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PUBLIC NOTICE

ENVIRONMENTAL PROTECTION

OFFICE OF LEGAL AFFAIRS

Notice of Action on Petition for Rulemaking

Petition to Adopt Regulations to Address Acute and Chronic Effects of Aluminum

N.J.A.C. 7:3, 8, 9B, 14A, 15, 38

Petitioner: Bill Wolfe

Take notice that the Department of Environmental Protection (Department), has denied

the petition for rulemaking described below as filed by Bill Wolfe (petitioner). The Department

received the petition on September 22, 2022, and published notice of receipt of the petition in the

November 7, 2022, New Jersey Register (54 N.J.R. 2103(a)). As stated in the notice of receipt,

the Department acknowledged the petition only to the extent it requests action within the

Department's jurisdiction. The Department cannot and did not acknowledge the petition on

behalf of the Pinelands Commission or the Highlands Water Protection and Planning Council

(Highlands Council) to which the petition was also directed, nor does the Department address

requests made of the Commission or Council.

The Petition

Requests of Pinelands Commission and Highlands Council

The petitioner requests that the Pinelands Commission amend the Pinelands

Comprehensive Management Plan to require monitoring and compliance with the United States

Environmental Protection Agency's (EPA) Final Aquatic Life Ambient Water Quality Criteria

for Aluminum (2018) (Final Criteria) for regulated activities that disturb soils, generate

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stormwater, and/or result in point and non-point discharge of pollutants to wetlands and surface waters, including development and forest management activities.

The petitioner requests that the Highlands Council amend the Highlands Regional Master Plan to require monitoring and compliance with the EPA's Final Criteria for regulated activities that disturb soils, generate stormwater, and/or result in point and non-point discharge of pollutants to wetlands and surface waters, including development and forest management activities.

The petitioner refers to the authority of the Highlands Water Protection and Planning Act, N.J.S.A. 13:20-1 et seq., and the Pinelands Protection Act, N.J.S.A. 13:18A-1 et seq., in support of the petition. The Pinelands Protection Act gives the Pinelands Commission the sole authority to amend the Pinelands Comprehensive Management Plan. N.J.S.A. 13:18A-6. Similarly, the Highlands Water Protection and Planning Act gives the Highlands Council sole authority to prepare, adopt, and amend the Highlands Regional Master Plan (in consultation with the Department and other State agencies), and to promulgate rules to exercise its powers and perform its duties and responsibilities. N.J.S.A. 13:20-6, 8, and 9. Accordingly, the Department does not acknowledge or respond to the petition, insofar as the petition requests amendments to the Pinelands Comprehensive Management Plan and the Highlands Regional Master Plan or other actions that are beyond the Department's sole authority.

Requests of the Department

The petitioner requests that the Department:

- 1. Amend the Surface Water Quality Standards (SWQS), N.J.A.C. 7:9B, to adopt aquatic protection criteria for acute and chronic effects of aluminum, at least as stringent as, and consistent with the EPA's Final Criteria;
- 2. Amend the Highlands Water Protection and Planning Act Rules, N.J.A.C. 7:38; New Jersey Pollutant Discharge Elimination System rules, N.J.A.C. 7:14A, Water Quality Management Planning rules, N.J.A.C. 7:15, Stormwater Management rules, N.J.A.C. 7:8, and regulations governing Total Maximum Daily Load provisions of the Surface Water Quality Standards, N.J.A.C. 7:9B, to mandate compliance with the EPA's Final Criteria;
- 3. Revise the Forestry Wetlands Best Management Practice (BMP) to mandate monitoring and compliance with the EPA's Final Criteria;
- 4. Revise the Water Quality Monitoring and Assessment Program under the Federal Clean Water Act sections 303(d) and 305(b) to include aluminum;
- 5. Revise the Forestry rules, N.J.A.C. 7:3, to include monitoring and compliance with the EPA's Final Criteria; and
- 6. Revise all the regulations cited above for conformity with the EPA's Final Criteria pending the Department's adoption of State criteria.

