Appendix 1-A

Use Support Ratings for All Monitored Waterbodies

2010 DRAFT

Draft 2010 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	All designated uses are monitored and supporting
1b	Designated use was impaired, other management strategy in place and no standards violations for the parameter of interest (POI)
1nc	DWQ have made field determination that parameter in exceedance is due to natural conditions
1r	Assessed as supporting watershed is in restoration effort status
1t	No criteria exceeded but approved TMDL for parameter of interest
2	Some designated uses are monitored and supporting none are impaired Overall only
2b	Designated use was impaired other management strategy in place and no standards violations Overall only
2r	Assessed as supporting watershed is in restoration effort status overall only
2t	No criteria exceeded but approved TMDL for POI Overall only
3a	Instream/monitoring data are inconclusive (DI)
3b	No Data available for assessment
3c	No data or information to make assessment
3n1	Chlorophyll a exceeds TL value and SAC is met-draft
3n2	Chlorophyll a exceeds EL value and SAC is not met first priority for further monitoring-draft
3n3	Chlorophyll a exceeds threshold value and SAC is not metfirst second priority for further monitoring-draft
3n4	Chlorophyll a not available determine need to collect-draft
3t	No Data available for assessment –AU is in a watershed with an approved TMDL
4b	Designated use impaired other management strategy expected to address impairment
4c	Designated use impaired by something other than pollutant
4cr	Recreation use impaired no instream monitoring data or screening criteria exceeded
4cs	Shellfish harvesting impaired no instream monitoring data- no longer used
4ct	Designated use impaired but water is subject to approved TMDL or under TMDL development
4s	Impaired Aquatic Life with approved TMDL for Aquatic Life POI or category 5 listing
4t	Designated use impaired approved TMDL
5	Designated use impaired because of biological or ambient water quality standards violations and needing a TMDL
5r	Assessed as impaired watershed is in restoration effort status

Catawba River Basin 2010 NC 305(b) Report

All Waters in NC are in Category 5-303(d) List for Mercury due to statewide fish consumption advice for several fish species

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year

Catawba River Basin — Catawba River Headwaters Subbasin 03050101

Catawba River Basin — **Headwaters Catawba River Watershed 0305010101**

11-19-(1)a	**Buck Creek**	From source to Chestnut Branch	**6.9 FW Miles**		WS-II,B;Tr,H
1	**Ecological/biological Integrity Benthos**	Excellent Bioclassification	Aquatic Life	2007	
11-(1)	**CATAWBA RIVER**	From source to Old Fort Finishing Plant Water Supply Intake	**7.6 FW Miles**		C;Tr
1	**Ecological/biological Integrity Benthos**	Good Bioclassification	Aquatic Life	2007	
1	**Ecological/biological Integrity FishCom**	Good-Fair Bioclassification	Aquatic Life	2002	
11-(8)	**CATAWBA RIVER (including backwaters of Lake James below elevation 1200)**	From Dam at Old Fort Finishing Plant Water Supply Intake to North Fork Catawba River	**23.5 FW Miles**		C
1	**Ecological/biological Integrity Benthos**	Good Bioclassification	Aquatic Life	2007	
3a	**Fecal Coliform (recreation)**	Potential Standards Violation	Recreation	2008	
1	**Water Quality Standards Aquatic Life**	No Criteria Exceeded	Aquatic Life	2008	
11-12	**Crooked Creek**	From source to Catawba River	**16.0 FW Miles**		C
1	**Ecological/biological Integrity Benthos**	Good-Fair Bioclassification	Aquatic Life	2007	
1	**Ecological/biological Integrity FishCom**	Good Bioclassification	Aquatic Life	2007	
11-10	**Curtis Creek**	From source to Catawba River	**9.7 FW Miles**		C;Tr
1	**Ecological/biological Integrity Benthos**	Excellent Bioclassification	Aquatic Life	2007	
1	**Ecological/biological Integrity FishCom**	Excellent Bioclassification	Aquatic Life	2007	
11-6	**Left Prong Catawba River**	From source to Catawba River	**3.8 FW Miles**		C;Tr
1	**Ecological/biological Integrity Benthos**	Excellent Bioclassification	Aquatic Life	2007	
11-19-11	**Little Buck Creek**	From source to Lake Tahoma, Buck Creek	**4.4 FW Miles**		WS-II,B;Tr,H
1	**Ecological/biological Integrity Benthos**	Excellent Bioclassification	Aquatic Life	2007	
11-15-(3.5)a	**Mackey Creek**	From Laurel Fork Creek to US 70	**1.8 FW Miles**		C
1	**Ecological/biological Integrity Benthos**	Not Impaired Bioclassification	Aquatic Life	2002	
11-15-(3.5)b	**Mackey Creek**	From US 70 to Catawba River	**0.8 FW Miles**		C
1	**Ecological/biological Integrity Benthos**	Good Bioclassification	Aquatic Life	2007	
4b	**Toxic Impacts**	Data Inconclusive	Aquatic Life	2000	2000

All Waters in NC are in Category 5-303(d) List for Mercury due to statewide fish consumption advice for several fish species

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-7-(0.5)	Mill Creek	From source to Swannanoa Creek	5.0	FW Miles	C;Tr,HQW

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	Ecological/biological Integrity FishCom	Excellent Bioclassification	Aquatic Life	1999	

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-19-8	Reedy Branch	From source to Buck Creek	1.5	FW Miles	WS-II,B;HQW

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	Ecological/biological Integrity Benthos	Excellent Bioclassification	Aquatic Life	2005	

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-19-2	Singecat Branch	From source to Buck Creek	1.4	FW Miles	WS-II,B;HQW

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	Ecological/biological Integrity Benthos	Not Impaired Bioclassification	Aquatic Life	2005	

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-7-9	Swannanoa Creek	From source to Mill Creek	3.2	FW Miles	C;Tr

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	Ecological/biological Integrity Benthos	Excellent Bioclassification	Aquatic Life	2002	

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-21-(6)	Toms Creek (Morgan Lake)	From McDowell County SR 1434 to Catawba River	3.5	FW Miles	C

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	Ecological/biological Integrity Benthos	Not Impaired Bioclassification	Aquatic Life	2002	

Catawba River Basin — **North Fork Catawba River Watershed 0305010102**

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-24-14-(1)	Armstrong Creek	From source to Hickory Botton Creek	10.8	FW Miles	C;Tr,HQW

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	Ecological/biological Integrity Benthos	Excellent Bioclassification	Aquatic Life	2007	

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-24-14-10-3-1	Bartlett Creek	From source to O'Dear Creek	1.3	FW Miles	C;HQW

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	Ecological/biological Integrity Benthos	Good Bioclassification	Aquatic Life	2005	

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-24-14-2	Bee Rock Creek	From source to Armstrong Creek	2.9	FW Miles	C;Tr,HQW

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	Ecological/biological Integrity Benthos	Not Impaired Bioclassification	Aquatic Life	2005	

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-24-14-10-1	Buchanan Creek	From source to Three Mile Creek	1.7	FW Miles	C;HQW

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	Ecological/biological Integrity Benthos	Not Impaired Bioclassification	Aquatic Life	2005	

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-24-14-3	Cow Creek	From source to Armstrong Creek	1.8	FW Miles	C;Tr,HQW

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	Ecological/biological Integrity Benthos	Not Impaired Bioclassification	Aquatic Life	2005	

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-24-8	Honeycutt Creek	From source to North Fork Catawba River	4.8	FW Miles	C;Tr

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	Ecological/biological Integrity Benthos	Good-Fair Bioclassification	Aquatic Life	2007	

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-24-3	Laurel Branch	From source to North Fork Catawba River	2.3	FW Miles	C;Tr

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	Ecological/biological Integrity Benthos	Good-Fair Bioclassification	Aquatic Life	2005	

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-24-(1)	North Fork Catawba River	From source to mouth of Laurel Branch	5.9	FW Miles	C;Tr

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	Ecological/biological Integrity Benthos	Good Bioclassification	Aquatic Life	2007	

All Waters in NC are in Category 5-303(d) List for Mercury due to statewide fish consumption advice for several fish species

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-24-(2.5)a	**North Fork Catawba River**	From mouth of Laurel Branch to Stillhouse Branch	**7.1**	**FW Miles**	B;Tr

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	**Ecological/biological Integrity Benthos**	Good Bioclassification	Aquatic Life	2007	

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-24-(2.5)b	**North Fork Catawba River**	From Stillhouse Branch to Armstrong Creek	**3.5**	**FW Miles**	B;Tr

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	**Ecological/biological Integrity Benthos**	Good-Fair Bioclassification	Aquatic Life	2007	

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-24-10	**Pepper Creek**	From source to North Fork Catawba River	**4.0**	**FW Miles**	C;Tr

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	**Ecological/biological Integrity Benthos**	Good-Fair Bioclassification	Aquatic Life	2007	

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-24-14-6	**Roses Creek**	From source to Armstrong Creek	**2.3**	**FW Miles**	C;Tr,HQW

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	**Ecological/biological Integrity Benthos**	Not Impaired Bioclassification	Aquatic Life	2005	

Catawba River Basin — **Linville River-Lake James Watershed 0305010103**

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-26	**Bailey Creek**	From source to Lake James, Catawba River	**2.2**	**FW Miles**	C

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	**Ecological/biological Integrity Benthos**	Good-Fair Bioclassification	Aquatic Life	2007	

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-(23)	**CATAWBA RIVER (Lake James below elevation 1200)**	From North Fork Catawba River to Bridgewater Dam	**5,810.5**	**FW Acres**	WS-V,B

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
3a	**High Water Temperature**	Data Inconclusive	Aquatic Life	2007	
1	**Water Quality Standards Water Supply**	No Criteria Exceeded	Water Supply	2008	

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-27	**Dales Creek**	From source to Lake James, Catawba River	**4.1**	**FW Miles**	C

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	**Ecological/biological Integrity Benthos**	Excellent Bioclassification	Aquatic Life	2007	

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-29-(19)	**Linville River**	From southern Boundary of Daniel Boone Wildlife Management Area to Lake James, Catawba River	**7.1**	**FW Miles**	B;HQW

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	**Ecological/biological Integrity Benthos**	Excellent Bioclassification	Aquatic Life	2007	
1	**Fecal Coliform (recreation)**	No Criteria Exceeded	Recreation	2008	
1	**Water Quality Standards Aquatic Life**	No Criteria Exceeded	Aquatic Life	2008	

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-29-(4.5)	**Linville River**	From Grandmother Creek to Linville Falls	**15.3**	**FW Miles**	B;Tr

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	**Ecological/biological Integrity Benthos**	Good-Fair Bioclassification	Aquatic Life	2007	

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-24-(13)	**North Fork Catawba River**	From Armstrong Creek to Lake James, Catawba River	**7.0**	**FW Miles**	C

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	**Fecal Coliform (recreation)**	No Criteria Exceeded	Recreation	2008	
1	**Water Quality Standards Aquatic Life**	No Criteria Exceeded	Aquatic Life	2008	

All Waters in NC are in Category 5-303(d) List for Mercury due to statewide fish consumption advice for several fish species

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-28	**Paddy Creek**	From source to 1.5mi upstream of Lake James	**4.6**	**FW Miles**	C;Tr

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	Ecological/biological Integrity FishCom	Good-Fair Bioclassification	Aquatic Life	2007	

11-(23)ut8	**UT LAKE JAMES**	Source to LAKE JAMES	**1.8**	**FW Miles**	

1	Ecological/biological Integrity Benthos	Good Bioclassification	Aquatic Life	2007	

11-30	**White Creek**	From source to Lake James, Catawba River	**3.1**	**FW Miles**	C

5	Ecological/biological Integrity Benthos	Fair Bioclassification	Aquatic Life	2007	2010

Catawba River Basin — **Warrior Fork-Catawba River Watershed 0305010104**

11-35-3-(2)b	**Irish Creek**	From Roses Creek to Warrior Fork	**3.0**	**FW Miles**	WS-III

1	Ecological/biological Integrity FishCom	Excellent Bioclassification	Aquatic Life	2007	

11-35-(1)	**Warrior Fork**	From source to a point 0.6 mile upstream of City of Morganton water supply intake	**4.9**	**FW Miles**	WS-III

1	Ecological/biological Integrity Benthos	Excellent Bioclassification	Aquatic Life	2007	

Catawba River Basin — **Johns River Watershed 0305010105**

11-38-10-3	**Anthony Creek**	From source to Gragg Prong	**4.8**	**FW Miles**	C;Tr

1	Ecological/biological Integrity Benthos	Good Bioclassification	Aquatic Life	2007	

11-38-31	**Franklin Branch**	From source to Johns River	**4.2**	**FW Miles**	C

1	Ecological/biological Integrity Benthos	Good-Fair Bioclassification	Aquatic Life	2007	

11-38-10	**Gragg Prong**	From source to Johns River	**4.0**	**FW Miles**	C;Tr

1	Ecological/biological Integrity Benthos	Excellent Bioclassification	Aquatic Life	2007	
1	Ecological/biological Integrity FishCom	Excellent Bioclassification	Aquatic Life	2007	

11-38-34-14	**Harper Creek**	From source to Wilson Creek	**9.1**	**FW Miles**	C;Tr,ORW

1	Ecological/biological Integrity Benthos	Excellent Bioclassification	Aquatic Life	2002	

11-38-(1)	**Johns River**	From source to Gragg Prong (previously called Anthony Creek)	**6.7**	**FW Miles**	C;Tr

1	Ecological/biological Integrity Benthos	Excellent Bioclassification	Aquatic Life	2007	
1	Ecological/biological Integrity FishCom	Excellent Bioclassification	Aquatic Life	2007	

11-38-(28)	**Johns River**	From Reids Creek to Wilson Creek	**10.3**	**FW Miles**	C

1	Ecological/biological Integrity Benthos	Excellent Bioclassification	Aquatic Life	2007	

11-38-(35.5)	**Johns River**	From a point 0.5 mile upstream of Sims Branch to a point 0.7 mile downstream of N.C. Hwy. 18	**6.9**	**FW Miles**	WS-IV;HQW

1	Ecological/biological Integrity Benthos	Excellent Bioclassification	Aquatic Life	2007	

All Waters in NC are in Category 5-303(d) List for Mercury due to statewide fish consumption advice for several fish species

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-38-32-17	Little Mulberry Creek	From source to Mulberry Creek	3.6	FW Miles	C

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	Ecological/biological Integrity Benthos	Good Bioclassification	Aquatic Life	2007	

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-38-32-18	Little Mulberry Creek	From source to Mulberry Creek	3.8	FW Miles	C

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
3a	Ecological/biological Integrity Benthos	Not Rated Bioclassification	Aquatic Life	2007	

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-38-32-(15)	Mulberry Creek	From Dam at Mulberry Beach to Johns River	5.4	FW Miles	C

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	Ecological/biological Integrity Benthos	Excellent Bioclassification	Aquatic Life	2007	
1	Ecological/biological Integrity FishCom	Excellent Bioclassification	Aquatic Life	2007	

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-38-35	Parks Creek	From source to Johns River	5.3	FW Miles	C

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
5	Ecological/biological Integrity Benthos	Fair Bioclassification	Aquatic Life	2007	2010

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-38-29	Reids Creek	From source to Johns River	2.3	FW Miles	C

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	Ecological/biological Integrity Benthos	Excellent Bioclassification	Aquatic Life	2007	

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-38-34-5	Stack Rock Creek (Gabes Mountain Branch)	From source to Wilson Creek	3.4	FW Miles	C;Tr,ORW

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	Fecal Coliform (recreation)	No Criteria Exceeded	Recreation	2008	
1n	Low pH	No Criteria Exceeded	Aquatic Life	2008	

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-38-5	Thunderhole Branch	From source to Johns River	5.7	FW Miles	C

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	Ecological/biological Integrity Benthos	Good Bioclassification	Aquatic Life	2007	

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-38-34	Wilson Creek	From source to Johns River	23.3	FW Miles	B;Tr,ORW

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	Ecological/biological Integrity Benthos	Excellent Bioclassification	Aquatic Life	2008	
1	Fecal Coliform (recreation)	No Criteria Exceeded	Recreation	2008	
1n	Low pH	No Criteria Exceeded	Aquatic Life	2006	

Catawba River Basin — **Silver Creek-Catawba River Watershed 0305010106**

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-33-(2)	Canoe Creek	From Burke County SR 1248 to Catawba River	5.6	FW Miles	WS-IV

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
5	Ecological/biological Integrity Benthos	Fair Bioclassification	Aquatic Life	2007	2010
1	Ecological/biological Integrity FishCom	Excellent Bioclassification	Aquatic Life	2002	

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-(31.5)	CATAWBA RIVER (including backwaters of Rhodhiss Lake below elevation 995)	From a point 0.6 mile upstream of Muddy Creek to a point 1.2 mile upstream of Canoe Creek	9.8	FW Miles	WS-IV

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	Ecological/biological Integrity Benthos	Good Bioclassification	Aquatic Life	2007	

All Waters in NC are in Category 5-303(d) List for Mercury due to statewide fish consumption advice for several fish species

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-(32.7)	**CATAWBA RIVER (including backwaters of Rhodhiss Lake below elevation 995)**	From a point 0.7 mile upstream of Canoe Creek to a point 0.6 mile upstream of Warrior Fork	**3.9**	**FW Miles**	WS-IV

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	**Ecological/biological Integrity Benthos**	Good-Fair Bioclassification	Aquatic Life	2002	
1	**Fecal Coliform (recreation)**	No Criteria Exceeded	Recreation	2008	
1	**Water Quality Standards Aquatic Life**	No Criteria Exceeded	Aquatic Life	2008	
1	**Water Quality Standards Water Supply**	No Criteria Exceeded	Water Supply		

11-36-(0.7)	**Hunting Creek**	From a point 1.0 mile upstream of Burke County SR 1940 to a point 0.4 mile downstream of Pee Dee Branch	**7.4**	**FW Miles**	WS-IV

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
5	**Ecological/biological Integrity FishCom**	Fair Bioclassification	Aquatic Life	2003	2006

11-32-1-4-1	**Jacktown Creek**	From source to Youngs Fork	**2.4**	**FW Miles**	C

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
3a	**Ecological/biological Integrity Benthos**	Not Rated Bioclassification	Aquatic Life	2001	

11-32-(0.5)	**Muddy Creek**	From source to a point 0.5 mile upstream of mouth	**4.6**	**FW Miles**	C

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	**Ecological/biological Integrity Benthos**	Good-Fair Bioclassification	Aquatic Life	2007	
1	**Ecological/biological Integrity FishCom**	Excellent Bioclassification	Aquatic Life	2007	

11-34-(0.5)	**Silver Creek**	From source to a point 1.3 miles downstream of Clear Creek	**15.4**	**FW Miles**	C

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	**Ecological/biological Integrity Benthos**	Good Bioclassification	Aquatic Life	2007	
1	**Ecological/biological Integrity FishCom**	Good Bioclassification	Aquatic Life	2007	

11-32-2	**South Muddy Creek**	From source to Muddy Creek	**16.1**	**FW Miles**	C

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	**Ecological/biological Integrity Benthos**	Good Bioclassification	Aquatic Life	2007	
1	**Ecological/biological Integrity FishCom**	Good Bioclassification	Aquatic Life	2007	

11-32-1-4a	**Youngs Fork (Coperning Creek)**	From source to Marion WWTP	**3.6**	**FW Miles**	C

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
5	**Ecological/biological Integrity Benthos**	Poor Bioclassification	Aquatic Life	2001	1998

11-32-1-4b	**Youngs Fork (Coperning Creek)**	From Marion WWTP to North Muddy Creek	**1.9**	**FW Miles**	C

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
5	**Ecological/biological Integrity Benthos**	Poor Bioclassification	Aquatic Life	2007	1998
5	**Ecological/biological Integrity FishCom**	Fair Bioclassification	Aquatic Life	2002	1998

Catawba River Basin **Lower Creek Watershed 0305010107**

All Waters in NC are in Category 5-303(d) List for Mercury due to statewide fish consumption advice for several fish species

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-39-6	**Abingdon Creek**	From source to Lower Creek	**5.6**	**FW Miles**	C

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	**Ecological/biological Integrity Benthos**	Not Impaired Bioclassification	Aquatic Life	2002	

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-39-3-1	**Blair Fork**	From source to Spainhour Creek	**2.6**	**FW Miles**	C

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
3a	**Ecological/biological Integrity Benthos**	Not Rated Bioclassification	Aquatic Life	2002	

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-39-8	**Bristol Creek**	From source to Lower Creek	**5.6**	**FW Miles**	WS-IV

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
5	**Ecological/biological Integrity Benthos**	Fair Bioclassification	Aquatic Life	1997	2000

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-39-7-1-(2)	**Celia Creek**	From a point 0.5 mile upstream of Caldwell County SR 1325 to Husband Cr.	**1.3**	**FW Miles**	WS-IV

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
3a	**Ecological/biological Integrity Benthos**	Not Rated Bioclassification	Aquatic Life	2002	

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-39-4a	**Greasy Creek**	From source to SR 1305	**2.6**	**FW Miles**	C

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	**Ecological/biological Integrity Benthos**	Good-Fair Bioclassification	Aquatic Life	2004	

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-39-4b	**Greasy Creek**	From SR 1305 to Lower Creek	**2.6**	**FW Miles**	C

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
5	**Ecological/biological Integrity Benthos**	Fair Bioclassification	Aquatic Life	2004	2000

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-39-7-(2)	**Husband Creek**	From a point 0.5 mile upstream of Celia Creek to Lower Creek	**2.1**	**FW Miles**	WS-IV

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	**Ecological/biological Integrity Benthos**	Not Impaired Bioclassification	Aquatic Life	2002	

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-39-(0.5)a	**Lower Creek**	From source to Zack's Fork	**8.8**	**FW Miles**	C

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	**Ecological/biological Integrity Benthos**	Good-Fair Bioclassification	Aquatic Life	2004	

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-39-(0.5)b	**Lower Creek**	FromZack's Fork to Caldwell County SR 1143	**5.1**	**FW Miles**	C

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
4s	**Ecological/biological Integrity Benthos**	Fair Bioclassification	Aquatic Life	1997	2000
4t	**Turbidity**	Standard Violation	Aquatic Life	2008	1998

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-39-(6.5)	**Lower Creek**	From Caldwell County SR 1143 to a point 0.7 mile downstream of Bristol Creek	**6.8**	**FW Miles**	WS-IV

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
4s	**Ecological/biological Integrity Benthos**	Fair Bioclassification	Aquatic Life	2002	
1	**Ecological/biological Integrity FishCom**	Good-Fair Bioclassification	Aquatic Life	2002	
3a	**Fecal Coliform (recreation)**	Potential Standards Violation	Recreation	2008	
4t	**Turbidity**	Standard Violation	Aquatic Life	2008	1998
1	**Water Quality Standards Water Supply**	No Criteria Exceeded	Water Supply		

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-39-(9)	**Lower Creek**	From a point 0.7 mile downstream of Bristol Creek to Rhodhiss Lake, Catawba River	**1.8**	**FW Miles**	WS-IV;CA

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
4s	**Ecological/biological Integrity Benthos**	Fair Bioclassification	Aquatic Life	1997	2000
4t	**Turbidity**	Standard Violation	Aquatic Life	2008	1998

All Waters in NC are in Category 5-303(d) List for Mercury due to statewide fish consumption advice for several fish species

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
11-39-3	Spainhour Creek	From source to Lower Creek	4.7	FW Miles	C
5	Ecological/biological Integrity Benthos	Fair Bioclassification	Aquatic Life	2002	2000
11-39-3-1ut2	UT to Blair Fork	From source to Blair Fork	2.1	FW Miles	C
3a	Ecological/biological Integrity Benthos	Not Rated Bioclassification	Aquatic Life	2002	
11-39-8-1-(2)	White Mill Creek	From a point 0.6 mile downstream of Burke County -Caldwell County Line to Bristol Creek	3.4	FW Miles	WS-IV
3a	Ecological/biological Integrity Benthos	Not Rated Bioclassification	Aquatic Life	2002	
11-39-1	Zacks Fork Creek	From source to Lower Creek	8.0	FW Miles	C
1	Ecological/biological Integrity Benthos	Not Impaired Bioclassification	Aquatic Life	2002	
Catawba River Basin		Rhodhiss Lake-Catawba River Watershed		0305010108	
11-(53)	CATAWBA RIVER (Lake Hickory below elevation 935)	From U.S. Highway 321 Bridge to N.C. Hwy. 127	1,232.8	FW Acres	WS-IV,B;CA
1	Water Quality Standards Aquatic Life	No Criteria Exceeded	Aquatic Life		
1	Water Quality Standards Water Supply	No Criteria Exceeded	Water Supply		
11-(37)	CATAWBA RIVER (Rhodhiss Lake below elevation 995)	From Johns River to Rhodhiss Dam	1,848.5	FW Acres	WS-IV,B;CA
3n	Chlorophyll a	Potential Standards Violation	Aquatic Life		
5	High pH	Potential Standards Violation	Aquatic Life		2006
1	Water Quality Standards Water Supply	No Criteria Exceeded	Water Supply		
11-52-(1)	Drowning Creek	From source to a point 0.6 mile upstream of mouth	9.1	FW Miles	WS-IV
1	Ecological/biological Integrity FishCom	Good-Fair Bioclassification	Aquatic Life	2007	
11-47-(1)	Freemason Creek	From source to a point 0.6 mile upstream of mouth	3.2	FW Miles	WS-IV
1	Ecological/biological Integrity Benthos	Good-Fair Bioclassification	Aquatic Life	2008	
1	Ecological/biological Integrity FishCom	Good Bioclassification	Aquatic Life	2007	
1	Water Quality Standards Aquatic Life	No Criteria Exceeded	Aquatic Life	2008	
11-55-(1.5)	Gunpowder Creek (Old Mill Pond)	From a point 0.5 mile downstream of Caldwell County SR 1127 to a point 0.8 mile downstream of Billy Branch	13.4	FW Miles	WS-IV
5	Ecological/biological Integrity Benthos	Fair Bioclassification	Aquatic Life	2007	2010

All Waters in NC are in Category 5-303(d) List for Mercury due to statewide fish consumption advice for several fish species

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-54-(0.5)	**Horseford Creek**	From Frye Creek to a point 0.7 mile upstream of mouth	**0.4**	**FW Miles**	WS-IV

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
5	**Ecological/biological Integrity Benthos**	Poor Bioclassification	Aquatic Life	2002	2006

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-54-(3)	**Horseford Creek**	From a point 0.7 mile upstream of mouth to Lake Hickory, Catawba River	**0.7**	**FW Miles**	WS-IV;CA

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
5	**Ecological/biological Integrity Benthos**	Poor Bioclassification	Aquatic Life	2002	2006

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-44-(3)	**McGalliard Creek**	From a point 0.6 mile upstream of mouth to Rhodhiss Lake, Catawba River	**3.9**	**FW Miles**	WS-IV;CA

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	**Ecological/biological Integrity Benthos**	Good-Fair Bioclassification	Aquatic Life	2007	
5	**Ecological/biological Integrity FishCom**	Poor Bioclassification	Aquatic Life	2003	2006

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-56-(2)	**Silver Creek**	From a point 0.7 mile upstream of mouth to Lake Hickory, Catawba River	**0.8**	**FW Miles**	WS-IV;CA

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	**Ecological/biological Integrity Benthos**	Good-Fair Bioclassification	Aquatic Life	2002	

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-41-(1)	**Smoky Creek**	From source to a point 0.6 mile upstream of mouth	**7.5**	**FW Miles**	WS-IV

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	**Ecological/biological Integrity Benthos**	Good Bioclassification	Aquatic Life	2007	
1	**Ecological/biological Integrity FishCom**	Excellent Bioclassification	Aquatic Life	2007	

Catawba River Basin — **Lake Hickory-Catawba River Watershed 0305010109**

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-(59.5)	**CATAWBA RIVER (Lake Hickory below elevation 935)**	From N.C. Hwy. 127 to Oxford Dam	**2,093.6**	**FW Acres**	WS-V,B

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	**Fecal Coliform (recreation)**	No Criteria Exceeded	Recreation	2008	
3a	**Low pH**	Potential Standards Violation	Aquatic Life	2008	
1	**Water Quality Standards Water Supply**	No Criteria Exceeded	Water Supply		

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-62-2-(1)	**Duck Creek**	From source to N.C. Highway 90	**8.5**	**FW Miles**	C;Tr

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	**Ecological/biological Integrity FishCom**	Good Bioclassification	Aquatic Life	2007	

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-62-2-(4)	**Duck Creek**	From N.C. Highway 90 to Middle Little River	**4.4**	**FW Miles**	C

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	**Ecological/biological Integrity Benthos**	Good Bioclassification	Aquatic Life	2007	

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-60	**Falling Creek**	From source to Lake Hickory, Catawba River	**4.0**	**FW Miles**	C

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
5	**Ecological/biological Integrity Benthos**	Fair Bioclassification	Aquatic Life	2007	2010

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-62a	**Middle Little River**	From source to Duck Creek	**14.6**	**FW Miles**	C

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	**Ecological/biological Integrity Benthos**	Excellent Bioclassification	Aquatic Life	2008	
1	**Ecological/biological Integrity FishCom**	Good Bioclassification	Aquatic Life	2007	

All Waters in NC are in Category 5-303(d) List for Mercury due to statewide fish consumption advice for several fish species

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-62b	Middle Little River	From Duck Creek Lake Hickory	6.9	FW Miles	C

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	Ecological/biological Integrity Benthos	Good-Fair Bioclassification	Aquatic Life	2007	

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-61	Snow Creek	From source to Lake Hickory, Catawba River	4.4	FW Miles	C

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	Ecological/biological Integrity Benthos	Good-Fair Bioclassification	Aquatic Life	2007	

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-58	Upper Little River (Cedar Creek)	From source to Morris Creek	9.1	FW Miles	C

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	Ecological/biological Integrity FishCom	Good-Fair Bioclassification	Aquatic Life	2007	

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-58-(5.5)	Upper Little River (Cedar Creek)	From Morris Creek to a point 0.5 mile upstream of mouth	9.8	FW Miles	WS-IV

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	Ecological/biological Integrity Benthos	Excellent Bioclassification	Aquatic Life	2007	
1	Ecological/biological Integrity FishCom	Good-Fair Bioclassification	Aquatic Life	2002	

Catawba River Basin — **Lookout Shoals Lake-Catawba River Watershed 0305010110**

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-73-(0.5)	Elk Shoal Creek (East Side)	From source to a point 1.4 miles upstream of mouth	7.8	FW Miles	WS-IV

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	Ecological/biological Integrity Benthos	Good-Fair Bioclassification	Aquatic Life	2007	
1	Ecological/biological Integrity FishCom	Excellent Bioclassification	Aquatic Life	2002	

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-69-7-(0.7)	Glade Creek	From Alexander County SR 1604 to Lower Little River	5.9	FW Miles	WS-IV

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	Ecological/biological Integrity FishCom	Excellent Bioclassification	Aquatic Life	2007	

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-69-3	Lambert Fork	From source to Lower Little River	8.2	FW Miles	C

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	Ecological/biological Integrity Benthos	Good-Fair Bioclassification	Aquatic Life	2005	
1	Ecological/biological Integrity FishCom	Good-Fair Bioclassification	Aquatic Life	2007	

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-69-(0.5)	Lower Little River	From source to a point 0.5 mile upstream of mouth of Stirewalt Creek	14.0	FW Miles	C

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	Ecological/biological Integrity FishCom	Good Bioclassification	Aquatic Life	2003	
3a	Fecal Coliform (recreation)	Potential Standards Violation	Recreation	2008	
5	Low pH	Standard Violation	Aquatic Life	2008	2010

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-69-(5.5)	Lower Little River	From a point 0.5 mile upstream of of mouth Stirewalt Creek to a point 0.8 mile upstream of mouth	8.6	FW Miles	WS-IV

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	Ecological/biological Integrity Benthos	Good-Fair Bioclassification	Aquatic Life	2007	

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-69-4	Muddy Fork	From source to SR 1409	6.8	FW Miles	C

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
5	Ecological/biological Integrity Benthos	Fair Bioclassification	Aquatic Life	2007	2010
1	Ecological/biological Integrity FishCom	Good-Fair Bioclassification	Aquatic Life	2004	

All Waters in NC are in Category 5-303(d) List for Mercury due to statewide fish consumption advice for several fish species

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-69-3-1	**Poplar Creek**	From source to Lambert Fork	**3.4**	**FW Miles**	C

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	**Ecological/biological Integrity Benthos**	Excellent Bioclassification	Aquatic Life	2005	

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-69-1.5	**Robinette Creek**	From source to Lower Little River	**3.4**	**FW Miles**	B

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	**Ecological/biological Integrity Benthos**	Not Impaired Bioclassification	Aquatic Life	2005	

Catawba River Basin — **Upper Lake Norman Watershed** — **0305010111**

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-78-(0.5)	**Buffalo Shoals Creek**	From source to a point 0.2 mile downstream of Broad Meadow Creek	**8.1**	**FW Miles**	WS-IV

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	**Ecological/biological Integrity FishCom**	Good Bioclassification	Aquatic Life	2007	

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-78-(3)	**Buffalo Shoals Creek**	From a point 0.2 mile downstream of Broad Meadow Creek to Lake Norman, Catawba River	**3.5**	**FW Miles**	WS-IV;CA

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	**Ecological/biological Integrity Benthos**	Good Bioclassification	Aquatic Life	2007	

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-(75)	**CATAWBA RIVER (Lake Norman below elevation 760)**	From Lyle Creek to Cowan's Ford Dam	**31,331.6**	**FW Acres**	WS-IV,B;CA

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	**Fecal Coliform (recreation)**	No Criteria Exceeded	Recreation	2008	
3a	**Low pH**	Data Inconclusive	Aquatic Life	2008	
1	**Water Quality Standards Water Supply**	No Criteria Exceeded	Water Supply		

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-76-(3.5)	**Lyle Creek**	From Bakers Creek to U.S. Hwys. 64 & 70	**6.3**	**FW Miles**	WS-IV

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	**Ecological/biological Integrity Benthos**	Good-Fair Bioclassification	Aquatic Life	2002	

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-76-(4.5)	**Lyle Creek**	From U.S. Hwys. 64 & 70 to Lake Norman, Catawba River	**5.9**	**FW Miles**	WS-IV;CA

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	**Ecological/biological Integrity Benthos**	Good-Fair Bioclassification	Aquatic Life	2007	
1	**Ecological/biological Integrity FishCom**	Excellent Bioclassification	Aquatic Life	2004	

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-76-5-(0.3)	**McLin Creek**	From source to Catawba County SR 1734	**3.7**	**FW Miles**	C

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	**Ecological/biological Integrity Benthos**	Good-Fair Bioclassification	Aquatic Life	2002	

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-76-5-(0.7)	**McLin Creek**	From Catawba County SR 1734 to a point 0.2 mile upstream of Catawba County SR 1722	**6.8**	**FW Miles**	WS-IV

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
5	**Ecological/biological Integrity Benthos**	Fair Bioclassification	Aquatic Life	2007	2010

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-76-5-(3)	**McLin Creek**	From a point 0.2 mile upstream of Catawba County SR 1722 to Lyle Creek	**0.7**	**FW Miles**	WS-IV;CA

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
5	**Ecological/biological Integrity Benthos**	Fair Bioclassification	Aquatic Life	2007	2010

Catawba River Basin — **Dutchmans Creek Watershed** — **0305010113**

All Waters in NC are in Category 5-303(d) List for Mercury due to statewide fish consumption advice for several fish species

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-119-2-2	**Anderson Creek**	From source to Killian Creek	**5.0**	**FW Miles**	C

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	**Ecological/biological Integrity FishCom**	Good Bioclassification	Aquatic Life	2007	

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-119-(0.5)	**Dutchmans Creek**	From source to a point 0.8 mile downstream of Taylors Creek	**7.4**	**FW Miles**	WS-IV

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	**Ecological/biological Integrity Benthos**	Good-Fair Bioclassification	Aquatic Life	2007	
3a	**Fecal Coliform (recreation)**	Potential Standards Violation	Recreation	2008	
5	**Turbidity**	Standard Violation	Aquatic Life	2008	2010
1	**Water Quality Standards Water Supply**	No Criteria Exceeded	Water Supply		

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-119-2-3	**Forney Creek**	From source to Killian Creek	**8.4**	**FW Miles**	C

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
5	**Ecological/biological Integrity FishCom**	Fair Bioclassification	Aquatic Life	2007	2010

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-119-2-(0.5)a	**Killian Creek**	From source to Anderson Creek	**11.6**	**FW Miles**	C

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	**Ecological/biological Integrity FishCom**	Good Bioclassification	Aquatic Life	2007	

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-119-2-(0.5)b	**Killian Creek**	From Anderson Creek to a point 1.2 miles upstream of mouth	**3.2**	**FW Miles**	C

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	**Ecological/biological Integrity Benthos**	Good-Fair Bioclassification	Aquatic Life	2007	

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-119-1-(1)	**Leepers Creek**	From source to a point a point 0.8 mile upstream of mouth	**15.9**	**FW Miles**	C

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	**Ecological/biological Integrity Benthos**	Good Bioclassification	Aquatic Life	2008	
1	**Ecological/biological Integrity FishCom**	Good-Fair Bioclassification	Aquatic Life	2007	

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-119-1-(12)	**Leepers Creek**	From a point 0.8 mile upstream of mouth to Dutchmans Creek	**0.9**	**FW Miles**	WS-IV

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	**Fecal Coliform (recreation)**	No Criteria Exceeded	Recreation	2008	
1	**Water Quality Standards Aquatic Life**	No Criteria Exceeded	Aquatic Life	2008	
1	**Water Quality Standards Water Supply**	No Criteria Exceeded	Water Supply	2008	

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-119-4	**South Stanley Creek**	From source to Dutchmans Creek	**4.8**	**FW Miles**	WS-IV

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	**Fecal Coliform (recreation)**	No Criteria Exceeded	Recreation	2008	
1	**Water Quality Standards Aquatic Life**	No Criteria Exceeded	Aquatic Life	2008	
1	**Water Quality Standards Water Supply**	No Criteria Exceeded	Water Supply	2008	

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-119-3-(2)	**Stanley Creek**	From a point 1.0 mile upstream of Gaston County SR 1918 to Dutchmans Creek	**4.7**	**FW Miles**	WS-IV

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	**Fecal Coliform (recreation)**	No Criteria Exceeded	Recreation	2008	
5	**Low Dissolved Oxygen**	Standard Violation	Aquatic Life	2008	2010
1	**Water Quality Standards Water Supply**	No Criteria Exceeded	Water Supply	2008	

All Waters in NC are in Category 5-303(d) List for Mercury due to statewide fish consumption advice for several fish species

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-119-5	Taylors Creek	From source to Dutchmans Creek	6.0	FW Miles	WS-IV

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
3a	Fecal Coliform (recreation)	Potential Standards Violation	Recreation	2008	
1	Water Quality Standards Aquatic Life	No Criteria Exceeded	Aquatic Life	2008	
1	Water Quality Standards Water Supply	No Criteria Exceeded	Water Supply	2008	

Catawba River Basin — **Mountain Island Lake-Catawba River Watershed 0305010114**

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-(117)	CATAWBA RIVER (Lake Wylie below elevation 570)	From Mountain Island Dam to Interstate Highway 85 Bridge at Belmont	375.3	FW Acres	WS-IV;CA

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	Fecal Coliform (recreation)	No Criteria Exceeded	Recreation	2008	
5	Low pH	Standard Violation	Aquatic Life	2008	2008
1	Water Quality Standards Water Supply	No Criteria Exceeded	Water Supply		

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-(122)	CATAWBA RIVER (Lake Wylie below elevation 570)	From I-85 bridge to the upstream side of Paw Creek Arm of Lake Wylie, Catawba River	601.1	FW Acres	WS-IV,B;CA

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1t	Chlorophyll a	No Criteria Exceeded	Aquatic Life	2008	1994
1	Fecal Coliform (recreation)	No Criteria Exceeded	Recreation	2008	
1	Water Quality Standards Aquatic Life	No Criteria Exceeded	Aquatic Life	2008	
1	Water Quality Standards Water Supply	No Criteria Exceeded	Water Supply		

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-(123.5)a	CATAWBA RIVER (Lake Wylie below elevation 570) North Carolina portion	From the upstream side of Paw Creek Arm of Lake Wylie to North Carolina-South Carolina State Line	4,294.0	FW Acres	WS-V,B

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
3t	Chlorophyll a	Potential Standards Violation	Aquatic Life	2008	1994
1	Fecal Coliform (recreation)	No Criteria Exceeded	Recreation	2008	
3a	High pH	Potential Standards Violation	Aquatic Life		
1	Water Quality Standards Water Supply	No Criteria Exceeded	Water Supply		

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-(114)	CATAWBA RIVER (Mountain Island Lake below elevation 648)	From Water Intake at River Bend Steam Station to Mountain Island Dam (Town of Mount Holly water supply intake)	1,937.1	FW Acres	WS-IV,B;CA

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	Fecal Coliform (recreation)	No Criteria Exceeded	Recreation	2008	
5	Low pH	Standard Violation	Aquatic Life	2008	2010
1	Water Quality Standards Water Supply	No Criteria Exceeded	Water Supply		

All Waters in NC are in Category 5-303(d) List for Mercury due to statewide fish consumption advice for several fish species

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-121-(1)	**Fites Creek**	From source to a point 0.3 mile downstream of N.C. Hwy. 273	**3.9**	**FW Miles**	WS-IV

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
3a	**Fecal Coliform (recreation)**	Potential Standards Violation	Recreation	2008	
1	**Water Quality Standards Aquatic Life**	No Criteria Exceeded	Aquatic Life	2008	
1	**Water Quality Standards Water Supply**	No Criteria Exceeded	Water Supply	2008	

11-116-(1)	**Gar Creek**	From source to a point 0.6 mile upstream of mouth	**3.4**	**FW Miles**	WS-IV

1	**Ecological/biological Integrity Benthos**	Good-Fair Bioclassification	Aquatic Life	2007	

11-113-(2)	**Johnson Creek**	From a point 0.6 mile upstream of mouth to Mountain Island Lake, Catawba River	**3.0**	**FW Miles**	WS-IV;CA

1	**Fecal Coliform (recreation)**	No Criteria Exceeded	Recreation	2008	
5	**Turbidity**	Standard Violation	Aquatic Life	2008	2010
1	**Water Quality Standards Water Supply**	No Criteria Exceeded	Water Supply	2008	

11-120-(0.5)	**Long Creek**	From source to a point 0.6 mile downstream of Mecklenburg County SR 2074	**4.7**	**FW Miles**	C

1	**Ecological/biological Integrity FishCom**	Good Bioclassification	Aquatic Life	2004	
3a	**Fecal Coliform (recreation)**	Potential Standards Violation	Recreation	2008	
4t	**Turbidity**	Standard Violation	Aquatic Life	2008	2008

11-120-(2.5)	**Long Creek**	From a point 0.6 mile downstream of Mecklenburg County SR 2074 to a point 0.4 mile upstream of Mecklenburg County SR 1606	**11.3**	**FW Miles**	WS-IV

5	**Copper**	Standard Violation	Aquatic Life	2006	2008
1	**Ecological/biological Integrity FishCom**	Good Bioclassification	Aquatic Life	2004	
3a	**Fecal Coliform (recreation)**	Potential Standards Violation	Recreation	2008	
4t	**Turbidity**	Standard Violation	Aquatic Life	2008	2008
1	**Water Quality Standards Water Supply**	No Criteria Exceeded	Water Supply		

11-115-(1)	**McDowell Creek**	From source to U.S. Hwy. 21	**1.6**	**FW Miles**	C

4b	**Ecological/biological Integrity FishCom**	Poor Bioclassification	Aquatic Life	2002	1998

11-115-(1.5)a	**McDowell Creek**	From U.S. Hwy. 21 to SR 2136 Mecklenburg Co	**4.4**	**FW Miles**	WS-IV

4b	**Ecological/biological Integrity FishCom**	Poor Bioclassification	Aquatic Life	2002	1998

All Waters in NC are in Category 5-303(d) List for Mercury due to statewide fish consumption advice for several fish species

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-115-(1.5)b	McDowell Creek	FromSR2136 Mecklengurg Co to a point 0.7 mile upstream of mouth	2.9	FW Miles	WS-IV

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
4b	Ecological/biological Integrity Benthos	Fair Bioclassification	Aquatic Life	2007	2000

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-115-(5)	McDowell Creek	From a point 0.7 mile upstream of mouth to Mountain Island Lake, Catawba River	2.7	FW Miles	WS-IV;CA

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
4b	Ecological/biological Integrity Benthos	Poor Bioclassification	Aquatic Life	2002	2000

Catawba River Basin — **Lake Wylie-Catawba River Watershed 0305010115**

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-135-4a	Abernethy Creek	From source to First Creek	3.2	FW Miles	C

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	Ecological/biological Integrity Benthos	Not Impaired Bioclassification	Aquatic Life	2002	

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-135-4b	Abernethy Creek	From First Creek to Crowders Creek	1.8	FW Miles	C

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	Ecological/biological Integrity Benthos	Good-Fair Bioclassification	Aquatic Life	2007	

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-135-7	Blackwood Creek	From source to Crowders Creek	4.4	FW Miles	C

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
3a	Ecological/biological Integrity Benthos	Not Rated Bioclassification	Aquatic Life	2002	
3a	Fecal Coliform (recreation)	Potential Standards Violation	Recreation	2008	

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-130a	Catawba Creek	From source toSR2446, Gaston	5.6	FW Miles	C

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
3t	Chlorophyll a	Data Inconclusive	Aquatic Life	1996	
5	Ecological/biological Integrity Benthos	Fair Bioclassification	Aquatic Life	1990	1998
3a	Fecal Coliform (recreation)	Potential Standards Violation	Recreation	2008	

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-130b	Catawba Creek	From SR2446, Gaston to SR2439, Gaston	3.1	FW Miles	C

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
3t	Chlorophyll a	Data Inconclusive	Aquatic Life	1996	
5	Ecological/biological Integrity Benthos	Fair Bioclassification	Aquatic Life	1990	1998
3a	Fecal Coliform (recreation)	Potential Standards Violation	Recreation	2008	

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-130c	Catawba Creek	FromSR2439 to Lake Wylie	4.9	FW Miles	C

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
3t	Chlorophyll a	Data Inconclusive	Aquatic Life	1996	
5	Ecological/biological Integrity FishCom	Poor Bioclassification	Aquatic Life	2007	1998

All Waters in NC are in Category 5-303(d) List for Mercury due to statewide fish consumption advice for several fish species

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-(123.5)b	**CATAWBA RIVER (Lake Wylie South FK Catawba Arm) North Carolina portion**	South Fork Catawba River Arm of Lake Wyly	**1,291.0**	**FW Acres**	WS-V,B

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1t	**Chlorophyll a**	No Criteria Exceeded	Aquatic Life	2008	1994
5	**Copper**	Standard Violation	Aquatic Life	2006	2008
1	**Fecal Coliform (recreation)**	No Criteria Exceeded	Recreation	2008	
5	**High Water Temperature**	Standard Violation	Aquatic Life	2008	2010
1	**Water Quality Standards Water Supply**	No Criteria Exceeded	Water Supply		

11-135a	**Crowders Creek**	From source to SR 1118	**1.9 FW Miles**	C

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
3t	**Chlorophyll a**	Data Inconclusive	Aquatic Life	1996	
5	**Ecological/biological Integrity Benthos**	Fair Bioclassification	Aquatic Life	2002	1998
5	**Ecological/biological Integrity FishCom**	Poor Bioclassification	Aquatic Life	2004	1998

11-135b	**Crowders Creek**	From State Route 1118 to State Route 1122	**3.1 FW Miles**	C

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
3t	**Chlorophyll a**	Data Inconclusive	Aquatic Life	1996	
1	**Ecological/biological Integrity Benthos**	Good-Fair Bioclassification	Aquatic Life	2002	

11-135c	**Crowders Creek**	From State Route 1122 to State Route 1131	**3.3 FW Miles**	C

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
3t	**Chlorophyll a**	Data Inconclusive	Aquatic Life	1996	
5	**Ecological/biological Integrity Benthos**	Fair Bioclassification	Aquatic Life	2002	1998
5	**Ecological/biological Integrity FishCom**	Poor Bioclassification	Aquatic Life	2004	1998

11-135d	**Crowders Creek**	From State Route 1131 to State Route 1108	**7.3 FW Miles**	C

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
3t	**Chlorophyll a**	Data Inconclusive	Aquatic Life	1996	
5	**Ecological/biological Integrity FishCom**	Fair Bioclassification	Aquatic Life	2007	1998

11-135e	**Crowders Creek**	From State Route 1108 To NC 321	**1.5 FW Miles**	C

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
3t	**Chlorophyll a**	Data Inconclusive	Aquatic Life	1996	
5	**Ecological/biological Integrity Benthos**	Fair Bioclassification	Aquatic Life	1989	2000
4t	**Fecal Coliform (recreation)**	Standard Violation	Recreation	2008	2000

11-135f	**Crowders Creek**	From State Route 321 to State Route 2424	**1.4 FW Miles**	C

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
3t	**Chlorophyll a**	Data Inconclusive	Aquatic Life	1996	
5	**Ecological/biological Integrity Benthos**	Fair Bioclassification	Aquatic Life	1989	2000
4t	**Fecal Coliform (recreation)**	Standard Violation	Recreation	2008	2000

All Waters in NC are in Category 5-303(d) List for Mercury due to statewide fish consumption advice for several fish species

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-135g	**Crowders Creek**	From State Route 2424 to North Carolina-South Carolina State Line	**1.5**	**FW Miles**	C

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
3t	**Chlorophyll a**	Data Inconclusive	Aquatic Life	1996	
1	**Ecological/biological Integrity Benthos**	Good-Fair Bioclassification	Aquatic Life	2007	
4t	**Fecal Coliform (recreation)**	Standard Violation	Recreation	2008	
1	**Water Quality Standards Aquatic Life**	No Criteria Exceeded	Aquatic Life	2008	

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-135-9	**McGill Branch**	From source to Crowders Creek	**3.8**	**FW Miles**	C

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	**Fecal Coliform (recreation)**	No Criteria Exceeded	Recreation	2008	
1	**Water Quality Standards Aquatic Life**	No Criteria Exceeded	Aquatic Life	2008	

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-135-2	**McGill Creek**	From source to Crowders Creek	**3.3**	**FW Miles**	C

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
5	**Ecological/biological Integrity Benthos**	Poor Bioclassification	Aquatic Life	1989	1998

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-135-10-1	**South Crowders Creek**	From source to South Fork Crowders Creek	**5.7**	**FW Miles**	C

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	**Fecal Coliform (recreation)**	No Criteria Exceeded	Recreation	2008	
5	**Low Dissolved Oxygen**	Standard Violation	Aquatic Life	2008	2010

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-135-10	**South Fork Crowders Creek**	North Carolina Portion	**5.7**	**FW Miles**	C

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	**Ecological/biological Integrity Benthos**	Good-Fair Bioclassification	Aquatic Life	2002	
1	**Ecological/biological Integrity FishCom**	Good-Fair Bioclassification	Aquatic Life	2004	

AU_Number	AU_Name	AU_Description	LengthArea	AU_Units	Classification
11-135fut1	**UT to Crowders Creek**	From source to Crowders Creek	**4.6**	**FW Miles**	

IR Cat	Parameter	Reason for Rating	Use Category	Collection Year	303(d)year
1	**Ecological/biological Integrity Benthos**	Good-Fair Bioclassification	Aquatic Life	2002	
4t	**Fecal Coliform (recreation)**	Standard Violation	Recreation	2008	

Appendix 1-B

Biological (Benthic & Fish) Sample Site Sheets

BENTHIC MACROINVERTEBRATE SAMPLE

Waterbody	Location	Station ID	Date	Bioclassification
Catawba R	**SR 1274**	**CB14**	**07/12/07**	**Excellent**

County	Subbasin	8 digit HUC	Latitude	Longitude	AU Number	Level IV Ecoregion
McDowell	30	03050101	353652	821348	11-(1)	Southern Crystalline Ridges and Mountains

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Stream Depth (m)
C;Tr	4.5	1600	6	0.4

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	50	20	30	0

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

Water Quality Parameters

Temperature (°C)	23.4
Dissolved Oxygen (mg/L)	6.0
Specific Conductance (µS/cm)	62
pH (s.u.)	6.8
Water Clarity	clear

Habitat Assessment Scores (max)

Channel Modification (5)	4
Instream Habitat (20)	14
Bottom Substrate (15)	14
Pool Variety (10)	8
Riffle Habitat (16)	15
Left Bank Stability (7)	6
Right Bank Stability (7)	6
Light Penetration (10)	8
Left Riparian Score (5)	5
Right Riparian Score (5)	1
Total Habitat Score (100)	81

Site Photograph

Substrate cobble, boulder, gravel, and sand

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
07/12/07	10255	---	42	---	2.64	Excellent
08/08/02	8934	---	26	---	2.75	Good-Fair
08/07/97	7404	---	24	---	2.88	Good-Fair

Taxonomic Analysis

The 2007 sample produced a record high EPT taxa richness, EPT abundance (195 in 2007, 139 and 122 in 2002 and 1997 respectively) , and record low EPTBI. EPT taxa collected in 2007 but not present at any other sampling include the mayflies *Diphetor hageni* , *Epeorus dispar* , *Rhithrogena exilis* , *Maccaffertium ithaca* , and the caddisflies *Apatania* , *Neophylax consimilis* , *N. mitchelli* , *Psychomyia flavida* , *Pycnopsyche gentilis* , *Rhyacophila acutiloba* , and *R. carolina* .

