Appendix A

Use Support Ratings for All Monitored Waterbodies in Pee Dee River Subbasin

HUC-03040201

IR Category	Integrated Reporting Categories for individual Assessment Unit/Use Support Category/Parameter Assessments. A single AU can have multiple assessments depending on data available and classified uses.
1	Supporting the assessed use no criteria exceeded (NCE) for a parameter of interest (POI) in a Use Support Category (USC).
1t	Supporting the assessed use no criteria exceeded (NCE) for a parameter of interest (POI) in a Use Support Category and there is an approved TMDL for the POI.
2	Supporting or not Impaired for all monitored uses
3a	Instream/monitoring data are inconclusive (DI)
3c	No Data available for assessment
3t	No Data available for assessment –AU is in a watershed with an approved TMDL
4a	Impaired for the assessed USC/POI; There is a standards violation (SV) and an approved TMDL for the POI.
4b	Impaired for the assessed USC/POI; Other program expected to address POI
4c	Impaired for the assessed USC/POI loss of use (LOU) and POI is a non pollutant
4cr	Impaired for LOU Recreation use and there is no data for TMDL (swimming advisories posted)
4ct	Impaired for the assessed USC/POI and the AU is in a watershed that is part of TMDL study area for the POI.
4s	Impaired Biological integrity with an identified Aquatic Life Standards Violation listed in Category 5
5	Impaired for the assessed USC/POI in need of TMDL for POI
5s	Impaired Biological integrity and stressor study does not indicate aquatic life standard violations.

Assessment Unit Number / Description / Classification	Name / DWQ Subbasin	Miles/Acres	Potential Stressors / Potential Sources	Use Support Category	Use Support Rating	Reason for Rating	Parameter of Interest	Collection Year	Listing Year	IR Category
13-42-1-3	**Bailey Creek**		**Habitat Degradation** Natural Conditions **Nutrient Impacts** General Agriculture/Pasture Impervious Surface	Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity FishCom	2006		1
From source to North Fork Jones Creek										
C	03-07-17	2.0 FW Miles								
13-39-8-7	**Beaver Dam Creek**			Aquatic Life	Not Rated	Data Inconclusive	Ecological/biological Integrity FishCom	2006		3a
From source to Rocky Fork Creek										
WS-III	03-07-16	5.2 FW Miles		Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2001		1
13-39-5	**Bones Fork Creek (Lake Bagget)**			Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2006		1
From source to Hitchcock Creek										
WS-III	03-07-16	12.2 FW Acres								
13-35	**Cartledge Creek**			Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity FishCom	2006		1
From source to Pee Dee River										
C	03-07-16	10.2 FW Miles								
13-39-6	**Chock Creek (Gibson Pond)**			Aquatic Life	Not Rated	Data Inconclusive	Ecological/biological Integrity FishCom	2006		3a
From source to Hitchcock Creek										
WS-III	03-07-16	4.7 FW Miles								
13-47-2	**Deadfall Creek**			Aquatic Life	Not Rated	Data Inconclusive	Ecological/biological Integrity FishCom	2006		3a
From source to N.C.-S.C. State Line										
C	03-07-17	8.5 FW Miles								
13-39-12-(7.5)	**Falling Creek**			Aquatic Life	Not Rated	Data Inconclusive	Aquatic Weeds	1998	1998	5
From a point 1.4 miles downstream of Richmond County SR 1640 to Rockingham Water Supply Intake										
WS-III;CA	03-07-16	0.6 FW Miles								
13-39-(1)	**Hitchcock Creek (McKinney Lake, Ledbetter Lake)**		**Mercury** Impoundment	Aquatic Life	Not Rated	Data Inconclusive	Ecological/biological Integrity FishCom	2006		3a
From source to a point 0.5 mile downstream of Richmond County SR 1442				Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2006		1
WS-III	03-07-16	10.0 FW Miles		Fish Consumption	Impaired	Standard Violation	Mercury	1998	1998	5

Assessment Unit Number / Description / Classification	Name / DWQ Subbasin	Miles/Acres	Potential Stressors / Potential Sources	Use Support Category	Use Support Rating	Reason for Rating	Parameter of Interest	Collection Year	Listing Year	IR Category
13-39-(10)	**Hitchcock Creek (Midway Pond, Steeles Mill Pond)**		**Low pH**	Aquatic Life	Not Rated	Potential Standards Violation	Low pH	2006		3a
From dam at Roberdel Lake to Pee Dee River				Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2006		1
C	03-07-16	11.3 FW Miles		Recreation	Supporting	No Criteria Exceeded	Fecal Coliform (recreation)	2006		1
13-39-(8.5)	**Hitchcock Creek (Roberdel Lake)**			Aquatic Life	Not Rated	Data Inconclusive	Water Quality Standards Aquatic Life	2006		3a
From a point 0.5 mile downstream of Richmond County SR 1442 to dam at Roberdel Lake (City of Rockingham water supply intake)										
WS-III;CA	03-07-16	0.8 FW Miles								
13-42	**Jones Creek**			Aquatic Life	Supporting	No Criteria Exceeded	Water Quality Standards Aquatic Life	2006		1
From source to Pee Dee River				Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2006		1
C	03-07-17	12.5 FW Miles		Recreation	Supporting	No Criteria Exceeded	Fecal Coliform (recreation)	2006		1
13-45-(2)a	**Marks Creek (Boyds Lake, City Lake, Everetts Lake)**		**Low Dissolved Oxygen** Natural Conditions WWTP NPDES **Low pH**	Aquatic Life	Not Rated	Potential Standards Violation	Low pH	2006		3a
From dam of lower Water Lake to NC 177				Aquatic Life	Not Rated	Potential Standards Violation	Low Dissolved Oxygen	2006		3a
C	03-07-16	5.4 FW Miles		Recreation	Supporting	No Criteria Exceeded	Fecal Coliform (recreation)	2006		1
13-45-(2)b	**Marks Creek (Boyds Lake, City Lake, Everetts Lake)**			Aquatic Life	Not Rated	Data Inconclusive	Ecological/biological Integrity FishCom	2006		3a
From NC 177 to N.C.-S.C. State Line				Aquatic Life	Impaired	Biological Criteria Exceeded	Ecological/biological Integrity Benthos	1991	1998	5
C	03-07-16	13.3 FW Miles								
13-45-(1)	**Marks Creek (Water Lake)**			Aquatic Life	Not Rated	Data Inconclusive	Water Quality Standards Aquatic Life	2006		3a
From a point 1.3 miles upstream of dam of lower Water Lake to dam of lower Water Lake (Town of Hamlet water supply intake)										
WS-II;HQW,CA	03-07-16	0.6 FW Miles								
13-43	**Mill Creek**			Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity FishCom	2006		1
From source to Pee Dee River										
C	03-07-16	11.5 FW Miles								
13-42-1-(0.5)	**North Fork Jones Creek**		**Habitat Degradation** Impoundment Natural Conditions	Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity FishCom	2006		1
From Wadesboro Water Supply Intake to Jones Creek				Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity Benthos	2006		1
C	03-07-17	7.4 FW Miles								

Assessment Unit Number / Description / Classification	Name / DWQ Subbasin	Miles/Acres	Potential Stressors / Potential Sources	Use Support Category	Use Support Rating	Reason for Rating	Parameter of Interest	Collection Year	Listing Year	IR Category
13-42-1-(0.3)	**North Fork Jones Creek (City Pond)**			Aquatic Life	Not Rated	Data Inconclusive	Chlorophyll a	2006		3a
				Water Supply	Supporting	No Criteria Exceeded	Water Quality Standards Water Supply	2006		1
From a point 1.0 mile downstream of Anson County SR 1122 to Wadesboro Water Supply Intake										
WS-II;HQW,CA	03-07-17	0.6 FW Miles								
13-(34)b	**PEE DEE RIVER**			Aquatic Life	Supporting	No Criteria Exceeded	Water Quality Standards Aquatic Life	2006		1
From mouth of Hitchcock Creek to N.C.-S.C. State Line				Recreation	Supporting	No Criteria Exceeded	Fecal Coliform (recreation)	2006		1
C	03-07-16	9.4 FW Miles								
13-39-8	**Rocky Fork Creek (Mill stone Lake)**			Aquatic Life	Not Rated	Data Inconclusive	Ecological/biological Integrity FishCom	2006		3a
From source to Ledbetter Lake, Hitchcock Creek										
WS-III	03-07-16	9.5 FW Miles								
13-42-2	**South Fork Jones Creek**		**Habitat Degradation** General Agriculture/Pasture Natural Conditions	Aquatic Life	Supporting	No Criteria Exceeded	Ecological/biological Integrity FishCom	2006		1
From source to Jones Creek										
C	03-07-17	15.0 FW Miles								

Appendix B

Ambient Monitoring Stations

Summary Sheets

Ambient Monitoring System Station Summaries
NCDENR, Division of Water Quality
Basinwide Assessment Report

