Water Resources Commission Decision
January 10, 2002

Request for Determination of Insignificance
Under the Interbasin Transfer Act
MGL Chapter 21 Sections 8b-8d

Town of Essex Sewer Project

Introduction

On September 17, 2001, the Massachusetts Water Resources Commission (WRC) received a request for determination of insignificance under the Interbasin Transfer Act (M.G.L. Chapter 21 §§ 8B-8D) from the Town of Essex. Additional information, required to fully evaluate this request under the Act, was received on October 19, 2001. Essex's request was discussed at the December 13, 2001 WRC meeting. **At its January 10, 2002 meeting, the WRC voted unanimously the Essex sewering project is insignificant under the Interbasin Transfer Act.**

REASONS FOR THE WRC DECISION

Essex is located in the North Coastal basin and obtains all of its water supply from this basin. Unlike other Massachusetts river basins, the North Coastal basin does not drain into one river which flows to the ocean. Instead, the basin is made up of many independent coastal streams, which discharge to the ocean. Essex is proposing to sewer portions of town to the Gloucester Wastewater Collection system. Gloucester is also located in the North Coastal basin, but discharges its wastewater to the Massachusetts Coastal basin. The Interbasin Transfer Act is triggered by this proposal because wastewater will cross both a town and basin line. As a result of this project, an estimated maximum of 0.225 million gallons per day (225,000 gallons per day) of wastewater will be transferred from the North Coastal basin to the Massachusetts Coastal basin.

Project Description

Essex is under a Court Judgement to address its wastewater problems. According to DEP, the proposed sewering project is a critical part of the Court Judgment negotiated between the Attorney General's Office and the Town of Essex. Essex is proposing to sewer a district within town to address serious Title 5 compliance problems. The area to be sewered is shown in Figure 1. Essex currently discharges all of its wastewater via onsite septic systems. The town has investigated alternatives to this project, including continued reliance on onsite septic systems, small communal leachfields, communal

infiltration beds and surface water discharge to the Essex River. These were evaluated during the MEPA process and rejected due to environmental problems.

Continued reliance on onsite septic systems was found to be problematic due to their current high rate of failure, resulting in increased pollutant loading to Essex Bay and other water bodies within town. The soils in the areas of failure do not meet the minimum requirements for Title 5 upgrade. Innovative and alternative septic systems were also investigated, but according to the September 1999 Needs Assessment for this project, DEP has stated that it will not approve these systems for areas that failed the soil evaluations. Small communal systems were eliminated from consideration because of inadequate capacity, the large number of systems that would be needed, and the associated costs. A central in-town ground water discharge was considered but rejected because of soil conditions and the sensitive environmental resources that could be impacted by the discharge, the Parker River/Essex Bay ACEC and the Essex Water Resources Protection District. In-town surface water discharge was also investigated but rejected in consideration of the Ocean Sanctuaries Act and the ACEC status of the Inner Essex Bay. The smaller tributaries within town were eliminated from consideration for surface water discharge because of lack of dilution.

After an extensive alternatives analysis, conducted through the MEPA process, the town determined that sewering a core area of town to the Gloucester wastewater treatment plant was the most suitable option for dealing with its wastewater problem.

Synopsis of Criteria for Insignificance

Criterion	Essex's Application
(a) Is not over 1 mgd	Meets
(b) Is less than 1 mgd on an annualized basis and is temporary, of short duration and for a purpose other than water supply use	Not Applicable
(c) Additional flow is less than 5% of the instantaneous flow	Not Applicable
(d) The 95% exceedance flow will not be diminished	Not Applicable
(e) Special resource values will not be adversely affected	Meets
(f) The Commission shall consider the cumulative impacts of all past, authorized or proposed transfers on streamflows in the donor basin	Meets

A description of how the application addressed these criteria is found in Attachment 1.

