

# Catawba River Basin Nutrient Study

October 1, 2018

Prepared by

**NC Department of Environmental Quality**

Division of Water Resources



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## Executive Summary

Session Law 2017-209, Section 12 tasked the NC Department of Environmental Quality (NCDEQ) with conducting a nutrient study of the Catawba River and its “major tributar(ies).” NCDEQ’s Division of Water Resources (DWR) monitored nutrients in the Catawba River basin from January to July 2018. DWR staff monitored nutrient concentrations at all 41 existing ambient monitoring stations in the Catawba River basin and added ten new monitoring stations to address data gaps and to respond to potential nutrient problems. Past nutrient monitoring data, watershed land use data, and input from DWR basin planners were used to locate the new stations. The highest mean concentrations for most nutrients were observed in the urbanized areas in the lower portions of the basin. Some streams north and south of Lake Hickory also experienced high mean ammonia concentrations. In general, monitoring stations immediately downstream of where major tributaries entered the mainstem of the Catawba River saw increases in nutrient concentrations while lakes typically acted as nutrient sinks. DWR has also developed a story map to present the findings of the study. The Catawba Nutrient Study story map can be found at the following link:

<https://ncdenr.maps.arcgis.com/apps/MapSeries/index.html?appid=fd48cb721ea2455682c10d79c397659c> or <https://arcg.is/1iyi9u>.

### 1.0 Introduction

The Catawba River is one of seventeen major river basins in NC. It originates in McDowell County just west of Marion, NC and runs west to east past Hickory, NC where it turns to the south and runs to the South Carolina border between Gastonia and Charlotte, NC (Figure 1). The NC portion of the Catawba River is approximately 225 miles long, and the watershed covers approximately 3,300 square miles. The river basin stretches across two NC Department of Environmental Quality (NCDEQ) regional offices, the Asheville Regional Office (ARO) and the Mooresville Regional Office (MRO). In 1999, due to water quality nutrient over enrichment concerns throughout the Catawba River Basin, the NC General Assembly ratified the Clean Water Act of 1999 (HB 1160, Part VII) which gave the Environmental Management Commission (EMC) the authority to adopt temporary rules to protect the Catawba River Basin. A temporary rule went into effect June 30, 2001 with the permanent *Catawba River Basin: Protection and Maintenance of Existing Riparian Buffers* rule (15A NCAC 02B .0243) taking effect August 1, 2004. This law established 50-foot protected riparian buffers along the mainstem of the Catawba River and its mainstem lakes.

Session Law 2017-209, House Bill 56, Section 12 tasks the NCDEQ with conducting a nutrient study of the Catawba River and its “major tributar(ies).” The language reads as follows:

#### **WATER QUALITY TESTING**

**SECTION 12.** *The Division of Water Resources of the Department of Environmental Quality shall conduct a water quality sampling program for nutrients along the mainstem of the Catawba River, which includes sampling for nutrients above, in, and below each major tributary of the Catawba River. No later than October 1, 2018, the Division shall report the results of the study to the Environmental Review Commission.*

### 2.0 Study Design

DWR began study development by attempting to define and enumerate major tributaries in the Catawba River basin. The Strahler stream order classification system was used to define a range of stream sizes

typically identified as major tributaries. Based on this range, the streams were enumerated by order. It was assumed that for each tributary included in the study there would be three monitoring stations, upstream of the tributary, downstream of the tributary, and within the tributary. Table 1 presents the order, number of streams by order, and the associated number of monitoring stations. Figure 1 shows the location of the different stream orders in the watershed.

**Table 1 - Numbers of Catawba River tributaries by stream order.**

<b>Stream Order</b>	<b>Number of Tributaries</b>	<b>Mean Drainage Area (sq mi)</b>	<b>Number of Stations*</b>
5 <sup>th</sup>	3	318	9
4 <sup>th</sup>	10	84	30
3 <sup>rd</sup>	18	23	54

\*Assumed need for a station upstream, in, and downstream from each tributary.

The number of needed monitoring stations depended on the stream order and ranged from 9 to 54. At the time of the analysis, there were a total of 41 monitoring stations in the basin. Some existing stations could function as an up-, down-, or instream station, but the study would likely require new monitoring locations. Establishing new monitoring stations can be complicated due to difficulties in finding safe, accessible locations, and regional office staff who primarily conduct the ambient monitoring would have to give up existing duties to cover additional monitoring locations. Recent legislation in Session Law 2018-5 established funding available for sampling/monitoring per- and polyfluoroalkyl substances (PFAS) in North Carolina. One PFAS sampling/monitoring position is being established to reside in the Mooresville Regional Office, which could potentially contribute to future study needs.

Upon consultation with the NC General Assembly, DWR developed a study plan for satisfying the legislative mandate. DWR developed a focus area for the study that included the Catawba River mainstem and major tributaries upstream of Lake Norman and the South Fork Catawba River and major tributaries in Burke and Catawba Counties (See Figure 2). DWR staff conducted a preliminary desktop analysis of existing nutrient data in these areas and identified gaps in monitoring data. DWR focused on areas of concern as determined by land use and known elevated nutrient concentrations.

Figure 1 – Map of the Catawba River basin stream orders.

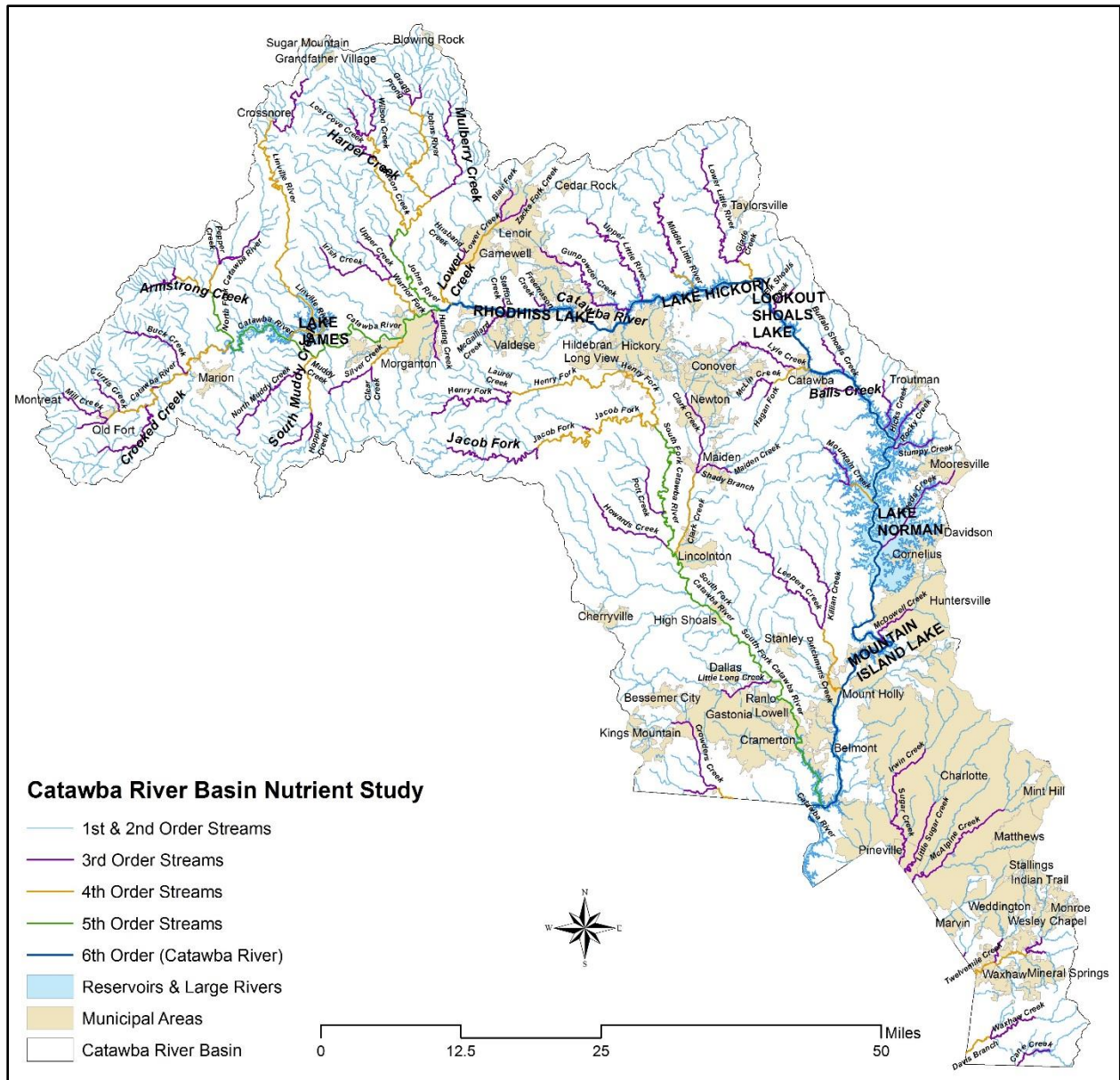
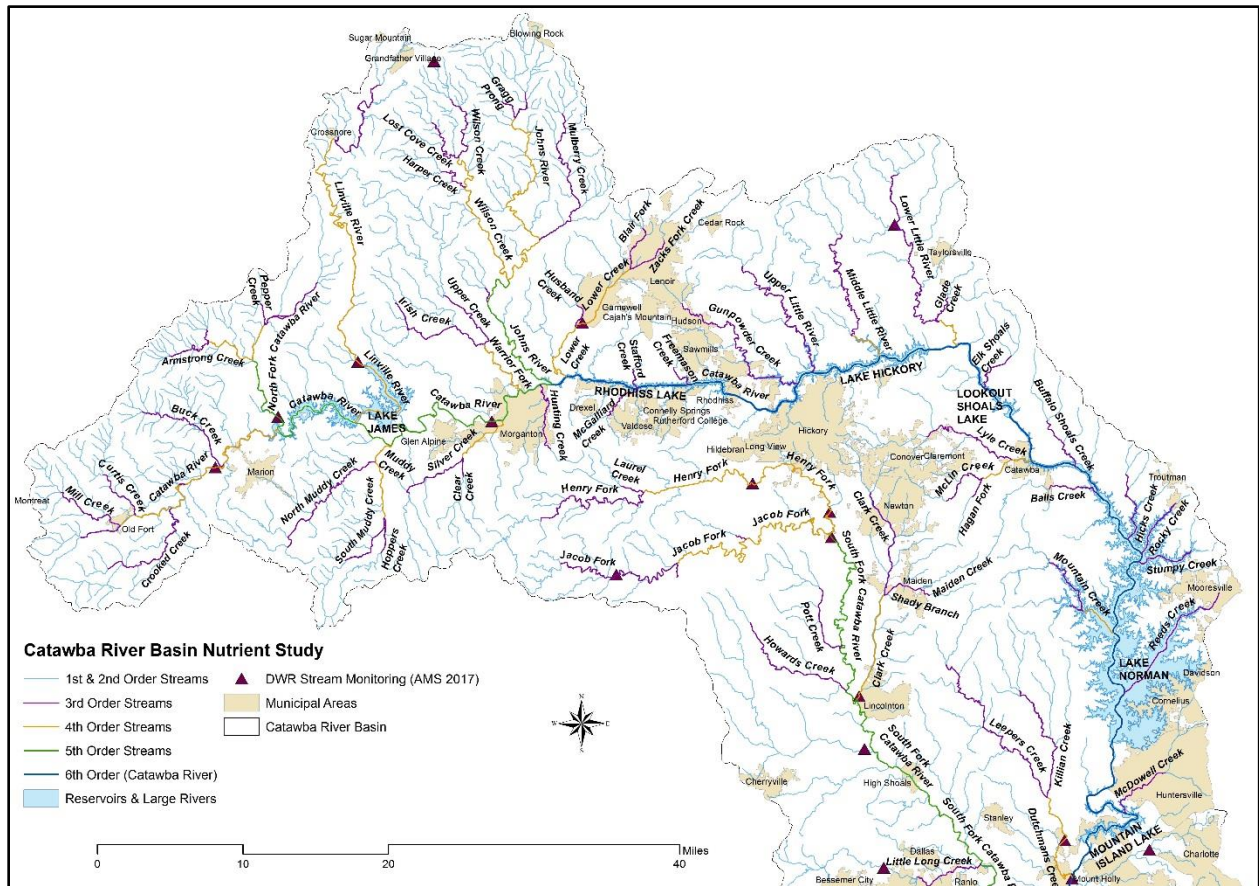


Figure 2 – Map of the focused study area in the Catawba River basin.



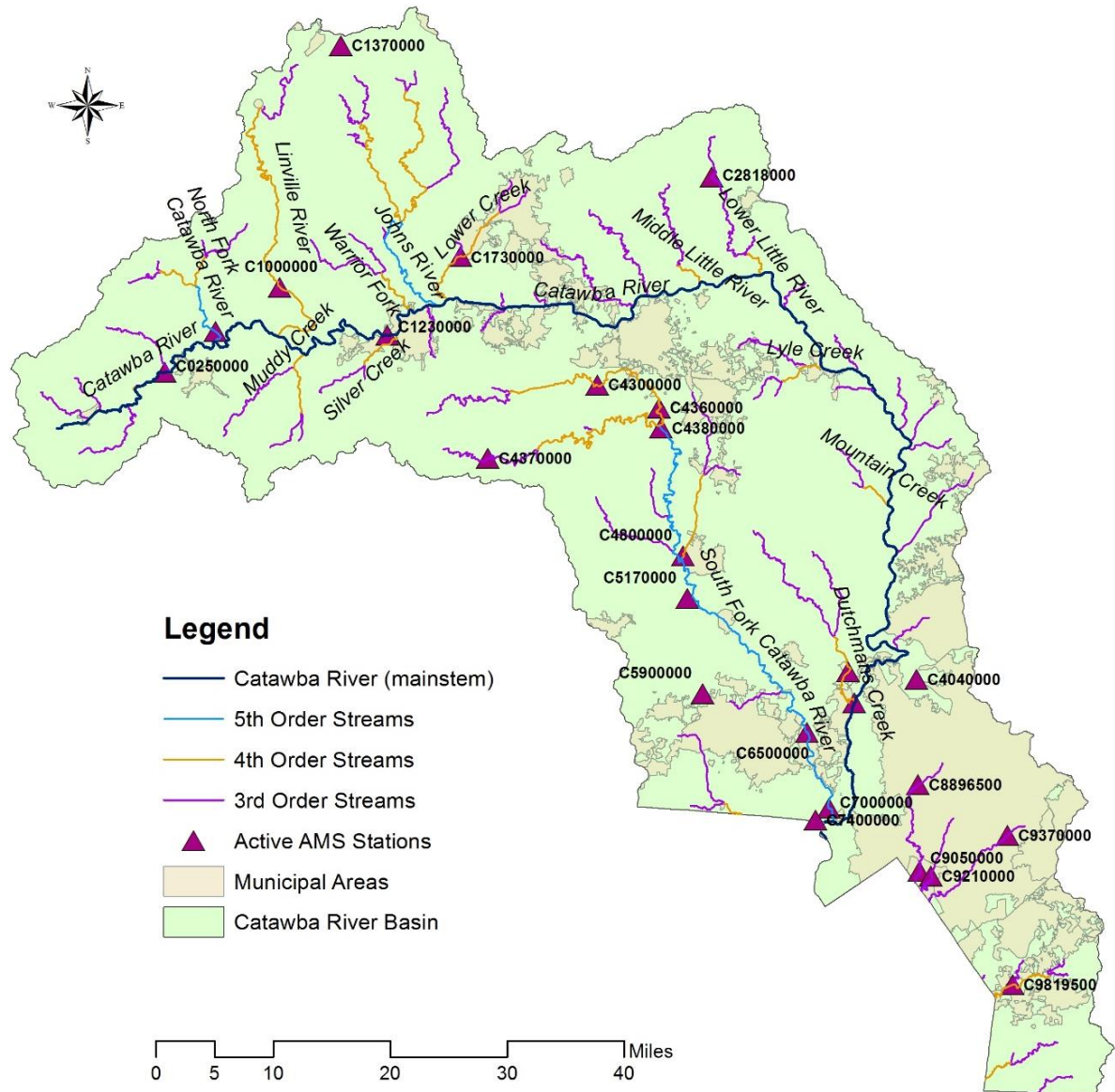
### 2.1 Existing Data

DWR looked at a variety of existing monitoring data. Where water quality changes over time could be statistically identified, DWR evaluated the data as well as the surrounding land use to determine if additional study was needed in the area. Table 2 details the stream locations in the Ambient Monitoring System (AMS) where DWR had sufficient data to run statistical analyses for total Kjeldahl nitrogen (TKN), nitrate+nitrite ( $\text{NO}_3+\text{NO}_2$ ), ammonia as N ( $\text{NH}_3$ ), and total phosphorus (TP), respectively. Seven locations in the focused study area had long term nutrient monitoring data. The locations, parameters, and respective changes over time are also provided in the table.

Figure 3 provides the locations of existing DWR ambient monitoring stations in the study area. At the time of study development, not all monitoring stations in the focused study area were monitored for nutrients and the majority of the monitoring data did not have adequate sample sizes to make a valid statistical analysis. Data from these locations along with chemical and physical parameters collected through the Ambient Lakes System Monitoring Program (ALMP), Fish Community Assessment program, and the Benthic Macroinvertebrate Assessment program were evaluated at the 10-digit hydrologic unit code (HUC) to provide a “big picture” view to help identify watersheds where nutrient concentrations may be higher. Data from all program areas were used with the understanding that they only provided a “snapshot” of the water quality conditions and were not conclusive in indicating where problems may or

may not exist. These data, combined with the AMS data, indicated that watersheds to the north of Lake Hickory and Rhodhiss Lake and the Clark Creek watershed south of Hickory and Newton have the potential for elevated nutrient concentrations. By evaluating the combined data sets to provide DWR a “big picture” view of the basin, it was also noted that there were very few monitoring stations in these portions of the Catawba River basin.

**Figure 3 – Map of Existing monitoring stations.**



**Table 2 – Existing data for monitoring stations in the proposed study area.**

Station	Changes Over Time by Parameter*			
	TKN	NO <sub>2</sub> +NO <sub>3</sub>	NH <sub>3</sub>	TP
Catawba River at SR 1221 NR Pleasant Gardens	Increasing	Decreasing	No Change	No Change
North Fork Catawba River at SR 1552 NR Hankins	Increasing	Decreasing	No Change	Decreasing
Linville River at NC 126 NR Nebo	Increasing	No Change	Increasing	Increasing
Wilson Creek at US221 NR Gragg	Increasing	Decreasing	Increasing	Increasing
Lower Creek at SR 1142 NR Lenoir	No Change	Increasing	No Change	No Change
Lower Creek NR Morganton/Marion (deactivated)	Decreasing	Decreasing	Decreasing	No Change
Jacob Fork at SR 1924 at Ramsey	Increasing	No Change	No Change	Increasing

\*Data shown in the table were developed using a seasonal and non-seasonal version of the non-parametric Mann-Kendal trend test to determine temporal trends in water quality. The dataset includes data from 1997-2016. Only stations that had at least 5 years of data and 40 samples during that time period were evaluated. The analysis is to be used as a screening tool and should not be used for other purposes outside of its intended use.

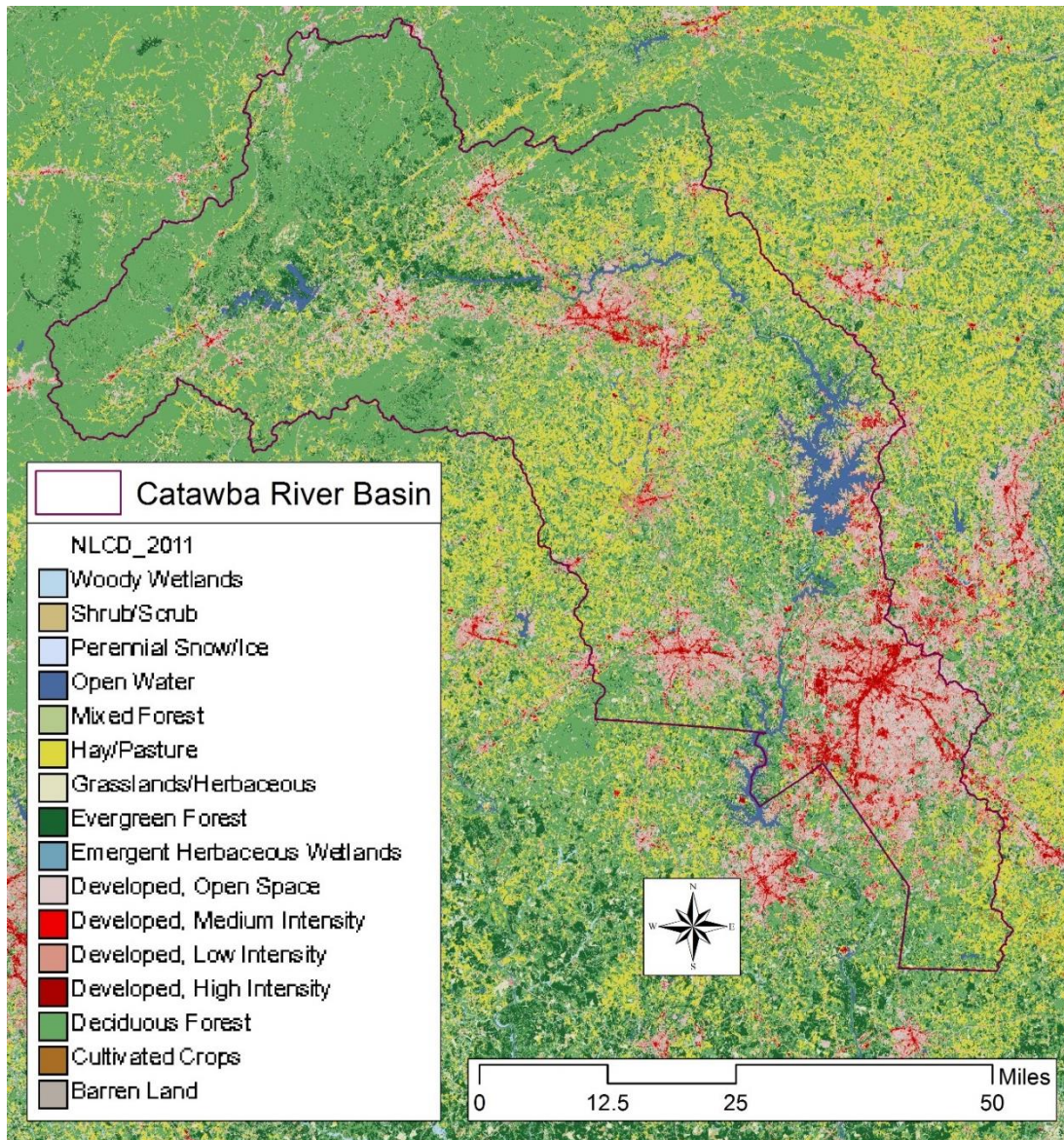
## 2.2 Additional Monitoring

A preliminary land use survey of the watershed and anecdotal evidence were used in combination with the existing nutrient data to identify data gaps and other streams of concern. Streams identified for closer study included the Upper, Middle, and Lower Little Rivers, and Gunpowder Creek to the north of Lake Hickory; Horseford Creek and Falling Creek near the City of Hickory; Lyle Creek and McLin Creek whose watersheds include portions of the City of Hickory, City of Newton, Town of Conover, Town of Claremont, and Town of Catawba. These streams drain a variety of land uses including agriculture and urban/suburban uses (Figure 4). During field reconnaissance, at least one suitable monitoring location was identified for each of these creeks. These locations (Figure 5) are listed below:

- Upper Little River at Petra Mill Rd. (USGS gage station)
- Middle Little River at Devil Track Rd.
- Lower Little River at Liledoun Rd.
- Gunpowder Creek at Dudley Shoals Rd. (least suitable, could require land owner permission)
- Horseford Creek at Glenn Hilton, Jr. Park
- Falling Creek at 29<sup>th</sup> Avenue NE and at Cloninger Mill Rd. NE
- Lyle Creek at Highway 70
- McLin Creek at Bethany Church Rd.



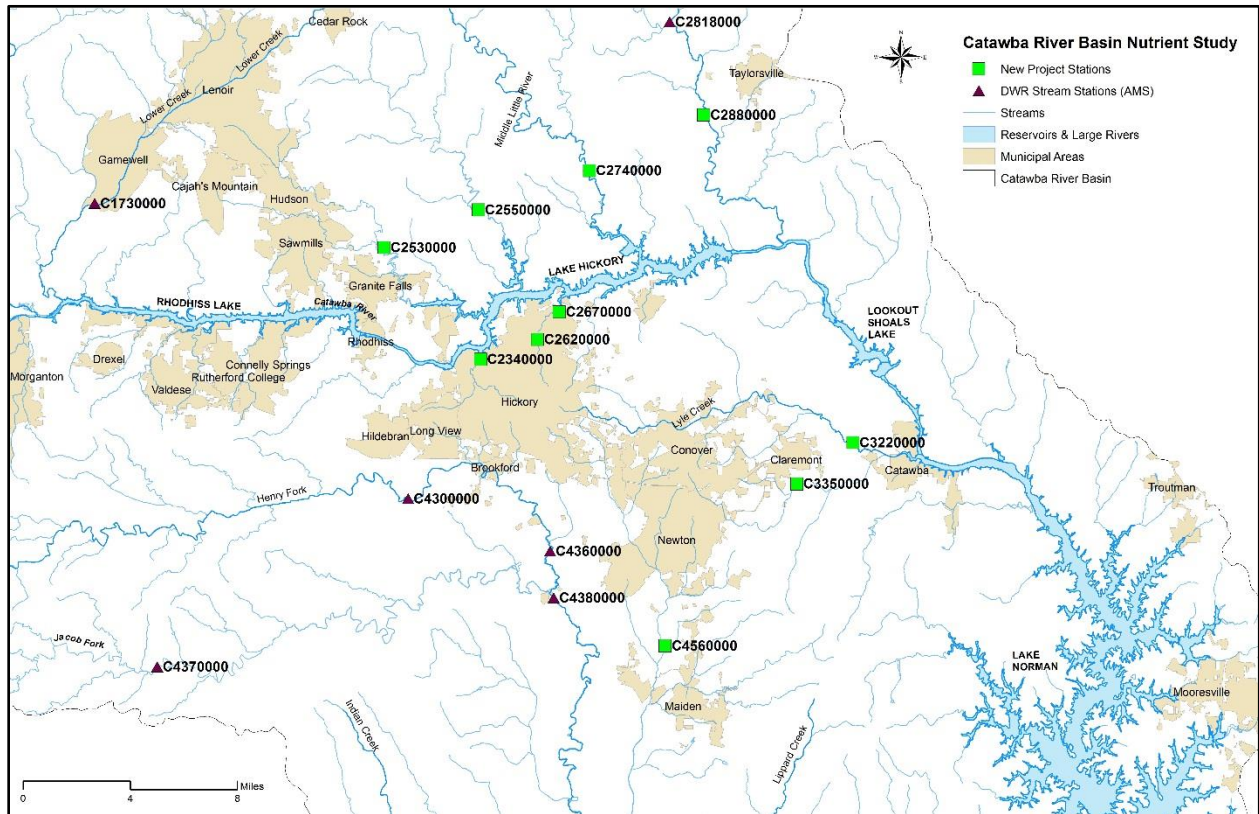
**Figure 4 – Land use coverage in the Catawba River basin.** (Source: National Land Cover Database 2011, [www.mrlc.gov](http://www.mrlc.gov), Homer et al., 2015)



As discussed above, existing water quality data suggested that Clark Creek has elevated nutrient concentrations compared with other watersheds in the study area. DWR currently monitors Clark Creek at the confluence with South Fork Catawba River. An additional station was located further up in the watershed on Clark Creek at Rome Jones Rd.

DWR’s AMS also had several stations in the focused study area that were not being monitored for nutrients. Nutrient monitoring was included at all stations in the river basin for the purposes of this study. In addition, DWR reached out to municipalities for assistance with nutrient monitoring. The City of Newton and the City of Hickory agreed to allow DWR staff to collect water quality samples at the raw water intakes for their respective water treatment plants. City of Newton has an intake on Jacobs Fork just west of US 321. City of Hickory’s intake is on Lake Hickory northeast of US 321 near the Catawba County line.

**Figure 5 – Map of new monitoring stations.**



### 2.3 Parameters

For the purposes of this study, “nutrients” were determined to be TP, TKN,  $\text{NO}_3+\text{NO}_2$ , and  $\text{NH}_3$ . Note that  $\text{TKN} + \text{NO}_3+\text{NO}_2 = \text{total nitrogen (TN)}$ . However, additional parameters were added to the study for increased usability of the results: turbidity, fecal coliform and physical water quality parameters (water temperature, dissolved oxygen, pH, and conductivity). Monitoring for these parameters was conducted in accordance with DWR’s Ambient Monitoring System Quality Assurance Project Plan, July 2017 and Ambient Lakes Monitoring Program Quality Assurance Project Plan, March 2014. Per the respective plans, samples taken in rivers and streams were collected as grab samples while lake samples were collected as a composite of the water column photic zone, defined here as two times the secchi depth.

### 3.0 Results

Nutrient results and related data were collected from DWR reservoir, river, and stream monitoring station locations during 2007-2018. Appendix A includes a list of all monitoring stations.