Location: PEE DEE RIV AT US 74 NR ROCKINGHAM
Station #: Q9400000 **Hydrologic Unit Code:** 3040201
Latitude: 34.94567 **Longitude:** -79.86910 **Stream class:** C
Agency: NCAMBNT **NC stream index:** 13-(34)

Time period: 01/07/2002 to 12/27/2006

	# result	# ND	Results not meeting EL	#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
Field													
D.O. (mg/L)	49	0	<4	5	10.2	63.5	2.5	3.8	5.4	8.2	10.6	11	15.6
	49	0	<5	8	16.3	94.8	2.5	3.8	5.4	8.2	10.6	11	15.6
pH (SU)	48	0	<6	0	0		6.1	6.1	6.4	6.7	6.9	7	7.3
	48	0	>9	0	0		6.1	6.1	6.4	6.7	6.9	7	7.3
Spec. conductance (umhos/cm at 25°C)	49	0	N/A				66	80	89	99	119	135	172
Water Temperature (°C)	49	0	>32	0	0		6	7.4	9.1	16.8	24.5	27.6	29.1
Other													
TSS (mg/L)	16	3	N/A				2.5	2.5	4.8	9	14	28.3	43
Turbidity (NTU)	49	0	>50	3	6.1		2	3.5	9	17	22	31	85
Metals (ug/L)													
Aluminum, total (Al)	16	0	N/A				130	144	205	360	585	1843	4300
Arsenic, total (As)	16	16	>10	0	0		5	5	5	5	10	10	10
Cadmium, total (Cd)	16	16	>2	0	0		2	2	2	2	2	2	2
Chromium, total (Cr)	16	16	>50	0	0		25	25	25	25	25	25	25
Copper, total (Cu)	16	6	>7	1	6.2		2	2	2	2	3	5	8
Iron, total (Fe)	16	0	>1000	1	6.2		160	160	340	595	748	1810	3700
Lead, total (Pb)	16	16	>25	0	0		10	10	10	10	10	10	10
Mercury, total (Hg)	16	16	>0.012	0	0		0.2	0.2	0.2	0.2	0.2	0.2	0.2
Nickel, total (Ni)	16	16	>88	0	0		10	10	10	10	10	10	10
Zinc, total (Zn)	16	14	>50	0	0		10	10	10	10	10	12	13

Fecal coliform (#/100mL)

# results:	Geomean	# > 400:	% > 400:	%Conf:
47	59	5	11	

Key:
result: number of observations
ND: number of observations reported to be below detection level (non-detect)
EL: Evaluation Level; applicable numeric or narrative water quality standard or action level
Results not meeting EL: number and percentages of observations not meeting evaluation level
%Conf : States the percent statistical confidence that the actual percentage of exceedances is at least 10% (20% for Fecal Coliform)
Stations with less than 10 results for a given parameter were not evaluated for statistical confidence

Ambient Monitoring System Station Summaries
NCDENR, Division of Water Quality
Basinwide Assessment Report

Location: PEE DEE RIV AT US 74 NR ROCKINGHAM
Station #: Q9400000 **Hydrologic Unit Code:** 3040201
Latitude: 34.94567 **Longitude:** -79.86910 **Stream class:** C
Agency: YPDRBA **NC stream index:** 13-(34)

Time period: 01/17/2002 to 12/14/2006

	# result	# ND	Results not meeting EL	#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
Field													
D.O. (mg/L)	85	0	<4	0	0		4.1	5.6	6	7.2	9.2	10.6	11.4
	85	0	<5	1	1.2		4.1	5.6	6	7.2	9.2	10.6	11.4
pH (SU)	85	0	<6	0	0		6.7	6.8	6.9	7.1	7.3	8	8.4
	85	0	>9	0	0		6.7	6.8	6.9	7.1	7.3	8	8.4
Spec. conductance (umhos/cm at 25°C)	84	0	N/A				71	81	91	112	142	165	202
Water Temperature (°C)	85	0	>32	0	0		3.6	6.6	10	20.1	23.5	25.7	29.1
Other													
TSS (mg/L)	60	0	N/A				2.4	3.3	7.2	10	16.5	33.8	166
Turbidity (NTU)	60	0	>50	3	5		3.2	6.6	8.6	15	21.8	30.9	75
Nutrients (mg/L)													
NH3 as N	60	8	N/A				0.01	0.01	0.04	0.07	0.12	0.17	0.25
NO2 + NO3 as N	60	0	N/A				0.06	0.23	0.39	0.56	0.69	0.83	5.04
TKN as N	60	1	N/A				0.1	0.31	0.37	0.52	0.66	0.81	2.73
Total Phosphorus	60	1	N/A				0.02	0.05	0.07	0.1	0.13	0.19	1
Metals (ug/L)													
Aluminum, total (Al)	47	0	N/A				51	233	429	696	1136	2865	8979
Arsenic, total (As)	47	46	>10	0	0		5	5	5	5	5	5	5
Cadmium, total (Cd)	47	44	>2	0	0		1	1	1	1	1	1	1
Chromium, total (Cr)	47	42	>50	0	0		5	5	5	5	5	6	10
Copper, total (Cu)	47	11	>7	3	6.4		2	2	2	3	5	7	15
Iron, total (Fe)	47	0	>1000	30	63.8	100	271	374	753	1173	1512	3137	11512
Lead, total (Pb)	47	45	>25	0	0		5	5	5	5	5	5	8
Mercury, total (Hg)	47	47	>0.012	0	0		0.2	0.2	0.2	0.2	0.2	0.2	0.2
Nickel, total (Ni)	47	45	>88	0	0		10	10	10	10	10	10	12
Zinc, total (Zn)	47	33	>50	0	0		10	10	10	10	11	16	26

Fecal coliform (#/100mL)

# results:	Geomean	# > 400:	% > 400:	%Conf:
60	68	2	3	

Key:
result: number of observations
ND: number of observations reported to be below detection level (non-detect)
EL: Evaluation Level; applicable numeric or narrative water quality standard or action level
Results not meeting EL: number and percentages of observations not meeting evaluation level
%Conf : States the percent statistical confidence that the actual percentage of exceedances is at least 10% (20% for Fecal Coliform)
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Ambient Monitoring System Station Summaries
NCDENR, Division of Water Quality
Basinwide Assessment Report

Location: HITCHCOCK CRK AT SR 1109 AT CORDOVA
Station #: Q9660000 **Hydrologic Unit Code:** 3040201
Latitude: 34.91837 **Longitude:** -79.83003 **Stream class:** C
Agency: NCAMBNT **NC stream index:** 13-39-(10)

Time period: 01/07/2002 to 12/27/2006

	# result	# ND	Results not meeting EL EL	#	%	%Conf	Min	Percentiles 10th	25th	50th	75th	90th	Max
Field													
D.O. (mg/L)	49	0	<4	1	2		2.5	6.9	7.4	9.4	11.7	12.6	14.6
	49	0	<5	1	2		2.5	6.9	7.4	9.4	11.7	12.6	14.6
pH (SU)	48	0	<6	8	16.7	95.4	5.5	5.7	6	6.2	6.5	6.7	7.5
	48	0	>9	0	0		5.5	5.7	6	6.2	6.5	6.7	7.5
Spec. conductance (umhos/cm at 25°C)	49	0	N/A				27	34	36	39	44	56	130
Water Temperature (°C)	49	0	>32	0	0		3.9	7	9.6	17.9	23	27	27.7
Other													
TSS (mg/L)	16	1	N/A				2.5	2.8	4	5.5	10.6	116.6	328
Turbidity (NTU)	49	0	>50	1	2		2.4	3.7	4.3	5.4	8.6	14	180
Nutrients (mg/L)													
NH3 as N	49	6	N/A				0.02	0.02	0.02	0.03	0.05	0.07	0.17
NO2 + NO3 as N	49	1	N/A				0.02	0.07	0.11	0.2	0.31	0.4	0.52
TKN as N	49	2	N/A				0.2	0.22	0.31	0.39	0.46	0.52	0.88
Total Phosphorus	49	2	N/A				0.02	0.02	0.03	0.04	0.05	0.06	0.39
Metals (ug/L)													
Aluminum, total (Al)	16	0	N/A				110	152	212	265	380	3710	9100
Arsenic, total (As)	16	16	>10	0	0		5	5	5	5	10	10	10
Cadmium, total (Cd)	16	16	>2	0	0		2	2	2	2	2	2	2
Chromium, total (Cr)	16	16	>50	0	0		25	25	25	25	25	25	25
Copper, total (Cu)	16	8	>7	1	6.2		2	2	2	2	4	7	12
Iron, total (Fe)	16	0	>1000	11	68.8	100	630	644	860	1250	1875	7330	13000
Lead, total (Pb)	16	15	>25	0	0		10	10	10	10	10	10	11
Mercury, total (Hg)	16	16	>0.012	0	0		0.2	0.2	0.2	0.2	0.2	0.2	0.2
Nickel, total (Ni)	16	16	>88	0	0		10	10	10	10	10	10	10
Zinc, total (Zn)	16	10	>50	0	0		10	10	10	10	13	28	38