Analysis of the Proposed Transfer

Essex's Request for Determination of Insignificance was reviewed by staff from the Department of Environmental Management's Office of Water Resources, the Division of Marine Fisheries (DMF), and the Department of Environmental Protection's Division of Watershed Permitting and Northeast Regional Office (NERO) against the criteria for insignificance listed in the Interbasin Transfer Act regulations, 313 CMR 4.04(4).

The Essex sewer project proposes sewering six areas in the Town of Essex. These six areas fall into portions of six subbasins which drain into the Essex River estuary. The Essex River makes up one of the six subbasins. The rivers which flow into the estuary are tidal along a portion of their extent near the estuary. The subbasins are: Alewife Brook, Coffles Hollow, Eben Creek (upper and lower), Lufkin Creek, Soginese Creek and the Essex River (upper and lower). Drainage areas for these subbasins are generally less than 1.0 square mile (Table 1) except for Alewife Brook, which is 5.6 square miles.

All the areas proposed to be sewered in the six subbasins are served by public water supply. With the exception of the Alewife Brook subbasin, none of the subbasins will have a net loss of water beyond pre-development conditions. Because Alewife Brook subbasin is the source of the entire water supply for the town, and a portion of the water supply for the town of Manchester-by-the-Sea, it will have an additional net loss due to removal of septic systems which previously returned some water to the subbasin (Table 1).

Criteria for determining insignificance in the Interbasin Transfer regulations, 313 CMR 4.04(4), with respect to hydrological impacts, focus on impacts to streamflow. Criteria for streamflow impacts, as stated above, include: less than 5% of the instantaneous flow can be withdrawn (transferred) and the 95% exceedence flow and the 7Q10 flow will not be diminished. The proponent was directed to provide streamflow statistics and an inflow-outflow analysis to evaluate the net loss as compared to the streamflow.

Table 1

Subbasin	Drainage Area Square miles	Amount Proposed to be Sewered (mgd)	Net I/O Existing (mgd)*	7Q10 est. (cfs)	Net I/O Proposed (mgd)
Alewife Brook	5.6	0.07	-0.88	0	-0.95
Coffles Hollow	0.53	0.02	+.02	0	0
Eben Creek	0.35	0.01	+0.01	0	0
Lufkin Creek	0.54	0.01	+0.01	0	0
Soginese Creek	0.77	0.003	+0.003	0	0
Essex River	1.0	0.015	+0.015	0	0

*Includes water supply withdrawals of 0.71 mgd for Manchester By-the-Sea

Currently no streamflow data are available for the streams in the Town of Essex. In addition, the USGS Streamstats program could not be used to estimate flow for these streams as they have not been center-lined by MASS GIS. However, the proponent provided estimates made by the U.S. Geological Survey of 7Q10 flow for a number of comparable coastal streams in Gloucester in the North Coastal Basin, and in West Newbury in the Merrimack River Basin. 7Q10 flows for these streams are zero. In addition, 7Q2 flows, which closely approximate the 95% duration flow, are also zero. Alewife Brook, which drains the largest sub-basin being sewered, is described as "variably intermittent" at the outlet of Chebacco Lake in the Chebacco Lake Diagnostic Report by Salem State College, 1998. The outlet from Chebacco Lake to Alewife Brook was dry from July 1997 until September 1997, as described in this report.

An additional criterion for determining insignificance requires that special resource values will not be adversely affected. Alewife Brook, located within the project area, supports an important alewife fishery. DMF does not believe that this sewering project will have a negative impact on this fishery. Rather, they believe that the project is important to improve the water quality vital to maintenance of healthy shellfish populations in Essex Bay. Lawrence Gil, the North Coastal Watershed Team Leader, stated that this project has major significance for water quality within the North Coastal Watershed, particularly for the Essex River/ Bay and Great Marsh. The opportunity to improve water quality within the Essex River and Bay is directly related to opportunities to reopen shellfish beds now closed to shellfishing due to contamination from failing septic systems.

