



**SUMMARY REPORT & FACT SHEET**

**Permit Application Numbers:** State: 15-DP-0580 NPDES: MD0021601  
**Name of Facility:** Patapsco WWTP  
**Mailing Address:** 3501 Asiatic Avenue, Baltimore, Maryland 21226  
**Facility's Location:** 3501 Asiatic Avenue, Baltimore, Maryland 21226  
**Facility Organization:** City of Baltimore, Department of Public Works, Abel Wolman Municipal Building, 6<sup>th</sup> Floor, 200 N. Holiday Street, Baltimore, Maryland 21202  
**Contact Person's Name:** Mr. Gary J. Wagner  
**-Title:** Plant Manger  
**-Phone:** 410-396-2898  
**Applicant engaged in:** The Treatment of Domestic and Industrial Wastewater  
**Number of outfalls:** One, 001A - (Facility Effluent) **SIC Code:** 4952 (Sewerage Systems)  
**MDE Engineer:** Mahendra Chawla *MCh* **Completion Date:** 8-16-2016  
 Revised 10/5/2016, *7-26-2017*

Reviewed by: \_\_\_\_\_ Date \_\_\_\_\_  
 {Permit Reviewer Name}

Reviewed by: Curtis H. Dalton 10/6/16  
 Curtis H. Dalton, P.E., Chief  
 Technical Services Division Date

Accepted by: [Signature] 10/17/16  
 Yen-Der Cheng, Chief  
 Municipal Surface Discharge Permits Division Date

Is EPA joint review required? Yes , Date sent: 10-17-2016 No   
 State/EPA comment/agreement received: Yes  Date received: 11-16-2016, N/A

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**I. Description of Facility, Outfall and Receiving Stream**

Description of Facility & Outfall(s)

<b><u>Details for Facility:</u></b>	
POTW <input checked="" type="checkbox"/>	Privately Owned Facility <input type="checkbox"/>
EPA MAJOR <input checked="" type="checkbox"/>	EPA MINOR <input type="checkbox"/> Chesapeake Bay Significant <input checked="" type="checkbox"/>
Service Area: The facility serves City of Baltimore, Anne Arundel County, Baltimore County and Howard County	
Population Served: <u>473,289</u> , 5-year projection flow: <u>70.0 mgd</u>	
The proposed discharge flow of 81.0 Million Gallons per Day (MGD) is consistent with the capacity listed in the 2006 Baltimore City's Water and Sewer Plan and approved by MDE's Water Resources Planning Program. It is also in conformance with the State's Smart Growth initiatives.	
Current Design Capacity of the Facility: <u>73.0</u> MGD	
Which of the following documents were used as the base of the design capacity? (Check boxes as appropriate.)	
<input type="checkbox"/> Construction Permit (Issued by MDE),	<input checked="" type="checkbox"/> Most updated W/S Plan (2006)
<input type="checkbox"/> Permit Application	<input type="checkbox"/> Other (Specify)
Additional comments on the plant capacity: I/I affecting plant capacity: (3.1 mgd).	
Type of Discharge: <input checked="" type="checkbox"/> Surface Discharge,	Discharge Period: <u>12 months (January – December)</u>
<input type="checkbox"/> Groundwater Discharge,	Discharge Period: <u>12 months (January – December)</u>
Additional comments on the discharge type: Continuous discharge.	
<b><u>Wastewater Treatment Processes:</u></b>	
Grit removal, mechanical screens, primary clarifiers, oxygen activated sludge reactors, secondary clarifiers, biological aerated filters for nitrification (under construction), de-nitrification filters (under construction), flow distribution chamber, chlorine contact chamber and cascade post aeration chamber	

**I. Description of Facility, Outfall and Receiving Stream**

<b><u>Details for Outfall:</u></b>				
Outfall Type:	Non-submerged discharge <input type="checkbox"/> Pipe <input type="checkbox"/> Ditch <input type="checkbox"/> Distance from the last sampling point: _____ Submerged Discharge: <input checked="" type="checkbox"/> Distance from the last sampling point: <u>824 ft</u> , Diameter of Diffusers: <u>3 feet</u> Distance from Shore: <u>824 feet</u> , Depth: <u>18 feet</u> , No. of Diffusers: <u>16</u>			
Outfall Location:	<b>GPS Readings</b>		<b>Maryland Coordinates, feet</b>	
	Latitude	Longitude	North	East
	39° 14' 00" (N)	76° 33' 47" (W)	510,154	923,773

**Details for Effluent Receiving Stream**

<b>Name of Stream</b>	Patapsco River which flows into the Chesapeake Bay.
<b>Type of Stream</b>	Tidal River
<b>Stream Use Designation</b>	Patapsco River is designated as Use II waters Chesapeake Bay is designated as Use II waters
<b>River Mile</b>	7.5 Miles (from outfall 001A to confluence of the Patapsco River with the Chesapeake Bay.)
<b>Watershed</b>	8-Digit Sub-watershed Code: 02-13-09-03 (Description) CBPSEG Code (Example: PATMH- Patapsco River Mesohaline)
<b>Tier II Waters</b>	Receiving stream(s) designated as Tier II water    Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Tier II rules applicable to discharge                      Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A <input type="checkbox"/>
<b>Does the facility discharge into impaired waters included on (303(d) list)?</b>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> As per the approved Integrated Report of Surface Water Quality (formerly known as the 303(d) List and 305(b) Report), the streams in the Patapsco River Mesohaline sub-watershed are listed as impaired water bodies due to, total phosphorus, total nitrogen, total suspended solids (1996), Enterococcus (1998), toxics (polychlorinated biphenyls, or PCBs) (1998), chlordane (1998), impacts to biological communities (2004), and Debris/Floatables (2008)

**I. Description of Facility, Outfall and Receiving Stream**

<b>Approved Total Maximum Daily Load (TMDL) / Water Quality Analysis (WQA) for concerned parameter(s)</b>	Any approved TMDL(s) for Patapsco River Mesohaline Sub-watershed Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>  Total Nitrogen, Total Phosphorus and Total Suspended Solids Chesapeake Bay TMDL, approved on 12/29/2010. The Baltimore Harbor, Nutrients TMDL approved on 12/17/2007, Chlordane TMDL was approved on March 23, 2001 and PCBs TMDL was approved on 10/1/2012.			
	Is the Patapsco River a part of the Chesapeake Bay TMDL (as accepted by EPA on 12/29/2010)? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>			
<b>Background Stream Flows</b> (See PROJECT FILE for details):	Period	7Q10 Low-flow, cfs	30Q5 Low-flow, cfs	Average, cfs *
	5/1 To 10/31	488.70	1052.50	N/A
	11/1 To 4/30	488.70	1052.50	N/A
	Annual	N/A	N/A	N/A
	* Annual average flow is not applicable to tidally influenced water body.			

**Plant Performance Evaluation:**

Source of Data: ICIS, Data Period: 4/1/2011-4/30/2016

The plant performance is summarized as follows: |

Parameter	Concentration	Quantity
BOD <sub>5</sub>	11.5 mg/l	5,592 lbs/day
Total Suspended Solids (TSS)	9.9 mg/l	4,814 lbs/day
Total Ammonia Nitrogen as N (5/1 to 10/31) (11/1 to 4/30)	18 mg/l 16 mg/l	8,752 lbs/day 7,780 lbs/day
Organic Nitrogen as N	2.8 mg/l	1,361 lbs/day
(Nitrite + Nitrate) as N	1.6 mg/l	778 lbs/day
Total Nitrogen as N	20.2 mg/l 19.7 mg/l	1,376,335 lbs/(5/1-10/31) 3,476,215 lbs/year
Orthophosphate as P	0.89 mg/l	433 lbs/day