Fecal coliform (#/100mL)

# results:	Geomean	# > 400:	% > 400:	%Conf:
47	85	7	15	

Key:
result: number of observations
ND: number of observations reported to be below detection level (non-detect)
EL: Evaluation Level; applicable numeric or narrative water quality standard or action level
Results not meeting EL: number and percentages of observations not meeting evaluation level
%Conf : States the percent statistical confidence that the actual percentage of exceedances is at least 10% (20% for Fecal Coliform)
Stations with less than 10 results for a given parameter were not evaluated for statistical confidence

Ambient Monitoring System Station Summaries
NCDENR, Division of Water Quality
Basinwide Assessment Report

Location: JONES CRK AT NC 145 NR PEE DEE
Station #: Q9777000 **Hydrologic Unit Code:** 3040201
Latitude: 34.90432 **Longitude:** -79.93047 **Stream class:** C
Agency: NCAMBNT **NC stream index:** 13-42

Time period: 01/07/2002 to 12/27/2006

	# result	# ND	Results not meeting EL	#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
Field													
D.O. (mg/L)	49	0	<4	0	0		4.2	5.9	7.2	8.6	11.1	12.5	16.1
	49	0	<5	2	4.1		4.2	5.9	7.2	8.6	11.1	12.5	16.1
pH (SU)	48	0	<6	1	2.1		5.5	6.3	6.5	6.8	7	7.1	7.5
	48	0	>9	0	0		5.5	6.3	6.5	6.8	7	7.1	7.5
Spec. conductance (umhos/cm at 25°C)	49	0	N/A				30	58	66	72	82	105	178
Water Temperature (°C)	49	0	>32	0	0		2.1	6.8	9.7	15.7	21.5	24.3	27.9
Other													
TSS (mg/L)	16	2	N/A				2.5	2.8	3	5	7.4	641	1670
Turbidity (NTU)	49	0	>50	2	4.1		2.4	4.2	5.4	7	12	33	500
Metals (ug/L)													
Aluminum, total (Al)	16	0	N/A				74	106	165	225	340	8750	14000
Arsenic, total (As)	16	16	>10	0	0		5	5	5	5	10	10	10
Cadmium, total (Cd)	16	16	>2	0	0		2	2	2	2	2	2	2
Chromium, total (Cr)	16	15	>50	0	0		25	25	25	25	25	29	39
Copper, total (Cu)	16	11	>7	2	12.5	78.9	2	2	2	2	2	17	34
Iron, total (Fe)	16	0	>1000	11	68.8	100	670	768	985	1250	1800	12390	21000
Lead, total (Pb)	16	15	>25	0	0		10	10	10	10	10	14	22
Mercury, total (Hg)	16	16	>0.012	0	0		0.2	0.2	0.2	0.2	0.2	0.2	0.2
Nickel, total (Ni)	16	15	>88	0	0		10	10	10	10	10	19	39
Zinc, total (Zn)	16	13	>50	0	0		10	10	10	10	10	31	46

Fecal coliform (#/100mL)

# results:	Geomean	# > 400:	% > 400:	%Conf:
47	144	7	15	

Key:
result: number of observations
ND: number of observations reported to be below detection level (non-detect)
EL: Evaluation Level; applicable numeric or narrative water quality standard or action level
Results not meeting EL: number and percentages of observations not meeting evaluation level
%Conf : States the percent statistical confidence that the actual percentage of exceedances is at least 10% (20% for Fecal Coliform)
Stations with less than 10 results for a given parameter were not evaluated for statistical confidence

Ambient Monitoring System Station Summaries
NCDENR, Division of Water Quality
Basinwide Assessment Report

Location: PEE DEE RIV APP 6 MI DNS OF NC 74 NR ROCKINGHAM
Station #: Q9830000 **Hydrologic Unit Code:** 3040201
Latitude: 34.86595 **Longitude:** -79.87927 **Stream class:** C
Agency: YPDRBA **NC stream index:** 13-(34)

Time period: 01/17/2002 to 08/24/2004

	# result	# ND	Results not meeting EL EL	#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
Field													
D.O. (mg/L)	46	0	<4	0	0		5.2	5.5	5.7	7.3	8.9	10.8	11.3
	46	0	<5	0	0		5.2	5.5	5.7	7.3	8.9	10.8	11.3
pH (SU)	46	0	<6	0	0		6.8	6.9	7.1	7.2	7.9	8	8.2
	46	0	>9	0	0		6.8	6.9	7.1	7.2	7.9	8	8.2
Spec. conductance (umhos/cm at 25°C)	45	1	N/A				50	89	93	112	141	208	232
Water Temperature (°C)	46	0	>32	0	0		3.5	7	11.4	21.5	24.1	26.7	28.7
Other													
Turbidity (NTU)	32	0	>50	2	6.2		4.1	6.2	8.7	13.5	17.8	32.8	140

Fecal coliform (#/100mL)

# results:	Geomean	# > 400:	% > 400:	%Conf:
32	176	5	16	

Key:
result: number of observations
ND: number of observations reported to be below detection level (non-detect)
EL: Evaluation Level; applicable numeric or narrative water quality standard or action level
Results not meeting EL: number and percentages of observations not meeting evaluation level
%Conf : States the percent statistical confidence that the actual percentage of exceedances is at least 10% (20% for Fecal Coliform)
Stations with less than 10 results for a given parameter were not evaluated for statistical confidence

Ambient Monitoring System Station Summaries
NCDENR, Division of Water Quality
Basinwide Assessment Report

Location: MARKS CRK AT SR 1812 NR HAMLET
Station #: Q9940000 **Hydrologic Unit Code:** 3040201
Latitude: 34.86257 **Longitude:** -79.71915 **Stream class:** C
Agency: NCAMBNT **NC stream index:** 13-45-(2)

Time period: 01/09/2002 to 12/19/2006

	# result	# ND	Results not meeting EL	#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
Field													
D.O. (mg/L)	48	0	<4	14	29.2	100	0.3	2.1	3.5	6.4	8.9	9.9	12.2
	48	0	<5	18	37.5	100	0.3	2.1	3.5	6.4	8.9	9.9	12.2
pH (SU)	47	0	<6	18	38.3	100	5.1	5.6	5.9	6.1	6.5	6.7	7.2
	47	0	>9	0	0		5.1	5.6	5.9	6.1	6.5	6.7	7.2
Spec. conductance (umhos/cm at 25°C)	48	0	N/A				26	39	41	44	48	53	65
Water Temperature (°C)	48	0	>32	0	0		3.6	6.1	11.2	15.8	23.1	26.9	28.9
Other													
TSS (mg/L)	16	5	N/A				2.5	2.5	2.5	3	4.6	11.2	14
Turbidity (NTU)	48	3	>50	0	0		1	1	1.3	2	3.2	5.2	19.2
Metals (ug/L)													
Aluminum, total (Al)	16	0	N/A				60	61	67	79	92	132	160
Arsenic, total (As)	16	16	>10	0	0		5	5	5	5	10	10	10
Cadmium, total (Cd)	16	16	>2	0	0		2	2	2	2	2	2	2
Chromium, total (Cr)	16	16	>50	0	0		25	25	25	25	25	25	25
Copper, total (Cu)	16	11	>7	0	0		2	2	2	2	2	3	5
Iron, total (Fe)	16	0	>1000	10	62.5	100	360	444	515	1150	2325	3730	3800
Lead, total (Pb)	16	16	>25	0	0		10	10	10	10	10	10	10
Mercury, total (Hg)	16	16	>0.012	0	0		0.2	0.2	0.2	0.2	0.2	0.2	0.2
Nickel, total (Ni)	16	16	>88	0	0		10	10	10	10	10	10	10
Zinc, total (Zn)	16	11	>50	0	0		10	10	10	10	11	17	20

Fecal coliform (#/100mL)

# results:	Geomean	# > 400:	% > 400:	%Conf:
45	66	2	4	

Key:
result: number of observations
ND: number of observations reported to be below detection level (non-detect)
EL: Evaluation Level; applicable numeric or narrative water quality standard or action level
Results not meeting EL: number and percentages of observations not meeting evaluation level
%Conf : States the percent statistical confidence that the actual percentage of exceedances is at least 10% (20% for Fecal Coliform)
Stations with less than 10 results for a given parameter were not evaluated for statistical confidence

Appendix C

Biological Data Sample Sites

Summary

YADKIN RIVER HUC 03040201 – PEE DEE RIVER

Description

HUC 03040201 is Yadkin subbasins 16 and 17 and includes Pee Dee River and its tributaries below Blewett Falls Lake (Figure 7). Much of Anson and Richmond Counties are included in the HUC. Rockingham, Hamlet, and a portion of Wadesboro are the largest urban areas. Most of the land cover is forest. Major active NPDES dischargers are given in Table 6.

