

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
NEW ENGLAND  
1 CONGRESS STREET  
BOSTON, MASSACHUSETTS 02203

FACT SHEET

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

NPDES PERMIT NO.: **MA0102288**

NAME AND ADDRESS OF APPLICANT:

**Caritas Southwood Hospital  
111 Dedham Street  
Norfolk, Massachusetts 02056**

ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

**Caritas Southwood Hospital  
111 Dedham Street  
Norfolk, Massachusetts 02056**

RECEIVING WATER: **Stop River**

CLASSIFICATION: B

**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 water, the Stop River. The facility is a state hospital with an on-site wastewater treatment plant engaged in the collection and treatment of sanitary wastewater. The treatment system includes screening, sedimentation, slow sand filtration and disinfection.

**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 C (not available electronically).

**III. Limitations and Conditions**

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

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

##### Waterbody Classification and Usage

The Stop River has been classified as a Class B waterbody by the Massachusetts Department of Environmental Protection (DEP). Class B 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 aesthetics value.

##### General Requirements

EPA is required to consider technology and water quality requirements when developing permit effluent limits. Technology based treatment requirements represent the minimum level of control that must be imposed under Sections 402 and 301(b) of the Clean Water Act (CWA) (see 40 C.F.R. part 125 Subpart A).

EPA regulations require NPDES permits to contain effluent limits more stringent than technology-based limits where more stringent limits are necessary to maintain or achieve federal or state water quality standards.

Under Section 301(b)(1)(C) of the CWA, discharges are subject to effluent limits 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, or attained.

EPA is authorized to apply secondary treatment requirements as technology-based limits using Best Professional Judgement, in accordance with Section 402(a)(1) of the Clean Water Act.

The permit must 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, has reasonable potential to cause, or contributes to an excursion above any water quality criterion. 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.

A permit may not be renewed, reissued, or modified with less stringent limitations or conditions than those contained in the previous permit unless in compliance with the anti-backsliding requirements of the CWA.

EPA's anti-backsliding provisions found in 40 C.F.R. 122.44 (l) prohibit the relaxation of permit limits, standards and conditions. Therefore, the technology-based effluent limits in the reissued permits must be at least as stringent as those in the previous permit. Relaxation is only allowed when cause for permit modification is met (see 40 C.F.R. 122.62). Effluent limits based on water quality, and state certification requirements must also meet the anti-backsliding provisions found under Section 402(o) and 303(d)(4) of the CWA, as described in 40 C.F.R.122.44(l).

##### Flow

The design flow of the plant currently is 0.055 MGD and the permit limits have been calculated based on this flow.

The 7Q10 used to calculate effluent limits in the draft permit was changed from what it was in the previous permit to 0 because the effluent discharges directly into the headwaters of a wetland.

## Conventional and Non-Conventional Pollutants

The BOD<sub>5</sub> and TSS, pH, total chlorine residual, minimum dissolved oxygen concentration, fecal coliform, ammonia, and phosphorus limits are based on water quality considerations and state certification requirements. These limits are designed to achieve the water quality standards for a Class B receiving water, in this case, the Stop River. The proposed average monthly limit for BOD<sub>5</sub> and TSS will remain the same as in the current permit. The average monthly BOD<sub>5</sub> and TSS limit is 15 mg/l and the weekly average limit for BOD<sub>5</sub> and TSS is 25 mg/l. There is a report only requirement for BOD<sub>5</sub> and TSS maximum daily limit. The settleable solids and total coliform limits have been deleted from the permit, since they are no longer required for state certification.

## Ammonia

Ammonia can impact the receiving stream dissolved oxygen concentration and can be toxic at elevated levels. Effluent limitations for ammonia-nitrogen have been included in this permit for the months of April through October. Ammonia instream criteria is dependent on pH and temperature as explained in the 1999 Update of Ambient Water Quality Criteria for Ammonia, 64 Federal Register 71973-71980. Chronic criteria values during several cold weather seasons (November through April) were reviewed as a function of temperature and pH for the receiving stream. The criteria was then multiplied by the design flow dilution and the results indicated that winter ammonia limits are not warranted at this time. A monthly average reporting requirement for the months of November through April is in the permit. See Attachment D.

