

**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),

South Essex Sewerage District

is authorized to discharge from the facility located at:

**South Essex Wastewater Treatment Facility
50 Fort Avenue
Salem, MA 01970**

to receiving water named:

Salem Sound (MA-93-25)

in accordance with effluent limitations, monitoring requirements and other conditions set forth herein.

The municipalities of Beverly, Danvers, Marblehead, Middleton, Peabody and Salem are co-permittees for Part I.C., Operation and Maintenance and Part I.D., Unauthorized Discharges from the Sewer System, Part I.F. Monitoring and Reporting and Part I.G. State Permit Conditions. The responsible municipal departments are:

**City of Beverly
c/o City Engineer
Beverly City Hall
191 Cabot Street
Beverly, MA 01915**

**Town of Danvers
c/o Town Engineer
Public Works Engineering Division
1 Burroughs Street
Danvers, MA 01923**

**Town of Marblehead
c/o Superintendent
Water/Sewer Department
P.O. Box 1108
Marblehead, MA 01945**

**Town of Middleton
c/o Superintendent of
Public Works
195 North Main Street
Middleton, MA 01949**

**City of Peabody
c/o Director of Public Services
50 Farm Avenue
Peabody, MA 01960**

**City of Salem
c/o City Engineer
120 Washington Street, 4th Fl
Salem, MA 01970**

This permit shall become effective on (See ** below)

This permit and the authorization to discharge expire at midnight, five (5) years from the effective date.

This permit supersedes the permit issued on February 9, 2001 and effective on October 10, 2001.

This permit consists of 13 pages in Part I including effluent limitations, monitoring requirements, Attachments A, Marine Acute Toxicity Test Procedure and Protocol; B, Marine Chronic Toxicity Test Procedure and Protocol; C, Self-Implementing Alternative Dilution Water Guidance; D, Pretreatment Program Evaluation Form & E, Summary of Required Reports Submittals and Part II including General Conditions and Definitions.

Signed this day of

Director
Office of Ecosystem Protection
Environmental Protection Agency
Boston, MA

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

Boston, MA

*** This permit will become effective on the date of signature if no comments are received during public notice. If comments are received during public notice, this permit will become effective on the first day of the calendar month immediately following 60 days after signature.*

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PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

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

Effluent Characteristic	Effluent Limits						Monitoring Requirements	
	Mass Limits			Concentration Limits			Measurement Frequency	Sample Type ³
	Average Monthly	Average Weekly	Maximum Daily	Average Monthly	Average Weekly	Maximum Daily		
Flow ²	***	***	***	29.7 MGD	***	Report MGD	Continuous	Recorder
Flow ²	***	***	***	Report MGD	***	***	Continuous	Recorder
CBOD ₅ ⁴	6,194 lbs/day	9,911 lbs/day	Report	25 mg/l	40mg/l	Report mg/l	1/Day	24-Hour Composite ⁵
TSS ⁴	7,433 lbs/day	11,150 lbs/day	Report	30 mg/l	45 mg/l	Report mg/l	1/Day	24-Hour Composite ⁵
pH ¹	6.5 - 8.5 SU SEE PERMIT PAGE 5 OF 11, PARAGRAPH I.A.2.b.						1/Day	Grab
Fecal Coliform Bacteria ^{1,6}	***	***	***	14 CFU/100 ml	***	28 CFU/100 ml	2/Day	Grab
Enterococci ^{1,6}	***	***	***	35 Colonies/100 ml	***	104 Colonies/100 ml	2/Day	Grab
Total Residual Chlorine ^{1,6,7,8,9}	***	***	***	0.180 mg/l	***	0.208 mg/l	2/Day	Grab
Total Nitrate/Nitrite	***	***	***	***	***	Report mg/l	1/Month	24-Hour Composite ⁵
Total Ammonia Nitrogen, as N	***	***	***	***	***	Report mg/l	1/Month	24-Hour Composite ⁵
Total Kjeldahl Nitrogen	***	***	***	***	***	Report mg/l	1/Month	24-Hour Composite ⁵
Whole Effluent Toxicity <small>10,12,13,14,15 16</small>	Acute LC ₅₀ ≥ 100%						4/Year	24-Hour Composite ⁵
Whole Effluent Toxicity <small>10,11,13,14,15,16</small>	Chronic Report NOEC						4/Year	24-Hour Composite ⁵

