

Tar-Pamlico River Basin
Basinwide Assessment Report
Whole Effluent Toxicity Program
2003-2007



The Division of Water Quality's Whole Effluent Toxicity Monitoring Program

Acute and/or chronic toxicity tests are used to determine toxicity of discharges to sensitive aquatic species (usually fathead minnows or the water flea, *Ceriodaphnia dubia*). Results of these tests have been shown by researchers to be predictive of discharge effects to receiving stream populations.

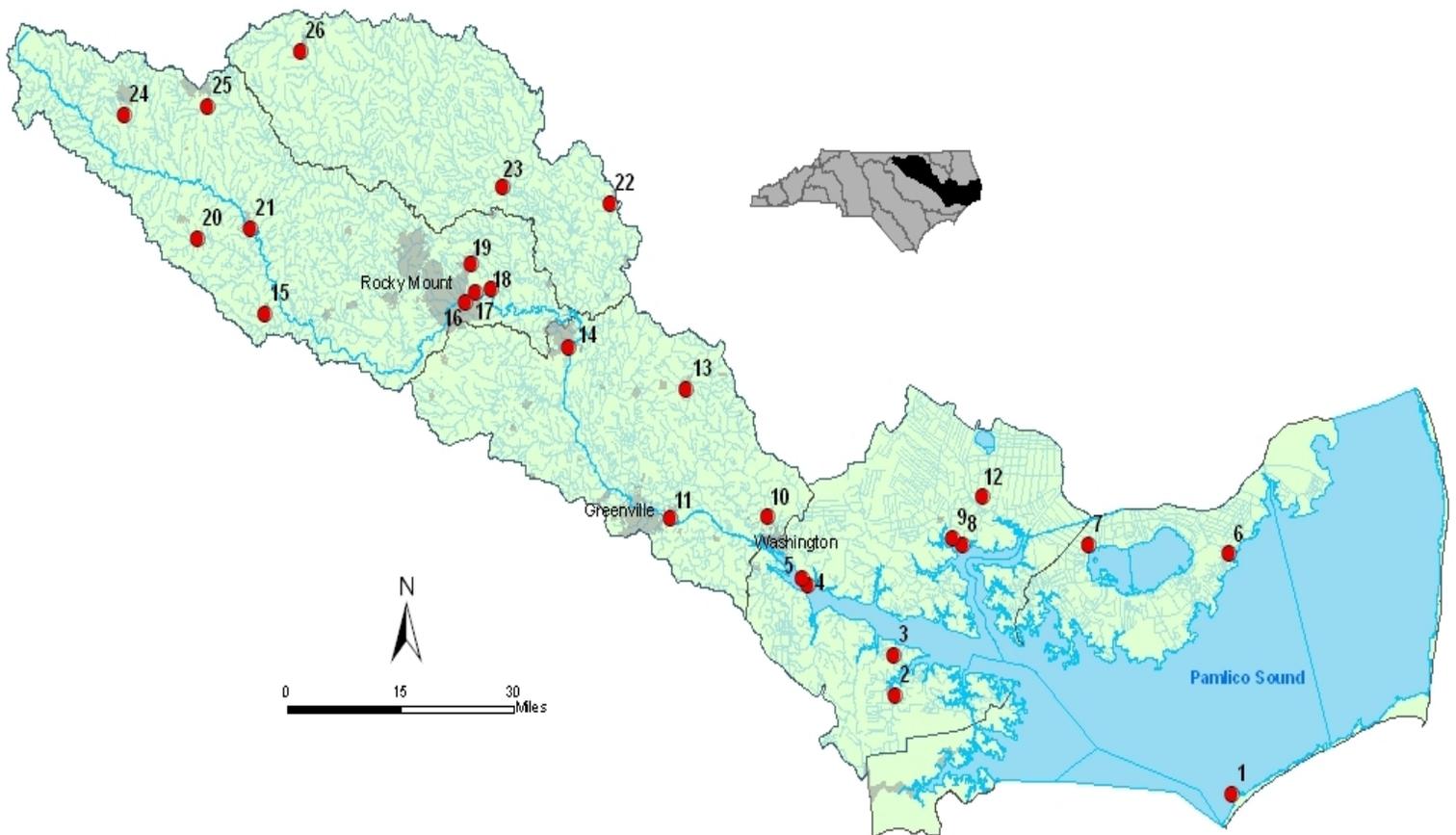
Many facilities are required to monitor whole effluent toxicity (WET) by their NPDES permit. Facilities without monitoring requirements may have their effluents evaluated for toxicity by DWQ's Aquatic Toxicology Laboratory. If toxicity is detected, DWQ may include aquatic toxicity testing upon permit renewal.

