

# Contamination Assessment and Reduction Project (CARP)

## A Model for the Evaluation and Management of Contaminants of Concern in Water, Sediment, and Biota in the NY/NJ Harbor Estuary



### Sediment Transport/Organic Carbon Production Sub-model



July, 2007



## PREFACE

The modeling work reported here is one of several efforts undertaken in connection with the Contamination Assessment and Reduction Project (CARP). CARP is a landmark project bringing together federal, state and non-government partners in a determined effort to better understand and reduce contamination within the New York/New Jersey Harbor Estuary. This contamination has led to environmental harm and economic hardships. In particular, dredging and disposal activities connected to port activities were severely curtailed in the early 1990s as dredging managers and regulators struggled with finding management options for handling contaminated dredged material. While dredging has since proceeded, the costs have escalated to 10 to 30 times previous levels, largely because of sediment contamination. Other negative impacts continue to plague the system, including fish advisories and substandard water quality, which are impeding the recovery and utilization of many of the estuary's natural resources.

Through workgroup deliberations in connection with the Dredged Material Forum and the NY/NJ Harbor Estuary Program (HEP), a general plan was developed to address the problem of continued contamination of sediments requiring dredging. The operative management questions included: Which sources of contaminants need to be reduced or eliminated to render future dredged material clean? Which actions can yield the greatest benefits? And, which actions are necessary to achieve the 2040 targets recommended in the Dredged Material Management Plan for the Harbor? CARP was initiated to address these questions. The primary funding mechanism for CARP was the 1996 *Joint Dredging Plan for the Port of New York and New Jersey*, an agreement between the States of New York and New Jersey that was funded by the Port Authority of New York and New Jersey (Port Authority). Additional funds were obtained from the New Jersey Department of Transportation (NJDOT), the Empire State Development Corporation, The U.S. Army Corps of Engineers, the Hudson River Estuary Management Program, HEP, and the Hudson River Foundation.

The specific objectives of the CARP are to:

1. Identify and quantify sources of contaminants of concern to the NY/NJ Harbor Estuary from a dredged material standpoint;
2. Establish baseline levels of contaminants of concern in water, sediments, and biota;
3. Determine the relative significance of contaminant inputs in controlling the concentrations of those contaminants in water, sediment and biota;
4. Forecast future conditions in light of various contaminant reduction scenarios;
5. Take action to reduce levels of contaminants of concern in water, sediments, and fish tissue.

CARP is a unique partnership of governmental and non-governmental entities whose activities have been guided by a management committee composed of representatives from the U.S. Environmental Protection Agency, U.S. Army Corps of Engineers, New Jersey Department of Environmental Protection (NJDEP), New York State Department of Environmental Conservation (NYSDEC), NJDOT, Empire State Development

Corporation, Port Authority, Environmental Defense and the Hudson River Foundation. NYSDEC and NJDEP completed objectives 1 and 2 above through a comprehensive data collection (sampling and testing) program, which represents about 90% of the \$32 million total funding for CARP. It was the consensus of the CARP Management Committee that mathematical modeling tools were needed to help understand the results of the data collection program and the fate and transport of contaminants through the Harbor. These models provide a means for integrating data in a mass balance framework such that relationships between loadings and contaminant concentrations in water, sediment and biota can be evaluated and quantified. Moreover, these models can provide the predictive capacity that managers and scientists need to assess the consequences of existing contaminant loads and potential remedial actions. The modeling work performed by HydroQual, Inc., therefore addresses Objectives 3 and 4 above, and represents about 10% of the total funding for CARP.

The major focus of CARP has been on an objective evaluation of the fate and transport of contaminants throughout the entire NY/NJ Harbor Estuary system. The CARP Management Committee hopes that its work will lead to action to reduce both ongoing and historic contamination. The CARP Management Committee includes representatives of federal and state government agencies and is therefore mindful of the various regulatory programs that are in place to address contaminant issues. Consequently, since the inception of CARP, agencies on the Committee have made comments and recommendations to make CARP as relevant as possible to these programs. However, the CARP data collection and modeling efforts were not designed specifically to comply with the requirements of any particular regulatory program. CARP products, particularly the modeling results, will no doubt provide important new information for these programs to consider, but further data collection and model refinement may be necessary to suit the scale and requirements of any particular program. And it is only those charged with regulatory responsibilities that can judge whether CARP products comply with their requirements.

Given the vast complexities of the entire estuary and the processes that affect contaminant fate and transport, modeling of this system has been a great technical challenge. From the initiation of CARP, it was understood that the modeling would be limited in some aspects because of scientific uncertainties in fully understanding all of the relevant processes. To ensure that the model components would be *state-of-the-science* upon completion, a Model Evaluation Group (MEG) was established at the outset of the project. Experts in organic and inorganic geochemistry, hydrodynamics, sediment transport and contaminant modeling were solicited to be members of the MEG. The MEG's first responsibility was to be part of the team to select a modeling contractor. It then has met repeatedly over the past five years, reviewing and commenting on the acceptability of modeling concepts and formulations to reproduce estuarine processes, including the review of model validation and hindcast results. The comments and suggestions of the MEG have been addressed by HydroQual, Inc., and a summary of the responses are included in this report. In addition, the MEG has provided comments and guidance on the future use and application of the modeling products.

While some model components have been verified, refined and successfully used in other venues, other components were newly designed for this project. The CARP modeling has elements that could be considered *applied science and engineering*, while others would be better characterized as *research and development*. The MEG has generally found that the CARP modeling effort has advanced the understanding of contaminant behavior in the estuary and does a very credible job of characterizing the relationships between contaminant loadings and concentrations in the environment.

One of the more challenging issues that the CARP Management Committee addressed was the development of realistic contaminant reduction scenarios to use as an illustration of the model's capability. As the modeling activities progressed, it became increasingly clear that legacy contamination of sediments was a dominant feature in controlling levels of contaminants in the system. Since two large-scale sediment remediation projects (namely the Hudson River Superfund and Lower Passaic River Superfund projects) were being developed, it made sense to include these projects in our initial CARP scenario analyses. While neither project is fully defined as yet, the model scenario gives a glimpse of the potential for these sites (remediated or not) to influence sediment and water quality in the Harbor over the long term.

The completed modeling components should not only be viewed as management tools, but as research tools from which fuller understandings of the fate and transport of contaminants can be gleaned. In addition, it is the hope of the CARP Management Committee that this modeling work serve as a foundation from which more advanced models can be developed and applied to new and emerging management issues.



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## **EXECUTIVE SUMMARY**

An existing calibrated, validated, and peer-reviewed three dimensional eutrophication model of the NY/NJ Harbor, Sound, and Bight System, the System-Wide Eutrophication Model (SWEM), has been expanded for the Contaminant Assessment and Reduction Project (CARP) to include suspended sediment transport calculations. The sediment transport formulations added to SWEM as well as the requisite modifications to SWEM organic carbon formulations are described in detail. The expanded SWEM, Sediment Transport SWEM (ST-SWEM), has been applied continuously for four consecutive water years: 1998-99, 1999-2000, 2000-01, and 2001-02 as well as the water years 1988-89 and 1994-95. The development of requisite model forcings and inputs for these water years is described in detail. The ST-SWEM domain includes the tidal, freshwater Hudson River between Albany and Poughkeepsie. This portion of the Hudson River was not previously included in SWEM.

Calibration/validation/skill assessment of ST-SWEM involved comparisons of model calculations to a broad spectrum of observed data as well as previous SWEM calculations and various estimates proposed by other investigators. The CARP sediment transport/organic carbon production sub-model is suitable for driving calculations of other CARP sub-models (i.e., contaminant fate and transport, and bioaccumulation).

## CONCLUSIONS

- The previously calibrated, validated, and peer-reviewed System-Wide Eutrophication Model (SWEM) is an appropriate starting point for building an expanded framework, Sediment Transport-SWEM (ST-SWEM), which serves as the CARP suspended sediment transport/organic carbon production sub-model. The CARP suspended sediment transport/organic carbon production sub-model properly accounts for the behavior of dissolved and particulate organic matter in the NY/NJ Harbor estuary. Available measured data for a wide variety of water and sediment quality parameters and model calculations are comparable.
- A shortcoming of the organic carbon production model is that in the tidal freshwater Hudson River, north of Poughkeepsie, the model did not have the benefit of being calibrated/validated with a multi-million dollar carbon and nutrient data set collected specifically for that purpose as was the case south of Poughkeepsie. Future efforts with the CARP sediment transport/organic carbon production model should be targeted at bolstering the organic carbon model in the tidal freshwater Hudson, particularly in terms of considering features of freshwater algal dynamics such as predation by zebra mussels, and more robust estimates of carbon and nutrient loadings in this portion of the model domain. We offset the implications of this weakness for contaminant modeling to some degree by considering contaminant distributions on both a dry weight and an organic carbon normalized basis.
- The CARP suspended sediment transport/organic carbon production sub-model provides sufficient detail on the fate of particles to support calculations by other CARP sub-models (i.e., contaminant fate and transport and bioaccumulation).
- After applying sediment transport/organic carbon production model results to the contaminant fate and transport model, there is some indication that the mass of particulate matter being moved upstream in near bottom waters from the Harbor to Haverstraw Bay may be somewhat overestimated.
- The CARP sediment transport/organic carbon production sub-model is amenable to application on an even more finely resolved computational grid than the CARP computational grid as may be warranted to support future modeling efforts within the region.

## SECTION 1.0

### INTRODUCTION

This report presents the technical details on the development of the Contaminant Assessment and Reduction Project (CARP) suspended sediment transport/organic carbon production sub-model. The report focuses on the development and calibration of the CARP suspended sediment transport/organic carbon production sub-model for the four water years beginning in October 1998 and ending in September 2002. For consistency and additional skill assessment, the application of the model to the 1988-89 and 1994-95 water years used for previous projects is also described. These additional years are useful to CARP for assessing water column suspended sediment concentration, sediment accumulation and storage phenomena in the Harbor over an expanded range of hydrodynamic conditions.

The CARP suspended sediment transport/organic carbon production sub-model originates from the calibrated, validated, and peer-reviewed eutrophication model implemented by HydroQual as part of the System-Wide Eutrophication Model (SWEM). SWEM has been used extensively by the New York City Department of Environmental Protection (NYCDEP) and the NY/NJ Harbor Estuary Program (HEP). Since SWEM is the predecessor model to the CARP suspended sediment transport/organic carbon production sub-model, some of the features of SWEM which will not be detailed in other sections of this report are described below.

SWEM was calibrated and validated against observed water and sediment quality data collected during two full annual cycles, the 12 month periods from October 1, 1994 to September 30, 1995 and from October 1, 1988 to September 30, 1989. The development, calibration, and validation of the SWEM eutrophication model are described in detail in a series of technical reports prepared by HydroQual for NYCDEP. Full citations for these reports are listed in the references section of this report. SWEM reports prepared by HydroQual are available to CARP upon request.

The peer-review process for SWEM development and application includes both oversight by several modeling evaluation groups (MEGs), publication in a edited compilation (Landeck Miller and St. John, 2006), and numerous technical presentations at the national meetings of several professional societies. The sediment nutrient flux portion of SWEM has been described in a book (Di Toro, 2001). A MEG with six members was convened in 1994 by HEP. This MEG met on three occasions and provided comprehensive review of the development of the SWEM and the supporting field program as well as the initial calibration of the model in the Harbor portion of the model domain. In 1997, a

second MEG was convened by HEP which consisted of four members. This MEG met on four occasions and provided comprehensive review of the calibration/validation of SWEM over the entire spatial domain. A third MEG was convened by the joint HEP and Long Island Sound Study Nutrient Work Groups in 1999. This MEG met on four occasions and provided detailed review of the final model. In all three cases, the MEGs also evaluated the SWEM hydrodynamic model and the combined suitability of the hydrodynamic and water quality models for application to address nutrient management actions.

Several MEG members were involved with all three phases of the MEG review of SWEM. A complete list of SWEM MEG members includes: Robert Thomann, Donald Pritchard, John Paul, John O'Reilly, Sam Wainwright, Dale Haidvogel, Jay Taft, Peter Hamilton, Chris Uchrin, and Charles Sawyer. More than \$250,000.00 was spent on convening MEG, preparing technical presentations for MEG evaluation, responding to written comments from MEG, and modifying SWEM to the satisfaction of MEG.

Prior to CARP, additional enhancement of the SWEM calibration in the New Jersey tributaries was performed by HydroQual under oversight by New Jersey Department of Environmental Protection (NJDEP) staff. Enhancement to SWEM in the New Jersey tributaries completed in July 2002 included refinements to loadings, vertical mixing coefficients, benthic filtration rates, nitrification rates, vertical light extinction coefficients, and temperature effects on algal growth. The enhancements both improved the overall level of calibration and/or made SWEM more defensible. The enhancements also included refinements to model grid geometry and several hydrodynamic parameters. A detailed description of this work appears in a technical report prepared by HydroQual for NJDEP which is available to CARP upon request. A full citation for this report is listed in the references section of this report.

The water quality model source code underlying both the CARP and SWEM applications is Row Column Aesop (RCA). RCA originates from the Water Analysis Simulation Program (WASP) developed by Hydrosience (HydroQual's predecessor firm) in the 1970's. RCA code has been used to develop numerous models outside of the NY/NJ Harbor region. The code has been constantly refined and upgraded to include both more realistic representations of chemical and biological processes occurring in open waters and underlying sediments, and more robust numerical solution techniques. The code has evolved to include the capacity to interface directly with the outputs of hydrodynamic transport models. Since the early 1990's, HydroQual has maintained a users manual for the RCA code. An updated version of the users manual recently completed by HydroQual is available to the CARP MEG upon request and includes a detailed description of the basic equations of the model,

characteristics of the model, characteristics of the computer code, and descriptions of input and output files associated with the code.

The principal attributes of the RCA source code include:

- RCA is a general purpose code used to evaluate a myriad of water quality problem settings. The user is able to customize an RCA sub-routine to address water body specific water quality issues.
- RCA formulates mass balance equations for each model segment for each water quality constituent or state-variable of interest. These mass balance equations include all horizontal, lateral and vertical components of advective flow and dispersive mixing between model segments; physical, chemical and biological transformations between the water quality variables within a model segment; and point, nonpoint, fall-line, and atmospheric inputs of the various water quality variables of interest.
- The partial differential equations, which form the water quality model, together with their boundary conditions, are solved using several mass conserving finite difference techniques.

The purpose of this report is to provide the CARP MEG with a comprehensive description of the CARP suspended sediment transport/organic carbon production model and its suitability for use in the calculation of contaminant fate and transport. The report is broken down into four technical sections including modeling approach, setup, calibration, and linkages with other CARP sub-models.

## SECTION 2.0

# CARP SUSPENDED SEDIMENT TRANSPORT/ORGANIC CARBON PRODUCTION MODELING APPROACH

Our original approach in modeling sediment transport and organic carbon involved linking a sediment transport model (ECOM-SED) to an organic carbon cycling model (SWEM). Some difficulties however were encountered in implementing this approach. First, sediment transport results that were passed forward from ECOM-SED caused mass conservation problems in SWEM. (This was in part caused by the settling and resuspension algorithms in ECOM-SED which calculate hourly settling and resuspension rates based on suspended sediment concentrations and bottom shear stresses at the end of the previous hour, and by differences in the numerical solution schemes in ECOM-SED and SWEM.) Second, decoupling of sediment transport and organic carbon cycling in the proposed approach did not allow us to explicitly consider interactions between inorganic and organic solids through coagulation processes.

We therefore modified our approach by directly incorporating sediment transport into SWEM. For simplicity, a description of the sediment transport formulation is first presented in Section 2.1 and is followed in Section 2.2 by a more complete description of our Sediment-Transport version of SWEM (ST-SWEM) that includes both sediment transport and organic carbon cycling.

## 2.1 SEDIMENT TRANSPORT MODELING APPROACH

Sediment transport through the CARP model domain is dependent on hydrodynamic flows, turbulent diffusion, settling, resuspension, and bed consolidation processes. Hydrodynamic flows and turbulent diffusivities across each cell interface are generated in a separate hydrodynamic model calculation (using ECOM) and are passed forward to ST-SWEM as hourly averages. Formulations for settling, resuspension, and bed structure are discussed below.

### 2.1.1 Settling

In ST-SWEM, settling velocity ( $w_s$ ) is described by a general formulation as follows:

$$w_s = B \cdot C^n \cdot h^m \quad (1)$$



where B is the settling rate coefficient, C is the total solids concentration of all inorganic and organic matter (mg/L), h is the layer depth (m), n and m are arbitrary exponents for concentration and depth. When the exponents n and m are set equal to zero, this relationship simply describes the case of a constant settling velocity. Constant settling velocities however are not expected to provide a reasonable description for suspended sediment removal rates in the Lower Hudson and NY-NJ Harbor. Rather, settling rates are expected to be controlled in part by coagulation processes which act to aggregate small particles into larger, faster settling flocs. The direct inclusion of coagulation (and the tracking of multiple particle size classes) in a 32,000 cell model however is not considered feasible at this time. Instead, the simplified relationship of Farley and Morel (1986) and Farley (1990) is used. The relationship describes the overall removal rate of solids by coagulation and settling with the following rate law expression:

$$\frac{dC}{dt} = -BC^2 \quad (2)$$

where B is a second-order rate coefficient and is dependent on rates of particle collisions by Brownian motion, shear, and differential settling. Equivalently, the overall rate of removal can be expressed in terms of a settling velocity as follows:

$$\frac{dC}{dt} = -\frac{w_s}{h} \times C \quad \text{yielding} \quad w_s = B \times C \times h \quad (3)$$

Finally, particle aggregation rates and coagulation may be limited by hydrodynamic and electrostatic resistance. For example, Han et al. (1997) has shown that the efficiency of particle collisions in forming aggregates can increase rapidly as a critical ionic strength (or salt concentration) is reached. This effect is added to our settling equation by allowing the overall removal rate by settling to be a function of salinity. The final equation for settling is therefore given as:

$$w_s = B \cdot C \cdot h \cdot \left( \frac{10^{(\text{Salinity} - \text{Critical Salinity})/\text{Spreading Coef.}}}{\frac{1}{\alpha} + 10^{(\text{Salinity} - \text{Critical Salinity})/\text{Spreading Coef.}}} + 0.5 \right) \quad (4)$$

where  $\alpha$  and the spreading coefficient help define the difference in settling rates for the freshwater and saltwater portions of the CARP domain. The relationship between settling rate and salinity is shown in Figure 2-1 for a sample calculation.

### 2.1.2 Resuspension

Resuspension is typically expressed as a function of the bottom shear stress and sediment bed properties. For the CARP model, bottom shear stress ( $\tau_{\text{bottom}}$ ) is calculated directly from the hydrodynamic flow field and the bottom roughness as:

$$\tau_{\text{bottom}} = \rho u_*^2 \quad \text{where} \quad u_* = \frac{\kappa u}{\ln[z/z_o]} \quad (5)$$

where  $\rho$  is the fluid density,  $u_*$  is the shear velocity,  $u$  is the instantaneous velocity in the bottom water column layer,  $\kappa$  is the von Karmen constant,  $z$  is the distance from the bottom to the mid-depth of the bottom water column layer, and  $z_o$  is the roughness height for skin friction.

For model cells having both longitudinal and lateral components of velocity, the bottom shear is calculated as an aerial average where

$$\tau_{\text{bottom}} = \rho \left[ \frac{\kappa}{\ln[z/z_o]} \right]^2 \iint [u^2 + v^2] dy dx \quad (6)$$

where  $u$  and  $v$  are assumed to vary linearly across the cell. After integration, this yields

$$\tau_{\text{bottom}} = \rho \left[ \frac{\kappa}{\ln[z/z_o]} \right]^2 \left[ \frac{(U_2 - U_1)^2}{3} + U_1(U_2 - U_1) + U_1^2 + \frac{(V_2 - V_1)^2}{3} + V_1(V_2 - V_1) + V_1^2 \right] \quad (7)$$

In sections of the model domain where artificial turns were introduced into the channels to compact the size of the model domain, an additional adjustment of the computed bottom shear stress is used to yield an equivalent value for a “straight channel” section.

The relationship between resuspension and bottom shear stress is typically described by the following power law function:

$$Q_s = a_o \left[ \frac{\tau_{bottom} - \tau_{critical}}{\tau_{critical}} \right]^n \quad (8)$$

where  $Q_s$  is the resuspension flux rate ( $\text{mg}/\text{cm}^2/\text{hr}$ ),  $a_o$  is a fitting coefficient,  $\tau_{bottom}$  is the bottom shear stress ( $\text{dynes}/\text{cm}^2$ ),  $\tau_{critical}$  is the critical shear stress which indicates the stress required to initiate resuspension of sediment, and  $n$  is a fitting coefficient. Values of  $n$  in the range of 2-3 have typically been used for freshwater applications. In marine systems, the exponent  $n$  is more commonly set to 1.

The resuspension flux rate may be expressed as,  $W_r$ , the resuspension velocity in meters per day, as shown:

$$W_r = \frac{Q_s}{SS_{BED}} \times 240 \quad (9)$$

where  $SS_{BED}$  is the solids concentration in the bed and 240 is a coefficient for units conversion.

### 2.1.3 Bed Structure

In ECOM-SED, consolidation of bed sediments is explicitly considered by the specification of up to seven “age class” layers. To mimic the effects of consolidation, layers are assigned increasing  $\tau_{critical}$  values, and transfer of sediment between the age layers are specified as a function of time after deposition. Although the ECOM-SED “age class” layers provide a reasonable approach for incorporating consolidation effects in the model, the specification of seven “age class” layers is probably excessive for NY/NJ Harbor where sediments are continually reworked by tidal resuspension and redeposition. In addition, there are a number of problems in applying ECOM-SED’s seven “age class” description in SWEM where the division of sediment layers is not based on deposition age but on redox chemistry (i.e., an aerobic and anaerobic zone).

The approach that we have incorporated in ST-SWEM has therefore been formulated to provide a consistent description of bed structure for both the sediment transport and organic carbon model calculations. In this approach, the “active” sediment is defined by a  $10 \pm 0.1$  cm layer, which will be subsequently divided into ten 1-cm layers in the RCATOX model code used for the CARP contaminant fate and transport sub-model. The allowable variation in active layer thickness is used to simulate tidal

resuspension and redeposition of a 0-0.2 cm “fluff” layer without causing artificial or numerical mixing through the underlying sediments. The remaining 9.9 cm of the active sediment represents previously deposited material that has undergone consolidation. Since the consolidated sediment is less likely to erode, a higher value of the critical shear stress,  $\tau_{\text{critical}}$ , can be set for the 9.9 cm “consolidated” layer.

During periods of net sediment accumulation, excess sediment and associated contaminants are passed from the “fluff” layer through the 9.9 cm consolidated sediment and are ultimately buried in the deeper sediment. Information on the sediment mass and associated contaminant concentrations of the deeper sediment is stored in an archival stack. Sediments in the archival stack are not considered in the active model calculation. During periods of net sediment erosion, however, sediment from the archival stack can be retrieved by the model to replenish sediment in the active layer. (In this formulation, a minimum thickness of 9.9 cm is maintained in the active layer throughout the entire model simulation to retain compatibility with the organic carbon sediment flux model calculation.) Once sediment in the archival stack is depleted, the sediments are considered to act as “hard bottom” and further resuspension of sediment will not occur until the archival stack is replenished through redeposition.

In summary, the main advantages of this approach are: 1) tidal resuspension and redeposition in a “fluff” layer can be simulated without numerical mixing of the underlying sediment layers, 2)  $\tau_{\text{critical}}$  values can be specified separately for the “fluff” and “consolidated” to provide a direct (albeit simple) description of consolidation, and 3) the maintenance of an active sediment layer is consistent with the SWEM model description for organic carbon decomposition and nutrient cycling in sediments (i.e., via the sediment flux model).

## 2.2 ORGANIC CARBON PRODUCTION MODELING APPROACH

Like sediment transport, organic carbon transport in the CARP domain is dependent upon hydrodynamic flows, turbulent diffusion, settling, resuspension, and bed consolidation processes. In addition, the autochthonous production of organic carbon within the CARP domain is dependent upon availability of light and nutrients and residence time in the photic zone.

The CARP model formulations for the dependence of organic carbon production on the availability of light and nutrients and residence time in the photic zone are those previously developed and calibrated for SWEM. The previous SWEM included 25 state variables in the water column (see Table 2-1) which are described in detail in technical reports prepared by HydroQual on SWEM (see references section) and are more briefly noted here. The previous SWEM also included state variables in the sediment bed to account for diagenesis and exchanges of nutrients and organic matter with the water column.

**Table 2-1. Twenty-five State Variables Included in SWEM**

salinity	ammonia nitrogen
winter phytoplankton carbon	nitrate and nitrite nitrogen
summer phytoplankton carbon	biogenic silica
refractory particulate organic phosphorus	available silica
labile particulate organic phosphorus	refractory particulate organic carbon
refractory dissolved organic phosphorus	labile particulate organic carbon
labile dissolved organic phosphorus	refractory dissolved organic carbon
dissolved inorganic phosphorus (DIP)	labile dissolved organic carbon
refractory particulate organic nitrogen	reactive dissolved organic carbon
labile particulate organic nitrogen	algal exudate dissolved organic carbon
refractory dissolved organic nitrogen	equivalents of aqueous dissolved oxygen demand
labile dissolved organic nitrogen	dissolved oxygen
	temperature

Note: Inert fractions of nutrients and organic carbon were not included in the SWEM water column because they do not contribute to the dissolved oxygen balance. These fractions were included in the SWEM sediment because they comprise a large portion of sediment concentrations. For purposes of ST-SWEM which considers resuspension, these fractions have been added to the water column. Inert material is continually resuspended to the water column and serves as an important sorbent phase for contaminants.

Figure 2-2 is a simplified diagrammatic representation of the principal eutrophication kinetics and water column-sediment interactions included in the previous SWEM. The kinetics shown in Figure 2-2 have been described in detail (DiToro et al. 2000; HydroQual 1999). Brief descriptions of the key features of primary production and sediment nutrient flux kinetics as shown in Figure 2-2 are presented below.

### 2.2.1 Available Light

The light that algae can use for growth is modeled as a function of four dependencies: incident solar radiation, the photoperiod or fraction of daylight, the depth of the water column, and light extinction or attenuation. The modeling framework used is an extension of a light curve analysis formulated by Steele (1962).

### 2.2.2 Algal Growth

Phytoplankton growth is modeled for two functional groups or assemblages: winter diatoms and summer flagellates. The reason phytoplankton are considered as two assemblages rather than as

individual species is that the growth rate of an individual population of phytoplankton in a natural environment is a complicated function of the species present and their differing reactions to solar radiation, temperature, and the balance between nutrient requirements and nutrient availability. The complex and often conflicting data pertinent to this problem have been reviewed exhaustively (Rhee 1973; Hutchinson 1967; Strickland 1965; Lund 1965; Raymond 1963). The available information is not sufficiently detailed at present to specify the growth kinetics for individual algal species in a natural environment. Instead we have divided the assemblages into distinct functional groups, namely diatoms and flagellates. Hence, in order to construct a growth function, a simplified approach is followed. Rather than consider the problem of different species and their associated environmental and nutrient requirements, the population is characterized as a whole by a measurement of the biomass of the phytoplankton present.

The kinetic framework employed for both functional algal groups is the same, only the choice of model coefficients is different. It is convenient to express the kinetic source term for phytoplankton,  $S_p$ , as the difference between the phytoplankton growth rate,  $G_p$ , and the loss rate,  $D_p$ . That is:

$$S_p = (G_p - D_p) \cdot P \quad (10)$$

where  $P$  is the phytoplankton population, and where  $G_p$  and  $D_p$  have units ( $\text{day}^{-1}$ ). The balance between the magnitude of the growth rate and the loss rate (together with the transport and mixing) determines the rate at which phytoplankton mass is created in each volume element.

For single species, the direct measure of the population size is the number of cells per unit volume. Cell counts of a single species may be obtained fairly readily in a well-controlled laboratory environment. However, in naturally occurring populations, this measure may be somewhat ambiguous. It is difficult to distinguish between viable and non-viable cells, and colonizing species tend to pose a problem because counts usually do not distinguish individual cells, and the sizes of the colonies are quite variable.

The sum of the numbers of each species, the total count, could be used to characterize biomass, but since cell size varies substantially, the picophytoplankton would dominate such an aggregation. To account for this, the total bio-volume, or wet weight of phytoplankton, assuming unit density, can be calculated using characteristic volumes for each identified species. Unfortunately, volumes can vary appreciably as a function of nutrient availability. Conversion to phytoplankton dry weight and carbon involves further species-dependent constants, which are also nutrient dependent, and therefore, are subject to variation and uncertainty. Thus, although the use of phytoplankton dry weight or carbon

concentration is an appealing solution to the issue of aggregation, it suffers from some practical difficulties.

An alternative approach to this problem is to measure a parameter which is characteristic of all phytoplankton, namely, chl-a, and to use this as the aggregated variable. The principal advantages are that the measurement is direct, it integrates cell types and age, and it accounts for cell viability. The principal disadvantages are that it is a community measurement with no differentiation between functional groups (for example, diatoms or blue-green algae), and it is not necessarily a good measurement of standing crop in dry weight or carbon units, since the chlorophyll to dry weight and carbon ratios are variable, and non-active chlorophyll (phaeo-pigments) must be measured to determine viable chlorophyll concentrations.

As can be seen from the above discussion, no simple aggregate measurement is entirely satisfactory. From a practical point of view, the availability of extensive chlorophyll data essentially dictates its use as the aggregate measure of the phytoplankton population, or biomass, for calibration and verification purposes. However, SWEM uses phytoplankton carbon as a measure of algal biomass. The reasons for choosing phytoplankton carbon, rather than chl-a as the internal state variable, are threefold. The first is a desire to maintain compatibility with the modeling framework developed by HydroQual, Inc. for the Long Island Sound study, from which the basic kinetic framework is drawn. The second reason is that the use of phytoplankton carbon greatly facilitates the model computation of oxygen-demanding material deposited to the sediment bed via settling. The third reason, and perhaps the most important for the CARP model, is that the algae provide an additional source of organic carbon to which contaminants may bind.

With the choice of biomass units established, a growth rate which expresses the rate of production of biomass as a function of the important environmental variables, temperature, light, and nutrients, may be developed. The specific growth rate,  $G_p$ , is related to  $G_{Pmax}$ , the maximum growth rate at optimum light, temperature, and nutrients, via the following equation:

$$G_p = G_{Pmax} \cdot G_T(T) \cdot G_I(I) \cdot G_N(N) \quad (11)$$

temperature      light      nutrients

where

$G_T(T)$  is the effect of temperature,

$G_I(I)$  is the light attenuation given by

$$G_I(I) = g(I, f, H, k_c) \quad (11a)$$

and

$G_N(N)$  is the nutrient limitation given by

$$G_N(N) = g(\text{DIP}, \text{DIN}, \text{Si}) \quad (11b)$$

where  $T$  is the ambient water temperature;  $I$  is the incident solar radiation;  $f$  is the fraction of daylight;  $H$  is the depth of the water column;  $k_c$  is the extinction or light attenuation coefficient; and DIP, DIN, and Si are the available nutrients required for growth: dissolved inorganic phosphorus (orthophosphate), dissolved inorganic nitrogen (ammonia plus nitrite/nitrate), and available silica, respectively.

Initial estimates of  $G_{P_{\max}}$  were based upon previous estuarine modeling studies and were subsequently refined during the calibration process. The selected maximum growth rates are then temperature-corrected using ambient water column temperature values. The temperature-corrected growth rate is computed using the following equation, which relates  $G_{P_{\max}}(T)$ , the growth rate at ambient temperature,  $T$ , to  $G_{P_{\max}}(T_{opt})$ , the growth rate at the optimal temperature,  $T_{opt}$ :

$$G_{P_{\max}}(T) = G_{P_{\max}}(T_{opt}) \cdot e^{-0.004(T_{opt}-T)^2} \quad T \leq T_{opt} \quad (12a)$$

$$G_{P_{\max}}(T) = G_{P_{\max}}(T_{opt}) \cdot e^{-0.006(T_{opt}-T)^2} \quad T > T_{opt} \quad (12b)$$

The temperature-corrected growth rate is then adjusted to reflect attenuation due to ambient light and nutrient levels.



In the natural environment, the light intensity to which the phytoplankton are exposed is not continuously at the optimum value. At the surface and near-surface of the air-water interface, photo-inhibition can occur due to high light intensities, while at depths below the euphotic zone, light is not available for photosynthesis due to natural and algal related turbidity. The modeling framework used in this study extends from a light curve analysis formulated by Steele (1962), and accounts for both the effects of supersaturating light intensities and light attenuation through the water column. The depth-averaged light attenuated growth rate factor,  $G_I(I)$ , is presented in Equation 13 and is obtained by integrating the specific growth rate over depth:

$$G_I(I) = \frac{ef}{k_c H} \left[ \exp\left(\frac{-I_o}{I_s} e^{-k_c H}\right) - \exp\left(\frac{-I_o}{I_s}\right) \right] \quad (13)$$

where:

- $e$  = 2.718,
- $f$  = the photoperiod or fraction of daylight,
- $H$  = the total water column depth (m),
- $k_c$  = the total extinction coefficient, computed from the sum of the base, non-algal related, light attenuation,  $k_{cbase}$ , and the self-shading attenuation due to the ambient phytoplankton population  $k_c P_{chl-a}$  ( $m^{-1}$ ),
- $k_c$  = the algal related extinction coefficient per unit of chlorophyll ( $m^2/mg \text{ chl-a}$ ),
- $P_{chl-a}$  = the ambient phytoplankton population as chlorophyll ( $\mu g \text{ chl-a/L}$ ), where  $P_{chl-a} = P_c/a_{cchl}$ ,
- $P_c$  = the ambient phytoplankton population as carbon ( $mgC/L$ ),
- $a_{cchl}$  = the ratio of algal carbon to algal chlorophyll ( $mgC/mg \text{ chl-a}$ ),
- $I_o$  = the total daily incident light intensity at the surface ( $ly/day$ ), and
- $I_s$  = the saturating light intensity ( $ly/day$ ).

The effects of various nutrient concentrations on the growth of phytoplankton have been investigated, and the results are quite complex. As a first approximation to the effect of nutrient concentration on the growth rate, it is assumed that the phytoplankton population in question follows Monod growth kinetics with respect to the important nutrients. That is, at an adequate level of nutrient concentration, the nutrient uptake/phytoplankton growth rate proceeds at the saturated rate for the ambient temperature and light conditions. However, at low substrate concentration, the uptake rate becomes linearly proportional to substrate concentration. Thus, for a nutrient with concentration  $N_j$  in the  $j$ th segment, the factor by which the saturated growth rate is reduced in the  $j$ th segment is  $N_j/(K_m + N_j)$ . The constant,  $K_m$ , which is called the Michaelis, or half-saturation, constant is the nutrient

concentration at which the uptake rate is half the saturated uptake rate. Since there are three nutrients, nitrogen, phosphorus, and silica, considered in this framework, the Michaelis-Menten expression is evaluated for each nutrient and the minimum value is chosen to reduce the saturated growth rate,

$$G_N(\mathbf{N}) = \text{Min} \left( \frac{\text{DIN}}{K_{mN} + \text{DIN}}, \frac{\text{DIP}}{K_{mP} + \text{DIP}}, \frac{\text{Si}}{K_{mSi} + \text{Si}} \right) \quad (14)$$

Numerous mechanisms have been proposed which contribute to the loss rate of phytoplankton: endogenous respiration, grazing by herbivorous zooplankton, sinking or settling from the water column, and parasitization (Fogg, 1965). The first three mechanisms have been included in previous models for phytoplankton dynamics, and they have been shown to be of general importance. For this study, only endogenous respiration and settling have been explicitly included in the modeling framework. The effect of zooplankton grazing is included indirectly using a time-variable algal loss rate that was developed based upon measurements of zooplankton abundance. For the domain of SWEM, field data have shown that in certain locations, particularly the lower East River, filtration by benthic bivalves is also an important loss mechanism of phytoplankton. The effect of benthic bivalve filtration on the loss of phytoplankton is included indirectly in SWEM by increasing the deposition rate of algae to the sediment on a location specific basis.

The endogenous respiration rate of phytoplankton is the rate at which the phytoplankton oxidize their organic carbon to carbon dioxide per unit weight of phytoplankton organic carbon. Respiration is the reverse of the photosynthesis process, and as such, contributes to the loss rate of the phytoplankton biomass. If the respiration rate of the phytoplankton as a whole is greater than the growth rate, there is a net loss of phytoplankton carbon or biomass. The endogenous respiration rate has been shown to be temperature dependent (Riley et al., 1949) and is determined via Equation 15,

$$k_{PR}(T) = k_{PR}(20^\circ\text{C}) \times \theta_{PR}^{T-20} \quad (15)$$

where  $k_{PR}(20^\circ\text{C})$  is the endogenous respiration rate at  $20^\circ\text{C}$ , and  $k_{PR}(T)$  is the temperature corrected rate, and  $\theta_{PR}$  is the temperature correction coefficient. The units of  $k_{PR}$  are  $\text{day}^{-1}$ .

The sinking of phytoplankton is an important contribution to the overall loss of the phytoplankton population, particularly in lakes and coastal oceanic waters. Published values of the sinking velocity of phytoplankton, mostly in quiescent laboratory conditions, range from 0.1 to 18.0 m/day. In some instances, however, the settling velocity is zero or negative. Actual settling rates in

natural waters are a complex phenomenon, affected by vertical turbulence, density gradients, and the physiological state of the different species of phytoplankton. An important factor determining the physiological state of algae is nutrient availability. Bienfang et al. (1982) measured sinking rate response of four marine diatoms to depletion of nitrate, phosphate, and silicate. All four species showed significant increase in sinking rate under conditions of silica depletion; one species showed increased settling rate under nitrate limitation. An analysis of field experiments by Culver and Smith (1989) indicated that low concentrations of nitrate, as well as light availability, affected diatom settling rates. Although the effective settling rate of phytoplankton is greatly reduced in a relatively shallow, well-mixed river or estuary due to vertical turbulence, it still can contribute to the overall loss of the algal population. In addition, the settling phytoplankton can be a significant source of nutrients to the sediments and can play an important role in the generation of SOD. For these reasons, a term representing phytoplankton settling has been included in the algal loss expression, and is determined by:

$$k_{sP} = \frac{V_{sPb}}{H} + \frac{V_{sPn}}{H} \cdot (1 - G_N(N)) \quad (16)$$

where  $k_{sP}$  is the net effective algal loss rate due to settling ( $\text{day}^{-1}$ ) at  $20^\circ\text{C}$ ,  $v_{sPb}$  is the base settling velocity of phytoplankton (m/day),  $v_{sPn}$  is the nutrient dependent settling rate, (m/day),  $G_N(N)$  is defined by Equation 14, and  $H$  is the depth of the segment, (m). A temperature correction is applied to equation 16.

Zooplankton grazing, depending upon time of the year and zooplankton biomass levels, may be an important loss rate for phytoplankton. Zooplankton abundance data suggest that the highest numbers of herbivorous zooplankton occur during the months March, April, and May. An attempt to convert the zooplankton abundance data to zooplankton carbon using limited available measures of zooplankton size, support this conclusion. It appears that zooplankton biomass is also highest during the late spring. The loss term used to represent zooplankton grazing,  $k_{grz}$ , has been assigned on a monthly basis in units of  $\text{day}^{-1}$  based on the data.

Filtration by benthic bivalves, depending upon time of the year and biomass levels at a particular location, may be an important loss rate for phytoplankton. Benthic bivalve abundance and biomass data suggest that benthic bivalves are present in high numbers in the lower East River and upper New York Bay. The rate of benthic filtration, or water column clearance (m/day), is assigned on a location specific basis with a temperature dependency. Water column clearance is determined from a regression equation developed for Chesapeake Bay between water column clearance rate and benthic bivalve

biomass. In the kinetics, the deposition flux of algae to the sediment bed is incremented to reflect the clearance rate. For practical purposes, the loss of algae due to benthic filtration is included in the  $k_{sp}$  term of equation 17.

The total loss rate for phytoplankton is the sum of the three loss rates described below:

$$D_p = k_{PR}(T) + k_{sp} + k_{grz}(T) \quad (17)$$

This completes the specification of the growth and loss rates for phytoplankton in terms of the physical variables: light, temperature, and available nutrients. With these variables known as a function of time, it would be possible to calculate the annual cycle of phytoplankton carbon. However, the nutrient concentrations are not known a priori since they depend upon the phytoplankton population which develops. Thus, the nutrient calculations performed in SWEM are interdependent and cannot be analyzed separately. It is necessary to formulate mass balances for the nutrients as well as the phytoplankton in order to calculate the phytoplankton carbon which would develop for a given set of environmental conditions.

### 2.2.3 Nutrient and Organic Carbon Cycling

Five forms of phosphorus, six forms of nitrogen, two forms of silica and six forms of organic carbon are included in the previous nutrient and carbon formulations in SWEM (not ST-SWEM) as schematically shown on Fig. 2-2. Inorganic phosphorus is utilized by phytoplankton for growth and is returned to various organic and inorganic forms via respiration and predation. A fraction of the phosphorus released during phytoplankton respiration and predation is in the inorganic form and is readily available for uptake by other viable phytoplankton. The remaining fraction is released in the dissolved and particulate organic forms. The organic phosphorus must undergo a mineralization or bacterial decomposition into inorganic phosphorous before it can be used by other viable phytoplankton.

During algal respiration and death, a fraction of the algal cellular nitrogen is returned to the inorganic pool in the form of ammonia. The remaining fraction is recycled to the dissolved and particulate organic nitrogen pools. Organic nitrogen undergoes a bacterial decomposition, the end product of which is ammonia. Ammonia nitrogen, in the presence of nitrifying bacteria and oxygen, is converted to nitrite nitrogen and subsequently nitrate nitrogen (nitrification). Both ammonia and

nitrate are available for uptake and use in cell growth by phytoplankton; however, for physiological reasons, the preferred form is ammonia.

Two silica forms are considered. Available silica is dissolved and is utilized by diatoms during growth for their cell structure. Unavailable or particulate biogenic silica is produced from diatom respiration and diatom grazing by zooplankton. Particulate biogenic silica undergoes mineralization to available silica or settles to the sediment from the water column.

Pools of dissolved and particulate organic carbon are established on the basis of timescales for oxidation or decomposition. Zooplankton consume algae and take up and redistribute algal carbon to the organic carbon pools via grazing, assimilation, respiration, and excretion. Since zooplankton are not directly included in the SWEM kinetics, the redistribution of algal carbon to the organic carbon pools by zooplankton is simulated by empirical distribution coefficients. An additional term, representing the excretion of dissolved organic carbon by phytoplankton during photosynthesis, is included in SWEM. This algal exudate is very reactive. The decomposition of organic carbon is assumed to be temperature and bacterial biomass-mediated. Since bacterial biomass is not directly included within the SWEM framework, phytoplankton biomass is used as a surrogate variable. An additional loss mechanism of particulate organic matter is that due to filtration by benthic bivalves. This loss is handled in SWEM kinetics by increasing the deposition of non-algal particulate organic carbon from the water column to the sediment.

#### **2.2.4 Sediment Dynamics**

The mass balance equations of the SWEM sediment kinetics account for changes in particulate organic matter (carbon, nitrogen, phosphorus, and silica) in the sediments due to deposition from the overlying water column, sedimentation, and decay or diagenesis. The decay of particulate organic matter follows first-order kinetics as described by Berner (1964, 1974, and 1980) and is often referred to as the G model. The end products of diagenesis or decay of the particulate organic matter include ammonia nitrogen, dissolved inorganic phosphorus and dissolved inorganic silica. These end products can undergo additional biological, chemical, and physical processing within the sediment layer such as nitrification, sorption, and exchange with the overlying water column. Of particular importance to the overlying water column is the calculation of sediment oxygen demand, SOD. A more complete development of the SWEM sediment diagenesis model theory is presented elsewhere (Di Toro and Fitzpatrick 1993; Di Toro 2001). The sediment kinetics state variables include: temperature, labile POP, refractory POP, slow refractory POP, labile PON, refractory PON, slow refractory PON, labile POC, refractory POC, slow refractory POC, biogenic silica, ammonia nitrogen, nitrate nitrogen, inorganic phosphorus, dissolved silica, and hydrogen sulfide.

### **2.2.5 Dissolved oxygen balance**

The dissolved oxygen balance includes both sources and sinks. Algal growth has two sources: the production of dissolved oxygen from photosynthetic carbon fixation and an additional source of oxygen from algal growth when nitrate rather than ammonia is utilized. Atmospheric reaeration is another source of dissolved oxygen. Sinks include algal respiration, nitrification, and oxidation of carbonaceous material.

### **2.2.6 Primary production**

Primary production, an indirect measure of the depth integrated algal growth rate, is calculated in ST-SWEM. Both source and sink terms from the dissolved oxygen balance, photosynthetic carbon fixation and algal respiration, are used to calculate primary production in oxygen units.

### **2.2.7 Incorporating Sediment Transport into SWEM**

The previous SWEM model did not fully consider resuspension and erosion processes for particulate organic matter on a time variable basis (i.e., these were accounted for through net deposition and constant burial rates and were calibrated against exerted oxygen demand and water and sediment concentrations of the particulate organic matter).

For purposes of the CARP sediment transport/organic carbon production sub-model, ST-SWEM, settling, resuspension and burial of particulate organic carbon, nitrogen and phosphorus are determined as part of sediment transport calculations. Specifically, calculated settling rates are applied to both inorganic and organic particulate matter. In this approach, we assume that inorganic and organic particulate matter aggregate in the water column and are removed at similar rates as floc settle. [Settling velocities for algae however are set independently due to their low rates of aggregation (i.e., low collision efficiencies).] Time-variable resuspension and burial rates of bed material are also applied equally to inorganic and organic matter. With the addition of inorganic sediment and sediment transport to the original SWEM, ST-SWEM is the single model used for CARP to simulate both suspended sediments and organic carbon.

The final ST-SWEM kinetics include seven rather than six organic carbon variables to accommodate a detailed consideration of resuspension and erosion processes. The seven organic carbon state variables considered in ST-SWEM include: reactive dissolved organic (ReDOC), labile dissolved (LDOC), refractory dissolved (RDOC), labile particulate (LPOC), refractory particulate (RPOC), inert particulate organic carbon (IPOC), and dissolved algal exudate (ExDOC). Reactive, labile, refractory,

and inert distinctions are based upon the time scales of oxidation or decomposition. Reactive organic carbon decomposes on a time scale of days to a week or two; labile organic carbon decomposes on the time scale of several weeks to a month or two; refractory organic carbon decomposes on the order of months to a year. Reactive and labile organic carbon decompose primarily in the water column or else rapidly in the sediments. Refractory organic carbon decomposes much more slowly, almost entirely in the sediments. Due to decomposition of reactive and refractory carbon, inert particulate organic carbon dominates the carbon present in sediments.

Table 2-2 presents the reaction rate terms for each of the organic carbon pools considered in the ST-SWEM framework together with the model coefficient used for CARP application. An additional loss mechanism of particulate organic matter is that due to filtration by benthic bivalves. This loss is handled in the model kinetics by increasing the deposition of non-algal particulate organic carbon from the water column to the sediment. Table 2-3 presents a summary overview of the organic carbon pools considered in ST-SWEM. Table 2-4 identifies model coefficients assigned in the sediment bed portion of ST-SWEM.

Table 2-2 - Organic Carbon Reaction Equations

Labile Particulate Organic Carbon (LPOC)

$$\text{LPOC} = f_{\text{LPOC}} \cdot k_{\text{grz}}(T) \cdot P_c - k_{5,7} \theta_{5,7}^{T-20} \cdot \text{LPOC} \cdot \frac{P_c + \text{ReDOC} + \text{ExDOC}}{K_{mP_c} + P_c + \text{ReDOC} + \text{ExDOC}}$$

$$- \frac{v_5}{H} \cdot \text{LPOC} + \frac{r_5}{H_{\text{sed}}} \cdot \text{G1C}$$

(Note: Last term above applies only to layer 10)

Refractory Particulate Organic Carbon (RPOC)

$$\text{RPOC} = f_{\text{RPOC}} \cdot k_{\text{grz}}(T) \cdot P_c - \frac{v_6}{H} \cdot \text{RPOC} - k_{6,8} \theta_{6,8}^{T-20} \cdot \text{RPOC} \cdot \frac{P_c + \text{ReDOC} + \text{ExDOC}}{K_{mP_c} + P_c + \text{ReDOC} + \text{ExDOC}}$$

$$+ \frac{r_6}{H_{\text{sed}}} \cdot \text{G2C}$$

(Note: Last term above applies only to layer 10)

Inert Particulate Organic Carbon (IPOC)

$$\text{IPOC} = - \frac{v_7}{H} \cdot \text{IPOC} + \frac{r_7}{H_{\text{sed}}} \cdot \text{G3C}$$

(Note: Last term above applies only to layer 10)



Labile Dissolved Organic Carbon (LDOC)

$$\begin{aligned}
\text{LDOC} = & f_{\text{LDOC}} \cdot k_{\text{grz}}(T) \cdot P_c + k_{5,7} \theta_{5,7}^{T-20} \cdot \text{LPOC} \cdot \frac{P_c + \text{ReDOC} + \text{ExDOC}}{K_{\text{mp}_c} + P_c + \text{ReDOC} + \text{ExDOC}} \\
& - k_{7,0} \theta_{7,0}^{T-20} \cdot \text{LDOC} \cdot \frac{\text{LDOC}}{K_{\text{mLDOC}} + \text{LDOC}} \cdot \frac{\text{DO}}{k_{\text{DO}} + \text{DO}} \cdot \frac{P_c + \text{ReDOC} + \text{ExDOC}}{K_{\text{mp}_c} + P_c + \text{ReDOC} + \text{ExDOC}} \\
& - \frac{5}{4} \cdot \frac{12}{14} \cdot K_{\text{DN}} \theta_{\text{DN}}^{T-20} \cdot \text{NO}_x \cdot \frac{K_{\text{NOX}}}{K_{\text{NOX}} + \text{DO}} \cdot \frac{\text{LDOC}}{K_{\text{mLDOC}} + \text{LDOC}}
\end{aligned}$$

Refractory Dissolved Organic Carbon (RDOC)

$$\begin{aligned}
\text{RDOC} = & f_{\text{RDOC}} \cdot k_{\text{grz}}(T) \cdot P_c - k_{8,0} \theta_{8,0}^{T-20} \cdot \text{RDOC} \cdot \frac{P_c + \text{ReDOC} + \text{ExDOC}}{K_{\text{mp}_c} + P_c} \cdot \frac{\text{DO}}{K_{\text{DO}} + \text{DO}} \\
& + k_{6,8} \theta_{6,8}^{T-20} \cdot \text{RPOC} \cdot \frac{P_c + \text{ReDOC} + \text{ExDOC}}{K_{\text{mp}_c} + P_c + \text{ReDOC} + \text{ExDOC}}
\end{aligned}$$

Reactive Dissolved Organic Carbon (ReDOC)

$$\text{ReDOC} = - k_{9,0} \theta_{9,0}^{T-20} \cdot \text{ReDOC} \cdot \frac{\text{ReDOC}}{K_{\text{mLDOC}} + \text{ReDOC}} \cdot \frac{\text{DO}}{K_{\text{DO}} + \text{DO}} \cdot \frac{P_c + \text{ReDOC} + \text{ExDOC}}{K_{\text{mp}_c} + P_c + \text{ReDOC} + \text{ExDOC}}$$

Algal Exudate Dissolved Organic Carbon (ExDOC)

$$\begin{aligned}
\text{ExDOC} = & f_{\text{ExPP}} \cdot G_p \cdot P_c \\
& - k_{10,0} \theta_{10,0}^{T-20} \cdot \text{ExDOC} \cdot \frac{\text{ExDOC}}{K_{\text{mLDOC}} + \text{ExDOC}} \cdot \frac{\text{DO}}{K_{\text{DO}} + \text{DO}} \cdot \frac{P_c + \text{ReDOC} + \text{ExDOC}}{K_{\text{mp}_c} + P_c + \text{ReDOC} + \text{ExDOC}}
\end{aligned}$$

**Table 2-2 - Organic Carbon Reaction Equations  
(Continued)**

<b>Description</b>	<b>Notation</b>	<b>Value</b>	<b>Units</b>
Phytoplankton Biomass	$P_c$	-	mgC/L
Specific Phytoplankton Growth Rate	$G_p$	Eq. 11	day <sup>-1</sup>
Half Saturation Constant for Phytoplankton Limitation	$K_{mPc}$	0.0	mgC/L
Half Saturation Constant for LDOC	$K_{mLDOC}$	0.0	mgC/L
Fraction of Grazed Organic Carbon Recycled to:			
the LPOC pool	$f_{LPOC}$	0.40	
the RPOC pool	$f_{RPOC}$	0.025	
the IPOC pool	$f_{IPOC}$	0.025	
the LDOC pool	$f_{LDOC}$	0.45	
the RDOC pool	$f_{RDOC}$	0.10	
Fraction of Primary Productivity Going to the Algal Exudate DOC pool	$f_{Expp}$	0.20	
Hydrolysis Rate for RPOC	$k_{6,8}$	0.01	day <sup>-1</sup>
Temperature Coefficient	$\theta_{6,8}$	1.08	
Hydrolysis Rate for LPOC	$k_{5,7}$	0.20	day <sup>-1</sup>
Temperature Coefficient	$\theta_{5,7}$	1.08	
Settling Rate of LPOC	$v_5$	Eq.4	m/day
Settling Rate of RPOC	$v_6$	Eq.4	m/day
Settling Rate of IPOC	$v_7$	Eq.4	m/day
Resuspension Rate of G1C	$r_5$	Eq.9	m/day
Resuspension Rate of G2C	$r_6$	Eq.9	m/day
Resuspension Rate of G3C	$r_7$	Eq.9	m/day
Water Column Segment Depth	H	-	m

Description	Notation	Value	Units
Sediment Segment Depth	$H_{\text{SED}}$	-	m
Oxidation Rate of LDOC	$k_{7,0}$	0.15	day <sup>-1</sup>
Temperature Coefficient	$\theta_{7,0}$	1.08	
Oxidation Rate of RDOC	$k_{8,0}$	0.008	day <sup>-1</sup>
Temperature Coefficient	$\theta_{8,0}$	1.08	
Oxidation Rate of ReDOC	$k_{9,0}$	0.3	day <sup>-1</sup>
Temperature Coefficient	$\theta_{9,0}$	1.047	
Oxidation Rate of ExDOC	$k_{10,0}$	0.1	day <sup>-1</sup>
Temperature Coefficient	$\theta_{10,0}$	1.08	
Half Saturation for Oxygen Limitation	$K_{\text{DO}}$	0.2	mgO <sub>2</sub> /L
Dissolved Oxygen	DO	-	mgO <sub>2</sub> /L
Denitrification Rate	$K_{\text{DN}}$	0.05	day <sup>-1</sup>
Temperature Coefficient	$\theta_{\text{DN}}$	1.045	
Nitrate + Nitrite	NOX	-	mgN/L
Half Saturation Constant for Denitrification	$K_{\text{NOX}}$	0.10	mgO <sub>2</sub> /L

**Table 2-3. Organic Carbon Forms Included in ST-SWEM**

		WATER COLUMN		SEDIMENT BED	
PHASE	POOL	SOURCES	SINKS	SOURCES	SINKS
Living Algae	Diatoms	external sources growth	settling respiration zooplankton grazing benthic filtration	NA	NA
	Greens	external sources growth	settling respiration zooplankton grazing benthic filtration	NA	NA
POC	Inert G3	resuspension grazed algae	settling benthic filtration	settling benthic filtration 15% of dead algae/POM deposition	resuspension burial mineralization/diagenesis
	Refractory G2	external loadings grazed algae resuspension	hydrolysis to DOC settling benthic filtration	settling benthic filtration 20% of dead algae/POM deposition	resuspension burial mineralization/diagenesis
	Labile G1	external loadings grazed algae resuspension	hydrolysis to DOC settling benthic filtration	settling benthic filtration 65% of dead algae/POM deposition	resuspension burial mineralization/diagenesis
DOC	Refractory	external loadings grazed algae from refractory POC	oxidation	NA	NA
	Labile I	external loadings grazed algae from labile POC	oxidation denitrification	NA	NA
	Labile II	external loadings	oxidation	NA	NA
	Exudate	algal exudation	oxidation	NA	NA

**Table 2-4. Sediment Sub-Model Coefficients**

Description	Notation	Value	Units
<u>Physical Related</u>			
Water column-sediment layer temperature diffusion coefficient	D	0.0156	cm <sup>2</sup> /sec
depth of active sediment layer	H <sub>2</sub>	9.9 +	cm
deposition velocity at 20°C for: phytoplankton	V <sub>dep</sub>	[0.2-1.0]• (Eq. 16)	m/day
non-phytoplankton POM	w <sub>s</sub>	Eq. 1	m/day
sedimentation velocity	V <sub>sed</sub>	variable	cm/yr
resuspension velocity	W <sub>r</sub>	Eq. 9	cm/yr
<u>Diagenesis Related</u>			
G1 diagenesis decay rate at 20°C	k <sub>diag1</sub>	0.035	day <sup>-1</sup>
temperature correction coefficient	θ <sub>1</sub>	1.10	
G2 diagenesis decay rate at 20°C	k <sub>diag2</sub>	0.0018	day <sup>-1</sup>
temperature correction coefficient	θ <sub>2</sub>	1.15	
G3 diagenesis decay rate at 20°C	k <sub>diag3</sub>	0.000001	day <sup>-1</sup>
temperature correction coefficient	θ <sub>3</sub>	1.17	

	Labile	Refractory	Slow Refractory
<u>G-Model Fraction Splits</u>			
<u>Phosphorus</u>			
phytoplankton group 1	0.65	0.20	0.15
phytoplankton group 2	0.65	0.20	0.15
non-phytoplankton POM	0.65	0.20	0.15
<u>Nitrogen</u>			
phytoplankton group 1	0.65	0.25	0.10
phytoplankton group 2	0.65	0.25	0.10
non-phytoplankton POM	0.65	0.25	0.10
<u>Carbon</u>			
phytoplankton group 1	0.65	0.20	0.15
phytoplankton group 2	0.65	0.20	0.15
non-phytoplankton POM	0.65	0.20	0.15

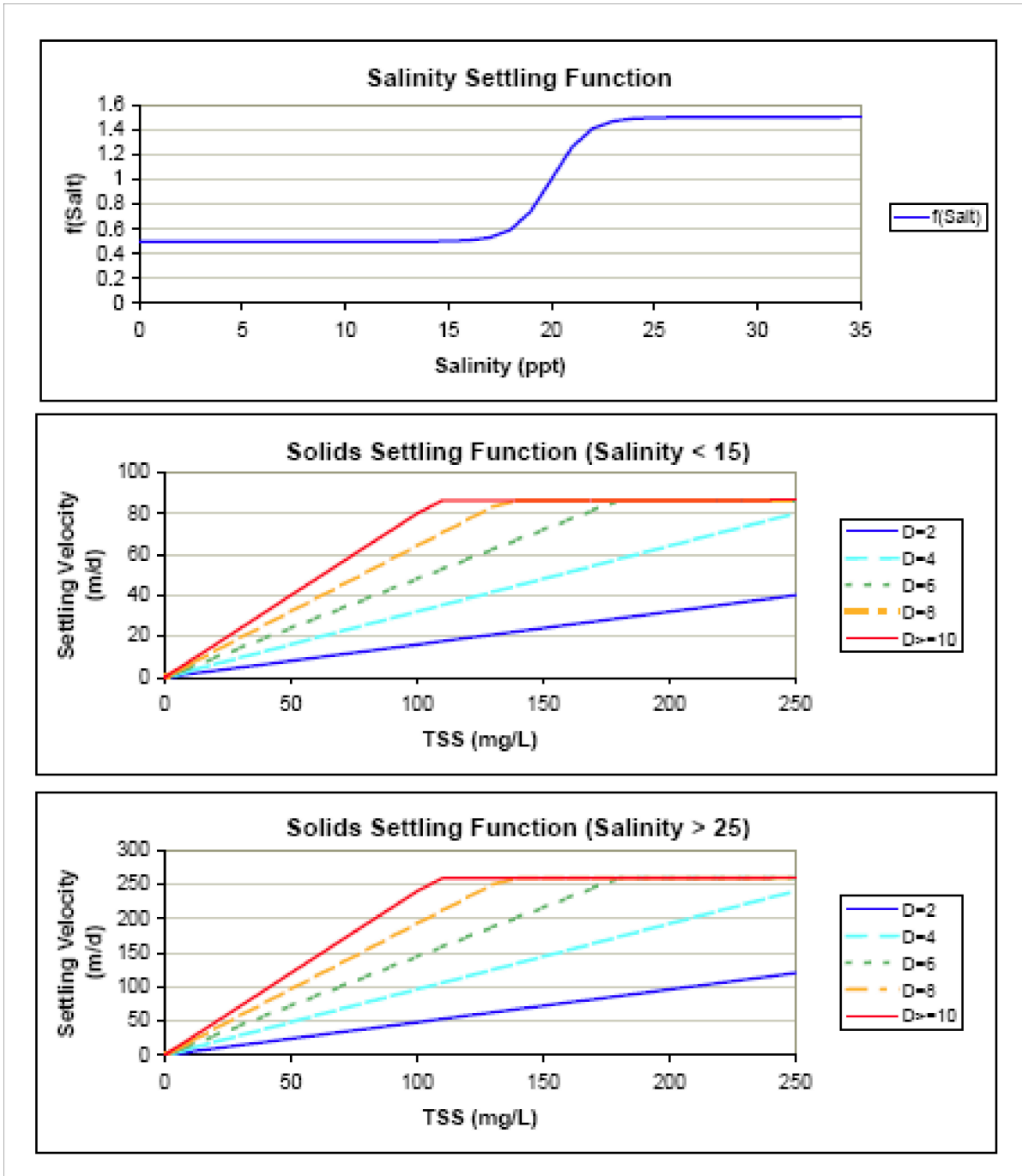


Figure 2-1. Settling velocity as a function of suspended sediment concentration and salinity

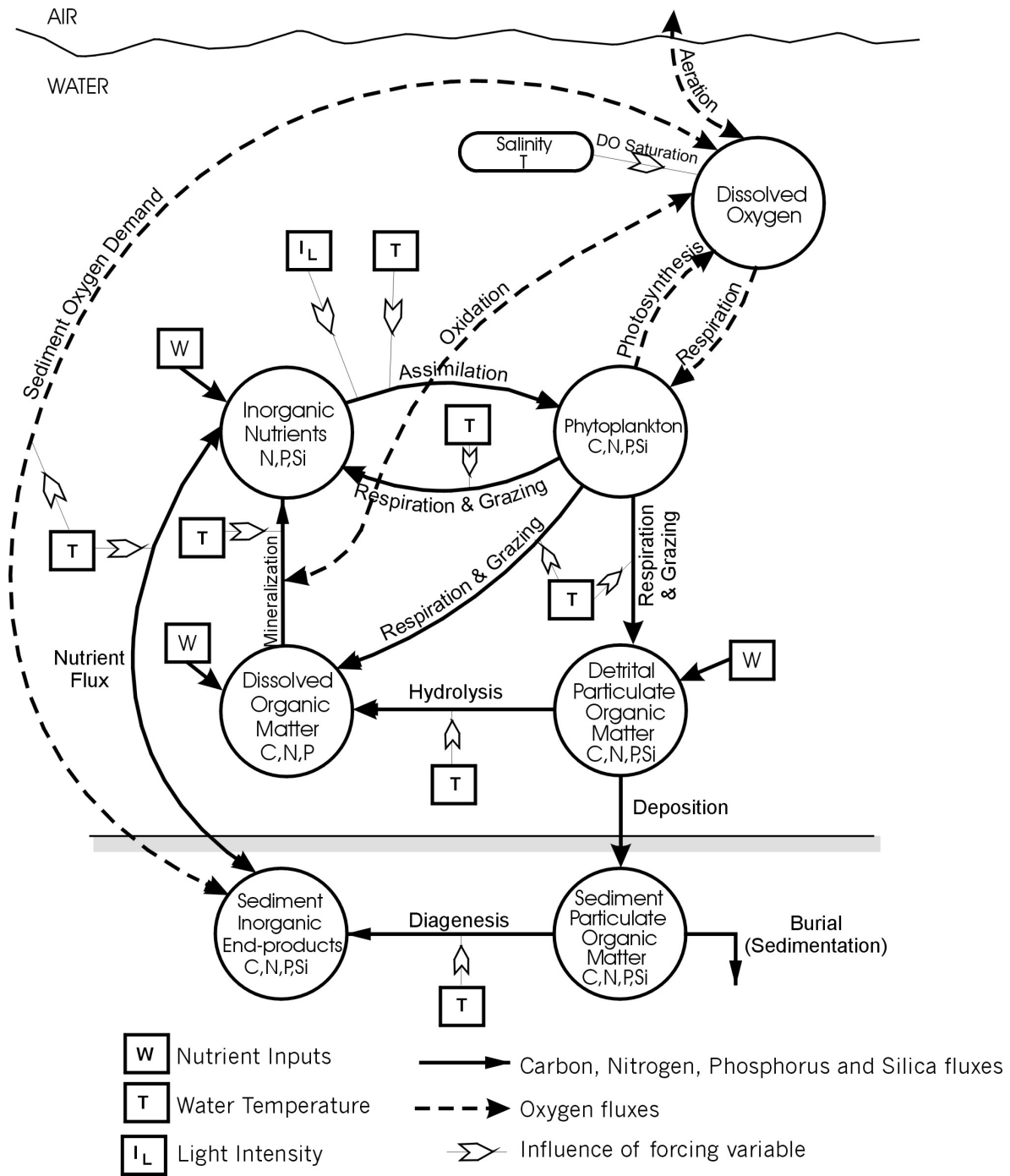


Figure 2-2. Principal kinetics and water column-sediment interactions for organic carbon production and sediment nutrient fluxes included in SWEM.

## SECTION 3.0

# CARP SEDIMENT TRANSPORT/ORGANIC CARBON PRODUCTION MODEL SETUP

HydroQual previously reported to the CARP MEG on the generation of SS and POC loadings and other model forcings necessary for ST-SWEM, the CARP sediment transport and organic carbon production sub-model. This information is repeated here and has been updated to describe other required model inputs and considerations.

### 3.1 SUSPENDED SEDIMENT LOADINGS

The accurate determination of sediment loads is an important element of the overall CARP modeling effort. On an annual time scale, sediment loadings influence the net deposition of suspended sediments (and therefore deposition of particulate organic carbon and nutrients). The rate of net deposition of particles is a primary factor in controlling the long-term fate of hydrophobic organic contaminants. Estimates of suspended sediment loadings, for purposes of driving the sediment transport portion of ST-SWEM, have been developed and are described in this report section.

#### 3.1.1 Flow Component of Suspended Sediment Loadings

Loadings (i.e., mass per time) of suspended sediment and other substances may be expressed as the product of a flow component (i.e., volume per time) and a concentration component (i.e., mass per volume). For suspended sediment loadings, the flow component was determined and described previously to the Model Evaluation Group (MEG) as part of the development of the hydrodynamic model. As described earlier, the flow component is based on both direct measurements and landside modeling of flows coming from tributary headwater, STP, CSO, and landside runoff sources. Flow conditions for which loadings have been developed include the water years 1988-89, 1994-95, 1998-99, 1999-2000, 2000-01 and 2001-02.

#### 3.1.2 Concentration Component of Suspended Sediment Loadings

This section will discuss the generation of suspended sediment loading estimates in mass per time units based on flows (i.e., volume per time) developed previously for the hydrodynamic model and suspended sediment concentrations (i.e., mass per volume units). Estimates of suspended sediment loadings on a mass per time basis have been developed for use in the sediment transport model for a



variety of different suspended sediment sources including: tributary headwater, STP, CSO, landside runoff. For each suspended sediment source type, a different protocol was used for specifying suspended sediment loadings as described below:

### 3.1.2.1 Tributary Headwaters

Suspended sediment loading estimates for tributary headwaters were developed using HydroQual's Normalized Sediment Load (NSL) approach (HydroQual, 1996). NSL is an empirical method for estimating suspended sediment loads in rivers. More specifically, NSL is a non-dimensional loading function with predictive capabilities. The NSL approach takes into account the observed behavior of rivers, i.e., a large fraction of the annual sediment load occurs during a relatively small number of high flow events, or floods, each year. NSL was developed, calibrated, and validated based on an analysis of sediment discharge data from a variety of rivers in the eastern United States and takes advantage of general trends and behaviors across the rivers. The basis of the approach is that across many rivers a consistent relationship between sediment discharge and flow exists. Daily observations of sediment discharge and flow rate for each river show a consistent relationship across rivers when normalized by mean daily sediment discharge under non-flood (i.e., flow rate less than or equal to twice the mean flow rate) conditions and long term mean flow rate, respectively.

The NSL approach calculates daily suspended sediment loadings normalized by mean daily sediment discharge under non-flood conditions as a function of the daily flow rate normalized by the long term mean flow rate drainage basin characteristics, and a stochastic term which accounts for variability. The approach includes separate relationships for flood and non-flood conditions developed from log linear regressions of the normalized data for each condition. The log linear equation used for both flood and non-flood conditions is as follows:

$$\log L_N = \log a + n \log Q_N + \delta S_L \quad (18)$$

where

- a, n = functions of drainage basin characteristics
- $S_L$  = standard deviation of the log estimate
- $\delta$  = normally distributed random number with mean of 0 and standard deviation of 1
- $L_N$  = daily sediment discharge normalized by mean daily sediment discharge under non-flood conditions,  $L_m$
- $Q_N$  = daily flow rate normalized by long term mean flow rate,  $Q_m$

Under the NSL approach, the log linear regressions of the normalized data for flood and non-flood conditions do not necessarily have to be coincident at the breakpoint between flood and non-flood conditions. For purposes of this project, the NSL approach was modified and improved. Under this project, the NSL approach was modified so that the log linear equations for flood and non-flood conditions would converge or hinge at the twice mean flow rate point which defines flood and non-flood conditions. Also under this project, instead of solving the log linear equation for each day of a given year with a single value for  $\delta$ , the solution for each year's set of daily values was repeated for 1001 iterations on  $\delta$  and the 501<sup>st</sup>, or median iteration  $\delta$  which approximates the arithmetic mean loading was selected for assigning loadings. Alternatively, the same results as produced by the 501<sup>st</sup>  $\delta$  iteration could have been achieved simply by transforming the median or log mean normalized loading to an arithmetic mean normalized loading following the equation:

$$\mu_x = e^{\left(\mu_{\ln x} + \frac{1}{2}\sigma_{\ln x}^2\right)} \quad (19)$$

where

$\mu_x$	=	mean in arithmetic space
$\mu_{\ln x}$	=	mean in natural logarithmic space
$\sigma_{\ln x}$	=	standard deviation in natural logarithmic space

The tributaries to which NSL has been applied to estimate loadings for this project are listed in Table 3-1. Table 3-1 shows the USGS stations for each tributary for which data records were obtained for calculation of  $Q_m$ , the long term mean flow rate, and  $L_m$ , the mean daily sediment discharge under non-flood conditions. In some case, as indicated on Table 3-1, data were insufficient (i.e., fewer than 25 data points) for calculation of  $L_m$ . In such instances,  $L_m$  was estimated as a function of drainage area following a relationship previously developed (HydroQual, 1996) for rivers in the eastern United States. It is noted that some of the USGS data stations listed in Table 3-1 have been discontinued (i.e., Moordener Kill at Castleton-on-Hudson, NY; Sawmill River at Yonkers, NY; Normans Kill at Albany, NY; Bronx River at Bronxville, NY; South River at Old Bridge, NJ). While these retired data records are potentially very useful for calculation of  $Q_m$  and  $L_m$ , they were not useful for the calculation of daily tributary flows and loads for all of the 1988-89, 1994-95, 1998-99, 1999-2000, 2000-01, and 2001-02 water years of interest for CARP. In these instances, the calculated  $Q_m$  and  $L_m$  from the NSL analysis were applied to more recent daily flow records and daily flow estimates used in the calibration of the hydrodynamic model. Flow estimates used in the hydrodynamic model for periods after gages were discontinued are based either on more upstream gages or gages located on neighboring tributaries. In either case, corrections were made to account for differences in drainage areas.

In other cases, the USGS station where the NSL analysis was performed as listed in Table 3-1 were significantly upstream of the model domain. In cases where the USGS station used to perform the NSL analysis was significantly upstream of the model domain (i.e., South River at Old Bridge, NJ; Wappinger Creek near Wappingers Falls, NY; Manasquan River at Squankum, NJ; Metedeconk River near Lakewood, NJ; Toms River near Toms River, NJ; Mullica River near Batso, NJ; Tuckahoe River at Head of River, NJ; Great Egg Harbor River at Folsom, NJ), the  $Q_m$  and  $L_m$  from the NSL analysis were applied to daily flow estimates representative of the more downstream model domain which were developed as part of the calibration of the hydrodynamic model. Estimation techniques for flow records with which to calculate  $Q_m$  for ungauged rivers (i.e., Catskill Creek, Thames River, Westecunk Creek, and Navesink and Shrewsbury Rivers) are explained by the annotations in Table 3-1.

In one instance, the NSL approach was not used for a tributary included in the CARP model. For the Upper Hudson River, there is an extensive record of suspended sediment loading measurements and the New York USGS has developed detailed loading estimates. Therefore, detailed loading estimates provided by the New York USGS are used for the Upper Hudson River instead of NSL estimates.

Loading estimates for several of the tributaries in New Jersey developed using NSL compare well with loading estimates developed independently by a New Jersey USGS rating curve approach as shown in Figure 3-1 and described in a project technical memorandum to the Hudson River Foundation dated March 7, 2003. Further, suspended sediment loading estimates for the Mohawk River are in general agreement with loadings developed for select years by the New York USGS as presented in Figure 3-2.

It is advantageous to use the NSL approach rather than the USGS approach for calculation of model loadings for several reasons:

- The NSL approach has been calibrated and validated for many rivers in the eastern United States and is more robust than an approach which is calibrated singularly to a specific river.
- The NSL approach accounts for the fact that data records for individual rivers do not typically capture suspended sediment discharge under flood conditions when the majority of suspended sediment is delivered.
- The NSL approach provides a framework for estimating suspended sediment loadings for rivers where little to no data are available.

Appendix 1 contains diagrams which compare the NSL relationship at each tributary with the data record for both flood and non-flood conditions. The figures in Appendix 1 demonstrate that site-

specific (i.e., there were sufficient data to calculate  $Q_m$ ,  $L_m$ ,  $a$  and  $n$ ) NSL analyses were performed for the Mohawk, Connecticut, Housatonic, Raritan, Rahway, Passaic, Norwalk, Elizabeth, Wallkill, Toms, Saddle, and Great Egg Rivers and Rondout Creek. For each of these waterways, with the exception of the Elizabeth River, separate relationships were developed for flood and non-flood conditions with a hinge or convergence point imposed at two times the long term mean flow. For the Elizabeth River a single relationship was used for both flood and non-flood conditions as supported by the available data. It is noted that for the Toms, Saddle, Rondout, and Great Egg Rivers, data under flood conditions were insufficient to support a site specific NSL application and a generic (i.e., using coefficients developed in HydroQual, 1996 for a variety of rivers in the eastern United States) NSL application was used. Similarly, for the Hackensack, Bronx, and Tuckahoe Rivers and for Wappinger Creek, the generic NSL was applied under both flood and non-flood conditions. Table 3-2 shows the calculated loadings for the six water years of interest.

### 3.1.2.2 STPs

Suspended sediment loadings were estimated for STPs based on Discharge Monitoring Reports (DMRs) previously obtained through EPA's Permit Compliance System (PCS). Seasonal (i.e., monthly) effluent suspended sediment loadings from the 1994-95 water year were obtained for each facility. These loading estimates have been applied across water years based on the typically steady performance of STP for solids removal across years. In the case of NYC STPs where more detailed flow records were readily available for the 1988-89, 1998-99, 1999-2000, 2000-01, and 2001-02 water years and were previously configured for model input, the suspended sediment loadings were adjusted or scaled to reflect flow differences. The NYC STP suspended sediment loadings developed from 1994-95 data were multiplied by the ratios of flows from other years to flows from 1994-95 to achieve suspended sediment loadings for other years.

Table 3-1. Tributary Characteristics Applied for Determining Loading using NSL

Station Location	Length of Record (Years)	Area (mi <sup>2</sup> )	Q <sub>m</sub> (cfs)	L <sub>m</sub> Data Based (Tons/day)	L <sub>m</sub> Estimated* (Tons/day)
Mohawk River at Cohoes, NY	84.0	3,450	5,708	227	373
Moordener Kill at Castleton-on-Hudson, NY	37.5	32.6	38.4	-	2.01
Esopus Creek at Mount Marion, NY	38.4	419	535	-	35.2
Wallkill River at Gardiner, NY	77.1	695	1,070	103	62.0
Rondout Creek at Rosendale, NY	84.0	383	653	7.84	31.8
Croton River at New Croton Dam near Croton-on-Hudson, NY	68.2	378	311	-	31.3
Sawmill River at Yonkers, NY	48.0	24	34.0	-	1.43
Normans Kill at Albany, NY	4.0	168	159	-	12.6
Wappinger Creek near Wappingers Falls, NY	73.0	181	258	-	13.7
Catskill Creek, NY <sup>1</sup>	31.6	655	1785	-	58.0
Raritan River Below Calco Dam at Bound Brook, NJ	62.6	785	1,197	121.5	71.0
Passaic River at Little Falls, NJ	104.0	762	1,137	53.5	68.7
Rahway River at Rahway, NJ	80.0	40.9	49.1	0.367	2.6
Elizabeth River at Elizabeth, NJ	80.0	16.9	25.9	0.693	0.96
Connecticut River at Thompsonville, CT	73.2	9,660	16,810	473	1180
Thames River, CT <sup>2</sup>	73.0	1,117	2,017	-	105
Quinnipiac River at Wallingford, CT	71.0	115	217	-	8.26

**Table 3-1. Tributary Characteristics Applied for Determining Loading using NSL (Cont'd)**

<b>Station Location</b>	<b>Length of Record (Years)</b>	<b>Area (mi<sup>2</sup>)</b>	<b>Q<sub>m</sub> (cfs)</b>	<b>L<sub>m</sub> Data Based (Tons/day)</b>	<b>L<sub>m</sub> Estimated* (Tons/day)</b>
Housatonic River at Stevenson, CT	73.0	1,544	2,645	51.3	152
Naugatuck River at Beacon Falls, CT	79.0	260	520	-	20.6
Norwalk River at South Wilton, CT	39.0	30.0	56.6	1.17	1.83
Hackensack River at New Milford, NJ	80.1	113	91.5	-	8.10
Saddle River at Ridgewood, NJ	80.8	54.6	99.8	2.97	3.57
South River at Old Bridge, NJ	49.2	94.6	141.8	-	6.64
Bronx River at Bronxville, NY	45.0	29.9	42.7	-	1.83
Manasquan River at Squankum, NJ	70.0	44.0	73.9	-	2.82
Shark River Near Neptune City, NJ	35.0	9.96	14.3	-	0.53
North Branch Metedeconk River Near Lakewood, NJ	29.0	34.9	60.2	-	2.17
Toms River Near Toms River, NJ	73.0	123	211	6.27	8.91
Mullica River Near Batsto, NJ	44.1	46.7	105	-	3.01
Westecunk Creek, NJ <sup>3</sup>	73.0	280	447	-	22.4
Great Egg Harbor River at Folsom, NJ	76.1	57.1	85.4	1.55	3.77
Tuckahoe River at Head of River, NJ	31.8	30.8	43.0	-	1.89
Navesink River, NJ <sup>4</sup>	79.2	73.4	92.7	-	5.00
Shrewsbury River, NJ <sup>4</sup>	79.2	27.4	34.6	-	1.66

\*Estimated based on the relationship  $L_m = 0.014 \times (\text{Drainage Area})^{1.12}$

<sup>1</sup>Catskill Creek NSL parameters estimated based on data records from the Wallkill River and Esopus Creek which were adjusted for drainage area

<sup>2</sup>Thames River NSL parameters estimated based on the summation of data records for the Shetucket and Quinebaug Rivers

<sup>3</sup>Westecunk Creek NSL parameters estimated based on Toms River data records which were adjusted for drainage area

<sup>4</sup>Navesink and Shrewsbury Rivers NSL parameters estimated based on Swimming River data records which were adjusted for drainage area

### 3.1.2.3 CSOs

CSO loadings were developed based on a uniform representative CSO suspended sediment concentration derived from limited available CARP data (i.e., five samples ranging between 100 and 400 mg/L with natural logarithmic mean of 201.9 mg/L). The uniform concentration, 201.9 mg/L, was combined with flows varying on an hourly basis to develop hourly loading estimates for more than 700 CSO outfall locations aggregated to the level of CARP model grid cell resolution (304 locations in the model with stormwater inputs). The hourly flows as used to drive the hydrodynamic model were generated for each water year using detailed landside loading models developed previously by HydroQual. The 201.9 mg/L concentration assigned is in general agreement but tends to be on the high end when compared to data from many CSO studies conducted in NY/NJ Harbor during the 1980's as summarized and described in HydroQual, 1991 (range across sewer district means: 51 to 233, note: 233 reported for New Jersey) and in good agreement with data collected in the early 1990's as summarized and described in HydroQual, 1995 (30 samples: range 90 to 2000, log mean 201.9).

### 3.1.2.4 Stormwater Runoff

Similar to CSO loadings, runoff loadings were developed based on a representative suspended sediment concentration, 27 mg/L, from other NY/NJ Harbor studies (HydroQual, 1991) and hourly flows generated from detailed landside models for each water year. There are probably more than 1000 stormwater outfalls to the estuary which have been aggregated to the level of CARP model grid cell resolution (304 locations in the model with CSO inputs).

Figure 3-3 is a summary diagrams of the suspended sediment loading estimates developed for use in sediment transport model calculations. Figure 3-3 shows the relative importance of each suspended sediment source under 1988-89 conditions. It is apparent that tributaries are the dominant source of suspended sediment to the Harbor. Figures 3-4 to 3-8 show the analogous summary for water years 1994-95, 1998-99, 1999-2000, 2000-01, and 2001-02.

**Table 3-2. NSL Estimated Suspended Sediment Loads Applied to ECOMSED (tons/yr)**

<b>Tributary</b>	<b>WY1988-89</b>	<b>WY1994-95</b>	<b>WY1998-99</b>	<b>WY1999-00</b>
Mohawk River	176,500	70,500	128,400	549,200
Upper Hudson River	155,900	45,000	118,900	204,900
<i>Hudson River + Mohawk River Total</i>	<i>332,400</i>	<i>115,500</i>	<i>247,300</i>	<i>754,100</i>
Normans Kill	17,800	5,500	3,900	5,700
Moordener Kill	1,700	500	400	600
Esopus Creek	18,100	6,500	11,800	31,700
Wallkill River and Rondout Creek	122,700	50,500	71,600	76,800
Wappinger Creek	71,300	25,200	26,000	45,800
Catskill Creek	27,400	9,000	15,100	27,600
Croton River	59,100	27,200	60,200	63,000
Sawmill River	2,200	500	1,000	800
Bronx River	3,300	0	2,100	2,500
<i>Mid Hudson/Other NY Total</i>	<i>323,600</i>	<i>124,900</i>	<i>192,100</i>	<i>254,500</i>
Hackensack River	2,300	200	16,000	2,800
Passaic River	35,500	12,700	21,100	27,100
Saddle River	6,100	1,000	6,000	2,400
Raritan River	172,200	24,500	397,000	41,200
Rahway River	2,000	400	2,400	700
Elizabeth River	900	300	800	500
South River	35,800	2,100	12,600	3,900
Navesink + Shrewsbury Rivers	5,200	400	2,500	1,700
<i>New Jersey Total</i>	<i>260,000</i>	<i>41,600</i>	<i>458,400</i>	<i>80,300</i>
Norwalk River	1,500	400	700	500
Housatonic + Naugatuck Rivers	48,200	21,000	35,100	35,700
Quinnipiac River	7,400	2,000	5,500	3,800
Connecticut River	710,700	179,400	400,800	558,400
Thames River	52,100	23,700	44,300	39,700
<i>Connecticut Total</i>	<i>819,900</i>	<i>226,500</i>	<i>486,400</i>	<i>638,100</i>
Manasquan + Shark Rivers	7,200	1,000	5,200	2,500
Metedeconk and Toms Rivers	5,400	2,200	8,200	8,000
Mullica + Westecunk Rivers	29,700	13,100	19,000	20,200
Great Egg + Tuckahoe Rivers	8,300	3,500	8,400	10,200
<i>New Jersey Shore Total</i>	<i>50,600</i>	<i>19,800</i>	<i>40,800</i>	<i>40,900</i>
<b>SUM</b>	<b>1,786,500</b>	<b>528,300</b>	<b>1,425,000</b>	<b>1,767,900</b>



## 3.2 ORGANIC CARBON AND NUTRIENT LOADINGS

This report section provides a review and summary of the principal inputs of nutrients and oxygen demanding material to NY/NJ Harbor, Long Island Sound and the New York Bight. These inputs are comprised of:

- municipal WPCP and industrial discharges
- fall-line tributary loadings
- combined sewer overflow (CSO) loadings
- nonpoint source loadings from rainfall runoff (SW)
- atmospheric loadings falling directly on the water surface

The databases, methodologies, and variability associated with each of these inputs is discussed in the following sections. In general, ST-SWEM requires loadings of dissolved and particulate forms of nitrogen, phosphorus, silica, and carbon as well as reactivity classes. Loadings are estimated on a monthly average basis for WPCP's and direct atmospheric deposition. Loadings for fall-line tributary inputs, CSOs, and SW are estimated on an hourly to daily basis. Figures 3-9 through 3-14 present the relative contributions of the various loading source categories by jurisdiction for each of the six hydrodynamic conditions considered for CARP modeling. WPCPs and tributary inputs, which are concentrated in the Harbor and Sound portions of the CARP domain, represent the bulk of the loading. Atmospheric loadings are large but are distributed mostly over the broad expanse of the NY Bight. The loadings are tabulated in Tables 3-3 to 3-8.

### 3.2.1 Fall-line Tributary Nutrient Inputs

Fall-line tributary inputs represent loadings of water quality constituents which are delivered from upland watersheds to the tidal Harbor/Sound/Bight system. These up-basin loadings result from ground water inflows, surface land runoff, direct atmospheric deposition to upland waters, and wastewater discharges to upland streams. ST-SWEM considers the delivery of these loads to the Harbor/Sound/Bight system via the following streams: Hudson River, Hackensack River, Passaic River, Saddle River, Raritan River, South River, Normans Kill, Moordener Kill, Esopus Creek, Rondout Creek, Wappinger Creek, Croton River, Sawmill River, Bronx River, Navesink and Shrewsbury Rivers, Catskill Creek, Norwalk River, Housatonic and Naugatuck Rivers, Quinnipiac River, Connecticut River, Thames River, Manasquan River, Metedeconk River, Toms River, Mullica River, Tuckahoe River, Great Egg River, and Westecunk Creek. To minimize model simulation time, in the water quality sub-model of previous versions of SWEM, the Hudson River, Normans Kill, Moordener Kill, Esopus Creek, Rondout Creek, and Catskill Creek discharge volumes were summed and assigned as a single input, the Hudson River near Poughkeepsie, New York. For purposes of CARP and ST-SWEM where a detailed understanding of the Hudson River above

Table 3-3. CARP ST-SWEM Loads 1988-89

<b>Total Nitrogen (Metric Tons Per Year)</b>						
Jurisdiction	STP	CSO	Stormwater	Tributary	Atmospheric	TOTAL
All	0	0	0	0	71335	71335
Connecticut	2620	381	1426	24949	0	29376
New Jersey	25670	1109	1416	11144	0	39339
New York City	37880	451	2550	78	0	40959
New York (non NYC)	20100	966	1069	17198	0	39333
Total	86270	2907	6460	53369	71335	220341
<b>Total Phosphorus (Metric Tons Per Year)</b>						
Jurisdiction	STP	CSO	Stormwater	Tributary	Atmospheric	TOTAL
All	0	0	0	0	1626	1626
Connecticut	485	57	155	1682	0	2378
New Jersey	3330	165	154	958	0	4607
New York City	3747	67	372	4	0	4190
New York (non NYC)	2063	144	116	1196	0	3519
Total	9626	432	797	3840	1626	16321
<b>Total Organic Carbon (Metric Tons Per Year)</b>						
Jurisdiction	STP	CSO	Stormwater	Tributary	Atmospheric	TOTAL
All	0	0	0	0	105699	105699
Connecticut	4471	2391	12936	102393	0	122191
New Jersey	31823	6966	12848	29016	0	80652
New York City	43972	2836	16483	231	0	63522
New York (non NYC)	15965	6071	9699	72110	0	103846
Total	96230	18265	51966	203750	105699	475909

Table 3-4. CARP ST-SWEM Loads 1994-95

<b>Total Nitrogen (Metric Tons Per Year)</b>						
Jurisdiction	STP	CSO	Stormwater	Tributary	Atmospheric	TOTAL
All	0	0	0	0	57395	57395
Connecticut	2620	227	1397	14419	0	18663
New Jersey	25670	660	843	4871	0	32045
New York City	35113	134	1103	0	0	36350
New York (non NYC)	17873	576	823	10706	0	29978
Total	81277	1597	4167	29996	57395	174431

<b>Total Phosphorus (Metric Tons Per Year)</b>						
Jurisdiction	STP	CSO	Stormwater	Tributary	Atmospheric	TOTAL
All	0	0	0	0	705	705
Connecticut	485	34	152	953	0	1624
New Jersey	3330	98	92	364	0	3885
New York City	3438	20	160	0	0	3618
New York (non NYC)	1866	86	89	789	0	2831
Total	9120	237	493	2107	705	12663

<b>Total Organic Carbon (Metric Tons Per Year)</b>						
Jurisdiction	STP	CSO	Stormwater	Tributary	Atmospheric	TOTAL
All	0	0	0	0	79372	79372
Connecticut	4471	1424	12677	61121	0	79693
New Jersey	31823	4149	7652	12578	0	56203
New York City	40066	844	7191	0	0	48101
New York (non NYC)	14440	3617	7471	44457	0	69985
Total	90800	10034	34992	118156	79372	333354

Table 3-5. CARP ST-SWEM Loads 1998-99

<b>Total Nitrogen (Metric Tons Per Year)</b>						
Jurisdiction	STP	CSO	Stormwater	Tributary	Atmospheric	TOTAL
All	0	0	0	0	57395	57395
Connecticut	2620	257	1403	16892	0	21173
New Jersey	25670	749	957	8110	0	35487
New York City	30665	109	1346	58	0	32178
New York (non NYC)	16783	653	872	11987	0	30295
Total	75738	1768	4578	37048	57395	176529

<b>Total Phosphorus (Metric Tons Per Year)</b>						
Jurisdiction	STP	CSO	Stormwater	Tributary	Atmospheric	TOTAL
All	0	0	0	0	705	705
Connecticut	485	38	152	1083	0	1759
New Jersey	3330	111	104	600	0	4146
New York City	3019	16	196	3	0	3233
New York (non NYC)	1772	97	95	837	0	2800
Total	8606	263	547	2523	705	12644

<b>Total Organic Carbon (Metric Tons Per Year)</b>						
Jurisdiction	STP	CSO	Stormwater	Tributary	Atmospheric	TOTAL
All	0	0	0	0	79372	79372
Connecticut	4471	1616	12729	69639	0	88454
New Jersey	31823	4709	8684	20402	0	65618
New York City	34610	682	8755	158	0	44205
New York (non NYC)	13639	4104	7914	51670	0	77327
Total	84542	11112	38082	141869	79372	354976

Table 3-6. CARP ST-SWEM Loads 1999-2000

<b>Total Nitrogen (Metric Tons Per Year)</b>						
Jurisdiction	STP	CSO	Stormwater	Tributary	Atmospheric	TOTAL
All	0	0	0	0	57395	57395
Connecticut	2622	291	1413	23763	0	28088
New Jersey	25678	848	1083	9417	0	37026
New York City	30074	127	1491	100	0	31791
New York (non NYC)	16507	739	928	20988	0	39162
Total	74880	2005	4915	54267	57395	193463

<b>Total Phosphorus (Metric Tons Per Year)</b>						
Jurisdiction	STP	CSO	Stormwater	Tributary	Atmospheric	TOTAL
All	0	0	0	0	705	705
Connecticut	485	43	153	1578	0	2260
New Jersey	3332	126	118	753	0	4329
New York City	2962	19	217	5	0	3203
New York (non NYC)	1745	110	101	1467	0	3422
Total	8524	298	589	3803	705	13918

<b>Total Organic Carbon (Metric Tons Per Year)</b>						
Jurisdiction	STP	CSO	Stormwater	Tributary	Atmospheric	TOTAL
All	0	0	0	0	79372	79372
Connecticut	4473	1830	12819	98513	0	117634
New Jersey	31834	5330	9830	24324	0	71318
New York City	33715	795	9700	287	0	44497
New York (non NYC)	13441	4645	8417	100785	0	127288
Total	83463	12600	40766	223909	79372	440109

Table 3-7. CARP ST-SWEM Loads 2000-01

<b>Total Nitrogen (Metric Tons Per Year)</b>						
Jurisdiction	STP	CSO	Stormwater	Tributary	Atmospheric	TOTAL
All	0	0	0	0	57395	57395
Connecticut	2620	158	1384	18252	0	22415
New Jersey	25670	462	590	9394	0	36116
New York City	29943	122	1308	78	0	31451
New York (non NYC)	16312	402	715	15931	0	33360
Total	74545	1145	3997	43656	57395	180738

<b>Total Phosphorus (Metric Tons Per Year)</b>						
Jurisdiction	STP	CSO	Stormwater	Tributary	Atmospheric	TOTAL
All	0	0	0	0	705	705
Connecticut	485	24	150	1213	0	1872
New Jersey	3330	69	64	717	0	4180
New York City	2951	18	190	4	0	3164
New York (non NYC)	1728	60	78	1141	0	3007
Total	8495	170	482	3076	705	12928

<b>Total Organic Carbon (Metric Tons Per Year)</b>						
Jurisdiction	STP	CSO	Stormwater	Tributary	Atmospheric	TOTAL
All	0	0	0	0	79372	79372
Connecticut	4471	996	12562	75091	0	93119
New Jersey	31823	2901	5350	23947	0	64021
New York City	34165	768	8516	221	0	43671
New York (non NYC)	13306	2528	6484	79577	0	101895
Total	83765	7193	32912	178836	79372	382078

Table 3-8. CARP ST-SWEM Loads 2001-02

**Total Nitrogen (Metric Tons Per Year)**

Jurisdiction	STP	CSO	Stormwater	Tributary	Atmospheric	TOTAL
All	0	0	0	0	57395	57395
Connecticut	2620	209	1394	14816	0	19038
New Jersey	25670	608	777	4218	0	31273
New York City	28254	86	1220	8	0	29568
New York (non NYC)	16118	530	795	11874	0	29317
Total	72662	1434	4186	30915	57395	166592

**Total Phosphorus (Metric Tons Per Year)**

Jurisdiction	STP	CSO	Stormwater	Tributary	Atmospheric	TOTAL
All	0	0	0	0	705	705
Connecticut	485	31	151	990	0	1657
New Jersey	3330	90	84	309	0	3814
New York City	2792	13	177	0	0	2983
New York (non NYC)	1712	79	86	800	0	2677
Total	8320	213	499	2099	705	11837

**Total Organic Carbon (Metric Tons Per Year)**

Jurisdiction	STP	CSO	Stormwater	Tributary	Atmospheric	TOTAL
All	0	0	0	0	79372	79372
Connecticut	4471	1312	12647	61957	0	80387
New Jersey	31823	3822	7049	11221	0	53915
New York City	32392	543	7947	25	0	40908
New York (non NYC)	13236	3331	7212	51814	0	75594
Total	81922	9008	34856	125017	79372	330175

Poughkeepsie is of importance for several of the contaminants of concern, the Hudson River, Normans Kill, Moordener Kill, Esopus Creek, Rondout Creek, and Catskill Creek discharge volumes were therefore all handled as separate tributary inputs. The discharge inputs from the Rahway and Elizabeth Rivers are included as part of the runoff model described subsequently.

To assign the fall-line tributary inputs in ST-SWEM, both discharge and quality have to be specified. Discharge data were compiled from USGS surface water records for New York, New Jersey, and Connecticut on a daily basis as part of the development of the CARP hydrodynamic sub-model. Tributary concentration data for individual water quality constituents collected during the 1994-95 monitoring program in support of the original SWEM for nine tributaries were used to assign concentrations for the fall-line tributary inputs on a monthly average basis. The fall-line tributary data (filled circles) as well as the concentration values assigned in ST-SWEM (solid lines) are displayed on the figures in Appendix 2. An example diagram is shown here for the Hackensack River as Figure 3-15. For the tributaries not monitored, concentration values were assigned based upon measured values at similar tributaries established during the original SWEM calibration and/or historical regional estimates. For the case of tributaries to the Bight along the New Jersey coast, very little specific information was available. These tributaries are believed to play a very minor role in influencing conditions in the Bight so they were not a focal point of our load quantification effort for either SWEM or ST-SWEM. For the Upper Hudson and the tributaries above Poughkeepsie, POC concentrations were estimated using the NPL procedure which is analogous to the NSL procedure described in section 3.1.2.1 and other concentrations were based on 1994-95 measurements for the Connecticut River. Appendix 2 also shows the assigned concentrations for all tributaries where specific measurements were not available.

The NPL procedure calculates daily POC loadings normalized by mean daily POC discharge as a function of flow for each of flood and non-flood conditions. A full description of the NPL calculations are included in the contaminant loadings development section of the CARP Contaminant Fate and Transport and Bioaccumulation modeling report. Also, NPL loading function diagrams are presented in Appendix 2 of that report.

Since the completion of the CARP ST-SWEM, the issue of the representativeness of using 1994-95 concentration data for nutrients at head of tide has been investigated by HydroQual for NJDEP. Specifically, HydroQual compared the 1994-95 measurements to head of tide data collected very recently by PVSC and the NJHDG. HydroQual's conclusion and the concurrence of the NJDEP is that the 1994-95 head of tide nutrient concentration measurements for the Raritan, Hackensack, and Passaic Rivers are in reasonable agreement with measurements collected between 2003 and 2005. Hence, for these watersheds, there have not been major changes to nutrient inputs since 1994-95.



### 3.2.2 WPCP Nutrient Inputs

Major municipal and industrial WPCPs discharging into the Harbor/Bight/Sound system are included in ST-SWEM. For each facility both discharge flow and individual constituent concentrations are specified as mass loadings (kg/day) on a monthly average basis. The mass loadings assigned in ST-SWEM were developed primarily from 1994-95 discharge monitoring report (DMR) data obtained from the USEPA Permit Compliance System (PCS) and are tabulated in Appendix 3. The DMR data were supplemented with data collected at the municipalities during the monitoring program conducted in support of SWEM in 1994-95. Specifically, DMR's do not contain effluent organic carbon or all of the nutrient forms required for ST-SWEM input.

WPCP monitoring data collected during the SWEM 1994-95 field program were used to develop correlations between effluent BOD<sub>5</sub> reported on DMR's and effluent DOC and POC both on a plant specific and average plant basis. For example, the following regressions were developed for converting BOD<sub>5</sub> data reported on DMR's to DOC and POC required by ST-SWEM:

$$\text{POC} = 4.68 + 0.31(\text{BOD}_5)$$

$$\text{DOC} = 9.98 + 0.26(\text{BOD}_5)$$

where POC, DOC, and BOD<sub>5</sub> are in mg/l.

### 3.2.3 Combined Sewer Overflow (CSO) and Storm Water Runoff (SW) Nutrient Loadings

As described in the model setup section of the CARP hydrodynamic sub-model report, CSO and SW volumes were generated on an hourly to daily basis using RRMP, a rainfall-runoff model developed for the New York City 208 Study by Hydrosience (Di Toro et al., 1978) and available calibrated Storm Water Management Models (SWMM) for various jurisdictions. These models calculate discharges for 268 land parcels in the NY/NJ Harbor Estuary area given: the hourly rainfall from regional airports or from local rain gauges, the drainage area of the parcel, land use, and the runoff flow captured by WPCPs if applicable. RRMP distinguishes between seven land use categories within each land parcel including: low density residential, middle density residential, high density residential, commercial, industrial, parks and cemeteries, and large institutions. Each land use category has characteristic runoff coefficients. RRMP and SWMM simulations were performed for a unit rainfall which was then scaled according to the actual rainfall record for each of the 6 water years considered for CARP: 1988-89, 1994-95, 1998-99, 1999-2000, 2000-01, and 2001-02. For areas of Long Island Sound beyond the domains of RRMP and SWMM but within the CARP model domain, runoff loadings were assigned based on runoff loads developed during the Long Island Sound Study. For areas of the

Hudson River north of the RRMP and SWMM domains but within the CARP model domain, runoff loadings are captured by several small tributaries draining to the Hudson River as described above in Section 3.2.1.

CSO and SW nutrient concentrations were assigned using data collected during the SWEM 1994-95 monitoring program. Due to the highly variable nature of CSO and SW quality and the limited fraction of the total possible locations sampled, log mean concentrations of the data were used.

The log mean concentrations assigned for CSO and SW in the CARP model are tabulated below in Table 3-9.

<b>Table 3-9. Concentrations Assigned to CSO and SW for ST-SWEM Calibration</b>		
	CSO	SW
<u>phosphorus</u>		
POP	0.697 mg P/l	0.090 mg P/l
DOP	0.130 mg P/l	0.019 mg P/l
DIP	0.596 mg P/l	0.084 mg P/l
<u>nitrogen</u>		
PON	3.02 mg N/l	0.372 mg N/l
DON	1.63 mg N/l	0.404 mg N/l
NH <sub>4</sub>	4.44 mg N/l	0.236 mg M/l
NO <sub>2</sub> + NO <sub>3</sub>	0.492 mg N/l	0.765 mg N/l
<u>silica</u>		
DSi	1.71 mg Si/l	1.77 mg Si/l
<u>carbon</u>		
POC	41.5 mg C/l	7.32 mg C/l
DOC	18.7 mg C/l	8.81 mg C/l
<u>oxygen</u>		
DO	3.8 mg O <sub>2</sub> /l	6.33 mg O <sub>2</sub> /l

### 3.2.4 Atmospheric Nutrient Inputs

Deposition of nitrogen, silica, phosphorus, and carbon resulting from direct precipitation to surface waters and dry fall are included in ST-SWEM as atmospheric inputs. Estimates of these loadings are based on atmospheric deposition data collected during the SWEM 1994-95 monitoring program, for the 1988-89 Long Island Sound Study, and by the University of Connecticut in the early 1990's.

The SWEM monitoring program included ten stations over the period November 1994 through June 1995. Concentrations in precipitation of DOC, PO<sub>4</sub>, NH<sub>4</sub>, NO<sub>2</sub> + NO<sub>3</sub>, SiO<sub>4</sub>, DON, and DOP

were measured. Due to the limited temporal and spatial scope of the monitoring program, data from all ten stations were combined and analyzed by constituent. For each month for each analyte, a maximum likelihood estimate (MLE) was calculated and combined with precipitation data to assign a monthly average load on a mass per square meter per day basis. For months during which concentrations were not measured, a MLE was calculated from the data for the entire monitoring program for each analyte.

The USGS collected atmospheric wet deposition data at four sites in the LISS area between August 1988 and December 1989, Greenwich, Connecticut; Old Field, New York; Clinton, Connecticut; and Block Island, Rhode Island. Constituent concentrations reported include total dissolved nitrogen, ammonia nitrogen, nitrate nitrogen, total dissolved phosphorus, dissolved inorganic phosphorus, and total organic carbon. Dissolved organic phosphorus was estimated as the difference between total dissolved phosphorus and dissolved inorganic phosphorus, while dissolved organic nitrogen was estimated by subtracting ammonia and nitrate nitrogen concentrations from the total dissolved nitrogen concentration, an approximation which assumes that nitrite nitrogen concentrations were negligible. Due to the wide variation in the data and the limited scope of the sampling program, data from all four stations were combined. The data for each constituent were found to be log normally distributed. Where measurements fell below detection limits, such as with TDP and  $\text{PO}_4$ , assumption of a log normal distribution below the detection limit enabled estimation of the actual concentration distribution. The most likely estimate (MLE) concentration for each constituent was calculated.

From 1991 to 1993, wetfall and dryfall data were collected weekly by the University of Connecticut at Storrs at two stations (Miller et al., 1993). These stations, Sherwood Island State Park in Westport CT and Hammonasset State Park in Madison Ct, are located close to Long Island Sound. Analytes included sulfate, sulfur dioxide, ammonia, nitrate, nitric acid vapor, total dissolved nitrogen and total phosphate. Based on the dryfall measurements collected at the two 1991-1993 stations, daily dryfall loadings of  $\text{NH}_4\text{-N}$  (981 lbs/day) and  $\text{NO}_2\text{+NO}_3\text{-N}$  (7184 lbs/day) were input at a constant rate for all months of model simulation.

### **3.2.5 Reactivity Data for Nutrient Loadings**

ST-SWEM is a carbon based model as opposed to a BOD based model. ST-SWEM incorporates seven forms of organic carbon. Similarly, ST-SWEM incorporates five forms each of organic phosphorus and organic nitrogen. Data collected during the SWEM 1994-95 monitoring program and available on WPCP DMR's do not provide guidance for the specification of the various organic forms which are reactivity and phase (particulate or dissolved) dependent. The reactivity classes of organic carbon include, in order of decreasing reactivity, reactive, labile, refractory, and inert. The

reactivity classes of organic phosphorus and nitrogen include labile, refractory, and inert. The reactivity classes are distinguished from one another by the relative rates of decomposition. Reactive organic matter decomposes rapidly, on the order of days. Labile organic matter decomposes on the order of weeks, while refractory and inert organic matter decomposes on the order of several months to years or longer.

Splits for the reactive classes of organic loadings were assigned on the basis of an analysis of data collected in the spring and summer of 1994 for the Interstate Sanitation Commission. The assigned reactivity splits are tabulated as Table 3-10.

**Table 3-10. ST-SWEM Organic Nutrient Loading Reactivity Splits**

FORM	FRACTION <sup>(1)</sup>	LOADING CATEGORY			
		WPCP (%)	CSO (%)	SW (%)	TRIB (%)
POC	RPOC	30	50	70	75
	LPOC	70	50	30	25
DOC	RDOC	25	50	70	75
	LDOC	25	25	15	25
	ReDOC	50	25	15	0
PON	RPON	30	50	70	75
	LPON	70	50	30	25
DON	RDON	30	50	70	75
	LDON	70	50	30	25
POP	RPOP	30	50	70	75
	LPOP	70	50	30	25
DOP	RDOP	30	50	70	75
	LDOP	70	50	30	25

<sup>(1)</sup> R - Refractory  
L - Labile  
Re - Reactive  
I - Inert<sup>(2)</sup>

POC - Particulate Organic Carbon  
DOC - Dissolved Organic Carbon  
PON - Particulate Organic Nitrogen  
DON - Dissolved Organic Nitrogen  
POP - Particulate Organic Phosphorus  
DOP - Dissolved Organic Phosphorus

<sup>(2)</sup>Note that although inert pools are modeled, only resuspended sediments from the bed and phytoplankton death contributed to inert pools in the water column.

The Interstate Sanitation Commission reactivity study included monitoring at sites which represent the major inputs of nutrients to the system. The major sources included: 21 WPCPs, 6 CSOs, 4 SW sites, and 4 tributaries. Each source was sampled twice. The reactivity samples were incubated for 50 days and sub-samples were taken at 10-day intervals for most analytes. Analytes measured during the reactivity study include: POC, DOC, PON, DON, POP, DOP,  $\text{NH}_4\text{-N}$ ,  $\text{NO}_3\text{+NO}_2\text{-N}$ , dissolved reactive  $\text{PO}_4\text{-P}$ , DSi, PSi, and BOD.

Once the loadings for ST-SWEM were developed, actual ST-SWEM simulations could be performed and model and data comparisons could be made to assess the level of calibration/validation achieved by an individual ST-SWEM simulation. The skill assessment for the nutrient portion of ST-SWEM using the loading data described above is the subject of Section 4.0 of this report.

Figure 3-1 – Comparison of NSL and USGS Sediment Load Estimates

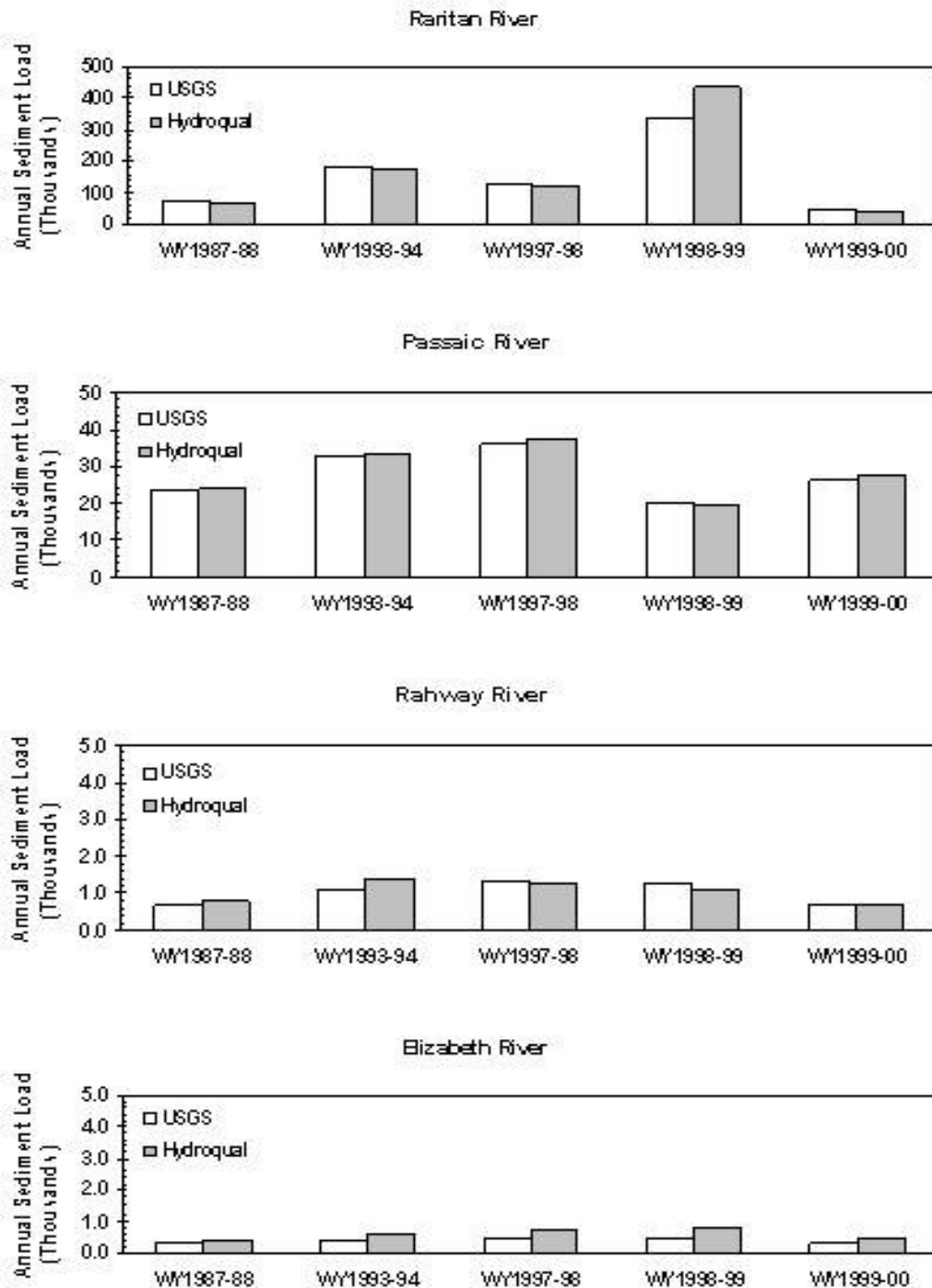
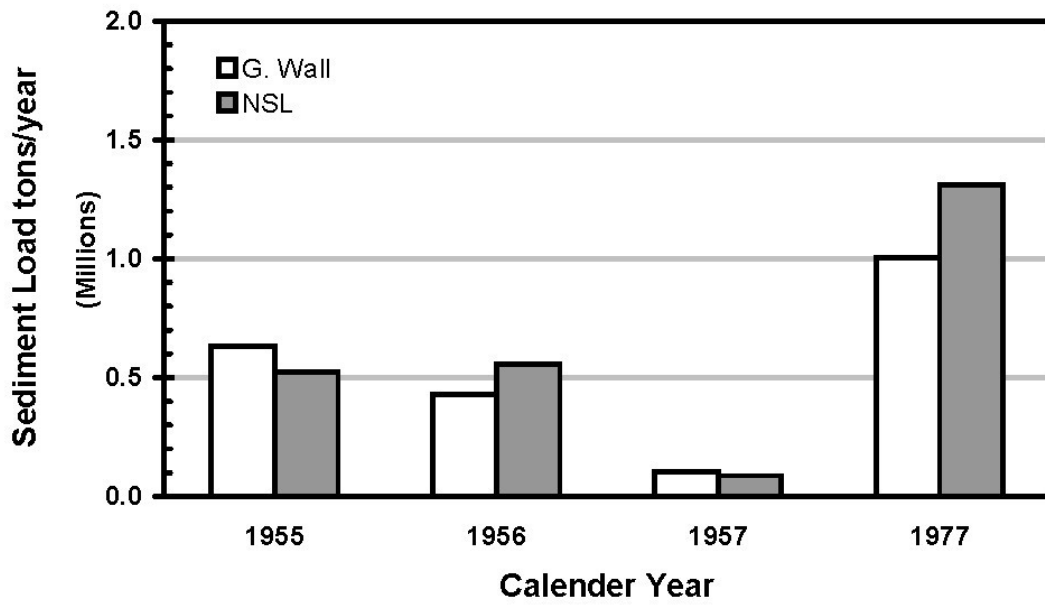


Figure 3-2 - Mohawk River Sediment Loads



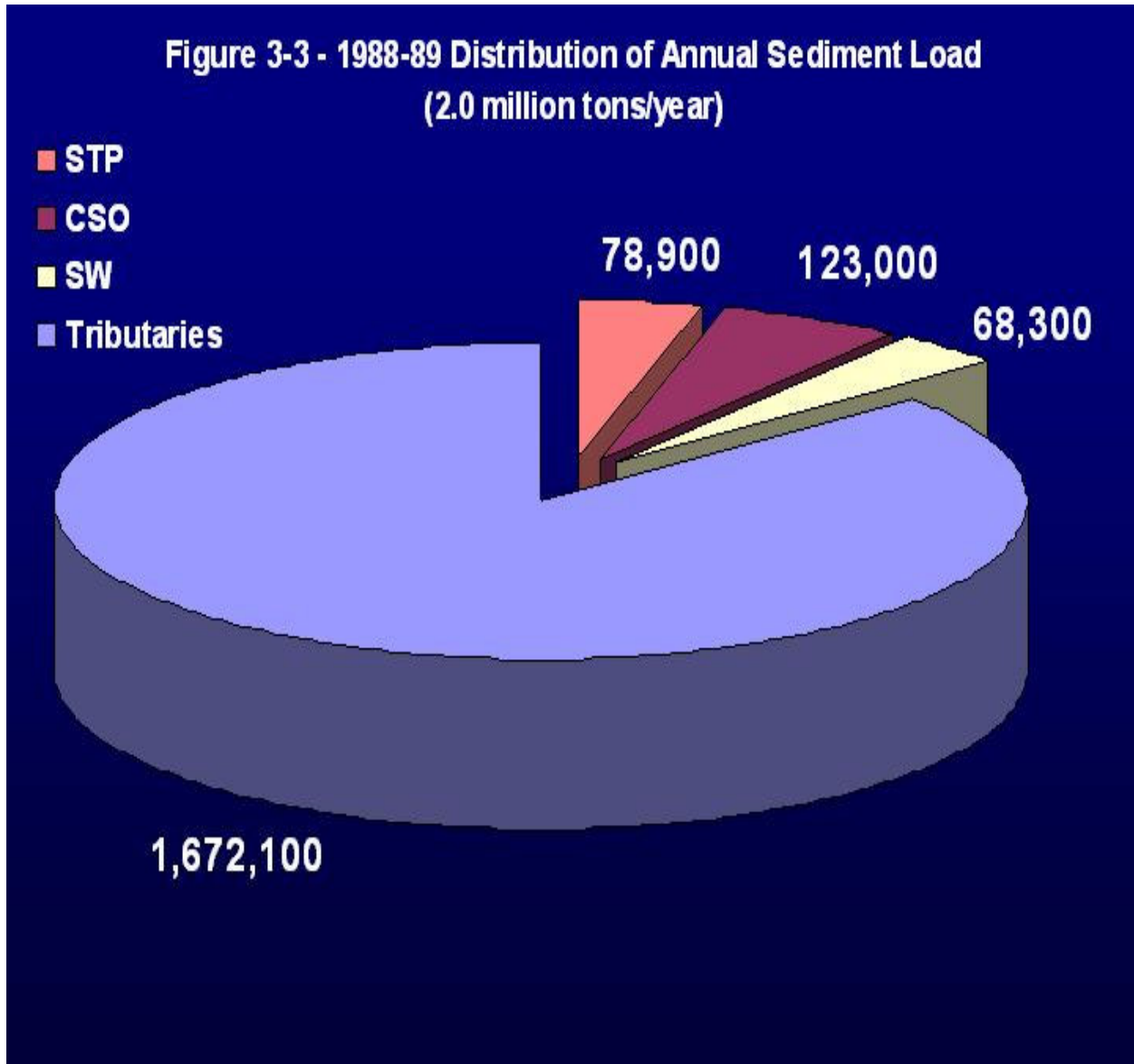
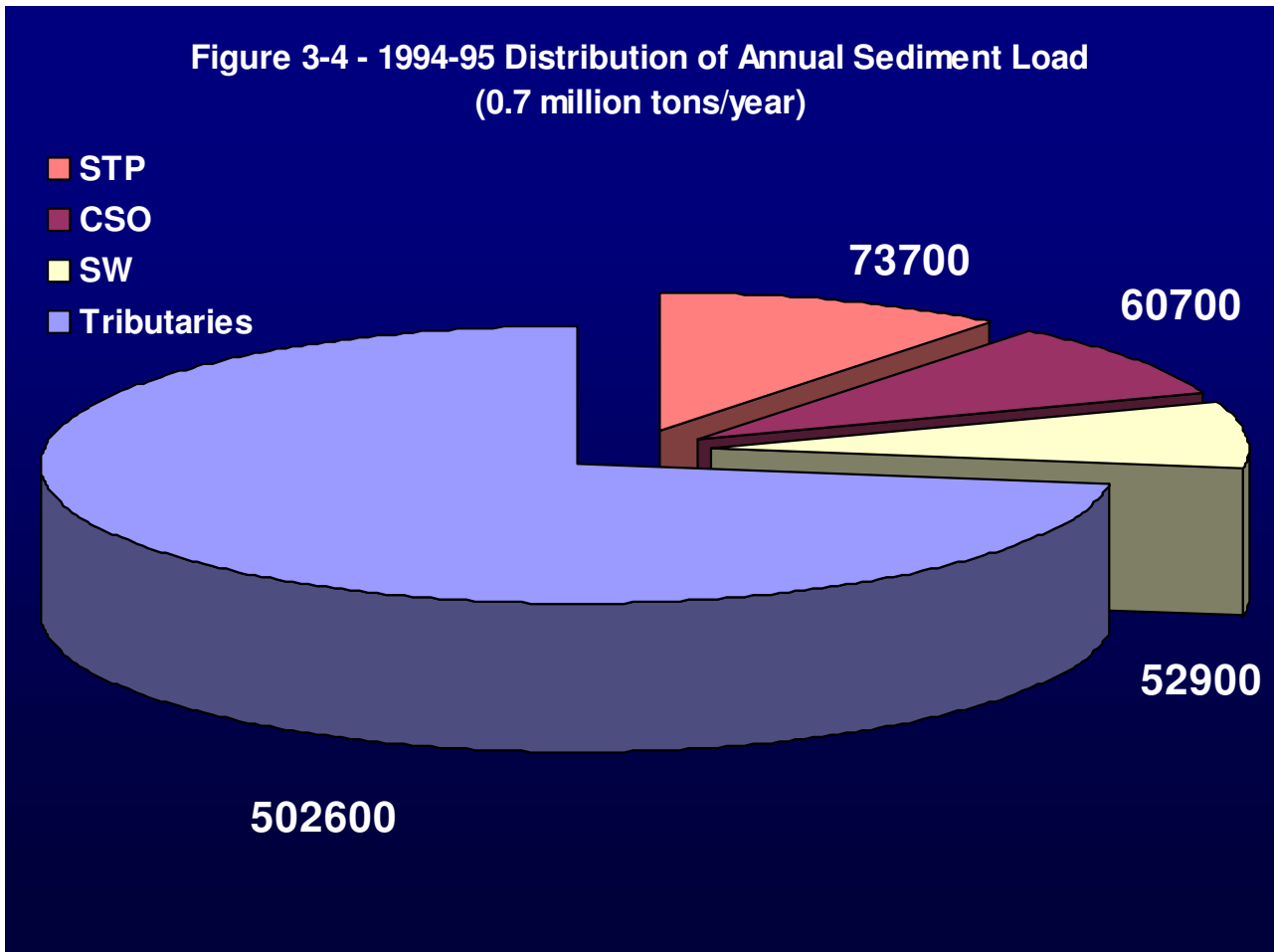
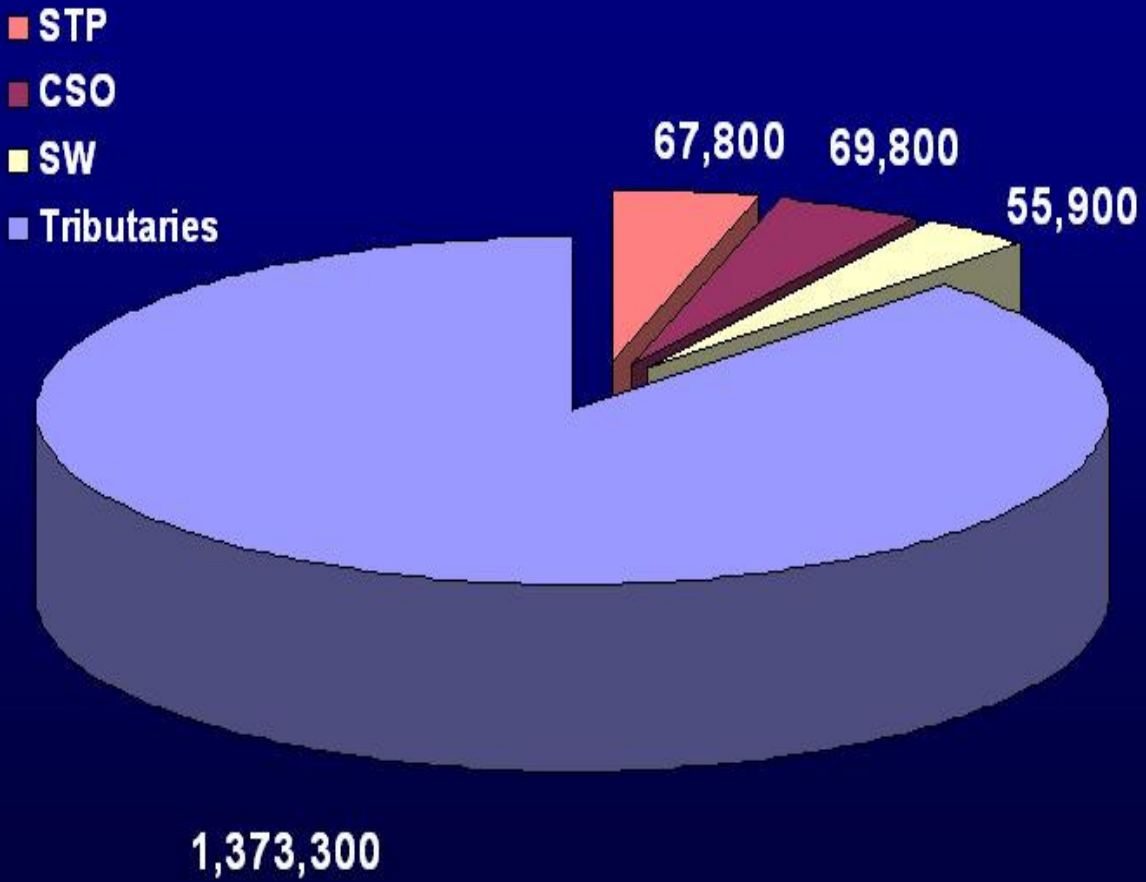


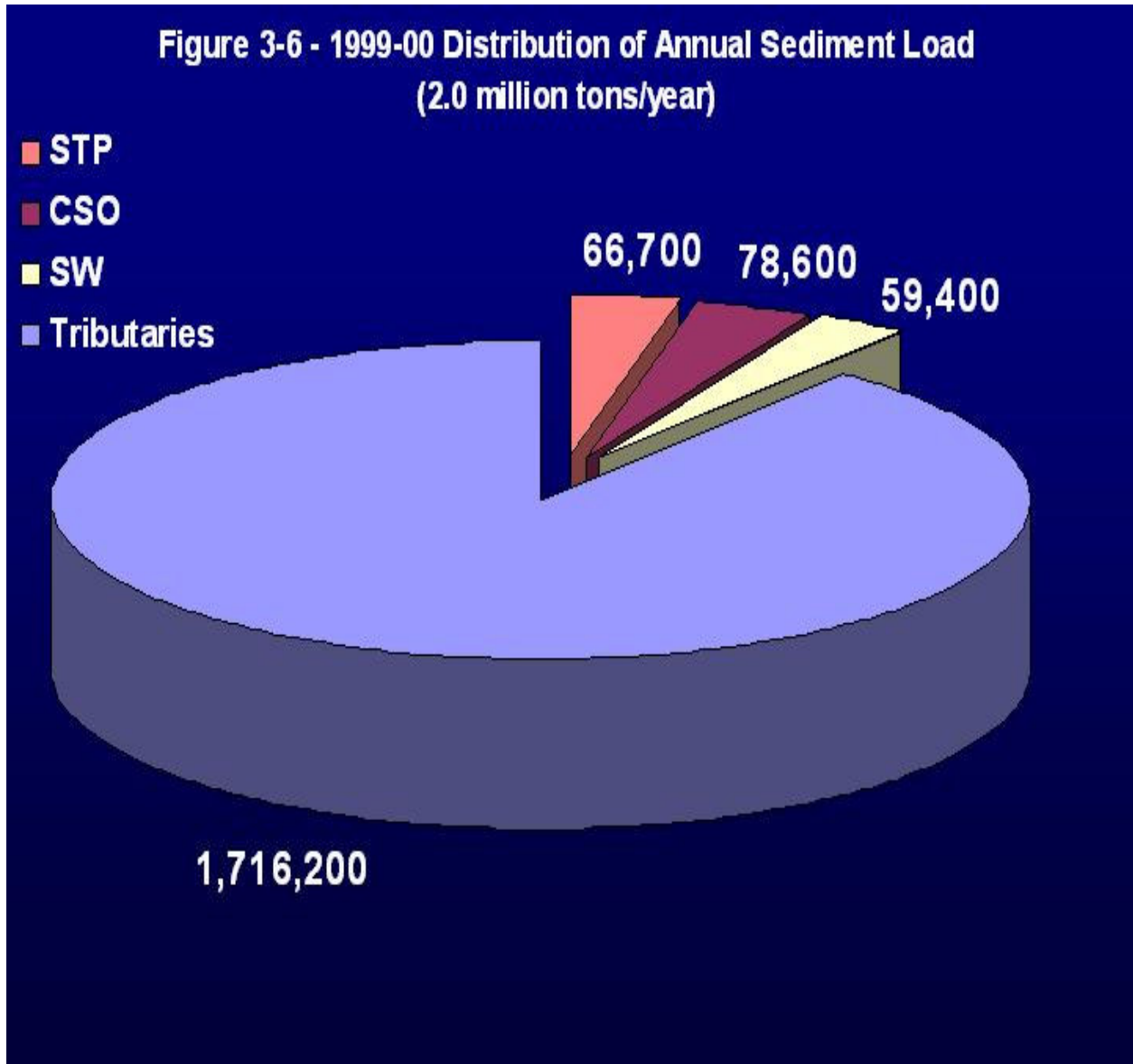


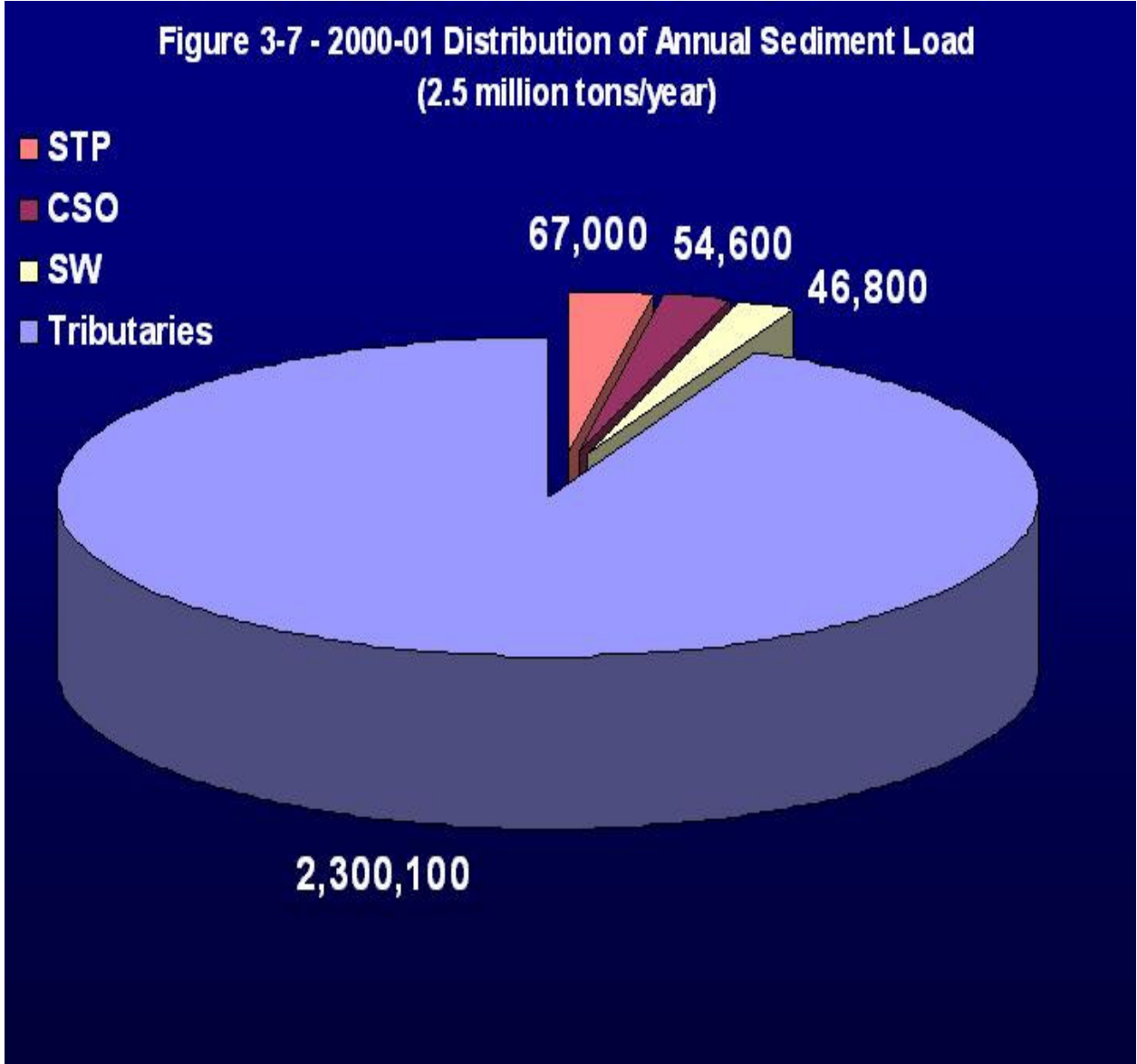
Figure 3-4 - 1994-95 Distribution of Annual Sediment Load  
(0.7 million tons/year)

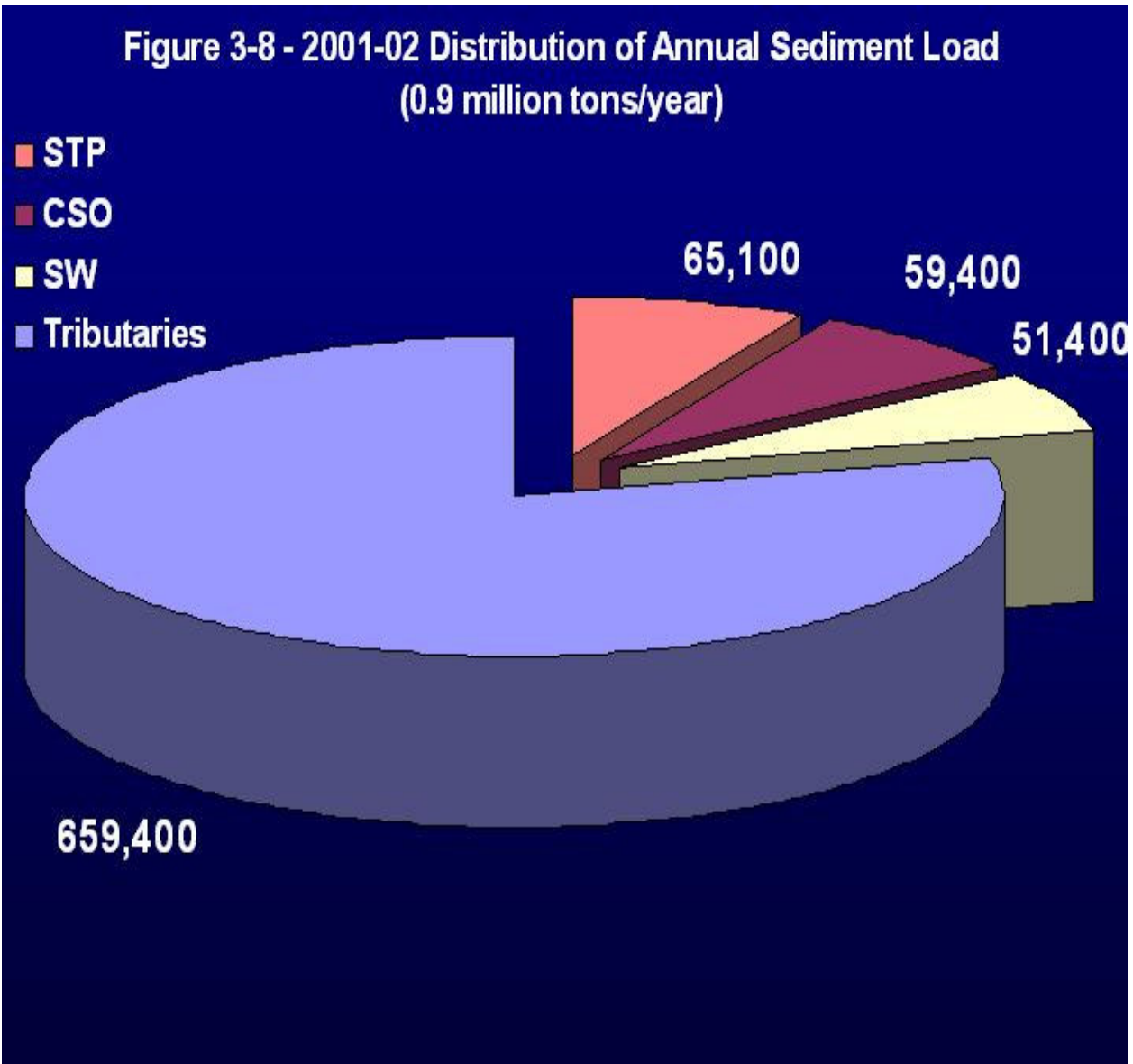


**Figure 3-5 - 1998-99 Distribution of Annual Sediment Load  
(1.6 million tons/year)**









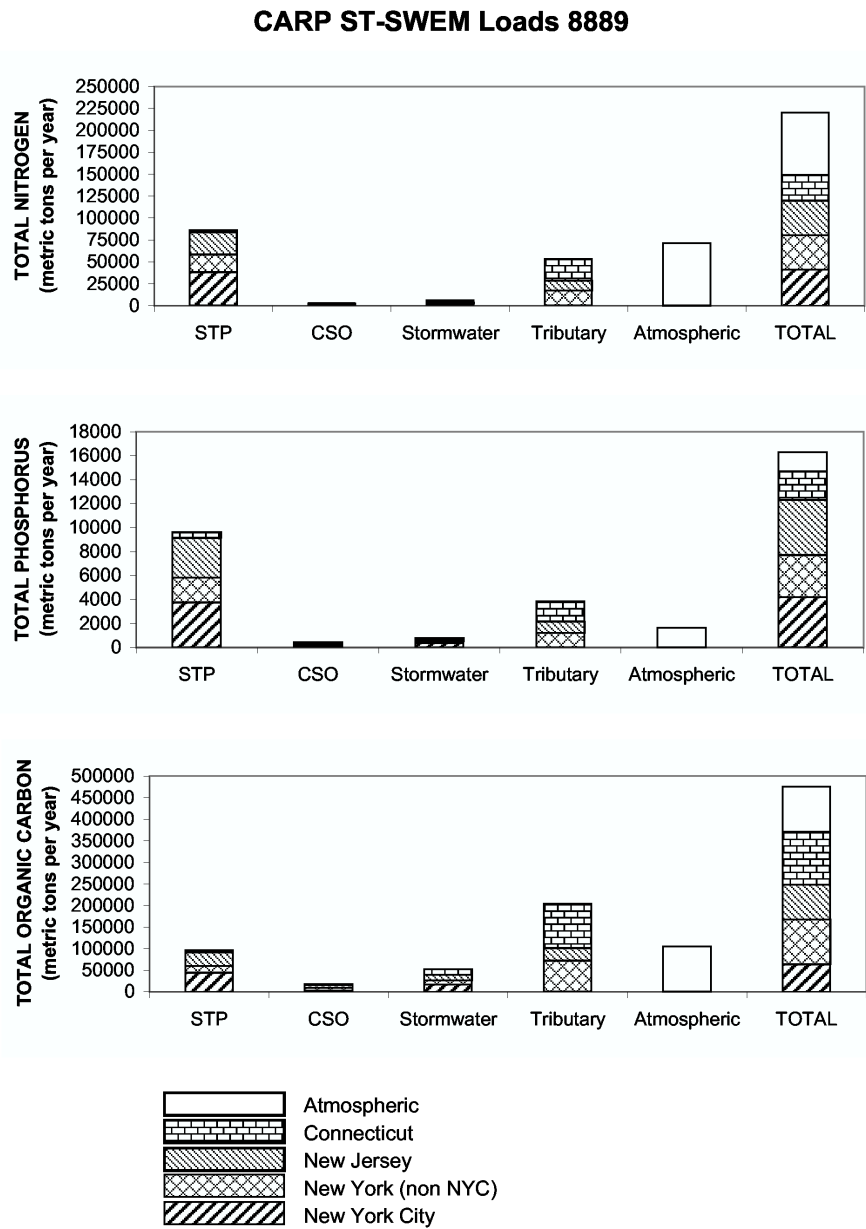


Figure 3-9. Summary of nutrient loadings to CARP sediment transport/organic carbon production model for various source types and jurisdictions - water year 1988-89.

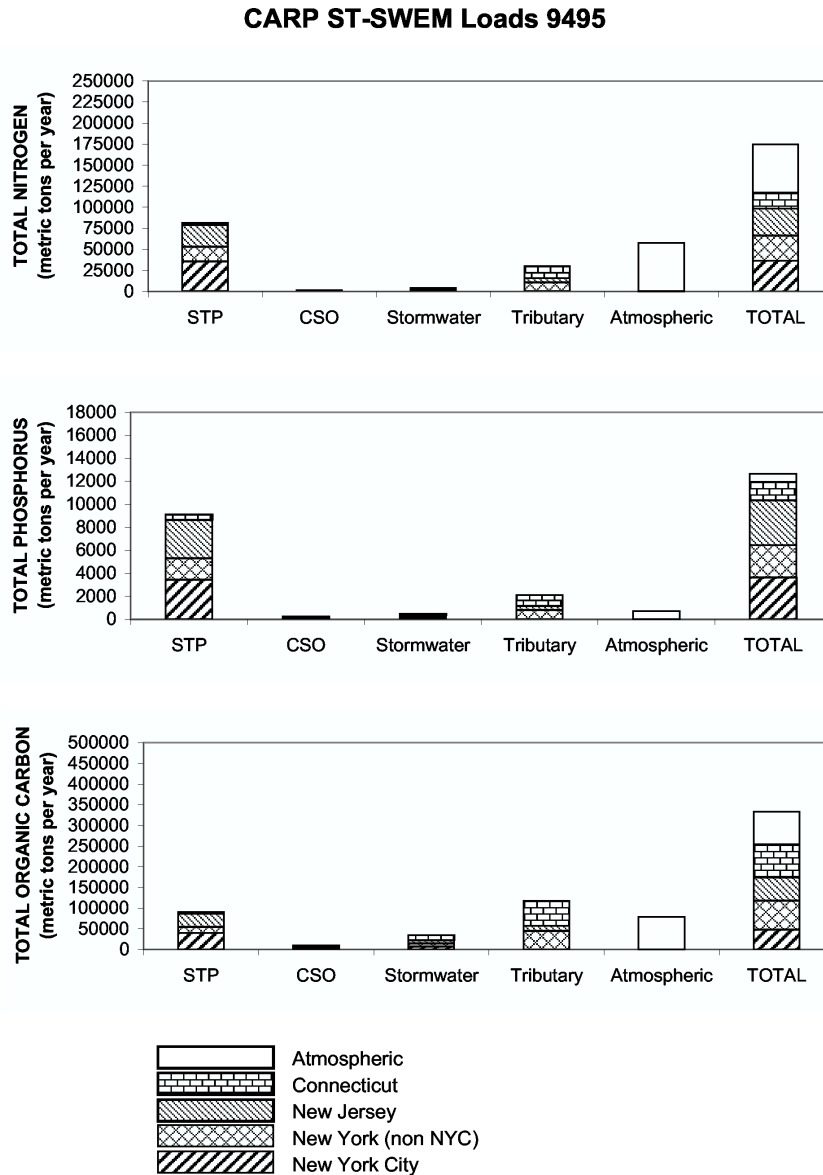


Figure 3-10. Summary of nutrient loadings to CARP sediment transport/organic carbon production model for various source types and jurisdictions - water year 1994-95.

### CARP ST-SWEM Loads 9899

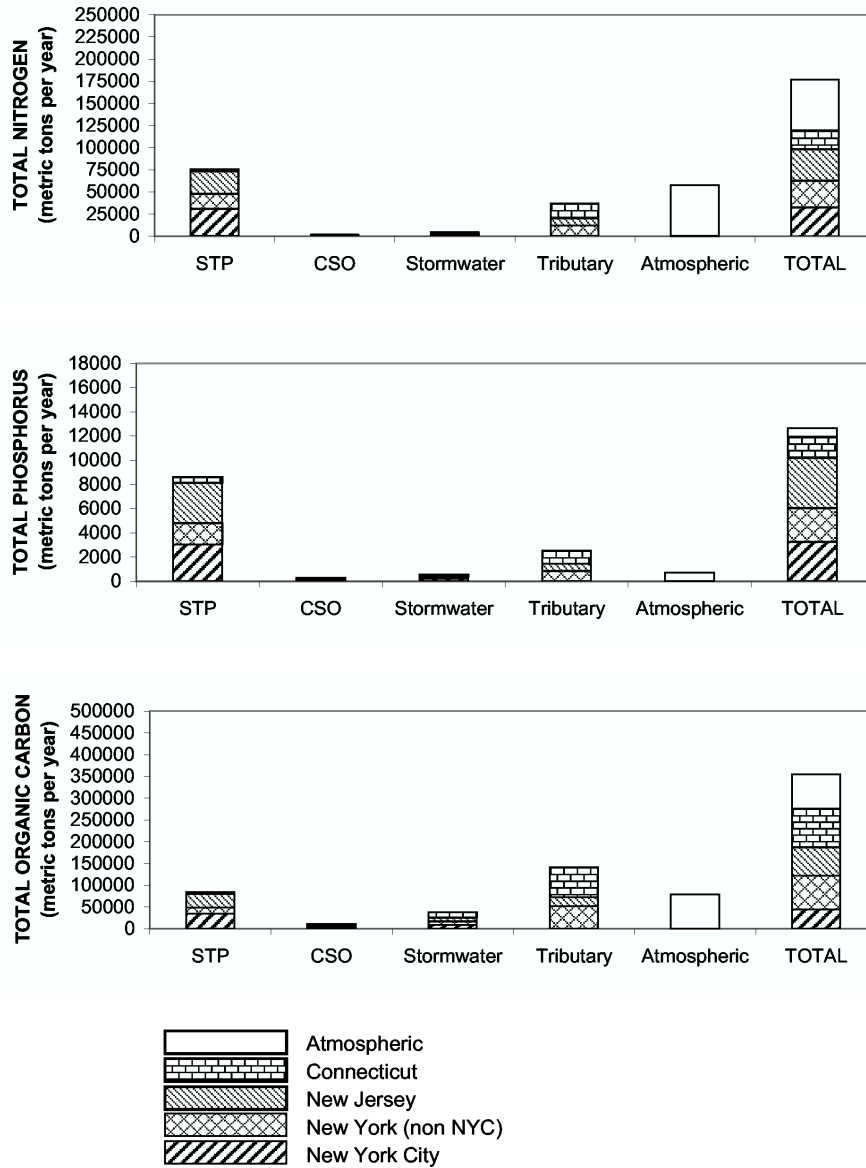


Figure 3-11. Summary of nutrient loadings to CARP sediment transport/organic carbon production model for various source types and jurisdictions - water year 1998-99.



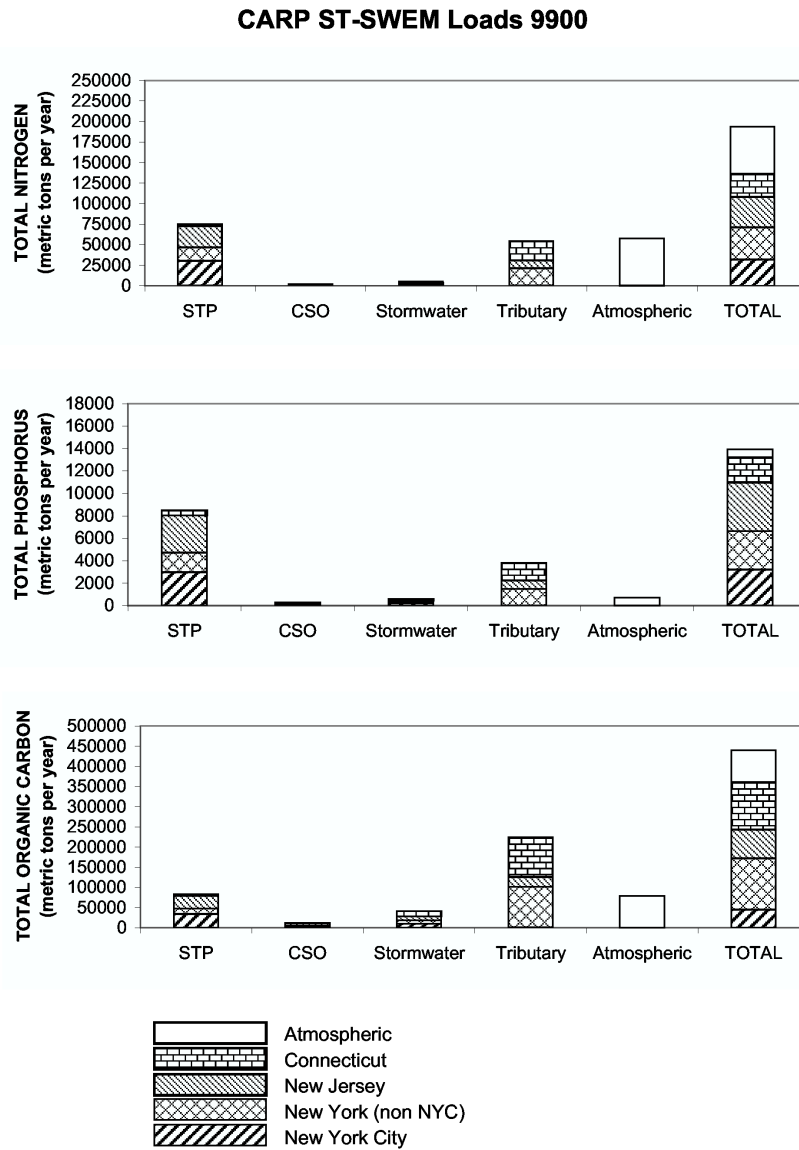


Figure 3-12. Summary of nutrient loadings to CARP sediment transport/organic carbon production model for various source types and jurisdictions - water year 1999-2000.

**CARP ST-SWEM Loads 0001**

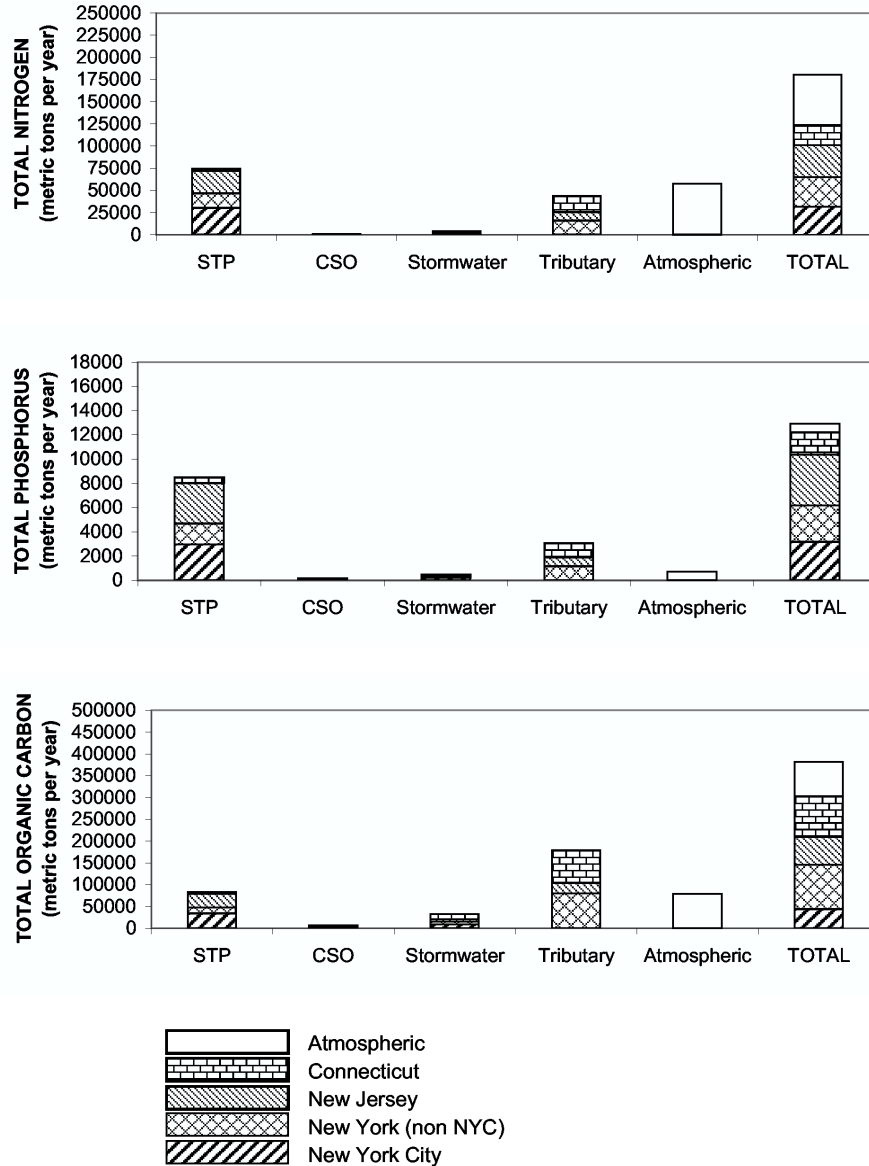


Figure 3-13. Summary of nutrient loadings to CARP sediment transport/organic carbon production model for various source types and jurisdictions - water year 2000-01.

**CARP ST-SWEM Loads 0102**

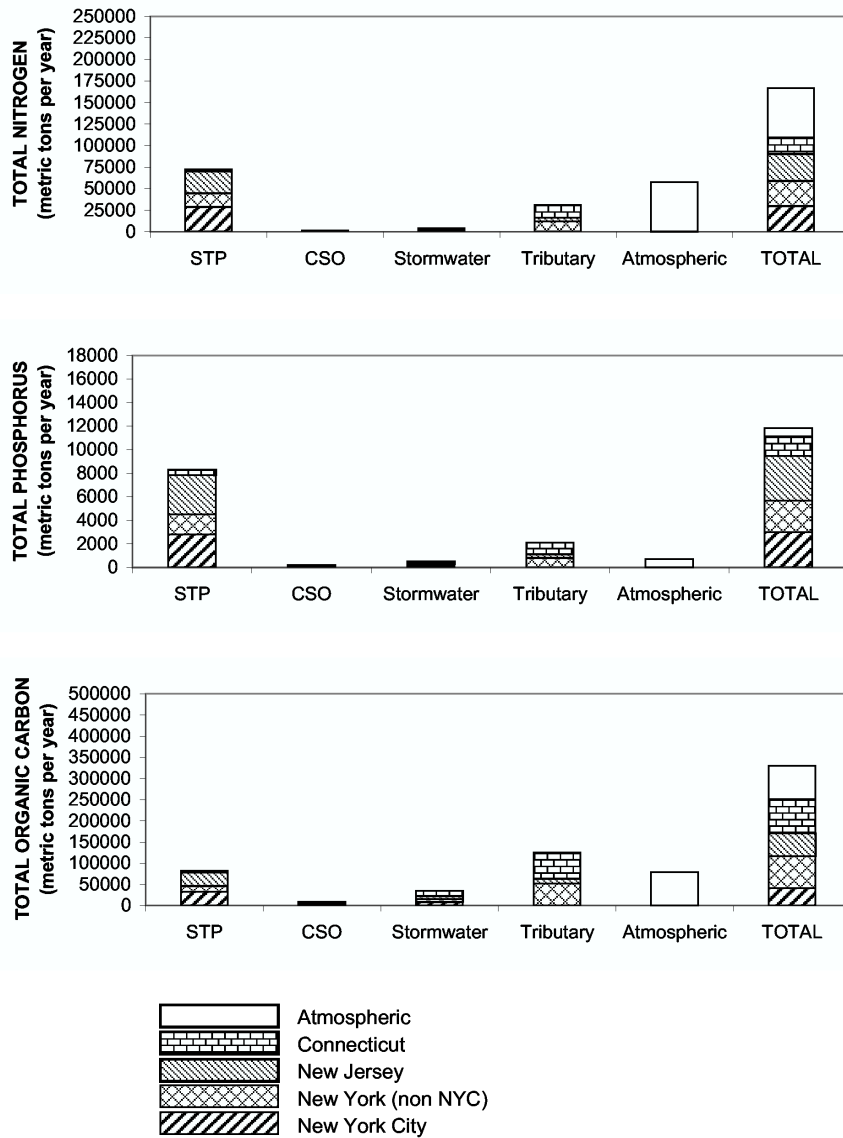
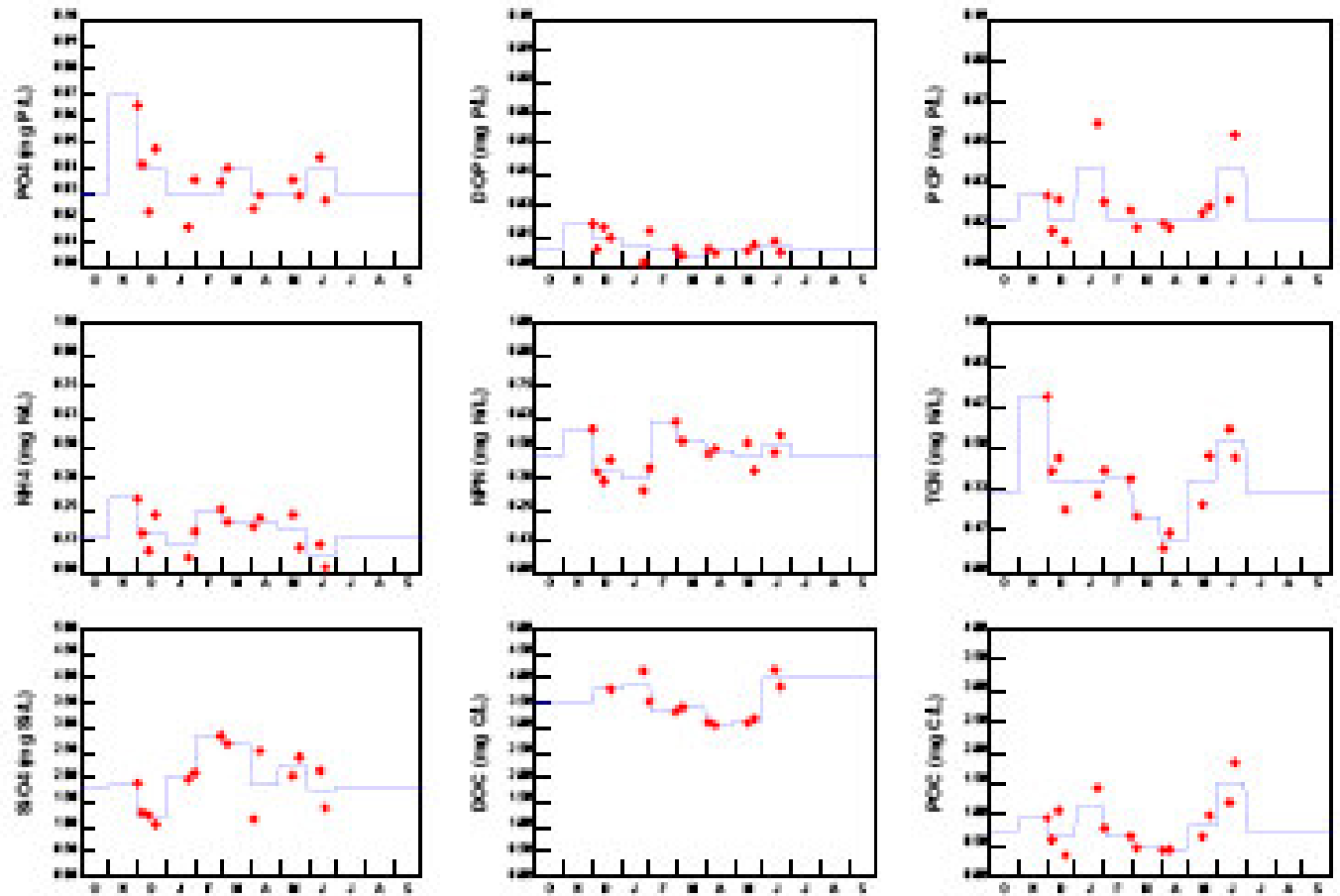


Figure 3-14. Summary of nutrient loadings to CARP sediment transport/organic carbon production model for various source types and jurisdictions - water year 2001-02.