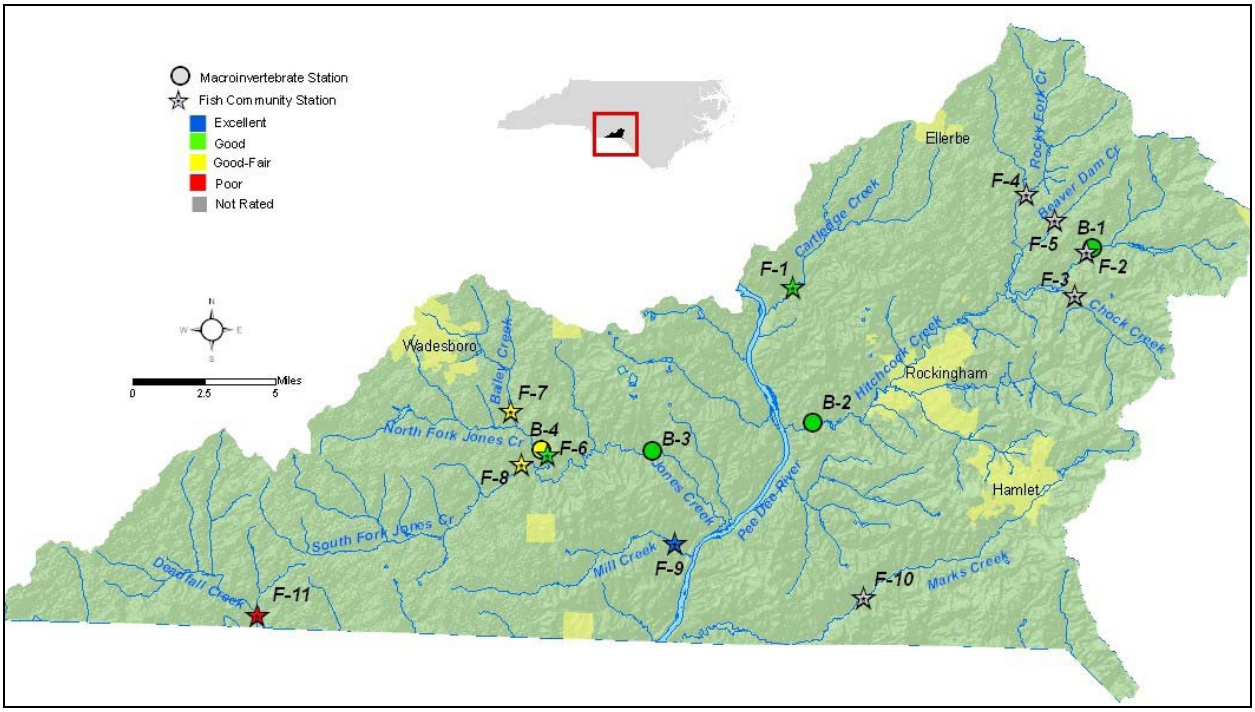

Figure 7. Sampling sites in HUC 03040201 in the Yadkin River basin. Monitoring sites are listed in Table 7.

Table 6. Major NPDES permitted dischargers in HUC 03040201.

Permit	Facility	County	Receiving Waterbody	Permitted Flow (MGD)
NC0043320	Burlington Industries LLC, Richmond Plant	Richmond	Hitchcock Creek	1.2
NC0047562	Hamlet WWTP	Richmond	Marks Creek	1.0
NC0041408	Anson County Regional WWTP	Anson	Pee Dee River	3.5
NC0020427	Rockingham WWTP	Richmond	Pee Dee River	9.0

The HUC straddles the divide between the piedmont and coastal plain and contains portions of three ecoregions as defined by Griffith *et al.* (2002). Far western portions of the HUC fall within a Triassic Basin, which consists of “unmetamorphosed shales, sandstones, mudstones, siltstones, and conglomerates.” Streams with low base flow result from clay soils with little permeability. Stream substrates are generally composed of sands and clays. The remainder of much of the western half of the HUC is in the Carolina Slate Belt. Metavolcanic and metasedimentary rocks make up the slates present in the ecoregion. Boulders and cobbles compose much of the stream substrate. Most of the eastern half of the HUC is in the Sand Hills, “a rolling to hilly region composed primarily of Cretaceous-age marine sands and clays.” Permeable sandy soils allow for a large capacity for infiltration; therefore, streams in the ecoregion rarely dry or flood. Sands make up much of the substrate for streams in the region.

Following an inventory of natural areas in Richmond County by the North Carolina Natural Heritage Program, several stream corridors, watersheds, and ecosystems that fall within the HUC were recognized as significant (Sorrie 2001).

- The upper portions of Rocky Fork, Beaverdam, and Hitchcock Creeks drain the western section of the Sand Hills Game Land (SGL) in Richmond County. SGL is composed of large areas mostly in Richmond and Scotland Counties. SGL contains an ecosystem that is nearly intact, supports a high diversity of flora and fauna, and provides a population pool for longleaf pine.
- The lower 1.5 miles of Hitchcock Creek falls within the Pee Dee River Megasite, and is significant for flowing from the coastal plain to the piedmont (only one of four North Carolina streams to do this), cutting a relatively deep valley before its confluence with Pee Dee River. A floodplain forest is also found on this lower section of Hitchcock Creek.
- Marks Creek shares the unusual characteristic with Hitchcock Creek of flowing from the coastal plain to the piedmont. The lower portion has few road crossings, affording some protection to the beech-dominant hardwood forest in the stream corridor. The coastal plain section of Marks Creek includes a large area of swamp forest dominated by black gum.
- Whites Creek Headwaters includes a large contiguous longleaf pine forest. Waters from the drainage area flow into South Carolina and eventually into Pee Dee River.

Overview of Water Quality

The following stream segments within HUC 03040201 are on the 303(d) impaired waters list for 2004: Pee Dee River from Blewett Falls Dam to the mouth of Hitchcock Creek (low dissolved oxygen; fish advisory for mercury); Hitchcock Creek from source to a point 0.5 mile downstream of SR 1442/Richmond County (fish advisory for mercury); Falling Creek from a point 1.4 miles downstream of SR 1640/Richmond County to the water supply intake for Rockingham (aquatic weeds); and Marks Creek from NC 177 to the state border (impaired biological integrity).

Thirteen basinwide collections were made in 2006 (Table 7). Nine sites were sampled for fish only, two for macroinvertebrates only, and two were sampled for both macroinvertebrates and fish. Fish sites in the Sand Hills ecoregion are not rated because of naturally low flows. Otherwise for fish sites there was one rating of Excellent, two Good, two Good-Fair, and one Poor. For benthic sites three rated as Good, one as Good-Fair. Fish and macroinvertebrate sites sampled in 2006 are given in Table 6.

Table 7. Waterbodies monitored in HUC 03040201 in the Yadkin River basin for basinwide assessment, 2001 and 2006.

Map #[1]	Waterbody	County	Location	2001	2006
B-1	Hitchcock Creek	Richmond	SR 1486	Good	Good
B-2	Hitchcock Creek	Richmond	SR 1109	Good-Fair	Good
B-3	Jones Creek	Anson	NC 145	Good-Fair	Good
B-4	N Fork Jones Creek	Anson	SR 1121	Good-Fair	Good-Fair
F-1	Carteledge Cr	Richmond	SR 1142	Good	Good
F-2	Hitchcock Cr	Richmond	SR 1486	Not Rated	Not Rated
F-3	Chock Cr	Richmond	SR 1475	---	Not Rated
F-4	Rocky Fork Cr	Richmond	SR 1424	Not Rated	Not Rated
F-5	Beaver Dam Cr	Richmond	SR 1486	Not Rated (1996)	Not Rated
F-6	N Fk Jones Cr	Anson	SR 1121	---	Good
F-7	Bailey Cr	Anson	SR 1811	Good	Good-Fair
F-8	S Fk Jones Cr	Anson	SR 1821	Excellent	Good-Fair
F-9	Mill Cr	Anson	SR 1826	---	Excellent
F-10	Marks Cr	Richmond	SR 1104	Not Rated	Not Rated
F-11	Deadfall Cr	Anson	SR 1109	---	Poor

[1]B = benthic macroinvertebrate monitoring sites; F = fish community monitoring sites.

The watershed above the fish site on Carteledge Creek at SR 1142/Richmond County drains a portion of Ellerbe at its headwaters. There was little change in the fish community at the site between 2001 and 2006.

The upper portion of the Hitchcock watershed was sampled at four sites for fish in 2006; one of those four sites was also sampled for macroinvertebrates. None of the fish sites received ratings. Three of the fish sites had been collected prior to 2006. The fish site on Rocky Ford Creek at SR 1424/Richmond County experienced a loss in the number of fish species collected between 2001 and 2006, from 14 to 11. Beaverdam Creek at SR 1486/Richmond County saw an increase of species collected, from 6 in 1996 to 8 in 2006. Hitchcock Creek at SR 1486/Richmond County also experienced an increase in number of fish species collected, from 12 in 2001 to 15 in 2006. The benthic data for three sampling events (1996, 2001, and 2006) at Hitchcock Creek at SR 1486/Richmond County indicate stable water quality; the site has maintained a rating of Good for each year sampled. Overall, biological data from the upper Hitchcock watershed indicate constant to slightly improving water quality.

