Rocky River Watershed Interagency Work Group Meetings

MEETING 1

Thursday April 8, 2021
10:00 – 11:30 am

Meeting 1 will cover current field studies and water quality in the lower portion of the Rocky River watershed.

MEETING 2

Thursday April 8, 2021
1:00 – 2:30 pm

Meeting 2 will cover the current and proposed health assessments of the endangered Cape Fear Shiner and other rare species in the watershed.

MEETING 3

Monday April 12, 2021
10:00 – 11:30 am

Meeting 3 will review the water quality needs for endangered and threatened species in the watershed and explore potential conservation and mitigation opportunities.

NORTH CAROLINA Wildlife RESOURCES COMMISSION

U.S. FISH & WILDLIFE SERVICE
DEPARTMENT OF THE INTERIOR

DEQ
NORTH CAROLINA
Department of Environmental Quality

Meeting 1 – Water Quality (DWR)

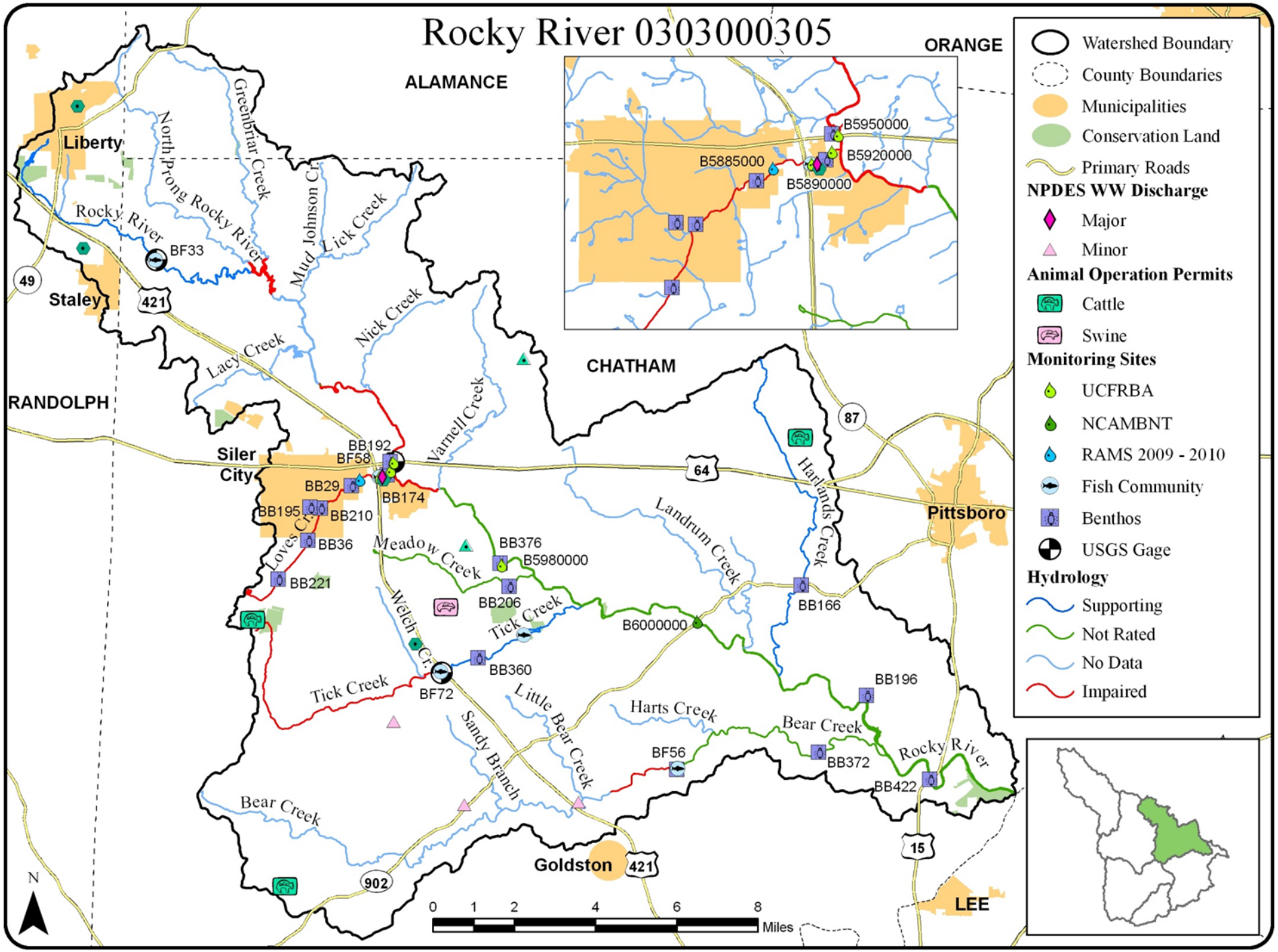
1. Instream water quality conditions in the Rocky River
    a. Nutrients
    b. Others – Sediment, pH, DO, Bacteria, Chlorophyll *a*
2. Integrated report status 303(d)/305(b)
3. 2020/2021 special study plan – Intensive Survey Branch
    a. In situ data logger deployment
    b. Mussel Bioindicator assessment
4. Update on Siler City WWTP
    a. General operations
        i. Effluent data
        ii. 2020/2021 issues and corrective actions
        iii. Optimization Plan
    b. Treatment plant upgrade (4 and 6 MGD)

NORTH CAROLINA
Department of Environmental Quality



Rocky River Interagency Work Group Meeting
Instream Water Quality Conditions and Integrated Report Status
April 8, 2021

Division of Water Resources
Nora Deamer

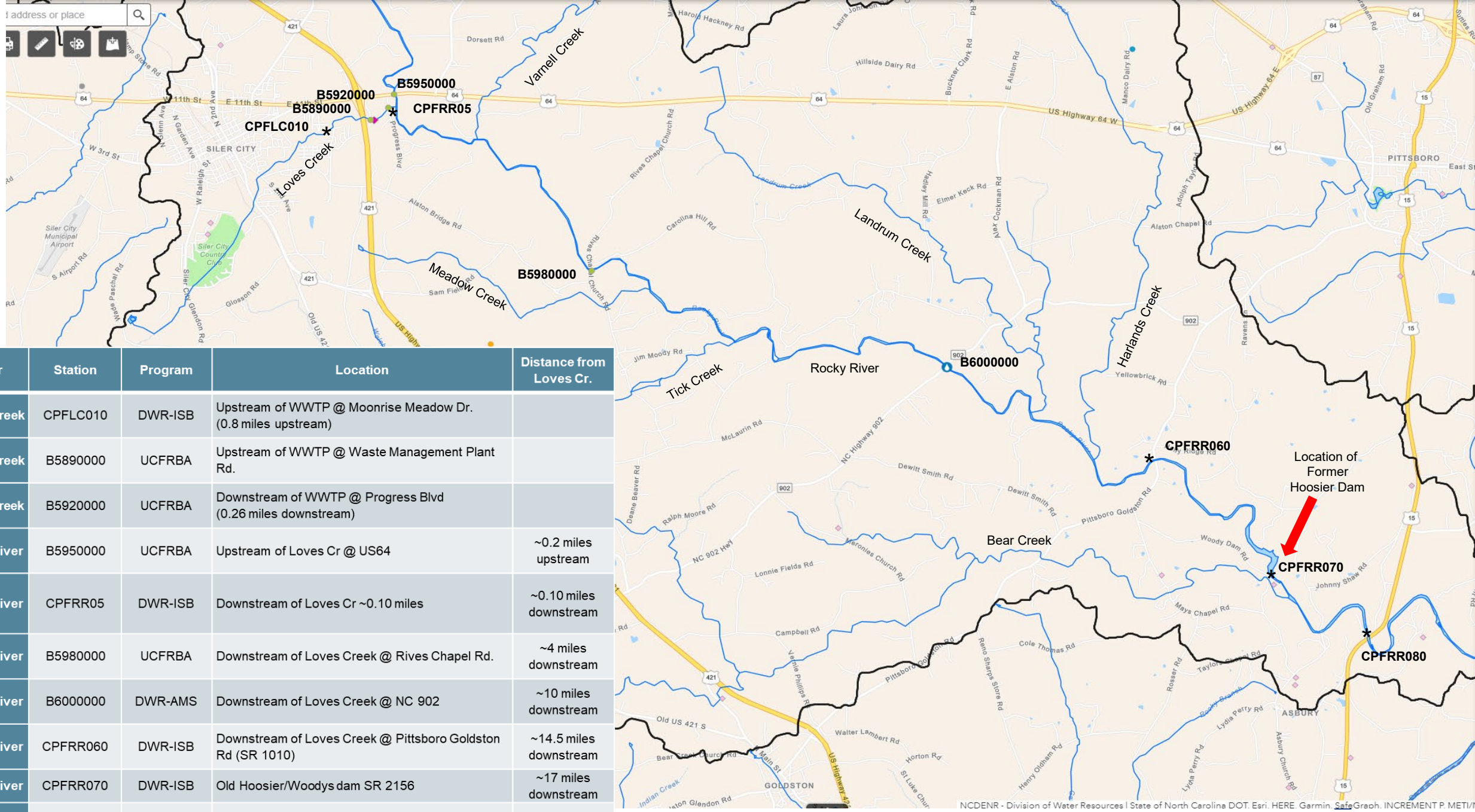


NORTH CAROLINA
Department of Environmental Quality

River	Station	Program	Location	Distance from Loves Cr.	ISB Study Parameters*	Ambient Monitoring Parameters
Loves Creek	CPFLC010	DWR-ISB	Upstream of WWTP @ Moonrise Meadow Dr. (0.8 miles upstream)		√ BOD-5	
Loves Creek	B5890000	UCFRBA	Upstream of WWTP @ Waste Management Plant Rd.			Nutrient and physical
Loves Creek	B5920000	UCFRBA	Downstream of WWTP @ Progress Blvd (0.26 miles downstream)		√ BOD-5	Nutrient and physical
Rocky River	B5950000	UCFRBA	Upstream of Loves Cr @ US64	~0.2 miles upstream	√ BOD-5	Nutrient and physical
Rocky River	CPFRR05	DWR-ISB	Downstream of Loves Cr ~0.10 miles	~0.10 miles downstream	√ BOD-5 Sonde Deployed	
Rocky River	B5980000	UCFRBA	Downstream of Loves Creek @ Rives Chapel Rd.	~4 miles downstream	√ BOD-5	Nutrient and physical
Rocky River	B6000000	DWR-AMS	Downstream of Loves Creek @ NC 902	~10 miles downstream	√	Nutrient and physical
Rocky River	CPFRR060	DWR-ISB	Downstream of Loves Creek @ Pittsboro Goldston Rd (SR 1010)	~14.5 miles downstream	√ Chl a	
Rocky River	CPFRR070	DWR-ISB	Old Hoosier/Woodys dam SR 2156	~17 miles downstream	√ Chl a	
Rocky River	CPFRR080	DWR-ISB	Downstream of Loves Cr @ 15/501 nr Moncure	~19.25 miles Downstream	√ Chl a Sonde Deployed	

ISB – Monthly August- December: Turbidity, Total Residue, Suspended Residue, NOx, TKN, NH3, TP, BOD-5*, Chl a*, Fecal Coliform, and data logger information, Temperature, DO, pH, Conductivity, Ammonia.
*** Only collected at specific ISB sites indicated.**
Sonde data – CPFRR05 10/7 – 11/18/2020 & CPFRR080 10/7-10/30/2020 (lost in storm).
Bioindicator assessment study – in situ mussel cages using Eastern Elliptio (Elliptio complanate).

DWR-AMS and Coalition parameters – Turbidity, NOx, TKN, NH3, TP, Fecal Coliform and data logger information, Temperature, DO, pH, and Conductivity. DWR collected some special modeling study parameters in 2020, BOD-5, Chl a, TOC, TSS. No monitoring by DWR in April and May due to Covid-19 restrictions.



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Rocky River	CPFRR080	DWR-ISB	Downstream of Loves Cr @ 15/501 nr Moncure	~19.25 miles Downstream

Central Cape Fear River

Special Modeling Study
2019-2020

Why Model?

1. **Support NPDES permitting for nutrients.**
2. Potentially support nutrient criteria, as described in the North Carolina Nutrient Criteria Development Plan (NCDP).
3. Potentially provide information on existing impaired waters.

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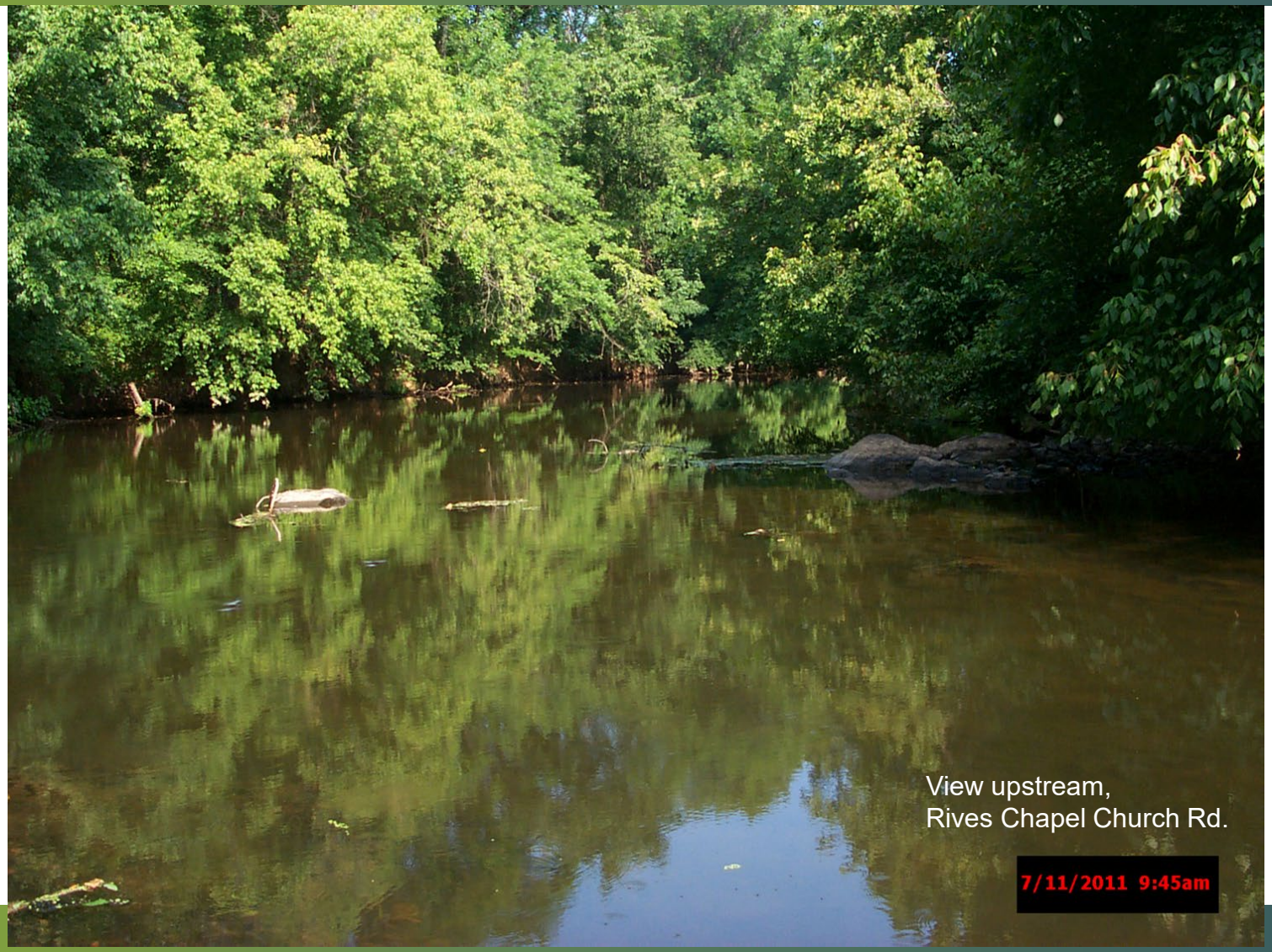
New Temporary Monitoring Stations – Fill Data Gaps

Watersheds	Receiving River	Station Location		Road Crossing
		Longitude	Latitude	
Bush Creek	Deep River	-79.713	35.753	SR 2226:
Brush Creek	Deep River	-79.583	35.602	SR 22 and 42
Richland Creek	Deep River	-79.619	35.608	SR 2873
Headwaters Rocky River	Rocky River	-79.493	35.802	SR1362
Landrum Creek	Rocky River	-79.275	35.688	NC 902
Bear Creek	Rocky River	-79.212	35.635	SR 2156
Gulf Creek	Cape Fear River	-79.027	35.566	SR#1916
Headwaters Locks Creek	Cape Fear River	-78.855	35.047	SR 1006
Carvers Creek	Cape Fear River	-78.404	34.453	NC 87

Parameters	Frequency	Agency
Physicals*	Monthly	DWR
Ammonia	Monthly	DWR
Nitrite/Nitrate	Monthly	DWR
TKN	Monthly	DWR
TP	Monthly	DWR
Ortho P	Monthly	DWR
NTU	Monthly	DWR
TSS	Monthly	DWR
TOC	Monthly	DWR
BOD5	Monthly	DWR
CBOD	Monthly	DWR

- Physicals = DO, pH, cond, temp and should include secchi depth for composite samples.
- Monitoring occurred January 2019 – December 2021

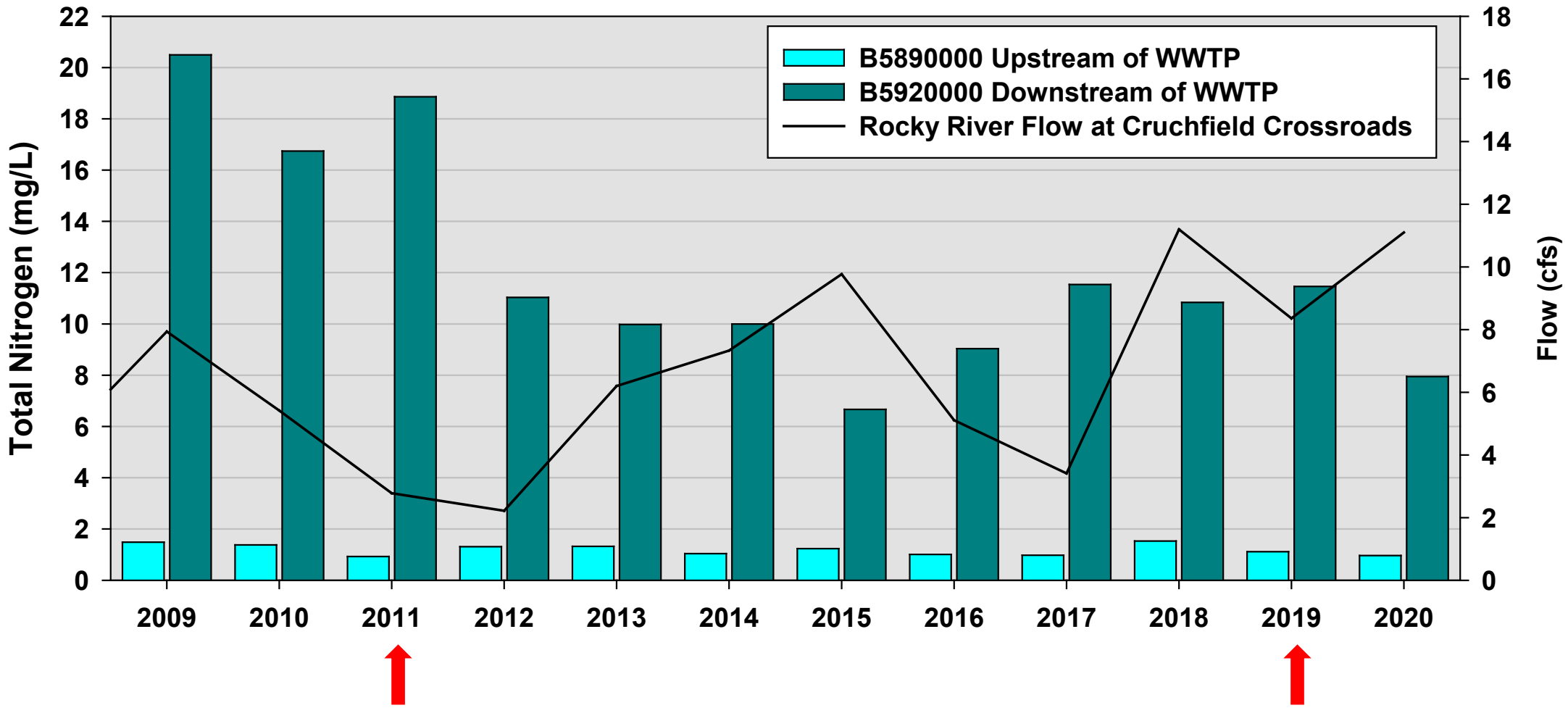
Instream Water Quality Data



Important Watershed Information

- Nov. 2009 Charles Turner Reservoir Full
  - Minimum release requirement
  - 20 cfs pulse every 30 day (unless a natural event occurs)
- Poultry Plan Closures
  - May 2008 (Pilgrim's Pride)
  - October 2011 (Townsend)
- Poultry Plan Opens
  - January 2019 (Mountaire Farms)
- 4 MGD Wastewater Treatment Plant (built in 1994)
  - TP limits = 0.5 (summer) & 2.0 mg/L (winter)
  - NH3 summer limits = 1.0 (m) & 3.0 mg/L (wk)
  - NH3 winter limits = 2.0 (m) & 6.0 mg/L (wk)
  - 2019 Permit modification includes
    - TN Load 243,455 lb/yr (1/1/2020-12/31/2022)
    - Future TN Load 73,058 lbs/yr (1/1/2023)

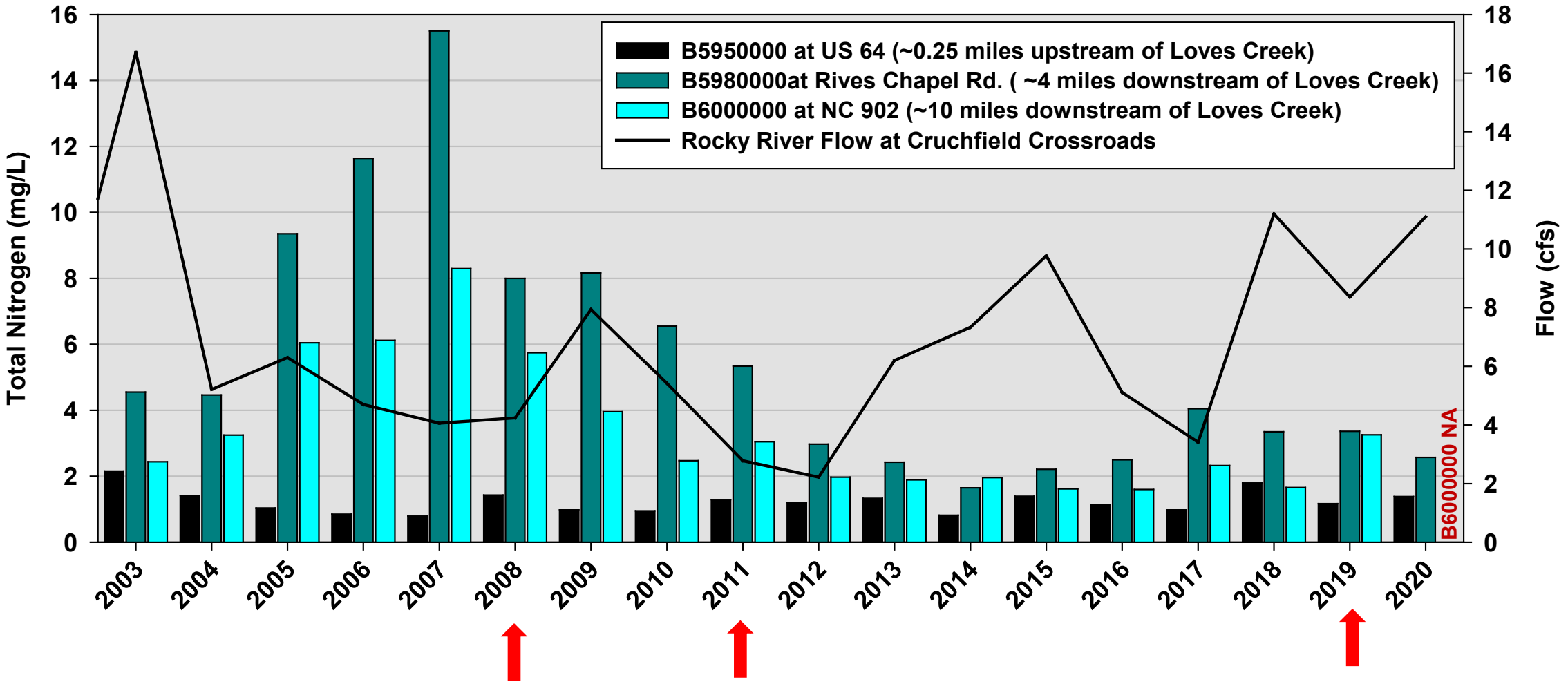
Loves Creek
Yearly Mean Total Nitrogen Concentration



Poultry Plant Closed:
May 2008 (Pilgrim's Pride)
October 2011 (Townsend)

Poultry Plant Opened:
January 2019 (Mountaire Farms)