**I. Description of Facility, Outfall and Receiving Stream**

<b><u>Plant Performance, Continued</u></b>		
Total Phosphorus as P	1.05 mg/l 0.94 mg/l	88,468 lbs/(5/1-10/31) 171,337 lbs/year
E. Coli (4/11-9/11)	3.3 MPN/100ml	N/A
Enterococci (10/11-2/16)	18.9 MPN/100ml	N/A
Total Residual Chlorine (TRC)	< 0.1 mg/l	N/A
pH	6.3 minimum 6.9 maximum	N/A N/A
Dissolved Oxygen (DO)	5.71mg/l	N/A
Zinc, total	23.8 ug/l	11.59 lbs/d
Cyanide (Free)	8.0 ug/l	3.90 lbs/d
Copper, total	6.4 ug/l	3.12 lbs/d
Flow	N/A	58.4 MGD

**II. Special Requirements and Conditions**


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**WWTP meeting at least 85% reduction of BOD<sub>5</sub> and TSS** Yes  No  N/A

Based on the plant performance records for 4/2011-2/2016, the effluent BOD<sub>5</sub> and TSS are averaged 11.5 mg/l and 9.9 mg/l, respectively. Using BOD<sub>5</sub> and TSS concentration of 200 mg/l for typical raw-sewage influent (as stated in the technical manuals), this facility removes more than 94 % of BOD<sub>5</sub> and TSS during the treatment processes, far exceeding the minimum 85% removal requirement for POTWs with the secondary treatment. ]

Rationale: 40CFR, PART 133, §133.102 ]

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**Enhanced Nutrient Removal (ENR) Requirements:** ENR Limits  ENR Goal  N/A

As per the Chesapeake Bay Watershed Implementation Plan and the Chesapeake Bay ENR strategy, Patapsco WWTP has been assigned with the annual maximum Waste Load Allocations (WLAs) of 889,300 pounds/year for Total nitrogen (TN) and 66,700 pounds/year for Total Phosphorus (TP), which are based on TN concentration of 4.0 mg/l, TP concentration of 0.3 mg/l and current design capacity of 73.0 MGD.

This is an ENR significant WWTP with a design capacity of greater than 0.5 MGD discharging into the Chesapeake Bay Water Quality Segment- PATMH\_MD (Patapsco River Mesohaline, Maryland}. As per the current Departmental Guidelines for the ENR requirements, the above stated WLAs for TN and TP are incorporated to establish the annual maximum load limits for the proposed permit renewal. ]

Rationale: Maryland's Chesapeake Bay Tributary Strategy Statewide Implementation Plan, 2008 and Chesapeake Bay Watershed Implementation Plan

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**TMDL Implementation Requirements:** Yes  No  N/A

The Total Nitrogen, Total Phosphorus, Total Suspended Solids and PCBs Waste Load Allocations (WLAs) for the Patapsco WWTP included in the TMDLs for the Chesapeake Bay and the Baltimore Harbor and are as follows:

Baltimore Harbor Nutrients TMDL Allocation

Approved 12/17/2007

Total Nitrogen (5/1-10/31) = 333,330 lbs  
 Total Phosphorus (5/1-10/31) = 33,330 lbs  
 Total Nitrogen (1/1-1/31) = 889,453 lbs  
 Total Phosphorus (1/1-12/31) = 66,709 lbs  
 Total Suspended Solids (1/1-12/31) = 6,669,776 lbs

Chesapeake Bay Nutrients TMDL Allocation

Approved on 12/29/2010

Total Nitrogen (1/1-12/31) = 889,304 lbs  
 Total Phosphorus (1/1-12/31) = 66,698 lbs  
 Total Suspended Solids (1/1-12/31) = 6,669,776 lbs

PCB TMDL Allocation

Approved on 10/1/2012

PCBs (1/1-12/31) = 27.20 grams/yr

Rationale: 40 CFR §130.7, The approved TMDLs of Total Nitrogen, Total Phosphorus, Total Suspended Solids for the Chesapeake Bay and of PCBs for the Baltimore Harbor .

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## II. Special Requirements and Conditions

Was WET testing required in the previous discharge permit (10-DP-0580)?

Yes  No  N/A

TEST PERIOD	TEST SPECIES	TEST RESULTS	
		48-hour LC <sub>50</sub> (ACUTE)	IC <sub>25</sub> (CHRONIC)
2/16/2011	M. bahia	>100	94.7
	C. variegatus	>100	>100
1/29/12	M. bahia	>100	50.4
	C. variegatus	>100	>100
2/4/2013	M. bahia	>100	58.1
	C. variegatus	>100	82.4
1/20/2014	M. bahia	>100	63.4
	C. variegatus	>100	>100

Is WET testing proposed for the permit?

Yes  No  N/A

Biological testing for toxic substances is required for POTWs with flows greater than 1,000,000 gpd or a pretreatment program, a discharger that has demonstrated actual or potential toxicity, or a discharger whose discharge the Department believes may cause toxicity as determined by an evaluation of manufacturing processes, indirect discharges, treatment processes, effluent or receiving water data, or other relevant information.

### Estimation of Instream Waste Concentration (IWC) for WET:

For Discharge to Tidal (Estuarine) waters (Submerged Outfall):

$$IWC(\%) = \left[ \frac{81.0 \times 1.5472}{((81.0 \times 1.5472) + 350.83)} \right] \times 100 = \underline{26.32\%}$$

$$Q_{RWE} = \left[ \frac{(1 - 0.2632)}{0.2632} \right] \times 81.0 \times 1.5472 = \underline{350.83 \text{ cfs}}$$

Where,  $Q_D$  = Plant permitted flow = 81.0, MGD

$Q_{RWE}$  = Calculated equivalent annual 30Q5 low-flow (for tidally influenced stream), cfs

$F$  = Chronic Toxicity Dilution factor = 0.2632

Are WET limits proposed for the permit?

Yes  No  N/A

IWC is less than IC25 and therefore WET limits are not recommended

Rationale: COMAR 26.08.03.07D(1), COMAR 26.08.03.07E and MDE's "Effluent Biototoxicity Testing Protocol, revised on 12/14/2012".



**II. Special Requirements and Conditions****Was Toxic Chemical Testing required in the previous discharge permit (10-DP-0580)?**Yes  No  N/A 

Total three effluent toxic chemical tests were performed in 2/16/11, 1/30/12 and 2/4/13. All of the available data for toxics have been reviewed and incorporated to determine local limits for the priority pollutants using the SPREADSHEET program for evaluating reasonable potential to violate State Toxic Substances Criteria. The analysis results show that no reasonable potential is existed for violations of Criteria; and hence, there is no need to set numerical limits in the permit. The analysis results also show that the additional monitoring, except for cyanide, copper and PCBs, is not needed beyond the routine toxic chemical testing requirements for this facility.

**Is Toxic Chemical Testing proposed?**Yes  No  N/A 

TCT is required for POTWs with (a) flows equal to or greater than 1.0 mgd or an approved pretreatment program, (b) a discharger that has demonstrated actual or potential toxicity, or (c) a discharger whose discharge the Department believes may cause toxicity as determined by an evaluation of manufacturing processes, indirect discharges, treatment processes, effluent or receiving water data, or other relevant information. The TCTs for this facility are proposed as follows: TCT is to be conducted with each WET test.

*Rationale: COMAR 26.08.03.07D(1) and MDE's "Toxic Pollutant Analytical and Reporting Requirements Protocol, revised on 5/18/2011"*

**Wastewater Capacity Management****Does the proposed permit include condition pertaining to the wastewater flow capacity management?**Yes  No **If Yes, does the proposed permit require submittal of Capacity Management Plan (CMP)?**Yes  No 

Because the most recent four-year annual average wastewater flow is more than 80 % of the existing rated capacity of 73.0 MGD.

*Rationale: MDE's Guidance Document "Wastewater Capacity Management Plans, 2006"*

**Pretreatment Program/Influent Restriction**

WWTP with approved pretreatment program  Non-pretreatment program WWTP

Does the non-pretreatment WWTP require the influent restriction? Yes  No

*Rationale: COMAR 26.08.08 and Department Guidelines*

## II. Special Requirements and Conditions

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### Reapplication Due Date for Next Permit Renewal

Per the Departmental guidelines for the watershed permitting, the next renewal of a discharge permit for the Patapsco River WWTP is scheduled for 1<sup>st</sup> quarter, 3<sup>rd</sup> year in cycle with the projected renewal application date of 01/01/2021 and reissuance date of 04/01/2022.

