UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
NEW ENGLAND - REGION I
ONE CONGRESS STREET, SUITE 1100
BOSTON, MASSACHUSETTS 02114-2023

FACT SHEET

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

NPDES PERMIT NO: **MA0101079**

PUBLIC NOTICE DATE:

NAME AND ADDRESS OF APPLICANT:

Town of Sunderland
12 School Street
Sunderland, MA 01375

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

Sunderland Wastewater Treatment Plant
113 River Road
Sunderland, MA 01375

RECEIVING WATERS: **Connecticut River**

CLASSIFICATION: **B - Warm Water**

I. PROPOSED ACTION

The above named applicant has applied to the U.S. Environmental Protection Agency for the re-issuance of its National Pollutant Discharge Elimination System (NPDES) permit to discharge into the designated receiving water. The current permit was issued on October 18, 2002 and became effective 30 days from the date of signature. It expired on September 30, 2005. A timely re-application was received. This draft permit will expire five years after the effective date.

II. TYPE OF FACILITY AND DISCHARGE LOCATION

The facility is a 0.5 million gallon per day wastewater treatment plant which provides secondary treatment. The facility discharges into the Connecticut River (See Figure 1). The system is a separate sewer system with no combined sewers.

The facility's discharge outfall is listed below:

Outfall	Description of Discharge	Outfall Location
001	Treated Effluent	Connecticut River

III. DESCRIPTION OF DISCHARGE

A quantitative description of the discharge in terms of significant effluent parameters, based on discharge monitoring reports (DMRs) submitted for the months of October 2003 through September 2005 is shown on Attachment A of this fact sheet.

IV. LIMITATIONS AND CONDITIONS

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

V. PERMIT BASIS AND EXPLANATION OF EFFLUENT LIMITATION DERIVATION

A. PROCESS DESCRIPTION

The Sunderland Wastewater Treatment Facility is a secondary treatment facility consisting of extended aeration, final clarification and chlorination (See Figure 2). It was designed to treat 0.5 million gallons of wastewater daily. On average, the facility treats approximately 0.2 MGD. Liquid sludge is trucked weekly to the East Fitchburg Wastewater Treatment Facility for incineration. The permittee estimates that it disposes of about 25 dry metric tons of sludge per year.

B. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. Overview of Federal and State Regulations

Under Section 301(b)(1) of the Clean Water Act ("CWA"), publicly owned treatment works ("POTWs") must have achieved effluent limitations based upon Secondary Treatment by July 1, 1977. The secondary treatment requirements are set forth at 40 C.F.R. Part 133.102. In addition, Section 301(b)(1)(c) of the CWA requires that effluent limitations based on water quality considerations be established for point source discharges when such limitations are necessary to meet state or federal water quality standards that are applicable to the designated receiving water.

Pursuant to 40 C.F.R. § 122.44 (d), permittees must achieve water quality standards established under Section 303 of the Clean Water Act (CWA), including state narrative criteria for water quality. Additionally, under 40 C.F.R. § 122.44 (d)(1)(i), "Limitations must control all pollutants or pollutant parameters which the Director determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any state water

quality standard." When determining whether a discharge causes, or has the reasonable potential to cause or contribute to an in-stream excursion above a narrative or numeric criterion, the permitting authority shall use procedures which account for existing controls on point and non-point sources of pollution, and where appropriate, consider the dilution of the effluent in the receiving water.

2. Water Quality Standards; Designated Use; Outfall 001

The Connecticut River in the vicinity of the discharge is classified as a Class B water in the Massachusetts Surface Water Quality Standards (314 CMR 4.00). Class B waters are designated as a habitat for fish, other aquatic life, and wildlife, and for primary and secondary contact recreation. They shall be suitable for irrigation and other agricultural uses and for compatible industrial cooling and process uses. The waters should have consistently good aesthetic value.

