

**Rocky River Watershed Management Plan Addendum  
Final Report for Fiscal Year 2022**

Prepared by Mecklenburg County Water Quality  
Pollution Prevention Program  
August 1, 2022

## **Purpose**

The purpose of the Watershed Management Plan (WMP) is to guide restoration, retrofitting, and preservation efforts aimed at achieving the specific goals listed in the WMP and in this addendum for improving water quality conditions in Rocky River such that these waters meet or exceed their State designated uses and are no longer rated as impaired on 303(d) lists.

This WMP Addendum documents activities from the completion of the WMP, or earliest date with available data, through August 1, 2022.

The Rocky River watershed is classified in the 14-digit Hydrologic Unit Code (HUC) 03040105010010. The main stem of the Rocky River originates in Iredell County and generally flows southward forming the border between Mecklenburg County and Cabarrus County. The main stem turns generally to the southeast and flows into Cabarrus County after the confluence with the West Branch Rocky River. The headwaters of the main stem are located in Iredell County within the Town of Mooresville. Portions of the West Branch Rocky River originate in the Towns of Davidson and Cornelius in Mecklenburg County.

The drainage area for the Rocky River Watershed upstream of the crossing from Mecklenburg County to Cabarrus County is approximately 37 square miles. The drainage area within Mecklenburg County is approximately 15 square miles.

The WMP was developed and implemented in 2010. The WMP identified several techniques which could be used to restore the watershed. These techniques have included monitoring, BMP construction, and stream restoration.

## **Completed CIP Projects**

### **Callaway Hills Stream Bank Stabilization Project – Spring 2017**

The Mecklenburg County Soil & Water Conservation District worked with the property owner at 18005 Callaway Hills Lane in Davidson, N.C. to complete a stream bank stabilization project. The cost of the project was \$42,000 with the NC Ag Cost Share Program reimburse the landowner \$32,000, leaving the landowner portion at \$10,000. The section of Rocky River that was worked on had a bedrock outcrop in the center of the channel (top elevation over bankfull), which was causing debris to jam in the center of the channel. These blockages were diverting flow into the bank, which resulted in very high sheer stress and bank erosion. The stream pattern was corrected, and the eroded bank was repaired using toe-wood for armoring and reinforcement. The underlying bedrock was also lowered to an elevation slightly below baseflow to help prevent blockages in the future. The initial stream length was 90 linear feet, and the repaired length (due to pattern correction) was 78 linear feet.

## **Planned CIP Projects**

### **The West Branch of the Rocky River (West Branch)**

The West Branch of the Rocky River (West Branch) and its main tributary are streams within the Rocky River Watershed with headwaters in Iredell County, NC east of I-77. The creek generally flows to the southeast through largely agricultural, exurban and forested areas in northeast Mecklenburg County within the Town of Davidson's ETJ. A stream restoration project was identified through ongoing implementation of the Rocky River Watershed Management plan. The project represents the initial effort by CMSWS to conduct stream restoration in the watershed.

The goal of Mecklenburg County's Water Quality Capital Improvement Program is to stabilize stream channels and restore in-stream habitat conditions to promote stream designated uses. This project aims to fulfill these stream goals and protect the adjacent Charlotte Water sanitary sewer infrastructure from erosion hazards.

Stream restoration projects typically address problems with vertical stability and lateral stability within the channel. This instability enlarges the channel through bank and bed erosion, thereby destroying the local aquatic ecosystem. To achieve ecological uplift, the three primary geomorphic variables (i.e., pattern, profile, and dimension) that dictate functionality must be considered.

- Pattern is the sinuosity or meander geometry of a stream channel.
- Profile is the longitudinal slope of the stream channel.
- Dimension is the two-dimensional, cross section of a channel.

Design approaches considered for this study should consist of restoration and enhancement techniques. According to the U.S. Army Corp of Engineers, restoration is the process of converting an unstable, altered, or degraded stream corridor, including adjacent riparian zone and flood-prone areas, to its natural stable condition considering recent and future watershed conditions. Full restoration is often not possible because most projects have constraints. Examples of constraints to improving pattern include the presence of utilities and adjacent development. Improvements to the profile of the stream are often constrained by culverts and flooding concerns.

Enhancement activities generally will include some activities that would be required for restoration. These activities may include in-stream or streambank activities, but in total fall short of restoring one or more of the geomorphic variables. Restoration and enhancement approaches considered for this study are summarized below.

The objectives for this specific project will mainly focus on bank stabilization, vegetation, buffer enhancement, and stream conveyance. This is a large project with much needed grading and stream bank repair. The bank stabilization will gently slope the existing vertical banks to establish a growing surface for a well-vegetated buffer and future tree growth that will provide roots to help secure the stream bank over time.

This project has had the opportunity to expand with additional partnerships that have delayed progress toward construction. This added length of the Tributary will extend to the limits of the FEMA Floodplain to restore additional stream. The total project will restore over 19,000 linear feet of stream in the Rocky River watershed in Davidson, NC.

#### Stream Restoration

- Addresses all three parameters: pattern, profile, and dimension.
- Functionality is restored and quasi-equilibrium is achieved according to the channel evolution model.
- Riparian buffer restoration is included.
- Because of existing culverts and flooding concerns, a new floodplain will be excavated at the stream's existing elevation. Earthwork costs will be reduced by constructing floodplain benches in the existing over-widened channel.

