VPDES PERMIT FACT SHEET

This document gives the pertinent information concerning the reissuance of the VPDES permit listed below. This permit is being processed as a minor municipal permit. The effluent limitations contained in this permit will maintain the Water Quality Standards of 9 VAC 25-260-5 et seq. The discharge results from the operation of a **0.020 MGD extended aeration package plant** with chlorination. This permit action consists of reducing the *E. coli* monitoring frequency and revising the special conditions. (SIC Code: 4952)

1. **Facility Name and Address:**
   Glen Wilton WWTP
   1502 Brownlee Avenue S.E.
   Roanoke, VA 24014
   Location: 358 Railway Road (State Road 622), Glen Wilton, Virginia

2. **Permit No: VA0089273** Existing Permit Expiration Date: April 19, 2016

3. **Facility/ Owner Contact:**
   Mr. Paul Peery, Utilities Manager, (540) 473-8316, paul.peery@westernvawater.org
   Mr. Scott Shirley, Director of Wastewater Operations, (540) 853-1283; scott.shirley@westernvawater.org

4. **Application Complete Date:** September 25, 2015
   Permit Drafted By: Becky L. France, Water Permit Writer
   Date: October 16, 2015
   DEQ Regional Office: Blue Ridge Regional Office
   Reviewed By: Kevin Crider, Water Permit Writer
   Date Reviewed: November 23, 2015
   Public Comment Period Dates: From 11/6/15 To 12/7/15

5. **Receiving Stream Classification:**

Receiving Stream:	James River (River Mile: 342.85)		
Watershed ID:	VAW-I18R (Upper James River/ Sinking Creek/ Mill Creek)		
River Basin:	James River, Upper		
River Subbasin:	NA		
Section:	12		
Class:	IV		
Special Standards:	None		
7-Day, 10-Year Low Flow:	124 MGD	7-Day, 10-Year High Flow:	256 MGD
1-Day, 10-Year Low Flow:	118 MGD	1-Day, 10-Year High Flow:	212 MGD
30-Day, 5-Year Low Flow:	156 MGD	Harmonic Mean Flow:	485 MGD
Tidal:	No	303(d) Listed:	No

(**Attachment A** contains a copy of the flow frequency determination memorandum.)

6. **Operator License Requirements:** IV

7. **Reliability Class:** II

8. **Permit Characterization**:

( ) Private ( ) Interim Limits in Other Document
( ) Federal ( ) Possible Interstate Effect
( ) State
(X) POTW
( ) PVOTW

9. **Wastewater Treatment System:** A description of the wastewater treatment system is provided below. See **Attachment B** for a wastewater treatment schematic and **Attachment C** for a copy of the site inspection report. Treatment units associated with the discharge are listed in the table below.

Table I
DISCHARGE DESCRIPTION

Outfall Number	Discharge Source	Treatment (Unit by Unit)	Flow (Design) (MGD)
001	Glen Wilton WWTP	bar screen equalization basin aeration basin clarifier sludge holding tank chlorinator baffled chlorine contact basin cascade aerator	0.020

The treatment works consist of a 20,000 gallon/day extended aeration activated sludge package plant. The system serves a population of approximately 122 in the community of Glen Wilton. Effluent is chlorinated with sodium hypochlorite prior to discharge.

10. **Sewage Sludge Use or Disposal:** A VPDES Sewage Permit Application Form was submitted for this facility to address disposal of sewage sludge from the wastewater treatment facility. Following aerobic digestion, the permittee has selected two potential options for sludge disposal. The sludge may be dewatered with a filter press prior to disposal in the Botetourt County Sanitary Landfill. Alternatively, the digested sludge may be hauled to the WVWA WPCP for further treatment.

11. **Discharge Location Description:** A USGS topographic map which indicates the discharge location, any significant dischargers, any water intakes, and other items of interest is included in

Attachment D. The outfall is located on the James River. The latitude and longitude of the discharge are N 37°45'13", E 79°48'47".

Name of Topo: Clifton Forge Number: 159D

12. **Material Stored:** Sodium hypochlorite is stored in a building onsite.

13. **Ambient Water Quality Information:** Memoranda or other information which helped to develop permit conditions (special water quality studies, STORET data, and any other biological and/or chemical data, etc.) are listed below.

The flow frequencies were determined from a gauge approximately 2.0 miles upstream of the discharge point. Because the flow in the James River has been regulated by Lake Moomaw since 1979, flow frequencies for the gauge have been developed using the regulated period of record from 1980 through 2011. See **Attachment A** for a summary of the flow frequencies.

STORET Station 2-JMS345.73 is the nearest ambient water quality monitoring station, and it is located at the Route 220 bridge near the confluence with Cowpasture Creek. Stream data and effluent data used to determine 90th percentile pH and temperature values for the antidegradation wasteload allocation spreadsheet are included in **Attachment E** and **Attachment F**, respectively. In the absence of effluent or stream hardness data, a default hardness of 50 mg/L was assumed.

Glen Wilton WWTP discharges into the Upper James River/ Sinking Creek/ Mill Creek Watershed (VAW-I18R). This segment has been assessed as fully supporting for aquatic life and not assessed for the recreation use.

14. **Antidegradation Review and Comments**: Tier 1 ____ Tier 2 ___X__ Tier 3 _____

The State Water Control Board's Water Quality Standards includes an antidegradation policy (9 VAC 25-260-30). All state surface waters are provided one of three levels of antidegradation protection. For Tier 1 or existing use protection, existing uses of the water body and the water quality to protect these uses must be maintained. Tier 2 water bodies have water quality that is better than the water quality standards. Significant lowering of the water quality of Tier 2 waters is not allowed without an evaluation of the economic and social impacts. Tier 3 water bodies are exceptional waters and are so designated by regulatory amendment. The antidegradation policy prohibits new or expanded discharges into exceptional waters.

The antidegradation review begins with Tier determination. The James River is not listed as a public water supply in the segment where the discharge is located. The James River in this segment (VAW-I18R) is not listed on Part I of the 303(d) list for exceedance of water quality criteria. Available pollutant data have been analyzed, and the existing water quality conditions for pollutants for which data exist compared to the water quality standards. This analysis indicates the water quality of the receiving stream does not exceed numeric criteria for any

pollutant analyzed. Therefore, this segment of the James River is classified as a Tier 2 water, and no significant degradation of existing water quality is allowed.

For purposes of aquatic life protection in Tier 2 waters, "significant degradation" means that no more than 25 percent of the difference between the acute and chronic aquatic criteria values and the existing quality (unused assimilative capacity) may be allocated. For purposes of human health protection, "significant degradation" means that no more than 10 percent of the difference between the human health criteria and the existing quality (unused assimilative capacity) may be allocated. The antidegradation baselines for aquatic life and human health are calculated for each pollutant as follows:

Antidegradation baseline (aquatic life) = 0.25 (WQS – existing quality) + existing quality

Antidegradation baseline (human health) = 0.10 (WQS – existing quality) + existing quality

Where:
"WQS" = Numeric criterion listed in 9 VAC 25-260-00 et seq. for the parameter analyzed
"Existing quality" = Concentration of the parameter being analyzed in the receiving stream

When applied, these "antidegradation baselines" become the new water quality criteria in Tier II waters, and effluent limits must be written to maintain the antidegradation baselines for each pollutant. Antidegradation baselines have been calculated as described above and included in **Attachment F**.

The wastewater treatment facility began operation in 1997. Antidegradation guidelines are applicable and have been applied to this permit reissuance. In accordance with antidegradation policy, pH will be maintained within the range of 6.0 S.U. and 9.0 S.U. The antidegradation review was conducted as described in Guidance Memo 00-2011, and complies with the antidegradation policy contained in Virginia's Water Quality Standards.

15. **Site Inspection:** Date: August 7, 2015 Performed by: Becky L. France
Attachment C contains a copy of the site inspection memorandum. The last compliance and laboratory inspection was performed on November 15, 2011 by Gerald A. Duff.

16. **Effluent Screening and Limitations Development:** DEQ Guidance Memo 00-2011 was used in developing all water quality based limits pursuant to water quality standards (9 VAC 25-260-5 et seq). **Attachment F** contains effluent data used to calculate the 90th percentile values for pH and temperature. Refer to **Attachment F** for the antidegradation wasteload allocation spreadsheet and effluent limit calculations. See **Table II** on page 13 for a summary of limits and monitoring requirements.

A. **Mixing Zone**

The MIXER program was run to determine the percentage of the receiving stream flow that could be used in the wasteload allocation calculations. The program output indicated that 100 percent of the 7Q10 and 25.5 percent of 1Q10 may be used for

calculating antidegradation acute and chronic wasteload allocations (AWLAs). A copy of the print out from the MIXER program run is enclosed in **Attachment F**.

B. **Effluent Limitations for Conventional Pollutants**

Flow -- The permitted design flow of 0.020 MGD for this facility is taken from the application for the reissuance. The treatment facility is currently operating significantly below its design flow. In accordance with the current VPDES Permit Manual, flow shall continue to be estimated and reported daily.

pH -- The pH limits of 6.0 S.U. minimum and 9.0 S.U. maximum have been required. These limits are technology-based limits for secondary treatment plants as described in 40 CFR 133.102 and are protective of water quality standards for a Class IV receiving stream. In accordance with Guidance Memo 98-2005, the facility qualifies for a reduced monitoring frequency of 1/week. See **Attachment G** for a summary of the discharge data and a discussion of the criteria for reduced monitoring.

Biochemical Oxygen Demand (BOD_5) -- Between August 2010 and September 2015, there were no exceedances of the BOD_5 limitations (**Attachment G**). Since there has been a change in the flow frequencies at the outfall, the new data have been entered into the Regional Water Quality Model for Free Flowing Streams (Version 4.0) to update calculations for BOD_5 limits. A copy of the model output results is found in **Attachment H**. An initial DO concentration of 0 mg/L, a TKN value of 20 mg/L, and 30 mg/L for BOD_5 were used in the model input. The background dissolved oxygen was 7.347 mg/L. The model predicted dissolved oxygen (DO) sag at the initial discharge point to 7.346 mg/L. The sag is 0.001 mg/L below the existing background condition of 7.347 mg/L. So, these effluent concentrations do not violate the antidegradation policy. Therefore, current treatment limits for BOD_5 are protective of the water quality, and a limit for DO is not needed to meet the DO water quality criterion in 9 VAC 25-260-50 for Class IV receiving waters.

BOD_5 limits are technology-based requirements for municipal dischargers with secondary treatment required in accordance with 40 CFR Part 133. These effluent limits of 30 mg/L (2300 g/d) monthly average and 45 mg/L (3400 g/d) have been continued from the previous permit. Grab samples shall continue to be collected.

The data from the permit term were evaluated to determine if the facility qualifies for a reduced monitoring frequency. In accordance with Guidance Memo 98-2005, the facility continues to qualify for a reduced monitoring frequency for BOD_5 of 1/ 6 months. See **Attachment G** for a summary of the discharge data and a discussion of the criteria for reduced monitoring.

Total Suspended Solids (TSS) -- Between August 2010 and September 2015, there were no exceedances of the TSS limitations (**Attachment G**). The TSS limits are technology-based requirements for municipal dischargers with secondary treatment

required in accordance with 40 CFR Part 133. These effluent limits of 30 mg/L (2300 g/d) monthly average and 45 mg/L (3400 g/d) have been continued from the previous permit. Grab samples shall continue to be collected.

The data from the permit term were evaluated to determine if the facility qualifies for a reduced monitoring frequency. In accordance with Guidance Memo 98-2005, the facility continues to qualify for a reduced monitoring frequency for TSS of 1/ 6 months. See **Attachment G** for a summary of the discharge data and a discussion of the criteria for reduced monitoring.

E. coli -- The limit of 126 cfu (colony forming units) /100 mL (geometric mean) has been continued from the previous permit. This limit is protective of the Water Quality Standards for bacteria found in 9 VAC 25-260-170. Also, the receiving stream is in a segment of the James River proposed for inclusion in the 305b impaired waters list. During the permit term the highest *E. coli* value was 29 cfu/100 mL. Since the water quality data were significantly below the water quality criterion, the monitoring frequency has been reduced from 1/week to 1/ year. In order to calculate a geometric mean a total of four consecutive weekly samples are required. See **Attachment G** for a summary of the discharge data and a discussion of the criteria for reduced monitoring.

C. **Effluent Limitations for Toxic Pollutants**

Ammonia as Nitrogen -- The need for an ammonia limit has been reevaluated using revised stream and effluent data. The 90th percentile temperature and pH data from STORET monitoring station 2-JMS345.73 on the James River (**Attachment E**) and effluent pH and temperature data reported on the facility's Discharge Monitoring Reports and bench sheets (**Attachment F**), were used to determine the antidegradation wasteload allocations (AWLAs). Acute and chronic water quality criteria and AWLAs were calculated and are included in the spreadsheet in **Attachment F**. The AWLAs were used in the STATS program to determine there is a reasonable potential to exceed the wasteload allocations. As recommended in Guidance Memo 00-2011, a default ammonia concentration of 9 mg/L was input into the program. The program output indicates that a permit limit is not necessary for ammonia (**Attachment F**).

Total Residual Chlorine (TRC) -- As noted in Guidance Memo 00-2011, all chlorinated effluent must have a chlorine limit because there is a reasonable potential for the facility to cause or contribute to a violation of the standards. This Guidance Memo also recommends an upper, technology based wasteload allocation of 4.0 mg/L where the chlorine limit, based solely on dilution, would be excessive. The effluent limits are technology based limits. The previous permit limits of 1.9 mg/L monthly average and 2.3 mg/L weekly average have been continued. The limits were calculated by entering an acute and chronic wasteload allocation of 4.0 mg/L into the STATS program. The program used 4.0 mg/L wasteload allocations as the 97th percentile distribution that must be attained. Monitoring shall be continued once per day using grab samples. See **Attachment F** for the STATS program output.

