

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
NEW ENGLAND  
1 CONGRESS STREET  
SUITE 1100  
BOSTON, MASSACHUSETTS 02114-2023**

**FACT SHEET**

**DRAFT NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)  
PERMIT TO DISCHARGE TO THE WATERS OF THE UNITED STATES**

**NPDES NO:** MA 0100315

**DATE OF PUBLIC NOTICE:**

**NAME AND ADDRESS OF APPLICANT:**

Board of Selectmen  
Town of Adams  
65 Park Street  
Adams, Massachusetts 01220

**NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:**

Adams Wastewater Treatment Plant  
273 Columbia Street  
Adams, Massachusetts 01220

**RECEIVING WATER:** Hoosic River (Segment MA 11-04)  
(Hudson River Basin)

**CLASSIFICATION:** B (Warm Water Fishery)

**LATITUDE:** 42° 38' 41" N

**LONGITUDE:** 73° 06' 32" W

I. Proposed Action, Type of Facility, and Discharge Location

The above named applicant has requested that the U.S. Environmental Protection Agency reissue its NPDES permit to discharge into the designated receiving waters. The facility collects and treats municipal and industrial wastewater and its location is shown in Figure 1.

## **II. Description of Discharge**

A quantitative description of the discharge in terms of significant effluent parameters based on recent monitoring data is shown in Attachment A.

## **III. Permit limitations and Conditions**

The effluent limitations and monitoring requirements may be found in the draft permit.

## **IV. Permit Basis and Explanation of Effluent Limitation Derivation**

The Clean Water Act (CWA or the Act) prohibits the discharge of pollutants to waters of the United States without an NPDES permit unless such a discharge is otherwise authorized by the Act. An NPDES permit is used to implement technology based and water quality based effluent limitations as well as other requirements including monitoring and reporting. This draft NPDES permit was developed in accordance with statutory and regulatory authorities established pursuant to the Act. The regulations governing the NPDES program are found in 40 CFR Parts 122, 124 and 125.

Under Section 301(b)(1)(B) of the Clean Water Act (CWA), Publicly Owned Treatment Works (POTW's) had to achieve effluent limitations based upon secondary treatment by July 1, 1977. The secondary treatment requirements are set forth in 40 CFR Part 133. The regulations describe the secondary treatment requirements for biochemical oxygen demand (BOD<sub>5</sub>), Total Suspended Solids (TSS), and pH. The "Average Monthly" and "Average Weekly" BOD<sub>5</sub> and TSS limitations are based on the requirements of 40 CFR §133.102. Numerical limitations for pH and fecal coliform are based on state certification requirements under Section 401(a)(1) of the CWA as described in 40 CFR §124.53 and state water quality standards in 314 CMR 4.05 (b) 3 and 4, respectively.

Under Section 301(b)(1)(C) of the CWA, discharges are subject to effluent limitations based on water quality standards. The Massachusetts Surface Water Quality Standards, 314 CMR 4.00, include requirements for the regulation and control of toxic constituents and also require that EPA criteria, established pursuant to Section 304(a) of the CWA, shall be used unless a site specific criteria is established. The State will limit or prohibit discharges of pollutants to surface waters to assure that surface water quality standards of the receiving waters are protected and maintained.

The permit must also limit any pollutant or pollutant parameter (conventional, non-conventional, toxic, and whole effluent toxicity) that is or may be discharged at a level that caused, or has reasonable potential to cause, or contributes to an excursion above any water quality criterion [40 CFR §122.44(d)(1)]. An excursion occurs if the projected or actual instream concentrations exceed the applicable criterion. In determining reasonable potential, EPA considers existing controls on point and non-point sources of pollution,

