This document provides pertinent information concerning the reissuance of the VPDES Permit listed below. This permit is being processed as a Minor, Municipal permit. The discharge results from the operation of a 0.72 MGD wastewater treatment plant. This permit action consists of updating the proposed effluent limits to reflect the current Virginia Water Quality Standards (effective 8 October 2020) and updating permit language as appropriate. This discharge is located in the Upper Machodoc Creek, approximately 800 feet from the confluence of the Potomac River. As such, the effluent limitations and special conditions contained within this permit will maintain the Water Quality Standards of both Maryland (COMAR 26.08.02 et seq., effective 11 July 2018) and Virginia (9VAC25-260 et seq.).

1.	Facility Name and Mailing Address:	Naval Support Facility Dahlgren Wastewater Treatment Plant 18329 Thompson Road Suite 226 Dahlgren, VA 22448-5018	SIC Code:	4952 – Sewerage Systems 8733 – Research & Development 9711 – National Security
			NAICS Code:	221320 – Sewage Treatment Facilities 541715 – Research & Development in the Physical, Engineering and Life Sciences 928110 – National Security
	Facility Location:	18329 Thompson Road Dahlgren, VA 22448-5018	County:	King George
	Facility Contact Name:	Jeffery Bossart	Telephone Number:	540-653-5071
	Facility Contact Title:	Installation Environmental Program Director		
	Facility Email Address:	Jeffery.Bossart@navy.mil		
2.	Permit No.:	VA0021067	Expiration Date:	31 March 2021
	Other VPDES Permits:	VAN010041 – VPDES Nutrient Trading General Permit		
	Other Permits:	Registration #40307 – DEQ air permit Registration #3020886 – DEQ tank registration VA7170024684 – DEQ Hazardous Waste Operating Permit VA71700246843 – DEQ Hazardous Waste Transporter Permit		
	E2/E3/E4 Status:	Not Applicable		
3.	Owner Name:	Naval Support Facility Dahlgren		
	Owner Contact:	Jeffery Bossart	Telephone Number:	540-653-5071
	Owner Contact Title:	Installation Environmental Program Director		
	Owner Email Address:	Jeffery.Bossart@navy.mil		
4.	Application Complete Date:	14 December 2020		
	Permit Drafted By:	Douglas Frasier	Date Drafted:	27 October 2021
	Draft Permit Reviewed By:	Alison Thompson	Date Reviewed:	9 November 2021
	WPM Review:	Sarah Sivers	Date Reviewed:	18 November 2021
	Public Comment Period:	Start Date: 8 July 2022	End Date:	8 August 2022
5.	Receiving Waters Information:			
	Receiving Stream Name:	Upper Machodoc Creek	Stream Code:	1aUMC
	Drainage Area at Outfall:	0.54 square miles	River Mile:	0.2
	Stream Basin:	Potomac River	Subbasin:	Potomac River
	Section:	2	Stream Class:	II
	Special Standards:	a	Waterbody ID:	VAN-A30E
			6th Order HUC:	PL63

Receiving Waters Information: See **Attachment 1** for the Flow Frequency Determination / Stream Model.

Chronic dilution ratio: 20:1* Acute dilution ratio: 10:1*

*19 August 1994 stream model. These ratios were utilized in the Water Quality Criteria / Wasteload Allocation Analysis in **Attachment 7**.

6. Statutory or Regulatory Basis for Special Conditions and Effluent Limitations:

X	State Water Control Law	X	EPA Guidelines
X	Clean Water Act	X	9VAC25-260 et seq. Virginia Water Quality Standards
X	VPDES Permit Regulation	X	COMAR 26.08.02 et seq. Maryland Water Quality Standards
X	EPA NPDES Regulation	X	9VAC25-820 et seq. *General VPDES Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Bay Watershed in Virginia*

7. Licensed Operator Requirements: Class II

8. Reliability Class: Class I

9. Facility / Permit Characterization:

	Private		Effluent Limited	X	Possible Interstate Effect
X	Federal	X	Water Quality Limited		Compliance Schedule
	State	X	Whole Effluent Toxicity Program		Interim Limits in Permit
	POTW		Pretreatment Program		Interim Limits in Other Document
X	eDMR Participant	X	Total Maximum Daily Load (TMDL)		

10. Wastewater Sources and Treatment Description:

The Naval Support Facility Dahlgren is a wastewater treatment plant with a current design capacity of 0.72 MGD. This federally owned treatment works (FOTW) treats domestic discharge from the Naval Support Facility Dahlgren, Barnesfield Park (seasonal) and USPO/MWR with a total population of approximately 8,900.

The facility consists of the following treatment processes: mechanical bar screen, primary clarifier, dual train bioreactor (anoxic/aerobic), secondary clarifiers, constructed wetlands, ultraviolet (UV) disinfection system and post aeration. Discharge is to the Upper Machodoc Creek via Outfall 001.

See **Attachment 2** for a facility schematic/diagram.

TABLE 1
OUTFALL DESCRIPTION

Number	Discharge Sources	Treatment	Design Flow	Latitude / Longitude
001	Domestic Wastewater	See Section 10	0.72 MGD	38° 19′ 15″ / 77° 01′ 40″
See **Attachment 3** for the Dahlgren topographic map.				

11. Sludge Treatment and Disposal Methods:

Sludge treatment consists of anaerobic digestion, lime addition for stabilization and pH adjustment prior to dewatering using a rotary fan press. The dewatered sludge is hauled to the King George County Landfill (Waste Permit SWP586) for disposal.

12. Other Permitted Facilities Located Within Waterbody PL63:

TABLE 2 PERMITTED FACILITIES			
Permit Number	Facility Name	Type	Receiving Streams
VA0073636	Naval Support Facility Dahlgren	Industrial Stormwater Discharge Individual Permit	Upper Machodoc Creek (Outfalls 001/002/014) Gambo Creek (Outfalls 003/007) Upper Machodoc Creek, UT (Outfalls 004/009)

13. Material Storage:

TABLE 3 MATERIAL STORAGE		
Materials Description	Volume Stored	Spill/Stormwater Prevention Measures
DelPAC 2000 (Polyaluminum chloride solution)	2,500 gallons	Secondary containment under roof.
Bio-Carb (glycerin)	4,500 gallons	

14. Site Inspection:

Performed by DEQ-NRO Compliance Staff on 28 June 2018. Refer to **Attachment 4** for the inspection report.

15. Receiving Stream Water Quality and Water Quality Standards:

a. Ambient Water Quality Data

This facility's outfall discharges into Upper Machodoc Creek. There are no downstream DEQ monitoring stations, but Upper Machodoc Creek has been assessed. The following is the water quality summary for this segment of the Upper Machodoc Creek, as taken from the 2020 Integrated Report:

Class II, Section 2, special standards a

DEQ monitoring stations located in this segment of Upper Machodoc Creek: not applicable.

The aquatic life use is categorized as not supporting; however, the Chesapeake Bay TMDL has been completed. Assessment of the submerged aquatic vegetation (SAV) acreage and thirty day mean dissolved oxygen values during the summer season indicates that the shallow-water submerged aquatic vegetation and the open-water aquatic life subuses are not met. The seven day mean and instantaneous dissolved oxygen levels have not been assessed. The deep-water subuse is considered fully supporting. The fish consumption use is categorized as impaired due to a Virginia Department of Health, Division of Health Hazards Control, PCB fish consumption advisory; the Tidal Potomac River PCB TMDL for the Upper Machodoc Creek watershed has been completed and approved. The recreation and wildlife uses were not assessed.

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b. 303(d) Listed Stream Segments and Total Maximum Daily Loads (TMDLs)

TABLE 4 RECEIVING STREAM IMPAIRMENTS AND TMDLs					
Waterbody Name	Impaired Use	Cause	TMDL completed	WLA	Basis for WLA
Impairment Information in the 2020 Integrated Report					
Upper Machodoc Creek	Open-Water Aquatic Life	Dissolved Oxygen	Chesapeake Bay TMDL 12/29/2010	This facility is accounted for in the Chesapeake Bay TMDL. It is included in the NPDES permit inventory and is assigned WLAs for Total Nitrogen, Total Phosphorus, and Total Suspended Solids (Appendix Q).	
	Aquatic Life				
	Shallow Water Submerged Aquatic Vegetation	Aquatic Plants (Macrophytes)*			
	Fish Consumption	PCBs in Fish Tissue	Tidal Potomac River Watershed PCBs TMDL 10/31/2007	0.064 grams/year PCBs	0.064 ng/L PCBs --- 0.72 MGD

*The Aquatic Plants (Macrophytes) impairment cause indicates that the waterbody segment was evaluated with less submerged aquatic vegetation than the segment goal.

TABLE 5 DOWNSTREAM 303(d) IMPAIRMENTS AND TMDLs					
Waterbody Name	Impaired Use	Cause	TMDL completed	WLA	Basis for WLA
Impairment Information in Maryland's 2018 Integrated Report					
Potomac River (Maryland)	Open-Water Fish and Shellfish	Total Nitrogen and Total Phosphorus	Chesapeake Bay TMDL 12/29/2010	This facility is accounted for in the Chesapeake Bay TMDL. It is included in the NPDES permit inventory and is assigned WLAs for Total Nitrogen, Total Phosphorus, and Total Suspended Solids (Appendix Q).	
	Seasonal Migratory Fish Spawning and Nursery				
	Seasonal Deep-Water Fish and Shellfish				
	Seasonal Deep-Channel Refuge				
	Seasonal Shallow-Water Submerged Aquatic Vegetation	Total Suspended Solids			

This facility discharges directly to the Upper Machodoc Creek; located within the Chesapeake Bay watershed. The receiving stream has been addressed in the Chesapeake Bay TMDL, completed by the Environmental Protection Agency (EPA) on 29 December 2010. The TMDL addresses dissolved oxygen (DO), chlorophyll a and submerged aquatic vegetation (SAV) impairments in the main stem Chesapeake Bay and its tidal tributaries by establishing non-point source load allocations (LAs) and point-source waste load allocations (WLAs) for total nitrogen (TN), total phosphorus (TP) and total suspended solids (TSS) to meet applicable Virginia Water Quality Standards contained in 9VAC25-260-185. This facility is considered a Significant Chesapeake Bay wastewater discharge and has been assigned wasteload allocations as noted in Tables 4 and 5 above.

Implementation of the Chesapeake Bay TDML is currently accomplished in accordance with the Commonwealth of Virginia's Phase I Watershed Implementation Plan (WIP); approved by EPA on 29 December 2010. The approved WIP recognizes that the TMDL nutrient WLAs for Significant Chesapeake Bay wastewater dischargers are set in two regulations: (1) the Water Quality Management Planning Regulation (9VAC25-720); and (2) the *General VPDES Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Bay Watershed of Virginia* (9VAC25-820).

The WIP states that since TSS discharges from wastewater facilities represent an insignificant portion of the Bay's total sediment load, they may be considered aggregated and wastewater discharges with technology-based TSS limits are considered consistent with the TMDL.

40 CFR 122.44(d)(1)(vii)(B) requires permits to be written with effluent limits necessary to meet water quality standards and to be consistent with the assumptions and requirements of applicable WLAs. DEQ has provided coverage under the VPDES Nutrient General Permit (GP) for this facility under permit VAN010041. The requirements of the Nutrient GP currently in effect for this facility are consistent with the Chesapeake Bay TMDL. This individual permit includes TSS limits that are also consistent with the Chesapeake Bay TMDL and WIP. In addition, the individual permit addresses limitations for the protection of instream dissolved oxygen concentrations as detailed in Section 19 of this Fact Sheet. The proposed effluent limits within this individual permit are consistent with the Chesapeake Bay TMDL and will not cause an impairment or observed violation of the standards for DO, chlorophyll a or SAV as required by 9VAC25-260-185.

The planning statement is located in **Attachment 5**.

c. Receiving Stream Water Quality Criteria

Part IX of 9VAC25-260(360-550) designates classes and special standards applicable to defined Virginia river basins and sections. The receiving stream, Upper Machodoc Creek, is located within Section 2 of the Potomac River Basin and classified as Class II water.

Class II tidal waters in the Chesapeake Bay and it tidal tributaries must meet dissolved oxygen concentrations as specified in 9VAC25-260-185 and maintain a pH of 6.0 – 9.0 standard units as specified in 9VAC25-260-50. In the Northern Virginia area, Class II waters must meet the Migratory Fish Spawning and Nursery Designated Use from February 1 through May 31. For the remainder of the year, these tidal waters must meet the Open Water use. The applicable dissolved oxygen concentrations are presented **Attachment 6**.

As stated earlier, this facility's discharge point is approximately 800 feet from the confluence of the Potomac River and has the potential to affect Maryland waters. Title 26, Subtitle 08 of the Code of Maryland Regulations (Maryland Water Quality Standards) has been reviewed and the proposed limitations contained within comply with these regulations.

This portion of the Potomac River has been designated as Use II water, per COMAR 26.08.02.03-3 A.(8). The designated uses present in this segment are: Migratory Spawning and Nursery Use (February 1 to May 31); Shallow Water Submerged Aquatic Vegetation Use (April 1 to October 30); Open Water Fish and Shellfish Use (January 1 to December 31); Seasonal Deep Water Fish and Shellfish Use (June 1 to September 30); Seasonal Deep Channel Refuge Use (June 1 to September 30); and Shellfish Harvest.

The aforementioned designations provide for various dissolved oxygen (DO) concentrations during different periods of the year. The following is applicable to the Open Water Fish and Shellfish Subcategory and is the most stringent:

1). Greater than or equal to 5.5 mg/L for a 30-day averaging period year-round in tidal fresh waters (salinity less than or equal to 0.5 parts per thousand);

2). Greater than or equal to 5 mg/L for a 30-day averaging period year-round (salinity greater than 0.5 parts per thousand);

3). Greater than or equal to 4.0 mg/L for a 7-day averaging period year-round;

4). Greater than or equal to 3.2 mg/L as an instantaneous minimum year-round; and

5). For protection of the endangered shortnose sturgeon, greater than or equal to 4.3 mg/L as an instantaneous minimum at water column temperatures greater than 29° C (77° F).

pH values may not be less than 6.5 or greater than 8.5 standard units (S.U.).

The Virginia Saltwater Water Quality Criteria / Wasteload Allocation Analysis located in **Attachment 7** details other water quality criteria applicable to the receiving stream. Some Water Quality Criteria are dependent on the pH, temperature and total hardness of the receiving stream and/or final effluent. These values were utilized to determine the criterion for the following pollutants:

pH and Temperature for Ammonia Criteria

According to the Virginia Water Quality Standards, 9VAC25-260-140.C.4., the receiving waters would be considered estuarine waters. This is based on the location of the outfall, which is located more than one mile southeast of Mathias Point; southernmost boundary of the transition zone. Estuarine waters include all tidal tributaries that enter the Potomac River from the downstream transition zone boundary to the mouth of the Potomac River (Buoy 44B). Saltwater criteria are applied to these types of receiving waters.

The aquatic life Water Quality Criteria for ammonia is dependent on the instream pH and temperature. Since the effluent may have an impact on the instream values, the pH and temperature values of the effluent must also be considered when determining the ammonia criteria for the receiving stream. The 90th percentile pH and temperature values are utilized because they best represent the critical conditions of the receiving stream.

Ambient water quality data from January 1999 to January 2011 found that the 90th and 10th percentile pH values are 7.6 S.U. and 6.6 S.U., respectively, and a summer temperature of 27.7° C and a winter temperature of 17.3° C are appropriate. In addition the average salinity of the receiving stream was 6.7 g/kg. Please refer to **Attachment 8** for the calculated ambient data. Daily effluent pH and temperature data for CY2020 was utilized to calculate pH and temperature data. Calculated 90th and 10th percentile for pH was found to be 7.8 S.U. and 7.2 S.U., respectively (**Attachment 9**). The temperature data indicated an annual 90th percentile value of 26.8° C and a wet season temperature value of 15.7° C. The wet season period is defined as December – April, based on the ambient data calculations in **Attachment 8**.

Hardness Dependent Metals Criteria

The Water Quality Criteria for some metals are dependent on the receiving stream and/or effluent total hardness values (expressed as mg/L calcium carbonate).

The hardness-dependent metals criteria found in **Attachment 7** are based on an average effluent value of 40 mg/L $CaCO_3$ and an average ambient value of 833 mg/L $CaCO_3$. The effluent value is based on data included in the Whole Effluent Toxicity test reports that were conducted during the last permit term. The calculated average ambient hardness value was derived from ambient monitoring collected from January 1990 through February 2011. It is staff's professional judgement that some of the data collected may have contained outliers and possibly skewed the calculated average value towards this high value. The Water Quality Standards are only valid within an average range of 25-400 mg/L $CaCO_3$; however, the program will self-adjust for out-of-range values when the criteria are calculated.

Bacteria Criteria

The Virginia Water Quality Standards at 9VAC25-260-170.A. state that transition and saltwater, Enterococci bacteria shall not exceed a geometric mean of 35 N/100 mL to protect primary recreational uses in surface waters.

The Maryland Water Quality Criteria Specific to Designated Uses (Code of Maryland Regulations 26.08.02.03-3.A) states that sewage discharges shall be disinfected to achieve the following criteria and reflects the fecal coliform loading rates found in the stream model (**Attachment 1**):

Enterococci bacteria per 100 mL of water for all areas shall be as follows:

	Steady State Geometric Mean	Single Sample Maximum
Marine enterococci	35	104

During the previous reissuance, the Maryland Department of the Environment (MDE) recommended that the bacteria limitation should reflect Maryland's fecal coliform of 14 most probable number (MPN)/100 mL to ensure protection of propagating shellfish. DEQ staff acknowledged this request and required that the facility concurrently monitor and report for fecal coliform. In was also noted that this bacterial sampling regime would be reassessed during this reissuance to determine if both species are still warranted. Review of the monitoring data revealed that the facility was consistently below the imposed limits for both bacterial species. Therefore, it is staff's professional judgement that continuance of fecal coliform monitoring is not warranted as the enterococci limitations are indicative that the effluent is properly disinfected and protective of shellfish propagation.

d. Receiving Stream Special Standards

The State Water Control Board's Water Quality Standards, River Basin Section Tables (9VAC25-260-360, 370 and 380) designates the river basins, sections, classes and special standards for surface waters of the Commonwealth of Virginia. The receiving stream, Upper Machodoc Creek, is located within Section 2 of the Potomac River Basin.

The receiving stream has been designated with a special standard of "a". According to 9VAC25-260-310.a., Special Standard "a" applies to all open ocean or estuarine waters capable of propagating shellfish or in specific areas where public or leased private shellfish beds are present, including those waters on which condemnation or restriction classifications are established by the State Department of Health. The fecal coliform bacteria standard is as follows: the geometric mean fecal coliform value for a sampling station shall not exceed an MPN (Most Probable Number) of 14 per 100 milliliters of sample and the 90th percentile shall not exceed 43 for a 5-tube, 3-dilution or 49 for a 3-tube, 3-dilution test. The shellfish are not to be so contaminated by radionuclides, pesticides, herbicides or fecal material that the consumption of shellfish might be hazardous. This same standard is also contained in 9VAC25-260-160 Fecal Coliform Bacteria; Shellfish Waters. This standard is used for the interpretation of instream monitoring data and not for setting fecal coliform effluent limitations.

16. Antidegradation (9VAC25-260-30):

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.

It is staff's professional judgement that the receiving stream be classified as Tier 1 based on the noted downstream impairments and the Total Maximum Daily Loads (TMDLs) associated with the receiving stream.

The proposed permit limits have been established by determining wasteload allocations which will result in attaining and/or maintaining all water quality criteria which apply to the receiving stream, including narrative criteria. These wasteload allocations will provide for the protection and maintenance of all existing uses.

17. Effluent Screening, Wasteload Allocation, and Effluent Limitation Development:

To determine water quality-based effluent limitations for a discharge, the suitability of data must first be determined. Data is suitable for analysis if one or more representative data points are equal to or above the quantification level (QL) and the data represent the exact pollutant being evaluated.

For discharges into tidal water bodies, wasteload allocations should be based on site-specific information concerning waste dispersion. A site-specific dilution ratio of 10:1 for acute aquatic life criteria and a dilution ratio of 20:1 for chronic aquatic life criteria and human health criteria were used to prevent lethality in the allocated impact zone as determined by the stream model for the discharge (**Attachment 1**). Even though the modeled flow is slightly greater than the design flow of this facility, it is staff's professional judgement that this results in limits that are more protective.

Utilizing these dilution ratios, Wasteload Allocations (WLAs) were calculated. The WLA values are then compared with available effluent data to determine the need for effluent limitations. Effluent limitations are needed if the 97th percentile of the daily effluent concentration values is greater than the acute wasteload allocation or if the 97th percentile of the four-day average effluent concentration values is greater than the chronic wasteload allocation. In the case of ammonia evaluations, limits are needed if the 97th percentile of the thirty-day average effluent concentration value is greater than the chronic WLA. Effluent limitations are the calculated on the most limiting WLA, the required sampling frequency and statistical characteristics of the effluent data.

a. Effluent Screening

Effluent data obtained from Attachment A, the permit application and March 2016 – February 2021 Discharge Monitoring Reports has been reviewed and determined to be suitable for evaluation. Please see **Attachment 10** for a summary of effluent data.

b. Effluent Limitations, Outfall 001 – Toxic Pollutants

9VAC25-31-220.D. requires limits be imposed where a discharge has a reasonable potential to cause or contribute to an in-stream excursion of water quality criteria. Those parameters with WLAs that are near effluent concentrations are evaluated for limits.

The VPDES Permit Regulation at 9VAC25-31-230.D requires that monthly and weekly average limitations be imposed for continuous discharges from POTWs and monthly average and daily maximum limitations be imposed for all other continuous non-POTW discharges.

1) Ammonia as N/TKN

DEQ and the Virginia Department of Health (VDH) approved plans and specifications for facility upgrades in 1995. The engineering design basis stated that these upgrades would allow the facility to achieve ammonia limits of 5 mg/L. The Certificate to Operate was issued in 2010 after completion of the upgrades (**Attachment 11**).

The above technology limits were compared with those calculated (**Attachment 12**) utilizing the wasteload allocations found in **Attachment 7**. The technology installed and subsequent treatment capabilities are found to be more stringent than the calculated limits based on water quality. Therefore, it is staff's professional judgement that the technology based limits are applicable and more protective of the receiving stream. This limit also ensures that the facility complies with the Maryland Water Quality Standards.

Note that the EPA finalized new, more stringent ammonia criteria in August 2013 and the State Water Control Board adopted the updated criteria in October 2020. This may result in reexamination of the above limits. Development of agency implementation procedures were ongoing during the drafting of this Fact Sheet. This and many other facilities will be reevaluated against the new criteria during their next respective permit terms to determine what changes may be required.

2) Total Residual Chlorine (TRC)

This facility utilizes ultraviolet (UV) radiation for final effluent disinfection; therefore, chlorine limit derivation is not warranted.

3) Metals

Chromium, copper, cyanide and zinc were found above the quantification levels in the application package. A reasonable potential analysis was completed for each of these to determine if limitations may be necessary. None of these pollutants warranted a limit at this time based on the one sample data point. See **Attachment 13** for the reasonable potential analyses results.

Comparing the saltwater acute and chronic criterion with the Maryland Water Quality Standards, staff noted that all but copper were identical between the states. The criteria for copper under the Maryland WQS was approximately half of that for Virginia. It is staff's professional judgement that the modeling report found in **Attachment 1** provides reasonable assurance that the findings support the Maryland WQS for copper and would not be contravened due to this discharge.

4) Pesticides

Dieldrin was found above the quantification level in the effluent scan results found in the permit application. This organochloride compound was developed as an insecticide. These types of compounds are extremely persistent in the environment, as they do not easily break down, and was one of the factors in banning its use in the early 1970s. Its presence may be due to past applications on the installation for termite control. The reasonable potential analysis does indicate that a limit is warranted based on this one sample (**Attachment 14**). Since this is only one sample, staff proposes that the facility monitor for this potential pollutant quarterly during the first two years of this permit term. DEQ staff will use this monitoring data to reassess the need of a limit. Alternatively, the permittee may submit for review and approval a source reduction plan if a limit is found to be warranted at the end of the sampling regime.

Review of the saltwater criteria for Maryland revealed they are identical to Virginia's criteria. The proposed monitoring to further assess is appropriate and will ensure protection of the receiving stream.

5) Polychlorinated Biphenyls (PCBs)

Naval Support Facility Dahlgren is included in the Tidal Potomac River PCBs TMDL, approved by EPA on 31 October 2007. As a result of being included in this TMDL, during the 2008 – 2013 permit term, this facility conducted low-level PCB testing utilizing EPA Method 1668.

DEQ utilized the procedures set forth in Guidance Memorandum 14-2004, *Procedures for reviewing and deriving total PCB concentrations from samples analyzed using low-level PCB method 1668 to be used in the development and implementation of TMDLs*, to obtain the concentrations for the samples in Table 6 below. DEQ staff then calculated the load (g/year) that is discharged to the receiving stream. Using the average flow from February 2020 – March 2021 of 0.46 MGD, an average annual load of 0.27 g/year was calculated.

TABLE 6
BLANK CORRECTED RESULTS OF PCB SAMPLES

Sample Date	Sample Type	Result (picograms per liter)
7/18/2013	Dry	478.193 pg/L
8/29/2013	Wet	376.04 pg/L

The chronic aquatic life criterion for PCBs is 14,000 pg/L and the human health criterion is 640 pg/L. Additionally, the Naval Support Facility has a wasteload allocation of 0.064 g/year under the Tidal Potomac River PCBs TMDL. While the individual samples are below the chronic aquatic life and human health criteria, the above calculated average annual load exceeded the wasteload allocation in the TMDL. Therefore, a special condition for the development of a PCB Pollution Minimization Plan will be included with this reissuance. Please refer to Section 21.m. of this Fact Sheet.

c. Effluent Limitations and Monitoring, Outfall 001 – Conventional and Non-Conventional Pollutants

No changes to pH, biochemical oxygen demand-5 day (BOD_5), total suspended solids (TSS), dissolved oxygen (DO), ammonia as N or enterococci bacteria are proposed.

BOD_5 limitations are based on Federal Secondary Treatment Standards and verified protective of the stream with modeling conducted in August 1994 (**Attachment 1**).

It is staff's practice to equate the total suspended solids limits with the BOD_5 limits since the two pollutants are closely related in terms of treatment of domestic sewage.

The pH and dissolved oxygen limitations are set at the Maryland Water Quality Standards at COMAR 26.08.02.03-3 C.(4) and COMAR 26.08.02.03-3 C.(8)(d) respectively as these were found more stringent.

Ammonia limitations are based on the technology installed. Refer to **Attachment 11** for the Certificate to Operate.

Enterococci limitations are in accordance with the Virginia Water Quality Standards 9VAC25-260-170 and are equivalent to the Maryland Water Quality Standards COMAR 26.08.02.03-3 A.(1)(a).

d. Effluent Annual Average Limitations and Monitoring, Outfall 001 – Nutrients

VPDES Regulation 9VAC25-31-220(D) requires effluent limitations that are protective of both the numerical and narrative water quality standards for state waters, including the Chesapeake Bay.

As discussed in Section 15, significant portions of the Chesapeake Bay and its tributaries are listed as impaired with nutrient enrichment cited as one of the primary causes. Virginia has committed to protecting and restoring the Bay and its tributaries. Only concentration limits are now found in the individual VPDES permit when the facility installs nutrient removal technology.

The basis for the concentration limits is 9VAC25-40 – *Regulation for Nutrient Enriched Waters and Dischargers within the Chesapeake Bay Watershed* which requires new or expanding discharges with design flows of ≥ 0.04 MGD to treat for TN and TP to either BNR (Biological Nutrient Removal) levels (TN = 8 mg/L; TP = 1.0 mg/L) or SOA (State of the Art) levels (TN = 3.0 mg/L and TP = 0.3 mg/L).

This facility has also obtained coverage under 9VAC25-820 – *General Virginia Pollutant Discharge Elimination System (VPDES) Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Bay Watershed in Virginia*. This regulation specifies and controls the nitrogen and phosphorus loadings from facilities and specifies facilities that must register under the general permit. Nutrient loadings for those facilities registered under the general permit as well as compliance schedules and other permit requirements, shall be authorized, monitored, limited, and otherwise regulated under the general permit and not this individual permit. This facility has coverage under this General Permit; the permit number is VAN010041. Total Nitrogen Annual Loads and Total Phosphorus Annual Loads from this facility are found in 9VAC25-720 – *Water Quality Management Plan Regulation* which sets forth TN and TP maximum wasteload allocations for facilities designated as significant discharges, i.e. those with design flows of ≥ 0.5 MGD above the fall line and > 0.1 MGD below the fall line.

Monitoring for nitrates + nitrites, TKN, TN and TP are included in this permit. The monitoring is needed to protect the Chesapeake Bay Water Quality Standards. Monitoring frequencies are set at the frequencies as set forth in 9VAC25-820. Annual average effluent limitations, as well as monthly and year to date calculations, for total nitrogen and total phosphorus are included in this individual permit. The annual averages are based on the technology installed and the engineering basis of design (**Attachment 11**). It should be noted that these annual average concentrations for TN and TP do not reflect the concentrations that were used to establish the WLAs found in 9VAC25-720. However, the reported effluent data found in **Attachment 10** indicates that the facility is producing an effluent quality below the annual loading limits of the Nutrient Trading GP (9VAC25-820). Therefore, it is staff's professional judgement that the installed technology and subsequent effluent limitations are adequate and appropriate.

e. Effluent Limitations and Monitoring Summary

The effluent limitations are presented in Section 19. Limits were established for pH, biochemical oxygen demand-5 day (BOD_5), total suspended solids (TSS), ammonia as N, dissolved oxygen (DO), enterococci, total nitrogen (calendar year) and total phosphorus (calendar year). The facility must also monitor flow, TKN, nitrate+nitrite, dieldrin and whole effluent toxicity.

The limit for total suspended solids is based on staff's professional judgement and reflects the Federal Secondary Treatment Standards in 40 CFR 133.

The mass loading (kg/d) for monthly and weekly averages were calculated by multiplying the concentration values (mg/L), with the flow values (in MGD) and then a conversion factor of 3.785.

Sample frequency are in accordance with the recommendations in the VPDES Permit Manual except for TKN and nitrate+nitrite; as those monitoring frequencies reflect those set forth in 9VAC25-820-70.E.1, *General VPDES Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Bay Watershed in Virginia*.

The permittee requested that the sample type be a 24H-C in lieu of the recommended 8H-C as stated in the current VPDES Permit Manual during the previous reissuance. This sampling regime will be carried forward with this reissuance. Refer to Section 24 of this Fact Sheet.

This VPDES permit requires 85% removal of BOD_5 and TSS in accordance with the federal effluent guidelines for Secondary Treatment included in 40 CFR §133.102. The permit will require influent sampling on a semiannual basis and will occur at the same frequency as the corresponding effluent samples. Results will be reported on the 10th day of the month following sampling.

18. Antibacksliding:

All limits in this permit are at least as stringent as those previously established. Backsliding does not apply to this reissuance.

19. Effluent Limitations/Monitoring Requirements:

Design flow is 0.72 MGD.

Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date.

PARAMETER	BASIS FOR LIMITS	DISCHARGE LIMITATIONS				MONITORING REQUIREMENTS	
		Monthly Average	Weekly Average	Minimum	Maximum	Frequency	Sample Type
Flow (MGD)	NA	NL	NA	NA	NL	Continuous	TIRE
pH	3	NA	NA	6.5 S.U.	8.5 S.U.	1/D	Grab
Biochemical Oxygen Demand (BOD_5)	1,3,4,5	30 mg/L 82 kg/day	45 mg/L 120 kg/day	NA	NA	3D/W	24H-C
BOD_5, Influent [a.]	1	NL mg/L	NA	NA	NA	1/6M [b.]	Grab
BOD_5, Percent Removal [a.]	1	NA	NA	85%	NA	1/6M [b.]	Calculated
Total Suspended Solids (TSS)	1,2	30 mg/L 82 kg/day	45 mg/L 120 kg/day	NA	NA	3D/W	24H-C
TSS, Influent [a.]	1	NL mg/L	NA	NA	NA	1/6M [b.]	Grab
TSS, Percent Removal [a.]	1	NA	NA	85%	NA	1/6M [b.]	Calculated
Dissolved Oxygen (DO)	3,5	NA	NA	5.5 mg/L	NA	1/D	Grab
Ammonia, as N	6	5.0 mg/L	5.0 mg/L	NA	NA	3D/W	24H-C
Enterococci (Geometric Mean) [c.]	3,4,5	35 n/100 mL	NA	NA	NA	3D/W	Grab
Total Kjeldahl Nitrogen (TKN)	3,4	NL mg/L	NA	NA	NA	2D/W	24H-C
Nitrate+Nitrite, as N	3,4	NL mg/L	NA	NA	NA	2D/W	24H-C
Total Nitrogen [d.]	7,8,9	NL mg/L	NA	NA	NA	2D/W	Calculated
Total Nitrogen – Year to Date [e.]	7,8,9	NL mg/L	NA	NA	NA	1/M	Calculated
Total Nitrogen – Calendar Year [e.]	6,7,8,9	7.0 mg/L	NA	NA	NA	1/YR	Calculated
Total Phosphorus	7,8,9	NL mg/L	NA	NA	NA	2D/W	24H-C
Total Phosphorus – Year to Date [e.]	7,8,9	NL mg/L	NA	NA	NA	1/M	Calculated
Total Phosphorus – Calendar Year [e.]	6,7,8,9	2.0 mg/L	NA	NA	NA	1/YR	Calculated
Dieldrin [f.]	2	NL µg/L	NA	NA	NA	1/3M	Grab
Chronic Toxicity – *M. bahia*		NA	NA	NA	NL TU_c	1/YR	24H-C
Chronic Toxicity – *C. variegates*		NA	NA	NA	NL TU_c	1/YR	24H-C

The basis for the limitations codes are:

1. Federal Effluent Requirements
2. Staff Professional Judgement
3. Maryland Water Quality Standards
4. Virginia Water Quality Standards
5. Stream Model – **Attachment 1**
6. Basis of design/CTO – **Attachment 11**
7. 9VAC25-40 (Nutrient Regulation)
8. 9VAC25-820 (Watershed General Permit)
9. Chesapeake Bay TMDL/WIP

MGD = Million gallons per day.
NA = Not applicable.
NL = No limit; monitor and report.
S.U. = Standard units.
TIRE = Totalizing, indicating and recording equipment.

1/D = Once every day.
2D/W = Two days every week.
3D/W = Three days every week.
1/M = Once every month.
1/3M = Once every calendar quarter.
1/6M = Once every six months.
1/YR = Once every calendar year.

a. At least 85% removal for BOD_5 and TSS shall be attained for this effluent. See Section 20.a.2) for more information on the removal calculations.
b. The semiannual monitoring periods shall be January through June and July through December.
c. Samples shall be collected between 10:00 a.m. and 4:00 p.m.
d. Total Nitrogen = Sum of TKN plus Nitrate+Nitrite
e. See Section 20.a.1) for more information on the Nutrient Calculations.
f. The quarterly monitoring periods shall be January – March, April – June, July – September and October – December.
Monitoring shall be during the first two years of the permit, at a minimum, for a total of eight (8) sample results. Results shall be reported by the 10th of the following month.

Effluent Limitations and Monitoring Abbreviations/Acronyms continued

24H-C = A flow proportional composite sample collected manually or automatically, and discretely or continuously, for the entire discharge of the monitored 24-hour period. Where discrete sampling is employed, the permittee shall collect a minimum of twenty-four (24) aliquots for compositing. Discrete sampling may be flow proportioned either by varying the time interval between each aliquot or the volume of each aliquot. Time composite samples consisting of a minimum twenty-four (24) grab samples obtained at hourly or smaller intervals may be collected where the permittee demonstrates that the discharge flow rate (gallons per minute) does not vary by 10% or more during the monitored discharge.

Grab = An individual sample collected over a period of time not to exceed 15 minutes.

20. Other Permit Requirements:

a. Part I.B. of the permit contains quantification levels and compliance reporting instructions

1) The calculations for the nitrogen and phosphorus parameters shall be in accordance with the calculations set forth in 9VAC25-820 – *General Virginia Pollutant Discharge Elimination System (VPDES) Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Bay Watershed in Virginia*. §62.1-44.19:13 of the Code of Virginia defines how annual nutrient loads are to be calculated; this is carried forward in 9VAC25-820-70. As annual concentrations (as opposed to loads) are limited in the individual permit, these reporting calculations are intended to reconcile the reporting calculations between the permit programs, as the permittee is collecting a single set of samples for the purpose of ascertaining compliance with two permits**.**

2) Influent concentrations shall be used to calculate a corresponding percent removal rate for each respective sampling event. Specific analytical methodologies calculating removal rates and for sample results <QL are detailed in this permit section. A single monthly average removal percentage of the monthly values shall be reported.

b. Permit Section Part I.C. details the requirements for Whole Effluent Toxicity (WET) Program

Whole Effluent Toxicity (WET) refers to the aggregate toxic effect to aquatic organisms from all pollutants present within a facility's wastewater effluent. This program is one approach to comply with the Clean Water Act's prohibition of the discharge of toxic pollutants in toxic amounts. WET testing allows for the measurement of the wastewater's potential effects on specific test organism's ability to survive, grow and reproduce.

The VPDES Permit Regulation at 9VAC25-31-220.D.1.a-d. requires limitations in permits to provide for and ensure compliance with all applicable requirements of the State Water Control Law and the Clean Water Act. Limitations must control all pollutants or pollutant parameters which the Board determines are or may be discharged at a level which will cause, have the reasonable potential to cause or contribute to an excursion above any Virginia water quality standard, including narrative criteria. The determination whether a discharge causes or contributes to an instream excursion above a narrative or numeric criteria shall utilize procedures which account for existing controls on sources of pollution, variability of the pollutant, species sensitivity and dilution of the effluent in the receiving stream. If it is determined that a reasonable potential exists to cause or contribute to an instream excursion of narrative criterion of the water quality standard, the permit must contain effluent limits for whole effluent toxicity. However, limits may not be necessary when it is demonstrated that chemical-specific limits are sufficient to attain and maintain applicable numeric and narrative water quality standards.

A WET Program is imposed for municipal facilities with a design rate >1.0 MGD, all facilities with an approved pretreatment program or required to develop a pretreatment program and/or those required by the Board based on effluent variability, compliance history, instream waste concentration (IWC), existing pollutant controls and/or receiving stream characteristics. This facility serves a comprehensive research and development complex which could potentially result in a pollutant pass through, producing possible effluent toxicity issues. Therefore it is staff's professional judgement that WET testing be carried forward with this reissuance.

As referenced above, reasonable potential determinations must take into account the variability of the pollutant or pollutant parameter in the effluent, sensitivity of the species to toxicity testing and, as appropriate, the dilution of the effluent in the receiving stream. This warrants a sampling regime that rotates throughout a given calendar year; a quarterly schedule in order to obtain seasonal perspectives that encompass that potential variableness listed prior. This methodology coincides with the VPDES Permit Regulation requirements that facilities submit representative data that reflects the seasonal variation in the discharge with each permit application (9VAC25-31-100.K.4.g.). Therefore, it is staff's best professional judgement that a WET testing protocol be proposed with this permit action that requires a rotating, quarterly testing regime for each annual monitoring requirement. The schedule as set forth within Part I.C. of the permit will ensure that the discharge is monitored for whole effluent toxicity and demonstrates seasonal variations.

Previous WET results have indicated that the effluent is not toxic to the test species. See **Attachment 15** for a summary of the past test results. **Attachment 16** details the statistical evaluation of the previous WET results indicating that no limit is warranted. **Attachment 17** documents the calculated endpoints that will be carried forward with this reissuance.