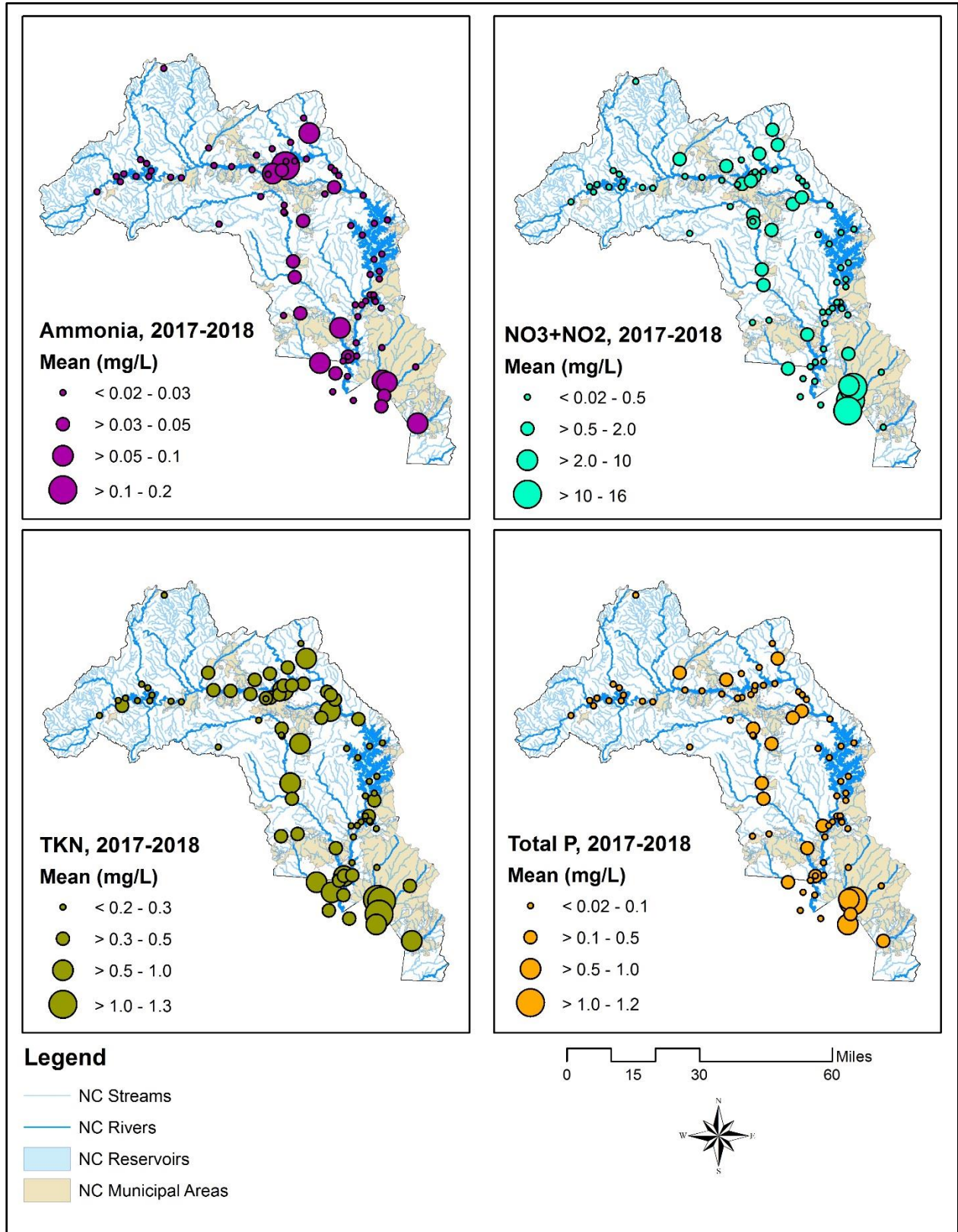
Nutrient results from monitoring stations with historic (2007-2016) data were compared to results from the study timeframe, January-July 2018 (nutrient monitoring at some stations began in February 2018). The comparison was made to evaluate the likelihood of obtaining representative data during the study. Median concentrations were compared, as these are most indicative of typical conditions at a given location. Major changes in median nutrient concentrations were not observed between the two timeframes (Appendix B).

Although NC does not have water quality standards for nutrients, all nutrient results from 2007-2018 were compiled and summarized in a process similar to that applied during DWR's assessment of surface waters. It should be noted that the data did not meet all of the requirements for comparison with NC water quality standards. The comparison was conducted to supply a standardized summary of results for each station (Appendix C) only. It can also be used as a screening tool to inform future monitoring actions in the Catawba River basin.

### *3.1 Basinwide Nutrient Concentrations*

Figure 6 presents the mean nutrient concentrations for all monitoring stations in the basin. Mean nutrient concentrations for the lakes and reservoirs were calculated using 2017 data and mean concentrations for streams were calculated using 2018 data. Mean values for most nutrients were highest around the urbanized areas in the lower portions of the watershed. Mean ammonia values were also elevated at the Horseford Creek and downstream Falling Creek and Lower Little River monitoring stations as compared to other watersheds in the basin.

Figure 6 – Mean nutrient values of 2017 ALMP data and 2018 AMS data.



### 3.2 Location-specific Nutrient Concentrations

Ammonia concentrations were generally below 0.2 mg/L during the study timeframe. Six results were greater than 0.2 mg/L, three of which were from stations in Charlotte and Gastonia at the lower end of the basin. The highest measured value was 0.47 mg/L in Sugar Creek (C9050000). Falling Creek (C2670000), located in Hickory, returned three results over 0.2 mg/L, the second highest study result, and the highest mean concentration (Table 3). In some streams with multiple monitoring stations, including Falling Creek and Lower Little River, average ammonia concentrations were higher at downstream stations (Figure 7).

**Table 3 – Monitoring stations with maximum NH<sub>3</sub> concentration greater than 0.2 mg/L.**

Station	Location	County	Stream Class	# of Results	Results >0.2 mg/L	Min (mg/L)	Median (mg/L)	Max (mg/L)	Mean (mg/L)
C9050000	SUGAR CRK AT NC 51 AT PINEVILLE	MECKLENBURG	C	7	1	0.02	0.02	0.47	0.09
C2670000	FALLING CRK NR HICKORY	CATAWBA	C	6	3	0.02	0.14	0.44	0.17
C6500000	S FORK CATAWBA RIV AT NC 7 AT MCADENVILLE	GASTON	WS-V	7	1	0.02	0.03	0.22	0.06
C9210000	LITTLE SUGAR CRK AT NC 51 AT PINEVILLE	MECKLENBURG	C	7	1	0.02	0.04	0.21	0.07

The majority of elevated NO<sub>3</sub>+NO<sub>2</sub> concentrations occurred in the lower portion of the basin, where there were four stations that returned multiple results greater than 2.0 mg/L NO<sub>3</sub>+NO<sub>2</sub> (Table 4). The highest values were observed at two stations in South Carolina, followed by Little Sugar Creek (C9210000) and Sugar Creek (C9050000) in Charlotte. Three of these stations averaged over 10 mg/L (Figure 7). Mid-basin Clark Creek (C4560000) was the only other project station with results over 2.0 mg/L, with a maximum value of 2.6 mg/L. NO<sub>3</sub>+NO<sub>2</sub> results primarily represent nitrate concentrations, as nitrite quickly converts to nitrate in the presence of oxygen.

**Table 4 – Monitoring stations with maximum NO<sub>3</sub>+NO<sub>2</sub> concentrations greater than 2.0 mg/L.**

Station	Location	County	Stream Class*	# of Results	Results >2.0 mg/L	Min (mg/L)	Median (mg/L)	Max (mg/L)	Mean (mg/L)
C9680000	MCALPINE CRK AT SC SR 29-64 NR CAMP COX SC	LANCASTER, SC	FW	7	7	2.4	19	23	15.8
C9790000	SUGAR CRK AT SC 160 NR FORT MILL SC	YORK, SC	FW	7	6	1.4	11	17	10.1
C9210000	LITTLE SUGAR CRK AT NC 51 AT PINEVILLE	MECKLENBURG	C	7	6	1.9	12	16	10.3
C9050000	SUGAR CRK AT NC 51 AT PINEVILLE	MECKLENBURG	C	7	6	0.8	4.9	6.5	4.6
C4560000	CLARK CRK AT SR 2012 NR NEWTON	CATAWBA	C	5	3	0.6	2.4	2.6	2.0

\* Freshwaters (FW) is a South Carolina surface water classification. FW are defined as freshwaters suitable for primary and secondary contact recreation and as a source for drinking water supply after conventional treatment in accordance with the requirements of the Department. Suitable for fishing and the survival and propagation of a balanced indigenous aquatic community of fauna and flora. Suitable also for industrial and agricultural uses.

Several stations (five in NC) had single monitoring events with greater than 1.5 mg/L TKN during the study timeframe, but only two NC streams (Sugar Creek and Little Sugar Creek) returned averages over 1.0 mg/L

TKN (Table 5). In the upper- to mid-basin, individual results over 1.5 mg/L were seen at three stations: C3220000 (Lyle Creek), C2880000 (Lower Little River), and C4560000 (Clark Creek) (Figure 7).

**Table 5 – Monitoring stations with maximum TKN concentrations greater than 1.5 mg/L.**

Station	Location	County	Stream Class	# of Results	Results >1.5 mg/L	Min (mg/L)	Median (mg/L)	Max (mg/L)	Mean (mg/L)
C9050000	SUGAR CRK AT NC 51 AT PINEVILLE	MECKLEN-BURG	C	7	1	0.6	0.8	4.8	1.3
C3220000	LYLE CRK AT US HWY 70 NR CATAWBA	CATAWBA	WS-IV CA*	6	1	0.2	0.5	3	0.9
C9790000	SUGAR CRK AT SC 160 NR FORT MILL SC	YORK, SC	FW	5	1	0.2	0.6	2.9	1.0
C2880000	LOWER LITTLE RIV AT LILEDOWN	ALEXANDER	C	6	1	0.3	0.5	2.7	0.8
C9680000	MCALPINE CRK NR CAMP COX SC	LANCASTER, SC	FW	7	1	0.2	1.1	2.2	1.1
C4560000	CLARK CRK AT SR 2012 NR NEWTON	CATAWBA	C	5	1	0.2	0.4	1.7	0.7
C9210000	LITTLE SUGAR CRK AT NC 51 AT PINEVILLE	MECKLEN-BURG	C	7	1	0.5	1.2	1.7	1.1
C8660000	CROWDERS CRK NR BOWLING GREEN SC	YORK, SC	FW	7	1	0.4	0.5	1.6	0.7

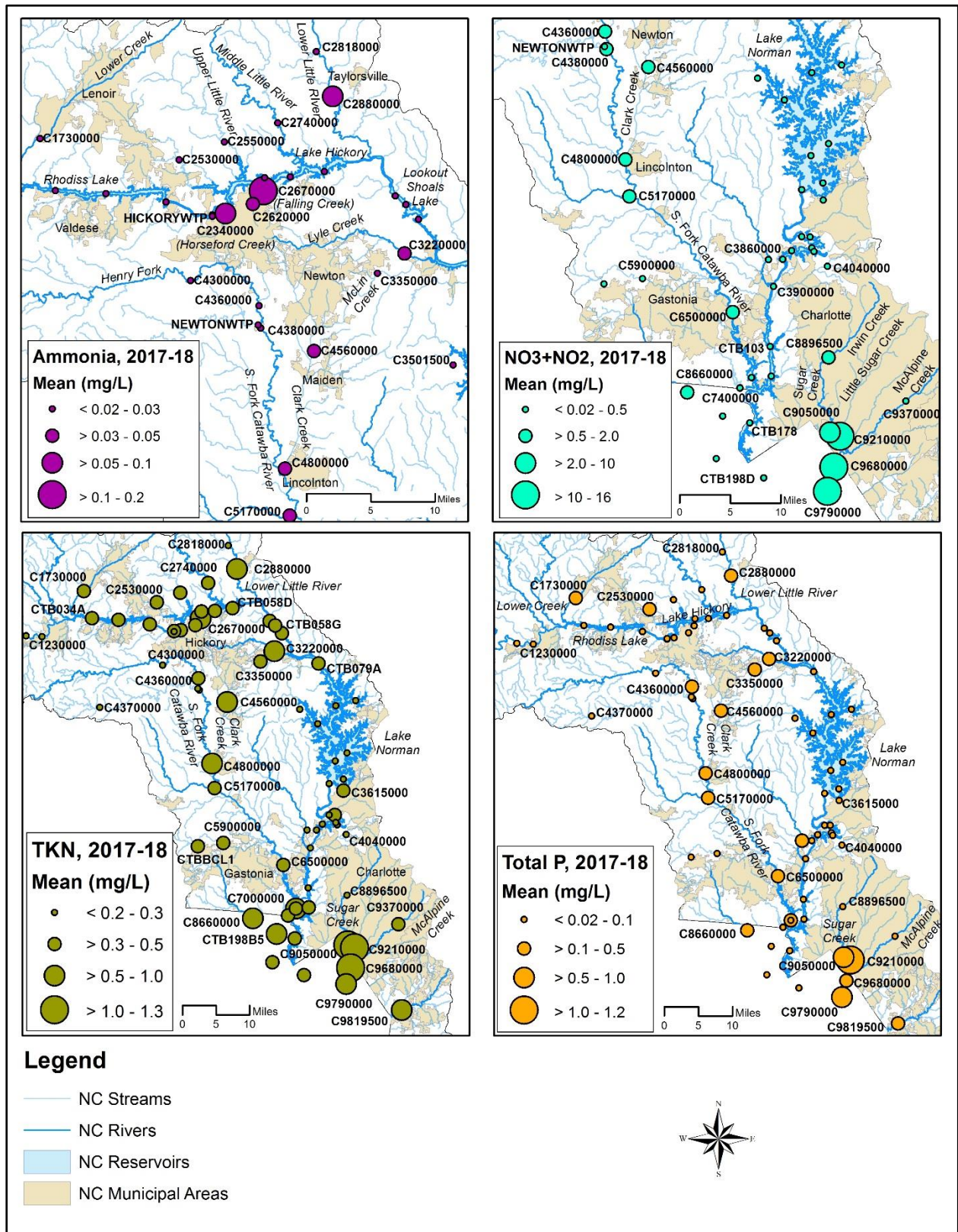
\*CA – Critical Area – The critical area is defined as extending either 1/2 mile from the normal pool elevation of the reservoir in which the intake is located or to the ridge line of the watershed (whichever comes first); or 1/2 mile upstream from and draining to the intake (or other appropriate downstream location associated with the water supply) located directly in the stream or river (run-of-the-river), or to the ridge line of the watershed (whichever comes first).

Seven stations (five in NC) had at least one result greater than or equal to 0.50 mg/L, and a mean of greater than 0.15 mg/L, total phosphorus (Table 6, Figure 7). C9210000 (Little Sugar Creek) was the only station with a majority of results greater than 1.0 mg/L.

**Table 6 – Monitoring stations with maximum TP concentrations greater than or equal to 0.50 mg/L.**

Station	Location	County	Stream Class	# of Results	Results ≥0.5 mg/L	Min (mg/L)	Median (mg/L)	Max (mg/L)	Mean (mg/L)
C9210000	LITTLE SUGAR CRK AT NC 51 AT PINEVILLE	MECKLEN-BURG	C	7	6	0.48	1.2	1.7	1.17
C9050000	SUGAR CRK AT NC 51 AT PINEVILLE	MECKLEN-BURG	C	7	5	0.38	0.71	1.1	0.76
C9790000	SUGAR CRK AT SC 160 NR FORT MILL SC	YORK, SC	FW	7	3	0.28	0.49	0.92	0.52
C2880000	LOWER LITTLE RIV AT LILEDOWN	ALEXANDER	C	6	1	0.04	0.06	0.87	0.19
C4560000	CLARK CRK AT SR 2012 NR NEWTON	CATAWBA	C	5	1	0.12	0.16	0.6	0.25
C9680000	MCALPINE CRK NR CAMP COX SC	LANCASTER, SC	FW	7	1	0.22	0.35	0.58	0.35
C4800000	CLARK CRK AT SR 1008 AT LINCOLNTON	LINCOLN	WS-IV	7	1	0.13	0.26	0.50	0.30

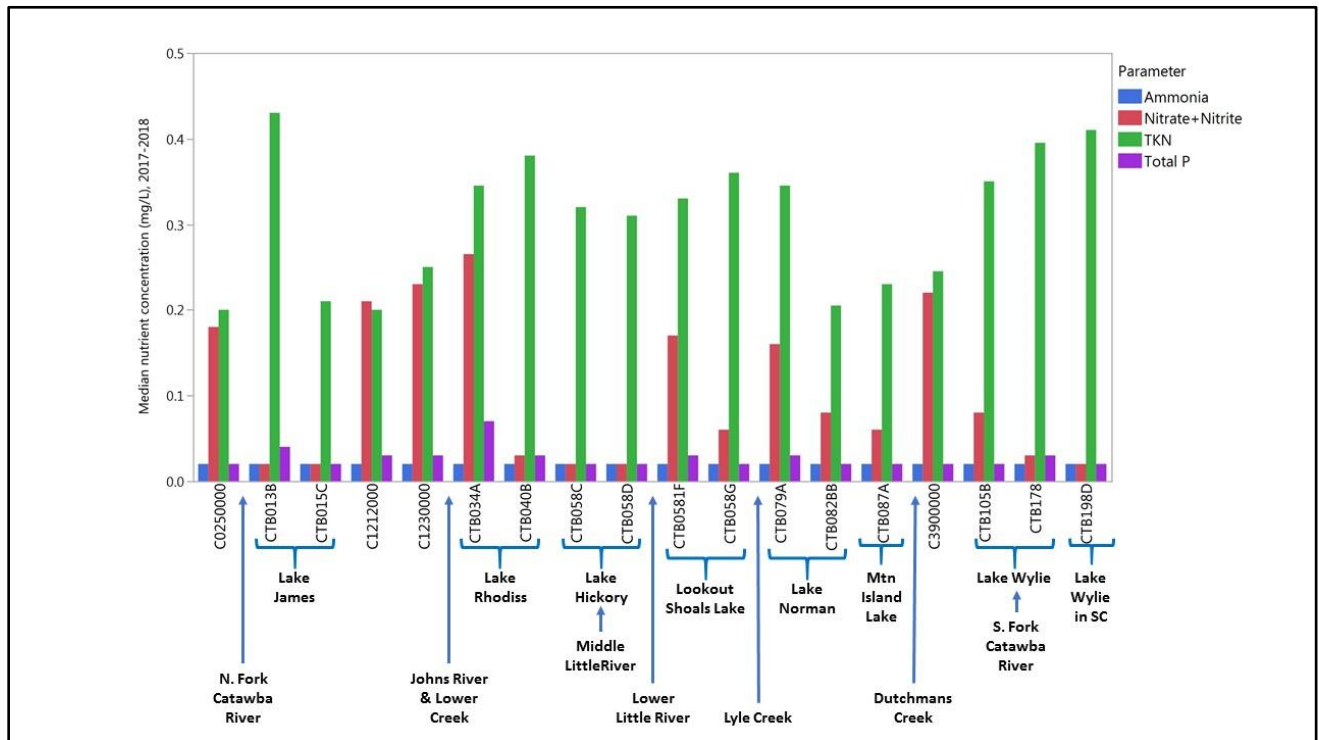
Figure 7 – Maps of stations with elevated concentrations by nutrient parameter.



### 3.3 Major Tributary Influence

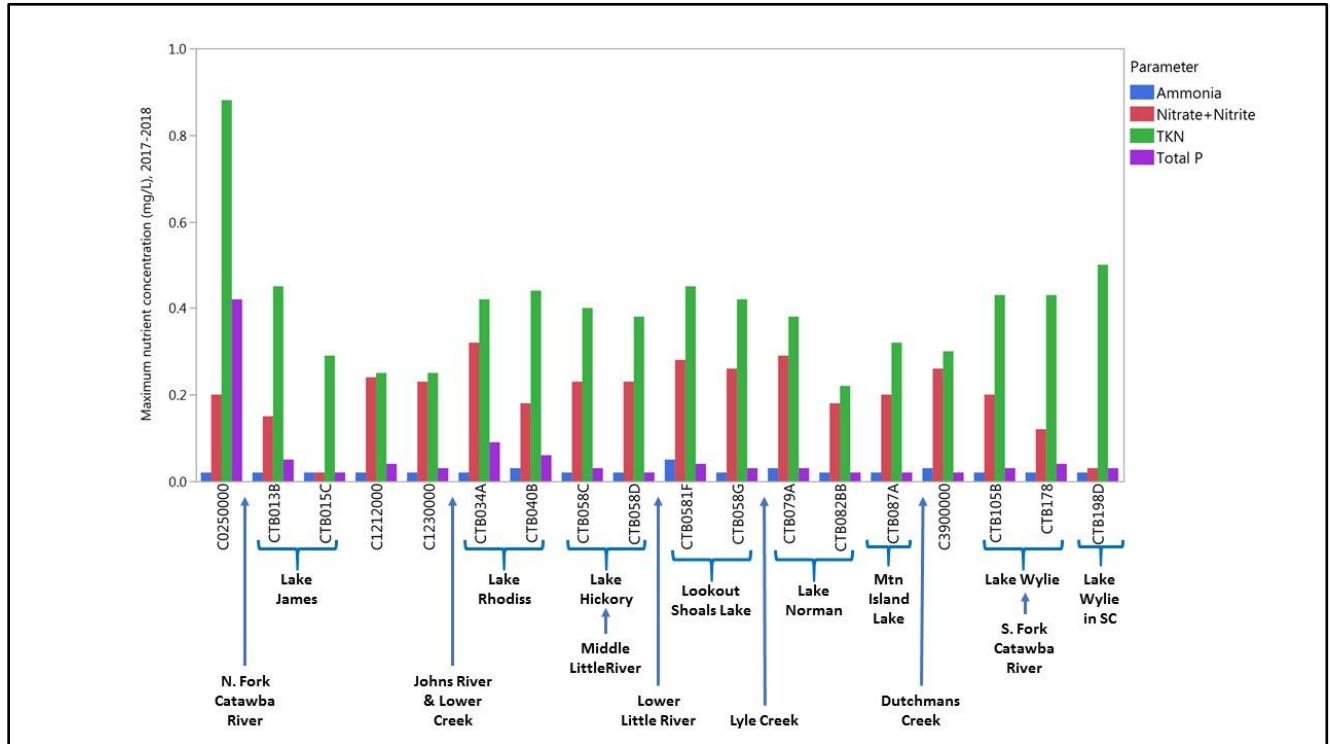
Based on the language of the session law, a main goal of the study is to understand the influence major tributaries have on the mainstem of the Catawba River. Figures 8 and 9 show the median and maximum nutrient concentrations, respectively, at monitoring stations along the mainstem of the Catawba River. Moving left to right on the horizontal axes of the graphs represents moving downstream along the river. The confluences of major tributaries are shown by arrows, and bracketed station codes represent lakes. In general, stations immediately downstream of where a major tributary enters the mainstem experience an increase in nutrient concentrations. This is not surprising considering that headwater and smaller order streams which feed the major tributaries make up approximately 75% of stream channel length in a watershed (Snyder et al., 2013). They have a high ratio of stream edge to watershed area and collect the majority of the nonpoint source pollutants entering the watershed (Richardson and Danehy, 2007). The graphs also show that mainstem lakes often act as nutrient sinks. As nutrients enter the lake backwaters, the nutrients settle out with particulate matter or are consumed by algal and aquatic plant communities for primary production within the lake.

**Figure 8 – Median nutrient concentrations by mainstem monitoring station for 2017-2018.**





**Figure 9 – Maximum nutrient concentrations by mainstem monitoring station for 2017-2018.**



#### 4.0 Discussion

As noted above, the highly urbanized areas in the lower portions of the basin have the highest observed nutrient concentrations. Urban and suburban areas have a variety of nutrient sources including stormwater from highly developed watersheds, untreated wastewater from sanitary sewer overflows and aging infrastructure, treated wastewater from point source discharges, and industrial sources. The problem is compounded by the lack of significant forested and vegetated areas adjacent to streams capable of taking up the nutrients. The condition of riparian areas, or buffers, along a stream or river play a pivotal role in the integrity of a stream channel and in-stream water quality. While any type of streamside vegetation is desirable, trees provide the greatest amount of benefit and highest potential for meeting water quality and habitat restoration objectives. Intact riparian buffers (grass or trees) can protect water quality by reducing sedimentation and filtering stormwater runoff, thus reducing the amount of nutrients entering the stream (NCSU, 2017). Riparian forested buffers provide shade which controls in-stream water temperature extremes (i.e., prevents direct sunlight from increasing water temperature) (Ibid.). They also stabilize streambanks, protect stream morphology, and enhance biodiversity.

The spatial location of many point sources of pollution are readily available. Figure 10 shows the locations of NPDES point source dischargers in the study area. Many of these facilities are required to keep records of effluent concentrations that can then be used by DWR to assist with identifying impacts to water quality. It is difficult, however, to account for and quantify nonpoint sources of pollution.

Outside of urbanized areas, nutrient inputs shift toward nonpoint sources. Many of the anthropogenic nutrient inputs comes from agricultural sources including animal operations, commercial fertilizer applications, and land application of treated wastes.

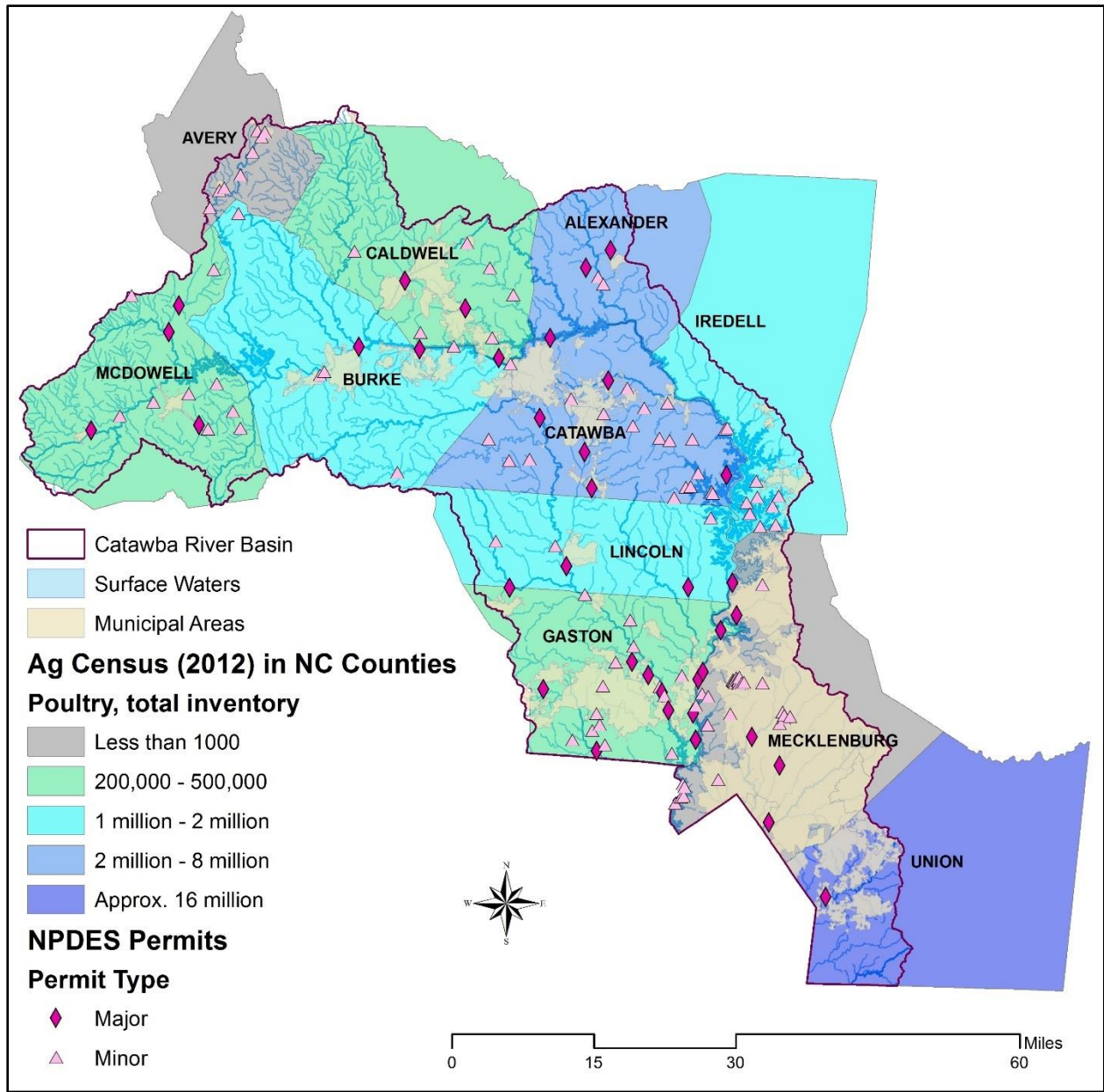
Waste from agricultural, industrial and municipal facilities can provide much needed plant nutrients for farmers, landscapers and home gardeners. Examples of operations that can produce waste for land application include food-processing plants, pharmaceutical companies, animal operations, wastewater treatment plants, and wood-product manufacturers. Regardless of the type of waste, it must be analyzed for nutrients and metals before it is land applied to ensure that the amount applied as fertilizer, or as a soil amendment, can be utilized by vegetation (i.e., crops, landscaped areas). If not effectively utilized by vegetation, nutrients can enter surface water by atmospheric deposition, groundwater transport and stormwater runoff. Excess nutrients in surface water can impact aquatic ecosystems, and the type and amount of treatment required to ensure that water is safe for human consumption.

