra./Scra.+Filt. Coll.	0.892	0.022	0.083	1.000	0.000
Shredders/Total	0.036	0.015	0.017	0.010	0.032
Percent of Reference					
Standing Crop (No./m2)	100	16	17	127	13
No. of Taxa	100	23	23	61	40
BCI(CTQd)	100	73	71	68	67
HBI	100	100	100	76	78
EPT Index	100	16	16	5	0
EPT/EPT + Chiron.	100	100	100	3	0
Scra./Scra.+Filt. Coll.	100	2	9	100	0
Shredders/Total	100	42	47	28	87
Score					
Standing Crop (No./m2)	6	0	0	6	0
No. of Taxa	6	0	0	4	2
BCI(CTQd)	6	4	4	2	2
HBI	6	6	6	4	4
EPT Index	6	0	0	0	0
EPT/EPT + Chiron.	6	6	6	0	0
Community Loss	6	4	4	4	4
% Dominant Taxon	2	0	0	0	4
Diversity	6	2	4	4	6
Scra./Scra.+Filt. Coll.	6	0	0	6	0
Shredders/Total	6	4	4	2	6
Biological Condition					
Total	62	26	28	32	28
% of Reference Condition	100	41	45	51	45

Table metric comparisons of Upper Los Alamos (LA 13.0) vs Upper Canyon de Valle (VA 2.6)

Metric	Stations	
	LA 13.0 reference	VA 2.6
Calculated Value		
Standing Crop (No./m2)	10914	3100
No. of Taxa	42	33
BCI (CTQd)	71.4	91.4
HBI	6.05	5.15
EPT Index	18	6
EPT/EPT + Chiron.	0.25	0.66
Community Loss	0	0.91
% Dominant Taxon	32	20
Diversity	3.07	4.03
Scra./Scra.+Filt. Coll.	0.892	0.145
Shredders/Total	0.036	0.165
Percent of Reference		
Standing Crop (No./m2)	100	28
No. of Taxa	100	78
BCI (CTQd)	100	78
HBI	100	100
EPT Index	100	33
EPT/EPT + Chiron.	100	100
Scra./Scra.+Filt. Coll.	100	16
Shredders/Total	100	100
Score		
Standing Crop (No./m2)	6	2
No. of Taxa	6	4
BCI (CTQd)	6	4
HBI	6	6
EPT Index	6	0
EPT/EPT + Chiron.	6	6
Community Loss	6	4
% Dominant Taxon	2	6
Diversity	6	6
Scra./Scra.+Filt. Coll.	6	0
Shredders/Total	6	6
Biological Condition		
Total	50	44
% of Reference Condition	100	70

28.6

Table Comparison of Community Metrics; Upper Los Alamos (reference) and Upper Pajarito Canyons

Metric	Stations			
	LA 13.0 reference	PA 9.0	PA 8.7	PA 6.7
Calculated Value				
Standing Crop (No./m2)	10914	2589	6562	2913
No. of Taxa	42	25	25	32
BCI (CTQd)	71.4	80.0	77.9	89.1
HBI	6.05	4.38	4.95	4.20
EPT Index	18	10	11	8
EPT/EPT + Chiron.	0.25	0.84	0.79	0.78
Community Loss	0	1.16	1.12	0.94
% Dominant Taxon	32	21	39	55
Diversity	3.07	3.53	2.67	2.63
Scra./Scra.+Filt. Coll.	0.892	0.948	0.961	0.975
Shredders/Total	0.036	0.051	0.023	0.139
Percent of Reference				
Standing Crop (No./m2)	100	23	60	26
No. of Taxa	100	59	59	76
BCI (CTQd)	100	89	91	80
HBI	100	100	100	100
EPT Index	100	55	61	44
EPT/EPT + Chiron.	100	100	100	100
Scra./Scra.+Filt. Coll.	100	100	100	100
Shredders/Total	100	100	62	100
Score				
Standing Crop (No./m2)	6	2	6	2
No. of Taxa	6	2	2	4
BCI (CTQd)	6	6	6	4
HBI	6	6	6	6
EPT Index	6	0	0	0
EPT/EPT + Chiron.	6	6	6	6
Community Loss	6	4	4	4
% Dominant Taxon	2	4	2	0
Diversity	6	6	4	4
Scra./Scra.+Filt. Coll.	6	6	6	6
Shredders/Total	6	6	6	6
Biological Condition				
Total	62	48	48	42
% of Reference Condition	100	77	77	67