Data Analysis

Although large portions of the catchment upstream of this location are forested, there are some rural residences and runoff from both SR 1274 and I-40 are potential stressors. As is typical in a watershed where there are no point discharges, and where nonpoint pollution is the greatest potential source for pollution, the 2007 drought and corresponding reduced runoff may be a reason why the invertebrate community has improved greatly in 2007. Other factors may also be involved since 2002 was also a drought year.

BENTHIC MACROINVERTEBRATE SAMPLE

Waterbody	Location	Station ID	Date	Bioclassification
Catawba R	**SR 1234**	**CB12**	**07/10/07**	**Good**

County	Subbasin	8 digit HUC	Latitude	Longitude	AU Number	Level IV Ecoregion
McDowell	30	03050101	353813	820838	0	Eastern Blue Ridge Foothills

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Stream Depth (m)
C	55	1380	12	0.4

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	60	10	20	10 (intersate highway)

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
Old Fort WWTP	NC0021229001	0.8

Water Quality Parameters

Temperature (°C)	26.8
Dissolved Oxygen (mg/L)	6.3
Specific Conductance (µS/cm)	75
pH (s.u.)	7.5
Water Clarity	clear

Habitat Assessment Scores (max)

Channel Modification (5)	4
Instream Habitat (20)	15
Bottom Substrate (15)	10
Pool Variety (10)	4
Riffle Habitat (16)	14
Left Bank Stability (7)	6
Right Bank Stability (7)	6
Light Penetration (10)	8
Left Riparian Score (5)	5
Right Riparian Score (5)	4
Total Habitat Score (100)	76

Site Photograph

Substrate boulder, cobble, gravel, and sand

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
07/10/07	10250	104	38	4.73	3.58	Good
08/08/02	8933	89	36	4.73	3.56	Good
08/07/97	7406	70	31	5.32	4.19	Good-Fair
07/09/92	5897	102	41	4.14	3.20	Good
07/26/90	5404	84	38	4.43	3.72	Good

Taxonomic Analysis

Excluding the spring (April 18, 1985; Fair) and the post-soybean oil 1997 (Good-Fair) sample, this location has had a stable macroinvertebrate community. Some taxa that have been consistently common or abundant at this location since sampling first started here include the mayflies *Baetis flavistriga*, *B. pluto*, *Isonychia*, as well as three species of *Maccaffertium*, the stoneflies *Acroneuria abnormis, Paragnetina immarginata,* and *Perlesta* and the caddisflies *Ceratopsyche bronta*, *C. sparna*, and *Psychomyia flavida*.

Data Analysis

With the exception of the April 1985 (Fair) and August 1997 (Good-Fair) samples, this site has always maintained a bioclassification of Good. The decline in rating measured in 1997 was related to a large soybean-oil spill upstream on nearby tributary (Swannanoa Creek). Since that sample, the community continues to maintain a stable ecological invertebrate community despite the proximity to the Old Fort WWTP discharge which is upstream on the tributary Curtis Creek. It was also noted that there are numerous active cow pastures located near this site as the odor of cow manure was obvious and persistent throughout the sample collection.

BENTHIC MACROINVERTEBRATE SAMPLE

Waterbody	Location	Station ID	Date	Bioclassification
Catawba R	**SR 1221**	**CB11**	**07/12/07**	**Good**

County	Subbasin	8 digit HUC	Latitude	Longitude	AU Number	Level IV Ecoregion
McDowell	30	03050101	354109	820340	0	Eastern Blue Ridge Foothills

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Stream Depth (m)
C	126	1270	26	0.5

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	70	10	0	20 (RV park)

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

Water Quality Parameters

Temperature (°C)	24.6
Dissolved Oxygen (mg/L)	6.0
Specific Conductance (µS/cm)	55
pH (s.u.)	6.8
Water Clarity	slightly turbid

Habitat Assessment Scores (max)

Channel Modification (5)	4
Instream Habitat (20)	13
Bottom Substrate (15)	8
Pool Variety (10)	3
Riffle Habitat (16)	7
Left Bank Stability (7)	6
Right Bank Stability (7)	6
Light Penetration (10)	7
Left Riparian Score (5)	3
Right Riparian Score (5)	2
Total Habitat Score (100)	59

Site Photograph

Substrate cobble, sand, gravel, silt, and some boulder

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
07/12/07	10251	93	35	5.17	3.88	Good
08/07/02	8931	73	27	5.38	4.11	Good-Fair
08/06/97	7399	75	35	4.46	3.90	Good
07/08/92	5894	90	42	4.42	3.61	Good
07/26/90	5405	77	43	4.28	3.77	Good

Taxonomic Analysis

EPT taxa collected in 2007 that had been previously abundant or common from the 1990, 1992, and 1997 collections but were absent in 2002 included the mayflies *Baetis intercalaris*, *Baetis pluto*, *Serratella serratoides*, the stoneflies *Acroneuria abnormis*, *Paragnetina immarginata*, and *Perlesta*, and the caddisfly *Hydropsyche venularis*. While *B. intercalaris* and *B. pluto* are somewhat pollution tolerant, the stoneflies *A. abnormis* and *P. immarginata* are both pollution intolerant and long-lived. Their absence for the first time at this location in 2002 suggests a temporary decline in water quality that year. Their reappearance in 2007 may indicate that conditions have since recovered.

Data Analysis

Including the 2007 collection, this segment of the Catawba River has been sampled on 11 occasions with four samples producing Good bioclassifications and the remaining seven producing Good-Fair ratings. Starting with the initial collection in 1983, five subsequent annual samples (1984-1988) produced Good-Fair bioclassifications. In 1990, the bioclassification improved to Good and remained so with subsequent samples in 1992, and 1997. However, the 2002 sample reverted back to the Good-Fair rating seen in the early and mid 1980's and this decrease in bioclassification was thought at that time to be the result of low flows and lower dissolved oxygen levels. However, the 2007 sample was collected during a drought so the decline in 2002 was likely not a result of poor flows. Since 1983 and through 11 samples, it appears that water quality in this large catchment has mostly been stable. Why this site suddenly reverted in 2002 to bioclassifications seen through the 1980's is unknown but conditions in the invertebrate community in 2007 have recovered to levels measured from the early and mid 1990's.

BENTHIC MACROINVERTEBRATE SAMPLE

Waterbody	Location	Station ID	Date	Bioclassification
Catawba R	**SR 1147**	**CB10**	**07/10/07**	**Good**

County	Subbasin	8 digit HUC	Latitude	Longitude	AU Number	Level IV Ecoregion
Burke	30	03050101	354440	814620	0	Northern Inner Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Stream Depth (m)
WS-IV;Tr	506	1100	50	0.5

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	90	0	0	10 (residential)

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

Water Quality Parameters

Temperature (°C)	13.4
Dissolved Oxygen (mg/L)	9.0
Specific Conductance (µS/cm)	49
pH (s.u.)	6.5
Water Clarity	clear

Habitat Assessment Scores (max)

Channel Modification (5)	4
Instream Habitat (20)	16
Bottom Substrate (15)	13
Pool Variety (10)	4
Riffle Habitat (16)	10
Left Bank Stability (7)	6
Right Bank Stability (7)	6
Light Penetration (10)	3
Left Riparian Score (5)	4
Right Riparian Score (5)	5
Total Habitat Score (100)	71

Site Photograph

Substrate cobble, boulder, gravel, and sand

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
07/10/07	10094	88	33	4.61	3.35	Good
08/08/02	8913	60	21	4.04	2.98	Good
08/08/97	7409	66	30	4.17	3.13	Good
08/12/88	4697	79	34	4.83	3.37	Good

Taxonomic Analysis

Although there is some variation among the major community metrics, the overall invertebrate community here has been largely stable through time with several of the same mayflies (*Baetis pluto* , *Maccaffertium modestum, Serratella serratoides*), stoneflies (*Acroneuria abnormis* , *Perlesta* , *Pteronarcys*), and caddisflies (*Brachycentrus numerosus* , *Ceratopsyche sparna* , *Glossosoma* , *Lepidostoma* , *Micrasema wataga* , *Neophylax oligius*) present from each sample.

Data Analysis

This site is located approximately 10 miles downstream of the powerhouse at Lake James. As a result, this river segment is subjected to large diurnal swings in discharge. Nevertheless, this site continues to exhibit a very stable macoinvertebrate community with all samples producing Good bioclassifications with very small ranges in the BI and EPT BI.

BENTHIC MACROINVERTEBRATE SAMPLE

Waterbody	Location	Station ID	Date	Bioclassification
Curtis Cr	**SR 1227**	**CB22**	**07/12/07**	**Excellent**

County	Subbasin	8 digit HUC	Latitude	Longitude	AU Number	Level IV Ecoregion
McDowell	30	03050101	354023	821132	0	Southern Crystalline Ridges and Mountains

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Stream Depth (m)
C;Tr	13	1700	6	0.4

	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)	23.1
Dissolved Oxygen (mg/L)	6.5
Specific Conductance (µS/cm)	19
pH (s.u.)	7.1
Water Clarity	clear

Habitat Assessment Scores (max)

Channel Modification (5)	4
Instream Habitat (20)	17
Bottom Substrate (15)	14
Pool Variety (10)	9
Riffle Habitat (16)	15
Left Bank Stability (7)	7
Right Bank Stability (7)	6
Light Penetration (10)	9
Left Riparian Score (5)	4
Right Riparian Score (5)	5
Total Habitat Score (100)	90

Site Photograph

Substrate boulder, cobble, gravel, and sand

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
07/12/07	10253	---	40	---	2.70	Excellent
08/08/02	8936	---	30	---	3.35	Good
08/07/97	7405	---	34	---	2.47	Good
02/10/92	5776	---	42	---	2.10	Good

Taxonomic Analysis

The 2007 EPT sample produced the highest EPT species richness for a summer sample at this location. Pollution intolerant taxa collected in 2007 but absent from all previous collections included the stonefly *Isoperla holochlora* and the caddisflies *Nyctiophylax celta*, *Polycentropus*, and *Psychomyia flavida*.

Data Analysis

Although nearly all of the Curtis Creek catchment is forested, there are some small breaks in the riparian zone that may cause impacts from SR 1227 especially during wet years. The high 2007 EPT taxa richness is not entirely explained by less nonpoint runoff in a drought because 2002 was also a drought year.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Station ID	Bioclassification
CURTIS CR	**US 70**	**05/24/07**	**CF112**	**Excellent**

County	Subbasin	8 digit HUC	Latitude	Longitude	AU Number	Level IV Ecoregion
MCDOWELL	30	03050101	35.645	-82.15916667	11-10	Eastern Blue Ridge Foothills

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
C;Tr	16.6	1442	12	0.4	Yes

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	65	0	25	10 (rural commercial)

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

Water Quality Parameters

Temperature (°C)	17.5
Dissolved Oxygen (mg/L)	8.2
Specific Conductance (µS/cm)	21
pH (s.u.)	6.1

Water Clarity	Clear

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	18
Bottom Substrate (15)	12
Pool Variety (10)	9
Riffle Habitat (16)	14
Left Bank Stability (7)	6
Right Bank Stability (7)	6
Light Penetration (10)	8
Left Riparian Score (5)	5
Right Riparian Score (5)	5
Total Habitat Score (100)	**88**

Site Photograph

Substrate cobble, boulder, gravel, sand

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
05/24/07	2007-68	20	60	Excellent
04/30/02	2002-34	19	60	Excellent

Most Abundant Species Central Stoneroller

Exotic Species Green Sunfish, Smallmouth Bass, Rainbow Trout, and Brown Trout

Species Change Since Last Cycle

Gains -- Green Sunfish, Piedmont Darter, and Western Blacknose Dace. **Losses** -- Notchlip Redhorse and Yellow Perch.

Data Analysis

Watershed -- a headwater tributary to the Catawba River located about 7/10 of a mile above its confluence; drainage area is almost entirely within the Southern Crystalline Ridges and Mountains ecoregion and the Pisgah National Forest. **Habitat** -- long runs, good riffles, chutes, side snags, and a few undercuts; nice forested riparian zone widths; very low conductivity. **2007** -- an abundant (n = 746) and diverse fish community including 4 intolerant species (Smallmouth Bass, Fieryblack Shiner, Piedmont Darter, and Rainbow Trout) was collected with a maximum NCIBI score and rating. **2002 - 2007** -- a total of 22 fish species are known from this watershed including 8 minnow species, 4 sucker species, and 3 darter species; based on two consecutive Excellent ratings, this regional reference site qualifies for HQW or ORW status if petitioned.

BENTHIC MACROINVERTEBRATE SAMPLE

Waterbody	Location	Station ID	Date	Bioclassification
Crooked Cr	**SR 1135**	**CB20**	**07/12/07**	**Good-Fair**

County	Subbasin	8 digit HUC	Latitude	Longitude	AU Number	Level IV Ecoregion
McDowell	30	3050101	353620	820701	11-12	Eastern Blue Ridge Foothills

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Stream Depth (m)
C	29	1520	9	0.4

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	50	10	10	30

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

Water Quality Parameters

Temperature (°C)	25.4
Dissolved Oxygen (mg/L)	6.3
Specific Conductance (µS/cm)	42
pH (s.u.)	7.3
Water Clarity	slightly turbid

Habitat Assessment Scores (max)

Channel Modification (5)	4
Instream Habitat (20)	15
Bottom Substrate (15)	13
Pool Variety (10)	3
Riffle Habitat (16)	14
Left Bank Stability (7)	6
Right Bank Stability (7)	6
Light Penetration (10)	9
Left Riparian Score (5)	3
Right Riparian Score (5)	5
Total Habitat Score (100)	78

Site Photograph

Substrate cobble, gravel, bedrock, boulder, sand, and silt

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
07/12/07	10254	---	27	---	3.29	Good-Fair
08/07/02	8932	74	32	4.41	3.66	Good
08/06/97	7401	69	38	4.25	3.74	Good
07/08/92	5895	---	32	---	3.03	Good

Taxonomic Analysis

EPT taxa present from all previous samples but absent in 2007 were restricted to just mayflies and included *Baetis flavistriga*, *Baetis pluto*, and *Caenis*. As these are fairly tolerant EPT taxa their absence in 2007 does not support a conclusion of deteriorating water chemistry.

Data Analysis

Although the 2007 sample had fewer EPT than any other collection, the 2007 collection was just one EPT taxon short of receiving a bioclassification of Good. In addition, the EPT BI was the second lowest ever measured at this location. These data suggest that the overall water quality remains essentially unchanged from earlier collections. This is supported by the 2007 conductivity value (43 µS/cm) which was down from 50 µS/cm in 2002 and 70 µS/cm in 1997. These data are consistent with a watershed where nonpoint pollution is the largest potential source of stress and in a drought year reduced runoff would be expected to result in lower stream conductivity. Why the reduced runoff did not translate into additional EPT taxa is unknown and is not likely the result of drought-induced habitat limitations as several edge taxa were present in 2007. However, despite the lower EPT richness, the EPT BI was the second lowest measured.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Station ID	Bioclassification
CROOKED CR	**SR 1135**	**05/24/07**	**CF9**	**Good**

County	Subbasin	8 digit HUC	Latitude	Longitude	AU Number	Level IV Ecoregion
MCDOWELL	30	03050101	35.60527778	-82.11694444	11-12	Eastern Blue Ridge Foothills

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
C	28.6	1438	12	0.3	Yes

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	90	5 (rural residential)	0	5 (construction site)

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

Water Quality Parameters

Temperature (°C)	16.6
Dissolved Oxygen (mg/L)	8.5
Specific Conductance (µS/cm)	40
pH (s.u.)	5.5

Water Clarity	Slightly turbid

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	16
Bottom Substrate (15)	7
Pool Variety (10)	6
Riffle Habitat (16)	15
Left Bank Stability (7)	5
Right Bank Stability (7)	6
Light Penetration (10)	10
Left Riparian Score (5)	5
Right Riparian Score (5)	5
Total Habitat Score (100)	**80**

Site Photograph

Substrate sand, gravel, cobble, bedrock

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
05/24/07	2007-67	19	52	Good
04/30/02	2002-35	22	56	Excellent

Most Abundant Species Fantail Darter

Exotic Species Brown Trout

Species Change Since Last Cycle

Gains -- Flat Bullhead, Western Blacknose Dace, and Brown Trout. **Losses** -- Fieryblack Shiner, Eastern Silvery Minnow, Bluegill, Smallmouth Bass, Notchlip Redhorse, and Yellow Perch.

Data Analysis

Watershed -- a tributary to the Catawba River, located about 4.5 miles above its confluence; drains the extreme southwest corner of McDowell County, just below the town of Old Fort; the headwaters of this watershed lie within the Southern Crystalline Ridges and Mountains ecoregion. **Habitat** -- shallow sandy runs, good riffles, and stick snags; good canopy and forested riparian zone widths; the low morning pH tracks the overnight highs in stream respiration. **2007** -- a diverse and abundant (n = 466) fish community collected including the intolerant Piedmont Darter. **2002 - 2007** -- overall, the NCIBI metrics have remained stable in this stream; the loss of two intolerant species (Fieryblack Shiner and Smallmouth Bass) are driving the slight decline in NCIBI score and rating; this regional reference watershed is supporting a diverse fish community including 25 known fish species; there are no apparent water quality issues in this watershed.

BENTHIC MACROINVERTEBRATE SAMPLE

Waterbody	Location	Station ID	Date	Bioclassification
Mackey Cr	**US 70**	**CB34**	**07/12/07**	**Good**

County	Subbasin	8 digit HUC	Latitude	Longitude	AU Number	Level IV Ecoregion
McDowell	30	03050101	354011	820651	0	Eastern Blue Ridge Foothills

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Stream Depth (m)
WS-I;Tr;HQW	7.5	1360	7	0.4

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	90	0	0	10 (commercial)

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

Water Quality Parameters

Temperature (°C)	26.2
Dissolved Oxygen (mg/L)	5.9
Specific Conductance (µS/cm)	35
pH (s.u.)	7.1
Water Clarity	slightly turbid

Habitat Assessment Scores (max)

Channel Modification (5)	4
Instream Habitat (20)	14
Bottom Substrate (15)	13
Pool Variety (10)	9
Riffle Habitat (16)	14
Left Bank Stability (7)	6
Right Bank Stability (7)	6
Light Penetration (10)	8
Left Riparian Score (5)	5
Right Riparian Score (5)	3
Total Habitat Score (100)	82

Site Photograph

Substrate boulder, cobble, gravel, sand, and bedrock

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
07/12/07	10252	---	33	---	3.14	Good
08/06/02	8911	67	30	4.25	3.68	Good
03/25/98	7541	29	15	4.44	3.93	Fair
10/21/96	7218	43	25	4.90	4.47	Good-Fair

Taxonomic Analysis

The 2007 EPT sample resulted in the highest EPT taxa richness ever at this site. This is particularly significant as all but the 1998 sample were collected using the more intensive Full-Scale methodology. EPT taxa collected in 2007 not previously observed here included the mayfly *Eurylophella verisimilis*, *Hexagenia*, the stonefly *Paragnetina fumosa*, and the caddisflies *Goera*, *Heteroplectron americanum*, *Oecetis persimilis*, and *Triaenodes perna*.

Data Analysis

Historically, a metal plating facility (Metal Industries, Inc.) had maintained a small (0.01 MGD) NPDES discharge upstream of this location. However, this facility ceased its discharge just prior to July, 2002 and an immediate and dramatic improvement in the invertebrate community was noted just one month later as the August 6, 2002 sample produced a doubling of the EPT taxa richness over the previous sample in 1998. In addition to the improving EPT taxa richness measured here, the BI and EPT BI continue to decrease demonstrating that the invertebrate community continues recovery following the removal of the discharge.

BENTHIC MACROINVERTEBRATE SAMPLE

Waterbody	Location	Station ID	Date	Bioclassification
Buck Cr	**NC 80**	**CB6**	**07/11/07**	**Excellent**

County	Subbasin	8 digit HUC	Latitude	Longitude	AU Number	Level IV Ecoregion
McDowell	30	03050101	354405	820605	0	Southern Crystalline Ridges and Mountains

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Stream Depth (m)
WS-III;Tr;HQW	14	1600	17	0.4

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	90	0	0	10 (road and residential)

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

Water Quality Parameters

Temperature (°C)	22.4
Dissolved Oxygen (mg/L)	7.0
Specific Conductance (µS/cm)	28
pH (s.u.)	6.9
Water Clarity	clear

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	17
Bottom Substrate (15)	14
Pool Variety (10)	10
Riffle Habitat (16)	15
Left Bank Stability (7)	7
Right Bank Stability (7)	7
Light Penetration (10)	9
Left Riparian Score (5)	5
Right Riparian Score (5)	5
Total Habitat Score (100)	94

Site Photograph

Substrate cobble, boulder, bedrock, and gravel

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
07/11/07	10248	---	45	---	2.88	Excellent
08/05/02	8905	---	31	---	3.04	Good
08/06/97	7397	---	38	---	2.59	Excellent
06/14/94	6558	75	41	3.28	2.47	Excellent
02/10/94	5773	---	42	---	2.20	Excellent

Taxonomic Analysis

The 2007 EPT collection produced the highest EPT taxa richness ever measured at this site. Even the more intensive Full-Scale collection from June 1994 did not produce as many EPT taxa as seen in 2007. EPT collected in 2007 and not previously observed here included the intolerant mayflies *Ephemerella dorothea* , *Serratella carolina* , and the caddisflies *Lepidostoma* and *Psychomyia flavida* .

Data Analysis

Almost all of the Buck Creek catchment is forested with only a few residences observed upstream. However, large portions of the NC 80 corridor are contained in this watershed. Despite the presence of NC 80, this site has been quite stable through time in terms of EPT species richness and EPT BI. The 2007 high EPT species diversity was most similar to that found in 1994.

BENTHIC MACROINVERTEBRATE SAMPLE

Waterbody	Location	Station ID	Date	Bioclassification
Little Buck Cr	**SR 1436**	**CB27**	**07/11/07**	**Excellent**

County	Subbasin	8 digit HUC	Latitude	Longitude	AU Number	Level IV Ecoregion
McDowell	30	03050101	354403	820502	0	Southern Crystalline Ridges and Mountains

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Stream Depth (m)
WS-II;B;Tr;HQW	5.7	1430	7	0.4

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	90	0	0	10 (residential)

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

Water Quality Parameters

Temperature (°C)	21.7
Dissolved Oxygen (mg/L)	7.1
Specific Conductance (µS/cm)	23
pH (s.u.)	6.9
Water Clarity	clear

Habitat Assessment Scores (max)

Channel Modification (5)	4
Instream Habitat (20)	17
Bottom Substrate (15)	14
Pool Variety (10)	8
Riffle Habitat (16)	14
Left Bank Stability (7)	7
Right Bank Stability (7)	6
Light Penetration (10)	10
Left Riparian Score (5)	5
Right Riparian Score (5)	4
Total Habitat Score (100)	89

Site Photograph

Substrate boulder, cobble, gravel, and bedrock

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
07/11/07	10100	---	49	---	2.51	Excellent
08/06/02	8910	---	35	---	2.75	Good
08/06/97	7398	---	37	---	2.44	Excellent
02/10/92	5774	---	43	---	2.01	Excellent
07/09/91	5652	60	37	2.75	2.32	Good

Taxonomic Analysis

The 2007 Little Buck Creek sample produced the highest EPT species richness ever measured at this location. Numerous EPT taxa not previously collected here but present in 2007 included: the mayflies *Diphetor hageni* , *Habrophlebioides* , and *Serratella serratoides;* the stoneflies *Acroneuria arenosa* and *A. carolinensis;* and the caddisflies *Neophylax consimilis* , and *N. ornatus* .

Data Analysis

This site has oscillated between Good and Excellent since sampling first started here in 1991. Nearly all of the Little Buck Creek watershed is forested with only a few rural residences observed. Predictably, the invertebrate community here is not only temporally stable, but it is also pollution intolerant and diverse. In addition to the few residences, there are small breaks in the riparian zone associated with SR 1436.

BENTHIC MACROINVERTEBRATE SAMPLE

Waterbody	Location	Station ID	Date	Bioclassification
N Fk Catawba R	**SR 1573**	**CB42**	**07/11/07**	**Good**

County	Subbasin	8 digit HUC	Latitude	Longitude	AU Number	Level IV Ecoregion
McDowell	30	03050101	355005	820010	0	Southern Metasedimentary Ridges and Mountains

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Stream Depth (m)
B;Tr	32	1420	8	0.4

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	60	20	0	20 (commercial, industrial)

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
Baxter Healthcare	NC0006564001	1.2

Water Quality Parameters

Temperature (°C)	22.2
Dissolved Oxygen (mg/L)	7.6
Specific Conductance (µS/cm)	107
pH (s.u.)	7.5
Water Clarity	slightly turbid

Habitat Assessment Scores (max)

Channel Modification (5)	4
Instream Habitat (20)	13
Bottom Substrate (15)	12
Pool Variety (10)	3
Riffle Habitat (16)	13
Left Bank Stability (7)	6
Right Bank Stability (7)	6
Light Penetration (10)	7
Left Riparian Score (5)	3
Right Riparian Score (5)	2
Total Habitat Score (100)	69

Site Photograph

Substrate boulder, gravel, cobble, sand, and silt

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
07/11/07	10097	---	31	---	4.20	Good
08/06/02	8907	---	29	---	3.80	Good
08/08/97	7408	---	37	---	2.97	Excellent
01/09/91	5510	---	37	---	2.83	Good

Taxonomic Analysis

Considering the last three summer samples, EPT taxa richness has never reached the highest level seen in 1997. Several intolerant EPT taxa present in 1997 but absent in 2002 and 2007 included the mayfly *Paraleptophlebia* , the stoneflies *Acroneuria abnormis* , *Leuctra* , *Malirekus hastatus* , and *Perlesta* , and the caddisflies *Dolophilodes* , *Glossosoma* , *Goera* , *Neophylax consimilis* , and *Helicopsyche borealis* . Moreover, at least two taxa of pollution tolerant caddisflies (*Hydropsyche betteni* and *H. venularis*) were collected for the first time at this location in 2002 and 2007. These data suggest slightly worsening conditions in this catchment.

Data Analysis

In addition to lower trending EPT taxa richness at this site since 1997, this location has also been experiencing an increasing trend in EPT BI over the same timeframe. Moreover, there has been a decreasing trend in EPT abundance with the 2007 and 2002 samples producing the lowest abundance totals (121 and 97 respectively) whereas samples in 1997 and 1991 resulted in 167 and 185 individuals respectively. Collectively, these trends suggest deteriorating conditions in this catchment.

BENTHIC MACROINVERTEBRATE SAMPLE

Waterbody	Location	Station ID	Date	Bioclassification
N Fk Catawba R	**SR 1560**	**CB41**	**07/11/07**	**Good-Fair**

County	Subbasin	8 digit HUC	Latitude	Longitude	AU Number	Level IV Ecoregion
McDowell	30	03050101	354804	820107	0	Southern Crystalline Ridges and Mountains

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Stream Depth (m)
B;Tr	44	1380	20	0.4

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	60	10	10	20

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
Coats American-Sevier Plant	NC0004243001	2.0
Baxter Healthcare	NC0006564001	1.2

Water Quality Parameters

Temperature (°C)	24.4
Dissolved Oxygen (mg/L)	6.4
Specific Conductance (µS/cm)	206
pH (s.u.)	7.0
Water Clarity	slightly turbid

Habitat Assessment Scores (max)

Channel Modification (5)	4
Instream Habitat (20)	14
Bottom Substrate (15)	12
Pool Variety (10)	4
Riffle Habitat (16)	13
Left Bank Stability (7)	6
Right Bank Stability (7)	6
Light Penetration (10)	7
Left Riparian Score (5)	2
Right Riparian Score (5)	1
Total Habitat Score (100)	69

Site Photograph

Substrate cobble, boulder, gravel, and sand

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
07/11/07	10098	---	21	---	4.16	Good-Fair
08/27/03	9295	78	33	4.24	3.71	Good
08/06/02	8909	74	23	5.90	4.92	Fair
08/05/97	7394	81	39	3.90	3.09	Good
07/07/92	5889	95	41	4.20	3.31	Good

Taxonomic Analysis

The 2007 (EPT) sample produced the fewest EPT taxa ever noted at this location although the 2002 (Full-Scale) sample had the second lowest EPT taxa richness. In both 2007 and 2002 there were numerous EPT taxa that were absent but which had been present at all other summer sampling events and included the mayflies *Epeorus rubidus* and *Leucrocuta*, the stoneflies *Acroneuria abnormis*, *Leuctra*, *Paragnetina immarginata*, and *Tallaperla*, and the caddisflies *Glossosoma*, and *Micrasema wataga*. The 2007 and 2002 samples were taken during severe droughts. The absence of these taxa, along with the lowered bioclassifications in 2007 and 2002, were likely the result of concentrated effluent from the upstream dischargers (Coats American and Baxter Healthcare).

Data Analysis

The 2002 and 2007 drought year samples had by far the highest conductivity (400 µS/cm and 206 µS/cm respectively) with the next highest (133 µS/cm) being measured in 2003. Increased stream conductivity would be expected under drought conditions where there are significant upstream NPDES inputs as is the case here. Although these two samples were taken in drought years, it appears that lowered flows did not adversely effect available habitat (and therefore EPT diversity) as the edge-dwelling caddisflies *Oecetis persimilis* and *Triaenodes ignitus* were plentiful from both sampling events. Moreover, although the 2007 sample was collected using the less intense EPT collection method (where all other samples had been obtained using the more intense Full-Scale collection method) this sampling discrepancy did not account for the lower EPT richness as all taxa absent in 2007 are readily collected using EPT methods and are not specific to Full-Scale collection methods.

BENTHIC MACROINVERTEBRATE SAMPLE

Waterbody	Location	Station ID	Date	Bioclassification
Armstrong Cr	**Armstrong Creek Rd**	**CB1**	**07/11/07**	**Excellent**

County	Subbasin	8 digit HUC	Latitude	Longitude	AU Number	Level IV Ecoregion
McDowell	30	03050101	354830	820428	0	Southern Crystalline Ridges and Mountains

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Stream Depth (m)
C;Tr;HQW	14	1800	7	0.5

	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)	7.0
Specific Conductance (µS/cm)	28
pH (s.u.)	6.1
Water Clarity	clear

Habitat Assessment Scores (max)

Channel Modification (5)	4
Instream Habitat (20)	17
Bottom Substrate (15)	13
Pool Variety (10)	9
Riffle Habitat (16)	15
Left Bank Stability (7)	7
Right Bank Stability (7)	6
Light Penetration (10)	9
Left Riparian Score (5)	5
Right Riparian Score (5)	3
Total Habitat Score (100)	88

Site Photograph

Substrate boulder, cobble, gravel, and bedrock

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
07/11/07	10049	---	44	---	2.55	Excellent
08/06/02	8908	---	38	---	2.80	Excellent
08/05/97	7390	---	36	---	2.15	Excellent
07/07/92	5890	---	38	---	2.11	Excellent

Taxonomic Analysis

The 2007 sample resulted in the highest EPT taxa richness recorded for this location. EPT collected in 2007 not previously observed here included the intolerant mayflies *Drunella cornutella* , *Epeorus dispar* , *Serratella carolina* , and the caddisflies *Ceratopsyche morosa* , and *Neophylax mitchelli* .

Data Analysis

Nearly all of the Armstrong Creek watershed is forested with only a few rural residences observed. Predictably, the invertebrate community here is not only temporally stable, but it is also pollution intolerant and diverse. The 2007 sample had the highest EPT taxa richness noted at this location and the EPT abundance was also the highest every measured (261) with a previous high of 176 seen in 1997. There is very little disturbance in this catchment, though there are some small breaks in the riparian zone associated with Armstrong Creek Road.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Station ID	Bioclassification
PADDY CR	**NC 126**	**05/23/07**	**CF47**	**Good-Fair**

County	Subbasin	8 digit HUC	Latitude	Longitude	AU Number	Level IV Ecoregion
BURKE	30	03050101	35.7661111	-81.905	11-28	Northern Inner Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
C;Tr	6.7	1315	7	0.3	No

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	60	0	40	0

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

Water Quality Parameters

Temperature (°C)	17.1
Dissolved Oxygen (mg/L)	8.4
Specific Conductance (µS/cm)	16
pH (s.u.)	6.3

Water Clarity	Clear

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	18
Bottom Substrate (15)	15
Pool Variety (10)	9
Riffle Habitat (16)	16
Left Bank Stability (7)	5
Right Bank Stability (7)	6
Light Penetration (10)	9
Left Riparian Score (5)	0
Right Riparian Score (5)	3
Total Habitat Score (100)	**86**

Site Photograph

Substrate Large cobble and bedrock

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
05/23/07	2007-64	12	46	Good-Fair
05/01/02	2002-38	13	46	Good-Fair
05/05/97	97-31	9	40	Fair

Most Abundant Species Central Stoneroller

Exotic Species Brown Trout and Smallmouth Bass

Species Change Since Last Cycle

Gains -- Bluehead Chub X Rosyside Dace hybrids (2), Flat Bullhead, and Brown Trout. **Losses** -- White Sucker, Striped Jumprock, and Snail Bullhead.

Data Analysis

Watershed -- tributary to Lake James (the Catawba River); borders the Northern Inner Piedmont and the Eastern Blue Ridge Foothills; rural; forested watershed with pasture in the lower reaches; livestock with direct access to the stream from both banks. **Habitat** -- shallow riffles and runs; high gradient plunge pools with bedrock shelves and chutes; *Podostemum* ; barren riparian areas due to cattle grazing and trampling. **2007** -- very low flow; conductivity consistently low (the lowest of any fish community site in the Catawba River basin in 2007) even though cattle have access to the stream. **1997 - 2007** -- no real change in fish community; the dominant species continued to be the Central Stoneroller, a species that successfully exploits mountain streams that have been altered by livestock; 15 species known from the site, but only 1 species of darter; percentage of omnivores and insectivores ~ 50%; community is isolated by Lake James which continues to serve as a barrier to recolonization by some species; community also affected by hydrologic extremes in flows (i.e., prolonged droughts followed by hurricane-induced flooding); habitat scores have ranged from 75 to 87.

BENTHIC MACROINVERTEBRATE SAMPLE

Waterbody	Location	Station ID	Date	Bioclassification
Linville R	**US 221**	**CB33**	**07/10/07**	**Good-Fair**

County	Subbasin	8 digit HUC	Latitude	Longitude	AU Number	Level IV Ecoregion
Avery	30	03050101	360144	815345	11-29-(4.5)	Southern Metasedimentary Mountains

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Stream Depth (m)
C;Tr	20	2650	11	0.3

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	70	30	0	0

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

Water Quality Parameters

Temperature (°C)	22.4
Dissolved Oxygen (mg/L)	6.6
Specific Conductance (µS/cm)	70
pH (s.u.)	7.3
Water Clarity	slightly turbid

Habitat Assessment Scores (max)

Channel Modification (5)	4
Instream Habitat (20)	14
Bottom Substrate (15)	12
Pool Variety (10)	3
Riffle Habitat (16)	11
Left Bank Stability (7)	6
Right Bank Stability (7)	6
Light Penetration (10)	7
Left Riparian Score (5)	1
Right Riparian Score (5)	3
Total Habitat Score (100)	67

Site Photograph

Substrate bedrock, cobble, boulder, gravel and sand

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
07/10/07	10096	101	29	5.81	4.21	Good-Fair
08/06/02	8906	---	28	---	3.90	Good
08/05/97	7396	---	27	---	3.25	Good-Fair
06/10/97	7280	---	24	---	3.24	Good-Fair
07/06/92	5887	---	30	---	3.27	Good

Taxonomic Analysis

A Full-Scale sample was taken here for the first time in order to better assess potential impacts due to the rapidly expanding upstream areas of Newland, Linville, and Grandfather Mountain. Despite the more intensive collection methodology, the 2007 sample still produced EPT taxa richness and EPT abundance levels comparable to earlier, less intensive EPT samples. In addition, the 2007 sample resulted in the highest EPT BI ever measured here and may suggest a slightly more tolerant invertebrate community relative to earlier samples. Facultative EPT taxa collected for the first time in 2007 include the mayflies *Plauditus dubius*, and *Procloeon*, and the caddisfly *Hydropsyche venularis*. In addition, the gastropod *Physella*, which can thrive in low dissolved oxygen conditions, was abundant and suggests that low dissolved oxygen may be a stress to this system.

Data Analysis

Conductivity was the highest ever measured at this location in 2007 (70µS/cm) and has been steadily increasing since 1997 with two measurements in 1997 at 20 µS/cm and 34 µS/cm respectively and one in 2002 measured at 59 µS/cm. Landuse activities stream of this location is a mix of forest, residential areas, and several golf courses. The high conductivity level despite the 2007 drought in this nonpoint driven system suggests increased levels of land disturbance or possibly increased point sources such as straight piping, or effects from upstream lakes. However, water temperature (22 degrees in 2007, 2002 and 1997) and pH (7.3 in 2007, 7.1 in 2002, 7.3 in 1997) and dissolved oxygen (6.6 mg/L in 2007, 6.3 mg/L in 2002, and 7.5 mg/L in 1997) have all been very stable and therefore do not suggest any changes due to the lakes.

BENTHIC MACROINVERTEBRATE SAMPLE

Waterbody	Location	Station ID	Date	Bioclassification
Linville R	**NC 126**	**CB32**	**07/10/07**	**Excellent**

County	Subbasin	8 digit HUC	Latitude	Longitude	AU Number	Level IV Ecoregion
Burke	30	03050101	354741	815325	0	Northern Inner Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Stream Depth (m)
B;HQW	67	1220	35	0.4

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	90	0	0	10 (residential)

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

Water Quality Parameters

Temperature (°C)	25.6
Dissolved Oxygen (mg/L)	7.6
Specific Conductance (µS/cm)	53
pH (s.u.)	7.1
Water Clarity	clear

Habitat Assessment Scores (max)

Channel Modification (5)	4
Instream Habitat (20)	17
Bottom Substrate (15)	10
Pool Variety (10)	5
Riffle Habitat (16)	15
Left Bank Stability (7)	6
Right Bank Stability (7)	6
Light Penetration (10)	5
Left Riparian Score (5)	2
Right Riparian Score (5)	4
Total Habitat Score (100)	74

Site Photograph

Substrate boulder, cobble, gravel, sand, and silt

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
07/10/07	10095	95	45	4.01	3.41	Excellent
08/23/02	8978	91	48	4.22	3.48	Excellent
08/04/97	7386	107	53	4.05	3.12	Excellent
07/07/92	5886	108	48	4.15	3.15	Excellent
07/09/91	5650	84	43	4.03	3.03	Excellent

Taxonomic Analysis

The benthic macroinvertebrate community at this location is remarkably stable and is indicative of the largely protected nature of this catchment. Several intolerant taxa have been collected here at every sampling attempt and include: the mayflies *Epeorus rubidus* , *Leucrocuta* , *Heptagenia marginalis;* the stoneflies *Acroneuria abnormis* , *Leuctra* , and *Paragnetina ichusa;* and the caddisflies *Ceratopsyche morosa* , *C. sparna* , *Chimarra* , *Lepidostoma* , *Micrasema wataga* , *Polycentropus* , and *Nyctiophylax* .

Data Analysis

This location has been sampled 23 times since 1983. Twenty of these samples produced bioclassifications of Excellent with only three samples (8/10/1983, 8/16/1985, and 3/29/1989) producing bioclassifications of Good. This location is immediately downstream of the Linville Gorge Wilderness Area and nearly all of the immediate catchment is protected. The stable, protected nature of most of the watershed upstream of this location helps explain the remarkable consistency of Excellent bioclassifications here through time. However, the last two samples have produced two of the highest EPT BIs (3.41 and 3.40 respectively) since sampling started here and may reflect increased residential growth adjacent to nearby river segments which are outside of the protected Wilderness Area.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Station ID	Bioclassification
N MUDDY CR	**SR 1760**	**05/23/07**	**CF46**	**Excellent**

County	Subbasin	8 digit HUC	Latitude	Longitude	AU Number	Level IV Ecoregion
MCDOWELL	30	03050101	35.675	-81.90638889	11-32-(0.5)	Northern Inner Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
C	42.8	1100	11	0.4	No

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	85	0	15	0

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
City of Marion - Corpening Creek WWTP (approximately 6 miles upstream)	NC0031879	3.0

Water Quality Parameters

Temperature (°C)	19.2
Dissolved Oxygen (mg/L)	8.8
Specific Conductance (µS/cm)	71
pH (s.u.)	7.9

Water Clarity	Clear

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	16
Bottom Substrate (15)	5
Pool Variety (10)	6
Riffle Habitat (16)	14
Left Bank Stability (7)	7
Right Bank Stability (7)	7
Light Penetration (10)	9
Left Riparian Score (5)	5
Right Riparian Score (5)	5
Total Habitat Score (100)	**79**

Site Photograph

Substrate bedrock, sand, gravel

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
05/23/07	2007-65	23	54	Excellent
04/30/02	2002-36	19	48	Good
05/07/97	97-36	20	52	Good

Most Abundant Species Bluehead Chub

Exotic Species Green Sunfish

Species Change Since Last Cycle **Gains** -- Flat Bullhead, Green Sunfish, Pumpkinseed, Bluegill, and Creek Chub. **Losses** -- Warmouth.

Data Analysis

Watershed -- a tributary to Muddy Creek located about 3 miles upstream of its confluence; drains part of southeastern McDowell County including most of the City of Marion. **Habitat** -- runs, fast plunge chutes, and bedrock ledge pools; nicely forested riparian zones with tall bluffs and bedrock outcrops. **2007** -- the highest number of species collected in the Catawba River basin for the year, including 4 species of suckers, 4 species of sunfish, 9 species of minnows, 3 species of catfish, and 3 species of darters. **1997 - 2007** -- a more balanced trophic structure of the fish community is the main reason for the improvements seen in the 2007 NCIBI score and rating. This watershed continues to support a highly diverse fish community with no apparent detrimental water quality issues.

BENTHIC MACROINVERTEBRATE SAMPLE

Waterbody	Location	Station ID	Date	Bioclassification
N Muddy Cr	**SR 1760**	**CB44**	**07/09/07**	**Good-Fair**

County	Subbasin	8 digit HUC	Latitude	Longitude	AU Number	Level IV Ecoregion
McDowell	30	03050101	354031	815423	0	Northern Inner Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Stream Depth (m)
C	43	1100	12	0.5

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	90	0	0	10 (residential)

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
City of Marion, Corpening Creek WWTP	NC0031879	3

Water Quality Parameters

Temperature (°C)	23.9
Dissolved Oxygen (mg/L)	8.3
Specific Conductance (µS/cm)	76
pH (s.u.)	7.8
Water Clarity	slightly turbid

Habitat Assessment Scores (max)

Channel Modification (5)	4
Instream Habitat (20)	17
Bottom Substrate (15)	12
Pool Variety (10)	5
Riffle Habitat (16)	14
Left Bank Stability (7)	7
Right Bank Stability (7)	6
Light Penetration (10)	7
Left Riparian Score (5)	5
Right Riparian Score (5)	4
Total Habitat Score (100)	81

Site Photograph

Substrate boulder, cobble, gravel, and sand

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
07/09/07	10092	78	25	5.36	4.39	Good-Fair
08/05/02	8902	79	32	5.51	4.59	Good-Fair
08/04/97	7388	63	33	4.76	4.26	Good
07/08/92	5892	80	32	4.95	4.47	Good-Fair
04/17/85	1426	85	35	5.48	4.16	Good-Fair

Taxonomic Analysis

The 2007 sample produced by far the fewest EPT taxa ever collected although total species richness remained consistent with previous samples. This fact, combined with the collection of many edge-dwelling caddisflies in 2007, suggests that there were no drought-related habitat effects. Among the most notably intolerant and long-lived taxa absent in 2007 but collected previously included two species of stonefly (*Paragnetina fumosa* and *Paragnetina immarginata*) as well as the intolerant caddisflies *Goera* and *Glossosoma*.

Data Analysis

The sharp decline in EPT taxa richness in 2007 is likely the result of drought effects concentrating effluent from upstream dischargers. This may explain the disappearance of the long-lived *Paragnetina* species as well as the intolerant caddisflies *Goera* and *Glossosoma*. While the overall BI and EPT BI have been relatively stable since 1985, the drastic decline in numerous EPT taxa suggests a decline in water quality at this location for 2007.

BENTHIC MACROINVERTEBRATE SAMPLE

Waterbody	Location	Station ID	Date	Bioclassification
Corpening Cr	**SR 1819**	**CB17**	**07/09/07**	**Poor**

County	Subbasin	8 digit HUC	Latitude	Longitude	AU Number	Level IV Ecoregion
McDowell	30	03050101	353914	815747	0	Eastern Blue Ridge Foothills

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Stream Depth (m)
C	6.5	1210	6	0.3

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	70	30	0	0

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

Water Quality Parameters

Temperature (°C)	21.8
Dissolved Oxygen (mg/L)	7.6
Specific Conductance (µS/cm)	52
pH (s.u.)	7.0
Water Clarity	slightly turbid

Habitat Assessment Scores (max)

Channel Modification (5)	4
Instream Habitat (20)	15
Bottom Substrate (15)	12
Pool Variety (10)	6
Riffle Habitat (16)	14
Left Bank Stability (7)	6
Right Bank Stability (7)	5
Light Penetration (10)	8
Left Riparian Score (5)	5
Right Riparian Score (5)	3
Total Habitat Score (100)	78

Site Photograph

Substrate cobble, sand, and gravel

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
07/09/07	10091	---	7	---	5.99	Poor
08/07/02	8930	65	21	5.79	4.62	Fair
04/09/01	8404	52	15	5.36	4.73	Fair
08/08/97	7407	---	16	---	5.02	Fair
09/12/90	5443	55	17	6.11	5.36	Fair

Taxonomic Analysis

The 2007 EPT sample produced the fewest EPT, highest EPT BI, and lowest EPT abundance ever measured at this location. Although several tolerant mayflies (*Baetis flavistriga* and *B. pluto*) and caddisflies (*Cheumatopsyche* and *Hydropsyche betteni)* remained either common or abundant in 2007 (as they were in previous samples) no stoneflies were collected here for the first time since sampling started in 1985. In addition, no heptageniid mayflies were collected in 2007 for the first time. All previous samples had at least two of these taxa (always common or abundant) present. Heptageniid mayflies have been shown to be sensitive to metal toxicity. Their absence in 2007 may suggest metal toxicity.

Data Analysis

All previous samples had at least one habitat-edge taxa present (either *Triaenodes* or *Pycnopyche* or both). The 2007 sample lacked all such taxa. This suggests that the drought had lowered water levels enough to preclude their collection. Nonetheless, the absence of just one or two of these taxa would not improve the bioclassification from Poor and therefore their absence does not explain the decrease in bioclassification in 2007. Moreover, the absence of heptageniids and stoneflies for the first time suggest worsening water quality in this catchment. This is surprising since the catchment is dominated by non-point pollution and would likely improve with lessened runoff due to drought. Indeed, the 2007 conductivity (51.6µS/cm) was significantly less than the three previous measurements from 1997, 2001, and 2002 (120 µS/cm, 91 µS/cm, and 130 µS/cm respectively). The 2007 and 1997 sample were both sampled by EPT collection methods. Every other sample was taken usuing more intensive Full-Scale methods. That the 1997 EPT sample had better EPT metrics versus the 2007 EPT sample supports worsening conditions rather than sample method bias.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Station ID	Bioclassification
S MUDDY CR	SR 1764	05/23/07	CF50	Good

County	Subbasin	8 digit HUC	Latitude	Longitude	AU Number	Level IV Ecoregion
MCDOWELL	30	03050101	35.64972222	-81.855	11-32-2	Northern Inner Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
C	33.2	1100	8	0.4	No

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	10	0	90	0

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

Water Quality Parameters

Temperature (°C)	18.7
Dissolved Oxygen (mg/L)	8.2
Specific Conductance (µS/cm)	45
pH (s.u.)	6.2

Water Clarity	Slightly turbid

Habitat Assessment Scores (max)

Channel Modification (5)	4
Instream Habitat (20)	14
Bottom Substrate (15)	4
Pool Variety (10)	4
Riffle Habitat (16)	12
Left Bank Stability (7)	6
Right Bank Stability (7)	6
Light Penetration (10)	10
Left Riparian Score (5)	3
Right Riparian Score (5)	3
Total Habitat Score (100)	**66**

Site Photograph

Substrate sand, cobble, boulder

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
05/23/07	2007-66	16	52	Good
05/01/02	2002-37	14	48	Good
07/02/97	97-70	15	50	Good
06/28/93	93-27	11	50	Good

Most Abundant Species Greenhead Shiner

Exotic Species None

Species Change Since Last Cycle **Gains** -- Flat Bullhead, Northern Hogsucker, and Warmouth. **Losses** -- Notchlip Redhorse.

Data Analysis

Watershed -- a tributary to Muddy Creek located about 3.5 miles above its confluence; drains the extreme southeast corner of McDowell County including parts of the Northern Inner Piedmont and the Eastern Blue Ridge Foothills ecoregions. **Habitat** -- primarily one long sandy run with side snags and a few riffles; both the left and right 6-12 meter riparian zones are bordered by active crops; chicken manure had just been applied to the adjacent fields, yet relatively low stream conductivity. **2007** -- good abundance and diversity of the fish community with the highest number of species collected at this site; improvement of NCIBI comes from a very slight shift in the fish community trophic structure. **1993 - 2007** -- stable NCIBI metrics and scores over a 14 year period; the Muddy Creek Watershed Restoration Initiative is likely a contributing factor to the Good water quality in this watershed.

