

## **Appendix F**

### **Eastern Davie WWTP Speculative Limits**

# **Davie County**

## **Board of Commissioners**

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123 SOUTH MAIN STREET  
ADMINISTRATION BUILDING  
MOCKSVILLE, NORTH CAROLINA 27028



Phone: (336) 753-6001  
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Mr. Tom Belnick  
NC Department of Environment and Natural Resources  
Division of Water Quality  
1617 Mail Service Center  
Raleigh NC 27699-1617

RE: Request for Speculative NPDES Limits for Davie County

Mr. Belnick:

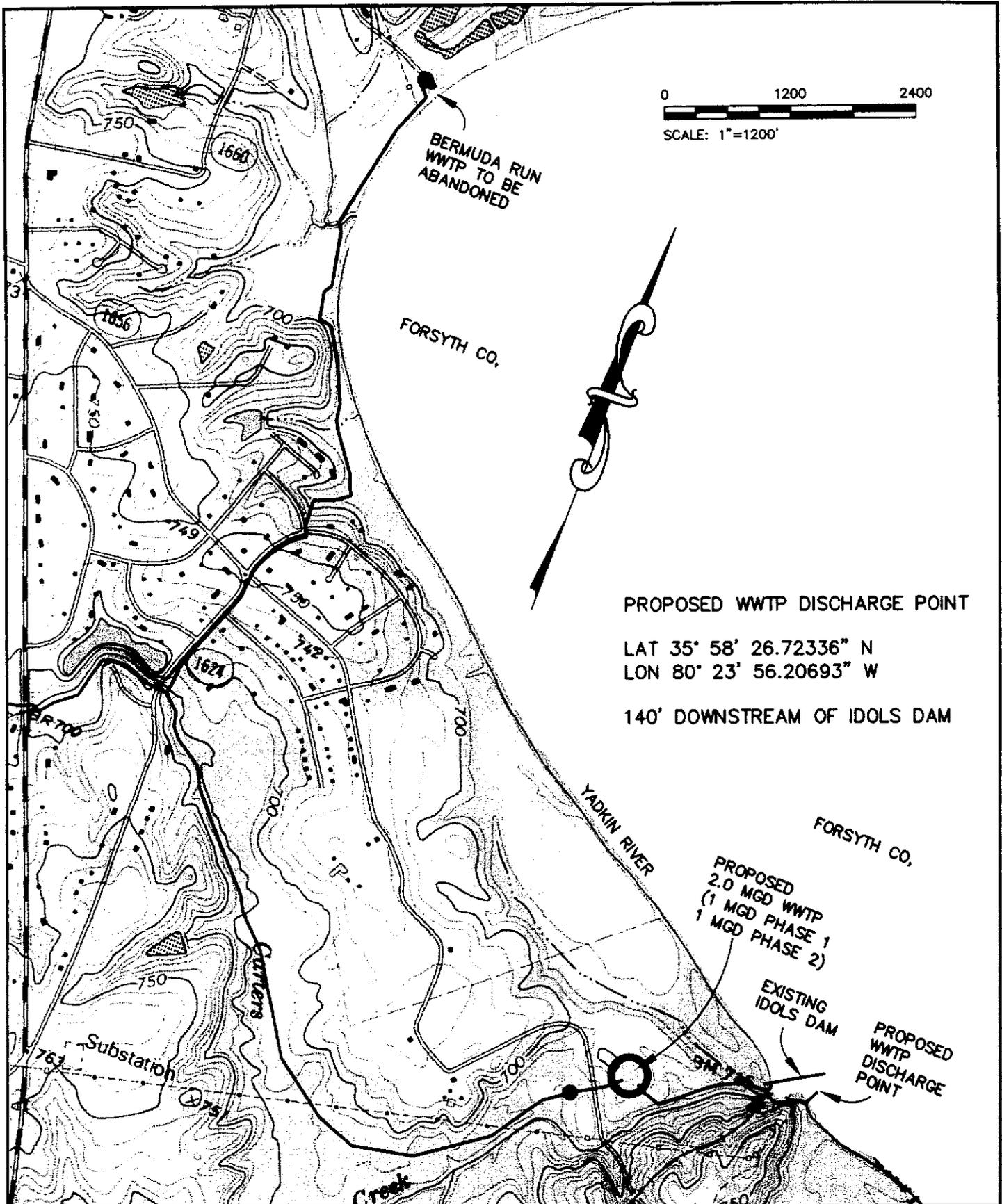
Davie County would like to request speculative limits for a new Wastewater Treatment Facility. The request is for a 2.0 MGD discharge to be built in two phases of 1.0 mgd each treating domestic wastewater. The facility will be located below Idols Dam in Davie County (see attached map). The minimum release from Idols dam is 5,542 cfs. Obtaining speculative limits is critical in order to effectively evaluate all options as we continue to address the wastewater issues within the County. If there are any questions regarding this request please contact John Grey of Grey Engineering at 336-978-3222 or Johnny Lambert, Director of Utilities at 336-753-6090.