21. Other Special Conditions:

a. 95% Capacity Reopener. The permittee shall develop and submit a plan of action to DEQ when the monthly average influent flow to the sewage treatment plant reaches 95% or more of the design capacity authorized in the permit for each month of any three consecutive month period. Basis for this condition is staff's professional judgement.

b. Indirect Dischargers. The VPDES Permit Regulation, 9VAC25-31-280.B.9. requires that the Board provide an explanation on the regulation of users (i.e., industrial, indirect dischargers) to treatment works not owned by a state or a municipality. The Naval Support Facility Dahlgren WWTP serves a Research and Development complex; thus, creating a potential for pollutants to pass through or interfere with the operation of the treatment plant. Therefore it is staff's professional judgement that VPDES Permit Regulation, 9VAC25-31-200.B.1 and B.2 is applicable since this facility receives waste from someone other than the owner of the treatment works.

c. O&M Manual Requirement. Required by Code of Virginia §62.1-44.19; Sewage Collection and Treatment Regulations, 9VAC25-790; VPDES Permit Regulation, 9VAC25-31-190.E. The permittee shall maintain a current Operations and Maintenance (O&M) Manual. The permittee shall operate the treatment works in accordance with the O&M Manual and shall make the O&M Manual available to Department personnel for review upon request. Any changes in the practices and procedures followed by the permittee shall be documented in the O&M Manual within 90 days of the effective date of the changes. Non-compliance with the O&M Manual shall be deemed a violation of the permit.

d. CTC, CTO Requirement. The Code of Virginia § 62.1-44.19; Sewage Collection and Treatment Regulations, 9VAC25-790 requires that all treatment works treating wastewater obtain a Certificate to Construct (CTC) prior to commencing construction and to obtain a Certificate to Operate (CTO) prior to commencing operation of the treatment works.

e. Licensed Operator Requirement. The Code of Virginia at §54.1-2300 et seq. and the VPDES Permit Regulation at 9VAC25-31-200.C., and by the Board for Waterworks and Wastewater Works Operators Licensing Regulations at 18VAC160-30 et seq., requires licensure of operators. This facility requires a Class II operator.

f. Reliability Class. The Sewage Collection and Treatment Regulations at 9VAC25-790 require sewage treatment works to achieve a certain level of reliability in order to protect water quality and public health consequences in the event of component or system failure. Reliability means a measure of the ability of the treatment works to perform its designated function without failure or interruption of service. The facility is required to meet a reliability Class of I.

g. Water Quality Criteria Reopener. The VPDES Permit Regulation at 9VAC25-31-220.D. requires establishment of effluent limitations to ensure attainment/maintenance of receiving stream water quality criteria. Should effluent monitoring indicate the need for any water quality-based limitations, this permit may be modified or alternatively revoked and reissued to incorporate appropriate limitations.

h. Sludge Reopener. The VPDES Permit Regulation at 9VAC25-31-220.C. requires all permits issued to treatment works treating domestic sewage (including sludge-only facilities) include a reopener clause allowing incorporation of any applicable standard for sewage sludge use or disposal promulgated under Section 405(d) of the CWA. The facility includes a sewage treatment works.

i. Sludge Use and Disposal. The VPDES Permit Regulation at 9VAC25-31-100.P; 220.B.2, and 420 through 720 and 40 CFR Part 503 require all treatment works treating domestic sewage to submit information on their sludge use and disposal practices and to meet specified standards for sludge use and disposal. The facility includes a treatment works treating domestic sewage.

j. Treatment Works Closure Plan. This condition establishes the requirement to submit a closure plan for the treatment works if the treatment facility is being replaced or is expected to close. This 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 maintained. Section §62.1-44.21 requires every owner to furnish when requested plans, specification and other pertinent information as may be necessary to determine the effect of the wastes from his 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.

k. E3/E4. 9VAC25-40-70.B. authorizes DEQ to approve an alternate compliance method to the technology-based effluent concentration limitations as required by subsection A of this section. Such alternate compliance method shall be incorporated into the permit of an Exemplary Environmental Enterprise (E3) facility or an Extraordinary Environmental Enterprise (E4) facility to allow the suspension of applicable technology-based effluent concentration limitations during the period the E3 or E4 facility has a fully implemented environmental management system that includes operation of installed nutrient removal technologies at the treatment efficiency levels for which they were designed.

l. Nutrient Reopener. 9VAC25-40-70.A. authorizes DEQ to include technology-based annual concentration limits in the permits of facilities that have installed nutrient control equipment, whether by new construction, expansion or upgrade. 9VAC25-31-390.A. authorizes DEQ to modify VPDES permits to promulgate amended water quality standards.

m. Polychlorinated biphenyl (PCB) Pollutant Minimization Plan. This special condition requires the permittee, upon notification from DEQ-NRO, to submit a Pollutant Minimization Plan (PMP) to identify known and unknown sources of low-level PCBs in the effluent. Sampling events during the previous permit term indicated that concentrations were noted above the assigned Potomac River TMDL wasteload allocations. Therefore, this special condition details the contents of the PMP and also requires an annual report on progress to identify sources.

n. Permit Maintenance Fees. Fees for Permits and Certificates at 9VAC25-20-60.A.4 requires the payment of permit maintenance fee(s) by October 1 of each calendar year. Permits will not be reissued or administratively continued without payment of the required fee(s).

o. Total Maximum Daily Load (TMDL) Reopener. 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.

22. Permit Section Part II.

Required by VPDES Regulation 9VAC25-31-190, Part II of the permit contains standard conditions that appear in all VPDES Permits. In general, these standard conditions address the responsibilities of the permittee, reporting requirements, testing procedures and records retention.

23. Changes to the Permit from the Previously Issued Permit:

a. Special Conditions:

- Water Quality Criteria Monitoring was removed with this reissuance as the permittee completed Attachment A sampling requirements during the previous permit term.
- Water Quality Criteria Reopener was included with this reissuance; reflecting current agency practice.
- Treatment Closure Plan requirement was included with this reissuance; reflecting current agency practice.
- Permit Maintenance Fees condition was included based on current agency practice.

b. Monitoring and Effluent Limitations:

- Changed the monitoring frequency for TKN, nitrate+nitrite, TN and TP from 1/2W to 2D/W to match the nutrient General Permit, 9VAC25-820.
- Fecal coliform monitoring/limitation was removed with this reissuance as the facility demonstrated that the disinfection method in place is sufficient and that the subsequent enterococci limitation is a good indicator that ensures shellfish consumption is protected.
- Monitoring for dieldrin was included with this reissuance at a frequency of 1/Q for the first two years of this permit cycle.
- Influent monitoring, reporting and calculating removal rates for BOD_5 and TSS was included with this reissuance per agency guidance and shall be conducted at a semi-annual interval.

c. Other:

- The outfall rivermile, drainage area and latitude/longitude were updated with this reissuance.

24. Variances/Alternate Limits or Conditions:

The sample type as proposed in this reissuance, as was the case during the previous term, is a 24-hour composite in lieu of the 8-hour composite as recommended in the current VPDES Permit Manual based on the design flow of the facility. This deviation was requested by the permittee during the drafting of the previous permit and will be carried forward with this permitting action.

25. Public Notice Information:

First Public Notice Date: 7 July 2022 Second Public Notice Date: 14 July 2022

Public Notice Information is required by 9VAC25-31-290. All pertinent information is on file and may be inspected and copied by contacting the: DEQ Northern Regional Office; 13901 Crown Court; Woodbridge, VA 22193; Telephone No. 571-866-6522, Douglas.Frasier@deq.virginia.gov. See **Attachment 18** for a copy of the public notice document.

Persons may comment in writing or by email 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 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 request an electronic copy of the draft permit and fact sheet or review the draft permit and application at the DEQ Northern Regional Office by appointment.

26. Additional Comments:

Previous Board Action(s):	Facility was referred to enforcement on 18 September 2018 due to instances of hydraulic overloading/loss of solids at the plant caused by I&I issues. Permittee entered a Letter of Agreement (LOA) in October 2019, setting forth corrective actives addressing the I&I issues. The LOA was closed in February 2021.
Staff Comments:	The permit was not reissued prior to the expiration date due to agency processing delays and delay of permittee to secure funding for the public notice and permission to complete payment to the newspaper for publication costs.
State/Federal Agency Comments:	VDH – Office of Drinking Water did not have any objections to this reissuance.
Public Comments:	TBD
Owner Comments:	Requested that the PMP Pollutant Minimization Plan submittal date be changed to one year of the effective date of the permit in lieu of 6 months. Staff had no objections to this request.

Fact Sheet Attachments

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Naval Support Facility Dahlgren Wastewater Treatment Plant
VA0021067
2022 Reissuance

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ATTACHMENT 1

Flow Frequency Determination / Stream Model

MALCOLM PIRNIE

MALCOLM PIRNIE, INC.
ENVIRONMENTAL ENGINEERS, SCIENTISTS & PLANNERS

August 19, 1994

Ms. Ann Swope
Dahlgren Division
Naval Surface Warfare Center
Dahlgren, Virginia 22448-5000

Re: NPDES Permit; Water Quality Modeling; Addendum to the September 1992 Report.

Dear Ms. Swope:

We have reviewed our files on the surface water quality modeling conducted to support the Dahlgren NSWC NPDES application. The following tasks have been conducted in response to your request to revise modeling results to simulate a 750,000 gallon per day (gpd) discharge:

- Re-calculated loading rates based on 750,000 gpd discharge
- Re-ran the Marina model using the new loading rates
- Re-evaluated Fecal Coliform and toxics distribution
- Re-evaluated Dissolved Oxygen Sag (DO Sag)
- Revised figures 3-1, 3-2, 3-3, and 3-4 in the September 1992 report

Loading Rates

The loading rates for fecal coliform (average and maximum reported values), a simulated conservative substance at 100μg/L, cyanide at a concentration of 20 μg/L, and biological oxygen demand (BOD) were recalculated using the new discharge rate of 750,000 gpd. The new loading rates are presented below:

Parameter	Previous Loading Rate	New Loading Rate
F.Coli Avg.- 59 MPN/100 ml	1.55×10^4 MPN/sec	1.94×10^4 MPN/sec
F.Coli Max - 310 MPN/100 ml	8.15×10^4 MPN/sec	1.02×10^5 MPN/sec
Conservative Substance at 100 μg/L	2.63×10^3 μg/sec	3.29×10^3 μg/sec
Cyanide at 20 μg/L	5.26 x 10 5 ηg/sec	6.57 x 10 5 ηg/sec
Biological Oxygen Demand	234 lb/day	291 lb/day

11832 ROCK LANDING DRIVE SUITE 400 NEWPORT NEWS, VA 23606-4206 804-873-8700 FAX 8(

Attachment 1

Marina Model

The new loading rates presented in the above table were used as input to the Marina model used previously. All other model variables (Average channel depth, dispersion, river velocity, channel width, and the parameter respective decay constants) remained unchanged. The resulting model output diagrams are enclosed.

Re-evaluation of Water Quality Modeling Results

Fecal Coliform

Results of the Fecal Coliform model run indicated only slight increases in the distance of the outfall plume. Figure 3-1 (revised) shows the new contour line for 4 MPN/100 ml, based on the average fecal coliform concentration of 59 MPN/100 ml. As with the previous model run from the September 1992 document, at a distance of 1 meter from the outfall the fecal coliform concentration is below the Virginia Department of Health limit of 14 MPN/100 ml. Figure 3-2 (revised) shows the new predicted position of the 14 MPN/100 ml limit for the reported maximum fecal coliform outfall concentration of 310 MPN/100 ml. This distribution indicates that at a distance of 25 meters perpendicular to the STP outfall, the concentration of fecal coliform drops below the VDH limit and that approximately 25 meters upstream and 75 meters downstream of the outfall the fecal coliform concentration falls below the VDH limit. In both cases, the predicted fecal coliform concentrations above the VDH limit would not increase the existing closed shellfish areas; therefore, its is not expected that any existing harvesting areas would be impacted.

Toxics

Figure 3-3 (revised) shows the distribution contours representing percent dilution of a conservative substance. At approximately 10 meters perpendicular to the STP outfall, the concentration is reduced by 90 percent. Upstream 90 percent reduction occurs at approximately 9 meters while downstream 90 percent reduction occurs at approximately 16 meters.

Cyanide distribution contour is shown in Figure 3-4 (revised). The contour line represents the 1.0 μg/L marine acute criterion for surface water set by the EPA. The graphic shows that the allocated impact zone based on this limit extends perpendicular from the outfall a distance of approximately 25 meters. The upstream extent is approximately 27 meters, while the downstream extent of the 1.0 μg/L contour is approximately 100 meters.

BOD

As in the previous study the new BOD loading rate remained relatively small. The calculated DO deficit based on the new BOD loading rate is still negligible. The DO deficit was calculated to be 9.82×10^{-4} mg/L.

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If you have any questions or should need further assistance please do not hesitate to call me.

Very truly yours,

MALCOLM PIRNIE, INC.

Bruce W. Schwenneker, Ph.D.
Senior Associate

djk
1613-201-100

Enclosures

DKL819.BWS

RECYCLED PAPER

RESULTS FOR USER DESIGNATED EXAMPLE fc310.dat

Fecal Coliform Distribution @ a Concentration of 310 MPN/100ml

INPUT IN MKS UNITS:

M	H	DX	DY	U	B	KD
-	-	--	--	-	-	--
0.102E+06	0.200E+01	0.210E+00	0.700E-01	0.400E-02	0.100E+04	0.100E-04

*** CONCENTRATION IN ORGANISMS PER 100 ML ***

EVALUATION IS FROM -5 TO 5

VALUES OF Y/B (COLUMNS) & X/B (ROWS):

	0.000	0.005	0.010	0.015	0.020	0.025	0.030	0.035	0.040	0.045	0.050	0.055	0.060	0.065	0.070	0.075	0.080	0.085	0.090	0.
			10m								50m									
-0.100	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	
-0.095	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	
-0.090	2	2	2	2	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	
-0.085	2	2	2	2	2	2	1	1	1	1	1	1	1	1	0	0	0	0	0	
-0.080	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1	0	0	0	0	
-0.075	3	3	3	3	2	2	2	2	2	1	1	1	1	1	1	1	0	0	0	
-0.070	3	3	3	3	3	3	2	2	2	2	1	1	1	1	1	1	0	0	0	
-0.065	4	4	4	3	3	3	3	2	2	2	2	1	1	1	1	1	1	0	0	
-0.060	4	4	4	4	4	3	3	3	2	2	2	2	1	1	1	1	1	1	0	
-0.055	5	5	5	5	4	4	3	3	3	2	2	2	1	1	1	1	1	1	0	
-0.050	6	6	6	5	5	4	4	3	3	3	2	2	2	1	1	1	1	1	1	
-0.045	7	7	7	6	6	5	4	4	3	3	2	2	2	2	1	1	1	1	1	
-0.040	8	8	8	7	6	6	5	4	4	3	3	2	2	2	1	1	1	1	1	
-0.035	10	10	9	8	7	6	5	5	4	4	3	3	2	2	2	1	1	1	1	
-0.030	12	11	11	9	8	7	6	5	4	4	3	3	2	2	2	1	1	1	1	
-0.025	14	14	12	11	9	8	7	6	5	4	4	3	3	2	2	2	1	1	1	
-0.020	17	16	14	12	10	9	7	6	5	5	4	3	3	2	2	2	1	1	1	
-0.015	21	20	17	14	11	10	8	7	6	5	4	4	3	3	2	2	2	1	1	
-0.010	27	24	19	15	12	10	9	7	6	5	4	4	3	3	2	2	2	1	1	
-0.005	37	28	21	17	13	11	9	8	7	6	5	4	3	3	3	2	2	2	1	
0.000	9999	32	23	18	14	12	10	8	7	6	5	4	4	3	3	2	2	2	1	
0.005	41	31	23	18	15	12	10	9	7	6	5	4	4	3	3	2	2	2	1	
0.010	33	29	23	19	15	13	11	9	8	6	5	5	4	3	3	3	2	2	2	
0.015	28	26	22	18	15	13	11	9	8	7	6	5	4	4	3	3	2	2	2	
0.020	25	24	21	18	15	13	11	9	8	7	6	5	4	4	3	3	2	2	2	
0.025	23	22	20	18	15	13	11	10	8	7	6	5	5	4	3	3	2	2	2	
0.030	21	21	19	17	15	13	11	10	8	7	6	5	5	4	3	3	3	2	2	
0.035	20	19	18	16	15	13	11	10	8	7	6	6	5	4	4	3	3	2	2	
0.040	19	18	17	16	14	13	11	10	8	7	6	6	5	4	4	3	3	2	2	
0.045	18	17	16	15	14	12	11	10	9	7	7	6	5	4	4	3	3	2	2	
0.050	17	16	16	15	13	12	11	10	9	8	7	6	5	4	4	3	3	3	2	
0.055	16	16	15	14	13	12	11	10	8	8	7	6	5	5	4	3	3	3	2	
0.060	15	15	14	14	13	12	10	9	8	8	7	6	5	5	4	4	3	3	2	
0.065	14	14	14	13	12	11	10	9	8	7	7	6	5	5	4	4	3	3	2	
0.070	14	14	13	13	12	11	10	9	8	7	7	6	5	5	4	4	3	3	2	
0.075	13	13	13	12	11	11	10	9	8	7	7	6	5	5	4	4	3	3	2	
0.080	13	13	12	12	11	10	10	9	8	7	7	6	5	5	4	4	3	3	3	
0.085	12	12	12	11	11	10	9	9	8	7	7	6	5	5	4	4	3	3	3	
0.090	12	12	11	11	11	10	9	9	8	7	7	6	5	5	4	4	3	3	3	
0.095	11	11	11	11	10	10	9	8	8	7	6	6	5	5	4	4	3	3	3	
0.100	11	11	11	10	10	9	9	8	8	7	6	6	5	5	4	4	3	3	3	

Conservative substance distrib ion @ 100 µg/L.
Note: Output values are interpreted as percent dilution – a value of 23 = 2.3% of original concentration
23/10 = 2.3%

RESULTS FOR USER DESIGNATED EXAMPLE consvtv.dat

INPUT IN MKS UNITS:

M	H	DX	DY	U	B	KD
0.329E+06	0.200E+01	0.210E+00	0.700E-01	0.400E-02	0.100E+04	0.100E-19

*** CONCENTRATION IN ORGANISMS PER 100 ML ***

EVALUATION IS FROM -5 TO 5

VALUES OF Y/B (COLUMNS) & X/B (ROWS):

	0.000	0.005	0.010	0.015	0.020	0.025	0.030	0.035	0.040	0.045	0.050	0.055	0.060	0.065	0.070	0.075	0.080	0.085	0.090	0.09
						25m							60m							
-0.050	25	25	24	23	21	19	18	16	14	13	12	10	9	8	7	7	6	5	5	
-0.047	27	27	26	24	22	20	19	17	15	13	12	11	10	9	8	7	6	6	5	
-0.045	29	29	28	26	24	22	19	18	16	14	13	11	10	9	8	7	6	6	5	
-0.043	31	31	29	27	25	23	20	18	16	15	13	12	10	9	8	7	7	6	5	
-0.040 40m	34	33	31	29	27	24	22	19	17	15	14	12	11	10	9	8	7	6	6	
-0.038	36	36	34	31	28	25	23	20	18	16	14	13	11	10	9	8	7	6	6	
-0.035	39	38	36	33	30	27	24	21	19	17	15	13	12	10	9	8	7	7	6	
-0.033	42	41	39	35	31	28	25	22	20	17	15	14	12	11	10	9	8	7	6	
-0.030	45	44	41	37	33	29	26	23	20	18	16	14	13	11	10	9	8	7	6	
-0.028	49	48	44	40	35	31	27	24	21	19	17	15	13	12	10	9	8	7	7	
-0.025	54	52	47	42	37	32	28	25	22	19	17	15	13	12	11	9	8	8	7	
-0.023	58	56	51	45	39	34	30	26	23	20	18	16	14	12	11	10	9	8	7	
-0.020	64	61	54	47	41	35	31	27	24	21	18	16	14	13	11	10	9	8	7	
-0.018	70	66	58	50	43	37	32	28	24	21	19	17	15	13	12	10	9	8	7	
-0.015	77	72	62	53	45	38	33	29	25	22	20	17	15	14	12	11	10	9	8	
-0.013	86	79	66	55	47	40	34	30	26	23	20	18	16	14	12	11	10	9	8	
-0.010	97	86	70	58	49	41	36	31	27	24	21	18	16	14	13	11	10	9	8	
-0.008	110	94	74	60	50	43	37	32	28	24	21	19	17	15	13	12	10	9	8	
-0.005	130	101	78	63	52	44	38	33	28	25	22	19	17	15	13	12	11	9	8	
-0.003	162	108	81	65	54	45	39	34	29	26	22	20	18	16	14	12	11	10	9	
0.000	9999	113	83	66	55	46	40	34	30	26	23	20	18	16	14	13	11	10	9	
0.002	170	114	85	68	56	48	41	35	31	27	24	21	18	16	14	13	11	10	9	
0.005	143	112	86	69	57	49	42	36	31	27	24	21	19	17	15	13	12	10	9	
0.007	128	108	86	70	58	49	42	37	32	28	25	22	19	17	15	14	12	11	10	
0.010 10m	117	104	85	70	59	50	43	37	33	29	25	22	20	17	16	14	12	11	10	
0.012	109	100	84	70	59	51	44	38	33	29	26	23	20	18	16	14	13	11	10	
0.015	103	96	83	70	60	51	44	39	34	30	26	23	20	18	16	14	13	11	10	
0.017	98	92	81	70	60	52	45	39	34	30	27	24	21	19	17	15	13	12	10	
0.020	94	89	80	69	60	52	45	40	35	31	27	24	21	19	17	15	13	12	11	1
0.022	90	86	78	69	60	52	46	40	35	31	27	24	22	19	17	15	14	12	11	1
0.025	86	84	76	68	60	52	46	40	36	31	28	25	22	20	17	16	14	12	11	1
0.027	84	81	75	67	60	52	46	41	36	32	28	25	22	20	18	16	14	13	11	1
0.030 30m	81	79	73	66	59	52	46	41	36	32	29	25	23	20	18	16	14	13	12	1
0.032	79	77	72	66	59	52	47	41	37	33	29	26	23	21	18	16	15	13	12	1
0.035	76	75	71	65	58	52	47	41	37	33	29	26	23	21	19	17	15	13	12	1
0.037	74	73	69	64	58	52	47	42	37	33	30	26	24	21	19	17	15	14	12	1
0.040	73	71	68	63	58	52	47	42	37	33	30	27	24	21	19	17	15	14	12	1
0.042	71	70	67	62	57	52	47	42	38	34	30	27	24	22	19	17	16	14	13	1
0.045	69	68	66	61	57	52	47	42	38	34	30	27	24	22	20	18	16	14	13	1
0.047	68	67	64	61	56	51	47	42	38	34	31	28	25	22	20	18	16	15	13	1
0.050	67	66	63	60	55	51	46	42	38	34	31	28	25	22	20	18	16	15	13	1

RESULTS FOR USER DESIGNATED EXAMPLE a:\rerun\cn.

INPUT IN MKS UNITS:

Cyanide distribution at a Concentration of 20µg/L

M	H	DX	DY	U	B	KD
0.657E+06	0.200E+01	0.210E+00	0.700E-01	0.400E-02	0.100E+04	0.100E-08

*** CONCENTRATION IN ORGANISMS PER 100 ML ***

EVALUATION IS FROM -5 TO 5

VALUES OF Y/B (COLUMNS) & X/B (ROWS):

	0.000	0.005	0.010	0.015	0.020	0.025	0.030	0.035	0.040	0.045	0.050	0.055	0.060	0.065	0.070	0.075	0.080	0.085	0.090	0.09
			10m			25m					50m					75m				
-0.100	15	14	14	14	13	13	12	11	11	10	9	9	8	7	7	6	6	5	5	
-0.093	17	17	17	17	16	15	14	13	13	12	11	10	9	8	8	7	6	6	5	
-0.085	21	21	20	20	19	18	17	16	15	14	12	11	10	10	9	8	7	7	6	
-0.078	25	25	24	24	23	21	20	19	17	16	14	13	12	11	10	9	8	7	7	
-0.070	30	30	29	28	27	25	23	22	20	18	17	15	14	12	11	10	9	8	8	
-0.062	37	36	35	34	32	30	27	25	23	21	19	17	16	14	13	12	10	9	9	
-0.055	45	44	43	41	38	35	32	29	27	24	22	20	18	16	14	13	12	10	9	
-0.047	55	54	52	49	45	41	37	34	31	27	25	22	20	18	16	14	13	12	10	
-0.040	68	67	63	59	54	48	43	39	35	31	28	25	22	20	18	16	14	13	12	1
-0.032	85	83	77	71	63	56	50	44	39	35	31	28	25	22	20	18	16	14	13	1
-0.025	107	104	95	84	74	65	57	50	44	39	35	31	27	24	22	19	17	16	14	1
-0.017	140	133	116	100	86	74	64	56	49	43	38	34	30	27	24	21	19	17	15	1
-0.010	194	172	141	116	97	83	71	62	54	47	42	37	33	29	26	23	21	18	17	1
-0.002	324	217	162	130	108	91	78	67	59	52	45	40	35	31	28	25	22	20	18	1
0.005	286	223	171	138	115	97	84	72	63	55	49	43	38	34	30	27	24	21	19	1
0.013	219	200	168	141	119	102	88	76	67	59	52	46	41	36	32	29	26	23	21	1
0.020	187	179	160	139	120	104	91	80	70	62	54	48	43	38	34	30	27	24	22	2
0.028	167	162	150	135	119	105	93	82	72	64	57	51	45	40	36	32	29	26	23	2
0.035	153	150	141	130	117	105	94	83	74	66	59	53	47	42	38	34	30	27	25	2
0.043	142	140	134	125	114	104	94	84	76	68	61	54	49	44	39	35	32	29	26	2
0.050	133	132	127	120	111	102	93	84	76	69	62	56	50	45	41	37	33	30	27	2
0.058	126	125	121	115	108	100	92	84	77	70	63	57	52	47	42	38	34	31	28	2
0.065	120	119	116	111	105	98	91	84	77	70	64	58	53	48	43	39	36	32	29	2
0.073	115	114	111	107	102	96	90	83	77	71	65	59	54	49	45	40	37	33	30	2
0.080	110	109	107	104	99	94	88	82	76	71	65	60	55	50	46	41	38	34	31	2
0.088	106	106	104	101	97	92	87	81	76	70	65	60	55	51	46	42	39	35	32	2
0.095	103	102	100	98	94	90	85	80	75	70	65	60	56	51	47	43	40	36	33	3
0.103	99	99	97	95	92	88	84	79	75	70	65	60	56	52	48	44	40	37	34	3
0.110	96	96	94	92	90	86	82	78	74	69	65	61	56	52	48	44	41	38	35	3
0.118	94	93	92	90	88	84	81	77	73	69	65	60	56	52	49	45	42	38	35	3
0.125	91	91	90	88	86	83	80	76	72	68	64	60	56	53	49	45	42	39	36	3
0.133	89	88	87	86	84	81	78	75	71	68	64	60	56	53	49	46	43	39	36	3
0.140	87	86	85	84	82	80	77	74	71	67	64	60	56	53	49	46	43	40	37	3
0.148	85	84	84	82	80	78	76	73	70	66	63	60	56	53	50	46	43	40	37	3
0.155	83	82	82	81	79	77	74	72	69	66	63	59	56	53	50	47	44	41	38	3
0.163	81	81	80	79	77	76	73	71	68	65	62	59	56	53	50	47	44	41	38	3
0.170	79	79	79	77	76	74	72	70	67	65	62	59	56	53	50	47	44	41	39	3
0.178	78	78	77	76	75	73	71	69	66	64	61	58	56	53	50	47	44	41	39	3
0.185	76	76	76	75	73	72	70	68	66	63	61	58	55	52	50	47	44	42	39	3
0.193	75	75	74	73	72	71	69	67	65	63	60	58	55	52	50	47	44	42	39	3
0.200	74	74	73	72	71	70	68	66	64	62	60	57	55	52	50	47	44	42	39	3

RESULTS FOR USER DESIGNATED EXAMPLE a:\rerun\fec

INPUT IN MKS UNITS:

Fecal Coliform Distribution at a concentration of 59 MPN/100mL

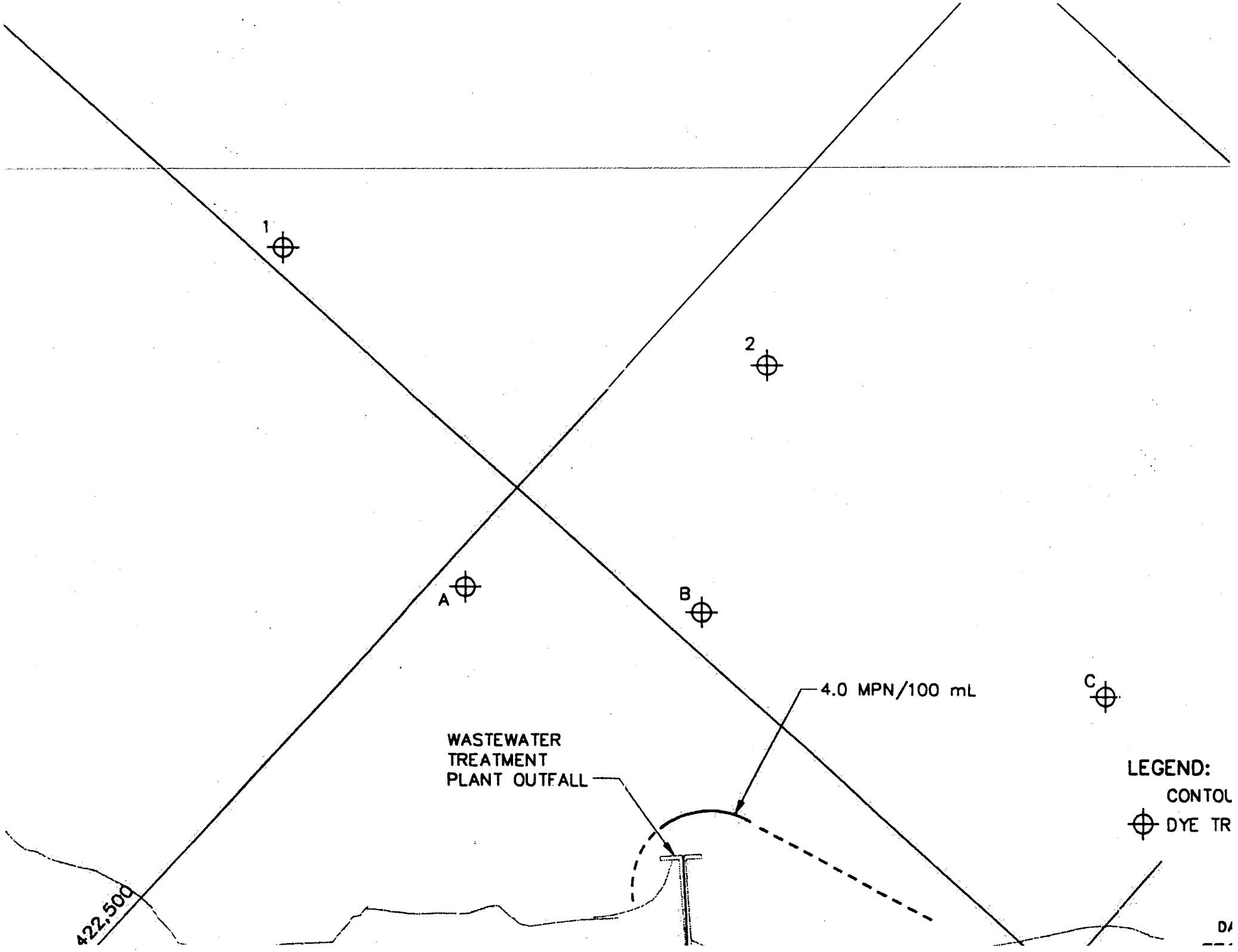
M	H	DX	DY	U	B	KD
-	-	--	--	-	-	--
0.194E+05	0.200E+01	0.210E+00	0.700E-01	0.400E-02	0.100E+04	0.100E-04

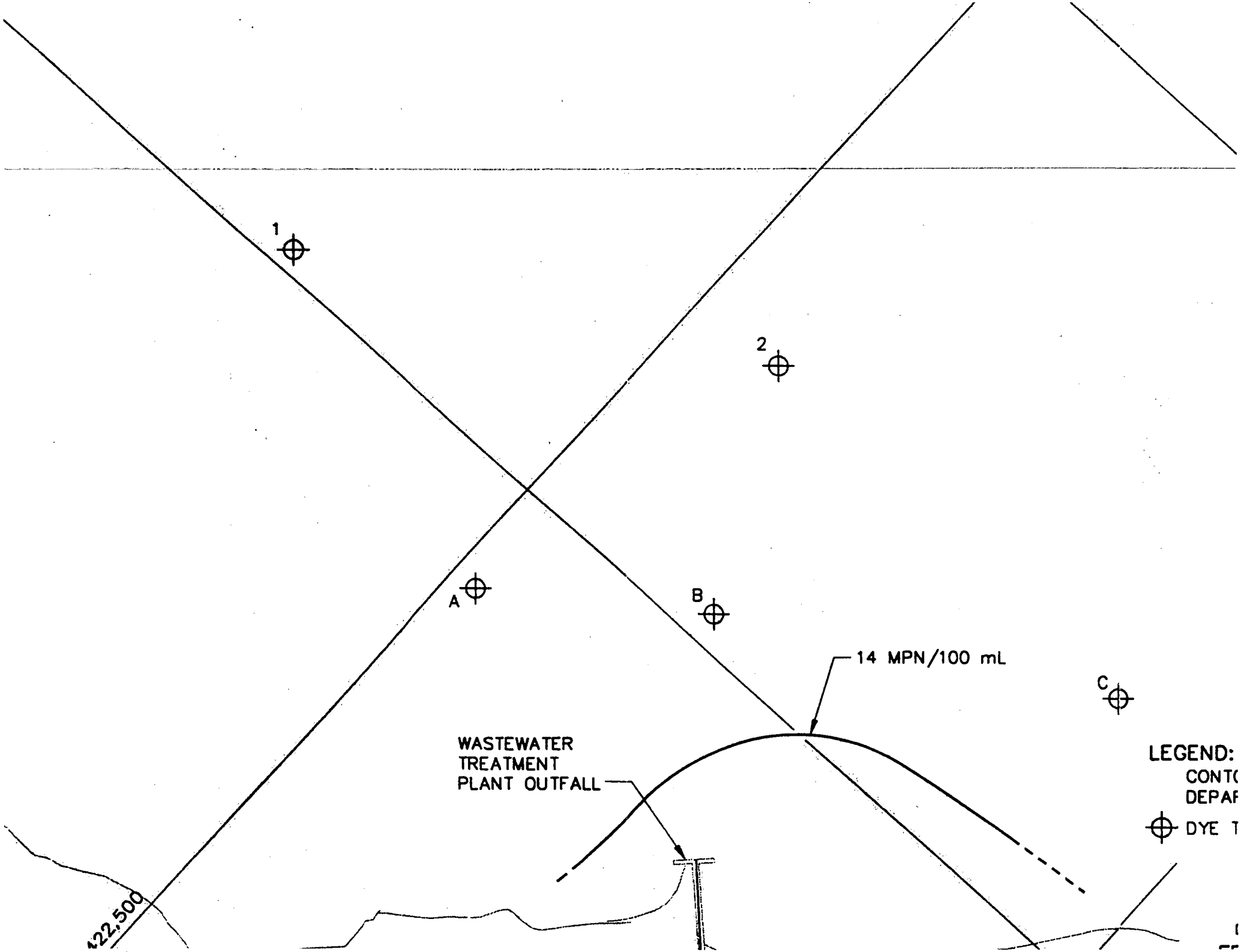
*** CONCENTRATION IN ORGANISMS PER 100 ML ***

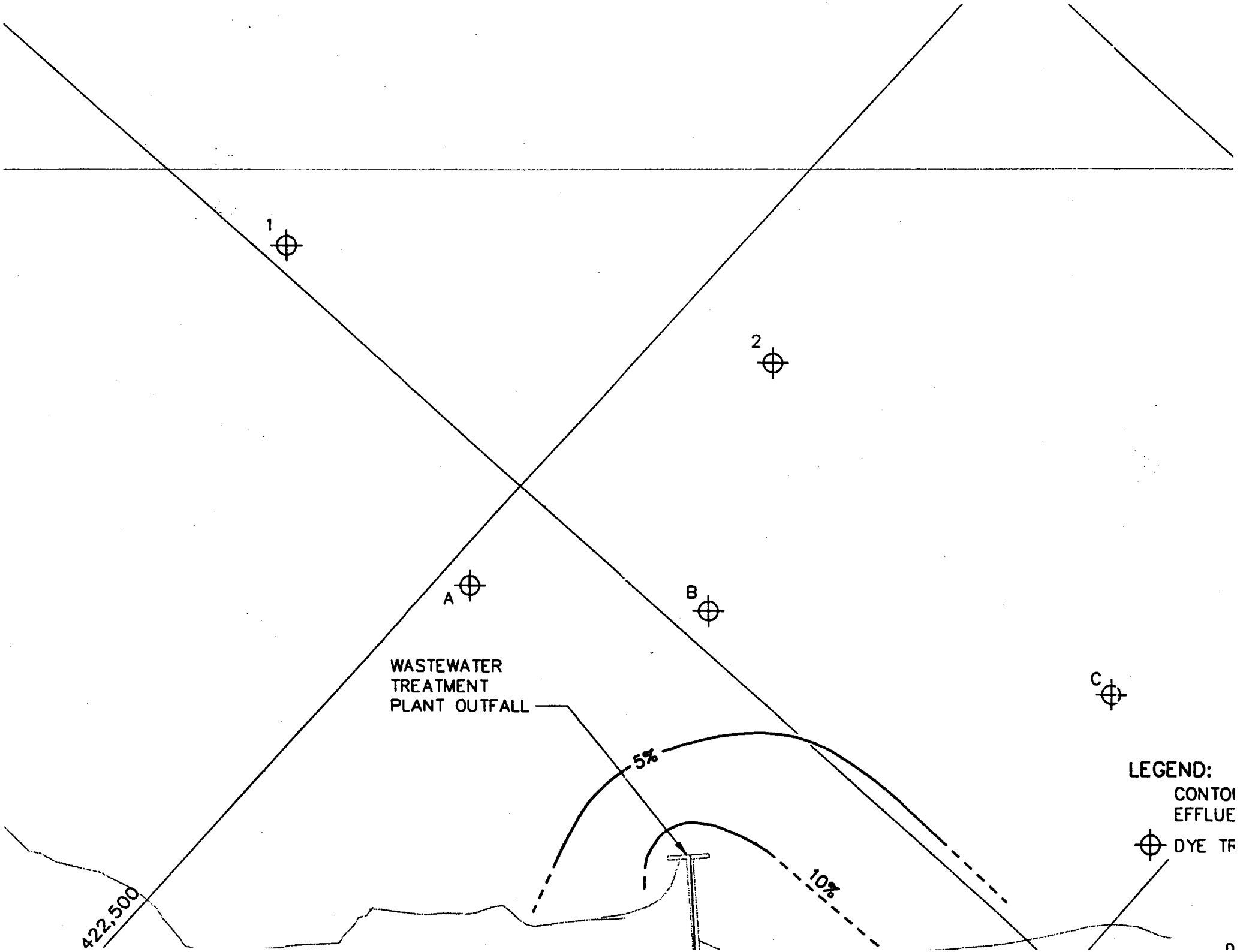
EVALUATION IS FROM -5 TO 5

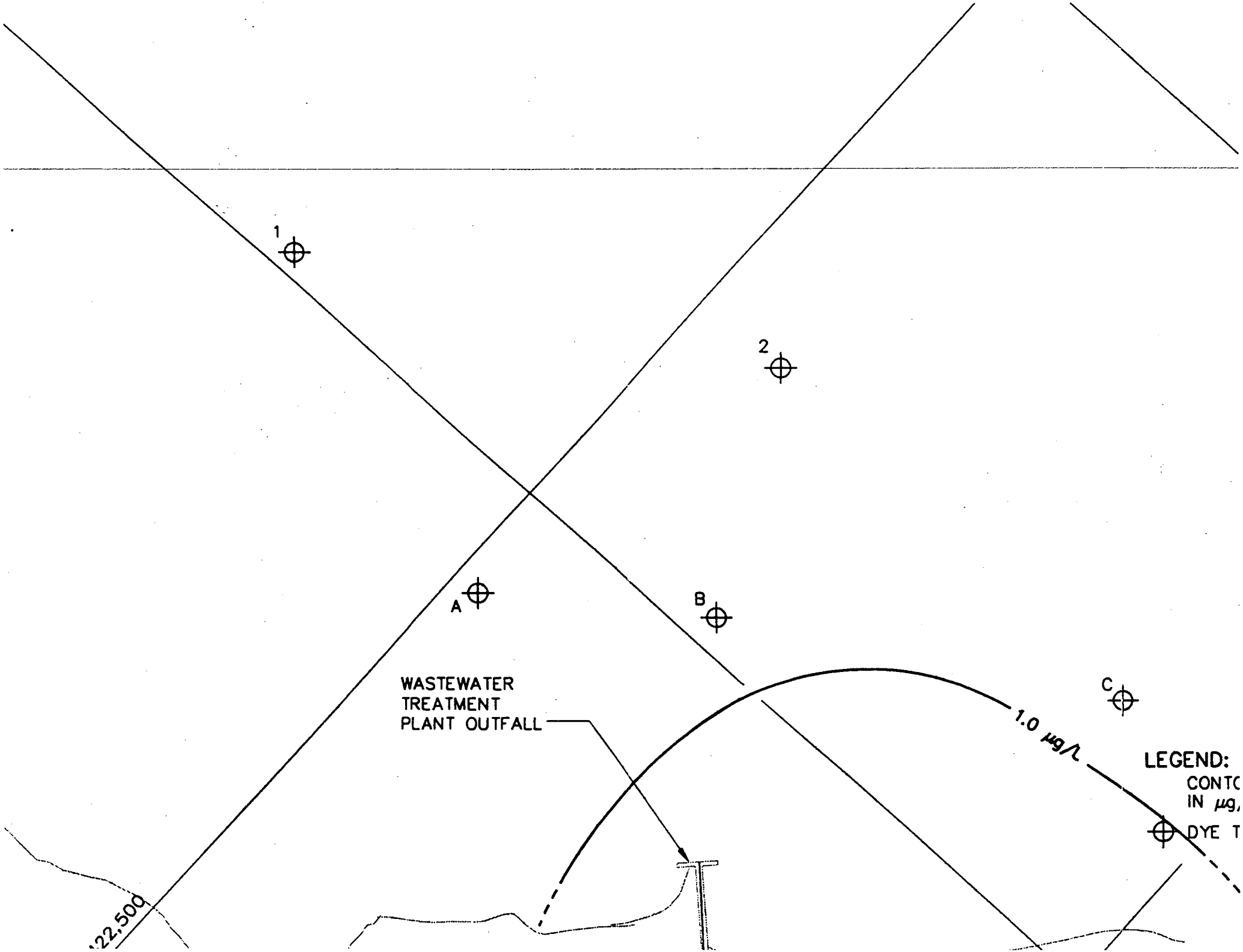
VALUES OF Y/B (COLUMNS) & X/B (ROWS):