BENTHIC MACROINVERTEBRATE SAMPLE

Waterbody	Location	Station ID	Date	Bioclassification
Canoe Cr	**SR 1250**	**CB8**	**07/10/07**	**Good-Fair**

County	Subbasin	8 digit HUC	Latitude	Longitude	AU Number	Level IV Ecoregion
Burke	30	03050101	354549	814553	0	Northern Inner Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Stream Depth (m)
C	12	1100	6	0.4

	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)	21.4
Dissolved Oxygen (mg/L)	7.9
Specific Conductance (µS/cm)	49
pH (s.u.)	6.5
Water Clarity	turbid

Habitat Assessment Scores (max)

Channel Modification (5)	4
Instream Habitat (20)	14
Bottom Substrate (15)	12
Pool Variety (10)	3
Riffle Habitat (16)	9
Left Bank Stability (7)	6
Right Bank Stability (7)	6
Light Penetration (10)	9
Left Riparian Score (5)	4
Right Riparian Score (5)	4
Total Habitat Score (100)	71

Site Photograph

Substrate sand, silt, gravel, cobble, and boulder

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
07/10/07	10249	---	27	---	4.11	Good-Fair
08/21/02	8971	---	28	---	3.51	Good
08/04/97	7411	---	19	---	4.05	Good-Fair
08/03/92	5958	---	25	---	3.14	Good-Fair

Taxonomic Analysis

The mayfly *Paraleptophlebia* , and the caddisfly *Brachycentrus nigrosoma* were all collected from each previous sample but were absent in 2007. Conversely, there were several mayflies (e.g., *Plauditus punctiventris* and *Leucrocuta*) and caddisflies (e.g., *Diplectrona modesta* , *Lype diversa* , and *Polycentropus*) that were present in 2007 but were absent from all other previous samples. These data suggest overall stable conditions in this watershed.

Data Analysis

Although this site technically decreased in bioclassification from Good in 2002 to Good-Fair in 2007, the 2007 sample was only one EPT taxon short of receiving a Good bioclassification. In addition, the 27 EPT taxa collected in 2007 was still higher than levels measured in 1997 and 1992. Overall, the EPT community apepars to be relatively stable in this catchment.

BENTHIC MACROINVERTEBRATE SAMPLE

Waterbody	Location	Station ID	Date	Bioclassification
Silver Cr	**SR 1127**	**CB86**	**08/03/07**	**Good**

County	Subbasin	8 digit HUC	Latitude	Longitude	AU Number	Level IV Ecoregion
Burke	31	03050101	354057	814800	11-34-(0.5)	Northern Inner Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Stream Depth (m)
C	21	1080	8	0.3

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	0	10	90	0

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

Water Quality Parameters

Temperature (°C)	20.2
Dissolved Oxygen (mg/L)	9.1
Specific Conductance (µS/cm)	50
pH (s.u.)	7.0
Water Clarity	clear

Habitat Assessment Scores (max)

Channel Modification (5)	4
Instream Habitat (20)	15
Bottom Substrate (15)	8
Pool Variety (10)	6
Riffle Habitat (16)	7
Left Bank Stability (7)	4
Right Bank Stability (7)	4
Light Penetration (10)	10
Left Riparian Score (5)	1
Right Riparian Score (5)	1
Total Habitat Score (100)	60

Site Photograph

Substrate mostly sand; remainder a mix of cobble, boulder, and gravel

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
08/03/07	10291	---	31	---	4.11	Good
08/21/02	8970	---	25	---	3.74	Good-Fair

Taxonomic Analysis

Abundant EPT taxa collected from the site in 2007 were: *Baetis intercalaris, B. pluto, Serratella deficiens, Maccaffertium modestum, Maccaffertium pudicum, Stenacron pallidum, Isonychia, Leuctra, Pteronarcys proteus, Brachycentrus nigrosoma, Cheumatopsyche, Hydropsyche betteni,* and *Triaenodes ignitus.* Most of the difference between EPT taxa present in the 2002 and 2007 samples involved rare taxa in one or the other. Exceptions are: *Maccaffertium pudicum*-- absent in 2002 and abundant in 2007; *Eccoptura xanthenes*-- common in 2002 and absent in 2007; *Ceratopsyche sparna*-- absent in 2002 and common in 2007; and *Polycentropus*-- absent in 2002 and common in 2007.

Data Analysis

The site is eight miles southwest of Morganton. Six additional EPT taxa collected in 2007 over 2002 pushes the site into the classification of Good. The bottom substrate was dominated by sand; cobbles and boulders were about half embedded in the sand. Such habitat characteristics can limit the benthic community.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Station ID	Bioclassification
SILVER CR	**SR 1149**	**05/22/07**	**CF51**	**Good**

County	Subbasin	8 digit HUC	Latitude	Longitude	AU Number	Level IV Ecoregion
BURKE	31	03050101	35.69805556	-81.76305556	11-34-(0.5)	Northern Inner Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
C	26.1	1095	11	0.3	No

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	70	0	30	0

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

Water Quality Parameters

Temperature (°C)	18.6
Dissolved Oxygen (mg/L)	8.7
Specific Conductance (µS/cm)	50
pH (s.u.)	6.3

Water Clarity	Clear

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	11
Bottom Substrate (15)	3
Pool Variety (10)	4
Riffle Habitat (16)	2
Left Bank Stability (7)	3
Right Bank Stability (7)	3
Light Penetration (10)	10
Left Riparian Score (5)	5
Right Riparian Score (5)	5
Total Habitat Score (100)	**51**

Site Photograph

Substrate sand, gravel

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
05/22/07	2007-62	13	50	Good
05/01/02	2002-39	19	60	Excellent

Most Abundant Species Greenhead Shiner

Exotic Species None

Species Change Since Last Cycle

Gains -- None. **Losses** -- Redfin Pickerel, Highback Chub, Green Sunfish, Bluegill, Largemouth Bass, and Yellow Perch.

Data Analysis

Watershed -- a tributary to the Catawba River located almost 5 miles above its confluence; drains the extreme southwest corner of Burke County below Glen Alpine. **Habitat** -- sandy runs with side snags and a few small pools; low flow; good riparian zone widths. **2007** -- the decline in NCIBI score and rating at this site reflects the reduction in total abundance (n= 152 vs. 384 in 2002) and diversity, including the loss of all three piscivorous species collected in 2002 (Redfin Pickerel, Largemouth Bass, and Yellow Perch); low flows and possibly non-point sources of sediment are likely responsible, evidenced by the marginal pool habitats and exposed substrates present. **2002 - 2007** -- there are 19 known species from this stream including 2 species of suckers, 7 species of minnows, and 3 species of darters. Overall, water quality continues to be good.

BENTHIC MACROINVERTEBRATE SAMPLE

Waterbody	Location	Station ID	Date	Bioclassification
Warrior Fk	**SR 1440**	**CB102**	**08/02/07**	**Excellent**

County	Subbasin	8 digit HUC	Latitude	Longitude	AU Number	Level IV Ecoregion
Burke	31	03050101	354749	814307	11-35-(1)	Northern Inner Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Stream Depth (m)
WS-III	82	1000	17	0.4

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	50	0	50	0

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

Water Quality Parameters

Temperature (°C)	25.4
Dissolved Oxygen (mg/L)	7.9
Specific Conductance (µS/cm)	37
pH (s.u.)	6.8
Water Clarity	clear

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	14
Bottom Substrate (15)	10
Pool Variety (10)	10
Riffle Habitat (16)	12
Left Bank Stability (7)	5
Right Bank Stability (7)	5
Light Penetration (10)	5
Left Riparian Score (5)	2
Right Riparian Score (5)	2
Total Habitat Score (100)	70

Site Photograph

Substrate mix of gravel, cobble, sand, and silt

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
08/02/07	10288	---	39	---	4.14	Excellent
08/21/02	8972	---	34	---	3.31	Good
08/04/97	7413	---	41	---	3.26	Excellent

Taxonomic Analysis

Along with *Oectis persimilis* , two species of *Oecetis* rarely identified from BAU samples were collected from the site for the first time in 2007: *O. avara* and *O. sphyra* . Though abundant in the 1997 collection, both *Epeorus rubidus* and *Psychomyia nomada* have not been collected from the site during the most recent two sampling events. Similarly, *Lepidostoma* , which was common in the 1997 collection, was not collected in the two latest samples. Abundant EPT taxa collected in 2007 were: *Caenis, Hexagenia, Maccaffertium modestum, Stenacron pallidum, Isonychia, Cheumatopsyche, Triaenodes ignitus,* and *Polycentropus.*

Data Analysis

The site is four miles NNW of Morganton and three stream-miles upstream of Catawba River. Five more EPT taxa were collected in 2007 than in 2002, putting the site back into the Excellent classification in 2007.

BENTHIC MACROINVERTEBRATE SAMPLE

Waterbody	Location	Station ID	Date	Bioclassification
S Muddy Cr	SR 1764	CB51	07/09/07	Good

County	Subbasin	8 digit HUC	Latitude	Longitude	AU Number	Level IV Ecoregion
McDowell	30	03050101	353900	815118	0	Northern Inner Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Stream Depth (m)
C	31	1100	10	0.5

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

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

Water Quality Parameters

Temperature (°C)	23.6
Dissolved Oxygen (mg/L)	7.5
Specific Conductance (µS/cm)	47
pH (s.u.)	6.8
Water Clarity	slightly turbid

Habitat Assessment Scores (max)

Channel Modification (5)	3
Instream Habitat (20)	14
Bottom Substrate (15)	11
Pool Variety (10)	3
Riffle Habitat (16)	12
Left Bank Stability (7)	5
Right Bank Stability (7)	5
Light Penetration (10)	7
Left Riparian Score (5)	2
Right Riparian Score (5)	3
Total Habitat Score (100)	65

Site Photograph

Substrate boulder, cobble, gravel, sand, and silt

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
07/09/07	10093	---	32	---	3.94	Good
08/05/02	8903	---	23	---	4.22	Good-Fair
08/04/97	7387	---	24	---	3.68	Good-Fair
07/08/92	5893	---	27	---	3.64	Good-Fair

Taxonomic Analysis

The 2007 sample resulted in the highest EPT taxa richness ever recorded at this location. EPT taxa not previously collected from this site but observed in 2007 include the mayflies *Procloeon*, *Serratella serratoides*, the stonefly *Paragnetina fumosa*, and the caddisflies *Lype diversa*, *Neophylax oligius*, and *Pycnopsyche lepida*. Like most streams in this subbasin, the drought does not seem to be adversely affecting the instream habitat of South Muddy Creek as numerous edge caddisflies were collected in 2007 and included *Oecetis persimilis* and *Triaenodes ignitus*.

Data Analysis

The South Muddy Creek watershed is dominated by agricultural uses. The large increase in EPT taxa measured in 2007 is likely related to reduced non-point pollution runoff due to the severe drought.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Station ID	Bioclassification
IRISH CR	SR 1439	05/22/07	CF22	Excellent

County	Subbasin	8 digit HUC	Latitude	Longitude	AU Number	Level IV Ecoregion
BURKE	31	03050101	35.81638889	-81.74805556	11-35-3-(2)b	Northern Inner Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
WS-III	31.7	1100	11	0.5	No

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	50	0	50	0

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

Water Quality Parameters

Temperature (°C)	18.6
Dissolved Oxygen (mg/L)	9.4
Specific Conductance (µS/cm)	37
pH (s.u.)	6.0

Water Clarity	Very slightly turbid

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	12
Bottom Substrate (15)	3
Pool Variety (10)	6
Riffle Habitat (16)	1
Left Bank Stability (7)	5
Right Bank Stability (7)	5
Light Penetration (10)	7
Left Riparian Score (5)	3
Right Riparian Score (5)	3
Total Habitat Score (100)	**50**

Site Photograph

Substrate sand, gravel

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
05/22/07	2007-61	21	54	Excellent
07/30/03	2003-48	13	40	Fair
05/02/02	2002-42	17	38	Fair

Most Abundant Species Tessellated Darter

Exotic Species Smallmouth Bass

Species Change Since Last Cycle

Gains -- Central Stoneroller, Rosyside Dace, Greenfin Shiner, Seagreen Darter, Warmouth, Warpaint Shiner, Greenhead Shiner, Margined Madtom, Piedmont Darter, and Striped Jumprock. **Losses** -- Rock Bass and Yellow Perch.

Data Analysis

Watershed -- a tributary to Warrior Fork, located less than 1 mile above its confluence; drains a portion of northwestern Burke County; the upper reaches of this watershed lie within the Pisgah National Forest and the lower reaches flow through land used extensively for tree farming. **Habitat** -- sandy runs with side snags, root mats, and a few stick riffles; tree farms flank the site outside of its 6-12 meter riparian zones. **2007** -- a diverse and trophically balanced fish community was collected; a major improvement from the 2003 sample with 8 more species collected, including two intolerant species (Seagreen Darter, and Piedmont Darter), and greater than triple the total abundance (n = 194 vs. 52 in 2003). **2002 - 2007** -- there are 26 known species fish from this site, including 4 species of suckers, 9 species of minnows, and 4 species of darters. The reason for the dramatic change in the NCIBI rating is unknown since land use, riparian coverage, and instream habitats appear the same as in previous samples.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Station ID	Bioclassification
JOHNS R	off SR 1367	05/22/07	CF73	Excellent

County	Subbasin	8 digit HUC	Latitude	Longitude	AU Number	Level IV Ecoregion
CALDWELL	31	03050101	36.0517131	-81.70123	11-38-(1)	Southern Crystalline Ridges and Mountains

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
C;Tr	18.4	1400	11	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)	16.6
Dissolved Oxygen (mg/L)	10.0
Specific Conductance (µS/cm)	42
pH (s.u.)	7.4

Water Clarity	Clear

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	19
Bottom Substrate (15)	15
Pool Variety (10)	8
Riffle Habitat (16)	15
Left Bank Stability (7)	7
Right Bank Stability (7)	7
Light Penetration (10)	5
Left Riparian Score (5)	4
Right Riparian Score (5)	5
Total Habitat Score (100)	**90**

Site Photograph

Substrate cobble, bedrock, boulder, gravel, sand

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
05/22/07	2007-60	17	56	Excellent

Most Abundant Species Central Stoneroller

Exotic Species Smallmouth Bass, Rainbow Trout, and Brown Trout

Species Change Since Last Cycle N/A

Data Analysis

This is the first fish community sample collected at this site. **Watershed** -- a headwater tributary to the Catawba River located in the northwest corner of Caldwell County; this catchment is situated directly between the Gragg Prong and Mulberry Creek watersheds within the Pisgah National Forest lands. **Habitat** -- riffles, plunge pools and runs; good riparian zones, and fairly open canopy; similar to the Gragg Prong site, substrates were minimally embedded. **2007** -- good diversity and high abundance (n = 793) including 3 intolerant species collected (Smallmouth Bass, Fieryblack Shiner, and Rainbow Trout); within the 17 species collected, there were 3 species of suckers, 6 species of minnows, and 2 species of darters. There are no indications of any water quality issues in this watershed.

BENTHIC MACROINVERTEBRATE SAMPLE

Waterbody	Location	Station ID	Date	Bioclassification
Johns R	**SR 1356**	**CB73**	**07/13/07**	**Excellent**

County	Subbasin	8 digit HUC	Latitude	Longitude	AU Number	Level IV Ecoregion
Caldwell	31	03050101	355603	814129	11-38-(28)	Southern Crystalline Ridges and Mountains

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Stream Depth (m)
C	64	1080	17	0.4

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	90	10	0	0

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

Water Quality Parameters

Temperature (°C)	23.3
Dissolved Oxygen (mg/L)	6.9
Specific Conductance (µS/cm)	40
pH (s.u.)	6.9
Water Clarity	slightly turbid

Habitat Assessment Scores (max)

Channel Modification (5)	4
Instream Habitat (20)	17
Bottom Substrate (15)	14
Pool Variety (10)	5
Riffle Habitat (16)	12
Left Bank Stability (7)	7
Right Bank Stability (7)	7
Light Penetration (10)	7
Left Riparian Score (5)	5
Right Riparian Score (5)	1
Total Habitat Score (100)	79

Site Photograph

Substrate mix of cobble, gravel, and sand; some boulder, silt also present

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
07/13/07	10256	---	45	---	2.84	Excellent
08/22/02	8975	---	43	---	3.38	Excellent
08/05/97	7415	---	49	---	2.56	Excellent
08/03/92	5957	---	43	---	3.15	Excellent

Taxonomic Analysis

No significant changes in the biota were noted between the four basinwide sampling events at the site. Abundant taxa in 2007 were *Epeorus rubidus, Heptagenia marginalis, Maccaffertium modestum, Stenacron pallidum, Isonychia, Tallaperla, Acroneuria abnormis, Apatania, Ceratopsyche morosa, Cheumatopsyche, Triaenodes ignitus, Chimarra, Neophylax fuscus* , and *Neophylax oligius* . *Brachycentrus lateralis* , rarely identified from BAU samples, has been collected from the site during three of the four basinwide sampling events.

Data Analysis

The site is about 8 miles west of Lenoir and 1.5 stream-miles upstream of the mouth of Mulberry Creek. The catchment is contained within Pisgah National Forest. The benthic community continues to indicate a high-quality site in terms of water quality.

BENTHIC MACROINVERTEBRATE SAMPLE

Waterbody	Location	Station ID	Date	Bioclassification
Johns R	**SR 1438**	**CB269**	**08/01/07**	**Excellent**

County	Subbasin	8 digit HUC	Latitude	Longitude	AU Number	Level IV Ecoregion
Burke	31	03050101	355002	814242	0	Northern Inner Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Stream Depth (m)
WS-IV;HQW	201	1000	35	0.4

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

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

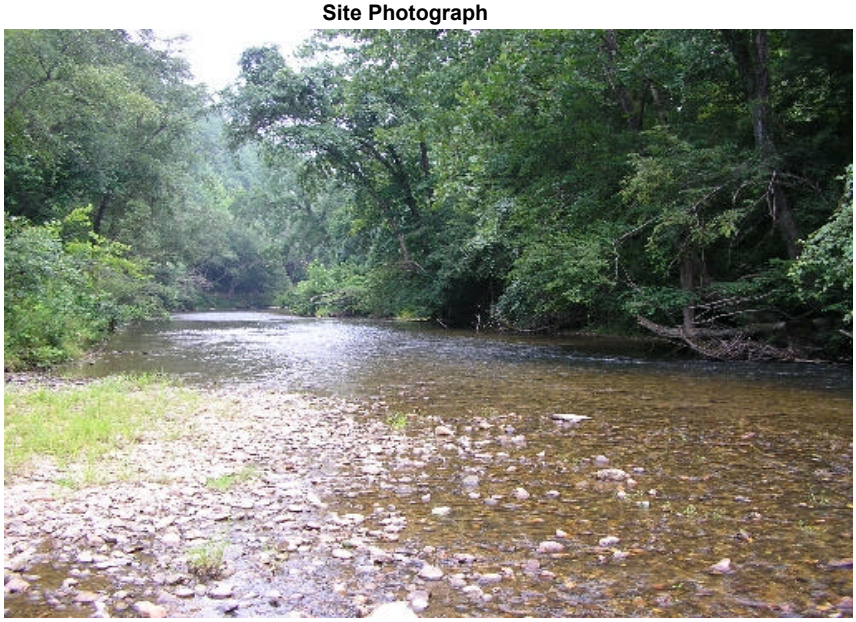
Water Quality Parameters

Temperature (°C)	25.3
Dissolved Oxygen (mg/L)	7.4
Specific Conductance (µS/cm)	31
pH (s.u.)	6.7
Water Clarity	clear

Habitat Assessment Scores (max)

Channel Modification (5)	4
Instream Habitat (20)	20
Bottom Substrate (15)	6
Pool Variety (10)	6
Riffle Habitat (16)	16
Left Bank Stability (7)	7
Right Bank Stability (7)	7
Light Penetration (10)	2
Left Riparian Score (5)	5
Right Riparian Score (5)	5
Total Habitat Score (100)	78

Site Photograph



Substrate mix of cobble, gravel, sand; some bedrock and silt

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
08/01/07	10285	---	39	---	2.98	Excellent
08/22/02	8974	---	35	---	3.45	Good
03/28/89	4872	116	63	3.85	2.69	Excellent
08/10/83	3113	89	43	4.04	3.32	Excellent

Taxonomic Analysis

A few Trichoptera rarely identified from BAU samples were collected for the first time from the site in 2007: *Micrasema rickeri* prefers clean mountain streams; *Ceraclea slossonae* had only seven prior BAU records, all from the New River basin; and *Oecetis avara* has a wide distribution across state and a strong preference for clean streams. Abundant EPT taxa at the site were: *Heterocloeon anoka, Maccaffertium modestum, Pteronarcys dorsata, Brachycentrus lateralis* (another Trichoptera rarely identified from BAU samples though collected in 2002 from the site)*, Hydropsyche venularis, Lepidostoma,* and *Neophylax fuscus.*

Data Analysis

The site is six miles NNW of Lenoir. The site slipped into the Good classification in 2002 (missing Excellent by the collection of a single additional EPT taxon for that sampling event). The four additional EPT taxa and lower EPT BI is suggestive of better water quality in 2007 over 2002.

Note that EPT richness values are not comparable between the Full-Scale samples collected in the earlier two sampling events and the latter two that were collected using EPT methods. The Full-Scale collection method is more extensive than the EPT method; it is therefore expected that collections using the Full-Scale method would result in higher richness values over EPT collections.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Station ID	Bioclassification
GRAGG PRONG	**SR 1367**	**05/22/07**	**CF16**	**Excellent**

County	Subbasin	8 digit HUC	Latitude	Longitude	AU Number	Level IV Ecoregion
CALDWELL	31	03050101	36.0463252	-81.7074049	11-38-10	Southern Crystalline Ridges and Mountains

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
C;Tr	15	1385	10	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)	14.7
Dissolved Oxygen (mg/L)	9.3
Specific Conductance (µS/cm)	33
pH (s.u.)	5.9

Water Clarity	Clear

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	19
Bottom Substrate (15)	15
Pool Variety (10)	10
Riffle Habitat (16)	16
Left Bank Stability (7)	7
Right Bank Stability (7)	7
Light Penetration (10)	6
Left Riparian Score (5)	5
Right Riparian Score (5)	5
Total Habitat Score (100)	**95**

Site Photograph

Substrate cobble, boulder, bedrock

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
05/22/07	2007-59	17	60	Excellent
05/25/99	99-37	18	56	Excellent
10/01/98	98-79	17	56	Excellent

Most Abundant Species Fantail Darter

Exotic Species Smallmouth Bass, Rainbow Trout, and Brown Trout

Species Change Since Last Cycle **Gains** -- Seagreen Darter and Creek Chub. **Losses** -- Rock Bass, Flat Bullhead, and Sandbar Shiner.

Data Analysis

Watershed -- a tributary to the Johns River located about one quarter mile above its confluence; drains the extreme northwest corner of Caldwell County; this watershed is largely encompassed by the Pisgah National Forest. **Habitat** -- highest habitat score for all 2007 Catawba basin fish sites; riffles, boulder pools, plunge pools and side snags; very little embeddedness of substrates; great riparian zone widths. **2007** -- diverse and highly abundant (n = 1,080, highest for all 2007 sites in the Catawba River basin) fish community collected, including 4 intolerant species; several large adult specimens and young of year wild Brown Trout collected. **1998 - 2007** -- 22 species of fish are known from this site including 9 species of minnows, 3 species of suckers, and 3 species of darters; this regional reference site has rated Excellent on 3 occasions, and would qualify for HQW or ORW status if petitioned.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Station ID	Bioclassification
MULBERRY CR	**NC 90**	**05/21/07**	**CF45**	**Excellent**

County	Subbasin	8 digit HUC	Latitude	Longitude	AU Number	Level IV Ecoregion
CALDWELL	31	03050101	35.9430555	-81.6338888	11-38-32-(15)	Northern Inner Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
C	33	1150	14	0.3	Yes

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	60	10 (rural residential)	30	0

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

Water Quality Parameters

Temperature (°C)	19.1
Dissolved Oxygen (mg/L)	9.6
Specific Conductance (µS/cm)	40
pH (s.u.)	6.1

Water Clarity	Clear

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	16
Bottom Substrate (15)	7
Pool Variety (10)	6
Riffle Habitat (16)	10
Left Bank Stability (7)	5
Right Bank Stability (7)	5
Light Penetration (10)	8
Left Riparian Score (5)	4
Right Riparian Score (5)	3
Total Habitat Score (100)	**69**

Site Photograph

Substrate cobble, gravel

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
05/21/07	2007-58	22	60	Excellent
09/22/99	99-61	27	60	Excellent
06/21/99	99-51	23	58	Excellent
04/16/99	99-19	26	56	Excellent
05/08/97	97-39	23	60	Excellent

Most Abundant Species Tessellated Darter

Exotic Species Smallmouth Bass and Mountain Redbelly Dace

Species Change Since Last Cycle **Gains** -- Mountain Redbelly Dace. **Losses** -- Rock Bass, Thicklip Chub, Eastern Silvery Minnow, Pumkinseed, and Largemouth Bass

Data Analysis

Watershed -- a fairly large tributary to the Johns River, located about 2.7 miles above its confluence; drains part of the Pisgah National Forest in central Caldwell County; although this site is located in the Northern Inner Piedmont ecoregion, the vast majority of the catchment is located within the Southern Crystalline Ridges and Mountains ecoregion. **Habitat** -- shallow runs, one long pool, riffles, and a few small side pools; although adequate, the riparian zones include mowed lawns and tree crops. **2007** -- very diverse and abundant (n = 421) fish community; maximum scores for all NCIBI metrics. **1997 -2007** -- based on its fish community, this regional reference site has rated Excellent on 5 occasions and would qualify for HQW or ORW status if petitioned. Many of the headwater tributaries to Mullberry Creek are currently classified as HQW, and a current benthic study supports the reclassification of this reach.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Station ID	Bioclassification
DROWNING CR	SR 1647	05/21/07	CF72	Good-Fair

County	Subbasin	8 digit HUC	Latitude	Longitude	AU Number	Level IV Ecoregion
BURKE	32	03050101	35.7464062	-81.4161312	11-52-(1)	Northern Inner Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
WS-IV	15	1000	6	0.5	No

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	90	10 (rural residential)	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)	10.1
Specific Conductance (µS/cm)	43
pH (s.u.)	5.8

Water Clarity: Slightly turbid

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	14
Bottom Substrate (15)	3
Pool Variety (10)	10
Riffle Habitat (16)	3
Left Bank Stability (7)	7
Right Bank Stability (7)	5
Light Penetration (10)	10
Left Riparian Score (5)	5
Right Riparian Score (5)	4
Total Habitat Score (100)	**66**

Site Photograph

Substrate: sand, gravel, bedrock

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
05/21/07	2007-56	12	44	Good-Fair

Most Abundant Species: Bluehead Chub

Exotic Species: None

Species Change Since Last Cycle: N/A

Data Analysis

This is the first fish community sample collected at this site. **Watershed** -- a tributary to Lake Hickory located to its southwest; the site is about 1.5 miles upstream of the lake and drains the eastern corner of Burke County between the towns of Hickory and Connelly Springs. **Habitat** -- primarily runs and pools with some coarse woody snags and a few bedrock outcrop chutes. **2007** - a moderate to low diversity fish community including 2 species of suckers, 4 species of minnows, and 1 darter species. Abundance of the collected population was good (n = 392), but the Bluehead Chub represented 48% of the total, and no intolerant species were collected. The urban nature of this watershed is likely having an impact on the fish community here. Although the specific conductance was not elevated, the stream did become very turbid during sampling, an indication of non-point source sedimentation.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Station ID	Bioclassification
SMOKY CR	**SR 1515**	**05/21/07**	**CF53**	**Excellent**

County	Subbasin	8 digit HUC	Latitude	Longitude	AU Number	Level IV Ecoregion
BURKE	31	03050101	35.79944444	-81.605	11-41-(1)	Northern Inner Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
WS-IV	7.6	1100	6	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)	16.6
Dissolved Oxygen (mg/L)	10.0
Specific Conductance (µS/cm)	38
pH (s.u.)	6.4

Water Clarity	Clear

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	16
Bottom Substrate (15)	8
Pool Variety (10)	7
Riffle Habitat (16)	9
Left Bank Stability (7)	7
Right Bank Stability (7)	6
Light Penetration (10)	9
Left Riparian Score (5)	5
Right Riparian Score (5)	5
Total Habitat Score (100)	**77**

Site Photograph

Substrate sand, cobble, boulder, bedrock

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
05/21/07	2007-57	17	54	Excellent
05/03/02	2002-44	16	58	Excellent

Most Abundant Species Central Stoneroller

Exotic Species None

Species Change Since Last Cycle **Gains** -- Notchlip Redhorse, Spottail Shiner, and Brassy Jumprock. **Losses** -- Flat Bullhead and Warmouth.

Data Analysis

Watershed -- a small tributary to Lake Rhodhiss located less than a mile to the north of the lake; drains small portions of Caldwell and Burke Counties, just south of the Towns of Gamewell and Lenoir. **Habitat** -- cobble riffles, shallow sandy runs, shallow bedrock plunge pools, and side snags; good canopy and forested riparian zone widths. **2007** -- a diverse and abundant fish community was collected including 4 species of suckers, 7 species of minnows, and 2 species of darters. **1993 - 2007** -- very stable metrics since the 2002 sample; the stream was clear, but became extremely turbid during sampling; this watershed is subject to sedimentation, maybe from non-point sources. However, if petitioned this regional reference site would qualify for reclassification to either HQW or ORW status.

BENTHIC MACROINVERTEBRATE SAMPLE

Waterbody	Location	Station ID	Date	Bioclassification
Smoky Cr	**SR 1515**	**CB88**	**08/02/07**	**Good**

County	Subbasin	8 digit HUC	Latitude	Longitude	AU Number	Level IV Ecoregion
Burke	31	03050101	354757	813618	11-41-(1)	Northern Inner Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Stream Depth (m)
WS-IV	8.0	1010	5	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)	21.6
Dissolved Oxygen (mg/L)	8.8
Specific Conductance (µS/cm)	41
pH (s.u.)	6.8
Water Clarity	clear

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	16
Bottom Substrate (15)	13
Pool Variety (10)	9
Riffle Habitat (16)	15
Left Bank Stability (7)	6
Right Bank Stability (7)	6
Light Penetration (10)	7
Left Riparian Score (5)	5
Right Riparian Score (5)	5
Total Habitat Score (100)	87

Site Photograph

Substrate mostly cobble, gravel, sand, and silt; some boulder and bedrock

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
08/02/07	10287	---	28	---	3.59	Good
08/21/02	8969	---	26	---	3.56	Good-Fair
08/05/97	7416	---	32	---	3.60	Good
08/04/92	5960	---	30	---	3.24	Good

Taxonomic Analysis

Abundant EPT taxa collected from the site in 2007 were: *Baetis pluto, Serratella deficiens, Hexagenia, Maccaffertium modestum, Stenacron pallidum, Isonychia, Leuctra, Acroneuria abnormis, Pteronarcys,* and *Cheumatopsyche*. Other than a significant loss of six Ephemeroptera taxa between the sampling events in 1997 and 2002, the EPT taxa present at the site are relatively similar between sampling efforts.

Data Analysis

The site is about 6 miles northeast of downtown Morganton and 1.5 miles upstream of the confluence with Catawba River. The collection of two additional EPT taxa in 2007 over the previous sampling effort in 2002 pushed the resulting classification back into Good from Good-Fair. Silt, which can stifle macroinvertebrate habitat, was implicated as a causative factor in the decline of EPT richness between 1997 and 2002 in the prior basinwide report. Visual estimates of the amount of silt present was less in 2007 than 2002.

BENTHIC MACROINVERTEBRATE SAMPLE

Waterbody	Location	Station ID	Date	Bioclassification
McGalliard Cr	**SR 1538**	**CB82**	**08/02/07**	**Good-Fair**

County	Subbasin	8 digit HUC	Latitude	Longitude	AU Number	Level IV Ecoregion
Burke	31	03050101	354549	813411	11-44-(3)	Northern Inner Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Stream Depth (m)
WS-IV	8.0	1000	5	0.4

	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)	21.8
Dissolved Oxygen (mg/L)	6.8
Specific Conductance (µS/cm)	109
pH (s.u.)	6.0
Water Clarity	turbid

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	12
Bottom Substrate (15)	2
Pool Variety (10)	10
Riffle Habitat (16)	5
Left Bank Stability (7)	3
Right Bank Stability (7)	3
Light Penetration (10)	10
Left Riparian Score (5)	5
Right Riparian Score (5)	5
Total Habitat Score (100)	60

Site Photograph

Substrate mostly silt and sand; small amounts of boulder, cobble, gravel

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
08/02/07	10286	---	22	---	5.06	Good-Fair
08/27/03	9294	---	18	---	4.30	Fair
08/21/02	8968	---	16	---	5.09	Fair
08/05/97	7417	---	21	---	4.81	Good-Fair

Taxonomic Analysis

Abundant taxa at the site were: *Baetis pluto, Maccaffertium modestum, Eccoptura xanthenes, Cheumatopsyche,* and *Hydropsyche betteni* . Three of the five abundant taxa are tolerant to the presence of pollutants: *M. modestum, Cheumatopsyche,* and *H. betteni* have tolerance values of 5.5, 6.2, and 7.8 respectively.

Data Analysis

The site--along with nearly the entire catchment--is in the city of Valdese and about 2 stream-miles above the confluence with Catawba River. The highest number of EPT taxa for the four basinwide sampling events at the site were collected in 2007, returning the resulting classification to the Good-Fair it received in 1997.

BENTHIC MACROINVERTEBRATE SAMPLE

Waterbody	Location	Station ID	Date	Bioclassification
Gunpowder Cr	**SR 1718**	**CB114**	**08/01/07**	**Fair**

County	Subbasin	8 digit HUC	Latitude	Longitude	AU Number	Level IV Ecoregion
Caldwell	32	03050101	355039	812610	11-55-(1.5)	Northern Inner Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Stream Depth (m)
WS-IV	19	1070	10	0.3

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	60	20	20	0

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
City of Lenoir, Gunpowder Creek WWTP	NC0023736	2

Water Quality Parameters

Temperature (°C)	20.6
Dissolved Oxygen (mg/L)	7.4
Specific Conductance (µS/cm)	103
pH (s.u.)	6.7
Water Clarity	slightly turbid

Habitat Assessment Scores (max)

Channel Modification (5)	4
Instream Habitat (20)	8
Bottom Substrate (15)	3
Pool Variety (10)	8
Riffle Habitat (16)	7
Left Bank Stability (7)	6
Right Bank Stability (7)	6
Light Penetration (10)	10
Left Riparian Score (5)	1
Right Riparian Score (5)	4
Total Habitat Score (100)	57

Site Photograph

Substrate mostly sand with small amounts of cobble and gravel near bridge

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
08/01/07	10283	---	14	---	4.80	Fair
08/21/02	8967	---	23	---	4.73	Good-Fair

Taxonomic Analysis

There was a loss of nine EPT taxa from the sampling event in 2002 compared to the effort in 2007. Most of the loss occurred within the Ephemeroptera as eight of those taxa collected in 2002 were not collected in 2007: *Heterocloeon, Plauditus, Pseudocloeon propinquum, Baetisca, Caenis, Hexagenia, Heptagenia marginalis,* and *Stenacron pallidum*. *Maccaffertium pudicum* was uncollected in 2002 and rare in 2007. Plecoptera were entirely different between the two sampling events: *Leuctra, Acroneuria abnormis,* and *Pteronarcys* were collected in 2002; *Tallaperla* and *Perlesta* in 2007. All stonefly taxa were rare in the sample from each year except for *Pteronarcys*, which was common in 2002. Conversely, Trichoptera were very similar in both years with only the loss of *Leucotrichia pitciptes* in 2007 (it was abundant in 2002). Abundant taxa in 2007 were *Baetis pluto, Maccaffertium modestum, Isonychia, Cheumatopsyche, Hydropsyche betteni,* and *Neophylax oligius*.

Data Analysis

The site is 7.5 miles southeast of Lenoir and about 2.5 miles stream-miles downstream of the City of Lenoir Gunpowder Creek WWTP. Macroinvertebrate habitat is quite limited at the site. The only rocky sustrate is an artifact of the bridge; otherwise bottom sustrate is almost entirely sand. The large loss of EPT taxa between 2002 and 2007 is not reflected by the EPT BI, i.e. it was not just sensitive taxa that were eliminated from the latter sample. However, the loss of 39% of the number of EPT taxa between the sampling events from 2002 to 2007 is significant. No particular stressor is indicated by the taxa lost. Macroinvertebrate habitat was limited for both sampling events and specific conductance is elevated, so differences in the benthic community are very likely due to additional water-borne stressors.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Station ID	Bioclassification
UPPER LITTLE R	SR 1712	04/27/07	CF66	Good-Fair

County	Subbasin	8 digit HUC	Latitude	Longitude	AU Number	Level IV Ecoregion
CALDWELL	32	03050101	35.896149	-81.421808	11-58	Northern Inner Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
C	11.3	1200	6	0.3	No

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	35	0	40	25 (tree nursery farm)

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
Caldwell County Board of Education's Oak Hill Elementary School WWTP	NC0041220	0.003

Water Quality Parameters

Temperature (°C)	16.7
Dissolved Oxygen (mg/L)	9.7
Specific Conductance (µS/cm)	40
pH (s.u.)	6.3

Water Clarity	Clear

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	16
Bottom Substrate (15)	4
Pool Variety (10)	4
Riffle Habitat (16)	11
Left Bank Stability (7)	3
Right Bank Stability (7)	5
Light Penetration (10)	9
Left Riparian Score (5)	5
Right Riparian Score (5)	5
Total Habitat Score (100)	**67**

Site Photograph

Substrate Sand and gravel

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
04/27/07	2007-38	10	46	Good-Fair

Most Abundant Species Rosyside Dace and Greenhead Shiner

Exotic Species None

Species Change Since Last Cycle **N/A**

Data Analysis

This is the first fish community sample collected at this site. **Watershed** -- drains east central Caldwell County and the southeastern facing slopes of the Brushy Mountains; borders the Eastern Blue Ridge Foothills ecoregion; no municipalities in the watershed; site is ~ 6 miles upstream from and about one-half the drainage area of the basinwide site sampled in 2002; WWTP is ~ 0.8 miles above the site. **Habitat** -- shallow, sandy flats and chutes; logs across the stream creating riffles; channel filled with sand; good riparian; deeply entrenched (natural?) with some badly eroded and bare banks; except for the entrenchment, site would have qualified as a reference site. **2007** -- very low flow (becomes intermittent during low flow?); low conductivity; a very abundant community, but species diversity was lower than expected, only one species of sunfish was collected and intolerant species were absent.

BENTHIC MACROINVERTEBRATE SAMPLE

Waterbody	Location	Station ID	Date	Bioclassification
Upper Little R	**SR 1740**	**CB130**	**07/31/07**	**Excellent**

County	Subbasin	8 digit HUC	Latitude	Longitude	AU Number	Level IV Ecoregion
Caldwell	32	03050101	355032	812145	11-58-(5.5)	Northern Inner Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Stream Depth (m)
WS-IV	34	980	16	0.3

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	70	30	0	0

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

Water Quality Parameters

Temperature (°C)	24.2
Dissolved Oxygen (mg/L)	8.2
Specific Conductance (µS/cm)	38
pH (s.u.)	7.4
Water Clarity	milky

Habitat Assessment Scores (max)

Channel Modification (5)	4
Instream Habitat (20)	20
Bottom Substrate (15)	13
Pool Variety (10)	10
Riffle Habitat (16)	10
Left Bank Stability (7)	7
Right Bank Stability (7)	7
Light Penetration (10)	2
Left Riparian Score (5)	1
Right Riparian Score (5)	5
Total Habitat Score (100)	79

Site Photograph

Substrate about half of area boulder; remainder sand, cobble, and gravel

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
07/31/07	10282	111	50	4.65	3.73	Excellent
08/20/02	8965	83	33	4.91	3.94	Good
08/06/97	7419	90	39	4.35	3.47	Good
08/04/92	5961	74	38	4.18	3.56	Good

Taxonomic Analysis

The greatest number of both Ephmeroptera and Trichoptera taxa were collected in 2007 over all sampling events at the site; the number of Plecoptera taxa collected in 2007 was equal to the number collected in 1992. *Acroneuria evoluta* and *Ochrotrichia* , taxa rarely identified from BAU samples, were collected for the first time from this site in 2007. Abundant taxa collected from the site in 2007 were: *Baetis flavistriga, Caenis, Serratella deficiens, Hexagenia, Heptagenia marginalis, Leucrocuta, Maccaffertium modestum, Stenacron pallidum, Isonychia, Leuctra, Acroneuria abnormis, Ceratopsyche sparna, Cheumatopsyche, Triaenodes ignitus, Paranyctiophylax, Boyeria vinosa, Gomphus, Helichus basalis, Macronychus glabratus, Simulium, Microtendipes pedellus* sp. group*, Polypedilum flavum, Tribelos jucundum,* Branchiobdellida, Lumbriculidae, *Elimia,* and *Corbicula fluminea* .

Data Analysis

The site is about 8 miles north of downtown Hickory and 5 stream-miles upstream of the confluence with Catawba River. The high number of EPT taxa collected resulted in a classification of Excellent for the first time for the site; the NCBI remained somewhat high though. Very good in-stream habitat helps to support macroinvertebrate diversity.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Station ID	Bioclassification
MIDDLE LITTLE R	**SR 1002**	**04/27/07**	**CF42**	**Good**

County	Subbasin	8 digit HUC	Latitude	Longitude	AU Number	Level IV Ecoregion
ALEXANDER	32	03050101	35.88916667	-81.32138889	11-62	Northern Inner Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
C	16.3	1200	7	0.4	Yes

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	95	5 (rural residential)	0	0

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

Water Quality Parameters

Temperature (°C)	16.8
Dissolved Oxygen (mg/L)	8.6
Specific Conductance (µS/cm)	31
pH (s.u.)	5.5

Water Clarity	Clear

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	18
Bottom Substrate (15)	8
Pool Variety (10)	8
Riffle Habitat (16)	12
Left Bank Stability (7)	6
Right Bank Stability (7)	6
Light Penetration (10)	10
Left Riparian Score (5)	5
Right Riparian Score (5)	5
Total Habitat Score (100)	**83**

Site Photograph

Substrate Sand, gravel, cobble, and boulder

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
04/27/07	2007-37	12	48	Good
05/23/02	2002-59	13	56	Excellent
05/08/97	97-41	12	52	Good
05/11/93	93-19	9	46	Good-Fair

Most Abundant Species Bluehead Chub **Exotic Species** None

Species Change Since Last Cycle **Gains** -- Highback Chub and Flat Bullhead. **Losses** -- White Sucker, Bluegill, and Largemouth Bass.

Data Analysis

Watershed -- tributary to Lake Hickory; downstream are Moretz Lake and Rink dams; drains western Alexander and eastern Caldwell counties, including the southeast facing slopes of the Brushy Mountains; no municipalities in the watershed. **Habitat** -- old mill site at the end of the reach; runs; pools with sand bottoms; snags; great riparian habitats. **2007** -- low specific conductance and very low pH; diversity metrics lower than expected and accounted for the decline in the rating from Excellent to Good; the intolerant Highback Chub was collected for the first time; declines noted in the relative abundance of Rosyside dace and Greenhead Shiner. **1993 - 2007** -- consistently low conductivity, ranging from 24 to 31 µS/cm; a relatively low species diversity, only 15 species known from the site; no exotic species have ever been collected at the site; dominant species are Bluehead Chub, Rosyside Dace, and Greenhead Shiner; no changes in the percentage of tolerant fish or in the trophic metrics; number of fish collected in 2007 (n = 295) was two-thirds of the number collected in 2002 (a low flow year), but similar to the number in 1997 (n = 230); habitat scores have ranged from 72 in 1997 to 83 in 2007.

BENTHIC MACROINVERTEBRATE SAMPLE

Waterbody	Location	Station ID	Date	Bioclassification
Middle Little R	**SR 1153**	**CB123**	**07/31/07**	**Good-Fair**

County	Subbasin	8 digit HUC	Latitude	Longitude	AU Number	Level IV Ecoregion
Alexander	32	03050101	355148	811719	11-62	Northern Inner Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Stream Depth (m)
C	43	1000	8	0.5

	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)	21.2
Dissolved Oxygen (mg/L)	7.5
Specific Conductance (µS/cm)	38
pH (s.u.)	6.6
Water Clarity	slightly turbid

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	7
Bottom Substrate (15)	3
Pool Variety (10)	10
Riffle Habitat (16)	2
Left Bank Stability (7)	6
Right Bank Stability (7)	5
Light Penetration (10)	10
Left Riparian Score (5)	4
Right Riparian Score (5)	3
Total Habitat Score (100)	55

Site Photograph

Substrate almost entirely sand; some silt present

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
07/31/07	10280	---	24	---	3.84	Good-Fair
08/27/03	9293	---	26	---	3.18	Good-Fair
08/20/02	8964	---	18	---	3.75	Fair
08/06/97	7420	---	26	---	3.96	Good-Fair
08/04/92	5963	---	32	---	4.15	Good

Taxonomic Analysis

Abundant EPT taxa collected from the site in 2007 were: *Serratella deficiens, Hexagenia, Maccaffertium modestum, Isonychia, Acroneuria abnormis, Brachycentrus nigrosoma,* and *Cheumatopsyche* . The EPT community was fairly similar between 2003 and 2007, though there are a few notable exceptions. *Heptagenia marginalis* and *Pycnopsyche lepida* were both common in 2003 though uncollected in 2007. *Neoperla* and *Triaenodes ignitus* were both uncollected in 2003 and were common in 2007.

Data Analysis

The site is 1.7 miles southwest of Bald Mountain of Barrett Mountain Range, about nine miles NNE of downtown Hickory, and about six stream-miles upstream of the confluence with Catawba River. Specific conductance is relatively low at the site. However, macroinvertebrate habitat is quite limited; reduced EPT richness generally at the site is more likely due to habitat limitations rather than water-borne pollutants.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Station ID	Bioclassification
DUCK CR	NC 90	04/26/07	CF13	Good

County	Subbasin	8 digit HUC	Latitude	Longitude	AU Number	Level IV Ecoregion
ALEXANDER	32	03050101	35.91777778	-81.31277778	11-62-2-(1)	Northern Inner Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
C;Tr	14.6	1200	7	0.4	No

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	55	20 (rural residential)	25	0

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

Water Quality Parameters

Temperature (°C)	18.3
Dissolved Oxygen (mg/L)	9.1
Specific Conductance (µS/cm)	38
pH (s.u.)	6.3

Water Clarity	Clear

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	16
Bottom Substrate (15)	9
Pool Variety (10)	8
Riffle Habitat (16)	12
Left Bank Stability (7)	6
Right Bank Stability (7)	4
Light Penetration (10)	10
Left Riparian Score (5)	5
Right Riparian Score (5)	2
Total Habitat Score (100)	**77**

Site Photograph

Substrate Sand, gravel, and cobble

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
04/26/07	2007-35	11	48	Good
05/23/02	2002-60	10	48	Good
05/08/97	97-40	10	48	Good
05/11/93	93-20	10	40	Fair

Most Abundant Species Bluehead Chub **Exotic Species** Fathead Minnow

Species Change Since Last Cycle **Gains** -- Fathead Minnow and White Sucker. **Losses** -- Seagreen Darter.

Data Analysis

Watershed -- tributary to the Middle Little River; drains the northeast portion of the Brushy Mountains in western Alexander and eastern Caldwell counties; no municipalities in the watershed. **Habitat** -- cattle continued to be fenced out of the stream; more sand and gravel in the stream than in 2002, bar development. **2007** -- lower species diversity and diversities of sunfish and darters than expected; percentage of tolerant fish increased from 6 to 21% between 2002 and 2007; first exotic species ever collected from the site. **1993 - 2007** -- conductivity ranged from 35 to 42 µS/cm; only 13 species known from the site, but only one species of sunfish; 10 or 11 of these species have been collected each time; the intolerant Highback Chub was not collected until 2002; no Tessellated Darter or trout have ever been collected from this site; dominant species have been Bluehead Chub, Greenhead Shiner, and Rosyside Dace; number of fish in 2002 (a low flow year) was an anomaly compared to 1997 and 2007 (n = 1,665, 421, and 387, respectively); a gradually improving trophic structure -- omnivores decreasing from 42 to 22% and the insectivores increasing from 58 to 78%.

BENTHIC MACROINVERTEBRATE SAMPLE

Waterbody	Location	Station ID	Date	Bioclassification
Duck Cr	**NC 127**	**CB112**	**07/31/07**	**Good**

County	Subbasin	8 digit HUC	Latitude	Longitude	AU Number	Level IV Ecoregion
Alexander	32	03050101	355333	811811	11-62-2-(4)	Northern Inner Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Stream Depth (m)
C	18	1040	17	0.4

	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)	22.0
Dissolved Oxygen (mg/L)	8.5
Specific Conductance (µS/cm)	41
pH (s.u.)	6.7
Water Clarity	clear

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	16
Bottom Substrate (15)	10
Pool Variety (10)	10
Riffle Habitat (16)	16
Left Bank Stability (7)	7
Right Bank Stability (7)	7
Light Penetration (10)	10
Left Riparian Score (5)	5
Right Riparian Score (5)	5
Total Habitat Score (100)	91

Site Photograph

Substrate mix of bedrock, boulder, cobble, gravel, and sand

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
07/31/07	10281	---	33	---	3.35	Good
08/20/02	8963	---	33	---	3.76	Good
08/06/97	7421	---	26	---	4.00	Good-Fair
08/04/92	5962	---	26	---	3.42	Good-Fair

Taxonomic Analysis

The difference in EPT richness between the first two sampling efforts at the site and the two most recent is driven primarily by an increase in the number of Trichoptera taxa collected during the latter two events: nine and seven Trichoptera taxa were collected in 1992 and 1997; 13 and 14 in 2002 and 2007 respectively. Abundant taxa at the site in 2007 were *Baetis pluto*, *Heterocloeon curiosum*, *Serratella deficiens*, *Maccaffertium modestum*, *Isonychia*, *Leuctra*, *Acroneuria abnormis*, *Pteronarcys proteus*, *Micrasema wataga*, *Ceratopsyche sparna*, and *Cheumatopsyche*. *Tallaperla* and *Micrasema bennetti* were among the taxa collected for the first time from the site in 2007; both taxa were common in the sample. *Epeorus rubidus*, which was abundant in 1992, has not been collected from the site during the latter sampling events.

Data Analysis

The site is 13 miles east of Lenoir and about 0.7 stream-miles above the confluence with Middle Little River. Except for the loss of a coldwater taxon (*Epeorus rubidus*) between 1992 and the more recent sampling events, no specific water-quality problems are indicated by the taxa present at the site.

