



STATE OF DELAWARE

**DEPARTMENT OF NATURAL RESOURCES AND
ENVIRONMENTAL CONTROL**

DIVISION OF WATER

RICHARDSON & ROBBINS BUILDING

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FACT SHEET – August 12, 2026

Winterthur Museum, Garden & Library
5105 Kennett Pike
Winterthur, Delaware 19735

NPDES Permit No. DE 0021768
State Permit No. WPCC 3250I/74

Winterthur Museum, Garden & Library has applied for reissuance of its National Pollutant Discharge Elimination System (NPDES) permit to discharge treated sanitary wastewater, storm water, and groundwater to Wilson Run, a tributary of Brandywine Creek.

Facility Location

This facility is located at Delaware Route 52, about five miles north of Wilmington, between Greenville and Centerville, New Castle County, Delaware.

Activity Description

The sanitary treatment plant, with a design hydraulic capacity of 25,000 gpd, is owned by the Winterthur Museum and operated by M&B Environmental, Inc. The plant treats sanitary sewage generated by the staff and visitors to the museum and gardens. It consists of a comminutor, two aerated flow equalization tanks with a combined working capacity of 13,700 gallons, two forward feed pumps, one aeration tank with a capacity of 25,000 gallons, one final clarifier, one filter feed pump, one pressure sand filter and an ultraviolet disinfection system.

Discharge Description

Outfall 001 discharges effluent consisting of treated sanitary sewage from residential-type sources which has received secondary treatment. Outfalls 002 through 036 discharge storm water and groundwater to the Brandywine Creek.

Receiving Stream Classification

The designated uses of the Brandywine Creek are: Industrial Water Supply; Primary Contact Recreation; Secondary Contact Recreation; Fish, Aquatic Life & Wildlife; Public Water Supply Source designated use for freshwater segments only; Cold Water Fish (Put-and-Take) designated use from March 15 to June 30 on Beaver Run from PA/DE line to Brandywine and Wilson Run Route 92 through Brandywine Creek State Park; Agriculture Water Supply designated use for freshwater segments only; and Exceptional

Recreational or Ecological Significance (ERES) Waters designated use from PA/DE line to Wilmington city line; and Fish Consumption.

The settlement of the Delaware lawsuit, *American Littoral Society and Sierra Club v. EPA*, Civil Action No. 96-591 (SLR) (D.De), was entered on August 9, 1997. The Delaware Total Maximum Daily Loads (TMDL) settlement sets forth specific deadlines for Environmental Protection Agency (EPA) relating to specific waters and TMDLs in the Christina River Basin. Under the schedule set forth in the settlement, Delaware was to establish low-flow and high-flow TMDLs for all water quality limited segments including Brandywine Creek.

EPA Region III established TMDL for nutrients and low dissolved oxygen in Christina River Basin under low-flow conditions in 2001 and under high-flow conditions in 2005, which were all revised in 2006. The wasteload allocations (WLAs) for Winterthur Museum, Garden & Library specified in Brandywine Creek main stem watershed are as follows:

• 5-day carbonaceous oxygen demand (CBOD ₅)	3.13 lb/day	15mg/L
• Ammonia Nitrogen (NH ₃ -N)	0.313lb/day	1.5mg/L
• Total Nitrogen (TN)	2.086 lb/day	10mg/L
• Total Phosphorus (TP)	0.417 lb/day	2mg/L
• Dissolved Oxygen (DO)	1.043 lb/day	5mg/L

In the High-flow conditions TMDL, for facilities with flow greater than 10,000 gpd, the CBOD₅ and NH₃-N limits above are summer limits and apply from May 1 to Oct 31 and the summer TP limits apply from Apr 1 to Oct 31. During the winter season from Nov 1 to Apr 30, the CBOD₅ limit is 2 times the summer limit and the NH₃-N limit is 3 times the summer limit. The winter TP limit is 2 times the summer limit and applies from Nov 1 to Mar 31.

In addition, EPA Region III established TMDLs for Bacteria and Sediments in the Christina River Basin in September 2006, which contains WLAs for this facility for Total Suspended Solids (TSS) and Enterococcus. The TSS concentration and Enterococcus are 15mg/L and 100cfu/100mL, respectively.

Statutory and Regulatory Basis

The Delaware Department of Natural Resources and Environmental Control (the Department) proposes to reissue an NPDES permit to discharge the wastewater subject to certain effluent discharge limitations, monitoring requirements and other terms and conditions identified in the permit. Section 402 of the federal Clean Water Act, as amended, and 7 Del. C. Chapter 60 provide the authority for permit issuance. Federal and state regulations promulgated pursuant to these statutes are the regulatory bases for permit issuance.

Bases for Effluent Limitations

The Department has examined the application, recent discharge monitoring data, and related information. The Department proposes to reissue the facility's NPDES permit for a period not to exceed five (5) years, subject to the effluent discharge limitations and monitoring requirements shown in the permit.