SWEM - CONNECTICUT RIVER

Boundary Condition - Water Year 9495

Figure 3-15. Example of specification of head of tide loading concentrations for nutrients - Hackensack River.

## SECTION 4.0

# CARP SEDIMENT TRANSPORT/ORGANIC CARBON PRODUCTION MODEL CALIBRATION

### 4.1 AVAILABLE INFORMATION FOR MODEL CALIBRATION

#### 4.1.1 Available Information for Sediment Transport Model Calibration

The following information is available for use for calibrating the sediment transport model:

- Suspended Sediment Concentrations at Poughkeepsie: A continuous record of suspended sediment concentrations at Poughkeepsie has been collected since March 2002. (Wall, 2003)
- Total Suspended Solids (TSS) Grab Samples: As part of a TMDL/WLA project performed for USEPA Region 2, HydroQual compiled a database of suspended solids measurements collected in the region during the 1980's and early 1990's. Data sets compiled include the works of: NYCDEP Harbor Survey (routine sampling and special tidal cycle surveys for 1991); Hirschberg and Bokuniewicz (1980 and 1981, released upon the request of the Hudson River Foundation); Bero (1989 through 1991 for the Hudson River Foundation), Olsen (1975-77); United States Geologic Service; NYSDEC; Interstate Sanitation Commission; and EPA Region 2 (period of records found in STORET). Under the TMDL/WLA project, TSS were also collected during January and October of 1991 and over tidal cycles in April and May of 1991. (HydroQual, 1995; Battelle, 1991 b and c).
- Dredging Records: Dredging records from 1981-91 were compiled to obtain estimates of sediment accumulation rates in various sections of NY-NJ Harbor (Farley et al., 1999; Suszkowski 2003)
- $^{234}\text{Th}$ - $^7\text{Be}$  Tracer Study: Relative concentrations of  $^{234}\text{Th}$  and  $^7\text{Be}$  on sedimented particles from several stations were used as evidence that there is a landward migration of sediments from the harbor into the North River and up into the lower portion of Haverstraw Bay (Feng et al., 1999)
- Seasonal Estimates of Sediment Storage: Seasonal estimates of sediment storage in the North River were obtained from analyses of sediment cores from various sampling locations by Woodruff et al. (2001).

- Sediment Mapping: Sidescan sonar was used to map sediments along the entire stretch of the Lower Hudson River (Bell, 2004; Nitsche et al., 2004).
- Suspended Sediment Concentrations in The Kills: Suspended sediment concentrations (and estimates of net sediment fluxes) in the Kills were obtained by CARP for selected periods in 2001, 2002 and 2003.
- Suspended Sediment Concentrations in the Hackensack River: CARP conducted tidal cycle measurements of suspended sediments in the Hackensack River during April and November of 2002.

#### **4.1.2 Available information for skill assessment of the previously calibrated and validated carbon portion of ST-SWEM**

Skill assessment and calibration-verification of the organic carbon portion of ST-SWEM has extensive data needs including a large suite of parameters (e.g., salinity, temperature, chlorophyll-a, dissolved oxygen, secchi depth, light extinction, nutrients, organic carbon, BOD, sediment nutrient fluxes, SOD). The data sets available for calibration-verification and skill assessment of the organic carbon portion of ST-SWEM include:

##### 1994-95 Field Program Conducted in Support of SWEM Calibration

The 1994-95 monitoring program conducted in support of SWEM included three components: loadings, hydrodynamics, and water and sediment quality. Monitoring of loadings involved sampling of 30 STPs and 11 tributaries eight times over the course of the year. In addition, 18 CSO and 15 stormwater locations were sampled three times and atmospheric deposition samples were collected at 10 locations for 7 precipitation events. The water and sediment quality monitoring included more than 100 stations at 2 depths for 9 synoptic events. The variables measured include physical parameters, plankton, nutrients, dissolved oxygen and sediment nutrient fluxes.

Other data sources include NYCDEP Harbor Survey, monitoring by the Connecticut Department of Environmental Protection, Consolidated Edison monitoring of the Hudson River, and special studies performed by the Interstate Environmental Commission and HydroQual.

### 1988-89 Long Island Sound Monitoring

The major source of data for model and data comparison under 1988-89 conditions is the database collected for the Long Island Sound Study for the development of LIS3.0 and the NYCDEP Harbor Survey.

### Supplemental Data for Years between 1988-89 and 1994-95

In addition to the databases cited above, several sampling studies were performed for the period between the 1988-89 and 1994-95 water years. Although these datasets contain only a subset of the relevant water quality parameters and oftentimes are limited to select areas of the Harbor, they provide additional information that can assist in model skill assessment. Datasets of particular interest include the following:

Academy of Natural Sciences of Philadelphia. 1994. Data Collection Program in Support of the Harbor-Wide Eutrophication Model for the New York - New Jersey Harbor Estuary Program. Report No. 94-29D.

Connell, R., Jr. and L. Messler. 1990. New Jersey Ambient Monitoring Program Report on Coastal and Estuarine Water Quality 1989-1990. NJ Department of Environmental Protection and Energy. Division of Science and Research.

General Testing Corporation. 1990. Bergen County Utilities Authority Impact Analysis of Sewage Treatment Plant Discharges on the Water Quality of the Lower Hackensack River. Appendix B. Part 1: Analytical Data. Submitted to Clinton Bogert Associates.

Olsen, P.S., and R. Mulcahy. 1991. Red Tides in the Hudson-Raritan Estuary are Associated with Hypoxia and Consequent Fauna Kills. Presentation to Fifth International Conference on Toxic Marine Phytoplankton. Newport, R.I.

The Academy of Natural Sciences database was collected mainly for purposes of defining reactivity rates of different loadings to the SWEM domain. Reactivity rates derived from Academy of Natural Sciences data collected in the early 1990's are applied in SWEM and ST-SWEM under 1998 - 2002, 1994-1995 and 1988-1989 conditions. Data collected by Connell and Messler (1990) and Olsen and Mulcahy (1991) during the summers of 1989 and 1990 emphasize dissolved oxygen and chlorophyll rather than nutrients and are focused on the waters of Raritan Bay and the New York Bight. The General Testing Corporation Bergen County Utilities Authority (BCUA) data are limited to the

Hackensack River and were predominantly collected in 1988 before the 1988-89 validation period which begins in October 1988. For reference, BCUA data collected in 1988 are used in SWEM and ST-SWEM model and data comparison diagrams with model results from the corresponding month in 1989. Although this is admittedly a mismatch of conditions, the 1988 measurements provide some level of guidance for 1989 calculations.

### Ongoing Data Sources

The NYCDEP Harbor Survey routinely monitors water quality through the Harbor.

The New Jersey Harbor Dischargers Group (NJHDG) led by the Passaic Valley Sewerage Commissioners (PVSC) has recently started up a routine water quality monitoring program.

The Hackensack Meadowlands Development Commission (HMDC) monitors water quality on a quarterly basis in the Hackensack River.

Nutrient and carbon data are collected on the Hudson River routinely by the Institute of Ecosystem Studies; however, HydroQual has not had access to these data for CARP.

### CARP Data

Measurements of POC and DOC were also performed as part of the CARP sampling program.

## **4.2 MODEL CALIBRATION STRATEGY**

### **4.2.1 Calibration Strategy for the Sediment Transport Portion of ST-SWEM**

Coefficients in the sediment transport model include the coagulation-settling rate coefficient ( $B$ ), the critical shear stress ( $\tau_{critical}$ ), the resuspension rate coefficient ( $a_o$ ), and the collision efficiency function ( $1/\alpha$ , Critical Salinity, and the Spreading Coef.) as presented in Section 2.1. Final estimates of these coefficients are given below in Table 4-1:



Table 4-1. Coefficients Related to Sediment Transport for ST-SWEM Calibration

Process	Coefficient Description	Notation	Value	Units	Notes
Settling (see equation 4)	settling rate coefficient	$\beta$	<sup>1</sup> 0.16	L/mg-day	Initial estimates based on calculations presented in Farley, 1991.
	fresh/salt water differential	$\alpha$	1		Collision efficiency function based on theoretical studies of Han et al., 1997 and field studies of Edzwald et al., 1972.
	critical salinity		20	ppt	
	spreading coefficient		2		
Resuspension (see equations 6 and 8)	vonKarmen constant	$\kappa$	0.4		Initial estimates based on results presented in HydroQual, 2002, Maa et al. 1998, and HydroQual shaker tests on the Passaic and Hackensack Rivers.
	roughness height	$z_o$	<sup>2</sup> 0.001		
	critical shear stress	$\tau$	0.5 or 3	dynes/cm <sup>2</sup>	
	resuspension coefficient	$a_o$	4.0	mg/cm <sup>2</sup> -hr	Initial estimates based on HydroQual shaker tests on the Passaic and Hackensack Rivers.
	resuspension exponent	$n$	1.0		Per the recommendation of Larry Sanford.

<sup>1</sup> In the Raritan River and in the the Hudson River from Poughkeepsie to the North River, the settling rate coefficient was set equal to 0.064 L/mg-day reflecting, depending on location, lower settling rates due to higher shearing rates and floc disaggregation or lower settling rates due to lower shearing rates and slower particle collision rates.

<sup>2</sup>  $z_o$  values were adjusted in a number of locations to account for wind driven waves and grid resolution problems.

The final assignment of values for the modeling coefficients was obtained through calibration to site-specific field information. For model calibration, the sediment layer was initially specified as “hard bottom” (i.e., the active sediment layer was set to its minimum thickness of 9.9 cm and the archive sediment layer thickness was set to zero). One or more years of a model “spin up” were then performed to place erodible sediments only in temporary and long-term deposition zones. We feel this is a very rigorous test of the sediment transport model since it provides a direct accounting of sediment input and mass accumulation. During calibration, we ran long-term sediment transport simulations with both the “hard bottom” condition and with an initial mass of erodible sediment to ensure that our specification of an initial bed condition did not significantly affect our final results.

Since we are dealing with a large model domain and a model with non-linear processes, calibration of the sediment transport model was performed in a step-wise fashion as outlined below:

1. Sediment transport in the tidal, freshwater Hudson between Troy and Poughkeepsie was first examined. For model calibration, we relied on the continuous record of suspended sediment concentrations at Poughkeepsie (Wall, 2004) and to a lesser extent, on sediment mapping (Bell, 2004) and TSS grab samples from various sources as described in Section 4.1.2. Since the SS record at Poughkeepsie begins in March 2002, model calibration runs were performed using the 2000-01 water year (with a high sediment load) as our spin-up year, followed by consecutive simulation of the high sediment load 2000-01 water year and the low sediment load 2001-02 water year. Values of the coagulation-settling rate coefficient ( $B$ ), the critical shear ( $\tau_{critical}$ ), and the resuspension rate coefficient ( $a_o$ ) were adjusted to match intratidal variations in SS concentrations and the long-term trends in SS concentrations. In addition, based on sediment mapping (and anecdotal information from a sediment transport workshop sponsored by the Hudson River Foundation), coefficients were set to allow temporary storage, but not an appreciable long-term build-up, of deposited sediments in this portion of the river. Specifically, the settling velocity was adjusted to capture the range in suspended sediment concentrations observed both between the surface and bottom layers of the model as well as variations in suspended sediment concentrations over the tidal cycle. Critical Shear values were adjusted to capture enough sediment above Poughkeepsie to reproduce the timing of an observed drop off in sediment concentration at Poughkeepsie after the freshet without trapping large quantities of sediment upstream.

2. Sediment transport between Poughkeepsie and the upper end of Haverstraw Bay was then examined. For calibration, we relied on a minimal amount of TSS grab measurements and sediment mapping (Bell, 2004; Nitsche et al., 2004) which suggests that there is some accumulation of cohesive muds near the Wallkill and into Newburgh Bay. Because of model segmentation, calculated shears were considerably lower in the section of the model from above to below Newburgh Bay. Shears in this portion of the Hudson River were increased to be more consistent with: 1) the shears in surrounding segments, 2) the significant fetch of Newburgh Bay and 3) additional bottom stresses potentially induced by wind-waves. An example of this adjustment is shown in Figure 4-1 for the water year 2000-2001. With this adjustment included in the model, sediments were no longer trapped as they went past this section of the River, but some level of storage was still maintained.
3. Sediment transport between the upper end of Haverstraw Bay and the Harbor was examined next. Because of seasonal estuarine circulation patterns, it was difficult to break this section of the model domain into smaller sections. Model calibration relied primarily on harbor dredging records (Farley et al., 1999; Suszkowski 2003), sediment mapping (Bell, 2004) which suggest accumulation of sediments in the upper and lower end of Haverstraw Bay, seasonal estimates of sediment storage in the North River (Woodruff et al., 2001), indications of landward transport from  $^{234}\text{Th}$ - $^{7}\text{Be}$  tracer studies (Feng et al., 1999) and TSS grab samples. Early model simulations indicated too much sediment accumulation in Haverstraw Bay (and too little sediment accumulation in the North River and Harbor) during and immediately after the spring freshet. Sediments that were transported into the Harbor migrated upstream after deposition and also accumulated in the Haverstraw Bay/Tappan Zee region of the model. Bottom shear stresses in Haverstraw Bay were increased (by increasing the bottom roughness) to help offset this large accumulation of sediment in Haverstraw Bay and to allow more of the sediments to be transported to the Harbor. A possible justification for this may be the effects of wind-waves in the open areas of Haverstraw Bay. In addition, the settling velocity for suspended sediment was also increased for the Harbor region by adjusting the salinity parameters in the collision efficiency function). This was effective in enhancing the trapping of sediment in the Harbor and in reducing the landward transport of resuspended sediment back toward Haverstraw Bay. Finally, since there was still too much upstream migration of sediment from the Harbor in months following the spring freshet, the critical shear stress for the 9.9 cm “consolidated” sediment layer was increased to help increase the retention of sediment in the Harbor region.

4. Sediment transport in Newark Bay and connecting waterways was then considered. For this assessment, we relied on Harbor dredging records (Farley et al., 1999; Suszkowski, 2003) and the suspended sediment and flux estimates of Chant (2004). In initial model simulations, there appeared to be an insufficient flux of sediment from the Harbor into Newark Bay. The collision efficiency function and critical shear stresses for the Harbor were adjusted to help direct less of the landward transport of sediment to Haverstraw Bay and more of the sediment to Newark Bay.

Finally, the calibrated sediment transport model was run for the full cycle of CARP years (with initial sediment conditions for both a “hard bottom” and an initial mass of erodible sediment) as part of a final skill assessment. A listing of final model coefficients is given in Table 4-1.

#### **4.2.2 Calibration Strategy for the Organic Carbon Portion of ST-SWEM**

Calibration of the organic carbon portion of ST-SWEM is considerably more involved than the calibration of the suspended sediment transport portion because of the large number of state variables and processes being modeled (e.g., algal growth dynamics and nutrient uptake, nutrient cycling, sediment diagenesis etc.). Fortunately, the organic carbon portion of ST-SWEM was previously well calibrated and validated as described in the introductory section of this report. The calibration strategy for the organic carbon portion of the CARP sediment transport/organic carbon production sub-model, ST-SWEM, assumes as a starting point an already calibrated and validated model and in actuality is a calibration-verification. The calibration-verification for the organic carbon portion of ST-SWEM is necessary because of the additional state variables and more detailed vertical transport processes that were incorporated. Briefly described below are the calibration variables that were given the most weight in the original SWEM calibration process as well as the approach followed for the calibration verification of the organic carbon portion of ST-SWEM. It is noted that the calibration of ST-SWEM considers both the suspended sediment and organic carbon calibrations simultaneously.

The major water and sediment quality variables of concern for SWEM calibration and validation included: salinity, temperature, dissolved oxygen, chlorophyll-a, BOD-5, organic carbon, nitrogen, phosphorus, and silica. The calibration and validation of the water column portion of SWEM included model and data comparisons both along spatial transects and over time at specific locations. Specifically, an individual SWEM 1994-95 calibration or 1988-89 validation simulation included model and data comparisons for 2592 spatial profiles and 648 temporal profiles. The calibration and validation

of the SWEM benthic sediment model involved model and data comparisons for 486 temporal profiles per simulation.

Visual inspection of SWEM output / data comparisons indicates that SWEM approximates the principal interactions between density induced circulation, nutrient inputs, and phytoplankton on an annual cycle for two distinct years (i.e., 1994-95 and 1988-89). In addition, the principal components of the dissolved oxygen budget appear to have been incorporated in the model and, in general, reproduce the observed temporal distributions of dissolved oxygen throughout the system during 1994-95 and 1988-89. Visual inspection of model output and available data indicates that the SWEM sediment sub-model reproduces the general observed features of the annual cycle of sediment oxygen demand and nutrient fluxes.

The final SWEM calibration was the result of multiple model runs which were made to obtain a consistent set of model coefficients that are reasonable and reproduce the observed data for all state variables considered. With the exception of exogenous variables such as flow, temperature, solar radiation, and extinction coefficients, all model coefficients were consistent for the 12 month calibration and validation periods. The method employed in determining the values of the model coefficients is essentially one of trial and error. The starting point was a set of rate constants and parameter values which were used in the Long Island Sound modeling effort (i.e., LIS 3.0) and which were used in the eutrophication and sediment modeling effort for the Chesapeake Bay system.

For purposes of the organic carbon portion of ST-SWEM calibration, the model coefficients established in the SWEM calibration were not changed although some additional model coefficients and state variables were added as described above in the modeling approach section of this report.

The calibration protocol for the organic carbon portion of ST-SWEM is:

- Step 1 - Test the vertical transport terms (i.e., settling and resuspension) incorporated into ST-SWEM based on calibration of the suspended sediment portion of ST-SWEM. Test the 1945-95 and 1988-89 water years first.
- Step 2 - Verify that ST-SWEM calculations for 1994-95 and 1988-89 reproduce SWEM calculations for those years. When true, proceed to Step 5.

- Step 3 - If ST-SWEM and SWEM differ for 1994-95 and/or 1988-89, revisit the ability of both models to reproduce the observed data following the hierarchical approach in Steps 3a - 3d.
- Step 3a - Check that ST-SWEM reproduces observed data profiles of total nitrogen and total phosphorus which behave somewhat conservatively in the water column and reflect that advective and dispersive transport are correct.
- Step 3b - Check that ST-SWEM reproduces observed data profiles of dissolved inorganic nutrients (i.e., ammonia nitrogen, nitrate plus nitrite nitrogen, dissolved inorganic phosphorus, and dissolved silica) to ascertain that nutrient fluxes from the sediment to the water column are intact.
- Step 3c - In conjunction with Step 3b, check that ST-SWEM reproduces observed data profiles of chlorophyll-a and particulate organic carbon to ascertain that algal dynamics are correct.
- Step 3d - Check that ST-SWEM reproduces observed data profiles of dissolved oxygen. Dissolved oxygen represents an integrated system response to many processes and serves as an ultimate endpoint for assessing model skill.
- Step 4 - If step 3 is not favorable, revisit the ST-SWEM code and modify the repeat suspended sediment calibration. Go back to Step 1.
- Step 5 - Upon a satisfactory ST-SWEM calculation under 1994-95 and 1988-89 conditions, perform ST-SWEM calibrations for water years beginning in 1998 and ending in 2002.
- Step 6 - Perform cursory skill assessment checks on the carbon portion of ST-SWEM for water years beginning in 1998 and ending in 2002.

### **4.3 MODEL CALIBRATION RESULTS**

This section will present representative displays of model and data comparisons as well as a discussion of the strengths and weaknesses of the calibrations. Calibrations for both suspended sediment and organic carbon related parameters will be considered.

### **4.3.1 Suspended Sediment Calibration Results**

Using the data and information described in Section 4.1.1 and following the calibration approach outlined in Section 4.2.1, ST-SWEM was successfully calibrated for suspended sediment transport. Consistent with the calibration approach, calibration results are presented on a regional basis.

#### **4.3.1.1 Suspended Sediment Calibration Results - Fresh Water Tidal Hudson River (Troy to Poughkeepsie)**

The comparison of model calculations to measured suspended sediment concentrations on the Hudson River near Poughkeepsie, on a daily average, maximum and minimum basis, is presented in Figure 4-2. The first three panels of Figure 4-2 show grab sample data and model results at near surface mid, and near bottom depths. The last panel of Figure 4-2 presents model results and depth integrated data collected from a moored instrument. The model does a good job of capturing seasonal trends in the average measured sediment concentrations, as well as the overall measured range, but does not capture the measured variations in concentrations over shorter time scales. There are several possible reasons why the model does not capture the shorter time scale variations. The hydrodynamic model calibration efforts were generally focused on the regions of the model closer to the NY/NJ Harbor area. In addition, the lack of lateral resolution of the model in this section of the Hudson River does not provide for a deeper channel, where shears would be higher, and shallower shoals at the sides of the River where shears would be lower, and some additional sediment storage would be provided.

#### **4.3.1.2 Suspended Sediment Calibration Results - Hudson River Poughkeepsie to Haverstraw Bay**

Figure 4-3 shows the time series of sediment accumulation for various regions of the model. The second panel from the top on the left (labelled Wappinger to Haverstraw) shows the final calibration time series of accumulation for this region of the model. As described above in Section 4.2, getting the sediment accumulation in this region of the model to reflect some level of storage, without trapping too much sediment, was a challenge in calibrating the model. For each region, final net accumulation in million metric ton units is reported as part of the panel labels on Figure 4-3. For example, in Haverstraw Bay to the Tappan Zee, a total of 7.30 million metric tons (or an average of 200,000 metric tons per year of sediment accumulated in this region over the thirty-seven year simulation period.

#### 4.3.1.3 Suspended Sediment Calibration Results - Haverstraw Bay through NY/NJ Harbor

Figure 4-4 shows the time series of model calculated sediment accumulation in the Haverstraw Bay to Tappan Zee and North River (i.e., South of the Tappan Zee to the Battery) regions of the CARP model. The third and fourth panels on Figure 4-4 show both the simulated and actual hydrograph for the Hudson River. The hydrograph is presented as monthly means, maxima, and minima. The second panel shows the seasonal accumulation of sediments after the freshet, and subsequent loss in the North River section of the model. The first panel shows the upstream migration of the sediments on a seasonal and long-term basis from the region in the second panel. When the mass stored in the North River section goes down the mass accumulated in the Haverstraw Bay to Tappan Zee region increases. This is also seen in the sediment accumulation maps presented as Figures 4-5a, 4-5b, and 4-5c. Sediment accumulation results prior to the 2001 freshet, presented on Figure 4-5a, show little accumulation in the North River and Upper Bay. Calculations just after the freshet (shown on Figure 4-5b) show the newly deposited material following the freshet. Accumulation calculations several months after the freshet (see Figure 4-5c) show that although there is some remaining accumulation in the downstream area, most of the mass has moved back upstream. As indicated in our calibration strategy (see report Section 4.1), these accumulation results are consistent with the findings of Woodruff et al., 2001 and Feng et al., 1999.

#### 4.3.1.4 Suspended Sediment Calibration Results - Newark Bay Complex

Continuous suspended sediment measurements in the Kills and Newark Bay for the period of the 2001-2002 water year were available from the CARP monitoring program. Figures 4-6a through 4-6d show the comparison between model-calculated and measured suspended sediment in the surface and bottom water column layers in the Kill Van Kull, Arthur Kill, and Newark Bay. Model results are presented as 5-day means, maxima, and minima. Data are presented as daily means and ranges. To achieve these calibrations, shears in the Upper Bay, in the vicinity of the Port Jersey Channel, were increased to pass excess sediment that have accumulated in the Upper Bay to the Kills and Newark Bay. The adjusted shears were in a portion of the Upper Bay where shoreline features were not fully resolved by the CARP computational grid. The model reproduces the overall magnitude of the measurements but does not capture the day to day variation.

#### 4.3.1.5 Overall Suspended Sediment Calibration Results

The average annual sediment accumulation and range over the thirty-seven year CARP sediment transport simulation period are shown in Figure 4-7. Figure 4-7 shows the sediment load entering the region, the dredging estimate for each region, and the accumulation calculated by the model for each



region. In most cases the average accumulation is equal to or greater than the dredging estimate. Accumulation in the Passaic, Hackensack, and Newark Bay region of the model however was underestimated. Greater model grid resolution may be required to achieve a better match with dredging estimates. Figure 4-8 shows the overall comparison between calculated suspended sediment concentration and measured values. The measurements presented are from various CARP investigations: hydrodynamic monitoring, Hackensack River tidal cycle investigations, Poughkeepsie continuous monitoring, and contaminant monitoring. In most areas of the domain, the model does a good job of capturing both the average and range of the suspended sediment data. Transects for individual time periods over the course of the simulation period can be found in the Appendix 4.

In Appendix 4, model results and data for a given month are presented near surface, near bottom, and over the full water column depth. Data are presented as being either nucleopore filter collected or glass fiber filter collected. The reason for this presentation is that the validity of glass fiber filter results in salt water is questionable so we wanted to be able to examine model and data comparisons for nucleopore and glass fiber filter independently. In instances where suspended sediment concentrations were inferred from other measurements, as is the case with data collected by Bob Chant and Gary Wall for CARP, they are shown with the nucleopore data. The data shown are from the following studies: Wall Poughkeepsie data, Bero Hudson River data, field program in support of SWEM, NYCDEP Harbor Survey, CTDEP, PVSC/NJHDG, CARP Hackensack River tidal cycle surveys, CARP Newark Bay/Kills hydrodynamics monitoring, and CARP contaminant sampling.

### **4.3.2 Carbon and Nutrient Calibration Results**

Using the data and information described in Section 4.1.2 and following the calibration approach outlined in Section 4.2.2, ST-SWEM was successfully calibrated for organic carbon and nutrients. In most cases, ST-SWEM results compared favorably to previous SWEM results and to data. Specific comparisons of ST-SWEM to SWEM results and measured data are described below.

#### **4.3.2.1 Comparison of ST-SWEM and SWEM Results**

ST-SWEM model results were compared to those calculated previously with SWEM. Most variables compared favorably with the exception of the dissolved nutrients. Concentrations for dissolved inorganic phosphorus and silica were both high due to the loss from sediments associated with resuspension. The partitioning of dissolved inorganic phosphorus and silica to solids, already accounted for in the sediment flux calculation, was added to the water column calculation to resolve this issue. Figures 4-9a and 4-9b show an example of a plotting transect for the Hudson River during the period of July 20<sup>th</sup> to August 2<sup>nd</sup> of 1995. The plots show the comparison between the original SWEM

calibration (grey), the ST-SWEM calibration (black), and field data collected during that time period. Most of the model results match up well with the previous SWEM calculations with the greatest deviation occurring in the upstream section of the Hudson. The availability of additional data in the upstream section of the river, both ambient and head of tide, would help to better refine the calibration in this region.

Figures 4-10a and 4-10b show an example of the Long Island Sound transect for the same period of time. Again ST-SWEM does a good job of reproducing the original SWEM calibration. Model results for Long Island Sound looks better than the Hudson River in some regards because the Sound did not have the same issues of extending the model beyond the original SWEM domain. (Under this project the domain of SWEM was extended to include the Hudson River between Poughkeepsie and Albany.) In the case of both of these transects, calculated dissolved organic carbon (DOC) values tend to be somewhat low. One possible reason for this underestimation of water column DOC may be that the sediment diagenesis model does not currently consider DOC as a sediment state variable (i.e., it is assumed that DOC concentrations in pore water are negligible in comparison to POC in the bulk sediment). Both transects also show an over prediction of dissolved silica. Silica calibration issues have come up in other work with SWEM and ways of improving the silica behavior in the model are being investigated on other projects. Since the silica concentration does not directly impact the subsequent toxic chemical fate and transport model (RCATOX), no further work was done on CARP to resolve this problem.

Figures 4-11a and 4-11b show transects for the Hackensack River and Newark Bay. Positive mile points are in the Hackensack River and negative mile points are in Newark Bay. This section of the model compares well with the original SWEM calculation for all variables. The particulate and dissolved organic carbon model results do a good job of reproducing the observed data. To improve the overall ability of the model to reproduce the data in these and other NJ tributary waters, additional grid resolution would likely be needed.

Figures 4-12a through 4-12c show time series sediment model results for a segment in the Hudson River. The segment shown is approximately 8.5 miles north of the Battery, near 125<sup>th</sup> Street. Despite considerable changes to the sediment model to include resuspension, model results compare well with the previous SWEM calibration. There are large changes in the top left panel of each page. These panels: flxpon, flxpop, and flxpoc previously only accounted for deposition and now also consider resuspension and as such show a great deal more variability. The model still does a good job of reproducing the magnitude and seasonal variation of the sediment oxygen demand (SOD).

#### 4.3.2.2 Comparison of ST-SWEM to 1998-2002 Data

Checks were done on the ST-SWEM calculations for 1998-2002 using data collected by a number of organizations including the New York City Department of Environmental Protection (NYCDEP), the Passaic Valley Sewerage Commissioners (PVSC), the Meadowlands Environmental Research Institute (MERI), and the Connecticut Department of Environmental Protection (CTDEP). It is noted that subsequent to the CARP ST-SWEM model validation period, the PVSC monitoring program was greatly expanded in conjunction with the New Jersey Harbor Dischargers Group (NJHDG). Figure 4-13 compares calculated and observed concentrations of a number of key eutrophication model variables.

Overall the model results compare very favorably with the data. The calculated and observed nutrients match well with each other over several orders of magnitude. The chlorophyll-a comparison matches well but is not as strong as the nutrient comparisons. There are a number of reasons for this. The plotted model results are ten-day averages and algal dynamics can change the chlorophyll-a concentration greatly over this period of time. Model input concentrations were not collected for the specific model years. It is not unlikely, for example, that the timing of seasonal peaks in algal biomass, occurring in tributary headwaters during the CARP 1998-2002 data collection period, could be somewhat different between those measured in the 1994-95 water year. In addition, the original SWEM model was calibrated considering a number of variables simultaneously. In some cases, the chlorophyll-a fit may have been compromised to simultaneously fit other related measurements indicative of algal biomass such as particulate organic carbon. The final calibration involved a number of compromises and tradeoffs to best represent the measurements of nutrients, algal biomass, and dissolved oxygen simultaneously.

Dissolved oxygen shows the greatest model and data agreement of the plotted variables. This is not surprising as dissolved oxygen has a smaller range of possible concentrations since it is buffered by the atmosphere. The variability in the comparison may also be due to the averaging period of ten days. Dissolved oxygen concentrations can vary greatly on a diurnal basis at a given location. Since dissolved oxygen is an overall indicator of water quality and represents an integrated ecosystem response to numerous physical, chemical, and biological processes, model and data agreement for dissolved oxygen serves as a final confirmation of our model calibration.

Figure 4-14 shows a comparison between the data collected for CARP and ST-SWEM model results for the period of the four CARP years. Data collected by New York investigators are plotted as circles and data collected by New Jersey investigators are plotted as triangles. Overall, the model results compare favorably with the data. As observed in the 1994-95 transects presented in Section 4.3.2.1, the

calculated DOC values in New York waters are skewed somewhat low but still compare reasonably well with the data. The particulate results (i.e., POC and SS) capture the central tendency of the data, but show a greater degree of scatter than the DOC. This is generally true because these variables vary more greatly in space and time with resuspension occurring on a tidal basis. The same observation is true for the sediment organic carbon, which can vary greatly over small spatial scales.

Figure 4-15 shows a comparison of the calculated and observed sediment organic carbon. The figure shows the average and range of calculated concentrations over the four CARP years. The organic carbon data are those measured for the CARP sediment and R-EMAP 98 data sets. Model results and measurements demonstrate the large ranges of organic carbon concentrations which may be observed over a small spatial area. The model goes through the center of the cloud of data in most locations. There are two locations, the mid-Hudson River and upstream on the Raritan River, where the model appears to be low. These issues are likely due to an underestimation of the inert fraction of boundary organic carbon and the estimates of carbon made for the concentrations in tributaries in the Upper Hudson that were not previously included in the SWEM model or monitoring program.

Appendix 5 shows model and data comparisons for the 1998-2002 period along spatial transects on a 30-day average basis. These comparisons were summarized on Figure 4-13 where model results were presented as 10-day averages.

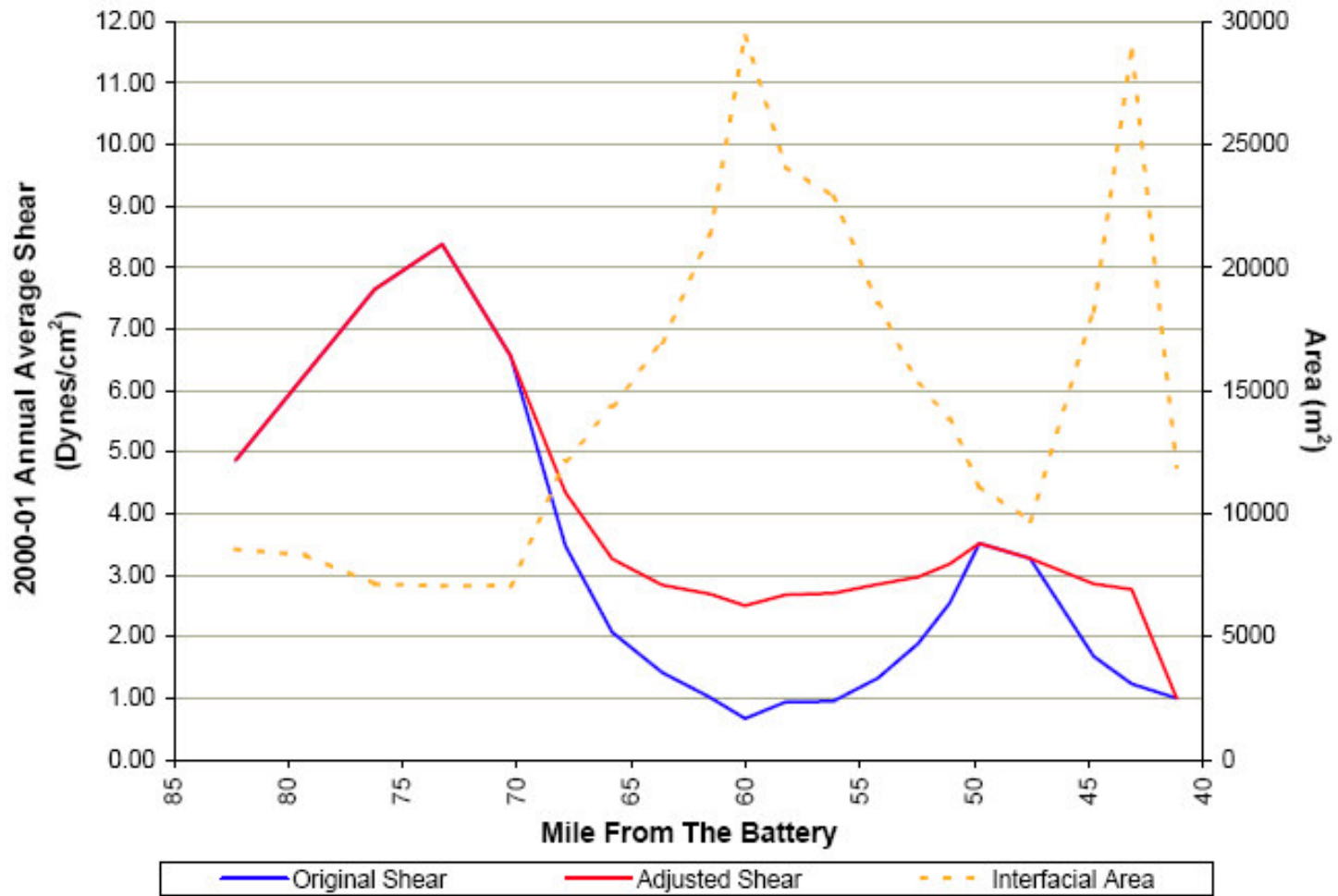


Figure 4-1. Adjustments to shear stress in the Hudson River.

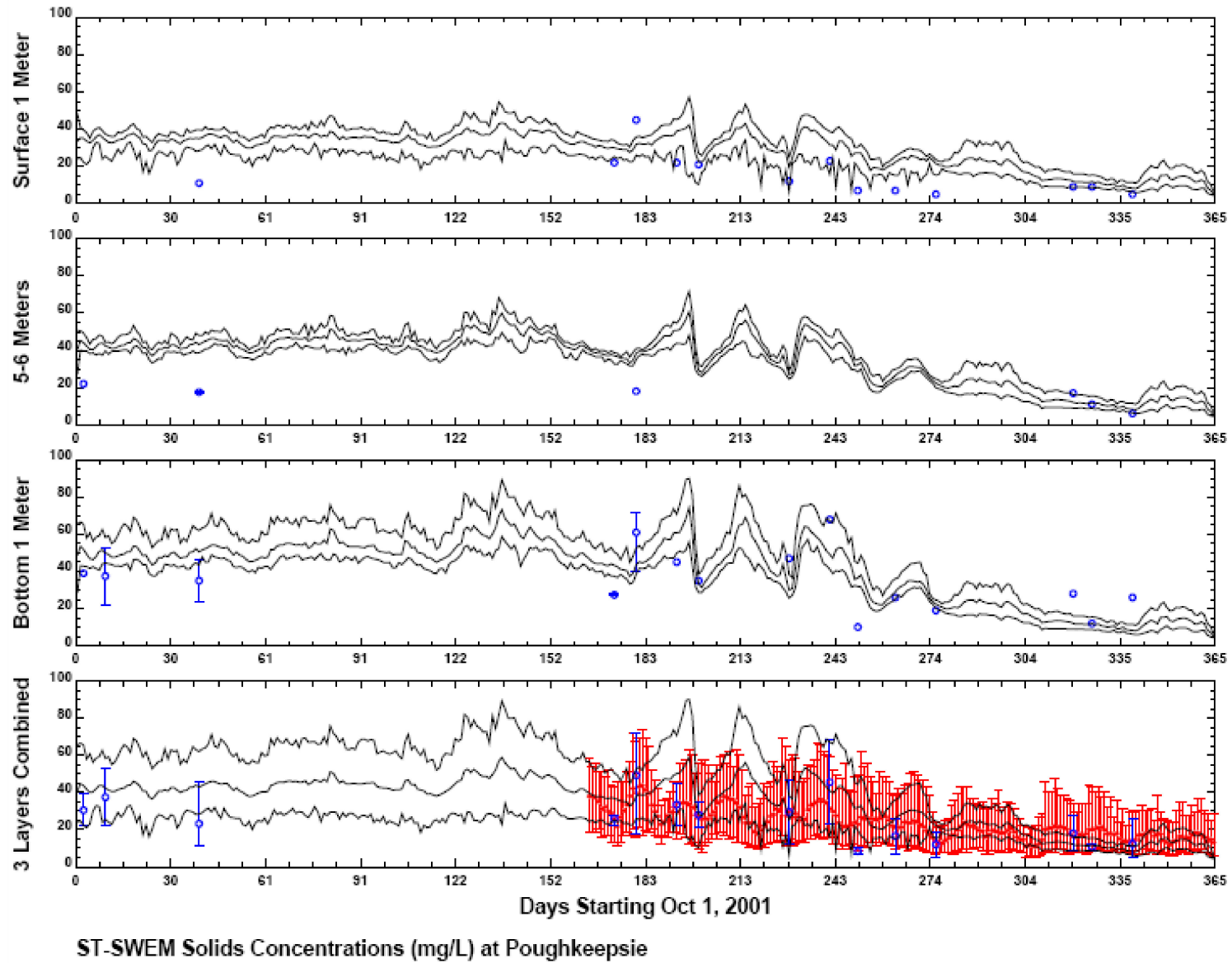


Figure 4-2. Model and data comparisons - suspended sediment concentrations on the Hudson River near Poughkeepsie.

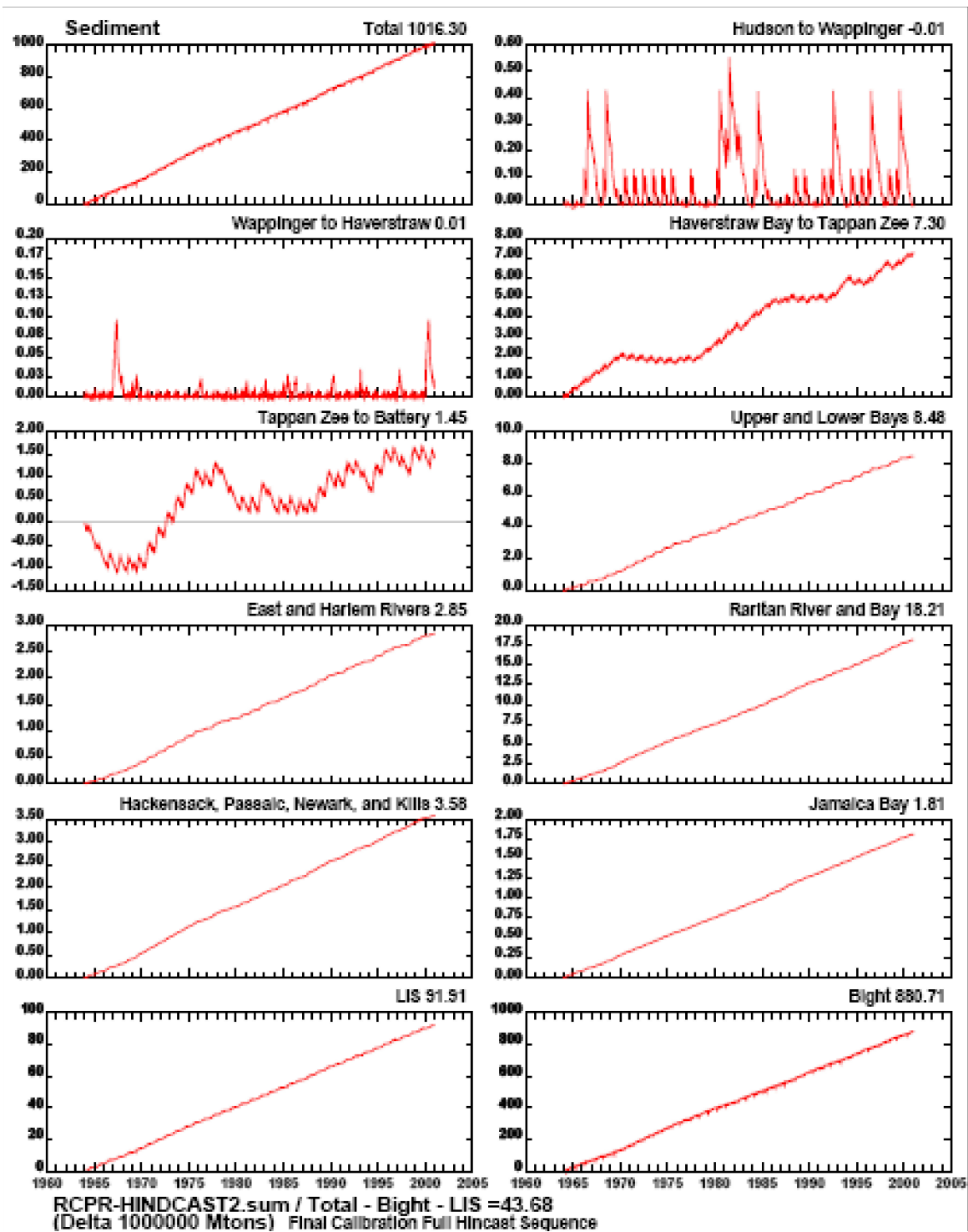


Figure 4-3. Time series calculations of sediment accumulation in million metric tons for various regions of the model.

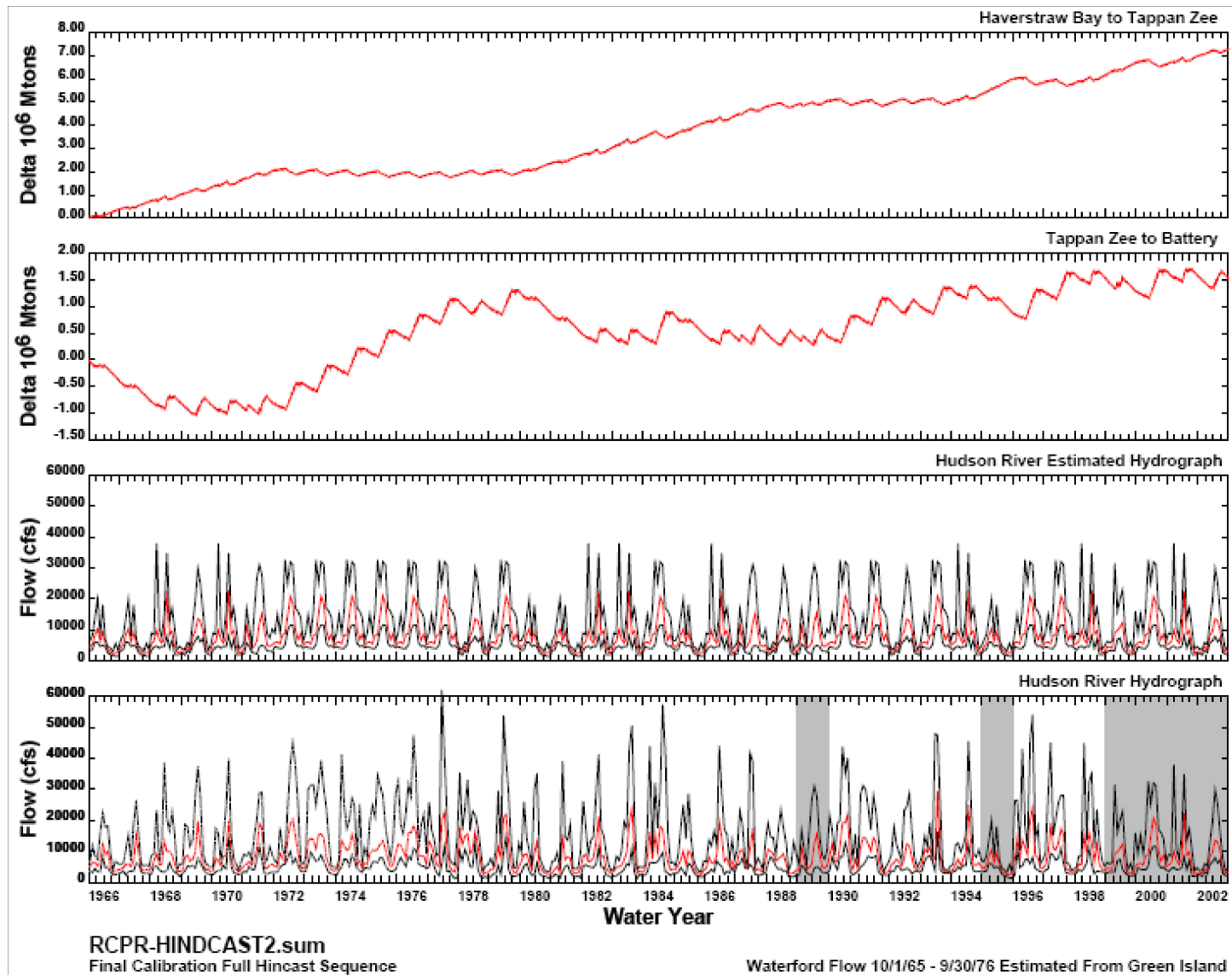


Figure 4-4. Calculated and observed Hudson River hydrograph and time series display of sediment accumulation (delta) in selected regions of the model.



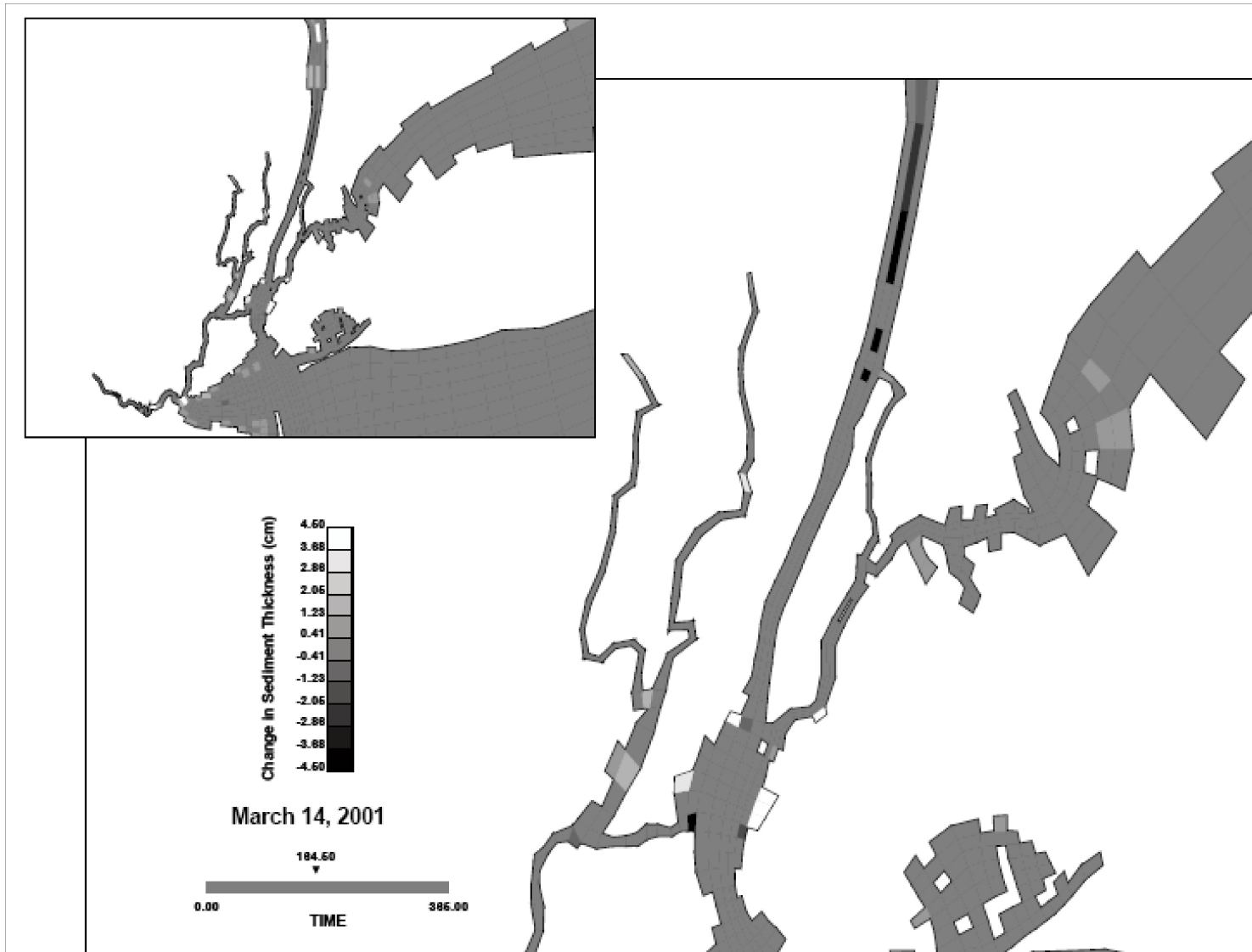


Figure 4-5a. Sediment accumulation map - before the Spring 2001 freshet.

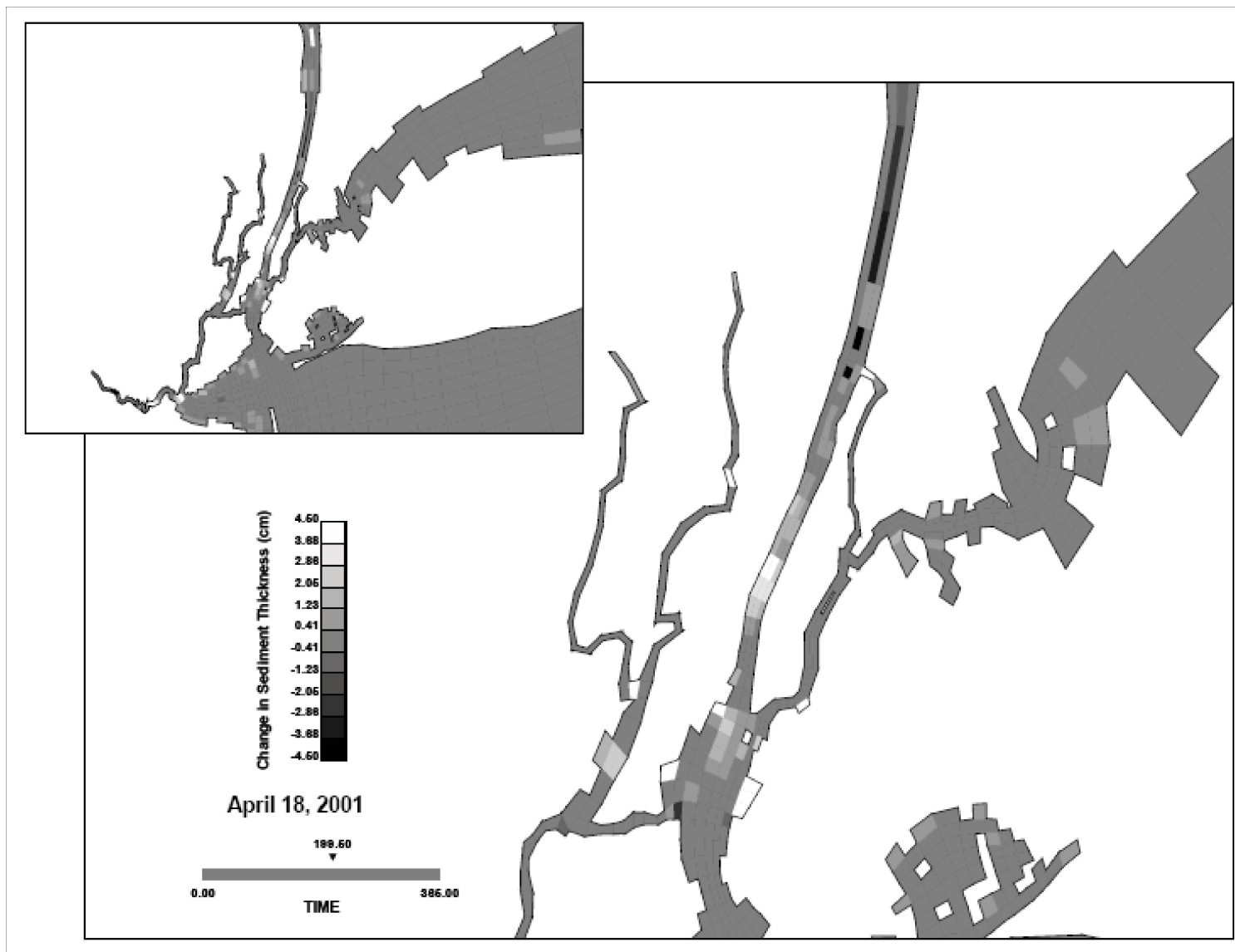


Figure 4-5b. Sediment accumulation map - shortly after the Spring 2001 freshet.

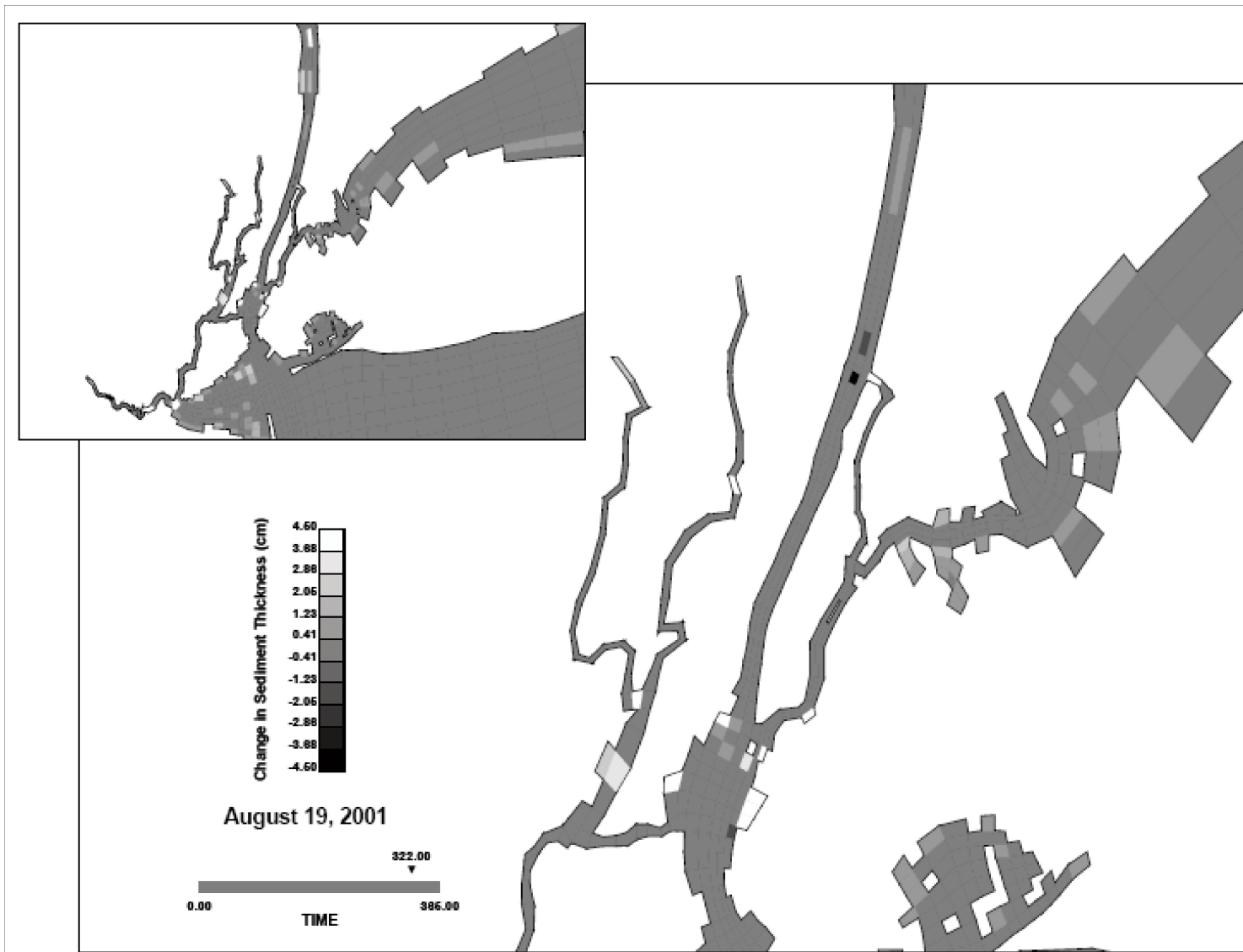


Figure 4-5c. Sediment accumulation map - several months after the Spring 2001 freshet.

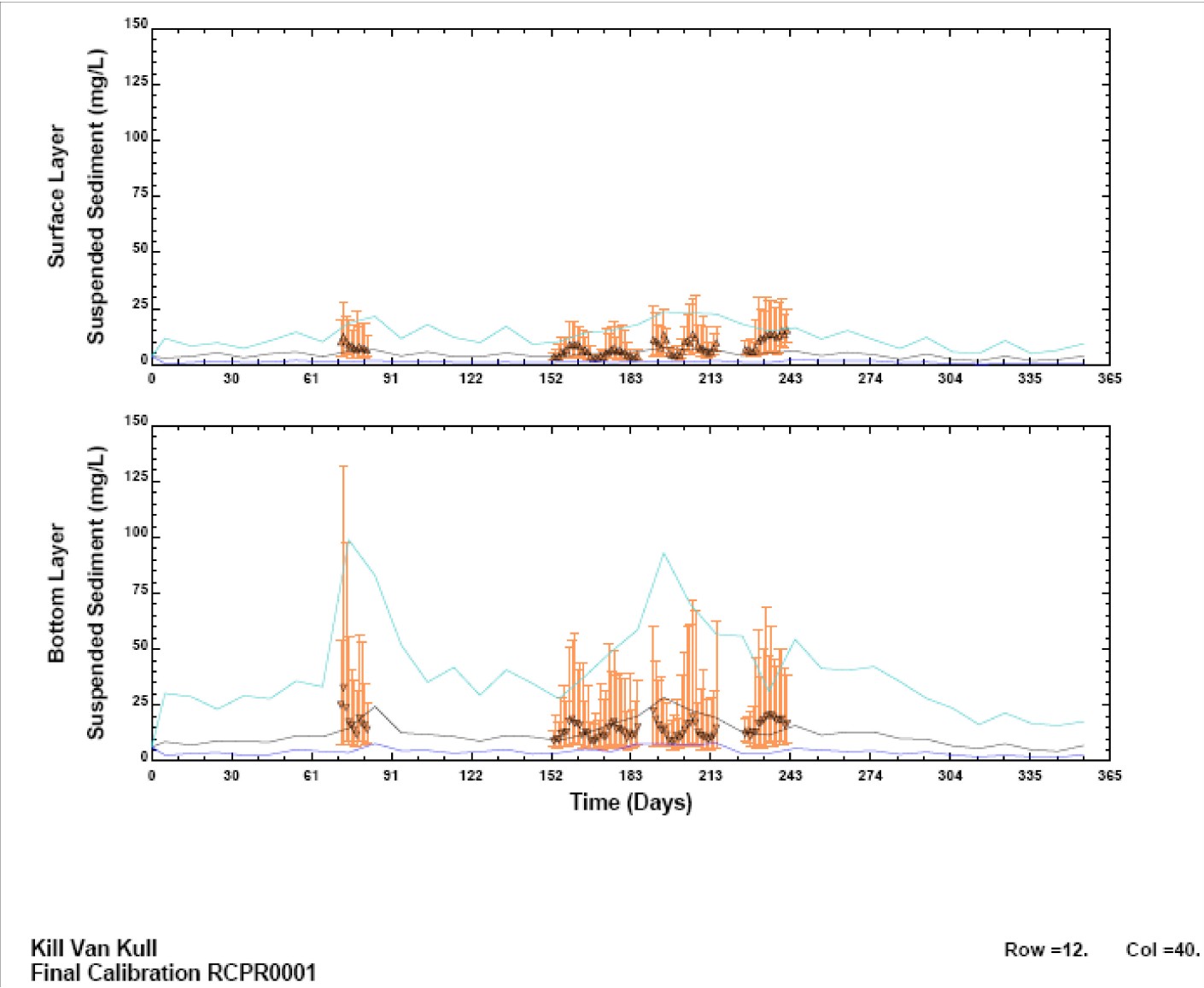
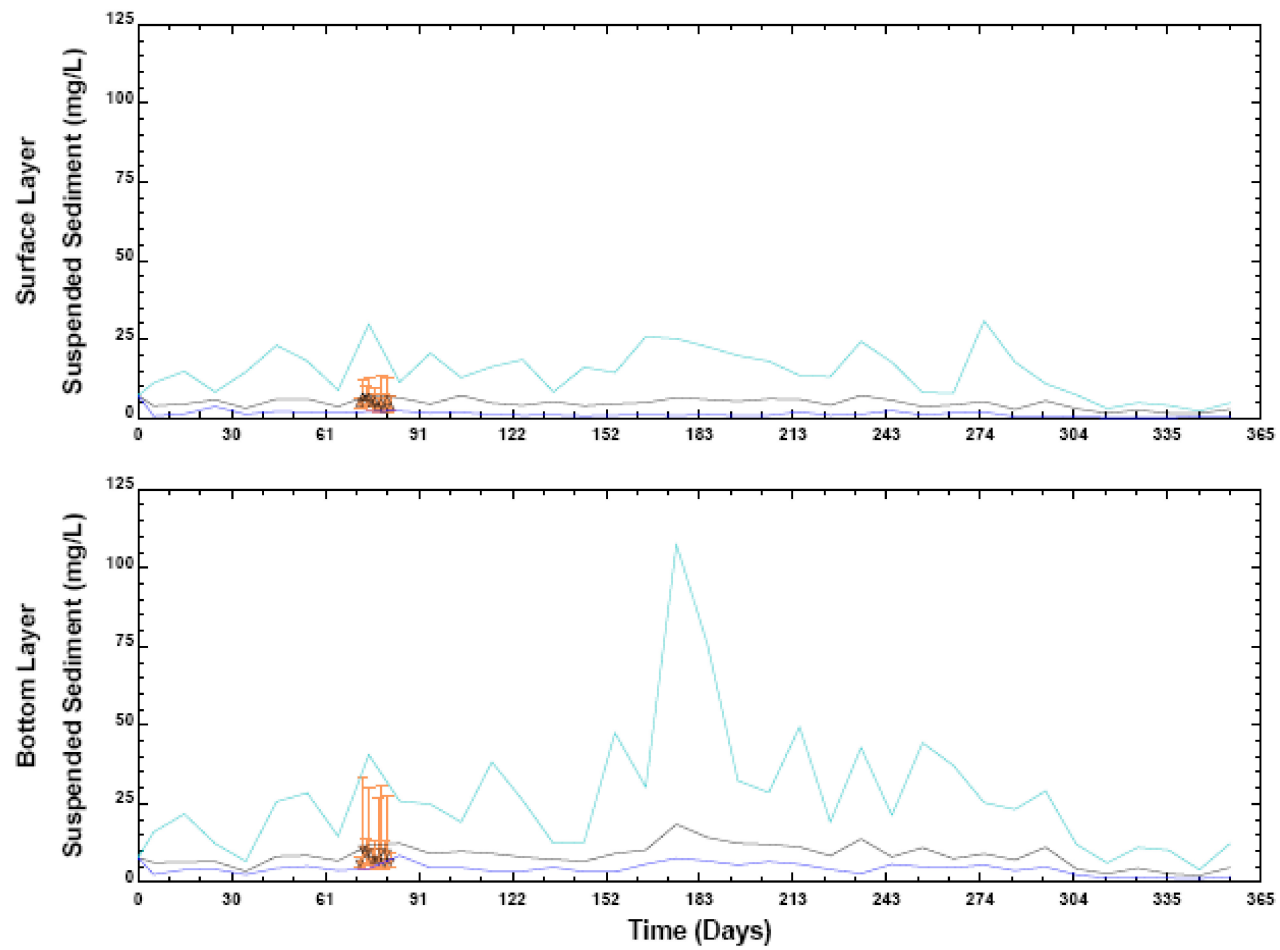


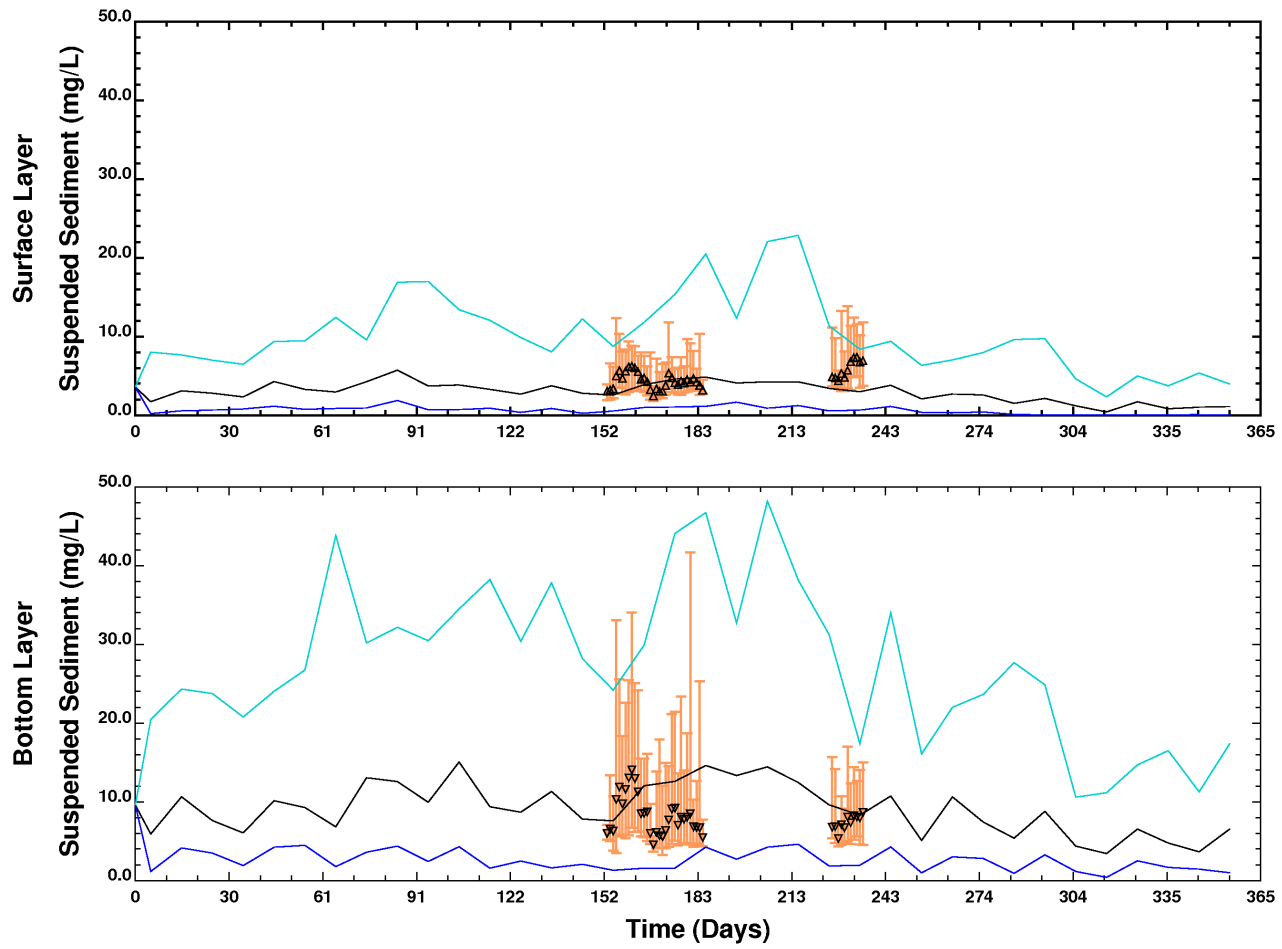
Figure 4-6a. Model and data comparisons for suspended sediment in the Kill Van Kull.



Arthur Kill  
Final Calibration RCPR0001

Row =4. Col =35.

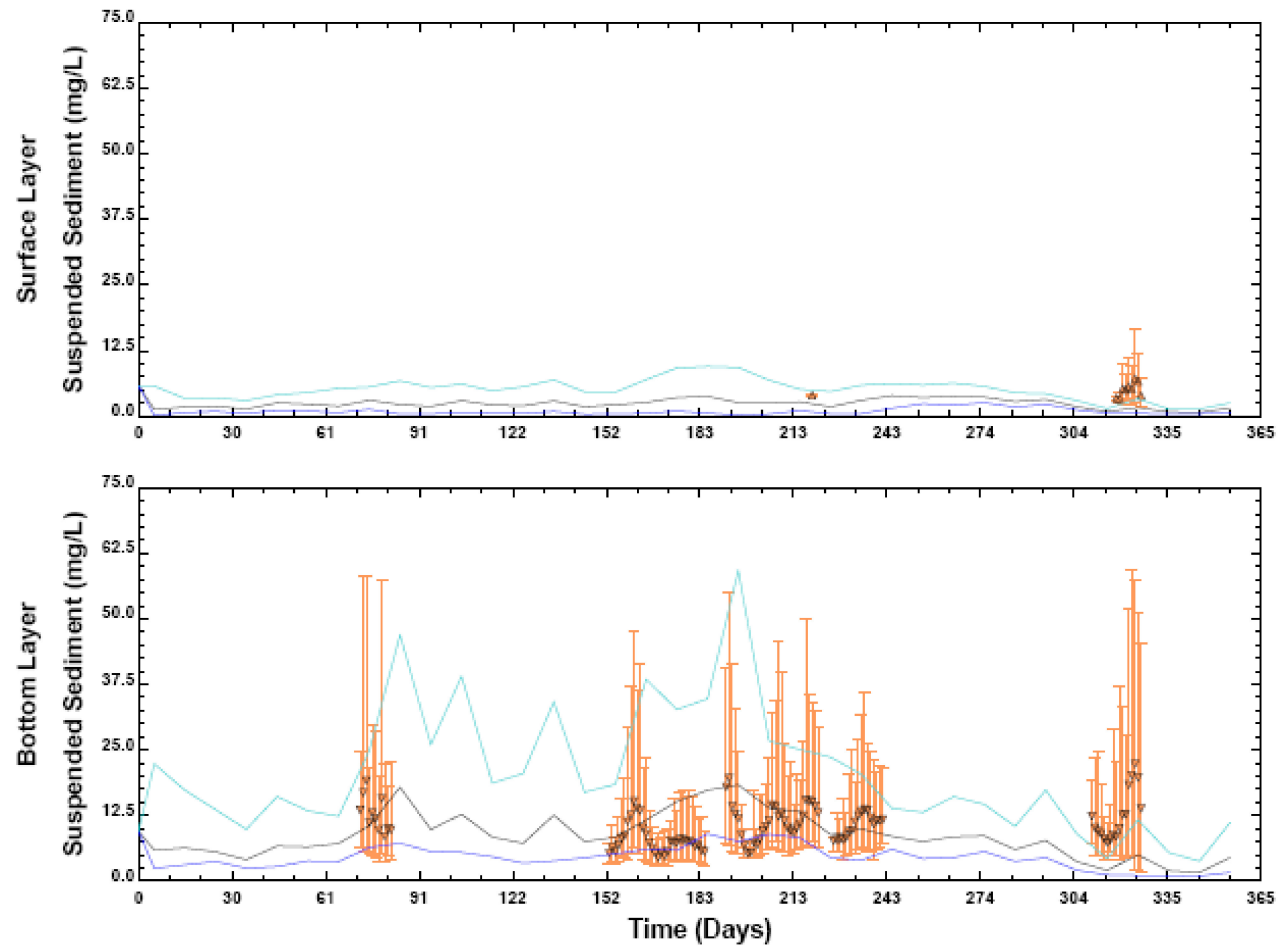
Figure 4-6b. Model and data comparisons for suspended sediment in the Arthur Kill.



Arthur Kill (South) - Perth Amboy  
 Final Calibration RCPR0001

Row =4. Col =27.

Figure 4-6c. Model and data comparisons for suspended sediment in the Arthur Kill (south).



Newark Bay\_01  
 Final Calibration RCPR0001

Row =8. Col =44.

Figure 4-6d. Model and data comparisons for suspended sediment in Newark Bay.

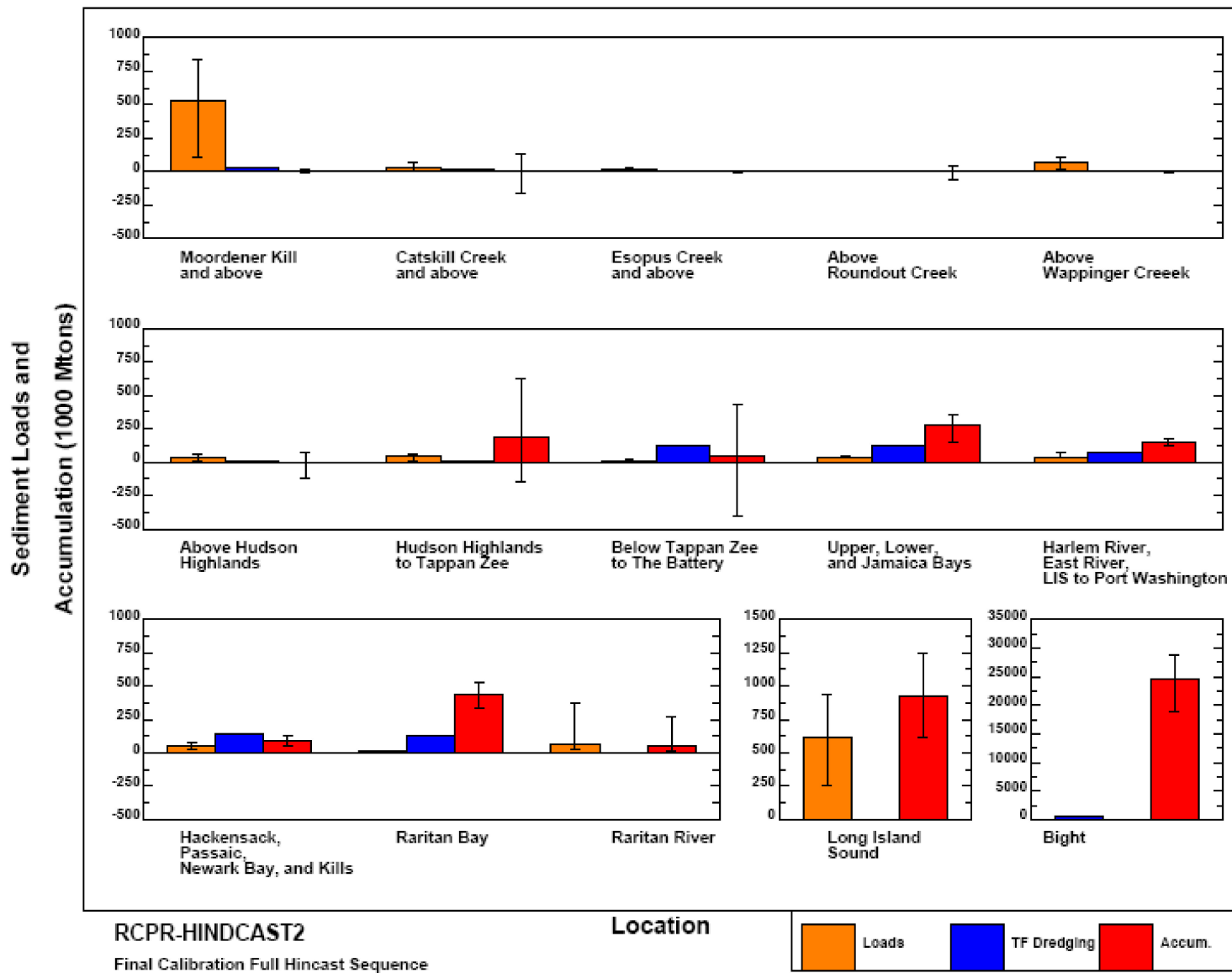


Figure 4-7. Summary of calculated sediment accumulation and comparison to loadings and dredging records.



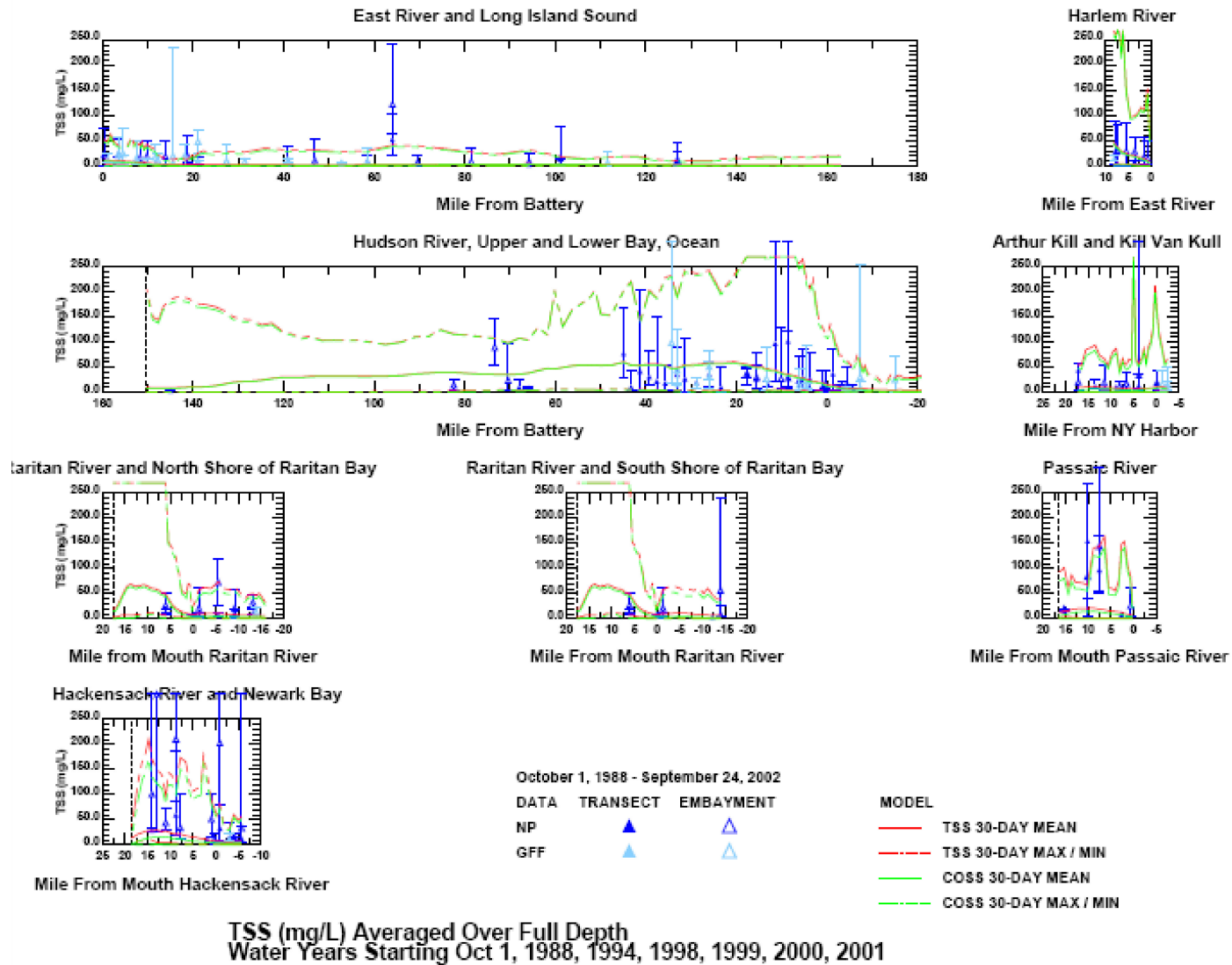


Figure 4-8. Summary of suspended sediment model and data comparisons. Model results for both organic and inorganic cohesive (TSS) and just inorganic cohesive (COSS) suspended sediments are presented.

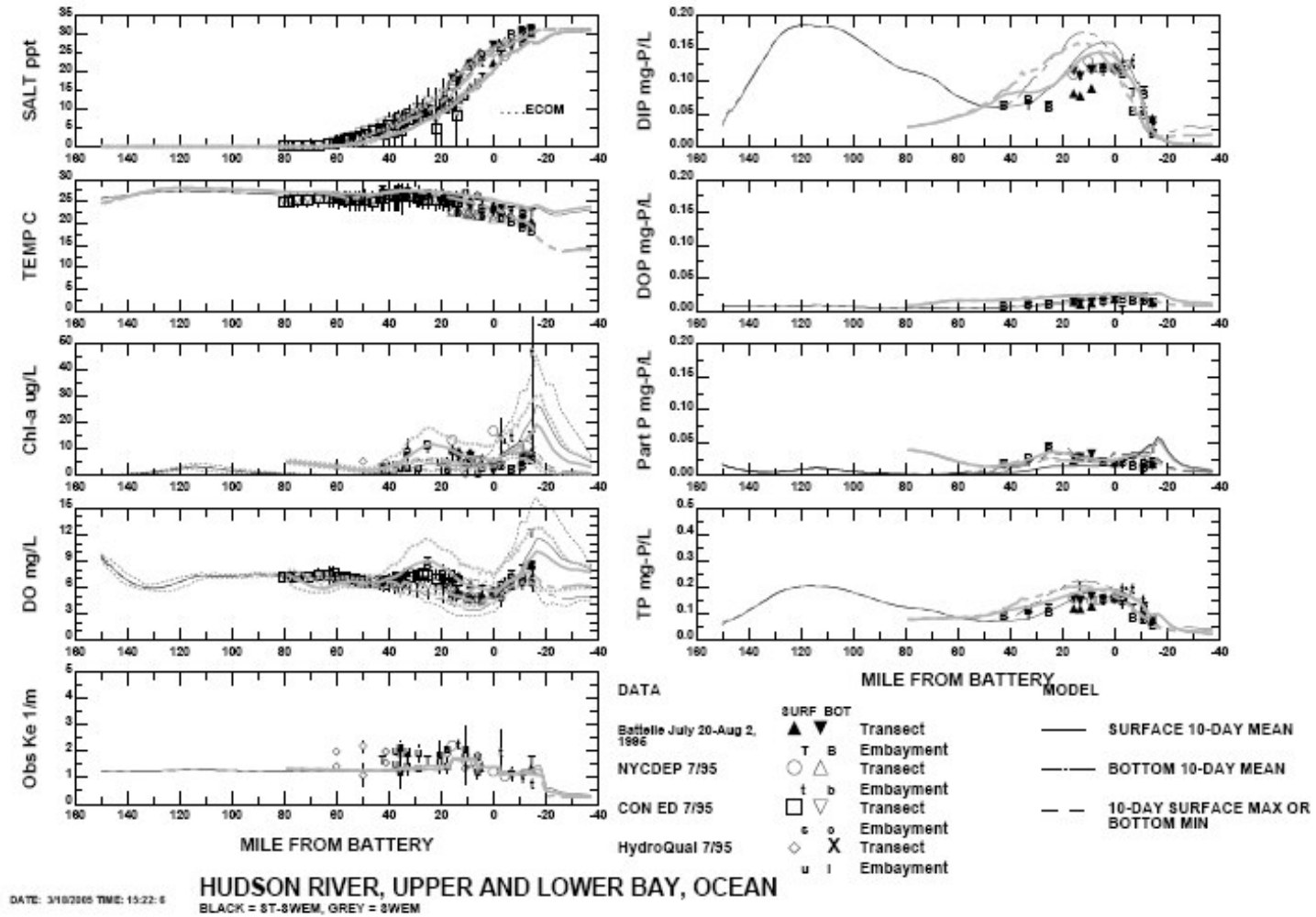


Figure 4-9a. Comparison between ST-SWEM, SWEM, and 1994-95 data - Hudson River, Upper Bay, and lower Bay example, part 1.

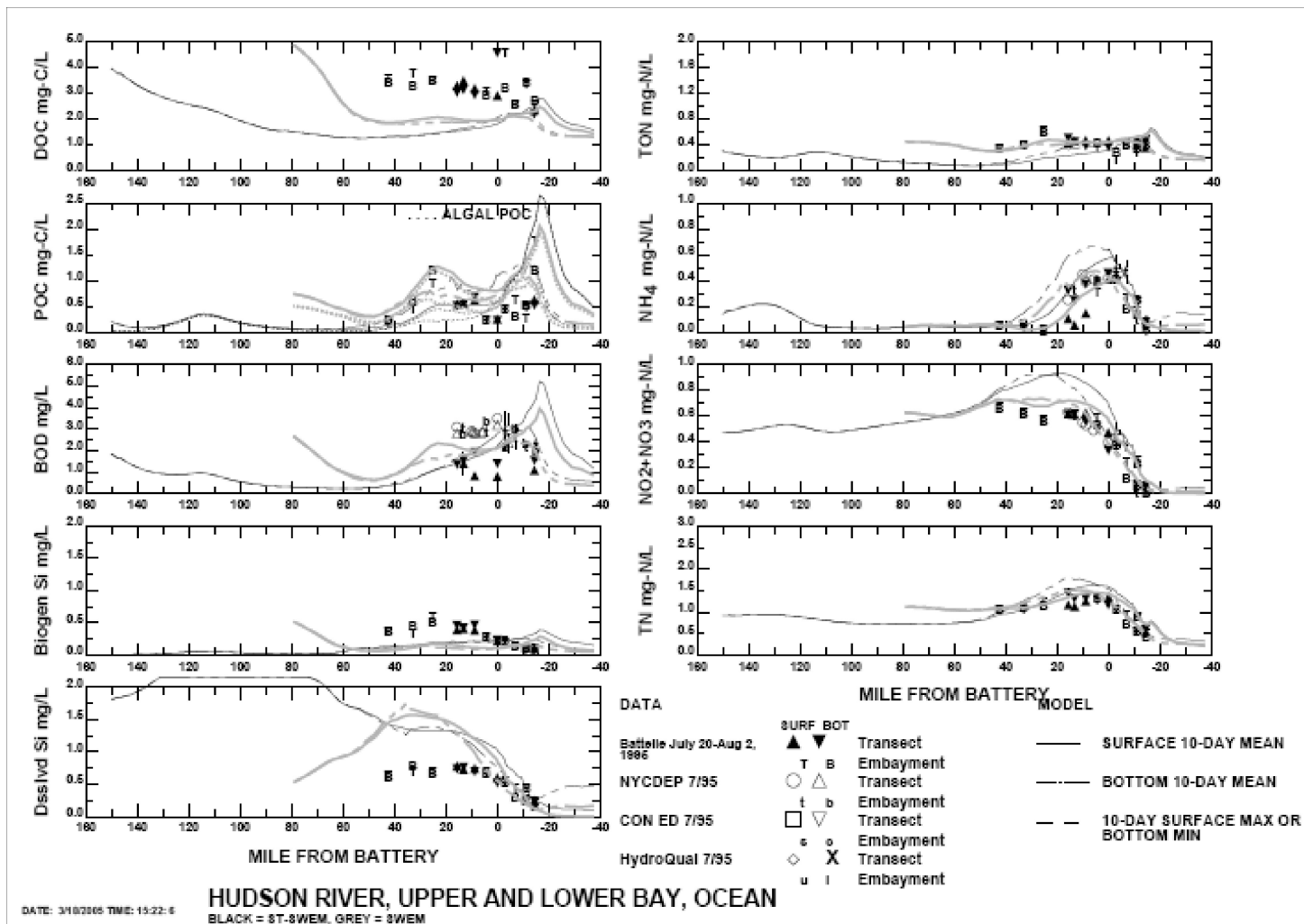


Figure 4-9b. Comparison between ST-SWEM, SWEM, and 1994-95 data - Hudson River, Upper Bay, and lower Bay example, part 2.

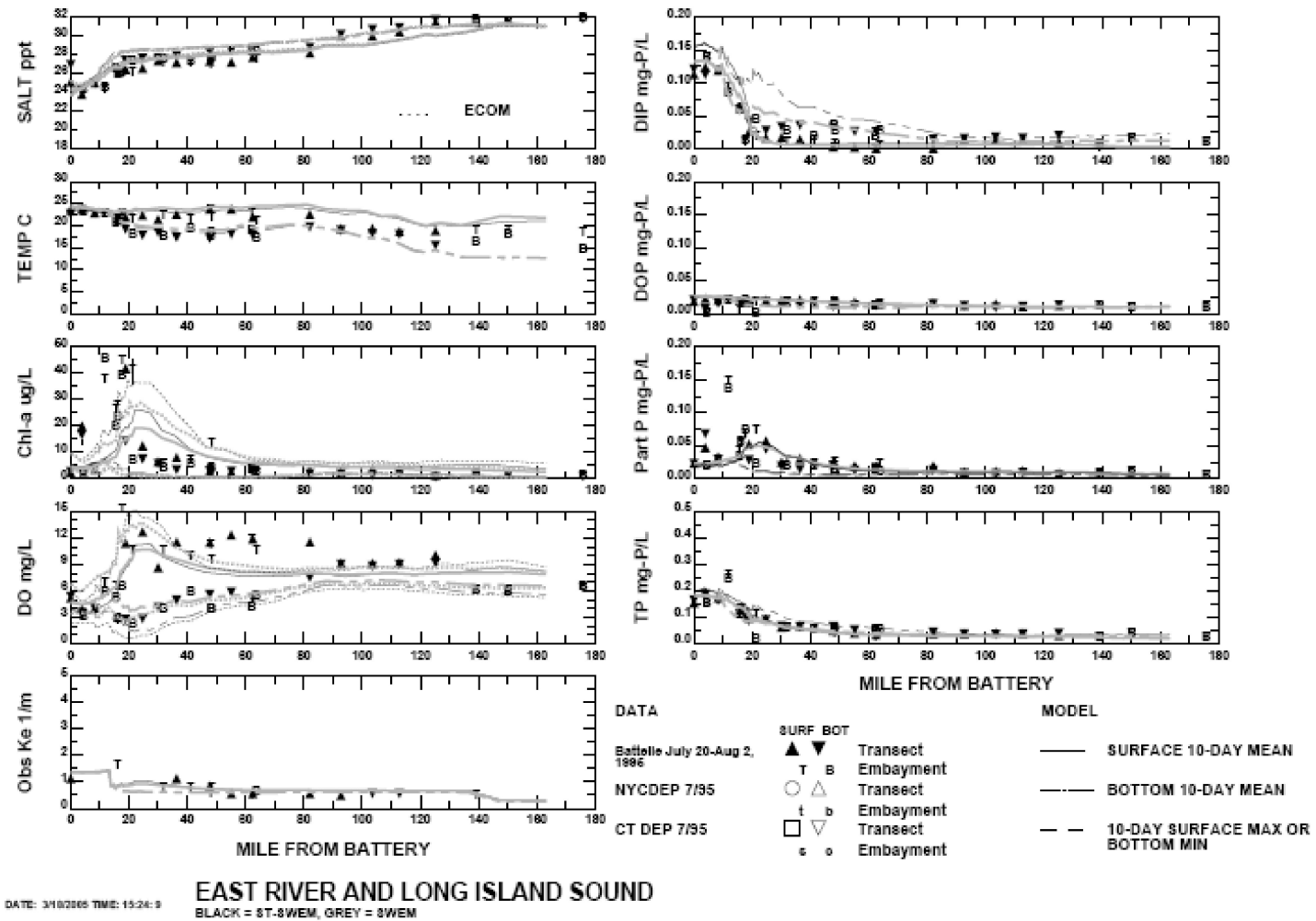


Figure 4-10a. Comparison between ST-SWEM, SWEM, and 1994-95 data - East River and Long Island Sound example, part 1.

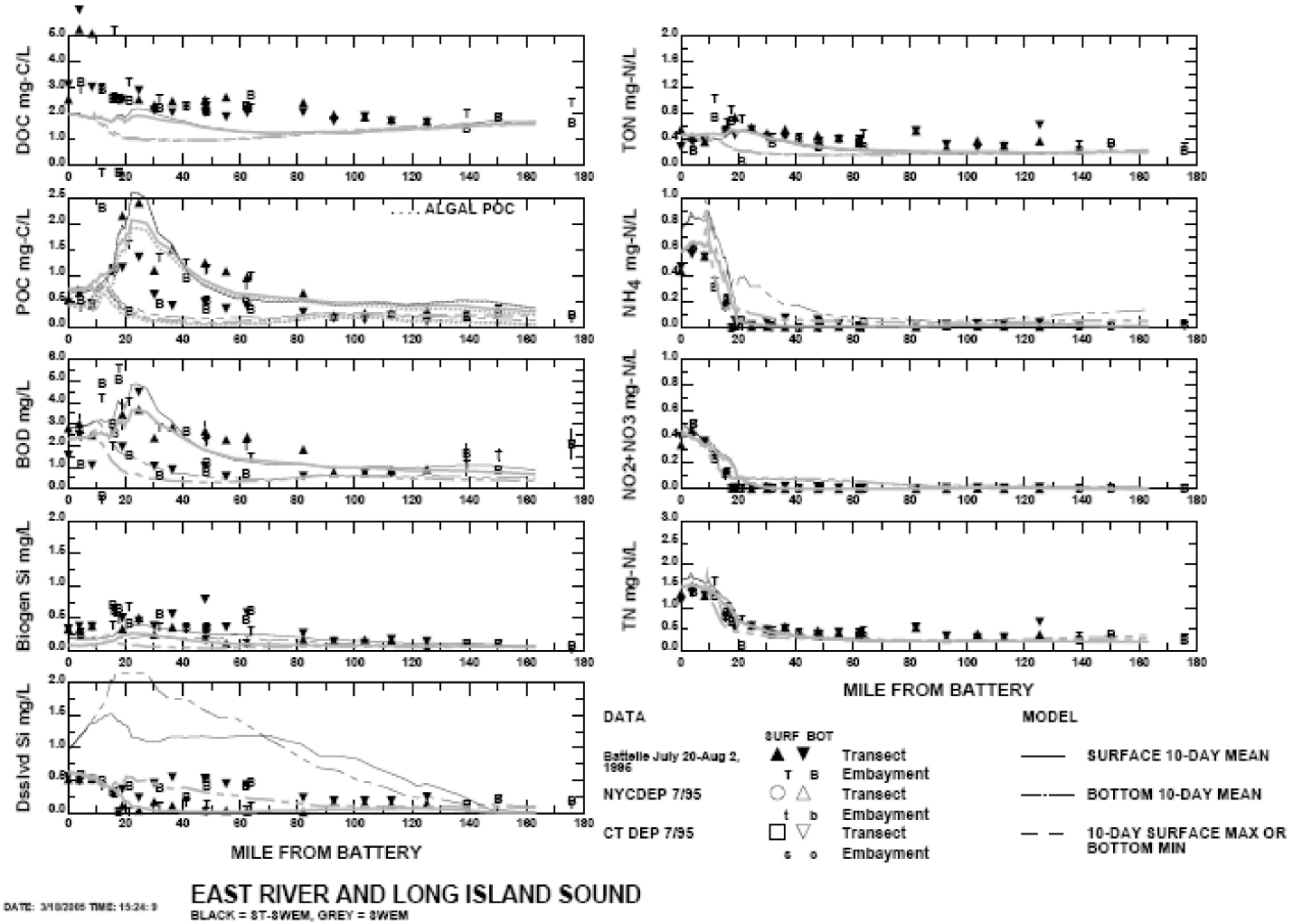


Figure 4-10b. Comparison between ST-SWEM, SWEM, and 1994-95 data - East River and Long Island Sound example, part 2.

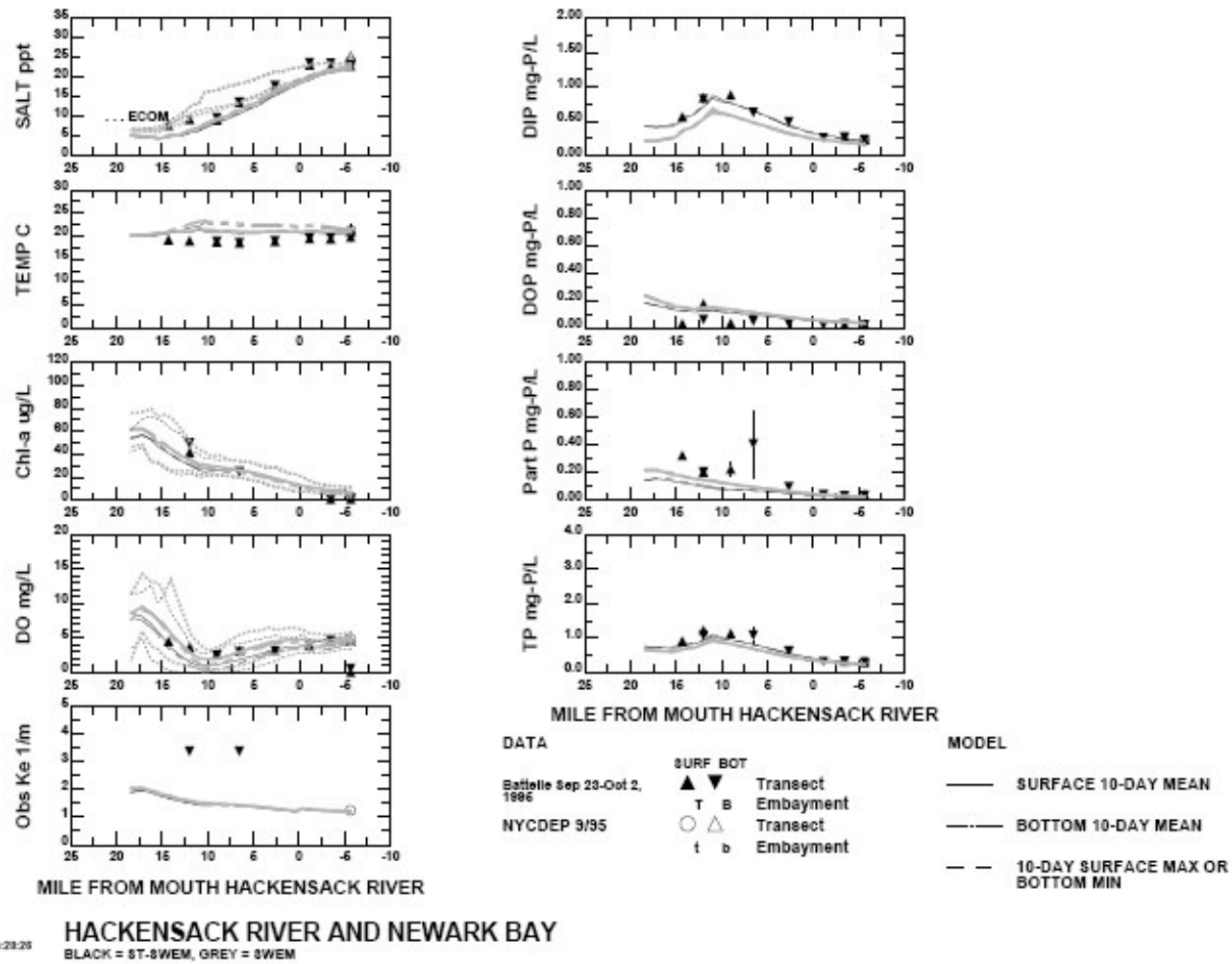


Figure 4-11a. Comparison between ST-SWEM, SWEM, and 1994-95 data - Hackensack River and Newark Bay example, part 1.

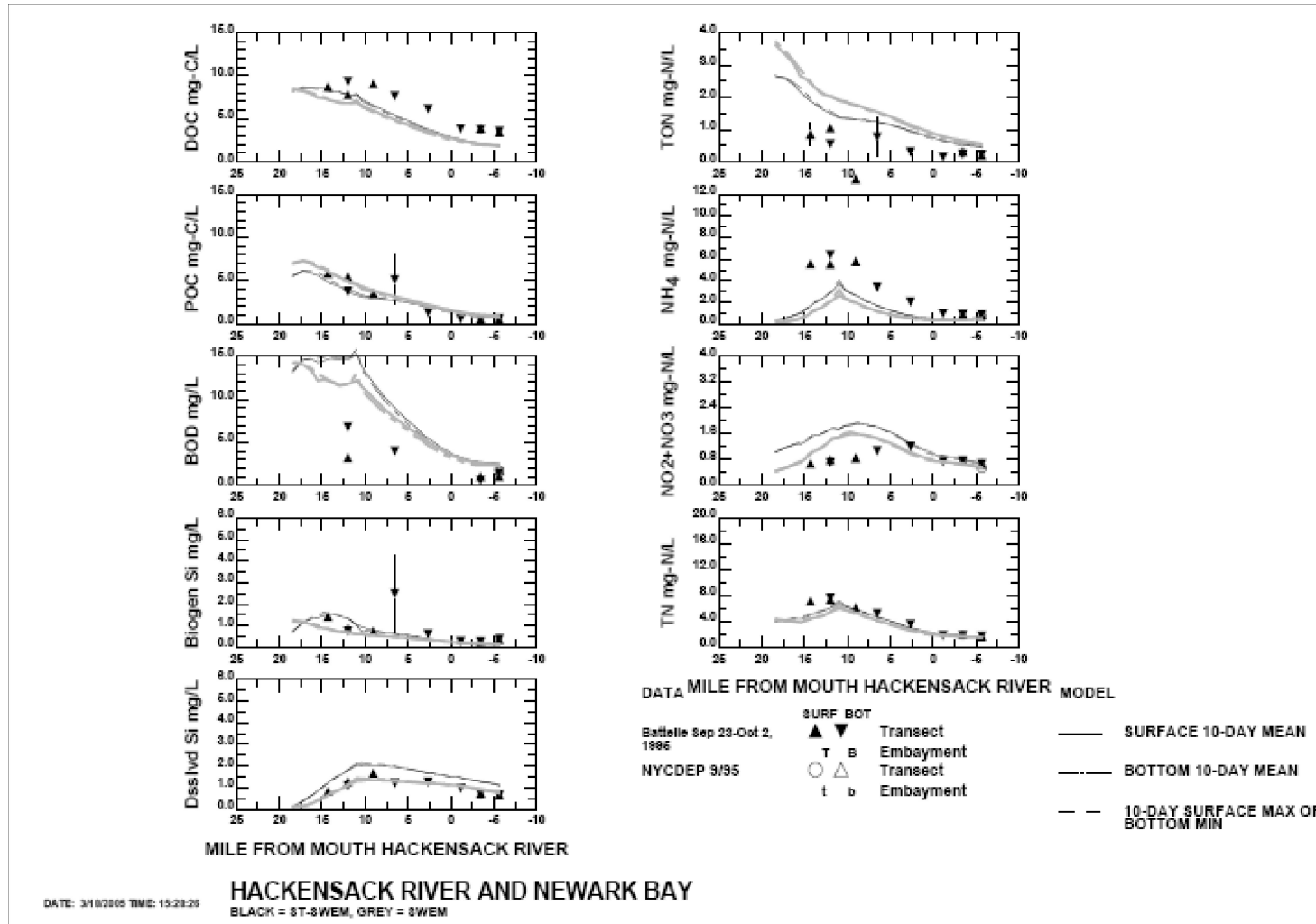
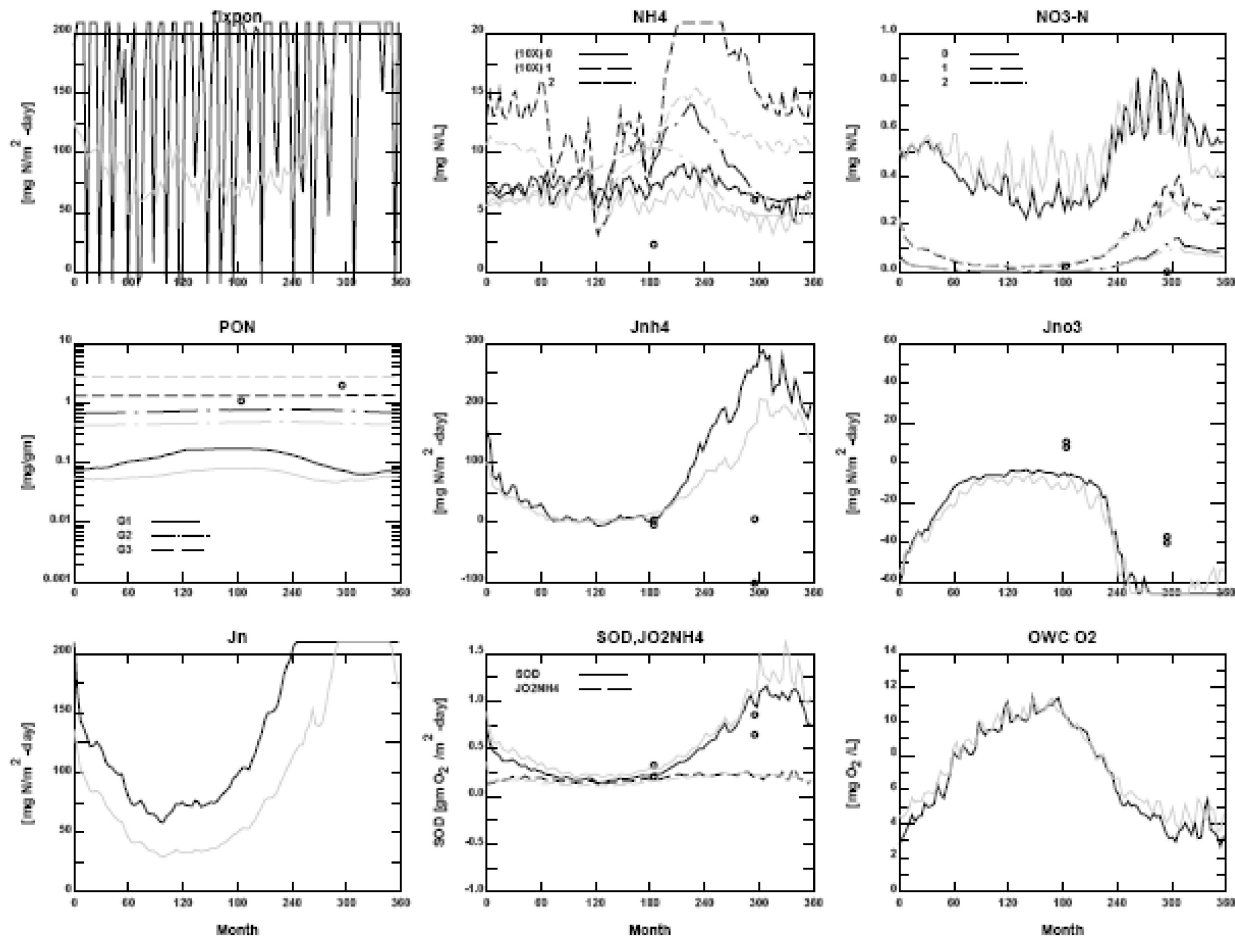


Figure 11b. Comparison between ST-SWEM, SWEM, and 1994-95 data - Hackensack River and Newark Bay example, part 2.



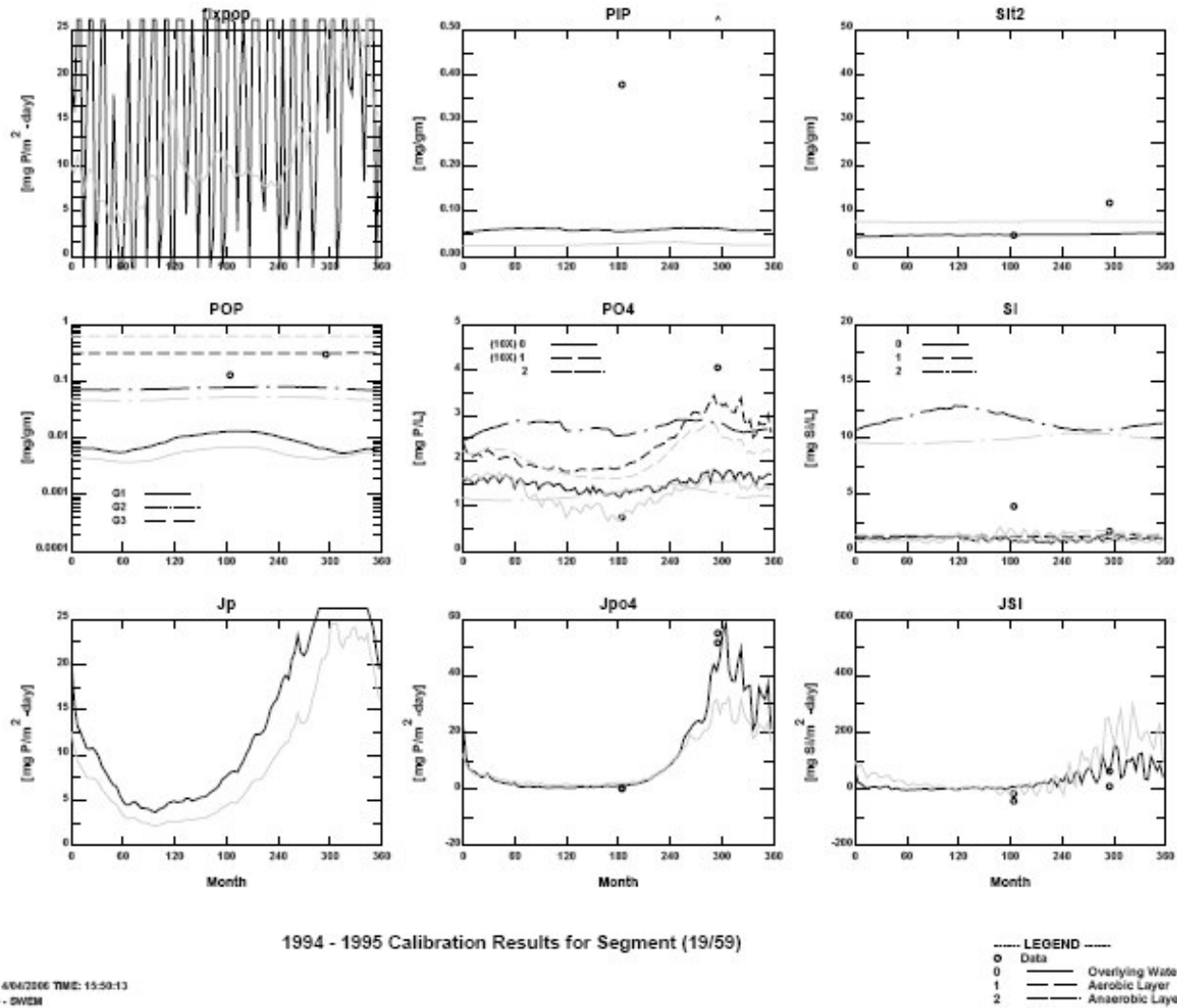
SWEM RUN NUMBER RUN083-HINDCA8T\_R0PR9485 YR8 1994 - 1995 Calibration Results for Segment (19/59)

DATE: 4/04/2006 TIME: 15:59:13  
GRHN0029 - SWEM

----- LEGEND -----  
 o Data  
 0 Overlying Water  
 1 Aerobic Layer  
 2 Anaerobic Layer

Figure 4-12a. Comparison between ST-SWEM (black), SWEM (grey), and 1994-95 data for sediment bed nutrients - Hudson River opposite Manhattan example, part 1.





DATE: 4/6/2006 TIME: 15:50:13  
 GRHN0029 - SWEM

Figure 4-12b. Comparison between ST-SWEM (black), SWEM (grey), and 1994-95 data for sediment bed nutrients - Hudson River opposite Manhattan example, part 2.

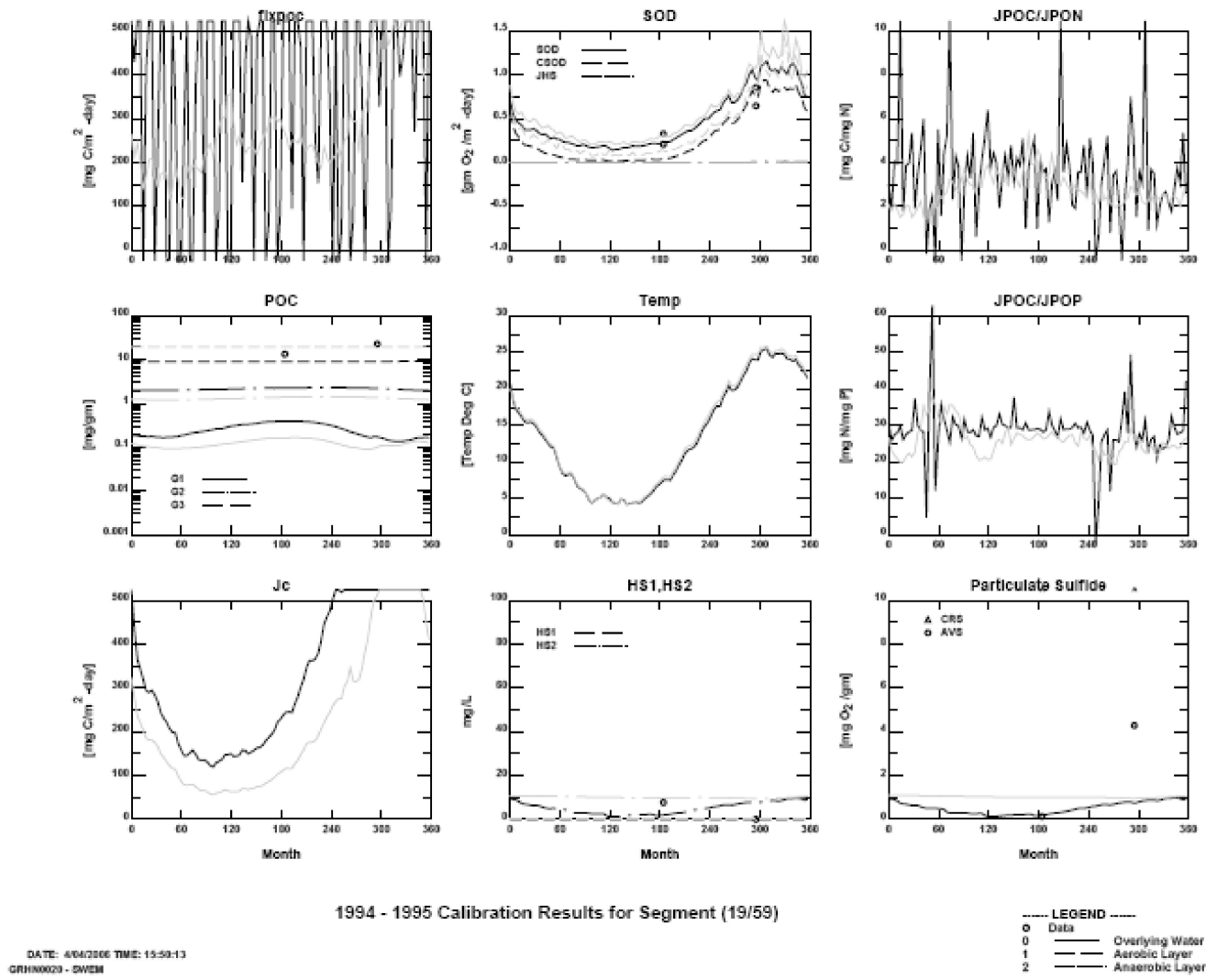


Figure 4-12c. Comparison between ST-SWEM (black), SWEM (grey), and 1994-95 data for sediment bed nutrients - Hudson River opposite Manhattan example, part 3.

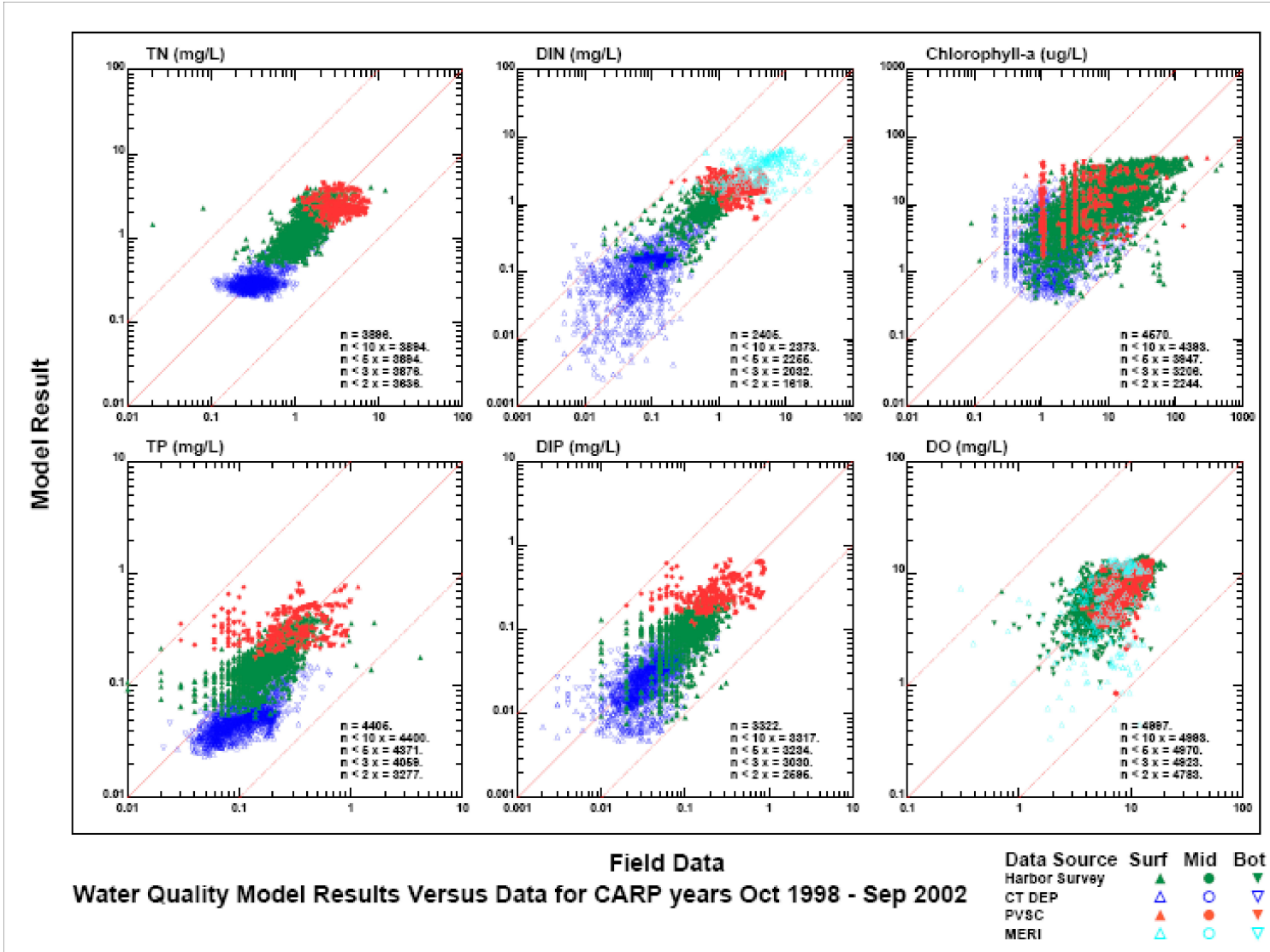
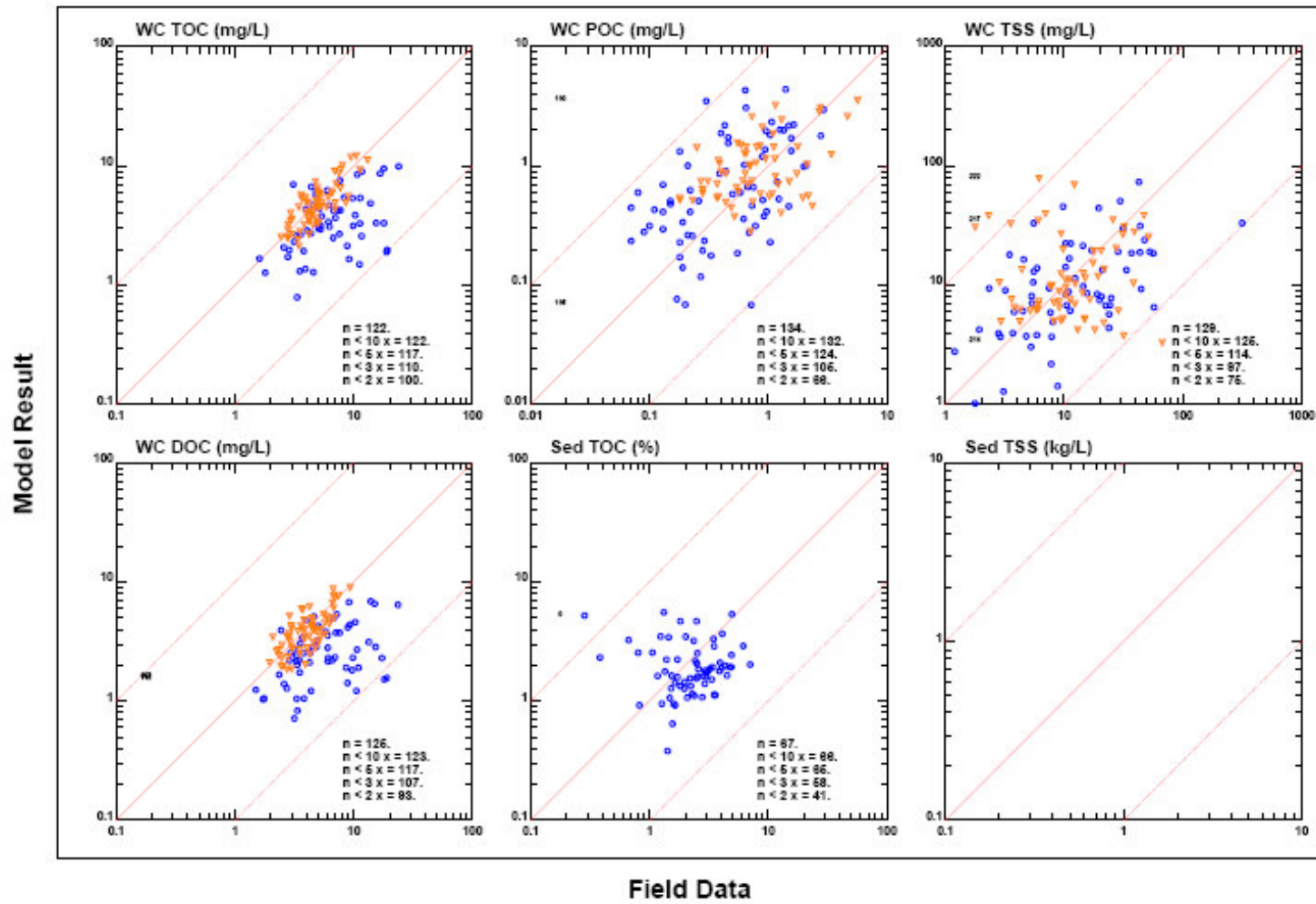


Figure 4-13. 1998-2002 model vs. data comparisons and summary statistics for water column dissolved oxygen, nutrients and algal biomass.



Model Results Versus Data, Run = 060.C2

Figure 4-14. 1998-2002 model vs. data comparisons and summary statistics for water column solids and carbon.

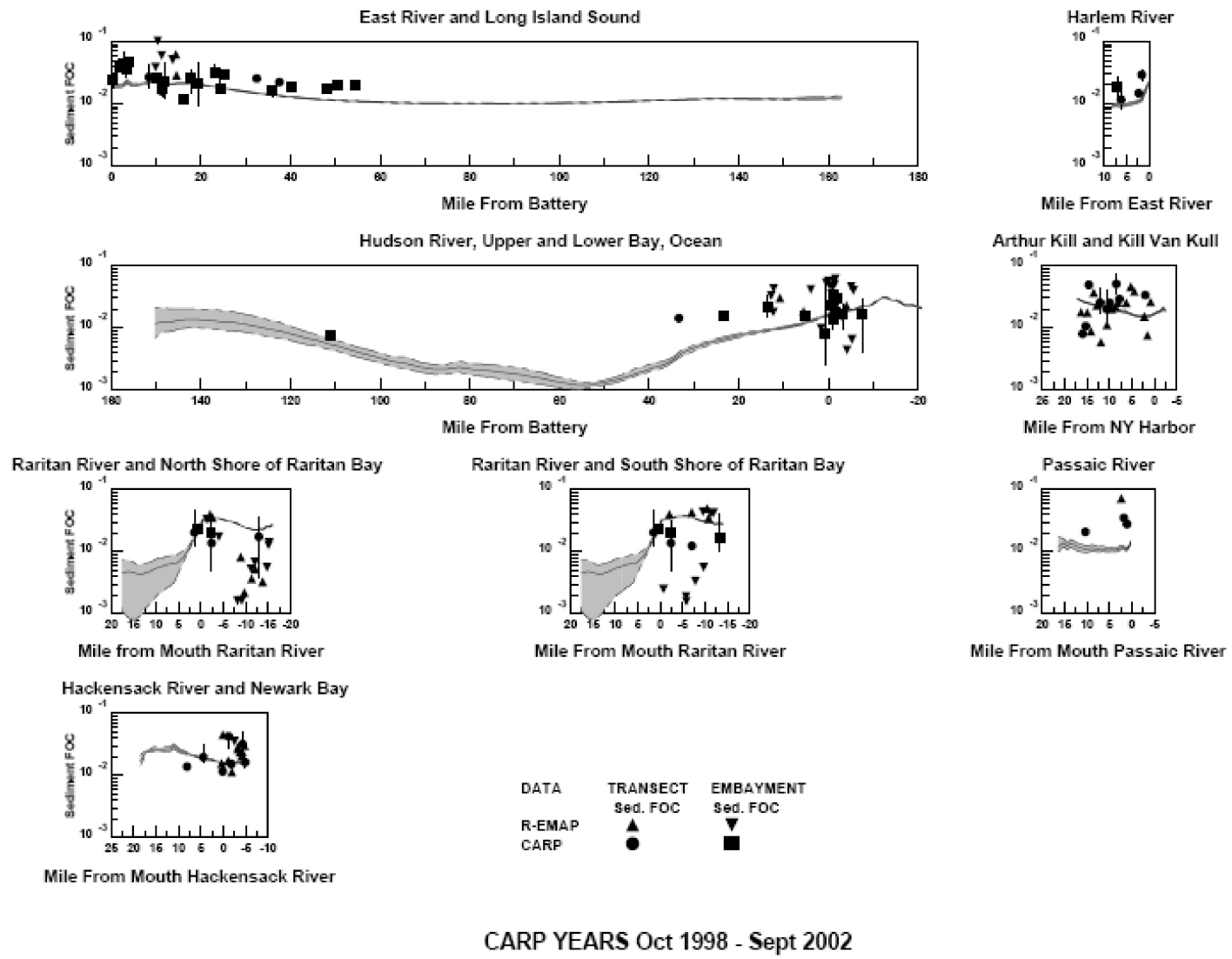


Figure 4-15. 1998-2002 model and data spatial comparisons for sediment bed organic carbon.

## SECTION 5.0

### LINKAGES TO OTHER CARP SUB-MODELS

In general, the CARP sediment transport/organic carbon production sub-model calculates concentrations of suspended sediment, particulate organic carbon, and dissolved organic carbon over time and in longitudinal/lateral space in ten vertical layers of the water column and in the sediment bed in active layer aerobic and anaerobic zones and in an anaerobic archive (a.k.a., archival stack). The carbon is type identified based on its reactivity.

The CARP sediment transport/organic carbon production sub-model outputs, in addition to organic carbon concentrations and vertical transport rates, numerous other concentrations and fluxes in the water column and sediments relevant to eutrophication including: algal biomass as either carbon or chlorophyll a; particulate and dissolved organic and dissolved inorganic phosphorus; particulate and dissolved organic and dissolved inorganic nitrogen; available and biogenic silicon; algal exudate carbon; hydrogen sulfide; dissolved oxygen; and porewater and bulk sediment concentrations and fluxes of nitrogen, phosphorus, silica, oxygen, and sulfides.

Correct calculation of suspended sediment and organic carbon concentrations and vertical transport rates of carbon, in particular, is needed for calculating concentrations of contaminants bound to particles. Information calculated by the sediment transport/organic carbon production sub-model and specifically passed to the contaminant fate and transport sub-model is described below in greater detail.

#### 5.1 GENERAL INFORMATION PASSED TO CARP FATE AND TRANSPORT SUB-MODELS

The CARP sediment transport/organic carbon production sub-model produces a large output file (i.e., approximately 7.4 gigabytes per year) specifically for the CARP contaminant fate and transport sub-models. The output file includes as time histories in three dimensions the calculated (i.e., one hour average) water column phytoplankton settling rate and phytoplankton biomass; refractory, labile, and inert particulate organic carbon concentrations; refractory and labile dissolved organic concentrations; average light intensity; settling rate for particulate organic carbon; and hydrogen sulfide concentrations. For the sediment, the output file includes as time histories in two dimensions the calculated (i.e., one hour average) diffusive and particle mixing rates; resuspension and burial rates for the active sediment bed; erosion rates from the sediment bed archival stack to the active sediment bed; rates of change of

the depth of the active sediment bed; concentrations of G1, G2, and G3 carbon in the active sediment bed; depths and rates of change in depth of the archival stack sediment bed; and concentrations of G1, G2, and G3 carbon in the archival stack sediment bed. This output file is read by the CARP contaminant fate and transport sub-models for both hydrophobic organic chemicals (HOCs ) and metals.

## **5.2 ADDITIONAL INFORMATION PASSED TO THE METALS FATE AND TRANSPORT SUB-MODEL**

In addition to the information passed from the sediment transport/organic carbon production sub-model to the contaminant fate and transport sub-models for HOCs and metals via the output file described above, supplemental sediment bed outputs, including sediment bed concentrations of hydrogen sulfide and sulfate and sulfate reduction rates, are passed as two-dimensional time histories specifically to the metals fate and transport sub-model. Subsequent reports will describe the CARP contaminant fate and transport models for both HOCs and metals.

## SECTION 6.0

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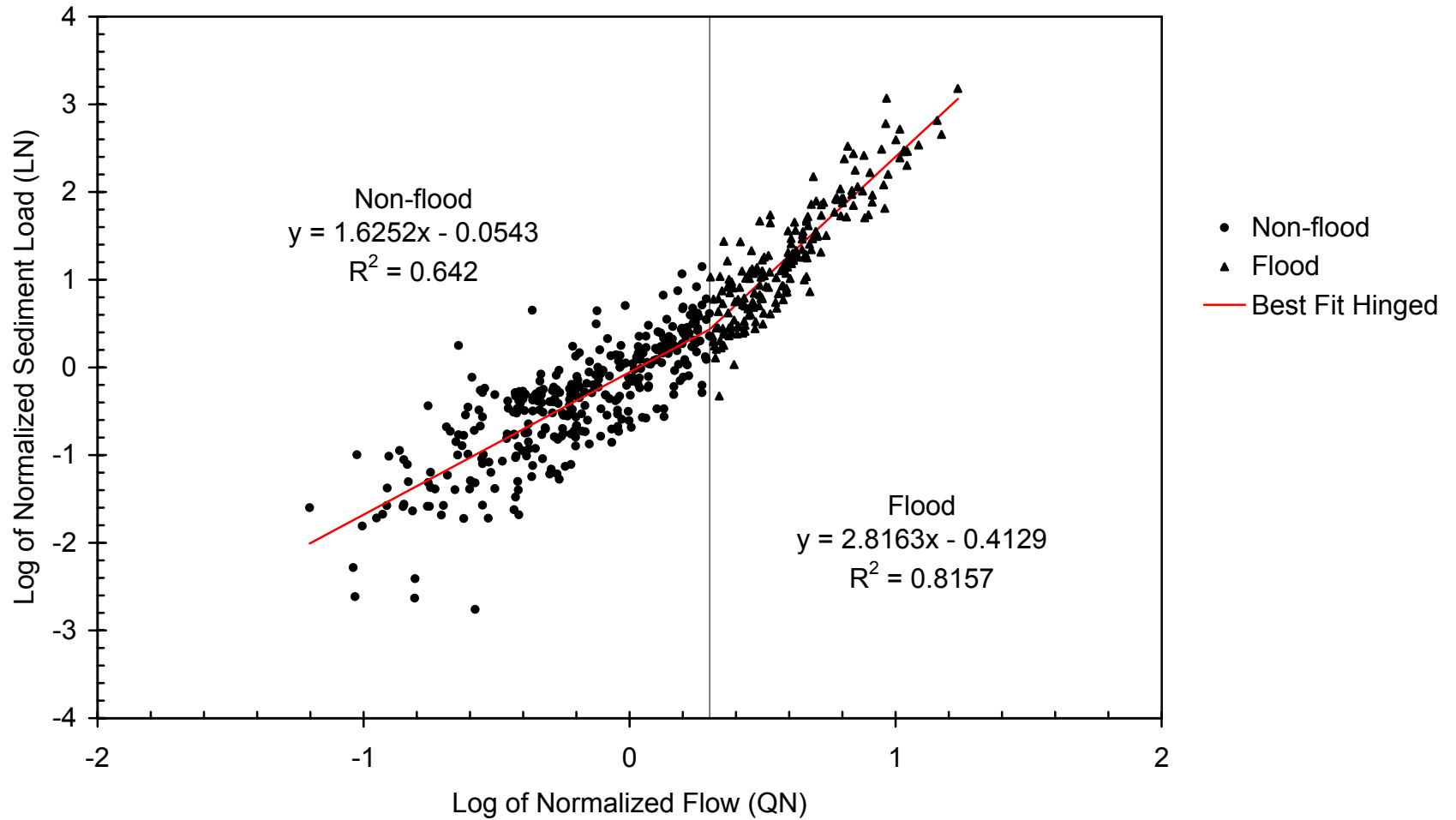
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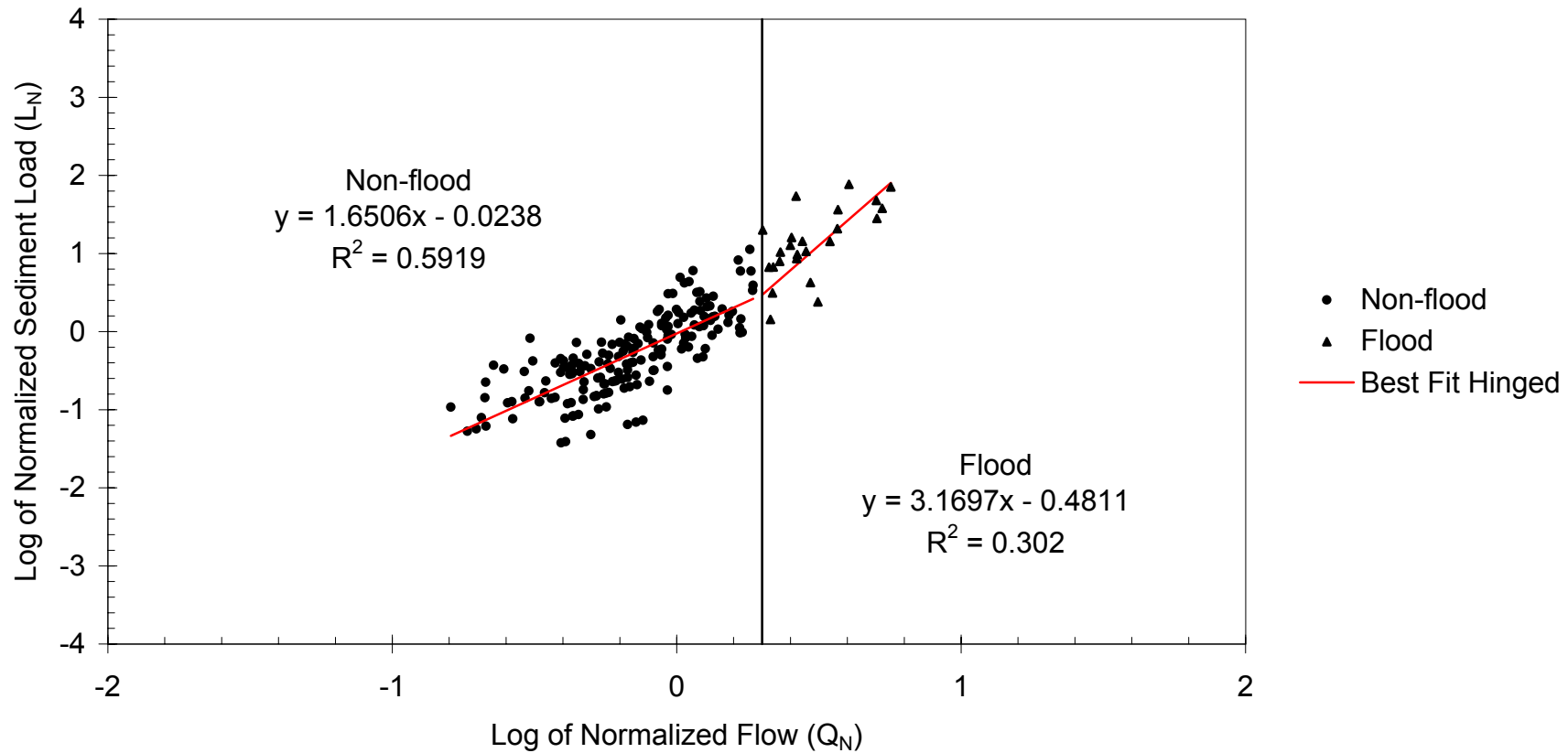
## **APPENDIX 1**

# **NSL CALCULATIONS AND DATA COMPARISONS FOR TRIBUTARY SUSPENDED SEDIMENT LOADINGS**

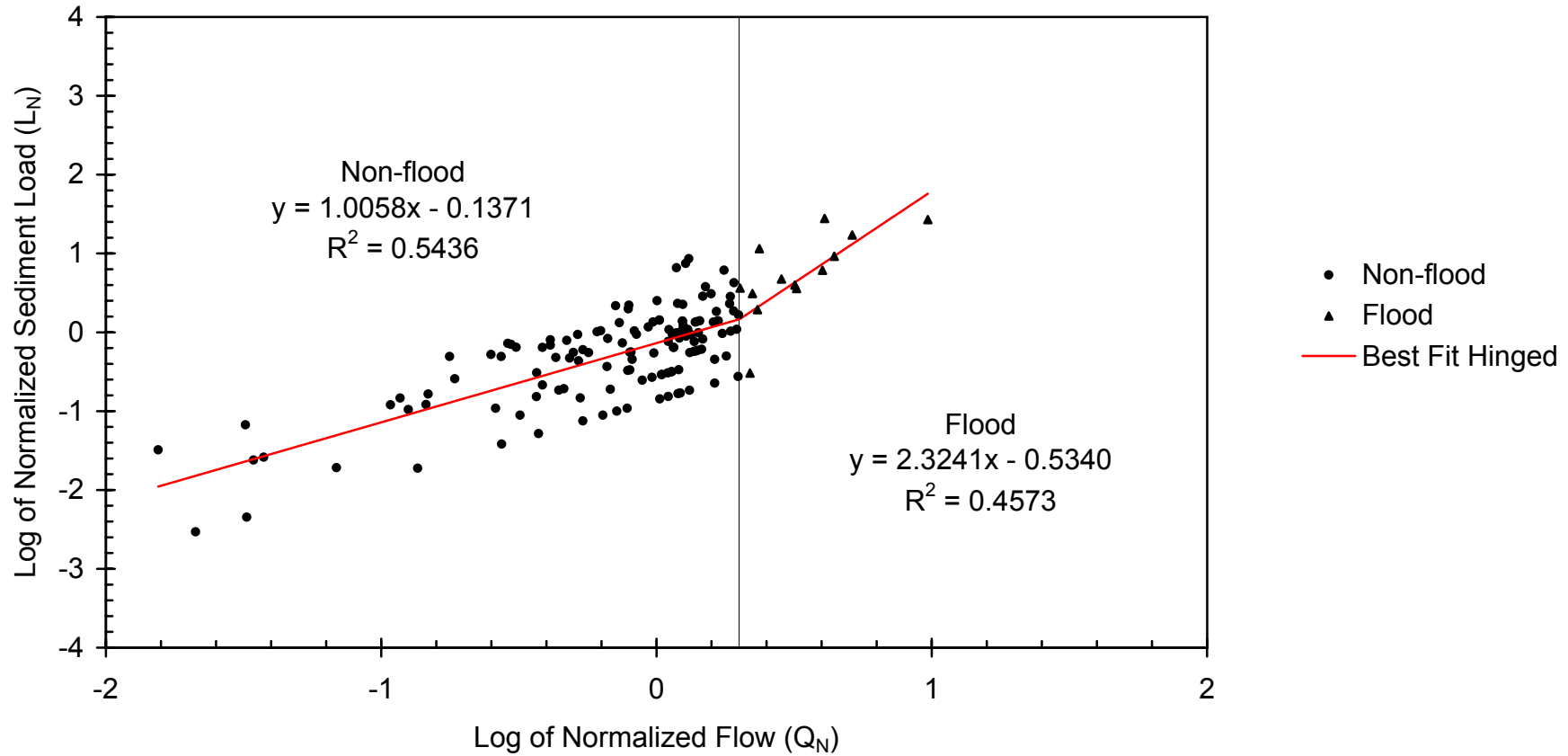
## Site-Specific NSL Analysis for the Mohawk River



## NSL Site-Specific Analysis for Connecticut River

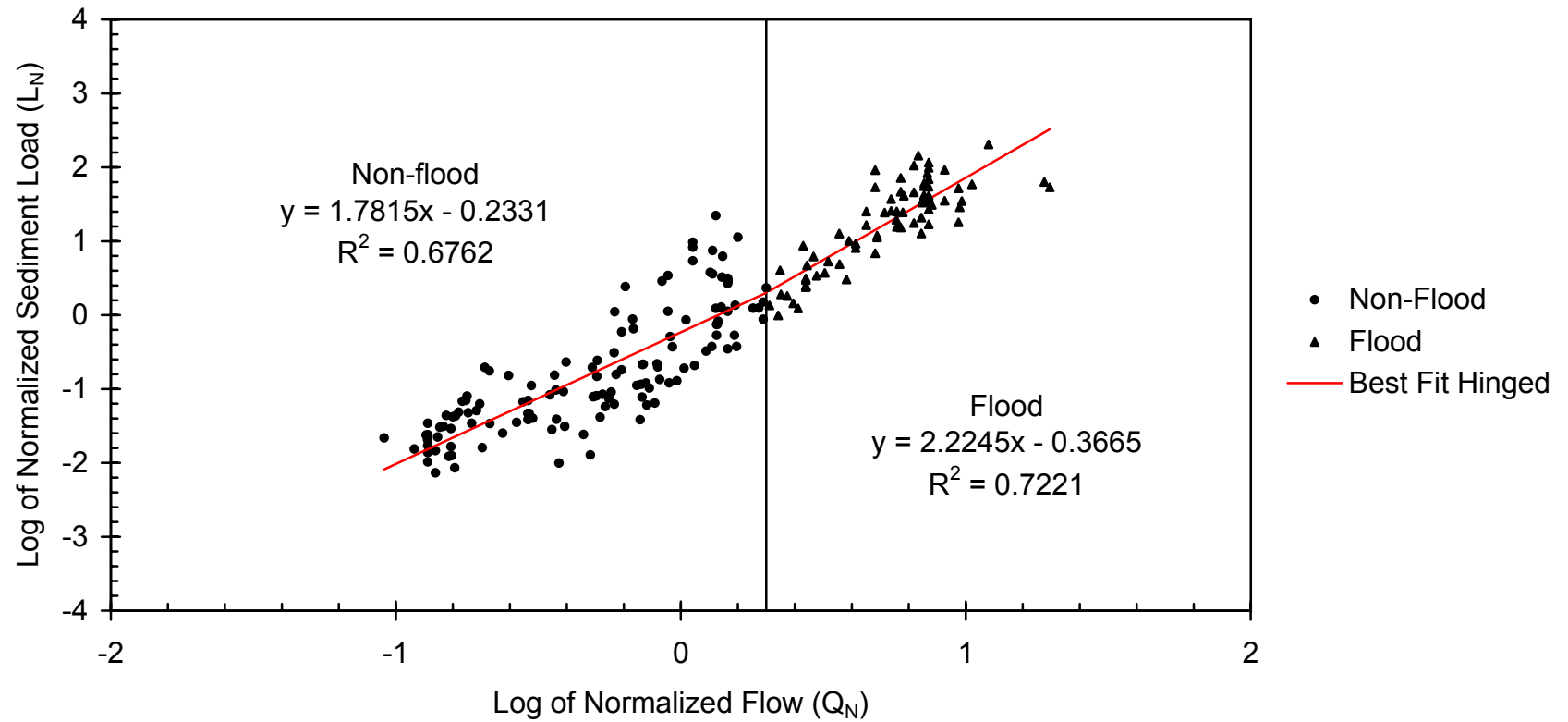


## NSL Site-Specific Analysis for Housatonic River

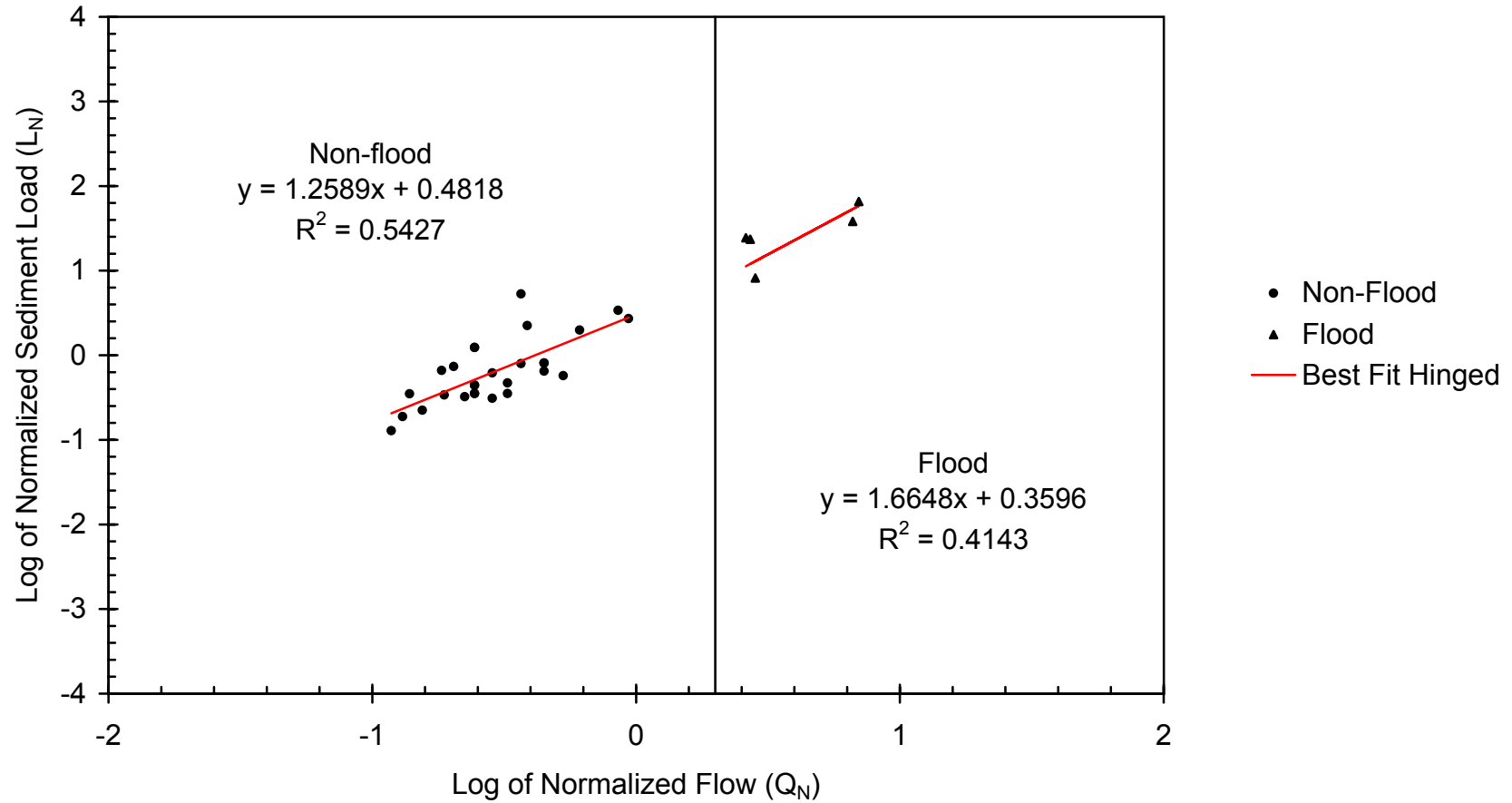




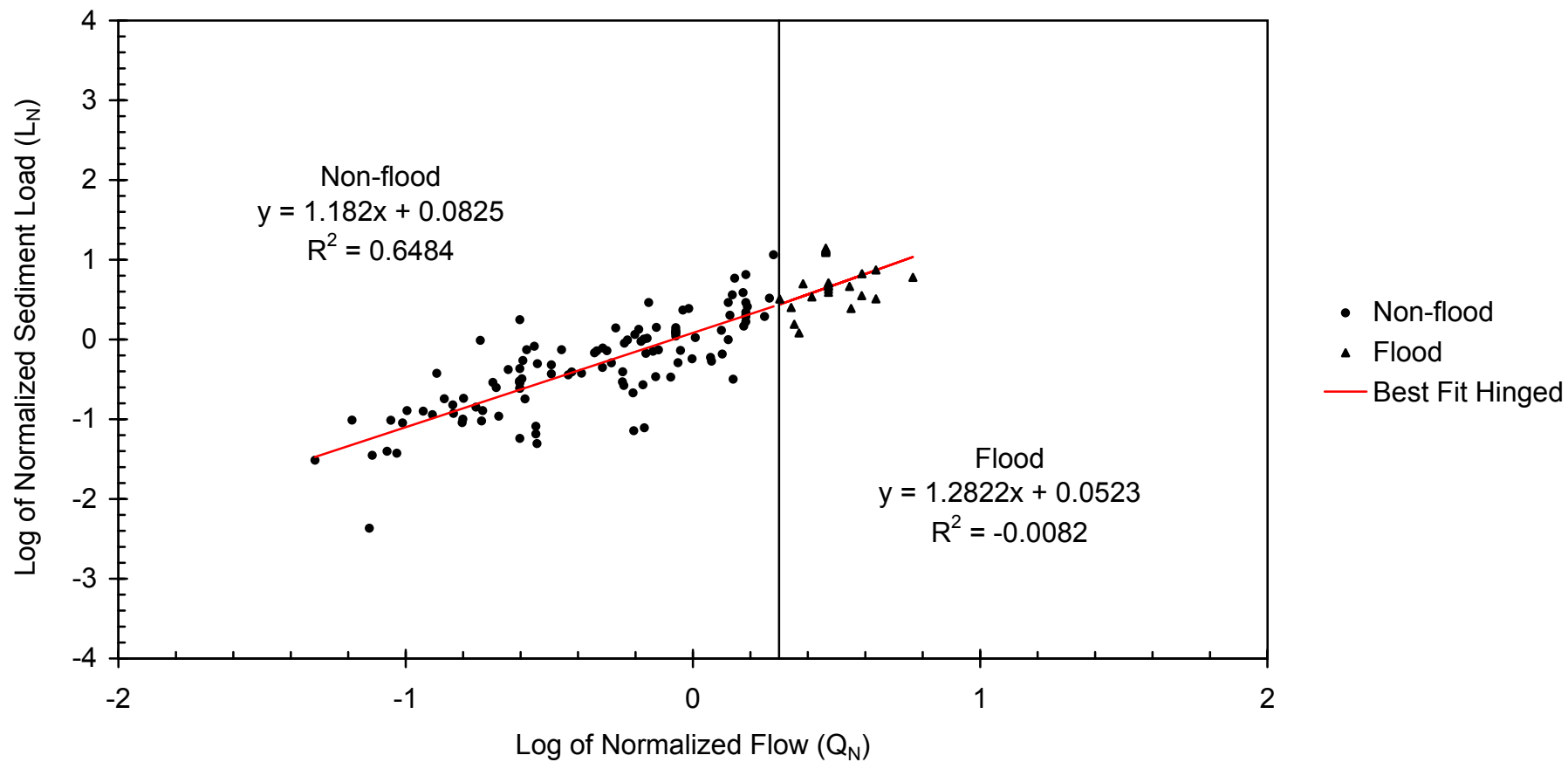
## NSL Site-Specific Analysis for the Raritan River



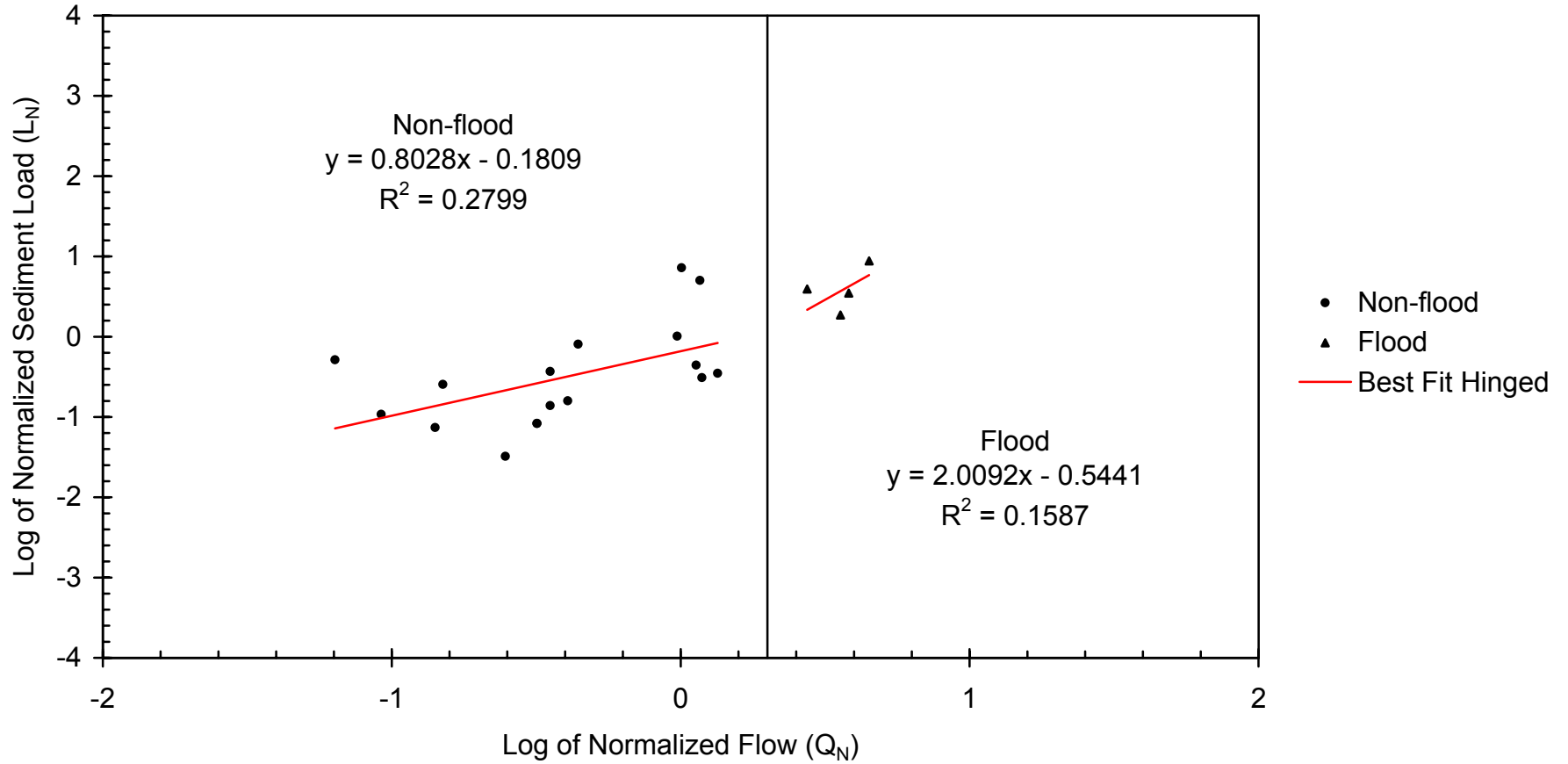
## NSL Site-Specific Analysis for the Rahway River