## Metals

EPA is required to limit any pollutant 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. Copper may be toxic to aquatic life at low concentrations, so the permit contains numerical limits for total recoverable copper and specifies an appropriate method of analysis. The copper limits have been calculated (see Attachment D) to reflect the water quality criteria published in the Federal Register on December 10, 1998. The maximum daily limit for copper based on the acute water quality criteria is 5 ug/l and the average monthly limit, based on the chronic criteria, is 4 ug/l.

## Whole Effluent Toxicity Testing

Under Section 301(b)(1) of the CWA, discharges are subject to effluent limitations based on water quality standards. The State Surface Water Quality Standards (314 CMR 4.05(5)(e.)), include the following narrative statements and require 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. Where the State determines that a specific pollutant not otherwise listed in 3.14 CMR 4.00 could reasonably be expected to adversely affect existing or designated uses, the State shall use the recommended limit published by EPA pursuant to 33 U.S.C. 1251 §304(a) as the allowable receiving water concentrations for the affected waters unless a site-specific limit is established. Site specific limits, human health risk levels and permit limits will be established in accordance with 314 CMR 4.05(5)(e)(1)(2)(3)(4).

National studies conducted by the EPA have demonstrated that domestic sources contribute toxic constituents to POTWs above those, which may be contributed from industrial users. These pollutants include metals, chlorinated solvents, aromatic hydrocarbons and other constituents.

As a result, EPA Region 1 and the DEP have developed toxicity control policies. These policies require wastewater treatment facilities to perform toxicity bioassays on their effluent. Discharges having a dilution of less than 10:1 require

acute and chronic toxicity testing four times per year.

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 analysis; (2) bioavailability of pollutants after discharge is measured by toxicity testing including any synergistic effect of pollutants; and (3) pollutants for which there are inadequate analytical methods or criteria can be addressed. Therefore, toxicity testing is being used in connection with pollutant-specific control procedures to control the discharge of toxic pollutants.

The Caritas Southwood Hospital will perform toxicity test each quarter. Chronic and modified acute toxicity test are required for two species, daphnia (Ceriodaphnia dubia) and fathead minnows (Pimephales promelas), four times year. Tests are to be conducted, during the months of January, April, July, and October and results submitted by the 30<sup>th</sup> day of the month after the sample was taken. See the Toxicity Testing Protocol in Attachment A of the draft permit for a description of the testing requirements.

After one full year or four consecutive satisfactory toxicity test results, the permittee may submit to EPA and DEP a written request for a permit modification of its toxicity test requirements. Once a written request is received, EPA and DEP will consider reopening the permit for modification.

### Chlorine

Chlorine and chlorine compounds produced by the chlorination of wastewater can be extremely toxic to aquatic life. The effluent limits for daily maximum and monthly average Total Residual Chlorine (TRC) are based on the acute and chronic values defined in EPA Quality Criteria for Water 1986 (EPA 440/5-86-001) and National Recommended Water Quality Criteria, published in the Federal Register on December 10, 1998 (63 FR 68354), as adapted into the Massachusetts Surface Water Quality Standards (314 CMR 4.00). The criteria states that the average total residual chlorine in the receiving water should not exceed 11 ug/l for chronic effects, and the maximum daily (TRC) concentration in the receiving water should not exceed 19 ug/l to protect freshwater aquatic life from acute toxicity.

The TRC limit in the permit is based on the TRC criteria, the 7Q10 dilution factor, and the WWTP design flow. The daily maximum limit is 19 ug/l and the average monthly limit is 11 ug/l. See Attachment D for the total residual chlorine calculation.

A monitoring frequency of 1/day for chlorine is the minimum frequency authorized in the permit. Since chlorine is extremely toxic to aquatic life, and since several measurements of chlorine are obtained within one month, EPA is requiring that the permittee report the highest of all measured values of chlorine as the maximum daily reported value.

