

Southern Inner Piedmont (45a) - Reference Data



GADNR/EPD MACROINVERTEBRATE REFERENCE DATA
PIEDMONT ECOREGION (45)
Southern Inner Piedmont - 45a Data

(45) PIEDMONT ECOREGION

45b Southern Inner Piedmont - reference streams

Waterbody Name	Catchment Area (m2)	Basin Name	Major Basin Name	Collection Date
<i>Reference Site 1</i>	39215110.19	Broad	Savannah	10/28/2000
<i>Reference Site 2</i>	30417034.98	Tugaloo	Savannah	10/22/2000
<i>Reference Site 3</i>	3370368.367	Middle Chattahoochee-Lake Harding	Apalachicola	10/28/2000
<i>Reference Site 4</i>	1856170.377	Middle Chattahoochee-Lake Harding	Apalachicola	10/28/2000
<i>Reference Site 5</i>	68643636.73	Middle Chattahoochee-Lake Harding	Apalachicola	10/28/2000

Southern Inner Piedmont (45a) - Reference Data



**GADNR/EPD MACROINVERTEBRATE REFERENCE DATA
PIEDMONT (45)
Southern Inner Piedmont - 45a Data**

45a - Southern Inner Piedmont - reference streams metric scores						
Waterbody Name	PlecoTax	plecotaxstd	TrichPct	stdtrichpct	CrCh2ChiPct	stdcrch2chi
<i>Reference Site 1</i>	4	71.43	14.85	46.73	0.00	100.00
<i>Reference Site 2</i>	6	100.00	18.78	59.12	0.00	100.00
<i>Reference Site 3</i>	2	35.71	4.15	13.05	0.00	100.00
<i>Reference Site 4</i>	3	53.57	13.82	43.52	0.00	100.00
<i>Reference Site 5</i>	1	17.86	35.02	100.00	0.00	100.00
DE	0.50		0.75		1.00	

45a - Southern Inner Piedmont - reference streams metric scores							
Waterbody Name	TolerTax	stdtoltax	ScrapPct	stdscrapct	stdcIngrtax	stdcIngrtax	Final Index
<i>Reference Site 1</i>	11	75.00	15.28	38.31	100	100.00	72
<i>Reference Site 2</i>	7	100.00	3.05	7.63	39	70.71	73
<i>Reference Site 3</i>	7	100.00	41.94	100.00	505	75.76	71
<i>Reference Site 4</i>	8	93.75	31.80	79.69	402	95.96	78
<i>Reference Site 5</i>	7	100.00	11.81	29.61	150	45.45	65
DE	1.00		0.75		0.88		1

45a - Southern Inner Piedmont - reference streams rankings				
Waterbody Name	Index Score	Numeric Ranking	Narrative Description	Stream Rating
<i>Reference Site 1</i>	72	1	Good	A
<i>Reference Site 2</i>	73	1	Good	A
<i>Reference Site 3</i>	71	1	Good	A
<i>Reference Site 4</i>	78	1	Very Good	A
<i>Reference Site 5</i>	65	2	Fair	B



**GADNR/EPD MACROINVERTEBRATE REFERENCE DATA
PIEDMONT (45)
Southern Inner Piedmont - 45a Data**

% Land use per Catchment Area for Reference Sites: 45a - Southern Inner Piedmont						
Stream Name and Sample Identification Number						
		<i>Reference Site 1</i>	<i>Reference Site 2</i>	<i>Reference Site 3</i>	<i>Reference Site 4</i>	<i>Reference Site 5</i>
Land use	Year					
% Natural	1998	62.93	73.48	89.67	89.87	40.27
% Urban	1998	7.24	8.84	6.75	4.87	3.06
% Agriculture Total	1998	29.83	17.68	3.58	5.26	5.53
% Barren	1998	11.74	11.08	6.96	6.54	6.99
% Natural	1994			89.67	93.66	89.20
% Urban	1994			6.75	0.10	0.05
% Agriculture Total	1994			3.58	6.24	10.36
% Barren	1994			6.96	0.00	0.39