17. **Basis for Sludge Use and Disposal Requirements:** The permittee has selected the options of either hauling treated sludge to a municipal landfill for disposal or the WVWA WPCP for further treatment. There are no limits or monitoring requirements associated with sludge use or disposal beyond compliance with the Sludge Management Plan approved with the reissuance of the permit.

18. **Antibacksliding Statement:** Since there are no limitations less stringent than the previous permit, the permit limits comply with the antibacksliding requirement of 9 VAC 25-31-220 L of the VPDES Permit Regulation.

19. **Compliance Schedules:** There are no compliance schedules included in this permit.

20. **Special Conditions:** A brief rationale for each special condition contained in the permit is given below.

A. **Additional Chlorine Limitations and Monitoring Requirements (Part I.B)**

Rationale: This condition requires that the permittee monitor the chlorine concentration after chlorine contact. This condition is required by the Sewage Collection and Treatment Regulations, 9 VAC 25-790, bacteria standards. Also, 40 CFR 122.41(e) requires the permittee, at all times, to properly operate and maintain all facilities and systems of treatment in order to comply with the permit. These requirements ensure proper operation of chlorination equipment to maintain adequate disinfection.

B. **95% Capacity Reopener (Part I.C.1)**

Rationale: This condition requires that the permittee address problems resulting from high influent flows, in a timely fashion, to avoid non-compliance and water quality problems from plant overloading. This requirement is contained in 9 VAC 25-31-200 B4 of the VPDES Permit Regulations and applies to all POTWs and PVOTWs.

C. **CTC, CTC Requirement (Part I.C.2)**

Rationale: This condition is required by Code of Virginia § 62.1-44.19 and Sewage Collection and Treatment Regulations, 9 VAC 25-790.

D. **Operations and Maintenance Manual Requirement (Part I.C.3)**

Rationale: An Operations and Maintenance Manual is required by the Code of Virginia § 62.1-44.19, the Sewage Collection and Treatment Regulations, 9 VAC 25-790, and 9 VAC 25-31-190 E of the VPDES Permit Regulation.

E. **Licensed Operator Requirement (Part I.C.4)**

Rationale: The VPDES Permit Regulation, 9 VAC 25-31-200 C and the Code of Virginia § 54.1-2300 et seq., Board for Waterworks and Wastewater Works Operators and Onsite Sewage System Professionals Regulations (18 VAC 160-20-10 et seq.) require licensure of operators. A Class IV operator is required for this facility.

F. **Reliability Class (Part I.C.5)**

Rationale: Reliability class designations are required by the Sewage Collection and Treatment Regulations, 9 VAC 25-790 for all municipal facilities. Facilities are required to achieve a certain level of reliability to protect water quality and public health in the event of component or system failure. A Reliability Class II has been assigned to this facility.

G. **Closure Plan (Part I.C.6)**

Rationale: This condition establishes the requirement to submit a closure plan for the treatment works if the treatment facility is being replaced or expected to close. A closure plan is necessary to ensure treatment works are properly closed so that the risk of untreated wastewater discharge, spills, leaks, and exposure to raw materials is eliminated and water quality is maintained. The Code of Virginia § 62.1-44.21 requires every owner to furnish when requested plans, specifications, and other pertinent information as may be necessary to determine the effect of the wastes from this discharge on the quality of state waters, or such other information as may be necessary to accomplish the purpose of the State Water Control Law.

H. **Sludge Reopener (Part I.C.7)**

Rationale: This condition is required by the VPDES Permit Regulation, 9 VAC 25-31-220 C for all permits issued to treatment works treating domestic sewage to allow incorporation of any applicable standard for sewage sludge use or disposal promulgated under Section 405(d) of the Clean Water Act.

I. **Sludge Use and Disposal (Part I.C.8)**

Rationale: VPDES Permit Regulation, 9 VAC 25-31-100 P; 220 B2; and 420 and 720, and 40 CFR Part 503 require all treatment works treating domestic sewage to submit information on sludge use and disposal practices and to meet specified standards for sludge use and disposal.

J. **Total Maximum Daily Load (TMDL) Reopener (Part I.C.9)**

Rationale: Section 303(d) of the Clean Water Act requires that Total Maximum Daily Loads (TMDLs) be developed for streams listed as impaired. This special condition is to

allow the permit to be reopened if necessary to bring it into compliance with any applicable TMDL approved for the receiving stream. The reopener recognizes that, according to Section 402(o)(1) of the Clean Water Act, limits and/or conditions may be either more or less stringent than those contained in this permit. Specifically, they can be relaxed it they are the result of a TMDL, basin plan, or other wasteload allocation prepared under Section 303 of the Act.

K. **Compliance Reporting (Part I.C.10)**

Rationale: In accordance with VPDES Permit Regulation, 9 VAC 25-31-190 J4 and 220 I, this condition is necessary when pollutants are monitored by the permittee and a maximum level of quantification and/or specific analytical method is required in order to assess compliance with a permit limit or to compare effluent quality with a numeric criterion. This condition also establishes protocols for calculation of reported values.

L. **Effluent Monitoring Frequencies (Part I.C.11)**

Rationale: Permittees are granted a reduction in monitoring frequency based on a history of permit compliance. To remain eligible for the reduction, the permittee should not have violations related to the effluent limits for which reduced frequencies were granted. If the permittee fails to maintain the previous level of performance, the baseline monitoring frequency should be reinstated for those parameters that were previously granted a monitoring frequency reduction.

M. **Permit Application Requirement (Part I.C.12)**

Rationale: VPDES Permit Regulation, 9 VAC 25-31-100 D and 40 CFR 122.21(d)(1) require submission of a new application at least 180 days prior to expiration of the existing permit. In addition, the VPDES Permit Regulation, 9 VAC 25-31-100 E1 and 40 CFR 122.21(e)(1) note that a permit shall not be issued before receiving a complete application.

N. **Conditions Applicable to All VPDES Permits (Part II)**

Rationale: VPDES Permit Regulation, 9 VAC 25-31-190 requires all VPDES permits to contain or specifically cite the conditions listed.

21. **Changes to the Permit**

A. **Special conditions that have been modified from the previous permit are listed below: (The referenced permit sections are for the new permit.)**

1. The Additional Chlorine Limitations and Monitoring Requirements Special Condition (Part I.B) has been modified to reflect changes in the Water Quality Standards.

2. The Operations and Maintenance Manual Requirement Special Condition (Part I.C.3) has been modified to reflect current VPDES Permit Manual recommendations.

3. The Compliance Reporting Special Condition (Part I.C.10) has been modified to include information about significant figures.

4. The Effluent Monitoring Frequencies Special Condition (Part I.C.11) has been revised to include a reduced monitoring frequency for *E. coli*.

B. **A new special condition added to the permit is listed below:**

A Permit Application Requirement Special Condition (Part I.C.12) has been added to provide the specific due date for the required submittal of the application.

C. **Permit Limits and Monitoring Requirements: Table III** on page 14 summarizes changes to permit limits and monitoring requirements.

22. **Variances/Alternate Limits or Conditions:** No variances or alternate limits or conditions are included in this permit. An application testing waiver was requested for the requirement to submit Sludge Permit Application Form, Section A.8, testing of a sample of the sludge. The permittee requested that *E. coli* collected the permit term be included on the application in lieu of fecal coliform. Also, the permittee requested that grab BOD_5 and TSS data collected during the permit term be used in lieu of the application requirement for 24-hour composite samples. These items were not considered necessary to the permit reissuance. Therefore, these waivers were granted.

23. **Regulation of Treatment Works Users:** There are no industrial users contributing to the treatment works. VPDES Permit Regulation 9 VAC 25-31-280 B9 requires that every permit issued to a treatment works owned by a person other than a state or municipality provide an explanation of the Board's decision on the regulation of users. The treatment works is owned by a water authority. Therefore, this regulation does not apply.

24. **Public Notice Information required by 9 VAC 25-31-280 B:**

All pertinent information is on file and may be inspected, and arrangements made for copying by contacting Becky L. France at:

Virginia DEQ, Blue Ridge Regional Office
3019 Peters Creek Road
Roanoke, VA 24019
540-562-6700
becky.france@deq.virginia.gov

Persons may comment in writing or by e-mail to the DEQ on the proposed permit action and may request a public hearing during the comment period. Comments shall include the name, address, and telephone number of the writer and of all persons represented by the commenter/requester, and shall contain a complete, concise statement of the factual basis for the comments. Only those comments received within this period will be considered. The DEQ may decide to hold a public hearing, including another comment period, if public response is significant and there are substantial, disputed issues relevant to the permit. Requests for public hearings shall state 1) the reason why a hearing is requested; 2) a brief informal statement regarding the nature and extent of the interest of the requester or of those represented by the requester, including how and to what extent such interest would be directly and adversely affected by the permit; and 3) specific references, where possible, to terms and conditions of the permit with suggested revisions. Following the comment period, the Board will make a determination regarding the proposed permit action. This determination will become effective unless the DEQ grants a public hearing.

Due notice of any public hearing will be given. The public may review the draft permit and application at the Blue Ridge Regional Office in Roanoke by appointment. A copy of the public notice is found in **Attachment I**.

25. **303d Listed Segments (TMDL):** This facility discharges directly to the James River. The stream segment receiving the effluent is not included on the current 303(d) list. A downstream segment of the James River is listed on the 303(d) list due to PCBs. A PCB TMDL for the James River watershed is scheduled to be completed in 2016. This upstream segment of the James River may be included in the TMDL study area.

This stream segment is included in the draft of the 2014 Impaired Waters List for *E. coli*. The 303(d) Impaired Waters List with this designation is still in the process of review and has not yet been approved.

26. **Additional Comments**

A. **Reduced Effluent Monitoring:** In accordance with Guidance Memo 98-2005, all permit applications received after May 4, 1998, are considered for reduction in effluent monitoring frequency. Only facilities having exemplary operations that consistently meet permit requirements may qualify for reduced monitoring. To qualify for consideration of reduced monitoring requirements, the facility should not have been issued any Warning Letters or Notices of Violation (NOV), or be under any Consent Orders, Consent Decrees, Executive Compliance Agreements, or related enforcement documents during the past three years. The facility has not been issued any warning letters or NOVs within the past there years and therefore qualifies for a reduced monitoring evaluation. See **Attachment G** for a summary of effluent data and a discussion of reduced monitoring.

B. **Previous Board Action:** None

C. **Staff Comments:** The discharge is not controversial. The discharge is not addressed in any planning document, but will be included, if applicable, when the plan is updated. The EPA Checksheet was completed for the previous reissuance.

D. **Public Comment:** No comments were received during the comment period.

E. **Tables**

Table I	Discharge Description (Page 2)
Table II	Basis for Monitoring Requirements (Page 13)
Table III	Permit Processing Change Sheet (Page 14)

F. **Attachments**

A. Flow Frequency Memorandum
B. Wastewater Schematic
C. Site Inspection Report
D. USGS Topographic Map
E. Ambient Water Quality Information
- STORET Data (Station 2-JMS345.73)
- 2012 Impaired Waters Fact Sheet (Excerpt)

F. Wasteload and Limit Calculations
- Mixing Zone Calculations (MIXER 2.1)
- Effluent Data (flow, pH and temperature)
- Antidegradation Wasteload Allocation Spreadsheet
- STATS Program Outputs (ammonia, TRC)

G. Reduced Monitoring Evaluation Memorandum
H. Regional Water Quality Model (Version 4.0)
I. Public Notice

Table II
BASIS FOR LIMITATIONS – MUNICIPAL

( ) Interim Limitations
(x) Final Limitations

OUTFALL: 001
DESIGN CAPACITY: 0.020 MGD

Effective Dates - From: Effective Date
To: Expiration Date

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITS				MONITORING REQUIREMENTS	
		Monthly Average	Weekly Average	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	NA	NA	NL	1/Day	Estimate
pH (Standard Units)	1,2	NA	NA	6.0	9.0	1/Week	Grab
BOD_5	1	30 mg/L 2300 g/d	45 mg/L 3400 g/d	NA	NA	1/ 6 Months	Grab
Total Suspended Solids	1	30 mg/L 2300 g/d	45 mg/L 3400 g/d	NA	NA	1/ 6 Months	Grab
Total Residual Chlorine	3	1.9 mg/L	2.3 mg/L	NA	NA	1/Day	Grab
E. coli (n/100 mL)	2	126 cfu/100 mL (Geometric Mean)	NA	NA	NA	1/Year*	Grab (between 8 AM and 4 PM)

NA = Not Applicable
NL = No Limitations; monitoring only
* = Calculate geometric mean from a total of 4 weekly consecutive samples.

The basis for the limitations codes are:
1. Federal Technology-Based Secondary Treatment Regulation (40 CFR Part 133)
2. Water Quality Criteria
3. Best Professional Judgment

Table III
PERMIT PROCESSING CHANGE SHEET

LIMITS AND MONITORING SCHEDULE:

Outfall No.	Parameter Changed	Monitoring Requirement Changed		Effluent Limits Changed		Reason for Change	Date
		From	To	From	To		
001	*E. coli*	1/Week	1/Year			The data collected during the permit term were significantly below the permit limit, so the monitoring frequency has been reduced to 1/year to verify compliance with the limit. In order to calculate a geometric mean, a total of four consecutive weekly samples are required.	9/30/15

Attachment A

Flow Frequency Memorandum

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY - WATER DIVISION
3019 Peters Creek Road Roanoke, Virginia 24019

SUBJECT: Flow Frequency Determination
Glen Wilton WWTP, VA0089273

TO: Permit File

FROM: Becky L. France, Water Permit Writer BLF

DATE: September 30, 2015

Glen Wilton WWTP discharges to the James River near Iron Gate, Virginia. Stream flow frequencies are required to develop effluent limitations for the VPDES permit. This memo supercedes the August 12, 2010.