	0.000	0.000	0.001	0.001	0.002	0.002	0.003	0.003	0.004	0.004	0.005	0.005	0.006	0.006	0.007	0.007	0.008	0.008	0.009	0.00
											5 MPN						8 MPN			
-0.010	5	5	5	5	5	5	4	4	4	4	4	4	4	4	4	4	4	3	3	
-0.009	5	5	5	5	5	5	5	5	4	4	4	4	4	4	4	4	4	4	3	
-0.009	5	5	5	5	5	5	5	5	5	4	4	4	4	4	4	4	4	4	3	
-0.008	5	5	5	5	5	5	5	5	5	4	4	4	4	4	4	4	4	4	4	
-0.008	5	5	5	5	5	5	5	5	5	5	4	4	4	4	4	4	4	4	4	
-0.007	6	6	5	5	5	5	5	5	5	5	5	4	4	4	4	4	4	4	4	
-0.007	6	6	6	6	5	5	5	5	5	5	5	5	4	4	4	4	4	4	4	
-0.007	6	6	6	6	6	6	5	5	5	5	5	5	4	4	4	4	4	4	4	
-0.006	6	6	6	6	6	6	6	5	5	5	5	5	5	4	4	4	4	4	4	
-0.005	6	6	6	6	6	6	6	5	5	5	5	5	5	4	4	4	4	4	4	
-0.005	7	7	7	6	6	6	6	6	5	5	5	5	5	5	4	4	4	4	4	
-0.005	7	7	7	7	6	6	6	6	5	5	5	5	5	5	4	4	4	4	4	
-0.004	7	7	7	7	7	6	6	6	6	5	5	5	5	5	4	4	4	4	4	
-0.004	8	8	7	7	7	7	6	6	6	5	5	5	5	5	5	4	4	4	4	
-0.003	8	8	8	7	7	7	6	6	6	6	5	5	5	5	5	4	4	4	4	
-0.003	9	8	8	8	7	7	6	6	6	6	5	5	5	5	5	4	4	4	4	
-0.002	9	9	8	8	7	7	7	6	6	6	5	5	5	5	5	4	4	4	4	
-0.002	10	10	9	8	8	7	7	6	6	6	6	5	5	5	5	5	4	4	4	
-0.001	11	10	9	8	8	7	7	6	6	6	6	5	5	5	5	5	4	4	4	
-0.001	13	11	10	9	8	7	7	6	6	6	6	5	5	5	5	5	4	4	4	
0.000	9999	11	10	9	8	7	7	7	6	6	6	5	5	5	5	5	4	4	4	
0.000	13	11	10	9	8	7	7	7	6	6	6	5	5	5	5	5	4	4	4	
0.001	11	11	9	9	8	7	7	7	6	6	6	5	5	5	5	5	5	4	4	
0.001	10	10	9	8	8	7	7	7	6	6	6	5	5	5	5	5	5	4	4	
0.002	10	9	9	8	8	7	7	7	6	6	6	5	5	5	5	5	5	4	4	
0.002	9	9	8	8	8	7	7	6	6	6	6	5	5	5	5	5	5	4	4	
0.003	9	8	8	8	7	7	7	6	6	6	6	5	5	5	5	5	5	4	4	
0.003	8	8	8	8	7	7	7	6	6	6	6	5	5	5	5	5	5	4	4	
0.004	8	8	8	7	7	7	7	6	6	6	6	5	5	5	5	5	5	4	4	
0.004	8	8	7	7	7	7	7	6	6	6	6	5	5	5	5	5	5	4	4	
0.005	7	7	7	7	7	7	6	6	6	6	6	5	5	5	5	5	5	4	4	
0.005	7	7	7	7	7	7	6	6	6	6	6	5	5	5	5	5	5	4	4	
0.006	7	7	7	7	7	6	6	6	6	6	5	5	5	5	5	5	5	4	4	
0.006	7	7	7	7	6	6	6	6	6	6	5	5	5	5	5	5	5	4	4	
0.007	7	7	7	6	6	6	6	6	6	6	5	5	5	5	5	5	5	4	4	
0.007	6	6	6	6	6	6	6	6	6	5	5	5	5	5	5	5	4	4	4	
0.008	6	6	6	6	6	6	6	6	6	5	5	5	5	5	5	5	4	4	4	
0.008	6	6	6	6	6	6	6	6	6	5	5	5	5	5	5	5	4	4	4	
0.009	6	6	6	6	6	6	6	6	5	5	5	5	5	5	5	5	4	4	4	
0.009	6	6	6	6	6	6	6	5	5	5	5	5	5	5	5	5	4	4	4	
0.010	6	6	6	6	6	6	6	5	5	5	5	5	5	5	5	5	4	4	4	


1
2
A
B
C
4.0 MPN/100 mL
WASTEWATER
TREATMENT
PLANT OUTFALL
LEGEND:
CONTOU
DYE TR
422,500

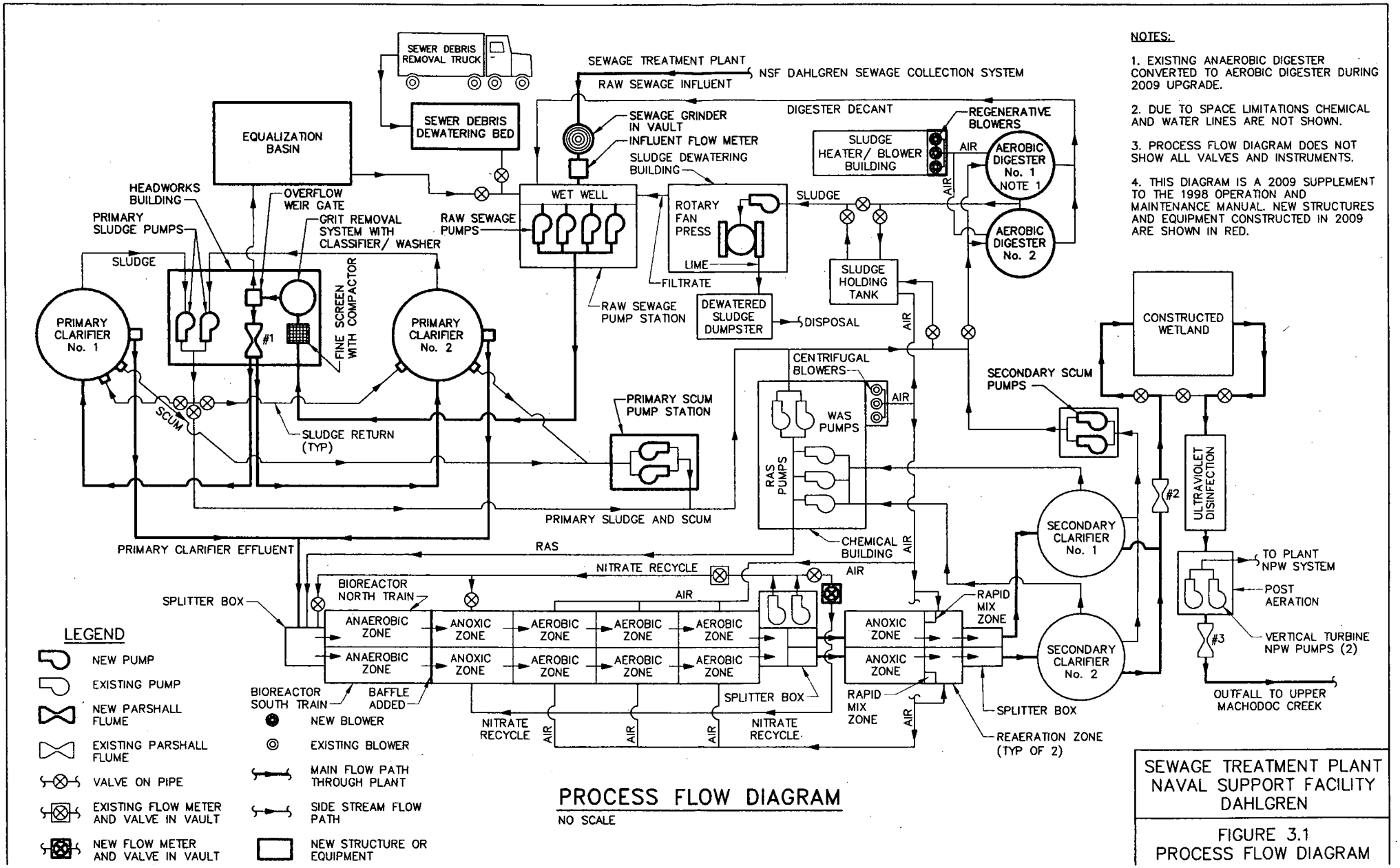

1
2
A
B
C
14 MPN/100 mL
WASTEWATER
TREATMENT
PLANT OUTFALL
LEGEND:
CONTO
DEPAR
DYE T
422,500


1
2
A
B
C
WASTEWATER
TREATMENT
PLANT OUTFALL
5%
10%
422,500
LEGEND:
CONTO
EFFLUE
DYE TR


1
2
A
B
C
WASTEWATER
TREATMENT
PLANT OUTFALL
1.0 µg/l
LEGEND:
CONTC
IN µg,
DYE T
22,500

ATTACHMENT 2

Facility Schematic / Diagram



NOTES:

1. EXISTING ANAEROBIC DIGESTER CONVERTED TO AEROBIC DIGESTER DURING 2009 UPGRADE.
2. DUE TO SPACE LIMITATIONS CHEMICAL AND WATER LINES ARE NOT SHOWN.
3. PROCESS FLOW DIAGRAM DOES NOT SHOW ALL VALVES AND INSTRUMENTS.
4. THIS DIAGRAM IS A 2009 SUPPLEMENT TO THE 1998 OPERATION AND MAINTENANCE MANUAL. NEW STRUCTURES AND EQUIPMENT CONSTRUCTED IN 2009 ARE SHOWN IN RED.

PROCESS FLOW DIAGRAM

NO SCALE

SEWAGE TREATMENT PLANT
NAVAL SUPPORT FACILITY
DAHLGREN

FIGURE 3.1
PROCESS FLOW DIAGRAM

ATTACHMENT 3

Topographic Map

DeLORME
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ATTACHMENT 4

Inspection Report

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY
NORTHERN REGIONAL OFFICE
13901 Crown Court, Woodbridge, Virginia 22193
(703) 583-3800
www.deq.virginia.gov

Matthew J. Strickler
Secretary of Natural Resources

David K. Paylor
Director

Thomas A. Faha
Regional Director

August 15, 2018

Jeffery Bossart
Director, Environmental Division
NAVFAC Washington, PWD South Potomac
18329 Thompson Road, Suite 226
Dahlgren, Virginia 22448-5110

Re: **Naval Support Facility Dahlgren WWTP - Permit # VA0021067**

Dear Mr. Bossart:

Attached is a copy of the Inspection Report generated while conducting a Facility Technical Inspection at the Naval Support Facility Dahlgren - Wastewater Treatment Plant (WWTP), on June 28, 2018. This letter is not intended as a case decision under the Virginia Administrative Process Act, Va. Code § 2.2-4000 et seq. (APA).

Please review the "Compliance Recommendations for Action" section and submit in writing, a narrative outlining how the facility plans to address these items, to the Department of Environmental Quality – Northern Regional Office (DEQ-NRO) by September 3, 2018. If you have any questions or comments concerning this report, please feel free to contact me at (703) 583-3854 or email at Rebecca.Johnson@deq.virginia.gov

Sincerely,

Rebecca L. Johnson

Rebecca Johnson
Environmental Specialist II

cc: Permits / DMR File; Compliance Manager; Compliance Auditor; Compliance Inspector
Joseph R. Trocchio – NSF Dahlgren, joseph.trocchio@navy.mil

DEQ
WASTEWATER FACILITY INSPECTION REPORT
PREFACE

VPDES/State Certification No.	(RE) Issuance Date	Amendment Date	Expiration Date
VA0021067	**April 1, 2016**		**March 31, 2021**

Facility Name	Address	Telephone Number
Naval Support Facility Dahlgren - WWTP	**18329 Thompson Road Dahlgren, VA 22448 - 5018**	**(540) 653-2341**
Owner Name	Address	Telephone Number
United States Department of the Navy	**NAVFAC Washington, PWD South Potomac 18329 Thompson Road Suite 226 Dahlgren, VA 22448**	**(540) 653-2341**
Responsible Official	Title	Telephone Number
Jeffery Bossart	**Director, Environmental Division**	**(540) 653-2341**
Responsible Operator	Operator Cert. Class/number	Telephone Number
Barry Randall	**Class 1 / 1965007995**	**540-653-1306**

TYPE OF FACILITY:

DOMESTIC				**INDUSTRIAL**			
Federal	**X**	Major		Major		Primary	
Non-federal		Minor	**X**	Minor		Secondary	

INFLUENT CHARACTERISTICS:	DESIGN:
Flow (MGD)	**0.720**
Population Served	**9,500**
Connections Served	**~900**

EFFLUENT LIMITS: **Outfall 001 (mg/L unless otherwise specified)**

Parameter	Min.	Avg.	Max.	Parameter	Min.	Avg.	Max.
Flow (MGD)	**NA**	**NL**	**NL**	**Fecal Coliform (n/100mL)**	**NA**	**14**	**NA**
pH (S.U.)	**6.5**	**NA**	**8.5**	**Enterococci (n/100mL)**	**NA**	**35**	**NA**
BOD5	**NA**	**30**	**45**	**TKN**	**NA**	**NL**	**NA**
TSS	**NA**	**30**	**45**	**NO2 + NO3**	**NA**	**NL**	**NA**
D.O.	**5.5**	**NA**	**NA**	**TN – Calendar Year**	**NA**	**7.0**	**NA**
Ammonia, as N	**NA**	**5.0**	**5.0**	**TP– Calendar Year**	**NA**	**2.0**	**NA**

Receiving Stream	**Upper Machodoc Creek**
Basin	**Potomac River**
Discharge Point (LONG)	**77° 01’ 40”**
Discharge Point (LAT)	**38° 19’ 15”**

Virginia Department of Environmental Quality

WASTEWATER FACILITY INSPECTION REPORT PART I

FACILITY NAME:	Naval Support Facility Dahlgren Wastewater Treatment Plant	**INSPECTION DATE:**	June 28, 2018
		INSPECTOR:	Rebecca Johnson
PERMIT No.:	VA0021067	**REPORT DATE:**	August 15, 2018
TYPE OF FACILITY:	☑**Domestic:** ☐ Major ☑ Minor ☑ Federal ☐ Non-Federal	☐ **Industrial** ☐ Major ☐ Minor ☐ Primary ☐ Secondary	
TOTAL TIME SPENT:	22 Hours	**UNANNOUNCED INSPECTION?**	☐ Yes ☑ No
REVIEWED BY / DATE:	8/3/18		
PRESENT DURING INSPECTION:	**Robbie Harr – Utilities Supervisor, Barry Randall – Chief Operator, Dr. Thomas Wray – Natural Resource Manager, Adrian Mood – Wastewater Manager**		
TYPE OF INSPECTION:	☑ Routine ☐ Compliance/Assistance/Complaint ☐ Re-inspection		
DATE OF LAST INSPECTION:	**May 9, 2012**		
POPULATION SERVED:	9,500	**CONNECTIONS SERVED:**	~900

LAST MONTH GRAB:

Effluent:

Flow (MGD)	0.502	**Total Phosphorous**	0.68
pH (s.u.)	7.0 / 7.7	**Total Nitrogen**	0.6
BOD5	0.2/0.7	**Ammonia, as N**	0.06
TSS	0.9	**Enterococci (N/100mL)**	4.4
Fecal Coliform (N/100mL)	2.2	**NO2 + NO3**	0.2
Dissolved Oxygen	5.6		

1. Data Verified in Preface:	☐ Updated ☑ No change
• Has there been any new construction? **Aqua Disc was installed in late 2012.** • If so, were plans and specifications approved? DEQ Approval Date: **January 22, 2013**	☑ Yes ☐ No ☐ NA ☑ Yes ☐ No

WASTEWATER FACILITY INSPECTION REPORT PART I

Permit #	VA0021067

(A) PLANT OPERATION AND MAINTENANCE

1. Class and number of licensed operators: I: **1** II: **1** III: **3** IV: **2** Trainee:	
2. Hours per day plant is manned: **2 operators onsite during the week, 1 person** onsite **during the weekend.**	**16 hr/d** **7 days/w**
3. Describe adequacy of staffing.	☑ Good ☐ Average ☐ Poor
4. Is there an established and adequate program for training personnel? Comments:	☑ Yes ☐ No ☐ NA
5. Are preventive maintenance task schedules being met? Comments: **The preventative maintenance tasks are maintained in a computer system called Maximo. All tickets/ repairs are located in this system. Tickets will appear on the schedule of maintenance.**	☑ Yes ☐ No ☐ NA
6. Describe the adequacy of the training program. Comments:	☑ Good ☐ Average ☐ Poor
7. Does the plant experience any organic or hydraulic overloading? Comments:	☑ Yes ☐ No ☐ NA
8. Has there been any bypassing or overflows since the last inspection? Comments: **May 19, 2018, due to I&I.**	☑ Yes ☐ No ☐ NA
9. Is the standby generator (including power transfer switch) operational and exercised regularly? Comments: **The generator is maintained by the NAVFAC high voltage generation shop. The generator is exercised weekly at full capacity.**	☑ Yes ☐ No ☐ NA
10. Is the plant alarm system operational and tested regularly? Comments: **There is a direct digital control system. The monitoring station used to be at the plant, now it is located at the utility building and it is online. NAVFAC planning on building a SCADA system. There are panels with audio/visual alarms.**	☑ Yes ☐ No ☐ NA
11. How often is the: a. Standby generator exercised? b. Power Transfer Switch? c. Alarm System?	a. **Weekly at full load** b. **Same as generator** c. **Weekly but not documenting**
12. When was the cross connection control device last tested on the potable water service? **In an e-mail exchange on August 8, 2018, between Mr. Mood and DEQ staff, the cross connection device was last tested in July 2018.**	☑ Yes ☐ No ☐ NA
13. Is sludge disposed of in accordance with the approved sludge management plan? Comments:	☑ Yes ☐ No ☐ NA
14. Is septage received? If so, is septage loading controlled, and are appropriate records maintained? Comments:	☐ Yes ☑ No ☐ NA ☐ Yes ☐ No ☑ NA
Overall Appearance of Plan	☑ **Good** ☐ **Average** ☐ **Poor**

(B) PLANT RECORDS

1. Which of the following records does the plant maintain? a. Operational Logs for each unit process b. Instrument maintenance and calibration c. Mechanical equipment maintenance d. Industrial waste contribution (Municipal Facilities)	a. ☑ Yes ☐ No ☐ NA b. ☑ Yes ☐ No ☐ NA c. ☑ Yes ☐ No ☐ NA d. ☑ Yes ☐ No ☐ NA
2. What does the operational log contain? ☑ Visual observations ☑ Flow measurement ☑ Laboratory results	

WASTEWATER FACILITY INSPECTION REPORT PART I

Permit #	VA0021067

☑ Process adjustments ☑ Control calculations ☐ Other (specify)
Comments:

3. What do the mechanical equipment records contain? ☑ As built plans and specs ☑ Spare parts inventory ☑ Manufacturer's instructions ☑ Equipment/parts suppliers ☑ Lubrication schedules ☐ Other (specify) Comments:	
4. What do the industrial waste contribution records contain (Municipal Only)? ☑ Waste Characteristics ☑ Locations and discharge types ☑ Impact on plant ☐ Other (specify) Comments:	
5. Which of the following records are kept at the plant and available to personnel? ☑ Equipment maintenance records ☑ Operational Log ☑ Industrial contributor records ☑ Instrumentation records ☑ Sampling and testing records Comments:	
6. Records not normally available to plant personnel and their location: **None**	
7. Were the records reviewed during the inspection?	☑ Yes ☐ No
8. Are the records adequate and the O & M Manual current? **Update O&M Manual**	☐ Yes ☑ No
9. Are the records maintained for the required 3-year time period?	☑ Yes ☐ No

(C) SAMPLING

1. Do sampling locations appear to be capable of providing representative samples? Comments:	☑ Yes ☐ No
2. Do sample types correspond to those required by the VPDES permit? Comments:	☑ Yes ☐ No
3. Do sampling frequencies correspond to those required by the VPDES permit? Comments:	☑ Yes ☐ No
4. Are composite samples collected in proportion to flow? Comments:	☑ Yes ☐ No ☐ NA
5. Are composite samples refrigerated during collection? Comments:	☑ Yes ☐ No ☐ NA
6. Does plant maintain required records of sampling? Comments:	☑ Yes ☐ No
7. Does plant run operational control tests? Comments: **pH, DO, MLSS, and Settleability**	☑ Yes ☐ No ☐ NA

WASTEWATER FACILITY INSPECTION REPORT PART I

Permit #	VA0021067

(D) TESTING

1. Who performs the testing?	☑ Plant ☐ Central Lab ☑ Commercial Lab	
Name: **See Laboratory Summary sheet for more details**		
If plant performs any testing, complete 2-4.		
2. What method is used for chlorine analysis? **N/A**		
3. Does plant appear to have sufficient equipment to perform required tests?	☑ Yes ☐ No	
4. Does testing equipment appear to be clean and/or operable?	☑ Yes ☐ No	
Comments: **Fredericktowne Environmental Testing Labs, Inc. in Meyersville Maryland is not a VELAP certified laboratory for wastewater sample analysis. See attached Laboratory Summary sheet for more details.**		

(E) FOR INDUSTRIAL FACILITIES WITH TECHNOLOGY BASED LIMITS ONLY

1. Is the production process as described in the permit application? (If no, describe changes in comments)?	☐ Yes ☐ No ☑ NA
2. Do products and production rates correspond as provided in the permit application? (If no, list differences in comments.)	☐ Yes ☐ No ☑ NA
3. Has the State been notified of the changes and their impact on plant effluent? Date:	☐ Yes ☐ No ☑ NA
Comments:	

Problems identified at last inspection:	**Corrected?**
1. The initial demonstration of capabilities for the dissolved oxygen documentation was not available.	☑ Yes ☐ No
2. The NIST certification documentation was not available.	☑ Yes ☐ No
3. The steps leading to the aerobic digestor were overgrown with plants.	☐ Yes ☑ No

SUMMARY:

On May 18, 2018 and lasting until May 20, 2018, the facility experienced a major inflow and infiltration event due to six or more inches of rain. Approximately 1.5 million gallons of partially treated sewage passed through the facility. The equalization basin and two primary clarifiers were filled to capacity as a result of this rain event, which equates to approximately 1 MG of storage capacity. The blowers in the aeration basins were turned off and the Aqua Disc was bypassed. There was pin floc loss however; the facility maintained compliance with the permitted effluent limitations during this event. The facility ran for 24 hours per day for nine days. See the corresponding response of the 5-day letter dated July 10, 2018 for this event for more details.

DEQ staff arrived onsite at 7:45 a.m. and met with the following Dahlgren Naval Base staff; Mr. Adrian Mood, Mr. Walter Legg, Mr. Robbie Harr, Mr. Barry Randall, and Dr. Thomas Wray. The purpose of this site visit was to conduct a scheduled technical and laboratory inspection.

Facility Tour:
Mr. Barry Randall, Chief Operator, gave DEQ staff a tour of the facility and following observations were made:

*Treatment Units not listed in this section denotes "No problems were observed".

Sewer Debris Dewatering Bed – This unit is located right outside the pump station building. The bed was in need of repair and maintenance. **Photo 4**
See Request for Corrective Actions

WASTEWATER FACILITY INSPECTION REPORT PART I

Permit #	VA0021067

Equalization Basin – There were cracks along the inside of this unit. **Photo 3**
See Request for Corrective Actions.

Biological Nutrient Removal - This treatment system uses swing zones to treat the mixed liquor suspended solids. Excessive aeration was observed in multiple zones which is indicative of damaged diffusers. The jet pumps were removed and floating mixers were installed between 2014 to now. **Photos 5 & 6**
See Request for Corrective Action.

Tertiary Treatment (Aqua Disc) - This system was placed online approximately 6 years ago. DEQ staff asked when the last time the discs were replaced. Operations staff said that they have not been replaced since they were placed online. DEQ asked what the life expectancy of the discs were and operations staff said they are 5 years. DEQ recommended replacing the disc filters as per manufacturer's recommendation. **See Request for Corrective Action**

Operations staff analyzed the final effluent dissolved oxygen (DO) and pH at 1200.

pH: 7.39 S.U. @ 24.6˚C
DO: 5.82 mg/L @ 24.7˚C

The automatic sampler temperature was 5.5˚C.
The laboratory refrigerator temperature was 3.0˚C.

DEQ staff departed at 1215.

REQUEST for CORRECTIVE ACTION:

1. As stated in Permit VA0021067, Part I. D. 3, Operation and Maintenance Manual Requirement. The permittee shall maintain a current Operations and Maintenance (O&M) Manual for the treatment works that is in accordance with the Virginia Pollutant Discharge Elimination System Regulations, 9VAC25-31 and the Sewage Collection and Treatment Regulations, 9VAC25-790."

   The O&M Manual was not up to date during the site inspection.

   Provide an updated O&M Manual to DEQ-NRO by September 3, 2018.

WASTEWATER FACILITY INSPECTION REPORT PART I

Permit #	VA0021067

2. As stated in Permit VA0021067, Part II, Q. Proper Operation and Maintenance, "The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes effective plant performance, adequate funding, adequate staffing, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by the permittee only when the operation is necessary to achieve compliance with the conditions of this permit."

   The following observation were made during the site inspection:

   - *The steps leading to the aerobic digestor were overgrown with vegetation;*
   - *The sewer debris dewatering bed was in need of repair and maintenance;*
   - *There were cracks along the inside of the EQ Basin;*
   - *There was excessive aeration in multiple zones of the BNR which is indicative of damaged air diffusers.*
   - *The filters in the Aqua disc treatment unit have not been replaced as per manufacturer's specifications. (once every five years)*
   - *The Hach in-line analyzer was not working properly.*

   Provide an explanation as to how the facility plans to address the issues noted above to DEQ-NRO by September 3, 2018.

NOTES and COMMENTS:

None.

UNIT PROCESS: Flow Measurement

☑ Influent ☐ Intermediate ☐ Effluent

1. Type measuring device: **Accuron 7210 ultrasonic sensor**

2. Present reading: **305.4 gpm**

3. Bypass channel: ☑ Yes ☐ No
   Metered: ☑ Yes ☐ No

4. Return flows discharged upstream from meter: ☐ Yes ☑ No
   Identify:

5. Device operating properly: ☑ Yes ☐ No *

6. Date of last calibration: **July 17, 2017**

7. Evidence of following problems:

   a. obstructions ☐ Yes* ☑ No
   b. grease ☐ Yes* ☑ No

8. General condition: ☑ Good ☐ Fair ☐ Poor

Comments:

3. When flows to the facility are above 500 gpm it is diverted and sent to the EQ basin and off-line primary clarifiers with a combined storage capacity of approximately 1 MG.

8. This unit is located between the raw sewage grinder and the Raw Sewage Pump Station.

UNIT PROCESS: Sewage Pumping

1. Name of station: **Raw Sewage Pump Station**

2. Location (if not at STP):

3. Following equipment operable:
   a. all pumps ☑ Yes ☐ No*
   b. ventilation ☑ Yes ☐ No*
   c. control system ☑ Yes ☐ No*
   d. sump pump ☐ Yes ☐ No*
   e. seal water system ☐ Yes ☐ No*

4. Reliability considerations:
   a. Class ☑ I ☐ II ☐ III
   b. Alarm system operable: ☑ Yes ☐ No*
   c. Alarm conditions monitored:
      1. high water level ☑ Yes ☐ No*
      2. high liquid level in dry well ☐ Yes ☐ No ☐ NA
      3. main electric power ☐ Yes ☐ No ☐ NA
      4. auxiliary electric power ☐ Yes ☐ No* ☐ NA
      5. failure of pump motors to start ☐ Yes ☐ No ☐ NA
      6. test function ☐ Yes ☐ No*
      7. other ☑ Yes ☐ No
         Low water level in the wet well

   d. Backup for alarm system operational: ☑ Yes ☐ No ☐ NA

   e. Alarm signal reported to (identify): **Audio/visual; also indicates alarm on the monitoring system (Maximo) in the control room and calls out.**

   f. Continuous operability provisions:
      ☑ generator ☑ two sources of power
      ☐ portable pump ☐ One day storage ☐ other

5. Does station have bypass: ☑ Yes* ☐ No
   a. evidence of bypass use ☐ Yes* ☑ No
   b. can bypass be disinfected ☐ Yes ☑ No
   c. can bypass be measured ☑ Yes ☐ No

6. How often is station checked? **Daily**

7. General condition: ☑ Good ☐ Fair ☐ Poor

Comments:

All four of the pumps are variable frequency drive pumps. There is one spare. The pumps are turned on based on flow coming through the facility. Each pump is rated for 1500 gpm, can't run below 250 gpm. They are all on a timer – a different one is running every 6 hours typically. Biocarb is added as a carbon source for the Biological Nutrient Removal Treatment system.

There is a sewer debris dewatering bed located right outside this pump station building. It is in need of maintenance and cleaning. Operations staff said they will overhaul this unit before the end of the summer. They are in the process of discussions with the King George County Landfill to try to obtain permission to take the debris from this unit there. ***See Request for Corrective Action.***

UNIT PROCESS: Screening/Comminution

1. Number of Units: **2** Manual: **1** Mechanical: **1**

   Number in operation: Manual: **0** Mechanical: **1**

2. Bypass channel provided: ☑ Yes ☐ No*
   Bypass channel in use: ☐ Yes ☑ No

3. Area adequately ventilated: ☑ Yes ☐ No *

4. Alarm system for equipment failure or overloads: ☑ Yes ☐ No *

5. Proper flow distribution between units: ☐ Yes ☐ No ☑ NA

6. How often are units checked and cleaned? **Screen is washed with non-potable water whenever it is operating; operators clean inside cabinet once per month.**

7. Cycle of operation: **Automatic; operates when headloss through the screen reaches a preset level.**

8. Volume of screenings removed: **Two times per year small roll around dumpster (two yard dumpster)**

9. General condition: ☑ Good ☐ Fair ☐ Poor

Comments:

UNIT PROCESS: Grit Removal

1. Number of units: **1** In operation: **1**

2. Unit adequately ventilated: ☑ Yes ☐ No *

3. Operation of grit collection equipment: ☐ Manual ☐ Time clock ☑ Continuous duty

4. Proper flow distribution between units: ☐ Yes ☐ No * ☑ NA

5. Daily volume of grit removed: **Same as screenings**

6. All equipment operable: ☑ Yes ☐ No *

7. General condition: ☑ Good ☐ Fair ☐ Poor

Comments:

1. **Grit vortex with classifier. Grit and rags end up in the sludge box and are hauled to the King George Landfill. There are two centrifugal grit pumps that pump the grit slurry from the vortex separation tank. It is run twice per day and there is an alarm system for equipment failures and overloads.**

UNIT PROCESS: Sedimentation

☑ Primary ☐ Secondary ☐ Tertiary

1. Number of units **2**	In operation: **0**			
2. Proper flow distribution between units:	☐ Yes	☐ No*	☑ NA	
3. Signs of short circuiting and/or overloads:	☐ Yes	☐ No		
4. Effluent weirs level:	☐ Yes	☐ No*		
Clean:	☐ Yes	☐ No*		
5. Scum collection system working properly:	☐ Yes	☐ No*	☑ NA	
6. Sludge collection system working properly:	☐ Yes	☐ No*		
7. Influent, effluent baffle systems working properly:	☐ Yes	☐ No*		
8. Chemical addition:	☐ Yes	☑ No		
Chemicals:				
9. Effluent characteristics:				
10. General condition:	☑ Good	☐ Fair	☐ Poor	

Comments:

These units are currently off-line and are used as equalization basins for storm events.

UNIT PROCESS: Sludge Pumping

1. Number of Pumps: **3** In operation: **0**

2. Type of sludge pumped: ☑ Primary ☐ Secondary ☐ Return Activated ☐ Combination ☐ Other:

3. Type of pump: ☐ Plunger ☐ Diaphragm ☐ Screwlift ☐ Centrifugal ☐ Progressing Cavity ☑ Other: **Recessed Impeller**

4. Mode of operation: ☑ Manual ☐ Automatic ☐ Other(explain):

5. Sludge volume pumped: **N/A**

6. Alarm system for equipment failures or overloads operational: ☐ Yes ☐ No ☑ NA

7. General condition: ☐ Good ☐ Fair ☐ Poor

Comments:

The pumps are for the Primary Clarifiers and EQ Basin. These tanks are empty and the pumps were not in operation.

UNIT PROCESS: Flow Equalization

1. Type: ☐ In-line ☑ Side-line ☐ Spill pond Number of cells: **1**

2. What unit process does it precede? **After primary screenings, prior to aeration basin**

3. Is volume adequate? ☑ Yes ☐ No

4. Mixing: ☑ None ☐ Diffused Air ☐ Fixed Mechanical ☐ Floating Mechanical

5. Condition of mixing equipment: **N/A** ☐ Good ☐ Average ☐ Poor

6. How drawn off? **Drain down**
   A. Pumped from: ☐ Surface ☑ Sub-surface ☐ Adjustable
   B. Weir ☐ Surface ☐ Sub-surface

7. Is containment structure in good condition? ☐ Yes ☑ No

8. Are the facilities to flush solids and grease from basin walls adequate? ☑ Yes ☐ No ☐ NA

9. Are there facilities for withdrawing floating material and foam? ☐ Yes ☑ No

10. How are solids removed? ☑ Drain down ☐ Drag line ☐ NA ☐ Other
    Is it adequate? ☑ Yes ☐ No

11. Is the emergency overflow in good condition? ☐ Yes ☐ No ☑ NA

12. Are the depth gauges in good condition? ☑ Yes ☐ No ☐ NA

Comments:

3. The unit has a 565,000 gallon capacity. Water held in the EQ basin is drained to the Raw Sewage Pump Station wet well.

6. The bottom of the tank is sloped towards the drain line. Tank is drained by manually opening a drain valve.

7. The containment structure had cracks along the inside of the unit. *See Request for Corrective Action.*

10. Basin is cleaned by washing with non-potable plant water via high pressure nozzles.

12. Niagara ultrasonic transducer. Basin also has a high water alarm.

UNIT PROCESS: Activated Sludge Aeration

1. Number of units: **2** In operation: **See Comments**

2. Mode of operation: **BNR- 5 stage Bardenpho**

3. Proper flow distribution between units: ☑ Yes ☐ No* ☐ NA

4. Foam control operational: ☐ Yes ☐ No* ☑ NA

5. Scum control operational: ☐ Yes ☐ No* ☑ NA

6. Evidence of following problems:

   a. dead spots ☐ Yes* ☑ No
   b. excessive foam ☐ Yes* ☑ No
   c. poor aeration ☐ Yes* ☑ No
   d. excessive aeration ☑ Yes* ☐ No
   e. excessive scum ☐ Yes* ☑ No
   f. aeration equipment malfunction ☑ Yes* ☐ No
   g. other (identify in comments) ☐ Yes* ☑ No

7. Mixed liquor characteristics (as available):

pH (s.u.)	**~7.20**	SDI	**N/A**	Odor	**Earthy**
DO (mg/L)	**0.12 – 3.4**	SVI	**N/A**	Color	**Dark brown**
MLSS (mg/L)	**N/A**	Settleability (mg/L)	**600-800**	Others (identify)	**Hach in-line analyzers for pH, DO, Ammonia – N, Nitrate ***

8. Return/waste sludge:

a. Return Rate:	**50%/ 250 gpm**	b. Waste Rate:	**~6,000/day**	c. Frequency of Wasting:	**Daily**

9. Aeration system control: ☐ Manual ☐ Time clock ☑ Continuous ☐ Other (explain)

10. Effluent control devices working properly (oxidation ditches): ☐ Yes ☐ No* ☑ NA

11. General condition: ☐ Good ☑ Fair ☐ Poor

Comments:

1. **Two stage system – 1st stage – flow splitter box followed by two trains; 1 anaerobic zone followed by four anoxic/aerobic zones (can be configured as they see fit) followed by the second stage splitter box (which is also where the nitrate recycle pumps are located) 2nd Stage – two trains – splitter box followed by anoxic zones and "re-aeration" tanks containing a rapid mix zone. Baffles were added in 2009 to the first tank of each train to create an anaerobic/anoxic zone, "Created swing zones".**

6. There was excessive aeration in multiple zones which is indicative of damaged air diffusers in multiple tanks.

Table 1. BarDenPho Treatment System – Zones

1	**4**	**5**	**8**
2	**3**	**6**	**7**

***Red arrows indicate direction of activated sludge flow.**

The air diffusers in Zones 4, 5, 6, 7, 8 are in need of repair. DEQ recommended checking all the diffusers throughout the Bardenpho process to ensure all diffusers are operating properly and recommended increasing the frequency of the preventative maintenance on the diffusers. *See Request for Corrective Action.*

7. Operations staff said that the Hach in-line analyzer is not working properly. *See Request for Corrective Action.*

11. Chemical addition: Delpac is added prior to the clarifier at a rate of 15 gallons of Delpac to 300 gallons of water.

UNIT PROCESS: Sedimentation

☐ Primary ☑ Secondary ☐ Tertiary

1. Number of units **2** In operation: **2**
2. Proper flow distribution between units: ☑ Yes ☐ No* ☐ NA
3. Signs of short circuiting and/or overloads: ☐ Yes ☑ No
4. Effluent weirs level: ☑ Yes ☐ No*
   Clean: ☑ Yes ☐ No*

   Weirwolf – brushes along the weirs to clean off algae
5. Scum collection system working properly: ☑ Yes ☐ No* ☐ NA
6. Sludge collection system working properly: ☑ Yes ☐ No*
7. Influent, effluent baffle systems working properly: ☑ Yes ☐ No*
8. Chemical addition: **N/A** ☐ Yes ☐ No
   Chemicals:
9. Effluent characteristics: **Not observed**
10. General condition: ☑ Good ☐ Fair ☐ Poor

Comments:

4. Automatic brush system to clean weirs – installed the same time that the aqua disc was installed late 2012.

9. Clarifier effluent is directed to the constructed onsite wetlands. The constructed wetlands consist of two parallel cells of about one acre each. Each cell is lined with a geomembrane liner, beneath which is geotextile fabric, a six inch sand bed, and a six inch gravel bed. Wetland plants are bedded in stone media placed on geotextiles fabric above the liner.