Rocky River
Yearly Mean Total Nitrogen Concentration



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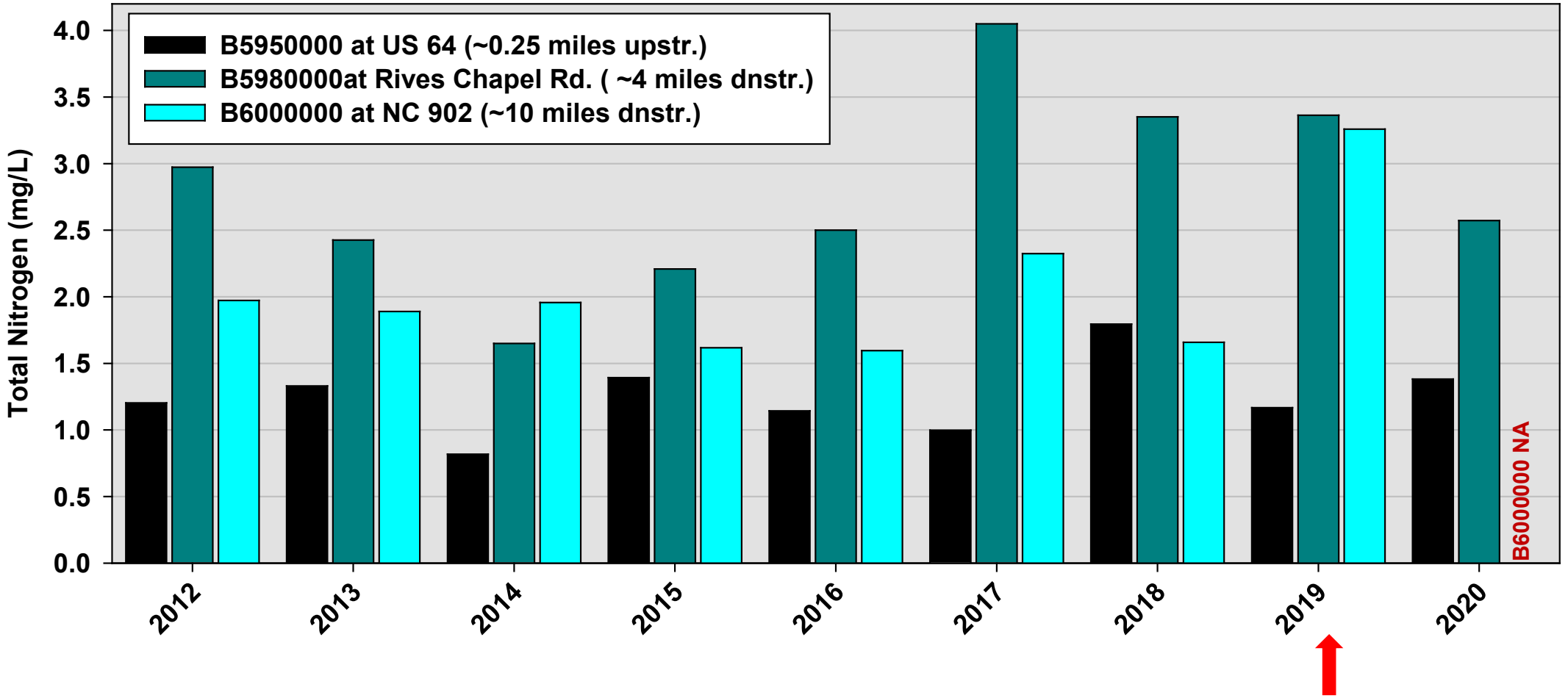

Poultry Plant Opened:
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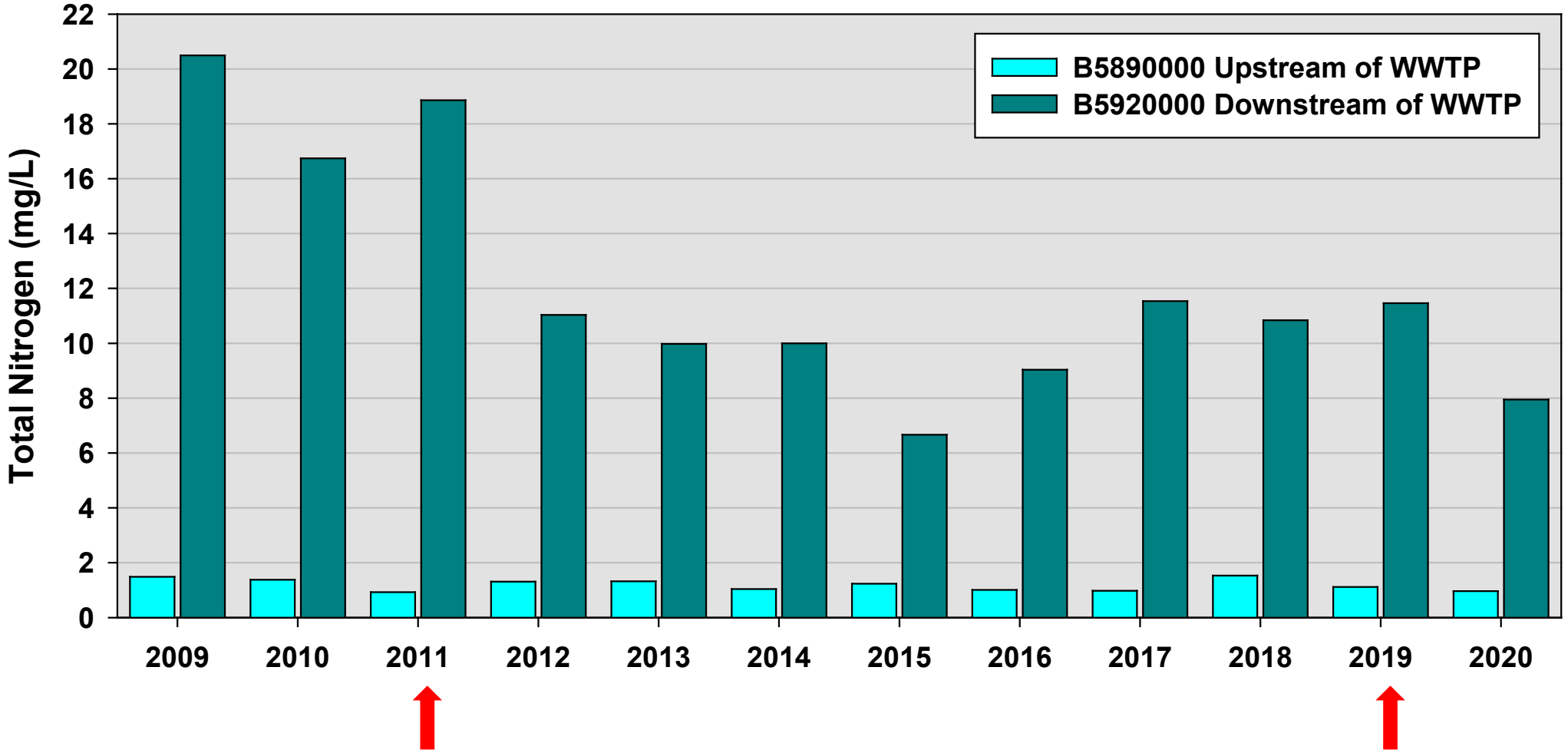
Loves Creek
Yearly Mean Total Nitrogen Concentration



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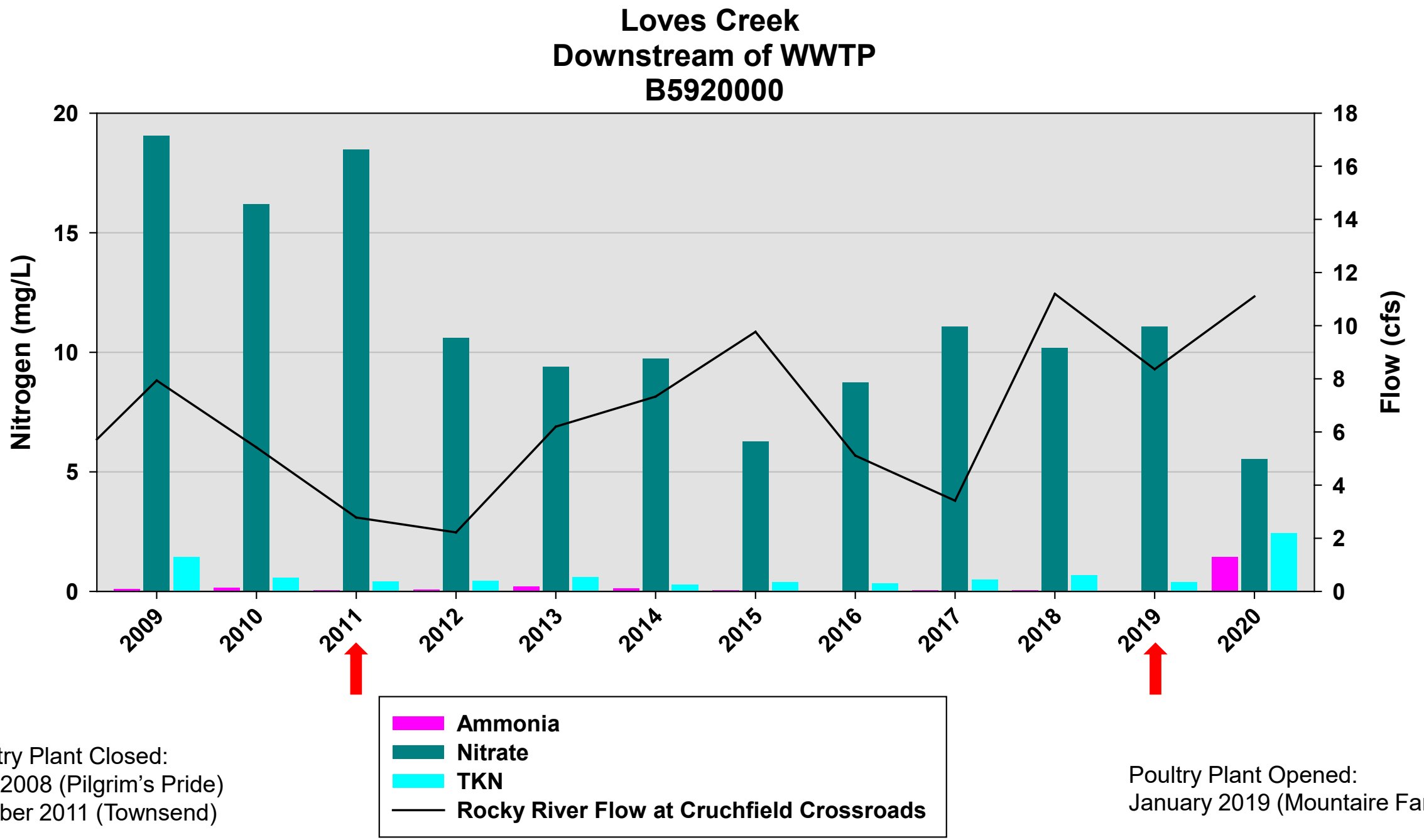

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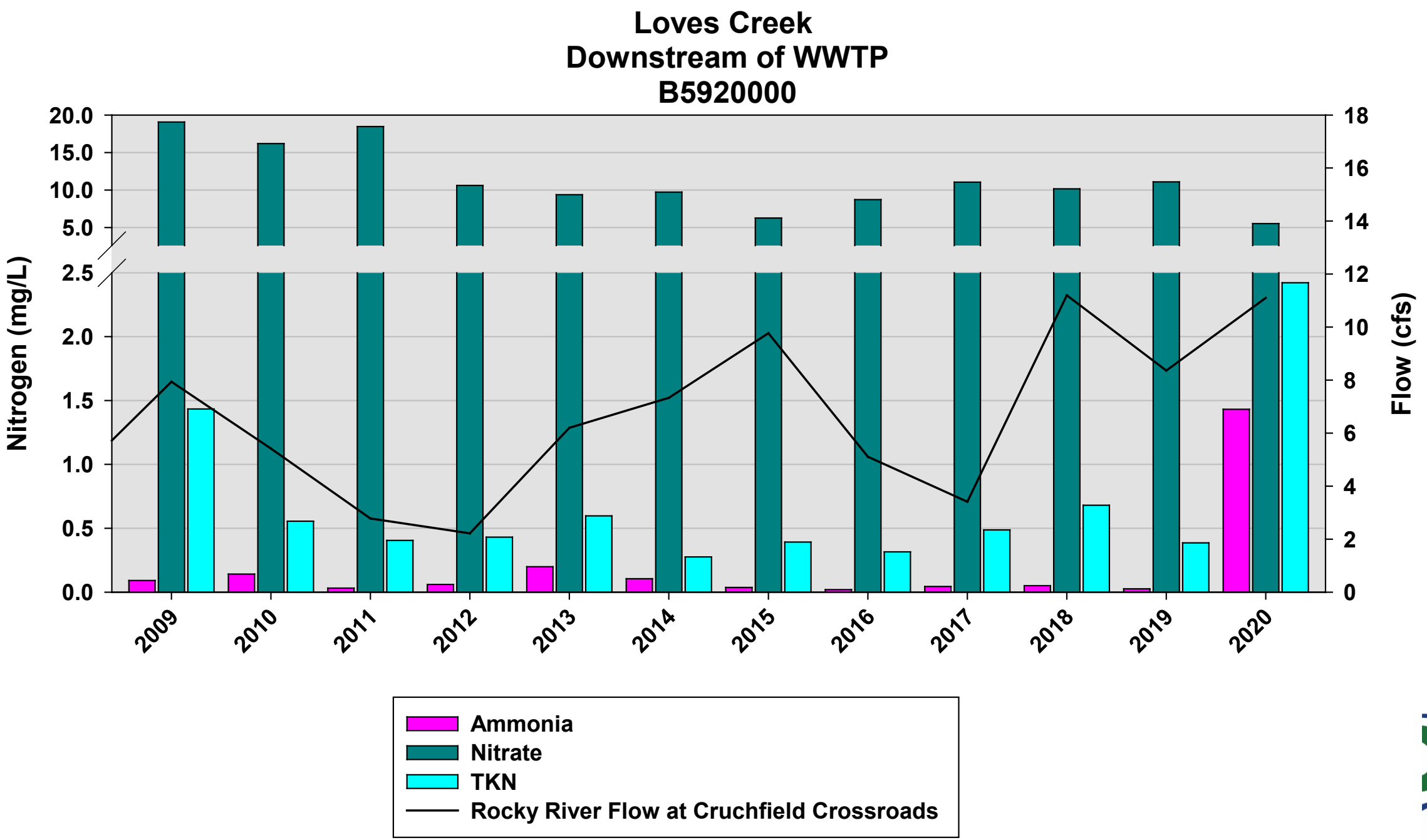
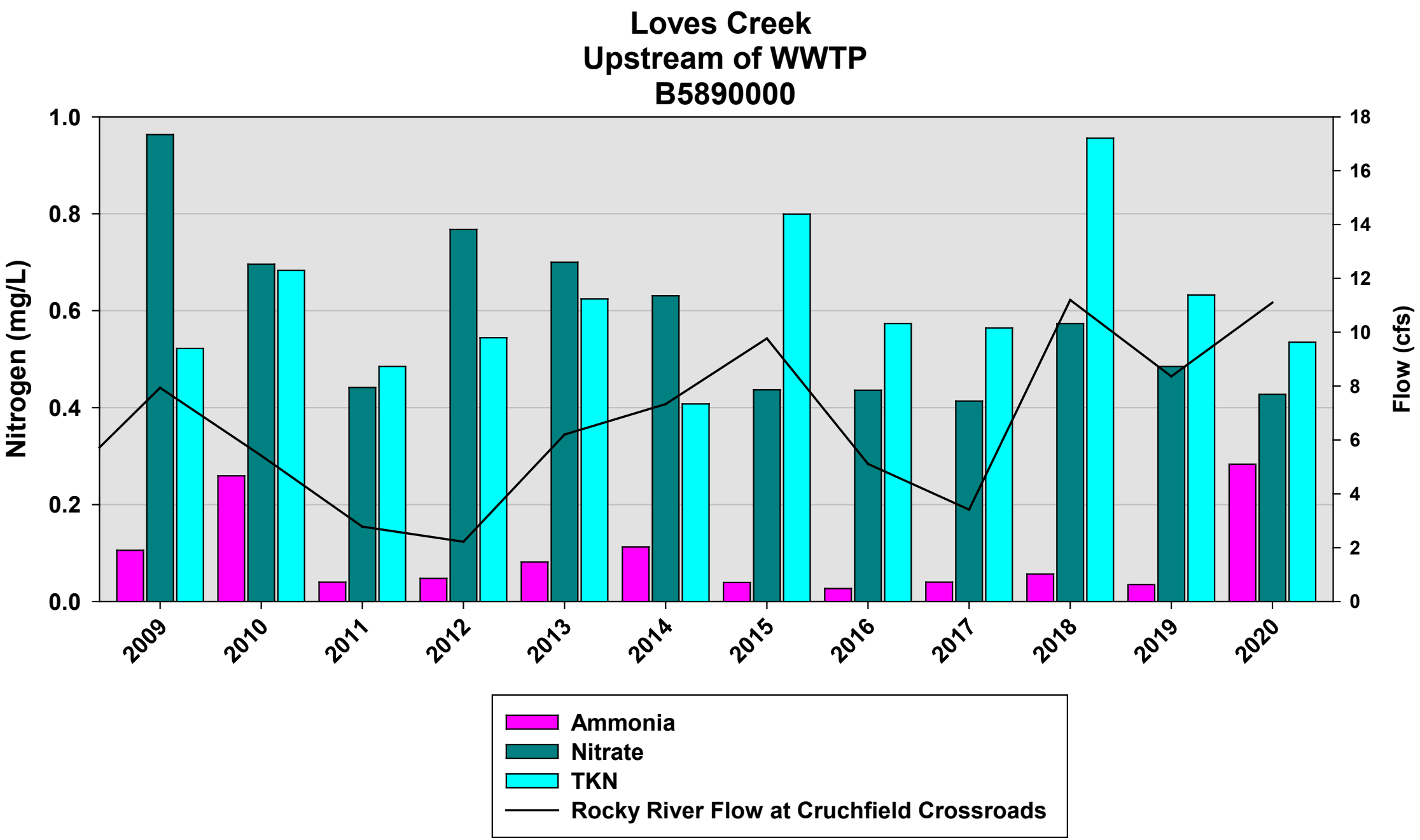
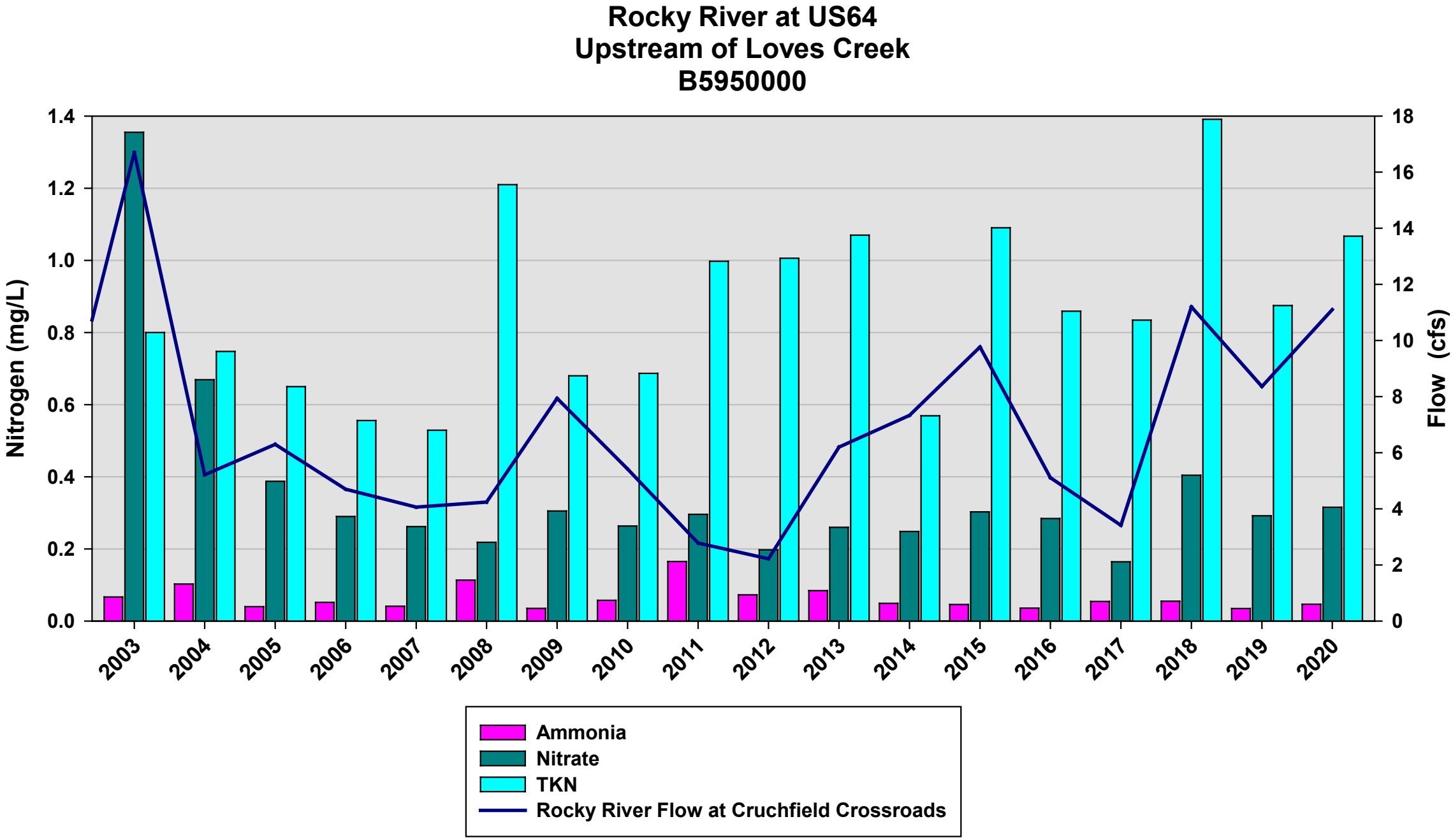
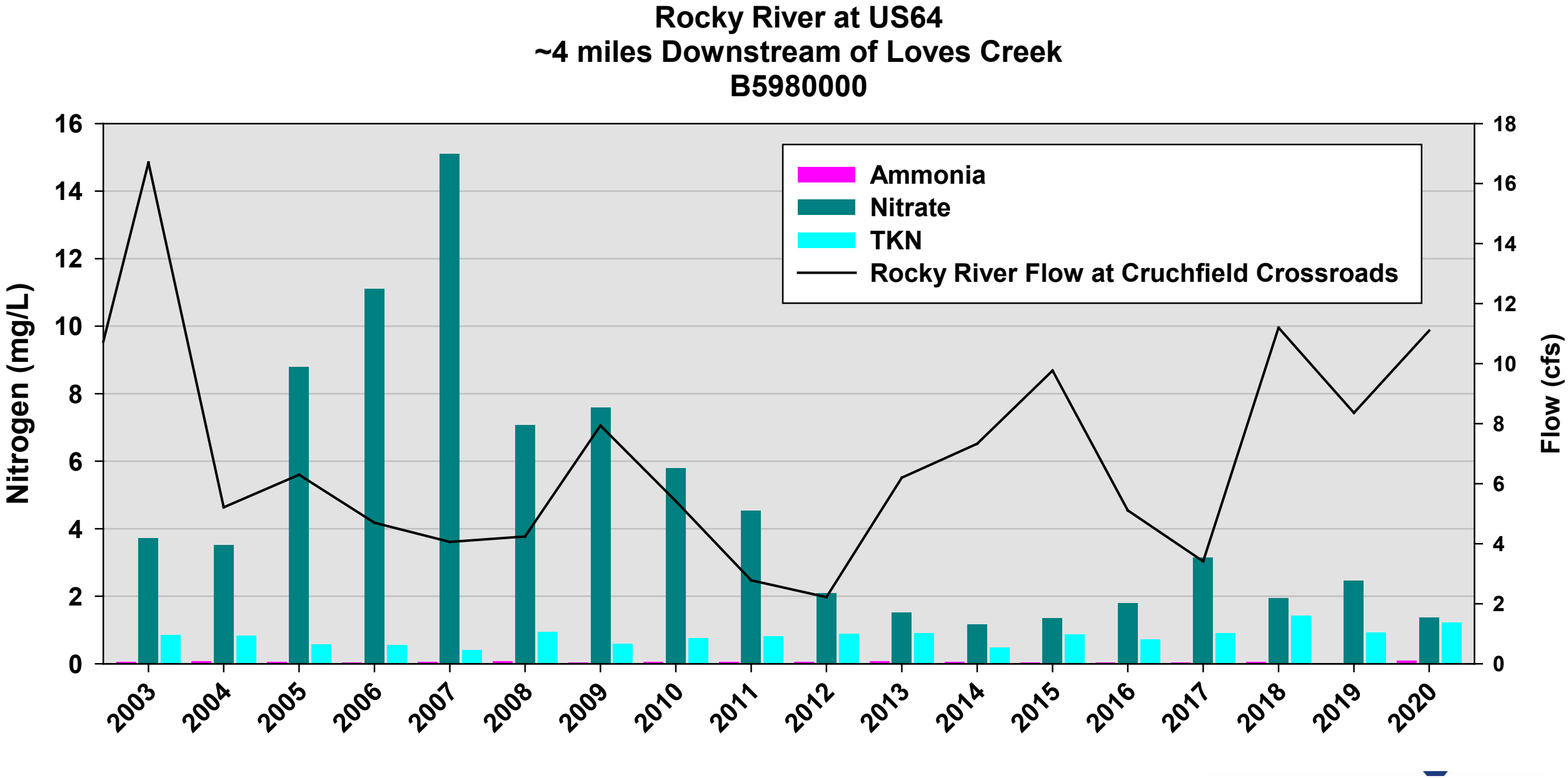
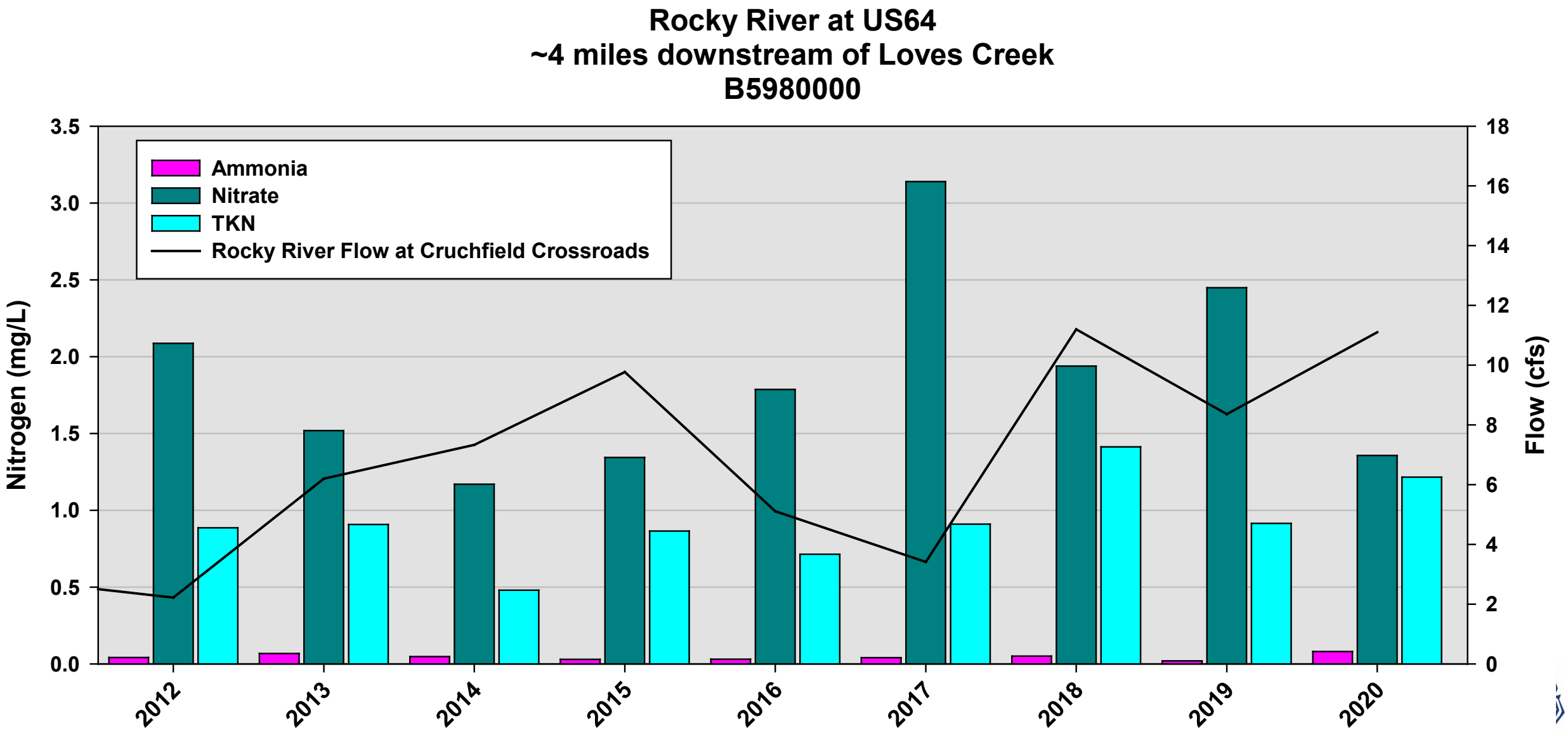
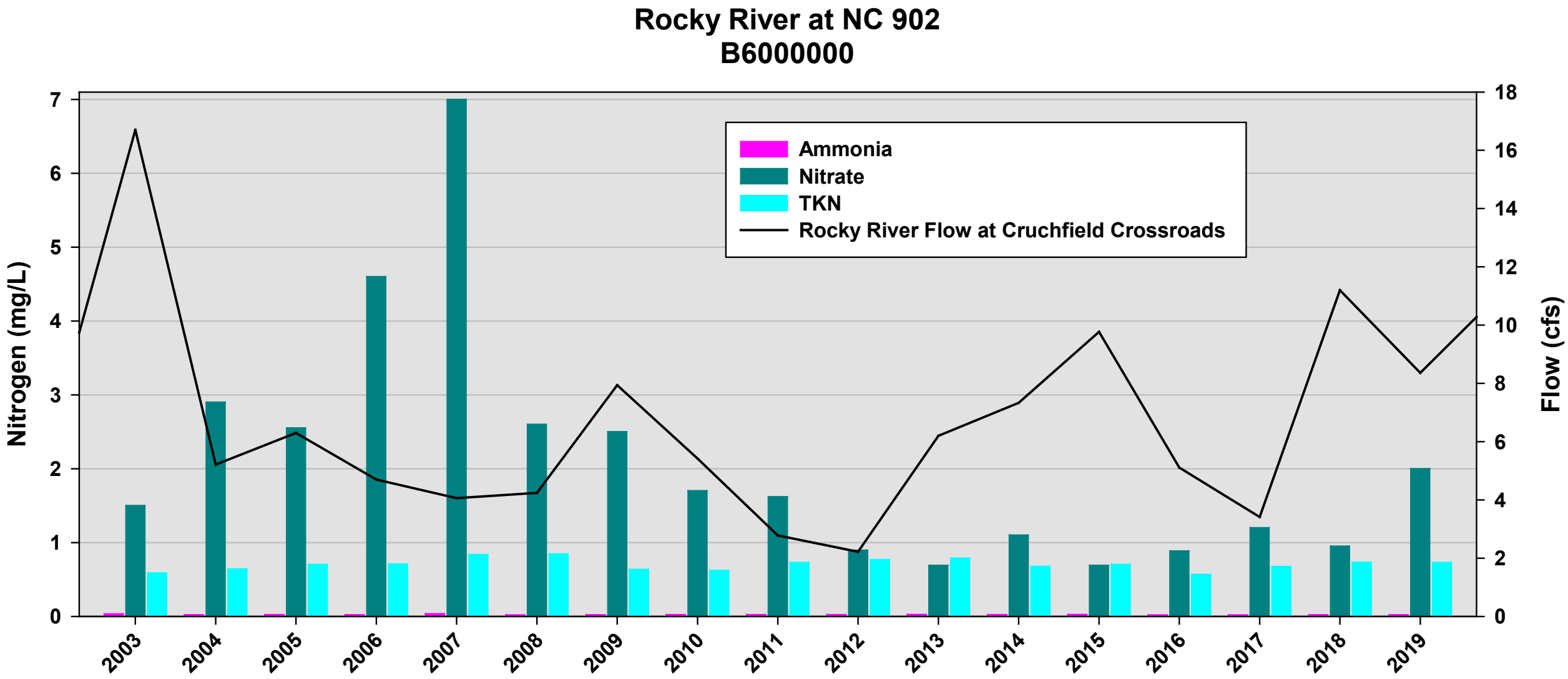

