

**MODIFICATION TO AUTHORIZATION TO DISCHARGE UNDER THE
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM**

In compliance with the provisions of the Federal Clean Water Act as amended, (33 U.S.C. §§1251 et seq.; the "CWA"), and the Massachusetts Clean Waters Act, as amended, (M.G.L. Chap. 21, §§26-53),

Town of Marion

is authorized to discharge from the facility located at

**Benson Brook Road
Marion, MA 02738**

to an unnamed brook which discharges to Aucoot Cove (Buzzards Bay Watershed - 95) in accordance with effluent limitations monitoring requirements and other conditions set forth in the permit issued on September 29, 2006, as modified by the conditions set forth herein in italics and summarized as follows:

Page 4, Footnote 6 - Sampling frequency for fecal coliform reduced after one year of sampling.

Page 4, Footnote 5 - A six month schedule to install equipment necessary to take flow proportioned samples has been added.

Page 10- Special Condition E deleted.

Page 11 - State certification requirement for Special Condition E. deleted.

This permit modification shall become effective on August 1, 2007

This permit modification and the authorization to discharge expire at midnight on February 29, 2012. This permit modification modifies the permit issued on September 29, 2006 (effective on March 1, 2007).

This permit modification consists of 11 pages in Part I including effluent limitations, monitoring requirements and other conditions

Signed this 22nd day of May, 2007

/S/ SIGNATURE ON FILE

Director
Office of Ecosystem Protection
Environmental Protection Agency
Boston, Massachusetts

Director
Division of Watershed Management
Department of Environmental Protection
Commonwealth of Massachusetts
Boston, Massachusetts

** If no comments are received during the public comment period, the permit modification will become effective on the date of signature. If comments are received, the permit will become effective no sooner than 30 days after the date of signature.

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. During the period beginning the effective date and lasting through expiration, the permittee is authorized to discharge treated effluent from outfall serial number 001. Such discharge shall be limited and monitored by the permittee as specified below.

<u>Effluent Characteristic</u>	<u>Units</u>	<u>Discharge Limitation</u>			<u>Monitoring Requirement</u>	
		<u>Average Monthly</u>	<u>Average Weekly</u>	<u>Maximum Daily</u>	<u>Measurement Frequency</u>	<u>Sample Type³</u>
Flow ²	MGD	0.5 88	----	Report	Continuous	Recorder
Flow ²	MGD	Report	----	Report	Continuous	Recorder
BOD ⁴	mg/l	9	13	Report	1/Week	24-Hour Composite ⁵
	lbs/day	42	63			
TSS ⁴	mg/l	9	13	Report	1/Week	24-Hour Composite ⁵
	lbs/day	42	63			
pH ¹		(See Condition I.A.1.b. on Page 6)			Daily	Grab
Fecal Coliform Bacteria ^{1,6}	cfu/100 ml	14	----	43	3/Week ⁶	Grab
Total Ammonia Nitrogen, as N (May 1- May 31)	mg/l	2.6	----	Report	1/Week	24-Hour Composite ⁵
Total Ammonia Nitrogen, as N (June 1 - October 31)	mg/l	1.74	----	Report	1/Week	24-Hour Composite ⁵

(Part A.1 continued)

<u>Effluent Characteristic</u>	<u>Units</u>	<u>Discharge Limitation</u>			<u>Monitoring Requirement</u>	
		<u>Average Monthly</u>	<u>Average Weekly</u>	<u>Maximum Daily</u>	<u>Measurement Frequency</u>	<u>Sample Type</u>
Total Ammonia Nitrogen, as N (November 1 - April 30)	mg/l	Report	----	Report	1/Month	24-Hour Composite ⁵
Total Nitrogen (Total of TKN + Nitrate + Nitrite)	mg/l	Report	----	Report	1/Month	24-Hour Composite ⁵
Total Phosphorus	mg/l	Report	----	Report	2/Month	24-Hour Composite ⁵
Copper, Total, Recoverable ⁷	ug/l	7.7	----	11.3	1/Month	24-Hour Composite ⁵
LC-50 ^{8,9,11}	%	----	----	>= 100	4/Year	24-Hour Composite ⁵
Chronic NOEC ^{8, 10,11}	%	----	----	100	4/Year	24-Hour Composite ⁵
Dissolved Oxygen (June 1- October 31]	mg/l	----	----	>= 5.0	1/Week	Grab

Effluent samples are required to be collected following disinfection by the UV unit; dissolved oxygen samples may be taken at the point of entering the unnamed receiving stream

Footnotes:

1. Required for State Certification.
2. Report annual average, monthly average, and the maximum daily flow. The limit is an annual average, which shall be reported as a rolling average. The value will be calculated as the arithmetic mean of the monthly average flow for the reporting month and the monthly average flows of the eleven previous months.
3. All required effluent samples shall be collected at the point specified on page 3. Any change in sampling location must be reviewed and approved in writing by EPA and MassDEP.