The start dates for all phases were pushed back because of the COVID-19 breakout and financial concerns. Bidding for Phase I was completed in February 2021. All Phase II and Phase III dates are to be determined pending future funding.

**UT WBRR NCDEQ:** Aug 2020- Apr 2021

**Phase I** May 2021-August 2021 – Phase I will begin along the tributary from just above Davis Road down to the confluence of the main branch, West Branch of Rocky River near Fisher Farm (est. 9,000 ft.).

**Phase II** Sep 2021 - Aug 2022 – Phase II will be along the main branch beginning at Grey Road and extending to the confluence with the tributary (est. 5,000 ft.).

**Phase III** Oct 2022 - Oct 2023 – Phase III will be the continuation of the main branch from the confluence downstream to the bottom of Fisher Farm Park (est. 5,000 ft.).

**Table 1: West Branch of the Rocky River Mainstem and Tributary SRRS Scores**

Stage	Total Score	Stream Dimension	Stream Profile	Buffer Quality	Bank Stability and Nutrients	Habitat Counts	Habitat Quality	Bank Veg Protection	Base flow	Sinuosity
<b>West Branch of the Rocky River Mainstem</b>										
Pre-construction	136.96	35.22	28.48	19.95	0.82	9.70	0	27	15.12	0.67
Potential Uplift	217.87	40	27.86	16.50	38.06	26	24	27	15.12	3.33
<b>West Branch of the Rocky River Tributary</b>										
Pre-construction	110.17	14.79	9.28	19.95	0	19.36	16.22	20.20	9.7	0.67
Potential Uplift	228.9	40	34.68	16.5	39.05	26	24	26	16	6.67

#### Plum Creek and South Prong of the West Branch Rocky River

The South Prong of the West Branch of Rocky River and parts of Plum Creek are in the planning stages for a stream and wetland restoration project. This project is currently on hold for financial reasons.

Table 2 below shows the current SRRS scores on this project. Since Plum Creek is still in the Cashflow stage, there are only Pre-construction and Potential Uplift from Restoration Scores.

**Table 2: Plum Creek and South Prong of the West Branch Rocky River SRRS Scores**

Stage	Total Score	Stream Dimension	Stream Profile	Buffer Quality	Bank Stability and Nutrients	Habitat Counts	Habitat Quality	Bank Veg Protection	Base flow	Sinuosity
Pre-construction	114.93	11.72	9.83	15.49	17.06	12.32	19.7	12.6	14.21	2
Potential Uplift	217.85	37.78	32.04	13.97	38.85	26	26	26	15.21	2

## Development

### *Demographics*

**Table 3: Rocky River Watershed Demographics**

2010 Population	2016 Population	2020 Population	Population Change	Percent Change
9,004	10,200	16,305	6,105	59.9% Increase

### *Impervious Area*

When the WMP was completed, impervious areas were estimated based upon land use. This method of estimating impervious areas was inaccurate. In 2011, Mecklenburg County began digitizing actual impervious areas based upon aerial photographs. The increase of impervious areas in the Rocky River Watershed are shown below.

**Table 4: Rocky River Watershed Impervious Area**

2011 Impervious Area (Acres)	2016 Impervious Area (Acres)	2018 Impervious Area (Acres)	2020 Impervious Area (Acres)	2021 Impervious Area (Acres)	2022 Impervious Area (Acres)	Impervious Acres Change (Acres)	Percent Change
3000	3491	908	1,004.07	1,028.61	1,051.72	23.11	2.25% Increase

### *Policy Changes*

There were several changes to the Town of Davidson Surface Water Pollution Control Ordinance since 2018. The most recent changes to the Ordinance were updated on January 26, 2021. Various working changes were made throughout the document without changing the regulatory requirements or overall intent of the Ordinance. The purpose of the Ordinance was expanded to include specific objectives (Section 2). Also, definitions in Section 4 were added and changed as necessary to support ordinance revisions. Revisions to the appeal process in Section 8 include significantly more detail

regarding the appeal process for violations of the Ordinance, including public hearing procedures.

The biggest change was prohibiting the use of pavement products that have high levels of polycyclic aromatic hydrocarbons (PAHs). Section 5, Prohibitions, now states that: “No person shall use, or permit to be used, a high PAH pavement product within the County. For purposes of this Sub-Section, the term “high PAH pavement product” means a product, material, or substance that contains greater than 0.1% (1000 ppm) polycyclic aromatic hydrocarbons (PAH) by weight and is intended for use on an asphalt or concrete surface, including but not limited to, a driveway, playground, parking area, pathway, or roadway.”

Other prohibitions (violations) added to Section 5 of the Ordinance include: accidental discharges (c), improper storage, handling, or processing of materials (d), failure to comply with requirements or corrective actions (e), obstructing county personnel (g), and allowable incidental discharges of non- storm water (h).