In support of the petition, the petitioner cites to the authority of the Highlands Water Protection and Planning Act, N.J.S.A. 13:20-1 et seq., the Pinelands Protection Act, N.J.S.A. 13:18A-1 et seq., the Coastal Area Facilities Review Act, N.J.S.A. 13:19-1 et seq., the Freshwater Wetlands Protection Act, N.J.S.A. 13:9B-1 et seq., the Water Pollution Control Act, N.J.S.A. 58:10A-1 et seq., and the delegated portions of the Federal Clean Water Act, 33 U.S.C. §1251 et seq., the Water Quality Planning Act, N.J.S.A. 58:11A-1 et seq., the Endangered and

Nongame Species Conservation Act, N.J.S.A. 23:1A-1 et seq., and the general powers of the Department, N.J.A.C. 13:1D-1 et seq. As justification for the need for the requested action, the petitioner states, "New Jersey's ecosystems, water resources, and natural resources are particularly vulnerable to the toxic effects of aluminum." The petitioner cites to a U.S. Geological Survey study, also cited by the EPA in its Final Criteria, that the petitioner states identifies anthropogenic activities (including soil disturbance, erosion, and runoff) as important sources of aluminum to surface water and identifies aluminum as causing serious adverse impacts on water resources, aquatic life, and fisheries. According to the petitioner, forest management activities, including logging, create soil disturbance that causes, among other things, liberation of inorganic monomeric aluminum via stormwater runoff, sediment transport, and erosion.

The petitioner states that the Department has no surface water quality standards for aluminum, although the EPA adopted aluminum criteria in 1988 and updated the criteria in 2018. He further states that the Department "does not monitor or assess water quality or aquatic ecosystem health for the well-known adverse ecological and water quality impacts of aluminum...does not regulate the water quality and ecosystem impacts of forestry or other development activities that generate non-point source pollution or point source wastewater discharges, including for the known toxic impacts of aluminum...[and] does not in any way regulate the presence of or discharge of aluminum to the environment...despite the fact that there are known industrial point source wastewater discharges to surface waters and non-point pollutant discharges from development and stormwater runoff, including from forestry." The

petitioner contends that the Pinelands Comprehensive Management Plan and Highlands Regional Master Plan are similarly flawed.

The petitioner provides that the reasons for the petition are to ensure protection of the ecological health of the State's water and natural resources, based upon the best available science; to ensure that forest management activities do not impair or adversely impact the water quality and/or aquatic life of the State's surface waters and wetlands; to ensure that the State's waters are fishable and swimmable, as required by the Federal Clean Water Act and the New Jersey Water Pollution Control Act; to ensure that the Department's water quality standards, Highlands, freshwater wetlands, stormwater, and forest management policies and regulations are current, reflect the best available science, and conform to minimum Federal standards, criteria, and guidance; to ensure protection of the Pinelands water and natural resources; to ensure protection of the Highlands water and natural resources; and to ensure that the Department's surface water quality standards' anti-degradation policies are implemented, particularly for Category One Waters (C1), trout production (TP), and trout maintenance (TM) waters.

Background

EPA Final Criteria

The EPA published the revised aquatic life ambient water quality criteria for aluminum in 2018. The recommended aluminum criteria are formulated by equations that include pH, total hardness as calcium carbonate (CaCO₃) and dissolved organic carbon (DOC). Aluminum is not needed by fish and other aquatic life to function (a non-essential metal), and elevated aluminum at certain pH, total hardness and DOC may cause respiratory dysfunction in certain fish species and can impact the ability to regulate ions (like salts). The EPA equations are based on multiple