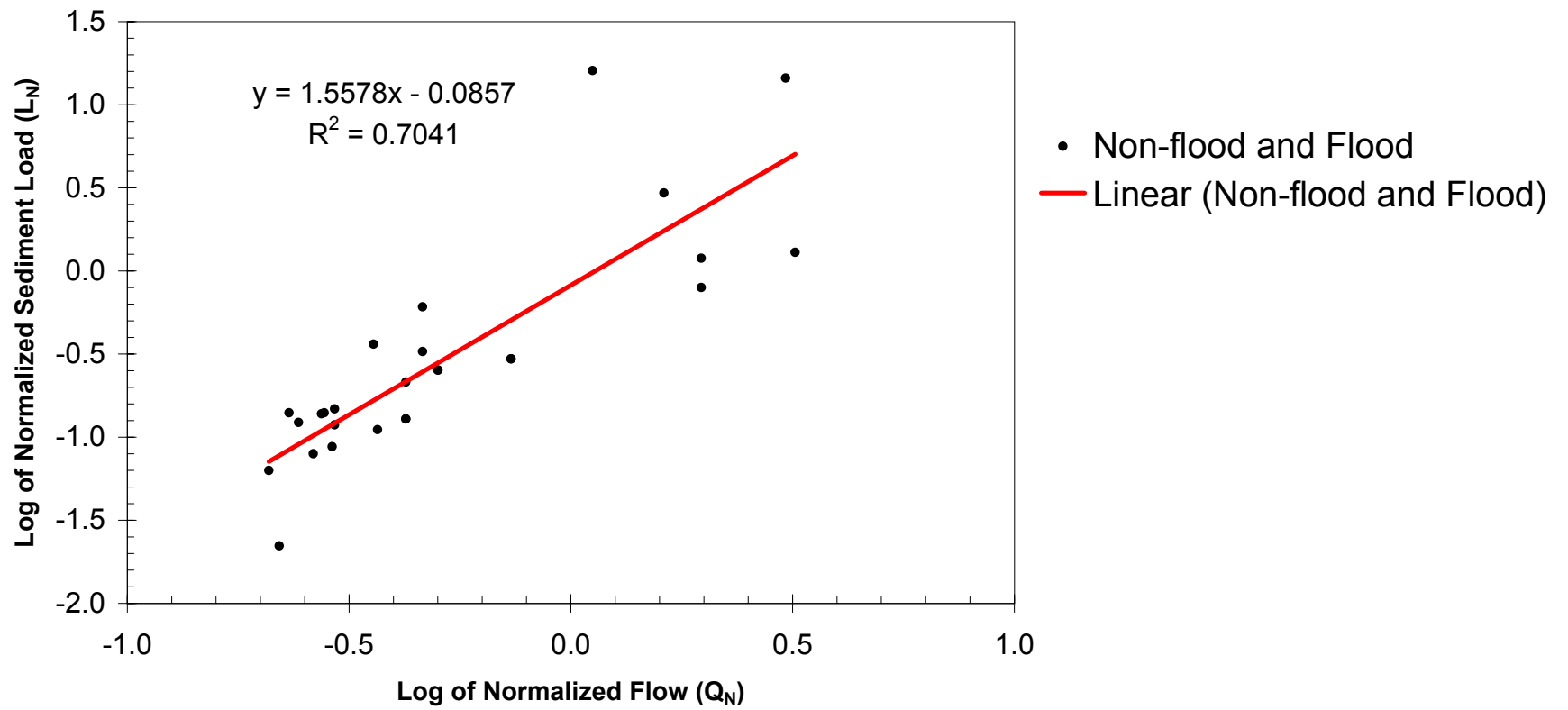
## NSL Site-Specific Analysis for the Passaic River



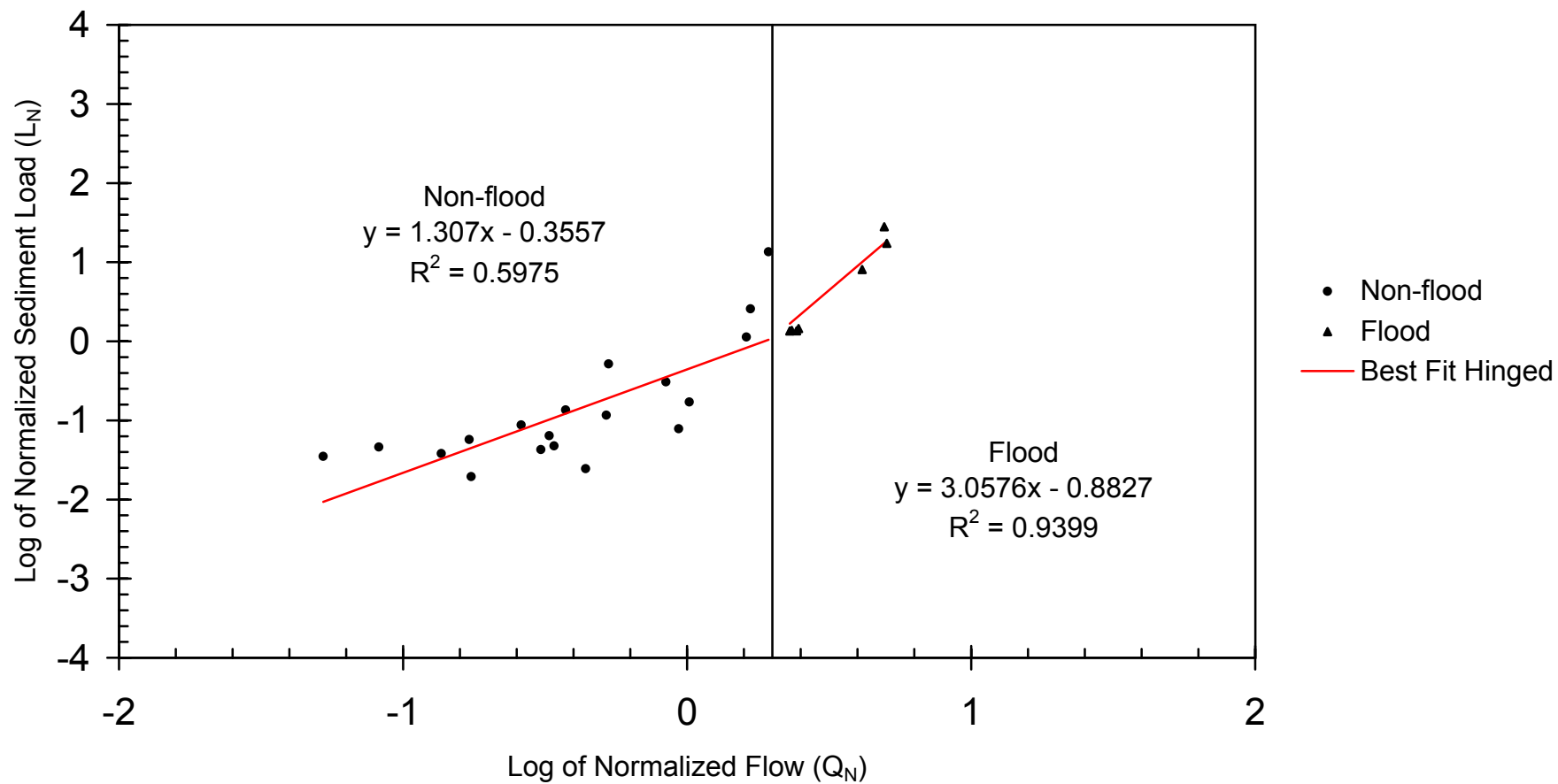
## NSL Site-Specific Analysis for Norwalk River



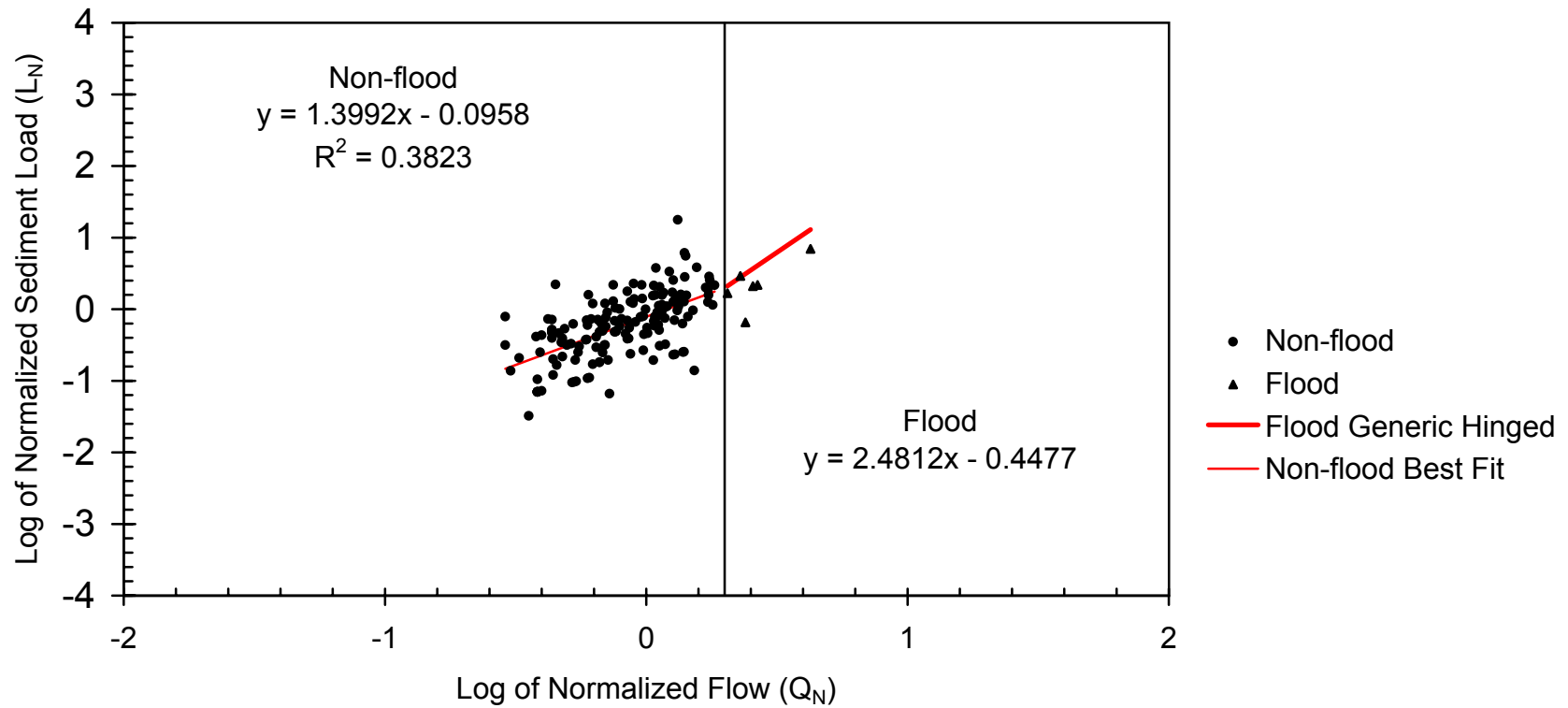
## NSL Site-Specific Analysis for the Elizabeth River



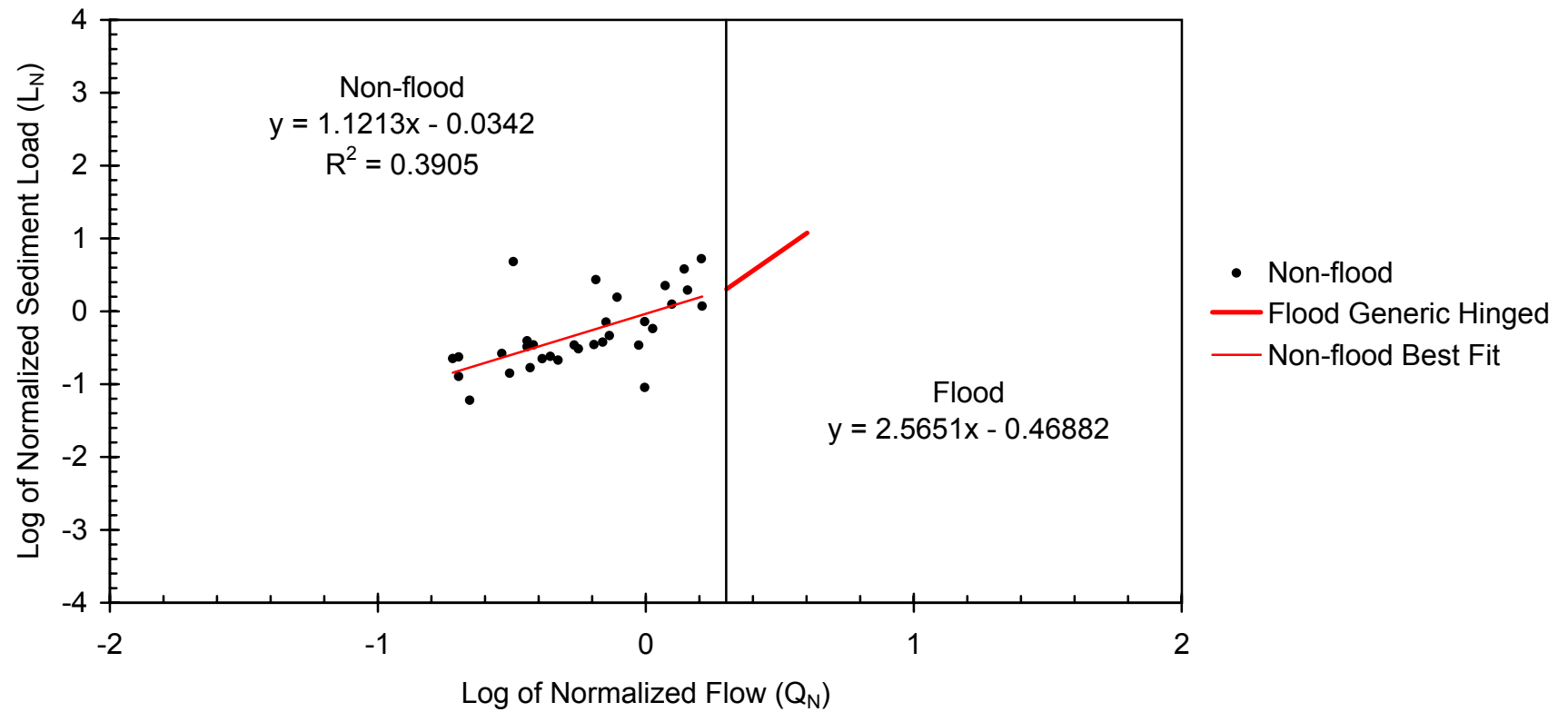
## NSL Site-Specific Analysis for Walkkill River



## Site-Specific NSL Analysis for Toms River

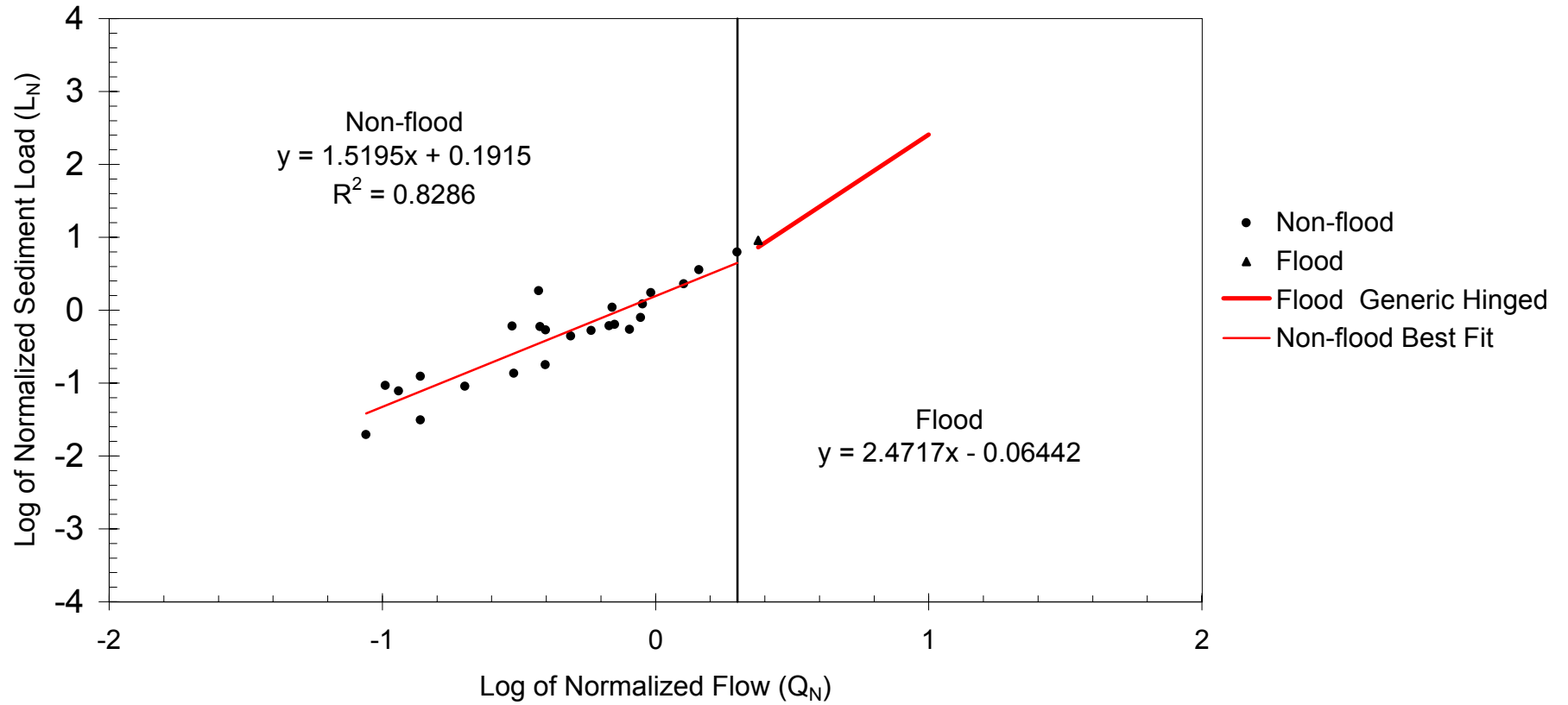


## Site-Specific NSL Analysis for Saddle River

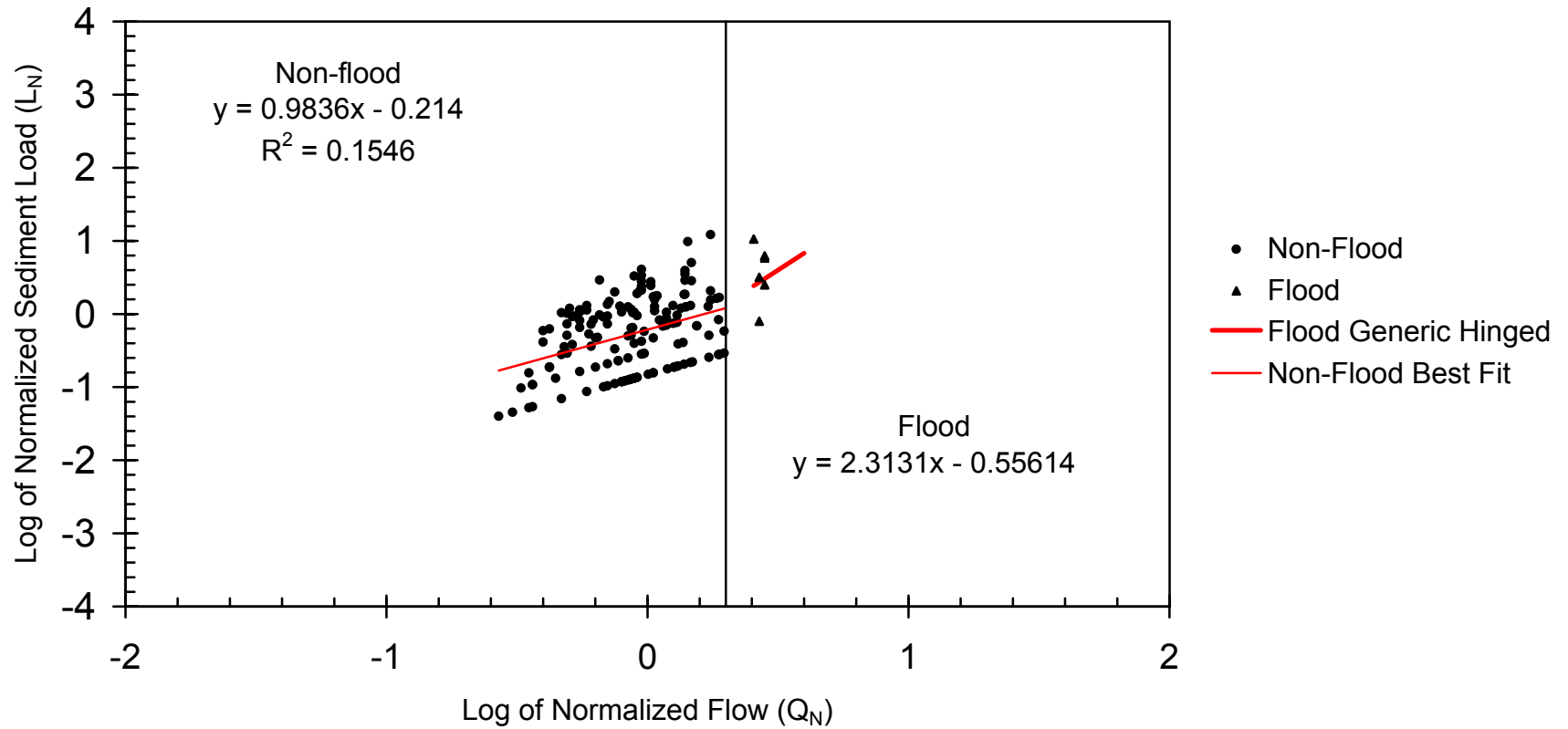




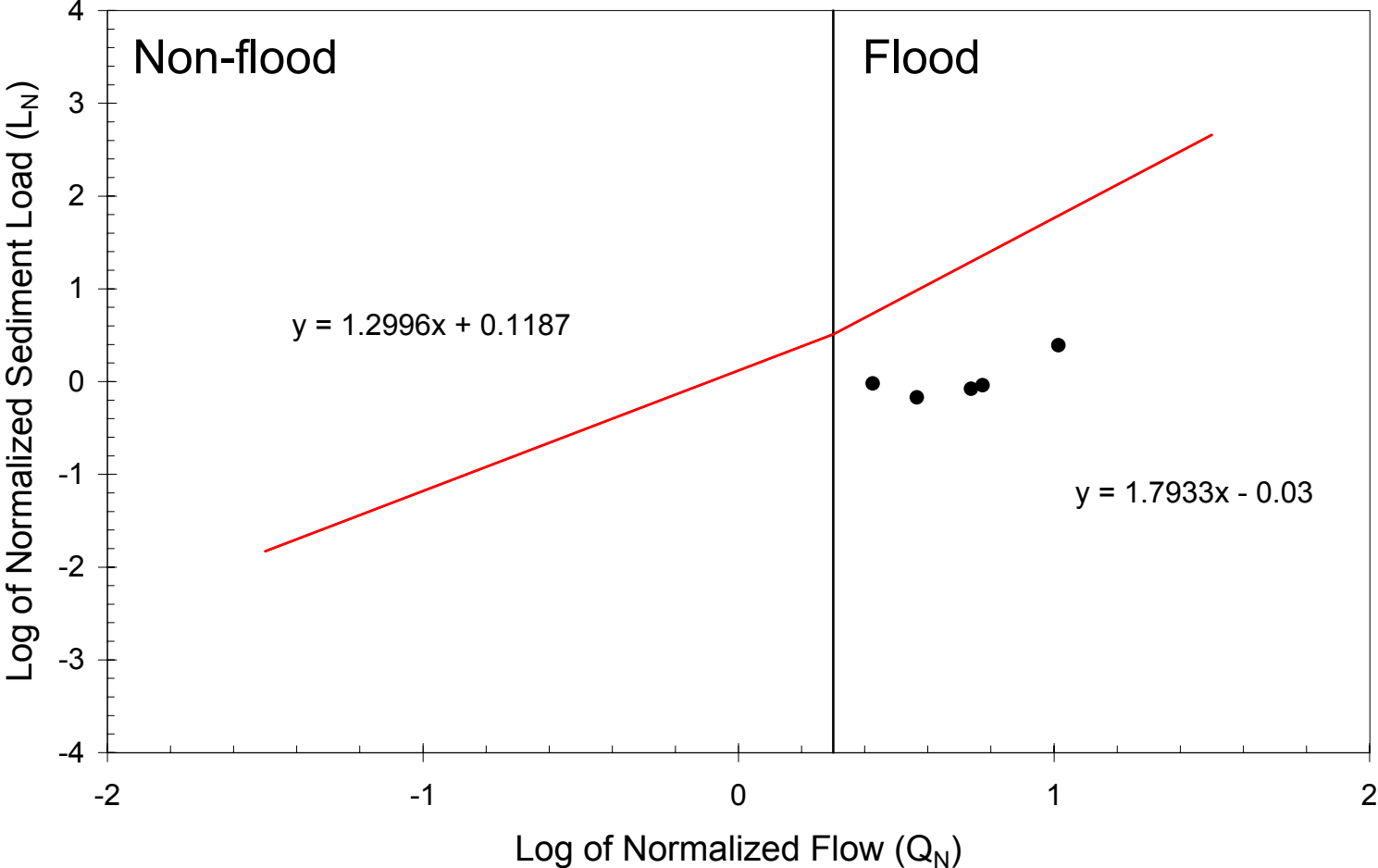
## NSL Site-Specific Analysis for Rondout Creek



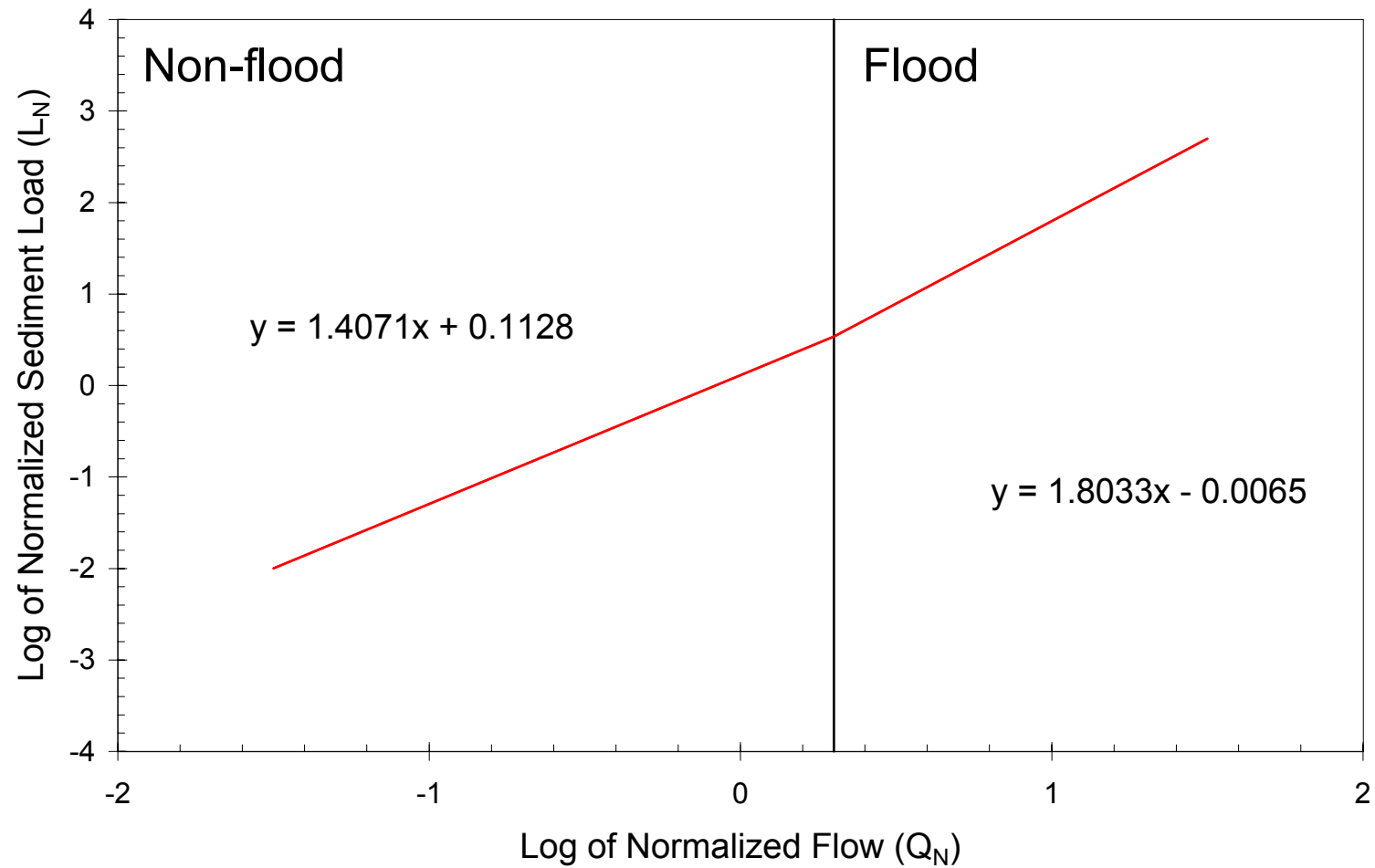
## Site-Specific NSL Analysis for Great Egg River



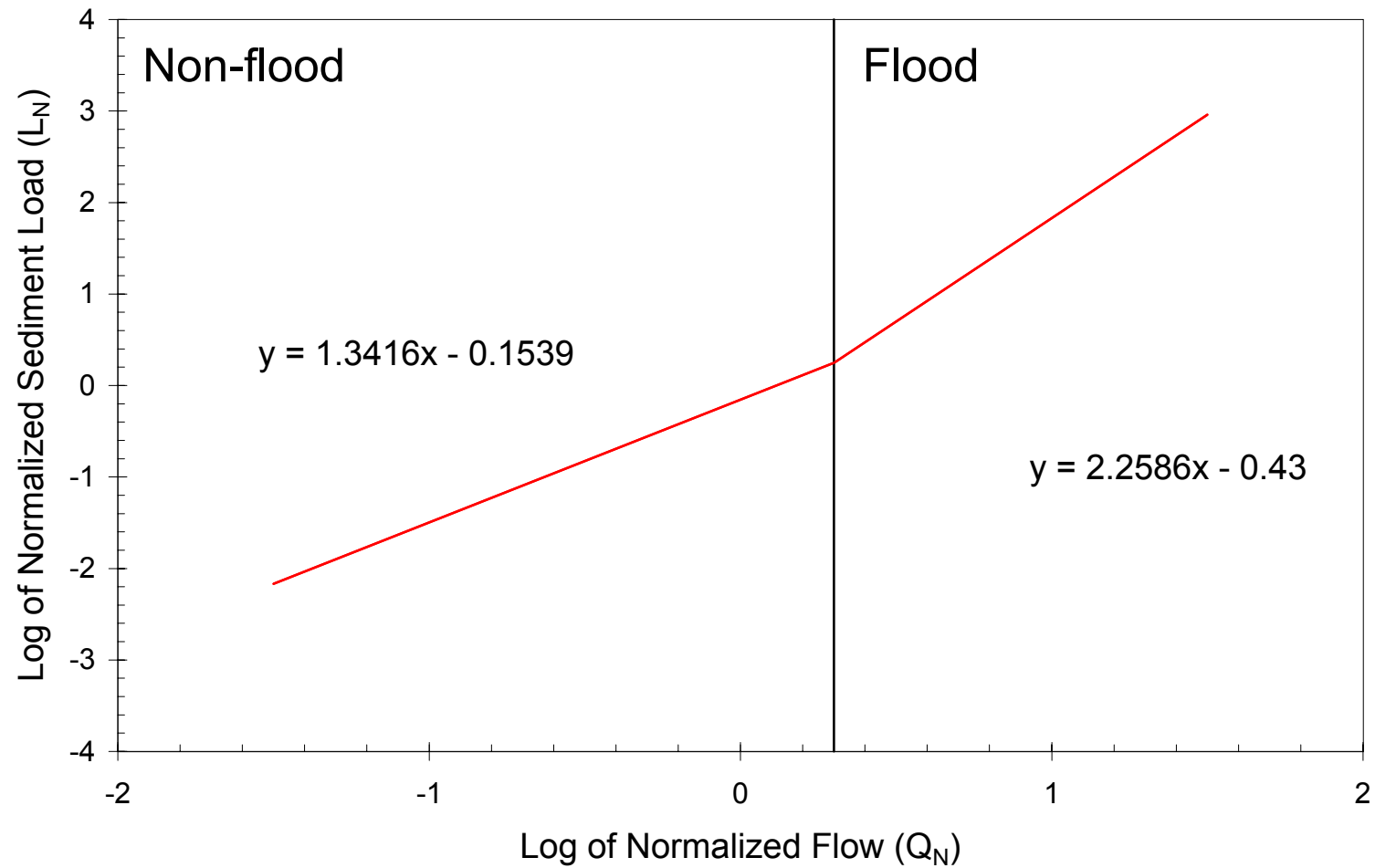
# Generic NSL Rating Curves for Hackensack



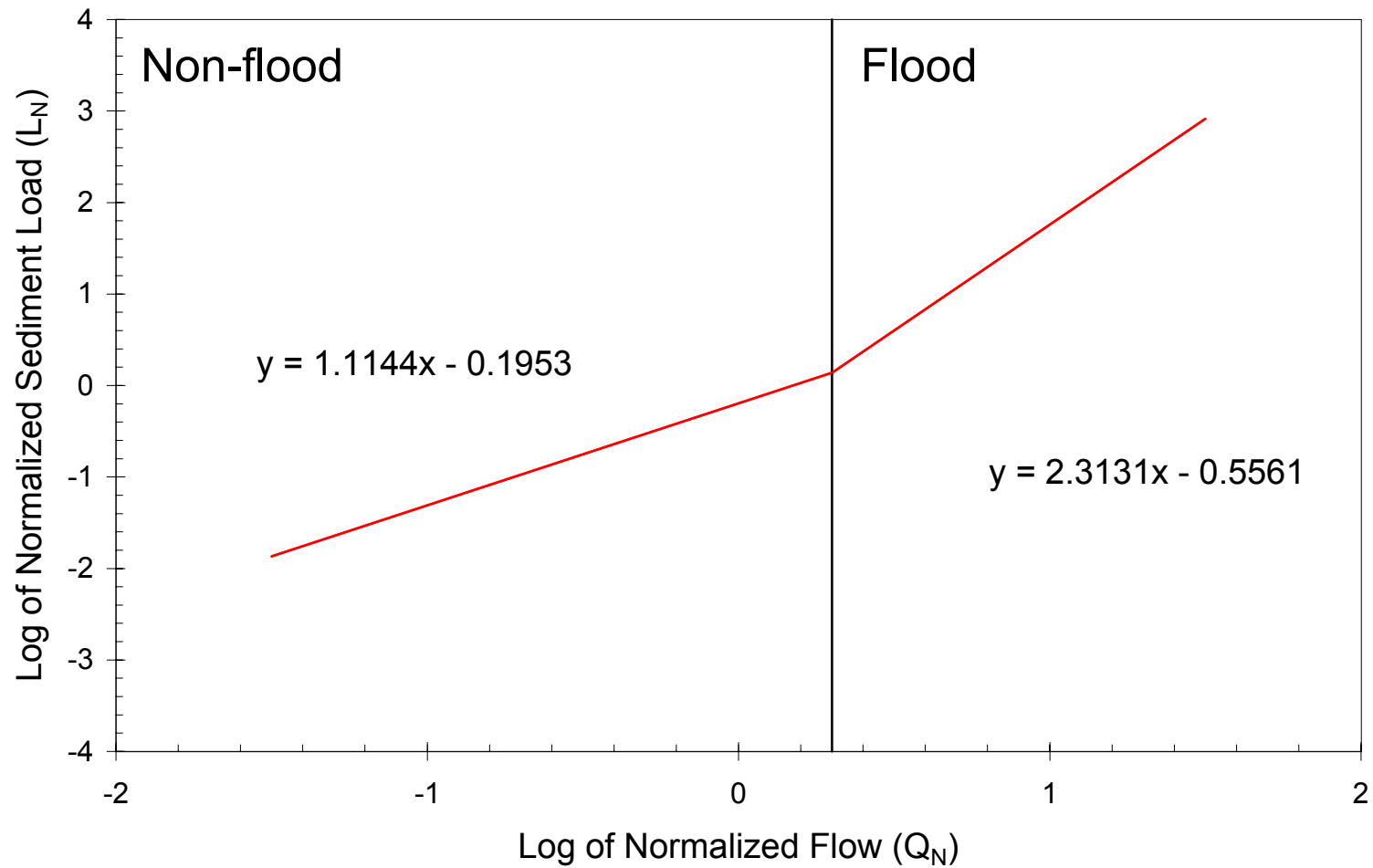
## Generic NSL Rating Curves for Bronx River



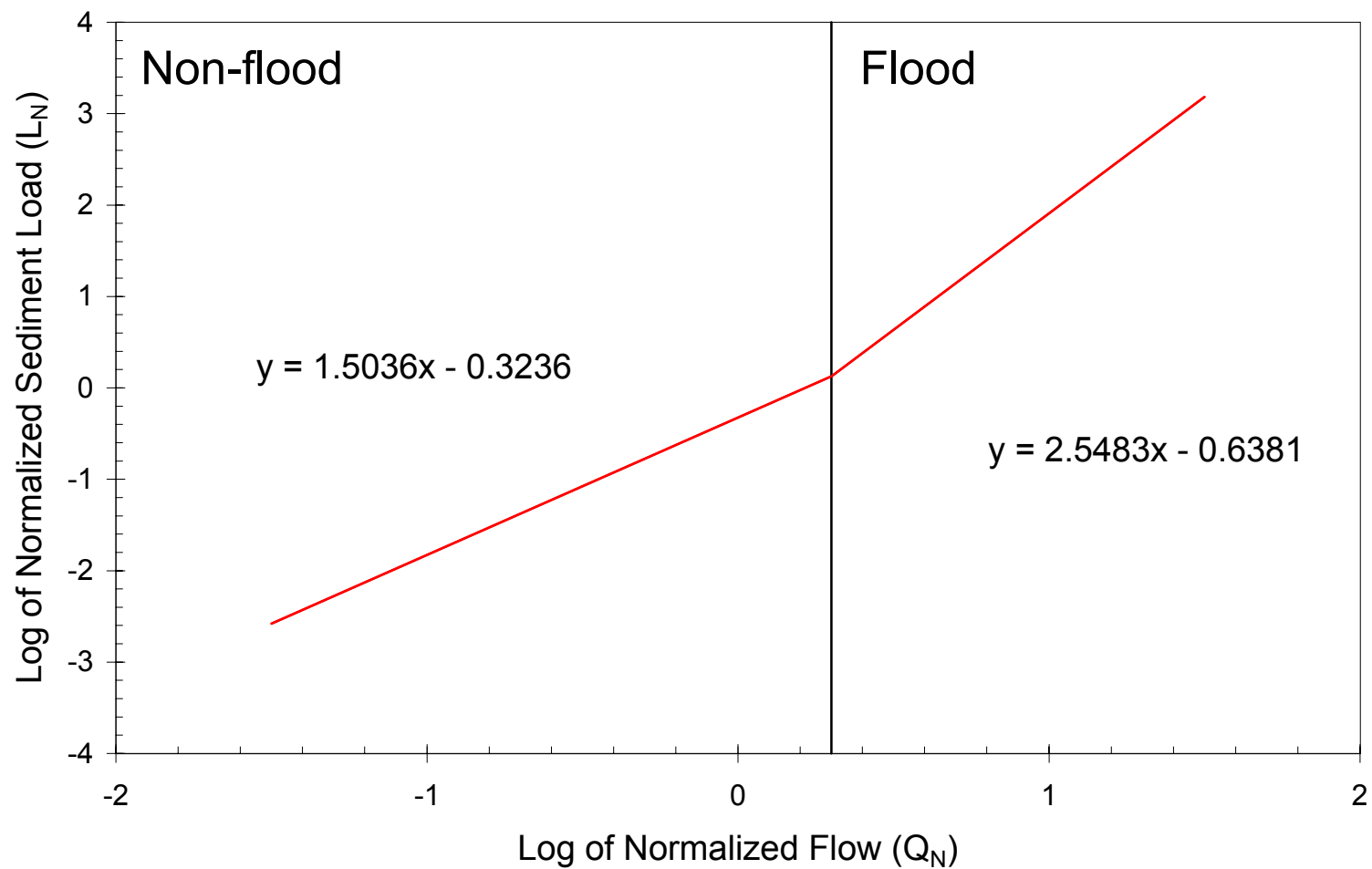
## Generic NSL Rating Curves for Wappinger



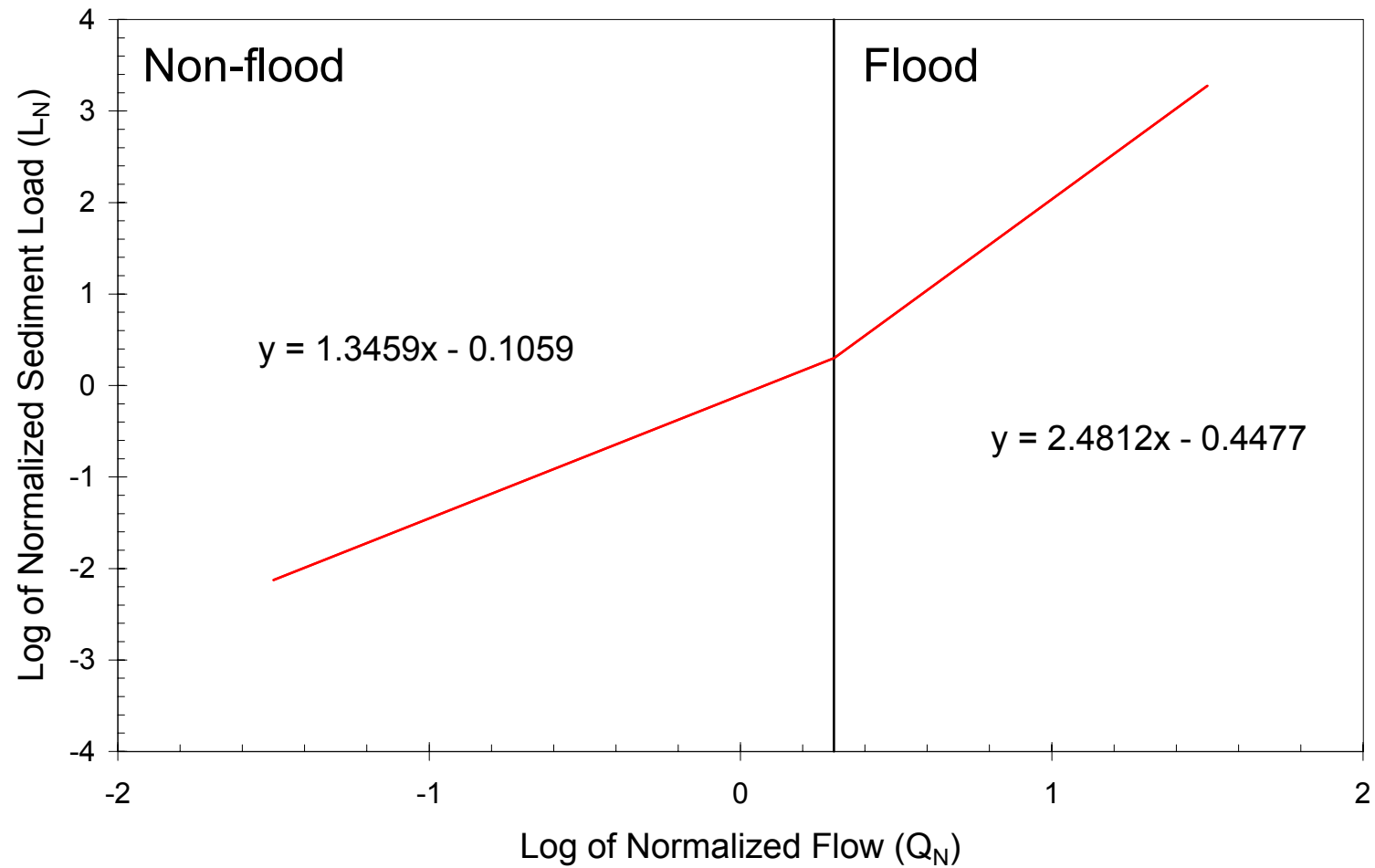
## Generic NSL Rating Curves for Tuckahoe



## Generic NSL Rating Curves for Thames

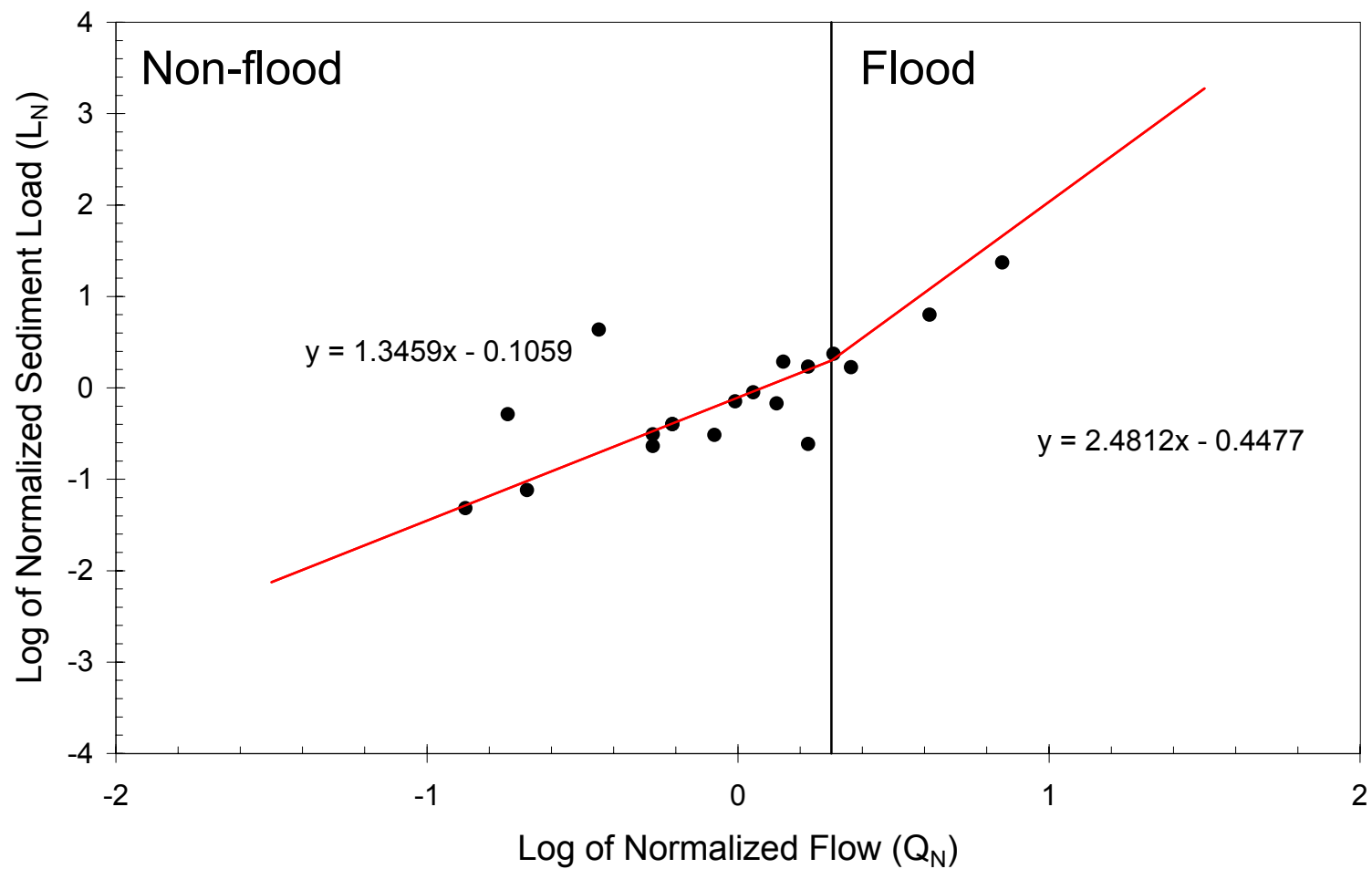


## Generic NSL Rating Curves for Shrewsbury

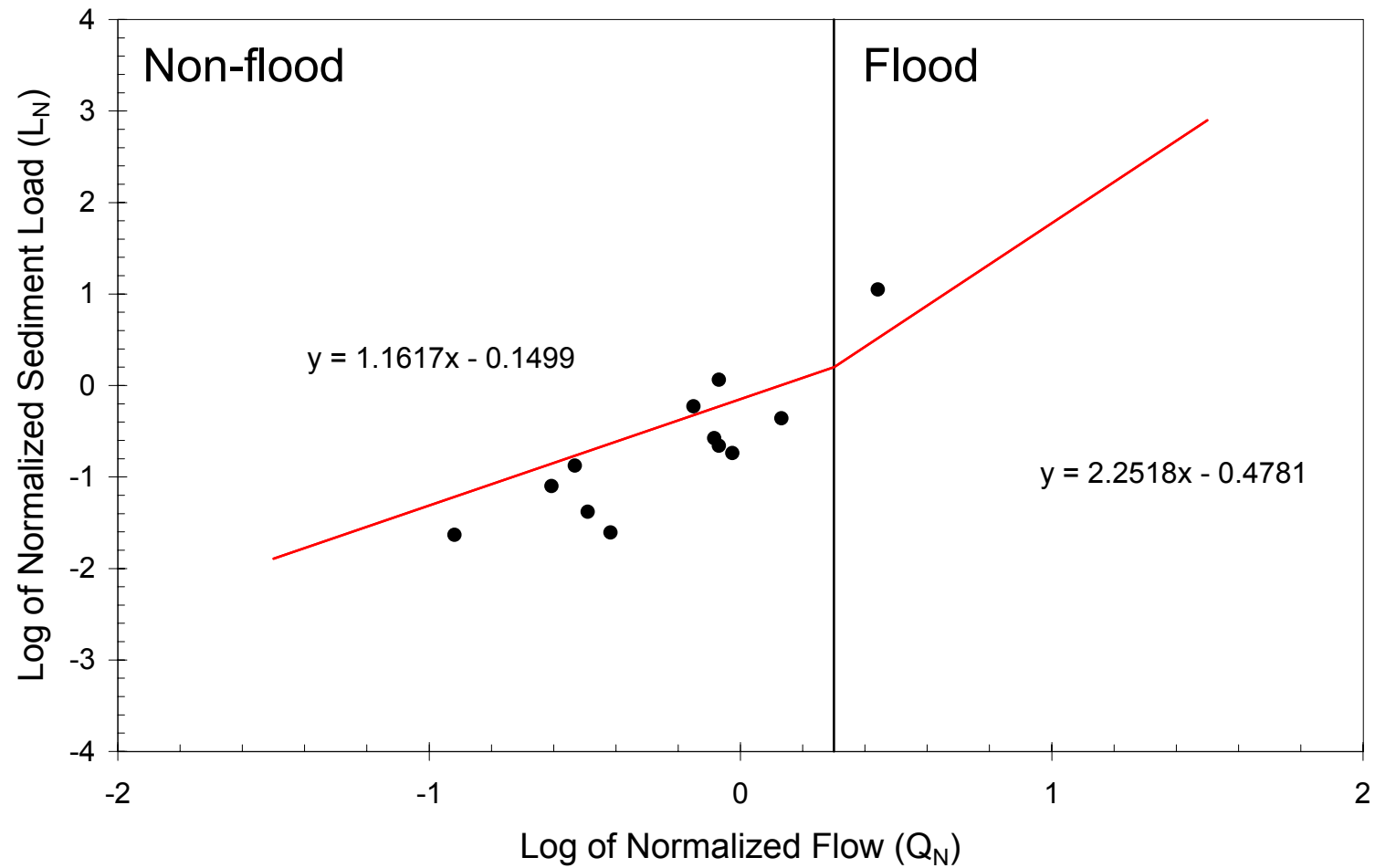




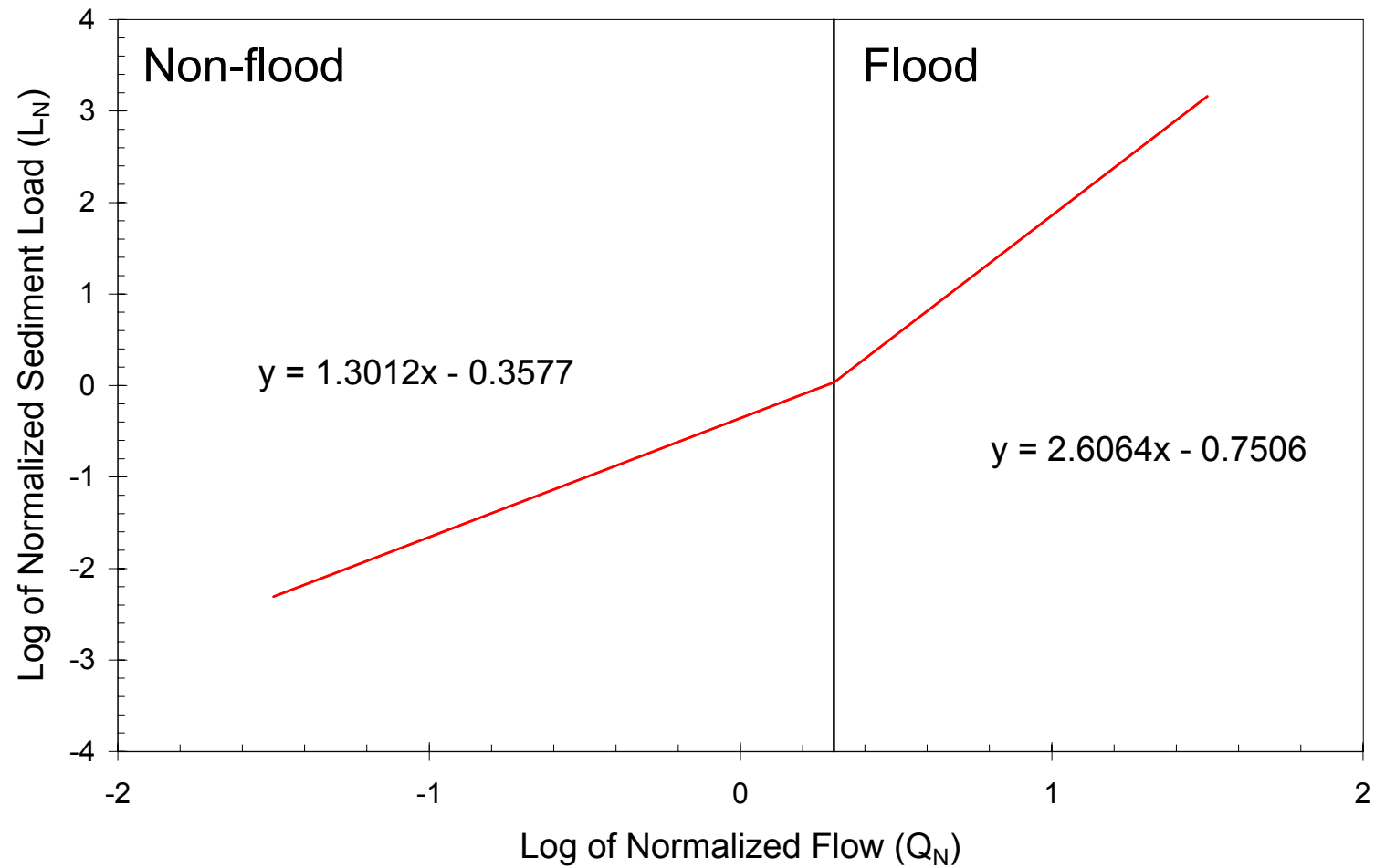
## Generic NSL Rating Curves for Shark River



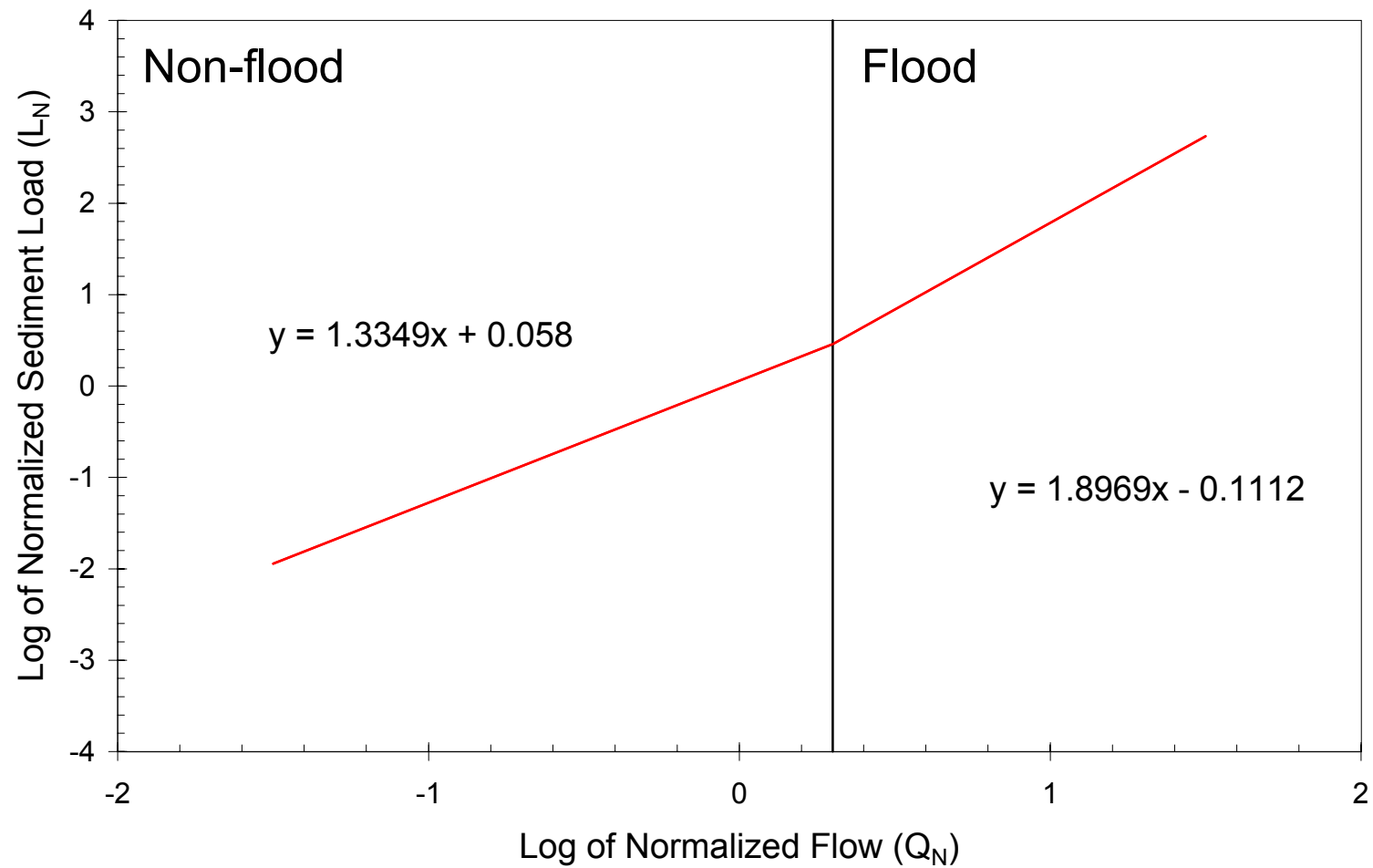
## Generic NSL Rating Curves for Sawmill



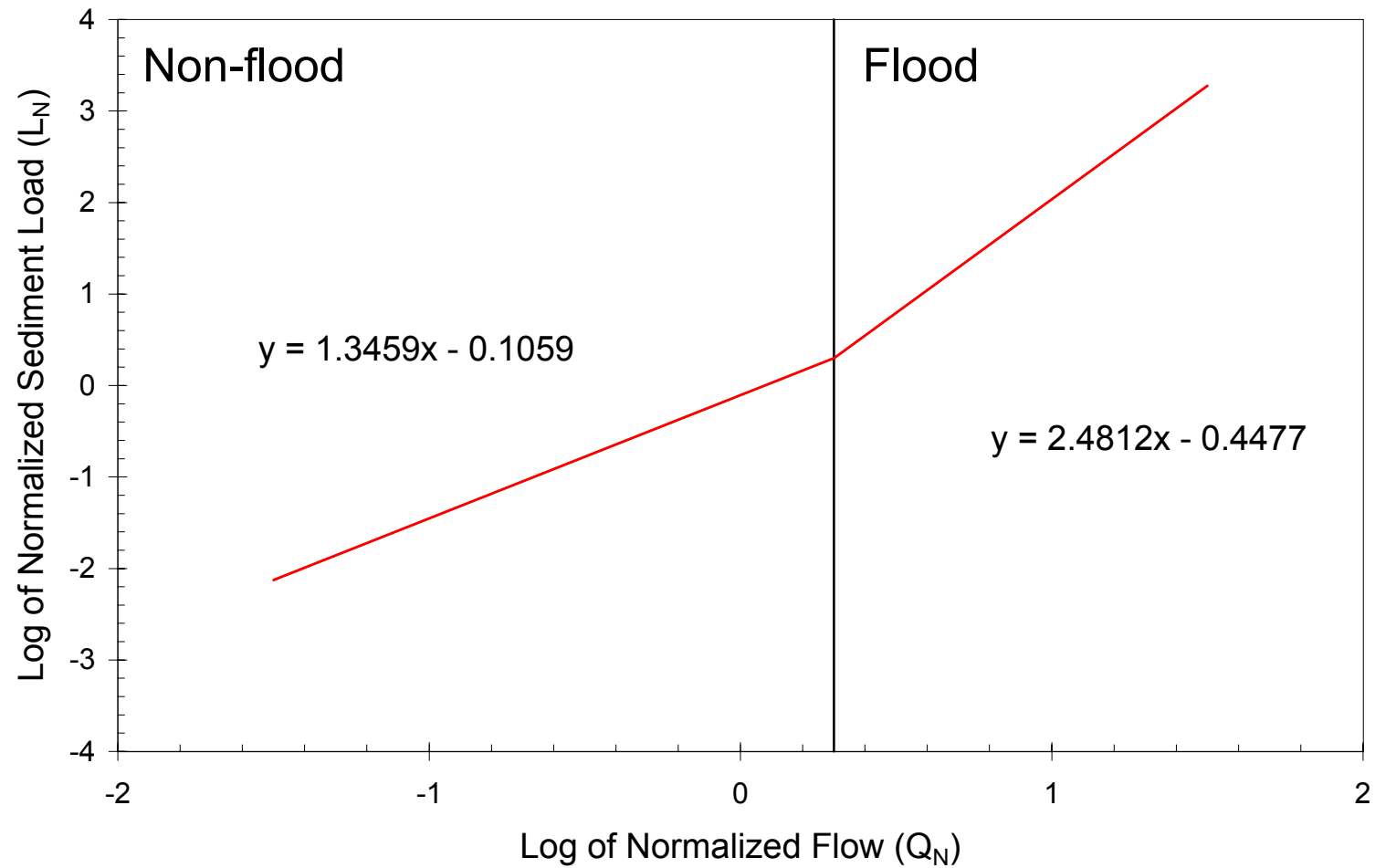
## Generic NSL Rating Curves for Quinnipiac



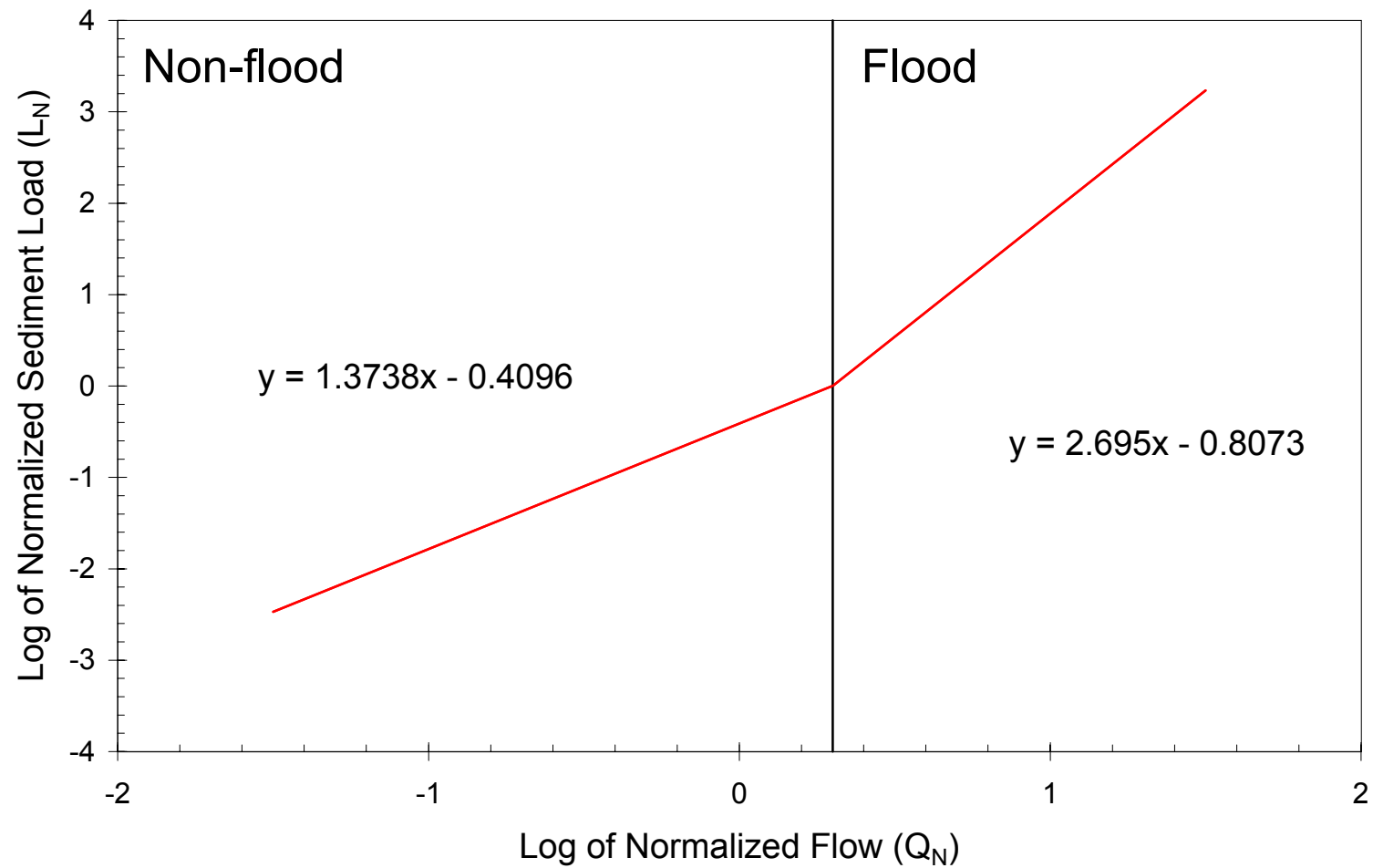
## Generic NSL Rating Curves for Normans Kill



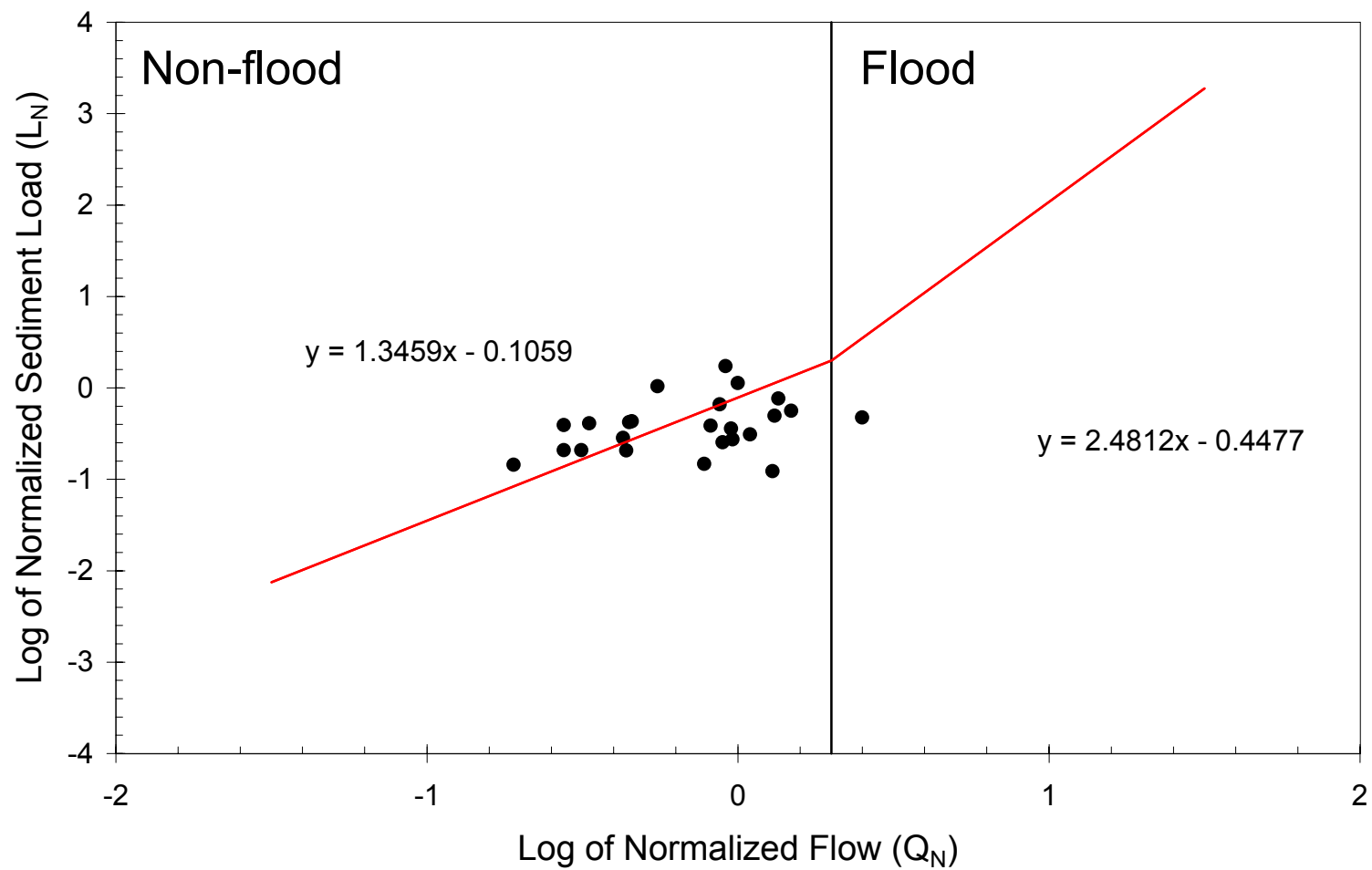
## Generic NSL Rating Curves for Navesink



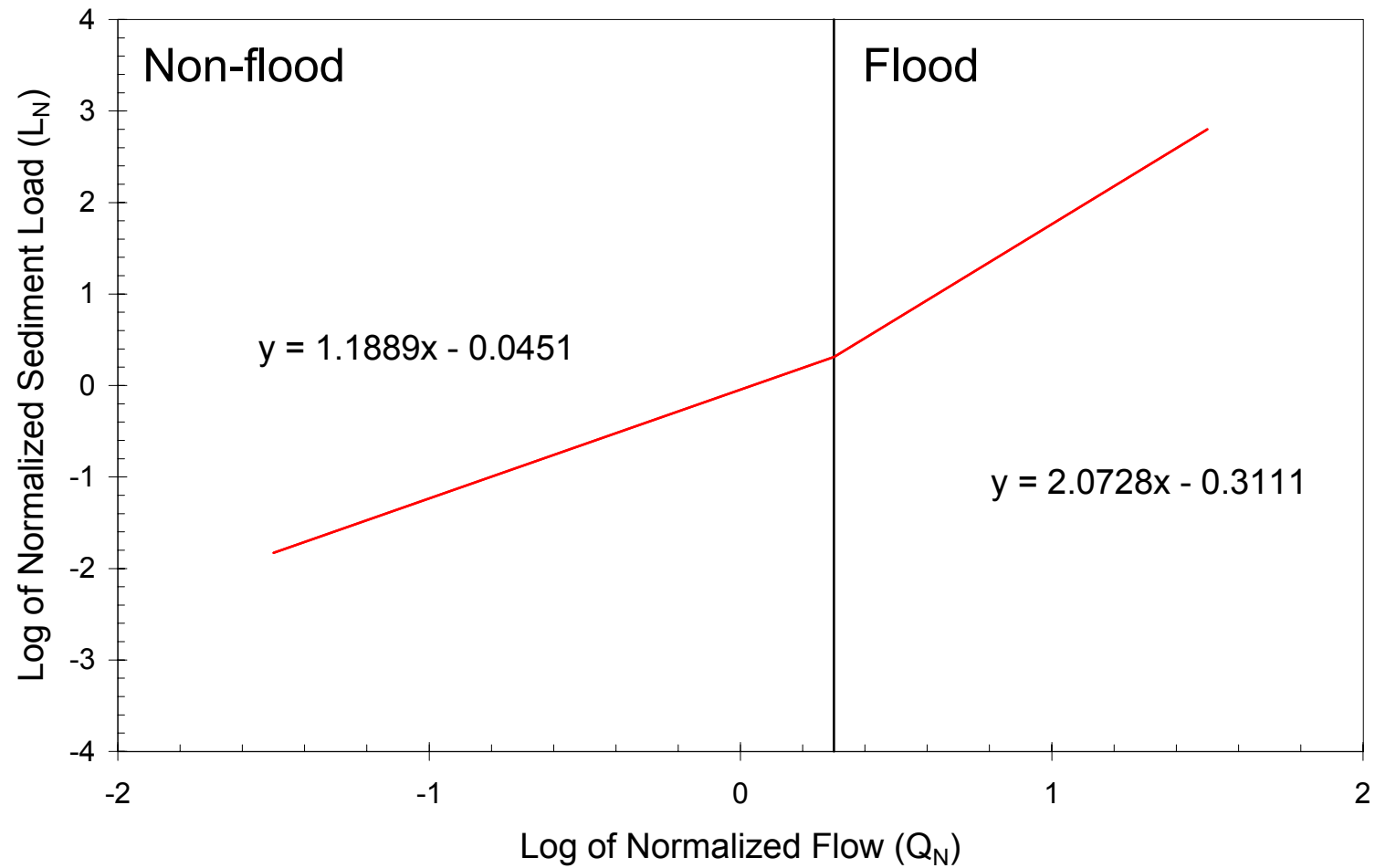
## Generic NSL Rating Curves for Naugatuck



## Generic NSL Rating Curves for Mullica

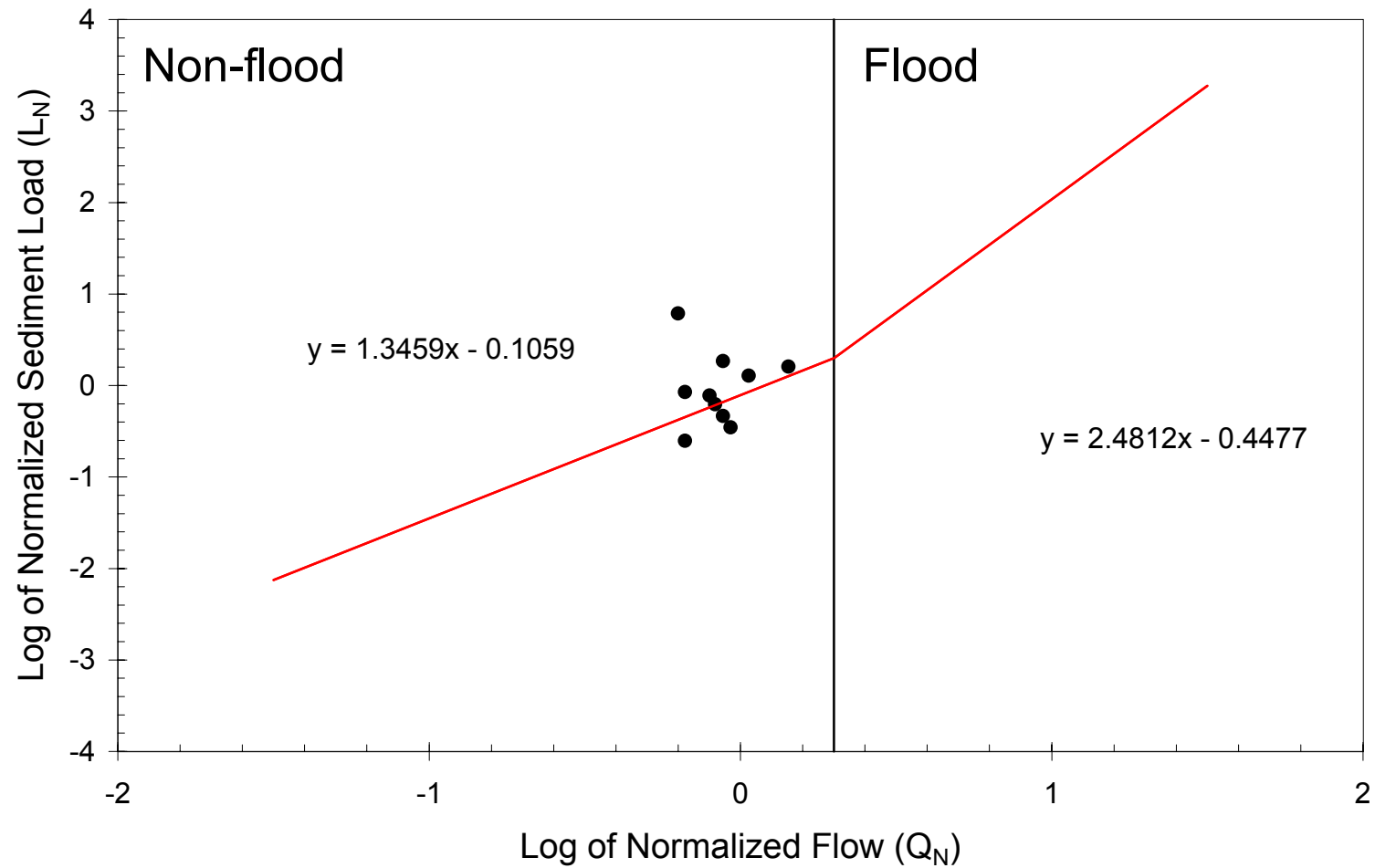


## Generic NSL Rating Curves for Moordener

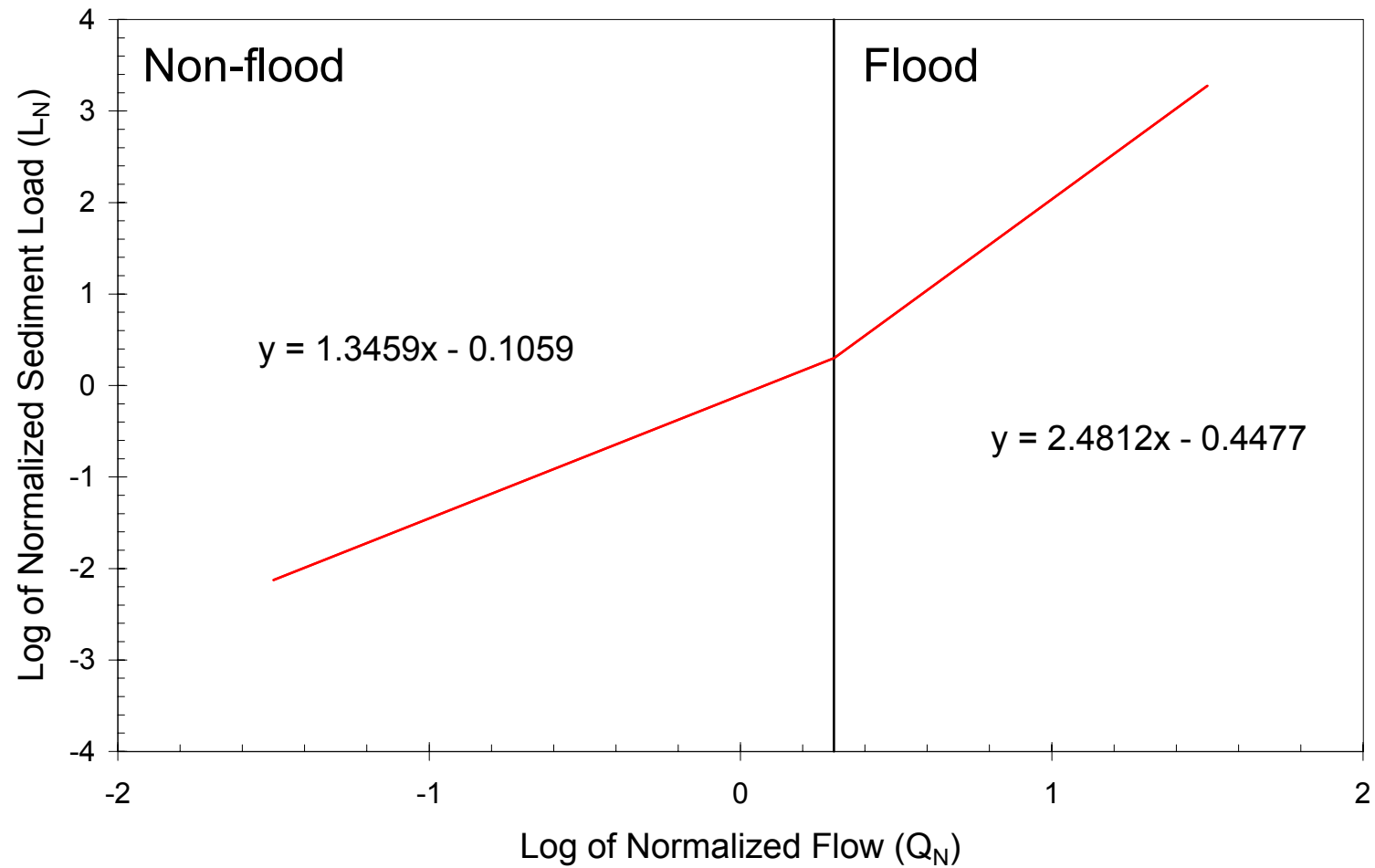




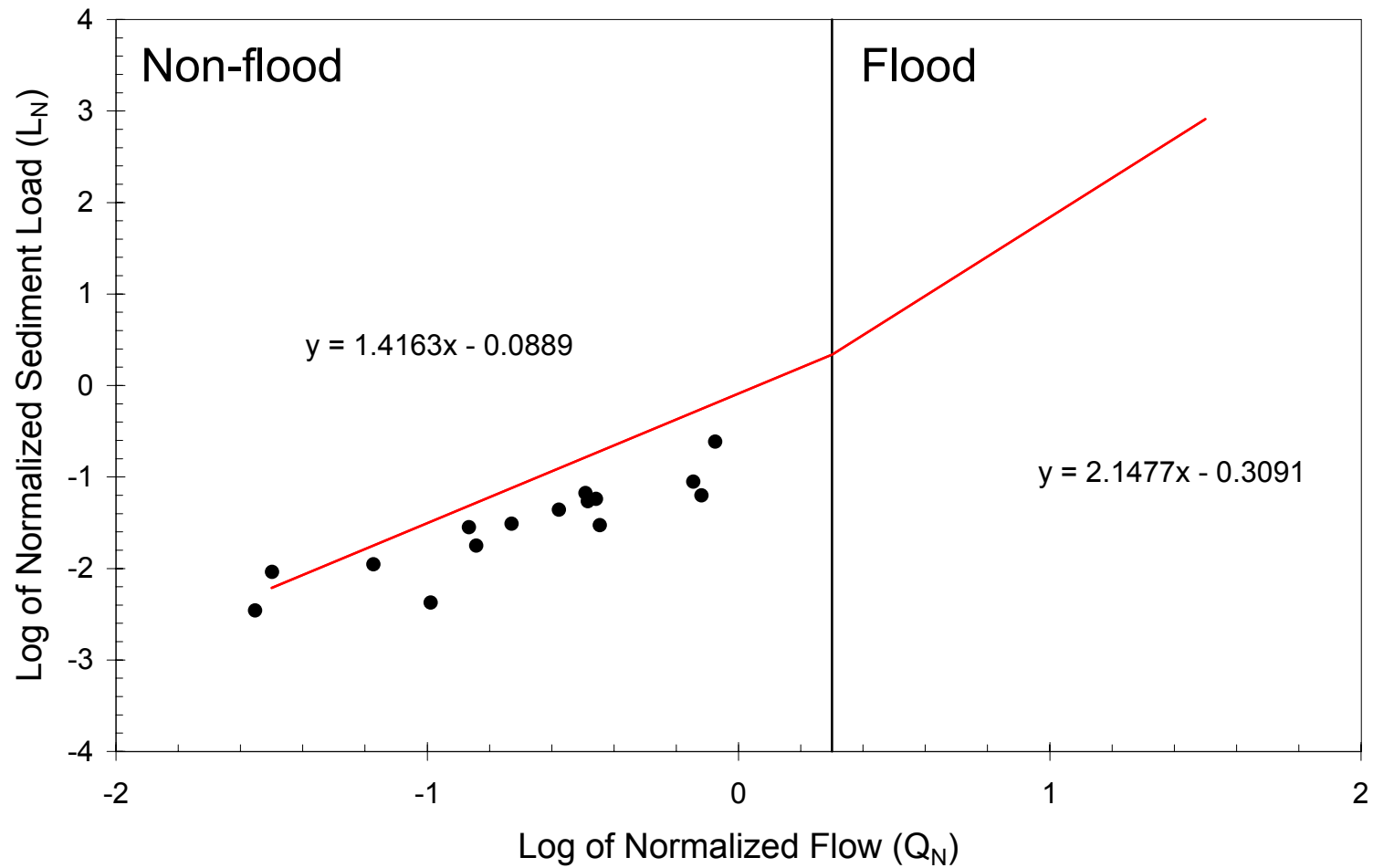
## Generic NSL Rating Curves for Metedeconk



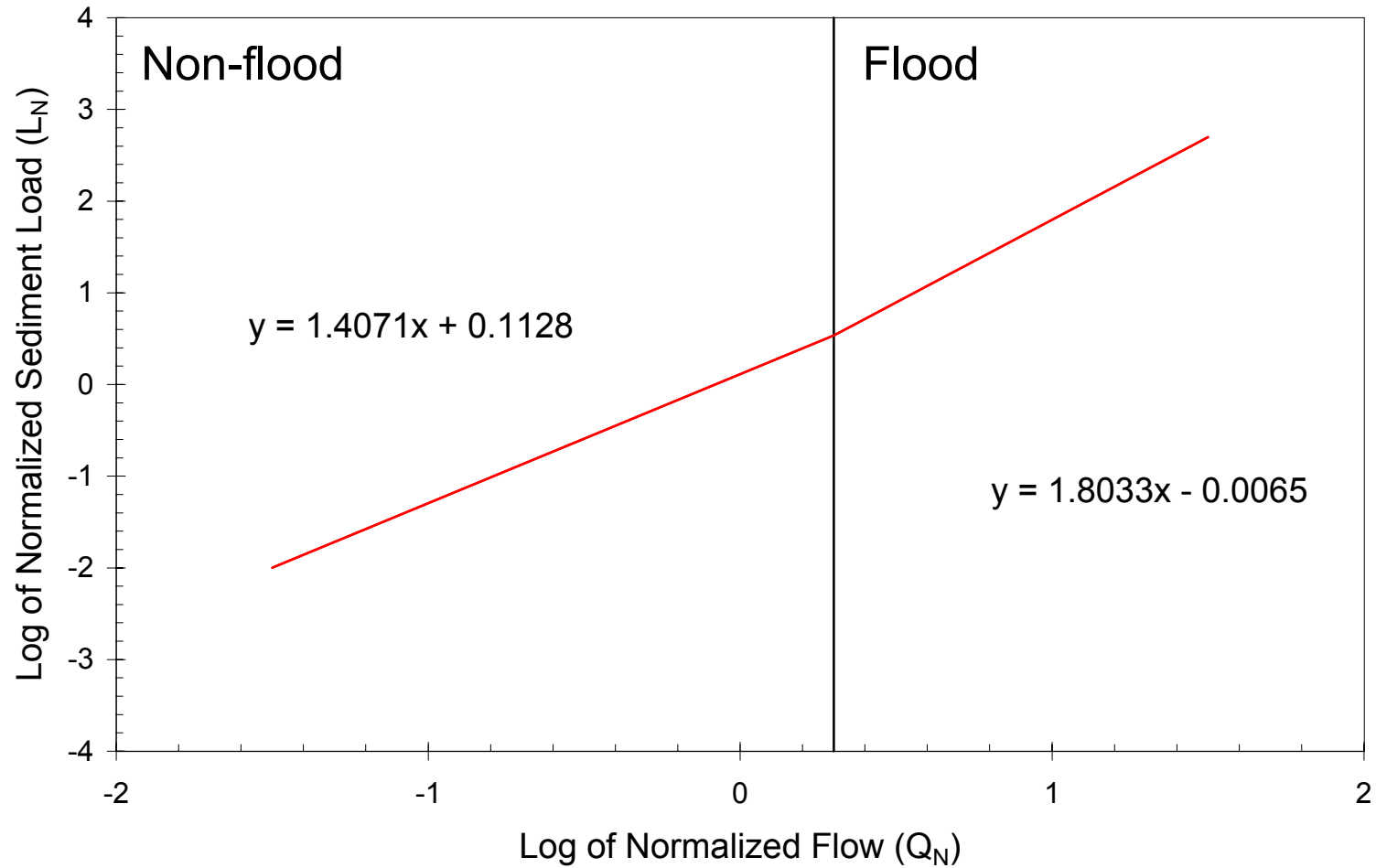
## Generic NSL Rating Curves for Manasquan



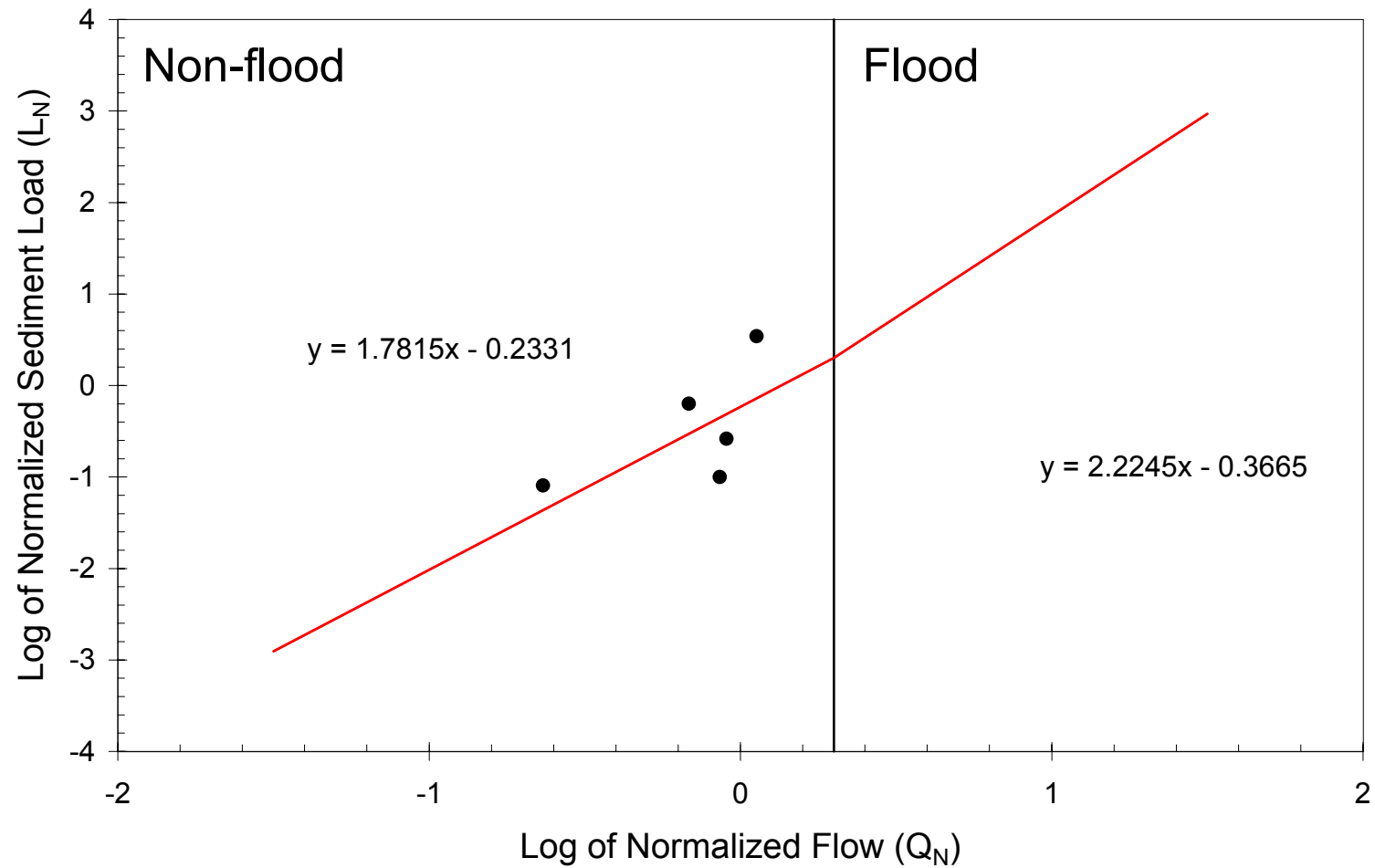
## Generic NSL Rating Curves for Esopus



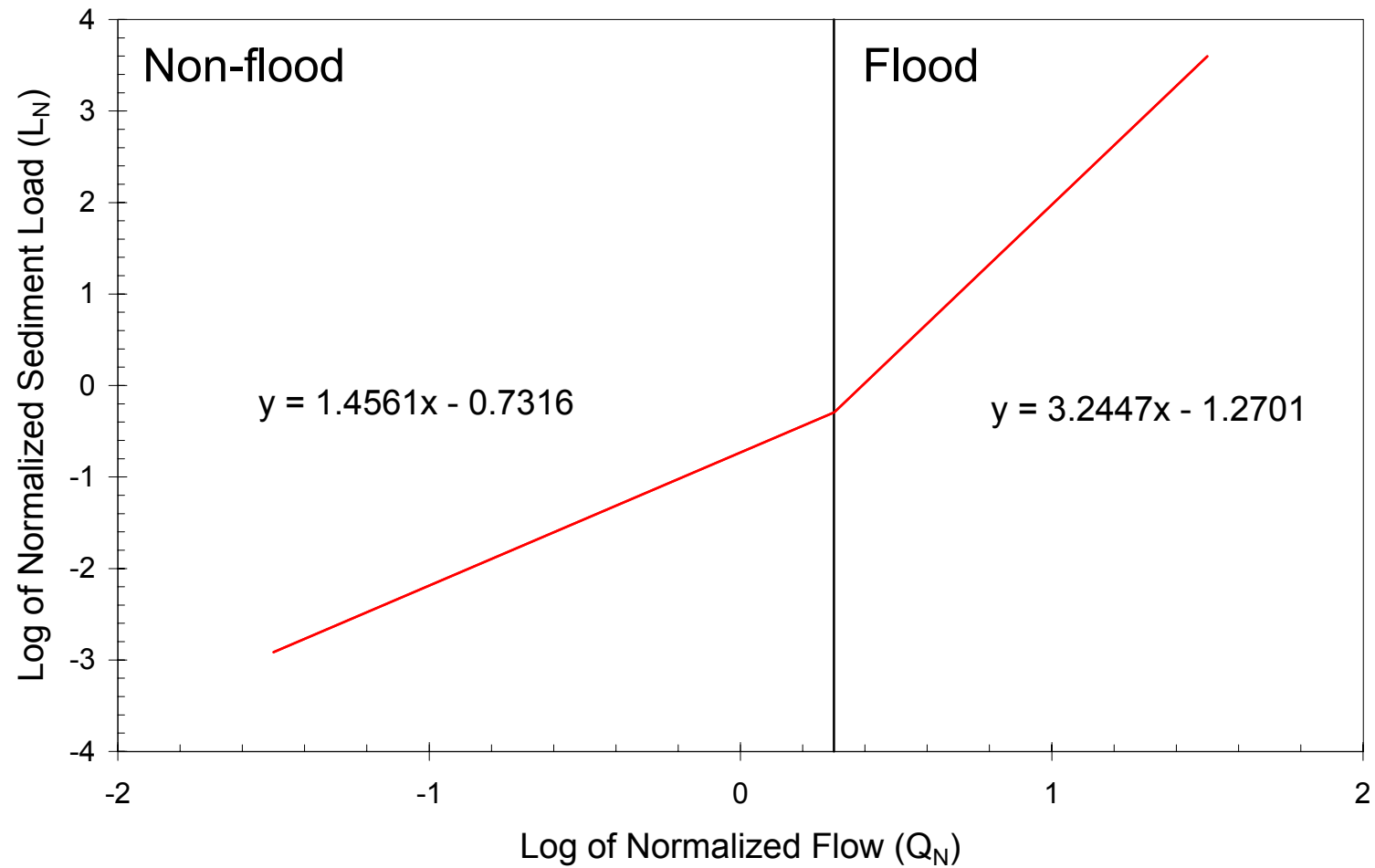
## Generic NSL Rating Curves for Croton



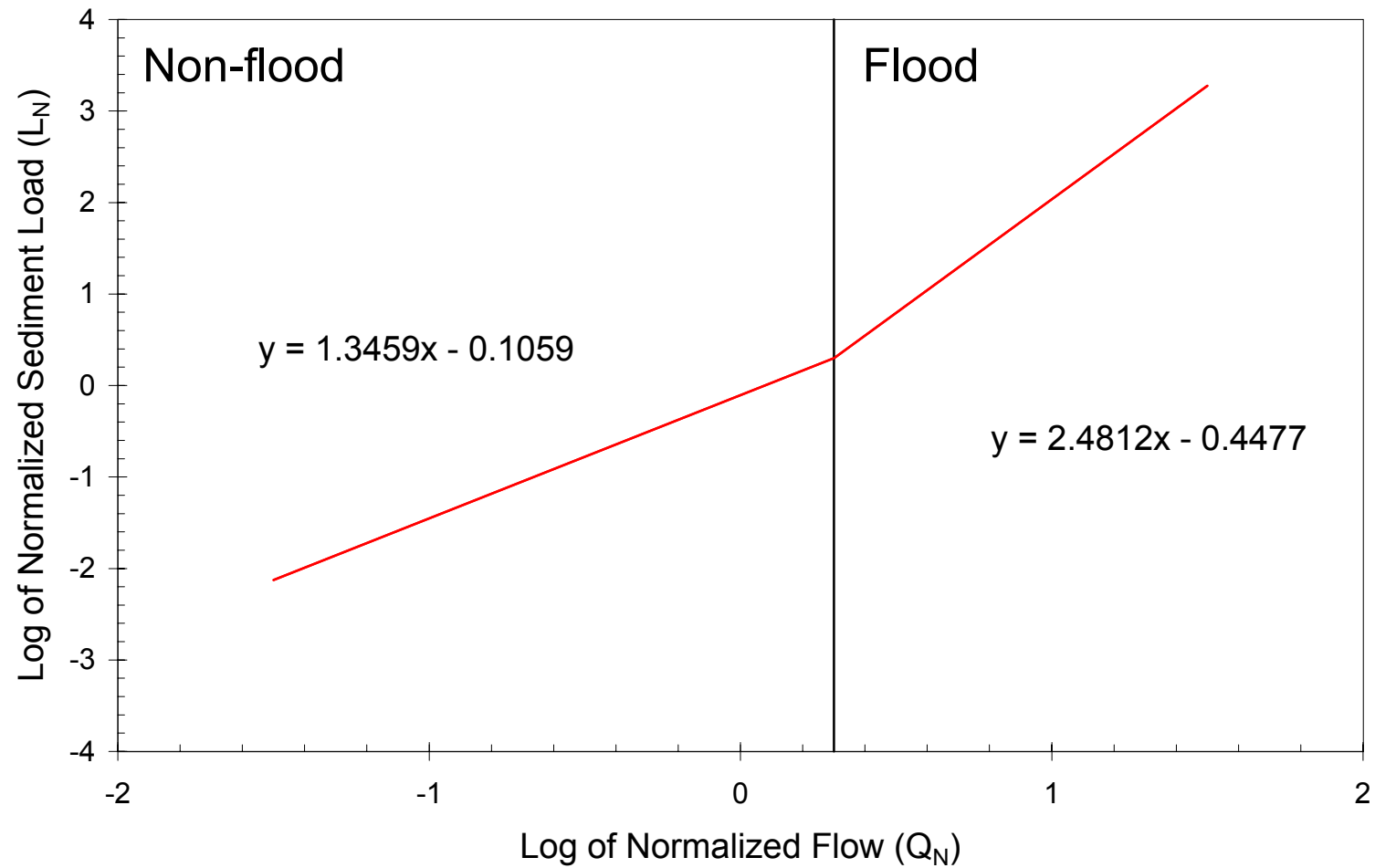
## Generic NSL Rating Curves for South River



## Generic NSL Rating Curves for Catskill



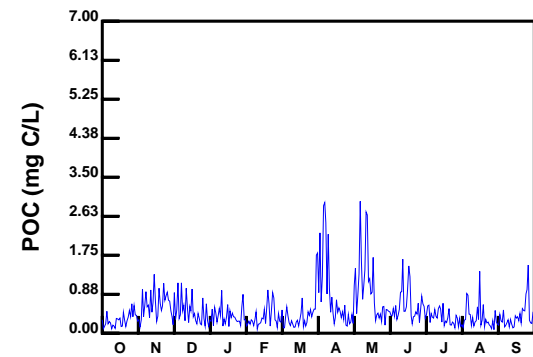
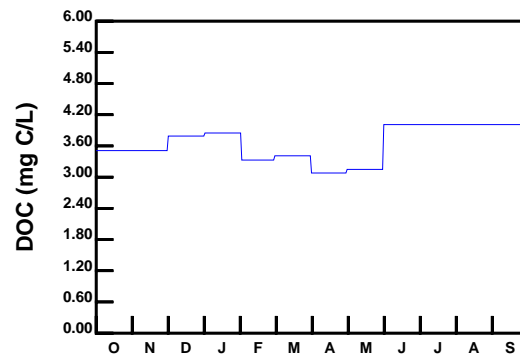
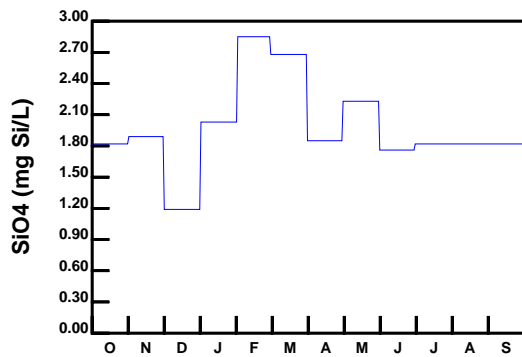
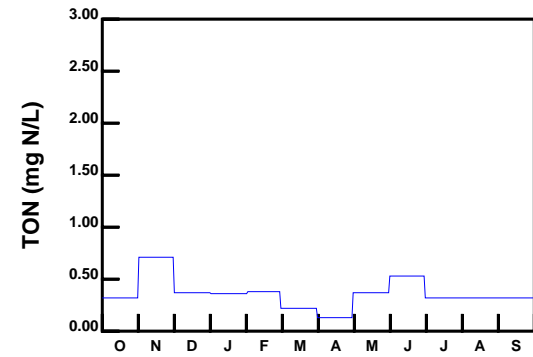
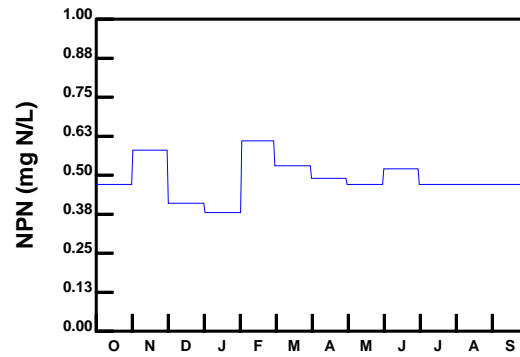
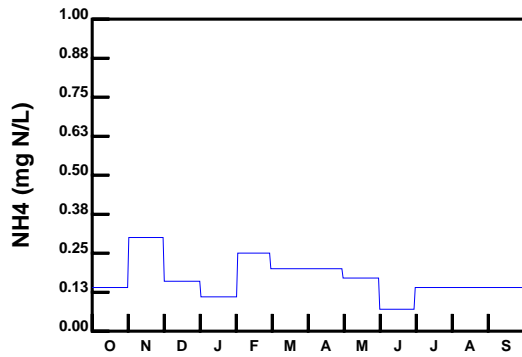
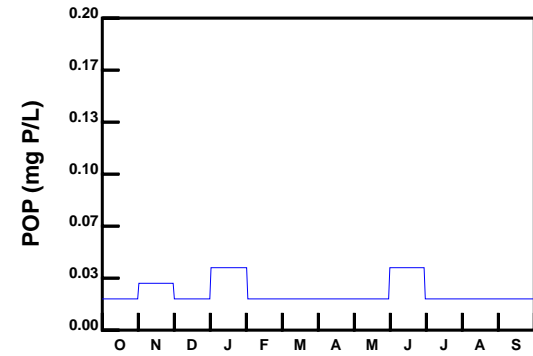
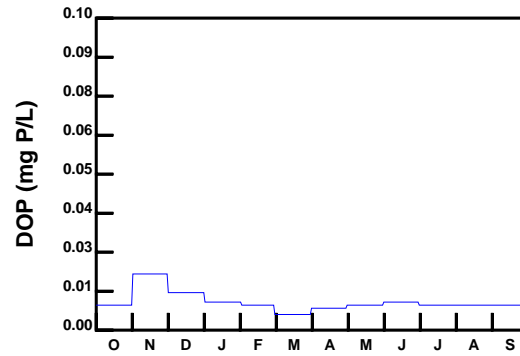
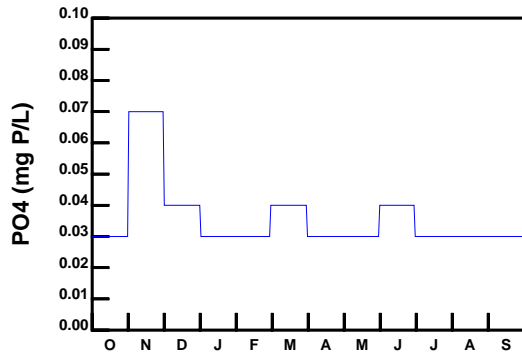
## Generic NSL Rating Curves for Westeconk



## **APPENDIX 2**

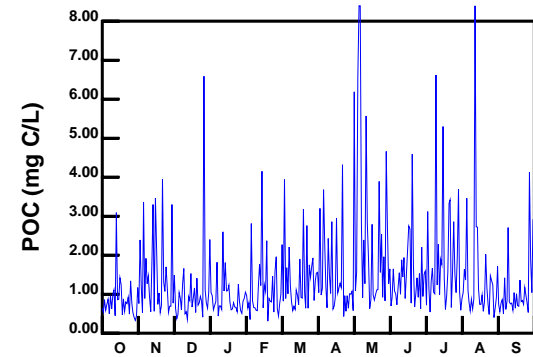
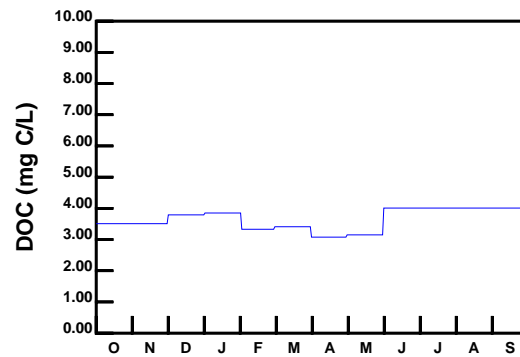
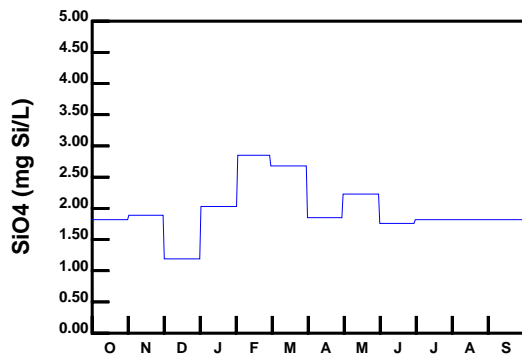
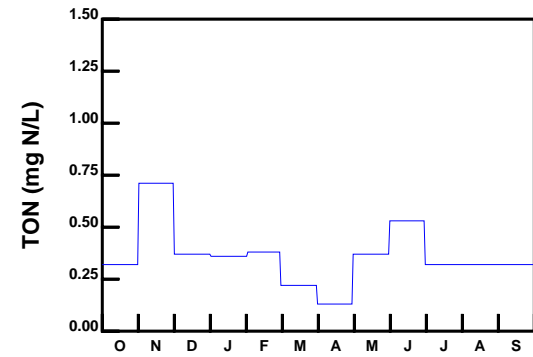
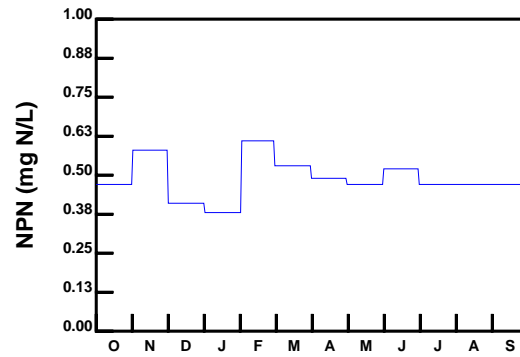
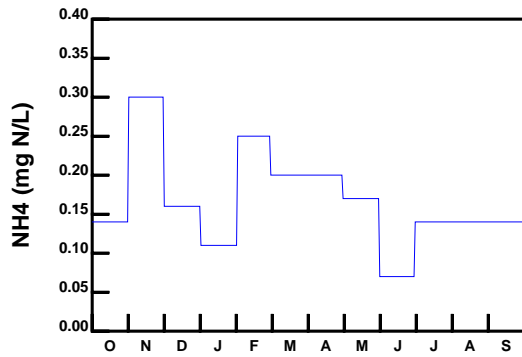
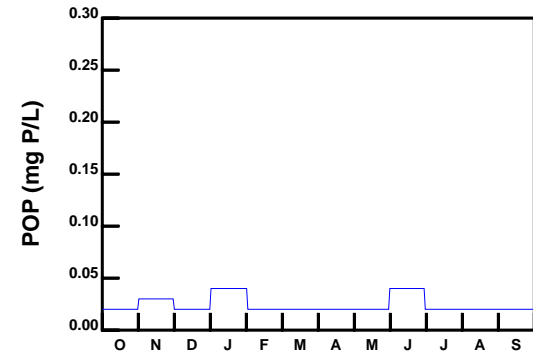
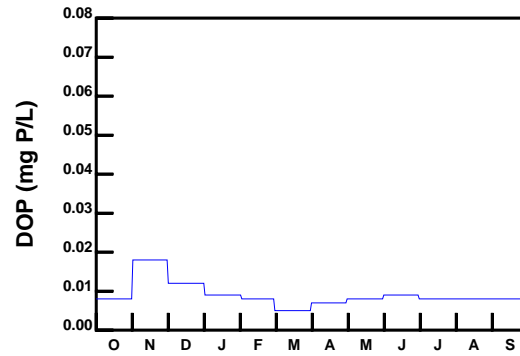
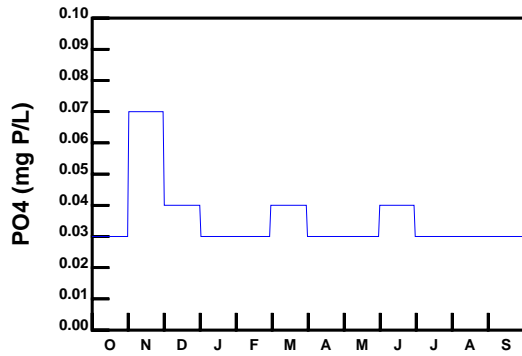
### **NUTRIENT LOADING DIAGRAMS - HEAD OF TIDE**





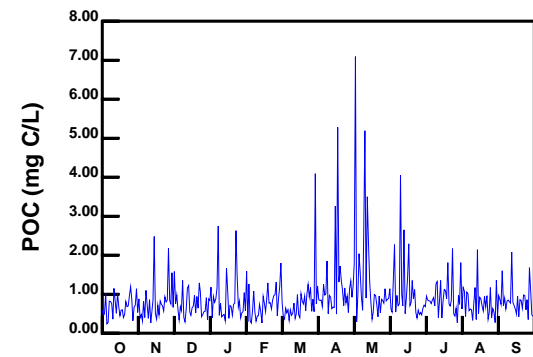
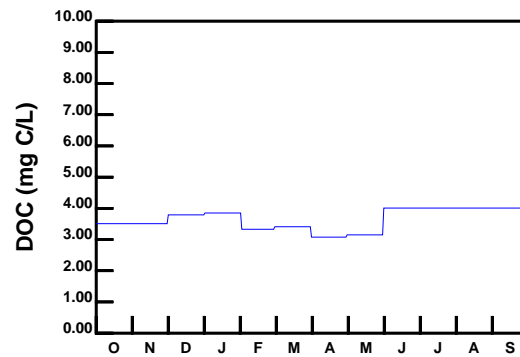
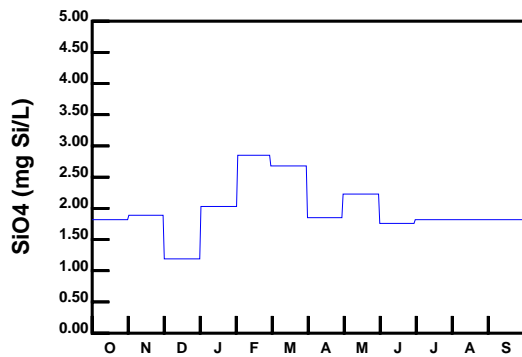
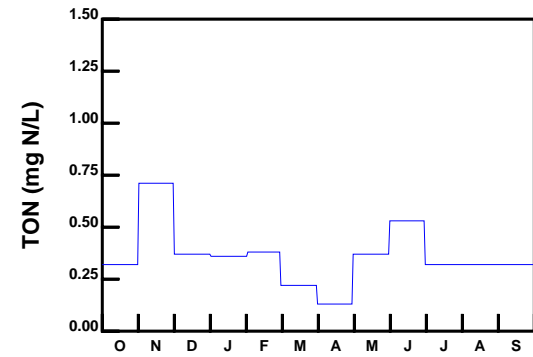
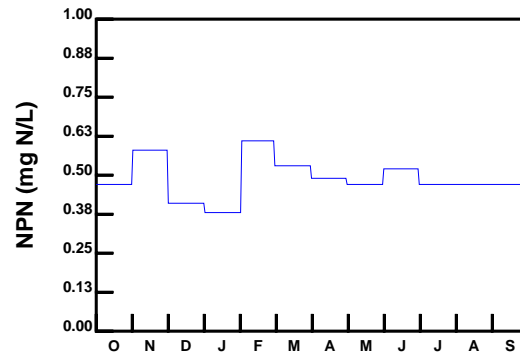
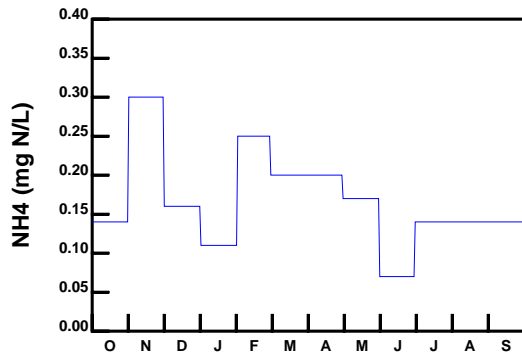
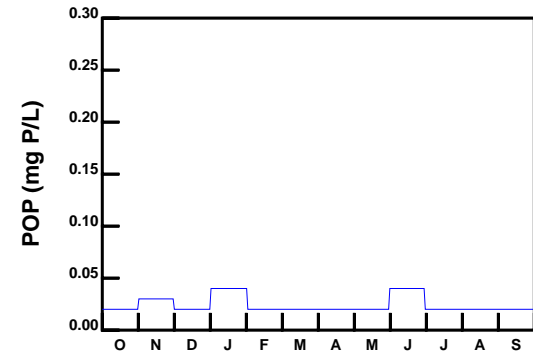
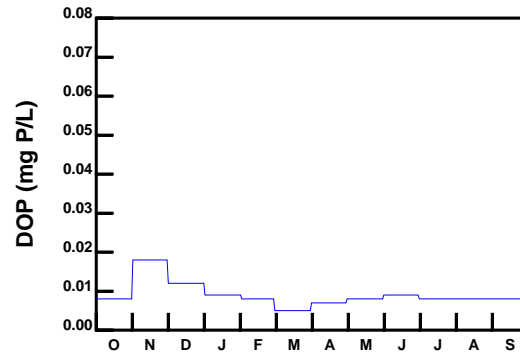
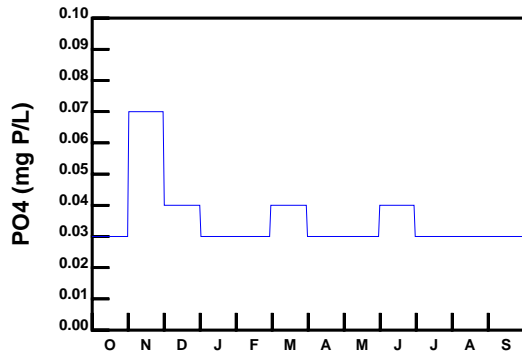
**SWEM - HUDSON RIVER**

**Boundary Condition - Water Year 8889**



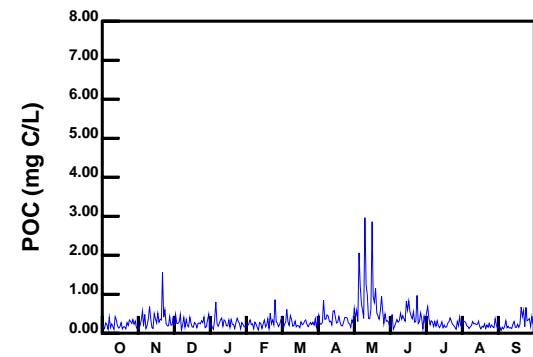
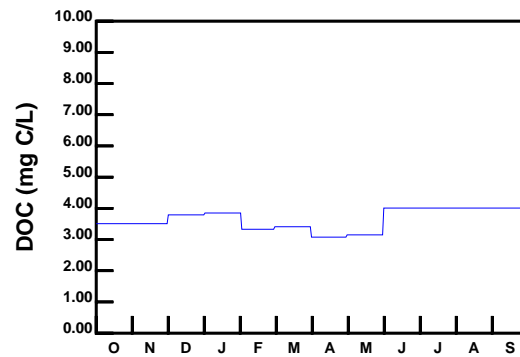
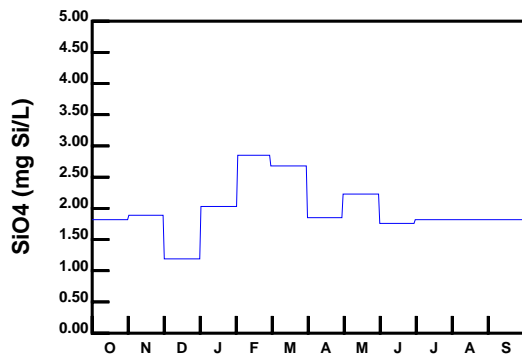
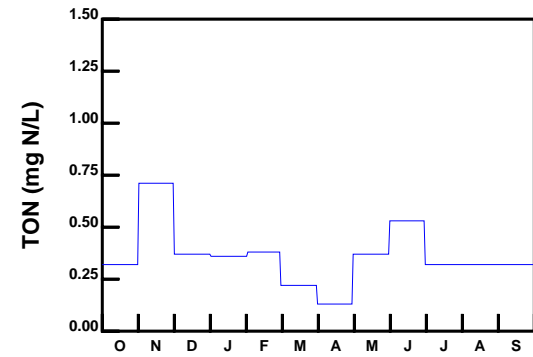
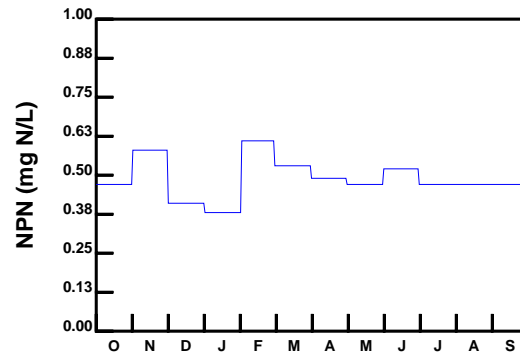
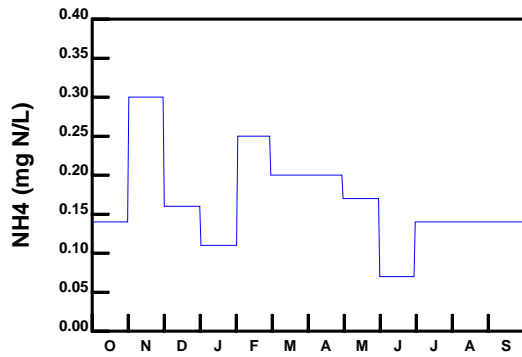
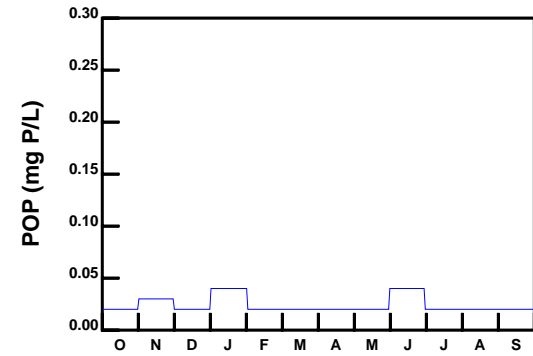
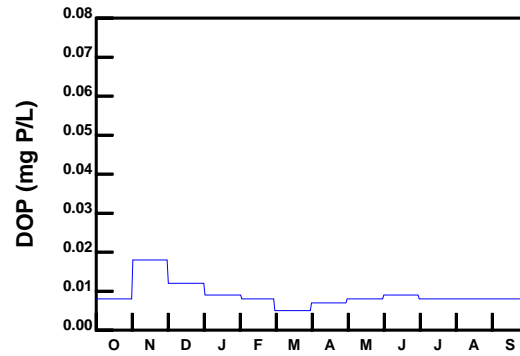
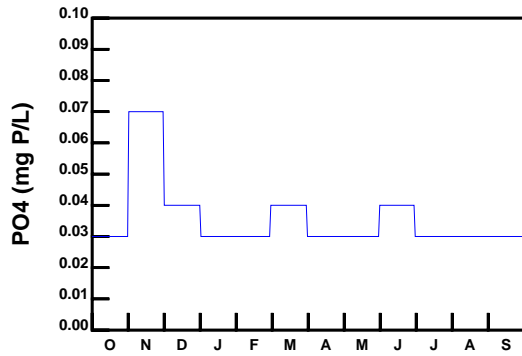
**SWEM - NORMAN KILL**

**Boundary Condition - Water Year 8889**

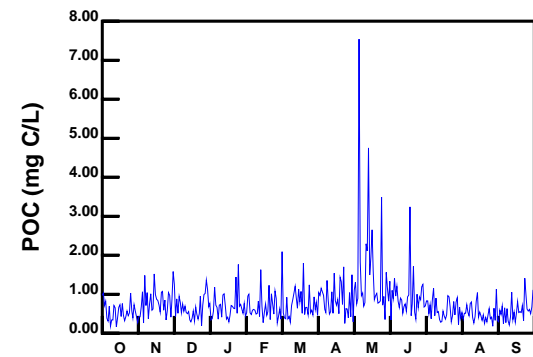
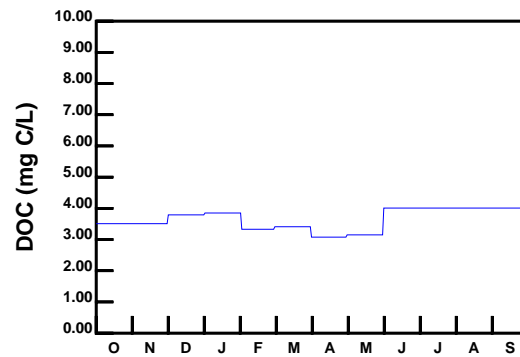
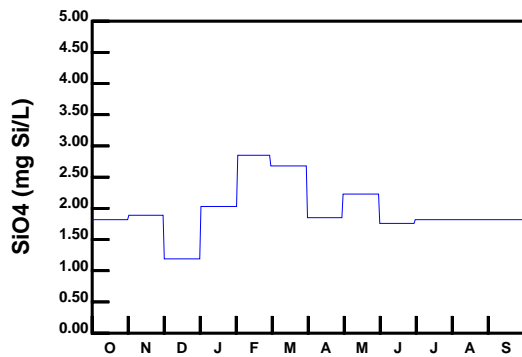
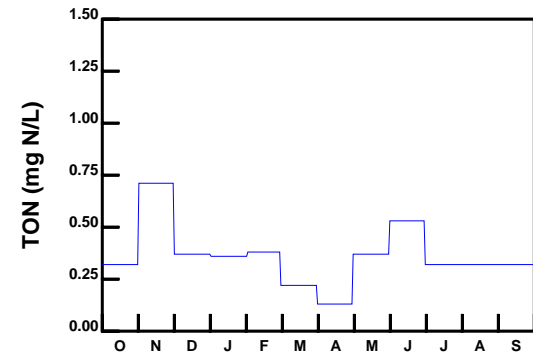
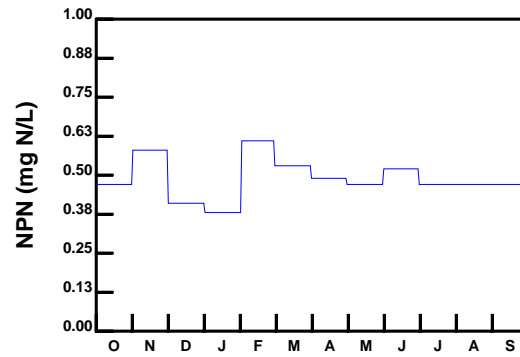
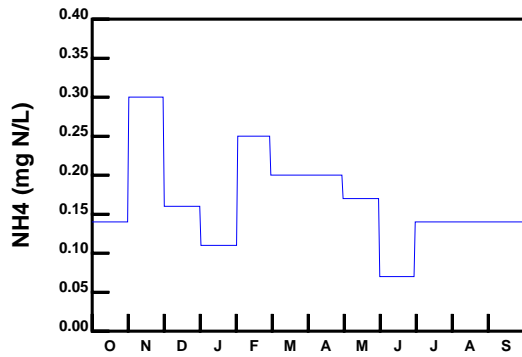
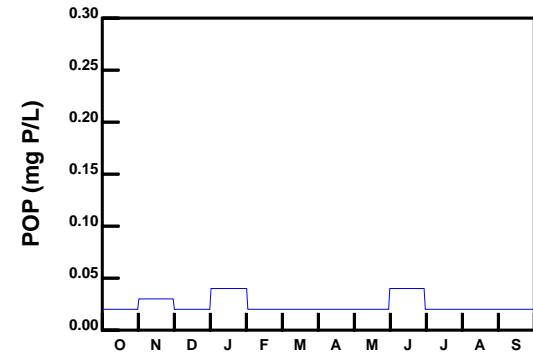
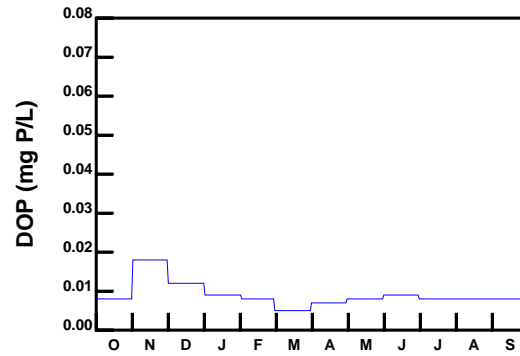
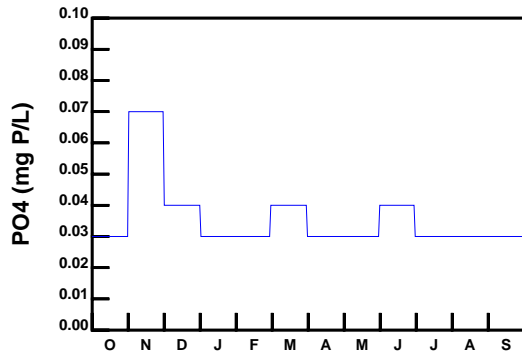


**SWEM - MOORDENER KILL**

**Boundary Condition - Water Year 8889**

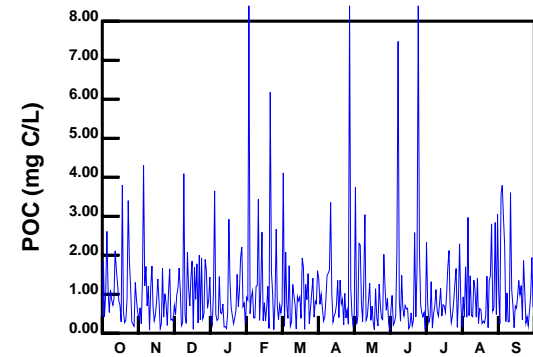
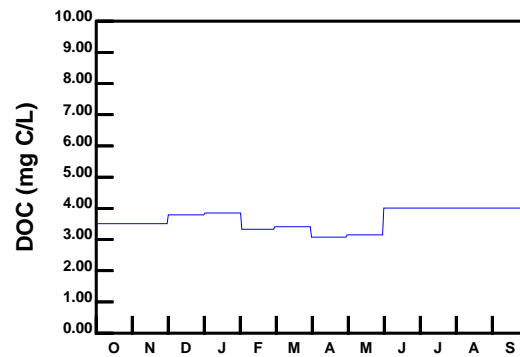
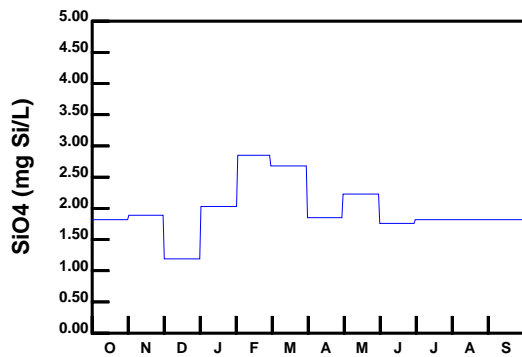
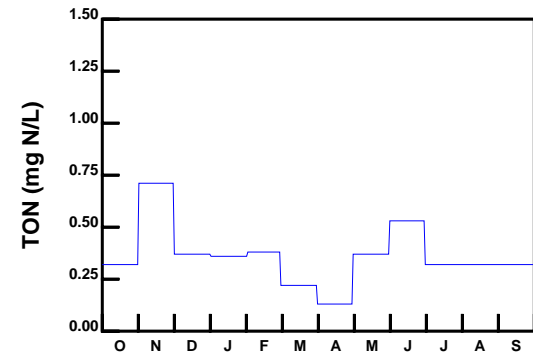
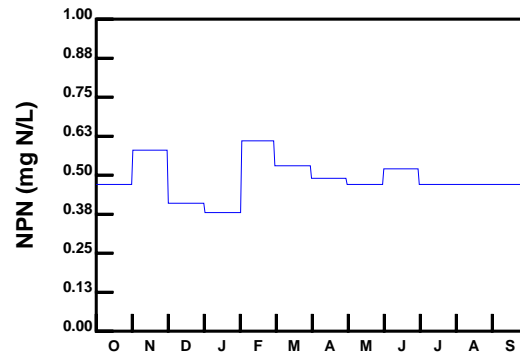
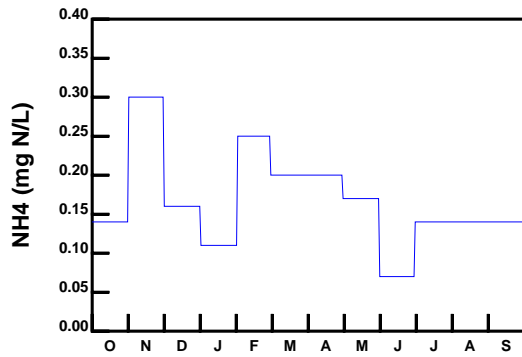
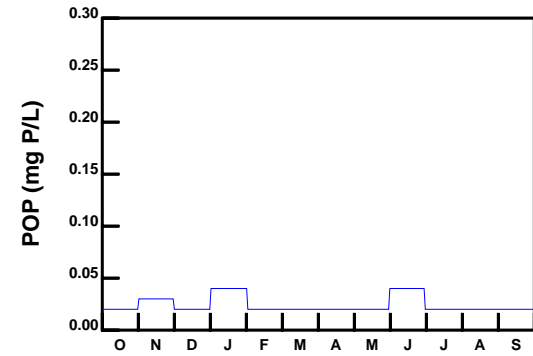
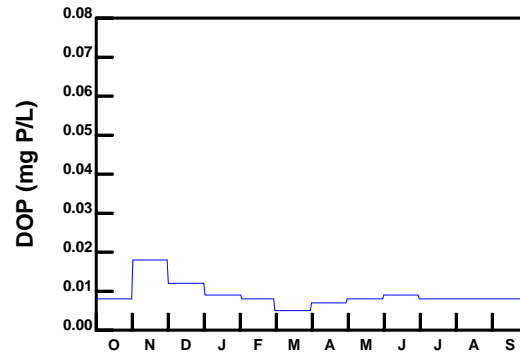
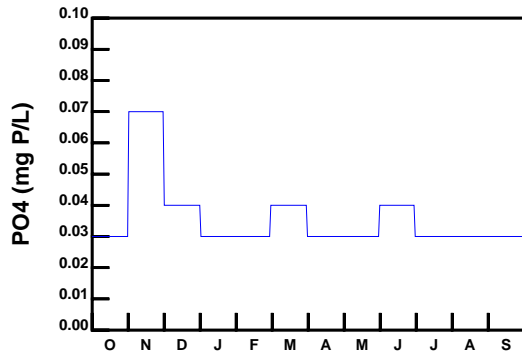


**SWEM - CATSKILL CREEK**  
**Boundary Condition - Water Year 8889**



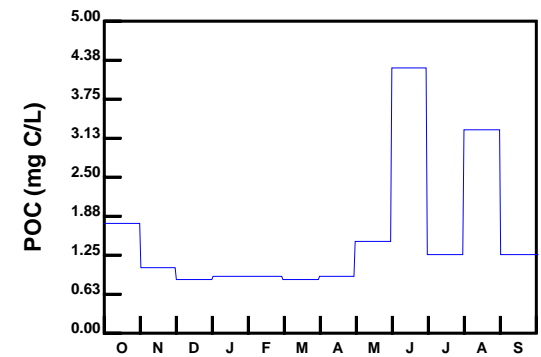
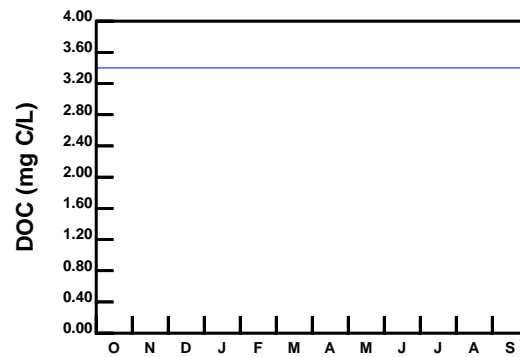
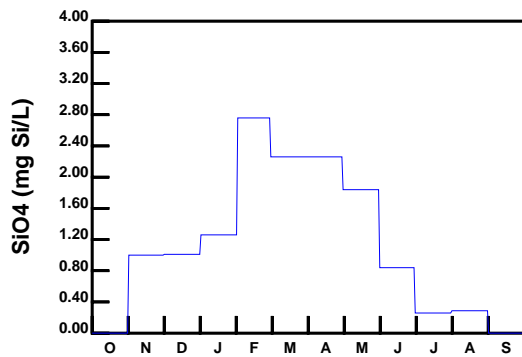
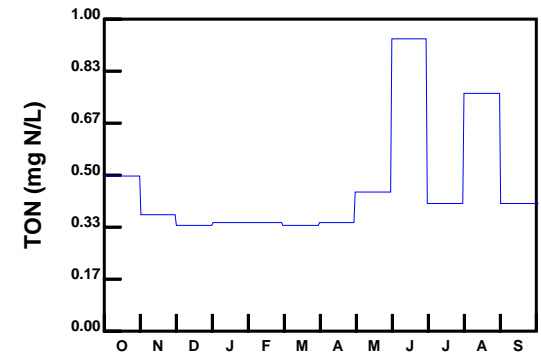
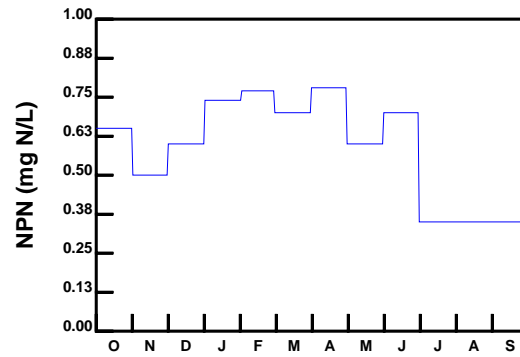
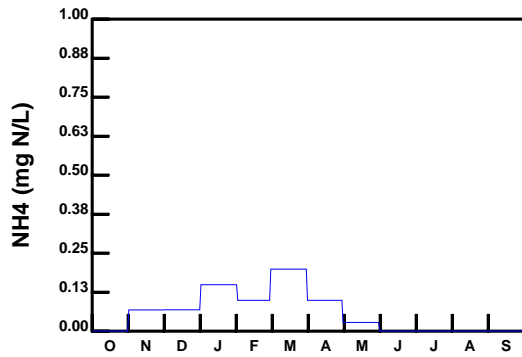
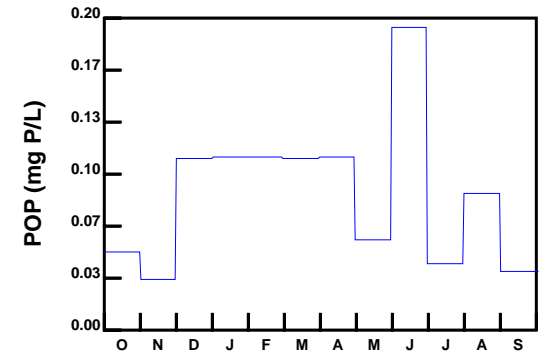
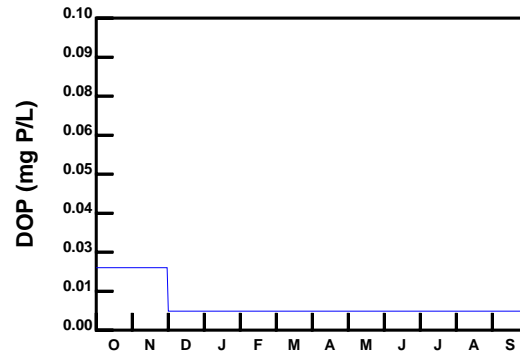
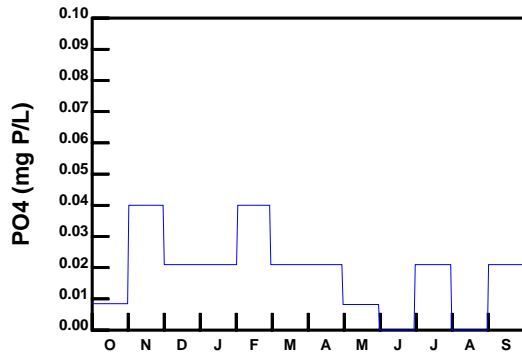
**SWEM - ESOPUS CREEK**

**Boundary Condition - Water Year 8889**



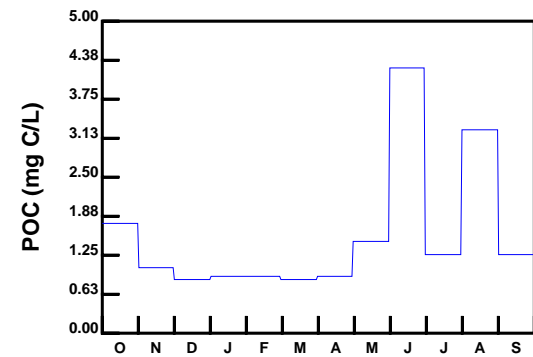
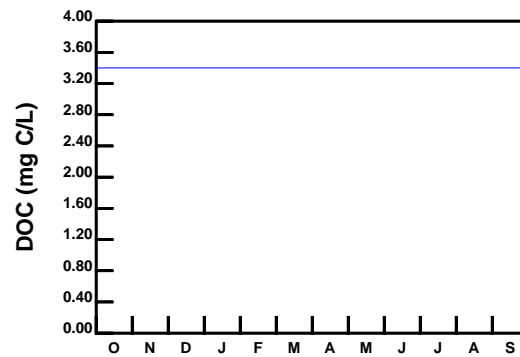
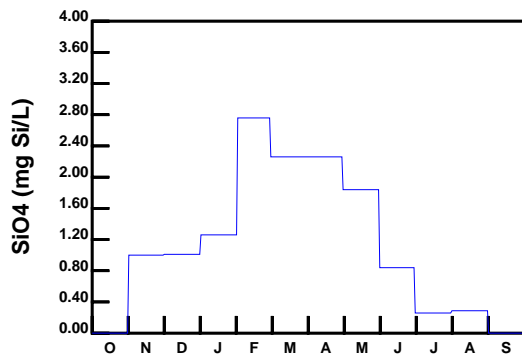
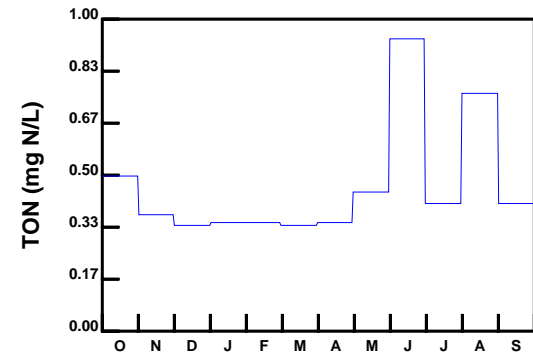
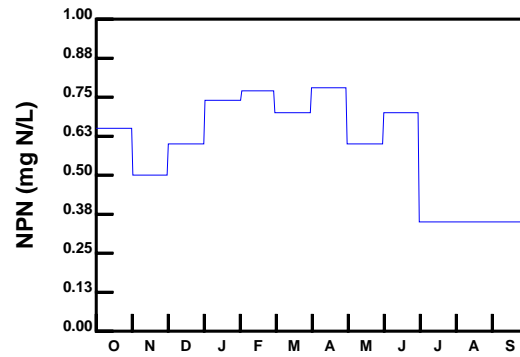
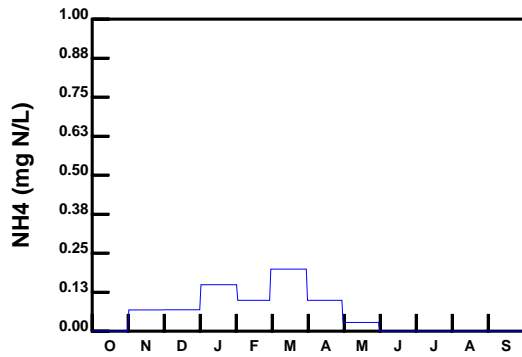
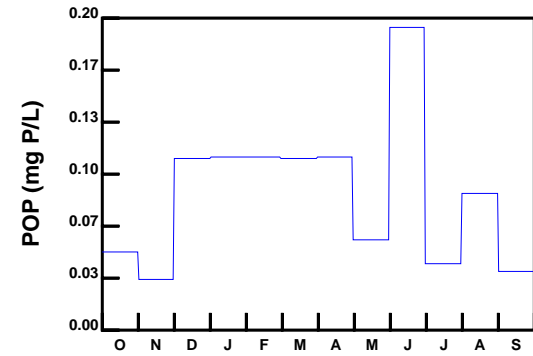
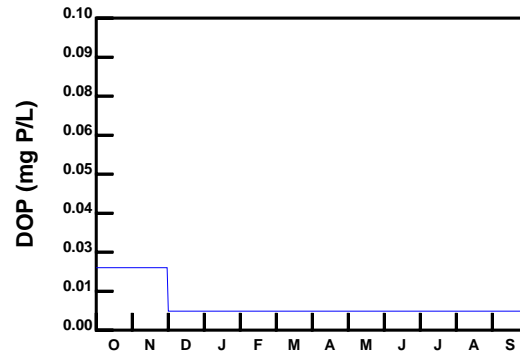
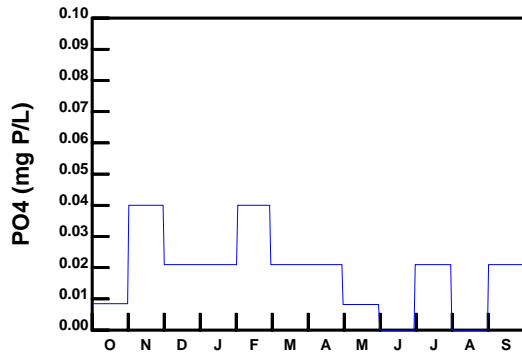
**SWEM - ROUNDOUT CREEK / WALLKILL RIVER**

**Boundary Condition - Water Year 8889**



**SWEM - WAPPINGER CREEK**

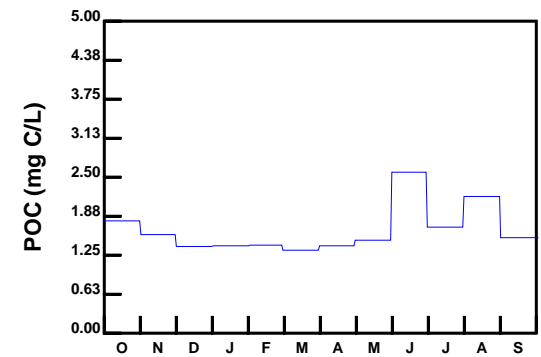
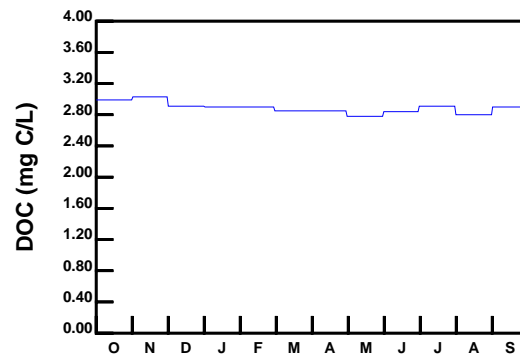
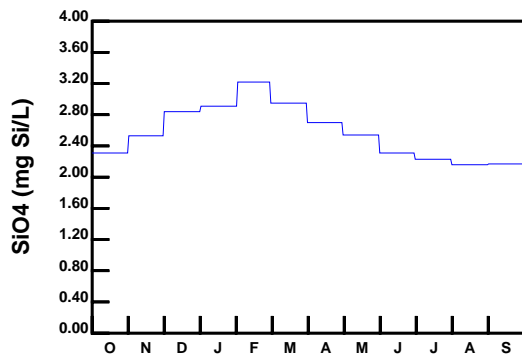
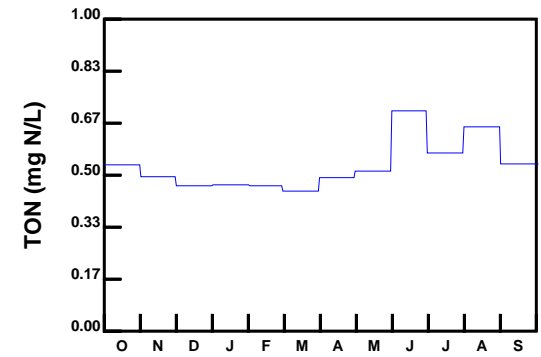
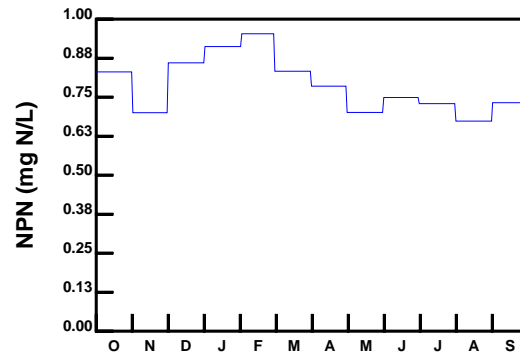
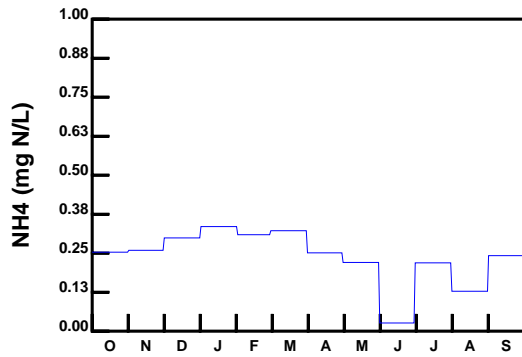
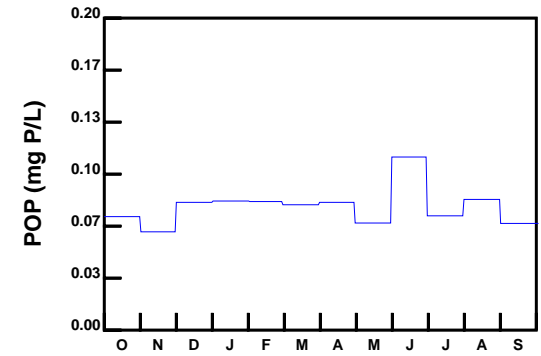
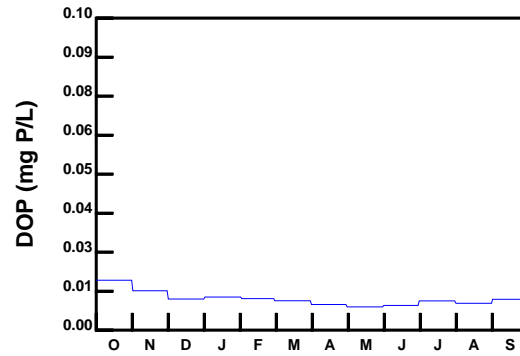
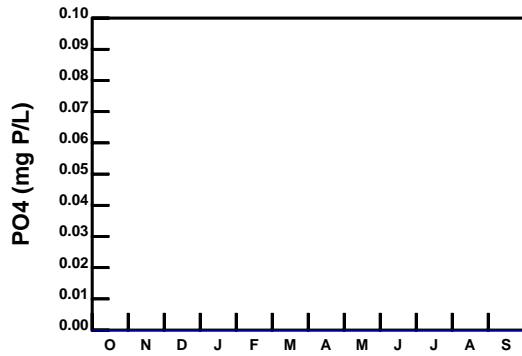
**Boundary Condition - Water Year 8889**



**SWEM - CROTON CREEK**

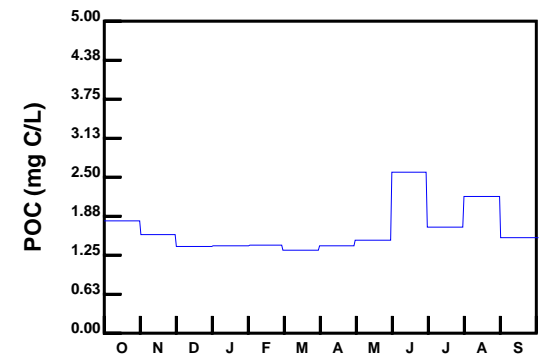
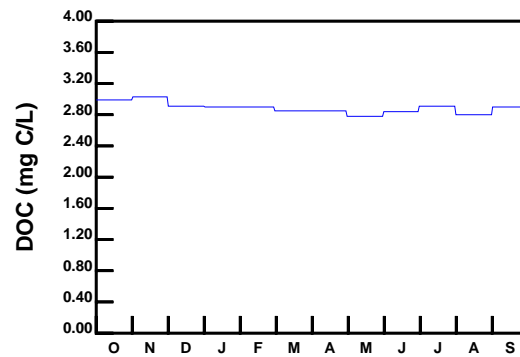
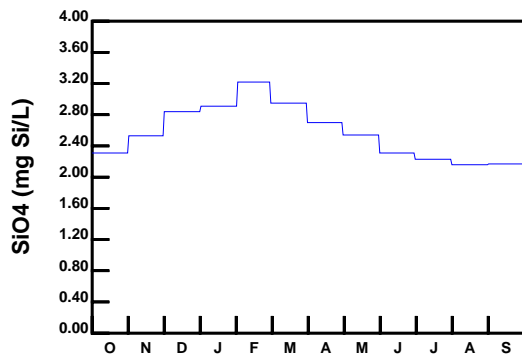
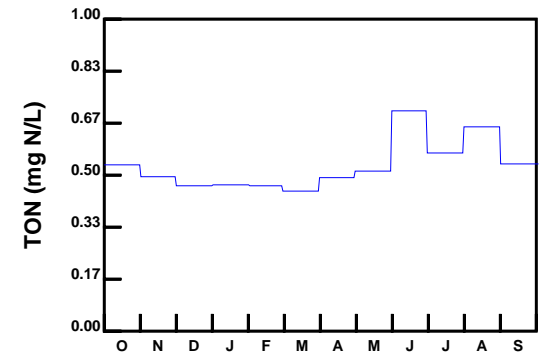
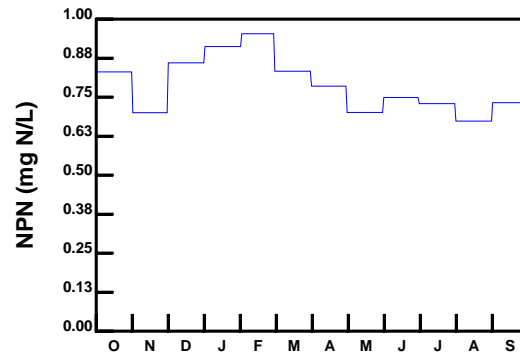
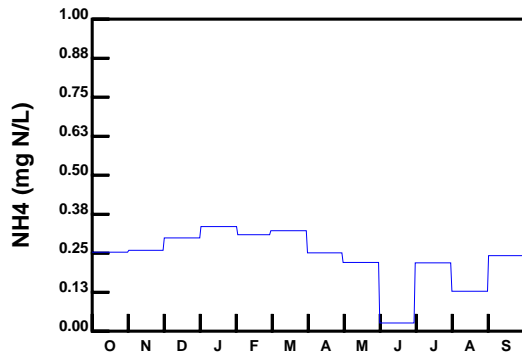
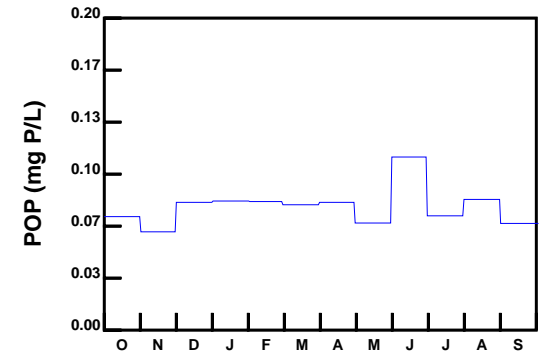
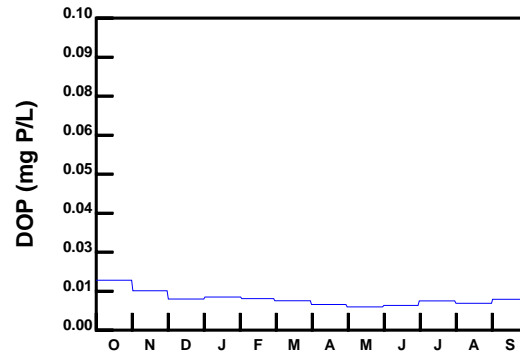
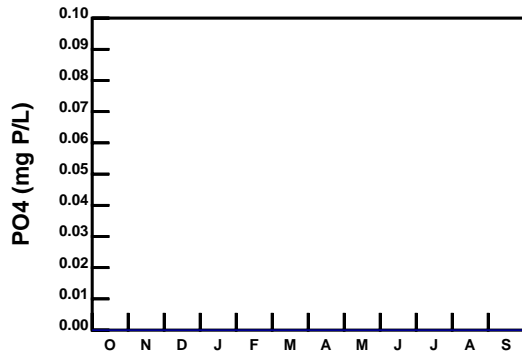
**Boundary Condition - Water Year 8889**