Changes to Section 6, Powers and Authority for Inspection, include:

- (a) **Authority to Inspect and Monitor** (a) – the revisions added a stipulation that when security measures are in force that would require identification and clearance before entry into the premises, arrangements with security personnel must be made so that, upon presentation of identification, personnel will be permitted to enter and perform their specific duties and responsibilities without delay.
- (b) **Search Warrants** (b) – the revisions added a provision for obtaining a search warrant to conduct inspections to the extent permitted by law.

Changes to Section 7, Enforcement Remedies and Penalties, include:

- (a) **Remedies Not Limited** (a) – the revisions added a provision that the remedies provided in the Ordinance are not exclusive and may be combined with any other remedies authorized by law.
- (b) **Notice of Violation** (b) – the revisions added a provision that any person who violates the Ordinance, or allows a direct or indirect, act or acts which causes a violation of the Ordinance will be issued a written notice of violation. The specific content of the notice is described as well as how it will be served.
- (c) **Civil Penalties** (c) – the revisions clarify that a civil penalty may be assessed for the time period from the date the violation first occurs until the date that the violation ceases as verified by staff. The revisions also indicate that penalties may be assessed concurrent with a notice of violation when staff are hampered or obstructed from carrying out official duties; a repeat or continuing violation has occurred; and/or there is a willful or intentional violation of the Ordinance. In addition, the revisions add the following factors for inclusion in determining the amount of a civil penalty: knowledge of the requirements by the violator and/or reasonable opportunity or obligation to obtain such knowledge; and technical and economic reasonableness of

reducing or eliminating the violation. Another change is that the previous version of the ordinance required that civil penalties collected would be credited to the Town of Davidson general fund as a non-tax revenue, whereas the revised version stipulates that all penalties shall be remitted to the Charlotte-Mecklenburg School System as required by State law.

- (d) **Compliance Agreement** (e) – the revisions added a provision for the use of a Compliance Agreement as a remedy to obtain compliance.
- (e) **Compliance Order** (f) – the revisions added a provision for the use of a Compliance Order to obtain compliance.
- (f) **Cease and Desist Order** (g) – the revisions added a provision for the use of a Cease-and-Desist Order to obtain compliance.
- (g) **Withholding of Inspections, Permits, or Other Approvals** (h) – the revisions added a provision for withholding inspections, permits, and other approvals as a means for obtaining compliance.
- (h) **Abatement by the County** (j) – the revisions included specific information regarding the process for abatement of violations by the County when the violator fails to comply.
- (i) **Emergencies** (k) – the revisions included provisions for abatement of violations when there is an immediate threat to public health, safety, or the environment.
- (j) **Injunctive Relief** (l) – the revisions included a provision for obtaining injunctive relief through the courts as an added compliance measure.

### *Service Requests*

From September 23, 2021, until August 1, 2022, Water Quality staff have responded to six (6) separate service requests in the Rocky River Watershed. These service requests were for a variety of problems including sewage discharges and stream blockages. A summary of the service requests is shown below. Additional information about each service request may be viewed by searching for the inspection number or the service request number in the Cityworks server. There are no active storm water or erosion control construction projects within the Rocky River watershed. One new commercial BMP Project was completed on January 6, 2022, located at 2440 Whitehall Park Drive in Cornelius.

**Table 5: Rocky River Watershed Service Requests**

SR#	Date Closed	Inspector	Location	Municipality	Activity Type	Incident Type	Land use type	Material released
111129	21-Jan-22	Burgett	19801 Shearer Rd	Davidson	SWO Maintenance	Blockage	Single-family Residential	N/A
118201	21-Dec-21	Thao	1101 Woody Ln	Davidson	Service Request	Discharge/Dump	Single-family Residential	Sewage - CMU
121395	5-Jan-22	Burgett	Rocky River Bluff Nature Preserve	Mecklenburg	SWO Maintenance	Blockage	Recreational	N/A
129706	4-Mar-22	Roux	13428 Scanlan Wy	Davidson	Service Request	Natural Condition	Single-family Residential	None
142574	31-May-22	Ferguson	736 Hudson Pl	Davidson	Service Request	Discharge/Dump	Single-family Residential	Sewage - private

144627	In Progress	Burgett	19330 Wildcat TI	Davidson	SWO Maintenance	Blockage	Single-family Residential	N/A
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## Public Property Acquisitions

There was one (1) new public property purchased from July 14, 2021, through August 1, 2022.