linear regression toxicity models for fish and invertebrate species that use site-specific pH, total hardness, and DOC as inputs to generate acute and chronic criteria values to protect aquatic organisms from the toxic effects of aluminum, applicable for pH ranges of 5.0 to 10.5, a total hardness range of 0.01 to 430 mg/L as CaCO₃, and a DOC range of 0.08 to 12.0 mg/L. Each of these input parameters influences the bioavailability (and thus toxicity) of aluminum. A low pH generally makes it easier for aluminum to be dissolved, and therefore be more bioavailable. At a higher pH, aluminum speciation changes, and aluminum also becomes more bioavailable. Higher hardness values imply that there are more ions present, which compete with aluminum. Consequently, at higher hardness, aluminum is less bioavailable. Higher DOC reduces bioavailability, and since aluminum is bound to DOC, aluminum is made less bioavailable to aquatic organisms. Therefore, an ambient aluminum concentration may or may not be toxic to the aquatic life in a particular waterbody depending upon the ambient pH, total hardness and DOC concentrations. (See https://www.epa.gov/wqc/aquatic-life-criteria-aluminum).

Determining the sources of excess aluminum in ambient waters is a complex exercise, as aluminum is found in most soils and is the third most abundant element in the Earth's crust. Anthropogenic releases of aluminum into ambient water may include discharges from mining and industrial processes using aluminum and wastewater and drinking water treated with alum (an aluminum compound and commonly used coagulant in wastewater and drinking water treatment, as well as reservoir management). Another potential source of aluminum is agricultural runoff resulting from the application of pesticides containing aluminum compounds. An agricultural pesticide use survey conducted by the Department in 2018 (see https://www.nj.gov/dep/enforcement/pcp/bpo/pem/surveys/priv2018.pdf) identifies two

pesticides containing aluminum: Fosetyl-Al, a fungicide, and aluminum phosphide, a fumigant. According to data provided to the Department, licensed pesticide applicators applied 557 pounds of Fosetyl-Al and eight pounds of aluminum phosphide in New Jersey in 2018. The Department generates pesticide use surveys once every three years for each category and does not expect agricultural runoff to be a major source of aluminum in ambient waters.

Water Quality

The Department's SWQS rules at N.J.A.C. 7:9B include policies, surface water classifications, and surface water quality criteria for toxic substances to protect aquatic life, human health, and the quality of New Jersey's surface waters. New Jersey's surface waters are classified based on the type and the designated use of the waterbody. The SWQS at N.J.A.C. 7:9B-1.14 establish the numeric or narrative water quality criteria that must be attained to support the existing and designated uses applicable to each surface water classification. Numeric criteria establish concentration thresholds of chemicals, such as pollutants, and other parameters, such as pH and temperature. The existing SWQS do not include a numeric aquatic life criterion for aluminum.

The Department utilizes the SWQS to develop water quality-based effluent limitations (WQBELs) in its New Jersey Pollutant Discharge Elimination System (NJPDES) rules, N.J.A.C. 7:14A, to protect or improve the existing water quality and designated uses. The Water Quality Management Planning (WQMP) rules, N.J.A.C. 7:15, implement the Water Quality Planning Act, N.J.S.A. 58:11A-1 et seq., whose purpose is to maintain and, where attainable, restore the chemical, physical, and biological integrity of the surface and ground water resources of the State. The WQMP rules focus on the adoption and amendment of areawide water quality management plans, including Wastewater Management Plans that are a component of areawide

plans, and provide at N.J.A.C. 7:15-5.4 that the Department shall propose Total Maximum Daily Loads (TMDLs) as amendments to areawide water quality management plans, include the procedures for the establishment of the biennial 303(d) List of Water Quality Limited Waters (303(d) List), and identify waters for which TMDLs are expected to be established in the next two years. The WQMP rules do not implement the SWQS and as currently written obviate the petitioner's request to mandate their compliance with the EPA's Final Criteria.