The average monthly TRC limit in the permit is below the analytical detection limit for this pollutant. In these situations, EPA Region 1 is following guidance set forth in Technical Support Document for Water Quality Based Toxics Control (EPA 505/2-90-001, March 1991), page 111, which recommends that “the compliance level be defined in the permit as the minimum level (ML).” The minimum level of detection for TRC established by the EPA Region 1 Quality Assurance Office in a memorandum dated April 30, 1992 is 50 ug/l.

Therefore, the limit at which compliance determinations will be based is the ML. For this permit, the ML for total residual chlorine is defined at 50 ug/l and any value below 50 ug/l shall be reported as non-detect. This value may be reduced by permit modification as EPA and the State approves more sensitive tests.

### Phosphorous

State water quality standards require any existing point source discharge containing nutrients in concentrations which encourage eutrophication or growth of weeds or algae shall be provided with the highest and best practical treatment to

remove such nutrients. Phosphorous interferes with water uses and reduces instream dissolved oxygen. A more stringent phosphorous limit in the permit is required because the Charles River has impounded areas downstream of the discharge and there is evidence of eutrophic conditions in the river. Phosphorous data collected by the Charles River Watershed Association between 1996 and 1999 indicates concentrations that are contributing to eutrophication in the river. The Charles River Watershed 1997/1998 Water Quality Assessment Report published in 2000 by the DEP states that reduced oxygen levels and elevated nutrient levels are compromising the biological integrity of the Charles between Populatic Pond and the Route 27 and, a wasteload allocation study on the upper Charles River by Camp Dresser and McKee in 1997 states that large amounts of phosphorous are released in the upper Charles and recommends looking at ways to reduce it from contributing sources is warranted.

Due to eutrophication in the river downstream of the discharge, the permit includes a limitation of 0.2 mg/l, which has been established by DEP as achievable by highest and best practical treatment. It is expected that achieving this limitation at the existing design flow of the treatment facility, along with adequate controls on non point sources will result in attainment of water quality standards. To help attain these limitations and other water quality goals, comprehensive wastewater management plans (CWMPs) are being encouraged if there is a need for sewer expansions. Until CWMPs are completed and approved, no increases in design flows will be authorized and NPDES permits will reflect currently approved design flows levels.

## **V. Sludge**

The permit prohibits any discharge of sludge. Section 405(d) of the Clean Water Act (CWA) requires that sludge conditions be included in all POTW permits. Technical sludge standards required by Section 405 of the CWA were finalized on November 25, 1992 and published on February 19, 1993. The regulations went into effect on March 21, 1993.

Currently, the sludge from Caritas Southwood Hospital is transported via a private contractor to the MWRA for final process and disposal. Approximately 2000 gallons of sludge is sent twice a year.

## **VI. Unauthorized Discharges**

The permittee is not authorized to discharge wastewater from any pump station emergency overflow. Overflows 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 EPA, the DEP, and others as appropriate (i.e. local Public Health Department), both orally and in writing as specified in the draft 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 effluent limitations contained 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 the Environmental Protection has reviewed the permit and advised EPA that the limitations are adequate to protect water quality. EPA has requested permit certification by the State and expects that the permit will be certified.

## **VIII. 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 U.S.EPA, Massachusetts Office of Ecosystem Protection (CMA), 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 proposed to be raised in the hearing. A public hearing may be held after at least thirty 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 a public hearing, if such 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.

**IX. EPA and DEP Contacts**

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:

Betsy Davis  
U.S. EPA  
1 Congress Street  
Suite 1100  
Boston, MA 02203  
Telephone: (617) 918-1576

or

Kathleen Keohane  
MA Department of Environmental Protection  
Division of Watershed Management  
627 Main Street  
Worcester, MA 01608  
Telephone: (508) 792-7470 x3856

June 9, 2000  
Date

Linda M. Murphy, Director  
Office of Ecosystem Protection  
U.S. Environmental Protection Agency

## Electronic Attachments

- A - Chronic & Modified Acute Freshwater Toxicity Test
- B - Sludge Guidance
- D - Calculations for Certain Effluent Limitations