A routine sampling program shall be developed in which samples are taken at the same location, same time and same days of the week each month. Occasional deviations from the routine sampling program are allowed, but the reason for the deviation shall be documented in correspondence appended to the applicable discharge monitoring report.

All samples shall be tested using the analytical methods found in 40 CFR §136, or alternative methods approved by EPA in accordance with the procedures in 40 CFR §136. All samples shall be 24 hour composites unless specified as a grab sample in 40 CFR §136.

4. Sampling required for influent and effluent.
5. A 24-hour composite sample will consist of at least twenty four (24) grab samples taken during one consecutive 24 hour period, either collected at equal intervals and combined proportional to flow or continuously collected proportionally to flow. *Within six months after the effective date of this permit condition, the permittee shall procure, install, and make operational all equipment necessary to take flow proportioned samples. In the interim, the permittee shall take time-weighted composite samples.*
6. Fecal coliform limitations and monitoring requirements are in effect year-round. The monthly average limit for fecal coliform is expressed as a geometric mean.

The limits will become effective one year from the effective date of the permit. Interim limits will be a geometric monthly mean of 200 cfu/100 ml and a maximum daily discharge of 400 cfu/100 ml.

Sampling shall be performed three times per week for the first 12 months after the effective date of the permit. Unless EPA provides the permittee with written notice that the higher frequency be maintained based on its review of the compliance data, the frequency of fecal monitoring after the first year shall by operation of the permit be reduced to two times per week.

7. The minimum level (ML) for copper is defined as 3 ug/l. This value is the minimum level for copper using the Furnace Atomic Absorption analytical method (EPA Method 220.2). For effluent limitations of less than 3 ug/l, compliance/non-compliance will be determined based on the ML from this method, or another approved method that has an equivalent or

lower ML, one of which must be used. Sample results of 3 ug/l or less shall be reported as zero on the Discharge Monitoring Report.

8. The permittee shall conduct chronic (and modified acute) toxicity tests four times per year. The chronic test may be used to calculate the acute LC₅₀ at the 48 hour exposure interval. The permittee shall test the daphnid, *Ceriodaphnia dubia*, and the fathead minnow, *Pimephales promelas*. Toxicity test samples shall be collected during the second week of the months of March, June, September and December. The test results shall be submitted by the last day of the month following the completion of the test. The results are due April 30, July 31, October 31 and January 31, respectively. The tests must be performed in accordance with test procedures and protocols specified in **Attachment A** of this permit.

Test Dates Second Week in	Submit Results By:	Test Species	Acute Limit LC ₅₀	Chronic Limit C-NOEC
March June September December	April 30 July 31 October 31 January 31	<i>Ceriodaphnia dubia</i> - (daphnid) <i>Pimephales promelas</i> - [fathead minnow] See Attachment A	≥ 100%	≥ 100%

After submitting **one year** and a **minimum** of four consecutive sets of WET test results, all of which demonstrate compliance with the WET permit limits, the permittee may request a reduction in the WET testing requirements. The permittee is required to continue testing at the frequency specified in the permit until notice is received by certified mail from the EPA that the WET testing requirement has been changed.

9. The LC₅₀ is the concentration of effluent which causes mortality to 50% of the test organisms. Therefore, a 100% limit means that a sample of 100% effluent (no dilution) shall cause no more than a 50% mortality rate.
10. C-NOEC (chronic-no observed effect concentration) is defined as the highest concentration of toxicant or effluent to which organisms are exposed in a life cycle or partial life cycle test which causes no adverse effect on growth, survival, or reproduction at a specific time of observation as determined from hypothesis testing where the test results exhibit a linear dose-response relationship. However, where the test results do not exhibit a linear dose-response relationship, the permittee must report the lowest concentration where there is no observable effect. The "100%" limit is defined as a sample which is composed of 100% effluent.
11. If toxicity test(s) using receiving water as diluent show the receiving water to be toxic or unreliable, the permittee shall either follow procedures outlined in **Attachment A (Toxicity Test Procedure and Protocol) Section IV., DILUTION WATER** in order to obtain an individual approval for use of an alternate dilution water, or the permittee shall follow the Self-Implementing Alternative Dilution Water Guidance which may be used to obtain

2007 Modification

automatic approval of an alternate dilution water, including the appropriate species for use with that water. This guidance is found in Attachment G of NPDES Program Instructions for the Discharge Monitoring Report Forms (DMRs) which is sent to all permittees with their annual set of DMRs and may also be found on the EPA, Region I web site at <http://www.epa.gov/region1/enforcementandassistance/dmr2005.pdf>. If this guidance is revoked, the permittee shall revert to obtaining individual approval as outlined in **Attachment A**. Any modification or revocation to this guidance will be transmitted to the permittees as part of the annual DMR instruction package. However, at any time, the permittee may choose to contact EPA-New England directly using the approach outlined in **Attachment A**.

