Catawba River
Basinwide Water Quality Plan

September 2004

Division of Water Quality
Water Quality Section

North Carolina Department of Environment and Natural Resources

Catawba River Basinwide Water Quality Plan

September 2004

Prepared by:
Dave Toms
Dave.Toms@ncmail.net

NC Department of Environment & Natural Resources
Division of Water Quality – Planning
1617 Mail Service Center
Raleigh, NC 27699-1617

(919) 733-5083, ext. 577

This Document was approved by the NC Environmental Management Commission on September 9, 2004 to be used as a guide by the NC Division of Water Quality in carrying out its Water Quality Program duties and responsibilities in the Catawba River basin. This plan is the second five-year update to the Catawba River Basinwide Water Quality Plan approved by the NC Environmental Management Commission in February 1995.

TABLE OF CONTENTS

Executive Summary xii

Section A - General Basinwide Information 1

Chapter 1 - Introduction to Basinwide Water Quality Planning 2

1.1 What is Basinwide Water Quality Planning? 2

1.2 Goals of Basinwide Water Quality Planning 2

1.3 Major Components of the Basinwide Plan 4

1.4 Benefits of Basinwide Water Quality Planning 4

1.5 How to Get Involved 4

1.6 Other References 5

1.7 Division of Water Quality Functions and Locations 5

Chapter 2 - Catawba River Basin Overview 7

2.1 General Overview 7

2.2 Surface Water Hydrology 10
2.2.1 Watershed Descriptions 10
2.2.2 Hydrologic Features 10
2.2.3 Minimum Streamflow 11
2.2.4 Water Withdrawals and Water Supply 11
2.2.5 Interbasin Transfers 13

2.3 Population and Growth Trends 15
2.3.1 County Population and Growth Trends 15
2.3.2 Population, Growth Trends and Population Density 16

2.4 Local Governments and Planning Jurisdictions in the Basin 20

2.5 Land Cover 21
2.5.1 CGIA Land Cover 21
2.5.2 NRI Land Cover Trends 22

2.6 NPDES Permits Summary 25
2.6.1 Permitted Wastewater Discharges 25
2.6.2 Other NPDES Permits 26

2.7 Animal Operations 26

2.8 Natural Resources 30
2.8.1 Catawba River Chain Lakes 30
2.8.2 Ecological Significance of the Catawba River Basin 31
2.8.3 Significant Natural Heritage Areas in the Catawba River Basin 33
2.8.4 Forestry in the Catawba River Basin 36

Chapter 3 - Summary of Water Quality Information for the Catawba River Basin 39

3.1 General Sources of Pollution.....39

3.2 Description of Surface Water Classifications and Standards.....40

3.3 DWQ Water Quality Monitoring Programs in the Catawba River Basin.....45
3.3.1 Benthic Macroinvertebrate Monitoring.....45
3.3.2 Fish Assessments.....47
3.3.3 Aquatic Toxicity Monitoring.....48
3.3.4 Lakes Assessment Program.....49
3.3.5 Ambient Monitoring System 49
3.3.6 Notable Patterns in Ambient Data.....51

3.4 Other Water Quality Research 52

3.5 Use Support Summary 53
3.5.1 Introduction to Use Support Assessment 53
3.5.2 Comparison of Use Support Rating to Streams on the List of Impaired Waters 54
3.5.3 Use Support Assessment in the Catawba River Basin 54

Chapter 4 - Water Quality Issues Related to Multiple Watersheds in the Catawba River Basin 59

4.1 Introduction 59

4.2 Water Quality Issues Related to Drought.....59

4.3 Color Reduction Strategy 60

4.4 South Fork Catawba River Watershed Toxics Review.....62

4.5 Charlotte-Mecklenburg Utilities Agreement.....63

4.6 Implementation of NCEEP Watershed Restoration and Local Watershed Plans 64

4.7 Chain Lakes Management Challenges 64
4.7.1 Hydropower Relicensing.....66
4.7.2 Lake Rhodhiss, Lake Hickory and Lookout Shoals Lake Watershed Protection.....67
4.7.3 Nutrient Management for Lake Wylie 71
4.7.4 Aquatic Weed Infestation.....72

