MONROE COUNTY

WATER QUALITY STUDY 2004

- Paradise Watershed Data -

STREAM SAMPLING STATIONS

Site Number	Site Id	Date Time Sampled	Description
01	PARACR03	8/9/04 0800	**PARADISE CREEK** (Paradise) Approximately 150 yards upstream of the railroad bridge on Route 191. Lat. 41° 04' 19.60" Long. -75° 13' 36.40"
02	BUTZRU01	8/9/04 0900	**BUTZ RUN** (Paradise) Approximately 50 yards upstream of its confluence with Paradise Creek. Lat. 41° 04' 41.20" Long. -75° 13' 44.50"
03	CRCRPA01	8/9/04 1000	**CRANBERRY CREEK** (Paradise) Approximately 75 yards upstream of Browns Hill Road. Lat. 41° 06' 03.80" Long. -75° 14' 58.60"
04	PARACR04	8/9/04 1040	**PARADISE CREEK** (Paradise) Approximately 50 yards downstream of confluence btw Tank Creek and Yankee Run. Lat. 41° 07' 43.80" Long. -75° 18' 57.80"
05	DEHOCR04	8/9/04 1115	**DEVILS HOLE CREEK** (Paradise) Approximately 15 yards upstream of its confluence with Paradise Creek Lat. 41° 07' 54.00" Long. -75° 18' 50.00"
06	CRCRPA03	8/9/04 1145	**CRANBERRY CREEK** (Barrett) Approximately 200 yards downstream of Bestway discharge. Lat. 41° 08' 51.30" Long. -75° 17' 01.50"
07	SWIFCR06	8/10/04 0800	**SWIFTWATER CREEK** (Pocono) Approximately 20 yards upstream of its confluence with Forest Hills Run. Lat. 41° 06' 06.80" Long. -75° 16' 18.80"

Site Number	Site ID	Date Time Sampled	Description
08	SWIFCR02	8/10/04 0830	**SWIFTWATER CREEK** (Pocono) Approximately 25 yards downstream of its confluence with Forest Hills Run. Lat. 41° 06' 03.70" Long. -75° 16' 16.70"
09	FOHIRU01	8/10/04 0900	**FOREST HILLS RUN** (Paradise) Approximately 25 yards upstream of Lower Swiftwater Road. Lat. 41° 06' 03.10" Long. -75° 16' 20.40"
10	PARACR01	8/10/04 0930	**PARADISE CREEK** (Paradise) Approximately 50 yards upstream of Lower Swiftwater Road. Lat. 41° 06' 07.30" Long. -75° 16' 07.60"
11	FOHIRU04	8/10/04 1100	**FOREST HILLS RUN** (Paradise) Approximately 175 yards upstream of Woodland Road Lat. 41° 06' 46.00" Long. -75° 19' 34.90"
12	FOHIRU09	8/10/04 1130	**FOREST HILLS RUN** (Paradise) Approximately 25 yards downstream of Carlton Road. Lat. 41° 06' 51.00" Long. -75° 18' 42.30"
16	SWIFCR07	8/11/04 1115	**SWIFTWATER CREEK** (Pocono) 75 yards upstream of Route 314. Lat. 41° 06' 02.00" Long. -75° 20' 51.30"
17	SWIFCR05	8/11/03 1145	**SWIFTWATER CREEK** (Pocono) 200 yards downstream of Aventis Pasteur property. Lat. 41° 05' 41.00" Long. -75° 18' 34.10"
18	SWIFCR03	8/11/04 1215	**SWIFTWATER CREEK** (Pocono) Immediately downstream of old bridge at the Swiftwater Inn (Route 611). Lat. 41° 05' 39.90" Long. -75° 19' 41.70"

Benthic Macroinvertebrates

Scores for samples for the Low Pocono,
Riffle / Run < 10 square miles

Stream Name	Sample Number	Type of Site	Score	Condition
Butz Run	BUTZRU01	**Monitor**	29	Slightly Impaired
Cranberry Creek (Paradise Twp)	CRCRPA01	**Monitor**	29	Slightly Impaired
Paradise Creek	PARACR04	**Monitor**	33	Optimal
Devils Hole Creek	DEHOCR04	**Monitor**	31	Optimal
Cranberry Creek (Paradise Twp)	CRCRPA03	Monitor	21	Moderately Impaired
Forest Hills Run	FOHIRU01	Monitor	29	Slightly Impaired
Forest Hills Run	FOHIRU04	Monitor	25	Slightly Impaired
Forest Hills Run	FOHIRU09	Monitor	15	Severely Impaired
Swiftwater Creek	SWIFCR07	Monitor	29	Slightly Impaired
Swiftwater Creek	SWIFCR05	Monitor	33	Optimal
Swiftwater Creek	SWIFCR03	Monitor	29	Slightly Impaired

The range 35 - 31 is considered optimal. The range 30 - 16 is the slightly to moderately impaired category, and any site with a total score of less than 16 is considered severely impaired.

Scores for samples for the Low Pocono,
Riffle / Run > 10 square miles

Stream Name	Sample Number	Type of Site	Score	Condition
Paradise Creek	PARACR03	Monitor	35	Optimal
Swiftwater Creek	SWIFCR06	Monitor	21	Moderately Impaired
Swiftwater Creek	SWIFCR02	Monitor	25	Slightly Impaired
Paradise Creek	PARACR01	Monitor	33	Optimal

The range 35 - 29 is considered optimal. The range 28 - 14 is the slightly to moderately impaired category, and any site with a total score of less than 14 is considered severely impaired.

The following tables compare trending results of the EPA/County scoring schemes for repeat sites (1995 through 2003).

Site #	Site Name	2004	2003	2002	2001	2000	1999	1998	1997	1996	1995
PARACR03	Paradise Creek	33	31								31
BUTZRU01	Butz Run	29	23								
CRCRPA01	Cranberry Creek (Paradise)	29									
PARACR04	Paradise Creek	33	31								
DEHOCR04	Devils Hole Creek	31	31								
CRCRPA03	Cranberry Creek (Paradise)	21	23								
SWIFCR06	Swiftwater Creek	21	23								
SWIFCR02	Swiftwater Creek	25	27								
FOHIRU01	Forest Hills Run	29	25								
PARACR01	Paradise Creek	29	29								
FOHIRU04	Forest Hills Run	25	19	25	29	25	27	27	23	31	
FOHIRU09	Forest Hills Run	15	17								
SWIFCR07	Swiftwater Creek	29	25	29	33						
SWIFCR05	Swiftwater Creek	33	23	25	29	27	25	29	21	25	19
SWIFCR03	Swiftwater Creek	29	29	25	29	29	17	27	19	27	23

Debris Sample Analysis

SITES	PARACR01	PARACR01 - DS
Number of Organisms	386	405
Number of Taxa	25	25
HBI	4.82	4.84
EPT Index	14	14
% Contrib. of Dom. Taxa	31.9	32.1
% Intolerant Taxa (0-2 TV)	28.0	28.0
% Non-insects	3.89	4.20
Shredders/Total	0.104	0.099

The Debris Sample (DS) column shows the composite of the original count + the debris sample count.

PARACR01 was the first debris sample site. In the composite sample, PARACR01 - DS, 5.69% of the total number of organisms were found in the debris analysis. The debris sample for this site was comprised predominantly of chironomidae (37%).

For the methods of sampling involved, naked eye initially and 2x magnifying lens for the debris sample, the percentages shown are within acceptable limits. Many of the individuals identified in the debris sample analysis were found primarily because of the use of the magnifying lens.

In future studies we will work to refine this method of quality assurance and control.

MONROE COUNTY WATER QUALITY STUDY				SITE ID. PARACR03	
Insecta		Philopotamidae	42	Simuliidae	6
Ephemeroptera		Polycentropodidae	16	Tabanidae	
Baetidae	23	Psychomyiidae		Dixidae	
Baetiscidae		Beraeidae		Collembola	
Caenidae		Brachycentridae	8	Poduridae	
Ephemerellidae	10	Lepidostomatidae		Nemertea	
Ephemeridae		Helicopsychidae		Nematoda	
Heptageniidae	39	Leptoceridae		Nematomorpha	
Leptophlebiidae		Limnephilidae	1	Annelida	
Metretopodidae		Molannidae		Hirudinea	
Neoephemeridae		Odontoceridae		Oligochaeta	
Oligoneuriidae	14	Phryganeidae		Lumbriculida	
Polymitarcyidae		Sericostomatidae		Lumbriculidae	
Potamanthidae		Uenoidae	12	Tubificida	
Siphlonuridae	31	Glossosomatidae		Platyhelminthes	
Tricorythidae	4	Hydroptilidae	3	Turbellaria	
Odonata		Rhyacophilidae	1	Planariidae	
Aeshnidae		Lepidoptera		Mollusca	
Cordulegastridae		Pyralidae		Bivalva	
Corduliidae		Coleoptera		Unionidae	
Gomphidae		Dytiscidae		Sphaeriidae	
Libellulidae		Gyrinidae		Cyrenidae	
Macromiidae		Haliplidae		Corbiculidae	
Calopterygidae		Noteridae		Gastropoda	
Coenagrionidae		Elmidae	11	Ancylidae	2
Lestidae		Hydraenidae		Physidae	
Plecoptera		Hydrophilidae		Planorbidae	
Capniidae		Limnichidae		Bulimidae	
Chloroperlidae	1	Psephenidae	2	Limnaeidae	
Leuctridae	9	Ptilodactylidae		Crustacea	
Nemouridae		Megaloptera		Amphipoda	
Peltoperlidae		Corydalidae	4	Gammaridae	
Perlidae	4	Sialidae		Talitridae	
Perlodidae	3	Neuroptera		Isopoda	
Pteronarcyidae		Sisyridae		Asellidae	
Taeniopterygidae		Diptera		Decapoda	
Hemiptera		Ephydridae		Cambaridae	
Belostomatidae		Athericidae		Arachnidia	
Corixidae		Tipulidae	1	Acari	
Gerridae		Empididae		Hydrachnidia	
Mesoveliidae		Blephariceridae			
Notonectidae		Ceratopogonidae			
Saldidae		Chaoboridae			
Veliidae		Chironomidae	66		
Trichoptera		Culicidae			
Hydropsychidae	52	Muscidae			

MONROE COUNTY WATER QUALITY STUDY				SITE ID. BUTZRU01	
Insecta		Philopotamidae	6	Simuliidae	6
Ephemeroptera		Polycentropodidae		Tabanidae	
Baetidae	4	Psychomyiidae		Dixidae	
Baetiscidae		Beraeidae		Collembola	
Caenidae		Brachycentridae		Poduridae	
Ephemerellidae		Lepidostomatidae		Nemertea	
Ephemeridae		Helicopsychidae		Nematoda	
Heptageniidae	3	Leptoceridae		Nematomorpha	
Leptophlebiidae	2	Limnephilidae	3	Annelida	
Metretopodidae		Molannidae		Hirudinea	
Neoephemeridae		Odontoceridae	1	Oligochaeta	
Oligoneuriidae		Phryganeidae		Lumbriculida	
Polymitarcyidae		Sericostomatidae		Lumbriculidae	
Potamanthidae		Uenoidae		Tubificida	
Siphlonuridae		Glossosomatidae		Platyhelminthes	
Tricorythidae		Hydroptilidae	14	Turbellaria	
Odonata		Rhyacophilidae		Planariidae	
Aeshnidae		Lepidoptera		Mollusca	
Cordulegastridae		Pyralidae		Bivalva	
Corduliidae		Coleoptera		Unionidae	
Gomphidae	4	Dytiscidae		Sphaeriidae	
Libellulidae		Gyrinidae		Cyrenidae	
Macromiidae		Haliplidae		Corbiculidae	
Calopterygidae		Noteridae		Gastropoda	
Coenagrionidae		Elmidae	2	Ancylidae	
Lestidae		Hydraenidae		Physidae	
Plecoptera		Hydrophilidae		Planorbidae	
Capniidae		Limnichidae		Bulimidae	
Chloroperlidae	3	Psephenidae	3	Limnaeidae	
Leuctridae	5	Ptilodactylidae		Crustacea	
Nemouridae		Megaloptera		Amphipoda	
Peltoperlidae		Corydalidae	1	Gammaridae	
Perlidae	6	Sialidae		Talitridae	
Perlodidae		Neuroptera		Isopoda	
Pteronarcyidae		Sisyridae		Asellidae	
Taeniopterygidae		Diptera		Decapoda	
Hemiptera		Ephydridae		Cambaridae	1
Belostomatidae		Athericidae		Arachnidia	
Corixidae		Tipulidae	5	Acari	
Gerridae		Empididae		Hydrachnidia	
Mesoveliidae		Blephariceridae			
Notonectidae		Ceratopogonidae			
Saldidae		Chaoboridae			
Veliidae		Chironomidae	24		
Trichoptera		Culicidae			
Hydropsychidae	1	Muscidae			

