

DOW 1.3.10 Mercury - SPDES Permitting & Multiple Discharge Variance

New York State Department of Environmental Conservation

DEC Program Policy

Issuing Authority: Mark Klotz, Division Director
Signature: 

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*** NOTICE ***

This document has been developed to provide Department staff with guidance on how to ensure compliance with the statutory and regulatory requirements, including case law interpretations, and to provide consistent treatment of similar situations. This document may also be used by the public to gain technical guidance and insight regarding how Department staff may analyze an issue and factors in their consideration of particular facts and circumstances. This guidance document is not a fixed rule under the State Administrative Procedures Act subsection 102(2)(a)(I). Furthermore, nothing set forth herein prevents staff from varying from this guidance as the specific facts and circumstances may dictate, provided staff's actions comply with applicable statutory and regulatory requirements. This document does not create any enforceable rights for the benefit of any party.

I. SUMMARY

This document provides technical guidance to New York State Department of Environmental Conservation ("NYSDEC," "DEC," or "the Department") staff for use when developing State Pollutant Discharge Elimination System ("SPDES") permits that regulate wastewater and stormwater discharges containing mercury and for use when performing mercury monitoring of water or wastewater.

This guidance includes a multiple discharge variance ("MDV") for mercury developed in accordance with 6 NYCRR 702.17(h). The first MDV was issued October 2010. This 2015 MDV is being issued because human caused conditions or sources of mercury prevent attainment of the water quality standard and cannot be remedied, i.e., mercury is ubiquitous in New York waters at levels above the water quality standard and compliance with a Water Quality Based Effluent Limit ("WQBEL") for mercury cannot be achieved with demonstrated treatment technologies.

This guidance on SPDES permitting and monitoring supports New York State's effort to reduce mercury pollution.

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III. ACRONYMS LIST SUMMARY

AWQC – Ambient Water Quality Criteria

BWP – NYSDEC, DOW, Bureau of Water Permits

CAIR – Clean Air Interstate Rule

CFR – Code of Federal Regulations

CSO – Combined Sewer Overflow

DEP – NYSDEC, Division of Environmental Permits

DOW – NYSDEC, Division of Water

EBPS – Environmental Benefit Permit Strategy

ELAP – NYSDOH Environmental Laboratory Approval Program

GLCA – General Level Currently Achievable

IDV – Individual Discharge Variance

ILCA – Individual Level Currently Achievable

MDL – Method Detection Limit

MDN – Mercury Deposition Network

MDV – Multiple Discharge Variance

MGD – Million Gallons per Day

ML – Minimum Level

MMP – Mercury Minimization Program

MOA – Memorandum of Agreement between NYSDEC and USEPA Region 2

MS4 – Municipal Separate Storm Sewer System

MSGP – Multi-Sector General Permit

ng/L – Nanograms per Liter

NYCRR – New York State Codes, Rules and Regulations
NYSDEC – New York State Department of Environmental Conservation
NYSDOH – New York State Department of Health
PCI – Private/Commercial/Institutional Facility
PEQ – Projected Effluent Quality
PMP – Pollutant Minimization Program
POTW – Publicly Owned Treatment Works
PQL – Practical Quantitation Limit
RIBS – Rotating Integrated Basin Studies
RGGI – Regional Greenhouse Gas Initiative
SPDES – State Pollutant Discharge Elimination System
SSO – Sanitary Sewer Overflow
TBEL – Technology Based Effluent Limit
TMDL – Total Maximum Daily Load
TOGS – Technical & Operation Guidance Series
USEPA – United States Environmental Protection Agency
WQBEL – Water Quality Based Effluent Limit

IV. INTRODUCTION

The Mercury-SPDES Permitting, Multiple Discharge Variance, and Water Quality Monitoring Policy (“Policy”) was issued in October 2010 by NYSDEC to provide technical guidance for SPDES permits for facilities that discharge mercury at levels greater than the WQBEL (Table 1). In the previous Policy, an MDV was developed to address surface water discharge of mercury in a reasonable, feasible manner, while protecting human health (fish consumption), and considering existing elevated levels of mercury in precipitation and in most water bodies in New York. With the MDV in place, SPDES permits were modified to include a limit referred to as the General Level Currently Achievable (“GLCA”). This document addresses the current state of mercury in New York as of April 2015 and provides justification for the continuation of a MDV for 2015-2020.

V. CURRENT WATER QUALITY

Water quality standards for mercury can be found in 6 NYCRR Part 703.5 and TOGS 1.1.1 (Table 1). The most stringent standard of 0.70 ng/l (dissolved) protects human consumers of fish. This standard is exceeded on average in almost every water body in New York. The surface water quality standards for the protection of wildlife, 1.3 ng/l and 2.6 ng/l, are also exceeded on average in almost every water body in New York. The following sections describe current concentrations of mercury in New York surface waters, precipitation, and wastewater dischargers.

AMBIENT SURFACE WATER BODIES

Through the NYSDEC Rotating Integrated Basin Studies (“RIBS”), two to four of the State’s 17 major drainage basins are sampled each year, resulting in data available statewide over a 5-year cycle. Mercury is one of the parameters sampled through this program. Data collected from 2012-2014 show statewide average and median concentrations of 2.0 ng/l and 1.2 ng/l, respectively. Maximum concentrations range from 0.69 ng/l in St. Lawrence County to 95 ng/l in Herkimer County. When samples were grouped by NYS Major Drainage Basins, the St. Lawrence River Basin had the lowest average mercury concentration at 0.2 ng/l and the Mohawk River Basin had the highest at 5.4 ng/l (Table 4).

PRECIPITATION

Studies suggest that much of the mercury present in ambient waters are a result of atmospheric deposition stemming from industrial activities.¹ The National Atmospheric Deposition Program sponsors the Mercury Deposition Network (“MDN”) to record total mercury concentration and deposition through precipitation in the United States and Canada. From this network, NYSDEC identified four sample locations in New York that collected deposition data from 2013-2014². The average mercury concentration from this sample set was 8.4 ng/l (Table 5).

¹ Volume III: Fate and Transport of Mercury in the Environment. 1997. USEPA, Office of Air Quality Planning & Standards and Office of Research and Development. Website- <http://www.epa.gov/ttn/oarpg/t3/reports/volume3.pdf>

² Precipitation data from the national Atmospheric Deposition Program’s Mercury Deposition Network. 2015. NADP Program Office, Illinois State Water Survey, 2204 Griffith Dr., Champaign, IL 61820. Website- nadp.sws.uiuc.edu. New York State value from averaged from the average values for monitoring sites NY20, NY43, NY68, and NY03.

Each monitoring station recorded 60-70 samples from 2013 to 2014. Assuming a lognormal distribution of this sample set, the 95th percentile ranges from 14 ng/l in Essex County to 25 ng/l in the Bronx, while the 99th percentile similarly varies from 20-40 ng/l (Table 6).

WASTEWATER DISCHARGES

With the MDV in place, most facilities required to complete a full SPDES permit application (NY-2A, NY-2C) must sample for mercury. Depending on a facility's priority class, it may have been subject to a mercury limit and mercury minimization plan ("MMP"). Discharge Monitoring Reports ("DMRs") submitted by 124 industrial, municipal, and public/commercial/institutional ("PCI") facilities were used to evaluate current wastewater conditions. Several different statistical analyses were used to evaluate each facility individually including: mean, median, min, and max. It was determined, however, that the best approach for identifying current conditions was to analyze industrial, municipal, and PCI facilities together within their discharge class (e.g. industrial, municipal, PCI).

Municipal and industrial data, examined separately, yielded similar results. For both sets of data, approximately 90 percent of facilities were at or under the GLCA limit of 50 ng/l (Table 7). Ninety-five percent of facilities were at or under 100 ng/l (Figure 1). Some facilities reported very high concentrations of mercury and were considered outliers. Removing these data points and applying percentiles did little to change the outcomes. For municipal data, 90 percent of facilities were still at or under 50 ng/l, while for industrial facilities the 90 percent threshold decreased slightly from 53 ng/l to 50 ng/l.

As no PCI permitted facilities had collected data using sufficiently sensitive analytical methods, the percentile was not determined.

Table 7 in Appendix A contains the average, max, and number of samples for all facilities included in the analysis.

WASTEWATER TREATMENT

Under contract with the United States Environmental Protection Agency ("EPA"), Science Applications International Corporation studied the mercury wastewater treatment issue and published a report in 2005.³ That report indicated it was possible to reduce mercury to about 12 ng/L using selective sorbents. However, no treatment technology was demonstrated to consistently achieve levels of 12 ng/L or less. Another EPA study published in 2007 also demonstrated continuing difficulties in achieving low-level mercury concentrations⁴.