Part I.A 1. Continued

- a. The discharge shall not cause a violation of the water quality standards of the receiving waters.
- b. The pH of the effluent shall not be less than 6.5 nor greater than 8.3 at any time, unless these values are exceeded due to natural causes or as a result of the approved treatment processes.
- c. The discharge shall not cause objectionable discoloration of the receiving waters.
- d. The effluent shall contain neither a visible oil sheen, foam, nor floating solids at any time.
- e. The permittee's treatment facility shall maintain a minimum of 85 percent removal of both total suspended solids and biochemical oxygen demand. The percent removal shall be based on monthly average values.
- f. Samples taken in compliance with the monitoring requirements specified in the permit shall be taken at a representative point prior to mixing with other streams.
- g. The permittee shall operate the upgraded treatment system to achieve total nitrogen removal consistent with the design total nitrogen projections in the report titled "Town of Marion, Wastewater Treatment Plant Upgrade, Conceptual Design Package" [CDM, March 2002]. The "target effluent quality" projected is 7 -10 mg/l. The permittee shall operate the treatment plant to achieve the "target effluent quality" whenever possible. The "target effluent quality" is not considered a numerical effluent limit.

In addition, the permittee shall evaluate the upgraded treatment plant's ability to remove phosphorus, and evaluate necessary changes/additions to the process to achieve a monthly average effluent limitation of 0.2 mg/l. The evaluation shall be completed and submitted to EPA and MassDEP within **one year from the effective date of the permit**. The evaluation is needed to determine removal capabilities, if a future Total Daily Maximum Load [TMDL] indicates the need for phosphorus removal.

2. All POTWs must provide adequate notice to the Director of the following:
 - a. Any new introduction of pollutants into that POTW from an indirect discharger in a primary industry category discharging process water; and

- b. Any substantial change in the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of issuance of the permit.
 - c. For purposes of this paragraph, adequate notice shall include information on:
 - (1) The quantity and quality of effluent introduced into the POTW; and
 - (2) Any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.
3. Development of Limitations for Industrial Users:
- Pollutants introduced into POTW's by a non-domestic source (user) shall not pass through the POTW or interfere with the operation or performance of the works.
4. This permit may be modified, or revoked and reissued, on the basis of new information in accordance with 40 C.F.R. 122.62.

B. UNAUTHORIZED DISCHARGES

The permittee is authorized to discharge only in accordance with the terms and conditions of this permit and only from the outfall listed in Part I A.1. of this permit. Discharges of wastewater from any other point sources, including sanitary sewer overflows (SSOs) are not authorized by this permit and shall be reported in accordance with Section D.1.e. (1) of the General Requirements of this permit (Twenty-four hour reporting).

Notification of SSOs to MassDEP shall be made on its SSO Reporting Form (which includes MassDEP Regional Office telephone numbers). The reporting form and instruction for its completion may be found on-line at <http://www.mass.gov/dep/water/approvals/surffms.htm#sso>.

C. OPERATION AND MAINTENANCE OF THE SEWER SYSTEM

Operation and maintenance of the sewer system shall be in compliance with the General Requirements of Part II and the following terms and conditions:

1. Maintenance Staff

The permittee shall provide an adequate staff to carry out the operation, maintenance, repair, and testing functions required to ensure compliance with the terms and conditions of this permit.

2. Infiltration/Inflow

The permittee shall develop and implement a plan to control infiltration and inflow (I/I) to the separate sewer system. The plan shall be **submitted to EPA and MassDEP within six months of the effective date of this permit** (see page 1 of this permit for the effective date)

and shall describe the permittee's program for preventing infiltration/inflow related effluent limit violations, and all unauthorized discharges of wastewater, including overflows and by-passes due to excessive infiltration/inflow.