The Virginia DEQ has operated a continuous record gauge on the James River near Lick Run, Virginia (#02016500) since 1925. The gauge is approximately 2.0 miles upstream of the discharge point. Flows at the gauging station have been regulated since 1979 by Lake Moomaw. The flow frequencies for the gauge are based on the regulated period of record from 1980 through 2011. The values at the discharge point were determined by drainage area proportions and do not address any withdrawals, discharges, or springs lying between the gauge and the discharge point.

The high flow months are January through May. Flow frequencies are listed on the attached table.

Flow Frequency Determination: Glen Wilton WWTP

Reference Gauge (data from 1980 to 2011)
James River, VA (#02016500)
Drainage Area [mi^2] = 1,371

	ft^3/s	MGD		ft^3/s	MGD
1Q10 =	182	118	High Flow 1Q10 =	325	210
7Q10 =	191	123	High Flow 7Q10 =	393	254
30Q5 =	239	154	HM =	745	481
30Q10=	212	137	High Flow 3010=	479	310

Flow frequencies for the reissued permit
James River at Discharge Point 4/20/16
Drainage Area [mi^2] = 1,381.0

	ft^3/s	MGD		ft^3/s	MGD
1Q10 =	**183**	**118**	**High Flow 1Q10 =**	**327**	**212**
7Q10 =	**192**	**124**	**High Flow 7Q10 =**	**396**	**256**
30Q5 =	**241**	**156**	**HM =**	**750**	**485**
30Q10=	**214**	**138**	**High Flow 30Q10=**	**482**	**312**

SITEID	NAME	RECORD	River	LATLONG	DAAREA	HARMEAN	HF30Q10	HF7Q10	HF1Q10	Z30Q5	Z30Q10	Z7Q10	Z1Q10	Z1Q30	HFMTHS	Statperiod	Yrstrn	Notes
02016500	James River at Lick Run, Va.	R, 1925-	James River	Lat 37 46'25", Long 79 47'04", NAD 83	1371	745	479	393	325	239	212	191	182	200	JAN-MAY	1980-2005	2011	Flow regulated by Lake Moomaw since Dec 1979

Attachment B

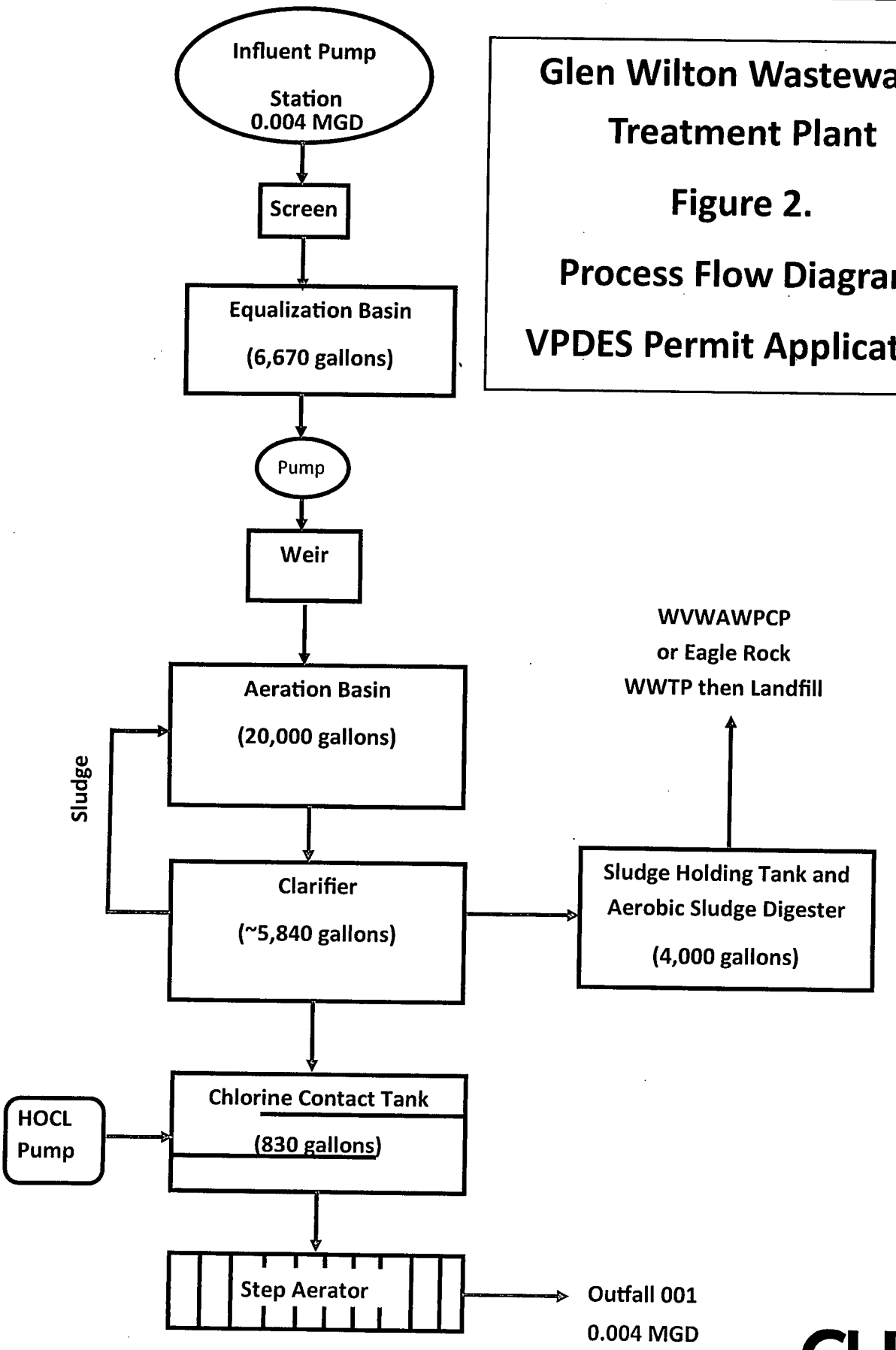
Wastewater Schematic

Glen Wilton Wastewater Treatment Plant

Figure 2.

Process Flow Diagram

VPDES Permit Application



JN: 30314

August 2015

CHA
1901 Innovation Drive, Suite 2100
Blacksburg, VA 24060
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Attachment C

Site Inspection Report

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY
Blue Ridge Regional Office

3019 Peters Creek Road Roanoke, VA 24019

SUBJECT: Site Inspection Report for Glen Wilton WWTP
Reissuance of VPDES Permit No. VA0089273

TO: Permit File

FROM: Becky L. France, Water Permit Writer BLF

DATE October 5, 2015

On August 7, 2015, I conducted a site visit of Glen Wilton WWTP. Mr. Paul Peery, Utility Supervisor, was present at the inspection. The facility is located on 358 Railway Road and serves approximately 40 residences in the Glen Wilton community.

The extended aeration system consists of an equalization basin, aeration basin with air diffusers, clarifier, sludge holding tank, chlorinator, baffled chlorine contact tank, and step aerator.

The wastewater gravity flows from the residences to a pump station which contains grinder pumps. Wastewater from the pump station is periodically discharged to the plant where it flows through a bar screen and into an equalization basin. The 6,670 gallon equalization basin has a blower unit and a backup air supply line. A float switch governs the transfer of the wastewater into a flow control box which has an adjustable overflow weir. Wastewater from the equalization tank enters the aeration tank through the flow control box. At the time of the site visit, the activated sludge appeared a medium chocolate brown.

The mixed liquor enters one of two clarifiers through a port in the aeration tank and is distributed across the clarifier via a trough. A skimmer removes debris from the surface of the clarifier and discharges it into the sludge tank. The clarifier tank has two hoppers and three air lift pumps. Two of the air lift pumps remove sludge for wasting or return, and the third pump removes floating scum from the surface. These air lift pumps operate when the blowers are operating. Routinely, the heavier sludge will be returned continuously from the first hopper (nearest the distribution trough), and the lighter sludge is wasted daily from the second hopper.

Sludge enters the sludge holding tank where it is mixed and aerated by a coarse bubble diffuser. The permittee's sludge management plan includes options for either hauling to the Botetourt County Landfill or the WVWA WPCP for further processing.

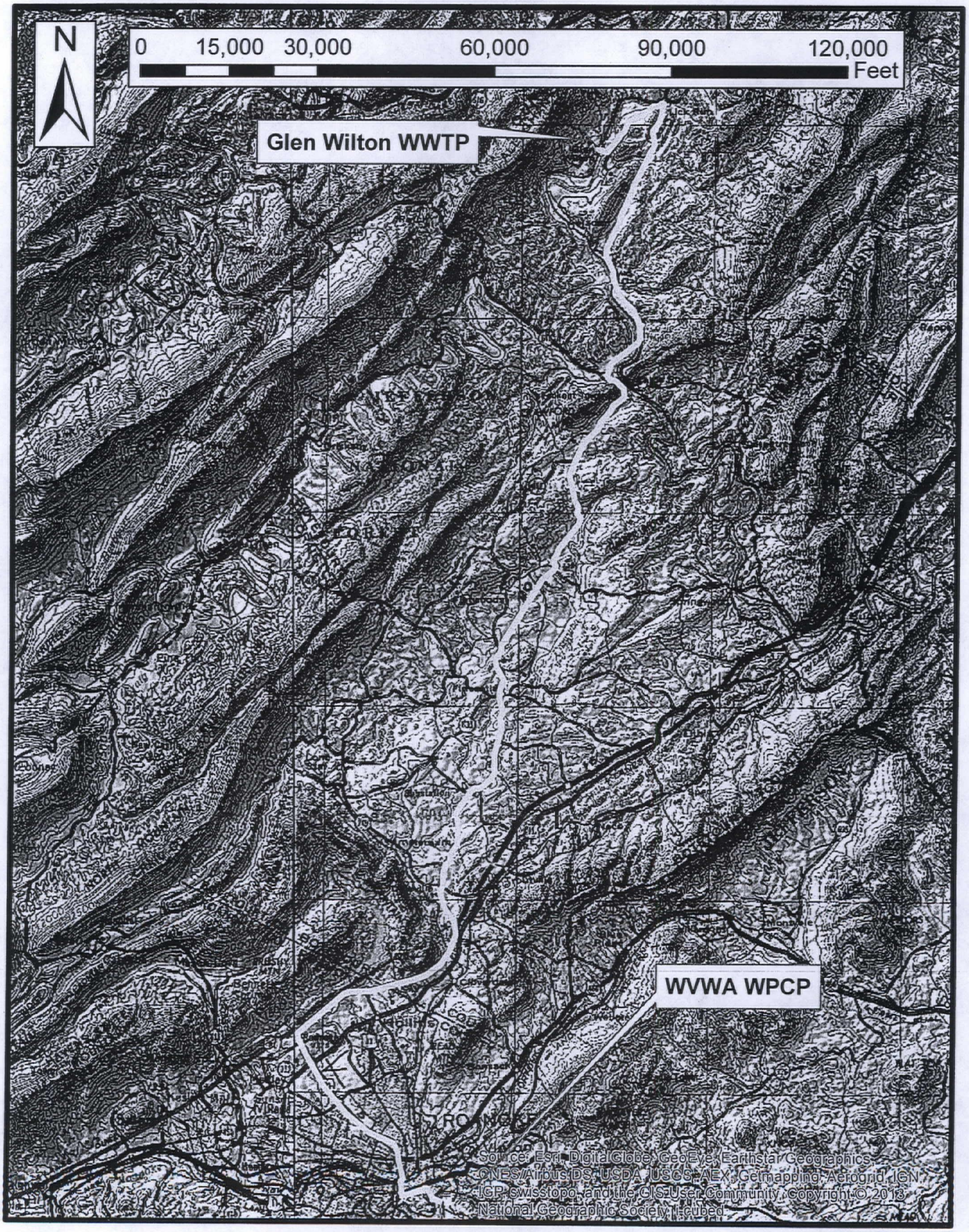
Prior to hauling to the landfill, the digested sludge will be dewatered with a portable plate and frame press. A submersible pump is used to pump the sludge to a flocculation tank where it is mixed with polymer and allowed to flocculate. The flocculated sludge is drawn into the press under pressure via a feed pump. The sludge enters the recessed fabric covered plates and is captured between the recessed area while the filtrate passes through the filter cloth and leaves the press through piping and is returned to the aeration basin. Air passages between the plates to facilitate further drying and manual removal of the sludge. This sludge is collected in a sludge hopper and stored on plastic sheeting or plastic garbage bags in a truck bed for disposal in the Botetourt County Sanitary Landfill.

Flow leaves the clarifier via a weir box and is routed to the chlorine contact tank for disinfection. A sodium hypochlorite solution is fed from a solution tank into a contact tank by a metering pump with a variable output. Sodium hypochlorite solution is kept in a storage building. Disinfected effluent flows through a cascade aerator and is discharged through a pipe which leads to the James River. At the time of the site visit the effluent appeared clear without any significant visible solids.

The effluent is piped via gravity approximately 500 feet to the James River. The effluent is discharged through a concrete pipe along a riprapped area into the James River. At the time of the site visit, there were no noticeable solids being discharged. The James River was about 150 feet wide and the river bed was reported to contain silt with some small rocks.