Loves Creek
Downstream of WWTP
B5920000
Nitrogen (mg/L)
Flow (cfs)
20.0
15.0
10.0
5.0
2.5
2.0
1.5
1.0
0.5
0.0
18
16
14
12
10
8
6
4
2
0
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
Ammonia
Nitrate
TKN
Rocky River Flow at Cruchfield Crossroads


Loves Creek
Upstream of WWTP
B5890000
Nitrogen (mg/L)
Flow (cfs)
1.0
0.8
0.6
0.4
0.2
0.0
18
16
14
12
10
8
6
4
2
0
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
Ammonia
Nitrate
TKN
Rocky River Flow at Cruchfield Crossroads

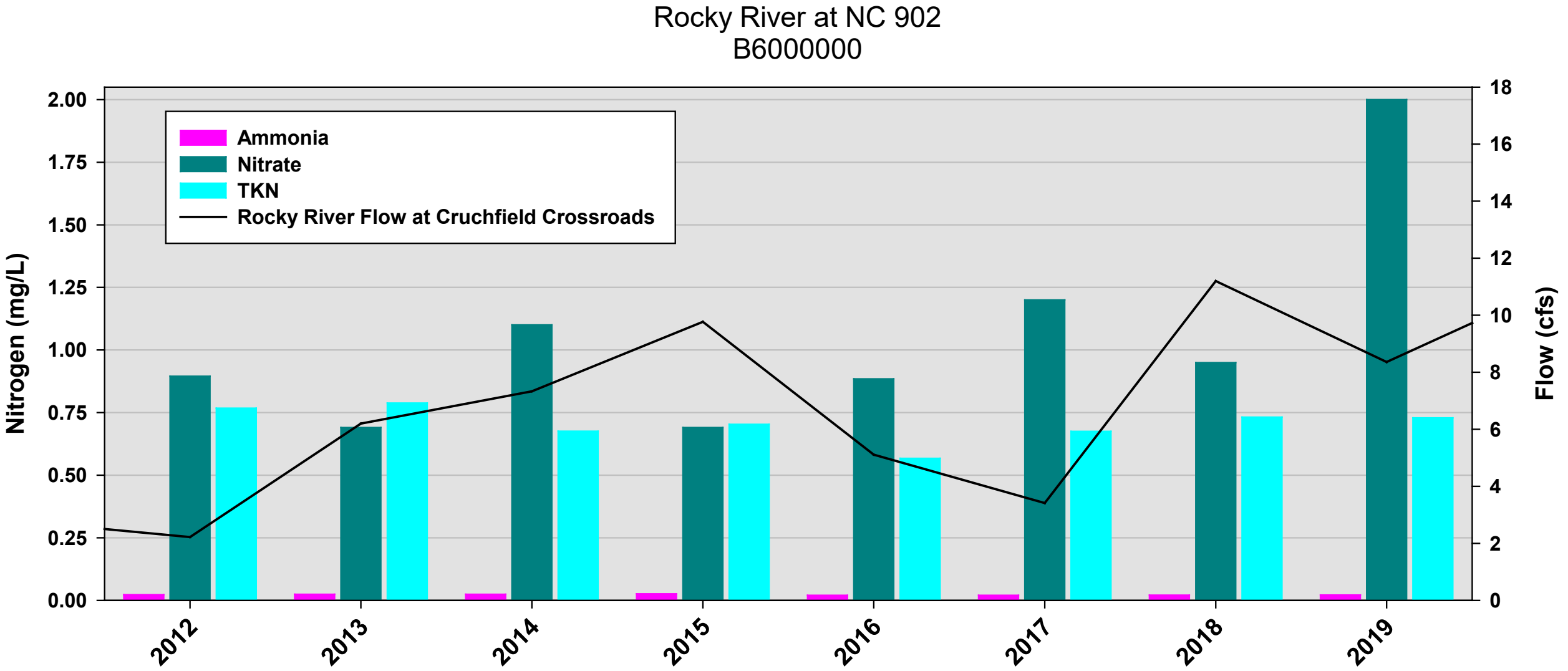

Rocky River at US64
Upstream of Loves Creek
B5950000
Nitrogen (mg/L)
Flow (cfs)
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
18
16
14
12
10
8
6
4
2
0
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
Ammonia
Nitrate
TKN
Rocky River Flow at Cruchfield Crossroads


Rocky River at US64
~4 miles Downstream of Loves Creek
B5980000
Ammonia
Nitrate
TKN
Rocky River Flow at Cruchfield Crossroads
Nitrogen (mg/L)
Flow (cfs)
0
2
4
6
8
10
12
14
16
18
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020


Rocky River at US64
~4 miles downstream of Loves Creek
B5980000
Ammonia
Nitrate
TKN
Rocky River Flow at Cruchfield Crossroads
Nitrogen (mg/L)
Flow (cfs)
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
18
16
14
12
10
8
6
4
2
0
2012
2013
2014
2015
2016
2017
2018
2019
2020

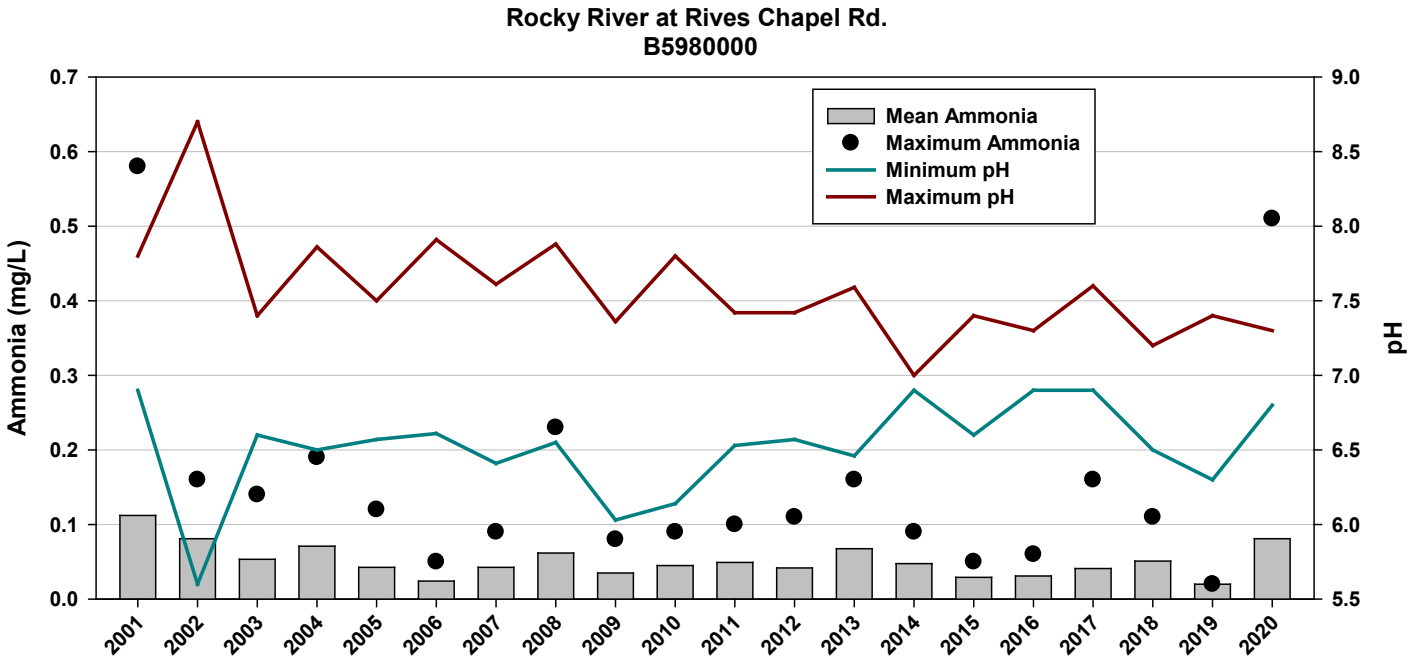


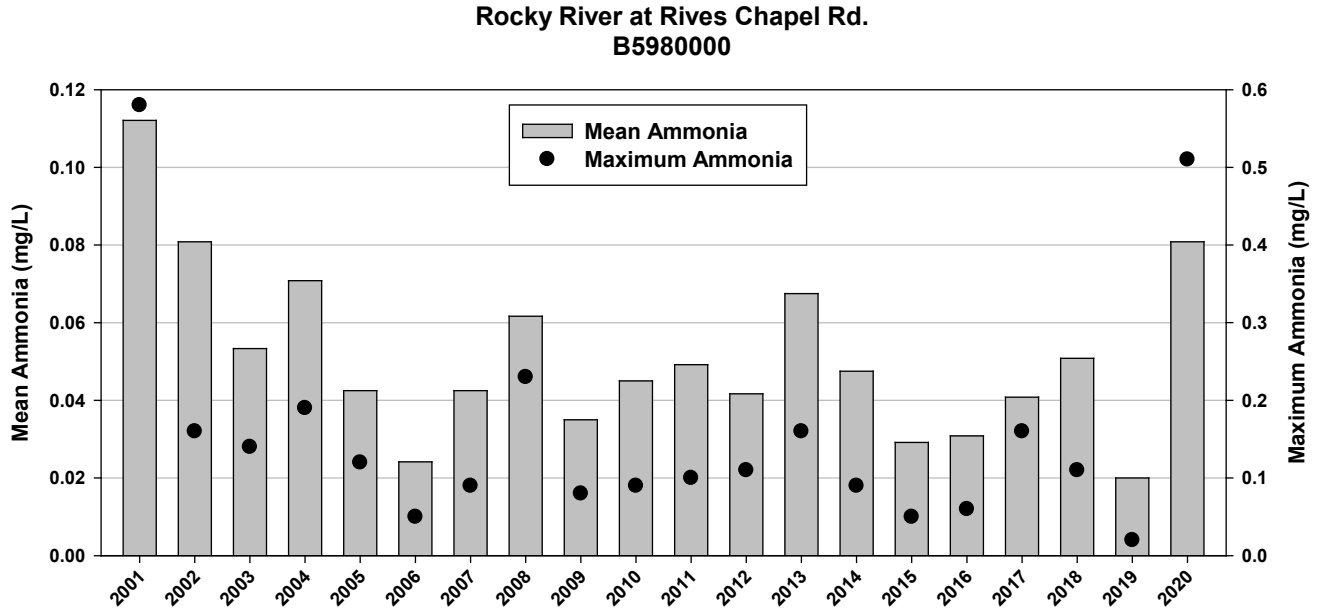
No 2020 data included

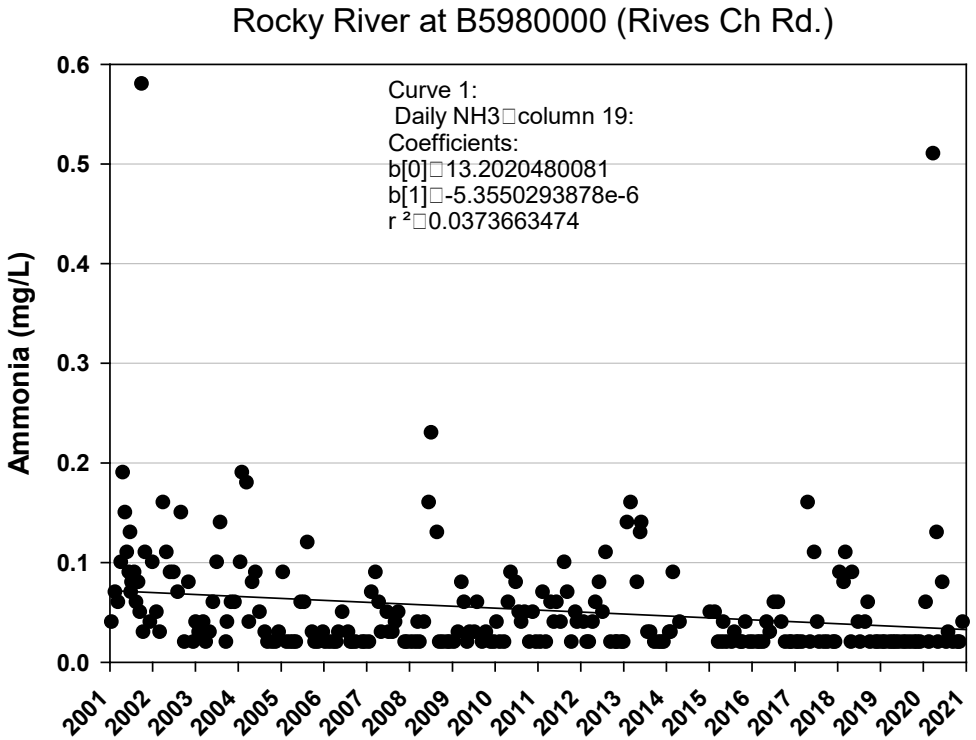


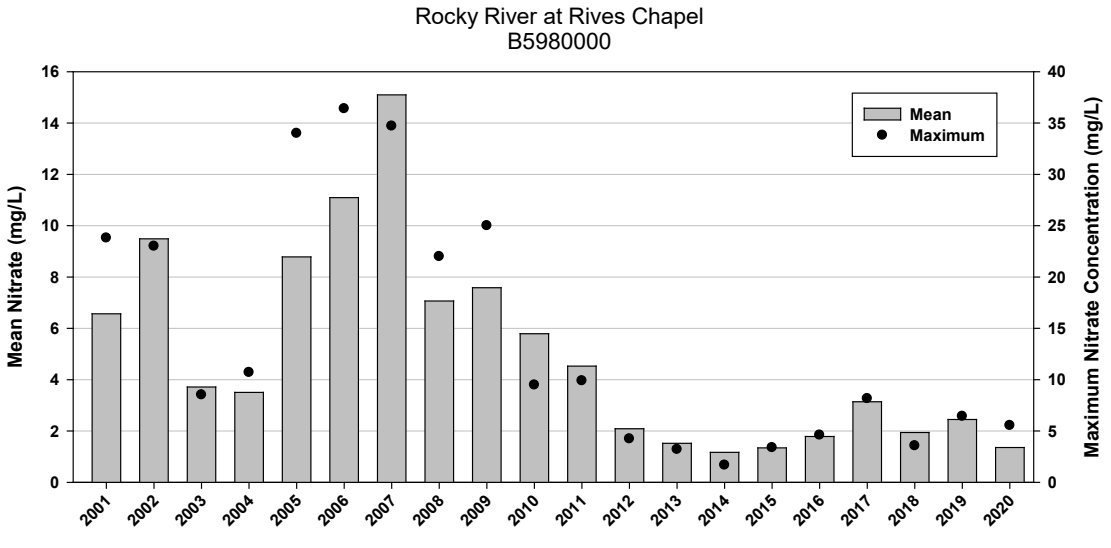
No 2020 data included

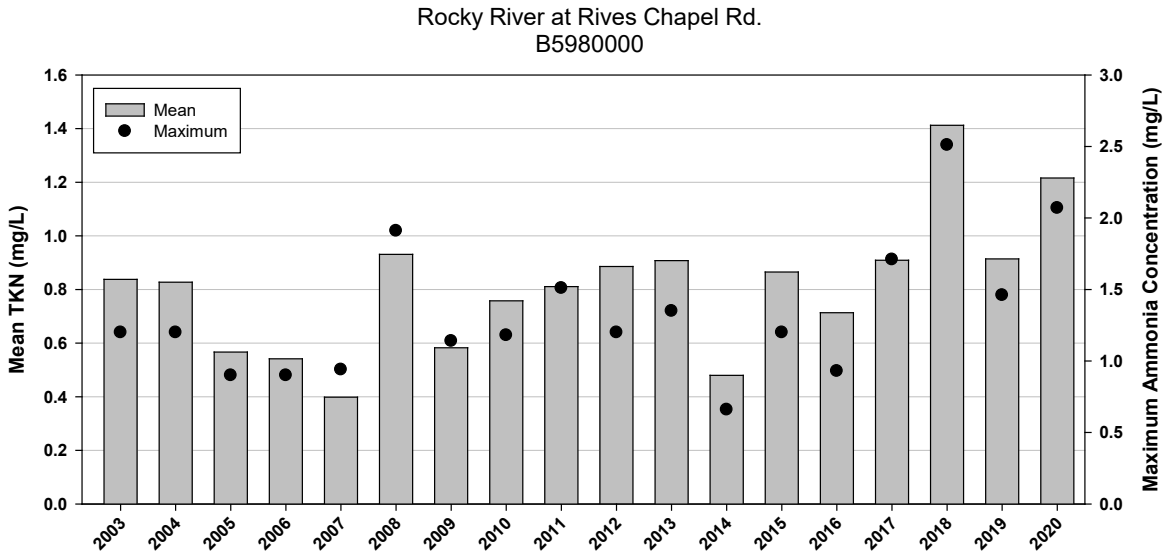
Department of Environmental Quality

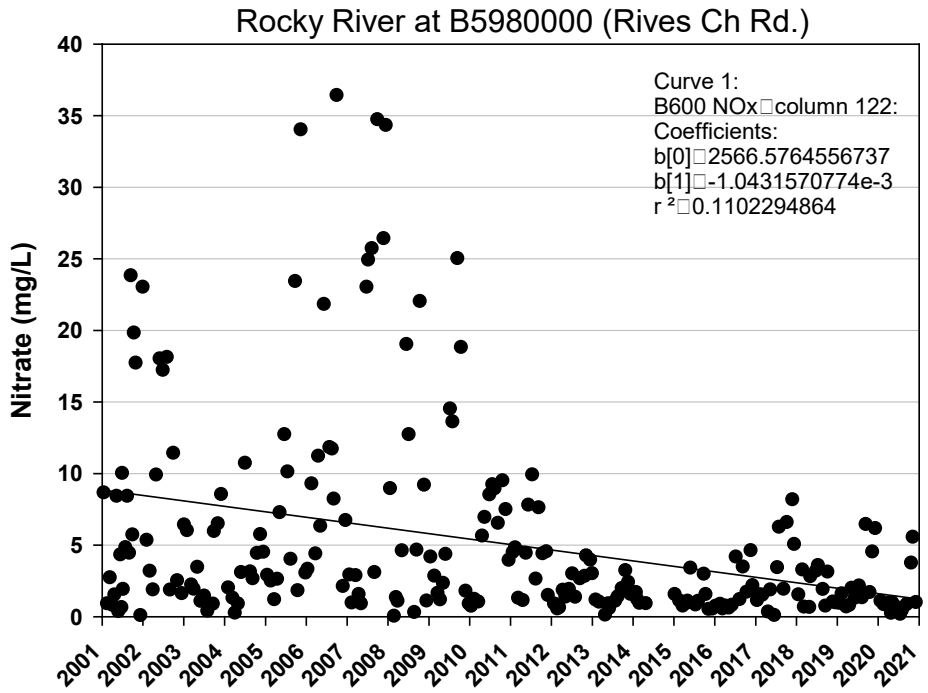

Rocky River at Rives Chapel Rd.
B5980000
Mean Ammonia
Maximum Ammonia
Minimum pH
Maximum pH
Ammonia (mg/L)
pH
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
5.5
6.0
6.5
7.0
7.5
8.0
8.5
9.0
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020

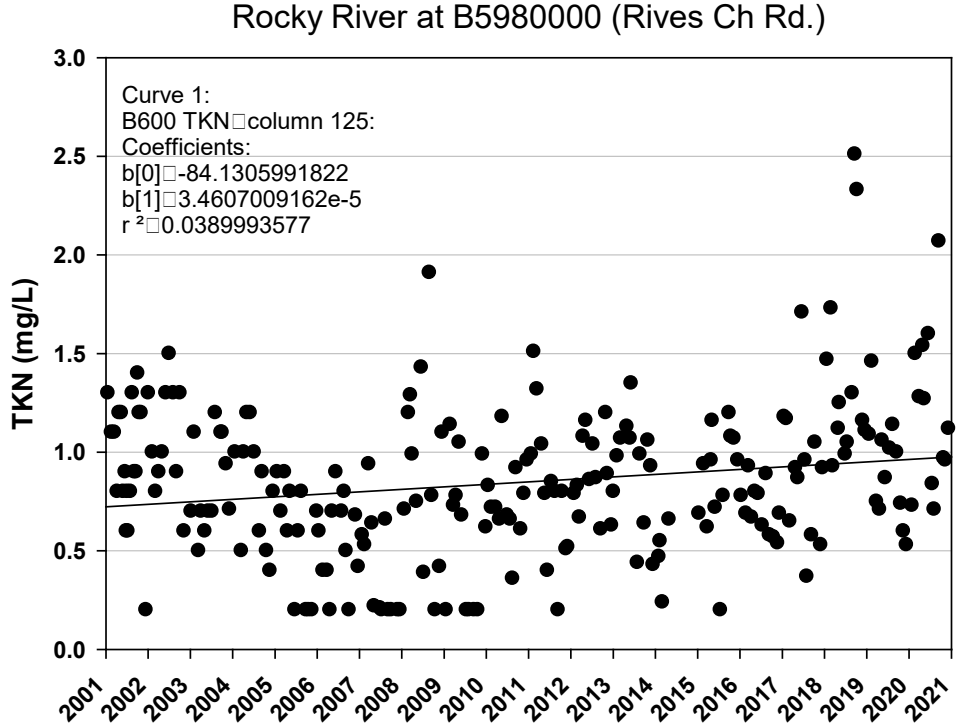

Rocky River at Rives Chapel Rd.
B5980000
Mean Ammonia
Maximum Ammonia
Mean Ammonia (mg/L)
Maximum Ammonia (mg/L)
0.00
0.02
0.04
0.06
0.08
0.10
0.12
0.0
0.1
0.2
0.3
0.4
0.5
0.6
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020

