Attachment A

Flow Frequency Memo

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY
Piedmont Regional Office
4949-A Cox Road Glen Allen, Virginia 23060

SUBJECT: Flow Frequency Determination / 303(d) Status
DOC Haynesville Correctional Center – VA0023469

TO: Brian Wrenn

FROM: Jennifer Palmore, P.G.

DATE: June 15, 2015

COPIES: File

The Haynesville Correctional Center's sewage treatment plant discharges to an unnamed tributary of Marshy Swamp in Richmond County. The outfall is located at rivermile 3-XAR001.00. Flow frequencies have been requested for use in developing effluent limitations for the VPDES permit.

At the discharge point, the tributary is shown as intermittent on the USGS 7.5' Haynesville Quadrangle topographic map. The flow frequencies for intermittent streams are listed below.

Unnamed tributary at Outfall 001:

1Q30 = 0.0 cfs	High Flow 1Q10 = 0.0 cfs
1Q10 = 0.0 cfs	High Flow 7Q10 = 0.0 cfs
7Q10 = 0.0 cfs	High Flow 30Q10 = 0.0 cfs
30Q10 = 0.0 cfs	HM = 0.0 cfs
30Q5 = 0.0 cfs	

Due to its intermittent nature, the tributary was previously determined to be a Tier 1 water; therefore Tier 1 should be continued in this reissuance. Effluent data should be used to characterize the stream during low-flow conditions.

During the 2012 and draft 2014 305(b)/303(d) Integrated Water Quality Assessment Reports, the receiving stream was not assessed for any of its designated uses. It was therefore considered a Category 3A water ("No data are available within the data window of the current assessment to determine if any designated use is attained and the water was not previously listed as impaired.")

The discharge was addressed in the report "Totuskey and Richardson Creek Total Maximum Daily Load Report for Shellfish Condemnation Areas Listed due to Bacteria Pollution", which was approved by the EPA on 2/19/2010 and by the SWCB on 9/30/2010. The TMDL was subsequently modified on 9/21/2010. The facility was assigned an enterococci wasteload allocation of 2.38E+08 cfu/day based on a permit limit of 35 cfu/100 mL and a design flow of 0.178 MGD. An interim fecal coliform allocation of 1.35E+09 MPN/day was assigned to Haynesville using DEQ's track and roll modification procedure; the TMDL modification states that the existing bacterial limits can be used to demonstrate compliance with the fecal coliform WLA.

The Upper Rappahannock River Watershed Shellfish TMDL was approved by the EPA on 8/10/2010 and by the SWCB on 12/13/2010. It was subsequently modified on 8/4/2011. The correctional center received a fecal coliform wasteload allocation of 1.35E+09 MPN/day.

The Haynesville Correctional Center was also addressed in the Chesapeake Bay TMDL, which was approved by the EPA on 12/29/2010. The TMDL allocates loads for total nitrogen, total phosphorus, and

total suspended solids to protect the dissolved oxygen and SAV criteria in the Chesapeake Bay and its tidal tributaries. The facility was considered a significant nutrient discharger in the Rappahannock River mesohaline estuary (RPPMH) and was assigned the following annual wasteload allocations:

- 2,802 lbs of total nitrogen (TN)
- 210 lbs of total phosphorus (TP)
- 21,014.364 lbs of total suspended solids (TSS)

The nutrient allocations are administered through the Watershed Nutrient General Permit; the TSS allocations are considered aggregated and facilities with technology-based TSS limits are considered to be in conformance with the TMDL.

If you have any questions concerning this analysis, please let me know.

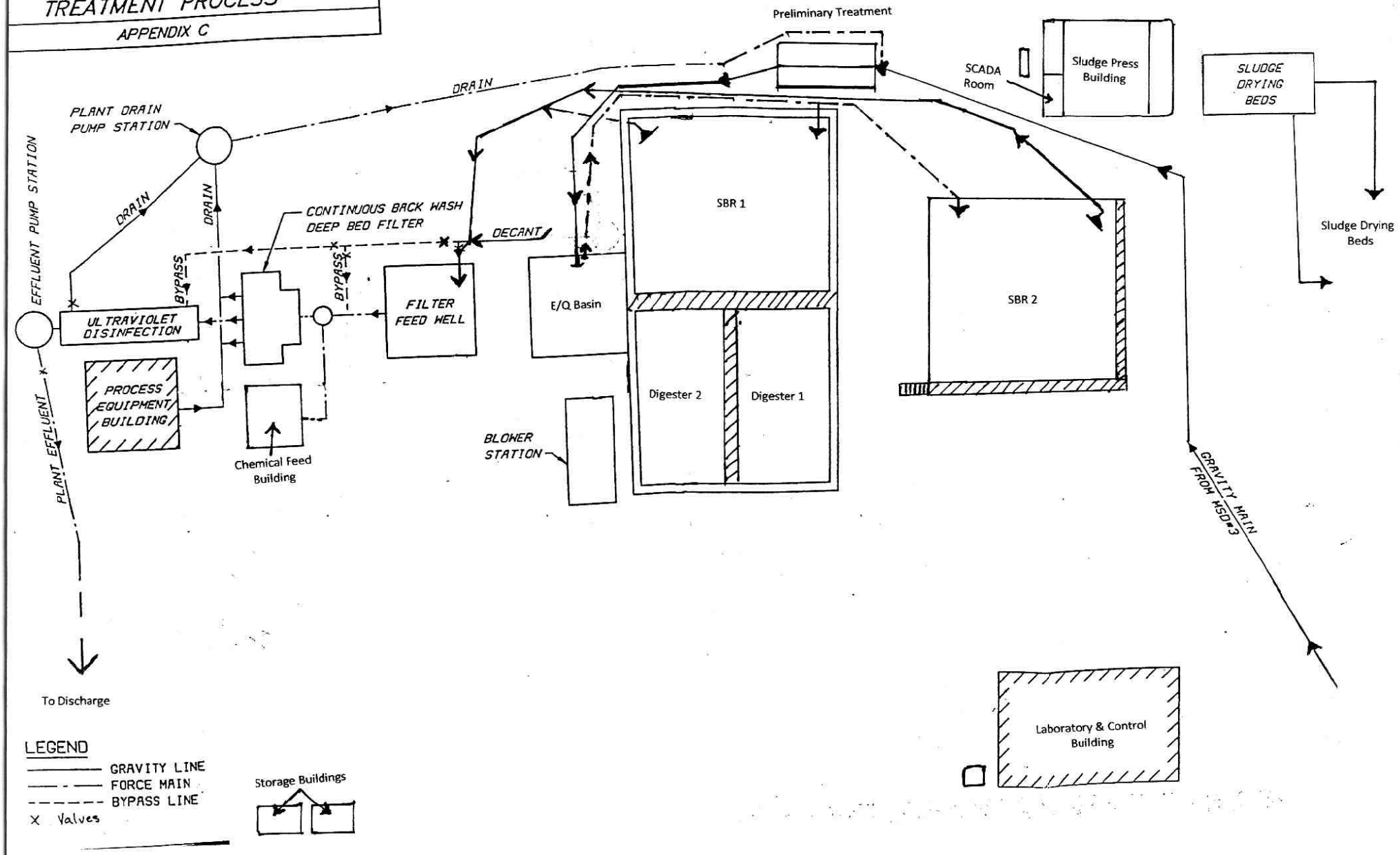
Attachment B

Site Diagram

HAYNESVILLE CORRECTIONAL CENTER

SCHEMATIC DIAGRAM OF WW TREATMENT PROCESS

APPENDIX C



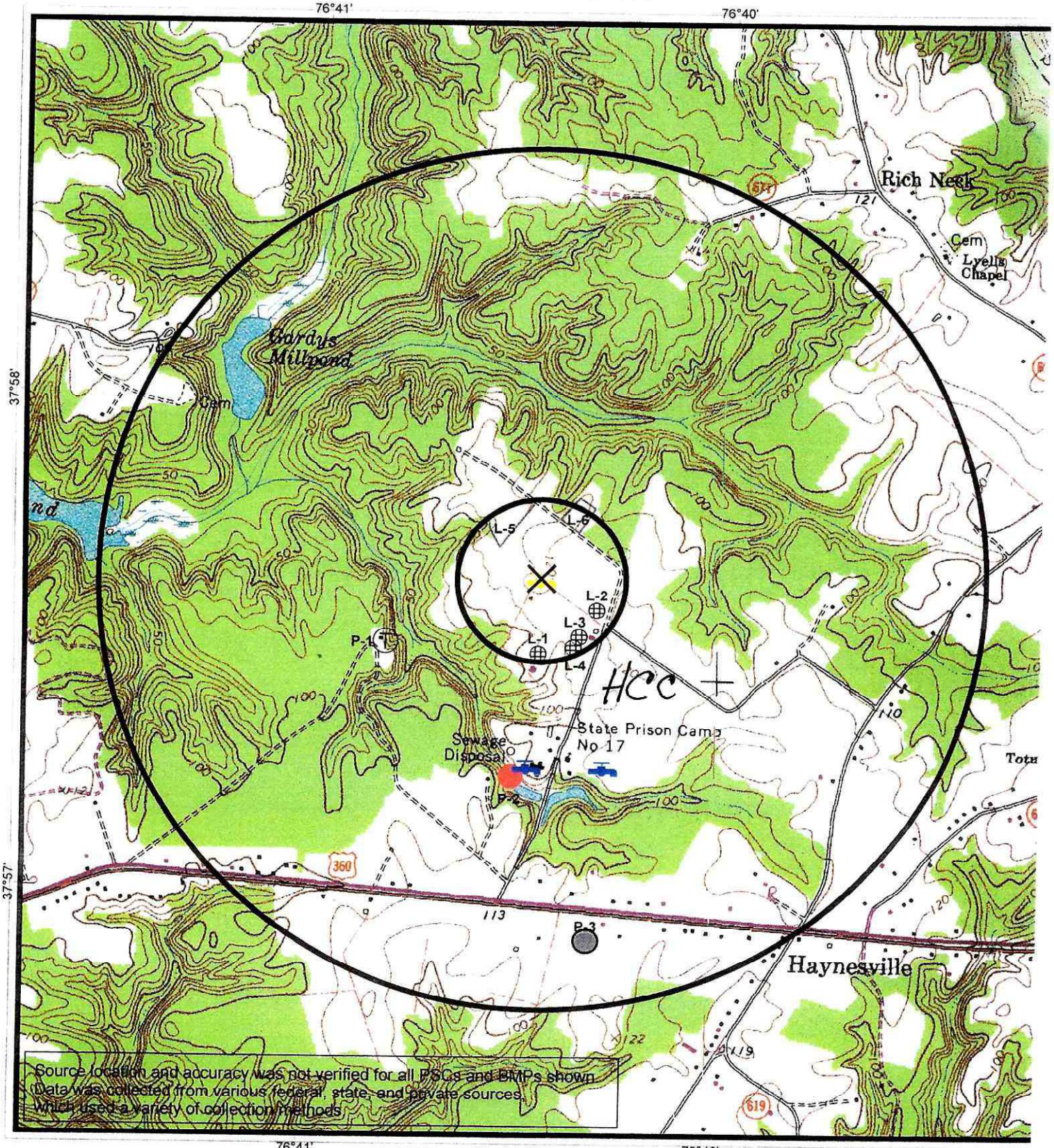
Attachment C

Topographic Map:

PWSID: 4159200
FACILITY: WELL NO. 3
WATERWORKS: HAYNESVILLE CORRECTIONAL CENTER

SWAP Zone 2 Map

DISTRICT 17
COUNTY/CITY: RICHMOND COUNT



Ground Water Sources
Selected Water Source
LUA Polygons
Land Use Activities (L-#)
Potential Conduits (C-#)
Best Management Practices (B-#)

VDH VIRGINIA DEPARTMENT OF HEALTH
Protecting You and Your Environment
Division of Water Supply Engineering

800 0 800 1600 Feet

Potential Sources of Contamination (P-#)
Landfills
Discharge -- No Discharge Facilities
Discharge
No Discharge
DEQSWRO -- Storage Tank Releases
Airports
Industrial Sites
Superfund Sites
Golf Courses
Underground Injection Wells

Attachment D

Site Visit:

September 11, 2015

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY
Piedmont Regional Office

4949-A Cox Road **Glen Allen, VA 23060** **804/527-5020**

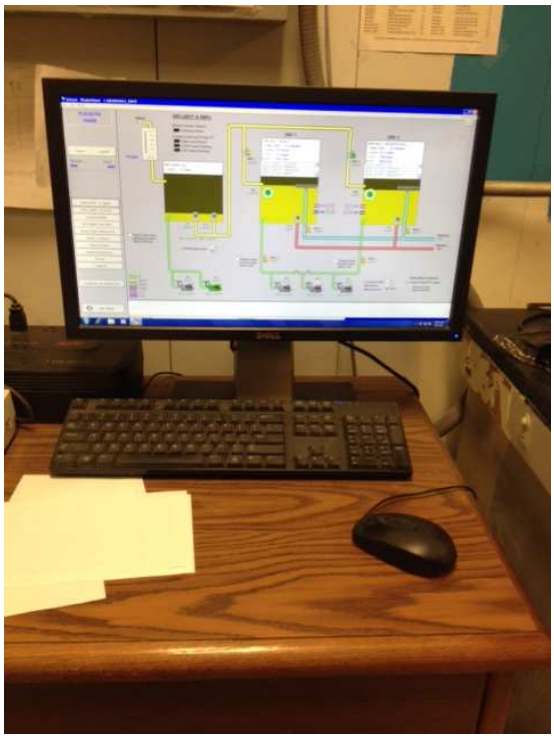
SUBJECT: Site Visit - VA0023469, Haynesville Correctional Center WWTP

DATE: September 11, 2015

On September 8, 2015, staff from the DEQ Piedmont Regional Office visited the Haynesville Correctional Center WWTP in Richmond County, Virginia. The visit consisted of a review of the SCADA and record keeping systems, the wastewater treatment plant, and the outfall. The WWTP includes an influent bar screen with a screw auger for solids removal, an influent equalization basin, two sequencing batch reactors (SBRs) with dual sludge digesters, a clear well tank for phosphorus removal by chemical treatment, a sand bed tertiary filter, two UV disinfection banks, and a cascade aeration channel prior to discharge. Wasted sludge is further treated through a fan belt press and is hauled to Deerfield Correctional Center for land application. This SBR system was upgraded in 2011.

Overall, the WWTP appears to be well run and maintained. Solids removed during primary treatment are sent to the land fill for disposal. The influent EQ basin aerates the wastewater using a timed blower. The SBRs run on 6-hour cycles. Some minor foaming was observed during the site visit. Little to no floating or suspended solids were observed in the chemical treatment clearwell. The UV banks are run in series. Each bank consists of 24 bulbs for a total of 48 bulbs. The system is designed to provide a minimum dosage of 105,000 microwatt-seconds per square centimeter. All alarms for UV outages or problems are housed at the disinfection unit. Alarms are present for low bulb intensity and bulb outages. The facility does not have a back up disinfection process. Approximately 12 wet tons of sludge are hauled to Deerfield Correctional Center every 2-3 weeks. The sludge is hauled by DOC and all monitoring for the sludge is conducted by Deerfield under their land application permit. The outfall was not discharging at the time of the visit, but no evidence of solids was observed in the discharge channel. The receiving stream appeared clear and free of solids. A back-up generator is located on site and is tested under load on a weekly basis.

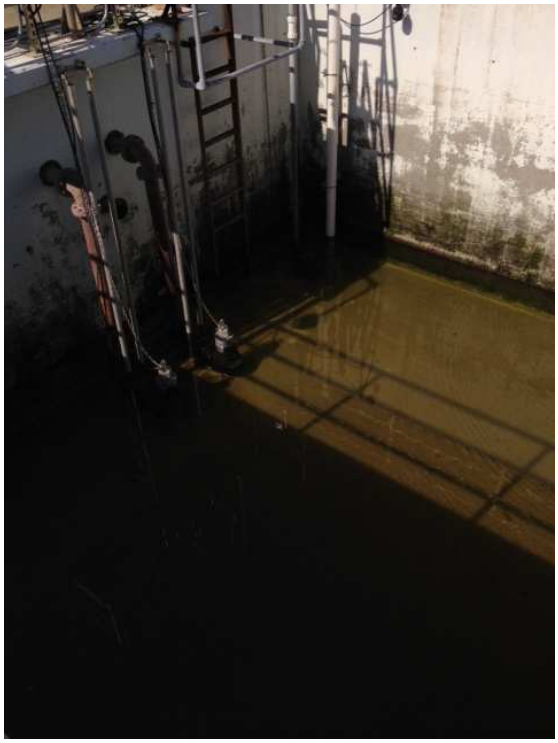
Haynesville CC conducts in-house analyses for pH, temperature, dissolved oxygen, total recoverable chlorine, *E. coli*, total suspended solids (TSS), and biochemical oxygen demand. Analyses for enterococci, nutrients, and metals are conducted by contract laboratories. Haynesville has had difficulties meeting the enterococcus limitation during warmer months. They have consulted various sources regarding this problem, but haven't found a solution. TSS concentrations have remained at $\leq$1 mg/L during this time. The Old Camp 17 WWTP was decommissioned in 2011. The influent from Camp 17 is pumped via lift station to the upgraded SBR facility.