Understanding the impacts from large-scale waste application can be challenging due to minimal monitoring in the watersheds in which they are located. DEQ has regulatory authority over swine and cattle operations that use dry or liquid manure waste management systems and poultry operations that use a liquid waste management system (i.e., spray irrigation). These permitted animal facilities are inspected annually. A Certified Animal Waste Management Plan (CAWMP) is required before a permit is issued or renewed.

Most poultry operations, however, produce a dry litter waste that typically falls under the deemed permitted category (NCAC 02T .1303), and they do not require an NPDES or state permit. Operations that fall into this category are only inspected if a complaint is filed. Because information about the location, number of animals, amount of waste produced or fields on which the dry litter is applied is unknown, determining the extent of potential impacts from poultry waste to water quality is difficult. Often, information about these facilities is restricted due to federal rules and regulations under the United States Department of Agriculture (USDA).

In addition to showing the location of NPDES point source dischargers, Figure 10 also displays the number of chickens and turkeys located in counties partially or entirely in the Catawba River basin based on information from the 2012 Census of Agriculture. The number of chickens and turkeys is just one example of how the number and type of animal in the county can potentially influence the amount of nutrients in the basin. Without knowing the location of deemed permitted operations and land application sites, however, it is difficult for DWR to establish new monitoring stations to assess potential nutrient impacts from animal operations to aquatic ecosystems and water quality. More information about the number and total number of animal operations for the counties located entirely or partially in the basin can be found in Appendix E.

Figure 10 – NPDES locations and poultry populations in the Catawba River basin.



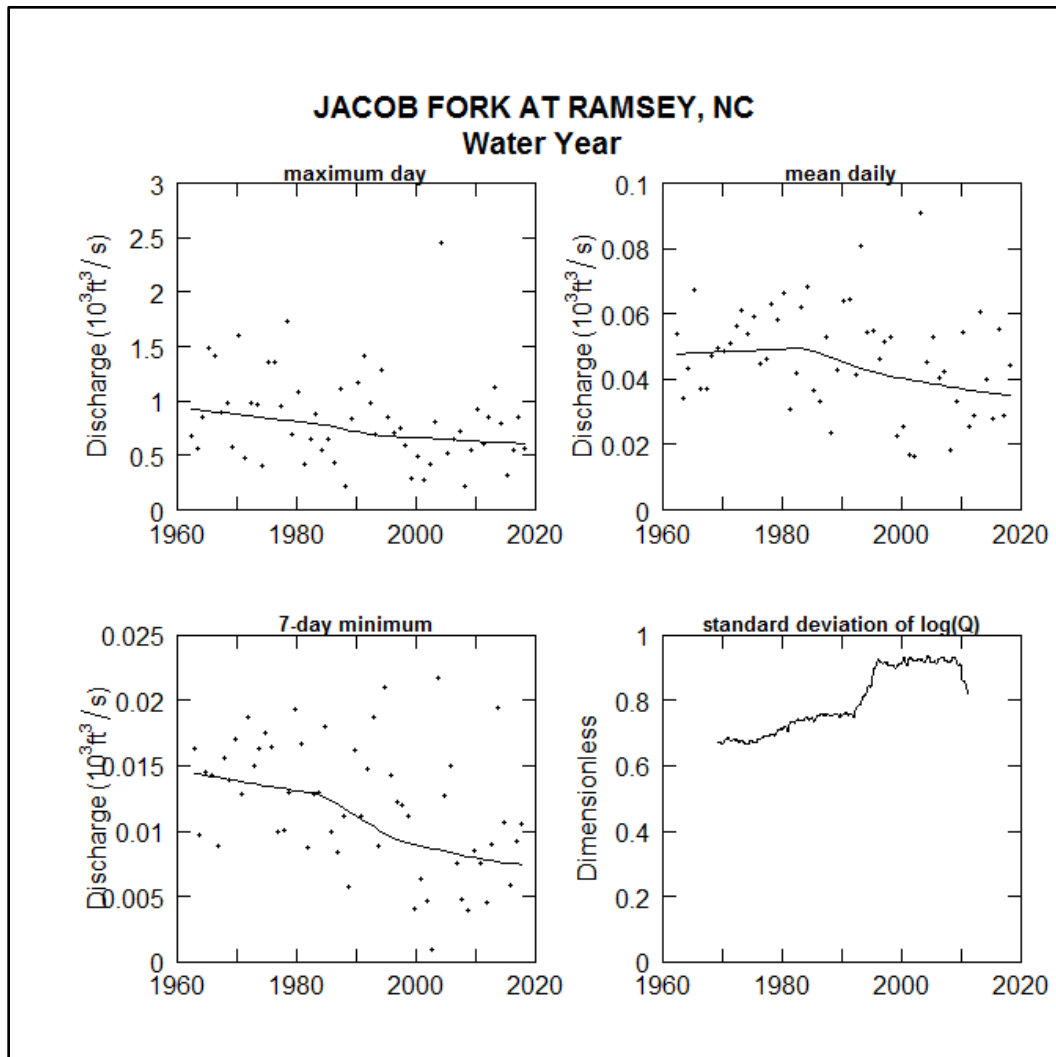
Discharge volumes, also known as streamflow, have two main drivers: precipitation and groundwater baseflow. These drivers are interconnected as groundwater baseflow is dependent on precipitation. Discharge volumes are an important factor in how nutrient inputs affect rivers and streams. Higher flows can dilute nutrient inputs from point and nonpoint sources as well as increase the assimilative capacity of streams. However, precipitation events driving higher discharge flows have more potential to wash in pollutants from the surrounding watershed. In low flow conditions, nutrient inputs have a greater impact on the system, but without precipitation, there is less interaction of the streams with the surrounding watershed.

Using the USGS Exploration and Graphics for River Trends (EGRET) tool, historical stream flow records at five non-Catawba River mainstem USGS stream gages were used to evaluate long-term stream flow changes throughout the Catawba River Basin (Table 7). The results were similar at all five gage stations, with declining flow trend in the annual mean daily flow and the annual 7-day minimum flows starting around 1980. A declining 7-day minimum flow is a possible indicator that groundwater baseflow contributions to these stream systems are on the decline. The minimum in-stream flows are generally most critical periods for aquatic life and can result in lower in-stream assimilative capacity for pollutants and limit habitat suitability. The variability as seen by the increasing standard deviation over time at all the stations is indicative of a larger flow difference between low flows and storm event high flows occurring in all five watersheds. It appears that storm events are becoming less frequent but more intense. Figure 11 provides an example of the stream flow trends at Jacob Fork at Ramsey NC. Stream flow trends for all five gage stations can be found in Appendix D.

**Table 7. USGS Gage Stations Used to Assess Long Term Stream Flow Trend Analysis (USGS EGRET).**

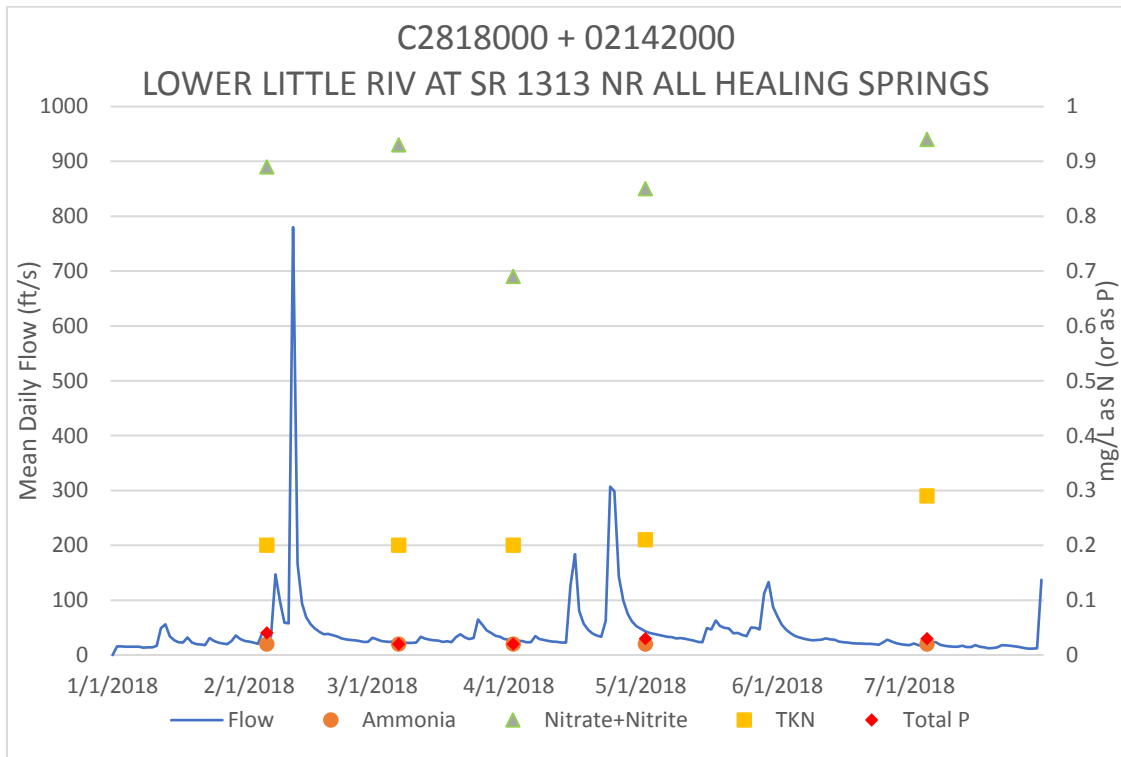
USGS Station	Station Name and Location	HUC	County	Drainage Area (Square Miles)	Years of Record	Notes
02142000	Lower Little River near All Healing Springs	03050101	Alexander	28.2	63	Upstream of C2880000
021430000	Henry Fork near Henry River	03050102	Catawba	83.2	77	Near C4300000
02143500	Indian Creek near Laboratory	03050102	Lincoln	69.2	67	Near C5170000
02143040	Jacob Fork at Ramsey	03050102	Burke	25.7	57	Near C4270000
02144000	Long Creek near Bessemer City	03050102	Gaston	31.8	66	

Figure 11. USGS EGRET Stream Flow Analysis Results for Jacob Fork at Ramsey NC (Gage 02143040).

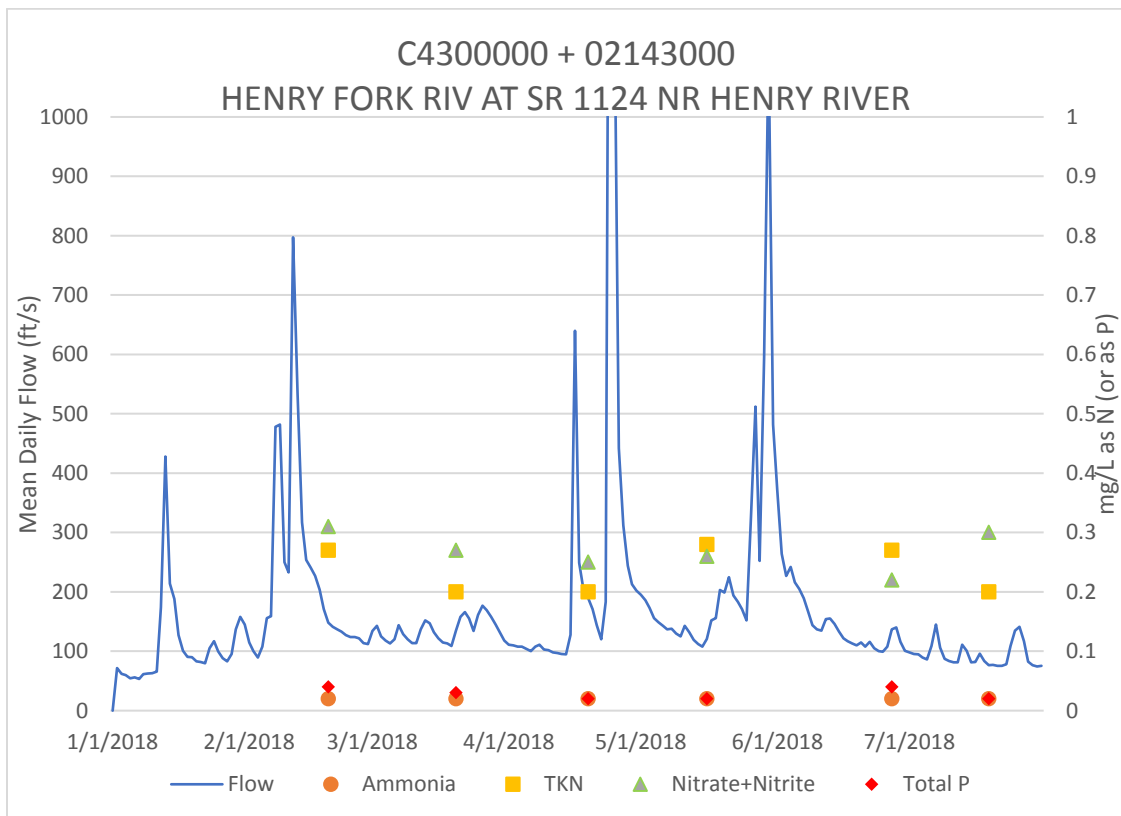


A comparison of streamflow and nutrient concentrations was made for monitoring stations co-located with gage stations at Lower Little River, Henry Fork, Indian Creek, and Jacob Fork (Figures 12, 13, 14, and 15). Very few differences in concentrations were observed, regardless of stream flow, across all nutrient parameters and all monitoring stations. Where concentrations did vary, the differences in concentration were relatively small and did not appear to be due to stream flow.

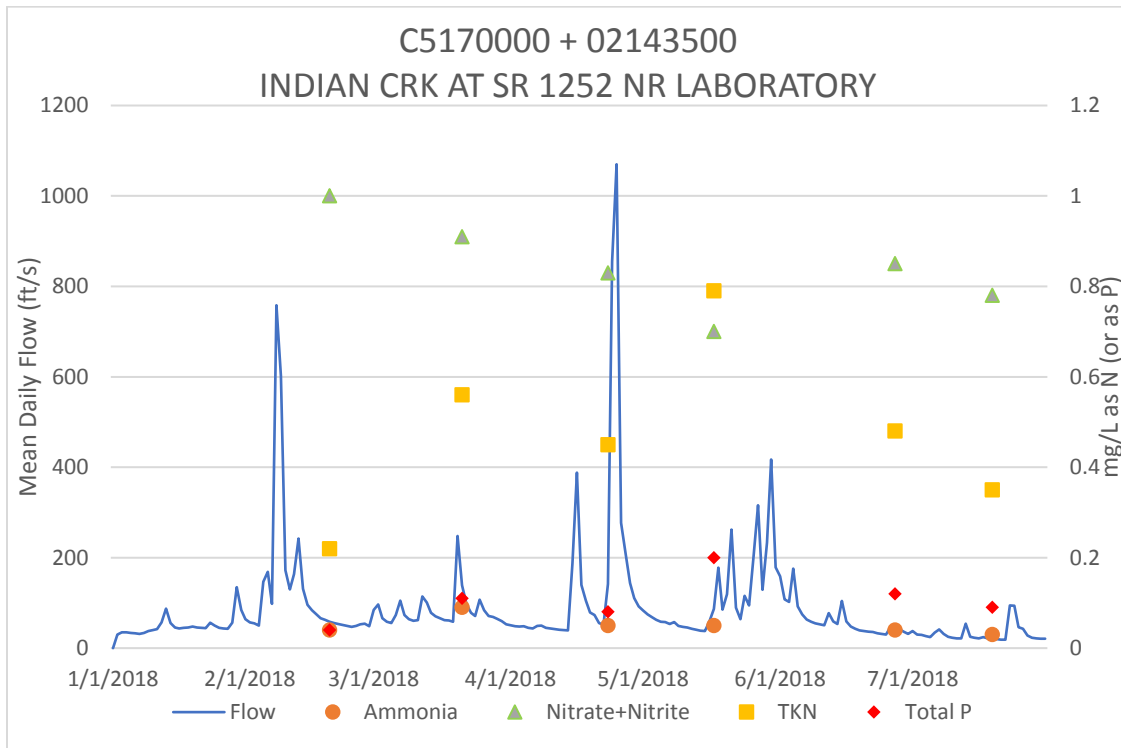
**Figure 12 – Nutrient concentrations v. stream flow at Lower Little River gage station.**



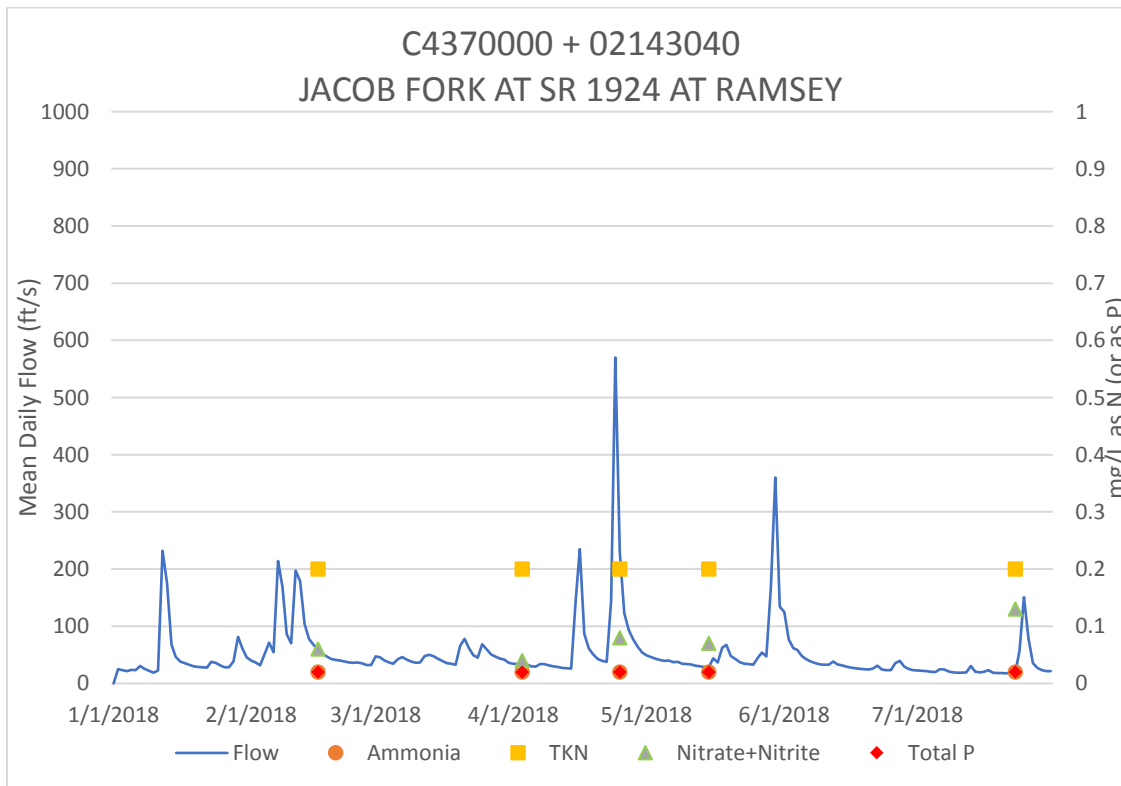
**Figure 13 – Nutrient concentrations v. stream flow at Henry Fork gage station.**



**Figure 14 – Nutrient concentrations v. stream flow at Indian Fork gage station.**



**Figure 15 – Nutrient concentrations v. stream flow at Jacob Fork gage station.**



## 5.0 Next Steps

Four main next steps will be discussed: continue nutrient monitoring, obtain additional information about potential nutrient sources, identification of specific nutrient sources and levels of contribution, and continued protection of riparian buffers.

First, continued monitoring is necessary to accurately identify what the nutrient problems are in the river basin. A basin-scale approach to monitoring nutrients can provide useful data but in very general terms. This is especially true when the study period does not span multiple years. As noted in the results discussion, the short duration of the study did not provide a sample size adequate to conduct valid statistical analyses that could demonstrate potential areas of significantly elevated nutrient concentrations. The most immediate needs for future study are continued monitoring of areas that have demonstrated the potential to have elevated nutrient concentrations. Based on the results discussed above and dependent on available resources, continued monitoring of the new stations established for this study will occur at the following locations:

- Horseford Creek at Glenn Hilton, Jr. Park
- Falling Creek at 29<sup>th</sup> Avenue NE and at Cloninger Mill Rd. NE
- Lower Little River at Liledoun Rd.
- Clark Creek at Rome Jones Rd.

Monitoring at the remaining new stations will be discontinued due to lack of potential for elevated nutrient concentrations. DWR will continue to monitor nutrients at the existing AMS stations in the Catawba River basin. DWR will also continue to look for opportunities to focus in on watersheds where nutrient concentrations demonstrate problems. This could include establishing new stations in smaller watersheds with elevated nutrients, intensive watershed studies, and/or upstream/downstream monitoring of suspected nutrient sources.

Second, additional information is needed to understand land use changes over time and how the number of animals and types of operations can potentially impact the amount of nutrients in the basin. As discussed in Section 4.0, DEQ has regulatory authority over swine and cattle operations that use dry or liquid manure waste management systems and poultry operations that use a liquid waste management system (i.e., spray irrigation). These permitted animal facilities are inspected annually, and a Certified Animal Waste Management Plan (CAWMP) is required before a permit is issued or renewed. Most poultry operations, however, produce a dry litter waste that typically falls under the deemed permitted category (NCAC 02T .1303) and do not require an NPDES or state permit. Because information about the location, number of animals, amount of waste produced, or fields on which the dry litter is applied is unknown, determining the extent of potential impacts from poultry waste to water quality is difficult to assess. Often, information about these facilities is restricted due to federal rules and regulations under the USDA. Without knowing the location of deemed permitted operations and land application sites, however, it is difficult for DWR to establish new monitoring stations to assess potential nutrient impacts from animal operations to aquatic ecosystems and water quality. More information about the number and total number of animal operations for the counties located entirely or partially in the basin can be found in Appendix E. In order to understand the amount of waste potentially produced in the basin and changes over time, the type, number and weight of the animal would need to be taken into consideration and normalized.



Third, in-depth analysis is needed to identify specific sources of the nutrients. However, identifying sources of elevated nutrient concentrations on a stream reach scale has proven difficult in past studies. Recently, stable isotope and excitation-emission matrix (EEM) fluorescence analyses have become popular in identifying nitrogen sources in ambient waters. Stable isotope analysis examines the ratios of stable N isotopes (N<sup>15</sup>:N<sup>14</sup>) (Perkins et al. 2014). Nitrogen sources such as wastewater effluent, fertilizers, and animal wastes have different ranges of isotope ratios. These ratio ranges can act as fingerprints for sources of the nitrogen.

EEM fluorescence analysis can also be used to identify the fluorescent properties of dissolved organic nitrogen (Osburn et al. 2016). Organic nitrogen exhibits different fluorescence signatures depending on the source of the nitrogen. These signatures can be modeled in a parallel factor analysis to identify sources (wastewater, animal waste, septage, etc.) and the relative nitrogen contributions of the sources (Ibid.).

Another analysis that can act as a surrogate for nutrient source identification is genetic testing of pathogens using quantitative polymerase chain reaction (qPCR) analysis. Often anthropogenic nutrient sources are also pathogen sources (domestic wastewater, septage, livestock wastes, etc.). Identifying the sources of the pathogens can provide insight into the sources of the nutrients. Each analysis has its advantages and disadvantages and could assist DWR with identifying nutrient sources and how to address those sources. Several universities across the state have the technology to conduct EEM fluorescence analysis and/or qPCR analysis. Additional resources would be needed to purchase equipment and fund staff in order for DWR to conduct these analysis strategies.

Fourth, as discussed in the introduction, the Catawba River mainstem is subject to the *Catawba River Basin: Protection and Maintenance of Existing Riparian Buffers*. Continued protection of these buffers is critical to reducing nutrient loading to the Catawba River. A multitude of scientific studies have shown that riparian buffers are very effective at removing sediment, nutrients, and other pollutants from surface and subsurface flows before they reach streams and rivers. A 2012 NC Department of Environment and Natural Resources report summarized the pollutant removal efficiencies published by dozens of researchers. One publication that surveyed 45 published papers found that 50-foot buffers remove about 70% of total nitrogen entering the riparian buffers through stormwater while another survey publication found phosphorus removal efficiencies of 46-79% in 30-foot buffers. If the buffer protections were expanded to the tributaries and headwater streams, which make up approximately 75% of a watershed's stream length, water quality could be better protected against developmental impacts.

The additional monitoring discussed above will require additional funds for staff, services, and equipment. The Mooresville Regional Office has recently obtained another ambient monitoring position which will help with staff workload, but additional monitoring equipment would be necessary for smaller scale investigations. Examples of this equipment include additional water quality meters for measuring physical parameters, automated samplers which initiate sampling based on rainfall or other stream flow-based factors, and vehicles for deploying multiple monitoring teams. In addition, the DWR Chemistry Lab has seen a 20% increase in nutrient analyses between 2017 and 2018. The lab would need additional staff and analytical equipment to process the samples associated with intensive studies. Furthermore, funds would be needed to pay for the source identification analyses discussed above (EEM, qPCR, etc.).

## 6.0 References

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# Appendices

# **Appendix A**

## **Monitoring Stations**

AGENCY	STATION	LOCATION	STREAMCLASS
NCRNDM	C0200000	Nix Creek (Nicks Creek) at SR 1191 (Nix Creek Rd) nr Marion	C
NCAMBNT	C0250000	CATAWBA RIV AT SR 1221 NR PLEASANT GARDENS	C
NCAMBNT	C0550000	N FORK CATAWBA RIV AT SR 1552 NR HANKINS	C
NCAMBNT	C1000000	LINVILLE RIV AT NC 126 NR NEBO	B HQW
NCRNDM	C1212000	CATAWBA RIV DNS SR 1147 NR GLEN ALPINE	WS-IV Tr
NCAMBNT	C1230000	CATAWBA RIV AT SR 1304 NR CALVIN	WS-IV
NCRNDM	C1275000	Cranberry Creek at Joe Poore Rd nr Mortimer	WS-III Tr ORW
NCAMBNT	C1370000	WILSON CRK AT US 221 NR GRAGG	B Tr ORW
NCAMBNT	C1370100	STACK ROCK CRK AT US 221 NR LINVILLE	C Tr ORW
NCRNDM	C1375000	Gragg Prong at SR 1362 (Anthony Creek Rd) nr Collettsville	C Tr
NCRNDM	C1380500	Chestnut Cove Branch at USFS 58 (Harper Creek Rd) in Pisgah National Forest nr Kawana	C Tr ORW
NCAMBNT	C1730000	LOWER CRK AT SR 1142 NR LENOIR	WS-IV
NCAMBNT	C1750000	LOWER CRK AT SR 1501 NR MORGANTON MARION	WS-IV
NCAMBNT	C2340000	HORSEFORD CRK AT MOUTH AT HICKORY	WS-IV CA
NCSPST	C2530000	GUNPOWDER CRK AT SR 1002 NR GRANITE FALLS	WS-IV
NCSPST	C2550000	Upper Little River at SR 1744 at Petra Mills	WS-IV
NCSPST	C2620000	FALLING CRK AT SR 1404 NR HICKORY	C
NCAMBNT	C2670000	FALLING CRK NR HICKORY	C
NCSPST	C2740000	MIDDLE LITTLE RIV AT SR 1153 NR BETHLEHEM	C
NCAMBNT	C2818000	LOWER LITTLE RIV AT SR 1313 NR ALL HEALING SPRINGS	C
NCAMBNT	C2880000	LOWER LITTLE RIV AT LILEDOWN	C
NCSPST	C3220000	LYLE CRK AT US HWY 70 NR CATAWBA	WS-IV CA
NCSPST	C3350000	MCLIN CRK AT SR 1722 AT CLAREMONT	WS-IV
NCRNDM	C3501500	UT CATAWBA RIV OFF SR 1851 NR TERRELL	WS-IV B CA
NCRNDM	C3615000	UT CATAWBA RIV OFF SR 2128 AT HUNTERSVILLE	WS-IV CA
NCAMBNT	C3860000	DUTCHMANS CRK AT SR 1918 AT MOUNTAIN ISLAND	WS-IV
NCAMBNT	C3900000	CATAWBA RIV AT NC 27 NR THRIFT	WS-IV CA
NCAMBNT	C4040000	LONG CRK AT SR 2042 NR PAW CREEK	WS-IV
NCAMBNT	C4300000	HENRY FORK RIV AT SR 1124 NR HENRY RIVER	C
NCAMBNT	C4360000	HENRY FORK RIV AT SR 1143 NR BROOKFORD	C
NCAMBNT	C4370000	JACOB FORK AT SR 1924 AT RAMSEY	WS-III ORW
NCAMBNT	C4380000	S FORK CATAWBA RIV AT NC 10 NR STARTOWN	WS-V
NCAMBNT	C4560000	CLARK CRK AT SR 2012 NR NEWTON	C
NCAMBNT	C4800000	CLARK CRK AT SR 1008 GROVE ST AT LINCOLNTON	WS-IV
NCAMBNT	C5170000	INDIAN CRK AT SR 1252 NR LABORATORY	WS-IV
NCAMBNT	C5900000	LONG CRK AT SR 1456 NR BESSEMER CITY	C
NCAMBNT	C6500000	S FORK CATAWBA RIV AT NC 7 AT MCADENVILLE	WS-V
NCAMBNT	C7000000	S FORK CATAWBA RIV AT SR 2524 NR SOUTH BELMONT	WS-V B
NCAMBNT	C7400000	CATAWBA CRK AT SR 2302 AT SC STATE LINE	WS-V B
NCAMBNT	C8660000	CROWDERS CRK AT SC 564 RIDGE RD NR BOWLING GREEN SC	FW
NCAMBNT	C8896500	IRWIN CRK AT IRWIN CRK WWTP NR CHARLOTTE	C
NCAMBNT	C9050000	SUGAR CRK AT NC 51 AT PINEVILLE	C
NCAMBNT	C9210000	LITTLE SUGAR CRK AT NC 51 AT PINEVILLE	C
NCAMBNT	C9370000	MCALPINE CRK AT SR 3356 SARDIS RD NR CHARLOTTE	C
NCAMBNT	C9680000	MCALPINE CRK AT SC SR 29-64 NR CAMP COX SC	FW