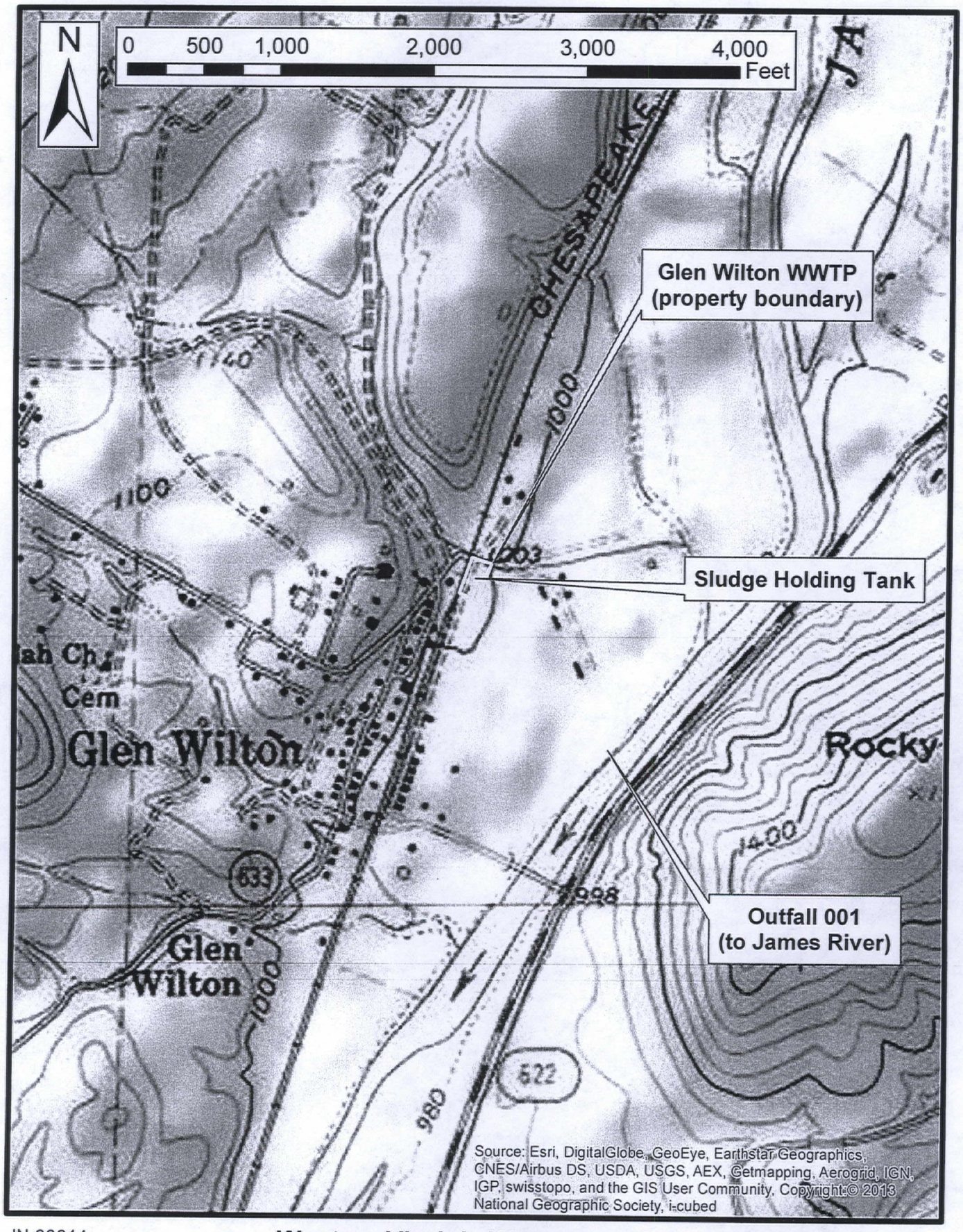
Attachment D

USGS Topographic Map



JN 30314
August 2015

Western Virginia Water Authority
Glen Wilton Wastewater Treatment Plant
VPDES Permit Application
Figure 3. Haul Routes



JN 30314
July 2015

Western Virginia Water Authority
Glen Wilton Wastewater Treatment Plant
VPDES Permit Application
Figure 1

Attachment E

Ambient Water Quality Information

- STORET Data (Station 2-JMS345.73)
- 2012 Impaired Waters Fact Sheet (Excerpt)

STORET Staion 2-JMS345.73 (Route 220 bridge near confluence with Cowpasture Creek)
VAW-I18R

Collection Date Time	Temp Celsius	pH (S.U.)
07/12/2005 10:30	24.1	7.9
11/09/2005 09:00	12.8	8
01/24/2006 10:00	5.6	7.8
03/30/2006 10:00	9	7.4
05/01/2006 10:30	15	6.9
07/31/2006 10:30	25.2	6.8
09/07/2006 10:00	19.8	8.3
11/14/2006 14:30	11	8.3
02/17/2011 10:00	6.2	8
04/20/2011 12:50	12.7	7.8
06/23/2011 10:15	24	7.3
08/17/2011 10:45	22.5	7.8
10/13/2011 12:05	17.6	8
12/29/2011 12:50	4.4	7.4
02/22/2012 11:20	6	7.4
03/08/2012 10:55	9.5	6.7
05/24/2012 11:35	18	8.1
07/05/2012 11:00	26.1	8
09/05/2012 12:10	24.2	8
11/27/2012 10:00	7.3	7.1
02/12/2013 09:30	5.3	7.5
04/02/2013 10:00	7.2	7.4
06/18/2013 10:35	19.6	7.5
08/13/2013 11:30	23.8	7.7
10/02/2013 11:10	18.5	7.7
12/16/2013 10:20	4.6	7.2
02/05/2014 10:25	3.8	7.5
04/01/2014 12:45	10.2	8
06/16/2014 11:45	23.5	8
08/04/2014 10:20	21.9	8.1
10/20/2014 12:20	13.33	NULL
12/01/2014 13:50	8.28	7.84
01/13/2015 09:35	2.31	7.12
03/09/2015 09:45	4.27	7.29
05/07/2015 11:15	18.27	7.83

pH 90th Percentile	8.1 S.U.
pH 10th Percentile	7.1 S.U.
Temperature 90th percentile	24.1 °C
Temperature 90th Percentile (Jan. - May)	16.8 °C

2012 Impaired Waters

Categories 4 and 5 by DCR Watershed*

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

James River Basin

Fact Sheet prepared for DCR Watershed: H01*

Cause Group Code: **H03R-04-PCB** **James River**

Location: The James River from Big Island dam (below Blue Ridge Parkway) downstream to the I-95 bridge James River Bridge in Richmond including its tributaries Hardware River up to Rt. 6 bridge and Slate River up the Rt. 676 bridge.

City / County: Amherst Co. Bedford Co.

Use(s): Fish Consumption

Cause(s) / VA Category: PCB in Fish Tissue/ 5A

The rivers are considered impaired of the Fish Consumption Use due to a VDH fish consumption restriction for PCBs. No more than two meals/month of gizzard shad, carp, American eel, flathead catfish, or quillback carpsucker are recommended.
Visit the VDH website for more details:
http://www.vdh.state.va.us/HHControl/fishingadvisories.asp

A portion of the segment was first listed in the 2004 segment but was expanded during the 2006 cycle based on the current condemnation (12/13/2004). The original 2016 TMDL due date was maintained.

The impairment is based on the results of DEQ's fish tissue monitoring program which indicated PCB exceedances at multiple stations including 2-JMS157.28, 2BJMS118.99, 2-JMS127.50, 2CJMS110.00 and 2-JMS258.54 with PCBs in 4 Species, 2-JMS213.00 (2005 FT/Sediment) with PCBs in 3 Species and 2-JMS176.63 (2005 FT/Sediment) with PCBs in 2 Species.

Assessment Unit / Water Name / Description	Cause	Category / Name	Nested	Cycle First Listed	TMDL Schedule or EPA Approval	Size
VAW-H01R_JMS01A00 / James River / James River mainstem from the mouth of Wilderness Creek downstream to Holcomb Rock Dam.	5A	PCB in Fish Tissue		2006	2016	1.34
VAW-H01R_JMS01A04 / James River / The James River from the upstream ending of the WQS PWS designation (37°30'08.38"/79°01'18.18") downstream to the mouth of Wilderness Creek.	5A	PCB in Fish Tissue		2006	2016	0.71
VAW-H01R_JMS02A00 / James River / James River mainstem from the Georgia Pacific outfalls downstream to the upstream ending of the WQS PWS designation (37°30'08.38"/79°01'18.18")	5A	PCB in Fish Tissue		2006	2016	4.03
VAW-H01R_JMS03A00 / James River / James River mainstem from the mouth of Hunting Creek downstream to the Georgia Pacific outfalls on the James River.	5A	PCB in Fish Tissue		2006	2016	0.28

James River **DCR Watershed: H01*** **Fish Consumption**	Estuary (Sq. Miles)	Reservoir (Acres)	River (Miles)
PCB in Fish Tissue - Total Impaired Size by Water Type:			**6.36**

Attachment F

Wasteload and Limit Calculations

- MIXING Zone Calculations (MIXER 2.1)
- Effluent Data (flow, pH, temperature)
- Antidegradation Wasteload Allocation Spreadsheet
- STATS Program Outputs (ammonia, TRC)

Mixing Zone Predictions for Glen Wilton WWTP

Effluent Flow = 0.020 MGD
Stream 7Q10 = 124 MGD
Stream 30Q10 = 138 MGD
Stream 1Q10 = 118 MGD
Stream slope = 0.0075 ft/ft
Stream width = 150 ft
Bottom scale = 4
Channel scale = 1

Mixing Zone Predictions @ 7Q10

Depth = 1.2256 ft
Length = 14094.32 ft
Velocity = 1.0442 ft/sec
Residence Time = .1562 days

Recommendation:

A complete mix assumption is appropriate for this situation and the entire 7Q10 may be used.

Mixing Zone Predictions @ 30Q10

Depth = 1.3074 ft
Length = 13346.18 ft
Velocity = 1.0894 ft/sec
Residence Time = .1418 days

Recommendation:

A complete mix assumption is appropriate for this situation and the entire 30Q10 may be used.

Mixing Zone Predictions @ 1Q10

Depth = 1.1895 ft
Length = 14455.16 ft
Velocity = 1.0239 ft/sec
Residence Time = 3.9215 hours

Recommendation:

A complete mix assumption is appropriate for this situation providing no more than 25.5% of the 1Q10 is used.

Glen Wilton WWTP (VA0089273)

Effluent pH (S.U.)

Date Due	min	max
10-Jun-11	7	7.4
10-Jul-11	7.2	7.5
10-Aug-11	7.2	7.4
10-Sep-11	7	7.3
10-Oct-11	6.9	7.2
10-Nov-11	7	7.1
10-Dec-11	6.9	7.1
10-Jan-12	6.9	7.2
10-Feb-12	7	7.1
10-Mar-12	7	7.1
10-Apr-12	7.1	7.4
10-May-12	7.3	7.6
10-Jun-12	7.2	7.7
10-Jul-12	7.3	7.5
10-Aug-12	7.3	7.5
10-Sep-12	7.4	7.5
10-Oct-12	7.3	7.5
10-Nov-12	7.3	7.4
10-Dec-12	7.2	7.3
10-Jan-13	7.2	7.7
10-Feb-13	7.1	7.5
10-Mar-13	7.3	7.7
10-Apr-13	7.1	7.8
10-May-13	7.1	7.3
10-Jun-13	7.1	7.3
10-Jul-13	7.3	7.7
10-Aug-13	7.4	7.7
10-Sep-13	7.3	7.4
10-Oct-13	7.3	7.4
10-Nov-13	7.1	7.9
10-Dec-13	7	7.4
10-Jan-14	7	7.2
10-Feb-14	7.1	7.3
10-Mar-14	7	7.2
10-Apr-14	6.9	7.1
10-May-14	7	7.5
10-Jun-14	7.1	7.5
10-Jul-14	7.5	7.8
10-Aug-14	7.2	7.5
10-Sep-14	6.9	7.1
10-Oct-14	7	7.1
10-Nov-14	7.1	7.3
10-Dec-14	7.1	7.7
10-Jan-15	7	7.6
10-Feb-15	7	7.8
10-Mar-15	6.8	7.2
10-Apr-15	7	7.5
10-May-15	7	7.4
10-Jun-15	7	7.2
10-Jul-15	7	7.2

90th Percentile pH	7.7	S.U.
10th Percentile pH	6.9	S.U.

Glen Wilton WWTP
VA0089273

Effluent Temperature Data for 90th Percentile Calculation

Days	Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15
1		21	23	20.4		11.2				17.1		22.4
2	23.3					11.0	10	10.3				
3			23.5	20	12.4					17.9		20.5
4	23	22						7.5	7.8			
5			22		16.4		9.6					20.0
6		21.9		15					8.6	15.5	15.4	
7	23.6				13.6		9.4					
8		22.1	22	18.3							17.6	22.0
9	24.3						9.1		9.8	18.4		
10		22	21.9	16.7		12.1						
11	23							9.5	10.1		18.7	
12		22	22.4		13.4	12.5	10.3					
13				17				9.3	10.4		18.6	
14	23				12.3		9.3					
15			20.4	19.5		11.4				19.2	18.4	
16	22.4						8	2	11.3			
17			21.7	20	15.3							23.3
18	22.4	22.3						5.8	9.8		19.0	
19			20		8.2	10.1	9.6					22.5
20		22.9		14				5.6	9.5		19.1	
21	22.1				13.0		8.4					
22		22.5	20	16.5		10.4				18.1		22.3
23	23.4						9.3	6.7	10.3			
24			18.2	15.8	10	11.1				17.8		23.4
25	24	22.6									19.3	
26			20		11	9.0	10.3					22.5
27		21.6		15.5					11.6	16.0		
28	23.6				10		7.6					
29		22.5	19	15.7		9.2					22.2	21.5
30	22.7						9.2		11.4	12.8		
31				13.2		9.4						