SCADA system	Influent Bar Screen with Screw Auger

Influent Equalization Basin	SBR #1

SBR #2	Sludge Digester #1



Sludge Digester #2	Clear Well for Phosphorus Treatment

UV Disinfection System	UV Disinfection System

UV Disinfection System	UV Control Panel and Alarms

Cascade Post-Aeration	Outfall 001

Confluence of Outfall Channel and UT to Marshy Swamp	Sludge Fan Belt Press

Decommissioned Old Camp 17 WWTP

Attachment E

Effluent Data:

DMR Data
Application Data
Water Quality Criteria Monitoring Form

VA0023469, Haynesville CC
DMR Data 2012-2015

Flow	
Date	**30-day Avg**
10-Aug-12	0.104
10-Sep-12	0.107
10-Oct-12	0.104
10-Nov-12	0.104
10-Dec-12	0.099
10-Jan-13	0.094
10-Feb-13	0.087
10-Mar-13	0.088
10-Apr-13	0.089
10-May-13	0.089
10-Jun-13	0.086
10-Jul-13	0.099
10-Aug-13	0.0994
10-Sep-13	0.095
10-Oct-13	0.101
10-Nov-13	0.1059
10-Dec-13	0.101
10-Jan-14	0.101
10-Feb-14	0.097
10-Mar-14	0.103
10-Apr-14	0.099
10-May-14	0.099
10-Jun-14	0.102
10-Jul-14	0.107
10-Aug-14	0.106
10-Sep-14	0.1098
10-Oct-14	0.1051
10-Nov-14	0.098
10-Dec-14	0.095
10-Jan-15	0.098
10-Feb-15	0.099
10-Mar-15	0.0972
10-Apr-15	0.099
10-May-15	0.099
10-Jun-15	0.105
10-Jul-15	0.1185
10-Aug-15	0.111
Average	**0.100**

pH	
Date	**Daily Max**
10-Aug-12	8.1
10-Sep-12	8.1
10-Oct-12	8.3
10-Nov-12	8.3
10-Dec-12	8.2
10-Jan-13	8.2
10-Feb-13	7.9
10-Mar-13	7.9
10-Apr-13	7.9
10-May-13	7.8
10-Jun-13	8
10-Jul-13	8.2
10-Aug-13	8.3
10-Sep-13	8.8
10-Oct-13	7.9
10-Nov-13	7.8
10-Dec-13	8
10-Jan-14	7.8
10-Feb-14	7.9
10-Mar-14	8
10-Apr-14	8.1
10-May-14	8
10-Jun-14	8
10-Jul-14	8.1
10-Aug-14	8.1
10-Sep-14	8.1
10-Oct-14	8.2
10-Nov-14	8
10-Dec-14	8
10-Jan-15	7.9
10-Feb-15	8
10-Mar-15	8
10-Apr-15	8
10-May-15	8
10-Jun-15	8.3
10-Jul-15	8.5
10-Aug-15	8.7
10th %	**7.9**
90th %	**8.3**
Min	**7.8**
Max	**8.8**

BOD_5	
Date	**30-day Avg**
10-Aug-12	5.3
10-Sep-12	4.7
10-Oct-12	1.9
10-Nov-12	1.6
10-Dec-12	1.8
10-Jan-13	1.8
10-Feb-13	2.3
10-Mar-13	2.4
10-Apr-13	4.3
10-May-13	2.2
10-Jun-13	0.04
10-Jul-13	<QL
10-Aug-13	0.4
10-Sep-13	<QL
10-Oct-13	<QL
10-Nov-13	0.5
10-Dec-13	<QL
10-Jan-14	<QL
10-Feb-14	<QL
10-Mar-14	1.8
10-Apr-14	<QL
10-May-14	<QL
10-Jun-14	<QL
10-Jul-14	<QL
10-Aug-14	<QL
10-Sep-14	0.5
10-Oct-14	<QL
10-Nov-14	<QL
10-Dec-14	0.5
10-Jan-15	<QL
10-Feb-15	0.4
10-Mar-15	<QL
10-Apr-15	<QL
10-May-15	<QL
10-Jun-15	<QL
10-Jul-15	<QL
10-Aug-15	<QL
Average	**1.9**

VA0023469, Haynesville CC
DMR Data 2012-2015

TSS	
Date	**30-day Avg**
10-Aug-12	8.3
10-Sep-12	8.5
10-Oct-12	3.2
10-Nov-12	2.9
10-Dec-12	3.7
10-Jan-13	2.4
10-Feb-13	2.9
10-Mar-13	4.8
10-Apr-13	4.3
10-May-13	6.1
10-Jun-13	6.7
10-Jul-13	2.5
10-Aug-13	8.5
10-Sep-13	3.6
10-Oct-13	2.2
10-Nov-13	3.8
10-Dec-13	3.1
10-Jan-14	1.8
10-Feb-14	1.2
10-Mar-14	1
10-Apr-14	<QL
10-May-14	1
10-Jun-14	1
10-Jul-14	1.4
10-Aug-14	2.3
10-Sep-14	2.5
10-Oct-14	2.2
10-Nov-14	1.2
10-Dec-14	4.6
10-Jan-15	1.2
10-Feb-15	3.8
10-Mar-15	4.1
10-Apr-15	3.2
10-May-15	5.9
10-Jun-15	2.2
10-Jul-15	2.8
10-Aug-15	1.7
Average	**3.4**

DO	
Date	**Daily Min**
10-Aug-12	6.6
10-Sep-12	6.7
10-Oct-12	7.1
10-Nov-12	7.2
10-Dec-12	8.4
10-Jan-13	9.1
10-Feb-13	9.8
10-Mar-13	9.4
10-Apr-13	9
10-May-13	8.2
10-Jun-13	8
10-Jul-13	7.4
10-Aug-13	7.3
10-Sep-13	7.38
10-Oct-13	7.1
10-Nov-13	8.1
10-Dec-13	8.7
10-Jan-14	9.3
10-Feb-14	9.7
10-Mar-14	10.1
10-Apr-14	9.8
10-May-14	8.9
10-Jun-14	7.8
10-Jul-14	7.4
10-Aug-14	6.7
10-Sep-14	7.2
10-Oct-14	7
10-Nov-14	7.4
10-Dec-14	8
10-Jan-15	6.7
10-Feb-15	9.8
10-Mar-15	10.2
10-Apr-15	9.8
10-May-15	8.8
10-Jun-15	7.4
10-Jul-15	7
10-Aug-15	6.8
Min	**6.6**

Ammonia	
Date	**30-day Avg**
10-Aug-12	0.22
10-Sep-12	0.03
10-Oct-12	0.14
10-Nov-12	0.05
10-Dec-12	<QL
10-Jan-13	<QL
10-Feb-13	<QL
10-Mar-13	<QL
10-Apr-13	0.02
10-May-13	0.03
10-Jun-13	<QL
10-Jul-13	0.15
10-Aug-13	0.1
10-Sep-13	0.04
10-Oct-13	<QL
10-Nov-13	<QL
10-Dec-13	<QL
10-Jan-14	0.02
10-Feb-14	<QL
10-Mar-14	<QL
10-Apr-14	0.02
10-May-14	<QL
10-Jun-14	<QL
10-Jul-14	0.05
10-Aug-14	0.01
10-Sep-14	<QL
10-Oct-14	0.06
10-Nov-14	0.03
10-Dec-14	0.11
10-Jan-15	0.04
10-Feb-15	0.29
10-Mar-15	0.12
10-Apr-15	0.04
10-May-15	0.13
10-Jun-15	<QL
10-Jul-15	<QL
10-Aug-15	<QL
Average	**0.08**

VA0023469, Haynesville CC
DMR Data 2012-2015

E. coli	
Date	**30-day Avg**
10-Aug-12	1
10-Sep-12	1.7
10-Oct-12	1
10-Nov-12	1.64
10-Dec-12	1.15
10-Jan-13	1.43
10-Feb-13	1
10-Mar-13	1.28
10-Apr-13	1
10-May-13	1
10-Jun-13	1.4
10-Jul-13	2
10-Aug-13	1
10-Sep-13	1.44
10-Oct-13	1.3
10-Nov-13	1.2
10-Dec-13	1
10-Jan-14	1.2
10-Feb-14	1
10-Mar-14	1
10-Apr-14	1
10-May-14	1
10-Jun-14	1.4
10-Jul-14	1
10-Aug-14	1
10-Sep-14	1
10-Oct-14	1
10-Nov-14	1
10-Dec-14	1
10-Jan-15	1
10-Feb-15	1
10-Mar-15	1
10-Apr-15	1
10-May-15	1
10-Jun-15	1
10-Jul-15	1
10-Aug-15	2
Average	**1.2**

Enterococcus	
Date	**30-day Avg**
10-Aug-12	12.3
10-Sep-12	16.68
10-Oct-12	7.5
10-Nov-12	1.73
10-Dec-12	2.21
10-Jan-13	1.32
10-Feb-13	1
10-Mar-13	1
10-Apr-13	1
10-May-13	1
10-Jun-13	1.5
10-Jul-13	5
10-Aug-13	21
10-Sep-13	4.85
10-Oct-13	17.8
10-Nov-13	1.6
10-Dec-13	4
10-Jan-14	1.2
10-Feb-14	1.4
10-Mar-14	1
10-Apr-14	1.6
10-May-14	1.19
10-Jun-14	2.4
10-Jul-14	30.2
10-Aug-14	12.4
10-Sep-14	10
10-Oct-14	26
10-Nov-14	3
10-Dec-14	1
10-Jan-15	1
10-Feb-15	4
10-Mar-15	3
10-Apr-15	9
10-May-15	5
10-Jun-15	16
10-Jul-15	3
10-Aug-15	34
Average	**7.2**

Copper	
Date	**30-day Avg**
10-Aug-12	9.93
10-Sep-12	11.1
10-Oct-12	9.9
10-Nov-12	10.6
10-Dec-12	8.29
10-Jan-13	5.47
10-Feb-13	6.03
10-Mar-13	7.16
10-Apr-13	7.42
10-May-13	5.67
10-Jun-13	3.5
10-Jul-13	2.6
10-Aug-13	2.4
10-Sep-13	2.13
10-Oct-13	4.37
10-Nov-13	3.65
10-Dec-13	4.4
10-Jan-14	<QL
10-Feb-14	<QL
10-Mar-14	<QL
10-Apr-14	2.3
10-May-14	1.7
10-Jun-14	1.7
10-Jul-14	1.34
10-Aug-14	<QL
10-Sep-14	2.6
10-Oct-14	2.45
10-Nov-14	2.83
10-Dec-14	2.3
10-Jan-15	2.5
10-Feb-15	2.76
10-Mar-15	3.32
10-Apr-15	2.6
10-May-15	2.26
10-Jun-15	<QL
10-Jul-15	1.8
10-Aug-15	6.4
Average	**4.5**

VA0023469, Haynesville CC
DMR Data 2012-2015

Zinc	
Date	**30-day Avg**
10-Apr-15	27.4
10-May-15	26.3
10-Jun-15	<QL
10-Jul-15	<QL
10-Aug-15	16.1
Average	**23**

FACILITY NAME AND PERMIT NUMBER:

ESU/Haynesville Correctional Center VA0023469

Form Approved 1/14/99
OMB Number 2040-0086

BASIC APPLICATION INFORMATION

PART A. BASIC APPLICATION INFORMATION FOR ALL APPLICANTS:

All treatment works must complete questions A.1 through A.8 of this Basic Application Information packet.

A.1. Facility Information.

Facility name	Environmental Services Unit (ESU) / Haynesville Correctional Center		
Mailing Address	650 Barnfield Road or P.O. Box 129 Haynesville, Virginia 22472		
Contact person	Dallas L. Phillips	&	Graham L. Jett
Title	Environmental Services Manager		Treatment Plant Supervisor
Telephone number	757-514-3592 or 757-334-3286 (Cell)		804-250-4174 or 804-441-5093 (Cell)
Facility Address (not P.O. Box)	650 Barnfield Road Haynesville, Virginia 22472		

A.2. Applicant Information. If the applicant is different from the above, provide the following:

Applicant name	Virginia Department of Corrections		
Mailing Address	1001 Obici Industrial Blvd., Suite F Suffolk, Virginia 23434	&	6900 Atmore Drive Richmond, Virginia 23225
Contact person	Dallas L. Phillips		Timothy G. Newton
Title	Environmental Services Manager		Environmental Services Director
Telephone number	757-514-3592 or 757-334-3286 (Cell)		804-887-8069 or 804-839-0337 (Cell)

Is the applicant the owner or operator (or both) of the treatment works?

✓ owner ✓ operator

Indicate whether correspondence regarding this permit should be directed to the facility or the applicant.

✓ facility ✓ applicant

A.3. Existing Environmental Permits. Provide the permit number of any existing environmental permits that have been issued to the treatment works (include state-issued permits).

NPDES	VA0023469	PSD	
UIC		Other	NT GP VAN020044
RCRA		Other	

A.4. Collection System Information. Provide information on municipalities and areas served by the facility. Provide the name and population of each entity and, if known, provide information on the type of collection system (combined vs. separate) and its ownership (municipal, private, etc.).

Name	Population Served	Type of Collection System	Ownership
Haynesville Correctional Center	1,249	Separate	State Government
Haynesville Correctional Unit # 2	161	Separate	State Government
VDOT Regional Shop	18	Separate	State Government
Total population served	1,428		

A.5. Indian Country.

a. Is the treatment works located in Indian Country?

____ Yes ✓ No

b. Does the treatment works discharge to a receiving water that is either in Indian Country or that is upstream from (and eventually flows through) Indian Country?

____ Yes ✓ No

A.6. Flow. Indicate the design flow rate of the treatment plant (i.e., the wastewater flow rate that the plant was built to handle). Also provide the average daily flow rate and maximum daily flow rate for each of the last three years. Each year's data must be based on a 12-month time period with the 12th month of "this year" occurring no more than three months prior to this application submittal.

a. Design flow rate 0.230 mgd

	Two Years Ago	Last Year	This Year	
b. Annual average daily flow rate	0.095	0.102	Jan.-Feb. 2015 0.098	mgd
c. Maximum daily flow rate	0.157	0.135	Jan.-Feb. 2015 0.115	mgd

A.7. Collection System. Indicate the type(s) of collection system(s) used by the treatment plant. Check all that apply. Also estimate the percent contribution (by miles) of each.

✓ Separate sanitary sewer 100 %

____ Combined storm and sanitary sewer ____ %

A.8. Discharges and Other Disposal Methods.

a. Does the treatment works discharge effluent to waters of the U.S.? ✓ Yes ____ No

If yes, list how many of each of the following types of discharge points the treatment works uses:

i. Discharges of treated effluent One Discharge Point

ii. Discharges of untreated or partially treated effluent ____

iii. Combined sewer overflow points ____

iv. Constructed emergency overflows (prior to the headworks) ____

v. Other ____ ____

b. Does the treatment works discharge effluent to basins, ponds, or other surface impoundments that do not have outlets for discharge to waters of the U.S.? ____ Yes ✓ No

If yes, provide the following for each surface impoundment:

Location: ____

Annual average daily volume discharged to surface impoundment(s) ____ mgd

Is discharge ____ continuous or ____ intermittent?

c. Does the treatment works land-apply treated wastewater? ____ Yes ✓ No

If yes, provide the following for each land application site:

Location: ____

Number of acres: ____

Annual average daily volume applied to site: ____ Mgd

Is land application ____ continuous or ____ intermittent?

d. Does the treatment works discharge or transport treated or untreated wastewater to another treatment works? ____ Yes ✓ No

If yes, describe the mean(s) by which the wastewater from the treatment works is discharged or transported to the other treatment works (e.g., tank truck, pipe).

_____

If transport is by a party other than the applicant, provide:

Transporter name: _____

Mailing Address: _____

_____

Contact person: _____

Title: _____

Telephone number: _____

For each treatment works that receives this discharge, provide the following:

Name: _____

Mailing Address: _____

_____

Contact person: _____

Title: _____

Telephone number: _____

If known, provide the NPDES permit number of the treatment works that receives this discharge. _____

Provide the average daily flow rate from the treatment works into the receiving facility. _____ mgd

e. Does the treatment works discharge or dispose of its wastewater in a manner not included in A.8.a through A.8.d above (e.g., underground percolation, well injection)? _____ Yes ✓ No

If yes, provide the following for each disposal method:

Description of method (including location and size of site(s) if applicable):

_____

Annual daily volume disposed of by this method: _____

Is disposal through this method _____ continuous or _____ intermittent?

FACILITY NAME AND PERMIT NUMBER:

ESU/Haynesville Correctional Center VA0023469

Form Approved 1/14/99
OMB Number 2040-0086

WASTEWATER DISCHARGES:

If you answered "yes" to question A.8.a, complete questions A.9 through A.12 **once for each outfall** (including bypass points) through which effluent is discharged. Do not include information on combined sewer overflows in this section. **If you answered "no" to question A.8.a**, go to Part B, "Additional Application Information for Applicants with a Design Flow Greater than or Equal to 0.1 mgd."

A.9. Description of Outfall.

a. Outfall number: 001

b. Location

Haynesville	22472
(City or town, if applicable)	(Zip Code)
Richmond	Virginia
(County)	(State)
N37 Degrees 57.353'	W076 Degrees 40.493'
(Latitude)	(Longitude)

c. Distance from shore (if applicable): N/A ft.

d. Depth below surface (if applicable): N/A ft.

e. Average daily flow rate: Jan. - Feb. 2015 0.098 mgd

f. Does this outfall have either an intermittent or a periodic discharge? ____ Yes ✓ No (go to A.9.g.)

If yes, provide the following information:

Number of times per year discharge occurs: ____

Average duration of each discharge: ____

Average flow per discharge: ____ mgd

Months in which discharge occurs: ____

g. Is outfall equipped with a diffuser? ____ Yes No No

A.10. Description of Receiving Waters.

a. Name of receiving water: Unnamed Tributary of Garlands Millpond

b. Name of watershed (if known): Unknown

United States Soil Conservation Service 14-digit watershed code (if known): Unknown

c. Name of State Management/River Basin (if known): Rappahannock

United States Geological Survey 8-digit hydrologic cataloging unit code (if known): Unknown

d. Critical low flow of receiving stream (if applicable):
acute 0 cfs chronic 0 cfs

e. Total hardness of receiving stream at critical low flow (if applicable): N/A mg/l of $CaCO_3$

FACILITY NAME AND PERMIT NUMBER:

ESU/Haynesville Correctional Center VA0023469

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A.11. Description of Treatment.

a. What levels of treatment are provided? Check all that apply.