Section 303(d) of the Federal Clean Water Act (CWA) requires states to identify those waterbodies that are not expected to meet surface water quality standards after the implementation of technology-based controls and, as such require the development of total maximum daily loads (TMDL). The Massachusetts Year 2002 Integrated List of Waters states that Connecticut River Segment MA34-04 is not attaining water quality standards for priority organics and pathogens.

3. Available Dilution

Water quality based limitations are established with the use of a calculated available dilution. Title 314 CMR 4.03(3)(a) requires that effluent dilution be calculated based on the receiving water 7Q10. The 7Q10 is the lowest observed mean river flow for 7 consecutive days, recorded over a 10-year recurrence interval. Additionally, the flow is used to calculate available effluent dilution.

The facility design flow is 500,000 gallons per day (0.5 MGD) or 0.77 cubic feet per second (cfs). The nearest United States Geological Survey (USGS) gage is located upstream near Montague. The USGS Gazetteer lists the drainage area of the Connecticut River at Montague City, MA as 7,860 square miles and the 7Q10 flow as 1690 cfs (1092 MGD). As the discharge location is downstream of this gage, the 7Q10 flow would be greater; therefore, the estimated dilution factor is greater than 2196.

$$\frac{\text{Daily Average design Flow + River flow (7Q10)}}{\text{Daily average design effluent flow}} = \text{Dilution Factor}$$

$$\frac{>1690 + 0.77}{0.77} > 2196$$

4. Conventional Pollutants

Biochemical Oxygen Demand (BOD_5) - The draft permit carries forward the average monthly and average weekly limits in the previous permit. The limits are based on the requirements set forth at 40 CFR 133.102 (b)(1), (2) and 40 CFR 122.45 (f). The secondary treatment limitations are a monthly average BOD_5 concentration of 30 mg/l and a weekly average concentration of 45 mg/l. The mass limitations for BOD are based on a 0.5 MGD design flow. The monitoring frequency is once per week.

Total Suspended Solids (TSS) - The draft permit carries forward the average monthly and average weekly limits in the previous permit. The limits are based on the requirements set forth at 40 CFR 133.102 (b)(1), (2) and 40 CFR 122.45 (f). The secondary treatment limitations are a monthly average TSS concentrations of 30 mg/l and a weekly average concentration of 45 mg/l. The mass limitations for TSS are based on a 0.5 MGD design flow. The monitoring frequency is once per week.

BOD_5 and TSS Mass Loading Calculations:

Calculations of maximum allowable loads for average weekly and average monthly BOD_5 and TSS are based on the following equation:

L = C x DF x 8.34 or L = C x DF x 3.79 where:

L = Maximum allowable load in lbs/day.
C = Maximum allowable effluent concentration for reporting period in mg/l. Reporting periods are average monthly and weekly and daily maximum.
DF = Design flow of facility in MGD.
8.34 = Factor to convert effluent concentration in mg/l and design flow in MGD to lbs/day.
3.79 = Factor to convert effluent concentration in mg/l and design flow in MGD to kgs/day.

(Concentration limit) [45] X 8.34 (Constant) X 0.5 (design flow) = 187.65 lb/day

(Concentration limit) [45] X 3.79 (Constant) X 0.5 (design flow) = 85.28 kg/day

(Concentration limit) [30] X 8.34 (Constant) X 0.5 (design flow) = 125.1 lb/day

(Concentration limit) [30] X 3.79 (Constant) X 0.5 (design flow) = 56.85 kg/day

Eighty-Five Percent (85%) BOD_5 and TSS Removal Requirement - the provisions of 40 CFR §133.102(3) requires that the 30 day average percent removal for BOD and TSS be not less than 85%. These limits are carried forward from the previous permit.

pH : The limits are 6.0-8.3 standard units. The limits are the same as in the current permit and will result in attainment of the Massachusetts Surface water Quality Standard (MASWQS) in-stream

Class B standard of 6.5-8.3 after the zone of initial dilution

Fecal Coliform Bacteria - The numerical limitations for fecal coliform are based on state certification requirements under Section 401(a)(1) of the CWA, as described in 40 CFR 124.53 and 124.55. These limitations are also in accordance with the Massachusetts Surface Water Quality Standards 314 CMR 4.05 (4)(a)4.a.