Southern Inner Piedmont (45a) - Reference Data



**GADNR/EPD MACROINVERTEBRATE REFERENCE DATA
PIEDMONT (45)
Southern Inner Piedmont - 45a Data**

Water Chemistry Values for Reference Sites: 45a - Southern Inner Piedmont						
		Stream Name and Sample Identification Number				
		<i>Reference Site 1</i>	<i>Reference Site 2</i>	<i>Reference Site 3</i>	<i>Reference Site 4</i>	<i>Reference Site 5</i>
Parameters	Chemical Units					
Air Temperature	°C	10	22	22.22	22	25
Water Temperature	°C	13.72	18.39	15.47	12.93	15.52
Specific Conductivity	mS/cm	0.0254	0.034	0.0348	0.0304	0.0264
Dissolved Oxygen	%	NA	NA	90	96.8	NA
Dissolved Oxygen	mg/l	9.03	8.43	8.95	10.02	8.93
pH	SU	7.38	6.78	6.75	7.15	7.15
Turbidity	NTU	7.8	3.6	0.1	0.7	0
Depth	m	0.2	0.1	0.2	0.2	0.1
Ammonia	mg/l as N	0.032	0.069	0.037	0.049	Not Detectable
Nitrate-Nitrite	mg/l as N	0.053	Not Detectable	Not Detectable	Not Detectable	0.034
Total Phosphorus	mg/l as P	Not Detectable	Not Detectable	Not Detectable	Not Detectable	Not Detectable
Alkalinity	mg/l as CaCO ₃	8.25	8.68	15.04	12.80	7.75
Hardness	mg/l as CaCO ₃	12.76	11.20	13.46	14.83	9.89
Copper	mg/l	Not Detectable	Not Detectable	Not Detectable	Not Detectable	Not Detectable
Iron	mg/l	Not Detectable	Not Detectable	Not Detectable	Not Detectable	Not Detectable
Manganese	mg/l	Not Detectable	Not Detectable	Not Detectable	Not Detectable	Not Detectable
Zinc	mg/l	Not Detectable	Not Detectable	Not Detectable	Not Detectable	Not Detectable

Southern Inner Piedmont (45a) - Reference Data



GADNR/EPD MACROINVERTEBRATE REFERENCE DATA
PIEDMONT (45)
Southern Inner Piedmont - 45a Data

Pebble Count % for Reference Sites: 45a - Southern Inner Piedmont					
	Stream Name and Sample Identification Number				
	<i>Reference Site 1</i>	<i>Reference Site 2</i>	<i>Reference Site 3</i>	<i>Reference Site 4</i>	<i>Reference Site 5</i>
Particle					
Silt/Clay	0.96	1.00	0.00	0.00	3.96
Sand	11.54	13.00	44.66	2.83	23.76
Gravel	78.85	38.00	4.85	35.85	59.41
Cobble	7.69	44.00	33.98	49.06	8.91
Boulder	0.96	3.00	5.83	12.26	0.00
Bedrock	0.00	1.00	10.68	0.00	3.96

Southern Inner Piedmont (45a) - Reference Data



**GADNR/EPD MACROINVERTEBRATE REFERENCE DATA
PIEDMONT (45)
Southern Inner Piedmont - 45a Data**

Habitat Values for Reference Sites: 45a - Southern Inner Piedmont					
Habitat Parameters	Stream Name and Sample Identification Number				
	Reference Site 1	Reference Site 2	Reference Site 3	Reference Site 4	Reference Site 5
Epifaunal Substrate/Available Cover	17	15	16	16	16
Embeddedness	17	17	15	15	13
Velocity/Depth Regime	15	16	19	16	15
Sediment Deposition	15	18	14	14	14
Channel Flow Status	17	14	16	16	15
Channel Alteration	19	19	15	15	17
Frequency of Riffles (or bends)	19	18	16	17	10
Bank Stability (Left Bank)	9	8	8	5	7
Bank Stability (Right Bank)	9	8	9	9	7
Vegetative Protection (Left Bank)	9	9	9	9	9
Vegetative Protection (Right Bank)	9	9	9	6	9
Riparian Vegetative Zone Width (Left Bank)	9	9	9	9	9
Riparian Vegetative Zone Width (Right Bank)	9	9	9	8	7
Total Habitat Score	173	169	164	155	148