____ Primary ✓ Secondary

✓ Advanced ____ Other. Describe: Sequencing Batch Reacto (SBR), Mix Air, Dynasand Filter

b. Indicate the following removal rates (as applicable):

Design BOD_5 removal or Design $CBOD_5$ removal 98 %

Design SS removal 99 %

Design P removal 97 %

Design N removal 93 %

Other Ammonia & TKN 99 & 96 %

c. What type of disinfection is used for the effluent from this outfall? If disinfection varies by season, please describe.

Ultraviolet Light (UV)

If disinfection is by chlorination, is dechlorination used for this outfall? ____ Yes ____ No

d. Does the treatment plant have post aeration? ✓ Yes ____ No

A.12. Effluent Testing Information. All Applicants that discharge to waters of the US must provide effluent testing data for the following parameters. Provide the indicated effluent testing required by the permitting authority for each outfall through which effluent is discharged. Do not include information on combined sewer overflows in this section. All information reported must be based on data collected through analysis conducted using 40 CFR Part 136 methods. In addition, this data must comply with QA/QC requirements of 40 CFR Part 136 and other appropriate QA/QC requirements for standard methods for analytes not addressed by 40 CFR Part 136. At a minimum, effluent testing data must be based on at least three samples and must be no more than four and one-half years apart.

Outfall number: 001

PARAMETER	MAXIMUM DAILY VALUE		AVERAGE DAILY VALUE		
	Value	Units	Value	Units	Number of Samples
pH (Minimum)	6.7	s.u.	7.6	mg/l	1096
pH (Maximum)	8.8	s.u.	8.1	mg/l	1096
Flow Rate	.165	mgd	.099	mgd	1096
Temperature (Winter)	18.9 Degrees	Centigrade	15.3 Degrees	Centigrade	271
Temperature (Summer)	30.3 Degrees	Centigrade	27.1 Degrees	Centigrade	276

* For pH please report a minimum and a maximum daily value

POLLUTANT		MAXIMUM DAILY DISCHARGE		AVERAGE DAILY DISCHARGE			ANALYTICAL METHOD	ML / MDL
		Conc.	Units	Conc.	Units	Number of Samples		
CONVENTIONAL AND NONCONVENTIONAL COMPOUNDS.								
BIOCHEMICAL OXYGEN	BOD-5	17.9	mg/l	1.6	mg/l	463	SM5210-B-2011	5.0 mg/l
DEMAND (Report one)	CBOD-5	N/A						
FECAL COLIFORM		95.6	N/CML	1.5	N/CML	466	HACH 10029	1.0 N/CML
TOTAL SUSPENDED SOLIDS (TSS)		8.5	mg/l	3.6	mg/l	36	SM2540-D-2011	1.0 mg/l

END OF PART A.

REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHICH OTHER PARTS OF FORM 2A YOU MUST COMPLETE

BASIC APPLICATION INFORMATION

PART B. ADDITIONAL APPLICATION INFORMATION FOR APPLICANTS WITH A DESIGN FLOW GREATER THAN OR EQUAL TO 0.1 MGD (100,000 gallons per day).

All applicants with a design flow rate ≥ 0.1 mgd must answer questions B.1 through B.6. All others go to Part C (Certification).

B.1. Inflow and Infiltration. Estimate the average number of gallons per day that flow into the treatment works from inflow and/or infiltration.

Minimum if any at all. _____gpd

Briefly explain any steps underway or planned to minimize inflow and infiltration.

This is not a problem but, during the last upgrade an equalization basin was constructed and added to the treatment process.

B.2. Topographic Map. Attach to this application a topographic map of the area extending at least one mile beyond facility property boundaries. This map must show the outline of the facility and the following information. (You may submit more than one map if one map does not show the entire area.)

a. The area surrounding the treatment plant, including all unit processes.

b. The major pipes or other structures through which wastewater enters the treatment works and the pipes or other structures through which treated wastewater is discharged from the treatment plant. Include outfalls from bypass piping, if applicable.

c. Each well where wastewater from the treatment plant is injected underground.

d. Wells, springs, other surface water bodies, and drinking water wells that are: 1) within 1/4 mile of the property boundaries of the treatment works, and 2) listed in public record or otherwise known to the applicant.

e. Any areas where the sewage sludge produced by the treatment works is stored, treated, or disposed.

f. If the treatment works receives waste that is classified as hazardous under the Resource Conservation and Recovery Act (RCRA) by truck, rail, or special pipe, show on the map where that hazardous waste enters the treatment works and where it is treated, stored, and/or disposed.

B.3. Process Flow Diagram or Schematic. Provide a diagram showing the processes of the treatment plant, including all bypass piping and all backup power sources or redundancy in the system. Also provide a water balance showing all treatment units, including disinfection (e.g, chlorination and dechlorination). The water balance must show daily average flow rates at influent and discharge points and approximate daily flow rates between treatment units. Include a brief narrative description of the diagram.

B.4. Operation/Maintenance Performed by Contractor(s).

Are any operational or maintenance aspects (related to wastewater treatment and effluent quality) of the treatment works the responsibility of a contractor? ____Yes ✓ No

If yes, list the name, address, telephone number, and status of each contractor and describe the contractor's responsibilities (attach additional pages if necessary).

Name: _____

Mailing Address: _____

_____

Telephone Number: _____

Responsibilities of Contractor: _____

B.5. Scheduled Improvements and Schedules of Implementation. Provide information on any uncompleted implementation schedule or uncompleted plans for improvements that will affect the wastewater treatment, effluent quality, or design capacity of the treatment works. If the treatment works has several different implementation schedules or is planning several improvements, submit separate responses to question B.5 for each. (If none, go to question B.6.)

a. List the outfall number (assigned in question A.9) for each outfall that is covered by this implementation schedule.

N/A

b. Indicate whether the planned improvements or implementation schedule are required by local, State, or Federal agencies.

____Yes ____No

c If the answer to B.5.b is "Yes," briefly describe, including new maximum daily inflow rate (if applicable).

_____

d. Provide dates imposed by any compliance schedule or any actual dates of completion for the implementation steps listed below, as applicable. For improvements planned independently of local, State, or Federal agencies, indicate planned or actual completion dates, as applicable. Indicate dates as accurately as possible.

Implementation Stage	Schedule MM / DD / YYYY	Actual Completion MM / DD / YYYY
– Begin construction	___/___/_____	___/___/_____
– End construction	___/___/_____	___/___/_____
– Begin discharge	___/___/_____	___/___/_____
– Attain operational level	___/___/_____	___/___/_____

e. Have appropriate permits/clearances concerning other Federal/State requirements been obtained? ____Yes ____No

Describe briefly: _____

_____

B.6. EFFLUENT TESTING DATA (GREATER THAN O.1 MGD ONLY).

Applicants that discharge to waters of the US must provide effluent testing data for the following parameters. Provide the indicated effluent testing required by the permitting authority for each outfall through which effluent is discharged. Do not include information on combined sewer overflows in this section. All information reported must be based on data collected through analysis conducted using 40 CFR Part 136 methods. In addition, this data must comply with QA/QC requirements of 40 CFR Part 136 and other appropriate QA/QC requirements for standard methods for analytes not addressed by 40 CFR Part 136. At a minimum, effluent testing data must be based on at least three pollutant scans and must be no more than four and one-half years old.

Outfall Number: 001

POLLUTANT	MAXIMUM DAILY DISCHARGE		AVERAGE DAILY DISCHARGE			ANALYTICAL METHOD	ML / MDL
	Conc.	Units	Conc.	Units	Number of Samples		
CONVENTIONAL AND NONCONVENTIONAL COMPOUNDS.							
AMMONIA (as N)	1.19	mg/l	0.05	mg/l	470	EPA 350.1 R20	0.10
CHLORINE (TOTAL RESIDUAL, TRC)	<QL	mg/L	<QL	mg/l	6	HACH 8167	0.10
DISSOLVED OXYGEN	13.5	mg/l	9.0	mg/l	1096	SM4500-OG-2011	N/A
TOTAL KJELDAHL NITROGEN (TKN)	4.9	mg/l	1.3	mg/l	72	EPA 351.2 R20	0.50
NITRATE PLUS NITRITE NITROGEN	9.16	mg/l	3.4	mg/l	72	SM4500-NO3F - 2011	0.10
OIL and GREASE	<QL	mg/l	<QL	mg/l	3	EPA 1664 A	5.2
PHOSPHORUS (Total)	3.29	mg/l	0.3	mg/l	76	SM4500-PE - 2011	0.02
TOTAL DISSOLVED SOLIDS (TDS)	618	mg/l	603	mg/l	3	SM2540-C-2011	10.0
OTHER	N/A						

END OF PART B.
REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHICH OTHER PARTS OF FORM 2A YOU MUST COMPLETE

ATTACHMENT A
DEPARTMENT OF ENVIRONMENTAL QUALITY
WATER QUALITY CRITERIA MONITORING

Effective January 1, 2012, all analyses shall be in accordance with 1VAC30-45, Certification for Noncommercial Environmental Laboratories, or 1VAC30-46, Accreditation for Commercial Environmental Laboratories.

A listing of Virginia Environmental Laboratory Accreditation Program (VELAP) certified and/or accredited laboratories can be found at the following website:
http://www.dgs.state.va.us/DivisionofConsolidatedLaboratoryServices/Services/EnvironmentalLaboratoryCertification/tabid/1059/Default.aspx

Please be advised that additional water quality analyses may be necessary and/or required for permitting purposes.

CASRN	CHEMICAL	EPA ANALYSIS NO.	QUANTIFICATION LEVEL[1]	REPORTING RESULTS	SAMPLE TYPE[2]	SAMPLE FREQUENCY
METALS						
7440-36-0	Antimony, dissolved	(3)	1.4	<QL	G	1/5 YR
7440-38-2	Arsenic, dissolved	(3)	1.0	<QL	G	1/5 YR
7440-43-9	Cadmium, dissolved	(3)	0.3	<QL	G	1/5 YR
16065-83-1	Chromium III, dissolved [6]	(3)	3.6	<QL	G	1/5 YR
18540-29-9	Chromium VI, dissolved [6]	(3)	1.6	<QL	G	1/5 YR
7440-50-8	Copper, dissolved	(3)	0.50	1.78	G	1/5 YR
7439-92-1	Lead, dissolved	(3)	0.50	<QL	G	1/5 YR
7439-97-6	Mercury, dissolved	(3)	1.0	<QL	G	1/5 YR
7440-02-0	Nickel, dissolved	(3)	0.94	0.54	G	1/5 YR
7782-49-2	Selenium, Total Recoverable	(3)	2.0	<QL	G	1/5 YR (FW)
7440-22-4	Silver, dissolved	(3)	0.20	<QL	G	1/5 YR
7440-28-0	Thallium, dissolved	(3)	(4)	<QL	G	1/5 YR
7440-66-6	Zinc, dissolved	(3)	3.6	14.7	G	1/5 YR
PESTICIDES/PCBs						
309-00-2	Aldrin	608/625	0.05	<QL	G	1/5 YR
57-74-9	Chlordane	608/625	0.2	ND	G	1/5 YR
2921-88-2	Chlorpyrifos (synonym = Dursban)	622	(4)	<QL	G	1/5 YR
72-54-8	DDD	608/625	0.1	<QL	G	1/5 YR
72-55-9	DDE	608/625	0.1	<QL	G	1/5 YR
50-29-3	DDT	608/625	0.1	<QL	G	1/5 YR

CASRN	CHEMICAL	EPA ANALYSIS NO.	QUANTIFICATION LEVEL[1]	REPORTING RESULTS	SAMPLE TYPE[2]	SAMPLE FREQUENCY
8065-48-3	Demeton (synonym = Dementon-O,S)	622	(4)	<QL	G	1/5 YR
333-41-5	Diazinon	622	(4)	<QL	G	1/5 YR
60-57-1	Dieldrin	608/625	0.1	<QL	G	1/5 YR
959-98-8	Alpha-Endosulfan (synonym = Endosulfan I)	608/625	0.1	<QL	G	1/5 YR
33213-65-9	Beta-Endosulfan (synonym = Endosulfan II)	608625	0.1	<QL	G	1/5 YR
1031-07-8	Endosulfan Sulfate	608/625	0.1	<QL	G	1/5 YR
72-20-8	Endrin	608/625	0.1	<QL	G	1/5 YR
7421-93-4	Endrin Aldehyde	608/625	(4)	<QL	G	1/5 YR
86-50-0	Guthion (synonym = Azinphos Methyl)	622	(4)	<QL	G	1/5 YR
76-44-8	Heptachlor	608/625	0.05	<QL	G	1/5 YR
1024-57-3	Heptachlor Epoxide	608/625	(4)	<QL	G	1/5 YR
319-84-6	Hexachlorocyclohexane Alpha-BHC	608/625	(4)	<QL	G	1/5 YR
319-85-7	Hexachlorocyclohexane Beta-BHC	608/625	(4)	<QL	G	1/5 YR
58-89-9	Hexachlorocyclohexane Gamma-BHC (syn. = Lindane)	608/625	(4)	<QL	G	1/5 YR
143-50-0	Kepone	8081 Extended/ 8270C/8270D	(4)	<QL	G	1/5 YR
121-75-5	Malathion	614	(4)	<QL	G	1/5 YR
72-43-5	Methoxychlor	608.2	(4)	<QL	G	1/5 YR
2385-85-5	Mirex	8081 Extended/ 8270C/8270D	(4)	<QL	G	1/5 YR
56-38-2	Parathion (synonym = Parathion Ethyl)	614	(4)	<QL	G	1/5 YR
1336-36-3	PCB, total	608/625	7.0	ND	G	1/5 YR
8001-35-2	Toxaphene	608/625	5.0	ND	G	1/5 YR
BASE NEUTRAL EXTRACTABLES						
83-32-9	Acenaphthene	610/625	10.0	<QL	G	1/5 YR
120-12-7	Anthracene	610/625	10.0	<QL	G	1/5 YR
92-87-5	Benzidine	625	(4)	<QL	G	1/5 YR
56-55-3	Benzo (a) anthracene	610/625	10.0	<QL	G	1/5 YR
205-99-2	Benzo (b) fluoranthene	610/625	10.0	<QL	G	1/5 YR
207-08-9	Benzo (k) fluoranthene	610/625	10.0	<QL	G	1/5 YR
50-32-8	Benzo (a) pyrene	610/625	10.0	<QL	G	1/5 YR
111-44-4	Bis 2-Chloroethyl Ether	625	(4)	<QL	G	1/5 YR

CASRN	CHEMICAL	EPA ANALYSIS NO.	QUANTIFICATION LEVEL[1]	REPORTING RESULTS	SAMPLE TYPE[2]	SAMPLE FREQUENCY
108-60-1	Bis 2-Chloroisopropyl Ether	625	(4)	<QL	G	1/5 YR
117-81-7	Bis 2-Ethylhexyl Phthalate (syn. = Di-2-Ethylhexyl Phthalate)	625	10.0	<QL	G	1/5 YR
85-68-7	Butyl benzyl phthalate	625	10.0	<QL	G	1/5 YR
91-58-7	2-Chloronaphthalene	625	(4)	<QL	G	1/5 YR
218-01-9	Chrysene	610/625	10.0	<QL	G	1/5 YR
53-70-3	Dibenzo (a,h) anthracene	610/625	20.0	<QL	G	1/5 YR
95-50-1	1,2-Dichlorobenzene	602/624	10.0	<QL	G	1/5 YR
541-73-1	1,3-Dichlorobenzene	602/624	10.0	<QL	G	1/5 YR
106-46-7	1,4-Dichlorobenzene	602/624	10.0	<QL	G	1/5 YR
91-94-1	3,3-Dichlorobenzidine	625	(4)	<QL	G	1/5 YR
84-66-2	Diethyl phthalate	625	10.0	<QL	G	1/5 YR
131-11-3	Dimethyl phthalate	625	(4)	<QL	G	1/5 YR
84-74-2	Di-n-butyl Phthalate (synonym = Dibutyl Phthalate)	625	10.0	<QL	G	1/5 YR
121-14-2	2,4-Dinitrotoluene	625	10.0	<QL	G	1/5 YR
122-66-7	1,2-Diphenylhydrazine	625/ 8270C/8270D	(4)	<QL	G	1/5 YR
206-44-0	Fluoranthene	610/625	10.0	<QL	G	1/5 YR
86-73-7	Fluorene	610/625	10.0	<QL	G	1/5 YR
118-74-1	Hexachlorobenzene	625	(4)	<QL	G	1/5 YR
87-68-3	Hexachlorobutadiene	625	(4)	<QL	G	1/5 YR
77-47-4	Hexachlorocyclopentadiene	625	(4)	<QL	G	1/5 YR
67-72-1	Hexachloroethane	625	(4)	<QL	G	1/5 YR
193-39-5	Indeno(1,2,3-cd)pyrene	610/625	20.0	<QL	G	1/5 YR
78-59-1	Isophorone	625	10.0	<QL	G	1/5 YR
98-95-3	Nitrobenzene	625	10.0	<QL	G	1/5 YR
62-75-9	N-Nitrosodimethylamine	625	(4)	<QL	G	1/5 YR
621-64-7	N-Nitrosodi-n-propylamine	625	(4)	<QL	G	1/5 YR
86-30-6	N-Nitrosodiphenylamine	625	(4)	<QL	G	1/5 YR
129-00-0	Pyrene	610/625	10.0	<QL	G	1/5 YR
120-82-1	1,2,4-Trichlorobenzene	625	10.0	<QL	G	1/5 YR
VOLATILES						