However, in 2013, Argonne National Laboratory released a British Petroleum (BP) funded study at an industrial facility in Indiana that focused on the achievability of meeting a 1.3 ng/l effluent

³ *Technological Feasibility Of Proposed Water Quality Criteria For New Jersey, March 2005*, prepared for USEPA Region 2 by Science Applications International Corporation.

⁴ *Treatment Technologies for Mercury in Soil, Waste, and Water. 2007.* USEPA, Office of Superfund Remediation and Technology Innovation. Washington, DC 20460. Website- <http://www.epa.gov/tio/download/remed/542r07003.pdf>

limit. The study revealed that this threshold is physically and chemically achievable by current technology for small-scale systems⁵. A large-scale demonstration of the practical application of such technology has not been conducted, so the feasibility and potential costs of pursuing widespread implementation have yet to be established.

Data collected in New York State appear to confirm the Science Applications International Corporation study. Two ion exchange systems in New York reported average influent/effluent levels of 91000/11 ng/L and 190/8.2 ng/L, respectively. Ion exchange appears to be the most effective full-scale treatment system type which has been demonstrated in the state. Mercury precipitation theoretically can achieve very low levels due to the insolubility of mercurous sulfide but there are no known systems in the state to review. Granular Activated Carbon (GAC) and Sulfur-impregnated Granular Activated Carbon (SGAC) systems have been successfully used to reduce mercury. One GAC system reported average influent/effluent levels of 100/2.2 ng/L. However, limited data suggests that these GAC/SGAC systems may not be able to achieve the GLCA when treating very high levels of both dissolved solids and mercury.

While review of the above information suggests that the GLCA is achievable, none of these systems have demonstrated compliance with the 0.70 ng/L WQBEL. Therefore, NYSDEC concludes that achieving the 0.70 ng/L WQBEL is not possible at this time.

Wastewater treatment system upgrades may be necessary at a few industrial facilities which are unable to achieve the GLCA using other methods. No POTW should require a treatment system upgrade to achieve the GLCA listed in *Table 3*. When necessary, more stringent control of industrial users and hauled wastes is expected to sufficiently reduce POTW effluent concentrations in all cases to achieve the GLCA listed in *Table 3*.

As implementation of the MDV is continued, an effort should be made to gather data on the effectiveness of actual full-scale treatment systems. This will allow for a better understanding of the capabilities of different mercury treatment technologies.

MERCURY TMDL

The EPA-approved Northeast Total Maximum Daily Load (“TMDL”) outlines the strategy for achieving the water quality standard in the northeast United States. The TMDL is a regional plan to reduce mercury entering into the State surface waters of Connecticut, Maine, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont. No additions or alterations have been made since the 2007 publication of the TMDL.

Based on calculations in the TMDL, 98% of the mercury load to surface waters is the result of atmospheric deposition with the remaining 2% due to wastewater discharges. Logically, the TMDL focuses primarily on reductions in anthropogenic mercury emissions as a means of reducing atmospheric deposition of mercury and thereby improving water quality. According to

⁵Achieving the Great Lakes Initiative Mercury Limits in Oil Refinery Effluent. 2013. Water Environment Research Vol 85, Issue 1, p. 77-86.

the TMDL, a 98% reduction in atmospheric deposition of mercury is needed in order to meet water quality goals.

The TMDL does not assign individual loadings to wastewater and stormwater discharges. Rather, such load reductions are expected to be achieved via Mercury Minimization Programs (“MMPs”) and the continuation of regional mercury reduction efforts. This approach has been endorsed by EPA in its guidance and is also evident in EPA’s approval of the TMDL⁶.

In New York State these TMDL-related mercury reduction efforts include, but are not limited to, establishing mercury limits in SPDES permits consistent with the *NYSDEC Mercury Work Group Recommendations to Meet the Mercury Challenge*⁷, which is incorporated into the TMDL by reference.

FISH ADVISORIES

Mercury is a bioaccumulative pollutant, which means it can concentrate and build up in the food chain over time. Fish are especially prone to mercury accumulation, putting humans who consume them at risk. The New York Department of Health (“NYDOH”) regularly issue fish advisories for New York waterbodies to warn consumers of potential hazards. Advisories for specific water basins or fish species can be accessed from the NYDOH webpage⁸. As of March 2015, there is a statewide advisory to limit fish consumption due to mercury contamination, as well as more restrictive advice for many specific waterbodies.

VI. PERMITTING PROCEDURE: SURFACE WATER DISCHARGES

PART A: MULTIPLE DISCHARGE VARIANCE

SUMMARY

Surface water quality standards for mercury are exceeded in ambient water bodies, rainfall, and wastewater effluent. Current treatment technologies are unable to achieve the level of removal necessary to meet surface water quality standards. As water quality standards for mercury are exceeded in New York, and treatment technologies are unable to meet surface water quality standards, it follows that to enforce the water quality standards in wastewater effluent is impracticable. It is necessary, however, to continue to work towards improving the quality of New York waters. A variance is needed that will allow facilities to continue to reduce their mercury contributions in a more feasible manner.

The previous MDV, allowed NYSDEC to identify and implement mercury monitoring and MMPs for a number of facilities. The revised MDV will expand upon these efforts.

⁶ Northeast Regional Mercury Total Maximum Daily Load. 2007. USEPA. Website-
<http://www.neiwpc.org/mercury/MercuryTMDL.asp>

⁷ NYSDEC Mercury Work Group Recommendations to Meet the Mercury Challenge. 2006. NYSDEC. Website-
http://www.dec.ny.gov/docs/permits_ej_operations_pdf/meetmercurychallenge.pdf

⁸ Fish: Health Advice on Eating Fish You Catch. New York Department of Health. Website-
http://www.health.ny.gov/environmental/outdoors/fish/health_advisories/

MULTIPLE DISCHARGE VARIANCE

Mercury MDV permitting strategy summary:

- ▶ Authorization;
- ▶ Anti-Degradation;
- ▶ SPDES Permit Limits & Anti-Backsliding;
- ▶ Discharge Prioritization;
- ▶ MMPs;
- ▶ Application Review;
- ▶ MDV Term.

Note - Proper MDV authorization requires that a permit be developed in accordance with the following sections. Permittees are considered to be authorized via the MDV only when their SPDES permit conforms exactly to the MDV guidance. Any deviation from this MDV guidance results in the need for authorization by an IDV, as described in below in PART B or by a limit of 0.70 ng/L.

1. AUTHORIZATION

6 NYCRR 702.17(h) authorizes the use of multiple discharge variances, stating that: *“Where the department determines that a multiple discharge variance is necessary to address widespread standard or guidance value attainment issues including the presence of a ubiquitous pollutant or naturally high levels of a pollutant in a watershed, the department, in lieu of the discharger, may conduct the variance demonstration requirements in subdivisions (b) and (c) of this section. Any permittee accepting such variance shall be subject to the provisions of subdivision (e) of this section.”*

6 NYCRR 702.17(b) specifies the factors on which a variance may be granted upon a demonstration that achieving the WQBEL is not feasible. The justification for granting a statewide MDV for mercury is based on the rationale found under 6 NYCRR 702.17(b)(3) whereby, *“human caused conditions or sources of pollution prevent attainment of the standard ... and cannot be remedied ...”*.

The preceding section, entitled “Current Water Quality,” outlines water quality standards and current conditions in New York State. It demonstrates that the most stringent standards are exceeded in much of the state and shows that no dischargers can consistently meet WQBELs based on these standards. There are also no demonstrated wastewater treatment technologies at present that can achieve these WQBELs on a large-scale, so the mercury problem cannot otherwise be corrected in the foreseeable future. Additionally, the authorized TMDL documents that the mercury problem is human caused, stemming largely from atmospheric deposition.

Additional details on the causes and magnitude of this problem, and the lack of short-term solutions can be found in the following documents: United Nations Environment Programme *Global*

*Mercury Assessment, December 2002*⁹; *EPA's Roadmap for Mercury, July 2006*¹⁰; *NYSDEC Mercury Work Group Recommendations to Meet the Mercury Challenge, December 2006*¹¹; and *Northeast Regional Mercury Total Maximum Daily Load, October 24, 2007 (TMDL)*¹².

Based on the above, NYSDEC concludes that human caused conditions or sources of mercury prevent attainment of WQBELs to protect human health (fish consumption) and wildlife. Note that while this MDV does not provide for a variance from WQBELs based on protection of human health (water supply) and aquatic life (acute & chronic), such WQBELs are of little practical consequence because the MDV effluent limits in Part 3 below are more stringent than what would be necessary for those protections.

Although there is an increased risk to human health and the environment associated with granting the variance compared with compliance with the mercury WQBELs absent the variance, as described above there is no realistic alternative to the MDV. During the period where the MDV is applicable, the increased risks to human health are mitigated by fish consumption advisories issued periodically by both the NYSDOH and the United States Food and Drug Administration. Therefore, NYSDEC has determined that the MDV is consistent with the protection of the public health, safety, and welfare.