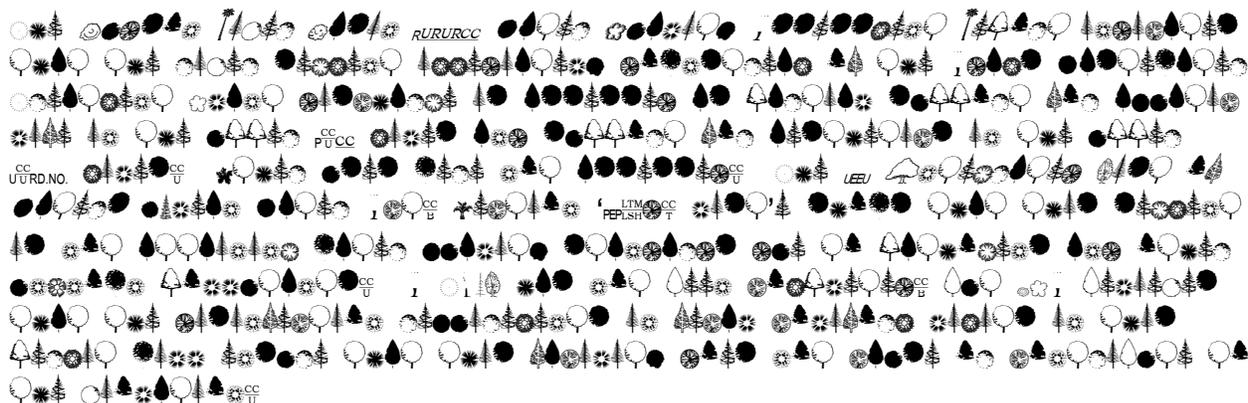
variability of the pollutant in the effluent, sensitivity of the species to toxicity and, where appropriate, the dilution of the effluent in the receiving water.

Also note that according to EPA regulations 40 CFR § 122.44(l), when a permit is reissued, effluent limitations, standards or conditions must be at least as stringent as the final effluent limitations, standards or conditions in the previous permit, unless the circumstances on which the previous permit was based have materially and substantially changed since the time the permit was issued. In addition, in accordance with regulations found at 40 CFR Section 131.12, MA DEP has developed and adopted a statewide antidegradation policy to maintain and protect existing in-stream water quality. The Massachusetts Antidegradation Policy is found at Title 314 CMR 4.04. No lowering of water quality is allowed, except in accordance with the antidegradation policy. The limits in the draft permit are based upon information in the application, the existing permit, a site visit, discharge monitoring reports, and toxicity test results.

Waterbody Classification and Usage

The Hoosic River is classified as a Class B waterbody by the Massachusetts Department of Environmental Protection (MADEP). The Massachusetts Surface Water Quality Standards (314 CMR 4.05(3)(b)) state that Class B waters shall have the following designated uses:

*“These waters are designated as habitat for fish, other aquatic life and wildlife, and for primary and secondary contact recreation. Where designated they shall be suitable as a source of public water supply with appropriate treatment. They shall be suitable for irrigation and other agricultural uses and for compatible industrial cooling and process uses. These waters shall have consistently good aesthetic value.”*



Process Description

The Adams Wastewater Treatment Plant collects municipal and industrial wastewater from 3 industries through a separate sanitary sewer system. A paper company which occasionally impacted the color of the POTW's effluent is no longer discharging to the treatment plant. The

facility consists of headworks, contact stabilization aeration basins, secondary clarifiers, chlorination, and dechlorination. Sludge is dewatered and transported to Synagro-Northeast in Connecticut for incineration. The Town is in the process of upgrading the treatment process to include alum addition and to switch from chlorine gas to hypochlorite solution.

Flow and Dilution Factor

The existing permitted average daily flow of the facility is 3.5 MGD for the months of June through October when low stream flows are most likely to occur and 5.1 MGD as an annual average flow limit. These flow limits had been established in the current permit to more accurately reflect the actual flows at the treatment facility. The data from the Discharge Monitoring Reports demonstrates the continuance of these flow volumes. Consequently, the flow limits in the permit will remain the same.