BENTHIC MACROINVERTEBRATE SAMPLE

Waterbody	Location	Station ID	Date	Bioclassification
Lower Little R	**SR 1131**	**CB120**	**07/31/07**	**Good-Fair**

County	Subbasin	8 digit HUC	Latitude	Longitude	AU Number	Level IV Ecoregion
Alexander	32	03050101	355150	811239	11-69-(5.5)	Northern Inner Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Stream Depth (m)
WS-IV	77	940	14	0.3

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	30	0	70	0

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

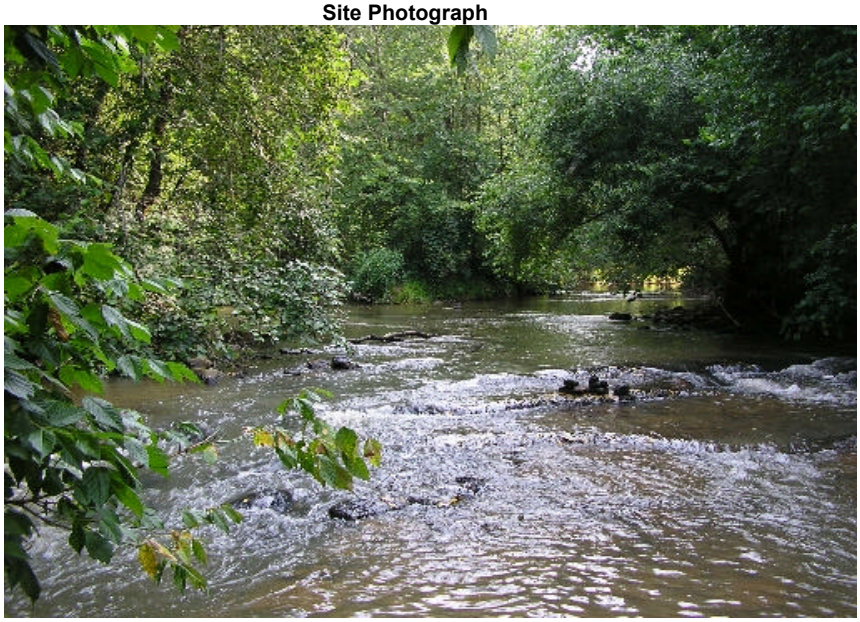
Water Quality Parameters

Temperature (°C)	22.0
Dissolved Oxygen (mg/L)	7.5
Specific Conductance (µS/cm)	54
pH (s.u.)	6.4
Water Clarity	slightly turbid

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	16
Bottom Substrate (15)	8
Pool Variety (10)	10
Riffle Habitat (16)	10
Left Bank Stability (7)	6
Right Bank Stability (7)	6
Light Penetration (10)	10
Left Riparian Score (5)	4
Right Riparian Score (5)	4
Total Habitat Score (100)	79

Site Photograph



Substrate half of area sand; remainder a mix of the remaining classes

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
07/31/07	10279	89	32	5.08	4.11	Good-Fair
08/20/02	8962	61	28	4.85	3.92	Good-Fair
08/06/97	7423	74	34	4.95	4.19	Good
08/04/92	5964	70	29	4.60	3.86	Good

Taxonomic Analysis

Abundant taxa at the site in 2007 were: *Baetis flavistriga, B. intercalaris, Heptagenia marginalis, Maccaffertium modestum, Stenacron pallidum, Isonychia, Ceratopsyche sparna, Cheumatopsyche, Psychomyia nomada, Neophylax oligius, Gomphus, Helichus basalis, Dineutus, Simulium, Antocha, Rheotanytarsus, Corbicula fluminea,* and *Pisidium.*

Data Analysis

The site is 1.7 miles east of Barrett Mountain peak, about 12 miles northeast of downtown Hickory and about 6 stream-miles from the confluence with Catawba River. In spite of the difference in bioclassification between the first two sampling events and the latter two, the macroinvertebrate community at the site has been relatively stable. The Good classifications resulting from collections in 1992 and 1997 were bordering on Good-Fair; small shifts in either EPT richness or NCBI value resulted in Good-Fair classifications for 2002 and 2007.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Station ID	Bioclassification
LAMBERT FK	SR 1317	04/26/07	CF65	Good-Fair

County	Subbasin	8 digit HUC	Latitude	Longitude	AU Number	Level IV Ecoregion
ALEXANDER	32	03050101	35.945923	-81.251191	11-69-3	Northern Inner Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
C	10.3	1200	8	0.3	No

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	80	5 (rural residential)	15	0

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

Water Quality Parameters

Temperature (°C)	18.3
Dissolved Oxygen (mg/L)	8.8
Specific Conductance (µS/cm)	27
pH (s.u.)	6.7

Water Clarity	Clear

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	16
Bottom Substrate (15)	6
Pool Variety (10)	2
Riffle Habitat (16)	12
Left Bank Stability (7)	4
Right Bank Stability (7)	4
Light Penetration (10)	10
Left Riparian Score (5)	5
Right Riparian Score (5)	5
Total Habitat Score (100)	**69**

Site Photograph

Substrate Sand, cobble, gravel, and bedrock

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
04/26/07	2007-36	9	46	Good-Fair

Most Abundant Species Bluehead Chub

Exotic Species None

Species Change Since Last Cycle N/A

Data Analysis

This is the first fish community sample collected at this site. **Watershed** -- tributary to the Lower Little River; drains rural northwest Alexander County, including the southeast facing slopes of the Brushy Mountains; borders the Eastern Blue Ridge Foothills ecoregion; no municipalities in the watershed. **Habitat** -- good riparian zones; gravel and cobble riffles and runs; very shallow pools; bar development; deeply entrenched (natural?); except for the entrenchment, site would have qualified as a reference site. **2007** -- very low flow (becomes intermittent during low flow?); very low conductivity; an abundant community, but species diversity was lower than expected, only one species of darter and sucker were collected; only site in the Catawba River basin in 2007 where no sunfish, bass, or trout were collected; Tessellated Darter were also absent; Highback Chub, an intolerant species, was abundant.

BENTHIC MACROINVERTEBRATE SAMPLE

Waterbody	Location	Station ID	Date	Bioclassification
Muddy Fk	**SR 1313**	**CB127**	**07/30/07**	**Fair**

County	Subbasin	8 digit HUC	Latitude	Longitude	AU Number	Level IV Ecoregion
Alexander	32	03050101	355546	811248	11-69-4	Northern Inner Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Stream Depth (m)
C	12	1060	5	0.3

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	10	0	90	0

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

Water Quality Parameters

Temperature (°C)	22.3
Dissolved Oxygen (mg/L)	7.1
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)	8
Bottom Substrate (15)	2
Pool Variety (10)	4
Riffle Habitat (16)	3
Left Bank Stability (7)	5
Right Bank Stability (7)	5
Light Penetration (10)	10
Left Riparian Score (5)	4
Right Riparian Score (5)	4
Total Habitat Score (100)	49

Site Photograph

Substrate almostly entirely silt and sand; small amount of cobble present

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
07/30/07	10278	---	8	---	5.39	Fair
08/27/03	9292	---	18	---	5.38	Good-Fair
08/19/02	8961	---	12	---	6.05	Fair
08/06/97	7422	76	22	6.27	5.42	Good-Fair

Taxonomic Analysis

All eight taxa collected in 2007 were also collected in 2003; the difference in EPT richness between the two sampling events is due strictly to the 2003 taxa uncollected in 2007. Richness in all three orders declined: Ephemeroptera from nine to six taxa; Plecoptera from three to zero; Trichoptera from six to two. Of the eight EPT taxa collected from the site in 2007, five were abundant in the sample: *Hexagenia, Maccaffertium modestum, Isonychia, Cheumatopsyche,* and *Hydropsyche betteni.*

Data Analysis

The site is two miles WNW of Taylorsville and about 250 meters upstream of the confluence with Lower Little River. EPT richness took a sharp decline between sampling events in 2003 and 2007. There was more silt noted at the site in 2007 than in any previous sampling event; macroinvertebrate habitat smothered by silt may be part of the reason for the decline in the benthic community. Also, as reported previously, cattle had access to the stream above the site and are therefore contributing to overall depressed EPT richness values.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Station ID	Bioclassification
MUDDY FK	SR 1313	06/21/04	CF44	Good-Fair

County	Subbasin	8 digit HUC	Latitude	Longitude	AU Number	Level IV Ecoregion
ALEXANDER	32	03050101	35.92944444	-81.2125	11-69-4	Northern Inner Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
C	12.6	1095	4	0.3	No

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	0	0	90	10 (confined animal operations)

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

Water Quality Parameters

Temperature (°C)	19.0
Dissolved Oxygen (mg/L)	8.1
Specific Conductance (µS/cm)	65
pH (s.u.)	6.2

Water Clarity	Turbid

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	9
Bottom Substrate (15)	3
Pool Variety (10)	4
Riffle Habitat (16)	1
Left Bank Stability (7)	2
Right Bank Stability (7)	2
Light Penetration (10)	5
Left Riparian Score (5)	1
Right Riparian Score (5)	1
Total Habitat Score (100)	**33**

Site Photograph

Substrate Sand

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
06/21/04	2004-96	11	42	Good-Fair

Most Abundant Species Bluehead Chub and Greenfin Shiner

Exotic Species None

Species Change Since Last Cycle N/A

Data Analysis

This is the first fish community sample collected at this site. **Watershed** -- tributary to the Lower Little River; drains central Alexander County and the northern part of the Town of Taylorsville; one small (0.78 MGD) discharger located ~1.5 miles upstream. **Habitat** -- very shallow runs; no riffles; cattle with access to stream from both banks; confined animal operations proximal to the stream. **2004** -- almost 75% of all the fish were the two dominant species; total diversity lower than expected; darters were absent; omnivores (Bluehead Chub and White Sucker) abundant; Largemouth Bass represented only by young-of-year; data were also used as part of a NCSU Urban Fish Study.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Station ID	Bioclassification
GLADE CR	SR 1610	04/26/07	CF64	Excellent

County	Subbasin	8 digit HUC	Latitude	Longitude	AU Number	Level IV Ecoregion
ALEXANDER	32	03050101	35.853337	-81.183432	"11-69-7-(0.7)	Northern Inner Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
WS-IV	12.7	1070	8	0.4	No

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	55	35 (rural businesses)	0	10 (church)

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

Water Quality Parameters

Temperature (°C)	16.7
Dissolved Oxygen (mg/L)	9.5
Specific Conductance (µS/cm)	49
pH (s.u.)	6.5

Water Clarity	Clear

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	16
Bottom Substrate (15)	6
Pool Variety (10)	10
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)	**79**

Site Photograph

Substrate Bedrock and sand

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
04/26/07	2007-34	14	54	Excellent

Most Abundant Species Redlip Shiner **Exotic Species** Redlip Shiner

Species Change Since Last Cycle **N/A**

Data Analysis

This is the first fish community sample collected at this site. **Watershed** -- tributary to the Lower Little River; site is ~ 0.4 miles above the creek's confluence; confluence is flanked by Millersville Dam upstream and North State Dam downstream; drains the southeastern portion of the Town of Taylorsville and south central Alexander County. **Habitat** -- *Podostemum* on shelf bedrock; plunge pools and runs; nice bluff on the right; pools filled in with sediment. **2007** -- a diverse and abundant community for a stream of its size; only metrics not to score a "5" were the number of Sunfish, Bass, and Trout and the Percentage of Piscivores; one-third of all the fish were Redlip Shiner; two intolerant species (Highback Chub and Fieryblack Shiner) and two species of darters (Tessellated Darter and Fantail Darter) were present.

BENTHIC MACROINVERTEBRATE SAMPLE

Waterbody	Location	Station ID	Date	Bioclassification
Elk Shoal Cr	**SR 1605**	**CB113**	**07/30/07**	**Good-Fair**

County	Subbasin	8 digit HUC	Latitude	Longitude	AU Number	Level IV Ecoregion
Alexander	32	03050101	354836	810555	11-73-(0.5)	Northern Inner Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Stream Depth (m)
WS-IV	13	880	4	0.2

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	30	0	70	0

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

Water Quality Parameters

Temperature (°C)	21.1
Dissolved Oxygen (mg/L)	8.5
Specific Conductance (µS/cm)	62
pH (s.u.)	6.6
Water Clarity	clear

Habitat Assessment Scores (max)

Channel Modification (5)	4
Instream Habitat (20)	11
Bottom Substrate (15)	3
Pool Variety (10)	4
Riffle Habitat (16)	3
Left Bank Stability (7)	5
Right Bank Stability (7)	5
Light Penetration (10)	10
Left Riparian Score (5)	1
Right Riparian Score (5)	1
Total Habitat Score (100)	47

Site Photograph

Substrate nearly entirely sand with some silt

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
07/30/07	10275	---	18	---	4.62	Good-Fair
08/20/02	8960	---	16	---	5.04	Good-Fair
08/07/97	7426	---	18	---	4.49	Good-Fair
08/05/92	5966	---	15	---	4.93	Good-Fair

Taxonomic Analysis

Abundant taxa at the site in 2007 were *Serratella deficiens*, *Maccaffertium modestum*, *Isonychia*, and *Cheumatopsyche*. The same taxa were abundant in most cases (otherwise common) for all prior sampling events at the site. *Pseudocloeon propinquum*, which was abundant from the earliest three sampling events, was rare in 2007.

Data Analysis

The site is 12 miles west of Statesville and three stream-miles upstream of the confluence with Catawba River. The benthic community has been relatively stable over the four sampling events beginning in 1992. Macroinvertebrate habitat is deficient as the substrate is sand with little else other than a small amount of silt, and is certainly depressing EPT richness at the site. Other water-quality problems may also exist though no specific stressors are indicated.

BENTHIC MACROINVERTEBRATE SAMPLE

Waterbody	Location	Station ID	Date	Bioclassification
Lyle Cr	**US 64/70**	**CB122**	**07/30/07**	**Good-Fair**

County	Subbasin	8 digit HUC	Latitude	Longitude	AU Number	Level IV Ecoregion
Catawba	32	03050101	354315	810632	11-76-(3.5)	Northern Inner Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Stream Depth (m)
WS-IV	44	780	9	0.3

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	60	0	40	0

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
City of Conover Northeast WWTP	NC0024252	1.5

Water Quality Parameters

Temperature (°C)	22.7
Dissolved Oxygen (mg/L)	8.6
Specific Conductance (µS/cm)	122
pH (s.u.)	7.0
Water Clarity	slightly turbid

Habitat Assessment Scores (max)

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

Site Photograph

Substrate mostly sand; some gravel, cobble; small amount boulder, silt

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
07/30/07	10276	---	22	---	4.42	Good-Fair
08/19/02	8958	---	22	---	4.70	Good-Fair
09/07/97	7424	51	23	4.95	4.22	Good-Fair
08/05/92	5965	62	22	5.66	4.89	Good-Fair

Taxonomic Analysis

Abundant EPT taxa in the sample collected in 2007 were: *Baetis intercalaris, Serratella deficiens, Heptagenia marginalis, Maccaffertium modestum, Isonychia, Ceratopsyche sparna, Cheumatopsyche, Hydropsyche betteni, Leucotrichia pictipes, Triaenodes ignitus,* and *Neophylax oligius*. The taxa present at the site during each sampling event have been fairly consistent over time with the exception that no Plecoptera were collected in 1992; three, three, and two stonefly taxa were collected in 1997, 2002, and 2007 respectively.

Data Analysis

The site is six miles east of Conover, three stream-miles above the confluence with Catawba River, and about seven stream-miles downstream of the City of Conover Northeast WWTP. The site had the highest specific conductance of all benthos basinwide sites sampled in 2007 in subbasin 32. The macroinvertebrate community is likely limited by both poor in-stream habitat and water quality. There has been no notable change in the benthic community over the course of the four sampling events at the site.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Station ID	Bioclassification
LYLE CR	US 70	07/14/04	CF35	Excellent

County	Subbasin	8 digit HUC	Latitude	Longitude	AU Number	Level IV Ecoregion
CATAWBA	32	03050101	35.72083333	-81.10888889	11-76-(4.5)	Northern Inner Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
WS-IV	43.2	810	8	0.4	No

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	75	0	25	0

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
City of Conover's Northeast WWTP	NC0024252	1.5

Water Quality Parameters

Temperature (°C)	23.4
Dissolved Oxygen (mg/L)	6.5
Specific Conductance (µS/cm)	95
pH (s.u.)	6.2

Water Clarity: Slightly turbid

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	10
Bottom Substrate (15)	4
Pool Variety (10)	6
Riffle Habitat (16)	4
Left Bank Stability (7)	2
Right Bank Stability (7)	2
Light Penetration (10)	5
Left Riparian Score (5)	5
Right Riparian Score (5)	3
Total Habitat Score (100)	**46**

Site Photograph

Substrate: Sand and gravel

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
07/14/04	2004-118	19	58	Excellent
07/01/97	97-68	22	48	Good
05/11/93	93-23	18	50	Good

Most Abundant Species: Bluehead Chub

Exotic Species: Green Sunfish

Species Change Since Last Cycle: **Gains** -- Flat Bullhead; Green Sunfish, Largemouth Bass, and Fantail Darter. **Losses** -- Whitefin Shiner, Common Carp, Greenhead Shiner, Creek Chub (young-of-year only), V-lip Redhorse, and Brassy Jumprock.

Data Analysis

Watershed -- tributary to the Catawba River; drains northeast Catawba County including the north and northeast portions of the cities of Conover and Hickory and the Interstate 40 corridor; site is ~ 3.3 miles above mouth. **Habitat** -- sandy runs, snags, a couple of decent gravel riffles; old sand-dipping operation in the middle of the reach along right shoreline. **2004** -- conductivity only slightly elevated; faint odor of chlorine; except for a slightly elevated percentage of omnivores+herbivores (White Sucker, Eastern Silvery Minnow, Bluehead Chub, and Spottail Shiner) all other metrics were indicative of an Excellent site; data were also used as part of a NCSU Urban Fish Study. **1993 - 2004** -- was a basinwide site in 1993 and 1997; high diversity, 30 species known from the site, including 10 species of cyprinids, 6 species of suckers, and 3 species of darters; except for Fantail Darter, gains or losses of species between 1997 and 2004 were represented by 1-5 fish/species; total habitat score declined from 73 in 1997 to 46 in 2004 due to loss of riffles, canopy, and instream habitats.

BENTHIC MACROINVERTEBRATE SAMPLE

Waterbody	Location	Station ID	Date	Bioclassification
McLin Cr	**SR 1722**	**CB124**	**07/30/07**	**Fair**

County	Subbasin	8 digit HUC	Latitude	Longitude	AU Number	Level IV Ecoregion
Catawba	32	03050101	354228	810552	11-76-5-(3)	Northern Inner Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Stream Depth (m)
WS-IV	26	780	8	0.3

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	10	0	90	0

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

Water Quality Parameters

Temperature (°C)	22.5
Dissolved Oxygen (mg/L)	9.0
Specific Conductance (µS/cm)	92
pH (s.u.)	7.3
Water Clarity	clear

Habitat Assessment Scores (max)

Channel Modification (5)	3
Instream Habitat (20)	7
Bottom Substrate (15)	3
Pool Variety (10)	10
Riffle Habitat (16)	3
Left Bank Stability (7)	2
Right Bank Stability (7)	3
Light Penetration (10)	3
Left Riparian Score (5)	1
Right Riparian Score (5)	2
Total Habitat Score (100)	37

Site Photograph

Substrate about half sand; remainder gravel, silt, and cobble

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
07/30/07	10277	---	18	---	5.28	Fair
08/19/02	8959	---	23	---	5.14	Good-Fair
08/07/97	7425	57	27	5.18	4.33	Good-Fair

Taxonomic Analysis

Abundant taxa collected from the site in 2007 were: *Baetis intercalaris, Serratella deficiens, Maccaffertium modestum, Isonychia, Tricorythodes, Eccoptura xanthenes, Cheumatopsyche, Hydropsyche betteni,* and *Hydroptila.* The difference in EPT richness between the latest two sampling events is due to several Ephemeroptera and Plecoptera that were rare in 2002 and uncollected in 2007: *Acentrella alachua, Baetis pluto, Hexagenia, Leucrocuta,* and *Leuctra.* Though the number of Trichoptera taxa were the same (at six) for the two most recent sampling events, only three taxa were in common between 2002 and 2007: *Cheumatopsyche, Hydropsyche betteni,* and *Triaenodes ignitus.*

Data Analysis

The site is about 6 miles east of Conover and about 0.8 stream-miles above the confluence with Catawba River. The resultant classification fell to Fair in 2007, though the addition of a single EPT taxon would have resulted in a Good-Fair. Poor habitat and elevated specific conductance implicate both physical and water-borne sources for impact to the biota.

Note that EPT richness values are not comparable between the Full-Scale samples collected in the earliest sampling event and the latter two that were collected using EPT methods. The Full-Scale collection method is more extensive than the EPT method; it is therefore expected that collections using the Full-Scale method would result in higher richness values over EPT collections.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Station ID	Bioclassification
BUFFALO SHOALS CR	**SR 1503**	**04/26/07**	**CF3**	**Good**

County	Subbasin	8 digit HUC	Latitude	Longitude	AU Number	Level IV Ecoregion
IREDELL	32	03050101	35.75277778	-81.04583333	11-78-(0.5)	Northern Inner Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
WS-IV	13.8	830	9	0.5	No

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	70	5 (rural residential)	25	0

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

Water Quality Parameters

Temperature (°C)	15.9
Dissolved Oxygen (mg/L)	8.5
Specific Conductance (µS/cm)	80
pH (s.u.)	6.3

Water Clarity	Clear

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	16
Bottom Substrate (15)	10
Pool Variety (10)	10
Riffle Habitat (16)	15
Left Bank Stability (7)	7
Right Bank Stability (7)	7
Light Penetration (10)	10
Left Riparian Score (5)	5
Right Riparian Score (5)	5
Total Habitat Score (100)	**90**

Site Photograph

Substrate Sand, gravel, cobble, bedrock, and boulder

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
04/26/07	2007-33	13	52	Good
06/04/97	97-54	20	58	Excellent

Most Abundant Species Bluehead Chub

Exotic Species None

Species Change Since Last Cycle

Gains -- Sunfish hybrid. **Losses** -- Common Carp (migrant from lake), Eastern Silvery Minnow, Shorthead Redhorse (migrant from lake), Brassy Jumprock, Brown Bullhead, Flat Bullhead, and Piedmont Darter.

Data Analysis

Watershed -- small tributary to the Lake Norman (Catawba River); drains western Iredell County, west of the City of Statesville, including the Interstate 40 corridor; no municipalities in the watershed; site is ~ 3.5 miles above the creek's mouth. **Habitat** -- an old mill site; boulder and bedrock shelves; gravel and sand bottomed pools; good riffles and instream and riparian habitats. **2007** -- intolerant species were absent which caused the rating to decline from Excellent to Good. **1997 & 2007** -- for a stream of its size, the community was abundant and diverse with 20 species known from the site, including 5 species of suckers; however 7 fewer species were present in 2007 than in 1997 including the intolerant Piedmont Darter; a noticeable decline in the relative abundance of the Greenhead Shiner between 1997 and 2007; downstream reservoir may prevent the community from recovering/recolonizing after low flow events; total habitat score was 71 in 1997 and 90 in 2007 due to higher quality riffles and greater bank stability in the reach below the bridge (sampled in 2007) than above the bridge (sampled in part in 1997).

BENTHIC MACROINVERTEBRATE SAMPLE

Waterbody	Location	Station ID	Date	Bioclassification
McDowell Cr	**SR 2128**	**CB139**	**07/17/07**	**Fair**

County	Subbasin	8 digit HUC	Latitude	Longitude	AU Number	Level IV Ecoregion
Mecklenburg	33	3050101	352323	805517	0	Southern Outer Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Stream Depth (m)
C	24	700	6	0.2

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	90	10	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)	6.6
Specific Conductance (µS/cm)	125
pH (s.u.)	7.2
Water Clarity	clear

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	11
Bottom Substrate (15)	3
Pool Variety (10)	4
Riffle Habitat (16)	3
Left Bank Stability (7)	4
Right Bank Stability (7)	4
Light Penetration (10)	7
Left Riparian Score (5)	4
Right Riparian Score (5)	4
Total Habitat Score (100)	49

Site Photograph

Substrate nearly all sand with a small amount of silt

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
07/17/07	10241	59	8	6.61	6.08	Fair
08/20/02	8939	48	8	6.65	5.74	Fair

Taxonomic Analysis

Abundant taxa included *Baetis pluto*, *Pseudocloeon propinquum*, *Maccaffertium modestum*, *Cheumatopsyche*, *Ancyronyx variegatus*, *Boyeria vinosa*, *Calopteryx*, *Gomphus*, *Polypedilum illinoense*, *Tribelos jucundum*, *Simulium* and *Corbicula fluminea*.

Data Analysis

This stream drains the northwestern portion of Mecklenburg County between Huntersville and Charlotte. This site was added as a basinwide site in 2002 to monitor this rapidly developing portion of Mecklenburg County. Based on the benthic data no major change in water quality was observed, and it continues to be a degraded stream.

BENTHIC MACROINVERTEBRATE SAMPLE

Waterbody	Location	Station ID	Date	Bioclassification
Gar Cr	**SR 2074**	**CB133**	**07/11/07**	**Good-Fair**

County	Subbasin	8 digit HUC	Latitude	Longitude	AU Number	Level IV Ecoregion
Mecklenburg	33	3050101	352140	805353	0	Southern Outer Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Stream Depth (m)
WS-IV	3.3	700	4	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)	24.0
Dissolved Oxygen (mg/L)	---
Specific Conductance (µS/cm)	168
pH (s.u.)	7.4
Water Clarity	turbid

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	17
Bottom Substrate (15)	15
Pool Variety (10)	8
Riffle Habitat (16)	16
Left Bank Stability (7)	6
Right Bank Stability (7)	6
Light Penetration (10)	10
Left Riparian Score (5)	5
Right Riparian Score (5)	5
Total Habitat Score (100)	93

Site Photograph

Substrate mostly cobble and boulder with small amounts of gravel and silt

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
07/11/07	10240	---	16	---	5.60	Good-Fair
08/20/97	7439	---	21	---	4.93	Good
06/08/94	6543	64	20	5.64	4.97	Good
08/20/92	5988	87	24	5.55	4.69	Good

Taxonomic Analysis

With the exception of presence/absence of Rare taxa, there were no major changes in the community structure. Abundant taxa included *Baetis flavistriga*, *Maccaffertium modestum*, *Cheumatopsyche*, *Chimarra* and *Hydropsyche betteni*. The caddisfly *Triaenodes marginatus* was collected for the first time from the site in 2007.

Data Analysis

Gar Creek is a tributary to the lower reaches of Mountain Island Lake. This stream tends to have very low flows during the summer and was not sampled in 2002 for that reason. This stream had rated Good in 1992, 1994 and 1997 but decreased to Good-Fair in 2007. This decline in water quality may be due to the 2007 drought effects, or to impacts from increasing development that is occurring in Mecklenburg County. However, no definitive conclusions can be drawn because this site was not sampled in 2002, which was also a dry year.

BENTHIC MACROINVERTEBRATE SAMPLE

Waterbody	Location	Station ID	Date	Bioclassification
Dutchmans Cr	**SR 1918**	**CB132**	**07/10/07**	**Good-Fair**

County	Subbasin	8 digit HUC	Latitude	Longitude	AU Number	Level IV Ecoregion
Gaston	33	3050101	352012	810051	0	Southern Outer Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Stream Depth (m)
WS-IV	117	600	12	0.4

	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)	26.7
Dissolved Oxygen (mg/L)	---
Specific Conductance (µS/cm)	114
pH (s.u.)	7.0
Water Clarity	turbid

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	12
Bottom Substrate (15)	12
Pool Variety (10)	10
Riffle Habitat (16)	7
Left Bank Stability (7)	7
Right Bank Stability (7)	7
Light Penetration (10)	10
Left Riparian Score (5)	5
Right Riparian Score (5)	5
Total Habitat Score (100)	80

Site Photograph

Substrate mix of boulder, cobble, gravel, sand and silt

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
07/10/07	10237	---	18	---	5.28	Good-Fair
08/21/02	8942	---	19	---	5.08	Good-Fair
08/19/97	7435	73	33	5.26	4.54	Good
08/06/92	5970	77	33	5.68	4.76	Good

Taxonomic Analysis

Dutchmans Creek, like its tributary Killian Creek, experienced a sharp decline in the number of mayfly taxa between 1997 and 2002. Seventeen mayfly taxa were collected in 1997 compared with nine taxa in 2002 and ten taxa in 2007.

Data Analysis

Dutchmans Creek drains southeast Lincoln County and northeast Gason County and enters the Catawba River below Mountain Island Lake. This site rated Good in 1992 and 1997 but declined to Good-Fair in 2002 and 2007. The lower bioclassification ratings could be due to drought effects as evidenced by the decrease in wetted stream width from 15 meters in 1997 to seven meters in 2002. Flows could have been low enough to reduce habitat, increase temperature and reduce dissolved oxygen, producing a cumulative stress on the benthic community.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Station ID	Bioclassification
LEEPERS CR	**NC 73**	**04/25/07**	**CF27**	**Good-Fair**

County	Subbasin	8 digit HUC	Latitude	Longitude	AU Number	Level IV Ecoregion
LINCOLN	33	03050101	35.47055556	-81.12027778	11-119-1-(1)	Southern Outer Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
C	28.2	740	12	0.4	No

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	75	0	25	0

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

Water Quality Parameters

Temperature (°C)	16.0
Dissolved Oxygen (mg/L)	8.7
Specific Conductance (µS/cm)	65
pH (s.u.)	6.1

Water Clarity	Very slightly turbid

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	16
Bottom Substrate (15)	4
Pool Variety (10)	8
Riffle Habitat (16)	4
Left Bank Stability (7)	3
Right Bank Stability (7)	5
Light Penetration (10)	2
Left Riparian Score (5)	5
Right Riparian Score (5)	5
Total Habitat Score (100)	**57**

Site Photograph

Substrate Sand and gravel

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
04/25/07	2007-29	17	46	Good-Fair
05/20/97	97-48	18	52	Good
06/29/93	93-31	19	56	Excellent

Most Abundant Species Bluehead Chub

Exotic Species Redlip Shiner

Species Change Since Last Cycle

Gains -- Swallowtail Shiner, Notchlip Redhorse, and Bluegill. **Losses** -- Fieryblack Shiner, Flat Bullhead, Seagreen Darter, and Piedmont Darter.

Data Analysis

Watershed -- tributary to Dutchmans Creek; drains east central Lincoln County, north and east of the City of Lincolnton, and southern Catawba County; no true municipalities in the watershed. **Habitat** -- very large coarse woody debris (snags and deadfalls) in the channel; deeply entrenched; severe bank erosion. **2007** -- relatively low specific conductance and pH for a Piedmont stream; abundance low for a stream of its size (n = 147); intolerant species absent. **1993 - 2007** -- conductivity has ranged from 49 to 63 µS/cm; a fairly diverse community, 24 species known from the site, including 10 species of cyprinids, 4 species of darters, and 3 species of suckers; dominant species has been the Bluehead Chub; ratings have declined, primarily due to loss of intolerant species of darters; three intolerant species lost between 1997 and 2007 (Fieryblack Shiner, Seagreen Darter, and Piedmont Darter); no change in the trophic metrics; total habitat scores have ranged from 57 in 2007 to 62 in 2002; stream appears to experience dramatic extremes in flows.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Station ID	Bioclassification
KILLIAN CR	**NC 73**	**04/25/07**	**CF25**	**Good**

County	Subbasin	8 digit HUC	Latitude	Longitude	AU Number	Level IV Ecoregion
LINCOLN	33	03050101	35.45666667	-81.03416667	11-119-2-(0.5)a	Southern Outer Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
C	12.1	690	9	0.2	No

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

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

Water Quality Parameters

Temperature (°C)	17.5
Dissolved Oxygen (mg/L)	8.7
Specific Conductance (µS/cm)	117
pH (s.u.)	7.2

Water Clarity	Very slightly turbid

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	15
Bottom Substrate (15)	3
Pool Variety (10)	5
Riffle Habitat (16)	2
Left Bank Stability (7)	5
Right Bank Stability (7)	5
Light Penetration (10)	9
Left Riparian Score (5)	4
Right Riparian Score (5)	4
Total Habitat Score (100)	**57**

Site Photograph

Substrate Sand and silt

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
04/25/07	2007-31	14	52	Good
05/21/02	2002-49	10	46	Good-Fair
05/20/97	97-47	16	52	Good

Most Abundant Species Tessellated Darter

Exotic Species Redlip Shiner and Green Sunfish

Species Change Since Last Cycle **Gains** --Golden Shiner, White Sucker, Flat Bullhead, and Green Sunfish. **Losses** -- none.

Data Analysis

Watershed -- small tributary to upper Dutchmans Creek in east-southeast Lincoln County; watershed is between Forney and Anderson creeks; no municipalities in the watershed. **Habitat** -- very silty and sandy; shallow flats; a few runs; roots and undercut snags; periphyton thick on the sand; stick riffles; low flow. **2007** -- a diverse and abundant community; species gained in 2007 improved the overall rating from Good-Fair to Good; intolerant species absent. **1997 - 2007** -- conductivity has ranged from 86 to 131 µS/cm; 19 species are known from the site, but intolerant species are absent; dominant species are Bluehead Chub and Speckled Killifish; a gradually changing trophic structure -- omnivores decreasing from 34 to 24 to 17% and the insectivores increasing from 65 to 76 to 83%; the fauna was typical of that of a piedmont Catawba River basin stream; total habitat scores have ranged from 40 to 57 and increased from 40 in 2002 (a very low flow year) to 57 in 2007 due to deeper pools, better bank stability, and slightly wide riparian zones; due to its size, stream is probably low flow affected.

BENTHIC MACROINVERTEBRATE SAMPLE

Waterbody	Location	Station ID	Date	Bioclassification
Killian Cr	**SR 1511**	**CB134**	**07/17/07**	**Good-Fair**

County	Subbasin	8 digit HUC	Latitude	Longitude	AU Number	Level IV Ecoregion
Lincoln	33	3050101	352457	810144	0	Southern Outer Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Stream Depth (m)
C	47	690	7	0.3

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	90	10	0	0

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

Water Quality Parameters

Temperature (°C)	25.0
Dissolved Oxygen (mg/L)	7.5
Specific Conductance (µS/cm)	149
pH (s.u.)	7.6
Water Clarity	slightly turbid

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	18
Bottom Substrate (15)	12
Pool Variety (10)	10
Riffle Habitat (16)	12
Left Bank Stability (7)	5
Right Bank Stability (7)	5
Light Penetration (10)	7
Left Riparian Score (5)	4
Right Riparian Score (5)	4
Total Habitat Score (100)	82

Site Photograph

Substrate mix of boulder, cobble, gravel, sand and silt

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
07/17/07	10242	---	19	---	5.38	Good-Fair
08/20/02	8941	---	12	---	5.04	Not Rated
08/19/97	7434	---	24	---	3.91	Good
08/05/92	5969	---	28	---	4.94	Excellent

Taxonomic Analysis

A sharp decline in the number of mayfly taxa, specifically baetids, occurred between 1997 and 2002. No baetid species were collected in 2002; whereas in 1997 six species of baetids were collected. In 2002 the wetted width was only four meters indicative of a very dry, low flow year. In 2007, the wetted width was seven meters and three species of baetids were collected. Even though 2007 was a dry year as well, the stream may have been just beginning to recover from the drought of 2002.

Data Analysis

Killian Creek is a tributary to upper Dutchmans Creek in southeastern Lincoln County. The water quality appears to have declined since 1992 but it is unclear as to the cause. The lower bioclassification may be due to drought effects alone or a combination of drought effects and other factors. Because of the 2002 drought and a followup drought study, BAU staff decided not to rate this site in 2002. A Good-Fair rating was assigned in 2007, even though there was again a drought. However 2007 was not preceded by low flow years as was 2002.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Station ID	Bioclassification
ANDERSON CR	SR 1383	04/25/07	CF62	Good

County	Subbasin	8 digit HUC	Latitude	Longitude	AU Number	Level IV Ecoregion
LINCOLN	33	03050101	35.446963	-81.042733	11-119-2-2	Southern Outer Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
C	21.5	695	9	0.3	No

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	85	15 (rural family residence)	0	0

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

Water Quality Parameters

Temperature (°C)	16.4
Dissolved Oxygen (mg/L)	8.9
Specific Conductance (µS/cm)	74
pH (s.u.)	6.8

Water Clarity	Clear

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	14
Bottom Substrate (15)	3
Pool Variety (10)	6
Riffle Habitat (16)	5
Left Bank Stability (7)	5
Right Bank Stability (7)	5
Light Penetration (10)	10
Left Riparian Score (5)	1
Right Riparian Score (5)	5
Total Habitat Score (100)	**59**

Site Photograph

Substrate Sand and gravel

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
04/25/07	2007-30	15	48	Good

Most Abundant Species Speckled Killifish

Exotic Species Redlip Shiner and Green Sunfish

Species Change Since Last Cycle N/A

Data Analysis

This is the first fish community sample collected at this site. **Watershed** -- tributary to Killian Creek in east-southeast Lincoln County; watershed is between Killian Creek and Leepers Creek; no municipalities in the watershed. **Habitat** -- shallow sandy runs; snags and deadfalls, but not as many as in Leepers Creek; quality pools and chutes were rare; no true riffles, riffles formed by logs in the current; American beech bluff on the east side; entrenched; low flow. **2007** -- a diverse and abundant community, but intolerant species were absent and only one species of sucker was present; except for the Redlip Shiner, the fauna was typical of that of a piedmont Catawba River basin stream.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Station ID	Bioclassification
FORNEY CR	**SR 1386**	**04/25/07**	**CF63**	**Fair**

County	Subbasin	8 digit HUC	Latitude	Longitude	AU Number	Level IV Ecoregion
LINCOLN	33	03050101	35.447382	-81.010887	11-119-2-3	Southern Outer Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
C	7.8	695	7	0.3	No

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	50	25 (subdivision)	0	25 (WWTP)

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
East Lincoln Water & Sewer District's Forney Creek WWTP	NC0074012	0.975

Water Quality Parameters

Temperature (°C)	21.1
Dissolved Oxygen (mg/L)	8.2
Specific Conductance (µS/cm)	164
pH (s.u.)	7.1

Water Clarity	Clear

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	13
Bottom Substrate (15)	3
Pool Variety (10)	4
Riffle Habitat (16)	2
Left Bank Stability (7)	3
Right Bank Stability (7)	3
Light Penetration (10)	7
Left Riparian Score (5)	5
Right Riparian Score (5)	5
Total Habitat Score (100)	**50**

Site Photograph

Substrate Sand

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
04/25/07	2007-32	11	40	Fair

Most Abundant Species Bluegill and Speckled Killifish

Exotic Species Redlip Shiner and Redear Sunfish

Species Change Since Last Cycle **N/A**

Data Analysis

This is the first fish community sample collected at this site. **Watershed** -- drains eastern Lincoln County, west of NC 16; no municipalities in the watershed, suburbs; site is immediately downstream from the WWTP; WWTP provides all of the summer flow to the creek (7Q10 = 0.6 MGD). **Habitat** -- sandy runs with side snags; stick riffles; some deadfalls; eroded and unstable banks; open canopy in places; channel filled with sediment; low flow. **2007** -- elevated conductivity; for its size, a diverse and abundant community, but suckers and intolerant species were absent; trophic structure skewed, 97% of all the fish were insectivores.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Station ID	Bioclassification
LONG CR	SR 2042	07/15/04	CF30	Good

County	Subbasin	8 digit HUC	Latitude	Longitude	AU Number	Level IV Ecoregion
MECKLENBURG	34	03050101	35.32833333	-80.90972222	11-120-(2.5)	Southern Outer Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
WS-IV	16.4	695	6	0.3	No

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	25	25 (industrial)	25	25 (pre-development)

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

Water Quality Parameters

Temperature (°C)	23.9
Dissolved Oxygen (mg/L)	6.3
Specific Conductance (µS/cm)	173
pH (s.u.)	6.5

Water Clarity	Turbid

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	9
Bottom Substrate (15)	3
Pool Variety (10)	4
Riffle Habitat (16)	1
Left Bank Stability (7)	2
Right Bank Stability (7)	2
Light Penetration (10)	10
Left Riparian Score (5)	5
Right Riparian Score (5)	3
Total Habitat Score (100)	**44**

Site Photograph

Substrate Sand

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
07/15/04	2004-123	17	48	Good

Most Abundant Species Bluehead Chub and Redbreast Sunfish

Exotic Species None

Species Change Since Last Cycle N/A

Data Analysis

This is the first fish community sample collected at this site. **Watershed** -- tributary to the Catawba River; drains the northwest portion of the City of Charlotte metropolitan area, west of the Interstate 77 corridor. **Habitat** -- shallow sandy runs; severe bank erosion; coarse woody debris and snags; stick riffles; deeply entrenched; densely shaded. **2004** -- conductivity elevated, diverse community but with only one species of sucker and darter; intolerant species absent; percentage of tolerant fish (Golden Shiner, Creek Chub, White Sucker, White Catfish, Flat Bullhead, Eastern Mosquitofish, and Redbreast Sunfish) slightly elevated; Striped Jumprock represented by only young-of-year; data were also used as part of a NCSU Urban Fish Study.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Station ID	Bioclassification
CATAWBA CR	SR 2435	04/24/07	CF5	Poor

County	Subbasin	8 digit HUC	Latitude	Longitude	AU Number	Level IV Ecoregion
GASTON	37	03050101	35.19472222	-81.08138889	11-130c	Southern Outer Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
C	23.4	600	9	0.3	No

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	75	0	20	5 (tree farm nursery)

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

Water Quality Parameters

Temperature (°C)	16.4
Dissolved Oxygen (mg/L)	8.5
Specific Conductance (µS/cm)	155
pH (s.u.)	7.0
Water Clarity	Clear

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	9
Bottom Substrate (15)	3
Pool Variety (10)	6
Riffle Habitat (16)	1
Left Bank Stability (7)	2
Right Bank Stability (7)	2
Light Penetration (10)	8
Left Riparian Score (5)	5
Right Riparian Score (5)	0
Total Habitat Score (100)	**41**

Site Photograph

Substrate Sand

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
04/24/07	2007-26	10	34	Poor
05/22/02	2002-55	11	40	Fair
05/19/97	97-44	11	42	Good-Fair

Most Abundant Species Bluehead Chub **Exotic Species** None

Species Change Since Last Cycle **Gains** -- Greenfin Shiner. **Losses** -- White Catfish and Pumpkinseed.

Data Analysis

Watershed -- tributary to Lake Wylie (Catawba River); drains southeastern Gaston County, including the southeast portion of the City of Gastonia metropolitan area; three small water treatment plants within the watershed (combined flow = unlimited); plant nursery and active cattle pasture along the right shoreline. **Habitat** -- very large woody debris, blow downs and deadfalls (tree trunks); very soft, shifting sand; infrequent stick riffles; severe erosion with sloughing banks; cattle fenced out of the stream, not so in 2002. **2007** -- specific conductance elevated, but similar to 2002 measurement; low diversity and abundance (n = 10 and 117, respectively); elevated percentage of omnivores. **1997 - 2007** -- low total diversity for a stream of its size, only 14 species known from the site, including one species of darter and sucker; no intolerant species known from the site; number of fish collected in 2007 (n = 117) was only one-third of the number collected in 2002 (a low flow year), but similar to the number in 1997 (n = 138); total habitat scores declined from 59 in 1997 to 45 in 2002 to 41 in 2007 due to loss of gravel riffles and poorer bank stability.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Station ID	Bioclassification
CROWDERS CR	SR 1131	06/22/04	CF11	Poor

County	Subbasin	8 digit HUC	Latitude	Longitude	AU Number	Level IV Ecoregion
GASTON	37	03050101	35.23361111	-81.23305556	11-135c	Southern Outer Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
C	23.5	695	8	0.4	No

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	50	0	0	50 (golf course)

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

Water Quality Parameters

Temperature (°C)	25.2
Dissolved Oxygen (mg/L)	9.4
Specific Conductance (µS/cm)	151
pH (s.u.)	---

Water Clarity	Clear

Habitat Assessment Scores (max)

Channel Modification (5)	3
Instream Habitat (20)	6
Bottom Substrate (15)	3
Pool Variety (10)	6
Riffle Habitat (16)	0
Left Bank Stability (7)	2
Right Bank Stability (7)	2
Light Penetration (10)	0
Left Riparian Score (5)	1
Right Riparian Score (5)	1
Total Habitat Score (100)	**24**

Site Photograph

Substrate Gravel and sand

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
06/22/04	2004-101	9	30	Poor

Most Abundant Species Redbreast Sunfish

Exotic Species None

Species Change Since Last Cycle **N/A**

Data Analysis

This is the first fish community sample collected at this site. **Watershed** -- tributary to Lake Wylie (Catawba River); drains central Gaston County, including portions of the municipal areas of Kings Mountain, Bessemer City, and Gastonia, and the Interstate 85 corridor. **Habitat** -- the lowest total habitat score of any fish community site in the Catawba River basin 2004 - 2007; a golf course stream - no canopy or forested riparian zones ; sandy runs; uniform width; one deep pool on the left. **2004** -- conductivity elevated; low diversity and abundance for a stream of its size; darters and intolerant species were absent; percentage of tolerant fish (Golden Shiner, White Sucker, Flat Bullhead, and Redbreast Sunfish) was high; skewed trophic structure, ~ 95% of all the fish were insectivores; 80% of all the fish were Redbreast Sunfish; very low percentage of species, only 2 of the 9 species, with multiple age groups ; two-thirds of the species represented by only 1 or 2 fish per species; data were also used as part of a NCSU Urban Fish Study.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Station ID	Bioclassification
CROWDERS CR	**SR 1108**	**04/24/07**	**CF10**	**Fair**

County	Subbasin	8 digit HUC	Latitude	Longitude	AU Number	Level IV Ecoregion
GASTON	37	03050101	35.17638889	-81.21611111	11-135d	Southern Outer Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
C	40.7	650	7	0.5	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)	16.8
Dissolved Oxygen (mg/L)	8.7
Specific Conductance (µS/cm)	156
pH (s.u.)	6.8

Water Clarity	Clear

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	14
Bottom Substrate (15)	3
Pool Variety (10)	6
Riffle Habitat (16)	3
Left Bank Stability (7)	4
Right Bank Stability (7)	4
Light Penetration (10)	9
Left Riparian Score (5)	5
Right Riparian Score (5)	5
Total Habitat Score (100)	**58**

Site Photograph

Substrate Sand

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
04/24/07	2007-27	12	40	Fair
05/22/02	2002-56	12	38	Fair
05/19/97	97-45	9	36	Fair

Most Abundant Species Bluehead Chub

Exotic Species None

Species Change Since Last Cycle

Gains -- Striped Jumprock, Warmouth, and Fantail Darter. **Losses** -- Rosyside Dace, Greenhead Shiner, and Flat Bullhead.

Data Analysis

Watershed -- tributary to Lake Wylie (Catawba River); drains central Gaston County, including portions of the municipal areas of Kings Mountain, Bessemer City, Gastonia, and the Interstate 85 corridor; six small permitted dischargers within the watershed (combined flow = 1.00 MGD). **Habitat** -- very shallow, sandy runs; woody debris and woody debris riffles. **2007** -- low diversity and abundance (n = 12 and 96, respectively); elevated percentage of omnivores; Striped Jumprock and Fantail Darter collected for the first time. **1997 - 2007** -- conductivity elevated, has ranged from 155 to 178 µS/cm; 18 species known from the site, but only one specimen of White Sucker and Striped Jumprock have ever been collected from the site; number of fish collected in 2007 (n = 96) was only one-third of the number collected in 2002 (a low flow year), but similar to the number in 1997 (n = 90); a gradually improving trophic structure -- omnivores decreasing from 68 to 52 to 42% and the insectivores increasing from 30 to 48 to 58%; total habitat scores have ranged from 45 to 58 and increased from 45 in 2002 to 58 in 2007 due to better quality riffles, bank stability, and wider riparian zones.

BENTHIC MACROINVERTEBRATE SAMPLE

Waterbody	Location	Station ID	Date	Bioclassification
Crowders Cr	**SC 564**	**CB234**	**07/10/07**	**Good-Fair**

County	Subbasin	8 digit HUC	Latitude	Longitude	AU Number	Level IV Ecoregion
York, SC	37	3050101	350837	810903	0	Southern Outer Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Stream Depth (m)
C	---	600	12	0.2

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	90	0	10	0

Upstream NPDES Dischargers (>1MGD or <1MGD and within 1 mile)	NPDES Number	Volume (MGD)
Crowders Creek WWTP	NC0074268	6.0

Water Quality Parameters

Temperature (°C)	26.0
Dissolved Oxygen (mg/L)	---
Specific Conductance (µS/cm)	213
pH (s.u.)	7.4
Water Clarity	slightly turbid

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	16
Bottom Substrate (15)	3
Pool Variety (10)	6
Riffle Habitat (16)	7
Left Bank Stability (7)	5
Right Bank Stability (7)	5
Light Penetration (10)	10
Left Riparian Score (5)	3
Right Riparian Score (5)	4
Total Habitat Score (100)	64

Site Photograph

Substrate mostly sand with small amounts of boulder, gravel and silt

Sample Date	Sample ID	ST	EPT	BI	EPT BI	Bioclassification
07/10/07	10236	51	19	5.81	5.34	Good-Fair
05/20/02	8714	57	14	6.31	5.94	Fair
08/20/97	7438	67	11	6.64	5.94	Fair
08/18/92	5979	66	18	6.28	5.53	Good-Fair

Taxonomic Analysis

EPT taxa collected in 2007 that had not been previously collected include *Procloeon*, *Oecetis persimilis*, *Polycentropus* and *Triaenodes perna*. The number of midge taxa collected in 2007 (10) had decreased by about 50% from the number of midge taxa collected in previous years. No midge taxa collected in 2007 were abundant and only two taxa were common (*Polypedilum flavum* and *Tribelos jucundum*).

Data Analysis

Crowders Creek, a tributary to Lake Wylie, drains the south and western region of the city of Gastonia, the Interstate 85 corridor, and the eastern area of the town of Kings Mountain. This site rated Good-Fair in 1992 and dropped to Fair in 1997 and 2002. In 2007, the bioclassification increased to Good-Fair and had the highest EPT taxa richness and lowest Biotic Index ever recorded for this site. Between 1997 and 2002 Bessemer City ceased its discharges to Abernethy Creek, which is a tributary to Crowders Creek, and Carolina and Southern Processing (a chicken processing plant) tied its facility into Crowders Creek WWTP. Before Carolina and Southern Processing tied its facility into Crowders Creek WWTP, this site had rated Poor. Due to these discharge changes and facility upgrades, the water quality here seems to be improving.

FISH COMMUNITY SAMPLE

Waterbody	Location	Date	Station ID	Bioclassification
S FK CROWDERS CR	SR 1109	06/22/04	CF49	Good-Fair

County	Subbasin	8 digit HUC	Latitude	Longitude	AU Number	Level IV Ecoregion
GASTON	37	03050101	35.16194444	-81.21777778	11-135-10	Southern Outer Piedmont

Stream Classification	Drainage Area (mi2)	Elevation (ft)	Stream Width (m)	Average Depth (m)	Reference Site
C	27.6	695	7	0.6	No

	Forested/Wetland	Urban	Agriculture	Other (describe)
Visible Landuse (%)	25	0	75	0

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

Water Quality Parameters

Temperature (°C)	22.1
Dissolved Oxygen (mg/L)	7.4
Specific Conductance (µS/cm)	95
pH (s.u.)	---

Water Clarity	Turbid

Habitat Assessment Scores (max)

Channel Modification (5)	5
Instream Habitat (20)	12
Bottom Substrate (15)	3
Pool Variety (10)	9
Riffle Habitat (16)	1
Left Bank Stability (7)	2
Right Bank Stability (7)	2
Light Penetration (10)	10
Left Riparian Score (5)	2
Right Riparian Score (5)	2
Total Habitat Score (100)	**48**

Site Photograph

Substrate Sand

Sample Date	Sample ID	Species Total	NCIBI	Bioclassification
06/22/04	2004-100	13	42	Good-Fair

Most Abundant Species Bluehead Chub

Exotic Species None

Species Change Since Last Cycle **N/A**

Data Analysis

This is the first fish community sample collected at this site. **Watershed** -- tributary to Crowders Creek; drains southwestern Gaston County; no municipalities in the watershed. **Habitat** -- deadfalls, snags; stick riffles; good pools and canopy cover; deeply entrenched; active cattle pastures along both banks. **2004** -- diversity and total abundance slightly lower than expected; only one species of darter (Tessellated Darter) and sucker (White Sucker) were present; intolerant species were absent; highest percentage of tolerant fish (83%) of any fish community site in the Catawba River basin, 2004 - 2007; data were also used as part of a NCSU Urban Fish Study.