The WRC has determined that the interbasin transfer is insignificant based on the following facts:

- There is no flow during the summer months in the streams draining the six subbasins and most of the streams are tidal.
- For five of the subbasins, water being sewered out is coming from another portion of the basin.
- Although Alewife Brook subbasin is currently losing approximately 0.88 mgd, the net increase in loss due to this project is only 0.07 mgd. The WRC believes that the net improvements in water quality will far outweigh the decrease in flow.
- The alewife fishery present in this area will not be adversely affected.
- The sewering project will result in an improvement in the water quality of Essex River, Essex Bay and Great Marsh.

Cumulative Impacts

As shown in Table 1, the net inflow-outflow balance to the Alewife Brook subbasin to be realized with this project is (-0.95). The project's incremental outflow amount does not make a significant difference to the net outflow. The WRC notes that the water used by Manchester-by-the-Sea, which represents 74% of the net outflow from the Alewife Brook subbasin, remains within the North Coastal Basin, and thus does not constitute an Interbasin Transfer as defined by the Act. However this does not minimize the fact that

water is being lost to the subbasin. Essex addressed sewer expansion issues in the EIR and has implemented measures to limit the amount of sewering in town. The WRC agrees that these measures should be ongoing to prevent the export of additional water from the Alewife Brook sub-basin.

Rockport is proposing to sewer 0.035 mgd from the North Coastal basin to the Massachusetts Coastal basin. It is not expected that Essex's transfer, combined with Rockport's transfer will have an appreciable cumulative impact on the resources of the North Coastal basin. The North Coastal basin is made up of many independent coastal streams, which discharge to the ocean. Both areas proposed to be sewered are in separate and distinct coastal drainages, which are not hydrologically connected.

WRC Decision

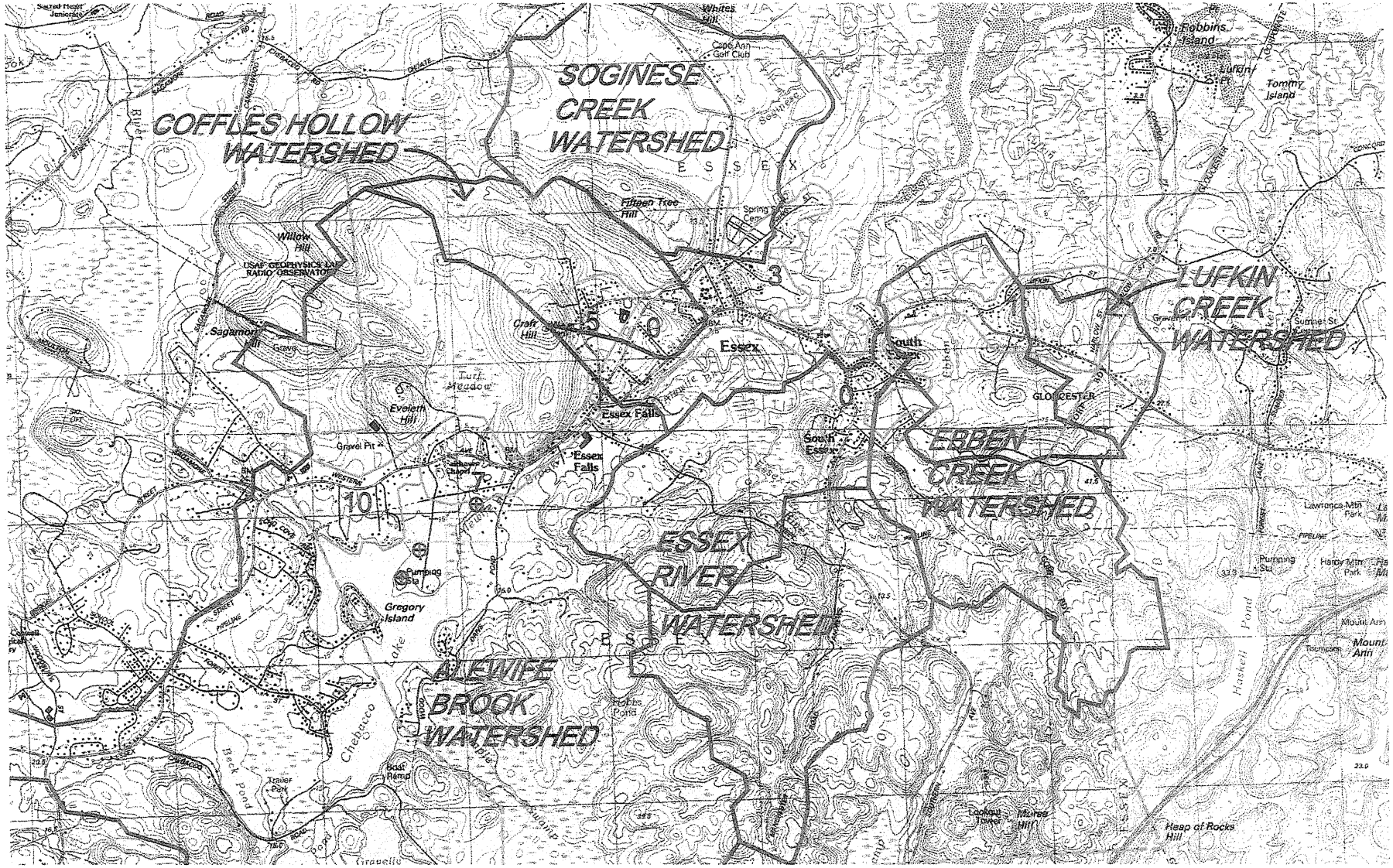
After reviewing the proposal and the comments received, **the WRC finds that Essex's sewering proposal, as described in the Town's Request, is insignificant under the Interbasin Transfer Act.** If additional areas of town are sewered, or if the wastewater contract with Gloucester is renegotiated, Interbasin Transfer Act review will be triggered at some level.