To confirm the previous dilution factor calculations shown in Attachment B a simple ratio of a drainage area at the treatment plant to the drainage area at the Adams Gage Station is applied to the flow at the Station. There is a slight difference in the estimated drainage area at the WWTP (63.5 square miles vs. 63 square miles). Examination of more recent 7Q10 data for the Hoosic River indicated that the use 12.6 cfs as the 7Q10 at the Adams Gage Station is still valid. This ratio results in the calculations below for the summer low flows:

Drainage Area (Adams Gage - Station #01331500) 46.7 square miles (s.m.)  
Drainage Area (at Adams WWTP) 63.5 square miles

7Q10@ Gage Station = 12.6 cfs  
7Q10@ WWTF discharge = 63.5 s.m./46.7 s.m. x 12.6 = 17.13 cfs  
Discharge flow = 3.5 mgd = 5.41 cfs

Dilution Factor = (River 7Q10 @ Discharge + WWTP Flow) ÷ WWTP Flow  
Dilution Factor = (17.13 cfs+ 5.41 cfs) ÷ 5.41 cfs = 4.16

The 30Q10 dilution factor calculation to be used in the following ammonia calculation is shown below and is based on a 30Q10 flow of 15.8 cfs at the Adams Gage Station.

30Q10@WWTP = 63.5 s.m./46.7 s.m. x 15.8 cfs = 21.48 cfs  
Dilution Factor = (21.48 cfs + 5.41 cfs) ÷ 5.41 cfs = 5.0

These calculations yield essentially the same dilution factors as those used in the current permit, 4.18 for 7Q10 and 5.1 for 30Q10 for a flow of 3.5 MGD. Consequently, for the purpose of consistency from permit to permit, the dilution factors used in the existing permit will be used in the calculations of this draft permit.

A similar calculation for the permitted flow and 30Q10 for the period from November through May is necessary to determine if an ammonia limit is necessary during that time period. Those calculations are shown below.

30Q10@ Gage Station = 25.7 cfs  
 30Q10@ WWTF discharge = 63.5 s.m./46.7 s.m. x 25.7 cfs= 34.95 cfs  
 Discharge flow =5.1 mgd = 7.91 cfs

Dilution Factor = (River 30Q10 @ Discharge + WWTP Flow) ÷ WWTP Flow  
 Dilution Factor = (34.95 + 7.91) ÷ 7.91 = 5.42

BOD, TSS, and Dissolved Oxygen (DO)

The average existing monthly and average concentration limits for BOD and TSS are based upon the secondary treatment requirements of 40 CFR §133.102 and remain the same as in the current permit. Because the monthly average flow is calculated as an annual average, mass limits are established to limit loadings. The calculation below shows the derivation of the average monthly mass limits for BOD and TSS using the seasonal flows and the concentration limits.

BOD and TSS (June through October) 3.5 mgd \* 8.34 \* 30 mg/l = 876 lbs/day  
 BOD and TSS (November through May) 5.1 mgd \* 8.34 \* 30 mg/l = 1276 lbs/day

The average weekly mass limits are calculated in a similar manner using the average weekly concentration limits of 45 mg/l.

The existing permit established seasonal DO monitoring requirements to meet water quality standards during the potential low DO level in the receiving water during the warm weather season. These monitoring requirements will remain the same in the draft permit.

Ammonia

Because ammonia can impact the dissolved oxygen concentration of the receiving water and can be toxic at elevated levels, EPA and the MA DEP are concerned about ammonia levels impacting the receiving water during the summer months. The ammonia criteria published in the Federal Register, Volume 64, No. 245, on December 22, 1999, states that a 30 Q10 flow should be used to establish chronic criteria based limits. The *1999 Update of Ambient Water Quality Criteria for Ammonia* established instream criteria dependent upon the pH and temperature of the receiving water. A pH of 8.6 as documented in the 1997 Hudson River Basin Assessment

Report and an estimated temperature of 24 °C for the summer months are used to establish the instream criteria. The criteria is multiplied by the 30Q10 dilution factor to generate the average monthly concentration limit. This, in turn, is used to develop the average monthly mass limit. This calculation results in the following ammonia limits for the summer months.

0.5 mg/l (instream criteria) \* 5.1 (30Q10 dilution factor for 3.5 mgd) = 2.55= 2.6 mg/l  
 2.6 mg/l \* 3.5 MGD \* 8.34 = 76 lbs/day.