**Table 6: Rocky River Watershed Public Parcels**

Parcel Number	Size (Acres)	Owner	Address			Date of Sale
310114	4.3	CITY OF CHARLOTTE		SHEARER	RD	7/14/2000
740252	0.1	CITY OF CHARLOTTE		PATRICK JOHNSTON	LN	8/5/2016
715234	0.2	CHARLOTTE-MECKLENBURG BOARD OF EDUCATION		BAILEY	RD	5/6/2015
712208	21.5	CHARLOTTE-MECKLENBURG BOARD OF EDUCATION		BAILEY	RD	1/11/2012
712101	32.3	CHARLOTTE-MECKLENBURG BOARD OF EDUCATION	12420	BAILEY	RD	1/11/2012
712102	4.8	CHARLOTTE-MECKLENBURG BOARD OF EDUCATION	12346	BAILEY	RD	1/11/2012
713116	18.2	CHARLOTTE-MECKLENBURG BOARD OF EDUCATION	11900	BAILEY	RD	8/31/2004
713116	18.2	CHARLOTTE-MECKLENBURG BOARD OF EDUCATION	11900	BAILEY	RD	8/31/2004
713116	18.2	CHARLOTTE-MECKLENBURG BOARD OF EDUCATION	11900	BAILEY	RD	8/31/2004
715232	1.7	CHARLOTTE-MECKLENBURG BOARD OF EDUCATION		BAILEY	RD	5/6/2015
712207	6.8	CHARLOTTE-MECKLENBURG BOARD OF EDUCATION		BAILEY	RD	1/11/2012
712206	1.0	CHARLOTTE-MECKLENBURG BOARD OF EDUCATION	12354	BAILEY	RD	1/11/2012
713293	1.2	CHARLOTTE-MECKLENBURG BOARD OF EDUCATION		MEETINGHOUSE	DR	4/30/2009
712205	2.0	CHARLOTTE-MECKLENBURG BOARD OF EDUCATION	12364	BAILEY	RD	1/11/2012
715233	0.9	CHARLOTTE-MECKLENBURG BOARD OF EDUCATION		BAILEY	RD	5/6/2015



305113	4.0	MECKLENBURG COUNTY		SHEARER	RD	9/2/2008
307115	55.1	MECKLENBURG COUNTY	20532	SHEARER	RD	10/11/2002
304103	239.9	MECKLENBURG COUNTY		GREY	RD	10/13/2011
705321	1.2	MECKLENBURG COUNTY		VERNON	DR	8/7/2008
305106	33.6	MECKLENBURG COUNTY	21705	SHEARER	RD	12/15/2005
730335	0.0	MECKLENBURG COUNTY	1120	HUDSON	PL	12/29/2005
336116	6.8	MECKLENBURG COUNTY	E	ROCKY RIVER	RD	5/31/2007
336115	2.2	MECKLENBURG COUNTY	E	ROCKY RIVER	RD	4/4/2007
740142	0.6	MECKLENBURG COUNTY		PATRICK JOHNSTON	LN	6/16/2006
745107	27.7	MECKLENBURG COUNTY		DAVIDSON- CONCORD	RD	11/9/2006
333102	70.3	MECKLENBURG COUNTY	21401	SHEARER	RD	8/19/2009
705320	1.2	MECKLENBURG COUNTY		VERNON	DR	8/7/2008
712212	10.3	MECKLENBURG COUNTY		BAILEY	RD	2/21/2008
307104	5.1	MECKLENBURG COUNTY	20520	SHEARER	RD	10/11/2002
747198	90.6	MECKLENBURG COUNTY		DAVIDSON- CONCORD	RD	10/31/2008
1127101	34.3	MECKLENBURG COUNTY	17005	DAVIDSON- CONCORD	RD	3/18/1998
1127101	34.3	MECKLENBURG COUNTY	17005	DAVIDSON- CONCORD	RD	3/18/1998
744109	0.5	CHARLOTTE- MECKLENBURG HOSPITAL		DAVIDSON- CONCORD	RD	1/29/2013
744108	21.1	CHARLOTTE- MECKLENBURG HOSPITAL		DAVIDSON- CONCORD	RD	1/29/2013
704307	12.4	TOWN OF DAVIDSON		SOUTH	ST	1/1/1975
751151	0.3	TOWN OF CORNELIUS	11320	FIELD	ST	6/24/2016
740134	0.1	TOWN OF DAVIDSON	1021	PATRICK JOHNSTON	LN	1/18/2006
711244	7.1	TOWN OF DAVIDSON		BRADFORD PARK	DR	12/30/2013
726392	0.3	TOWN OF DAVIDSON		ROBERT WALKER	DR	12/27/2007
751205	0.2	TOWN OF CORNELIUS	N	MAIN	ST	2/21/1980
704205	1.6	TOWN OF DAVIDSON		SOUTH	ST	8/30/2005
751206	0.0	TOWN OF CORNELIUS	N	MAIN	ST	12/28/1981
726599	1.2	TOWN OF DAVIDSON		ROBERT WALKER	DR	12/27/2007
317721	0.7	TOWN OF CORNELIUS	N	MAIN	ST	9/30/2005
751118	0.4	TOWN OF CORNELIUS	19746	ZION	AV	8/22/2016
751227	0.0	TOWN OF CORNELIUS		ZION	AV	8/22/2016
751242	0.1	TOWN OF CORNELIUS	S	MAIN	ST	8/5/1965
331456	0.3	TOWN OF DAVIDSON		O HENRY	AV	3/27/2008
331485	0.3	TOWN OF DAVIDSON	186	HARPER LEE	ST	3/27/2008
704309	0.6	TOWN OF DAVIDSON		SOUTH	ST	4/14/1934
711171	3.6	TOWN OF DAVIDSON	12550	STONEBRIAR RIDGE	DR	12/30/2013
315730	0.6	TOWN OF DAVIDSON		SOUTH FAULKNER	WY	3/27/2008
317726	1.1	TOWN OF CORNELIUS	21445	CATAWBA	AV	8/5/1999
317719	0.0	TOWN OF CORNELIUS	N	MAIN	ST	11/19/1992
317718	0.0	TOWN OF CORNELIUS	20001	N MAIN	ST	11/19/1992
713118	21.8	TOWN OF CORNELIUS		OLD STATESVILLE	RD	12/30/2016
712253	12.9	TOWN OF CORNELIUS		BAILEY	RD	12/9/2016
751208	0.0	TOWN OF CORNELIUS	N	MAIN	ST	2/21/1980
315324	0.0	TOWN OF DAVIDSON		CALDWELL	LN	3/27/2008