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 previous eleven months.
3. Effluent samples shall be taken after dechlorination and prior to discharge to the effluent pipe for the parameters: pH, TRC, fecal coliform and enterococci. Sampling for all other parameters can be taken prior to chlorination. All sampling shall be representative of the effluent that is discharged through Outfall 001 to the Salem Sound. A routine sampling program shall be developed in which samples are taken at the same location, same time and same day(s) of every month. Any deviations from the routine sampling program shall be documented in correspondence appended to the applicable discharge monitoring report that is submitted to EPA. In addition, all samples shall be analyzed using the analytical methods found in 40 CFR §136, or alternative methods approved by EPA in accordance with the procedures in 40 CFR §136.
4. Sampling required for influent and effluent once per day.
5. A 24-hour composite sample will consist of at least twenty four (24) grab samples, flow proportional, taken for a consecutive 24 hour period (e.g. 0700 Monday - 0700 Tuesday).
6. Fecal coliform bacteria, enterococci and total residual chlorine limits and monitoring requirements are in effect year round. As enterococci is a new requirement, the permittee shall monitor only for the first year of the permit without an effluent limit. After one year the effluent limits for enterococci apply. The average monthly limit for fecal coliform bacteria is expressed as a geometric mean. Samples for fecal coliform bacteria and enterococci shall be taken at the same time as a total residual chlorine sample.
7. The minimum detection level (ML) for total residual chlorine is defined as 20 ug/l. This value is the minimum detection level for chlorine using EPA approved methods found in Standard Methods for the Examination of Water and Wastewater, 20th Edition, Method 4500 CL-E and G, or USEPA Manual of Methods of Analysis of Water and Wastes, Method 330.5. One of these methods must be used to determine total residual chlorine. Samples of 50 ug/l or less shall be reported as zero on the discharge monitoring report.
8. For every day that more than two samples are analyzed, the monthly DMR shall include an attachment documenting the individual grab sample results for that day, the date and time of each sample, the analytical method, and a summary of any operational modifications implemented in response to the sample results. This requirement applies to all samples taken, including screening level and process control samples. All test results utilizing an EPA approved analytical method shall be used in the calculation and reporting of the monthly average and maximum daily data submitted on the DMR (see Part II. Section D.1.d(2)).
9. Chlorination and dechlorination systems shall include an alarm system for indicating system interruptions or malfunctions. Any interruption or malfunction of the chlorine dosing system that may have resulted in levels of chlorine that were inadequate for achieving effective disinfection or interruptions or malfunctions of the dechlorination system that may have resulted in excessive levels of chlorine in the final effluent shall be reported with the monthly DMRs. The report shall

include the date and time of the interruption or malfunction, the nature of the problem, and the estimated amount of time that the reduced levels of chlorine or dechlorination chemicals occurred.

10. The permittee shall conduct chronic and acute toxicity tests four (4) times per year using Arbacia and Menidia beryllina, respectively. Toxicity test samples shall be collected during the second week of the months of February, April, June and August. The test results shall be submitted by the last day of the month following the completion of the test. The results are due by March 31, May 31, July 31 and September 30, respectively. The tests must be performed in accordance with test procedures and protocols specified in Attachments A and B of this permit

Test Dates Second Week of	Submit Results By:	Test Species	Acute Limit LC ₅₀	Chronic
February	March 31st	<u>Arbacia</u>	100%	Report
April	May 31 st	<u>Menidia beryllina</u>		NOEC
June	July 31st			
August	September 30 th	See Attachments A & B		

11. 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.
12. 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 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.
13. The permittee must use the receiving water as diluent in WET testing unless authorized after following the procedures in Attachment C.
14. If toxicity test(s) using receiving water as diluent show the receiving water to be toxic or unreliable, the permittee shall follow procedures outlined in Attachment C, Part 17, Alternate Dilution Water in order to obtain permission to use an alternate dilution water. If this Guidance document is revoked, the permittee shall revert to obtaining approval as outlined in Attachment B. The "Guidance Document" has been sent to all permittees with their annual set of DMRs and Revised Updated Instructions for Completing EPA's Pre-Printed NPDES Discharge Monitoring Report (DMR) Form 3320-1 and is not intended as a direct attachment to this permit. Any modification or revocation to this "Guidance Document" will be transmitted to the permittees as part of the annual DMR instruction package.
15. For every WET test, the permittee must run the required sets of controls including chemistry (e.g. site water controls and lab water controls). Site water controls are required when utilizing alternative dilution water as detailed in Attachment C.
16. The permit shall be modified, or alternatively revoked and reissued, to incorporate additional toxicity testing requirements, including chemical specific limits, if the results of the toxicity tests indicate the discharge causes an exceedance of any State Water Quality Criterion. Results from these tests are considered "new information" and the permit may be modified pursuant to 40 CFR 122.6(a)(2).