Los Alamos Canyon Species List

WATERSHED	Los Alamos Canyon & DP Canyon				
	STATION	LA 13.0	LA 12.2	LA 5.3	DP 0.1
DATE	25-Feb-97	21-Jun-93	21-Jun-93	21-Jun-93	
TAXA					
PLECOPTERA - stoneflies					
<i>Malenka sp.</i>		X	X		
<i>Suwallia sp.</i>				X	
<i>Zapada cinctipes</i>			X		
Capniidae	X				
<i>Isoperla sp.</i>		X			
<i>Hesperoperla pacifica</i>	X				
Perlodinae	X				
<i>Alloperla severa</i>	X				
<i>Amphinemura banksi</i>	X				
EPHEMEROPTERA - mayflies					
<i>Siphonurus occidentalis</i>				X	
<i>Baetis tricaudatus</i>	X	X	X		X
<i>Nixe simplicoides</i>	X	X	X		
<i>Acentrella insignificans</i>	X				
<i>Paraleptophlebia sp.</i>	X	X			
<i>Ameletus sp.</i>		X			
<i>Epeorus sp.</i>		X			
TRICHOPTERA - caddisflies					
<i>Hydropsyche sp.</i>	X				
<i>Hesperophylax sp.</i>	X	X			
<i>Limnephilus sp.</i>		X			
<i>Lepidostoma sp.</i>		X			
<i>Rhyacophila brunea cpx.</i>	X				
<i>Rhyacophila verrula</i>	X				
<i>Dolophilodes sortosa</i>	X				
Limnephilidae	X				
<i>Oligophlebodes sp.</i>	X				
Leptoceridae	X				
<i>Micrasema sp.</i>	X				
DIPTERA - true flies					
<i>Tipula sp.</i>					X
<i>Antocha monticola</i>	X				
<i>Dicranota sp.</i>	X	X	X		
<i>Limonia sp.</i>	X				
<i>Pericoma sp.</i>	X				
Simuliidae - black flies					X
<i>Simulium sp.</i>	X	X	X		
<i>Prosimulium sp.</i>		X			
<i>Pagastia sp.</i>	X		X		
<i>Orthocladius sp.</i>	X				
<i>Synorthocladius sp.</i>	X				
<i>Eukiefferiella sp.</i>	X	X	X		
<i>Tvetenia sp.</i>	X	X	X		
<i>Nostococladius sp.</i>	X				
<i>Rheocricotopus sp.</i>	X				

Los Alamos Canyon Species List

WATERSHED	Los Alamos Canyon & DP Canyon			
	LA 13.0	LA 12.2	LA 5.3	DP 0.1
STATION				
DATE	25-Feb-97	21-Jun-93	21-Jun-93	21-Jun-93
TAXA				
<i>Brillia sp.</i>		X	X	
<i>Micropsectra sp.</i>	X			
<i>Parametricnemus sp.</i>			X	
<i>Paraphaenocladus sp.</i>	X			
<i>Limnophora sp.</i>			X	X
<i>Microtendipes sp.</i>				X
<i>Chilifera sp.</i>	X		X	
<i>Oreogeton sp.</i>	X			
<i>Euparyphus sp.</i>	X			
<i>Bezzia sp.</i>	X			
<i>Culiseta sp.</i>				X
<i>Dixa sp.</i>		X		
HEMIPTERA - true bugs				
<i>Gerris sp.</i>			X	X
COLEOPTERA - beetles				
<i>Agabus sp.</i>		X	X	X
<i>Deronectes sp.</i>			X	
<i>Optioservus sp.</i>	X	X		X
<i>Helichus sp.</i>	X	X		
<i>Zaitzevia parvula</i>		X		X
<i>Narpus sp.</i>	X			
Curculionidae				X
ARTHROPODA - other arthropods				
Hydrachnidia A - mites	X			
ANNELIDA - segmented worms				
Lumbricidae		X	X	
MOLLUSCA - snails/clams				
Sphaeriidae	X			
Total Taxa	41	23	18	11