4.8 The Importance of Local Initiatives.....73

4.9 Biological Criteria for Assessment of Aquatic Life.....74

4.10 Fish Consumption Advice.....74

4.11 Managing the Impacts of Growth and Development and Stormwater Runoff 78
4.11.1 Effects of Growth and Development in the Catawba River Basin.....78
4.11.2 The Role of Local Governments 79
4.11.3 Maintain and Develop Riparian Buffers.....81
4.11.4 Protect Headwater Streams.....81

4.11.5 Reduce Impacts of Future Development 82

4.12 DWQ Stormwater Programs 83
4.12.1 NPDES Phase I 83
4.12.2 NPDES Phase II 84
4.12.3 State Stormwater Program 86
4.12.4 Water Supply Watershed Stormwater Rules 87
4.12.5 Trout Stream Protection 90

4.13 Habitat Degradation 90
4.13.1 Sedimentation 91
4.13.2 Loss of Riparian Vegetation 94
4.13.3 Loss of Instream Organic Microhabitats 94
4.13.4 Channelization 95
4.13.5 Recommendations for Reducing Habitat Degradation 95

4.14 Fecal Coliform Bacteria 96

4.15 Addressing Waters on the State's Integrated 305(b) and 303(d) Report 98

Section B - Water Quality Data and Information by Subbasin 99

Chapter 1 - Catawba River Subbasin 03-08-30
Corpening Creek, Mackey Creek, North Fork Catawba River, Muddy Creek, Linville River and Lake James 100

1.1 Subbasin Overview 100

1.2 Use Support Assessment Summary 105

1.3 Status and Recommendations of Previously and Newly Impaired Waters ..106
1.3.1 Corpening Creek (Youngs Fork)
Jacktown Creek 106
1.3.2 Mackey Creek 107
1.3.3 North Fork Catawba River 107

1.4 Status and Recommendations for Waters with Noted Impacts 108
1.4.1 Lake James 108
1.4.2 Linville River 109
1.4.3 Left Prong Catawba River 109
1.4.4 Muddy Creek 110
1.4.5 Canoe Creek 112

1.5 Additional Water Quality Issues within Subbasin 03-08-30 112

Chapter 2 - Catawba River Subbasin 03-08-31
Lower Creek, Wilson Creek, Johns River and Lake Rhodhiss 113

2.1 Subbasin Overview 113

2.2 Use Support Assessment Summary 117

2.3 Status and Recommendations of Newly and Previously Impaired Waters ..118

2.3.1 Lower Creek Watershed Including:
Lower Creek
Zacks Fork Creek
Spainhour Creek
Greasy Creek
Bristol Creek
Husband Creek 119
2.3.2 Lake Rhodhiss 120
2.3.3 McGalliard Creek 121
2.3.4 Irish Creek 122
2.3.5 Harper Creek 122
2.3.6 Hunting Creek 122

2.4 Status and Recommendations for Waters with Noted Impacts 123
2.4.1 Johns River 123
2.4.2 Silver Creek 123
2.4.3 Catawba River 124

Chapter 3 - Catawba River Subbasin 03-08-32
Lower, Middle and Upper Little Rivers, Lake Hickory, Lookout Shoals Lake and Lake Norman 125

3.1 Subbasin Overview 125

3.2 Use Support Assessment Summary 131

3.3 Status and Recommendations of Newly and Previously Impaired Waters ..132
3.3.1 Horseford Creek 132
3.3.2 Lower Little River 133

3.4 Status and Recommendations for Waters with Noted Impacts 133
3.4.1 Lake Hickory 133
3.4.2 Muddy Fork 134
3.4.3 Middle Little River 134
3.4.4 Gunpowder Creek 134
3.4.5 Lookout Shoals Lake 135
3.4.6 Lake Norman 135

Chapter 4 - Catawba River Subbasin 03-08-33
Dutchmans Creek, McDowell Creek and Mountain Island Lake 137

4.1 Subbasin Overview 137

4.2 Use Support Assessment Summary 140

4.3 Status and Recommendations of Previously and Newly Impaired Waters ..141
4.3.1 McDowell Creek 141
4.3.2 Killian Creek 143

4.4 Status and Recommendations for Waters with Noted Impacts 144
4.4.1 Mountain Island Lake 144

4.5 Additional Water Quality Issues within Subbasin 03-08-33 144
4.5.1 Water Quality Threats to Streams in Urbanizing Watersheds 144

Chapter 5 - Catawba River Subbasin 03-08-34
Irwin Creek, Long Creek, McAlpine Creek and Sugar Creek 146