Your assistance is greatly appreciated.

Sincerely,

Beth M. Dirks, County Manager

CC: Mr. Tom Reeder, Director  
Mr. Johnny Lambert  
Mr. John Grey



PROPOSED WWTP DISCHARGE POINT  
 LAT 35° 58' 26.72336" N  
 LON 80° 23' 56.20693" W  
 140' DOWNSTREAM OF IDOLS DAM

PROPOSED  
 2.0 MGD WWTP  
 (1 MGD PHASE 1  
 1 MGD PHASE 2)

EXISTING  
 IDOLS DAM  
 PROPOSED  
 WWTP  
 DISCHARGE  
 POINT

**GREY ENGINEERING, INC.**  
 Civil Design and Surveying  
 P.O. Box 9 Mocksville, N.C. 27028  
 greyengineering.com (336)751-2110

**DAVIE COUNTY**

**EASTERN DAVIE SEWER CONCEPT  
 SPEC LIMIT EXHIBIT**

DRAWN BY: G. BULLARD PROJ. NO.: 202.054.GE  
 DESIGN BY: G. BULLARD DATE: 6/6/13

SHEET  
**1**  
 OF 1



North Carolina Department of Environment and Natural Resources

Division of Water Resources

Water Quality Programs

Pat McCrory  
Governor

Thomas A. Reeder  
Director

John E. Skvarla, III  
Secretary

August 7, 2013

Ms. Beth M. Dirks  
County Manager  
123 South Main Street  
Mocksville, North Carolina 27028

Subject: Speculative Effluent Limits  
Davie County WWTP  
Davie County  
Yadkin River Basin

Dear Ms. Dirks:

This letter provides speculative effluent limits for 1 MGD and 2 MGD for a proposed new regional facility, Davie County WWTP. The Division received the speculative limits request in a letter received June 14, 2013 from Beth M. Dirks, County Manager for Davie County. Please recognize that speculative limits may change based on future water quality initiatives, and it is highly recommended that the applicant verify the speculative limits with the Division's NPDES Unit prior to any engineering design work.

Please note that these speculative limits are provided for regional planning purposes. Current planning includes consolidation of an existing point source with the new regional wastewater treatment plant. The speculative nutrient limits may change pending results of a TMDL and/or nutrient management strategy being developed to address impairment of High Rock Lake.

Receiving Stream. Yadkin River is located within the Yadkin River Basin. This portion of Yadkin River has a stream classification of WS-V, and waters with this classification have a best usage that are protected as water supplies which are generally upstream and draining to WS-IV waters, or waters previously used for drinking water supply purposes, or waters used by industry to supply their employees. This portion of Yadkin River flow is regulated upstream by a minimum release from Idols Dam, 554 cfs year round.

This portion of Yadkin River is currently not listed as an impaired waterbody on the 2012 North Carolina 303(d) Impaired Waters List. There are no specific permitting strategies for

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Yadkin River in the Yadkin River Basinwide Water Quality Plan. Yadkin River ultimately drains into High Rock Lake, which is listed on the 303(d) list as impaired for chlorophyll-a, and there is a nutrient management strategy development process scheduled to begin in 2014 to address the chlorophyll-a impairment. Please note the DENR Natural Heritage Program Map Viewer that identifies federal threatened/endangered species in the project vicinity was temporarily unavailable during the preparation of this speculative limits letter.

Speculative Effluent Limits. Based on Division review of receiving stream conditions and water quality modeling results, speculative limits for the proposed new discharge of treated domestic wastewater of 1 MGD and 2 MGD are presented in Tables 1 and 2, respectively. A complete evaluation of these limits and monitoring requirements for metals and other toxicants, as well as potential instream monitoring requirements, will be addressed upon receipt of a formal NPDES permit application. Some features of the speculative limit development include the following:

- BOD<sub>5</sub>, TSS, 85% removal, pH Limits: Applied 40 CFR 133.102 US EPA secondary treatment standards for domestic treatment facility.
- TRC, Fecal Coliform Limits: Applied 15A NCAC 02B .0211 water quality standards.
- Nutrient Limits: An annual TN mass load and TP mass load were determined based on 2 MGD, a TN effluent concentration of 4 mg/L, and a TP effluent concentration of 0.5 mg/L. These mass loads are speculative and ultimately will be determined by a pending nutrient management strategy that may override these speculative limits, and may result in more stringent nutrient requirements.