Part I.A.2.

- 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 8.5 and not more than 0.2 standard units outside of the natural background range. There shall be no change from natural background conditions that would impair any use assigned to this Class.
- 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 CBOD₅ and TSS. The percent removal shall be based on monthly average values.
- f. The permittee shall minimize the use of chlorine while maintaining adequate bacterial control.
- g. The results of sampling for any parameter above its required frequency must also be reported.

3. 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.

4. Prohibitions Concerning Interference and Pass Through:

- a. Pollutants introduced into a POTW by a non-domestic source (user) shall not pass through the POTW or interfere with the operation or performance of the works.

5. Toxics Control

- a. The permittee shall not discharge any pollutant or combination of pollutants in toxic amounts.
- b. Any toxic components of the effluent shall not result in any demonstrable harm to aquatic life or violate any state or federal water quality standard which has been or may be

promulgated. Upon promulgation of any such standard, this permit may be revised or amended in accordance with such standards.

6. Numerical Effluent Limitations for Toxicants

EPA or MassDEP may use the results of the toxicity tests and chemical analyses conducted pursuant to this permit, as well as national water quality criteria developed pursuant to Section 304(a)(1) of the Clean Water Act (CWA), state water quality criteria, and any other appropriate information or data, to develop numerical effluent limitations for any pollutants, including but not limited to those pollutants listed in Appendix D of 40 CFR Part 122.

B. INDUSTRIAL USERS AND PRETREATMENT PROGRAM

1. The permittee shall develop and enforce specific effluent limits (local limits) for Industrial User(s), and all other users, as appropriate, which together with appropriate changes in the POTW Treatment Plant's Facilities or operation, are necessary to ensure continued compliance with the POTW's NPDES permit or sludge use or disposal practices. Specific local limits shall not be developed and enforced without individual notice to persons or groups who have requested such notice and an opportunity to respond. Within (120 days of the effective date of this permit), the permittee shall prepare and submit a written technical evaluation to the EPA analyzing the need to revise local limits. As part of this evaluation, the permittee shall assess how the POTW performs with respect to influent and effluent of pollutants, water quality concerns, sludge quality, sludge processing concerns/inhibition, biomonitoring results, activated sludge inhibition, worker health and safety and collection system concerns. In preparing this evaluation, the permittee shall complete and submit the attached form (Attachment D) with the technical evaluation to assist in determining whether existing local limits need to be revised. Justifications and conclusions should be based on actual plant data if available and should be included in the report. Should the evaluation reveal the need to revise local limits, the permittee shall complete the revisions within 120 days of notification by EPA and submit the revisions to EPA for approval. The Permittee shall carry out the local limits revisions in accordance with EPA's Local Limit Development Guidance (July 2004).
2. The permittee shall implement the Industrial Pretreatment Program in accordance with the legal authorities, policies, procedures, and financial provisions described in the permittee's approved Pretreatment Program, and the General Pretreatment Regulations, 40 CFR 403. At a minimum, the permittee must perform the following duties to properly implement the Industrial Pretreatment Program (IPP):
 - a. Carry out inspection, surveillance, and monitoring procedures which will determine independent of information supplied by the industrial user, whether the industrial user is in compliance with the Pretreatment Standards. At a minimum, all significant industrial users shall be sampled and inspected at the frequency established in the approved IPP but in no case less than once per year and maintain adequate records.
 - b. Issue or renew all necessary industrial user control mechanisms within 90 days of their expiration date or within 180 days after the industry has been determined to be a significant industrial user.

- c. Obtain appropriate remedies for noncompliance by any industrial user with any pretreatment standard and/or requirement.
 - d. Maintain an adequate revenue structure for continued implementation of the Pretreatment Program.
3. The permittee shall provide the EPA and MassDEP with an annual report describing the permittee's pretreatment program activities for the twelve (12) month period ending 60 days prior to the due date in accordance with 403.12(i). The annual report shall be consistent with the format described in Attachment D of this permit and shall be submitted no later than March 1 of each year.
 4. The permittee must obtain approval from EPA prior to making any significant changes to the industrial pretreatment program in accordance with 40 CFR 403.18(c).
 5. The permittee must assure that applicable National Categorical Pretreatment Standards are met by all categorical industrial users of the POTW. These standards are published in the Federal Regulations at 40 CFR 405 et. seq.
 6. The permittee must modify its pretreatment program, if necessary, to conform to all changes in the Federal Regulations that pertain to the implementation and enforcement of the industrial pretreatment program. The permittee must provide EPA, in writing, within 180 days of this permit's effective date proposed changes, if applicable, to the permittee's pretreatment program deemed necessary to assure conformity with current Federal Regulations. At a minimum, the permittee must address in its written submission the following areas: (1) Enforcement response plan; (2) revised sewer use ordinances; and (3) slug control evaluations. The permittee will implement these proposed changes pending EPA Region I's approval under 40 CFR 403.18. This submission is separate and distinct from any local limits analysis submission described in Part I.B.3.b.
 7. On October 14, 2005 EPA published in the Federal Register final changes to the General Pretreatment Regulations. The final "Pretreatment Streamlining Rule" is designed to reduce the burden to industrial users and provide regulatory flexibility in technical and administrative requirements of industrial users and POTWs. Within 60 days of the effective date of this permit, the permittee must submit to EPA all required modifications of the Streamlining Rule in order to be consistent with the provisions of the newly promulgated Rule. To the extent that the POTW legal authority is not consistent with the required changes, they must be revised and submitted to EPA for review.