MONROE COUNTY WATER QUALITY STUDY				SITE ID. CRCRPA01	
Insecta		Philopotamidae	3	Simuliidae	
Ephemeroptera		Polycentropodidae	12	Tabanidae	
Baetidae	25	Psychomyiidae		Dixidae	
Baetiscidae		Beraeidae		Collembola	
Caenidae		Brachycentridae	1	Poduridae	
Ephemerellidae	2	Lepidostomatidae		Nemertea	
Ephemeridae		Helicopsychidae		Nematoda	
Heptageniidae	11	Leptoceridae	2	Nematomorpha	
Leptophlebiidae	7	Limnephilidae		Annelida	
Metretopodidae		Molannidae		Hirudinea	
Neoephemeridae		Odontoceridae	1	Oligochaeta	
Oligoneuriidae	12	Phryganeidae		Lumbriculida	
Polymitarcyidae		Sericostomatidae		Lumbriculidae	1
Potamanthidae		Uenoidae	2	Tubificida	
Siphlonuridae	8	Glossosomatidae		Platyhelminthes	
Tricorythidae		Hydroptilidae	4	Turbellaria	
Odonata		Rhyacophilidae		Planariidae	
Aeshnidae		Lepidoptera		Mollusca	
Cordulegastridae		Pyralidae		Bivalva	
Corduliidae		Coleoptera		Unionidae	
Gomphidae	3	Dytiscidae		Sphaeriidae	
Libellulidae		Gyrinidae		Cyrenidae	
Macromiidae		Haliplidae		Corbiculidae	
Calopterygidae		Noteridae		Gastropoda	
Coenagrionidae		Elmidae	6	Ancylidae	3
Lestidae		Hydraenidae		Physidae	
Plecoptera		Hydrophilidae		Planorbidae	
Capniidae		Limnichidae		Bulimidae	
Chloroperlidae	5	Psephenidae	31	Limnaeidae	
Leuctridae	14	Ptilodactylidae		Crustacea	
Nemouridae		Megaloptera		Amphipoda	
Peltoperlidae		Corydalidae	9	Gammaridae	
Perlidae	18	Sialidae		Talitridae	
Perlodidae	19	Neuroptera		Isopoda	
Pteronarcyidae	2	Sisyridae		Asellidae	
Taeniopterygidae		Diptera		Decapoda	
Hemiptera		Ephydridae		Cambaridae	
Belostomatidae		Athericidae		Arachnidia	
Corixidae		Tipulidae	1	Acari	
Gerridae		Empididae		Hydrachnidia	
Mesoveliidae		Blephariceridae			
Notonectidae		Ceratopogonidae			
Saldidae		Chaoboridae			
Veliidae		Chironomidae	69		
Trichoptera		Culicidae			
Hydropsychidae	40	Muscidae			

MONROE COUNTY WATER QUALITY STUDY				SITE ID. PARACR04	
Insecta		Philopotamidae	16	Simuliidae	
Ephemeroptera		Polycentropodidae		Tabanidae	4
Baetidae	42	Psychomyiidae		Dixidae	
Baetiscidae		Beraeidae		Collembola	
Caenidae		Brachycentridae	2	Poduridae	
Ephemerellidae	2	Lepidostomatidae		Nemertea	
Ephemeridae		Helicopsychidae		Nematoda	
Heptageniidae	11	Leptoceridae		Nematomorpha	
Leptophlebiidae		Limnephilidae		Annelida	
Metretopodidae		Molannidae		Hirudinea	
Neoephemeridae		Odontoceridae		Oligochaeta	
Oligoneuriidae		Phryganeidae		Lumbriculida	
Polymitarcyidae		Sericostomatidae		Lumbriculidae	
Potamanthidae		Uenoidae		Tubificida	
Siphlonuridae		Glossosomatidae		Platyhelminthes	
Tricorythidae		Hydroptilidae	19	Turbellaria	
Odonata		Rhyacophilidae		Planariidae	
Aeshnidae		Lepidoptera		Mollusca	
Cordulegastridae		Pyralidae	2	Bivalva	
Corduliidae		Coleoptera		Unionidae	
Gomphidae		Dytiscidae		Sphaeriidae	
Libellulidae		Gyrinidae		Cyrenidae	
Macromiidae		Haliplidae		Corbiculidae	
Calopterygidae		Noteridae		Gastropoda	
Coenagrionidae		Elmidae	3	Ancylidae	
Lestidae		Hydraenidae		Physidae	
Plecoptera		Hydrophilidae		Planorbidae	
Capniidae		Limnichidae		Bulimidae	
Chloroperlidae	15	Psephenidae	4	Limnaeidae	
Leuctridae	38	Ptilodactylidae		Crustacea	
Nemouridae		Megaloptera		Amphipoda	
Peltoperlidae		Corydalidae		Gammaridae	
Perlidae		Sialidae		Talitridae	
Perlodidae	4	Neuroptera		Isopoda	
Pteronarcyidae	5	Sisyridae		Asellidae	
Taeniopterygidae		Diptera		Decapoda	
Hemiptera		Ephydridae		Cambaridae	
Belostomatidae		Athericidae		Arachnidia	
Corixidae		Tipulidae	4	Acari	
Gerridae		Empididae		Hydrachnidia	
Mesoveliidae		Blephariceridae			
Notonectidae		Ceratopogonidae			
Saldidae		Chaoboridae			
Veliidae		Chironomidae	38		
Trichoptera		Culicidae			
Hydropsychidae	9	Muscidae			

MONROE COUNTY WATER QUALITY STUDY				SITE ID. DEHOCR04	
Insecta		Philopotamidae	3	Simuliidae	7
Ephemeroptera		Polycentropodidae	37	Tabanidae	1
Baetidae	46	Psychomyiidae		Dixidae	
Baetiscidae		Beraeidae		Collembola	
Caenidae		Brachycentridae	2	Poduridae	
Ephemerellidae	6	Lepidostomatidae		Nemertea	
Ephemeridae		Helicopsychidae		Nematoda	
Heptageniidae	12	Leptoceridae		Nematomorpha	
Leptophlebiidae	1	Limnephilidae		Annelida	
Metretopodidae		Molannidae		Hirudinea	
Neoephemeridae		Odontoceridae		Oligochaeta	
Oligoneuriidae		Phryganeidae		Lumbriculida	
Polymitarcyidae		Sericostomatidae		Lumbriculidae	
Potamanthidae		Uenoidae		Tubificida	
Siphlonuridae		Glossosomatidae		Platyhelminthes	
Tricorythidae		Hydroptilidae	18	Turbellaria	
Odonata		Rhyacophilidae		Planariidae	
Aeshnidae		Lepidoptera		Mollusca	
Cordulegastridae		Pyralidae		Bivalva	
Corduliidae		Coleoptera		Unionidae	
Gomphidae		Dytiscidae		Sphaeriidae	
Libellulidae		Gyrinidae		Cyrenidae	
Macromiidae		Haliplidae		Corbiculidae	
Calopterygidae		Noteridae		Gastropoda	
Coenagrionidae		Elmidae	2	Ancylidae	
Lestidae		Hydraenidae		Physidae	
Plecoptera		Hydrophilidae		Planorbidae	
Capniidae		Limnichidae		Bulimidae	
Chloroperlidae	22	Psephenidae		Limnaeidae	
Leuctridae	16	Ptilodactylidae		Crustacea	
Nemouridae		Megaloptera		Amphipoda	
Peltoperlidae	8	Corydalidae		Gammaridae	
Perlidae	4	Sialidae		Talitridae	
Perlodidae		Neuroptera		Isopoda	
Pteronarcyidae	1	Sisyridae		Asellidae	
Taeniopterygidae		Diptera		Decapoda	
Hemiptera		Ephydridae		Cambaridae	
Belostomatidae		Athericidae		Arachnidia	
Corixidae		Tipulidae	6	Acari	
Gerridae		Empididae		Hydrachnidia	
Mesoveliidae		Blephariceridae			
Notonectidae		Ceratopogonidae			
Saldidae		Chaoboridae			
Veliidae		Chironomidae	78		
Trichoptera		Culicidae			
Hydropsychidae	14	Muscidae			

MONROE COUNTY WATER QUALITY STUDY				SITE ID. CRCRPA03	
Insecta		Philopotamidae	6	Simuliidae	1
Ephemeroptera		Polycentropodidae		Tabanidae	
Baetidae		Psychomyiidae		Dixidae	
Baetiscidae		Beraeidae		Collembola	
Caenidae		Brachycentridae	1	Poduridae	
Ephemerellidae		Lepidostomatidae	2	Nemertea	
Ephemeridae		Helicopsychidae		Nematoda	
Heptageniidae	2	Leptoceridae		Nematomorpha	
Leptophlebiidae		Limnephilidae	4	Annelida	
Metretopodidae		Molannidae		Hirudinea	
Neoephemeridae		Odontoceridae	1	Oligochaeta	
Oligoneuriidae		Phryganeidae		Lumbriculida	
Polymitarcyidae		Sericostomatidae		Lumbriculidae	
Potamanthidae		Uenoidae		Tubificida	
Siphlonuridae		Glossosomatidae		Platyhelminthes	
Tricorythidae		Hydroptilidae		Turbellaria	
Odonata		Rhyacophilidae		Planariidae	
Aeshnidae	2	Lepidoptera		Mollusca	
Cordulegastridae		Pyralidae		Bivalva	
Corduliidae		Coleoptera		Unionidae	
Gomphidae	2	Dytiscidae		Sphaeriidae	111
Libellulidae		Gyrinidae		Cyrenidae	
Macromiidae		Haliplidae		Corbiculidae	
Calopterygidae		Noteridae		Gastropoda	
Coenagrionidae		Elmidae	23	Ancylidae	
Lestidae		Hydraenidae		Physidae	
Plecoptera		Hydrophilidae		Planorbidae	
Capniidae		Limnichidae		Bulimidae	
Chloroperlidae		Psephenidae		Limnaeidae	
Leuctridae	2	Ptilodactylidae		Crustacea	
Nemouridae		Megaloptera		Amphipoda	
Peltoperlidae		Corydalidae	5	Gammaridae	
Perlidae	1	Sialidae		Talitridae	
Perlodidae		Neuroptera		Isopoda	
Pteronarcyidae		Sisyridae		Asellidae	
Taeniopterygidae		Diptera		Decapoda	
Hemiptera		Ephydridae		Cambaridae	1
Belostomatidae		Athericidae		Arachnidia	
Corixidae		Tipulidae	2	Acari	
Gerridae		Empididae		Hydrachnidia	
Mesoveliidae		Blephariceridae			
Notonectidae		Ceratopogonidae			
Saldidae		Chaoboridae			
Veliidae		Chironomidae	78		
Trichoptera		Culicidae			
Hydropsychidae	18	Muscidae			

MONROE COUNTY WATER QUALITY STUDY				SITE ID. SWIFCR06	
Insecta		Philopotamidae	26	Simuliidae	6
Ephemeroptera		Polycentropodidae	9	Tabanidae	
Baetidae	10	Psychomyiidae		Dixidae	
Baetiscidae		Beraeidae		Collembola	
Caenidae		Brachycentridae		Poduridae	
Ephemerellidae		Lepidostomatidae		Nemertea	
Ephemeridae		Helicopsychidae		Nematoda	
Heptageniidae	16	Leptoceridae		Nematomorpha	
Leptophlebiidae	2	Limnephilidae		Annelida	
Metretopodidae		Molannidae		Hirudinea	
Neoephemeridae		Odontoceridae		Oligochaeta	
Oligoneuriidae		Phryganeidae		Lumbriculida	
Polymitarcyidae		Sericostomatidae		Lumbriculidae	4
Potamanthidae		Uenoidae		Tubificida	
Siphlonuridae		Glossosomatidae	1	Platyhelminthes	
Tricorythidae		Hydroptilidae		Turbellaria	
Odonata		Rhyacophilidae		Planariidae	
Aeshnidae		Lepidoptera		Mollusca	
Cordulegastridae		Pyralidae		Bivalva	
Corduliidae		Coleoptera		Unionidae	
Gomphidae		Dytiscidae		Sphaeriidae	53
Libellulidae		Gyrinidae		Cyrenidae	
Macromiidae		Haliplidae		Corbiculidae	
Calopterygidae		Noteridae		Gastropoda	
Coenagrionidae		Elmidae	2	Ancylidae	
Lestidae		Hydraenidae		Physidae	7
Plecoptera		Hydrophilidae		Planorbidae	
Capniidae		Limnichidae		Bulimidae	
Chloroperlidae		Psephenidae		Limnaeidae	
Leuctridae	11	Ptilodactylidae		Crustacea	
Nemouridae		Megaloptera		Amphipoda	
Peltoperlidae		Corydalidae	1	Gammaridae	
Perlidae	2	Sialidae		Talitridae	
Perlodidae		Neuroptera		Isopoda	
Pteronarcyidae		Sisyridae		Asellidae	
Taeniopterygidae		Diptera		Decapoda	
Hemiptera		Ephydridae		Cambaridae	
Belostomatidae		Athericidae	1	Arachnidia	
Corixidae		Tipulidae		Acari	
Gerridae		Empididae		Hydrachnidia	
Mesoveliidae		Blephariceridae			
Notonectidae		Ceratopogonidae			
Saldidae		Chaoboridae			
Veliidae		Chironomidae	113		
Trichoptera		Culicidae			
Hydropsychidae	58	Muscidae			