AGENCY	STATION	LOCATION	STREAMCLASS
NCAMBNT	C9790000	SUGAR CRK AT SC 160 NR FORT MILL SC	FW
NCAMBNT	C9819500	TWELVEMILE CRK AT NC 16 NR WAXHAW	C
NCLAKES	CTB013B	LAKE JAMES AT MARION NC	WS-V B
NCLAKES	CTB013C	LAKE JAMES NR MARION NC	WS-V B
NCLAKES	CTB015A	LAKE JAMES NR NEBO NC	WS-V B
NCLAKES	CTB015C	LAKE JAMES NR BRIDGEWATER NC	WS-V B
NCLAKES	CTB023A1	LAKE JAMES AT LONGTOWN NC	WS-V B
NCLAKES	CTB023B	LAKE JAMES NR GLEN ALPINC NC	WS-V B
NCLAKES	CTB034A	LAKE RHODHISS AT SR 1501 NR DREXEL NC	WS-IV B CA
NCLAKES	CTB040A	LAKE RHODHISS AT SR 1001 NR BATON NC	WS-IV B CA
NCLAKES	CTB040B	LAKE RHODHISS NR RHODHISS NC	WS-IV B CA
NCLAKES	CTB048A	LAKE HICKORY AT US HWY 321 AT HICKORY NC	WS-IV B CA
NCLAKES	CTB056A	LAKE HICKORY AT NC HWY 127 NR HICKORY NC	WS-V B
NCLAKES	CTB0581F	LOOKOUT SHOALS LAKE AT MOUTH OF ELK SHOALS CREEK	WS-IV B CA
NCLAKES	CTB058C	LAKE HICKORY NR PROSPST STORE NC	WS-V B
NCLAKES	CTB058D	LAKE HICKORY NEAR MILLERSVILLE NC	WS-V B
NCLAKES	CTB058F	LOOKOUT SHOALS LAKE 1.5 MI US DAM	WS-IV B CA
NCLAKES	CTB058G	LOOKOUT SHOALS LAKE AT DAM NR CATAWBA	WS-IV B CA
NCLAKES	CTB079A	LAKE NORMAN AT SR 1004 NR MOORESVILLE NC	WS-IV B CA
NCLAKES	CTB082A	CORNELIUS CREEK ARM OF LAKE NORMAN	WS-IV B CA
NCLAKES	CTB082AA	LAKE NORMAN AT HUNTERSVILLE WATER INTAKE	WS-IV B CA
NCLAKES	CTB082B	LAKE NORMAN AT DUKE POWER PINNACLE ACCESS	WS-IV B CA
NCLAKES	CTB082BB	LAKE NORMAN AT COWANS FORD DAM	WS-IV B CA
NCLAKES	CTB082M	LAKE NORMAN AT SR 1844 IN MOUNTAIN CREEK ARM	WS-IV B CA
NCLAKES	CTB082Q	LAKE NORMAN AT DAVIDSON WATER INTAKE	WS-IV B CA
NCLAKES	CTB082R	LAKE NORMAN AT MOUTH OF REEDS CREEK ARM	WS-IV B CA
NCLAKES	CTB083B	MOUNTAIN ISLAND LAKE BELOW DUKE POWER COMPANY	WS-IV B CA
NCLAKES	CTB086A	MCDOWELLS CREEK AT MOUTH NEAR HUNTERSVILLE	WS-IV CA
NCLAKES	CTB086B	MOUNTAIN ISLAND LAKE ABOVE GAR CREEK NEAR PAW CREEK	WS-IV B CA
NCLAKES	CTB086C	GAR CREEK AT MOUTH NEAR PAW CREEK	WS-IV B CA
NCLAKES	CTB087	MOUNTAIN ISLAND LAKE AT NC HWY 16 NEAR THRIFT	WS-IV B CA
NCLAKES	CTB087A	MOUNTAIN ISLAND LAKE ABOVE DAM NEAR MT HOLLY NC	WS-IV B CA
NCLAKES	CTB103	CATAWBA RIVER AT SOUTH BELMONT	WS-IV B CA
NCLAKES	CTB105B	LAKE WYLIE NEAR SHOPTON NC	WS-V B
NCLAKES	CTB174	SOUTH FORK CATAWBA RIVER AT SR 2524 NEAR SOUTH BELMONT	WS-V B
NCLAKES	CTB177	CATAWBA CREEK AT SR 2302 AT NC-SC STATE LINE	WS-V B
NCLAKES	CTB178	LAKE WYLIE AT NC HWY 49 NR OAK GROVE	NA
NCLAKES	CTB198B5	LAKE WYLIE IN CROWDERS CREEK ARM NEAR CLOVER SC	NA
NCLAKES	CTB198C5	LAKE WYLIE IN ALLISON CREEK ARM NEAR CONCORD SC	NA
NCLAKES	CTB198D	LAKE WYLIE AT CATAWBA DAM	NA
NCLAKES	CTBBCL1	BESSEMER CITY LAKE NEAR SR 1404	WS-II HQW CA
NCSPST	HICKORYWTP	LAKE HICKORY AT INTAKE HICKORY WTP	WS-IV B CA
NCSPST	NEWTONWTP	NEWTON WTP INTAKE	WS-III CA

## **Appendix B**

### Median Concentrations Comparison

2007-2016 v. 2018

Station	Location	Parameter	Time-frame	# Results	Min (mg/L)	Median (mg/L)	Max (mg/L)	Change in Median (mg/L)	% Change
C0250000	CATAWBA RIV AT SR 1221 NR PLEASANT GARDENS	Ammonia	Project	7	0.02	0.02	0.02	0	0
		Ammonia	Historic	94	0.02	0.02	0.04		
		Nitrate+Nitrite	Project	7	0.12	0.18	0.2	0.02	13
		Nitrate+Nitrite	Historic	94	0.04	0.16	0.48		
		TKN	Project	7	0.2	0.2	0.88	0	0
		TKN	Historic	92	0.2	0.2	1.8		
		Total P	Project	7	0.02	0.02	0.42	-0.01	-33
		Total P	Historic	95	0.02	0.03	0.52		
C0550000	N FORK CATAWBA RIV AT SR 1552 NR HANKINS	Ammonia	Project	7	0.02	0.02	0.02	0	0
		Ammonia	Historic	94	0.02	0.02	0.04		
		Nitrate+Nitrite	Project	7	0.11	0.16	0.2	-0.03	-16
		Nitrate+Nitrite	Historic	94	0.02	0.19	0.6		
		TKN	Project	7	0.2	0.2	0.43	0	0
		TKN	Historic	92	0.2	0.2	0.93		
		Total P	Project	7	0.02	0.03	0.14	0	0
		Total P	Historic	95	0.02	0.03	0.45		
C1000000	LINVILLE RIV AT NC 126 NR NEBO	Ammonia	Project	5	0.02	0.02	0.02	0	0
		Ammonia	Historic	91	0.02	0.02	0.13		
		Nitrate+Nitrite	Project	5	0.13	0.2	0.25	-0.03	-13
		Nitrate+Nitrite	Historic	91	0.02	0.23	0.47		
		TKN	Project	5	0.2	0.2	0.3	0	0
		TKN	Historic	89	0.2	0.2	1.2		
		Total P	Project	5	0.02	0.02	0.07	0	0
		Total P	Historic	92	0.02	0.02	0.27		
C1370000	WILSON CRK AT US 221 NR GRAGG	Ammonia	Project	4	0.02	0.02	0.02	0	0
		Ammonia	Historic	70	0.02	0.02	0.02		
		Nitrate+Nitrite	Project	4	0.08	0.12	0.13	-0.02	-14
		Nitrate+Nitrite	Historic	70	0.02	0.14	0.57		
		TKN	Project	4	0.2	0.2	0.2	0	0
		TKN	Historic	70	0.2	0.2	0.67		
		Total P	Project	4	0.02	0.02	0.02	0	0
		Total P	Historic	70	0.02	0.02	0.05		
C1730000	LOWER CRK AT SR 1142 NR LENOIR	Ammonia	Project	5	0.02	0.02	0.03	0	0
		Ammonia	Historic	46	0.02	0.02	0.28		
		Nitrate+Nitrite	Project	5	0.62	0.75	0.9	0.06	9
		Nitrate+Nitrite	Historic	46	0.14	0.69	1		
		TKN	Project	5	0.26	0.38	0.42	0.1	36
		TKN	Historic	46	0.2	0.28	1.4		
		Total P	Project	5	0.08	0.13	0.16	0.04	44
		Total P	Historic	46	0.02	0.09	0.45		



Station	Location	Parameter	Time-frame	# Results	Min (mg/L)	Median (mg/L)	Max (mg/L)	Change in Median (mg/L)	% Change
C3900000	CATAWBA RIV AT NC 27 NR THRIFT	Ammonia	Project	8	0.02	0.02	0.03	0	0
		Ammonia	Historic	91	0.02	0.02	0.05		
		Nitrate+Nitrite	Project	8	0.17	0.22	0.26	0.05	29
		Nitrate+Nitrite	Historic	91	0.02	0.17	0.4		
		TKN	Project	8	0.2	0.245	0.3	0.035	17
		TKN	Historic	90	0.2	0.21	0.62		
		Total P	Project	7	0.02	0.02	0.02	0	0
		Total P	Historic	91	0.02	0.02	0.23		
C4370000	JACOB FORK AT SR 1924 AT RAMSEY	Ammonia	Project	5	0.02	0.02	0.02	0	0
		Ammonia	Historic	90	0.02	0.02	0.03		
		Nitrate+Nitrite	Project	5	0.04	0.07	0.13	0.02	40
		Nitrate+Nitrite	Historic	90	0.02	0.05	1		
		TKN	Project	5	0.2	0.2	0.2	0	0
		TKN	Historic	89	0.2	0.2	0.71		
		Total P	Project	5	0.02	0.02	0.02	0	0
		Total P	Historic	90	0.02	0.02	0.13		
C4800000	CLARK CRK AT SR 1008 GROVE ST AT LINCOLNTON	Ammonia	Project	7	0.02	0.03	0.05	0	0
		Ammonia	Historic	95	0.02	0.03	0.34		
		Nitrate+Nitrite	Project	7	0.81	1	1.3	-0.4	-29
		Nitrate+Nitrite	Historic	95	0.34	1.4	2.9		
		TKN	Project	7	0.35	0.56	1.3	0.16	40
		TKN	Historic	91	0.2	0.4	3		
		Total P	Project	7	0.13	0.26	0.5	0.05	24
		Total P	Historic	94	0.08	0.21	1.6		
C5900000	LONG CRK AT SR 1456 NR BESSEMER CITY	Ammonia	Project	7	0.02	0.03	0.05	0.01	50
		Ammonia	Historic	99	0.02	0.02	0.1		
		Nitrate+Nitrite	Project	7	0.25	0.43	0.61	0.01	2
		Nitrate+Nitrite	Historic	99	0.02	0.42	0.72		
		TKN	Project	7	0.27	0.34	0.53	0.05	17
		TKN	Historic	96	0.2	0.29	2.8		
		Total P	Project	7	0.03	0.05	0.06	0	0
		Total P	Historic	99	0.02	0.05	0.78		
C6500000	S FORK CATAWBA RIV AT NC 7 AT MCADENVILLE	Ammonia	Project	7	0.02	0.03	0.22	0	0
		Ammonia	Historic	97	0.02	0.03	0.18		
		Nitrate+Nitrite	Project	7	0.77	0.9	1	0.1	13
		Nitrate+Nitrite	Historic	97	0.46	0.8	1.3		
		TKN	Project	7	0.33	0.41	0.54	0.04	11
		TKN	Historic	94	0.2	0.37	1.6		
		Total P	Project	7	0.08	0.11	0.38	0.01	10
		Total P	Historic	95	0.04	0.1	0.57		

Station	Location	Parameter	Time-frame	# Results	Min (mg/L)	Median (mg/L)	Max (mg/L)	Change in Median (mg/L)	% Change
C8660000	CROWDERS CRK AT SC 564 RIDGE RD NR BOWLING GREEN SC	Ammonia	Project	7	0.02	0.05	0.14	0.01	25
		Ammonia	Historic	100	0.02	0.04	0.34		
		Nitrate+Nitrite	Project	7	0.4	0.52	1.4	-0.02	-4
		Nitrate+Nitrite	Historic	100	0.16	0.54	2		
		TKN	Project	7	0.36	0.49	1.6	0.06	14
		TKN	Historic	96	0.2	0.43	1.6		
		Total P	Project	7	0.06	0.07	0.28	-0.005	-7
		Total P	Historic	98	0.03	0.075	0.65		
C9050000	SUGAR CRK AT NC 51 AT PINEVILLE	Ammonia	Project	7	0.02	0.02	0.47	0	0
		Ammonia	Historic	99	0.02	0.02	1.3		
		Nitrate+Nitrite	Project	7	0.79	4.9	6.5	-1.6	-25
		Nitrate+Nitrite	Historic	99	0.56	6.5	14		
		TKN	Project	7	0.56	0.77	4.8	0.125	19
		TKN	Historic	94	0.2	0.645	9.3		
		Total P	Project	7	0.38	0.71	1.1	0.03	4
		Total P	Historic	98	0.2	0.68	1.8		
C9210000	LITTLE SUGAR CRK AT NC 51 AT PINEVILLE	Ammonia	Project	7	0.02	0.04	0.21	0.02	100
		Ammonia	Historic	98	0.02	0.02	1.3		
		Nitrate+Nitrite	Project	7	1.9	12	16	3	33
		Nitrate+Nitrite	Historic	98	0.87	9	17		
		TKN	Project	7	0.46	1.2	1.7	0.4	50
		TKN	Historic	91	0.2	0.8	2.4		
		Total P	Project	7	0.48	1.2	1.7	0.1	9
		Total P	Historic	97	0.25	1.1	2.3		
C9370000	MCALPINE CRK AT SR 3356 SARDIS RD NR CHARLOTTE	Ammonia	Project	7	0.02	0.02	0.02	0	0
		Ammonia	Historic	97	0.02	0.02	0.26		
		Nitrate+Nitrite	Project	7	0.02	0.31	0.7	0.08	35
		Nitrate+Nitrite	Historic	97	0.02	0.23	1.7		
		TKN	Project	7	0.28	0.32	0.65	-0.02	-6
		TKN	Historic	96	0.2	0.34	1		
		Total P	Project	7	0.02	0.03	0.08	-0.02	-40
		Total P	Historic	95	0.02	0.05	0.38		
C9680000	MCALPINE CRK AT SC SR 29-64 NR CAMP COX SC	Ammonia	Project	7	0.02	0.03	0.1	-0.02	-40
		Ammonia	Historic	99	0.02	0.05	0.21		
		Nitrate+Nitrite	Project	7	2.4	19	23	2	12
		Nitrate+Nitrite	Historic	99	2.5	17	28		
		TKN	Project	7	0.2	1.1	2.2	0.05	5
		TKN	Historic	90	0.2	1.05	2.2		
		Total P	Project	7	0.22	0.35	0.58	-0.06	-15
		Total P	Historic	98	0.22	0.41	1.3		

Station	Location	Parameter	Time-frame	# Results	Min (mg/L)	Median (mg/L)	Max (mg/L)	Change in Median (mg/L)	% Change
C9790000	SUGAR CRK AT SC 160 NR FORT MILL SC	Ammonia	Project	7	0.02	0.02	0.16	-0.01	-33
		Ammonia	Historic	97	0.02	0.03	0.49		
		Nitrate+Nitrite	Project	7	1.4	11	17	1	10
		Nitrate+Nitrite	Historic	97	0.95	10	19		
		TKN	Project	5	0.2	0.62	2.9	-0.23	-27
		TKN	Historic	93	0.2	0.85	6.6		
		Total P	Project	7	0.28	0.49	0.92	-0.03	-6
		Total P	Historic	96	0.26	0.52	0.92		
C9819500	TWELVEMILE CRK AT NC 16 NR WAXHAW	Ammonia	Project	7	0.02	0.04	0.19	0.02	100
		Ammonia	Historic	99	0.02	0.02	0.58		
		Nitrate+Nitrite	Project	7	0.3	0.45	0.78	0.1	29
		Nitrate+Nitrite	Historic	99	0.02	0.35	5.2		
		TKN	Project	7	0.54	0.75	0.93	0.21	39
		TKN	Historic	97	0.21	0.54	2		
		Total P	Project	7	0.05	0.11	0.26	0.02	22
		Total P	Historic	96	0.02	0.09	0.54		

*Note: Historic timeframe includes all data from 2007-2016, project timeframe includes data from Jan-Jul 2018.*

# **Appendix C**

## Monitoring Summary Sheets By Station

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources

Basinwide Assessment Report

**Location:** Nix Creek (Nicks Creek) at SR 1191 (Nix Creek Rd) nr Marion

**Station #:** C0200000

**Hydrologic Unit Code:** 03050101

**Latitude:** 35.66815

**Longitude:** -82.04441

**Stream class:** C

**Agency:** NCRNDM

**NC stream index:** 11-20

**Time period:** 03/02/2015 to 06/27/2016

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Nutrients (mg/L)</b>													
NH3 as N	17	11	N/A				0.02	0.02	0.02	0.02	0.02	0.03	0.03
NO2 + NO3 as N	17	0	N/A				0.31	0.32	0.38	0.42	0.48	0.52	0.54
TKN as N	17	8	N/A				0.2	0.2	0.2	0.2	0.22	0.24	0.34
Total Phosphorus	17	2	N/A				0.02	0.02	0.02	0.03	0.04	0.04	0.06

**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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources

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:** 01/23/2008 to 07/12/2018

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
Hardness (mg/L)	2	0	N/A				14	14	14	18	22	22	22
TSS (mg/L)	2	1	N/A				6.2	6.2	6.2	183.1	360	360	360
Turbidity (NTU)	6	0	>50	1	16.7		1.1	1.1	1.6	2.5	60.3	220	220
<b>Nutrients (mg/L)</b>													
NH3 as N	101	91	N/A				0.02	0.02	0.02	0.02	0.02	0.02	0.04
NO2 + NO3 as N	101	0	N/A				0.04	0.08	0.13	0.17	0.19	0.23	0.48
TKN as N	99	61	N/A				0.2	0.2	0.2	0.2	0.2	0.28	1.8
Total Phosphorus	102	12	N/A				0.02	0.02	0.02	0.03	0.04	0.07	0.52

**Fecal Coliform Screening(#/100mL)**

# results:	Geomean:	# > 400:	% > 400:	%Conf:
6	92.8	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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources

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:** 01/23/2008 to 07/12/2018

	# results	# ND	EL	Results not meeting EL			Percentiles					
				#	%	%Conf	Min	10th	25th	50th	75th	90th
<b>Other</b>												
Hardness (mg/L)	2	0	N/A				21	21	21	22	22	22
TSS (mg/L)	2	1	N/A				6.2	6.2	6.2	73.1	140	140
Turbidity (NTU)	6	1	>50	1	16.7		1	1	1.2	2	20.4	70
<b>Nutrients (mg/L)</b>												
NH3 as N	101	87	N/A				0.02	0.02	0.02	0.02	0.02	0.04
NO2 + NO3 as N	101	3	N/A				0.02	0.08	0.14	0.18	0.27	0.39
TKN as N	99	52	N/A				0.2	0.2	0.2	0.2	0.21	0.28
Total Phosphorus	102	2	N/A				0.02	0.02	0.02	0.03	0.05	0.08

**Fecal Coliform Screening(#/100mL)**

# results:	Geomean:	# > 400:	% > 400:	%Conf:
6	85.5	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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources

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:** 01/23/2008 to 07/12/2018

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
Hardness (mg/L)	2	0	N/A				11	11	11	13	15	15	15
TSS (mg/L)	2	1	N/A				6.2	6.2	6.2	39.6	73	73	73
Turbidity (NTU)	4	0	>50	0	0		1.8	1.8	1.9	5.6	18	21	21
<b>Nutrients (mg/L)</b>													
NH3 as N	96	93	N/A				0.02	0.02	0.02	0.02	0.02	0.02	0.13
NO2 + NO3 as N	96	1	N/A				0.02	0.12	0.16	0.23	0.29	0.36	0.47
TKN as N	94	54	N/A				0.2	0.2	0.2	0.2	0.2	0.24	1.2
Total Phosphorus	97	70	N/A				0.02	0.02	0.02	0.02	0.02	0.03	0.27

**Fecal Coliform Screening(#/100mL)**

# results:	Geomean:	# > 400:	% > 400:	%Conf:
4	51.3	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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence



**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources  
Basinwide Assessment Report

**Location:** CATAWBA RIV DNS SR 1147 NR GLEN ALPINE

**Station #:** C1212000

**Hydrologic Unit Code:** 03050101

**Latitude:** 35.74062

**Longitude:** -81.76692

**Stream class:** WS-IV Tr

**Agency:** NCRNDM

**NC stream index:** 11-(31.5)

**Time period:** 01/29/2018 to 07/23/2018

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
Hardness (mg/L)	7	0	>100	0	0		15	15	16	18	19	20	20
Turbidity (NTU)	6	0	>10	1	16.7		1.1	1.1	2.4	3.4	9.7	12	12
<b>Nutrients (mg/L)</b>													
NH3 as N	7	6	N/A				0.02	0.02	0.02	0.02	0.02	0.02	0.02
NO2 + NO3 as N	7	0	>10	0	0		0.15	0.15	0.17	0.21	0.24	0.24	0.24
TKN as N	7	1	N/A				0.2	0.2	0.2	0.2	0.21	0.25	0.25
Total Phosphorus	7	2	N/A				0.02	0.02	0.02	0.03	0.03	0.04	0.04

**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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources

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:** 02/16/2018 to 06/18/2018

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
Hardness (mg/L)	2	0	>100	0	0		15	15	15	16	17	17	17
TSS (mg/L)	2	1	N/A				6.2	6.2	6.2	8.6	11	11	11
Turbidity (NTU)	5	0	>50	0	0		2.5	2.5	3.2	12	30.5	45	45
<b>Nutrients (mg/L)</b>													
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		0.23	0.23	0.23	0.23	0.23	0.23	0.23
TKN as N	1	0	N/A				0.25	0.25	0.25	0.25	0.25	0.25	0.25
Total Phosphorus	1	0	N/A				0.03	0.03	0.03	0.03	0.03	0.03	0.03

**Fecal Coliform Screening(#/100mL)**

# results:	Geomean:	# > 400:	% > 400:	%Conf:
5	88.6	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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources

Basinwide Assessment Report

**Location:** Cranberry Creek at Joe Poore Rd nr Mortimer

**Station #:** C1275000

**Hydrologic Unit Code:** 03050101

**Latitude:** 35.97667

**Longitude:** -81.88190

**Stream class:** WS-III Tr ORW

**Agency:** NCRNDM

**NC stream index:** 11-35-2-4

**Time period:** 02/23/2015 to 06/28/2016

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Nutrients (mg/L)</b>													
NH3 as N	17	15	N/A				0.02	0.02	0.02	0.02	0.02	0.02	0.02
NO2 + NO3 as N	17	0	>10	0	0		0.07	0.09	0.12	0.14	0.16	0.19	0.21
TKN as N	17	11	N/A				0.2	0.2	0.2	0.2	0.2	0.28	0.32
Total Phosphorus	17	11	N/A				0.02	0.02	0.02	0.02	0.02	0.02	0.02

**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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources

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:** 10/19/2009 to 06/20/2018

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
Hardness (mg/L)	2	0	N/A				6	6	6	7	9	9	9
TSS (mg/L)	2	2	N/A				6.2	6.2	6.2	6.2	6.2	6.2	6.2
Turbidity (NTU)	4	2	>10	1	25		1	1	1	1.2	41.6	55	55
<b>Nutrients (mg/L)</b>													
NH3 as N	74	73	N/A				0.02	0.02	0.02	0.02	0.02	0.02	0.02
NO2 + NO3 as N	74	1	N/A				0.02	0.06	0.09	0.14	0.2	0.28	0.57
TKN as N	74	61	N/A				0.2	0.2	0.2	0.2	0.2	0.2	0.67
Total Phosphorus	74	70	N/A				0.02	0.02	0.02	0.02	0.02	0.02	0.05

**Fecal Coliform Screening(#/100mL)**

# results:	Geomean:	# > 400:	% > 400:	%Conf:
4	11.6	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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources  
Basinwide Assessment Report

**Location:** STACK ROCK CRK AT US 221 NR LINVILLE

**Station #:** C1370100

**Hydrologic Unit Code:** 03050101

**Latitude:** 36.08968

**Longitude:** -81.81972

**Stream class:** C Tr ORW

**Agency:** NCAMBNT

**NC stream index:** 11-38-34-5

**Time period:** 11/28/2007 to 09/29/2009

	# results	# ND	EL	Results not meeting EL			Percentiles					
				#	%	%Conf	Min	10th	25th	50th	75th	90th
<b>Nutrients (mg/L)</b>												
NH3 as N	21	21	N/A				0.02	0.02	0.02	0.02	0.02	0.02
NO2 + NO3 as N	21	1	N/A				0.02	0.02	0.04	0.08	0.1	0.21
TKN as N	20	8	N/A				0.2	0.2	0.2	0.22	0.25	0.32
Total Phosphorus	21	18	N/A				0.02	0.02	0.02	0.02	0.02	0.06

**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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources  
Basinwide Assessment Report

**Location:** Gragg Prong at SR 1362 (Anthony Creek Rd) nr Collettsville  
**Station #:** C1375000 **Hydrologic Unit Code:** 03050101  
**Latitude:** 36.05585 **Longitude:** -81.71434 **Stream class:** C Tr  
**Agency:** NCRNDM **NC stream index:** 11-38-10

**Time period:** 06/01/2015 to 06/20/2016

	# results	# ND	EL	Results not meeting EL			Percentiles					
				#	%	%Conf	Min	10th	25th	50th	75th	90th
<b>Nutrients (mg/L)</b>												
NH3 as N	14	11	N/A				0.02	0.02	0.02	0.02	0.02	0.02
NO2 + NO3 as N	14	0	N/A				0.04	0.04	0.07	0.08	0.1	0.12
TKN as N	14	12	N/A				0.2	0.2	0.2	0.2	0.2	0.3
Total Phosphorus	14	10	N/A				0.02	0.02	0.02	0.02	0.02	0.04

**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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources

Basinwide Assessment Report

**Location:** Chestnut Cove Branch at USFS 58 (Harper Creek Rd) in Pisgah National Forest nr Kawana

**Station #:** C1380500

**Hydrologic Unit Code:** 03050101

**Latitude:** 35.99407

**Longitude:** -81.84178

**Stream class:** C Tr ORW

**Agency:** NCRNDM

**NC stream index:** 11-38-34-14-2-1

**Time period:** 05/26/2015 to 06/28/2016

	# results	# ND	EL	Results not meeting EL			Percentiles					
				#	%	%Conf	Min	10th	25th	50th	75th	90th
<b>Nutrients (mg/L)</b>												
NH3 as N	14	14	N/A				0.02	0.02	0.02	0.02	0.02	0.02
NO2 + NO3 as N	14	1	N/A				0.02	0.02	0.03	0.04	0.05	0.07
TKN as N	14	10	N/A				0.2	0.2	0.2	0.2	0.2	0.2
Total Phosphorus	14	13	N/A				0.02	0.02	0.02	0.02	0.02	0.02

**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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources

Basinwide Assessment Report

**Location:** LOWER CRK AT SR 1142 NR LENOIR

**Station #:** C1730000

**Hydrologic Unit Code:** 03050101

**Latitude:** 35.84017      **Longitude:** -81.61670

**Stream class:** WS-IV

**Agency:** NCAMBNT

**NC stream index:** 11-39-(6.5)

**Time period:** 07/12/2012 to 06/18/2018

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
Hardness (mg/L)	2	0	>100	0	0		27	27	27	28	29	29	29
TSS (mg/L)	2	0	N/A				7.8	7.8	7.8	13.9	20	20	20
Turbidity (NTU)	5	1	>50	1	20		1	1	2.2	5.5	40.5	70	70
<b>Nutrients (mg/L)</b>													
NH3 as N	51	17	N/A				0.02	0.02	0.02	0.02	0.04	0.07	0.28
NO2 + NO3 as N	51	0	>10	0	0		0.14	0.39	0.59	0.7	0.76	0.86	1
TKN as N	51	1	N/A				0.2	0.2	0.26	0.28	0.39	0.62	1.4
Total Phosphorus	51	1	N/A				0.02	0.03	0.05	0.1	0.16	0.21	0.45

**Fecal Coliform Screening(#/100mL)**

# results:	Geomean:	# > 400:	% > 400:	%Conf:
5	113	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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence



**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources

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:** 01/23/2008 to 06/18/2012