Appendix 1-C

Ambient Station Summary Sheets

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

Location: CATAWBA RIV AT SR 1234 NR GREENLEE
Station #: C0145000 **Hydrologic Unit Code:** 03050101
Latitude: 35.63669 **Longitude:** -82.14385 **Stream class:** C
Agency: NCAMBNT **NC stream index:** 11-(8)

Time period: 01/22/2004 to 12/14/2006

	# results	# ND	EL	Results not meeting EL #	%	%Conf	Min	10th	25th	50th	75th	90th	Max
Field													
D.O. (mg/L)	33	0	<4	0	0		7.2	8.3	9.4	10.6	12.4	13.9	16.4
	33	0	<5	0	0		7.2	8.3	9.4	10.6	12.4	13.9	16.4
pH (SU)	33	0	<6	1	3		5.9	6.4	6.6	6.7	6.9	7	7.2
	33	0	>9	0	0		5.9	6.4	6.6	6.7	6.9	7	7.2
Spec. conductance (umhos/cm at 25°C)	32	0	N/A				31	35	44	52	58	70	87
Water Temperature (°C)	33	0	>29	0	0		2	3.7	7	13.7	18.1	19.5	21.6
Other													
TSS (mg/L)	12	3	N/A				2.5	2.5	2.5	3	6.7	52.5	63
Turbidity (NTU)	34	3	>50	2	5.9		0.7	1	1.6	2	4.7	38	450
Metals (ug/L)													
Aluminum, total (Al)	12	3	N/A				50	50	57	88	218	1198	1300
Arsenic, total (As)	12	12	>10	0	0		5	5	5	5	9	10	10
Cadmium, total (Cd)	12	12	>2	0	0		2	2	2	2	2	2	2
Chromium, total (Cr)	12	12	>50	0	0		25	25	25	25	25	25	25
Copper, total (Cu)	12	11	>7	0	0		2	2	2	2	2	2	2
Iron, total (Fe)	12	0	>1000	2	16.7	88.9	96	100	118	190	325	1470	1500
Lead, total (Pb)	12	12	>25	0	0		10	10	10	10	10	10	10
Mercury, total (Hg)	12	12	>0.012	0	0		0.2	0.2	0.2	0.2	0.2	0.2	0.2
Nickel, total (Ni)	12	12	>88	0	0		10	10	10	10	10	10	10
Zinc, total (Zn)	12	10	>50	0	0		10	10	10	10	10	15	17

Fecal Coliform Screening(#/100mL)

# results:	Geomean	# > 400:	% > 400:	%Conf:
34	219	10	29	93.8

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: CATAWBA RIV AT SR 1221 NR PLEASANT GARDENS
Station #: C0250000 **Hydrologic Unit Code:** 03050101
Latitude: 35.68597 **Longitude:** -82.06075 **Stream class:** C
Agency: NCAMBNT **NC stream index:** 11-(8)

Time period: 01/22/2004 to 12/09/2008

	# results	# ND	EL	Results not meeting EL #	%	%Conf	Min	10th	25th	50th	75th	90th	Max
Field													
D.O. (mg/L)	48	0	<4	0	0		6	7.5	8.6	10.4	11.9	13.6	15.5
	48	0	<5	0	0		6	7.5	8.6	10.4	11.9	13.6	15.5
pH (SU)	49	0	<6	1	2		5.2	6.4	6.7	6.9	7	7.3	7.8
	49	0	>9	0	0		5.2	6.4	6.7	6.9	7	7.3	7.8
Spec. conductance (umhos/cm at 25°C)	46	0	N/A				33	39	45	50	58	70	78
Water Temperature (°C)	49	0	>29	0	0		3	4.3	7.3	13.9	19	21.4	24.7
Other													
TSS (mg/L)	20	8	N/A				2.4	2.5	3.2	6.1	9.8	36.9	74
Turbidity (NTU)	54	0	>50	3	5.6		1.5	1.8	2.4	3.4	8.3	29	500
Nutrients (mg/L)													
NH3 as N	54	44	N/A				0.02	0.02	0.02	0.02	0.02	0.02	0.08
NO2 + NO3 as N	54	1	N/A				0.02	0.08	0.13	0.18	0.2	0.23	0.48
TKN as N	54	30	N/A				0.2	0.2	0.2	0.2	0.24	0.4	2.9
Total Phosphorus	54	2	N/A				0.02	0.02	0.02	0.04	0.05	0.11	1
Metals (ug/L)													
Aluminum, total (Al)	13	0	N/A				56	66	84	190	660	4720	7000
Arsenic, total (As)	13	13	>10	0	0		5	5	5	5	8	10	10
Cadmium, total (Cd)	13	13	>2	0	0		1	1.4	2	2	2	2	2
Chromium, total (Cr)	13	13	>50	0	0		10	16	25	25	25	25	25
Copper, total (Cu)	13	12	>7	0	0		2	2	2	2	2	3	4
Iron, total (Fe)	13	0	>1000	2	15.4	86.6	180	180	215	330	830	3320	4400
Lead, total (Pb)	13	13	>25	0	0		10	10	10	10	10	10	10
Mercury, total (Hg)	12	12	>0.012	0	0		0.2	0.2	0.2	0.2	0.2	0.2	0.2
Nickel, total (Ni)	13	13	>88	0	0		10	10	10	10	10	10	10
Zinc, total (Zn)	13	12	>50	0	0		10	10	10	10	10	14	16

Fecal Coliform Screening(#/100mL)

# results:	Geomean	# > 400:	% > 400:	%Conf:
54	159	9	17	

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: N FORK CATAWBA RIV AT SR 1552 NR HANKINS
Station #: C0550000 **Hydrologic Unit Code:** 03050101
Latitude: 35.73832 **Longitude:** -81.98572 **Stream class:** C
Agency: NCAMBNT **NC stream index:** 11-24-(13)

Time period: 01/22/2004 to 12/09/2008

	# results	# ND	EL	Results not meeting EL #	%	%Conf	Min	10th	25th	50th	75th	90th	Max
Field													
D.O. (mg/L)	49	0	<4	0	0		6.4	7.6	8.6	10.3	12	13.1	15.5
	49	0	<5	0	0		6.4	7.6	8.6	10.3	12	13.1	15.5
pH (SU)	50	0	<6	1	2		5.4	6.8	7.2	7.4	7.6	8	8.5
	50	0	>9	0	0		5.4	6.8	7.2	7.4	7.6	8	8.5
Spec. conductance (umhos/cm at 25°C)	47	0	N/A				11	63	83	93	120	139	171
Water Temperature (°C)	50	0	>29	0	0		4	5	8.1	14.4	19.5	22	25.9
Other													
TSS (mg/L)	20	9	N/A				2.5	2.5	2.6	5.8	10.6	24.1	51
Turbidity (NTU)	54	3	>50	4	7.4		1	1.2	1.9	3	7.4	35	400
Nutrients (mg/L)													
NH3 as N	54	42	N/A				0.02	0.02	0.02	0.02	0.02	0.02	0.07
NO2 + NO3 as N	54	0	N/A				0.04	0.15	0.24	0.3	0.42	0.55	0.69
TKN as N	54	35	N/A				0.2	0.2	0.2	0.2	0.25	0.39	1.5
Total Phosphorus	54	0	N/A				0.02	0.03	0.04	0.06	0.07	0.11	0.56
Metals (ug/L)													
Aluminum, total (Al)	13	0	N/A				57	61	70	110	300	3660	5300
Arsenic, total (As)	13	13	>10	0	0		5	5	5	5	8	10	10
Cadmium, total (Cd)	13	13	>2	0	0		1	1.4	2	2	2	2	2
Chromium, total (Cr)	13	13	>50	0	0		10	16	25	25	25	25	25
Copper, total (Cu)	13	12	>7	0	0		2	2	2	2	2	4	5
Iron, total (Fe)	13	0	>1000	2	15.4	86.6	160	168	205	240	530	3220	4300
Lead, total (Pb)	13	13	>25	0	0		10	10	10	10	10	10	10
Mercury, total (Hg)	12	12	>0.012	0	0		0.2	0.2	0.2	0.2	0.2	0.2	0.2
Nickel, total (Ni)	13	13	>88	0	0		10	10	10	10	10	10	10
Zinc, total (Zn)	13	10	>50	0	0		10	10	10	10	12	16	17

Fecal Coliform Screening(#/100mL)

# results:	Geomean	# > 400:	% > 400:	%Conf:
54	43	9	17	

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: LINVILLE RIV AT NC 126 NR NEBO
Station #: C1000000 **Hydrologic Unit Code:** 03050101
Latitude: 35.79539 **Longitude:** -81.89013 **Stream class:** B HQW
Agency: NCAMBNT **NC stream index:** 11-29-(19)

Time period: 01/22/2004 to 12/09/2008

	# results	# ND	EL	Results not meeting EL #	%	%Conf	Min	10th	25th	50th	75th	90th	Max
Field													
D.O. (mg/L)	49	0	<4	0	0		7.2	8.1	8.9	9.9	12.1	13.3	14.5
	49	0	<5	0	0		7.2	8.1	8.9	9.9	12.1	13.3	14.5
pH (SU)	50	0	<6	1	2		5.2	6.3	6.6	6.8	7	7.2	7.4
	50	0	>9	0	0		5.2	6.3	6.6	6.8	7	7.2	7.4
Spec. conductance (umhos/cm at 25°C)	47	0	N/A				29	35	40	46	49	53	57
Water Temperature (°C)	50	0	>29	0	0		2	4.1	7.4	14.2	19.5	23	26.5
Other													
TSS (mg/L)	21	18	N/A				2.5	2.5	2.5	2.5	6.2	9.2	12
Turbidity (NTU)	54	17	>50	1	1.9		1	1	1	1.4	2.9	7.1	140
Nutrients (mg/L)													
NH3 as N	53	51	N/A				0.02	0.02	0.02	0.02	0.02	0.02	0.13
NO2 + NO3 as N	53	0	N/A				0.02	0.13	0.21	0.28	0.36	0.41	0.51
TKN as N	53	39	N/A				0.2	0.2	0.2	0.2	0.2	0.24	0.68
Total Phosphorus	53	24	N/A				0.01	0.02	0.02	0.02	0.03	0.04	0.2
Metals (ug/L)													
Aluminum, total (Al)	13	6	N/A				50	50	50	52	90	188	220
Arsenic, total (As)	13	13	>10	0	0		5	5	5	5	8	10	10
Cadmium, total (Cd)	13	13	>2	0	0		1	1.4	2	2	2	2	2
Chromium, total (Cr)	13	13	>50	0	0		10	16	25	25	25	25	25
Copper, total (Cu)	13	13	>7	0	0		2	2	2	2	2	2	2
Iron, total (Fe)	13	0	>1000	0	0		88	88	115	130	225	356	400
Lead, total (Pb)	13	13	>25	0	0		10	10	10	10	10	10	10
Mercury, total (Hg)	12	12	>0.012	0	0		0.2	0.2	0.2	0.2	0.2	0.2	0.2
Nickel, total (Ni)	13	13	>88	0	0		10	10	10	10	10	10	10
Zinc, total (Zn)	13	12	>50	0	0		10	10	10	10	10	12	14

Fecal Coliform Screening(#/100mL)

# results:	Geomean	# > 400:	% > 400:	%Conf:
54	17	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

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

Location: CATAWBA RIV AT SR 1304 NR CALVIN
Station #: C1230000 **Hydrologic Unit Code:** 03050101
Latitude: 35.73983 **Longitude:** -81.72436 **Stream class:** WS-IV
Agency: NCAMBNT **NC stream index:** 11-(32.7)

Time period: 01/07/2004 to 12/09/2008

	# results	# ND	EL	Results not meeting EL #	%	%Conf	Min	10th	25th	50th	75th	90th	Max
Field													
D.O. (mg/L)	48	0	<4	0	0		5.6	7.7	8.8	9.6	11.1	12.8	13.3
	48	0	<5	0	0		5.6	7.7	8.8	9.6	11.1	12.8	13.3
pH (SU)	50	0	<6	0	0		6.1	6.4	6.5	6.7	6.9	6.9	7.1
	50	0	>9	0	0		6.1	6.4	6.5	6.7	6.9	6.9	7.1
Spec. conductance (umhos/cm at 25°C)	49	0	N/A				28	42	48	54	58	60	62
Water Temperature (°C)	52	0	>29	0	0		3.9	5.6	10.1	13.6	17.4	20.4	22.6
Other													
TSS (mg/L)	20	8	N/A				2.5	2.6	3.4	6.2	8.4	22.7	62
Turbidity (NTU)	54	0	>50	2	3.7		1.1	1.4	1.9	3.2	7.1	25	130
Metals (ug/L)													
Aluminum, total (Al)	13	0	N/A				65	65	145	210	390	1780	1900
Arsenic, total (As)	13	13	>10	0	0		5	5	5	5	5	10	10
Cadmium, total (Cd)	13	13	>2	0	0		1	1.4	2	2	2	2	2
Chromium, total (Cr)	13	13	>50	0	0		10	16	25	25	25	25	25
Copper, total (Cu)	13	11	>7	0	0		2	2	2	2	2	3	4
Iron, total (Fe)	13	0	>1000	2	15.4	86.6	120	136	240	390	640	1860	1900
Lead, total (Pb)	13	13	>25	0	0		10	10	10	10	10	10	10
Manganese, total (Mn)	13	0	>200	0	0		17	17	23	42	64	90	95
Mercury, total (Hg)	12	12	>0.012	0	0		0.2	0.2	0.2	0.2	0.2	0.2	0.2
Nickel, total (Ni)	13	13	>25	0	0		10	10	10	10	10	10	10
Zinc, total (Zn)	13	10	>50	0	0		10	10	10	10	10	14	15

Fecal Coliform Screening(#/100mL)

# results:	Geomean	# > 400:	% > 400:	%Conf:
54	34	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

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

Location: WILSON CRK AT US 221 NR GRAGG
Station #: C1370000 **Hydrologic Unit Code:** 03050101
Latitude: 36.09695 **Longitude:** -81.80743 **Stream class:** B Tr ORW
Agency: NCAMBNT **NC stream index:** 11-38-34

Time period: 01/07/2004 to 12/04/2008

	# results	# ND	EL	Results not meeting EL #	%	%Conf	Min	10th	25th	50th	75th	90th	Max
Field													
D.O. (mg/L)	45	0	<6	0	0		7.8	8.9	9.2	10.5	11.3	12.6	14.6
pH (SU)	47	0	<6	20	42.6	100	3.7	4.3	4.7	6.1	6.4	6.6	6.8
	47	0	>9	0	0		3.7	4.3	4.7	6.1	6.4	6.6	6.8
Spec. conductance (umhos/cm at 25°C)	45	0	N/A				14	17	18	20	22	26	28
Water Temperature (°C)	48	0	>29	0	0		1	3	5.7	10.5	14	15.7	18.1
Other													
Chloride (mg/L)	16	4	>230	0	0		1	1	1	1	1	2	2
Fluoride (mg/L)	16	16	>1.8	0	0		0	0	0	0	0	0	0
TSS (mg/L)	20	17	N/A				2.5	2.5	2.5	2.5	6.2	11.8	12
Turbidity (NTU)	49	25	>10	1	2		0.2	1	1	1	1.6	3.7	11
Nutrients (mg/L)													
NH3 as N	48	47	N/A				0.02	0.02	0.02	0.02	0.02	0.02	0.08
NO2 + NO3 as N	48	6	N/A				0.02	0.02	0.06	0.24	0.38	0.53	0.67
TKN as N	48	35	N/A				0.2	0.2	0.2	0.2	0.21	0.26	0.36
Total Phosphorus	48	27	N/A				0.02	0.02	0.02	0.02	0.02	0.04	0.08
Metals (ug/L)													
Aluminum, total (Al)	13	1	N/A				50	52	68	100	120	280	360
Arsenic, total (As)	13	13	>10	0	0		5	5	5	5	5	10	10
Cadmium, total (Cd)	13	13	>0.4	0	0		1	1.4	2	2	2	2	2
Chromium, total (Cr)	13	13	>50	0	0		10	16	25	25	25	25	25
Copper, total (Cu)	13	13	>7	0	0		2	2	2	2	2	2	2
Iron, total (Fe)	13	9	>1000	0	0		50	50	50	50	63	125	150
Lead, total (Pb)	13	13	>25	0	0		10	10	10	10	10	10	10
Mercury, total (Hg)	12	12	>0.012	0	0		0.2	0.2	0.2	0.2	0.2	0.2	0.2
Nickel, total (Ni)	13	13	>88	0	0		10	10	10	10	10	10	10
Zinc, total (Zn)	13	8	>50	0	0		10	10	10	10	16	28	29

Fecal Coliform Screening(#/100mL)

# results:	Geomean	# > 400:	% > 400:	%Conf:
49	3	0	0	

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: WILSON CRK AT SR 1358 AT EDGEMONT
Station #: C1385000 **Hydrologic Unit Code:** 03050101
Latitude: 36.00300 **Longitude:** -81.77100 **Stream class:** B Tr ORW
Agency: NCAMBNT **NC stream index:** 11-38-34

Time period: 07/21/2005 to 07/21/2005

	# results	# ND	EL	Results not meeting EL #	%	%Conf	Percentiles Min	10th	25th	50th	75th	90th	Max
Field													
D.O. (mg/L)	1	0	<6	0	0		9.6	9.6	9.6	9.6	9.6	9.6	9.6
pH (SU)	1	0	<6	0	0		6.8	6.8	6.8	6.8	6.8	6.8	6.8
	1	0	>9	0	0		6.8	6.8	6.8	6.8	6.8	6.8	6.8
Spec. conductance (umhos/cm at 25°C)	1	0	N/A				21	21	21	21	21	21	21
Water Temperature (°C)	1	0	>29	0	0		19.2	19.2	19.2	19.2	19.2	19.2	19.2
Other													
Turbidity (NTU)	1	1	>10	0	0		1	1	1	1	1	1	1
Nutrients (mg/L)													
NH3 as N	1	1	N/A				0.02	0.02	0.02	0.02	0.02	0.02	0.02
NO2 + NO3 as N	1	0	N/A				0.05	0.05	0.05	0.05	0.05	0.05	0.05
TKN as N	1	1	N/A				0.2	0.2	0.2	0.2	0.2	0.2	0.2
Total Phosphorus	1	1	N/A				0.02	0.02	0.02	0.02	0.02	0.02	0.02

Fecal Coliform Screening(#/100mL)

# results:	Geomean	# > 400:	% > 400:	%Conf:
1	19	0	0	

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: LOWER CRK AT SR 1501 NR MORGANTON MARION
Station #: C1750000 **Hydrologic Unit Code:** 03050101
Latitude: 35.82512 **Longitude:** -81.63587 **Stream class:** WS-IV
Agency: NCAMBNT **NC stream index:** 11-39-(6.5)

Time period: 01/07/2004 to 12/09/2008

	# results	# ND	EL	Results not meeting EL #	%	%Conf	Min	10th	25th	50th	75th	90th	Max
Field													
D.O. (mg/L)	47	0	<4	0	0		5.7	7	7.9	9.1	10.5	12	13.4
	47	0	<5	0	0		5.7	7	7.9	9.1	10.5	12	13.4
pH (SU)	49	0	<6	0	0		6.3	6.5	6.7	6.9	7	7.1	7.2
	49	0	>9	0	0		6.3	6.5	6.7	6.9	7	7.1	7.2
Spec. conductance (umhos/cm at 25°C)	48	0	N/A				62	80	85	94	112	122	135
Water Temperature (°C)	51	0	>29	0	0		3	5.1	9.4	13.6	19	22.2	23.4
Other													
TSS (mg/L)	20	2	N/A				5.4	6.2	9	16	33.5	122	143
Turbidity (NTU)	52	0	>50	6	11.5	73.9	1.2	4.9	9.9	14.5	30.5	65.5	230
Nutrients (mg/L)													
NH3 as N	51	5	N/A				0.02	0.02	0.03	0.04	0.06	0.18	0.68
NO2 + NO3 as N	51	0	>10	0	0		0.32	0.44	0.52	0.61	0.72	0.82	1.2
TKN as N	51	7	N/A				0.2	0.2	0.24	0.3	0.4	0.62	1.2
Total Phosphorus	51	0	N/A				0.03	0.04	0.05	0.1	0.17	0.26	0.64
Metals (ug/L)													
Aluminum, total (Al)	13	0	N/A				210	262	680	780	1750	5120	6000
Arsenic, total (As)	13	13	>10	0	0		5	5	5	5	5	10	10
Cadmium, total (Cd)	13	13	>2	0	0		1	1.4	2	2	2	2	2
Chromium, total (Cr)	13	13	>50	0	0		10	16	25	25	25	25	25
Copper, total (Cu)	13	7	>7	0	0		2	2	2	2	3	6	7
Iron, total (Fe)	13	0	>1000	10	76.9	100	730	754	1035	1400	2100	5600	7200
Lead, total (Pb)	13	13	>25	0	0		10	10	10	10	10	10	10
Manganese, total (Mn)	13	0	>200	1	7.7		65	74	92	110	130	210	250
Mercury, total (Hg)	12	12	>0.012	0	0		0.2	0.2	0.2	0.2	0.2	0.2	0.2
Nickel, total (Ni)	13	13	>25	0	0		10	10	10	10	10	10	10
Zinc, total (Zn)	13	2	>50	0	0		10	10	11	12	16	31	31

Fecal Coliform Screening(#/100mL)

# results:	Geomean	# > 400:	% > 400:	%Conf:
52	438	25	48	100

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: LAKE HICKORY AT NC 127 NR HICKORY
Station #: C2600000 **Hydrologic Unit Code:** 03050101
Latitude: 35.80201 **Longitude:** -81.30426 **Stream class:** WS-V&B
Agency: NCAMBNT **NC stream index:** 11-(59.5)

Time period: 01/20/2004 to 01/02/2007

	# results	# ND	EL	Results not meeting EL #	%	%Conf	Min	10th	25th	50th	75th	90th	Max
Field													
D.O. (mg/L)	35	0	<4	0	0		6.5	7.3	8	8.7	10.2	10.9	12.5
	35	0	<5	0	0		6.5	7.3	8	8.7	10.2	10.9	12.5
pH (SU)	35	0	<6	4	11.4	73.1	5.7	5.9	6.3	6.6	7.4	7.9	8.4
	35	0	>9	0	0		5.7	5.9	6.3	6.6	7.4	7.9	8.4
Spec. conductance (umhos/cm at 25°C)	35	0	N/A				41	46	48	52	56	57	61
Water Temperature (°C)	35	0	>29	4	11.4	73.1	6	7.9	11	18	27.2	29.7	30.5
Other													
Chlorophyll a (ug/L)	31	0	>40	0	0		1	2	3	10	15	19	23
TSS (mg/L)	14	3	N/A				2.5	2.5	2.5	3.8	4.8	8	10
Turbidity (NTU)	36	0	>25	1	2.8		1.7	2	2.7	3.2	4.6	11.2	30
Nutrients (mg/L)													
NH3 as N	36	20	N/A				0.02	0.02	0.02	0.02	0.03	0.04	0.08
NO2 + NO3 as N	36	9	>10	0	0		0.02	0.02	0.02	0.22	0.3	0.35	0.49
TKN as N	36	8	N/A				0.2	0.2	0.2	0.24	0.3	0.36	0.55
Total Phosphorus	36	1	N/A				0.02	0.02	0.03	0.03	0.04	0.04	0.06
Metals (ug/L)													
Aluminum, total (Al)	14	0	N/A				58	60	75	125	222	850	1300
Arsenic, total (As)	14	14	>10	0	0		5	5	5	5	5	10	10
Cadmium, total (Cd)	14	14	>2	0	0		1	1.5	2	2	2	2	2
Chromium, total (Cr)	14	14	>50	0	0		10	18	25	25	25	25	25
Copper, total (Cu)	14	13	>7	0	0		2	2	2	2	2	2	3
Iron, total (Fe)	14	0	>1000	0	0		57	67	82	175	305	755	1000
Lead, total (Pb)	14	14	>25	0	0		10	10	10	10	10	10	10
Manganese, total (Mn)	14	1	>200	0	0		10	10	11	15	34	40	41
Mercury, total (Hg)	14	14	>0.012	0	0		0.2	0.2	0.2	0.2	0.2	0.2	0.2
Nickel, total (Ni)	14	14	>25	0	0		10	10	10	10	10	10	10
Zinc, total (Zn)	14	12	>50	0	0		10	10	10	10	10	16	19

Fecal Coliform Screening(#/100mL)

# results:	Geomean	# > 400:	% > 400:	%Conf:
36	3	0	0	

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: LOWER LITTLE RIV AT SR 1313 NR ALL HEALING SPRINGS
Station #: C2818000 **Hydrologic Unit Code:** 03050101
Latitude: 35.94585 **Longitude:** -81.23698 **Stream class:** C
Agency: NCAMBNT **NC stream index:** 11-69-(0.5)

Time period: 01/07/2004 to 12/01/2008

	# results	# ND	EL	Results not meeting EL #	%	%Conf	Min	Percentiles 10th	25th	50th	75th	90th	Max
Field													
D.O. (mg/L)	58	0	<4	0	0		7	7.6	8.1	9.6	11.2	12.4	15
	58	0	<5	0	0		7	7.6	8.1	9.6	11.2	12.4	15
pH (SU)	58	0	<6	13	22.4	99.9	4.9	5.7	6	6.4	6.5	6.7	7.8
	58	0	>9	0	0		4.9	5.7	6	6.4	6.5	6.7	7.8
Spec. conductance (umhos/cm at 25°C)	56	0	N/A				41	44	46	48	51	53	56
Water Temperature (°C)	58	0	>29	0	0		2	5.6	8.4	14	19.4	21.1	24.4
Other													
TSS (mg/L)	20	4	N/A				2.5	3	3.2	4.9	6.2	21	66
Turbidity (NTU)	59	0	>50	3	5.1		2.2	3.1	3.8	6.4	9.4	27	450
Metals (ug/L)													
Aluminum, total (Al)	13	0	N/A				130	138	175	210	275	438	490
Arsenic, total (As)	13	13	>10	0	0		5	5	5	5	8	10	10
Cadmium, total (Cd)	13	13	>2	0	0		1	1.4	2	2	2	2	2
Chromium, total (Cr)	13	13	>50	0	0		10	16	25	25	25	25	25
Copper, total (Cu)	13	11	>7	0	0		2	2	2	2	2	3	4
Iron, total (Fe)	13	0	>1000	0	0		270	282	315	400	560	764	880
Lead, total (Pb)	13	13	>25	0	0		10	10	10	10	10	10	10
Mercury, total (Hg)	12	12	>0.012	0	0		0.2	0.2	0.2	0.2	0.2	0.2	0.2
Nickel, total (Ni)	13	13	>88	0	0		10	10	10	10	10	10	10
Zinc, total (Zn)	13	11	>50	0	0		10	10	10	10	10	27	32

Fecal Coliform Screening(#/100mL)

# results:	Geomean	# > 400:	% > 400:	%Conf:
59	367	28	47	100

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: LAKE NORMAN AT SR 1004 NR MOORESVILLE
Station #: C3420000 **Hydrologic Unit Code:** 03050101
Latitude: 35.69560 **Longitude:** -80.99076 **Stream class:** WS-IV&B CA
Agency: NCAMBNT **NC stream index:** 11-(75)

Time period: 02/24/2004 to 01/02/2007

	# results	# ND	EL	Results not meeting EL #	%	%Conf	Min	Percentiles 10th	25th	50th	75th	90th	Max
Field													
D.O. (mg/L)	35	0	<4	0	0		5.3	6.2	7.5	8.1	10.3	11.6	12.5
	35	0	<5	0	0		5.3	6.2	7.5	8.1	10.3	11.6	12.5
pH (SU)	35	0	<6	4	11.4	73.1	5.7	5.9	6.2	6.4	7.2	7.9	8.6
	35	0	>9	0	0		5.7	5.9	6.2	6.4	7.2	7.9	8.6
Spec. conductance (umhos/cm at 25°C)	35	0	N/A				41	46	50	54	57	60	61
Water Temperature (°C)	35	0	>32	0	0		6	8	11.8	17.4	26.7	29.2	31.1
Other													
Chlorophyll a (ug/L)	31	0	>40	1	3.2		1	2	3	6	9	19	41
TSS (mg/L)	13	1	N/A				4.2	4.5	6.9	7.8	18	30	30
Turbidity (NTU)	35	0	>25	2	5.7		2.7	4.2	5.2	6	9.1	16.4	60
Nutrients (mg/L)													
NH3 as N	35	16	N/A				0.02	0.02	0.02	0.02	0.04	0.06	0.07
NO2 + NO3 as N	35	2	>10	0	0		0.02	0.04	0.2	0.27	0.36	0.41	0.45
TKN as N	35	8	N/A				0.2	0.2	0.22	0.24	0.31	0.4	0.5
Total Phosphorus	35	0	N/A				0.02	0.02	0.03	0.03	0.04	0.05	0.1
Metals (ug/L)													
Aluminum, total (Al)	13	0	N/A				140	152	235	350	735	1808	2400
Arsenic, total (As)	13	13	>10	0	0		5	5	5	5	5	10	10
Cadmium, total (Cd)	13	13	>2	0	0		1	1.4	2	2	2	2	2
Chromium, total (Cr)	13	13	>50	0	0		10	16	25	25	25	25	25
Copper, total (Cu)	13	10	>7	0	0		2	2	2	2	2	3	4
Iron, total (Fe)	13	0	>1000	1	7.7		130	174	315	440	690	1720	2300
Lead, total (Pb)	13	13	>25	0	0		10	10	10	10	10	10	10
Manganese, total (Mn)	13	0	>200	0	0		18	22	32	35	52	61	63
Mercury, total (Hg)	13	13	>0.012	0	0		0.2	0.2	0.2	0.2	0.2	0.2	0.2
Nickel, total (Ni)	13	13	>25	0	0		10	10	10	10	10	10	10
Zinc, total (Zn)	13	12	>50	0	0		10	10	10	10	10	20	27

Fecal Coliform Screening(#/100mL)

# results:	Geomean	# > 400:	% > 400:	%Conf:
35	16	3	9	

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: MOUNTAIN ISLAND LAKE ABOVE GAR CRK NR CROFT
Station #: C3699000 **Hydrologic Unit Code:** 03050101
Latitude: 35.35514 **Longitude:** -80.93793 **Stream class:** WS-IV&B CA
Agency: NCAMBNT **NC stream index:** 11-(114)

Time period: 02/23/2004 to 01/02/2007

	# results	# ND	EL	Results not meeting EL #	%	%Conf	Min	10th	25th	50th	75th	90th	Max
Field													
D.O. (mg/L)	34	0	<4	0	0		4.6	6	6.6	7.6	9.6	10.2	10.9
	34	0	<5	1	2.9		4.6	6	6.6	7.6	9.6	10.2	10.9
pH (SU)	34	0	<6	4	11.8	75	5.7	5.9	6.2	6.4	6.7	7.4	7.6
	34	0	>9	0	0		5.7	5.9	6.2	6.4	6.7	7.4	7.6
Spec. conductance (umhos/cm at 25°C)	34	0	N/A				51	54	55	58	60	62	64
Water Temperature (°C)	34	0	>32	0	0		9.6	10.5	12.9	19	29.2	31.4	31.5
Other													
Chlorophyll a (ug/L)	30	0	>40	0	0		2	2	3	4	5	8	10
TSS (mg/L)	13	2	N/A				2.5	2.5	2.6	3.5	4.9	17.4	25
Turbidity (NTU)	35	0	>25	0	0		1.8	2.2	2.8	3.3	4.1	6.7	22
Nutrients (mg/L)													
NH3 as N	34	19	N/A				0.02	0.02	0.02	0.02	0.02	0.03	0.09
NO2 + NO3 as N	34	1	>10	0	0		0.02	0.04	0.08	0.18	0.21	0.24	0.27
TKN as N	34	16	N/A				0.2	0.2	0.2	0.2	0.24	0.28	0.33
Total Phosphorus	34	13	N/A				0.02	0.02	0.02	0.02	0.02	0.03	0.05
Metals (ug/L)													
Aluminum, total (Al)	13	0	N/A				60	62	82	140	220	610	830
Arsenic, total (As)	13	13	>10	0	0		5	5	5	5	5	10	10
Cadmium, total (Cd)	13	13	>2	0	0		1	1.4	2	2	2	2	2
Chromium, total (Cr)	13	13	>50	0	0		10	16	25	25	25	25	25
Copper, total (Cu)	13	6	>7	0	0		2	2	2	3	4	4	4
Iron, total (Fe)	13	0	>1000	0	0		70	71	93	140	280	650	870
Lead, total (Pb)	13	13	>25	0	0		10	10	10	10	10	10	10
Manganese, total (Mn)	13	0	>200	0	0		15	15	18	24	38	51	58
Mercury, total (Hg)	13	13	>0.012	0	0		0.2	0.2	0.2	0.2	0.2	0.2	0.2
Nickel, total (Ni)	13	13	>25	0	0		10	10	10	10	10	10	10
Zinc, total (Zn)	13	13	>50	0	0		10	10	10	10	10	10	10

Fecal Coliform Screening(#/100mL)

# results:	Geomean	# > 400:	% > 400:	%Conf:
35	7	1	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)
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: DUTCHMANS CRK AT SR 1918 AT MOUNTAIN ISLAND
Station #: C3860000 **Hydrologic Unit Code:** 03050101
Latitude: 35.33646 **Longitude:** -81.01328 **Stream class:** WS-IV
Agency: NCAMBNT **NC stream index:** 11-119-(0.5)

Time period: 01/14/2004 to 12/03/2008

	# results	# ND	EL	Results not meeting EL #	%	%Conf	Min	10th	25th	50th	75th	90th	Max
Field													
D.O. (mg/L)	58	0	<4	0	0		5	6.7	7.4	9	11.6	12.6	14
	58	0	<5	0	0		5	6.7	7.4	9	11.6	12.6	14
pH (SU)	59	0	<6	5	8.5		5.5	6	6.4	6.6	6.9	7.1	7.5
	59	0	>9	0	0		5.5	6	6.4	6.6	6.9	7.1	7.5
Spec. conductance (umhos/cm at 25°C)	55	0	N/A				71	77	85	91	102	116	156
Water Temperature (°C)	59	0	>32	0	0		3	4.4	9.2	15.2	22	25	28.5
Other													
TSS (mg/L)	20	6	N/A				3	4.6	6	10.5	19.8	66.4	72
Turbidity (NTU)	59	0	>50	6	10.2	62.3	3.3	4.4	7.4	13	28	80	250
Nutrients (mg/L)													
NH3 as N	1	1	N/A				0.02	0.02	0.02	0.02	0.02	0.02	0.02
NO2 + NO3 as N	1	0	>10	0	0		0.18	0.18	0.18	0.18	0.18	0.18	0.18
TKN as N	1	0	N/A				0.83	0.83	0.83	0.83	0.83	0.83	0.83
Total Phosphorus	1	0	N/A				0.35	0.35	0.35	0.35	0.35	0.35	0.35
Metals (ug/L)													
Aluminum, total (Al)	13	0	N/A				160	160	205	520	1600	3600	4800
Arsenic, total (As)	13	13	>10	0	0		5	5	5	5	8	10	10
Cadmium, total (Cd)	13	13	>2	0	0		1	1.4	2	2	2	2	2
Chromium, total (Cr)	13	13	>50	0	0		10	16	25	25	25	25	25
Copper, total (Cu)	13	8	>7	0	0		2	2	2	2	2	5	6
Iron, total (Fe)	13	0	>1000	8	61.5	100	660	744	880	1400	2050	4340	5500
Lead, total (Pb)	13	13	>25	0	0		10	10	10	10	10	10	10
Manganese, total (Mn)	13	0	>200	1	7.7		86	87	92	100	115	246	330
Mercury, total (Hg)	12	12	>0.012	0	0		0.2	0.2	0.2	0.2	0.2	0.2	0.2
Nickel, total (Ni)	13	13	>25	0	0		10	10	10	10	10	10	10
Zinc, total (Zn)	13	11	>50	0	0		10	10	10	10	10	13	14

Fecal Coliform Screening(#/100mL)

# results:	Geomean	# > 400:	% > 400:	%Conf:
59	208	17	29	96.3

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)
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: CATAWBA RIV AT NC 27 NR THRIFT
Station #: C3900000 **Hydrologic Unit Code:** 03050101
Latitude: 35.29818 **Longitude:** -81.00323 **Stream class:** WS-IV CA
Agency: NCAMBNT **NC stream index:** 11-(117)

Time period: 02/23/2004 to 12/08/2008

	# results	# ND	EL	Results not meeting EL #	%	%Conf	Min	Percentiles 10th	25th	50th	75th	90th	Max
Field													
D.O. (mg/L)	59	0	<4	0	0		4	5.1	5.9	7.6	9.2	10.1	11.1
	59	0	<5	4	6.8		4	5.1	5.9	7.6	9.2	10.1	11.1
pH (SU)	59	0	<6	10	16.9	96.9	5.5	5.8	6	6.3	6.7	7	7.6
	59	0	>9	0	0		5.5	5.8	6	6.3	6.7	7	7.6
Spec. conductance (umhos/cm at 25°C)	58	0	N/A				52	55	57	62	70	77	80
Water Temperature (°C)	59	0	>32	2	3.4		9	10.4	13.3	20.1	27	31	33
Other													
Chlorophyll a (ug/L)	53	7	>40	0	0		1	1	1	2	3	4	9
TSS (mg/L)	19	8	N/A				2.5	2.5	3.5	6	6.2	11	12
Turbidity (NTU)	59	0	>25	0	0		1.3	2	2.5	3.5	4.7	6.2	19
Nutrients (mg/L)													
NH3 as N	58	18	N/A				0.02	0.02	0.02	0.02	0.04	0.05	0.12
NO2 + NO3 as N	58	0	>10	0	0		0.03	0.06	0.09	0.16	0.21	0.23	0.49
TKN as N	58	34	N/A				0.2	0.2	0.2	0.2	0.23	0.26	0.31
Total Phosphorus	58	29	N/A				0.02	0.02	0.02	0.02	0.02	0.03	0.04
Metals (ug/L)													
Aluminum, total (Al)	13	0	N/A				100	104	120	210	300	388	400
Arsenic, total (As)	13	13	>10	0	0		5	5	5	5	5	10	10
Cadmium, total (Cd)	13	13	>2	0	0		1	1	2	2	2	2	2
Chromium, total (Cr)	13	13	>50	0	0		10	10	25	25	25	25	25
Copper, total (Cu)	13	4	>7	0	0		2	2	2	2	3	5	5
Iron, total (Fe)	13	0	>1000	0	0		120	124	160	230	310	482	490
Lead, total (Pb)	13	13	>25	0	0		10	10	10	10	10	10	10
Manganese, total (Mn)	13	0	>200	0	0		14	14	24	29	44	53	56
Mercury, total (Hg)	12	12	>0.012	0	0		0.2	0.2	0.2	0.2	0.2	0.2	0.2
Nickel, total (Ni)	13	13	>25	0	0		10	10	10	10	10	10	10
Zinc, total (Zn)	13	13	>50	0	0		10	10	10	10	10	10	10

Fecal Coliform Screening(#/100mL)

# results:	Geomean	# > 400:	% > 400:	%Conf:
59	9	0	0	

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: LONG CRK AT SR 2042 NR PAW CREEK
Station #: C4040000 **Hydrologic Unit Code:** 03050101
Latitude: 35.32846 **Longitude:** -80.90962 **Stream class:** WS-IV
Agency: NCAMBNT **NC stream index:** 11-120-(2.5)

Time period: 01/14/2004 to 12/03/2008

	# results	# ND	EL	Results not meeting EL #	%	%Conf	Min	10th	25th	50th	75th	90th	Max
Field													
D.O. (mg/L)	58	0	<4	1	1.7		3.7	5.5	6.8	8.1	10.3	11.6	14.4
	58	0	<5	3	5.2		3.7	5.5	6.8	8.1	10.3	11.6	14.4
pH (SU)	59	0	<6	2	3.4		5.8	6.2	6.5	6.7	7	7.4	7.7
	59	0	>9	0	0		5.8	6.2	6.5	6.7	7	7.4	7.7
Spec. conductance (umhos/cm at 25°C)	55	0	N/A				56	106	147	167	183	198	207
Water Temperature (°C)	59	0	>32	0	0		3	5.5	11.9	15.7	22.3	24.7	25.9
Other													
TSS (mg/L)	20	9	N/A				2.5	2.6	4.4	6.2	14.1	62.4	92
Turbidity (NTU)	59	0	>50	12	20.3	99.5	1.7	3.1	4.7	12	40	140	900
Metals (ug/L)													
Aluminum, total (Al)	13	0	N/A				60	84	185	750	4200	5520	5800
Arsenic, total (As)	13	13	>10	0	0		5	5	5	5	8	10	10
Cadmium, total (Cd)	13	13	>2	0	0		1	1.4	2	2	2	2	2
Chromium, total (Cr)	13	13	>50	0	0		10	16	25	25	25	25	25
Copper, total (Cu)	13	6	>7	3	23.1	96.6	2	2	2	3	6	10	10
Iron, total (Fe)	13	1	>1000	6	46.2	100	50	134	630	970	3000	5220	5500
Lead, total (Pb)	13	13	>25	0	0		10	10	10	10	10	10	10
Manganese, total (Mn)	13	0	>200	1	7.7		56	56	93	120	175	214	230
Mercury, total (Hg)	12	12	>0.012	0	0		0.2	0.2	0.2	0.2	0.2	0.2	0.2
Nickel, total (Ni)	13	13	>25	0	0		10	10	10	10	10	10	10
Zinc, total (Zn)	13	6	>50	1	7.7		10	10	10	12	20	47	61

Fecal Coliform Screening(#/100mL)

# results:	Geomean	# > 400:	% > 400:	%Conf:
59	270	15	25	88.4

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

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

Location: CATAWBA RIV AT POWERLINE CROSSING AT S BELMONT X REF C4210000
Station #: C4220000 **Hydrologic Unit Code:** 03050101
Latitude: 35.21480 **Longitude:** -81.00971 **Stream class:** WS-IV&B CA
Agency: NCAMBNT **NC stream index:** 11-(122)

Time period: 02/23/2004 to 01/03/2007

	# results	# ND	EL	Results not meeting EL #	%	%Conf	Percentiles Min	10th	25th	50th	75th	90th	Max
Field													
D.O. (mg/L)	35	0	<4	0	0		4.7	5.9	7	8.4	9.1	9.9	10.8
	35	0	<5	1	2.9		4.7	5.9	7	8.4	9.1	9.9	10.8
pH (SU)	35	0	<6	1	2.9		5.9	6	6.1	6.4	7	7.4	8.6
	35	0	>9	0	0		5.9	6	6.1	6.4	7	7.4	8.6
Spec. conductance (umhos/cm at 25°C)	35	0	N/A				55	57	60	64	73	82	86
Water Temperature (°C)	35	0	>32	2	5.7		10	10.3	12.8	19.7	29	31.9	32.8
Other													
Chlorophyll a (ug/L)	30	3	>40	0	0		1	1	2	3	11	17	23
TSS (mg/L)	12	0	N/A				2.8	3.2	4.7	7.4	17.2	57.3	72
Turbidity (NTU)	35	0	>25	3	8.6		2.7	3.7	4.8	7.3	9.3	21	200
Nutrients (mg/L)													
NH3 as N	34	13	N/A				0.02	0.02	0.02	0.03	0.04	0.07	0.15
NO2 + NO3 as N	34	4	>10	0	0		0.02	0.02	0.12	0.18	0.22	0.26	0.3
TKN as N	34	9	N/A				0.2	0.2	0.2	0.26	0.34	0.4	0.82
Total Phosphorus	34	0	N/A				0.02	0.03	0.03	0.04	0.06	0.08	0.22
Metals (ug/L)													
Aluminum, total (Al)	12	0	N/A				190	193	222	430	700	1259	1400
Arsenic, total (As)	12	12	>10	0	0		5	5	5	5	5	10	10
Cadmium, total (Cd)	12	12	>2	0	0		1	1.3	2	2	2	2	2
Chromium, total (Cr)	12	12	>50	0	0		10	14	25	25	25	25	25
Copper, total (Cu)	12	2	>7	1	8.3		2	2	2	3	4	8	10
Iron, total (Fe)	12	0	>1000	2	16.7	88.9	250	253	302	420	758	1370	1400
Lead, total (Pb)	12	12	>25	0	0		10	10	10	10	10	10	10
Manganese, total (Mn)	12	0	>200	0	0		25	26	30	44	54	152	190
Mercury, total (Hg)	12	12	>0.012	0	0		0.2	0.2	0.2	0.2	0.2	0.2	0.2
Nickel, total (Ni)	12	12	>25	0	0		10	10	10	10	10	10	10
Zinc, total (Zn)	12	11	>50	0	0		10	10	10	10	10	35	46

Fecal Coliform Screening(#/100mL)

# results:	Geomean	# > 400:	% > 400:	%Conf:
35	17	2	6	

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: CATAWBA CRK AT SR 2302 AT SC STATE LINE
Station #: C7400000 **Hydrologic Unit Code:** 03050101
Latitude: 35.15135 **Longitude:** -81.05824 **Stream class:** WS-V B
Agency: NCAMBNT **NC stream index:** 11-(123.5)

Time period: 02/18/2004 to 12/08/2008

	# results	# ND	EL	Results not meeting EL #	%	%Conf	Percentiles Min	10th	25th	50th	75th	90th	Max
Field													
D.O. (mg/L)	60	0	<4	0	0		6	6.5	7.4	8.6	9.6	10.2	11.4
	60	0	<5	0	0		6	6.5	7.4	8.6	9.6	10.2	11.4
pH (SU)	60	0	<6	5	8.3		5.5	6	6.4	6.9	8	8.4	8.9
	60	0	>9	0	0		5.5	6	6.4	6.9	8	8.4	8.9
Spec. conductance (umhos/cm at 25°C)	57	0	N/A				58	69	74	85	102	113	125
Water Temperature (°C)	60	0	>32	3	5		8	10.4	14	21.6	30.1	31.7	33.6
Other													
Chlorophyll a (ug/L)	1	0	>40	0	0		17	17	17	17	17	17	17
TSS (mg/L)	20	6	N/A				4	4.8	5.6	6.5	8	11.7	18
Turbidity (NTU)	59	0	>25	1	1.7		2.9	3.6	4	5.6	7.7	14	30
Nutrients (mg/L)													
NH3 as N	1	1	N/A				0.02	0.02	0.02	0.02	0.02	0.02	0.02
NO2 + NO3 as N	1	0	>10	0	0		0.3	0.3	0.3	0.3	0.3	0.3	0.3
TKN as N	1	0	N/A				0.28	0.28	0.28	0.28	0.28	0.28	0.28
Total Phosphorus	1	0	N/A				0.03	0.03	0.03	0.03	0.03	0.03	0.03
Metals (ug/L)													
Aluminum, total (Al)	13	0	N/A				140	156	205	250	480	794	830
Arsenic, total (As)	13	13	>10	0	0		5	5	5	5	5	10	10
Cadmium, total (Cd)	13	13	>2	0	0		1	1	2	2	2	2	2
Chromium, total (Cr)	13	13	>50	0	0		10	10	25	25	25	25	25
Copper, total (Cu)	13	1	>7	0	0		2	2	3	4	5	5	5
Iron, total (Fe)	13	0	>1000	0	0		170	194	280	360	475	704	720
Lead, total (Pb)	13	13	>25	0	0		10	10	10	10	10	10	10
Manganese, total (Mn)	6	0	>200	0	0		18	18	26	30	40	46	46
Mercury, total (Hg)	12	12	>0.012	0	0		0.2	0.2	0.2	0.2	0.2	0.2	0.2
Nickel, total (Ni)	13	13	>25	0	0		10	10	10	10	10	10	10
Zinc, total (Zn)	13	10	>50	0	0		10	10	10	10	10	14	15

Fecal Coliform Screening(#/100mL)

# results:	Geomean	# > 400:	% > 400:	%Conf:
59	5	0	0	

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: LAKE WYLIE AT NC 49 NR OAK GROVE
Station #: C7500000 **Hydrologic Unit Code:** 03050101
Latitude: 35.10128 **Longitude:** -81.04000 **Stream class:** WS-V&B
Agency: NCAMBNT **NC stream index:** 11-(123.5)

Time period: 02/23/2004 to 01/03/2007

	# results	# ND	EL	Results not meeting EL #	%	%Conf	Percentiles Min	10th	25th	50th	75th	90th	Max
Field													
D.O. (mg/L)	35	0	<4	0	0		4.3	6.5	7.1	8.8	9.5	10.8	11.1
	35	0	<5	1	2.9		4.3	6.5	7.1	8.8	9.5	10.8	11.1
pH (SU)	35	0	<6	1	2.9		5.4	6.1	6.2	6.6	7.9	8.3	8.7
	35	0	>9	0	0		5.4	6.1	6.2	6.6	7.9	8.3	8.7
Spec. conductance (umhos/cm at 25°C)	35	0	N/A				59	65	68	74	83	90	102
Water Temperature (°C)	35	0	>32	2	5.7		9	10.3	13.7	20	29.4	30.9	33.7
Other													
Chlorophyll a (ug/L)	30	0	>40	0	0		1	2	4	6	14	18	22
TSS (mg/L)	12	2	N/A				2.5	2.5	3	4.4	6	22.3	25
Turbidity (NTU)	35	0	>25	3	8.6		1.8	2.3	2.4	4.7	7.3	20.6	50
Nutrients (mg/L)													
NH3 as N	36	20	N/A				0.02	0.02	0.02	0.02	0.05	0.06	0.07
NO2 + NO3 as N	36	5	>10	0	0		0.02	0.02	0.07	0.2	0.29	0.35	0.43
TKN as N	36	2	N/A				0.2	0.21	0.22	0.29	0.36	0.42	0.51
Total Phosphorus	36	0	N/A				0.02	0.02	0.03	0.03	0.05	0.06	0.09
Metals (ug/L)													
Aluminum, total (Al)	13	0	N/A				61	71	117	230	305	1628	2500
Arsenic, total (As)	13	13	>10	0	0		5	5	5	5	5	10	10
Cadmium, total (Cd)	13	13	>2	0	0		1	1.4	2	2	2	2	2
Chromium, total (Cr)	13	13	>50	0	0		10	16	25	25	25	25	25
Copper, total (Cu)	13	0	>7	0	0		3	3	3	3	4	5	5
Iron, total (Fe)	13	0	>1000	1	7.7		60	76	210	290	420	1480	2000
Lead, total (Pb)	13	13	>25	0	0		10	10	10	10	10	10	10
Manganese, total (Mn)	13	0	>200	1	7.7		15	15	20	34	48	162	230
Mercury, total (Hg)	13	13	>0.012	0	0		0.2	0.2	0.2	0.2	0.2	0.2	0.2
Nickel, total (Ni)	13	13	>25	0	0		10	10	10	10	10	10	10
Zinc, total (Zn)	13	11	>50	0	0		10	10	10	10	10	15	18

Fecal Coliform Screening(#/100mL)

# results:	Geomean	# > 400:	% > 400:	%Conf:
35	3	2	6	

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: CROWDERS CRK AT SC 564 RIDGE RD NR BOWLING GREEN SC
Station #: C8660000 **Hydrologic Unit Code:** 03050101
Latitude: 35.14374 **Longitude:** -81.15046 **Stream class:** FW
Agency: NCAMBNT **NC stream index:**

Time period: 01/14/2004 to 12/10/2008

	# results	# ND	EL	Results not meeting EL #	%	%Conf	Min	10th	25th	50th	75th	90th	Max
Field													
D.O. (mg/L)	58	0	N/A				5.6	6.5	7.5	9	10.5	12	14.2
pH (SU)	59	0	N/A				6	6.2	6.5	6.8	7	7.2	7.5
Spec. conductance (umhos/cm at 25°C)	54	0	N/A				114	128	146	173	231	324	519
Water Temperature (°C)	59	0	N/A				3.8	6	10.5	16.5	21	24.4	26.4
Other													
TSS (mg/L)	20	5	N/A				2.5	3	4	6.2	7.8	14.6	52
Turbidity (NTU)	59	0	N/A				2	2.8	5.2	8.6	14	32	260
Nutrients (mg/L)													
NH3 as N	59	10	N/A				0.02	0.02	0.02	0.03	0.04	0.07	0.33
NO2 + NO3 as N	59	0	N/A				0.16	0.3	0.43	0.59	0.85	1.5	2.5
TKN as N	59	5	N/A				0.2	0.24	0.28	0.35	0.45	0.77	1.2
Total Phosphorus	59	0	N/A				0.04	0.05	0.06	0.07	0.1	0.14	0.31
Metals (ug/L)													
Aluminum, total (Al)	13	0	N/A				97	102	135	350	445	1272	1800
Arsenic, total (As)	13	13	N/A				5	5	5	5	8	10	10
Cadmium, total (Cd)	13	13	N/A				1	1.4	2	2	2	2	2
Chromium, total (Cr)	13	13	N/A				10	16	25	25	25	25	25
Copper, total (Cu)	13	11	N/A				2	2	2	2	2	3	3
Iron, total (Fe)	13	0	N/A				410	450	535	790	980	2100	2700
Lead, total (Pb)	13	13	N/A				10	10	10	10	10	10	10
Manganese, total (Mn)	4	0	N/A				160	160	168	195	200	200	200
Mercury, total (Hg)	12	12	N/A				0.2	0.2	0.2	0.2	0.2	0.2	0.2
Nickel, total (Ni)	13	13	N/A				10	10	10	10	10	10	10
Zinc, total (Zn)	13	7	N/A				10	10	10	10	12	19	20