MONROE COUNTY WATER QUALITY STUDY				SITE ID. SWIFCR02	
Insecta		Philopotamidae	32	Simuliidae	6
Ephemeroptera		Polycentropodidae	11	Tabanidae	2
Baetidae	5	Psychomyiidae		Dixidae	
Baetiscidae		Beraeidae		Collembola	
Caenidae		Brachycentridae		Poduridae	
Ephemerellidae		Lepidostomatidae		Nemertea	
Ephemeridae		Helicopsychidae		Nematoda	
Heptageniidae	36	Leptoceridae		Nematomorpha	
Leptophlebiidae		Limnephilidae		Annelida	
Metretopodidae		Molannidae		Hirudinea	
Neoephemeridae		Odontoceridae		Oligochaeta	
Oligoneuriidae		Phryganeidae		Lumbriculida	
Polymitarcyidae		Sericostomatidae		Lumbriculidae	3
Potamanthidae		Uenoidae	2	Tubificida	
Siphlonuridae		Glossosomatidae		Platyhelminthes	
Tricorythidae		Hydroptilidae		Turbellaria	
Odonata		Rhyacophilidae	1	Planariidae	
Aeshnidae		Lepidoptera		Mollusca	
Cordulegastridae		Pyralidae		Bivalva	
Corduliidae		Coleoptera		Unionidae	
Gomphidae	1	Dytiscidae		Sphaeriidae	29
Libellulidae		Gyrinidae		Cyrenidae	
Macromiidae		Haliplidae		Corbiculidae	
Calopterygidae		Noteridae		Gastropoda	
Coenagrionidae		Elmidae	5	Ancylidae	1
Lestidae		Hydraenidae		Physidae	7
Plecoptera		Hydrophilidae		Planorbidae	5
Capniidae		Limnichidae		Bulimidae	
Chloroperlidae		Psephenidae	2	Limnaeidae	
Leuctridae	36	Ptilodactylidae		Crustacea	
Nemouridae		Megaloptera		Amphipoda	
Peltoperlidae		Corydalidae	6	Gammaridae	13
Perlidae	6	Sialidae		Talitridae	
Perlodidae		Neuroptera		Isopoda	
Pteronarcyidae		Sisyridae		Asellidae	
Taeniopterygidae		Diptera		Decapoda	
Hemiptera		Ephydridae		Cambaridae	
Belostomatidae		Athericidae		Arachnidia	
Corixidae		Tipulidae	3	Acari	
Gerridae		Empididae		Hydrachnidia	
Mesoveliidae		Blephariceridae			
Notonectidae		Ceratopogonidae			
Saldidae		Chaoboridae			
Veliidae		Chironomidae	68		
Trichoptera		Culicidae			
Hydropsychidae	51	Muscidae			

MONROE COUNTY WATER QUALITY STUDY				SITE ID. FOHIRU01	
Insecta		Philopotamidae	10	Simuliidae	2
Ephemeroptera		Polycentropodidae	8	Tabanidae	3
Baetidae	13	Psychomyiidae		Dixidae	
Baetiscidae		Beraeidae		Collembola	
Caenidae		Brachycentridae	3	Poduridae	
Ephemerellidae		Lepidostomatidae		Nemertea	
Ephemeridae		Helicopsychidae		Nematoda	
Heptageniidae	19	Leptoceridae		Nematomorpha	1
Leptophlebiidae		Limnephilidae		Annelida	
Metretopodidae		Molannidae		Hirudinea	
Neoephemeridae		Odontoceridae		Oligochaeta	
Oligoneuriidae		Phryganeidae		Lumbriculida	
Polymitarcyidae		Sericostomatidae		Lumbriculidae	1
Potamanthidae		Uenoidae	1	Tubificida	
Siphlonuridae		Glossosomatidae		Platyhelminthes	
Tricorythidae		Hydroptilidae	5	Turbellaria	
Odonata		Rhyacophilidae		Planariidae	
Aeshnidae	1	Lepidoptera		Mollusca	
Cordulegastridae		Pyralidae		Bivalva	
Corduliidae		Coleoptera		Unionidae	
Gomphidae	3	Dytiscidae		Sphaeriidae	
Libellulidae		Gyrinidae		Cyrenidae	
Macromiidae		Haliplidae		Corbiculidae	
Calopterygidae		Noteridae		Gastropoda	
Coenagrionidae		Elmidae	1	Ancylidae	1
Lestidae		Hydraenidae		Physidae	1
Plecoptera		Hydrophilidae		Planorbidae	
Capniidae		Limnichidae		Bulimidae	
Chloroperlidae	1	Psephenidae	8	Limnaeidae	
Leuctridae	16	Ptilodactylidae		Crustacea	
Nemouridae		Megaloptera		Amphipoda	
Peltoperlidae		Corydalidae	6	Gammaridae	
Perlidae	7	Sialidae		Talitridae	
Perlodidae		Neuroptera		Isopoda	
Pteronarcyidae		Sisyridae		Asellidae	
Taeniopterygidae		Diptera		Decapoda	
Hemiptera		Ephydridae		Cambaridae	
Belostomatidae		Athericidae		Arachnidia	
Corixidae		Tipulidae	7	Acari	
Gerridae		Empididae		Hydrachnidia	
Mesoveliidae		Blephariceridae			
Notonectidae		Ceratopogonidae			
Saldidae		Chaoboridae			
Veliidae		Chironomidae	44		
Trichoptera		Culicidae			
Hydropsychidae	13	Muscidae			

MONROE COUNTY WATER QUALITY STUDY				SITE ID. PARACR01	
Insecta		Philopotamidae	7	Simuliidae	2
Ephemeroptera		Polycentropodidae	4	Tabanidae	
Baetidae	36	Psychomyiidae		Dixidae	
Baetiscidae		Beraeidae		Collembola	
Caenidae		Brachycentridae	5	Poduridae	
Ephemerellidae	1	Lepidostomatidae	1	Nemertea	
Ephemeridae		Helicopsychidae		Nematoda	
Heptageniidae	62	Leptoceridae		Nematomorpha	
Leptophlebiidae	1	Limnephilidae		Annelida	
Metretopodidae		Molannidae	1	Hirudinea	
Neoephemeridae		Odontoceridae		Oligochaeta	
Oligoneuriidae	2	Phryganeidae		Lumbriculida	
Polymitarcyidae		Sericostomatidae		Lumbriculidae	
Potamanthidae		Uenoidae		Tubificida	
Siphlonuridae		Glossosomatidae		Platyhelminthes	
Tricorythidae		Hydroptilidae	3	Turbellaria	
Odonata		Rhyacophilidae		Planariidae	
Aeshnidae		Lepidoptera		Mollusca	
Cordulegastridae		Pyralidae		Bivalva	
Corduliidae		Coleoptera		Unionidae	
Gomphidae	2	Dytiscidae		Sphaeriidae	5
Libellulidae		Gyrinidae		Cyrenidae	
Macromiidae		Haliplidae		Corbiculidae	
Calopterygidae		Noteridae		Gastropoda	
Coenagrionidae		Elmidae	7	Ancylidae	7
Lestidae		Hydraenidae		Physidae	3
Plecoptera		Hydrophilidae		Planorbidae	
Capniidae		Limnichidae		Bulimidae	
Chloroperlidae		Psephenidae	5	Limnaeidae	
Leuctridae	38	Ptilodactylidae		Crustacea	
Nemouridae		Megaloptera		Amphipoda	
Peltoperlidae		Corydalidae	11	Gammaridae	
Perlidae	5	Sialidae	1	Talitridae	
Perlodidae		Neuroptera		Isopoda	
Pteronarcyidae		Sisyridae		Asellidae	
Taeniopterygidae		Diptera		Decapoda	
Hemiptera		Ephydridae		Cambaridae	
Belostomatidae		Athericidae		Arachnidia	
Corixidae		Tipulidae	2	Acari	
Gerridae		Empididae		Hydrachnidia	
Mesoveliidae		Blephariceridae			
Notonectidae		Ceratopogonidae			
Saldidae		Chaoboridae			
Veliidae		Chironomidae	123		
Trichoptera		Culicidae			
Hydropsychidae	52	Muscidae			

MONROE COUNTY WATER QUALITY STUDY				SITE ID. FOHIRU04	
Insecta		Philopotamidae	13	Simuliidae	3
Ephemeroptera		Polycentropodidae	3	Tabanidae	
Baetidae	106	Psychomyiidae		Dixidae	
Baetiscidae		Beraeidae		Collembola	
Caenidae		Brachycentridae	1	Poduridae	
Ephemerellidae	2	Lepidostomatidae		Nemertea	
Ephemeridae		Helicopsychidae		Nematoda	
Heptageniidae	4	Leptoceridae		Nematomorpha	
Leptophlebiidae	2	Limnephilidae		Annelida	
Metretopodidae		Molannidae		Hirudinea	
Neoephemeridae		Odontoceridae		Oligochaeta	
Oligoneuriidae		Phryganeidae		Lumbriculida	
Polymitarcyidae		Sericostomatidae		Lumbriculidae	4
Potamanthidae		Uenoidae	2	Tubificida	
Siphlonuridae		Glossosomatidae		Platyhelminthes	
Tricorythidae		Hydroptilidae		Turbellaria	
Odonata		Rhyacophilidae	1	Planariidae	
Aeshnidae		Lepidoptera		Mollusca	
Cordulegastridae		Pyralidae		Bivalva	
Corduliidae		Coleoptera		Unionidae	
Gomphidae		Dytiscidae		Sphaeriidae	
Libellulidae		Gyrinidae		Cyrenidae	
Macromiidae		Haliplidae		Corbiculidae	
Calopterygidae		Noteridae		Gastropoda	
Coenagrionidae		Elmidae	2	Ancylidae	
Lestidae		Hydraenidae		Physidae	
Plecoptera		Hydrophilidae		Planorbidae	
Capniidae		Limnichidae		Bulimidae	
Chloroperlidae		Psephenidae		Limnaeidae	
Leuctridae	10	Ptilodactylidae		Crustacea	
Nemouridae		Megaloptera		Amphipoda	
Peltoperlidae		Corydalidae		Gammaridae	
Perlidae		Sialidae		Talitridae	
Perlodidae		Neuroptera		Isopoda	
Pteronarcyidae	1	Sisyridae		Asellidae	
Taeniopterygidae		Diptera		Decapoda	
Hemiptera		Ephydridae		Cambaridae	
Belostomatidae		Athericidae		Arachnidia	
Corixidae		Tipulidae	3	Acari	
Gerridae		Empididae		Hydrachnidia	
Mesoveliidae		Blephariceridae			
Notonectidae		Ceratopogonidae			
Saldidae		Chaoboridae			
Veliidae		Chironomidae	68		
Trichoptera		Culicidae			
Hydropsychidae	47	Muscidae			

MONROE COUNTY WATER QUALITY STUDY				SITE ID. FOHIRU09	
Insecta		Philopotamidae	1	Simuliidae	10
Ephemeroptera		Polycentropodidae		Tabanidae	
Baetidae	2	Psychomyiidae		Dixidae	
Baetiscidae		Beraeidae		Collembola	
Caenidae		Brachycentridae		Poduridae	
Ephemerellidae		Lepidostomatidae		Nemertea	
Ephemeridae		Helicopsychidae		Nematoda	
Heptageniidae		Leptoceridae		Nematomorpha	
Leptophlebiidae		Limnephilidae		Annelida	
Metretopodidae		Molannidae		Hirudinea	
Neoephemeridae		Odontoceridae		Oligochaeta	
Oligoneuriidae		Phryganeidae	1	Lumbriculida	
Polymitarcyidae		Sericostomatidae		Lumbriculidae	
Potamanthidae		Uenoidae		Tubificida	
Siphlonuridae		Glossosomatidae		Platyhelminthes	
Tricorythidae		Hydroptilidae		Turbellaria	
Odonata		Rhyacophilidae		Planariidae	
Aeshnidae		Lepidoptera		Mollusca	
Cordulegastridae		Pyralidae		Bivalva	
Corduliidae		Coleoptera		Unionidae	
Gomphidae		Dytiscidae		Sphaeriidae	12
Libellulidae		Gyrinidae		Cyrenidae	
Macromiidae		Haliplidae		Corbiculidae	
Calopterygidae		Noteridae		Gastropoda	
Coenagrionidae		Elmidae		Ancylidae	1
Lestidae		Hydraenidae		Physidae	
Plecoptera		Hydrophilidae		Planorbidae	
Capniidae		Limnichidae		Bulimidae	
Chloroperlidae		Psephenidae		Limnaeidae	
Leuctridae	1	Ptilodactylidae		Crustacea	
Nemouridae		Megaloptera		Amphipoda	
Peltoperlidae		Corydalidae	13	Gammaridae	
Perlidae		Sialidae		Talitridae	
Perlodidae		Neuroptera		Isopoda	
Pteronarcyidae		Sisyridae		Asellidae	
Taeniopterygidae		Diptera		Decapoda	
Hemiptera		Ephydridae		Cambaridae	
Belostomatidae		Athericidae		Arachnidia	
Corixidae		Tipulidae	1	Acari	
Gerridae		Empididae		Hydrachnidia	
Mesoveliidae		Blephariceridae			
Notonectidae		Ceratopogonidae			
Saldidae		Chaoboridae			
Veliidae		Chironomidae	163		
Trichoptera		Culicidae			
Hydropsychidae	71	Muscidae			