The issuance date of this proposed permit will be established after fulfilling all the formalities of the public participation process. It is anticipated that a period between the proposed permit issuance date and the above stated reapplication date for the next permit cycle year would likely exceed the minimum permit processing period of 42 months and therefore, the reapplication due date will be set to no later than months 18 before the expiration date of the proposed permit. |

*Rationale: COMAR 26.08.04.01 and Departmental Guidelines. |*

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### Are temperature requirements included?

Yes  No

For Use I, I-P, II, II-P waters:

The Department recognizes that Patapsco WWTP effluent may involve a thermal component. For this discharge, there is no reasonable potential for the temperature to exceed the 90° F or the ambient temperature of the surface waters criteria in COMAR 26.08.02.03-3; therefore, temperature limitations and monitoring are not required.

*Rationale: COMAR 26.08.02.03-3 |*

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### Is the emergency holding pond required?

Yes  No  |

*Rationale: COMAR 26.08.04.04C(2)(c) |*

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### III. Proposed Effluent Limits and Monitoring Requirements

The effluent limits and monitoring requirements, as listed below, are proposed to process the application for the discharge permit renewal. *Refer to Appendix- A for the previous permit's effluent limitations and monitoring requirements.* The quality of the effluent discharged by the facility at the discharge location- 001A<sup>(1)(2)(3)(4)</sup> shall be limited and/or monitored at all times as shown below. If the sampling point is other than the outfall- 001A, the permittee shall ensure that the effluent samples are representative of the effluent quality being discharged at the outfall 001A.

Effluent Characteristics	Requirements	Period	Quantity	Concentration	Footnotes
BOD <sub>5</sub>	Limits for 73.0 mgd	All Year	18,000 lbs/d (mo ave) 27,000 lbs/d (wkly ave)	30 mg/l (mo ave) 45 mg/l (wkly ave)	
	Limits for 81.0 mgd	All Year	18,000 lbs/d (mo ave) 27,000 lbs/d (wkly ave)	27 mg/l (mo ave) 40 mg/l (wkly ave)	
	Monitoring	All Year	Frequency One per day	Sample Type 24-hour composite	(9)
Total Suspended Solids (TSS)	Limits for 73.0 mgd	All Year	18,000 lbs/d (mo ave) 27,000 lbs/d (wkly ave) 6,669,776 lbs/yr (annual max)	30 mg/l (mo ave) 45 mg/l (wkly ave)	
	Limits for 81.0 mgd	All Year	18,000 lbs/d (mo ave) 27,000 lbs/d (wkly ave) 6,669,776 lbs/yr (annual max)	27 mg/l (mo ave) 40 mg/l (wkly ave)	
	Monitoring	All Year	Frequency One per day	Sample Type 24-hour composite	(9)
Total Ammonia Nitrogen as N	Limits for 73.0 mgd	(5/1-10/31)	3,836 lbs/d (mo ave)	6.3 mg/l (mo ave)	
	Limits for 81.0 mgd	(5/1-10/31)	4,256 lbs/d (mo ave)	6.3 mg/l (mo ave)	
	Monitoring	All Year	Frequency One per day	Sample Type 24-hour composite	(9)(11)
Organic Nitrogen as N (Monitoring only parameter)	Reporting	All Year	N/A	REPORT mg/l (mo ave)	(9)(10)(11)
	Monitoring	All Year	Frequency One per day	Sample Type 24-hour composite	
(Nitrite + Nitrate) as N (Monitoring only parameter)	Reporting	All Year	N/A	REPORT mg/l (mo ave)	(9)(10)(11)
	Monitoring	All Year	Frequency One per day	Sample Type 24-hour composite	
Total Nitrogen as N	Limits for 73 and 81.0 mgd	(5/1-10/31) All Year	333,330 lbs (5/1-10/31) 889,300 lbs/yr (annual max)	REPORT mg/l (mo ave)	(5)(6)(7)
	Monitoring	All Year	Frequency One per day	Sample Type Calculated	(9) 13)(11)(12)

**III. Proposed Effluent Limits and Monitoring Requirements**

<b>Orthophosphate as P (Monitoring only parameter)</b>	<b>Reporting</b>	All Year	N/A	REPORT mg/l (mo ave)	(9)(10)(15)
	<b>Monitoring</b>	All Year	<b>Frequency</b> One per week	<b>Sample Type</b> 24-hour composite	
<b>Total Phosphorus as P</b>	<b>Limits for 73 mgd*</b>	All Year	1,220 lbs/day* 1,830 lbs/day*	2.0 mg/(mo ave)* 3.0 mg/l l (wkly ave)*	(5)(6)(7)
	<b>Limits for 73 and 81.0 mgd</b>	(5/1-10/31) All Year	33,330 lbs (5/1-10/31) 66,700 lbs/year	REPORT mg/l (mo ave)	
	<b>Monitoring</b>	All Year	<b>Frequency</b> One per day	<b>Sample Type</b> 24-hour composite	(9)(12)
<b>Enterococci</b>	<b>Limits for 73 and 81.0 mgd</b>	All year	N/A	35 MPN/100 ml (max mo geo mean)	(9)
	<b>Monitoring</b>	All Year	<b>Frequency</b> One per day	<b>Sample Type</b> Grab	
<b>Total Residual Chlorine (TRC)</b>	<b>Limits</b>	All Year	N/A	0.018 mg/l (See footnote- 8)	(8)
	<b>Monitoring</b>	All Year	<b>Frequency</b> Three per day, one per shift	<b>Sample Type</b> Grab	(9)(13)(14)
<b>pH</b>	<b>Limits for 73 and 81.0 mgd</b>	All Year	N/A	<b>6.0 SU min</b> <b>8.5 SU max</b>	(9)(14)
	<b>Monitoring</b>	All Year	<b>Frequency</b> Three per day, one per shift	<b>Sample Type</b> Grab	
<b>Dissolved Oxygen (DO)</b>	<b>Limits for 71 and 81.0 mgd</b>	All Year 2/1 – 5/31	N/A N/A	5.0 mg/l (min at anytime) 6.0 mg/l (min wkly ave)	N/A
	<b>Monitoring</b>	All Year	<b>Frequency</b> Three per day, one per shift	<b>Sample Type</b> Grab	(9)(14)
<b>Cyanide</b>	<b>Limits</b>	All Year	REPORT	REPORT mg/l (mo ave)	(9)(15)
	<b>Monitoring</b>	All Year	<b>Frequency</b> One per month	<b>Sample Type</b> Grab(Four per day)	
<b>Total Polychlorinated Biphenyls (tPCBs)</b>	<b>Limits</b>	All Year	REPORT	<b>REPORT pg/L (qu ave)</b>	(9)(15)
	<b>Monitoring</b>	All Year	<b>Frequency</b> One per Quarter	<b>Sample Type</b> 24-hour composite	
<b>Copper</b>	<b>Limits</b>	All Year	REPORT	REPORT mg/l (mo ave)	(9)(15)
	<b>Monitoring</b>	All Year	<b>Frequency</b> One per month	<b>Sample Type</b> Grab	

\* The monthly and weekly Total Phosphorus limits remain in effect until completion of the ENR upgrade.

**III. Proposed Effluent Limits and Monitoring Requirements**

<b>Flow</b>	<b>Limits / Reporting</b>	All Year	REPORT mgd (mo ave) REPORT mgd (daily max)	N/A	N/A
	<b>Monitoring</b>	All Year	<b>Frequency</b> Continuous	<b>Sample Type</b> Recorded	(9)(16)(17)
<b>Total Flow</b>	<b>Reporting</b>	All Year	REPORT Mgal/MO (Monthly Total)	N/A	(9)(18)
	<b>Monitoring</b>	All Year	<b>Frequency</b> Monthly	<b>Sample Type</b> Calculated	

An annual average flows of 73.0 and 81.0 million gallons per day (mgd) were used in waste allocation calculations (expressed as waste loading rate limit), and this unit shall be used when reporting on the Discharge Monitoring Report (DMR), (EPA Form 3320-1, Rev. 01/06). Notification is to be provided to the Department at least 180 days before the annual average flow is expected to exceed this flow level. If a permit modification is required, the Department will initiate the public participation NPDES process.