CASRN	CHEMICAL	EPA ANALYSIS NO.	QUANTIFICATION LEVEL[1]	REPORTING RESULTS	SAMPLE TYPE[2]	SAMPLE FREQUENCY
107-02-8	Acrolein	624	(4)	<QL	G	1/5 YR
107-13-1	Acrylonitrile	624	(4)	<QL	G	1/5 YR
71-43-2	Benzene	602/624	10.0	<QL	G	1/5 YR
75-25-2	Bromoform	624	10.0	<QL	G	1/5 YR
56-23-5	Carbon Tetrachloride	624	10.0	<QL	G	1/5 YR
108-90-7	Chlorobenzene (synonym = Monochlorobenzene)	602/624	50.0	<QL	G	1/5 YR
124-48-1	Chlorodibromomethane	624	10.0	<QL	G	1/5 YR
67-66-3	Chloroform	624	10.0	<QL	G	1/5 YR
75-27-4	Dichlorobromomethane	624	10.0	<QL	G	1/5 YR
107-06-2	1,2-Dichloroethane	624	10.0	<QL	G	1/5 YR
75-35-4	1,1-Dichloroethylene	624	10.0	<QL	G	1/5 YR
156-60-5	1,2-trans-dichloroethylene	624	(4)	<QL	G	1/5 YR
78-87-5	1,2-Dichloropropane	624	(4)	<QL	G	1/5 YR
542-75-6	1,3-Dichloropropene	624	(4)	<QL	G	1/5 YR
100-41-4	Ethylbenzene	602/624	10.0	<QL	G	1/5 YR
74-83-9	Methyl Bromide (synonym = Bromomethane)	624	(4)	<QL	G	1/5 YR
75-09-2	Methylene Chloride (synonym = Dichloromethane)	624	20.0	<QL	G	1/5 YR
79-34-5	1,1,2,2-Tetrachloroethane	624	(4)	<QL	G	1/5 YR
127-18-4	Tetrachloroethylene (synonym = Tetrachloroethene)	624	10.0	<QL	G	1/5 YR
10-88-3	Toluene	602/624	10.0	<QL	G	1/5 YR
79-00-5	1,1,2-Trichloroethane	624	(4)	<QL	G	1/5 YR
79-01-6	Trichloroethylene (synonym = Trichloroethene)	624	10.0	<QL	G	1/5 YR
75-01-4	Vinyl Chloride	624	10.0	<QL	G	1/5 YR
ACID EXTRACTABLES						
95-57-8	2-Chlorophenol	625	10.0	<QL	G	1/5 YR
120-83-2	2,4 Dichlorophenol	625	10.0	<QL	G	1/5 YR
105-67-9	2,4 Dimethylphenol	625	10.0	<QL	G	1/5 YR
51-28-5	2,4-Dinitrophenol	625	(4)	<QL	G	1/5 YR
534-52-1	2-Methyl-4,6-Dinitrophenol	625	(4)	<QL	G	1/5 YR
25154-52-3	Nonylphenol	ASTM D 7065-06	(4)	<QL	G	1/5 YR

CASRN	CHEMICAL	EPA ANALYSIS NO.	QUANTIFICATION LEVEL[1]	REPORTING RESULTS	SAMPLE TYPE[2]	SAMPLE FREQUENCY
87-86-5	Pentachlorophenol	625	50.0	<QL	G	1/5 YR
108-95-2	Phenol	625	10.0	<QL	G	1/5 YR
88-06-2	2,4,6-Trichlorophenol	625	10.0	<QL	G	1/5 YR
MISCELLANEOUS						
776-41-7	Ammonia as NH3-N	350.1	200	<QL	C	1/5 YR
16887-00-6	Chloride	(3)	(4)	101	C	1/5 YR (FW and PWS)
7782-50-5	Chlorine, Total Residual	(3)	100	ND	G	1/5 YR
57-12-5	Cyanide, Free [8]	ASTM 4282-02	10.0	<QL	G	1/5 YR
N/A	*E. coli / Enterococcus* (N/CML)	(3)	(4)	<1	G	1/5 YR
18496-25-8	Sulfide, dissolved [7]	SM 4500 S^2 B	100	<QL	G	1/5 YR
60-10-5	Tributyltin	(5)	(4)	<QL	G	1/5 YR
471-34-1	Hardness (mg/L as $CaCO_3$)	(3)	(4)	85.9	G	1/5 YR (FW & TZs)

Timothy Newton ESU Director

Name of Principal Executive Officer or Authorized Agent & Title

3/24/15

Signature of Principal Executive Officer or Authorized Agent & Date

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment for knowing violations. See 18 U.S.C. Sec. 1001 and 33 U.S.C. Sec. 1319. (Penalties under these statutes may include fines up to $10,000 and or maximum imprisonment of between 6 months and 5 years.)

FOOTNOTES:

(1) Quantification level (QL) means the minimum levels, concentrations, or quantities of a target variable (e.g. target analyte) that can be reported with a specified degree of confidence in accordance with 1VAC30-45, Certification for Noncommercial Environmental Laboratories, or 1VAC30-46, Accreditation for Commercial Environmental Laboratories.

The quantification levels indicated for the metals are actually Specific Target Values developed for this permit. The Specific Target Value is the approximate value that may initiate a wasteload allocation analysis. Target values are not wasteload allocations or effluent limitations. The Specific Target Values are subject to change based on additional information such as hardness data, receiving stream flow, and design flows.

Units for the quantification level are micrograms/liter unless otherwise specified.

Quality control and quality assurance information (i.e. laboratory certificates of analysis) shall be submitted to document that the required quantification level has been attained.

(2) Sample Type

G = Grab = An individual sample collected in less than 15 minutes. Substances specified with "grab" sample type shall only be collected as grabs. The permittee may analyze multiple grabs and report the average results provided that the individual grab results are also reported. For grab metals samples, the individual samples shall be filtered and preserved immediately upon collection.

C = Composite = A 24-hour **(PW - Revise as required to require same composite duration as BOD_5)** composite unless otherwise specified. The composite shall be a combination of individual samples, taken proportional to flow, obtained at hourly or smaller time intervals. The individual samples may be of equal volume for flows that do not vary by +/- 10 percent over a 24-hour period.

(3) A specific analytical method is not specified; however, an appropriate method to meet the QL shall be selected from any approved method presented in 40 CFR Part 136.

(4) The QL is at the discretion of the permittee. If the test result is less than the method QL, a "<[QL]" shall be reported where the actual analytical test QL is substituted for [QL].

(5) Analytical Methods: Analysis of Butyltins in Environmental Systems by the Virginia Institute of Marine Science, dated November 1996 (currently the only Virginia Environmental Laboratory Accreditation Program (VELAP) accredited method).

(6) Both Chromium III and Chromium VI may be measured by the total chromium analysis. The total chromium analytical test QL shall be less than or equal to the lesser of the Chromium III or Chromium VI method QL listed above. If the result of the total chromium analysis is less than the analytical test QL, both Chromium III and Chromium VI can be reported as "<[QL]", where the actual analytical test QL is substituted for [QL].

(7) Dissolved sulfide may be measured by the total sulfide analysis. The total sulfide analytical test QL shall be less than or equal to the dissolved sulfide method QL listed above. If the result of the total sulfide analysis is less than the analytical test QL, dissolved sulfide can be reported as "<[QL]", where the actual analytical test QL is substituted for [QL].

(8) Free cyanide may be measured by the total cyanide analysis. The total cyanide analytical test QL shall be less than or equal to the free cyanide method QL listed above. If the result of the total cyanide analysis is less than the analytical test QL, free cyanide can be reported as "<[QL]", where the actual analytical test QL is substituted for [QL].

Attachment F

Effluent Limitation Development:

Modeling Memo
MSTRANTI Data Source Report
MSTRANTI
STATS.exe

****

REGIONAL MODELING SYSTEM VERSION 3.2

****

MODEL SIMULATION FOR THE Haynesville DISCHARGE

TO UTRIB Garland's Millpond

COMMENT: considers capacities of 0.028 and 0.15 MGD WWTPs

THE SIMULATION STARTS AT THE Haynesville DISCHARGE

********** PROPOSED PERMIT LIMITS **********

FLOW = .178 MGD cBOD5 = 15 Mg/L TKN = 3 Mg/L D.O. = 5.5 Mg/L

**** THE MAXIMUM CHLORINE ALLOWABLE IN THE DISCHARGE IS 0.011 Mg/L ****

THE SECTION BEING MODELED IS BROKEN INTO 2 SEGMENTS
RESULTS WILL BE GIVEN AT 0.1 MILE INTERVALS

********** BACKGROUND CONDITIONS **********

THE 7Q10 STREAM FLOW AT THE DISCHARGE IS 0.00000 MGD
THE DISSOLVED OXYGEN OF THE STREAM IS 7.489 Mg/L
THE BACKGROUND cBOD5 OF THE STREAM IS 5 Mg/L
THE BACKGROUND nBOD OF THE STREAM IS 0 Mg/L

********** MODEL PARAMETERS **********

SEG.	LEN. MI	VEL. F/S	K2 1/D	K1 1/D	KN 1/D	BENTHIC Mg/L	ELEV. Ft	TEMP. °C	DO-SAT Mg/L
1	0.40	0.482	20.000	1.400	0.350	0.000	50.00	25.00	8.321
2	0.80	0.354	18.750	1.400	0.350	0.000	27.50	25.00	8.327

(The K Rates shown are at 20°C ... the model corrects them for temperature.)

Diane Gook

Denise M

Mar 10,99 10:38 No.006 P.0

********** RESPONSE FOR SEGMENT 1 **********

TOTAL STREAMFLOW = 0.1780 MGD
(Including Discharge)

DISTANCE FROM HEAD OF SEGMENT (MI.)	TOTAL DISTANCE FROM MODEL BEGINNING (MI.)	DISSOLVED OXYGEN (Mg/L)	cBODu (Mg/L)	nBODu (Mg/L)
0.000	0.000	5.500	37.500	0.000
0.100	0.100	5.480	36.671	0.000
0.200	0.200	5.482	35.860	0.000
0.300	0.300	5.498	35.068	0.000
0.400	0.400	5.526	34.292	0.000

FOR THE DISCHARGE AT THE END OF SEGMENT 1
DISCHARGER = unnamed
FLOW = .00168 MGD cBOD5 = 2 Mg/L TKN = 1 Mg/L D.O. = 8 Mg/L

FLOW FROM INCREMENTAL DRAINAGE AREA = 0.0000 MGD

********** RESPONSE FOR SEGMENT 2 **********

TOTAL STREAMFLOW = 0.1797 MGD
(Including Discharge, Tributaries and Incremental D.A. Flow)

DISTANCE FROM HEAD OF SEGMENT (MI.)	TOTAL DISTANCE FROM MODEL BEGINNING (MI.)	DISSOLVED OXYGEN (Mg/L)	cBOD5 (Mg/L)	nBOD5 (Mg/L)
0.000	0.400	5.549	34.019	0.000
0.100	0.500	5.544	32.999	0.000
0.200	0.600	5.567	32.011	0.000
0.300	0.700	5.607	31.052	0.000
0.400	0.800	5.659	30.121	0.000
0.500	0.900	5.719	29.219	0.000
0.600	1.000	5.783	28.343	0.000
0.700	1.100	5.849	27.494	0.000
0.800	1.200	5.917	26.670	0.000

****

REGIONAL MODELING SYSTEM Ver 3.2 (OWRM - 9/90)
01-20-1994 14:03:27

DATA FILE = 194.MOD

To: Diane O. Cook@RCHMD@DEQ
Cc:
Bcc:
From: Denise M. Mosca@KLMCK@DEQ
Subject: re: stream model
Date: Thursday, March 18, 1999 16:41:12 EST
Attach:
Certify: N
Forwarded by:

OK, here's the regional model--Back in '94 I also ran at flow 0.178 MGD as well.

So, we're ok with increased flow.

denise

****

REGIONAL MODELING SYSTEM VERSION 3.2

****

MODEL SIMULATION FOR THE Haynesville Correctional Center DISCHARGE

TO UTRIB Garland's Mill pond

COMMENT: 7Q10 of zero

THE SIMULATION STARTS AT THE Haynesville Correctional Center DISCHARGE

********** PROPOSED PERMIT LIMITS **********

FLOW = .15 MGD cBOD5 = 15 Mg/L TKN = 3 Mg/L D.O. = 5.5 Mg/L

**** THE MAXIMUM CHLORINE ALLOWABLE IN THE DISCHARGE IS 0.011 Mg/L ****

THE SECTION BEING MODELED IS BROKEN INTO 2 SEGMENTS
RESULTS WILL BE GIVEN AT 0.1 MILE INTERVALS

********** BACKGROUND CONDITIONS **********

THE 7Q10 STREAM FLOW AT THE DISCHARGE IS 0.00000 MGD
THE DISSOLVED OXYGEN OF THE STREAM IS 7.489 Mg/L
THE BACKGROUND cBOD5 OF THE STREAM IS 5 Mg/L
THE BACKGROUND nBOD OF THE STREAM IS 0 Mg/L

********** MODEL PARAMETERS **********

SEG.	LEN. Mi	VEL. F/S	K2 1/D	K1 1/D	KN 1/D	BENTHIC Mg/L	ELEV. Ft	TEMP. °C	DO-SAT Mg/L
1	0.40	0.482	20.000	1.400	0.350	0.762	50.00	25.00	8.321
2	0.80	0.354	18.750	1.400	0.350	0.000	27.50	25.00	8.327

(The K Rates shown are at 20°C ... the model corrects them for temperature.)

********** RESPONSE FOR SEGMENT 1 **********

TOTAL STREAMFLOW = 0.1500 MGD
(Including Discharge)

DISTANCE FROM HEAD OF SEGMENT (MI.)	TOTAL DISTANCE FROM MODEL BEGINNING (MI.)	DISSOLVED OXYGEN (Mg/L)	cBOD5 (Mg/L)	nBOD5 (Mg/L)
0.000	0.000	5.500	37.500	0.000
0.100	0.100	5.468	36.671	0.000
0.200	0.200	5.460	35.860	0.000
0.300	0.300	5.470	35.068	0.000
0.400	0.400	5.492	34.292	0.000

FOR THE DISCHARGE AT THE END OF SEGMENT 1
DISCHARGER = unnamed
FLOW = .00168 MGD cBOD5 = 2 Mg/L TKN = 1 Mg/L D.O. = 8 Mg/L

FLOW FROM INCREMENTAL DRAINAGE AREA = 0.0014 MGD

********** RESPONSE FOR SEGMENT 2 **********

TOTAL STREAMFLOW = 0.1531 MGD
(Including Discharge, Tributaries and Incremental D.A. Flow)

DISTANCE FROM HEAD OF SEGMENT (MI.)	TOTAL DISTANCE FROM MODEL BEGINNING (MI.)	DISSOLVED OXYGEN (Mg/L)	cBODu (Mg/L)	nBODu (Mg/L)
0.000	0.400	5.538	33.699	0.000
0.100	0.500	5.545	32.689	0.000
0.200	0.600	5.575	31.710	0.000
0.300	0.700	5.620	30.760	0.000
0.400	0.800	5.676	29.838	0.000
0.500	0.900	5.737	28.944	0.000
0.600	1.000	5.802	28.077	0.000
0.700	1.100	5.870	27.236	0.000
0.800	1.200	5.937	26.420	0.000

****

REGIONAL MODELING SYSTEM Ver 3.2 (OWRM - 9/90)
06-08-1994 11:24:39

DATA FILE = ZERO.MOD

Rich Neck
Haynesville
State Prison Camp
No. 17
Gardys Millpond
Millpond
Gardys
Swamp
Totuskey

MSTRANTI DATA SOURCE REPORT

Stream Information	
Mean Hardness	The receiving stream is a Tier 1, intermittent stream. During low flow conditions the stream is assumed to be dry, and therefore, the stream flow consists entirely of effluent flow. The effluent conditions are used for the stream data in the MSTRANTI spreadsheet.
90% Temperature (annual)	
90% Temperature (wet season)	
90% Maximum pH	
10% Maximum pH	
Tier Designation	Flow Frequency Memo
Stream Flows	
All Data	The receiving stream is a Tier 1, intermittent stream. During low flow conditions the stream is assumed to be dry, and therefore, the stream flow consists entirely of effluent flow. The effluent conditions are used for the stream data in the MSTRANTI spreadsheet.
Mixing Information	
All Data	Because the stream flows during low flow conditions are assumed to be 100% effluent, 100% mixing is assumed.
Effluent Information	
Mean Hardness	Attachment A – Water Quality Criteria Monitoring Form
90% Temperature (annual)	Application Data
90% Maximum pH	DMR Data
10% Maximum pH	DMR Data
Discharge Flow	Application Data

Data Location:

Flow Frequency Memo – Attachment A
Water Quality Criteria Memo – Attachment E
Application Data – Attachment E
DMR Data – Attachment E

FRESHWATER
WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: DOC Haynesville Correctional Center Permit No.: VA0023469

Receiving Stream: UT to Marshy Swamp Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information		
Mean Hardness (as CaCO3) =	85.9	mg/L
90% Temperature (Annual) =	30.3	deg C
90% Temperature (Wet season) =		deg C
90% Maximum pH =	8.5	SU
10% Maximum pH =	7.9	SU
Tier Designation (1 or 2) =	1	
Public Water Supply (PWS) Y/N? =	N	
Trout Present Y/N? =	N	
Early Life Stages Present Y/N? =	Y	

Stream Flows		
1Q10 (Annual) =	0	MGD
7Q10 (Annual) =	0	MGD
30Q10 (Annual) =	0	MGD
1Q10 (Wet season) =	0	MGD
30Q10 (Wet season)	0	MGD
30Q5 =	0	MGD
Harmonic Mean =	0	MGD

Mixing Information		
Annual - 1Q10 Mix =	100	%
- 7Q10 Mix =	100	%
- 30Q10 Mix =	100	%
Wet Season - 1Q10 Mix =		%
- 30Q10 Mix =		%

