North Carolina Addendum
Total Maximum Daily Load (TMDL) for Impaired Segments in the Dan River Watershed to Virginia TMDLs Approved by EPA Region 3

Assessment units (AU) for the Dan River, 22-(31.5)a, 22-(31.5)b, 22-(38.5), 22-(39)a, 22-(39)b and for the Smith River, 22-40-(1), 22-40-(2.5), 22-40-(3)

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Roanoke River Basin

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Introduction

The Virginia Department of Environmental Quality (DEQ) developed bacteria Total Daily Maximum Loads (TMDL) for Dan River, Blackberry Creek, Byrds Branch, Double Creek, Fall Creek, Leatherwood Creek, Marrowbone Creek, North Fork Mayo River, South Fork Mayo River, Smith River, Sandy Creek, and Sandy River watersheds. EPA Region 3 approved the TMDLs on December 8, 2008 (http://www.deq.virginia.gov/tmdl/apptmdls/roankrvr/danec.pdf). The Dan River watershed encompasses a large drainage area within North Carolina and Virginia. This addendum to the TMDLs will further address North Carolina impaired waters that are contained in the same hydrologic units as the Virginia TMDLs. The impaired waters in NC are:
Dan River - AU#s 22-(31.5)a, 22-(31.5)b, 22-(38.5), 22-(39)a, 22-(39)b and
Smith River - AU#s 22-40-(1), 22-40-(2.5), 22-40-(3)

In order to approve these TMDLs for the NC portions of the watershed, EPA Region 4 requested the following supplemental information.

Watershed Description

This TMDL addendum covers the Dan River watershed that is located partially or wholly within the North Carolina counties of Surry, Stokes, Rockingham, Caswell, Forsyth and Guilford. This watershed is located in the USGS Cataloging Units 03010103 and 03010104. For purposes of this TMDL addendum this excludes the Hyco Creek watershed since it flows into the Dan River downstream of the impairment. (The VA TMDL also excluded this watershed).

Impairment Description

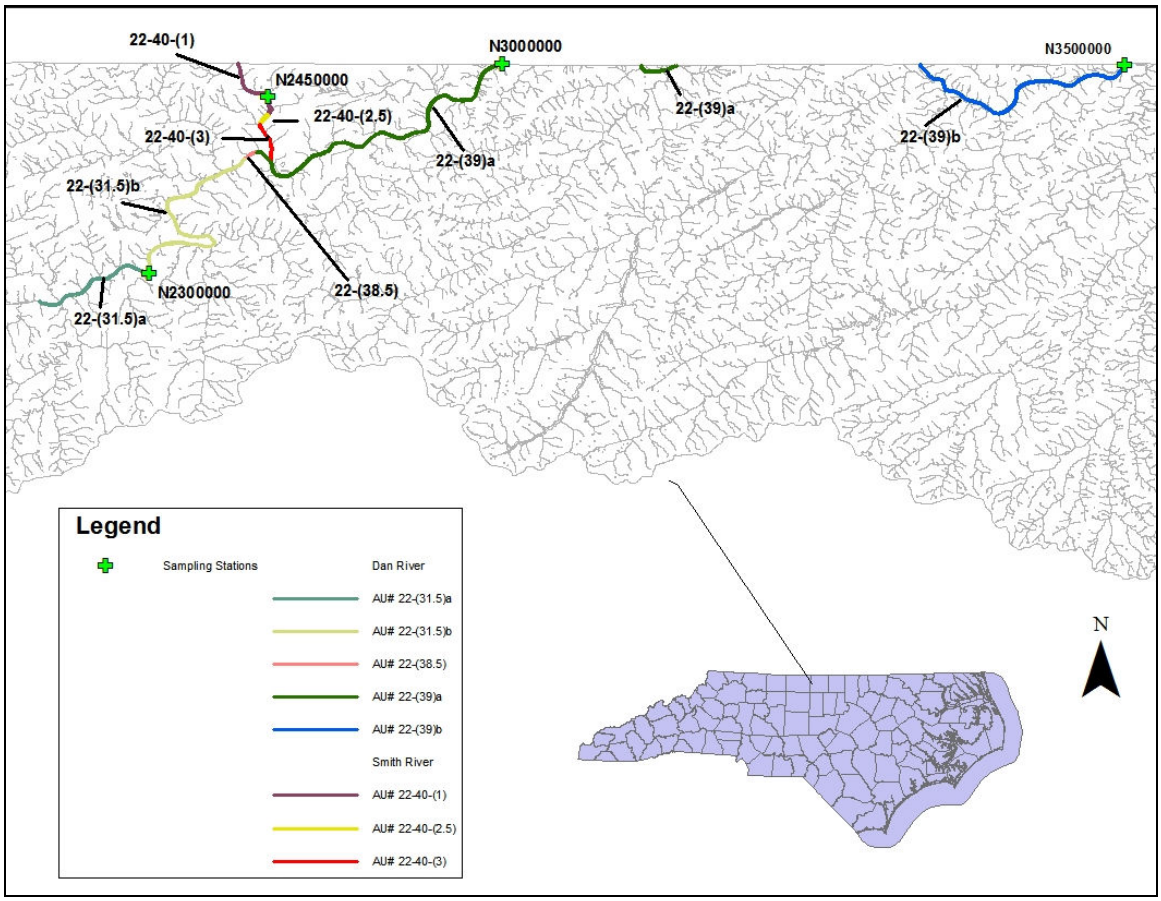
The Dan and Smith Rivers are on the North Carolina draft 2008 303(d) list of impaired waters for fecal coliform bacteria. The NC water quality standard for fecal coliform bacteria is discussed in section 'Water Quality Target' (below). A rolling series of 5 fecal bacteria samples were taken over multiple 30 day periods in 2004. A total of four sampling stations represent the eight impaired AUs. A map is provided in Figure 1 depicting locations of sampling stations and impaired AUs. Sampling stations and data analysis are provided in Table 1.