UNIT PROCESS: Filtration

1. Type of filters: ☑ Gravity ☐ Pressure ☐ Intermittent

2. Number of units: **2** In operation: **1**

3. Operation of system: ☑ Automatic ☐ Semi-automatic ☐ Manual ☐ Other (specify):

4. Proper flow distribution between units: ☑ Yes ☐ No* ☐ NA

5. Evidence of following problems:

   a. uneven flow distribution ☐ Yes* ☑ No
   b. filter clogging (ponding) ☐ Yes* ☑ No
   c. nozzles clogging ☐ Yes* ☑ No
   d. icing ☐ Yes* ☑ No
   e. filter flies ☐ Yes* ☑ No
   f. vegetation on filter ☐ Yes* ☑ No

6. Filter aid system provided: ☐ Yes ☑ No
   Properly operating: ☐ Yes ☐ No* ☑ NA
   Chemical used: **NA**

7. Automatic valves properly operating: ☐ Yes* ☐ No * ☐ NA

8. Valves sequencing correctly: ☐ Yes* ☐ No * ☐ NA

9. Backwash system operating properly: ☐ Yes* ☐ No * ☐ NA

10. Filter building adequately ventilated: ☑ Yes* ☐ No * ☐ NA

11. Effluent characteristics: **Clear**

12. General condition: ☐ Good ☑ Fair ☐ Poor

Comments:

1) Aqua Disk

7-9) A backwash event was not observed during this visit. Backwash is on a timer but will also run if head pressure increases. This unit has been bypassed during the recent storm events that create hydraulic overloading to the plant.

12) This system was placed online approximately six years ago. DEQ staff asked when the last time the discs were replaced. Operations staff said that they haven't been replaced since they were placed online. DEQ asked what the life expectancy of the discs were and operations staff said they are five years. DEQ recommends replacing the discs filters as per manufacturer's recommendation. *See Request for Corrective Action*

UNIT PROCESS: Sludge Pumping – Scum Pumps

1. Number of Pumps: **2** In operation: **2**
2. Type of sludge pumped: ☐ Primary ☐ Secondary ☐ Return Activated ☐ Combination ☑ Other: **Clarifier Scum Pumps**
3. Type of pump: ☐ Plunger ☐ Diaphragm ☐ Screwlift ☐ Centrifugal ☐ Progressing Cavity ☑ Other: **Submersible Grinder Pumps**
4. Mode of operation: ☐ Manual ☐ Automatic ☑ Other(explain): **Float switches in wet well of the secondary scum pumping station.**
5. Sludge volume pumped: **Not measured.**
6. Alarm system for equipment failures or overloads operational: ☑ Yes ☐ No ☐ NA
7. General condition: ☑ Good ☐ Fair ☐ Poor

Comments:

UNIT PROCESS: Sludge Pumping - RAS

1. Number of Pumps: **4** In operation: **2**
2. Type of sludge pumped: ☐ Primary ☑ Secondary ☐ Return Activated ☐ Combination ☐ Other:
3. Type of pump: ☐ Plunger ☐ Diaphragm ☐ Screwlift ☐ Centrifugal ☐ Progressing Cavity ☑ Other: **Turbine pump**
4. Mode of operation: ☐ Manual ☑ Automatic ☐ Other(explain):
5. Sludge volume pumped: **150 to 250 gpm**
6. Alarm system for equipment failures or overloads operational: ☑ Yes ☐ No ☐ NA
7. General condition: ☑ Good ☐ Fair ☐ Poor

Comments:

UNIT PROCESS: Sludge Pumping WAS

1. Number of Pumps: **2** In operation: **0**

2. Type of sludge pumped: ☐ Primary ☑ Secondary ☐ Return Activated ☐ Combination ☐ Other:

3. Type of pump: ☐ Plunger ☑ Diaphragm ☐ Screwlift ☐ Centrifugal ☐ Progressing Cavity ☐ Other:

4. Mode of operation: ☐ Manual ☐ Automatic ☑ Other(explain): Timer

5. Sludge volume pumped: **6,000 gallons/day**

6. Alarm system for equipment failures or overloads operational: ☐ Yes ☑ No ☐ NA

7. General condition: ☑ Good ☐ Fair ☐ Poor

Comments:
Neither pump is in use. Operations staff use one of the RAS pumps for wasting.

UNIT PROCESS: Ultraviolet (UV) Disinfection

1. Number of UV lamps/assemblies: **2** In operation: **1**

2. Type of UV system and design dosage: **Sunlight Systems**

3. Proper flow distribution between units: ☐ Yes ☐ No* ☑ NA

4. Method of UV intensity monitoring: **Intensity meter**

5. Adequate ventilation of ballast control boxes: ☑ Yes ☐ No* ☐ NA

6. Indication of on/off status of all lamps provided: ☑ Yes ☐ No*

7. Lamp assemblies easily removed for maintenance: ☑ Yes ☐ No*

8. Records of lamp operating hours and replacement dates provided: ☑ Yes ☐ No*

9. Routine cleaning system provided: ☑ Yes ☐ No*
   Operate properly: ☑ Yes ☐ No*
   Frequency of routine cleaning: **Weekly**

10. Lamp energy control system operate properly: ☑ Yes ☐ No*

11. Date of last system overhaul: **Once per year the operations staff conduct a complete overhaul**
    a. UV unit completely drained ☑ Yes ☐ No*
    b. all surfaces cleaned ☑ Yes ☐ No*
    c. UV transmissibility checked ☑ Yes ☐ No*
    d. output of selected lamps checked ☑ Yes ☐ No*
    e. output of tested lamps
    f. total operating hours, oldest lamp/assembly **9809 hours, Bank #1. Bank #2 offline**
    g. number of spare lamps and ballasts available: lamps: ballasts: **Multiple spare parts on site.**

12. UV protective eyeglasses provided: ☑ Yes ☐ No*

13. General condition: ☑ Good ☐ Fair ☐ Poor

Comments:
Life expectancy of the bulbs is about a year.

4. The intensity was set to 100% for Bank #1

UNIT PROCESS: Post Aeration

1. Number of units: **1** In operation: **1**

2. Proper flow distribution between units: ☐ Yes ☐ No* ☑ NA

3. Evidence of following problems:

   a. dead spots ☐ Yes* ☑ No
   b. excessive foam ☐ Yes* ☑ No
   c. poor aeration ☐ Yes* ☑ No
   d. mechanical equipment failure ☐ Yes* ☑ No ☐ NA

4. How is the aerator controlled? ☐ Manual ☐ Time clock ☑ Continuous ☐ Other ☐ NA

5. What is the current operating schedule? **Continuously**

6. Step weirs level: ☐ Yes ☐ No ☑ NA

7. Effluent D.O. level: **5.82 mg/L in situ by Operations staff**

8. General condition: ☑ Good ☐ Fair ☐ Poor

Comments:
Compliance sampling point is in the post aeration tank prior to the Parshall flume.

UNIT PROCESS: Flow Measurement

☐ Influent ☐ Intermediate ☑ Effluent

1. Type measuring device: **Totalizer**

2. Present reading: **1080021 MG**

3. Bypass channel: ☐ Yes ☑ No
   Metered: **N/A** ☐ Yes ☐ No

4. Return flows discharged upstream from meter: ☐ Yes ☑ No
   Identify:

5. Device operating properly: ☑ Yes ☐ No *

6. Date of last calibration: **July 17, 2017**

7. Evidence of following problems:

   a. obstructions ☐ Yes* ☑ No
   b. grease ☐ Yes* ☑ No

8. General condition: ☑ Good ☐ Fair ☐ Poor

Comments:

UNIT PROCESS: Effluent/Plant Outfall

1. Type Outfall: ☑ Shore based ☐ Submerged
2. Type if shore based: ☐ Wingwall ☑ Headwall ☐ Rip Rap
3. Flapper valve: ☐ Yes ☑ No ☐ NA
4. Erosion of bank: ☐ Yes* ☐ No ☑ NA
5. Effluent plume visible? ☐ Yes* ☑ No
6. Condition of outfall and supporting structures: ☐ Good ☐ Fair ☐ Poor
7. Final effluent, evidence of following problems:
   a. oil sheen ☐ Yes* ☐ No
   b. grease ☐ Yes* ☐ No
   c. sludge bar ☐ Yes* ☐ No
   d. turbid effluent ☐ Yes* ☐ No
   e. visible foam ☐ Yes* ☐ No
   f. unusual color ☐ Yes* ☐ No

Comments:
The outfall was not observed due to military activity. (Questions 4, 6 and 7)

UNIT PROCESS: Aerobic Digestion

1. Number of units: **2** In operation: **2**

2. Type of sludge treated ☐ Primary ☑ WAS ☑ Other

3. Frequency of sludge application to digestors: **Daily**

4. Supernatant return rate: **Not measured**

5. pH adjustment provided: ☐ Yes ☑ No
   Utilized: ☐ Yes ☐ No ☑ NA

6. Tank contents well-mixed and relatively free of odors: ☑ Yes ☐ No*

7. If diffused aeration is used, do diffusers require frequent cleaning? ☐ Yes ☑ No ☐ NA

8. Location of supernatant return: ☑ Head ☐ Primary ☐ Other

9. Process control testing:

   a. reduction of volatile solids ☑ Yes ☐ No
   b. pH ☐ Yes ☑ No
   c. alkalinity ☐ Yes ☑ No
   d. dissolved oxygen ☐ Yes ☑ No

10. Foaming problem present: ☐ Yes* ☑ No

11. Signs of short-circuiting or overloads: ☐ Yes* ☑ No

12. General condition: ☑ Good ☐ Fair ☐ Poor

Comments:

3. **Approximately 6,000 gallons are wasted per day into the aerobic digestors.**

7. **The diffusers were last cleaned about 2 years ago. Both aerated by educator tube aeration system with coarse bubble diffusers.**

8. **One digestor is automatically decanted, the other one is manually decanted. The sludge holding tank is decanted using a portable pump. Digested sludge is sent to the aerated sludge holding tank after supernatant decanted off; SHT allows digested sludge to thicken even more (second decant), then fed to the filter belt press.**

The steps to this unit were overgrown with vegetation. Operations staff have put in a work order to address this issue. *See Request for Corrective Action*

UNIT PROCESS: Sludge Pumping

1. Number of Pumps: **1** In operation: **1**

2. Type of sludge pumped: ☑ Primary ☐ Secondary ☐ Return Activated
   ☐ Combination ☑ Other: **Digested**

3. Type of pump: ☐ Plunger ☐ Diaphragm ☐ Screwlift ☐ Centrifugal
   ☐ Progressing Cavity ☑ Other: **Rotary Lobe**

4. Mode of operation: ☑ Manual ☐ Automatic ☐ Other(explain):

5. Sludge volume pumped: **~18,000 gallons per day of digested sludge when in operation**

6. Alarm system for equipment failures or overloads operational: ☐ Yes ☐ No ☑ NA

7. General condition: ☑ Good ☐ Fair ☐ Poor

Comments:

1. **Pumps digested sludge from sludge holding tank to rotary fan press for dewatering.**
2. **The type of belt filter pressed used is a Prim Solutions, 36 S Rotary Fan Press**

UNIT PROCESS: Pressure Filtration (Sludge)

1. Number of units: **1** In operation: **0**
2. Percent solids in influent sludge: **2.5%**
3. Percent solids in discharge cake: **25-30%**
4. Filter run time: **2-3 days per week**
5. Amount cake produced: **unknown**
6. Conditioning chemicals used: **Polymer: WNFLC 7BC1**
   Dose:
7. Sludge pumping: ☑ Manual ☐ Automatic
8. Recirculating system included on acid wash: ☐ Yes ☐ No ☑ NA
9. Signs of overloads: ☐ Yes* ☑ No
10. General condition: ☑ Good ☐ Fair ☐ Poor

Comments:

The filtrate is sent back to the headworks.

1. **Grit Chamber**

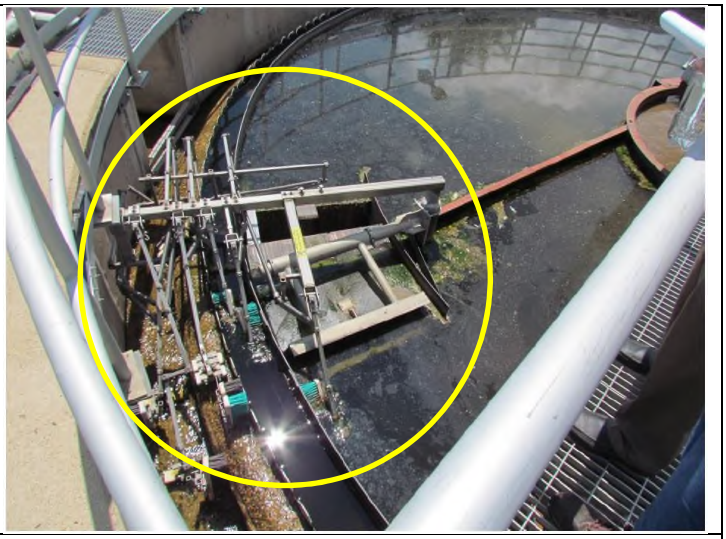
2. **Grit Chamber Pumps**

3. **Equalization Basin - Crack**

4. **Sewage Debris Drying Bed – in need of repair and cleaning**

5. **Damaged Air Diffuser**

6. **Damaged Air Diffuser**

	
7. Clarifier	**8. Clarifier weir brush**
9. Clarifier weir brush	

DEPARTMENT OF ENVIRONMENTAL QUALITY - WATER DIVISION
LABORATORY INSPECTION REPORT

11/2014

PERMIT #:	INSPECTION DATE:	PREVIOUS INSP. DATE:	PREVIOUS EVALUATION:	TIME SPENT:
VA021067	June 28 2018	May 9, 2012	Deficient	8 hrs.

NAME/ADDRESS OF FACILITY:	FACILITY CLASS:	FACILITY TYPE:	UNANNOUNCED INSPECTION?
Naval Support Facility Dahlgren – Wastewater Treatment Plant 18329 Thompson Road Dahlgren, VA 22448 - 5018	☐ MAJOR ☑ MINOR ☐ MINOR (Small) ☐ VPA	☑ MUNICIPAL ☐ INDUSTRIAL ☐ FEDERAL	☐ YES ☑ NO **FFY-SCHEDULED INSPECTION?** ☑ YES ☐ NO

INSPECTOR(S):	REVIEWER(S):	PRESENT AT INSPECTION:
Rebecca Johnson		**Adrian Mood – Wastewater Manager**

LABORATORY EVALUATION	DEFICIENCIES? Yes	DEFICIENCIES? No
LABORATORY RECORDS	☐	☑
GENERAL SAMPLING AND ANALYSIS	☐	☑
pH PROCEDURE	☐	☑
DISSOLVED OXYGEN PROCEDURES	☐	☑
TEMPERATURE PROCEDURES	☐	☑
OTHER – VELAP CERTIFIED LABORATORY	☑	☐

VELAP CERTIFICATION (on site Environmental Laboratory) –N/A	Yes	No
Does the laboratory have VELAP certification (interim or final)?	☐	☐
– Document the laboratory's VELAP laboratory number:		
– Document the effective date of the VELAP certification:		
– Document the expiration date of the VELAP certification:		
– List the certified parameters:		

VELAP ACCREDITATION (Commercial Environmental Laboratory)			Yes	No
IS A VELAP ACCREDITED LAB USED FOR OTHER PERMIT REQUIRED ANALYSES? VELAP#, LAB NAME, ADDRESS and LIST PARAMETERS:				
VELAP #	LAB NAME and ADDRESS	PARAMETERS:		
460157	ALS Environmental 34 Dogwood Lane Middletown, PA 17057	Ammonia –N, BOD, TSS, TKN	☑	☐
N/A	Fredericktowne Environmental Testing Labs Inc. 3020 Ventrie Court PO Box 245 Myersville, MD 21773	Enterococci, Fecal Coliforms	☐	☑

460182	Eurofins Lancaster Laboratories Environmental 2425 New Holland Pike Lancaster, PA 17601	Ammonia –N, BOD, NO2+NO3, TP	☑	☐
IF PERMIT REQUIRED SAMPLE ANALYSIS IS PERFORMED AT ANOTHER LOCATION, ARE SHIPPING PROCEDURES ADEQUATE?			**N/A**	

COPIES: ☑ DEQ - RO; ☑ Owner, ☐ Other:

PERMIT #: VA0021067

LABORATORY RECORDS SECTION

LABORATORY RECORDS INCLUDE THE FOLLOWING:

☑	SAMPLING DATE	☑	ANALYSIS DATE	☐	CONT MONITORING CHART
☑	SAMPLING TIME	☑	ANALYSIS TIME	☐	INSTRUMENT CALIBRATION
☑	SAMPLE LOCATION	☑	TEST METHOD	☐	INSTRUMENT MAINTENANCE
				☑	CERTIFICATE OF ANALYSIS

WRITTEN INSTRUCTIONS INCLUDE THE FOLLOWING:

☑	SAMPLING SCHEDULES	☑	CALCULATIONS	☑	ANALYSIS PROCEDURES

	YES	NO	N/A
DO ALL ANALYSTS INITIAL THEIR WORK?	☑	☐	☐
DO BENCH SHEETS (or LOG BOOK) INCLUDE ALL INFORMATION NECESSARY TO DETERMINE RESULTS?	☑	☐	☐
IS THE DMR COMPLETE AND CORRECT? LIST MONTH(S) REVIEWED: **June 2016 and January 2018**	☑	☐	☐
ARE ALL MONITORING VALUES REQUIRED BY THE PERMIT REPORTED?	☑	☐	☐
DOES CHAIN OF CUSTODY DOCUMENT PROPER SAMPLE PRESERVATION WAS MET?	☑	☐	☐
WHEN THE CERTIFICATE OF ANALYSIS CONTAINS FLAGGED DATA IS THE 'FLAG' REPORTED ON THE DMR?	☑	☐	☐

GENERAL SAMPLING AND ANALYSIS SECTION

	YES	NO	N/A
ARE SAMPLE LOCATIONS ACCORDING TO PERMIT REQUIREMENTS?	☑	☐	☐
ARE PERMIT REQUIRED SAMPLE COLLECTION PROCEDURES APPROPRIATE?	☑	☐	☐
ARE EFFLUENT SAMPLES REPRESENTATIVE OF THE MONITORED ACTIVITY?	☑	☐	☐
ARE PERMIT REQUIRED COMPOSITE SAMPLES FLOW PROPORTIONAL? **NOTE:** Equal volume composite aliquots are acceptable ***if the instantaneous flow is within ± 10% of the daily average flow during the monitoring period***. Some permits specify how the composite is to be taken (e.g., 5G/8HC).	☑	☐	☐
IS COLLECTION SAMPLE EQUIPMENT ADEQUATE?	☑	☐	☐
IS FLOW MEASUREMENT ACCORDING TO PERMIT REQUIREMENTS?	☑	☐	☐

DEPARTMENT OF ENVIRONMENTAL QUALITY – WATER DIVISION
LABORATORY INSPECTION REPORT SUMMARY

FACILITY NAME:	**Naval Support Facility Dahlgren – Wastewater Treatment Plant**	Permit #:	**VA0021067**	INSPECTION DATE:	**June 28, 2018**
LABORATORY EVALUATION		☐	No required actions at this time		
		☑	**REQUIRED CORRECTIVE ACTION(s) IDENTIFIED**		

SUMMARY of REQUEST FOR CORRECTIVE ACTION

Lab Records

Laboratory Records section deficiency and required action:

1. None

General Sampling and Analysis

General Sampling and Analysis section deficiency and required action:

1. None

pH Analysis

pH deficiency and required action:

1. None

D.O. Analysis

D.O. deficiency and required action:

1. None

Temperature Analysis

Temperature deficiency and required action:

1. None

OTHER – Comments or Observations

Fredericktowne Environmental Testing Labs Inc.is used to analyze Fecal Coliform and Enterococci. This laboratory is not VELAP certified to analyze wastewater samples. This laboratory does have a drinking water certification to analyze bacteriological samples; however it does not have the certificate to analyze the wastewater samples.

As stated in Permit Number VA0021067, Part II, A. 1.c., "Samples taken shall be analyzed in accordance with 1VAC30-45, Certification for Noncommercial Environmental Laboratories, or 1VAC30-46, Accreditation for Commercial Environmental Laboratories."

DEQ recommended the permittee analyze the final effluent permit required samples at a VELAP certified laboratory for wastewater. On July 30, 2018, Mr. Mood changed laboratories to EnviroCompliance.

Provide an explanation as to how the facility plans to address this issue to DEQ-NRO by August 30, 3018.

DEPARTMENT OF ENVIRONMENTAL QUALITY - WATER DIVISION
SAMPLE ANALYSIS HOLDING TIME/CONTAINER/PRESERVATION CHECK SHEET
Revised 02/2015 [40 CFR, Part 136.3, Table II]

FACILITY NAME:	**Naval Support Facility Dahlgren - WWTP**	VPDES NO	**VA0021067**	DATE:	**June 28, 2018**

HOLDING TIMES *[Note: Collection period (for composites) and Sample Collection time (end of collection period) must be recorded on the COC.]*						**SAMPLE CONTAINER**				**PRESERVATION** *[Note: Preservation is to occur within 15 minutes of the end of the collection period.]*				
PARAMETER	APPROVED	MET?		LOGGED?		ADEQ. VOLUME		APPROP. TYPE		APPROVED	MET?		CHECKED?	
		Y	N	Y	N	Y	N	Y	N		Y	N	Y	N
pH	15 MIN.	☑	☐	☑	☐	☑	☐	☑	☐	Within 15 minutes				
CHLORINE	15 MIN.	☑	☐	☑	☐	☑	☐	☑	☐	Within 15 minutes				
DISSOLVED 0_2	15 MIN	☑	☐	☑	☐	☑	☐	☑	☐	Within 15 minutes				
BOD5 & CBOD5	48 HOURS									$\leq 6^o$ C	☑	☐	☑	☐
TSS	7 DAYS									$\leq 6^o$ C	☑	☐	☑	☐
FECAL COLIFORM / *E. coli* / *Enterococci*	8 HRS									$<10^o$ C+0.008% $Na_2S_20_3$	☑	☐	☑	☐
AMMONIA	28 DAYS									DECHLOR $\leq 6^o$ C+H_2S0_4 pH<2t	☑	☐	☑	☐
TKN	28 DAYS									DECHLOR $\leq 6^o$ C+H_2S0_4 pH<2	☑	☐	☑	☐
NITRATE+NITRITE	28 DAYS									$\leq 6^o$ C+H_2S0_4 pH<2	☑	☐	☑	☐
TOTAL PHOS.	28 DAYS									$\leq 6^o$ C+H_2S0_4 pH<2	☑	☐	☑	☐

PROBLEMS:

Note: All chemical preservation should be noted by the Permittee on the Chain of Custody.

Permittee not analyzing Fecal Coliform and Enterococci at a VELAP certificated laboratory for wastewater.

Holding Times and Preservation References (VELAP except for Field Tests)

ANALYST:	**Adam Hall**	VPDES NO	**VA0021067**

Parameter: Dissolved Oxygen
Method: Luminescence-based Sensor Procedure
11/2014

METHOD OF ANALYSIS:

☐	ASTM D 888-09 (C)
☐	In-Situ - 1002-8-2009
☑	HACH LDO – 10360
☐	YSI – ASTM D 888-09 (C)

		Y	N
1)	Has Initial Demonstration of Laboratory Capability been performed by each analyst? [ASTM 29.5 and ASTM 31.3] a. Prepare air-saturated water by bubbling air for at least 30 min. through 1500mL water that is at room temperature (± 2°C). **NOTE:** An in-line air filter must be used with the aeration tubing (i.e., cotton, glass wool, other suitable material). b. Allow air-saturated water to equilibrate for 45 – 60 minutes. c. Transfer aerated water to four clean BOD bottles, beakers or other suitable containers until overflowing, then sealed. d. Analyze samples. e. Use a D.O. table to calculate theoretical D.O. based on sample temperature and barometric pressure (or altitude correction factor applied). Results must be between 97-104% of calculated value.	☑	☐
2)	Are calibration results (mg/L) within ± 4% of the barometric (or altitude) corrected oxygen saturated water value? [SM 21 B.2 or SM 22 1020 B.2.]	☑	☐
3)	If samples are collected, is collection carried out with a minimum of turbulence and air bubble formation? [ASTM 6.2]	**In Situ**	
4)	If samples are collected, is the sample bottle allowed to overflow several times its volume? [ASTM 6.4]		
5)	Is meter calibrated before use or at least daily? **NOTE:** If using water saturated air the instrument must be in 'O_2 Calibration' mode and sensor cap must be above surface of liquid. [ASTM 29.2, 29.4 & 29.5]	☑	☐
6)	Is calibration verification within 97% to 104% of the theoretical D.O.? [ASTM 29.7.1] Temperature must be recorded. [ASTM 29.5.6]	☑	☐
7)	Is calibration procedure performed according to manufacturer's instructions? [Mfr.]	☑	☐
8)	Does the lot code on the meter display match the lot code printed on the sensor cap? **NOTE:** Code begins with a number between '3' and '9'. NOTE: This requirement may not be applicable for sensors from other manufacturers. [Mfr.]	☑	☐
9)	Is sensor cap replaced after one year? **NOTE:** "Cap Expired icon" will display in results window and data exported will be flagged with an asterisk. This requirement may not be applicable for sensors from other manufacturers. [Mfr.]	☑	☐
10)	Are air bubbles trapped on probe tip dislodged before taking a reading? [Mfr.]	☑	☐
11)	Is black surface of the sensor cap clean and unscratched? This requirement may not be applicable for sensors from other manufacturers. [Mfr.]	☑	☐

12)	When taking reading is probe deep enough in sample to cover the thermistor on side of probe? **NOTE:** Care should be taken to not touch the thermistor because it will cause an incorrect temperature reading. [Mfr.]	☑	☐
13)	Is there adequate flow/stirring during calibration and sample analysis? [ASTM 29.6 and Mfr.]	☑	☐
14)	Is meter stabilized before reading D.O.? [Mfr.]	☑	☐
15)	Is temperature recorded at time of analysis? [Permit, ASTM 29.5.6]	☑	☐
16)	Is accuracy of thermistor checked annually? [Permit]	☑	☐
17)	Is 'Dry Storage' used for probes immersed less than 6 hrs per day and 'Wet Storage' for tips immersed more than 6 hrs per day? This requirement may not be applicable for sensors from other manufacturers. [Mfr.]	☑	☐

Comments:

DEPARTMENT OF ENVIRONMENTAL QUALITY - WATER DIVISION
EQUIPMENT TEMPERATURE LOG/THERMOMETER VERIFICATION CHECK SHEET
11/2014

FACILITY NAME:	**Naval Support Facility Dahlgren - WWTP**	**PERMIT NO:**	**VA0021067**	**DATE:**	**June 28, 2018**

EQUIPMENT	**Preservation Range**	**In Range?**		**Inspector Reading**	**Checked & Logged Daily?**		**Correct Increment?**		**ANNUAL THERMOMETER VERIFICATION**				
									Is the NIST / NIST-Traceable Reference Thermometer within the manufacturer's expiration date or recertified yearly?				Yes/No **Yes**
		Yes	No	**°C**	Yes	No	Yes	No	**DATE CHECKED**	**MARKED** Yes	**MARKED** No	**OFFSET VALUE[1] (Correction)** °C	**INSPECT TEMP** °C
SAMPLE REFRIGERATOR	1-6° C	☑	☐	**3.0**	☑	☐	☐	☐	**7/7/2017**	☑	☐	**NC**	**0, 5, 14**
AUTO SAMPLER	1-6° C	☑	☐	**5.5**	☑	☐	☐		**7/7/2017**	☑	☐	**NC**	**0, 5, 14**
pH METER	± 1° C	☑	☐						**7/7/2017**	☑	☐	**NC**	**20.6**
D.O. METER	± 1° C	☑	☐						**8/23/2017**	☑	☐	**NC**	**24**

PROBLEMS:

Notes:
-NC denotes "No Correction"

[1] Offset Value tolerances (reference **NIST 105-6**): Sampling Refrigerator and Auto Sampler, pH and D.O. meters must be within ±2°C (2 times tolerance value). Thermometers measuring Outfall permit compliance must be within ±1.0°C (2 times tolerance value).

ANALYST:	**Adam Hall**	VPDES NO	**VA0021067**

Meter:_____**Hach HQ30 d flexi**

Parameter: Hydrogen Ion (pH)
Method: Electrometric
3/2015

METHOD OF ANALYSIS:

☐	21st Edition of Standard Methods (SM 21) – 4500-H^+ B-2000 (SM 21 pH)
☑	22nd Edition of Standard Methods (SM 22), or Online Editions of Standard Methods – 4500-H^+ B-2011 (SM 22 pH)

	pH is a method-defined analyte so modifications are not allowed. [40 CFR Part 136.6]	**Y**	**N**
1)	Is a certificate of operator competence or initial demonstration of capability available for each analyst/operator performing this analysis? **NOTE**: Analyze 4 samples of known pH; you may use an external source of buffers or other known standards (different lot/manufacturer than buffers used to calibrate meter). Recovery for each of the 4 samples must be +/- 0.2 SU of the known concentration of the sample or within "Acceptable Range" specified by the PT provider. [SM 1020 B.1] **NOTE: The same pH buffer [values] used for calibration of the instrument can be used as LCS if from a different source or different lot.**	☑	☐
2)	**IF** a replicate sample is analyzed is there a written procedure for which result will be reported on DMR (Sample or Replicate) and is this procedure being followed? [DEQ – based on EPA Good Laboratory Practices Standards]	☑	☐
3)	Is a Laboratory Control Sample (LCS) tested at least annually and are results within acceptance criteria? [SM 21 B.2 or SM 22 1020 B.3.] **NOTE:** LCS should be a purchased Proficiency Test (PT) sample or a different buffer other than ones used for calibration of the meter [with a ±0.2 SU acceptance range or within "Acceptable Range" specified by the PT provider].. **NOTE: The same pH buffer [values] used for calibration of the instrument can be used as LCS if from a different source or different lot.**	☑	☐
4)	Is the electrode in good condition (no chloride precipitate, scratches, deterioration, etc.)? [SM 21 pH or SM 22 pH 2.b./c. and 5.b.]	☑	☐
5)	Is electrode storage solution in accordance with manufacturer's instructions? [SM 21 pH or SM 22 pH 4.a. and Mfr.]	☑	☐
6)	Is meter calibrated on at least a daily basis using three buffers all of which are at the same temperature? [SM 21 pH or SM 22 pH 4.a.] **NOTE**: Start with Buffer 7 unless manufacturer's instructions state otherwise. [**NOTE:** If meter is not capable of 3 buffer calibration use 2 buffers bracketing the expected sample pH and then measure a 3rd buffer (the measurement value recorded must be ±0.1 SU), and then reread and record value of buffer 7 to ensure ±0.1 SU.]	☑	☐
7)	After calibration, is a buffer analyzed as a check sample to verify that calibration is correct? Verification measurement should be within +/- 0.1 SU. [SM 21 1020 B 10.c. or SM 22 1020 B 11.c.]	☑	☐
8)	Is calibration verification measurement repeated with every 10 samples and at the end of a series of samples? Verification measurement should be within +/- 0.1 SU. [SM 21 pH or SM 22 pH 4020 B 2.b.] **NOTE:** Not applicable if pH meter is calibrated before taking any measurement (e.g., if operator monitors daily pH at more than one facility and calibrates before each measurement).	☑	☐
9)	Do the buffer solutions appear to be free of contamination or growths? [SM 21 pH or SM 22 pH 3.a.]	☑	☐
10)	Are buffer solutions within the listed shelf-life or have they been prepared within the last 4 weeks? [SM 21 pH or SM 22 pH 3.a.]	☑	☐

11)	Is the cap or sleeve covering the access hole on the reference electrode removed when measuring pH? [Mfr.]	☑	☐
12)	Is sample analyzed within 15 minutes of collections? [40 CFR Part 136]	☑	☐
13)	Is the electrode rinsed and then blotted dry between reading solutions (Disregard if a portion of the next sample analyzed is used as the rinsing solution.)? [SM 21 pH or SM 22 pH 4.a and 4.b]	☑	☐
14)	Is the sample stirred gently at a constant speed during measurement? [SM 21 pH or SM 22 pH 4.b.]	☑	☐
15)	Does the meter hold a steady reading after reaching equilibrium? [4.b.]	☑	☐

PROBLEMS:

ATTACHMENT 5

Planning Statement

To:	Douglas Frasier
From:	Rebecca Shoemaker
Date:	24 February 2021
Subject:	Planning Statement for Naval Support Facility Dahlgren WWTP
Permit Number:	VA0021067

Information for Outfall 001:

Discharge Type:	municipal minor
Discharge Flow:	0.72 MGD design
Receiving Stream:	Upper Machodoc Creek
Latitude / Longitude:	38° 19´ 15´´ / -77° 1´ 40´´
Rivermile:	0.2
Streamcode:	1aUMC
Waterbody:	VAN-A30E
6th Order HUC:	PL63
Water Quality Standards:	Class II, Section 2, special standards a
Drainage Area:	0.54 square miles

1. Please provide water quality monitoring information for the receiving stream segment. If there is not monitoring information for the receiving stream segment, please provide information on the nearest downstream monitoring station, including how far downstream the monitoring station is from the outfall.

   This facility's outfall discharges into Upper Machodoc Creek. There are no downstream DEQ monitoring stations, but Upper Machodoc Creek has been assessed. The following is the water quality summary for this segment of Upper Machodoc Creek, as taken from the 2020 Integrated Report:

   Class II, Section 2, special standards a

   DEQ monitoring stations located in this segment of Upper Machodoc Creek: n/a

   The aquatic life use is categorized as not supporting; however, the Chesapeake Bay TMDL has been completed. Assessment of the submerged aquatic vegetation (SAV) acreage and thirty day mean dissolved oxygen values during the summer season indicates that the shallow-water submerged aquatic vegetation and the open-water aquatic life subuses are not met. The seven day mean and instantaneous dissolved oxygen levels have not been assessed. The deep-water subuse is considered fully supporting. The fish consumption use is categorized as impaired due to a Virginia Department of Health, Division of Health Hazards Control, PCB fish consumption advisory; the Tidal Potomac River PCB TMDL for the Upper Machodoc Creek watershed has been completed and approved. The recreation and wildlife uses were not assessed.

2. Does this facility discharge to a stream segment on the 303(d) list? If yes, please fill out Table A.

Yes.

Table A. 303(d) Impairment and TMDL information for the receiving stream segment

Waterbody Name	Impaired Use	Cause	Year First Listed as Impaired	TMDL completed	WLA	Basis for WLA
Impairment Information in the 2020 Integrated Report						
Upper Machodoc Creek	Open-Water Aquatic Life	Dissolved Oxygen	2006	Chesapeake Bay TMDL 12/29/2010	This facility is accounted for in the Chesapeake Bay TMDL. It is included in the NPDES permit inventory and is assigned WLAs for Total Nitrogen, Total Phosphorus, and Total Suspended Solids (Appendix Q).	
	Aquatic Life					
	Shallow Water Submerged Aquatic Vegetation	Aquatic Plants (Macrophytes)*				
	Fish Consumption	PCBs in Fish Tissue	2006	Tidal Potomac River Watershed PCBs TMDL 10/31/2007	0.064 grams/year PCBs	0.064 ng/L PCBs --- 0.72 MGD

*The Aquatic Plants (Macrophytes) impairment cause indicates that the waterbody segment was evaluated with less submerged aquatic vegetation than the segment goal.

3. Are there any downstream 303(d) listed impairments that are relevant to this discharge? If yes, please fill out Table B.

Yes.

Table B. Information on Downstream 303(d) Impairments and TMDLs

Waterbody Name	Impaired Use	Cause	Year First Listed as Impaired	Distance From Outfall	TMDL completed	WLA	Basis for WLA
Impairment Information in Maryland's 2018 Integrated Report							
Potomac River (Maryland)	Open-Water Fish and Shellfish	Total Nitrogen and Total Phosphorus	1996	0.2 mile	Chesapeake Bay TMDL 12/29/2010	This facility is accounted for in the Chesapeake Bay TMDL. It is included in the NPDES permit inventory and is assigned WLAs for Total Nitrogen, Total Phosphorus, and Total Suspended Solids (Appendix Q).	
	Seasonal Migratory Fish Spawning and Nursery		2012				
	Seasonal Deep-Water Fish and Shellfish		1996				
	Seasonal Deep-Channel Refuge		1996				
	Seasonal Shallow-Water Submerged Aquatic Vegetation	Total Suspended Solids	2008				

4. Is there monitoring or other conditions that Planning/Assessment needs in the permit?

The tidal Potomac River is listed with a PCBs impairment and a TMDL has been developed to address this impairment. This facility is included in the Tidal Potomac River PCBs TMDL and received a WLA. In support of the PCBs TMDL, this facility conducted PCBs monitoring during a previous permit cycle. Any additional requirements related to PCBs, including the need for a pollutant minimization plan (PMP), will be outlined in the permit.

5. Fact Sheet Requirements – Please provide information regarding any drinking water intakes located within a 5 mile radius of the discharge point.

There are no public water supply intakes located within five miles of this discharge.

ATTACHMENT 6

Dissolved Oxygen Criteria 9VAC25-260-185

Dissolved Oxygen Criteria (9VAC25-260-185)

Designated Use	Criteria Concentration/Duration	Temporal Application
Migratory fish spawning and nursery	7-day mean > 6 mg/L (tidal habitats with 0-0.5 ppt salinity)	February 1 – May 31
	Instantaneous minimum > 5 mg/L	
Open-water[1,2]	30-day mean > 5.5 mg/L (tidal habitats with 0-0.5 ppt salinity) 30-day mean > 5 mg/L (tidal habitats with >0.5 ppt salinity)	Year-round
	7-day mean > 4 mg/L	
	Instantaneous minimum > 3.2 mg/L at temperatures < 29°C Instantaneous minimum > 4.3 mg/L at temperatures > 29°C	
Deep-water	30-day mean >3 mg/L	June 1-September 30
	1-day mean > 2.3 mg/L	
	Instantaneous minimum > 1.7 mg/L	
Deep-channel	Instantaneous minimum > 1 mg/L	June 1-September 30

[1]See subsection aa of 9VAC25-260-310 for site specific seasonal open-water dissolved oxygen criteria applicable to the tidal Mattaponi and Pamunkey Rivers and their tidal tributaries.

[2]In applying this open-water instantaneous criterion to the Chesapeake Bay and its tidal tributaries where the existing water quality for dissolved oxygen exceeds an instantaneous minimum of 3.2 mg/L, that higher water quality for dissolved oxygen shall be provided antidegradation protection in accordance with section 30 subsection A.2 of the Water Quality Standards.