The MDV will result in reasonable progress toward achieving the WQBEL by including meaningful, yet achievable, requirements in SPDES permits. All surface water SPDES permittees are eligible for authorization by the MDV. While long-term solutions are being explored and implemented there will be a continuing need for this MDV. Specific elements of New York's MDV are explained in the sections below.

2. ANTI-DEGRADATION

NYSDEC's existing anti-degradation policy is contained in *Organization and Delegation Memorandum No. 85-40, TOGS 1.3.9, and TOGS 1.2.1*. Department review when issuing permits should conform to the policy. Additional guidance is available from USEPA¹³.

3. SPDES PERMIT LIMITS & ANTI-BACKSLIDING

Available low-level monitoring data were evaluated to determine a GLCA applicable to all discharges authorized by the MDV. It was determined that 90 percent of currently permitted dischargers can meet a GLCA of 50 ng/l, expressed as a daily maximum. Many facilities, however, discharge below the GLCA. For this reason, the following approach is reasonable.

- ▶ For high priority facilities that have been monitoring mercury and have enough data to

⁹ Website- www.chem.unep.ch/mercury/Report/GMA-report-TOC.htm

¹⁰ Website- www.epa.gov/mercury/pdfs/FINAL-Mercury-Roadmap-6-29.pdf

¹¹ Website- http://www.dec.ny.gov/docs/permits_ej_operations_pdf/meetmercurychallenge.pdf

¹² Website- www.dec.ny.gov/docs/water_pdf/tmdlnehg.pdf

¹³ Guidance for Implementing the January 2001 Methylmercury Water Quality Criterion (sections 7.2.3, 7.5.1.2.2). EPA-823-R-10-001, April 2010. Website- www.epa.gov/waterscience/criteria/methylmercury/mercury2010.pdf.

calculate the projected effluent quality (“PEQ”) (10 or more data points), the following protocol for establishing statistically-based permit limits should be used¹⁴:

- The permit limit shall be expressed as a 12-month rolling average (12 MRA) using the 95th percentile and sampled per recommendations in *Table 2*.
 - If PEQ recommends a limit > 50 ng/l, and the permit already contains a limit ≤ 50 ng/l, then the existing limit should be retained.
 - If PEQ recommends a limit > 50 ng/l, and mercury was not previously limited, then an Individual Level Currently Achievable (“ILCA”) should be developed as an initial limit. The final limit should be the GLCA.
 - If PEQ recommends a limit less than ambient conditions, the limit should be set at the lower of the GLCA or ambient conditions.
 - Any facility incapable of meeting the GLCA should be assigned an ILCA as an initial limit using the same PEQ approach as referred to above.
 - In keeping with NYSDEC’s Anti-Degradation Policy (TOGS 1.3.9) and Anti-Backsliding consistent with CWA §402(o), the revised permit limit should be no greater than the facility’s existing limit.
- ▶ For high priority facilities consistently (10 or more consecutive data points) discharging at or below 20 ng/l, sampling requirements may be reduced, or if outside of the Great Lakes Basin, suspended.¹⁵
- ▶ For high priority facilities that do not have enough data to perform a PEQ analysis, the following protocol for establishing permit limits should be used:
- For new facilities or facilities that have not been monitoring mercury, the GLCA will be the permit limit.
 - If a facility is determined to be incapable of meeting the GLCA, it will be assigned an initial limit¹⁶ of 200 ng/l or an ILCA following PEQ procedure. Limits will be expressed as a daily maximum and sampled per recommendations in *Table 3*.
- ▶ New and recommencing dischargers are not eligible for a variance within the Great Lakes Basin unless the requirements of 6 NYCRR Part 702.17(a)(2) are met. For such permittees

¹⁴ Technical Support Document for Water Quality-based Toxics Control (Appendix E.). 1991. USEPA, Office of Water. Washington, DEC 20460. Website- http://water.epa.gov/scitech/datait/models/upload/2002_10_25_npdes_pubs_owm0264.pdf

¹⁵ The GLCA limit of 50 ng/l does not take into account the average (95th percentile) mercury deposition concentration of 20 ng/l. If the facility is discharging below 20 ng/l, then it is below the expected contribution of natural deposition.

¹⁶ Initial limit of 200 ng/l is the detection limit for the old analytical procedure, EPA Method 245.1.

which would otherwise qualify as high priority facilities as per the MDV, permits should be issued to contain a monthly average limit of 0.70 ng/L and routine monitoring using EPA Method 1631.

- ▶ For high priority facilities, implementation of the MDV/permitting strategy will generally result in more stringent requirements as compared to the previous permit. However, there may be some facilities where conformance to the MDV/permitting strategy could result in less stringent requirements and the appearance of backsliding. On a case-by-case basis, the NYSDEC will review existing requirements and in some cases allow such less stringent requirements where justified in accordance with 40 CFR122.44(l)(2)(i)(B)(1), 122.44(l)(2)(i)(C), 750-1.10(c)(2) & (3), and the recommendations of this guidance.

PEQ, GLCA and ILCA limits may be established for industrial and PCI facilities at internal locations as recommended in *TOGS 1.2.1*. For the purposes of this assessment, such limits are considered TBELs. This includes cases where an internal outfall exceeds the GLCA, but the final outfall does not due to dilution with less contaminated wastewaters.

4. DISCHARGE PRIORITIZATION

As of March 2015, the approximate number of SPDES permits in effect for discharges to New York State surface waters was 1,900 individual permits. Each of these permittees is assumed to discharge mercury at levels exceeding the WQBEL. Currently, 152 facility permits require mercury monitoring or contain an effluent limit. Considering the large number of facilities, it is appropriate to focus resources on the ones which are likely to yield the greatest environmental benefit, i.e., the facilities which are significant sources, including those that use mercury in their processes, accept mercury containing wastewater, discharge stormwater runoff which is a vector for site-related mercury contamination, or otherwise generate significant concentrations of mercury unrelated to atmospheric deposition or water intake.

High priority is assigned to Publicly Owned Treatment Works (“POTWs”) with a design flow of 1 MGD and greater, due to their higher flow rate and potential for these discharges to be influenced by industrial users and hauled wastes. The 1 MGD value is equivalent to the flow threshold employed by USEPA when determining an EPA major discharger designation. A high priority is also being assigned to other wastewater and stormwater discharges (industrial, PCI, and, POTWs less than 1 MGD) if they are significant mercury sources, as defined by any one of the following criteria:

- ▶ One or more effluent measurements which exceed the GLCA;
- ▶ Internal or tributary waste stream measurements exceed the GLCA and the final effluent measurements are less than the GLCA due primarily to dilution by uncontaminated or less contaminated waste streams;
- ▶ A permit application or other information indicates that mercury is handled on site and could be discharged through outfalls;
- ▶ Outfalls which contain mercury due to past waste disposal practices; or,

- ▶ Sizable POTW collection systems which are permitted under SPDES and transmit wastewaters to large regional treatment plants that are separately permitted.

These discharge priority categories are reflected in *Table 3*.

5. MERCURY MINIMIZATION PROGRAMS (MMPs)

Requirements for a MMP will be included in permits consistent with the recommendations summarized in *Table 3*. The goal of each MMP shall be to reduce mercury effluent levels in pursuit of the WQBEL. MMP requirements will include an on-going program consisting of: periodic monitoring designed to quantify and, over time, track the reduction of mercury; an acceptable control strategy for reducing mercury discharges via cost-effective measures, which may include more stringent control of tributary waste streams, remediation, and/or installation of new or improved treatment facilities; and, submission of annual status reports. In cases where a permit includes an ILCA then the permit writer should modify the MMP boilerplate permit requirement to specify submission of semi-annual instead of annual status reports.

MMP permit requirements for high priority facilities will be developed consistent with these recommendations which satisfy the requirements of 40 CFR Part 132. Example MMP permit requirements are included in *Appendix B*.

6. PERMIT APPLICATION REVIEW

When sampling for mercury is necessary or appropriate as part of a permit application, Environmental Benefic Permit Strategy (“EBPS”) *Request For Information*, or in response to other NYSDEC request, the analytical methods and sampling techniques used should be consistent with *Table 2* recommendations. Otherwise, the information provided should be considered incomplete and the permittee (applicant) required to repeat the sampling using correct methods. At these times it is often appropriate for staff to require sampling of water supply intake, wastewater influent, and wastewater effluent to ensure complete characterization.

If permit application data for effluent mercury consists of a single sample result which is greater than 80% of the GLCA value, i.e., > 40 ng/L, and there is no other low level effluent mercury data available then the applicant should be required to further characterize the discharge by collecting a minimum of three additional rounds of samples. This additional information should be generated prior to the application being considered complete.