Table 1. Statistical Evaluation of 5 in 30 Sampling Data

	Sampling Stations							
	N2300000		N2450000		N3000000		N3500000	
Sampling Dates	Geometric Mean	% > 400	Geometric Mean	% > 400	Geometric Mean	% > 400	Geometric Mean	% > 400
4/13/2004 - 5/4/2004	***397.62***	20%	***299.19***	20%	***216.03***	20%	***271.51***	***40%***
4/20/2004 - 5/5/2004	185.54	0%	141.53	0%	118.06	0%	161.01	20%
4/22/2004 - 5/18/2004	***447.39***	20%	192.86	20%	***232.86***	20%	***224.82***	***40%***
4/27/2004 - 5/25/2004	***508.84***	***40%***	***316.06***	***40%***	***288.30***	20%	***256.36***	***40%***
5/4/2004 - 5/27/2004	***488.14***	***40%***	***433.69***	***60%***	***474.73***	***40%***	***439.06***	***60%***
5/5/2004 - 6/3/2004	***380.53***	***40%***	***316.33***	***60%***	***495.44***	***40%***	***320.67***	***40%***
5/18/2004 - 6/8/2004	***439.48***	***40%***	***637.85***	***80%***	***578.98***	***40%***	***349.83***	***40%***

Water Quality Standard Violations for fecal coliform bacteria are bolded and italicized.

Figure 1. Sampling Station Locations and Impaired AUs



Water Quality Target
The North Carolina fresh surface water quality standard in Class C waters states: Organisms of the coliform group: fecal coliforms shall not exceed a geometric mean of 200/100 ml (membrane filter count) based upon at least five consecutive samples examined during any 30 day period, nor exceed 400/100 ml in more than 20 percent of the samples examined during such period; violations of the fecal coliform standard are expected during rainfall events and, in some cases, this violation is expected to be caused by uncontrollable nonpoint source pollution; all coliform concentrations are to be analyzed using the membrane filter technique unless high turbidity or other adverse conditions necessitate the tube dilution method; in case of controversy over results, the MPN 5-tube dilution technique will be used as the reference method. (15A NCAC 02B.0211)

Wasteload Allocation (WLA) and Load Allocation (LA)
Table 2 shows the permitted NPDES facilities with their allocated loadings. These facilities were assumed to be discharging at their permitted limits. With these limits, they are not contributing to the fecal coliform impairment. In this case, the WLA equates to the facility's permit limit.

There are currently no permitted MS4s in this TMDL watershed.

Table 2. Wasteload allocations (WLAs) for each NPDES permitted facility

NPDES Permit Number	Facility Name	AU#	Concentration (counts/100ml)	Permitted Flow (MGD)	Load (counts/day)
NC0002828	Reidsville plant	22-(39)b	200	0.005	3.79E+07
NC0003441	Carolina Plant	22-(31.5)a, 22-(31.5)b, 22-(38.5), 22-(39)a, 22-(39)b	200	0.015	*
NC0003468	Dan River Steam Station	22-(39)a, 22-(39)b	200	No Limit	*
NC0021873	Mayodan WWTP	22-(31.5)a, 22-(31.5)b, 22-(38.5), 22-(39)a, 22-(39)b	200	2.5	1.89E+10
NC0025071	Mebane Bridge WWTP	22-(39)a, 22-(39)b	200	13.5	1.02E+11
NC0025151	Dry Creek WWTP	22-(39)a, 22-(39)b	200	0.5	3.79E+09