Effluent Information		
Mean Hardness (as CaCO3) =	85.9	mg/L
90% Temp (Annual) =	30.3	deg C
90% Temp (Wet season) =		deg C
90% Maximum pH =	8.3	SU
10% Maximum pH =	7.9	SU
Discharge Flow =	0.178	MGD

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Acenapthene	0	--	--	na	9.9E+02	--	--	na	9.9E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**9.9E+02**
Acrolein	0	--	--	na	9.3E+00	--	--	na	9.3E+00	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**9.3E+00**
Acrylonitrile[C]	0	--	--	na	2.5E+00	--	--	na	2.5E+00	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.5E+00**
Aldrin [C]	0	3.0E+00	--	na	5.0E-04	3.0E+00	--	na	5.0E-04	--	--	--	--	--	--	--	--	**3.0E+00**	**--**	**na**	**5.0E-04**
Ammonia-N (mg/l) (Yearly)	0	4.71E+00	5.51E-01	na	--	4.71E+00	5.51E-01	na	--	--	--	--	--	--	--	--	--	**4.71E+00**	**5.51E-01**	**na**	**--**
Ammonia-N (mg/l) (High Flow)	0	4.71E+00	1.52E+00	na	--	4.71E+00	1.52E+00	na	--	--	--	--	--	--	--	--	--	**4.71E+00**	**1.52E+00**	**na**	**--**
Anthracene	0	--	--	na	4.0E+04	--	--	na	4.0E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.0E+04**
Antimony	0	--	--	na	6.4E+02	--	--	na	6.4E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**6.4E+02**
Arsenic	0	3.4E+02	1.5E+02	na	--	3.4E+02	1.5E+02	na	--	--	--	--	--	--	--	--	--	**3.4E+02**	**1.5E+02**	**na**	**--**
Barium	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Benzene [C]	0	--	--	na	5.1E+02	--	--	na	5.1E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**5.1E+02**
Benzidine[C]	0	--	--	na	2.0E-03	--	--	na	2.0E-03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.0E-03**
Benzo (a) anthracene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.8E-01**
Benzo (b) fluoranthene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.8E-01**
Benzo (k) fluoranthene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.8E-01**
Benzo (a) pyrene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.8E-01**
Bis2-Chloroethyl Ether [C]	0	--	--	na	5.3E+00	--	--	na	5.3E+00	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**5.3E+00**
Bis2-Chloroisopropyl Ether	0	--	--	na	6.5E+04	--	--	na	6.5E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**6.5E+04**
Bis 2-Ethylhexyl Phthalate [C]	0	--	--	na	2.2E+01	--	--	na	2.2E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.2E+01**
Bromoform [C]	0	--	--	na	1.4E+03	--	--	na	1.4E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.4E+03**
Butylbenzylphthalate	0	--	--	na	1.9E+03	--	--	na	1.9E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.9E+03**
Cadmium	0	3.3E+00	1.0E+00	na	--	3.3E+00	1.0E+00	na	--	--	--	--	--	--	--	--	--	**3.3E+00**	**1.0E+00**	**na**	**--**
Carbon Tetrachloride [C]	0	--	--	na	1.6E+01	--	--	na	1.6E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.6E+01**
Chlordane [C]	0	2.4E+00	4.3E-03	na	8.1E-03	2.4E+00	4.3E-03	na	8.1E-03	--	--	--	--	--	--	--	--	**2.4E+00**	**4.3E-03**	**na**	**8.1E-03**
Chloride	0	8.6E+05	2.3E+05	na	--	8.6E+05	2.3E+05	na	--	--	--	--	--	--	--	--	--	**8.6E+05**	**2.3E+05**	**na**	**--**
TRC	0	1.9E+01	1.1E+01	na	--	1.9E+01	1.1E+01	na	--	--	--	--	--	--	--	--	--	**1.9E+01**	**1.1E+01**	**na**	**--**
Chlorobenzene	0	--	--	na	1.6E+03	--	--	na	1.6E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.6E+03**

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Chlorodibromomethane[C]	0	--	--	na	1.3E+02	--	--	na	1.3E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.3E+02**
Chloroform	0	--	--	na	1.1E+04	--	--	na	1.1E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.1E+04**
2-Chloronaphthalene	0	--	--	na	1.6E+03	--	--	na	1.6E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.6E+03**
2-Chlorophenol	0	--	--	na	1.5E+02	--	--	na	1.5E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.5E+02**
Chlorpyrifos	0	8.3E-02	4.1E-02	na	--	8.3E-02	4.1E-02	na	--	--	--	--	--	--	--	--	--	**8.3E-02**	**4.1E-02**	**na**	**--**
Chromium III	0	5.0E+02	6.5E+01	na	--	5.0E+02	6.5E+01	na	--	--	--	--	--	--	--	--	--	**5.0E+02**	**6.5E+01**	**na**	**--**
Chromium VI	0	1.6E+01	1.1E+01	na	--	1.6E+01	1.1E+01	na	--	--	--	--	--	--	--	--	--	**1.6E+01**	**1.1E+01**	**na**	**--**
Chromium, Total	0	--	--	1.0E+02	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Chrysene [C]	0	--	--	na	1.8E-02	--	--	na	1.8E-02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.8E-02**
Copper	0	1.2E+01	7.9E+00	na	--	1.2E+01	7.9E+00	na	--	--	--	--	--	--	--	--	--	**1.2E+01**	**7.9E+00**	**na**	**--**
Cyanide, Free	0	2.2E+01	5.2E+00	na	1.6E+04	2.2E+01	5.2E+00	na	1.6E+04	--	--	--	--	--	--	--	--	**2.2E+01**	**5.2E+00**	**na**	**1.6E+04**
DDD [C]	0	--	--	na	3.1E-03	--	--	na	3.1E-03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.1E-03**
DDE [C]	0	--	--	na	2.2E-03	--	--	na	2.2E-03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.2E-03**
DDT [C]	0	1.1E+00	1.0E-03	na	2.2E-03	1.1E+00	1.0E-03	na	2.2E-03	--	--	--	--	--	--	--	--	**1.1E+00**	**1.0E-03**	**na**	**2.2E-03**
Demeton	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	--	--	--	--	--	--	--	**--**	**1.0E-01**	**na**	**--**
Diazinon	0	1.7E-01	1.7E-01	na	--	1.7E-01	1.7E-01	na	--	--	--	--	--	--	--	--	--	**1.7E-01**	**1.7E-01**	**na**	**--**
Dibenz(a,h)anthracene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.8E-01**
1,2-Dichlorobenzene	0	--	--	na	1.3E+03	--	--	na	1.3E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.3E+03**
1,3-Dichlorobenzene	0	--	--	na	9.6E+02	--	--	na	9.6E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**9.6E+02**
1,4-Dichlorobenzene	0	--	--	na	1.9E+02	--	--	na	1.9E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.9E+02**
3,3-Dichlorobenzidine[C]	0	--	--	na	2.8E-01	--	--	na	2.8E-01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.8E-01**
Dichlorobromomethane [C]	0	--	--	na	1.7E+02	--	--	na	1.7E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.7E+02**
1,2-Dichloroethane [C]	0	--	--	na	3.7E+02	--	--	na	3.7E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.7E+02**
1,1-Dichloroethylene	0	--	--	na	7.1E+03	--	--	na	7.1E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**7.1E+03**
1,2-trans-dichloroethylene	0	--	--	na	1.0E+04	--	--	na	1.0E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.0E+04**
2,4-Dichlorophenol	0	--	--	na	2.9E+02	--	--	na	2.9E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.9E+02**
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
1,2-Dichloropropane[C]	0	--	--	na	1.5E+02	--	--	na	1.5E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.5E+02**
1,3-Dichloropropene [C]	0	--	--	na	2.1E+02	--	--	na	2.1E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.1E+02**
Dieldrin [C]	0	2.4E-01	5.6E-02	na	5.4E-04	2.4E-01	5.6E-02	na	5.4E-04	--	--	--	--	--	--	--	--	**2.4E-01**	**5.6E-02**	**na**	**5.4E-04**
Diethyl Phthalate	0	--	--	na	4.4E+04	--	--	na	4.4E+04	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.4E+04**
2,4-Dimethylphenol	0	--	--	na	8.5E+02	--	--	na	8.5E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**8.5E+02**
Dimethyl Phthalate	0	--	--	na	1.1E+06	--	--	na	1.1E+06	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.1E+06**
Di-n-Butyl Phthalate	0	--	--	na	4.5E+03	--	--	na	4.5E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.5E+03**
2,4 Dinitrophenol	0	--	--	na	5.3E+03	--	--	na	5.3E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**5.3E+03**
2-Methyl-4,6-Dinitrophenol	0	--	--	na	2.8E+02	--	--	na	2.8E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.8E+02**
2,4-Dinitrotoluene [C]	0	--	--	na	3.4E+01	--	--	na	3.4E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.4E+01**
Dioxin 2,3,7,8-tetrachlorodibenzo-p-dioxin	0	--	--	na	5.1E-08	--	--	na	5.1E-08	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**5.1E-08**
1,2-Diphenylhydrazine[C]	0	--	--	na	2.0E+00	--	--	na	2.0E+00	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.0E+00**
Alpha-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	2.2E-01	5.6E-02	na	8.9E+01	--	--	--	--	--	--	--	--	**2.2E-01**	**5.6E-02**	**na**	**8.9E+01**
Beta-Endosulfan	0	2.2E-01	5.6E-02	na	8.9E+01	2.2E-01	5.6E-02	na	8.9E+01	--	--	--	--	--	--	--	--	**2.2E-01**	**5.6E-02**	**na**	**8.9E+01**
Alpha + Beta Endosulfan	0	2.2E-01	5.6E-02	--	--	2.2E-01	5.6E-02	--	--	--	--	--	--	--	--	--	--	**2.2E-01**	**5.6E-02**	**--**	**--**
Endosulfan Sulfate	0	--	--	na	8.9E+01	--	--	na	8.9E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**8.9E+01**
Endrin	0	8.6E-02	3.6E-02	na	6.0E-02	8.6E-02	3.6E-02	na	6.0E-02	--	--	--	--	--	--	--	--	**8.6E-02**	**3.6E-02**	**na**	**6.0E-02**
Endrin Aldehyde	0	--	--	na	3.0E-01	--	--	na	3.0E-01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.0E-01**

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Ethylbenzene	0	--	--	na	2.1E+03	--	--	na	2.1E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.1E+03**
Fluoranthene	0	--	--	na	1.4E+02	--	--	na	1.4E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.4E+02**
Fluorene	0	--	--	na	5.3E+03	--	--	na	5.3E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**5.3E+03**
Foaming Agents	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Guthion	0	--	1.0E-02	na	--	--	1.0E-02	na	--	--	--	--	--	--	--	--	--	**--**	**1.0E-02**	**na**	**--**
Heptachlor [C]	0	5.2E-01	3.8E-03	na	7.9E-04	5.2E-01	3.8E-03	na	7.9E-04	--	--	--	--	--	--	--	--	**5.2E-01**	**3.8E-03**	**na**	**7.9E-04**
Heptachlor Epoxide[C]	0	5.2E-01	3.8E-03	na	3.9E-04	5.2E-01	3.8E-03	na	3.9E-04	--	--	--	--	--	--	--	--	**5.2E-01**	**3.8E-03**	**na**	**3.9E-04**
Hexachlorobenzene[C]	0	--	--	na	2.9E-03	--	--	na	2.9E-03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.9E-03**
Hexachlorobutadiene[C]	0	--	--	na	1.8E+02	--	--	na	1.8E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.8E+02**
Hexachlorocyclohexane Alpha-BHC[C]	0	--	--	na	4.9E-02	--	--	na	4.9E-02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.9E-02**
Hexachlorocyclohexane Beta-BHC[C]	0	--	--	na	1.7E-01	--	--	na	1.7E-01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.7E-01**
Hexachlorocyclohexane Gamma-BHC[C] (Lindane)	0	9.5E-01	na	na	1.8E+00	9.5E-01	--	na	1.8E+00	--	--	--	--	--	--	--	--	**9.5E-01**	**--**	**na**	**1.8E+00**
Hexachlorocyclopentadiene	0	--	--	na	1.1E+03	--	--	na	1.1E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.1E+03**
Hexachloroethane[C]	0	--	--	na	3.3E+01	--	--	na	3.3E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.3E+01**
Hydrogen Sulfide	0	--	2.0E+00	na	--	--	2.0E+00	na	--	--	--	--	--	--	--	--	--	**--**	**2.0E+00**	**na**	**--**
Indeno (1,2,3-cd) pyrene [C]	0	--	--	na	1.8E-01	--	--	na	1.8E-01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.8E-01**
Iron	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Isophorone[C]	0	--	--	na	9.6E+03	--	--	na	9.6E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**9.6E+03**
Kepone	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	**--**	**0.0E+00**	**na**	**--**
Lead	0	9.8E+01	1.1E+01	na	--	9.8E+01	1.1E+01	na	--	--	--	--	--	--	--	--	--	**9.8E+01**	**1.1E+01**	**na**	**--**
Malathion	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	--	--	--	--	--	--	--	**--**	**1.0E-01**	**na**	**--**
Manganese	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Mercury	0	1.4E+00	7.7E-01	- -	- -	1.4E+00	7.7E-01	- -	- -	--	--	--	--	--	--	--	--	**1.4E+00**	**7.7E-01**	**- -**	**- -**
Methyl Bromide	0	--	--	na	1.5E+03	--	--	na	1.5E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.5E+03**
Methylene Chloride [C]	0	--	--	na	5.9E+03	--	--	na	5.9E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**5.9E+03**
Methoxychlor	0	--	3.0E-02	na	--	--	3.0E-02	na	--	--	--	--	--	--	--	--	--	**--**	**3.0E-02**	**na**	**--**
Mirex	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	**--**	**0.0E+00**	**na**	**--**
Nickel	0	1.6E+02	1.8E+01	na	4.6E+03	1.6E+02	1.8E+01	na	4.6E+03	--	--	--	--	--	--	--	--	**1.6E+02**	**1.8E+01**	**na**	**4.6E+03**
Nitrate (as N)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Nitrobenzene	0	--	--	na	6.9E+02	--	--	na	6.9E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**6.9E+02**
N-Nitrosodimethylamine[C]	0	--	--	na	3.0E+01	--	--	na	3.0E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.0E+01**
N-Nitrosodiphenylamine[C]	0	--	--	na	6.0E+01	--	--	na	6.0E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**6.0E+01**
N-Nitrosodi-n-propylamine[C]	0	--	--	na	5.1E+00	--	--	na	5.1E+00	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**5.1E+00**
Nonylphenol	0	2.8E+01	6.6E+00	--	--	2.8E+01	6.6E+00	na	--	--	--	--	--	--	--	--	--	**2.8E+01**	**6.6E+00**	**na**	**--**
Parathion	0	6.5E-02	1.3E-02	na	--	6.5E-02	1.3E-02	na	--	--	--	--	--	--	--	--	--	**6.5E-02**	**1.3E-02**	**na**	**--**
PCB Total[C]	0	--	1.4E-02	na	6.4E-04	--	1.4E-02	na	6.4E-04	--	--	--	--	--	--	--	--	**--**	**1.4E-02**	**na**	**6.4E-04**
Pentachlorophenol [C]	0	2.2E+01	1.7E+01	na	3.0E+01	2.2E+01	1.7E+01	na	3.0E+01	--	--	--	--	--	--	--	--	**2.2E+01**	**1.7E+01**	**na**	**3.0E+01**
Phenol	0	--	--	na	8.6E+05	--	--	na	8.6E+05	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**8.6E+05**
Pyrene	0	--	--	na	4.0E+03	--	--	na	4.0E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.0E+03**
Radionuclides	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Gross Alpha Activity (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Beta and Photon Activity (mrem/yr)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Radium 226 + 228 (pCi/L)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Uranium (ug/l)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				**Most Limiting Allocations**			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	**Acute**	**Chronic**	**HH (PWS)**	**HH**
Selenium, Total Recoverable	0	2.0E+01	5.0E+00	na	4.2E+03	2.0E+01	5.0E+00	na	4.2E+03	--	--	--	--	--	--	--	--	**2.0E+01**	**5.0E+00**	**na**	**4.2E+03**
Silver	0	2.7E+00	--	na	--	2.7E+00	--	na	--	--	--	--	--	--	--	--	--	**2.7E+00**	**--**	**na**	**--**
Sulfate	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
1,1,2,2-Tetrachloroethane[C]	0	--	--	na	4.0E+01	--	--	na	4.0E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.0E+01**
Tetrachloroethylene[C]	0	--	--	na	3.3E+01	--	--	na	3.3E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.3E+01**
Thallium	0	--	--	na	4.7E-01	--	--	na	4.7E-01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**4.7E-01**
Toluene	0	--	--	na	6.0E+03	--	--	na	6.0E+03	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**6.0E+03**
Total dissolved solids	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Toxaphene [C]	0	7.3E-01	2.0E-04	na	2.8E-03	7.3E-01	2.0E-04	na	2.8E-03	--	--	--	--	--	--	--	--	**7.3E-01**	**2.0E-04**	**na**	**2.8E-03**
Tributyltin	0	4.6E-01	7.2E-02	na	--	4.6E-01	7.2E-02	na	--	--	--	--	--	--	--	--	--	**4.6E-01**	**7.2E-02**	**na**	**--**
1,2,4-Trichlorobenzene	0	--	--	na	7.0E+01	--	--	na	7.0E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**7.0E+01**
1,1,2-Trichloroethane[C]	0	--	--	na	1.6E+02	--	--	na	1.6E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**1.6E+02**
Trichloroethylene [C]	0	--	--	na	3.0E+02	--	--	na	3.0E+02	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**3.0E+02**
2,4,6-Trichlorophenol [C]	0	--	--	na	2.4E+01	--	--	na	2.4E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.4E+01**
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**--**
Vinyl Chloride[C]	0	--	--	na	2.4E+01	--	--	na	2.4E+01	--	--	--	--	--	--	--	--	**--**	**--**	**na**	**2.4E+01**
Zinc	0	1.0E+02	1.0E+02	na	2.6E+04	1.0E+02	1.0E+02	na	2.6E+04	--	--	--	--	--	--	--	--	**1.0E+02**	**1.0E+02**	**na**	**2.6E+04**

Notes:

1. All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
2. Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals
3. Metals measured as Dissolved, unless specified otherwise
4. "C" indicates a carcinogenic parameter
5. Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information.
   Antidegradation WLAs are based upon a complete mix.
6. Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic
   = (0.1(WQC - background conc.) + background conc.) for human health
7. WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens and Harmonic Mean for Carcinogens. To apply mixing ratios from a model set the stream flow equal to (mixing ratio - 1), effluent flow equal to 1 and 100% mix.