The limits on fecal coliform are carried forward from the previous permit reflecting the discharge into a Class B water body. The proposed limits in the draft permit are 200 cfu/100 ml, average monthly, and 400 cfu/100 ml, maximum daily. The limits and monitoring requirements are seasonal, April 1 through October 31. The monitoring frequency for fecal coliform has been continued at twice per month and must be collected concurrent with sampling for total residual chlorine.

5. Non Conventional Pollutants

Total Residual Chlorine (TRC) - Chlorine compounds produced by the chlorination of wastewater can be extremely toxic to aquatic life. The current permit includes total residual chlorine limitations based on requirements of Massachusetts Water Quality Standards Implementation Policy for the Control of Toxic Pollutants in Surface Waters (February 23, 1990). Part VI. D. of the policy requires that "In segments with dilution factors greater than 100, the maximum effluent concentration of chlorine shall not exceed 1.0 mg/l TRC."

National Recommended Water Quality Criteria: 2002 include acute criteria of 19 ug/l and chronic criteria of 11 ug/l for fresh water receiving waters. Water quality-based TRC limits calculated using the recommended water quality criteria are shown below:

Total Residual Chlorine Limitations:

(acute criteria * dilution factor) = Acute (Maximum Daily)
(19 ug/l x 2235)= 42465 ug/l = 42 mg/l

(chronic criteria * dilution factor) = Chronic (Monthly Average)
(11 ug/l x 2235) = 24585 ug/l = 25 mg/l

As shown, the limit required by the Massachusetts Toxics Policy is more stringent than the calculated water quality limits. Therefore, the draft permit includes a maximum daily limit of 1 mg/l. The monitoring frequency continues as daily.

Whole Effluent Toxicity (WET)

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 include the following narrative statement and requires that EPA criteria established pursuant to Section 304(a)(1) of the CWA be used as guidance for interpretation of the following narrative criteria: All surface waters shall be free from pollutants in concentrations or combinations that are toxic to humans, aquatic life

or wildlife.

National studies conducted by the EPA have demonstrated that domestic sources contribute toxic constituents to POTWs. These constituents include metals, chlorinated solvents, aromatic hydrocarbons and others. In addition, EPA recognizes that toxicity testing is required to assure that the synergistic effect of the pollutants in the discharge does not cause toxicity, even though the pollutants may be at low concentrations in the effluent.

Based on the potential for toxicity from domestic, the state narrative water quality criterion, the level of dilution at the discharge location, and in accordance with EPA national, regional and state policy and 40 C.F.R. § 122.44(d), the draft permit includes a whole effluent acute toxicity (LC50) limitation. (See also Policy for the Development of Water Quality-Based Permit Limitations for Toxic Pollutants, 49 Fed. Reg. 9016 March 9, 1984, and EPA's Technical Support Document for Water Quality-Based Toxics Control, September, 1991, and the Massachusetts Water Quality Standards Implementation Policy for the Control of Toxic Pollutants in Surface Waters (February 23, 1990).

Thus, the draft permit includes a whole effluent toxicity limitation requirement for the 001 outfall, to assure that the facility does not discharge combinations of toxic compounds into the Connecticut River in amounts which would affect aquatic or human life.

The current permit requires semi-annual acute toxicity tests using the specie Pimephales promelas, fathead minnow. The draft permit carries forward this requirement. The tests must be performed in accordance with the test procedures and protocols specified in **Permit Attachment A**. The tests shall be conducted two times a year.