7. MDV TERM

This variance is in effect for five years from the effective date specified on page 1 of this document. High priority permits may not be renewed or modified after the expiration date of the MDV, which is the effective date + 5 years, unless they incorporate requirements of either a new MDV or an IDV, or include a limit of 0.70 ng/L. It is likely that the water quality standard will not be achieved for many years and that it will be necessary to pursue one or more subsequent MDVs in the future.

PART B: INDIVIDUAL DISCHARGE VARIANCES

It is expected to be more economical for all involved if dischargers obtain necessary permit authorization under the MDV. In most cases, IDVs should only be necessary upon a permittee's refusal to be authorized by the MDV. Such permittees have two regulatory options to obtain necessary permit authorization, i.e., accept an effluent limit of 0.70 ng/L (typically not a realistic option as described earlier in this document), or apply for and receive approval of a site-specific IDV in accordance with 6 NYCRR Part 702.17.

1. APPLICATION FOR AN IDV

Consistent with both 6 NYCRR Part 621.3(a)(5) and Part 750-1.7(f), an applicant/permittee wishing to vary from the MDV, or one directed to do so by NYSDEC, must submit an IDV request at application time if either a permit renewal or a permittee initiated modification are involved. The IDV request is part of the overall evaluation by the Department as to completeness of the permit application. If the IDV request is absent from an application then NYSDEC staff should incorporate MDV requirements into the permit, if appropriate. Likewise, for Department-initiated modifications, NYSDEC will incorporate MDV requirements into the permit, if appropriate.

If the permittee requests any deviation from the MDV during the public notice period then this must be accompanied by an IDV application. Many permittees are likely to be unaware of this requirement. Such permittees should be advised of the need for an IDV application and directed by NYSDEC staff to submit one within 60 days of such notification.

IDV application requirements are summarized in Appendix D.

2. IDV REVIEW AND APPROVAL PROCEDURES

Received IDVs should first be reviewed for completeness by the permit writer. Consistent with 6 NYCRR Part 750-1.2(a)(8), IDV requests which are not complete should be revised and resubmitted to the NYSDEC within 60 days of notification. Requests which remain incomplete or are otherwise not approvable should be denied by the NYSDEC in accordance with 6 NYCRR Part 702.17(f).

Assuming that an IDV demonstration can be made to the satisfaction of NYSDEC, such IDV requests for Great Lakes Basin dischargers must be sent to USEPA Region 2 for their review. The procedure is spelled out in the 1998 MOA in section III, paragraphs (2) - (8) and the 2000 MOA in section XII¹⁷.

If a permittee's IDV application is not accepted by either NYSDEC or USEPA then either authorization via the MDV, a limit of 0.70 ng/L, or denial of the permit must be pursued.

¹⁷ Amendment To The National Pollutant Discharge Elimination System Memorandum Of Agreement Between The New York State Department Of Environmental Conservation And The United States Environmental Protection Agency, Region 2 Relating To Implementation Of The Requirements Of The Great Lakes Water Quality Guidance In The Great Lakes Basin. 27 September 2000.

3. IDV-BASED PERMIT REQUIREMENTS

Permit requirements based on an approved IDV must conform to both 6 NYCRR Part 702.17(e) and the TMDL and these should be identical to the MDV requirements except where differences have been justified by the permittee. It is possible for an IDV to result in more or less stringent requirements as compared to the MDV. For such permits the following requirement must also be added to the bottom of the MMP permit page:

Individual Discharge Variance (IDV) requirements - The mercury-related requirements in this permit are based on a site-specific IDV issued in accordance with 6 NYCRR Part 702.17 (see also NYSDEC policy DOW 1.3.10). This IDV is valid for five years, or the term of the permit, whichever period is less. This permit may not be administratively renewed without full technical review. The permittee must submit a complete permit renewal application in accordance with regulatory deadlines. If renewal of the IDV is desired then a new IDV application must also be submitted at renewal application time.

PART C: EFFLUENT LIMITS OF 0.70 NG/L

There may be some existing cases which warrant a mercury limit and no variance. Such permits should be issued to contain a monthly average limit of 0.70 ng/L and routine monitoring using EPA Method 1631. No MMP is necessary.

PART D: OTHER DISCHARGES

Facilities that do not qualify as high-priority dischargers may not be eligible for coverage under the MDV. Such discharges shall be referred to as low-priority. Low-priority dischargers are believed to contain relatively low-levels of mercury solely due to the presence of mercury in precipitation, intake water, or other sources beyond their control of individual permittees. These facilities do not typically require mercury permit limits or monitoring. However, POTWs classified as such will be required to implement the low-priority MMP outlined in *Appendix B*.

VII. PERMITTING PROCEDURE: GROUNDWATER DISCHARGES

For discharges to class GA groundwater there is a 1400 ng/L *total* mercury groundwater effluent limit specified in 6 NYCRR Part 703.6. This level is well within the capabilities of existing treatment technology. For these discharges the permit writer should specify a limit of 1400 ng/L *total* mercury and set a monitoring frequency and sample type in accordance with *TOGS 1.2.1 or 1.3.3*. There is typically no need to specify use of specific analytical methods for discharges to groundwater as all methods (see *Table 2*) have acceptable detection capabilities relative to the 1400 ng/L effluent limit, though the newer methods are preferred. In order to minimize sludge contamination, POTWs discharging to groundwater will be required to implement the low-priority MMP outlined in *Appendix B*.

VIII. SPDES PERMIT EQUIVALENTS

SPDES permit equivalents are developed for remedial discharges from contaminated sites using the same technical procedures as those used for SPDES permits. New permit equivalents should

conform to this guidance. Existing permit equivalents for long-term discharges should be updated in accordance with this guidance at renewal or modification time. If there is a proposed remedial discharge or renewal/modification of an existing discharge, the permit writer should request EPA Method 1631 data be provided if there is any possibility that mercury contamination could be an issue. A MMP is not necessary for most short-term remedial discharges of less than two years since there will be insufficient time for one to achieve meaningful results.

IX. RESPONSIBILITY

Staff of the Bureau of Water Permits will maintain and interpret this policy and provide updates as needed.

X. RELATED REFERENCES

To fully understand the mercury SPDES permitting and monitoring recommendations contained herein, one must also be familiar with the following primary documents and regulations. It is important to note that some of these documents are more up to date than others. In instances where guidance documents provide conflicting recommendations, the most recent guidance should be relied upon. These and some secondary documents and regulations are cited and/or footnoted above as appropriate.

6 NYCRR Parts 700-706 - Water Quality Regulations.

6 NYCRR Part 750 - SPDES Permit Regulations.

40 CFR Part 132 - Water Quality Guidance for the Great Lakes System.

40 CFR Part 136 - Guidelines Establishing Test Procedures for the Analysis of Pollutants.

Amendments to the NPDES Memorandum of Agreement Between the NYSDEC and the USEPA, Region II Relating to Implementation of the Requirements of the Great Lakes Water Quality Guidance in the Great Lakes Basin, March 16, 1998 and September 27, 2000.

Northeast Regional Mercury Total Maximum Daily Load, October 24, 2007.

NYSDEC Mercury Work Group Recommendations to Meet the Mercury Challenge, December 2006.

NYSDEC Organization and Delegation Memorandum No. 85-40, Water Quality Antidegradation Policy, September 9, 1985.

NYSDEC TOGS 1.1.1 - Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations.

NYSDEC TOGS 1.2.1 - Industrial Permit Writing.

NYSDEC TOGS 1.2.2 - Administrative Procedures and the Environmental Benefit Permit Strategy for Individual SPDES Permits.

NYSDEC TOGS 1.3.1 - Total Maximum Daily Loads and Water Quality-Based Effluent Limits.

NYSDEC TOGS 1.3.3 - SPDES Permit Development for POTWs.

NYSDEC TOGS 1.3.9 - Implementation of the NYSDEC Antidegradation Policy - Great Lakes Basin (Supplement to Antidegradation Policy dated September 9, 1985).

Table 1 - Ambient Water Quality Standards for Mercury

Standard (ng/L)	Form	Basis	Regulation
1400	Dissolved	Aquatic Life - Acute	6 NYCRR Part 703.5
770	Dissolved	Aquatic Life - Chronic	6 NYCRR Part 703.5
700	Total	Human Health - Water Supply	6 NYCRR Part 703.5
2.6	Dissolved	Wildlife	6 NYCRR Part 703.5
1.3	Total	Wildlife (Great Lakes Basin only)	40 CFR Part 132.6(e)
0.7	Dissolved	Human Health - Fish Consumption	6 NYCRR Part 703.5

Table 2 - USEPA-Approved Methods for Mercury Water/Wastewater Analysis & Sampling

USEPA Method	MDL/ML (ng/L)	Method Suitability				
		Ambient Surface Water	Discharges to Surface Water - Permits & Permit Applications	MMP Internal Monitoring	Ambient Groundwater	Discharges to Groundwater - Permits & Permit Applications
245.1	200 / 500	NO	NO	NO	YES*	YES*
245.2	200 / 500	NO	NO	NO	YES*	YES*
245.7	2.0 / 5.0	NO	NO	YES	YES	YES
1631	0.20 / 0.50	YES	YES	YES	YES	YES
1669	grab sample collection	YES	YES	YES	UNNECESSARY	UNNECESSARY

* - USEPA Methods 245.1 and 245.2 are acceptable for use in assessing ambient groundwaters and discharges to groundwater. However, use of USEPA Methods 245.7 and 1631 is preferred.