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Nutrients (mg/L)</b>													
NH3 as N	49	4	N/A				0.02	0.02	0.02	0.03	0.05	0.13	0.68
NO2 + NO3 as N	49	0	>10	0	0		0.15	0.41	0.49	0.58	0.75	0.83	1.2
TKN as N	47	6	N/A				0.2	0.2	0.24	0.29	0.4	1.1	1.6
Total Phosphorus	49	0	N/A				0.03	0.03	0.04	0.09	0.17	0.26	0.64

**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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources  
Basinwide Assessment Report

**Location:** HORSEFORD CRK AT MOUTH AT HICKORY

**Station #:** C2340000

**Hydrologic Unit Code:** 03050101

**Latitude:** 35.76111

**Longitude:** -81.35757

**Stream class:** WS-IV CA

**Agency:** NCAMBNT

**NC stream index:** 11-54-(3)

**Time period:** 02/21/2018 to 07/25/2018

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
Turbidity (NTU)	5	0	>50	0	0		2.4	2.4	3.9	30	42.5	45	45
<b>Nutrients (mg/L)</b>													
NH3 as N	6	0	N/A				0.03	0.03	0.03	0.06	0.09	0.14	0.14
NO2 + NO3 as N	6	0	>10	0	0		0.57	0.57	0.64	1.2	1.23	1.3	1.3
TKN as N	6	0	N/A				0.28	0.28	0.29	0.37	0.63	0.65	0.65
Total Phosphorus	6	0	N/A				0.02	0.02	0.02	0.06	0.09	0.09	0.09

**Fecal Coliform Screening(#/100mL)**

# results:	Geomean:	# > 400:	% > 400:	%Conf:
6	1050.3	5	83.3	

**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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources  
Basinwide Assessment Report

**Location:** GUNPOWDER CRK AT SR 1002 NR GRANITE FALLS

**Station #:** C2530000

**Hydrologic Unit Code:** 03050101

**Latitude:** 35.82027

**Longitude:** -81.42351

**Stream class:** WS-IV

**Agency:** NCS PST

**NC stream index:** 11-55-(1.5)

**Time period:** 02/21/2018 to 07/25/2018

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
Turbidity (NTU)	5	0	>50	1	20		9	9	10.5	21	66	100	100
<b>Nutrients (mg/L)</b>													
NH3 as N	6	3	N/A				0.02	0.02	0.02	0.02	0.02	0.02	0.02
NO2 + NO3 as N	6	0	>10	0	0		0.5	0.5	0.65	0.78	0.84	0.95	0.95
TKN as N	6	0	N/A				0.3	0.3	0.34	0.4	0.58	0.84	0.84
Total Phosphorus	6	0	N/A				0.07	0.07	0.07	0.11	0.14	0.17	0.17

**Fecal Coliform Screening(#/100mL)**

# results:	Geomean:	# > 400:	% > 400:	%Conf:
6	738.3	5	83.3	

**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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources

Basinwide Assessment Report

**Location:** Upper Little River at SR 1744 at Petra Mills

**Station #:** C2550000

**Hydrologic Unit Code:** 03050101

**Latitude:** 35.84187

**Longitude:** -81.36137

**Stream class:** WS-IV

**Agency:** NCS PST

**NC stream index:** 11-58-(5.5)

**Time period:** 02/21/2018 to 07/25/2018

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
Turbidity (NTU)	5	0	>50	1	20		4.5	4.5	4.6	6.4	71	130	130
<b>Nutrients (mg/L)</b>													
NH3 as N	6	5	N/A				0.02	0.02	0.02	0.02	0.02	0.04	0.04
NO2 + NO3 as N	6	0	>10	0	0		0.32	0.32	0.35	0.41	0.47	0.52	0.52
TKN as N	6	0	N/A				0.2	0.2	0.21	0.26	0.81	0.91	0.91
Total Phosphorus	6	3	N/A				0.02	0.02	0.02	0.02	0.2	0.22	0.22

**Fecal Coliform Screening(#/100mL)**

# results:	Geomean:	# > 400:	% > 400:	%Conf:
6	576.2	3	50	

**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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources

Basinwide Assessment Report

**Location:** FALLING CRK AT SR 1404 NR HICKORY

**Station #:** C2620000

**Hydrologic Unit Code:** 03050101

**Latitude:** 35.77258

**Longitude:** -81.32002

**Stream class:** C

**Agency:** NCS PST

**NC stream index:** 11-60

**Time period:** 02/21/2018 to 07/25/2018

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
Turbidity (NTU)	5	0	>50	1	20		2.2	2.2	2.6	29	47	65	65
<b>Nutrients (mg/L)</b>													
NH3 as N	6	1	N/A				0.02	0.02	0.02	0.02	0.04	0.09	0.09
NO2 + NO3 as N	6	0	N/A				0.7	0.7	0.78	1	1.1	1.1	1.1
TKN as N	6	0	N/A				0.26	0.26	0.32	0.4	0.5	0.69	0.69
Total Phosphorus	6	0	N/A				0.02	0.02	0.04	0.04	0.06	0.11	0.11

**Fecal Coliform Screening(#/100mL)**

# results:	Geomean:	# > 400:	% > 400:	%Conf:
6	620.2	5	83.3	

**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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources  
Basinwide Assessment Report

**Location:** FALLING CRK NR HICKORY

**Station #:** C2670000

**Hydrologic Unit Code:** 03050101

**Latitude:** 35.78776      **Longitude:** -81.30608

**Stream class:** C

**Agency:** NCAMBNT

**NC stream index:** 11-60

**Time period:** 02/21/2018 to 07/25/2018

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
Turbidity (NTU)	5	0	>50	1	20		2.8	2.8	3	25	53.5	75	75
<b>Nutrients (mg/L)</b>													
NH3 as N	6	0	N/A				0.02	0.02	0.03	0.14	0.31	0.44	0.44
NO2 + NO3 as N	6	0	N/A				0.73	0.73	0.74	1.05	1.12	1.2	1.2
TKN as N	6	0	N/A				0.27	0.27	0.34	0.7	0.8	0.82	0.82
Total Phosphorus	6	0	N/A				0.03	0.03	0.04	0.06	0.11	0.13	0.13

**Fecal Coliform Screening(#/100mL)**

# results:	Geomean:	# > 400:	% > 400:	%Conf:
6	913.5	5	83.3	

**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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources

Basinwide Assessment Report

**Location:** MIDDLE LITTLE RIV AT SR 1153 NR BETHLEHEM

**Station #:** C2740000

**Hydrologic Unit Code:** 03050101

**Latitude:** 35.86451

**Longitude:** -81.28816

**Stream class:** C

**Agency:** NCS PST

**NC stream index:** 11-62

**Time period:** 02/21/2018 to 07/25/2018

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
Turbidity (NTU)	5	0	>50	1	20		6.2	6.2	6.8	11	60.5	110	110
<b>Nutrients (mg/L)</b>													
NH3 as N	6	3	N/A				0.02	0.02	0.02	0.02	0.03	0.04	0.04
NO2 + NO3 as N	6	0	N/A				0.35	0.35	0.4	0.48	0.62	0.66	0.66
TKN as N	6	0	N/A				0.2	0.2	0.26	0.34	0.67	0.94	0.94
Total Phosphorus	6	0	N/A				0.03	0.03	0.03	0.04	0.18	0.31	0.31

**Fecal Coliform Screening(#/100mL)**

# results:	Geomean:	# > 400:	% > 400:	%Conf:
6	1588.9	5	83.3	

**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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources

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:** 01/02/2018 to 07/05/2018

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
Hardness (mg/L)	2	0	N/A				14	14	14	15	16	16	16
TSS (mg/L)	2	0	N/A				15	15	15	16	17	17	17
Turbidity (NTU)	7	0	>50	0	0		3.2	3.2	3.4	6.2	7.2	13	13
<b>Nutrients (mg/L)</b>													
NH3 as N	5	4	N/A				0.02	0.02	0.02	0.02	0.02	0.02	0.02
NO2 + NO3 as N	5	0	N/A				0.69	0.69	0.77	0.89	0.94	0.94	0.94
TKN as N	5	0	N/A				0.2	0.2	0.2	0.2	0.25	0.29	0.29
Total Phosphorus	5	0	N/A				0.02	0.02	0.02	0.03	0.04	0.04	0.04

**Fecal Coliform Screening(#/100mL)**

# results:	Geomean:	# > 400:	% > 400:	%Conf:
7	149.5	2	28.6	

**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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence



**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources  
Basinwide Assessment Report

**Location:** LOWER LITTLE RIV AT LILEDOWN

**Station #:** C2880000

**Hydrologic Unit Code:** 03050101

**Latitude:** 35.89600      **Longitude:** -81.21300

**Stream class:** C

**Agency:** NCAMBNT

**NC stream index:** 11-69-(0.5)

**Time period:** 02/21/2018 to 07/25/2018

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
Turbidity (NTU)	5	0	>50	1	20		11	11	11.5	13	135	250	250
<b>Nutrients (mg/L)</b>													
NH3 as N	6	0	N/A				0.04	0.04	0.06	0.08	0.16	0.18	0.18
NO2 + NO3 as N	6	0	N/A				0.77	0.77	0.94	1.1	1.42	1.5	1.5
TKN as N	6	0	N/A				0.29	0.29	0.38	0.5	1.19	2.7	2.7
Total Phosphorus	6	0	N/A				0.04	0.04	0.05	0.06	0.27	0.87	0.87

**Fecal Coliform Screening(#/100mL)**

# results:	Geomean:	# > 400:	% > 400:	%Conf:
6	1676.3	6	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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources  
Basinwide Assessment Report

**Location:** LYLE CRK AT US HWY 70 NR CATAWBA

**Station #:** C3220000

**Hydrologic Unit Code:** 03050101

**Latitude:** 35.72065

**Longitude:** -81.10899

**Stream class:** WS-IV CA

**Agency:** NCS PST

**NC stream index:** 11-76-(4.5)

**Time period:** 02/21/2018 to 07/25/2018

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
Turbidity (NTU)	5	0	>50	3	60		6.1	6.1	8.6	75	400	600	600
<b>Nutrients (mg/L)</b>													
NH3 as N	6	0	N/A				0.02	0.02	0.03	0.03	0.07	0.12	0.12
NO2 + NO3 as N	6	0	>10	0	0		0.6	0.6	0.62	0.86	1	1.1	1.1
TKN as N	6	0	N/A				0.24	0.24	0.28	0.52	1.35	3	3
Total Phosphorus	5	0	N/A				0.04	0.04	0.05	0.07	0.22	0.29	0.29

**Fecal Coliform Screening(#/100mL)**

# results:	Geomean:	# > 400:	% > 400:	%Conf:
6	1020.9	4	66.7	

**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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources  
Basinwide Assessment Report

**Location:** MCLIN CRK AT SR 1722 AT CLAREMONT

**Station #:** C3350000

**Hydrologic Unit Code:** 03050101

**Latitude:** 35.69769

**Longitude:** -81.14572

**Stream class:** WS-IV

**Agency:** NCS PST

**NC stream index:** 11-76-5-(0.7)

**Time period:** 02/21/2018 to 07/25/2018

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
Turbidity (NTU)	5	0	>50	1	20		4.4	4.4	5.6	8.3	165	280	280
<b>Nutrients (mg/L)</b>													
NH3 as N	6	4	N/A				0.02	0.02	0.02	0.02	0.03	0.05	0.05
NO2 + NO3 as N	6	0	>10	0	0		0.7	0.7	0.73	0.83	0.96	0.98	0.98
TKN as N	6	0	N/A				0.2	0.2	0.22	0.23	0.72	1.4	1.4
Total Phosphorus	6	0	N/A				0.03	0.03	0.03	0.03	0.18	0.47	0.47

**Fecal Coliform Screening(#/100mL)**

# results:	Geomean:	# > 400:	% > 400:	%Conf:
6	517.9	2	33.3	

**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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources

Basinwide Assessment Report

**Location:** UT CATAWBA RIV OFF SR 1851 NR TERRELL

**Station #:** C3501500

**Hydrologic Unit Code:** 03050101

**Latitude:** 35.59617

**Longitude:** -81.03842

**Stream class:** WS-IV B CA

**Agency:** NCRNDM

**NC stream index:** 11-(75)

**Time period:** 01/15/2018 to 07/25/2018

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
Turbidity (NTU)	8	0	>50	0	0		3	3	3.6	6	8.2	8.8	8.8
<b>Nutrients (mg/L)</b>													
NH3 as N	8	7	N/A				0.02	0.02	0.02	0.02	0.02	0.02	0.02
NO2 + NO3 as N	8	0	>10	0	0		0.17	0.17	0.24	0.36	0.39	0.41	0.41
TKN as N	8	2	N/A				0.2	0.2	0.2	0.2	0.25	0.3	0.3
Total Phosphorus	8	0	N/A				0.02	0.02	0.02	0.04	0.04	0.04	0.04

**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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources  
Basinwide Assessment Report

**Location:** UT CATAWBA RIV OFF SR 2128 AT HUNTERSVILLE

**Station #:** C3615000

**Hydrologic Unit Code:** 03050101

**Latitude:** 35.42316

**Longitude:** -80.91950

**Stream class:** WS-IV CA

**Agency:** NCRNDM

**NC stream index:** 11-(112)

**Time period:** 01/15/2018 to 07/25/2018

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
Turbidity (NTU)	8	0	>50	0	0		6.1	6.1	7.4	11	32	50	50
<b>Nutrients (mg/L)</b>													
NH3 as N	8	5	N/A				0.02	0.02	0.02	0.02	0.03	0.03	0.03
NO2 + NO3 as N	8	0	>10	0	0		0.2	0.2	0.24	0.32	0.38	0.55	0.55
TKN as N	8	0	N/A				0.23	0.23	0.35	0.4	0.41	0.67	0.67
Total Phosphorus	8	0	N/A				0.03	0.03	0.05	0.06	0.09	0.15	0.15

**Key:**

# result: number of observations

# ND: number of observations reported to be below detection level (non-detect)

EL: Evaluation Level; applicable numeric or narrative water quality standard or action level

Results not meeting EL: number and percentages of observations not meeting evaluation level

%Conf : States the percent statistical confidence that the actual percentage of exceedances is greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources  
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:** 01/24/2018 to 07/16/2018

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
Hardness (mg/L)	2	0	>100	0	0		35	35	35	35	35	35	35
TSS (mg/L)	2	0	N/A				8.2	8.2	8.2	14.1	20	20	20
Turbidity (NTU)	7	0	>50	0	0		5.5	5.5	5.6	7.4	16	22	22
<b>Nutrients (mg/L)</b>													
NH3 as N	6	6	N/A				0.02	0.02	0.02	0.02	0.02	0.02	0.02
NO2 + NO3 as N	6	0	>10	0	0		0.08	0.08	0.12	0.3	0.4	0.45	0.45
TKN as N	6	0	N/A				0.2	0.2	0.22	0.26	0.31	0.31	0.31
Total Phosphorus	6	0	N/A				0.1	0.1	0.12	0.14	0.17	0.18	0.18

**Fecal Coliform Screening(#/100mL)**

# results:	Geomean:	# > 400:	% > 400:	%Conf:
7	195.5	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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources  
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:** 01/15/2008 to 07/26/2018

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
Chlorophyll a (ug/L)	7	2	>40	0	0		1	1	1	1	2	2	2
Hardness (mg/L)	3	0	>100	0	0		15	15	15	16	17	17	17
TSS (mg/L)	3	3	N/A				6.2	6.2	6.2	6.2	6.2	6.2	6.2
Turbidity (NTU)	8	0	>25	0	0		1.4	1.4	1.8	3.6	6.9	20	20
<b>Nutrients (mg/L)</b>													
NH3 as N	99	29	N/A				0.02	0.02	0.02	0.02	0.03	0.04	0.05
NO2 + NO3 as N	99	0	>10	0	0		0.02	0.06	0.1	0.18	0.22	0.25	0.4
TKN as N	98	25	N/A				0.2	0.2	0.2	0.22	0.25	0.3	0.62
Total Phosphorus	98	63	N/A				0.02	0.02	0.02	0.02	0.02	0.03	0.23

**Fecal Coliform Screening(#/100mL)**

# results:	Geomean:	# > 400:	% > 400:	%Conf:
8	15.3	1	12.5	

**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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources  
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:** 01/23/2018 to 07/16/2018

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
Hardness (mg/L)	2	0	>100	0	0		68	68	68	70	72	72	72
TSS (mg/L)	2	1	N/A				6.2	6.2	6.2	17.6	29	29	29
Turbidity (NTU)	7	0	>50	2	28.6		3.6	3.6	5.5	11	60	120	120
<b>Nutrients (mg/L)</b>													
NH3 as N	6	6	N/A				0.02	0.02	0.02	0.02	0.02	0.02	0.02
NO2 + NO3 as N	6	1	>10	0	0		0.02	0.02	0.02	0.19	0.28	0.48	0.48
TKN as N	6	0	N/A				0.2	0.2	0.2	0.24	0.38	0.49	0.49
Total Phosphorus	6	0	N/A				0.02	0.02	0.02	0.04	0.06	0.11	0.11

**Fecal Coliform Screening(#/100mL)**

# results:	Geomean:	# > 400:	% > 400:	%Conf:
7	253.9	2	28.6	

**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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence



**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources

Basinwide Assessment Report

**Location:** HENRY FORK RIV AT SR 1124 NR HENRY RIVER

**Station #:** C4300000

**Hydrologic Unit Code:** 03050102

**Latitude:** 35.68483

**Longitude:** -81.40346

**Stream class:** C

**Agency:** NCAMBNT

**NC stream index:** 11-129-1-(12.5)

**Time period:** 01/30/2018 to 07/19/2018

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
Hardness (mg/L)	2	0	N/A				10	10	10	10	11	11	11
TSS (mg/L)	2	0	N/A				12	12	12	19.5	27	27	27
Turbidity (NTU)	7	0	>50	0	0		4.5	4.5	5.4	9.9	19	19	19
<b>Nutrients (mg/L)</b>													
NH3 as N	6	4	N/A				0.02	0.02	0.02	0.02	0.02	0.02	0.02
NO2 + NO3 as N	6	0	N/A				0.22	0.22	0.24	0.26	0.3	0.31	0.31
TKN as N	6	1	N/A				0.2	0.2	0.2	0.24	0.27	0.28	0.28
Total Phosphorus	6	1	N/A				0.02	0.02	0.02	0.02	0.04	0.04	0.04

**Fecal Coliform Screening(#/100mL)**

# results:	Geomean:	# > 400:	% > 400:	%Conf:
7	148.6	3	42.9	

**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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources

Basinwide Assessment Report

**Location:** HENRY FORK RIV AT SR 1143 NR BROOKFORD

**Station #:** C4360000

**Hydrologic Unit Code:** 03050102

**Latitude:** 35.65832

**Longitude:** -81.30838

**Stream class:** C

**Agency:** NCAMBNT

**NC stream index:** 11-129-1-(12.5)

**Time period:** 01/30/2018 to 07/19/2018

	# results	# ND	EL	Results not meeting EL			Percentiles					
				#	%	%Conf	Min	10th	25th	50th	75th	90th
<b>Other</b>												
Hardness (mg/L)	2	0	N/A				15	15	15	16	17	17
TSS (mg/L)	2	0	N/A				23	23	23	28.5	34	34
Turbidity (NTU)	7	0	>50	0	0		7.9	7.9	11	15	19	21
<b>Nutrients (mg/L)</b>												
NH3 as N	5	5	N/A				0.02	0.02	0.02	0.02	0.02	0.02
NO2 + NO3 as N	5	0	N/A				0.66	0.66	0.72	0.86	1.05	1.2
TKN as N	5	0	N/A				0.21	0.21	0.24	0.3	0.4	0.44
Total Phosphorus	5	0	N/A				0.07	0.07	0.1	0.12	0.18	0.22

**Fecal Coliform Screening(#/100mL)**

# results:	Geomean:	# > 400:	% > 400:	%Conf:
7	276.3	2	28.6	

**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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources

Basinwide Assessment Report

**Location:** JACOB FORK AT SR 1924 AT RAMSEY

**Station #:** C4370000

**Hydrologic Unit Code:** 03050102

**Latitude:** 35.59055      **Longitude:** -81.56712

**Stream class:** WS-III ORW

**Agency:** NCAMBNT

**NC stream index:** 11-129-2-(4)

**Time period:** 01/22/2008 to 07/23/2018

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
Hardness (mg/L)	2	0	>100	0	0		7	7	7	9	11	11	11
TSS (mg/L)	2	2	N/A				6.2	6.2	6.2	6.2	6.2	6.2	6.2
Turbidity (NTU)	4	0	>50	0	0		1.3	1.3	1.6	3.2	4.4	4.5	4.5
<b>Nutrients (mg/L)</b>													
NH3 as N	95	91	N/A				0.02	0.02	0.02	0.02	0.02	0.02	0.03
NO2 + NO3 as N	95	6	>10	0	0		0.02	0.02	0.04	0.05	0.08	0.09	1
TKN as N	94	86	N/A				0.2	0.2	0.2	0.2	0.2	0.2	0.71
Total Phosphorus	95	85	N/A				0.02	0.02	0.02	0.02	0.02	0.02	0.13

**Fecal Coliform Screening(#/100mL)**

# results:	Geomean:	# > 400:	% > 400:	%Conf:
4	41.7	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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources  
Basinwide Assessment Report

**Location:** S FORK CATAWBA RIV AT NC 10 NR STARTOWN

**Station #:** C4380000

**Hydrologic Unit Code:** 03050102

**Latitude:** 35.63311      **Longitude:** -81.30531

**Stream class:** WS-V

**Agency:** NCAMBNT

**NC stream index:** 11-129-(0.5)

**Time period:** 01/30/2018 to 07/19/2018

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
Hardness (mg/L)	2	0	>100	0	0		16	16	16	18	19	19	19
TSS (mg/L)	2	0	N/A				16	16	16	23.5	31	31	31
Turbidity (NTU)	6	0	>50	0	0		8.4	8.4	11.1	16	22.2	26	26
<b>Nutrients (mg/L)</b>													
NH3 as N	6	6	N/A				0.02	0.02	0.02	0.02	0.02	0.02	0.02
NO2 + NO3 as N	6	0	>10	0	0		0.58	0.58	0.62	0.71	0.85	0.94	0.94
TKN as N	6	0	N/A				0.2	0.2	0.26	0.28	0.34	0.38	0.38
Total Phosphorus	6	0	N/A				0.05	0.05	0.06	0.09	0.11	0.14	0.14

**Fecal Coliform Screening(#/100mL)**

# results:	Geomean:	# > 400:	% > 400:	%Conf:
7	256.4	2	28.6	

**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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources  
Basinwide Assessment Report

**Location:** CLARK CRK AT SR 2012 NR NEWTON  
**Station #:** C4560000 **Hydrologic Unit Code:** 03050102  
**Latitude:** 35.60860 **Longitude:** -81.23072 **Stream class:** C  
**Agency:** NCAMBNT **NC stream index:** 11-129-5-(0.3)  
**Time period:** 02/21/2018 to 07/25/2018

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
Turbidity (NTU)	5	0	>50	3	60		13	13	15.5	80	300	400	400
<b>Nutrients (mg/L)</b>													
NH3 as N	5	4	N/A				0.02	0.02	0.02	0.02	0.06	0.11	0.11
NO2 + NO3 as N	5	0	N/A				0.55	0.55	1.12	2.4	2.6	2.6	2.6
TKN as N	5	0	N/A				0.2	0.2	0.28	0.44	1.16	1.7	1.7
Total Phosphorus	5	0	N/A				0.12	0.12	0.13	0.16	0.42	0.6	0.6

**Fecal Coliform Screening(#/100mL)**

# results:	Geomean:	# > 400:	% > 400:	%Conf:
6	1361	5	83.3	

**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 greater than 10% (20% for Fecal Coliform)  
Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources

Basinwide Assessment Report

**Location:** CLARK CRK AT SR 1008 GROVE ST AT LINCOLNTON

**Station #:** C4800000

**Hydrologic Unit Code:** 03050102

**Latitude:** 35.47532

**Longitude:** -81.26719

**Stream class:** WS-IV

**Agency:** NCAMBNT

**NC stream index:** 11-129-5-(9.5)

**Time period:** 01/23/2008 to 07/19/2018

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
TSS (mg/L)	2	0	N/A				21	21	21	117.5	214	214	214
Turbidity (NTU)	7	0	>50	2	28.6		13	13	15	39	130	170	170
<b>Nutrients (mg/L)</b>													
NH3 as N	102	16	N/A				0.02	0.02	0.02	0.03	0.05	0.12	0.34
NO2 + NO3 as N	102	0	>10	0	0		0.34	0.88	1.1	1.3	1.7	2.07	2.9
TKN as N	98	1	N/A				0.2	0.27	0.34	0.4	0.49	0.81	3
Total Phosphorus	101	0	N/A				0.08	0.13	0.16	0.21	0.29	0.34	1.6

**Fecal Coliform Screening(#/100mL)**

# results:	Geomean:	# > 400:	% > 400:	%Conf:
7	1099.4	6	85.7	

**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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources  
Basinwide Assessment Report

**Location:** INDIAN CRK AT SR 1252 NR LABORATORY

**Station #:** C5170000

**Hydrologic Unit Code:** 03050102

**Latitude:** 35.42280

**Longitude:** -81.25920

**Stream class:** WS-IV

**Agency:** NCAMBNT

**NC stream index:** 11-129-8-(6.5)

**Time period:** 01/30/2018 to 07/19/2018

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
Hardness (mg/L)	2	0	>100	0	0		23	23	23	24	24	24	24
TSS (mg/L)	2	0	N/A				6.5	6.5	6.5	33.2	60	60	60
Turbidity (NTU)	7	0	>50	0	0		10	10	11	24	39	40	40
<b>Nutrients (mg/L)</b>													
NH3 as N	6	0	N/A				0.03	0.03	0.04	0.04	0.06	0.09	0.09
NO2 + NO3 as N	6	0	>10	0	0		0.7	0.7	0.76	0.84	0.93	1	1
TKN as N	6	0	N/A				0.22	0.22	0.32	0.46	0.62	0.79	0.79
Total Phosphorus	6	0	N/A				0.04	0.04	0.07	0.1	0.14	0.2	0.2

**Fecal Coliform Screening(#/100mL)**

# results:	Geomean:	# > 400:	% > 400:	%Conf:
7	873.5	5	71.4	

**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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources

Basinwide Assessment Report

**Location:** LONG CRK AT SR 1456 NR BESSEMER CITY

**Station #:** C5900000

**Hydrologic Unit Code:** 03050102

**Latitude:** 35.30518

**Longitude:** -81.23264

**Stream class:** C

**Agency:** NCAMBNT

**NC stream index:** 11-129-16-(4)

**Time period:** 01/23/2008 to 07/16/2018

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
Hardness (mg/L)	2	0	N/A				40	40	40	45	50	50	50
TSS (mg/L)	2	0	N/A				7.8	7.8	7.8	8.2	8.5	8.5	8.5
Turbidity (NTU)	7	0	>50	0	0		5.5	5.5	6.2	11	13	18	18
<b>Nutrients (mg/L)</b>													
NH3 as N	106	52	N/A				0.02	0.02	0.02	0.02	0.03	0.05	0.1
NO2 + NO3 as N	106	0	N/A				0.02	0.2	0.32	0.42	0.54	0.61	0.72
TKN as N	103	9	N/A				0.2	0.2	0.24	0.29	0.37	0.58	2.8
Total Phosphorus	106	0	N/A				0.02	0.03	0.03	0.05	0.06	0.14	0.78

**Fecal Coliform Screening(#/100mL)**

# results:	Geomean:	# > 400:	% > 400:	%Conf:
7	196.2	1	14.3	

**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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence



**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources

Basinwide Assessment Report

**Location:** S FORK CATAWBA RIV AT NC 7 AT MCADENVILLE

**Station #:** C6500000

**Hydrologic Unit Code:** 03050102

**Latitude:** 35.26014      **Longitude:** -81.07390

**Stream class:** WS-V

**Agency:** NCAMBNT

**NC stream index:** 11-129-(15.5)

**Time period:** 01/16/2008 to 07/16/2018

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
Hardness (mg/L)	2	0	>100	0	0		20	20	20	22	25	25	25
TSS (mg/L)	2	0	N/A				14	14	14	23.5	33	33	33
Turbidity (NTU)	7	0	>50	0	0		11	11	12	17	18	37	37
<b>Nutrients (mg/L)</b>													
NH3 as N	104	22	N/A				0.02	0.02	0.02	0.03	0.05	0.07	0.22
NO2 + NO3 as N	104	0	>10	0	0		0.46	0.6	0.7	0.82	0.91	1	1.3
TKN as N	101	1	N/A				0.2	0.25	0.3	0.37	0.46	0.67	1.6
Total Phosphorus	102	0	N/A				0.04	0.06	0.08	0.1	0.14	0.21	0.57

**Fecal Coliform Screening(#/100mL)**

# results:	Geomean:	# > 400:	% > 400:	%Conf:
7	83.8	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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources

Basinwide Assessment Report

**Location:** S FORK CATAWBA RIV AT SR 2524 NR SOUTH BELMONT

**Station #:** C7000000

**Hydrologic Unit Code:** 03050102

**Latitude:** 35.16666

**Longitude:** -81.03825

**Stream class:** WS-V B

**Agency:** NCAMBNT

**NC stream index:** 11-(123.5)

**Time period:** 01/03/2018 to 07/26/2018

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
Hardness (mg/L)	3	0	>100	0	0		17	17	17	21	24	24	24
TSS (mg/L)	3	2	N/A				6.2	6.2	6.2	6.2	7.8	7.8	7.8
Turbidity (NTU)	7	0	>25	1	14.3		3.1	3.1	3.6	11	17	180	180
<b>Nutrients (mg/L)</b>													
NH3 as N	5	2	N/A				0.02	0.02	0.02	0.02	0.08	0.13	0.13
NO2 + NO3 as N	5	0	>10	0	0		0.2	0.2	0.23	0.61	0.72	0.76	0.76
TKN as N	5	0	N/A				0.35	0.35	0.38	0.46	0.72	0.98	0.98
Total Phosphorus	4	0	N/A				0.04	0.04	0.05	0.07	0.21	0.26	0.26