The plan shall include:

- An ongoing program to identify and remove sources of infiltration and inflow. The program shall include the necessary funding level and the source(s) of funding.
- An inflow identification and control program that focuses on the disconnection and redirection of illegal sump pumps and roof down spouts. Priority should be given to removal of public and private inflow sources that are upstream from, and potentially contribute to, known areas of sewer system backups and/or overflows.
- Identification and prioritization of areas that will provide increased aquifer recharge as the result of reduction/elimination of infiltration and inflow to the system.
- An educational public outreach program for all aspects of I/I control, particularly private inflow.

Reporting Requirements:

A summary report of all actions taken to minimize I/I during the previous calendar year **shall be submitted to EPA and the MassDEP annually, by the anniversary date of the effective date of this permit.** The summary report shall, at a minimum, include:

- A map and a description of inspection and maintenance activities conducted and corrective actions taken during the previous year.
- Expenditures for any infiltration/inflow related maintenance activities and corrective actions taken during the previous year.
- A map with areas identified for I/I-related investigation/action in the coming year.
- A calculation of the annual average I/I and the maximum month I/I for the reporting year.
- A report of any infiltration/inflow related corrective actions taken as a result of unauthorized discharges reported pursuant to 314 CMR 3.19(20) and reported pursuant to the Unauthorized Discharges section of this permit.

3. Alternative Power Source

In order to maintain compliance with the terms and conditions of this permit, the permittee shall continue to provide an alternative power source with which to sufficiently operate its treatment works (as defined at 40 CFR §122.2).

D. SLUDGE CONDITIONS

2007 Modification

1. The permittee shall comply with all existing federal and state laws and regulations that apply to sewage sludge use and disposal practices and with the CWA Section 405(d) technical standards.
2. The permittee shall comply with the more stringent of either the state or federal (40 CFR part 503), requirements.
3. The requirements and technical standards of 40 CFR part 503 apply to facilities which perform one or more of the following use or disposal practices.
 - a. Land application - the use of sewage sludge to condition or fertilize the soil
 - b. Surface disposal - the placement of sewage sludge in a sludge-only landfill
 - c. Sewage sludge incineration in a sludge-only incinerator
4. The 40 CFR part 503 conditions do not apply to facilities which place sludge within a municipal solid waste landfill. These conditions also do not apply to facilities which do not dispose of sewage sludge during the life of the permit but rather treat the sludge (e.g. lagoons or reed beds), or are otherwise excluded under 40 CFR 503.6.
5. The permittee shall use and comply with the attached (see Attachment - B) compliance guidance document to determine appropriate conditions. Appropriate conditions contain the following elements:
 - General requirements
 - Pollutant limitations
 - Operational Standards (pathogen reduction requirements and vector attraction reduction requirements)
 - Management practices
 - Record keeping
 - Monitoring
 - Reporting

Depending upon the quality of material produced by a facility, all conditions may not apply to the facility.

6. The permittee shall monitor the pollutant concentrations, pathogen reduction and vector attraction reduction at the following frequency. This frequency is based upon the volume of sewage sludge generated at the facility in dry metric tons per year:

less than 290	1/ year
290 to less than 1500	1 /quarter
1500 to less than 15000	6 /year
15000 +	1 /month

7. The permittee shall sample the sewage sludge using the procedures detailed in 40 CFR 503.8.

8. The permittee **shall submit an annual report containing the information specified in the guidance by February 19.** Reports shall be submitted to the address contained in the reporting section of the permit. Sludge monitoring is not required by the permittee when the permittee is not responsible for the ultimate sludge disposal. The permittee must be assured that any third party contractor is in compliance with appropriate regulatory requirements. In such case, the permittee is required only to **submit an annual report by February 19** containing the following information:
- Name and address of contractor responsible for sludge disposal
 - Quantity of sludge in dry metric tons removed from the facility by the sludge contractor

E. (Section deleted pursuant to permit modification)

F. MONITORING AND REPORTING

1. Reporting

Monitoring results obtained during the previous month shall be summarized for each month and **reported on separate Discharge Monitoring Report Form(s) postmarked no later than the 15th day of the month following the completed reporting period.**

Signed and dated originals of these and all other reports required herein, shall be submitted to the Director and the State at the following address:

EPA- New England
Water Technical Unit (SEW)
P.O. Box 8127
Boston, Massachusetts 02114

The State Agency is:

Massachusetts Department of Environmental Protection
Bureau of Resource Protection
20 Riverside Drive
Lakeville, Massachusetts 02347

Signed and dated Discharge Monitoring Report Forms, monitoring plans and toxicity test reports required by this permit shall also be submitted to the State:

Massachusetts Department of Environmental Protection
Division of Watershed Management
Surface Water Discharge Permit Program
627 Main Street
Worcester, Massachusetts 01608

G. STATE PERMIT CONDITIONS

This discharge permit is issued jointly by the U. S. Environmental Protection Agency and the

Massachusetts Department of Environmental Protection under federal and state law, respectively. As such, all the terms and conditions of this permit are hereby incorporated into and constitute a discharge permit issued by the Massachusetts Department of Environmental Protection pursuant to M.G.L. Chap. 21, §43. Each agency shall have the independent right to enforce the terms and conditions of this permit.