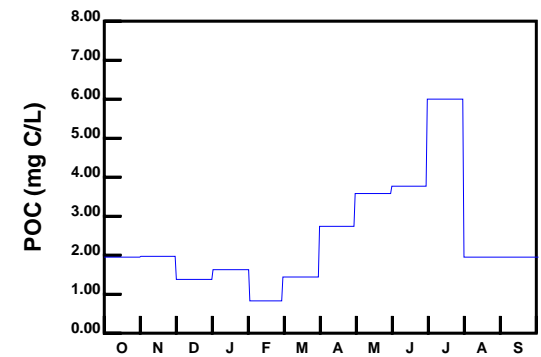
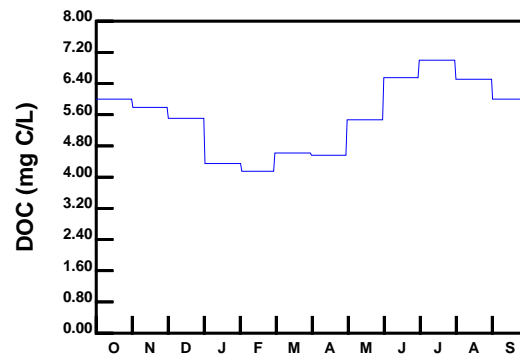
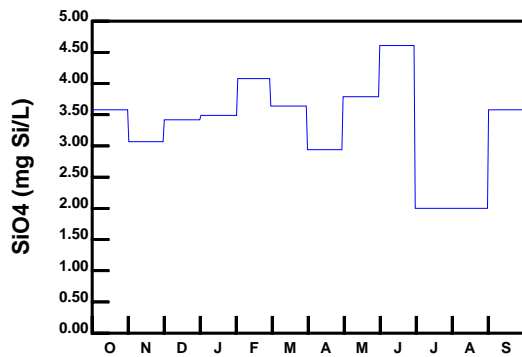
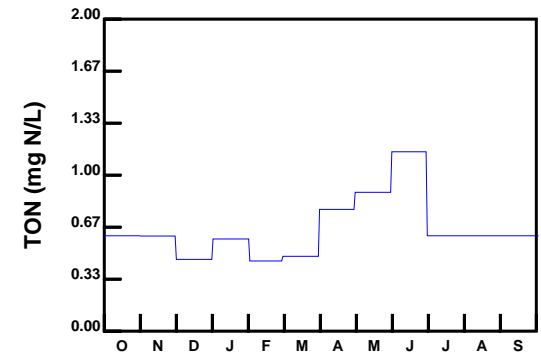
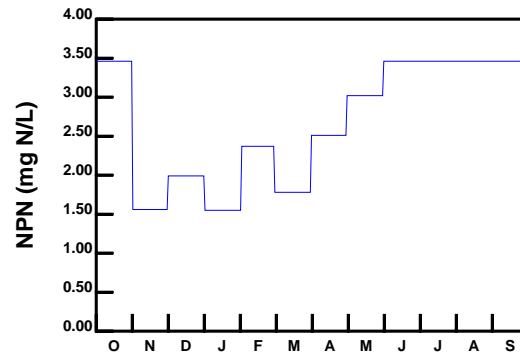
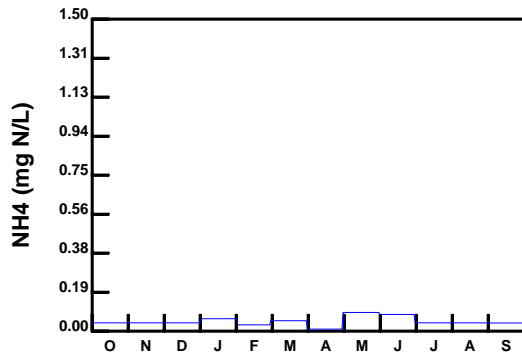
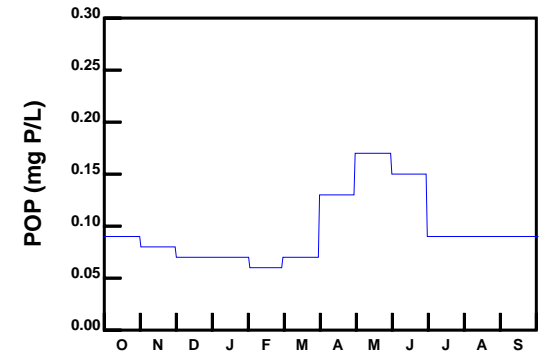
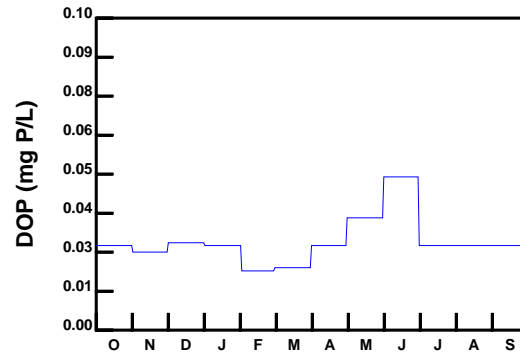
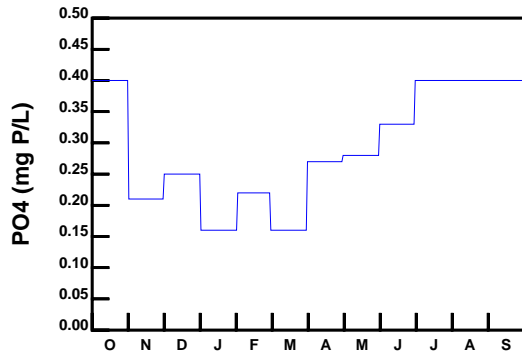
**SWEM - SAWMILL CREEK**

**Boundary Condition - Water Year 8889**



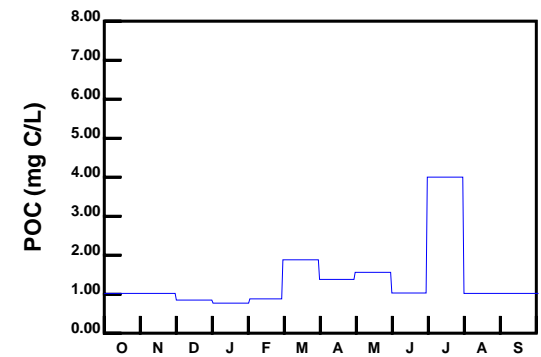
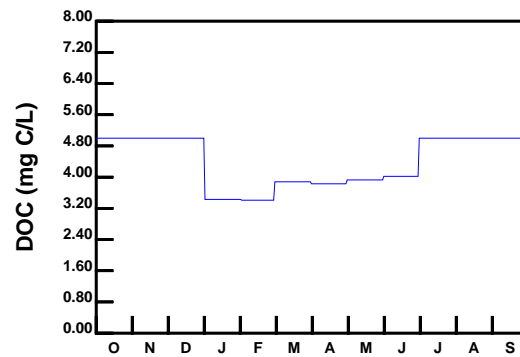
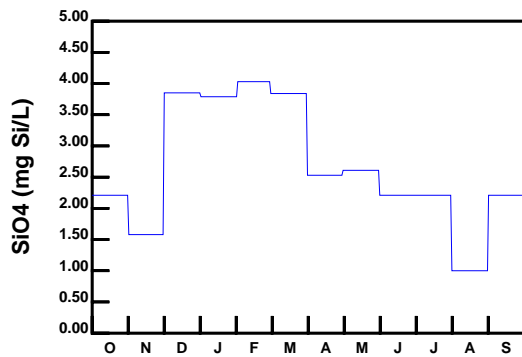
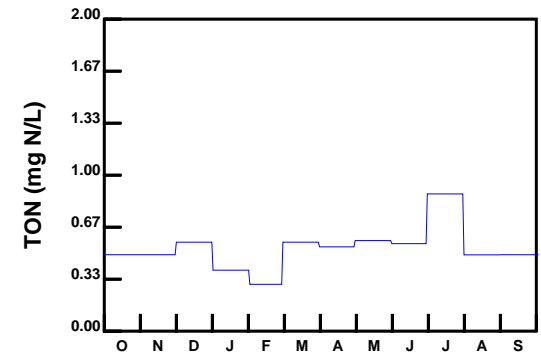
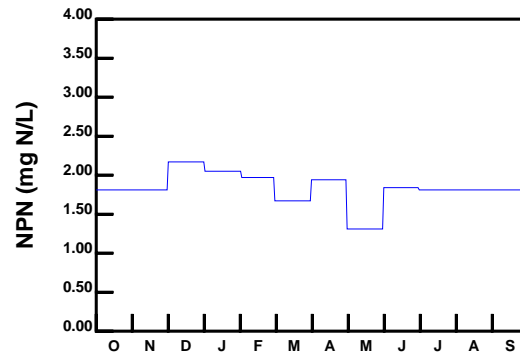
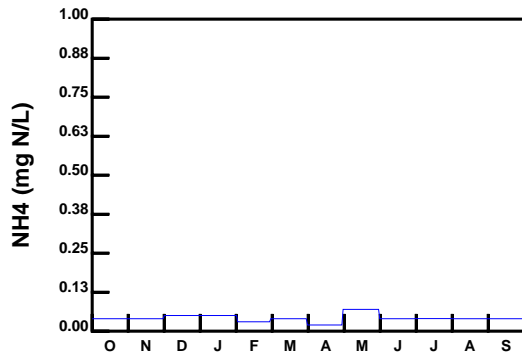
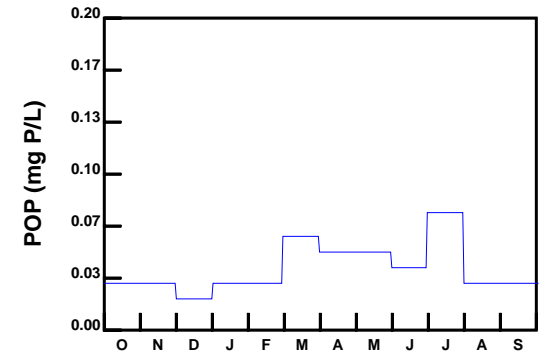
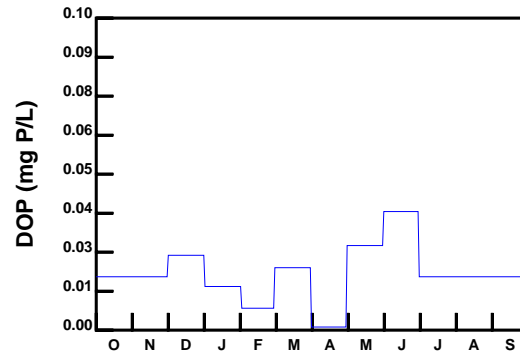
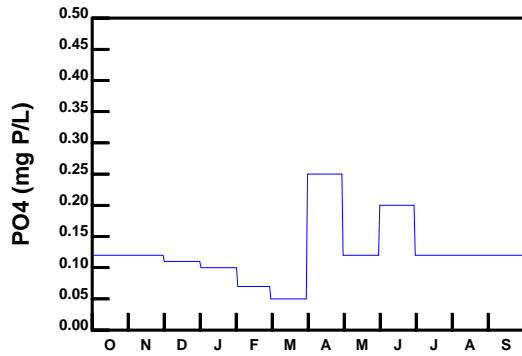
**SWEM - BRONX RIVER**

**Boundary Condition - Water Year 8889**



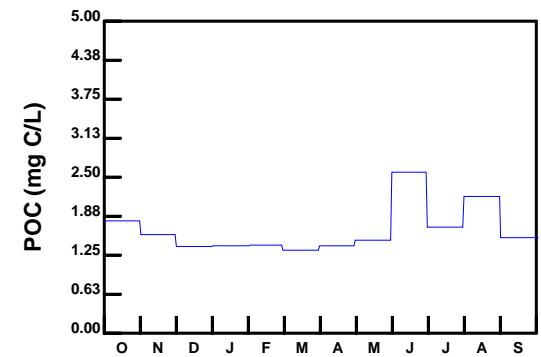
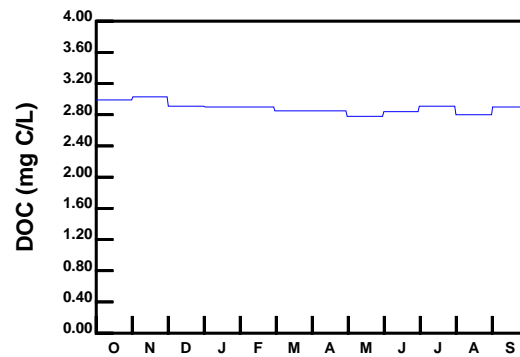
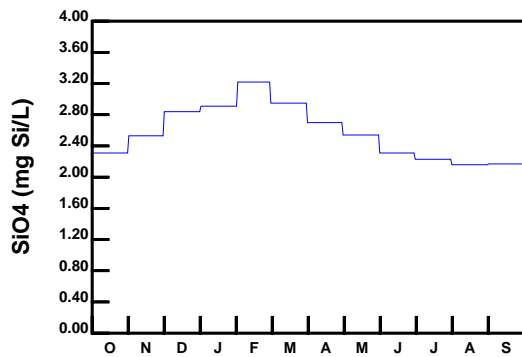
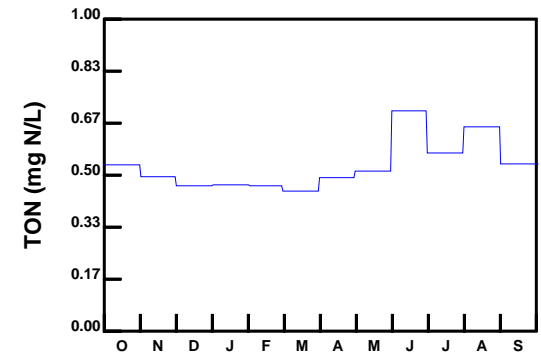
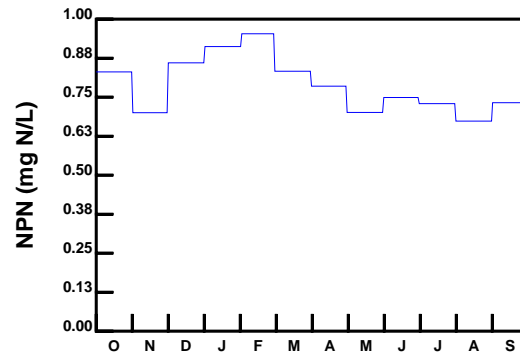
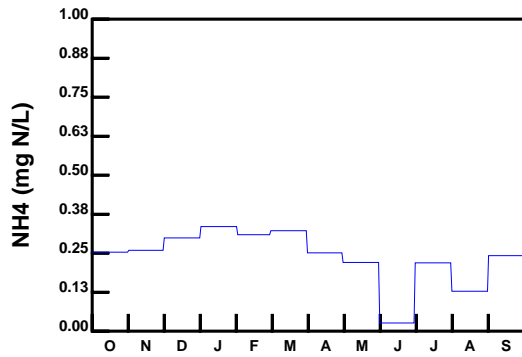
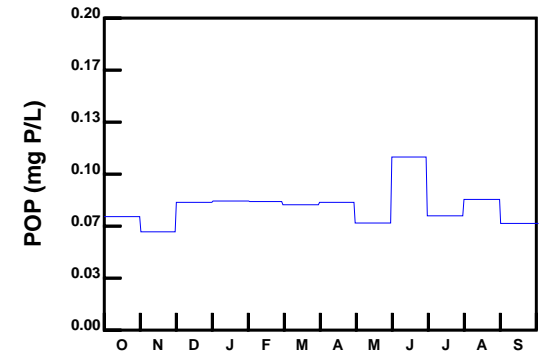
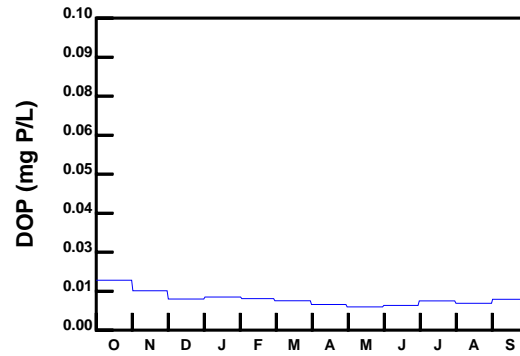
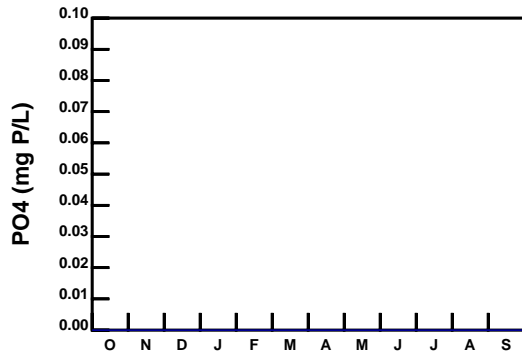
**SWEM - SADDLE RIVER**

**Boundary Condition - Water Year 8889**



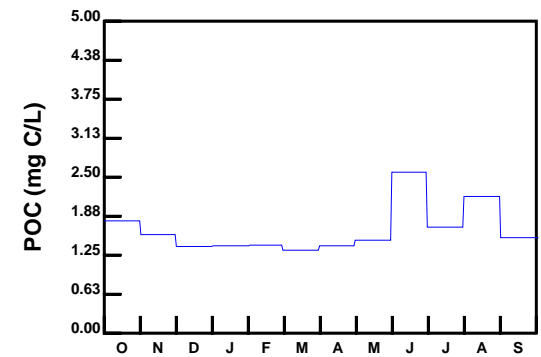
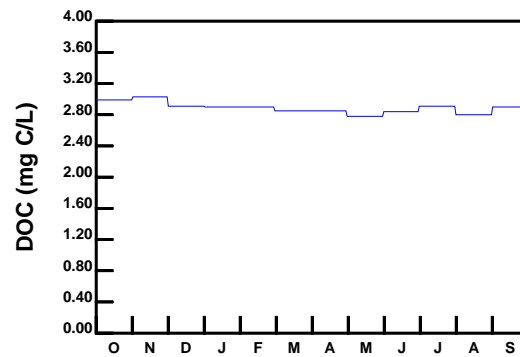
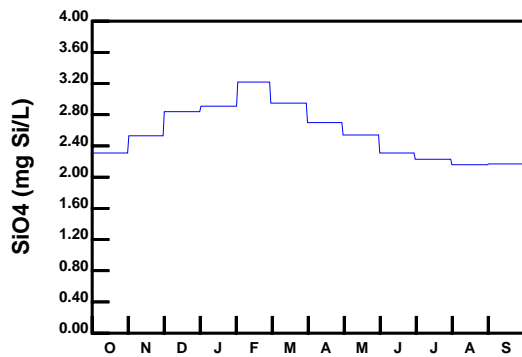
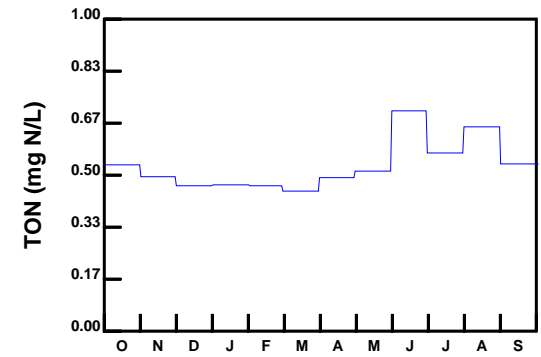
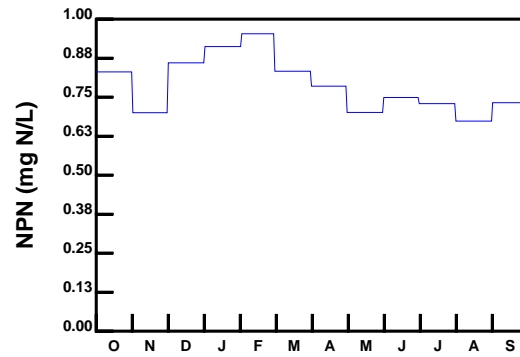
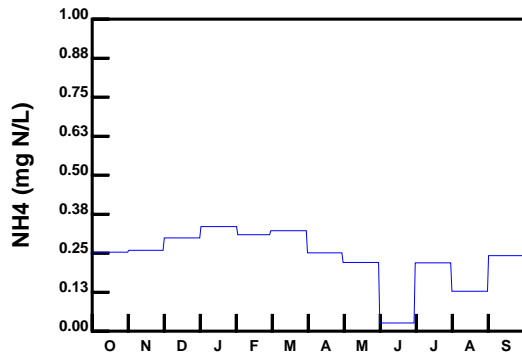
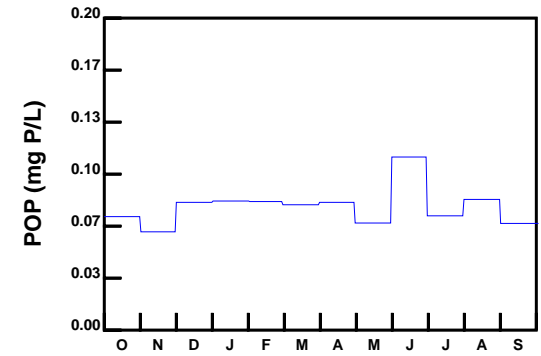
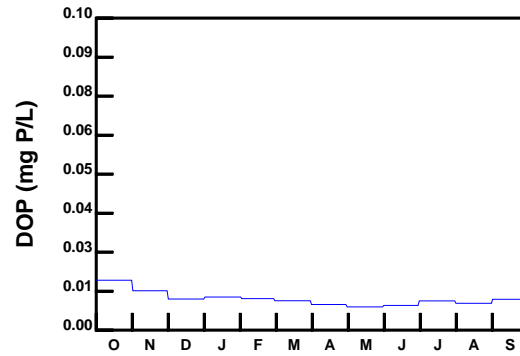
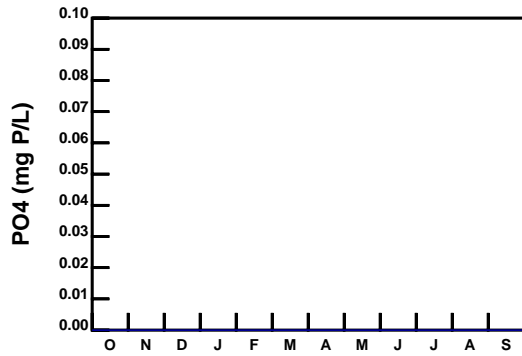
**SWEM - SOUTH RIVER**

**Boundary Condition - Water Year 8889**



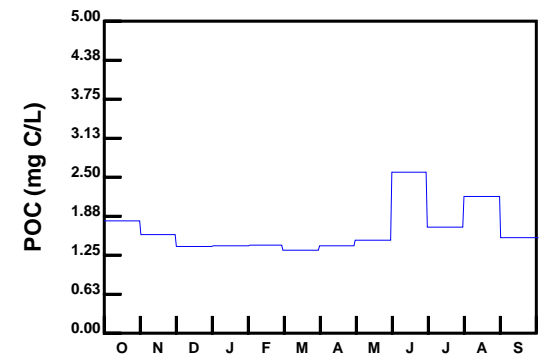
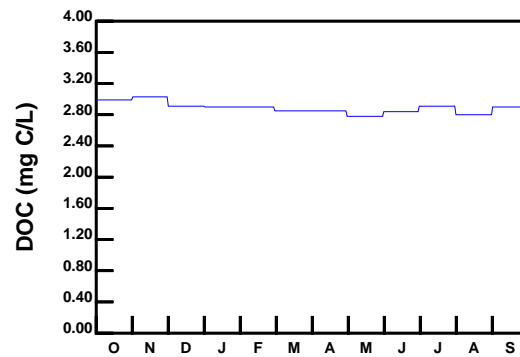
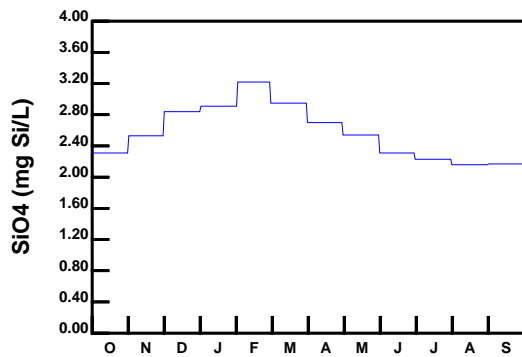
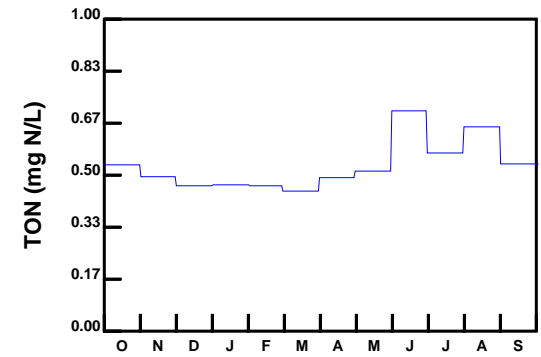
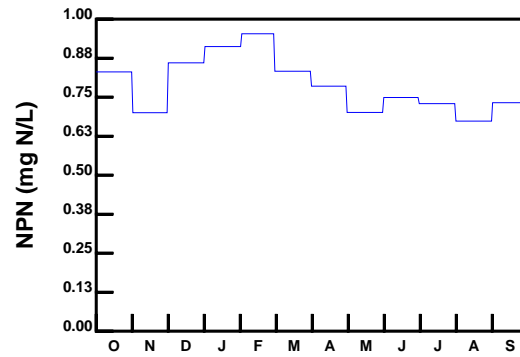
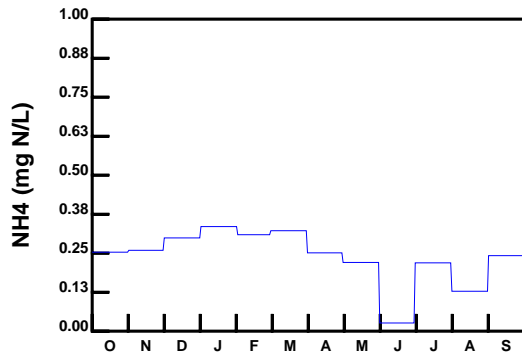
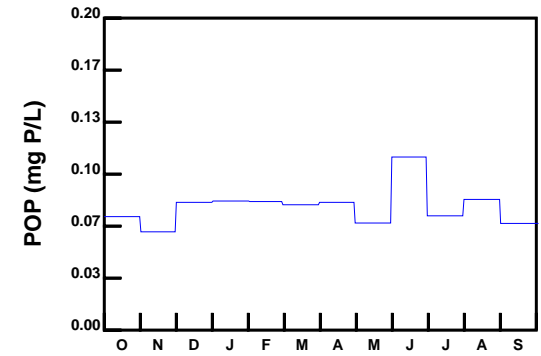
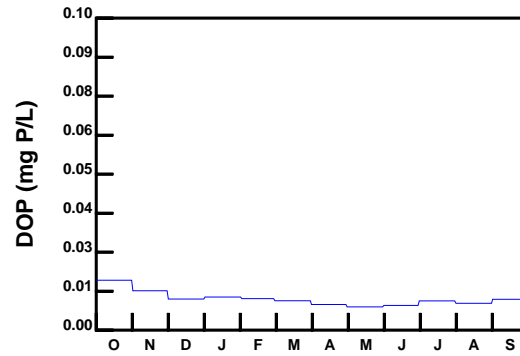
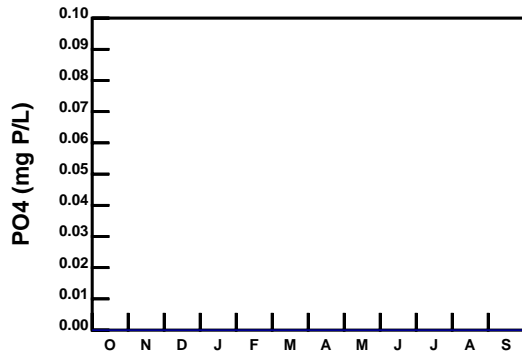
**SWEM - NAVESINK AND SHREWSBURY RIVERS**

**Boundary Condition - Water Year 8889**



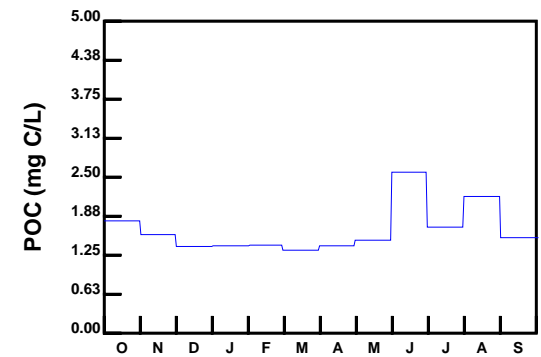
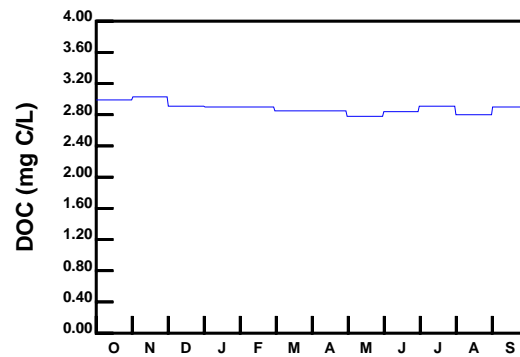
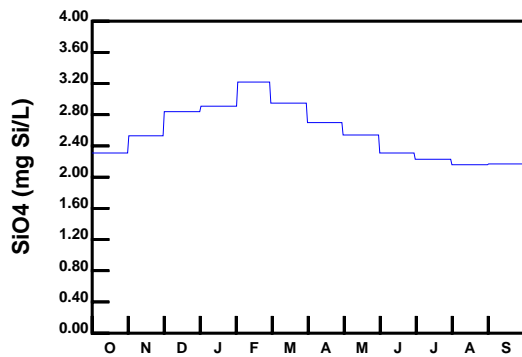
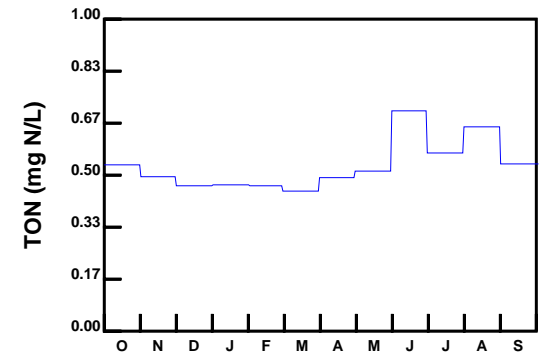
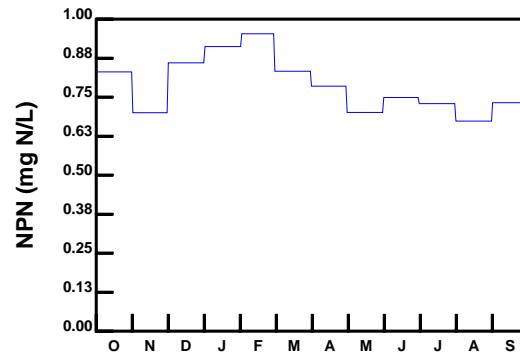
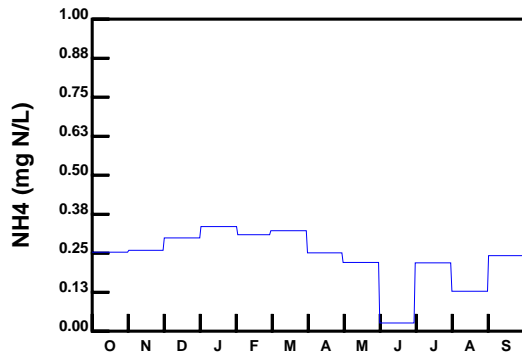
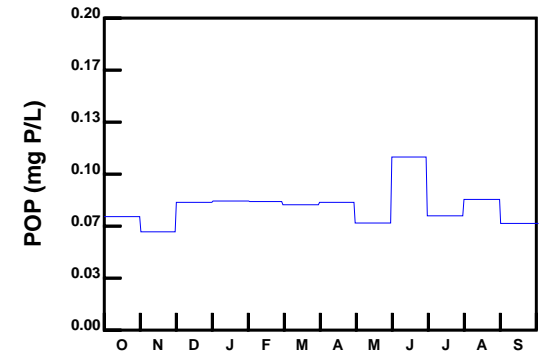
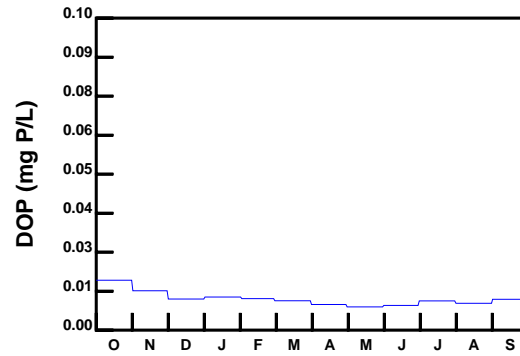
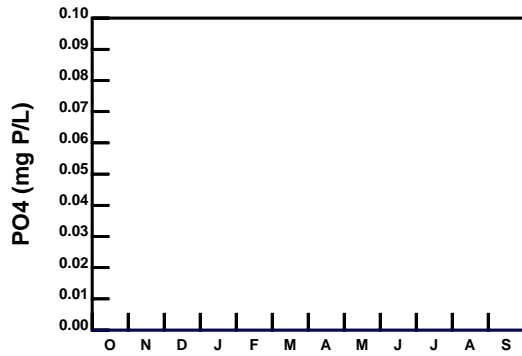
**SWEM - MANASQUAN RIVER**

**Boundary Condition - Water Year 8889**



**SWEM - METEDECONK AND TOMS RIVERS**

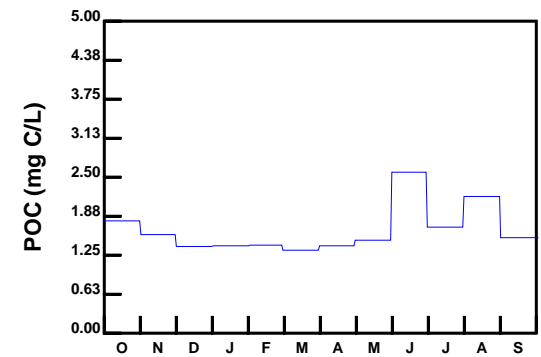
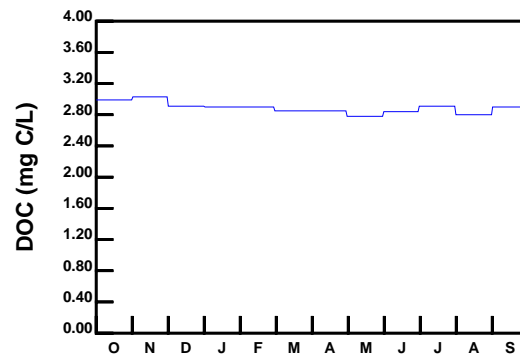
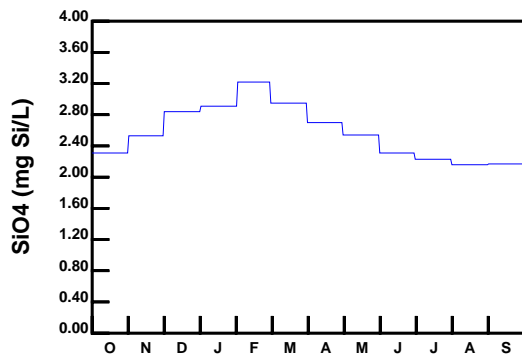
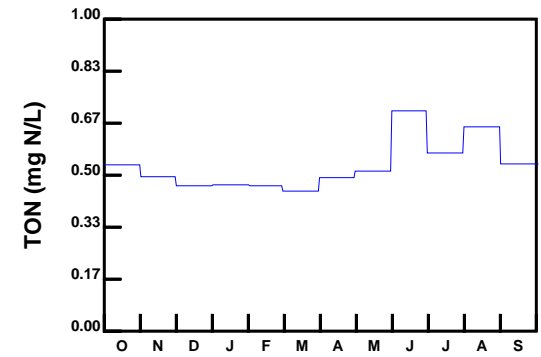
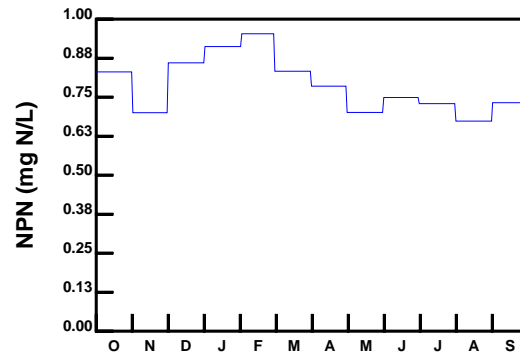
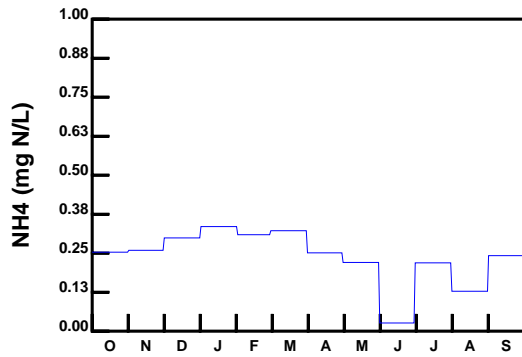
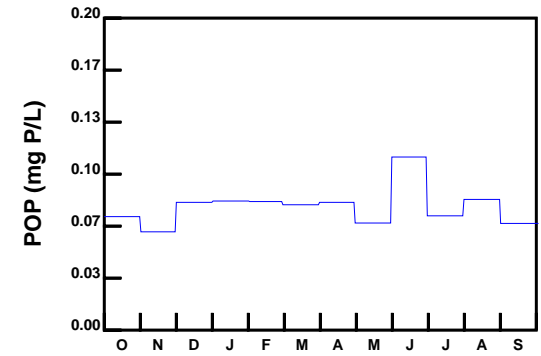
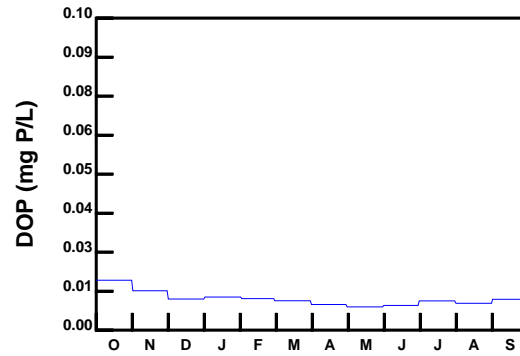
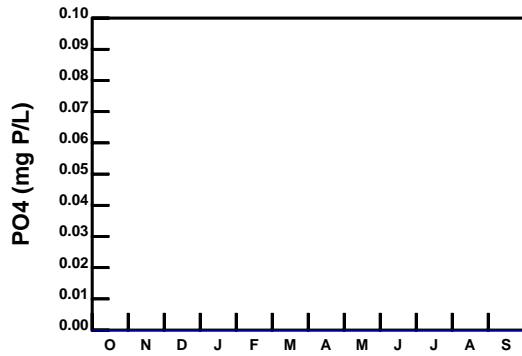
**Boundary Condition - Water Year 8889**



**SWEM - MULLICA RIVER AND WESTECUNK CREEK**

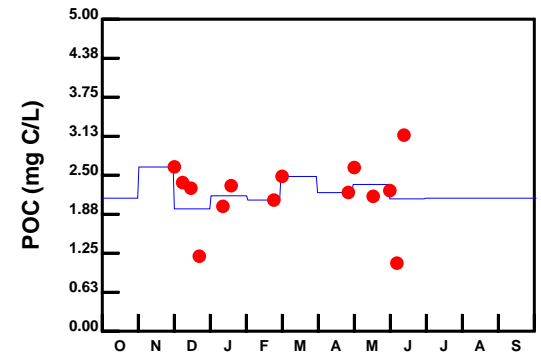
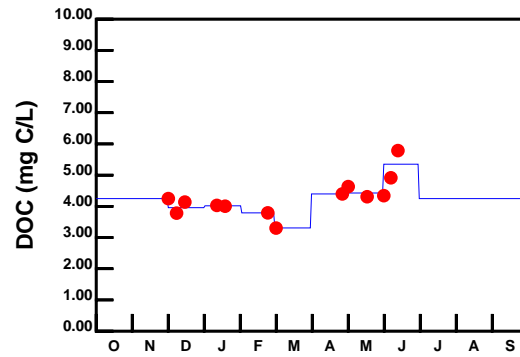
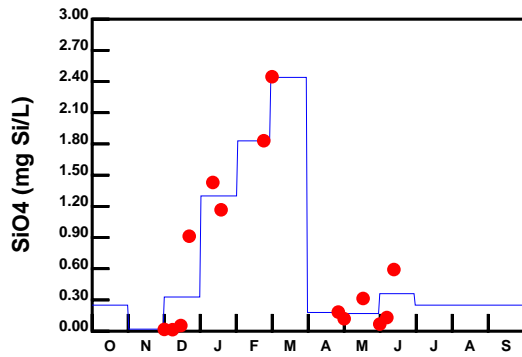
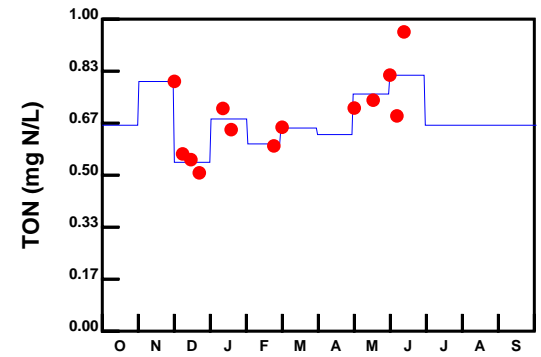
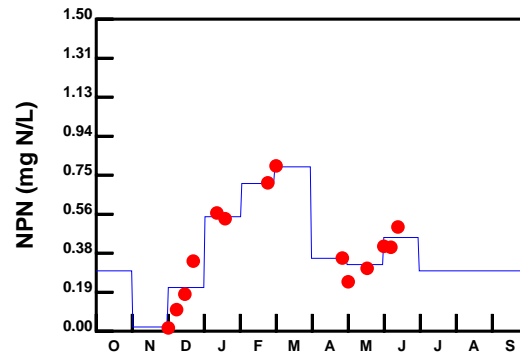
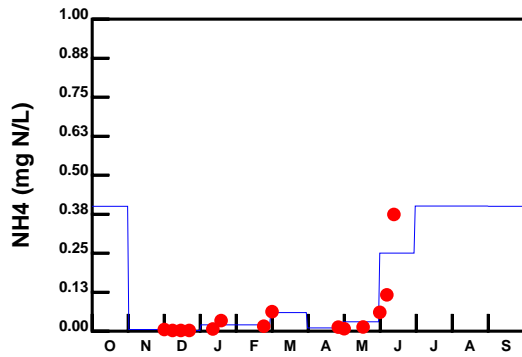
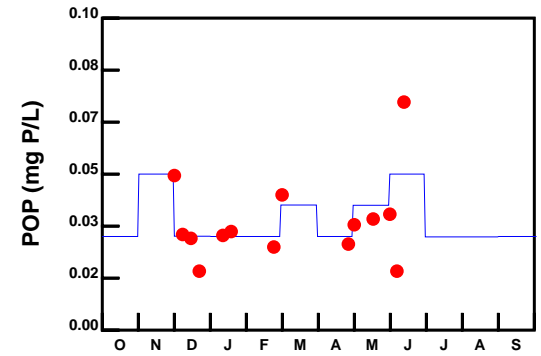
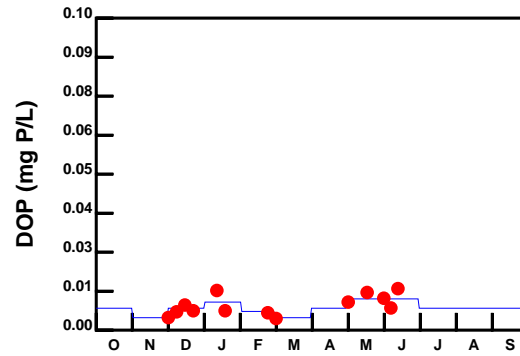
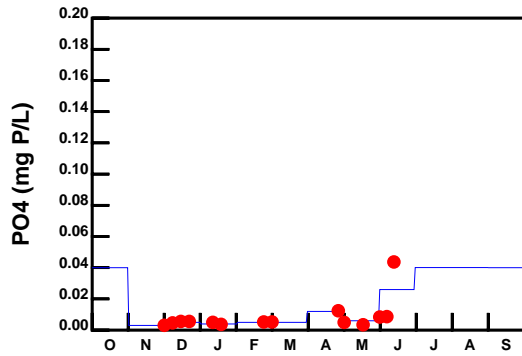
**Boundary Condition - Water Year 8889**



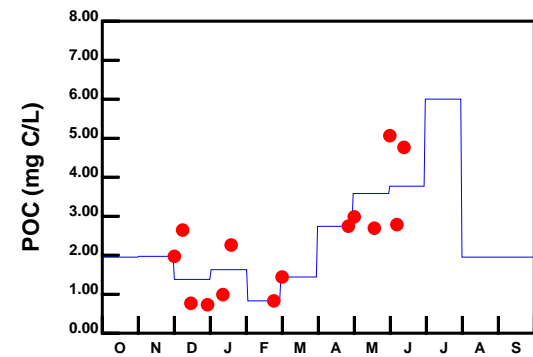
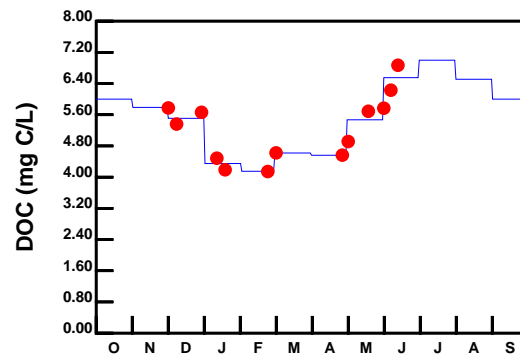
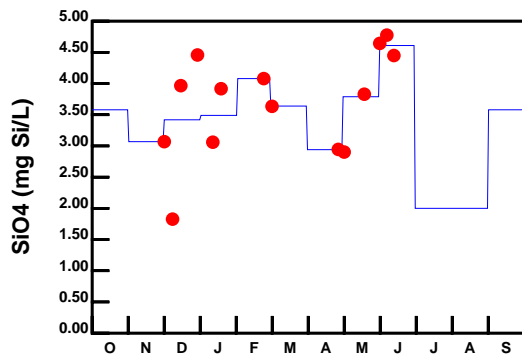
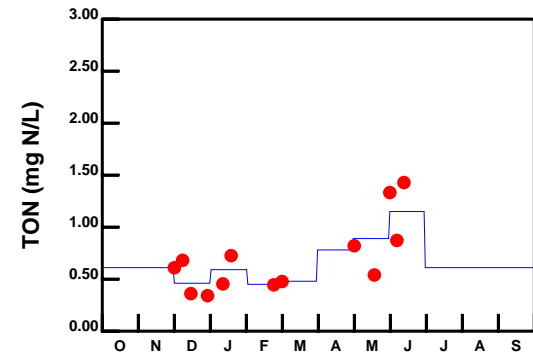
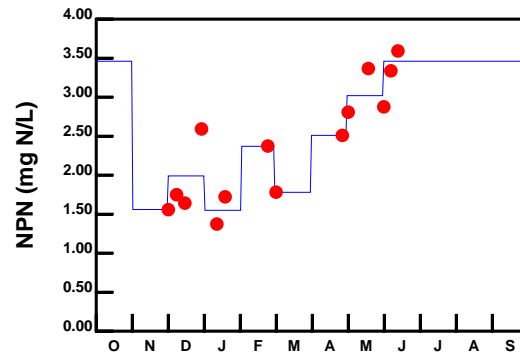
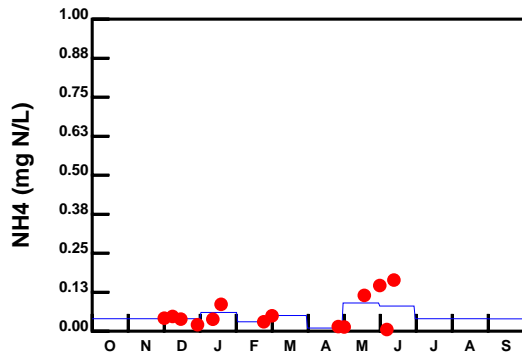
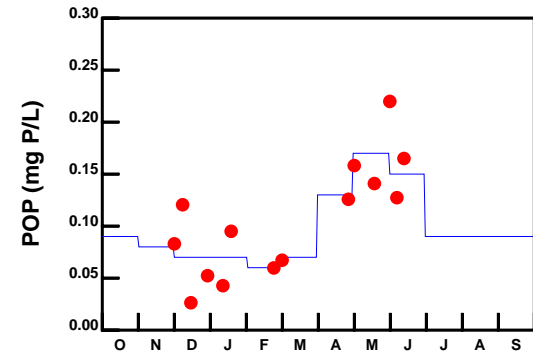
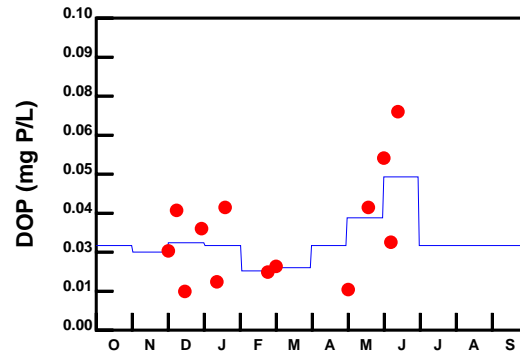
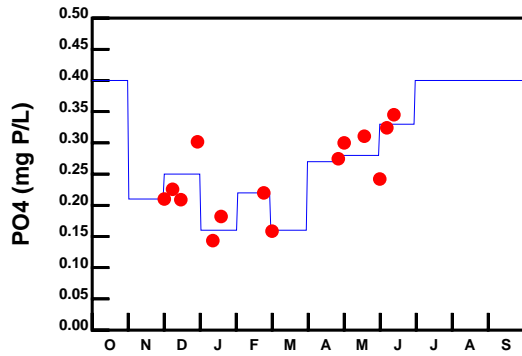


**SWEM - TUCKAHOE AND GREAT EGG RIVERS**

**Boundary Condition - Water Year 8889**

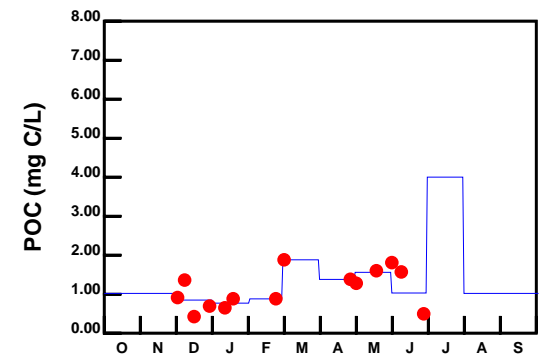
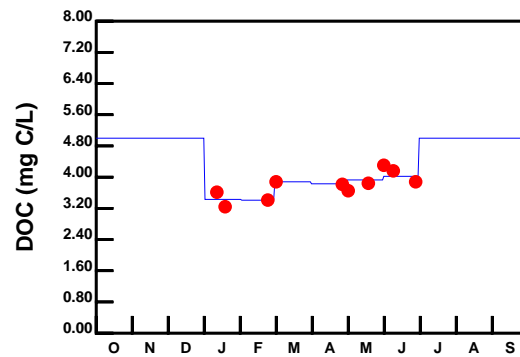
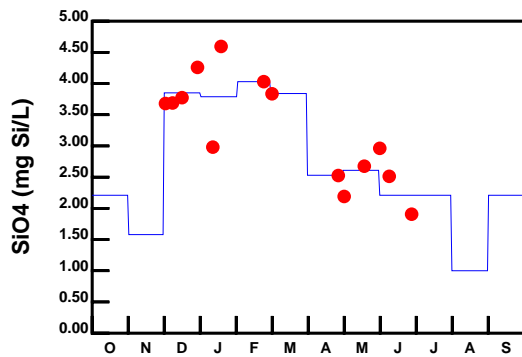
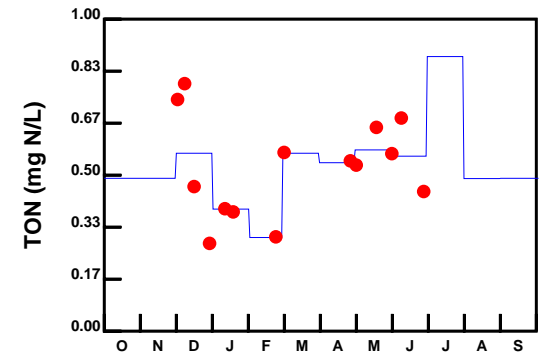
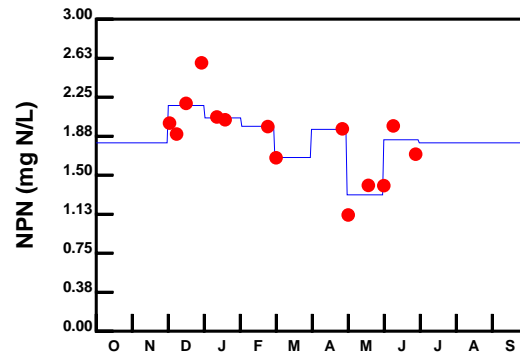
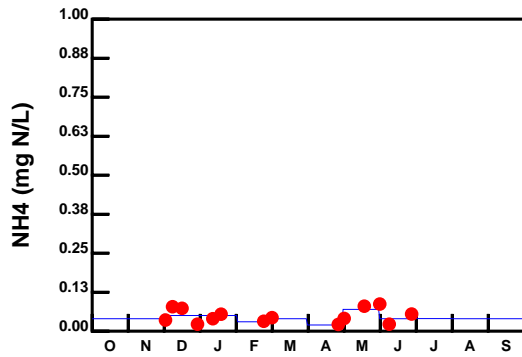
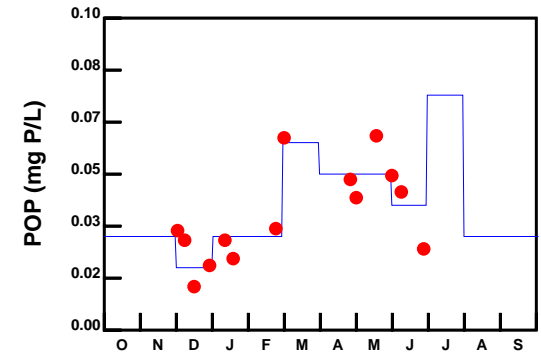
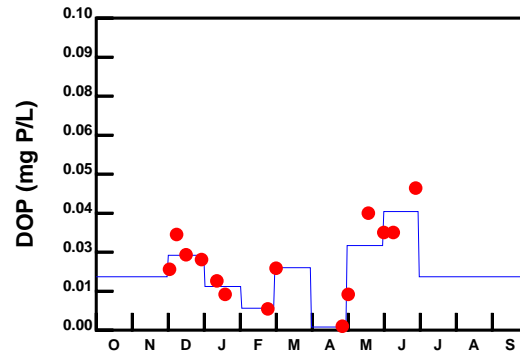
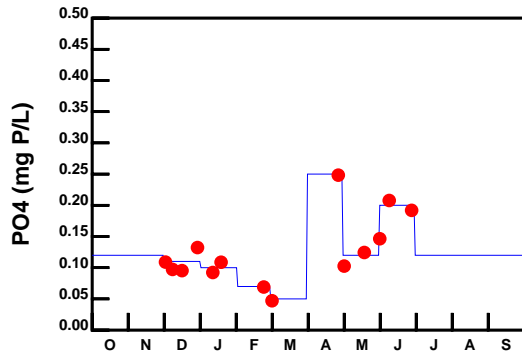


**SWEM - HACKENSACK RIVER**  
**Boundary Condition - Water Year 8889**



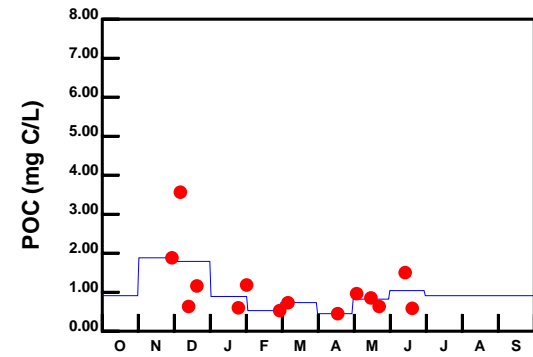
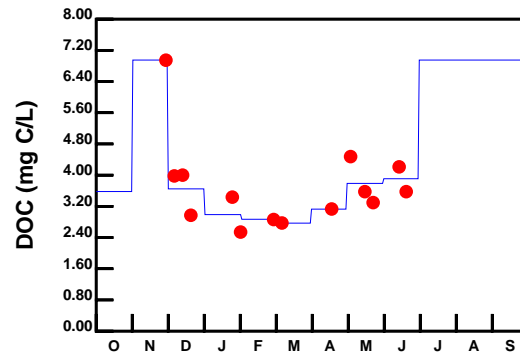
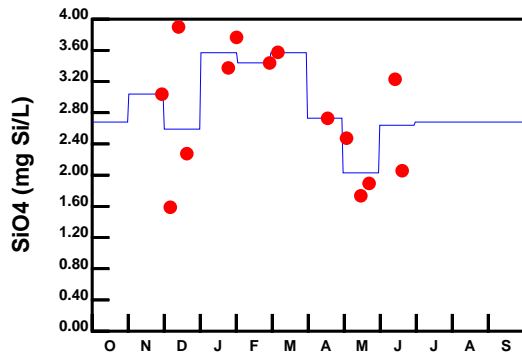
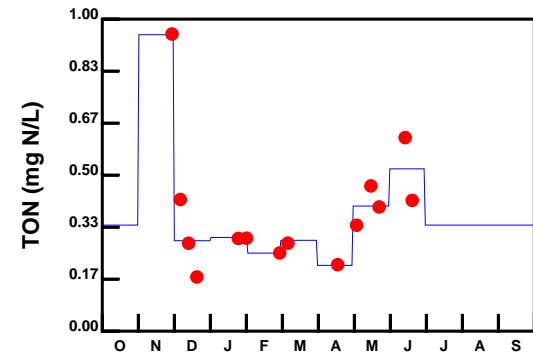
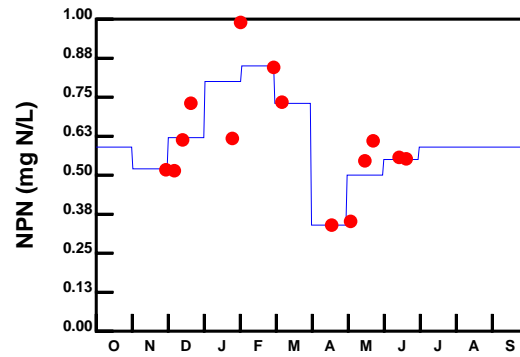
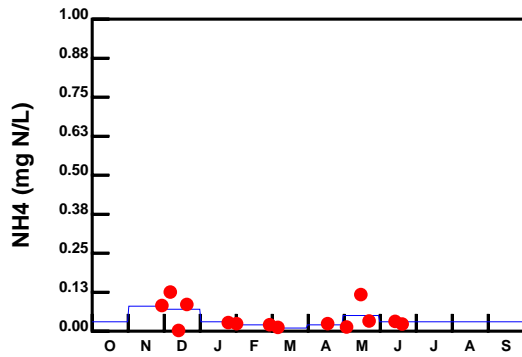
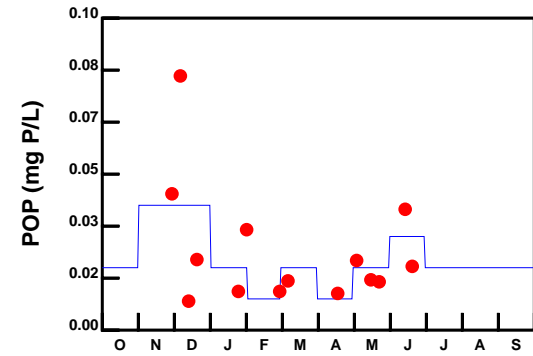
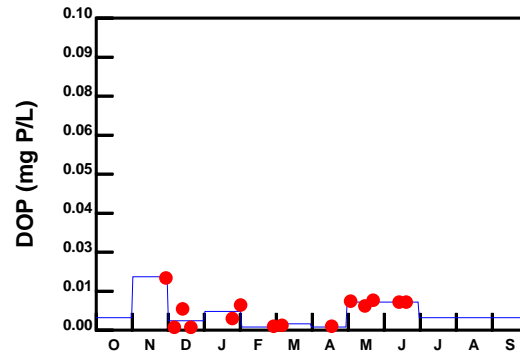
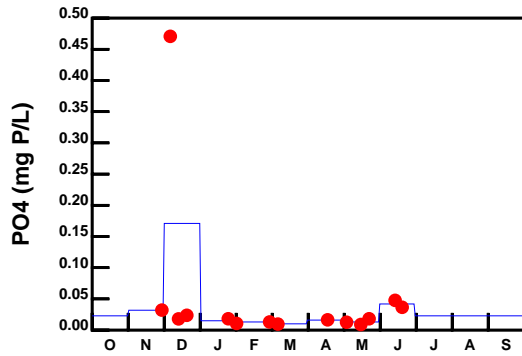
**SWEM - PASSAIC RIVER**

**Boundary Condition - Water Year 8889**



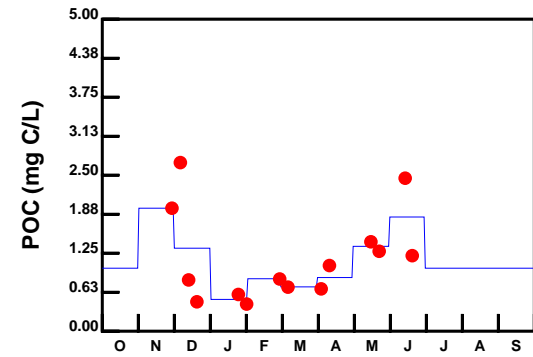
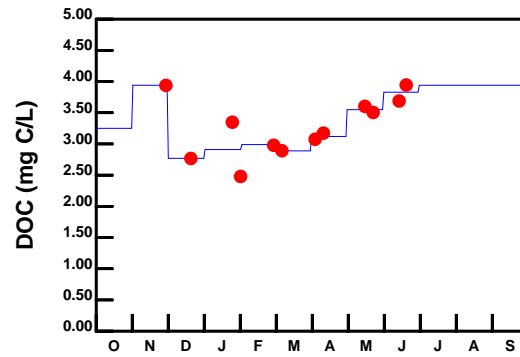
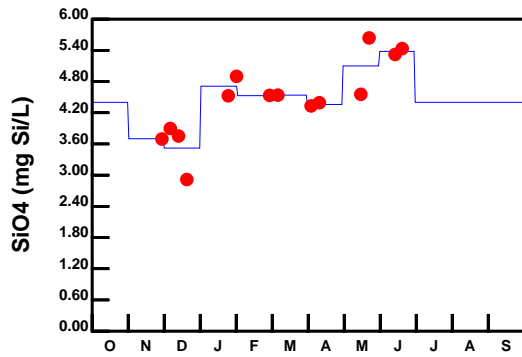
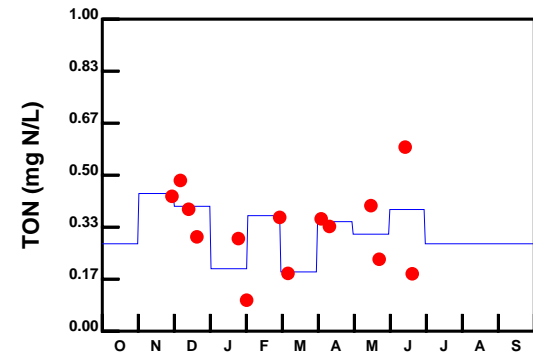
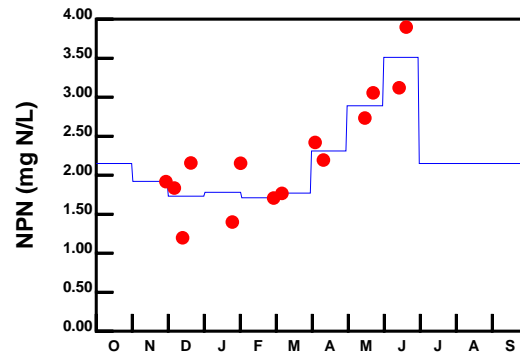
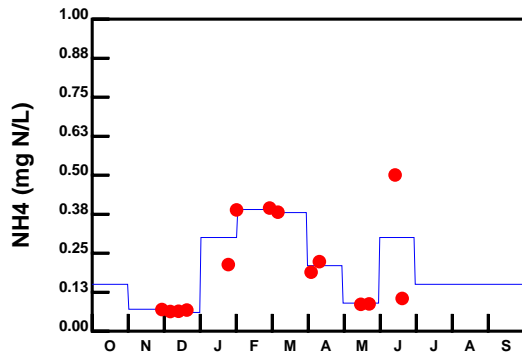
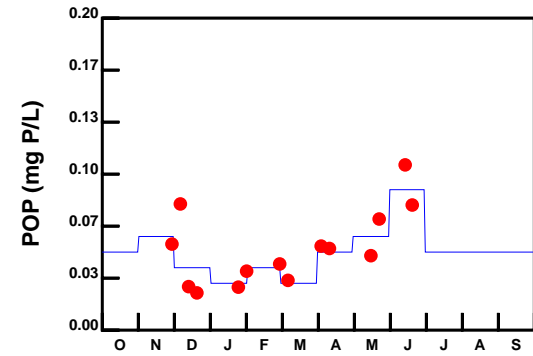
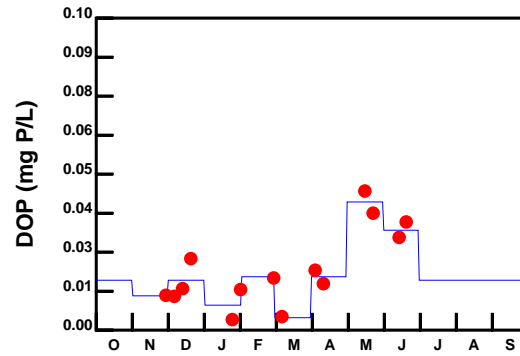
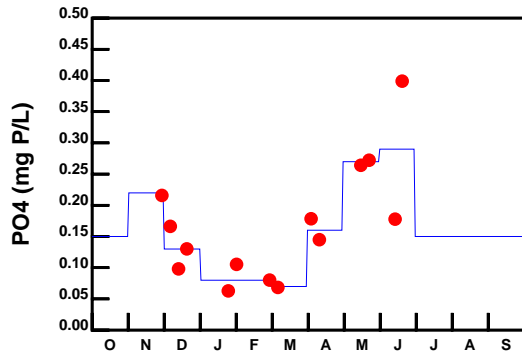
**SWEM - RARITAN RIVER**

**Boundary Condition - Water Year 8889**

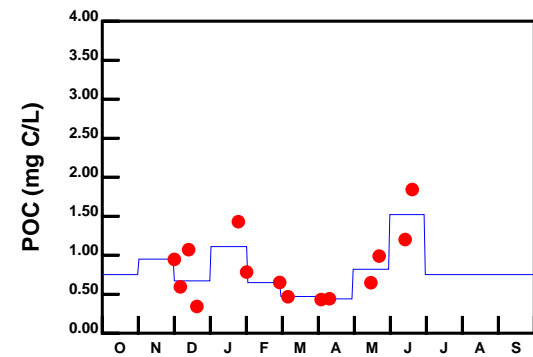
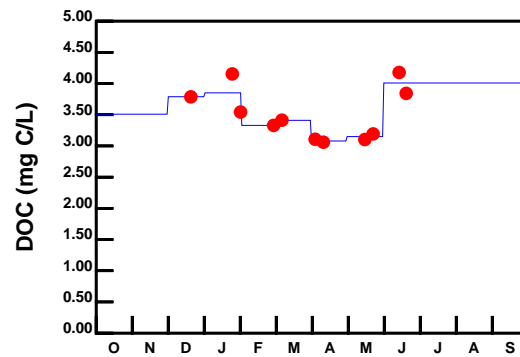
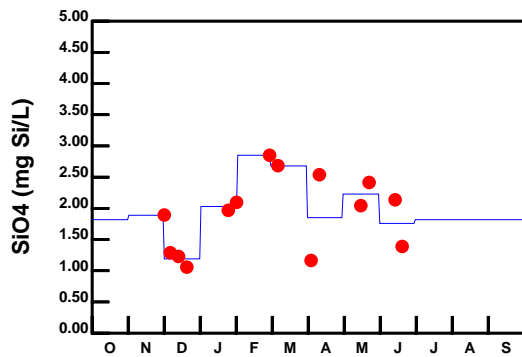
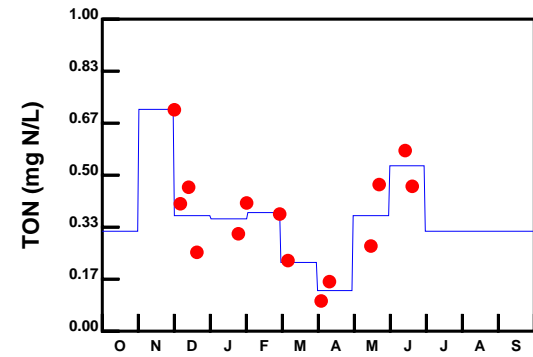
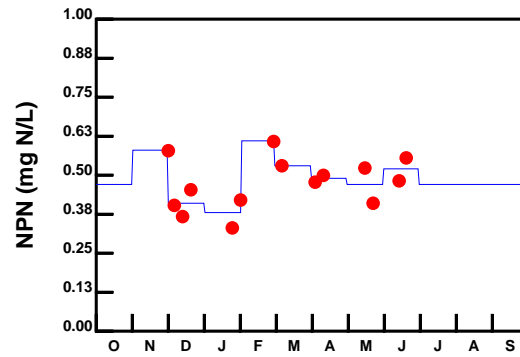
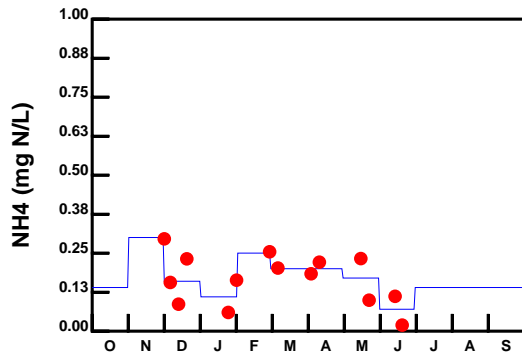
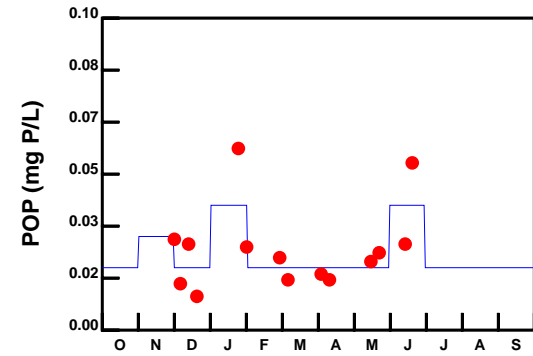
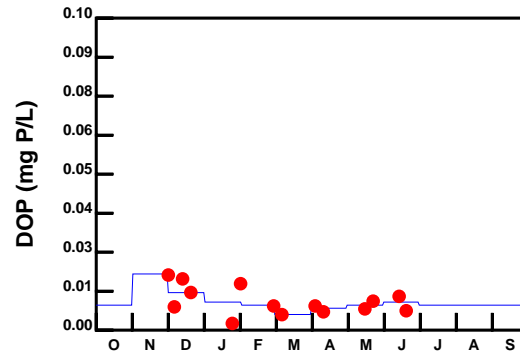
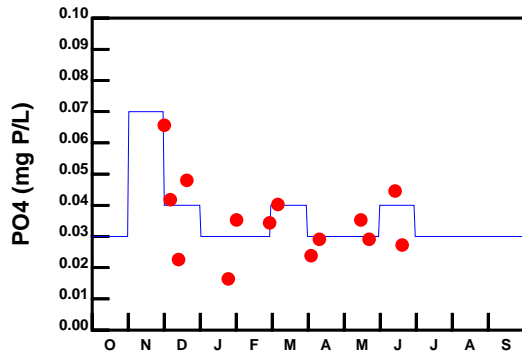


**SWEM - NORWALK RIVER**

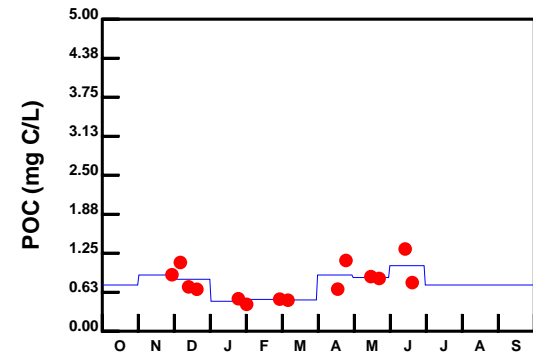
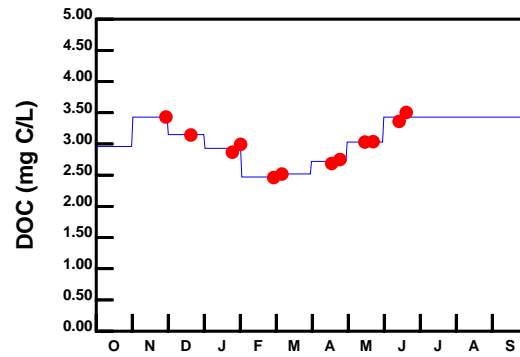
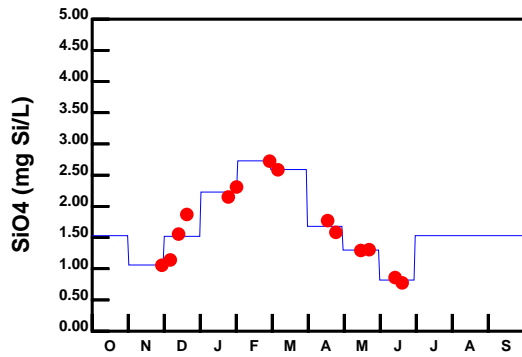
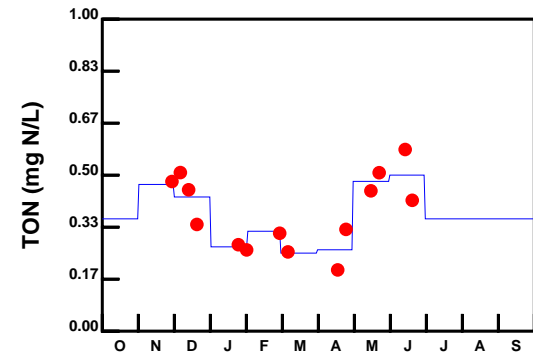
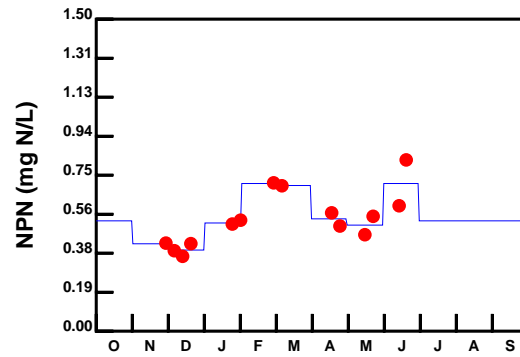
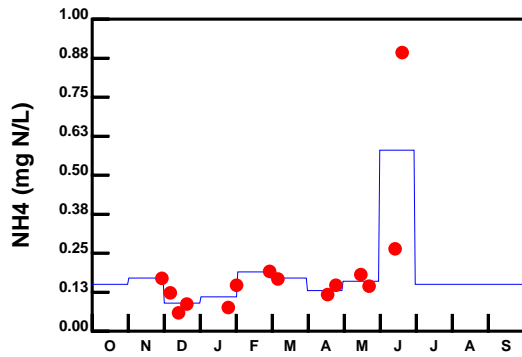
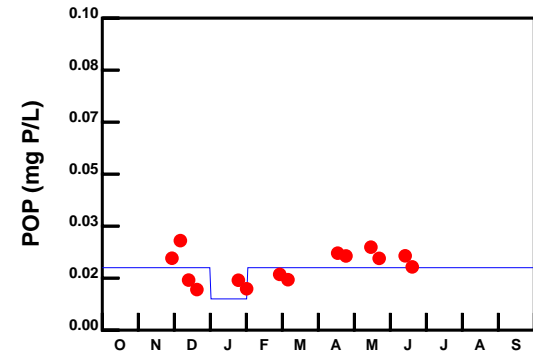
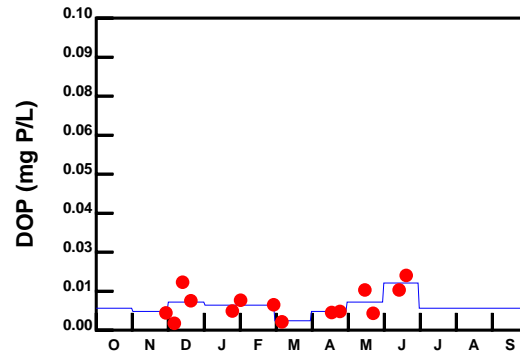
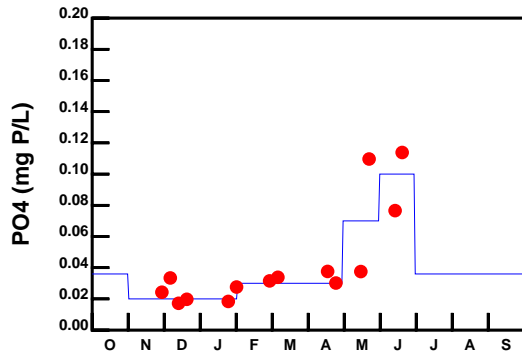
**Boundary Condition - Water Year 8889**



**SWEM - QUINNIPIAC RIVER**  
**Boundary Condition - Water Year 8889**



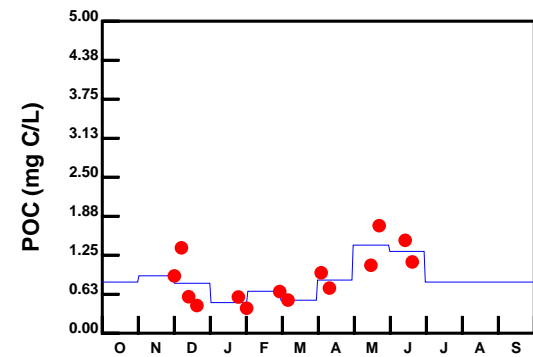
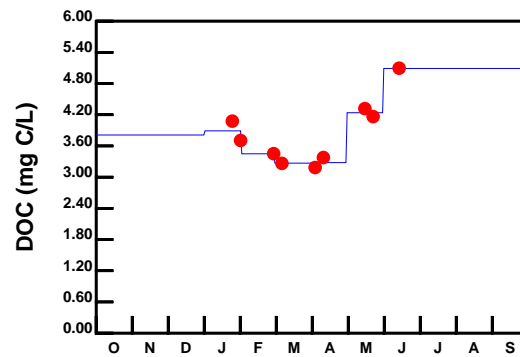
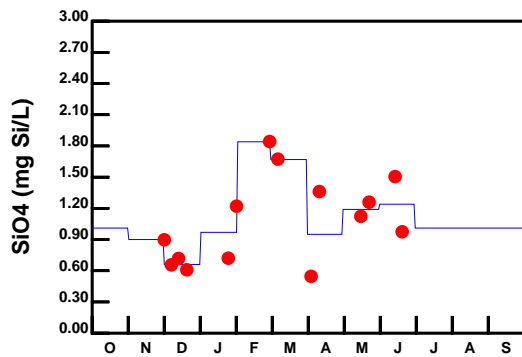
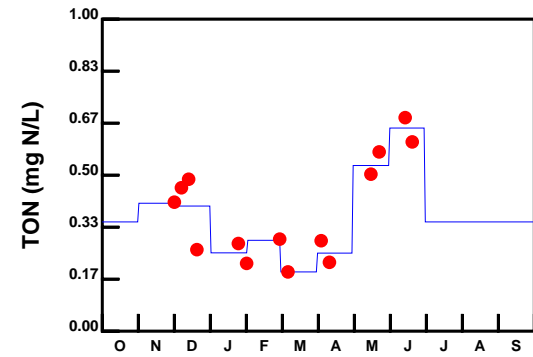
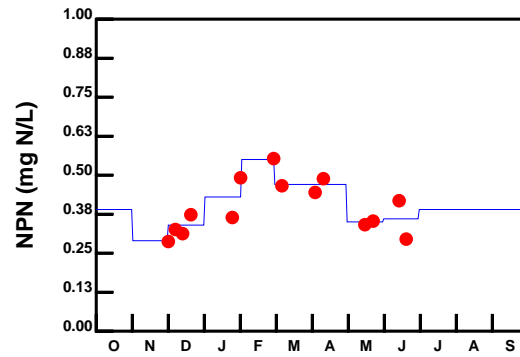
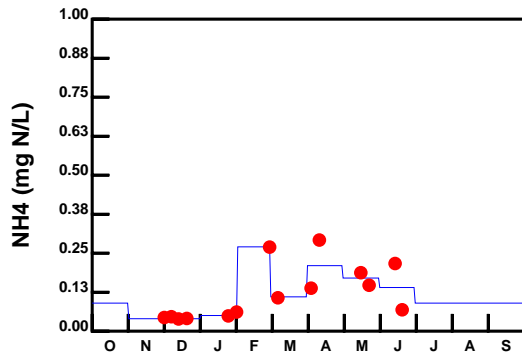
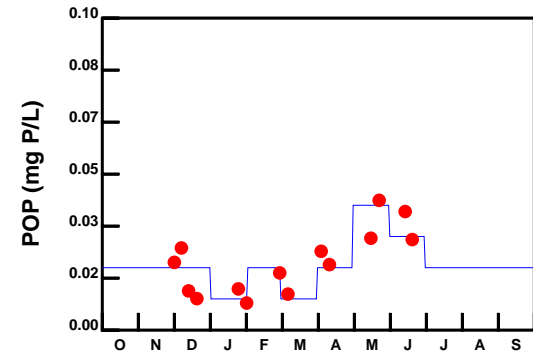
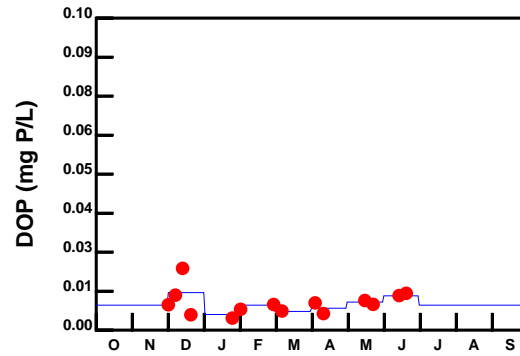
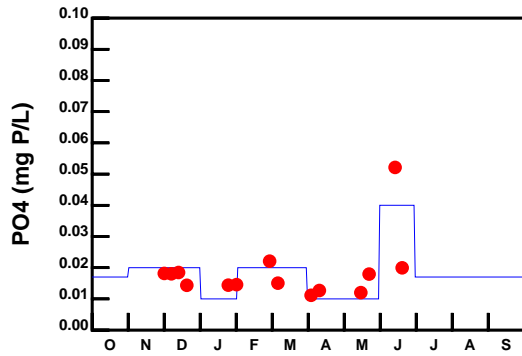
**SWEM - CONNECTICUT RIVER**  
**Boundary Condition - Water Year 8889**



**SWEM - HOUSATONIC AND NAUGATUCK RIVERS**

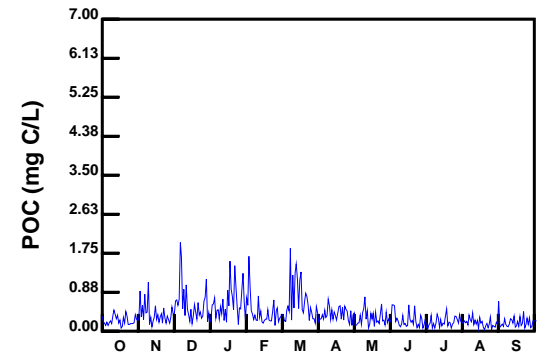
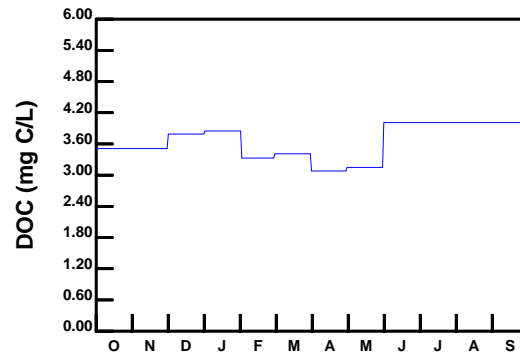
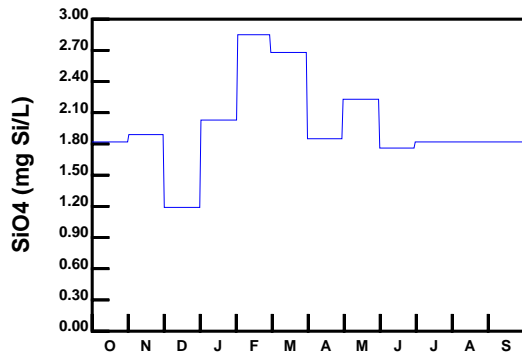
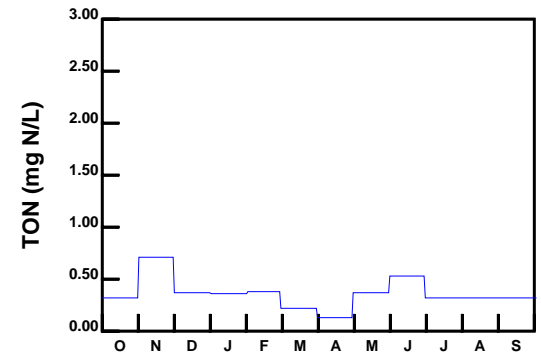
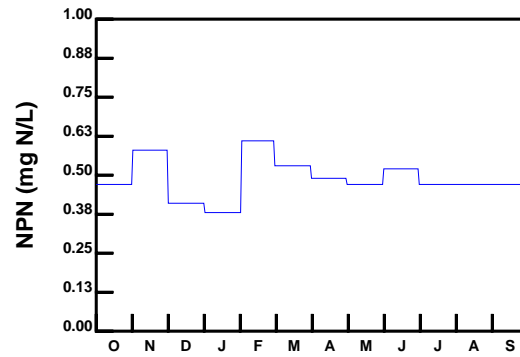
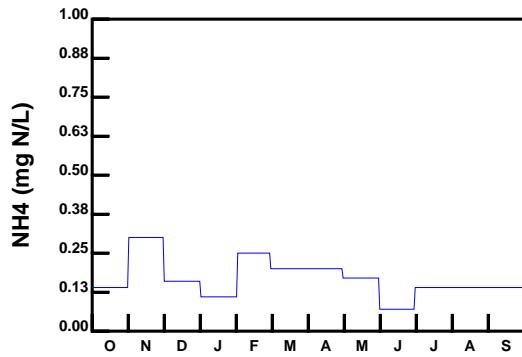
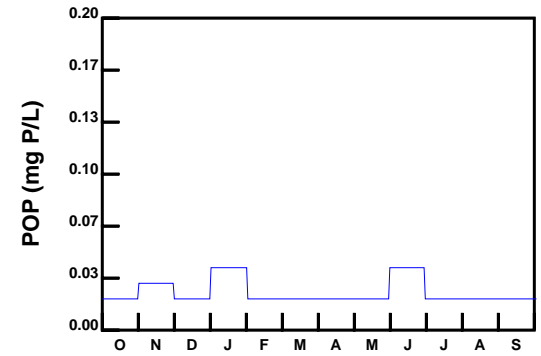
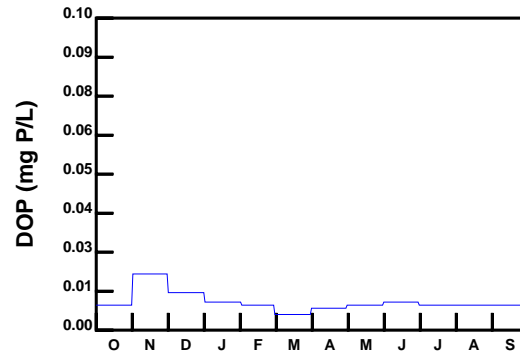
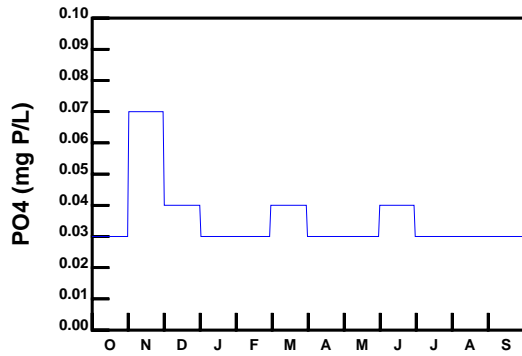
**Boundary Condition - Water Year 8889**





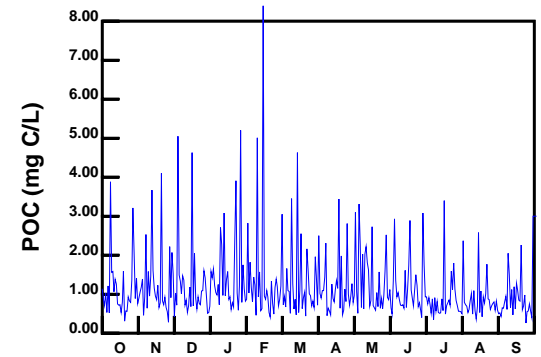
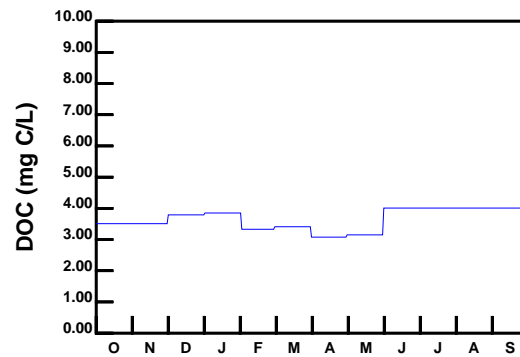
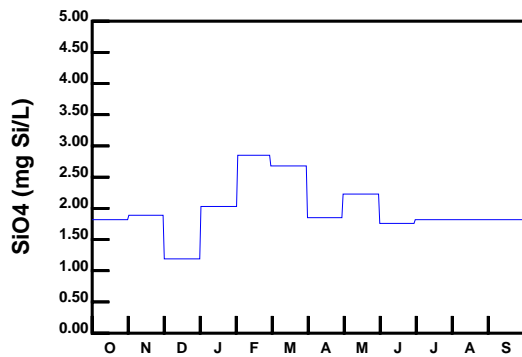
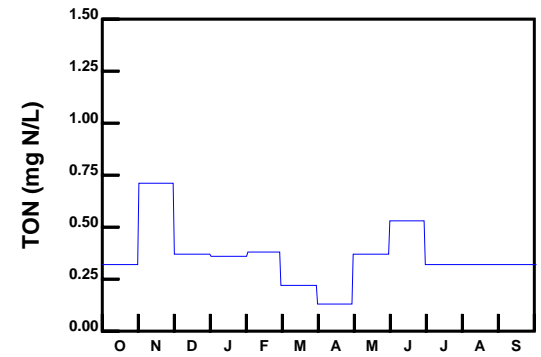
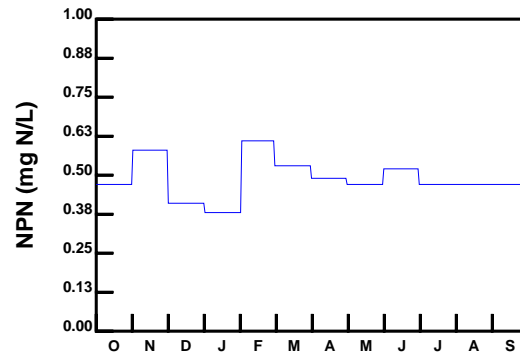
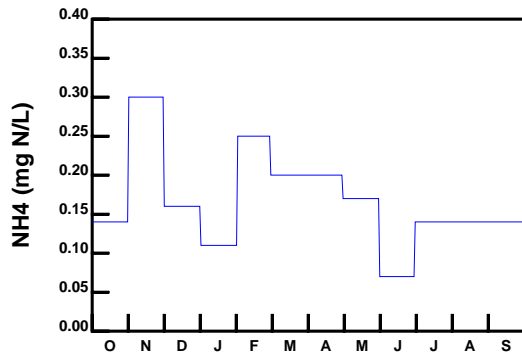
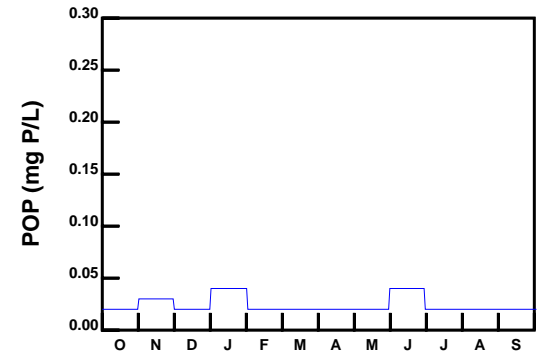
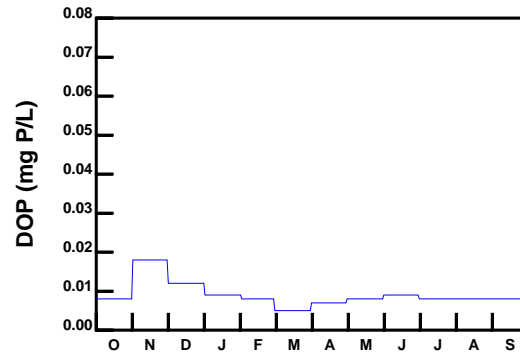
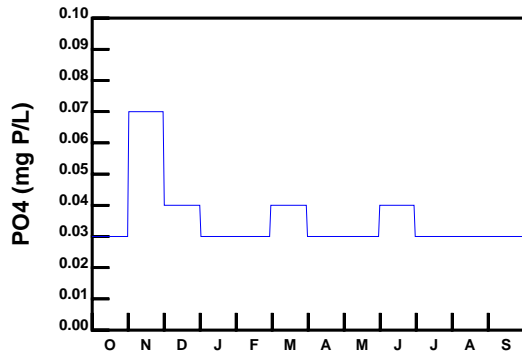
**SWEM - THAMES RIVER**

**Boundary Condition - Water Year 8889**



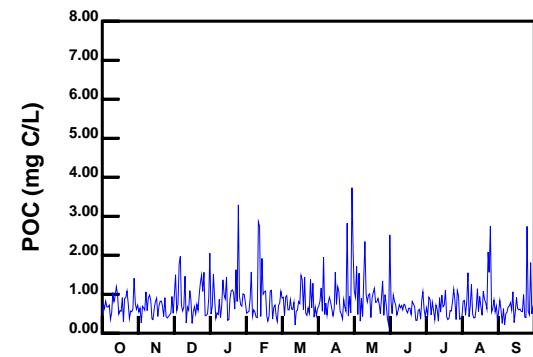
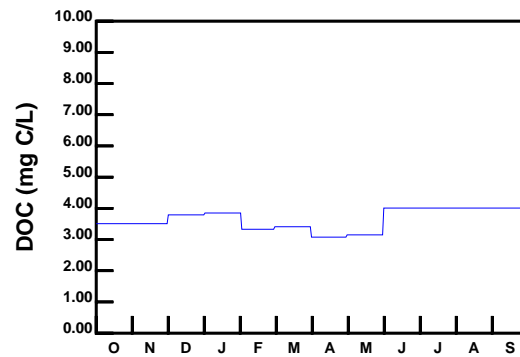
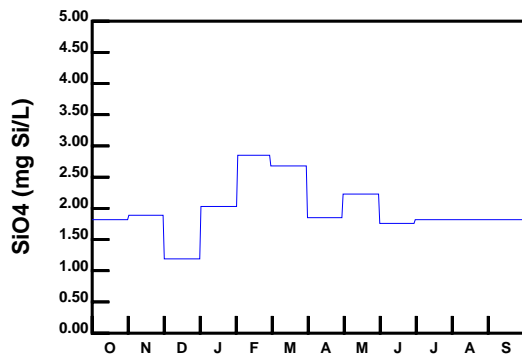
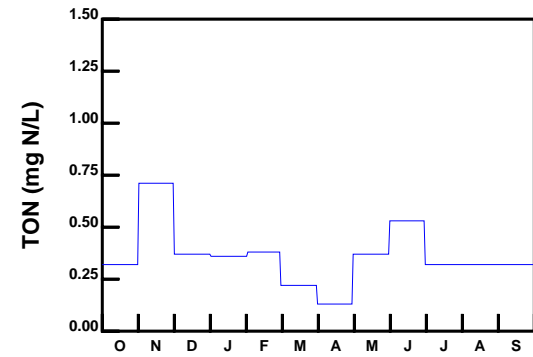
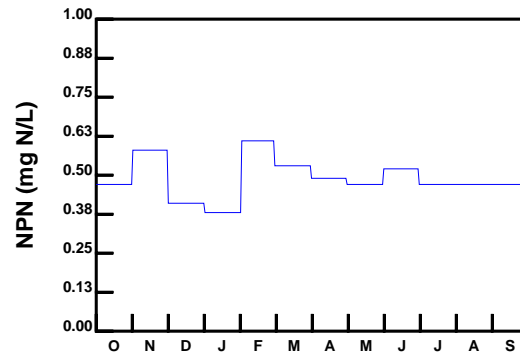
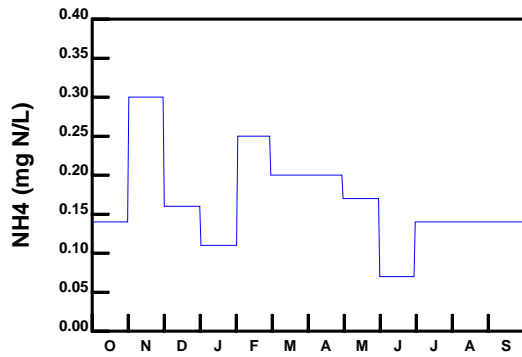
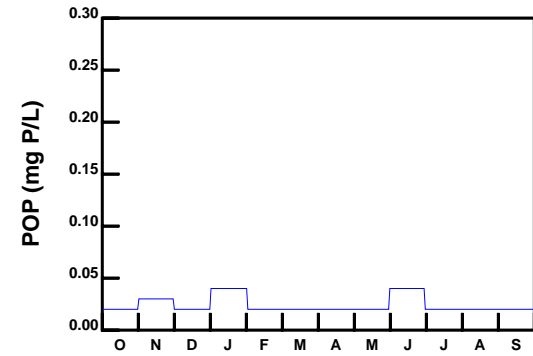
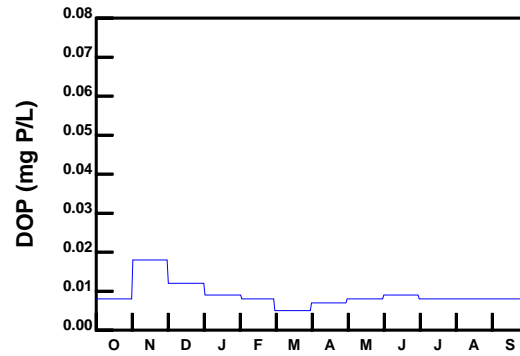
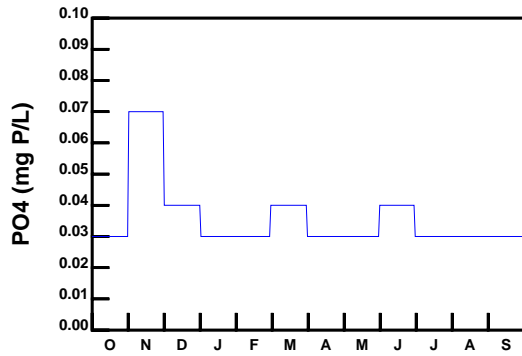
**SWEM - HUDSON RIVER**

**Boundary Condition - Water Year 9495**



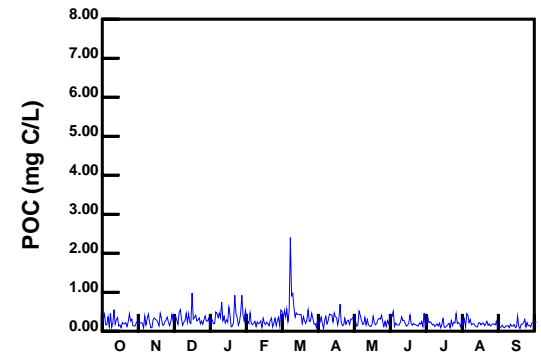
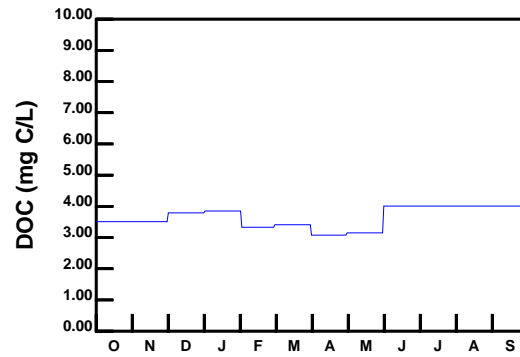
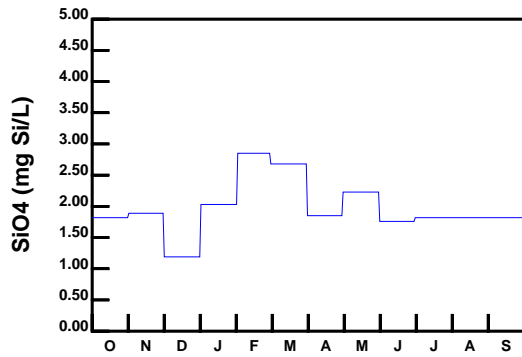
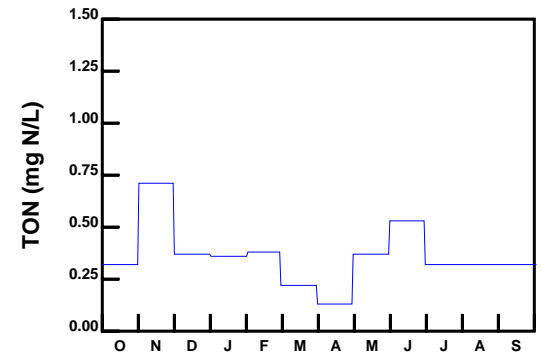
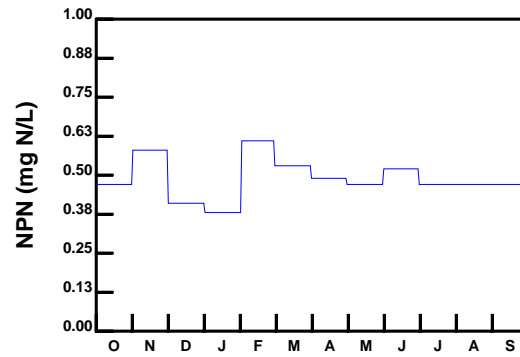
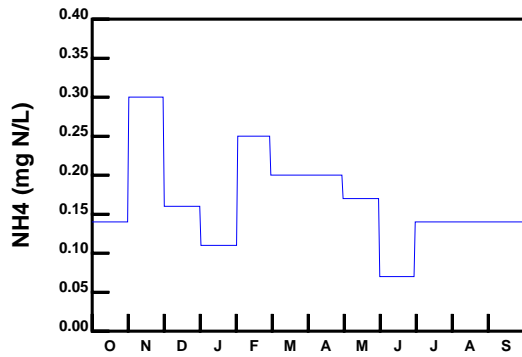
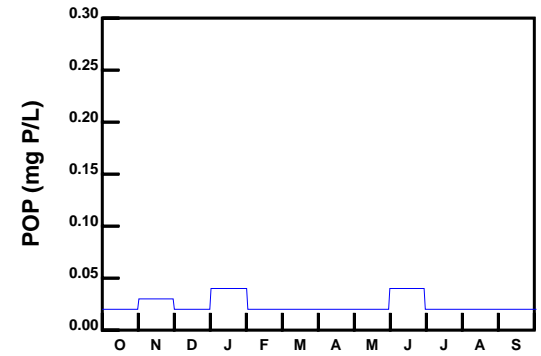
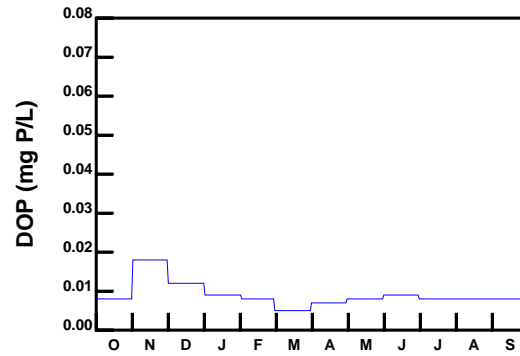
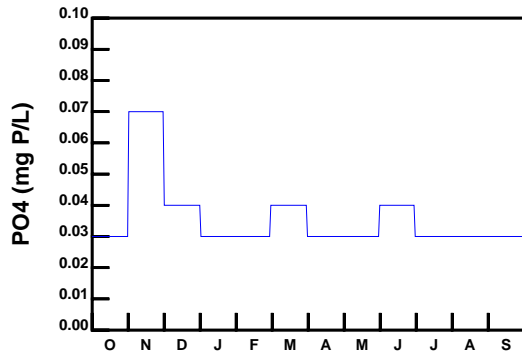
**SWEM - NORMAN KILL**

**Boundary Condition - Water Year 9495**

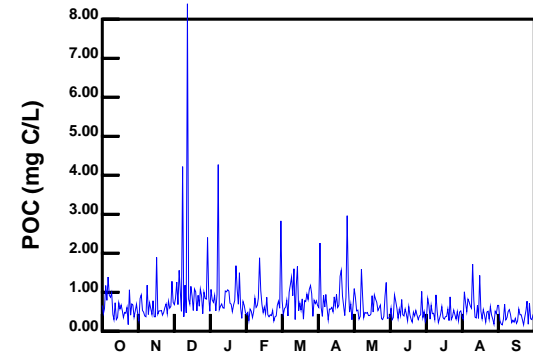
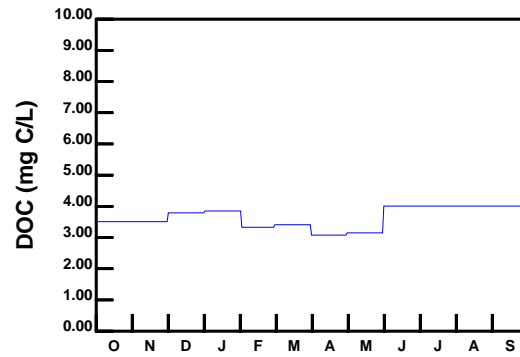
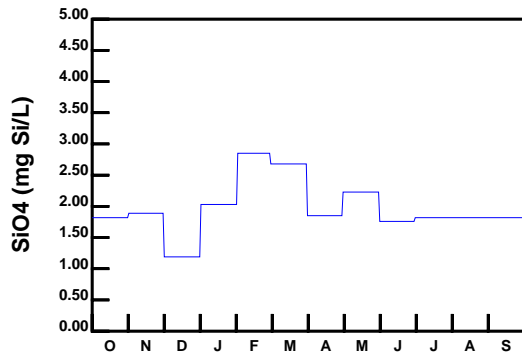
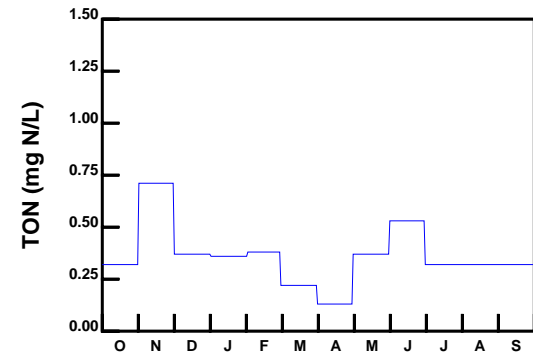
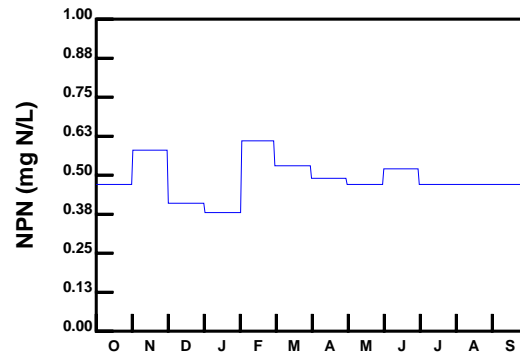
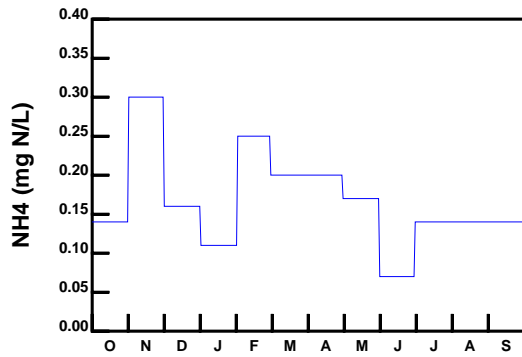
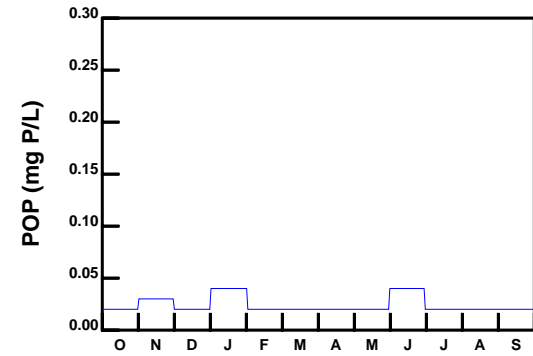
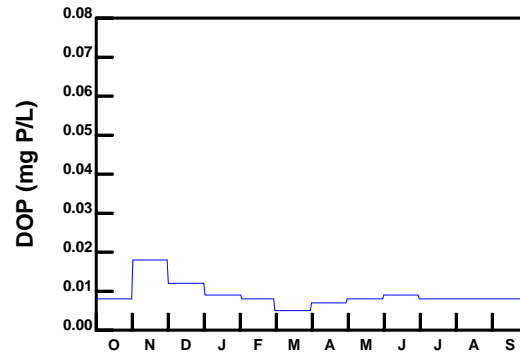
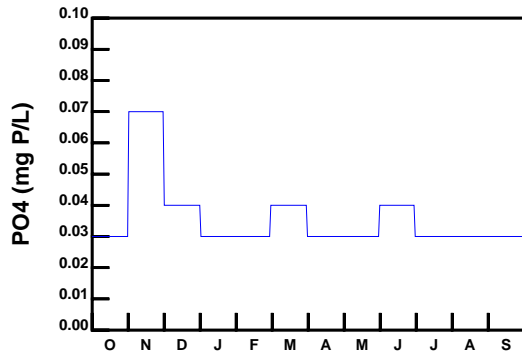


**SWEM - MOORDENER KILL**

**Boundary Condition - Water Year 9495**

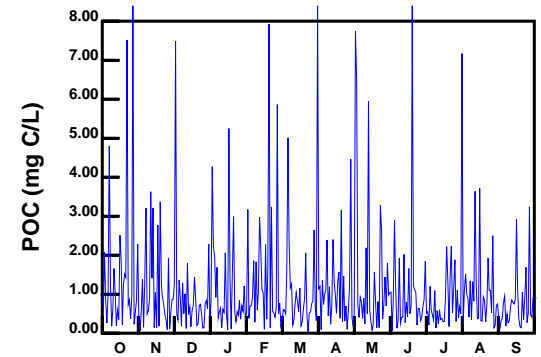
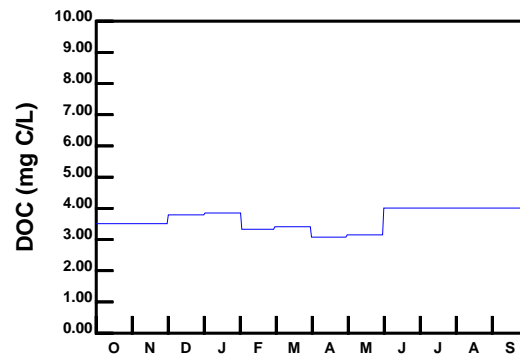
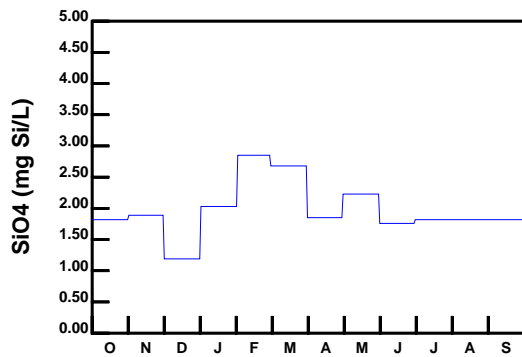
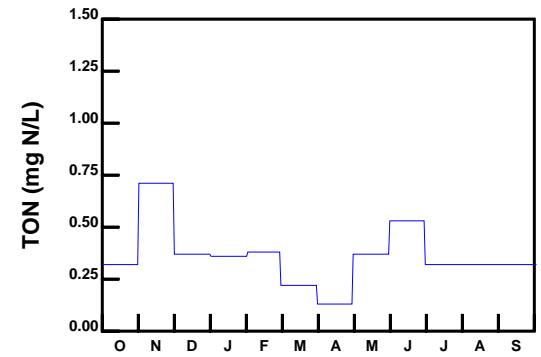
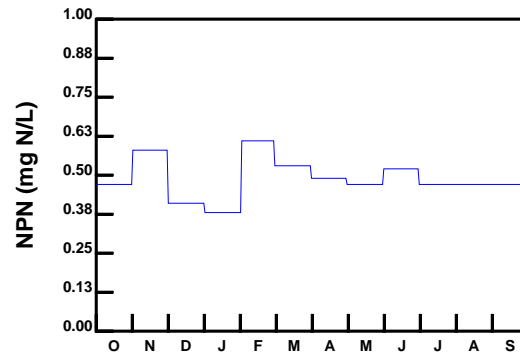
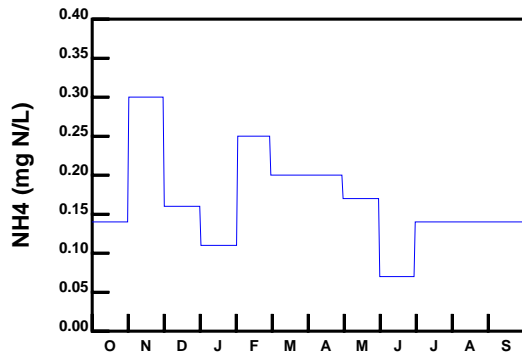
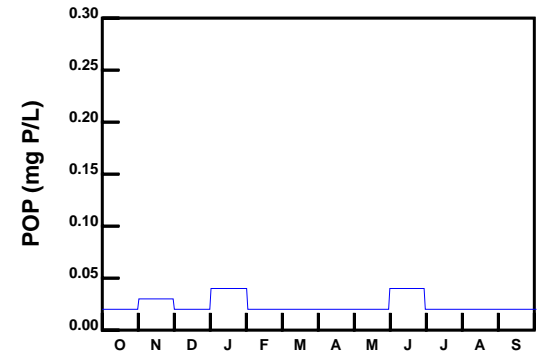
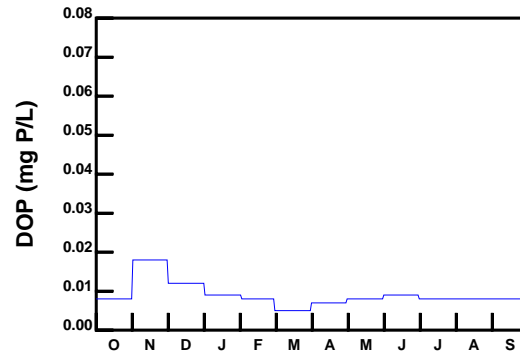
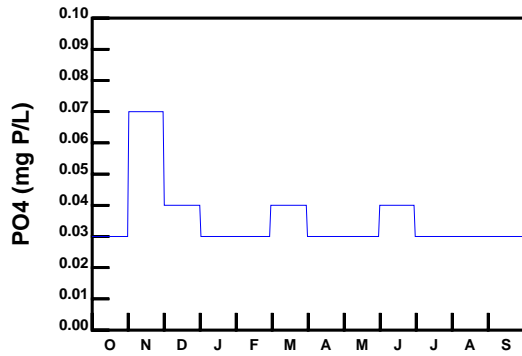


**SWEM - CATSKILL CREEK**  
**Boundary Condition - Water Year 9495**



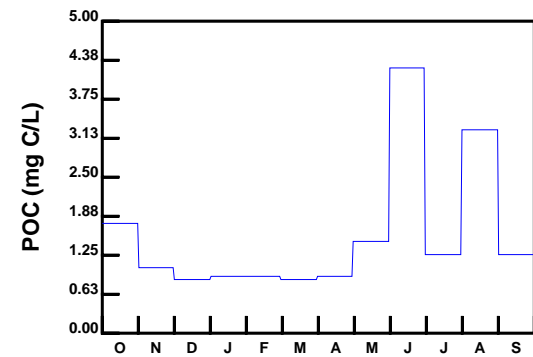
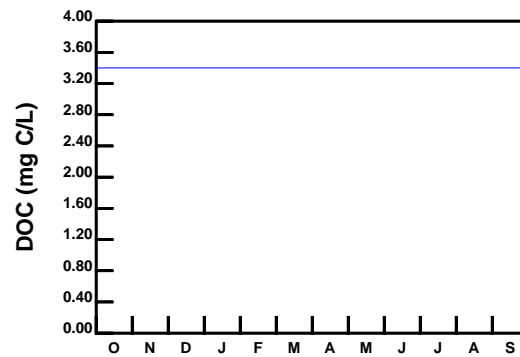
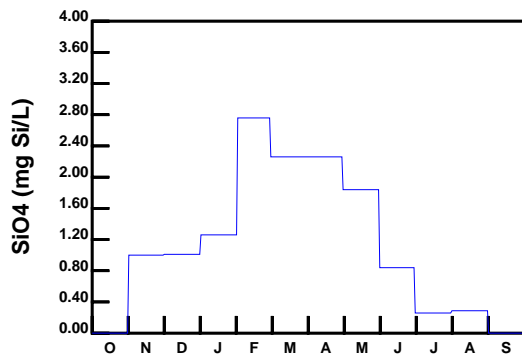
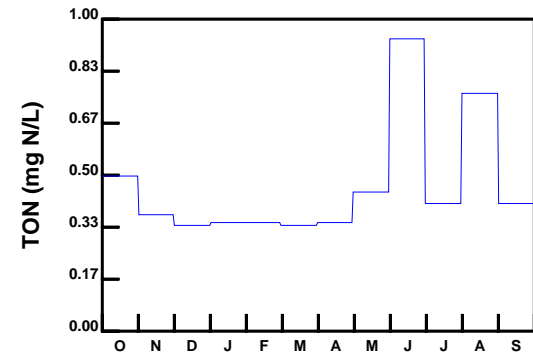
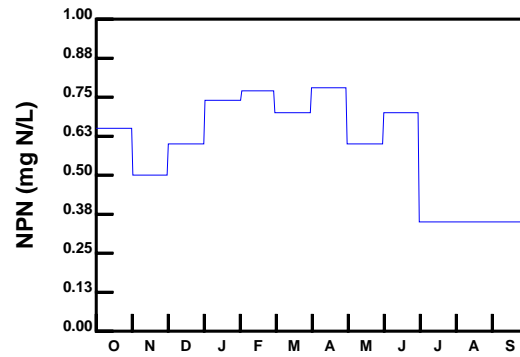
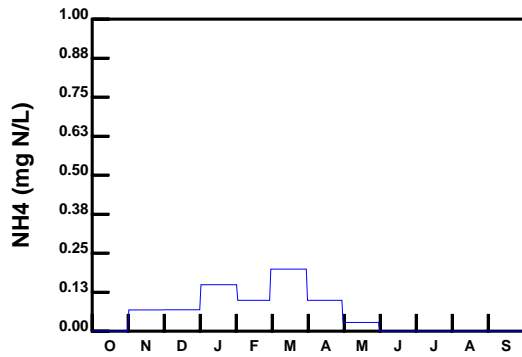
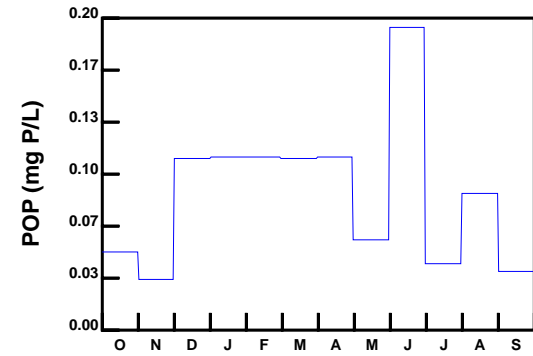
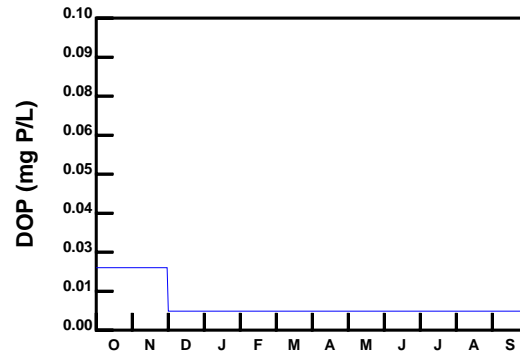
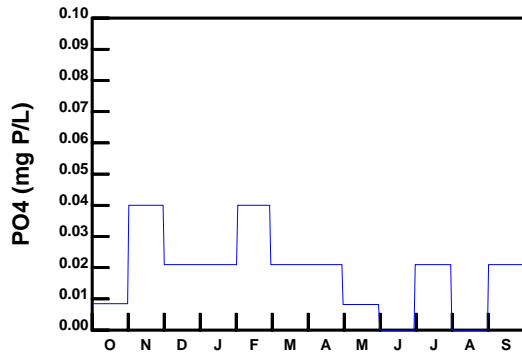
**SWEM - ESOPUS CREEK**

**Boundary Condition - Water Year 9495**



**SWEM - ROUNDOUT CREEK / WALLKILL RIVER**

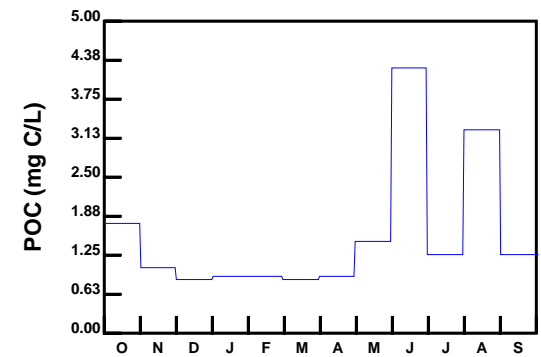
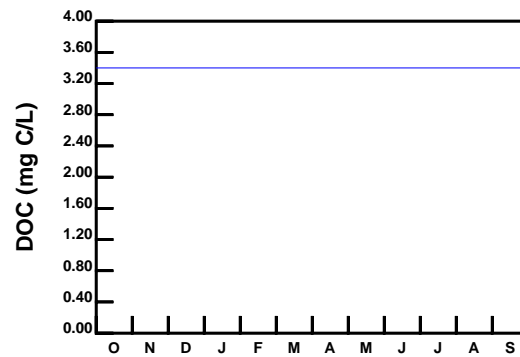
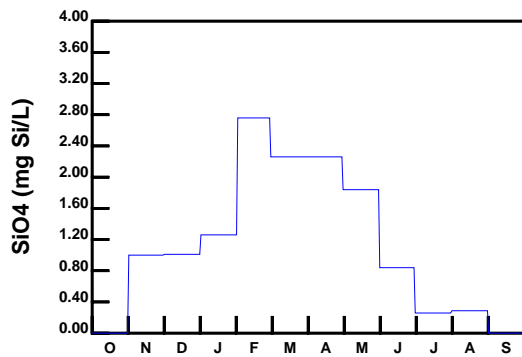
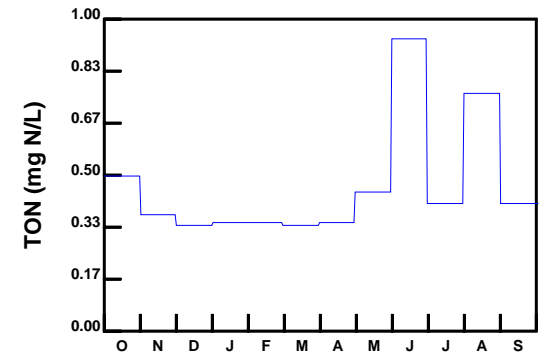
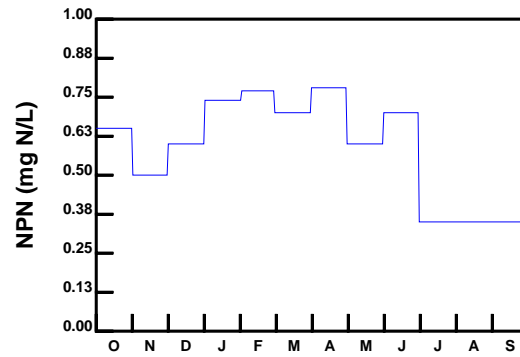
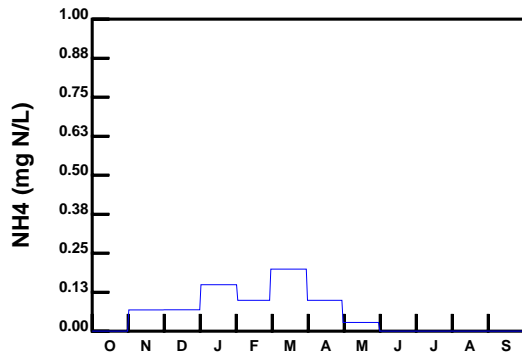
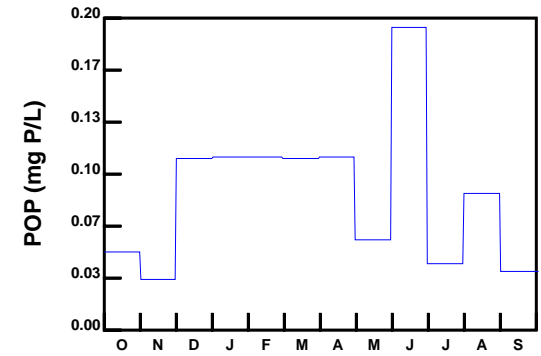
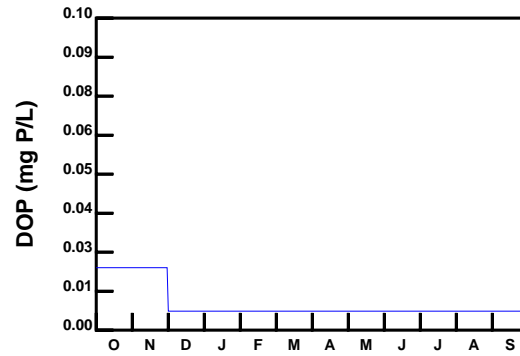
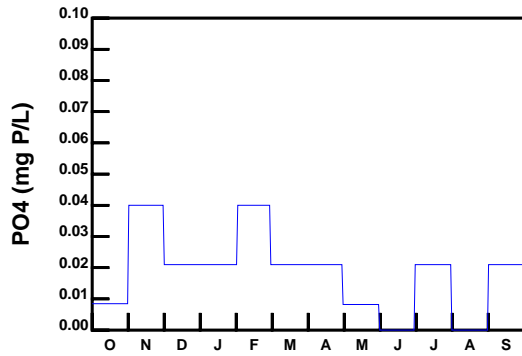
**Boundary Condition - Water Year 9495**



**SWEM - WAPPINGER CREEK**

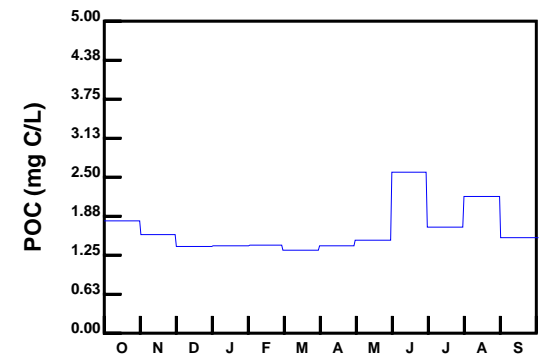
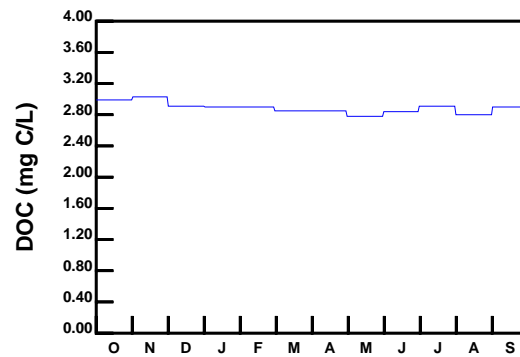
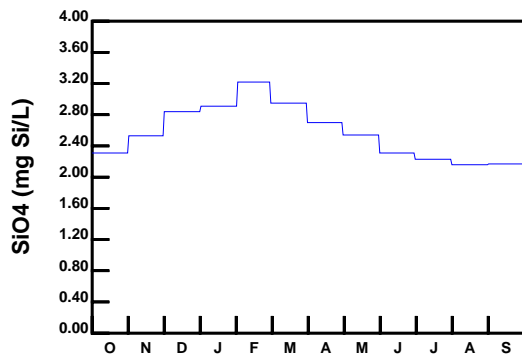
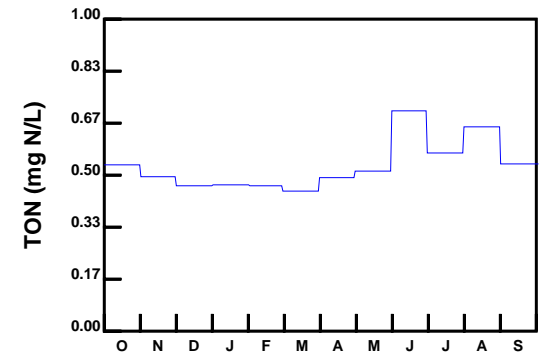
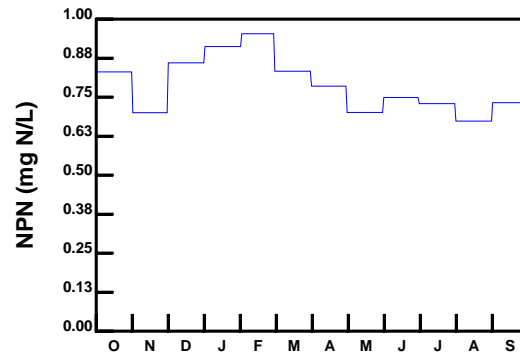
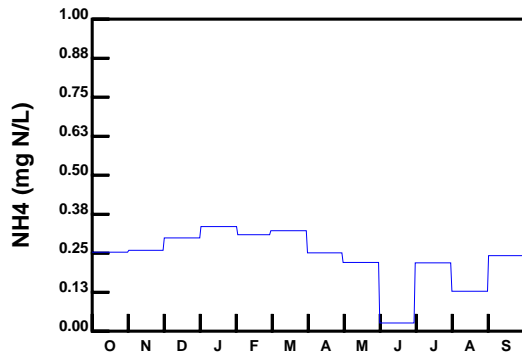
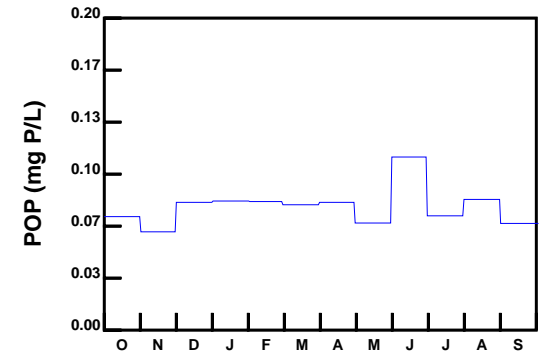
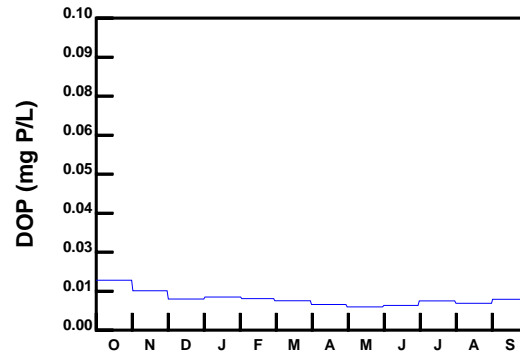
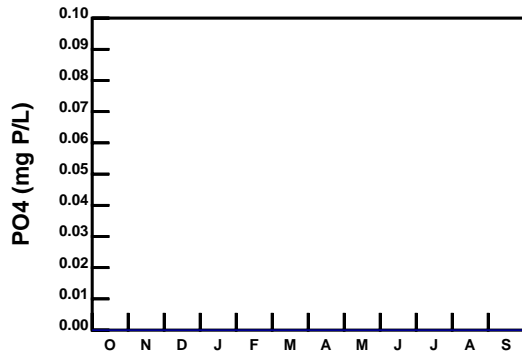
**Boundary Condition - Water Year 9495**





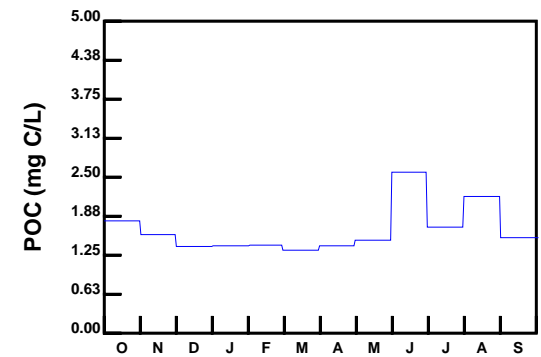
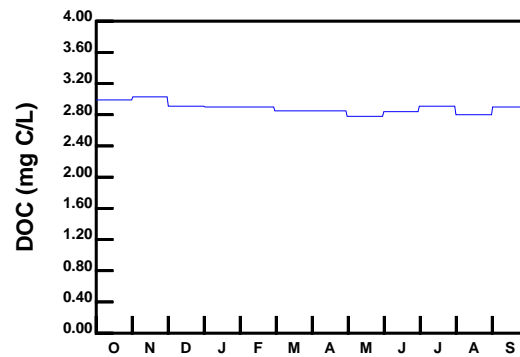
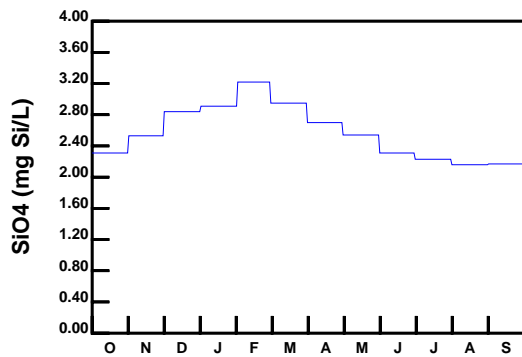
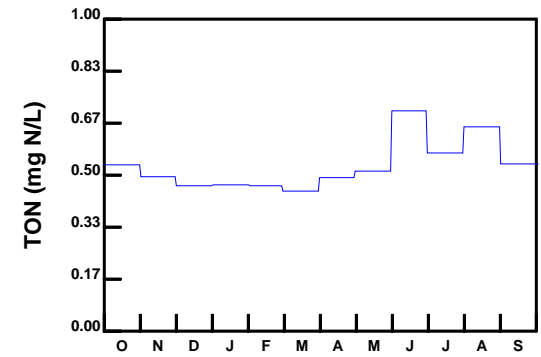
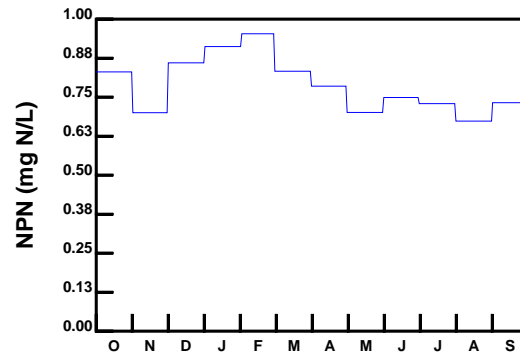
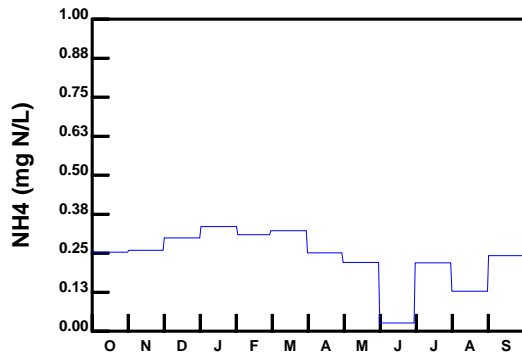
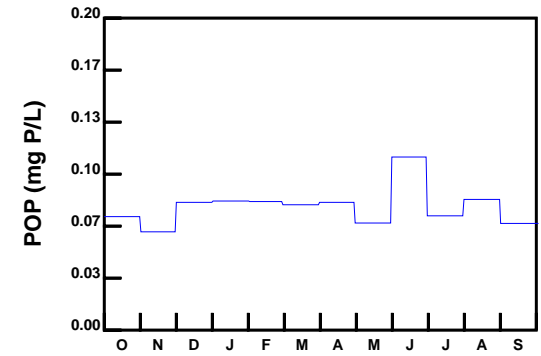
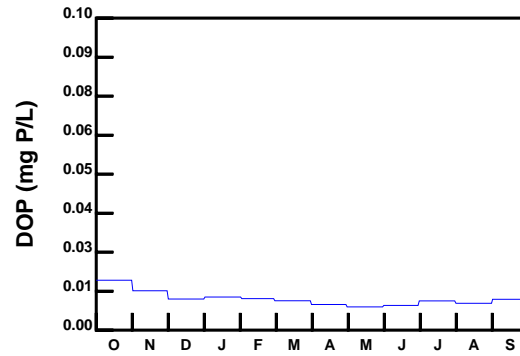
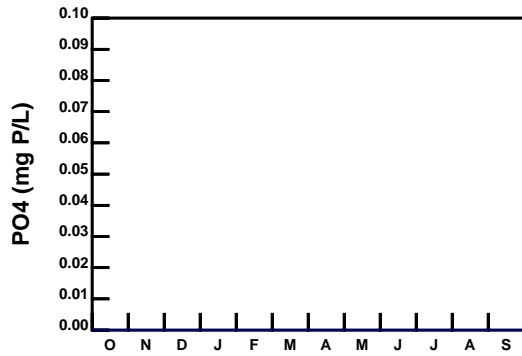
**SWEM - CROTON CREEK**

**Boundary Condition - Water Year 9495**



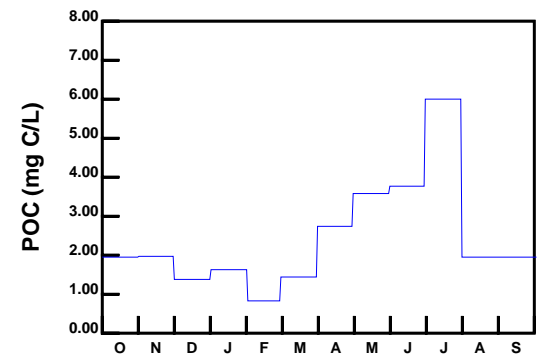
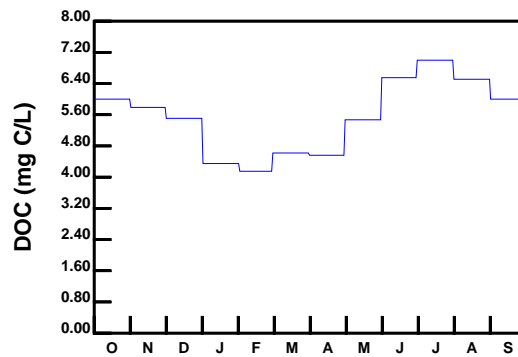
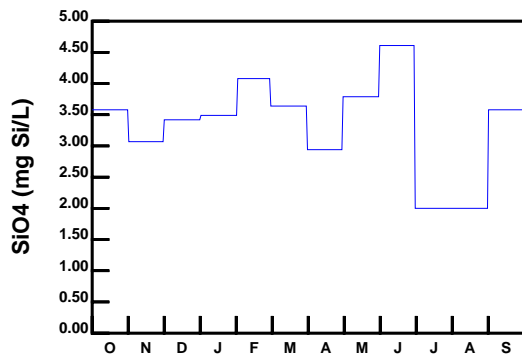
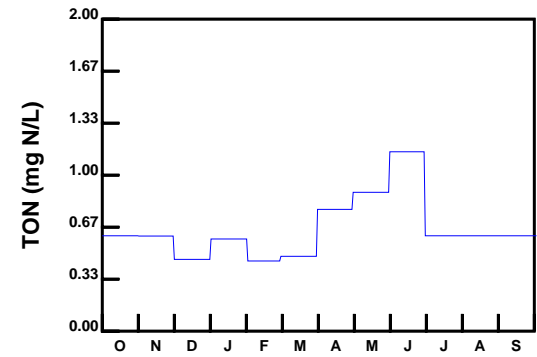
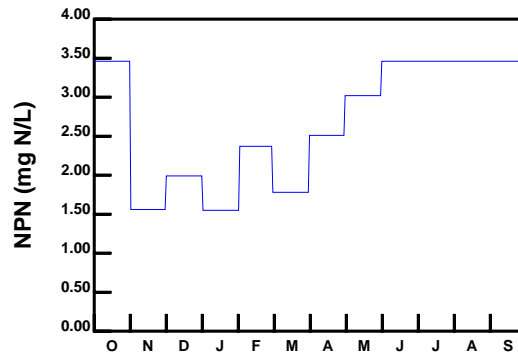
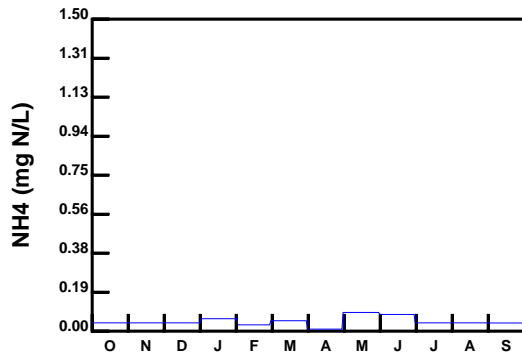
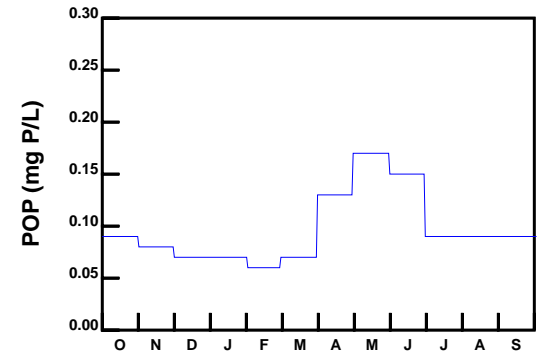
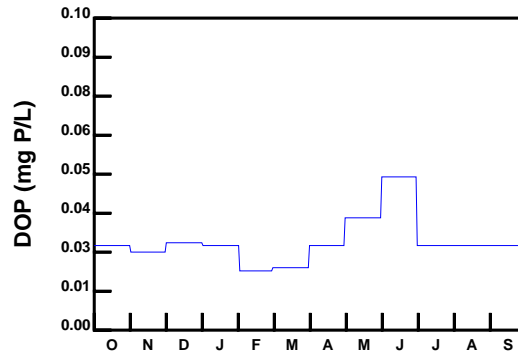
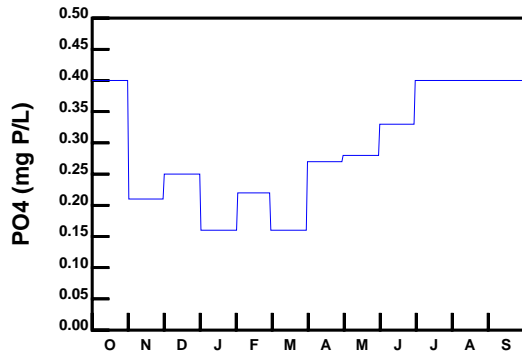
**SWEM - SAWMILL CREEK**

**Boundary Condition - Water Year 9495**



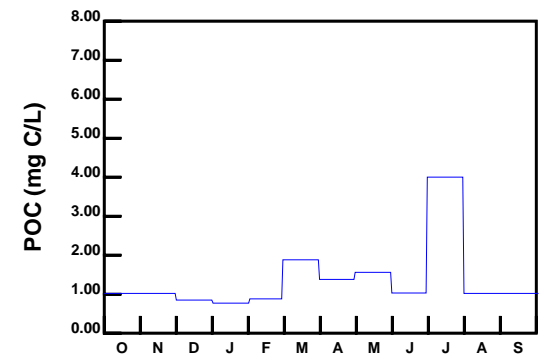
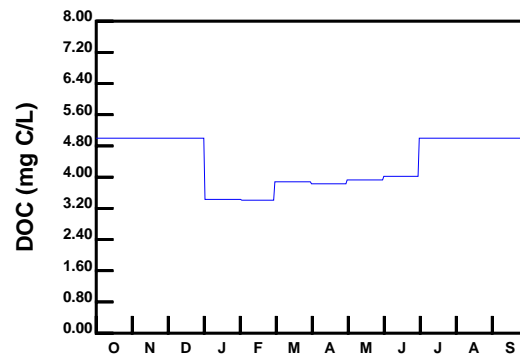
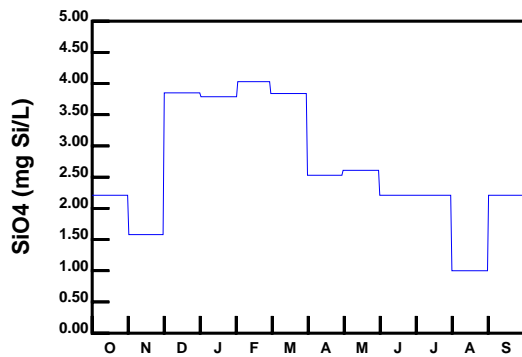
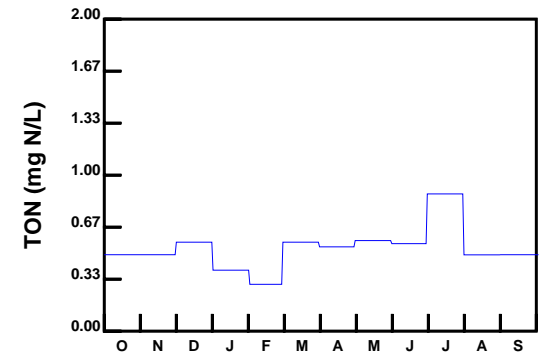
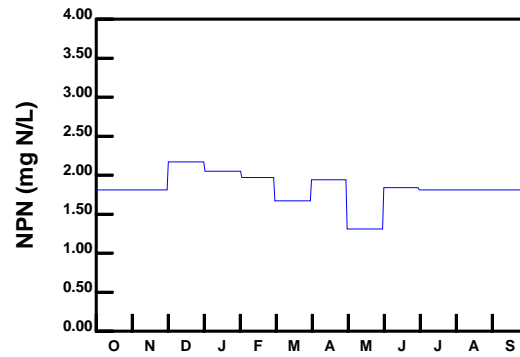
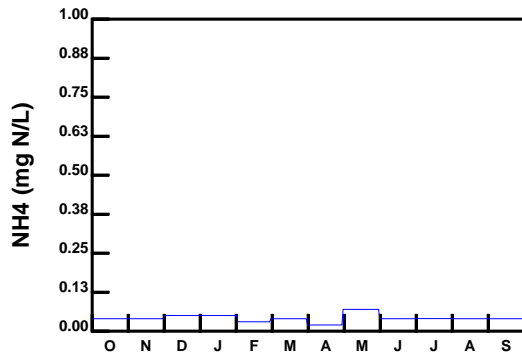
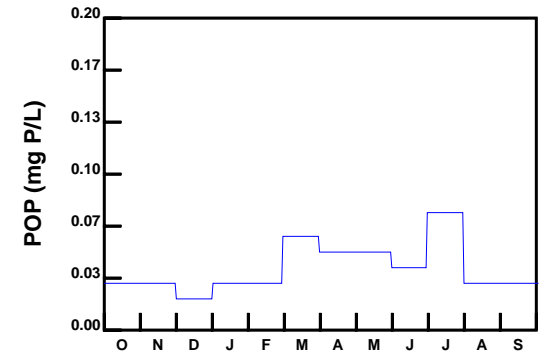
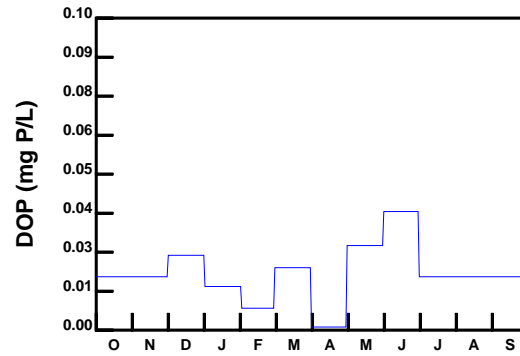
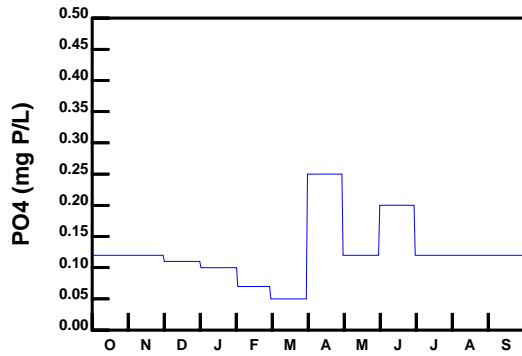
**SWEM - BRONX RIVER**

**Boundary Condition - Water Year 9495**



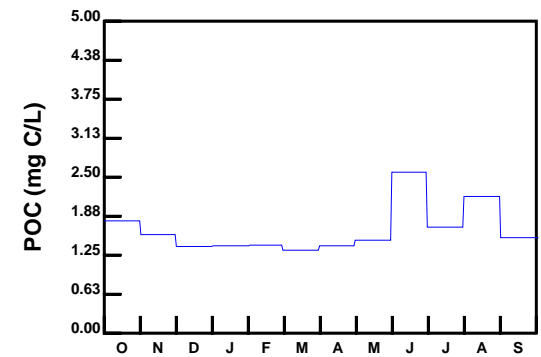
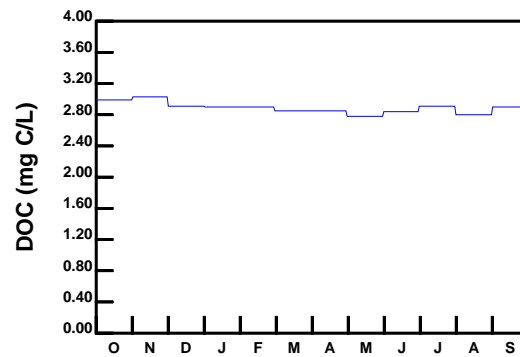
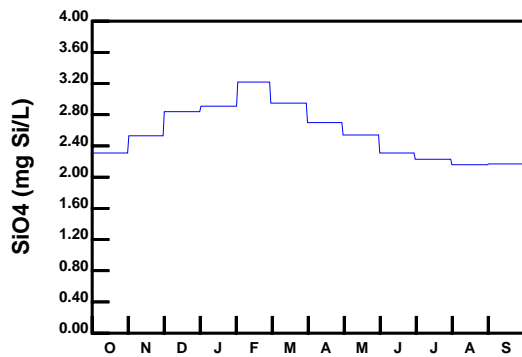
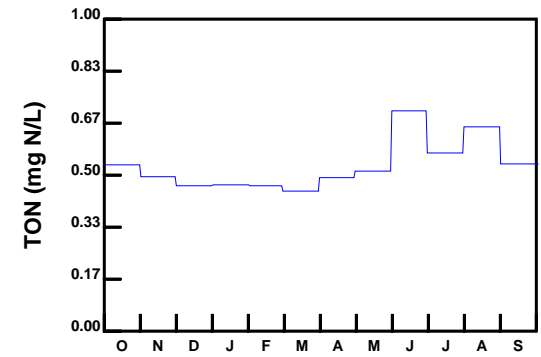
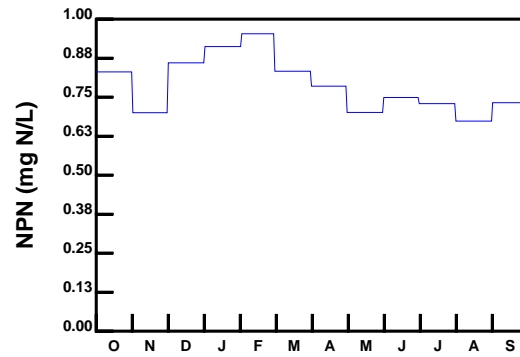
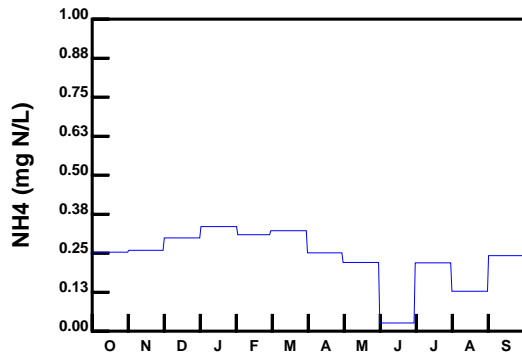
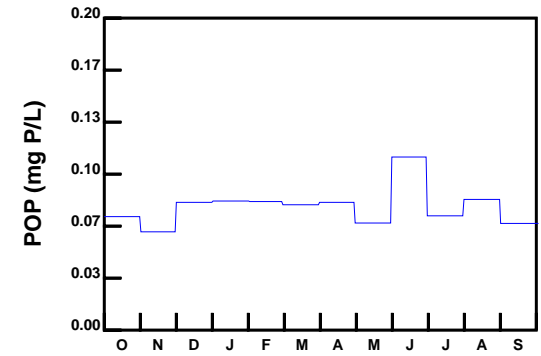
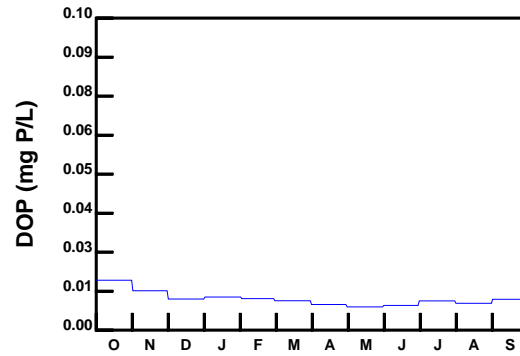
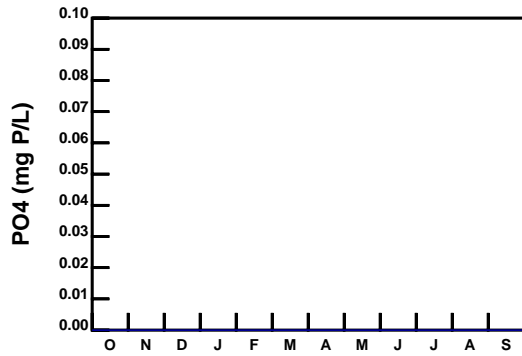
**SWEM - SADDLE RIVER**

**Boundary Condition - Water Year 9495**



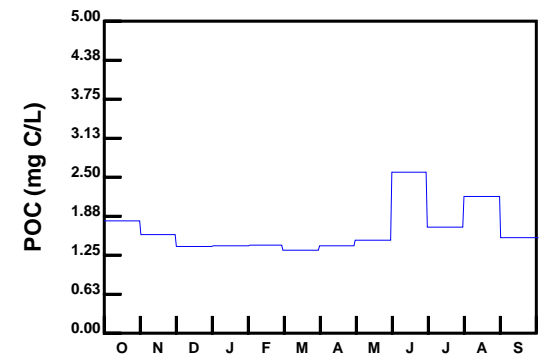
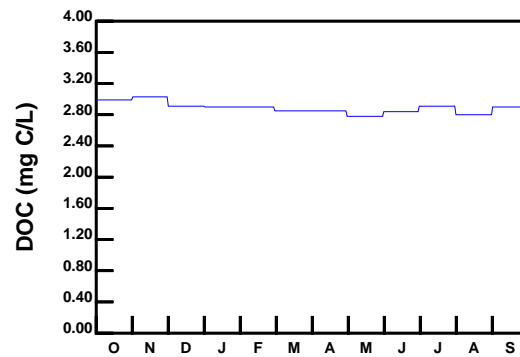
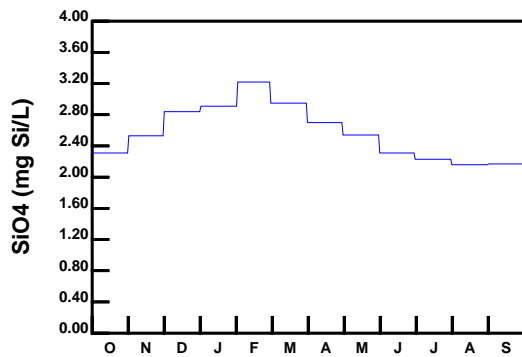
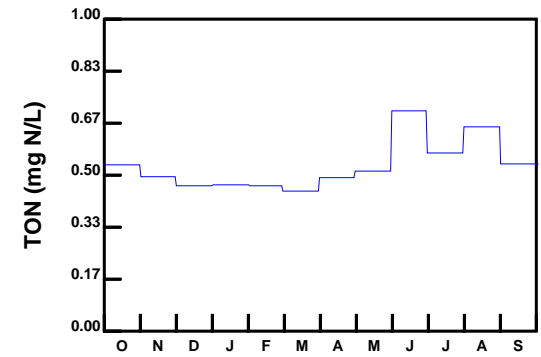
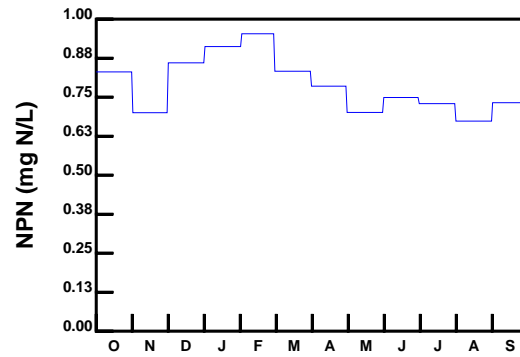
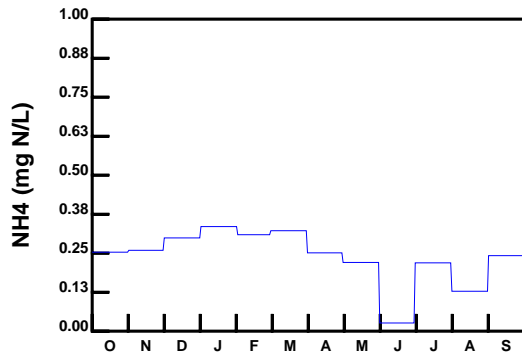
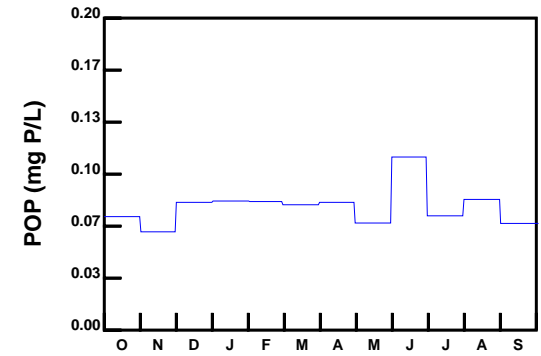
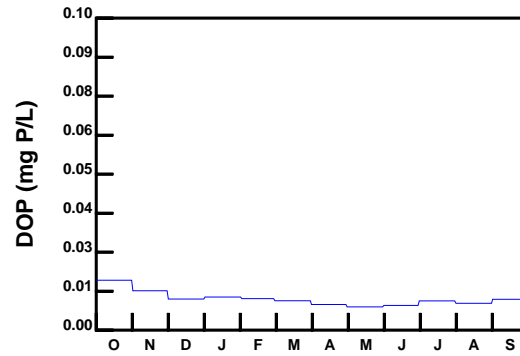
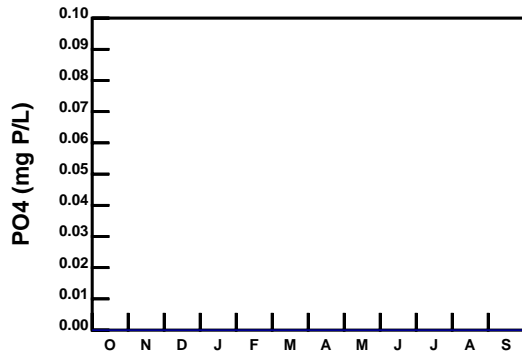
**SWEM - SOUTH RIVER**