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 and co-permittees 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. Preventative Maintenance Program

The permittee and co-permittees shall maintain an ongoing preventative maintenance program to prevent overflows and bypasses caused by malfunctions or failures of the sewer system infrastructure. The program shall include an inspection program designed to identify all potential and actual unauthorized discharges.

3. Infiltration/Inflow Control Plan:

The permittee and co-permittees shall each develop and implement a plan to control infiltration and inflow (I/I) to its sewer system. The plans shall be submitted to EPA and MassDEP within six (6) months of the effective date of this permit (see page 1 of this permit for the effective date) and shall describe the co-permittee's and permittee's program for preventing infiltration/inflow related effluent limit violations at the treatment plant, and all unauthorized discharges of wastewater, including overflows and by-passes due to excessive infiltration/inflow.

The plan shall include:

- a. 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.
- b. 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.
- c. Identification and prioritization of areas that will provide increased aquifer recharge as the result of reduction/elimination of infiltration and inflow to the system.
- d. An educational public outreach program for all aspects of I/I control, particularly private inflow.

4. Reporting Requirements:

A summary report of all actions taken to minimize I/I during the previous calendar year shall be submitted by the permittee and co-permittees to EPA and the MassDEP annually by March 31. The summary report shall, at a minimum, include:

- a. A map and a description of inspection and maintenance activities conducted and corrective actions taken during the previous year.
- b. Expenditures for any infiltration/inflow related maintenance activities and corrective actions taken during the previous year.
- c. A map with areas identified for I/I-related investigation/action in the coming year.

- d. A calculation of the annual average I/I, the maximum month I/I for the reporting year.
 - e. 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.
5. Alternate Power Source

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

D. UNAUTHORIZED DISCHARGES

The permittee and co-permittees are authorized to discharge only in accordance with the terms and conditions of this permit and only from the outfall(s) 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 DEP 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>.

E. SLUDGE CONDITIONS

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- reed beds), or are otherwise excluded under 40 CFR 503.6.
5. The permittee shall use and comply with the attached 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

a. 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

- | | | |
|------|-------------------------|------------|
| i) | less than 290 | 1/ year |
| ii) | 290 to less than 1500 | 1 /quarter |
| iii) | 1500 to less than 15000 | 6 /year |
| iv) | 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:

- i. Name and address of contractor responsible for sludge disposal
- ii. Quantity of sludge in dry metric tons removed from the facility by the sludge contractor

F. MONITORING AND REPORTING

Reporting

Monitoring results obtained during each calendar month shall be summarized and reported on Discharge Monitoring Report Form(s) postmarked no later than the 15th day of the following month.

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

Environmental Protection Agency
Water Technical Unit (SEW)
P.O. Box 8127
Boston, Massachusetts 02114

The State Agency is:

Massachusetts Department of Environmental Protection
Bureau of Resource Protection
Northeast Regional Office
205A Lowell Street
Wilmington, MA 01887

Industrial Pretreatment Program Reports should be sent to:

EPA New England
Attn: Justin Pimpare
One Congress Street
Suite 1100 – CMU
Boston, MA 02114

Massachusetts Department of Environmental Protection
Bureau of Waste Prevention
Industrial Wastewater Program
One Winter Street
Boston, MA 02108

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

Massachusetts Department of Environmental Protection
Division of Watershed Management
Surface Water Discharge Permit Program
627 Main Street, 2nd Floor
Worcester, Massachusetts 01608

G. STATE PERMIT CONDITIONS

This Discharge Permit is issued jointly by the U. S. Environmental Protection Agency (EPA) and the Massachusetts Department of Environmental Protection (MassDEP) 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 Commissioner of the MassDEP 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.

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