Table 3 - MDV: Permit Limits, Monitoring Frequencies, and Mercury Minimization Programs

To be authorized by the MDV, the permit must include the limits and MMP version as specified in this table. The only MDV requirements subject to permit writer discretion are the sampling frequency and the initial period permit limits. If less frequent sampling is proposed the permit writer must ensure that it meets the minimum requirements of 40 CFR Part 132. Otherwise the discharge will not qualify for the MDV and must either be authorized by an approved IDV or include a limit of 0.70 ng/L. More frequent monitoring may be justified for dischargers with significant effluent variability.

Discharge Category	Permit Limits			Monitoring Frequency		MMP Version Required
	Initial*	Interim	Final	Initial *	Interim/Final	
POTWs 1 MGD or >	200 ng/L Daily Max or site-specific ILCA**	PEQ ¹ or GLCA of 50 ng/L Daily Maximum**	0.70 ng/L	Monthly	Quarterly	High Priority POTW
High Priority POTWs < 1 MGD	200 ng/L Daily Max or site-specific ILCA**	PEQ ¹ or GLCA of 50 ng/L Daily Maximum**	0.70 ng/L	Once/2 months	Quarterly	High Priority POTW
High Priority Industries & High Priority PCIs	200 ng/L Daily Max or site-specific ILCA	PEQ ¹ or GLCA of 50 ng/L Daily Maximum	0.70 ng/L	Weekly to Once/2 Months	Quarterly	Industrial

¹ When there are 10 or more data points, PEQ must be evaluated. If PEQ is greater than 50 ng/l, the limit should be the GLCA.

* - If permittee cannot achieve 50 ng/L Daily Maximum limit then “initial” requirements may be applied. Otherwise, “interim” requirements must be applied.

** - Sizeable POTW collection systems which are permitted (SPDES) and transmit wastewaters to large regional treatment plants that are separately permitted do not require permit limits but must get the *High Priority POTW* version of MMP unless the regional treatment plant accepts responsibility for performing the MMP system-wide.

APPENDIX A - Selected Mercury Monitoring Data

Table 4 summarizes the data for ambient water quality samples analyzed using EPA Method 1631.

Table 4 - Mercury Ambient Surface Water Monitoring Data

Drainage Basin (basin number)	Sample Results (ng/L) Average/Maximum (number of samples)	
	Total (2015 TOGS)	Total (2010 TOGS)
Lake Erie - Niagara River Basin (01)	2.5/6.5 (17)	3.1/12 (55)
Allegheny River Basin (02)	1.7/22.9 (116)	-
Lake Ontario & Minor Tributaries (03)	1.0/3.5 (65)	5.7/30 (13)
Genesee River Basin (04)	2.8/10.1 (14)	2.5/4.3 (7)
Chemung River Basin (05)	2.0/14.9 (79)	-
Susquehanna River Basin (06)	2.6/75.5 (118)	-
Seneca-Oneida-Oswego River Basin (07)	1.1/6.4 (171)	2.0/2.7 (7)
Black River Basin (08)	3.0/16.7 (64)	4.1/10 (6)
St. Lawrence River Basin (09)	0.2/0.685 (18)	-
Lake Champlain Basin (10)	1.1/3.4 (56)	-
Upper Hudson River Basin (11)	1.5/17.1 (142)	30/170 (16)*
Mohawk River Basin (12)	5.4/94.8 (40)	19/80 (20)*, 2.6/3.4 (4)
Lower Hudson River Basin (13)	3.2/26.3 (148)	12/130 (64)*
Delaware River Basin (14)	-	1.4/1.8 (5)
Passaic - Newark (Basin 15)	-	-
Housatonic River Basin (16)	-	-
Atlantic Ocean - Long Island Sound (Basin 17)	1.7/5.7 (41)	12/92 (42)*

Sources of data: Various NYSDEC water quality surveys and SPDES permittee reported intake data.

* – Includes data collected 1999-2001 and may not be representative of current levels.

Table 5: Mercury Deposition Network averaged sampling data and locations.

Year	NY20 Essex	NY43 Rochester	NY68 Ulster	NY03 Bronx	PA30 Erie	PA90 Tioga	PA72 Pike	Total (Average)
2013	6.4	9.9	7.1	11	16	9	8.4	8.7
2014	5.5	11	7.1	7.4	11	13	9.5	7.8
2013-2014	6.2	10	7.1	10	15	10	8.7	8.4

Samples were averaged across the year and are in ng/l. Values were rounded to two significant figures.

Table 6: Mercury Deposition Network lognormal percentiles.

Percentile	NY20 Essex	NY43 Rochester	NY68 Ulster	NY03 Bronx	Total (Average)
95 th (monthly average)	14	22	17	25	20
99 th (daily maximum)	20	33	26	40	30

Estimates were based on 60-70 data points collected from 2013-2014 and are in ng/l. Values were rounded to two significant figures.