VI. INFLOW/INFILTRATION REQUIREMENTS

The draft permit includes requirements for the permittee to control infiltration and inflow (I/I). Infiltration/inflow is extraneous water entering the wastewater collection system through a variety of sources. The permittee shall develop an I/I removal program commensurate with the severity of the I/I in the collection system. Where portions of the collection system have little I/I, the control program will logically be scaled down.

Infiltration is groundwater that enters the collection system through physical defects such as cracked pipes, or deteriorated joints. Inflow is extraneous flow entering the collection system through point sources such as roof leaders, yard and area drains, sump pumps, manhole covers, tide gates, and cross connections from storm water systems.

Significant I/I in a collection system may displace sanitary flow reducing the capacity and the efficiency of the treatment works and may cause bypasses to secondary treatment. It greatly increases the potential for sanitary sewer overflows (SSO) in separate systems, and combined sewer overflows in combined systems.

The permit standard conditions for ‘Proper Operation and Maintenance’ are found at 40 CFR §122.41(e). These require proper operation and maintenance of permitted wastewater systems

and related facilities to achieve permit conditions. Similarly, the permittee has a 'duty to mitigate' as stated in 40 CFR §122.41 (d). This requires the permittee to take all reasonable steps to minimize or prevent any discharge in violation of the permit which has a reasonable likelihood of adversely effecting human health or the environment. EPA and Mass DEP maintain that an I/I removal program is an integral component to insuring permit compliance under both of these provisions.

The Mass DEP has stated that inclusion of the I/I conditions in the draft permit shall be a standard State Certification requirement under Section 401 of the Clean Water Act and 40 CFR §124.55(b).

VII. SLUDGE INFORMATION AND REQUIREMENTS

Section 405(d) of the Clean Water Act requires that sludge conditions be included in all POTW permits. The Sunderland Wastewater Treatment Facility transports its sludge to the Fitchburg East WWTP for treatment. The annual quantity of dry sludge is approximately 25 dry metric tons. Sludge requirements for the facility are outlined in the permit and defined in the sludge attachment. If the ultimate sludge disposal method changes, the permit requirements pertaining to sludge monitoring and other conditions would change accordingly.

VIII. ANTI-BACKSLIDING

Anti-backsliding as defined at 40 CFR §122.44(l)(1) requires reissued permits to contain limitations as stringent or more stringent than those of the previous permit unless the circumstances allow application of one of the defined exceptions to this regulation. Anti-backsliding does not apply when changes to limits are based on new information not available at the time of the previous permit reissuance (40 CFR §122.44 (l)(2)(i)(B)(1)) or when limits are changed as a result of material and substantial additions or alterations to the permitted facility which occurred after permit issuance which justify the application of less stringent limitations, as defined 40 CFR § 122.44 (l)(2)(i)(A).

IX. ANTI-DEGRADATION

The Massachusetts Anti-degradation Policy is found at Title 314 CMR 4.04. All existing uses of Connecticut River must be protected. This draft permit is being reissued with allowable discharge limits as or more stringent than the current permit with the same parameter coverage. There is no change in outfall location. The public is invited to participate in the anti-degradation finding through the permit public notice procedure.

X. UNAUTHORIZED DISCHARGES

The permittee is only authorized to discharge wastewater from outfall 001. Any other discharges, including sanitary sewer overflows and emergency pump station overflows are not

authorized by this permit and must be reported in accordance with reporting requirements found in Section D.1.e. of Part II of the permit (24-hour reporting). If a discharge does occur, the permittee must notify the EPA, the Mass DEP, and others, as appropriate (i.e. local Public Health Department), both orally and in writing as specified in the draft permit.