MONROE COUNTY WATER QUALITY STUDY				SITE ID. SWIFCR07	
Insecta		Philopotamidae	3	Simuliidae	
Ephemeroptera		Polycentropodidae		Tabanidae	
Baetidae		Psychomyiidae		Dixidae	
Baetiscidae		Beraeidae		Collembola	
Caenidae		Brachycentridae	13	Poduridae	
Ephemerellidae	3	Lepidostomatidae		Nemertea	
Ephemeridae		Helicopsychidae		Nematoda	
Heptageniidae		Leptoceridae		Nematomorpha	
Leptophlebiidae	2	Limnephilidae	1	Annelida	
Metretopodidae		Molannidae		Hirudinea	
Neoephemeridae		Odontoceridae		Oligochaeta	
Oligoneuriidae		Phryganeidae		Lumbriculida	
Polymitarcyidae		Sericostomatidae		Lumbriculidae	
Potamanthidae		Uenoidae		Tubificida	
Siphlonuridae		Glossosomatidae		Platyhelminthes	
Tricorythidae		Hydroptilidae	7	Turbellaria	
Odonata		Rhyacophilidae	2	Planariidae	
Aeshnidae		Lepidoptera		Mollusca	
Cordulegastridae		Pyralidae		Bivalva	
Corduliidae		Coleoptera		Unionidae	
Gomphidae		Dytiscidae		Sphaeriidae	
Libellulidae		Gyrinidae		Cyrenidae	
Macromiidae		Haliplidae		Corbiculidae	
Calopterygidae		Noteridae		Gastropoda	
Coenagrionidae		Elmidae	14	Ancylidae	
Lestidae		Hydraenidae		Physidae	
Plecoptera		Hydrophilidae		Planorbidae	
Capniidae		Limnichidae		Bulimidae	
Chloroperlidae	2	Psephenidae		Limnaeidae	
Leuctridae	9	Ptilodactylidae		Crustacea	
Nemouridae		Megaloptera		Amphipoda	
Peltoperlidae		Corydalidae		Gammaridae	
Perlidae		Sialidae		Talitridae	
Perlodidae	5	Neuroptera		Isopoda	
Pteronarcyidae	4	Sisyridae		Asellidae	
Taeniopterygidae		Diptera		Decapoda	
Hemiptera		Ephydridae		Cambaridae	
Belostomatidae		Athericidae		Arachnidia	
Corixidae		Tipulidae	2	Acari	
Gerridae		Empididae		Hydrachnidia	
Mesoveliidae		Blephariceridae			
Notonectidae		Ceratopogonidae			
Saldidae		Chaoboridae			
Veliidae		Chironomidae	54		
Trichoptera		Culicidae			
Hydropsychidae	5	Muscidae			

MONROE COUNTY WATER QUALITY STUDY				SITE ID. SWIFCR05	
Insecta		Philopotamidae	16	Simuliidae	3
Ephemeroptera		Polycentropodidae	10	Tabanidae	
Baetidae	32	Psychomyiidae		Dixidae	
Baetiscidae		Beraeidae		Collembola	
Caenidae		Brachycentridae		Poduridae	
Ephemerellidae	1	Lepidostomatidae	1	Nemertea	
Ephemeridae		Helicopsychidae		Nematoda	
Heptageniidae	6	Leptoceridae		Nematomorpha	
Leptophlebiidae	3	Limnephilidae		Annelida	
Metretopodidae		Molannidae		Hirudinea	
Neoephemeridae		Odontoceridae		Oligochaeta	
Oligoneuriidae		Phryganeidae		Lumbriculida	
Polymitarcyidae		Sericostomatidae		Lumbriculidae	
Potamanthidae		Uenoidae		Tubificida	
Siphlonuridae		Glossosomatidae		Platyhelminthes	
Tricorythidae		Hydroptilidae	3	Turbellaria	
Odonata		Rhyacophilidae	1	Planariidae	
Aeshnidae		Lepidoptera		Mollusca	
Cordulegastridae		Pyralidae		Bivalva	
Corduliidae		Coleoptera		Unionidae	
Gomphidae		Dytiscidae		Sphaeriidae	
Libellulidae		Gyrinidae		Cyrenidae	
Macromiidae		Haliplidae		Corbiculidae	
Calopterygidae		Noteridae		Gastropoda	
Coenagrionidae		Elmidae		Ancylidae	
Lestidae		Hydraenidae		Physidae	
Plecoptera		Hydrophilidae		Planorbidae	
Capniidae		Limnichidae		Bulimidae	
Chloroperlidae	21	Psephenidae		Limnaeidae	
Leuctridae	13	Ptilodactylidae		Crustacea	
Nemouridae		Megaloptera		Amphipoda	
Peltoperlidae		Corydalidae	7	Gammaridae	
Perlidae	4	Sialidae		Talitridae	
Perlodidae		Neuroptera		Isopoda	
Pteronarcyidae		Sisyridae		Asellidae	
Taeniopterygidae		Diptera		Decapoda	
Hemiptera		Ephydridae		Cambaridae	
Belostomatidae		Athericidae		Arachnidia	
Corixidae		Tipulidae	11	Acari	
Gerridae		Empididae		Hydrachnidia	
Mesoveliidae		Blephariceridae			
Notonectidae		Ceratopogonidae			
Saldidae		Chaoboridae			
Veliidae		Chironomidae	63		
Trichoptera		Culicidae			
Hydropsychidae	34	Muscidae			

MONROE COUNTY WATER QUALITY STUDY				SITE ID. SWIFCR03	
Insecta		Philopotamidae	3	Simuliidae	21
Ephemeroptera		Polycentropodidae	2	Tabanidae	
Baetidae	93	Psychomyiidae		Dixidae	
Baetiscidae		Beraeidae		Collembola	
Caenidae		Brachycentridae	26	Poduridae	
Ephemerellidae	5	Lepidostomatidae		Nemertea	
Ephemeridae		Helicopsychidae		Nematoda	
Heptageniidae	2	Leptoceridae		Nematomorpha	
Leptophlebiidae	2	Limnephilidae	1	Annelida	
Metretopodidae		Molannidae		Hirudinea	
Neoephemeridae		Odontoceridae		Oligochaeta	
Oligoneuriidae		Phryganeidae		Lumbriculida	
Polymitarcyidae		Sericostomatidae		Lumbriculidae	
Potamanthidae		Uenoidae		Tubificida	
Siphlonuridae		Glossosomatidae		Platyhelminthes	
Tricorythidae		Hydroptilidae		Turbellaria	
Odonata		Rhyacophilidae	2	Planariidae	
Aeshnidae		Lepidoptera		Mollusca	
Cordulegastridae		Pyralidae		Bivalva	
Corduliidae		Coleoptera		Unionidae	
Gomphidae		Dytiscidae		Sphaeriidae	
Libellulidae		Gyrinidae		Cyrenidae	
Macromiidae		Haliplidae		Corbiculidae	
Calopterygidae		Noteridae		Gastropoda	
Coenagrionidae		Elmidae	3	Ancylidae	
Lestidae		Hydraenidae		Physidae	
Plecoptera		Hydrophilidae		Planorbidae	
Capniidae		Limnichidae		Bulimidae	
Chloroperlidae	12	Psephenidae		Limnaeidae	
Leuctridae	15	Ptilodactylidae		Crustacea	
Nemouridae		Megaloptera		Amphipoda	
Peltoperlidae		Corydalidae		Gammaridae	
Perlidae	2	Sialidae		Talitridae	
Perlodidae		Neuroptera		Isopoda	
Pteronarcyidae	1	Sisyridae		Asellidae	
Taeniopterygidae		Diptera		Decapoda	
Hemiptera		Ephydridae		Cambaridae	
Belostomatidae		Athericidae		Arachnidia	
Corixidae		Tipulidae	9	Acari	
Gerridae		Empididae		Hydrachnidia	
Mesoveliidae		Blephariceridae			
Notonectidae		Ceratopogonidae			
Saldidae		Chaoboridae			
Veliidae		Chironomidae	104		
Trichoptera		Culicidae			
Hydropsychidae	62	Muscidae			

Surface Water Parameters

SURFACE WATER TEST SITES
PHYSICAL/CHEMICAL DATA

Site ID	PARACR03	BUTZRU01	CRCRPA01	PARACR04
Date	8/9/04	8/9/04	8/9/04	8/9/04
Time	0800	0900	1000	1045
Stream Name	Paradise Creek	Butz Run	Cranberry Creek	Paradise Creek
Weather	Clear	Clear	Clear	Clear
Volume of Flow (cfs)	38.74	2.85	3.6	5.53
Stream Temperature (^{O}C)	15.9	15.2	15.4	14.3
Dissolved Oxygen	9.57	9.25	10.12	10.30
pH	Field / Lab 7.5 7.34	Field / Lab 7.1 7.38	Field / Lab 7.2 7.23	Field / Lab 7.4 7.15
Conductivity µs/cm	114.9	98.6	78.3	136.2
Total Hardness	36.0	38.0	31.0	42.0
Total Alkalinity	17.0	16.5	12.5	10.5
Nitrate+Nitrite as N	0.332	0.240	0.219	0.541
Nitrate NO_3	0.332	0.240	0.219	0.541
Nitrite NO_2	ND	ND	ND	ND
Ammonia NH_3	ND	ND	ND	ND
Total Phosphorus	ND	ND	ND	ND
Chlorides	31.4	23.4	16.7	47.3
Total Acidity	ND	ND	2.50	2.00
T.D.S.	82.6	98.6	39.2	67.7
T.S.S.	ND	ND	ND	ND
Fecal Coliform	10 EST.	10 EST.	30 EST.	<10 EST.

ND - None Detected

SURFACE WATER TEST SITES
PHYSICAL/CHEMICAL DATA

Site ID	DEHOCR04	CRCRPA03	SWIFCR06	SWIFCR02
Date	8/9/04	8/9/04	8/10/04	8/10/04
Time	1115	1145	0800	0830
Stream Name	Devils Hole Creek	Cranberry Creek	Swiftwater Creek	Swiftwater Creek
Weather	Clear	Clear	Clear	Clear
Volume of Flow (cfs)	5.67	0.63	17.15	18.28
Stream Temperature (^{O}C)	15.4	16.6	18.4	18.4
Dissolved Oxygen	9.94	9.19	8.40	8.50
pH	Field / Lab 7.1 7.09	Field / Lab 7.0 7.13	Field / Lab 7.6 7.32	Field / Lab 7.6 7.35
Conductivity µs/cm	39.2	152.2	184.0	176.0
Total Hardness	16.0	52.0	36.0	43.0
Total Alkalinity	7.00	24.0	17.0	17.0
Nitrate+Nitrite as N	0.286	0.496	0.311	0.332
Nitrate NO_3	0.286	0.496	0.311	0.332
Nitrite NO_2	ND	ND	ND	ND
Ammonia NH_3	ND	ND	ND	ND
Total Phosphorus	ND	ND	ND	ND
Chlorides	8.15	37.0	46.1	45.9
Total Acidity	2.00	3.00	3.00	2.50
T.D.S.	19.8	75.9	92.0	89.0
T.S.S.	ND	2.80	ND	ND
Fecal Coliform	30 EST.	100 EST.	10 EST.	<10 EST.

ND - None Detected

SURFACE WATER TEST SITES
PHYSICAL/CHEMICAL DATA

Site ID	FOHIRU01	PARACR01	FOHIRU04	FOHIRU09
Date	8/10/04	8/10/04	8/10/04	8/10/04
Time	0900	0930	1100	1130
Stream Name	Forest Hills Run	Paradise Creek	Forest Hills Run	Forest Hills Run
Weather	Clear	Clear	Clear	Clear
Volume of Flow (cfs)	2.95	9.05	2.86	3.66
Stream Temperature (^{O}C)	16.6	17.7	15.9	20.6
Dissolved Oxygen	8.88	9.38	10.90	8.19
pH	Field / Lab 7.6 7.51	Field / Lab 7.4 7.28	Field / Lab 7.6 7.55	Field / Lab 7.4 7.35
Conductivity µs/cm	182.0	126.9	283.0	179.0
Total Hardness	51.0	31.0	65.0	60.0
Total Alkalinity	28.5	13.0	32.0	34.0
Nitrate+Nitrite as N	0.638	0.528	0.883	0.586
Nitrate NO_3	0.638	0.508	0.883	0.561
Nitrite NO_2	ND	0.020	ND	0.025
Ammonia NH_3	ND	ND	ND	ND
Total Phosphorus	ND	ND	ND	ND
Chlorides	38.5	22.3	61.9	49.6
Total Acidity	2.00	2.50	2.50	3.00
T.D.S.	91.0	63.4	143.0	90.0
T.S.S.	2.00	ND	ND	ND
Fecal Coliform	<10 EST.	<10 EST.	<10 EST.	30 EST.

ND - None Detected

SURFACE WATER TEST SITES
PHYSICAL/CHEMICAL DATA

Site ID	SWIFCR07	SWIFCR05	SWIFCR03	
Date	8/11/04	8/11/04	8/11/04	
Time	1115	1145	1215	
Stream Name	Swiftwater Creek	Swiftwater Creek	Swiftwater Creek	
Weather	Cloudy	Cloudy	Cloudy	
Volume of Flow (cfs)	2.37	6.96	9.02	
Stream Temperature (^{O}C)	13.4	16.0	14.6	
Dissolved Oxygen	10.58	9.61	10.26	
pH	Field / Lab 7.2 ---	Field / Lab 7.4 7.28	Field / Lab 6.8 7.13	
Conductivity µs/cm	96.8	181.0	132.2	
Total Hardness	---	40.0	32.0	
Total Alkalinity	---	22.0	10.0	
Nitrate+Nitrite as N	---	0.444	0.406	
Nitrate NO_3	---	0.44	0.406	
Nitrite NO_2	---	ND	ND	
Ammonia NH_3	---	ND	ND	
Total Phosphorus	---	ND	ND	
Chlorides	---	45.7	26.2	
Total Acidity	---	2.00	2.50	
T.D.S.	48.1	91.0	65.7	
T.S.S.	---	ND	6.80	
Fecal Coliform	---	240	30 EST.	

ND - None Detected

Sites that are tested annually and which consistently show good water quality did not have chemical samples taken for laboratory analysis.