**Footnotes:****For Effluent Limitations:**

- (1) When this permit is renewed, the new limitations may not be equal to the above limitations.
- (2) There shall be no discharge of floating solids or visible foam other than trace amounts. See Special Condition II.M in the discharge permit.
- (3) The permit may also be reopened in accordance with the requirements of MDE's Watershed Permitting Plan under which all discharge permits in a watershed are issued the same year.
- (4)<sub>(a)</sub> The Patapsco River (Baltimore Harbor basin number 02130903) has been identified on the 303(d) list as impaired by total phosphorus, total nitrogen, total suspended solids (1996), Enterococcus (1998), toxics (polychlorinated biphenyls, or PCBs) (1998), chlordane (1998), impacts to biological communities (2004) and Debris/Floatables (2008). A Total Maximum Daily Load (TMDL), approved by the EPA on 12/29/2010, allocated limits of 33,330 lbs of total phosphorus and 333,330 lbs of total nitrogen per season (5/1-10/31). Yearly loadings of 66,700 lbs, 889,300 lbs, 6,669,776 lbs and 27.20 grams for total phosphorus, total nitrogen, total suspended solids and PCBs respectively were also allocated to this facility; and the parameter limits are in conformance with this TMDL. This permit is in conformance with the "Chesapeake Bay TMDL for Nitrogen, Phosphorus and Sediment" established on December 29, 2010. When TMDLs for other remaining parameters are completed, limits may be imposed, after the public participation process, to incorporate any TMDL requirements.
- (4)<sub>(b)</sub> The TMDL for PCBs for Baltimore Harbor and PATMH Tidal Chesapeake Bay Segment, approved by the EPA on 10/1/2012, has included a tPCBs annual waste load allocation (WLA) of 27.20 grams/year (0.059912 pounds/year) for this facility (that is based on the design capacity of 73.0 mgd and the water column TMDL endpoint tPCBs concentration of 0.27 nanograms (ng/l). The above stated WLA of tPCBs included in the TMDL does not impose effluent limits for tPCBs in the discharge permit until the effluent tPCBs data collected after the completion of the ENR upgrade are evaluated by the Department. Upon completion of the ENR upgrade, if the facility's annual tPCBs load exceeds the WLA, the permittee shall submit a plan to the Department for approval to track the sources and Best Management Practice (BMP) implementation within 60 days of exceedence of the above stated annual load for tPCBs.

### III. Proposed Effluent Limits and Monitoring Requirements

- (5) The permittee shall operate the ENR facility in a manner that optimizes the nutrient removal capability of the facility as stipulated in the Grant Agreement for ENR upgrade. The first exceedance of the permit limit shall be counted and reported as daily exceedances beginning from the first exceedance, determined to the nearest day, through December 31. In addition, after any such exceedance, the permittee shall demonstrate to the Department's satisfaction that the facility is optimizing its nutrient removal capability, and neither the arrival of the next calendar year nor the issuance of a permit renewal during a period of noncompliance shall obviate continuance of any noncompliance status related to treatment optimization requirements.
- (6) At the end of each calendar year, the permittee shall comply with the *concentration-based* limitations for the Annual Maximum Loading Rate defined below or the *Tributary Strategy-based* loading rate limitation listed in above in the effluent limitations table, whichever is lower:
- (a) TN Limitation (lbs/year):  $3.6 \text{ mg/l} \times \text{annual total flow (calendar year based in million gallons per year)} \times 8.34$ . To the extent that the permittee alleges that temperature levels of 12 degrees C or lower have diminished the treatment system's capability of complying with this *concentration-based* loading rate limitation for Total Nitrogen, the permittee shall provide notification beginning with the calendar year report under the "Upset" provision in Section III.B.6 of this permit. In any enforcement proceeding, the permittee seeking to establish the occurrence of an upset has the burden of proof.
- (b) TP Limitation (lbs/year):  $0.27 \text{ mg/l} \times \text{annual total flow (calendar year based in million gallons per year)} \times 8.34$ .

The details and results of all required annual calculations shall be submitted to the Department with the Discharge Monitoring Report for December. See Special Condition II.K of the permit for further details. The *concentration-based* loading requirements may be revised if the limits or schedule are determined to be impracticable based on actual performance and the Department re-opens the permit as a major modification (which requires public participation) to impose (an) alternate effluent limitation(s) or revised schedule.

- (7) The permittee may request that the permit be reopened and modified to include nutrient trading consistent with the most current "Maryland Policy for Nutrient Cap Management and Trading in Maryland's Chesapeake Bay Watershed" in effect at that time.
- (8) Total residual chlorine limitation of **0.018** mg/l shall be applicable, when chlorine or any chlorine-containing compound is used in any treatment process(es), including but not limited to disinfection, that could become a potential constituent of the effluent discharged from the Patapsco WWTP. The wastewater shall be dechlorinated to reduce effluent total residual chlorine concentration to the non-detectable level (See definition I.M of the permit).

For Monitoring Requirements:

- (9) "STORET" (short for STorage and RETrieval) is a widely-used repository for water quality data reporting and monitoring. The corresponding STORET codes for the effluent characteristics specified in Special Conditions II.A and II.B are: BOD<sub>5</sub> (00310), Total Suspended Solids (00530), Total Ammonia Nitrogen as N (00610), Total Phosphorus as P (00665), Total Nitrogen as N (00600), (Nitrite + Nitrate) as N (00630), Organic Nitrogen as N (00605), Orthophosphate as P (04175), E. Coli (51040), Total Residual Chlorine (50060), Dissolved Oxygen (00300), pH (00400), Flow (50050), Total monthly flow (82220), Total hardness as CaCO<sub>3</sub>, (00900), PCBs (79819), Copper (01119), and Total Cyanide (00722).

### III. Proposed Effluent Limits and Monitoring Requirements

- (10) This parameter (without effluent limitations) must be monitored, and it shall be reported on the Monthly Operating Report (MOR) as individual results and on the Discharge Monitoring Report (DMR) as monthly average concentrations.
- (11) Total nitrogen as N (in mg/l) is a calculated parameter as the sum of individual results for total ammonia nitrogen as N, organic nitrogen as N and (nitrite + nitrate) as N. All the nitrogen species must be sampled on the same day.
- (12) The permittee shall also calculate and report on the monthly DMR the TN and TP total monthly loads plus year-to-date cumulative loads for the calendar year in question for the outfall- 001A. For each calendar year, the year-to-date cumulative loads of TN and TP for the month of December shall represent the total annual loads, and they must be incorporated toward complying with the respective annual maximum load limits.. Refer to Special Condition II.K of the permit for “Reporting TN and TP total annual loads for compliance to the Concentration-based maximum annual loading rate limits”.
- (13) The Minimum monitoring requirements of three per day (one per shift) grab samplings for total residual chlorine shall be applicable, when chlorine or any chlorine compound is used in any treatment process(es), including but not limited to disinfection, that could become a potential constituent of the effluent discharged from the Patapsco WWTP. The minimum detection level (quantification level) for total residual chlorine is 0.10 mg/l. The permittee may report all results below the minimum level as <0.10 mg/l. All results reported below the minimum level shall be considered in compliance.
- (14) Samples for these parameters (total residual chlorine, pH and dissolved oxygen) shall be taken at intervals evenly distributed throughout the staffed period each day to comply with the General Condition III.A of the permit for the representative sampling requirements.
- (15) All toxic chemical monitoring required by this permit shall be performed in accordance with MDE's Water Management Administration Toxic Substance Analytical Protocol. This includes analytical methodology, detection levels, holding times, preservation methods, sample types and reporting.

