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MEMORANDUM

SUBJECT: NPDES Requirements for Municipal Wastewater Treatment During Wet Weather Conditions

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TO: Water Division Directors, Region I-X
Authorized NPDES State Program Directors

The purpose of this memorandum is to provide Environmental Protection Agency (EPA) guidance regarding National Pollutant Discharge Elimination System (NPDES) requirements, specifically, related to publicly owned treatment works (POTWs) and wet weather conditions in the following three situations:

1) Discharges from emergency overflow structures located within municipal sanitary sewer collection systems;

2) Discharges from physical/chemical treatment processes used exclusively for treating peak excess flows in sanitary sewer collection systems; and

3) Wet weather treatment scenarios at POTW treatment plants.

NPDES Requirements for Emergency Overflow Structures on Municipal Sanitary Sewer Collection Systems

When submitting an application for an NPDES permit to discharge from a POTW, the applicant must identify all outfalls that discharge to waters of the United States, including "constructed emergency overflow" outfalls located on the sanitary sewer collection system that discharge to waters of the United States (see 40 CFR 122.21(j)(1)(viii)(A)). Emergency overflow outfall structures are recognized in some State and local design standards. For example, the "Ten-State Standards"[1] provide that consideration should be given to providing

[1] See section 46.3 of "Recommended Standards for Wastewater Facilities," 1997 Edition, Great Lakes-Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers.

controlled, high-level wet well overflows at wastewater pumping stations to supplement alarm and emergency power generation during possible periods of extensive power outages, mandatory power reductions, or uncontrollable emergency conditions to prevent backup of wastewater into basements, or other discharges which may cause severe adverse impacts on public interests, including public health and property damage. In addition, the applicant also must provide information characterizing seasonal or periodic discharges from such constructed emergency overflow outfalls (see 40 CFR 122.21(j)(3)(i)(F)).

If an anticipated discharge from an emergency outfall is identified and fully disclosed to the NPDES permit authority, and considered during the permitting process as documented in the public record consistent with the applicable NPDES regulations, EPA's policy is that the permit should address any discharges (e.g., incorporate effluent limits or prohibit discharges) from such an outfall. For a more complete explanation, see the memorandum entitled "Revised Policy Statement on Scope of Discharge Authorization and Shield Associated with NPDES Permits," April 11, 1995.

EPA considers an emergency outfall located within a municipal sanitary sewer collection system to be part of a POTW. Permits addressing discharges from such an outfall must either prohibit the discharge or contain technology-based effluent limitations based upon secondary treatment or, to the extent that the discharge is at a level that will cause, have the reasonable potential to cause, or contribute to an excursion of water quality standards, any more stringent water quality based effluent limitations, in numeric and/or narrative form.

A discharge from an emergency outfall identified in a permit is also subject to the bypass provision of the permit. The bypass provision in the permit is to be consistent with bypass provision of the NPDES standard permit conditions at 40 CFR 122.41(m). Standard permit conditions are conditions that are applicable to all NPDES permits,except that authorized NPDES States are not precluded from omitting or modifying a standard permit condition to impose a more stringent requirement. 40 CFR 122.41(m) and 123.25 (note). The bypass provision prohibits bypasses except in limited circumstances where the bypass is for essential maintenance and does not cause effluent limitations to be exceeded (see 122.41(m)(4) and (m)(2)). Under the bypass provision, EPA or the NPDES authority may take enforcement action against a permittee for a bypass unless:

(A) Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

(B) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime; and

(C) The permittee submitted required notices to the NPDES authority.

In order to satisfy the "no feasible alteratives" criteria, adequate back-up equipment should be installed in the exercise of reasonable engineering judgment to prevent a bypass. The "no feasible alternatives" provision of 40 CFR 122.41(m) requires, among other things, that consideration be given to the feasibility of additional construction for any bypasses that occur because of inadequate capacity. See *United States v. City of Toledo, Ohio* 63 F.Supp.2d 834 (N.D. Ohio 1999).

