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ENVIRONMENTAL PROTECTION

WATER RESOURCE MANAGEMENT

DIVISION OF WATER MONITORING AND STANDARDS

Adopted Amendment to the Atlantic County, Cape May County, Lower Delaware, Lower Raritan/Middlesex County, Mercer County, Monmouth County, Northeast, Ocean County, Sussex County, Tri-County, Upper Delaware and Upper Raritan Water Quality Management Plans to Establish 26 Total Maximum Daily Loads Addressing Mercury Impairments

Public Notice

Take notice that on 05/28/2020 , pursuant to Section 303(d) of the Federal Clean Water Act at 33 U.S.C. 1313(d), the New Jersey Water Quality Planning Act at N.J.S.A. 58:11A-7, and the Water Quality Management Planning rules at N.J.A.C. 7:15-5.4, the New Jersey Department of Environmental Protection (Department) adopted an amendment to the Atlantic County, Cape May County, Lower Delaware, Lower Raritan/Middlesex County, Mercer County, Monmouth County, Northeast, Ocean County, Sussex County, Tri-County, Upper Delaware and Upper Raritan Water Quality Management (WQM) Plans. The adopted amendment established 26 total maximum daily loads (TMDLs) that address mercury impairments in non-tidal, freshwater waterbodies where, the level of mercury in fish tissue exceeded the threshold used in fish consumption advisories, mercury is not present in the water column in excess of the numeric surface water quality criteria, and there are no known significant sources of mercury other than air deposition. The adopted TMDL document and support materials are available on the Department's website at https://www.state.nj.us/dep/wms/bears/tmdls-completed.html under "Documents". Preliminary notice of the proposed amendment was published in the New Jersey Register

on October 7, 2019 (51 N.J.R. 1542(a)) and on the Department's website at https://www.nj.gov/dep/wqmp/wmpnotices.html and https://www.state.nj.us/dep/wms/bears/tmdls-proposed-tmdls.html. The public comment period ended on November 6, 2019. No comments were received. On December 9, 2019, the Department submitted these TMDLs to the U.S. Environmental Protection Agency (USEPA) for approval in accordance with N.J.A.C. 7:15-5.4. USEPA approved the TMDLs on January 6, 2020.

Background

All states are required, pursuant to Section 305(b) of the Federal Clean Water Act (CWA), 33 U.S.C. 1315(b), to biennially prepare and submit to U.S. Environmental Protection Agency (USEPA), a report addressing the overall water quality of the State's waters, including support of designated uses (the Integrated List of Waters, or "Integrated List"). States are also required, under Section 303(d) of the Federal Clean Water Act, 33 U.S.C. 1313(d), to develop a list of waters that currently do not meet, or are not expected to meet, applicable water quality standards after the implementation of technology-based controls. This list is known as the 303(d) List of Water Quality Limited Waters or, more simply, the "303(d) List." The 303(d) List includes a priority ranking for scheduling TMDLs, as well as identifying TMDLs expected to be completed in the next two years. These two lists, along with strategies to maintain and improve water quality and other pertinent information, comprise the Integrated Water Quality Assessment Report (Integrated Report). The Integrated Report identifies where regulatory and other actions have been successful in restoring water quality, where water quality improvement is needed, where high quality waters are threatened and/or need protection, and where further study and/or research is needed to address unresolved water quality issues, such as nutrient impacts on aquatic life uses. These results provide a sound scientific foundation to inform and prioritize the State's water regulatory and management programs. USEPA compiles this water quality information from all states and tribes and, as required by the CWA, compiles it into a national assessment of water quality.

The Integrated List is divided into five sublists. Sublists 1 through 4 of the Integrated List include: waterbodies that are generally unimpaired and fully support one or more applicable designated uses (Sublists 1 and 2), waterbodies with insufficient information to assess applicable designated uses (Sublist 3), and waterbodies that are either impaired due to pollution rather than pollutants or have had a TMDL or other enforceable management measures approved by USEPA (Sublist 4). Sublist 5 constitutes the 303(d) List for waters impaired or threatened by one or more pollutants, for which a TMDL or alternative restoration measure is required.

Impaired waterbodies not supporting the fish consumption use due to mercury in fish tissue, (among other parameters) were previously identified on the *2008 303(d) List of Water Quality Limited Waters* (published November 16, 2009 at 41 N.J.R. 4321(a)), *2010 303(d) List of Water Quality Limited Waters* (published March 5, 2012 at 44 N.J.R. 598(b)), *2012 303(d) List of Water Quality Limited Waters* (published January 5, 2015 at 47 N.J.R. 231(b)) and *2014 303(d) List of Water Quality Limited Waters* (published October 16, 2017 at 49 N.J.R. 3444(a)) based on the data available when each 303(d) List was developed.