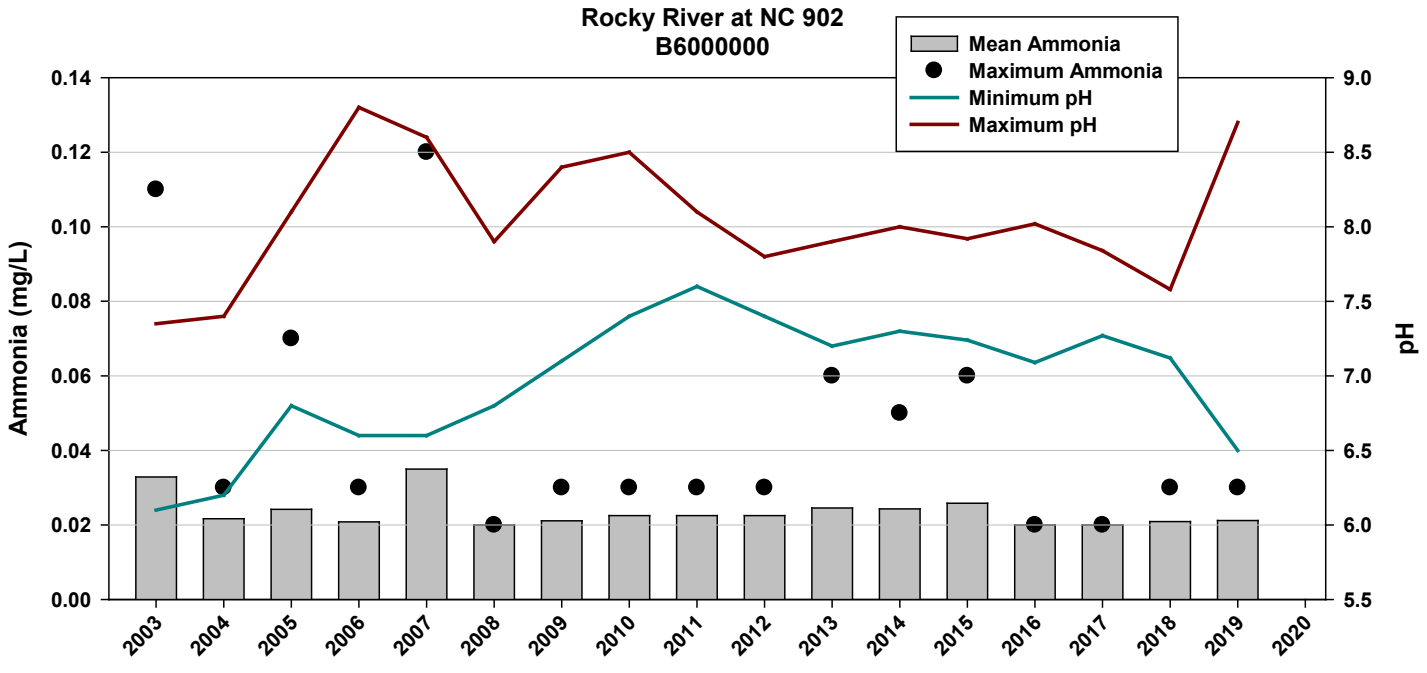

Rocky River at B5980000 (Rives Ch Rd.)
Curve 1:
Daily NH3□column 19:
Coefficients:
b[0]□13.2020480081
b[1]□-5.3550293878e-6
r ²□0.0373663474
Ammonia (mg/L)
0.0
0.1
0.2
0.3
0.4
0.5
0.6
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021

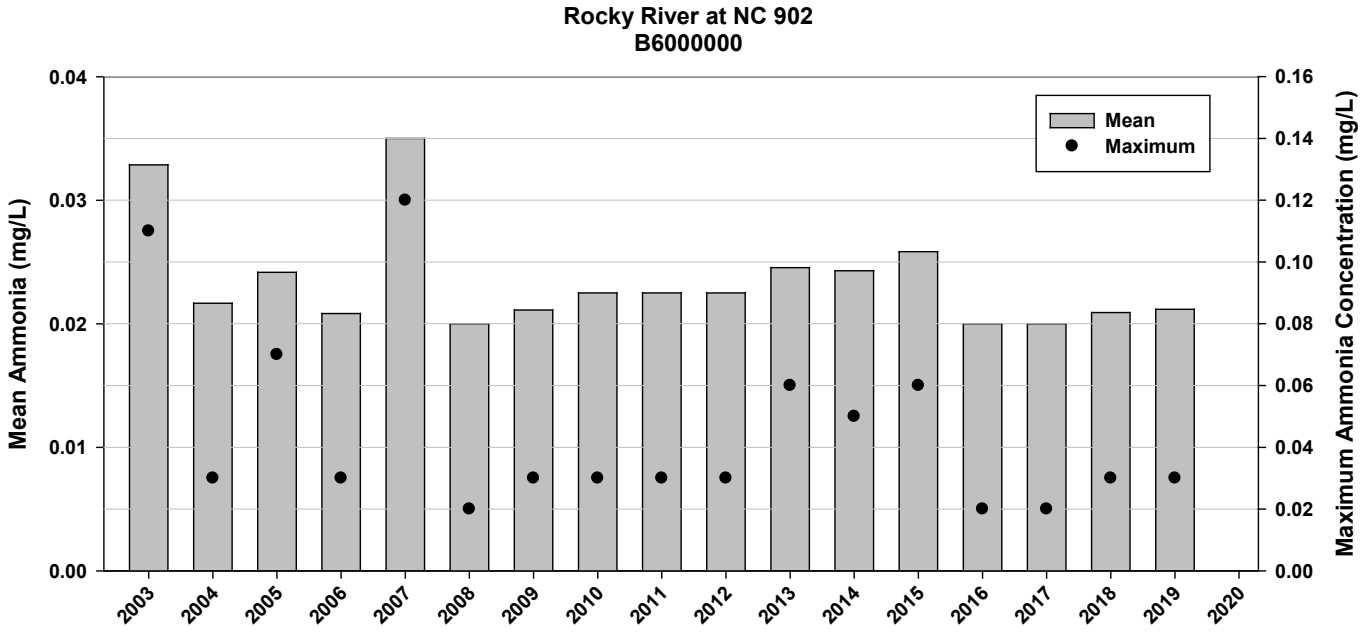

Rocky River at Rives Chapel
B5980000
Mean
Maximum
Mean Nitrate (mg/L)
Maximum Nitrate Concentration (mg/L)

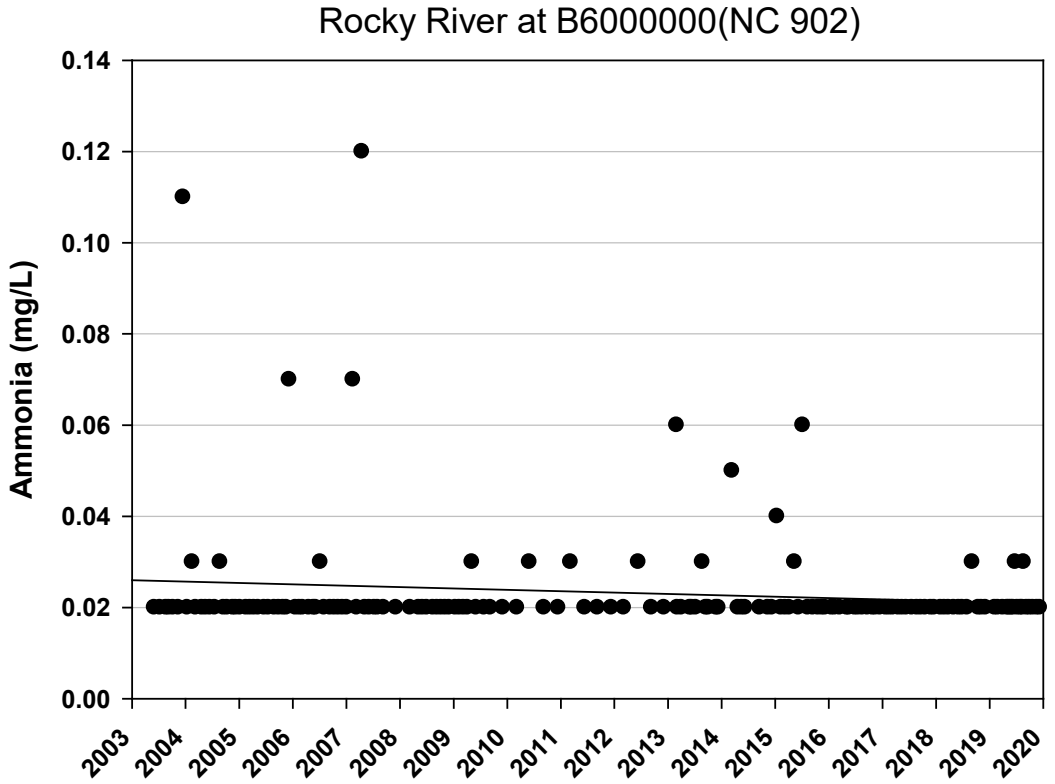

Rocky River at Rives Chapel Rd.
B5980000
Mean
Maximum
Mean TKN (mg/L)
Maximum Ammonia Concentration (mg/L)


Rocky River at B5980000 (Rives Ch Rd.)
Curve 1:
B600 NOx□column 122:
Coefficients:
b[0]□2566.5764556737
b[1]□-1.0431570774e-3
r ²□0.1102294864
Nitrate (mg/L)

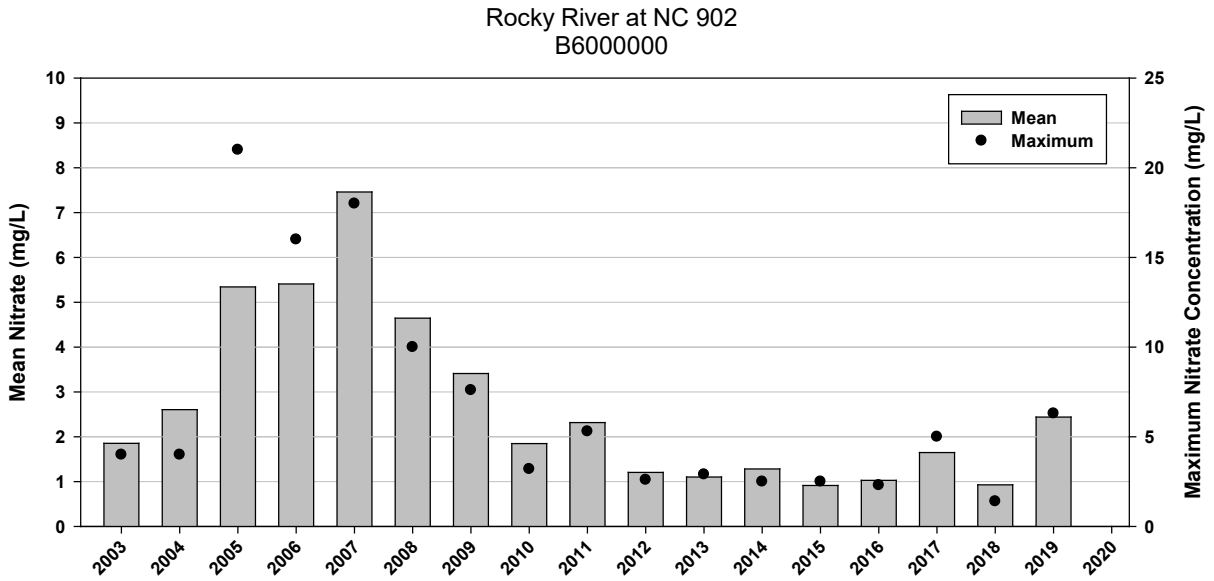

Rocky River at B5980000 (Rives Ch Rd.)
Curve 1:
B600 TKN□column 125:
Coefficients:
b[0]□-84.1305991822
b[1]□3.4607009162e-5
r ²□0.0389993577
TKN (mg/L)

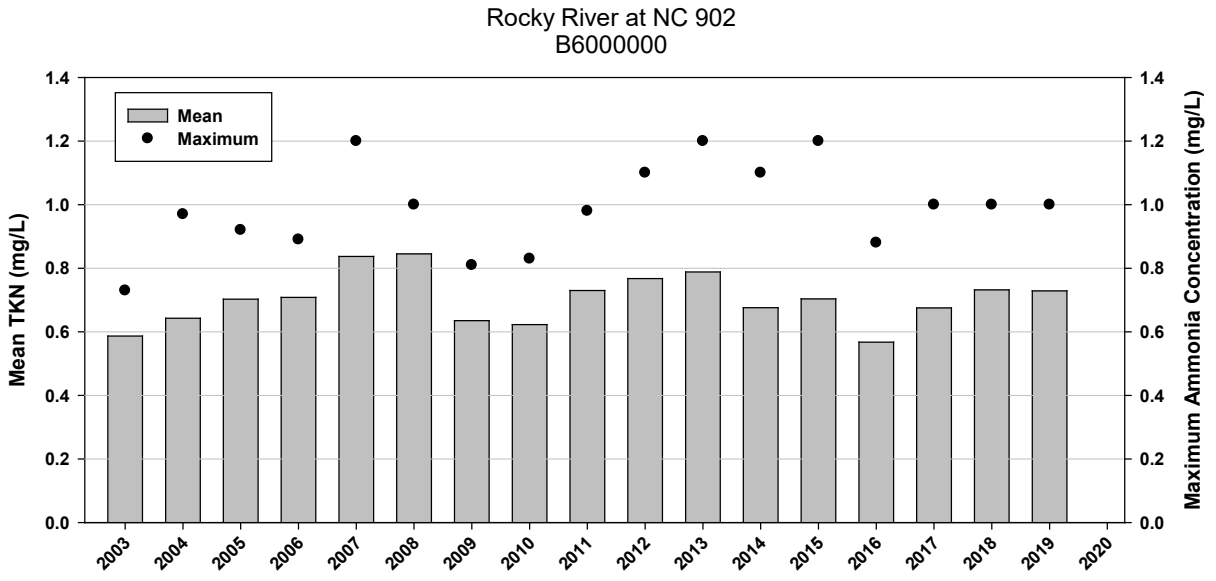


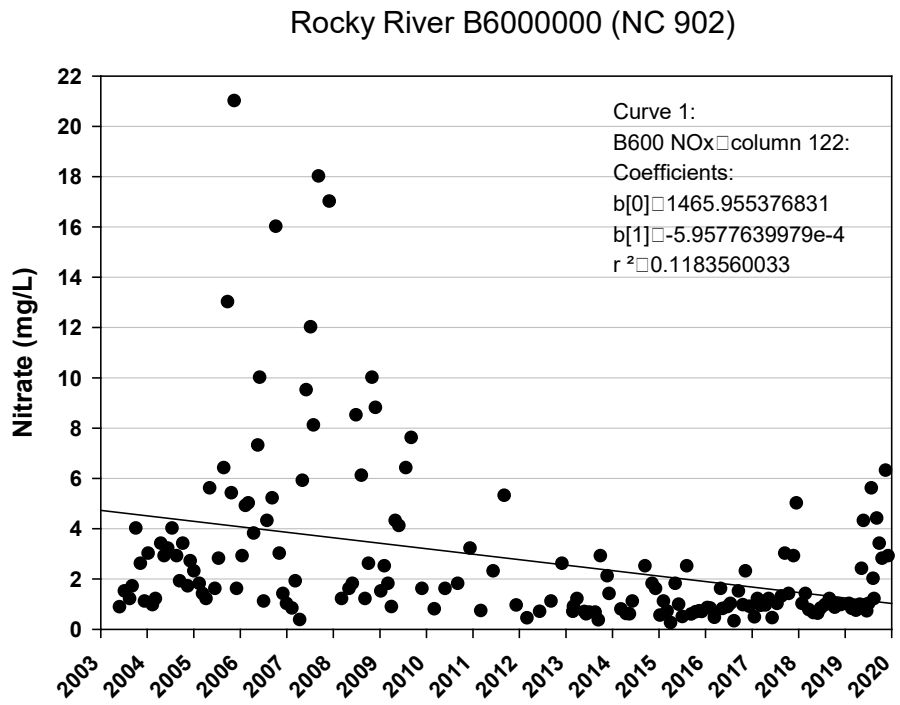


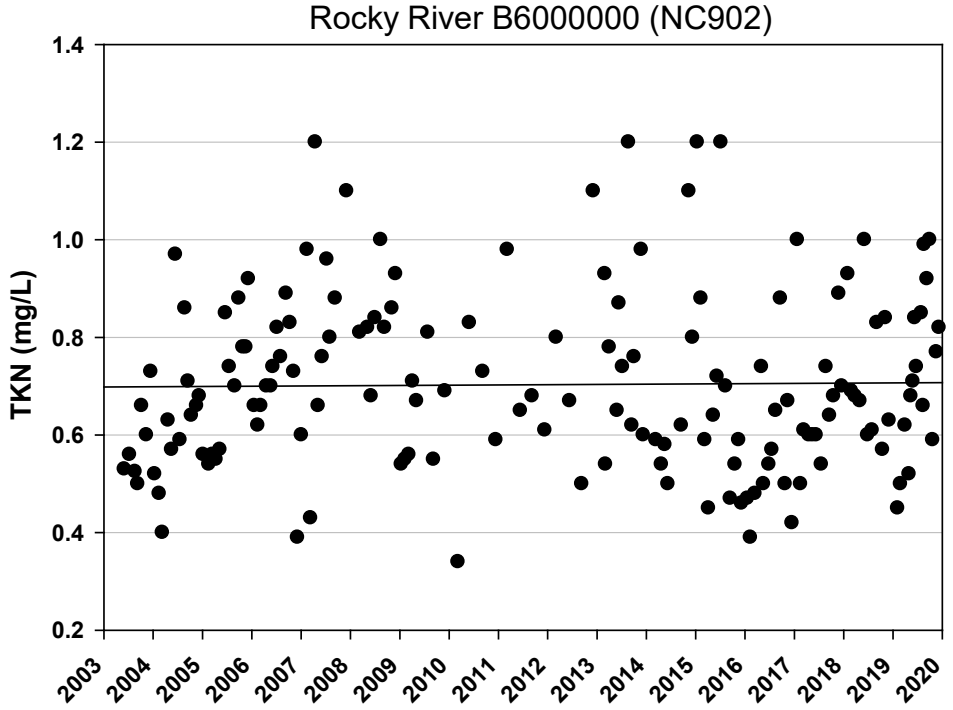


2020 data is not available at this time









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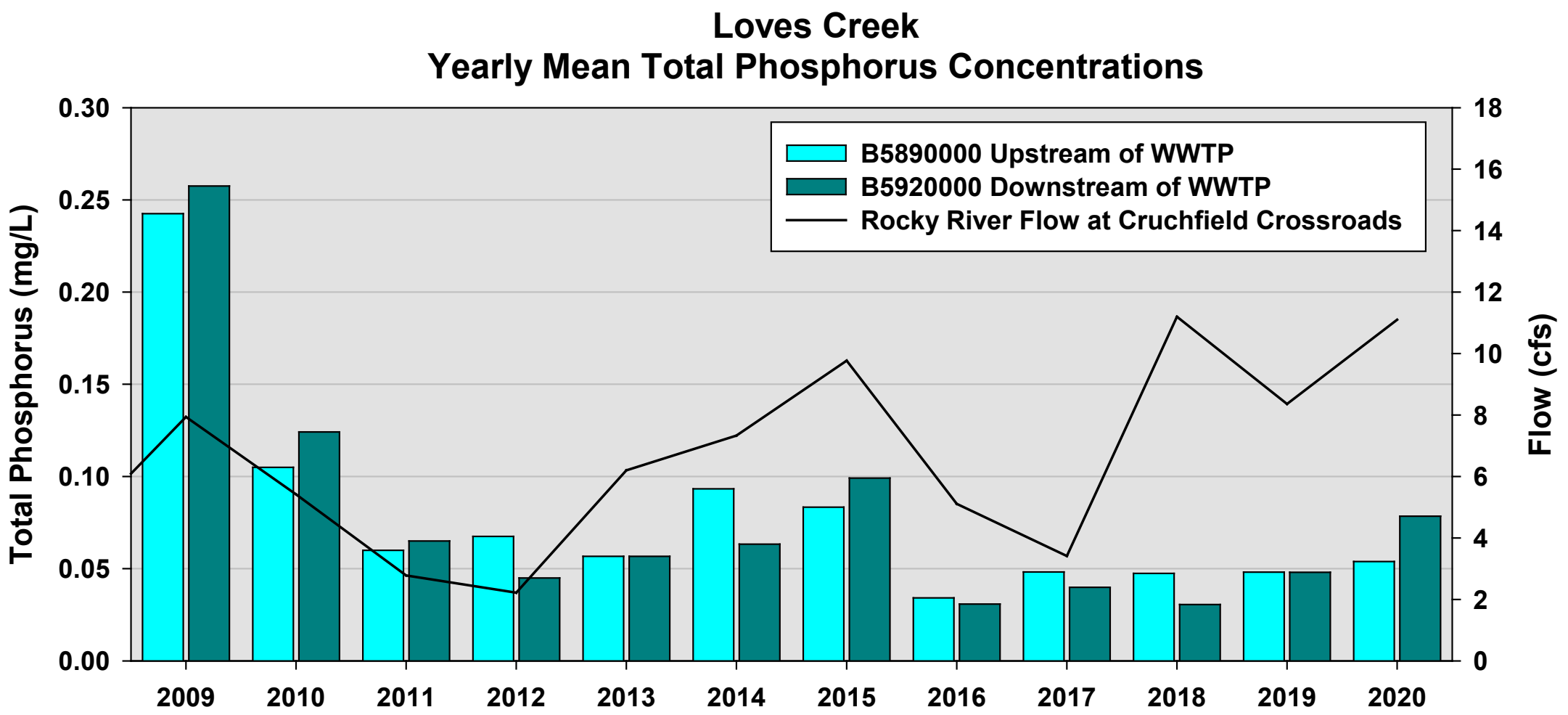
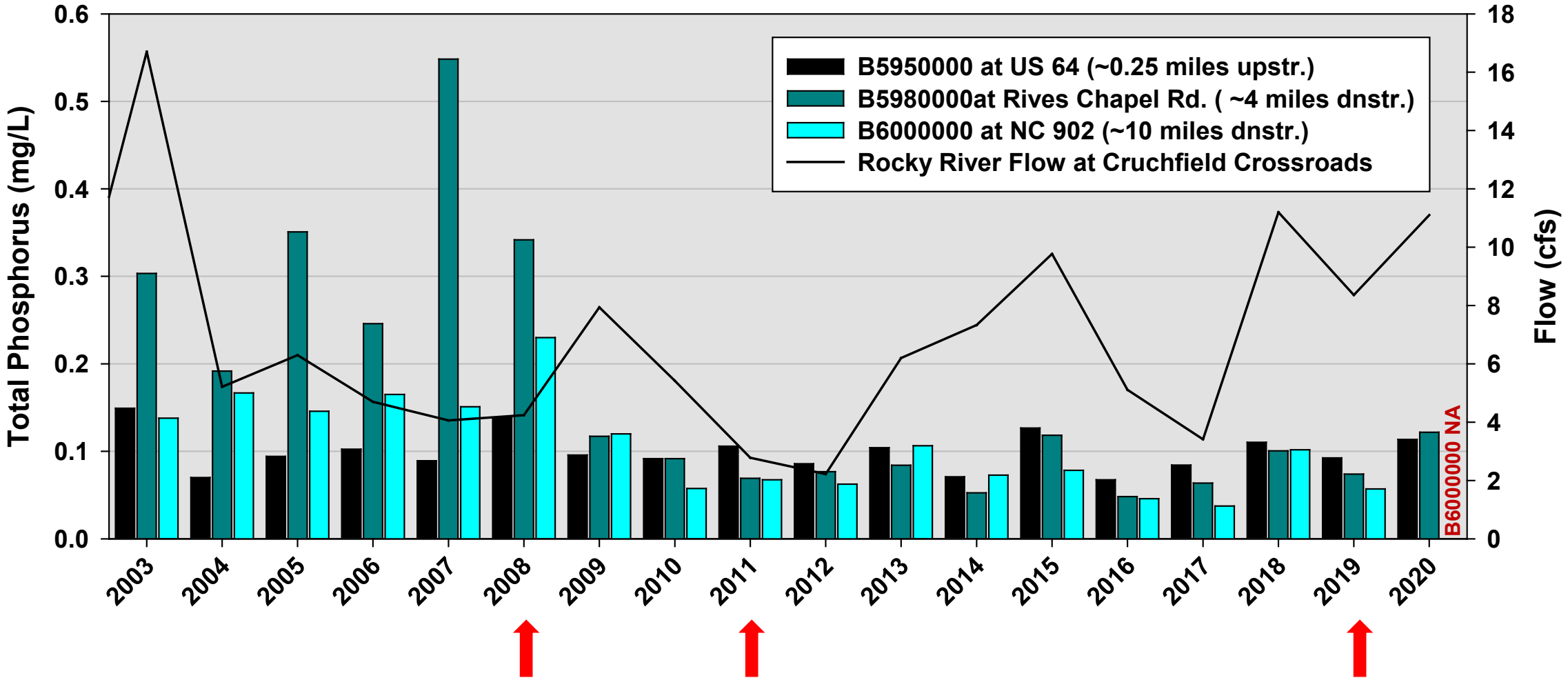

Loves Creek
Yearly Mean Total Phosphorus Concentrations
Total Phosphorus (mg/L)
Flow (cfs)
0.30
0.25
0.20
0.15
0.10
0.05
0.00
18
16
14
12
10
8
6
4
2
0
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
B5890000 Upstream of WWTP
B5920000 Downstream of WWTP
Rocky River Flow at Cruchfield Crossroads

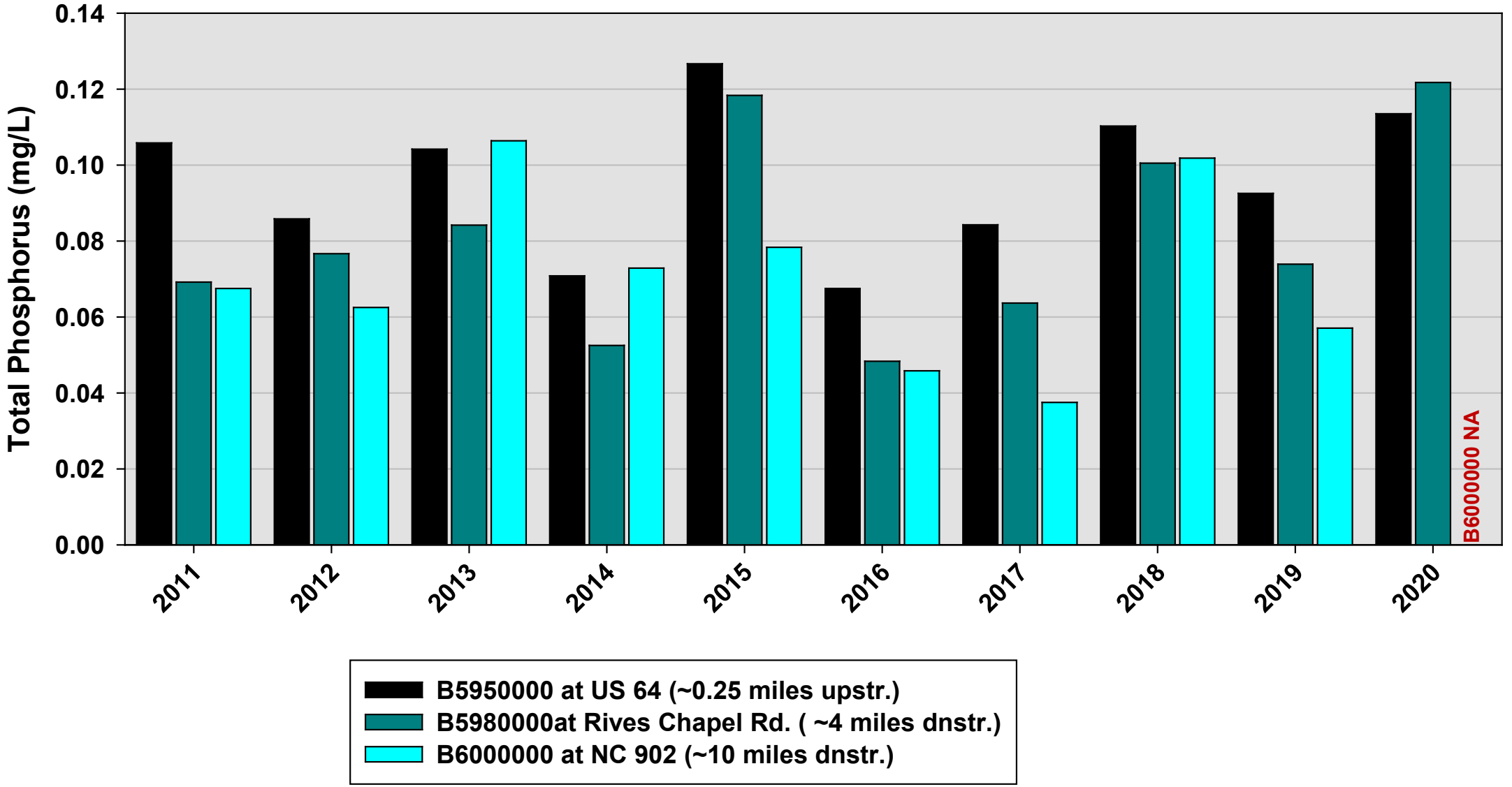
Rocky River
Yearly Mean Total Phosphorus Concentration