**Boundary Condition - Water Year 9495**



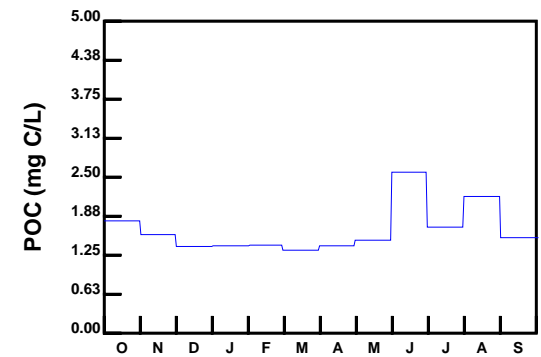
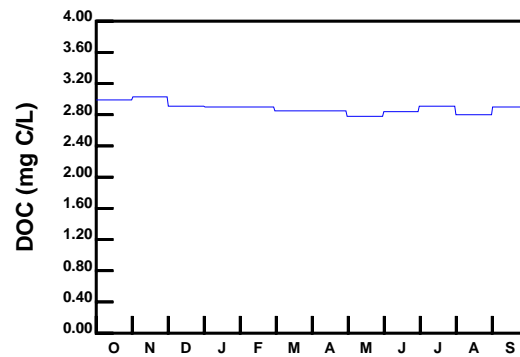
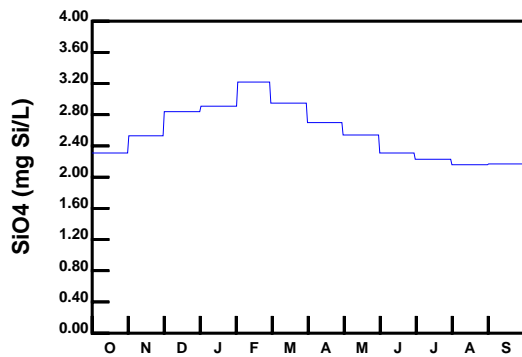
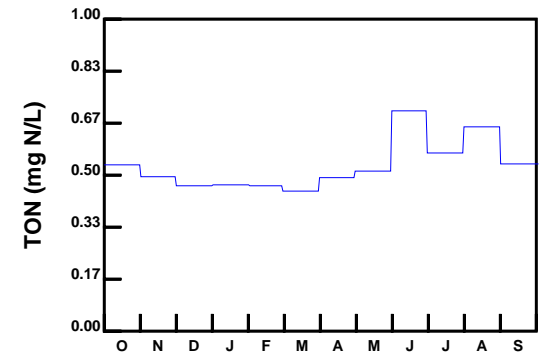
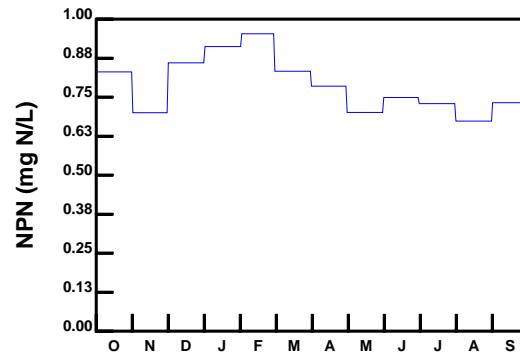
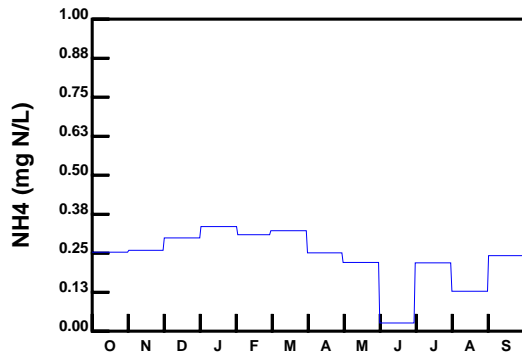
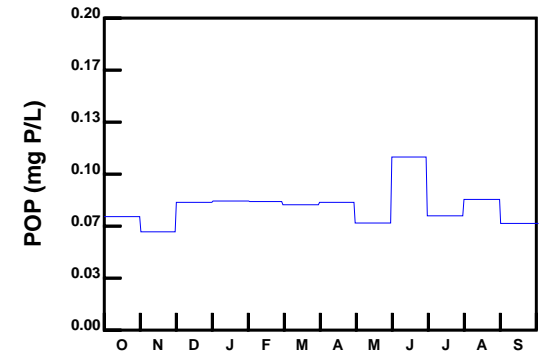
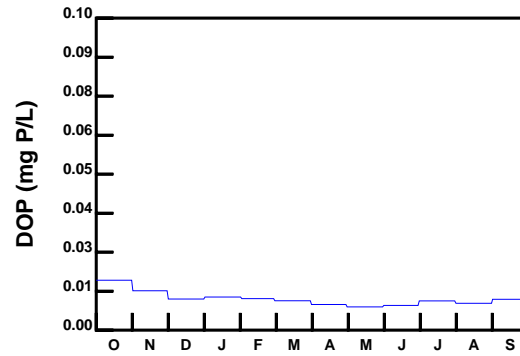
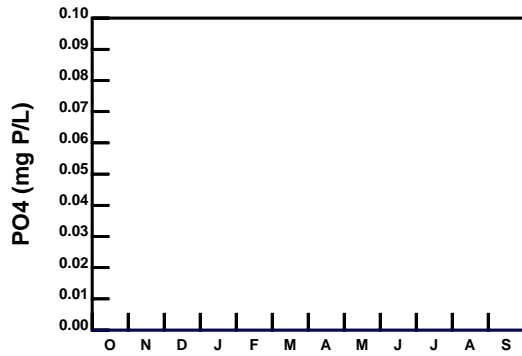
**SWEM - NAVESINK AND SHREWSBURY RIVERS**

**Boundary Condition - Water Year 9495**



**SWEM - MANASQUAN RIVER**

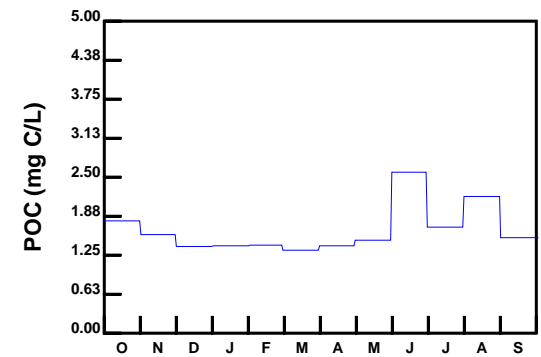
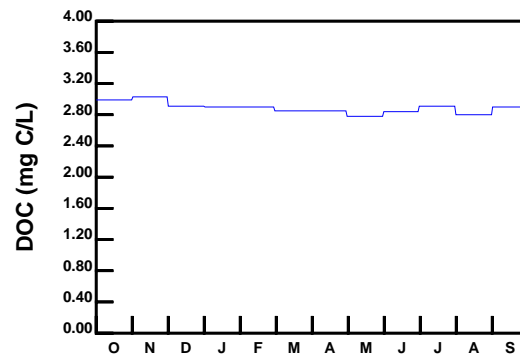
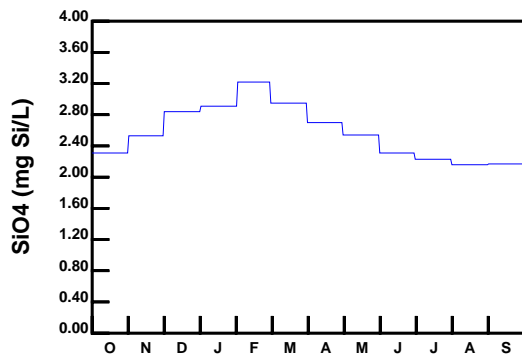
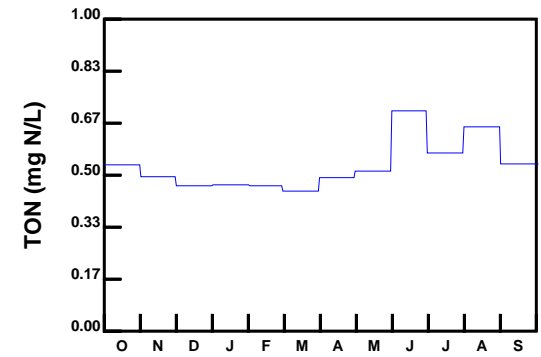
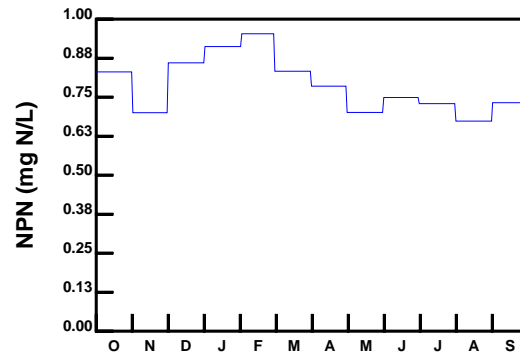
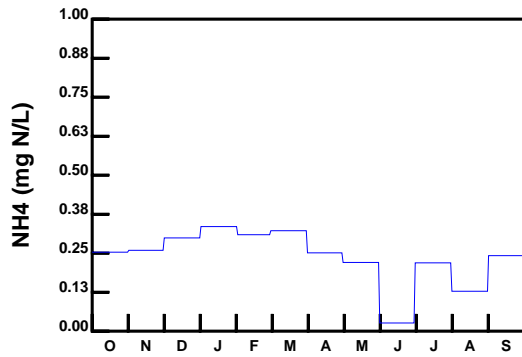
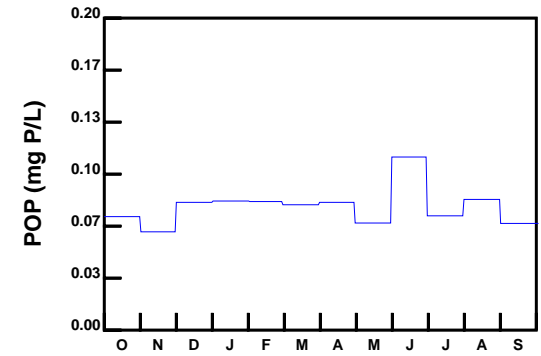
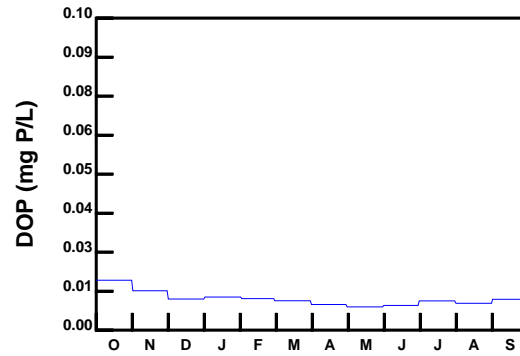
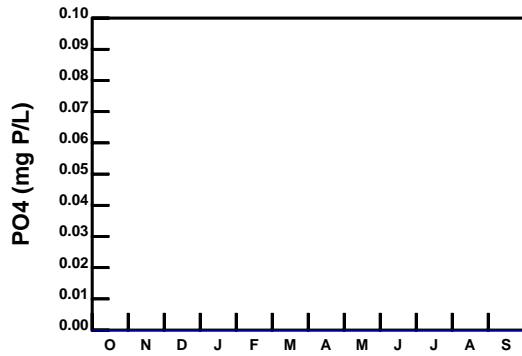
**Boundary Condition - Water Year 9495**



**SWEM - METEDECONK AND TOMS RIVERS**

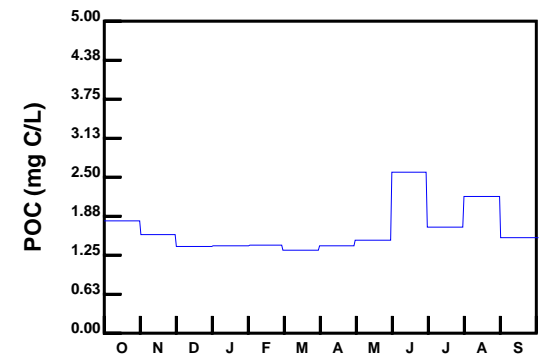
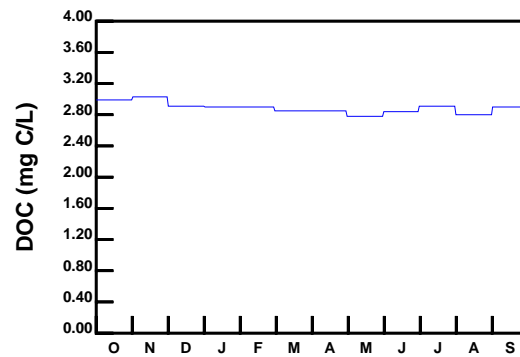
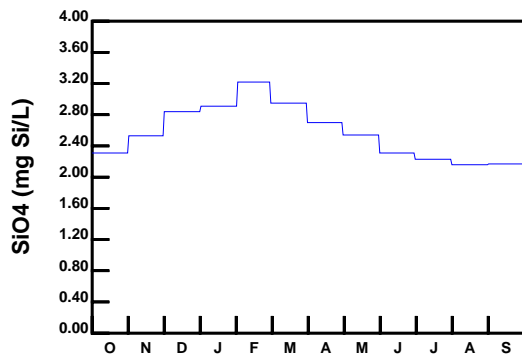
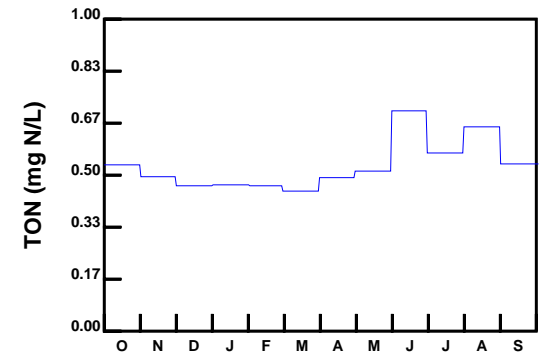
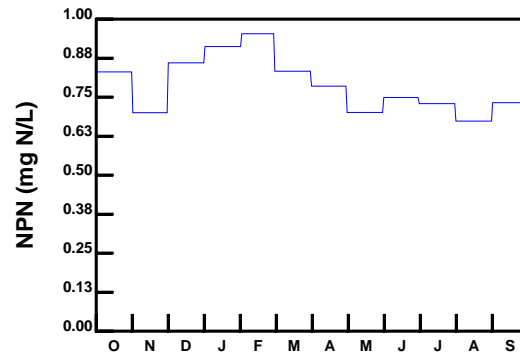
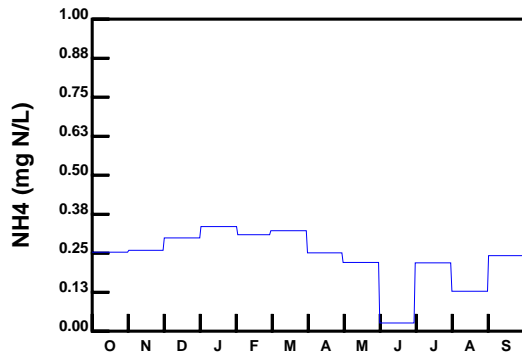
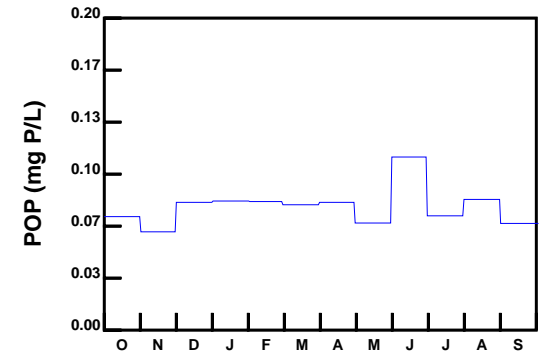
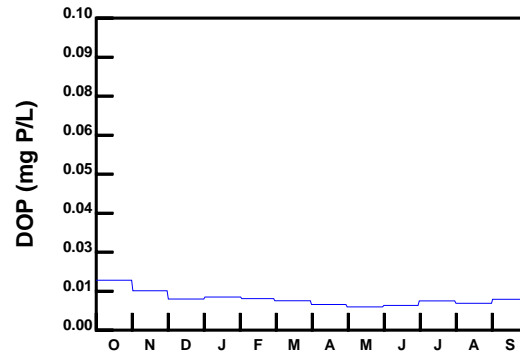
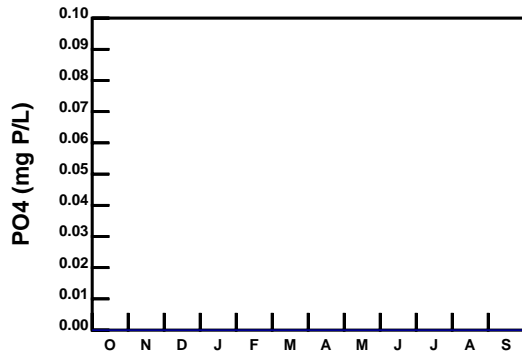
**Boundary Condition - Water Year 9495**





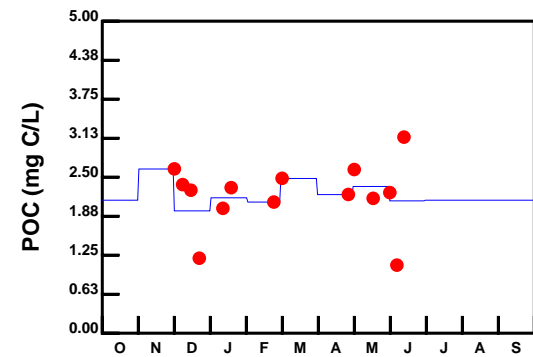
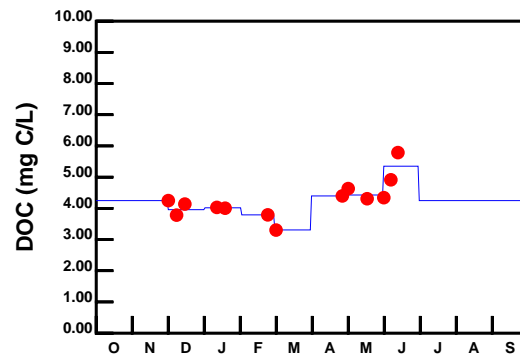
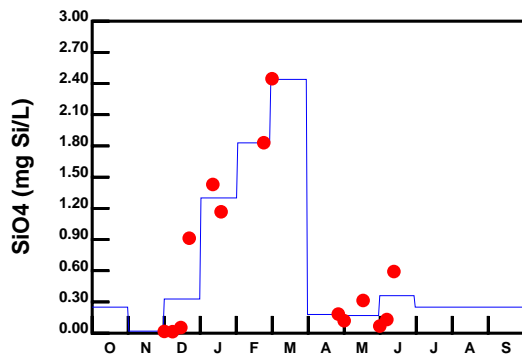
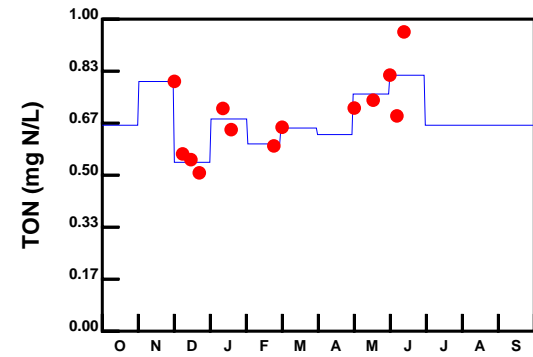
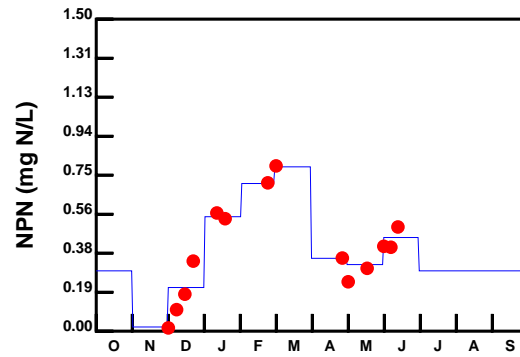
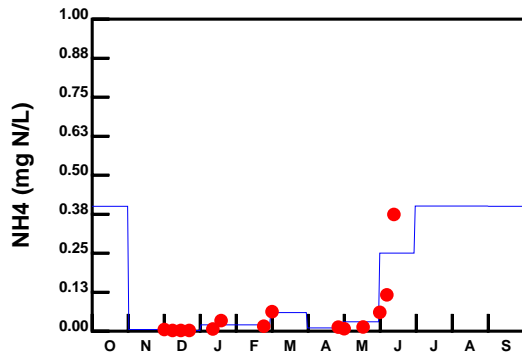
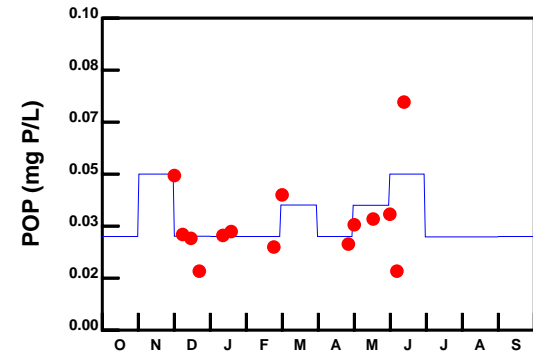
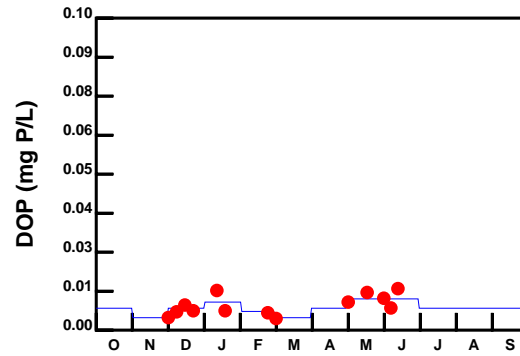
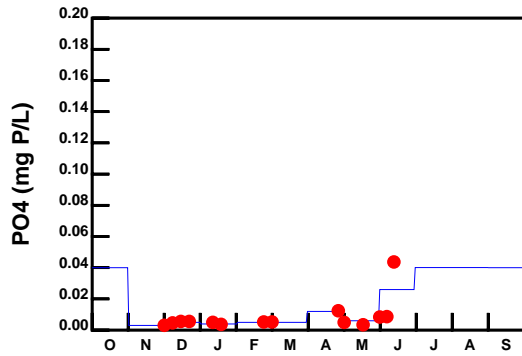
**SWEM - MULLICA RIVER AND WESTECUNK CREEK**

**Boundary Condition - Water Year 9495**

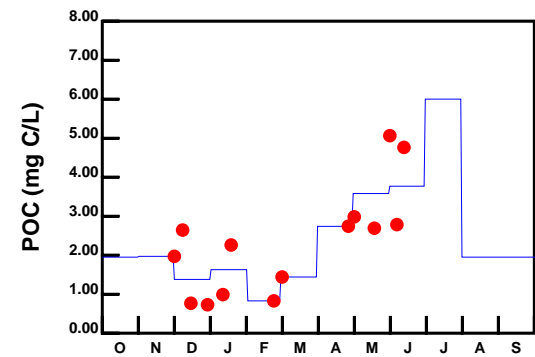
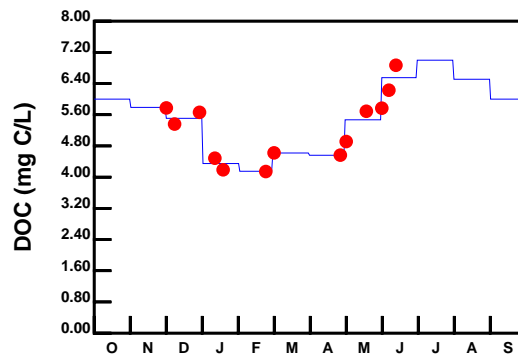
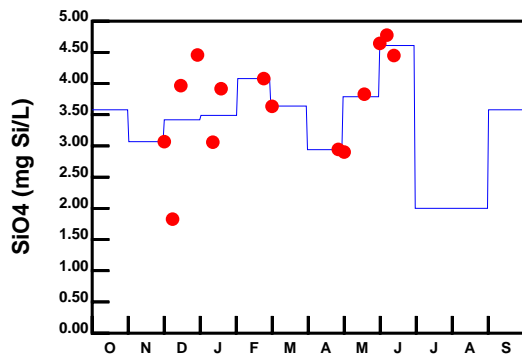
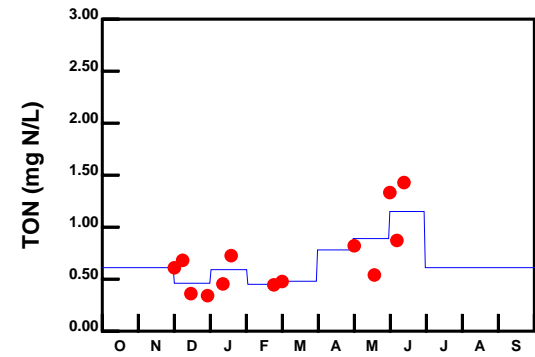
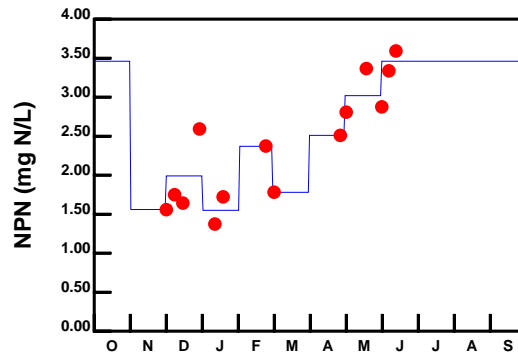
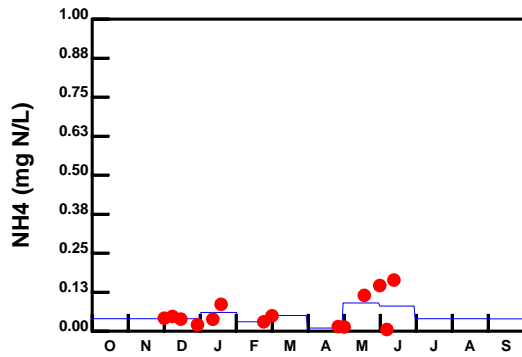
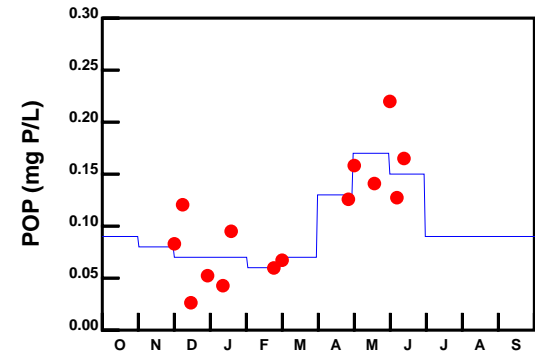
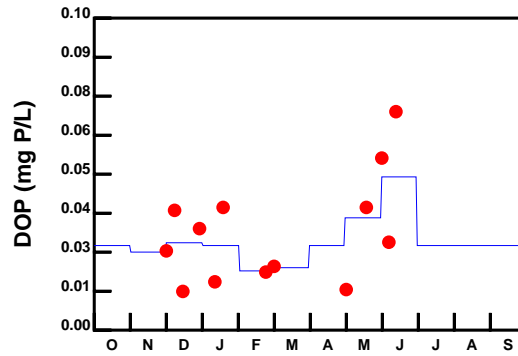
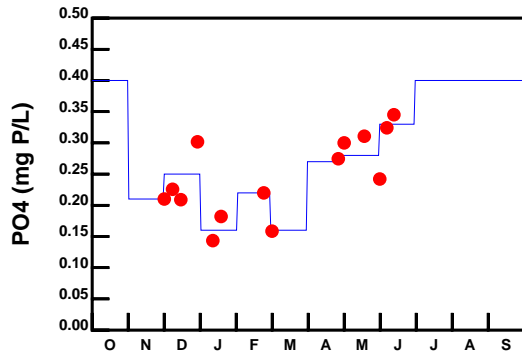


**SWEM - TUCKAHOE AND GREAT EGG RIVERS**

**Boundary Condition - Water Year 9495**

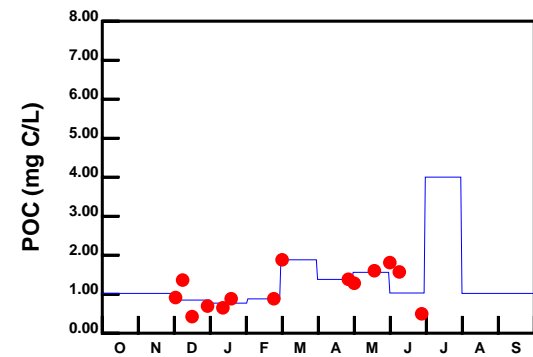
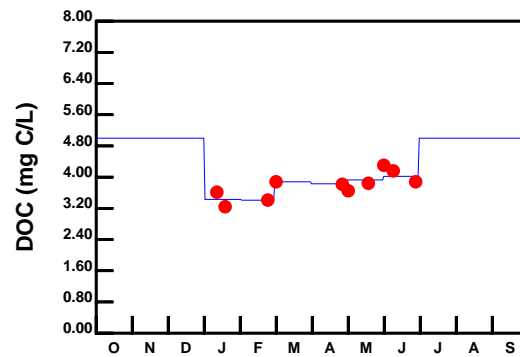
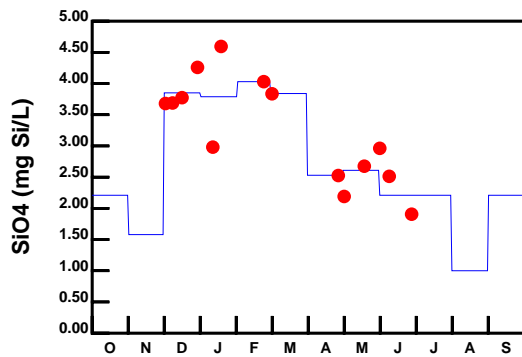
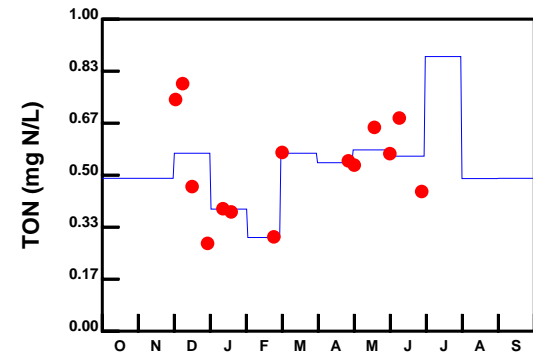
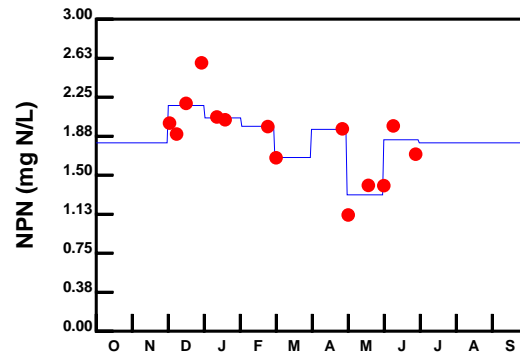
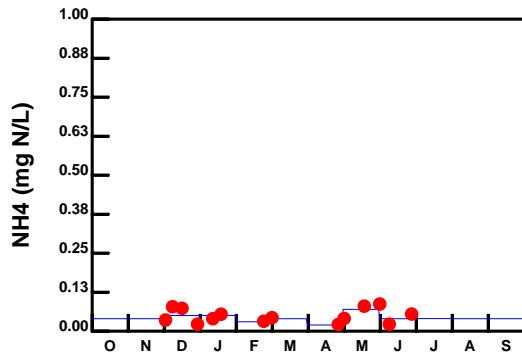
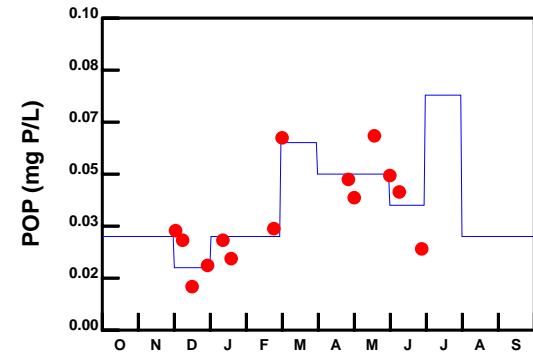
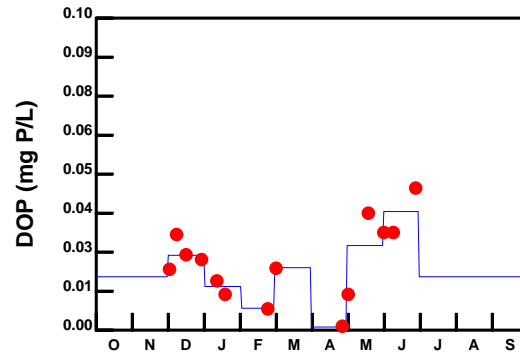
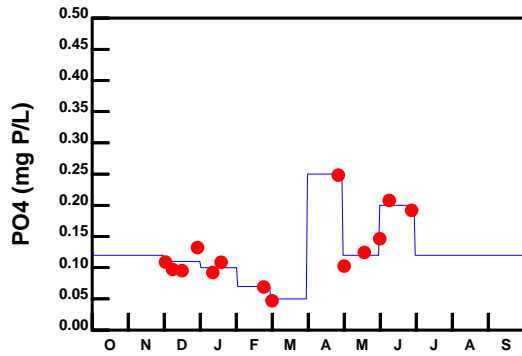


**SWEM - HACKENSACK RIVER**  
**Boundary Condition - Water Year 9495**



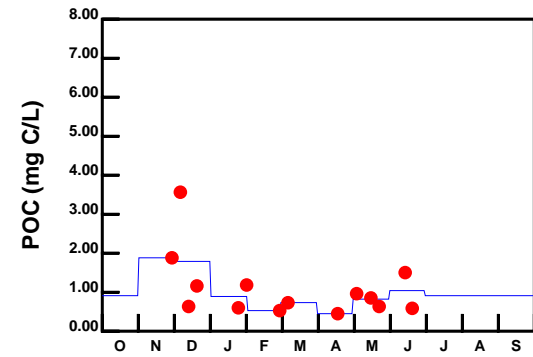
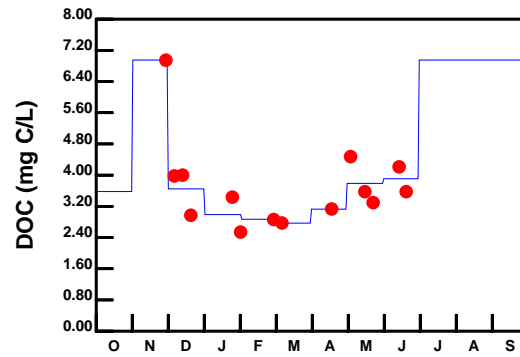
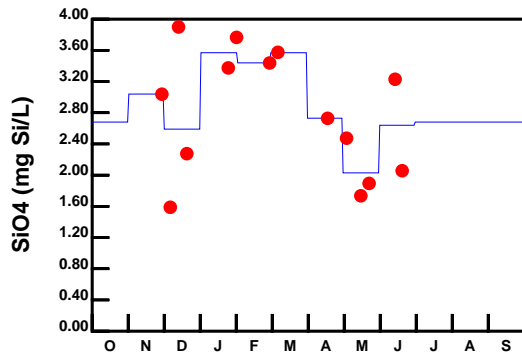
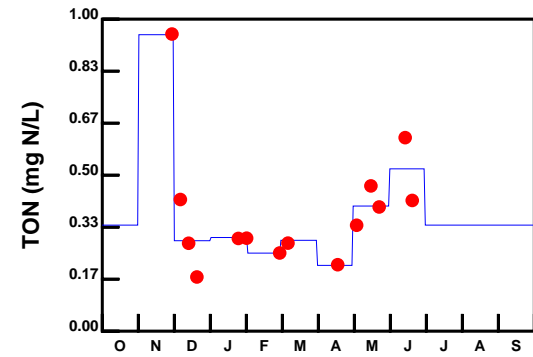
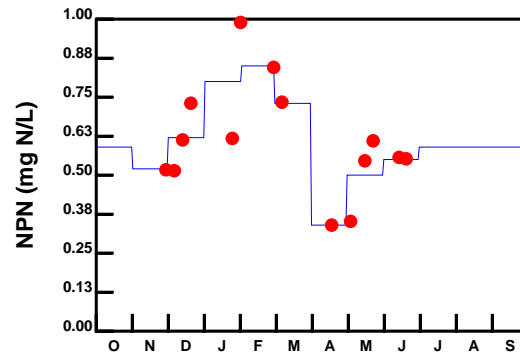
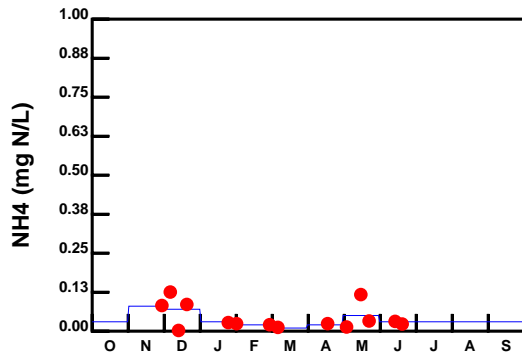
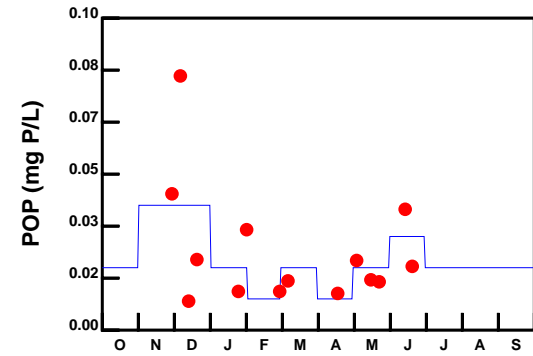
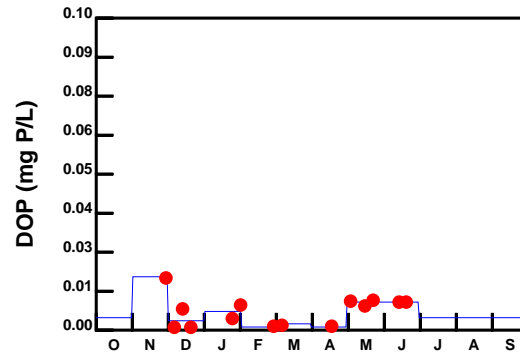
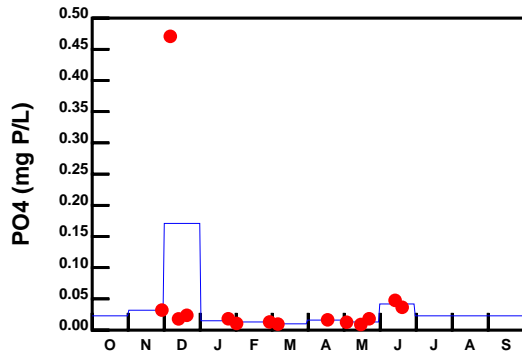
**SWEM - PASSAIC RIVER**

**Boundary Condition - Water Year 9495**

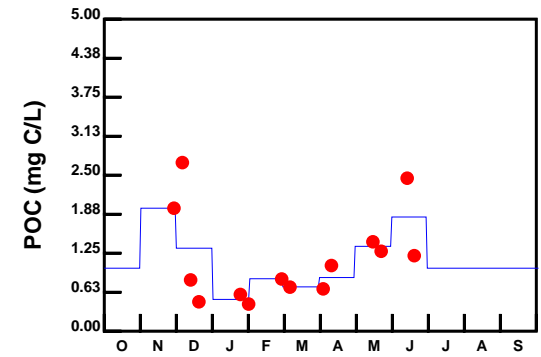
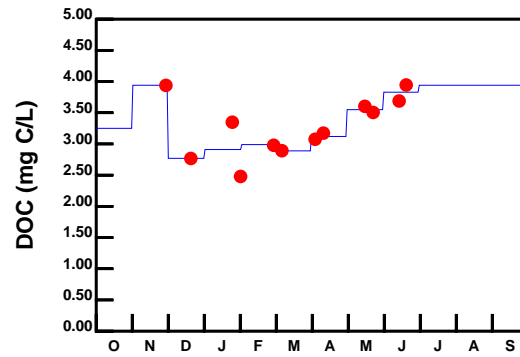
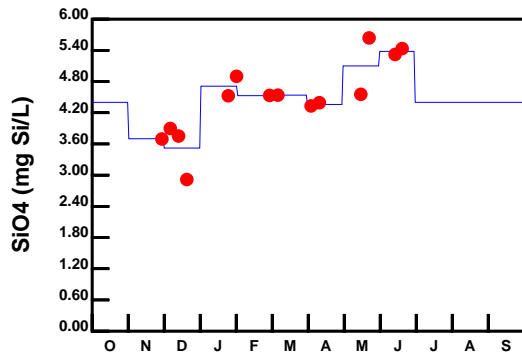
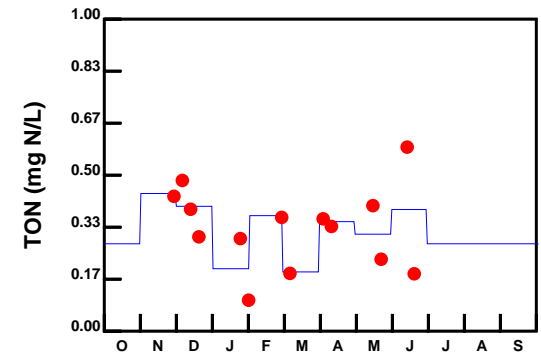
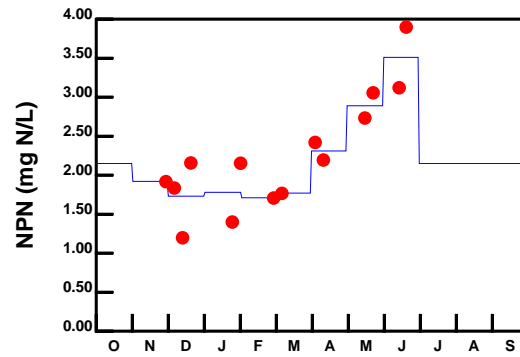
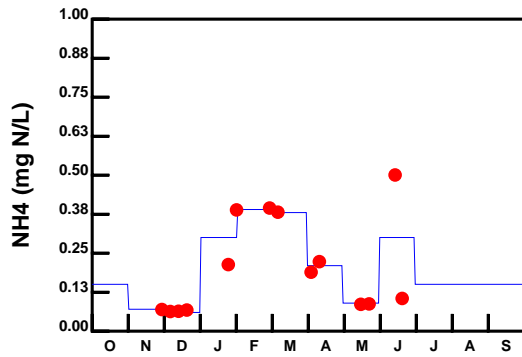
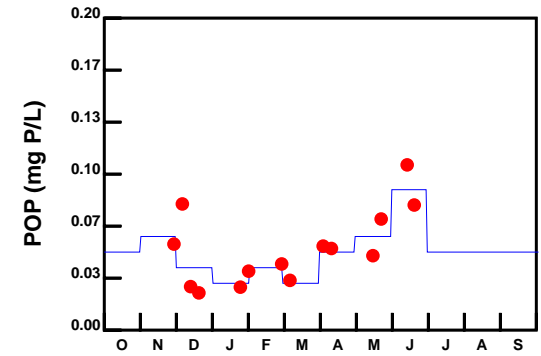
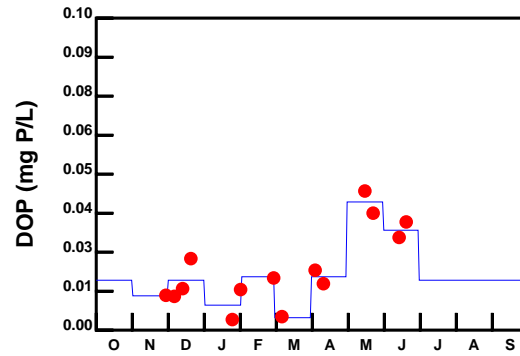
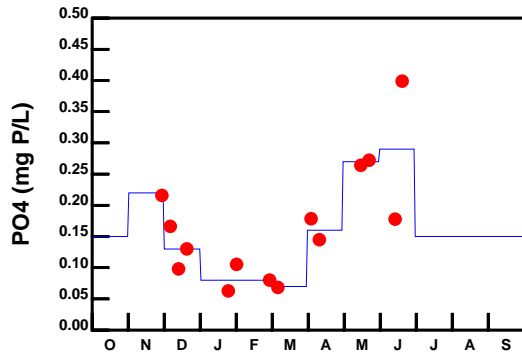


**SWEM - RARITAN RIVER**

**Boundary Condition - Water Year 9495**

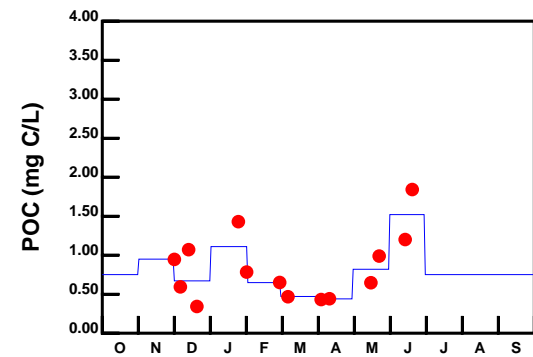
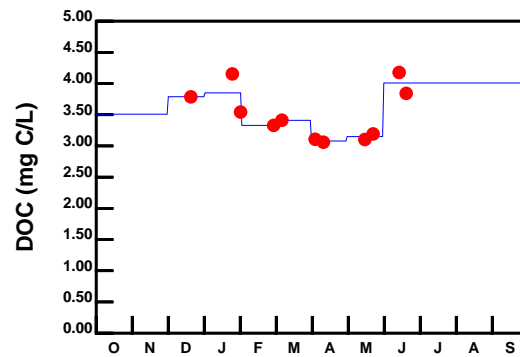
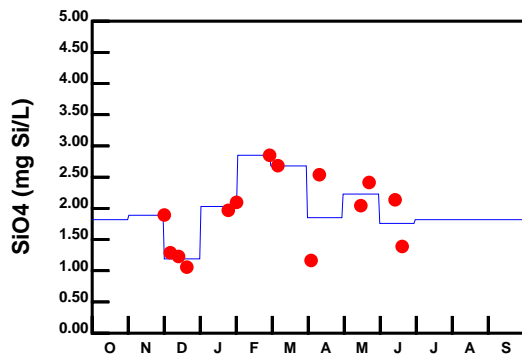
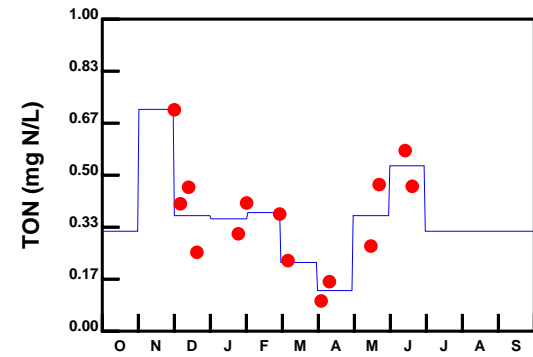
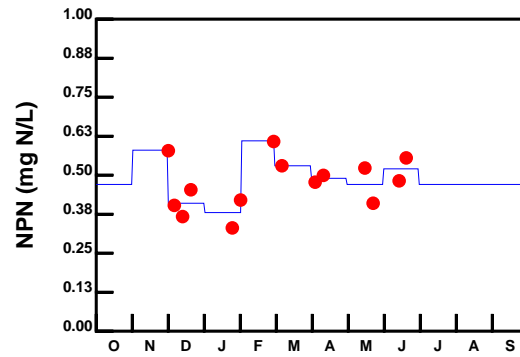
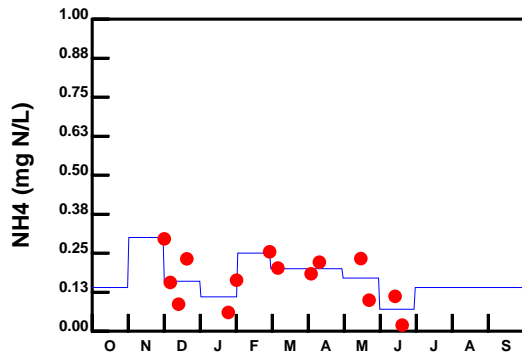
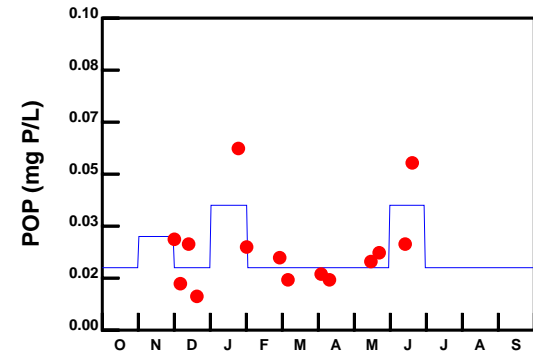
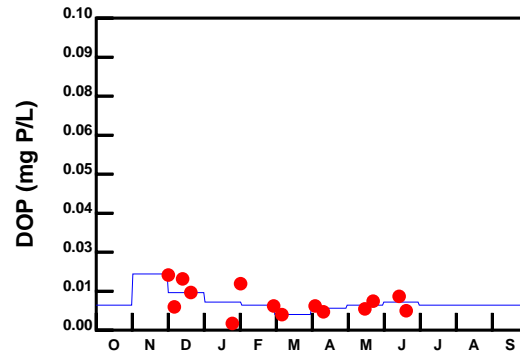
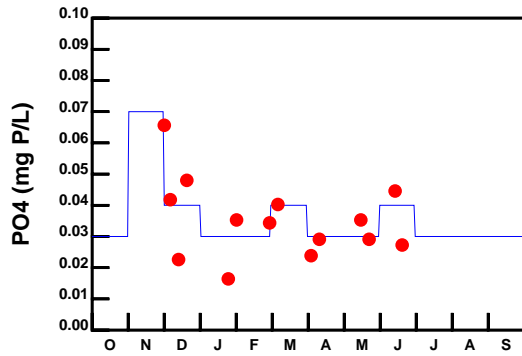


**SWEM - NORWALK RIVER**  
**Boundary Condition - Water Year 9495**



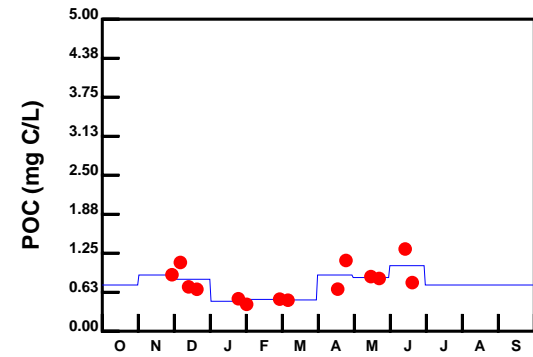
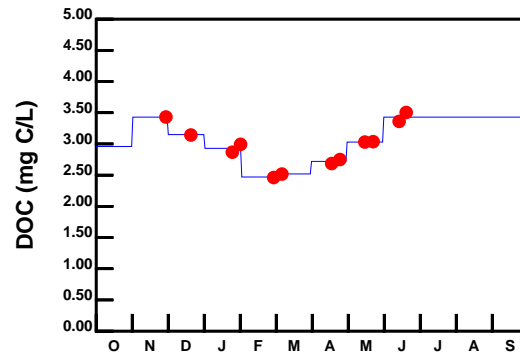
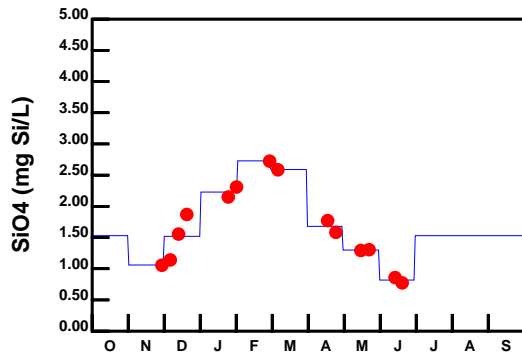
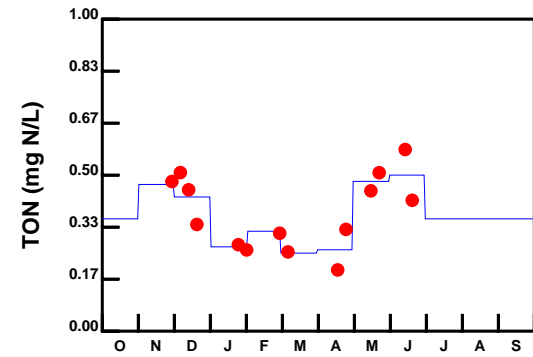
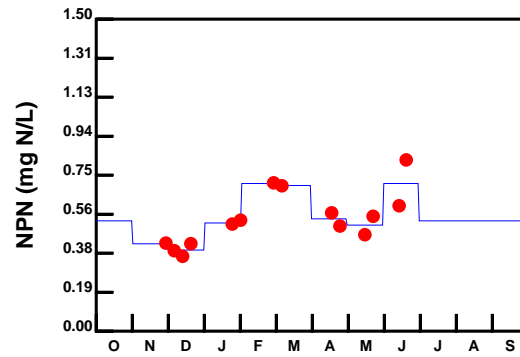
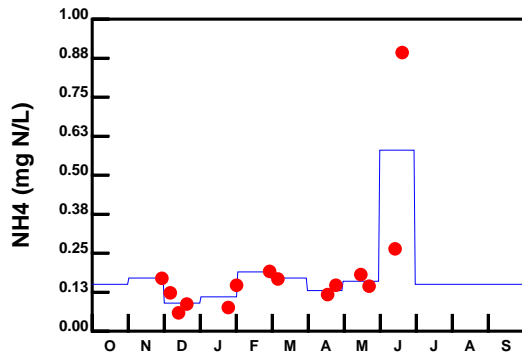
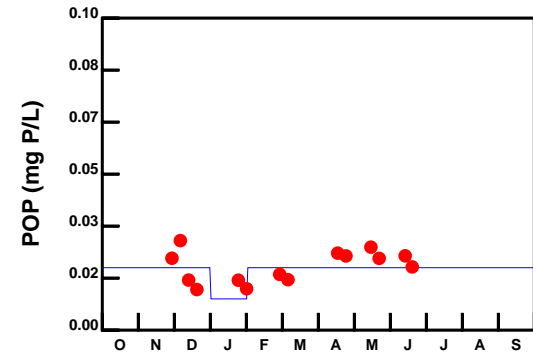
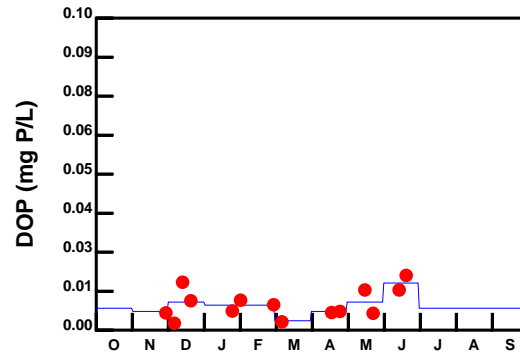
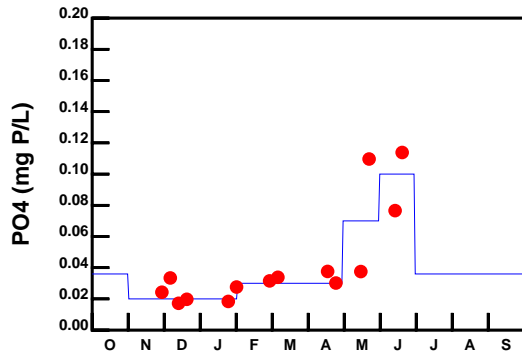
**SWEM - QUINNIPIAC RIVER**

**Boundary Condition - Water Year 9495**



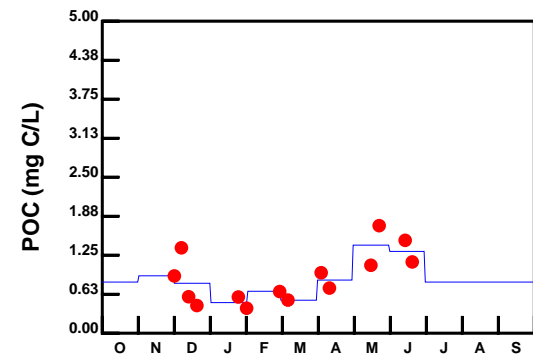
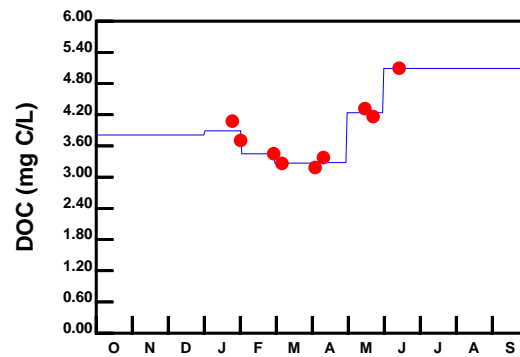
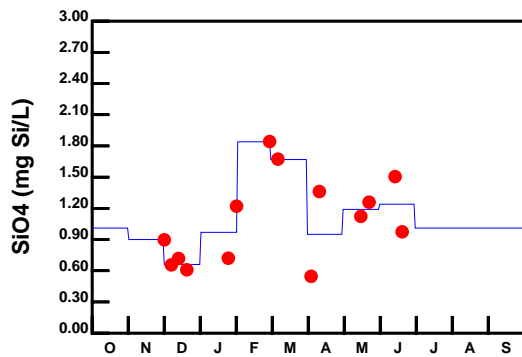
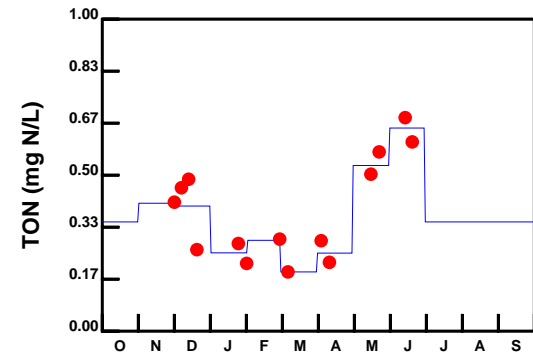
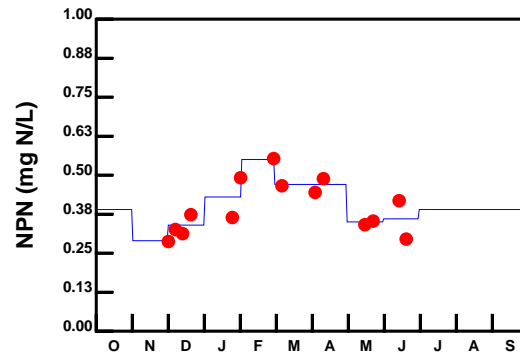
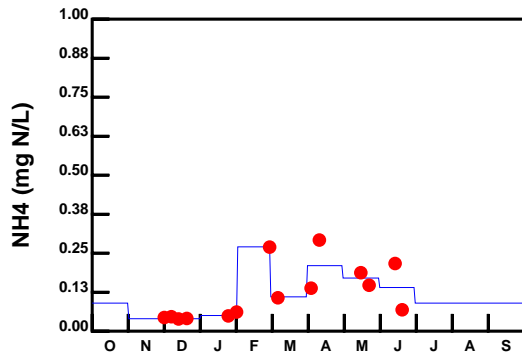
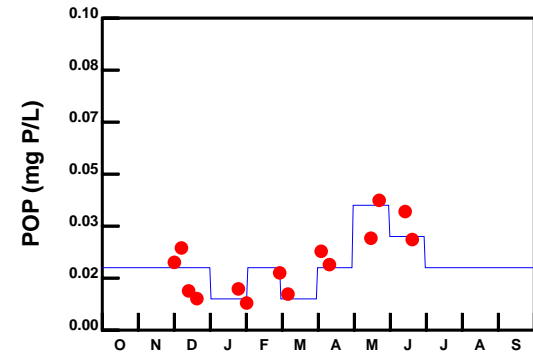
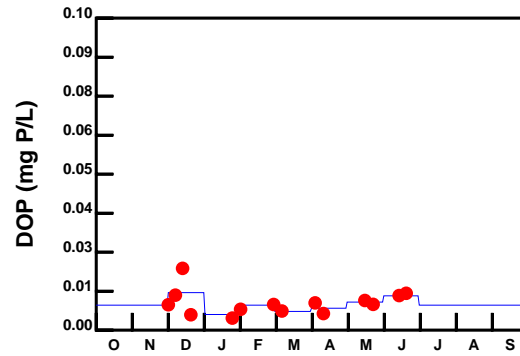
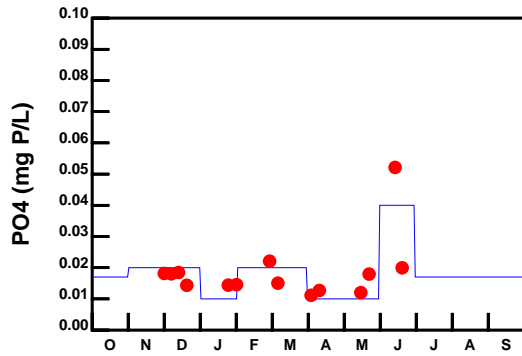
**SWEM - CONNECTICUT RIVER**  
**Boundary Condition - Water Year 9495**





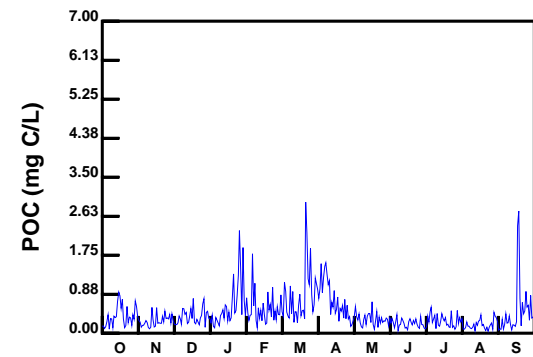
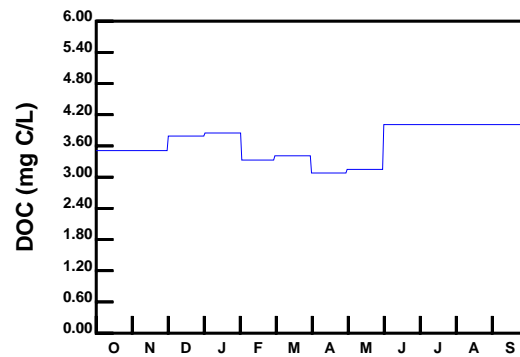
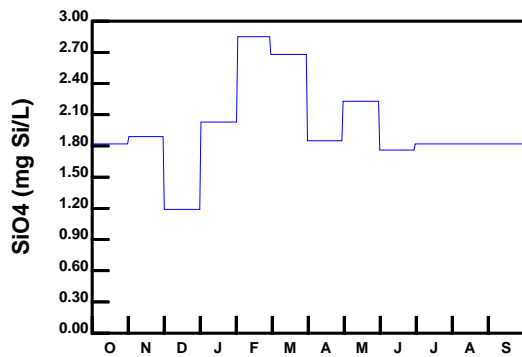
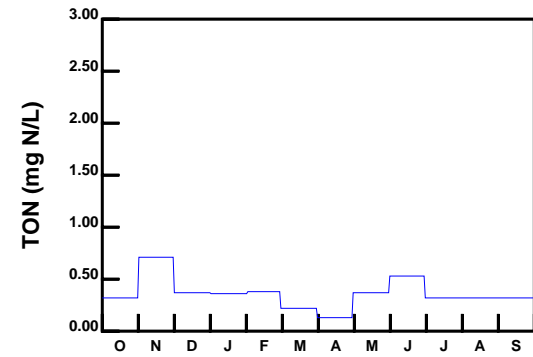
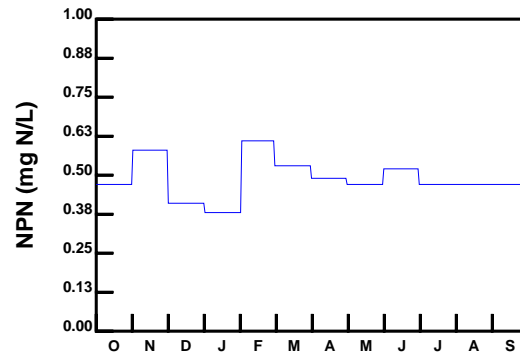
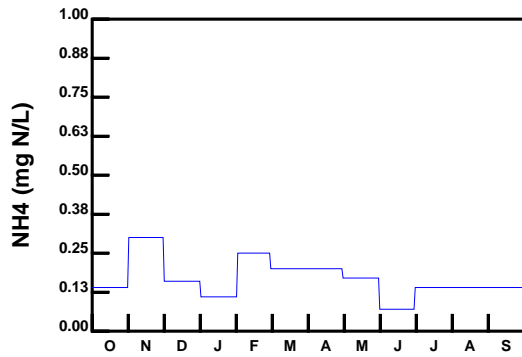
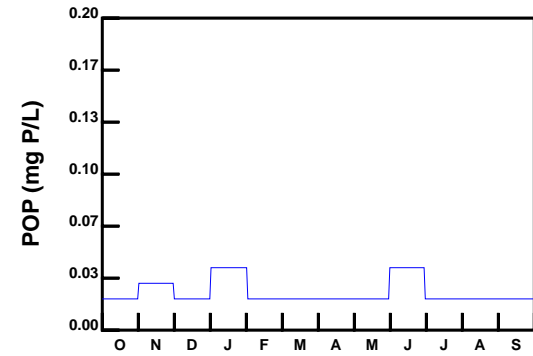
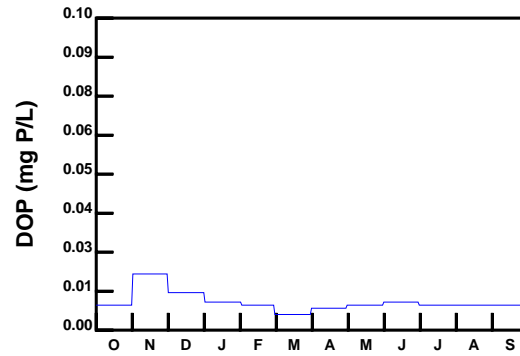
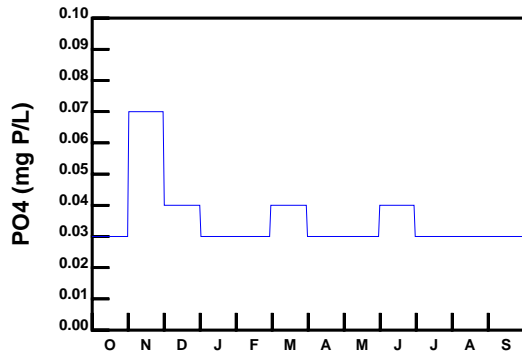
**SWEM - HOUSATONIC AND NAUGATUCK RIVERS**

**Boundary Condition - Water Year 9495**



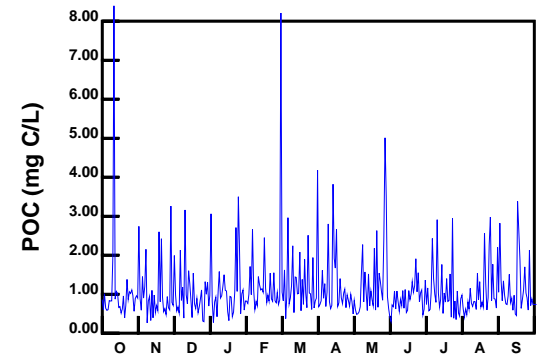
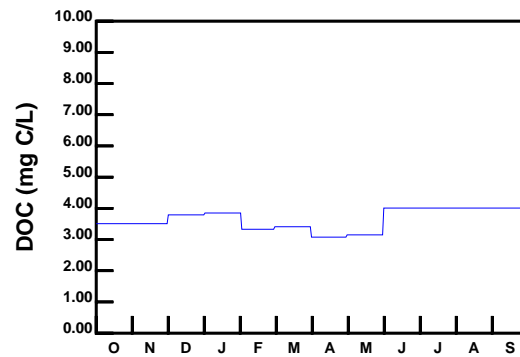
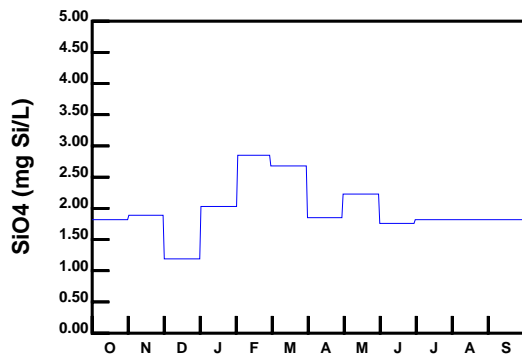
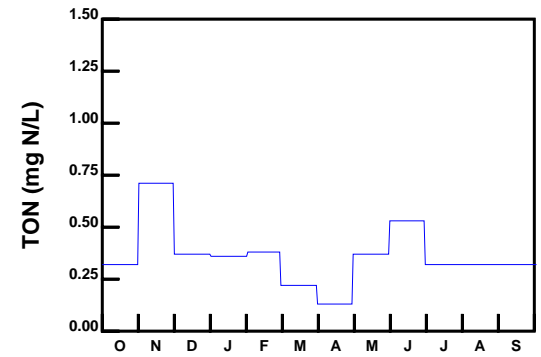
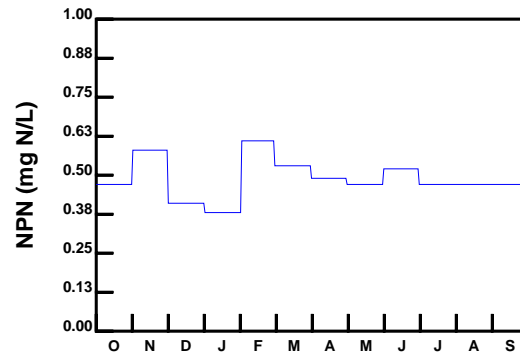
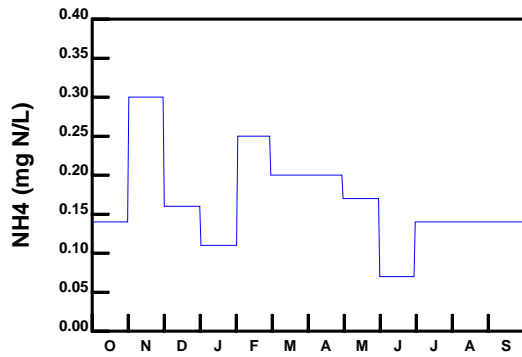
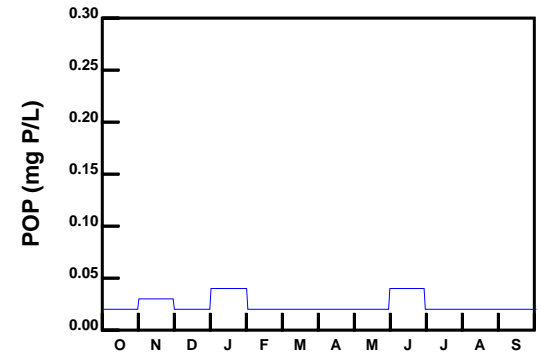
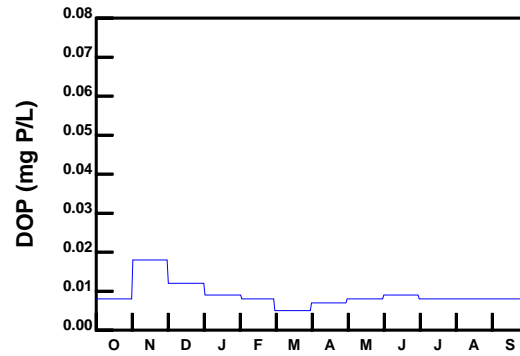
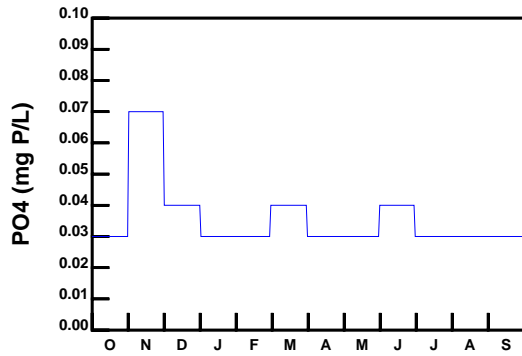
**SWEM - THAMES RIVER**

**Boundary Condition - Water Year 9495**



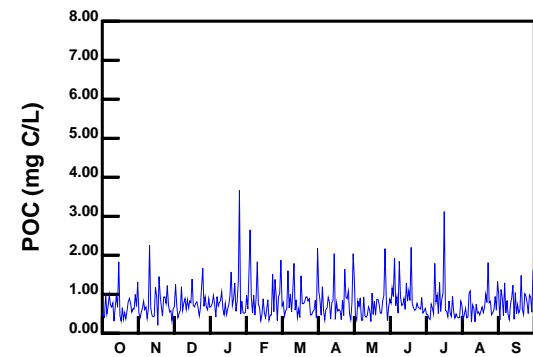
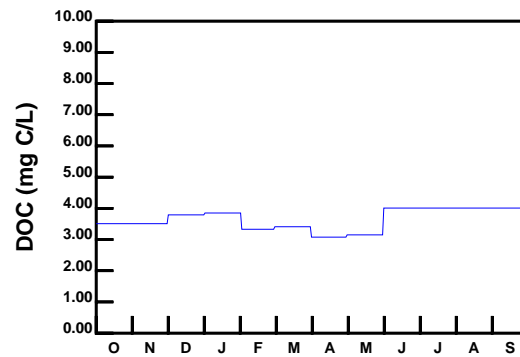
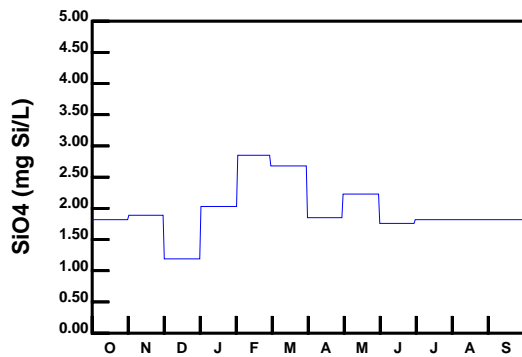
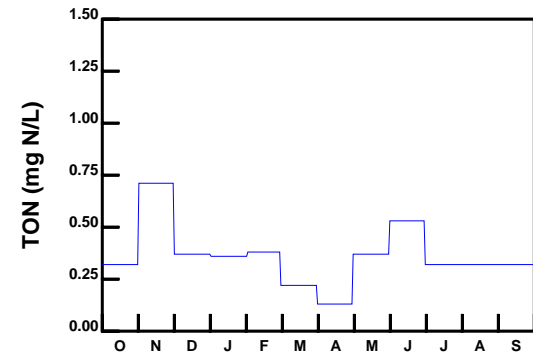
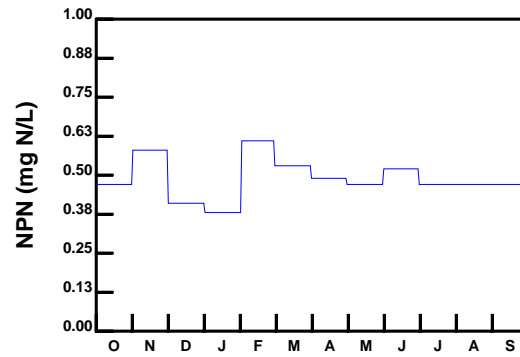
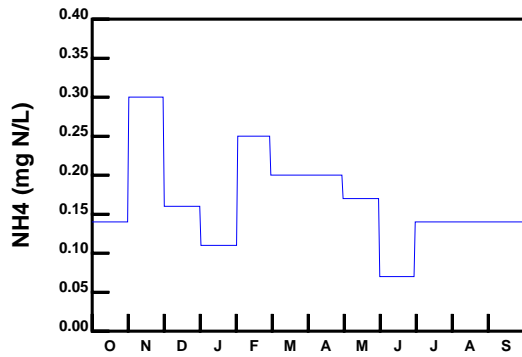
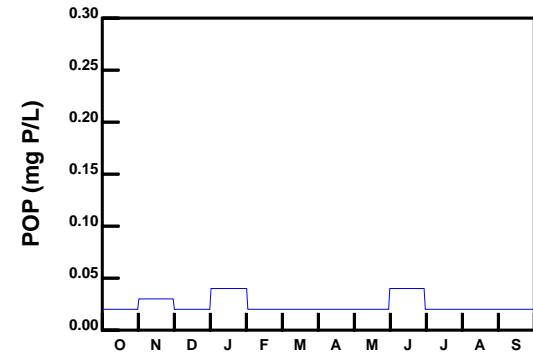
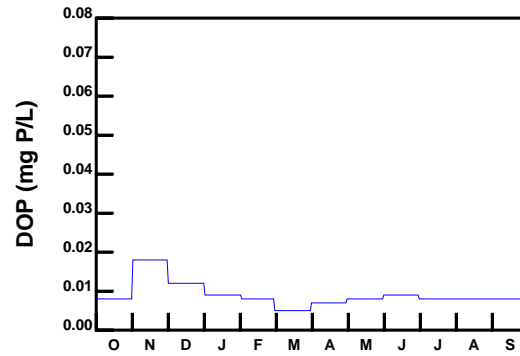
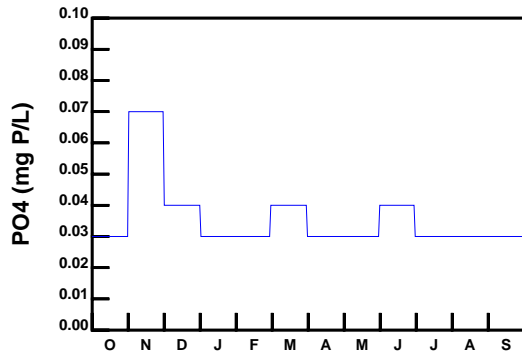
**SWEM - HUDSON RIVER**

**Boundary Condition - Water Year 9899**



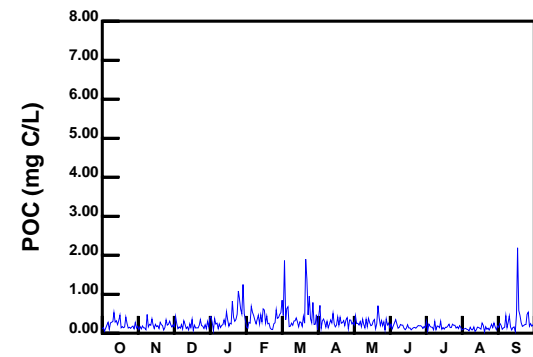
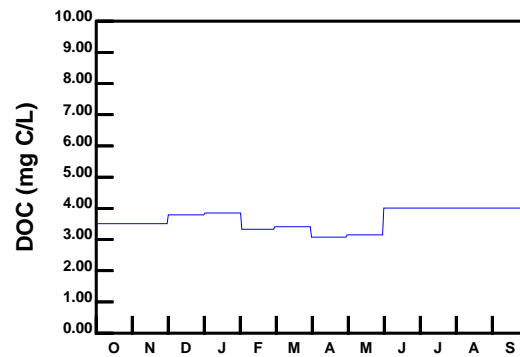
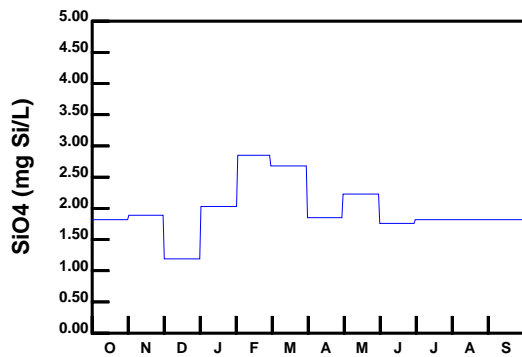
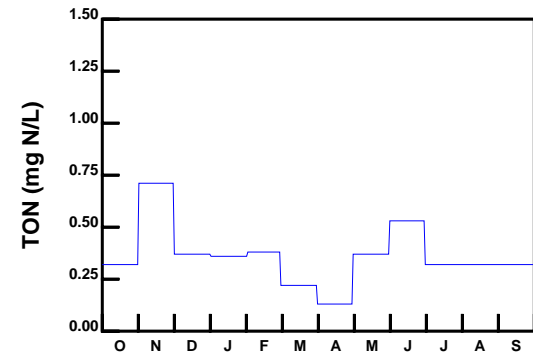
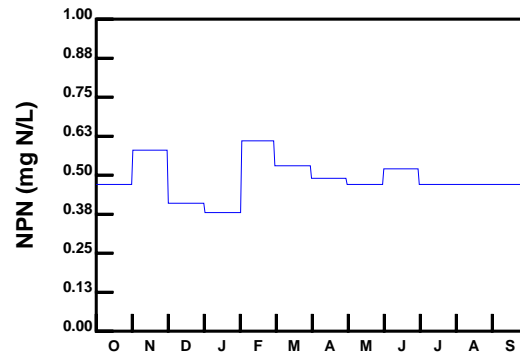
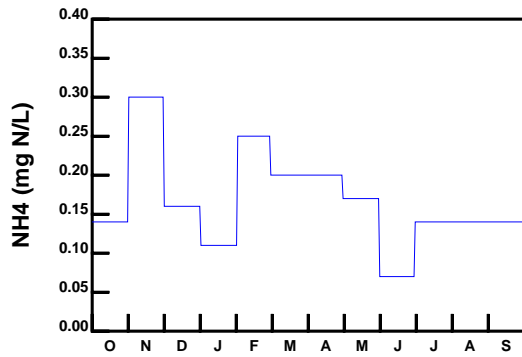
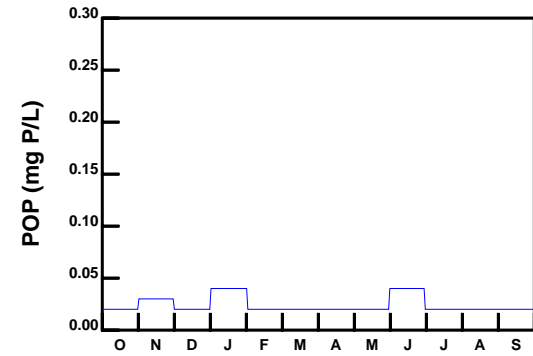
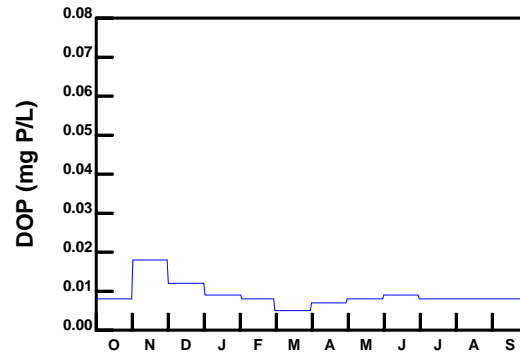
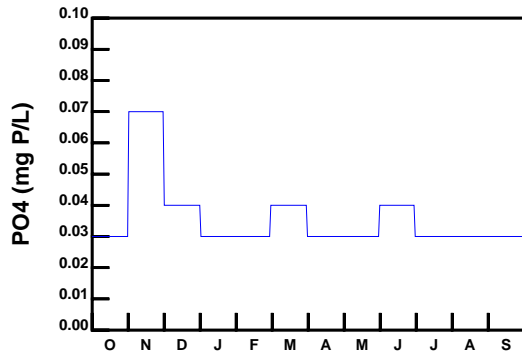
**SWEM - NORMAN KILL**

**Boundary Condition - Water Year 9899**

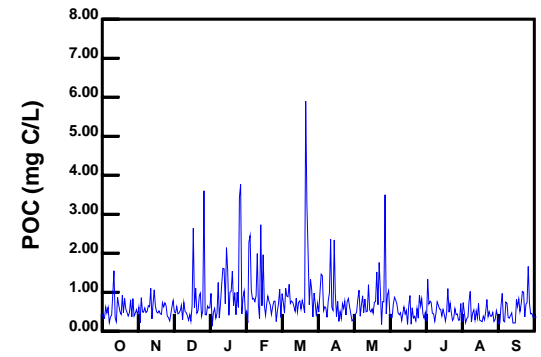
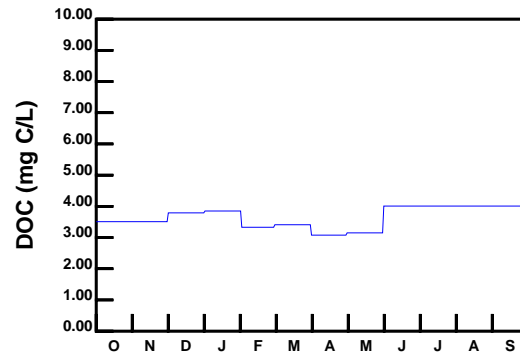
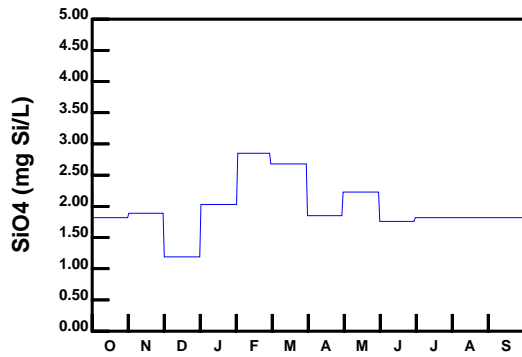
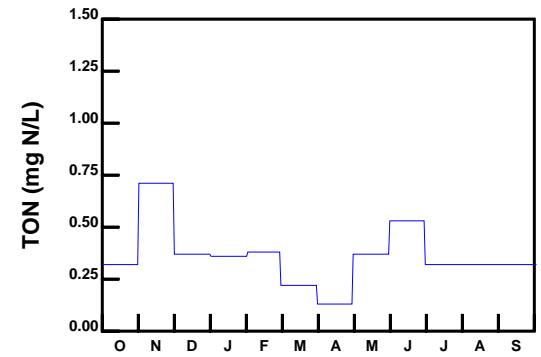
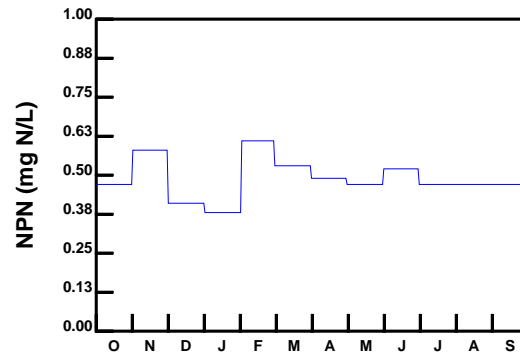
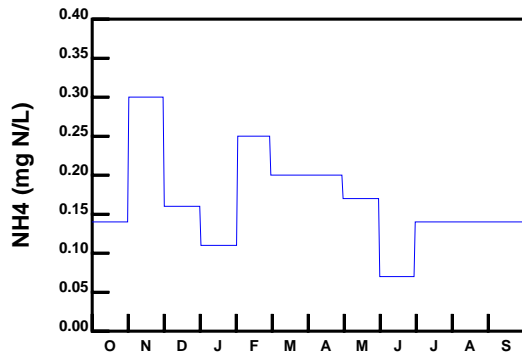
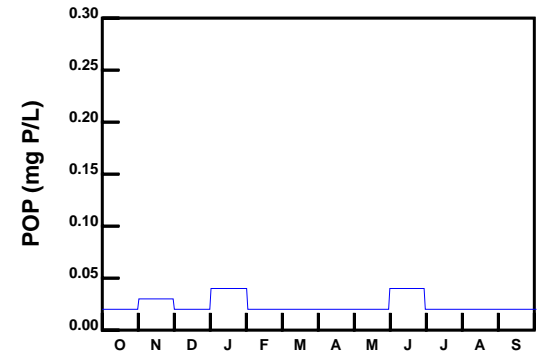
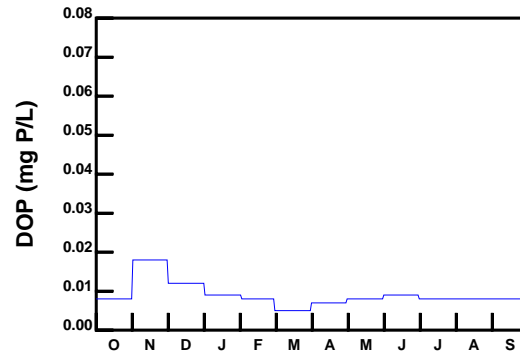
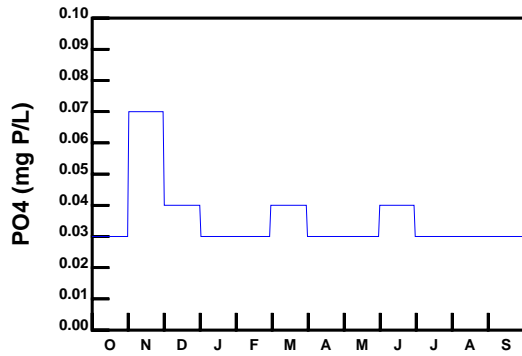


**SWEM - MOORDENER KILL**

**Boundary Condition - Water Year 9899**

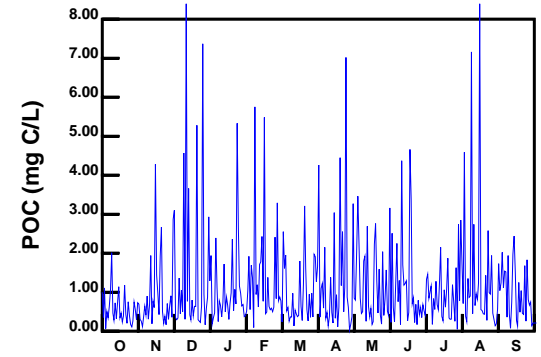
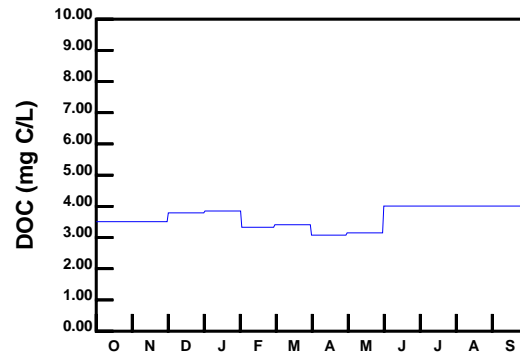
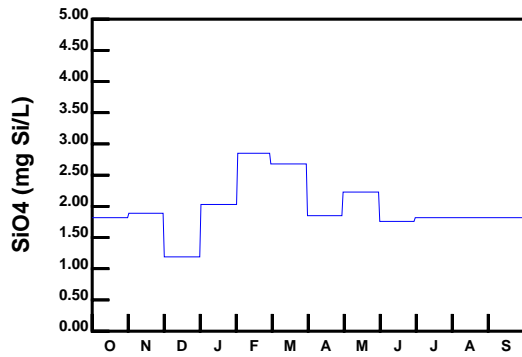
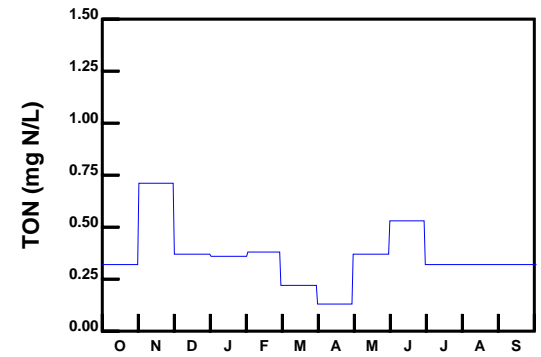
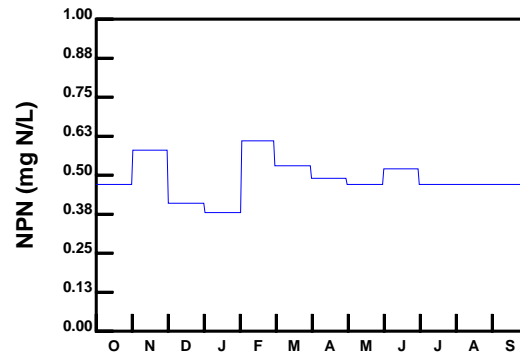
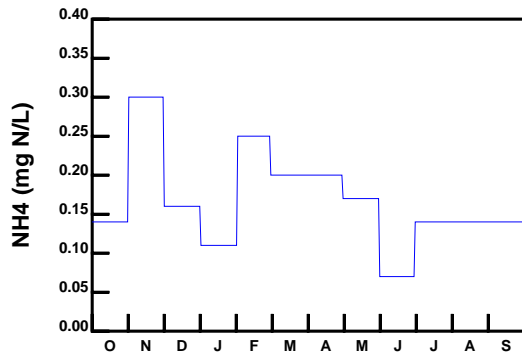
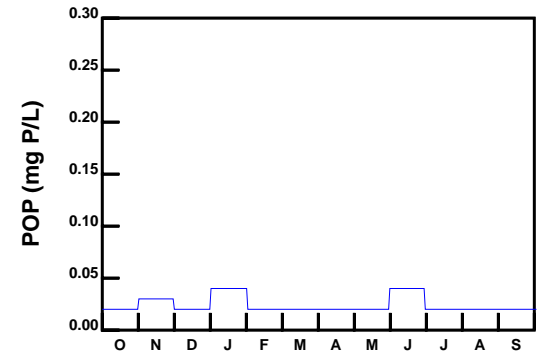
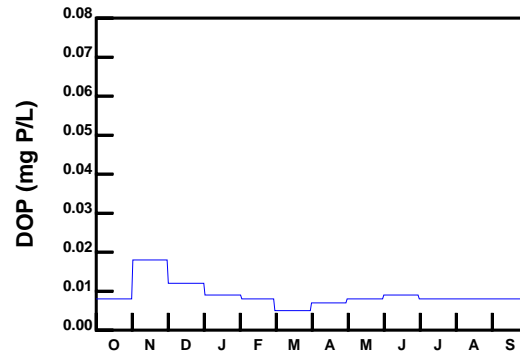
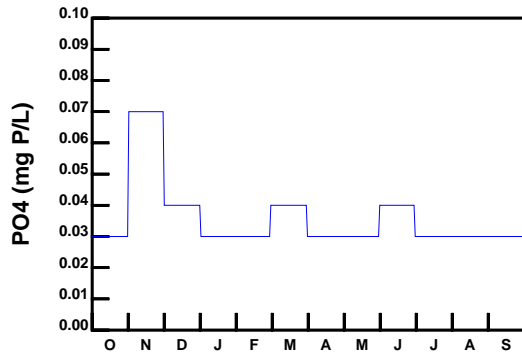


**SWEM - CATSKILL CREEK**  
**Boundary Condition - Water Year 9899**



**SWEM - ESOPUS CREEK**

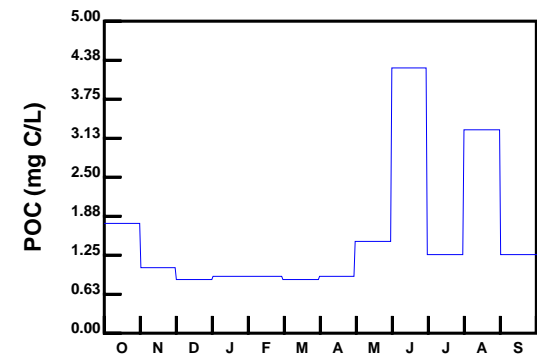
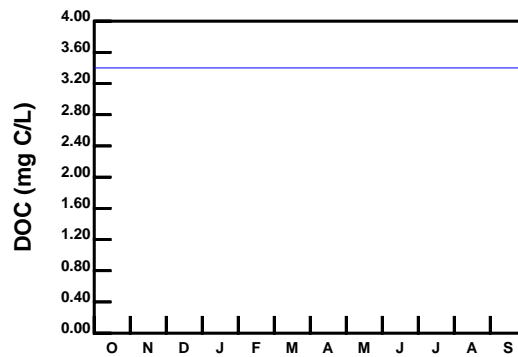
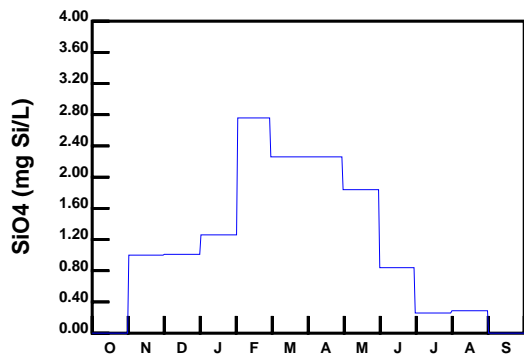
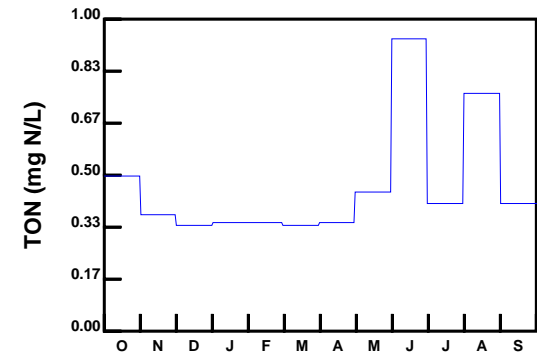
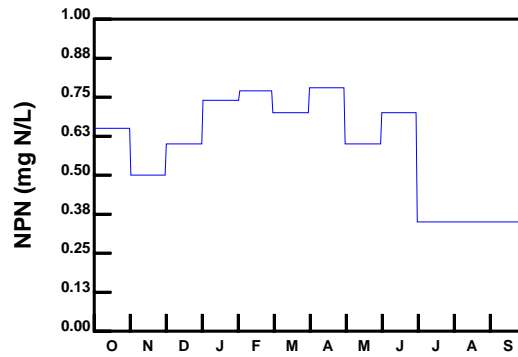
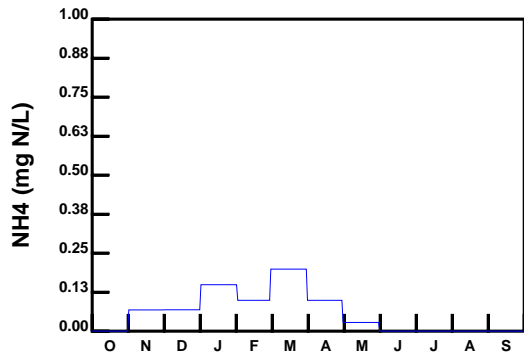
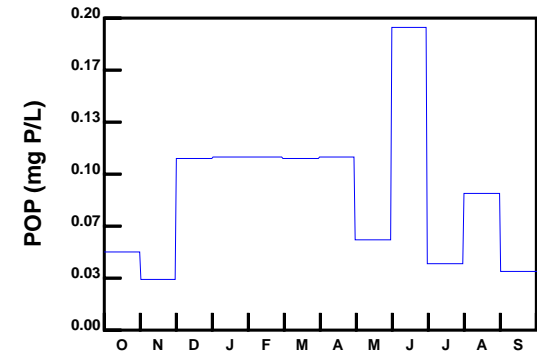
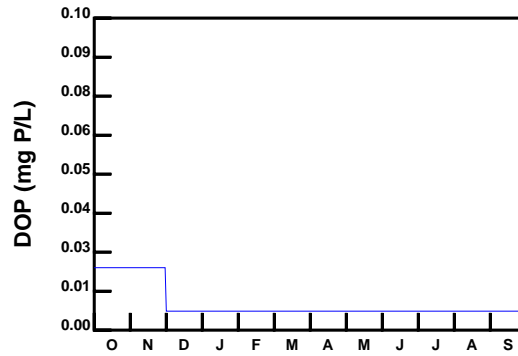
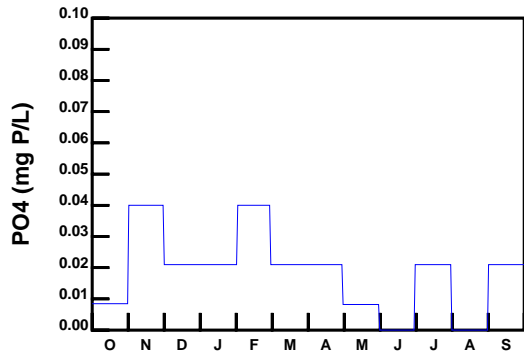
**Boundary Condition - Water Year 9899**



**SWEM - ROUNDOUT CREEK / WALLKILL RIVER**

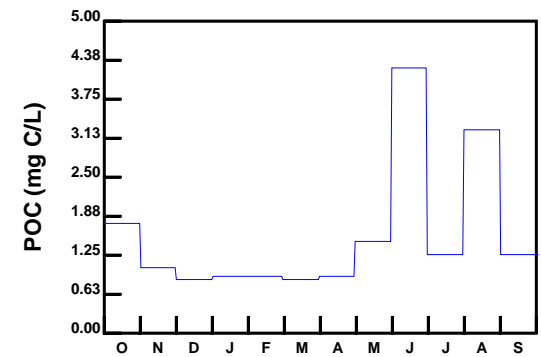
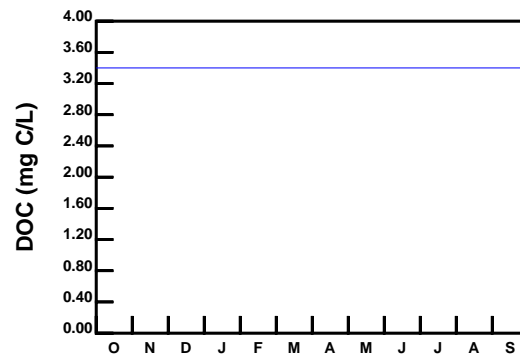
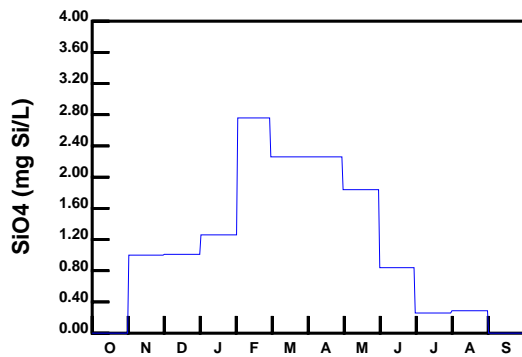
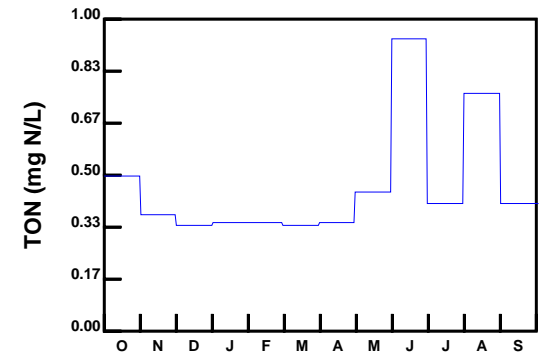
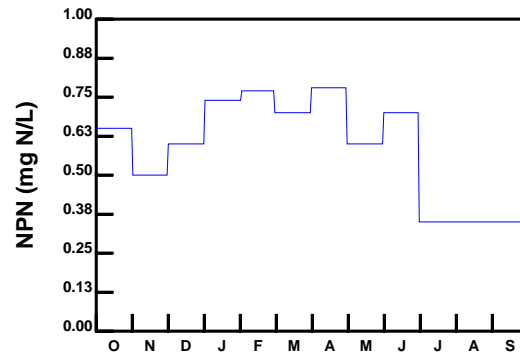
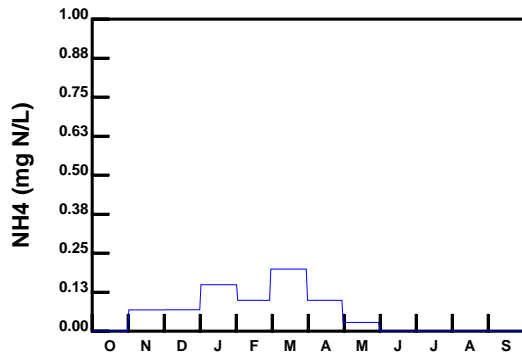
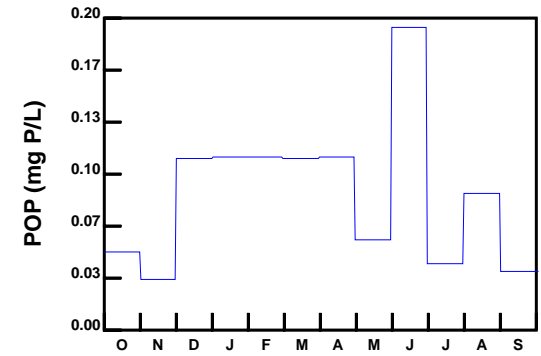
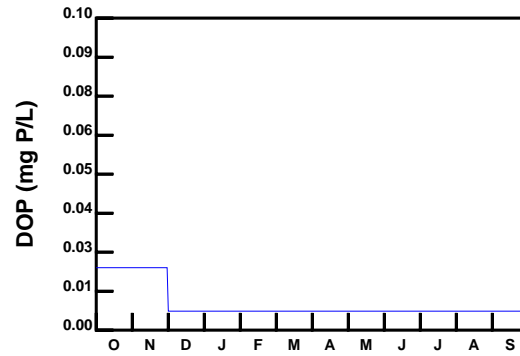
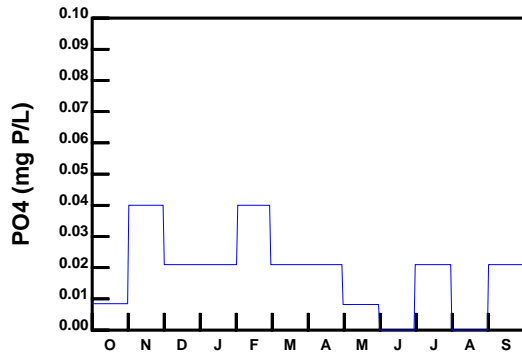
**Boundary Condition - Water Year 9899**





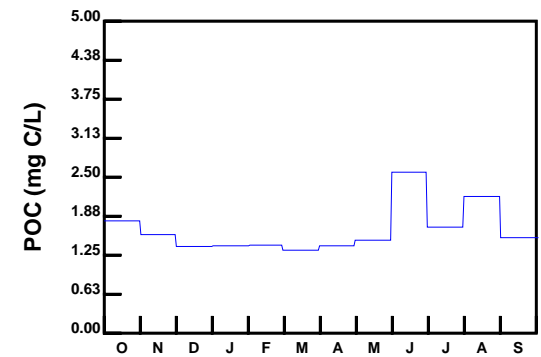
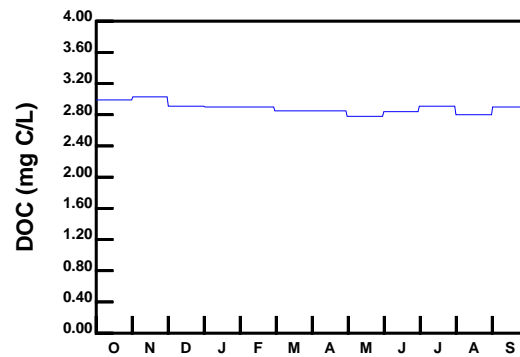
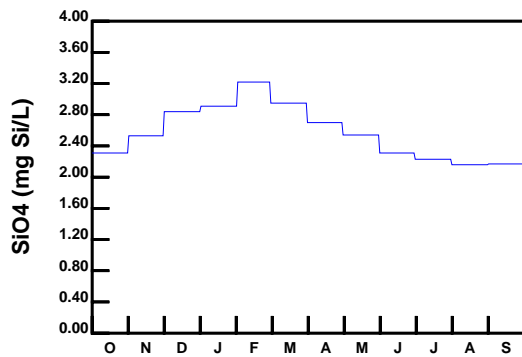
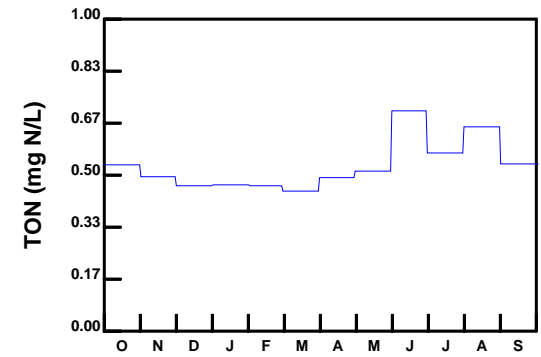
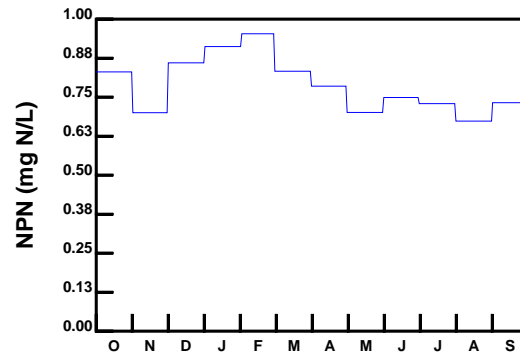
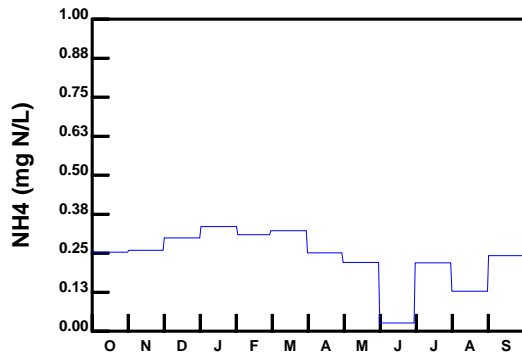
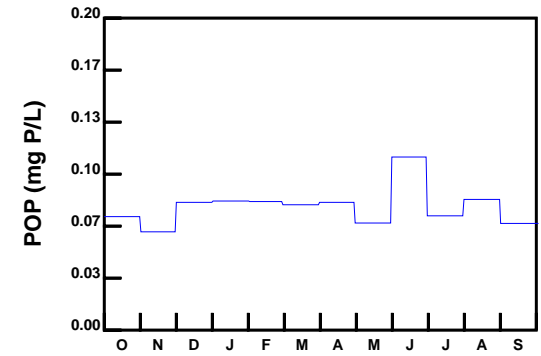
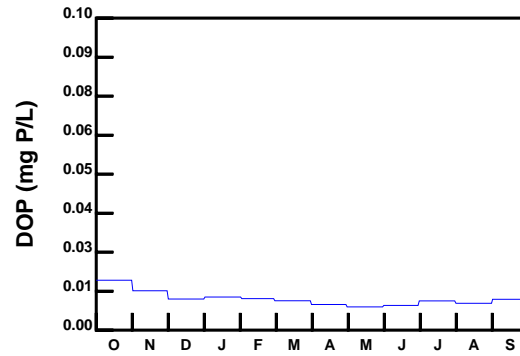
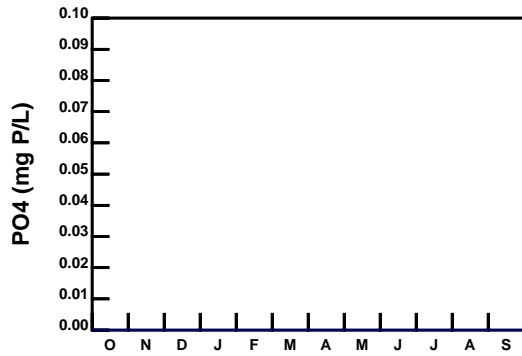
**SWEM - WAPPINGER CREEK**

**Boundary Condition - Water Year 9899**



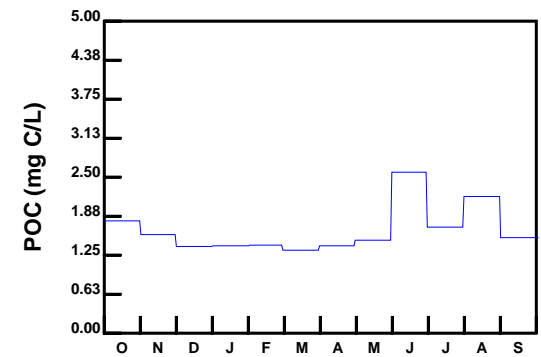
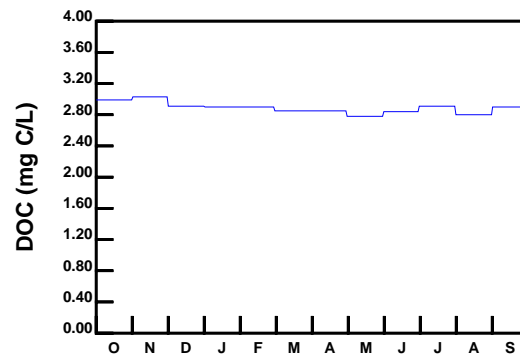
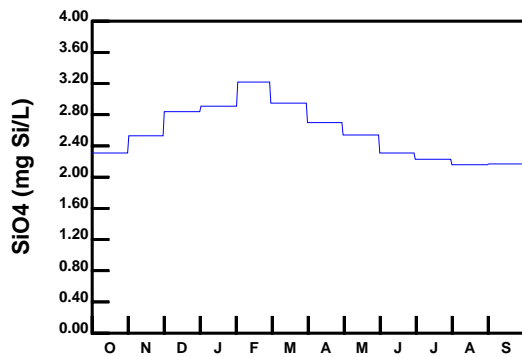
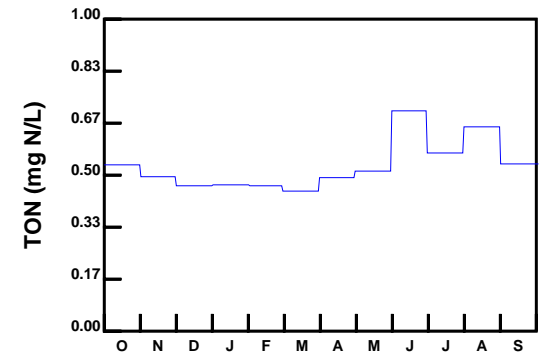
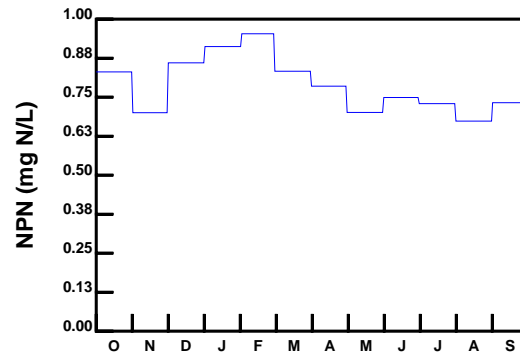
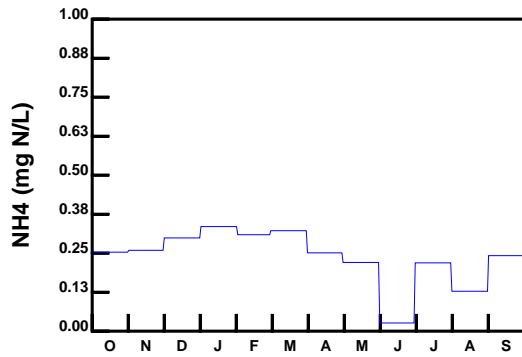
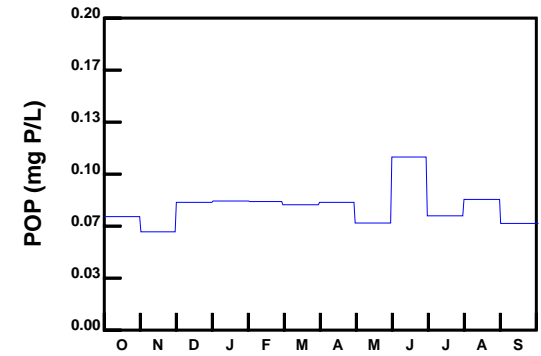
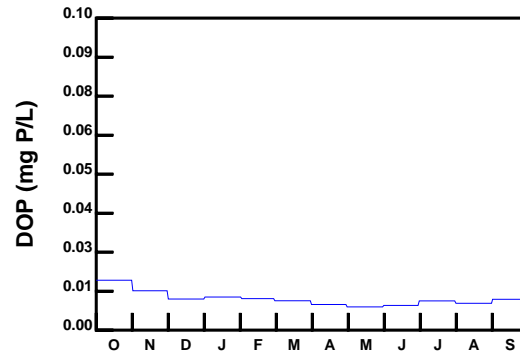
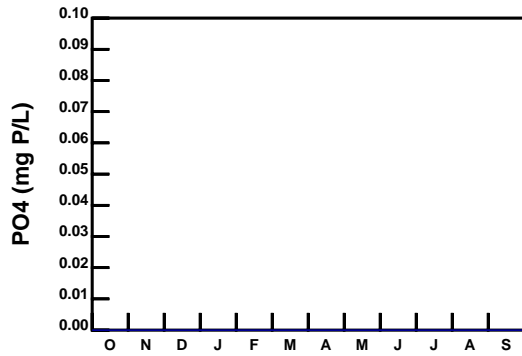
**SWEM - CROTON CREEK**

**Boundary Condition - Water Year 9899**



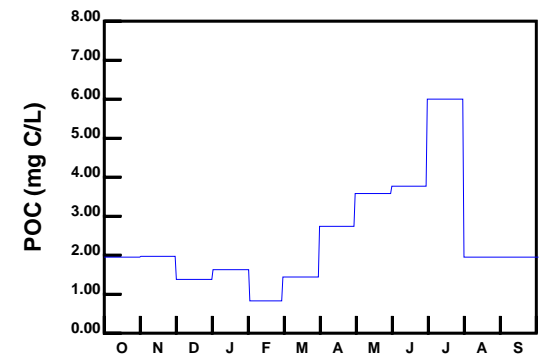
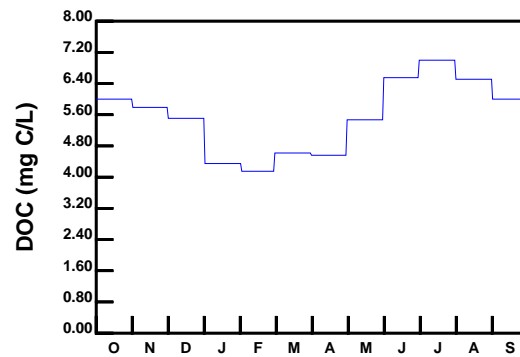
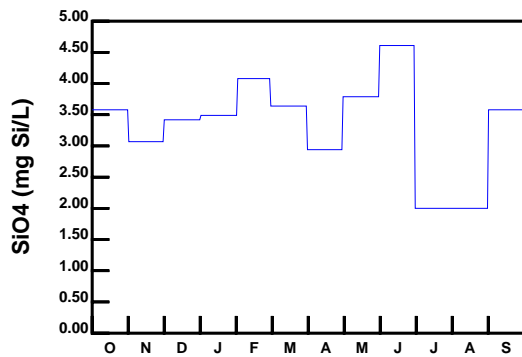
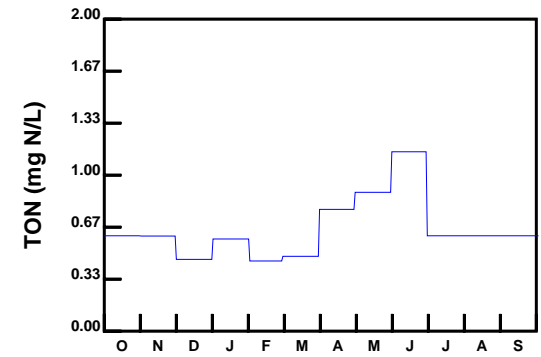
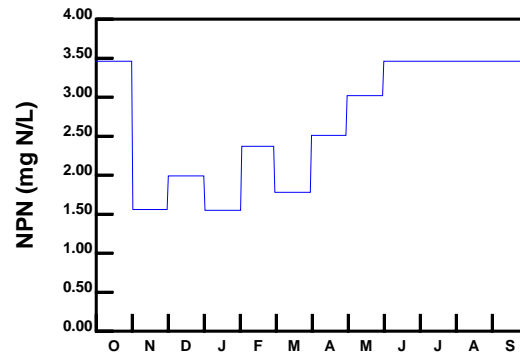
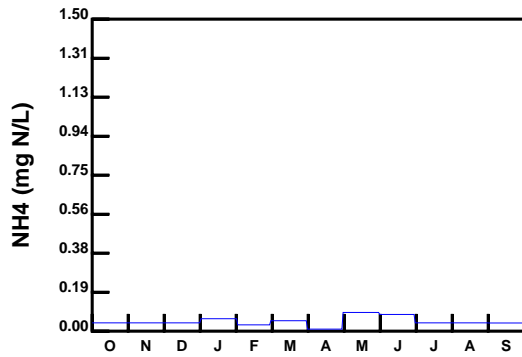
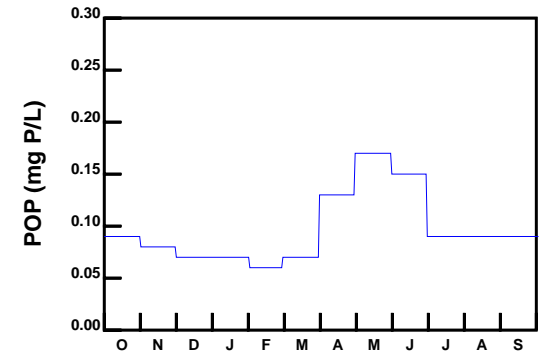
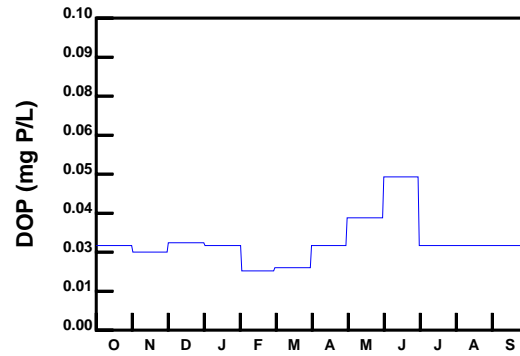
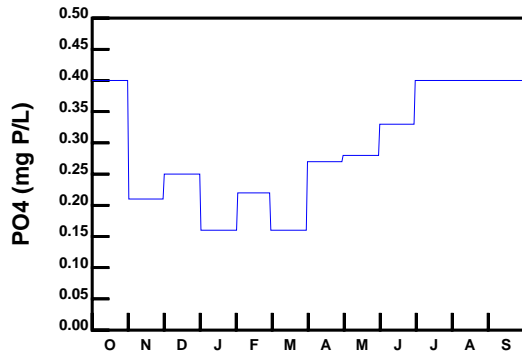
**SWEM - SAWMILL CREEK**

**Boundary Condition - Water Year 9899**



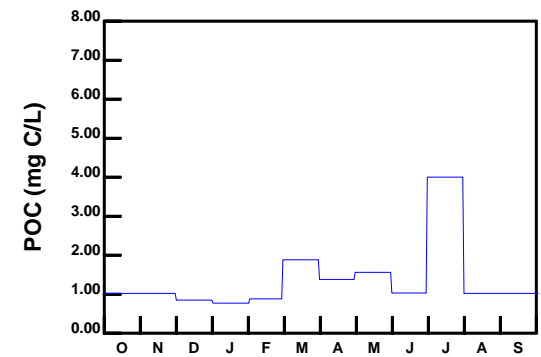
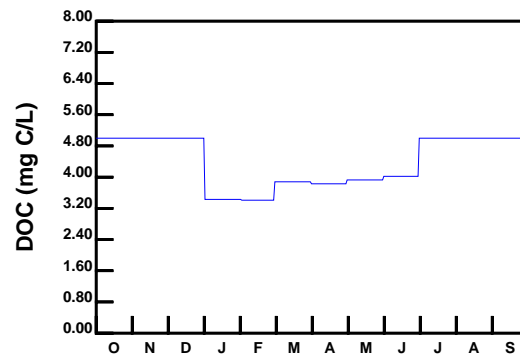
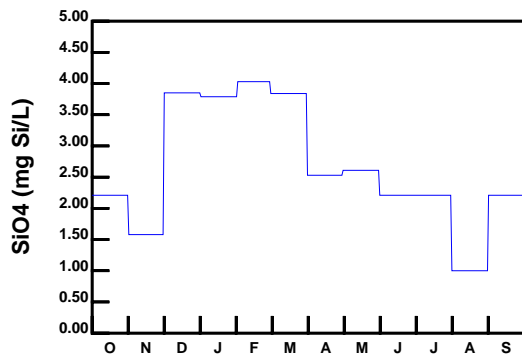
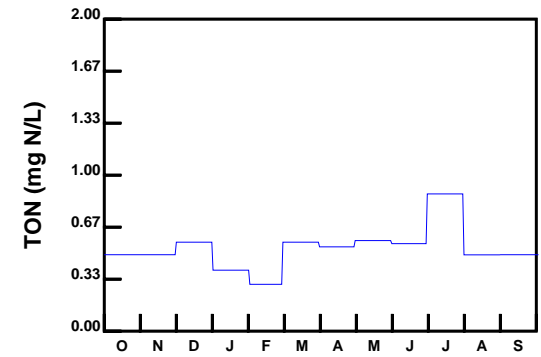
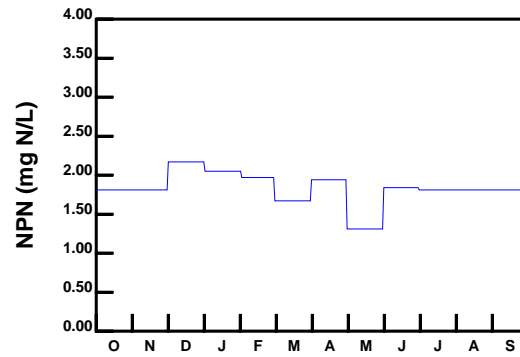
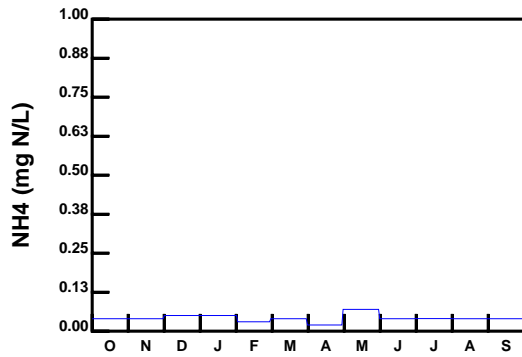
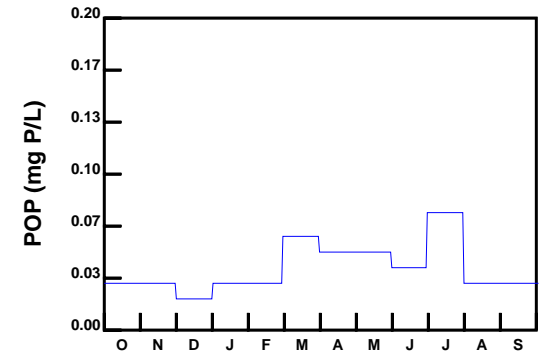
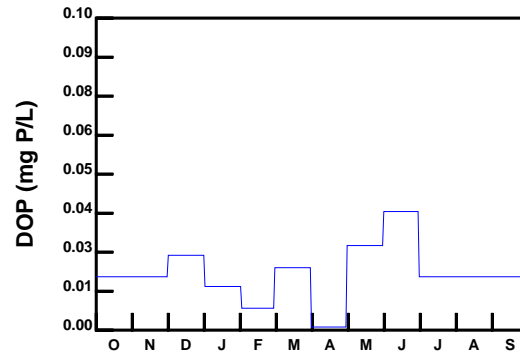
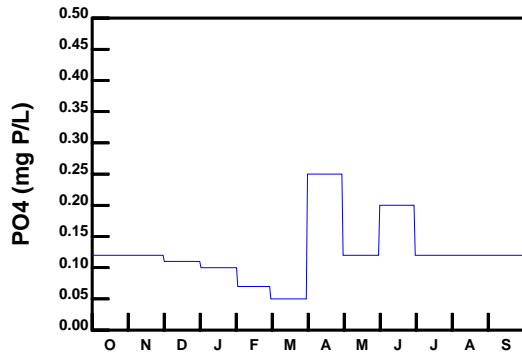
**SWEM - BRONX RIVER**

**Boundary Condition - Water Year 9899**



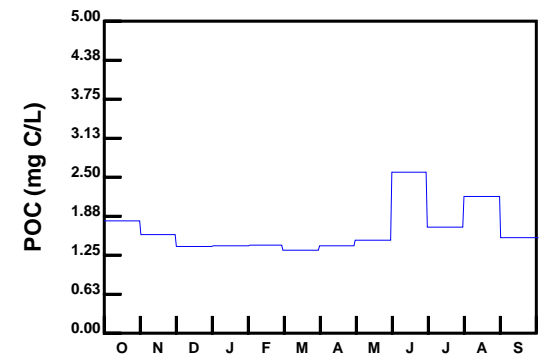
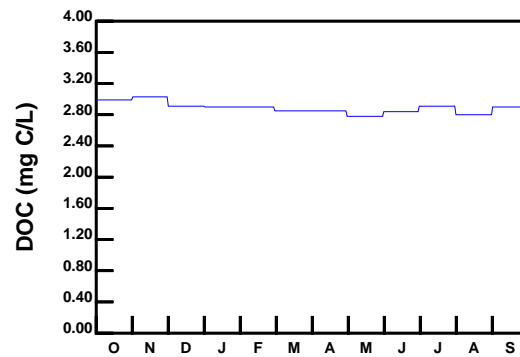
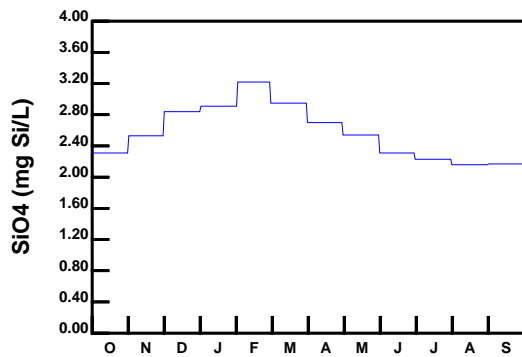
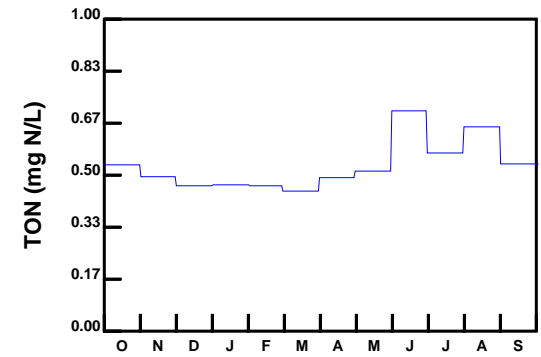
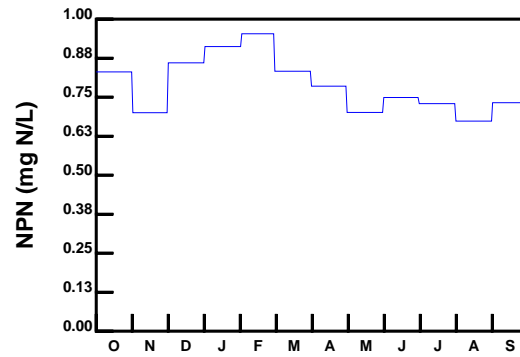
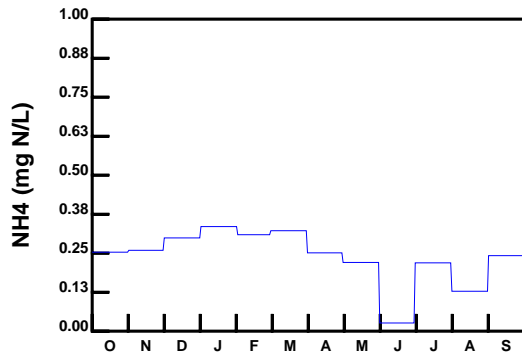
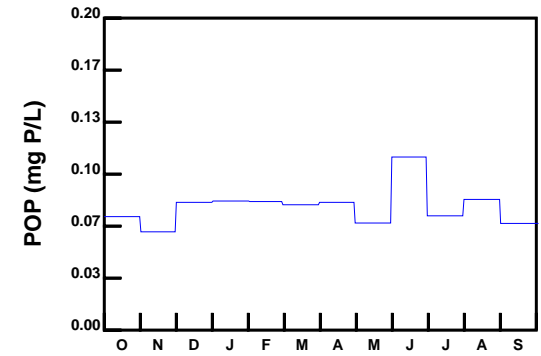
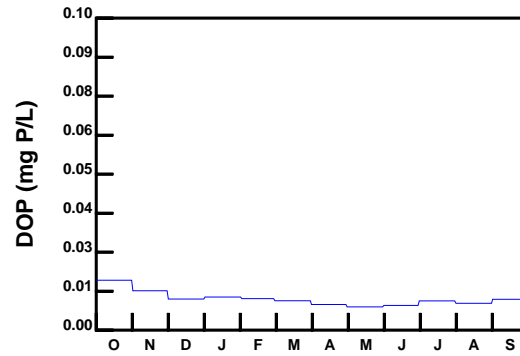
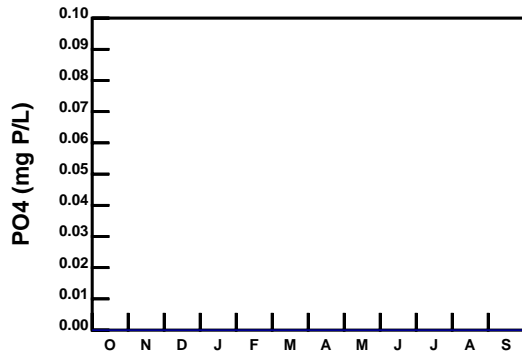
**SWEM - SADDLE RIVER**

**Boundary Condition - Water Year 9899**



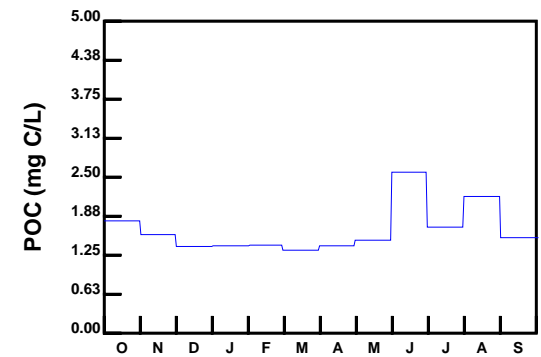
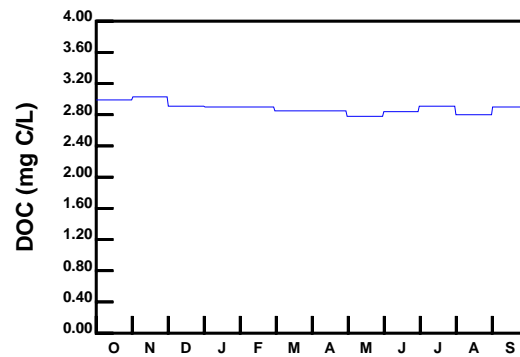
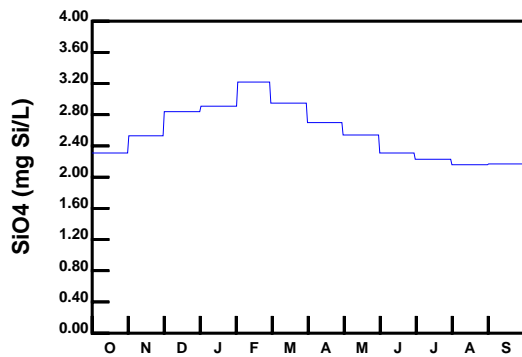
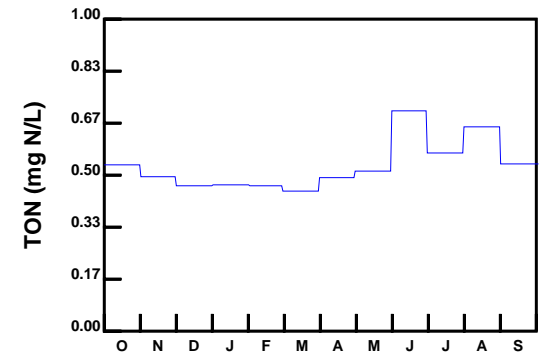
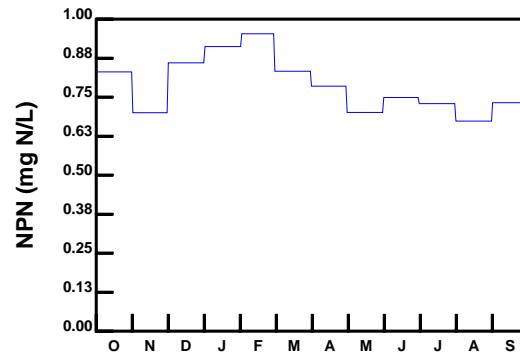
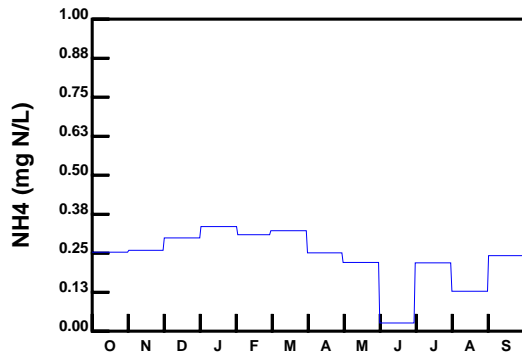
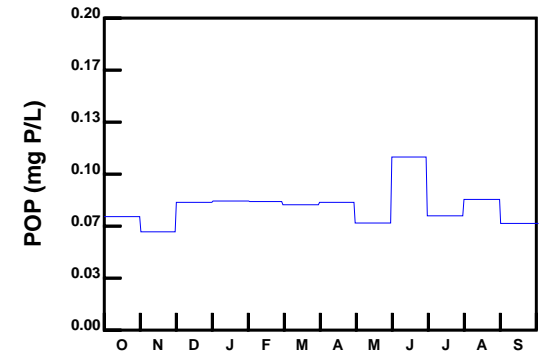
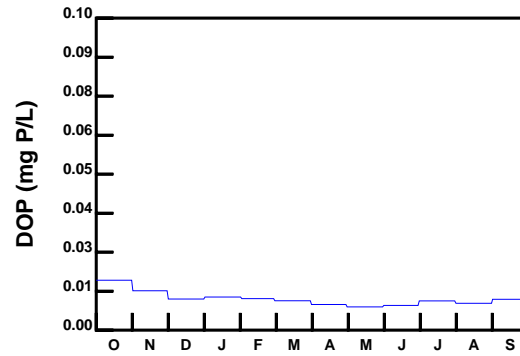
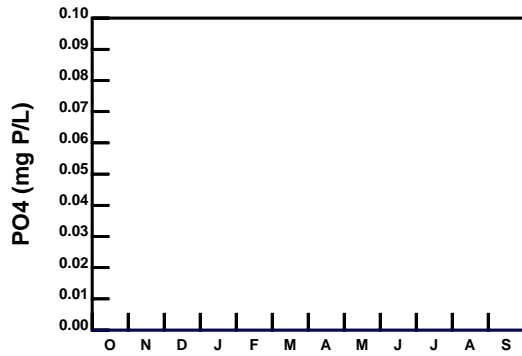
**SWEM - SOUTH RIVER**

**Boundary Condition - Water Year 9899**



**SWEM - NAVESINK AND SHREWSBURY RIVERS**

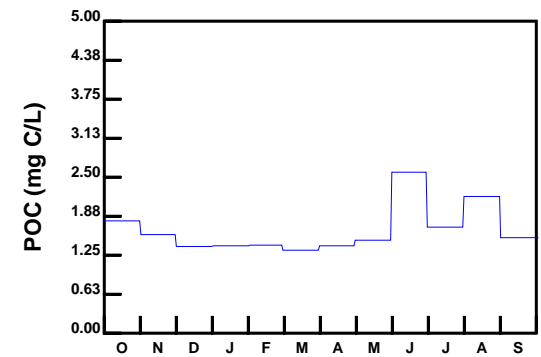
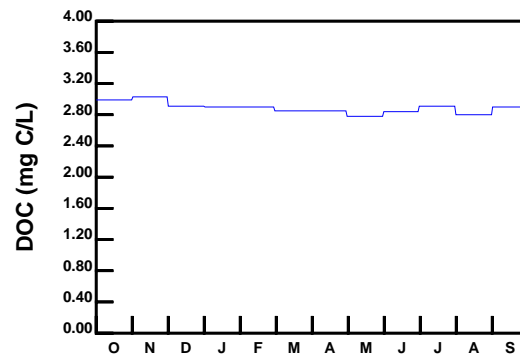
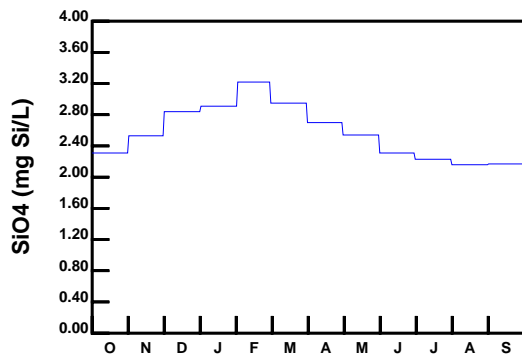
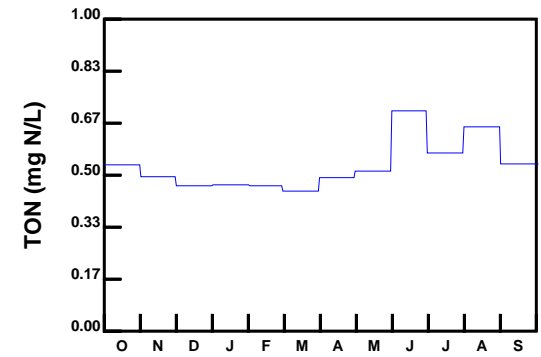
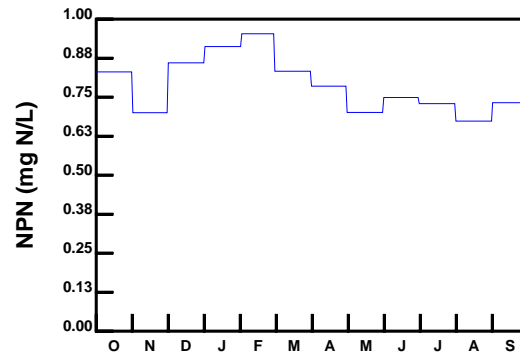
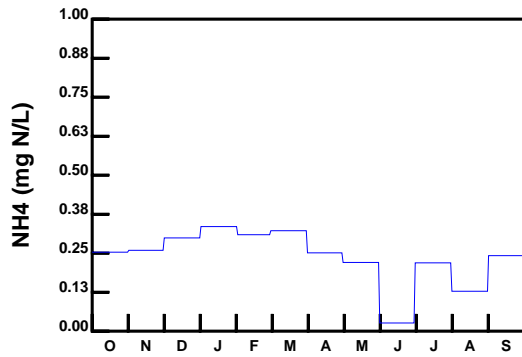
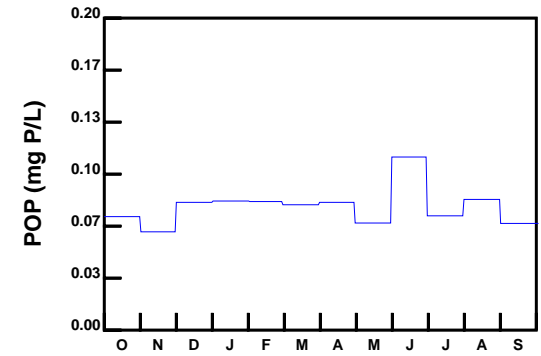
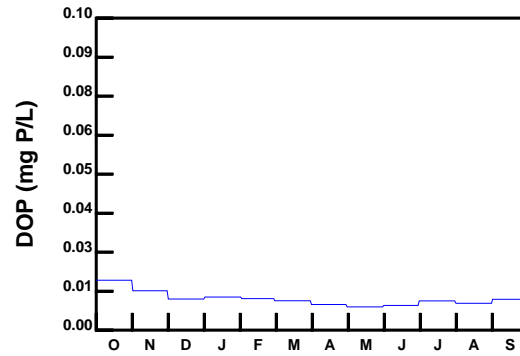
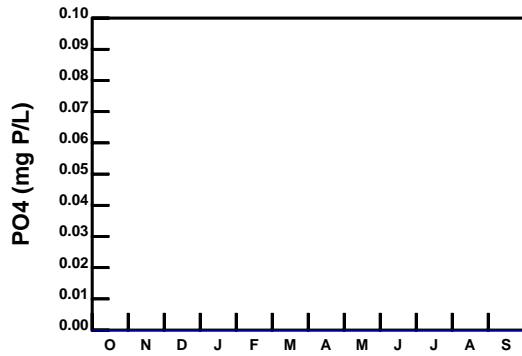
**Boundary Condition - Water Year 9899**



**SWEM - MANASQUAN RIVER**

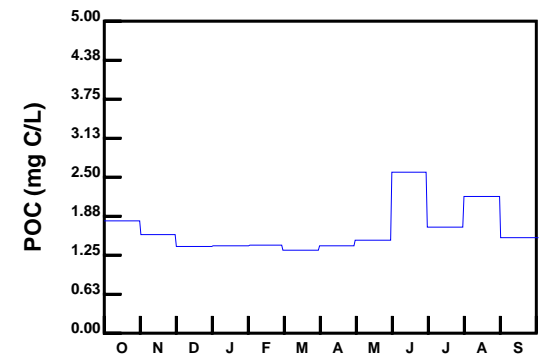
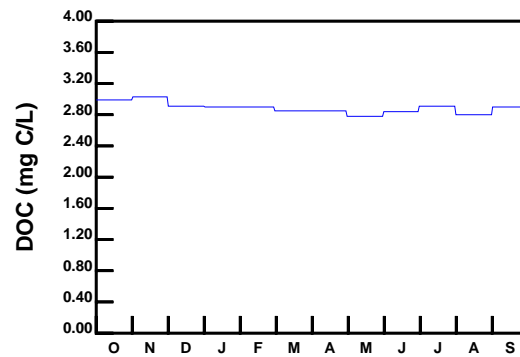
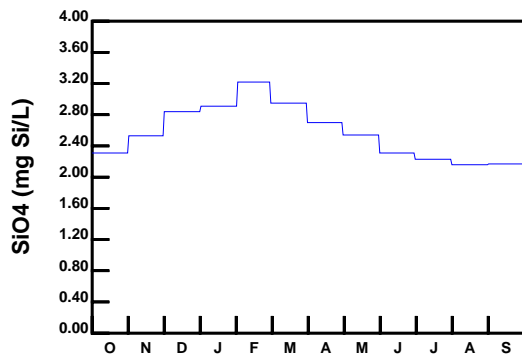
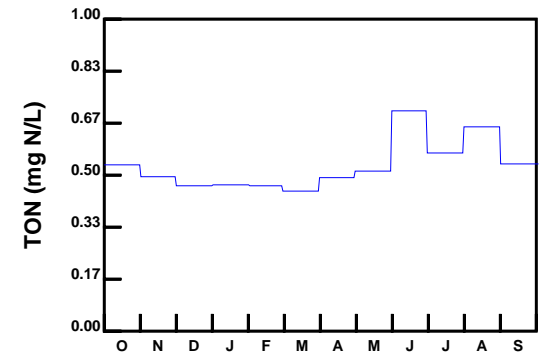
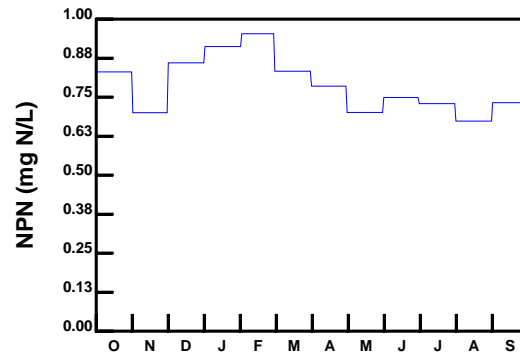
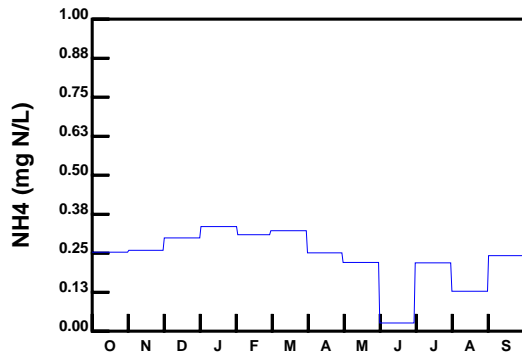
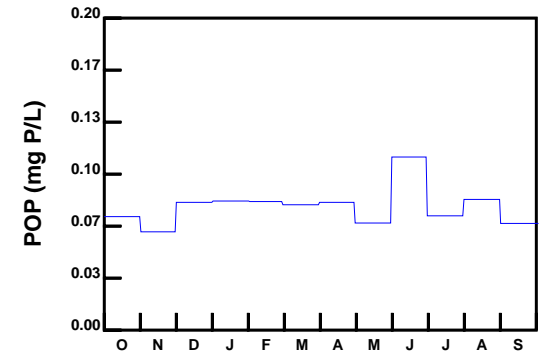
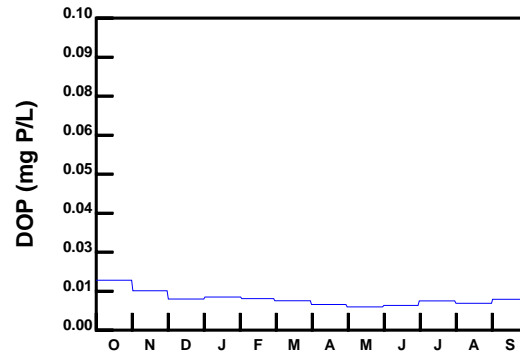
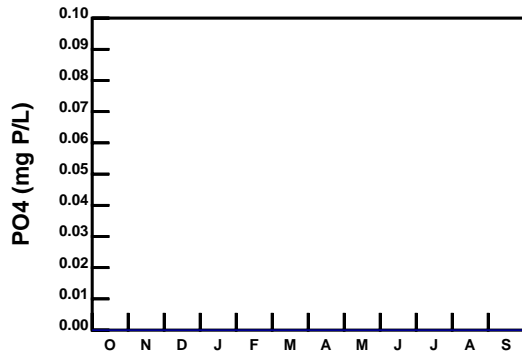
**Boundary Condition - Water Year 9899**





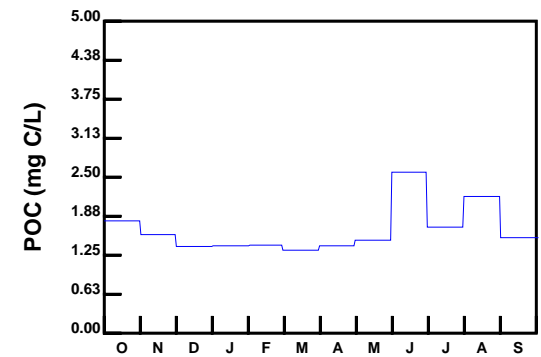
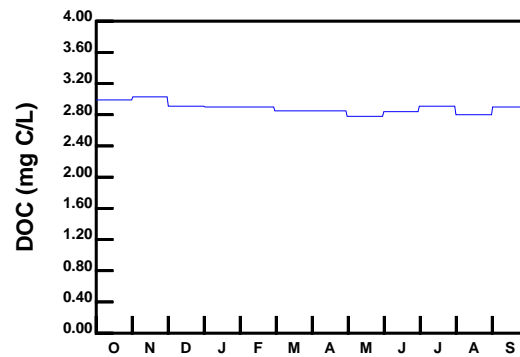
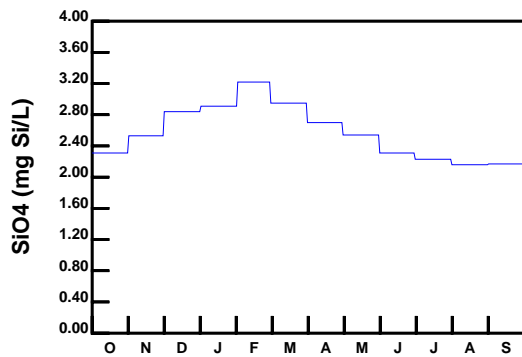
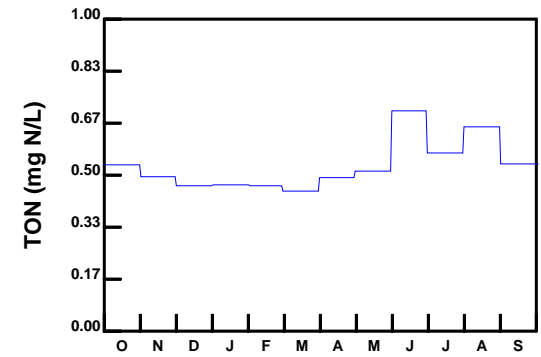
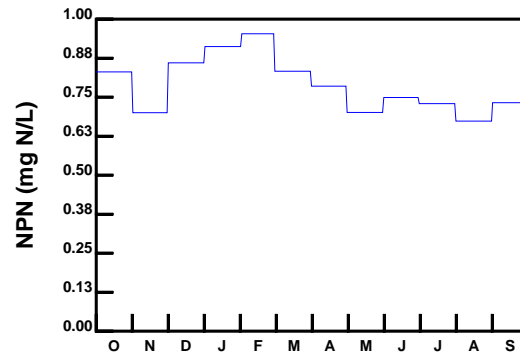
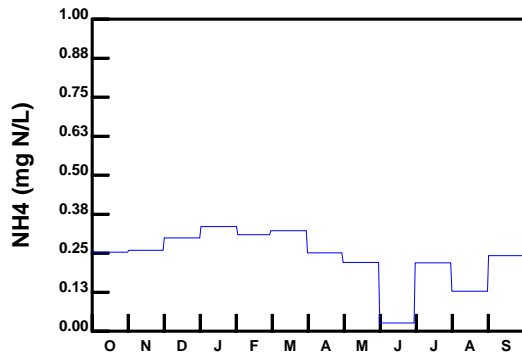
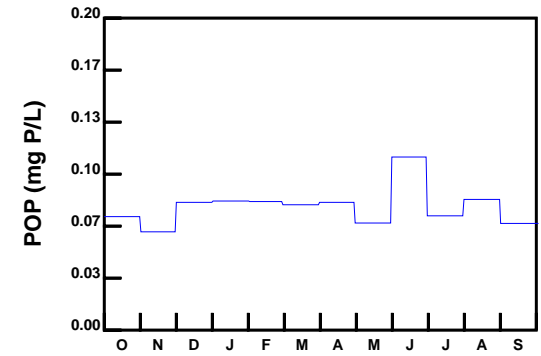
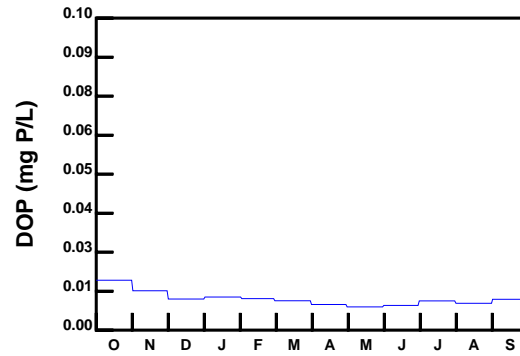
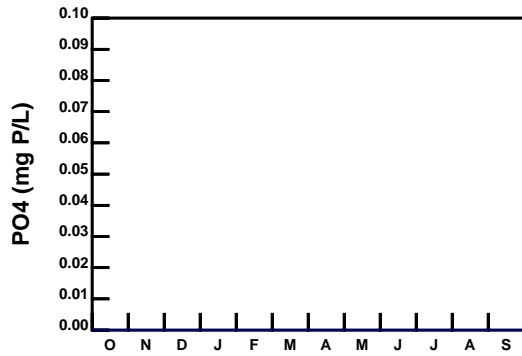
**SWEM - METEDECONK AND TOMS RIVERS**