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NMED/DOE OB SF

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WATERSHED	Los Alamos Canyon		Pajarito Canyon & Tributaries					Upper Sandia Canyon				Valle
	above & below reservoir		PA 9.0	PA 8.7	PA 6.7	BU 0.0	ST 0.5	SA 10.3	SA 10.1	SA 7.64	SA 7.53	VA 2.8
STATION	LA 13.0	LA 12.2	PA 9.0	PA 8.7	PA 6.7	BU 0.0	ST 0.5	SA 10.3	SA 10.1	SA 7.64	SA 7.53	VA 2.8
DATE	25-Feb-97	21-Jun-93	22-Jul-94	22-Jul-94	22-Jul-94	22-Jul-94	22-Jul-94	20-Mar-96	28-Mar-96	20-Mar-96	20-Mar-96	12-May-97
								"wetlands"	"wetlands"			
TAXA												
PLECOPTERA - stoneflies												
<i>Melenka</i> sp.		X										
<i>Suwilla</i> sp.												
<i>Zapada cinctipes</i>		X										
Capniidae	X											
<i>Pteronarcissa badia</i>					X							X
<i>Isoperla</i> sp.		X					X	X				
<i>Hesperoperla pacifica</i>	X		X	X			X	X				
Perlodinae	X			X			X	X				
<i>Alloperla severa</i>	X			X	X			X				X
<i>Amphinemura banksi</i>	X		X	X	X							
<i>Sweltsa</i> sp.			X	X								
EPHEMEROPTERA - mayflies												
Siphonuridae												
<i>Siphonurus occidentalis</i>										X	X	X
<i>Beetis tricaudatus</i> Y	X	X	X	X	X	X	X					
<i>Nixe simplicoides</i>	X	X										
<i>Tricorythodes</i> sp.												
<i>Acentrotra insignificans</i>	X							X				
<i>Paraleptophlebia</i> sp.	X	X										
<i>Ephemereilla inermis</i>								X				
<i>Ameletus</i> sp. Y		X	X	X								
<i>Epeorus</i> sp.		X					X					
<i>Centroptilum</i> sp.												
TRICHOPTERA - caddisflies												
<i>Chimarra</i> sp.												
<i>Hydropsyche</i> sp.	X									X	X	
<i>Hydropsyche oelari</i>			X	X	X	X						X
<i>Hydropsyche occidentalis</i> N			X	X	X	X						
<i>Hydroptila</i> sp. R												
<i>Stactobiella</i> sp.								X		X	X	X
<i>Hesperophylex</i> sp. Y	X	X	X	X	X							
<i>Psychoglypha</i> sp.			X									
<i>Ecdisomyia</i> sp.												
<i>Chaumatopsyche</i> sp.												
<i>Leucotrichia</i> sp.												
<i>Alisotrichia</i> sp.												
<i>Brachycentrus americanus</i>												
<i>Limnephilus</i> sp.		X			X	X						
<i>Lepidostoma</i> sp.		X										
<i>Wormaldia</i> sp.								X				
<i>Rhyecophila</i> sp.												