90th percentile	23	°C	
90th percentile	19	°C	January - May

Glen Wilton WWTP
VA0089273

DMR Flow Data

Date DMR Due	Flow Monthly Average (MGD)	Flow Weekly Ave (MGD)
10-Aug-12	0.0023	0.0036
10-Sep-12	0.0024	0.0052
10-Oct-12	0.0031	0.0148
10-Nov-12	0.0023	0.0035
10-Dec-12	0.0021	0.0029
10-Jan-13	0.0028	0.0045
10-Feb-13	0.006	0.058
10-Mar-13	0.003	0.0082
10-Apr-13	0.003	0.0126
10-May-13	0.0136	0.084
10-Jun-13	0.01	0.0758
10-Jul-13	0.0058	0.035
10-Aug-13	0.0079	0.048
10-Sep-13	0.0029	0.0132
10-Oct-13	0.0023	0.0054
10-Nov-13	0.0031	0.0066
10-Dec-13	0.0027	0.0093
10-Jan-14	0.0093	0.0517
10-Feb-14	0.0032	0.02
10-Mar-14	0.0057	0.0261
10-Apr-14	0.0031	0.01
10-May-14	0.0036	0.0199
10-Jun-14	0.0033	0.0103
10-Jul-14	0.0012	0.0034
10-Aug-14	0.0037	0.027
10-Sep-14	0.0013	0.0024
10-Oct-14	0.0013	0.0025
10-Nov-14	0.0025	0.0079
10-Dec-14	0.0022	0.005
10-Jan-15	0.0026	0.0048
10-Feb-15	0.0028	0.0079
10-Mar-15	0.0025	0.0035
10-Apr-15	0.01	0.0211
10-May-15	0.0081	0.0414
10-Jun-15	0.0027	0.0836
10-Jul-15	0.0022	0.0048
mean	0.0041	0.021
maximum	0.014	0.084
minimum	0.0012	0.0024
permit limit	0.020	

FRESHWATER
WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: Glen Wilton WWTP

Permit No.: VA0089273

Receiving Stream: James River, Upper

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

Stream Information

Mean Hardness (as CaCO3) =	50	mg/L
90% Temperature (Annual) =	24.1	deg C
90% Temperature (Wet season) =	16.8	deg C
90% Maximum pH =	8.1	SU
10% Maximum pH =	7.1	SU
Tier Designation (1 or 2) =	2	
Public Water Supply (PWS) Y/N? =	n	
Trout Present Y/N? =	n	
Early Life Stages Present Y/N? =	y	

Stream Flows

1Q10 (Annual) =	118	MGD
7Q10 (Annual) =	124	MGD
30Q10 (Annual) =	138	MGD
1Q10 (Wet season) =	212	MGD
30Q10 (Wet season)	312	MGD
30Q5 =	156	MGD
Harmonic Mean =	485	MGD
Annual Average =		MGD

Mixing Information

Annual - 1Q10 Mix =	25.5	%
- 7Q10 Mix =	100	%
- 30Q10 Mix =	100	%
Wet Season - 1Q10 Mix =	100	%
- 30Q10 Mix =	100	%

Effluent Information

Mean Hardness (as CaCO3) =	50	mg/L
90% Temp (Annual) =	23	deg C
90% Temp (Wet season) =	19	deg C
90% Maximum pH =	7.7	SU
10% Maximum pH =	6.9	SU
Discharge Flow =	0.02	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	2.1E+07	--	--	na	2.7E+02	--	--	na	2.1E+06	**--**	**--**	**na**	**2.1E+06**
Acrolein	0	--	--	na	7.8E+02	--	--	na	6.1E+06	--	--	na	7.8E+01	--	--	na	6.1E+05	**--**	**--**	**na**	**6.1E+05**
Acrylonitrile[c]	0	--	--	na	6.6E+00	--	--	na	1.6E+05	--	--	na	6.6E-01	--	--	na	1.6E+04	**--**	**--**	**na**	**1.6E+04**
Aldrin [c]	0	3.0E+00	--	na	1.4E-03	4.5E+03	--	na	3.4E+01	7.5E-01	--	na	1.4E-04	4.4E+03	--	na	3.4E+00	**4.4E+03**	**--**	**na**	**3.4E+00**
Ammonia-N (mg/l) (Yearly)	0	6.95E+00	1.13E+00	na	--	1.0E+04	7.8E+03	na	--	1.74E+00	2.83E-01	na	--	1.0E+04	2.0E+03	na	--	**1.0E+04**	**2.0E+03**	**na**	**--**
Ammonia-N (mg/l) (High Flow)	0	6.95E+00	1.81E+00	na	--	7.4E+04	2.8E+04	na	--	1.74E+00	4.53E-01	na	--	1.8E+04	7.1E+03	na	--	**1.8E+04**	**7.1E+03**	**na**	**--**
Anthracene	0	--	--	na	1.1E+05	--	--	na	8.6E+08	--	--	na	1.1E+04	--	--	na	8.6E+07	**--**	**--**	**na**	**8.6E+07**
Antimony	0	--	--	na	4.3E+03	--	--	na	3.4E+07	--	--	na	4.3E+02	--	--	na	3.4E+06	**--**	**--**	**na**	**3.4E+06**
Arsenic	o	3.4E+02	1.5E+02	na	--	5.1E+05	9.3E+05	na	--	8.5E+01	3.8E+01	na	--	5.0E+05	2.3E+05	na	--	**5.0E+05**	**2.3E+05**	**na**	**--**
Barium	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	**--**	**--**	**na**	**--**
Benzene [c]	0	--	--	na	7.1E+02	--	--	na	1.7E+07	--	--	na	7.1E+01	--	--	na	1.7E+06	**--**	**--**	**na**	**1.7E+06**
Benzidine[c]	0	--	--	na	5.4E-03	--	--	na	1.3E+02	--	--	na	5.4E-04	--	--	na	1.3E+01	**--**	**--**	**na**	**1.3E+01**
Benzo (a) anthracene [c]	0	--	--	na	4.9E-01	--	--	na	1.2E+04	--	--	na	4.9E-02	--	--	na	1.2E+03	**--**	**--**	**na**	**1.2E+03**
Benzo (b) fluoranthene [c]	0	--	--	na	4.9E-01	--	--	na	1.2E+04	--	--	na	4.9E-02	--	--	na	1.2E+03	**--**	**--**	**na**	**1.2E+03**
Benzo (k) fluoranthene [c]	0	--	--	na	4.9E-01	--	--	na	1.2E+04	--	--	na	4.9E-02	--	--	na	1.2E+03	**--**	**--**	**na**	**1.2E+03**
Benzo (a) pyrene [c]	0	--	--	na	4.9E-01	--	--	na	1.2E+04	--	--	na	4.9E-02	--	--	na	1.2E+03	**--**	**--**	**na**	**1.2E+03**
Bis2-Chloroethyl Ether	0	--	--	na	1.4E+01	--	--	na	1.1E+05	--	--	na	1.4E+00	--	--	na	1.1E+04	**--**	**--**	**na**	**1.1E+04**
Bis2-Chloroisopropyl Ether	0	--	--	na	1.7E+05	--	--	na	1.3E+09	--	--	na	1.7E+04	--	--	na	1.3E+08	**--**	**--**	**na**	**1.3E+08**
Bromoform [c]	0	--	--	na	3.6E+03	--	--	na	8.7E+07	--	--	na	3.6E+02	--	--	na	8.7E+06	**--**	**--**	**na**	**8.7E+06**
Butylbenzylphthalate	0	--	--	na	5.2E+03	--	--	na	4.1E+07	--	--	na	5.2E+02	--	--	na	4.1E+06	**--**	**--**	**na**	**4.1E+06**
Cadmium	0	1.8E+00	6.6E-01	na	--	2.7E+03	4.1E+03	na	--	4.5E-01	1.6E-01	na	--	2.6E+03	1.0E+03	na	--	**2.6E+03**	**1.0E+03**	**na**	**--**
Carbon Tetrachloride [c]	0	--	--	na	4.4E+01	--	--	na	1.1E+06	--	--	na	4.4E+00	--	--	na	1.1E+05	**--**	**--**	**na**	**1.1E+05**
Chlordane [c]	0	2.4E+00	4.3E-03	na	2.2E-02	3.6E+03	2.7E+01	na	5.3E+02	6.0E-01	1.1E-03	na	2.2E-03	3.5E+03	6.7E+00	na	5.3E+01	**3.5E+03**	**6.7E+00**	**na**	**5.3E+01**
Chloride	0	8.6E+05	2.3E+05	na	--	1.3E+09	1.4E+09	na	--	2.2E+05	5.8E+04	na	--	1.3E+09	3.6E+08	na	--	**1.3E+09**	**3.6E+08**	**na**	**--**
TRC	0	1.9E+01	1.1E+01	na	--	2.9E+04	6.8E+04	na	--	4.8E+00	2.8E+00	na	--	2.8E+04	1.7E+04	na	--	**2.8E+04**	**1.7E+04**	**na**	**--**
Chlorobenzene	0	--	--	na	2.1E+04	--	--	na	1.6E+08	--	--	na	2.1E+03	--	--	na	1.6E+07	**--**	**--**	**na**	**1.6E+07**

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	3.4E+02	--	--	na	8.2E+06	--	--	na	3.4E+01	--	--	na	8.2E+05	--	--	na	**8.2E+05**
Chloroform [C]	0	--	--	na	2.9E+04	--	--	na	7.0E+08	--	--	na	2.9E+03	--	--	na	7.0E+07	--	--	na	**7.0E+07**
2-Chloronaphthalene	0	--	--	na	4.3E+03	--	--	na	3.4E+07	--	--	na	4.3E+02	--	--	na	3.4E+06	--	--	na	**3.4E+06**
2-Chlorophenol	0	--	--	na	4.0E+02	--	--	na	3.1E+06	--	--	na	4.0E+01	--	--	na	3.1E+05	--	--	na	**3.1E+05**
Chlorpyrifos	0	8.3E-02	4.1E-02	na	--	1.2E+02	2.5E+02	na	--	2.1E-02	1.0E-02	na	--	1.2E+02	6.4E+01	na	--	**1.2E+02**	**6.4E+01**	na	--
Chromium III	0	3.2E+02	4.2E+01	na	--	4.9E+05	2.6E+05	na	--	8.1E+01	1.1E+01	na	--	4.8E+05	6.5E+04	na	--	**4.8E+05**	**6.5E+04**	na	--
Chromium VI	0	1.6E+01	1.1E+01	na	--	2.4E+04	6.8E+04	na	--	4.0E+00	2.8E+00	na	--	2.4E+04	1.7E+04	na	--	**2.4E+04**	**1.7E+04**	na	--
Chromium, Total	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Chrysene [C]	0	--	--	na	4.9E-01	--	--	na	1.2E+04	--	--	na	4.9E-02	--	--	na	1.2E+03	--	--	na	**1.2E+03**
Copper	0	7.0E+00	5.0E+00	na	--	1.1E+04	3.1E+04	na	--	1.7E+00	1.2E+00	na	--	1.0E+04	7.7E+03	na	--	**1.0E+04**	**7.7E+03**	na	--
Cyanide	0	2.2E+01	5.2E+00	na	2.2E+05	3.3E+04	3.2E+04	na	1.7E+09	5.5E+00	1.3E+00	na	2.2E+04	3.2E+04	8.1E+03	na	1.7E+08	**3.2E+04**	**8.1E+03**	na	**1.7E+08**
DDD [C]	0	--	--	na	8.4E-03	--	--	na	2.0E+02	--	--	na	8.4E-04	--	--	na	2.0E+01	--	--	na	**2.0E+01**
DDE [C]	0	--	--	na	5.9E-03	--	--	na	1.4E+02	--	--	na	5.9E-04	--	--	na	1.4E+01	--	--	na	**1.4E+01**
DDT [C]	0	1.1E+00	1.0E-03	na	5.9E-03	1.7E+03	6.2E+00	na	1.4E+02	2.8E-01	2.5E-04	na	5.9E-04	1.6E+03	1.6E+00	na	1.4E+01	**1.6E+03**	**1.6E+00**	na	**1.4E+01**
Demeton	0	--	1.0E-01	na	--	--	6.2E+02	na	--	--	2.5E-02	na	--	--	1.6E+02	na	--	--	**1.6E+02**	na	--
Dibenz(a,h)anthracene [C]	0	--	--	na	4.9E-01	--	--	na	1.2E+04	--	--	na	4.9E-02	--	--	na	1.2E+03	--	--	na	**1.2E+03**
Dibutyl phthalate	0	--	--	na	1.2E+04	--	--	na	9.4E+07	--	--	na	1.2E+03	--	--	na	9.4E+06	--	--	na	**9.4E+06**
Dichloromethane (Methylene Chloride) [C]	0	--	--	na	1.6E+04	--	--	na	3.9E+08	--	--	na	1.6E+03	--	--	na	3.9E+07	--	--	na	**3.9E+07**
1,2-Dichlorobenzene	0	--	--	na	1.7E+04	--	--	na	1.3E+08	--	--	na	1.7E+03	--	--	na	1.3E+07	--	--	na	**1.3E+07**
1,3-Dichlorobenzene	0	--	--	na	2.6E+03	--	--	na	2.0E+07	--	--	na	2.6E+02	--	--	na	2.0E+06	--	--	na	**2.0E+06**
1,4-Dichlorobenzene	0	--	--	na	2.6E+03	--	--	na	2.0E+07	--	--	na	2.6E+02	--	--	na	2.0E+06	--	--	na	**2.0E+06**
3,3-Dichlorobenzidine[C]	0	--	--	na	7.7E-01	--	--	na	1.9E+04	--	--	na	7.7E-02	--	--	na	1.9E+03	--	--	na	**1.9E+03**
Dichlorobromomethane [C]	0	--	--	na	4.6E+02	--	--	na	1.1E+07	--	--	na	4.6E+01	--	--	na	1.1E+06	--	--	na	**1.1E+06**
1,2-Dichloroethane [C]	0	--	--	na	9.9E+02	--	--	na	2.4E+07	--	--	na	9.9E+01	--	--	na	2.4E+06	--	--	na	**2.4E+06**
1,1-Dichloroethylene	0	--	--	na	1.7E+04	--	--	na	1.3E+08	--	--	na	1.7E+03	--	--	na	1.3E+07	--	--	na	**1.3E+07**
1,2-trans-dichloroethylene	0	--	--	na	1.4E+05	--	--	na	1.1E+09	--	--	na	1.4E+04	--	--	na	1.1E+08	--	--	na	**1.1E+08**
2,4-Dichlorophenol	0	--	--	na	7.9E+02	--	--	na	6.2E+06	--	--	na	7.9E+01	--	--	na	6.2E+05	--	--	na	**6.2E+05**
2,4-Dichlorophenoxy acetic acid (2,4-D)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
1,2-Dichloropropane[C]	0	--	--	na	3.9E+02	--	--	na	9.5E+06	--	--	na	3.9E+01	--	--	na	9.5E+05	--	--	na	**9.5E+05**
1,3-Dichloropropene	0	--	--	na	1.7E+03	--	--	na	1.3E+07	--	--	na	1.7E+02	--	--	na	1.3E+06	--	--	na	**1.3E+06**
Dieldrin [C]	0	2.4E-01	5.6E-02	na	1.4E-03	3.6E+02	3.5E+02	na	3.4E+01	6.0E-02	1.4E-02	na	1.4E-04	3.5E+02	8.7E+01	na	3.4E+00	**3.5E+02**	**8.7E+01**	na	**3.4E+00**
Diethyl Phthalate	0	--	--	na	1.2E+05	--	--	na	9.4E+08	--	--	na	1.2E+04	--	--	na	9.4E+07	--	--	na	**9.4E+07**
Di-2-Ethylhexyl Phthalate [C]	0	--	--	na	5.9E+01	--	--	na	1.4E+06	--	--	na	5.9E+00	--	--	na	1.4E+05	--	--	na	**1.4E+05**
2,4-Dimethylphenol	0	--	--	na	2.3E+03	--	--	na	1.8E+07	--	--	na	2.3E+02	--	--	na	1.8E+06	--	--	na	**1.8E+06**
Dimethyl Phthalate	0	--	--	na	2.9E+06	--	--	na	2.3E+10	--	--	na	2.9E+05	--	--	na	2.3E+09	--	--	na	**2.3E+09**
Di-n-Butyl Phthalate	0	--	--	na	1.2E+04	--	--	na	9.4E+07	--	--	na	1.2E+03	--	--	na	9.4E+06	--	--	na	**9.4E+06**
2,4 Dinitrophenol	0	--	--	na	1.4E+04	--	--	na	1.1E+08	--	--	na	1.4E+03	--	--	na	1.1E+07	--	--	na	**1.1E+07**
2-Methyl-4,6-Dinitrophenol	0	--	--	na	7.65E+02	--	--	na	6.0E+06	--	--	na	7.7E+01	--	--	na	6.0E+05	--	--	na	**6.0E+05**
2,4-Dinitrotoluene [C]	0	--	--	na	9.1E+01	--	--	na	2.2E+06	--	--	na	9.1E+00	--	--	na	2.2E+05	--	--	na	**2.2E+05**
Dioxin (2,3,7,8-tetrachlorodibenzo-p-dioxin) (ppq)	0	--	--	na	1.2E-06	--	--	na	na	--	--	na	1.2E-07	--	--	na	1.2E-07	--	--	na	**na**
1,2-Diphenylhydrazine[C]	0	--	--	na	5.4E+00	--	--	na	1.3E+05	--	--	na	5.4E-01	--	--	na	1.3E+04	--	--	na	**1.3E+04**
Alpha-Endosulfan	0	2.2E-01	5.6E-02	na	2.4E+02	3.3E+02	3.5E+02	na	1.9E+06	5.5E-02	1.4E-02	na	2.4E+01	3.2E+02	8.7E+01	na	1.9E+05	**3.2E+02**	**8.7E+01**	na	**1.9E+05**
Beta-Endosulfan	0	2.2E-01	5.6E-02	na	2.4E+02	3.3E+02	3.5E+02	na	1.9E+06	5.5E-02	1.4E-02	na	2.4E+01	3.2E+02	8.7E+01	na	1.9E+05	**3.2E+02**	**8.7E+01**	na	**1.9E+05**
Endosulfan Sulfate	0	--	--	na	2.4E+02	--	--	na	1.9E+06	--	--	na	2.4E+01	--	--	na	1.9E+05	--	--	na	**1.9E+05**
Endrin	0	8.6E-02	3.6E-02	na	8.1E-01	1.3E+02	2.2E+02	na	6.3E+03	2.2E-02	9.0E-03	na	8.1E-02	1.3E+02	5.6E+01	na	6.3E+02	**1.3E+02**	**5.6E+01**	na	**6.3E+02**
Endrin Aldehyde	0	--	--	na	8.1E-01	--	--	na	6.3E+03	--	--	na	8.1E-02	--	--	na	6.3E+02	--	--	na	**6.3E+02**