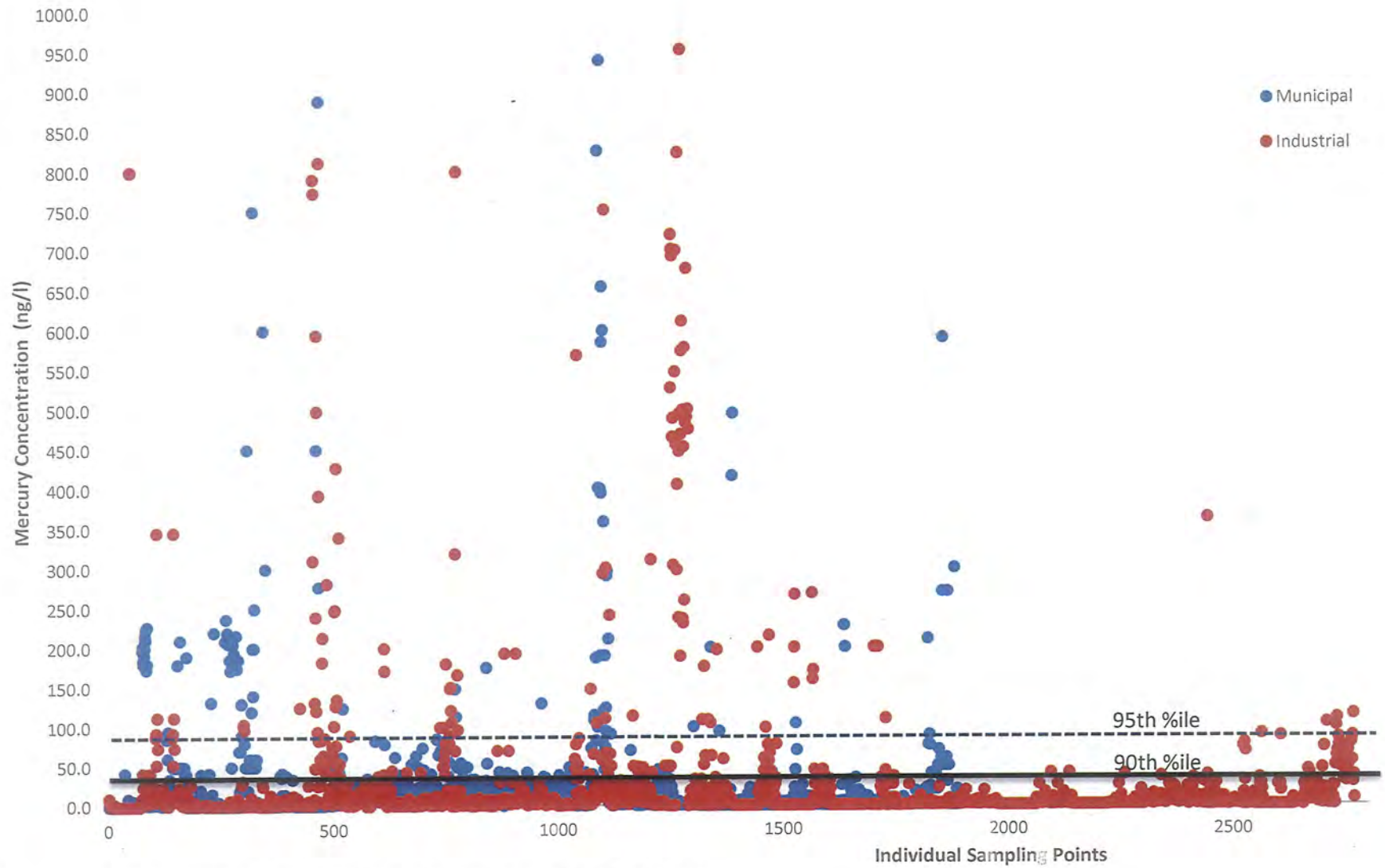


Figure 1- Permittee sampling data from 2011-2014

Table 7 - Mercury Wastewater Monitoring Data

SPDES #	Facility Name	Avg (ng/l)	Max (ng/l)	# Samples
Industries				
NY0005037	LAFARGE BUILDING MATERIALS, INC	19	180	56
NY0007072	SABIC INNOVATIVE PLASTICS US, LLC	200	270	6
NY0004880	NORLITE CORPORATION	490	2300	52
NY0269620	HYLAND LANDFILL	2.5	8.3	23
NY0000973	WEST VALLEY DEMONSTRATION PROJ	23	350	108
NY0094781	DRESSER-RAND CO-OLEAN OPERATIONS	26	26	1
NY0003395	TITANX ENGINE COOLING, INC.	0.9	3.3	7
NY0002321	DUNKIRK GENERATING STATION	1.1	3.2	40
NY0003824	AMPHENOL CORP-AEROSPACE OPERATIONS	22	310	82
NY0001023	HUNTLEY GENERATING STATION	2.2	2.3	4
NY0110043	PVS CHEMICAL SOLUTIONS, INC	4.2	41	164
NY0030881	VESUVIUS USA CORPORATION	200	200	5
NY0000337	FMC CORP - PEROXYGENS DIV	51000	160000	16
NY0103187	HUNTER (T) LANDFILL LEACHATE	1.2	23	82
NY0191973	STIEFEL LABORATORIES, INC	2.5	39	71
NY0007242	LEHIGH NORTHEAST CEMENT CO	14	45	38
NY0257150	MOHAWK VALLEY SANITARY LANDFILL	2.3	6.6	30
NY0206938	REENERGY BLACK RIVER, LLC	37	360	13
NY0276570	NEWTOWN CREEK WPCP	14	50	15
NY0005151	HUDSON AVE STATION	15	200	39
NY0267724	GREENPOINT REMEDIATION PROJECT	32	90	16
NY0068225	ARKEMA CHEMICALS INC	34	110	13
NY0001643	EASTMAN KODAK CO	55	2400	73
NY0001198	DUREZ DIVISION	0.6	1.3	44
NY0104213	SOMERSET OPERATING CO, LLC	2.9	7.0	24
NY0275387	ASHLAND ADVANCED MATERIALS LLC	17	100	21
NY0072061	CWM CHEMICAL SERVICES LLC	20	36	14
NY0003328	NIAGARA FALLS PLANT	51	750	83
NY0001490	INTERNATIONAL WIRE GROUP	10	90	41
NY0232491	FRAZER AND JONES CO	3.0	28	44
NY0001929	STAUFFER MGMT CO, LLC	3.2	43	62
NY0002275	HONEYWELL - SYRACUSE WORKS	30	2000	295
NY0000825	CRUCIBLE INDUSTRIES LLC	7500	26000	4
NY0275123	ELT HARRIMAN, LLC	18	44	36
NY0006262	DANSKAMMER GENERATING STATION	200	200	1
NY0001015	NINE MILE POINT NUCLEAR LLC	1.8	27	40
NY0201278	TULLY ENVIRONMENTAL INC	9.2	34	82
NY0200867	FRESH KILLS LANDFILL LTP	6.4	36	41
NY0004405	INT'L PAPER HUDSON RIVER MILLS DEVELOPMENT	1.2	4.9	28
NY0005801	SI GROUP, INC	0.5	0.6	6
NY0260525	SI GROUP, INC - CONGRESS	3.2	8.6	6
NY0007030	GE GLOBAL RESEARCH CTR	33	210	41
NY0001406	EVANS CHEMETICS FACILITY	59	810	156

NY0001791	ST LAWRENCE ZINC CO, LLC-BALMAT	1.5	2.2	8
NY0264687	EAST DELAWARE TUNNEL OUTLET	3.8	15	12
NY0001333	CAYUGA OPERATING COMPANY, LLC	9.7	100	56
NY0260312	MOUNT VERNON DPW, CITY YARD	26	78	12
NY0107069	LOCKWOOD ASH DISPOSAL SITE	2.4	10	9
NY0001325	GREENIDGE STATION	2.5	9.9	20
NY0004146	CHOBANI CORPORATE CAMPUS	3.0	11	12
POTWs				
NY0027758	MOHAWK VIEW WPCP	4.1	11	14
NY0022357	ALFRED (V) WWTP	18	130	14
NY0026191	NYCDEP - HUNT'S POINT WPCP	18	49	41
NY0024406	BINGHAMTON (C) CSO'S	450	600	2
NY0024414	BINGHAMTON-JOHNSON (C) JNT STP	10	42	41
NY0027669	ENDICOTT (V) WPCP	13	100	14
NY0027961	DUNKIRK (C) WWTP	13	94	8
NY0035742	CHEMUNG CO ELMIRA SD STP	3.3	11	41
NY0036986	CHEMUNG CO SD#1 STP	4.1	9.5	41
NY0022195	DANNEMORA (V) STP	1.8	2.2	2
NY0027561	LE ROY R SUMMERSON WWTF	2.0	16	39
NY0026271	ARLINGTON WWTP	2.7	6.4	14
NY0022136	ECSD#6 - LACKAWANNA WWTP	14	41	15
NY0025950	AMHERST (T) WWTF #16	540	890	3
NY0026395	TONAWANDA (T) SD#2 WWTP	3.2	3.2	1
NY0027693	GRAND ISLAND SD#2 WWTP	200	200	1
NY0028410	BIRD ISLAND STP	2.8	6.0	41
NY0022403	LITTLE FALLS (C) WWTP	29	220	8
NY0036528	HERKIMER CO SD WWTF	1.5	8.1	14
NY0025984	WATERTOWN (C) WPCP	6.3	45	28
NY0026166	NYCDEP - OWLS HEAD WPCP	23	74	40
NY0026182	NYCDEP - CONEY ISLAND WPCP	28	150	41
NY0026204	NYCDEP - NEWTOWN CREEK WPCP	23	170	41
NY0026212	NYCDEP - 26TH WARD WPCP	18	41	40
NY0027073	NYCDEP - RED HOOK WPCP	18	45	40
NY0020290	AMSTERDAM (C) WWTP	3.4	7.0	28
NY0021610	WALTER W BRADLEY WPCF	2.7	5.0	41
NY0022128	GREAT NECK (V) STP	57	190	7
NY0026450	BAY PARK STP	13	91	14
NY0026859	CEDAR CREEK WPCP	7.9	24	14
NY0026131	NYCDEP - WARD'S ISLAND WPCP	20	83	41
NY0026247	NYCDEP - NORTH RIVER WPCP	21	49	41
NY0026336	NIAGARA FALLS (C) WWTP	200	940	41

NY0027057	LOCKPORT (C) WWTP	4.2	33	24
NY0027979	NIAGARA CO SD#1 WWTP	190	490	5
NY0025780	ONEIDA COUNTY WPCP	1.3	1.7	3
NY0030864	ROME MUNICIPAL STP	4.9	25	14
NY0027618	WETZEL ROAD WWTP	0.9	1.3	8
NY0030571	BALDWINVILLE SENECA KNOLLS	2.5	4.0	14
NY0027049	MARSH CREEK WWTP	11	70	13
NY0026328	MIDDLETOWN (C) STP	2.1	7.6	9
NY0028401	ALBION (V) STP	42	42	1
NY0028401	ALBION (V) STP	42	42	1
NY0026301	FULTON (C) STP	10	42	7
NY0029114	OSWEGO (C) EAST SIDE STP	2.5	11	10
NY0031151	ONEONTA (C) WWTP	210	230	4
NY0026115	NYCDEP - JAMAICA WPCP	18	35	41
NY0026158	NYCDEP - BOWERY BAY WPCP	20	62	41
NY0026221	NYCDEP - ROCKAWAY WPCP	18	42	41
NY0026239	NYCDEP - TALLMAN ISLAND WPCP	21	130	41
NY0026107	NYCDEP - PORT RICHMOND WPCF	22	120	41
NY0026174	NYCDEP - OAKWOOD BEACH WPCP	21	85	41
NY0022748	SUFFERN (V) STP	190	240	13
NY0028533	HAVERSTRAW JOINT REGIONAL STP	14	590	41
NY0031895	ROCKLAND CO SD#1 STP	12	35	41
NY0028240	SARATOGA CO SD#1 WWTP	3.7	23	41
NY0023647	HORNELL (C) WPCP	1.9	6.0	14
NY0020079	GREENPORT (V) WWTP	3.3	9.9	4
NY0021342	HUNTINGTON SEWER DISTRICT STP	200	230	12
NY0021750	PORT JEFFERSON SD#1 STP	46	210	41
NY0023311	SCSD#6 - KINGS PARK STP	90	750	40
NY0104809	BERGEN POINT WWTP	3.3	18	14
NY0206644	SUFFOLK CO SD#21 SUNY	66	590	47
NY0025437	LIVINGSTON MANOR STP	27000	38000	3
NY0025704	WALWORTH SD #1	0.6	3.5	13
NY0029475	NEWARK (V) WWTP	1.7	7.1	18
NY0026689	YONKERS JOINT WWTP	3.2	5.0	6
NY0026701	MAMARONECK (V) SANITARY SD	2.2	3.0	13
NY0100803	PEEKSKILL SANITARY SD WWTP	1.8	2.8	14
NY0108324	OSSINING SANITARY SD WWTP	6.4	22	14
NY0026697	NEW ROCHELLE STP	100	1200	12
NY0199079	EAST HAMPTON (T) SCAVENGER WTP	90	300	4

Average and maximum values rounded to two significant figures.