The permittee shall measure and report tPCBs in picograms/L (pg/L). To incorporate the TMDL of PCBs for Back River approved by the EPA on 10/1/2012, the effluent tPCBs monitoring and annual totals PCBs reporting shall be initiated upon completion and beginning operation of the ENR upgrades at Back River WWTP. The permittee shall use the approved EPA testing Methods in accordance with MDE's protocol titled “Reporting Requirements for Total PCBs ( PCB Congeners) by EPA Method 1668 C or A”. The tPCBs monitoring shall be once per quarter for at least one year beginning the ENR operation. The quarter shall end on March, June, September and December. The annual average concentration for tPCBs shall be calculated using the following formula:

$$\text{Average Concentration (ng/l)} = 264172 \times \frac{\text{Total Annual Cumulative load discharged (Grams)}}{\text{Total Annual Flow (MG) at 001A and 001B}}$$

Based on the tPCBs monitoring results, the Department will determine whether to continue tPCBs monitoring or change the tPCBs monitoring frequency after the tPCBs sources are identified and eliminated through BMP as stated in footnote 4<sub>(b)</sub>. Any changes to the effluent tPCBs limits and/or monitoring requirements shall be addressed through the permit modification process.

- (16) Flows shall be reported in millions gallons per day (mgd) to at least the nearest 10,000 gallons per day. (Example: A flow of 1,524,699 gallons per day shall be reported as 1.53 mgd.). For each calendar month, flows shall be reported on the MOR as daily individual results and on the DMR as monthly average (mgd) and daily maximum (mgd)).
- (17) Continuous electronic flow measurement and recording which can produce a permanent record are acceptable to the Department.
- (18) Total monthly flow is a calculated parameter equal to sum of the daily flow results in a calendar month. It shall be reported on the monthly DMR as Total monthly flow in millions gallons (MG) to at least the nearest 10,000 gallons.(Example: A flow of 1,524,699 gallons shall be reported as 1.53 MG).

**III. Proposed Effluent Limits and Monitoring Requirements**

<b><i>Regulations and Rationale for Effluent Limitations:</i></b>	
<b>BOD<sub>5</sub></b>	<p><b><u>Regulations:</u></b> 40 CFR §130.7, COMAR 26.08.02.03-3A(2), COMAR 26.08.04.04C(1) and COMAR 26.08.01.01B(80).</p> <p><b><u>Discussion and Rationale(s):</u></b> The technical analysis was performed in 2010 using a mathematical model WASP to establish the effluent limits requirements for discharge flows up to 81.0 MGD. There is no increase of the discharge flow for the permit renewal; and also, there are no indications of apparent changes to the receiving stream. See DO and Chlorophyll-a profile for Station WT5.1 (pages - 66a thru 66d of the project file) located below the WWTP Outfall 001A. Therefore, the BOD<sub>5</sub> and dissolved oxygen effluent limits established in 2010 and incorporated in previous permit 10-DP-0580 have been considered at this time for the proposed permit renewal. These limits will be protective of meeting the dissolved oxygen criteria in downstream portion of the effluent receiving stream(s).</p>
<b>Total Suspended Solids (TSS)</b>	<p><b><u>Regulations:</u></b> 40 CFR §130.7, COMAR 26.08.02.03-3A(5), COMAR 26.08.04.04C(1), COMAR 26.08.01.01B(80) and 40 CFR§133.102 - §133.105.</p> <p><b><u>Discussion and Rationale(s):</u></b> Under the Chesapeake Bay Watershed Implementation Plan as adopted in the Chesapeake Bay TMDL, all the significant point sources (WWTPs) discharging into the Chesapeake Bay watershed have been assigned with the individual WLA for TSS. The proposed TSS limits are also in conformance to the requirements of the Chesapeake Bay TMDL as accepted by EPA on 12/29/2010.</p>
<b>Total Ammonia Nitrogen as N</b>	<p><b><u>Regulations:</u></b> COMAR 26.08.02.03-2J, COMAR 26.08.02.03-2K and COMAR 26.08.02.05C, COMAR 26.08.02.05D.</p> <p><b><u>Discussion and Rationale(s):</u></b> The reasonable potential of the Patapsco WWTP effluent to cause a violation of the receiving stream's ammonia water quality criteria was investigated to process the discharge permit renewal. An in-house SPREADSHEET program (developed by the Municipal Surface Discharge Permits Division) was used as a tool for the toxicity analysis. The CORMIX dilution model was used to estimate dilution factors, based on the applicable mixing zone criteria, and were incorporated in the analysis. As the ammonia toxicity criteria are pH dependent, the effluent pH of 6.9 which is a median of the maximum effluent pH data (for summer and winter months) was used.</p>
<b>Total Nitrogen as N</b>	<p><b><u>Regulations:</u></b> 40 CFR §130.7, COMAR 26.08.02.04, COMAR 26.08.03.01C(3), COMAR 26.08.04.04C, and in addition, the Chesapeake Bay Nutrient Reduction Strategy and the Enhanced Nutrient Removal (ENR) Policy.</p> <p><b><u>Discussion and Rationale(s):</u></b> Refer to Section II (Special Requirements and Conditions) on page - 7 for ENR load goal requirements.</p>
<b>Total Phosphorus as P</b>	<p><b><u>Regulations:</u></b> 40 CFR §130.7, COMAR 26.08.02.04, COMAR 26.08.03.01C(3), COMAR 26.08.04.04C, and in addition, the Chesapeake Bay Nutrient Reduction Strategy and the Enhanced Nutrient Removal (ENR) Policy.</p> <p><b><u>Discussion and Rationale(s):</u></b> Refer to Section II (Special Requirements and Conditions) on page - 7 for ENR load goal requirements.</p>



### III. Proposed Effluent Limits and Monitoring Requirements

<p><b>Enterococci</b></p>	<p><b>Regulations:</b> 40 CFR §130.7, COMAR 26.08.04.02-1A(2). <b>Discussion and Rationale(s):</b> Refer to Regulations</p>
<p><b>Total Residual Chlorine</b></p>	<p><b>Regulations:</b> COMAR 26.08.02.03-2G(1), COMAR 26.08.02.05C, COMAR 26.08.02.05D, COMAR 26.08.03.06C(5), COMAR 26.08.03.06D, COMAR 26.08.03.06F, <b>Discussion and Rationale(s):</b> The reasonable potential of the Patapsco WWTP effluent to cause a violation of the receiving stream’s TRC water quality criteria was investigated to process the discharge permit renewal. An in-house SPREADSHEET program (developed by the Municipal Surface Discharge Permits Division) is used as a tool for the toxicity analysis. The toxicity based limit was compared with the effluent quality criteria to set the TRC limit requirement.</p>
<p><b>pH</b></p>	<p><b>Regulations:</b> 40 CFR §130.7, COMAR 26.08.02.03-3A(4), <b>Discussion and Rationale(s):</b> The limits are set equal to the stream water quality criteria. Also, refer to Discussion and Additional Rationale for Total Ammonia Nitrogen as N.</p>
<p><b>Dissolved Oxygen (DO)</b></p>	<p><b>Regulations:</b> COMAR 26.08.02.03-3A(4). <b>Discussion and Rationale(s):</b> The limits are set equal to the stream water quality criteria. Also, refer to Discussion and Additional Rationale for BOD<sub>5</sub>.</p>
<p><b>Flow</b></p>	<p><b>Regulations:</b> COMAR 26.08.04.02A(2). The discharge is consistent with the Baltimore County water and sewer master plan. <b>Discussion and Rationale(s):</b> The permit flow considered for this permit renewal is equivalent to the rated design capacity of the facility. It is not a limitation, but is incorporated with concentration limits to calculate the waste load limits for BOD<sub>5</sub>, TSS, Ammonia-N, TP and TN.</p>

### III. Proposed Effluent Limits and Monitoring Requirements

#### ***Additional Rationales for Effluent Limitations:***

(A) Anti-backsliding Policy Review:

Provisions as stipulated in Federal Regulations [CWA §303(d)(4), CWA §402(o) & 40 CFR 122.44(l) require a reissued permit to be as stringent as the previous permit requirements, with some exceptions as determined by the Department.