Any modification, suspension or revocation of this permit shall be effective only with respect to the agency taking such action, and shall not affect the validity or status of this permit as issued by the other agency, unless and until each agency has concurred in writing with such modification, suspension or revocation. In the event any portion of this permit is declared invalid, illegal or otherwise issued in violation of state law such permit shall remain in full force and effect under federal law as an NPDES permit issued by the U.S. Environmental Protection Agency. In the event this permit is declared invalid, illegal or otherwise issued in violation of federal law, this permit shall remain in full force and effect under state law as a permit issued by the Commonwealth of Massachusetts.

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 WATERS OF THE UNITED STATES.

NPDES PERMIT NO.: **MA0100030**

NAME AND ADDRESS OF APPLICANT:

**Town of Marion
Town Hall Building
2 Spring Street
Marion, MA 02738**

NAME AND ADDRESS OF FACILITY WHERE DISCHARGE OCCURS:

**Marion Water Pollution Control Facility
Benson Brook Road
Marion, MA 02738**

RECEIVING WATER: **Unnamed Brook to Aucoot Cove (Buzzards Bay Watershed - 95)**

CLASSIFICATION: **B**

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

The above named applicant has requested that the U.S. Environmental Protection Agency (EPA) reissue its NPDES permit to discharge into the designated receiving water (see Attachment B). The facility is engaged in the collection and treatment of domestic wastewater. The discharge is from the outfall 001 of the Marion Water Pollution Control Facility.

II. Description of Discharge.

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

III. Limitations and Conditions.

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

IV. Permit Basis and Explanation of Effluent Limitation Derivation.

A. Description

The Town of Marion has a 0.5 million gallon per day (mgd) advanced secondary wastewater treatment facility. Treatment is provided by three facultative lagoons in series followed by disc filters. The disc filters were brought on line in October 2002, replacing sand filters. Treated wastewater is disinfected by an Ultra- Violet (U/V) system before it is discharged to an unnamed brook which discharges to Aucoot Cove. The lagoons produce minimal sludge.

Marion is upgrading the wastewater treatment facility to an average design flow of 0.6 mgd. The new upgraded facility is scheduled to begin operation in 2006.

B. POTW Discharges

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. For publicly owned treatment works (POTWs), technology based requirements are effluent limitations based on the secondary treatment requirements of Section 301 (b) (1) (B) of the Clean Water Act (CWA) as defined in 40 CFR 133.

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) (I) (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) 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.

The permit must limit any pollutant or pollutant parameter (conventional, non-conventional, toxic, and whole effluent toxicity) may not 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 in-stream 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 Section 402 (o) of the CWA and at 40 CFR 122.44(1) restrict the relaxation of permit limits, standards, and conditions. Therefore, the technology-based effluent limits in the reissued permit must be at least as stringent as those of the previous permit except under specific conditions. Effluent limits based on BPJ, water quality, and state certification requirements must also meet the anti-backsliding provisions.

B.1. Conventional Pollutants:

All effluent limitations for BOD and TSS are the same as those limits found in the previous permit, consistent with technology and water quality based requirements and anti-backsliding provisions.

The numerical limitations for fecal coliform and pH are based on state certification requirements under Section 401 (a) (1) of the CWA, as described in 40 CFR 124.53 and 124.55.

B.2. Non-Conventional Pollutants:

Due to concerns regarding the impact of nitrogen loadings to Buzzards Bay, ammonia-nitrogen limitations from May to June 14, and June 15 to October 15 and effluent monitoring requirements for total kjeldahl nitrogen (TKN), nitrate (NO₃) and ammonia-nitrogen will continue in the draft permit.