WATERSHED	Los Alamos Canyon		Pajarito Canyon & Tributaries					Upper Sandia Canyon				Valle
	above & below reservoir		PA 9.0	PA 8.7	PA 6.7	BU 0.0	ST 0.5	SA 10.3	SA 10.1	SA 7.64	SA 7.53	VA 2.6
	LA 13.0	LA 12.2	22-Jul-94	22-Jul-94	22-Jul-94	22-Jul-94	22-Jul-94	20-Mar-96	26-Mar-96	20-Mar-96	20-Mar-96	12-May-97
STATION	25-Feb-87	21-Jun-93						"wetlands"	"wetlands"			
DATE												
TAXA												
<i>Rhyacophila brunea</i> cpx.	X						X					
<i>Rhyacophila verrula</i>	X											
<i>Dolophlodes sortosa</i>	X											
Limnephilidae	X											
<i>Oligophlebodes</i> sp.	X											
Leptoceridae	X											
<i>Micrasema</i> sp.	X		X	X								
<i>Glossosoma</i> sp.												
DIPTERA - true flies				X								
Tipulidae							X	X				
<i>Tipula</i> sp.							X	X				X
<i>Merula</i> sp.				X			X	X				X
<i>Antocha morticola</i> N	X	X	X		X		X	X				
<i>Dicranota</i> sp. Y	X						X	X				
<i>Limonia</i> sp.	X		X				X	X				
<i>Pericoma</i> sp.							X					X
<i>Pedicia</i> sp.									X	X	X	X
<i>Holorusia grandis</i> N							X	X				X
Simuliidae - black flies N			X	X	X	X	X	X				
<i>Simulium</i> sp. Y	X	X										
<i>Prosimulium</i> sp.										X	X	
Chironomidae - midges									X			X
Chironomidae A (unidentified midges)			X	X					X	X		X
<i>Diamasa</i> sp. Y	X		X	X	X	X	X	X	X	X		
<i>Pagastia</i> sp.	X		X				X	X				
<i>Orthocladius</i> sp. Y	X											X
<i>Synorthocladius</i> sp.				X	X		X	X	X	X		
<i>Chaetocladius</i> sp.	X	X					X	X	X	X		
<i>Eukiefferiella</i> sp. N	X	X	X	X	X	X	X	X				
<i>Tvetenia</i> sp.	X							X				
<i>Nastoccladius</i> sp.	X						X	X	X	X		X
<i>Rheocricotopus</i> sp.		X	X	X			X	X	X			X
<i>Brillia</i> sp.	X						X	X				
<i>Micropsectra</i> sp. Y			X				X	X	X	X		
<i>Parametrioctenus</i> sp. N	X											
<i>Paraphaenocladus</i> sp.									X			
<i>Limnophora</i> sp.						X		X	X			X
<i>Thienemanniella</i> sp.						X		X	X			
<i>Thienemanniella</i> sp.						X		X	X			
<i>Cricotopus</i> sp. N									X			
<i>Cryptotendipes</i> sp.									X	X		X
<i>Nilotanytus</i> sp.												
<i>Tanytarsus</i> sp. N												