Fecal Coliform Screening(#/100mL)

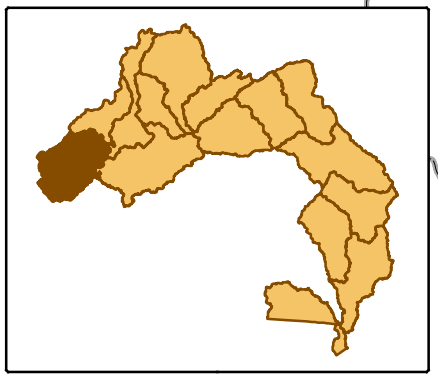
# results:	Geomean	# > 400:	% > 400:	%Conf:
59	277	16	27	93.3

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)
Stations with less than 10 results for a given parameter were not evaluated for statistical confidence

Appendix 1-D

Watershed Maps

Headwaters Catawba River Watershed
0305010101



- Watershed Boundary
- County Boundaries
- Municipalities
- Stormwater Permit
- Non-Discharge Facility
- Cattle Operation Permit
- Primary Roads

NPDES WW Discharge

- Major
- Minor

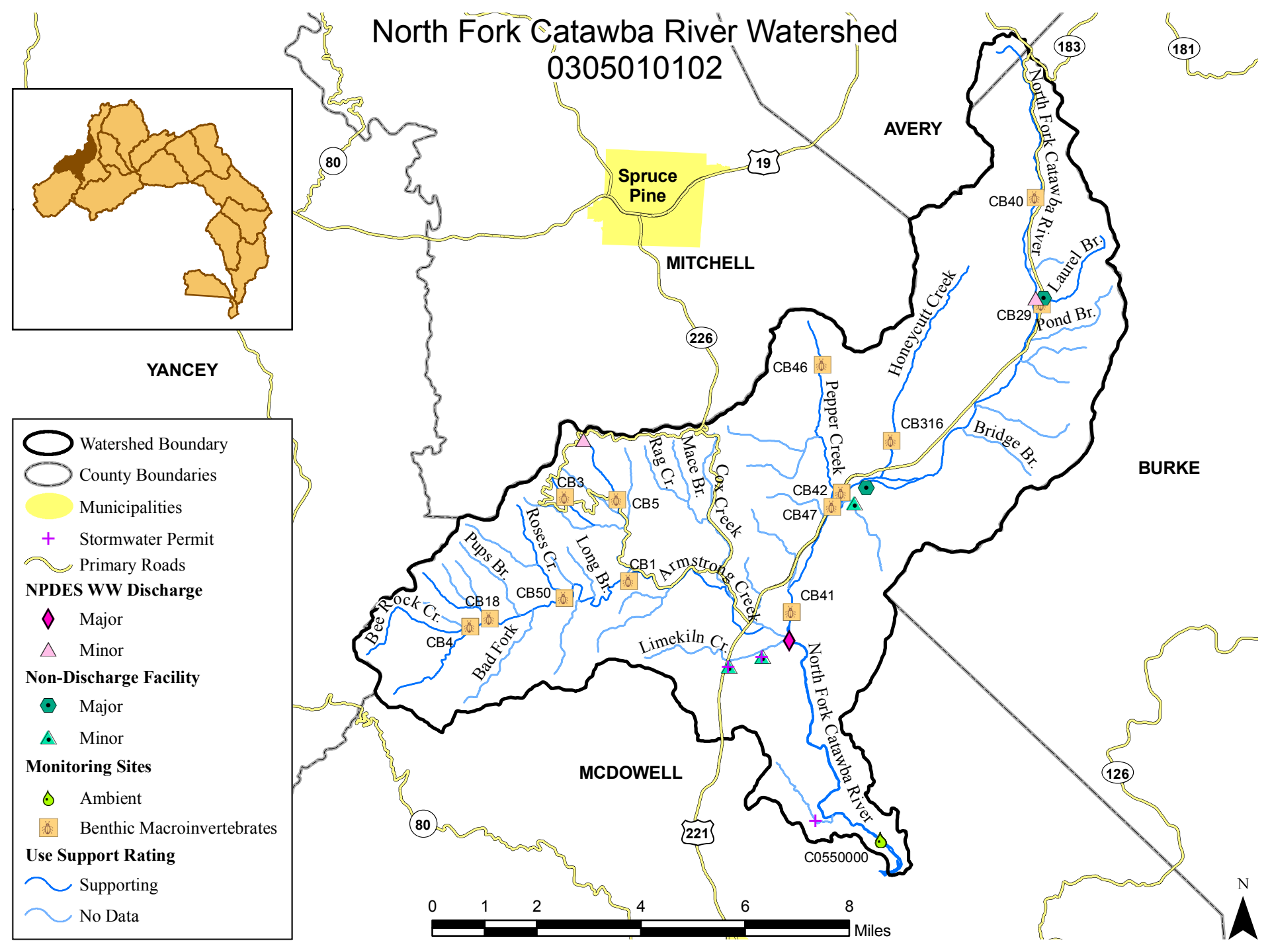
Monitoring Sites

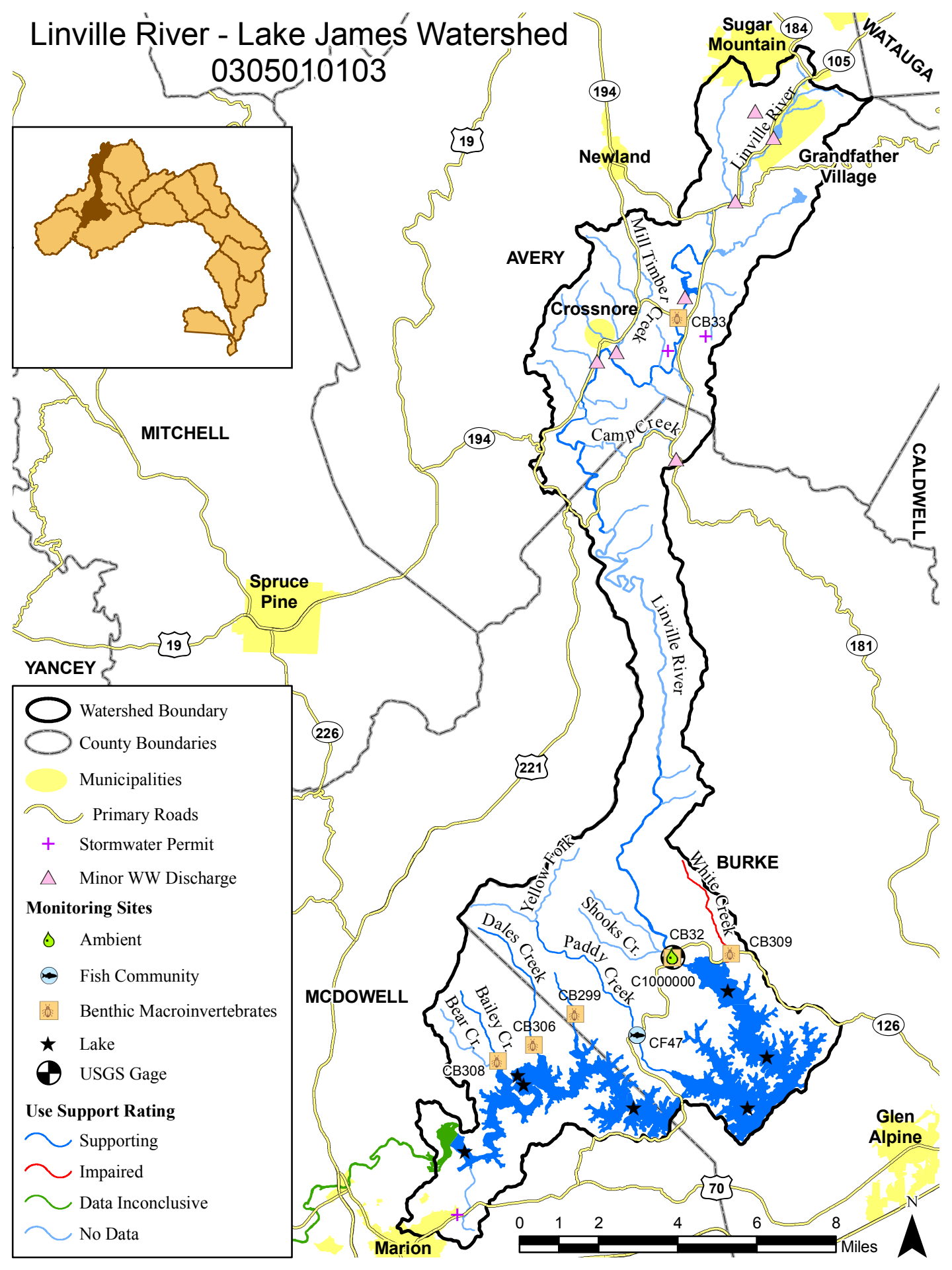
- Ambient
- Fish Community
- Benthic Macroinvertebrates
- Lake
- USGS Gage

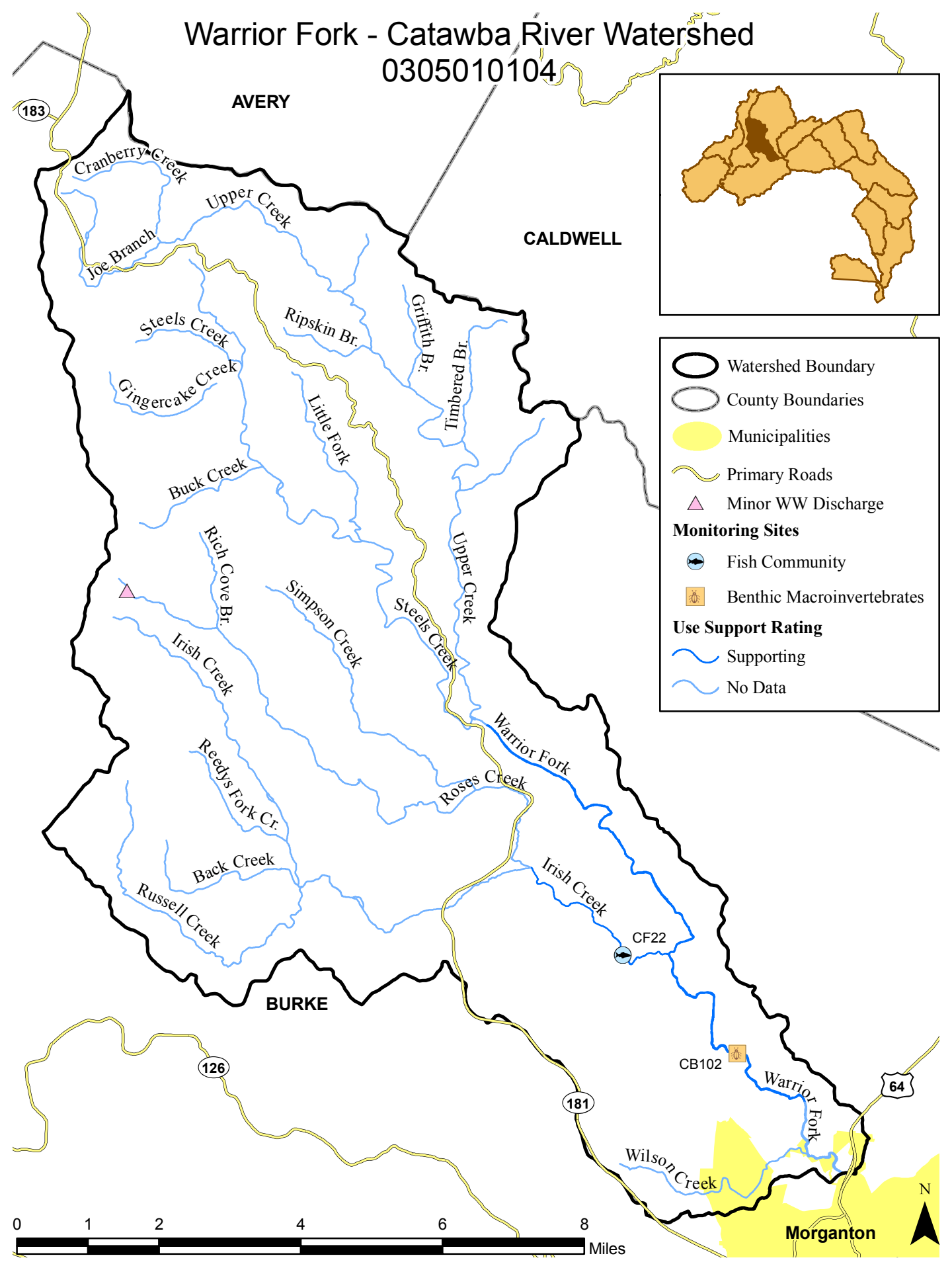
Use Support Rating

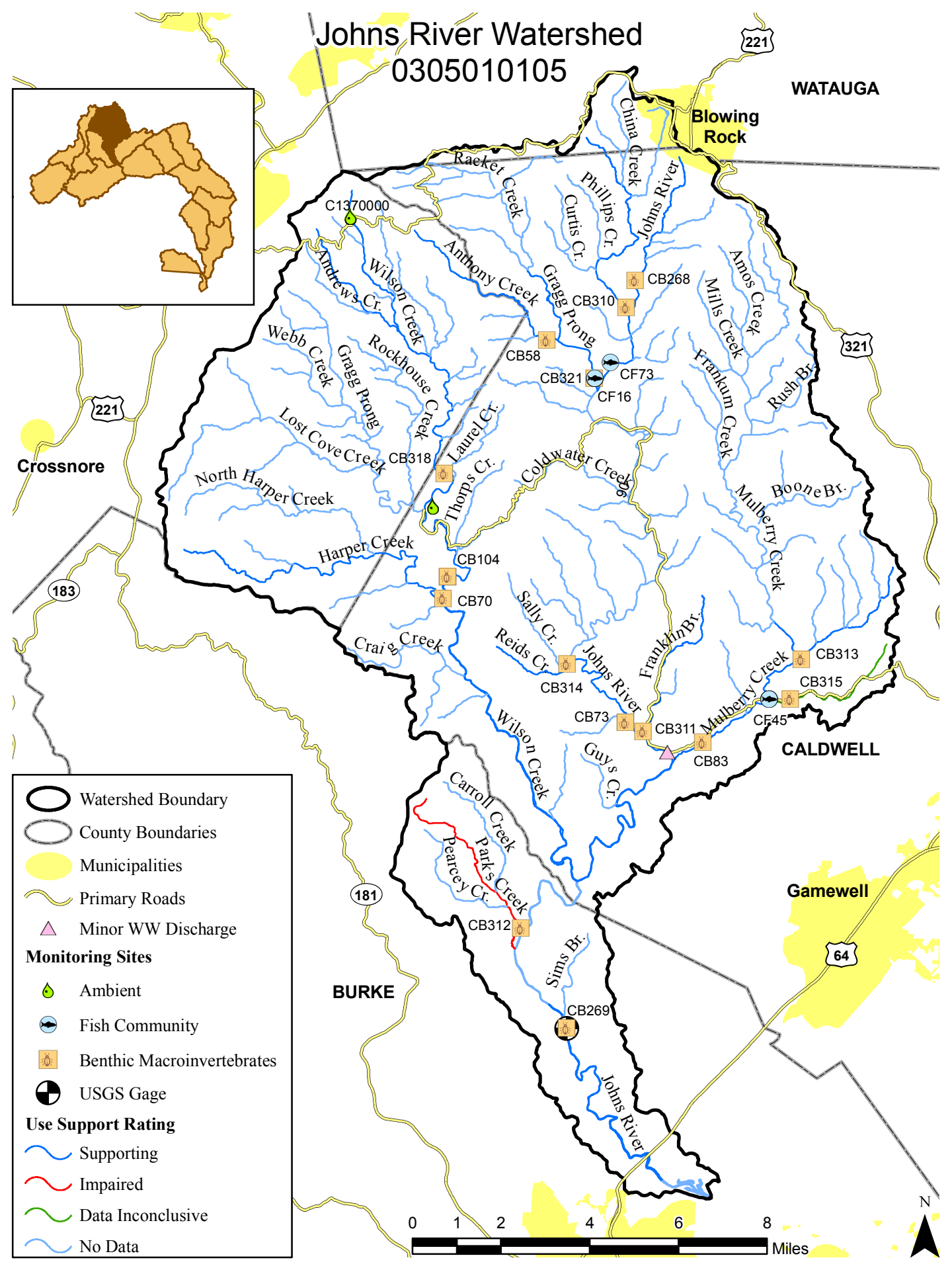
- Supporting
- Impaired
- Data Inconclusive
- No Data

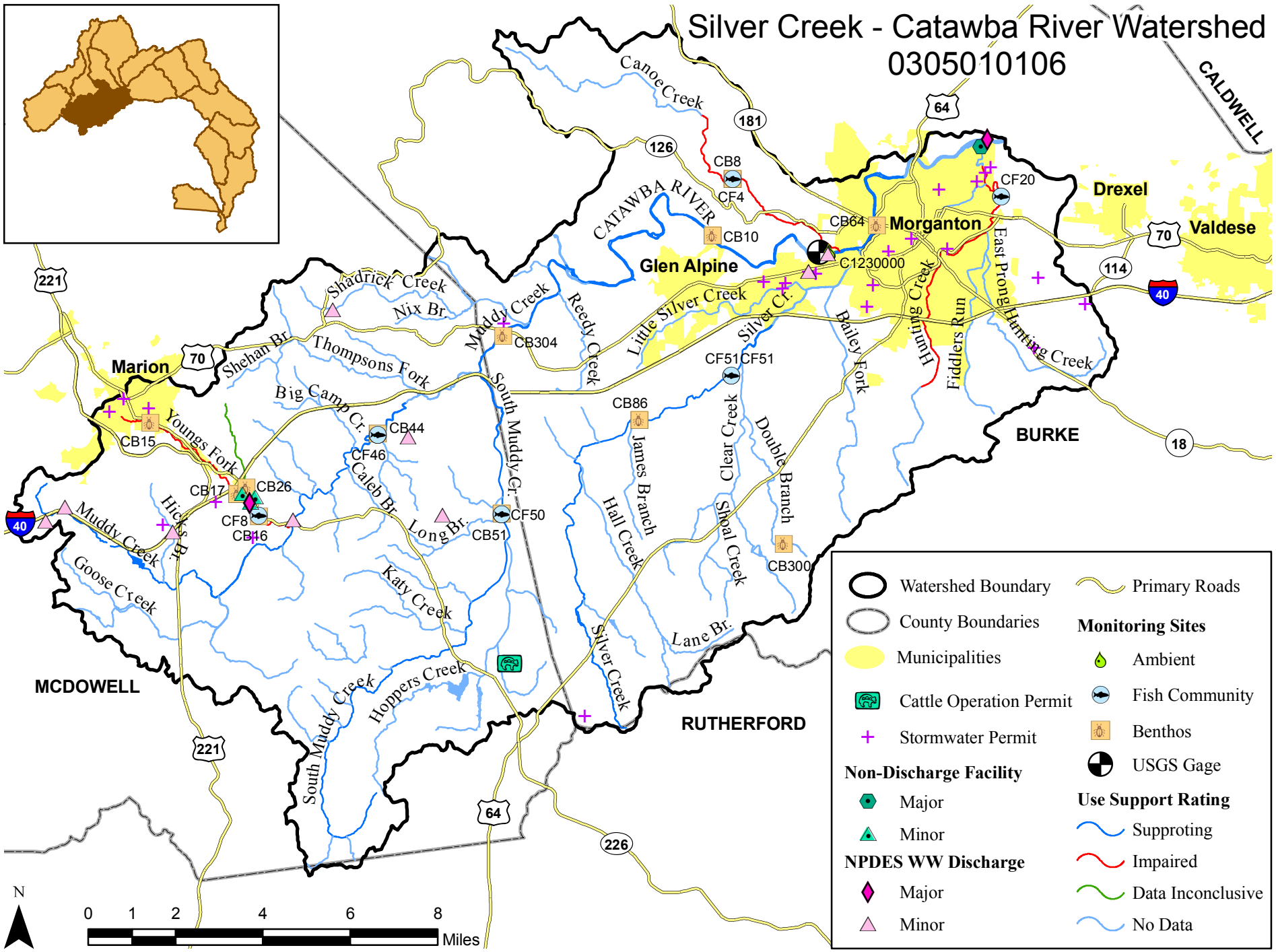
YANCEY
BUNCOMBE
MCDOWELL
Old Fort
Marion
CATAWBA RIVER
Licklog Cr.
Sams Cr.
Locust Cr.
Long Br.
Little Buck Creek
Harris Creek
Buck Creek
Clear Creek
Toms Creek
Johns Cr.
Curtis Creek
Newberry Cr.
Prichard Cr.
Jarrett Creek
Mackey Creek
Beatty Branch
Cave Creek
Cane Creek
Jake Creek
Nix Creek
Glades Creek
Mill Creek
Swannanoa Creek
Brevard Creek
Crooked Cr.
Haw Br.
Guthrie Br.
Clarks Br.
Crooked Creek
Bird Creek
Camp Creek
CB52
CB6
CB49
CB27
CB56
CB11
C0250000
CB259
CB35
CF36
CB265
CF112
CB12
C0145000
CF43
CB54
CB14
CB305
CF6
CB20
CF9
80
128
221
70
40
9
0 1 2 4 6 8 Miles
N

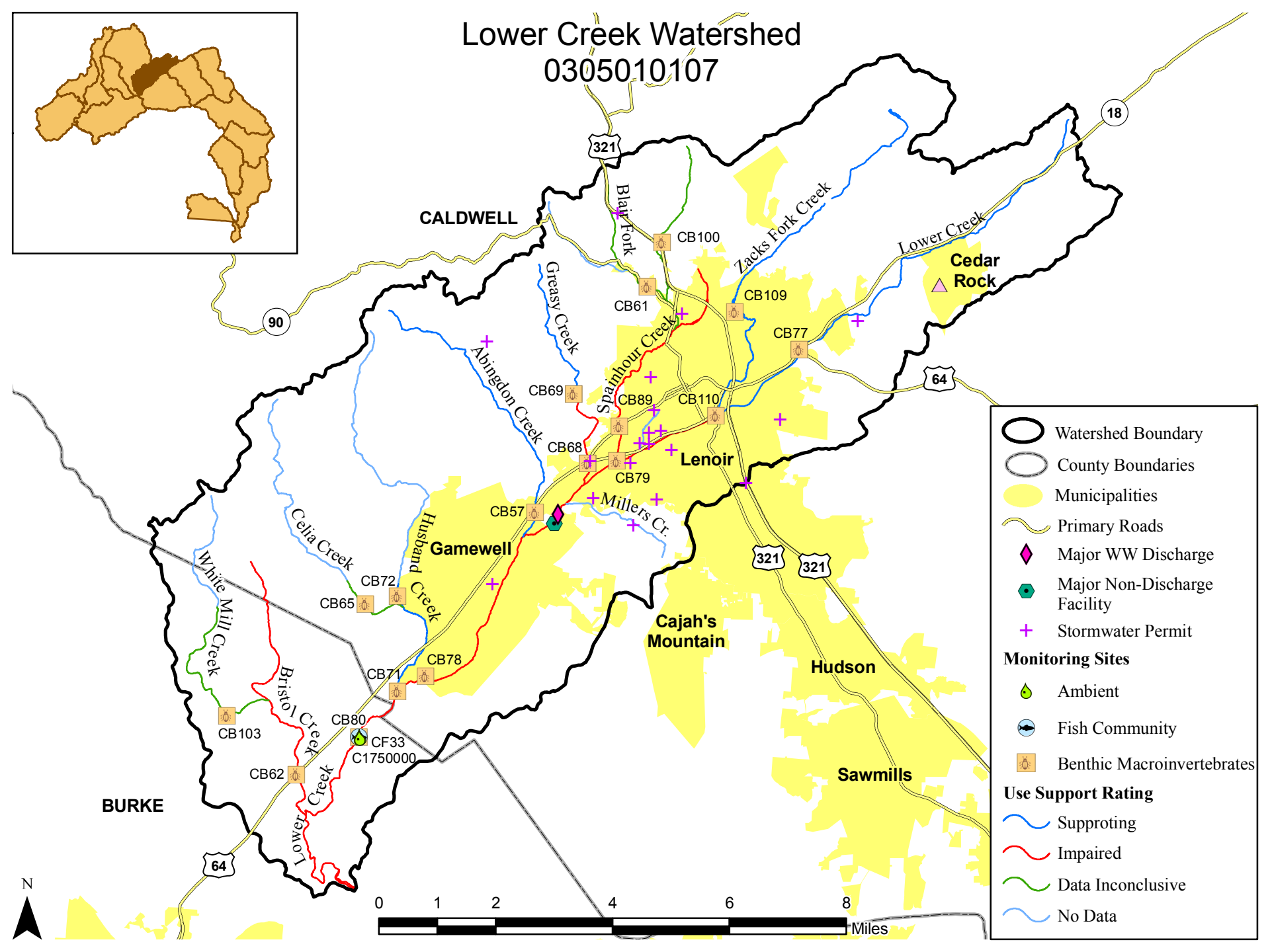

North Fork Catawba River Watershed
0305010102
AVERY
MITCHELL
YANCEY
BURKE
MCDOWELL
Spruce Pine
80
19
226
183
181
126
221
North Fork Catawba River
Laurel Br.
Pond Br.
Honeycutt Creek
Pepper Creek
Bridge Br.
Rag Cr.
Mace Br.
Cox Creek
Roses Cr.
Long Br.
Armstrong Creek
Pups Br.
Bee Rock Cr.
Bad Fork
Limekiln Cr.
CB40
CB29
CB46
CB316
CB42
CB47
CB3
CB5
CB1
CB50
CB18
CB4
CB41
C0550000
Watershed Boundary
County Boundaries
Municipalities
Stormwater Permit
Primary Roads
NPDES WW Discharge
Major
Minor
Non-Discharge Facility
Major
Minor
Monitoring Sites
Ambient
Benthic Macroinvertebrates
Use Support Rating
Supporting
No Data
0 1 2 4 6 8
Miles
N

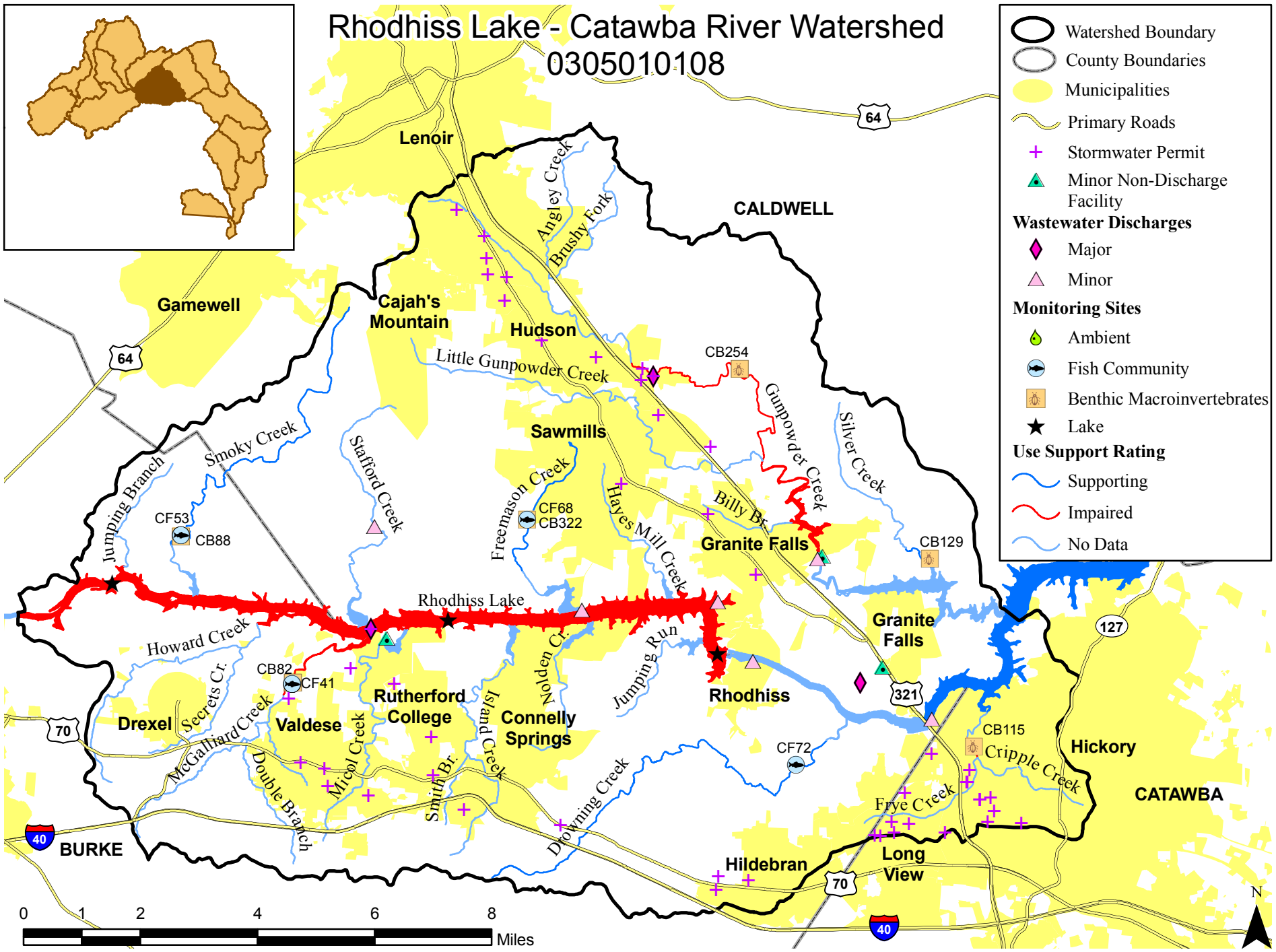

Linville River - Lake James Watershed
0305010103
Sugar Mountain
184
105
WATAUGA
194
19
Newland
Linville River
Grandfather Village
AVERY
Mill Timber Creek
Crossnore
CB33
MITCHELL
194
Camp Creek
CALDWELL
Spruce Pine
19
YANCEY
181
Linville River
226
221
BURKE
Yellow Fork
White Creek
Shooks Cr.
Dales Creek
Paddy Creek
CB32
CB309
C1000000
MCDOWELL
CB299
Bear Cr.
Bailey Cr.
CB306
CF47
126
CB308
Glen Alpine
70
Marion
Watershed Boundary
County Boundaries
Municipalities
Primary Roads
Stormwater Permit
Minor WW Discharge
Monitoring Sites
Ambient
Fish Community
Benthic Macroinvertebrates
Lake
USGS Gage
Use Support Rating
Supporting
Impaired
Data Inconclusive
No Data
0 1 2 4 6 8
Miles
N

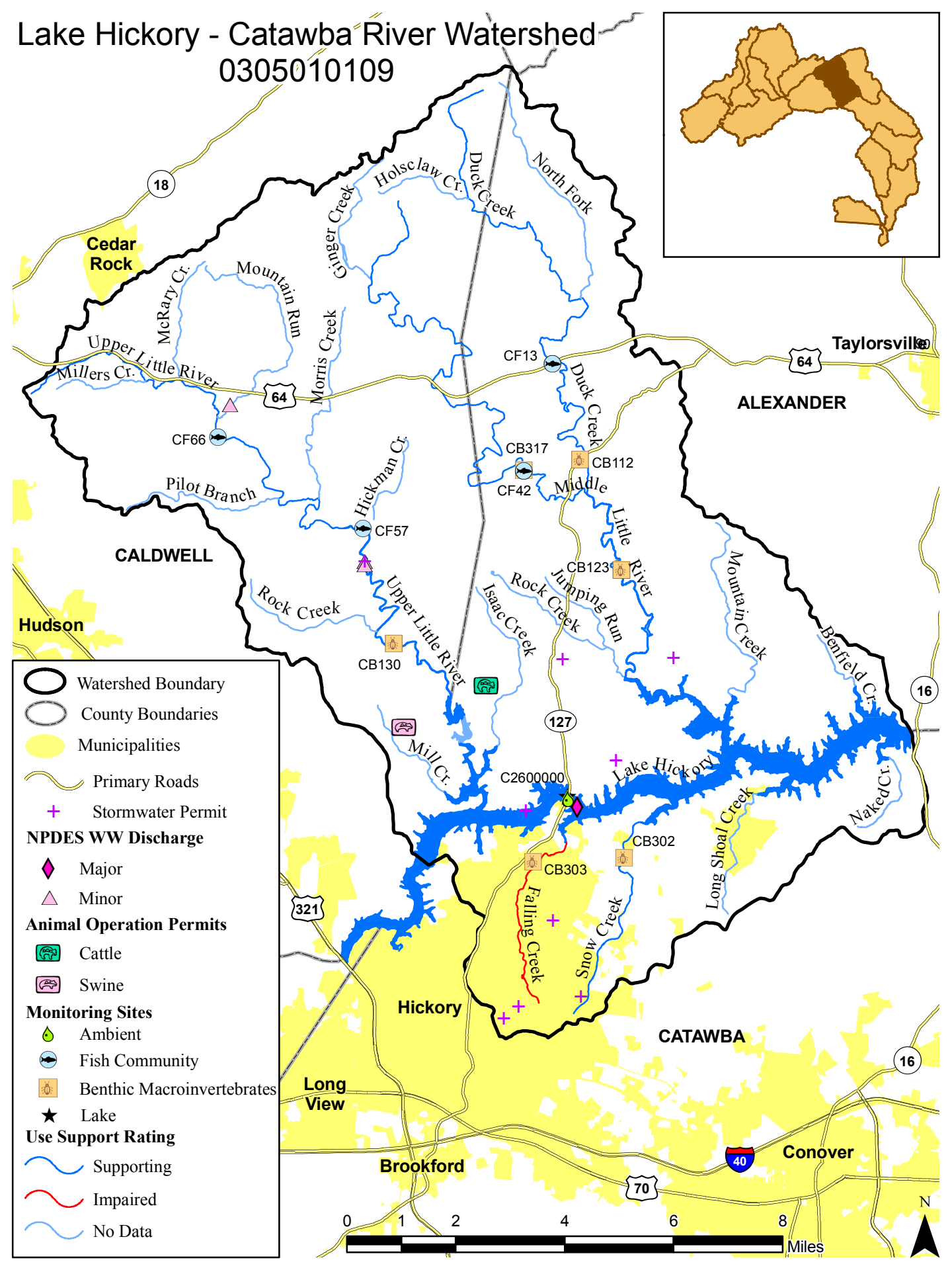

Warrior Fork - Catawba River Watershed
0305010104
AVERY
CALDWELL
BURKE
183
126
181
64
Cranberry Creek
Upper Creek
Joe Branch
Steels Creek
Gingercake Creek
Ripskin Br.
Griffith Br.
Timbered Br.
Little Fork
Buck Creek
Rich Cove Br.
Simpson Creek
Steels Creek
Upper Creek
Irish Creek
Warrior Fork
Reedys Fork Cr.
Roses Creek
Back Creek
Russell Creek
Irish Creek
CF22
CB102
Warrior Fork
Wilson Creek
Morganton
Watershed Boundary
County Boundaries
Municipalities
Primary Roads
Minor WW Discharge
Monitoring Sites
Fish Community
Benthic Macroinvertebrates
Use Support Rating
Supporting
No Data
0 1 2 4 6 8
Miles
N

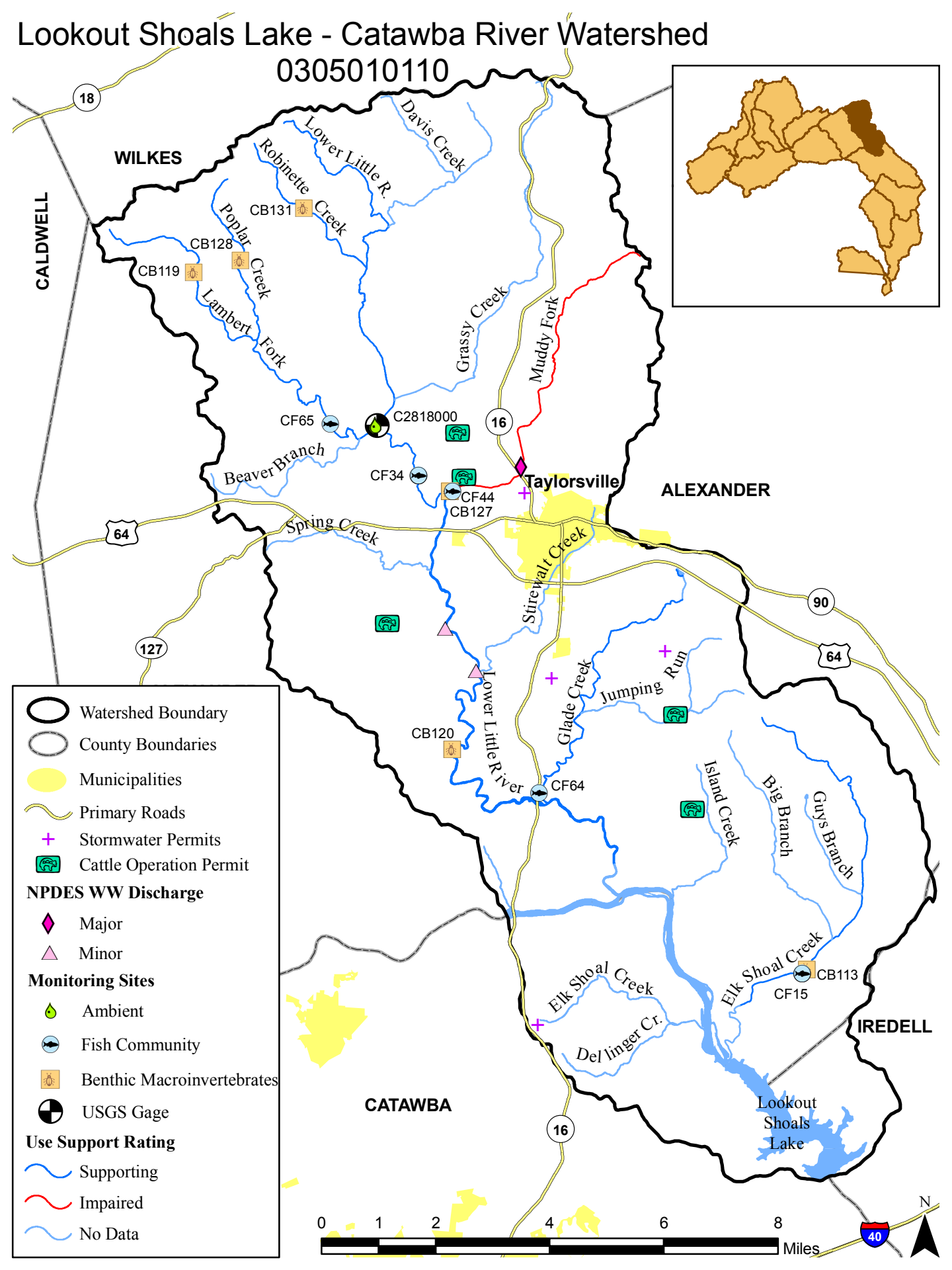

Johns River Watershed
0305010105
WATAUGA
Blowing Rock
Crossnore
CALDWELL
Gamewell
BURKE
221
321
183
181
64
China Creek
Raeket Creek
Phillips Cr.
Johns River
Curtis Cr.
Amos Creek
Mills Creek
Anthony Creek
Gragg Prong
Andrews Cr.
Wilson Creek
Webb Creek
Rockhouse Creek
Frankum Creek
Rush Br.
Lost Cove Creek
Laurel Cr.
Thorps Cr.
Coldwater Creek
Boone Br.
Mulberry Creek
North Harper Creek
Harper Creek
Craig Creek
Sally Cr.
Reids Cr.
Franklin Br.
Guys Cr.
Carroll Creek
Parks Creek
Pearcey Cr.
Sims Br.
C1370000
CB268
CB310
CB58
CB321
CF73
CF16
CB318
CB104
CB70
CB313
CB315
CB314
CB73
CB311
CF45
CB83
CB312
CB269
Watershed Boundary
County Boundaries
Municipalities
Primary Roads
Minor WW Discharge
Monitoring Sites
Ambient
Fish Community
Benthic Macroinvertebrates
USGS Gage
Use Support Rating
Supporting
Impaired
Data Inconclusive
No Data
0 1 2 4 6 8
Miles
N

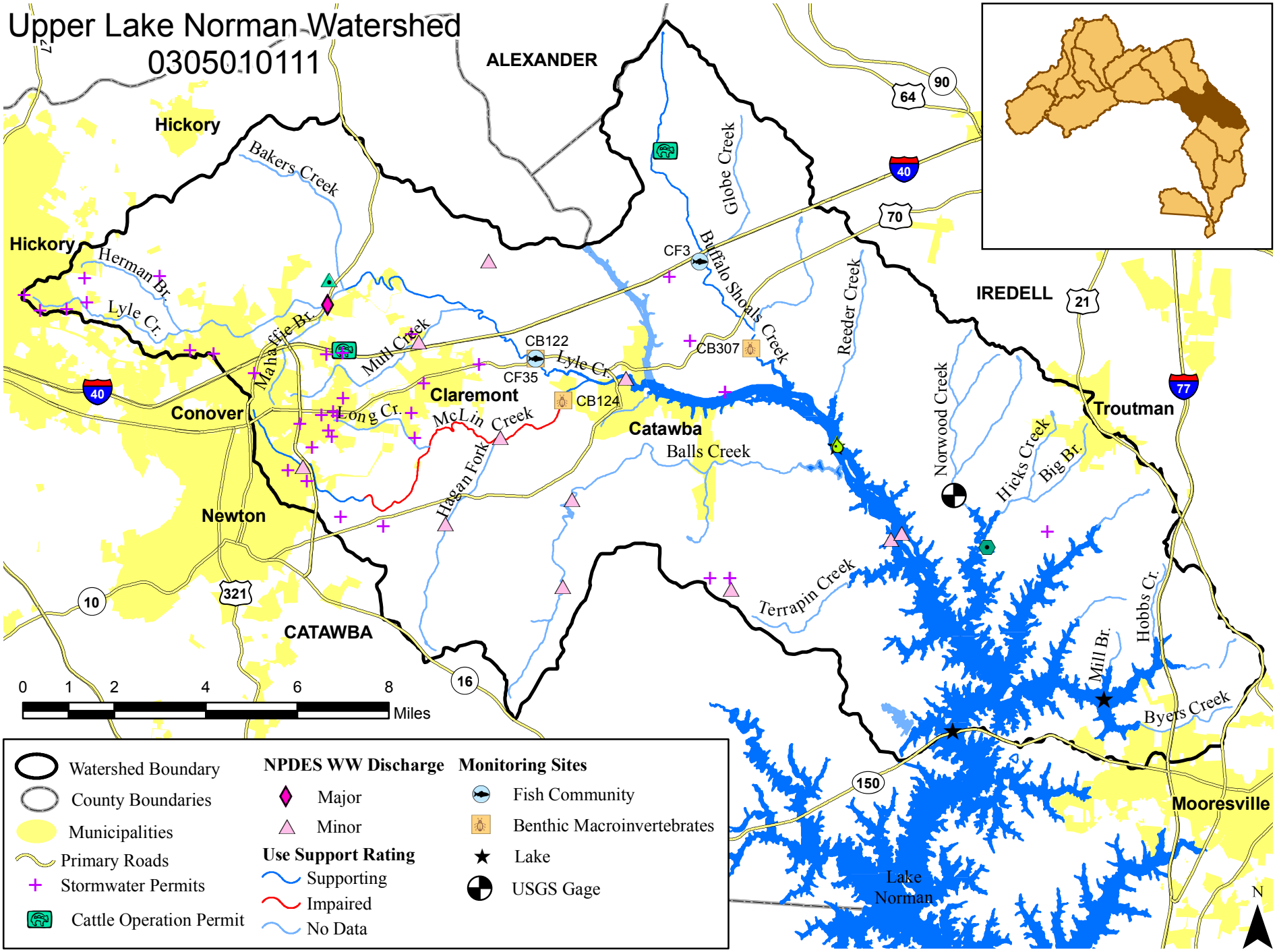

Silver Creek - Catawba River Watershed
0305010106
Canoe Creek
CATAWBA RIVER
Glen Alpine
Morganton
Drexel
Valdese
CALDWELL
BURKE
MCDOWELL
RUTHERFORD
Marion
Shadrick Creek
Nix Br.
Muddy Creek
Reedy Creek
Little Silver Creek
Silver Cr.
Bailey Fork
Hunting Creek
East Prong Hunting Creek
Fiddlers Run
Shehan Br.
Thompsons Fork
Big Camp Cr.
Youngs Fork
South Muddy Cr.
James Branch
Hall Creek
Clear Creek
Double Branch
Shoal Creek
Caleb Br.
Long Br.
Hicks Br.
Goose Creek
Katy Creek
Hoppers Creek
South Muddy Creek
Silver Creek
Lane Br.
CB8
CF4
CB10
CB64
CF20
C1230000
CB304
CF51
CB86
CB44
CF46
CB15
CB17
CB26
CF8
CB16
CF50
CB51
CB300
64
181
126
70
114
40
221
18
226
Watershed Boundary
County Boundaries
Municipalities
Cattle Operation Permit
Stormwater Permit
Non-Discharge Facility
Major
Minor
NPDES WW Discharge
Major
Minor
Primary Roads
Monitoring Sites
Ambient
Fish Community
Benthos
USGS Gage
Use Support Rating
Supproting
Impaired
Data Inconclusive
No Data
N
0 1 2 4 6 8
Miles

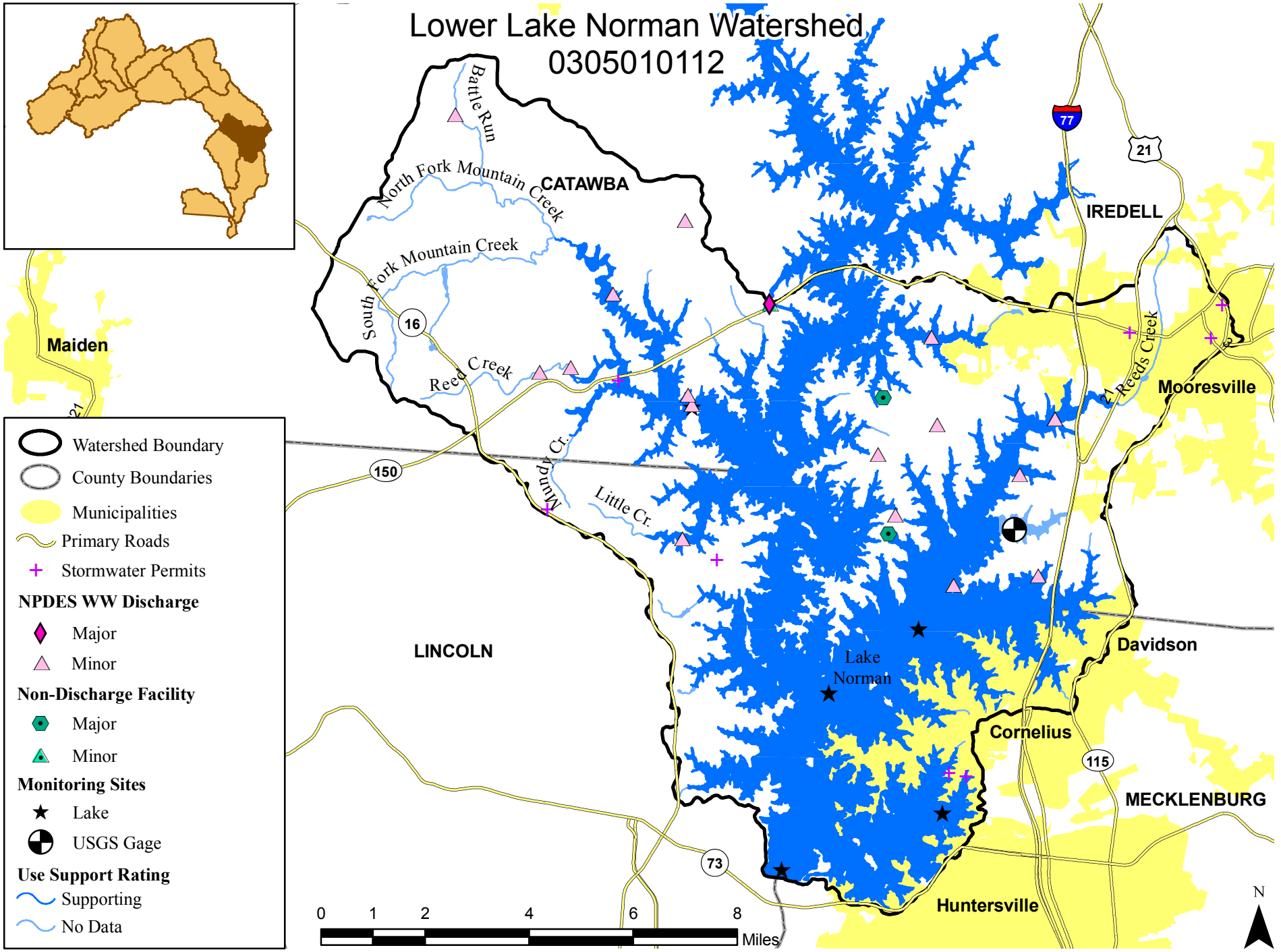

Lower Creek Watershed
0305010107
CALDWELL
BURKE
Gamewell
Lenoir
Cajah's Mountain
Hudson
Sawmills
Cedar Rock
Blair Fork
Zacks Fork Creek
Lower Creek
Greasy Creek
Abingdon Creek
Spainhour Creek
Millers Cr.
Husband Creek
Celia Creek
White Mill Creek
Bristol Creek
Lower Creek
CB100
CB61
CB109
CB77
CB69
CB89
CB110
CB68
CB79
CB57
CB72
CB65
CB78
CB71
CB80
CF33
C1750000
CB103
CB62
18
321
90
64
Watershed Boundary
County Boundaries
Municipalities
Primary Roads
Major WW Discharge
Major Non-Discharge Facility
Stormwater Permit
Monitoring Sites
Ambient
Fish Community
Benthic Macroinvertebrates
Use Support Rating
Supproting
Impaired
Data Inconclusive
No Data
N
0 1 2 4 6 8
Miles