Metal	Target Value (SSTV)
Antimony	6.4E+02
Arsenic	9.0E+01
Barium	na
Cadmium	6.0E-01
Chromium III	3.9E+01
Chromium VI	6.4E+00
Copper	4.7E+00
Iron	na
Lead	6.7E+00
Manganese	na
Mercury	4.6E-01
Nickel	1.1E+01
Selenium	3.0E+00
Silver	1.1E+00
Zinc	4.1E+01

Note: do not use QL's lower than the minimum QL's provided in agency guidance

8/25/2015 4:25:32 PM

Facility = Haynesville CC
Chemical = Copper
Chronic averaging period = 4
WLAa = 12
WLAc = 7.9
Q.L. = 1.5
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 30
Expected Value = 2.80263
Variance = 1.84355
C.V. = 0.484464
97th percentile daily values = 5.88203
97th percentile 4 day average = 4.13667
97th percentile 30 day average= 3.23669
< Q.L. = 6
Model used = delta lognormal

No Limit is required for this material

The data are:

7.42
5.67
3.5
2.6
2.4
2.13
4.37
3.65
4.4
0
0
0
2.3
1.7
1.7
1.34
0
2.6
2.45
2.83
2.3
2.5
2.76
3.32

2.6
2.26
0
1.8
6.4
1.78

10/30/2015 10:19:09 AM

Facility = Haynesville Correctional Center
Chemical = Ammonia
Chronic averaging period = 30
WLAa = 4.71
WLAc = 0.551
Q.L. = 0.2
# samples/mo. = 12
# samples/wk. = 3

Summary of Statistics:

observations = 1
Expected Value = 9
Variance = 29.16
C.V. = 0.6
97th percentile daily values = 21.9007
97th percentile 4 day average = 14.9741
97th percentile 30 day average= 10.8544
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Chronic Toxicity
Maximum Daily Limit = 1.11173622147239
Average Weekly limit = 0.813172455170699
Average Monthly LImit = 0.605707193699853

The data are:

9

6/19/2015 11:07:23 AM

Facility = Haynesville CC
Chemical = TRC
Chronic averaging period = 4
WLAa = 19
WLAc = 11
Q.L. = 0.1
# samples/mo. = 90
# samples/wk. = 21

Summary of Statistics:

observations = 1
Expected Value = 20000
Variance = 1440000
C.V. = 0.6
97th percentile daily values = 48668.3
97th percentile 4 day average = 33275.8
97th percentile 30 day average= 24121.0
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Chronic Toxicity
Maximum Daily Limit = 16.0883226245855
Average Weekly limit = 8.37736286379464
Average Monthly LImit = 7.39793639872119

The data are:

20000

8/24/2015 2:05:37 PM

Facility = Haynesville CC
Chemical = Zinc
Chronic averaging period = 4
WLAa = 100
WLAc = 100
Q.L. = 3.6
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 6
Expected Value = 5.35808
Variance = 10.3352
C.V. = 0.6
97th percentile daily values = 13.0384
97th percentile 4 day average = 8.91472
97th percentile 30 day average= 6.46213
< Q.L. = 2
Model used = BPJ Assumptions, Type 1 data

No Limit is required for this material

The data are:

27.4
26.3
0
0
16.1
14.7

8/31/2015 1:34:41 PM

Facility = Haynesville CC
Chemical = Chloride
Chronic averaging period = 4
WLAa = 860000
WLAc = 230000
Q.L. = 12.0
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 1
Expected Value = 101
Variance = 3672.36
C.V. = 0.6
97th percentile daily values = 245.775
97th percentile 4 day average = 168.042
97th percentile 30 day average= 121.811
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

No Limit is required for this material

The data are:

101

8/31/2015 1:33:18 PM

Facility = Haynesville CC
Chemical = Nickel
Chronic averaging period = 4
WLAa = 160
WLAc = 18
Q.L. = 0.5
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

observations = 1
Expected Value = .54
Variance = .104976
C.V. = 0.6
97th percentile daily values = 1.31404
97th percentile 4 day average = .898446
97th percentile 30 day average= .651268
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

No Limit is required for this material

The data are:

0.54

FRESHWATER
WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: Haynesville Correctional Facility

Permit No.: VA0023469

Receiving Stream: UT Garland's Mill Pond

Version: OWP Guidance Memo 00-2011 (8/24/00)

Stream Information

Mean Hardness (as CaCO3) =	39.3	mg/L
90% Temperature (Annual) =	20.38	deg C
90% Temperature (Wet season) =	NA	deg C
90% Maximum pH =	6.79	SU
10% Maximum pH =	NA	SU
Tier Designation (1 or 2) =	1	
Public Water Supply (PWS) Y/N? =	N	
Trout Present Y/N? =	N	
Early Life Stages Present Y/N? =	Y	

Stream Flows

1Q10 (Annual) =	0	MGD
7Q10 (Annual) =	0	MGD
30Q10 (Annual) =	0	MGD
1Q10 (Wet season) =	0	MGD
30Q10 (Wet season)	0	MGD
30Q5 =	0	MGD
Harmonic Mean =	0	MGD
Annual Average =	0	MGD

Mixing Information

Annual - 1Q10 Mix =	100	%
- 7Q10 Mix =	100	%
- 30Q10 Mix =	100	%
Wet Season - 1Q10 Mix =	100	%
- 30Q10 Mix =	100	%

Effluent Information

Mean Hardness (as CaCO3) =	32	mg/L
90% Temp (Annual) =	29.7	deg C
90% Temp (Wet season) =	22.7	deg C
90% Maximum pH =	8.7	SU
10% Maximum pH =	NA	SU
Discharge Flow =	0.178	MGD

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Acenapthene	0	--	--	na	2.7E+03	--	--	na	2.7E+03	--	--	--	--	--	--	--	--	--	--	na	2.7E+03
Acrolein	0	--	--	na	7.8E+02	--	--	na	7.8E+02	--	--	--	--	--	--	--	--	--	--	na	7.8E+02
Acrylonitrile[c]	0	--	--	na	6.6E+00	--	--	na	6.6E+00	--	--	--	--	--	--	--	--	--	--	na	6.6E+00
Aldrin [c]	0	3.0E+00	--	na	1.4E-03	3.0E+00	--	na	1.4E-03	--	--	--	--	--	--	--	--	3.0E+00	--	na	1.4E-03
Ammonia-N (mg/l) (Yearly)	0	2.20E+00	2.92E-01	na	--	2.2E+00	2.9E-01	na	--	--	--	--	--	--	--	--	--	2.2E+00	2.9E-01	na	--
Ammonia-N (mg/l) (High Flow)	0	2.20E+00	#VALUE!	na	--	2.2E+00	#######	na	--	--	--	--	--	--	--	--	--	2.2E+00	#VALUE!	na	--
Anthracene	0	--	--	na	1.1E+05	--	--	na	1.1E+05	--	--	--	--	--	--	--	--	--	--	na	1.1E+05
Antimony	0	--	--	na	4.3E+03	--	--	na	4.3E+03	--	--	--	--	--	--	--	--	--	--	na	4.3E+03
Arsenic	0	3.4E+02	1.5E+02	na	--	3.4E+02	1.5E+02	na	--	--	--	--	--	--	--	--	--	3.4E+02	1.5E+02	na	
Barium	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	
Benzene [c]	0	--	--	na	7.1E+02	--	--	na	7.1E+02	--	--	--	--	--	--	--	--	--	--	na	7.1E+02
Benzidine[c]	0	--	--	na	5.4E-03	--	--	na	5.4E-03	--	--	--	--	--	--	--	--	--	--	na	5.4E-03
Benzo (a) anthracene [c]	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na	4.9E-01
Benzo (b) fluoranthene [c]	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na	4.9E-01
Benzo (k) fluoranthene [c]	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na	4.9E-01
Benzo (a) pyrene [c]	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na	4.9E-01
Bis2-Chloroethyl Ether	0	--	--	na	1.4E+01	--	--	na	1.4E+01	--	--	--	--	--	--	--	--	--	--	na	1.4E+01
Bis2-Chloroisopropyl Ether	0	--	--	na	1.7E+05	--	--	na	1.7E+05	--	--	--	--	--	--	--	--	--	--	na	1.7E+05
Bromoform [c]	0	--	--	na	3.6E+03	--	--	na	3.6E+03	--	--	--	--	--	--	--	--	--	--	na	3.6E+03
Butylbenzylphthalate	0	--	--	na	5.2E+03	--	--	na	5.2E+03	--	--	--	--	--	--	--	--	--	--	na	5.2E+03
Cadmium	0	1.1E+00	4.6E-01	na	--	1.1E+00	4.6E-01	na	--	--	--	--	--	--	--	--	--	1.1E+00	4.6E-01	na	--
Carbon Tetrachloride [c]	0	--	--	na	4.4E+01	--	--	na	4.4E+01	--	--	--	--	--	--	--	--	--	--	na	4.4E+01
Chlordane [c]	0	2.4E+00	4.3E-03	na	2.2E-02	2.4E+00	4.3E-03	na	2.2E-02	--	--	--	--	--	--	--	--	2.4E+00	4.3E-03	na	2.2E-02
Chloride	0	8.6E+05	2.3E+05	na	--	8.6E+05	2.3E+05	na	--	--	--	--	--	--	--	--	--	8.6E+05	2.3E+05	na	--
TRC	0	1.9E+01	1.1E+01	na	--	1.9E+01	1.1E+01	na	--	--	--	--	--	--	--	--	--	1.9E+01	1.1E+01	na	--
Chlorobenzene	0	--	--	na	2.1E+04	--	--	na	2.1E+04	--	--	--	--	--	--	--	--	--	--	na	2.1E+04

2005 Ammonia Reasonable Potential Analysis

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Chlorodibromomethane[c]	0	--	--	na	3.4E+02	--	--	na	3.4E+02	--	--	--	--	--	--	--	--	--	--	na	3.4E+02
Chloroform [c]	0	--	--	na	2.9E+04	--	--	na	2.9E+04	--	--	--	--	--	--	--	--	--	--	na	2.9E+04
2-Chloronaphthalene	0	--	--	na	4.3E+03	--	--	na	4.3E+03	--	--	--	--	--	--	--	--	--	--	na	4.3E+03
2-Chlorophenol	0	--	--	na	4.0E+02	--	--	na	4.0E+02	--	--	--	--	--	--	--	--	--	--	na	4.0E+02
Chlorpyrifos	0	8.3E-02	4.1E-02	na	--	8.3E-02	4.1E-02	na	--	--	--	--	--	--	--	--	--	8.3E-02	4.1E-02	na	--
Chromium III	0	2.2E+02	2.9E+01	na	--	2.2E+02	2.9E+01	na	--	--	--	--	--	--	--	--	--	2.2E+02	2.9E+01	na	--
Chromium VI	0	1.6E+01	1.1E+01	na	--	1.6E+01	1.1E+01	na	--	--	--	--	--	--	--	--	--	1.6E+01	1.1E+01	na	--
Chromium, Total	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Chrysene [c]	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na	4.9E-01
Copper	0	4.6E+00	3.4E+00	na	--	4.6E+00	3.4E+00	na	--	--	--	--	--	--	--	--	--	4.6E+00	3.4E+00	na	--
Cyanide	0	2.2E+01	5.2E+00	na	2.2E+05	2.2E+01	5.2E+00	na	2.2E+05	--	--	--	--	--	--	--	--	2.2E+01	5.2E+00	na	2.2E+05
DDD [c]	0	--	--	na	8.4E-03	--	--	na	8.4E-03	--	--	--	--	--	--	--	--	--	--	na	[illegible]
DDE [c]	0	--	--	na	5.9E-03	--	--	na	5.9E-03	--	--	--	--	--	--	--	--	--	--	na	5.[illegible]3
DDT [c]	0	1.1E+00	1.0E-03	na	5.9E-03	1.1E+00	1.0E-03	na	5.9E-03	--	--	--	--	--	--	--	--	1.1E+00	1.0E-03	na	5.9E-03
Demeton	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	--	--	--	--	--	--	--	--	1.0E-01	na	--
Dibenz(a,h)anthracene [c]	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na	4.9E-01
Dibutyl phthalate	0	--	--	na	1.2E+04	--	--	na	1.2E+04	--	--	--	--	--	--	--	--	--	--	na	1.2E+04
Dichloromethane (Methylene Chloride) [c]	0	--	--	na	1.6E+04	--	--	na	1.6E+04	--	--	--	--	--	--	--	--	--	--	na	1.6E+04
1,2-Dichlorobenzene	0	--	--	na	1.7E+04	--	--	na	1.7E+04	--	--	--	--	--	--	--	--	--	--	na	1.7E+04
1,3-Dichlorobenzene	0	--	--	na	2.6E+03	--	--	na	2.6E+03	--	--	--	--	--	--	--	--	--	--	na	2.6E+03
1,4-Dichlorobenzene	0	--	--	na	2.6E+03	--	--	na	2.6E+03	--	--	--	--	--	--	--	--	--	--	na	2.6E+03
3,3-Dichlorobenzidine[c]	0	--	--	na	7.7E-01	--	--	na	7.7E-01	--	--	--	--	--	--	--	--	--	--	na	7.7E-01
Dichlorobromomethane [c]	0	--	--	na	4.6E+02	--	--	na	4.6E+02	--	--	--	--	--	--	--	--	--	--	na	4.6E+02
1,2-Dichloroethane [c]	0	--	--	na	9.9E+02	--	--	na	9.9E+02	--	--	--	--	--	--	--	--	--	--	na	9.9E+02
1,1-Dichloroethylene	0	--	--	na	1.7E+04	--	--	na	1.7E+04	--	--	--	--	--	--	--	--	--	--	na	1.7E+04
1,2-trans-dichloroethylene	0	--	--	na	1.4E+05	--	--	na	1.4E+05	--	--	--	--	--	--	--	--	--	--	na	1.4E+05
2,4-Dichlorophenol	0	--	--	na	7.9E+02	--	--	na	7.9E+02	--	--	--	--	--	--	--	--	--	--	na	7.9E+02
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
1,2-Dichloropropane[c]	0	--	--	na	3.9E+02	--	--	na	3.9E+02	--	--	--	--	--	--	--	--	--	--	na	3[illegible]
1,3-Dichloropropene	0	--	--	na	1.7E+03	--	--	na	1.7E+03	--	--	--	--	--	--	--	--	--	--	na	1.7[illegible]03
Dieldrin [c]	0	2.4E-01	5.6E-02	na	1.4E-03	2.4E-01	5.6E-02	na	1.4E-03	--	--	--	--	--	--	--	--	2.4E-01	5.6E-02	na	1.4E-03
Diethyl Phthalate	0	--	--	na	1.2E+05	--	--	na	1.2E+05	--	--	--	--	--	--	--	--	--	--	na	1.2E+05
Di-2-Ethylhexyl Phthalate [c]	0	--	--	na	5.9E+01	--	--	na	5.9E+01	--	--	--	--	--	--	--	--	--	--	na	5.9E+01
2,4-Dimethylphenol	0	--	--	na	2.3E+03	--	--	na	2.3E+03	--	--	--	--	--	--	--	--	--	--	na	2.3E+03
Dimethyl Phthalate	0	--	--	na	2.9E+06	--	--	na	2.9E+06	--	--	--	--	--	--	--	--	--	--	na	2.9E+06
Di-n-Butyl Phthalate	0	--	--	na	1.2E+04	--	--	na	1.2E+04	--	--	--	--	--	--	--	--	--	--	na	1.2E+04
2,4 Dinitrophenol	0	--	--	na	1.4E+04	--	--	na	1.4E+04	--	--	--	--	--	--	--	--	--	--	na	1.4E+04
2-Methyl-4,6-Dinitrophenol	0	--	--	na	7.65E+02	--	--	na	7.7E+02	--	--	--	--	--	--	--	--	--	--	na	7.7E+02
2,4-Dinitrotoluene [c]	0	--	--	na	9.1E+01	--	--	na	9.1E+01	--	--	--	--	--	--	--	--	--	--	na	9.1E+01
Dioxin (2,3,7,8-tetrachlorodibenzo-p-dioxin) (ppq)	0	--	--	na	1.2E-06	--	--	na	na	--	--	--	--	--	--	--	--	--	--	na	na
1,2-Diphenylhydrazine[c]	0	--	--	na	5.4E+00	--	--	na	5.4E+00	--	--	--	--	--	--	--	--	--	--	na	5.4E+00
Alpha-Endosulfan	0	2.2E-01	5.6E-02	na	2.4E+02	2.2E-01	5.6E-02	na	2.4E+02	--	--	--	--	--	--	--	--	2.2E-01	5.6E-02	na	2.4E+02
Beta-Endosulfan	0	2.2E-01	5.6E-02	na	2.4E+02	2.2E-01	5.6E-02	na	2.4E+02	--	--	--	--	--	--	--	--	2.2E-01	5.6E-02	na	2.4E+02
Endosulfan Sulfate	0	--	--	na	2.4E+02	--	--	na	2.4E+02	--	--	--	--	--	--	--	--	--	--	na	2.4E+02
Endrin	0	8.6E-02	3.6E-02	na	8.1E-01	8.6E-02	3.6E-02	na	8.1E-01	--	--	--	--	--	--	--	--	8.6E-02	3.6E-02	na	8.1E-01
Endrin Aldehyde	0	--	--	na	8.1E-01	--	--	na	8.1E-01	--	--	--	--	--	--	--	--	--	--	na	8.1E-01