DWQ's Aquatic Toxicology Unit maintains a compliance summary for all facilities required to perform tests and provides a monthly update of this information to regional offices and WQ administration. Ambient toxicity tests can be used to evaluate stream water quality relative to other stream sites and/or a point source discharge.

WET Monitoring in the Tar-Pamlico River Basin – 2003-2007

Thirty facility permits in the Tar-Pamlico River basin currently require whole effluent toxicity (WET) monitoring (Figure 1 and Table 1). Seventeen facility permits have a WET limit while thirteen requires monitoring without a limit. Some of these facilities have more than one permit because they have multiple outfalls.

Figure 1. Tar-Pamlico River basin facilities required to conduct whole effluent toxicity testing



Key

1	Ocracoke Sanitary District (RO) WTP	10	Washington WWTP	18	Rocky Mount/Tar River Regional WWTP
2	Aurora WWTP	11	Greenville WWTP	19	Ingersoll-Rand/Schlage Corp.
3	PCS Phosphate Company, Inc.	12	Hyde County Ponzer(RO) WTP	20	Franklin Co. WASA
4	Beaufort Co.- Richland WTP	13	Robesonville	21	Louisburg WWTP
5	Washington Regional WTP	14	Tarboro WWTP	22	Scotland Neck WWTP
6	Engelhard (RO) WTP	15	Bunn WWTP	23	Enfield WWTP
7	Hyde County Fairfield (RO) WTP	16	Conoco Philips	24	Oxford WWTP
8	Belhaven WWTP	17	Battleboro Plant-Edgecombe Genco LLC	25	Saint-Gobain Containers(Ball Foster)
9	Belhaven(RO) WTP			26	Warren Co WWTP

Table 1. Tar-Pamlico River basin facilities required to conduct whole effluent toxicity testing

Subbasin/Facility	NPDES Permit No.	Receiving Stream	County	Flow (MGD)	IWC (%)	7Q10 (cfs)
03-03-01						
Bunn WWTP	NC0042269/001	Crooked Creek	Franklin	0.15	11	1.8
Franklin Co. WASA	NC0069311/001	Cedar Creek	Franklin	0.5	74	1.6
Louisburg WWTP	NC0020231/001	Tar River	Franklin	1.37	13	14
Oxford WWTP	NC0025054/001	UT Fishing Creek	Granville	2.17	90	0.05
03-03-02						
Battleboro Plant-Edgecombe Genco LLC	NC0077437/001	Tar River	Edgecombe	0.904	2.3	60
Conoco Philips	NC0084697/001	Tar River	Edgecombe	-	-	0
Ingersoll-Rand/Schlage Corp.	NC0079227/001	UT Breech Branch	Nash	0.124	100	0
Rocky Mount/Tar River Regional WWTP	NC0030317/001	Tar River	Edgecombe	21	35	60
Saint-Gobain Containers(Ball Foster)	NC0083038/001	UT Martin Creek	Vance	0.50	-	-
03-03-03						
Tarboro WWTP	NC0020605/001	Tar River	Edgecombe	5.0	8.0	90
03-03-04						
Enfield WWTP	NC0025402/001	Beech Swamp	Halifax	1.0	7	20
Scotland Neck WWTP	NC0023337/001	Canal Creek	Halifax	0.675	100	0
Warren Co WWTP	NC0020834/001	Fishing Creek	Warren	2.0	76	1.0
03-03-05						
Greenville WWTP	NC0023931/001	Tar River	Pitt	17.5	20	100
03-03-06						
Robersonville	NC0026042/001	Flat Swamp	Martin	1.8	91.2	0.27
03-03-07						
Aurora WWTP	NC0021521/001	South Creek	Beaufort	0.12	-	Tidal
Beaufort Co.- Richland WTP	NC0087491/001	Pamlico River	Beaufort	0.288	2.78	Tidal
Belhaven(RO) WTP	NC0086854/001	UT Pantego Creek	Beaufort	0.22	100	0
Belhaven WWTP	NC0026492/001	Battilina Creek	Beaufort	1.0	-	Tidal
Hyde County Fairfield (RO) WTP	NC0068233/001	UT Lake Mattamuskeet	Hyde	0.10	100	0
Hyde County Ponzer (RO) WTP	NC0077992/001	UT Pungo Lake Canal	Hyde	0.108	90	0
PCS Phosphate Company, Inc.	NC0003255	Pamlico River	Beaufort	-	-	-
Washington Regional WTP	NC0081191/001	Pamlico River	Beaufort	0.42	-	Tidal
Washington WWTP	NC0020648/001	Kennedy Creek	Beaufort	3.6	-	Tidal
03-03-08						
Ocracoke Sanitary District (RO) WTP	NC0041530/001	Pamlico Sound	Hyde	0.45	-	-
Engelhard Reverse Osmosis WTP	NC0088668/001	Far Creek	Hyde	0.11	-	-