**Fecal Coliform Screening(#/100mL)**

# results:	Geomean:	# > 400:	% > 400:	%Conf:
8	26.2	1	12.5	

**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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources

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:** 01/03/2018 to 07/26/2018

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
Hardness (mg/L)	3	0	>100	0	0		21	21	21	24	25	25	25
TSS (mg/L)	3	3	N/A				6.2	6.2	6.2	6.2	6.2	6.2	6.2
Turbidity (NTU)	8	0	>25	0	0		2.8	2.8	3.4	4.8	9.5	11	11
<b>Nutrients (mg/L)</b>													
NH3 as N	6	6	N/A				0.02	0.02	0.02	0.02	0.02	0.02	0.02
NO2 + NO3 as N	6	1	>10	0	0		0.02	0.02	0.04	0.08	0.26	0.31	0.31
TKN as N	6	0	N/A				0.32	0.32	0.38	0.42	0.49	0.57	0.57
Total Phosphorus	5	0	N/A				0.03	0.03	0.03	0.04	0.06	0.06	0.06

**Fecal Coliform Screening(#/100mL)**

# results:	Geomean:	# > 400:	% > 400:	%Conf:
8	8.6	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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources

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:** NA

**Time period:** 01/10/2008 to 07/16/2018

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
Hardness (mg/L)	2	0	N/A				54	54	54	55	56	56	56
TSS (mg/L)	2	1	N/A				8	8	8	10	12	12	12
Turbidity (NTU)	7	0	N/A				4.3	4.3	5.3	6.4	13	120	120
<b>Nutrients (mg/L)</b>													
NH3 as N	107	16	N/A				0.02	0.02	0.02	0.04	0.06	0.1	0.34
NO2 + NO3 as N	107	0	N/A				0.16	0.32	0.4	0.54	0.79	1.02	2
TKN as N	103	1	N/A				0.2	0.27	0.33	0.43	0.57	0.67	1.6
Total Phosphorus	105	0	N/A				0.03	0.04	0.06	0.07	0.11	0.19	0.65

**Fecal Coliform Screening(#/100mL)**

# results:	Geomean:	# > 400:	% > 400:	%Conf:
7	236.5	1	14.3	

**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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources

Basinwide Assessment Report

**Location:** IRWIN CRK AT IRWIN CRK WWTP NR CHARLOTTE

**Station #:** C8896500

**Hydrologic Unit Code:** 03050103

**Latitude:** 35.19801

**Longitude:** -80.90453

**Stream class:** C

**Agency:** NCAMBNT

**NC stream index:** 11-137-1

**Time period:** 01/23/2018 to 07/12/2018

	# results	# ND	EL	Results not meeting EL			Percentiles					
				#	%	%Conf	Min	10th	25th	50th	75th	90th
<b>Other</b>												
TSS (mg/L)	2	2	N/A				6.2	6.2	6.2	6.2	6.2	6.2
Turbidity (NTU)	7	0	>50	1	14.3		1.4	1.4	1.9	3.8	9.2	110
<b>Nutrients (mg/L)</b>												
NH3 as N	6	5	N/A				0.02	0.02	0.02	0.02	0.02	0.04
NO2 + NO3 as N	6	0	N/A				0.35	0.35	0.43	0.57	0.91	0.96
TKN as N	6	0	N/A				0.24	0.24	0.26	0.28	0.31	0.33
Total Phosphorus	6	0	N/A				0.02	0.02	0.02	0.02	0.03	0.03

**Fecal Coliform Screening(#/100mL)**

# results:	Geomean:	# > 400:	% > 400:	%Conf:
7	253	3	42.9	

**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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources

Basinwide Assessment Report

**Location:** SUGAR CRK AT NC 51 AT PINEVILLE

**Station #:** C9050000

**Hydrologic Unit Code:** 03050103

**Latitude:** 35.09067      **Longitude:** -80.89962

**Stream class:** C

**Agency:** NCAMBNT

**NC stream index:** 11-137

**Time period:** 01/16/2008 to 07/12/2018

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
Hardness (mg/L)	2	0	N/A				87	87	87	89	91	91	91
TSS (mg/L)	2	0	N/A				8	8	8	8	8	8	8
Turbidity (NTU)	7	0	>50	1	14.3		1.8	1.8	2.7	3.4	16	140	140
<b>Nutrients (mg/L)</b>													
NH3 as N	106	41	N/A				0.02	0.02	0.02	0.02	0.04	0.09	1.3
NO2 + NO3 as N	106	0	N/A				0.56	2.4	4.05	6.2	8.8	11	14
TKN as N	101	3	N/A				0.2	0.45	0.56	0.66	0.78	1.1	9.3
Total Phosphorus	105	0	N/A				0.2	0.38	0.44	0.68	0.96	1.1	1.8

**Fecal Coliform Screening(#/100mL)**

# results:	Geomean:	# > 400:	% > 400:	%Conf:
7	416.8	4	57.1	

**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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources

Basinwide Assessment Report

**Location:** LITTLE SUGAR CRK AT NC 51 AT PINEVILLE

**Station #:** C9210000

**Hydrologic Unit Code:** 03050103

**Latitude:** 35.08502

**Longitude:** -80.88218

**Stream class:** C

**Agency:** NCAMBNT

**NC stream index:** 11-137-8

**Time period:** 01/16/2008 to 07/12/2018

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
Hardness (mg/L)	2	0	N/A				85	85	85	102	118	118	118
TSS (mg/L)	2	0	N/A				9	9	9	130.5	252	252	252
Turbidity (NTU)	7	0	>50	4	57.1		6.3	6.3	13	100	250	260	260
<b>Nutrients (mg/L)</b>													
NH3 as N	105	32	N/A				0.02	0.02	0.02	0.02	0.05	0.16	1.3
NO2 + NO3 as N	105	0	N/A				0.87	3.2	5.55	9.1	12	14	17
TKN as N	98	1	N/A				0.2	0.59	0.69	0.81	0.97	1.2	2.4
Total Phosphorus	104	0	N/A				0.25	0.48	0.68	1.1	1.5	1.8	2.3

**Fecal Coliform Screening(#/100mL)**

# results:	Geomean:	# > 400:	% > 400:	%Conf:
7	1138	5	71.4	

**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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources

Basinwide Assessment Report

**Location:** MCALPINE CRK AT SR 3356 SARDIS RD NR CHARLOTTE

**Station #:** C9370000

**Hydrologic Unit Code:** 03050103

**Latitude:** 35.13725

**Longitude:** -80.76817

**Stream class:** C

**Agency:** NCAMBNT

**NC stream index:** 11-137-9

**Time period:** 01/10/2008 to 07/11/2018

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
Hardness (mg/L)	2	0	N/A				68	68	68	72	75	75	75
TSS (mg/L)	2	2	N/A				6.2	6.2	6.2	9.1	12	12	12
Turbidity (NTU)	7	0	>50	0	0		1.8	1.8	2.2	3.7	20	40	40
<b>Nutrients (mg/L)</b>													
NH3 as N	104	53	N/A				0.02	0.02	0.02	0.02	0.03	0.06	0.26
NO2 + NO3 as N	104	9	N/A				0.02	0.02	0.09	0.25	0.37	0.53	1.7
TKN as N	103	2	N/A				0.2	0.24	0.29	0.34	0.45	0.6	1
Total Phosphorus	102	0	N/A				0.02	0.03	0.04	0.05	0.07	0.11	0.38

**Fecal Coliform Screening(#/100mL)**

# results:	Geomean:	# > 400:	% > 400:	%Conf:
7	334.9	3	42.9	

**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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence



**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources

Basinwide Assessment Report

**Location:** MCALPINE CRK AT SC SR 29-64 NR CAMP COX SC

**Station #:** C9680000

**Hydrologic Unit Code:** 03050103

**Latitude:** 35.04101

**Longitude:** -80.89162

**Stream class:** FW

**Agency:** NCAMBNT

**NC stream index:** NA

**Time period:** 01/16/2008 to 07/12/2018

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
Hardness (mg/L)	2	0	N/A				100	100	100	112	123	123	123
TSS (mg/L)	2	0	N/A				8.8	8.8	8.8	13.4	18	18	18
Turbidity (NTU)	7	0	N/A				2.7	2.7	3.2	4.9	16	230	230
<b>Nutrients (mg/L)</b>													
NH3 as N	106	4	N/A				0.02	0.02	0.03	0.05	0.06	0.08	0.21
NO2 + NO3 as N	106	0	N/A				2.4	8.22	12	17	21	24	28
TKN as N	97	6	N/A				0.2	0.39	0.84	1.1	1.2	1.4	2.2
Total Phosphorus	105	0	N/A				0.22	0.27	0.34	0.4	0.48	0.58	1.3

**Fecal Coliform Screening(#/100mL)**

# results:	Geomean:	# > 400:	% > 400:	%Conf:
7	349.2	2	28.6	

**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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources

Basinwide Assessment Report

**Location:** SUGAR CRK AT SC 160 NR FORT MILL SC

**Station #:** C9790000

**Hydrologic Unit Code:** 03050103

**Latitude:** 35.00592

**Longitude:** -80.90221

**Stream class:** FW

**Agency:** NCAMBNT

**NC stream index:** NA

**Time period:** 01/16/2008 to 07/12/2018

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
Hardness (mg/L)	2	0	N/A				81	81	81	96	110	110	110
TSS (mg/L)	2	0	N/A				23	23	23	25	27	27	27
Turbidity (NTU)	7	0	N/A				6.7	6.7	7.4	25	28	240	240
<b>Nutrients (mg/L)</b>													
NH3 as N	104	16	N/A				0.02	0.02	0.02	0.03	0.04	0.1	0.49
NO2 + NO3 as N	104	0	N/A				0.95	4.65	7.22	10	13	16	19
TKN as N	98	4	N/A				0.2	0.56	0.72	0.83	0.97	1.11	6.6
Total Phosphorus	103	0	N/A				0.26	0.31	0.4	0.52	0.67	0.77	0.92

**Fecal Coliform Screening(#/100mL)**

# results:	Geomean:	# > 400:	% > 400:	%Conf:
7	527.2	4	57.1	

**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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources  
Basinwide Assessment Report

**Location:** TWELVEMILE CRK AT NC 16 NR WAXHAW

**Station #:** C9819500

**Hydrologic Unit Code:** 03050103

**Latitude:** 34.95225

**Longitude:** -80.75581

**Stream class:** C

**Agency:** NCAMBNT

**NC stream index:** 11-138

**Time period:** 01/10/2008 to 07/11/2018

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
TSS (mg/L)	2	0	N/A				8.8	8.8	8.8	168.4	328	328	328
Turbidity (NTU)	7	0	>50	2	28.6		6.5	6.5	11	13	60	70	70
<b>Nutrients (mg/L)</b>													
NH3 as N	106	41	N/A				0.02	0.02	0.02	0.02	0.05	0.07	0.58
NO2 + NO3 as N	106	11	N/A				0.02	0.02	0.13	0.35	0.49	0.75	5.2
TKN as N	104	0	N/A				0.21	0.34	0.42	0.54	0.66	0.94	2
Total Phosphorus	103	0	N/A				0.02	0.05	0.07	0.09	0.14	0.21	0.54

**Fecal Coliform Screening(#/100mL)**

# results:	Geomean:	# > 400:	% > 400:	%Conf:
7	385	4	57.1	

**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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources  
Basinwide Assessment Report

**Location:** LAKE JAMES AT MARION NC

**Station #:** CTB013B

**Hydrologic Unit Code:** 03050101

**Latitude:** 35.72048

**Longitude:** -81.96805

**Stream class:** WS-V B

**Agency:** NCLAKES

**NC stream index:** 11-(23)

**Time period:** 05/16/2017 to 09/18/2017

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
Chlorophyll a (ug/L)	5	0	>40	0	0		4	4	11	20	32	39	39
TSS (mg/L)	5	4	N/A				6.2	6.2	9.1	12	13.5	15	15
Turbidity (NTU)	5	0	>25	0	0		6.1	6.1	6.2	7.8	10.1	11	11
<b>Nutrients (mg/L)</b>													
NH3 as N	5	5	N/A				0.02	0.02	0.02	0.02	0.02	0.02	0.02
NO2 + NO3 as N	5	3	>10	0	0		0.02	0.02	0.02	0.02	0.1	0.15	0.15
TKN as N	5	0	N/A				0.24	0.24	0.32	0.43	0.44	0.45	0.45
Total Phosphorus	5	0	N/A				0.03	0.03	0.03	0.04	0.05	0.05	0.05

**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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources

Basinwide Assessment Report

**Location:** LAKE JAMES NR MARION NC

**Station #:** CTB013C

**Hydrologic Unit Code:** 03050101

**Latitude:** 35.74686

**Longitude:** -81.95530

**Stream class:** WS-V B

**Agency:** NCLAKES

**NC stream index:** 11-(23)

**Time period:** 05/16/2017 to 09/18/2017

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
Chlorophyll a (ug/L)	5	0	>40	0	0		4	4	4	5	9	11	11
TSS (mg/L)	5	5	N/A				6.2	6.2	6.2	6.2	6.2	6.2	6.2
Turbidity (NTU)	5	0	>25	0	0		1.3	1.3	1.3	1.6	2.4	2.7	2.7
<b>Nutrients (mg/L)</b>													
NH3 as N	5	5	N/A				0.02	0.02	0.02	0.02	0.02	0.02	0.02
NO2 + NO3 as N	5	3	>10	0	0		0.02	0.02	0.02	0.02	0.02	0.03	0.03
TKN as N	5	0	N/A				0.22	0.22	0.22	0.23	0.24	0.25	0.25
Total Phosphorus	5	4	N/A				0.02	0.02	0.02	0.02	0.02	0.02	0.02

**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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources  
Basinwide Assessment Report

**Location:** LAKE JAMES NR NEBO NC

**Station #:** CTB015A

**Hydrologic Unit Code:** 03050101

**Latitude:** 35.73940      **Longitude:** -81.90547

**Stream class:** WS-V B

**Agency:** NCLAKES

**NC stream index:** 11-(23)

**Time period:** 05/16/2017 to 09/18/2017

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
Chlorophyll a (ug/L)	5	0	>40	0	0		3	3	3	4	5	6	6
TSS (mg/L)	5	5	N/A				6.2	6.2	6.2	6.2	9.1	12	12
Turbidity (NTU)	5	0	>25	0	0		1.1	1.1	1.2	1.3	2	2.3	2.3
<b>Nutrients (mg/L)</b>													
NH3 as N	5	5	N/A				0.02	0.02	0.02	0.02	0.02	0.02	0.02
NO2 + NO3 as N	5	5	>10	0	0		0.02	0.02	0.02	0.02	0.02	0.02	0.02
TKN as N	5	0	N/A				0.2	0.2	0.2	0.21	0.27	0.31	0.31
Total Phosphorus	5	5	N/A				0.02	0.02	0.02	0.02	0.02	0.02	0.02

**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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources

Basinwide Assessment Report

**Location:** LAKE JAMES NR BRIDGEWATER NC

**Station #:** CTB015C

**Hydrologic Unit Code:** 03050101

**Latitude:** 35.74071      **Longitude:** -81.85445

**Stream class:** WS-V B

**Agency:** NCLAKES

**NC stream index:** 11-(23)

**Time period:** 05/16/2017 to 09/18/2017

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
Chlorophyll a (ug/L)	5	0	>40	0	0		2	2	3	3	5	6	6
Hardness (mg/L)	5	0	>100	0	0		16	16	16	17	17	17	17
TSS (mg/L)	5	5	N/A				6.2	6.2	6.2	6.2	6.2	6.2	6.2
Turbidity (NTU)	5	0	>25	0	0		1.1	1.1	1.1	1.4	1.8	2.1	2.1
<b>Nutrients (mg/L)</b>													
NH3 as N	5	5	N/A				0.02	0.02	0.02	0.02	0.02	0.02	0.02
NO2 + NO3 as N	5	5	>10	0	0		0.02	0.02	0.02	0.02	0.02	0.02	0.02
TKN as N	5	0	N/A				0.2	0.2	0.2	0.21	0.25	0.29	0.29
Total Phosphorus	5	5	N/A				0.02	0.02	0.02	0.02	0.02	0.02	0.02

**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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources

Basinwide Assessment Report

**Location:** LAKE JAMES AT LONGTOWN NC

**Station #:** CTB023A1

**Hydrologic Unit Code:** 03050101

**Latitude:** 35.78319      **Longitude:** -81.86473

**Stream class:** WS-V B

**Agency:** NCLAKES

**NC stream index:** 11-(23)

**Time period:** 05/16/2017 to 09/18/2017

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
Chlorophyll a (ug/L)	5	0	>40	0	0		3	3	4	6	8	10	10
TSS (mg/L)	5	5	N/A				6.2	6.2	6.2	6.2	6.2	6.2	6.2
Turbidity (NTU)	5	0	>25	0	0		1.3	1.3	1.4	1.6	2.6	3.3	3.3
<b>Nutrients (mg/L)</b>													
NH3 as N	5	5	N/A				0.02	0.02	0.02	0.02	0.02	0.02	0.02
NO2 + NO3 as N	5	5	>10	0	0		0.02	0.02	0.02	0.02	0.02	0.02	0.02
TKN as N	5	0	N/A				0.2	0.2	0.22	0.24	0.26	0.27	0.27
Total Phosphorus	5	5	N/A				0.02	0.02	0.02	0.02	0.02	0.02	0.02

**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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence



**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources

Basinwide Assessment Report

**Location:** LAKE JAMES NR GLEN ALPINC NC

**Station #:** CTB023B

**Hydrologic Unit Code:** 03050101

**Latitude:** 35.75956      **Longitude:** -81.84630

**Stream class:** WS-V B

**Agency:** NCLAKES

**NC stream index:** 11-(23)

**Time period:** 05/16/2017 to 09/18/2017

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
Chlorophyll a (ug/L)	5	0	>40	0	0		2	2	3	4	5	6	6
TSS (mg/L)	5	5	N/A				6.2	6.2	6.2	6.2	6.2	6.2	6.2
Turbidity (NTU)	5	0	>25	0	0		1.1	1.1	1.2	1.4	1.8	2	2
<b>Nutrients (mg/L)</b>													
NH3 as N	5	5	N/A				0.02	0.02	0.02	0.02	0.02	0.02	0.02
NO2 + NO3 as N	5	5	>10	0	0		0.02	0.02	0.02	0.02	0.02	0.02	0.02
TKN as N	5	0	N/A				0.2	0.2	0.2	0.22	0.31	0.39	0.39
Total Phosphorus	5	5	N/A				0.02	0.02	0.02	0.02	0.02	0.02	0.02

**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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources

Basinwide Assessment Report

**Location:** LAKE RHODHISS AT SR 1501 NR DREXEL NC

**Station #:** CTB034A

**Hydrologic Unit Code:** 03050101

**Latitude:** 35.78233

**Longitude:** -81.59360

**Stream class:** WS-IV B CA

**Agency:** NCLAKES

**NC stream index:** 11-(37)

**Time period:** 05/08/2017 to 09/13/2017

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
Chlorophyll a (ug/L)	5	2	>40	0	0		1	1	1	2	2	2	2
Hardness (mg/L)	5	0	>100	0	0		14	14	16	17	18	18	18
TSS (mg/L)	5	2	N/A				7.5	7.5	9.8	12	14.5	16	16
Turbidity (NTU)	5	0	>25	0	0		6.2	6.2	8.6	18	23	24	24
<b>Nutrients (mg/L)</b>													
NH3 as N	4	2	N/A				0.02	0.02	0.02	0.02	0.02	0.02	0.02
NO2 + NO3 as N	4	0	>10	0	0		0.21	0.21	0.21	0.26	0.32	0.32	0.32
TKN as N	4	0	N/A				0.25	0.25	0.27	0.34	0.4	0.42	0.42
Total Phosphorus	4	0	N/A				0.06	0.06	0.06	0.07	0.08	0.09	0.09

**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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources

Basinwide Assessment Report

**Location:** LAKE RHODHISS AT SR 1001 NR BATON NC

**Station #:** CTB040A

**Hydrologic Unit Code:** 03050101

**Latitude:** 35.78033

**Longitude:** -81.52335

**Stream class:** WS-IV B CA

**Agency:** NCLAKES

**NC stream index:** 11-(37)

**Time period:** 05/08/2017 to 09/13/2017

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
Chlorophyll a (ug/L)	5	0	>40	0	0		2	2	7	19	24	25	25
Hardness (mg/L)	5	0	>100	0	0		14	14	15	17	17	17	17
TSS (mg/L)	5	5	N/A				6.2	6.2	6.2	6.2	6.2	6.2	6.2
Turbidity (NTU)	5	0	>25	0	0		2.9	2.9	3	3.3	7.8	11	11
<b>Nutrients (mg/L)</b>													
NH3 as N	5	5	N/A				0.02	0.02	0.02	0.02	0.03	0.04	0.04
NO2 + NO3 as N	5	3	>10	0	0		0.02	0.02	0.02	0.02	0.1	0.18	0.18
TKN as N	5	0	N/A				0.21	0.21	0.28	0.44	0.48	0.5	0.5
Total Phosphorus	5	0	N/A				0.02	0.02	0.02	0.03	0.04	0.04	0.04

**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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources

Basinwide Assessment Report

**Location:** LAKE RHODHISS NR RHODHISS NC

**Station #:** CTB040B

**Hydrologic Unit Code:** 03050101

**Latitude:** 35.77243

**Longitude:** -81.44026

**Stream class:** WS-IV B CA

**Agency:** NCLAKES

**NC stream index:** 11-(37)

**Time period:** 05/08/2017 to 09/13/2017

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
Chlorophyll a (ug/L)	5	0	>40	0	0		12	12	14	16	21	22	22
Hardness (mg/L)	5	0	>100	0	0		15	15	16	16	16	17	17
TSS (mg/L)	5	5	N/A				6.2	6.2	6.2	6.2	6.2	6.2	6.2
Turbidity (NTU)	5	0	>25	0	0		2.6	2.6	3	4.5	6.2	7.1	7.1
<b>Nutrients (mg/L)</b>													
NH3 as N	5	4	N/A				0.02	0.02	0.02	0.02	0.02	0.03	0.03
NO2 + NO3 as N	5	2	>10	0	0		0.02	0.02	0.02	0.03	0.15	0.18	0.18
TKN as N	5	0	N/A				0.29	0.29	0.32	0.38	0.43	0.44	0.44
Total Phosphorus	5	0	N/A				0.02	0.02	0.02	0.03	0.04	0.06	0.06

**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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources  
Basinwide Assessment Report

**Location:** LAKE HICKORY AT US HWY 321 AT HICKORY NC

**Station #:** CTB048A

**Hydrologic Unit Code:** 03050101

**Latitude:** 35.75924

**Longitude:** -81.37576

**Stream class:** WS-IV B CA

**Agency:** NCLAKES

**NC stream index:** 11-(53)

**Time period:** 05/09/2017 to 09/26/2017

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
Chlorophyll a (ug/L)	4	0	>40	0	0		5	5	7	14	25	28	28
TSS (mg/L)	5	5	N/A				6.2	6.2	6.2	12	12	12	12
Turbidity (NTU)	5	0	>25	0	0		3.3	3.3	3.6	4.6	8.5	11	11
<b>Nutrients (mg/L)</b>													
NH3 as N	5	4	N/A				0.02	0.02	0.02	0.02	0.02	0.02	0.02
NO2 + NO3 as N	5	1	>10	0	0		0.02	0.02	0.02	0.08	0.15	0.2	0.2
TKN as N	5	0	N/A				0.25	0.25	0.3	0.39	0.41	0.43	0.43
Total Phosphorus	5	0	N/A				0.02	0.02	0.02	0.03	0.03	0.03	0.03

**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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources  
Basinwide Assessment Report

**Location:** LAKE HICKORY AT NC HWY 127 NR HICKORY NC

**Station #:** CTB056A

**Hydrologic Unit Code:** 03050101

**Latitude:** 35.80263

**Longitude:** -81.30454

**Stream class:** WS-V B

**Agency:** NCLAKES

**NC stream index:** 11-(59.5)

**Time period:** 05/09/2017 to 09/26/2017

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
Chlorophyll a (ug/L)	4	0	>40	0	0		13	13	13	16	18	18	18
TSS (mg/L)	5	5	N/A				6.2	6.2	6.2	6.2	6.2	6.2	6.2
Turbidity (NTU)	5	0	>25	0	0		2.3	2.3	2.4	2.6	4.1	5.4	5.4
<b>Nutrients (mg/L)</b>													
NH3 as N	5	4	N/A				0.02	0.02	0.02	0.02	0.02	0.02	0.02
NO2 + NO3 as N	5	4	>10	0	0		0.02	0.02	0.02	0.02	0.12	0.22	0.22
TKN as N	5	0	N/A				0.29	0.29	0.31	0.34	0.36	0.38	0.38
Total Phosphorus	5	1	N/A				0.02	0.02	0.02	0.02	0.02	0.03	0.03

**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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources

Basinwide Assessment Report

**Location:** LOOKOUT SHOALS LAKE AT MOUTH OF ELK SHOALS CREEK

**Station #:** CTB0581F

**Hydrologic Unit Code:** 03050101

**Latitude:** 35.78549

**Longitude:** -81.12322

**Stream class:** WS-IV B CA

**Agency:** NCLAKES

**NC stream index:** 11-(72)

**Time period:** 05/09/2017 to 09/26/2017

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
Chlorophyll a (ug/L)	5	0	>40	0	0		6	6	7	8	15	22	22
TSS (mg/L)	5	5	N/A				6.2	6.2	6.2	6.2	6.2	6.2	6.2
Turbidity (NTU)	5	0	>25	0	0		3.2	3.2	3.2	6.8	7.7	7.8	7.8
<b>Nutrients (mg/L)</b>													
NH3 as N	5	2	N/A				0.02	0.02	0.02	0.02	0.04	0.05	0.05
NO2 + NO3 as N	5	0	>10	0	0		0.09	0.09	0.1	0.17	0.24	0.28	0.28
TKN as N	5	0	N/A				0.28	0.28	0.28	0.33	0.42	0.45	0.45
Total Phosphorus	5	0	N/A				0.02	0.02	0.02	0.03	0.04	0.04	0.04

**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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources  
Basinwide Assessment Report

**Location:** LAKE HICKORY NR PROSPST STORE NC

**Station #:** CTB058C

**Hydrologic Unit Code:** 03050101

**Latitude:** 35.80416

**Longitude:** -81.26902

**Stream class:** WS-V B

**Agency:** NCLAKES

**NC stream index:** 11-(59.5)

**Time period:** 05/09/2017 to 09/26/2017

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
Chlorophyll a (ug/L)	5	0	>40	0	0		14	14	14	16	21	24	24
TSS (mg/L)	5	5	N/A				6.2	6.2	6.2	6.2	6.2	6.2	6.2
Turbidity (NTU)	5	0	>25	0	0		1.9	1.9	2	2.6	4	5.2	5.2
<b>Nutrients (mg/L)</b>													
NH3 as N	5	5	N/A				0.02	0.02	0.02	0.02	0.02	0.02	0.02
NO2 + NO3 as N	5	4	>10	0	0		0.02	0.02	0.02	0.02	0.12	0.23	0.23
TKN as N	5	0	N/A				0.23	0.23	0.27	0.32	0.37	0.4	0.4
Total Phosphorus	5	1	N/A				0.02	0.02	0.02	0.02	0.03	0.03	0.03

**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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence



**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources

Basinwide Assessment Report

**Location:** LAKE HICKORY NEAR MILLERSVILLE NC

**Station #:** CTB058D

**Hydrologic Unit Code:** 03050101

**Latitude:** 35.81105

**Longitude:** -81.22229

**Stream class:** WS-V B

**Agency:** NCLAKES

**NC stream index:** 11-(59.5)

**Time period:** 05/09/2017 to 09/26/2017

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
Chlorophyll a (ug/L)	5	0	>40	0	0		10	10	11	16	17	17	17
Hardness (mg/L)	5	0	>100	0	0		14	14	14	15	15	15	15
TSS (mg/L)	5	5	N/A				6.2	6.2	6.2	6.2	6.2	6.2	6.2
Turbidity (NTU)	5	0	>25	0	0		1.6	1.6	1.6	2.7	3.5	4.2	4.2
<b>Nutrients (mg/L)</b>													
NH3 as N	5	4	N/A				0.02	0.02	0.02	0.02	0.02	0.02	0.02
NO2 + NO3 as N	5	4	>10	0	0		0.02	0.02	0.02	0.02	0.12	0.23	0.23
TKN as N	5	0	N/A				0.3	0.3	0.3	0.31	0.38	0.38	0.38
Total Phosphorus	5	1	N/A				0.02	0.02	0.02	0.02	0.02	0.02	0.02