The petitioner asks the Department to revise the Water Quality Monitoring and Assessment Program under the Federal Clean Water Act (CWA) sections 303(d) and 305(b) to include aluminum. Section 303(d) requires submission of the biennial 303(d) List, which identifies waters that are not supporting designated uses because they do not meet SWQS despite the implementation of technology-based effluent limits. The biennial Statewide Water Quality Inventory Report, or 305(b) Report, includes the status of waters of the State in terms of overall water quality and support of designated uses, as well as strategies to maintain and improve water quality. The New Jersey Integrated Water Quality Assessment Report (Integrated Report) constitutes the combined reporting requirements of both 303(d) and 305(b). In advance of an Integrated Report, the Department prepares an Integrated Water Quality Monitoring and Assessment Methods Document (Methods Document) for public comment. It includes a description of the data quality requirements, and the methods to be used by the Department to evaluate surface water quality data, assess compliance with SWQS and support of designated uses, the rationale for the placement of assessment units on the 303(d) List, and identification of the pollutant(s) for which the assessment unit is impaired. The Department prepares the Methods Document in accordance with the WQMP rules to satisfy New Jersey's requirement to provide a

description of the methodology used to develop the 303(d) List. Were the Department to at some point amend the SWQS rules to include the aluminum criteria, the Department would update the Methods Document as appropriate to include the assessment methods for the aluminum SWQS criteria from which aquatic life designated use attainment would be determined when preparing subsequent Integrated Reports.

Stormwater Management

The Department implements the Stormwater Management rules, N.J.A.C. 7:8, through the review of permits issued by the Division of Watershed Protection and Restoration and the Division of Land Resource Protection in Watershed and Land Management (Flood Hazard, Freshwater Wetlands, CAFRA, Waterfront Development and Coastal Wetlands) if specific project are major developments. The Stormwater Management rules do not contain standards specific to any individual pollutant. Rather, the rules utilize the designations in the Surface Water Quality Standards at N.J.A.C. 7:9B to determine the allowable amount of disturbance in regulated areas based on the SWQS designation.

Local authorities implement the Stormwater Management rules through the Municipal Land Use Law and the Residential Site Improvement Standards. Nothing in the Stormwater Management rules is construed as preventing the Department or other agencies or entities from imposing additional or more stringent stormwater management requirements necessary to implement the purposes of any enabling legislation including those measures necessary to achieve the Surface Water Quality Standards at N.J.A.C. 7:9B.

Forestry

The Department's forestry programs are governed by the Forestry rules at N.J.A.C. 7:3. The rules establish the procedures for the public to obtain seedlings from the State Forest Nursery, govern the Department's maintenance of an approved forester list in support of Farmland Assessment Act implementation, set standards for forest stewardship plans and for plan compliance, and establish the Forest Stewardship Advisory Committee. The Forestry rules do not contain monitoring and compliance requirements for specific substances, nor do they refer to such requirements.

The Department issued the "New Jersey Forestry and Wetlands Best Management Practices Manual," dated October 1995 (BMP manual), which is available at https://www.nj.gov/dep/parksandforests/forest/nj_bmp_manual1995.pdf. The Freshwater Wetlands Protection Act Rules at N.J.A.C. 7:7A and the Flood Hazard Area Control Act Rules at N.J.A.C 7:13 refer to the BMP manual. Forestry activities in wetlands, transition areas, and State open waters are generally exempt for the Freshwater Wetlands Protection Act Rules if they follow the BMP manual. Forestry activities in riparian zones usually qualify for a permit-by-rule under the Flood Hazard Control Act Rules. Neither the rules nor the BMP manual contains monitoring and compliance requirements for specific substances.

The Department's Response to the Petition

Water Quality

After careful consideration, the Department has determined to deny the petitioner's request to amend the SWQS at N.J.A.C. 7:9B to include surface water quality criteria for aluminum based on the EPA's aquatic life criteria recommendations published in 2018, pending

further evaluation of the criteria development method specific to New Jersey and the corresponding implementation strategy as described below.