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	2.9E+04	--	--	na	2.3E+08	--	--	na	2.9E+03	--	--	na	2.3E+07	--	--	na	**2.3E+07**
Fluoranthene	0	--	--	na	3.7E+02	--	--	na	2.9E+06	--	--	na	3.7E+01	--	--	na	2.9E+05	--	--	na	**2.9E+05**
Fluorene	0	--	--	na	1.4E+04	--	--	na	1.1E+08	--	--	na	1.4E+03	--	--	na	1.1E+07	--	--	na	**1.1E+07**
Foaming Agents	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Guthion	0	--	1.0E-02	na	--	--	6.2E+01	na	--	--	2.5E-03	na	--	--	1.6E+01	na	--	--	**1.6E+01**	na	--
Heptachlor [C]	0	5.2E-01	3.8E-03	na	2.1E-03	7.8E+02	2.4E+01	na	5.1E+01	1.3E-01	9.5E-04	na	2.1E-04	7.7E+02	5.9E+00	na	5.1E+00	**7.7E+02**	**5.9E+00**	na	**5.1E+00**
Heptachlor Epoxide[C]	0	5.2E-01	3.8E-03	na	1.1E-03	7.8E+02	2.4E+01	na	2.7E+01	1.3E-01	9.5E-04	na	1.1E-04	7.7E+02	5.9E+00	na	2.7E+00	**7.7E+02**	**5.9E+00**	na	**2.7E+00**
Hexachlorobenzene[C]	0	--	--	na	7.7E-03	--	--	na	1.9E+02	--	--	na	7.7E-04	--	--	na	1.9E+01	--	--	na	**1.9E+01**
Hexachlorobutadiene[C]	0	--	--	na	5.0E+02	--	--	na	1.2E+07	--	--	na	5.0E+01	--	--	na	1.2E+06	--	--	na	**1.2E+06**
Hexachlorocyclohexane Alpha-BHC[C]	0	--	--	na	1.3E-01	--	--	na	3.2E+03	--	--	na	1.3E-02	--	--	na	3.2E+02	--	--	na	**3.2E+02**
Hexachlorocyclohexane Beta-BHC[C]	0	--	--	na	4.6E-01	--	--	na	1.1E+04	--	--	na	4.6E-02	--	--	na	1.1E+03	--	--	na	**1.1E+03**
Hexachlorocyclohexane Gamma-BHC[C] (Lindane)	0	9.5E-01	na	na	6.3E-01	1.4E+03	--	na	1.5E+04	2.4E-01	--	na	6.3E-02	1.4E+03	--	na	1.5E+03	**1.4E+03**	--	na	**1.5E+03**
Hexachlorocyclopentadiene	0	--	--	na	1.7E+04	--	--	na	1.3E+08	--	--	na	1.7E+03	--	--	na	1.3E+07	--	--	na	**1.3E+07**
Hexachloroethane[C]	0	--	--	na	8.9E+01	--	--	na	2.2E+06	--	--	na	8.9E+00	--	--	na	2.2E+05	--	--	na	**2.2E+05**
Hydrogen Sulfide	0	--	2.0E+00	na	--	--	1.2E+04	na	--	--	5.0E-01	na	--	--	3.1E+03	na	--	--	**3.1E+03**	na	--
Indeno (1,2,3-cd) pyrene [C]	0	--	--	na	4.9E-01	--	--	na	1.2E+04	--	--	na	4.9E-02	--	--	na	1.2E+03	--	--	na	**1.2E+03**
Iron	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Isophorone[C]	0	--	--	na	2.6E+04	--	--	na	6.3E+08	--	--	na	2.6E+03	--	--	na	6.3E+07	--	--	na	**6.3E+07**
Kepone	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--	--	**0.0E+00**	na	--
Lead	0	4.9E+01	5.6E+00	na	--	7.4E+04	3.5E+04	na	--	1.2E+01	1.4E+00	na	--	7.3E+04	8.7E+03	na	--	**7.3E+04**	**8.7E+03**	na	--
Malathion	0	--	1.0E-01	na	--	--	6.2E+02	na	--	--	2.5E-02	na	--	--	1.6E+02	na	--	--	**1.6E+02**	na	--
Manganese	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Mercury	0	1.4E+00	7.7E-01	na	5.1E-02	2.1E+03	4.8E+03	na	4.0E+02	3.5E-01	1.9E-01	na	5.1E-03	2.1E+03	1.2E+03	na	4.0E+01	**2.1E+03**	**1.2E+03**	na	**4.0E+01**
Methyl Bromide	0	--	--	na	4.0E+03	--	--	na	3.1E+07	--	--	na	4.0E+02	--	--	na	3.1E+06	--	--	na	**3.1E+06**
Methoxychlor	0	--	3.0E-02	na	--	--	1.9E+02	na	--	--	7.5E-03	na	--	--	4.7E+01	na	--	--	**4.7E+01**	na	--
Mirex	0	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--	--	0.0E+00	na	--	--	**0.0E+00**	na	--
Monochlorobenzene	0	--	--	na	2.1E+04	--	--	na	1.6E+08	--	--	na	2.1E+03	--	--	na	1.6E+07	--	--	na	**1.6E+07**
Nickel	0	1.0E+02	1.1E+01	na	4.6E+03	1.5E+05	7.0E+04	na	3.6E+07	2.5E+01	2.8E+00	na	4.6E+02	1.5E+05	1.7E+04	na	3.6E+06	**1.5E+05**	**1.7E+04**	na	**3.6E+06**
Nitrate (as N)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--
Nitrobenzene	0	--	--	na	1.9E+03	--	--	na	1.5E+07	--	--	na	1.9E+02	--	--	na	1.5E+06	--	--	na	**1.5E+06**
N-Nitrosodimethylamine[C]	0	--	--	na	8.1E+01	--	--	na	2.0E+06	--	--	na	8.1E+00	--	--	na	2.0E+05	--	--	na	**2.0E+05**
N-Nitrosodiphenylamine[C]	0	--	--	na	1.6E+02	--	--	na	3.9E+06	--	--	na	1.6E+01	--	--	na	3.9E+05	--	--	na	**3.9E+05**
N-Nitrosodi-n-propylamine[C]	0	--	--	na	1.4E+01	--	--	na	3.4E+05	--	--	na	1.4E+00	--	--	na	3.4E+04	--	--	na	**3.4E+04**
Parathion	0	6.5E-02	1.3E-02	na	--	9.8E+01	8.1E+01	na	--	1.6E-02	3.3E-03	na	--	9.6E+01	2.0E+01	na	--	**9.6E+01**	**2.0E+01**	na	--
PCB-1016	0	--	1.4E-02	na	--	--	8.7E+01	na	--	--	3.5E-03	na	--	--	2.2E+01	na	--	--	**2.2E+01**	na	--
PCB-1221	0	--	1.4E-02	na	--	--	8.7E+01	na	--	--	3.5E-03	na	--	--	2.2E+01	na	--	--	**2.2E+01**	na	--
PCB-1232	0	--	1.4E-02	na	--	--	8.7E+01	na	--	--	3.5E-03	na	--	--	2.2E+01	na	--	--	**2.2E+01**	na	--
PCB-1242	0	--	1.4E-02	na	--	--	8.7E+01	na	--	--	3.5E-03	na	--	--	2.2E+01	na	--	--	**2.2E+01**	na	--
PCB-1248	0	--	1.4E-02	na	--	--	8.7E+01	na	--	--	3.5E-03	na	--	--	2.2E+01	na	--	--	**2.2E+01**	na	--
PCB-1254	0	--	1.4E-02	na	--	--	8.7E+01	na	--	--	3.5E-03	na	--	--	2.2E+01	na	--	--	**2.2E+01**	na	--
PCB-1260	0	--	1.4E-02	na	--	--	8.7E+01	na	--	--	3.5E-03	na	--	--	2.2E+01	na	--	--	**2.2E+01**	na	--
PCB Total[C]	0	--	--	na	1.7E-03	--	--	na	4.1E+01	--	--	na	1.7E-04	--	--	na	4.1E+00	--	--	na	**4.1E+00**