**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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources

Basinwide Assessment Report

**Location:** LOOKOUT SHOALS LAKE 1.5 MI US DAM

**Station #:** CTB058F

**Hydrologic Unit Code:** 03050101

**Latitude:** 35.77577

**Longitude:** -81.10846

**Stream class:** WS-IV B CA

**Agency:** NCLAKES

**NC stream index:** 11-(72)

**Time period:** 05/09/2017 to 09/26/2017

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
Chlorophyll a (ug/L)	5	0	>40	0	0		9	9	10	14	19	19	19
TSS (mg/L)	5	5	N/A				6.2	6.2	6.2	6.2	6.2	6.2	6.2
Turbidity (NTU)	5	0	>25	0	0		2.2	2.2	2.8	5	6.4	7.5	7.5
<b>Nutrients (mg/L)</b>													
NH3 as N	5	3	N/A				0.02	0.02	0.02	0.02	0.03	0.04	0.04
NO2 + NO3 as N	5	0	>10	0	0		0.04	0.04	0.04	0.14	0.2	0.26	0.26
TKN as N	5	0	N/A				0.27	0.27	0.3	0.35	0.4	0.42	0.42
Total Phosphorus	5	0	N/A				0.02	0.02	0.02	0.02	0.03	0.03	0.03

**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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources

Basinwide Assessment Report

**Location:** LOOKOUT SHOALS LAKE AT DAM NR CATAWBA

**Station #:** CTB058G

**Hydrologic Unit Code:** 03050101

**Latitude:** 35.75964

**Longitude:** -81.09042

**Stream class:** WS-IV B CA

**Agency:** NCLAKES

**NC stream index:** 11-(72)

**Time period:** 05/09/2017 to 09/26/2017

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
Chlorophyll a (ug/L)	5	0	>40	0	0		11	11	14	20	24	26	26
Hardness (mg/L)	5	0	>100	0	0		13	13	13	14	14	15	15
TSS (mg/L)	5	5	N/A				6.2	6.2	6.2	6.2	12	12	12
Turbidity (NTU)	5	0	>25	0	0		1.9	1.9	2.2	3.6	5.6	7.2	7.2
<b>Nutrients (mg/L)</b>													
NH3 as N	5	4	N/A				0.02	0.02	0.02	0.02	0.02	0.02	0.02
NO2 + NO3 as N	5	1	>10	0	0		0.02	0.02	0.02	0.06	0.17	0.26	0.26
TKN as N	5	0	N/A				0.3	0.3	0.31	0.36	0.41	0.42	0.42
Total Phosphorus	5	0	N/A				0.02	0.02	0.02	0.02	0.03	0.03	0.03

**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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources  
Basinwide Assessment Report

**Location:** LAKE NORMAN AT SR 1004 NR MOORESVILLE NC

**Station #:** CTB079A

**Hydrologic Unit Code:** 03050101

**Latitude:** 35.69588

**Longitude:** -80.99171

**Stream class:** WS-IV B CA

**Agency:** NCLAKES

**NC stream index:** 11-(75)

**Time period:** 05/04/2017 to 09/07/2017

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
Chlorophyll a (ug/L)	5	0	>40	0	0		7	7	8	11	20	22	22
Hardness (mg/L)	5	0	>100	0	0		15	15	15	16	17	18	18
TSS (mg/L)	5	4	N/A				6.2	6.2	6.2	6.2	10	12	12
Turbidity (NTU)	5	0	>25	0	0		5.1	5.1	5.6	6.2	7.4	8	8
<b>Nutrients (mg/L)</b>													
NH3 as N	5	3	N/A				0.02	0.02	0.02	0.02	0.03	0.03	0.03
NO2 + NO3 as N	5	0	>10	0	0		0.02	0.02	0.06	0.16	0.22	0.29	0.29
TKN as N	4	0	N/A				0.28	0.28	0.29	0.34	0.38	0.38	0.38
Total Phosphorus	5	0	N/A				0.02	0.02	0.02	0.03	0.03	0.03	0.03

**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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources

Basinwide Assessment Report

**Location:** CORNELIUS CREEK ARM OF LAKE NORMAN

**Station #:** CTB082A

**Hydrologic Unit Code:** 03050101

**Latitude:** 35.61718

**Longitude:** -80.89146

**Stream class:** WS-IV B CA

**Agency:** NCLAKES

**NC stream index:** 11-(75)

**Time period:** 05/04/2017 to 09/07/2017

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
Chlorophyll a (ug/L)	5	0	>40	0	0		8	8	9	11	16	18	18
Hardness (mg/L)	5	0	>100	0	0		5	5	10	16	18	18	18
TSS (mg/L)	5	5	N/A				6.2	6.2	6.2	6.2	6.2	6.2	6.2
Turbidity (NTU)	5	0	>25	0	0		2.2	2.2	2.3	3.1	4	4.6	4.6
<b>Nutrients (mg/L)</b>													
NH3 as N	5	5	N/A				0.02	0.02	0.02	0.02	0.02	0.02	0.02
NO2 + NO3 as N	5	4	>10	0	0		0.02	0.02	0.02	0.02	0.04	0.06	0.06
TKN as N	4	0	N/A				0.26	0.26	0.26	0.28	0.34	0.36	0.36
Total Phosphorus	5	3	N/A				0.02	0.02	0.02	0.02	0.02	0.02	0.02

**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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources

Basinwide Assessment Report

**Location:** LAKE NORMAN AT HUNTERSVILLE WATER INTAKE

**Station #:** CTB082AA

**Hydrologic Unit Code:** 03050101

**Latitude:** 35.44760

**Longitude:** -80.92027

**Stream class:** WS-IV B CA

**Agency:** NCLAKES

**NC stream index:** 11-(75)

**Time period:** 05/04/2017 to 09/07/2017

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
Chlorophyll a (ug/L)	5	0	>40	0	0		2	2	2	4	5	5	5
Hardness (mg/L)	4	0	>100	0	0		14	14	14	15	15	15	15
TSS (mg/L)	5	5	N/A				6.2	6.2	6.2	6.2	6.2	6.2	6.2
Turbidity (NTU)	5	0	>25	0	0		1.2	1.2	1.2	1.5	2.1	2.6	2.6
<b>Nutrients (mg/L)</b>													
NH3 as N	5	5	N/A				0.02	0.02	0.02	0.02	0.02	0.02	0.02
NO2 + NO3 as N	5	0	>10	0	0		0.05	0.05	0.06	0.09	0.16	0.17	0.17
TKN as N	4	0	N/A				0.2	0.2	0.2	0.22	0.24	0.24	0.24
Total Phosphorus	5	5	N/A				0.02	0.02	0.02	0.02	0.02	0.02	0.02

**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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources

Basinwide Assessment Report

**Location:** LAKE NORMAN AT DUKE POWER PINNACLE ACCESS

**Station #:** CTB082B

**Hydrologic Unit Code:** 03050101

**Latitude:** 35.60555

**Longitude:** -80.94380

**Stream class:** WS-IV B CA

**Agency:** NCLAKES

**NC stream index:** 11-(75)

**Time period:** 05/04/2017 to 09/07/2017

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
Chlorophyll a (ug/L)	5	0	>40	0	0		5	5	8	11	14	15	15
Hardness (mg/L)	5	0	>100	0	0		16	16	16	18	18	18	18
TSS (mg/L)	5	5	N/A				6.2	6.2	6.2	6.2	9.1	12	12
Turbidity (NTU)	5	0	>25	0	0		1.6	1.6	1.8	2.5	2.9	2.9	2.9
<b>Nutrients (mg/L)</b>													
NH3 as N	5	4	N/A				0.02	0.02	0.02	0.02	0.03	0.04	0.04
NO2 + NO3 as N	5	0	>10	0	0		0.04	0.04	0.05	0.06	0.16	0.18	0.18
TKN as N	4	0	N/A				0.24	0.24	0.24	0.26	0.29	0.3	0.3
Total Phosphorus	5	3	N/A				0.02	0.02	0.02	0.02	0.02	0.02	0.02

**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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources

Basinwide Assessment Report

**Location:** LAKE NORMAN AT COWANS FORD DAM

**Station #:** CTB082BB

**Hydrologic Unit Code:** 03050101

**Latitude:** 35.43744      **Longitude:** -80.95723

**Stream class:** WS-IV B CA

**Agency:** NCLAKES

**NC stream index:** 11-(75)

**Time period:** 05/04/2017 to 09/07/2017

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
Chlorophyll a (ug/L)	5	0	>40	0	0		2	2	2	4	7	10	10
Hardness (mg/L)	5	0	>100	0	0		14	14	14	15	16	16	16
TSS (mg/L)	5	5	N/A				6.2	6.2	6.2	6.2	12	12	12
Turbidity (NTU)	5	0	>25	0	0		1.1	1.1	1.2	1.3	1.9	2.2	2.2
<b>Nutrients (mg/L)</b>													
NH3 as N	5	5	N/A				0.02	0.02	0.02	0.02	0.02	0.02	0.02
NO2 + NO3 as N	5	0	>10	0	0		0.05	0.05	0.06	0.08	0.18	0.18	0.18
TKN as N	4	0	N/A				0.2	0.2	0.2	0.2	0.22	0.22	0.22
Total Phosphorus	5	5	N/A				0.02	0.02	0.02	0.02	0.02	0.02	0.02

**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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence



**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources

Basinwide Assessment Report

**Location:** LAKE NORMAN AT SR 1844 IN MOUNTAIN CREEK ARM

**Station #:** CTB082M

**Hydrologic Unit Code:** 03050101

**Latitude:** 35.56564

**Longitude:** -80.99102

**Stream class:** WS-IV B CA

**Agency:** NCLAKES

**NC stream index:** 11-(75)

**Time period:** 05/04/2017 to 09/07/2017

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
Chlorophyll a (ug/L)	5	0	>40	0	0		4	4	4	6	10	12	12
Hardness (mg/L)	4	0	>100	0	0		14	14	14	16	17	17	17
TSS (mg/L)	5	5	N/A				6.2	6.2	6.2	6.2	6.2	6.2	6.2
Turbidity (NTU)	5	0	>25	0	0		1.7	1.7	1.7	1.7	2	2	2
<b>Nutrients (mg/L)</b>													
NH3 as N	5	4	N/A				0.02	0.02	0.02	0.02	0.03	0.04	0.04
NO2 + NO3 as N	5	2	>10	0	0		0.02	0.02	0.02	0.03	0.11	0.13	0.13
TKN as N	4	0	N/A				0.22	0.22	0.22	0.24	0.26	0.26	0.26
Total Phosphorus	5	5	N/A				0.02	0.02	0.02	0.02	0.02	0.02	0.02

**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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources

Basinwide Assessment Report

**Location:** LAKE NORMAN AT DAVIDSON WATER INTAKE

**Station #:** CTB082Q

**Hydrologic Unit Code:** 03050101

**Latitude:** 35.50449

**Longitude:** -80.91180

**Stream class:** WS-IV B CA

**Agency:** NCLAKES

**NC stream index:** 11-(75)

**Time period:** 05/04/2017 to 09/07/2017

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
Chlorophyll a (ug/L)	5	0	>40	0	0		2	2	3	4	5	6	6
Hardness (mg/L)	5	0	>100	0	0		14	14	14	16	16	16	16
TSS (mg/L)	5	5	N/A				6.2	6.2	6.2	6.2	6.2	6.2	6.2
Turbidity (NTU)	5	0	>25	0	0		1.1	1.1	1.2	1.4	1.8	2.2	2.2
<b>Nutrients (mg/L)</b>													
NH3 as N	5	5	N/A				0.02	0.02	0.02	0.02	0.02	0.02	0.02
NO2 + NO3 as N	5	0	>10	0	0		0.04	0.04	0.04	0.06	0.15	0.16	0.16
TKN as N	4	0	N/A				0.2	0.2	0.2	0.2	0.21	0.21	0.21
Total Phosphorus	5	5	N/A				0.02	0.02	0.02	0.02	0.02	0.02	0.02

**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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources

Basinwide Assessment Report

**Location:** LAKE NORMAN AT MOUTH OF REEDS CREEK ARM

**Station #:** CTB082R

**Hydrologic Unit Code:** 03050101

**Latitude:** 35.48662

**Longitude:** -80.94238

**Stream class:** WS-IV B CA

**Agency:** NCLAKES

**NC stream index:** 11-(75)

**Time period:** 05/04/2017 to 09/07/2017

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
Chlorophyll a (ug/L)	5	0	>40	0	0		2	2	2	4	5	7	7
Hardness (mg/L)	4	0	>100	0	0		14	14	14	15	16	17	17
TSS (mg/L)	5	5	N/A				6.2	6.2	6.2	6.2	9.1	12	12
Turbidity (NTU)	5	0	>25	0	0		1.3	1.3	1.3	1.3	1.8	2.1	2.1
<b>Nutrients (mg/L)</b>													
NH3 as N	5	5	N/A				0.02	0.02	0.02	0.02	0.02	0.02	0.02
NO2 + NO3 as N	5	0	>10	0	0		0.04	0.04	0.04	0.08	0.16	0.17	0.17
TKN as N	4	0	N/A				0.2	0.2	0.2	0.2	0.23	0.24	0.24
Total Phosphorus	5	5	N/A				0.02	0.02	0.02	0.02	0.02	0.02	0.02

**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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources

Basinwide Assessment Report

**Location:** MOUNTAIN ISLAND LAKE BELOW DUKE POWER COMPANY

**Station #:** CTB083B

**Hydrologic Unit Code:** 03050101

**Latitude:** 35.37023

**Longitude:** -80.95589

**Stream class:** WS-IV B CA

**Agency:** NCLAKES

**NC stream index:** 11-(114)

**Time period:** 05/10/2017 to 09/13/2017

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
Chlorophyll a (ug/L)	5	0	>40	0	0		2	2	2	3	4	6	6
TSS (mg/L)	5	5	N/A				6.2	6.2	6.2	6.2	9.1	12	12
Turbidity (NTU)	5	0	>25	0	0		1.2	1.2	1.2	1.6	1.8	1.9	1.9
<b>Nutrients (mg/L)</b>													
NH3 as N	5	5	N/A				0.02	0.02	0.02	0.02	0.02	0.02	0.02
NO2 + NO3 as N	5	0	>10	0	0		0.05	0.05	0.06	0.1	0.17	0.18	0.18
TKN as N	5	0	N/A				0.2	0.2	0.21	0.22	0.25	0.26	0.26
Total Phosphorus	5	5	N/A				0.02	0.02	0.02	0.02	0.02	0.02	0.02

**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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources

Basinwide Assessment Report

**Location:** MCDOWELLS CREEK AT MOUTH NEAR HUNTERSVILLE

**Station #:** CTB086A

**Hydrologic Unit Code:** 03050101

**Latitude:** 35.37020

**Longitude:** -80.94117

**Stream class:** WS-IV CA

**Agency:** NCLAKES

**NC stream index:** 11-115-(5)

**Time period:** 05/10/2017 to 09/13/2017

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
Chlorophyll a (ug/L)	5	0	>40	0	0		6	6	7	8	9	10	10
TSS (mg/L)	5	5	N/A				6.2	6.2	6.2	6.2	6.2	6.2	6.2
Turbidity (NTU)	5	0	>25	0	0		4.3	4.3	4.4	4.7	5.8	6	6
<b>Nutrients (mg/L)</b>													
NH3 as N	5	5	N/A				0.02	0.02	0.02	0.02	0.02	0.02	0.02
NO2 + NO3 as N	5	0	>10	0	0		0.09	0.09	0.12	0.2	0.32	0.42	0.42
TKN as N	5	0	N/A				0.27	0.27	0.29	0.33	0.36	0.36	0.36
Total Phosphorus	5	1	N/A				0.02	0.02	0.02	0.02	0.02	0.02	0.02

**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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources

Basinwide Assessment Report

**Location:** MOUNTAIN ISLAND LAKE ABOVE GAR CREEK NEAR PAW CREEK

**Station #:** CTB086B

**Hydrologic Unit Code:** 03050101

**Latitude:** 35.35426

**Longitude:** -80.93773

**Stream class:** WS-IV B CA

**Agency:** NCLAKES

**NC stream index:** 11-(114)

**Time period:** 05/10/2017 to 09/13/2017

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
Chlorophyll a (ug/L)	5	0	>40	0	0		1	1	2	3	5	6	6
TSS (mg/L)	5	5	N/A				6.2	6.2	6.2	6.2	6.2	6.2	6.2
Turbidity (NTU)	5	0	>25	0	0		2.1	2.1	2.2	2.7	3.4	3.8	3.8
<b>Nutrients (mg/L)</b>													
NH3 as N	5	4	N/A				0.02	0.02	0.02	0.02	0.02	0.02	0.02
NO2 + NO3 as N	5	0	>10	0	0		0.06	0.06	0.06	0.08	0.18	0.19	0.19
TKN as N	5	0	N/A				0.2	0.2	0.2	0.23	0.26	0.26	0.26
Total Phosphorus	5	5	N/A				0.02	0.02	0.02	0.02	0.02	0.02	0.02

**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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources

Basinwide Assessment Report

**Location:** GAR CREEK AT MOUTH NEAR PAW CREEK

**Station #:** CTB086C

**Hydrologic Unit Code:** 03050101

**Latitude:** 35.34915

**Longitude:** -80.93388

**Stream class:** WS-IV B CA

**Agency:** NCLAKES

**NC stream index:** 11-(114)

**Time period:** 05/10/2017 to 09/13/2017

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
Chlorophyll a (ug/L)	5	0	>40	0	0		4	4	5	11	14	15	15
TSS (mg/L)	5	5	N/A				6.2	6.2	6.2	6.2	6.2	6.2	6.2
Turbidity (NTU)	5	0	>25	0	0		3.2	3.2	3.4	3.9	4	4.1	4.1
<b>Nutrients (mg/L)</b>													
NH3 as N	5	5	N/A				0.02	0.02	0.02	0.02	0.02	0.02	0.02
NO2 + NO3 as N	5	2	>10	0	0		0.02	0.02	0.02	0.02	0.12	0.14	0.14
TKN as N	5	0	N/A				0.22	0.22	0.24	0.27	0.32	0.33	0.33
Total Phosphorus	5	1	N/A				0.02	0.02	0.02	0.02	0.02	0.02	0.02

**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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources  
Basinwide Assessment Report

**Location:** MOUNTAIN ISLAND LAKE AT NC HWY 16 NEAR THRIFT

**Station #:** CTB087

**Hydrologic Unit Code:** 03050101

**Latitude:** 35.34970

**Longitude:** -80.97296

**Stream class:** WS-IV B CA

**Agency:** NCLAKES

**NC stream index:** 11-(114)

**Time period:** 05/10/2017 to 09/13/2017

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
Chlorophyll a (ug/L)	5	0	>40	0	0		2	2	2	4	6	7	7
TSS (mg/L)	5	5	N/A				6.2	6.2	6.2	6.2	6.2	6.2	6.2
Turbidity (NTU)	5	0	>25	0	0		1.9	1.9	2.2	2.5	3	3.3	3.3
<b>Nutrients (mg/L)</b>													
NH3 as N	5	4	N/A				0.02	0.02	0.02	0.02	0.02	0.02	0.02
NO2 + NO3 as N	5	0	>10	0	0		0.06	0.06	0.06	0.06	0.17	0.19	0.19
TKN as N	5	0	N/A				0.23	0.23	0.24	0.27	0.28	0.3	0.3
Total Phosphorus	5	5	N/A				0.02	0.02	0.02	0.02	0.02	0.02	0.02

**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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence



**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources

Basinwide Assessment Report

**Location:** MOUNTAIN ISLAND LAKE ABOVE DAM NEAR MT HOLLY NC

**Station #:** CTB087A

**Hydrologic Unit Code:** 03050101

**Latitude:** 35.33707

**Longitude:** -80.98824

**Stream class:** WS-IV B CA

**Agency:** NCLAKES

**NC stream index:** 11-(114)

**Time period:** 05/10/2017 to 09/13/2017

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
Chlorophyll a (ug/L)	5	0	>40	0	0		2	2	2	4	6	8	8
Hardness (mg/L)	5	0	>100	0	0		15	15	16	16	16	17	17
TSS (mg/L)	5	5	N/A				6.2	6.2	6.2	6.2	6.2	6.2	6.2
Turbidity (NTU)	5	0	>25	0	0		1.9	1.9	2	2.2	2.5	2.5	2.5
<b>Nutrients (mg/L)</b>													
NH3 as N	5	4	N/A				0.02	0.02	0.02	0.02	0.02	0.02	0.02
NO2 + NO3 as N	5	0	>10	0	0		0.06	0.06	0.06	0.06	0.18	0.2	0.2
TKN as N	5	0	N/A				0.21	0.21	0.22	0.23	0.28	0.32	0.32
Total Phosphorus	5	4	N/A				0.02	0.02	0.02	0.02	0.02	0.02	0.02

**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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources

Basinwide Assessment Report

**Location:** CATAWBA RIVER AT SOUTH BELMONT

**Station #:** CTB103

**Hydrologic Unit Code:** 03050101

**Latitude:** 35.21197

**Longitude:** -81.00694

**Stream class:** WS-IV B CA

**Agency:** NCLAKES

**NC stream index:** 11-(122)

**Time period:** 05/31/2017 to 09/25/2017

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
Chlorophyll a (ug/L)	5	0	>40	0	0		3	3	3	5	9	12	12
TSS (mg/L)	5	3	N/A				6.2	6.2	6.2	6.2	9.4	12	12
Turbidity (NTU)	5	0	>25	0	0		4.6	4.6	4.6	5.5	7.2	7.9	7.9
<b>Nutrients (mg/L)</b>													
NH3 as N	5	3	N/A				0.02	0.02	0.02	0.02	0.03	0.04	0.04
NO2 + NO3 as N	5	0	>10	0	0		0.07	0.07	0.08	0.12	0.16	0.2	0.2
TKN as N	4	0	N/A				0.24	0.24	0.25	0.28	0.32	0.33	0.33
Total Phosphorus	5	0	N/A				0.02	0.02	0.02	0.02	0.03	0.03	0.03

**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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources  
Basinwide Assessment Report

**Location:** LAKE WYLIE NEAR SHOPTON NC

**Station #:** CTB105B

**Hydrologic Unit Code:** 03050101

**Latitude:** 35.16947      **Longitude:** -81.00427

**Stream class:** WS-V B

**Agency:** NCLAKES

**NC stream index:** 11-(123.5)a

**Time period:** 05/31/2017 to 09/25/2017

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
Chlorophyll a (ug/L)	5	0	>40	0	0		4	4	7	10	13	14	14
TSS (mg/L)	5	4	N/A				6.2	6.2	6.2	6.2	6.5	6.8	6.8
Turbidity (NTU)	5	0	>25	0	0		3.4	3.4	4.3	5.2	7.6	9.6	9.6
<b>Nutrients (mg/L)</b>													
NH3 as N	5	5	N/A				0.02	0.02	0.02	0.02	0.02	0.02	0.02
NO2 + NO3 as N	5	1	>10	0	0		0.02	0.02	0.04	0.08	0.14	0.2	0.2
TKN as N	4	0	N/A				0.29	0.29	0.3	0.35	0.41	0.43	0.43
Total Phosphorus	5	0	N/A				0.02	0.02	0.02	0.02	0.03	0.03	0.03

**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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources

Basinwide Assessment Report

**Location:** SOUTH FORK CATAWBA RIVER AT SR 2524 NEAR SOUTH BELMONT

**Station #:** CTB174

**Hydrologic Unit Code:** 03050102

**Latitude:** 35.16690

**Longitude:** -81.03843

**Stream class:** WS-V B

**Agency:** NCLAKES

**NC stream index:** 11-(123.5)b

**Time period:** 05/31/2017 to 09/25/2017

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
Chlorophyll a (ug/L)	5	0	>40	1	20		14	14	14	22	32	41	41
TSS (mg/L)	5	4	N/A				6.2	6.2	6.2	6.2	9.4	12	12
Turbidity (NTU)	5	0	>25	0	0		4.9	4.9	5.2	5.6	7.5	8.1	8.1
<b>Nutrients (mg/L)</b>													
NH3 as N	5	2	N/A				0.02	0.02	0.02	0.02	0.04	0.04	0.04
NO2 + NO3 as N	5	0	>10	0	0		0.13	0.13	0.15	0.21	0.26	0.27	0.27
TKN as N	5	0	N/A				0.3	0.3	0.33	0.36	0.56	0.61	0.61
Total Phosphorus	5	0	N/A				0.03	0.03	0.04	0.04	0.05	0.06	0.06

**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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources

Basinwide Assessment Report

**Location:** CATAWBA CREEK AT SR 2302 AT NC-SC STATE LINE

**Station #:** CTB177

**Hydrologic Unit Code:** 03050101

**Latitude:** 35.15150

**Longitude:** -81.05839

**Stream class:** WS-V B

**Agency:** NCLAKES

**NC stream index:** 11-(123.5)a

**Time period:** 05/31/2017 to 09/25/2017

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
Chlorophyll a (ug/L)	5	0	>40	0	0		20	20	20	22	32	35	35
TSS (mg/L)	5	4	N/A				6.2	6.2	6.2	6.2	6.4	6.5	6.5
Turbidity (NTU)	5	0	>25	0	0		3.3	3.3	4	4.9	5.8	6.3	6.3
<b>Nutrients (mg/L)</b>													
NH3 as N	5	4	N/A				0.02	0.02	0.02	0.02	0.02	0.03	0.03
NO2 + NO3 as N	5	3	>10	0	0		0.02	0.02	0.02	0.02	0.04	0.05	0.05
TKN as N	5	0	N/A				0.4	0.4	0.42	0.46	0.57	0.58	0.58
Total Phosphorus	5	0	N/A				0.03	0.03	0.04	0.04	0.04	0.05	0.05

**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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources

Basinwide Assessment Report

**Location:** LAKE WYLIE AT NC HWY 49 NR OAK GROVE

**Station #:** CTB178

**Hydrologic Unit Code:** 03050101

**Latitude:** 35.10198

**Longitude:** -81.03975

**Stream class:** NA

**Agency:** NCLAKES

**NC stream index:** NA

**Time period:** 05/31/2017 to 09/25/2017

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
Chlorophyll a (ug/L)	5	0	N/A				16	16	16	19	20	21	21
TSS (mg/L)	5	5	N/A				6.2	6.2	6.2	6.2	9.1	12	12
Turbidity (NTU)	5	0	N/A				2.3	2.3	2.4	3.2	4.1	4.7	4.7
<b>Nutrients (mg/L)</b>													
NH3 as N	5	5	N/A				0.02	0.02	0.02	0.02	0.02	0.02	0.02
NO2 + NO3 as N	5	0	N/A				0.02	0.02	0.02	0.03	0.08	0.12	0.12
TKN as N	4	0	N/A				0.34	0.34	0.35	0.4	0.43	0.43	0.43
Total Phosphorus	5	0	N/A				0.02	0.02	0.02	0.03	0.04	0.04	0.04

**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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources

Basinwide Assessment Report

**Location:** LAKE WYLIE IN CROWDERS CREEK ARM NEAR CLOVER SC

**Station #:** CTB198B5

**Hydrologic Unit Code:** 03050101

**Latitude:** 35.11075

**Longitude:** -81.08753

**Stream class:** NA

**Agency:** NCLAKES

**NC stream index:** NA

**Time period:** 05/31/2017 to 09/25/2017

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
Chlorophyll a (ug/L)	5	0	N/A				17	17	22	29	43	55	55
TSS (mg/L)	5	1	N/A				7.8	7.8	8.9	12	18	24	24
Turbidity (NTU)	5	0	N/A				7.1	7.1	8.6	11	14.5	17	17
<b>Nutrients (mg/L)</b>													
NH3 as N	5	2	N/A				0.02	0.02	0.02	0.04	0.04	0.04	0.04
NO2 + NO3 as N	5	2	N/A				0.02	0.02	0.02	0.02	0.28	0.46	0.46
TKN as N	5	0	N/A				0.56	0.56	0.58	0.63	0.75	0.8	0.8
Total Phosphorus	5	0	N/A				0.03	0.03	0.04	0.06	0.07	0.07	0.07

**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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources  
Basinwide Assessment Report

**Location:** LAKE WYLIE IN ALLISON CREEK ARM NEAR CONCORD SC

**Station #:** CTB198C5

**Hydrologic Unit Code:** 03050101

**Latitude:** 35.04975

**Longitude:** -81.09717

**Stream class:** NA

**Agency:** NCLAKES

**NC stream index:** NA

**Time period:** 05/31/2017 to 09/25/2017

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
Chlorophyll a (ug/L)	5	0	N/A				18	18	20	23	29	32	32
TSS (mg/L)	5	3	N/A				6.2	6.2	6.2	6.2	6.8	7.5	7.5
Turbidity (NTU)	5	0	N/A				3.5	3.5	4	5.1	6.6	7	7
<b>Nutrients (mg/L)</b>													
NH3 as N	5	5	N/A				0.02	0.02	0.02	0.02	0.02	0.02	0.02
NO2 + NO3 as N	5	5	N/A				0.02	0.02	0.02	0.02	0.02	0.02	0.02
TKN as N	5	0	N/A				0.44	0.44	0.45	0.48	0.54	0.54	0.54
Total Phosphorus	5	0	N/A				0.02	0.02	0.02	0.04	0.06	0.08	0.08