ATTACHMENT 7

Water Quality Criteria / Wasteload Allocation Analysis

Naval Support Facility Dahlgren WWTP: VA0021067
Water Quality Criteria/Wasteload Allocation

21 April, 2021

Input Parameters:

Facility Information

Facility Name:	Naval Support Facility Dahlgren WWTP
Permit Number:	Upper Machodoc Creek
Receiving Stream:	VA0021067
Analysis Type:	Saltwater

Stream Information

Mean Hardness (as $CaCO_3$):	833 mg/L
90% Temperature (Annual):	27.7 °C
90% Temperature (Wet Season):	17.3 °C
90% Maximum pH:	7.6 SU
10% Maximum pH:	6.6 SU
Tier Designation (1 or 2):	1
Early Life Stages Present?	Yes
Tidal Zone:	Saltwater
Mean Salinity:	6.7 g/Kg

Stream Flows

Design Flow:	0.72 MGD
Acute WLA Multiplier:	10
Chronic WLA Multiplier:	20
Human Health WLA Multiplier:	20

Effluent Information

Mean Hardness (as $CaCO_3$):	40 mg/L
90% Temperature (Annual):	26.8 °C
90% Temperature (Wet Season):	15.7 °C
90% Maximum pH:	7.8 SU
10% Maximum pH:	7.2 SU
Discharge Flow:	0.72 MGD

Parameter	Units	Background Concentration	Water Quality Criteria			Wasteload Allocations			Antidegradation Baseline			Antidegradation Allocations			Most Limiting Allocations			Method Target Value
			Acute	Chronic	HH	Acute	Chronic	HH	Acute	Chronic	HH	Acute	Chronic	HH	Acute	Chronic	HH	
Acenapthene	ug/l	0			90.00			1,800									1,800	1,800
Acrolein	ug/l	0			400.0			8,000									8,000	8,000
Acrylonitrile	ug/l	0			70.00			1,400									1,400	1,400
Aldrin	ug/l	0	1.300		0.000007700	13.00		0.0001540							13.00		0.0001540	0.0001540
Ammonia - Annual	mg/l	0	7.158	1.094		71.58	21.88								71.58	21.88		13.13
Ammonia - Winter	mg/l	0	16.59	3.313		165.9	66.27								165.9	66.27		39.76
Anthracene	ug/l	0			400.0			8,000									8,000	8,000
Antimony	ug/l	0			640.0			1.280e+4									1.280e+4	1.280e+4
Arsenic	ug/l	0	69.00	36.00		690.0	720.0								690.0	720.0		276.0
Benzene	ug/l	0			160.0			3,200									3,200	3,200
Benzidine	ug/l	0			0.1100			2.200									2.200	2.200
Benzo (a) anthracene	ug/l	0			0.01300			0.2600									0.2600	0.2600
Benzo (b) fluoranthene	ug/l	0			0.01300			0.2600									0.2600	0.2600
Benzo (k) fluoranthene	ug/l	0			0.1300			2.600									2.600	2.600
Benzo (a) pyrene	ug/l	0			0.001300			0.02600									0.02600	0.02600
Bis (chloromethyl) Ether	ug/l	0			0.1700			3.400									3.400	3.400
Bis2-Chloroethyl Ether	ug/l	0			22.00			440.0									440.0	440.0
Bis2-Chloroisopropyl Ether	ug/l	0			4,000			8.000e+4									8.000e+4	8.000e+4
Bis2-Ethylhexyl Phthalate	ug/l	0			3.700			74.00									74.00	74.00
Bromoform	ug/l	0			1,200			2.400e+4									2.400e+4	2.400e+4
Butylbenzylphthalate	ug/l	0			1.000			20.00									20.00	20.00
Cadmium	ug/l	0	33.00	7.900		330.0	158.0								330.0	158.0		94.80
Carbaryl	ug/l	0	1.600	2.100		16.00	42.00								16.00	42.00		6.400
Carbon Tetrachloride	ug/l	0			50.00			1,000									1,000	1,000
Chlordane	ug/l	0	0.09000	0.004000	0.003200	0.9000	0.08000	0.06400							0.9000	0.08000	0.06400	0.04800
TRC	mg/l	0																
Chlorine Prod. Oxidant	ug/l	0	13.00	7.500		130.0	150.0								130.0	150.0		52.00
Chlorobenzene	ug/l	0			800.0			1.600e+4									1.600e+4	1.600e+4
Chlorodibromomethane	ug/l	0			210.0			4,200									4,200	4,200
Chloroform	ug/l	0			2,000			4.000e+4									4.000e+4	4.000e+4
2-Chloronaphthalene	ug/l	0			1,000			2.000e+4									2.000e+4	2.000e+4
2-Chlorophenol	ug/l	0			800.0			1.600e+4									1.600e+4	1.600e+4
Chlorpyrifos	ug/l	0	0.01100	0.005600		0.1100	0.1120								0.1100	0.1120		0.04400
Chromium III	ug/l	0																
Chromium VI	ug/l	0	1,100	50.00		1.100e+4	1,000								1.100e+4	1,000		600.0

Parameter	Units	Background Concentration	Water Quality Criteria			Wasteload Allocations			Antidegradation Baseline			Antidegradation Allocations			Most Limiting Allocations			Method Target Value
			Acute	Chronic	HH	Acute	Chronic	HH	Acute	Chronic	HH	Acute	Chronic	HH	Acute	Chronic	HH	
Chrysene	ug/l	0			1.300			26.00									26.00	26.00
Copper	ug/l	0	9.300	6.000		93.00	120.0								93.00	120.0		37.20
Cyanide, Free	ug/l	0	1.000	1.000	400.0	10.00	20.00	8,000							10.00	20.00	8,000	4.000
DDD	ug/l	0			0.001200			0.02400									0.02400	0.02400
DDE	ug/l	0			0.0001800			0.003600									0.003600	0.003600
DDT	ug/l	0	0.1300	0.001000	0.0003000	1.300	0.02000	0.006000							1.300	0.02000	0.006000	0.006000
Demeton	ug/l	0		0.1000			2.000									2.000		1.200
Diazinon	ug/l	0	0.8200	0.8200		8.200	16.40								8.200	16.40		3.280
Dibenz(a,h)anthracene	ug/l	0			0.001300			0.02600									0.02600	0.02600
1,2-Dichlorobenzene	ug/l	0			3,000			6.000e+4									6.000e+4	6.000e+4
1,3-Dichlorobenzene	ug/l	0			10.00			200.0									200.0	200.0
1,4-Dichlorobenzene	ug/l	0			900.0			1.800e+4									1.800e+4	1.800e+4
3,3-Dichlorobenzidine	ug/l	0			1.500			30.00									30.00	30.00
Dichlorobromomethane	ug/l	0			270.0			5,400									5,400	5,400
1,2-Dichloroethane	ug/l	0			6,500			1.300e+5									1.300e+5	1.300e+5
1,1-Dichloroethylene	ug/l	0			2.000e+4			4.000e+5									4.000e+5	4.000e+5
1,2-trans-dichloroethylene	ug/l	0			4,000			8.000e+4									8.000e+4	8.000e+4
2,4-Dichlorophenol	ug/l	0			60.00			1,200									1,200	1,200
2,4-Dichlorophenoxy acetic acid (2,4-D)	ug/l	0			1.200e+4			2.400e+5									2.400e+5	2.400e+5
1,2-Dichloropropane	ug/l	0			310.0			6,200									6,200	6,200
1,3-Dichloropropene	ug/l	0			120.0			2,400									2,400	2,400
Dieldrin	ug/l	0	0.7100	0.001900	0.00001200	7.100	0.03800	0.0002400							7.100	0.03800	0.0002400	0.0002400
Diethyl Phthalate	ug/l	0			600.0			1.200e+4									1.200e+4	1.200e+4
2,4-Dimethylphenol	ug/l	0			3,000			6.000e+4									6.000e+4	6.000e+4
Dimethyl Phthalate	ug/l	0			2,000			4.000e+4									4.000e+4	4.000e+4
Di-n-Butyl Phthalate	ug/l	0			30.00			600.0									600.0	600.0
2,4 Dinitrophenol	ug/l	0			300.0			6,000									6,000	6,000
Dinitrophenols	ug/l	0			1,000			2.000e+4									2.000e+4	2.000e+4
2-Methyl-4,6-Dinitrophenol	ug/l	0			30.00			600.0									600.0	600.0
2,4-Dinitrotoluene	ug/l	0			17.00			340.0									340.0	340.0
Dioxin 2,3,7,8-tetrachlorodibenzo-p-dioxin	ug/l	0			5.100e-8			0.000001020									0.000001020	0.000001020
1,2-Diphenylhydrazine	ug/l	0			2.000			40.00									40.00	40.00
Alpha-Endosulfan	ug/l	0	0.03400	0.008700	30.00	0.3400	0.1740	600.0							0.3400	0.1740	600.0	0.1044
Beta-Endosulfan	ug/l	0	0.03400	0.008700	40.00	0.3400	0.1740	800.0							0.3400	0.1740	800.0	0.1044
Alpha + Beta Endosulfan	ug/l	0	0.03400	0.008700		0.3400	0.1740								0.3400	0.1740		0.1044

Parameter	Units	Background Concentration	Water Quality Criteria			Wasteload Allocations			Antidegradation Baseline			Antidegradation Allocations			Most Limiting Allocations			Method Target Value
			Acute	Chronic	HH	Acute	Chronic	HH	Acute	Chronic	HH	Acute	Chronic	HH	Acute	Chronic	HH	
Endosulfan Sulfate	ug/l	0			40.00			800.0									800.0	800.0
Endrin	ug/l	0	0.03700	0.002300	0.03000	0.3700	0.04600	0.6000							0.3700	0.04600	0.6000	0.02760
Endrin Aldehyde	ug/l	0			1.000			20.00									20.00	20.00
Ethylbenzene	ug/l	0			130.0			2,600									2,600	2,600
Fluoranthene	ug/l	0			20.00			400.0									400.0	400.0
Fluorene	ug/l	0			70.00			1,400									1,400	1,400
Guthion	ug/l	0		0.01000			0.2000									0.2000		0.1200
Heptachlor	ug/l	0	0.05300	0.003600	0.00005900	0.5300	0.07200	0.001180							0.5300	0.07200	0.001180	0.001180
Heptachlor Epoxide	ug/l	0	0.05300	0.003600	0.0003200	0.5300	0.07200	0.006400							0.5300	0.07200	0.006400	0.006400
Hexachlorobenzene	ug/l	0			0.0007900			0.01580									0.01580	0.01580
Hexachlorobutadiene	ug/l	0			0.1000			2.000									2.000	2.000
Hexachlorocyclohexane Alpha-BHC	ug/l	0			0.003900			0.07800									0.07800	0.07800
Hexachlorocyclohexane Beta-BHC	ug/l	0			0.1400			2.800									2.800	2.800
Hexachlorocyclohexane Gamma-BHC (Lindane)	ug/l	0	0.1600		4.400	1.600		88.00							1.600		88.00	0.6400
Hexachlorocyclohexane (HCH) - Technical	ug/l	0			0.1000			2.000									2.000	2.000
Hexachlorocyclopentadiene	ug/l	0			4.000			80.00									80.00	80.00
Hexachloroethane	ug/l	0			1.000			20.00									20.00	20.00
Hydrogen Sulfide	ug/l	0		2.000			40.00									40.00		24.00
Indeno (1,2,3-cd) pyrene	ug/l	0			0.01300			0.2600									0.2600	0.2600
Isophorone	ug/l	0			1.800e+4			3.600e+5									3.600e+5	3.600e+5
Kepone	ug/l	0		0.000			0.000									0.000		0.000
Lead	ug/l	0	230.0	8.800		2,300	176.0								2,300	176.0		105.6
Malathion	ug/l	0		0.1000			2.000									2.000		1.200
Mercury	ug/l	0	1.800	0.9400		18.00	18.80								18.00	18.80		7.200
Methyl Bromide	ug/l	0			1.000e+4			2.000e+5									2.000e+5	2.000e+5
3-Methyl-4-Chlorophenol	ug/l	0			2,000			4.000e+4									4.000e+4	4.000e+4
Methylene Chloride	ug/l	0			1,000			2.000e+4									2.000e+4	2.000e+4
Methoxychlor	ug/l	0		0.03000	0.02000		0.6000									0.6000	0.4000	0.3600
Mirex	ug/l	0		0.000			0.000									0.000		0.000
Nickel	ug/l	0	74.00	8.200	4,600	740.0	164.0	9.200e+4							740.0	164.0	9.200e+4	98.40
Nitrobenzene	ug/l	0			600.0			1.200e+4									1.200e+4	1.200e+4
N-Nitrosodimethylamine	ug/l	0			30.00			600.0									600.0	600.0
N-Nitrosodiphenylamine	ug/l	0			60.00			1,200									1,200	1,200
N-Nitrosodi-n-propylamine	ug/l	0			5.100			102.0									102.0	102.0
Nonylphenol	ug/l	0	7.000	1.700		70.00	34.00								70.00	34.00		20.40

Parameter	Units	Background Concentration	Water Quality Criteria			Wasteload Allocations			Antidegradation Baseline			Antidegradation Allocations			Most Limiting Allocations			Method Target Value
			Acute	Chronic	HH	Acute	Chronic	HH	Acute	Chronic	HH	Acute	Chronic	HH	Acute	Chronic	HH	
Parathion	ug/l	0																
PCB Total	ug/l	0		0.03000	0.0006400		0.6000	0.01280								0.6000	0.01280	0.01280
Pentachlorobenzene	ug/l	0			0.1000			2.000									2.000	2.000
Pentachlorophenol	ug/l	0	13.00	7.900	0.4000	130.0	158.0	8.000							130.0	158.0	8.000	8.000
Phenol	ug/l	0			3.000e+5			6.000e+6									6.000e+6	6.000e+6
Phosphorus (Elemental)	ug/l	0		0.1000			2.000									2.000		1.200
Pyrene	ug/l	0			30.00			600.0									600.0	600.0
Selenium	ug/l	0	290.0	71.00	4,200	2,900	1,420	8.400e+4							2,900	1,420	8.400e+4	852.0
Silver	ug/l	0	1.900			19.00									19.00			7.600
1,2,4,5-Tetrachlorobenzene	ug/l	0			0.03000			0.6000									0.6000	0.6000
1,1,2,2-Tetrachloroethane	ug/l	0			30.00			600.0									600.0	600.0
Tetrachloroethylene	ug/l	0			290.0			5,800									5,800	5,800
Thallium	ug/l	0			0.4700			9.400									9.400	9.400
Toluene	ug/l	0			520.0			1.040e+4									1.040e+4	1.040e+4
Toxaphene	ug/l	0	0.2100	0.0002000	0.007100	2.100	0.004000	0.1420							2.100	0.004000	0.1420	0.002400
Tributyltin	ug/l	0	0.4200	0.007400		4.200	0.1480								4.200	0.1480		0.08880
1,2,4-Trichlorobenzene	ug/l	0			0.7600			15.20									15.20	15.20
1,1,1-Trichloroethane	ug/l	0			2.000e+5			4.000e+6									4.000e+6	4.000e+6
1,1,2-Trichloroethane	ug/l	0			89.00			1,780									1,780	1,780
Trichloroethylene	ug/l	0			70.00			1,400									1,400	1,400
2,4,5-Trichlorophenol	ug/l	0			600.0			1.200e+4									1.200e+4	1.200e+4
2,4,6-Trichlorophenol	ug/l	0			28.00			560.0									560.0	560.0
2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex)	ug/l	0			400.0			8,000									8,000	8,000
Vinyl Chloride	ug/l	0			16.00			320.0									320.0	320.0
Zinc	ug/l	0	90.00	81.00	2.600e+4	900.0	1,620	5.200e+5							900.0	1,620	5.200e+5	360.0

Notes:

1. Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals.
2. Metals measured as Dissolved, unless specified otherwise.
3. For transition zone waters, this program prints the lesser of the freshwater and saltwater quality criteria.
4. Regular WLA = (WQC x WLA multiplier) - (WLA multiplier - 1)(background conc.)
5. Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic
   Antideg. Baseline = (0.1(WQC - background conc.) + background conc.) for human health
6. Antideg. WLA = (Antideg. Baseline)(WLA multiplier) - (WLA multiplier - 1)(background conc.)

ATTACHMENT 8

January 1999 to January 2011 Ambient Water Data

Monitoring Station ID 1AUMC004.43

Stream Name	Collection Date Time	Collector Id	Depth	Temp Celcius	Field Ph	Do Probe	Specific Conductance	Salinity
UPPER MACHODOC CREEK	7-Jan-99	JPW	0.3	0.1	7.1	12.9	11212	6.4
UPPER MACHODOC CREEK	17-Mar-99	JST	0.3	7.3	6.9	10.8	2278	NULL
UPPER MACHODOC CREEK	25-May-99	JST	1	NULL	NULL	NULL	NULL	NULL
UPPER MACHODOC CREEK	25-May-99	JST	0.3	22.2	6.6	6.6	10440	5.9
UPPER MACHODOC CREEK	25-Aug-99	JST	0.3	26.6	6.8	5.1	20912	12.5
UPPER MACHODOC CREEK	5-Oct-99	JST	0.3	18.8	6.9	5.3	9037	5.1
UPPER MACHODOC CREEK	2-Dec-99	JPW	3	NULL	NULL	NULL	NULL	NULL
UPPER MACHODOC CREEK	2-Dec-99	JPW	0.3	0.7	5.7	11.4	58.1	NULL
UPPER MACHODOC CREEK	23-Feb-00	JPW	0.3	6.2	NULL	11	83.4	NULL
UPPER MACHODOC CREEK	26-Apr-00	JPW	0.3	10.3	NULL	10.9	87.5	NULL
UPPER MACHODOC CREEK	28-Jun-00	JPW	0.3	22.18	6.68	6.44	77.5	NULL
UPPER MACHODOC CREEK	29-Aug-00	JPW	0.3	21.85	6.74	4.02	144.2	NULL
UPPER MACHODOC CREEK	26-Oct-00	JPW	0.3	12.06	5.72	4.41	36.9	NULL
UPPER MACHODOC CREEK	14-Feb-01	JPW	0.3	NULL	NULL	NULL	NULL	NULL
UPPER MACHODOC CREEK	13-Mar-01	JPW	0.3	10.14	6.65	9.09	156.3	NULL
UPPER MACHODOC CREEK	3-May-01	JPW	0.3	18.57	7.15	7.6	140.2	NULL
UPPER MACHODOC CREEK	20-Dec-01	JPW	0.3	3.93	6.89	8.71	41.8	NULL
UPPER MACHODOC CREEK	7-Feb-02	JPW	0.3	2.81	6.91	10.3	47.4	NULL
UPPER MACHODOC CREEK	15-Apr-02	JPW	0.3	22.08	6.14	7.52	34.9	NULL
UPPER MACHODOC CREEK	6-Feb-03	MLM	0.3	2.28	6.06	15.27	402.2	NULL
UPPER MACHODOC CREEK	2-Apr-03	DJD	0.3	13.3	7.4	7.48	542.5	NULL
UPPER MACHODOC CREEK	10-Jun-03	DJD	0.3	23.82	6.54	4.29	294.4	NULL
UPPER MACHODOC CREEK	13-Aug-03	MLM	0.3	27.44	6.83	4.18	258.8	NULL
UPPER MACHODOC CREEK	9-Dec-03	MLM	0.3	2.15	6.84	13.11	454.1	NULL
UPPER MACHODOC CREEK	5-Feb-04	MLM	0.3	NULL	NULL	NULL	NULL	NULL
UPPER MACHODOC CREEK	23-Jun-04	MLM	0.3	26.47	7.42	5.65	41.4	NULL
UPPER MACHODOC CREEK	31-Aug-04	MLM	0.3	27.66	7.42	5.25	125.6	NULL
UPPER MACHODOC CREEK	12-Oct-04	JMC	0.3	18.35	7.03	8.36	4112	NULL
UPPER MACHODOC CREEK	20-Dec-04	MLM	0.3	0.43	5.98	13.45	64.5	NULL
UPPER MACHODOC CREEK	8-Feb-05	MLM	0.3	5.33	7.07	13.74	149.1	NULL
UPPER MACHODOC CREEK	14-Apr-05	MLM	0.3	15.09	7.04	7.22	193.6	NULL
UPPER MACHODOC CREEK	2-Jun-05	JMC	0.3	23.67	6.9	5.92	3951	2.15
UPPER MACHODOC CREEK	10-Aug-05	GKB	0.3	31.11	6.94	6.74	9870	NULL

UPPER MACHODOC CREEK	25-Oct-05	GKB	0.3	13.4	6.93	8.97	11808	NULL
UPPER MACHODOC CREEK	5-Dec-05	MLM	0.3	6.4	7.48	11.56	376.5	NULL
UPPER MACHODOC CREEK	1-Feb-06	MLM	0.3	13.65	7.44	8.95	138.4	NULL
UPPER MACHODOC CREEK	13-Apr-06	MLM	0.3	19.5	7.2	7.7	99.6	NULL
UPPER MACHODOC CREEK	5-Jun-06	MLM	0.3	25.7	7.3	5.6	109.3	NULL
UPPER MACHODOC CREEK	2-Aug-06	MLM	0.3	31.2	7.2	6.8	418.9	NULL
UPPER MACHODOC CREEK	12-Mar-07	PMH	0.3	12	7.1	10.4	745	NULL
UPPER MACHODOC CREEK	3-May-07	PMH	0.3	21.1	7.1	7.4	1656	NULL
UPPER MACHODOC CREEK	23-Jul-07	PMH	0.3	27.7	7.4	7.7	12311	7.02
UPPER MACHODOC CREEK	25-Sep-07	PMH	0.3	24.8	7	5.6	16901	9.9
UPPER MACHODOC CREEK	29-Nov-07	PMH	0.3	9	7.5	10.3	14310	8.29
UPPER MACHODOC CREEK	30-Jan-08	PMH	0.3	6.1	8.4	14.8	12914	7.38
UPPER MACHODOC CREEK	24-Apr-08	PMH	0.3	20.6	6.9	5.7	2603	NULL
UPPER MACHODOC CREEK	26-Jun-08	PMH	0.3	30.2	7.1	6	3157	NULL
UPPER MACHODOC CREEK	21-Aug-08	PMH	0.3	28.1	7.3	6.4	13169	7.54
UPPER MACHODOC CREEK	30-Oct-08	PMH	0.3	10.8	7.5	9	14064	8.16
UPPER MACHODOC CREEK	9-Dec-08	PMH	0.3	4.3	7.9	12.9	15316	8.82
UPPER MACHODOC CREEK	21-Jan-09	PMH	0.3	0.5	6.6	14	9531	5.21
UPPER MACHODOC CREEK	17-Mar-09	PMH	0.3	8.9	7.4	10.9	8114	4.54
UPPER MACHODOC CREEK	14-May-09	PMH	0.3	20.8	7	5.5	3418	NULL
UPPER MACHODOC CREEK	8-Jul-09	PMH	0.3	27.5	7	6.3	6724	3.73
UPPER MACHODOC CREEK	1-Sep-09	PMH	0.3	26.4	7.6	7.8	13267	7.62
UPPER MACHODOC CREEK	23-Nov-09	PMH	0.3	11.7	7	8.2	6445	3.54
UPPER MACHODOC CREEK	28-Jan-10	PMH	0.3	6.5	6.9	11	3647	NULL
UPPER MACHODOC CREEK	25-Mar-10	PMH	0.3	14.9	7	8.8	293	NULL
UPPER MACHODOC CREEK	19-May-10	PMH	0.3	18.4	6.8	5.4	3602	NULL
UPPER MACHODOC CREEK	1-Jun-10	PMH	0.3	29	7	6	4530	2.48
UPPER MACHODOC CREEK	29-Jul-10	PMH	0.3	31.7	7.6	6.8	13842	7.99
UPPER MACHODOC CREEK	23-Sep-10	PMH	0.3	25.6	7.7	8	17888	10.55
UPPER MACHODOC CREEK	17-Nov-10	PMH	0.3	12.6	7.6	9.2	13113	7.54
UPPER MACHODOC CREEK	10-Jan-11	PMH	0.3	0.3	8	15.6	8811	4.79

90th percentile annual temp: **27.7**

90th percentile wet season temp: **17.3**

Salinity; 90th percentile: **9.792**

Mean **6.688636**

Median **7.2**

90th percentile pH: **7.6**

10th percentile pH: **6.6**

ATTACHMENT 9

CY2020 Daily Effluent pH & Temperature Data

2020 pH

Date	Jan	Feb	March	April	May	June	July	August	Sept	October	Nov	Dec
1	7.74	7.51	7.55	7.25	7.4	7.67	7.78	7.63	7.34	7.53	7.16	7.48
2	7.71	7.78	7.61	7.19	7.41	7.33	7.75	7.77	7.83	7.42	7.21	7.51
3	7.87	7.45	7.66	7.29	7.29	7.61	7.79	7.57	7.46	7.5	7.21	7.52
4	7.78	7.49	7.62	7.46	7.17	7.67	7.43	7.5	7.41	7.43	7.09	7.51
5	7.69	7.51	7.55	7.73	7.29	7.72	7.42	7.45	7.45	7.48	7.22	7.47
6	7.71	7.41	7.5	7.76	7.3	7.66	7.75	7.42	7.48	7.58	7.13	7.51
7	7.75	7.48	7.55	7.64	7.24	7.66	7.66	7.27	7.48	7.45	7.1	7.33
8	7.56	7.78	7.52	7.62	7.31	7.63	7.79	7.31	7.49	7.71	7.23	7.31
9	7.7	7.48	7.59	7.26	7.31	7.6	7.6	7.37	7.46	7.48	7.33	7.3
10	7.43	7.27	7.57	7.27	7.32	7.63	7	7.47	7.39	7.88	7.17	7.33
11	7.65	7.31	7.63	7.52	7.48	7.74	7.71	7.43	7.39	7.23	7.16	7.31
12	7.38	7.34	7.57	7.68	7.38	7.59	7.67	7.48	7.4	7.37	7.2	7.35
13	7.4	7.36	7.37	7.82	7.34	7.86	7.68	7.48	7.36	7.38	7.4	7.36
14	7.45	7.57	7.75	6.93	7.39	7.78	7.75	7.4	7.43	7.36	7.34	7.39
15	7.42	7.49	7	7.2	7.4	7.76	7.67	7.37	7.52	7.44	7.42	7.32
16	7.37	7.47	7.67	7.14	7.55	7.8	7.73	7.32	7.85	7.49	7.42	7.28
17	7.43	7.58	7.6	6.91	7.46	7.75	7.01	7.44	7.58	7.13	7.47	7.29
18	7.46	7.56	7.6	7.46	7.58	7.49	7.82	7.38	7.61	7.38	7.4	7.33
19	7.55	7.53	7.18	7.56	7.49	7.74	7.8	7.37	7.68	7.35	7.58	7.34
20	7.76	7.28	7.59	7.6	7.33	7.71	7.79	7.31	7.7	7.31	7.62	7.25
21	7.46	7.49	7.21	7.12	7.58	7.63	7.73	7.33	7.62	7.45	7.6	7.29
22	7.5	7.45	7.75	7.1	7.47	7.75	7.68	7.4	7.7	7.41	7.58	7.32
23	7.49	7.48	7.73	7.11	7.5	7.68	7.69	7.42	7.64	7.42	7.66	7.77
24	7.68	6.88	7.3	7.12	7.41	7.7	7.77	7.43	7.66	7.57	7.64	7.25
25	7.62	7.28	7.7	6.99	7.49	7.73	7.81	7.44	7.75	7.34	7.58	7.42
26	7.22	7.57	7.73	7.07	7.52	7.67	7.78	6.67	7.55	7.41	7.56	7.41

27	7.54	7.59	7.22	7.53	7.51	7.8	7.72	7.43	7.58	7.42	7.71	7.36
28	7.45	7.63	6.88	7.42	7.61	7.7	7.75	7.47	7.62	7.5	7.57	7.31
29	7.43	7.53	6.8	7.5	7.74	7.42	7.67	7.29	7.56	7.43	7.62	7.41
30	7.43		7.67	7.45	7.57	7.74	7.75	7.43	7.44	7.16	7.51	7.39
31	7.52		7.86		7.24		7.58	7.33		7.17		7.42
AVG	7.55	7.47	7.50	7.36	7.42	7.67	7.66	7.40	7.55	7.43	7.40	7.38
MAX	7.87	7.78	7.86	7.82	7.74	7.86	7.82	7.77	7.85	7.88	7.71	7.77
MIN	7.22	6.88	6.8	6.91	7.17	7.33	7	6.67	7.36	7.13	7.09	7.25

90th percentile: **7.75**
10th percentile: **7.23**

2020 TEMPERATURE ^{O}C

Date	Jan	Feb	March	April	May	June	July	August	Sept	October	Nov	Dec
1	13.2	12.4	11	16.9	17.3	21.7	26.2	27.8	25.1	22.9	17.7	16.5
2	12.5	11.8	12.6	16.6	17	21.5	26.3	28	25.8	22.7	17.3	15.1
3	13.1	12.8	15	16.9	17.9	21.6	26.3	28	26.5	22.2	16.3	13.8
4	13	14.3	14.9	16.8	18.3	22.1	25	26.9	27.1	21.6	16.8	14.1
5	13.1	15	12.8	15.2	18.3	22.9	26.9	26.5	26.2	21.9	17.1	13.9
6	14.7	14.8	13	15.6	17.2	23.5	27	27	26	21.6	19	14
7	12.9	14.4	14.7	16.2	16.8	23.7	27.3	26.7	25.8	21.7	17.8	13.6
8	12.4	12.6	12	16.8	17	23.7	28.1	26.6	25.7	22.3	17.9	12.9
9	11.1	11.8	14.7	17.6	16.7	23.6	27	26.6	26.3	22.1	18.1	12.2
10	12.4	13	15	16.6	15.7	24.2	24.7	27.2	25.5	22.2	18.5	12.4
11	11.6	14.9	14.6	16.4	16	24.6	27.4	27.4	26.6	21.9	19.1	12.7
12	15.1	14.4	16.9	16	16.4	24.7	27.4	27.8	26.7	21.9	19.8	13.4
13	15.9	14.2	14.6	16.2	16.2	24.3	27.2	27.3	26.4	21.6	18.5	14
14	14.8	13.2	14.8	18.3	16.9	24.1	27.1	26.8	25.6	21.1	17.7	14.8
15	14.2	12.1	16	16.5	17.4	23.4	27.1	26.9	24.9	20.9	17.5	13
16	14.8	10.8	14.1	17.3	18.7	23	27.1	25.6	24.2	21.1	17.9	12.6
17	13.9	10.9	15.7	16.7	19.7	22.7	24.6	25.2	24.2	19.9	16.8	11.4
18	12.8	12.9	14.2	15.6	19.6	23.1	26.1	25.2	24.5	19.3	15.8	11.3
19	11.3	13.3	16.2	16.1	19.2	23	27.8	25.8	23.8	19.4	14.8	11.6
20	11.2	15.6	17.2	15.6	18.6	23.8	28.2	25.4	22.8	20.2	14.9	11.8
21	10.8	12	17.3	15.9	18	24.1	28.6	25.7	22.2	20.8	15.7	12.3
22	11.4	10.7	16.1	16	18.4	24.6	28.6	26	22.1	21.2	16.7	12.7
23	10.4	12.7	15.4	16.1	19.2	24.9	28.2	26.2	21.7	21.5	17.2	12.5
24	11.4	12.4	14.5	17.5	20	25	28.2	26.8	22.6	21.3	16.4	12.9
25	10.3	11.5	14.4	16.7	20.1	24.8	28	26.7	22.8	21.2	16	13.4
26	12.4	14.3	14.2	16.7	20.1	24.9	28.1	26.7	22.6	19.2	16.1	13.2

27	13.6	13.9	15.4	16.5	20.5	25.4	28.3	26.6	22.2	19.3	16.8	10.1
28	12.4	13.9	16.3	16	21.1	25.9	28.6	26.9	23.6	19.8	16.8	10.2
29	13.6	11	16	15.8	21.7	26	28.7	26.4	24.5	20.5	16.5	10.4
30	12.8		15.9	17	22.2		28.5	26.2	23.8	19.8	15.8	10.3
31	12.3		16.2		21.7		28.5	25.7		18.4		10.5
AVG	12.75	13.02	14.89	16.47	18.51	23.82	27.33	26.60	24.59	21.02	17.11	12.70
MAX	15.9	15.6	17.3	18.3	22.2	26	28.7	28	27.1	22.9	19.8	16.5
MIN	10.3	10.7	12	15.2	15.7	21.5	24.6	25.2	21.7	18.4	14.8	10.1

90th percentile annual temp: 26.8

90th percentile wet season temp: 15.7

ATTACHMENT 10

March 2016 – February 2021 Effluent Data

Permit Number equal to VA0021067
Due Date between 2016-05-01 and 2021-04-01

Due Date	Parameter	Quant Avg	Quant Max	Quant Lim Avg	Quant Lim Max	Units	Conc Min	Conc Avg	Conc Max	Conc Lim Min	Conc Lim Avg	Conc Lim Max	Units
5/10/2016	AMMONIA, AS N			********	********			<QL	<QL	********	5.0	5.0	MG/L
6/10/2016	AMMONIA, AS N			********	********			0.020	0.07	********	5.0	5.0	MG/L
7/10/2016	AMMONIA, AS N			********	********			0.017	0.090	********	5.0	5.0	MG/L
8/10/2016	AMMONIA, AS N			********	********			0.060	0.13	********	5.0	5.0	MG/L
9/10/2016	AMMONIA, AS N			********	********			0	0.01	********	5.0	5.0	MG/L
10/10/2016	AMMONIA, AS N			********	********			0.0020	<QL	********	5.0	5.0	MG/L
11/10/2016	AMMONIA, AS N			********	********			<QL	<QL	********	5.0	5.0	MG/L
12/10/2016	AMMONIA, AS N			********	********			<QL	<QL	********	5.0	5.0	MG/L
1/10/2017	AMMONIA, AS N			********	********			0.01	0.06	********	5.0	5.0	MG/L
2/10/2017	AMMONIA, AS N			********	********			0.02	0.04	********	5.0	5.0	MG/L
3/10/2017	AMMONIA, AS N			********	********			0.020	0.060	********	5.0	5.0	MG/L
4/10/2017	AMMONIA, AS N			********	********			<QL	<QL	********	5.0	5.0	MG/L
5/10/2017	AMMONIA, AS N			********	********			<QL	<QL	********	5.0	5.0	MG/L
6/10/2017	AMMONIA, AS N			********	********			0.050	0.20	********	5.0	5.0	MG/L
7/10/2017	AMMONIA, AS N			********	********			<QL	<QL	********	5.0	5.0	MG/L
8/10/2017	AMMONIA, AS N			********	********			0.062	0.12	********	5.0	5.0	MG/L
9/10/2017	AMMONIA, AS N			********	********			.010	0.050	********	5.0	5.0	MG/L
10/10/2017	AMMONIA, AS N			********	********			<QL	<QL	********	5.0	5.0	MG/L
11/10/2017	AMMONIA, AS N			********	********			0.02	0.08	********	5.0	5.0	MG/L
12/10/2017	AMMONIA, AS N			********	********			<QL	<QL	********	5.0	5.0	MG/L
1/10/2018	AMMONIA, AS N			********	********			<QL	<QL	********	5.0	5.0	MG/L
2/10/2018	AMMONIA, AS N			********	********			<QL	<QL	********	5.0	5.0	MG/L
3/10/2018	AMMONIA, AS N			********	********			<QL	<QL	********	5.0	5.0	MG/L
4/10/2018	AMMONIA, AS N			********	********			<QL	<QL	********	5.0	5.0	MG/L
5/10/2018	AMMONIA, AS N			********	********			<QL	<QL	********	5.0	5.0	MG/L
6/10/2018	AMMONIA, AS N			********	********			0.06	0.21	********	5.0	5.0	MG/L
7/10/2018	AMMONIA, AS N			********	********			0.02	0.02	********	5.0	5.0	MG/L

8/10/2018	AMMONIA, AS N			********	********			1.09	3.40	*******	5.0	5.0	MG/L
9/10/2018	AMMONIA, AS N			********	********			2.69	6.40	*******	5.0	5.0	MG/L
10/10/2018	AMMONIA, AS N			********	********			0.01	0.03	*******	5.0	5.0	MG/L
11/10/2018	AMMONIA, AS N			********	********			<QL	<QL	*******	5.0	5.0	MG/L
12/10/2018	AMMONIA, AS N			********	********			<QL	<QL	*******	5.0	5.0	MG/L
1/10/2019	AMMONIA, AS N			********	********			<QL	<QL	*******	5.0	5.0	MG/L
2/10/2019	AMMONIA, AS N			********	********			0.01	<QL	*******	5.0	5.0	MG/L
3/10/2019	AMMONIA, AS N			********	********			0.06	0.16	*******	5.0	5.0	MG/L
4/10/2019	AMMONIA, AS N			********	********			0.04	0.19	*******	5.0	5.0	MG/L
5/10/2019	AMMONIA, AS N			********	********			0.08	0.29	*******	5.0	5.0	MG/L
6/10/2019	AMMONIA, AS N			********	********			<QL	<QL	*******	5.0	5.0	MG/L
7/10/2019	AMMONIA, AS N			********	********			<QL	<QL	*******	5.0	5.0	MG/L
8/10/2019	AMMONIA, AS N			********	********			<QL	<QL	*******	5.0	5.0	MG/L
9/10/2019	AMMONIA, AS N			********	********			<QL	<QL	*******	5.0	5.0	MG/L
10/10/2019	AMMONIA, AS N			********	********			<QL	<QL	*******	5.0	5.0	MG/L
11/10/2019	AMMONIA, AS N			********	********			<QL	<QL	*******	5.0	5.0	MG/L
12/10/2019	AMMONIA, AS N			********	********			<QL	<QL	*******	5.0	5.0	MG/L
1/10/2020	AMMONIA, AS N			********	********			0.01	0.03	*******	5.0	5.0	MG/L
2/10/2020	AMMONIA, AS N			********	********			<QL	<QL	*******	5.0	5.0	MG/L
3/10/2020	AMMONIA, AS N			********	********			<QL	<QL	*******	5.0	5.0	MG/L
4/10/2020	AMMONIA, AS N			********	********			0.17	0.62	*******	5.0	5.0	MG/L
5/10/2020	AMMONIA, AS N			********	********			0.01	<QL	*******	5.0	5.0	MG/L
6/10/2020	AMMONIA, AS N			********	********			0.01	0.10	*******	5.0	5.0	MG/L
7/10/2020	AMMONIA, AS N			********	********			<QL	<QL	*******	5.0	5.0	MG/L
8/10/2020	AMMONIA, AS N			********	********			<QL	<QL	*******	5.0	5.0	MG/L
9/10/2020	AMMONIA, AS N			********	********			<QL	<QL	*******	5.0	5.0	MG/L
10/10/2020	AMMONIA, AS N			********	********			<QL	<QL	*******	5.0	5.0	MG/L
11/10/2020	AMMONIA, AS N			********	********			<QL	<QL	*******	5.0	5.0	MG/L
12/10/2020	AMMONIA, AS N			********	********			0.01	0.03	*******	5.0	5.0	MG/L
1/10/2021	AMMONIA, AS N			********	********			<QL	<QL	*******	5.0	5.0	MG/L
2/10/2021	AMMONIA, AS N			********	********			<QL	<QL	*******	5.0	5.0	MG/L
3/10/2021	AMMONIA, AS N			********	********			<QL	<QL	*******	5.0	5.0	MG/L
5/10/2016	BOD5	<QL	1.85	82	120	KG/D		<QL	<QL	*******	30	45	MG/L
6/10/2016	BOD5	1.2	1.14	82	120	KG/D		0.59	0.70	*******	30	45	MG/L
7/10/2016	BOD5	<QL	<QL	82	120	KG/D		<QL	<QL	*******	30	45	MG/L
8/10/2016	BOD5	<QL	<QL	82	120	KG/D		<QL	<QL	*******	30	45	MG/L
9/10/2016	BOD5	<QL	<QL	82	120	KG/D		<QL	<QL	*******	30	45	MG/L