Ammonia is a toxic pollutant which may be harmful to the aquatic organisms, and nitrogen is a nutrient which can contribute to excessive plant growth in receiving water, thus depleting dissolved oxygen in the water-body necessary for aquatic life. The ammonia limitations in the permit are water quality based effluent limitations necessary to prevent toxicity in the receiving water. The current permit contains seasonal limits of monthly average limits of 1.74 mg/l from June 15 to October 15 and 2.6 mg/l from May 1 to June 14. The current limits were calculated using recommended 1994 water quality for ammonia at a pH of 6.75 and 25 degrees C for the period from June 15 to October 15 and at a pH of 6.75 and 15 degrees C for the period May 1 to June 14 respectively. Latest recommended ammonia criteria are found in the 1999 Update of Ambient Water Quality Criteria for Ammonia (EPA-822-R-99-014). The recommended chronic criteria for total ammonia, at a pH of 6.75 and 25 degrees C is 3.24 mg/l and at a pH of 6.75 and 15 degrees C is 6.15 mg/l. However, due to zero dilution the limits are not relaxed in order to ensure that dissolved oxygen levels are maintained in the receiving water. So, the present limits will continue at 1.74 mg/l from June 15 to October 15 and 2.6 mg/l from May 1 to June 14 in the draft permit.

During 1992, the Town's consultant conducted a study of the discharge to determine the fate of nitrogen and its impact on Buzzards Bay. Based on this analysis, the nitrogen from the WWTP is mostly taken up by the salt marsh, located at the mouth of the unnamed brook. Concentrations of nitrogen discharging from the salt marsh are lower than concentrations in Buzzards Bay, suggesting that the ambient concentrations in Buzzards Bay are higher than Aucoot Cove. During February 1994, the Buzzards Bay Project published a draft report named "A Buzzards Bay Embayment Sub-water Evaluation : Establishing Priorities for Nitrogen Management Action". This report concludes that the principal source of nitrogen to Aucoot Cove is the Marion WWTP and estimates that the current nitrogen load is 24% of the sub-basin's assimilative capacity.

Phosphorus :

The Massachusetts Surface Water Quality Standards (314 CMR 4.00) do not contain numerical criteria for total phosphorus. The criteria for nutrients is found at 314 CMR 4.05(5)(c), which states that nutrients "shall not exceed the site specific limits necessary to control accelerated or cultural eutrophication". The Water Quality Standards also require that "any existing point source discharges containing nutrients in concentrations which encourage eutrophication or growth of weeds or algae shall be provided with the highest and best practicable treatment to remove such nutrients (314 CMR 4.04). MADEP has established that a monthly average total phosphorus limit of 0.2 mg/l represents highest and best practical treatment for POTWs.

EPA has produced several guidance documents which contain recommended total phosphorus criteria for receiving waters. The 1986 Quality Criteria of Water (the Gold Book) recommends in-stream phosphorus concentrations of 0.05 mg/l in any stream entering a lake or reservoir, 0.1 mg/l for any stream not discharging directly to lakes or impounds, and 0.025 mg/l within the lake or reservoir.

More recently, EPA has released "Eco-regional 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 criteria represent conditions in waters in that eco-region minimally impacted by human activities, and thus representative of water without cultural eutrophication. Middleboro is within Eco-region XIV, Eastern Coastal Plains. The total phosphorus criteria for this eco-region, found in Ambient Water Quality Criteria Recommendations, Information Supporting the Development of State and Tribal Nutrient Criteria, Rivers and Streams in Eco-region XIV, published in the December, 2000 is 24 ug/l (0.024 mg/l).

The permittee showed a value of 2.6 mg/l for total phosphorus in the permit application. No other phosphorus effluent data are available at this time. Based on the above discussions, EPA requires the permittee to monitor and report only maximum daily for total phosphorus in the draft permit. No limit is established at this time. EPA will evaluate the data and in the future, if necessary, limits may be imposed either by modifying the permit or during next renewal time .

B.3. Toxic Pollutants:

Metals:

Certain metals in water can be toxic to aquatic life. There is a need to limit toxic metal concentrations in the effluent where aquatic life may be impacted. The present permit contains water quality based limits for copper. An evaluation (see below) of the reasonable potential of toxicity on the concentration of metals in the effluent shows that there is reasonable potential of toxicity for copper.

Calculation of reasonable potential for copper, lead, zinc and nickel :

All effluent metals data are taken from the Toxicity Test Reports for the period from January 2000 to February 2003 .

Allowable Receiving Water Concentration, $C = \text{Criteria (Total Recoverable)} \times \text{Dilution Factor}$

$7Q10 = 0$ for the unnamed brook. Hence, the Dilution Factor = 1

From Federal Register, December 10, 1998, National Recommended Water Quality Criteria is used with a hardness of 80 mg/l. A review of the toxicity test reports from February 2001 to February 2003 indicates that the hardness in the receiving water (un-named Brook to Aucoot Cove) varies from 37 to 139 with an average value of 80 mg/l as CaCO_3 . This average value of 80 mg/l is used in the draft permit. Previous permit used a hardness of 50 mg/l. Data of the metals are collected from the chemical analysis under toxicity testing for the period from January 2000 to May 2002.