Mercury is a bioaccumulative neurotoxin. When it enters the environment and is consumed or taken up by aquatic organisms, the mercury persists in each organism and becomes magnified through the food chain. When mercury concentrations reach a certain level in fish tissues, fish consumption advisories are triggered. Fish consumption advisories (https://www.nj.gov/dep/dsr/fishadvisories/Fish_Advisories_2019.pdf) are jointly issued by the New Jersey Department of Environmental Protection and the New Jersey Department of Health. They provide advice to the general population and high-risk individuals (for example, women of childbearing age and children). Fish consumption advisories provide guidance on reducing risks such as the types and sizes of specific species of fish and the number of meals that may be eaten. They are not promulgated surface water quality standards under N.J.A.C. 7:9B but provide a scientifically sound basis for assessing whether

the fish consumption designated use is fully supported as part of Integrated List/303(d) List development. Where fish tissue mercury levels exceed the advisory thresholds in a waterbody, the waterbody is identified as impaired by mercury in fish tissue and the assessment unit containing that waterbody is placed on the 303(d) List triggering the development of a TMDL.

A TMDL represents the assimilative or carrying capacity of a waterbody, taking into consideration point and nonpoint sources of the pollutant of concern, natural background, and surface water withdrawals. A TMDL quantifies the amount of a pollutant a waterbody can assimilate without violating applicable water quality standards, allocates that loading capacity to known point sources in the form of Wasteload Allocations (WLAs) and to nonpoint sources in the form of Load Allocations (LAs), and includes a margin of safety and optional consideration of reserve capacity. All TMDLs must be calculated to achieve compliance with the applicable adopted surface water quality standard for the pollutant of concern. Accordingly, the targets to be achieved by the mercury TMDL are attainment of fish tissue levels that are considered safe for unlimited consumption by the general population and for one meal per week by the high-risk population. As explained in the Statewide Mercury TMDL (see https://www.state.nj.us/dep/wms/bears/tmdls.html) adopted in 2010 at 42 N.J.R 1630(a), achieving the required fish tissue levels will ensure achievement of the most conservative Surface Water Quality Standard numeric criterion summarized in Table 1 below. Criteria for saline waters are provided for informational purposes only; this TMDL does not cover any saline waters. The fish consumption advisory levels are summarized in Tables 2 and 3 below.

Table 1: New Jersey Surface Water Quality Criteria for Mercury

	Fresh Water (FW2) Criteria			**Saline Water (SE&SC) Criteria**		
	Aquatic		Human	Aquatic		Human Health
	Acute	Chronic	Health	Acute	Chronic	

Mercury Concentration (µg/l)	1.4 (d)(s)	0.77 (d)(s)	0.050 (h)(T)	1.8 (d)(s)	0.94 (d)(s)	0.051 (h)(T)

(d): criterion expressed as a function of the water effects ratio

(s): dissolved

(h): noncarcinogenic effect-based human health criteria

(T): total

Table 2: Advisories for High-Risk Individuals

(Women of Child Bearing Age, Nursing Mothers and Children)

Fish Tissue Mercury Concentration	Advisory
Greater than 0.54 µg/g (ppm)	Do not eat
Between 0.19 and 0.54 µg/g (ppm)	One meal per month
Between 0.08 and 0.18 µg/g (ppm)	One meal per week
0.07 µg/g (ppm	Unlimited consumption

Table 3: Advisories for the General Population

Fish Tissue Mercury Concentration	Advisory
Greater than 2.81 µg/g (ppm)	Do not eat
Between 0.94 and 2.81 µg/g (ppm)	One meal per month
Between 0.35 and 0.93 µg/g (ppm)	One meal per week.
0.34 µg/g (ppm)	Unlimited consumption

The overwhelming source of mercury contamination, both in New Jersey and globally, is from air deposition. Waters across the nation, even in otherwise pristine areas, are affected because air can transport mercury across the bounds of land and water. This makes mercury contamination from air deposition uniquely suited to a regional or statewide TMDL that models the relative contribution of mercury from various air sources and identifies the levels of reduction needed to make fish safe to eat. Because of the variability of the air pollution source, adequate control of sources of mercury contamination will depend on regional, national and international efforts.