10/10/2016	BOD5	<QL	<QL	82	120	KG/D		0.24	1.03	*******	30	45	MG/L
11/10/2016	BOD5	2.1	9.16	82	120	KG/D		1.5	6.7	*******	30	45	MG/L
12/10/2016	BOD5	<QL	<QL	82	120	KG/D		<QL	<QL	*******	30	45	MG/L
1/10/2017	BOD5	<QL	<QL	82	120	KG/D		0.28	1.02	*******	30	45	MG/L
2/10/2017	BOD5	<QL	<QL	82	120	KG/D		0.19	0.83	*******	30	45	MG/L
3/10/2017	BOD5	<QL	<QL	82	120	KG/D		<QL	<QL	*******	30	45	MG/L
4/10/2017	BOD5	<QL	5.46	82	120	KG/D		1.1	4.3	*******	30	45	MG/L
5/10/2017	BOD5	<QL	<QL	82	120	KG/D		0.2	0.8	*******	30	45	MG/L
6/10/2017	BOD5	<QL	2.60	82	120	KG/D		0.41	1.2	*******	30	45	MG/L
7/10/2017	BOD5	<QL	<QL	82	120	KG/D		<QL	<QL	*******	30	45	MG/L
8/10/2017	BOD5	<QL	<QL	82	120	KG/D		<QL	<QL	*******	30	45	MG/L
9/10/2017	BOD5	0.8	1.3	82	120	KG/D		<QL	<QL	*******	30	45	MG/L
10/10/2017	BOD5	<QL	<QL	82	120	KG/D		0.20	0.80	*******	30	45	MG/L
11/10/2017	BOD5	0.3	1.3	82	120	KG/D		0.21	0.90	*******	30	45	MG/L
12/10/2017	BOD5	0.3	1.4	82	120	KG/D		0.3	1.3	*******	30	45	MG/L
1/10/2018	BOD5	<QL	<QL	82	120	KG/D		<QL	<QL	*******	30	45	MG/L
2/10/2018	BOD5	<QL	<QL	82	120	KG/D		<QL	<QL	*******	30	45	MG/L
3/10/2018	BOD5	0	0	82	120	KG/D		0	0	*******	30	45	MG/L
4/10/2018	BOD5	<QL	<QL	82	120	KG/D		<QL	<QL	*******	30	45	MG/L
5/10/2018	BOD5	2.6	11.1	82	120	KG/D		1.8	7.9	*******	30	45	MG/L
6/10/2018	BOD5	0.40	2.09	82	120	KG/D		0.20	0.70	*******	30	45	MG/L
7/10/2018	BOD5	1.4	4.4	82	120	KG/D		1.1	3.5	*******	30	45	MG/L
8/10/2018	BOD5	4.36	8.08	82	120	KG/D		10.20	31.03	*******	30	45	MG/L
9/10/2018	BOD5	2.06	4.30	82	120	KG/D		1.21	2.64	*******	30	45	MG/L
10/10/2018	BOD5	<QL	<QL	82	120	KG/D		<QL	<QL	*******	30	45	MG/L
11/10/2018	BOD5	<QL	<QL	82	120	KG/D		<QL	<QL	*******	30	45	MG/L
12/10/2018	BOD5	<QL	<QL	82	120	KG/D		<QL	<QL	*******	30	45	MG/L
1/10/2019	BOD5	<QL	<QL	82	120	KG/D		<QL	<QL	*******	30	45	MG/L
2/10/2019	BOD5	<QL	<QL	82	120	KG/D		<QL	<QL	*******	30	45	MG/L
3/10/2019	BOD5	<QL	<QL	82	120	KG/D		<QL	<QL	*******	30	45	MG/L
4/10/2019	BOD5	<QL	<QL	82	120	KG/D		<QL	<QL	*******	30	45	MG/L
5/10/2019	BOD5	<QL	<QL	82	120	KG/D		<QL	<QL	*******	30	45	MG/L
6/10/2019	BOD5	0.48	<QL	82	120	KG/D		0.36	<QL	*******	30	45	MG/L
7/10/2019	BOD5	<QL	<QL	82	120	KG/D		<QL	<QL	*******	30	45	MG/L
8/10/2019	BOD5	<QL	<QL	82	120	KG/D		<QL	<QL	*******	30	45	MG/L
9/10/2019	BOD5	<QL	<QL	82	120	KG/D		<QL	<QL	*******	30	45	MG/L
10/10/2019	BOD5	<QL	<QL	82	120	KG/D		<QL	<QL	*******	30	45	MG/L

11/10/2019	BOD5	<QL	<QL	82	120	KG/D		<QL	<QL	*******	30	45	MG/L
12/10/2019	BOD5	<QL	<QL	82	120	KG/D		<QL	<QL	*******	30	45	MG/L
1/10/2020	BOD5	<QL	<QL	82	120	KG/D		<QL	<QL	*******	30	45	MG/L
2/10/2020	BOD5	<QL	<QL	82	120	KG/D		<QL	<QL	*******	30	45	MG/L
3/10/2020	BOD5	<QL	<QL	82	120	KG/D		<QL	<QL	*******	30	45	MG/L
4/10/2020	BOD5	1.57	6.79	82	120	KG/D		1.00	4.33	*******	30	45	MG/L
5/10/2020	BOD5	<QL	<QL	82	120	KG/D		<QL	<QL	*******	30	45	MG/L
6/10/2020	BOD5	<QL	<QL	82	120	KG/D		<QL	<QL	*******	30	45	MG/L
7/10/2020	BOD5	0.95	1.79	82	120	KG/D		0.69	1.33	*******	30	45	MG/L
8/10/2020	BOD5	<QL	<QL	82	120	KG/D		<QL	<QL	*******	30	45	MG/L
9/10/2020	BOD5	<QL	<QL	82	120	KG/D		<QL	<QL	*******	30	45	MG/L
10/10/2020	BOD5	<QL	<QL	82	120	KG/D		<QL	<QL	*******	30	45	MG/L
11/10/2020	BOD5	<QL	<QL	82	120	KG/D		<QL	<QL	*******	30	45	MG/L
12/10/2020	BOD5	<QL	<QL	82	120	KG/D		<QL	<QL	*******	30	45	MG/L
1/10/2021	BOD5	<QL	<QL	82	120	KG/D		<QL	<QL	*******	30	45	MG/L
2/10/2021	BOD5	<QL	<QL	82	120	KG/D		<QL	<QL	*******	30	45	MG/L
3/10/2021	BOD5	<QL	<QL	82	120	KG/D		<QL	<QL	*******	30	45	MG/L
5/10/2016	COLIFORM, FECAL			********	********			0.32		*******	14	*******	N/CML
6/10/2016	COLIFORM, FECAL			********	********			0.32		*******	14	*******	N/CML
7/10/2016	COLIFORM, FECAL			********	********			0.35		*******	14	*******	N/CML
8/10/2016	COLIFORM, FECAL			********	********			0.5		*******	14	*******	N/CML
9/10/2016	COLIFORM, FECAL			********	********			0.38		*******	14	*******	N/CML
10/10/2016	COLIFORM, FECAL			********	********			1.8		*******	14	*******	N/CML
11/10/2016	COLIFORM, FECAL			********	********			0.5		*******	14	*******	N/CML
12/10/2016	COLIFORM, FECAL			********	********			0		*******	14	*******	N/CML
1/10/2017	COLIFORM, FECAL			********	********			0		*******	14	*******	N/CML
2/10/2017	COLIFORM, FECAL			********	********			0		*******	14	*******	N/CML
3/10/2017	COLIFORM, FECAL			********	********			0		*******	14	*******	N/CML
4/10/2017	COLIFORM, FECAL			********	********			0		*******	14	*******	N/CML
5/10/2017	COLIFORM, FECAL			********	********			0.46		*******	14	*******	N/CML
6/10/2017	COLIFORM, FECAL			********	********			0		*******	14	*******	N/CML
7/10/2017	COLIFORM, FECAL			********	********			0.49		*******	14	*******	N/CML
8/10/2017	COLIFORM, FECAL			********	********			0.07		*******	14	*******	N/CML
9/10/2017	COLIFORM, FECAL			********	********			0.81		*******	14	*******	N/CML
10/10/2017	COLIFORM, FECAL			********	********			0.3		*******	14	*******	N/CML
11/10/2017	COLIFORM, FECAL			********	********			0.55		*******	14	*******	N/CML
12/10/2017	COLIFORM, FECAL			********	********			0.11		*******	14	*******	N/CML

1/10/2018	COLIFORM, FECAL			********	********			0.18		*******	14	*******	N/CML
2/10/2018	COLIFORM, FECAL			********	********			X		*******	14	*******	N/CML
3/10/2018	COLIFORM, FECAL			********	********			X		*******	14	*******	N/CML
4/10/2018	COLIFORM, FECAL			********	********			X		*******	14	*******	N/CML
5/10/2018	COLIFORM, FECAL			********	********			X		*******	14	*******	N/CML
6/10/2018	COLIFORM, FECAL			********	********			X		*******	14	*******	N/CML
7/10/2018	COLIFORM, FECAL			********	********			X		*******	14	*******	N/CML
8/10/2018	COLIFORM, FECAL			********	********			X		*******	14	*******	N/CML
9/10/2018	COLIFORM, FECAL			********	********			2.1		*******	14	*******	N/CML
10/10/2018	COLIFORM, FECAL			********	********			1.50		*******	14	*******	N/CML
11/10/2018	COLIFORM, FECAL			********	********			1.15		*******	14	*******	N/CML
12/10/2018	COLIFORM, FECAL			********	********			1.00		*******	14	*******	N/CML
1/10/2019	COLIFORM, FECAL			********	********			1.00		*******	14	*******	N/CML
2/10/2019	COLIFORM, FECAL			********	********			1.00		*******	14	*******	N/CML
3/10/2019	COLIFORM, FECAL			********	********			1		*******	14	*******	N/CML
4/10/2019	COLIFORM, FECAL			********	********			1.00		*******	14	*******	N/CML
5/10/2019	COLIFORM, FECAL			********	********			1.00		*******	14	*******	N/CML
6/10/2019	COLIFORM, FECAL			********	********			1.55		*******	14	*******	N/CML
7/10/2019	COLIFORM, FECAL			********	********			1.0		*******	14	*******	N/CML
8/10/2019	COLIFORM, FECAL			********	********			1.00		*******	14	*******	N/CML
9/10/2019	COLIFORM, FECAL			********	********			4.51		*******	14	*******	N/CML
10/10/2019	COLIFORM, FECAL			********	********			1.00		*******	14	*******	N/CML
11/10/2019	COLIFORM, FECAL			********	********			1.97		*******	14	*******	N/CML
12/10/2019	COLIFORM, FECAL			********	********			12.48		*******	14	*******	N/CML
1/10/2020	COLIFORM, FECAL			********	********			1.00		*******	14	*******	N/CML
2/10/2020	COLIFORM, FECAL			********	********			1.00		*******	14	*******	N/CML
3/10/2020	COLIFORM, FECAL			********	********			1.00		*******	14	*******	N/CML
4/10/2020	COLIFORM, FECAL			********	********			1.00		*******	14	*******	N/CML
5/10/2020	COLIFORM, FECAL			********	********			1.00		*******	14	*******	N/CML
6/10/2020	COLIFORM, FECAL			********	********			1.00		*******	14	*******	N/CML
7/10/2020	COLIFORM, FECAL			********	********			1		*******	14	*******	N/CML
8/10/2020	COLIFORM, FECAL			********	********			1.00		*******	14	*******	N/CML
9/10/2020	COLIFORM, FECAL			********	********			1.64		*******	14	*******	N/CML
10/10/2020	COLIFORM, FECAL			********	********			1		*******	14	*******	N/CML
11/10/2020	COLIFORM, FECAL			********	********			1		*******	14	*******	N/CML
12/10/2020	COLIFORM, FECAL			********	********			1.00		*******	14	*******	N/CML
1/10/2021	COLIFORM, FECAL			********	********			1		*******	14	*******	N/CML

2/10/2021	COLIFORM, FECAL			********	********			<1.0		*******	14	*******	N/CML
3/10/2021	COLIFORM, FECAL			********	********			<1		*******	14	*******	N/CML
5/10/2016	DO			********	********		6.6			5.5	*******	*******	MG/L
6/10/2016	DO			********	********		5.7			5.5	*******	*******	MG/L
7/10/2016	DO			********	********		5.55			5.5	*******	*******	MG/L
8/10/2016	DO			********	********		5.64			5.5	*******	*******	MG/L
9/10/2016	DO			********	********		6.21			5.5	*******	*******	MG/L
10/10/2016	DO			********	********		5.86			5.5	*******	*******	MG/L
11/10/2016	DO			********	********		5.99			5.5	*******	*******	MG/L
12/10/2016	DO			********	********		7.27			5.5	*******	*******	MG/L
1/10/2017	DO			********	********		7.64			5.5	*******	*******	MG/L
2/10/2017	DO			********	********		8.20			5.5	*******	*******	MG/L
3/10/2017	DO			********	********		7.96			5.5	*******	*******	MG/L
4/10/2017	DO			********	********		6.6			5.5	*******	*******	MG/L
5/10/2017	DO			********	********		6.22			5.5	*******	*******	MG/L
6/10/2017	DO			********	********		5.5			5.5	*******	*******	MG/L
7/10/2017	DO			********	********		5.77			5.5	*******	*******	MG/L
8/10/2017	DO			********	********		5.56			5.5	*******	*******	MG/L
9/10/2017	DO			********	********		5.53			5.5	*******	*******	MG/L
10/10/2017	DO			********	********		5.62			5.5	*******	*******	MG/L
11/10/2017	DO			********	********		6.21			5.5	*******	*******	MG/L
12/10/2017	DO			********	********		7.1			5.5	*******	*******	MG/L
1/10/2018	DO			********	********		7.09			5.5	*******	*******	MG/L
2/10/2018	DO			********	********		7.37			5.5	*******	*******	MG/L
3/10/2018	DO			********	********		6.06			5.5	*******	*******	MG/L
4/10/2018	DO			********	********		6.9			5.5	*******	*******	MG/L
5/10/2018	DO			********	********		5.5			5.5	*******	*******	MG/L
6/10/2018	DO			********	********		5.6			5.5	*******	*******	MG/L
7/10/2018	DO			********	********		5.5			5.5	*******	*******	MG/L
8/10/2018	DO			********	********		5.50			5.5	*******	*******	MG/L
9/10/2018	DO			********	********		5.5			5.5	*******	*******	MG/L
10/10/2018	DO			********	********		5.54			5.5	*******	*******	MG/L
11/10/2018	DO			********	********		5.75			5.5	*******	*******	MG/L
12/10/2018	DO			********	********		6.44			5.5	*******	*******	MG/L
1/10/2019	DO			********	********		6.81			5.5	*******	*******	MG/L
2/10/2019	DO			********	********		7.02			5.5	*******	*******	MG/L
3/10/2019	DO			********	********		6.46			5.5	*******	*******	MG/L

4/10/2019	DO			********	********		6.07			5.5	*******	*******	MG/L
5/10/2019	DO			********	********		6.29			5.5	*******	*******	MG/L
6/10/2019	DO			********	********		6.31			5.5	*******	*******	MG/L
7/10/2019	DO			********	********		6.90			5.5	*******	*******	MG/L
8/10/2019	DO			********	********		6.01			5.5	*******	*******	MG/L
9/10/2019	DO			********	********		5.57			5.5	*******	*******	MG/L
10/10/2019	DO			********	********		6.34			5.5	*******	*******	MG/L
11/10/2019	DO			********	********		6.39			5.5	*******	*******	MG/L
12/10/2019	DO			********	********		7.18			5.5	*******	*******	MG/L
1/10/2020	DO			********	********		7.84			5.5	*******	*******	MG/L
2/10/2020	DO			********	********		7.65			5.5	*******	*******	MG/L
3/10/2020	DO			********	********		5.83			5.5	*******	*******	MG/L
4/10/2020	DO			********	********		6.79			5.5	*******	*******	MG/L
5/10/2020	DO			********	********		5.68			5.5	*******	*******	MG/L
6/10/2020	DO			********	********		5.96			5.5	*******	*******	MG/L
7/10/2020	DO			********	********		6.46			5.5	*******	*******	MG/L
8/10/2020	DO			********	********		5.5			5.5	*******	*******	MG/L
9/10/2020	DO			********	********		5.50			5.5	*******	*******	MG/L
10/10/2020	DO			********	********		5.5			5.5	*******	*******	MG/L
11/10/2020	DO			********	********		6.02			5.5	*******	*******	MG/L
12/10/2020	DO			********	********		6.44			5.5	*******	*******	MG/L
1/10/2021	DO			********	********		5.55			5.5	*******	*******	MG/L
2/10/2021	DO			********	********		7.26			5.5	*******	*******	MG/L
3/10/2021	DO			********	********		7.24			5.5	*******	*******	MG/L
5/10/2016	ENTEROCOCCI			********	********			1.3		*******	35	*******	N/CML
6/10/2016	ENTEROCOCCI			********	********			1.86		*******	35	*******	N/CML
7/10/2016	ENTEROCOCCI			********	********			1.57		*******	35	*******	N/CML
8/10/2016	ENTEROCOCCI			********	********			3.3		*******	35	*******	N/CML
9/10/2016	ENTEROCOCCI			********	********			2.4		*******	35	*******	N/CML
10/10/2016	ENTEROCOCCI			********	********			0.34		*******	35	*******	N/CML
11/10/2016	ENTEROCOCCI			********	********			0		*******	35	*******	N/CML
12/10/2016	ENTEROCOCCI			********	********			0.10		*******	35	*******	N/CML
1/10/2017	ENTEROCOCCI			********	********			0.02		*******	35	*******	N/CML
2/10/2017	ENTEROCOCCI			********	********			0		*******	35	*******	N/CML
3/10/2017	ENTEROCOCCI			********	********			0		*******	35	*******	N/CML
4/10/2017	ENTEROCOCCI			********	********			0		*******	35	*******	N/CML
5/10/2017	ENTEROCOCCI			********	********			0		*******	35	*******	N/CML

6/10/2017	ENTEROCOCCI			********	********			0.15		*******	35	*******	N/CML
7/10/2017	ENTEROCOCCI			********	********			0.19		*******	35	*******	N/CML
8/10/2017	ENTEROCOCCI			********	********			1.2		*******	35	*******	N/CML
9/10/2017	ENTEROCOCCI			********	********			0.58		*******	35	*******	N/CML
10/10/2017	ENTEROCOCCI			********	********			0.3		*******	35	*******	N/CML
11/10/2017	ENTEROCOCCI			********	********			0.54		*******	35	*******	N/CML
12/10/2017	ENTEROCOCCI			********	********			0.10		*******	35	*******	N/CML
1/10/2018	ENTEROCOCCI			********	********			0		*******	35	*******	N/CML
2/10/2018	ENTEROCOCCI			********	********			X		*******	35	*******	N/CML
3/10/2018	ENTEROCOCCI			********	********			X		*******	35	*******	N/CML
4/10/2018	ENTEROCOCCI			********	********			X		*******	35	*******	N/CML
5/10/2018	ENTEROCOCCI			********	********			X		*******	35	*******	N/CML
6/10/2018	ENTEROCOCCI			********	********			X		*******	35	*******	N/CML
7/10/2018	ENTEROCOCCI			********	********			X		*******	35	*******	N/CML
8/10/2018	ENTEROCOCCI			********	********			X		*******	35	*******	N/CML
9/10/2018	ENTEROCOCCI			********	********			34.5		*******	35	*******	N/CML
10/10/2018	ENTEROCOCCI			********	********			5.6		*******	35	*******	N/CML
11/10/2018	ENTEROCOCCI			********	********			1.97		*******	35	*******	N/CML
12/10/2018	ENTEROCOCCI			********	********			1.15		*******	35	*******	N/CML
1/10/2019	ENTEROCOCCI			********	********			1.45		*******	35	*******	N/CML
2/10/2019	ENTEROCOCCI			********	********			1.00		*******	35	*******	N/CML
3/10/2019	ENTEROCOCCI			********	********			1		*******	35	*******	N/CML
4/10/2019	ENTEROCOCCI			********	********			1.31		*******	35	*******	N/CML
5/10/2019	ENTEROCOCCI			********	********			1.06		*******	35	*******	N/CML
6/10/2019	ENTEROCOCCI			********	********			3.02		*******	35	*******	N/CML
7/10/2019	ENTEROCOCCI			********	********			4.25		*******	35	*******	N/CML
8/10/2019	ENTEROCOCCI			********	********			1.41		*******	35	*******	N/CML
9/10/2019	ENTEROCOCCI			********	********			1.87		*******	35	*******	N/CML
10/10/2019	ENTEROCOCCI			********	********			1.74		*******	35	*******	N/CML
11/10/2019	ENTEROCOCCI			********	********			2.10		*******	35	*******	N/CML
12/10/2019	ENTEROCOCCI			********	********			1.75		*******	35	*******	N/CML
1/10/2020	ENTEROCOCCI			********	********			1.09		*******	35	*******	N/CML
2/10/2020	ENTEROCOCCI			********	********			1.19		*******	35	*******	N/CML
3/10/2020	ENTEROCOCCI			********	********			1.23		*******	35	*******	N/CML
4/10/2020	ENTEROCOCCI			********	********			1.00		*******	35	*******	N/CML
5/10/2020	ENTEROCOCCI			********	********			1.11		*******	35	*******	N/CML
6/10/2020	ENTEROCOCCI			********	********			1.45		*******	35	*******	N/CML

7/10/2020	ENTEROCOCCI			********	********			1		*******	35	*******	N/CML
8/10/2020	ENTEROCOCCI			********	********			1		*******	35	*******	N/CML
9/10/2020	ENTEROCOCCI			********	********			2.24		*******	35	*******	N/CML
10/10/2020	ENTEROCOCCI			********	********			1		*******	35	*******	N/CML
11/10/2020	ENTEROCOCCI			********	********			1.06		*******	35	*******	N/CML
12/10/2020	ENTEROCOCCI			********	********			1.48		*******	35	*******	N/CML
1/10/2021	ENTEROCOCCI			********	********			1		*******	35	*******	N/CML
2/10/2021	ENTEROCOCCI			********	********			<1.0		*******	35	*******	N/CML
3/10/2021	ENTEROCOCCI			********	********			<1		*******	35	*******	N/CML
5/10/2016	FLOW	0.319	0.396	0.72	NL	MGD				*******	*******	*******	
6/10/2016	FLOW	0.51	0.74	0.72	NL	MGD				*******	*******	*******	
7/10/2016	FLOW	0.470	0.746	0.72	NL	MGD				*******	*******	*******	
8/10/2016	FLOW	0.424	0.699	0.72	NL	MGD				*******	*******	*******	
9/10/2016	FLOW	0.352	0.508	0.72	NL	MGD				*******	*******	*******	
10/10/2016	FLOW	0.373	0.665	0.72	NL	MGD				*******	*******	*******	
11/10/2016	FLOW	0.384	0.628	0.72	NL	MGD				*******	*******	*******	
12/10/2016	FLOW	0.266	0.325	0.72	NL	MGD				*******	*******	*******	
1/10/2017	FLOW	0.285	0.548	0.72	NL	MGD				*******	*******	*******	
2/10/2017	FLOW	0.346	0.504	0.72	NL	MGD				*******	*******	*******	
3/10/2017	FLOW	0.286	0.354	0.72	NL	MGD				*******	*******	*******	
4/10/2017	FLOW	0.404	0.591	0.72	NL	MGD				*******	*******	*******	
5/10/2017	FLOW	0.383	0.627	0.72	NL	MGD				*******	*******	*******	
6/10/2017	FLOW	0.418	0.572	0.72	NL	MGD				*******	*******	*******	
7/10/2017	FLOW	0.341	0.468	0.72	NL	MGD				*******	*******	*******	
8/10/2017	FLOW	0.356	0.632	0.72	NL	MGD				*******	*******	*******	
9/10/2017	FLOW	0.420	0.590	0.72	NL	MGD				*******	*******	*******	
10/10/2017	FLOW	0.361	0.482	0.72	NL	MGD				*******	*******	*******	
11/10/2017	FLOW	0.273	0.383	0.72	NL	MGD				*******	*******	*******	
12/10/2017	FLOW	0.239	0.371	0.72	NL	MGD				*******	*******	*******	
1/10/2018	FLOW	0.208	0.257	0.72	NL	MGD				*******	*******	*******	
2/10/2018	FLOW	0.295	0.418	0.72	NL	MGD				*******	*******	*******	
3/10/2018	FLOW	.515	.836	0.72	NL	MGD				*******	*******	*******	
4/10/2018	FLOW	0.41	1.11	0.72	NL	MGD				*******	*******	*******	
5/10/2018	FLOW	0.368	0.531	0.72	NL	MGD				*******	*******	*******	
6/10/2018	FLOW	0.502	1.137	0.72	NL	MGD				*******	*******	*******	
7/10/2018	FLOW	0.463	0.816	0.72	NL	MGD				*******	*******	*******	
8/10/2018	FLOW	0.47	1.25	0.72	NL	MGD				*******	*******	*******	

9/10/2018	FLOW	0.447	0.656	0.72	NL	MGD				*******	*******	*******	
10/10/2018	FLOW	0.433	0.597	0.72	NL	MGD				*******	*******	*******	
11/10/2018	FLOW	0.485	1.278	0.72	NL	MGD				*******	*******	*******	
12/10/2018	FLOW	0.585	0.804	0.72	NL	MGD				*******	*******	*******	
1/10/2019	FLOW	0.519	0.845	0.72	NL	MGD				*******	*******	*******	
2/10/2019	FLOW	0.505	0.716	0.72	NL	MGD				*******	*******	*******	
3/10/2019	FLOW	0.535	0.894	0.72	NL	MGD				*******	*******	*******	
4/10/2019	FLOW	0.516	0.779	0.72	NL	MGD				*******	*******	*******	
5/10/2019	FLOW	0.346	0.426	0.72	NL	MGD				*******	*******	*******	
6/10/2019	FLOW	0.335	0.445	0.72	NL	MGD				*******	*******	*******	
7/10/2019	FLOW	0.335	0.619	0.72	NL	MGD				*******	*******	*******	
8/10/2019	FLOW	0.277	0.401	0.72	NL	MGD				*******	*******	*******	
9/10/2019	FLOW	0.308	0.615	0.72	NL	MGD				*******	*******	*******	
10/10/2019	FLOW	0.298	0.368	0.72	NL	MGD				*******	*******	*******	
11/10/2019	FLOW	0.303	0.651	0.72	NL	MGD				*******	*******	*******	
12/10/2019	FLOW	0.260	0.372	0.72	NL	MGD				*******	*******	*******	
1/10/2020	FLOW	0.333	0.475	0.72	NL	MGD				*******	*******	*******	
2/10/2020	FLOW	0.396	0.588	0.72	NL	MGD				*******	*******	*******	
3/10/2020	FLOW	0.455	0.711	0.72	NL	MGD				*******	*******	*******	
4/10/2020	FLOW	0.373	0.495	0.72	NL	MGD				*******	*******	*******	
5/10/2020	FLOW	0.410	0.749	0.72	NL	MGD				*******	*******	*******	
6/10/2020	FLOW	0.483	0.870	0.72	NL	MGD				*******	*******	*******	
7/10/2020	FLOW	0.284	0.371	0.72	NL	MGD				*******	*******	*******	
8/10/2020	FLOW	0.321	0.804	0.72	NL	MGD				*******	*******	*******	
9/10/2020	FLOW	0.718	1.153	0.72	NL	MGD				*******	*******	*******	
10/10/2020	FLOW	0.54	1.00	0.72	NL	MGD				*******	*******	*******	
11/10/2020	FLOW	0.479	0.904	0.72	NL	MGD				*******	*******	*******	
12/10/2020	FLOW	0.523	0.957	0.72	NL	MGD				*******	*******	*******	
1/10/2021	FLOW	0.482	0.744	0.72	NL	MGD				*******	*******	*******	
2/10/2021	FLOW	0.390	0.625	0.72	NL	MGD				*******	*******	*******	
3/10/2021	FLOW	0.561	0.804	0.72	NL	MGD				*******	*******	*******	
5/10/2016	NITRITE+NITRATE-N,TOTAL			********	********			2.2		*******	NL	*******	MG/L
6/10/2016	NITRITE+NITRATE-N,TOTAL			********	********			4.11		*******	NL	*******	MG/L
7/10/2016	NITRITE+NITRATE-N,TOTAL			********	********			0.33		*******	NL	*******	MG/L
8/10/2016	NITRITE+NITRATE-N,TOTAL			********	********			3.5		*******	NL	*******	MG/L
9/10/2016	NITRITE+NITRATE-N,TOTAL			********	********			2.03		*******	NL	*******	MG/L
10/10/2016	NITRITE+NITRATE-N,TOTAL			********	********			0.87		*******	NL	*******	MG/L

11/10/2016	NITRITE+NITRATE-N,TOTAL			********	********			1.03		*******	NL	*******	MG/L
12/10/2016	NITRITE+NITRATE-N,TOTAL			********	********			2.08		*******	NL	*******	MG/L
1/10/2017	NITRITE+NITRATE-N,TOTAL			********	********			2.80		*******	NL	*******	MG/L
2/10/2017	NITRITE+NITRATE-N,TOTAL			********	********			1.6		*******	NL	*******	MG/L
3/10/2017	NITRITE+NITRATE-N,TOTAL			********	********			2.6		*******	NL	*******	MG/L
4/10/2017	NITRITE+NITRATE-N,TOTAL			********	********			2.3		*******	NL	*******	MG/L
5/10/2017	NITRITE+NITRATE-N,TOTAL			********	********			1.11		*******	NL	*******	MG/L
6/10/2017	NITRITE+NITRATE-N,TOTAL			********	********			1.2		*******	NL	*******	MG/L
7/10/2017	NITRITE+NITRATE-N,TOTAL			********	********			0.65		*******	NL	*******	MG/L
8/10/2017	NITRITE+NITRATE-N,TOTAL			********	********			0.38		*******	NL	*******	MG/L
9/10/2017	NITRITE+NITRATE-N,TOTAL			********	********			1.2		*******	NL	*******	MG/L
10/10/2017	NITRITE+NITRATE-N,TOTAL			********	********			0.82		*******	NL	*******	MG/L
11/10/2017	NITRITE+NITRATE-N,TOTAL			********	********			1.81		*******	NL	*******	MG/L
12/10/2017	NITRITE+NITRATE-N,TOTAL			********	********			2.00		*******	NL	*******	MG/L
1/10/2018	NITRITE+NITRATE-N,TOTAL			********	********			1.1		*******	NL	*******	MG/L
2/10/2018	NITRITE+NITRATE-N,TOTAL			********	********			1.4		*******	NL	*******	MG/L
3/10/2018	NITRITE+NITRATE-N,TOTAL			********	********			1.12		*******	NL	*******	MG/L
4/10/2018	NITRITE+NITRATE-N,TOTAL			********	********			1.05		*******	NL	*******	MG/L
5/10/2018	NITRITE+NITRATE-N,TOTAL			********	********			0.56		*******	NL	*******	MG/L
6/10/2018	NITRITE+NITRATE-N,TOTAL			********	********			0.17		*******	NL	*******	MG/L
7/10/2018	NITRITE+NITRATE-N,TOTAL			********	********			0.29		*******	NL	*******	MG/L
8/10/2018	NITRITE+NITRATE-N,TOTAL			********	********			<QL		*******	NL	*******	MG/L
9/10/2018	NITRITE+NITRATE-N,TOTAL			********	********			0.66		*******	NL	*******	MG/L
10/10/2018	NITRITE+NITRATE-N,TOTAL			********	********			0.81		*******	NL	*******	MG/L
11/10/2018	NITRITE+NITRATE-N,TOTAL			********	********			2.49		*******	NL	*******	MG/L
12/10/2018	NITRITE+NITRATE-N,TOTAL			********	********			1.76		*******	NL	*******	MG/L
1/10/2019	NITRITE+NITRATE-N,TOTAL			********	********			0.64		*******	NL	*******	MG/L
2/10/2019	NITRITE+NITRATE-N,TOTAL			********	********			0.94		*******	NL	*******	MG/L
3/10/2019	NITRITE+NITRATE-N,TOTAL			********	********			1.02		*******	NL	*******	MG/L
4/10/2019	NITRITE+NITRATE-N,TOTAL			********	********			0.53		*******	NL	*******	MG/L
5/10/2019	NITRITE+NITRATE-N,TOTAL			********	********			0.31		*******	NL	*******	MG/L
6/10/2019	NITRITE+NITRATE-N,TOTAL			********	********			0.07		*******	NL	*******	MG/L
7/10/2019	NITRITE+NITRATE-N,TOTAL			********	********			0.19		*******	NL	*******	MG/L
8/10/2019	NITRITE+NITRATE-N,TOTAL			********	********			0.41		*******	NL	*******	MG/L
9/10/2019	NITRITE+NITRATE-N,TOTAL			********	********			0.40		*******	NL	*******	MG/L
10/10/2019	NITRITE+NITRATE-N,TOTAL			********	********			0.93		*******	NL	*******	MG/L
11/10/2019	NITRITE+NITRATE-N,TOTAL			********	********			0.47		*******	NL	*******	MG/L

12/10/2019	NITRITE+NITRATE-N,TOTAL			********	********			0.37		*******	NL	*******	MG/L
1/10/2020	NITRITE+NITRATE-N,TOTAL			********	********			0.42		*******	NL	*******	MG/L
2/10/2020	NITRITE+NITRATE-N,TOTAL			********	********			0.51		*******	NL	*******	MG/L
3/10/2020	NITRITE+NITRATE-N,TOTAL			********	********			2.13		*******	NL	*******	MG/L
4/10/2020	NITRITE+NITRATE-N,TOTAL			********	********			1.03		*******	NL	*******	MG/L
5/10/2020	NITRITE+NITRATE-N,TOTAL			********	********			0.32		*******	NL	*******	MG/L
6/10/2020	NITRITE+NITRATE-N,TOTAL			********	********			0.22		*******	NL	*******	MG/L
7/10/2020	NITRITE+NITRATE-N,TOTAL			********	********			<QL		*******	NL	*******	MG/L
8/10/2020	NITRITE+NITRATE-N,TOTAL			********	********			<QL		*******	NL	*******	MG/L
9/10/2020	NITRITE+NITRATE-N,TOTAL			********	********			0.19		*******	NL	*******	MG/L
10/10/2020	NITRITE+NITRATE-N,TOTAL			********	********			0.21		*******	NL	*******	MG/L
11/10/2020	NITRITE+NITRATE-N,TOTAL			********	********			0.36		*******	NL	*******	MG/L
12/10/2020	NITRITE+NITRATE-N,TOTAL			********	********			1.11		*******	NL	*******	MG/L
1/10/2021	NITRITE+NITRATE-N,TOTAL			********	********			0.76		*******	NL	*******	MG/L
2/10/2021	NITRITE+NITRATE-N,TOTAL			********	********			1.28		*******	NL	*******	MG/L
3/10/2021	NITRITE+NITRATE-N,TOTAL			********	********			0.33		*******	NL	*******	MG/L
5/10/2016	NITROGEN, TOTAL (AS N)			********	********			2.6		*******	NL	*******	MG/L
6/10/2016	NITROGEN, TOTAL (AS N)			********	********			4.68		*******	NL	*******	MG/L
7/10/2016	NITROGEN, TOTAL (AS N)			********	********			0.52		*******	NL	*******	MG/L
8/10/2016	NITROGEN, TOTAL (AS N)			********	********			3.9		*******	NL	*******	MG/L
9/10/2016	NITROGEN, TOTAL (AS N)			********	********			2.6		*******	NL	*******	MG/L
10/10/2016	NITROGEN, TOTAL (AS N)			********	********			1.40		*******	NL	*******	MG/L
11/10/2016	NITROGEN, TOTAL (AS N)			********	********			1.33		*******	NL	*******	MG/L
12/10/2016	NITROGEN, TOTAL (AS N)			********	********			2.7		*******	NL	*******	MG/L
1/10/2017	NITROGEN, TOTAL (AS N)			********	********			3.3		*******	NL	*******	MG/L
2/10/2017	NITROGEN, TOTAL (AS N)			********	********			2.0		*******	NL	*******	MG/L
3/10/2017	NITROGEN, TOTAL (AS N)			********	********			3.2		*******	NL	*******	MG/L
4/10/2017	NITROGEN, TOTAL (AS N)			********	********			2.8		*******	NL	*******	MG/L
5/10/2017	NITROGEN, TOTAL (AS N)			********	********			1.46		*******	NL	*******	MG/L
6/10/2017	NITROGEN, TOTAL (AS N)			********	********			1.7		*******	NL	*******	MG/L
7/10/2017	NITROGEN, TOTAL (AS N)			********	********			1.2		*******	NL	*******	MG/L
8/10/2017	NITROGEN, TOTAL (AS N)			********	********			0.81		*******	NL	*******	MG/L
9/10/2017	NITROGEN, TOTAL (AS N)			********	********			1.7		*******	NL	*******	MG/L
10/10/2017	NITROGEN, TOTAL (AS N)			********	********			1.3		*******	NL	*******	MG/L
11/10/2017	NITROGEN, TOTAL (AS N)			********	********			2.5		*******	NL	*******	MG/L
12/10/2017	NITROGEN, TOTAL (AS N)			********	********			3.1		*******	NL	*******	MG/L
1/10/2018	NITROGEN, TOTAL (AS N)			********	********			1.5		*******	NL	*******	MG/L

2/10/2018	NITROGEN, TOTAL (AS N)			********	********			1.7		*******	NL	*******	MG/L
3/10/2018	NITROGEN, TOTAL (AS N)			********	********			1.42		*******	NL	*******	MG/L
4/10/2018	NITROGEN, TOTAL (AS N)			********	********			1.20		*******	NL	*******	MG/L
5/10/2018	NITROGEN, TOTAL (AS N)			********	********			1.16		*******	NL	*******	MG/L
6/10/2018	NITROGEN, TOTAL (AS N)			********	********			0.63		*******	NL	*******	MG/L
7/10/2018	NITROGEN, TOTAL (AS N)			********	********			0.71		*******	NL	*******	MG/L
8/10/2018	NITROGEN, TOTAL (AS N)			********	********			1.06		*******	NL	*******	MG/L
9/10/2018	NITROGEN, TOTAL (AS N)			********	********			3.24		*******	NL	*******	MG/L
10/10/2018	NITROGEN, TOTAL (AS N)			********	********			2.05		*******	NL	*******	MG/L
11/10/2018	NITROGEN, TOTAL (AS N)			********	********			3.12		*******	NL	*******	MG/L
12/10/2018	NITROGEN, TOTAL (AS N)			********	********			2.26		*******	NL	*******	MG/L
1/10/2019	NITROGEN, TOTAL (AS N)			********	********			1.15		*******	NL	*******	MG/L
2/10/2019	NITROGEN, TOTAL (AS N)			********	********			1.44		*******	NL	*******	MG/L
3/10/2019	NITROGEN, TOTAL (AS N)			********	********			1.51		*******	NL	*******	MG/L
4/10/2019	NITROGEN, TOTAL (AS N)			********	********			0.93		*******	NL	*******	MG/L
5/10/2019	NITROGEN, TOTAL (AS N)			********	********			1.16		*******	NL	*******	MG/L
6/10/2019	NITROGEN, TOTAL (AS N)			********	********			0.58		*******	NL	*******	MG/L
7/10/2019	NITROGEN, TOTAL (AS N)			********	********			0.51		*******	NL	*******	MG/L
8/10/2019	NITROGEN, TOTAL (AS N)			********	********			0.82		*******	NL	*******	MG/L
9/10/2019	NITROGEN, TOTAL (AS N)			********	********			0.79		*******	NL	*******	MG/L
10/10/2019	NITROGEN, TOTAL (AS N)			********	********			0.93		*******	NL	*******	MG/L
11/10/2019	NITROGEN, TOTAL (AS N)			********	********			0.96		*******	NL	*******	MG/L
12/10/2019	NITROGEN, TOTAL (AS N)			********	********			0.83		*******	NL	*******	MG/L
1/10/2020	NITROGEN, TOTAL (AS N)			********	********			0.84		*******	NL	*******	MG/L
2/10/2020	NITROGEN, TOTAL (AS N)			********	********			0.90		*******	NL	*******	MG/L
3/10/2020	NITROGEN, TOTAL (AS N)			********	********			2.52		*******	NL	*******	MG/L
4/10/2020	NITROGEN, TOTAL (AS N)			********	********			1.48		*******	NL	*******	MG/L
5/10/2020	NITROGEN, TOTAL (AS N)			********	********			0.55		*******	NL	*******	MG/L
6/10/2020	NITROGEN, TOTAL (AS N)			********	********			0.42		*******	NL	*******	MG/L
7/10/2020	NITROGEN, TOTAL (AS N)			********	********			0.34		*******	NL	*******	MG/L
8/10/2020	NITROGEN, TOTAL (AS N)			********	********			0.33		*******	NL	*******	MG/L
9/10/2020	NITROGEN, TOTAL (AS N)			********	********			0.39		*******	NL	*******	MG/L
10/10/2020	NITROGEN, TOTAL (AS N)			********	********			0.50		*******	NL	*******	MG/L
11/10/2020	NITROGEN, TOTAL (AS N)			********	********			0.62		*******	NL	*******	MG/L
12/10/2020	NITROGEN, TOTAL (AS N)			********	********			1.32		*******	NL	*******	MG/L
1/10/2021	NITROGEN, TOTAL (AS N)			********	********			0.94		*******	NL	*******	MG/L
2/10/2021	NITROGEN, TOTAL (AS N)			********	********			1.50		*******	NL	*******	MG/L

