Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

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ANTIDEGRADATION REVIEW AND FINAL DETERMINATION

Applicant and Address
Hollingsworth and Vose Company
112 Washington Street
East Walpole, MA 02032
NPDES Permit MA0044996

Receiving Water and Classification
Neponset River
Boston Harbor Watershed
Segment: MA73-01
Classification: B, Warm Water Fishery

Introduction

Hollingsworth & Vose Company ("the Facility") has submitted an application for a new individual NPDES permit to U.S. Environmental Protection Agency ("EPA") and the Massachusetts Department of Environmental Protection ("MassDEP") for the discharge of reverse osmosis ("RO") reject water from their East Walpole facility to the Neponset River (MA73-01).

The Facility is currently engaged in the manufacture of battery separator material. To achieve the water purity level required for its manufacturing process, a RO system was installed to treat the incoming water withdrawn from the Neponset River.

The following review and determination were based upon information submitted as part of the NPDES application, the EPA draft permit and draft fact sheet, and through correspondence with the permittee. This information is paraphrased in the following discussion without further reference.

Applicability

This proposed discharge constitutes a “new discharge” (314 CMR 4.02) to a surface water of the Commonwealth. In accordance with 314 CMR 3.03, this discharge requires a NPDES permit and is subject to a review and determination by MassDEP under the Antidegradation Provisions [314 CMR 4.04 (2)].

Technology-Based Review

The technology-based review ensures that the discharge is provided with a level of treatment equal to or exceeding the requirements in 314 CMR 3.00 for technology-based effluent limitations. The Facility is seeking to discharge a new RO reject water stream to the Neponset River. In the absence of effluent guidelines for RO reject water, technology-based requirements have been made on a case-by-case basis based on best professional judgment.

The incoming water from the Neponset River is first pumped through coarse filtration and ultra-filtration units to remove all suspended solids. Aluminum sulfate is added to the water as a coagulant prior to ultra-filtration to facilitate the removal of the solids. This pretreated water is then sent to the RO unit to generate permeate/purified water for the manufacturing process and the reject water stream is discharged as effluent. Although aluminum residual may be present in the effluent, the estimated concentration of aluminum in the effluent (0.1897 mg/L) is significantly below the dilution-adjusted water quality criteria for aluminum. These criteria are 1.17 mg/L for chronic and 10.12 mg/L for acute. All wastewater generated through backwash and cleaning processes as well as all other process wastewaters are prohibited from being discharged to the Neponset River. The maximum effluent flow rate of the RO reject water is 50 gallons per minute (gpm).

Determination of Applicability of Specific Antidegradation Designations

The federal antidegradation policy established three tiers of protection. The first tier established a standard that is applicable to all waters and requires that all "existing uses" of a water body and level of water quality necessary to protect those existing uses be maintained and protected [see 40 CFR 131.12(a)(l)]. Under Massachusetts’s antidegradation requirements in 314 CMR 4.04, "in all cases existing uses and the level of water quality necessary to protect the existing uses shall be maintained and protected." Existing uses are defined as, "Those designated uses and any other uses that do not impair the designated uses that are actually attained in a water body on or after November 28, 1975; except that in no case shall assimilation or transport of pollutants be considered an existing use."

The *Implementation Procedures for the Antidegradation Provisions of the Massachusetts Water Surface Water Quality Standards, 314 CMR 4.00* may be found at https://www.mass.gov/doc/antidegradationimplementation-procedures-0/download and require the following:

(1) An identification of existing uses;
(2) A determination of water quality impact; and
(3) A comparison with criteria.

The applicable Massachusetts Water Quality Standards (MA WQS), at 314 CMR 4.06, identify the segment MA73-01 of the Neponset River as a Class B water that is designated to support aquatic life and

recreational uses. This segment originates at the outlet of the Neponset Reservoir in Foxborough, and extends to its confluence with East Branch, Canton (through former pond segments Crackrock Pond MA73010 and Bird Pond MA73002). According to the MA WQS, these waters are designated as habitat for fish, other aquatic life and wildlife, and for primary and secondary contact recreation. These waters have consistently good water quality. In addition, Neponset River's classification includes a further qualifier as a warm water fishery, which indicates special considerations and uses that may affect the application of criteria or antidegradation provisions of 314 CMR 4.00.