In 2007, the New England Interstate Water Pollution Control Commission (NEIWPCC) established a regional TMDL for the states of Connecticut, Maine, Massachusetts, New Hampshire, New York, Rhode Island and Vermont, which addressed impairments due to mercury contamination in fish tissue where the main source of mercury contamination was air deposition. The NEIWPCC TMDL relies on modeling of the air sources on the premise that reduction in air sources is linearly related to levels found in fish and identifies the need for source controls outside the jurisdiction of the affected states to attain water quality objectives. The NEIWPCC regional TMDL was approved by USEPA on December 20, 2007. Since USEPA has approved establishment of regional TMDLs for mercury impairments with air deposition as the primary source using the NEIWPCC approach, the Department determined that it was appropriate for New Jersey to develop a similar TMDL for comparable impairments in New Jersey, not only to recommend a course of action to reduce mercury contamination in New Jersey, but also to emphasize that substantial source reductions from outside New Jersey will be needed to achieve water quality objectives.

New Jersey has issued statewide fish advisories for mercury in fish tissue based on the ubiquitous nature of the air deposition sources, even in the absence of fish tissue data. However, TMDLs are required only for those specific assessment units for which fish tissue data verifying an impairment are available, thereby resulting in inclusion of the mercury-impaired waterbody/assessment unit on New Jersey's 303(d) List. As stated in the Statewide Mercury TMDL adopted in 2010:

As additional fish tissue data is obtained, it is expected that other assessment units will be identified that conform to the parameters established for this TMDL approach and would appropriately be addressed by this TMDL, had the data been available. Therefore, in addition to the impaired waters listed in Table 1, this TMDL may, in appropriate circumstances, also apply to waterbodies that are identified in the future as being impaired for mercury. For such waterbodies, this TMDL may apply if, after listing the waters for mercury impairment and taking into account all relevant comments submitted on the Impaired Waters List, the Department determines, with EPA approval of the list, that this TMDL should apply to future mercury impaired waterbodies. Under these circumstances, the assessment units will be placed on Sublist 4.

Due to time constraints when the TMDL adopted in 2010 was being developed, some assessment units were excluded from that TMDL because further investigation was needed to determine if air deposition was the major source of mercury contamination. With subsequent further investigation and new fish tissue data becoming available, as reflected in the 2010, 2012 and 2014 Integrated Lists, the Department confirmed that the additional assessment units listed in Table 4 below are impaired by mercury in fish tissue mainly due to atmospheric deposition. Under the adopted amendment, these assessment units are now subject to the allocations specified in the 2010 Statewide Mercury TMDL.

Table 4. Assessment Units from the 2008, 2010, 2012, and 2014 Integrated List Subject to Allocations Specified in the Statewide Mercury TMDL Adopted in 2010

	Watershed Management Area (WMA)	Assessment Unit ID	Waterbody Name	2008 Integrated List	2010 Integrated List	2012 Integrated List	2014 Integrated List

1	03	02030103100060	Crystal Lake/Pond Brook *	Sublist 5	Sublist 5	Sublist 4	Sublist 4
2	11	02040105230020	Assunpink Ck (New Sharon Br to/incl Lake) *	Sublist 5	Sublist 5	Sublist 4	Sublist 4
3	11	02040105230030	New Sharon Branch (Assunpink Creek) *	Sublist 5	Sublist 5	Sublist 4	Sublist 4
4	11	02040105230040	Assunpink Ck (Trenton Rd to New Sharon Br) *	Sublist 5	Sublist 5	Sublist 4	Sublist 4
5	12	02030104090040	Shark River (above Remsen Mill gage) *	Sublist 5	Sublist 5	Sublist 4	Sublist 4
6	13	02040301080060	Toms R Lwr (Rt 166 to Oak Ridge Pkwy) *	Sublist 5	Sublist 5	Sublist 4	Sublist 4

7	15	020403020500 80	Stephen Creek (GEHR) *	Sublist 3	Sublist 5	Sublist 4	Sublist 4
8	17	020402061800 30	Menantico Creek (above Rt 552) *	Sublist 3	Sublist 5	Sublist 4	Sublist 4
9	18	020402021600 20	Oldmans Creek (Rt 45 to Commissione rs Rd) *	Sublist 5	Sublist 5	Sublist 3	Sublist 3
10	20	020402010500 60	Ellisdale trib (Crosswicks Creek) *	Sublist 5	Sublist 5	Sublist 4	Sublist 4
11	20	020402010500 30	Crosswicks Ck (Lahaway Ck to New Egypt) *	Sublist 5	Sublist 5	Sublist 4	Sublist 4
12	20	020402010500 50	Crosswicks Ck (Ellisdale trib to Walnford) *	Sublist 5	Sublist 5	Sublist 4	Sublist 4