Southern Inner Piedmont (45a) - Reference Data



**GADNR/EPD MACROINVERTEBRATE REFERENCE DATA
PIEDMONT (45)
Southern Inner Piedmont - 45a Data**

**45a - Southern Inner Piedmont - reference streams
Reference Site 1**

Order	Family	Final ID	Individuals	TCR	Stage
		Oligochaeta	7		X
Coleoptera	Elmidae	<i>Ancyronyx variegatus</i>	1		L
		<i>Microcylloepus pusillus</i>	1		L
		<i>Promoresia elegans</i>	1		L
		<i>Stenelmis sp.</i>	2		L
	Gyrinidae	<i>Dineutus sp.</i>	1		A
Diptera	Ceratopogonidae	<i>Bezzia complex</i>	2		X
	Chironomidae	<i>Ablabesmyia annulata</i>	10		X
		<i>Ablabesmyia mallochi</i>	2		X
		<i>Ablabesmyia rhamphe group</i>	1		X
		<i>Apedilum sp.</i>	4		X
		<i>Brillia flavifrons</i>	1	TCR-2	X
		<i>Clinotanypus sp.</i>	1		X
		<i>Cryptochironomus</i>	1		X
		<i>Endotribelos hesperium</i>	1		X
		<i>Hydrobaenus sp.</i>	1	TCR-2	X
		<i>Microtendipes sp.</i>	1		X
		Orthoclaadiinae	1		X
		<i>Parakiefferiella A</i>	1		X
		<i>Paratanytarsus sp.</i>	2		X
		<i>Phaenopsectra sp.</i>	15		X
		<i>Phaenopsectra obediens group</i>	66		X
		<i>Polypedilum aviceps</i>	2	1-TCR-2 for species	X
		<i>Polypedilum halterale group</i>	1		X
<i>Psectrocladius elatus</i>	1		X		

* continued on next page

Southern Inner Piedmont (45a) - Reference Data

45a - Southern Inner Piedmont - reference streams
Reference Site 1

Order	Family	Final ID	Individuals	TCR	Stage
Diptera	Chironomidae	<i>Rheotanytarsus sp.</i>	4		X
		<i>Robackia demeijerei</i>	1		X
		<i>Stenochironomus sp.</i>	6	1 with TCR-2	X
		<i>Stictochironomus sp.</i>	1		X
		Tanypodinae	1		X
		<i>Tribelos sp.</i>	1		X
		<i>Tribelos jucundus</i>	5		X
	Simuliidae	<i>Simulium sp.</i>	1		X
Ephemeroptera	Baetiscidae	<i>Baetisca carolina</i>	1		X
		<i>Baetisca gibbera</i>	1		X
	Heptageniidae	<i>Stenonema sp.</i>	17	1 with TCR-2	X
	Isonychiidae	<i>Isonychia sp.</i>	1		X
	Potamanthidae	<i>Potamanthus distinctus</i>	5		X
Megaloptera	Corydalidae	<i>Corydalis cornutus</i>	1		X
		<i>Nigronia serricornis</i>	2		X
	Sialidae	<i>Sialis sp.</i>	1		X
Odonata	Aeshnidae	<i>Aeshna umbrosa</i>	1		X
		Aeshnidae	1		X
	Coenagrionidae	Coenagrionidae	2		X
	Gomphidae	Gomphidae	1		X
		<i>Gomphus borealis</i>	1	TCR-2	X
		<i>Lanthus vernalis</i>	1		X
Plecoptera	Perlidae	<i>Perlesta placida</i>	3		X
		Perlidae	1		X
	Perlodidae	<i>Yugus bulbosus</i>	1	TCR-2	X
	Taeniopterygidae	<i>Strophopteryx sp.</i>	5		X

* continued on next page

Southern Inner Piedmont (45a) - Reference Data

45a - Southern Inner Piedmont - reference streams
Reference Site 1

Order	Family	Final ID	Individuals	TCR	Stage
Trichoptera	Brachycentridae	Brachycentridae	2		X
	Calamoceratidae	<i>Anisocentropus pyraloides</i>	1		X
	Hydropsychidae	Cheumatopsyche sp.	13		X
		<i>Hydropsyche sp.</i>	1		X
		Hydropsychidae	8		X
		<i>Potamyia flava</i>	5		X
	Leptoceridae	<i>Nectopsyche sp.</i>	2		X
		<i>Setodes sp.</i>	1		X
	Polycentropodidae	<i>Polycentropus sp.</i>	1		X
Veneroida	Pisidiidae	<i>Sphaerium sp.</i>	1		X