**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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence



**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources

Basinwide Assessment Report

**Location:** LAKE WYLIE AT CATAWBA DAM

**Station #:** CTB198D

**Hydrologic Unit Code:** 03050101

**Latitude:** 35.02338

**Longitude:** -81.01361

**Stream class:** NA

**Agency:** NCLAKES

**NC stream index:** NA

**Time period:** 05/31/2017 to 09/25/2017

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
Chlorophyll a (ug/L)	5	0	N/A				12	12	14	19	20	20	20
Hardness (mg/L)	5	0	N/A				19	19	20	20	22	23	23
TSS (mg/L)	5	5	N/A				6.2	6.2	6.2	6.2	9.1	12	12
Turbidity (NTU)	5	0	N/A				1.8	1.8	1.8	2.5	2.8	2.8	2.8
<b>Nutrients (mg/L)</b>													
NH3 as N	5	5	N/A				0.02	0.02	0.02	0.02	0.02	0.02	0.02
NO2 + NO3 as N	5	4	N/A				0.02	0.02	0.02	0.02	0.02	0.03	0.03
TKN as N	5	0	N/A				0.33	0.33	0.34	0.41	0.46	0.5	0.5
Total Phosphorus	5	0	N/A				0.02	0.02	0.02	0.02	0.03	0.03	0.03

**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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources

Basinwide Assessment Report

**Location:** BESSEMER CITY LAKE NEAR SR 1404

**Station #:** CTBBCL1

**Hydrologic Unit Code:** 03050102

**Latitude:** 35.29647      **Longitude:** -81.29983

**Stream class:** WS-II Hqw CA

**Agency:** NCLAKES

**NC stream index:** 11-129-16-4.5-(1)

**Time period:** 05/10/2017 to 09/13/2017

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
Chlorophyll a (ug/L)	5	0	>40	0	0		8	8	9	13	17	18	18
Hardness (mg/L)	5	0	>100	0	0		17	17	22	27	29	29	29
TSS (mg/L)	5	5	N/A				6.2	6.2	6.2	6.2	12	12	12
Turbidity (NTU)	5	0	>25	0	0		3.2	3.2	3.2	3.8	5	5.4	5.4
<b>Nutrients (mg/L)</b>													
NH3 as N	5	4	N/A				0.02	0.02	0.02	0.02	0.02	0.03	0.03
NO2 + NO3 as N	5	1	>10	0	0		0.02	0.02	0.03	0.07	0.14	0.16	0.16
TKN as N	5	0	N/A				0.41	0.41	0.41	0.41	0.46	0.5	0.5
Total Phosphorus	5	1	N/A				0.02	0.02	0.02	0.02	0.02	0.03	0.03

**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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources

Basinwide Assessment Report

**Location:** LAKE HICKORY AT INTAKE HICKORY WTP

**Station #:** HICKORYWTP

**Hydrologic Unit Code:** 03050101

**Latitude:** 35.75765

**Longitude:** -81.37544

**Stream class:** WS-IV B CA

**Agency:** NCS PST

**NC stream index:** 11-(53)

**Time period:** 02/21/2018 to 07/25/2018

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Nutrients (mg/L)</b>													
NH3 as N	6	5	N/A				0.02	0.02	0.02	0.02	0.02	0.02	0.02
NO2 + NO3 as N	6	0	>10	0	0		0.21	0.21	0.25	0.3	0.33	0.33	0.33
TKN as N	6	0	N/A				0.2	0.2	0.2	0.2	0.31	0.36	0.36
Total Phosphorus	6	0	N/A				0.02	0.02	0.03	0.04	0.06	0.08	0.08

**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 greater than 10% (20% for Fecal Coliform)

Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

**Ambient Monitoring System Station Summaries**

NCDENR, Division of Water Resources  
Basinwide Assessment Report

**Location:** NEWTON WTP INTAKE

**Station #:** NEWTONWTP

**Hydrologic Unit Code:** 03050102

**Latitude:** 35.63640

**Longitude:** -81.30889

**Stream class:** WS-III CA

**Agency:** NCS PST

**NC stream index:** 11-129-2-(15)

**Time period:** 05/23/2018 to 06/20/2018

	# results	# ND	EL	Results not meeting EL			Percentiles						
				#	%	%Conf	Min	10th	25th	50th	75th	90th	Max
<b>Other</b>													
Turbidity (NTU)	2	0	>50	0	0		6.5	6.5	6.5	9.2	12	12	12
<b>Nutrients (mg/L)</b>													
NH3 as N	2	1	N/A				0.02	0.02	0.02	0.02	0.02	0.02	0.02
NO2 + NO3 as N	2	0	>10	0	0		0.49	0.49	0.49	0.5	0.5	0.5	0.5
TKN as N	2	0	N/A				0.27	0.27	0.27	0.28	0.29	0.29	0.29
Total Phosphorus	2	0	N/A				0.03	0.03	0.03	0.04	0.04	0.04	0.04

**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 greater than 10% (20% for Fecal Coliform)

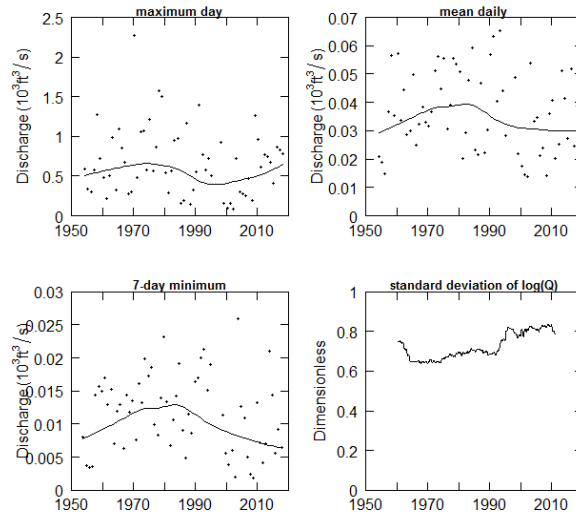
Stations with less than 10 results or less than or equal to 10% (20% Fecal Coliform) exceedance for a given parameter were not evaluated for statistical confidence

# **Appendix D**

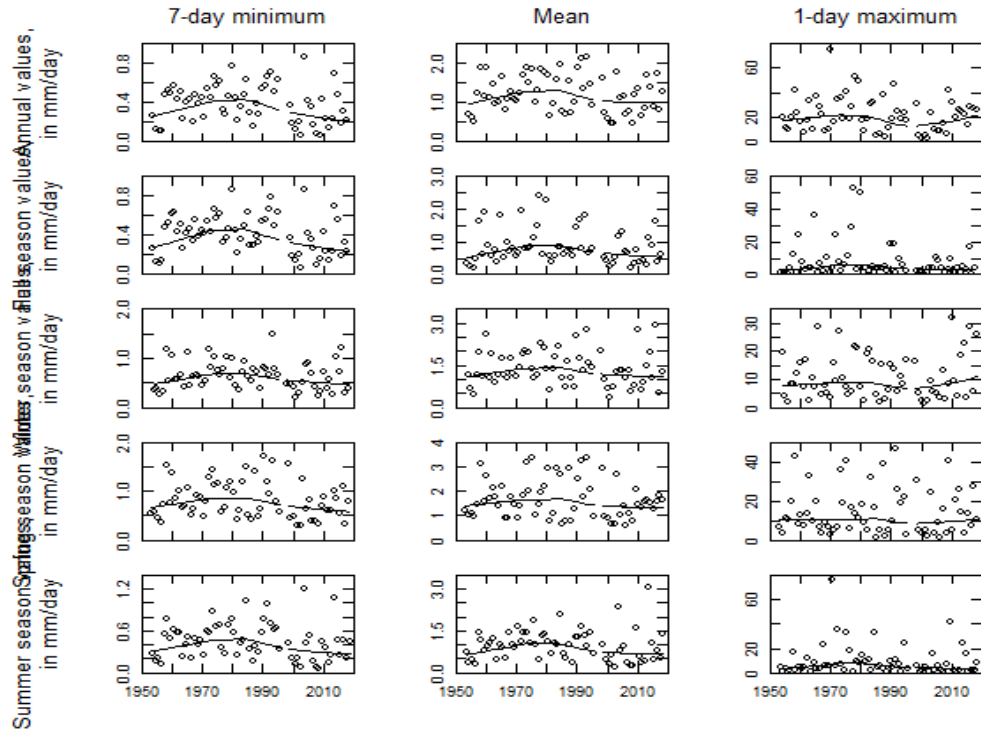
## USGS Flow Gauge Data

(1) Lower Little River

LOWER LITTLE RIVER NR ALL HEALING SPRINGS, NC  
Water Year



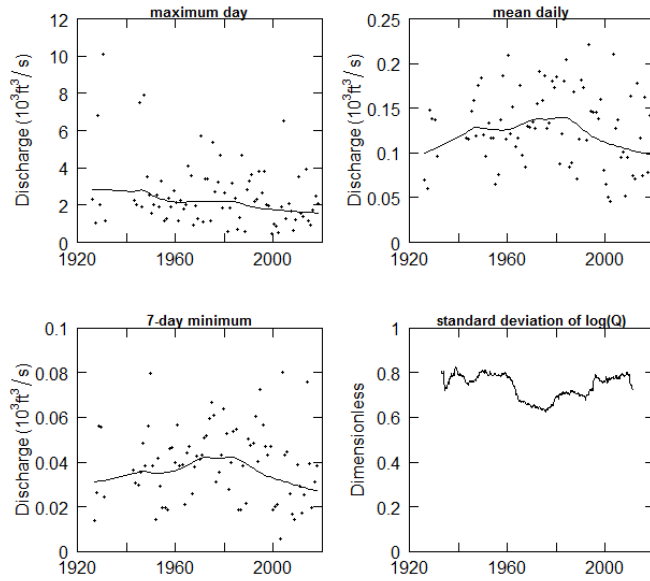
LOWER LITTLE RIVER NR ALL HEALING SPRINGS, NC



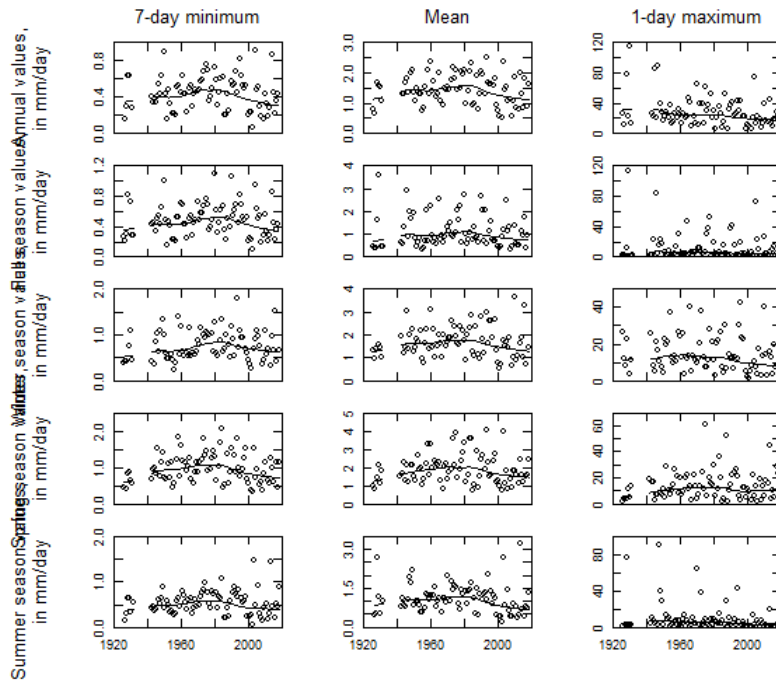
Streamflow statistics (circles) in units of millimeters per day, annual values and seasonal values  
Fall (Sept., Oct., and Nov.), Winter (Dec., Jan., and Feb.), Spring (Mar., Apr., and May), and Summer (June, July, and Aug) and locally weighted scatterplot smooth (solid curve) for LOWER LITTLE RIVER NR ALL HEALING SPRINGS, NC for 1950

## (2) Henry Fork

### HENRY FORK NEAR HENRY RIVER, NC Water Year



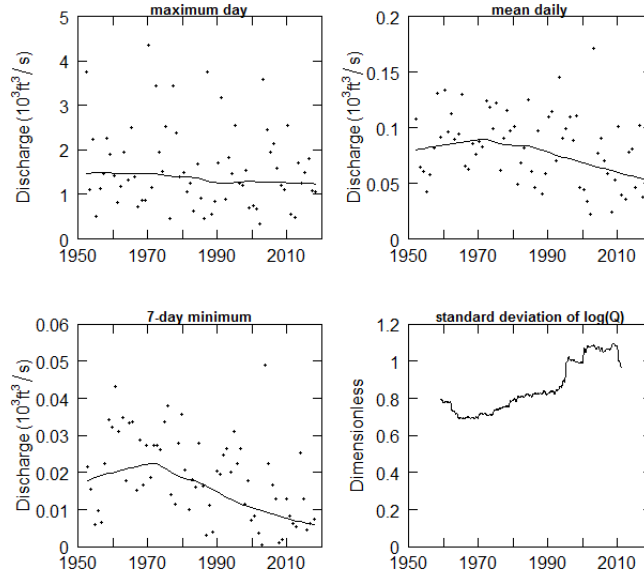
### HENRY FORK NEAR HENRY RIVER, NC



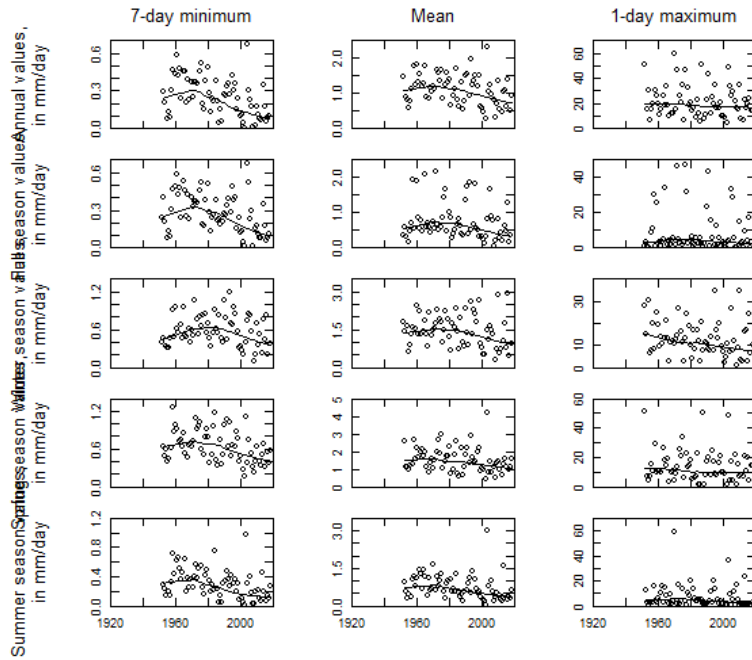
Streamflow statistics (circles) in units of millimeters per day, annual values and seasonal values  
Fall (Sept., Oct., and Nov.), Winter (Dec., Jan., and Feb.), Spring (Mar., Apr., and May), and Summer (June, July, and Aug)  
and locally weighted scatterplot smooth (solid curve) for HENRY FORK NEAR HENRY RIVER, NC for 1920 - 2017.

(3) Indian Creek

INDIAN CREEK NEAR LABORATORY, NC  
Water Year



INDIAN CREEK NEAR LABORATORY, NC



Streamflow statistics (circles) in units of millimeters per day, annual values and seasonal values  
Fall (Sept., Oct., and Nov.), Winter (Dec., Jan., and Feb.), Spring (Mar., Apr., and May), and Summer (June, July, and Aug  
and locally weighted scatterplot smooth (solid curve) for INDIAN CREEK NEAR LABORATORY, NC for 1920 - 2017.





# **Appendix E**

## USDA Agriculture Census Data

Information about the number and types of animal operations in counties located entirely or partially in the Catawba River basin were queried using the 2012 USDA Census of Agriculture. The census and the query are available online: [https://quickstats.nass.usda.gov/?source\\_desc=CENSUS](https://quickstats.nass.usda.gov/?source_desc=CENSUS). The census definition of a farm is “any place from which \$1,000 or more of agricultural products were produced and sold, or normally would have been sold, during the census year” (USDA, 2012). For the purposes of this report, the 2002, 2007, and 2012 census was queried for the sector “animals and products”. To remain consistent with the type of information presented, “inventory” was selected as the category and queried for all three census years. Counties included: Alexander, Avery, Burke, Caldwell, Catawba, Gaston, Iredell, McDowell, Mecklenburg, and Union. The number and type of animal operations are included as an appendix to this report to identify potential sources of nutrients in the basin. More in-depth analysis is needed to understand how the number of animals and operations can potentially impact the amount of nutrients in the basin.

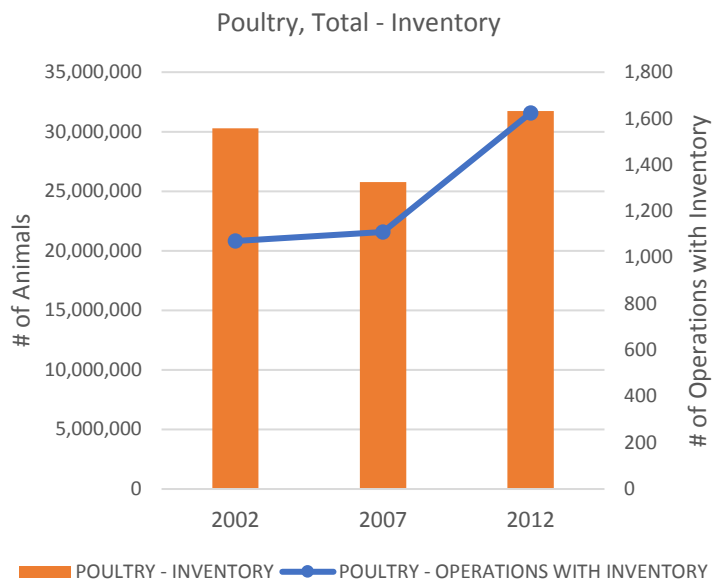
**POULTRY (CHICKEN & TURKEYS), TOTAL – INVENTORY (POINT IN TIME)**

**Total Poultry (Chickens & Turkeys - Inventory)**

County	2002	2007	2012	% Change 2002-2007	% Change 2007-2012	% Change 2002-2012	County % of Total (2012)
ALEXANDER	4,973,996	5,116,984	7,664,833	3%	50%	54%	24%
AVERY	175	154	835	-12%	442%	377%	0%
BURKE	1,081,000	396,541	1,134,544	-63%	186%	5%	4%
CALDWELL	190,000	147,118	252,912	-23%	72%	33%	1%
CATAWBA	744,210	717,214	2,305,232	-4%	221%	210%	7%
GASTON	477,269	251,546	415,571	-47%	65%	-13%	1%
IREDELL	2,014,606	1,712,391	1,963,463	-15%	15%	-3%	6%
LINCOLN	680,762	557,581	1,587,142	-18%	185%	133%	5%
MCDOWELL	542,221	365,997	379,228	-33%	4%	-30%	1%
MECKLENBURG	1,005	304	716	-70%	136%	-29%	0%
UNION	19,588,800	16,516,710	16,037,343	-16%	-3%	-18%	51%
TOTALS	30,294,044	25,782,540	31,741,819	-15%	23%	5%	100%

**Total Number of Poultry Operations with Inventory**

County	2002	2007	2012
ALEXANDER	196	175	255
AVERY	11	10	41
BURKE	40	85	121
CALDWELL	54	85	84
CATAWBA	82	103	120
GASTON	29	40	118
IREDELL	173	180	284
LINCOLN	53	84	153
MCDOWELL	38	73	105
MECKLENBURG	30	18	41
UNION	365	257	302
TOTALS	1,071	1,110	1,624



The numbers associated with poultry are the total number of animals (broilers, pullets, layers, roosters, and turkeys) and total number of operations with inventory reported at a point in time (end of December) for each census year in each county. The USDA NASS provides a breakdown of the farms by inventory. Inventory numbers are: 1 to 49, 50 to 99, 100 to 399, 400 to 3,199, 3,200 to 9,999, 10,000 to 19,999, 20,000 to 49,999, 50,000 to 99,999, 100,000 or more.

**HOGS, TOTAL – INVENTORY (POINT IN TIME)**

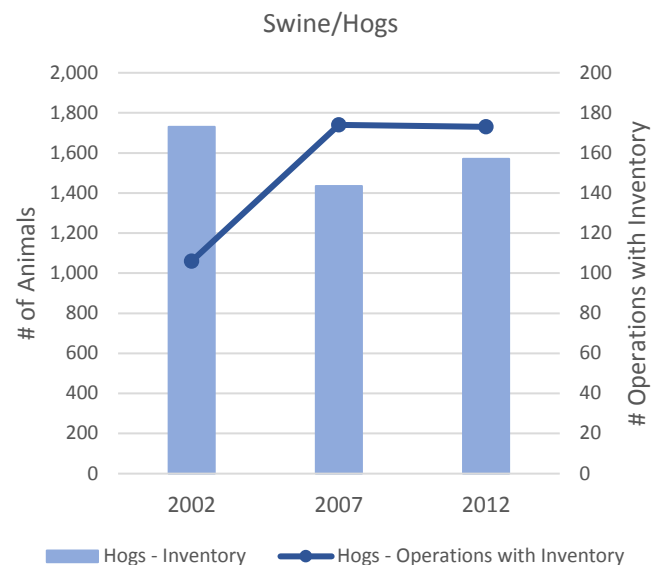
**Total Hogs**

County	Data Item		2002	2007	2012	% Change 2002-2007	% Change 2007-2012	%Change 2002-2012
ALEXANDER	HOGS - INVENTORY	TOTAL	119	97	86	-18%	-11%	-28%
AVERY	HOGS - INVENTORY	TOTAL		5	20		300%	
BURKE	HOGS - INVENTORY	TOTAL		243	32		-87%	
CALDWELL	HOGS - INVENTORY	TOTAL	(D)	80	(D)			
CATAWBA	HOGS - INVENTORY	TOTAL	529	594	281	12%	-53%	-47%
GASTON	HOGS - INVENTORY	TOTAL	169	176	318	4%	81%	88%
IREDELL	HOGS - INVENTORY	TOTAL	324	33	281	-90%	752%	-13%
LINCOLN	HOGS - INVENTORY	TOTAL	480	120	269		124%	-44%
MCDOWELL	HOGS - INVENTORY	TOTAL	73	68	284	-7%	318%	289%
MECKLENBURG	HOGS - INVENTORY	TOTAL	37	19		-49%	-100%	-100%
UNION	HOGS - INVENTORY	TOTAL	(D)	(D)	(D)			
TOTALS			1,731	1,435	1,571	-17%	9%	-9%

(D) Withheld to avoid disclosing data for individual farms.

**Total Number of Hog Operations**

County	2002	2007	2012
ALEXANDER	5	12	11
AVERY		3	8
BURKE		19	10
CALDWELL	10	29	10
CATAWBA	13	29	16
GASTON	16	12	31
IREDELL	16	9	31
LINCOLN	9	24	18
MCDOWELL	11	20	25
MECKLENBURG	10	9	
UNION	16	8	13
TOTALS	106	174	173



Swine/hog numbers are generally low in the 11 counties located entirely or partially in the basin. The numbers associated with swine/hogs are the total number of animals and total number of operations with inventory reported at a point in time (end of December) for each census year in each county. The USDA NASS provides a breakdown of the farms by inventory. Inventory numbers are: 1 to 24, 24 to 49, 50 to 99, 100 to 199, 200 to 499, 500 to 999, and 1,000 or more. Only Caldwell and Union counties had inventories marked at 1,000 or more.

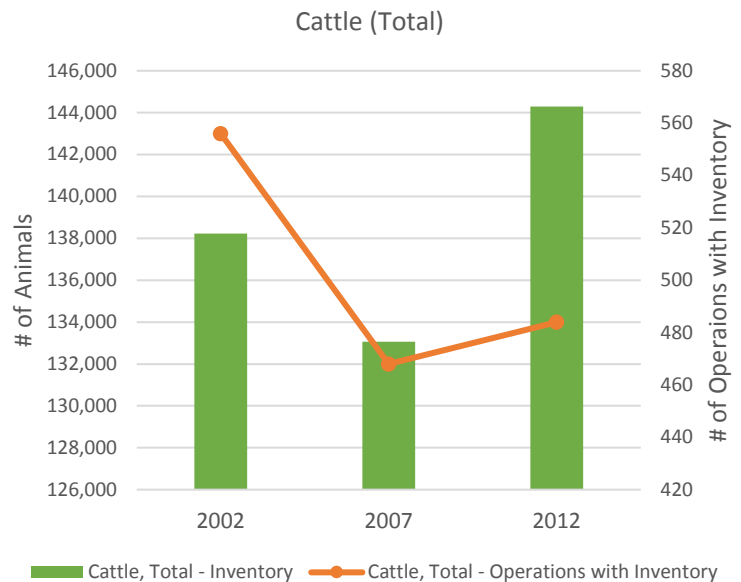
**CATTLE, INCLUDING CALVES TOTAL – INVENTORY (POINT IN TIME)**

**Total Cattle (Number of Animals)**

County	Data Item	2002	2007	2012	% Change 2002-2007	% Change 2007-2012	%Change 2002-2012
ALEXANDER	CATTLE, INCL CALVES	18,921	20,190	23,921	7%	18%	26%
AVERY	CATTLE, INCL CALVES	1,416	1,189	1,444	-16%	21%	2%
BURKE	CATTLE, INCL CALVES	3,992	3,814	4,092	-4%	7%	3%
CALDWELL	CATTLE, INCL CALVES	5,368	4,531	5,446	-16%	20%	1%
CATAWBA	CATTLE, INCL CALVES	13,241	13,356	13,326	1%	0%	1%
GASTON	CATTLE, INCL CALVES	7,769	8,259	7,612	6%	-8%	-2%
IREDELL	CATTLE, INCL CALVES	44,418	44,039	49,395	-1%	12%	11%
LINCOLN	CATTLE, INCL CALVES	12,049	10,605	14,179	-12%	34%	18%
MCDOWELL	CATTLE, INCL CALVES	3,833	3,008	2,437	-22%	-19%	-36%
MECKLENBURG	CATTLE, INCL CALVES	4,100	2,363	2,125	-42%	-10%	-48%
UNION	CATTLE, INCL CALVES	23,126	21,708	20,314	-6%	-6%	-12%
		138,233	133,062	144,291	-4%	8%	4%

**Total Number of Cattle Operations**

County	2002	2007	2012
ALEXANDER	379	332	371
AVERY	89	75	78
BURKE	203	159	182
CALDWELL	236	207	214
CATAWBA	389	342	365
GASTON	218	193	218
IREDELL	843	644	717
LINCOLN	331	238	315
MCDOWELL	155	172	131
MECKLENBURG	154	90	94
UNION	556	468	484



The numbers associated with cattle are the total number of animals and total number of operations with inventory reported at a point in time (end of December) for each census year in each county.

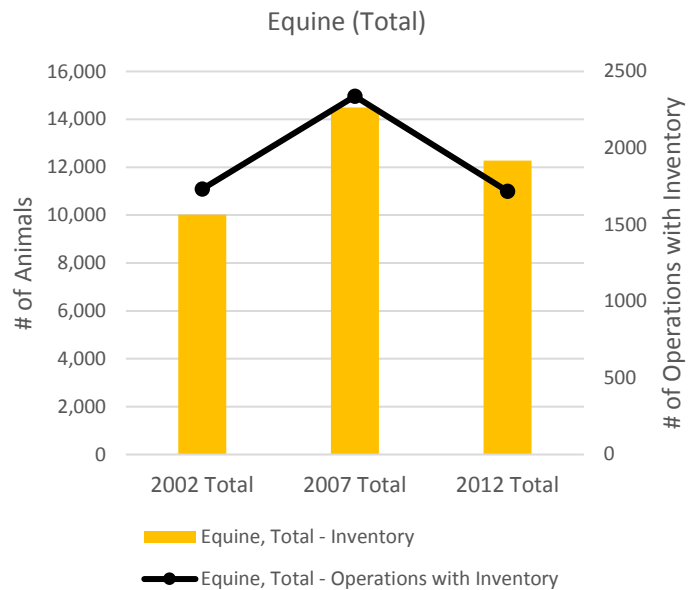
**EQUINE (HORSES, PONIES, MULES, BURROS, DONKEYS), TOTAL – INVENTORY (POINT IN TIME)**

**Total Equine (Horses, Ponies, Mules, Burros & Donkeys)**

County	2002 Total	2007 Total	2012 Total	% Change 2002-2007	% Change 2007-2012	% Change 2002-2012
ALEXANDER	771	1,106	961	43%	-13%	25%
AVERY	267	361	236	35%	-35%	-12%
BURKE	584	1,141	929	95%	-19%	59%
CALDWELL	634	1,066	634	68%	-41%	0%
CATAWBA	1,419	2,023	1,439	43%	-29%	1%
GASTON	976	1,444	1,014	48%	-30%	4%
IREDELL	1,738	2,098	1,993	21%	-5%	15%
LINCOLN	1,025	1,512	1,345	48%	-11%	31%
MCDOWELL	302	790	844	162%	7%	179%
MECKLENBURG	594	715	816	20%	14%	37%
UNION	1,711	2,233	2,067	31%	-7%	21%
TOTALS	10,021	14,489	12,278	45%	-15%	23%

**Total Number of Equine Operations**

County	2002	2007	2012
ALEXANDER	153	242	162
AVERY	55	119	67
BURKE	107	95	53
CALDWELL	107	205	156
CATAWBA	224	207	177
GASTON	139	185	139
IREDELL	327	197	130
LINCOLN	182	288	198
MCDOWELL	59	304	224
MECKLENBURG	93	253	211
UNION	287	243	201
TOTALS	1,733	2,338	1,718



The numbers associated with equine (horses, ponies, donkeys, burros, mules) are the total number of animals and total number of operations with inventory reported at a point in time (end of December) for each census year in each county.