The weekly average limit for ammonia is calculated as twice the average monthly limit in accordance with the National Recommended Water Quality Criteria, or:

$$0.5 \text{ mg/l} * 5.1 \text{ (dilution factor)} = 2.55 \text{ mg/l}$$

$$2.55 * 3.5 \text{ MGD} * 8.34 * 2 \text{ (weekly average factor)} = 149 \text{ lbs/day}$$

The data in Attachment 1 indicates discharge levels of ammonia significantly lower than the calculated limits during this time. Consequently, the reporting requirement has been reduced from twice per week to weekly.

Similarly, ammonia limits for the remainder of the year are calculated using the water quality criteria of 2.80 mg/l based on a temperature of 0° C and a pH of 7.9, averaged from WET tests analyses for the last 4 years. Using the appropriate dilution factor of 5.42 and the flow of 5.1 mgd, the ammonia limits for November through May would be the following:

$$2.80 \text{ mg/l (instream criteria)} * 5.42 \text{ (30Q10 dilution factor for 5.1 mgd)} = 15.2 \text{ mg/l}$$

$$15.2 \text{ mg/l} * 5.1 \text{ mgd} * 8.34 = 647 \text{ lbs/day}$$

The data indicates that more stringent permit requirements for the period from November through May are not warranted at this time. Consequently, the monthly reporting requirement of the current permit is maintained in the draft permit.

Copper

The *EPA Quality Criteria for Water, 1986 (Gold Book)* set forth the methodology for establishing water quality criteria for copper, a hardness dependent pollutant. In the *National Recommended Water Quality Criteria: 2002* EPA updated its national recommended water quality criteria for pollutants. 314 CMR 4.05(5)(e) Toxic Pollutants of the State water Quality standards specifies “The Department shall use the water quality criteria for the protection of aquatic life expressed in terms of the dissolved fraction of metals.” Using a hardness of 120 mg/l for the Hoosic River and a conversion factor (CF) to convert recoverable to dissolved copper, the chronic and acute criteria calculations for the State water quality standards are as follows.

Chronic instream criteria	$e^{(0.8545 * \ln 120) + (-1.702)} * 0.96 \text{ (CF)} = 10.46 \text{ ug/l}$
Acute instream criteria	$e^{(0.9422 * \ln 120) + (-1.700)} * 0.96 \text{ (CF)} = 15.96 \text{ ug/l}$

EPA regulation 40 CFR §122.45(c) *Metals* requires that all permit effluent limitations for a metal be expressed in terms of “total recoverable metal”. Thus, the copper limits in the permit are derived by multiplying the criteria by the dilution factor and dividing by a conversion factor. The calculations are shown below.

Chronic copper limit	$10.46 \text{ mg/l} * 4.18 \div 0.96 \text{ (CF)} = 45.54 \text{ ug/l} = 0.046 \text{ mg/l}$
Acute copper limit	$15.96 \text{ ug/l} * 4.18 \div 0.96 \text{ (CF)} = 69.49 \text{ ug/l} = 0.069 \text{ mg/l}$

These are the same limits as those in the prior permit and they remain in effect.

Total Residual Chlorine

Limits for fecal coliform are based on water quality standards. The months of the year during which the limits are in effect are at the discretion of the MA DEP. Because chlorine and chlorine compounds can be extremely toxic to aquatic life, it is preferable to limit the discharge of chlorine to the receiving water to those months when primary and secondary contact recreational activities may occur.

Total Residual Chlorine (TRC) water quality criteria are established in the Gold Book and the subsequent 2002 update and are adopted into the State Water Quality Standards. The instream criteria shall not exceed 11 ug/l for chronic toxicity and 19 ug/l for acute toxicity to protect aquatic life. Allowing for available dilution at the annual monthly average flow, the TRC permit limit calculations are shown below.

$$\begin{aligned} \text{Chronic chlorine limit} & 11 \text{ ug/l} * 4.18 = 45.98 \text{ ug/l} = 0.046 \text{ mg/l} \\ \text{Acute chlorine limit} & 19 \text{ ug/l} * 4.18 = 79.42 \text{ ug/l} = 0.079 \text{ mg/l} \end{aligned}$$

These are the same as the seasonal limits in the current permit and will remain in effect.