2005 Ammonia Reasonable Potential Analysis

Parameter (ug/l unless noted)	Background Conc.	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
		Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Ethylbenzene	0	--	--	na	2.9E+04	--	--	na	2.9E+04	--	--	--	--	--	--	--	--	--	--	na	2.9E+04
Fluoranthene	0	--	--	na	3.7E+02	--	--	na	3.7E+02	--	--	--	--	--	--	--	--	--	--	na	3.7E+02
Fluorene	0	--	--	na	1.4E+04	--	--	na	1.4E+04	--	--	--	--	--	--	--	--	--	--	na	1.4E+04
Foaming Agents	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Guthion	0	--	1.0E-02	na	--	--	1.0E-02	na	--	--	--	--	--	--	--	--	--	--	1.0E-02	na	--
Heptachlor [c]	0	5.2E-01	3.8E-03	na	2.1E-03	5.2E-01	3.8E-03	na	2.1E-03	--	--	--	--	--	--	--	--	5.2E-01	3.8E-03	na	2.1E-03
Heptachlor Epoxide[c]	0	5.2E-01	3.8E-03	na	1.1E-03	5.2E-01	3.8E-03	na	1.1E-03	--	--	--	--	--	--	--	--	5.2E-01	3.8E-03	na	1.1E-03
Hexachlorobenzene[c]	0	--	--	na	7.7E-03	--	--	na	7.7E-03	--	--	--	--	--	--	--	--	--	--	na	7.7E-03
Hexachlorobutadiene[c]	0	--	--	na	5.0E+02	--	--	na	5.0E+02	--	--	--	--	--	--	--	--	--	--	na	5.0E+02
Hexachlorocyclohexane Alpha-BHC[c]	0	--	--	na	1.3E-01	--	--	na	1.3E-01	--	--	--	--	--	--	--	--	--	--	na	1.3E-01
Hexachlorocyclohexane Beta-BHC[c]	0	--	--	na	4.6E-01	--	--	na	4.6E-01	--	--	--	--	--	--	--	--	--	--	na	4.[illegible]
Hexachlorocyclohexane Gamma-BHC[c] (Lindane)	0	9.5E-01	na	na	6.3E-01	9.5E-01	--	na	6.3E-01	--	--	--	--	--	--	--	--	9.5E-01	--	na	6.3E-01
Hexachlorocyclopentadiene	0	--	--	na	1.7E+04	--	--	na	1.7E+04	--	--	--	--	--	--	--	--	--	--	na	1.7E+04
Hexachloroethane[c]	0	--	--	na	8.9E+01	--	--	na	8.9E+01	--	--	--	--	--	--	--	--	--	--	na	8.9E+01
Hydrogen Sulfide	0	--	2.0E+00	na	--	--	2.0E+00	na	--	--	--	--	--	--	--	--	--	--	2.0E+00	na	--
Indeno (1,2,3-cd) pyrene [c]	0	--	--	na	4.9E-01	--	--	na	4.9E-01	--	--	--	--	--	--	--	--	--	--	na	4.9E-01
Iron	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Isophorone[c]	0	--	--	na	2.6E+04	--	--	na	2.6E+04	--	--	--	--	--	--	--	--	--	--	na	2.6E+04
Kepone	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	0.0E+00	na	--
Lead	0	2.8E+01	3.2E+00	na	--	2.8E+01	3.2E+00	na	--	--	--	--	--	--	--	--	--	2.8E+01	3.2E+00	na	--
Malathion	0	--	1.0E-01	na	--	--	1.0E-01	na	--	--	--	--	--	--	--	--	--	--	1.0E-01	na	--
Manganese	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Mercury	0	1.4E+00	7.7E-01	na	5.1E-02	1.4E+00	7.7E-01	na	5.1E-02	--	--	--	--	--	--	--	--	1.4E+00	7.7E-01	na	5.1E-02
Methyl Bromide	0	--	--	na	4.0E+03	--	--	na	4.0E+03	--	--	--	--	--	--	--	--	--	--	na	4.0E+03
Methoxychlor	0	--	3.0E-02	na	--	--	3.0E-02	na	--	--	--	--	--	--	--	--	--	--	3.0E-02	na	--
Mirex	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	--	--	--	--	--	--	--	--	0.0E+00	na	--
Monochlorobenzene	0	--	--	na	2.1E+04	--	--	na	2.1E+04	--	--	--	--	--	--	--	--	--	--	na	2.1E+04
Nickel	0	7.0E+01	7.7E+00	na	4.6E+03	7.0E+01	7.7E+00	na	4.6E+03	--	--	--	--	--	--	--	--	7.0E+01	7.7E+00	na	4.[illegible]
Nitrate (as N)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Nitrobenzene	0	--	--	na	1.9E+03	--	--	na	1.9E+03	--	--	--	--	--	--	--	--	--	--	na	1.9E+03
N-Nitrosodimethylamine[c]	0	--	--	na	8.1E+01	--	--	na	8.1E+01	--	--	--	--	--	--	--	--	--	--	na	8.1E+01
N-Nitrosodiphenylamine[c]	0	--	--	na	1.6E+02	--	--	na	1.6E+02	--	--	--	--	--	--	--	--	--	--	na	1.6E+02
N-Nitrosodi-n-propylamine[c]	0	--	--	na	1.4E+01	--	--	na	1.4E+01	--	--	--	--	--	--	--	--	--	--	na	1.4E+01
Parathion	0	6.5E-02	1.3E-02	na	--	6.5E-02	1.3E-02	na	--	--	--	--	--	--	--	--	--	6.5E-02	1.3E-02	na	--
PCB-1016	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	--	1.4E-02	na	--
PCB-1221	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	--	1.4E-02	na	--
PCB-1232	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	--	1.4E-02	na	--
PCB-1242	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	--	1.4E-02	na	--
PCB-1248	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	--	1.4E-02	na	--
PCB-1254	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	--	1.4E-02	na	--
PCB-1260	0	--	1.4E-02	na	--	--	1.4E-02	na	--	--	--	--	--	--	--	--	--	--	1.4E-02	na	--
PCB Total[c]	0	--	--	na	1.7E-03	--	--	na	1.7E-03	--	--	--	--	--	--	--	--	--	--	na	1.7E-03

2005 Ammonia Reasonable Potential Analysis

Parameter	Background	Water Quality Criteria				Wasteload Allocations				Antidegradation Baseline				Antidegradation Allocations				Most Limiting Allocations			
(ug/l unless noted)	Conc.	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH	Acute	Chronic	HH (PWS)	HH
Pentachlorophenol [C]	0	7.7E-03	5.9E-03	na	8.2E+01	7.7E-03	5.9E-03	na	8.2E+01	--	--	--	--	--	--	--	--	7.7E-03	5.9E-03	na	8.2E+01
Phenol	0	--	--	na	4.6E+06	--	--	na	4.6E+06	--	--	--	--	--	--	--	--	--	--	na	4.6E+06
Pyrene	0	--	--	na	1.1E+04	--	--	na	1.1E+04	--	--	--	--	--	--	--	--	--	--	na	1.1E+04
Radionuclides (pCi/l except Beta/Photon)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Gross Alpha Activity	0	--	--	na	1.5E+01	--	--	na	1.5E+01	--	--	--	--	--	--	--	--	--	--	na	1.5E+01
Beta and Photon Activity (mrem/yr)	0	--	--	na	4.0E+00	--	--	na	4.0E+00	--	--	--	--	--	--	--	--	--	--	na	4.0E+00
Strontium-90	0	--	--	na	8.0E+00	--	--	na	8.0E+00	--	--	--	--	--	--	--	--	--	--	na	8.0E+00
Tritium	0	--	--	na	2.0E+04	--	--	na	2.0E+04	--	--	--	--	--	--	--	--	--	--	na	2.0E+04
Selenium	0	2.0E+01	5.0E+00	na	1.1E+04	2.0E+01	5.0E+00	na	1.1E+04	--	--	--	--	--	--	--	--	2.0E+01	5.0E+00	na	1.1E+04
Silver	0	4.9E-01	--	na	--	4.9E-01	--	na	--	--	--	--	--	--	--	--	--	4.9E-01	--	na	--
Sulfate	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	[illegible]
1,1,2,2-Tetrachloroethane[C]	0	--	--	na	1.1E+02	--	--	na	1.1E+02	--	--	--	--	--	--	--	--	--	--	na	1.[illegible]
Tetrachloroethylene[C]	0	--	--	na	8.9E+01	--	--	na	8.9E+01	--	--	--	--	--	--	--	--	--	--	na	8.9E+01
Thallium	0	--	--	na	6.3E+00	--	--	na	6.3E+00	--	--	--	--	--	--	--	--	--	--	na	6.3E+00
Toluene	0	--	--	na	2.0E+05	--	--	na	2.0E+05	--	--	--	--	--	--	--	--	--	--	na	2.0E+05
Total dissolved solids	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Toxaphene [C]	0	7.3E-01	2.0E-04	na	7.5E-03	7.3E-01	2.0E-04	na	7.5E-03	--	--	--	--	--	--	--	--	7.3E-01	2.0E-04	na	7.5E-03
Tributyltin	0	4.6E-01	6.3E-02	na	--	4.6E-01	6.3E-02	na	--	--	--	--	--	--	--	--	--	4.6E-01	6.3E-02	na	--
1,2,4-Trichlorobenzene	0	--	--	na	9.4E+02	--	--	na	9.4E+02	--	--	--	--	--	--	--	--	--	--	na	9.4E+02
1,1,2-Trichloroethane[C]	0	--	--	na	4.2E+02	--	--	na	4.2E+02	--	--	--	--	--	--	--	--	--	--	na	4.2E+02
Trichloroethylene [C]	0	--	--	na	8.1E+02	--	--	na	8.1E+02	--	--	--	--	--	--	--	--	--	--	na	8.1E+02
2,4,6-Trichlorophenol [C]	0	--	--	na	6.5E+01	--	--	na	6.5E+01	--	--	--	--	--	--	--	--	--	--	na	6.5E+01
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	--	--	na	--	--	--	na	--	--	--	--	--	--	--	--	--	--	--	na	--
Vinyl Chloride[C]	0	--	--	na	6.1E+01	--	--	na	6.1E+01	--	--	--	--	--	--	--	--	--	--	na	6.1E+01
Zinc	0	4.5E+01	4.5E+01	na	6.9E+04	4.5E+01	4.5E+01	na	6.9E+04	--	--	--	--	--	--	--	--	4.5E+01	4.5E+01	na	6.9E+04

Notes:

1. All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
2. Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals
3. Metals measured as Dissolved, unless specified otherwise
4. "C" indicates a carcinogenic parameter
5. Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information. Antidegradation WLAs are based upon a complete mix.
6. Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic
   = (0.1(WQC - background conc.) + background conc.) for human health
7. WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens, Harmonic Mean for Carcinogens, and Annual Average for Dioxin. Mixing ratios may be substituted for stream flows where appropriate.

Metal	Target Value (SSTV)
Antimony	4.3E+03
Arsenic	9.0E+01
Barium	na
Cadmium	2.8E-01
Chromium III	1.7E+01
Chromium VI	6.4E+00
Copper	1.8E+00
Iron	na
Lead	1.9E+00
Manganese	na
Mercury	5.1E-02
Nickel	4.6E+00
Selenium	3.0E+00
Silver	1.9E-01
Zinc	1.8E+01

Note: do not use QL's lower than the minimum QL's provided in agency guidance

2005 Ammonia Reasonable Potential Analysis

4/15/04 4:24:03 PM

Facility = Haynesville Correctional Facility
Chemical = ammonia
Chronic averaging period = 30
WLAa = 2.2
WLAc = 0.29
Q.L. = 0.2
# samples/mo. = 12
# samples/wk. = 3

Summary of Statistics:

observations = 1
Expected Value = 9
Variance = 29.16
C.V. = 0.6
97th percentile daily values = 21.9007
97th percentile 4 day average = 14.9741
97th percentile 30 day average= 10.8544
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Chronic Toxicity
Maximum Daily Limit = 0.58512432709073
Average Weekly limit = 0.42798550272142
Average Monthly LImit = 0.318793259842028

The data are:

Attachment G

CTO

RECEIVED PRO
JUL 22 2015

COMMONWEALTH of VIRGINIA

Department of Corrections

HAROLD W. CLARKE
DIRECTOR

P. O. BOX 26963
RICHMOND, VIRGINIA 23261
(804) 674-3000

July 17, 2015

Mr. Curt Linderman
Virginia Department of Environmental Quality
Piedmont Regional Office
4949A Cox Road
Glen Allen, VA 23060

Re: Upgrade Haynesville Wastewater Treatment Plant

Dear Mr. Linderman:

Enclosed is the Application for Certificate To Operate (CTO) for the referenced project.

Please contact me at 804-887-7784 if you have any questions.

Sincerely,
Virginia Department of Corrections

Jim Schrecengost
Capital Outlay Program Manager

Cc: Jeff Haas, P.E., Austin Brockenbrough & Associates
Dallas Phillips, Virginia Department of Corrections

enclosure

Department of Environmental Quality
APPLICATION for CERTIFICATE TO OPERATE
Under the Sewage Collection and Treatment Regulations 9 VAC 25-790

See instructions. Submit 2 copies of this form and any attachments. Form will expand as you enter information.

Project Title: Upgrade Haynesville Wastewater Treatment Plant P.E. Seal Date on Cover: January 4, 2010 Specifications Title and Date: Upgrade Haynesville Wastewater Treatment Plant, January 4, 2010	
Location of Project: Haynesville Correctional Center	County/City: Richmond County/Haynesville
Receiving Wastewater Collection System(s): N/A	
Receiving Sewage Treatment Plant(s): N/A	
PROJECT OWNER	**PROJECT ENGINEER**
Name: James Schrecengost, Capital Outlay Program Manager	Name: Jeffrey J. Haas, PE
Signature and Date: James Schrecengost 7/17/15	Company Name: Austin Brockenbrough and Associates, LLP
Address: 6900 Atmore Drive, PO Box 26963, Richmond VA 23225	Address: 1011 Boulder Springs Drive, Suite 200, Richmond, VA 23225
Phone:804-887-7784	Phone: 804-592-3902
Email: james.schrecengost@vadoc.virginia.gov	Email: jhaas@brockenbrough.com

PTL NUMBER FROM CERTIFICATE TO CONSTRUCT: ***24845***

Attach Copy of the original Certificate to Construct if issued prior to November 9, 2008, or if a WQIF project. If applicable, provide verification of compliance with any conditions in the Certificate to Construct.

Design Sewage Flow: (a) average daily flow (MGD): **0.178** (b) peak flow (MGD): **0.267**

For sewage treatment plant projects, provide the VPDES/VPA Permit Number: **VA0023469**
Is a new Discharge Monitoring Report (DMR) required? Yes ☐ No **X**
For Pump Stations and Sewage Treatment Plants check Reliability Class: I ☐ II ☐ III ☐

The following statement must be signed and sealed by the inspecting engineer: (DEQ will not conduct a confirming inspection.)

"Statement of Completion:
I hereby certify that the construction work was completed in accordance with the approved referenced design documents or revised only in accordance with 9 VAC 25-790-180.B. and I have completed sufficient inspections to certify the work."

COMMONWEALTH OF VIRGINIA
JEFFREY J. HAAS
Lic. No. 21389
7/13/15
PROFESSIONAL ENGINEER

Inspecting Licensed Engineer's Signature and original seal (signed and dated)

For DEQ use only:
In accordance with *Code of Virginia* 1950, as amended, Title 62.1, Section 62.1-44.19, this form, signed by the appropriate DEQ representative, serves as the Certificate to Operate for the referenced project.

Emilee C. Adamson	Emilee C. Adamson	8-28-2015	26333
Name	Signature	Date	CTO PTL Number

Department of Environmental Quality Authorized Representative

For sewage treatment plants, an Operation and Maintenance Manual must be submitted to the DEQ Regional Office in accordance with 9 VAC 25-790 and VPDES/VPA permit requirements.

For pump stations, an Operation and Maintenance Manual must be maintained for the facility in accordance with 9 VAC 25-790, but is NOT to be submitted to DEQ. The pump station must be operated and maintained in accordance with that manual.

Austin
Brockenbrough
ENGINEERING + CONSULTING

RECEIVED
MAR 18 2010
PRO

March 17, 2010

Mr. Curt Linderman
Virginia Department of Environmental Quality
Piedmont Regional Office
4949A Cox Road
Glen Allen, VA 23060

Re: Upgrade Haynesville Wastewater Treatment Plant

Dear Mr. Linderman:

Enclosed is the Application for Certificate to Construct (CTC) for the referenced project.

Please contact me at 804-592-3902 if you have any questions.

Sincerely,
Austin Brockenbrough & Associates, L.L.P.

Jeffrey J. Haas, P.E.
Associate

JJH/snw

Cc: Gary Weddle

enclosure

G:\05 Jobs\05-054 Upgrade Haynesville Wastewater Treatment Plant\Correspondence\L Linderman CTC.doc

Virginia Department of Environmental Quality
APPLICATION for CERTIFICATE TO CONSTRUCT (CTC)
For Municipal Sewage Collection, Treatment, and/or Reclamation Systems

See Instructions. Do not submit plans and specifications. Submit 1 copy of this form with all attachments. Form will expand as you enter information.