Poultry Plant Closed:
May 2008 (Pilgrim's Pride)
October 2011 (Townsend)

Poultry Plant Opened:
January 2019 (Mountaire Farms)

Rocky River
Yearly Mean Total Phosphorus Concentrations



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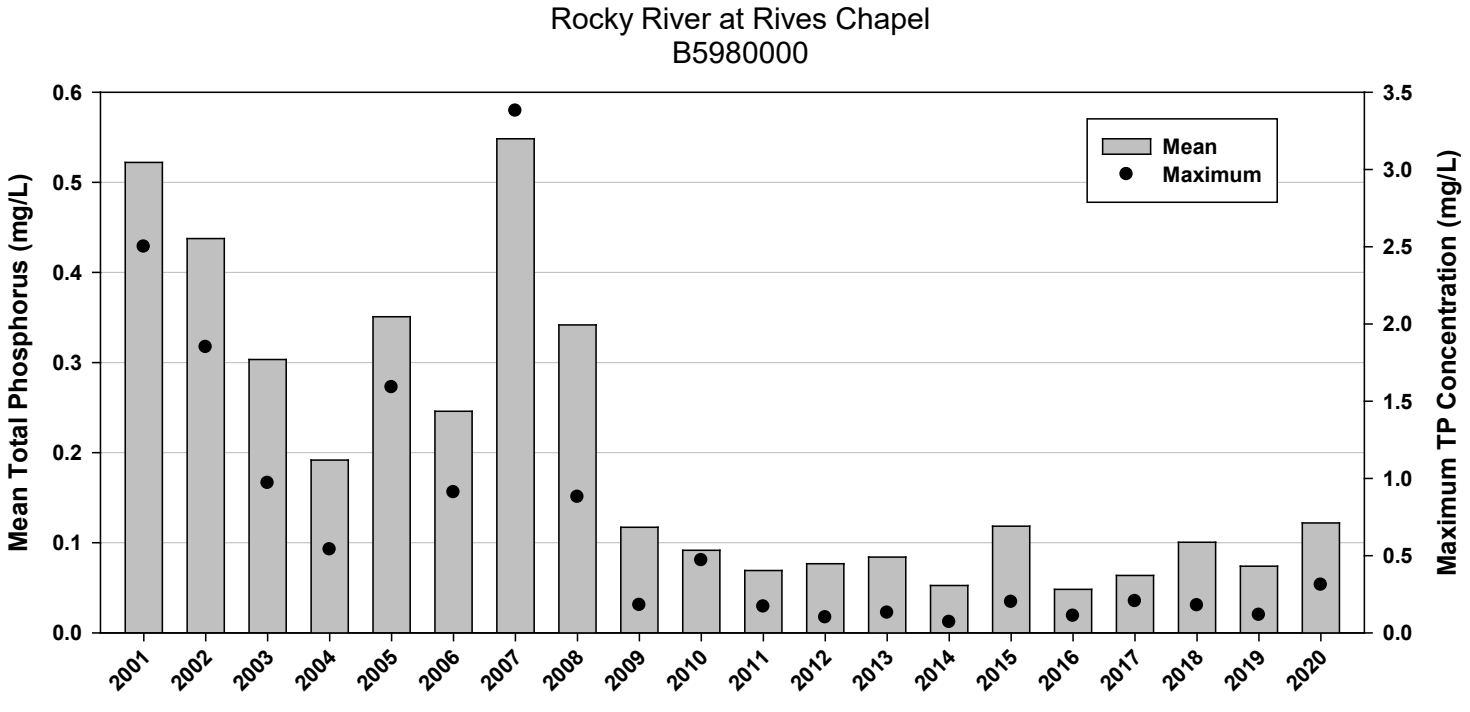
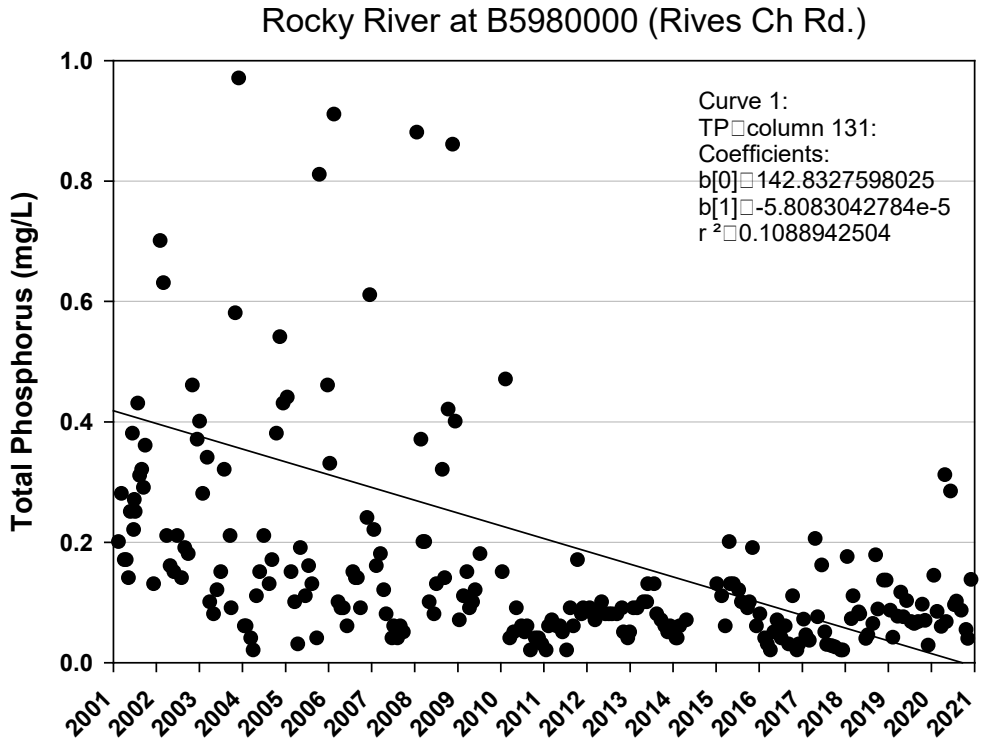
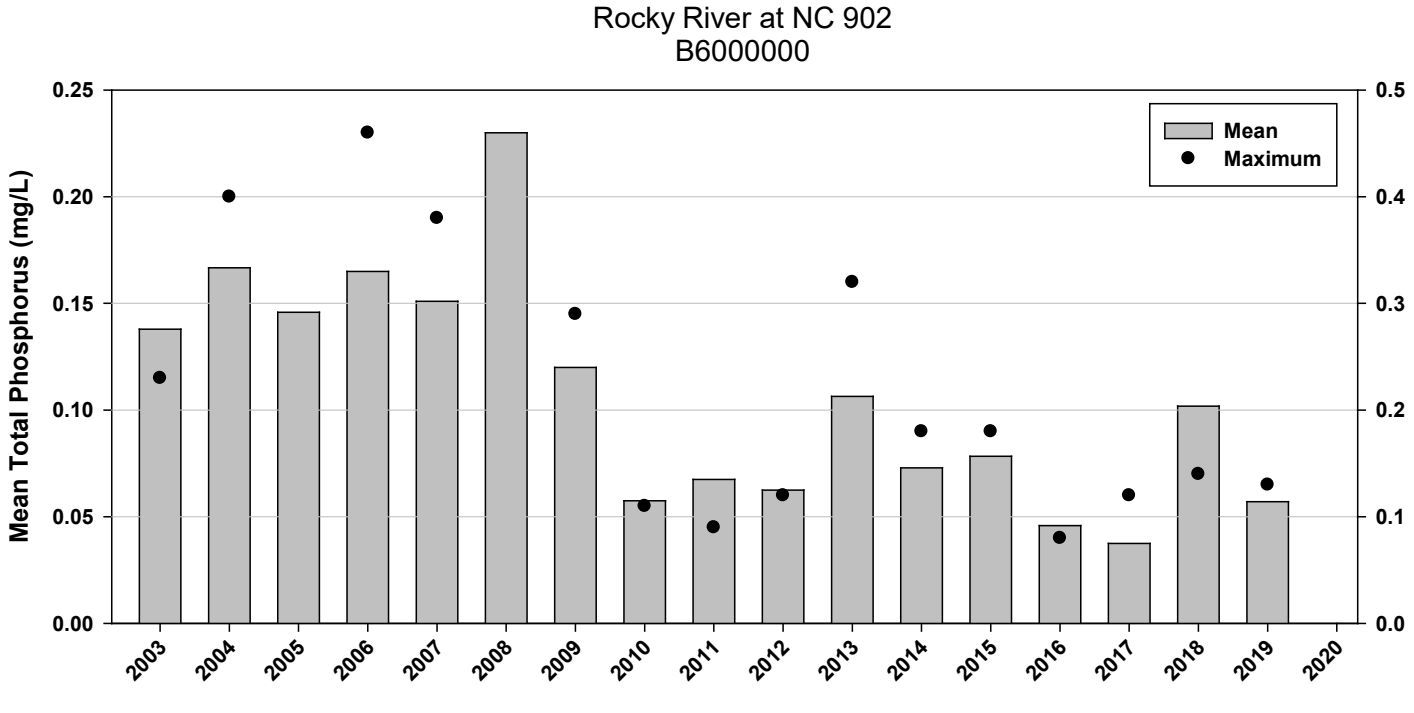
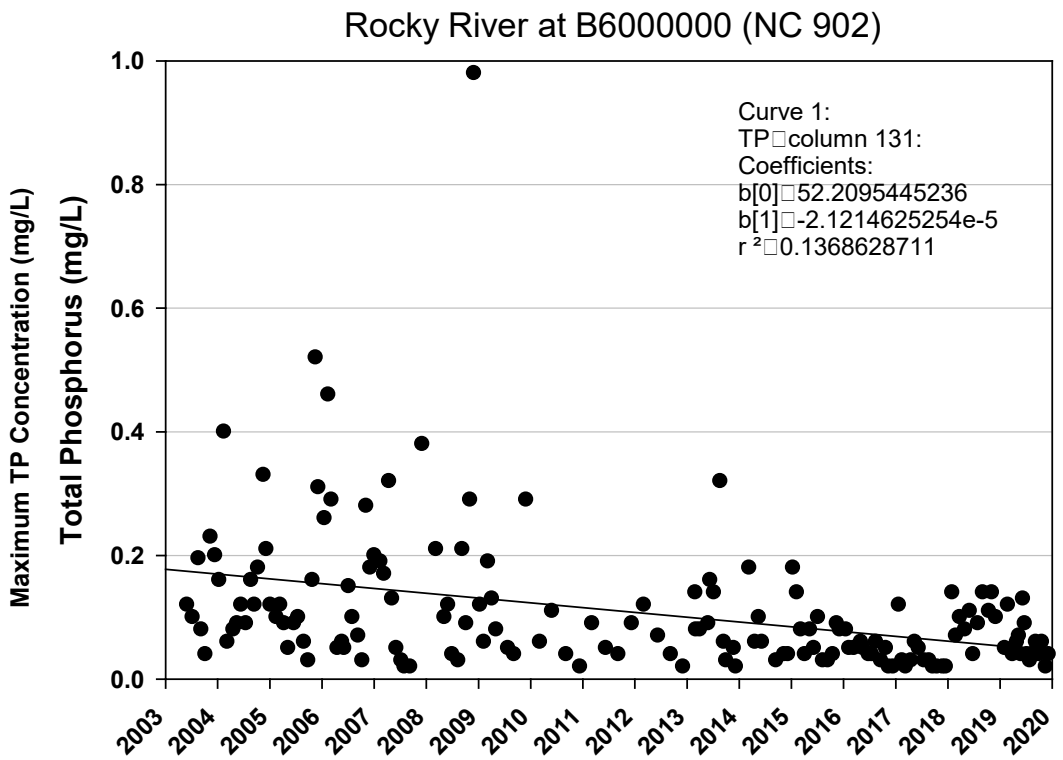
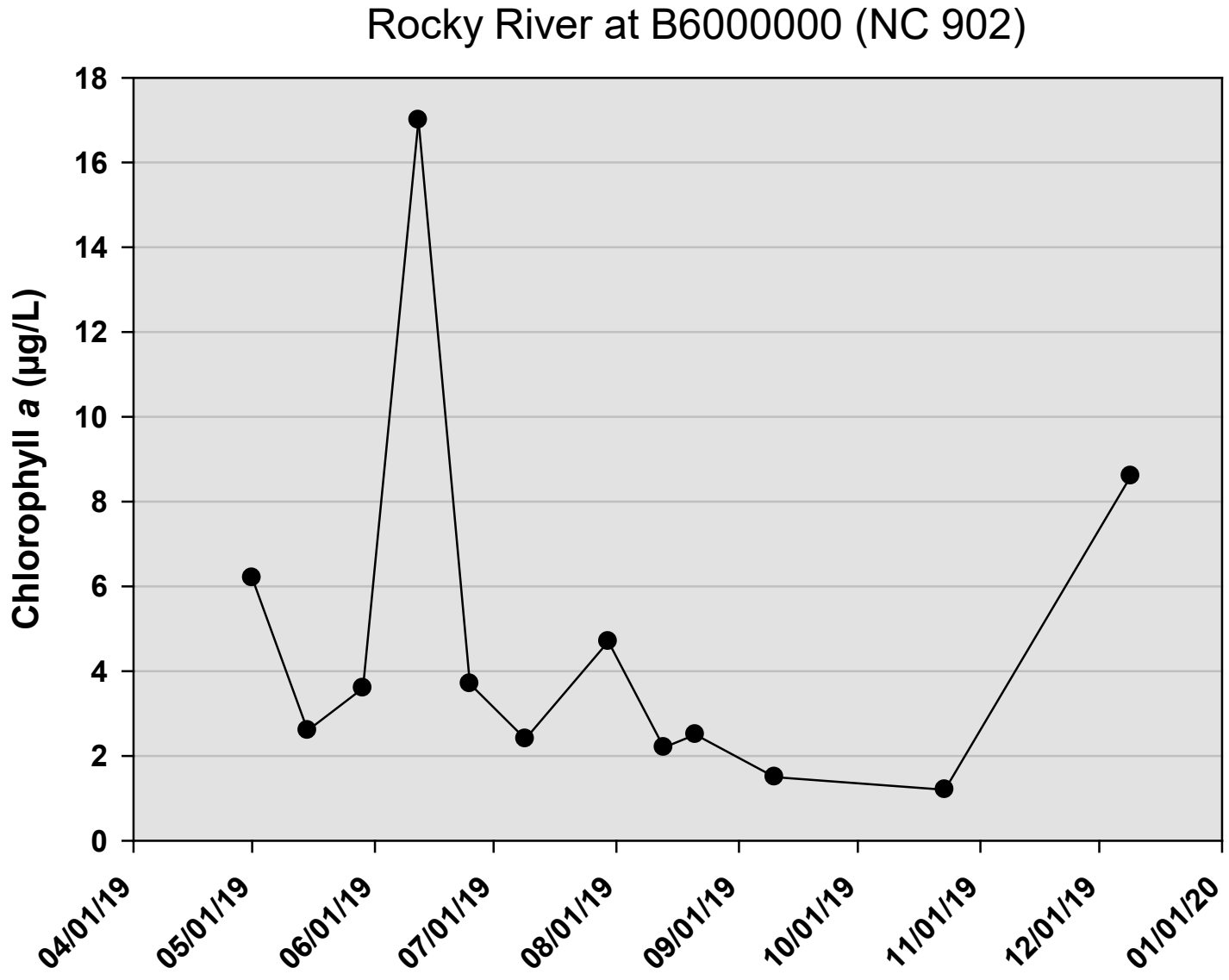

Rocky River at Rives Chapel
B5980000
Mean
Maximum
Mean Total Phosphorus (mg/L)
Maximum TP Concentration (mg/L)
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020


Rocky River at B5980000 (Rives Ch Rd.)
Curve 1:
TP column 131:
Coefficients:
b[0] 142.8327598025
b[1] -5.8083042784e-5
r ² 0.1088942504
Total Phosphorus (mg/L)
0.0
0.2
0.4
0.6
0.8
1.0
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021



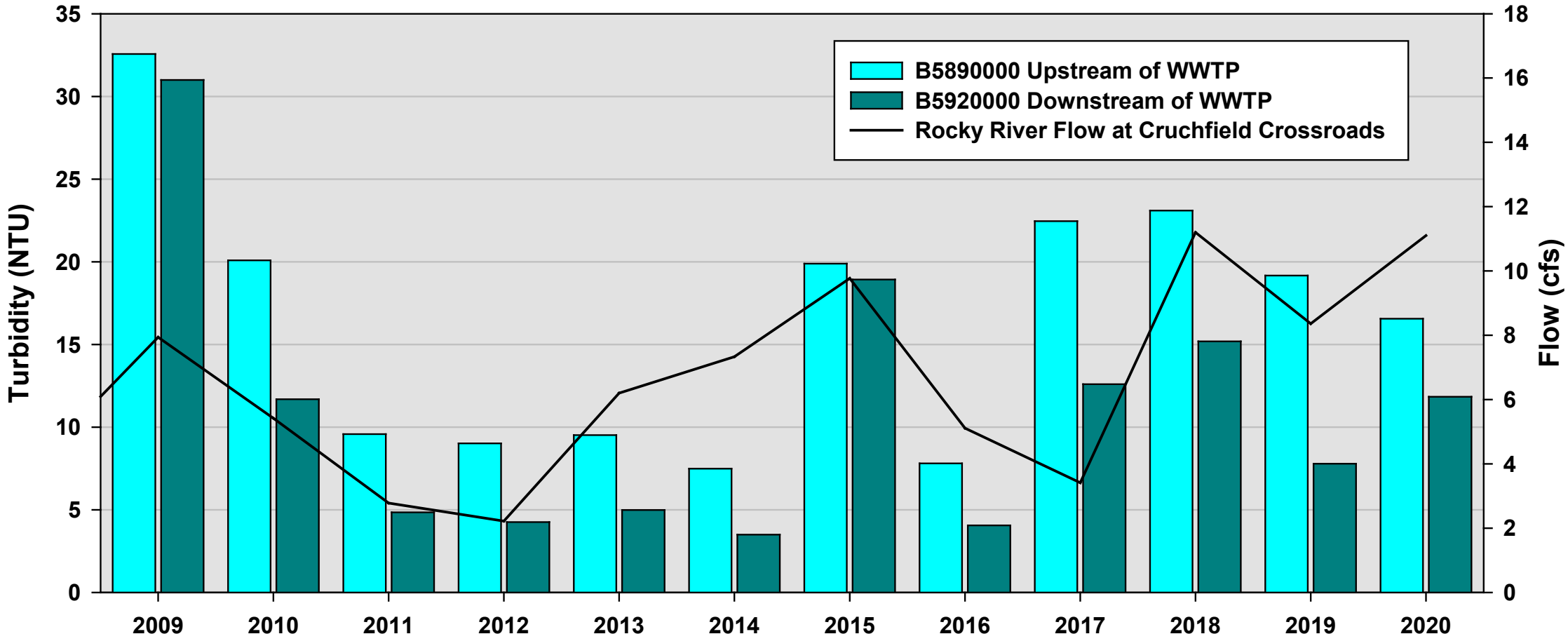


2020 data is not available at this time



Class C Chlorophyll *a* Standard = 40 µg/L

Loves Creek
Yearly Mean Tubidity Concentrations



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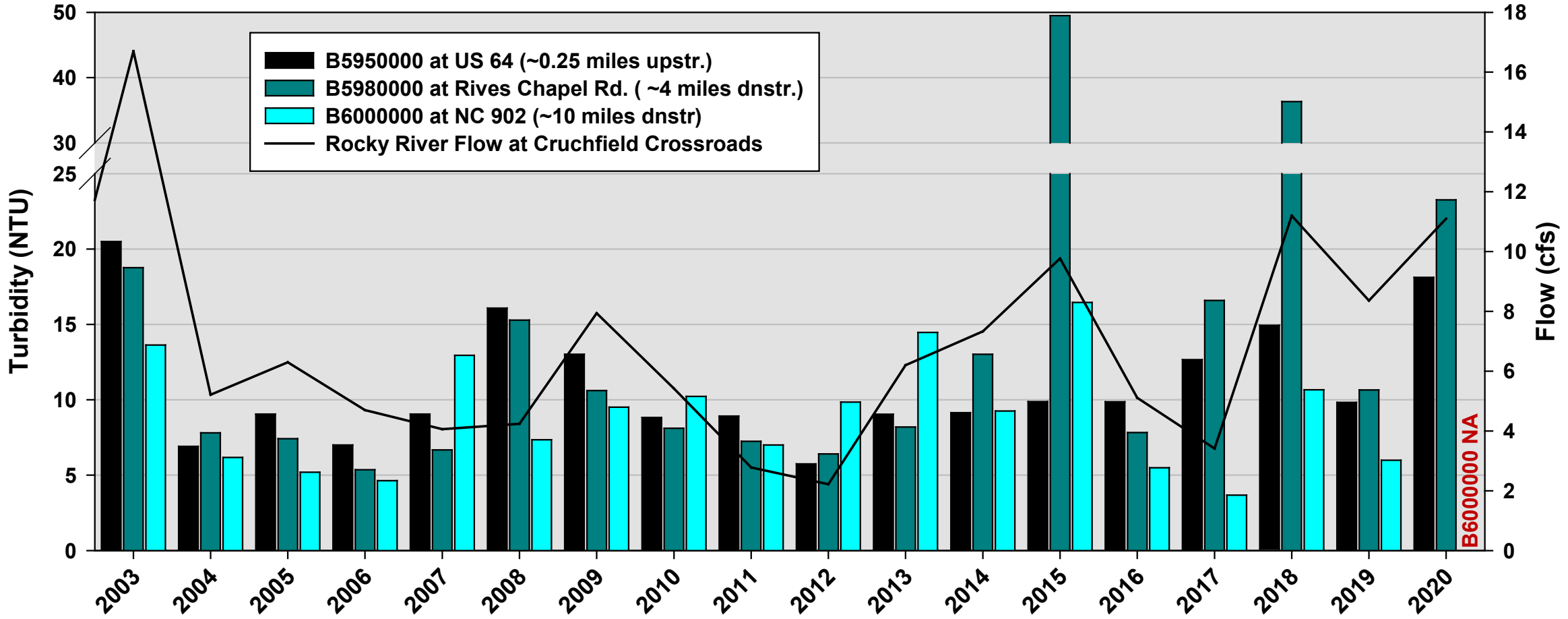
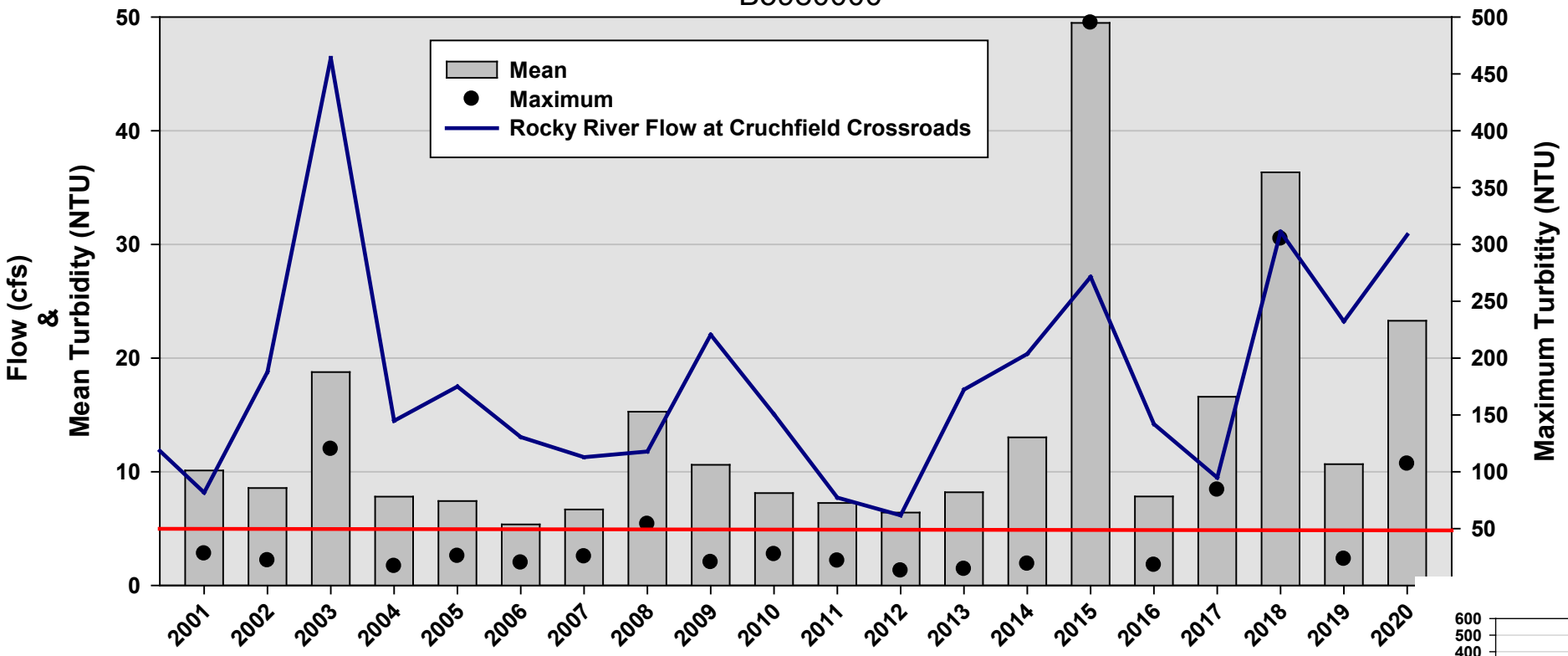
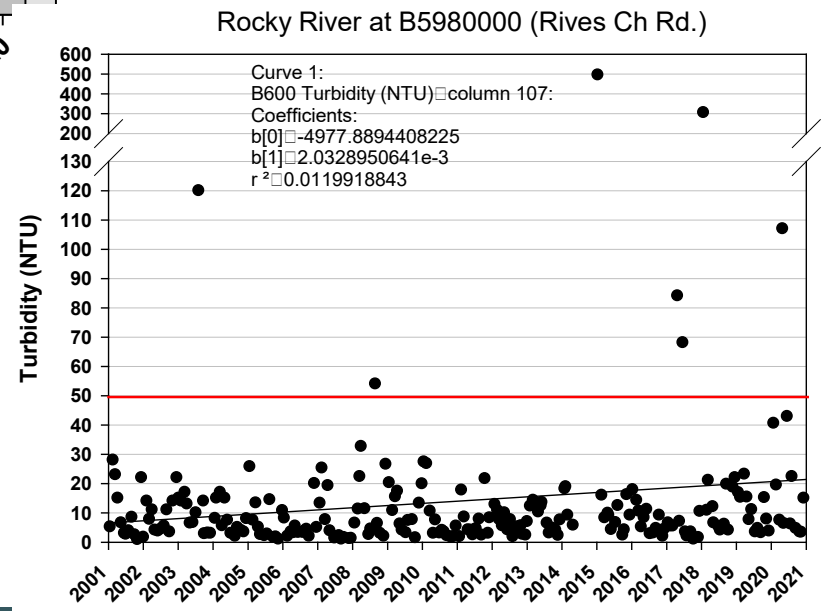
Class C Turbidity Standard = 50 NTUs