Southern Inner Piedmont (45a) - Reference Data



**GADNR/EPD MACROINVERTEBRATE REFERENCE DATA
PIEDMONT (45)
Southern Inner Piedmont - 45a Data**

45a - Southern Inner Piedmont - reference streams
Reference Site 2

Order	Family	Final ID	Individuals	TCR	Stage	
		Oligochaeta	2		X	
Diptera	Chironomidae	<i>Ablabesmyia sp.</i>	1		X	
		<i>Ablabesmyia mallochi</i>	1		X	
		<i>Apedilum sp.</i>	2		X	
		Chironomidae	3		X	
		<i>Corynoneura B</i>	4		X	
		<i>Larsia sp.</i>	2		X	
		Orthoclaadiinae	7		X	
		<i>Parakiefferiella sp.</i>	1		X	
		<i>Parametriocnemus sp.</i>	2		X	
		<i>Paratanytarsus sp.</i>	3		X	
		<i>Phaenopsectra sp.</i>	1		X	
		<i>Polypedilum aviceps</i>	3		X	
		<i>Polypedilum fallax group</i>	1		X	
		<i>Polypedilum flavum</i>	6		X	
		<i>Rheocricotopus sp.</i>	1		X	
		<i>Rheotanytarsus sp.</i>	1		X	
		<i>Thienemanniella sp.</i>	14		X	
		<i>Thienemanniella xena</i>	6		X	
		Simuliidae	<i>Simulium sp.</i>	4		X
		Tipulidae	<i>Pseudolimnophila sp.</i>	1		X
	<i>Tipula sp.</i>		1		X	
Ephemeroptera	Ephemeridae	<i>Hexagenia sp.</i>	1		X	
	Heptageniidae	Heptageniidae	1		X	
			<i>Stenonema sp.</i>	4		X

* continued on next page

Southern Inner Piedmont (45a) - Reference Data

45a - Southern Inner Piedmont - reference streams
Reference Site 2

Order	Family	Final ID	Individuals	TCR	Stage
Ephemeroptera	Isonychiidae	<i>Isonychia sp.</i>	5		X
Megaloptera	Corydalidae	<i>Corydalis cornutus</i>	1		X
		<i>Nigronia serricornis</i>	1		X
Neotaenioglossa	Pleuroceridae	<i>Pleurocera sp.</i>	1		X
Plecoptera	Perlidae	<i>Acroneuria abnormis</i>	17		X
		<i>Acroneuria internata</i>	3		X
		Perlidae	2		X
	Perlodidae	<i>Helopicus subvarians</i>	1		X
	Taeniopterygidae	<i>Strophopteryx fasciata</i>	1		X
		<i>Strophopteryx limata</i>	55		X
Trichoptera	Hydropsychidae	<i>Cheumatopsyche sp.</i>	23		X
		<i>Hydropsyche sp.</i>	2		X
	Philopotamidae	<i>Chimarra sp.</i>	12		X



**GADNR/EPD MACROINVERTEBRATE REFERENCE DATA
PIEDMONT (45)
Southern Inner Piedmont - 45a Data**

**45a - Southern Inner Piedmont - reference streams
Reference Site 3**

Order	Family	Final ID	Individuals	TCR	Stage		
Amphipoda	Talitridae	<i>Hyalella azteca</i>	10		X		
Coleoptera	Curculionidae	Curculionidae	1		A		
	Dryopidae	<i>Helichus sp.</i>	1		A		
	Elmidae		<i>Ancyronyx variegatus</i>	8		A	
				1		L	
			<i>Dubiraphia sp.</i>	2		A	
				3		L	
			<i>Dubiraphia bivittata</i>	9		A	
			<i>Dubiraphia quadrinotata</i>	4		A	
			Elmidae		2		L
			<i>Macronychus glabratus</i>	1		A	
				2		L	
			<i>Optioservus sp.</i>	4	TCR-1	A	
				1	TCR-2	L	
			<i>Promoresia tardella</i>	1		A	
			<i>Stenelmis sp.</i>	2		A	
	65		L				
Gyrinidae	<i>Gyrinus sp.</i>	2		A			
Diptera	Ceratopogonidae	<i>Bezzia complex</i>	2		X		
	Chironomidae	<i>Apedilum sp.</i>	6		X		
		Chironomidae	1		X		
		<i>Nanocladius sp.</i>	1		X		
		<i>Paratanytarsus sp.</i>	1		X		