5.1 Subbasin Overview 146

5.2 Use Support Assessment Summary 150

5.3 Status and Recommendations of Previously and Newly Impaired Waters .. 151
5.3.1 The Sugar Creek Watershed Including:
Irwin Creek
Little Sugar Creek
McAlpine Creek
Sugar Creek 151
5.3.2 Long Creek 154
5.3.3 Lake Wylie 154

5.4 Additional Water Quality Issues within Subbasin 03-08-34 155

Chapter 6 - Catawba River Subbasin 03-08-35
Clark Creek, Mauney Creek, South Fork Catawba River, Henry Fork and Jacob Fork 156

6.1 Subbasin Overview 156

6.2 Use Support Assessment Summary 160

6.3 Status and Recommendations of Previously and Newly Impaired Waters .. 161
6.3.1 Clark Creek 161
6.3.2 Maiden Creek 164
6.3.3 Indian Creek 164
6.3.4 Mauney Creek 164
6.3.5 Henry Fork 165

6.4 Status and Recommendations for Waters with Noted Impacts 165
6.4.1 South Fork Catawba River 166
6.4.2 Howards Creek 166
6.4.3 Hoyle Creek 166
6.4.4 Town Creek 166

Chapter 7 - Catawba River Subbasin 03-08-36
Long Creek, Dallas Branch and South Fork Catawba River 167

7.1 Subbasin Overview 167

7.2 Use Support Assessment Summary 170

7.3 Status and Recommendations of Previously and Newly Impaired Waters .. 171
7.3.1 Dallas Branch 171

7.4 Status and Recommendations for Waters with Noted Impacts 172
7.4.1 South Fork Catawba River 172
7.4.2 Long Creek 172

Chapter 8 - Catawba River Subbasin 03-08-37
Catawba Creek and Crowders Creek 174

8.1 Subbasin Overview 174

8.2 Use Support Assessment Summary.....178

8.3 Status and Recommendations of Previously and Newly Impaired Waters..178
8.3.1 Catawba Creek.....179
8.3.2 Crowders Creek.....179
8.3.3 Unnamed Tributary to Crowders Creek 180
8.3.4 McGill Creek.....180
8.3.5 Abernethy Creek.....181
8.3.6 Lake Wylie 181

8.4 Status and Recommendations for Waters with Noted Impacts.....181
8.4.1 South Fork Crowders Creek [AU# 11-135-10].....181

8.5 Additional Water Quality Issues within Subbasin 03-08-37.....182

Chapter 9 - Catawba River Subbasin 03-08-38
Sixmile Creek, Twelvemile Creek and Waxhaw Creek 183

9.1 Subbasin Overview 183

9.2 Use Support Assessment Summary.....186

9.3 Status and Recommendations of Previously and Newly Impaired Waters..187
9.3.1 Sixmile Creek 187

9.4 Status and Recommendations for Waters with Noted Impacts.....187
9.4.1 Twelvemile Creek 188

9.5 Additional Water Quality Issues within Subbasin 03-08-38.....188
9.5.1 Waxhaw Creek 188

Section C - Current and Future Water Quality Initiatives 189

Chapter 1 - Current Water Quality Initiatives 190

1.1 Workshop Summaries 190

1.2 Federal Initiatives.....191
1.2.1 Clean Water Act – Section 319 Program 191
1.2.2 USDA EQIP 192

1.3 State Initiatives.....192
1.3.1 NC Agriculture Cost Share Program.....192
1.3.2 Ecosystem Enhancement Program (Formerly Wetlands Restoration Program).....193
1.3.3 Clean Water Management Trust Fund 200
1.3.4 NC Construction Grants and Loans Program.....204
1.3.5 North Carolina Stream Watch 205
1.3.6 South Carolina Department of Health and Environmental Control.....206
1.3.7 Bi-State Catawba River Commission.....206

1.3.8 Catawba River Corridor Project 206

1.4 Local Initiatives 207
1.4.1 Mecklenburg County S.W.I.M. Program 207
1.4.2 The Lake James Task Force 209
1.4.3 Catawba County 209
1.4.4 Caldwell County 209
1.4.5 City of Newton 210
1.4.6 Gaston County Projects 210
1.4.7 Morganton Greenway 211
1.4.8 Burke County 211