All limits for Outfall 001 including DO, BOD₅, TSS, Enterococcus, NH₃-N, TN, and TP, and pH are proposed to be retained from the current permit. This treatment Facility has been in compliance with its existing permit limits. Proper disposal of sludge is stated in special condition No. 3, 4, and 5.

Outfalls (002-036) include storm water runoff from roads or parking lots, groundwater and sump pumps drains. Even though there are no limits for these outfalls, the permittee has been closely monitoring semi-annual water quality and stream health across their whole facility since 2008. They conduct stream inspections and sample five testing sites along the stream for pH, Fecal Col., Enterococcus, biochemical

oxygen demand, total nitrogen, total phosphorous, turbidity, and dissolved oxygen semi-annually. The analytical parameters were selected to provide an economical cross-section of water quality and gross correlation to NPDES permit monitoring parameters. These sites represent stream water at the entry to the property, upstream of the wastewater treatment plant outfall, downstream of the wastewater treatment plant outfall, at the downstream border of the property, and drainage water from the adjacent Wilmington Country Club Golf Course. Also, they have completed numerous stream and pond restoration projects and activities to minimize runoff and to maintain water quality. Over the years, the data shows that no pollutants being discharge from Outfall 002-036.

The following table indicates the basis for effluent limitations for Outfall 001:

Bases for Effluent Limitations and Monitoring for Outfall 001				
Parameter	Water Quality-Based	Technology-Based	Performance Based ⁽²⁾	Monitoring Only
		RGCWP ⁽¹⁾		
Flow				X
pH		§ 7.7.3		
DO	TMDL			
BOD ₅		§ 7.7.3		
TSS	TMDL	§ 7.7.3		
Enterococcus	TMDL, SWQS ⁽³⁾ §4.5.7.1			
TN	TMDL			
TP	TMDL			
NH ₃ -N	TMDL			
Total Residual Chlorine (TRC)			X	
1. State of Delaware, Regulations Governing the Control of Water Pollution (RGCWP) 2. Performance-based limits are based on the provisions of 40 CFR 122.43(a) and 122.48(b) 3. State of Delaware, Surface Water Quality Standards (SWQS)				

Flow: Continuous flow monitoring and reporting have been retained from the current permit. The hydraulic design discharge rate of 25,000 gallons per day was used in determining the effluent limitations for this outfall.

pH: Technology-based pH limits and five days per week monitoring requirements have been retained from the current permit. These limits are based on RGCWP Section 7.7.3.

DO: The Christina River Basin TMDL includes a WLA for DO of 5 mg/L for this facility. This allocation has been included in the current permit as the minimum DO concentration at all times, which is proposed to be retained. Also, the monthly monitoring requirement has been retained from the current permit.

TSS, BOD₅: Based on Section 7.7.3 of the RGCWP, TSS and BOD₅ limits should be 15 mg/L daily average and 23 mg/L daily maximum. The current TSS effluent limitation of 15 mg/L is also identical to the WLA for TSS contained in the Christina River Basin TMDL. The current daily average BOD₅ effluent

limitation of 15 mg/L is more stringent than the WLA for CBOD₅ contained in the Christina River Basin TMDL. The current limits and monitoring frequency are proposed to be retained. The current load limits are calculated using the concentration limits and the design flow of 25,000 GPD. Further, based on our review of the RGCWP, §7.7.3 regulation also requires 92.5% removal of BOD₅ and TSS on an average monthly basis for facilities employing secondary treatment, filtration and disinfection. This requirement has been added to the permit in Part III.A Special Condition No. 8.

The permittee has demonstrated that, because its influent is occasionally highly dilute, it cannot consistently meet the 92.5% removal requirement under those conditions. Influent sampling shows that BOD₅ and TSS concentrations can fall to approximately 30–40 mg/L. At those levels, achieving a 92.5% removal rate would require effluent concentrations in the range of 2–3 mg/L, limits far more stringent than those required by concentration-based secondary treatment standards.

Under 40 CFR 133.103(d), a mass-loading limit may be substituted for the percent-removal requirement when the permittee demonstrates that: (1) The facility is consistently meeting, or will consistently meet, its effluent concentration limits but cannot meet percent removal due to less-concentrated influent; (2) Meeting the percent-removal requirement would necessitate substantially more stringent effluent limits than otherwise required; and (3) The dilute influent is not caused by excessive inflow/infiltration (I/I).

Because Winterthur satisfies these criteria, the permit will require compliance with a mass-loading limit in lieu of the percent-removal requirement. Special Condition No. 8 provides that, during periods of diluted influent, the permittee may comply through this alternative mass-loading approach. The permittee shall continue monthly influent monitoring. Based on current influent data submitted by the permittee, the existing concentration limits remain sufficient to demonstrate compliance under the alternative mass-loading framework.