Copper :	Chronic	$C = 7.7 \times 1 = 7.7 \text{ ug/l}$ which is less than the monthly average effluent concentration range of 25 to 40 ug/l. So, reasonable potential exists.
	Acute	$C = 11.3 \times 1 = 11.3 \text{ ug/l}$ which is less than the maximum effluent concentration range of 40 ug/l. So, reasonable potential exists.
Lead :	Chronic	$C = 2.4 \times 1 = 2.4 \text{ ug/l}$ which is less than the monthly average effluent concentration of < 5 ug/l (dl = 5 ug/l). So, reasonable potential may or may not exist.
	Acute	$C = 61.5 \times 1 = 61.5 \text{ ug/l}$ which is greater than the maximum effluent concentration of < 5 ug/l. So, reasonable potential does not exist.
Zinc :	Chronic	$C = 99.2 \times 1 = 99.2 \text{ ug/l}$ which is greater than the average of the monthly average effluent concentration of 36.3 ug/l . So, reasonable potential does not exist.

	Acute	$C = 99.2 \times 1 = 99.2 \text{ ug/l}$ which is less than the maximum effluent concentration of 140 ug/l. So, reasonable potential exists.
Nickel :	Chronic	$C = 43.2 \times 1 = 43.2 \text{ ug/l}$ which is far greater than the monthly average effluent concentration of < 20 ug/l (dl = 20 ug/l). So, reasonable potential does not exist.
	Acute	$C = 388.5 \times 1 = 388.5 \text{ ug/l}$ which is far greater than the maximum effluent concentration < 20 ug/l. So, reasonable potential does not exist.

Based on the above evaluation, monthly average and daily maximum copper limits are included in the draft permit.

Test data for lead is < 5 ug/l with an average value of 2.5 ug/l (assuming it varies between 0 to 5 ug/l). The measurement level (ML) for lead is 3 ug/l. No limit has been established in the draft permit at this time. The draft permit will require lead monitoring with a detection limit of 3 ug/l. EPA will evaluate the data through the toxicity test results and if necessary, a limit may be imposed in the future.

Out of eight samples for zinc, values of 180 ug/l, 30 ug/l, and six below detection limit of <20 ug/l were measured. The maximum allowable receiving water concentration is 99.2 ug/l. No limit has been established in the draft permit at this time due to the fact that only one of eight samples showed reasonable potential for toxicity. The draft permit will require lead monitoring with a detection limit of 10 ug/l. EPA will evaluate the data through the sampling required as part of the WET protocol, and if necessary, a limit may be imposed in the future.

Derivation of Permit Limits :

The limits for copper is calculated based on criteria in National Recommended Water Quality Criteria:2002 at a hardness of 80 mg/l and a dilution factor of 1.0.

Water Quality Criteria for hardness-dependent metals, see equations below :

$$\text{Acute Criteria (dissolved)} = \exp\{m_a[\ln(\text{hardness})] + b_a\} (\text{CF})$$

Where: m_a = pollutant-specific coefficient
 b_a = pollutant-specific coefficient
 h = Hardness = 80 mg/l as CaCO_3
 \ln = natural logarithm
 CF = pollutant-specific conversion factor (CF is used to convert total recoverable to dissolved metal)

$$\text{Chronic Criteria (dissolved)} = \exp\{m_c[\ln(\text{hardness})] + b_c\} (\text{CF})$$

Where: m_c = pollutant-specific coefficient
 b_c = pollutant-specific coefficient
 h = Hardness = 80 mg/l as CaCO₃
 \ln = natural logarithm
 CF = pollutant-specific conversion factor (CF is used to convert total recoverable to dissolved metal)

Calculation of acute limit for copper :

$$m_a = 0.9422 \quad b_a = -1.7 \quad \text{CF} = 0.96$$

$$\text{Acute criteria (dissolved)} = \exp\{0.9422[\ln(80)] - 1.7\} (.96) = 10.89 \text{ ug/l}$$

Dilution Factor = 1

$$\text{Effluent Limitation:} = 1 \times 10.89 \text{ ug/l} = 10.89 \text{ ug/l (dissolved)}$$

$$\text{Total Recoverable} = 10.89 / \text{CF} = 10.89 / 0.96 = 11.3 \text{ ug/l} *$$

* Inverse conversion factor is used to determine total recoverable metal. EPA Metals Translator : Guidance for Calculating a Total Recoverable Permit Limit from a Dissolved Criterion (EPA-823-B-96-007) is used as the basis for using the criteria conversion factor. National guidance requires that permit limits be based on total recoverable metals and not dissolved metals. Consequently, it is necessary to apply a translator in order to develop a total recoverable permit limit from a dissolved criteria. The translator reflects how a discharge partitions between the particulate and dissolved phases after mixing with the receiving water. In the absence of site specific data on how a particular discharge partitions in the receiving water, a default assumption that the translator is equivalent to the criteria conversion factor is used in accordance with the Translator Guidance.