Habitat Analysis

Site Number	Score	Category	Influences
PARACR03	204	Optimal	Greater than 50% mix of boulder, cobble, or other stable habitat. All four velocity/depth regimes present. Width of riparian zone 12-18 meters.
BUTZRU01	210	Optimal	Well developed riffle and run. No channelization or dredging present. More than 90% of the streambank surfaces covered by vegetation.
CRCRPA01	192	Optimal	30 - 50% mix of boulder, cobble, or other stable habitat. Banks stable; no evidence of erosion or bank failure. Width of riparian zone 12-18 meters.
PARACR04	193	Optimal	Greater than 50% mix of boulder, cobble, submerged logs or other stable habitat. All four velocity/depth regimes present. Occurrence of riffles relatively frequent.
DEHOCR04	189	Suboptimal-Optimal	Only two of the four velocity/depth regimes present. Well developed riffle and run. Less than 5% of the bottom affected by sediment deposition.
CRANCR03	196	Optimal	Greater than 50% mix of boulder, cobble, or other stable habitat. More than 90% of the streambank surfaces covered by vegetation. Width of riparian zone > 18 meters.
SWIFCR06	213	Optimal	Occurrence of riffles relatively frequent. Banks stable; no evidence of erosion or bank failure. No channelization or dredging present.
SWIFCR02	177	Suboptimal	Water fills > 75% of the available channel. Banks moderately stable; infrequent, small areas of erosion mostly healed over. Width of riparian zone 12-18 meters.
FOHIRU01	186	Suboptimal-Optimal	Only three of the four velocity/depth regimes present. Well developed riffle and run. Width of riparian zone 12-18 meters.
PARACR01	189	Suboptimal-Optimal	Gravel, cobble, and boulder particles are 50 - 75% surrounded by fine sediment. All four velocity/depth regimes present. Width of riparian zone 12-18 meters.

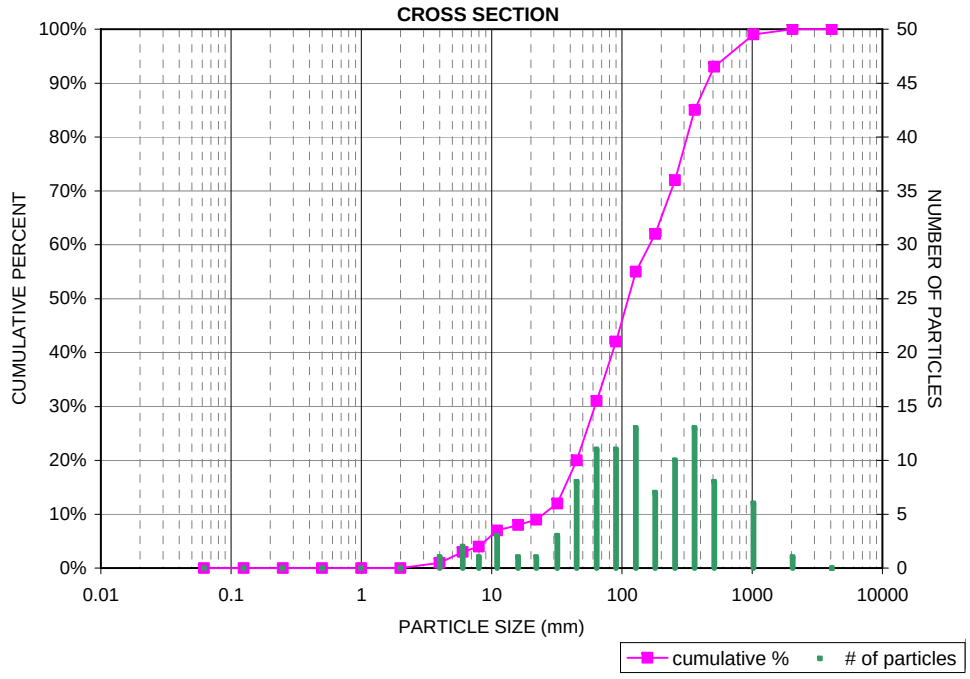
Site Number	Score	Category	Influences
FOHIRU04	171	Suboptimal	30 - 50% mix of boulder, cobble, or other stable habitat. Width of riparian zone < 6 meters. All four velocity/depth regimes present.
FOHIRU09	195	Optimal	Water reaches base of both lower banks and minimal amount of channel substrate is exposed. Less than 5% of the bottom affected by sediment deposition. Occurrence of riffles relatively frequent.
SWIFCR07	205	Optimal	Greater than 50% mix of boulder, cobble, submerged logs or other stable habitat. All four velocity/depth regimes present. Occurrence of riffles relatively frequent.
SWIFCR05	200	Optimal	Water reaches base of both lower banks and minimal amount of channel substrate is exposed. All four velocity/depth regimes present. Less than 5% of the bottom affected by sediment deposition.
SWIFCR03	192	Optimal	More than 90% of the streambank surfaces covered by vegetation. Well developed riffle and run. Width of riparian zone 6 - 12 meters.

Pebble Counts

Pebble Count (Cross Section)

PARACR03

Material	Size Range (mm)		Particle Count	Cumulative Percent
silt/clay	0	0.062	0	0%
very fine sand	0.062	0.13	0	0%
fine sand	0.13	0.25	0	0%
medium sand	0.25	0.5	0	0%
coarse sand	0.5	1	0	0%
very coarse sand	1	2	0	0%
very fine gravel	2	4	1	1%
fine gravel	4	6	2	3%
fine gravel	6	8	1	4%
medium gravel	8	11	3	7%
medium gravel	11	16	1	8%
coarse gravel	16	22	1	9%
coarse gravel	22	32	3	12%
very coarse gravel	32	45	8	20%
very coarse gravel	45	64	11	31%
small cobble	64	90	11	42%
medium cobble	90	128	13	55%
large cobble	128	180	7	62%
very large cobble	180	256	10	72%
small boulder	256	362	13	85%
small boulder	362	512	8	93%
medium boulder	512	1024	6	99%
large - very large boulder	1024	2048	1	100%
bedrock	2048	4096	0	100%
Total Particle Count:			100	

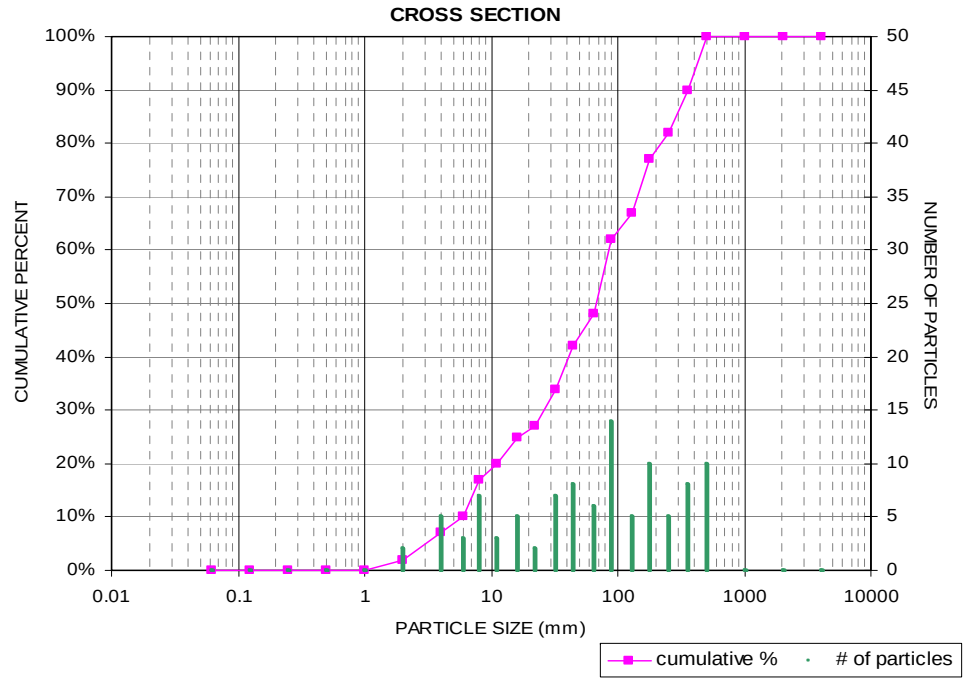


size percent less than (mm)						particle size distribution		
D16	D35	D50	D65	D84	D95	gradation	geo mean	std dev
37.947	72.45	111.8	200	352	645	3.0	115.7	3.0

Pebble Count (Cross Section)

BUTZRU01

Material	Size Range (mm)		Particle Count	Cumulative Percent
silt/clay	0	0.062	0	0%
very fine sand	0.062	0.13	0	0%
fine sand	0.13	0.25	0	0%
medium sand	0.25	0.5	0	0%
coarse sand	0.5	1	0	0%
very coarse sand	1	2	2	2%
very fine gravel	2	4	5	7%
fine gravel	4	6	3	10%
fine gravel	6	8	7	17%
medium gravel	8	11	3	20%
medium gravel	11	16	5	25%
coarse gravel	16	22	2	27%
coarse gravel	22	32	7	34%
very coarse gravel	32	45	8	42%
very coarse gravel	45	64	6	48%
small cobble	64	90	14	62%
medium cobble	90	128	5	67%
large cobble	128	180	10	77%
very large cobble	180	256	5	82%
small boulder	256	362	8	90%
small boulder	362	512	10	100%
medium boulder	512	1024	0	100%
large - very large boulder	1024	2048	0	100%
bedrock	2048	4096	0	100%
Total Particle Count:			100	

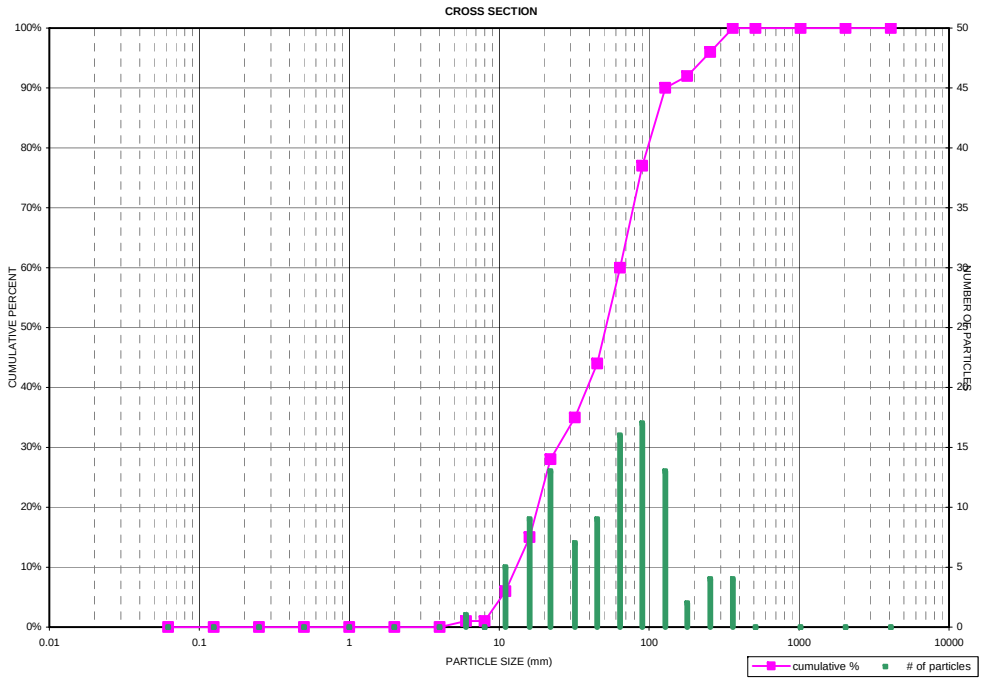


size percent less than (mm)						particle size distribution		
D16	D35	D50	D65	D84	D95	gradation	geo mean	std dev
7.678	33.39	67.2	111	279	431	6.5	46.3	6.0

Pebble Count (Cross Section)

CRCRPA01

Material	Size Range (mm)		Particle Count	Cumulative Percent
silt/clay	0	0.062	0	0%
very fine sand	0.062	0.13	0	0%
fine sand	0.13	0.25	0	0%
medium sand	0.25	0.5	0	0%
coarse sand	0.5	1	0	0%
very coarse sand	1	2	0	0%
very fine gravel	2	4	0	0%
fine gravel	4	6	1	1%
fine gravel	6	8	0	1%
medium gravel	8	11	5	6%
medium gravel	11	16	9	15%
coarse gravel	16	22	13	28%
coarse gravel	22	32	7	35%
very coarse gravel	32	45	9	44%
very coarse gravel	45	64	16	60%
small cobble	64	90	17	77%
medium cobble	90	128	13	90%
large cobble	128	180	2	92%
very large cobble	180	256	4	96%
small boulder	256	362	4	100%
small boulder	362	512	0	100%
medium boulder	512	1024	0	100%
large - very large boulder	1024	2048	0	100%
bedrock	2048	4096	0	100%
Total Particle Count:			100	

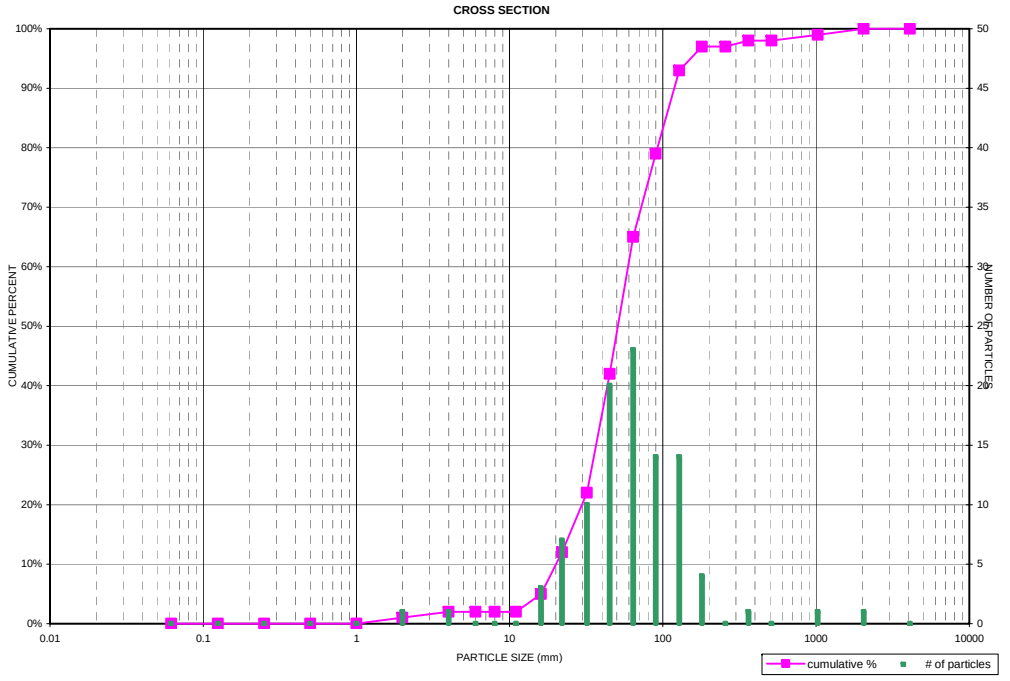


size percent less than (mm)						particle size distribution		
D16	D35	D50	D65	D84	D95	gradation	geo mean	std dev
16.397	32.00	51.4	71	109	234	2.6	42.2	2.6