**Boundary Condition - Water Year 9899**



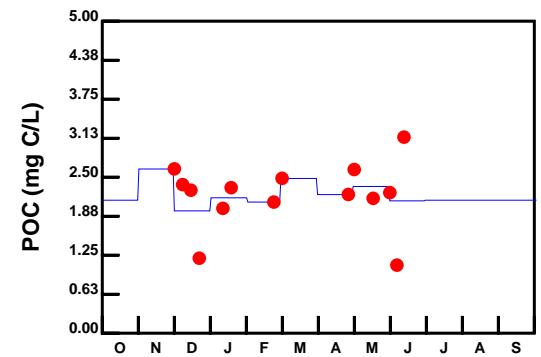
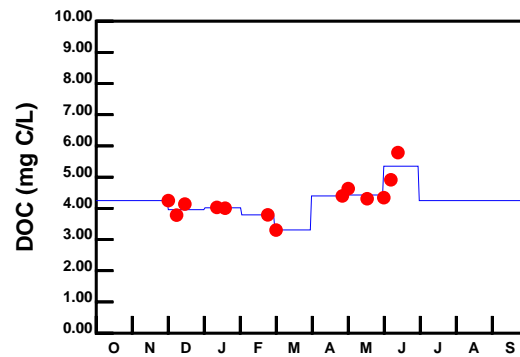
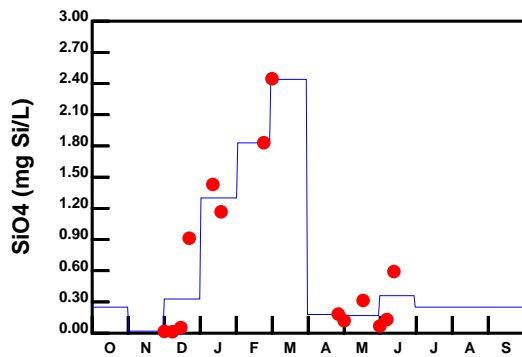
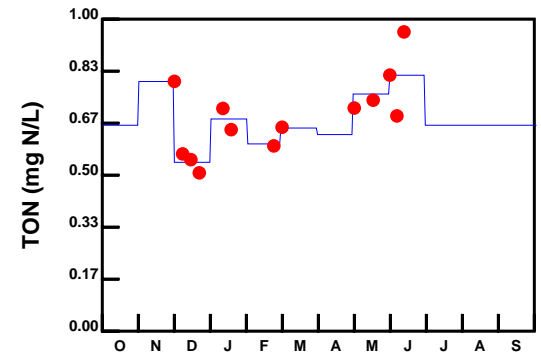
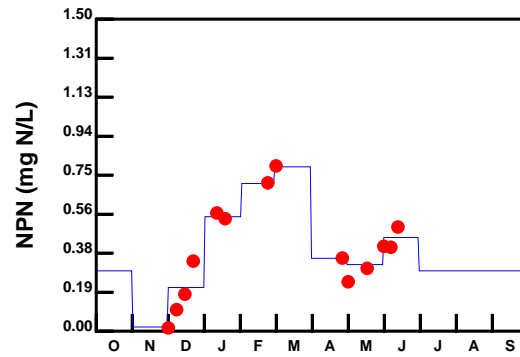
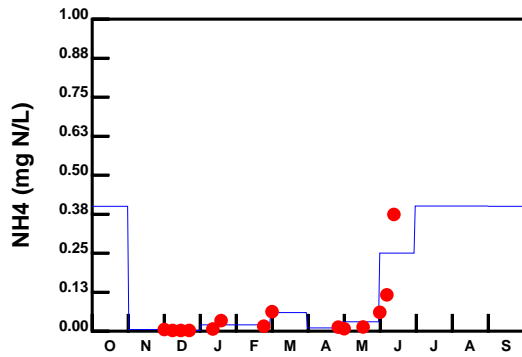
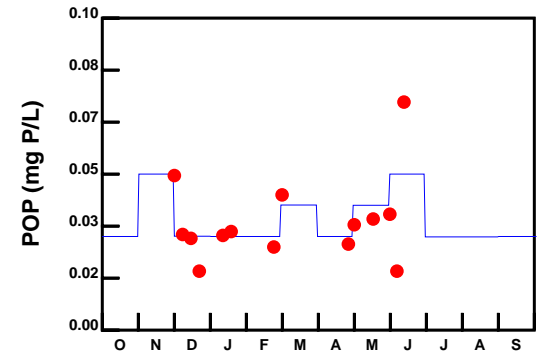
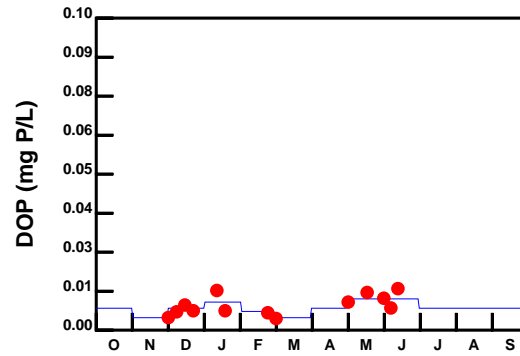
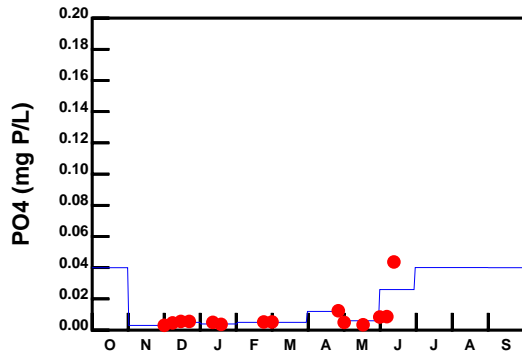
**SWEM - MULLICA RIVER AND WESTECUNK CREEK**

**Boundary Condition - Water Year 9899**

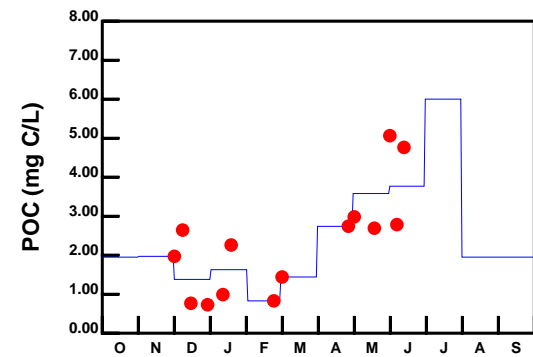
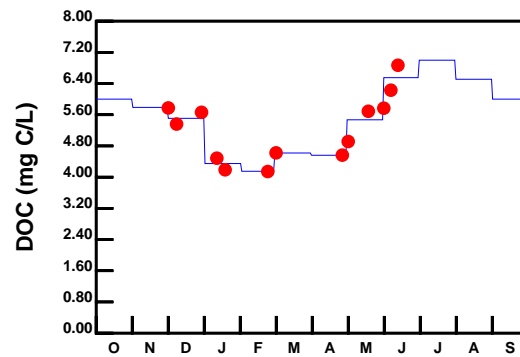
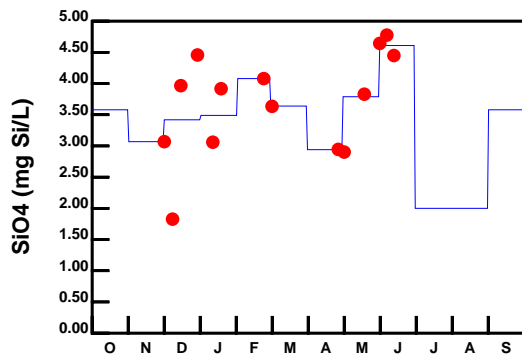
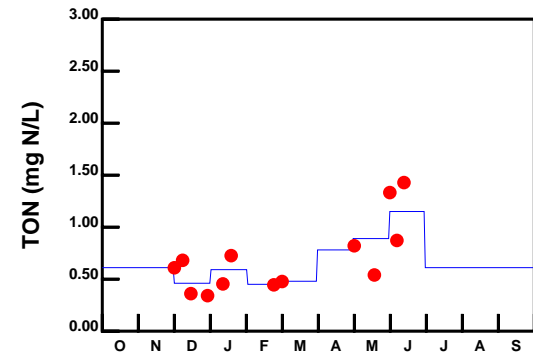
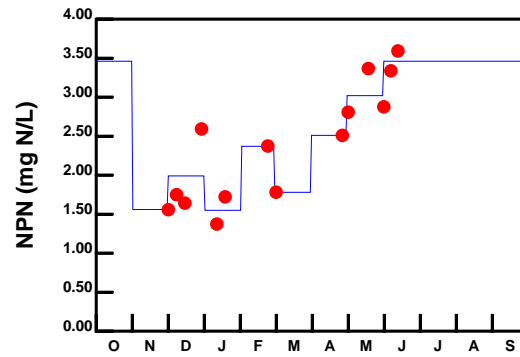
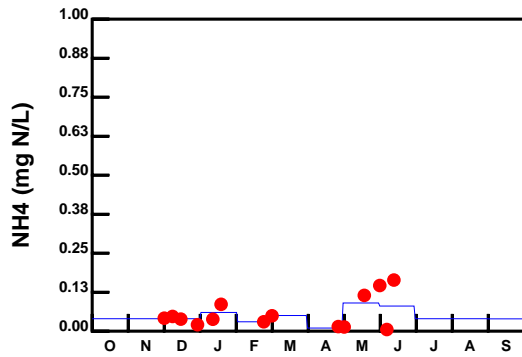
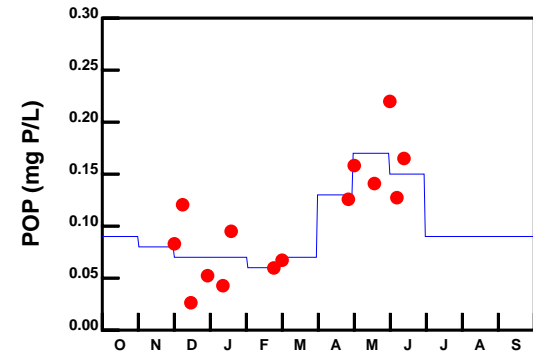
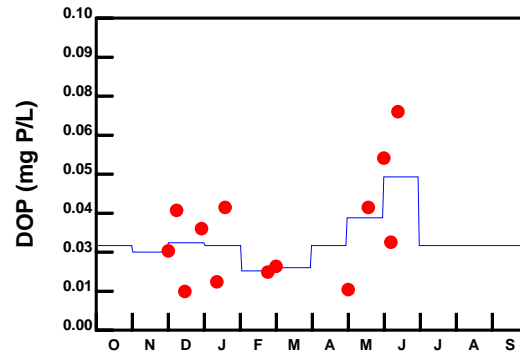
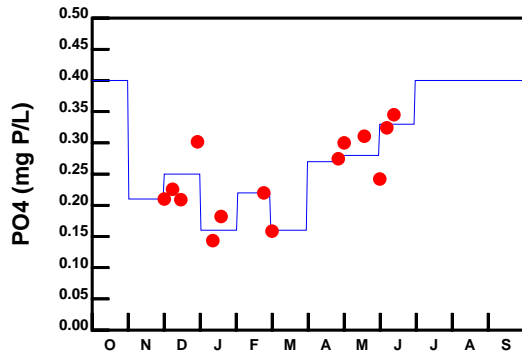


**SWEM - TUCKAHOE AND GREAT EGG RIVERS**

**Boundary Condition - Water Year 9899**

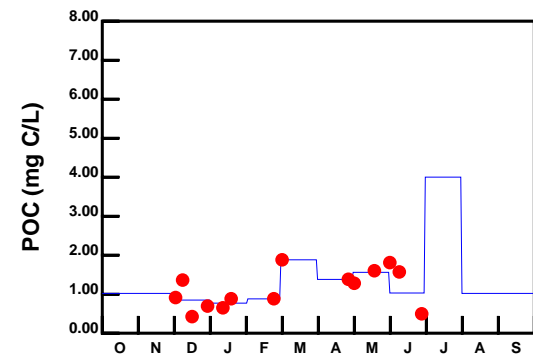
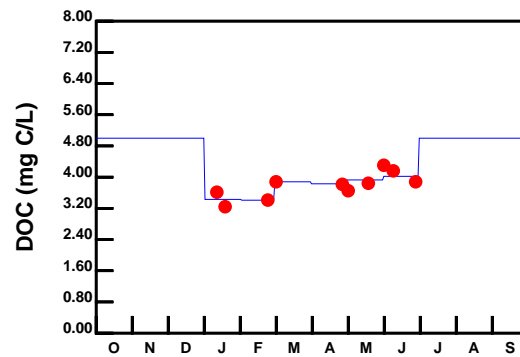
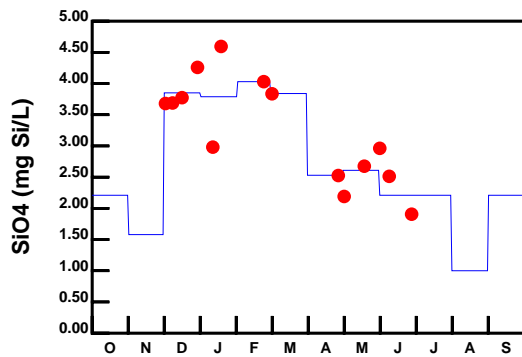
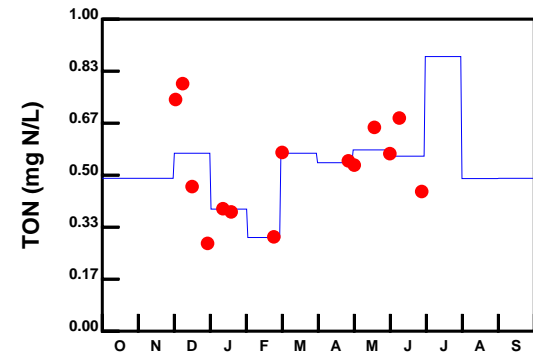
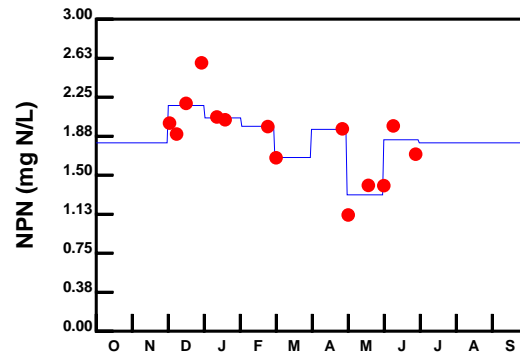
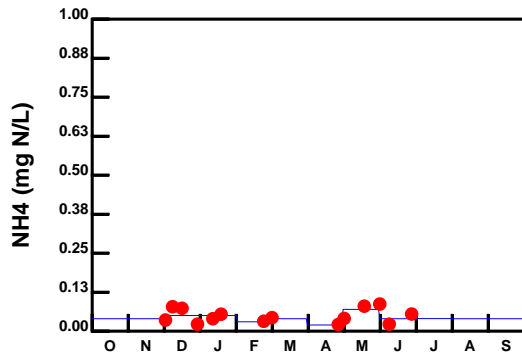
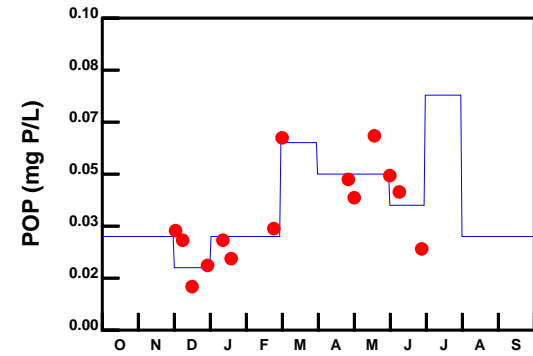
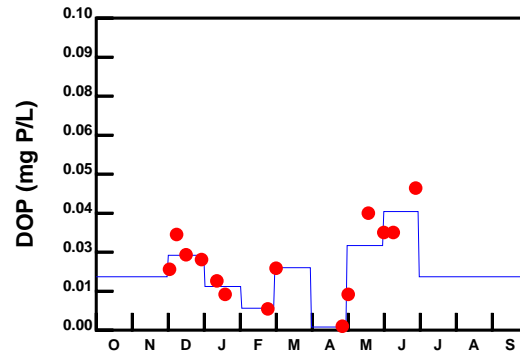
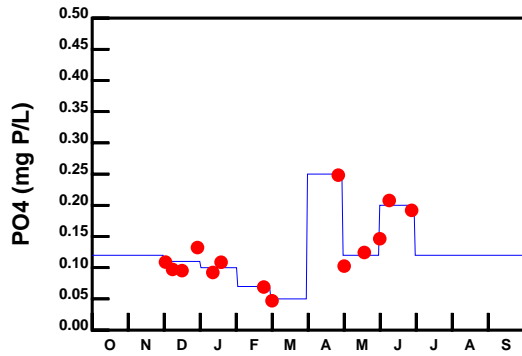


**SWEM - HACKENSACK RIVER**  
**Boundary Condition - Water Year 9899**



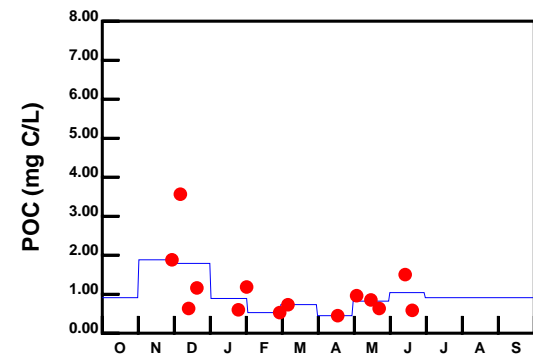
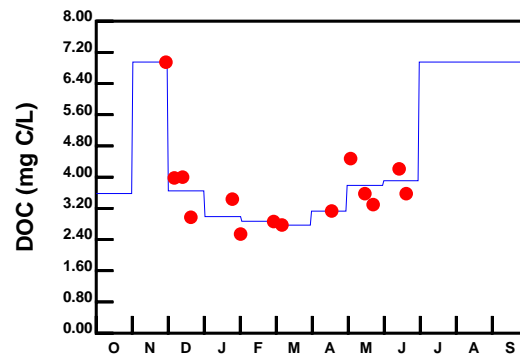
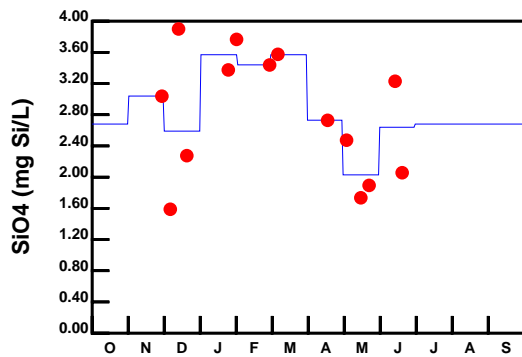
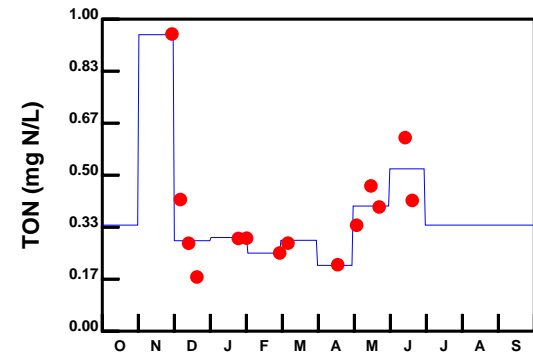
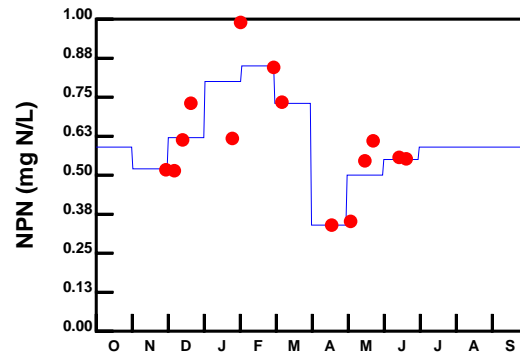
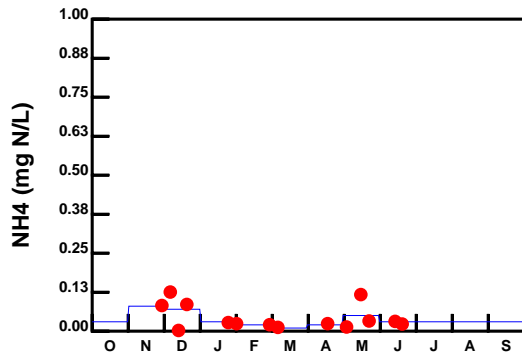
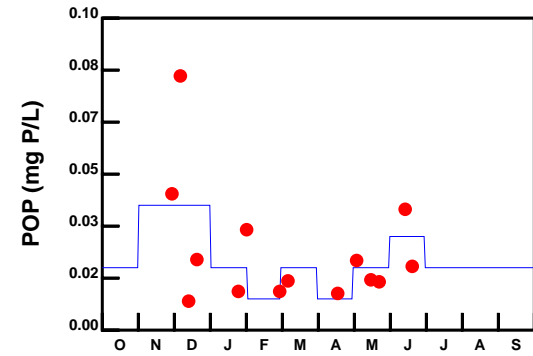
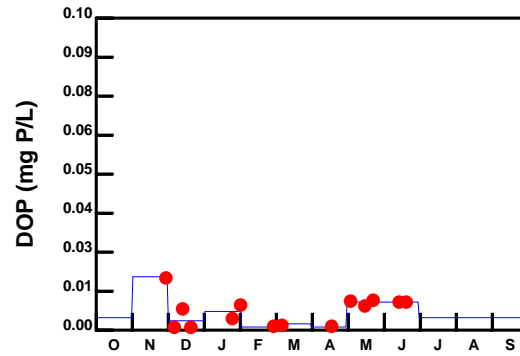
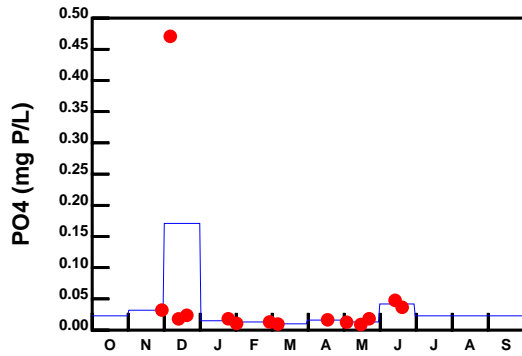
**SWEM - PASSAIC RIVER**

**Boundary Condition - Water Year 9899**

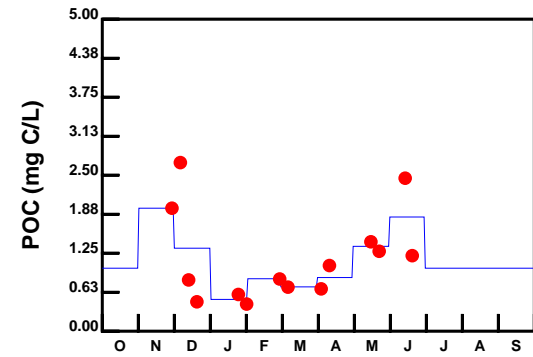
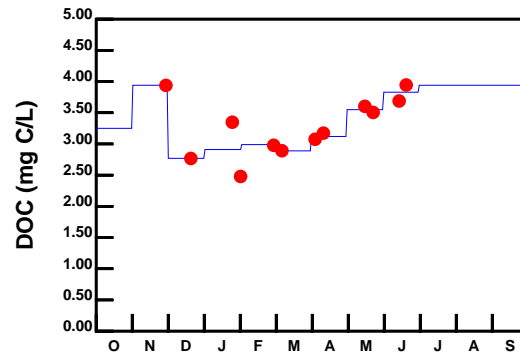
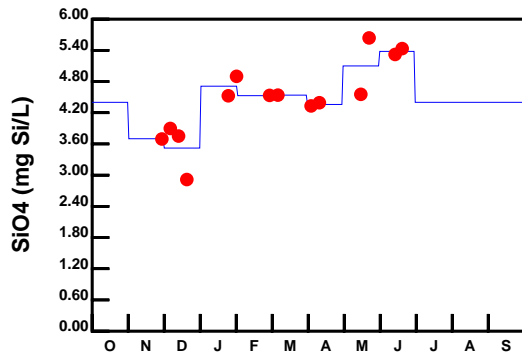
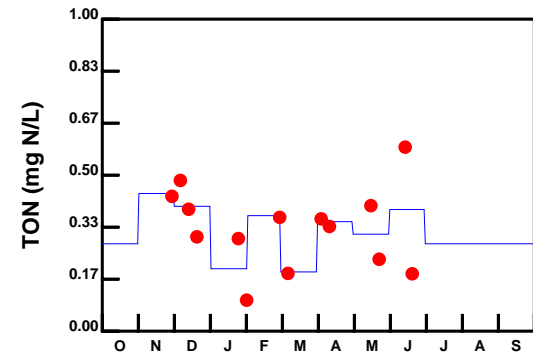
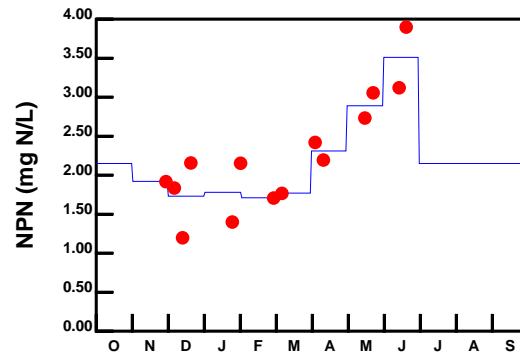
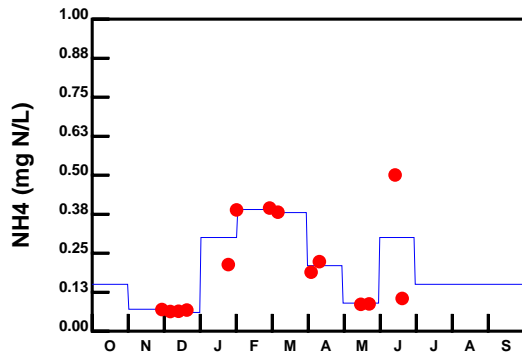
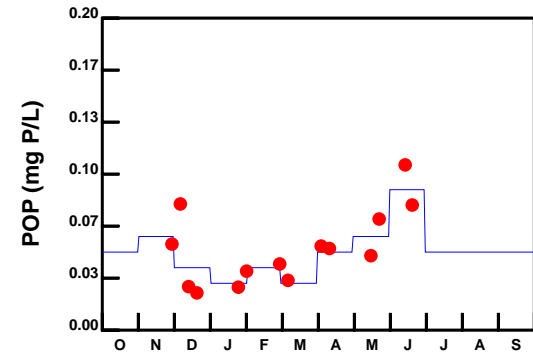
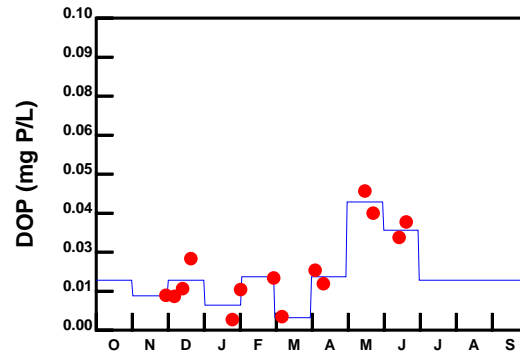
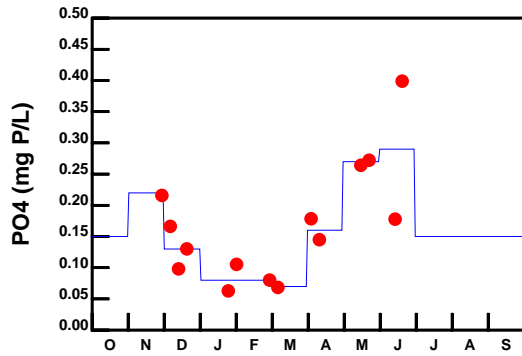


**SWEM - RARITAN RIVER**

**Boundary Condition - Water Year 9899**

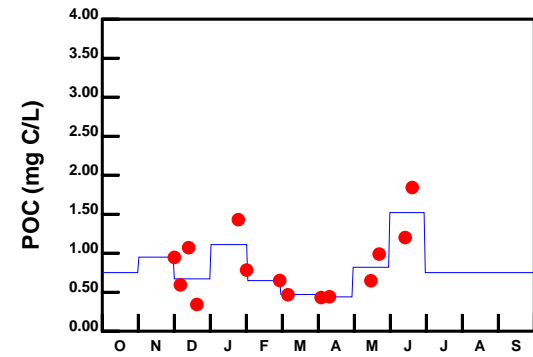
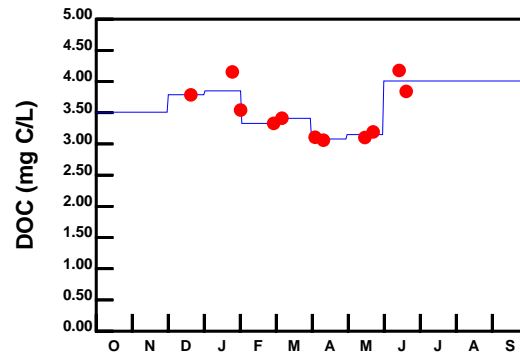
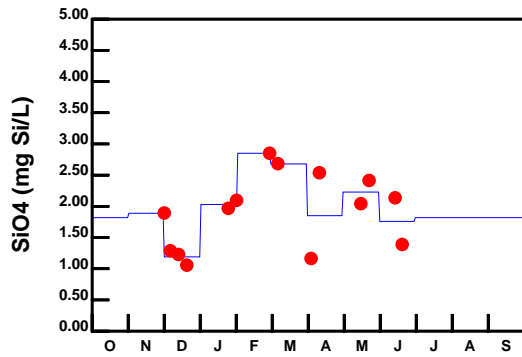
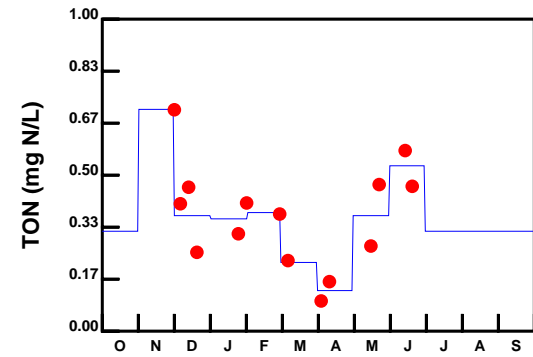
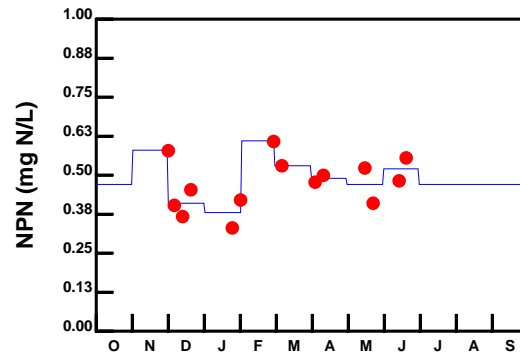
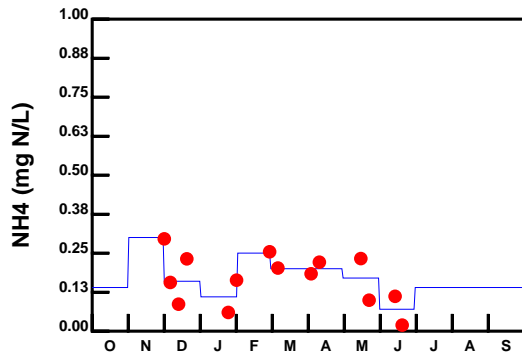
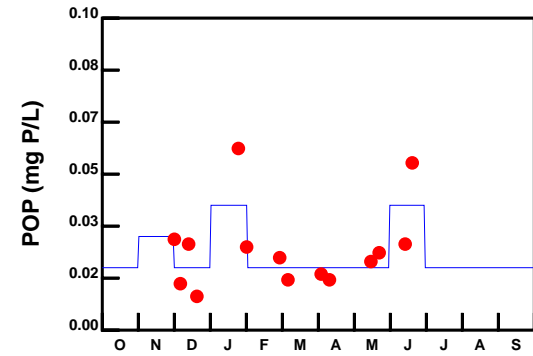
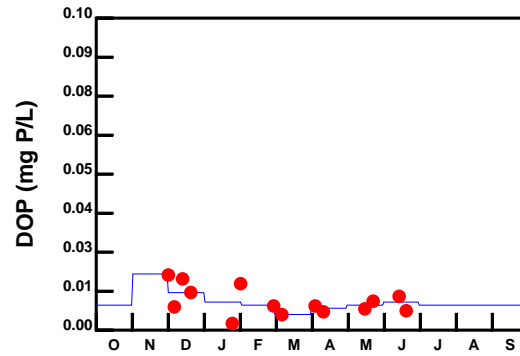
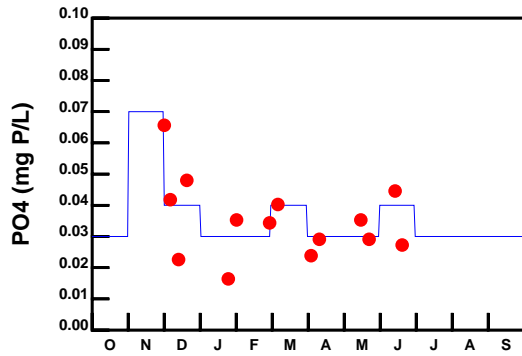


**SWEM - NORWALK RIVER**  
**Boundary Condition - Water Year 9899**

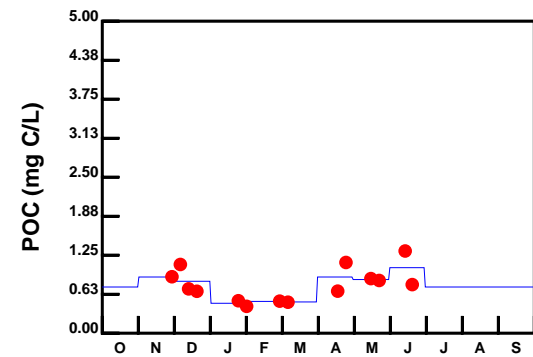
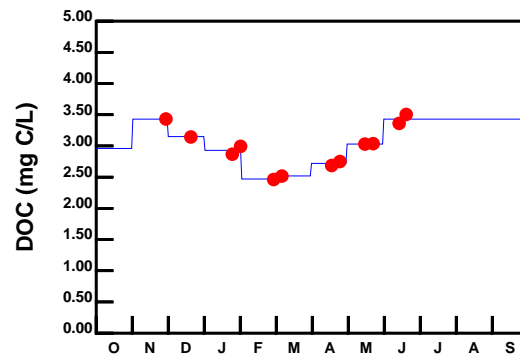
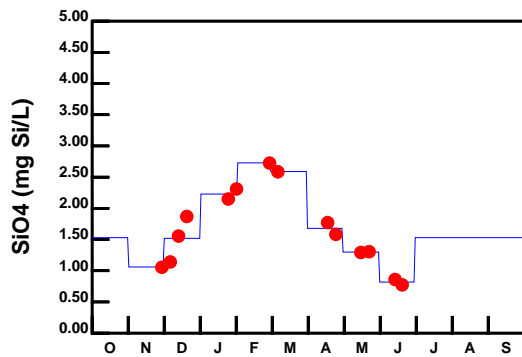
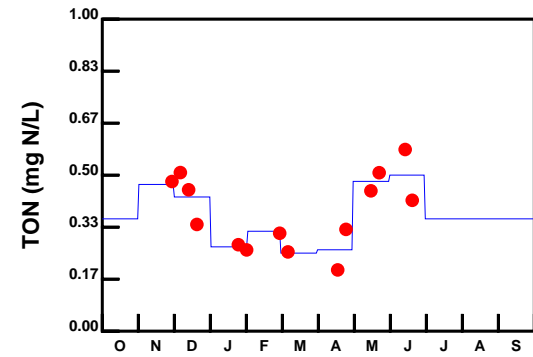
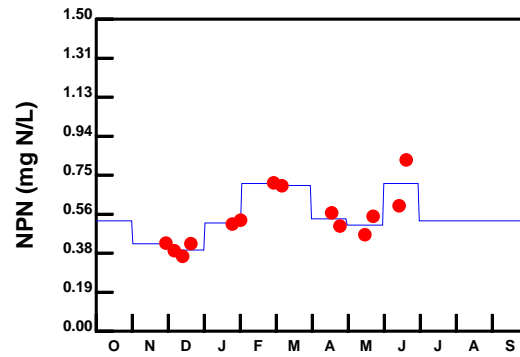
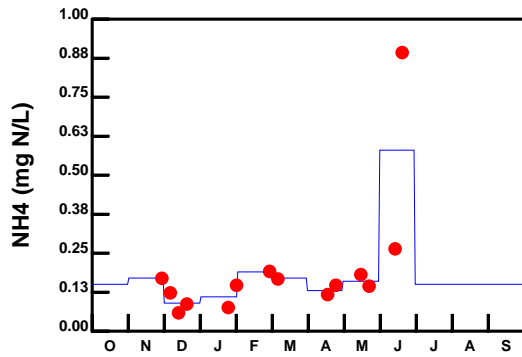
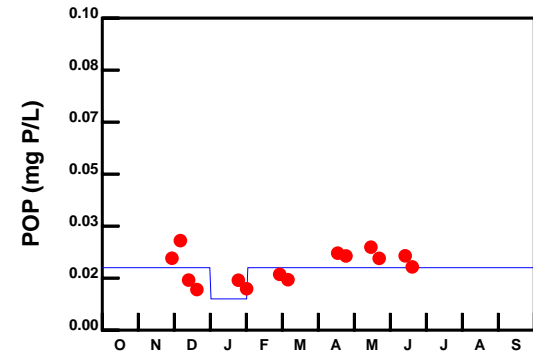
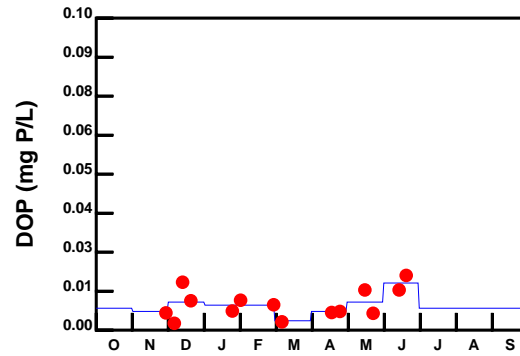
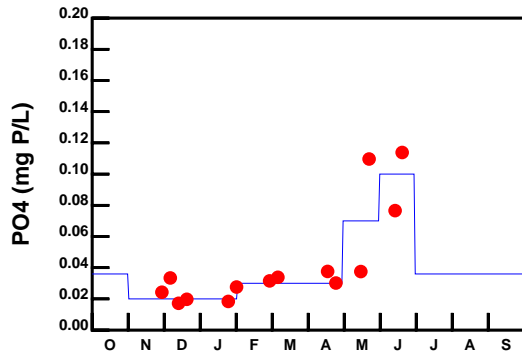


**SWEM - QUINNIPIAC RIVER**  
**Boundary Condition - Water Year 9899**



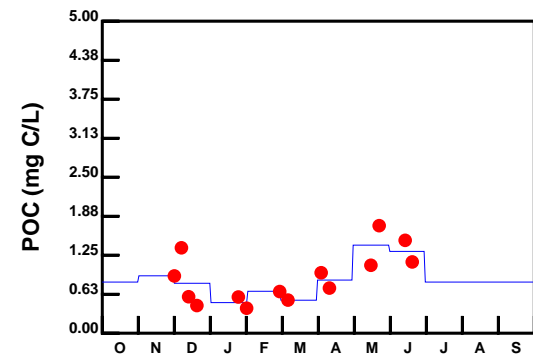
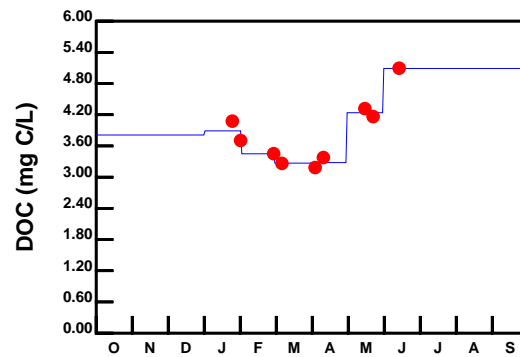
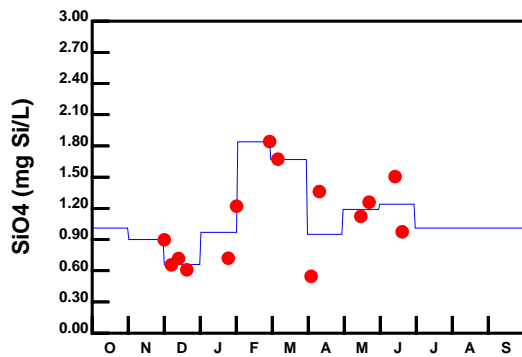
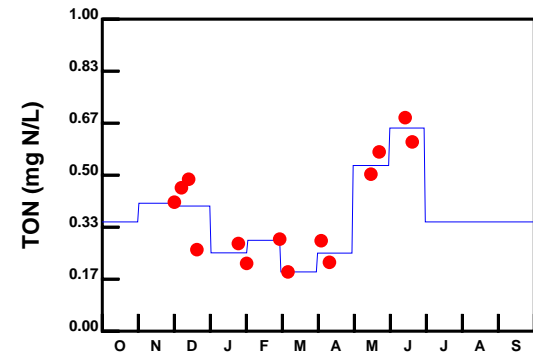
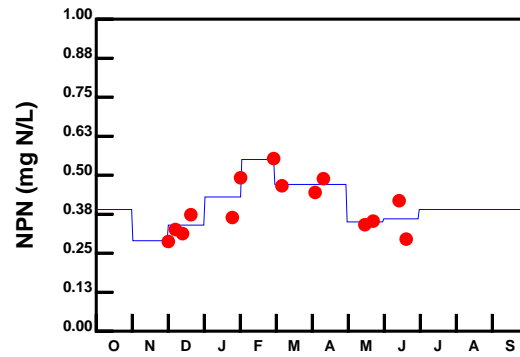
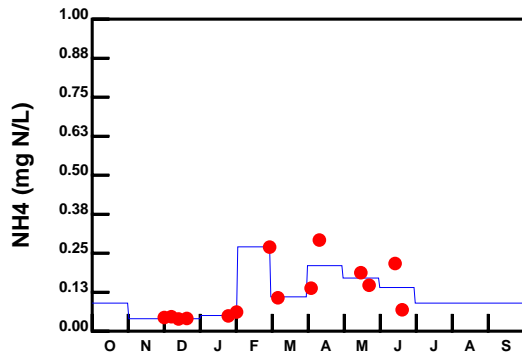
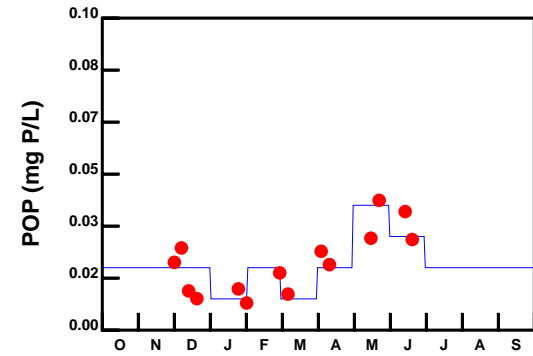
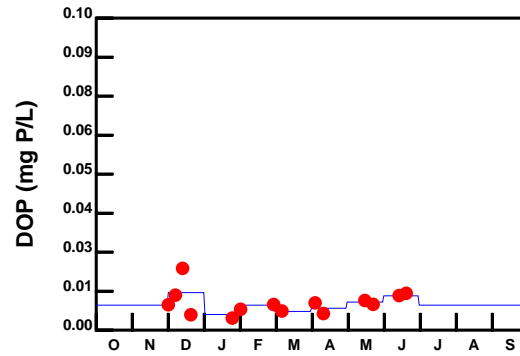
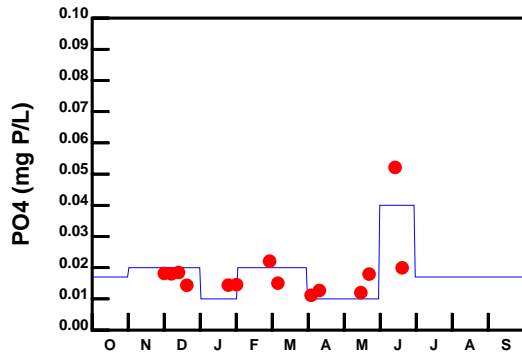


**SWEM - CONNECTICUT RIVER**  
**Boundary Condition - Water Year 9899**



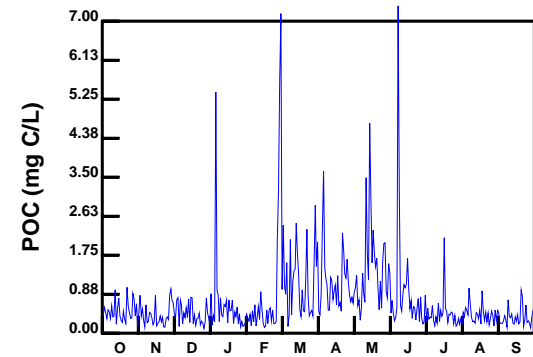
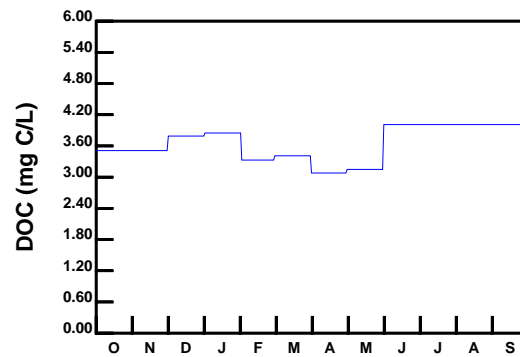
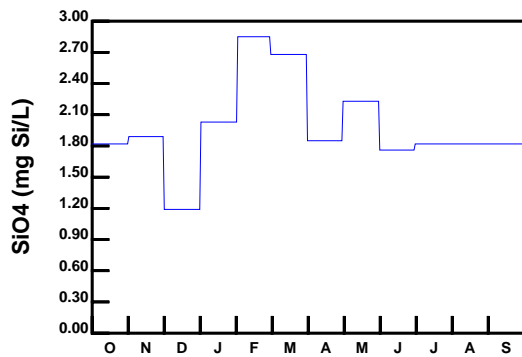
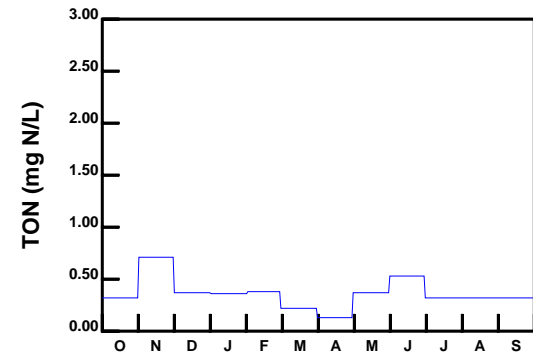
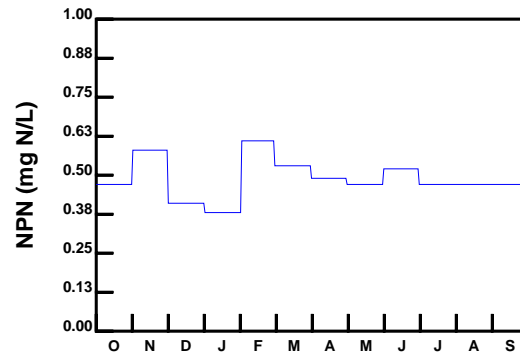
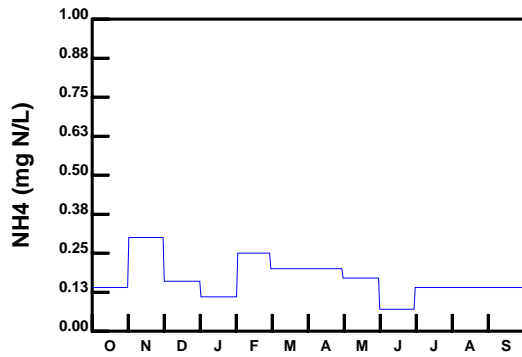
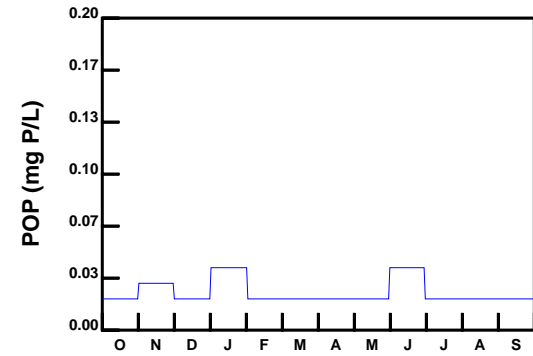
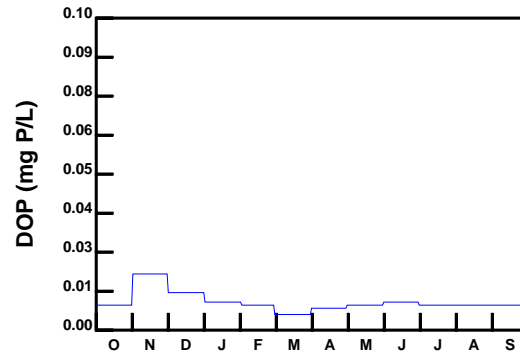
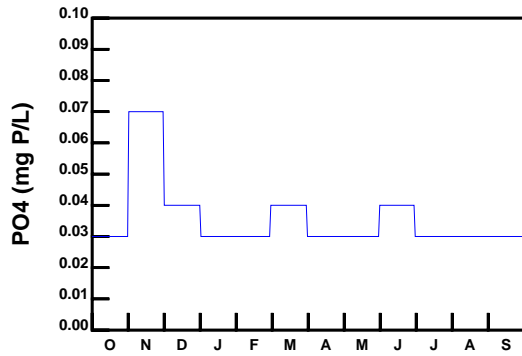
**SWEM - HOUSATONIC AND NAUGATUCK RIVERS**

**Boundary Condition - Water Year 9899**



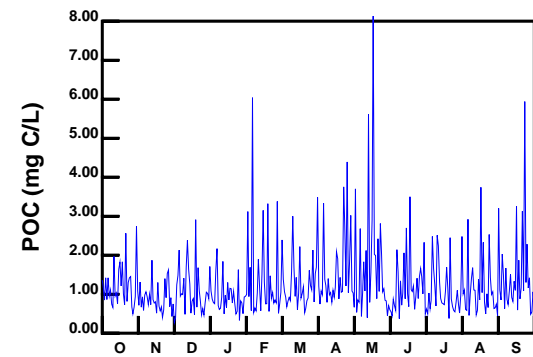
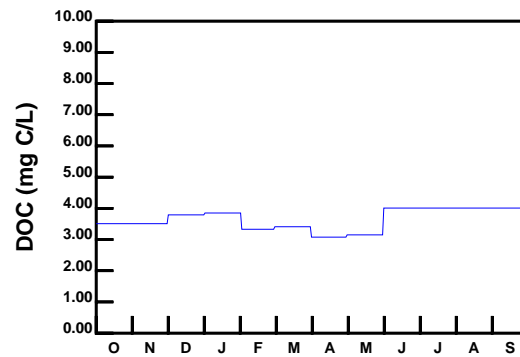
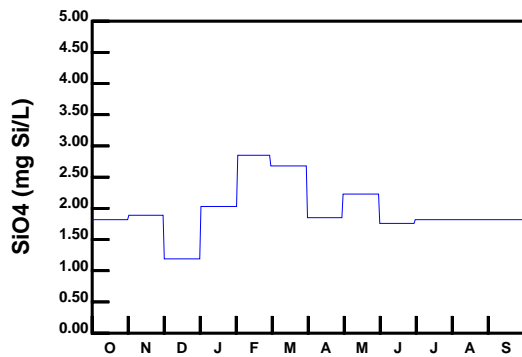
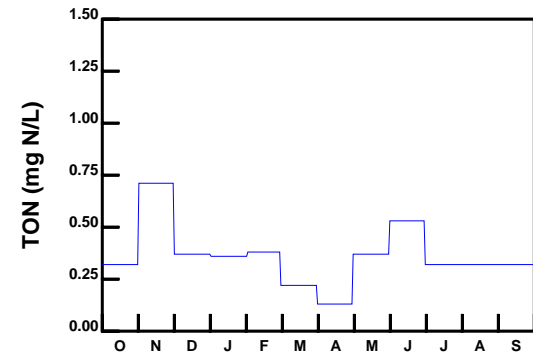
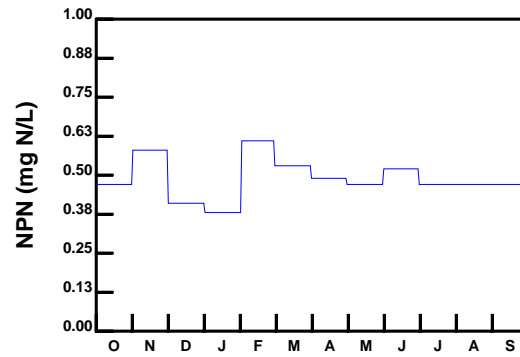
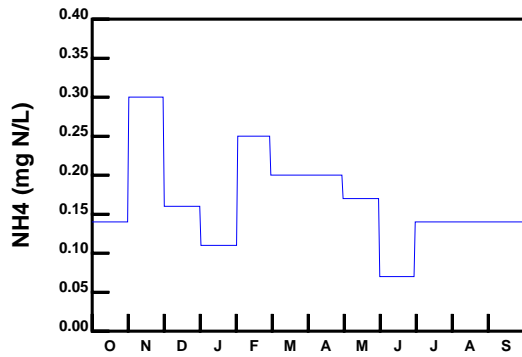
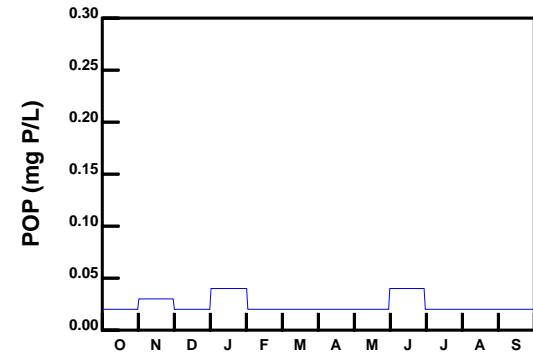
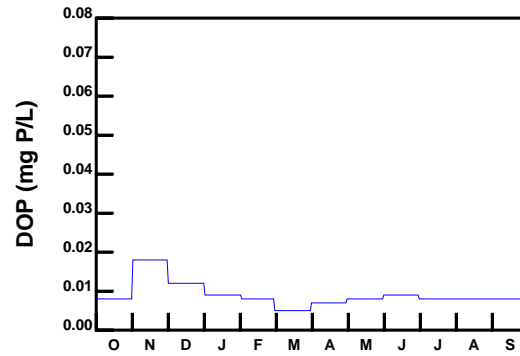
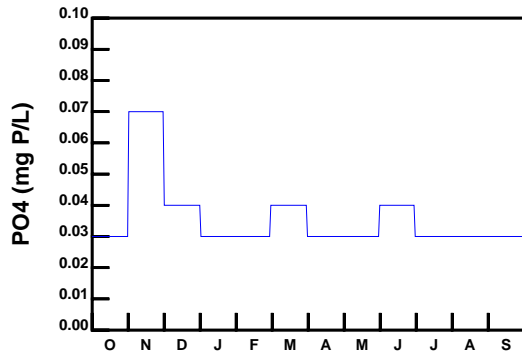
**SWEM - THAMES RIVER**

**Boundary Condition - Water Year 9899**



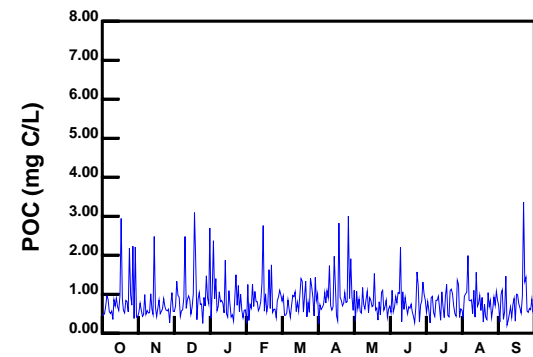
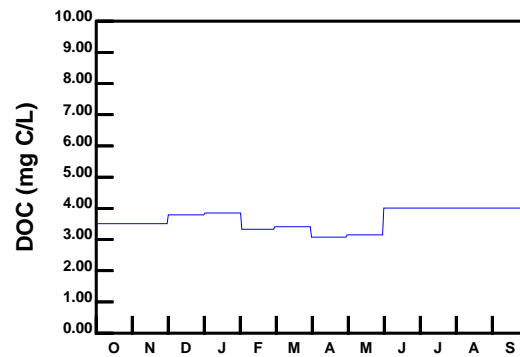
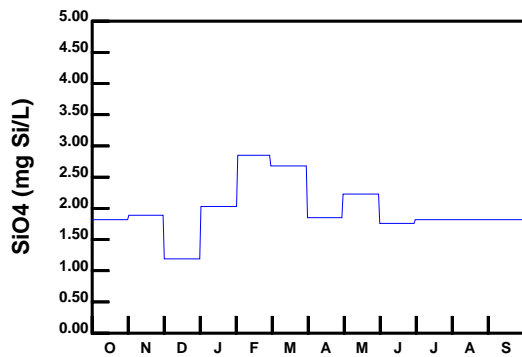
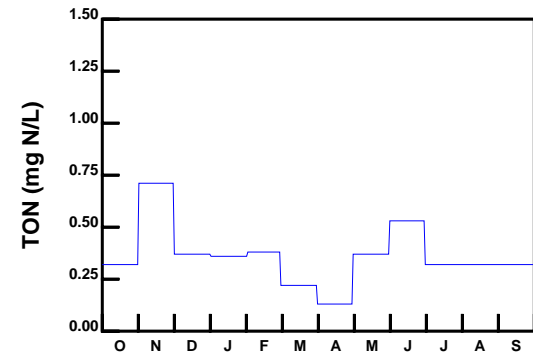
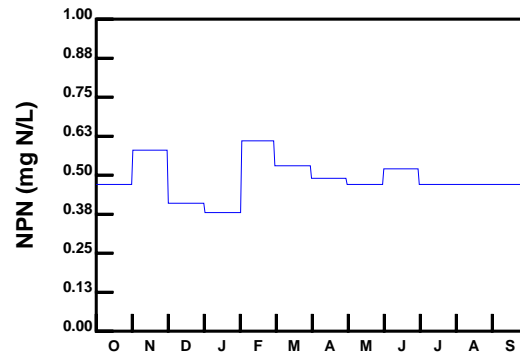
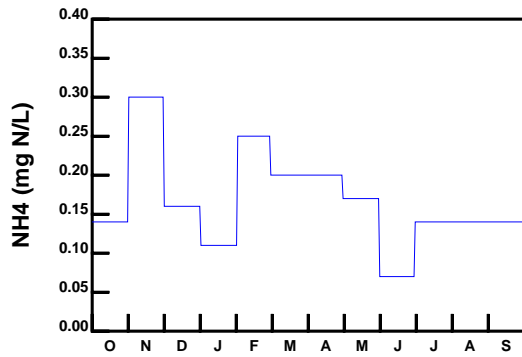
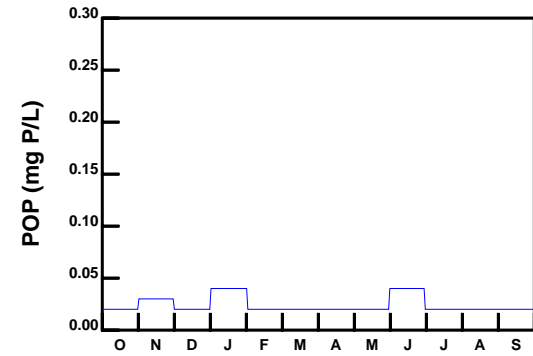
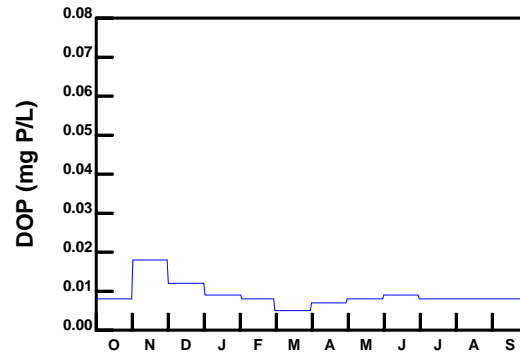
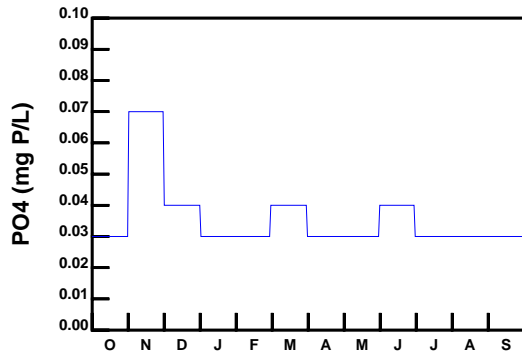
**SWEM - HUDSON RIVER**

**Boundary Condition - Water Year 9900**



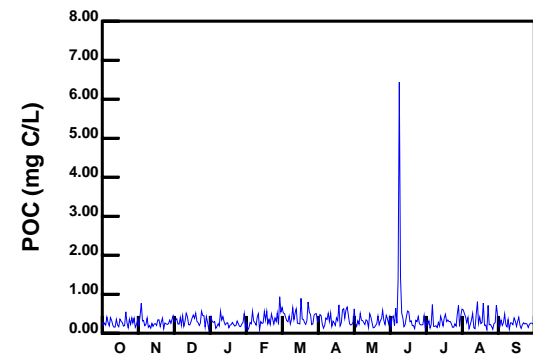
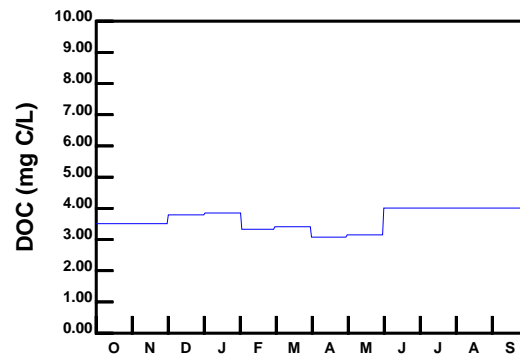
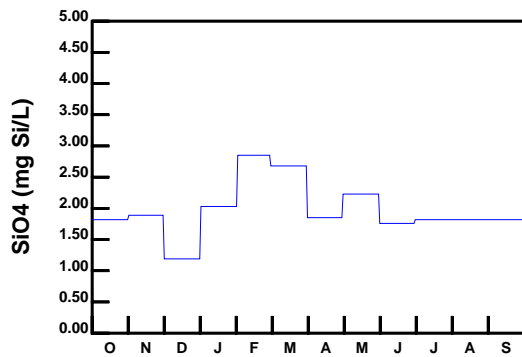
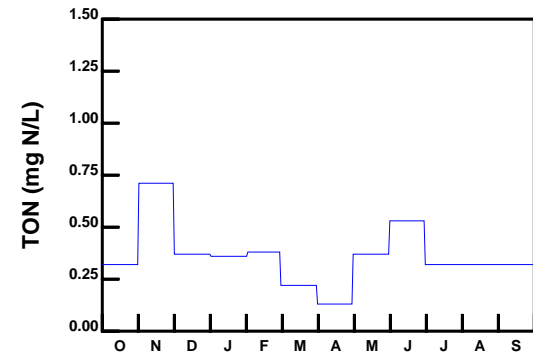
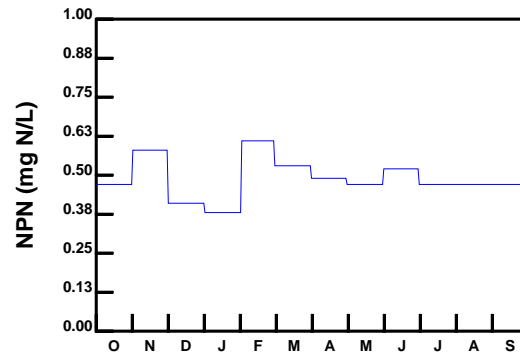
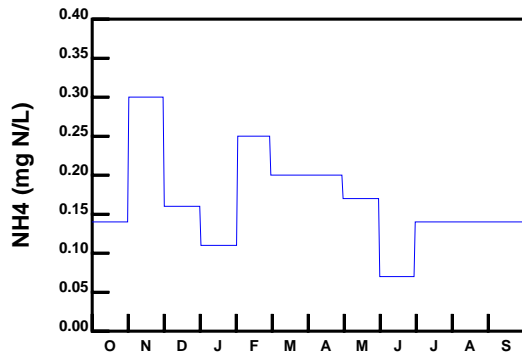
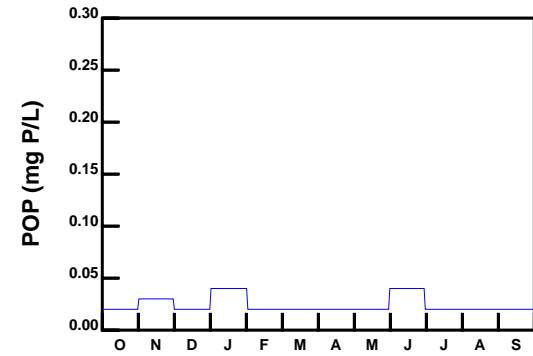
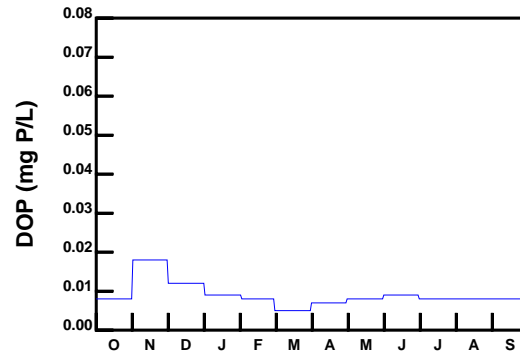
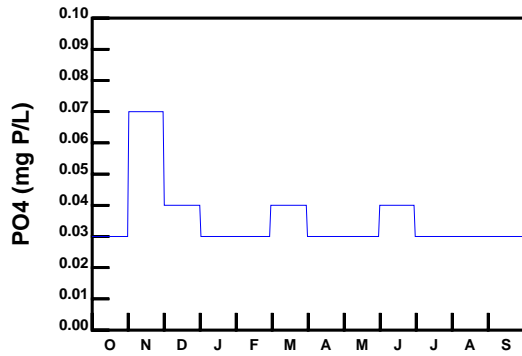
**SWEM - NORMAN KILL**

**Boundary Condition - Water Year 9900**

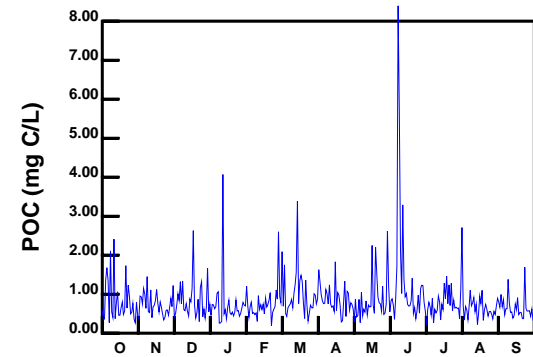
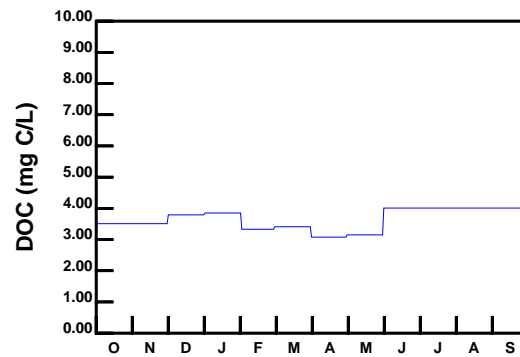
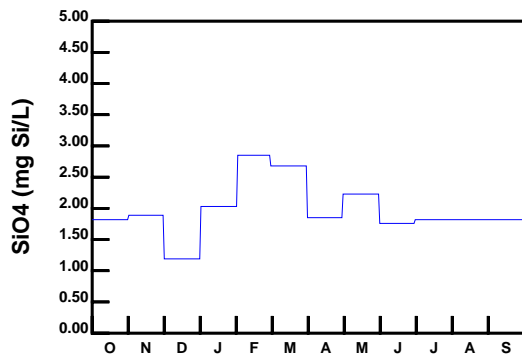
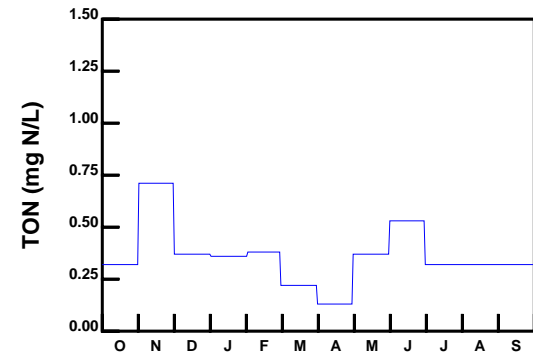
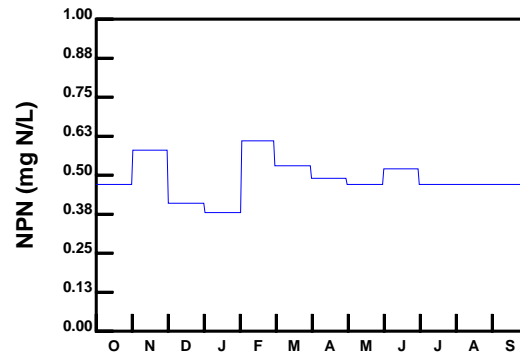
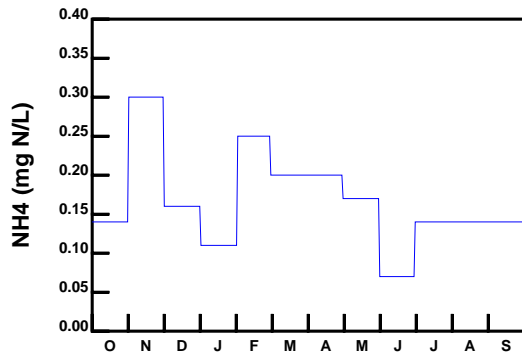
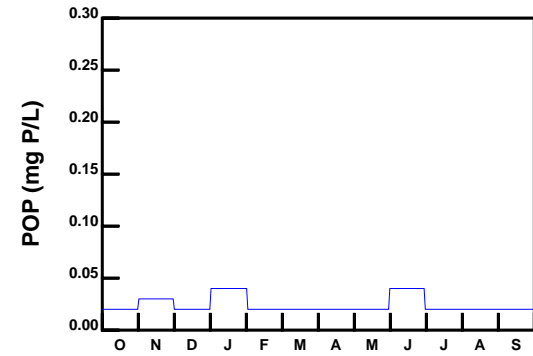
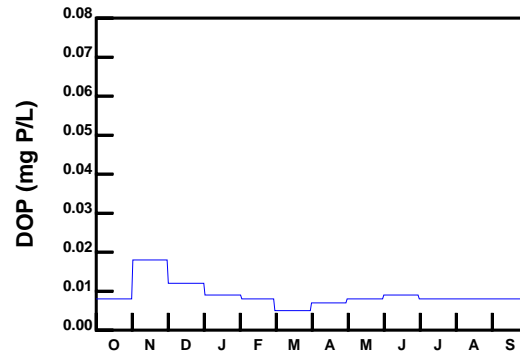
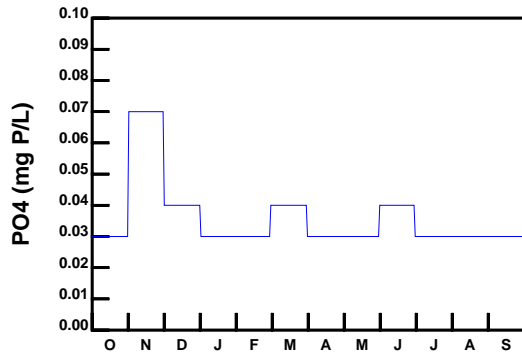


**SWEM - MOORDENER KILL**

**Boundary Condition - Water Year 9900**



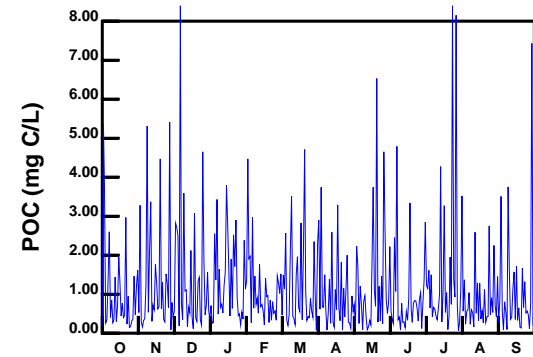
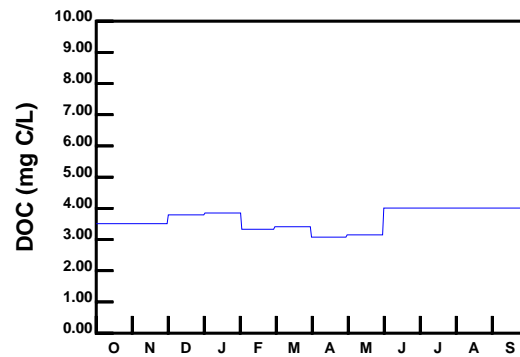
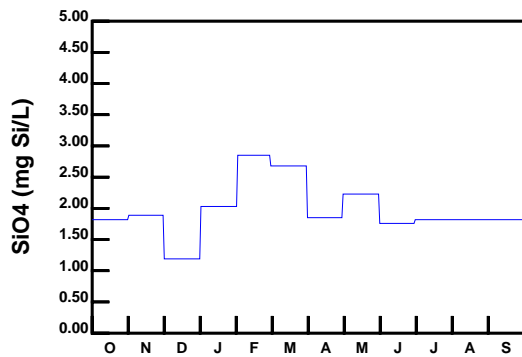
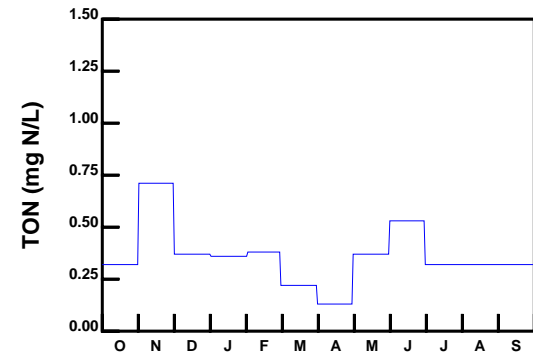
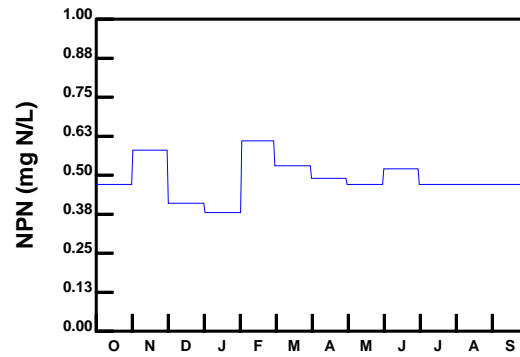
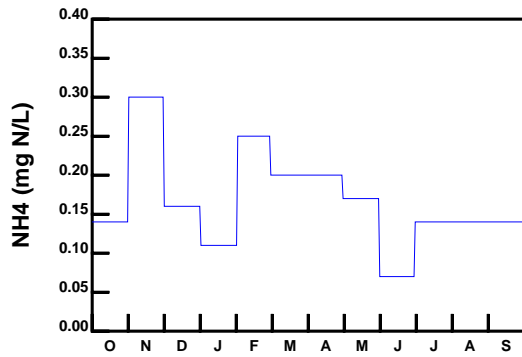
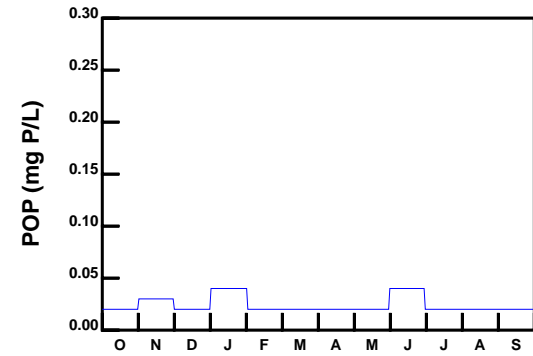
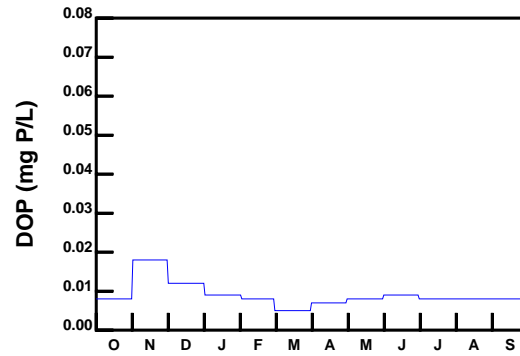
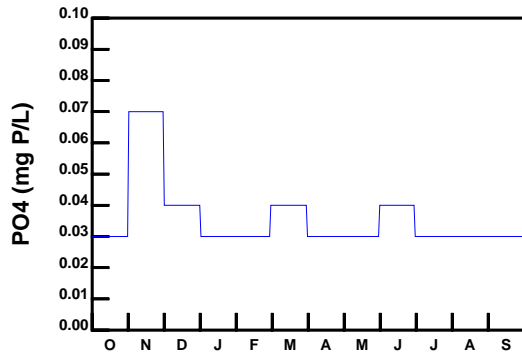
**SWEM - CATSKILL CREEK**  
**Boundary Condition - Water Year 9900**



**SWEM - ESOPUS CREEK**

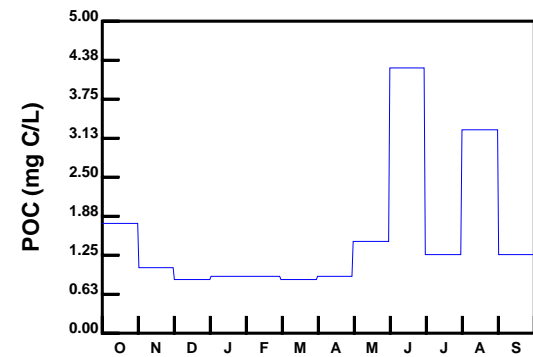
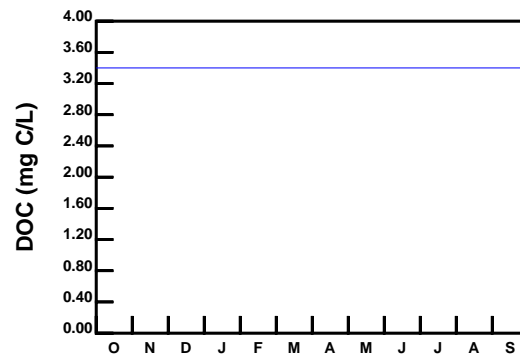
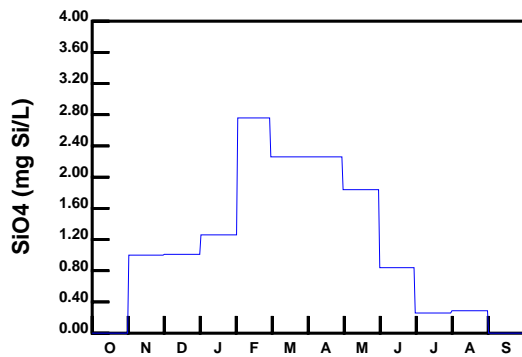
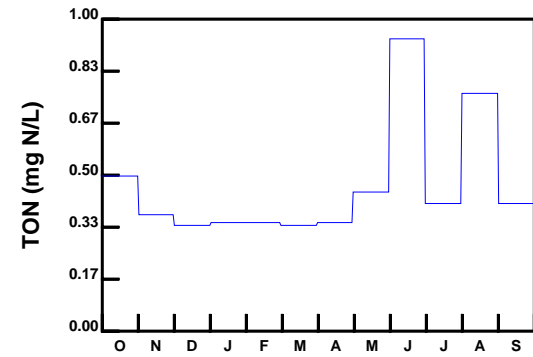
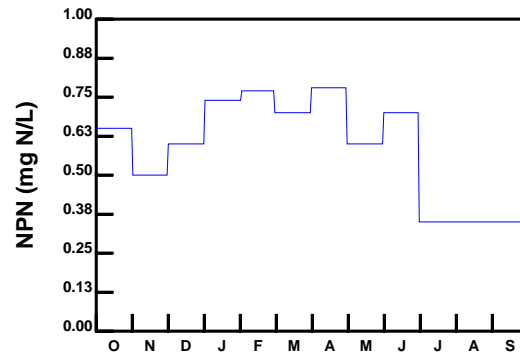
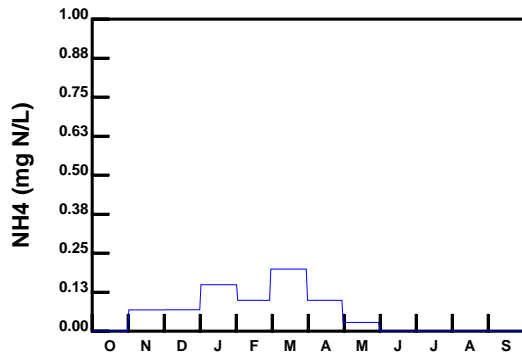
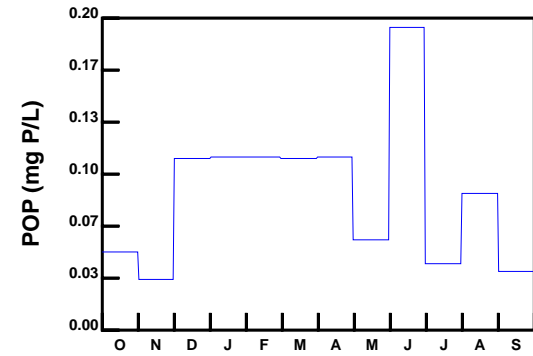
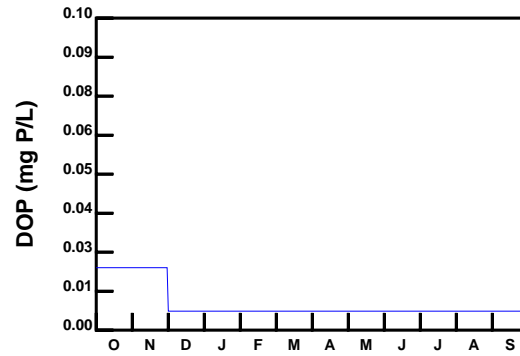
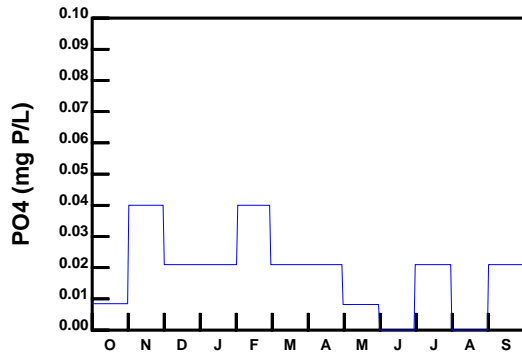
**Boundary Condition - Water Year 9900**





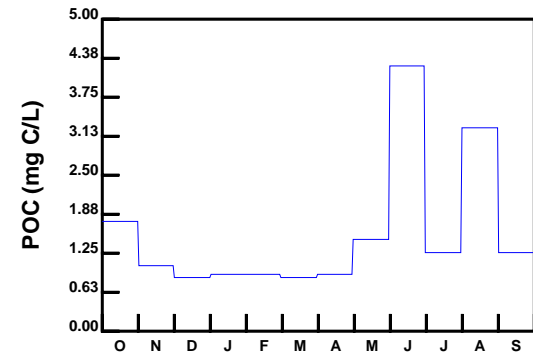
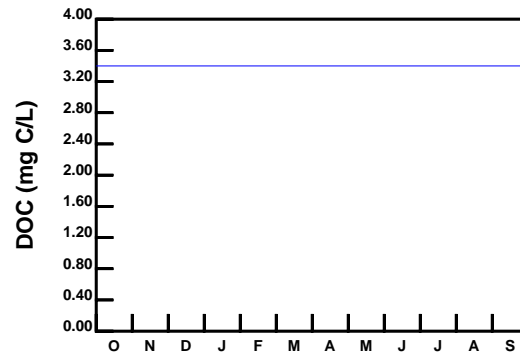
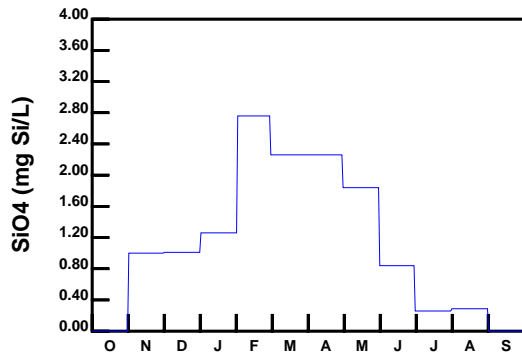
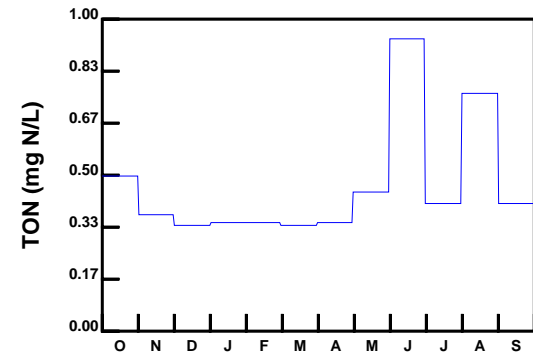
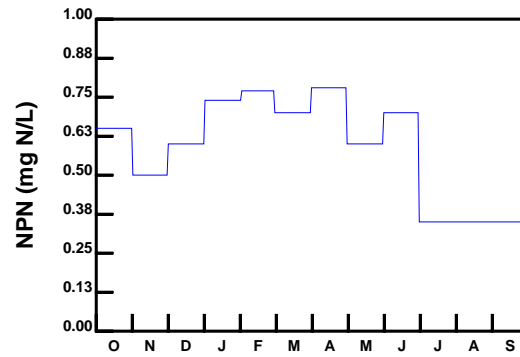
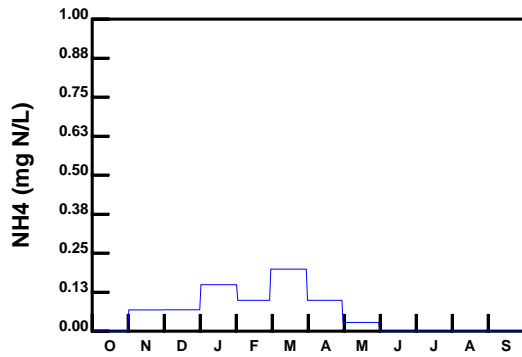
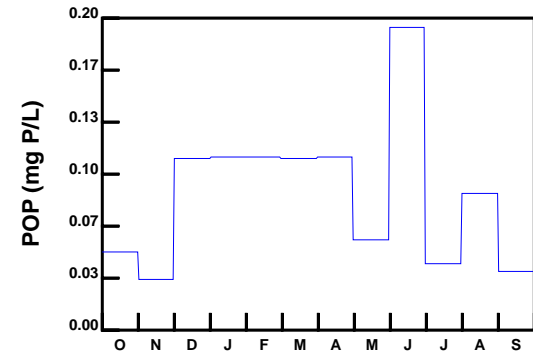
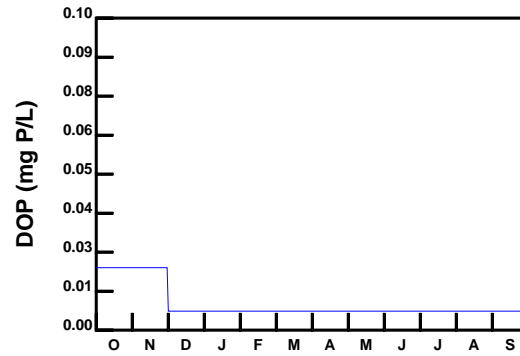
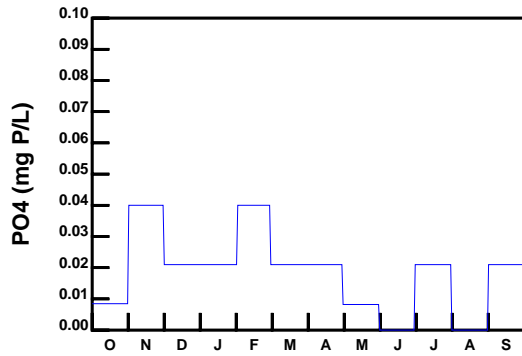
**SWEM - ROUNDOUT CREEK / WALLKILL RIVER**

**Boundary Condition - Water Year 9900**

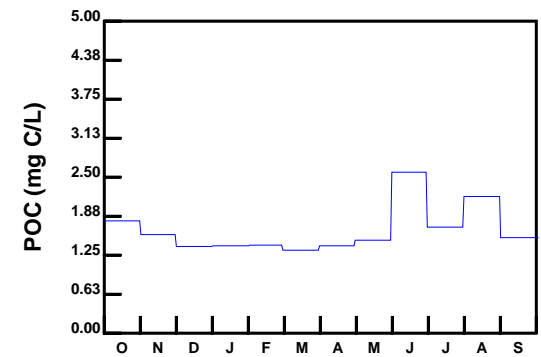
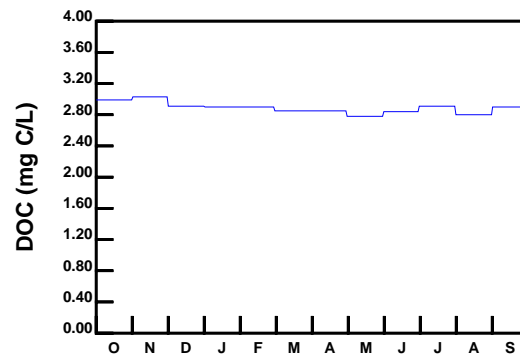
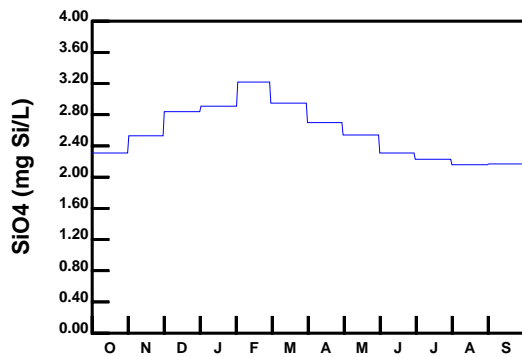
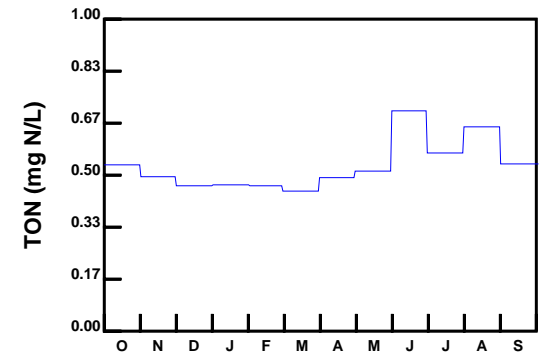
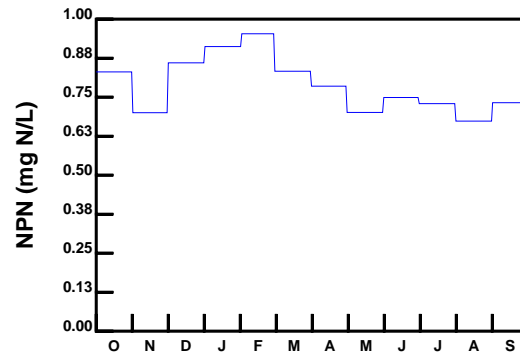
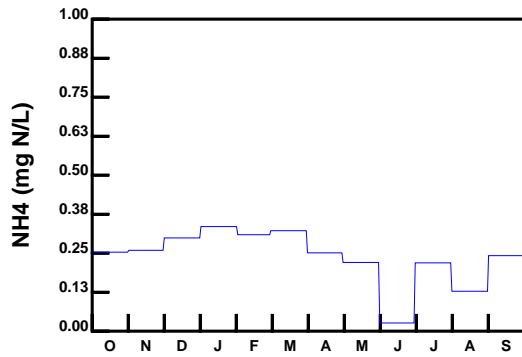
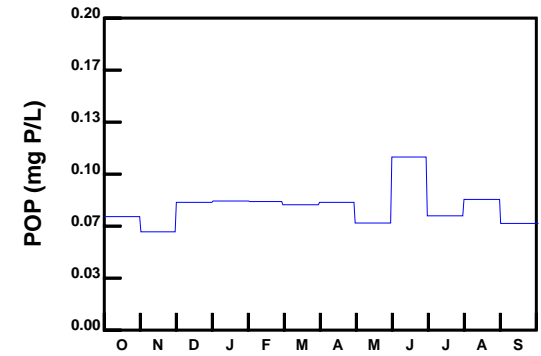
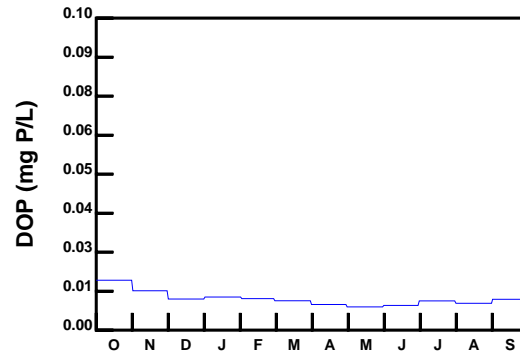
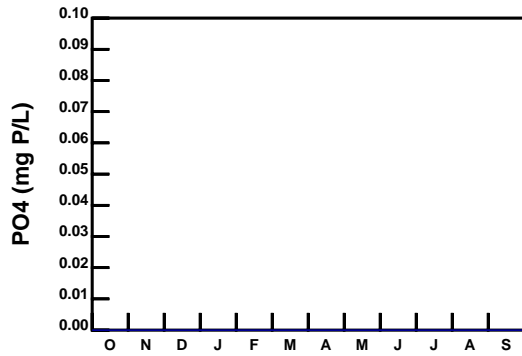


**SWEM - WAPPINGER CREEK**

**Boundary Condition - Water Year 9900**

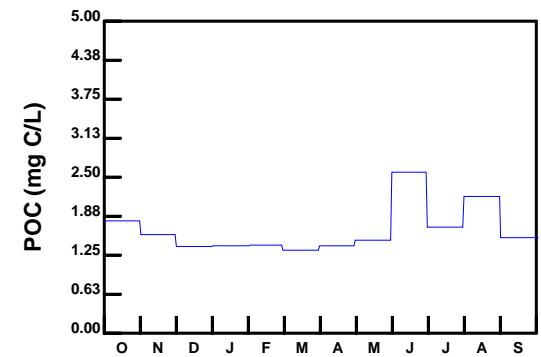
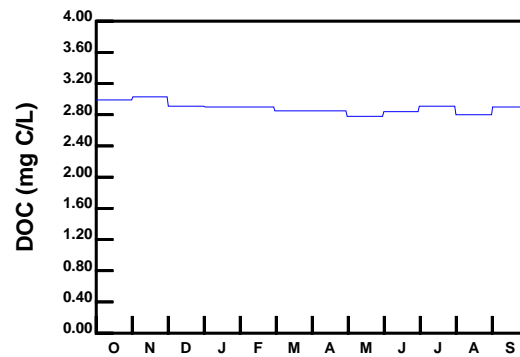
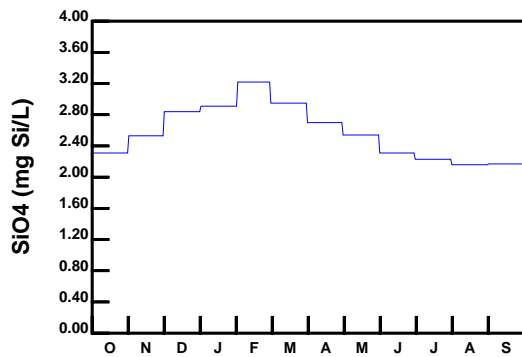
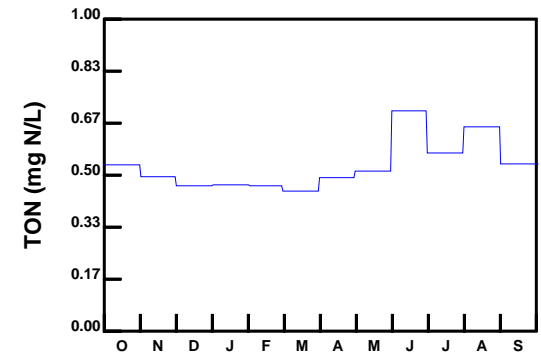
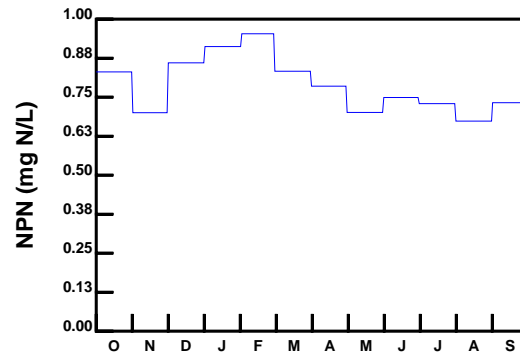
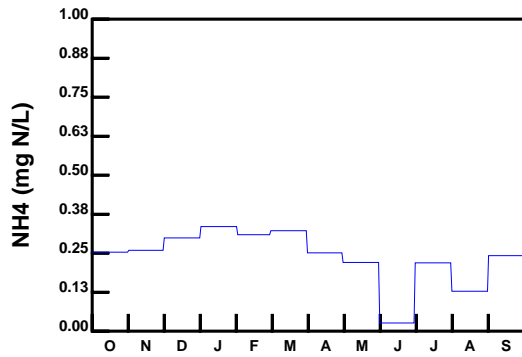
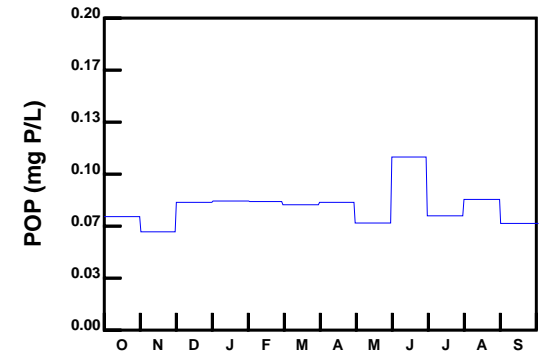
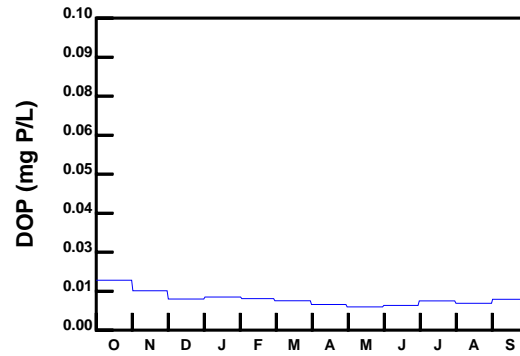
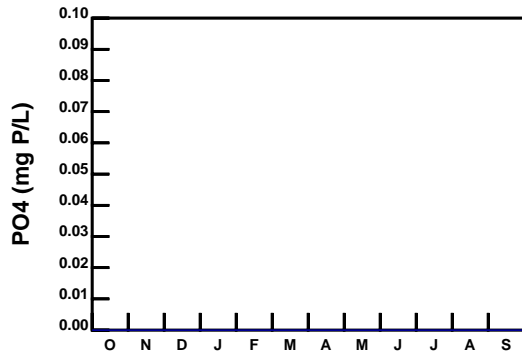


**SWEM - CROTON CREEK**  
**Boundary Condition - Water Year 9900**



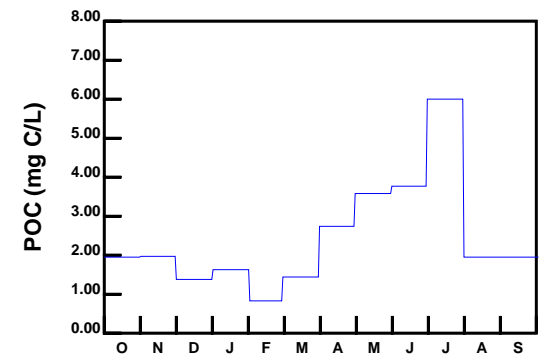
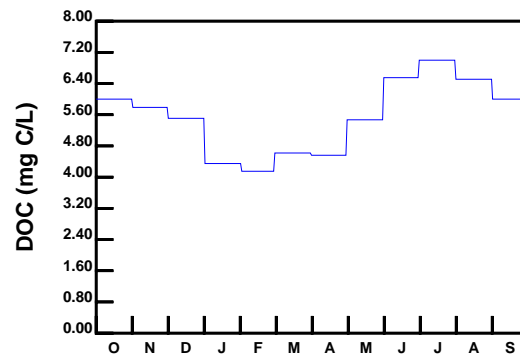
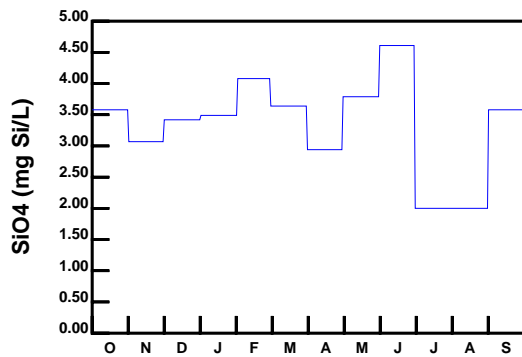
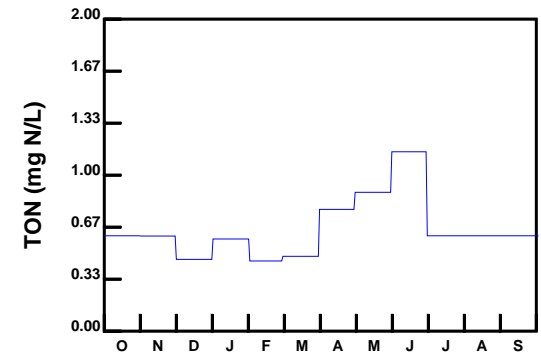
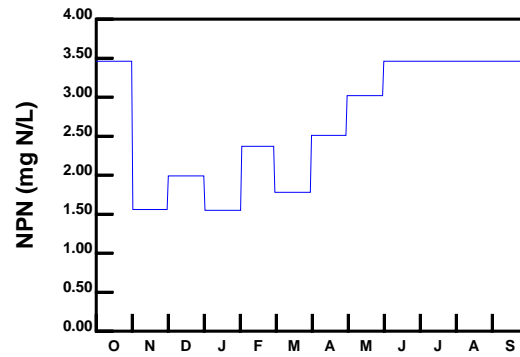
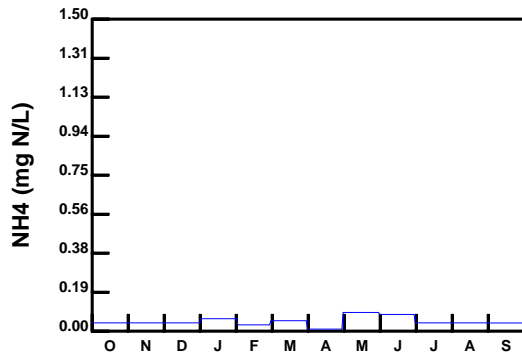
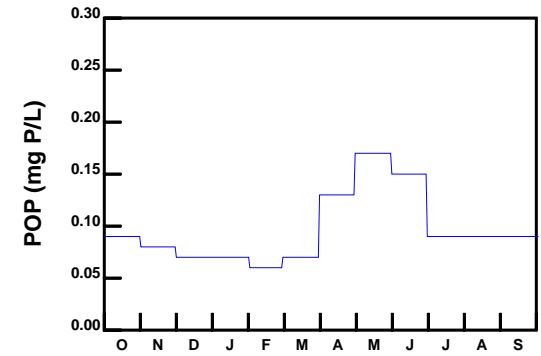
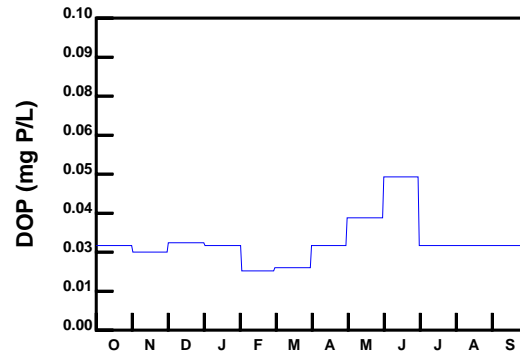
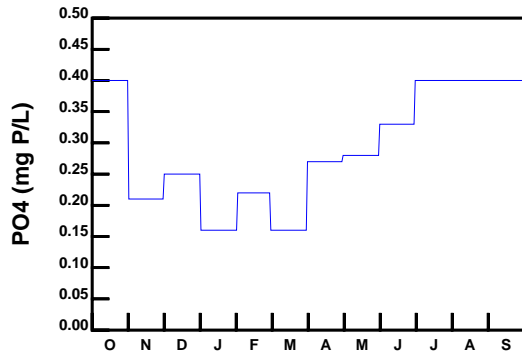
**SWEM - SAWMILL CREEK**

**Boundary Condition - Water Year 9900**



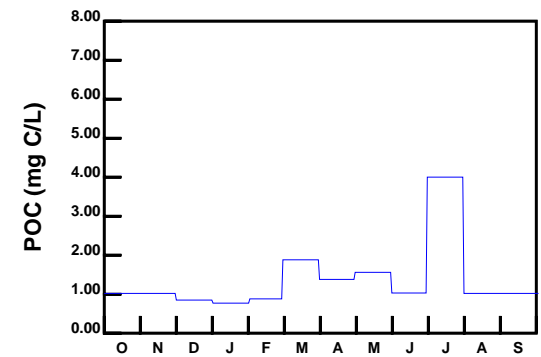
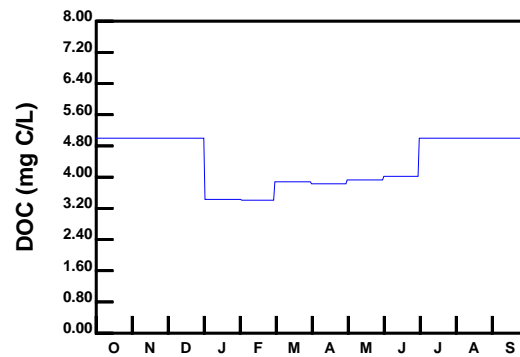
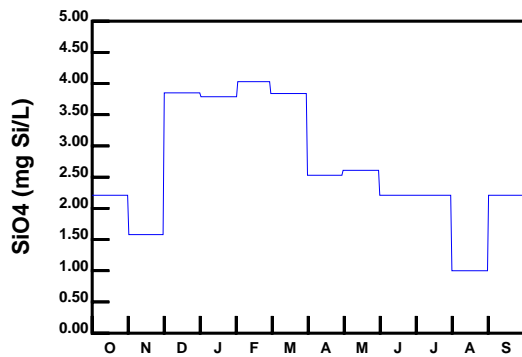
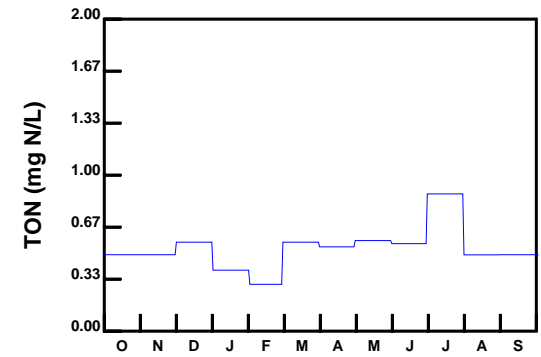
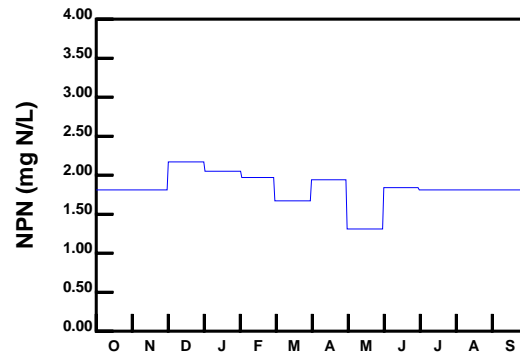
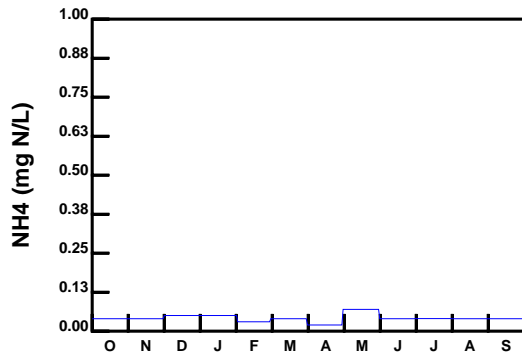
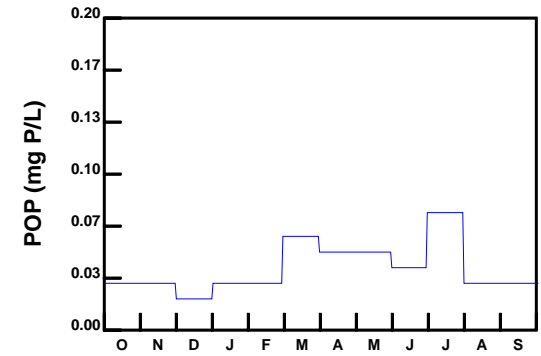
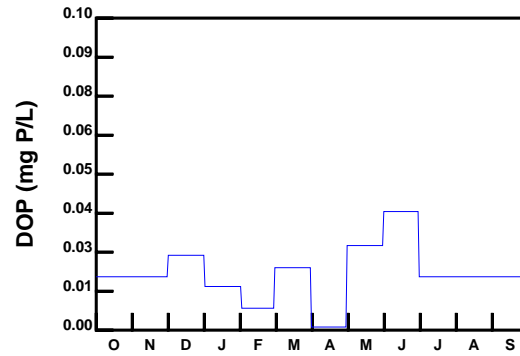
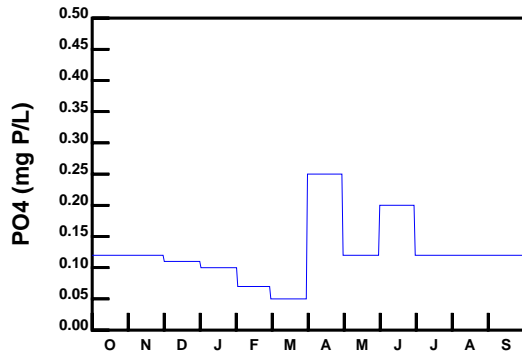
**SWEM - BRONX RIVER**

**Boundary Condition - Water Year 9900**



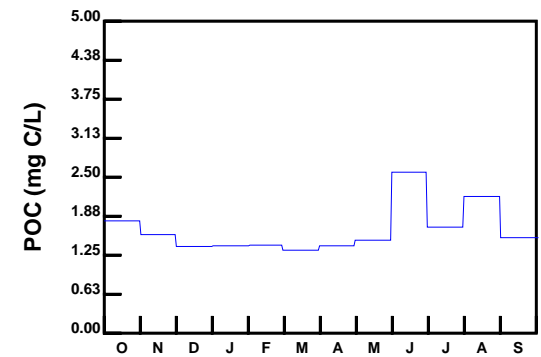
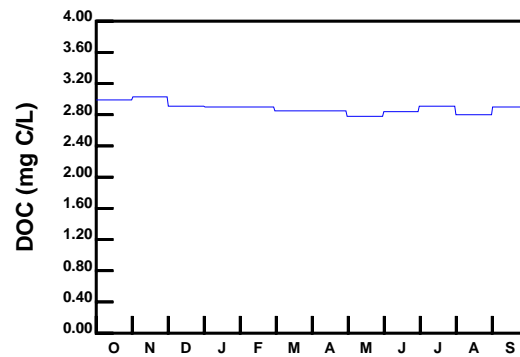
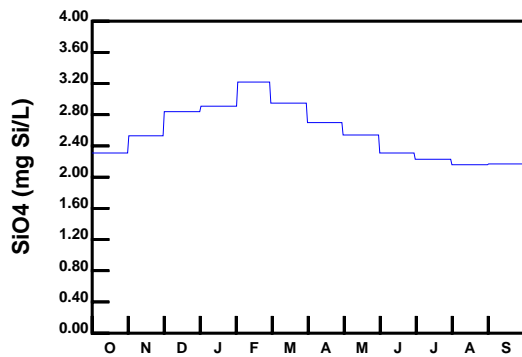
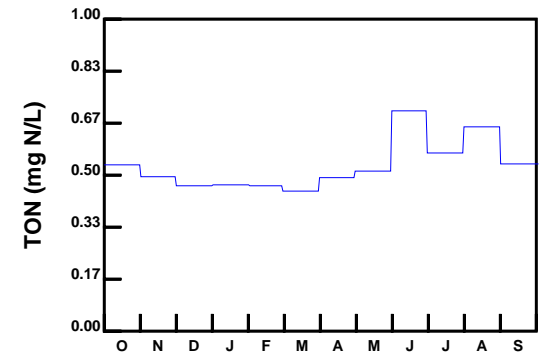
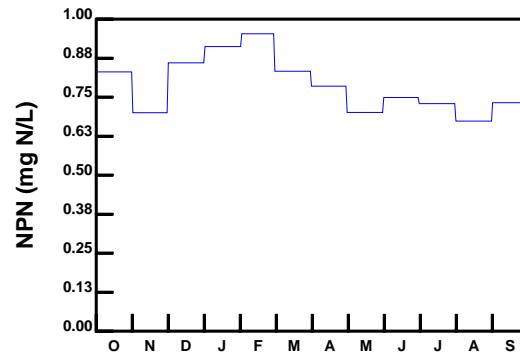
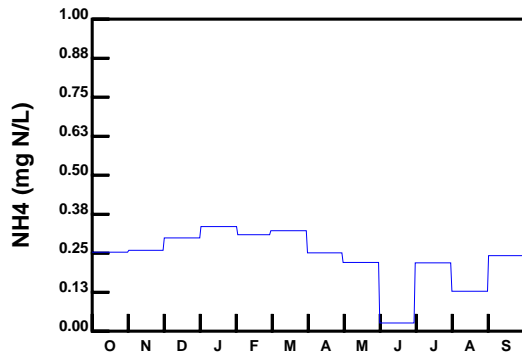
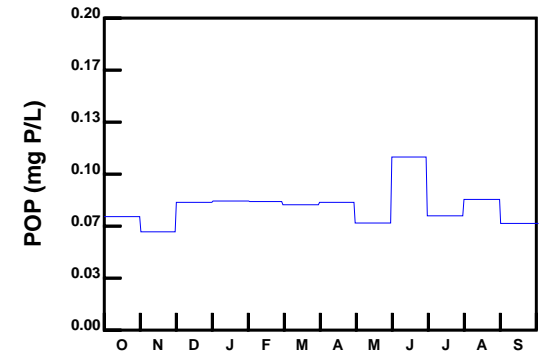
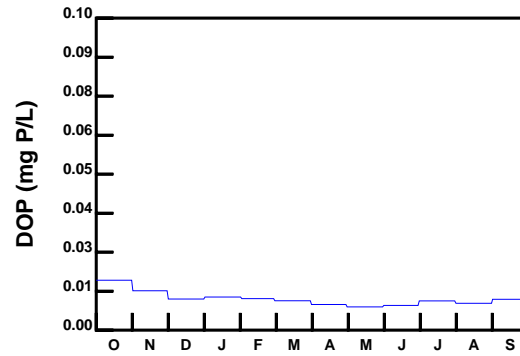
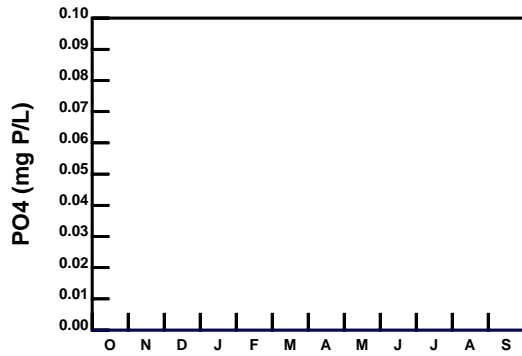
**SWEM - SADDLE RIVER**

**Boundary Condition - Water Year 9900**



**SWEM - SOUTH RIVER**

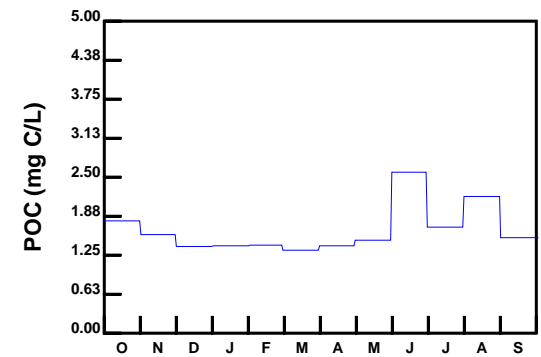
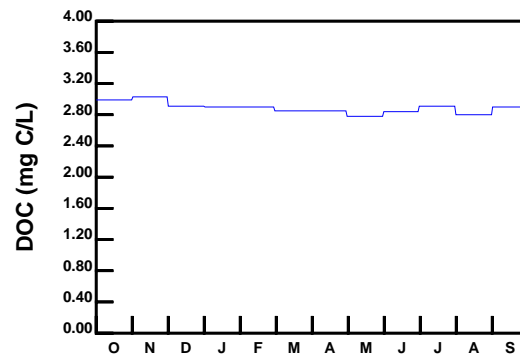
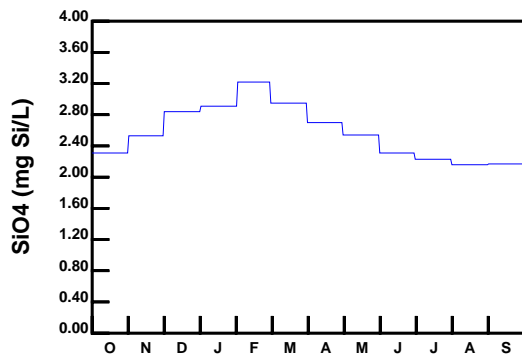
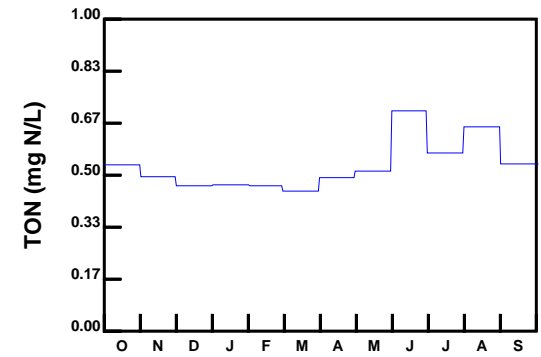
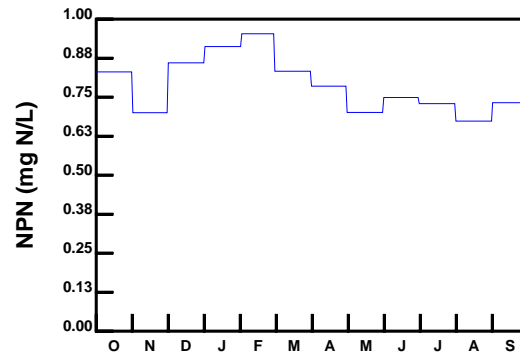
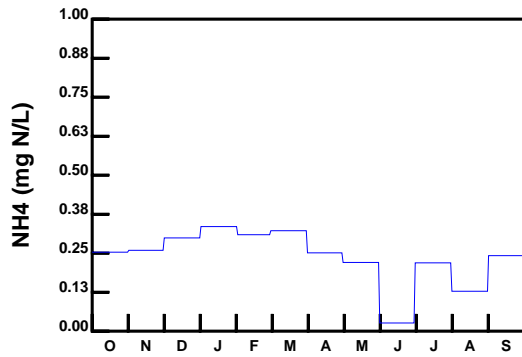
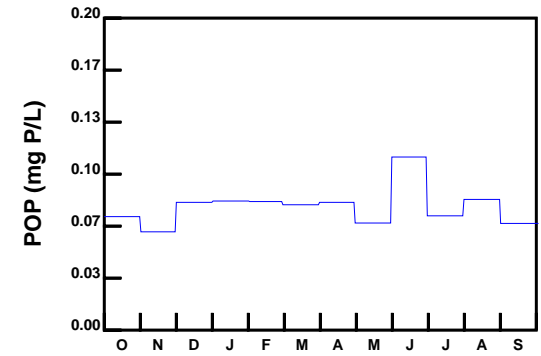
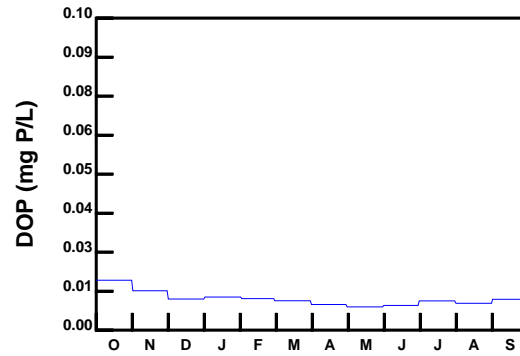
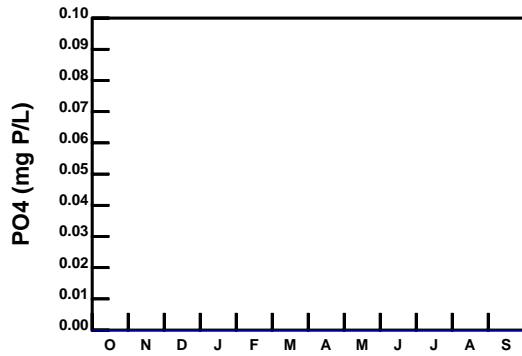
**Boundary Condition - Water Year 9900**



**SWEM - NAVESINK AND SHREWSBURY RIVERS**

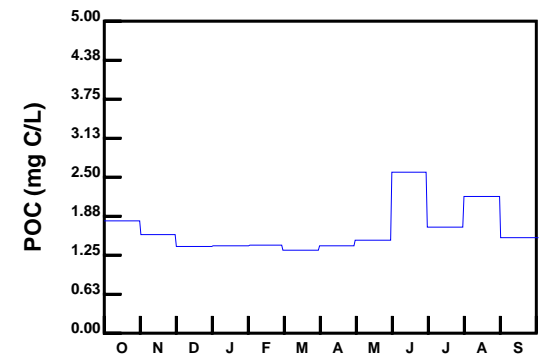
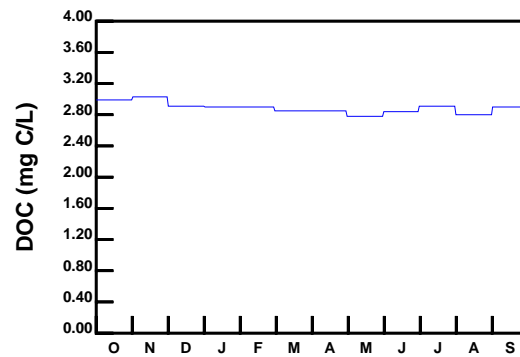
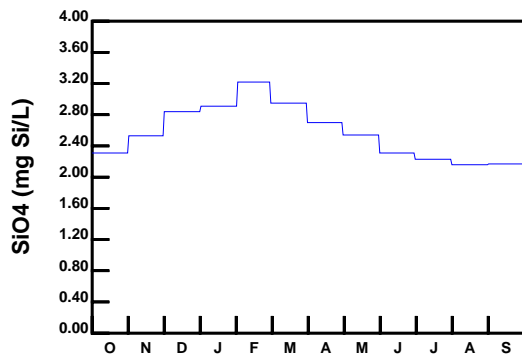
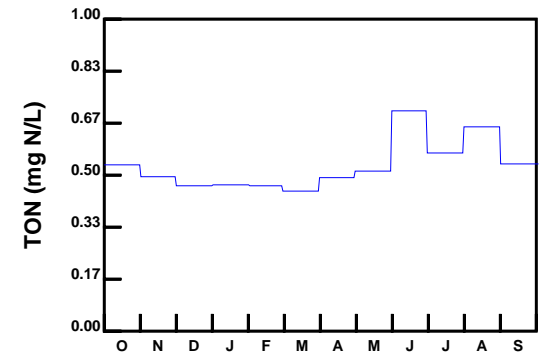
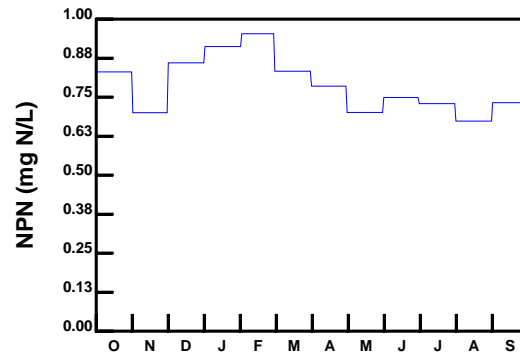
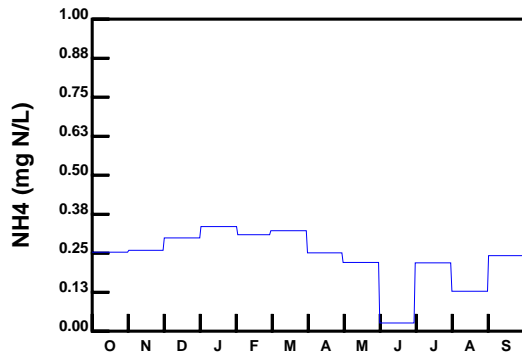
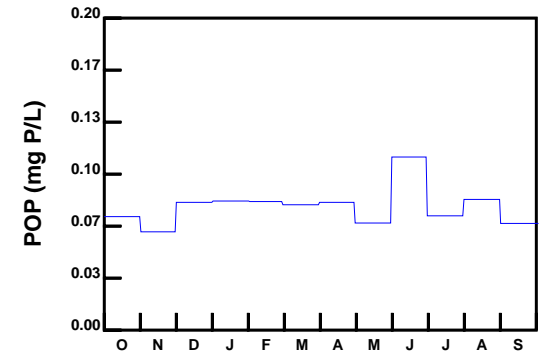
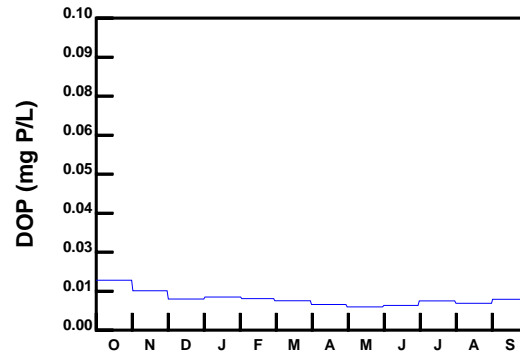
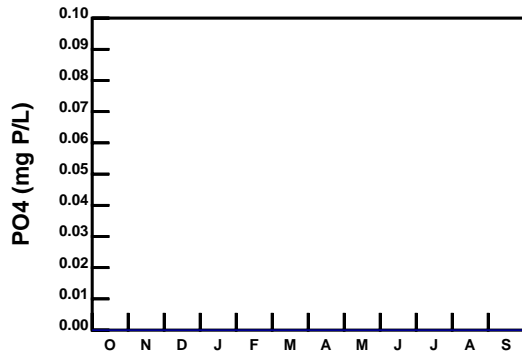
**Boundary Condition - Water Year 9900**





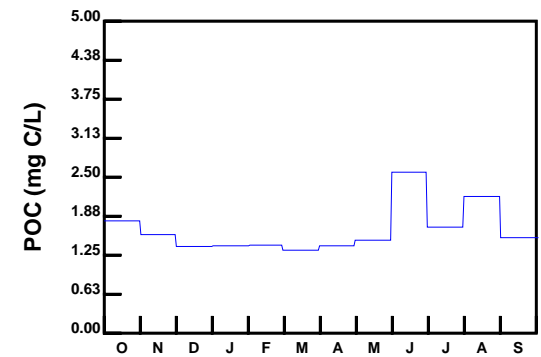
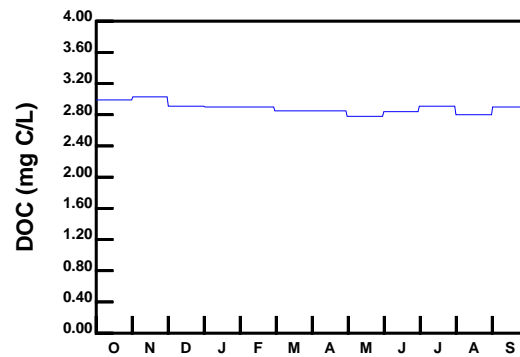
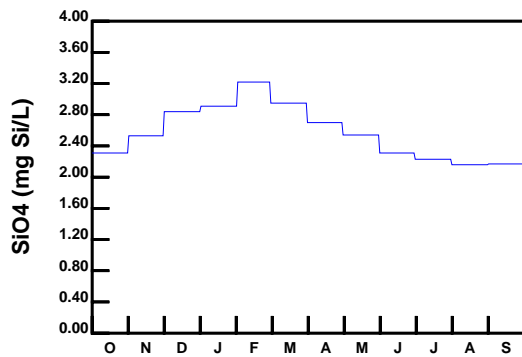
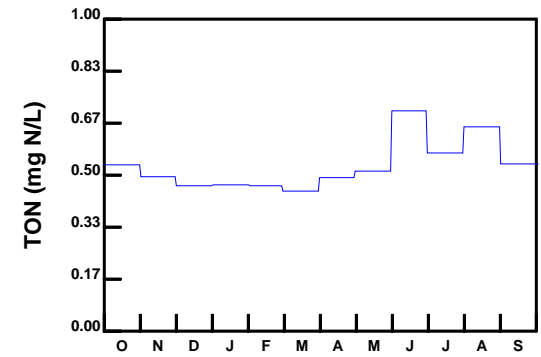
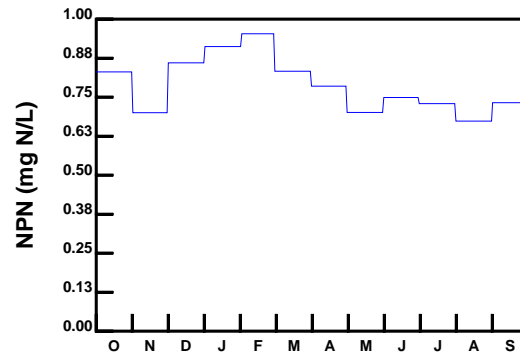
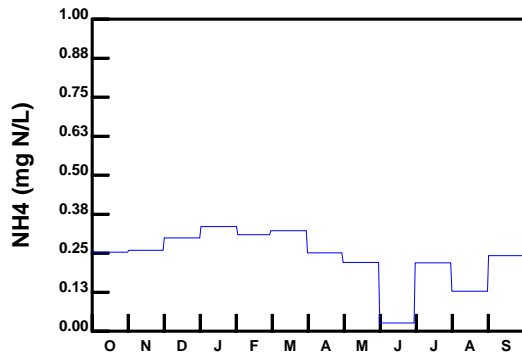
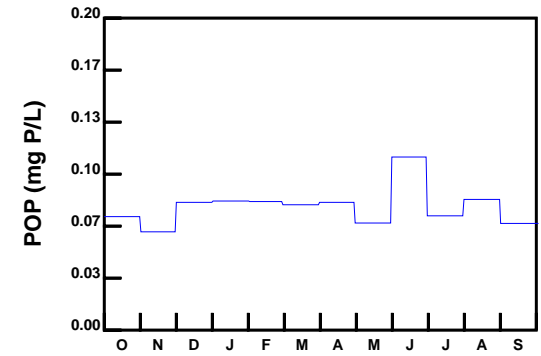
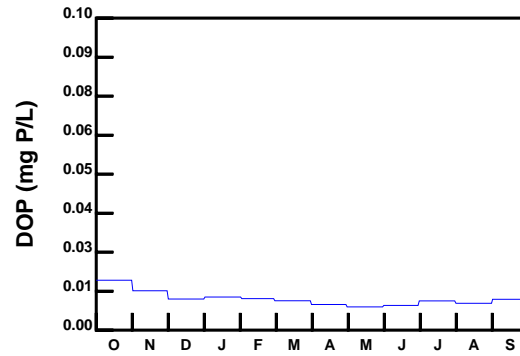
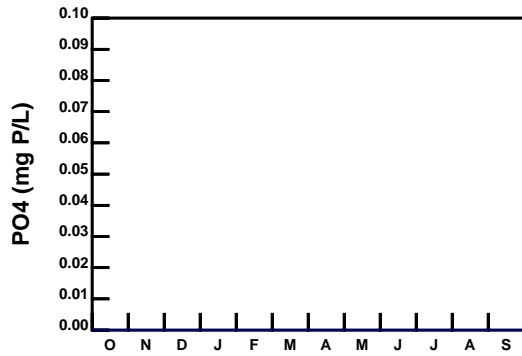
**SWEM - MANASQUAN RIVER**

**Boundary Condition - Water Year 9900**



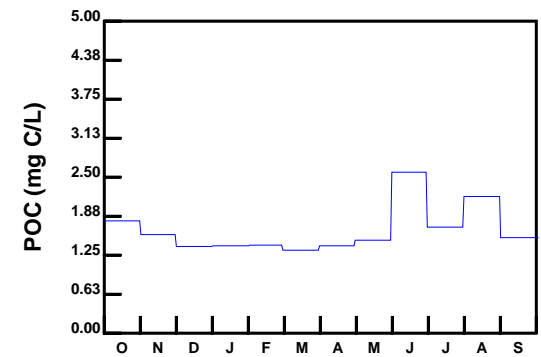
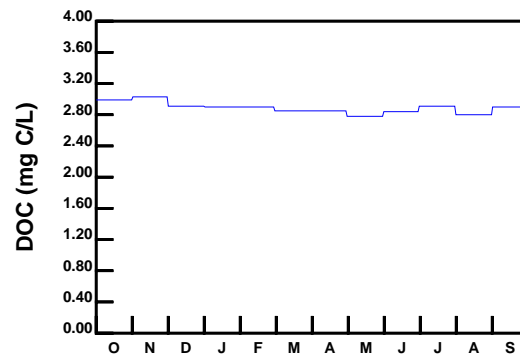
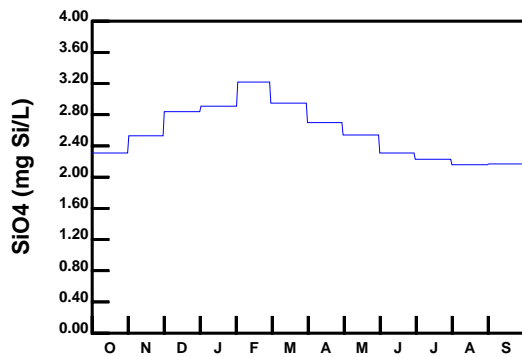
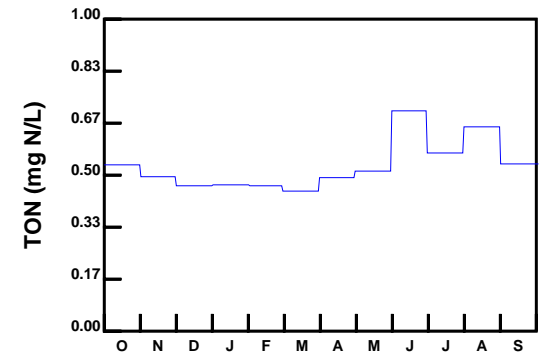
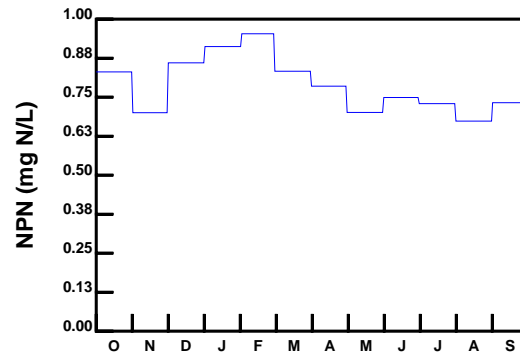
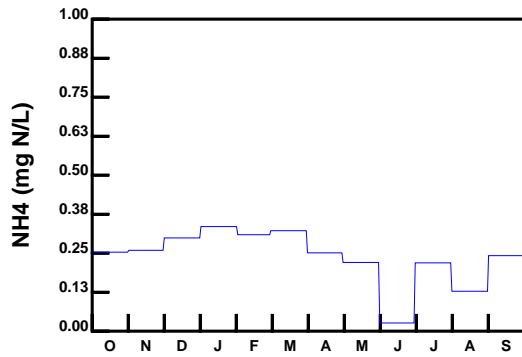
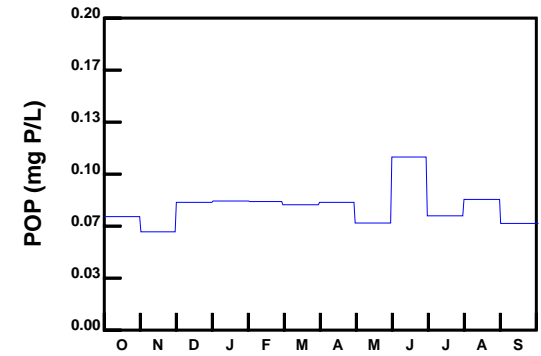
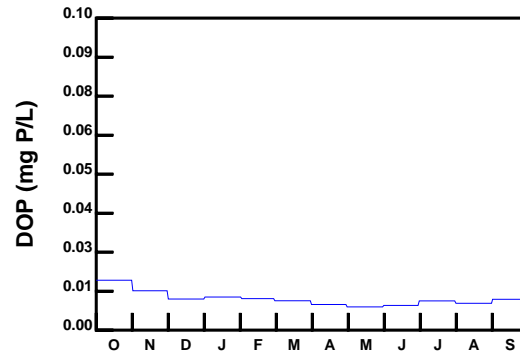
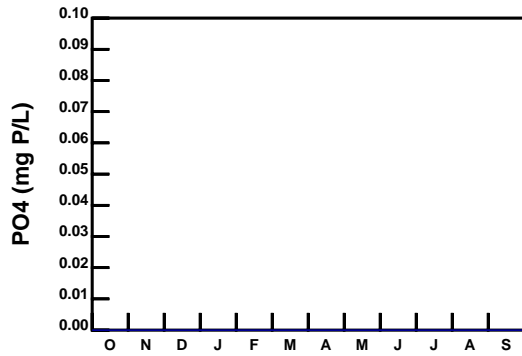
**SWEM - METEDECONK AND TOMS RIVERS**

**Boundary Condition - Water Year 9900**



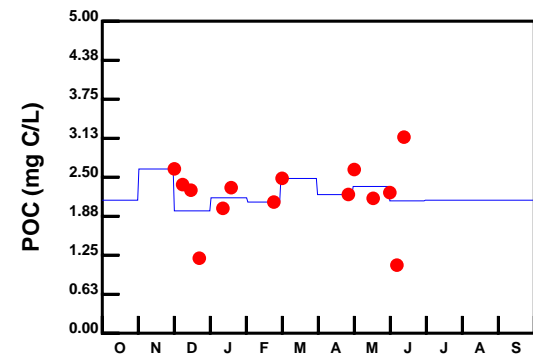
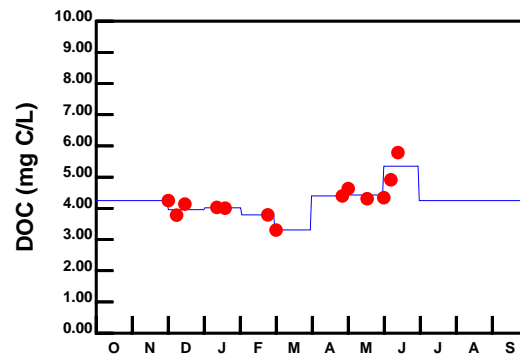
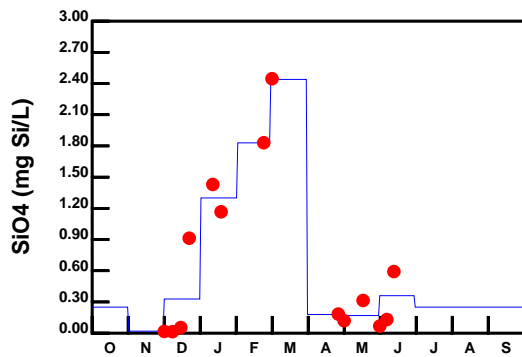
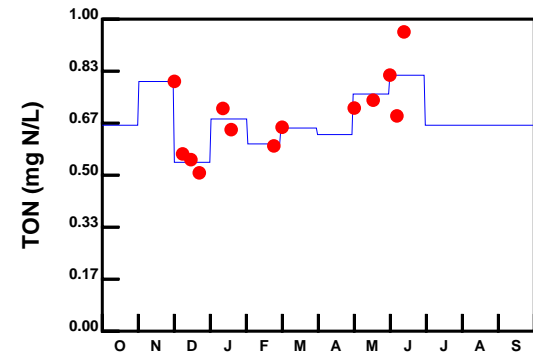
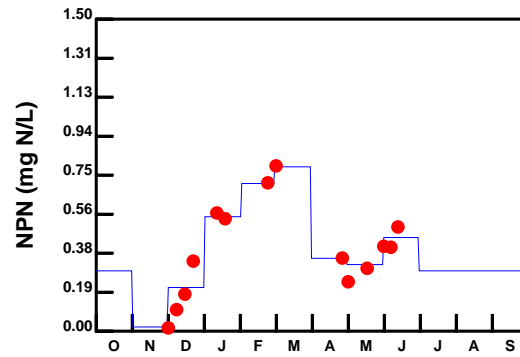
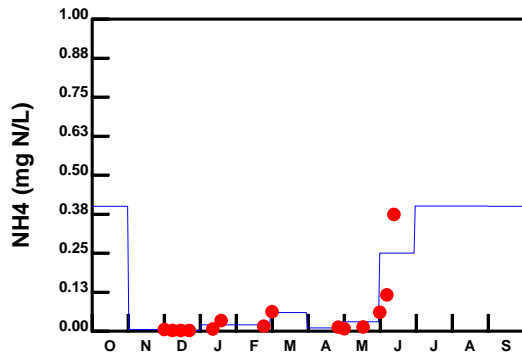
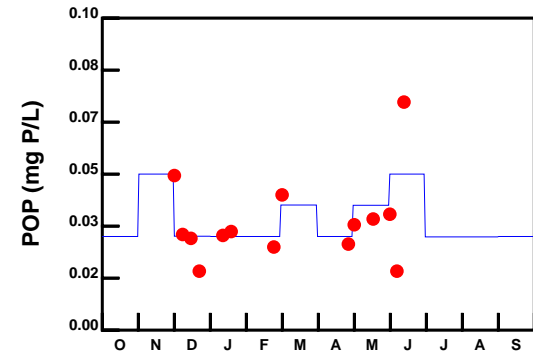
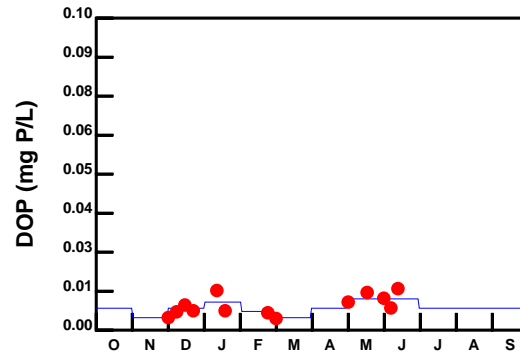
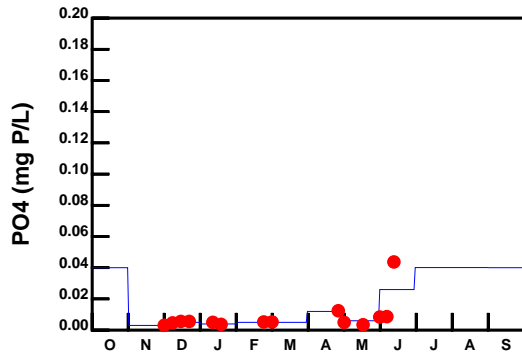
**SWEM - MULLICA RIVER AND WESTECUNK CREEK**

**Boundary Condition - Water Year 9900**

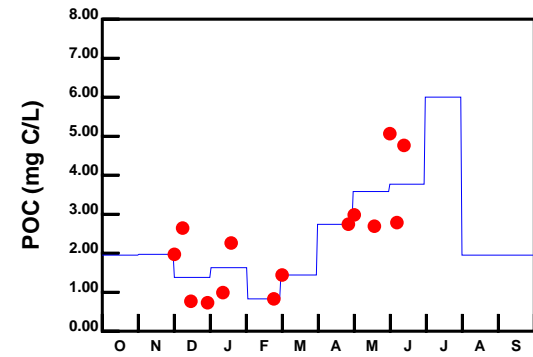
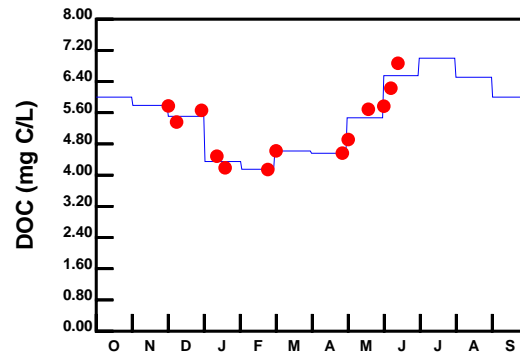
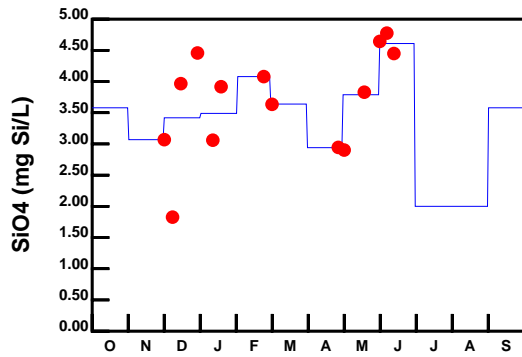
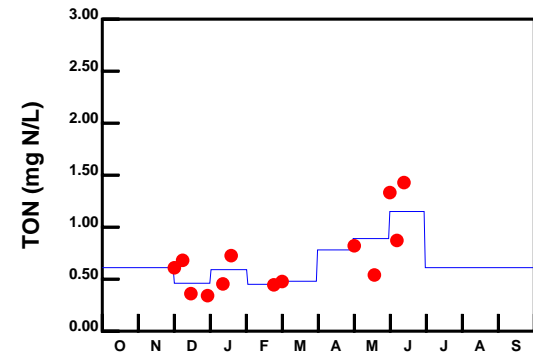
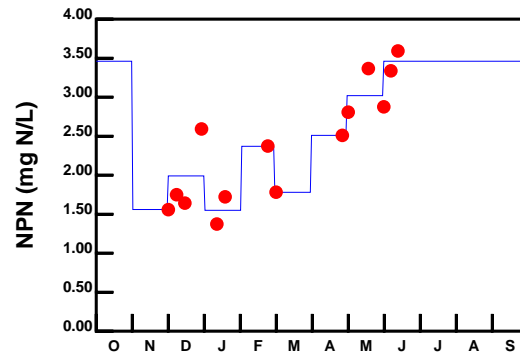
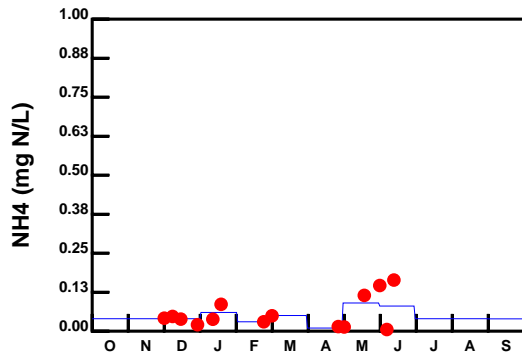
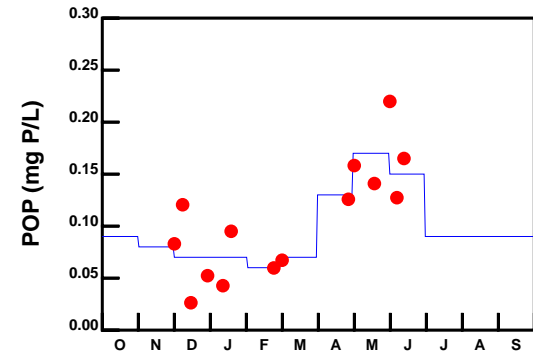
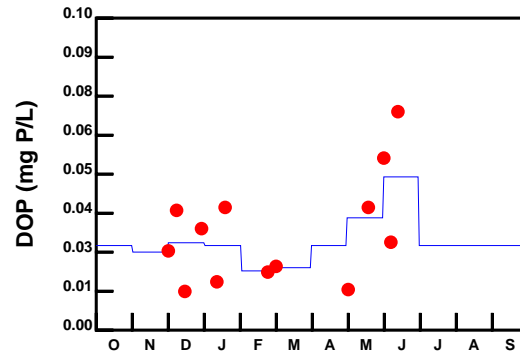
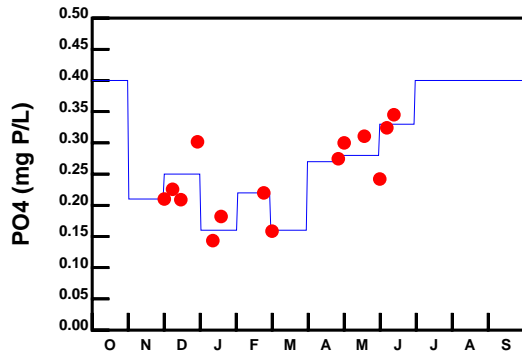


**SWEM - TUCKAHOE AND GREAT EGG RIVERS**

**Boundary Condition - Water Year 9900**

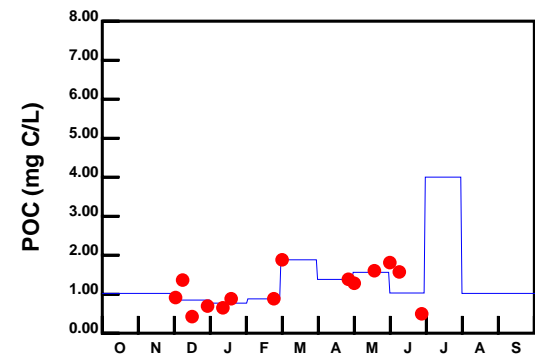
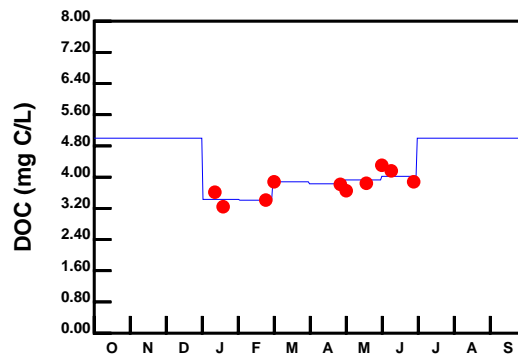
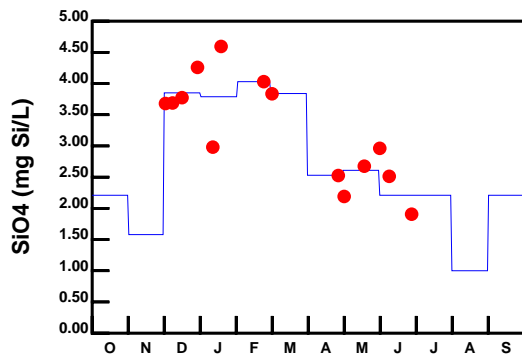
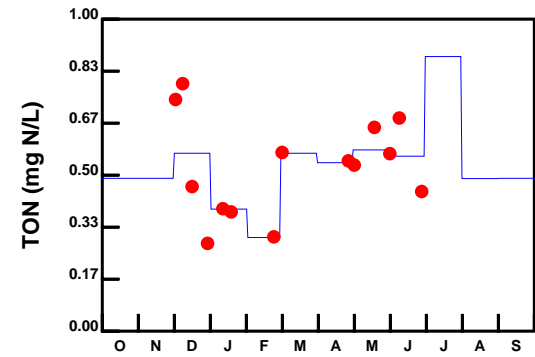
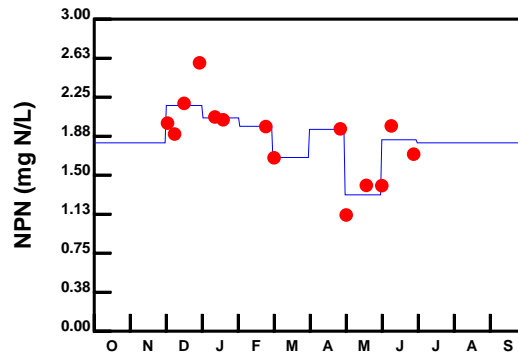
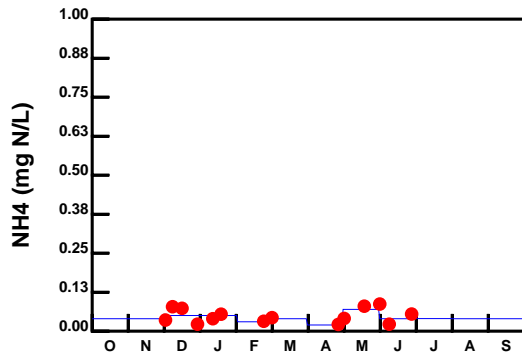
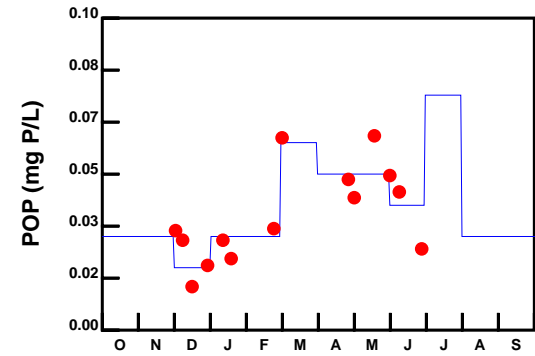
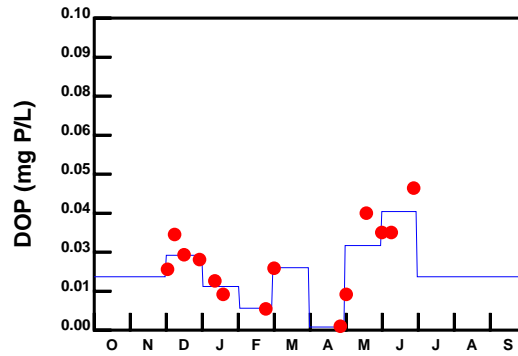
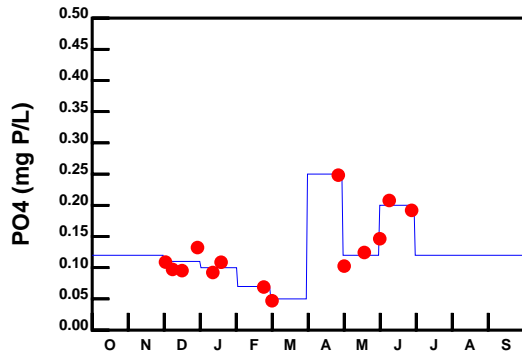


**SWEM - HACKENSACK RIVER**  
**Boundary Condition - Water Year 9900**



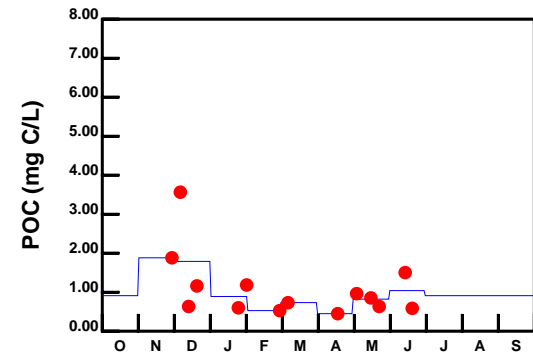
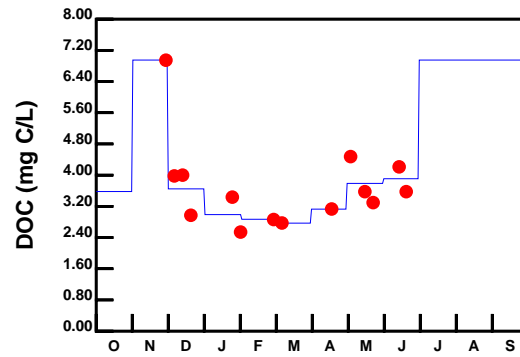
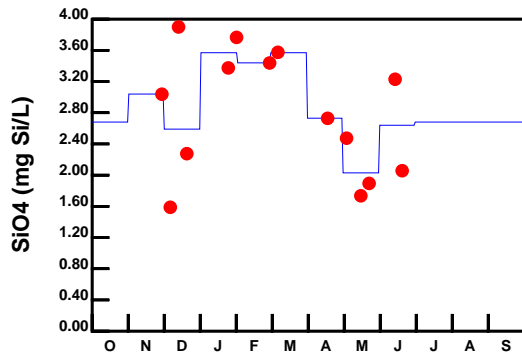
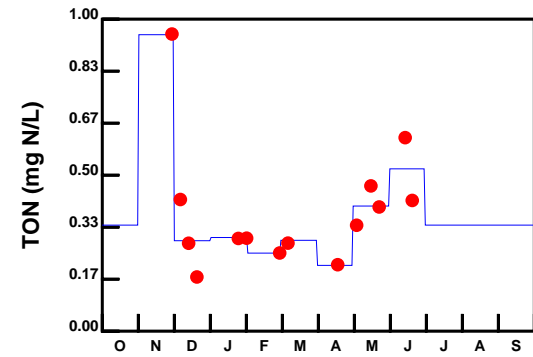
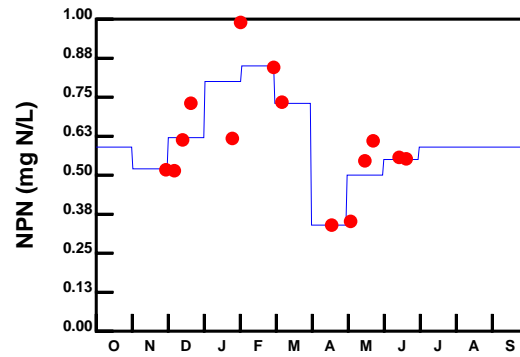
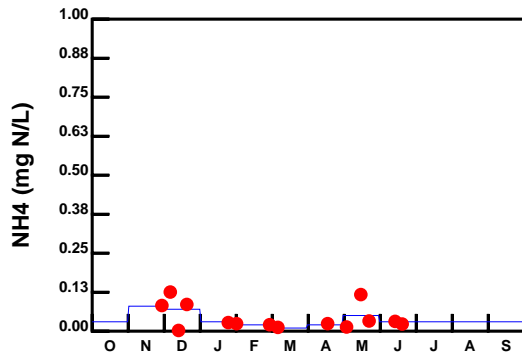
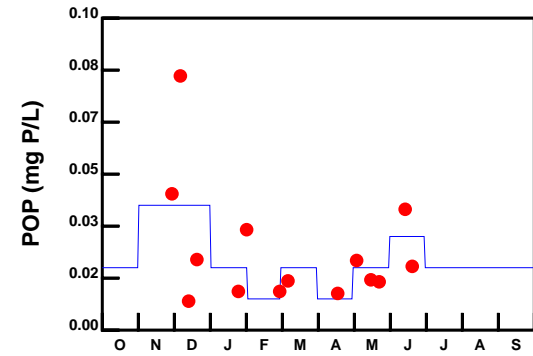
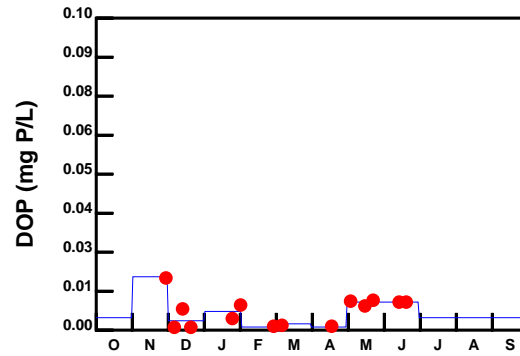
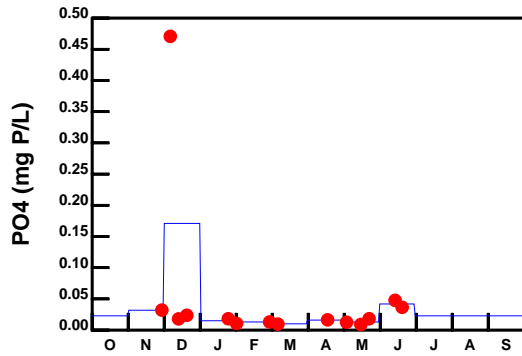
**SWEM - PASSAIC RIVER**