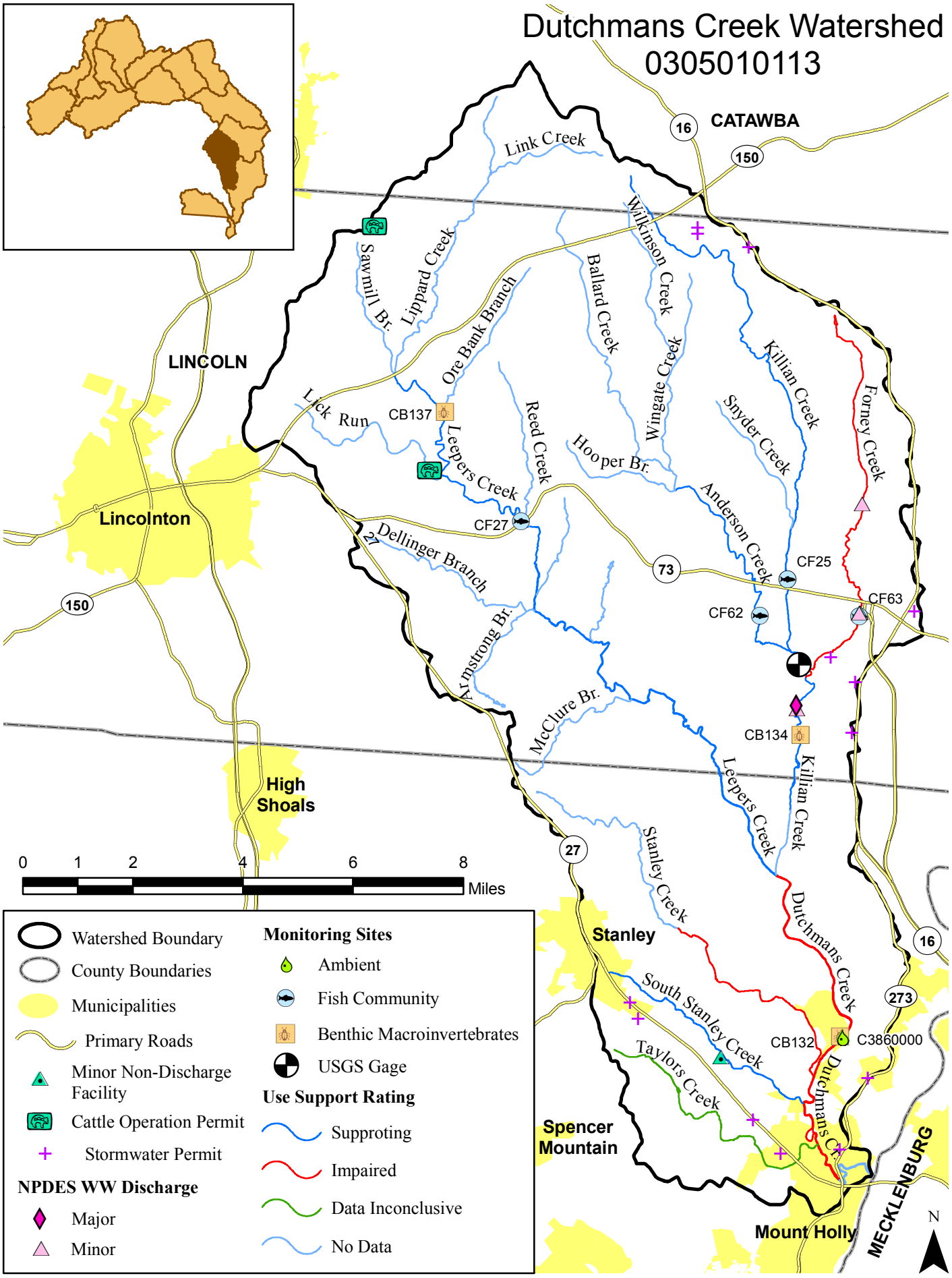

Rhodhiss Lake - Catawba River Watershed
0305010108
Watershed Boundary
County Boundaries
Municipalities
Primary Roads
Stormwater Permit
Minor Non-Discharge Facility
Wastewater Discharges
Major
Minor
Monitoring Sites
Ambient
Fish Community
Benthic Macroinvertebrates
Lake
Use Support Rating
Supporting
Impaired
No Data
Lenoir
CALDWELL
Gamewell
Cajah's Mountain
Hudson
Sawmills
Granite Falls
Rhodhiss
Rutherford College
Connelly Springs
Valdese
Drexel
Hickory
CATAWBA
BURKE
Hildebran
Long View
Rhodhiss Lake
Little Gunpowder Creek
Gunpowder Creek
Silver Creek
Angley Creek
Brushy Fork
Smoky Creek
Jumping Branch
Stafford Creek
Freemason Creek
Hayes Mill Creek
Billy Br.
Howard Creek
Secrets Cr.
McGalliard Creek
Double Branch
Micol Creek
Smith Br.
Island Creek
Nolden Cr.
Jumping Run
Drowning Creek
Cripple Creek
Frye Creek
CB254
CB129
CB115
CF53
CB88
CF68
CB322
CB82
CF41
CF72
64
70
40
321
127
0 1 2 4 6 8
Miles
N

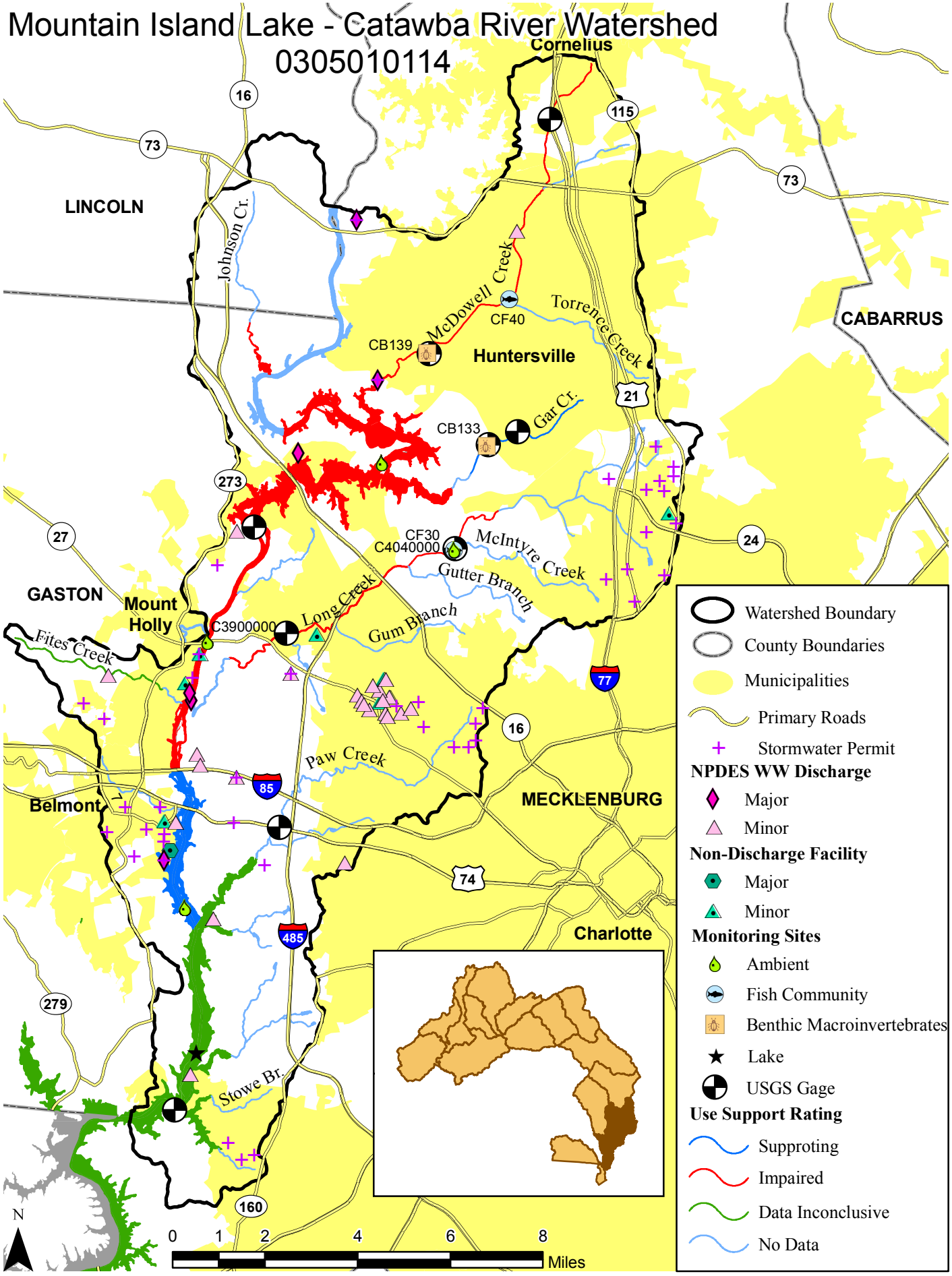

Lake Hickory - Catawba River Watershed
0305010109
Cedar Rock
Taylorsville
ALEXANDER
CALDWELL
Hudson
Hickory
CATAWBA
Long View
Brookford
Conover
Lake Hickory
Upper Little River
Millers Cr.
McRary Cr.
Mountain Run
Ginger Creek
Holsclaw Cr.
Duck Creek
North Fork
Morris Creek
Pilot Branch
Hickman Cr.
Rock Creek
Isaac Creek
Jumping Run
Little River
Mountain Creek
Benfield Cr.
Mill Cr.
Falling Creek
Snow Creek
Long Shoal Creek
Naked Cr.
CF13
CF66
CF57
CF42
CB317
CB112
CB123
CB130
CB302
CB303
C2600000
18
64
127
321
16
40
70
Watershed Boundary
County Boundaries
Municipalities
Primary Roads
Stormwater Permit
NPDES WW Discharge
Major
Minor
Animal Operation Permits
Cattle
Swine
Monitoring Sites
Ambient
Fish Community
Benthic Macroinvertebrates
Lake
Use Support Rating
Supporting
Impaired
No Data
0 1 2 4 6 8
Miles
N

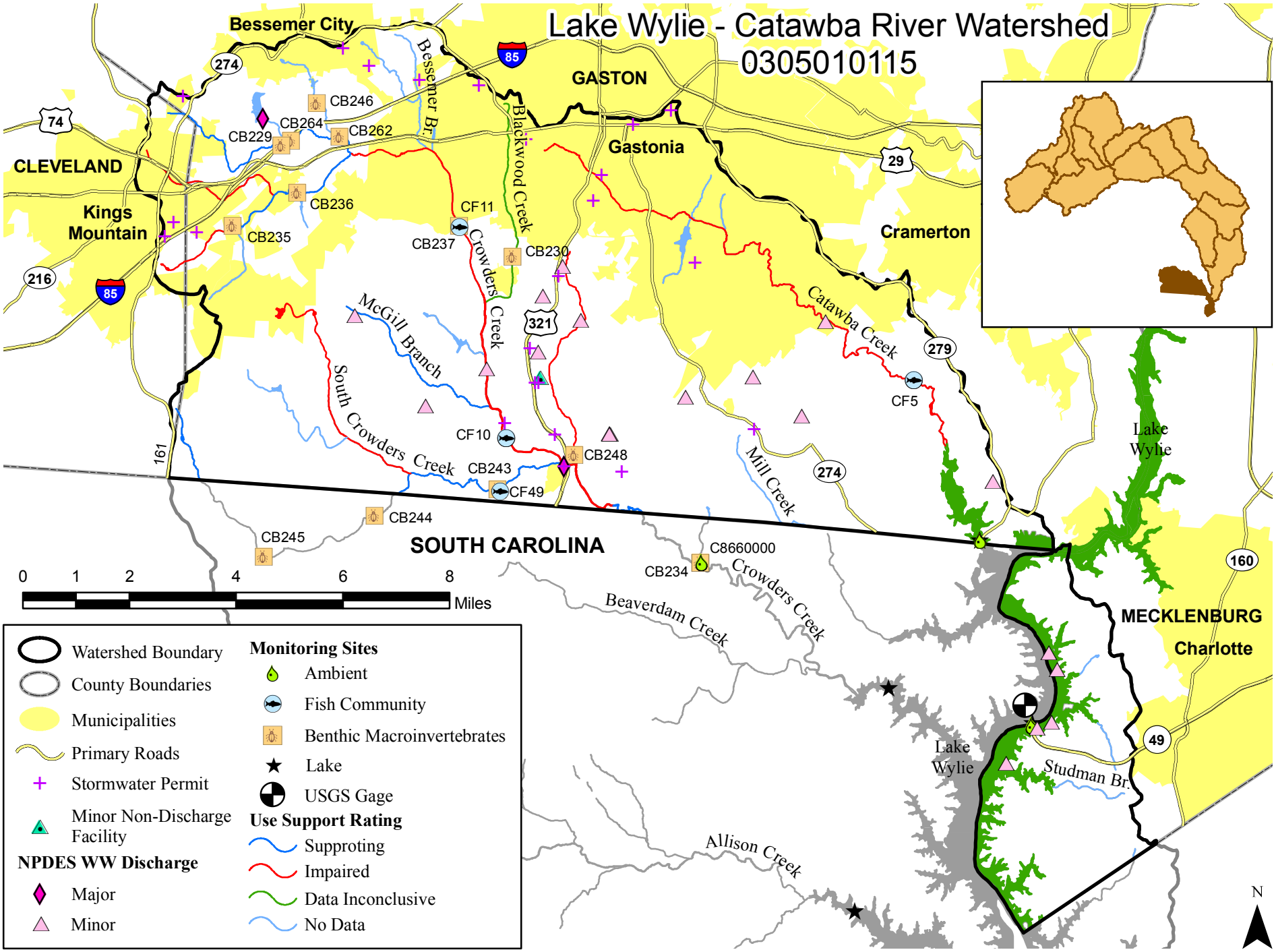

Lookout Shoals Lake - Catawba River Watershed
0305010110
WILKES
CALDWELL
ALEXANDER
CATAWBA
IREDELL
Taylorsville
Lookout Shoals Lake
Davis Creek
Lower Little R.
Robinette Creek
Poplar Creek
Lambert Fork
Grassy Creek
Muddy Fork
Beaver Branch
Spring Creek
Stirewalt Creek
Glade Creek
Jumping Run
Lower Little River
Island Creek
Big Branch
Guys Branch
Elk Shoal Creek
Delinger Cr.
CB131
CB128
CB119
CF65
C2818000
CF34
CF44
CB127
CB120
CF64
CB113
CF15
18
16
64
127
90
40
Watershed Boundary
County Boundaries
Municipalities
Primary Roads
Stormwater Permits
Cattle Operation Permit
NPDES WW Discharge
Major
Minor
Monitoring Sites
Ambient
Fish Community
Benthic Macroinvertebrates
USGS Gage
Use Support Rating
Supporting
Impaired
No Data
0 1 2 4 6 8
Miles
N


Upper Lake Norman Watershed
0305010111
ALEXANDER
IREDELL
CATAWBA
Hickory
Hickory
Conover
Newton
Claremont
Catawba
Troutman
Mooresville
Lake Norman
Bakers Creek
Herman Br.
Lyle Cr.
Mahaffie Br.
Mull Creek
Long Cr.
McLin Creek
Hagan Fork
Balls Creek
Globe Creek
Buffalo Shoals Creek
Reeder Creek
Norwood Creek
Hicks Creek
Big Br.
Terrapin Creek
Mill Br.
Hobbs Cr.
Byers Creek
CF3
CB122
CF35
CB124
CB307
0 1 2 4 6 8
Miles
N
Watershed Boundary
County Boundaries
Municipalities
Primary Roads
Stormwater Permits
Cattle Operation Permit
NPDES WW Discharge
Major
Minor
Use Support Rating
Supporting
Impaired
No Data
Monitoring Sites
Fish Community
Benthic Macroinvertebrates
Lake
USGS Gage


Lower Lake Norman Watershed
0305010112
Watershed Boundary
County Boundaries
Municipalities
Primary Roads
Stormwater Permits
NPDES WW Discharge
Major
Minor
Non-Discharge Facility
Major
Minor
Monitoring Sites
Lake
USGS Gage
Use Support Rating
Supporting
No Data
Battle Run
North Fork Mountain Creek
South Fork Mountain Creek
Reed Creek
Mundy Cr.
Little Cr.
Reeds Creek
CATAWBA
IREDELL
LINCOLN
Maiden
Mooresville
Davidson
Cornelius
MECKLENBURG
Huntersville
Lake Norman
77
21
16
150
115
73
0 1 2 4 6 8
Miles
N


Dutchmans Creek Watershed
0305010113
CATAWBA
LINCOLN
Lincolnton
High Shoals
Stanley
Spencer Mountain
Mount Holly
MECKLENBURG
Link Creek
Sawmill Br.
Lippard Creek
Ore Bank Branch
Ballard Creek
Wilkinson Creek
Killian Creek
Forney Creek
Lick Run
CB137
Leepers Creek
Reed Creek
Hooper Br.
Wingate Creek
Snyder Creek
Anderson Creek
CF27
Dellinger Branch
CF25
CF63
CF62
Armstrong Br.
McClure Br.
CB134
Stanley Creek
Dutchmans Creek
South Stanley Creek
Taylors Creek
CB132
C3860000
16
150
73
27
273
0 1 2 4 6 8
Miles
Watershed Boundary
County Boundaries
Municipalities
Primary Roads
Minor Non-Discharge Facility
Cattle Operation Permit
Stormwater Permit
NPDES WW Discharge
Major
Minor
Monitoring Sites
Ambient
Fish Community
Benthic Macroinvertebrates
USGS Gage
Use Support Rating
Supproting
Impaired
Data Inconclusive
No Data
N


Mountain Island Lake - Catawba River Watershed
0305010114
Cornelius
LINCOLN
CABARRUS
Huntersville
GASTON
Mount Holly
Belmont
MECKLENBURG
Charlotte
Johnson Cr.
McDowell Creek
Torrence Creek
Gar Cr.
McIntyre Creek
Gutter Branch
Long Creek
Gum Branch
Fites Creek
Paw Creek
Stowe Br.
CF40
CB139
CB133
CF30
C4040000
C3900000
16
73
115
21
24
27
273
77
85
74
485
279
160
Watershed Boundary
County Boundaries
Municipalities
Primary Roads
Stormwater Permit
NPDES WW Discharge
Major
Minor
Non-Discharge Facility
Major
Minor
Monitoring Sites
Ambient
Fish Community
Benthic Macroinvertebrates
Lake
USGS Gage
Use Support Rating
Supproting
Impaired
Data Inconclusive
No Data
N
0 1 2 4 6 8
Miles


Lake Wylie - Catawba River Watershed
0305010115
Bessemer City
GASTON
Gastonia
CLEVELAND
Kings Mountain
Cramerton
SOUTH CAROLINA
MECKLENBURG
Charlotte
Lake Wylie
Bessemer Br.
Blackwood Creek
Crowders Creek
McGill Branch
South Crowders Creek
Catawba Creek
Mill Creek
Beaverdam Creek
Allison Creek
Studman Br.
CB246
CB264
CB229
CB262
CB236
CB235
CF11
CB237
CB230
CF10
CB243
CF49
CB248
CF5
CB244
CB245
C8660000
CB234
274
74
85
29
216
321
279
161
160
49
0 1 2 4 6 8
Miles
Watershed Boundary
County Boundaries
Municipalities
Primary Roads
Stormwater Permit
Minor Non-Discharge Facility
NPDES WW Discharge
Major
Minor
Monitoring Sites
Ambient
Fish Community
Benthic Macroinvertebrates
Lake
USGS Gage
Use Support Rating
Supproting
Impaired
Data Inconclusive
No Data
N

Appendix 1-E

Permits

Table 1E-1: Wastewater Discharge Permits in the Catawba River Headwaters Watershed

Permit #	Owner Name	Facility Name	Owner Type	Permit Type	Class	County	Region	Permit Flow (Gal. / Day)
NC0004243	Coats American Inc	Sevier Plant	Non-Government	Industrial Process & Commercial Wastewater	Major	McDowell	Asheville	200,0000
NC0004260	SKF USA Inc	SKF Gastonia Facility	Non-Government	Industrial Process & Commercial Wastewater	Minor	Gaston	Mooresville	14,400
NC0004375	Clariant Corporation	Mount Holly East (MHE) Facility	Non-Government	Industrial Process & Commercial Wastewater	Major	Mecklenburg	Mooresville	3,900,000
NC0004723	Kinder Morgan Southeast Terminals	Charlotte Terminal 3	Non-Government	Industrial Process & Commercial Wastewater	Minor	Mecklenburg	Mooresville	Not Limited
NC0004839	Kinder Morgan Southeast Terminals	Charlotte Terminal 2	Non-Government	Industrial Process & Commercial Wastewater	Minor	Mecklenburg	Mooresville	57,000
NC0004961	Duke Energy Carolinas LLC	Riverbend Steam Station	Non-Government	Industrial Process & Commercial Wastewater	Major	Gaston	Mooresville	Not Limited
NC0004987	Duke Energy Carolinas LLC	Marshall Steam Station	Non-Government	Industrial Process & Commercial Wastewater	Major	Catawba	Mooresville	Not Limited
NC0005177	FMC Corporation	Lithium Division Plant	Non-Government	Industrial Process & Commercial Wastewater	Major	Gaston	Mooresville	615,000
NC0005185	Magellan Terminals Holdings L P	Charlotte II Terminal	Non-Government	Industrial Process & Commercial Wastewater	Minor	Mecklenburg	Mooresville	259,000
NC0005258	Sgl Carbon LLC	SGL Carbon Corporation	Non-Government	Industrial Process & Commercial Wastewater	Minor	Burke	Asheville	Not Limited
NC0005771	Transmontaigne Operating Company L	Charlotte/Paw Creek Terminal #1	Non-Government	Industrial Process & Commercial Wastewater	Minor	Mecklenburg	Mooresville	Not Limited
NC0020401*	City of Hickory	Northeast WWTP	Government - Municipal	Municipal Wastewater Discharge, Large	Major	Catawba	Mooresville	6,000,000
NC0021156*	City of Mount Holly	Mount Holly WWTP	Government - Municipal	Municipal Wastewater Discharge, Large	Major	Gaston	Mooresville	4,000,000
NC0021181*	City of Belmont	Belmont WWTP	Government - Municipal	Municipal Wastewater Discharge, Large	Major	Gaston	Mooresville	5,000,000
NC0021229*	Town of Old Fort	Old Fort WWTP	Government - Municipal	Municipal Wastewater Discharge, Large	Major	McDowell	Asheville	1,200,000
NC0021890	Town of Granite Falls	Granite Falls WWTP	Government - Municipal	Municipal Wastewater Discharge, < 1MGD	Minor	Caldwell	Asheville	900,000
NC0021962	CITGO Petroleum Corporation	Charlotte Terminal	Non-Government	Industrial Process & Commercial Wastewater	Minor	Mecklenburg	Mooresville	Not Limited

* The asterisk indicates the NPDES permits with Pretreatment Programs. See the Point Source Contributors – Pretreatment section of the Subbasin Chapters for more details on Pretreatment Programs.

Table 1E-1: Wastewater Discharge Permits in the Catawba River Headwaters Watershed

Permit #	Owner Name	Facility Name	Owner Type	Permit Type	Class	County	Region	Permit Flow (Gal. / Day)
NC0021971	BP Products North America Inc	Charlotte BP Terminal/Paw Creek	Non-Government	Industrial Process & Commercial Wastewater	Minor	Mecklenburg	Mooresville	Not Limited
NC0022187	Motiva Enterprises LLC	Paw Creek Terminal	Non-Government	Industrial Process & Commercial Wastewater	Minor	Mecklenburg	Mooresville	Not Limited
NC0022497	Cross Country Campground	Cross Country Campground	Non-Government	Discharging 100% Domestic < 1MGD	Minor	Catawba	Mooresville	65,000
NC0022756	Linville Land Harbor Prop Owners A	Linville Land Harbor WWTP	Non-Government	Discharging 100% Domestic < 1MGD	Minor	Avery	Asheville	225,000
NC0023124	GGCC Utility Inc	GGCC Utility WWTP	Non-Government	Discharging 100% Domestic < 1MGD	Minor	Avery	Asheville	70,000
NC0023540	Belmont Textile Machinery Company	Belmont Textile Machinery WWTP	Non-Government	Discharging 100% Domestic < 1MGD	Minor	Gaston	Mooresville	5,000
NC0023736*	City of Lenoir	Gunpowder Creek WWTP	Government - Municipal	Municipal Wastewater Discharge, Large	Major	Caldwell	Asheville	2,000,000
NC0023981*	City of Lenoir	Lower Creek WWTP	Government - Municipal	Municipal Wastewater Discharge, Large	Major	Caldwell	Asheville	6,000,000
NC0024252*	City of Conover	Northeast WWTP	Government - Municipal	Municipal Wastewater Discharge, Large	Major	Catawba	Mooresville	1,500,000
NC0024279	City of Conover	Southeast WWTP	Government - Municipal	Municipal Wastewater Discharge, < 1MGD	Minor	Catawba	Mooresville	300,000
NC0024392	Duke Energy Carolinas LLC	McGuire Nuclear Power Plant	Non-Government	Industrial Process & Commercial Wastewater	Major	Mecklenburg	Mooresville	Not Limited
NC0025135	Huffman Finishing Inc	Huffman Finishing	Non-Government	Industrial Process & Commercial Wastewater	Major	Caldwell	Asheville	250,000
NC0025542*	City of Hickory	Catawba WWTP	Government - Municipal	Municipal Wastewater Discharge, < 1MGD	Minor	Catawba	Mooresville	225,000
NC0025917	Town of Rhodhiss	Rhodhiss WWTP	Government - Municipal	Municipal Wastewater Discharge, < 1MGD	Minor	Burke	Asheville	96,000
NC0026271	Town of Taylorsville	Taylorsville WWTP	Government - Municipal	Municipal Wastewater Discharge, < 1MGD	Minor	Alexander	Mooresville	830,000
NC0026573*	City of Morganton	Catawba River Pollution Control Faci	Government - Municipal	Municipal Wastewater Discharge, Large	Major	Burke	Asheville	13,000,000
NC0026654	Town of Crossnore	Crossnore WWTP	Government - Municipal	Municipal Wastewater Discharge, < 1MGD	Minor	Avery	Asheville	70,000

* The asterisk indicates the NPDES permits with Pretreatment Programs. See the Point Source Contributors – Pretreatment section of the Subbasin Chapters for more details on Pretreatment Programs.

Table 1E-1: Wastewater Discharge Permits in the Catawba River Headwaters Watershed

Permit #	Owner Name	Facility Name	Owner Type	Permit Type	Class	County	Region	Permit Flow (Gal. / Day)
NC0028711	Mecklenburg County Schools	Berryhill Elementary School WWTP	Government - County	Discharging 100% Domestic < 1MGD	Minor	Mecklenburg	Mooresville	6,000
NC0029831	Carolina Energies Inc	Sugar Hill Truck Stop	Non-Government	Discharging 100% Domestic < 1MGD	Minor	McDowell	Asheville	5,000
NC0030783	Caldwell County Schools	Baton Elementary School	Government - County	Discharging 100% Domestic < 1MGD	Minor	Caldwell	Asheville	15,000
NC0030996	The Switzerland Inn	The Switzerland Inn	Non-Government	Discharging 100% Domestic < 1MGD	Minor	McDowell	Asheville	10,000
NC0031038	Colonial Pipeline Company	Paw Creek Terminal	Non-Government	Industrial Process & Commercial Wastewater	Minor	Mecklenburg	Mooresville	Not Limited
NC0031879	City of Marion	Corpening Creek WWTP	Government - Municipal	Municipal Wastewater Discharge, Large	Major	McDowell	Asheville	3,000,000
NC0032662	City of Claremont	North WWTP	Government - Municipal	Municipal Wastewater Discharge, < 1MGD	Minor	Catawba	Mooresville	100,000
NC0032891	Kinder Morgan Southeast Terminals	Charlotte Terminal 1	Non-Government	Industrial Process & Commercial Wastewater	Minor	Mecklenburg	Mooresville	Not Limited
NC0034754	Commscope Inc	Commscope WWTP	Non-Government	Industrial Process & Commercial Wastewater	Minor	Catawba	Mooresville	20,000
NC0034860	Schneider Mills Inc	Schneider Mills WWTP	Non-Government	Industrial Process & Commercial Wastewater	Major	Alexander	Mooresville	780,000
NC0034967	Carolina Glove Company	Carolina Glove Company	Non-Government	Discharging 100% Domestic < 1MGD	Minor	Alexander	Mooresville	15,000
NC0035157	McDowell County Adult Care LLC	Cedarbrook Residential Center	Non-Government	Discharging 100% Domestic < 1MGD	Minor	McDowell	Asheville	3,000
NC0035211	Shuford Yarns LLC	Shuford Yarns, LLC-Dudley Shoals Pla	Non-Government	Discharging 100% Domestic < 1MGD	Minor	Caldwell	Asheville	5,400
NC0036277	Charlotte-Mecklenburg Utilities	McDowell Creek WWTP	Government - Municipal	Municipal Wastewater Discharge, Large	Major	Mecklenburg	Mooresville	12,000,000
NC0039446	Linville Resorts Inc	Linville Resorts WWTP	Non-Government	Discharging 100% Domestic < 1MGD	Minor	Avery	Asheville	150,000
NC0040291	Mansukh Patel	Days Inn - Marion	Individual	Discharging 100% Domestic < 1MGD	Minor	McDowell	Asheville	20,000
NC0040339	NC DENR/Division of Forest Resourc	B.H. Corpening Forestry Training Cen	Government - State	Discharging 100% Domestic < 1MGD	Minor	Avery	Asheville	18,000

* The asterisk indicates the NPDES permits with Pretreatment Programs. See the Point Source Contributors – Pretreatment section of the Subbasin Chapters for more details on Pretreatment Programs.

Table 1E-1: Wastewater Discharge Permits in the Catawba River Headwaters Watershed

Permit #	Owner Name	Facility Name	Owner Type	Permit Type	Class	County	Region	Permit Flow (Gal. / Day)
NC0040754	NC Outward Bound School	NC Outward Bound School	Non-Government	Discharging 100% Domestic < 1MGD	Minor	Burke	Asheville	7,500
NC0041157	Caldwell County Schools	Gateway Alternate School	Government - County	Discharging 100% Domestic < 1MGD	Minor	Caldwell	Asheville	4,000
NC0041220	Caldwell County Schools	Oak Hill Elementary School	Government - County	Discharging 100% Domestic < 1MGD	Minor	Caldwell	Asheville	3,000
NC0041696*	Town of Valdese	Lake Rhodiss WWTP	Government - Municipal	Municipal Wastewater Discharge, Large	Major	Burke	Asheville	10,500,000
NC0043231	Cedar Rock Country Club	Cedar Rock Country Club	Non-Government	Discharging 100% Domestic < 1MGD	Minor	Caldwell	Asheville	9,000
NC0044059	Catawba County Schools	Bunker Hill High School	Government - County	Discharging 100% Domestic < 1MGD	Minor	Catawba	Mooresville	15,000
NC0044121*	City of Hickory	Hickory WTP	Government - Municipal	Water Plants and Water Conditioning Discharge	Minor	Catawba	Mooresville	Not Limited
NC0044164	City of Lenoir	Lake Rhodhiss WTP	Government - Municipal	Water Plants and Water Conditioning Discharge	Minor	Caldwell	Asheville	Not Limited
NC0044253	North Carolina Lions Foundation In	NC Lions/ Camp Dogwood	Non-Government	Discharging 100% Domestic < 1MGD	Minor	Catawba	Mooresville	10,000
NC0045438	Catawba County Schools	Sherrills Ford Elementary School	Government - County	Discharging 100% Domestic < 1MGD	Minor	Catawba	Mooresville	7,000
NC0046213	Marathon Petroleum Company LLC	Charlotte Terminal	Non-Government	Industrial Process & Commercial Wastewater	Minor	Mecklenburg	Mooresville	Not Limited
NC0046531	Refuel America Inc	Refuel Terminal Operations - Charlot	Non-Government	Industrial Process & Commercial Wastewater	Minor	Mecklenburg	Mooresville	43,200
NC0046892	Motiva Enterprises LLC	Charlotte South Terminal	Non-Government	Industrial Process & Commercial Wastewater	Minor	Mecklenburg	Mooresville	Not Limited
NC0050075	Caldwell County Schools	Collettsville Elementary School	Government - County	Discharging 100% Domestic < 1MGD	Minor	Caldwell	Asheville	10,000
NC0051608	Catawba County Schools	Bandys High School	Government - County	Discharging 100% Domestic < 1MGD	Minor	Catawba	Mooresville	15,000
NC0055221	City of Marion	Marion WTP	Government - Municipal	Water Plants and Water Conditioning Discharge	Minor	McDowell	Asheville	Not Limited
NC0056154	Aqua North Carolina Inc	Bridgeport WWTP	Non-Government	Discharging 100% Domestic < 1MGD	Minor	Iredell	Mooresville	100,000

* The asterisk indicates the NPDES permits with Pretreatment Programs. See the Point Source Contributors – Pretreatment section of the Subbasin Chapters for more details on Pretreatment Programs.

Table 1E-1: Wastewater Discharge Permits in the Catawba River Headwaters Watershed

Permit #	Owner Name	Facility Name	Owner Type	Permit Type	Class	County	Region	Permit Flow (Gal. / Day)
NC0057401	Go Go Properties LLC	The Hideaways WWTP	Non-Government	Discharging 100% Domestic < 1MGD	Minor	Mecklenburg	Mooresville	200,000
NC0058084	Gough Econ Inc	Gough Econ WWTP	Non-Government	Discharging 100% Domestic < 1MGD	Minor	Mecklenburg	Mooresville	1,200
NC0058742	Heater Utilities Inc	Country Valley WWTP	Non-Government	Discharging 100% Domestic < 1MGD	Minor	Catawba	Mooresville	100,000
NC0059579	Carolina Water Service Inc Of NC	Emerald Point WWTP	Non-Government	Discharging 100% Domestic < 1MGD	Minor	Mecklenburg	Mooresville	60,000
NC0060194	City of Morganton	Catawba River WTP	Government - Municipal	Water Plants and Water Conditioning Discha	Minor	Burke	Asheville	Not Limited
NC0060224	High Country Home Care Inc	Jonas Ridge Adult Care Facility	Non-Government	Discharging 100% Domestic < 1MGD	Minor	Burke	Asheville	7,500
NC0060593	Heater Utilities Inc	Spinnaker Bay WWTP	Non-Government	Discharging 100% Domestic < 1MGD	Minor	Catawba	Mooresville	12,500
NC0060755	Carolina Water Service Inc Of NC	Saddlewood WWTP	Non-Government	Discharging 100% Domestic < 1MGD	Minor	Gaston	Mooresville	9,000
NC0062278	Berkley Oaks LLC	Berkley Oaks WWTP	Non-Government	Discharging 100% Domestic < 1MGD	Minor	Gaston	Mooresville	36,000
NC0062383	Carolina Water Service Inc Of NC	Queens Harbor WWTP	Non-Government	Discharging 100% Domestic < 1MGD	Minor	Mecklenburg	Mooresville	100,000
NC0062413	Linville Ridge Country Club	Linville Ridge Country Club WWTP	Non-Government	Discharging 100% Domestic < 1MGD	Minor	Avery	Asheville	15,000
NC0062481	Heater Utilities Inc	Mallard Head WWTP	Non-Government	Discharging 100% Domestic < 1MGD	Minor	Iredell	Mooresville	20,000
NC0063355	Heater Utilities Inc	Killian Crossroads WWTP	Non-Government	Discharging 100% Domestic < 1MGD	Minor	Catawba	Mooresville	75,000
NC0063860	Heater Utilities Inc	Harbor Estates WWTP	Non-Government	Discharging 100% Domestic < 1MGD	Minor	Mecklenburg	Mooresville	75,000
NC0064599	Halina R Genaro	Lake Norman Motel WWTP	Individual	Discharging 100% Domestic < 1MGD	Minor	Catawba	Mooresville	7,500
NC0067148	McDowell County Schools	Nebo Elementary School WWTP	Government - County	Discharging 100% Domestic < 1MGD	Minor	McDowell	Asheville	7,500
NC0068705	Mariners Watch Homeowners Associat	Mariners Watch WWTP	Non-Government	Discharging 100% Domestic < 1MGD	Minor	Mecklenburg	Mooresville	2,500

* The asterisk indicates the NPDES permits with Pretreatment Programs. See the Point Source Contributors – Pretreatment section of the Subbasin Chapters for more details on Pretreatment Programs.

Table 1E-1: Wastewater Discharge Permits in the Catawba River Headwaters Watershed

Permit #	Owner Name	Facility Name	Owner Type	Permit Type	Class	County	Region	Permit Flow (Gal. / Day)
NC0069035	Heater Utilities Inc	Southgate WTP	Non-Government	Water Plants and Water Conditioning Discharge	Minor	Gaston	Mooresville	Not Limited
NC0069175	Ridge Community Sewer Association	Ridge Community WWTP	Non-Government	Discharging 100% Domestic < 1MGD	Minor	Gaston	Mooresville	10,000
NC0069345	Catawba County Historical Associat	Murray's Mill Historical Site	Non-Government	Discharging 100% Domestic < 1MGD	Minor	Catawba	Mooresville	12,500
NC0071200	City of Marion	Catawba River WWTP	Government - Municipal	Municipal Wastewater Discharge, < 1MGD	Minor	McDowell	Asheville	250,000
NC0071242	Carolina Water Service Inc Of NC	Riverpointe WWTP	Non-Government	Discharging 100% Domestic < 1MGD	Minor	Mecklenburg	Mooresville	100,000
NC0071528	Lake Norman Woods Homeowners Assoc	Lake Norman Woods WWTP	Non-Government	Discharging 100% Domestic < 1MGD	Minor	Catawba	Mooresville	25,000
NC0072061	Heater Utilities Inc	Fox Run WTP	Non-Government	Water Plants and Water Conditioning Discharge	Minor	Gaston	Mooresville	Not Limited
NC0072621	Fa Be Enterprises Inc	Fa-Be Enterprises	Non-Government	Discharging 100% Domestic < 1MGD	Minor	Lincoln	Mooresville	12,000
NC0074012	Lincoln County	Forney Creek WWTP	Government - County	Municipal Wastewater Discharge, < 1MGD	Minor	Lincoln	Mooresville	975,000
NC0074268*	City of Gastonia	Crowders Creek WWTP	Government - Municipal	Municipal Wastewater Discharge, Large	Major	Gaston	Mooresville	6,000,000
NC0074705	Magellan Terminals Holdings L P	Charlotte/Southern Facilities Termin	Non-Government	Industrial Process & Commercial Wastewater	Minor	Mecklenburg	Mooresville	Not Limited
NC0074772	Heater Utilities Inc	Diamond Head WWTP	Non-Government	Discharging 100% Domestic < 1MGD	Minor	Iredell	Mooresville	100,000
NC0074799	Pines Mobile Home Park	Pines Mobile Home Park	Non-Government	Discharging 100% Domestic < 1MGD	Minor	Gaston	Mooresville	11,000
NC0074900	Hydraulics Ltd	Highway 150 WWTP	Non-Government	Discharging 100% Domestic < 1MGD	Minor	Iredell	Mooresville	100,000
NC0075205	Aqua North Carolina Inc	Alexander Island WWTP	Non-Government	Discharging 100% Domestic < 1MGD	Minor	Iredell	Mooresville	15,000
NC0075353	McDowell Assisted Living LLC	McDowell Assisted Living WWTP	Non-Government	Discharging 100% Domestic < 1MGD	Minor	McDowell	Asheville	10,000
NC0077763	City of Belmont	Belmont WTP	Government - Municipal	Water Plants and Water Conditioning Discharge	Minor	Gaston	Mooresville	Not Limited

* The asterisk indicates the NPDES permits with Pretreatment Programs. See the Point Source Contributors – Pretreatment section of the Subbasin Chapters for more details on Pretreatment Programs.

Table 1E-1: Wastewater Discharge Permits in the Catawba River Headwaters Watershed

Permit #	Owner Name	Facility Name	Owner Type	Permit Type	Class	County	Region	Permit Flow (Gal. / Day)
NC0079481	Dennis J Whitson	Harmony Estates WWTP	Non-Government	Discharging 100% Domestic < 1MGD	Minor	McDowell	Asheville	40,000
NC0080098	Coastal Ventures Group II LLC	Blue Ridge Country Club WWTP	Non-Government	Discharging 100% Domestic < 1MGD	Minor	McDowell	Asheville	202,000
NC0080691	Heater Utilities Inc	Windemere WWTP	Non-Government	Discharging 100% Domestic < 1MGD	Minor	Iredell	Mooresville	90,000
NC0080781	Duke Energy Carolinas LLC	Lincoln Combustion Turbine Plant	Non-Government	Industrial Process & Commercial Wastewater	Minor	Lincoln	Mooresville	400,000
NC0081370	City of Claremont	McLin Creek WWTP	Government - Municipal	Municipal Wastewater Discharge, < 1MGD	Minor	Catawba	Mooresville	300,000
NC0082546	Town of Granite Falls	Granite Falls WTP	Government - Municipal	Water Plants and Water Conditioning Discharge	Minor	Caldwell	Asheville	Not Limited
NC0083887	City of Charlotte	Charlotte Douglas International Airp	Government - Municipal	Industrial Process & Commercial Wastewater	Minor	Mecklenburg	Mooresville	Not Limited
NC0084387	Charlotte Mecklenburg Utility Depa	Lee S. Dukes WTP	Government - Municipal	Water Plants and Water Conditioning Discharge	Minor	Mecklenburg	Mooresville	Not Limited
NC0084468	Heater Utilities Inc	Keltic Meadows WTP #2	Non-Government	Water Plants and Water Conditioning Discharge	Minor	Gaston	Mooresville	Not Limited
NC0084549	Charlotte Mecklenburg Utility Depa	Franklin WTP	Government - Municipal	Water Plants and Water Conditioning Discharge	Minor	Mecklenburg	Mooresville	Not Limited
NC0084565	Carolina Water Service Inc Of NC	The Harbour - Wells 1 & 2 WTP	Non-Government	Water Plants and Water Conditioning Discharge	Minor	Iredell	Mooresville	Not Limited
NC0084573	Lincoln County	Lincoln County WTP	Government - County	Water Plants and Water Conditioning Discharge	Minor	Lincoln	Mooresville	Not Limited
NC0084689	City of Mount Holly	Mount Holly WTP	Government - Municipal	Water Plants and Water Conditioning Discharge	Minor	Gaston	Mooresville	100,000
NC0086142	Heater Utilities Inc	Oakley Park WTP	Non-Government	Water Plants and Water Conditioning Discharge	Minor	Gaston	Mooresville	1,000
NC0086193	Heater Utilities Inc	Maplecrest WTP	Non-Government	Water Plants and Water Conditioning Discharge	Minor	Gaston	Mooresville	Not Limited
NC0086304	Catawba County Schools	Mill Creek Middle School	Government - County	Discharging 100% Domestic < 1MGD	Minor	Catawba	Mooresville	6,500
NC0086428	Sugar Hill Enterprises Inc	Marion Travel Plaza WWTP	Non-Government	Discharging 100% Domestic < 1MGD	Minor	McDowell	Asheville	10,000

* The asterisk indicates the NPDES permits with Pretreatment Programs. See the Point Source Contributors – Pretreatment section of the Subbasin Chapters for more details on Pretreatment Programs.

Table 1E-1: Wastewater Discharge Permits in the Catawba River Headwaters Watershed

Permit #	Owner Name	Facility Name	Owner Type	Permit Type	Class	County	Region	Permit Flow (Gal. / Day)
NC0086592	Carolina Water Service Inc Of NC	The Point / Well 1 WTP	Non-Government	Water Plants and Water Conditioning Discharge	Minor	Iredell	Mooresville	Not Limited
NC0086606	Carolina Water Service Inc Of NC	The Harbour - Well #4 WTP	Non-Government	Water Plants and Water Conditioning Discharge	Minor	Iredell	Mooresville	Not Limited
NC0088684	Daniel Jonathan Stowe Conservancy	Daniel Stowe Botanical Garden	Non-Government	Water Plants and Water Conditioning Discharge	Minor	Gaston	Mooresville	3,800
NC0088722	Lincoln County	Killian Creek WWTP	Government - County	Municipal Wastewater Discharge, Large	Major	Lincoln	Mooresville	3,350,000

* The asterisk indicates the NPDES permits with Pretreatment Programs. See the Point Source Contributors – Pretreatment section of the Subbasin Chapters for more details on Pretreatment Programs.

Table 1E-2: Non-discharge Permits in the Catawba River Headwaters Watershed

Permit #	Owner Name	Facility Name	Owner Type	Permit Type	Class	County	Region
WQ0001512	Baxter Healthcare Corporation	North Cove Steam Generation Plant	Non-Government	Wastewater Recycling	Minor	McDowell	Asheville
WQ0001618	Town of Granite Falls	Town of Granite Falls Residuals Land Application Program	Government - Municipal	Land Application of Residual Solids (503)	Minor	Caldwell	Asheville
WQ0001990	Town of Valdese	Town of Valdese Distribution of Composted Residuals Program	Government - Municipal	Distribution of Residual Solids (503)	Minor	Burke	Asheville
WQ0002127	City of Morganton	City of Morganton Morganite Composting Facility and Distribution Program	Government - Municipal	Distribution of Residual Solids (503)	Major	Burke	Asheville
WQ0002431	Huffman Finishing Inc	Huffman Finishing Co-WWTP/A S	Non-Government	Land Application of Residual Solids (503)	Minor	Caldwell	Asheville
WQ0002544	Clariant Corporation	Mount Holly West (MHW) Facility	Non-Government	Land Application of Residual Solids (503)	Minor	Gaston	Mooresville
WQ0003281	City of Belmont	City of Belmont Residuals Land Application Program	Government - Municipal	Land Application of Residual Solids (503)	Major	Gaston	Mooresville
WQ0003698	City of Marion	Corpening Creek WWTP	Government - Municipal	Surface Disposal of Residual Solids (503)	Minor	McDowell	Asheville
WQ0004270	AB Carter Inc	AB Carter Incorporated-A B Carter	Non-Government	Surface Irrigation	Minor	Gaston	Mooresville
WQ0004381	City of Conover	City of Conover Residuals Land Application Program	Government - Municipal	Land Application of Residual Solids (503)	Minor	Catawba	Mooresville
WQ0004624	Explosives Supply Co	Explosives Supply Co-Woodlawn	Non-Government	Wastewater Recycling	Minor	McDowell	Asheville
WQ0004751	Colonial Pipeline Company	Colonial Pipeline Co-Char Del	Non-Government	Surface Irrigation	Minor	Mecklenburg	Mooresville
WQ0005603	Coats American Inc	Coats American-Sevier Plant	Non-Government	Wastewater Recycling	Minor	McDowell	Asheville
WQ0006060	Gerdau Ameristeel Corporation	Gerdau Ameristeel US, Inc., Charlotte Steel Mill	Non-Government	Wastewater Recycling	Minor	Mecklenburg	Mooresville
WQ0009368	ITL Corp.	Industrial Timber and Land Company Marion Kiln Drying Facility	Non-Government	Wastewater Recycling	Minor	McDowell	Asheville
WQ0010059	City of Lenoir	City of Lenoir Lenoir Blends Processing Facility and Distribution Program	Government - Municipal	Distribution of Residual Solids (503)	Major	Caldwell	Asheville
WQ0010197	American & Efird Inc	American & Efird Incorporated-WWTP	Non-Government	Wastewater Recycling	Minor	Gaston	Mooresville
WQ0010689	Baxter Healthcare Corporation	North Cove Steam Generation Plant Ash Distribution Program	Non-Government	Distribution of Residual Solids (503 exempt)	Major	McDowell	Asheville
WQ0011260	Town of Old Fort	Old Fort Town-A Sludge/Resid	Government - Municipal	Distribution of Residual Solids (503)	Major	McDowell	Asheville
WQ0012073	Coastal Ventures Group II LLC	Linville Falls Club	Non-Government	Reuse	Major	McDowell	Asheville

Table 1E-2: Non-discharge Permits in the Catawba River Headwaters Watershed

Permit #	Owner Name	Facility Name	Owner Type	Permit Type	Class	County	Region
WQ0015931	The Point Lake and Golf Club Inc	The Village at the Point	Non-Government	Reuse	Major	Iredell	Mooresville
WQ0016686	Metal Industries Inc	Metal Industries Incorporated	Non-Government	Wastewater Recycling	Minor	McDowell	Asheville
WQ0016922	Lincoln County	Lincoln County Residuals Land Application Program	Government - County	Land Application of Residual Solids (503)	Minor	Lincoln	Mooresville
WQ0019504	City of Belmont	Belmont City-A Sludge/Dors	Government - Municipal	Distribution of Residual Solids (503 exempt)	Minor	Gaston	Mooresville
WQ0019911	CITGO Petroleum Corporation	Charlotte Terminal	Non-Government	Surface Irrigation	Minor	Mecklenburg	Mooresville
WQ0019960	City of Marion	City of Marion Residuals Land Application Program	Government - Municipal	Land Application of Residual Solids (503)	Minor	McDowell	Asheville
WQ0020881	NC DENR Division of Parks and Recreation	Lake Norman State Park Swim Beach	Government - State	Surface Irrigation	Major	Iredell	Mooresville
WQ0021734	Charlotte Mecklenburg Utility Department	Franklin WTP	Government - Municipal	Reuse	Minor	Mecklenburg	Mooresville
WQ0023511	Iredell-Statesville Schools	Woodland Heights Elementary School	Government - County	Surface Irrigation	Major	Iredell	Mooresville
WQ0023580	Cove Key Association Inc	Cove Key Townhomes on Lake Norman	Non-Government	Reuse	Minor	Iredell	Mooresville
WQ0023680	Cove Key Association Inc	Cove Key Townhomes on Lake Norman	Non-Government	Gravity Sewer Extension, Pump Stations, & Pressure Sewer Extensions	Minor	Iredell	Mooresville
WQ0029447	Marcus M Goodson	Marcus Goodson SFR	Individual	Surface Irrigation - SFR (Single Family Residence)	Minor	Gaston	Mooresville
WQ0030106	Camp Lake James LLC	Camp Lake James	Non-Government	Gravity Sewer Extension, Pump Stations, & Pressure Sewer Extensions	Minor	Burke	Asheville
WQ0030259	Shannon M Wright	Shannon Wright & Michael Elmore SFR	Individual	Surface Irrigation - SFR (Single Family Residence)	Minor	Cabarrus	Mooresville
WQ0031131	Larry Kreider	Larry and Carol Kreider SFR	Individual	Surface Irrigation - SFR (Single Family Residence)	Minor	McDowell	Asheville
WQ0031133	James E Roberts	James Ernest Roberts SFR	Individual	Surface Irrigation - SFR (Single Family Residence)	Minor	McDowell	Asheville
WQ0033677	Case Farms LLC	Morgan Hatchery	Non-Government	Surface Irrigation	Minor	Burke	Asheville
WQCSD0117	Duke Energy Carolinas LLC	Marshall Steam Station	Non-Government	Deemed permitted collection system management and operation	Minor	Catawba	Mooresville

Table 1E-2: Non-discharge Permits in the Catawba River Headwaters Watershed

Permit #	Owner Name	Facility Name	Owner Type	Permit Type	Class	County	Region
WQCSD0356	Carolina Energies Inc	Sugar Hill Truck Stop	Non-Government	Deemed permitted collection system management and operation	Minor	McDowell	Asheville
WQCSD0357	Larry G Scott	Scotty's Mobile Village	Non-Government	Deemed permitted collection system management and operation	Minor	McDowell	Asheville
WQCSD0358	McDowell Assisted Living LLC	McDowell Assisted Living WWTP	Non-Government	Deemed permitted collection system management and operation	Minor	McDowell	Asheville
WQCSD0359	Coastal Ventures Group II LLC	Blue Ridge Country Club WWTP	Non-Government	Deemed permitted collection system management and operation	Minor	McDowell	Asheville
WQCSD0360	McDowell County Adult Care LLC	Cedarbrook Residential Center	Non-Government	Deemed permitted collection system management and operation	Minor	McDowell	Asheville
WQCSD0396	Carolina Water Service Inc Of NC	Emerald Point WWTP	Non-Government	Deemed permitted collection system management and operation	Minor	Mecklenburg	Mooresville
WQCSD0398	Carolina Water Service Inc Of NC	Riverpointe WWTP	Non-Government	Deemed permitted collection system management and operation	Minor	Mecklenburg	Mooresville