The effluent limitations established for the permit renewal are in conformance to the above stated provisions.

(B) Anti-Degradation Policy Review:

Waters of this State shall be protected and maintained for existing uses and the basic uses of water contact recreation, fishing, protection of aquatic life and wildlife, and agricultural and industrial water supply as identified in Use I. The discharge permit being processed includes sufficient limits in order to maintain and protect water quality intended for the existing designated uses.

As outlined in COMAR 26.08.02.04 (Anti-degradation Policy), certain waters of the State possess an existing quality that is better than the water quality standards established for them. The quality of these waters shall be maintained unless:

1. The Department determines a change in quality is justifiable as a result of necessary economic or social development; and
2. The change will not diminish uses made of, or presently existing, in these waters.

This facility is discharging into the Patapsco River (Northern Chesapeake Bay segment PATMH), which is not identified as [TIER II or III] water. In addition to the actions taken to uphold the Department's Anti-degradation Policy and in accordance with COMAR 26.08.02.04-1, the following determination has been made:

The discharge permit 15-DP-0580 being processed for the reissuance includes the effluent limitations which are sufficient to protect and maintain the water quality of the Patapsco River (Chesapeake Bay Segment PATMH (Patapsco River Mesohaline)). It does not require Tier II antidegradation review for the existing facility with permitted flow of 81.0 MGD.

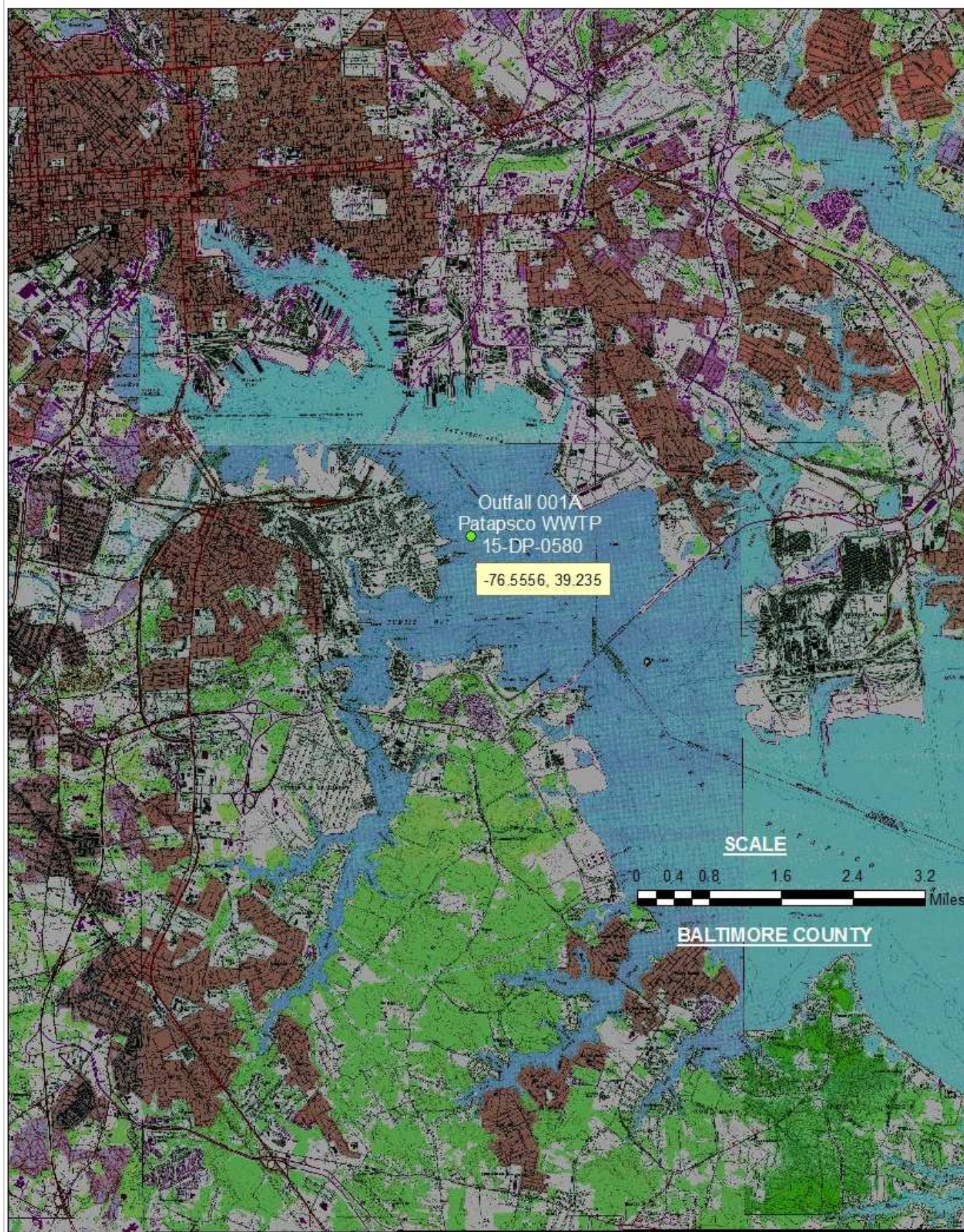
#### ***Rationale(s) for Monitoring Requirements:***

The Department Guidelines for Minimum Monitoring Requirements as revised by memorandums of 7/24/1996 and 3/6/2008.

**IV. Chronological Log of Meetings, Site Visits, Telephone Calls, etc.  
(Reports are in official file):**

DATE	ACTIVITY DESCRIPTION
09/22/2014	The Municipal Surface Discharge Permits Division received discharge permit renewal application dated 9/22/14 completed by Gary Wagner.
10/13/2015	The Municipal Surface Discharge Permits Division received letters from David Flores, Doug Myers, Gary Wagner, Andy Galli, Karen Butler, Andrew Keir, Jason Reed, and Leana Wen with particular interest concerning the renewal permit.
06/30/2016	Report narrating information gathered during the site visit of 6/29/2016 along with photographs.
5/1/2017	Comments from Law Clinic to include on the interest list, Ms. Seema Kakade, Director of Environmental Law Clinic (c/o Kate Woods)

**V. MAP SHOWING POINT OF DISCHARGE LOCATION**



**VI. APPENDIX- A**

**Effluent Limitations and Monitoring Requirements of the Previous Permit (10-DP-0580)**

Permit No. 10-DP-0580 (NPDES MD0021601)

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**II. SPECIAL CONDITIONS**

A.1 Effluent Limitations, Outfall 001A <sup>(1)(2)</sup>

The quality of the effluent discharged by the facility at a discharge point location- 001 shall be limited at all times as shown below:

<u>Effluent Characteristics</u>	<u>Maximum Effluent Limits</u>					
	<u>Monthly Average Loading Rate, Pounds/day</u>	<u>Weekly Average Loading Rate, Pounds/day</u>	<u>Daily Average Loading Rate, Pounds/day</u>	<u>Monthly Average Concentration, mg/l</u>	<u>Weekly Average Concentration, mg/l</u>	<u>Daily Average Concentration, mg/l</u>
BOD <sub>5</sub>	18,000	27,000	N/A	30	45	N/A
TSS	18,000	27,000	N/A	30	45	N/A
Total Phosphorus <sup>(3)</sup>	1,220	1,830	N/A	2.0	3.0	N/A

<u>Effluent Characteristics</u>	<u>Maximum Effluent Limits</u>		
	<u>Total Monthly Loading Rate <sup>(6)</sup>, Pounds/Month</u>	<u>Maximum Loading Rate <sup>(7)</sup>, Pounds</u>	<u>Monthly Average Concentration, mg/l</u>
Total Phosphorus-P <sup>(5)(6)(7)(8)(9)</sup> 5/1-10/31	REPORT	33,330 lbs total 5/1-10/31	REPORT
Total Phosphorus-P <sup>(5)(6)(7)(8)(9)</sup>	REPORT	66,700 lbs/yr	REPORT
Total Nitrogen-N <sup>(4)(5)(6)(7)(8)(9)</sup> 5/1-10/31	REPORT	333,330 lbs total 5/1-10/31	REPORT
Total Nitrogen-N <sup>(4)(5)(6)(7)(8)(9)</sup>	REPORT	889,300 lbs/yr	REPORT