Rocky River
Yearly Mean Turbidity Concentration

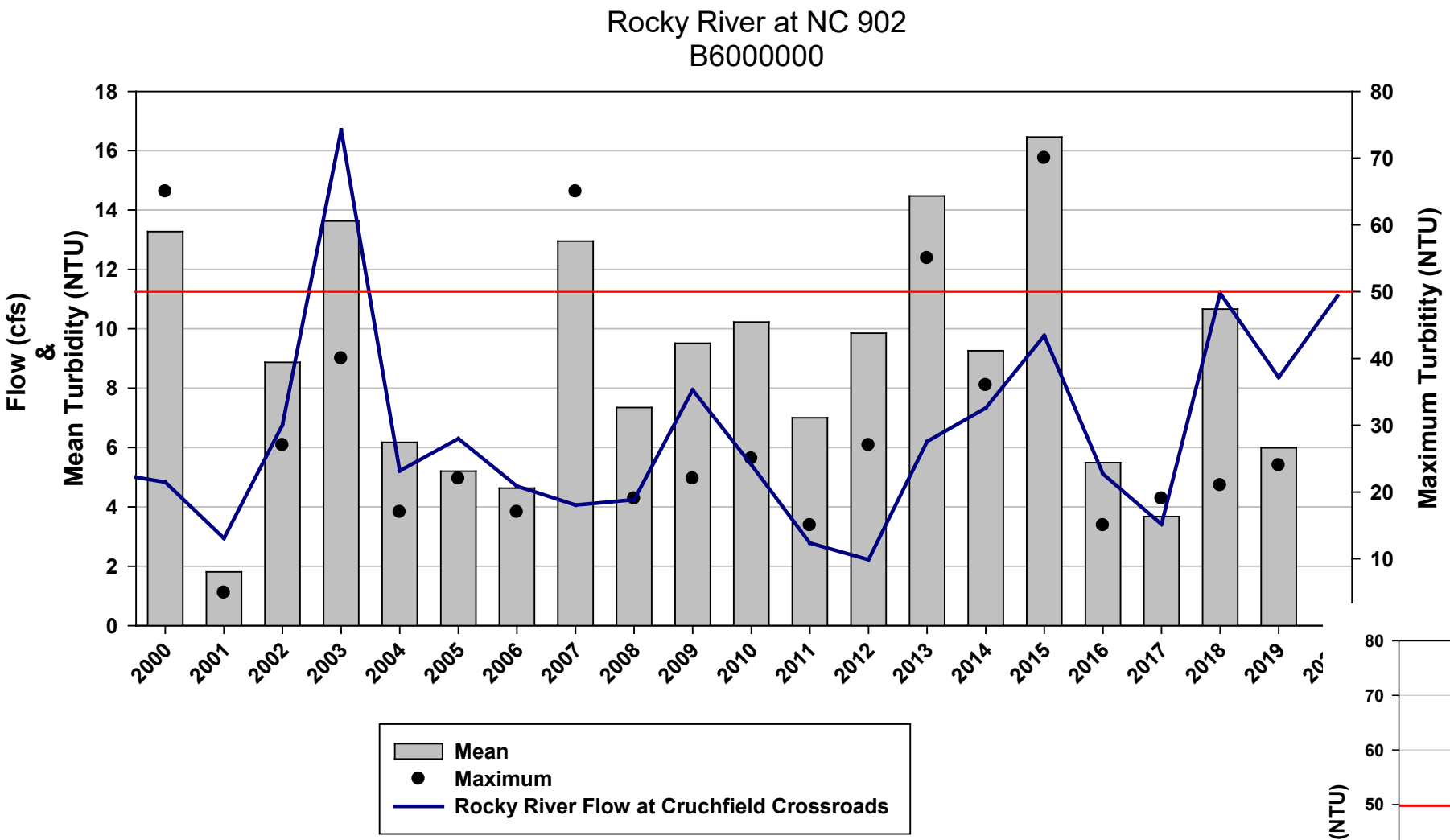


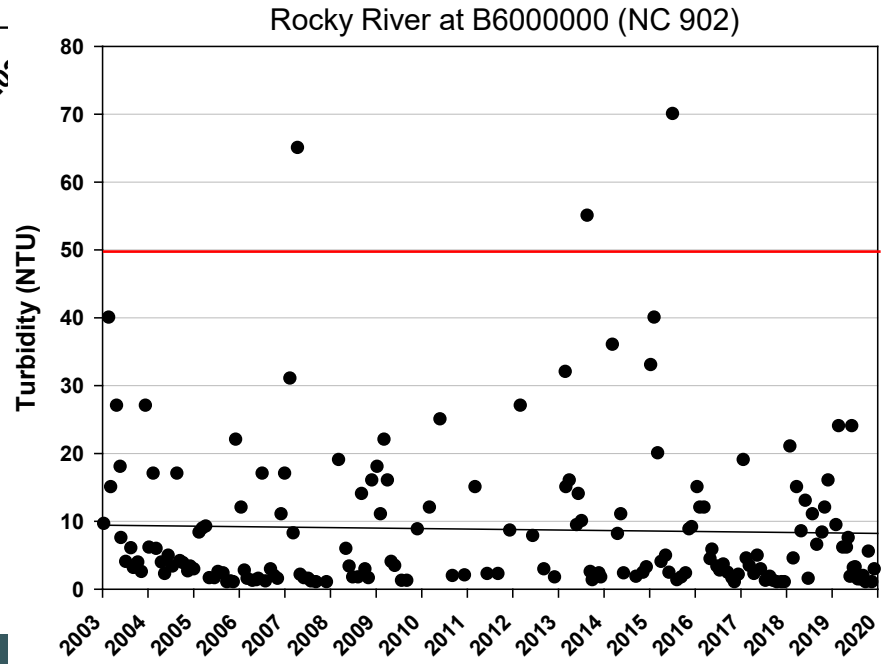
Class C Turbidity Standard = 50 NTUs



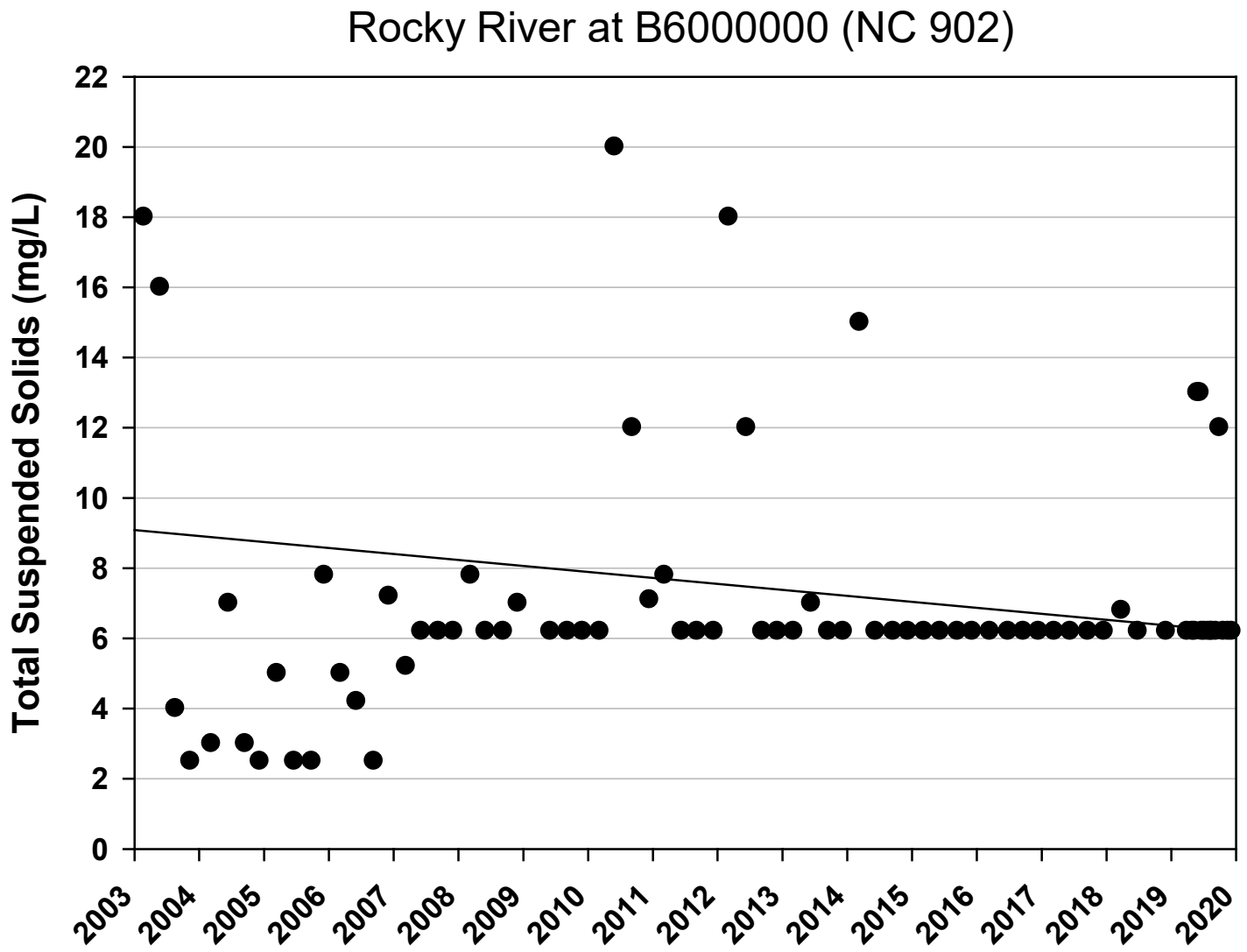


Class C Turbidity Standard = 50 NTUs

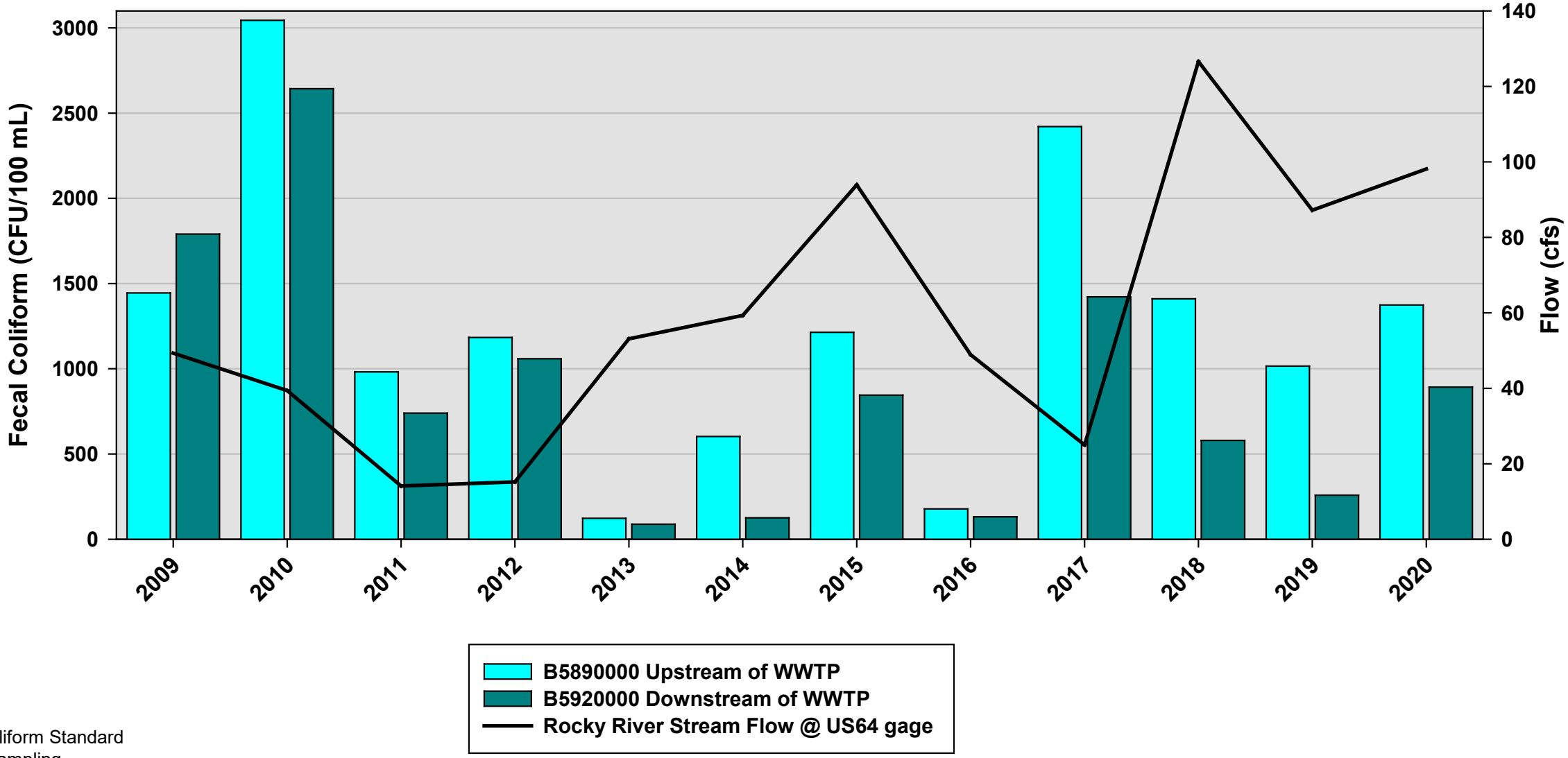




Class C Turbidity Standard = 50 NTUs


Rocky River at B6000000 (NC 902)
Total Suspended Solids (mg/L)
0
2
4
6
8
10
12
14
16
18
20
22
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020

Loves Creek
Yearly Mean Fecal Coliform Concentrations



Fecal Coliform Standard
5-in-30 sampling
No more than 20% >400 CFU/100 mL or
No more than a Geomean of 200 CFU/100 mL

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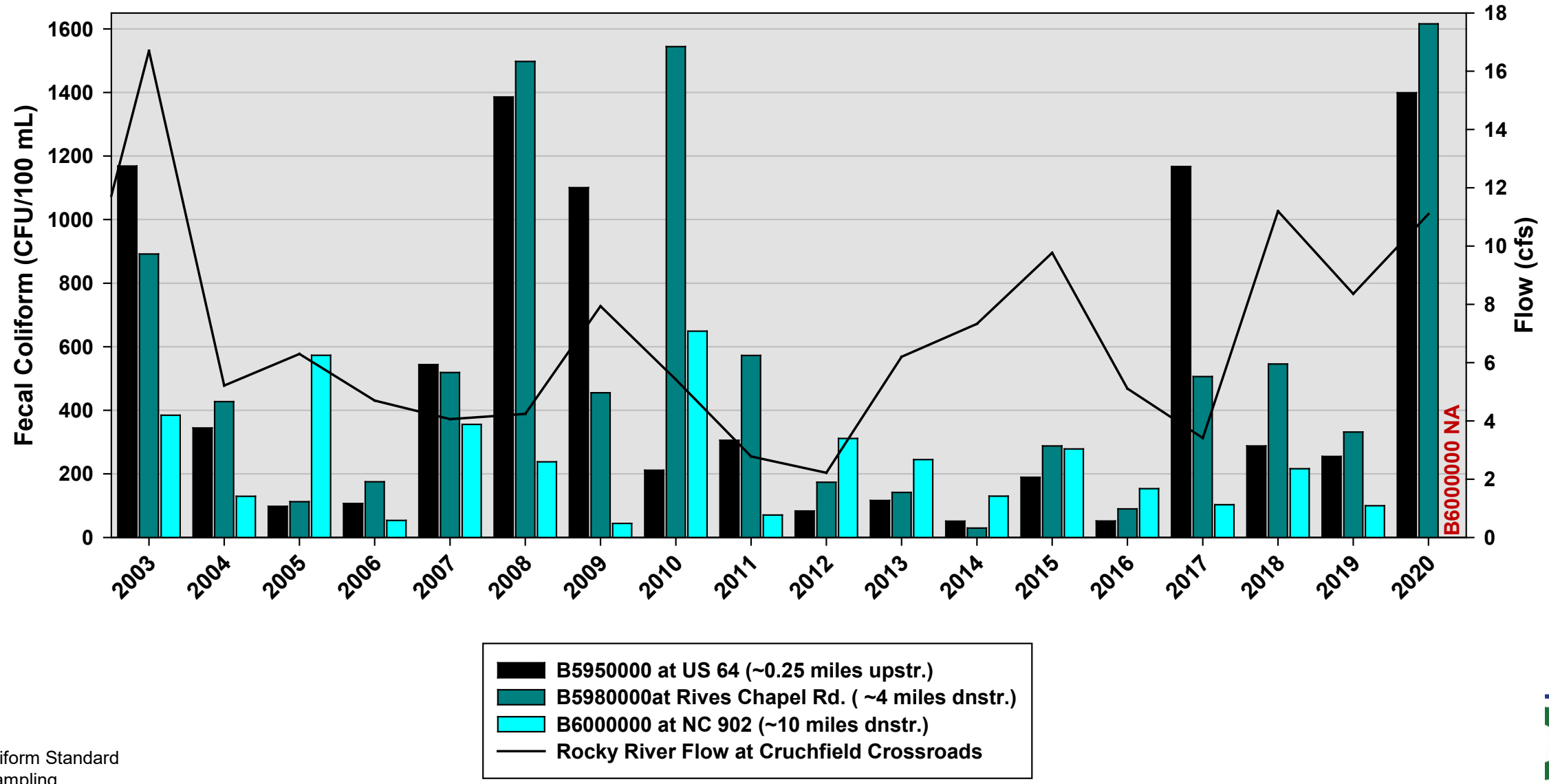
Rocky River
Yearly Mean Fecal Coliform Concentrations



Fecal Coliform Standard
5-in-30 sampling
No more than 20% >400 CFU/100 mL or
No more than a Geomean of 200 CFU/100 mL

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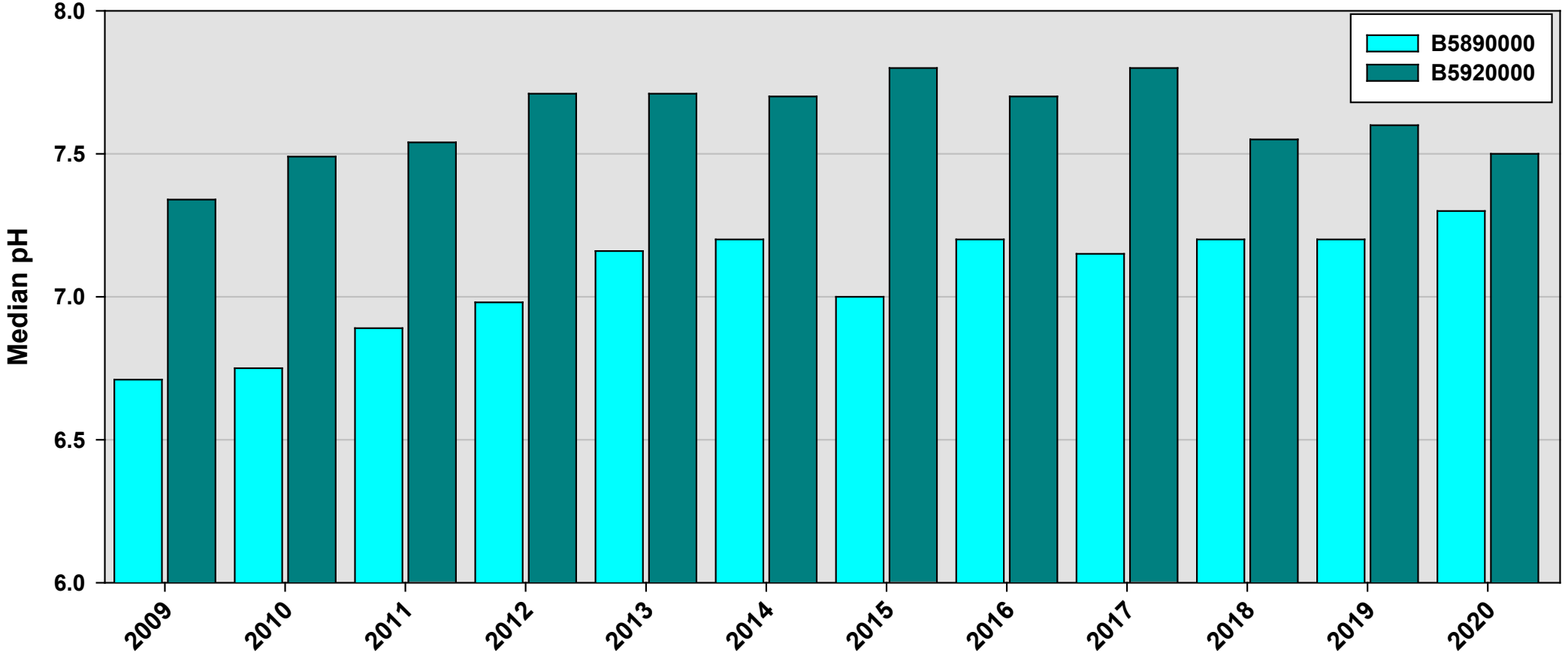
Loves Creek
Median pH Levels