EPA applies a different regulatory framework to combined sewer overflows (CSOs). CSOs are not considered to be discharges from a POTW. The design intention for combined sewer systems differs from the design intention for sanitary sewers, where intentional inflow connections are typically prohibited. As a result of this difference in design, combined sewers generally have much greater volume wet weather flows than sanitary sewers. Given the challenges associated with handling the large volume of wet weather flow, combined sewer systems have historically had different performance objectives during wet weather than sanitary sewer systems. Consistent with this, EPA has applied a different technology-based standard under the Clean Water Act (CWA): best available technology economically achievable and best conventional pollutant control technology (BAT/BCT). Given the flexibility of the BAT/BCT standard, and the ability of that standard to establish technology-based requirements for the expected range of wet weather conditions for the collection system, EPA has not applied the bypass provision to CSO discharges. See "National Combined Sewer Overflow Control Strategy," 54 FR 37371 (September 8, 1989) and "Combined Sewer Overflow Control Policy," 59 FR 18688 (April 19, 1994).

Application of Secondary Treatment Requirements to Discharges from a Physical/Chemical Treatment Process Used Exclusively for Treating Peak Excess Flow in a Sanitary Sewer Collection System

The CWA requires that most POTWs achieve effluent limitations based upon secondary treatment as defined by EPA or any more stringent limitation necessary to meet water quality standards. The secondary treatment requirements at 40 CFR Part 133 are applied at the "end-of-the-pipe" and include 7-day and 30-day average effluent concentrations and a 30-day average percent removal requirement. With the exception of alternative requirements for facilities eligible for treatment equivalent to secondary treatment, the secondary treatment regulations do not specify the type of treatment process that must be used to meet secondary treatment requirements, nor do they preclude the use of non-biological facilities. Both the statute and the regulations require achievement of performance-based effluent limits prior to discharge, not the installation of specific technologies. Currently, some POTWs regularly achieve secondary treatment requirements using only physical and chemical treatment technologies.

The secondary treatment regulations at 40 CFR 133.103(d) authorize the NPDES authority to substitute either a lower percent removal requirement or a mass loading limit for

the 85 percent removal requirements (or lower percent removal requirements for facilities eligible for treatment equivalent to secondary treatment), if the permittee demonstrates:

(A) the treatment facility will consistently meet its permit effluent concentration limitations but its percent removal requirements cannot be met due to less concentrated influent,

(B) to meet the percent removal requirements, the facility would have to achieve significantly more stringent limitations than would otherwise be required by concentration-based standards, and

(C) the less concentrated influent is not the result of excessive infiltration and inflow (I/I).

The percent removal requirement must not be adjusted where the permitting authority determines that adverse water quality impacts will result from an adjustment because water quality-based effluent limitations will, of necessity, preclude such an adjustment (see June 3, 1985 (50 FR 23385)). The criterion for adjusting percent removal requirements better reflects the influent strengths actually occurring and recognizes the limitations of I/I correction.

Excessive I/I is defined at 40 CFR 35.2005(b)(16) as the quantities of I/I that can be economically eliminated from a sewer system as determined by a cost-effectiveness analysis that compares the costs for correcting the I/I conditions to the total costs for transportation and treatment of the I/I. The regulations do not specifically address the issue of whether the cost of correcting I/I conditions should be compared with the cost of transport and treatment to a continuously operating treatment facility providing treatment to meet secondary treatment during dry as well as wet conditions, or the cost of transport and treatment at a facility that is designed to only treat and discharge wet weather flows. However, EPA interprets the provision to mean mean that the cost of correcting I/I conditions should be compared with the cost of transport and treatment to a continuously operating treatment facility providing treatment to meet secondary treatment requirements during both dry and wet weather conditions. The Agency believes that this interpretation is consistent with the original objective of the regulation of encouraging municipalities to correct excessive I/I problems in their sanitary sewer systems.

Where a permit for a facility that will only treat and discharge less concentrated wastewater associated with wet weather conditions prohibits discharges during dry weather conditions, the criteria at 40 CFR 133.103(d) for adjusting the percent removal requirements do not require the permittee to demonstrate that the facility is capable of achieving 85% removal during dry weather conditions, only that the demonstrations required in that section

will be met under the conditions when the discharge will be authorized.

EPA believes that an ongoing commitment to an effective capacity, management, operation and maintenance (CMOM) program is appropriate for addressing I/I problems in a sanitary sewer collection system. Where a permit contains an adjustment to the percent removal requirement authorized under 40 CFR 133.103(d), EPA supports inclusion of permit conditions that specifically require a clear, comprehensive plan to effectively address collection system deficiencies including appropriate I/I reduction measures to ensure that the collection system is properly operated and maintained. This could include requirements for developing and implementing a CMOM program and conducting a CMOM program audit.