Pebble Count (Cross Section)

PARACR04

Material	Size Range (mm)		Particle Count	Cumulative Percent
silt/clay	0	0.062	0	0%
very fine sand	0.062	0.13	0	0%
fine sand	0.13	0.25	0	0%
medium sand	0.25	0.5	0	0%
coarse sand	0.5	1	0	0%
very coarse sand	1	2	1	1%
very fine gravel	2	4	1	2%
fine gravel	4	6	0	2%
fine gravel	6	8	0	2%
medium gravel	8	11	0	2%
medium gravel	11	16	3	5%
coarse gravel	16	22	7	12%
coarse gravel	22	32	10	22%
very coarse gravel	32	45	20	42%
very coarse gravel	45	64	23	65%
small cobble	64	90	14	79%
medium cobble	90	128	14	93%
large cobble	128	180	4	97%
very large cobble	180	256	0	97%
small boulder	256	362	1	98%
small boulder	362	512	0	98%
medium boulder	512	1024	1	99%
large - very large boulder	1024	2048	1	100%
bedrock	2048	4096	0	100%
Total Particle Count:			100	

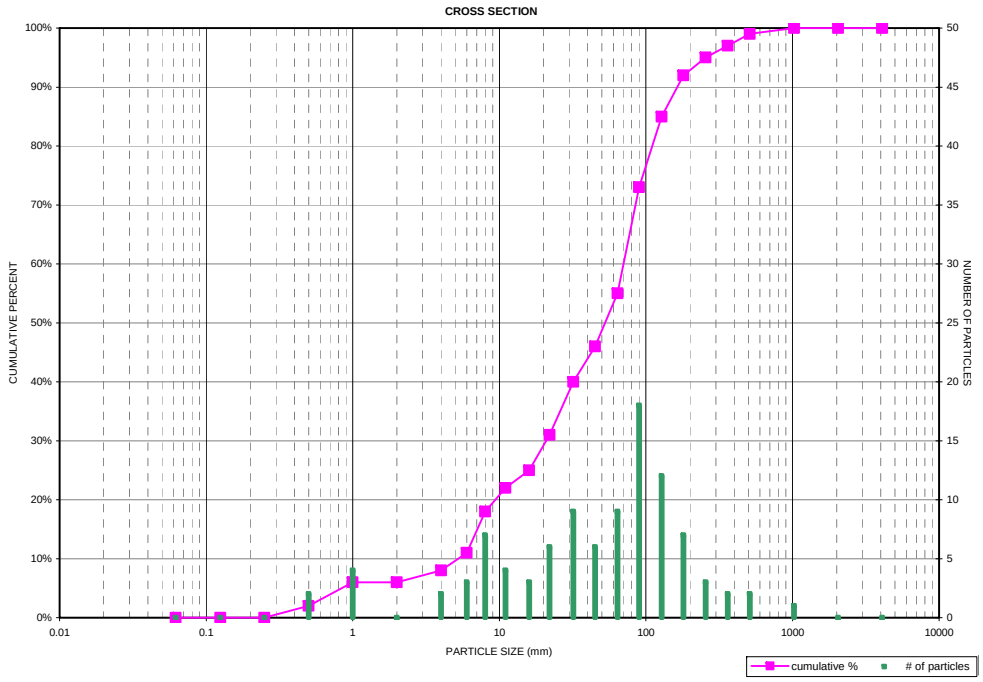


size percent less than (mm)						particle size distribution		
D16	D35	D50	D65	D84	D95	gradation	geo mean	std dev
25.557	39.94	50.9	64	102	152	2.0	51.1	2.0

Pebble Count (Cross Section)

DEHOCR04

Material	Size Range (mm)		Particle Count	Cumulative Percent
silt/clay	0	0.062	0	0%
very fine sand	0.062	0.13	0	0%
fine sand	0.13	0.25	0	0%
medium sand	0.25	0.5	2	2%
coarse sand	0.5	1	4	6%
very coarse sand	1	2	0	6%
very fine gravel	2	4	2	8%
fine gravel	4	6	3	11%
fine gravel	6	8	7	18%
medium gravel	8	11	4	22%
medium gravel	11	16	3	25%
coarse gravel	16	22	6	31%
coarse gravel	22	32	9	40%
very coarse gravel	32	45	6	46%
very coarse gravel	45	64	9	55%
small cobble	64	90	18	73%
medium cobble	90	128	12	85%
large cobble	128	180	7	92%
very large cobble	180	256	3	95%
small boulder	256	362	2	97%
small boulder	362	512	2	99%
medium boulder	512	1024	1	100%
large - very large boulder	1024	2048	0	100%
bedrock	2048	4096	0	100%
Total Particle Count:			100	

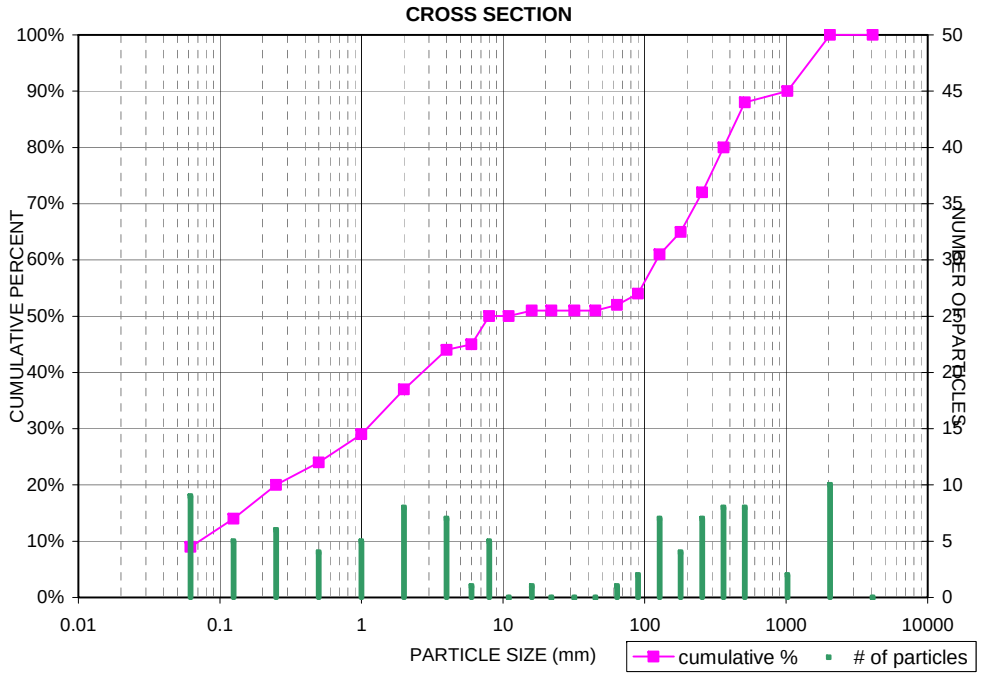


size percent less than (mm)						particle size distribution		
D16	D35	D50	D65	D84	D95	gradation	geo mean	std dev
7.369	25.99	52.6	77	124	256	4.8	30.3	4.1

Pebble Count (Cross Section)

CRCRPA03

Material	Size Range (mm)		Particle Count	Cumulative Percent
silt/clay	0	0.062	9	9%
very fine sand	0.062	0.13	5	14%
fine sand	0.13	0.25	6	20%
medium sand	0.25	0.5	4	24%
coarse sand	0.5	1	5	29%
very coarse sand	1	2	8	37%
very fine gravel	2	4	7	44%
fine gravel	4	6	1	45%
fine gravel	6	8	5	50%
medium gravel	8	11	0	50%
medium gravel	11	16	1	51%
coarse gravel	16	22	0	51%
coarse gravel	22	32	0	51%
very coarse gravel	32	45	0	51%
very coarse gravel	45	64	1	52%
small cobble	64	90	2	54%
medium cobble	90	128	7	61%
large cobble	128	180	4	65%
very large cobble	180	256	7	72%
small boulder	256	362	8	80%
small boulder	362	512	8	88%
medium boulder	512	1024	2	90%
large - very large boulder	1024	2048	10	100%
bedrock	2048	4096	0	100%
Total Particle Count:			100	

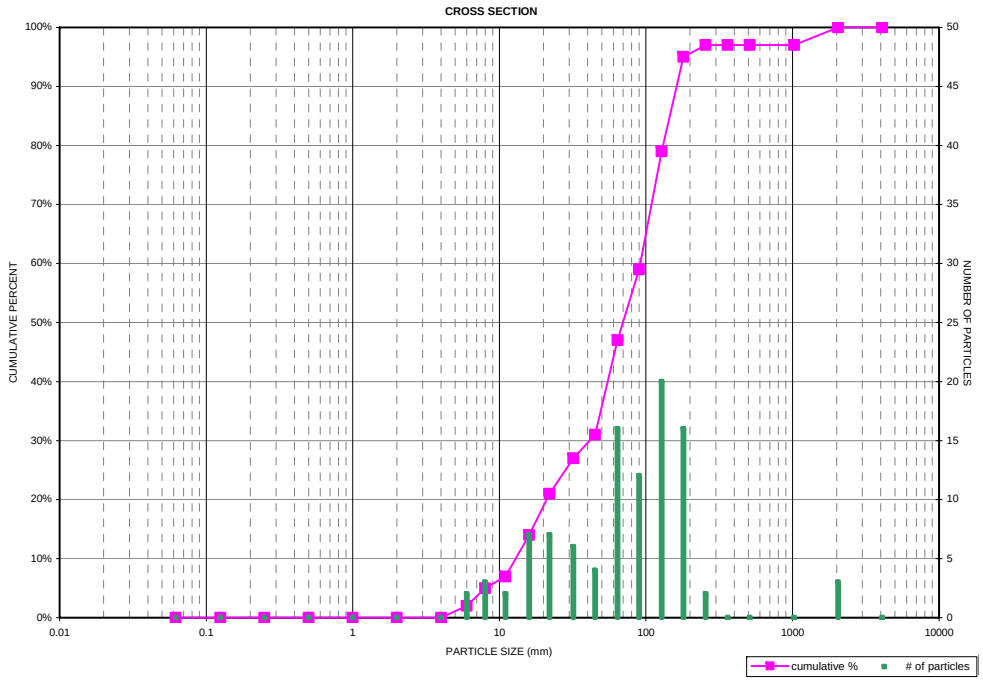


size percent less than (mm)						particle size distribution		
D16	D35	D50	D65	D84	D95	gradation	geo mean	std dev
0.157	1.68	8.0	180	431	1448	52.3	8.2	52.3

Pebble Count (Cross Section)

SWIFCR06

Material	Size Range (mm)		Particle Count	Cumulative Percent
silt/clay	0	0.062	0	0%
very fine sand	0.062	0.13	0	0%
fine sand	0.13	0.25	0	0%
medium sand	0.25	0.5	0	0%
coarse sand	0.5	1	0	0%
very coarse sand	1	2	0	0%
very fine gravel	2	4	0	0%
fine gravel	4	6	2	2%
fine gravel	6	8	3	5%
medium gravel	8	11	2	7%
medium gravel	11	16	7	14%
coarse gravel	16	22	7	21%
coarse gravel	22	32	6	27%
very coarse gravel	32	45	4	31%
very coarse gravel	45	64	16	47%
small cobble	64	90	12	59%
medium cobble	90	128	20	79%
large cobble	128	180	16	95%
very large cobble	180	256	2	97%
small boulder	256	362	0	97%
small boulder	362	512	0	97%
medium boulder	512	1024	0	97%
large - very large boulder	1024	2048	3	100%
bedrock	2048	4096	0	100%
Total Particle Count:			100	