331481	0.0	TOWN OF DAVIDSON	270	HARPER LEE	ST	3/27/2008
711199	3.7	TOWN OF DAVIDSON		BRADFORD PARK	DR	12/30/2013
331428	2.0	TOWN OF DAVIDSON	421	NORTH FAULKNER	WY	3/27/2008
706123	0.0	TOWN OF CORNELIUS	N	MAIN	ST	3/11/1997
726397	4.4	TOWN OF DAVIDSON THE	13130	ROBERT WALKER	DR	12/31/1997
331484	0.3	TOWN OF DAVIDSON		NORTH FAULKNER	WY	3/27/2008
315218	1.7	TOWN OF DAVIDSON	312	NORTH FAULKNER	WY	3/27/2008
331483	7.7	TOWN OF DAVIDSON		O HENRY	AV	3/27/2008
751207	0.0	TOWN OF CORNELIUS	N	MAIN	ST	12/28/1981
713114	6.8	TOWN OF CORNELIUS	11900	BAILEY	RD	8/31/2004
713115	5.2	TOWN OF CORNELIUS	11536	BAILEY	RD	4/25/2006
325102	0.1	TOWN OF DAVIDSON THE		POTTS	ST	4/15/1991
317717	0.0	TOWN OF CORNELIUS	N	MAIN	ST	11/19/1992
521211	1.2	TOWN OF CORNELIUS	21440	CATAWBA	AV	2/10/1920
711197	2.2	TOWN OF DAVIDSON		BRADFORD PARK	DR	1/8/2009
713113	53.6	TOWN OF CORNELIUS		BAILEY	RD	10/31/2000
317716	0.0	TOWN OF CORNELIUS THE	20009	N MAIN	ST	11/19/1992
740254	2.2	TOWN OF DAVIDSON		MATTHEW MCCLURE	CR	7/19/2017
741568	3.6	TOWN OF DAVIDSON		SHEARER	RD	5/12/2004
704202	1.6	TOWN OF DAVIDSON	865	SOUTH	ST	1/1/1975
331486	0.2	TOWN OF DAVIDSON	185	HARPER LEE	ST	3/27/2008
704202	0.9	TOWN OF DAVIDSON	865	SOUTH	ST	1/1/1975
711149	9.5	TOWN OF DAVIDSON		BRADFORD PARK	DR	12/30/2013
741125	3.0	TOWN OF DAVIDSON		INDIAN OAKS	LN	5/12/2004
726119	4.0	TOWN OF DAVIDSON		DAVIDSON- CONCORD	RD	5/12/2004
521209	0.2	TOWN OF CORNELIUS	21450	CATAWBA	AV	2/6/2001
325322	0.0	TOWN OF DAVIDSON	244	S MAIN	ST	4/15/1982
751101	0.8	TOWN OF CORNELIUS	20114	ZION	AV	12/20/1999
706212	2.0	TOWN OF CORNELIUS		ZION	AV	12/29/2003
751145	18.8	TOWN OF CORNELIUS		OLD CANAL	ST	12/28/2015
711279	2.4	TOWN OF DAVIDSON		CYPRESS GARDEN	DR	3/11/2010
0033611	2.16	MECKLENBURG COUNTY	E	ROCKY RIVER	RD	2/5/2019
0074719	90.52	MECKLENBURG COUNTY		DAVIDSON- CONCORD	RD	2/28/2020
0073033	0	MECKLENBURG COUNTY	1120	HUDSON	PL	9/10/2019
0070532	1.23	MECKLENBURG COUNTY		VERNON	DR	9/18/2019
0074014	1.04	TOWN OF DAVIDSON		PINE	RD	10/28/2019
0071119	3.67	TOWN OF DAVIDSON		BRADFORD PARK	DR	7/11/2018
0031771	0	TOWN OF CORNELIUS	N	MAIN	ST	1/9/2020
0075114	18.77	TOWN OF CORNELIUS		OLD CANAL	ST	9/18/2019
0071311	21.8	TOWN OF CORNELIUS		OLD STATESVILLE	RD	11/26/2019
0075111	0.64	TOWN OF CORNELIUS	19746	ZION	AV	7/23/2018
0072659	1.23	TOWN OF DAVIDSON		ROBERT WALKER	DR	5/26/2020
0031772	0.73	TOWN OF CORNELIUS	20025	N MAIN	ST	1/9/2020
0070430	12.4	TOWN OF DAVIDSON	626	SOUTH	ST	9/18/2019
0070131	5.28	TOWN OF DAVIDSON	251	SOUTH	ST	9/9/2019
0071225	12.85	TOWN OF CORNELIUS		BAILEY	RD	3/13/2020
0071539	3.55	TOWN OF CORNELIUS		AVERY PARK	DR	5/10/2019
0070621	1.98	TOWN OF CORNELIUS		ZION	AV	9/18/2019
00740254	2.2	TOWN OF DAVIDSON		MATTHEW MCCLURE	CR	2/5/2020