WATERSHED	Los Alamos Canyon		Pajarito Canyon & Tributaries					Upper Sandia Canyon				Valle
	above & below reservoir		PA 9.0	PA 8.7	PA 6.7	BU 0.0	ST 0.5	SA 10.3	SA 10.1	SA 7.64	SA 7.53	VA 2.6
STATION	LA 13.0	LA 12.2	22-Jul-94	22-Jul-94	22-Jul-94	22-Jul-94	22-Jul-94	20-Mar-96	28-Mar-96	20-Mar-96	20-Mar-96	12-May-97
DATE	25-Feb-97	21-Jun-93						"wetlands"	"wetlands"			
TAXA												
<i>Cledotanytersus sp.</i>												X
<i>Paratanytersus sp.</i>									X			
<i>Phaenopsectra sp.</i>					X							X
<i>Rheotanytersus sp.</i>									X			
<i>Polypedilum sp.</i>												
<i>Pseudochironomus sp.</i>												
<i>Microtendipes sp.</i>			X			X	X					
<i>Corynoneura sp.</i>							X					X
<i>Paramerina sp.</i>							X					
<i>Pseudodiamesa sp.</i>							X					X
<i>Boreochlus sp.</i>												
<i>Pentaneura sp.</i>									X			X
Empididae												
<i>Chelifera sp.</i>	X											X
<i>Oreogeton sp.</i>	X											
<i>Hemerodromia sp.</i>									X			
Muscidae												
Stratiomyidae												
<i>Euperyphus sp.</i>	X				X	X		X	X			
Ceratopogonidae - biting midges												
<i>Bezzia sp.</i>	X											
<i>Ephydra sp.</i>												
Culicidae - mosquitos												
<i>Culiseta sp.</i>												X
Dobidae												X
<i>Dixa sp.</i>		X										
ODONATA - damsel/dragonflies												X
Libellulidae												
<i>Libellula sp.</i> N												X
<i>Hetaerina sp.</i>												
Coenagrionidae N								X	X	X	X	X
<i>Argia sp.</i>										X	X	
<i>Ophiogomphus sp.</i> N												
<i>Optoneochna sp.</i>												
HEMIPTERA - true bugs						X						
<i>Gerris sp.</i>												
<i>Ambrysus mormon</i>						X						
<i>Rhagovelia sp.</i>						X						
Circadellidae												
Veliidae												
<i>Sigara sp.</i>										X		
COLEOPTERA - beetles												
<i>Agabus sp.</i>		X										

WATERSHED	Los Alamos Canyon		Pajarito Canyon & Tributaries					Upper Sandia Canyon				Valle
	above & below reservoir		PA 9.0	PA 8.7	PA 6.7	BU 0.0	ST 0.5	SA 10.3	SA 10.1	SA 7.64	SA 7.53	VA 2.6
STATION	LA 13.0	LA 12.2	22-Jul-94	22-Jul-94	22-Jul-94	22-Jul-94	22-Jul-94	20-Mar-96	28-Mar-96	20-Mar-96	20-Mar-96	12-May-97
DATE	25-Feb-97	21-Jun-93						"wetlands"	"wetlands"			
TAXA												
<i>Doronectes sp.</i>			X	X	X	X				X	X	X
<i>Optioservus sp.</i>	X	X	X	X								
<i>Helichus sp.</i>	X				X		X				X	
<i>Heterelmis sp.</i>												
<i>Heterelmis copulentus</i>		X										
<i>Zaitzevia parvula</i>			X	X			X					
<i>Narpius sp.</i>	X						X					
Curculionidae												
<i>Microcyloepus sp.</i>					X							
Dytiscidae												
COLLEMBOLA - springtails								X				
Poduridae												
ASCHELMINTHES								X				
Nematoda												
LEPIDOPTERA - moths												X
<i>Paragyraea kearffottalis</i>												
<i>Petrophila sp.</i> N												
ARTHROPODA - other arthropods										X		
Hydrachnidia A - mites	X											
AMPHIPODA - scuds												
<i>Hyalella azteca</i>										X		
ISOPODA - pill bugs												
<i>Asellidae sp.</i>												
OSTRACODA - seed shrimp									X			
Ostracoda												
NEMATOMORPHA - Gordian worms										X		
<i>Gordius sp.</i>											X	X
ANNELIDA - segmented worms		X	X	X			X	X	X	X	X	
Lumbricidae					X			X	X			
Tubificidae					X							
Naididae					X							
Lumbriculidae												
MOLLUSCA - snails/clams												X
<i>Physella sp.</i>							X					
Sphaeriidae N	X											
PLATYHELMINTHES - flatworms			X	X			X					
Turbellaria												
Total Taxa	41	23	25	25	32	25	35	17	26	10	10	33

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