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	9.6E+00	7.4E+00	na	8.2E+01	1.5E+04	4.6E+04	na	2.0E+06	2.4E+00	1.8E+00	na	8.2E+00	1.4E+04	1.1E+04	na	2.0E+05	**1.4E+04**	**1.1E+04**	**na**	**2.0E+05**
Phenol	0	--	--	na	4.6E+06	--	--	na	3.6E+10	--	--	na	4.6E+05	--	--	na	3.6E+09	**--**	**--**	**na**	**3.6E+09**
Pyrene	0	--	--	na	1.1E+04	--	--	na	8.6E+07	--	--	na	1.1E+03	--	--	na	8.6E+06	**--**	**--**	**na**	**8.6E+06**
Radionuclides (pCi/l except Beta/Photon)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	**--**	**--**	**na**	**--**
Gross Alpha Activity	0	--	--	na	1.5E+01	--	--	na	1.2E+05	--	--	na	1.5E+00	--	--	na	1.2E+04	**--**	**--**	**na**	**1.2E+04**
Beta and Photon Activity (mrem/yr)	0	--	--	na	4.0E+00	--	--	na	3.1E+04	--	--	na	4.0E-01	--	--	na	3.1E+03	**--**	**--**	**na**	**3.1E+03**
Strontium-90	0	--	--	na	8.0E+00	--	--	na	6.2E+04	--	--	na	8.0E-01	--	--	na	6.2E+03	**--**	**--**	**na**	**6.2E+03**
Tritium	0	--	--	na	2.0E+04	--	--	na	1.6E+08	--	--	na	2.0E+03	--	--	na	1.6E+07	**--**	**--**	**na**	**1.6E+07**
Selenium	0	2.0E+01	5.0E+00	na	1.1E+04	3.0E+04	3.1E+04	na	8.6E+07	5.0E+00	1.3E+00	na	1.1E+03	3.0E+04	7.8E+03	na	8.6E+06	**3.0E+04**	**7.8E+03**	**na**	**8.6E+06**
Silver	0	1.0E+00	--	na	--	1.6E+03	--	na	--	2.6E-01	--	na	--	1.5E+03	--	na	--	**1.5E+03**	**--**	**na**	**--**
Sulfate	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	**--**	**--**	**na**	**--**
1,1,2,2-Tetrachloroethane[C]	0	--	--	na	1.1E+02	--	--	na	2.7E+06	--	--	na	1.1E+01	--	--	na	2.7E+05	**--**	**--**	**na**	**2.7E+05**
Tetrachloroethylene[C]	0	--	--	na	8.9E+01	--	--	na	2.2E+06	--	--	na	8.9E+00	--	--	na	2.2E+05	**--**	**--**	**na**	**2.2E+05**
Thallium	0	--	--	na	6.3E+00	--	--	na	4.9E+04	--	--	na	6.3E-01	--	--	na	4.9E+03	**--**	**--**	**na**	**4.9E+03**
Toluene	0	--	--	na	2.0E+05	--	--	na	1.6E+09	--	--	na	2.0E+04	--	--	na	1.6E+08	**--**	**--**	**na**	**1.6E+08**
Total dissolved solids	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	**--**	**--**	**na**	**--**
Toxaphene [C]	0	7.3E-01	2.0E-04	na	7.5E-03	1.1E+03	1.2E+00	na	1.8E+02	1.8E-01	5.0E-05	na	7.5E-04	1.1E+03	3.1E-01	na	1.8E+01	**1.1E+03**	**3.1E-01**	**na**	**1.8E+01**
Tributyltin	0	4.6E-01	6.3E-02	na	--	6.9E+02	3.9E+02	na	--	1.2E-01	1.6E-02	na	--	6.8E+02	9.8E+01	na	--	**6.8E+02**	**9.8E+01**	**na**	**--**
1,2,4-Trichlorobenzene	0	--	--	na	9.4E+02	--	--	na	7.3E+06	--	--	na	9.4E+01	--	--	na	7.3E+05	**--**	**--**	**na**	**7.3E+05**
1,1,2-Trichloroethane[C]	0	--	--	na	4.2E+02	--	--	na	1.0E+07	--	--	na	4.2E+01	--	--	na	1.0E+06	**--**	**--**	**na**	**1.0E+06**
Trichloroethylene [C]	0	--	--	na	8.1E+02	--	--	na	2.0E+07	--	--	na	8.1E+01	--	--	na	2.0E+06	**--**	**--**	**na**	**2.0E+06**
2,4,6-Trichlorophenol [C]	0	--	--	na	6.5E+01	--	--	na	1.6E+06	--	--	na	6.5E+00	--	--	na	1.6E+05	**--**	**--**	**na**	**1.6E+05**
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	0	--	--	na	--	--	--	na	--	--	--	na	--	--	--	na	--	**--**	**--**	**na**	**--**
Vinyl Chloride[C]	0	--	--	na	6.1E+01	--	--	na	1.5E+06	--	--	na	6.1E+00	--	--	na	1.5E+05	**--**	**--**	**na**	**1.5E+05**
Zinc	0	6.5E+01	6.6E+01	na	6.9E+04	9.8E+04	4.1E+05	na	5.4E+08	1.6E+01	1.6E+01	na	6.9E+03	9.6E+04	1.0E+05	na	5.4E+07	**9.6E+04**	**1.0E+05**	**na**	**5.4E+07**

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	3.4E+06
Arsenic	1.4E+05
Barium	na
Cadmium	6.1E+02
Chromium III	3.9E+04
Chromium VI	9.4E+03
Copper	4.1E+03
Iron	na
Lead	5.2E+03
Manganese	na
Mercury	4.0E+01
Nickel	1.0E+04
Selenium	4.7E+03
Silver	6.2E+02
Zinc	3.8E+04

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

0.020 MGD DISCHARGE FLOW - STREAM MIX PER "Mix.exe"

Discharge Flow Used for WQS-WLA Calculations (MGI 0.020

	Stream Flows Allocated to Mix (MGD)		Total Mix Flows Stream + Discharge (MGD)	
	Dry Season	Wet Season	Dry Season	Wet Season
1Q10	30.090	212.000	30.110	212.020
7Q10	124.000	N/A	124.020	N/A
30Q10	138.000	312.000	138.020	312.020
30Q5	156.000	N/A	156.020	N/A
Harm. Mean	485.000	N/A	485.020	N/A
Annual Avg.	0.000	N/A	0.020	N/A

Stream/Discharge Mix Values

	Dry Season	Wet Season
1Q10 90th% Temp. Mix (deg C)	24.099	16.800
30Q10 90th% Temp. Mix (deg C)	24.100	16.800
1Q10 90th% pH Mix (SU)	8.100	8.100
30Q10 90th% pH Mix (SU)	8.100	8.100
1Q10 10th% pH Mix (SU)	7.100	N/A
7Q10 10th% pH Mix (SU)	7.100	N/A

	Calculated	Formula Inputs
1Q10 Hardness (mg/L as CaCO3)	50.0	50.0
7Q10 Hardness (mg/L as CaCO3)	50.0	50.0

Ammonia - Dry Season - Acute

90th Percentile pH (SU)	8.100
(7.204 - pH)	-0.896
(pH - 7.204)	0.896
Trout Present Criterion (mg N/l	4.645
Trout Absent Criterion (mg N/L	6.954
Trout Present?	n
Effective Criterion (mg N/L)	6.954

Ammonia - Dry Season - Chronic

90th Percentile Temp. (deg C)	24.100
90th Percentile pH (SU)	8.100
MIN	1.537
MAX	24.100
(7.688 - pH)	-0.412
(pH - 7.688)	0.412
Early LS Present Criterion (mg N	1.131
Early LS Absent Criterion (mg N/	1.131
Early Life Stages Present?	y
Effective Criterion (mg N/L)	1.131

Ammonia - Wet Season - Acute

90th Percentile pH (SU)	8.100
(7.204 - pH)	-0.896
(pH - 7.204)	0.896
Trout Present Criterion (mg N/l	4.641
Trout Absent Criterion (mg N/L	6.949
Trout Present?	n
Effective Criterion (mg N/L)	6.949

Ammonia - Wet Season - Chronic

90th Percentile Temp. (deg C)	16.800
90th Percentile pH (SU)	8.100
MIN	2.460
MAX	16.800
(7.688 - pH)	-0.412
(pH - 7.688)	0.412
Early LS Present Criterion (mg N	1.810
Early LS Absent Criterion (mg N/	1.810
Early Life Stages Present?	y
Effective Criterion (mg N/L)	1.810

0.020 MGD DISCHARGE FLOW - COMPLETE STREAM MIX

Discharge Flow Used for WQS-WLA Calculations (MGI 0.020

	100% Stream Flows Allocated to Mix (MGD)		Total Mix Flows Stream + Discharge (MGD)	
	Dry Season	Wet Season	Dry Season	Wet Season
1Q10	118.000	212.000	118.020	212.020
7Q10	124.000	N/A	124.020	N/A
30Q10	138.000	312.000	138.020	312.020
30Q5	156.000	N/A	156.020	N/A
Harm. Mean	485.000	N/A	485.020	N/A
Annual Avg.	0.000	N/A	0.020	N/A

Stream/Discharge Mix Values

	Dry Season	Wet Season
1Q10 90th% Temp. Mix (deg C)	24.100	16.800
30Q10 90th% Temp. Mix (deg C)	24.100	16.800
1Q10 90th% pH Mix (SU)	8.100	8.100
30Q10 90th% pH Mix (SU)	8.100	8.100
1Q10 10th% pH Mix (SU)	7.100	N/A
7Q10 10th% pH Mix (SU)	7.100	N/A

	Calculated	Formula Inputs
1Q10 Hardness (mg/L as CaCO3) =	50.000	50.000
7Q10 Hardness (mg/L as CaCO3) =	50.000	50.000

Ammonia - Dry Season - Acute

90th Percentile pH (SU)	8.100
(7.204 - pH)	-0.896
(pH - 7.204)	0.896
Trout Present Criterion (mg N/l	4.642
Trout Absent Criterion (mg N/L	6.950
Trout Present?	n
Effective Criterion (mg N/L)	6.950

Ammonia - Dry Season - Chronic

90th Percentile Temp. (deg C)	24.100
90th Percentile pH (SU)	8.100
MIN	1.537
MAX	24.100
(7.688 - pH)	-0.412
(pH - 7.688)	0.412
Early LS Present Criterion (mg N	1.131
Early LS Absent Criterion (mg N/	1.131
Early Life Stages Present?	y
Effective Criterion (mg N/L)	1.131

Ammonia - Wet Season - Acute

90th Percentile pH (SU)	8.100
(7.204 - pH)	-0.896
(pH - 7.204)	0.896
Trout Present Criterion (mg N/l	4.641
Trout Absent Criterion (mg N/L	6.949
Trout Present?	n
Effective Criterion (mg N/L)	6.949

Ammonia - Wet Season - Chronic

90th Percentile Temp. (deg C)	16.800
90th Percentile pH (SU)	8.100
MIN	2.460
MAX	16.800
(7.688 - pH)	-0.412
(pH - 7.688)	0.412
Early LS Present Criterion (mg N	1.810
Early LS Absent Criterion (mg N/	1.810
Early Life Stages Present?	y
Effective Criterion (mg N/L)	1.810

10/14/2015 9:35:17 AM

Facility = Glen Wilton WWTP
Chemical = ammonia (mg/L)
Chronic averaging period = 30
WLAa = 10000
WLAc = 2000
Q.L. = 0.2
# samples/mo. = 1
# samples/wk. = 1

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

No Limit is required for this material

The data are:

9

9/30/2015 10:25:16 AM

Facility = Glen Wilton WWTP
Chemical = TRC (mg/L)
Chronic averaging period = 4
WLAa = 4
WLAc = 4
Q.L. = 0.2
# samples/mo. = 30
# samples/wk. = 8

Summary of Statistics:

observations = 1
Expected Value = 1000
Variance = 360000
C.V. = 0.6
97th percentile daily values = 2433.41
97th percentile 4 day average = 1663.79
97th percentile 30 day average= 1206.05
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Acute Toxicity
Maximum Daily Limit = 4
Average Weekly limit = 2.38602034360889
Average Monthly LImit = 1.98248465547072

The data are:

1000

Attachment G

Reduced Monitoring Frequency Evaluation Memorandum

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY
Blue Ridge Regional Office

3019 Peters Creek Road Roanoke, VA 24019

SUBJECT: Justification for Reduced Monitoring Frequency
Reissuance of VPDES Permit No. VA0089273
Glen Wilton WWTP

TO: Permit File

FROM: Becky L. France, Water Permit Writer

DATE: September 30, 2015

Compliance History

The VPDES Permit Manual recommends effluent monitoring frequencies. Guidance Memo 98-2005 allows for reduced monitoring at facilities with excellent compliance histories. To qualify for consideration of reduced monitoring, the facility should not have been issued any Letter of Noncompliance (LON), Notice of Violation (NOV), Warning Letter, or be under any Consent Orders, Consent Decrees, Executive Compliance Agreements, or related enforcement documents during the past three years.

This facility has not been issued any Warning Letters or NOVs within the past three years. A compliance and laboratory inspection was conducted on November 15, 2011. There were no deficiencies noted with the general sampling and analysis section. Therefore, this facility qualifies for a reduced monitoring data evaluation.

Monitoring Data Evaluation

Discharge Monitoring Report (DMR) pH data from July 2012 through June 2015 pH and BOD_5 and TSS data from August 2010 through October 2015 have been summarized in the attached tables. A table of *E. coli* data from May 2011 through June 2015 has also been compiled. Total suspended solids (TSS), pH, biochemical oxygen demand (BOD_5), and *E. coli* have been considered for reduced monitoring. Total residual chlorine limits are not considered eligible for reduced monitoring to ensure protection of aquatic life and human health. The actual performance to permit limit ratios are summarized in the table that follows. Facilities with baseline monitoring that have an actual performance to permit limit ratio of greater than 75 percent are not eligible for reduced monitoring.

Table 1 **Performance to Permit Limit Ratios (DMR Data)**

Parameter	Actual Performance/ Permit Limit Monthly Average*	Actual Performance/ Permit Limit (Maximum)*	Reduced Monitoring
TSS	10 %, 5.2%	18%, 3.5%	1/ 6 Months
BOD_5	4.0%, 0.62%	2.7%, 0.42%	1/ 6 Months
E. coli	--	--	1/Year
pH	--	--	1/Week

*The ratio based upon concentration is listed first, and the ratio based upon loading is listed second.

pH: None of the reported values were within 0.5 S.U. of the permit limits. The facility does not adjust pH through chemical addition. So, the pH monitoring frequency shall continued to be reduced to 1/week.

TSS and BOD_5: The DMR data are consistently well below the permit limits. According to Guidance Memo 98-2005, facilities with baseline monitoring that have an actual performance to permit limit ratio of less than 25 percent are eligible for a reduced monitoring frequency of 1 /6 months. Thia reduced monitoring frequency for BOD_5 and TSS has been continued from the previous permit.

E. coli: The *E. coli* data area consistently well below the permit limit of 126 cfu/100 mL. During the permit term, the highest *E. coli* value was 29 cfu/100 mL. Since the water quality data were significantly below the water quality criterion, the monitoring frequency has been reduced from 1/week to 1/year. In order to calculate a geometric mean, a total of four consecutive weekly samples are required.