00713113	53.62	TOWN OF CORNELIUS		BAILEY	RD	11/26/2019
00713114	6.83	TOWN OF CORNELIUS	11900	BAILEY	RD	11/26/2019
00704309	0.57	TOWN OF DAVIDSON		SOUTH	ST	9/18/2019
00740134	0.12	TOWN OF DAVIDSON	1021	PATRICK JOHNSTON	LN	3/25/2019
0074025	0.12	CITY OF CHARLOTTE	722	PATRICK JOHNSTON	LN	3/25/2019
00741125	3	TOWN OF DAVIDSON		INDIAN OAKS	LN	5/2/2018
00711171	3.63	TOWN OF DAVIDSON	12550	STONEBRIAR RIDGE	DR	4/30/2018
00726119	4	TOWN OF DAVIDSON	19436	DAVIDSON- CONCORD	RD	5/2/2018
00741568	3.62	TOWN OF DAVIDSON		SHEARER	RD	5/2/2018
00726397	4.38	TOWN OF DAVIDSON	13130	ROBERT WALKER	DR	5/2/2018
00726392	0.27	TOWN OF DAVIDSON		ROBERT WALKER	DR	5/2/2018
00307105	0.68	MECKLENBURG COUNTY	20416	SHEARER	RD	2/23/2022

## Progress Toward Goals

**Table 7: Rocky River Watershed In-Stream Water Quality Goals**

In-Stream Water Quality Goals
1. TSS $\leq$ 0.3 tons/ac/year
2. Benthic Macroinvertebrates = Fully Supporting
3. Fish = Fully Supporting
4. Fecal coliform standard (400 CFU/100 ml)

### Activities

During FY2022, the following actions were completed to reduce fecal coliform bacteria levels and enhance water quality in this watershed:

1. Health Department records were reviewed, and no failed septic systems were identified in the watershed between June 30, 2021, and August 1, 2022, which suggests that failing septic systems are not a chronic problem in this area.
2. Fecal coliform samples were collected at the locations where the Rocky River enters and exits Mecklenburg County. These samples showed no significant elevation in fecal coliform levels within the Watershed.
3. No basins within the Rocky River Watershed were walked during the FY2022 streamwalk season.

### Continued Monitoring of the Rocky River Watershed

Water quality monitoring has been conducted in the Rocky River watershed since the 1970s. Monitoring has included the following data collection efforts:

- a. Fixed Interval Monitoring. Fixed interval monitoring was conducted at MY1B (West Branch Rocky River at River Ford Drive) on a monthly basis throughout the fiscal year.

- b. Macroinvertebrate Samples. Macroinvertebrate samples and MHAP data was collected at MY1B.
- c. Figures 1, 2, and 3 below show graphically Fecal Coliform sampling results at the Q733 (1) site and MY1B site (2 and 3).