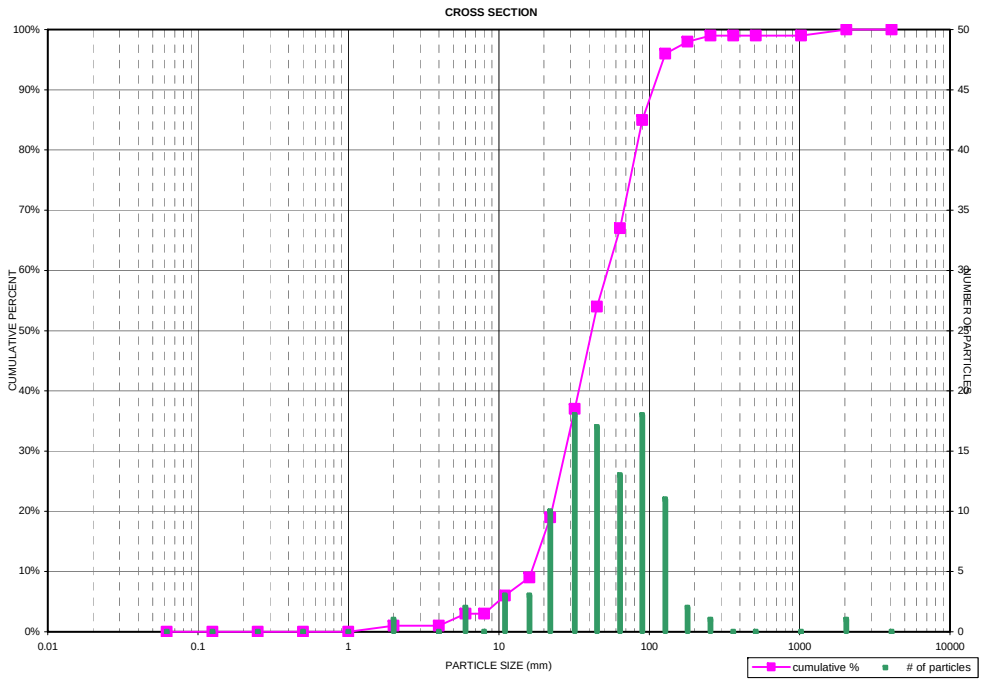


size percent less than (mm)						particle size distribution		
D16	D35	D50	D65	D84	D95	gradation	geo mean	std dev
17.524	49.14	69.7	100	142	180	3.0	50.0	2.9

Pebble Count (Cross Section)

SWIFCR02

Material	Size Range (mm)		Particle Count	Cumulative Percent
silt/clay	0	0.062	0	0%
very fine sand	0.062	0.13	0	0%
fine sand	0.13	0.25	0	0%
medium sand	0.25	0.5	0	0%
coarse sand	0.5	1	0	0%
very coarse sand	1	2	1	1%
very fine gravel	2	4	0	1%
fine gravel	4	6	2	3%
fine gravel	6	8	0	3%
medium gravel	8	11	3	6%
medium gravel	11	16	3	9%
coarse gravel	16	22	10	19%
coarse gravel	22	32	18	37%
very coarse gravel	32	45	17	54%
very coarse gravel	45	64	13	67%
small cobble	64	90	18	85%
medium cobble	90	128	11	96%
large cobble	128	180	2	98%
very large cobble	180	256	1	99%
small boulder	256	362	0	99%
small boulder	362	512	0	99%
medium boulder	512	1024	0	99%
large - very large boulder	1024	2048	1	100%
bedrock	2048	4096	0	100%
Total Particle Count:			100	

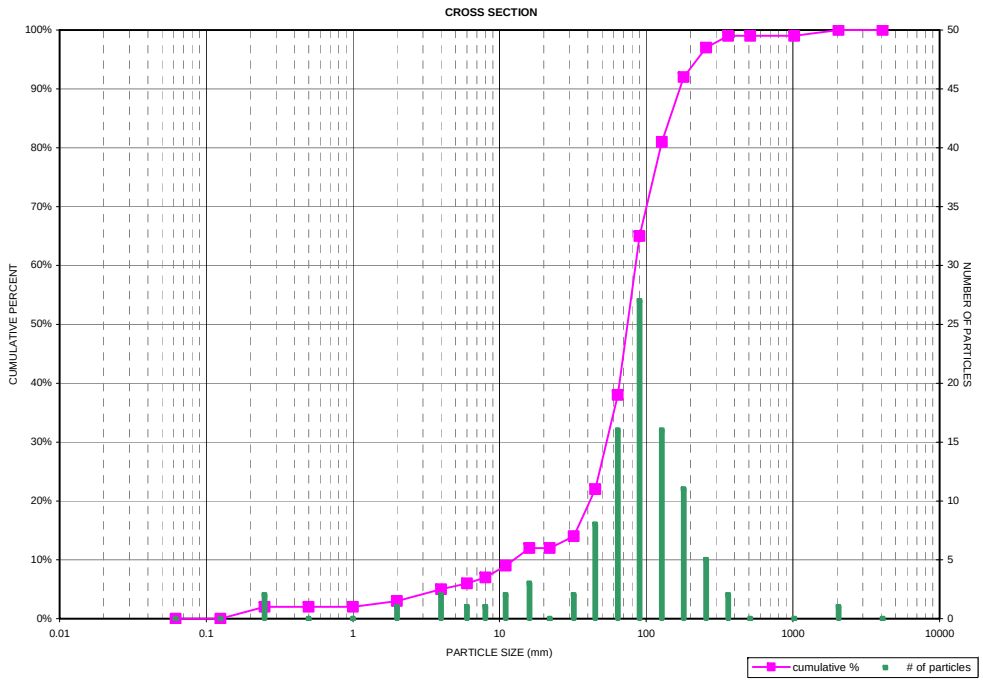


size percent less than (mm)						particle size distribution		
D16	D35	D50	D65	D84	D95	gradation	geo mean	std dev
19.995	30.70	41.5	61	88	124	2.1	42.0	2.1

Pebble Count (Cross Section)

FOHIRU01

Material	Size Range (mm)		Particle Count	Cumulative Percent
silt/clay	0	0.062	0	0%
very fine sand	0.062	0.13	0	0%
fine sand	0.13	0.25	2	2%
medium sand	0.25	0.5	0	2%
coarse sand	0.5	1	0	2%
very coarse sand	1	2	1	3%
very fine gravel	2	4	2	5%
fine gravel	4	6	1	6%
fine gravel	6	8	1	7%
medium gravel	8	11	2	9%
medium gravel	11	16	3	12%
coarse gravel	16	22	0	12%
coarse gravel	22	32	2	14%
very coarse gravel	32	45	8	22%
very coarse gravel	45	64	16	38%
small cobble	64	90	27	65%
medium cobble	90	128	16	81%
large cobble	128	180	11	92%
very large cobble	180	256	5	97%
small boulder	256	362	2	99%
small boulder	362	512	0	99%
medium boulder	512	1024	0	99%
large - very large boulder	1024	2048	1	100%
bedrock	2048	4096	0	100%
Total Particle Count:			100	

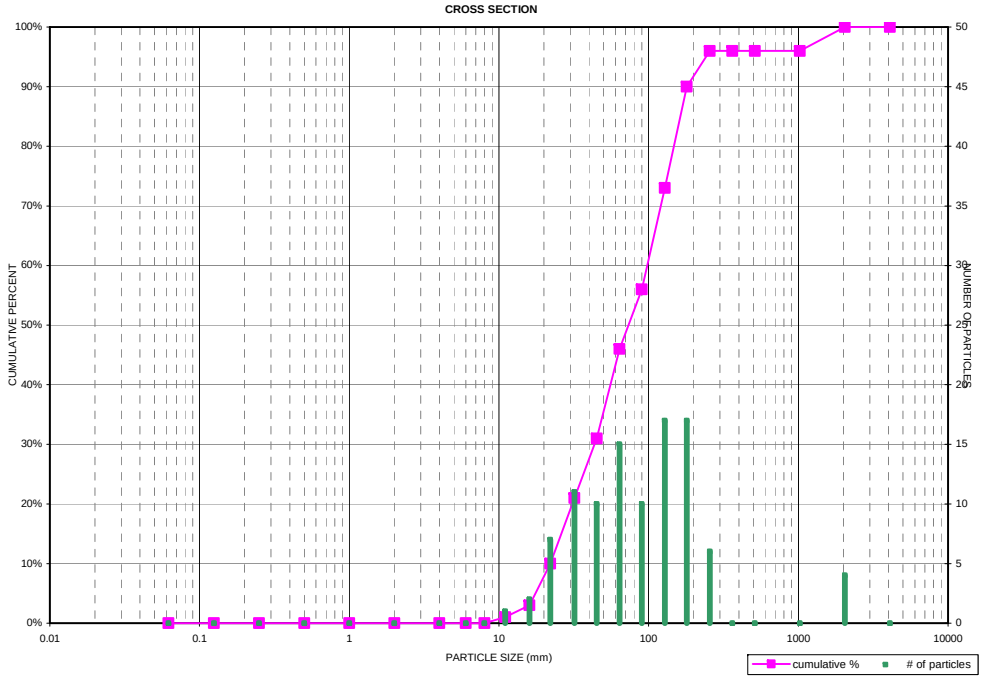


size percent less than (mm)						particle size distribution		
D16	D35	D50	D65	D84	D95	gradation	geo mean	std dev
34.847	59.91	74.5	90	140	222	2.0	70.0	2.0

Pebble Count (Cross Section)

PARACR01

Material	Size Range (mm)		Particle Count	Cumulative Percent
silt/clay	0	0.062	0	0%
very fine sand	0.062	0.13	0	0%
fine sand	0.13	0.25	0	0%
medium sand	0.25	0.5	0	0%
coarse sand	0.5	1	0	0%
very coarse sand	1	2	0	0%
very fine gravel	2	4	0	0%
fine gravel	4	6	0	0%
fine gravel	6	8	0	0%
medium gravel	8	11	1	1%
medium gravel	11	16	2	3%
coarse gravel	16	22	7	10%
coarse gravel	22	32	11	21%
very coarse gravel	32	45	10	31%
very coarse gravel	45	64	15	46%
small cobble	64	90	10	56%
medium cobble	90	128	17	73%
large cobble	128	180	17	90%
very large cobble	180	256	6	96%
small boulder	256	362	0	96%
small boulder	362	512	0	96%
medium boulder	512	1024	0	96%
large - very large boulder	1024	2048	4	100%
bedrock	2048	4096	0	100%
Total Particle Count:			100	

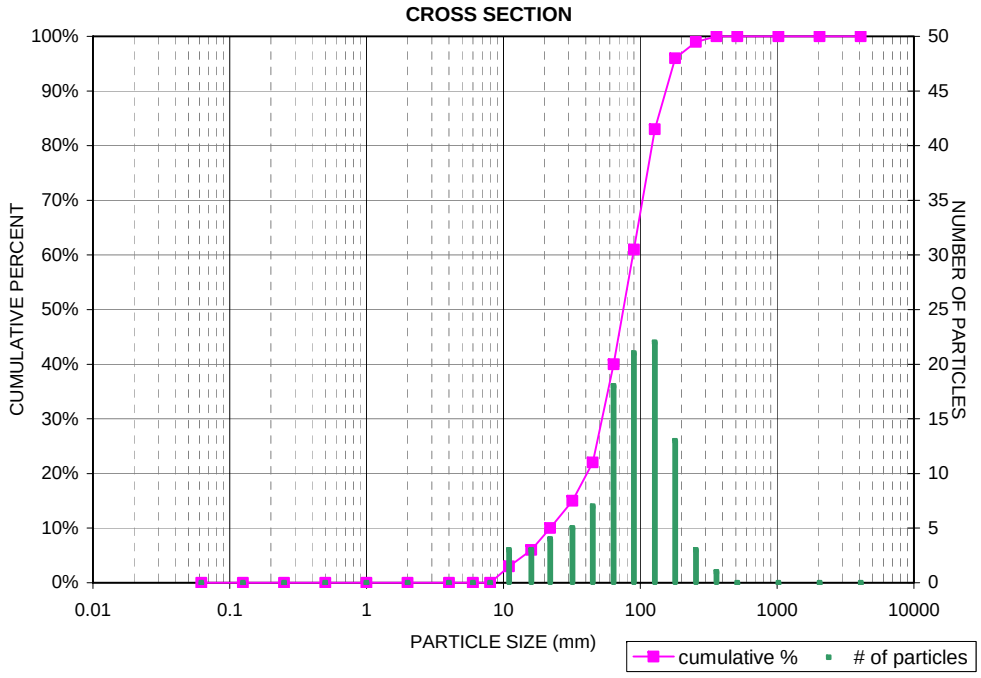


size percent less than (mm)						particle size distribution		
D16	D35	D50	D65	D84	D95	gradation	geo mean	std dev
26.989	49.43	73.4	108	160	241	2.4	65.6	2.4

Pebble Count (Cross Section)

FOHIRU04

Material	Size Range (mm)		Particle Count	Cumulative Percent
silt/clay	0	0.062	0	0%
very fine sand	0.062	0.13	0	0%
fine sand	0.13	0.25	0	0%
medium sand	0.25	0.5	0	0%
coarse sand	0.5	1	0	0%
very coarse sand	1	2	0	0%
very fine gravel	2	4	0	0%
fine gravel	4	6	0	0%
fine gravel	6	8	0	0%
medium gravel	8	11	3	3%
medium gravel	11	16	3	6%
coarse gravel	16	22	4	10%
coarse gravel	22	32	5	15%
very coarse gravel	32	45	7	22%
very coarse gravel	45	64	18	40%
small cobble	64	90	21	61%
medium cobble	90	128	22	83%
large cobble	128	180	13	96%
very large cobble	180	256	3	99%
small boulder	256	362	1	100%
small boulder	362	512	0	100%
medium boulder	512	1024	0	100%
large - very large boulder	1024	2048	0	100%
bedrock	2048	4096	0	100%
Total Particle Count:			100	

