



Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

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ANTIDegradation REVIEW AND DETERMINATION

Permittee

Polar Corporation
40 Walcott Street
Worcester, MA 01603
NPDES Permit MA0040483

Receiving Water

Middle River
Blackstone River Basin
Segment: MA51-02
Classification: B, Warm Water Fishery

Introduction

Polar Corporation ("Polar"), a domestic for-profit corporation, manufactures beverages, primarily carbonated and non-carbonated soft drinks and bottled water.

The current permit, most recently issued in 2015, authorizes the discharge of up to a monthly average flow of 100,000 gallons per day (gpd) of reverse osmosis (RO) reject water from Outfall 001. The RO reject water flows via the roof leader system to an internal outfall to the City of Worcester's storm drain system that eventually discharges to the Middle River. Polar has requested a permitted flow increase based on its anticipated production schedule. Specifically, Polar has requested to increase this discharge rate by an additional 50,000 gpd for a total of up to 150,000 gpd (0.15 MGD). The increased discharge will go through the same internal outfall as the existing permitted RO discharge.

NPDES Permit History

Polar has applied to the U.S. Environmental Protection Agency (EPA) for reissuance of its NPDES permit to discharge RO reject water to the Middle River through Outfall 001. The current permit was issued and became effective on April 7, 2015 and expired on March 31, 2020. EPA received a complete permit renewal application from the permittee in two separate submittals dated November 20, 2019 and January 21, 2020. The renewal application was deemed timely and complete by EPA and has been administratively continued pursuant to 40 CFR § 122.6.

This information is available in alternate format. Contact Michelle Waters-Ekanem, Director of Diversity/Civil Rights at 617-292-5751.
TTY# MassRelay Service 1-800-439-2370
MassDEP Website: www.mass.gov/dep
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Applicability

This proposed discharge constitutes an increased discharge to a surface water of the Commonwealth. In accordance with the State's Antidegradation Provisions contained in 314 CMR 4.04, the increased discharge is subject to this Antidegradation Review and Determination.

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. This is an existing beverage manufacturer seeking to increase the volume of its existing RO reject water discharge to an existing storm drain. 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.

Polar requires that its municipal water supply be pretreated prior to use in its beverage manufacturing process. A backflow preventer separates the municipal influent source from the first pre-treatment 10-micron filter. Preliminary filtration is followed by treatment with water softening and anti-chlorination solutions prior to additional filtration through a 3-micron filter. The permittee currently utilizes two RO units to treat Worcester municipal drinking water to achieve the required water purity for its beverage production process. Only one of the two units is run full time while the second unit cycles on and off depending on the demand.

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)(1)]. Under Massachusetts 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/antidegradation-implementation-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 entire length of the Middle River, which in its entirety is segment MA51-02, as a Class B water that is designated to support aquatic life and recreational uses. According to the MA WQS, these waters are designed 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, Middle 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 Middle River as impaired for nutrient/eutrophication biological indicators, turbidity, *Escherichia coli*, aquatic macroinvertebrate bioassessments, and debris/floatables/trash. One 0.2 mile reach is culverted underground, thereby impairing aquatic life. The rest of the river is channelized with natural substrate.

This water is impaired (i.e., not supporting one or more intended use) as noted above. The impairment was related to the presence of one or more "pollutants," and the source of those pollutants was not considered to be natural. Therefore, the proposed increased discharge is subject to a Tier I review for these impairments and a Tier II review for other pollutants that are not causing impairment to the Middle River.

Tier I Review

The general area around the discharge is an urban river environment that is partially culverted. The effluent from the facility is essentially tap water, containing the typical chemical parameters of the source water, but at higher concentrations. The proposed flow increase will not increase the concentration of the discharge. The effluent limits in the permit are based on the MA WQS for Class B waters and will ensure that the discharge does not cause or contribute to the lowering of water quality and, in fact, contain total residual chlorine (TRC) limitations to ensure 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 existing monitoring results from the facility and the proposed flow increase, MassDEP finds that the discharge will not further impair the Middle River, and is therefore deemed insignificant.

Authorizations

In accordance with 314 CMR 4.04(5), an authorization to discharge to the waters designated for protection under 314 CMR 4.04(2) may be allowed 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 applicant/permittee, Polar Corporation produces waters and beverages at this location and is a major employer in the Greater Worcester area.

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;*

Polar discharges RO reject water to a roof leader system that discharges to a storm drain system and eventually to the Middle River. Based on previous sampling of Polar's discharge, TRC is present at low levels. However, an analysis incorporating the increased flow found that discharges of TRC have reasonable potential to cause or contribute to an excursion above the chronic and acute aquatic life water quality criterion. As a result, TRC limitations are incorporated into the permit to maintain water quality standards.

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; and

The design of the system utilizes reverse osmosis filters that will be maintained and replaced on a scheduled basis.

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 Middle River. To the maximum extent feasible, the discharge and activity, combined with the associated effluent limitations for TRC 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
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Department of Environmental Protection
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