The EPA has offered states various options in adopting the recommended 2018 aquatic life criteria for aluminum, which the Department is evaluating and will continue to evaluate. According to the EPA, a state must determine sufficient cause to establish a protective criterion based on scientific judgment, which may involve a review of current ambient concentrations of aluminum across the state. As discussed above, the toxicity of aluminum in water is related to the ambient pH and inversely correlated to total hardness (as CaCO₃) and DOC concentrations, which can vary widely with site-specific conditions, including geologic, stream flow and weather, and anthropogenic sources such as permitted discharges. If appropriate, a state may then proceed to develop criteria based on the EPA's 2018 recommendations or by another scientifically defensible method which must be reviewed and approved by the EPA.

If the Department determines that it is appropriate to adopt the EPA's 2018 recommendations, the Department may: (1) incorporate into the Department's rules by reference the applicable section(s) of the CWA Section 304(a) recommended criteria document; (2) incorporate into the Department's rules by reference the aluminum criteria calculator; (3) adopt the criteria value lookup tables in the 2018 EPA document's Appendix K; or (4) adopt ecoregional, Statewide, or localized criteria values for aluminum. The Department also has the option to develop its own regionally informed calculator or may modify the calculator to reflect regional conditions by tailoring the species in the toxicity dataset to better match the species assemblage that is known and expected to occur at a particular site. Moreover, it may be necessary for the Department to adopt a written process, such as a criteria derivation

methodology, that is detailed to ensure predictable, repeatable outcomes by the implementing program generating criteria values.

Due to the complexity of the aluminum criteria calculations and the various options recommended by the EPA to the states to adopt aquatic life criteria recommendations for aluminum, additional waterbody-specific concurrently measured data for aluminum, pH, total hardness, and DOC across a range of conditions are required to determine the applicability of the EPA's recommendations and identify the approach that is most suitable for New Jersey's waters. The Department's freshwater monitoring network at present includes 90 sites across the five water regions, where aluminum, total hardness, pH and DOC are concurrently measured. The Department has collected aluminum data as part of the routine chemistry monitoring for the Monitoring Gap and Enhancement Network since 2017 and the Regional Targeted Network since January 2018. The latter network conducts targeted ambient water sampling in one of the State's five water regions for a period of two years and then rotates to another water region. The Department will continue to monitor for aluminum concurrently with the input parameters to the EPA's 2018 criteria equation (pH, DOC, and total hardness) and may expand the number of sites and coverage until there is adequate data available to demonstrate the need to set protective criteria. The Department is also in the process of updating the monitoring network for aluminum based on the "Draft Technical Support Document: Implementing the 2018 Recommended Aquatic Life Water Quality Criteria for Aluminum," which the EPA published in December 2020 (https://www.epa.gov/system/files/documents/2021-11/aluminum-tsd-draft-2021.pdf).

The implementation strategy for an adopted SWQS is critical to ensure effective protection and restoration of surface waters. As indicated above, the Department implements

SWQS through the NJPDES rules at N.J.A.C. 7:14A and Remediation Standards at N.J.A.C. 7:26D. According to the EPA, there are many considerations related to the application of potential aluminum criteria to NPDES programs, including the NJPDES permitting program. If the Department chooses to adopt numeric criteria values based on the calculator for aluminum, the development of WQBELs would require additional data to account for various considerations, such as pH, DOC and total hardness, or the potential use of seasonal WQBELS based on seasonal criteria. Sampling sites upstream and downstream of effluent pipes must be chosen to reflect the relative impacts from dilution and mixing. Thus, development of an implementation strategy is data intensive. Additionally, determining the social, economic, environmental, and other impacts of an amendment to the SWQS would be an essential part of any rulemaking to adopt the EPA's recommended criteria for aluminum. The collection of facility-specific effluent data and waterbody-specific ambient data would be necessary to determine these impacts.