Source of data - For New York State facilities based on permittee or NYSDEC sampling results unless otherwise noted below.

APPENDIX B – Example SPDES Permit Requirements

Example SPDES permit fact sheet entry for mercury:

Effluent Parameter (Units) (concentration units - mg/l, ug/l or ng/l; mass units - lbs/d or g/d)	Existing Effluent Quality				Technology Based Effluent Limit				Water Quality Based Effluent Limit				Permit Basis (T or WQ)	
	concentration		mass					PQL	AWQC	Ambient Background	Effluent			
	Avg/Max	95%/99%	Avg/Max	95%/99%	conc.	mass	Type	conc.	conc.	conc.	conc.	mass		Type
Mercury, Total (ng/l, grams/d)	<add info>	<add info>	<add info>	<add info>	50	Monitor	Max		0.70	<add info>	0.70		Max	MDV

Example SPDES permit entry for mercury:

<Add appropriate sample frequency in accordance with Table 3 above. If composite sample is desired, change sample type to “Composite” and include a footnote similar to the following example: “Composite sample shall consist of three separate grab samples, with each sample collected at eight hour intervals, combined by the laboratory prior to analysis.” >

PARAMETER	EFFLUENT LIMIT					MONITORING REQUIREMENTS				FN
	Type	Limit	Units	Limit	Units	Sample Frequency	Sample Type	Location		
								Inf.	Eff.	
Mercury, Total	Daily Maximum Monitor	50 Monitor	ng/l	<calculated> Monitor	lbs/d	<insert from Table 3>	Grab		X	

MERCURY MINIMIZATION PROGRAM – High Priority POTWs

1. General - The permittee shall develop, implement, and maintain a Mercury Minimization Program (MMP). The MMP is required because the permit limit exceeds the statewide water quality based effluent limit (WQBEL) of 0.70 nanograms/liter (ng/L) for Total Mercury. The goal of the MMP will be to reduce mercury effluent levels in pursuit of the WQBEL. Note - The mercury-related requirements in this permit conform to the mercury Multiple Discharge Variance specified in NYSDEC policy *DOW 1.3.10*.

2. MMP Elements - The MMP shall be documented in narrative form and shall include any necessary drawings or maps. Other related documents already prepared for the facility may be used as part of the MMP and may be incorporated by reference. As a minimum, the MMP shall include an on-going program consisting of: periodic monitoring designed to quantify and, over time, track the reduction of mercury; an acceptable control strategy for reducing mercury discharges via cost-effective measures, which may include more stringent control of tributary waste streams; and submission of periodic status reports.

A. Monitoring - The permittee shall conduct periodic monitoring designed to quantify and, over time, track the reduction of mercury. All permit-related wastewater and stormwater mercury compliance point (outfall) monitoring shall be performed using EPA Method 1631. Use of EPA Method 1669 during sample collection is recommended. Unless otherwise specified, all samples shall be grabs. Monitoring at influent and other locations tributary to compliance points may be performed using either EPA Methods 1631 or 245.7. Monitoring of raw materials, equipment, treatment residuals, and other non-wastewater/non-stormwater substances may be performed using other methods as appropriate. Monitoring shall be coordinated so that the results can be effectively compared between internal locations and final outfalls. Minimum required monitoring is as follows:

i. Sewage Treatment Plant Influent & Effluent, and Type II SSO Outfalls - Samples at each of these locations shall be collected in accordance with the minimum frequency specified on the mercury permit limits page.

ii. Key Locations in the Collection System and Potential Significant Mercury Sources - The minimum monitoring frequency at these locations shall be semi-annual. Monitoring of properly treated dental facility discharges is not required.

iii. Hauled Wastes - Hauled wastes which may contain significant mercury levels shall be periodically tested prior to acceptance to ensure compliance with pretreatment/local limits requirements and/or determine mercury load.

iv. Additional monitoring shall be completed as may be required elsewhere in this permit or upon Department request.

B. Control Strategy - An acceptable control strategy is required for reducing mercury discharges via cost-effective measures, including but not limited to more stringent control of industrial users and hauled wastes. The control strategy will become enforceable under this permit and shall contain the following minimum elements:

i. Pretreatment/Local Limits - The permittee shall evaluate and revise current requirements in pursuit of the goal.

ii. Periodic Inspection - The permittee shall inspect users as necessary to support the MMP. Each dental facility shall be inspected at least once every five years to verify compliance with the wastewater treatment operation, maintenance, and notification elements

of 6NYCRR Part 374.4. Other mercury sources shall also be inspected once every five years. Alternatively, the permittee may develop an outreach program which informs these users of their responsibilities once every five years and is supported by a subset of site inspections. Monitoring shall be performed as above.

iii. Systems with CSO & Type II SSO Outfalls - Priority shall be given to controlling mercury sources upstream of CSOs and Type II SSOs through mercury reduction activities and/or controlled-release discharge. Effective control is necessary to avoid the need for the Department to establish mercury permit limits at these outfalls.

iv. Equipment and Materials - Equipment and materials which may contain mercury shall be evaluated by the permittee and replaced with mercury-free alternatives where environmentally preferable.

v. Bulk Chemical Evaluation - For chemicals used at a rate which exceeds 1,000 gallons/year or 10,000 pounds/year, the permittee shall obtain a manufacturer's certificate of analysis and/or a notarized affidavit which describes the substances' mercury concentration and the detection limit achieved. The permittee shall only use bulk chemicals which contain <10 ppb mercury, if available.

for permits with all mercury limits less than or equal to 50 ng/L:

C. Annual Status Report & Documentation - An annual status report shall be submitted to the Regional Water Engineer and to the Bureau of Water Permits summarizing: (a) all MMP monitoring results for the previous year; (b) a list of known and potential mercury sources; (c) all action undertaken pursuant to the strategy during the previous year; (d) actions planned for the upcoming year, and (e) progress toward the goal. The first annual status report is due one year after the permit is modified to include the MMP requirement and follow-up status reports are due annually thereafter. A file shall be maintained containing all MMP documentation, including the dental forms required by 6NYCRR Part 374.4, which shall be available for review by NYSDEC representatives. Copies shall be provided upon request.

for permits with one or more mercury limits > 50 ng/L:

C. Semiannual Status Report & Documentation - A semiannual status report shall be submitted to the Regional Water Engineer and to the Bureau of Water Permits summarizing: (a) all MMP monitoring results for the previous six months; (b) a list of known and potential mercury sources; (c) all action undertaken pursuant to the strategy during the previous six months; (d) actions planned for the upcoming six months; and (e) progress toward the goal. The first semiannual status report is due six months after the permit is modified to include the MMP requirement and follow-up status reports are due every six months thereafter. A file shall be maintained containing all MMP documentation, including the dental forms required by 6NYCRR Part 374.4, which shall be available for review by NYSDEC representatives. Copies shall be provided upon request.

3. MMP Modification - The MMP shall be modified whenever: (a) changes at the facility or within the collection system increase the potential for mercury discharges; (b) actual discharges exceed 50 ng/L; (c) a letter from the Department identifies inadequacies in the MMP; or, (d) pursuant to a permit modification.

MERCURY MINIMIZATION PROGRAM – Low Priority POTWs

The permittee shall inspect each tributary dental facility at least once every five years to verify compliance with the wastewater treatment operation, maintenance, and notification elements of 6 NYCRR 374.4. Inspection and/or outreach to other industrial/commercial sectors which may contribute mercury is also recommended. All new or increased tributary discharges, including hauled wastes, which are from sources that are industrial in nature shall be evaluated for mercury content and if levels exceed 500 ng/L then authorization shall be obtained from the Department prior to acceptance. Equipment and materials which may contain mercury shall be also evaluated by the permittee and replaced with mercury-free alternatives where environmentally preferable. A file shall be maintained containing the notices submitted by dental offices and all other pertinent information. This file shall be available for review by NYSDEC representatives and copies shall be provided upon request. A permit modification may be necessary to include more stringent requirements for POTWs which do not maintain low mercury effluent levels. Note - the mercury-related requirements in this permit conform to the mercury Multiple Discharge Variance specified in NYSDEC policy *DOW 1.3.10*.