In contrast to the upper portion of the watershed, the macroinvertebrate site on Hitchcock Creek at SR 1109/Richmond County in the lower portion of the watershed has shown a marked improvement over three sampling events in 1996, 2001, and 2006. The site is about 1.5 stream miles above the confluence with Pee Dee River. Improving water quality at the site coincides with the loss of discharge to the stream from Laurel Hill Paper Company beginning in February 1998. Bioclassifications for the site have improved from Poor in 1996, to Good-Fair in 2001, and to Good in 2006.

The watershed above the fish site on Bailey Creek at SR 1811/Anson County includes western portions of Wadesboro. Between sampling events at the site in 1996 and 2001 there was very little change in the number of species collected and in NCIBI values; the site was rated Good for both of those years. A marked drop in the number of species collected and in the NCIBI value resulted in a bioclassification of Good-Fair for 2006. Low flow in 2006 may be influencing the results for the latest collection.

Downstream of the Bailey Creek site there is a shared fish/benthic site on North Fork Jones Creek at SR 1121/Anson County. Fish were collected for the first time from the site in 2006; the resulting fish bioclassification is Good. The site has been collected for benthos using Full-Scale methods in 2001 and 2006. The benthic community in both years was very similar, an indication of stable water quality at the site for those two sampling events. The site rated as Good-Fair in both years.

South Fork Jones Creek drains an area adjacent to and southeast of North Fork Jones Creek. The fish site on South Fork Jones Creek at SR 1821/Anson County is within one stream-mile of the confluence with North Fork Jones Creek. There is a marked difference between the fish collections made in 2001 and 2006. Three fewer species collected and a 10-point drop in the NCIBI value resulted in a drop of two classifications between 2001 and 2006, from Excellent to Good-Fair. As with Bailey Creek, the decline in the fish community at South Fork Jones Creek may be due to low-flow conditions sometime during the year as indicated by the loss of several species of sunfish, which inhabit pools.

At the confluence of the North and South Forks, Jones Creek begins. Slightly downstream of the midpoint of the length of the stream is the benthic site at NC 145. A greater number of EPT taxa collected in 2006 compared to 1996 and 2001 may be reflecting better water quality at the site in 2006 over the prior two sampling events. The sited rated as Good in 2006; it has rated as Good-Fair for all other sampling events back to 1987.

Generally for the Jones Creek watershed stable water quality conditions are indicated. Low flows are implicated for reduced fish results on Bailey Creek and South Fork Jones Creek. Slightly better water quality than for previous sampling events may be indicated for the site furthest downstream.

A new fish site was established on Mill Creek at SR 1826/Anson County, and rated as Excellent for 2006. The site was the most species-rich for all fish sites sampled in 2006, and is a new regional fish reference site.

Marks Creek at SR 1104/Richmond County has been sampled for fish in 2001 and 2006. Along with other Sand Hills fish sites, the site was not rated. There was a gain in the number of species collected, from 13 in 2001 to 21 in 2006. High abundance and diversity may be due to enrichment from Hamlet WWTP. Specific conductance at the site is elevated for a Sand Hills stream.

Deadfall Creek at SR 1109/Anson County was sampled for fish for the first time in 2006. The site received a rating of Poor. A lack of diverse habitat and low flow at the site are implicated for low numbers of individuals and species collected.

River and Stream Assessment

Beaver Dam Creek at SR 1486/Richmond County is a basinwide benthic site last sampled in 2001 that was not sampled for invertebrates in 2006. The following basinwide benthic sites have not been sampled since 1996: Carteledge Creek at SR1142/Richmond County; Marks Creek at SR 1812/Richmond County; South Fork Jones Creek at SR 1821/Anson County. Sampling at all benthic basinwide sites should continue during the next cycle for the basin if conditions permit. It was suggested in the prior BAU basinwide report that the benthic site on Marks Creek be investigated as a possible swamp site.

Specific site summaries of the four benthic macroinvertebrate and 11 fish community samples may be found at this link: **03040201**.

SPECIAL STUDIES

No special studies were conducted in this HUC during this basin cycle.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Bioclassification
Carteledge Cr	**SR 1142**	**04/10/06**	**Good**

County	Subbasin	8 digit HUC	Latitude	Longitude	Index Number	Level IV Ecoregion
Richmond	16	03040201	345914	795043	13-35	Carolina Slate Belt

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
C	30.2	--	5	0.3	Yes

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	100	0	0	0

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
None	---	---

Water Quality Parameters

Temperature (°C)	11.8
Dissolved Oxygen (mg/L)	10.3
Specific Conductance (µS/cm)	67
pH (s.u.)	6.1

Water Clarity	Clear

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	16
Bottom Substrate (15)	6
Pool Variety (10)	9
Riffle Habitat (16)	11
Left Bank Stability (7)	6
Right Bank Stability (7)	6
Light Penetration (10)	9
Left Riparian Score (5)	5
Right Riparian Score (5)	5
Total Habitat Score (100)	**78**

Site Photograph

Substrate Gravel, sand, cobble

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
04/10/06	2006-06	21	52	Good
04/06/01	2001-05	17	50	Good

Most Abundant Species Bluehead Chub

Exotic Species None

Species Change Since Last Cycle

Losses -- Highback Chub, Spotted Sucker, and Green Sunfish. **Gains** -- Rosyside Dace, Coastal Shiner, Sandbar Shiner, Redfin Pickerel, Eastern Mosquitofish, Warmouth, and Piedmont Darter.

Data Analysis

Watershed -- drains rural western Richmond County; headwaters in the Town of Ellerbee; tributary to the Pee Dee River. **Habitat** -- coarse woody debris; riffles; snags; good riparian zones; low flow. **2006** -- increase in numbers and species; diverse, but no suckers; 11 of 21 species with only 1 or 2 fish per species (similar to 2001). **2001 and 2006** -- 24 species known from the site; dominant species are Bluehead Chub and Redlip shiner; slight increase in NCIBI score, but no change in NCIBI rating.

Benthic Macroinvertebrate Sample

Waterbody	Location	Date	Bioclassification
Hitchcock Creek	**SR 1486**	**08/21/06**	**Good**

County	Subbasin	8 digit HUC	Index Number	Latitude	Longitude
Richmond	16	03040201	13-39-(1)	350028	793939

Level IV Ecoregion	Stream Classification	Drainage Area (mi2)	Stream Width (m)	Stream Depth (m)
Sand Hills	WS-III	15.7	6	0.3

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	100	0	0	

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
none	---	---

Water Quality Parameters

Temperature (°C)	26.1
Dissolved Oxygen (mg/L)	5.5
Specific Conductance (µS/cm)	17
pH (s.u.)	5
Water Clarity	clear/tannic

Habitat Assessment Scores (max)

Channel Modification (5)	4
Instream Habitat (20)	16
Bottom Substrate (15)	9
Pool Variety (10)	5
Riffle Habitat (16)	7
Left Bank Stability (7)	6
Right Bank Stability (7)	6
Light Penetration (10)	9
Left Riparian Score (5)	5
Right Riparian Score (5)	5
Total Habitat Score (100)	72

Site Photograph

Substrate sand, gravel, silt

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
08/21/06	10023	---	24	---	3.5	Good
08/14/01	8585	---	23	---	3.2	Good
08/19/96	7184	---	21	---	3.3	Good

Taxonomic Analysis

The EPT community at this location has been stable since sampling commenced in 1996 and is typical of a mostly forested catchment. Only three previously uncollected taxa (at this location) were observed in 2006 and included the mayfly *Plauditus punctiventris* , the intolerant, and long-lived stonelfy *Acroneuria abnormis* , and the caddisfly *Oecetis nocturna* . Of note, four stonefly taxa (*A. abnormis* , *A. carolinensis* , *A. lycorias* , and *Leuctra*) were all collected in 2006 while each previous sample resulted in only two stonefly taxa.

Data Analysis

The 2006 sample continues to demonstrate the gradual increase in EPT taxa richness observed at this location since 1996. Although the EPTBI increased very slightly over prior samples, the doubling of total stonefly taxa richness in 2006 (relative to the two previous samples) may indicate slightly improved physical conditions along this reach of Hitchcock Creek in 2006.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Bioclassification
Hitchcock Cr	**SR 1486**	**04/24/06**	**Not Rated**

County	Subbasin	8 digit HUC	Latitude	Longitude	Index Number	Level IV Ecoregion
Richmond	16	03040201	350028	793939	13-39-(1)	Sand Hills

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
WS-III	15.7	--	6	0.3	No

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	100	0	0	0

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
None	---	---

Water Quality Parameters

Temperature (°C)	20.8
Dissolved Oxygen (mg/L)	7.8
Specific Conductance (µS/cm)	18
pH (s.u.)	5.2

Water Clarity	Black water

Habitat Assessment Scores (max)

Channel Modification (15)	15
Instream Habitat (20)	18
Bottom Substrate (15)	13
Pool Variety (10)	10
Left Bank Stability (10)	10
Right Bank Stability (10)	10
Light Penetration (10)	10
Left Riparian Score (5)	5
Right Riparian Score (5)	5
Total Habitat Score (100)	**96**

Site Photograph

Substrate Sand, silt, coarse woody debris

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
04/24/06	2006-21	15	--	Not Rated
04/05/01	2001-01	12	--	Not Rated

Most Abundant Species Yellow Perch

Exotic Species Yellow Perch

Species Change Since Last Cycle

Losses -- Bluespotted Sunfish and Sawcheek Darter. **Gains** -- Margined Madtom, Pirate Perch, Lined Topminnow, Black Crappie, and Largemouth Bass.