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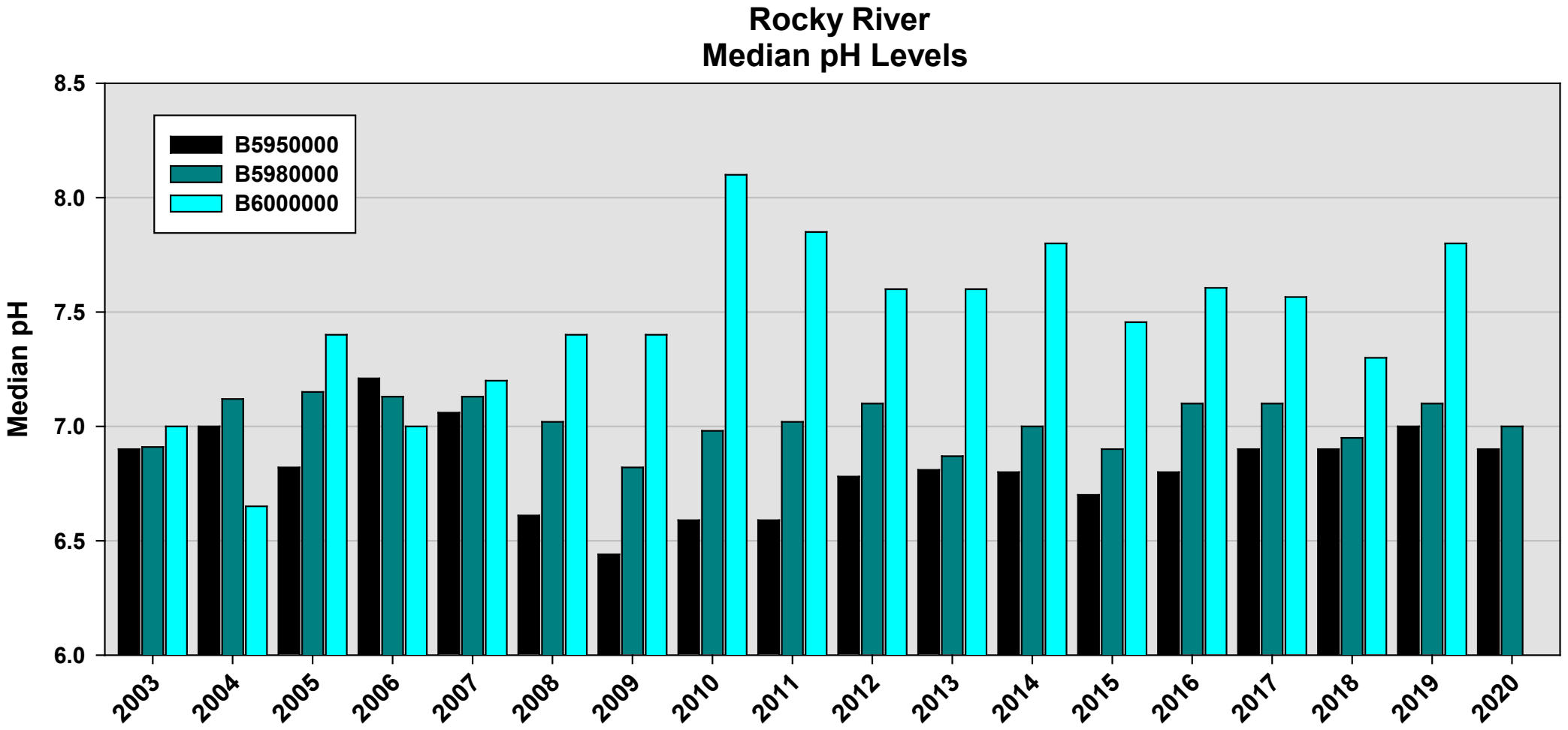
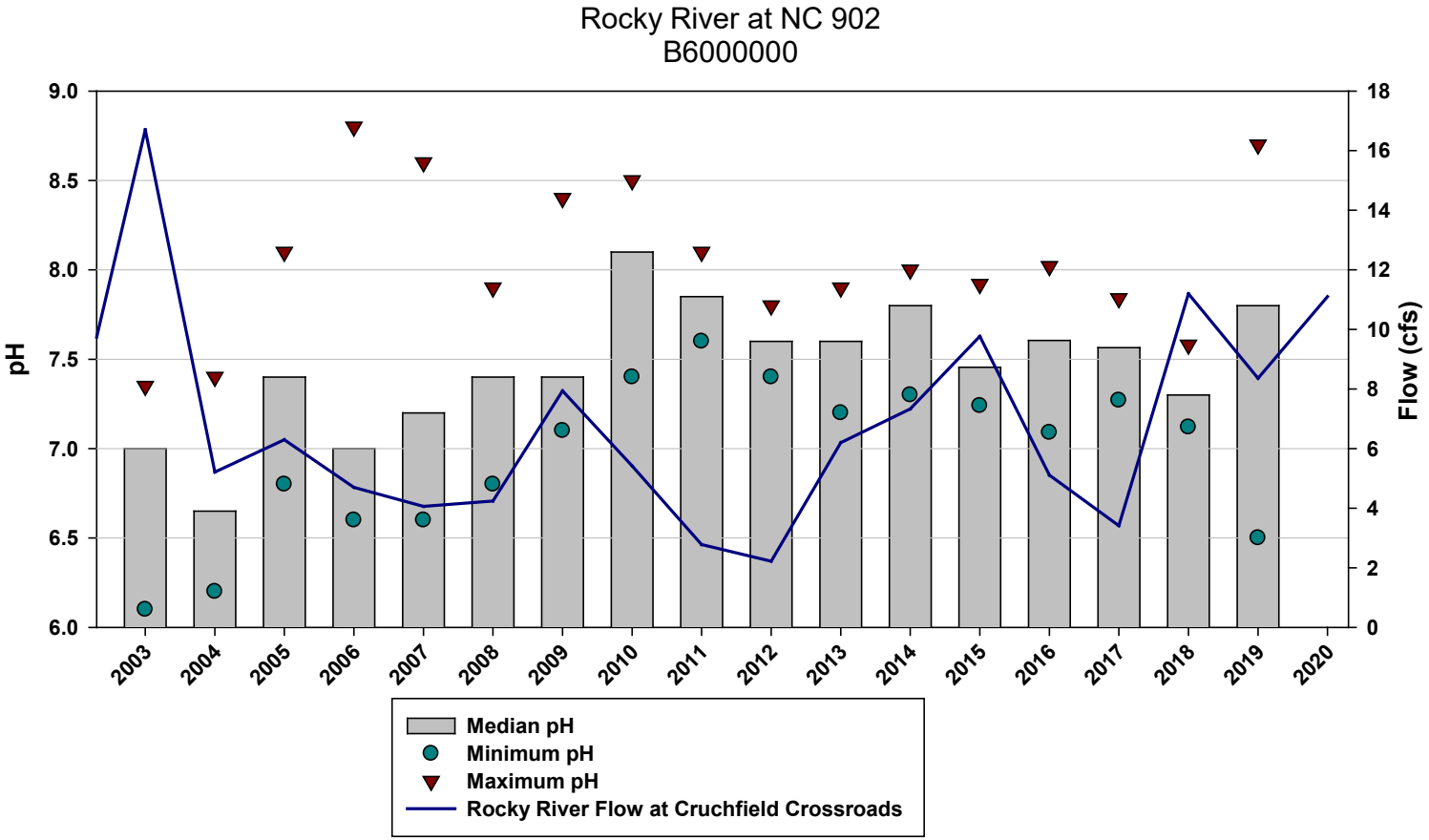
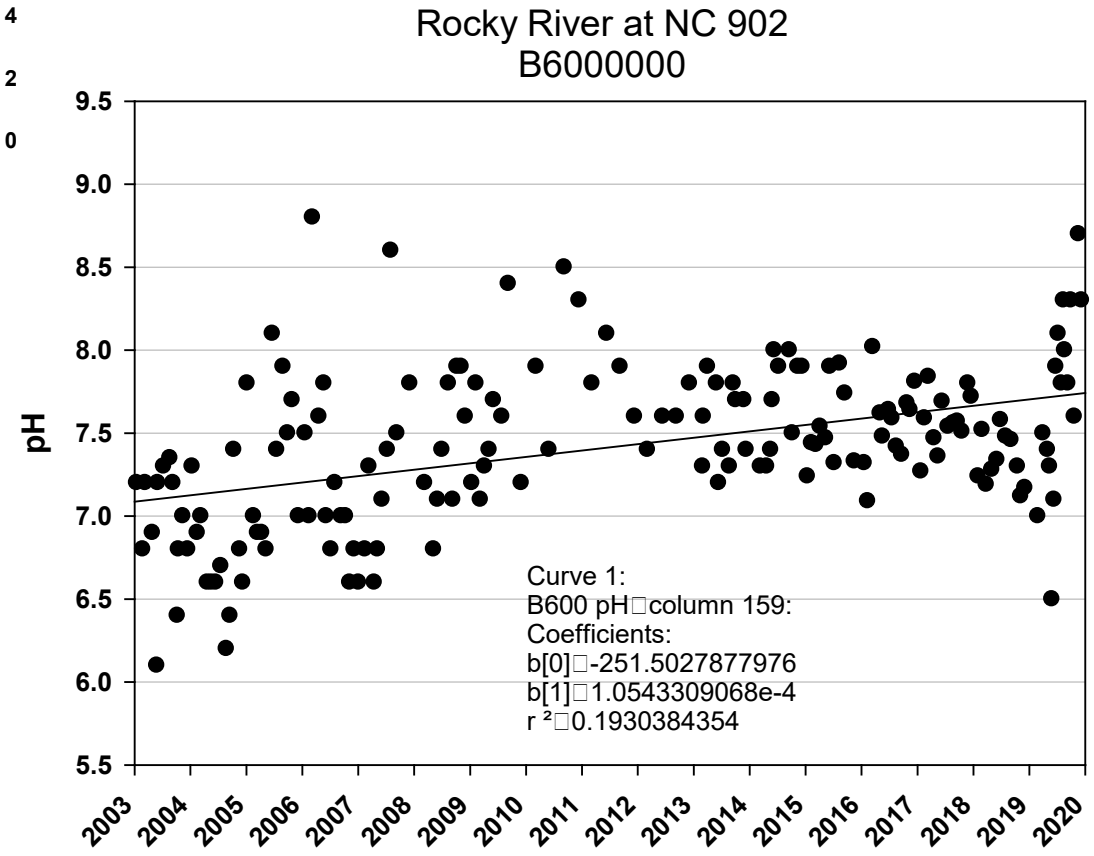
Class C pH Standard = 6-9



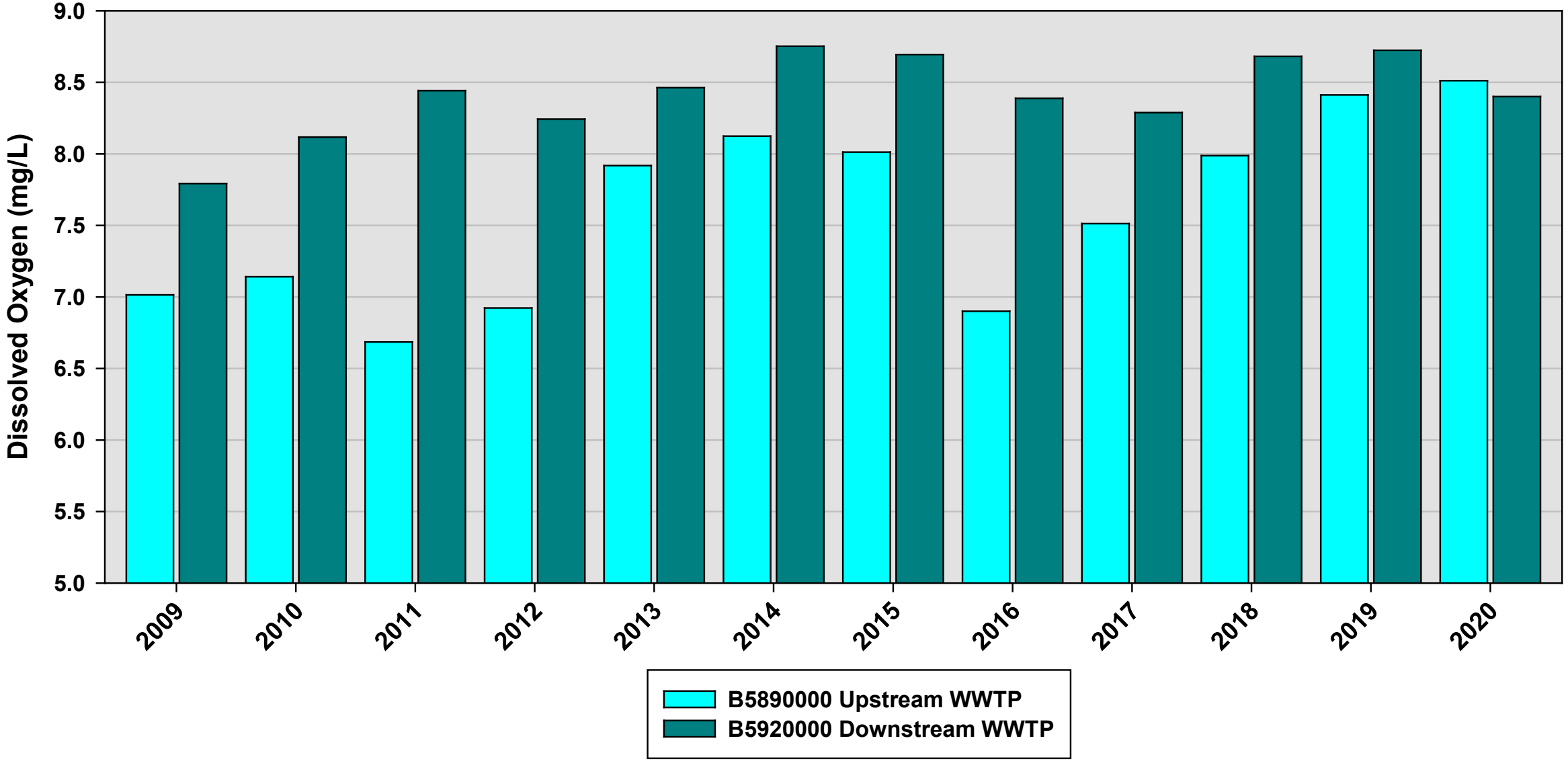
Class C pH Standard = 6-9





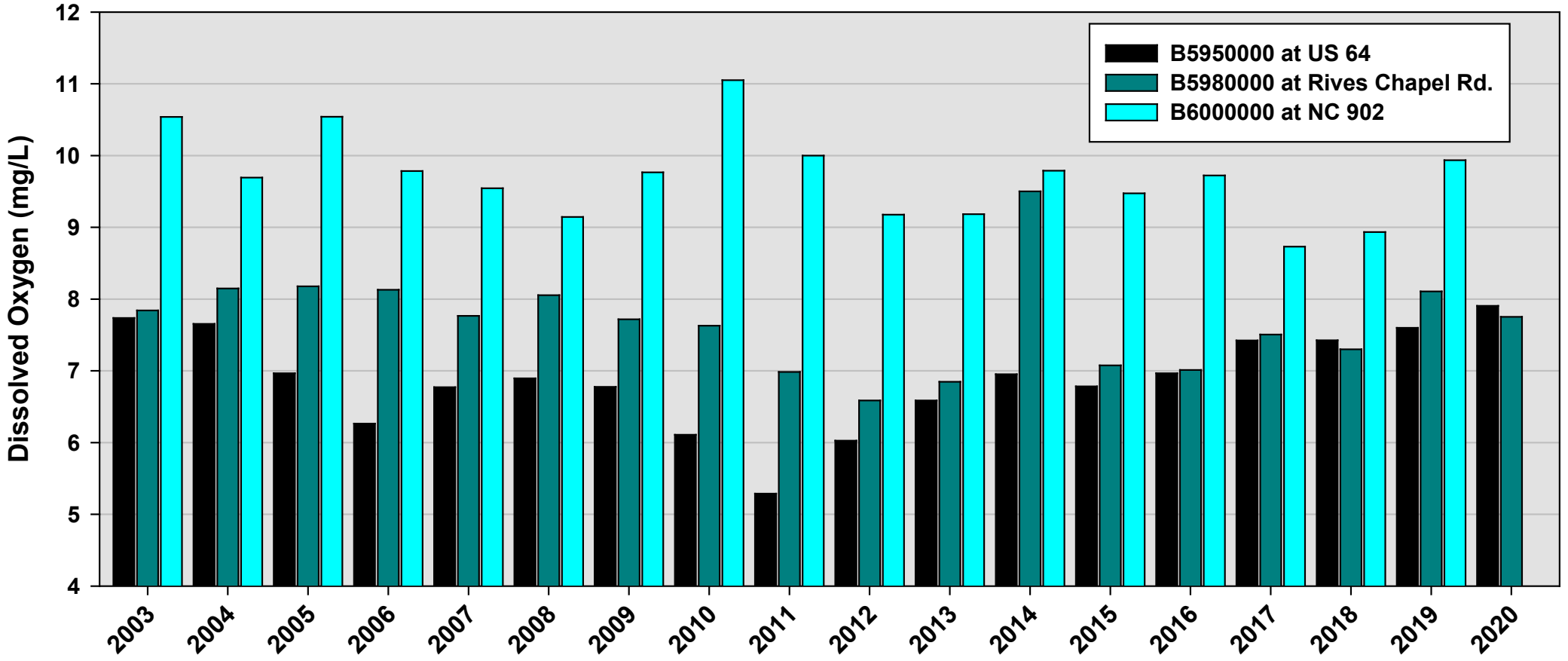
Class C pH Standard = 6-9

Loves Creek
Yearly Mean Dissolved Oxygen Concentrations

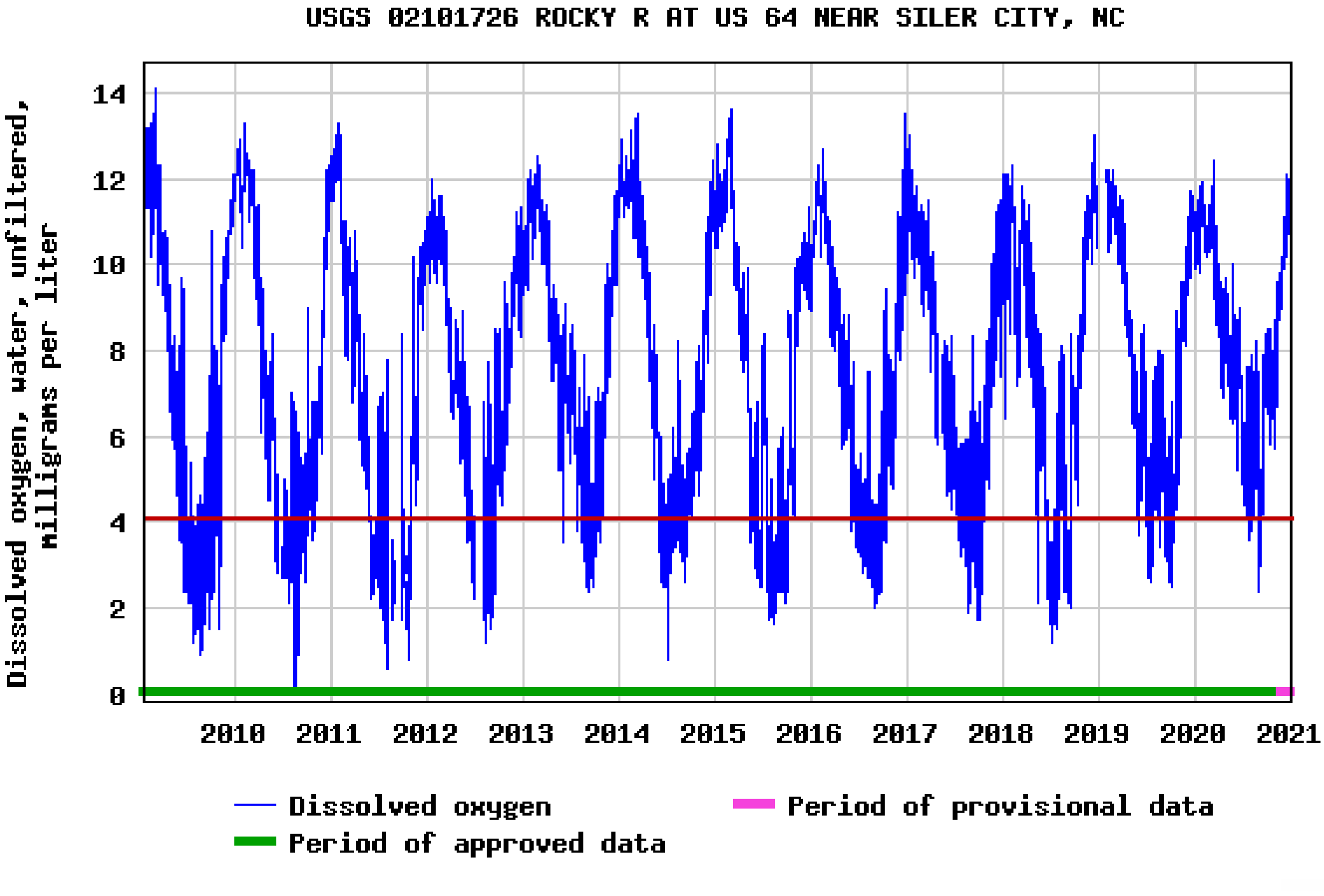


Class C DO Standard – instantaneous value of not less than 4mg/L

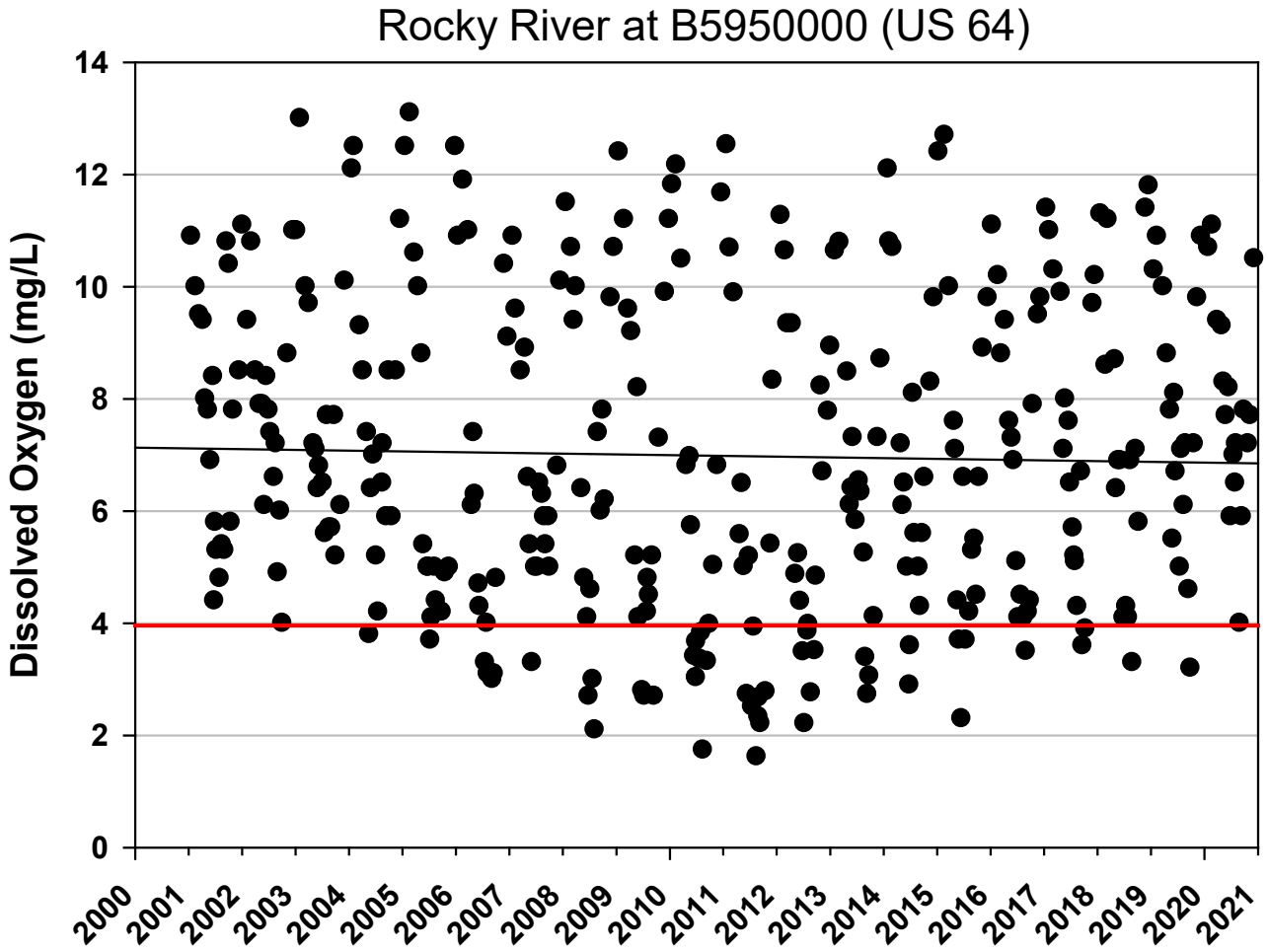
Rocky River
Yearly Mean Dissolved Oxygen Concentrations

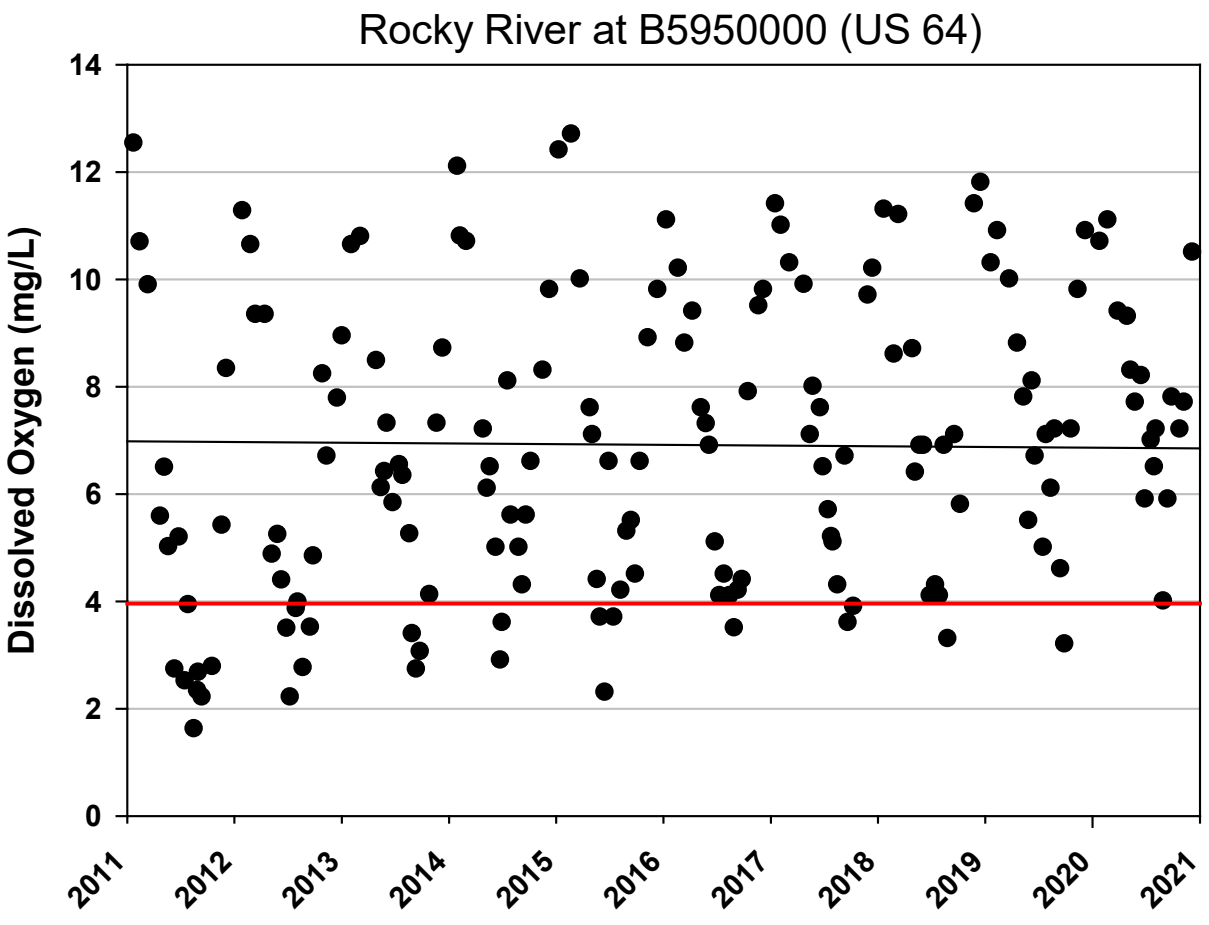


Class C DO Standard – instantaneous value of not less than 4mg/L

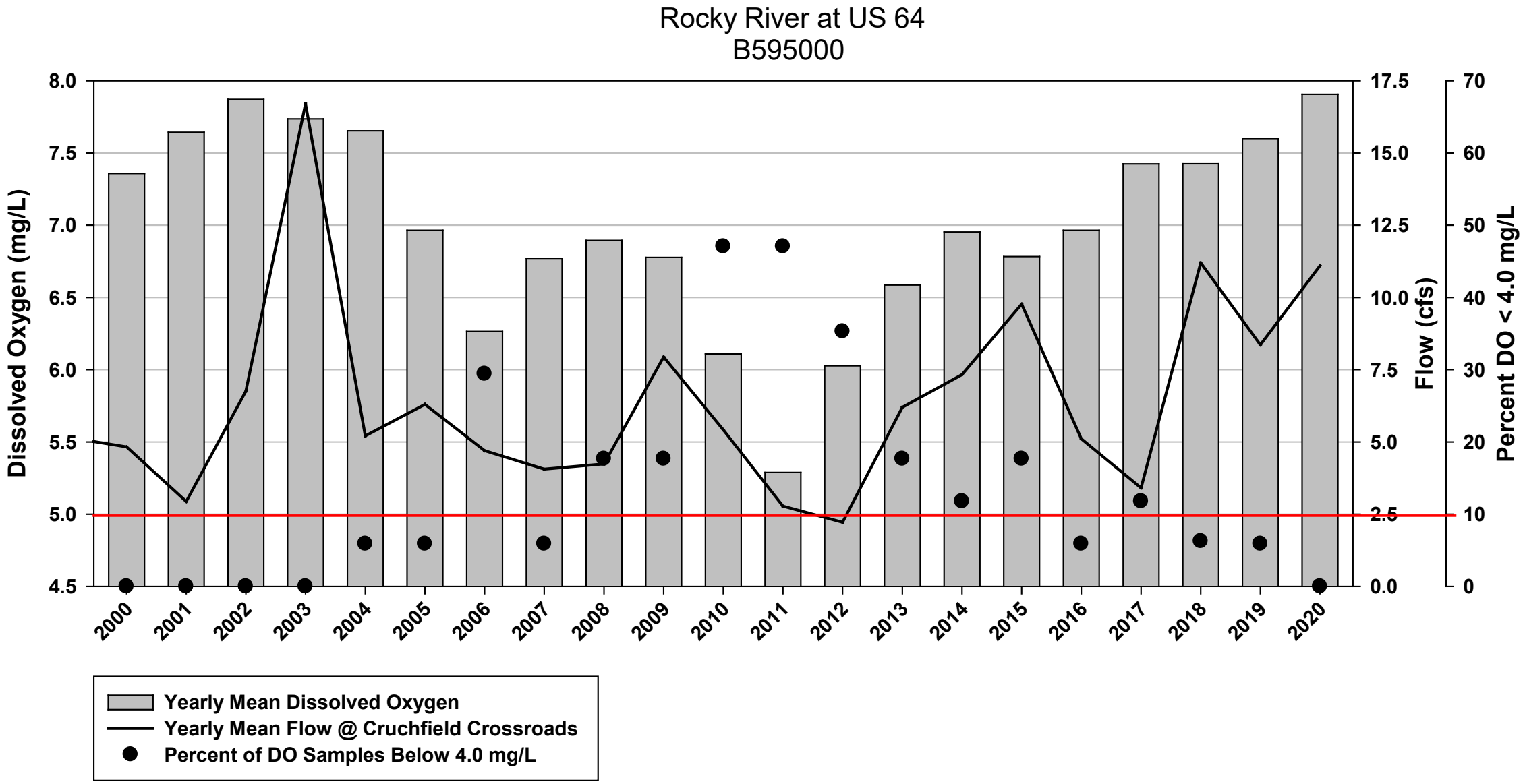

USGS 02101726 ROCKY R AT US 64 NEAR SILER CITY, NC
Dissolved oxygen, water, unfiltered, milligrams per liter
14
12
10
8
6
4
2
0
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
Dissolved oxygen
Period of approved data
Period of provisional data


USGS





Class C DO Standard – instantaneous value of not less than 4mg/L



Class C DO Standard – instantaneous value of not less than 4mg/L

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Rocky River – from Charles Turner Reservoir to Varnell Creek

2020 IR Water Quality Assessment

Rocky River [AU# 17-43-(8)a] – From Charles Turner Reservoir Dam to Varnelll Creek remains impaired due to continued low dissolved oxygen concentrations at station B5950000 (US 64).