The Department recognizes the potentially harmful effects of aluminum on aquatic life and the importance of establishing numeric ambient aquatic life surface water quality criteria to address this pollutant. However, regulatory changes as extensive of those suggested by the petitioner would benefit from a more thorough rulemaking process that engages a cross-section of potentially affected stakeholders. Through such a process, the Department would obtain input on the issues raised by the petitioner from a range of stakeholders, including on the methods for best protecting public health and the environment from aluminum, and then provide further opportunity for public input as part of a formal rulemaking comment period.

Accordingly, the Department has determined that amending the SWQS to include aluminum criteria based on the EPA's 2018 recommendations at this time, as requested in the petition, is not warranted because: (1) the Department requires additional waterbody-specific data for aluminum, pH, total hardness and DOC across a range of conditions to determine the applicability of the EPA's recommendations for New Jersey's waters; (2) if the Department chooses to accept the EPA's recommendations, the Department requires additional ambient and effluent data from the permittees discharging to the surface waters to evaluate the various options for adopting the recommendations into the SWQS (with corresponding implementation strategies); and (3) the changes the petitioner suggests would benefit from stakeholder engagement attendant to a thorough rulemaking process.

If the Department adopts surface water quality criteria for aluminum, the rules cited by the petitioner that implement the SWQS rules will, by order of their operation, implement any such criteria. Pending adoption of any SWQS amendment, the Department would review and update any relevant program materials and guidance documents for consistency.

Stormwater Management

As discussed above, the Stormwater Management rules do not contain standards specific to any individual pollutant. Rather, the rules utilize the designations in the Surface Water Quality Standards at N.J.A.C. 7:9B to determine the allowable amount of disturbance in regulated areas based on the SWQS designation. Accordingly, it would not be appropriate to amend Stormwater Management rules to address an individual pollutant, such as aluminum. The Department therefore denies the petitioner's request to amend the Stormwater Management rules.

Forestry

The Department has determined to deny the petition as to the Forestry rules and BMPs. The petitioner requests revisions to the Forestry rules to require monitoring and compliance with the EPA's Final Criteria. The Forestry rules, N.J.A.C. 7:3, are of limited scope. As stated above, the Forestry rules establish the procedures for obtaining seedlings from the State Forest Nursery, govern the Department's maintenance of an approved forester list, set standards for forest stewardship plans and for plan compliance, and establish the Forest Stewardship Advisory Committee. Only N.J.A.C. 7:3-5, Forest Stewardship Program, is tangentially related to petitioner's request. The Forest Stewardship Program is an entirely voluntary program for an owner who is willing to manage a qualifying property in accordance with a Departmentapproved forest stewardship plan. N.J.A.C. 7:3-5.1(a). The Forest Stewardship Program rules do not include monitoring and compliance requirements for any substance. If monitoring and compliance requirements were to apply to a property that is subject to a forest stewardship plan (through application of State or Federal statute or regulation, local ordinance, or other applicable law), N.J.A.C. 7:3-5.1(1) is clear that the property owner is responsible for complying with those requirements. Therefore, it is not necessary to amend the Forestry rules to include monitoring and compliance criteria for any substance.

The petitioner also requests revisions to the forestry and wetlands BMPs, examples of which may be found in the BMP manual. The Office of Administrative Law's Rules for Agency Rulemaking at N.J.A.C. 1:30-4.1, Notice of petition for rulemaking, provide that an interested person may petition an agency to adopt a new rule or amend or repeal an existing rule. The BMP

manual is not codified in the Forestry or other rules; accordingly, a request to revise the manual is outside the scope of the rules governing petitions for rulemaking.

To the extent the petitioner requests that the Department amend the Highlands Water Protection and Planning Act Rules at N.J.A.C. 7:38 to address forestry activities, the petition is also denied. The Highlands Water Protection and Planning Act rules implement the Highlands Water Protection and Planning Act, which does not address forestry activities. Accordingly, the request is beyond the scope of those rules.

Conclusion

For the reasons stated above, the petition is hereby denied. A copy of this notice has been mailed to the petitioner, as required pursuant to N.J.A.C. 1:30-3.6.