* continued on next page

Southern Inner Piedmont (45a) - Reference Data

45a - Southern Inner Piedmont - reference streams
Reference Site 3

Order	Family	Final ID	Individuals	TCR	Stage
Diptera	Chironomidae	<i>Phaenopsectra sp.</i>	1		X
		<i>Polypedilum A</i>	2		X
		<i>Polypedilum fallax group</i>	1		X
		<i>Polypedilum halterale group</i>	1		X
		<i>Polypedilum scalaenum group</i>	2		X
		<i>Pseudochironomus sp.</i>	1	TCR-2	X
		<i>Stelechomyia perpulchra</i>	1		X
		<i>Thienemannimyia group</i>	1		X
		<i>Tribelos jucundus</i>	2		X
	Simuliidae	<i>Simulium sp.</i>	1		X
	Tipulidae	Tipulidae	1		X
Ephemeroptera	Heptageniidae	<i>Stenonema sp.</i>	17		X
Heteroptera	Veliidae	<i>Microvelia sp.</i>	1		X
Isopoda	Asellidae	Asellidae	1		X
Odonata	Coenagrionidae	Coenagrionidae	2		X
Plecoptera	Perlidae	<i>Acroneuria internata</i>	2		X
	Taeniopterygidae	<i>Strophopteryx limata</i>	41		X
Trichoptera	Calamoceratidae	<i>Anisocentropus pyraloides</i>	1		X
	Hydropsychidae	<i>Cheumatopsyche sp.</i>	6		X
	Philopotamidae	<i>Chimarra sp.</i>	2		X



**GADNR/EPD MACROINVERTEBRATE REFERENCE DATA
PIEDMONT (45)
Southern Inner Piedmont - 45a Data**

**45a - Southern Inner Piedmont - reference streams
Reference Site 4**

Order	Family	Final ID	Individuals	TCR	Stage
		Oligochaeta	6		X
Coleoptera	Dryopidae	<i>Helichus sp.</i>	1		A
	Elmidae	<i>Ancyronyx variegatus</i>	1		A
		<i>Dubiraphia sp.</i>	6		L
		<i>Macronychus glabratus</i>	1		A
		<i>Optioservus sp.</i>	21		L
		<i>Promoresia sp.</i>	1		L
		<i>Promoresia tardella</i>	1		A
		<i>Stenelmis sp.</i>	2		L
	Gyrinidae	<i>Dineutus sp.</i>	2		A
	Hydrophilidae	<i>Helophorus sp.</i>	1		A
Psephenidae	<i>Psephenus herricki</i>	8		L	
Decapoda	Cambaridae	<i>Cambarus bartonii</i>	1		X
Diptera	Ceratopogonidae	<i>Bezzia complex</i>	3		X
	Chironomidae	<i>Ablabesmyia janta</i>	2	TCR-2	X
		<i>Apedilum sp.</i>	32		X
		<i>Brillia sp.</i>	1		X
		<i>Cardiocladius sp.</i>	2		X
		<i>Chaetocladius sp.</i>	1		X
		<i>Labrundinia sp.</i>	2		X
		<i>Nanocladius sp.</i>	1		X
		Orthoclaadiinae	1		X
		<i>Parametriocnemus sp.</i>	1		X
		<i>Phaenopsectra sp.</i>	28		X