IR Year	Data Range	%<4 mg/L	% Confidence	Use Support
2020	2014-2018	10.7 %	EC3*	Impaired
2018	2012-2016	17.6 %	97.9 %	Impaired
2016	2010-2014	31.8 %	> 99.9 %	Impaired
2014	2008-2012	32.9 %	> 99.9 %	Impaired
2012	2006-2010	22.4 %	> 99.9 %	Impaired
2010	2004-2008	12.9 %	86 %	Impaired
2008	2002-2006	8.2 %		Supporting
2006	2000-2004	1.2 %		Supporting

* Excursion rate > 10 %, confidence in excursion rate < 90%, Previously exceeding criteria, new data years excursions >1

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Impaired Waters List (303(d)) / Integrated Report

IR Year	Data Window
2020	2014-2018
2018	2012-2016
2016	2010-2014
2014	2008-2012
2012	2006-2010
2010	2004-2008
2008	2002-2006
2006	2000-2004

Link to DWR Integrated Report Page:
https://deq.nc.gov/about/divisions/water-resources/planning/modeling-assessment/water-quality-data-assessment/integrated-report-files

Link to DWR NC Locator Map:
https://experience.arcgis.com/experience/689283d17bf342c2a96364fbab09a5d8

Rocky River Watershed Draft 2020 Impaired Waters List

Stream	AU #	Length	Parameter	IR Listing date	IR Category	Stream description
Loves Creek	17-43-10a	3.3 miles	Fair Benthos Bioclassification	1998	5	From source to Chatham Ave.
Loves Creek	17-43-10b1	2.3 miles	Low Dissolved Oxygen	2012	5	From Chatham Ave. to US 421
Loves Creek	17-43-10b1	2.3 miles	Fair Benthos Bioclassification	1998	4s	From Chatham Ave. to US 421
Loves Creek	17-43-10b2	0.2 miles	Fair Benthos Bioclassification	1998	5	From US 421 to Siler City WWTP
Loves Creek	17-43-10b2	0.2 miles	Fair Fish Bioclassification	2020	5	From US 421 to Siler City WWTP
Loves Creek	17-43-10c	0.4 miles	Fair Benthos Bioclassification	1998	5	From Siler City WWTP to Rocky River
Rocky River	17-43-(1)b	190 Acres	Chlorophyll a	2010	5	Siler City Upper Reservoir to 0.3 miles upstream of dam
Rocky River	17-43-(5.5)a	24.3 Acres	Chlorophyll a	2010	5	the dam (Turner Reservoir Critical Area)
Rocky River	17-43-5.5)b	160 Acres	Chlorophyll a	2020	5	From Siler City Upper Reservoir dam to Charles L. Turner Res.
Rocky River	17-43-(8)a	6.7 miles	Low Dissolved Oxygen	2010	5	From Charles Turner Reservoir dam to Varnal Creek
Rocky River	17-43-(8)a	6.7 miles	Fair Benthos Bioclassification	2020	5	From Charles Turner Reservoir dam to Varnal Creek
Rocky River	17-43-(8)b1	15.2 miles	None			From Varnal Creek to Former pond area behind Woody's Dam
Rocky River	17-43-(8)b2	~~35 Acres~~	~~Chlorophyll a~~	~~2012~~	~~5~~	Woody's Dam **Dam Removed**
Tick Creek	17-43-13a	8.2 miles	Fair Fish Bioclassification	2006	5	From Source to US 421
Tick Creek	17-43-13b	4.9 miles	Fair Benthos Bioclassification	2020	5	From US 421 to Rocky River
Bear Creek	17-43-16b	2.0 miles	Fair Benthos Bioclassification	2010	5	From SR 2189 to SR 2187
Bear Creek	17-43-16c	7.3 miles	Fair Benthos Bioclassification	2020	5	From SR 2187 to Rocky River
Harland Cr.	17-43-15	10.2 miles	Fair Benthos Bioclassification	2020	5	From source to Rocky River

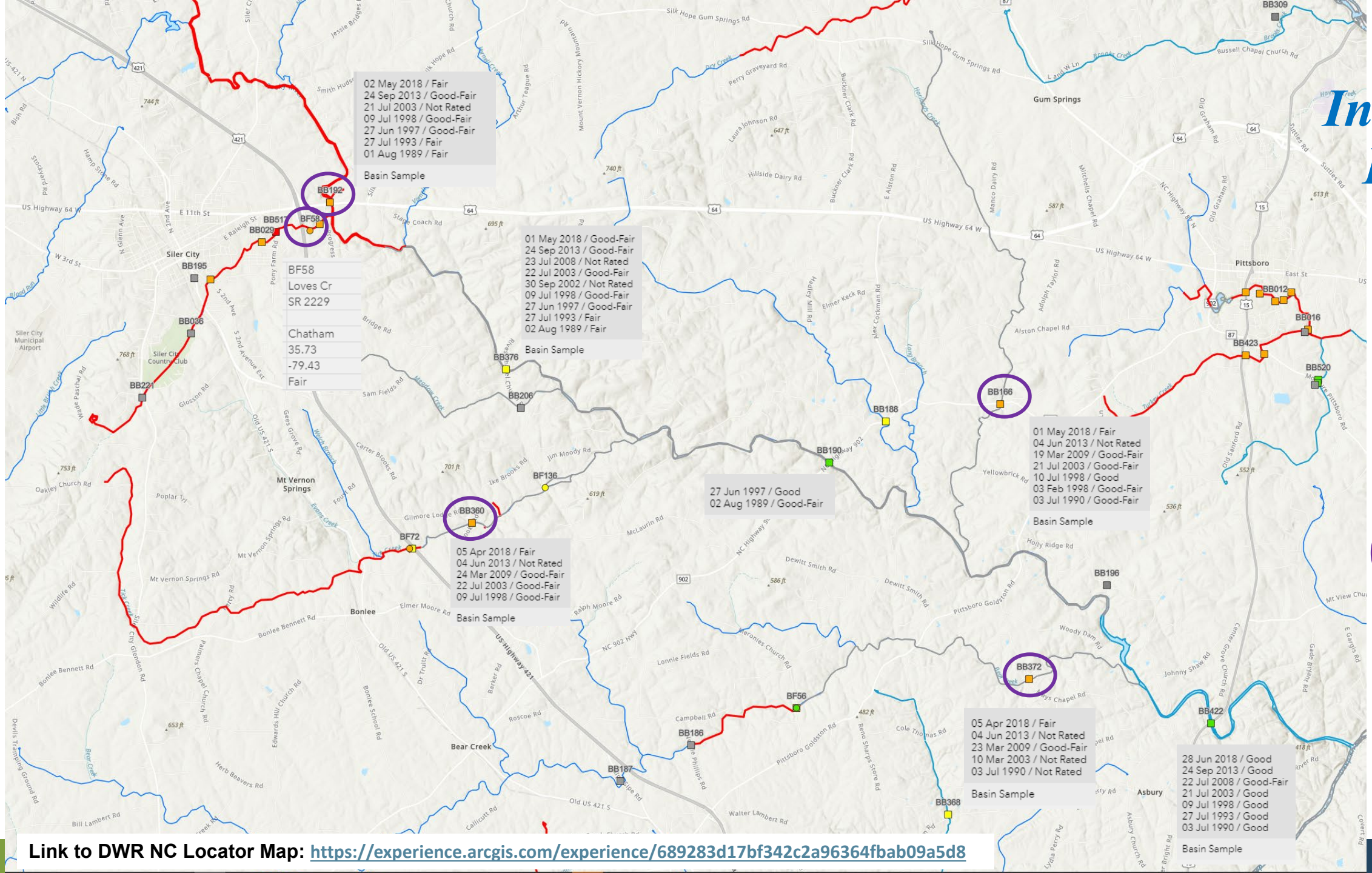
IR Category Definitions

Categories 4 and 5 – Exceeds Criteria and are identified as IMPAIRED

5 = Exceeding criteria, no approved TMDL in place for assessed parameter

4s = Biological data exceeding criteria, another aquatic life parameter is assessed in category 4 or 5

(2020 IR Data window is 2014-2018)



2018 Integrated Report - Benthic and Fish Ratings

- Excellent
- Good
- Good-Fair
- Fair
- Poor
- Not Rated

Link to DWR NC Locator Map: https://experience.arcgis.com/experience/689283d17bf342c2a96364fbab09a5d8

Waterbody	Location	Station ID	Date	Bioclassification
HARLANDS CR	NC 902	BB166	01 May 2018	Fair

County	8 digit HUC	Latitude	Longitude	Elevation (ft)
Chatham	03030003	35.691670	-79.244440	394

Level IV Ecoregion	Drainage Area (mi2)	Stream Width (m)	Stream Depth (m)
Carolina Slate Belt	12.7	8.0	0.2

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

Landuse (%)	Forest	Developed	Impervious	Cultivation	Grass/Herb/Shrub	Wetland	Water	Barren

Water Quality Parameters	2018	2013	2009
Temperature (°C)	13.2	20.2	12.4
Dissolved Oxygen(mg/L)	9.7	4.4	11.3
Specific Conductance (µS/cm)	75	83	70
pH (s.u.)	6.2	6.9	6.5

Habitat Assessment Scores (max score)	

Substrate (%)	Boulder (40), Cobble (35), Gravel (10), Sand (5), Silt (5)	Water Clarity	Turbid

Sample Date	Sample ID	Method	ST	EPT	BI	EPT BI	Bioclassification
01 May 2018	12356	EPT	--	11	--	2.20	Fair
04 Jun 2013	11577	EPT	--	12	--	3.92	Not Rated
19 Mar 2009	10615	EPT	--	24	--	4.11	Good-Fair
21 Jul 2003	9202	EPT	--	16	--	4.88	Good-Fair
10 Jul 1998	7652	EPT	--	23	--	4.48	Good
03 Feb 1998	7483	EPT	--	22	--	4.98	Good-Fair
03 Jul 1990	5322	EPT	--	15	--	3.82	Good-Fair

Analysis - 01 May 2018

Harlans Creek at NC 902 is located approximately five kilometers upstream from its confluence with Rocky River. High amounts of precipitation were observed in this catchment in both 2013 and 2018 when EPT richness dropped from 24 in 2009 to 12 in 2013 and 11 in 2018. This benthic macroinvertebrate sampling site was not rated in 2013 due to heavy storms possibly scouring the site just prior to sampling. There were high amounts of precipitation in 2018 and a clear cut was noted upstream of the sampling location. Forest cover in the catchment has declined by at least 12% beginning in 1992. EPT richness declines in this reach of Harlans Creek could be associated with this increased development and agriculture leading to elevated nonpoint source pollution runoff from upstream.

Analysis - 04 Jun 2013

The site is located about seven kilometers SW of Pittsboro and about five stream-kilometers from the confluence with Rocky River. The stream drains a small catchment just west of Pittsboro. The stream experienced a spate two weeks prior to the 2013 sampling event, which very likely contributed to reduced EPT Richness for 2013. For that reason a bioclassification of Not Rated was assigned.

Analysis - 19 Mar 2009

Harlands Creek rated Good-Fair in 2009. Though more EPT taxa were collected here than in any of the previous samples, seasonal corrections resulting in the same rating as in 2003 and slightly lower than that of 1998. In 2009, there was a higher EPT abundance here than in most Slate Belt streams sampled and given the compostion of EPT taxa, it appears that this site remained flowing in 2008. Habitat scores from 2003 to 2009 were very similar further suggesting that this watershed remains stable.

Questions

NORTH CAROLINA
Department of Environmental Quality

Intensive Survey Branch - 2020/2021 Rocky River Special Study

Agenda Item # 3

2020/2021 special study plan

a. *In situ* data logger deployment

b. Mussel Bioindicator assessment

NORTH CAROLINA
Department of Environmental Quality

Raleigh Regional Office – Update on Siler City WWTP

Agenda Item # 4

Update on Siler City WWTP

- **a. General operations**
  - **i. Effluent data**
  - **ii. 2020/2021 issues and corrective actions**
  - **iii. Optimization Plan**
- **b. Treatment plant upgrade (4 and 6 MGD)**

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Meeting 2 – Species Health and Needs (WRC and FWS)

1. Current efforts to assess the health of the Cape Fear Shiner population and other species of concern in the Rocky River and Loves Creek.
   a. Status of Cape Fear Shiner
      i. Results of recent survey - Brena
      ii. Recovery projects – Emily
         1. Dam Removal
            a. Post removal monitoring
         2. Conservation fund – corridor connections; riparian restoration
      iii. Proposed work in 2021
         1. WRC activities
         2. FWS activities
   b. Other rare species in watershed – WRC
      i. Savannah Lilliput Mussel
      ii. Atlantic Pigtoe Mussel
      iii. Others

2. Limiting factors – Species Needs/What is known? – WRC and FWS
   a. Mussels -
      i. Habitat needs
      ii. Sedimentation
      iii. Metals and salts
      iv. Ammonia
      v. Nutrient enrichment – habitat impacts (periphyton growth issues)
   b. Cape Fear Shiner -
      i. Habitat needs
      ii. Sediments
      iii. Metals and salts
      iv. Ammonia
      v. Nutrient enrichment – habitat impacts

NORTH CAROLINA Department of Environmental Quality

Rocky River Watershed Interagency Work Group Meetings

MEETING 1

Thursday April 8, 2021
10:00 – 11:30 am

Meeting 1 will cover current field studies and water quality in the lower portion of the Rocky River watershed.

MEETING 2

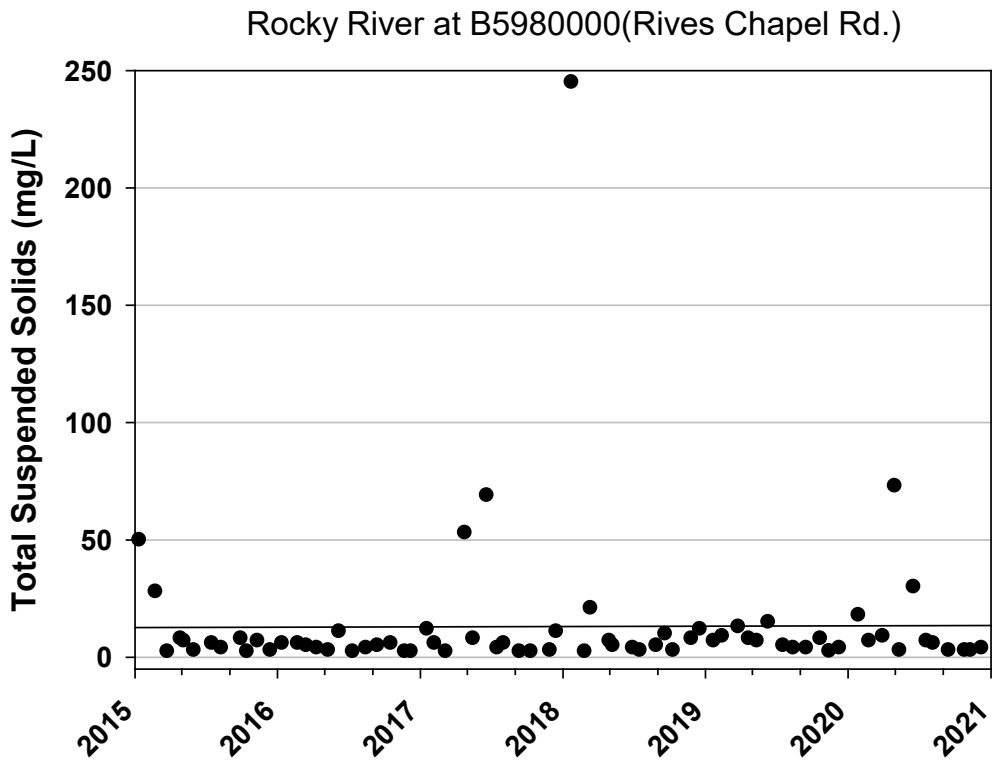
Thursday April 8, 2021
1:00 – 2:30 pm

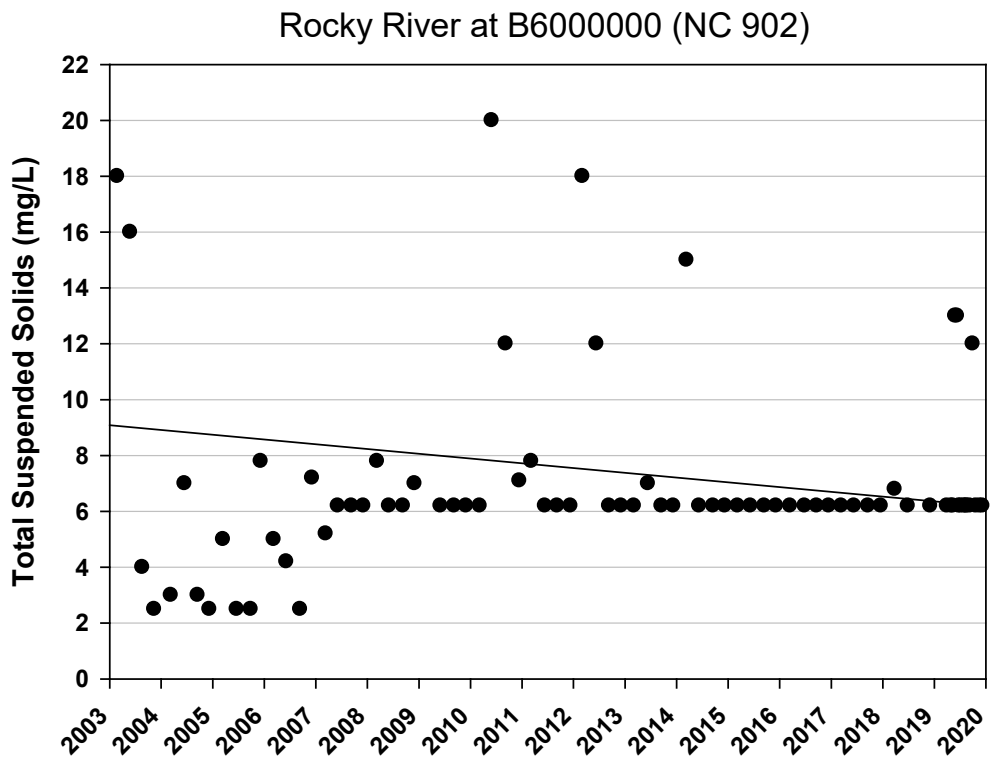
Meeting 2 will cover the current and proposed health assessments of the endangered Cape Fear Shiner and other rare species in the watershed.

MEETING 3

Monday April 12, 2021
10:00 – 11:30 am

Meeting 3 will review the water quality needs for endangered and threatened species in the watershed and explore potential conservation and mitigation opportunities.





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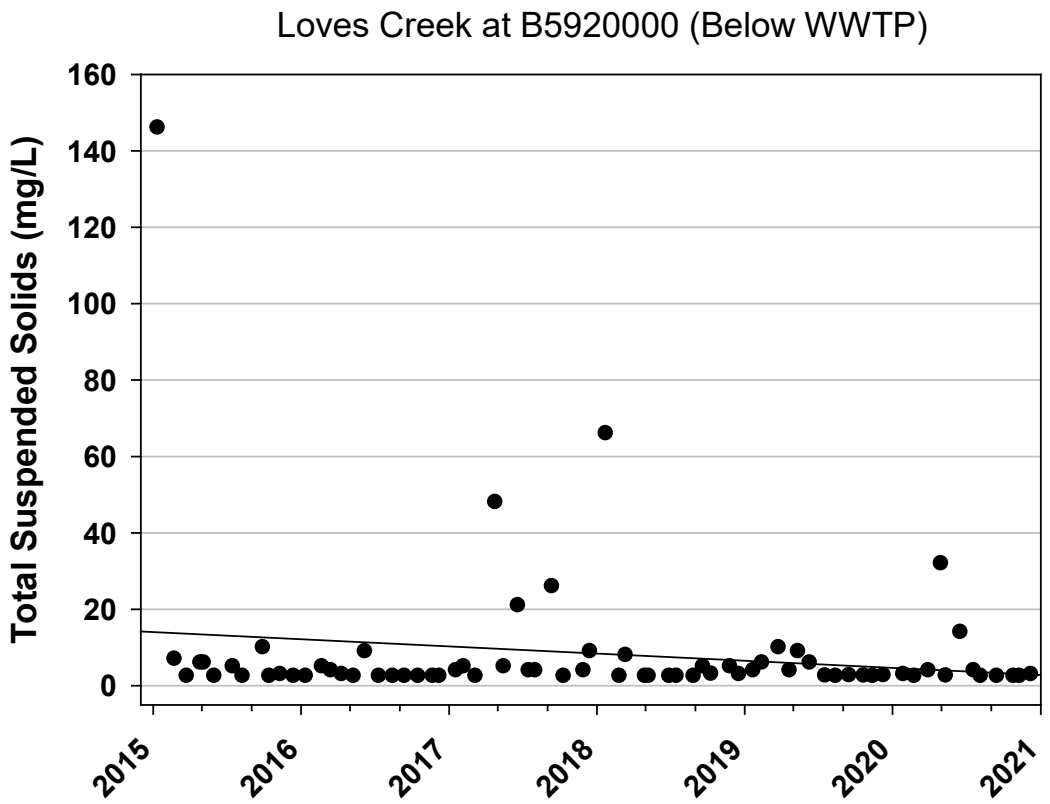

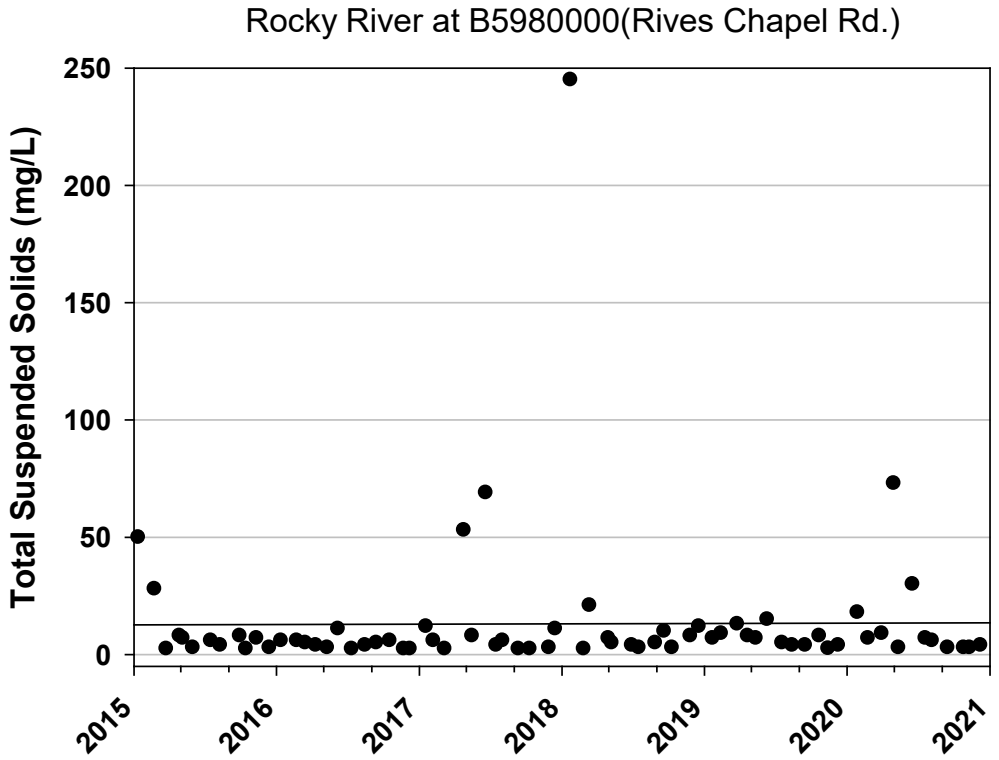

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Meeting 3 – Exploring Opportunities

1. **Intersection of Rocky River water quality and species needs – FWS, Tom Augspurger**
   a. Mussels
   b. Cape Fear Shiner

2. **What activities are occurring in the watershed to improve water quality?**

   Explore ways to prioritize mitigation and conservation efforts for protection of water quality and endangered species.

   a. DWR – Planning Section (Point and nonpoint sources)
   b. US Fish and Wildlife Service
   c. NC Wildlife Resources Commission
   d. Soil and Water Conservation
   e. Division of Mitigation Services
   f. Siler City
   g. Other local efforts
      i. Loves Creek Watershed Stewards

3. **Follow Up Actions/Next Steps**

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DWR – Planning Section

Basin Planning – Watershed Chapters

1. **Highlight watershed issues**
2. **Incorporate resource agency information**
3. **Develop watershed appropriate recommendations**

Other DWR actions

- **Water Sciences monitoring (ambient and biological)**
- **Modeling work to understand nutrient throughout the Central Cape Fear River area**
- **Nutrient Criteria Development Plan**
- **Regional Office work with the WWTP to continue to improve their process**
- **Work with Soil and Water Conservation District to prioritize nutrient reducing BMP throughout the watershed**
- **Work with local watershed groups**
- **Support local watershed planning processes**
- **Support grant opportunities to assist in water quality improvement projects**

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3. Follow Up Actions/Next Steps