Whole Effluent Toxicity

National studies conducted by the Environmental Protection Agency have demonstrated that domestic sources contribute toxic constituents to POTWs. These constituents include metals, chlorinated solvents, aromatic hydrocarbons, and other constituents. Additionally, as previously discussed, the POTW receives significant amounts of industrial wastewater which may contain toxic constituents. The Region's current policy is to include toxicity testing requirements in all municipal permits, while Section 101(a)(3) of the CWA specifically prohibits the discharge of toxic pollutants in toxic amounts.

Based on the potential for toxicity resulting from domestic and industrial contributions, the low level of dilution at the discharge location, water quality standards and in accordance with EPA regulation and policy, the draft permit includes acute and chronic effluent toxicity limitations and monitoring requirements. (See, e.g., "Policy for the Development of Water Quality-Based Permit Limitations for Toxic Pollutants", 50 Fed. Reg. 30,784 (July 24, 1985); and EPA's Technical Support Document for Water Quality-Based Toxics Control). The principal advantages of biological techniques are: (1) the effects of complex discharges of many known and unknown constituents can be measured only by biological analyses; (2) bioavailability of pollutants after discharge is best measured by toxicity testing including any synergistic effects of pollutants; and (3) pollutants for which there are inadequate chemical analytical methods or criteria can be addressed. Therefore, toxicity testing is being used in conjunction with pollutant specific control procedures to control the discharge of toxic pollutants.

Pursuant to EPA Region 1 policy, and MADEP's Implementation Policy for the Control of Toxic Pollutants in Surface Waters February 23, 1990, discharges having a dilution ratio less than 10:1 require acute toxicity testing four times per year with an LC<sub>50</sub> equal to 100%. Also in accordance with that policy, the chronic (c-NOEC) whole effluent toxicity limit of 1.A.1. is calculated using the instream waste concentration ( IWC) of the WWTF effluent. The IWC is the inverse of the dilution.

$$IWC = 1 \div 4.18 * 100\% = 24\%$$

This limit will be protective of ambient criteria since higher effluent flow will only occur when river flows are also much higher. The limit is established at critical low flow of the receiving water at which time effluent flows will be significantly lower than the permitted flow. WET monitoring is required during specific weeks which eliminates the potential for monitoring toxicity only during low flow periods.

The EPA and the MA DEP have a policy that these agencies will consider reducing the species requirement in the toxicity tests from two species to one specie; if after an extended period of testings, the effluents show no chronic effects to the test organisms. Based upon past test results, EPA sent a letter in July, 1996, to the facility approving a reduction in the number of species to be tested. Therefore, as in the current permit, the facility is required to test for the daphnid, *Ceriodaphnia dubia*, only.

### Phosphorus

EPA has published national guidance documents which contain recommended total phosphorus criteria and other indicators of eutrophication. EPA's *Quality Criteria for Water 1986* (the Gold Book)  in order to control eutrophication,  should be less than 100 ug/l (0.100 mg/l) in streams or other flowing waters not discharging directly to lakes or impoundments. More recently, EPA released Ecoregional Nutrient Criteria, established as part of an effort to reduce problems associated with excess nutrients in water bodies in specific areas of the country. The published ecoregion-specific criteria represent conditions in waters minimally impacted by human activities, and thus representative of water without cultural eutrophication. Adams is within Ecoregion VIII, Nutrient Poor Largely Glaciated Upper Midwest and Northeast. Recommended criteria for this ecoregion is found in *Ambient Water Quality Criteria Recommendations, Information Supporting the Development of State and Tribal Nutrient Criteria, Rivers and Streams in Ecoregion VIII*, published in December, 2001, and includes a total phosphorus criteria of 10 ug/l (0.010 mg/l).

Because of Vermont water quality concerns, the current permit established a phosphorus limit of 1 mg/l. That permit limit along with adequate non-point source controls is expected to attain water quality standards. Presently, no new data regarding nutrient levels in the Hoosic River is available. Consequently, until such data is obtained, the phosphorus limits in the draft permit remain the same.