3/10/2021	NITROGEN, TOTAL (AS N)			********	********			0.55		*******	NL	*******	MG/L
1/10/2017	NITROGEN, TOTAL (CY)			********	********			2.5		*******	7.0	*******	MG/L
1/10/2018	NITROGEN, TOTAL (CY)			********	********			1.9		*******	7.0	*******	MG/L
1/10/2019	NITROGEN, TOTAL (CY)			********	********			1.62		*******	7.0	*******	MG/L
1/10/2020	NITROGEN, TOTAL (CY)			********	********			0.94		*******	7.0	*******	MG/L
1/10/2021	NITROGEN, TOTAL (CY)			********	********			0.86		*******	7.0	*******	MG/L
5/10/2016	NITROGEN, TOTAL (YTD)			********	********			2.3		*******	NL	*******	MG/L
6/10/2016	NITROGEN, TOTAL (YTD)			********	********			2.8		*******	NL	*******	MG/L
7/10/2016	NITROGEN, TOTAL (YTD)			********	********			2.4		*******	NL	*******	MG/L
8/10/2016	NITROGEN, TOTAL (YTD)			********	********			2.6		*******	NL	*******	MG/L
9/10/2016	NITROGEN, TOTAL (YTD)			********	********			2.61		*******	NL	*******	MG/L
10/10/2016	NITROGEN, TOTAL (YTD)			********	********			2.48		*******	NL	*******	MG/L
11/10/2016	NITROGEN, TOTAL (YTD)			********	********			2.37		*******	NL	*******	MG/L
12/10/2016	NITROGEN, TOTAL (YTD)			********	********			2.40		*******	NL	*******	MG/L
1/10/2017	NITROGEN, TOTAL (YTD)			********	********			2.5		*******	NL	*******	MG/L
2/10/2017	NITROGEN, TOTAL (YTD)			********	********			2.0		*******	NL	*******	MG/L
3/10/2017	NITROGEN, TOTAL (YTD)			********	********			2.6		*******	NL	*******	MG/L
4/10/2017	NITROGEN, TOTAL (YTD)			********	********			2.7		*******	NL	*******	MG/L
5/10/2017	NITROGEN, TOTAL (YTD)			********	********			2.36		*******	NL	*******	MG/L
6/10/2017	NITROGEN, TOTAL (YTD)			********	********			2.2		*******	NL	*******	MG/L
7/10/2017	NITROGEN, TOTAL (YTD)			********	********			2.05		*******	NL	*******	MG/L
8/10/2017	NITROGEN, TOTAL (YTD)			********	********			1.87		*******	NL	*******	MG/L
9/10/2017	NITROGEN, TOTAL (YTD)			********	********			1.9		*******	NL	*******	MG/L
10/10/2017	NITROGEN, TOTAL (YTD)			********	********			1.79		*******	NL	*******	MG/L
11/10/2017	NITROGEN, TOTAL (YTD)			********	********			1.84		*******	NL	*******	MG/L
12/10/2017	NITROGEN, TOTAL (YTD)			********	********			2.0		*******	NL	*******	MG/L
1/10/2018	NITROGEN, TOTAL (YTD)			********	********			1.93		*******	NL	*******	MG/L
2/10/2018	NITROGEN, TOTAL (YTD)			********	********			1.7		*******	NL	*******	MG/L
3/10/2018	NITROGEN, TOTAL (YTD)			********	********			1.58		*******	NL	*******	MG/L
4/10/2018	NITROGEN, TOTAL (YTD)			********	********			1.36		*******	NL	*******	MG/L
5/10/2018	NITROGEN, TOTAL (YTD)			********	********			1.31		*******	NL	*******	MG/L
6/10/2018	NITROGEN, TOTAL (YTD)			********	********			1.18		*******	NL	*******	MG/L
7/10/2018	NITROGEN, TOTAL (YTD)			********	********			1.10		*******	NL	*******	MG/L
8/10/2018	NITROGEN, TOTAL (YTD)			********	********			1.09		*******	NL	*******	MG/L
9/10/2018	NITROGEN, TOTAL (YTD)			********	********			1.36		*******	NL	*******	MG/L
10/10/2018	NITROGEN, TOTAL (YTD)			********	********			1.44		*******	NL	*******	MG/L
11/10/2018	NITROGEN, TOTAL (YTD)			********	********			1.61		*******	NL	*******	MG/L

12/10/2018	NITROGEN, TOTAL (YTD)			********	********			1.67		*******	NL	*******	MG/L
1/10/2019	NITROGEN, TOTAL (YTD)			********	********			1.62		*******	NL	*******	MG/L
2/10/2019	NITROGEN, TOTAL (YTD)			********	********			1.44		*******	NL	*******	MG/L
3/10/2019	NITROGEN, TOTAL (YTD)			********	********			1.48		*******	NL	*******	MG/L
4/10/2019	NITROGEN, TOTAL (YTD)			********	********			1.29		*******	NL	*******	MG/L
5/10/2019	NITROGEN, TOTAL (YTD)			********	********			1.26		*******	NL	*******	MG/L
6/10/2019	NITROGEN, TOTAL (YTD)			********	********			1.12		*******	NL	*******	MG/L
7/10/2019	NITROGEN, TOTAL (YTD)			********	********			1.02		*******	NL	*******	MG/L
8/10/2019	NITROGEN, TOTAL (YTD)			********	********			0.99		*******	NL	*******	MG/L
9/10/2019	NITROGEN, TOTAL (YTD)			********	********			0.97		*******	NL	*******	MG/L
10/10/2019	NITROGEN, TOTAL (YTD)			********	********			0.96		*******	NL	*******	MG/L
11/10/2019	NITROGEN, TOTAL (YTD)			********	********			0.96		*******	NL	*******	MG/L
12/10/2019	NITROGEN, TOTAL (YTD)			********	********			0.95		*******	NL	*******	MG/L
1/10/2020	NITROGEN, TOTAL (YTD)			********	********			0.94		*******	NL	*******	MG/L
2/10/2020	NITROGEN, TOTAL (YTD)			********	********			0.90		*******	NL	*******	MG/L
3/10/2020	NITROGEN, TOTAL (YTD)			********	********			1.71		*******	NL	*******	MG/L
4/10/2020	NITROGEN, TOTAL (YTD)			********	********			1.63		*******	NL	*******	MG/L
5/10/2020	NITROGEN, TOTAL (YTD)			********	********			1.36		*******	NL	*******	MG/L
6/10/2020	NITROGEN, TOTAL (YTD)			********	********			1.17		*******	NL	*******	MG/L
7/10/2020	NITROGEN, TOTAL (YTD)			********	********			1.04		*******	NL	*******	MG/L
8/10/2020	NITROGEN, TOTAL (YTD)			********	********			0.93		*******	NL	*******	MG/L
9/10/2020	NITROGEN, TOTAL (YTD)			********	********			0.87		*******	NL	*******	MG/L
10/10/2020	NITROGEN, TOTAL (YTD)			********	********			0.83		*******	NL	*******	MG/L
11/10/2020	NITROGEN, TOTAL (YTD)			********	********			0.81		*******	NL	*******	MG/L
12/10/2020	NITROGEN, TOTAL (YTD)			********	********			0.85		*******	NL	*******	MG/L
1/10/2021	NITROGEN, TOTAL (YTD)			********	********			0.86		*******	NL	*******	MG/L
2/10/2021	NITROGEN, TOTAL (YTD)			********	********			1.50		*******	NL	*******	MG/L
3/10/2021	NITROGEN, TOTAL (YTD)			********	********			1.03		*******	NL	*******	MG/L
5/10/2016	pH			********	********		7.1		8.2	6.5	*******	8.5	SU
6/10/2016	pH			********	********		6.98		7.32	6.5	*******	8.5	SU
7/10/2016	pH			********	********		7.02		7.60	6.5	*******	8.5	SU
8/10/2016	pH			********	********		6.99		7.59	6.5	*******	8.5	SU
9/10/2016	pH			********	********		7.38		7.73	6.5	*******	8.5	SU
10/10/2016	pH			********	********		7.33		7.68	6.5	*******	8.5	SU
11/10/2016	pH			********	********		7.05		7.54	6.5	*******	8.5	SU
12/10/2016	pH			********	********		7.40		7.78	6.5	*******	8.5	SU
1/10/2017	pH			********	********		6.93		7.62	6.5	*******	8.5	SU

2/10/2017	pH			********	********		6.88		7.57	6.5	*******	8.5	SU
3/10/2017	pH			********	********		6.96		7.27	6.5	*******	8.5	SU
4/10/2017	pH			********	********		6.9		7.4	6.5	*******	8.5	SU
5/10/2017	pH			********	********		6.82		7.23	6.5	*******	8.5	SU
6/10/2017	pH			********	********		6.67		7.23	6.5	*******	8.5	SU
7/10/2017	pH			********	********		6.81		7.35	6.5	*******	8.5	SU
8/10/2017	pH			********	********		6.90		7.34	6.5	*******	8.5	SU
9/10/2017	pH			********	********		6.79		7.24	6.5	*******	8.5	SU
10/10/2017	pH			********	********		6.83		7.55	6.5	*******	8.5	SU
11/10/2017	pH			********	********		6.82		8.14	6.5	*******	8.5	SU
12/10/2017	pH			********	********		6.94		7.71	6.5	*******	8.5	SU
1/10/2018	pH			********	********		6.85		7.49	6.5	*******	8.5	SU
2/10/2018	pH			********	********		7.02		7.93	6.5	*******	8.5	SU
3/10/2018	pH			********	********		6.70		7.78	6.5	*******	8.5	SU
4/10/2018	pH			********	********		7.0		8.1	6.5	*******	8.5	SU
5/10/2018	pH			********	********		7.4		7.7	6.5	*******	8.5	SU
6/10/2018	pH			********	********		7.0		7.7	6.5	*******	8.5	SU
7/10/2018	pH			********	********		7.0		7.9	6.5	*******	8.5	SU
8/10/2018	pH			********	********		6.88		8.30	6.5	*******	8.5	SU
9/10/2018	pH			********	********		6.52		7.49	6.5	*******	8.5	SU
10/10/2018	pH			********	********		7.14		8.16	6.5	*******	8.5	SU
11/10/2018	pH			********	********		6.97		7.61	6.5	*******	8.5	SU
12/10/2018	pH			********	********		6.91		7.40	6.5	*******	8.5	SU
1/10/2019	pH			********	********		6.99		7.39	6.5	*******	8.5	SU
2/10/2019	pH			********	********		6.83		7.79	6.5	*******	8.5	SU
3/10/2019	pH			********	********		6.60		7.23	6.5	*******	8.5	SU
4/10/2019	pH			********	********		6.98		7.31	6.5	*******	8.5	SU
5/10/2019	pH			********	********		6.79		7.44	6.5	*******	8.5	SU
6/10/2019	pH			********	********		7.15		7.93	6.5	*******	8.5	SU
7/10/2019	pH			********	********		6.96		7.52	6.5	*******	8.5	SU
8/10/2019	pH			********	********		7.37		8.06	6.5	*******	8.5	SU
9/10/2019	pH			********	********		7.23		8.20	6.5	*******	8.5	SU
10/10/2019	pH			********	********		7.23		7.90	6.5	*******	8.5	SU
11/10/2019	pH			********	********		7.24		7.80	6.5	*******	8.5	SU
12/10/2019	pH			********	********		6.81		7.72	6.5	*******	8.5	SU
1/10/2020	pH			********	********		7.03		7.83	6.5	*******	8.5	SU
2/10/2020	pH			********	********		7.22		7.87	6.5	*******	8.5	SU

3/10/2020	pH			********	********		6.88		7.78	6.5	*******	8.5	SU
4/10/2020	pH			********	********		6.80		7.86	6.5	*******	8.5	SU
5/10/2020	pH			********	********		6.91		7.82	6.5	*******	8.5	SU
6/10/2020	pH			********	********		7.17		7.74	6.5	*******	8.5	SU
7/10/2020	pH			********	********		7.33		7.86	6.5	*******	8.5	SU
8/10/2020	pH			********	********		7.00		7.82	6.5	*******	8.5	SU
9/10/2020	pH			********	********		6.67		7.77	6.5	*******	8.5	SU
10/10/2020	pH			********	********		7.34		7.85	6.5	*******	8.5	SU
11/10/2020	pH			********	********		7.13		7.88	6.5	*******	8.5	SU
12/10/2020	pH			********	********		7.09		7.71	6.5	*******	8.5	SU
1/10/2021	pH			********	********		7.25		7.77	6.5	*******	8.5	SU
2/10/2021	pH			********	********		7.19		7.72	6.5	*******	8.5	SU
3/10/2021	pH			********	********		7.22		7.64	6.5	*******	8.5	SU
5/10/2016	PHOSPHORUS, TOTAL (AS P)			********	********			0.16		********	NL	*******	MG/L
6/10/2016	PHOSPHORUS, TOTAL (AS P)			********	********			0.77		********	NL	*******	MG/L
7/10/2016	PHOSPHORUS, TOTAL (AS P)			********	********			0.26		********	NL	*******	MG/L
8/10/2016	PHOSPHORUS, TOTAL (AS P)			********	********			2.3		********	NL	*******	MG/L
9/10/2016	PHOSPHORUS, TOTAL (AS P)			********	********			0.62		********	NL	*******	MG/L
10/10/2016	PHOSPHORUS, TOTAL (AS P)			********	********			0.36		********	NL	*******	MG/L
11/10/2016	PHOSPHORUS, TOTAL (AS P)			********	********			0.23		********	NL	*******	MG/L
12/10/2016	PHOSPHORUS, TOTAL (AS P)			********	********			0.20		********	NL	*******	MG/L
1/10/2017	PHOSPHORUS, TOTAL (AS P)			********	********			0.26		********	NL	*******	MG/L
2/10/2017	PHOSPHORUS, TOTAL (AS P)			********	********			0.21		********	NL	*******	MG/L
3/10/2017	PHOSPHORUS, TOTAL (AS P)			********	********			0.18		********	NL	*******	MG/L
4/10/2017	PHOSPHORUS, TOTAL (AS P)			********	********			0.24		********	NL	*******	MG/L
5/10/2017	PHOSPHORUS, TOTAL (AS P)			********	********			0.17		********	NL	*******	MG/L
6/10/2017	PHOSPHORUS, TOTAL (AS P)			********	********			0.24		********	NL	*******	MG/L
7/10/2017	PHOSPHORUS, TOTAL (AS P)			********	********			0.78		********	NL	*******	MG/L
8/10/2017	PHOSPHORUS, TOTAL (AS P)			********	********			0.57		********	NL	*******	MG/L
9/10/2017	PHOSPHORUS, TOTAL (AS P)			********	********			0.80		********	NL	*******	MG/L
10/10/2017	PHOSPHORUS, TOTAL (AS P)			********	********			0.65		********	NL	*******	MG/L
11/10/2017	PHOSPHORUS, TOTAL (AS P)			********	********			0.75		********	NL	*******	MG/L
12/10/2017	PHOSPHORUS, TOTAL (AS P)			********	********			0.26		********	NL	*******	MG/L
1/10/2018	PHOSPHORUS, TOTAL (AS P)			********	********			0.23		********	NL	*******	MG/L
2/10/2018	PHOSPHORUS, TOTAL (AS P)			********	********			0.06		********	NL	*******	MG/L
3/10/2018	PHOSPHORUS, TOTAL (AS P)			********	********			0.16		********	NL	*******	MG/L
4/10/2018	PHOSPHORUS, TOTAL (AS P)			********	********			0.19		********	NL	*******	MG/L

5/10/2018	PHOSPHORUS, TOTAL (AS P)			********	********			0.24		*******	NL	*******	MG/L
6/10/2018	PHOSPHORUS, TOTAL (AS P)			********	********			0.68		*******	NL	*******	MG/L
7/10/2018	PHOSPHORUS, TOTAL (AS P)			********	********			0.47		*******	NL	*******	MG/L
8/10/2018	PHOSPHORUS, TOTAL (AS P)			********	********			1.74		*******	NL	*******	MG/L
9/10/2018	PHOSPHORUS, TOTAL (AS P)			********	********			0.72		*******	NL	*******	MG/L
10/10/2018	PHOSPHORUS, TOTAL (AS P)			********	********			1.29		*******	NL	*******	MG/L
11/10/2018	PHOSPHORUS, TOTAL (AS P)			********	********			1.15		*******	NL	*******	MG/L
12/10/2018	PHOSPHORUS, TOTAL (AS P)			********	********			0.42		*******	NL	*******	MG/L
1/10/2019	PHOSPHORUS, TOTAL (AS P)			********	********			0.25		*******	NL	*******	MG/L
2/10/2019	PHOSPHORUS, TOTAL (AS P)			********	********			0.18		*******	NL	*******	MG/L
3/10/2019	PHOSPHORUS, TOTAL (AS P)			********	********			0.17		*******	NL	*******	MG/L
4/10/2019	PHOSPHORUS, TOTAL (AS P)			********	********			0.16		*******	NL	*******	MG/L
5/10/2019	PHOSPHORUS, TOTAL (AS P)			********	********			0.18		*******	NL	*******	MG/L
6/10/2019	PHOSPHORUS, TOTAL (AS P)			********	********			0.55		*******	NL	*******	MG/L
7/10/2019	PHOSPHORUS, TOTAL (AS P)			********	********			0.54		*******	NL	*******	MG/L
8/10/2019	PHOSPHORUS, TOTAL (AS P)			********	********			0.53		*******	NL	*******	MG/L
9/10/2019	PHOSPHORUS, TOTAL (AS P)			********	********			0.39		*******	NL	*******	MG/L
10/10/2019	PHOSPHORUS, TOTAL (AS P)			********	********			0.46		*******	NL	*******	MG/L
11/10/2019	PHOSPHORUS, TOTAL (AS P)			********	********			0.68		*******	NL	*******	MG/L
12/10/2019	PHOSPHORUS, TOTAL (AS P)			********	********			0.36		*******	NL	*******	MG/L
1/10/2020	PHOSPHORUS, TOTAL (AS P)			********	********			0.20		*******	NL	*******	MG/L
2/10/2020	PHOSPHORUS, TOTAL (AS P)			********	********			0.17		*******	NL	*******	MG/L
3/10/2020	PHOSPHORUS, TOTAL (AS P)			********	********			0.10		*******	NL	*******	MG/L
4/10/2020	PHOSPHORUS, TOTAL (AS P)			********	********			0.20		*******	NL	*******	MG/L
5/10/2020	PHOSPHORUS, TOTAL (AS P)			********	********			0.15		*******	NL	*******	MG/L
6/10/2020	PHOSPHORUS, TOTAL (AS P)			********	********			0.13		*******	NL	*******	MG/L
7/10/2020	PHOSPHORUS, TOTAL (AS P)			********	********			0.34		*******	NL	*******	MG/L
8/10/2020	PHOSPHORUS, TOTAL (AS P)			********	********			0.42		*******	NL	*******	MG/L
9/10/2020	PHOSPHORUS, TOTAL (AS P)			********	********			0.24		*******	NL	*******	MG/L
10/10/2020	PHOSPHORUS, TOTAL (AS P)			********	********			0.13		*******	NL	*******	MG/L
11/10/2020	PHOSPHORUS, TOTAL (AS P)			********	********			0.38		*******	NL	*******	MG/L
12/10/2020	PHOSPHORUS, TOTAL (AS P)			********	********			0.45		*******	NL	*******	MG/L
1/10/2021	PHOSPHORUS, TOTAL (AS P)			********	********			0.44		*******	NL	*******	MG/L
2/10/2021	PHOSPHORUS, TOTAL (AS P)			********	********			0.41		*******	NL	*******	MG/L
3/10/2021	PHOSPHORUS, TOTAL (AS P)			********	********			0.18		*******	NL	*******	MG/L
1/10/2017	PHOSPHORUS, TOTAL (CY)			********	********			0.47		*******	2.0	*******	MG/L
1/10/2018	PHOSPHORUS, TOTAL (CY)			********	********			0.42		*******	2.0	*******	MG/L

1/10/2019	PHOSPHORUS, TOTAL (CY)			********	********			0.62		*******	2.0	*******	MG/L
1/10/2020	PHOSPHORUS, TOTAL (CY)			********	********			0.37		*******	2.0	*******	MG/L
1/10/2021	PHOSPHORUS, TOTAL (CY)			********	********			0.27		*******	2.0	*******	MG/L
5/10/2016	PHOSPHORUS, TOTAL (YTD)			********	********			0.15		*******	NL	*******	MG/L
6/10/2016	PHOSPHORUS, TOTAL (YTD)			********	********			0.27		*******	NL	*******	MG/L
7/10/2016	PHOSPHORUS, TOTAL (YTD)			********	********			0.27		*******	NL	*******	MG/L
8/10/2016	PHOSPHORUS, TOTAL (YTD)			********	********			0.56		*******	NL	*******	MG/L
9/10/2016	PHOSPHORUS, TOTAL (YTD)			********	********			0.57		*******	NL	*******	MG/L
10/10/2016	PHOSPHORUS, TOTAL (YTD)			********	********			0.54		*******	NL	*******	MG/L
11/10/2016	PHOSPHORUS, TOTAL (YTD)			********	********			0.51		*******	NL	*******	MG/L
12/10/2016	PHOSPHORUS, TOTAL (YTD)			********	********			0.48		*******	NL	*******	MG/L
1/10/2017	PHOSPHORUS, TOTAL (YTD)			********	********			0.47		*******	NL	*******	MG/L
2/10/2017	PHOSPHORUS, TOTAL (YTD)			********	********			0.21		*******	NL	*******	MG/L
3/10/2017	PHOSPHORUS, TOTAL (YTD)			********	********			0.20		*******	NL	*******	MG/L
4/10/2017	PHOSPHORUS, TOTAL (YTD)			********	********			0.21		*******	NL	*******	MG/L
5/10/2017	PHOSPHORUS, TOTAL (YTD)			********	********			0.20		*******	NL	*******	MG/L
6/10/2017	PHOSPHORUS, TOTAL (YTD)			********	********			0.21		*******	NL	*******	MG/L
7/10/2017	PHOSPHORUS, TOTAL (YTD)			********	********			0.30		*******	NL	*******	MG/L
8/10/2017	PHOSPHORUS, TOTAL (YTD)			********	********			0.34		*******	NL	*******	MG/L
9/10/2017	PHOSPHORUS, TOTAL (YTD)			********	********			0.40		*******	NL	*******	MG/L
10/10/2017	PHOSPHORUS, TOTAL (YTD)			********	********			0.43		*******	NL	*******	MG/L
11/10/2017	PHOSPHORUS, TOTAL (YTD)			********	********			0.46		*******	NL	*******	MG/L
12/10/2017	PHOSPHORUS, TOTAL (YTD)			********	********			0.44		*******	NL	*******	MG/L
1/10/2018	PHOSPHORUS, TOTAL (YTD)			********	********			0.42		*******	NL	*******	MG/L
2/10/2018	PHOSPHORUS, TOTAL (YTD)			********	********			0.060		*******	NL	*******	MG/L
3/10/2018	PHOSPHORUS, TOTAL (YTD)			********	********			22		*******	NL	*******	MG/L
4/10/2018	PHOSPHORUS, TOTAL (YTD)			********	********			0.15		*******	NL	*******	MG/L
5/10/2018	PHOSPHORUS, TOTAL (YTD)			********	********			0.18		*******	NL	*******	MG/L
6/10/2018	PHOSPHORUS, TOTAL (YTD)			********	********			0.28		*******	NL	*******	MG/L
7/10/2018	PHOSPHORUS, TOTAL (YTD)			********	********			0.31		*******	NL	*******	MG/L
8/10/2018	PHOSPHORUS, TOTAL (YTD)			********	********			0.51		*******	NL	*******	MG/L
9/10/2018	PHOSPHORUS, TOTAL (YTD)			********	********			0.54		*******	NL	*******	MG/L
10/10/2018	PHOSPHORUS, TOTAL (YTD)			********	********			0.62		*******	NL	*******	MG/L
11/10/2018	PHOSPHORUS, TOTAL (YTD)			********	********			0.68		*******	NL	*******	MG/L
12/10/2018	PHOSPHORUS, TOTAL (YTD)			********	********			0.66		*******	NL	*******	MG/L
1/10/2019	PHOSPHORUS, TOTAL (YTD)			********	********			0.62		*******	NL	*******	MG/L
2/10/2019	PHOSPHORUS, TOTAL (YTD)			********	********			0.18		*******	NL	*******	MG/L

3/10/2019	PHOSPHORUS, TOTAL (YTD)			********	********			0.18		*******	NL	*******	MG/L
4/10/2019	PHOSPHORUS, TOTAL (YTD)			********	********			0.17		*******	NL	*******	MG/L
5/10/2019	PHOSPHORUS, TOTAL (YTD)			********	********			0.17		*******	NL	*******	MG/L
6/10/2019	PHOSPHORUS, TOTAL (YTD)			********	********			0.25		*******	NL	*******	MG/L
7/10/2019	PHOSPHORUS, TOTAL (YTD)			********	********			0.30		*******	NL	*******	MG/L
8/10/2019	PHOSPHORUS, TOTAL (YTD)			********	********			0.33		*******	NL	*******	MG/L
9/10/2019	PHOSPHORUS, TOTAL (YTD)			********	********			0.35		*******	NL	*******	MG/L
10/10/2019	PHOSPHORUS, TOTAL (YTD)			********	********			0.36		*******	NL	*******	MG/L
11/10/2019	PHOSPHORUS, TOTAL (YTD)			********	********			0.39		*******	NL	*******	MG/L
12/10/2019	PHOSPHORUS, TOTAL (YTD)			********	********			0.39		*******	NL	*******	MG/L
1/10/2020	PHOSPHORUS, TOTAL (YTD)			********	********			0.37		*******	NL	*******	MG/L
2/10/2020	PHOSPHORUS, TOTAL (YTD)			********	********			0.25		*******	NL	*******	MG/L
3/10/2020	PHOSPHORUS, TOTAL (YTD)			********	********			0.18		*******	NL	*******	MG/L
4/10/2020	PHOSPHORUS, TOTAL (YTD)			********	********			0.18		*******	NL	*******	MG/L
5/10/2020	PHOSPHORUS, TOTAL (YTD)			********	********			0.18		*******	NL	*******	MG/L
6/10/2020	PHOSPHORUS, TOTAL (YTD)			********	********			0.17		*******	NL	*******	MG/L
7/10/2020	PHOSPHORUS, TOTAL (YTD)			********	********			0.20		*******	NL	*******	MG/L
8/10/2020	PHOSPHORUS, TOTAL (YTD)			********	********			0.23		*******	NL	*******	MG/L
9/10/2020	PHOSPHORUS, TOTAL (YTD)			********	********			0.23		*******	NL	*******	MG/L
10/10/2020	PHOSPHORUS, TOTAL (YTD)			********	********			0.22		*******	NL	*******	MG/L
11/10/2020	PHOSPHORUS, TOTAL (YTD)			********	********			0.24		*******	NL	*******	MG/L
12/10/2020	PHOSPHORUS, TOTAL (YTD)			********	********			0.26		*******	NL	*******	MG/L
1/10/2021	PHOSPHORUS, TOTAL (YTD)			********	********			0.27		*******	NL	*******	MG/L
2/10/2021	PHOSPHORUS, TOTAL (YTD)			********	********			0.41		*******	NL	*******	MG/L
3/10/2021	PHOSPHORUS, TOTAL (YTD)			********	********			0.30		*******	NL	*******	MG/L
5/10/2016	TSS	<QL	<QL	82	120	KG/D		<QL	<QL	*******	30	45	MG/L
6/10/2016	TSS	<QL	<QL	82	120	KG/D		<QL	<QL	*******	30	45	MG/L
7/10/2016	TSS	<QL	<QL	82	120	KG/D		<QL	<QL	*******	30	45	MG/L
8/10/2016	TSS	<QL	<QL	82	120	KG/D		<QL	<QL	*******	30	45	MG/L
9/10/2016	TSS	<QL	<QL	82	120	KG/D		0.10	0.33	*******	30	45	MG/L
10/10/2016	TSS	<QL	<QL	82	120	KG/D		<QL	<QL	*******	30	45	MG/L
11/10/2016	TSS	<QL	4.23	82	120	KG/D		0.67	2.7	*******	30	45	MG/L
12/10/2016	TSS	0.14	0.63	82	120	KG/D		<QL	<QL	*******	30	45	MG/L
1/10/2017	TSS	0.15	0.70	82	120	KG/D		<QL	<QL	*******	30	45	MG/L
2/10/2017	TSS	<QL	<QL	82	120	KG/D		<QL	<QL	*******	30	45	MG/L
3/10/2017	TSS	<QL	<QL	82	120	KG/D		0.08	0.33	*******	30	45	MG/L
4/10/2017	TSS	<QL	<QL	82	120	KG/D		<QL	<QL	*******	30	45	MG/L

5/10/2017	TSS	<QL	3.5	82	120	KG/D		0.5	2.0	*******	30	45	MG/L
6/10/2017	TSS	<QL	<QL	82	120	KG/D		<QL	<QL	*******	30	45	MG/L
7/10/2017	TSS	<QL	<QL	82	120	KG/D		<QL	<QL	*******	30	45	MG/L
8/10/2017	TSS	0.16	0.68	82	120	KG/D		<QL	<QL	*******	30	45	MG/L
9/10/2017	TSS	0.3	1.0	82	120	KG/D		<QL	<QL	*******	30	45	MG/L
10/10/2017	TSS	<QL	3.5	82	120	KG/D		0.60	2.7	*******	30	45	MG/L
11/10/2017	TSS	2.1	3.8	82	120	KG/D		2.1	3.7	*******	30	45	MG/L
12/10/2017	TSS	0.34	2.2	82	120	KG/D		0.38	2.5	*******	30	45	MG/L
1/10/2018	TSS	1.0	1.4	82	120	KG/D		1.2	1.7	*******	30	45	MG/L
2/10/2018	TSS	<QL	<QL	82	120	KG/D		<QL	<QL	*******	30	45	MG/L
3/10/2018	TSS	0.26	3.10	82	120	KG/D		0.17	0.67	*******	30	45	MG/L
4/10/2018	TSS	<QL	<QL	82	120	KG/D		<QL	<QL	*******	30	45	MG/L
5/10/2018	TSS	0.3	0.8	82	120	KG/D		0.2	0.7	*******	30	45	MG/L
6/10/2018	TSS	2.31	8.00	82	120	KG/D		1.00	3.00	*******	30	45	MG/L
7/10/2018	TSS	0.35	0.80	82	120	KG/D		0.20	0.70	*******	30	45	MG/L
8/10/2018	TSS	9.00	34.00	82	120	KG/D		3.00	8.30	*******	30	45	MG/L
9/10/2018	TSS	1.6	2.1	82	120	KG/D		0.9	1.3	*******	30	45	MG/L
10/10/2018	TSS	0.7	1.3	82	120	KG/D		0.4	0.9	*******	30	45	MG/L
11/10/2018	TSS	0.1	0.7	82	120	KG/D		0.1	0.4	*******	30	45	MG/L
12/10/2018	TSS	<QL	<QL	82	120	KG/D		0.13	<QL	*******	30	45	MG/L
1/10/2019	TSS	<QL	<QL	82	120	KG/D		<QL	<QL	*******	30	45	MG/L
2/10/2019	TSS	<QL	<QL	82	120	KG/D		<QL	<QL	*******	30	45	MG/L
3/10/2019	TSS	<QL	<QL	82	120	KG/D		<QL	<QL	*******	30	45	MG/L
4/10/2019	TSS	<QL	<QL	82	120	KG/D		<QL	<QL	*******	30	45	MG/L
5/10/2019	TSS	0.3	0.8	82	120	KG/D		0.2	0.5	*******	30	45	MG/L
6/10/2019	TSS	<QL	<QL	82	120	KG/D		<QL	<QL	*******	30	45	MG/L
7/10/2019	TSS	0.1	0.4	82	120	KG/D		0.1	0.4	*******	30	45	MG/L
8/10/2019	TSS	0.8	1.8	82	120	KG/D		0.8	1.8	*******	30	45	MG/L
9/10/2019	TSS	0.1	0.3	82	120	KG/D		0.1	0.4	*******	30	45	MG/L
10/10/2019	TSS	0.3	1.0	82	120	KG/D		0.3	0.9	*******	30	45	MG/L
11/10/2019	TSS	0.4	1.0	82	120	KG/D		0.4	0.8	*******	30	45	MG/L
12/10/2019	TSS	0.2	0.4	82	120	KG/D		0.3	0.4	*******	30	45	MG/L
1/10/2020	TSS	<QL	<QL	82	120	KG/D		<QL	<QL	*******	30	45	MG/L
2/10/2020	TSS	0.2	<QL	82	120	KG/D		0.1	<QL	*******	30	45	MG/L
3/10/2020	TSS	<QL	<QL	82	120	KG/D		<QL	<QL	*******	30	45	MG/L
4/10/2020	TSS	<QL	<QL	82	120	KG/D		<QL	<QL	*******	30	45	MG/L
5/10/2020	TSS	<QL	<QL	82	120	KG/D		<QL	<QL	*******	30	45	MG/L

6/10/2020	TSS	<QL	<QL	82	120	KG/D		<QL	<QL	*******	30	45	MG/L
7/10/2020	TSS	0.1	0.3	82	120	KG/D		0.1	0.4	*******	30	45	MG/L
8/10/2020	TSS	0.7	1.2	82	120	KG/D		0.6	1.2	*******	30	45	MG/L
9/10/2020	TSS	0.6	0.9	82	120	KG/D		0.2	0.3	*******	30	45	MG/L
10/10/2020	TSS	0.5	2.2	82	120	KG/D		0.4	1.6	*******	30	45	MG/L
11/10/2020	TSS	<QL	<QL	82	120	KG/D		<QL	<QL	*******	30	45	MG/L
12/10/2020	TSS	<QL	<QL	82	120	KG/D		<QL	<QL	*******	30	45	MG/L
1/10/2021	TSS	<QL	<QL	82	120	KG/D		<QL	<QL	*******	30	45	MG/L
2/10/2021	TSS	<QL	<QL	82	120	KG/D		<QL	<QL	*******	30	45	MG/L
3/10/2021	TSS	<QL	<QL	82	120	KG/D		<QL	<QL	*******	30	45	MG/L

ATTACHMENT 11

Certificate to Operate

M E M O R A N D U M

DEPARTMENT OF ENVIRONMENTAL QUALITY

Northern Regional Office

1549 Old Bridge Road, Suite 108 Woodbridge, Virginia 22192 (703) 490-8922

SUBJECT: Plans and Specifications for Sewage Treatment Plants

TO: Peter W. Schmidt, Director

FROM: Alan L. Laubscher, Regional Permits Manager, NRO

DATE: February 23, 1995

Project Name: Upgrade Sewage Treatment Plant, Naval Surface Warfare Center, Dahlgren, Virginia, Contract No. N62477-91-C-0260, A&E Commission No. 1761A

Project Owner: U. S. Department of the Navy, Naval Surface Warfare Center, Dahlgren Division

Project Scope: This project involves the upgrade and expansion of Dahlgren NSWC sewage treatment plant. The project consists of the installation of a 0.72 MGD sewage treatment works consisting of bar screens, dissolved air floatation unit, raw sewage influent pumping station, biological reactors with anoxic and aerobic zones, secondary clarifiers, chemical addition, ultra-violet disinfection, backup chlorination dechlorination, and post aeration. Solids handling consists of existing anaerobic digestion. A lime feeder with belt filter press is provided as backup.

Design Basis: This project has been designed for an average flow of 0.072 MGD. The proposed facilities have been designed to comply with effluent limits of 30 mg/l BOD5 and TSS, 6.2 mg/l for ammonia and 200 MPN/100ml for fecal coliform. The facilities are also designed to meet anticipated future limits of 2 mg/l for total phosphorus, 5 mg/l for ammonia nitrogen and 7 mg/l for total nitrogen.

Previous Agency Action: The facility is required to take the polishing ponds at the treatment facilities off-line as soon as possible in order to meet waste management regulations.

Virginia Department of Health Action: By letter dated January 9, 1995 the Virginia Department of Health conditionally approved the plans and specifications as noted in their letter report.

Staff Comments: None

Attachment 7

STAFF RECOMMENDATIONS:

The staff recommends that the Director:

Conditionally approve the plans and specifications subject to the following conditions:

1. An operation and maintenance manual and biosolids management plan must be submitted to the Virginia Department of Health and this office for review and approval prior to operation of this project.

2. If the biosolids treatment and handling capacity provided by this treatment works fails to meet the state and federal technical requirements for biosolids management, a plan outlining the necessary corrective action must be submitted to this Department and the Department of Health within 60 days upon notice to the owner.

3. Ultraviolet disinfection represents new technology for which limited performance is available; therefore, one year of testing for fecal coliform bacteria shall be initiated to evaluate the performance of the UV disinfection system following start-up. A minimum sampling frequency of three (3) samples per week is recommended.

APPROVED: Gregory L Clayton
for Director, Department of Environmental Quality

DATE: Feb 28, 1995

MEMORANDUM

DEPARTMENT OF ENVIRONMENTAL QUALITY

Northern Virginia Regional Office

1549 Old Bridge Road, Suite 108 Woodbridge, Virginia 22192 (703) 490-8922

SUBJECT: Plans and Specifications for Sewage Treatment Plants

TO: Peter W. Schmidt, Director

FROM: Alan L. Laubscher, Regional Permit Manager, NRO

DATE: September 22, 1995

Project Name:	Final Submission Closure of Existing Polishing Ponds and Constructed Wetlands
Project Owner:	Naval Surface Warfare Center, Dahlgren
Project Scope:	This project involves the closure of the existing polishing ponds and the installation of constructed wetlands at the existing sewage treatment plant.
Previous Agency Action:	The facility has been in compliance with its permit during the last quarter.
Virginia Department of	By letter dated August 3, 1995 the Virginia Department of Health conditionally approved the plans and specifications as noted in their letter report.
Staff Comments:	The two existing polishing ponds are being closed due to waste sludges and earth cover in the polishing ponds being classified as an EPA hazardous waste F006 (sludge from electroplating operations).

STAFF RECOMMENDATIONS:

The staff recommends that the Director:

Conditionally approve the plans and specifications subject to the following conditions:

1) This approval is contingent upon the successful completion of hazardous waste closure activities associated with the polishing ponds. The removal of all contaminants outlined in the approved hazardous waste closure plan must be completed for soils and clean closure demonstrated for groundwater, and clean closure must be acknowledged by the Department of Environmental Quality prior to proceeding with the construction of the constructed wetland. In the event the hazardous waste unit cannot be clean closed for either soils or groundwater, DEQ must be contacted in order to evaluate any options that may be available for the relocation or redesign of the wetland.

2) The media size of the constructed wetland material be increased to a stone or rock of 1/2 to 1 inch size range. Also, the 10 inch diameter sludge removal pipe in each wetland needs to be fitted with three capped observation tees of six inch or larger size spaced approximately equidistant apart.

APPROVED: Gregory L. Clayton
for Director, Department of Environmental Quality

DATE: Sept 26, 1995

COMMONWEALTH of VIRGINIA

RANDOLPH L. GORDON, M.D., M.P.H.
COMMISSIONER

Department of Health
Office of Water Programs

ENVIRONMENTAL ENGINEERING FIELD OFFICE
400 S. MAIN ST. - 2ND FLOOR
CULPEPER, VA 22701
PHONE: 540-829-7340
FAX: 540-829-7337

SUBJECT: King George County
Sewerage - Dahlgren NSWC

Mr. W. E. Goss, Jr., Head
Safety Environmental Office
Dahlgren NSWC
17320 Dahlgren Road
Dahlgren, VA 22448-5100

Dear Mr. Goss:

Enclosed is the Certificate to Operate (CTO) for the Dahlgren NSWC Sewage Treatment Works.