13	20	02040201050040	Crosswicks Ck (Walnford to Lahaway Ck) *	Sublist 5	Sublist 5	Sublist 4	Sublist 4
14	20	02040201040070	Crosswicks Ck (New Egypt to/incl North Run) *	Sublist 5	Sublist 5	Sublist 4	Sublist 4
15	01	02040104240010	Van Campens Brook	Sublist 3	Sublist 3	Sublist 5	Sublist 5
16	01	02040105050010	Paulins Kill (Blairstown to Stillwater)	Sublist 3	Sublist 3	Sublist 5	Sublist 5
17	01	02040105050050	Paulins Kill (below Blairstown gage)	Sublist 3	Sublist 3	Sublist 5	Sublist 5
18	01	02040105070020	New Wawayanda Lake/Andover Pond trib	Sublist 3	Sublist 3	Sublist 3	Sublist 5
19	01	02040105070050	Trout Brook / Lake Tranquility	Sublist 3	Sublist 3	Sublist 3	Sublist 5

20	01	020401050900 50	Furnace Brook	Sublist 3	Sublist 3	Sublist 5	Sublist 5
21	01	020401051500 30	Musconetcon g R (Wills Bk to Lk Hopatcong)	Sublist 3	Sublist 3	Sublist 5	Sublist 5
22	10	020301051000 50	Rocky Brook (below Monmouth Co line)	Sublist 3	Sublist 3	Sublist 5	Sublist 5
23	11	020401052300 50	Assunpink Ck (Shipetaukin to Trenton Rd)	Sublist 5	Sublist 5	Sublist 5	Sublist 5
24	11	020401052400 20	Shabakunk Creek WB	Sublist 3	Sublist 3	Sublist 3	Sublist 5
25	17	020402060300 60	Salem R (39-40-14 dam-Courses Lndg)/Canal	Sublist 3	Sublist 3	Sublist 3	Sublist 5
26	17	020402061600 40	Mill Creek (lower)	N/A	Sublist 5	Sublist 5	Sublist 5

*Assessment Units submitted to USEPA on August 5, 2011 and approved on September 14, 2011 to be subject to the 2010 TMDL but not proposed as an amendment to the areawide WMQ plans at that time.

As explained earlier, air deposition is the primary source of mercury contamination for the waterbodies shown in Table 4. Accordingly, reductions of mercury levels from this source will result in reductions in levels found in fish tissue in accordance with a simple linear relationship. A portion of mercury from air deposition is from natural sources and cannot be reduced. Therefore, mercury from human sources must be the focus for achieving the reductions needed to achieve the targeted fish tissue concentrations. New Jersey is actively engaged in an initiative to aggressively reduce human sources of mercury, including air deposition, mercury containing products, and discharges to wastewater treatment facilities. Information on this initiative is set forth in the implementation plan for the adopted 2010 TMDL.

While air deposition is the primary source of mercury contamination on a statewide basis, municipal and industrial discharges to surface water are point sources that must be addressed specifically in a TMDL and assigned a wasteload allocation. It is estimated that wastewater discharges to surface water account for approximately one percent of the overall load contributed to waterbodies and are considered *de minimus* sources when compared to air deposition. Dental facilities are believed to be the largest source of mercury reaching wastewater treatment plants. Through the New Jersey Pollutant Discharge Elimination System, Requirements for Indirect Users – Dental Facilities rules, N.J.A.C. 7:14A-21.12 (see http://www.nj.gov/dep/dwq/dap.htm) adopted on October 1, 2007, dental facilities that generate amalgam waste are required to comply with best management practices and install amalgam separators. The amalgam separators allow the mercury containing amalgam to be collected and recycled, thereby reducing the amount entering the environment primarily through sludge incineration. The Department required major wastewater treatment facilities to carry out baseline monitoring of their effluent to determine mercury levels prior to implementation of the dental rules. A second round of monitoring was performed in 2011 after rule implementation to determine the impact on the mercury levels in the

discharges. There was a reported decrease of about 36 percent in wastewater mercury effluent concentrations, and a 31 percent decrease in sewage sludge mercury concentration. By calendar year 2016, the mercury concentration in sewage sludge had decreased by 48 percent since the inception of the dental BMPs (https://www.nj.gov/dep/dwq/dap.htm). The Department has been working to better control mercury emissions. A *Mercury Emission Trend Report* published in 2017 summarized the measurable reductions in mercury emissions and the declined mean wet deposition mercury concentration observed under National Mercury Deposition Network (https://www.nj.gov/dep/dsr/trends/mercury.pdf). The Department's *Air Deposition Reduction Strategy* is expected to be updated with new information and technology when it is available.

05/28/2020

Date

SIGNED

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Division of Water Monitoring and Standards