<u>Effluent Characteristics</u>	<u>Effluent Limits</u>	
	<u>Maximum</u>	<u>Minimum</u>
E. Coli <sup>(10)</sup>	126 MPN/100 ml monthly geometric mean	N/A
Enterococci <sup>(10)</sup>	35 MPN/ 100 ml monthly geometric mean	N/A
Total Residual Chlorine <sup>(11)</sup>	0.018 mg/l or nondetectable level	N/A
pH	8.5	6.0
Dissolved Oxygen (1/1-12/31) (2/1-5/31)	N/A N/A	5.0 mg/l at anytime 6.0 mg/l for a 7-day average

An annual average flow of 73.0 million gallons per day (mgd) was used in waste allocation calculations and this unit should be used when reporting on the Discharge Monitoring Report (EPA Form 3320-1, Rev. 01/06). Notification is to be provided to the Department at least 180 days before the annual average flow is expected to exceed this flow level. If a permit modification is required, the Department will initiate the public participation NPDES process.

**VI. APPENDIX- A**

**Effluent Limitations and Monitoring Requirements of the Previous Permit (10-DP-0580)**

Permit No. 10-DP-0580 (NPDES MD0021601)

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**II. SPECIAL CONDITIONS**

A.2 Effluent Limitation, Outfall 001B <sup>(1)(2)</sup>

The following authorization for a design flow of 81.0 mgd flow shall be effective only after completion of a public participation process and issuance of a major permit modification by the Department. The permit modification will be based on submittal by the permittee of a demonstration, using at least one year's performance data after the ENR upgrade is completed, that total nitrogen concentrations of 3.6 mg/l as an annual average and 2.7 mg/l for the period of 5/1 through 10/31 are achievable for the 81.0 mgd flow, unless more stringent wasteload allocation requirements are applicable at the time of the permit modification. The Department's permit modification decision shall account for current applicable wasteload allocation and watershed implementation plans necessary to achieve the Chesapeake Bay TMDL. The quality of the effluent discharged by the facility at a discharge point location- 001B shall be limited at all times as shown below:

<b>Maximum Effluent Limits</b>						
<b>Effluent Characteristics</b>	<b>Monthly Average Loading Rate, Pounds/day</b>	<b>Weekly Average Loading Rate, Pounds/day</b>	<b>Daily Average Loading Rate, Pounds/day</b>	<b>Monthly Average Concentration, mg/l</b>	<b>Weekly Average Concentration, mg/l</b>	<b>Daily Average Concentration, mg/l</b>
BOD <sub>5</sub>	18,000	27,000	N/A	27	40	N/A
TSS	18,000	27,000	N/A	27	40	N/A
<b>Maximum Effluent Limits</b>						
<b>Effluent Characteristics</b>	<b>Total Monthly Loading Rate <sup>(6)</sup>, Pounds/Month</b>		<b>Maximum Loading Rate <sup>(7)</sup>, Pounds</b>		<b>Monthly Average Concentration, mg/l</b>	
Total Phosphorus-P <sup>(5)(6)(7)(8)(9)</sup> 5/1-10/31	REPORT		33,330 lbs total 5/1-10/31		REPORT	
Total Phosphorus-P <sup>(5)(6)(7)(8)(9)</sup>	REPORT		66,700 lbs/yr		REPORT	
Total Nitrogen-N <sup>(4)(5)(6)(7)(8)(9)</sup> 5/1-10/31	REPORT		333,330 lbs total 5/1-10/31		REPORT	
Total Nitrogen-N <sup>(4)(5)(6)(7)(8)(9)</sup>	REPORT		889,300 lbs/yr		REPORT	
<b>Effluent Limits</b>						
<b>Effluent Characteristics</b>	<b>Maximum</b>			<b>Minimum</b>		
E. Coli <sup>(10)</sup>	126 MPN/100 ml monthly geometric mean			N/A		
Enterococci <sup>(10)</sup>	35 MPN/ 100 ml monthly geometric mean			N/A		
Total Residual Chlorine <sup>(11)</sup>	0.018 mg/l or nondetectable level			N/A		
pH	8.5			6.0		
Dissolved Oxygen (1/1-12/31) (2/1-5/31)	N/A			5.0 mg/l at anytime 6.0 mg/l for a 7-day average		

An annual average flow of 81.0 million gallons per day (mgd) was used in waste allocation calculations and this unit should be used when reporting on the Discharge Monitoring Report (EPA Form 3320-1, Rev. 01/06). Notification is to be provided to the Department at least 180 days before the annual average flow is expected to exceed this flow level. If a permit modification is required, the Department will initiate the public participation NPDES process.

## VI. APPENDIX- A

Effluent Limitations and Monitoring Requirements of the Previous Permit (10-DP-0580)

Permit No. 10-DP-0580 (NPDES MD0021601)

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## II. SPECIAL CONDITIONS

*Footnotes for effluent limitations on pages 4 and 5:*

- (1) When this permit is renewed, the new limitations may not be equal to the above limitations. There shall be no discharge of floating solids or visible foam other than trace amounts.
- (2) The permit may also be reopened in accordance with the requirements of MDE's Watershed Permitting Plan under which all discharge permits in a watershed are issued the same year.
- (3) The monthly and weekly TP limits remain in effect until completion of the ENR upgrade.
- (4) The ENR upgrade shall be completed according to the following schedule:
  - Complete Construction - June 20, 2014

Upon completion of the Enhanced Nutrient Removal (ENR) upgrade, the permittee shall operate the ENR facility in a manner that optimizes the nutrient removal capability of the facility. Until the facility's upgrade to the ENR treatment is complete and fully operational (with schedule as listed below), the permittee is to operate the Biological Nutrient Removal (BNR) process on a year round basis and undertake best efforts to meet the TN load goal of 889,300 pounds/year for this facility. Total Nitrogen is the sum of ammonia-N, organic-N and (nitrite + nitrate)-N based on samples collected on the same day.
- (5) The permit Annual and Seasonal (5/1-10/31) Maximum Loading Rate Limits for TN and TP shall become effective January 1, 2015. The first exceedance of the permit limit shall be counted and reported as daily exceedances beginning from the first exceedance, determined to the nearest day, through December 31. In addition, after any such exceedance, the permittee shall demonstrate to the Department's satisfaction that the facility is optimizing its nutrient removal capability, and neither the arrival of the next calendar year nor the issuance of a permit renewal during a period of noncompliance shall obviate continuance of any noncompliance status related to treatment optimization requirements.
- (6) Total monthly loading rate (in pounds/month) for nutrients is a calculated parameter to be reported for each calendar month. It is equal to  $\{(\text{monthly average concentration, mg/l}) \times (\text{Total flow in a calendar month, Million Gallons}) \times 8.34\}$ .
- (7) The Annual Maximum Loading Rate (in pounds/year) for nutrients is a calculated parameter to be reported monthly as the sum of the Total Monthly Loading Rates from January through December of the current calendar year. Upon completion of the ENR upgrade and beginning January 1, 2015, the permittee shall calculate, report and comply with the *concentration-based* loading rate limitation(s) defined below or the *Tributary Strategy-based* loading rate limitation in the above table, whichever is lower:
  - (a) TN Limitation (lbs/year):  $3.6 \text{ mg/l} \times \text{annual total flow (calendar year based in million gallons per year)} \times 8.34$ . To the extent that the permittee alleges that temperature levels of 12 degrees C or lower have diminished the treatment system's capability of complying with this *concentration-based* loading rate limitation for Total Nitrogen, the permittee shall provide notification beginning with the calendar year report under the "Upset" provision in Section III.B.6 of this permit. In any enforcement proceeding, the permittee seeking to establish the occurrence of an upset has the burden of proof.
  - (b) TP Limitation (lbs/year):  $0.30 \text{ mg/l} \times \text{annual total flow (calendar year based in million gallons per year)} \times 8.34$ .