* continued on next page

Southern Inner Piedmont (45a) - Reference Data

45a - Southern Inner Piedmont - reference streams
Reference Site 4

Order	Family	Final ID	Individuals	TCR	Stage	
Diptera	Chironomidae	<i>Polypedilum sp.</i>	2		X	
		<i>Polypedilum fallax group</i>	1	TCR-2	X	
		<i>Polypedilum flavum</i>	8		X	
		<i>Polypedilum illinoense group</i>	1		X	
		<i>Psectrocladius sp.</i>	1		X	
		<i>Pseudochironomus sp.</i>	1		X	
		<i>Rheotanytarsus pellucidus</i>	1		X	
		<i>Stelechomyia perpulchra</i>	1		X	
		<i>Telopelopia okoboji</i>	2		X	
	<i>Thienemannimyia group</i>	1		X		
	Tipulidae	<i>Pseudolimnophila sp.</i>	3	TCR-2	X	
<i>Tipula sp.</i>		1		X		
Ephemeroptera	Ephemeridae	<i>Hexagenia limbata</i>	1		X	
	Heptageniidae	<i>Stenonema sp.</i>	8		X	
Megaloptera	Corydalidae	<i>Nigronia serricornis</i>	1		X	
Odonata	Aeshnidae	<i>Boyeria vinosa</i>	2		X	
	Cordulegastridae	<i>Epitheca sp.</i>	4		X	
	Gomphidae	<i>Gomphus cavillaris</i>	1	Sp. TCR-2	X	
Plecoptera	Perlidae	<i>Acroneuria sp.</i>	7		X	
	Perlidae	<i>Acroneuria internata</i>	1		X	
	Taeniopterygidae	<i>Strophopteryx limata</i>	13		X	
Trichoptera	Calamoceratidae	<i>Anisocentropus pyraloides</i>	2		X	
	Hydropsychidae	<i>Cheumatopsyche sp.</i>	18		X	
		Hydropsychidae		1		X
		<i>Potamyia flava</i>	4		X	
	Leptoceridae	<i>Nectopsyche sp.</i>	1	TCR-2	X	
Philopotamidae	<i>Chimarra sp.</i>	4		X		

Southern Inner Piedmont (45a) - Reference Data



**GADNR/EPD MACROINVERTEBRATE REFERENCE DATA
PIEDMONT (45)
Southern Inner Piedmont - 45a Data**

**45a - Southern Inner Piedmont - reference streams
Reference Site 5**

Order	Family	Final ID	Individuals	TCR	Stage
Basommatophora	Physidae	<i>Physella sp.</i>	1		X
Coleoptera	Elmidae	<i>Ancyronyx variegatus</i>	42		L
		<i>Dubiraphia sp.</i>	2		L
		<i>Macronychus glabratus</i>	3		A
		<i>Stenelmis sp.</i>	7		L
Decapoda	Cambaridae	<i>Procambarus</i>	3		X
Diptera	Ceratopogonidae	<i>Bezzia complex</i>	1		X
	Chironomidae	<i>Ablabesmyia sp.</i>	2		X
		<i>Ablabesmyia annulata</i>	1		X
		Chironomidae	2		X
		<i>Clinotanytus sp.</i>	2		X
		<i>Hudsonimyia sp.</i>	1		X
		<i>Parametriocnemus sp.</i>	1		X
		<i>Rheocricotopus sp.</i>	1		X
		<i>Stenochironomus sp.</i>	4		X
<i>Xylotopus par</i>	3		X		
Ephemeroptera	Baetidae	<i>Baetis sp.</i>	2		X
	Ephemeridae	<i>Hexagenia limbata</i>	20		X
	Heptageniidae	<i>Stenonema sp.</i>	20		X
	Isonychiidae	<i>Isonychia sp.</i>	6		X
Isopoda	Asellidae	<i>Lirceus fontinalis</i>	12		X
Megaloptera	Corydalidae	<i>Corydalus cornutus</i>	4		X

* continued on next page

Southern Inner Piedmont (45a) - Reference Data

**45a - Southern Inner Piedmont - reference streams
Reference Site 5**

Order	Family	Final ID	Individuals	TCR	Stage
Odonata	Calopterygidae	Hetaerina americana	1		X
	Coenagrionidae	Argia sp.	1		X
		Ischnura sp.	1		X
Plecoptera	Taeniopterygidae	Taeniopteryx sp.	1		X
Trichoptera	Hydropsychidae	Cheumatopsyche sp.	63		X
		Hydropsyche sp.	7		X
	Leptoceridae	Oecetis inconspicua	2		X
	Philopotamidae	Chimarra sp.	9		X
	Polycentropodidae	Neureclipsis sp.	2		X
Veneroida	Corbiculidae	Corbicula fluminea	10		X