Enterococcus: The monthly monitoring frequency for Enterococcus has been retained from the current permit. The current Enterococcus limit is based on State of Delaware's SWQS §4.5.7.1, as amended June 1, 2011. Since this treatment facility directly discharges to a tributary of the Brandywine Creek, the Bacterial Water Quality Criteria for Primary Contact Recreation Fresh Waters in §4.5.7.1 shall apply to this facility. The daily average limit for enterococcus shall be based on a geometric mean of 100cfu/100ml. The 100 cfu/100mL limit is also identical to TMDL for Bacteria and Sediments in the Christina River Basin. The daily maximum effluent limitation for Enterococcus is 185 cfu/100ml, which is based on the Single Sample Value criteria in §4.5.7.1 of the SWQS.

NH₃-N, TN, and TP: The Christina River Basin TMDL includes this facility. TMDL includes allocations for CBOD₅, NH₃-N, TN, and TP. Since the current BOD₅ is more stringent than the WLA for CBOD₅ contained in the Christina River Basin TMDL, the CBOD₅ limit is not necessary to apply here. The current limits and monthly monitoring frequencies are proposed to be retained. In addition, the effluent limitations for winter season and summer season have been updated based on the Christina River Basin TMDL for Nutrient and Low Dissolved Oxygen under High-Flow Conditions. The NH₃-N limits in Christina River Basin TMDL are summer limits and apply from May 1 to Oct 31 and the summer TP limits apply from Apr 1 to Oct 31. During the winter season from Nov 1 to Apr 30, the NH₃-N limit is 3 times the summer limit. The winter TP limit is 2 times the summer limit and applies from Nov 1 to Mar 31.

During the renewal process, the permittee requested a reduction in nutrient monitoring frequency under Special Condition No. 10. After reviewing the past two years of monitoring data, the TP monitoring frequency was reduced from monthly to quarterly. Monthly monitoring for NH₃-N and TN remain in place.

TRC: The "none detectable" effluent limitation for TRC is proposed to be retained from the current permit. Because the facility uses ultraviolet (UV) disinfection, TRC limits and monitoring requirements apply only

when the back-up chlorination system is in operation—specifically, during periods when the UV system is inoperable or ineffective. During such times, TRC monitoring must be conducted five days per week.

Consistent with 40 CFR 122.43(a), which requires permits to include all conditions necessary to meet applicable effluent limitations and standards, the permit maintains the “none detectable” TRC limit and the corresponding monitoring provisions. Because the facility uses UV disinfection, TRC limits and monitoring apply only as needed base specifically when the back-up chlorination system is operating.

Under 40 CFR 122.48(b), permittees must conduct monitoring at the type, intervals, and frequency to ensure that the data collected are representative of the monitored activity. In this case, representative monitoring occurs whenever the chlorination system is in use, allowing the permittee to demonstrate compliance with the “none detectable” TRC limit. Authorization to operate the back-up chlorination system—along with the applicable monitoring frequency and the requirement to meet the TRC effluent limitation—is provided in Special Condition No. 7.

Special Conditions

Special Condition No. 1 states that this permit supersedes NPDES Permit DE 0021768 and State Permit WPCC 3150H/74, issued on January 7, 2021, with an effective date of February 1, 2021.

Special Condition No. 2 is a standard permit reopener clause. This special condition allows the Department to reopen and modify the permit if the discharger is causing water quality problems.

Special Condition No. 3, 4, and 5 require proper disposal of sludge in accordance with State and Federal requirements.

Special Condition No. 6 outlines wastewater treatment plant operator licensing requirements for this facility.

Special Condition No. 7 allows the permittee to utilize a back-up chlorination/dechlorination system for effluent disinfection in the event that the UV disinfection system is inoperable or ineffective. In such instances, the effluent limitation for TRC shall be “none detectable”, and monitoring frequency shall be five (5) days per week.

Special Condition No. 8 requires the permittee to demonstrate a minimum of 92.5% reduction in the raw waste TSS and BOD₅ concentrations on a monthly average basis prior to discharge.

Special Condition No. 9 requires the permittee to use EPA-approved analytical methods that are capable of detecting and measuring the pollutants at, or below, the applicable water quality criteria or permit limits pursuant to 40 CFR Part 136.

Special Condition No. 10 allows for reduced frequency testing for TN, NH₃-N, and TP after successfully submitting two (2) years of monthly test results.

Antidegradation Statement

The proposed effluent limitations included in this NPDES permit comply with the applicable portions of the State of Delaware Surface Water Quality Standards, Section 5: Antidegradation and ERES Waters Policies.

Public Notice and Process for Reaching a Final Decision

The public notice of the Department's receipt of the application and of reaching the tentative determinations outlined herein will be published in the Wilmington News Journal and the Delaware State News on **August 12, 2026**. Interested persons are invited to submit their written views on the draft permit and the tentative determinations made with respect to this NPDES permit application. The Department will not hold a public hearing on this application unless the Department receives a meritorious request to do so or unless the notice of this proposal generates substantial public interest. A public hearing request shall be deemed meritorious if it exhibits a familiarity with the application and a reasoned statement of the permit's probable impact. The request for a public hearing shall be in writing and shall state the nature of the issues to be raised at the hearing. All comments received by 4:30 p.m. on **September 11, 2026** will be considered by the Department in preparing the final permit.

Department Contact for Additional Information:

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