## VI. APPENDIX- A

### Effluent Limitations and Monitoring Requirements of the Previous Permit (10-DP-0580)

Permit No. 10-DP-0580 (NPDES MD0021601)

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#### II. SPECIAL CONDITIONS

##### A. Effluent Limitations, Continued

*Footnotes for effluent limitation on pages 4 and 5 , Continued*

<sup>(7)</sup> Continued

The details and results of all required annual calculations shall be submitted to the Department with the Discharge Monitoring Report for December.

The concentration based loading requirements may be revised if the limits or schedule are determined to be impracticable based on actual performance and the Department re-opens the permit as a major modification (which requires public participation) to impose (an) alternate effluent limitation(s) or revised schedule.

<sup>(8)</sup> The permittee may request that the permit be reopened and modified to include nutrient trading consistent with the most current "Maryland Policy for Nutrient Cap Management and Trading in Maryland's Chesapeake Bay Watershed" guidelines.

<sup>(9)</sup> The Patapsco River is on the 303(d) list of the impaired waters for nutrients, metals, suspended solids, cyanide chlordane, PCBs, fecal coliform, estuarine bioassessments, and debris/floatable/trash. A Total Maximum Daily Load (TMDL), approved by the EPA on December 17, 2007, allocated a total nitrogen load of 333,330 lbs and total phosphorus load of 33,330 lbs for the growing season (May 1 thru October 31), which translates to 3.0 mg/l and 0.3 mg/l maximum monthly average concentrations respectively. The annual average load of 889,300 lbs/yr for total nitrogen and 66,700 lbs/yr for total phosphorus, which translates to 4.0 mg/l and 0.3 maximum monthly average concentrations respectively, is allocated to this facility in conformance with the TMDL.

Another TMDL was approved by the EPA on March 20, 2001 for Chlordane in the Baltimore Harbor. Per the TMDL, in the absence of any defined currently active sources of chlordane, other than sporadic low-level inputs from urban runoff, there is no opportunity to allocate loadings among point and non-point sources other than bottom sediments. When TMDLs for other remaining parameters are completed, limits may be imposed, after the public participation process.

<sup>(10)</sup> The E. coli limit shall be in effect until the Enterococci limit becomes effective. The Enterococci limit shall take effect one year after the issuance date of the permit. However, the permittee may request in writing that the Enterococci limitation become effective sooner.

<sup>(11)</sup> Total residual chlorine limitation shall apply only if chlorine or any chlorine-containing compound is used in the wastewater treatment. The wastewater shall be dechlorinated to reduce effluent total residual chlorine concentration to the non-detectable level (See definition I.N). The minimum level (quantification level) for total residual chlorine is 0.10 mg/l. The permittee may report all results below the minimum level as <0.10 mg/l. All results reported below the minimum level shall be considered in compliance.



**VI. APPENDIX- A****Effluent Limitations and Monitoring Requirements of the Previous Permit (10-DP-0580)**

Permit No. 10-DP-0580 (NPDES MD0021601)

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**II. SPECIAL CONDITIONS****B. Minimum Monitoring Requirements:**

The effluent characteristics listed below shall be monitored as follows:

<b><u>Effluent Characteristics</u></b> <sup>(1)</sup>	<b><u>Measurement Frequency</u></b>	<b><u>Sample Type</u></b>
BOD <sub>5</sub>	One/day	24 hr. Composite
Total Suspended Solids	One/day	24 hr. Composite
Ammonia Nitrogen <sup>(2)</sup> as N	One/day	24 hr Composite
Total Phosphorus as P <sup>(3)</sup>	One/day	24 hr. Composite
Total Nitrogen as N <sup>(3)</sup>	One/day	24 hr. Composite
(Nitrite + Nitrate) as N <sup>(2)</sup>	One/day	24 hr. Composite
Organic Nitrogen as N <sup>(2)</sup>	One/day	24 hr. Composite
Orthophosphate as P <sup>(2)</sup>	Two/month	24 hr. Composite
E. Coli <sup>(4)</sup>	One/day	Grab
Enterococci <sup>(4)</sup>	One/day	Grab
Total Residual Chlorine <sup>(5)</sup>	See Footnote- 5	Grab
Dissolved Oxygen	Three/day	Grab
pH	Three/day	Grab
Flow <sup>(6)</sup>	Continuous	Recorded <sup>(7)</sup>
Copper <sup>(8)</sup>	One/month	24 hr Composite
Cyanide <sup>(8)</sup>	One/month	4 Grabs/day
Zinc <sup>(8)</sup>	One/month	24 hr Composite

**VI. APPENDIX- A****Effluent Limitations and Monitoring Requirements of the Previous Permit (10-DP-0580)**

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**II. SPECIAL CONDITIONS****B. Minimum Monitoring Requirements, Continued:***Footnotes for the monitoring requirements, continued:*

- (1) "STORET" (short for STORage and RETrieval) is a widely-used repository for water quality data reporting and monitoring. The corresponding STORET codes for the effluent characteristics specified in Special Conditions II.A and II.B are: BOD5 (00310), Total Suspended Solids (00530), Total Ammonia Nitrogen as N (00610), Total Phosphorus as P (00665), Total Nitrogen as N (00600), (Nitrite + Nitrate) as N (00630), Organic Nitrogen as N (00605), Orthophosphate as P (70507), Fecal Coliform (74055), Enterococci (61211), Total Residual Chlorine (50060), Dissolved Oxygen (00300), pH (00400), Flow (50050), Cyanide free (00722), Copper total (01042) and Zinc total (01092).
- (2) Monitor only; parameters shall be reported on the monthly operating report as individual results and on the Discharge Monitoring Report (EPA Form 3320-1) as monthly average concentration and monthly loading rates. In addition, along with the Discharge Monitoring Report for December each year, the annual loading rate, which is the sum of the monthly loading rates from January through December, and annual average concentration shall be reported.
- (3) Beginning with the effective date of this permit, the permittee shall report on each monthly Discharge Monitoring Report the cumulative TN and TP load for the calendar year in question. The cumulative load is calculated by summing the monthly loading values for each month in that calendar year. TN and TP concentrations will be reported as a monthly average. Total nitrogen is the sum of Total Ammonia- N, Organic-N and (nitrite + nitrate)-N. All nitrogen parameters shall be measured on the same daily samples.
- (4) The E. coli limit shall be in effect until the Enterococci limit becomes effective. The Enterococci limit shall take effect one year after the issuance date of the permit. However, the permittee may request in writing that the Enterococci limitation become effective sooner.
- (5) The minimum monitoring requirements of three per day and one per shift, grab sampling for total residual chlorine shall be applicable, only when the wastewater at the Patapsco River WWTP is treated with chlorine or any chlorine compound. The minimum detection level (quantification level) for total residual chlorine is 0.10 mg/l. The permittee may report all results below the minimum level as <0.10 mg/l. All results reported below the minimum level shall be considered in compliance.
- (6) Flows shall be reported to at least the nearest 10,000 gallons. For each calendar month, they shall be reported as follows: (a) On the *Monthly Operating Reports*, the permittee shall report the following three flows: (1) actual daily flow (in Million Gallons (MG)), (2) total monthly flow (in MG) and (3) monthly average flow (in mgd); and (b) On the *Discharge Monitoring Reports (EPA Form 3320-1, Rev. 01/06)*, the permittee shall report flows in mgd as the monthly average and daily maximum. (Example: A flow of 1,570,899 gallons per day shall be reported as 1.57 mgd.)
- (7) Continuous electronic flow measurement and recording which can produce a permanent record are acceptable to the Department.
- (8) All toxic chemical monitoring required by this permit shall be performed in accordance with MDE's Water Management Administration Toxic Substance Analytical Protocol. This includes analytical methodology, detection levels, holding times, preservation methods, sample types and reporting.