The permit contains a special condition that will revert the TSS and BOD_5 monitoring frequencies back to 1/month, the pH monitoring frequency back to 1/day, and the *E. coli* back to 1/week if the permittee is issued a NOV.

Table 2 **TSS and BOD_5 Effluent Data**

Date DMR Due	TSS				BOD_5			
	average kg/d	max kg/d	average mg/L	max mg/L	average kg/d	max kg/d	average mg/L	max mg/L
10-Sep-10	0.02	0.02	2	2	<QL	<QL	<QL	<QL
10-Oct-10	<QL	<QL	<QL	<QL	<QL	<QL	<QL	<QL
10-Nov-10	0.01	0.01	1	1	<QL	<QL	<QL	<QL
10-Dec-10	0.01	0.01	1	1	<QL	<QL	<QL	<QL
10-Jan-11	0.06	0.06	8	8	<QL	<QL	<QL	<QL
10-Feb-11	0.04	0.04	4	4	<QL	<QL	<QL	<QL
10-Mar-11	0.02	0.02	3	3	<QL	<QL	<QL	<QL
10-Apr-11	0.8	0.8	6	6	<QL	<QL	<QL	<QL
10-May-11	0.05	0.05	5	5	<QL	<QL	<QL	<QL
10-Nov-11	23	23	2	2	<QL	<QL	<QL	<QL
10-May-12	8	8	1	1	<QL	<QL	<QL	<QL
10-Nov-12	8	8	1	1	<QL	<QL	<QL	<QL
10-May-13	9	9	1	1	63	63	7	7
10-Nov-13	1908	1908	4	4	0	0	0	0
10-May-14	50	50	4	4	0	0	0	0
10-Nov-14	100	100	8	8	210	210	16	16
10-May-15	30	30	4	4	0	0	0	0
10-Nov-15	14	14	2	2	0	0	0	0
mean	120	120	3.11	8	14	14	1.2	1.2
maximum		1908	8.0	3.1	210	210	16	16
minimum	<QL	<QL	<QL	<QL	<QL	<QL	<QL	<QL
permit limit	2300	3400	*30*	*45*	2300	3400	*30*	*45*
performance / permit limit) 100	5.2	3.5	10	18	0.62	0.42	4.0	2.7

Table 3 **pH Effluent Data**

Date DMR Due	pH, min S.U.	H ion conc	pH, max S.U.	H ion conc
10-Aug-12	7.3	5.012E-08	7.5	3.162E-08
10-Sep-12	7.4	3.981E-08	7.5	3.162E-08
10-Oct-12	7.3	5.012E-08	7.5	3.162E-08
10-Nov-12	7.3	5.012E-08	7.4	3.981E-08
10-Dec-12	7.2	6.310E-08	7.3	5.012E-08
10-Jan-13	7.2	6.310E-08	7.7	1.995E-08
10-Feb-13	7.1	7.943E-08	7.5	3.162E-08
10-Mar-13	7.3	5.012E-08	7.7	1.995E-08
10-Apr-13	7.1	7.943E-08	7.8	1.585E-08
10-May-13	7.1	7.943E-08	7.3	5.012E-08
10-Jun-13	7.1	7.943E-08	7.3	5.012E-08
10-Jul-13	7.3	5.012E-08	7.7	1.995E-08
10-Aug-13	7.4	3.981E-08	7.7	1.995E-08
10-Sep-13	7.3	5.012E-08	7.4	3.981E-08
10-Oct-13	7.3	5.012E-08	7.4	3.981E-08
10-Nov-13	7.1	7.943E-08	7.9	1.259E-08
10-Dec-13	7	1.000E-07	7.4	3.981E-08
10-Jan-14	7	1.000E-07	7.2	6.310E-08
10-Feb-14	7.1	7.943E-08	7.3	5.012E-08
10-Mar-14	7	1.000E-07	7.2	6.310E-08
10-Apr-14	6.9	1.259E-07	7.1	7.943E-08
10-May-14	7	1.000E-07	7.5	3.162E-08
10-Jun-14	7.1	7.943E-08	7.5	3.162E-08
10-Jul-14	7.5	3.162E-08	7.8	1.585E-08
10-Aug-14	7.2	6.310E-08	7.5	3.162E-08
10-Sep-14	6.9	1.259E-07	7.1	7.943E-08
10-Oct-14	7	1.000E-07	7.1	7.943E-08
10-Nov-14	7.1	7.943E-08	7.3	5.012E-08
10-Dec-14	7.1	7.943E-08	7.7	1.995E-08
10-Jan-15	7	1.000E-07	7.6	2.512E-08
10-Feb-15	7	1.000E-07	7.8	1.585E-08
10-Mar-15	6.8	1.585E-07	7.2	6.310E-08
10-Apr-15	7	1.000E-07	7.5	3.162E-08
10-May-15	7	1.000E-07	7.4	3.981E-08
10-Jun-15	7	1.000E-07	7.2	6.310E-08
10-Jul-15	7	1.000E-07	7.2	6.310E-08
mean	7.2	6.140E-08	7.5	3.025E-08
maximum			7.9	
minimum	6.8			
permit limit	6.0	1.000E-06	9.0	1.000E-09

Table 4 ***E. coli* Effluent Data**

Date Due	Geometric Mean (cfu/100 mL)
10-Jun-11	1
10-Jul-11	1
10-Aug-11	2
10-Sep-11	3
10-Oct-11	1
10-Nov-11	<1
10-Dec-11	<1
10-Jan-12	<1
10-Feb-12	3
10-Mar-12	<1
10-Apr-12	<1
10-May-12	1
10-Jun-12	<QL
10-Jul-12	15
10-Aug-12	<QL
10-Sep-12	2.3
10-Oct-12	0.5
10-Nov-12	0.4
10-Dec-12	0.25
10-Jan-13	2
10-Feb-13	1
10-Mar-13	29
10-Apr-13	2
10-May-13	0.6
10-Jun-13	0
10-Jul-13	0.25
10-Aug-13	0
10-Sep-13	0
10-Oct-13	0.55
10-Nov-13	0
10-Dec-13	0
10-Jan-14	0.2
10-Feb-14	0
10-Mar-14	0.075
10-Apr-14	0.075
10-May-14	1.21
10-Jun-14	0.584
10-Jul-14	0.119
10-Aug-14	0
10-Sep-14	0
10-Oct-14	0
10-Nov-14	0
10-Dec-14	0
10-Jan-15	0
10-Feb-15	0
10-Mar-15	0.79825
10-Apr-15	2
10-May-15	1
10-Jun-15	0
10-Jul-15	0

Attachment H

Regional Water Quality Model Output (Version 4.0)

REGIONAL MODELING SYSTEM VERSION 4.0

Model Input File for the Discharge to JAMES RIVER.

File Information

File Name:	C:\Users\pmp94864\Documents\Working files\BECKY\PERMITS\VPDES\G
Date Modified:	October 13, 2015

Water Quality Standards Information

Stream Name:	JAMES RIVER
River Basin:	James River Basin
Section:	12
Class:	IV - Mountainous Zones Waters
Special Standards:	none

Background Flow Information

Gauge Used:	James River Gauge 02016500
Gauge Drainage Area:	1371 Sq.Mi.
Gauge 7Q10 Flow:	123 MGD
Headwater Drainage Area:	1381 Sq.Mi.
Headwater 7Q10 Flow:	123.8972 MGD (Net; includes Withdrawals/Discharges)
Withdrawal/Discharges:	0 MGD
Incremental Flow in Segments:	8.971553E-02 MGD/Sq.Mi.

Background Water Quality

Background Temperature:	24.1 Degrees C
Background cBOD5:	2 mg/l
Background TKN:	0 mg/l
Background D.O.:	7.347231 mg/l

Model Segmentation

Number of Segments:	1
Model Start Elevation:	1000 ft above MSL
Model End Elevation:	960.4 ft above MSL

REGIONAL MODELING SYSTEM VERSION 4.0

Model Input File for the Discharge to JAMES RIVER.

Segment Information for Segment 1

Definition Information

Segment Definition:	A discharge enters.
Discharge Name:	GLEN WILTON WWTP
VPDES Permit No.:	

Discharger Flow Information

Flow:	0.02 MGD
cBOD5:	30 mg/l
TKN:	20 mg/l
D.O.:	0 mg/l
Temperature:	23 Degrees C

Geographic Information

Segment Length:	1 miles
Upstream Drainage Area:	1381 Sq.Mi.
Downstream Drainage Area:	0 Sq.Mi.
Upstream Elevation:	1000 Ft.
Downstream Elevation:	960.4 Ft.

Hydraulic Information

Segment Width:	150 Ft.
Segment Depth:	1.173 Ft.
Segment Velocity:	1.09 Ft./Sec.
Segment Flow:	123.917 MGD
Incremental Flow:	-123.897 MGD (Applied at end of segment.)

Channel Information

Cross Section:	Rectangular
Character:	Moderately Meandering
Pool and Riffle:	No
Bottom Type:	Small Rock
Sludge:	None
Plants:	None
Algae:	None

```
"Model Run For C:\Users\pmp94864\Documents\Working files\BECKY\PERMITS\VPDES\Glen
Wilton WWTP\Reissuance 2016\Data\DO Model Glen Wilton 2016.mod On 10/13/2015 5:12:05
PM"

"Model is for JAMES RIVER."
"Model starts at the GLEN WILTON WWTP discharge."

"Background Data"
"7Q10",  "cBOD5",  "TKN",     "DO",      "Temp"
"(mgd)", "(mg/l)", "(mg/l)", "(mg/l)", "deg C"
123.8972,2,        0,         7.347,     24.1

"Discharge/Tributary Input Data for Segment 1"
"Flow",  "cBOD5",  "TKN",     "DO",      "Temp"
"(mgd)", "(mg/l)", "(mg/l)", "(mg/l)", "deg C"
.02,     30,       20,        ,0,        23

"Hydraulic Information for Segment 1"
"Length","Width",  "Depth",   "Velocity"
"(mi)",  "(ft)",   "(ft)",    "(ft/sec)"
1,       150,      1.173,     1.09

"Initial Mix Values for Segment 1"
"Flow",  "DO",     "cBOD",    "nBOD",    "DOSat",   "Temp"
"(mgd)", "(mg/l)", "(mg/l)", "(mg/l)", "(mg/l)", "deg C"
123.9172,7.346,    5.011,     .012,      8.169,     24.09982

"Rate Constants for Segment 1. - (All units Per Day)"
"k1",  "k1@T", "k2",   "k2@T", "kn",   "kn@T", "BD",   "BD@T"
1,     1.207,  20,     22.042, .45,    .617,   0,      0

"Output for Segment 1"
"Segment starts at GLEN WILTON WWTP"
"Total", "Segm."
"Dist.", "Dist.",  "DO",      "cBOD",    "nBOD"
"(mi)",  "(mi)",   "(mg/l)", "(mg/l)", "(mg/l)"
0,       0,        7.346,     5.011,     .012
.1,      .1,       7.353,     5,         .012
.2,      .2,       7.353,     5,         .012
.3,      .3,       7.353,     5,         .012
.4,      .4,       7.353,     5,         .012
.5,      .5,       7.353,     5,         .012
.6,      .6,       7.353,     5,         .012
.7,      .7,       7.353,     5,         .012
.8,      .8,       7.353,     5,         .012
.9,      .9,       7.353,     5,         .012
1,       1,        7.353,     5,         .012


"END OF FILE"
```

Attachment I

Public Notice

PUBLIC NOTICE – Environmental Permit

PURPOSE OF NOTICE: To seek public comment on a draft permit from the Department of Environmental Quality that will allow the release of treated wastewater into a water body in Botetourt County, Virginia.
PUBLIC COMMENT PERIOD: November 6, 2015 through December 7, 2015
PERMIT NAME: Virginia Pollutant Discharge Elimination System Permit – Wastewater issued by DEQ, under the authority of the State Water Control Board
APPLICANT NAME, ADDRESS, AND PERMIT NUMBER: Western Virginia Water Authority, 1502 Brownlee Avenue, SE, Roanoke, VA 24014, VA0089273
FACILITY NAME AND LOCATION: Glen Wilton WWTP, 358 Railway Road, Glen Wilton, VA 24438
PROJECT DESCRIPTION: The Western Virginia Water Authority has applied for a reissuance of a permit for the public wastewater treatment plant. The applicant proposes to release treated sewage wastewater at a rate of 20,000 gallons per day from the current facility into a water body. The facility proposes to release the treated sewage into the James River in Botetourt County in the Upper James River/Sinking Creek/Mill Creek Watershed (VAW-I18R). A watershed is the land area drained by a river and its incoming streams. The permit will limit the following pollutants to amounts that protect water quality: organic matter, solids, toxic pollutants.
HOW TO COMMENT AND/OR REQUEST A PUBLIC HEARING: DEQ accepts comments and requests for public hearing by e-mail, fax, or postal mail. All comments and requests must be in writing and be received by DEQ during the comment period. Submittals must include the names, mailing addresses and telephone numbers of the commenter/requester and of all persons represented by the commenter/requester. A request for a public hearing must also include: 1) The reason why a public hearing is requested. 2) A brief, informal statement regarding the nature and extent of the interest of the requester or of those represented by the requestor, including how and extent such interest would be directly and adversely affected by the permit. 3) Specific references, where possible, to terms and conditions of the permit with suggested revisions. A public hearing may be held, including another comment period, if a public response is significant, based on individual requests for a public hearing, and there are substantial, disputed issues relevant to the permit.
CONTACT FOR PUBLIC COMMENTS, DOCUMENT REQUESTS, AND ADDITIONAL INFORMATION:
Becky L. France; ADDRESS: Virginia Department of Environmental Quality, Blue Ridge Regional Office, 3019 Peters Creek Road, Roanoke, VA 24019-2738; (540) 562-6700; E-MAIL ADDRESS: becky.france@deq.virginia.gov; FAX: (540) 562-6725. The public may review the draft permit and application at the DEQ office named above by appointment or may request copies of the documents from the contact person listed above.