1.5 Regional Initiatives 211
1.5.1 Voices and Choices of the Central Carolinas 211
1.5.2 Sustainable Environment for Quality of Life 212
1.5.3 Catawba Lands Conservancy 213
1.5.4 Foothills Conservancy 213
1.5.5 Catawba River Foundation 213
1.5.6 Trout Unlimited 213
1.5.7 American Rivers 214
1.5.8 Catawba-Wateree Relicensing Coalition 214
1.5.9 Catawba Bi-State Task Force 214
1.6.0 NC Wildlife Federation 215
1.6.1 Volunteer Water Information Network Program (VWIN) and Lake James Environmental Association 215
1.6.2 The Trust for Public Land 216

APPENDICES

I NPDES Discharges and Individual Stormwater Permits in the Catawba River Basin

II Biological Water Quality Data Collected by DWQ
- Benthic Macroinvertebrate Collections
- Fish Community Assessments
- Lakes Assessments

III Use Support Methodology and Use Support Ratings

IV 303(d) Listing and Reporting Methodology

V Catawba River Basin Workshop Summaries

VI Catawba River Basin Nonpoint Source Program Description and Contacts

VII Glossary of Terms and Acronyms

LIST OF FIGURES

Figure A-1 Basinwide Planning Schedule (2002 to 2007) 2
Figure A-2 Division of Water Quality Regional Offices 6
Figure A-3 General Map of the Entire Catawba River Basin 8
Figure A-4 General Map of the Catawba River Basin in North Carolina 9
Figure A-5 Percent Projected County Population Growth (2000-2020) for Counties of the Catawba River Basin 17
Figure A-6 8-Digit Hydrologic Units in the Catawba River Basin and Population Density by Subbasin 19
Figure A-7 Percentages within Major CGIA Land Cover Categories in the Catawba River Basin 22
Figure A-8 Land Cover Changes from 1982 to 1997 for the Catawba River Basin 24
Figure A-9 Animal Operations in the Catawba River Basin 28
Figure A-10 Significant Natural Heritage Areas in the Catawba River Basin 34
Figure A-11 ORWs and HQWs in the Catawba River Basin 42
Figure A-12 Water Supply Watersheds in the Catawba River Basin 44
Figure A-13 Summary of Compliance with Aquatic Toxicity Tests in the Catawba River Basin 49
Figure A-14 Catawba River Chain Lakes 65
Figure B-1 Catawba River Subbasin 03-08-30 101
Figure B-2 Catawba River Subbasin 03-08-31 114
Figure B-3 Catawba River Subbasin 03-08-32 126
Figure B-4 Catawba River Subbasin 03-08-33 138
Figure B-5 Catawba River Subbasin 03-08-34 147
Figure B-6 Catawba River Subbasin 03-08-35 157
Figure B-7 Catawba River Subbasin 03-08-36 168
Figure B-8 Catawba River Subbasin 03-08-37 175
Figure B-9 Catawba River Subbasin 03-08-38 184
Figure C-1 Total Attendance by Various Interests at DWQ Water Quality Workshops in the Catawba River Basin (2002) 190
Figure C-2 EEP Targeted Watersheds of the Catawba River Basin 199