**Boundary Condition - Water Year 9900**



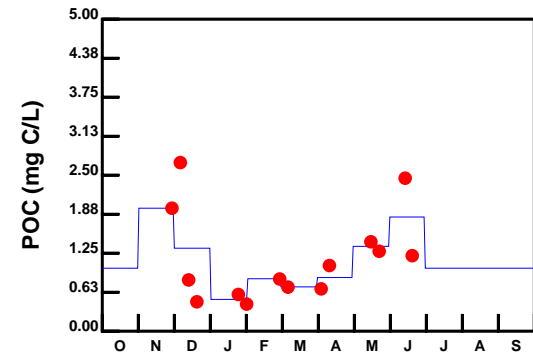
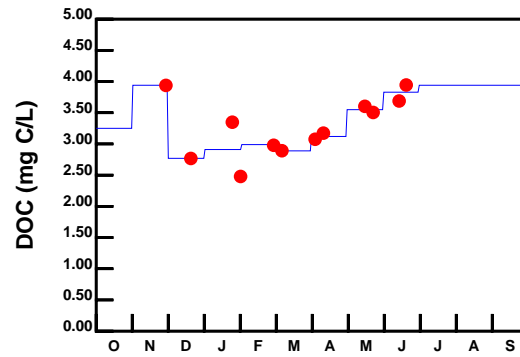
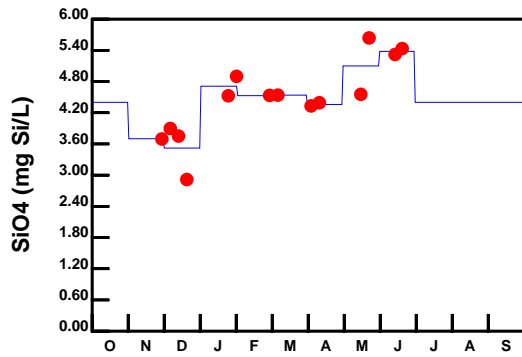
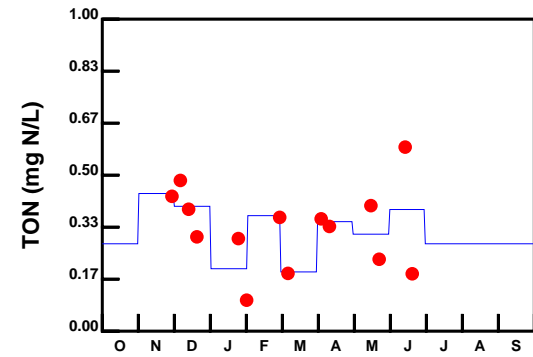
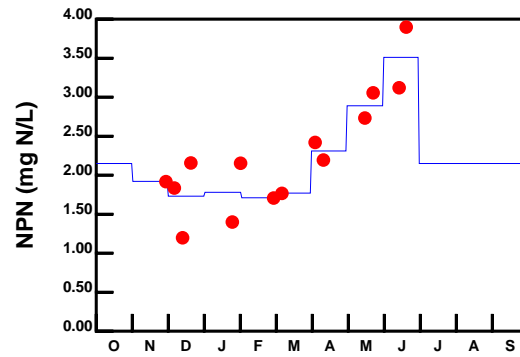
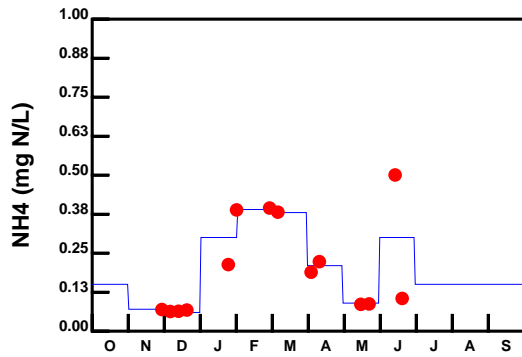
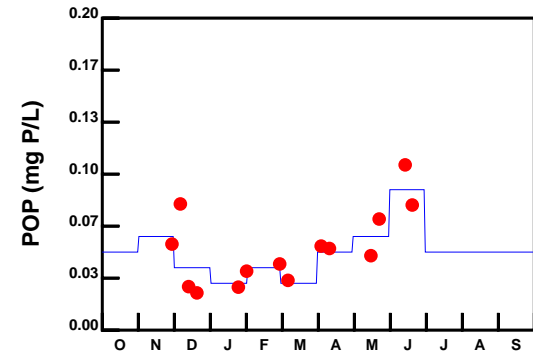
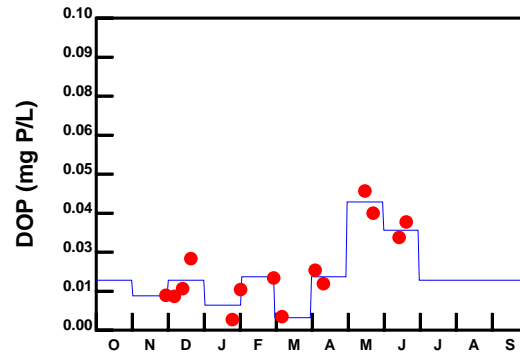
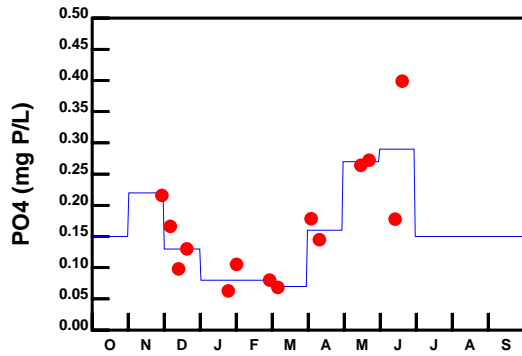
**SWEM - RARITAN RIVER**

**Boundary Condition - Water Year 9900**

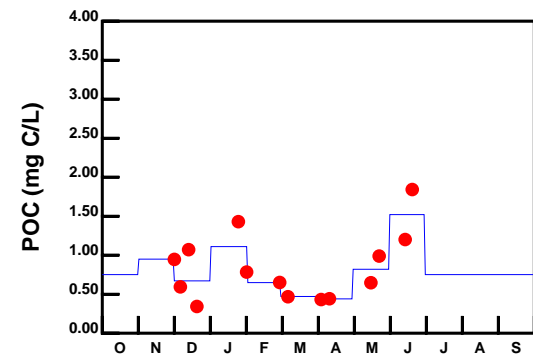
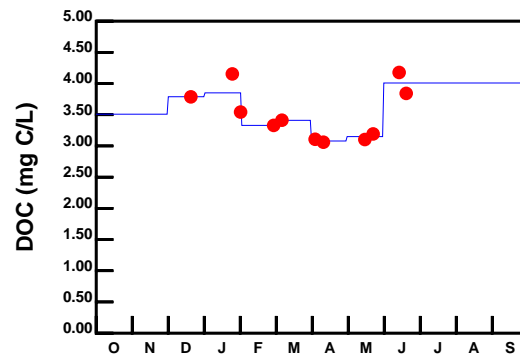
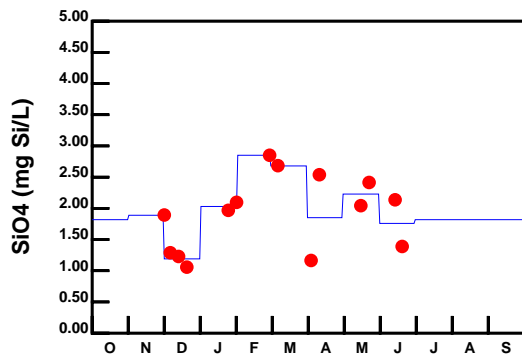
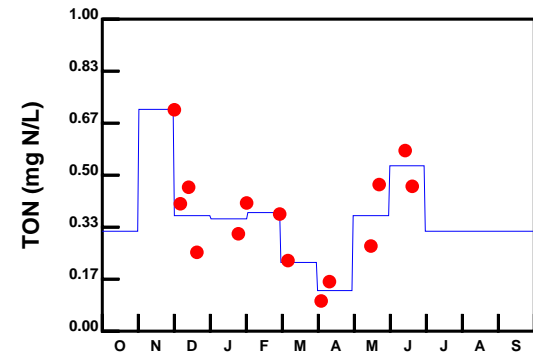
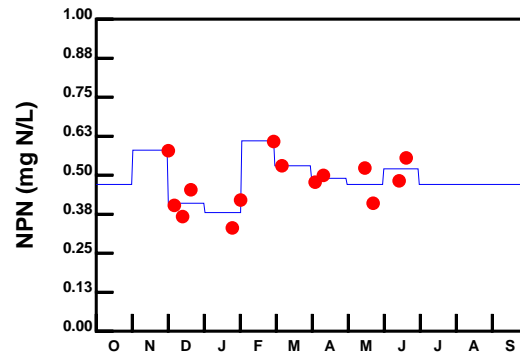
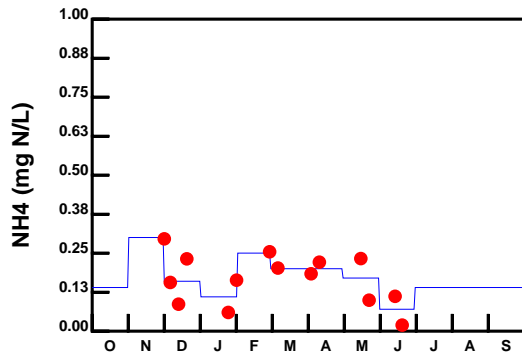
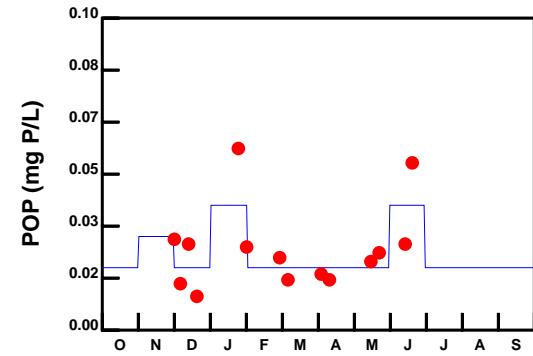
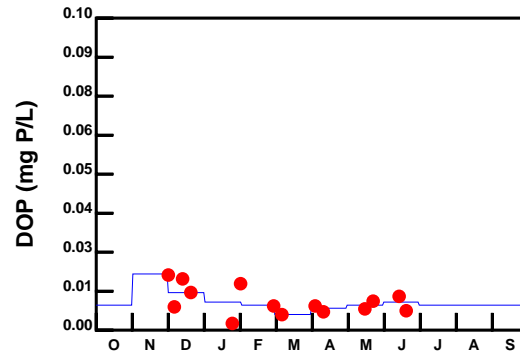
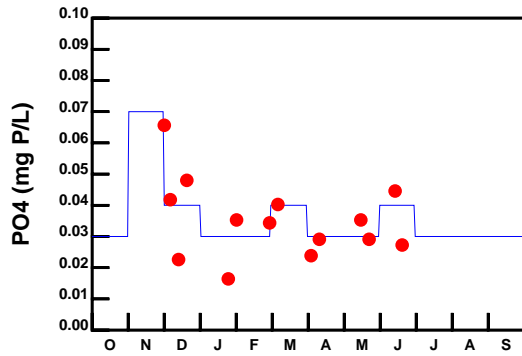


**SWEM - NORWALK RIVER**  
**Boundary Condition - Water Year 9900**

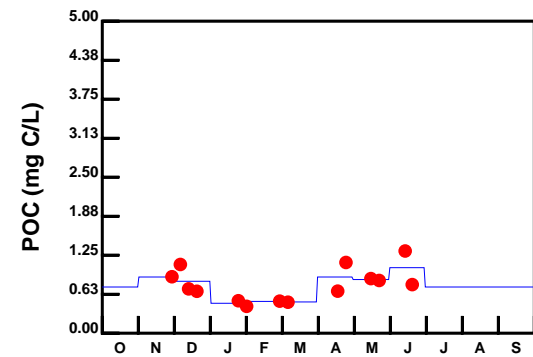
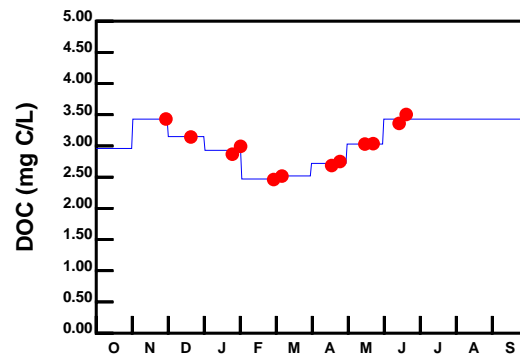
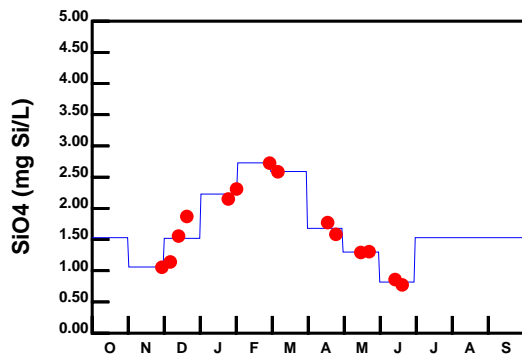
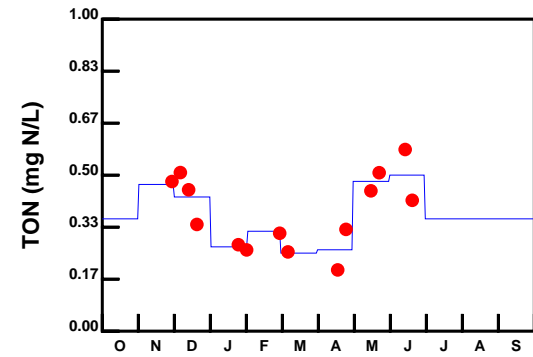
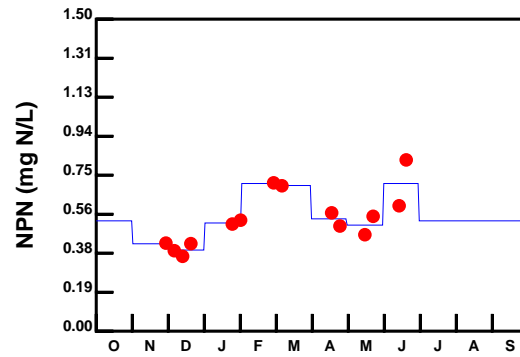
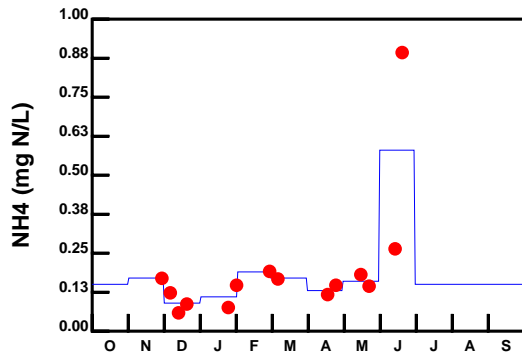
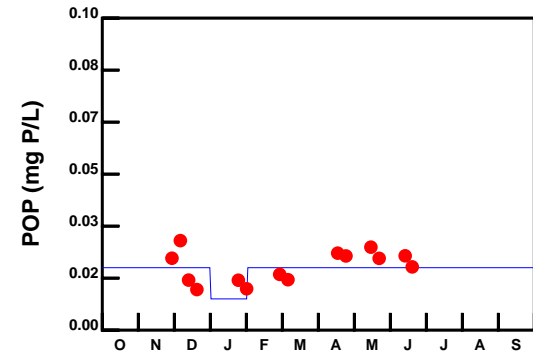
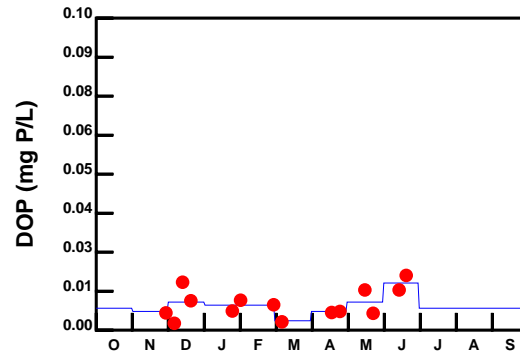
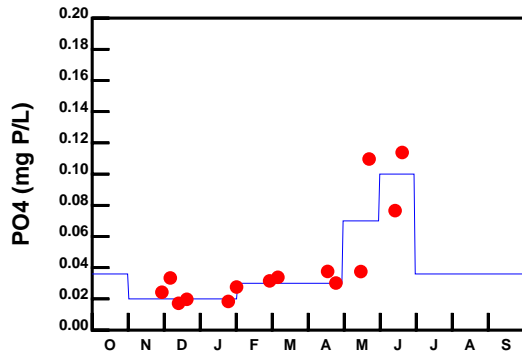




**SWEM - QUINNIPIAC RIVER**  
**Boundary Condition - Water Year 9900**

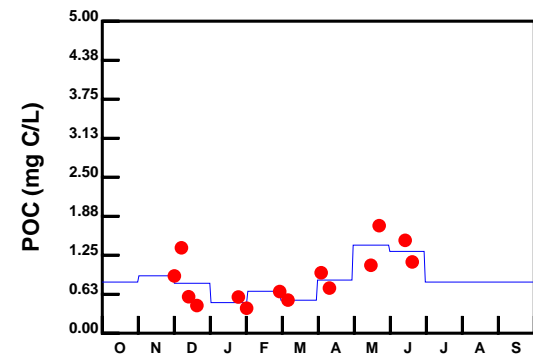
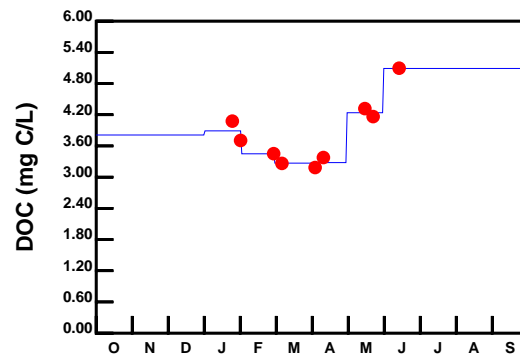
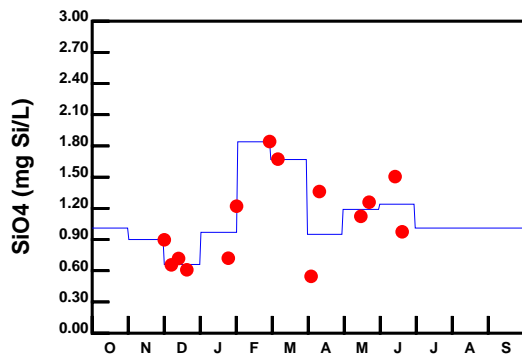
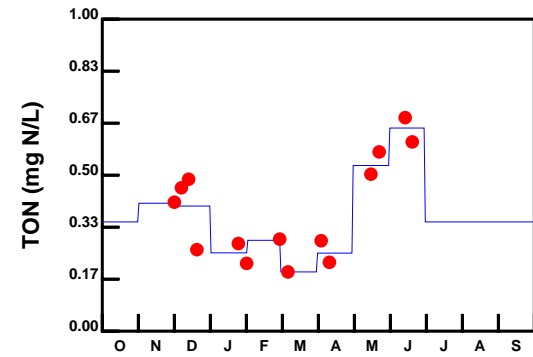
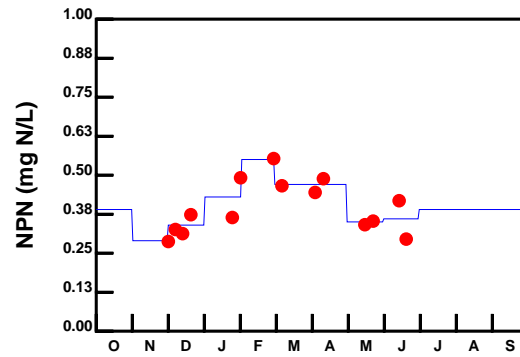
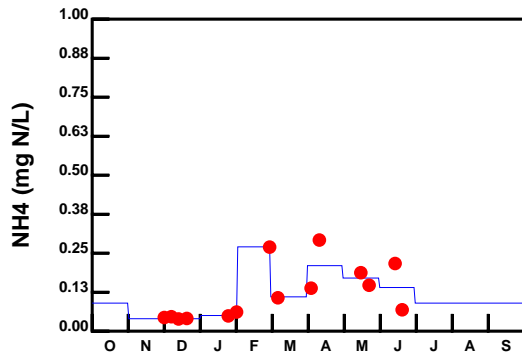
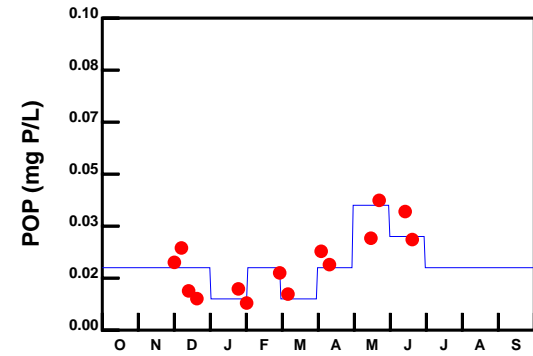
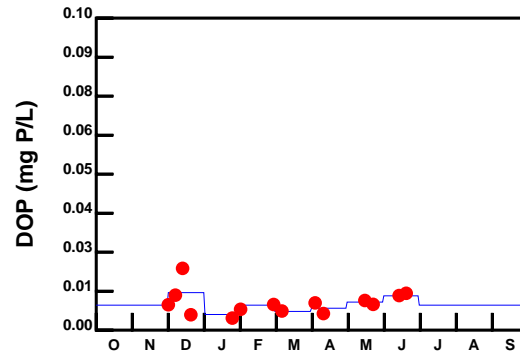
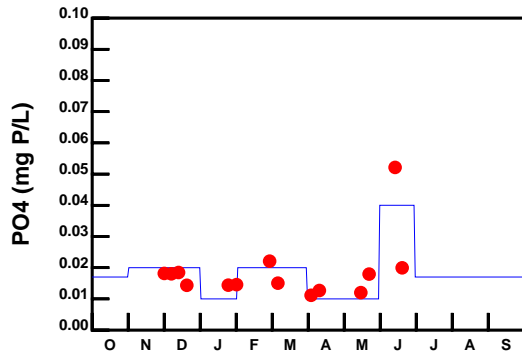


**SWEM - CONNECTICUT RIVER**  
**Boundary Condition - Water Year 9900**



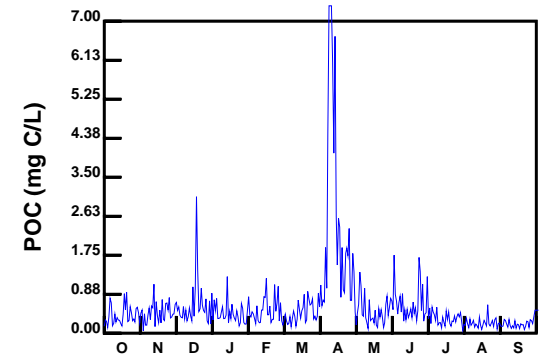
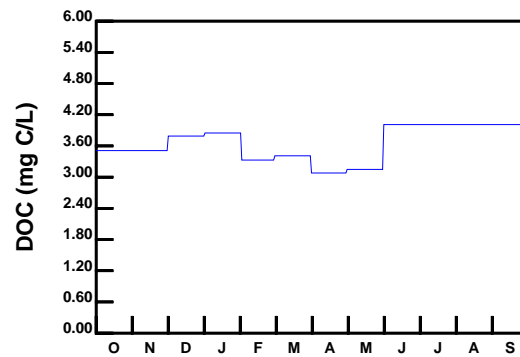
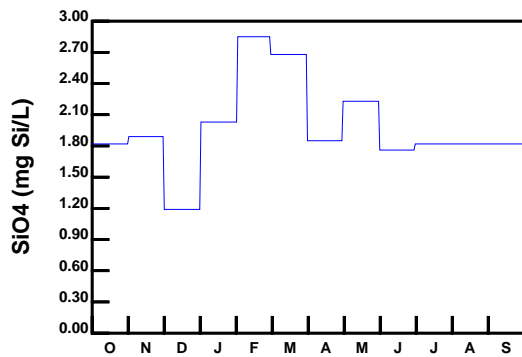
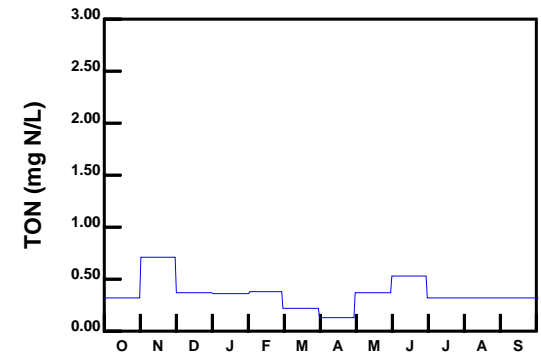
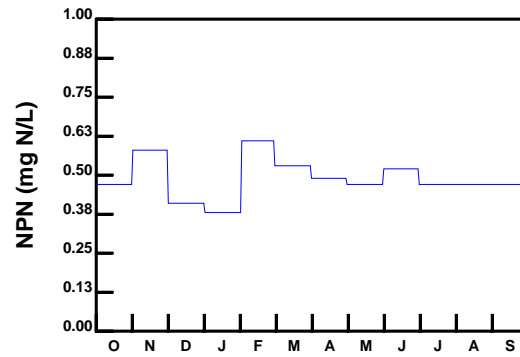
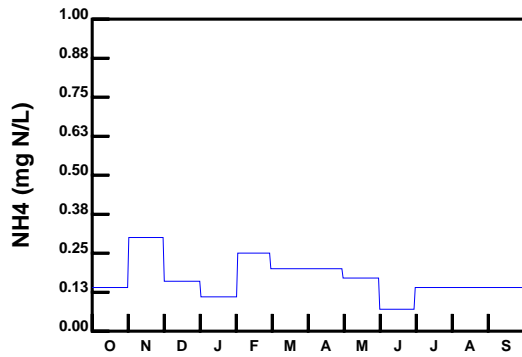
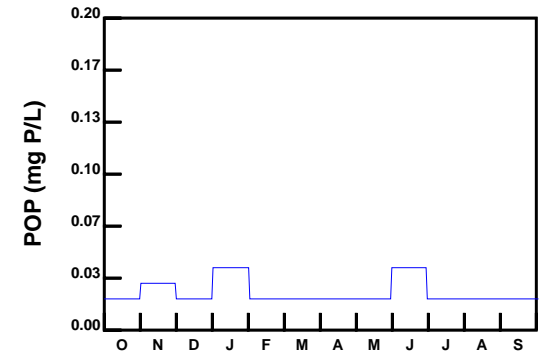
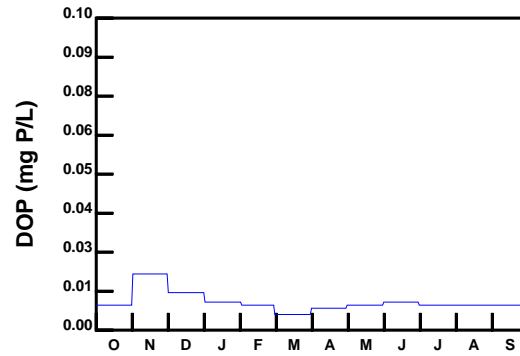
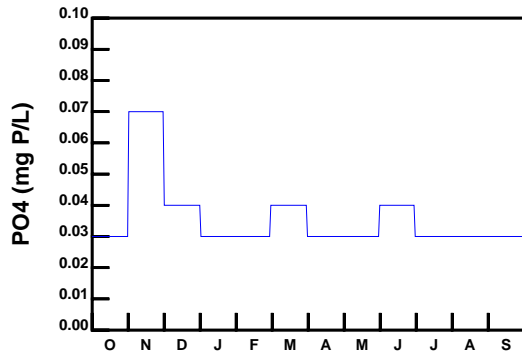
**SWEM - HOUSATONIC AND NAUGATUCK RIVERS**

**Boundary Condition - Water Year 9900**



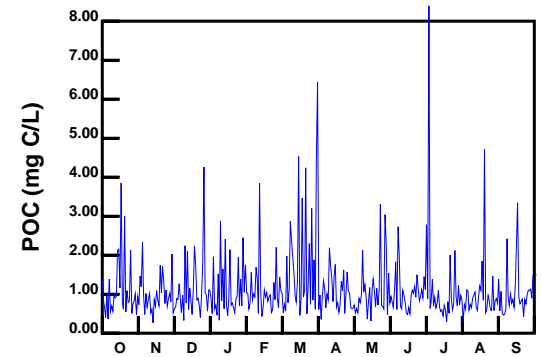
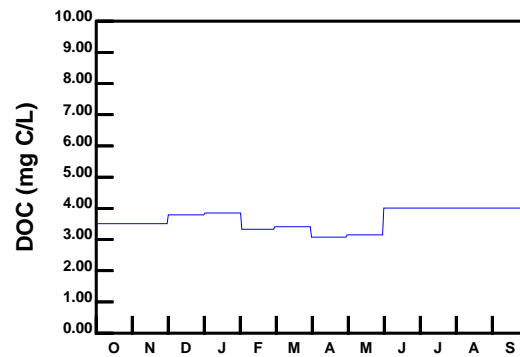
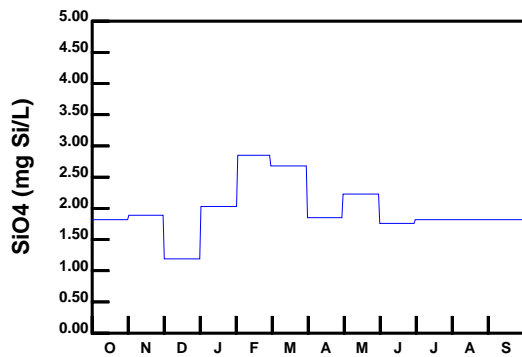
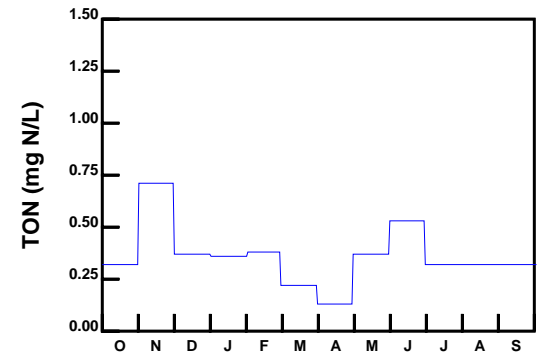
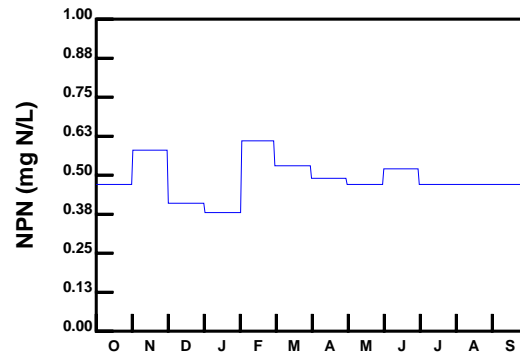
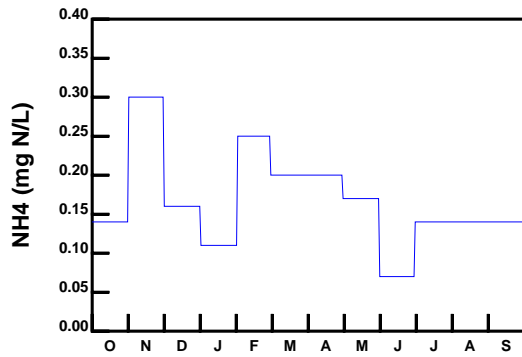
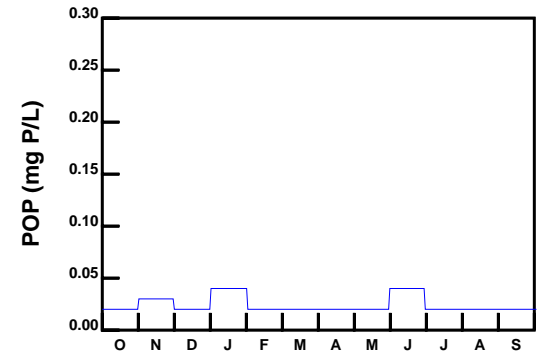
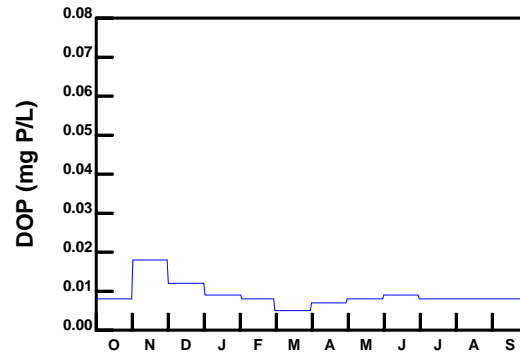
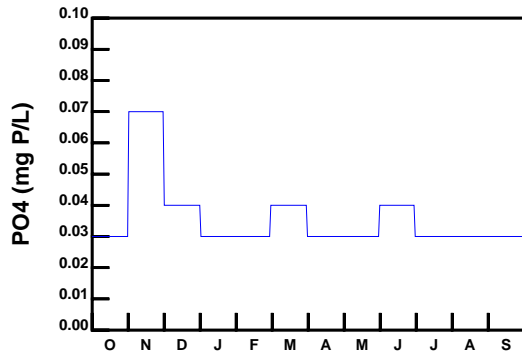
**SWEM - THAMES RIVER**

**Boundary Condition - Water Year 9900**



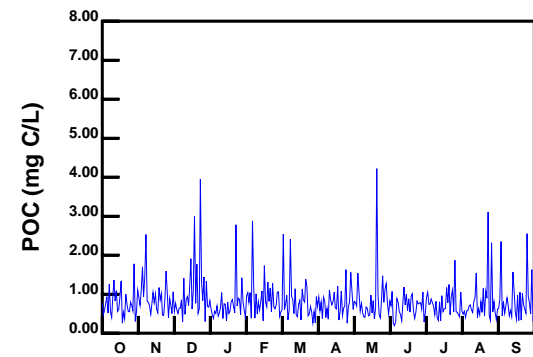
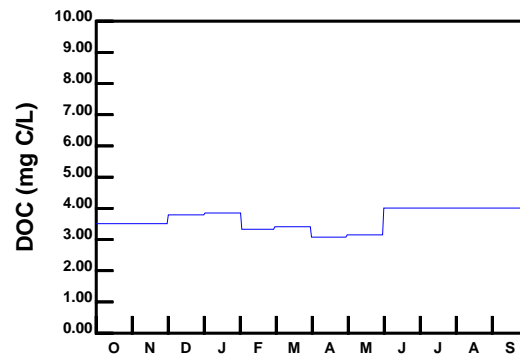
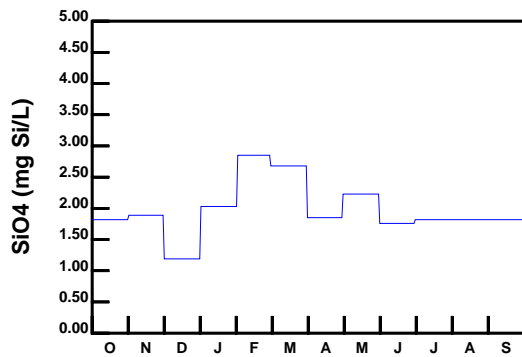
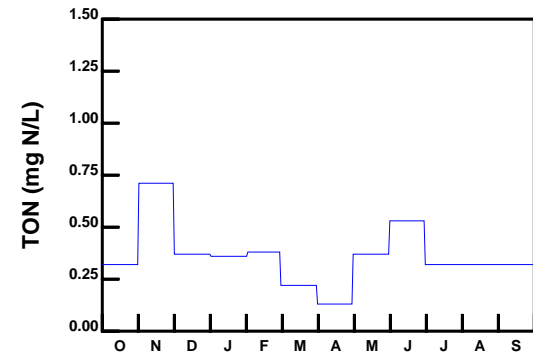
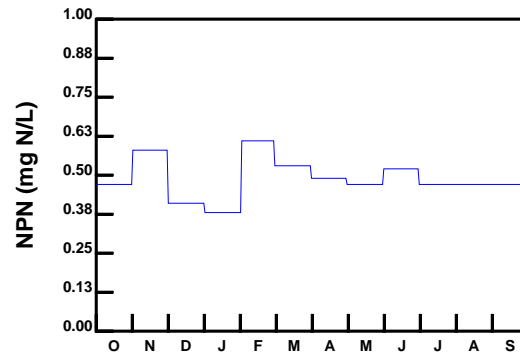
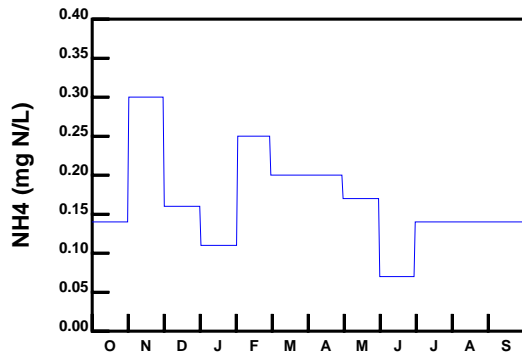
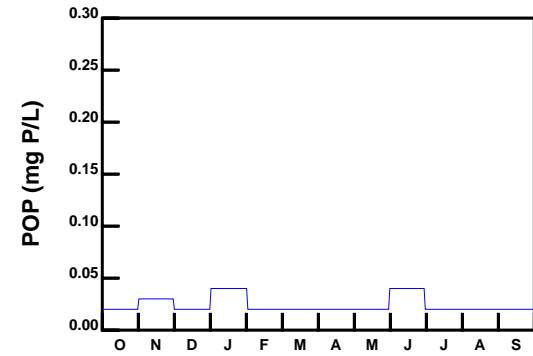
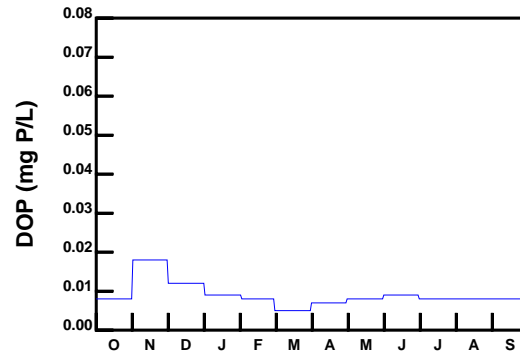
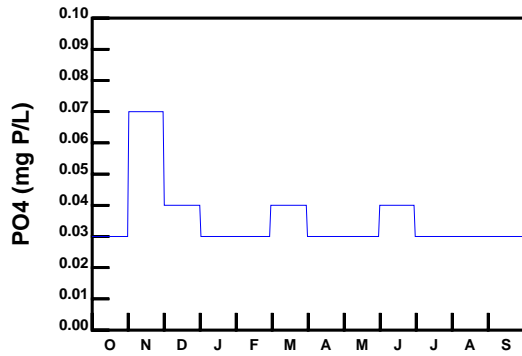
**SWEM - HUDSON RIVER**

**Boundary Condition - Water Year 0001**



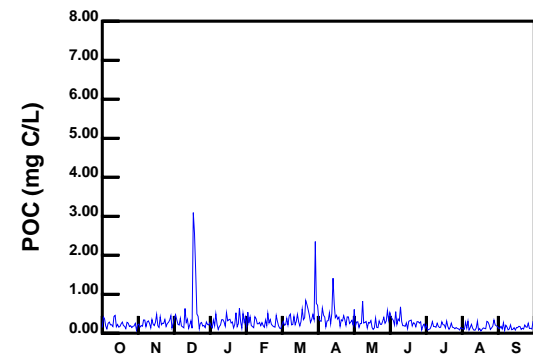
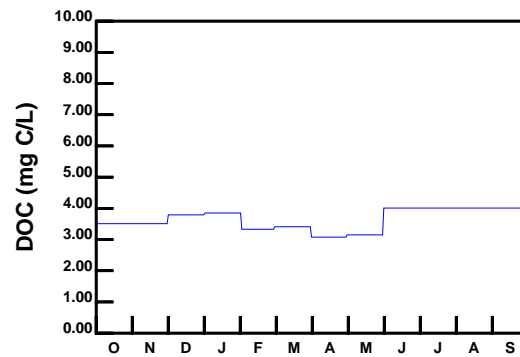
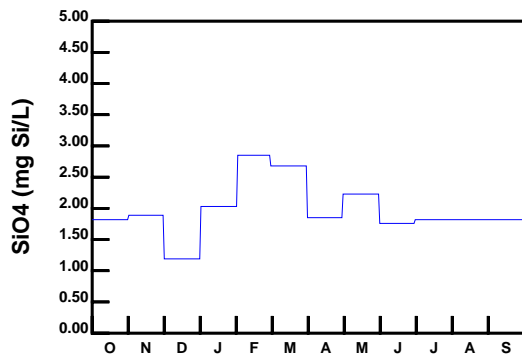
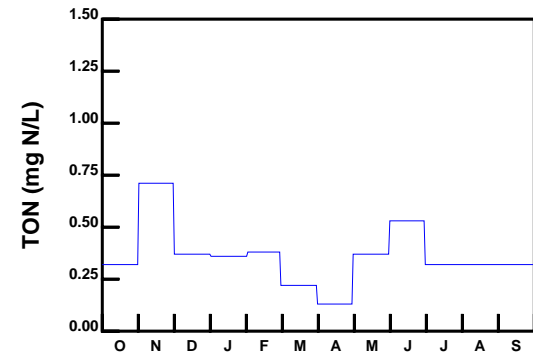
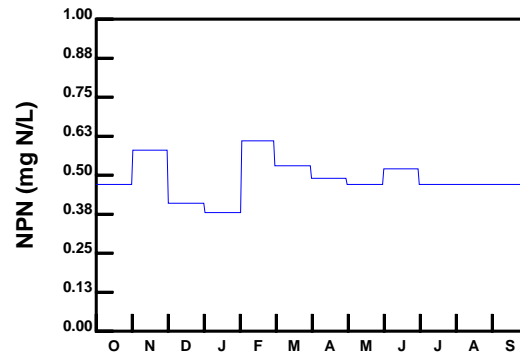
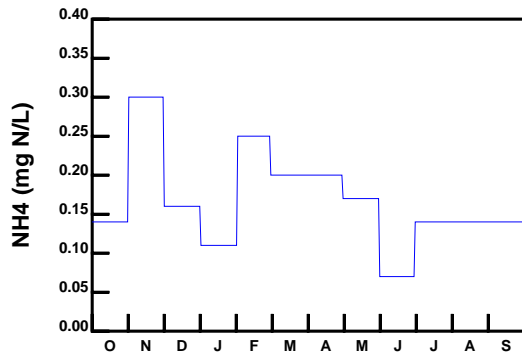
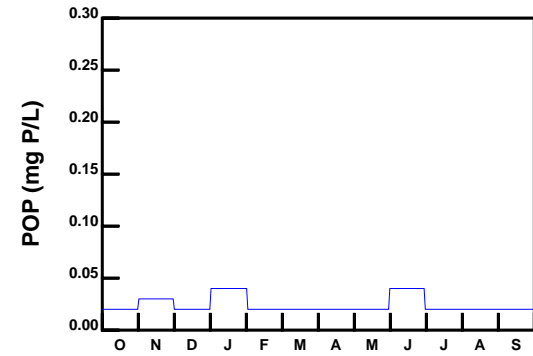
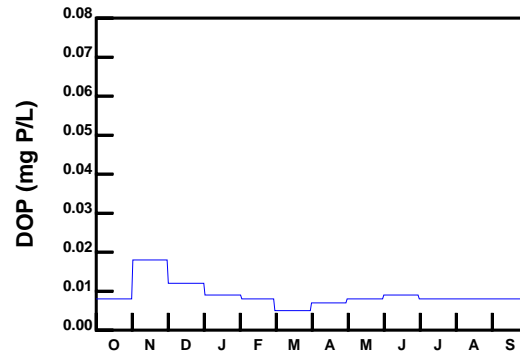
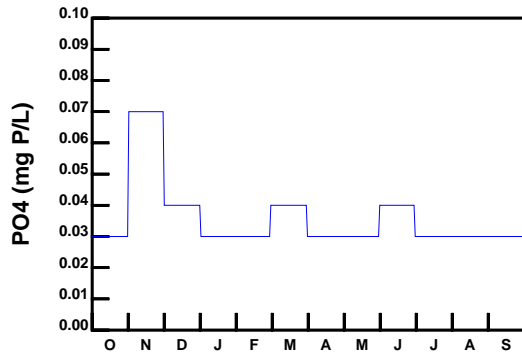
**SWEM - NORMAN KILL**

**Boundary Condition - Water Year 0001**



**SWEM - MOORDENER KILL**

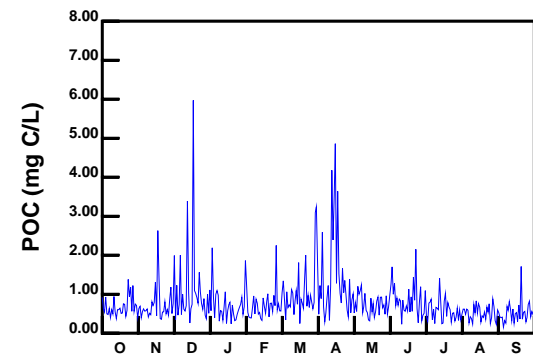
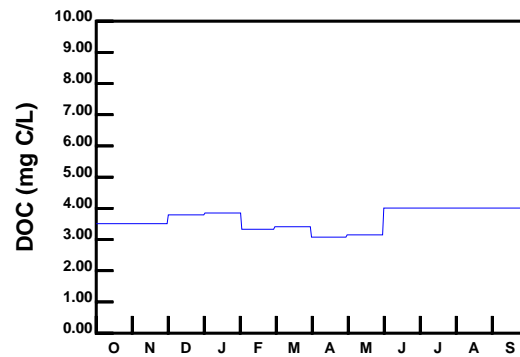
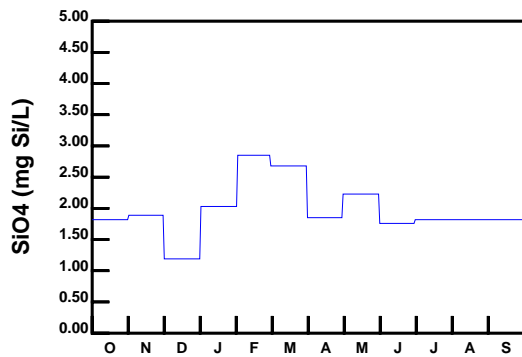
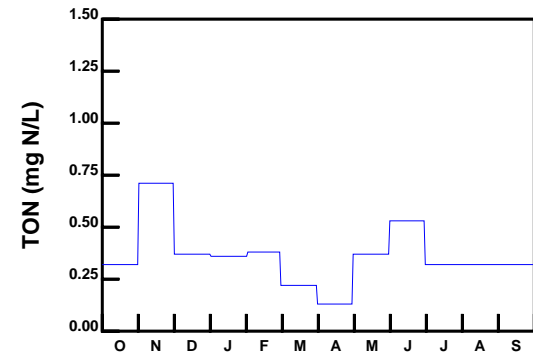
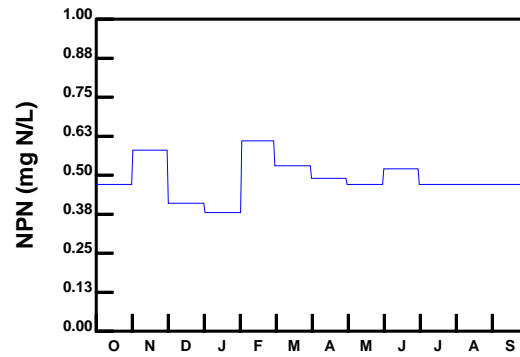
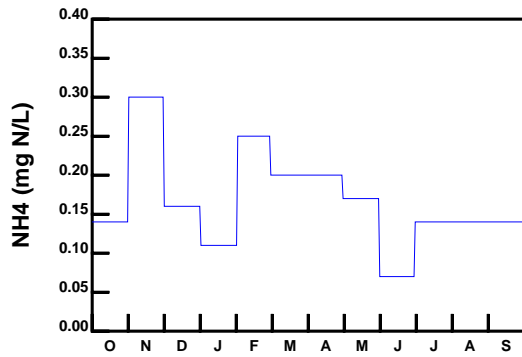
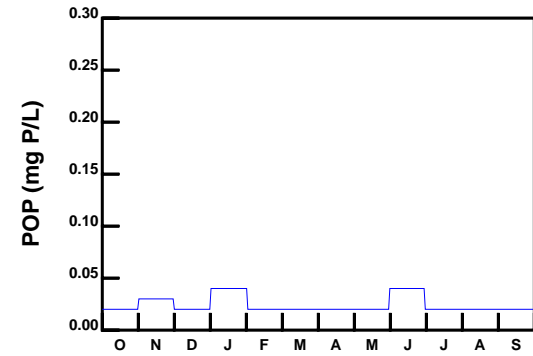
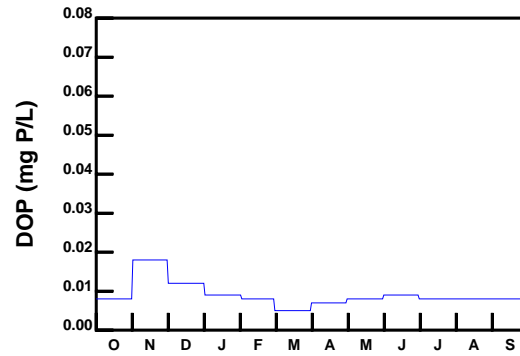
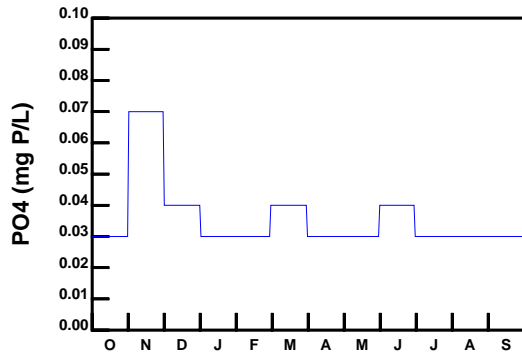
**Boundary Condition - Water Year 0001**



**SWEM - CATSKILL CREEK**

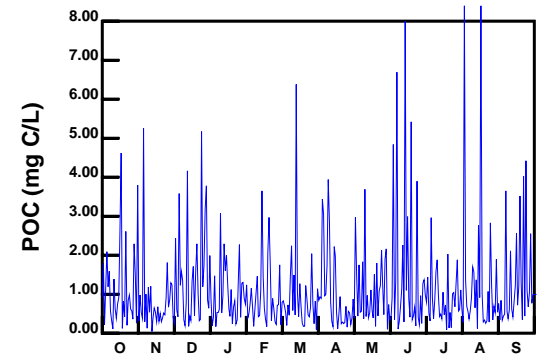
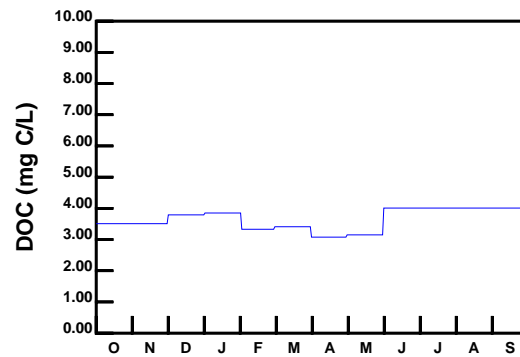
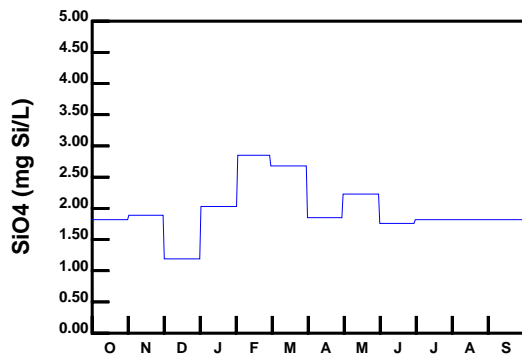
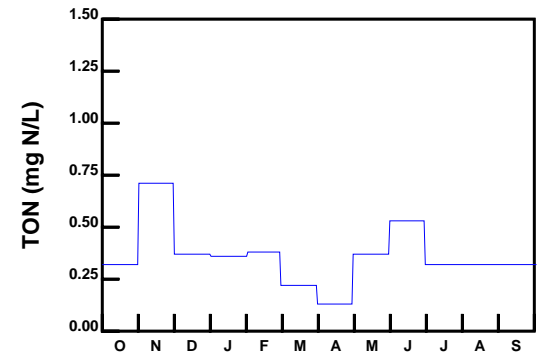
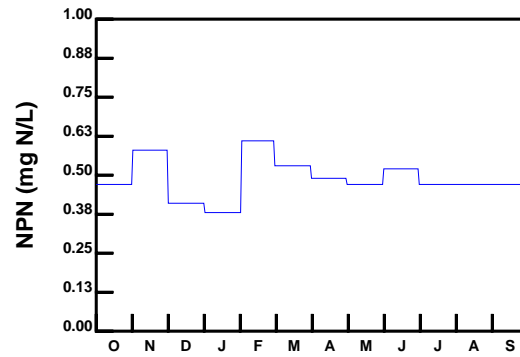
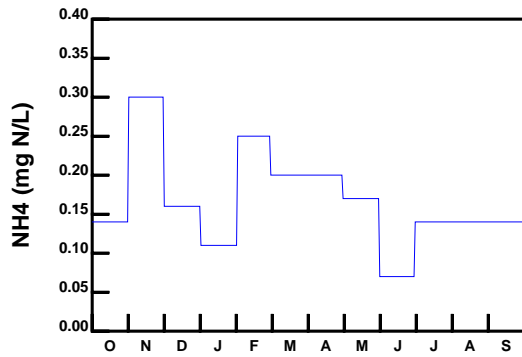
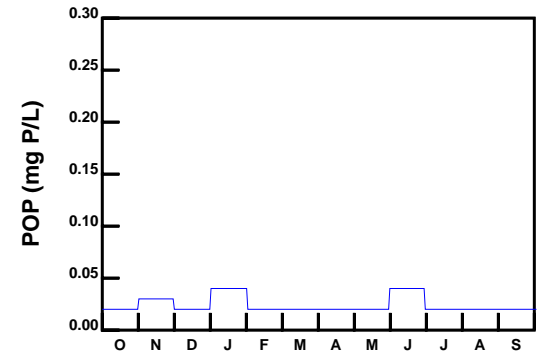
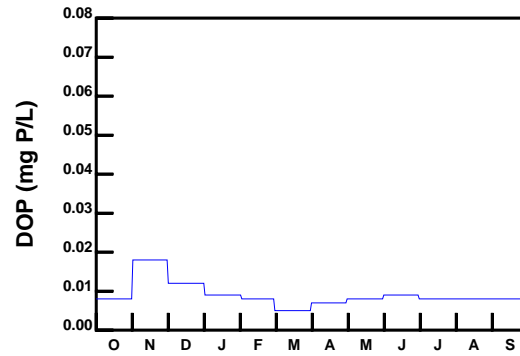
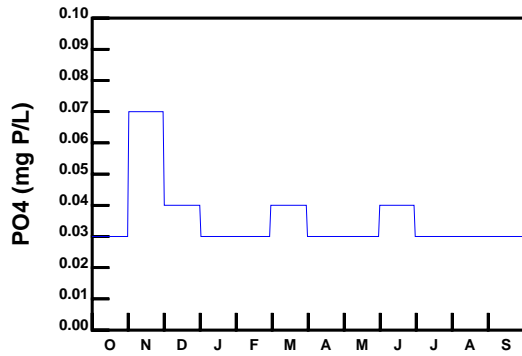
**Boundary Condition - Water Year 0001**





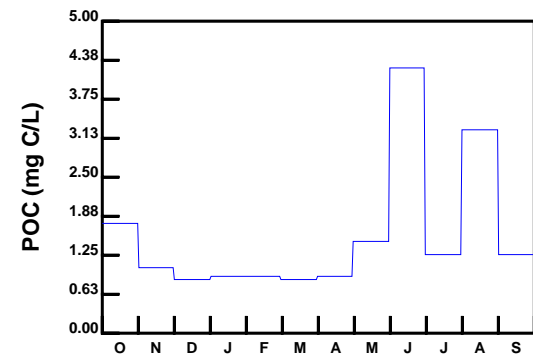
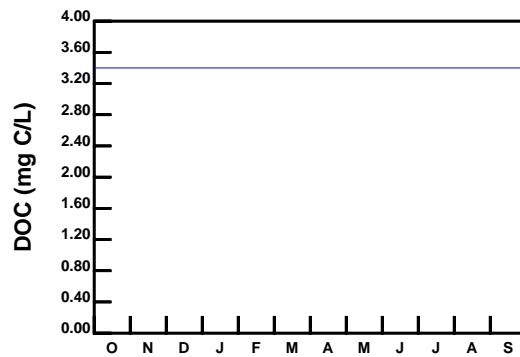
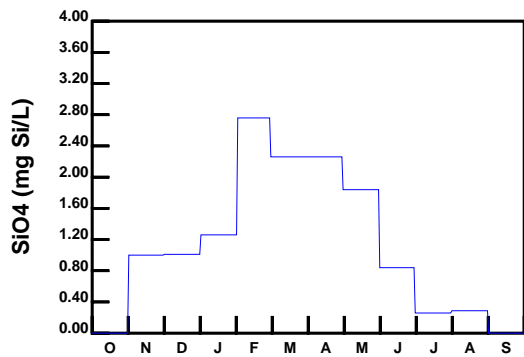
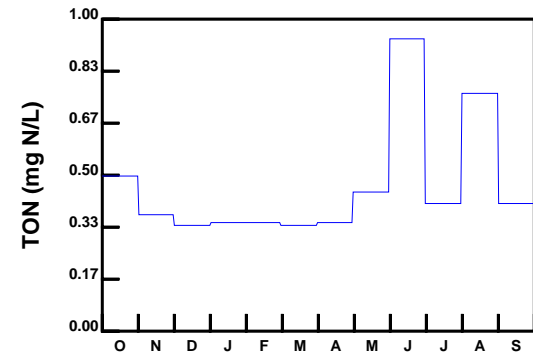
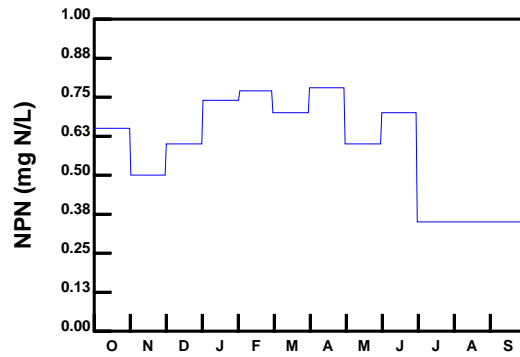
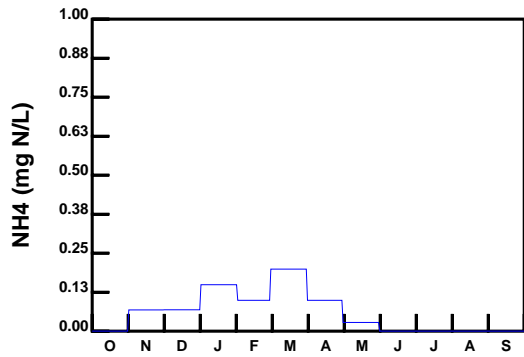
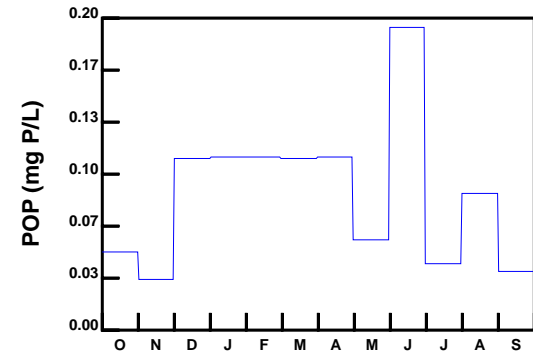
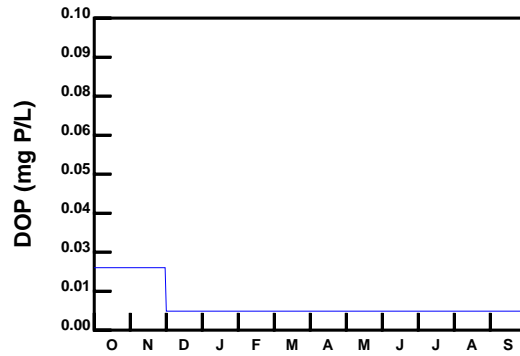
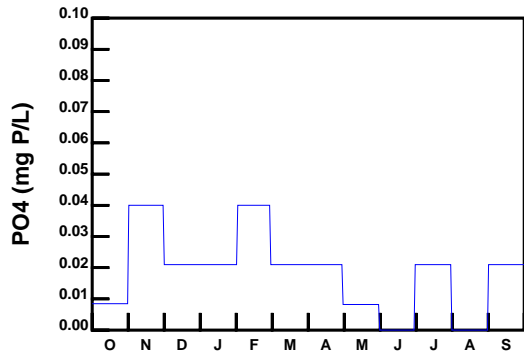
**SWEM - ESOPUS CREEK**

**Boundary Condition - Water Year 0001**



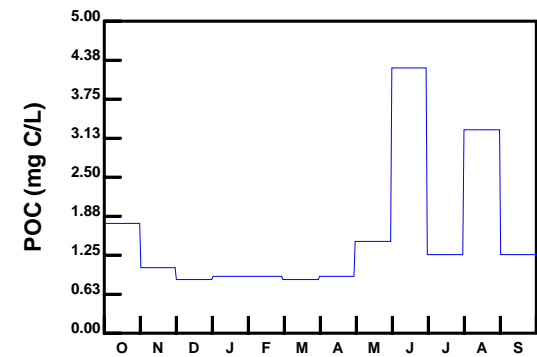
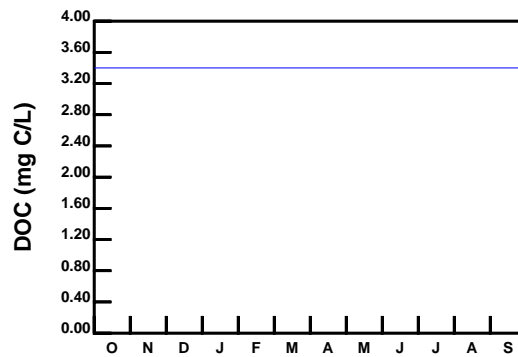
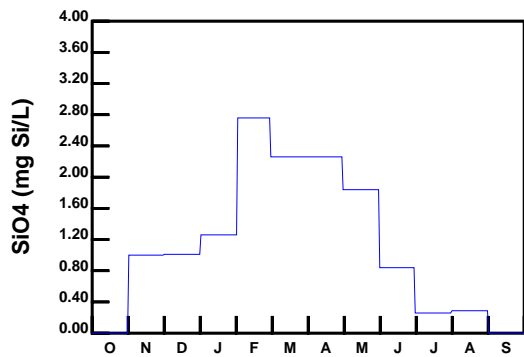
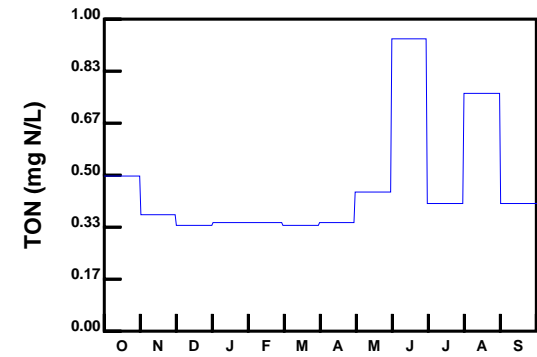
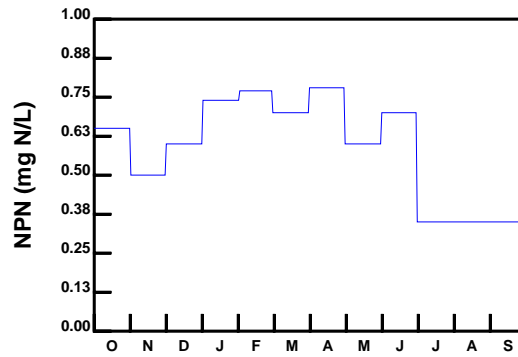
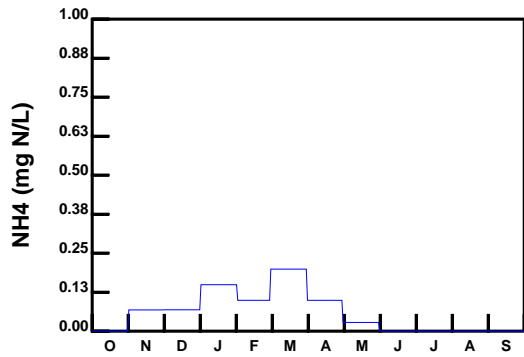
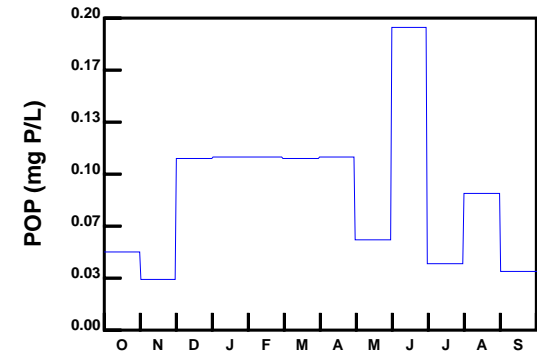
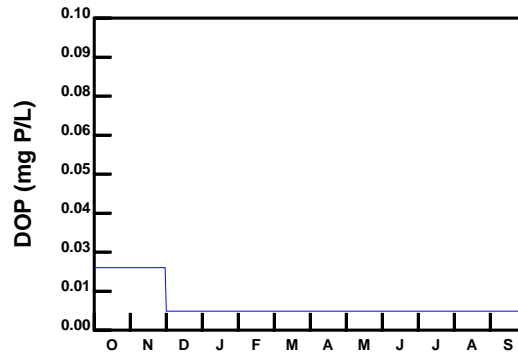
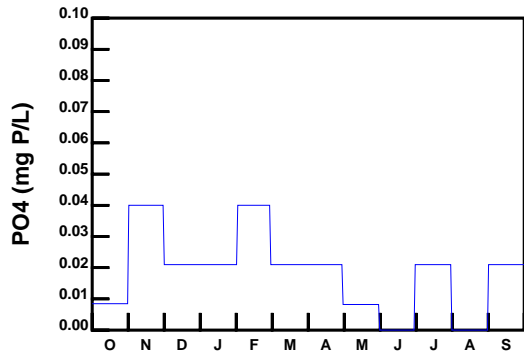
**SWEM - ROUNDOUT CREEK / WALLKILL RIVER**

**Boundary Condition - Water Year 0001**



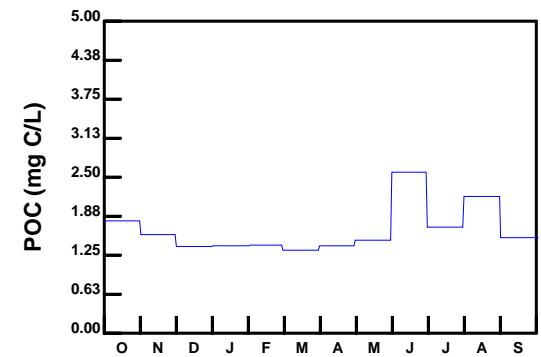
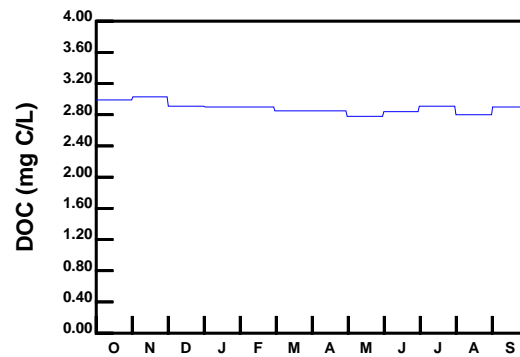
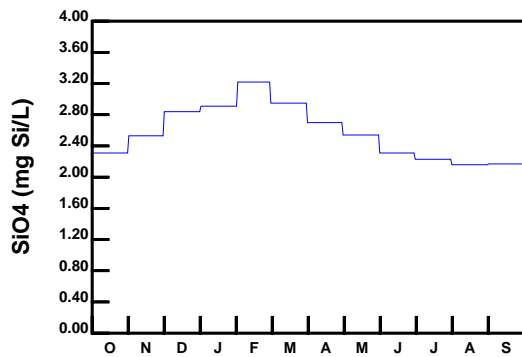
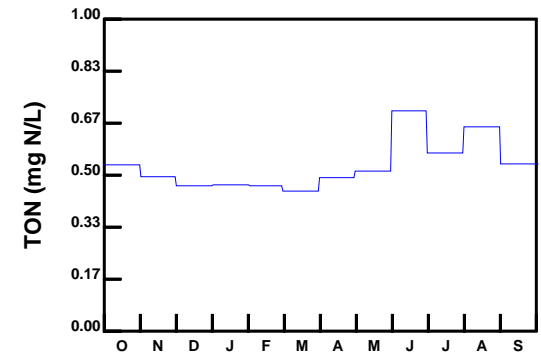
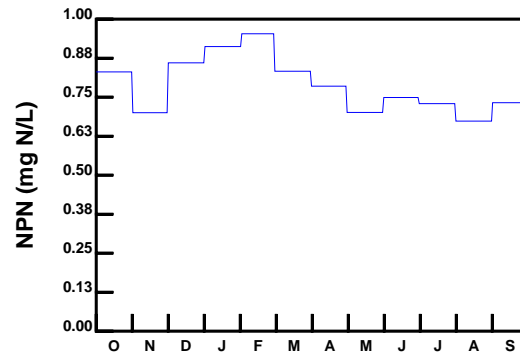
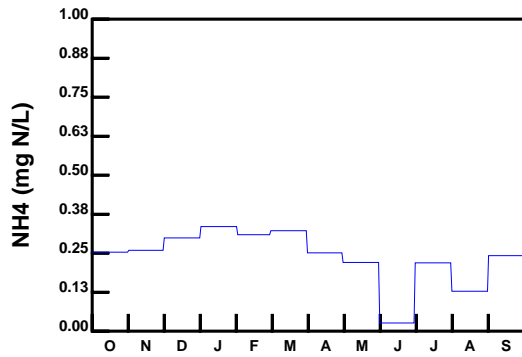
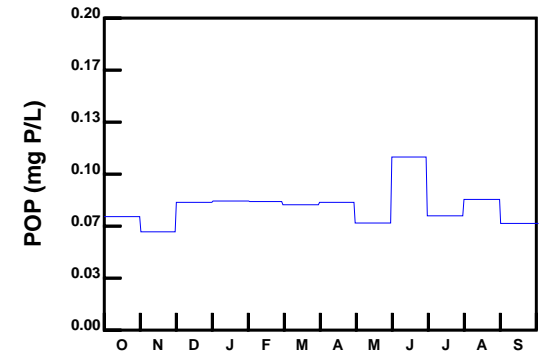
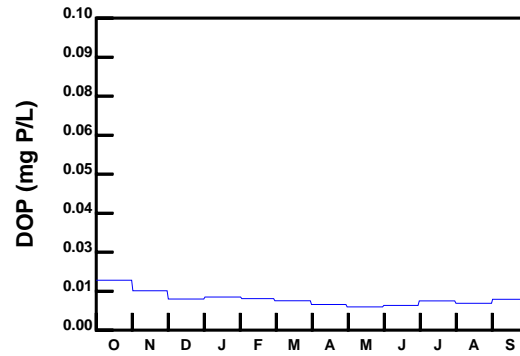
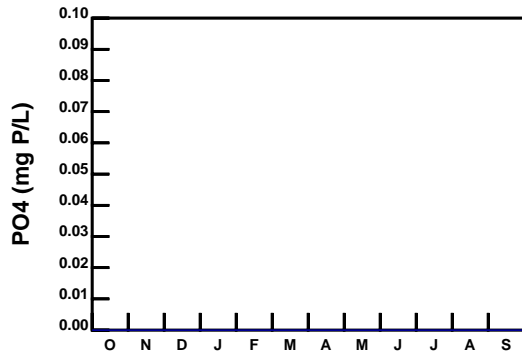
**SWEM - WAPPINGER CREEK**

**Boundary Condition - Water Year 0001**



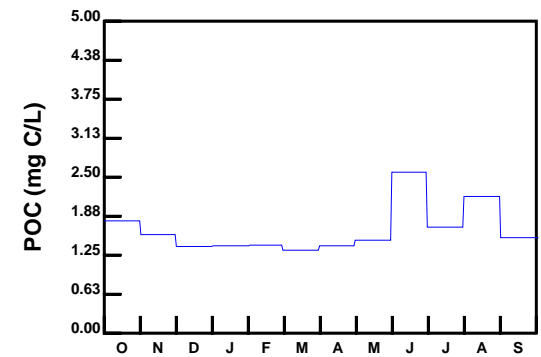
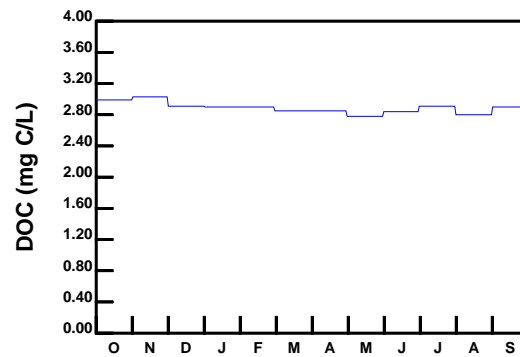
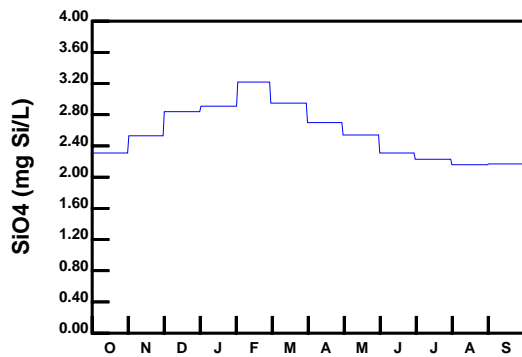
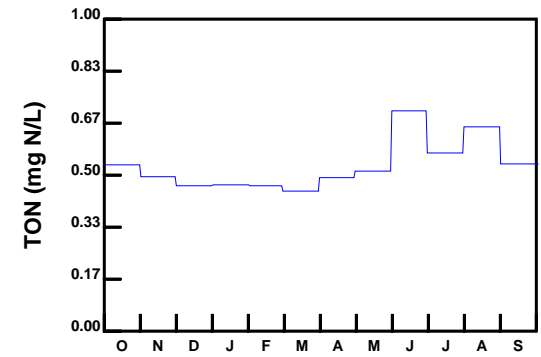
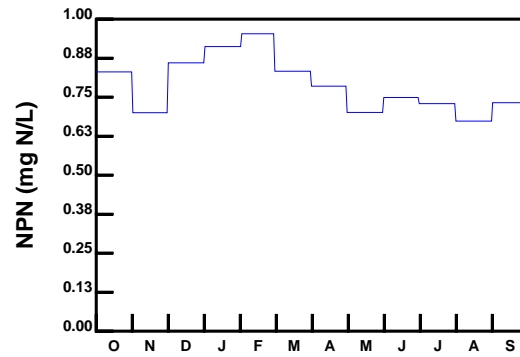
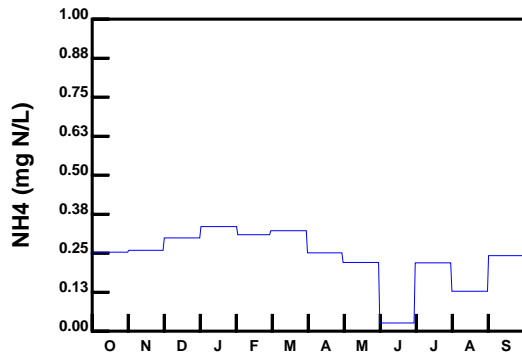
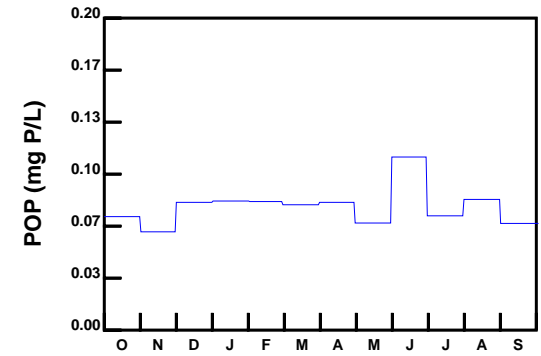
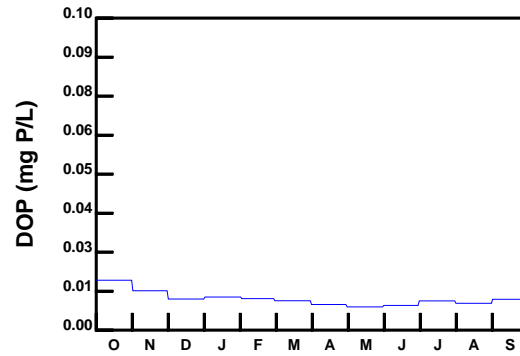
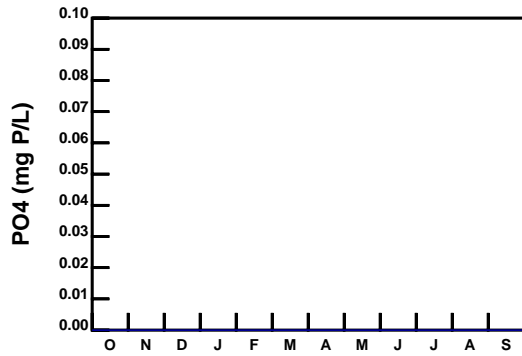
**SWEM - CROTON CREEK**

**Boundary Condition - Water Year 0001**



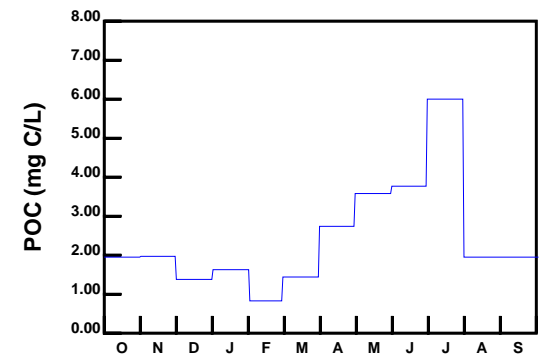
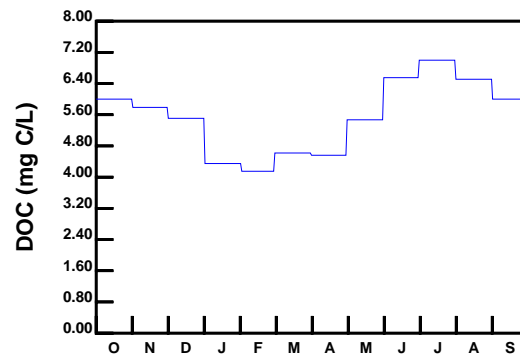
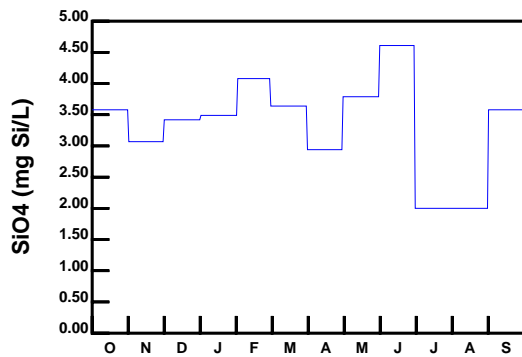
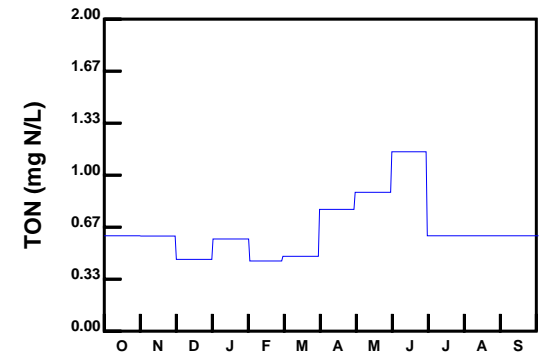
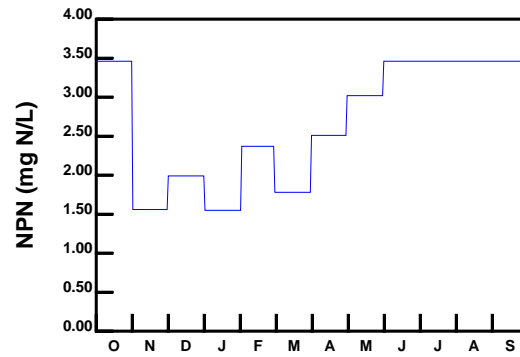
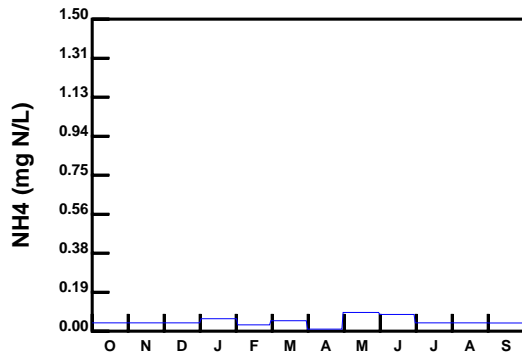
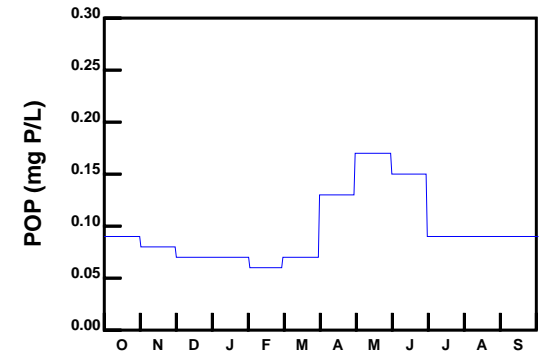
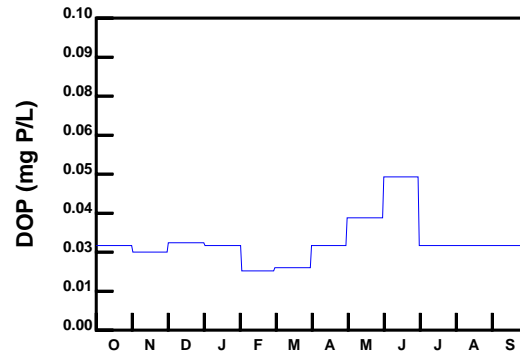
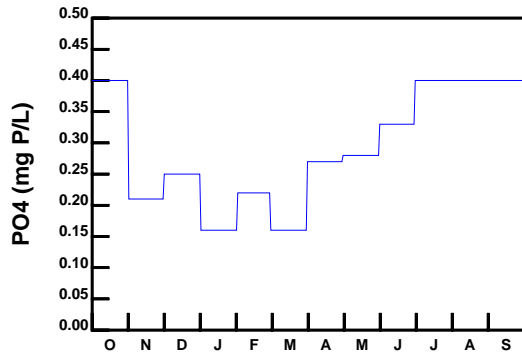
**SWEM - SAWMILL CREEK**

**Boundary Condition - Water Year 0001**



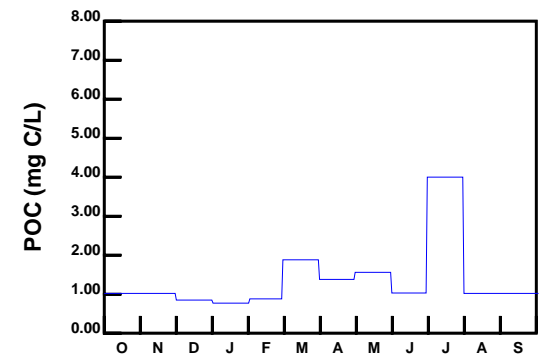
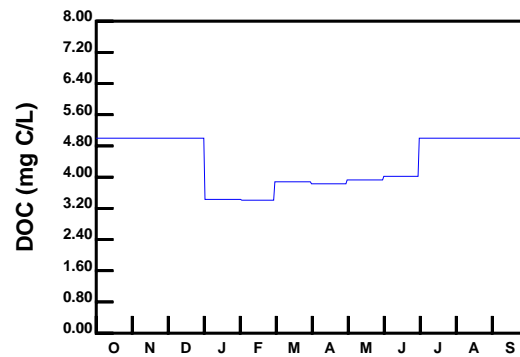
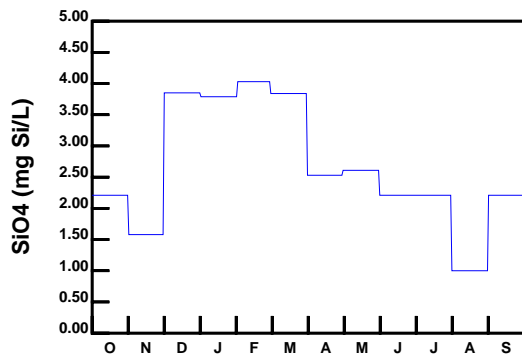
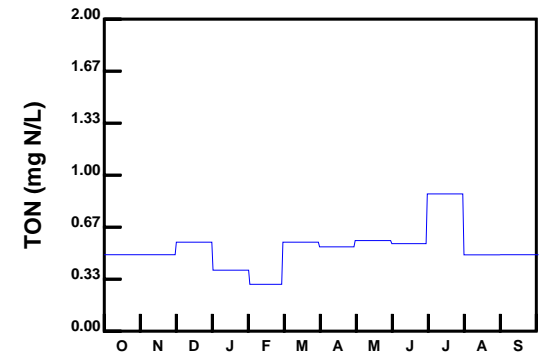
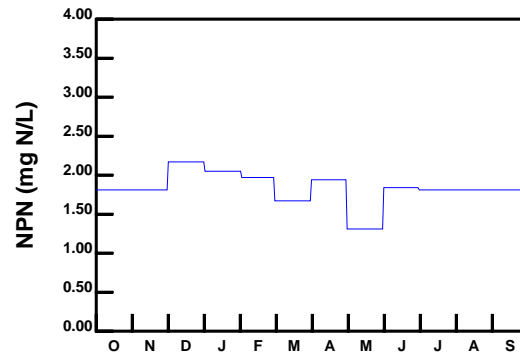
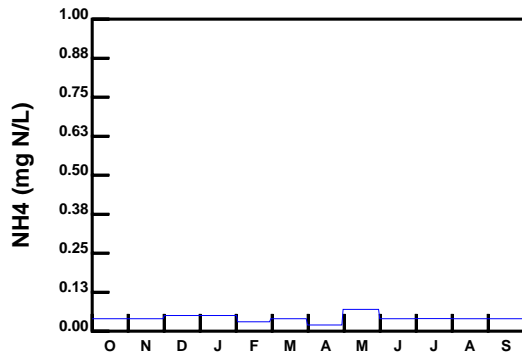
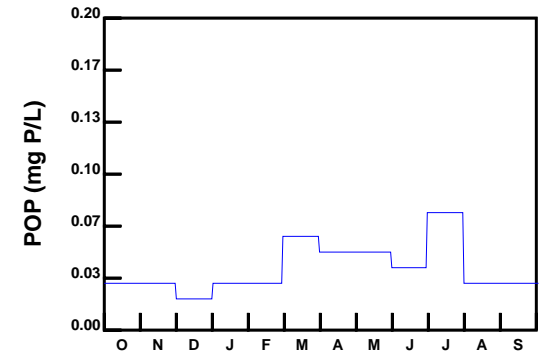
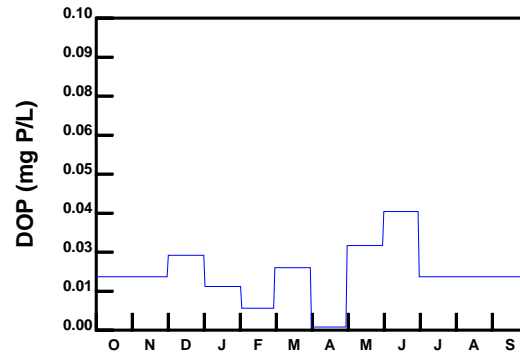
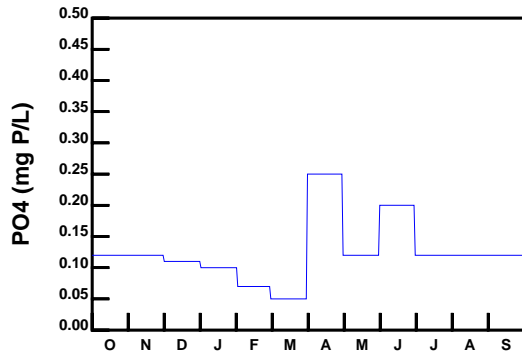
**SWEM - BRONX RIVER**

**Boundary Condition - Water Year 0001**



**SWEM - SADDLE RIVER**

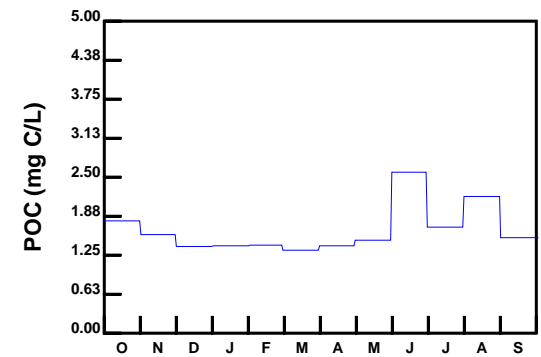
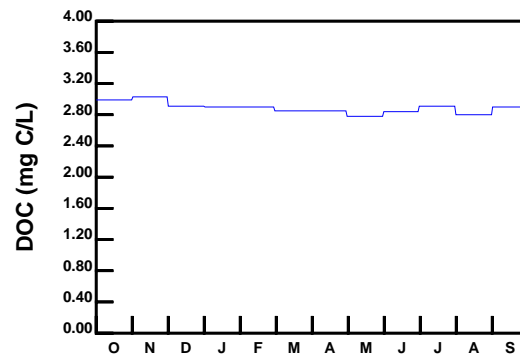
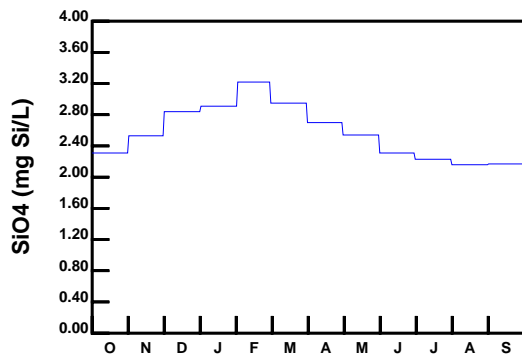
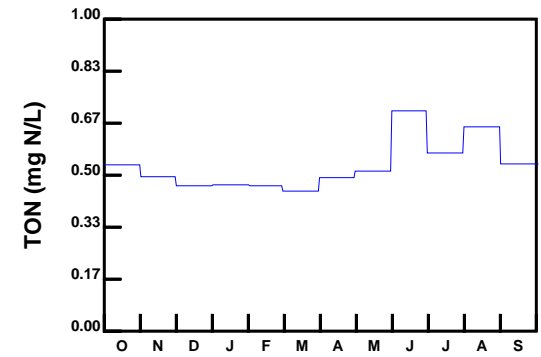
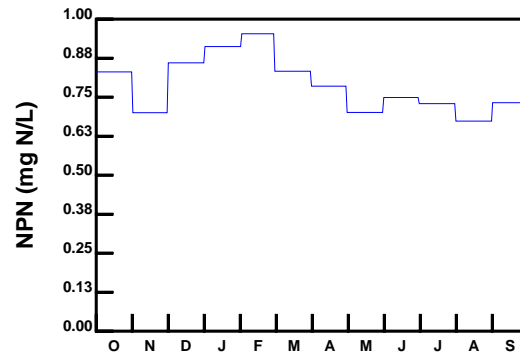
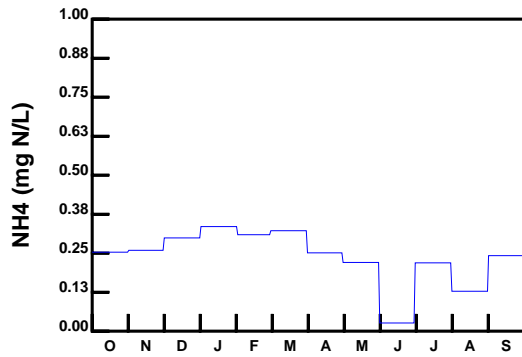
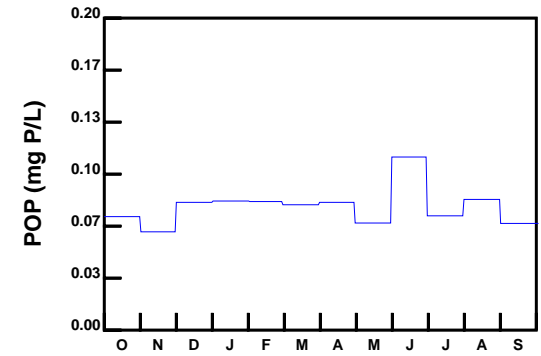
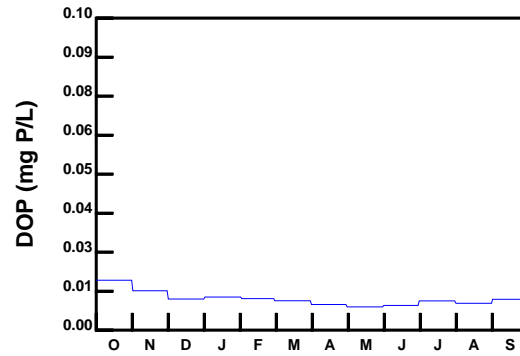
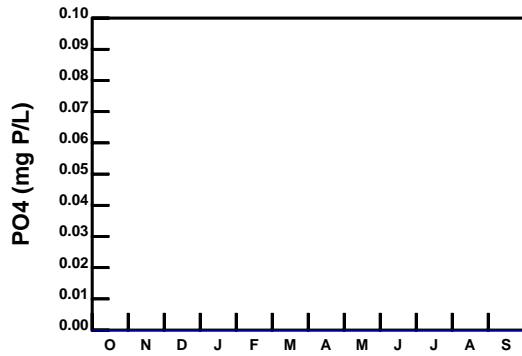
**Boundary Condition - Water Year 0001**



**SWEM - SOUTH RIVER**

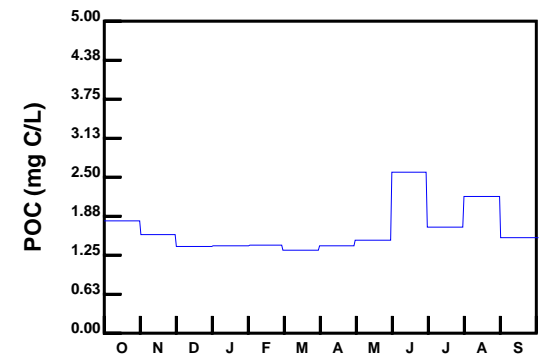
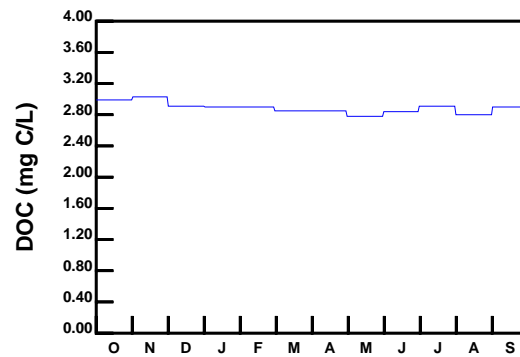
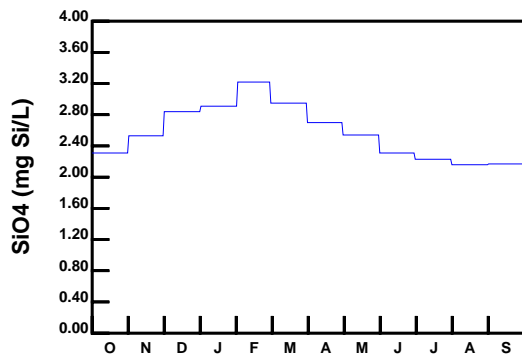
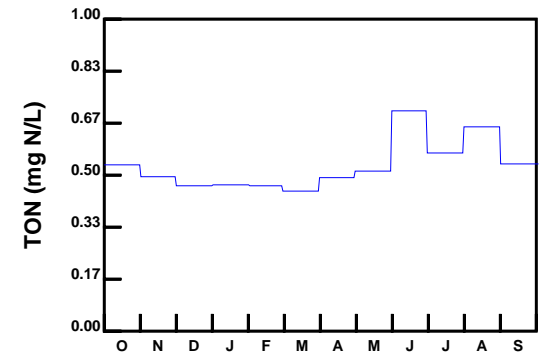
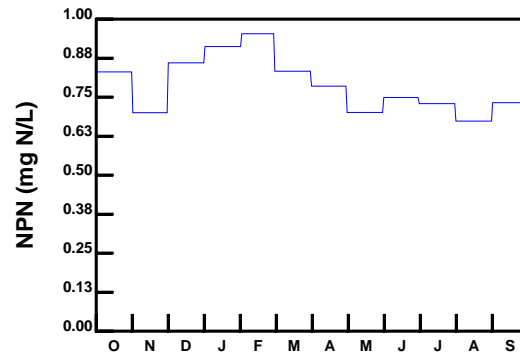
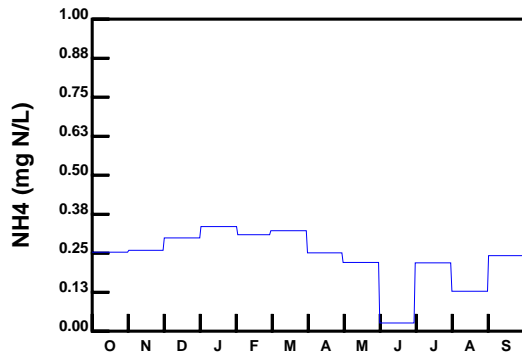
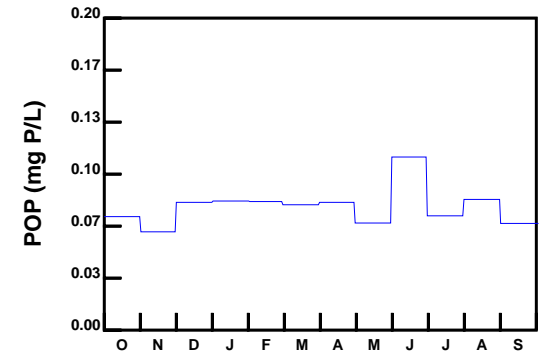
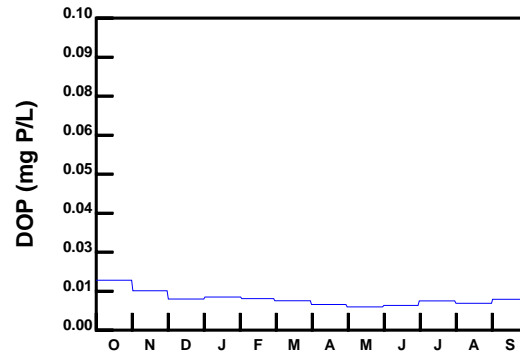
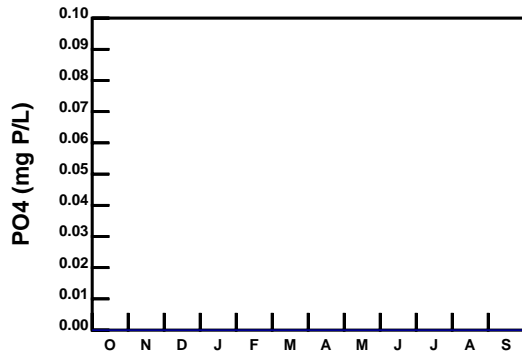
**Boundary Condition - Water Year 0001**





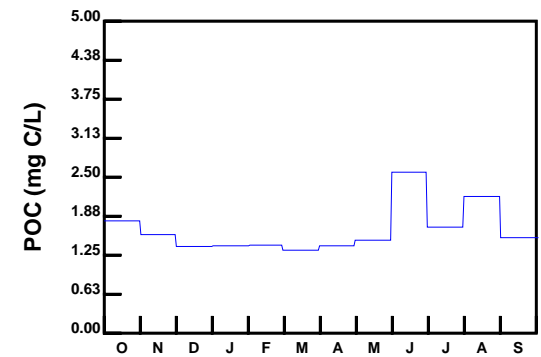
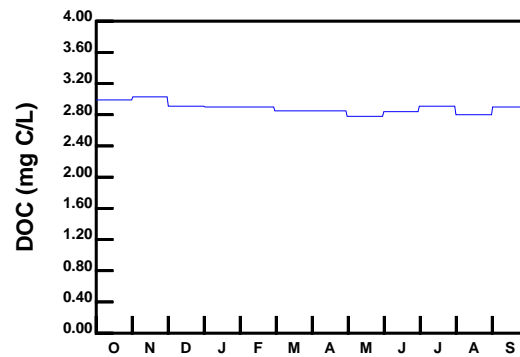
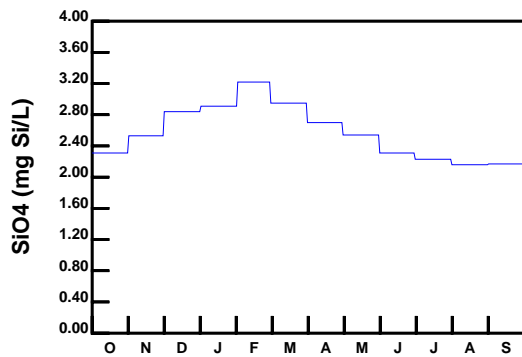
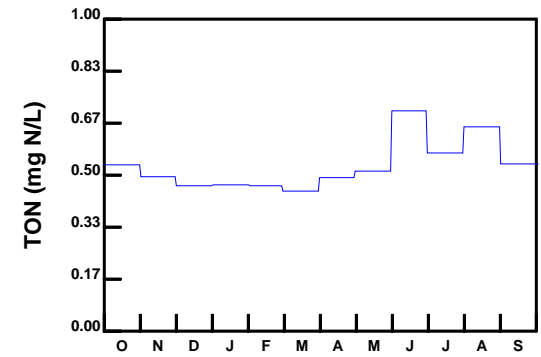
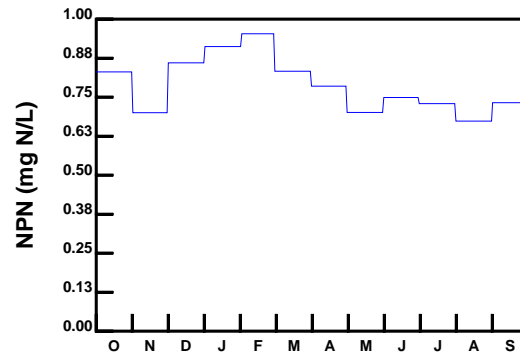
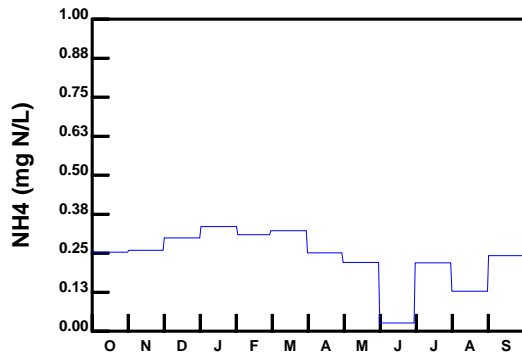
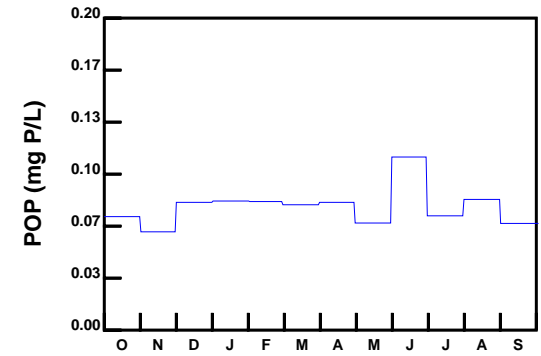
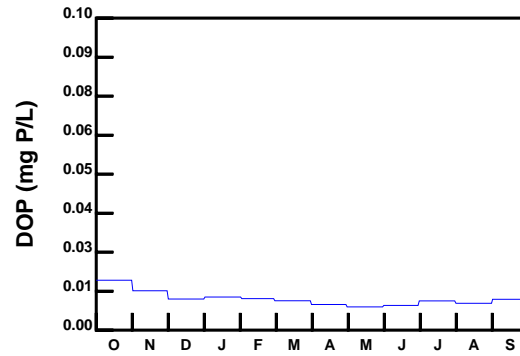
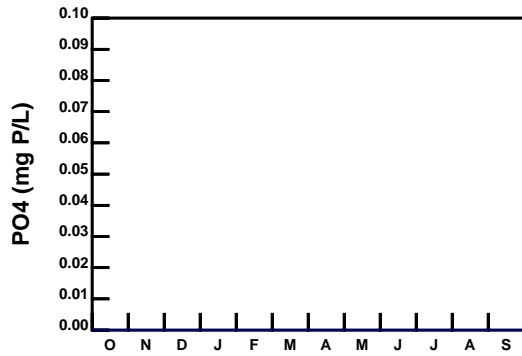
**SWEM - NAVESINK AND SHREWSBURY RIVERS**

**Boundary Condition - Water Year 0001**



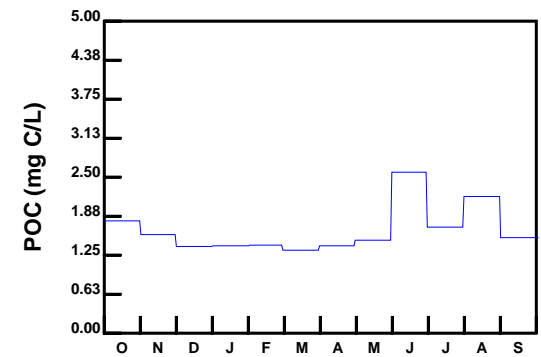
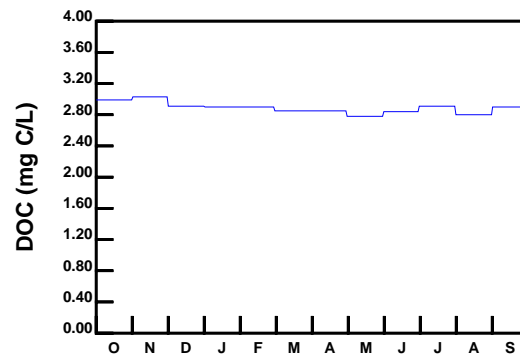
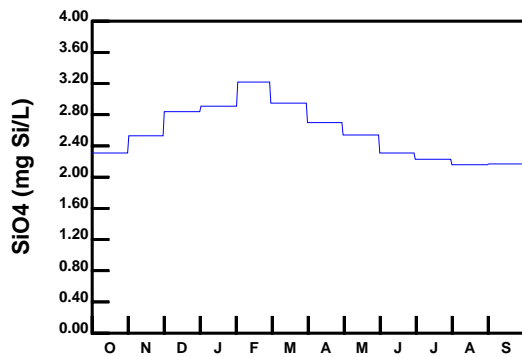
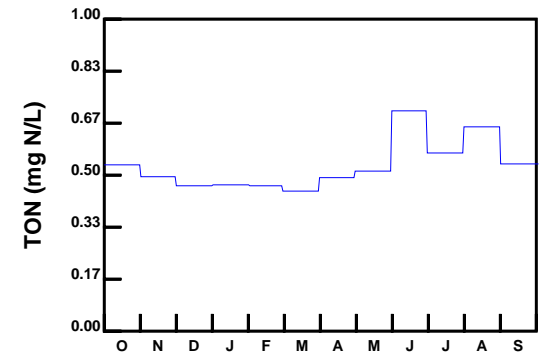
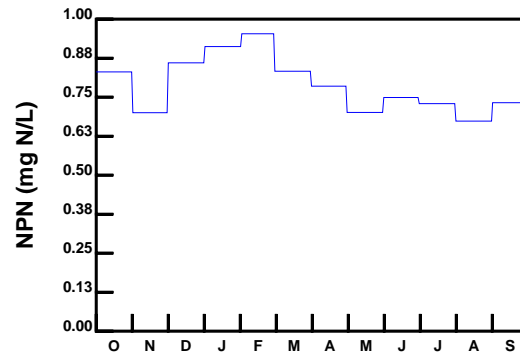
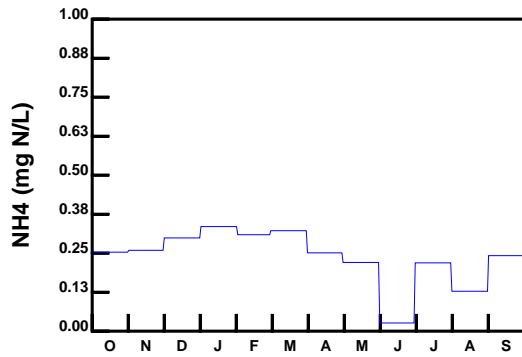
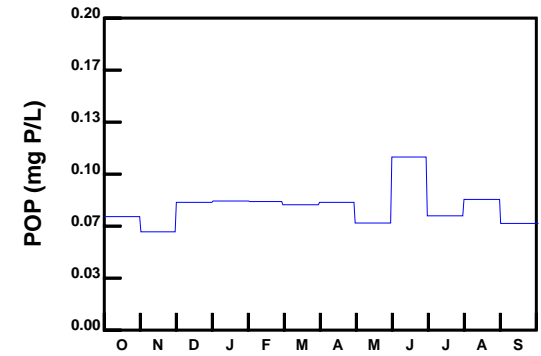
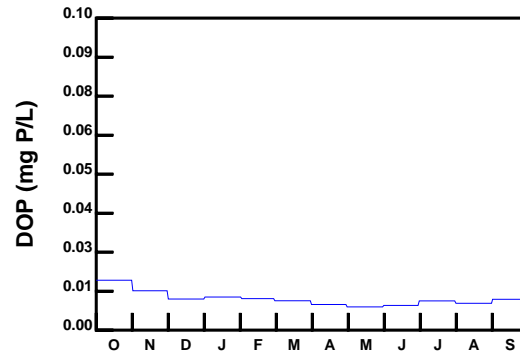
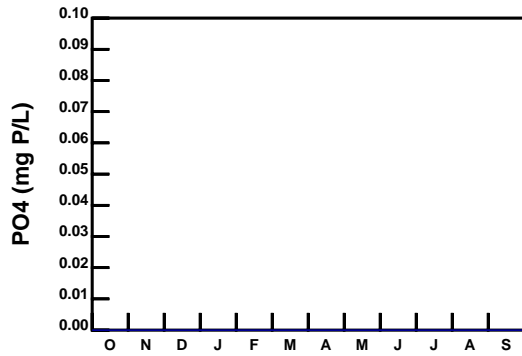
**SWEM - MANASQUAN RIVER**

**Boundary Condition - Water Year 0001**



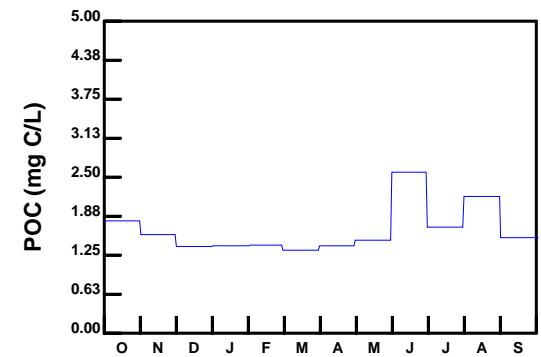
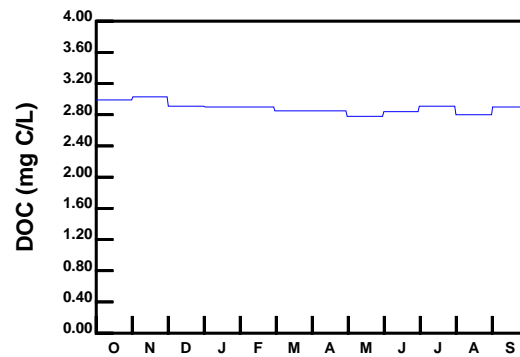
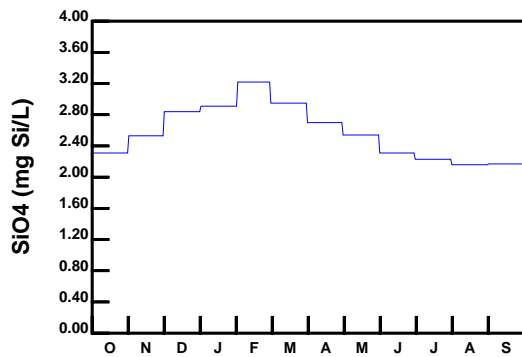
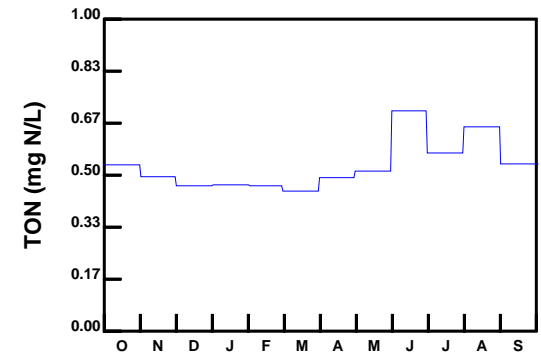
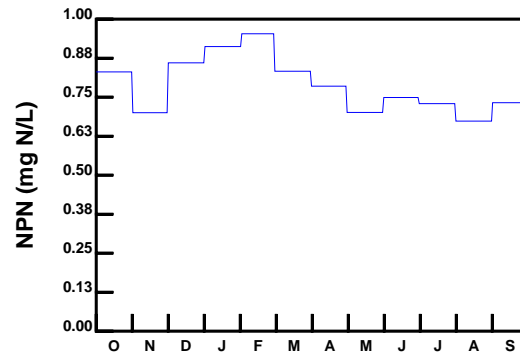
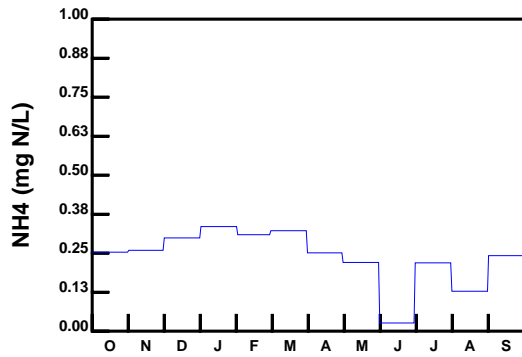
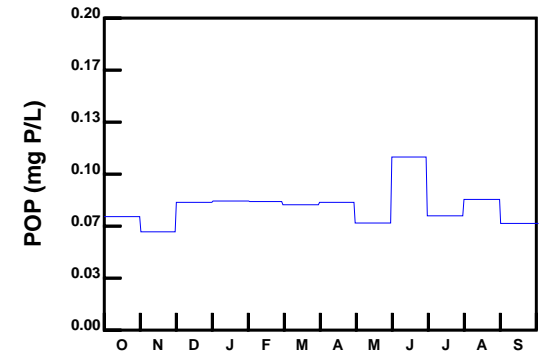
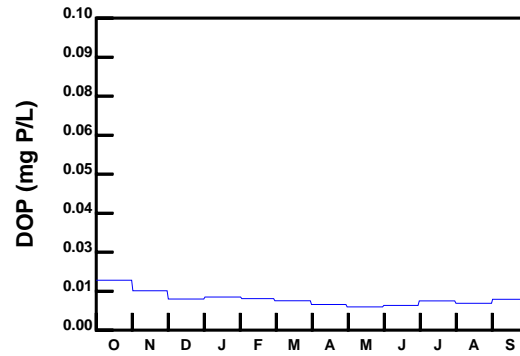
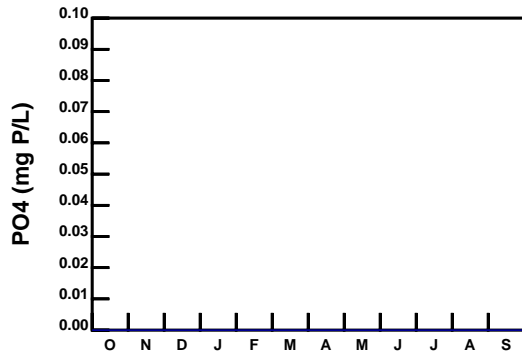
**SWEM - METEDECONK AND TOMS RIVERS**

**Boundary Condition - Water Year 0001**



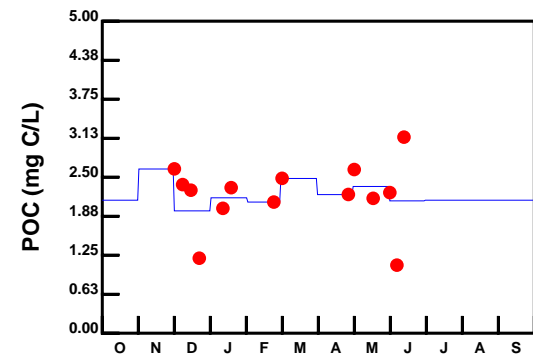
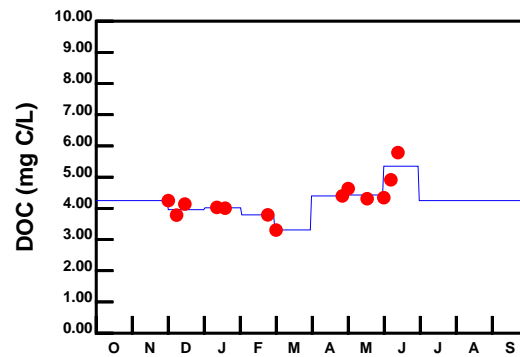
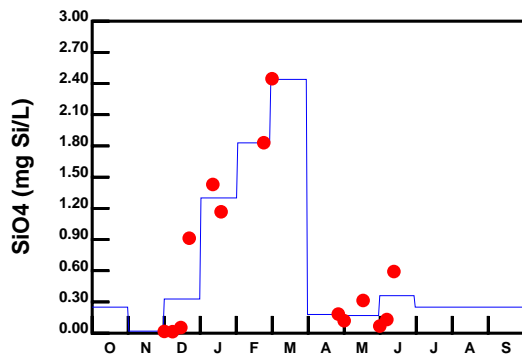
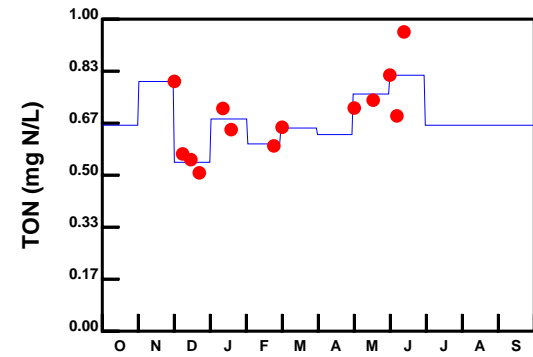
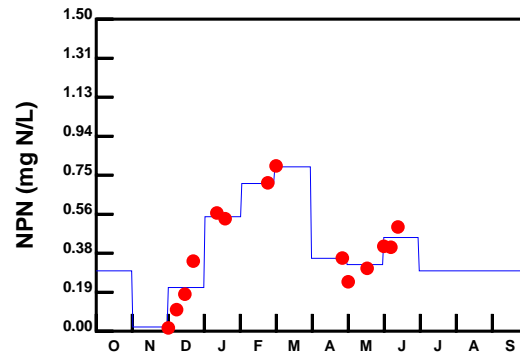
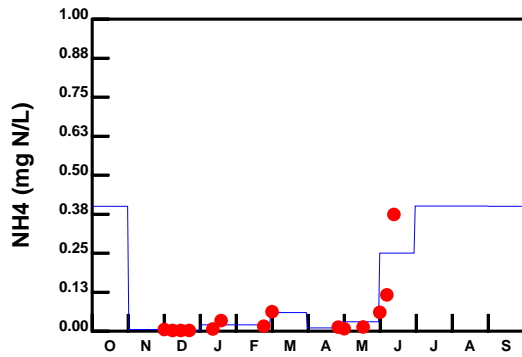
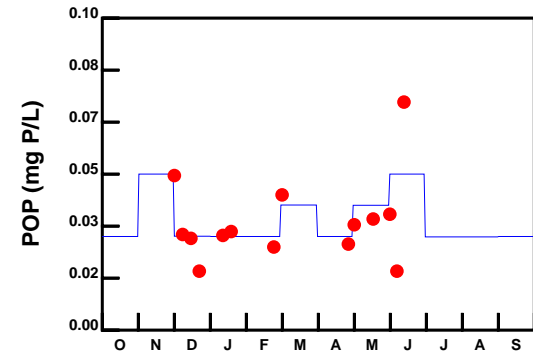
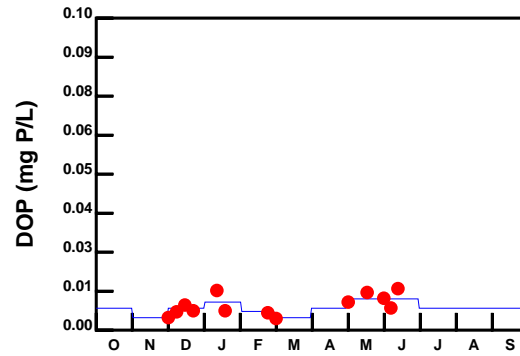
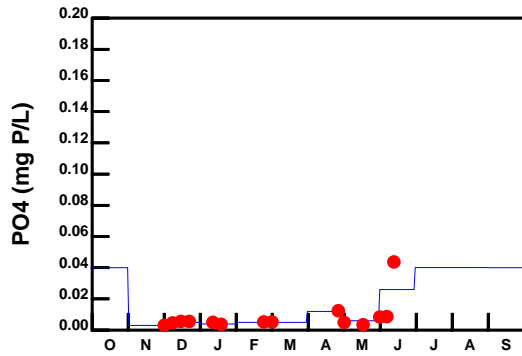
**SWEM - MULLICA RIVER AND WESTECUNK CREEK**

**Boundary Condition - Water Year 0001**

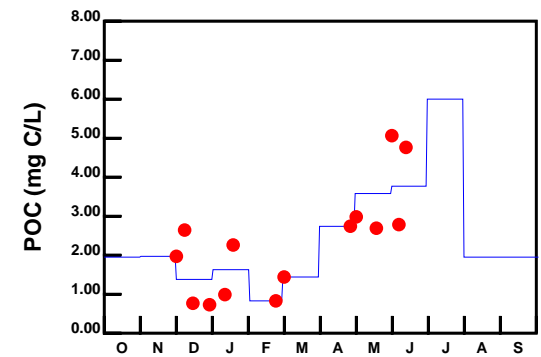
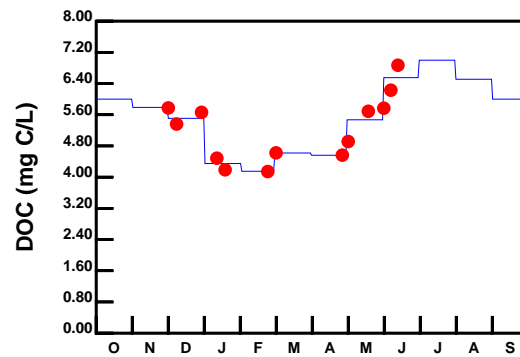
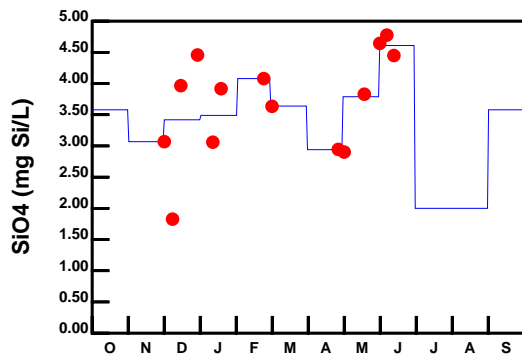
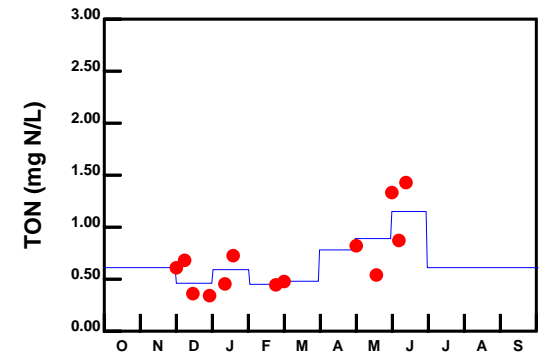
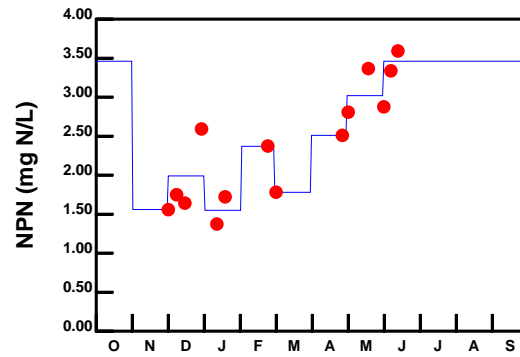
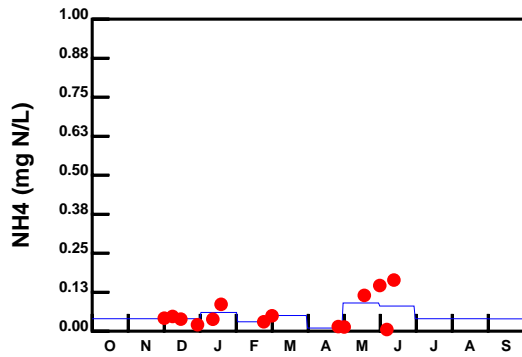
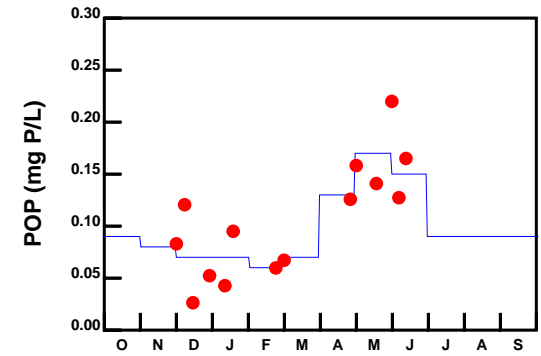
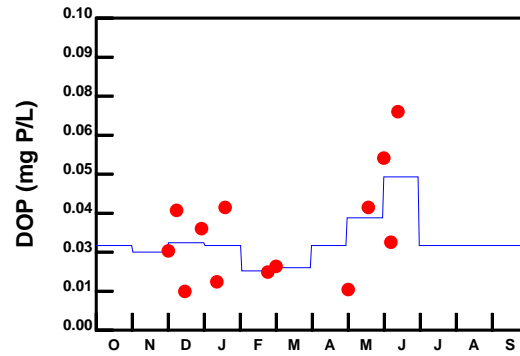
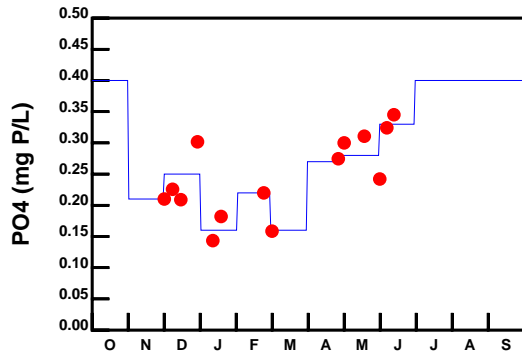


**SWEM - TUCKAHOE AND GREAT EGG RIVERS**

**Boundary Condition - Water Year 0001**

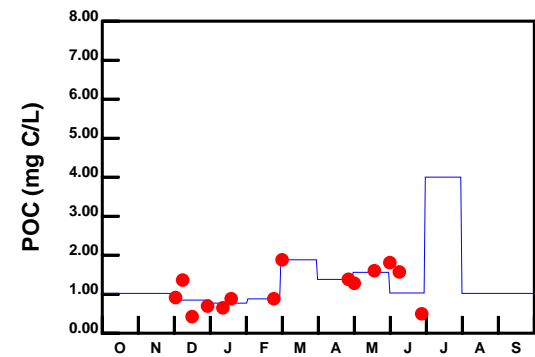
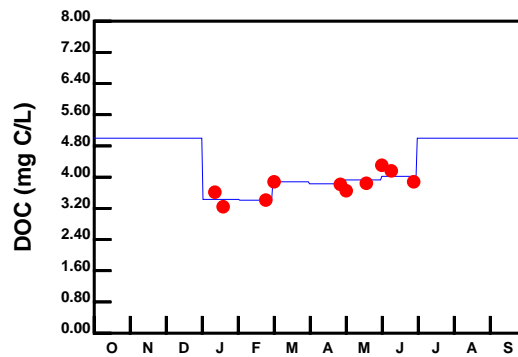
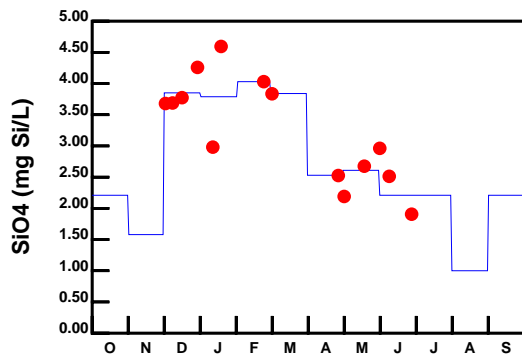
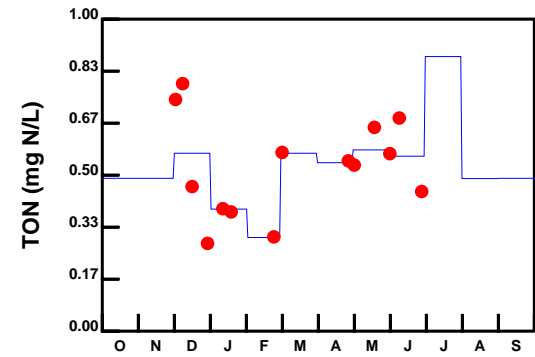
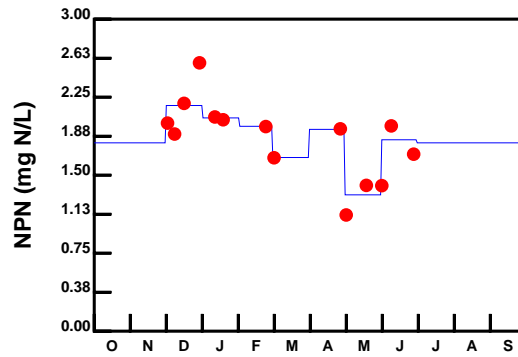
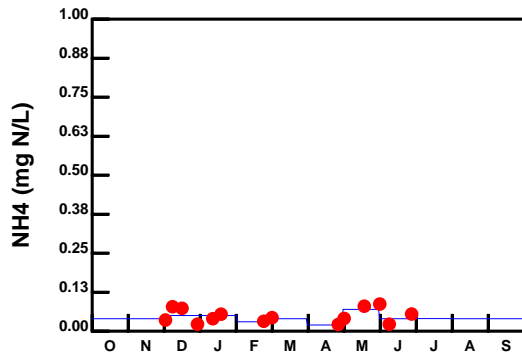
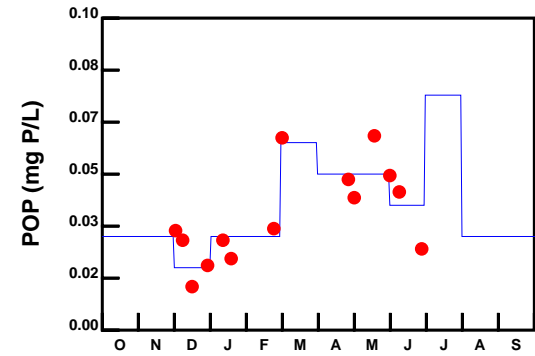
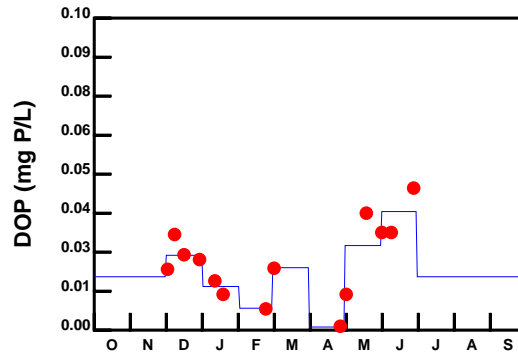
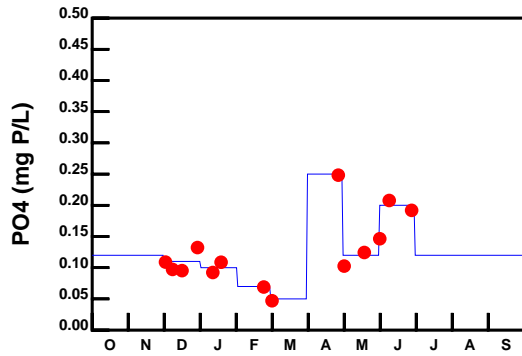


**SWEM - HACKENSACK RIVER**  
**Boundary Condition - Water Year 0001**



**SWEM - PASSAIC RIVER**

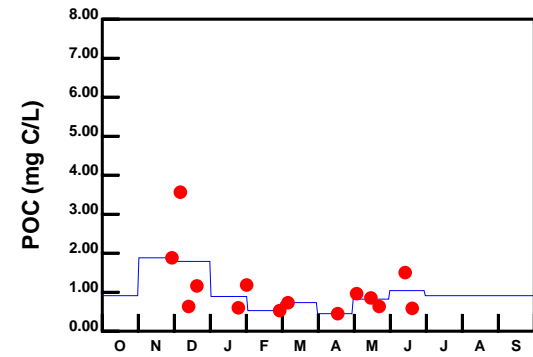
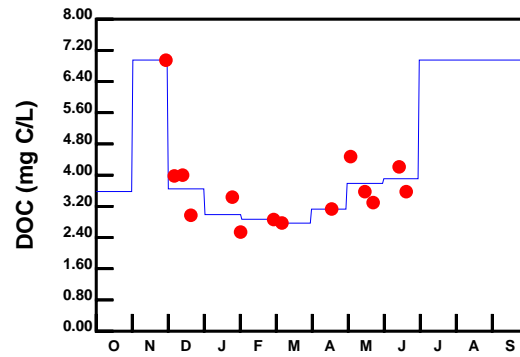
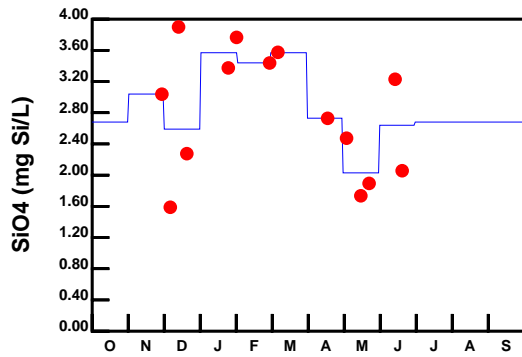
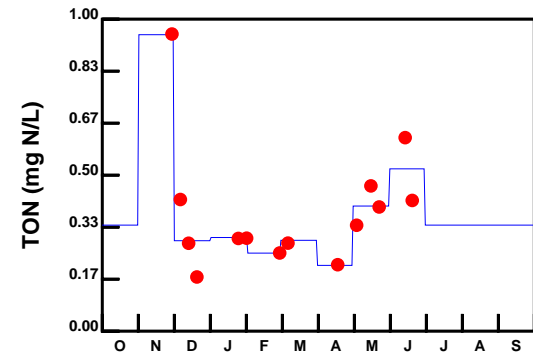
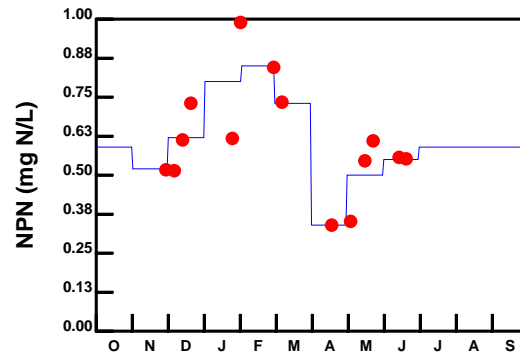
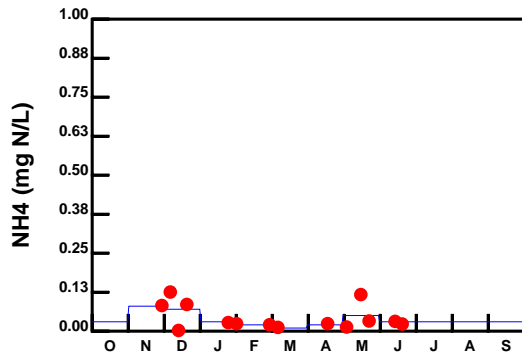
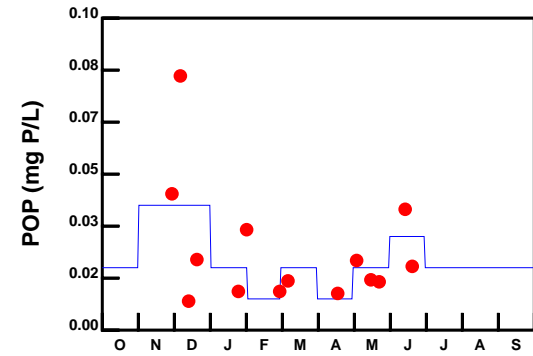
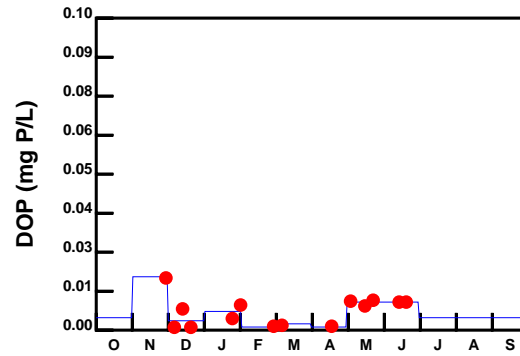
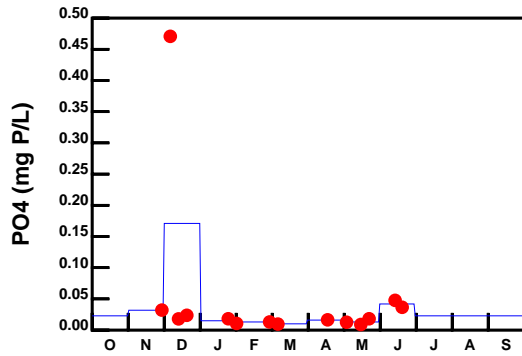
**Boundary Condition - Water Year 0001**



**SWEM - RARITAN RIVER**

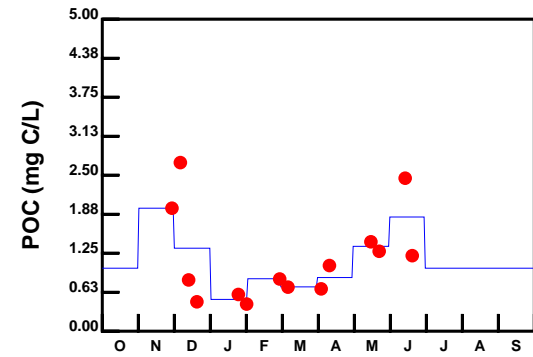
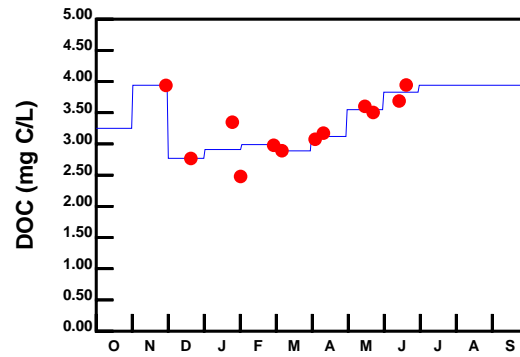
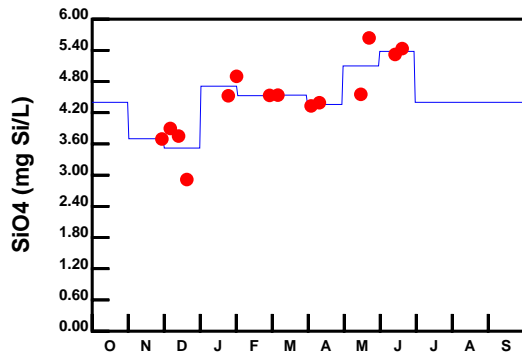
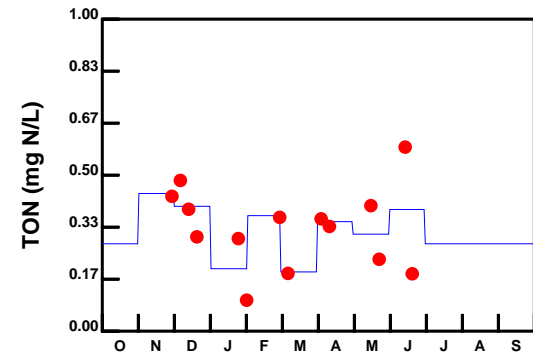
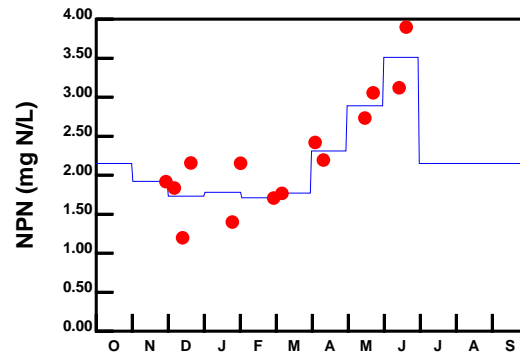
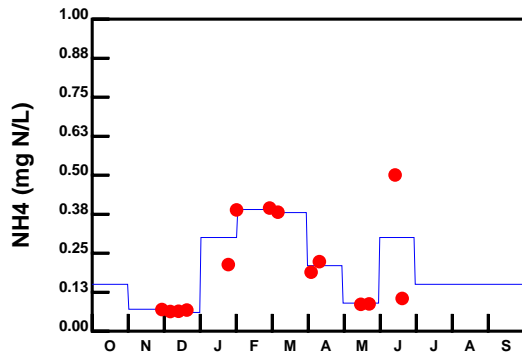
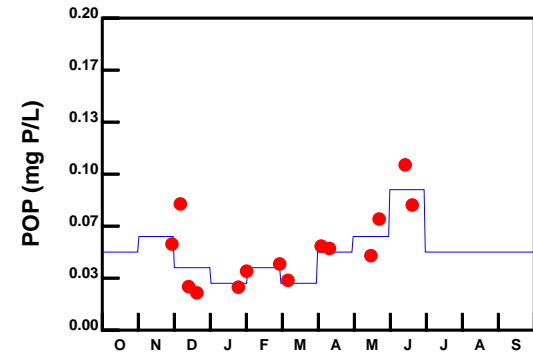
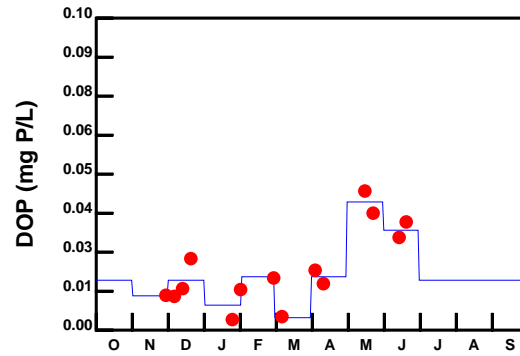
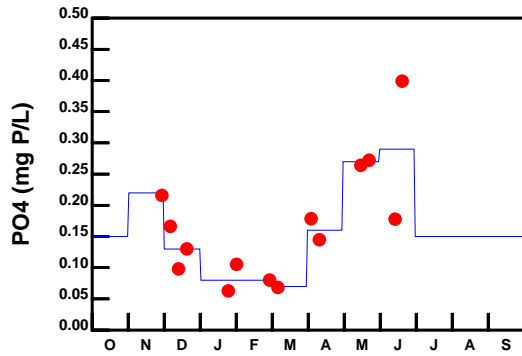
**Boundary Condition - Water Year 0001**





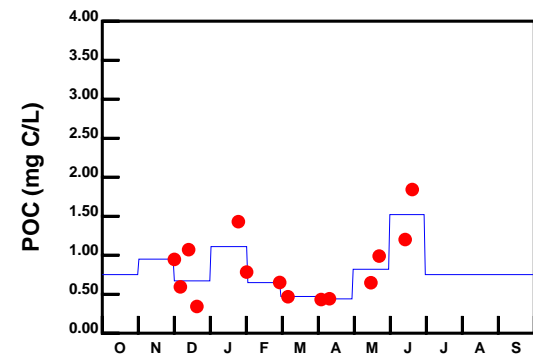
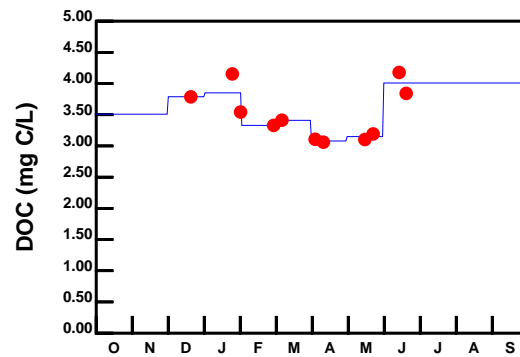
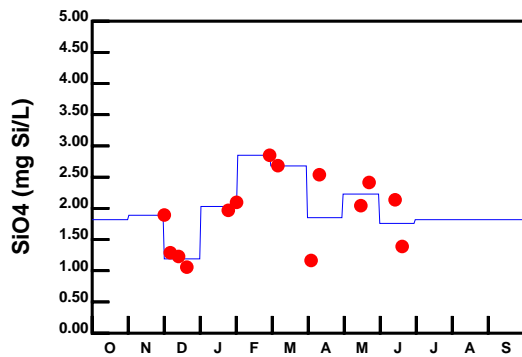
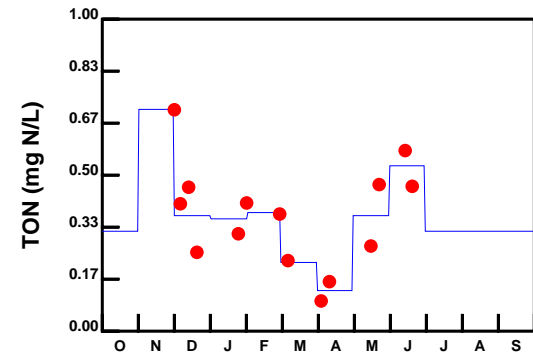
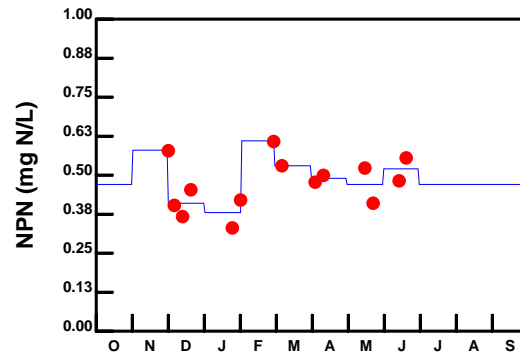
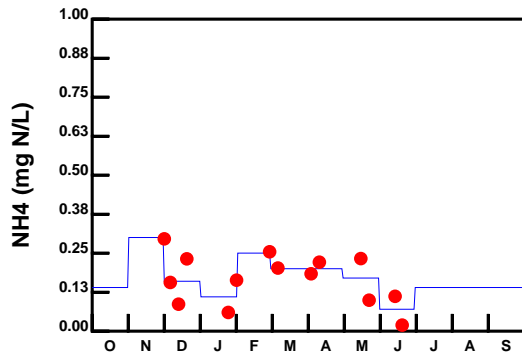
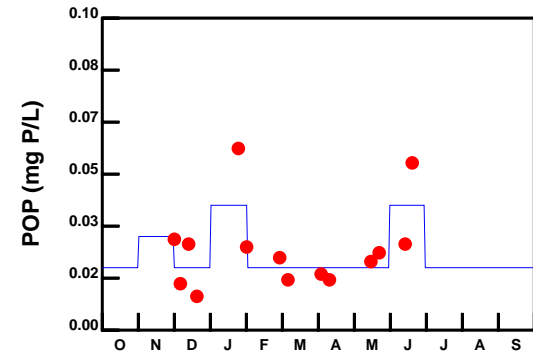
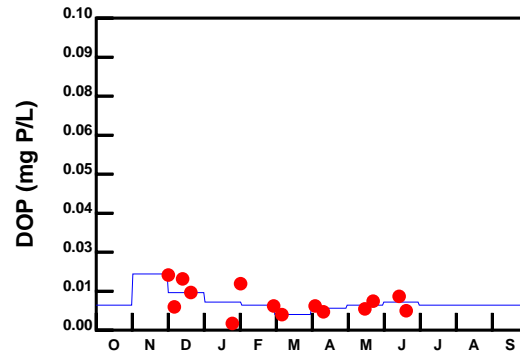
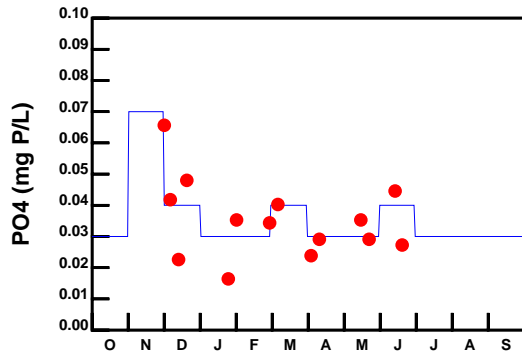
**SWEM - NORWALK RIVER**

**Boundary Condition - Water Year 0001**



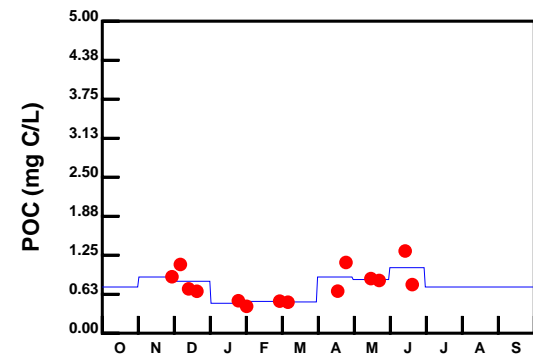
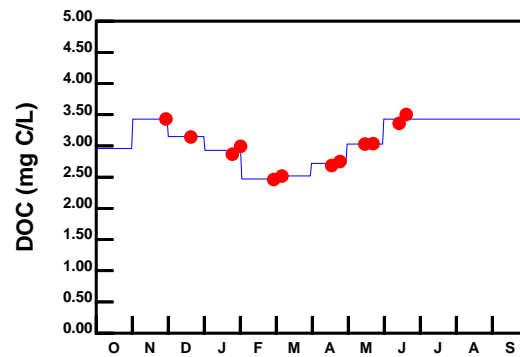
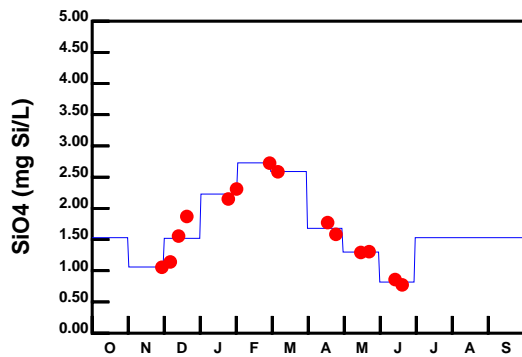
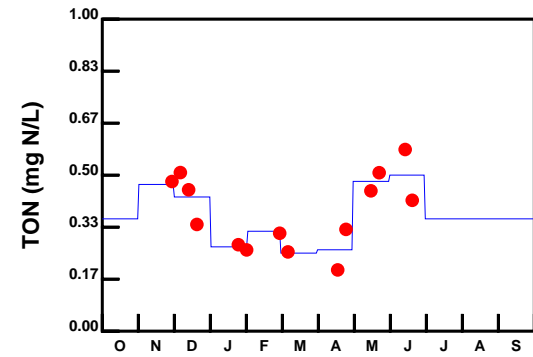
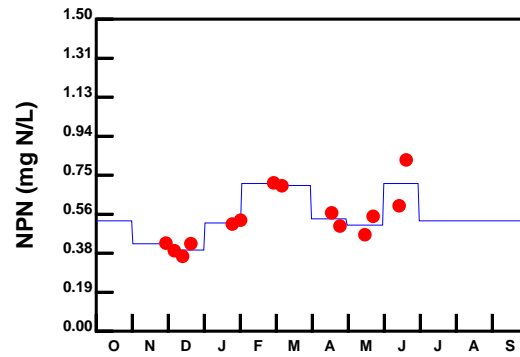
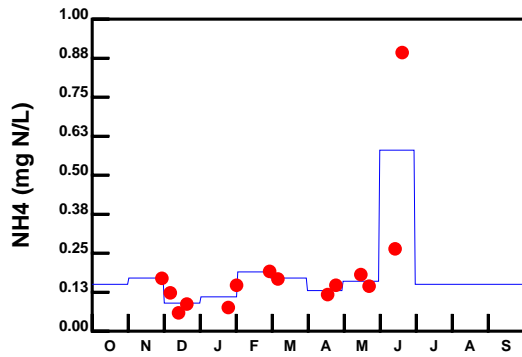
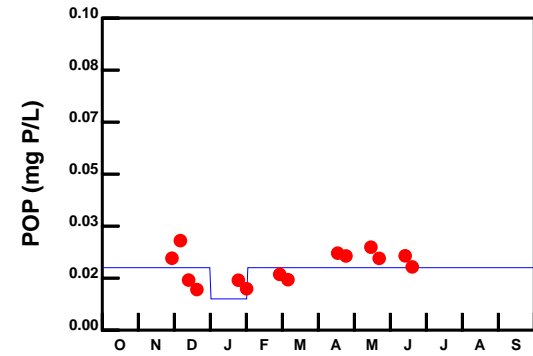
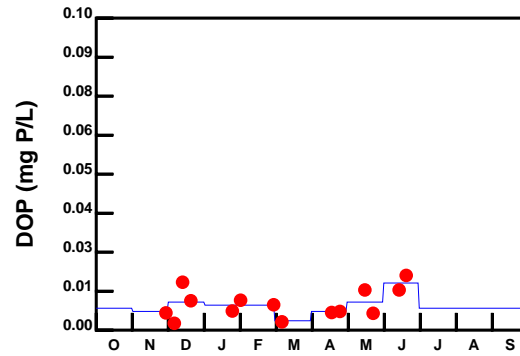
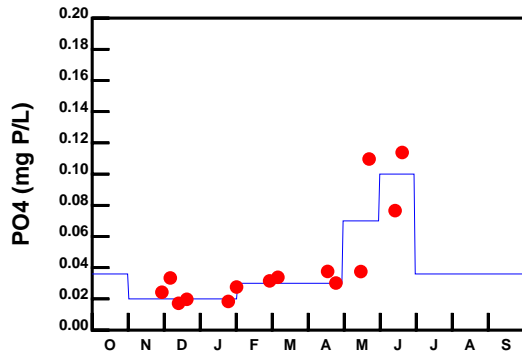
**SWEM - QUINNIPIAC RIVER**

**Boundary Condition - Water Year 0001**



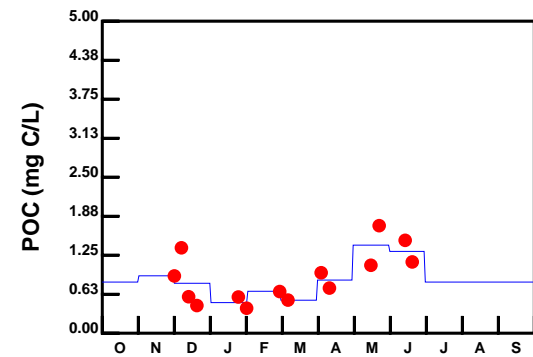
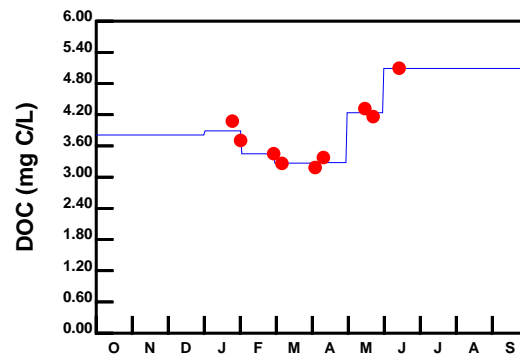
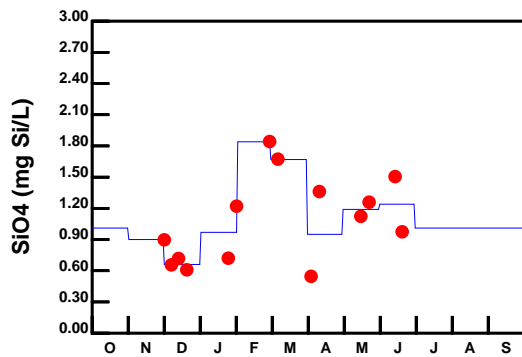
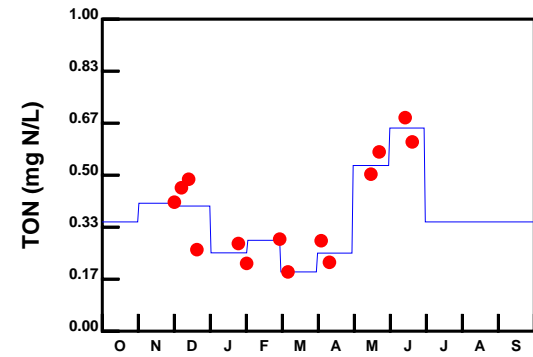
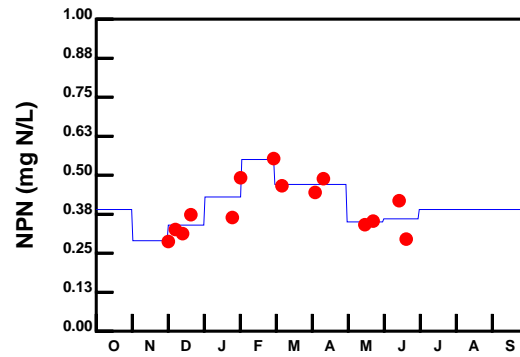
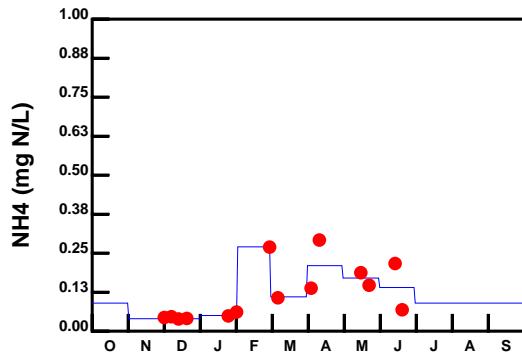
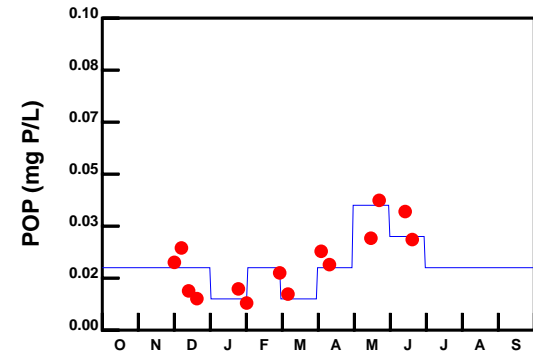
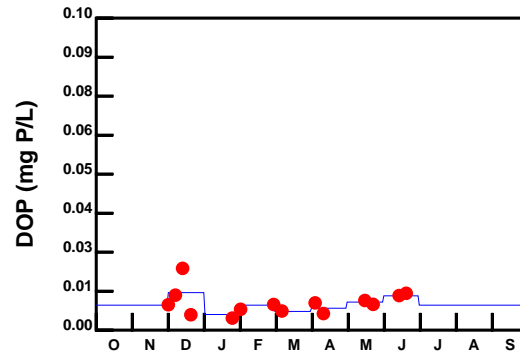
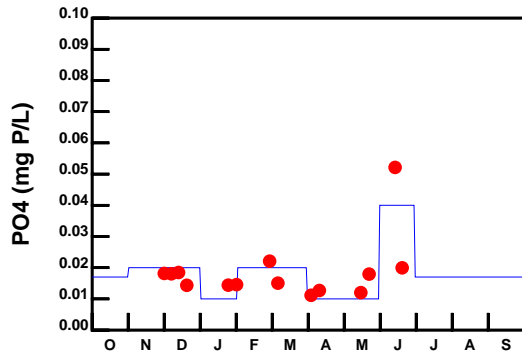
**SWEM - CONNECTICUT RIVER**