The number of facilities in this basin with whole effluent toxicity limits has increased from 1985 (first year monitoring required) to 2007. The compliance rate of those facilities has generally risen since the inception of the program. In 2007, the compliance rate stabilized in the range of 99% (Figure 2 and Table 2).

Scotland Neck WWTP, discharging to Canal Creek (subbasin 04), began to experience frequent WET non-compliances from 2003-2006. Evaluation of the facility shows that they are using chlorine to chlorinate their system. Scotland Neck entered in to an SOC in November of 2004 and ended November of 2005. There have been some infiltration problems in the past.

Figure 2. NPDES facility whole effluent toxicity compliance in the Tar-Pamlico River basin, 1986-2007. The compliance values were calculated by determining whether facilities with WET limits were meeting their ultimate permit limits during the given time period, regardless of any SOC's in force.

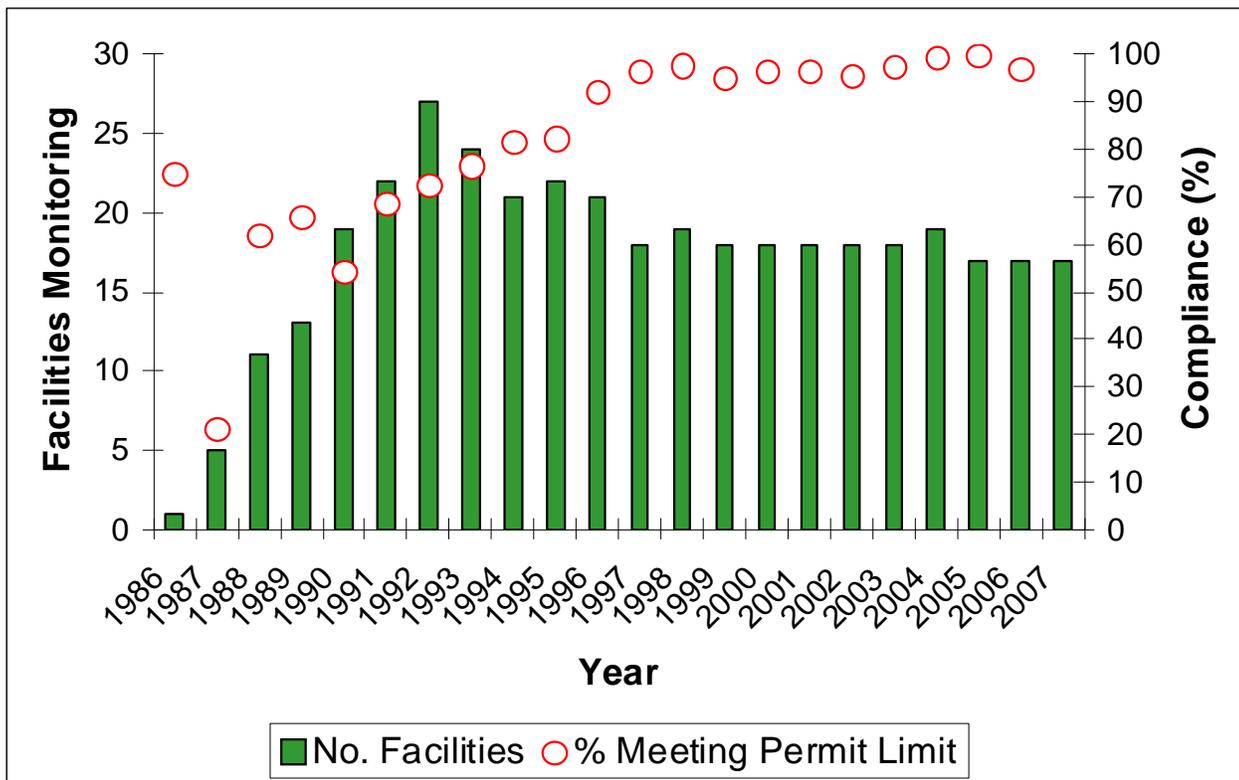


Table 2. Recent compliance record of facilities performing whole effluent toxicity testing in the Tar-Pamlico River basin

Subbasin/Facility	NPDES Permit No.	2003		2004		2005		2006		2007	
		Pass	Fail								
03-08-01											
Bunn WWTP	NC0042269/001	4	0	4	0	4	0	4	0	5	1
Franklin Co. WASA	NC0069311/001	4	0	4	0	4	0	4	0	4	0
Louisburg WWTP	NC0020231/001	4	0	4	0	4	0	4	0	4	0
Oxford WWTP	NC0025054/001	5	0	4	0	4	0	5	2	4	0
03-08-02											
Battleboro Plant-Edgecombe Genco LLC	NC0077437/001	4	0	4	0	4	0	4	1	5	0
Conoco Philips	NC0084697/001	4	0	4	0	4	0	4	0	4	0
Ingersoll-Rand/Schlage Corp.	NC0079227/001	4	0	4	0	4	0	4	0	4	0
Rocky Mount/Tar River Regional WWTP	NC0030317/001	5	1	4	0	4	0	4	0	4	0
Saint-Gobain Containers(Ball Foster)	NC0083038/001	H	H	H	H	H	H	H	H	H	H