Data Analysis

Watershed -- drains east-central Richmond County, including the Sand Hills Gamelands; site is ~ 2 mi. downstream from McKinney Lake and ~ 2 mi. upstream of Ledbetter Lake. **Habitat** -- very high quality habitats (2nd greatest habitat score of any fish site in 2006); a typical Sand Hills type stream; runs; single riffle at beginning of reach; good riparian; *Valisneria* **2006** -- lowest specific conductance and pH of any fish site in 2006; Yellow Perch and Black Crappie possible migrants from Ledbetter Lake. **2001 and 2006** -- typical Sand Hills fauna including Spotted Sucker, Chain Pickerel, and Dollar Sunfish; 17 species known from the site.

Benthic Macroinvertebrate Sample

Waterbody	Location	Date	Bioclassification
Hitchcock Creek	**SR 1109**	**08/21/06**	**Good**

County	Subbasin	8 digit HUC	Index Number	Latitude	Longitude
Richmond	16	03040201	13-39-(10)	345508	794956

Level IV Ecoregion	Stream Classification	Drainage Area (mi2)	Stream Width (m)	Stream Depth (m)
Sand Hills	C	140	11	0.3

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	80	20	0	0

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
Burlington Industries LLC, RIchmond Plant	NC0043320	1.2

Water Quality Parameters

Temperature (°C)	26.6
Dissolved Oxygen (mg/L)	10
Specific Conductance (µS/cm)	57
pH (s.u.)	6.6
Water Clarity	tannic

Habitat Assessment Scores (max)

Channel Modification (5)	4
Instream Habitat (20)	15
Bottom Substrate (15)	8
Pool Variety (10)	5
Riffle Habitat (16)	9
Left Bank Stability (7)	6
Right Bank Stability (7)	5
Light Penetration (10)	8
Left Riparian Score (5)	5
Right Riparian Score (5)	5
Total Habitat Score (100)	70

Site Photograph

Substrate sand, gravel, silt

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
08/21/06	10077	79	32	5.6	4.5	Good
08/15/01	8587	72	21	6.0	4.6	Good-Fair
08/20/96	7188	40	5	7.8	6.4	Poor

Taxonomic Analysis

This site has improved drastically since sampling commenced in 1996. The 2006 sample garnered the most EPT taxa ever collected here as well as the most total taxa. Previously uncollected (at this location) EPT taxa included the intolerant mayflies *Heptagenia pulla* , *Paraleptophlebia* , the stoneflies *Acroneuria abnormis* , *Eccoptura xanthenes* , *Neoperla* , *Paragnetina fumosa* , and a caddisfly rarely collected in North Carolina, *Protoptila* . Moreover, the 2006 collection was the first time any stonefly taxa (several of which are long-lived as nymphs) have been observed here. In addition, a low dissolved oxygen indicator, *Physella* (a gastropod), declined from abundant in 1996 to rare in 2006. Last, the number of pollution tolerant oligocheates declined from six taxa in 1996 to only three taxa in 2006. These data clearly demonstrate improving conditions along this segment of Hitchcock Creek.

Data Analysis

Every benthic macroinvertebrate metric has improved steadily since the first sample in 1996. Not only have all taxa richness metrics increased and all biotic index measures decreased, but the EPTN has increased from 25 in 1996, to 70 in 2001, to 136 in 2006. These improved metrics correspond well with the conductivity data as this parameter was 305 (µS/cm) in 1996, decreased to 74 (µS/cm) in 2001, and has decreased again to 57 (µS/cm) in 2006. The Laurel Hill Paper Company discharged upstream of this location up until February 1998. The stream continues to recover as a result of the removal of this facility.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Bioclassification
Chock Cr	**SR 1475**	**04/25/06**	**Not Rated**

County	Subbasin	8 digit HUC	Latitude	Longitude	Index Number	Level IV Ecoregion
Richmond	16	03040201	345903	794016	13-39-6	Sand Hills

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
WS-III	13.8	--	6	0.3	No

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	100	0	0	0

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
None	---	---

Water Quality Parameters

Temperature (°C)	19.4
Dissolved Oxygen (mg/L)	8.2
Specific Conductance (µS/cm)	30
pH (s.u.)	5.9

Water Clarity	Black water

Habitat Assessment Scores (max)

Channel Modification (15)	15
Instream Habitat (20)	18
Bottom Substrate (15)	6
Pool Variety (10)	10
Left Bank Stability (10)	10
Right Bank Stability (10)	10
Light Penetration (10)	10
Left Riparian Score (5)	5
Right Riparian Score (5)	5
Total Habitat Score (100)	**89**

Site Photograph

Substrate Soft sand, muck, and detritus; coarse woody debris

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
04/25/06	2006-24	13	---	Not Rated

Most Abundant Species Dollar Sunfish and Dusky Shiner

Exotic Species Yellow Perch

Species Change Since Last Cycle N/A; new site in 2006.

Data Analysis

Watershed -- drains eastern Richmond County, northwest of US 1 and NC 177; a tributary to Ledbetter Lake, site is ~ 0.5 mi. above lake. **Habitat** -- high quality habitats; a typical Sand Hills stream; runs; coarse woody debris riffles; *Valisneria.* **2006** - typical Sand Hills fauna including Dusky Shiner, Spotted Sucker, Dollar Sunfish, and Mud Sunfish.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Bioclassification
Rocky Fork Cr	**SR 1424**	**04/24/06**	**Not Rated**

County	Subbasin	8 digit HUC	Latitude	Longitude	Index Number	Level IV Ecoregion
Richmond	16	03040201	350207	794204	13-39-8	Sand Hills

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
WS-III	29.7	--	6	0.3	No

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	80	0	0	20 -- residential

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
None	---	---

Water Quality Parameters

Temperature (°C)	18.2
Dissolved Oxygen (mg/L)	8.3
Specific Conductance (µS/cm)	23
pH (s.u.)	6.2

Water Clarity	Stained, slightly turbid

Habitat Assessment Scores (max)

Channel Modification (15)	15
Instream Habitat (20)	18
Bottom Substrate (15)	13
Pool Variety (10)	10
Left Bank Stability (10)	10
Right Bank Stability (10)	10
Light Penetration (10)	9
Left Riparian Score (5)	5
Right Riparian Score (5)	5
Total Habitat Score (100)	**95**

Site Photograph

Substrate Sand, silt, detritus, cobble, boulder, bedrock

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
04/24/06	2006-20	11	--	Not Rated
04/05/01	2001-02	14	--	Not Rated

Most Abundant Species Redbreast Sunfish

Exotic Species None

Species Change Since Last Cycle

Losses -- Bluehead Chub, Creek Chubsucker, Snail Bullhead, Chain Pickerel, Warmouth, Largemouth Bass, and Yellow Perch. **Gains** -- Yellow Bullhead, Flat Bullhead, Mud Sunfish, and Dollar Sunfish.

Data Analysis

Watershed -- drains northeast Richmond County, including the Sand Hills Gamelands; tributary to Ledbetter Lake. **Habitat** -- very high quality habitats (2nd greatest habitat score of any fish site in 2006); a typical Sand Hills type stream; runs, boulder outcrops near old mill site; *Valisneria;* good riparian zones; coarse woody debris. **2006** -- low abundance of most species (only 1 or 2 fish per species), but a typical Sand Hills fauna present including Dusky Shiner, Spotted Sucker, Dollar Sunfish, and Mud Sunfish. **2001 and 2006** -- 18 species known from the site.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Bioclassification
Beaverdam Cr	**SR 1486**	**04/24/06**	**Not Rated**

County	Subbasin	8 digit HUC	Latitude	Longitude	Index Number	Level IV Ecoregion
Richmond	16	03040201	350120	794100	13-39-8-7	Sand Hills

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
WS-III	4.5	0	3	0.2	Yes

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	100	0	0	0

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
None	---	---

Water Quality Parameters

Temperature (°C)	19.2
Dissolved Oxygen (mg/L)	8.5
Specific Conductance (µS/cm)	19
pH (s.u.)	5.6

Water Clarity	Blackwater

Habitat Assessment Scores (max)

Channel Modification (15)	15
Instream Habitat (20)	18
Bottom Substrate (15)	7
Pool Variety (10)	8
Left Bank Stability (10)	10
Right Bank Stability (10)	10
Light Penetration (10)	9
Left Riparian Score (5)	5
Right Riparian Score (5)	5
Total Habitat Score (100)	**87**

Site Photograph

Substrate Sand, organic detritus

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
04/24/06	2006-22	8	--	Not Rated
04/15/96	96-13	6	--	Not Rated

Most Abundant Species Sandhills Chub

Exotic Species None

Species Change Since Last Cycle

Losses -- Bluehead Chub, Creek Chubsucker, and Redbreast Sunfish. **Gains** -- Sandhills Chub, Yellow Bullhead, Margined Madtom, Bluegill, and Largemouth Bass.