**TABLE 1. Speculative Limits for Davie County WWTP (Proposed New Discharge 1 MGD)**

Effluent Characteristic	Effluent Limitations		
	Monthly Average	Weekly Average	Daily Maximum
Flow	1.0 MGD		
BOD <sub>5</sub> <sup>1</sup>	30 mg/L	45 mg/L	
TSS <sup>1</sup>	30 mg/L	45 mg/L	
TRC <sup>2</sup>			28 µg/L
pH	Not less than 6.0 S.U. nor greater than 9.0 S.U.		
Fecal coliform (geometric mean)	200/100 ml	400/100 ml	
Total Phosphorus	3,044 lbs/year (annual load)		
Total Nitrogen	24,353 lbs/year (annual load)		
Chronic Toxicity Pass/Fail (Quarterly test)	0.28%		

Note:

1. The monthly average BOD<sub>5</sub> and TSS concentration shall not exceed 15% of the respective influent value (85% removal).
2. TRC is only applicable if chlorine or a chlorine derivative is used for disinfection.

**TABLE 2. Speculative Limits for Davie County WWTP (Proposed New Discharge 2 MGD)**

Effluent Characteristic	Effluent Limitations		
	Monthly Average	Weekly Average	Daily Maximum
Flow	2.0 MGD		
BOD <sub>5</sub> <sup>1</sup>	30 mg/L	45 mg/L	
TSS <sup>1</sup>	30 mg/L	45 mg/L	
TRC <sup>2</sup>			28 µg/L
pH	Not less than 6.0 S.U. nor greater than 9.0 S.U.		
Fecal coliform (geometric mean)	200/100 ml	400/100 ml	
Total Phosphorus	3,044 lbs/year (annual load)		
Total Nitrogen	24,353 lbs/year (annual load)		
Chronic Toxicity Pass/Fail (Quarterly test)	0.56%		

Note:

1. The monthly average BOD<sub>5</sub> and TSS concentration shall not exceed 15% of the respective influent value (85% removal).
2. TRC is only applicable if chlorine or a chlorine derivative is used for disinfection.

Engineering Alternatives Analysis (EAA). Please note that the Division cannot guarantee that an NPDES permit for a new discharge will be issued with these speculative limits. Final decisions can only be made after the Division receives and evaluates a formal permit application for the proposed discharge. In accordance with the North Carolina General Statutes, the practicable wastewater treatment and disposal alternative with the least adverse impact on the environment is required to be implemented. Therefore, as a component of all NPDES permit applications for new or expanding flow, a detailed engineering alternatives analysis (EAA) must be prepared. The EAA must justify requested flows and provide an analysis of potential wastewater treatment alternatives. A copy of Division guidance for preparing EAA documents is attached.

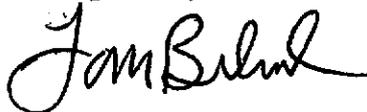
State Environmental Policy Act (SEPA) EA/EIS Requirements. A SEPA EA/EIS document must be prepared for all projects that: 1) need a permit; 2) use public money or affect public lands; and 3) might have a potential to significantly impact the environment. For new discharges, significant impact is defined as a new discharge > 500,000 gpd. Since Davie County is proposing a new discharge >500,000 gpd flow, Davie County must prepare a SEPA document that evaluates the potential for impacting the quality of the environment. The NPDES Unit will not accept an NPDES permit application for the new discharge until the Division has approved the SEPA document and sent a Finding of No Significant Impact (FONSI) to the State Clearinghouse for review and comment. A SEPA Environmental Assessment (EA) should contain a clear justification for the proposed project. If the SEPA EA demonstrates that the project may result in a significant adverse effect on the quality of the environment, you must then prepare a SEPA EIS (Environmental Impact Statement). Since your new discharge is subject to SEPA, the EAA requirements

Ms. Beth M. Dirks  
August 7, 2013  
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discussed above will need to be folded into the SEPA document. The SEPA process will be delayed if all EAA requirements are not adequately addressed. If you have any questions regarding SEPA EA/EIS requirements, please contact Hannah Stallings with the DWR Planning Branch at (919) 807-6434.

Should you have any questions about these speculative limits or NPDES permitting requirements, please feel free to contact Ron Berry at (919) 807-6396 or Tom Belnick at (919) 807-6390.

Respectfully,



Tom Belnick  
Supervisor, NPDES Complex Permitting Unit

Attachment: EAA Guidance Document

Hardcopy:

Central Files  
NPDES Permit File

Electronic Copy:

NC WRC, Inland Fisheries, shannon.deaton@ncwildlife.org  
US Fish and Wildlife Service, Sara\_Ward@fws.gov  
DWR/WQP Regional Office  
DWR/SEPA, Hannah Headrick  
DWR/Basinwide Planning, Dianne Reid  
Steve Tedder [tedderfarmconsulting@gmail.com]  
NPDES Server>Specs