Therefore the acute (maximum daily), water quality based limitation for Total Recoverable Copper is 11.3 ug/l. Previous permit used a maximum daily limit of 9.22 ug/l. Anti-backsliding does not apply due to changed condition of hardness.

Calculation of chronic limit for copper :

$$m_c = 0.8545 \quad b_c = -1.7 \quad \text{CF} = 0.96$$

$$\text{Chronic criteria (dissolved)} = \exp\{0.8545[\ln(80)] - 1.7\} (.96) = 7.4 \text{ ug/l}$$

Dilution Factor = 1

$$\text{Effluent Limitation:} = 1 \times 7.4 \text{ ug/l} = 7.4 \text{ ug/l (dissolved)}$$

$$\text{Total Recoverable} = 7.4 / \text{CF} = 7.4 / 0.96 = 7.7 \text{ ug/l} *$$

Therefore the chronic (monthly average), water quality based limitation for Total Recoverable Copper is 7.7 ug/l.

C. Pretreatment Program

The permitted facility does not have any major industry which contributes industrial wastewater to the WWTF. The draft permit provides the following provision :

“Pollutants introduced into POTWs by a non-domestic source shall not pass through the POTW or interfere with the operation or performance of the treatment.”

D. Toxicity

The receiving water has been classified as a Class B waterway by the state. The designated uses for a Class B water are (1) the protection and propagation of fish, other aquatic life and wildlife and (2) for primary and secondary contact recreation.

40 CFR 122.44 (d) requires whole effluent toxicity limits in NPDES permits when the permittee has a “reasonable potential” to cause toxicity.

National studies conducted by the EPA have demonstrated that domestic sources contribute both metal and organic toxic constituents to POTW. These constituents include metals, chlorinated solvents, aromatic hydrocarbons and other constituents. Additionally, as previously discussed, the POTW receives industrial waste which may also contain toxic constituents.

Therefore, based on the potential for toxicity from domestic contributions, the available dilution at the discharge location, water quality standards and in accordance with EPA regulation and policy, the draft permit includes chronic and acute effluent toxicity limitations and monitoring requirements. (See EPA’s Technical Support Document for Water Quality-Based Toxics Control, EPA/505/2-90-01). The No Observed Chronic Effect Concentration (C-NOEC) limitation in the draft permit prohibits chronic adverse effects (e.g. on survival, growth, and reproduction), when aquatic organisms are exposed to the POTW discharges at the available dilution. The dilution is zero. Therefore, C-NOEC is set at 100% of the effluent. The LC50 limitation of 100% prohibits acute effects (lethality to more than 50% of the test organisms) when exposed undiluted to POTW effluent for a period of time.

E. Sludge

The permit prohibits any discharge of sludge. Section 405 (d) of the Clean Water Act requires that sludge conditions be included in all NPDES permits. The lagoons produce minimal sludge. The Marion WWTF has not yet removed or disposed of any sludge from its treatment process. However, the permit requires that any sludge disposal be done in accordance with comply with

all existing federal and state laws and regulations that apply to sewage sludge use and disposal practices.

F. Essential Fish Habitat Determination (EFH):

Under the 1996 Amendments (PL 104-267) to the Magunson-Stevens Fishery Conservation and Management Act (16 U.S.C. § 1801 et seq. (1998)), EPA is required to consult with the National Marine Fisheries Services (NMFS) if EPA's action or proposed actions that it funds, permits, or undertakes, may adversely impact any essential fish habitat as: waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (16 U.S.C. § 1802 (10)).

Adversely 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.

Essential fish habitat is only designated for 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 has determined that a formal EFH consultation with NMFS is not required because the proposed discharge will not adversely impact EFH.

V. State Certification Requirements.

The staff of the Massachusetts Department of Environmental Protection 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.

VI. Comment Period, and Procedures for Final Decisions.

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, Massachusetts Office of Ecosystem Protection, One Congress Street-Suite 1100 (CPE), 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.

VII. EPA 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:

Suproakash Sarker P.E.
MA NPDES permit Program Unit
US Environmental Protection Agency
1 Congress Street, Suite 1100 (CPE)
Boston, MA 02114-2023
Tele: (617) 918-1574

Date

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