MERCURY MINIMIZATION PROGRAM – Industrial Facilities

1. General - The permittee shall develop, implement, and maintain a Mercury Minimization Program (MMP) for those outfalls which have mercury effluent limits. The MMP is required because the permit limit exceeds the statewide water quality based effluent limit (WQBEL) of 0.70 nanograms/liter (ng/L) for Total Mercury. The goal of the MMP is to reduce mercury effluent levels in pursuit of the WQBEL. Note - The mercury-related requirements in this permit conform to the mercury Multiple Discharge Variance specified in NYSDEC policy *DOW 1.3.10*.

2. MMP Elements - The MMP shall be documented in narrative form and shall include any necessary drawings or maps. Other related documents already prepared for the facility may be used as part of the MMP and may be incorporated by reference. As a minimum, the MMP shall include an on-going program consisting of: periodic monitoring; an acceptable control strategy which will become enforceable under this permit; and, submission of periodic status reports.

A. Monitoring - The permittee shall conduct periodic monitoring designed to quantify and, over time, track the reduction of mercury. Wastewater treatment plant influents and effluents, and other outfalls shall be monitored in accordance with the minimum frequency specified on the mercury permit limits page. Additionally, key locations in the wastewater and/or stormwater collection systems, and known or potential mercury sources, including raw materials, shall be monitored at the above frequency during the first year of the MMP. Monitoring of key locations and known/potential sources may be reduced during subsequent years if downstream outfalls have maintained mercury levels less than 50 ng/l during the previous year. Additional monitoring shall be completed as may be required elsewhere in this permit or upon Department request. Monitoring shall be coordinated so that the results can be effectively compared between internal locations and final outfalls.

All permit-related wastewater and stormwater mercury compliance point (outfall) monitoring shall be performed using EPA Method 1631. Use of EPA Method 1669 during sample collection is recommended. Unless otherwise specified, all samples shall be grabs. Monitoring at influent and other locations tributary to compliance points may be performed using either EPA Methods 1631 or 245.7. Monitoring of raw materials, equipment, treatment residuals, and other non-wastewater/non-stormwater substances may be performed using other methods as appropriate.

B. Control Strategy - An acceptable control strategy is required for reducing mercury discharges via cost-effective measures, which may include, but is not limited to: source identification; replacement of mercury-containing equipment, materials, and products with mercury-free alternatives where environmentally preferable; more stringent control of tributary waste streams; remediation; and/or installation of new or improved treatment facilities. Required monitoring shall also be used, and supplemented as appropriate, to determine the most effective way to operate the wastewater treatment system(s) to ensure effective removal of mercury while maintaining compliance with other permit requirements.

C. Bulk Chemical Evaluation – For chemicals used at a rate which exceeds 1,000 gallons/year or 10,000 pounds/year, the permittee shall obtain a manufacturer's certificate of analysis and/or a notarized affidavit which describes the substances' mercury concentration and the detection limit achieved. The permittee shall only use bulk chemicals which contain <10 ppb mercury,

if available. **This requirement is only applicable to chemicals that would impact wastewater effluent.**

for permits with all mercury limits less than or equal to 50 ng/L:

D. Annual Status Report & Documentation - An annual status report shall be submitted to the Regional Water Engineer and to the Bureau of Water Permits summarizing: (a) all MMP monitoring results for the previous year; (b) a list of known and potential mercury sources; (c) all action undertaken pursuant to the strategy during the previous year; (d) actions planned for the upcoming year, and (e) progress toward the goal. The first annual status report is due one year after the permit is modified to include the MMP requirement and follow-up status reports are due annually thereafter. A file shall be maintained containing all MMP documentation, which shall be available for review by NYSDEC representatives. Copies shall be provided upon request.

for permits with one or more mercury limits > 50 ng/L:

E. Semiannual Status Report - A semiannual status report shall be submitted to the Regional Water Engineer and to the Bureau of Water Permits summarizing: (a) all MMP monitoring results for the previous six months; (b) a list of known and potential mercury sources; (c) all action undertaken pursuant to the strategy during the previous six months; (d) actions planned for the upcoming six months; and (e) progress toward the goal. The first semiannual status report is due six months after the permit is modified to include the MMP requirement and follow-up status reports are due every six months thereafter. A file shall be maintained containing all MMP documentation, which shall be available for review by NYSDEC representatives. Copies shall be provided upon request.

3. MMP Modification - The MMP shall be modified whenever: (a) changes at the facility or within the collection system increase the potential for mercury discharges; (b) actual discharges exceed 50 ng/L; (c) a letter from the Department identifies inadequacies in the MMP; or (d) pursuant to a permit modification.

APPENDIX C - Summary of New York State Mercury Minimization Milestones¹⁸

1998 New ambient water quality standards promulgated;

2002 Lowered waste incineration limits;

2004 School (K-12) use/purchase banned;

2005 Elemental mercury sales restricted to medical, dental, manufacturing, research;
Sale/distribution of mercury-containing novelties, and fever thermometers (without prescription) prohibited;
Labeling of most mercury-added consumer products required;
Disposal of mercury-added consumer products restricted;
Law restricting mercury use in vaccines;
On record in opposition to inadequate federal Clean Air Mercury Rule (CAMR);

2006 Sale/distribution of mercury-containing barometers, flow meters, hydrometers, pyrometers, psychrometers, esophageal dilators, bougie tubes, and gastrointestinal tubes prohibited;
Proper management of dental mercury required, new dentists must install amalgam separators;
Mercury management restrictions at vehicle dismantlers;
Mercury-free schools outreach project begins;

2007 Coal-Fired Power Plant mercury regs issued, phase 2 implementation harmonized with CAIR & RGGI;
Sale/distribution of Hg-containing hydrometers and manometers prohibited;
Northeast Regional TMDL is approved by USEPA;

2008 Dental amalgam separator installation deadline for existing dentists;
Sale/distribution of mercury-containing switches and relays prohibited;
Sale/distribution of sphygomanometers prohibited;

2010 Coal-Fired Power Plant Regs Phase I - 50% mercury reduction required, mercury cap, no trading allowed;
Phase-out of mercury-added motor vehicle components;
Mercury SPDES permitting strategy and Multiple Discharge Variance finalized;

2013 Mercury Thermostat Collection Act- mandatory collection and environmentally sound management of out-of-service mercury thermostats by manufacturers;

2015 Coal-Fired Power Plant Regs Phase II - 90% mercury reduction required.

¹⁸ Additional information on mercury management in New York State can be found on the NYSDEC website at www.dec.ny.gov/chemical/285.html.

APPENDIX D - SPDES Permit Application Requirements for an IDV

SPDES Permit Application Requirements for an Individual Discharge Variance from the Mercury Water Quality Based Effluent Limitations of 0.70, 1.3, and 2.6 ng/L

In accordance with 6 NYCRR Parts 702.17 and 750-2.1(i), an approvable application for an Individual Discharge Variance (IDV) shall contain all of the following information:

- ▶ A demonstration that it is not feasible to achieve one or more of the above-noted Water Quality Based Effluent Limitations;
- ▶ A demonstration that it is not feasible to achieve the Statewide Multiple Discharge Variance (MDV) requirements published in NYSDEC policy *DOW 1.3.10*. This shall address the specific MDV provisions that the applicant wishes to vary from;
- ▶ A characterization of any increased risk to human health and the environment and a demonstration that granting the IDV will not adversely affect the public health, safety and welfare, or, jeopardize the continued existence of any endangered or threatened species. The characterization and demonstration should be made relative to both the water quality standard and the MDV requirements, i.e., what is the risk of the overall IDV and what is the incremental increase in risk of the IDV versus the MDV;
- ▶ A demonstration that the requested IDV will conform to the applicable TMDL;
- ▶ A demonstration that the requested IDV will conform to the State's anti-degradation policy;
- ▶ A tabulation of all available mercury data for the site in question. This tabulation shall include a minimum of ten EPA Method 1631 sample results for each water supply intake, treatment system influent (if applicable), and effluent location. Sample results should also be provided for atmospheric precipitation, groundwater, site soils and sediments, and materials used or stored at the site, as appropriate.

The applicant shall submit the IDV request at application time if either a renewal or a permittee initiated modification is involved. For NYSDEC initiated modifications, an IDV request should be submitted by the permittee if so directed by NYSDEC staff.