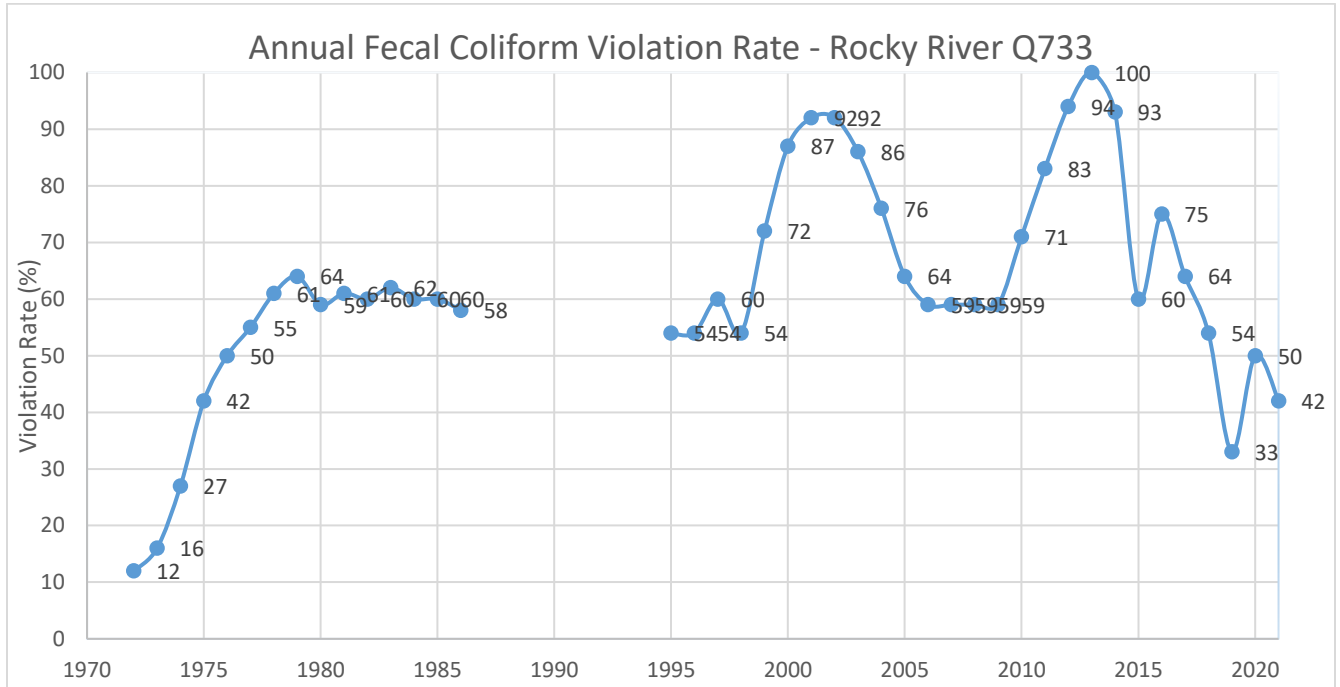


Figure 1 - Annual Fecal Coliform Violation Rate

Table 8: NCDWQ Fecal Coliform Data for Site Q7330000 on the Rocky River

Year	Geometric Mean	# Compliant	# Non-Compliant	Total Samples	% Compliant	% Non-Compliant
2015	400.35	4	6	10	40%	60%
2016	596.97	3	9	12	25%	75%
2017	471.93	5	6	11	36%	64%
2018	573.58	6	7	13	46%	54%
2019	357.17	8	4	12	67%	33%
2020*	432.4	3	3	6	50%	50%
2021	491.22	7	5	12	58%	42%

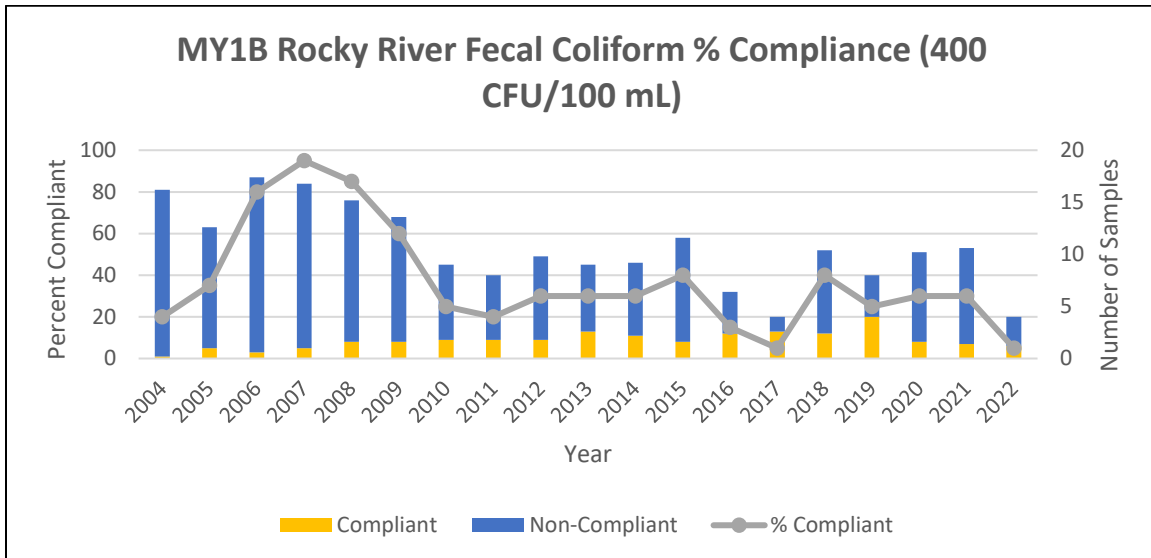
\*There are fewer samples for 2020 because of Covid-19.

A section of the Rocky River in Mecklenburg County (AU Number 13-17a) is subject to a fecal coliform TMDL with a WLA assigned to storm water that was approved on September 19, 2002. According to the approved NC 2020 305(b) report, the Rocky River is currently meeting the fecal coliform criteria. Mecklenburg County has been assigned responsibility for this TMDL on behalf of the Phase I and Phase II jurisdictions in Charlotte-Mecklenburg. Phase II Permit conditions required that a monitoring plan be developed for the Fecal Coliform TMDL in the Rocky River Watershed unless a waiver was obtained from NCDEQ. Such a waiver was obtained on June 26, 2014, based on the