Executive Order 385

This decision is consistent with EO 385, which has the dual objective of resource protection and sustainable development. The decision does not encourage growth without adequate infrastructure, nor does it cause an unavoidable loss of environmental quality or resources.

Attachment 1
Request for Determination of Insignificance
Town of Essex Sewering Project

Criterion	Proposal Meets	Explanation
(a) Is not over 1 mgd	Meets	Proposed transfer is for an estimated maximum of 0.225 million gallons per day of wastewater
(b) Is less than 1mgd on an annualized basis and is temporary, of short duration and for a purpose other than water supply use)	Not Applicable	Proposal is long-term for wastewater purposes.
(c) Additional flow is less than 5% of the instantaneous flow	Not Applicable	This transfer is less than 5% of the instantaneous flow. There is no flow during the summer months in the streams draining the six subbasins and most of the streams are tidal.
(d) The 95% exceedance flow will not be diminished	Not Applicable	7Q2 flows, which closely approximate the 95% duration flow, are zero. There is no flow during the summer months in the streams draining the six subbasins and most of the streams are tidal.
(e) Special resource values will not be adversely affected	Meets	NHESP, USFWS, and the ACEC programs, among others, were contacted during the MEPA process to determine that special resource values will not be adversely affected by this project.
(f) The Commission shall consider the cumulative impacts of all past, authorized or proposed transfers on streamflows in the donor basin	Meets	The net increase due to sewer is only 0.07 mgd. This project is not expected to have an appreciable cumulative impact on the resources of the North Coastal basin, when evaluated in conjunction with the proposed Rockport interbasin transfer. Both areas proposed to be sewered are in separate and distinct coastal drainages, which are not hydrologically interdependent.



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0	CORE AREA	5	STORY ST.
1	EASTERN AVE./ LUFKIN ST.	7	WESTERN AVE. TO CENT. GROVE
3	SPRING ST.	10	WESTERN AVE. TO HAMILTON

ESSEX
SEWER SERVICE AREAS