The Massachusetts Year 2016 Integrated List of Waters Final Listing of the Condition of Massachusetts' Waters Pursuant to Sections 305(b), 314 and 303(d) of the Clean Water Act (the "2016 Integrated List") includes this waterbody as a Category 5 water, which are those classified as "Waters requiring a TMDL." Specifically, the 2016 Integrated List identifies Neponset River as impaired for DDT in fish tissue, dissolved oxygen, *Escherichia coli*, metals, nutrient/eutrophication biological indicators, PCBs in fish tissue, and total phosphorus. A Total Maximum Daily Loads (TMDL) of Bacteria for Neponset River Basin was finalized by MassDEP in 2002, and an addendum to this TMDL was finalized in 2012. This discharge is not expected to be a source of bacteria unless it is already present in the intake water from the river.

Tier I Review

The Facility's effluent is essentially river water, containing the source water's typical chemical constituents but at higher concentrations, except for total suspended solids which are removed. The effluent also contains aluminum residual at the level below the dilution-adjusted water quality criteria. The effluent limits in the draft NPDES permit are based on the MA WQS for Class B waters. They will ensure that the discharge does not cause or contribute to lowering water quality and ensuring the water quality is maintained.

Tier II Review

High quality waters are protected and maintained for the existing level of quality. Discharges are permitted to these waters only when there will be no significant lowering of water quality, or an Antidegradation Authorization is granted to allow for the lowering of water quality. MassDEP may determine that a discharge is insignificant "because it does not have the potential to impair any existing or designated water use and does not have the potential to cause any significant lowering of water quality." See 314 CMR 4.04(2). Based on the estimated concentrations of the pollutants, MassDEP finds that the discharge will not further impair the Neponset River, and is therefore deemed insignificant.

Authorizations

In accordance with 314 CMR 4.04(5), an authorization to discharge to waters designated for protection under 314 CMR 4.04(2) may be issued by MassDEP where the applicant demonstrates that:

1. *The discharge is necessary to accommodate important economic or social development in the area in which the waters are located.*

   The Facility serves as both the company's corporate headquarters as well as a vital manufacturing facility. H&V is a major employer in the Town of Walpole and the surrounding area and provides additional financial input to the local economy.

2. *No less environmentally damaging alternative site for the activity, receptor for the disposal, or method of elimination of the discharge is reasonably available or feasible.*

   The Facility proposes to discharge RO reject water to the Neponset River. No other facilities owned by the company have the capacity available to produce battery separator material product. Other discharge options are not feasible or allowed. The Massachusetts Water Resources Authority (MWRA) does not allow the discharge of RO reject water into its sewer system. Based on information provided by Hollingsworth and Vose, due to the physical layout of the facility and property, neither infiltration of RO reject water into the subsurface nor spray application onto the ground surface is feasible.

3. *To the maximum extent feasible, the discharge and activity are designed and conducted to minimize adverse impacts on water quality, including implementation of source reduction practices.*

   The design of the system utilizes RO filters that will be maintained and replaced on a scheduled basis. The membranes in the RO system will be sent off-site for cleaning. The backwash water from cleaning the filtration equipment is prohibited from being discharged to the Neponset River.

4. *The discharge will not impair existing water uses and will not result in a level of water quality less than that specified for the Class.*

   As described above, the effluent characteristics of the RO reject water will not impair the designated uses of the Neponset River. The estimated aluminum concentration that will be in the effluent discharge is low and does not indicate a reasonable potential to exceed the dilution-adjusted water quality criteria for aluminum in the Neponset River. To the maximum extent feasible, the discharge and activity, combined with the associated effluent limitations, are designed and conducted to minimize adverse impacts on water quality.

Determination

The Department has determined that the proposed discharge meets the requirements of the Antidegradation Provisions of the MA WQS and complies with the policy document entitled *Implementation Procedures for the Antidegradation Provisions of the Massachusetts Surface Water Quality Standards, 314 CMR 4.00, effective 10/21/2009.*

Lealdon Langley, Director
Division of Watershed Management
Department of Environmental Protection
Commonwealth of Massachusetts
Boston, MA

Date: January 7, 2021