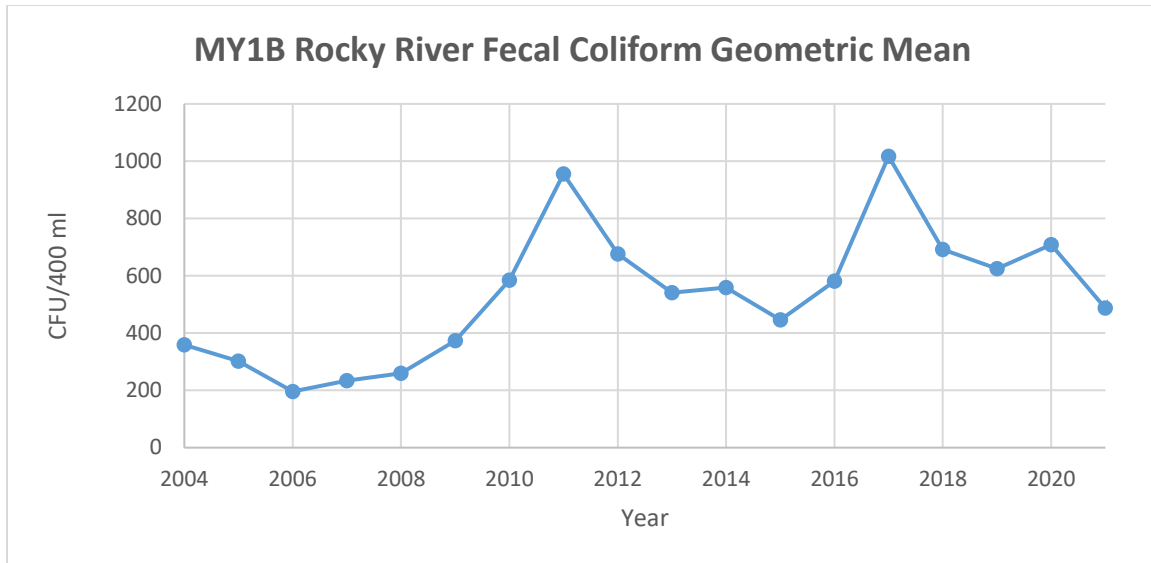
condition that Mecklenburg County continue to evaluate the land use and development within the watershed on an annual basis and if additional storm water infrastructure is installed or higher intensity land uses are constructed a Monitoring Plan would be reconsidered.

**Table 9: Fecal Coliform Data for Site MY1B on the Rocky River**

Year	Geometric Mean	# Compliant	# Non-Compliant	Total Samples	% Compliant	% Non-Compliant
2015	445.78	8	8	16	50	50
2016	581.77	3	12	15	20	80
2017	1017.24	1	13	14	7	93
2018	691.93	8	12	20	40	60
2019	624.25	5	20	25	20	80
2020	709.00	6	8	14	43	57
2021	487.07	6	7	13	46	54
2022	832.78	1	6	7	14	86



**Figure 2 - Fecal Coliform Compliance**



**Figure 3 - Fecal Coliform Geometric Mean**

### **Benthic Macroinvertebrates**

Benthic macroinvertebrate surveys are conducted on an annual basis to assess the abundance and diversity of the biological community. Table 10 summarizes the benthic macroinvertebrate data that has been collected from site MY1B from August 2002 – September 2021.

**Table 10: Benthic Macroinvertebrate Summary Data from MY1B**

<b>Date</b>	<b>NCBI</b>	<b>EPT Species</b>	<b>Total Taxa</b>	<b># of Organisms</b>	<b>Bioclass</b>
8/2/2002	7.20	7	46	231	Fair
9/12/2003	6.74	7	41	372	Fair
8/6/2004	6.22	5	22	211	Fair
8/16/2005	6.59	8	28	244	Fair
7/7/2006	6.11	10	42	360	Fair
8/23/2007	7.23	8	33	251	Fair
8/15/2008	6.70	11	44	361	Fair
8/7/2009	6.27	11	33	272	Fair
7/30/2010	6.30	9	32	301	Fair
7/1/2011	6.72	11	42	325	Fair
7/6/2012	6.52	12	45	235	Fair
9/5/2013	6.84	11	38	337	Fair
7/21/2014	6.24	8	31	338	Fair
7/23/2015	6.12	16	50	498	Good-Fair
7/22/2016	6.28	10	35	328	Fair
7/20/2017	6.39	12	38	456	Fair
7/9/2018	6.29	13	44	566	Good-Fair
8/7/2019	6.45	11	47	550	Fair

8/18/2020	6.09	12	40	474	Good-Fair
9/17/2021	6.68	10	43	327	Fair

The North Carolina Index of Biotic Integrity (NCIBI) is a measure of the structure and “health” of a stream’s biological community. The NCIBI integrates data about species richness and composition, trophic composition, species abundance, and habitat condition. The general trend for NCIBI at MY1B is Fair for macrobenthic invertebrates.

### **Fish**

Fish community surveys are conducted on a 3-year and 4-year rotation at sites throughout the County. Table 11 summarizes the fish community data that has been collected at MY1B from May 1996 through May 2021.

**Table 11: Fish Summary Data from MY1B**

<b>Date</b>	<b>NCBI</b>	<b>NCBI Rating</b>	<b># of Species</b>	<b># of Fish</b>
5/21/1996	48	Good	18	217
9/23/2005	46	Good-Fair	14	223
9/15/2010	36	Fair	13	169
10/10/2013	32	Poor	13	142
5/8/2017	20	Poor	7	88
5/24/2021	30	Poor	15	187

### **Adaptive Management**

The Water Quality Program should continue implementing the Watershed Management Plan. Fixed Interval Monitoring, Benthic and Fish Monitoring, could be expanded to other sections of the watershed. Stream restoration and enhancement opportunities are challenging due to the inability to obtain easements. Opportunities to partner with other government agencies and the Towns to implement stream restoration projects should be investigated. Within the next two fiscal years, the Rocky River Watershed Management Plan will be revisited and updated in whole to reflect new programs and initiatives within the Water Quality Department.