Data Analysis

Watershed -- small watershed draining northeast Richmond County, including the Sand Hills Gamelands; tributary to Ledbetter Lake. **Habitat** -- a typical Sand Hills stream; narrow; very organic substrate; *Panicum* and bay forested riparian zones; logged on upper zones and lower right riparian zones, but ~ 200 ft. buffer remains. **2006** -- very low specific conductance; 2nd lowest of any fish site in 2006; very few fish collected, but the stream is small; Sandhills Chub, a species of Special Concern, collected. **1996 and 2006** -- Typical Sand Hills fauna including Sandhills Chub, Redfin Pickerel, Pirate Perch, and Dollar Sunfish; 11 species known from the small site.

Benthic Macroinvertebrate Sample

Waterbody	Location	Date	Bioclassification
Jones Creek	**NC 145**	**08/21/06**	**Good**

County	Subbasin	8 digit HUC	Index Number	Latitude	Longitude
Anson	17	03040201	13-42	345415	795551

Level IV Ecoregion	Stream Classification	Drainage Area (mi2)	Stream Width (m)	Stream Depth (m)
Carolina Slate Belt	C	93.9	16	0.3

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	100	0	0	0

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
none	---	---

Water Quality Parameters

Temperature (°C)	25.3
Dissolved Oxygen (mg/L)	6.8
Specific Conductance (µS/cm)	79
pH (s.u.)	6.6
Water Clarity	slightly turbid

Habitat Assessment Scores (max)

Channel Modification (5)	4
Instream Habitat (20)	14
Bottom Substrate (15)	11
Pool Variety (10)	4
Riffle Habitat (16)	7
Left Bank Stability (7)	7
Right Bank Stability (7)	7
Light Penetration (10)	7
Left Riparian Score (5)	5
Right Riparian Score (5)	5
Total Habitat Score (100)	71

Site Photograph

Substrate sand, gravel, bedrock, boulder, rubble

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
08/21/06	10079	66	27	5.7	5.2	Good
08/14/01	8583	74	18	5.9	4.4	Good-Fair
08/20/96	7189	63	17	5.8	4.8	Good-Fair
07/23/90	5388	73	16	5.9	5.0	Good-Fair
07/07/87	4131	70	24	5.9	4.6	Good-Fair

Taxonomic Analysis

The 2006 sample produced the most EPT taxa ever observed at this site and included the following new (for this location) mayflies (*Acentrella alachua* , *Heterocloeon curiosum* , *Procloeon*), stoneflies (*Eccoptura xanthenes*), and caddsiflies (*Nectopsyche pavida* , *Oecetis nocturna* , and *Triaenodes perna)* . In addition, an indicator of organic enrichment and low dissolved oxygen, *Polypedilum illinoense* (a chironomid), was absent from the 2006 collection but was present (common to abundant) in all previous samples. Moreover, there were no oligocheate taxa observed in the 2006 sample whereas all previous samples had at least one oligocheate taxon present. These data suggest slightly improving conditions in the Jones Creek catchment.

Data Analysis

Although EPT taxa richness and EPT abundance were the highest ever observed at this site in 2006, the total taxa richness was less than in all previous samples other than the 1996 collection. Most of this reduction was caused by a substantial decrease in chironomid taxa with only seven taxa present in 2006 whereas 13, 18, 16, and 21 chironomid taxa were collected in 1987, 1990, 1996, and 2001 respectively. The increased number of EPT taxa and decreased chironomid (and oligocheate) taxa accounted for the slight reduction of the BI observed in 2006. These data loosely correlate with a reduction in the conductivity measured at this site since 1996 (93 µS/cm) and 2001 (110µS/cm). These data suggest slightly improved physical conditions in Jones Creek relative to previous samples.

Benthic Macroinvertebrate Sample

Waterbody	Location	Date	Bioclassification
North Fork Jones Creek	**SR 1121**	**08/21/06**	**Good-Fair**

County	Subbasin	8 digit HUC	Index Number	Latitude	Longitude
Anson	17	03040201	13-42-1-(0.5)	345414	795957

Level IV Ecoregion	Stream Classification	Drainage Area (mi2)	Stream Width (m)	Stream Depth (m)
Carolina Slate Belt	C	35.4	5	0.2

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	100	0	0	0

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
none	---	---

Water Quality Parameters

Temperature (°C)	25.3
Dissolved Oxygen (mg/L)	5.6
Specific Conductance (µS/cm)	102
pH (s.u.)	6.2
Water Clarity	clear/tannic

Habitat Assessment Scores (max)

Channel Modification (5)	4
Instream Habitat (20)	12
Bottom Substrate (15)	4
Pool Variety (10)	3
Riffle Habitat (16)	3
Left Bank Stability (7)	6
Right Bank Stability (7)	7
Light Penetration (10)	9
Left Riparian Score (5)	5
Right Riparian Score (5)	5
Total Habitat Score (100)	58

Site Photograph

Substrate sand, silt, trace of gravel

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
08/21/06	10078	64	14	6.2	5.3	Good-Fair
08/13/01	8582	63	16	6.1	5.4	Good-Fair
08/20/96	7190	---	11	---	5.1	Fair

Taxonomic Analysis

The 2006 Full-Scale sample produced a nearly identical benthic community to that measured during the last Full-Scale collection in 2001. The only previously uncollected EPT taxa (for this location) included the mayflies *Procloeon* , *Plauditus cestus* , and the tolerant caddisfly *Hydropsyche betteni* . Moreover, nearly all of the remaining non-EPT taxa remained unchanged from the 2001 collection.

Data Analysis

As was noted in the 2001 basinwide assessment document, the 1996 sample was conducted under higher flow conditions. Conversely, the 2001 and 2006 samples were collected under definite low flow conditions. As is the case in a catchment that is dominated by non-point pollution inputs, lower flows tend to improve the benthic community and that is the probable explanation (given the lack of NPDES dischargers upstream) for the differences observed between 1996 and 2001. This phenomenon also accounts for the near-identical metrics between the low flow years of 2001 and 2006.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Bioclassification
N Fk Jones Cr	**SR 1121**	**04/11/06**	**Good**

County	Subbasin	8 digit HUC	Latitude	Longitude	Index Number	Level IV Ecoregion
Anson	17	03040201	345415	795957	13-42-1-0.5	Carolina Slate Belt

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
C	35.4	---	9	0.3	No

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	100	---	---	---

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
---	---	---

Water Quality Parameters

Temperature (°C)	11.6
Dissolved Oxygen (mg/L)	7.8
Specific Conductance (µS/cm)	86
pH (s.u.)	6.9

Water Clarity	Clear

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	16
Bottom Substrate (15)	3
Pool Variety (10)	7
Riffle Habitat (16)	3
Left Bank Stability (7)	5
Right Bank Stability (7)	5
Light Penetration (10)	9
Left Riparian Score (5)	5
Right Riparian Score (5)	5
Total Habitat Score (100)	**63**

Site Photograph

Substrate sand, gravel, a little cobble

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
04/11/06	2006-09	23	50	Good

Most Abundant Species Bluehead Chub

Exotic Species Redear Sunfish

Species Change Since Last Cycle N/A, new site in 2006

Data Analysis

Watershed -- drains the south side of Wadesboro and is downstream of Bailey Creek watershed (eastern Wadesboro) in south east Anson County. **Habitats** -- sandy runs, snags, small stick riffles, some bedrock outcrops, some small cobble riffles. **2006** -- new fish community monitoring site; high diversity; balanced trophic structure (61% Insectivores including 16% Redlip Shiner, 13% Redbreast Sunfish, and 13% Whitemouth Shiner); water quality approaching the highest bioclassification.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Bioclassification
Bailey Cr	**SR 1811**	**04/10/06**	**Good-Fair**

County	Subbasin	8 digit HUC	Latitude	Longitude	Index Number	Level IV Ecoregion
Anson	17	03040201	345522	800107	13-42-1-3	Carolina Slate Belt/Triassic Uplands

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
C	13	---	4	0.3	No

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	60	---	40	---

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
---	---	---

Water Quality Parameters

Temperature (°C)	16.1
Dissolved Oxygen (mg/L)	10.3
Specific Conductance (µS/cm)	90
pH (s.u.)	6.1

Water Clarity	Clear

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	12
Bottom Substrate (15)	3
Pool Variety (10)	4
Riffle Habitat (16)	2
Left Bank Stability (7)	6
Right Bank Stability (7)	6
Light Penetration (10)	9
Left Riparian Score (5)	1
Right Riparian Score (5)	4
Total Habitat Score (100)	**52**