NC0025526	Walnut Cove WWTP	22-(31.5)a, 22-(31.5)b, 22-(38.5), 22-(39)a, 22-(39)b	200	0.5	3.79E+09
NC0028746	Briarwood Subdivision WWTP	22-(31.5)a, 22-(31.5)b, 22-(38.5), 22-(39)a, 22-(39)b	200	0.05	3.79E+08
NC0030180	Blanch Youth Center WWTP	22-(39)b	200	0.018	1.36E+08
NC0035173	Kobewieland Copper Products	22-(31.5)a, 22-(31.5)b, 22-(38.5), 22-(39)a, 22-(39)b	200	0.025	1.89E+08
NC0037001	Bethany Elementary School	22-(31.5)a, 22-(31.5)b, 22-(38.5), 22-(39)a, 22-(39)b	200	0.01	7.57E+07
NC0037311	Creekside Manor Assisted Living	22-(31.5)a, 22-(31.5)b, 22-(38.5), 22-(39)a, 22-(39)b	200	0.01	7.57E+07
NC0040011	Yanceyville WWTP	22-(39)b	200	0.45	3.41E+09
NC0044750	Britthaven of Madison WWTP	22-(31.5)a, 22-(31.5)b, 22-(38.5), 22-(39)a, 22-(39)b	200	0.025	1.89E+08
NC0044954	South Stokes High School	22-(31.5)a, 22-(31.5)b, 22-(38.5), 22-(39)a, 22-(39)b	200	0.0173	1.31E+08
NC0044962	North Stokes High School	22-(31.5)a, 22-(31.5)b, 22-(38.5), 22-(39)a, 22-(39)b	200	0.0115	8.71E+07
NC0056791	Horizons Residential Care Center	22-(31.5)a, 22-(31.5)b, 22-(38.5), 22-(39)a, 22-(39)b	200	0.015	1.14E+08
NC0057720	Hidden Lakes Village, LLC	22-(31.5)a, 22-(31.5)b, 22-(38.5), 22-(39)a, 22-(39)b	200	0.04	3.03E+08

NC0059251	Quail Acres Mobile Home Park	22-(31.5)a, 22-(31.5)b, 22-(38.5), 22-(39)a, 22-(39)b	200	0.018	1.36E+08
NC0060461	Abington WWTP	22-(31.5)a, 22-(31.5)b, 22-(38.5), 22-(39)a, 22-(39)b	200	0.2	1.51E+09
NC0060542	Gold Hill Mobile Home Park	22-(31.5)a, 22-(31.5)b, 22-(38.5), 22-(39)a, 22-(39)b	200	0.0176	1.33E+08
NC0060623	Stone Highway Mobile Home Park	22-(31.5)b, 22-(38.5), 22-(39)a, 22-(39)b	200	0.015	1.14E+08
NC0067091	Mikkola Downs Subdivision WWTP	22-(31.5)a, 22-(31.5)b, 22-(38.5), 22-(39)a, 22-(39)b	200	0.072	5.45E+08
NC0075027	Cains Way Mobile Home Park	22-(31.5)a, 22-(31.5)b, 22-(38.5), 22-(39)a, 22-(39)b	200	0.0432	3.27E+08
NC0077135	Hidden Valley WWTP	22-(39)b	200	0.022	1.67E+08
NC0078115	Greystone Subdivision WWTP	22-(31.5)a, 22-(31.5)b, 22-(38.5), 22-(39)a, 22-(39)b	200	0.032	2.42E+08
NC0078271	Betsy Jeff Penn 4H Education	22-(39)a, 22-(39)b	200	0.0084	6.36E+07
NC0079049	R.H. Johnson Construction WWTP	22-(31.5)a, 22-(31.5)b, 22-(38.5), 22-(39)a, 22-(39)b	200	0.06	4.54E+08
NC0082384	Danbury WWTP	22-(31.5)a, 22-(31.5)b, 22-(38.5), 22-(39)a, 22-(39)b	200	0.1	7.57E+08
NC0083933	Salem Quarters WWTP	22-(31.5)a, 22-(31.5)b, 22-(38.5), 22-(39)a, 22-(39)b	200	0.06	4.54E+08

NC0085189	Jose's Restaurant WWTP	22-(31.5)b, 22-(38.5), 22-(39)a, 22-(39)b	200	0.005	3.79E+07
NC0087645	Milton WWTP	22-(39)b	200	0.025	1.89E+08
NC0087980	Pine Hall Elementary School WWTP	22-(31.5)a, 22-(31.5)b, 22-(38.5), 22-(39)a, 22-(39)b	200	0.004	3.03E+07

* These facilities have small sanitary components with negligible fecal coliform bacteria loading.

The Load Allocation (LA) was derived from the VA TMDL (http://www.deq.virginia.gov/tmdl/apptmdls/roankrvr/danec.pdf). The TMDL is presented in Table 3.

Table 3. Fecal Coliform Bacteria TMDL

WLA (NC Point Sources)	LA (NC + VA Nonpoint Sources)	MOS (Margin of Safety)	TMDL
1.39E+11	2.74E+12	Implicit	2.88E+12

Public Participation

Virginia DEQ held two public meetings for the draft Total Daily Maximum Loads (TMDL) for Dan River, Blackberry Creek, Byrds Branch, Double Creek, Fall Creek, Leatherwood Creek, Marrowbone Creek, North Fork Mayo River, South Fork Mayo River, Smith River, Sandy Creek, and Sandy River Watersheds. A total of twenty-seven people attended, including North Carolina residents. The Dan River Basin Association (DRBA) is a bi-state organization with active members residing in North Carolina and Virginia. DRBA members attended both meetings. DEQ did not receive any comments during the public comment period. Public attendance sheets from these meetings are provided.