Project Title: (as it appears on plans) Upgrade Haynesville Wastewater Treatment Plant P.E. Seal Date on Cover: 1/4/10 Specifications Title and Date: Upgrade Haynesville Wastewater Treatment Plant 1/4/10	
Location of Project: Haynesville Correctional Center	County/City: Haynesville VA
Receiving Wastewater Collection System(s): N/A	
Receiving Sewage Treatment Plant(s)/Reclamation System: N/A	
PROJECT OWNER:Virginia Department of Corrections	**PROJECT ENGINEER**
Name & Title: Gary Weddle, Capital Outlay Manager	Name: Jeffrey J. Haas, PE
Signature and date: 3/17/10	Company Name: Austin Brockenbrough and Associates, LLP
Address: 6900 Atmore Drive, PO Box 26963, Richmond VA 23225	Address: 1011 Boulder Springs Drive, Suite 200, Richmond VA 23225
Phone: 804-674-3102 x1223	Phone: 804-592-3902
Email: gary.weddle@vadoc.virginia.gov	Email: jhaas@brockenbrough.com

For Sewage Treatment Works and Sewage Collection Systems:

Attach Project Description

Attach Letter(s) of Acceptance from Receiving Facility/Utility for sewage collection system projects

Attach Reliability Class: (1) For Pump Stations attach Reliability Class Worksheet. (2) For Sewage Treatment Plants note the Reliability Class rating from the VPDES or VPA permit and method of meeting reliability classification requirements.

For a sewage treatment plant project, provide the VPDES or VPA permit number: VA0023469
Design Sewage Flow (Sewage Plant): (a) average daily flow (MGD): 0.178 (b) peak daily flow (MGD): 0.267
Design Sewage Flow (Pump Station): (a) average daily flow (MGD): _____ (b) peak hour flow (MGD): _____

Please check the appropriate components of your project:

Gravity and/or Vacuum Sewer	☒	New Sewage Treatment Plant	☐
Pump Station(s)	☒	Modification of Existing Sewage Treatment Plant	☒
Force Main(s)	☒	Expansion of Existing Sewage Treatment Plant	☐

For Reclamation or Satellite Reclamation System, Attach Page 2: Page 2 Attached? Yes ☐ No ☒

The following statement must be signed and sealed by the Virginia licensed design engineer:

"As discussed in 9 VAC 25-790-240.C., the referenced design documents are in substantial compliance with Part III - Manual of Practice For Sewerage Systems and Treatment Works, of the Sewage Collection and Treatment Regulations (9 VAC 25-790-310 et seq.)"

COMMONWEALTH OF VIRGINIA
JEFFREY J. HAAS
Lic. No. 21389
3/17/10
PROFESSIONAL ENGINEER

Licensed Design Engineer's Signature and original seal (signed and dated)

☐ **Design exceptions and justifications are attached in accordance with 9 VAC 25-790-240.C.**

For DEQ use only:

In accordance with the *Code of Virginia* 1950, as amended, Title 62.1, Section 62.1-44.19, this form, signed by the appropriate DEQ representative, constitutes your Certificate to Construct. This Certificate is valid for a period of five years from the date of issuance. Other permits and authorizations may be necessary. Please contact your Regional DEQ Office if you have any questions.

Curtis T. Linderman		4/16/10	24845
Name	Signature	Date	CTC PTL Number

Department of Environmental Quality Authorized Representative

Note: Once the project is complete, an application for a Certificate to Operate must be submitted to the appropriate DEQ Regional office.

Project Description

The project consists of the renovations to the existing sequencing batch reactor (SBR) type wastewater treatment process with new equipment and controls to meet the nutrient limits in the VPDES Permit No. VA0023469. The renovations include influent screening, influent metering, influent equalization, SBR treatment, denitrifying filters, aerobic sludge digesters, sludge dewatering equipment and building. For reliability classification, the treatment system will have three emergency power generators for maintaining the entire treatment process in operation in the event of a loss of commercial power. The control system will have computerized monitoring of the treatment system alarms to the operators control building.

At the existing Unit 17 treatment facility, the work includes a new pump station with two pumps rated for 85 gpm at 30 ft, and 1,500 lf of 6" force main to deliver the wastewater to the renovated SBR treatment plant. The existing oxidation ditch treatment facility at Unit 17 will be demolished.

The work also includes 1200 lf of 6" and 8" gravity sanitary sewer and a 1000 gallon grease trap for the correctional facility kitchen.

Reliability Classification
Worksheet for Sewage Pumping Stations

Pump Station Name: Upgrade Haynesville Wastewater Treatment Plant
Location: Haynesville Correctional Center
Average Daily Design Flow/ Peak Design Flow (MGD/MGD): 0.178

Complete Part I and Part II of this form, and submit this form with your CTC application. All assessments are based on the average daily design flow of the pump station (not peak flow or current flow).

Part I. Reliability Classification Assessment

1. Is the station located in the Dulles Watershed (9 VAC 25-401) or in the Occoquan Watershed (9 VAC 25-410)?
   - ☐ If yes, STOP - Reliability is Class I with special construction requirements (see 9 VAC 25-401 and/or 410).
   - ☒ If no, proceed to Question 2.

2. The default Reliability Classification for all other pump stations within Virginia is Class I. Is the pump station to be constructed to meet Reliability Class I?
   - ☒ If yes, STOP - Reliability is Class I.
   - ☐ If no, proceed to Question 3.

3. Is the design average daily flow to the pump station greater than or equal to 0.5 MGD?
   - ☐ If yes, STOP - Reliability is Class I.
   - ☐ If no, proceed to Question 4.

4. Is the pump station located in the any of the following localities? **Counties** of Accomack, Charles City, Essex, Gloucester, Isle of Wight, James City, King and Queen, King George, King William, Lancaster, Mathews, Middlesex, New Kent, Northampton, Northumberland, Richmond, Southampton, Surry, Westmoreland or York; or **Cities** of Chesapeake, Franklin, Hampton, Newport News, Norfolk, Poquoson, Portsmouth, Suffolk, Virginia Beach or Williamsburg.
   - ☐ If yes, STOP - Reliability is Class I.
   - ☐ If no, proceed to Question 5.

5. Is a public water supply surface water intake within 5 miles downgradient of the pump station or within 1 tidal cycle upstream of the pump station?
   [Contact the appropriate field office of VDH's Office of Drinking Water http://www.vdh.virginia.gov/drinkingwater/contacts/. Provide VDH with latitude/longitude information for the pump station and the average and peak design flows.]
   - ☐ If yes, STOP - Reliability is Class I.
   - ☐ If no, proceed to Question 6.

6. If the pump station were to overflow, is there high probability of public contact with the wastewater? [Is the station close to residential/commercial/institutional areas and/or recreational areas (boat landings, posted swimming/fishing/boating areas, parks) such that an overflow would likely present a public health hazard?]
   - ☐ If yes, STOP - Reliability is Class I.
   - ☐ If no, proceed to Question 7.

7. Is average daily design flow to the pump station < 2000 gpd?
   - ☐ If yes, STOP - Reliability is Class II.
   - ☐ If no, proceed to Question 8.

8. Is there a perennial surface water located within 1500 ft downgradient of the facility? (Perennial stream defined as a solid blue line on USGS quad map or determined from field investigation.)
   - ☐ If no, STOP - Reliability is Class II.
   - ☐ If yes, proceed to Question 9.

9. Does the perennial surface water considered in Question 8 above provide less than a 10:1 dilution (7Q10 receiving water flow to average daily design flow); OR is the perennial surface water a 303d listed impaired segment? [See www.deq.virginia.gov/wastewater/ for location and list of stream gauges, 7Q10 information, and 303d listings]
   - ☐ If yes to either of the questions, STOP - Reliability is Class I.
   - ☐ If no, STOP - Reliability is Class II.

Based on the Part I assessment, the designated reliability classification for this pump station is Class I
Note that DEQ has determined that Reliability Class III is not protective of water quality and is not a valid classification for a new pump station.

Part II. Method of Complying with Reliability Classification

For this pump station, select your method of complying with the reliability class requirements.
Reference 9 VAC 25-790-390 through 420.

Reliability Class I:

☒ Option A: Emergency generator with automatic transfer switch or dual electrical feeds. Class I must monitor main power supply, auxiliary power supply, failure of pump to discharge, and high liquid level in wet/dry wells; a test function must also be provided. On-site audio-visual alarm required with telemetry or autodialer to site manned 24 hours a day.

☐ Option B: 24 hour emergency storage. Class I must monitor main power supply, failure of pump to discharge, and high liquid level in wet/dry wells; a test function must also be provided. On-site audio-visual alarm required with telemetry or autodialer to site manned 24 hours a day. (24 hour storage based on average daily design flow.)

☐ Option C: Closing the facility to eliminate generation of sewage. On-site audio-visual alarm required with telemetry or autodialer to site manned 24 hours a day. (Only available to facilities that will close during a power outage such as schools, certain industries, some recreational and park areas.)

☐ Option D: [Only available for facilities to be owned and operated by a locality, utility, or service authority.] Wet well storage above the high water alarm equal to or greater than documented response time of owner/service provider. Owner/Service Provider has sufficient portable equipment (see 9 VAC 25-790-410 for details). Portable pump and/or portable generator hookup provided. Class I must monitor main power supply, failure of pump to discharge, and high liquid level in wet/dry wells; a test function must also be provided. On-site audio-visual alarm required with telemetry or autodialer to site manned 24 hours a day.

☐ Option E: For facilities in the Dulles Watershed Only: In addition to complying with Reliability Class I requirements in 9 VAC 25-790, the facility also complies with 9 VAC 25-401-30.D.

☐ Option F: For facilities in the Occoquan Watershed Only: In addition to complying with Reliability Class I requirements in 9 VAC 25-790, the facility also complies with 9 VAC 25-410-20-F.5.

Reliability Class II:

☐ Option A: Portable/standby generator (manual transfer switch or quick connect). On-site audio-visual high water alarm.

☐ Option B: Emergency pump connection (and access to a portable pump). On-site audio-visual high water alarm.

☐ Option C: Closing the facility to eliminate generation of sewage. On-site audio-visual high water alarm. (Only available to facilities that will close during a power outage such as schools, certain industries, some recreational and park areas.)

Form to be completed and signed by Design Engineer.

Form completed by Jeff Haas (signature)

Printed name Jeffrey J. Haas

Wrenn, Brian (DEQ)

From: Phillips, Dallas L. (VADOC)
Sent: Friday, June 05, 2015 12:05 PM
To: Wrenn, Brian (DEQ)
Cc: Jett, Graham L. (VADOC); Schrecengost, James (VADOC)
Subject: FW: Haynesville WWTP - CTO
Attachments: PTL24845_Haynesville_CTC_4 16 10.pdf; CTO_Application10302008.pdf; Document 9.pdf

Brian,

Attached you will find copies of the CTC and CTO documentation that was supposed to be completed and sent to DEQ. I cannot be sure if the CTO ever made it to DEQ. The VADOC Project Manager that dealt with the Haynesville Correctional Center (HCC) project regrettably has passed away. I have no access to his files in an effort to locate this documentation. As you can see in my email to the Engineer that designed the WWTP upgrade project at HCC, the CTO form will be redone and routed for proper signatures before forwarding to DEQ.

As for the designed flow, the .178 MGD is the correct design flow. The .230 MGD figure listed on the VPDES Reissuance Permit Application was considered but, never approved because it was not necessary. There is also an attachment included verifying that decision.

Should you have any questions, please contact me.

Dallas L. Phillips
Environmental Services Manager
VADOC/Environmental Services Unit
Eastern Service Area
757-514-3592
Dallas.Phillips@vadoc.virginia.gov

From: Jeff Haas [mailto:jhaas@brockenbrough.com]
Sent: Wednesday, June 03, 2015 2:59 PM
To: Phillips, Dallas L. (VADOC)
Cc: Schrecengost, James (VADOC)
Subject: RE: Haynesville WWTP - CTO

Jim,

Please confirm that I should put your name or Tom's name in the Project Owner block, and if I should sign it as of now, June 2015 or at the time of substantial completion on or about March 26, 2010?

Jeff

From: Phillips, Dallas L. (VADOC) [mailto:Dallas.Phillips@vadoc.virginia.gov]
Sent: Wednesday, June 03, 2015 2:51 PM
To: Jeff Haas
Cc: Schrecengost, James (VADOC)
Subject: RE: Haynesville WWTP - CTO

Jeff,

I think it would be a good idea to seal and sign the CTO form again and forward to Jim for processing. It may be hard to determine and locate proof that this was done with Gary not being present.

Jim will be sending out the arrangements on Gary's funeral today. I am sure he will pass that information on to you also.

Thanks for your help.

Dallas L. Phillips
Environmental Services Manager
VADOC/Environmental Services Unit
Eastern Service Area
757-514-3592
Dallas.Phillips@vadoc.virginia.gov

From: Jeff Haas [mailto:jhaas@brockenbrough.com]
Sent: Wednesday, June 03, 2015 10:57 AM
To: Phillips, Dallas L. (VADOC)
Cc: Schrecengost, James (VADOC)
Subject: Haynesville WWTP - CTO

DL,

Attached is the CTO form that I believe to have stamped with my PE seal on or about March 26, 2012, the date of substantial completion and sent to Gary to be signed and processed.

If you require, I can seal and sign this again and forward to Jim for processing.

I'm also attaching a copy of the CTC that was signed by Curt Linderman.

Jeffrey J. Haas, PE, PMP
Associate - Civil Engineer

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A. EXECUTIVE SUMMARY

The existing Haynesville Wastewater Treatment Plant was designed and constructed in the 1990's and consists of two Sequencing Batch Reactor (SBR) treatment tanks. The treatment plant includes influent solids separation through a bar screen. The effluent from the SBR process passes through a tertiary filter before it is disinfected by ultraviolet (UV) light and discharged to the receiving stream.

The SBR treatment plant was originally planned to undergo an upgrade for increased flow to 230,000 gallons per day (gpd) in a Preliminary Engineering Report (PER) dated March 2002. The PER was revised in August 2005 to include the provisions for the removal of nitrogen and phosphorus and to meet the permitted metals limit for copper, cadmium and silver.

Based on the design evaluation, the existing SBR tanks can handle a flow rate of 0.178 MGD. Consideration was given to operating the existing plant at 0.23 MGD. However based on observed reduction in flow rates following the installation of water serving devices by the Virginia Department of Corrections (VDOC), construction of a 0.23 MGD facility and the associated process tank and equipment upgrades is not justifiable. The option of upgrading of the existing SBR treatment process to 0.23 MGD was therefore not considered further.

Three options are considered for the making improvements to meet the permit requirements. Each options include the addition of a grease trap for the institutional kitchen, a pump station and force main to deliver wastewater from Unit 17 to the SBR treatment plant, an influent grinder station, a sludge dewatering system housed in a pre-engineered metal building, and a deep bed sand filter for denitrification of the effluent. The options are described as follows:

OPTION 1: Renovate the existing SBR treatment system with new equipment and controls. New sludge digesters will be provided and the one existing sludge digester will be converted to an influent equalization tank. The estimated cost for Option 1 is $3.6 Million, not including additive bid items. The study calculations provided herein generally represent the upgrade of the process represented by this option.

OPTION 2: Provide two new SBR treatment tanks and equipment, and renovate the existing SBR treatment tanks for use as influent equalization and sludge digester tanks. This option is almost identical to the preliminary design dated November 2005 with the exception that the capacity of the process is reduced from 0.230 MGD to 0.178 MGD. The estimated cost for Option 2 is $4.7 Million, not including additive bid items.

OPTION 3: Provide one new SBR treatment tank adjacent to the existing two SBR tanks, and renovate the existing two SBR Tanks. One of the existing SBR tanks will be renovated for use as a digester tank. The existing digester tank will be renovated for use as an influent equalization tank. The estimated cost for Option 3 is $4.1 Million, not including additive bid items. The study

calculations provided herein for Option 1 generally represent the upgrade of the process represented by this option.

Each option provides viable solutions for upgrading of the existing treatment process to meet the new VPDES discharge limits. The responsible personnel for the Virginia Department of Corrections will make a decision based upon the available funding for the project.

B. REPORT PURPOSE AND SCOPE

The VDOC is undertaking this study to determine which treatment process steps are essential to meet the provisions of the VPDES permit and the January 1, 2011 Chesapeake Bay nutrient discharge limits. An evaluation of the design flow rate of the treatment process will be a primary consideration of this study to determine the necessary course of action. The study will include the hydraulic flow capacities of the various components to determine whether increased sizing is needed to achieve the treatment requirements.

The Effluent Discharge Limits for the VPDES Permit are summarized as follows:

TABLE 1 - DISCHARGE LIMITS

PARAMETER	VALUE
FLOW	0.178 MGD
BOD_5	15 mg/L
TOTAL SUSPENDED SOLIDS	15 mg/L
E. Coli	126 per 100 mL
TOTAL NITROGEN	* 4.0 mg/L
TOTAL PHOSPHORUS	* 0.3 mg/L
DISSOLVED OXYGEN	5.5 mg/L
COPPER	4.8 ug/L
ZINC	Monitor - NL
CADMIUM	0.67 ug/L
SILVER	0.49 ug/L
TOTAL HARDNESS as $CaCO_3$	150 mg/L
pH	6.0 – 9.0
* For General Permit Limits	

A copy of the VPDES Permit is included in Appendix A of this report.

Attachment H.

Other Agency Comments

Wrenn, Brian (DEQ)

From: Wrenn, Brian (DEQ)
Sent: Wednesday, May 20, 2015 3:12 PM
To: Ragnauth, Bennett (VDH)
Subject: Reissuance of VA0023469, Haynesville Correctional Center

Mr. Ragnauth
Documentation supporting reissuance of the referenced VPDES permit application is posted at this link for your concurrence. Please submit a response to this office within 14 days with your comments or objections or a statement verifying that the Virginia Department of Health has no comments on the application. Thank you.

Brian L. Wrenn
VPDES Water Permit Writer
VA DEQ - Piedmont Regional Office
804-527-5015 (Ph.)
804-527-5106 (FAX)
brian.wrenn@deq.virginia.gov
www.deq.virginia.gov

Attachment I

Owner Comments and DEQ Responses