LIST OF TABLES

Table 1 Lake Stressor Summary xvi
Table 2 Monitored Impaired Waters within the Catawba River Basin (as of 2003) xxi
Table A-1 Basinwide Planning Schedule (2000 to 2007) 3
Table A-2 Five-Year Process for Development of an Individual Basinwide Plan 3
Table A-3 Hydrologic Subdivisions in the Catawba River Basin 10
Table A-4 Minimum Streamflow Projects in the Catawba River Basin 12
Table A-5 Estimated Interbasin Transfers in the Catawba River Basin (1997) 14
Table A-6 Past and Projected Population (1990, 2000, 2020) and Population Change by County 15
Table A-7 Population (1980, 1990, 2000) and Population Change for Municipalities Greater Than 2,000 Located Wholly or Partly in the Catawba River Basin 18
Table A-8 Local Governments and Planning Units within the Catawba River Basin 20
Table A-9 Description of Major CGIA Land Cover Categories 21
Table A-10 Land Cover in the Catawba River Basin by Major Watersheds – 1982 vs. 1997 23
Table A-11 Description of Land Cover Types 24
Table A-12 Summary of NPDES Dischargers and Permitted Flows for the Catawba River Basin (as of 06/16/03) 26
Table A-13 Registered Animal Operations in the Catawba River Basin (as of 07/03/03) 29
Table A-14 Estimated Populations of Swine, Dairy and Poultry in the Catawba River Basin (1998 and 1994) 30
Table A-15 Statistics on Major Lakes in the Catawba River Basin 31
Table A-16 Rare Aquatic and Wetland-Dwelling Species in the Catawba River Basin (as of August 2003) 32
Table A-17 Primary and Supplemental Surface Water Classifications 40
Table A-18 Summary of Bioclassifications for All Freshwater Benthic Macroinvertebrate Sites (using the most recent rating for each site) in the Catawba River Basin 46
Table A-19 Summary of NCIBI Categories for All Freshwater Fish Community Sites (using the most recent rating for each site) in the Catawba River Basin 47
Table A-20 Locations of Ambient Monitoring Stations in the Catawba River Basin by Subbasin 50
Table A-21 Summary of Ambient Sites with Elevated Fecal Coliform Bacteria Concentrations in the Catawba River Basin, September 1997 – August 2002 52
Table A-22 Aquatic Life Use Support Ratings Summary for All Waters in the Catawba River Basin (1997-2002) 55
Table A-23 Recreation Use Support Ratings Summary for Waters in the Catawba River Basin (1997-2002) 56
Table A-24 Impaired Monitored Waters within the Catawba River Basin (1997 to 2002) 57
Table A-25 NPDES Color Permitting Imposed During 2002 and 2003 for Catawba River Basin Dischargers in the South Fork Catawba River Watershed 62
Table A-26 Lake Stressor Summary 66
Table A-27 Communities in the Catawba River with Stormwater Requirements 88
Table B-1 DWQ Assessment and Use Support Ratings Summary for Monitored Waters in Subbasin 03-08-30 102

Table B-2 Summary of Use Support Ratings by Use Support Category in Subbasin 03-08-30 ... 105
Table B-3 DWQ Assessment and Use Support Ratings Summary for Monitored Waters in Subbasin 03-08-31 ... 115
Table B-4 Summary of Use Support Ratings by Use Support Category in Subbasin 03-08-31 ... 118
Table B-5 DWQ Assessment and Use Support Ratings Summary for Monitored Waters in Subbasin 03-08-32 ... 127
Table B-6 Summary of Use Support Ratings by Use Support Category in Subbasin 03-08-32 ... 132
Table B-7 DWQ Assessment and Use Support Ratings Summary for Monitored Waters in Subbasin 03-08-33 ... 139
Table B-8 Summary of Use Support Ratings by Use Support Category in Subbasin 03-08-33 ... 141
Table B-9 DWQ Assessment and Use Support Ratings Summary for Monitored Waters in Subbasin 03-08-34 ... 148
Table B-10 Summary of Use Support Ratings by Use Support Category in Subbasin 03-08-34 ... 151
Table B-11 Summary of Sugar Creek Watershed Fecal Coliform TMDL ... 153
Table B-12 DWQ Assessment and Use Support Ratings Summary for Monitored Waters in Subbasin 03-08-35 ... 158
Table B-13 Summary of Use Support Ratings by Use Support Category in Subbasin 03-08-35 ... 160
Table B-14 DWQ Assessment and Use Support Ratings Summary for Monitored Waters in Subbasin 03-08-36 ... 169
Table B-15 Summary of Use Support Ratings by Use Support Category in Subbasin 03-08-36 ... 171
Table B-16 DWQ Assessment and Use Support Ratings Summary for Monitored Waters in Subbasin 03-08-37 ... 176
Table B-17 Summary of Use Support Ratings by Use Support Category in Subbasin 03-08-37 ... 178
Table B-18 DWQ Assessment and Use Support Ratings Summary for Monitored Waters in Subbasin 03-08-38 ... 185
Table B-19 Summary of Use Support Ratings by Use Support Category in Subbasin 03-08-38 ... 186
Table C-1 Projects Funded Through Clean Water Act Section 319 ... 191
Table C-2 Ecosystem Enhancement Program Targeted Local Watersheds (2003) ... 196
Table C-3 Projects in the Catawba River Basin Funded by the Clean Water Management Trust Fund (as of 12/02) ... 200
Table C-4 Projects in the Catawba River Basin Funded by the NC Construction Grants and Loans Section ... 205