This action is in accordance with Section 2.06 of the Virginia *Sewerage Regulations*.

If you have any questions regarding the CTO, please feel free to contact this office.

Sincerely,

Hugh J. Eggborn, P.E.
Engineering Field Director

JSD/plw
CC: DEQ - Water - Woodbridge
King George County Health Department
OWP - Central
O:\mswKing\s\dahlgrennswc-1a

Post-it™ Fax Note 7671	Date 5/21	# of pages ▶ 3
To J. DESAI	From A YOUNG	
Co./Dept. VDH	Co. DEQ	
Phone #	Phone #	
Fax #	Fax #	

VDH VIRGINIA DEPARTMENT OF HEALTH

COMMONWEALTH of VIRGINIA

RANDOLPH L. GORDON, M.D., M.P.H.
COMMISSIONER

Department of Health
Office of Water Programs

ENVIRONMENTAL ENGINEERING FIELD OFFICE
400 S. MAIN ST. - 2ND FLOOR
CULPEPER, VA 22701
PHONE: 540-829-7340
FAX: 540-829-7337

CERTIFICATE TO OPERATE

Owner: Dahlgren Naval Surface Warfare Center

Facility/System Name: Dahlgren NSWC STW

VPDES Permit Number: VA0021067

Description of the Facility/System: The project included the construction of a 0.72 MGD sewage treatment works consisting of bar screens, dissolved air flotation (DAF) unit, raw sewage influent pumping station, biological reactors with anoxic and aerobic zones, secondary clarifiers, chemical addition, ultra-violet disinfection, chlorination/dechlorination (to be utilized only when UV system is out of service) and postaeration.

Authorization to Operate: By letters dated October 30, 1997, as well as March 26, 1998, the firm of Hays, Seay, Mattern and Mattern certified that the construction was substantially completed in accordance with approved plans and specifications. A staff member from the State Health Department conducted an inspection of the above facilities on November 19, 1997. Therefore, the owner is authorized to operate these facilities with the following conditions:

1. An operation and maintenance manual and biosolids management plan must be submitted to the State Health Department and the Department of Environmental Quality for review and approval within thirty (30) days of the issuance of this Certificate to Operate (CTO).

2. All remaining punchlist items as indicated on updated list dated March 17, 1998 must be completed within thirty (30) days of the issuance of this Certificate to Operate, with the exception of constructed wetlands, which may follow a separate construction schedule tied to the closure of the polishing ponds.

CONCURRENCE

Hugh J. Eggborn, P.E., Engineering Field Director
State Department of Health

4/6/98
Date

ISSUANCE

for David A. Johnson, Chief Deputy Director
DEpartment of Environmental Quality

4/15/98
Date

O:\msw\king\s\dahlgrennswc-1aa

COMMONWEALTH of VIRGINIA

E. Anne Peterson, M.D., M.P.H.
COMMISSIONER

Department of Health
Office of Water Programs

ENVIRONMENTAL ENGINEERING FIELD OFFICE
400 S. MAIN ST. - 2ND FLOOR
CULPEPER, VA 22701
PHONE: 540-829-7340
FAX: 540-829-7337

MEMORANDUM

DATE: SEP 28 2000

TO: Dennis Treacy, Director
Department of Environmental Quality, Water Regional Office, Woodbridge

FROM: RJV Robert J. VanLier, P.E., Engineering Field Representative
State Health Department, Division of Wastewater Engineering

SUBJECT: King George County - Sewerage - Dahlgren NSWC STW

Please find enclosed the Certificate to Operate (CTO) for the above-mentioned facility. Please process in our usual fashion.

PLEASE STAMP THIS PAGE ONLY

COMMONWEALTH of VIRGINIA

E. Anne Peterson, M.D., M.P.H.
COMMISSIONER

Department of Health
Office of Water Programs

ENVIRONMENTAL ENGINEERING FIELD OFFICE
400 S. MAIN ST. - 2ND FLOOR
CULPEPER, VA 22701
PHONE: 540-829-7340
FAX: 540-829-7337

SUBJECT: King George County
Sewerage - Dahlgren NSWC STW

Mr. Gary Vick
Dahlgren Naval Surface Weapons Center
Public Works Officer
Department of Public Works
Building 182
Dahlgren, VA 22448-5000

Dear Mr. Vick:

Enclosed is the Certificate to Operate (CTO) for the Dahlgren NSWC STW

This action is in accordance with Section 2.06 of the Virginia ***Sewerage Regulations***.

If you have any questions regarding the CTO, please feel free to contact this office.

Sincerely,

Robert J. VanLier, P.E.
Engineering Field Representative

RJV/tjb
cc: DEQ - Water Regional Office, Woodbridge
King George County Health Department
OWP - Central
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COMMONWEALTH of VIRGINIA

E. Anne Peterson, M.D., M.P.H.
COMMISSIONER

Department of Health
Office of Water Programs

ENVIRONMENTAL ENGINEERING FIELD OFFICE
400 S MAIN ST · 2ND FLOOR
CULPEPER, VA 22701
PHONE: 540-829-7340
FAX: 540-829-7337

CERTIFICATE TO OPERATE

Owner: Dahlgren Naval Surface Warfare Center

Facility/System Name: Dahlgren NSWC STW

VPDES Permit Number: VA0021067

Description of the Facility/System: This project involves the addition of constructed wetlands. The wetlands are intended as a final polishing process before UV disinfection and final discharge. No change in flow is involved.

Authorization to Operate: By letter dated May 10, 2000, W. Craig Hamilton, P.E. certified that the treatment works has been installed as per the approved plans and specifications for this facility. A CTO inspection was performed by VDH and the DEQ. The Owner is authorized to operate these facilities with the condition that an operation and maintenance manual will be submitted to the VDH for approval.

CONCURRENCE

Robert J. VanLier, P.E., Engineering Field Representative
State Department of Health

9/27/00 Date

ISSUANCE

_____ Date

Mr. Dennis Treacy, Director
Department of Environmental Quality

RJV/tjb
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COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY
NORTHERN REGIONAL OFFICE
13901 Crown Court, Woodbridge, Virginia 22193
(703) 583-3800 Fax (703) 583-3821
www.deq.virginia.gov

Douglas W. Domenech
Secretary of Natural Resources

David K. Paylor
Director

Thomas A. Faha
Regional Director

September 1, 2010

King George County
NSWC Dahlgren Modification to STP
PTL#24989, Permit VA0021067

Mr. William Rees
Construction Manager
Public Works Department (Bldg 182)
Naval Support Facility Dahlgren
18329 Thompson Rd
Dahlgren, VA 22448-5110

Dear Mr. Rees:

In accordance with 9VAC25-790-190 of the Commonwealth of Virginia's *Sewage Collection and Treatment Regulations*, this letter transmits the Certificate to Operate (CTO) for NSWC Dahlgren Modification to STP located in King George County. The CTO is being issued based on the Application for Certificate to Operate dated August 16, 2010, and received by this office on August 17, 2010 with supplemental information received August 24, 2010.

If you have any questions about this letter or the approval process, please contact me at (703)-583-3834 or alison.thompson@deq.virginia.gov.

Respectfully,

Alison Thompson
Water Permits Technical Reviewer

cc: VPDES Permit File VA0021067
VDH District Office, attn: Environmental Health Manager
King George County Local Building Official
W. Craig Hamilton Jr, AECOM, 1315 Franklin Rd, Roanoke, VA 24016

Attachment: CTO

Department of Environmental Quality
APPLICATION for CERTIFICATE TO OPERATE
Under the Sewage Collection and Treatment Regulations 9 VAC 25-790
and/or the Water Reclamation and Reuse Regulation 9 VAC 25-740

See instructions. Submit 1 copy of this form and any attachments. Form will expand as you enter information.

Project Title: (as it appears on plans) Modification to Sewage Treatment Plant P.E. Seal Date on Cover: July 20, 2007 Specifications Title and Date: Same as Above	
Location of Project: Naval Support Facility Dahlgren	County/City: King George Co.
Receiving Wastewater Collection System(s): N/A	
Receiving Sewage Treatment Plant(s): N/A	
PROJECT OWNER: United States Government	**RESPONSIBLE ENGINEER**
Owner Contact Name: William Rees, Government Representative	Name: W. Craig Hamilton, Jr. PE
Title: Construction Manager	Company Name: AECOM
Address: Public Works Department (Building 182) Naval Support Facility Dahlgren 18329 Thompson Road Dahlgren, Virginia 22448-5110	Address: 1315 Franklin Road Roanoke, Virginia 24016
Phone: 540-284-1063	Phone: 540-857-3207
Email: william.rees@navy.mil	Email: craig.hamilton@aecom.com
Owner Signature and Date: 8/12/2010	

PTL NUMBER FROM CERTIFICATE TO CONSTRUCT: **22997**

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

Design Flow: (a) average daily flow (MGD): 0.72 (b) peak flow (MGD): 2.4
For sewage treatment plant, water reclamation or satellite reclamation projects, provide the VPDES/VPA Permit Number: VA0021067
Is a new Discharge Monitoring Report (DMR) or other monthly monitoring report required? Yes ☐ No X
For Pump Stations, Sewage Treatment Plants, and Reclamation Systems, check Reliability Class: I X II ☐ III ☐ NA ☐

Two options are provided for the Statement of Completion, depending on whether the project is being authorized under the Sewage Collection and Treatment Regulations, the Water Reclamation and Reuse Regulations, or BOTH. Please check the appropriate box and then provide signature and seal below as indicated.

X *The following statement of completion for issuance of a Certificate to Operate under the Sewage Collection and Treatment Regulations must be signed and sealed by the responsible engineer.* (DEQ will not conduct a confirming inspection.)

"The construction of the project has been completed in accordance with the referenced plans and specifications or revised only in accordance with 9 VAC 25-790-180.B, and inspections have been performed to make this statement in accordance with Section 9 VAC 25-790-180.C.1 of the Sewage Collection and Treatment Regulations."

COMMONWEALTH OF VIRGINIA
WALTER C. HAMILTON, JR.
Lic. No. 10335
8/2/10
PROFESSIONAL ENGINEER

W. Craig Hamilton, Jr.
Licensed Engineer's Signature and original seal (signed and dated)

☐ *The following statement of completion for issuance of a Certificate to Operate under the Water Reclamation and Reuse Regulation must be signed and sealed by the responsible engineer.* (DEQ will not conduct a confirming inspection.)

"The construction of the project has been completed in accordance with the referenced plans and specifications or revised only in accordance with 9 VAC 25-740-120-B.2.b. and inspections have been performed to make this statement in accordance with Section 9 VAC 25-40-120.B.3.a. of the Water Reclamation and Reuse Regulations."

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.

Name	Signature	Date	CTO PTL Number
Alison Thompson		9/1/10	24989

Department of Environmental Quality Authorized Representative

An Operation and Maintenance Manual must be submitted to the DEQ Regional Office in accordance with 9 VAC 25-790 for sewage treatment plants, 9 VAC 25-740 for water reclamation systems and satellite reclamation systems and VPDES or 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.

ATTACHMENT 12

Ammonia Limit Derivation

Naval Support Facility Dahlgren WWTP

20 April, 2021

Input Parameters:

Parameter Analyzed:	ammonia
Chronic Averaging Period:	30 day
WLA_a:	38.08 mg/L
WLA_c:	11.28 mg/L
Q.L.:	0.2 mg/L
# Samples/Mo.:	12
# Samples/Wk.:	3

Statistical Results

# Observations:	1
Expected Value:	9.0000 mg/L
Variance:	29.1600 mg^2/L^2
C.V.:	0.6000
97th percentile daily values:	21.8983 mg/L
97th percentile 4 day average:	14.9732 mg/L
97th percentile 30 day average:	10.8543 mg/L
# Observations < Q.L.:	0

Limit Results

Model Used:	BPJ Assumptions, Type 2 data
Limit Needed?:	NO
Basis for Limit?:	NA
Maximum Daily Limit:	NA
Weekly Average Limit:	NA
Monthly Average Limit:	NA

Input Data 9 mg/L

ATTCHMENT 13

Metals Reasonable Potential / Limitation Derivation

Naval Support Facility Dahlgren WWTP

20 April, 2021

Input Parameters:

Parameter Analyzed:	chromium
Chronic Averaging Period:	4 day
WLA_a:	11000 ug/L
WLA_c:	1000 ug/L
Q.L.:	2 ug/L
# Samples/Mo.:	1
# Samples/Wk.:	1

Statistical Results

# Observations:	1
Expected Value:	2.4000 ug/L
Variance:	2.0736 ug^2/L^2
C.V.:	0.6000
97th percentile daily values:	5.8395 ug/L
97th percentile 4 day average:	3.9929 ug/L
97th percentile 30 day average:	2.8945 ug/L
# Observations < Q.L.:	0

Limit Results

Model Used:	BPJ Assumptions, Type 2 data
Limit Needed?:	NO
Basis for Limit?:	NA
Maximum Daily Limit:	NA
Weekly Average Limit:	NA
Monthly Average Limit:	NA

Input Data 2.4 ug/L

Naval Support Facility Dahlgren WWTP

20 April, 2021

Input Parameters:

Parameter Analyzed:	copper
Chronic Averaging Period:	4 day
WLA_a:	93 ug/L
WLA_c:	120 ug/L
Q.L.:	5 ug/L
# Samples/Mo.:	1
# Samples/Wk.:	1

Statistical Results

# Observations:	1
Expected Value:	6.4000 ug/L
Variance:	14.7456 ug^2/L^2
C.V.:	0.6000
97th percentile daily values:	15.5721 ug/L
97th percentile 4 day average:	10.6476 ug/L
97th percentile 30 day average:	7.7186 ug/L
# Observations < Q.L.:	0

Limit Results

Model Used:	BPJ Assumptions, Type 2 data
Limit Needed?:	NO
Basis for Limit?:	NA
Maximum Daily Limit:	NA
Weekly Average Limit:	NA
Monthly Average Limit:	NA

Input Data 6.4 ug/L

Naval Support Facility Dahlgren WWTP

20 April, 2021

Input Parameters:

Parameter Analyzed:	cyanide
Chronic Averaging Period:	4 day
WLA_a:	10 ug/L
WLA_c:	20 ug/L
Q.L.:	2 ug/L
# Samples/Mo.:	1
# Samples/Wk.:	1

Statistical Results

# Observations:	1
Expected Value:	3.3000 ug/L
Variance:	3.9204 ug^2/L^2
C.V.:	0.6000
97th percentile daily values:	8.0294 ug/L
97th percentile 4 day average:	5.4902 ug/L
97th percentile 30 day average:	3.9799 ug/L
# Observations < Q.L.:	0

Limit Results

Model Used:	BPJ Assumptions, Type 2 data
Limit Needed?:	NO
Basis for Limit?:	NA
Maximum Daily Limit:	NA
Weekly Average Limit:	NA
Monthly Average Limit:	NA

Input Data 3.3 ug/L

Naval Support Facility Dahlgren WWTP

20 April, 2021

Input Parameters:

Parameter Analyzed:	zinc
Chronic Averaging Period:	4 day
WLA_a:	900 ug/L
WLA_c:	1620 ug/L
Q.L.:	5 ug/L
# Samples/Mo.:	1
# Samples/Wk.:	1

Statistical Results

# Observations:	1
Expected Value:	11.0000 ug/L
Variance:	43.5600 ug^2/L^2
C.V.:	0.6000
97th percentile daily values:	26.7645 ug/L
97th percentile 4 day average:	18.3006 ug/L
97th percentile 30 day average:	13.2663 ug/L
# Observations < Q.L.:	0

Limit Results

Model Used:	BPJ Assumptions, Type 2 data
Limit Needed?:	NO
Basis for Limit?:	NA
Maximum Daily Limit:	NA
Weekly Average Limit:	NA
Monthly Average Limit:	NA

Input Data 11 ug/L

ATTACHMENT 14

Dieldrin Reasonable Potential / Limitation Derivation

Naval Support Facility Dahlgren WWTP

20 April, 2021

Input Parameters:

Parameter Analyzed:	dieldrin
Chronic Averaging Period:	4 day
WLA_a:	7.1 ug/L
WLA_c:	0.04 ug/L
Q.L.:	0.019 ug/L
# Samples/Mo.:	1
# Samples/Wk.:	1

Statistical Results

# Observations:	1
Expected Value:	0.0330 ug/L
Variance:	0.0004 ug^2/L^2
C.V.:	0.6000
97th percentile daily values:	0.0803 ug/L
97th percentile 4 day average:	0.0549 ug/L
97th percentile 30 day average:	0.0398 ug/L
# Observations < Q.L.:	0

Limit Results

Model Used:	BPJ Assumptions, Type 2 data
Limit Needed?:	YES
Basis for Limit?:	Chronic Toxicity
Maximum Daily Limit:	0.0585 ug/L
Weekly Average Limit:	0.0585 ug/L
Monthly Average Limit:	0.0585 ug/L

Input Data 0.033 ug/L

ATTACHMENT 15

Summary of Whole Effluent Toxicity Test Results

M E M O R A N D U M

DEPARTMENT OF ENVIRONMENTAL QUALITY
Northern Regional Office
13901 Crown Court **Woodbridge, VA 22192** **(703) 583-3800**

SUBJECT: TOXICS MANAGEMENT PROGRAM (TMP) DATA REVIEW
Naval Surface Warfare Center - Dahlgren (VA0021067)
REVIEWER: Douglas Frasier
DATE: 12 February 2021

PREVIOUS REVIEW: 11 May 2020

DATA REVIEWED:

This review covers the fourth (4th) annual chronic toxicity tests conducted in May 2020 at Outfall 001.

DISCUSSION:

The results of these toxicity tests, along with the results of previous toxicity tests performed on effluent samples collected from Outfall 001 are summarized in Table 1.

The chronic toxicity of the effluent samples was determined with a 7-day static renewal survival, growth and fecundity chronic test using *M. bahia* and a 7-day static renewal survival and growth chronic test using *C. variegates*.

CONCLUSION:

The chronic toxicity tests are valid and the results are acceptable. The test results were found to be within the compliance endpoints as stated in the permit.

BIOMONITORING RESULTS
Naval Surface Warfare Center – Dahlgren (VA0021067)

Table 1
Summary of Toxicity Test Results for Outfall 001

TEST DATE	TEST TYPE/ORGANISM	IC_{25} (%)	48-h LC_{50} (%)	NOEC (%)	% SURV	REMARKS
02/09/95	Acute *M. bahia*		28.7		0	
02/09/95	Acute *C. variegatus*		>100		75	
02/07/95	Chronic *M. bahia*			10 G	0	
02/07/95	Chronic *C. variegatus*			30 SG	18	
04/27/95	Acute *M. bahia*		31.9		0	
04/27/95	Acute *C. variegatus*		>100		100	
04/25/95	Chronic *M. bahia*			10 G	0	
04/25/95	Chronic *C. variegatus*			30 G	78	
TMP monitoring commences 6 months after CTO 4/15/98						
9/24/98	Acute *M. bahia*		>100		100	1st Quarterly
9/24/98	Acute *C. variegatus*		>100		100	
9/22/98	Chronic *M. bahia*			100 SGF	93	
9/22/98	Chronic *C. variegatus*			100 SG	100	
12/17/98	Acute *M. bahia*		>100		100	2nd Quarterly
12/17/98	Acute *C. variegatus*		>100		100	
12/15/98	Chronic *M. bahia*			100 SGF	95	
12/15/98	Chronic *C. variegatus*			100 SG	100	
3/11/99	Acute *M. bahia*		>100		100	3rd Quarterly
3/11/99	Acute *C. variegatus*		>100		100	
3/9/99	Chronic *M. bahia*			100 SG 10 F	98	
3/9/99	Chronic *C. variegatus*			100 SG	100	
6/24/99	Acute *M. bahia*		94.9		45	4th Quarterly
6/24/99	Acute *C. variegatus*		>100		100	
6/22/99	Chronic *M. bahia*			10 SGF	5	
6/22/99	Chronic *C. variegatus*			100 SG	90	
10/28/99	Acute *M. bahia*		>100		95	1st annual
10/26/99	Chronic *M. bahia*			100 SGF	90	
Permit Reissued February 28, 2000						
5/25/00	Acute *M. bahia*		>100		100	1st annual
5/23/00	Chronic *M. bahia*			100 SGF	98	
5/17/01	Acute *M. bahia*		>100		100	2nd annual
5/17/01	Acute *C. variegatus*		>100		100	
5/15/01	Chronic *M. bahia*	>100	>100	100 SGF	100	
5/15/01	Chronic *C. variegatus*	>100	>100	100 SG	95	
7/20/02	Acute *M. bahia*		>100		100	3rd annual
7/16/02	Chronic *M. bahia*	>100	>100	100 SGF	100	
11/21/02	Acute *M. bahia*		>100		100	Extra test after spray of herbicide
11/19/02	Chronic *M. bahia*	>100	>100	100 SG	98	No egg produced in the control
05/07/03	Acute *M. bahia*		>100		100	4th annual
05/06/03	Chronic *M. bahia*	>100	>100	100 SG	100	

TEST DATE	TEST TYPE/ORGANISM	IC_{25} (%)	48-h LC_{50} (%)	NOEC (%)	% SURV	REMARKS
05/12/04	Acute *M. bahia*		>100		100	5th annual
05/11/04	Chronic *M. bahia*	>100G 56.4 F	>100	100 SGF	90	
Permit Reissued 31 May 2005						
09/27/05	Chronic *M. bahia*	>100	>100	100 SGF	100	1st annual
09/27/05	Chronic *C. variegatus*	>100	>100	100 SG	100	
10/17/06	Chronic *M. bahia*	>100	>100	100 SGF	100	2nd annual
10/17/06	Chronic *C. variegatus*	>100	>100	100 SG	100	
9/18/07	Chronic *M. bahia*	>100	>100	100 SGF	100	3rd annual
9/18/07	Chronic *C. variegatus*	>100	>100	100 SG	100	
11/18/08	Chronic *M. bahia*	>100	>100	100 SGF	85	4th annual
11/18/08	Chronic *C. variegatus*	>100	>100	93 SG	93	
09/22/09	Chronic *M. bahia*	>100	>100	100 SGF	90	5th annual
09/22/09	Chronic *C. variegatus*	>100	>100	100 SG	98	
Permit Reissued 15 March 2011						
11/29/11	Chronic *M. bahia*	>100	>100	100 SGF	83	Extra – outside compliance period
11/29/11	Chronic *C. variegatus*	>100	>100	100 SG	100	
12/12/12	Chronic *M. bahia*	>100	>100	100 SGF	100	1st annual
12/12/12	Chronic *C. variegatus*	>100	>100	100 SG	100	
12/10/13	Chronic *M. bahia*	>100	>100	100 SGF	93	2nd annual
12/10/13	Chronic *C. variegatus*	>100	>100	100 SG	100	
11/18/14	Chronic *M. bahia*	>100	>100	100 SGF	90	3rd annual
11/18/14	Chronic *C. variegatus*	>100	>100	100 SG	100	
11/10/15	Chronic *M. bahia*	>100	>100	100 SGF	93	4th annual
11/10/15	Chronic *C. variegatus*	>100	>100	100 SG	100	
Permit Reissued 1 April 2016						
07/25/17	Chronic *M. bahia*	>100	>100	100 SGF	95	1st annual
07/25/17	Chronic *C. variegatus*	>100	>100	100 SG	100	
02/13/18	Chronic *M. bahia*	>100	>100	100 SGF	95	2nd annual
02/13/18	Chronic *C. variegatus*	>100	>100	100 SG	100	
11/06/19	Chronic *M. bahia*	>100	>100	100 SGF	98	3rd annual
11/06/19	Chronic *C. variegatus*	>100	>100	100 SG	100	
05/06/20	Chronic *M. bahia*	62.8 G >100 F	>100 S	16 SGF	50	4th annual
05/06/20	Chronic *C. variegatus*	>100	>100	100 SG	100	

ABBREVIATIONS:

S – Survival; G – Growth; F – Fecundity

% SURV – Percent survival in 100% effluent

ATTACHMENT 16

Statistical Analysis of Previous WET Results

NSF Dahlgren WWTP

24 May, 2021

Input Parameters:

Parameter Analyzed:	M. bahia
Chronic Averaging Period:	4 day
WLA_a:	30 TU
WLA_c:	20 TU
Q.L.:	1 TU
# Samples/Mo.:	1
# Samples/Wk.:	1

Statistical Results

# Observations:	10
Expected Value:	1.4207 TU
Variance:	0.8056 TU
C.V.:	0.6318
97th percentile daily values:	3.5723 TU
97th percentile 4 day average:	2.4197 TU
97th percentile 30 day average:	1.7289 TU
# Observations < Q.L.:	0

Limit Results

Model Used:	lognormal
Limit Needed?:	NO
Basis for Limit?:	NA
Maximum Daily Limit:	NA
Weekly Average Limit:	NA
Monthly Average Limit:	NA

Input Data 1 1 1 1 1 1 1 1 1 6.25 TU

NSF Dahlgren WWTP

24 May, 2021

Input Parameters:

Parameter Analyzed:	C. variegatus
Chronic Averaging Period:	4 day
WLA_a:	30 TU
WLA_c:	20 TU
Q.L.:	1 TU
# Samples/Mo.:	1
# Samples/Wk.:	1

Statistical Results

# Observations:	10
Expected Value:	1.0000 TU
Variance:	0.0000 TU
C.V.:	0.0000
97th percentile daily values:	1.0000 TU
97th percentile 4 day average:	1.0000 TU
97th percentile 30 day average:	1.0000 TU
# Observations < Q.L.:	0

Limit Results

Model Used:	lognormal
Limit Needed?:	NO
Basis for Limit?:	NA
Maximum Daily Limit:	NA
Weekly Average Limit:	NA
Monthly Average Limit:	NA

Input Data 1 1 1 1 1 1 1 1 1 1 TU

ATTACHMENT 17

Calculated Compliance Endpoints for WET Requirements

Spreadsheet for determination of WET test endpoints or WET limits

Excel 97
Revision Date: 12/13/13
File: WETLIM10.xls
(MIX.EXE required also)

Acute Endpoint/Permit Limit — **Use as LC_{50} in Special Condition, as TUa on DMR**

ACUTE	2.925149368	TUa	LC_{50} =	35	% Use as	2.85	TUa
ACUTE WLAa	3						

Note: Inform the permittee that if the mean of the data exceeds this TUa: 1.0 a limit may result using STATS.EXE

Chronic Endpoint/Permit Limit — **Use as NOEC in Special Condition, as TUc on DMR**

CHRONIC	29.25149368	TU_c	NOEC =	4	% Use as	25.00	TU_c
BOTH*	30.00000074	TU_c	NOEC =	4	% Use as	25.00	TU_c
AML	29.25149368	TU_c	NOEC =	4	% Use as	25.00	TU_c
ACUTE WLAa,c	30						
CHRONIC WLAc	20						

Note: Inform the permittee that if the mean of the data exceeds this TUc: 12.0207454 a limit may result using STATS.EXE

* Both means acute expressed as chronic

Enter data in the cells with blue type:

Entry Date:	05/24/21	
Facility Name:	NSF Dahlgren WWTP	
VPDES Number:	VA0021067	
Outfall Number:	1	
Plant Flow:	0.72	MGD
Acute 1Q10:	0	MGD
Chronic 7Q10:	0	MGD

% Flow to be used from MIX.EXE

Acute	100	%
Chronic	100	%

Diffuser /modeling study?

Enter Y/N	y	
Acute	10	:1
Chronic	20	:1

Are data available to calculate CV? (Y/N)	N	(Minimum of 10 data points, same species, needed)	Go to Page 2
Are data available to calculate ACR? (Y/N)	N	(NOEC<LC50, do not use greater/less than data)	Go to Page 3

IWC_a	10	%	Plant flow/plant flow + 1Q10
IWC_c	5	%	Plant flow/plant flow + 7Q10
Dilution, acute	10		100/IWCa
Dilution, chronic	20		100/IWCc
WLA_a	3		Instream criterion (0.3 TUa) X's Dilution, acute
WLA_c	20		Instream criterion (1.0 TUc) X's Dilution, chronic
$WLA_{a,c}$	30		ACR X's WLA_a - converts acute WLA to chronic units
ACR -acute/chronic ratio	10		LC50/NOEC (Default is 10 - if data are available, use tables Page 3)
CV-Coefficient of variation	0.6		Default of 0.6 - if data are available, use tables Page 2)
Constants eA	0.4109447		Default = 0.41
eB	0.6010373		Default = 0.60
eC	2.4334175		Default = 2.43
eD	2.4334175		Default = 2.43 (1 samp)

NOTE: If the IWCa is >33%, specify the NOAEC = 100% test/endpoint for use

No. of samples: 1

****The Maximum Daily Limit is calculated from the lowest LTA, X's eC. The LTAa,c and MDL using it are driven by the ACR.**

$LTA_{a,c}$	12.328341	WLAa,c X's eA						
LTA_c	12.020746	WLAc X's eB					Rounded NOEC's	%
MDL** with $LTA_{a,c}$	30.00000074	TU_c	NOEC =	3.333333	(Protects from acute/chronic toxicity)		NOEC =	4 %
MDL** with LTA_c	29.25149368	TU_c	NOEC =	3.418629	(Protects from chronic toxicity)		NOEC =	4 %
AML with lowest LTA	29.25149368	TU_c	NOEC =	3.418629	Lowest LTA X's eD		NOEC =	4

IF ONLY ACUTE ENDPOINT/LIMIT IS NEEDED, CONVERT MDL FROM TU_c to TU_a

						Rounded LC50's	%
MDL with $LTA_{a,c}$	3.000000074	TU_a	LC50 =	33.333333	%	LC50 =	34 %
MDL with LTA_c	2.925149368	TU_a	LC50 =	34.186288	%	LC50 =	35

Page 2 - Follow the directions to develop a site specific CV (coefficient of variation)

IF YOU HAVE AT LEAST 10 DATA POINTS THAT ARE QUANTIFIABLE (NOT "<" OR ">") FOR A SPECIES, ENTER THE DATA IN EITHER COLUMN "G" (VERTEBRATE) OR COLUMN "J" (INVERTEBRATE). THE 'CV' WILL BE PICKED UP FOR THE CALCULATIONS BELOW. THE DEFAULT VALUES FOR eA, eB, AND eC WILL CHANGE IF THE 'CV' IS ANYTHING OTHER THAN 0.6.

Coefficient of Variation for effluent tests

CV = 0.6 (Default 0.6)

δ^2 = 0.3074847

δ = 0.554513029

Using the log variance to develop eA

(P. 100, step 2a of TSD)

Z = 1.881 (97% probability stat from table

A = -0.88929666

eA = 0.410944686

Using the log variance to develop eB

(P. 100, step 2b of TSD)

δ_4^2 = 0.086177696

δ_4 = 0.293560379

B = -0.50909823

eB = 0.601037335

Using the log variance to develop eC

(P. 100, step 4a of TSD)

δ^2 = 0.3074847

δ = 0.554513029

C = 0.889296658

eC = 2.433417525

Using the log variance to develop eD

(P. 100, step 4b of TSD)

n = 1 This number will most likely stay as "1", for 1 sample/month.

δ_n^2 = 0.3074847

δ_n = 0.554513029

D = 0.889296658

eD = 2.433417525

59														
60		Page 2 - Follow the directions to develop a site specific CV (coefficient of variation)												
61														
62		IF YOU HAVE AT LEAST 10 DATA POINTS THAT					Vertebrate			Invertebrate				
63		ARE QUANTIFIABLE (NOT "<" OR ">")					IC_{25} Data			IC_{25} Data				
64		FOR A SPECIES, ENTER THE DATA IN EITHER					or			or				
65		COLUMN "G" (VERTEBRATE) OR COLUMN					LC_{50} Data	LN of data		LC_{50} Data	LN of data			
66		"J" (INVERTEBRATE). THE 'CV' WILL BE					**********			**********				
67		PICKED UP FOR THE CALCULATIONS				1			1					
68		BELOW. THE DEFAULT VALUES FOR eA,				2			2					
69		eB, AND eC WILL CHANGE IF THE 'CV' IS				3			3					
70		ANYTHING OTHER THAN 0.6.				4			4					
71						5			5					
72						6			6					
73						7			7					
74		Coefficient of Variation for effluent tests				8			8					
75						9			9					
76		CV =	0.6	(Default 0.6)		10			10					
77						11			11					
78		δ^2 =	0.3074847			12			12					
79		δ =	0.554513029			13			13					
80						14			14					
81		Using the log variance to develop eA				15			15					
82			(P. 100, step 2a of TSD)			16			16					
83		Z = 1.881 (97% probability stat from table				17			17					
84		A =	-0.88929666			18			18					
85		eA =	0.410944686			19			19					
86						20			20					
87		Using the log variance to develop eB												
88			(P. 100, step 2b of TSD)			St Dev	NEED DATA	NEED DATA	St Dev	NEED DAT/	NEED DATA			
89		δ_4^2 =	0.086177696			Mean	0	0	Mean	0	0			
90		δ_4 =	0.293560379			Variance	0	0.000000	Variance	0	0.000000			
91		B =	-0.50909823			CV	0		CV	0				
92		eB =	0.601037335											
93														
94		Using the log variance to develop eC												
95			(P. 100, step 4a of TSD)											
96														
97		δ^2 =	0.3074847											
98		δ =	0.554513029											
99		C =	0.889296658											
100		eC =	2.433417525											
101														
102		Using the log variance to develop eD												
103			(P. 100, step 4b of TSD)											
104		**n =**	**1**	This number will most likely stay as "1", for 1 sample/month.										
105		δ_n^2 =	0.3074847											
106		δ_n =	0.554513029											
107		D =	0.889296658											
108		eD =	2.433417525											
109														

Page 3 - Follow directions to develop a site specific ACR (Acute to Chronic Ratio)

To determine Acute/Chronic Ratio (ACR), insert usable data below. Usable data is defined as valid paired test results, acute and chronic, tested at the same temperature, same species. The chronic NOEC must be less than the acute LC_{50}, since the ACR divides the LC_{50} by the NOEC. LC_{50}'s >100% should not be used.

Table 1. ACR using Vertebrate data

Set #	LC_{50}	NOEC	Test ACR	Logarithm	Geomean	Antilog	ACR to Use
1	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
2	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
3	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
4	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
5	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
6	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
7	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
8	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
9	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
10	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
				ACR for vertebrate data:			0

Table 1. Result:	Vertebrate ACR	0
Table 2. Result:	Invertebrate ACR	0
	Lowest ACR	Default to 10

Table 2. ACR using Invertebrate data

Set #	LC_{50}	NOEC	Test ACR	Logarithm	Geomean	Antilog	ACR to Use
1	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
2	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
3	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
4	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
5	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
6	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
7	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
8	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
9	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
10	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	NO DATA
				ACR for vertebrate data:			0

Convert LC_{50}'s and NOEC's to Chronic TU's for use in WLA.EXE

Table 3. **ACR used: 10**

	Enter LC_{50}	TUc	Enter NOEC	TUc
1		NO DATA		NO DATA
2		NO DATA		NO DATA
3		NO DATA		NO DATA
4		NO DATA		NO DATA
5		NO DATA		NO DATA
6		NO DATA		NO DATA
7		NO DATA		NO DATA
8		NO DATA		NO DATA
9		NO DATA		NO DATA
10		NO DATA		NO DATA
11		NO DATA		NO DATA
12		NO DATA		NO DATA
13		NO DATA		NO DATA
14		NO DATA		NO DATA
15		NO DATA		NO DATA
16		NO DATA		NO DATA
17		NO DATA		NO DATA
18		NO DATA		NO DATA
19		NO DATA		NO DATA
20		NO DATA		NO DATA

If WLA.EXE determines that an acute limit is needed, you need to convert the TUc answer you get to TUa and then an LC50, enter it here: NO DATA %LC_{50}

NO DATA TUa

DILUTION SERIES TO RECOMMEND

Table 4.

	Monitoring % Effluent	Monitoring TUc	Limit % Effluent	Limit TUc
Dilution series based on data mean	8.3	12.02075		
Dilution series to use for limit			4	25
Dilution factor to recommend:	0.2884259		0.2	
Dilution series to recommend:	100.0	1.00	100.0	1.00
	28.8	3.47	20.0	5.00
	8.3	12.02	4.0	25.00
	2.4	41.68	0.8	125.00
	0.69	144.50	0.2	625.00
Extra dilutions if needed	0.20	500.99	0.0	3125.00
	0.06	1736.98	0.0	15625.00

Cell: I9
Comment:
This is assuming that the data are Type 2 data (none of the data in the data set are censored - "<" or ">").

Cell: K18
Comment: This is assuming that the data are Type 2 data (none of the data in the data set are censored - "<" or ">").

Cell: J22
Comment: Remember to change the "N" to "Y" if you have ratios entered, otherwise, they won't be used in the calculations.

Cell: C40
Comment:
If you have entered data to calculate an ACR on page 3, and this is still defaulted to "10", make sure you have selected "Y" in cell E21

Cell: C41
Comment: If you have entered data to calculate an effluent specific CV on page 2, and this is still defaulted to "0.6", make sure you have selected "Y" in cell E20

Cell: L48
Comment:
See Row 151 for the appropriate dilution series to use for these NOEC's

Cell: G62
Comment:
Vertebrates are:
Pimephales promelas
Oncorhynchus mykiss
Cyprinodon variegatus

Cell: J62
Comment:
Invertebrates are:
Ceriodaphnia dubia
Mysidopsis bahia

Cell: C117
Comment: Vertebrates are:

Pimephales promelas
Cyprinodon variegatus

Cell: M119
Comment: The ACR has been picked up from cell C34 on Page 1. If you have paired data to calculate an ACR, enter it in the tables to the left, and make sure you have a "Y" in cell E21 on Page 1. Otherwise, the default of 10 will be used to convert your acute data.

Cell: M121
Comment: If you are only concerned with acute data, you can enter it in the NOEC column for conversion and the number calculated will be equivalent to the TUa. The calculation is the same: 100/NOEC = TUc or 100/LC50 = TUa.

Cell: C138
Comment: Invertebrates are:

Ceriodaphnia dubia
Mysidopsis bahia

ATTACHMENT 18

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 in King George County, Virginia.

PUBLIC COMMENT PERIOD: July 8, 2022 to August 8, 2022

PERMIT NAME: Virginia Pollutant Discharge Elimination System Permit – Wastewater issued by DEQ, pursuant to applicable water laws and regulations.

APPLICANT NAME, ADDRESS AND PERMIT NUMBER: Naval Support Facility Dahlgren; 18329 Thompson Road, Suite 226, Dahlgren, VA 22448-5018; VA0021067.

FACILITY NAME AND LOCATION: Naval Support Facility Dahlgren Wastewater Treatment Plant; 18329 Thompson Road, Dahlgren, VA 22448-5018.

PROJECT DESCRIPTION: Naval Support Facility Dahlgren has applied for reissuance of a permit for the federal Naval Support Facility Dahlgren Wastewater Treatment Plant. The applicant proposes to release treated sewage wastewaters from a naval research and development facility at a rate of 0.72 million gallons per day into a water body. Sludge from the treatment process will be transported to the King George County Landfill (SWP586) for final disposal. The facility proposes to release the treated sewage in the Upper Machodoc Creek in King George County in the Potomac River watershed. 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: physical and chemical properties, nutrients, organic matter, solids and bacteria. The permit requires monitoring and reporting for flow, pesticide and whole effluent toxicity. This facility is subject to the requirements of 9VAC25-820 and has registered for coverage under the General VPDES Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Bay Watershed in Virginia (Nutrient GP).

HOW TO COMMENT AND/OR REQUEST A PUBLIC HEARING: DEQ accepts comments and requests for public hearing on the draft permit by hand-delivery, email, fax or postal mail. All comments and requests must be in writing and be received by DEQ during the comment period. DEQ must receive hand-delivery and postal mail by close of business and email and fax comments by 11:59 p.m. on the last day of the comment period. Submittals must include the names, mailing addresses or email addresses of the commenter/requester and of all persons represented by the commenter/requester. A request for 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 requester, including how and to what 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 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: Douglas Frasier; DEQ-Northern Regional Office, 13901 Crown Court, Woodbridge, VA 22193; Phone: 571-866-6522; Email: Douglas.Frasier@deq.virginia.gov; Fax: 804-698-4178. 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.