Site Photograph

Substrate sand, gravel

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
04/10/06	2006-08	14	44	Good-Fair
04/06/01	2001-06	20	52	Good
04/15/96	96-14	19	52	Good

Most Abundant Species Bluehead Chub

Exotic Species None

Species Change Since Last Cycle

Losses -- Pumpkinseed, Warmouth, Redear Sunfish, Spottail Shiner, Yellow Bullhead, Margined Madtom, Piedmont Darter. **Gains** -- Redfin Pickerel

Data Analysis

Watershed -- drains the eastern half of Wadesboro in southeast-central Anson County. Atypical substrate for a stream of the Carolina Slate Belt ecoregion. **Habitats** -- sandy runs, snags, undercuts, thin riparian, very silty, thick periphyton. **2006** -- Low flow; six fewer species than in 2001; no intolerants collected. **1996-2006** -- 24 fish species known from this watershed; a decline in the NCIBI score and rating since 2001, may be due to low flow in 2006; conductivity continues to show evidence of nutrient enrichment from urban runoff and agriculture.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Bioclassification
S Fk Jones Cr	**SR 1821**	**04/11/06**	**Good-Fair**

County	Subbasin	8 digit HUC	Latitude	Longitude	Index Number	Level IV Ecoregion
Anson	17	03040201	345346	800041	13-42-2	Carolina Slate Belt/Triassic Uplands

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
C	34.6	---	8	0.3	No

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	100	---	---	---

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
---	---	---

Water Quality Parameters

Temperature (°C)	12.0
Dissolved Oxygen (mg/L)	10.0
Specific Conductance (µS/cm)	65
pH (s.u.)	6.2

Water Clarity	Clear, tannin stained

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	16
Bottom Substrate (15)	3
Pool Variety (10)	9
Riffle Habitat (16)	7
Left Bank Stability (7)	3
Right Bank Stability (7)	3
Light Penetration (10)	9
Left Riparian Score (5)	5
Right Riparian Score (5)	5
Total Habitat Score (100)	**65**

Site Photograph

Substrate sand, some gravel

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
04/11/06	2006-10	15	44	Good-Fair
04/10/01	2001-08	18	54	Excellent

Most Abundant Species Bluehead Chub, Redlip Shiner

Exotic Species None

Species Change Since Last Cycle

Losses -- Pumpkinseed, Warmouth, Bluegill, Largemouth Bass, Whitemouth Shiner, Sea Lamprey.
Gains -- Golden Shiner, Creek Chub, Redfin Pickerel.

Data Analysis

Watershed -- drains rural south central Anson County; atypical stream for this ecoregion, borders Triassic Uplands Ecoregion. **Habitats** -- sandy runs, snags, some bedrock outcrops; Privet was dense in the riparian zone. **2006** -- the two most abundant species each represented 38% of the sample; Redbreast Sunfish was the only sunfish species collected. **2001-2006** -- 21 species known from this site; 14% fewer total fish collected in 2006; loss of four sunfish species may be flow related; decline of 10 points in NCIBI; water quality rating has dropped by two bioclassifications.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Bioclassification
Mill Cr	**SR 1826**	**04/11/06**	**Excellent**

County	Subbasin	8 digit HUC	Latitude	Longitude	Index Number	Level IV Ecoregion
Anson	16	03040201	345123	795500	13-43	Carolina Slate Belt/Sand Hills

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
C	18.6	--	7	0.4	Yes

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	100	0	0	0

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
None	---	---

Water Quality Parameters

Temperature (°C)	14.4
Dissolved Oxygen (mg/L)	9.9
Specific Conductance (µS/cm)	58
pH (s.u.)	6.3

Water Clarity	Clear, tannin stained

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	16
Bottom Substrate (15)	6
Pool Variety (10)	9
Riffle Habitat (16)	7
Left Bank Stability (7)	6
Right Bank Stability (7)	6
Light Penetration (10)	9
Left Riparian Score (5)	5
Right Riparian Score (5)	5
Total Habitat Score (100)	**74**

Site Photograph

Substrate Sand, coarse woody debris, cobble

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
04/11/06	2006-11	26	56	Excellent

Most Abundant Species Bluehead Chub

Exotic Species None

Species Change Since Last Cycle N/A; new site in 2006.

Data Analysis

Watershed -- drains the southeastern corner of Anson County, including the small Town of Morven; rural; tributary to the Pee Dee River; borders the Carolina Slate Belt and Sand Hills. **Habitat** -- characteristics of Piedmont; Sand Hills, and Coastal Plain; Sand Hills habitat score = 91; riffles; runs, coarse woody debris; great riparian zones. New regional reference site. **2006** -- fauna a mixture of Piedmont, Coastal Plain, and Sand Hills species; most species-rich fish site in 2006, including 3 species of darters and 7 species of sunfish; unique species include Sea Lamprey, American Eel, Spotted Sunfish, and Mud Sunfish.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Bioclassification
Marks Cr	**SR 1104**	**04/25/06**	**Not Rated**

County	Subbasin	8 digit HUC	Latitude	Longitude	Index Number	Level IV Ecoregion
Richmond	16	03040201	344947	794759	13-45-(2)	Sand Hills

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
C	29.9	--	8	0.4	No

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	100	0	0	0

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
City of Hamlet's Hamlet WWTP	NC0047562	1

Water Quality Parameters

Temperature (°C)	18.9
Dissolved Oxygen (mg/L)	6.8
Specific Conductance (µS/cm)	49
pH (s.u.)	5.8

Water Clarity	Blackwater

Habitat Assessment Scores (max)

Channel Modification (15)	15
Instream Habitat (20)	18
Bottom Substrate (15)	7
Pool Variety (10)	10
Left Bank Stability (10)	10
Right Bank Stability (10)	10
Light Penetration (10)	10
Left Riparian Score (5)	5
Right Riparian Score (5)	5
Total Habitat Score (100)	**90**

Site Photograph

Substrate Sand, coarse woody debris

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
04/25/06	2006-23	21		Not Rated
04/06/01	2001-04	13		Not Rated

Most Abundant Species Dusky Shiner

Exotic Species None

Species Change Since Last Cycle

Losses -- Tadpole Madtom. **Gains** -- Golden Shiner, Creek Chubsucker, Spotted Sucker, Chain Pickerel, Mud Sunfish, Flier, Pumpkinseed, and Largemouth Bass.

Data Analysis

Watershed -- drains southwest Richmond County, including the cities of Hamlet and East Hamlet; tributary to Everetts Lake and the Pee Dee River. **WWTP** -- with frequent violations over the period 2001 to 2004 for biochemical oxygen demand; proceeded to enforcement (BIMS query 12/14/2006); specific conductance low, but elevated for a Sand Hills stream (43 and 49 µS/cm in 2001 and 2006, respectively). **Habitat** -- high quality habitats; Coastal Plain like; pools; snags; runs; good bottomland riparian zones. **2006** -- most species of sunfish (n = 9) of any fish site in 2006; high abundance (n = 238) and diversity (n = 21) for a Sand Hills stream (some enrichment from WWTP?). **2001 and 2006** -- high diversity, 22 species known from the site; fauna includes American Eel, Dusky Shiner, Spotted Sucker, Mud Sunfish, Flier, Bluespotted Sunfish, and Dollar Sunfish.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Bioclassification
Deadfall Cr	**SR 1109**	**04/11/06**	**Poor**

County	Subbasin	8 digit HUC	Latitude	Longitude	Index Number	Level IV Ecoregion
Anson	17	03040201	344850	801026	13-47-2	Carolina Slate Belt

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
C	31.5	---	8	0.5	No

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	75	---	25	---

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
---	---	---

Water Quality Parameters

Temperature (°C)	16.4
Dissolved Oxygen (mg/L)	11.6
Specific Conductance (µS/cm)	135
pH (s.u.)	6.1

Water Clarity	Clear

Habitat Assessment Scores (max)

Channel Modification (5)	4
Instream Habitat (20)	15
Bottom Substrate (15)	12
Pool Variety (10)	9
Riffle Habitat (16)	0
Left Bank Stability (7)	5
Right Bank Stability (7)	5
Light Penetration (10)	7
Left Riparian Score (5)	5
Right Riparian Score (5)	2
Total Habitat Score (100)	**64**

Site Photograph

Substrate boulder, gravel, some bedrock

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
04/11/06	2006-12	10	30	Poor

Most Abundant Species Redbreast Sunfish

Exotic Species Redear Sunfish

Species Change Since Last Cycle N/A, new site in 2006

Data Analysis

Watershed -- drains part of south central Anson County to South Carolina; a tributary to Thompson Creek (SC). **Habitats** -- entrenched; one long straight pool of mostly uniform depths with no riffles; abundant algae; very low flow. **2006** -- new fish community monitoring site; very few fish collected (total = 52); no cyprinids collected; high percentage of Insectivores (87% of total, including 7 of 10 species); low fish species abundances due to very low flow and uniform depths; low flow effected stream.