Table 1E-3: NPDES Stormwater Permits in the Catawba River Headwaters Watershed

Permit #	Owner Name	Facility Name	Owner Type	Permit Type	Class	County	Region
NCG020026	Vulcan Construction Materials LP	Vulcan Construction Materials - Lenoir Quarry	Non-Government	Mining Activities Stormwater Discharge COC	Minor	Caldwell	Asheville
NCG020039	Martin Marietta Materials Inc	Caldwell Quarry	Non-Government	Mining Activities Stormwater Discharge COC	Minor	Caldwell	Asheville
NCG020097	B V Hedrick Gravel & Sand Company	B V Hedrick-Lowesville Quarry	Non-Government	Mining Activities Stormwater Discharge COC	Minor	Lincoln	Mooresville
NCG020169	Martin Marietta Materials Inc	Martin Marietta-Denver Quarry	Non-Government	Mining Activities Stormwater Discharge COC	Minor	Lincoln	Mooresville
NCG020177	Vulcan Construction Materials LP	Vulcan Construction Materials-Morganton	Non-Government	Mining Activities Stormwater Discharge COC	Minor	Burke	Asheville
NCG020231	Bv Hedrick Gravel & Sand Co	Hedrick Industries-Greenlee P	Unknown	Mining Activities Stormwater Discharge COC	Minor	McDowell	Asheville
NCG020236	Appalachian Stone Co Inc	Applachian Stone Co.-Edge Mine	Non-Government	Mining Activities Stormwater Discharge COC	Minor	McDowell	Asheville
NCG020267	Statesville Brick Co	Statesville Brick Co-Iredell2	Non-Government	Mining Activities Stormwater Discharge COC	Minor	Iredell	Mooresville
NCG020275	Johnson Paving Co Inc	Johnson Paving Co Incorporated	Non-Government	Mining Activities Stormwater Discharge COC	Minor	McDowell	Asheville
NCG020309	Johnson Paving Co Inc	Johnson Paving Co Incorporated 1	Non-Government	Mining Activities Stormwater Discharge COC	Minor	McDowell	Asheville
NCG020333	B V Hedrick Gravel & Sand Company	B V Hedrick-Gravel & Sand	Non-Government	Mining Activities Stormwater Discharge COC	Minor	McDowell	Asheville
NCG020467	Cumberland Gravel & Sand Co	Cumberland Gravel & Sand Co	Non-Government	Mining Activities Stormwater Discharge COC	Minor	McDowell	Asheville
NCG020506	JEJ Borrow Pit	JEJ Borrow Pit	Non-Government	Mining Activities Stormwater Discharge COC	Minor	Gaston	Mooresville
NCG020761	Statesville Brick Co	Statesville Brick Co-Iredell	Non-Government	Mining Activities Stormwater Discharge COC	Minor	Iredell	Mooresville
NCG030078	Commscope Inc	Commscope Incorporated	Non-Government	Metal Fabrication Stormwater Discharge COC	Minor	Catawba	Mooresville
NCG030085	Freightliner LLC	Mt Holly Truck Plant	Non-Government	Metal Fabrication Stormwater Discharge COC	Minor	Gaston	Mooresville
NCG030148	Neptco Inc	Neptco Incorporated	Non-Government	Metal Fabrication Stormwater Discharge COC	Minor	Caldwell	Asheville
NCG030179	Acme/Romac Inc	Acme/Romac Inc	Non-Government	Metal Fabrication Stormwater Discharge COC	Minor	Iredell	Mooresville
NCG030212	Claremont NA Cable Systems LLC	Claremont NA Cable Systems LLC	Non-Government	Metal Fabrication Stormwater Discharge COC	Minor	Catawba	Mooresville
NCG030259	Blum Inc	Blum Incorporated	Non-Government	Metal Fabrication Stormwater Discharge COC	Minor	Lincoln	Mooresville
NCG030285	AB Carter Inc	A B Carter Incorporated	Non-Government	Metal Fabrication Stormwater Discharge COC	Minor	Gaston	Mooresville
NCG030314	Huntington Alloys	Special Metals Welding Products Company	Non-Government	Metal Fabrication Stormwater Discharge COC	Minor	Catawba	Mooresville

Table 1E-3: NPDES Stormwater Permits in the Catawba River Headwaters Watershed

Permit #	Owner Name	Facility Name	Owner Type	Permit Type	Class	County	Region
NCG030325	Structural Steel of Carolina	Hickory Steel	Non-Government	Metal Fabrication Stormwater Discharge COC	Minor	Catawba	Mooresville
NCG030375	SteelFab Inc & C M Steel Inc	SteelFab Inc & C M Steel Inc	Non-Government	Metal Fabrication Stormwater Discharge COC	Minor	Mecklenburg	Mooresville
NCG030412	Wix Corporation	Wix Corporation- Allen Plant	Non-Government	Metal Fabrication Stormwater Discharge COC	Minor	Gaston	Mooresville
NCG030414	Wix Corporation	Wix Filtration Products Division -Dixon Plant	Non-Government	Metal Fabrication Stormwater Discharge COC	Minor	Gaston	Mooresville
NCG030422	Masonite Entry Door Corporation	Masonite Entry Doors	Non-Government	Metal Fabrication Stormwater Discharge COC	Minor	Mecklenburg	Mooresville
NCG030452	United Technologies Carrier	United Technologies Carrier	Non-Government	Metal Fabrication Stormwater Discharge COC	Minor	Mecklenburg	Mooresville
NCG030467	Wireway/Husky Corp	Wireway / Husky Corp	Non-Government	Metal Fabrication Stormwater Discharge COC	Minor	Lincoln	Mooresville
NCG030499	Crane Resistoflex	Crane Resistoflex	Non-Government	Metal Fabrication Stormwater Discharge COC	Minor	McDowell	Asheville
NCG050037	Shurtape Technologies, LLC	Shurtape Tech Incorporated-Hickory	Non-Government	Apparel/Printing/Paper/Leather/Rubber Stormwater Discharge COC	Minor	Catawba	Mooresville
NCG050048	Gd Satcom Technologies Inc	Prodelin Catawba Molding Facility	Non-Government	Apparel/Printing/Paper/Leather/Rubber Stormwater Discharge COC	Minor	Catawba	Mooresville
NCG050083	Buckeye Fire Equipment	Buckeye Fire Equipment	Non-Government	Apparel/Printing/Paper/Leather/Rubber Stormwater Discharge COC	Minor	Gaston	Mooresville
NCG050136	Sunterrace Casual Furniture	Sunterrace Casual Furniture	Non-Government	Apparel/Printing/Paper/Leather/Rubber Stormwater Discharge COC	Minor	Gaston	Mooresville
NCG050169	International Paper Company	International Paper-Charlotte Container Plant	Non-Government	Apparel/Printing/Paper/Leather/Rubber Stormwater Discharge COC	Minor	Mecklenburg	Mooresville
NCG050190	Hickory Springs Manufacturing Company	Hickory Springs-Conover Complex	Non-Government	Apparel/Printing/Paper/Leather/Rubber Stormwater Discharge COC	Minor	Catawba	Mooresville
NCG050194	Constar International	Constar International	Non-Government	Apparel/Printing/Paper/Leather/Rubber Stormwater Discharge COC	Minor	Mecklenburg	Mooresville
NCG050218	Foamex Innovations Inc	Foamex Innovations, Inc.	Non-Government	Apparel/Printing/Paper/Leather/Rubber Stormwater Discharge COC	Minor	Mecklenburg	Mooresville
NCG050220	Packaging Corp of America	Packaging Corporation Of America	Non-Government	Apparel/Printing/Paper/Leather/Rubber Stormwater Discharge COC	Minor	Burke	Asheville
NCG050225	Triad Packaging Inc	Triad Packaging Inc	Non-Government	Apparel/Printing/Paper/Leather/Rubber Stormwater Discharge COC	Minor	Catawba	Mooresville
NCG050240	Molded Fiber Glass Comp	Molded Fiber Glass Comp	Non-Government	Apparel/Printing/Paper/Leather/Rubber Stormwater Discharge COC	Minor	Burke	Asheville
NCG050251	Chambers Container Co	Chambers Container Co-Gaston	Non-Government	Apparel/Printing/Paper/Leather/Rubber Stormwater Discharge COC	Minor	Gaston	Mooresville

Table 1E-3: NPDES Stormwater Permits in the Catawba River Headwaters Watershed

Permit #	Owner Name	Facility Name	Owner Type	Permit Type	Class	County	Region
NCG050276	Shurtape Technologies, LLC	Shurtape Tech Incorporated-Hudson	Non-Government	Apparel/Printing/Paper/Leather/Rubber Stormwater Discharge COC	Minor	Caldwell	Asheville
NCG050324	Blachford RP Corporation	Blachford RP Corporation	Non-Government	Apparel/Printing/Paper/Leather/Rubber Stormwater Discharge COC	Minor	Cleveland	Mooresville
NCG060083	Arrochem Inc	Arrochem Incorporated	Non-Government	Food/Tobacco/Soaps/Cosmetics/Public Warehousing Stormwater Discharge COC	Minor	Gaston	Mooresville
NCG060173	Valley Proteins Inc	Carolina By-Products - Gastonia Division	Non-Government	Food/Tobacco/Soaps/Cosmetics/Public Warehousing Stormwater Discharge COC	Minor	Gaston	Mooresville
NCG060232	Earthgrains Baking Co Inc	Earthgrains Baking Co Incorporated	Non-Government	Food/Tobacco/Soaps/Cosmetics/Public Warehousing Stormwater Discharge COC	Minor	Burke	Asheville
NCG070004	Jason Inc - Jackson Lea	Jackson Lea	Non-Government	Stone, Clay, Glass, and Concrete Products Stormwater Discharge COC	Minor	Catawba	Mooresville
NCG070009	Cemex Construction Materials Atlantic LLC	Cemex-Hickory-Lyle Creek	Non-Government	Stone, Clay, Glass, and Concrete Products Stormwater Discharge COC	Minor	Catawba	Mooresville
NCG070033	Taylorsville Precast Molds Inc	Taylorsville Precast Molds Inc	Non-Government	Stone, Clay, Glass, and Concrete Products Stormwater Discharge COC	Minor	Alexander	Mooresville
NCG070038	Bethlehem Manufacturing Co Inc	Bethlehem Manufacturing Co Inc	Non-Government	Stone, Clay, Glass, and Concrete Products Stormwater Discharge COC	Minor	Alexander	Mooresville
NCG070085	Hairfield Wilbert Burial Vault	Hairfield Wilbert Burial Vault	Non-Government	Stone, Clay, Glass, and Concrete Products Stormwater Discharge COC	Minor	Burke	Asheville
NCG070112	Statesville Brick Co	Statesville Brick Co-Iredell	Non-Government	Stone, Clay, Glass, and Concrete Products Stormwater Discharge COC	Minor	Iredell	Mooresville
NCG070129	Cemex Construction Materials Atlantic LLC	Cemex-Marion-Forsyth Creek	Non-Government	Stone, Clay, Glass, and Concrete Products Stormwater Discharge COC	Minor	McDowell	Asheville
NCG070147	Dellinger Precast Inc	Dellinger Precast Inc.	Non-Government	Stone, Clay, Glass, and Concrete Products Stormwater Discharge COC	Minor	Lincoln	Mooresville
NCG070158	Precast Construction Products	Precast Construction Products	Non-Government	Stone, Clay, Glass, and Concrete Products Stormwater Discharge COC	Minor	Mecklenburg	Mooresville
NCG080052	Automotive Carrier Services	Automotive Carrier Services - Mt Holly	Non-Government	Transportation w/Vehicle Maintenance/Petroleum Bulk/Oil Water Separator Stormwater Discharge COC	Minor	Gaston	Mooresville
NCG080064	Fedex Ground	Fedex Ground	Non-Government	Transportation w/Vehicle Maintenance/Petroleum Bulk/Oil Water Separator Stormwater Discharge COC	Minor	Mecklenburg	Mooresville
NCG080087	Commscope Inc	Commscope Incorporated	Non-Government	Transportation w/Vehicle Maintenance/Petroleum Bulk/Oil Water Separator Stormwater Discharge COC	Minor	Catawba	Mooresville

Table 1E-3: NPDES Stormwater Permits in the Catawba River Headwaters Watershed

Permit #	Owner Name	Facility Name	Owner Type	Permit Type	Class	County	Region
NCG080175	Century Furn Ind	Century Furn Ind - Hildebran	Non-Government	Transportation w/Vehicle Maintenance/Petroleum Bulk/Oil Water Separator Stormwater Discharge COC	Minor	Burke	Asheville
NCG080210	Republic Services Of NC LLC	Garbage Disposal Service-Burke	Non-Government	Transportation w/Vehicle Maintenance/Petroleum Bulk/Oil Water Separator Stormwater Discharge COC	Minor	Burke	Asheville
NCG080211	Republic Services of NC LLC	Garbage Disposal Ser-Catawba	Non-Government	Transportation w/Vehicle Maintenance/Petroleum Bulk/Oil Water Separator Stormwater Discharge COC	Minor	Catawba	Mooresville
NCG080318	Wilson Trucking Corp	Wilson Trucking Corp-Conover	Non-Government	Transportation w/Vehicle Maintenance/Petroleum Bulk/Oil Water Separator Stormwater Discharge COC	Minor	Catawba	Mooresville
NCG080323	Wilson Trucking Corp	Wilson Trucking Corp-Charlotte	Non-Government	Transportation w/Vehicle Maintenance/Petroleum Bulk/Oil Water Separator Stormwater Discharge COC	Minor	Mecklenburg	Mooresville
NCG080354	Institution Food House Inc	Institution Food House Incorporated	Non-Government	Transportation w/Vehicle Maintenance/Petroleum Bulk/Oil Water Separator Stormwater Discharge COC	Minor	Catawba	Mooresville
NCG080426	Cargo Transporters Inc	Cargo Transporters, Inc.	Non-Government	Transportation w/Vehicle Maintenance/Petroleum Bulk/Oil Water Separator Stormwater Discharge COC	Minor	Catawba	Mooresville
NCG080428	A T Williams Oil Co	A T Williams Oil Co.-#351	Non-Government	Transportation w/Vehicle Maintenance/Petroleum Bulk/Oil Water Separator Stormwater Discharge COC	Minor	Catawba	Mooresville
NCG080448	Republic Services of NC LLC	Republic Services Of NC LLC	Non-Government	Transportation w/Vehicle Maintenance/Petroleum Bulk/Oil Water Separator Stormwater Discharge COC	Minor	Mecklenburg	Mooresville
NCG080501	N C National Guard	NC Nat Gd- Morganton	Government - State	Transportation w/Vehicle Maintenance/Petroleum Bulk/Oil Water Separator Stormwater Discharge COC	Minor	Burke	Asheville
NCG080534	N C National Guard	NC Nat Gd- Belmont	Government - State	Transportation w/Vehicle Maintenance/Petroleum Bulk/Oil Water Separator Stormwater Discharge COC	Minor	Gaston	Mooresville
NCG080551	N C National Guard	NC Nat Gd- Hickory/Oms # 3	Government - State	Transportation w/Vehicle Maintenance/Petroleum Bulk/Oil Water Separator Stormwater Discharge COC	Minor	Catawba	Mooresville
NCG080577	Yrc Inc	YRC, Inc.-Conover	Non-Government	Transportation w/Vehicle Maintenance/Petroleum Bulk/Oil Water Separator Stormwater Discharge COC	Minor	Catawba	Mooresville

Table 1E-3: NPDES Stormwater Permits in the Catawba River Headwaters Watershed

Permit #	Owner Name	Facility Name	Owner Type	Permit Type	Class	County	Region
NCG080584	Larry Campbell's Towing & Recovery Inc	Larry Campbell's Towing & Recovery, Inc	Non-Government	Transportation w/Vehicle Maintenance/Petroleum Bulk/Oil Water Separator Stormwater Discharge COC	Minor	Mecklenburg	Mooresville
NCG080599	Saia Motor Freight Line Inc	Saia Motor Freight Line Incorporated	Non-Government	Transportation w/Vehicle Maintenance/Petroleum Bulk/Oil Water Separator Stormwater Discharge COC	Minor	Mecklenburg	Mooresville
NCG080613	Sea Lane Express Inc	Sea Lane Express, Inc.	Non-Government	Transportation w/Vehicle Maintenance/Petroleum Bulk/Oil Water Separator Stormwater Discharge COC	Minor	Mecklenburg	Mooresville
NCG080624	Fedex Freight East Inc	Fedex Freight - Charlotte	Non-Government	Transportation w/Vehicle Maintenance/Petroleum Bulk/Oil Water Separator Stormwater Discharge COC	Minor	Mecklenburg	Mooresville
NCG080626	Southeastern Freight Line	Southeastern Freight Line-Claremont	Non-Government	Transportation w/Vehicle Maintenance/Petroleum Bulk/Oil Water Separator Stormwater Discharge COC	Minor	Catawba	Mooresville
NCG080689	Town of Mooresville	Mooresville Public Works	Government - Municipal	Transportation w/Vehicle Maintenance/Petroleum Bulk/Oil Water Separator Stormwater Discharge COC	Minor	Iredell	Mooresville
NCG080724	City of Morganton	Morganton City-Warehouse and Garage	Government - Municipal	Transportation w/Vehicle Maintenance/Petroleum Bulk/Oil Water Separator Stormwater Discharge COC	Minor	Burke	Asheville
NCG090013	BASF Corporation	BASF Morganton plant	Non-Government	Paints, Varnishes, Lacquers Stormwater Discharge COC	Minor	Burke	Asheville
NCG090019	Chemical Coatings Inc	Chemical Coatings Incorporated	Non-Government	Paints, Varnishes, Lacquers Stormwater Discharge COC	Minor	Caldwell	Asheville
NCG100036	Schronce Used Parts Inc	Schronce Used Parts Incorporated	Non-Government	Used Motor Vehicle Parts Stormwater Discharge COC	Minor	Catawba	Mooresville
NCG100042	Stagecoach Ltd	Stagecoach Ltd - Import Auto Sales	Non-Government	Used Motor Vehicle Parts Stormwater Discharge COC	Minor	McDowell	Asheville
NCG100069	Highway 10 Auto Parts Inc	Highway 10 Auto Parts Inc	Non-Government	Used Motor Vehicle Parts Stormwater Discharge COC	Minor	Catawba	Mooresville
NCG100071	J & T Auto Parts Inc	J & T Auto Parts Inc	Non-Government	Used Motor Vehicle Parts Stormwater Discharge COC	Minor	McDowell	Asheville
NCG100074	I 40 Auto Parts Inc	I 40 Auto Parts Incorporated	Non-Government	Used Motor Vehicle Parts Stormwater Discharge COC	Minor	Burke	Asheville
NCG110011	Charlotte-Mecklenburg Utilities	McDowell Creek WWTP	Government - Municipal	Municipal WWTP > 1MGD, Stormwater Discharge, COC	Minor	Mecklenburg	Mooresville
NCG110023	City of Belmont	Belmont WWTP	Government - Municipal	Municipal WWTP > 1MGD, Stormwater Discharge, COC	Minor	Gaston	Mooresville

Table 1E-3: NPDES Stormwater Permits in the Catawba River Headwaters Watershed

Permit #	Owner Name	Facility Name	Owner Type	Permit Type	Class	County	Region
NCG110055	City of Gastonia	Crowders Creek WWTP	Government - Municipal	Municipal WWTP > 1MGD, Stormwater Discharge, COC	Minor	Gaston	Mooresville
NCG110072	Town of Valdese	Lake Rhodiss WWTP	Government - Municipal	Municipal WWTP > 1MGD, Stormwater Discharge, COC	Minor	Burke	Asheville
NCG110083	City of Morganton	Catawba River Pollution Control Facility	Government - Municipal	Municipal WWTP > 1MGD, Stormwater Discharge, COC	Minor	Burke	Asheville
NCG110098	City of Lenoir	Lower Creek WWTP	Government - Municipal	Municipal WWTP > 1MGD, Stormwater Discharge, COC	Minor	Caldwell	Asheville
NCG110099	City of Lenoir	Gunpowder Creek WWTP	Government - Municipal	Municipal WWTP > 1MGD, Stormwater Discharge, COC	Minor	Caldwell	Asheville
NCG110102	City of Marion	Corpening Creek WWTP	Government - Municipal	Municipal WWTP > 1MGD, Stormwater Discharge, COC	Minor	McDowell	Asheville
NCG120060	Republic Services Of NC LLC	Republic Services Of NC LLC - Lenoir	Non-Government	Landfill Stormwater Discharge COC	Minor	Caldwell	Asheville
NCG130017	Sonoco Products Co	Sonoco Products Co-Hickory	Non-Government	Wholesale Trade of Non-metal Waste and Scrap Stormwater Discharge COC	Minor	Catawba	Mooresville
NCG140033	Thomas Concrete Of Carolina Inc	Thomas Concrete of Carolina, Inc.	Non-Government	Ready Mix Concrete Stormwater/Wastewater Discharge COC	Minor	Gaston	Mooresville
NCG140048	Concrete Supply Co	Concrete Supply Co-Denver	Non-Government	Ready Mix Concrete Stormwater/Wastewater Discharge COC	Minor	Lincoln	Mooresville
NCG140053	Concrete Supply Co	Concrete Supply Co-Croft Plt	Non-Government	Ready Mix Concrete Stormwater/Wastewater Discharge COC	Minor	Mecklenburg	Mooresville
NCG140097	Hamby Brothers Concrete Inc	Hamby Brothers Concrete Incorporated	Non-Government	Ready Mix Concrete Stormwater/Wastewater Discharge COC	Minor	Caldwell	Asheville
NCG140104	Kerr's Hickory Ready Mixed Con	Kerr's Hickory Ready Mixed Con	Non-Government	Ready Mix Concrete Stormwater/Wastewater Discharge COC	Minor	Catawba	Mooresville
NCG140117	R H Loven Co Inc	R H Loven Co Incorporated	Non-Government	Ready Mix Concrete Stormwater/Wastewater Discharge COC	Minor	Avery	Asheville
NCG140133	Cemex Construction Materials Atlantic LLC	Cemex-Gastonia	Non-Government	Ready Mix Concrete Stormwater/Wastewater Discharge COC	Minor	Gaston	Mooresville
NCG140173	Ready Mixed Concrete	Ready Mixed Concrete Co - Hickory	Non-Government	Ready Mix Concrete Stormwater/Wastewater Discharge COC	Minor	Catawba	Mooresville
NCG140176	Ready Mixed Concrete	Ready Mixed Concrete Co - Denver	Non-Government	Ready Mix Concrete Stormwater/Wastewater Discharge COC	Minor	Lincoln	Mooresville
NCG140205	Cemex Construction Materials Atlantic LLC	Cemex-Morganton-Little Silver Creek	Non-Government	Ready Mix Concrete Stormwater/Wastewater Discharge COC	Minor	Burke	Asheville
NCG140264	Thomas Concrete Of Carolina Inc	Thomas Concrete of Carolina, Inc. -Denver Plant	Non-Government	Ready Mix Concrete Stormwater/Wastewater Discharge COC	Minor	Lincoln	Mooresville

Table 1E-3: NPDES Stormwater Permits in the Catawba River Headwaters Watershed

Permit #	Owner Name	Facility Name	Owner Type	Permit Type	Class	County	Region
NCG140290	Thomas Concrete Of Carolina Inc	Thomas Concrete of Carolina, Inc.-Mooresville Plant	Non-Government	Ready Mix Concrete Stormwater/Wastewater Discharge COC	Minor	Iredell	Mooresville
NCG140303	Caldwell Ready-Mix Inc	Caldwell Ready Mix Incorporated	Non-Government	Ready Mix Concrete Stormwater/Wastewater Discharge COC	Minor	Caldwell	Asheville
NCG140326	Explosives Supply Co	Explosives Supply Co-Woodlawn	Non-Government	Ready Mix Concrete Stormwater/Wastewater Discharge COC	Minor	McDowell	Asheville
NCG160018	Carolina Paving Of Hickory Inc	Carolina Asphalt	Non-Government	Asphalt Paving Mixture Stormwater Discharge COC	Minor	Catawba	Mooresville
NCG160021	Maymead Materials Inc	Maymead Materials, Inc.-Barber Green Asphalt	Non-Government	Asphalt Paving Mixture Stormwater Discharge COC	Minor	Burke	Asheville
NCG160034	Blythe Construction Inc	Blythe Construction, Inc.-N. Plant	Non-Government	Asphalt Paving Mixture Stormwater Discharge COC	Minor	Mecklenburg	Mooresville
NCG160069	Maymead Materials Inc	Maymead Materials, Inc.-Morganton	Non-Government	Asphalt Paving Mixture Stormwater Discharge COC	Minor	Burke	Asheville
NCG160114	Maymead Materials Inc	Maymead Materials Inc	Non-Government	Asphalt Paving Mixture Stormwater Discharge COC	Minor	Avery	Asheville
NCG160116	Blythe Construction Inc	Blythe Construction Inc	Non-Government	Asphalt Paving Mixture Stormwater Discharge COC	Minor	Lincoln	Mooresville
NCG170030	Meridian Specialty Yarn Group Inc	Meridian Specialty Yarn Group, Inc.	Non-Government	Textile Mill Products Stormwater Discharge COC	Minor	Burke	Asheville
NCG170056	Pisgah Yarn And Dyeing Corp	Pisgah Yarn And Dyeing Corporation	Non-Government	Textile Mill Products Stormwater Discharge COC	Minor	McDowell	Asheville
NCG170073	Valdese Weavers Inc	Valdese Weavers Incorporated	Non-Government	Textile Mill Products Stormwater Discharge COC	Minor	Burke	Asheville
NCG170097	Tefron USA, Inc.	Pineburr	Non-Government	Textile Mill Products Stormwater Discharge COC	Minor	Burke	Asheville
NCG170098	Valdese Warehouse LLC	Valdese Warehouse, LLC	Non-Government	Textile Mill Products Stormwater Discharge COC	Minor	Burke	Asheville
NCG170111	Meridian Industries Inc. dba Meridian Specialty Yarns	Meridian Specialty Yarns	Non-Government	Textile Mill Products Stormwater Discharge COC	Minor	Gaston	Mooresville
NCG170126	Valdese Weavers Inc	Valdese Weavers, Inc.	Non-Government	Textile Mill Products Stormwater Discharge COC	Minor	Burke	Asheville
NCG170218	Shuford Yarns LLC	Shuford Yarns, LLC-Hickory Spinners Plant	Non-Government	Textile Mill Products Stormwater Discharge COC	Minor	Catawba	Mooresville
NCG170220	Shuford Mills LLC	Shuford Mills Inc - Hudson Cloth	Non-Government	Textile Mill Products Stormwater Discharge COC	Minor	Caldwell	Asheville
NCG170225	Shuford Yarns LLC	Dudley Shoals Plant	Non-Government	Textile Mill Products Stormwater Discharge COC	Minor	Caldwell	Asheville
NCG170227	Belmont Riverside Complex LLC	Belmont Riverside Complex	Unknown	Textile Mill Products Stormwater Discharge COC	Minor	Gaston	Mooresville
NCG170269	Coats American Inc	Coats American-Sevier Plant	Non-Government	Textile Mill Products Stormwater Discharge COC	Minor	McDowell	Asheville

Table 1E-3: NPDES Stormwater Permits in the Catawba River Headwaters Watershed

Permit #	Owner Name	Facility Name	Owner Type	Permit Type	Class	County	Region
NCG170297	Iac Group North America	IAC Old Fort, LLC	Non-Government	Textile Mill Products Stormwater Discharge COC	Minor	McDowell	Asheville
NCG170310	Unifour Finishers Inc	Unifour Finishers Incorporated-Plt 2	Non-Government	Textile Mill Products Stormwater Discharge COC	Minor	Catawba	Mooresville
NCG170313	American & Efird Inc	American & Efird Incorporated-Nelson	Non-Government	Textile Mill Products Stormwater Discharge COC	Minor	Caldwell	Asheville
NCG170314	American & Efird Inc	Dyeing & Finishing Plant #15	Non-Government	Textile Mill Products Stormwater Discharge COC	Minor	Gaston	Mooresville
NCG170319	Specialty Textile Interiors	Specialty Textile Interiors	Non-Government	Textile Mill Products Stormwater Discharge COC	Minor	Cleveland	Mooresville
NCG170339	Parkdale America	Parkdale Mills Incorporated-Plt 1&2	Non-Government	Textile Mill Products Stormwater Discharge COC	Minor	Gaston	Mooresville
NCG170340	Parkdale America	Parkdale Mills Incorporated-Plt 8	Non-Government	Textile Mill Products Stormwater Discharge COC	Minor	Gaston	Mooresville
NCG170341	Parkdale America	Parkdale Mills Incorporated-Plt 9	Non-Government	Textile Mill Products Stormwater Discharge COC	Minor	Gaston	Mooresville
NCG170343	Parkdale America	Parkdale Mills Inc- Plant 60	Non-Government	Textile Mill Products Stormwater Discharge COC	Minor	Gaston	Mooresville
NCG170346	Parkdale America	Parkdale Mills Inc- Plant 15	Non-Government	Textile Mill Products Stormwater Discharge COC	Minor	Gaston	Mooresville
NCG170347	Parkdale America	Parkdale Mills Incorporated-Plt 17	Non-Government	Textile Mill Products Stormwater Discharge COC	Minor	Gaston	Mooresville
NCG170361	Spartan Dyers Inc	Spartan Dyers Incorporated	Non-Government	Textile Mill Products Stormwater Discharge COC	Minor	Gaston	Mooresville
NCG170362	American & Efird Inc	American & Efrid Inc-Gastoni	Non-Government	Textile Mill Products Stormwater Discharge COC	Minor	Gaston	Mooresville
NCG170364	Valdese Weavers Inc	Valdese Weavers Inc-F&D Plant	Non-Government	Textile Mill Products Stormwater Discharge COC	Minor	Burke	Asheville
NCG170391	Firestone Fibers & Textiles LLC	Firestone Fibers & Textiles Company	Non-Government	Textile Mill Products Stormwater Discharge COC	Minor	Gaston	Mooresville
NCG180029	Jasper Seating Company Inc	Jasper Seating Company-Plant #8	Non-Government	Furniture and Fixtures Stormwater Discharge COC	Minor	Alexander	Mooresville
NCG180031	Universal Furniture Limited	Universal Furniture Limited	Non-Government	Furniture and Fixtures Stormwater Discharge COC	Minor	McDowell	Asheville
NCG180033	Furniture Brands/ Henredon	Furniture Brannds/ Henredon	Non-Government	Furniture and Fixtures Stormwater Discharge COC	Minor	Burke	Asheville
NCG180054	Clayton Marcus Co Inc	Clayton Marcus Co Incorporated-Plt1	Non-Government	Furniture and Fixtures Stormwater Discharge COC	Minor	Alexander	Mooresville
NCG180062	CV Industries Century Furn Ind	CV Industries Century Furn Ind	Non-Government	Furniture and Fixtures Stormwater Discharge COC	Minor	Catawba	Mooresville

Table 1E-3: NPDES Stormwater Permits in the Catawba River Headwaters Watershed

Permit #	Owner Name	Facility Name	Owner Type	Permit Type	Class	County	Region
NCG180063	CV Industries Century Furn Ind	Cu Industries Century Furn Ind	Non-Government	Furniture and Fixtures Stormwater Discharge COC	Minor	Catawba	Mooresville
NCG180064	CV Industries Century Furn Ind	Cu Industries Century Furn Ind	Non-Government	Furniture and Fixtures Stormwater Discharge COC	Minor	Catawba	Mooresville
NCG180065	CV Industries Century Furn Ind	CV Industries Century Furn Ind	Non-Government	Furniture and Fixtures Stormwater Discharge COC	Minor	Catawba	Mooresville
NCG180066	CV Industries Century Furn Ind	CV Industries Century Furn Ind	Non-Government	Furniture and Fixtures Stormwater Discharge COC	Minor	Catawba	Mooresville
NCG180068	CV Industries Century Furn Ind	CV Industries Century Furn Ind - Hickory	Non-Government	Furniture and Fixtures Stormwater Discharge COC	Minor	Catawba	Mooresville
NCG180080	Broyhill Furniture Industries Inc	Broyhill Furniture Ind-Whitnel	Non-Government	Furniture and Fixtures Stormwater Discharge COC	Minor	Caldwell	Asheville
NCG180090	Drexel Heritage Furniture Ind., Inc.	Drexel Heritage Furnishings-60	Non-Government	Furniture and Fixtures Stormwater Discharge COC	Minor	Burke	Asheville
NCG180092	Westwood NC, LLC	Westwood Plant #2	Non-Government	Furniture and Fixtures Stormwater Discharge COC	Minor	McDowell	Asheville
NCG180098	Center 190 LLC	Adden Furniture	Non-Government	Furniture and Fixtures Stormwater Discharge COC	Minor	Burke	Asheville
NCG180100	Ethan Allen Inc - Pine Valley Div	Ethan Allen Inc. - Pine Valley Div.	Non-Government	Furniture and Fixtures Stormwater Discharge COC	Minor	McDowell	Asheville
NCG180102	Hammary Furniture Co	Kincaid Furniture Co Inc - Plant 14	Non-Government	Furniture and Fixtures Stormwater Discharge COC	Minor	Caldwell	Asheville
NCG180105	Baker Furniture Company	Baker Furniture Company	Non-Government	Furniture and Fixtures Stormwater Discharge COC	Minor	Burke	Asheville
NCG180110	Kincaid Furniture Co	Kincaid Furniture Co-Plants1&6	Non-Government	Furniture and Fixtures Stormwater Discharge COC	Minor	Caldwell	Asheville
NCG180112	Hni Corporation	Hickory Business Furniture	Non-Government	Furniture and Fixtures Stormwater Discharge COC	Minor	Catawba	Mooresville
NCG180117	Southern Furniture Co	Southern Furniture Co-Conover	Non-Government	Furniture and Fixtures Stormwater Discharge COC	Minor	Catawba	Mooresville
NCG180118	Southern Furniture Co	Southern Furniture Co-Conover	Non-Government	Furniture and Fixtures Stormwater Discharge COC	Minor	Catawba	Mooresville
NCG180123	Bassett Furniture Industries	Bassett Furniture Industries	Non-Government	Furniture and Fixtures Stormwater Discharge COC	Minor	Catawba	Mooresville
NCG180153	Bernhardt Furniture Co	Bernhardt Furniture Co-Plt 5	Non-Government	Furniture and Fixtures Stormwater Discharge COC	Minor	Caldwell	Asheville
NCG180154	Bernhardt Furniture Co	Bernhardt Furniture Co-Plt 7	Non-Government	Furniture and Fixtures Stormwater Discharge COC	Minor	Caldwell	Asheville
NCG180155	Bernhardt Furniture Co	Bernhardt Furniture Co-Plt 3	Non-Government	Furniture and Fixtures Stormwater Discharge COC	Minor	Caldwell	Asheville

Table 1E-3: NPDES Stormwater Permits in the Catawba River Headwaters Watershed

Permit #	Owner Name	Facility Name	Owner Type	Permit Type	Class	County	Region
NCG180156	Bernhardt Furniture Co	Bernhardt Furniture Co-Plt 2	Non-Government	Furniture and Fixtures Stormwater Discharge COC	Minor	Caldwell	Asheville
NCG180157	Minton Ventures LLC	Minton Ventures, LLC-Plant 1	Non-Government	Furniture and Fixtures Stormwater Discharge COC	Minor	Caldwell	Asheville
NCG180169	Thomasville Furniture Industries, Inc.	Lenoir Plant	Non-Government	Furniture and Fixtures Stormwater Discharge COC	Minor	Caldwell	Asheville
NCG180178	Sherrill Furniture	Sherrill Furniture- Hickory	Non-Government	Furniture and Fixtures Stormwater Discharge COC	Minor	Catawba	Mooresville
NCG180179	CTH Sherrill Occasional	CTH Sherrill Occasional	Non-Government	Furniture and Fixtures Stormwater Discharge COC	Minor	Catawba	Mooresville
NCG180189	Fairfield Chair Co	Fairfield Chair Co-Plnt #2	Non-Government	Furniture and Fixtures Stormwater Discharge COC	Minor	Caldwell	Asheville
NCG180190	Fairfield Chair Co	Fairfield Chair Co-Plt #1	Non-Government	Furniture and Fixtures Stormwater Discharge COC	Minor	Caldwell	Asheville
NCG180198	CV Industries Century Furn Ind	CV Industries Century Furn Ind	Non-Government	Furniture and Fixtures Stormwater Discharge COC	Minor	Alexander	Mooresville
NCG180201	Hickory Hill Furniture	Hickory Hill Furniture	Non-Government	Furniture and Fixtures Stormwater Discharge COC	Minor	Burke	Asheville
NCG180209	Regency Leather	Regency Leather	Non-Government	Furniture and Fixtures Stormwater Discharge COC	Minor	Catawba	Mooresville
NCG180227	Kroehler Furniture Mfg Co Inc	Kroehler Furniture Mfg Co Inc	Non-Government	Furniture and Fixtures Stormwater Discharge COC	Minor	Catawba	Mooresville
NCG190004	Kings Point Marina Inc	Kings Point Marina Incorporated	Non-Government	Ship and Boat Building Stormwater Discharge COC	Minor	Mecklenburg	Mooresville
NCG190042	Lake Norman Marina Inc	Lake Norman Marina Incorporated	Non-Government	Ship and Boat Building Stormwater Discharge COC	Minor	Catawba	Mooresville
NCG200350	Bruces Iron & Metal	Bruces Iron & Metal	Non-Government	Wholesale Trade of Metal Waste and Scrap Stormwater Discharge COC	Minor	Gaston	Mooresville
NCG200355	Griffin Gordon Recycling LLC	Mountain Recylcing	Non-Government	Wholesale Trade of Metal Waste and Scrap Stormwater Discharge COC	Minor	Catawba	Mooresville
NCG200448	Griffin-Gordon Recycling	Mountain Recycling, LLC	Non-Government	Wholesale Trade of Metal Waste and Scrap Stormwater Discharge COC	Minor	Burke	Asheville
NCG210241	Sonoco Products Co	Sonoco Products Co-Granite Fal	Non-Government	Timber Products Stormwater Discharge COC	Minor	Caldwell	Asheville
NCG210256	Brackett Brothers Corp	Brackett Brothers Corporation	Non-Government	Timber Products Stormwater Discharge COC	Minor	Burke	Asheville
NCG210307	Cramer Lumber Co Inc	Cramer Lumber Co Inc	Non-Government	Timber Products Stormwater Discharge COC	Minor	Catawba	Mooresville
NCG210330	Tradewinds International Inc	Tradewinds International Inc	Non-Government	Timber Products Stormwater Discharge COC	Minor	Catawba	Mooresville
NCG210386	Blue Ridge Panels Inc	Blue Ridge Panels, Inc.	Non-Government	Timber Products Stormwater Discharge COC	Minor	Caldwell	Asheville
NCGNE0019	Ladd Furniture Inc	Clayton Marcus Co. Inc-Plant 5 & 9	Non-Government	Stormwater Discharge, No Exposure Certificate	Minor	Catawba	Mooresville

Table 1E-3: NPDES Stormwater Permits in the Catawba River Headwaters Watershed

Permit #	Owner Name	Facility Name	Owner Type	Permit Type	Class	County	Region
NCGNE0021	L & P Polyester Fibers LLC	Cameo Fibers	Non-Government	Stormwater Discharge, No Exposure Certificate	Minor	Catawba	Mooresville
NCGNE0026	Chiron America Inc	Chiron America Inc	Non-Government	Stormwater Discharge, No Exposure Certificate	Minor	Mecklenburg	Mooresville
NCGNE0030	Dynisco Extrusion LLC	Dynisco Extrusion LLC	Non-Government	Stormwater Discharge, No Exposure Certificate	Minor	Catawba	Mooresville
NCGNE0031	Reliance Electric Ind. Co	Dodge Rockwell Automation	Non-Government	Stormwater Discharge, No Exposure Certificate	Minor	McDowell	Asheville
NCGNE0034	DEBS SBS Inc	DEB SBS Inc	Non-Government	Stormwater Discharge, No Exposure Certificate	Minor	Gaston	Mooresville
NCGNE0038	Hickory Springs Manufacturing Company	Dixie-Regency Division-Hickory Springs Mfg. Co.	Non-Government	Stormwater Discharge, No Exposure Certificate	Minor	Catawba	Mooresville
NCGNE0039	Hickory Springs Manufacturing Company	Allen-Beck Division-Hickory Springs Mfg. Co	Non-Government	Stormwater Discharge, No Exposure Certificate	Minor	Caldwell	Asheville
NCGNE0045	Hickory Springs Manufacturing Company	Hickory Springs Mfg. Co.-Lenior	Non-Government	Stormwater Discharge, No Exposure Certificate	Minor	Caldwell	Asheville
NCGNE0050	Hickory Springs Manufacturing Company	Hickory Springs Mfg. Co.-HS Converting Division	Non-Government	Stormwater Discharge, No Exposure Certificate	Minor	Caldwell	Asheville
NCGNE0062	Hickory Springs Manufacturing Company	Allen-Beck Sewing	Non-Government	Stormwater Discharge, No Exposure Certificate	Minor	Caldwell	Asheville
NCGNE0065	Rock-Tenn Packaging and Paperboard, LLC	Rock-Tenn Company-Claremont Folding	Non-Government	Stormwater Discharge, No Exposure Certificate	Minor	Catawba	Mooresville
NCGNE0077	Hickory Springs Manufacturing Company	Hickory Springs Fibers	Non-Government	Stormwater Discharge, No Exposure Certificate	Minor	Catawba	Mooresville
NCGNE0078	INX International Ink Company	INX International Ink Company	Non-Government	Stormwater Discharge, No Exposure Certificate	Minor	Mecklenburg	Mooresville
NCGNE0085	Kawneer Company Incorporated	Kawneer Company Incorporated	Non-Government	Stormwater Discharge, No Exposure Certificate	Minor	Mecklenburg	Mooresville
NCGNE0092	Livingstone Coating Corporation	Livingstone Coating Corporation	Non-Government	Stormwater Discharge, No Exposure Certificate	Minor	Mecklenburg	Mooresville
NCGNE0109	AAA Cooper Transport	AAA Cooper Transport-Mecklenburg	Non-Government	Stormwater Discharge, No Exposure Certificate	Minor	Mecklenburg	Mooresville
NCGNE0115	Joseph Riddle	Bernhardt Furniture Company	Individual	Stormwater Discharge, No Exposure Certificate	Minor	Caldwell	Asheville
NCGNE0124	Rock-Tenn Packaging and Paperboard, LLC	Rock-Tenn Company-Marion Folding	Non-Government	Stormwater Discharge, No Exposure Certificate	Minor	McDowell	Asheville
NCGNE0128	EBM Textiles	EBM Textiles LLC	Non-Government	Stormwater Discharge, No Exposure Certificate	Minor	Burke	Asheville
NCGNE0142	Sonoco Products Co	Sonoco Products Company-Long Shoals Plant	Non-Government	Stormwater Discharge, No Exposure Certificate	Minor	Gaston	Mooresville
NCGNE0189	Media General Inc.	The News Herald	Non-Government	Stormwater Discharge, No Exposure Certificate	Minor	Burke	Asheville

Table 1E-3: NPDES Stormwater Permits in the Catawba River Headwaters Watershed

Permit #	Owner Name	Facility Name	Owner Type	Permit Type	Class	County	Region
NCGNE0193	Media General Inc.	The McDowell News	Non-Government	Stormwater Discharge, No Exposure Certificate	Minor	McDowell	Asheville
NCGNE0218	Torque Traction Int Tech Inc	Torque Traction Int Tech Inc	Non-Government	Stormwater Discharge, No Exposure Certificate	Minor	Mecklenburg	Mooresville
NCGNE0221	Hunter Douglas Designer Shade	Hunter Douglas Designer Shades	Non-Government	Stormwater Discharge, No Exposure Certificate	Minor	Gaston	Mooresville
NCGNE0258	Bsn-Jobst Inc	BSN-Jobst, Inc.	Non-Government	Stormwater Discharge, No Exposure Certificate	Minor	Burke	Asheville
NCGNE0276	Sonoco Products DBA Keating	Keating Gravure USA	Non-Government	Stormwater Discharge, No Exposure Certificate	Minor	Mecklenburg	Mooresville
NCGNE0283	Bassett Furniture Industries	Bassett Furniture Industries-Plant 31	Non-Government	Stormwater Discharge, No Exposure Certificate	Minor	Catawba	Mooresville
NCGNE0306	Blue Ridge Products Inc	Blue Ridge Products, Inc.	Non-Government	Stormwater Discharge, No Exposure Certificate	Minor	Catawba	Mooresville
NCGNE0331	Carpenter Co	Carpenter Co.-Long View Plant	Non-Government	Stormwater Discharge, No Exposure Certificate	Minor	Catawba	Mooresville
NCGNE0346	Cekal Specialties Inc	Cekal Specialties	Non-Government	Stormwater Discharge, No Exposure Certificate	Minor	Gaston	Mooresville
NCGNE0349	Wix Corporation	Wix Corporation- Ozark Plant	Non-Government	Stormwater Discharge, No Exposure Certificate	Minor	Gaston	Mooresville
NCGNE0350	McCreary Modern	McCreary Modern	Non-Government	Stormwater Discharge, No Exposure Certificate	Minor	Caldwell	Asheville
NCGNE0363	Estes Express Lines	Estes Express Lines-Truck Wash	Non-Government	Stormwater Discharge, No Exposure Certificate	Minor	Mecklenburg	Mooresville
NCGNE0376	N C National Guard	NC Nat Gd- Belmont	Government - State	Stormwater Discharge, No Exposure Certificate	Minor	Gaston	Mooresville
NCGNE0389	N C National Guard	NC Nat Gd- Gastonia	Government - State	Stormwater Discharge, No Exposure Certificate	Minor	Gaston	Mooresville
NCGNE0399	N C National Guard	NC Nat Gd- Mooresville	Government - State	Stormwater Discharge, No Exposure Certificate	Minor	Iredell	Mooresville
NCGNE0414	N C National Guard	NC Nat Gd- Taylorsville	Government - State	Stormwater Discharge, No Exposure Certificate	Minor	Alexander	Mooresville
NCGNE0487	Gough Econ Inc	Gough Econ WWTP	Non-Government	Stormwater Discharge, No Exposure Certificate	Minor	Mecklenburg	Mooresville
NCGNE0501	Commscope Inc	Commscope Incorporated-Catawba	Non-Government	Stormwater Discharge, No Exposure Certificate	Minor	Catawba	Mooresville
NCGNE0661	Cumulus Fibres Polyester Fibers LLC	Cumulus Fibres	Non-Government	Stormwater Discharge, No Exposure Certificate	Minor	Mecklenburg	Mooresville
NCR002037	Town of Blowing Rock	The Blowing Rock Art and History Museum	Government - Municipal	Construction Stormwater	Minor	Watauga	Winston-Salem
NCS000009	Sgl Carbon LLC	SGL Carbon Corporation	Non-Government	Stormwater Discharge, Individual	Minor	Burke	Asheville
NCS000020	Duke Energy Carolinas LLC	McGuire Nuclear Power Plant	Non-Government	Stormwater Discharge, Individual	Minor	Mecklenburg	Mooresville

Table 1E-3: NPDES Stormwater Permits in the Catawba River Headwaters Watershed

Permit #	Owner Name	Facility Name	Owner Type	Permit Type	Class	County	Region
NCS000021	Siemens Energy Inc	Charlotte Turbine Generator Service Center	Non-Government	Stormwater Discharge, Individual	Minor	Mecklenburg	Mooresville
NCS000041	Clariant Corporation	Mount Holly West (MHW) Facility	Non-Government	Stormwater Discharge, Individual	Minor	Gaston	Mooresville
NCS000061	Lenoir Mirror Company	Lenoir Mirror Co-Caldwell Site	Non-Government	Stormwater Discharge, Individual	Minor	Caldwell	Asheville
NCS000066	Neptune Inc	Neptune Inc	Non-Government	Stormwater Discharge, Individual	Minor	Caldwell	Asheville
NCS000161	Emerald Carolina Chemicals	Noveon Textile Chemical, Inc.	Non-Government	Stormwater Discharge, Individual	Minor	Mecklenburg	Mooresville
NCS000163	Color Mate Inc	Color Mate Incorporated	Non-Government	Stormwater Discharge, Individual	Minor	Gaston	Mooresville
NCS000304	Gerdau Ameristeel Corporation	Ameristeel Corporation	Non-Government	Stormwater Discharge, Individual	Minor	Mecklenburg	Mooresville
NCS000321	Lubrizol Advanced Materials Inc	Lubrizol Advanced Materials Inc	Non-Government	Stormwater Discharge, Individual	Minor	Gaston	Mooresville
NCS000332	Hexion Specialty Chemicals, Inc.	Hexion Specialty Chemicals	Non-Government	Stormwater Discharge, Individual	Minor	Burke	Asheville
NCS000334	JCI - Jones Chemicals	Jci Jones Chemicals Incorporated	Non-Government	Stormwater Discharge, Individual	Minor	Mecklenburg	Mooresville
NCS000359	Iac Group North America	Iac, Old Fort, LLC	Non-Government	Stormwater Discharge, Individual	Minor	McDowell	Asheville
NCS000407	City of Mount Holly	Mount Holly city - Small MS4	Government - Municipal	Stormwater Discharge, Individual (MS4)	Minor	Gaston	Mooresville
NCS000409	City of Belmont	Belmont city - Small MS4	Government - Municipal	Stormwater Discharge, Individual (MS4)	Minor	Gaston	Mooresville
NCS000426	City of Hickory	Hickory city - Small MS4	Government - Municipal	Stormwater Discharge, Individual (MS4)	Minor	Catawba	Mooresville
NCS000429	City of Gastonia	Gastonia city - Small MS4	Government - Municipal	Stormwater Discharge, Individual (MS4)	Minor	Gaston	Mooresville
NCS000431	City of Conover	Conover city - Small MS4	Government - Municipal	Stormwater Discharge, Individual (MS4)	Minor	Catawba	Mooresville
NCS000474	County of Caldwell	Caldwell County-Small MS4	Government - County	Stormwater Discharge, Individual (MS4)	Minor	Caldwell	Asheville
NCS000480	Town of Rutherford College	Town of Rutherford College-Small MS4	Government - Municipal	Stormwater Discharge, Individual (MS4)	Minor	Burke	Asheville
NCS000498	City of Morganton	Morganton City--Small MS4	Government - Municipal	Stormwater Discharge, Individual (MS4)	Minor	Burke	Asheville

Table 1E-4: Animal Feeding Operations in the Catawba River Headwaters (HUC: 03050101)				
Permit Number	Facility Name	Permit Type	County	Region
AWC020002	Herman Dairy Farm, Inc.	Cattle State COC	Alexander	Mooresville
AWC020003	Payne Dairy	Cattle State COC	Alexander	Mooresville
AWC020005	Superior Jersey Farm	Cattle State COC	Alexander	Mooresville
AWC020007	Reese Dairy Farm	Cattle State COC	Alexander	Mooresville
AWC020008	Idlenot Farm	Cattle State COC	Alexander	Mooresville
AWC020013	Chapman Farms	Cattle State COC	Alexander	Mooresville
AWC490030	Grayhouse Farms, Inc	Cattle State COC	Iredell	Mooresville
AWC550001	Lewis Eddie Smith Farm	Cattle State COC	Lincoln	Mooresville
AWC550016	Lynch's Dairy, Inc.	Cattle State COC	Lincoln	Mooresville
AWC590004	Harold P. McKinney Dairy Farm	Cattle State COC	McDowell	Asheville
AWI590001	Honey Brook Dairy	Animal Individual State	McDowell	Asheville
AWS140003	B.G. Looper and Sons / Wesley Looper	Swine State COC	Caldwell	Asheville