### Aluminum

The current permit has an aluminum reporting requirement with the intended purpose of determining if aluminum levels in the effluent warranted additional monitoring. In the *National Recommended Water Quality Criteria: 2002* EPA updated its national recommended water quality criteria for pollutants. That document set the chronic water quality criteria for aluminum at 87 ug/l and an acute water quality criteria of 750 ug/l. Allowing for a dilution factor of 4.18, the chronic aluminum limit would be 87 ug/l \* 4.18, or 364 ug/l. An examination of the reporting data in Attachment I indicates that the effluent has, on occasion, exceeded the recommended limit. Also, as previously mentioned, proposed upgrades include facilities for the addition of alum to improve phosphorus removal. Consequently, the draft permit will contain a monthly average aluminum limit of 364 ug/l and will require monitoring twice per month from May through October when phosphorus removal is occurring. An examination of calculations using the acute criteria for aluminum indicated that an acute aluminum limit is not warranted at this time.

## **V. Sludge**

The draft permit prohibits sludge discharges. In addition, Section 405(d) of the CWA requires that sludge conditions be included in all POTW permits. Because the permittee is presently disposing its sludge at a sludge landfill and will contract out for its sludge disposal in the future, the permittee is subject to 40 CFR Part 503, and must comply with its provisions.

## **VI. Pretreatment Program**

The permittee is required to administer a pretreatment program based on the authority granted under 40 CFR §122.44(j), 40 CFR Part 403, and section 307 of the Act. The permittee's pretreatment program received EPA approval on September 9, 1984. As a result, appropriate pretreatment program requirements consistent with that approval and the federal pretreatment regulations in effect were incorporated into the appropriate permit upon its issuance.

Amendments to the Federal Pretreatment Regulations (40 CFR 403) in October, 1988, and in July, 1990, established new requirements for the implementation of pretreatment programs. The subsequent reissuance of its NPDES permit required the permittee to modify its pretreatment program to be consistent with those amended Federal Regulations. EPA commented on the permittee's Sewer Use Ordinance on July 12, 1999. However, the permittee has not responded to those comments. Therefore, the permittee must revise its Sewer Use Ordinance to reflect EPA's comments of July 12, 1999. The current permit also required the permittee to submit on March 1 each year a pretreatment report detailing the activities of the program for the twelve month period ending 60 days prior to the due date.

There have been no additional changes to the pretreatment regulations. Consequently, the pretreatment requirements in the draft permit remain the same as in the current permit.

## **VII. State Certification Requirements**

EPA may not issue a permit unless the Massachusetts Department of Environmental Protection

with jurisdiction over the receiving waters certifies that the receiving waters certifies that the effluent limitations in the permit are stringent enough to assure that the discharge will not cause the receiving water to violate State Water Quality Standards. The staff of the Massachusetts Department of Environmental Protection has reviewed the draft permit and advised the EPA that the limitations are adequate to protect water quality. EPA has requested permit certification by the State pursuant to 40 CFR 124.53 and expects that the draft permit be certified.

### **VIII. Comment Period and Procedures the Final Decision**

All persons, including applicants, who believe any condition of the permit is inappropriate must raise all issues and submit all available arguments and all supporting material for their arguments in full by the close of the public comment period to the U.S. Environmental Protection Agency, Municipal Permits Branch (CPM), One Congress Street-Suite 1100, Boston, Massachusetts 02114-2023. Any person prior to such date, may submit a request in writing for a public hearing to consider the draft permit to EPA and the State Agency. Such requests shall state the nature of the issues to be raised in the hearing. A public hearing may be held after at least thirty (30) days public notice whenever the Regional Administrator finds that response to this notice indicates significant public interest. In reaching a final decision on the draft permit the Regional Administrator will respond to all significant comments and make these responses available to the public at EPA's Boston office.

Following the close of the comment period, and after the public hearing, if held, the Regional Administrator will issue a final permit decision and forward a copy of the final decision to the applicant and to each person who has submitted written comments or requested notice.

### **IX. EPA Contact**

Additional information concerning the draft permit may be obtained between the hours of 9-5, Monday through Friday from:

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Linda M. Murphy, Director  
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