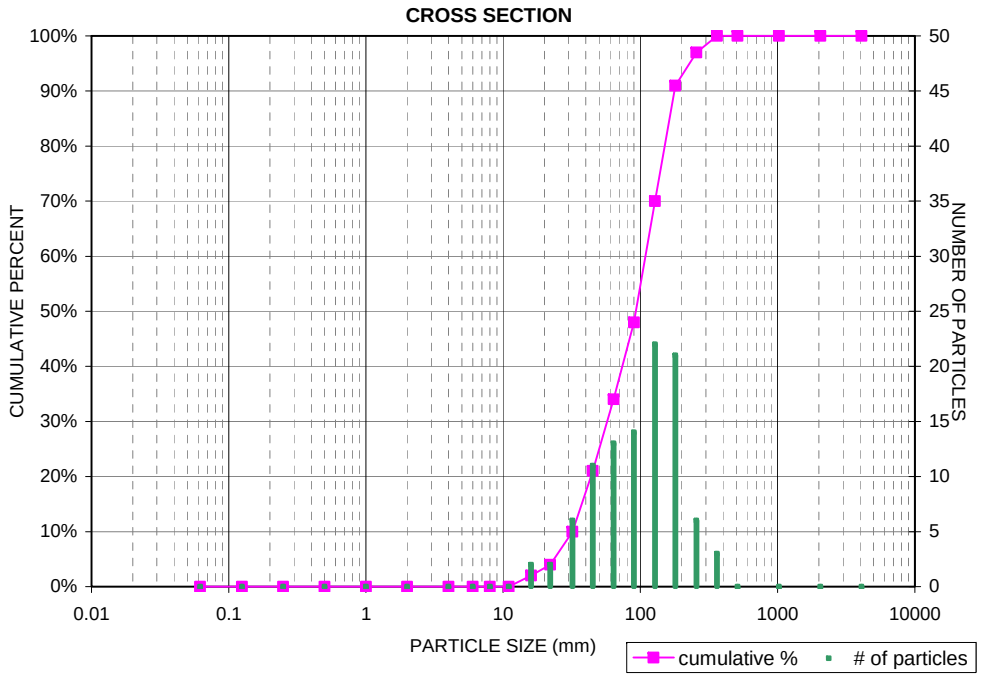


size percent less than (mm)						particle size distribution		
D16	D35	D50	D65	D84	D95	gradation	geo mean	std dev
33.597	58.03	75.3	96	131	175	2.0	66.4	2.0

Pebble Count (Cross Section)

FOHIRU09

Material	Size Range (mm)		Particle Count	Cumulative Percent
silt/clay	0	0.062	0	0%
very fine sand	0.062	0.13	0	0%
fine sand	0.13	0.25	0	0%
medium sand	0.25	0.5	0	0%
coarse sand	0.5	1	0	0%
very coarse sand	1	2	0	0%
very fine gravel	2	4	0	0%
fine gravel	4	6	0	0%
fine gravel	6	8	0	0%
medium gravel	8	11	0	0%
medium gravel	11	16	2	2%
coarse gravel	16	22	2	4%
coarse gravel	22	32	6	10%
very coarse gravel	32	45	11	21%
very coarse gravel	45	64	13	34%
small cobble	64	90	14	48%
medium cobble	90	128	22	70%
large cobble	128	180	21	91%
very large cobble	180	256	6	97%
small boulder	256	362	3	100%
small boulder	362	512	0	100%
medium boulder	512	1024	0	100%
large - very large boulder	1024	2048	0	100%
bedrock	2048	4096	0	100%
Total Particle Count:			100	

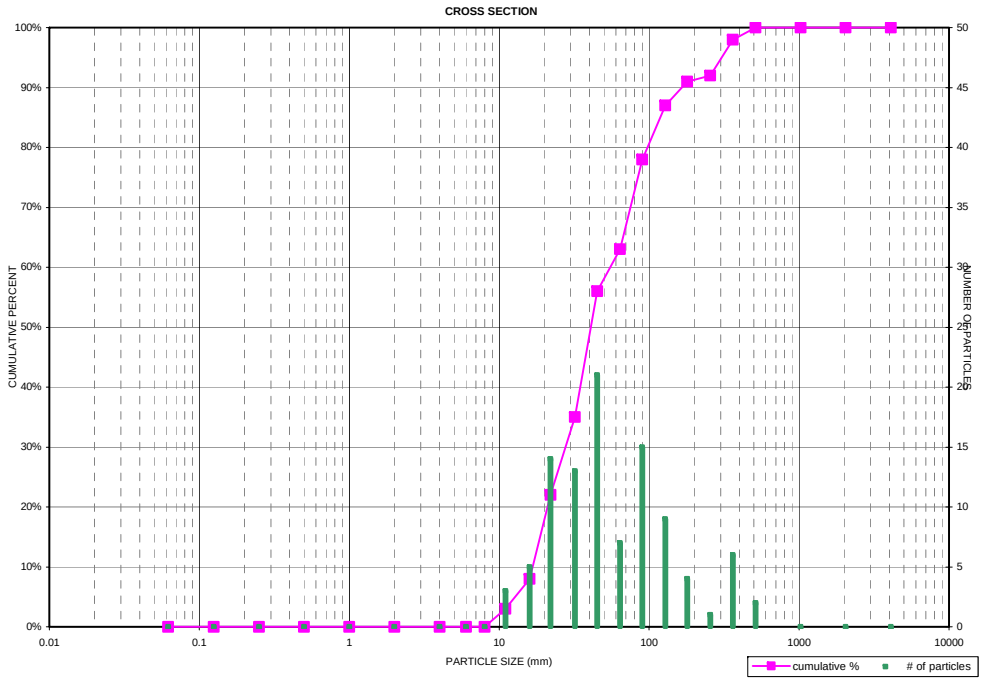


size percent less than (mm)						particle size distribution		
D16	D35	D50	D65	D84	D95	gradation	geo mean	std dev
38.540	65.58	92.9	118	161	228	2.1	78.7	2.0

Pebble Count (Cross Section)

SWIFCR07

Material	Size Range (mm)		Particle Count	Cumulative Percent
silt/clay	0	0.062	0	0%
very fine sand	0.062	0.13	0	0%
fine sand	0.13	0.25	0	0%
medium sand	0.25	0.5	0	0%
coarse sand	0.5	1	0	0%
very coarse sand	1	2	0	0%
very fine gravel	2	4	0	0%
fine gravel	4	6	0	0%
fine gravel	6	8	0	0%
medium gravel	8	11	3	3%
medium gravel	11	16	5	8%
coarse gravel	16	22	14	22%
coarse gravel	22	32	13	35%
very coarse gravel	32	45	21	56%
very coarse gravel	45	64	7	63%
small cobble	64	90	15	78%
medium cobble	90	128	9	87%
large cobble	128	180	4	91%
very large cobble	180	256	1	92%
small boulder	256	362	6	98%
small boulder	362	512	2	100%
medium boulder	512	1024	0	100%
large - very large boulder	1024	2048	0	100%
bedrock	2048	4096	0	100%
Total Particle Count:			100	

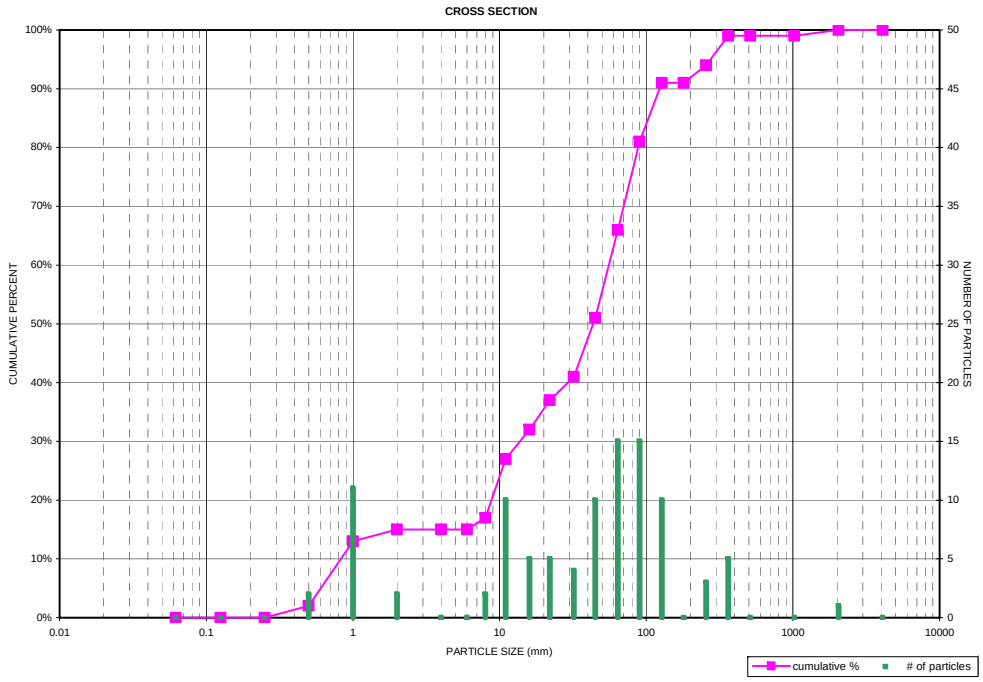


size percent less than (mm)						particle size distribution		
D16	D35	D50	D65	D84	D95	gradation	geo mean	std dev
19.193	32.00	40.8	67	114	304	2.5	46.7	2.4

Pebble Count (Cross Section)

SWIFCR05

Material	Size Range (mm)		Particle Count	Cumulative Percent
silt/clay	0	0.062	0	0%
very fine sand	0.062	0.13	0	0%
fine sand	0.13	0.25	0	0%
medium sand	0.25	0.5	2	2%
coarse sand	0.5	1	11	13%
very coarse sand	1	2	2	15%
very fine gravel	2	4	0	15%
fine gravel	4	6	0	15%
fine gravel	6	8	2	17%
medium gravel	8	11	10	27%
medium gravel	11	16	5	32%
coarse gravel	16	22	5	37%
coarse gravel	22	32	4	41%
very coarse gravel	32	45	10	51%
very coarse gravel	45	64	15	66%
small cobble	64	90	15	81%
medium cobble	90	128	10	91%
large cobble	128	180	0	91%
very large cobble	180	256	3	94%
small boulder	256	362	5	99%
small boulder	362	512	0	99%
medium boulder	512	1024	0	99%
large - very large boulder	1024	2048	1	100%
bedrock	2048	4096	0	100%
Total Particle Count:			100	

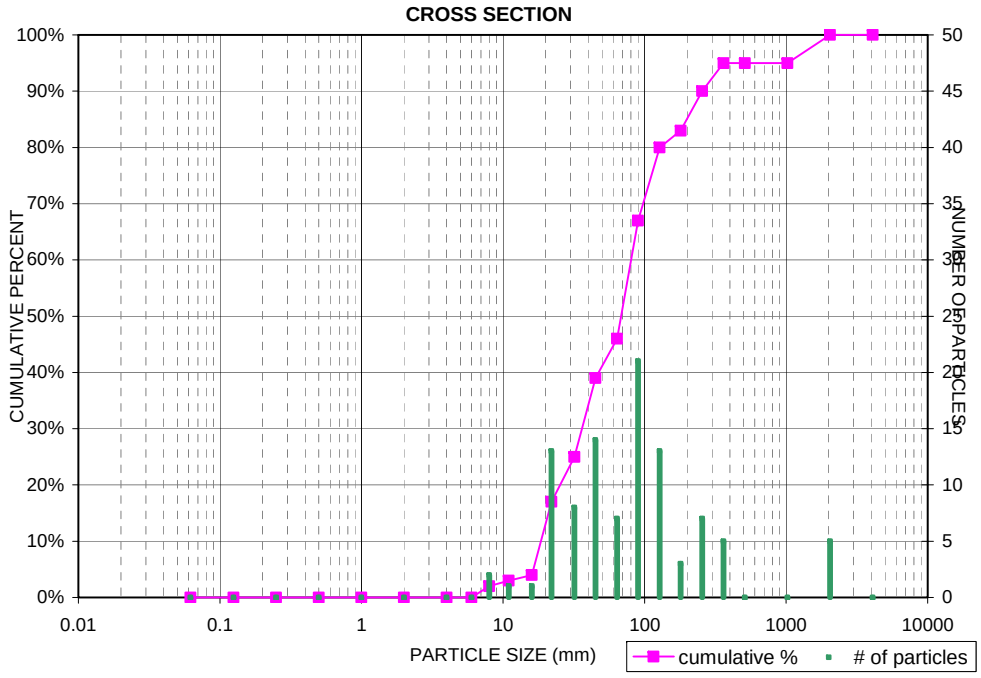


size percent less than (mm)						particle size distribution		
D16	D35	D50	D65	D84	D95	gradation	geo mean	std dev
6.928	19.37	43.5	63	100	274	4.3	26.3	3.8

Pebble Count (Cross Section)

SWIFCR03

Material	Size Range (mm)		Particle Count	Cumulative Percent
silt/clay	0	0.062	0	0%
very fine sand	0.062	0.13	0	0%
fine sand	0.13	0.25	0	0%
medium sand	0.25	0.5	0	0%
coarse sand	0.5	1	0	0%
very coarse sand	1	2	0	0%
very fine gravel	2	4	0	0%
fine gravel	4	6	0	0%
fine gravel	6	8	2	2%
medium gravel	8	11	1	3%
medium gravel	11	16	1	4%
coarse gravel	16	22	13	17%
coarse gravel	22	32	8	25%
very coarse gravel	32	45	14	39%
very coarse gravel	45	64	7	46%
small cobble	64	90	21	67%
medium cobble	90	128	13	80%
large cobble	128	180	3	83%
very large cobble	180	256	7	90%
small boulder	256	362	5	95%
small boulder	362	512	0	95%
medium boulder	512	1024	0	95%
large - very large boulder	1024	2048	5	100%
bedrock	2048	4096	0	100%
Total Particle Count:			100	



size percent less than (mm)						particle size distribution		
D16	D35	D50	D65	D84	D95	gradation	geo mean	std dev
21.468	40.82	68.3	87	189	362	3.0	63.7	3.0