Additionally, during permit reissuance, the situation is to be reevaluated to consider changing circumstances, such as progress made in rehabilitating the collection system, and planning criteria, such as the duration of financial instruments used to finance the project. If the reevaluation of criteria indicates that I/I was significantly reduced and/or the peak flow capacity of the system was increased, the percent removal requirement of subsequent permits may be more stringent.

If an adjustment to the percent removal requirement is justified under 40 CFR 133.103(d), it may be applied to a peak excess flow treatment facility. If not, than EPA may address a peak excess flow treatment facility that is not designed to meet effluent limitations based on secondary treatment (and any necessary more stringent water quality-based requirements) on an interim basis in an enforcement action which provides a formal commitment and schedule to carry out a plan to correct problems. Such actions should identify a date by which discharges from the peak excess flow treatment facility would need to be phased out. Any remaining discharges after that date would be addressed in the context of applicable permit language (e.g., the bypass provision at 40 CFR 122.41(m)).

Wet Weather Treatment Scenarios at Publicly Owned Treatment Works

NPDES authorities have considerable flexibility through the permitting process to account for different peak flow scenarios that are consistent with generally accepted good engineering practices and criteria for long-term design. Peak wet weather discharges from POTWs that consist of effluent routed around biological treatment units blended together with the effluent from the biological units prior to discharge can be approved in an NPDES permit where all of the following principles are followed:

1. The final discharge meets effluent limitations based on the secondary treatment regulation (40 CFR Part 133) and/or any more stringent limitations necessary to attain water quality standards.

2. The NPDES permit application for the POTW provides notice of, and the permit

specifically recognizes, the treatment scheme that will be used for peak flow management. The treatment scheme, including designed capacity of various units, should be consistent with generally accepted practices and long-term design criteria, and designed to meet under the specified treatment scenario effluent limitations based on the secondary treatment regulation and/or any more stringent limitations necessary to meet water quality standards. The application of generally accepted practices and long-term design criteria will have generally included an evaluation of the cost-effectiveness of a reasonable range of alternatives and may require some facilities to provide additional wet weather equalization and/or storage facilities.

3. Alternative flow routing scenarios are only used when flows exceed the capacity of storage/equalization units and biological treatment units based on generally accepted good engineering practices and criteria under the specific circumstances described in the permit application and defined in the permit.

4. During peak flow conditions, the treatment system chosen by the permittee is operated as it is designed to be operated and in accordance with the conditions set forth in the permit.

5. The permit contains appropriate requirements for the collection system, including at a minimum, that the permittee properly design, operate, and maintain its collection system and, for permittees that own or operate combined sewers, conditions that conform to the 1994 Combined Sewer Overflow (CSO) Control Policy.

Under the NPDES regulations, all NPDES permits are required to contain a prohibition on bypasses consistent with or more stringent than 40 CFR 122.41(m). See 40 CFR 123.25 (note). EPA considers peak wet weather flows that are routed around the biological treatment units of the POTW that do not meet the five criteria listed above to be prohibited bypasses and subject to the criteria at 40 CFR 122.41(m), including the “no feasible alternatives” criterion. However, where all the principles identified above are followed, and the permit defines the bypass provision to not apply to alternative flow routing scenarios approved by the permit, a permittee is not required to make an additional demonstration that there were no feasible alternatives to the discharge.

Additional considerations for permit writers addressing POTWs that use alternative peak flow treatment schemes include:

A. NPDES permits should require compliance monitoring appropriate for the peak flow treatment scheme recognized in the permit.

B. NPDES permits should ensure that permittees develop good information to foster informed management of the collection system and treatment facility during peak wet

weather flow conditions, and, where appropriate, assessment of potential water quality impacts and performance of treatment technologies under peak flow conditions.

C. To the extent practicable, NPDES permit requirements for discharges of peak wet weather flows at the POTW should be developed in a manner that encourages the permittee to consider the relationship between the performance of the collection system and the performance of treatment plants serving the system.

D. NPDES permit conditions are clear and enforceable.

The principles for approving routing schemes in a permit described above do not address NPDES permit requirements for discharges from facilities other than POTWs, portions of flows that do not receive at least the equivalent of primary treatment, or the treatment of flows resulting from dry weather conditions.

This approach ensures that NPDES requirements are applied in a manner that is protective of human health and the environment and reflect the technical realities of wastewater treatment. The principles provide a framework for complying with technology-based requirements of the CWA that is consistent with generally accepted good engineering practices and criteria for long-term design, uses the development of water quality-based effluent limitations to address residual site-specific health and environmental risks, and identifies a comprehensive framework to address deficiencies in collection systems.

Attachment