XI. ESSENTIAL FISH HABITAT

Under the 1996 Amendments (PL 104-267) to the Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. § 1801 et seq.(1998)), EPA is required to consult with the National Marine Fisheries Service (NMFS) if EPA's action or proposed actions that it funds, permits, or undertakes, "may adversely impact any essential fish habitat," 16 U.S.C. § 1855(b). The Amendments broadly define "essential fish habitat" (EFH) as: "waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity," 16 U.S.C. § 1802(10). "Adverse impact" means any impact which reduces the quality and/or quantity of EFH, 50 C.F.R. § 600.910(a). Adverse effects may include direct (e.g., contamination or physical disruption), indirect (e.g., loss of prey, reduction in species' fecundity), site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions. Id.

Essential fish habitat is only designated for fish species for which federal Fisheries Management Plans exist. 16 U.S.C. § 1855(b)(1)(A). EFH designations for New England were approved by the U.S. Department of Commerce on March 3, 1999.

EPA and Mass DEP have determined that a formal EFH consultation with NMFS for this discharge is not required. The proposed discharge permit is developed to meet State Surface Water Quality Standards and will not adversely impact EFH.

XII. Endangered Species Act (ESA)

Under Section 7 of the Endangered Species Act, federal agencies are required to ensure that any action they conduct, authorize, or fund is not likely to jeopardize the continued existence of a federally listed species, or result in the adverse modification of critical habitat. EPA consulted with the United State Fish and Wildlife Service (USFWS) concerning listed species under its purview. According to Susan Von Oettingen of the USFWS, there are no species present within this reach of the Connecticut River, with the exception of transient bald eagles (*Haliaeetus leucocephalus*). Based on the fact that this is a reissuance of an existing permit, with no increase in pollutants authorized, USFWS has concluded that this permitted activity will have no effect on listed species under its purview.

EPA has also initiated informal consultation with NOAA Fisheries concerning the possible presence of shortnose sturgeon (*Acipenser brevirostrum*) in the vicinity of the Facility's discharge. Sarah McNulty of NOAA Fisheries confirmed that shortnose sturgeon may be present in this area. NOAA Fisheries has requested additional information on the exact location of the outfall, and the constituents of the discharged pollutants. EPA believes the authorized discharge from this facility is not likely to adversely affect shortnose sturgeon or its habitat, and is seeking concurrence to this opinion from NOAA Fisheries through the ESA consultation.

XIII. MONITORING AND REPORTING

The permitee is obliged to monitor and report sampling results to EPA and the Mass DEP within the time specified in the permit. The effluent monitoring requirements have been established to yield data representative of the discharge by the authority under Section 308(a) of the CWA in accordance with 40 CFR 122.441(j), 122.44, and 122.48.

The remaining general conditions of the permit are based primarily on the NPDES regulations 40 CFR 122 through 125 and consist primarily of management requirements common to all permits.

XIV. GENERAL CONDITIONS

The general conditions of the permit are based on 40 CFR Parts 122, Subparts A and D and 40 CFR 124, Subparts A, D, E, and F and are consistent with management requirements common to other permits.

XV. STATE CERTIFICATION REQUIREMENTS

The staff of the Massachusetts Department of Environmental Protection (Mass DEP) has reviewed the draft permit. EPA has requested permit certification by the State pursuant to 40 CFR § 124.53 and expects that the draft permit will be certified.

XVI. PUBLIC COMMENT PERIOD AND PROCEDURES FOR FINAL DECISION

All persons, including applicants, who believe any condition of the draft 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. EPA, Office of Ecosystem Protection, CMP, One Congress Street, Suite-1100, Boston, Massachusetts 02114. 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 proposed to be raised in the hearing. Public hearings may be held after at least thirty days public notice whenever the Regional Administrator finds that response to this notice indicates a 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 a public hearing, if such a hearing is held, the Regional Administrator will issue a final permit decision and forward a copy of the final decision to the applicant and each person who has submitted written comments or requested notice.

XVII. EPA AND MASS DEP CONTACT

Additional information concerning the draft permit may be obtained between the hours of 9:00 a.m. and 5:00 p.m., Monday through Friday, excluding holidays from:

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