03-08-03											
Tarboro WWTP	NC0020605/001	4	0	4	0	4	0	5	1	4	0
03-08-04											
Enfield WWTP	NC0025402/001	4	0	4	0	4	0	5	1	4	0
Scotland Neck WWTP	NC0023337/001	6	3	4	1	3	1	5	1	5	0
Warren Co WWTP	NC0020834/001	5	0	6	0	4	0	4	0	4	0
03-08-05											
Greenville WWTP	NC0023931/001	4	0	4	0	4	0	4	0	4	0
03-08-06											
Robersonville WWTP	NC0026042/001	4	0	6	0	4	0	5	1	4	0
03-08-07											
Aurora WWTP	NC0021521/001	4	0	4	0	4	0	4	0	3	1
Beaufort Co.- Richland WTP**	NC0087491/001	*	*	*	*	2	0	4	0	4	0
Belhaven(RO) WTP **	NC0086854/001	4	1	4	0	4	0	4	0	4	0
Belhaven WWTP	NC0026492/001	4	0	7	0	4	0	4	0	4	0
Hyde County Fairfield (RO) WTP **	NC0068233/001	0	4	0	4	0	4	0	4	0	4
Hyde County Ponzer (RO) WTP **	NC0077992/001	0	4	0	4	0	4	0	4	0	4
PCS Phosphate Company, Inc.**	NC0003255/004	H	H	H	H	H	H	H	H	H	H
PCS Phosphate Company, Inc.**	NC0003255/005	*	*	*	*	*	*	*	1	4	0
PCS Phosphate Company, Inc.**	NC0003255/007	12	0	12	0	12	0	12	0	12	0
PCS Phosphate Company, Inc.**	NC0003255/100	12	0	12	0	12	0	12	0	12	0
Washington Regional WTP**	NC0081191/001	0	0	0	0	2	0	4	0	4	0
Washington WWTP	NC0020648/001	4	0	6	0	4	0	4	0	4	0
03-08-08											
Ocracoke Sanitary District (RO) WTP **	NC0041530/001	3	1	3	1	4	0	4	0	4	0
Engelhard Reverse Osmosis WTP **	NC0088668/001	*	*	*	*	*	*	*	*	*	*

Note that "pass" denotes meeting a permit limit or, for those facilities with a monitoring requirement, meeting a target value. The actual test result may be a "pass" (from a pass/fail acute or chronic test), LC₅₀, or chronic value. Conversely, "fail" means failing to meet a permit limit or target value.

** Water plants are not under compliance enforcement. They are monitoring only facilities.

* Facilities were not under permit.