**Boundary Condition - Water Year 0001**



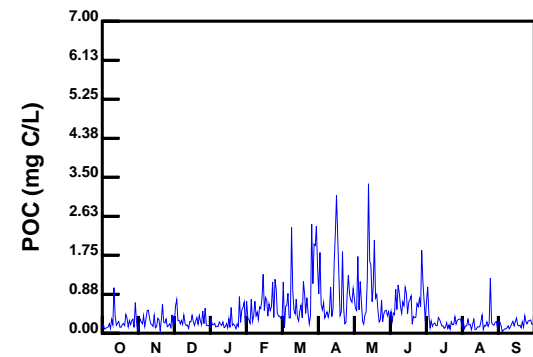
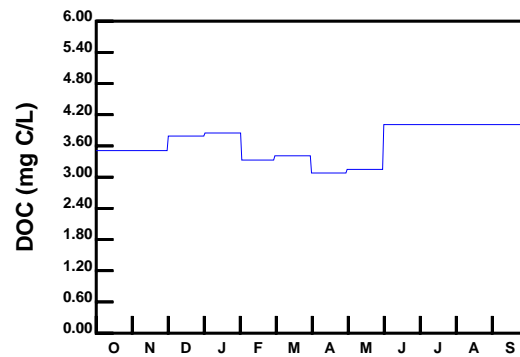
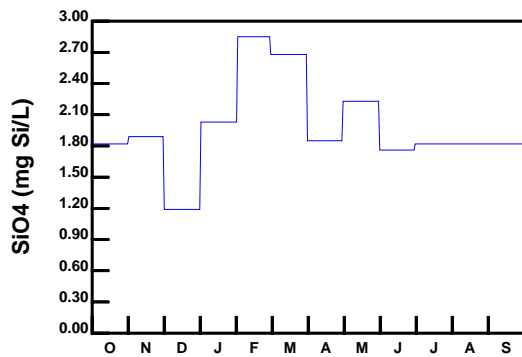
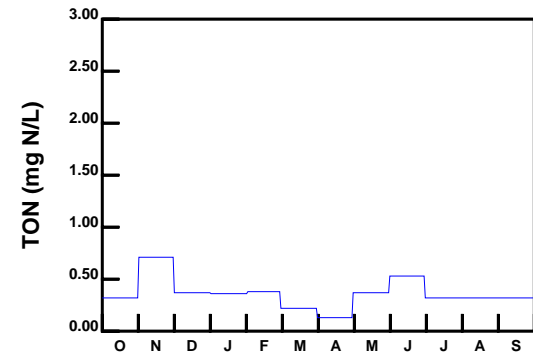
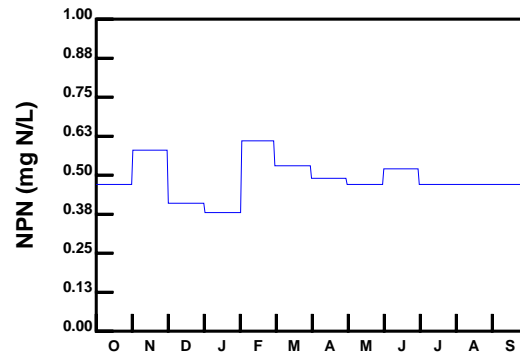
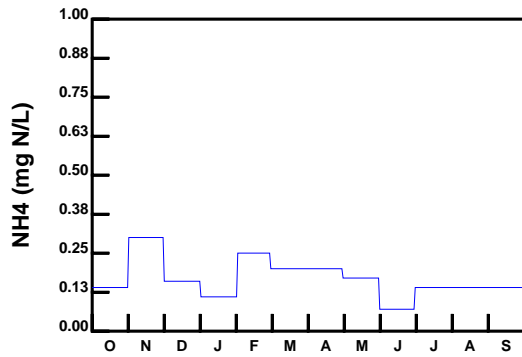
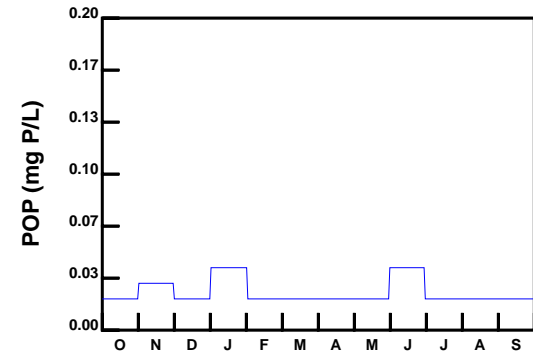
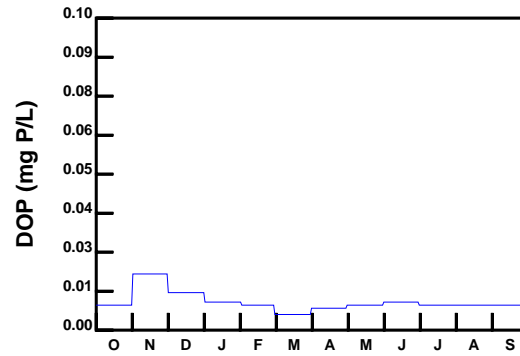
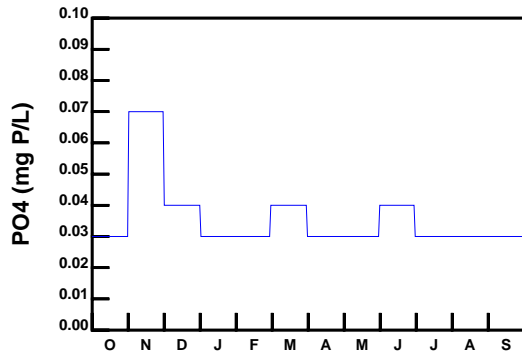
**SWEM - HOUSATONIC AND NAUGATUCK RIVERS**

**Boundary Condition - Water Year 0001**



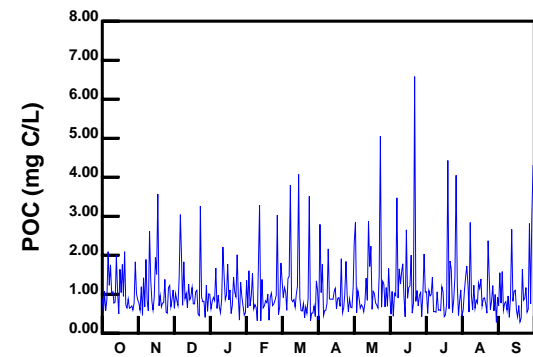
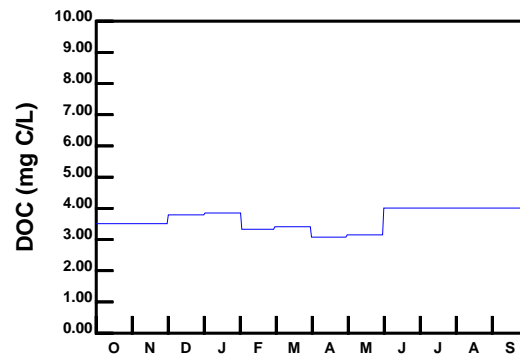
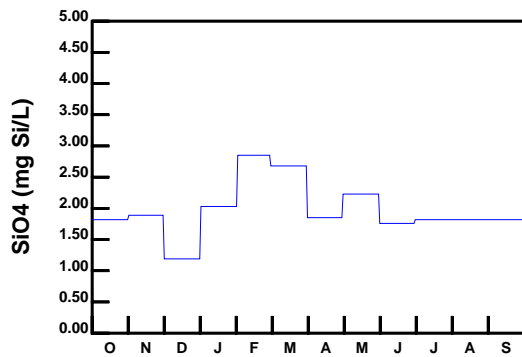
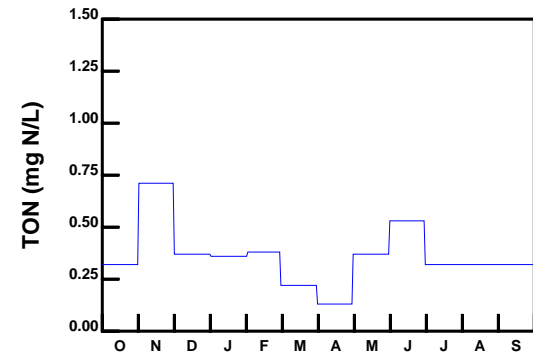
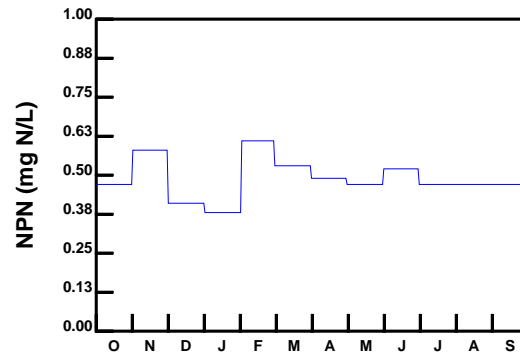
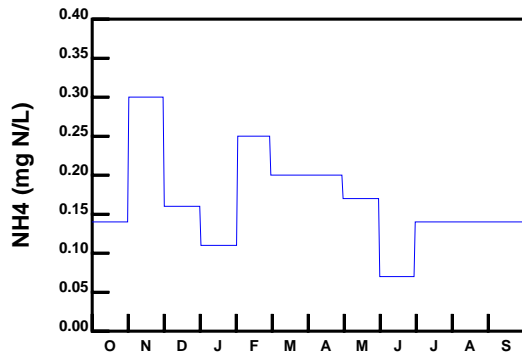
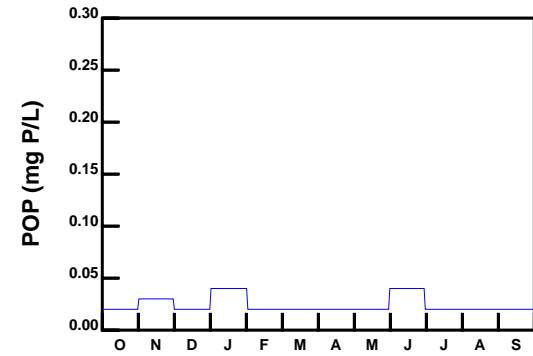
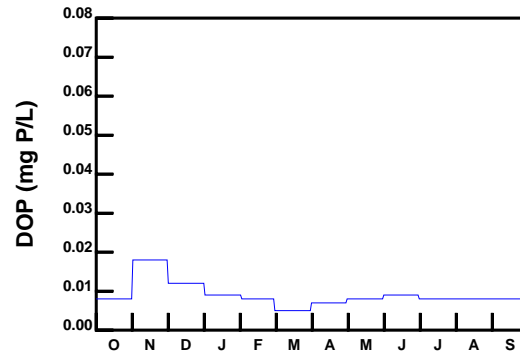
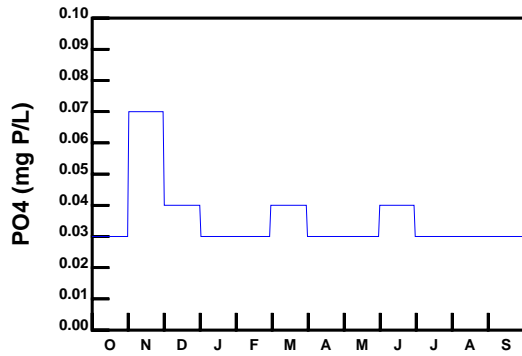
**SWEM - THAMES RIVER**

**Boundary Condition - Water Year 0001**



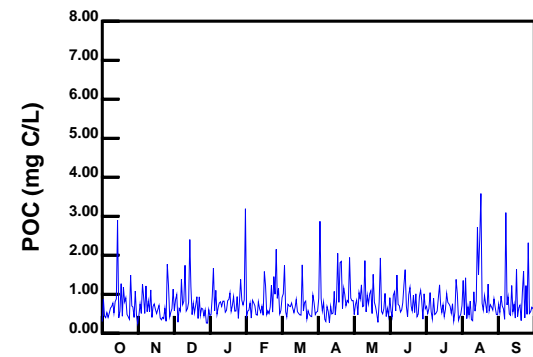
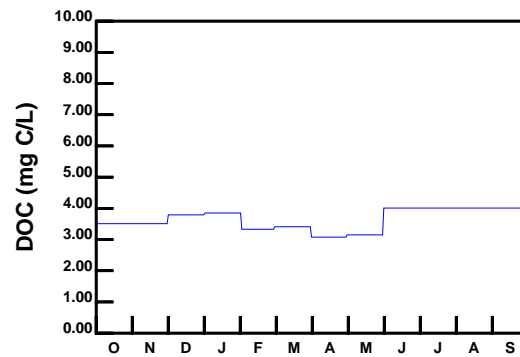
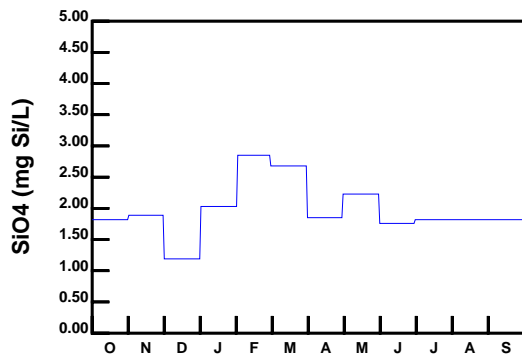
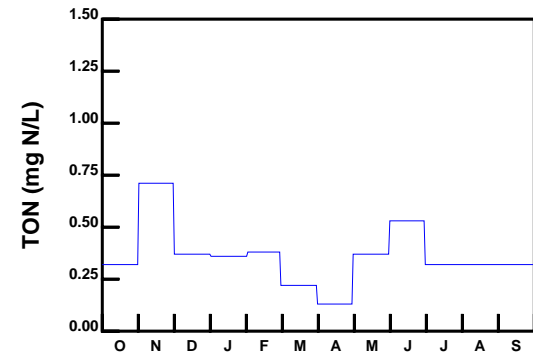
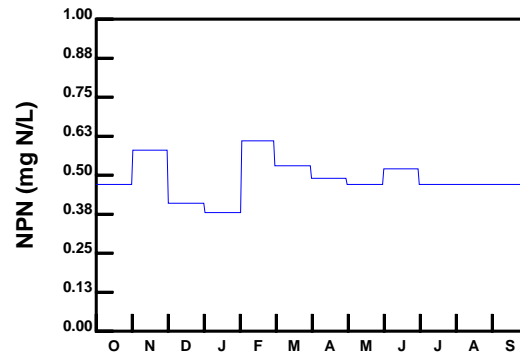
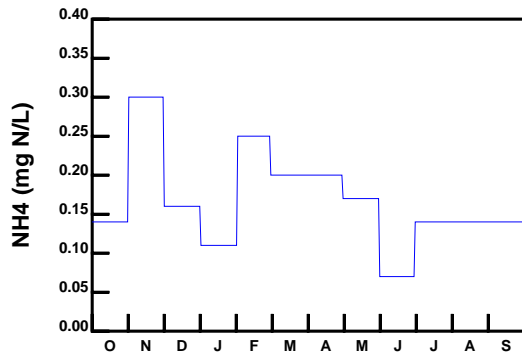
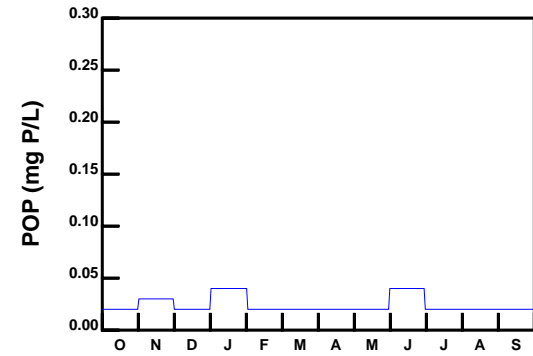
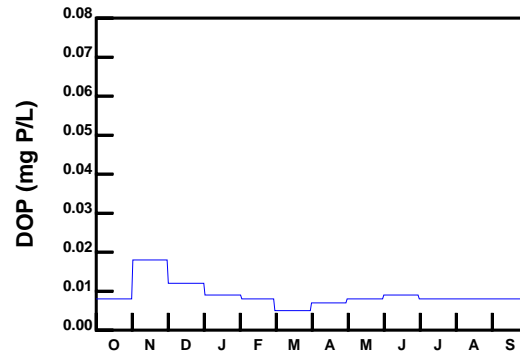
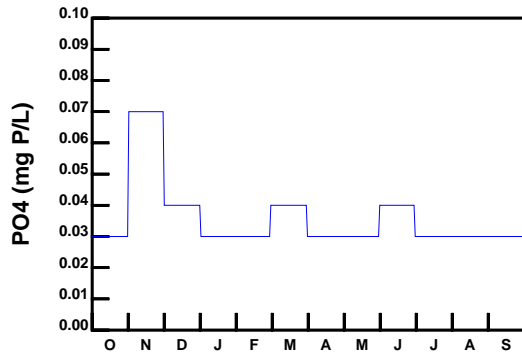
**SWEM - HUDSON RIVER**

**Boundary Condition - Water Year 0102**



**SWEM - NORMAN KILL**

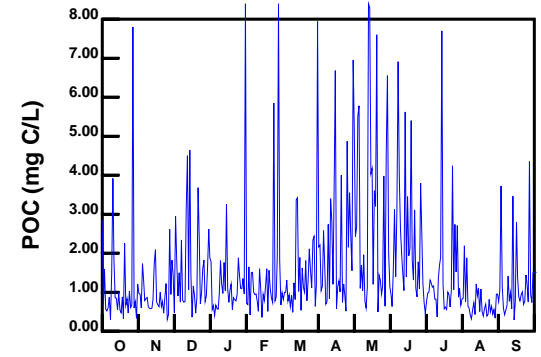
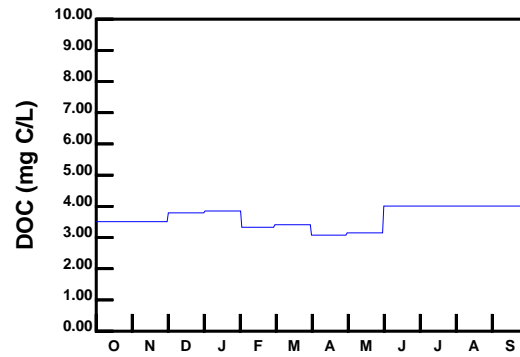
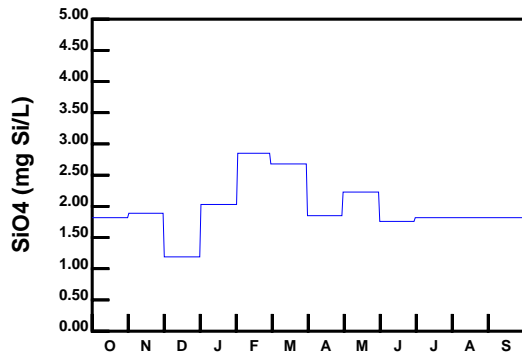
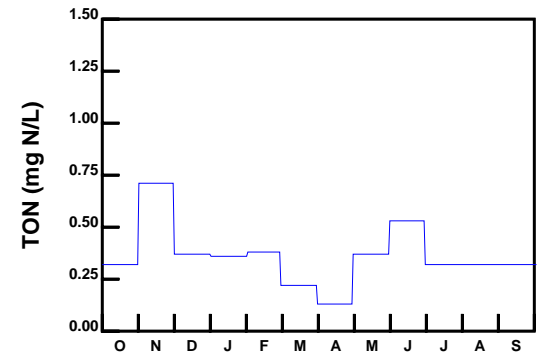
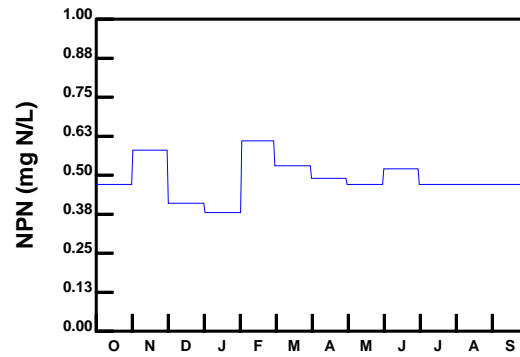
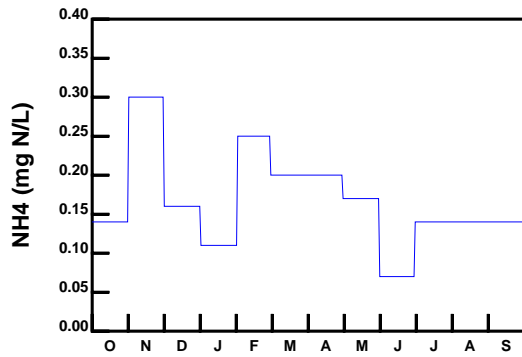
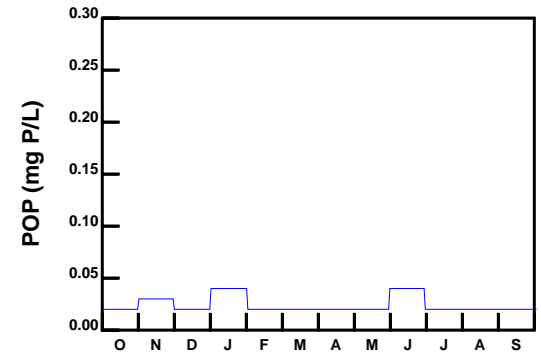
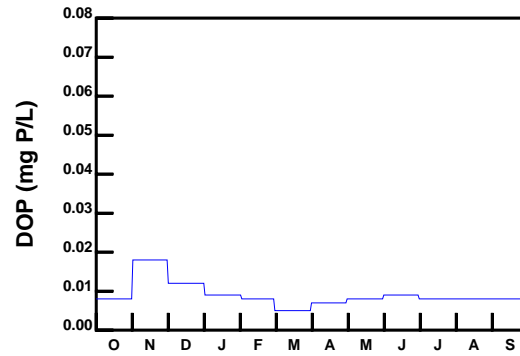
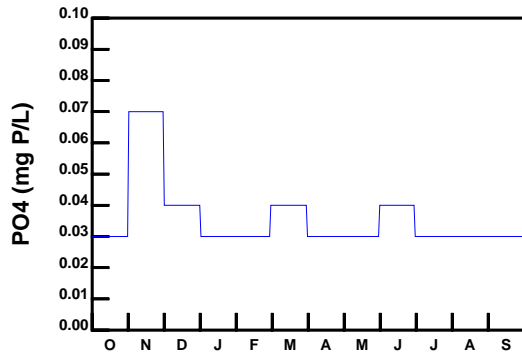
**Boundary Condition - Water Year 0102**



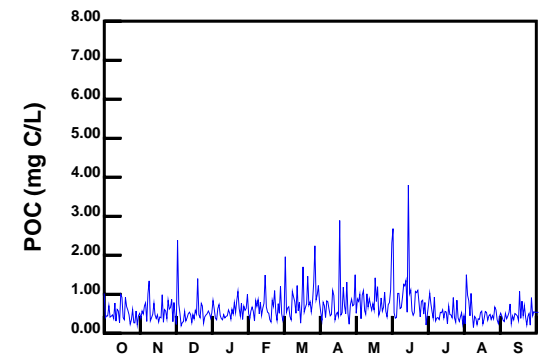
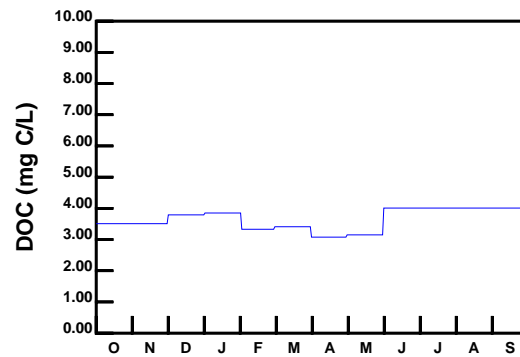
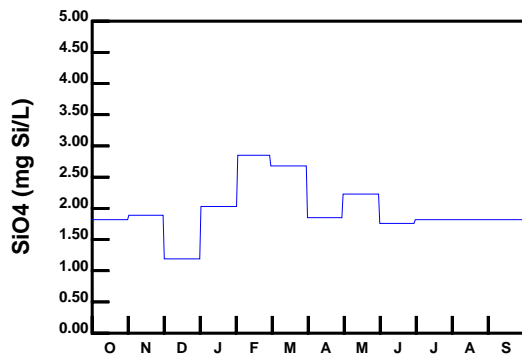
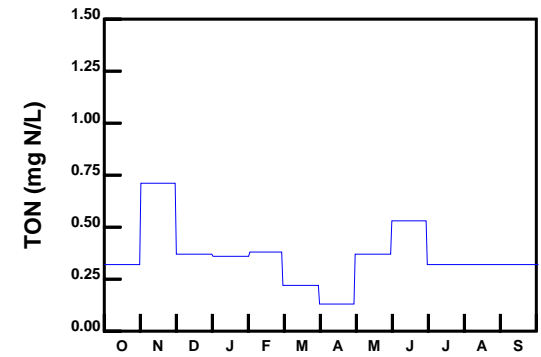
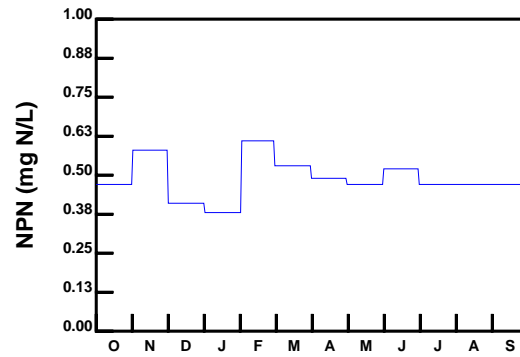
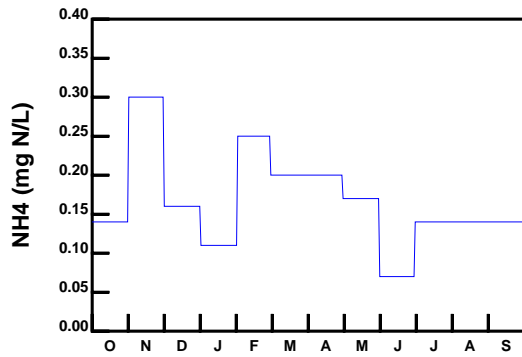
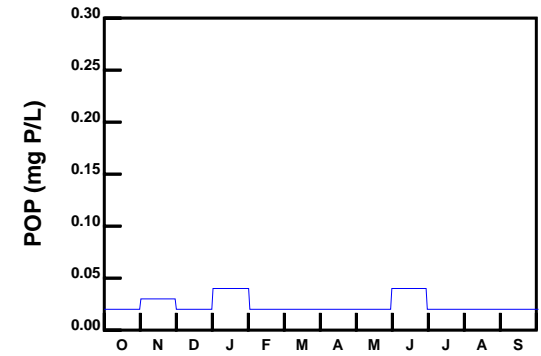
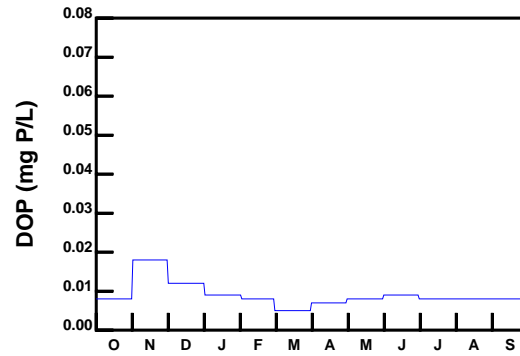
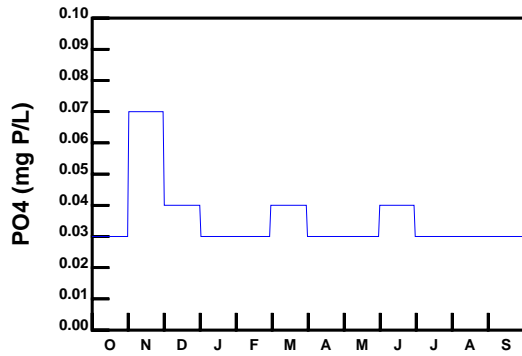
**SWEM - MOORDENER KILL**

**Boundary Condition - Water Year 0102**



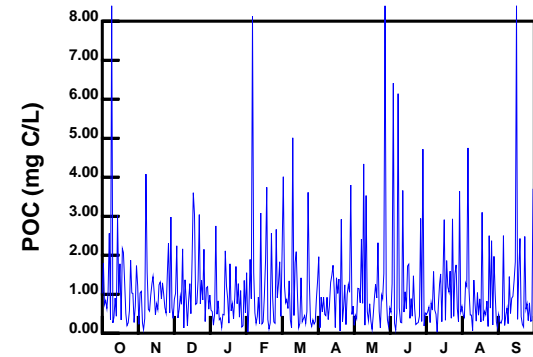
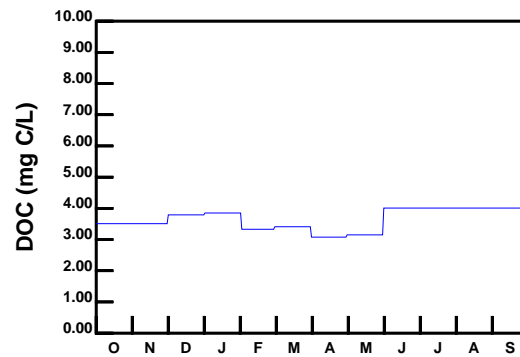
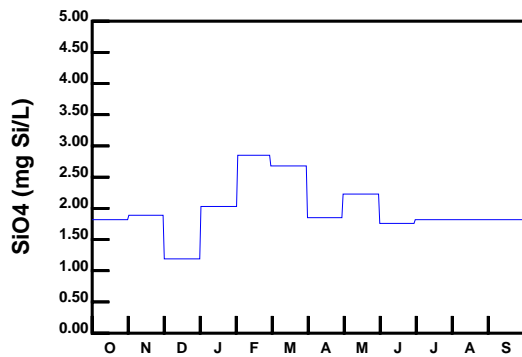
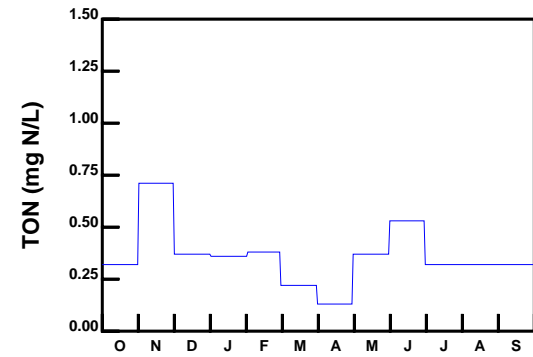
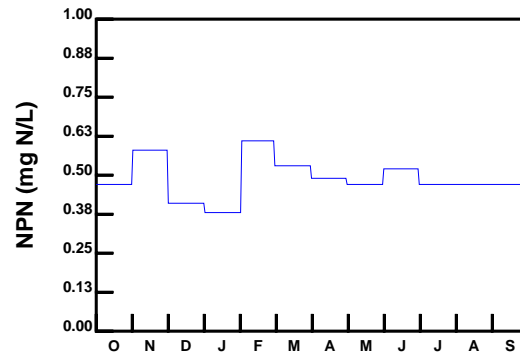
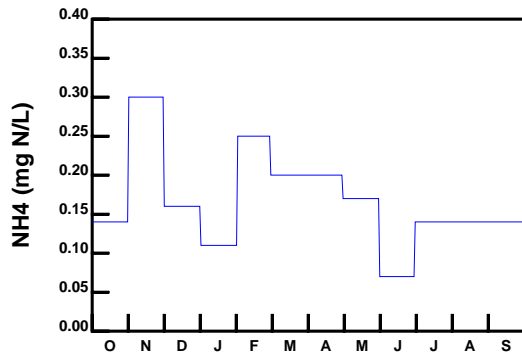
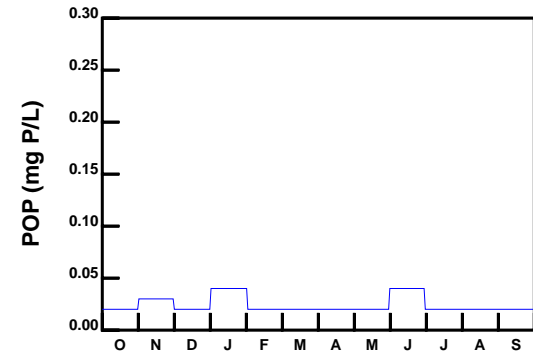
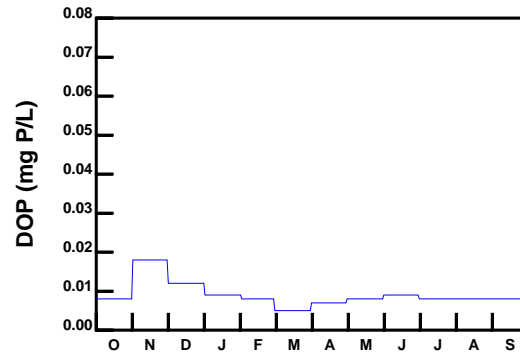
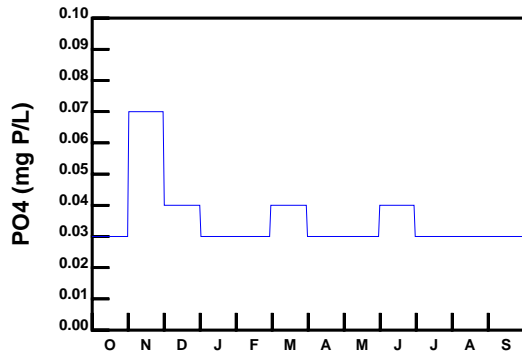


**SWEM - CATSKILL CREEK**  
**Boundary Condition - Water Year 0102**



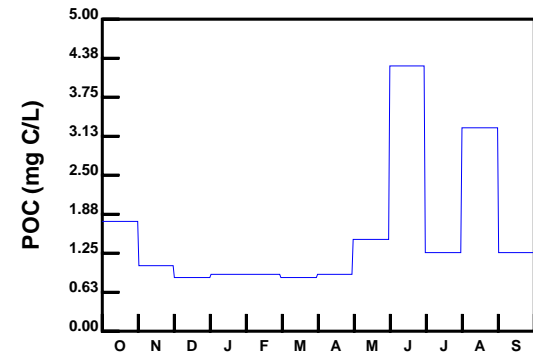
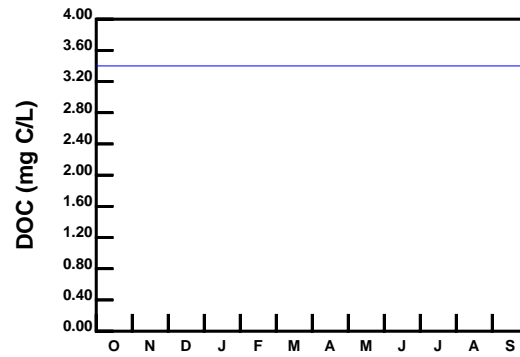
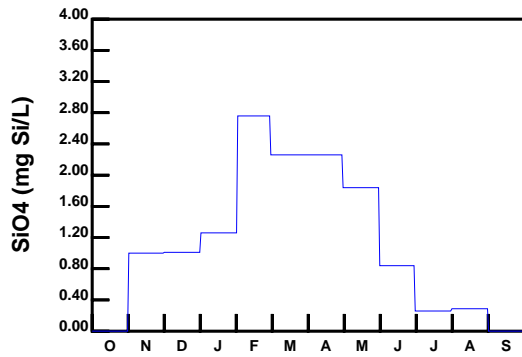
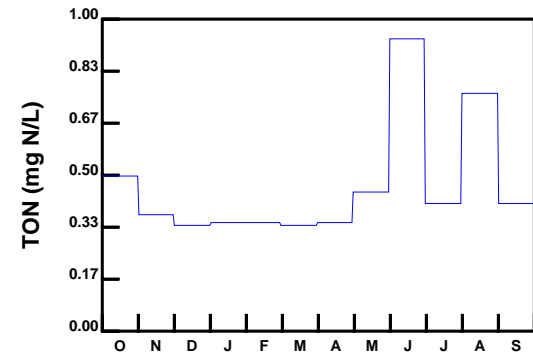
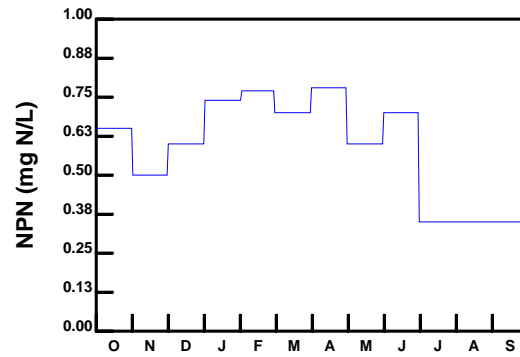
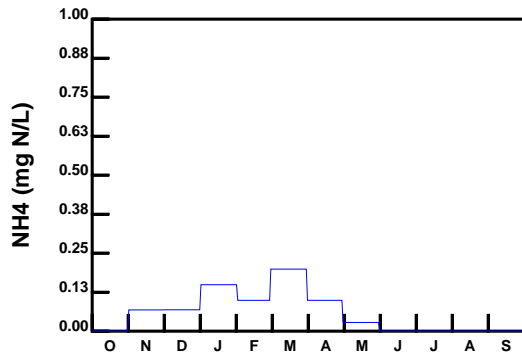
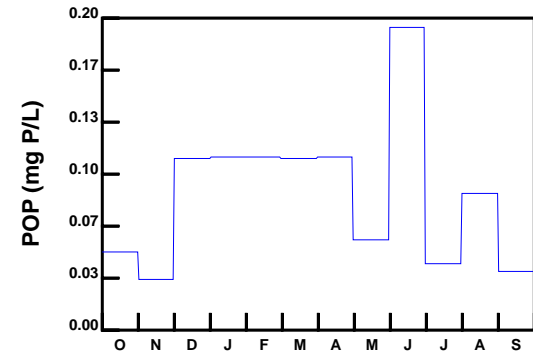
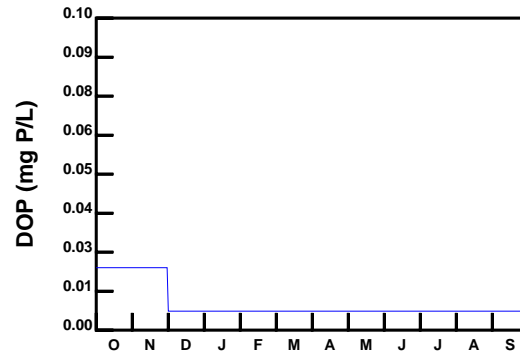
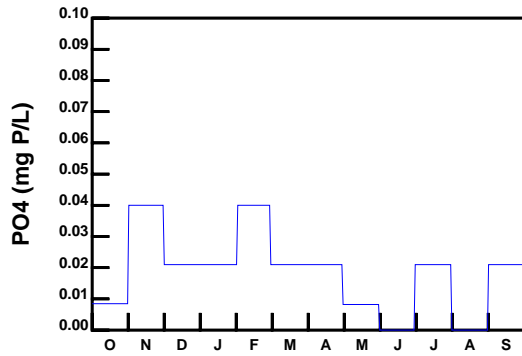
**SWEM - ESOPUS CREEK**

**Boundary Condition - Water Year 0102**

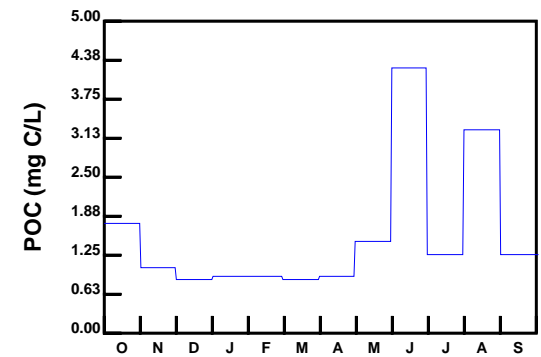
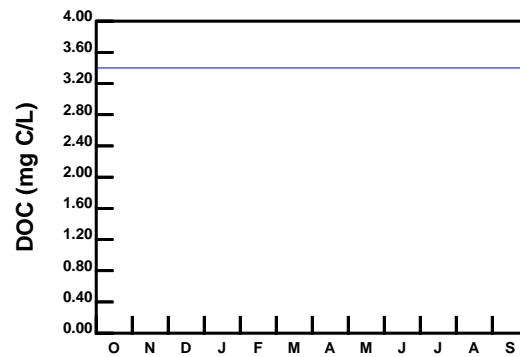
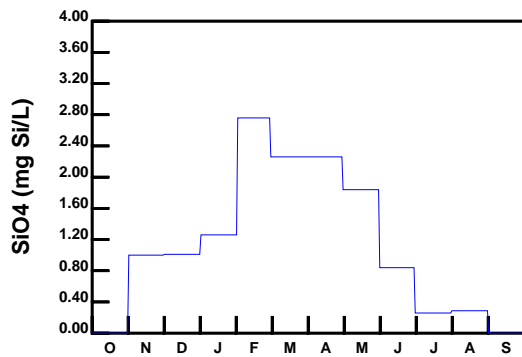
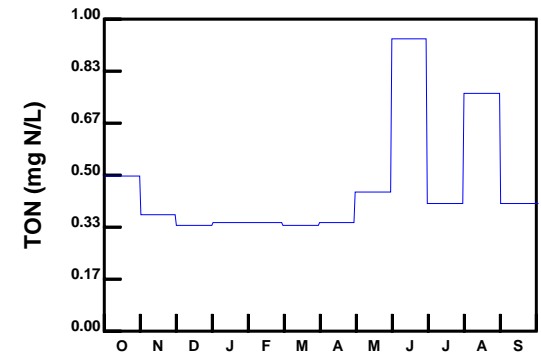
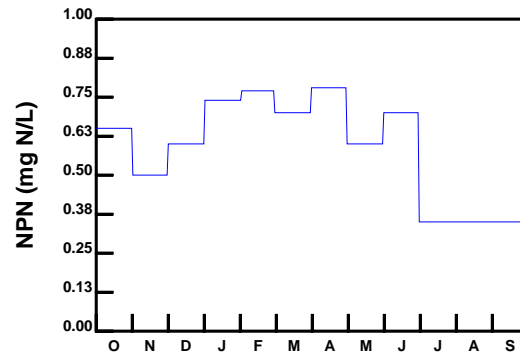
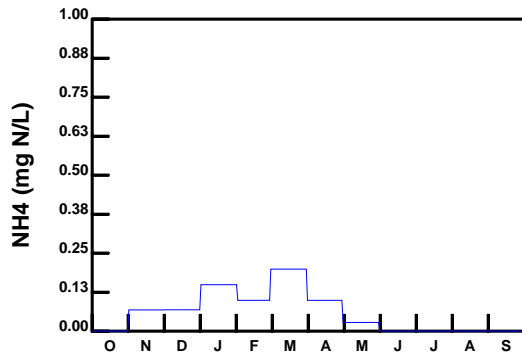
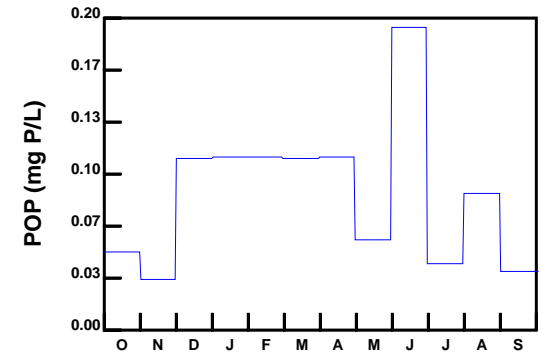
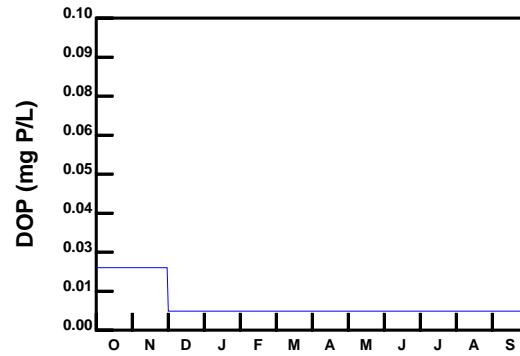
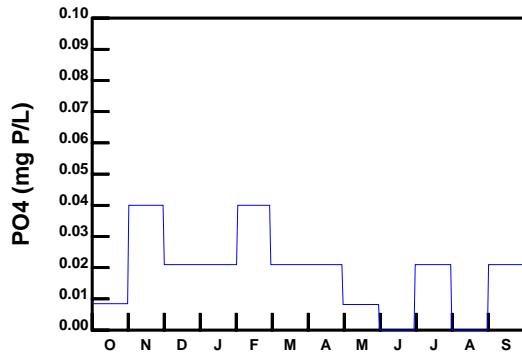


**SWEM - ROUNDOUT CREEK / WALLKILL RIVER**

**Boundary Condition - Water Year 0102**

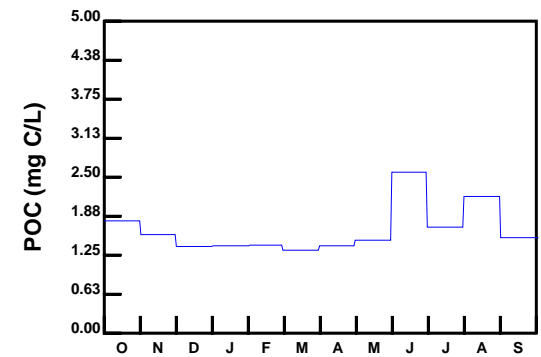
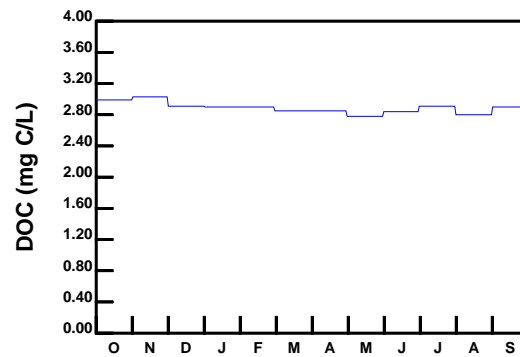
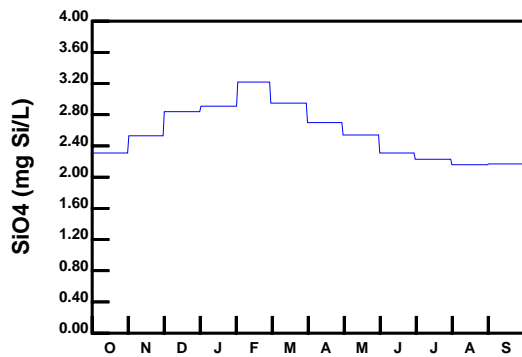
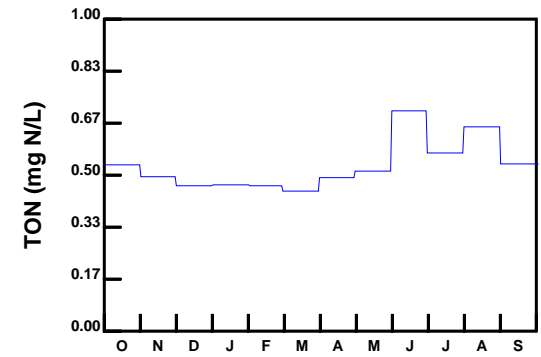
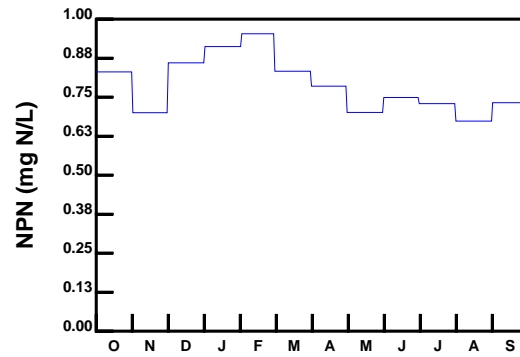
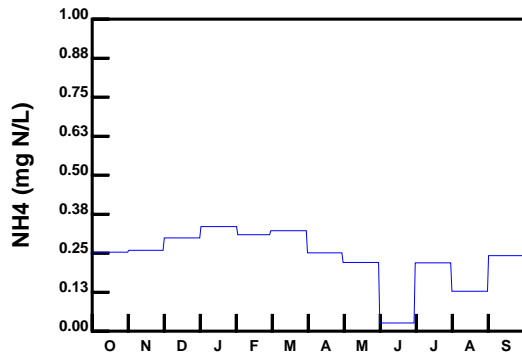
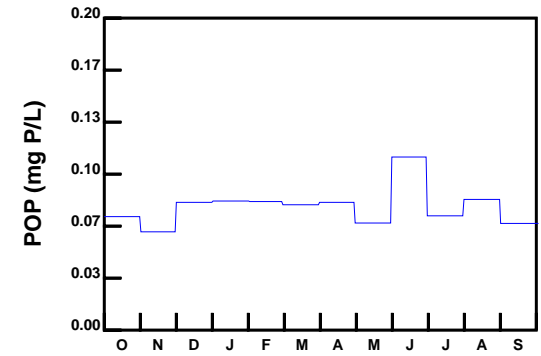
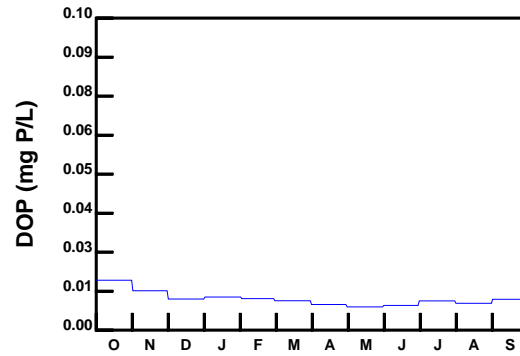
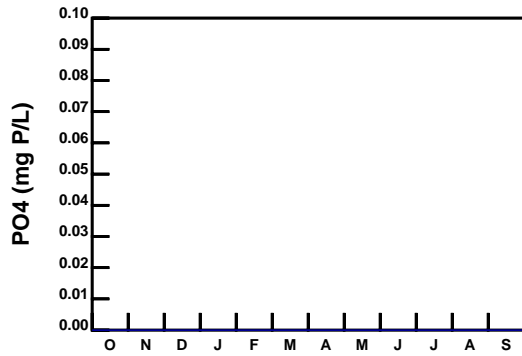


**SWEM - WAPPINGER CREEK**  
**Boundary Condition - Water Year 0102**



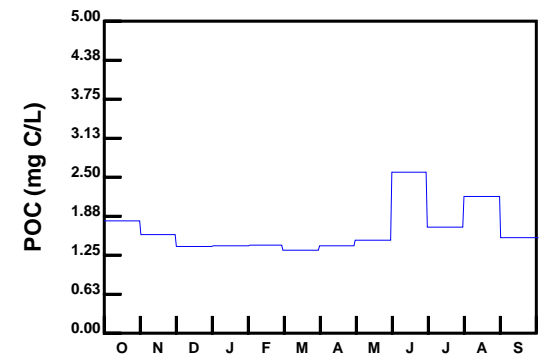
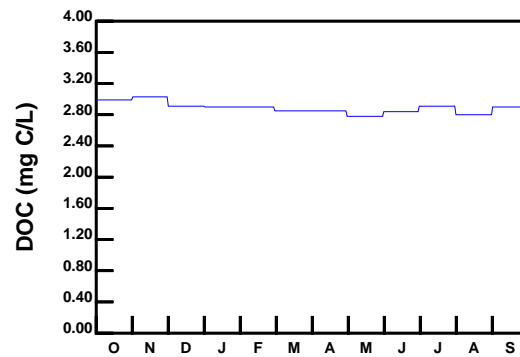
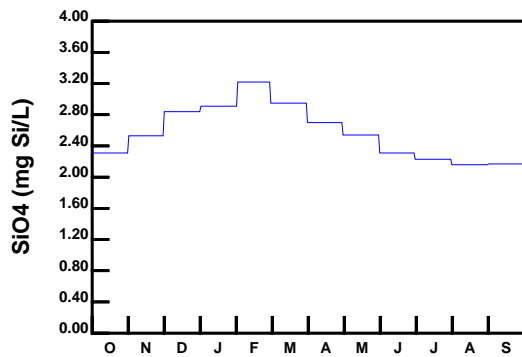
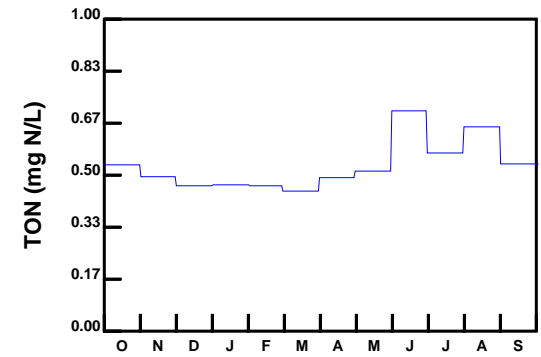
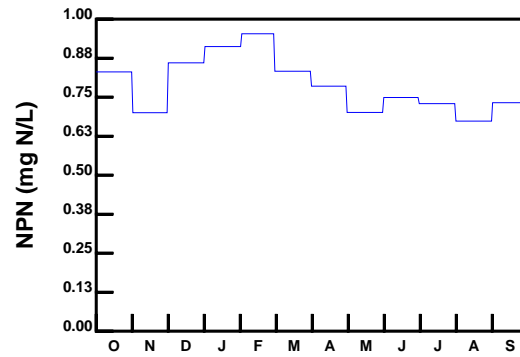
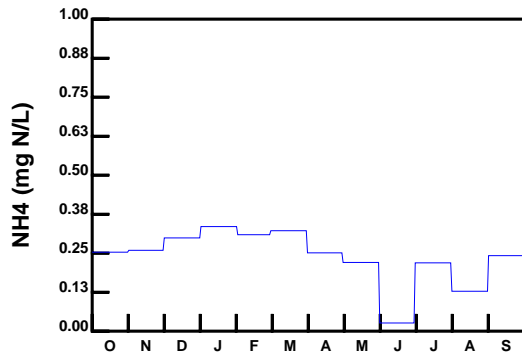
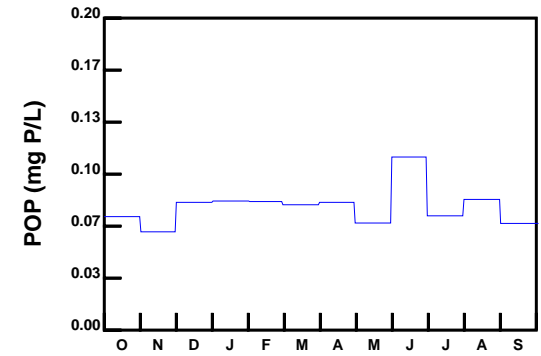
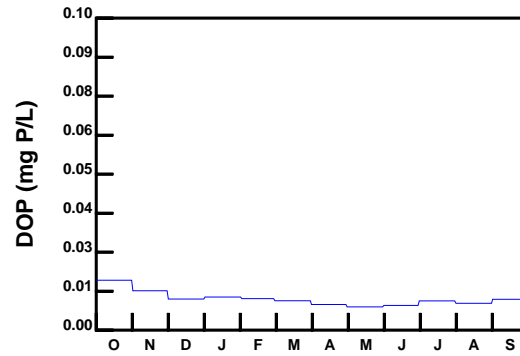
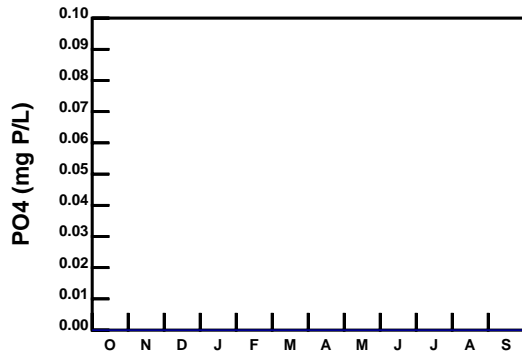
**SWEM - CROTON CREEK**

**Boundary Condition - Water Year 0102**



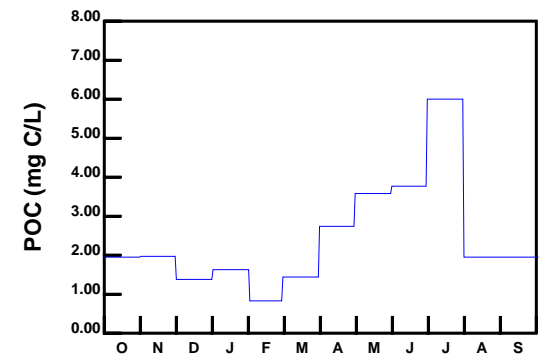
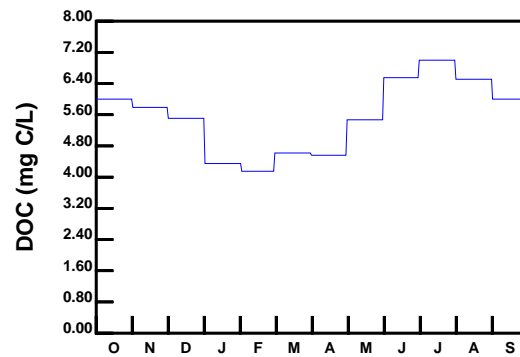
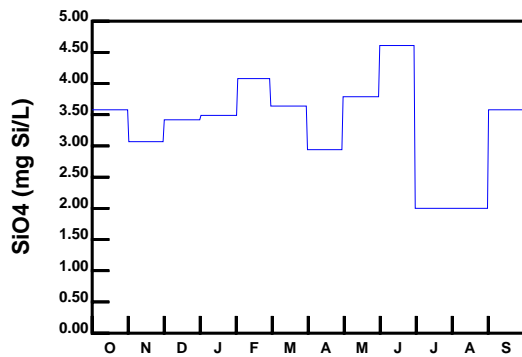
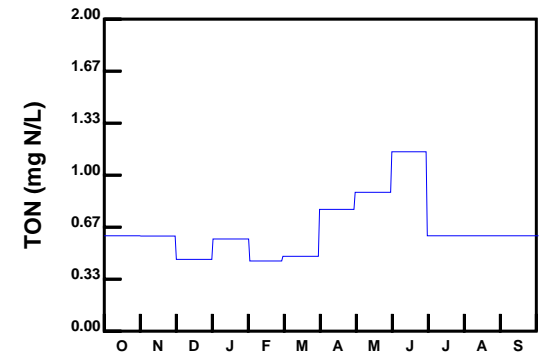
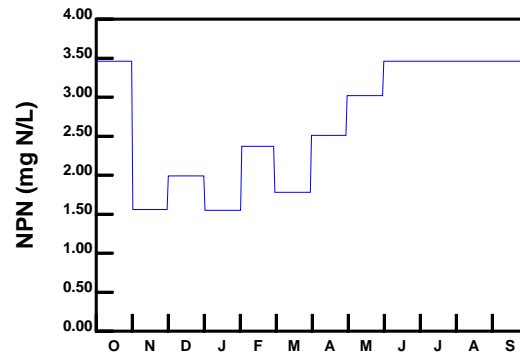
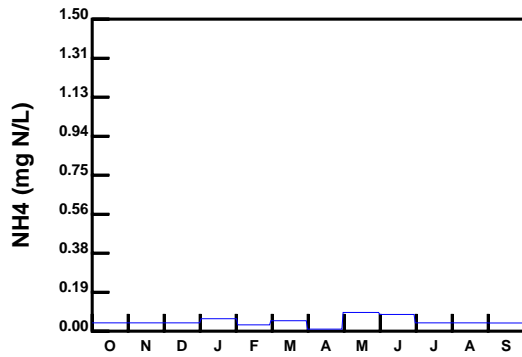
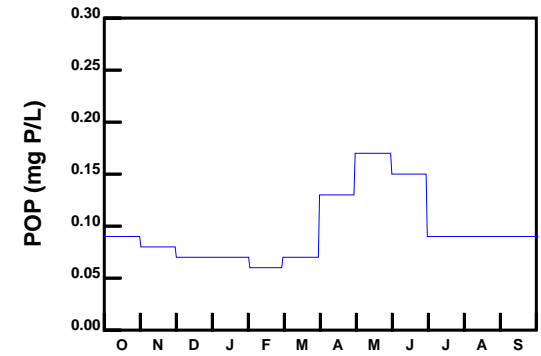
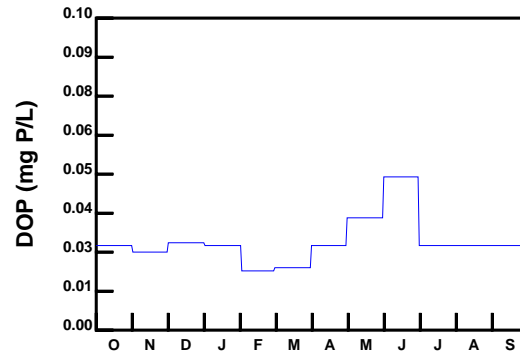
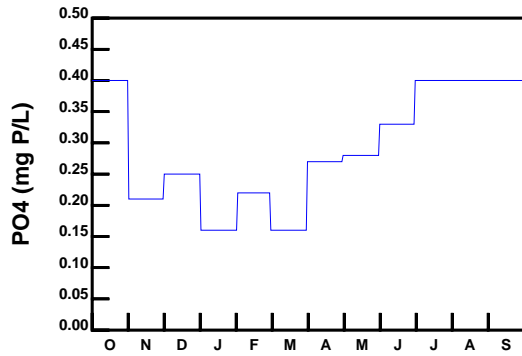
**SWEM - SAWMILL CREEK**

**Boundary Condition - Water Year 0102**



**SWEM - BRONX RIVER**

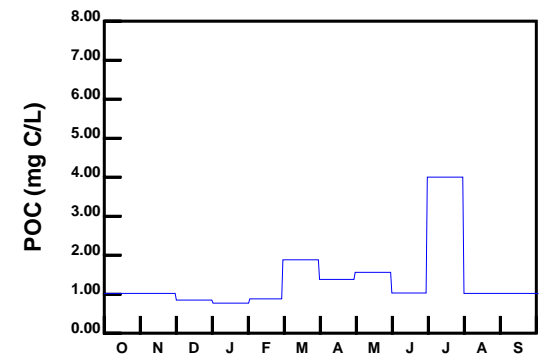
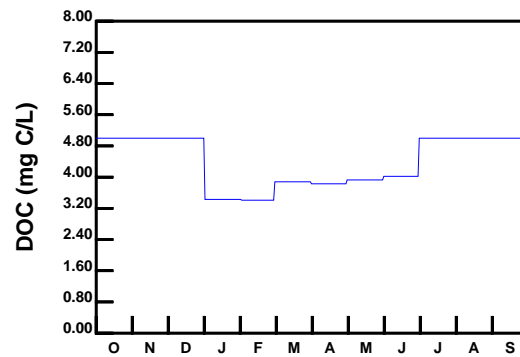
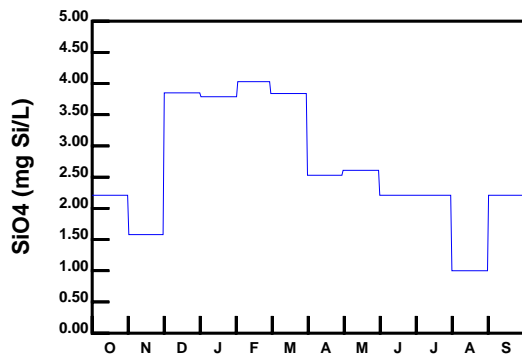
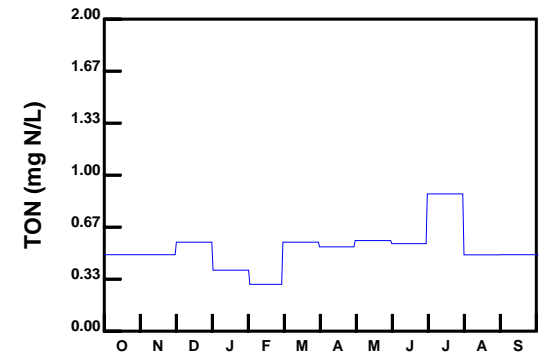
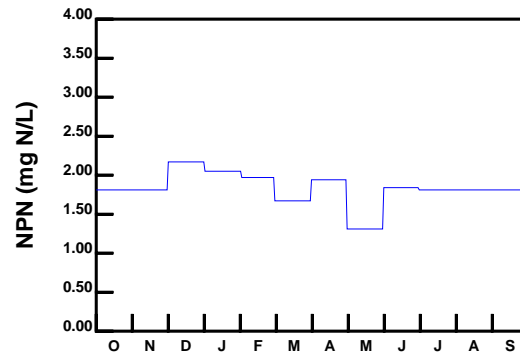
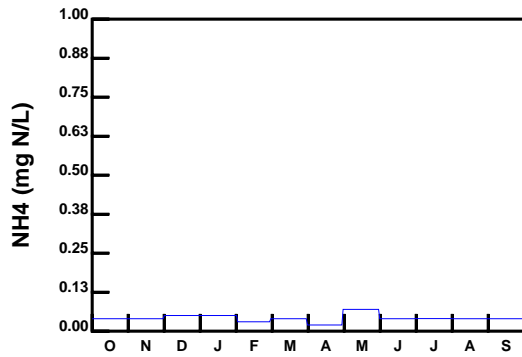
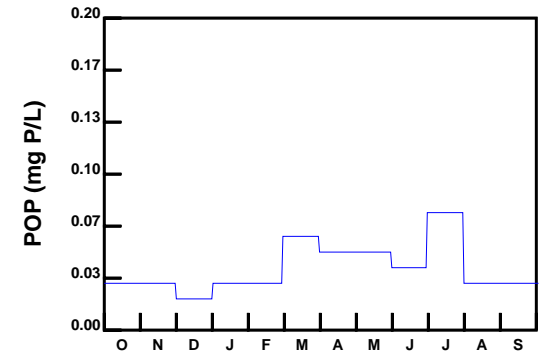
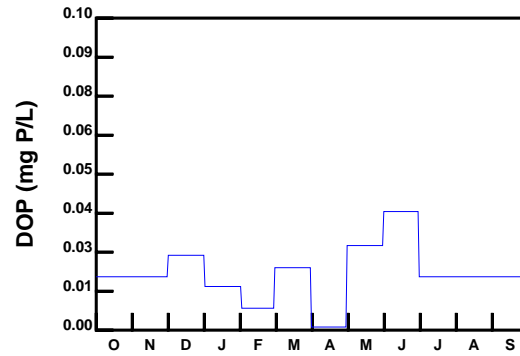
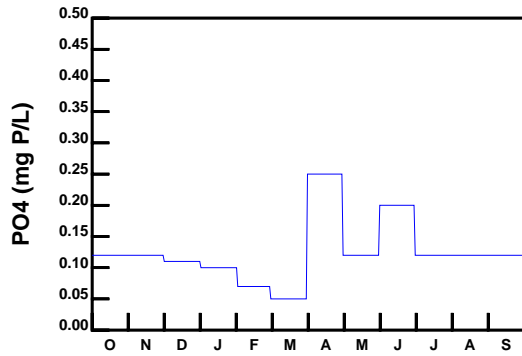
**Boundary Condition - Water Year 0102**



**SWEM - SADDLE RIVER**

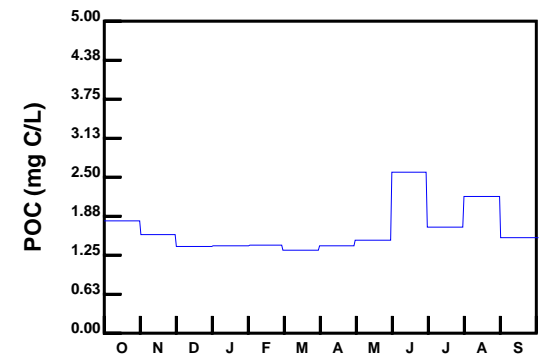
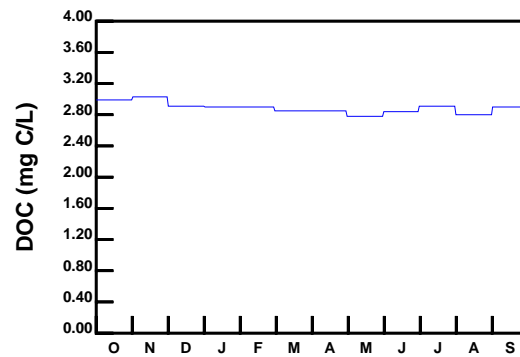
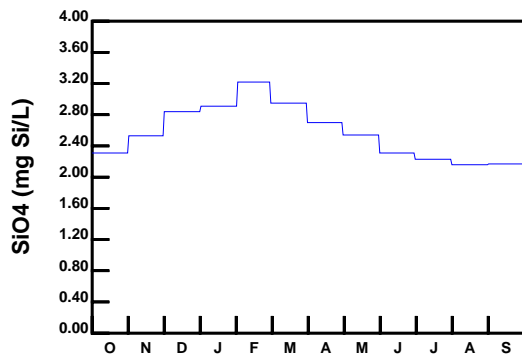
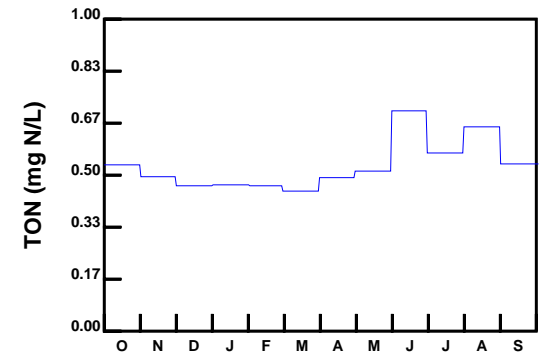
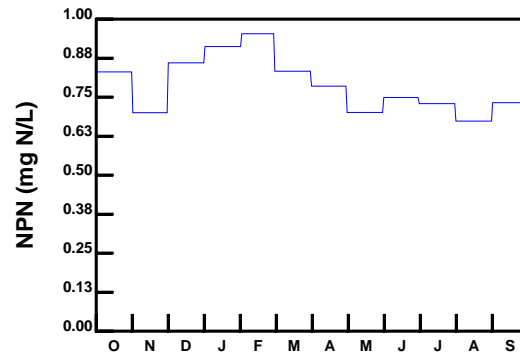
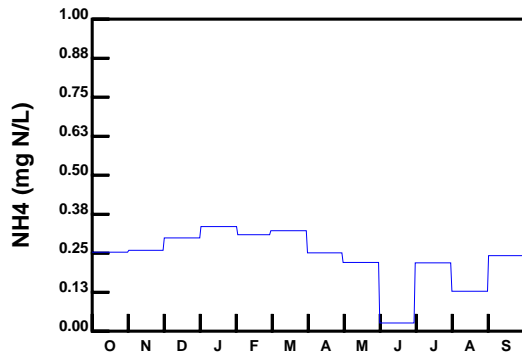
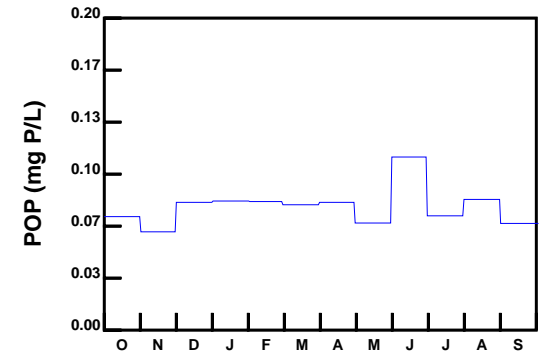
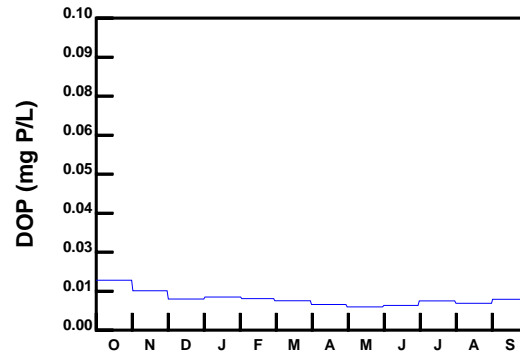
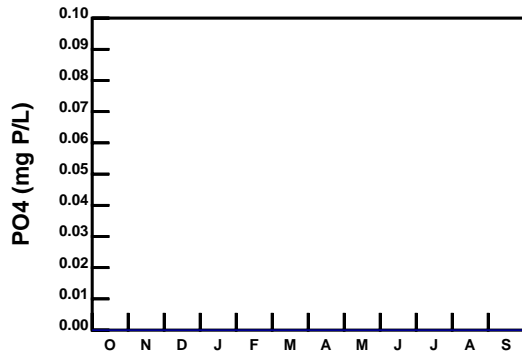
**Boundary Condition - Water Year 0102**





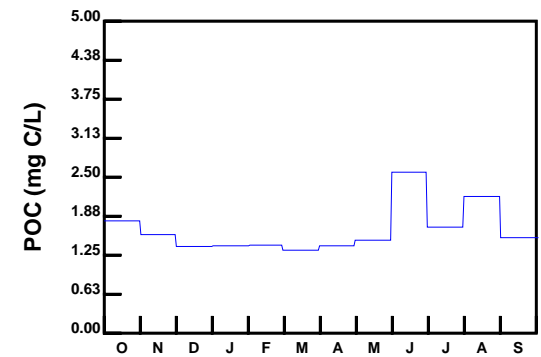
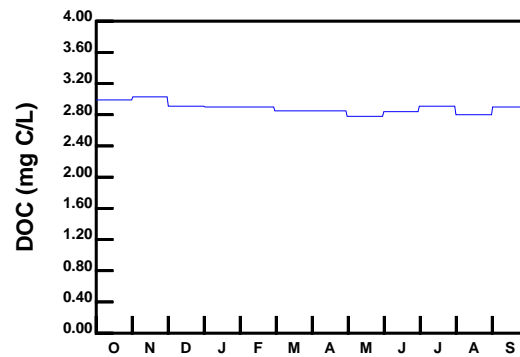
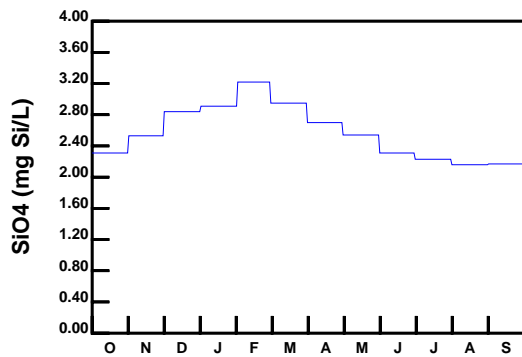
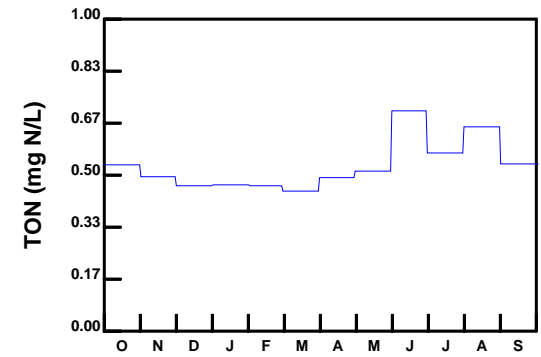
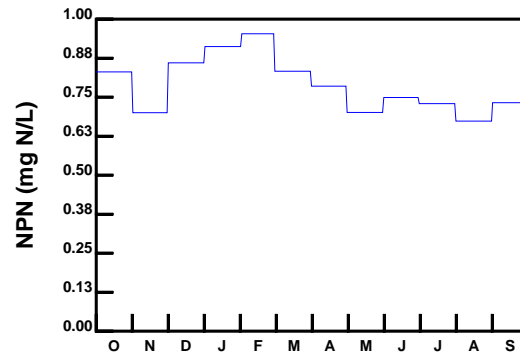
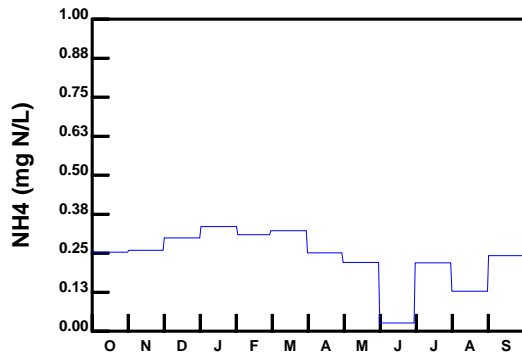
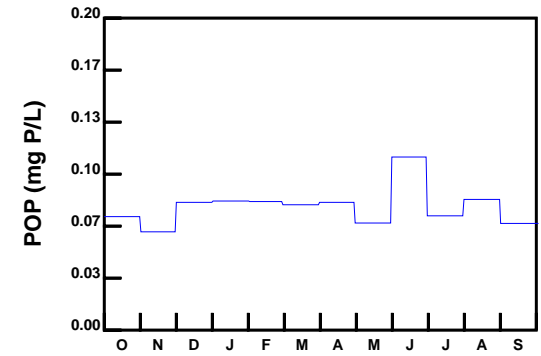
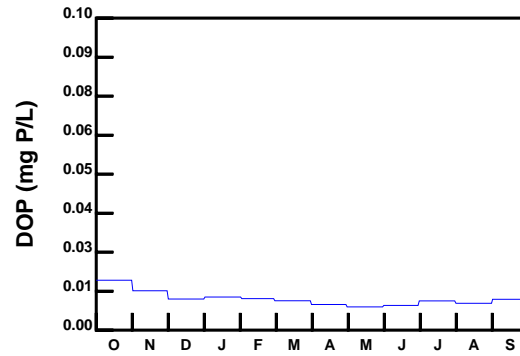
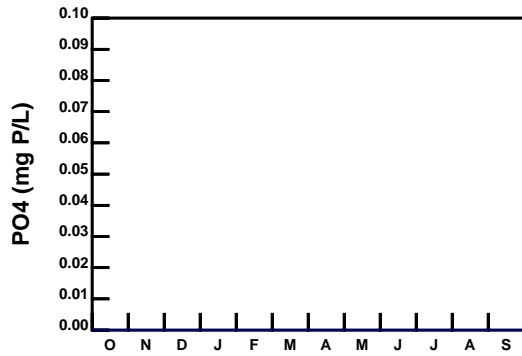
**SWEM - SOUTH RIVER**

**Boundary Condition - Water Year 0102**



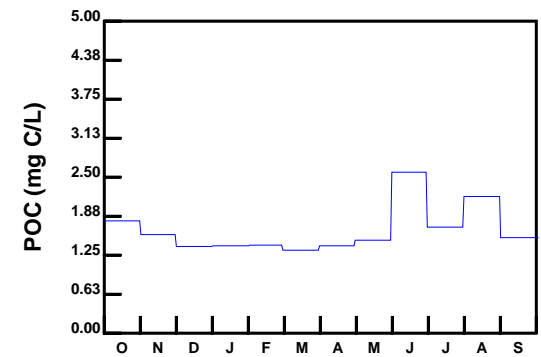
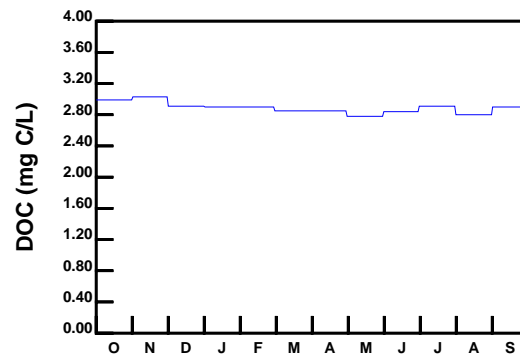
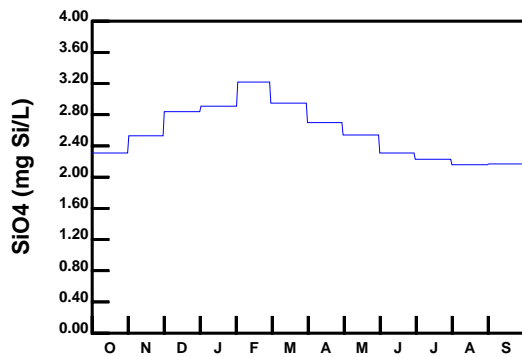
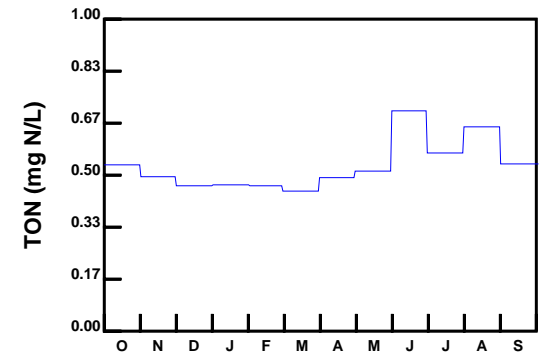
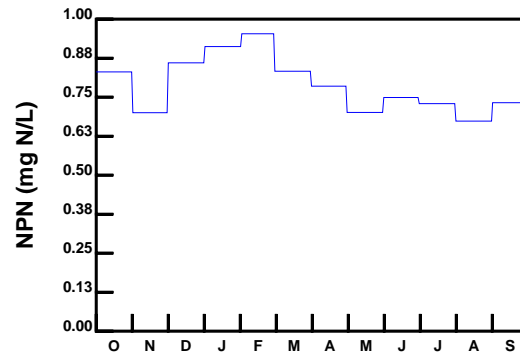
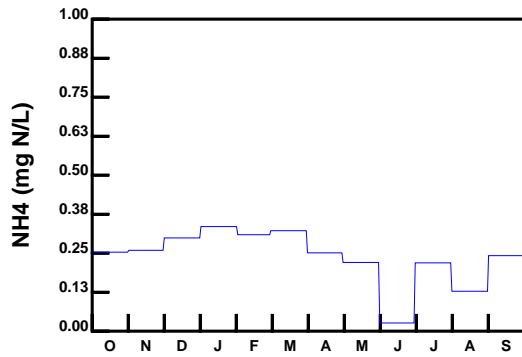
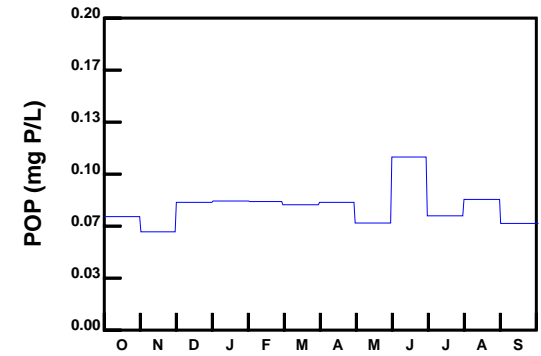
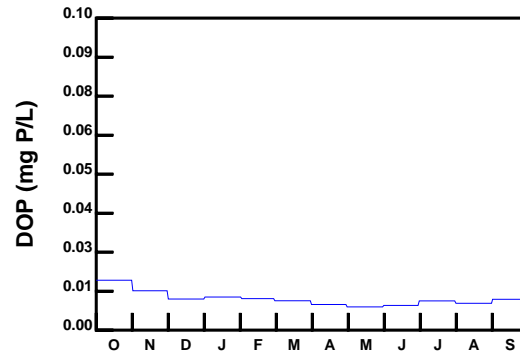
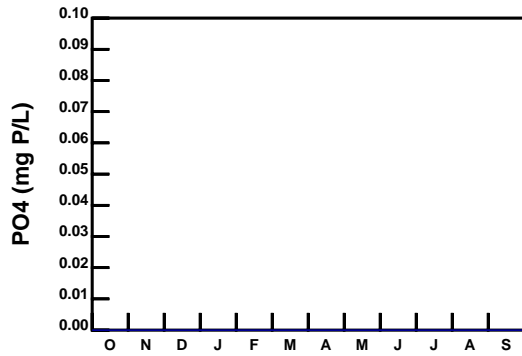
**SWEM - NAVESINK AND SHREWSBURY RIVERS**

**Boundary Condition - Water Year 0102**



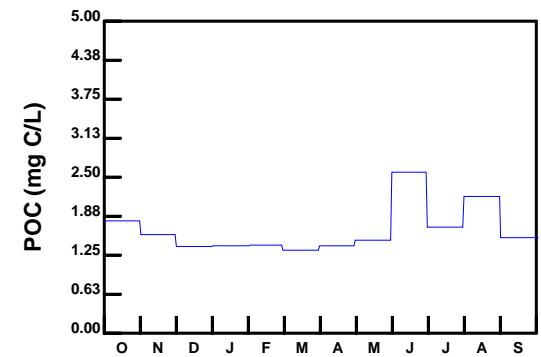
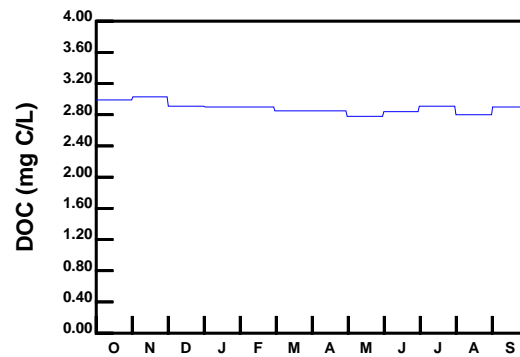
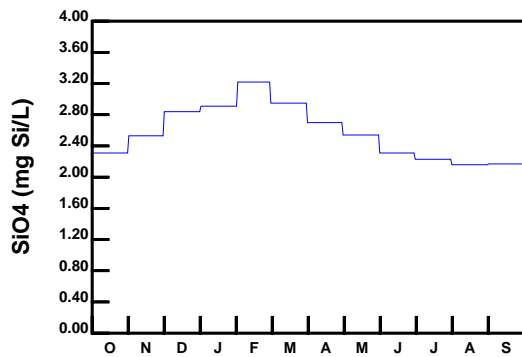
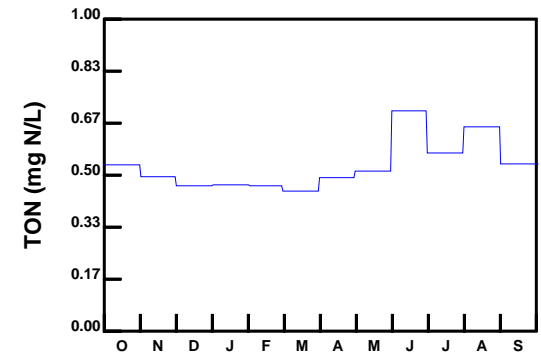
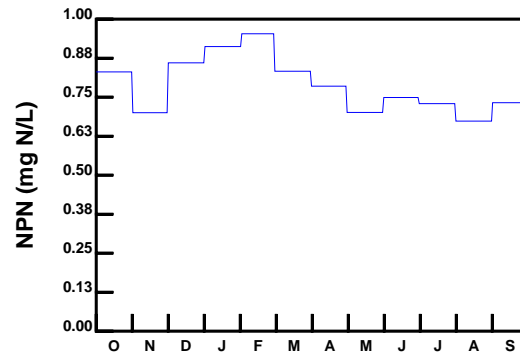
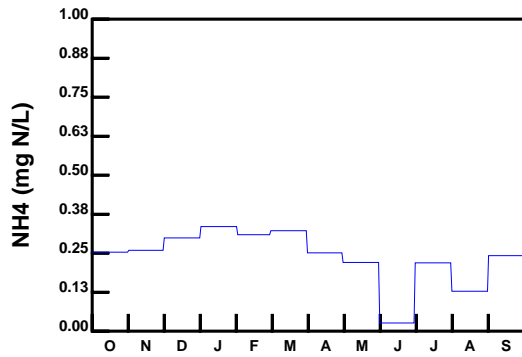
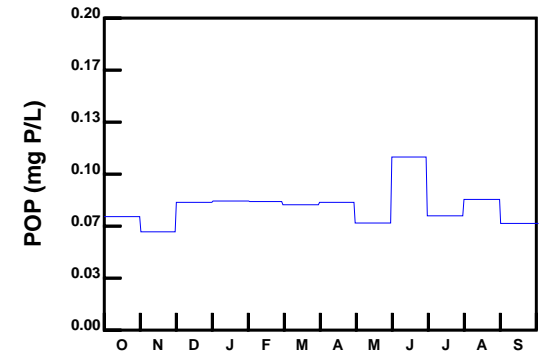
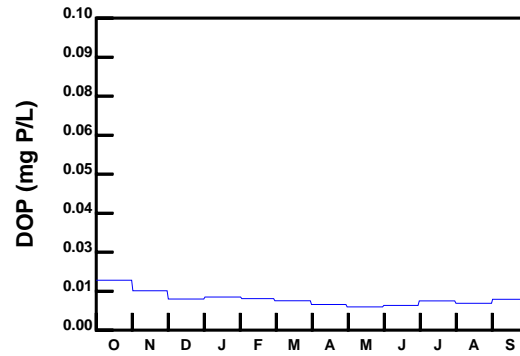
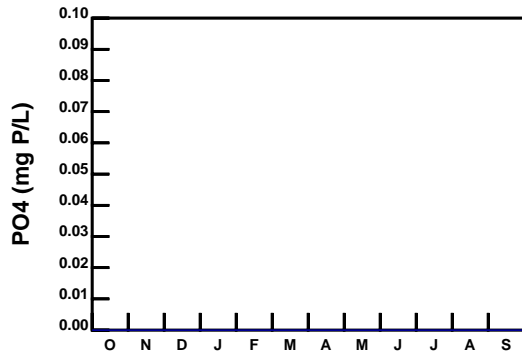
**SWEM - MANASQUAN RIVER**

**Boundary Condition - Water Year 0102**



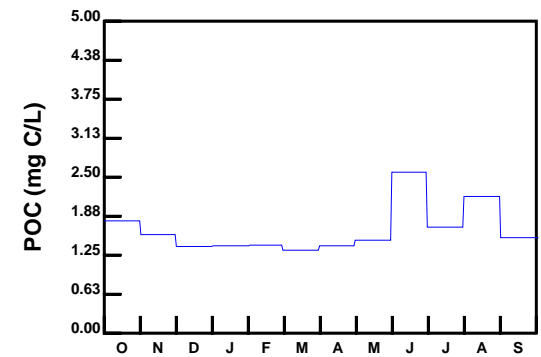
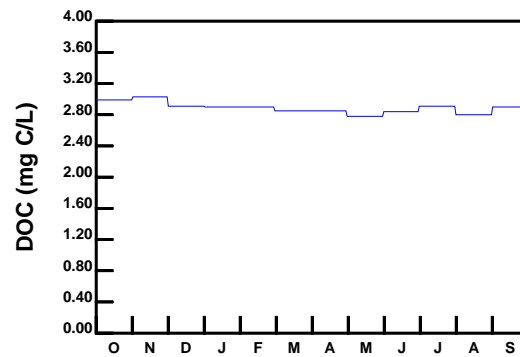
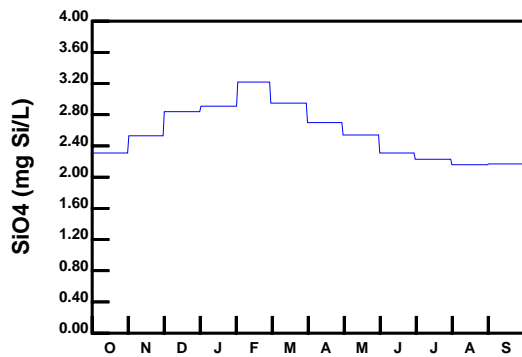
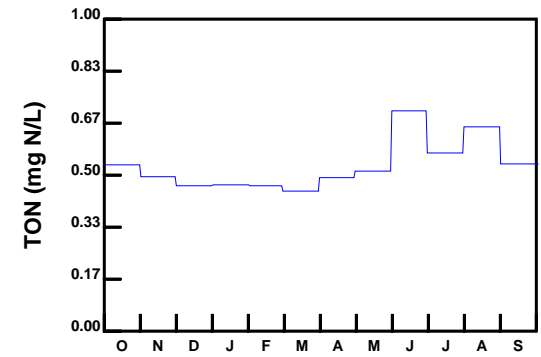
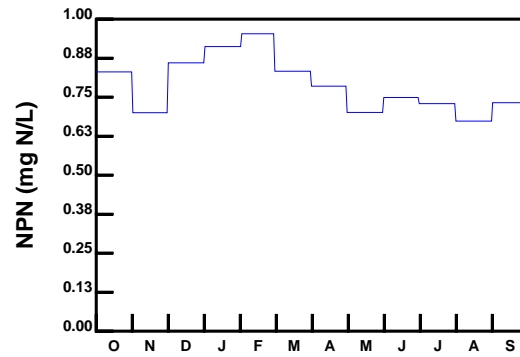
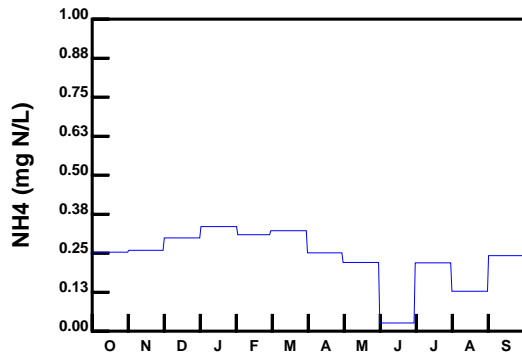
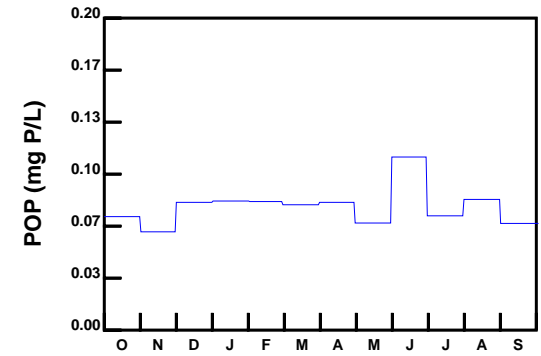
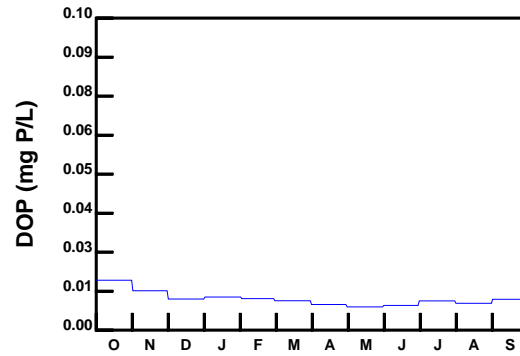
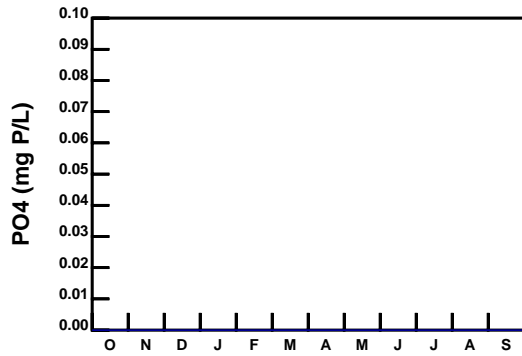
**SWEM - METEDECONK AND TOMS RIVERS**

**Boundary Condition - Water Year 0102**



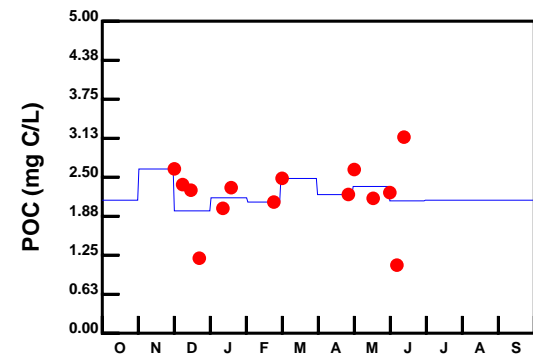
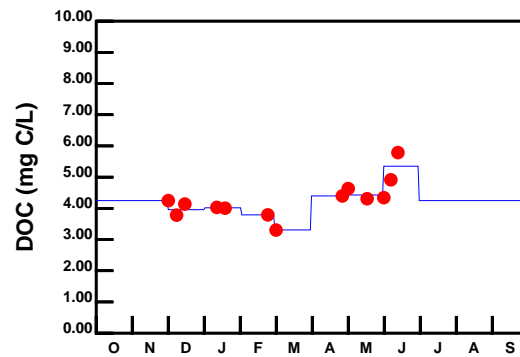
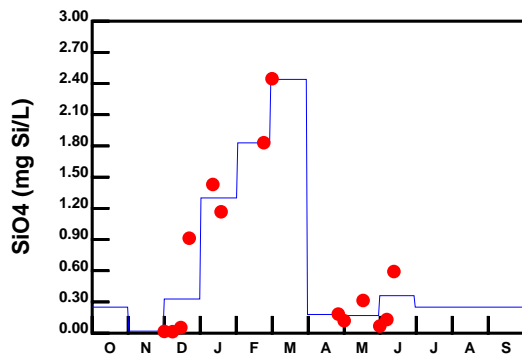
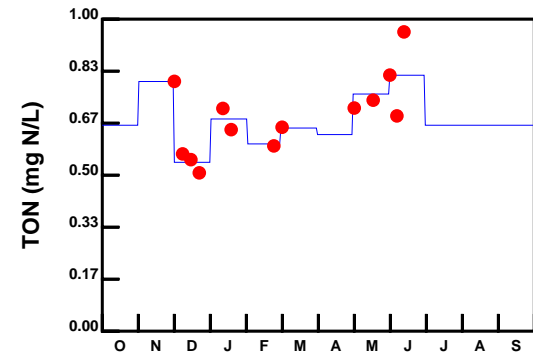
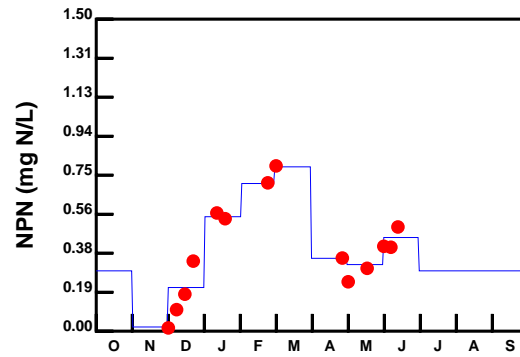
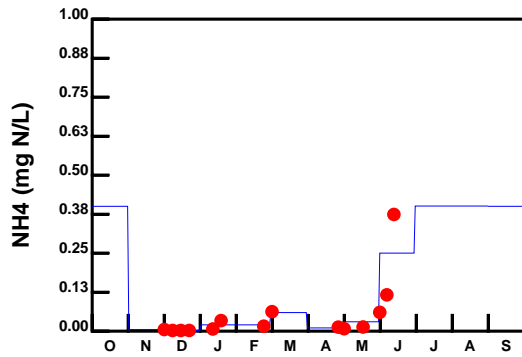
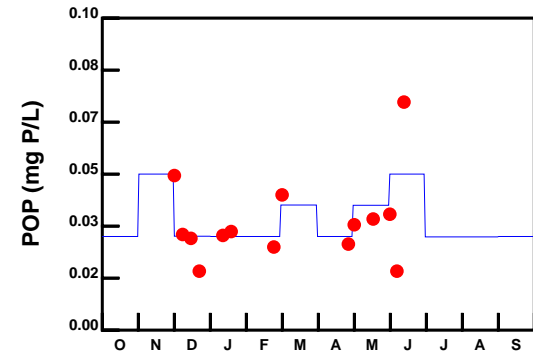
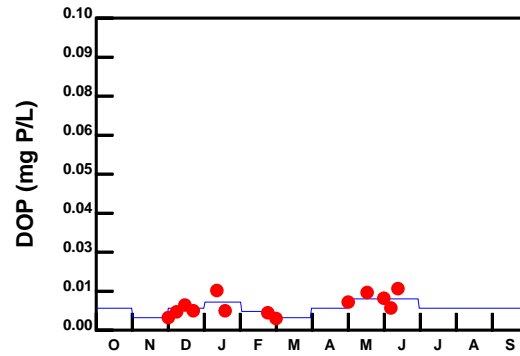
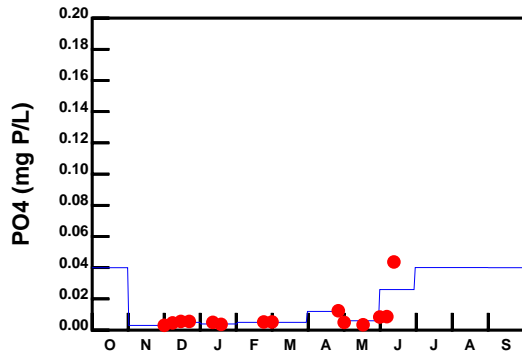
**SWEM - MULLICA RIVER AND WESTECUNK CREEK**

**Boundary Condition - Water Year 0102**

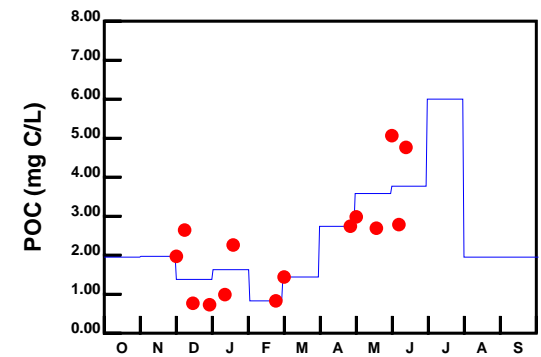
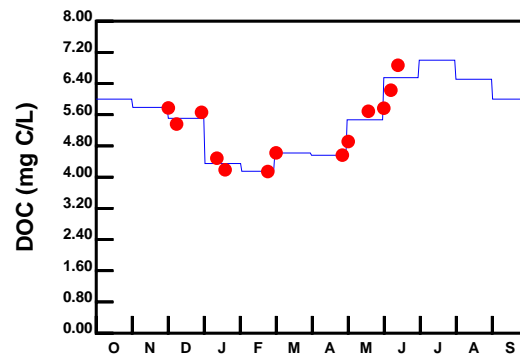
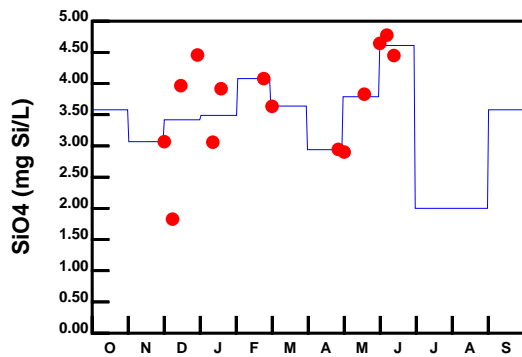
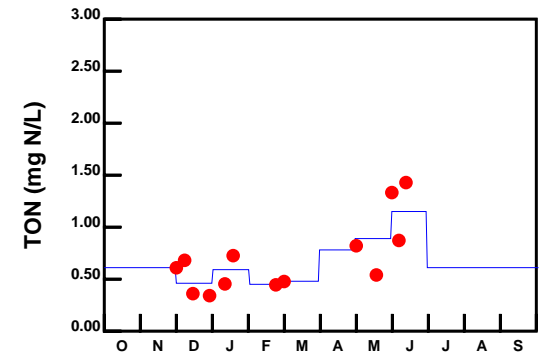
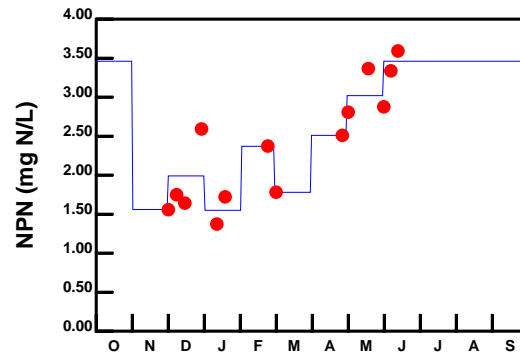
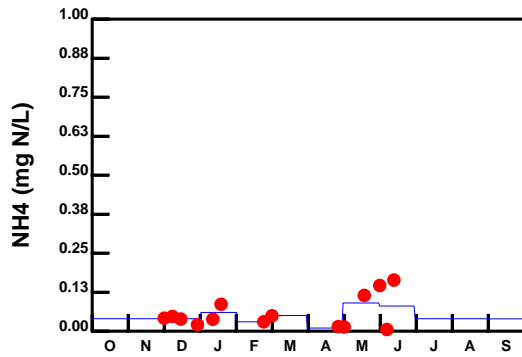
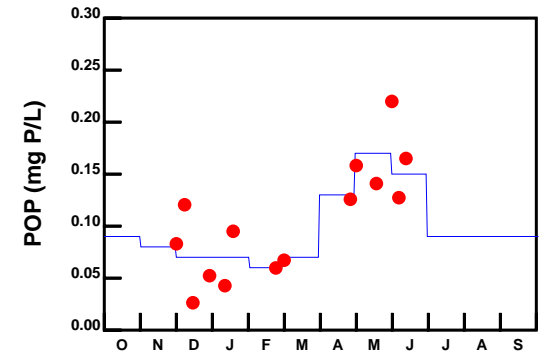
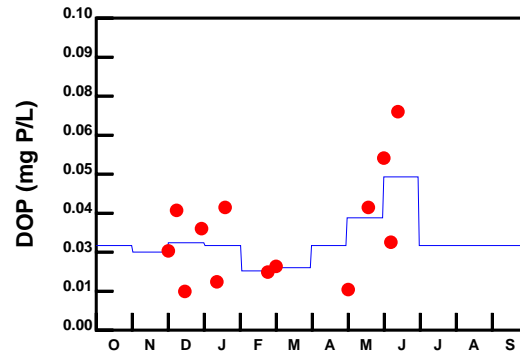
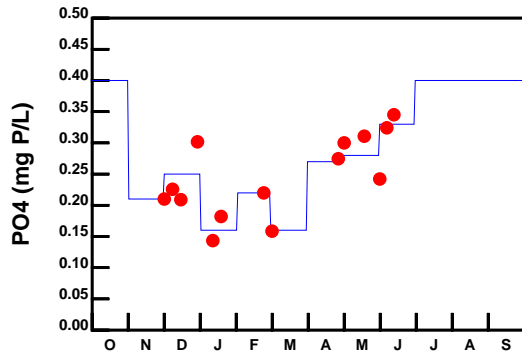


**SWEM - TUCKAHOE AND GREAT EGG RIVERS**

**Boundary Condition - Water Year 0102**



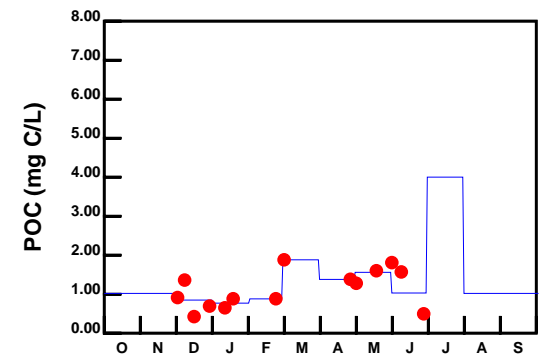
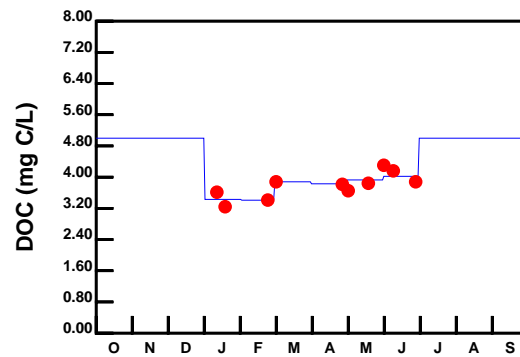
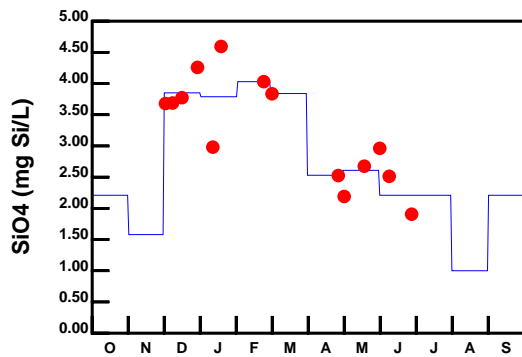
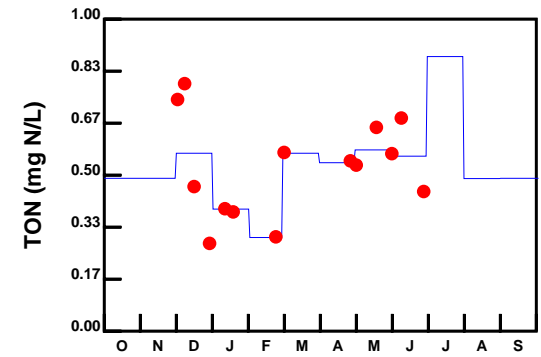
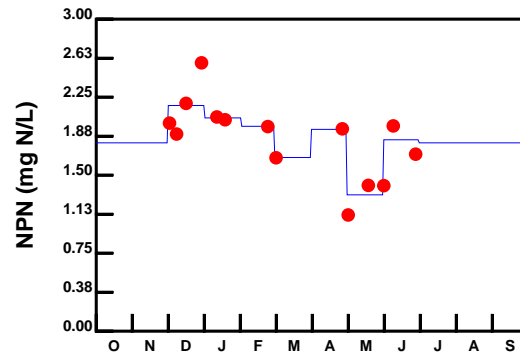
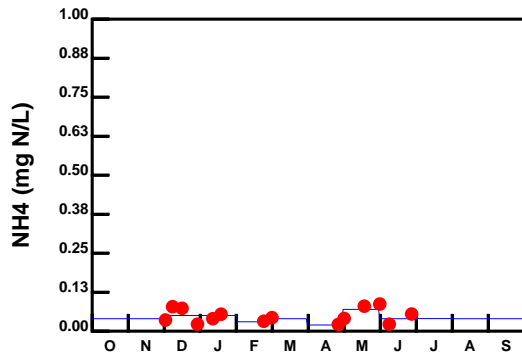
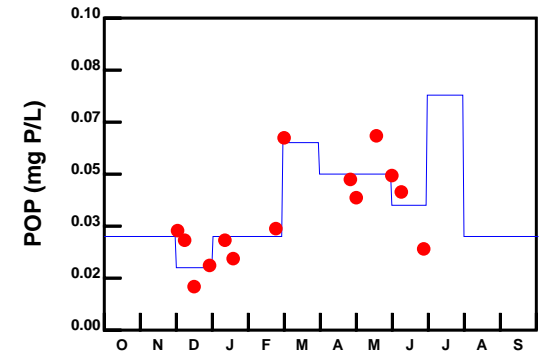
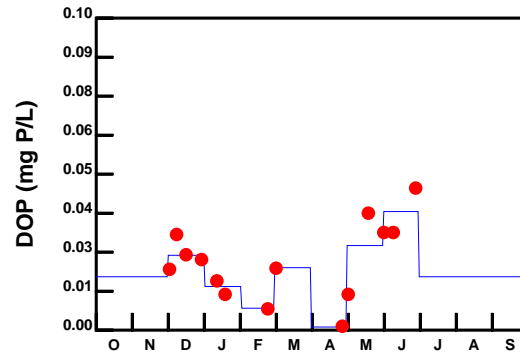
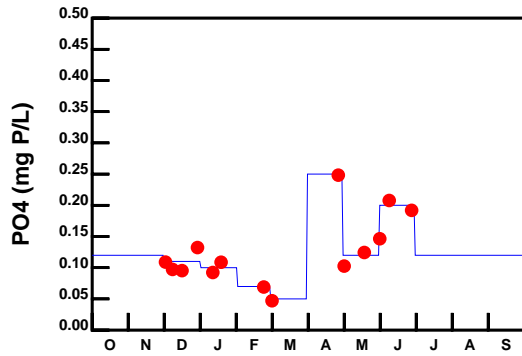
**SWEM - HACKENSACK RIVER**  
**Boundary Condition - Water Year 0102**



**SWEM - PASSAIC RIVER**

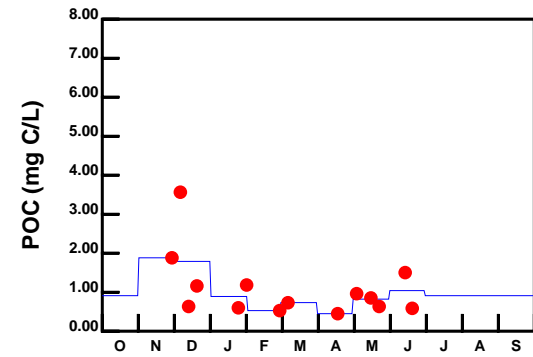
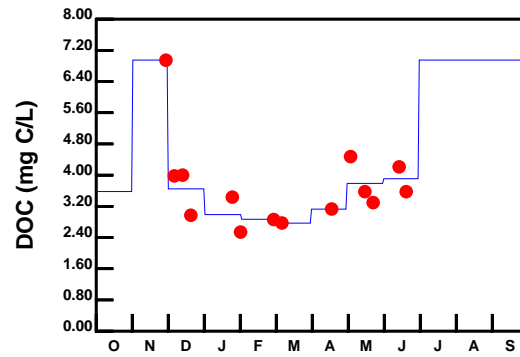
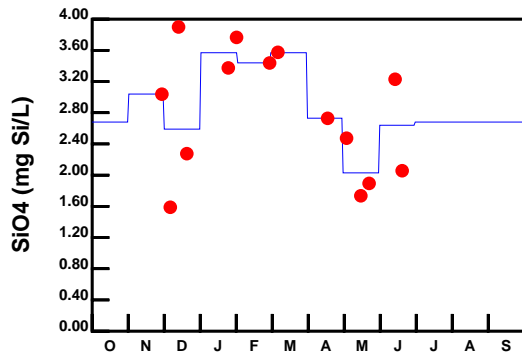
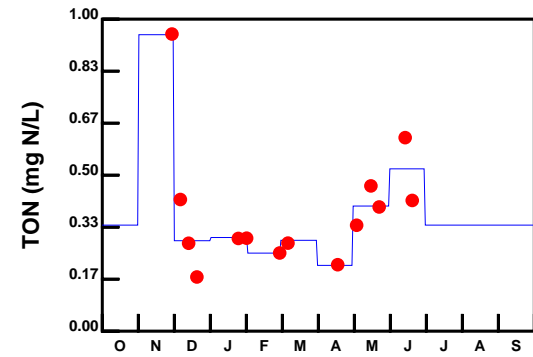
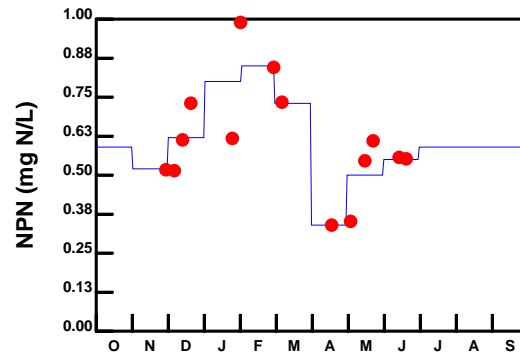
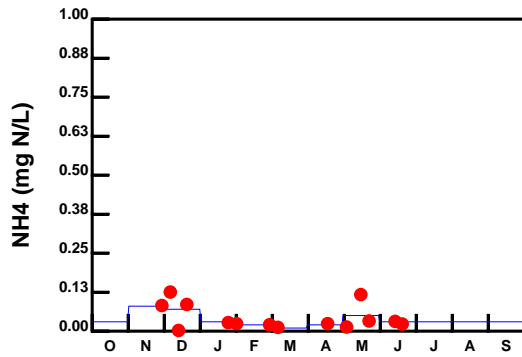
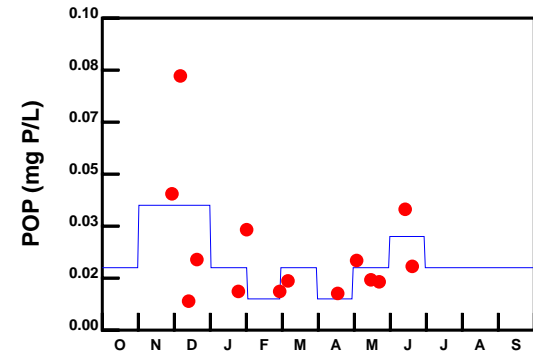
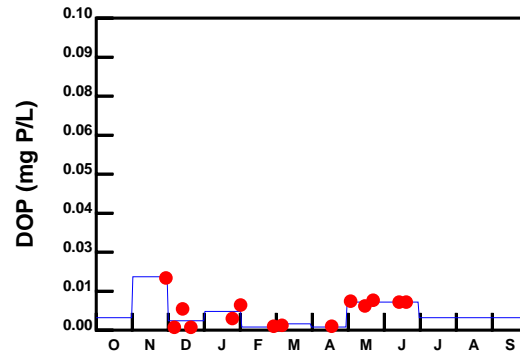
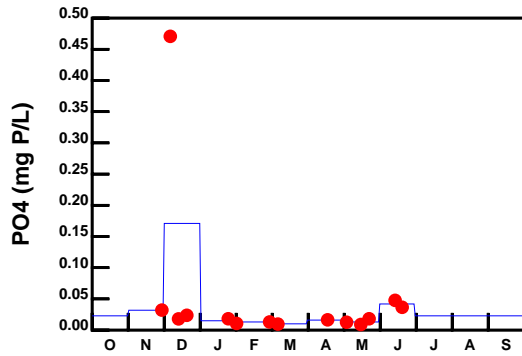
**Boundary Condition - Water Year 0102**



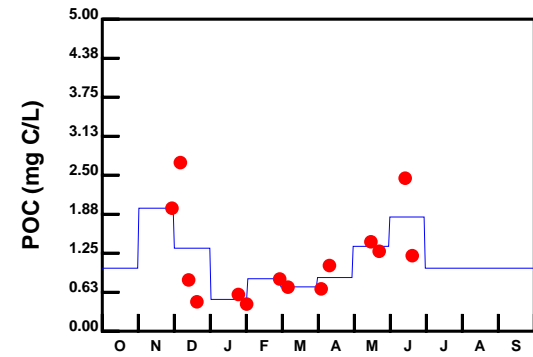
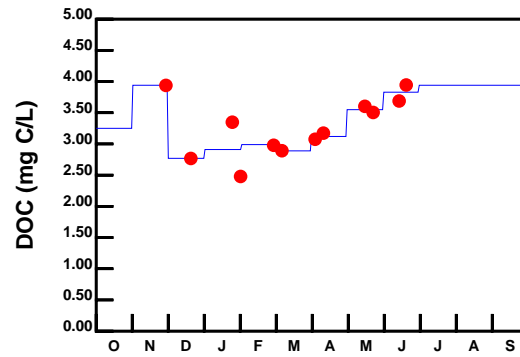
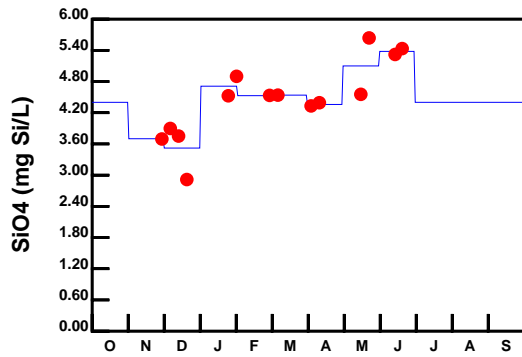
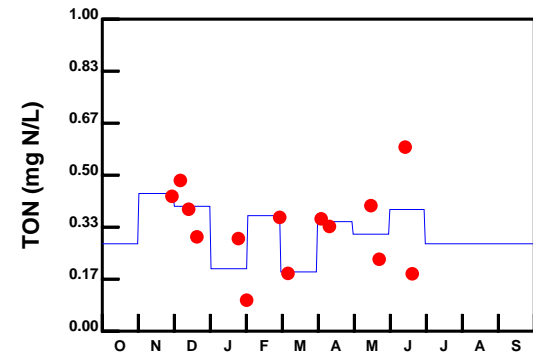
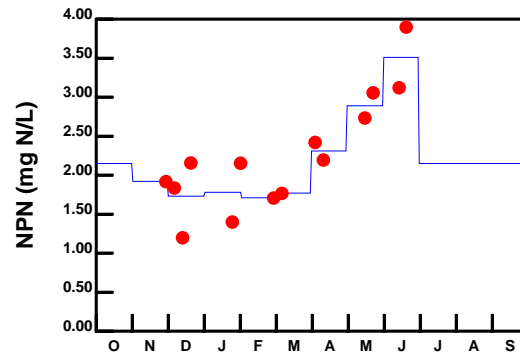
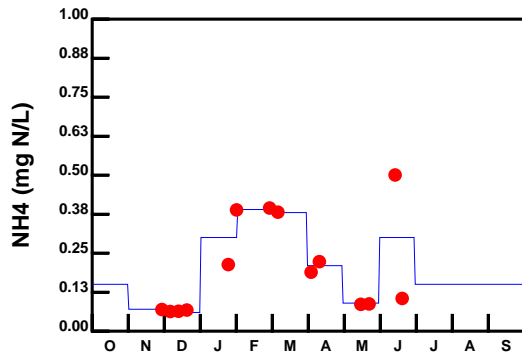
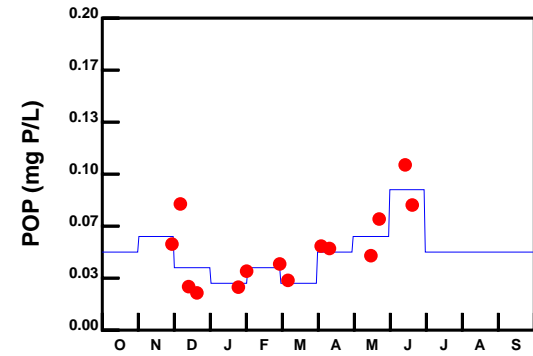
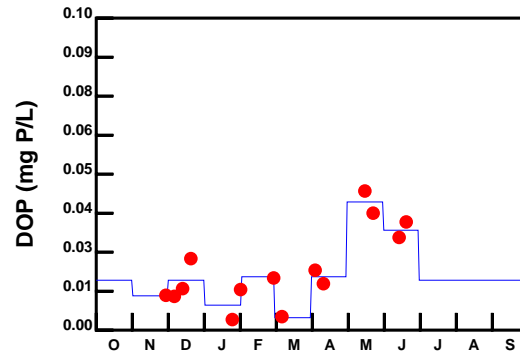
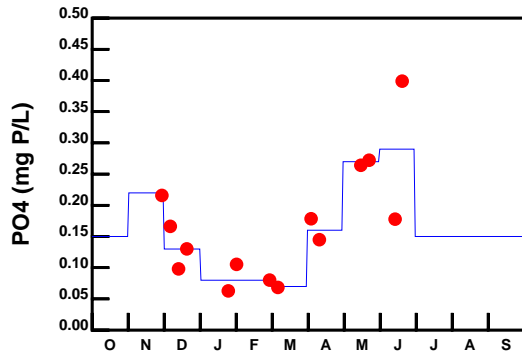


**SWEM - RARITAN RIVER**

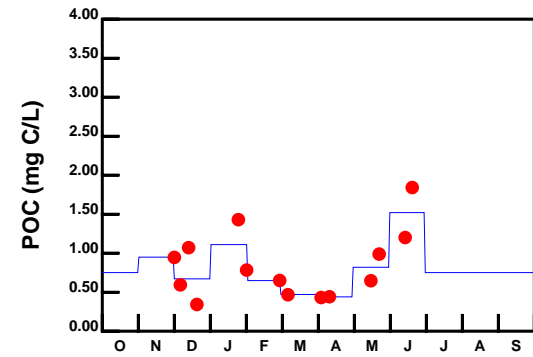
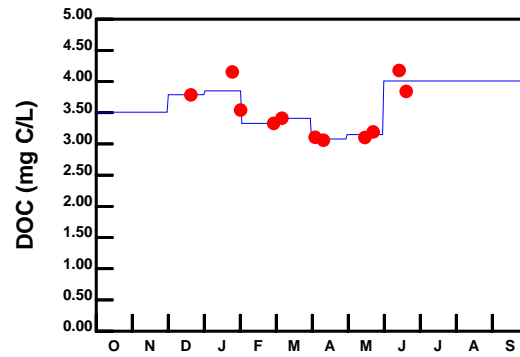
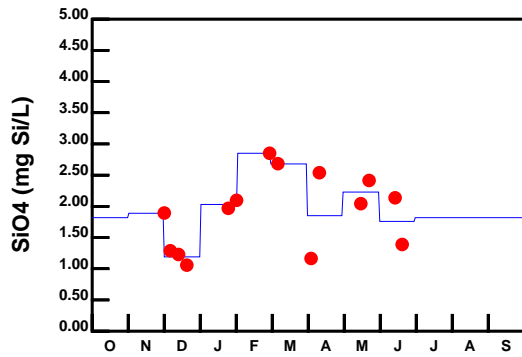
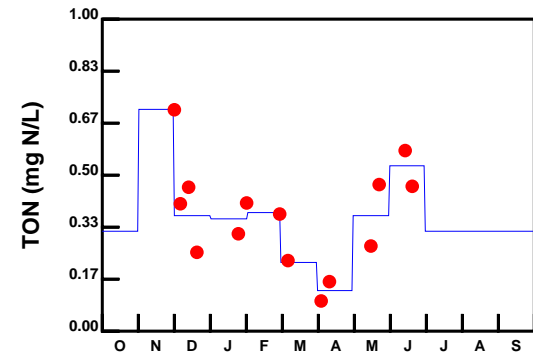
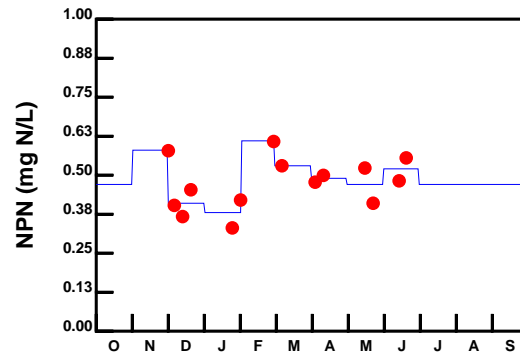
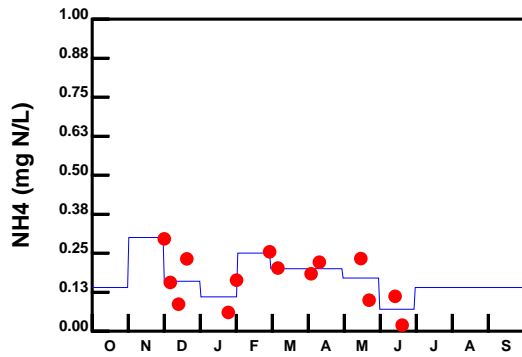
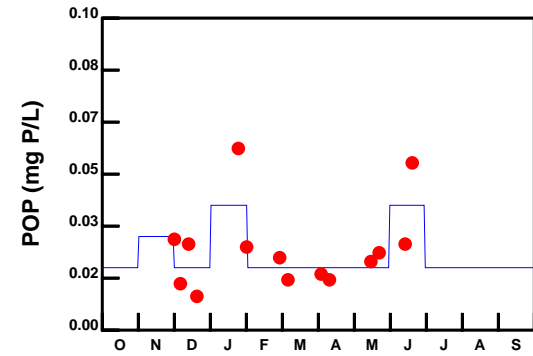
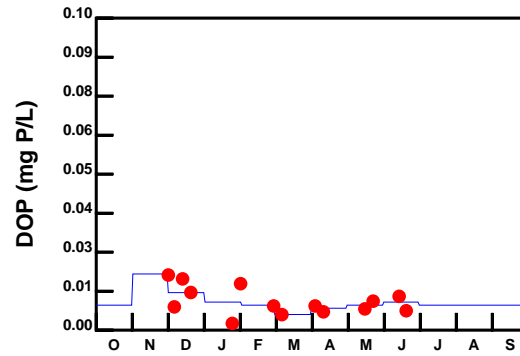
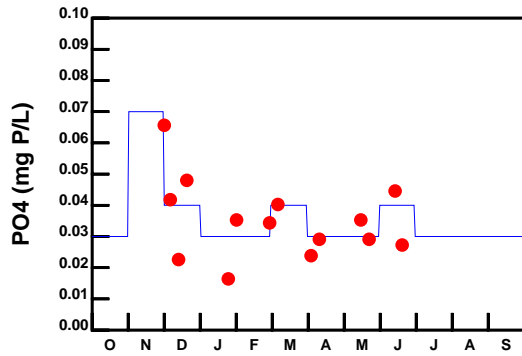
**Boundary Condition - Water Year 0102**



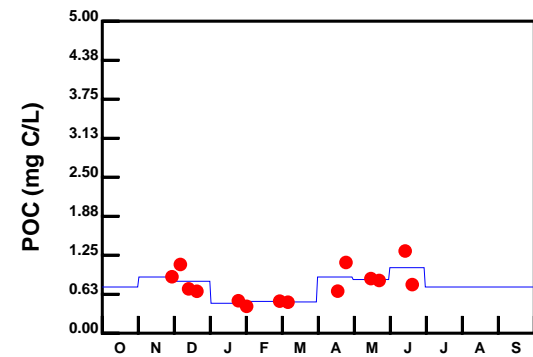
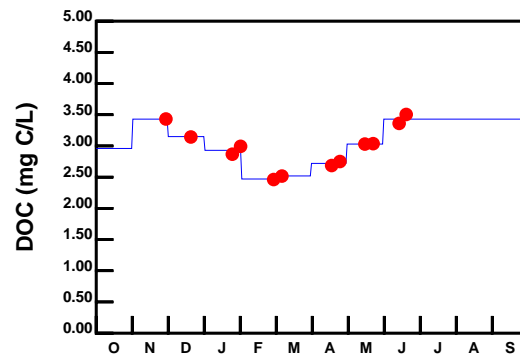
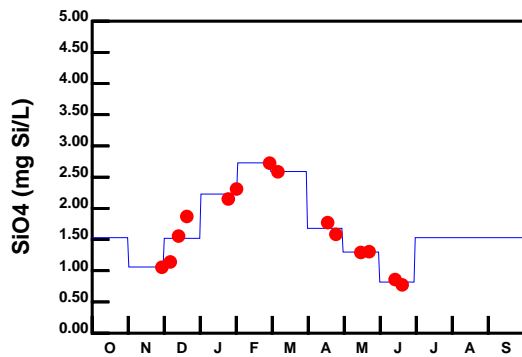
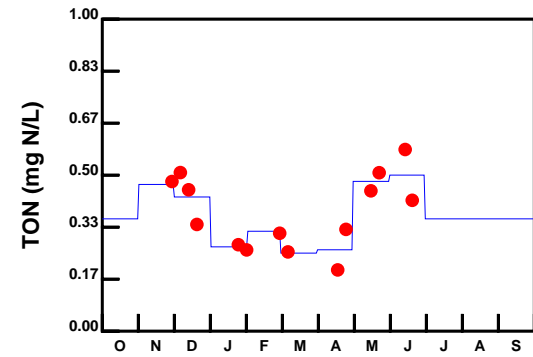
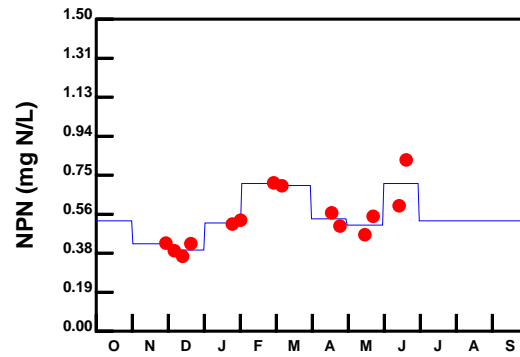
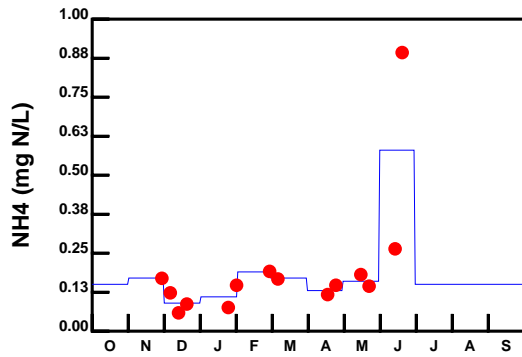
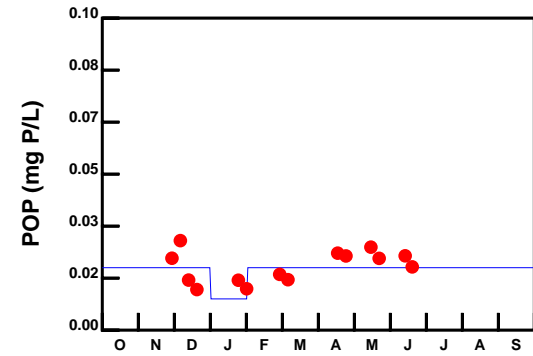
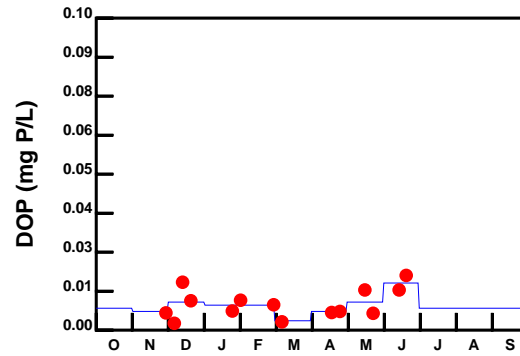
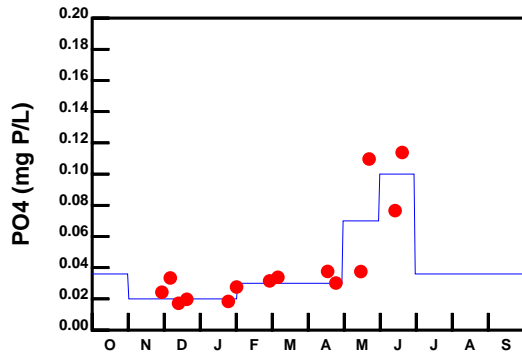
**SWEM - NORWALK RIVER**  
**Boundary Condition - Water Year 0102**



**SWEM - QUINNIPIAC RIVER**  
**Boundary Condition - Water Year 0102**

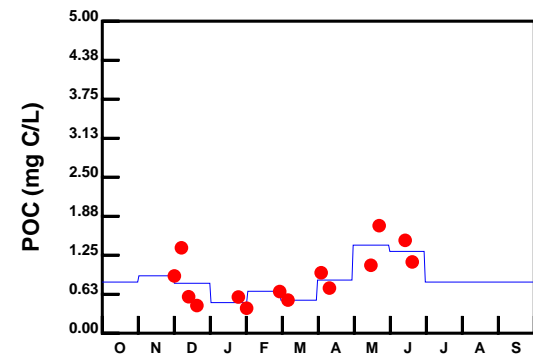
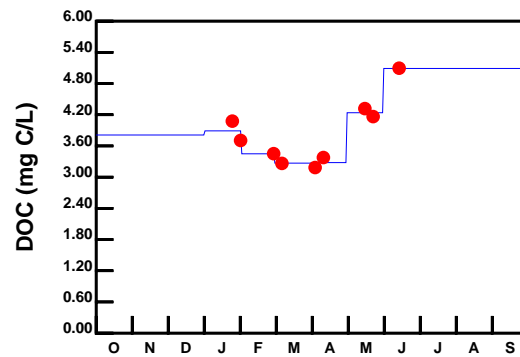
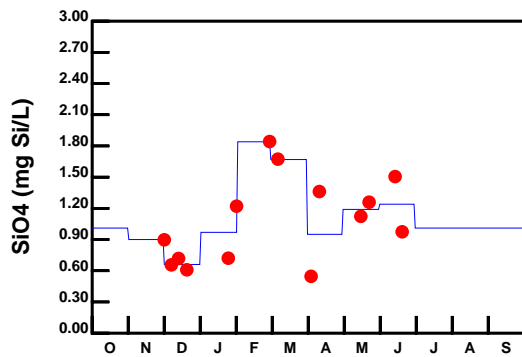
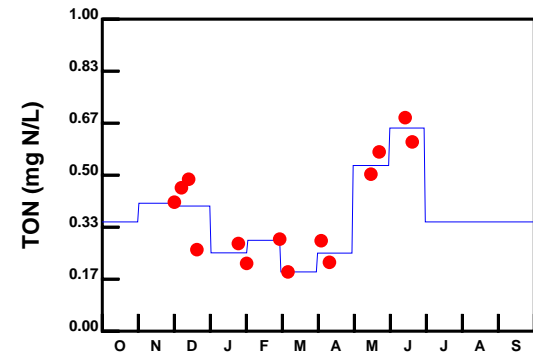
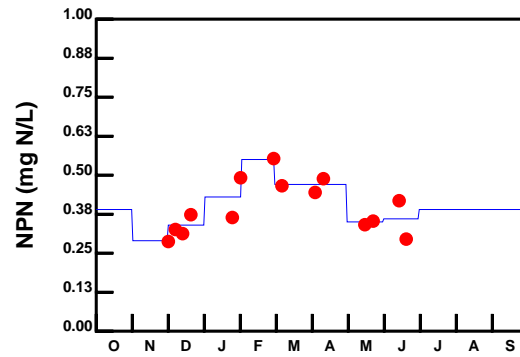
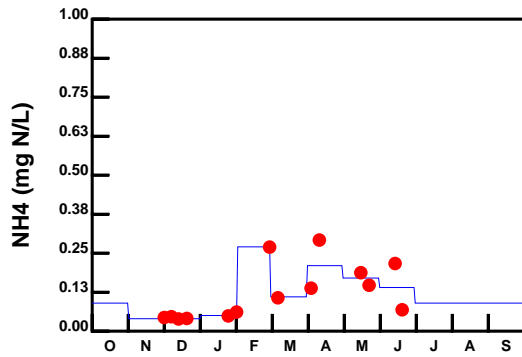
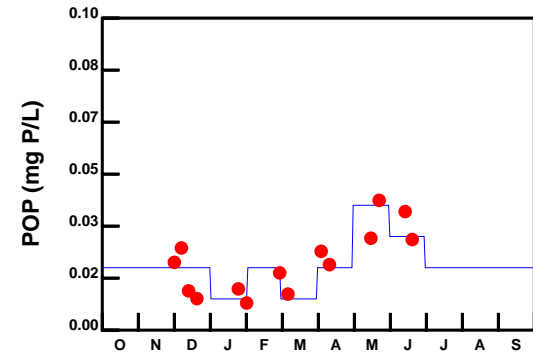
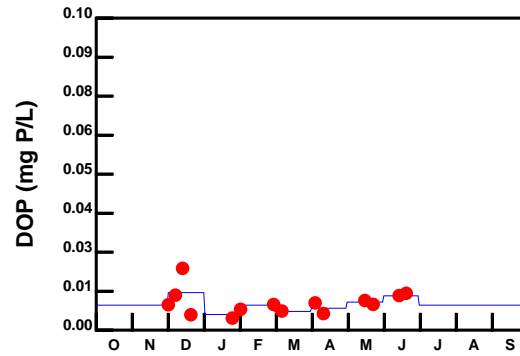
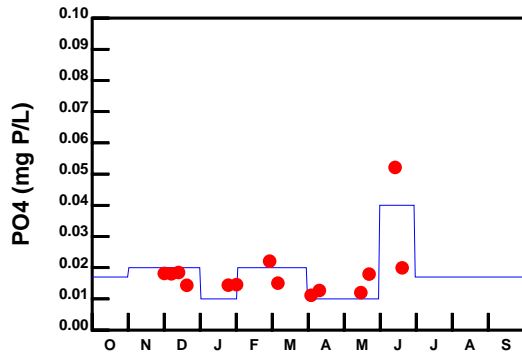


**SWEM - CONNECTICUT RIVER**  
**Boundary Condition - Water Year 0102**



**SWEM - HOUSATONIC AND NAUGATUCK RIVERS**

**Boundary Condition - Water Year 0102**



**SWEM - THAMES RIVER**

**Boundary Condition - Water Year 0102**

## **APPENDIX 3**

### **NUTRIENT STP LOADINGS - FLOWS AND CONCENTRATIONS**

Plant	NPDES	Month	Flow (MGD)								Concentration (mg/L)								
			8889	9495	9899	9900	0001	0102	POC	DOC	PON	DON	NH3T	NO23	POP	DOP	PO4T	SIT	DO
			8889	9495	9899	9900	0001	0102	POC	DOC	PON	DON	NH3T	NO23	POP	DOP	PO4T	SIT	DO
26TH. WA	NY0026212	Oct	54.70	64.83	57.23	56.83	51.36	50.53	8.220	13.040	10.380	1.913	11.700	2.150	0.761	0.662	1.230	3.040	6.070
26TH. WA	NY0026212	Nov	60.47	69.24	56.55	56.08	55.28	50.98	10.730	15.770	6.980	1.282	9.060	3.940	0.352	0.304	1.840	3.330	6.660
26TH. WA	NY0026212	Dec	52.67	69.16	56.16	57.68	54.64	54.27	10.250	15.310	8.170	1.500	11.600	2.400	0.320	0.278	1.070	3.290	6.570
26TH. WA	NY0026212	Jan	54.58	67.41	62.57	55.53	56.06	54.05	9.830	14.880	9.380	1.717	14.800	1.610	0.361	0.314	0.604	3.260	6.530
26TH. WA	NY0026212	Feb	56.12	68.78	59.61	55.23	54.47	50.86	8.480	13.730	10.520	1.930	14.400	1.410	0.928	0.806	1.080	3.260	6.530
26TH. WA	NY0026212	Mar	57.18	65.13	61.01	57.13	59.62	56.10	7.480	12.610	9.390	1.727	12.900	0.965	0.124	0.107	0.919	3.120	6.260
26TH. WA	NY0026212	Apr	57.85	67.58	58.75	59.08	53.51	56.54	8.410	13.610	9.100	1.672	17.800	0.770	0.156	0.136	1.460	3.240	6.470
26TH. WA	NY0026212	May	63.40	68.88	59.21	58.06	54.24	55.23	9.710	14.690	8.340	1.530	18.100	0.711	0.433	0.376	1.240	3.220	6.440
26TH. WA	NY0026212	Jun	60.81	67.49	55.82	56.11	54.67	53.99	8.380	13.570	7.490	1.374	18.100	1.430	0.133	0.115	1.180	3.230	6.450
26TH. WA	NY0026212	Jul	57.52	67.25	56.09	58.35	54.12	51.01	7.310	12.890	6.560	1.204	13.800	1.760	0.239	0.207	1.300	3.350	6.690
26TH. WA	NY0026212	Aug	55.47	63.55	58.60	57.09	53.79	55.92	7.600	12.530	4.330	0.795	11.800	2.670	0.366	0.317	2.260	3.040	6.090
26TH. WA	NY0026212	Sep	57.12	67.71	62.47	57.96	56.27	57.62	8.270	13.670	3.410	0.626	11.800	2.470	0.410	0.357	1.630	3.310	6.630
BOWERY B	NY0026158	Oct	147.75	125.68	109.83	114.90	110.93	100.04	2.318	6.440	4.030	0.000	11.700	1.990	0.173	0.144	1.880	2.220	6.680
BOWERY B	NY0026158	Nov	157.35	131.92	108.94	111.90	116.86	100.90	2.655	7.360	3.244	0.000	12.900	1.120	0.199	0.167	1.430	1.300	6.540
BOWERY B	NY0026158	Dec	145.59	132.00	108.08	115.30	115.11	106.53	2.611	7.240	3.315	0.000	14.000	1.590	0.125	0.105	1.720	1.780	6.430
BOWERY B	NY0026158	Jan	148.25	129.45	118.83	110.85	118.06	103.92	3.630	10.080	4.700	0.000	16.300	0.819	0.150	0.127	1.340	2.130	6.250
BOWERY B	NY0026158	Feb	151.48	133.63	116.96	109.95	114.30	101.24	5.330	14.800	5.300	0.000	16.400	0.835	0.322	0.270	1.090	2.190	6.540
BOWERY B	NY0026158	Mar	151.81	124.74	115.43	113.19	123.73	109.25	4.700	13.050	6.030	0.000	16.300	1.130	0.203	0.170	1.710	2.280	6.220
BOWERY B	NY0026158	Apr	152.31	128.62	109.84	115.52	113.27	108.91	4.050	11.210	4.900	0.000	17.500	0.824	0.334	0.280	0.974	3.050	6.370
BOWERY B	NY0026158	May	160.67	129.71	112.96	115.75	114.97	107.15	2.600	7.200	2.485	0.000	18.700	0.815	0.267	0.223	0.911	2.550	6.390
BOWERY B	NY0026158	Jun	154.70	126.47	105.66	116.14	118.02	107.08	3.271	9.070	4.060	0.000	16.700	0.481	0.299	0.251	2.090	1.700	6.270
BOWERY B	NY0026158	Jul	152.16	129.54	105.70	120.70	113.35	100.81	2.582	7.160	4.500	0.000	14.400	1.870	0.273	0.230	1.400	2.120	6.370
BOWERY B	NY0026158	Aug	151.93	122.49	111.70	114.16	114.46	104.01	1.768	4.910	2.414	0.000	12.300	2.440	0.135	0.114	2.110	2.030	6.100
BOWERY B	NY0026158	Sep	151.78	129.67	120.27	115.78	119.97	111.58	1.856	5.160	3.257	0.000	14.600	1.550	0.114	0.096	2.140	2.140	6.410
CONEY IS	NY0026182	Oct	99.06	100.22	97.37	95.56	92.87	88.92	6.610	11.690	3.540	0.651	7.410	1.390	0.096	0.083	0.514	3.030	6.060
CONEY IS	NY0026182	Nov	100.61	103.58	96.81	94.80	96.37	89.22	7.370	12.440	3.470	0.637	6.470	1.870	0.176	0.153	1.100	3.090	6.160
CONEY IS	NY0026182	Dec	98.38	103.63	96.79	96.38	95.33	91.98	8.340	13.290	3.800	0.697	9.800	0.855	0.225	0.196	1.070	3.090	6.150
CONEY IS	NY0026182	Jan	99.04	102.34	101.60	94.29	96.84	91.65	9.500	14.370	5.070	0.933	12.600	0.381	0.263	0.229	1.170	3.150	6.320
CONEY IS	NY0026182	Feb	100.27	103.74	99.48	94.08	95.28	89.27	7.950	12.870	3.255	0.599	11.200	0.839	0.306	0.266	0.953	3.060	6.100
CONEY IS	NY0026182	Mar	100.28	100.19	100.13	95.81	100.38	93.50	8.890	14.510	4.400	0.809	12.200	0.966	0.396	0.343	0.989	3.060	6.140
CONEY IS	NY0026182	Apr	100.41	102.36	98.54	97.57	94.34	93.45	8.700	13.560	3.770	0.693	13.100	1.460	0.166	0.144	1.220	3.100	6.200
CONEY IS	NY0026182	May	101.94	103.27	98.85	96.60	95.15	92.77	7.710	12.760	1.959	0.360	15.100	0.229	0.166	0.144	0.737	3.090	6.160
CONEY IS	NY0026182	Jun	100.99	102.27	96.31	95.01	95.31	91.44	7.000	12.060	2.958	0.544	13.300	0.333	0.161	0.140	1.220	3.060	6.130
CONEY IS	NY0026182	Jul	99.45	101.85	96.37	97.28	94.52	89.14	6.800	11.990	3.510	0.644	10.900	1.440	0.350	0.304	1.010	3.110	6.240
CONEY IS	NY0026182	Aug	99.65	99.32	98.08	95.63	94.38	92.88	5.610	10.770	2.397	0.440	10.900	0.727	0.092	0.080	1.110	3.000	6.020
CONEY IS	NY0026182	Sep	99.56	102.43	101.69	96.08	96.86	95.18	7.450	12.570	3.580	0.659	13.600	0.132	0.167	0.145	0.249	3.120	6.230
HUNT'S P	NY0026191	Oct	145.00	148.36	116.55	116.99	107.87	96.53	3.172	7.670	6.970	0.686	13.600	4.280	0.039	0.045	0.932	2.240	6.210
HUNT'S P	NY0026191	Nov	150.34	154.74	115.60	114.75	111.76	97.51	3.830	9.230	9.010	0.887	16.800	5.330	0.106	0.124	1.890	2.220	6.550
HUNT'S P	NY0026191	Dec	143.94	154.70	115.09	117.37	110.95	104.08	4.710	11.410	8.340	0.822	13.600	5.500	0.095	0.112	1.730	2.410	6.490
HUNT'S P	NY0026191	Jan	145.44	152.02	124.54	113.07	113.44	101.05	4.140	10.450	9.370	0.923	12.600	4.190	0.206	0.241	1.450	2.000	6.340
HUNT'S P	NY0026191	Feb	148.92	156.89	122.76	112.97	110.30	97.91	5.100	12.350	8.630	0.846	11.000	3.810	0.196	0.230	2.030	2.300	6.380
HUNT'S P	NY0026191	Mar	147.75	147.36	121.62	115.29	116.71	107.69	4.470	10.810	7.310	0.718	11.100	6.370	0.140	0.164	1.860	2.670	6.150
HUNT'S P	NY0026191	Apr	148.71	151.10	117.08	117.91	109.72	107.29	4.150	10.050	6.900	0.678	12.800	5.420	0.321	0.377	1.400	1.770	6.360
HUNT'S P	NY0026191	May	151.91	152.37	119.06	117.32	110.92	105.35	4.510	10.920	7.810	0.768	16.400	3.700	0.233	0.274	1.830	2.680	6.190
HUNT'S P	NY0026191	Jun	149.41	149.14	112.87	117.35	112.38	105.84	4.040	9.800	6.020	0.592	16.600	5.200	0.101	0.119	1.590	2.130	6.180
HUNT'S P	NY0026191	Jul	147.40	152.52	112.73	121.41	109.33	97.70	3.770	9.130	5.310	0.521	11.000	3.940	0.213	0.249	1.050	2.330	6.490
HUNT'S P	NY0026191	Aug	147.34	145.07	117.84	116.16	109.98	101.88	2.615	6.330	5.470	0.539	10.900	4.440	0.086	0.102	1.060	2.160	6.010
HUNT'S P	NY0026191	Sep	147.22	152.56	125.26	117.98	113.68	111.63	3.299	7.990	7.670	0.755	10.400	4.900	0.044	0.051	1.050	2.330	6.470
JAMAICA	NY0026115	Oct	100.57	82.33	79.34	81.43	82.19	70.94	7.580	12.520	7.150	1.316	14.900	0.800	0.076	0.066	1.720	3.040	6.080
JAMAICA	NY0026115	Nov	104.05	85.03	78.95	80.81	85.30	71.30	9.380	14.170	6.850	1.261	15.700	0.576	0.586	0.510	1.540	3.110	6.210
JAMAICA	NY0026115	Dec	99.66	85.22	78.87	82.19	84.38	73.61	9.920	14.580	6.860	1.263	15.900	1.360	0.470	0.409	1.730	3.080	6.150
JAMAICA	NY0026115	Jan	100.66	84.29	83.51	80.33	85.64	73.50	9.550	14.270	6.860	1.256	14.800	0.719	0.314	0.273	0.987	3.070	6.140
JAMAICA	NY0026115	Feb	102.43	85.39	81.41														



		Flow (MGD)										Concentration (mg/L)							
Plant	NPDES	Month	8889	9495	9899	9900	0001	0102	POC	DOC	PON	DON	NH3T	NO23	POP	DOP	PO4T	SIT	DO
NORTH RI	NY0026247	Jul	176.32	159.29	140.06	143.07	122.10	123.47	5.910	11.750	6.750	2.200	11.500	0.144	0.244	0.257	2.290	1.720	6.350
NORTH RI	NY0026247	Aug	179.31	152.37	144.28	138.34	123.67	130.03	5.180	10.310	6.550	2.141	10.400	0.485	0.167	0.176	2.170	1.640	6.050
NORTH RI	NY0026247	Sep	177.62	158.72	152.16	140.57	129.41	133.31	6.760	13.460	5.680	1.856	12.200	0.734	0.077	0.081	1.410	1.710	6.310
OAKWOOD	NY0026174	Oct	34.60	29.22	29.48	29.89	29.06	29.04	2.772	6.590	1.642	0.010	5.650	5.870	0.083	0.104	2.630	3.880	5.990
OAKWOOD	NY0026174	Nov	35.66	30.28	29.17	29.87	29.86	29.19	3.230	7.680	1.629	0.010	5.550	6.470	0.036	0.046	3.060	2.780	6.000
OAKWOOD	NY0026174	Dec	34.19	29.93	29.21	29.84	29.90	29.62	2.772	6.590	2.543	0.015	6.740	5.820	0.203	0.254	2.740	3.380	5.990
OAKWOOD	NY0026174	Jan	34.48	29.83	30.81	29.71	29.76	29.54	3.231	7.680	1.787	0.011	6.690	4.340	0.104	0.131	2.060	4.680	5.990
OAKWOOD	NY0026174	Feb	34.82	30.11	30.02	29.41	29.48	29.09	4.630	10.970	2.743	0.016	9.240	3.910	0.160	0.202	0.908	3.890	6.000
OAKWOOD	NY0026174	Mar	35.11	29.30	30.08	29.94	31.05	30.21	4.640	10.940	2.901	0.017	13.100	1.750	0.451	0.566	1.550	4.280	6.000
OAKWOOD	NY0026174	Apr	34.94	29.64	29.54	30.06	29.38	30.22	5.180	12.240	10.860	0.066	13.100	2.890	0.267	0.337	2.270	3.330	5.160
OAKWOOD	NY0026174	May	36.23	29.82	30.05	30.53	29.84	30.25	4.620	10.950	1.410	0.008	14.600	3.190	0.111	0.140	2.100	4.670	5.990
OAKWOOD	NY0026174	Jun	35.11	29.36	29.00	29.97	30.12	30.41	4.170	9.870	5.730	0.034	22.200	0.950	0.104	0.132	3.950	3.580	6.000
OAKWOOD	NY0026174	Jul	34.81	29.95	29.12	30.72	29.54	28.90	3.230	7.690	7.720	0.047	16.200	2.330	0.540	0.679	2.180	3.890	6.000
OAKWOOD	NY0026174	Aug	35.26	28.98	30.34	30.24	29.56	29.80	3.230	7.690	5.110	0.031	16.800	1.260	0.333	0.420	2.880	3.890	6.000
OAKWOOD	NY0026174	Sep	35.26	30.15	31.11	30.04	30.28	30.26	2.772	6.590	9.830	0.059	16.100	5.690	1.245	1.570	3.350	3.890	6.000
OWLS HEA	NY0026166	Oct	112.70	122.25	110.33	108.24	102.50	97.18	8.420	15.050	2.426	0.445	13.600	0.128	0.210	0.183	1.150	1.420	6.160
OWLS HEA	NY0026166	Nov	115.36	127.13	109.20	106.54	107.39	98.09	17.540	31.380	3.920	0.722	16.200	0.118	0.259	0.225	2.200	1.300	6.400
OWLS HEA	NY0026166	Dec	112.09	126.19	109.16	108.34	107.43	101.69	9.400	16.820	9.860	1.812	14.500	0.128	0.303	0.263	1.430	0.649	6.400
OWLS HEA	NY0026166	Jan	113.20	124.81	118.15	107.51	109.42	100.79	7.940	14.240	7.940	1.457	12.500	0.271	0.118	0.103	1.030	1.480	6.250
OWLS HEA	NY0026166	Feb	115.42	127.07	114.49	106.42	106.65	98.04	8.700	15.570	3.670	0.672	13.100	0.172	0.287	0.250	0.994	1.470	6.360
OWLS HEA	NY0026166	Mar	114.40	121.54	114.54	106.75	113.79	103.84	7.150	12.810	5.150	0.948	13.200	0.183	0.270	0.234	1.050	1.730	6.100
OWLS HEA	NY0026166	Apr	115.61	123.78	111.26	108.44	104.59	103.21	6.710	12.020	3.256	0.599	12.300	0.245	0.267	0.233	1.070	1.350	6.270
OWLS HEA	NY0026166	May	117.37	125.19	112.99	108.28	105.69	102.50	7.280	13.010	2.140	0.393	13.000	0.364	0.220	0.191	1.190	1.490	6.180
OWLS HEA	NY0026166	Jun	115.12	122.44	106.66	110.22	109.46	102.89	6.780	12.100	4.610	0.845	10.300	0.658	0.334	0.291	1.170	2.150	6.310
OWLS HEA	NY0026166	Jul	113.66	124.34	107.58	112.12	104.73	97.35	6.860	12.320	6.160	1.135	13.500	0.472	0.521	0.453	1.810	1.480	6.380
OWLS HEA	NY0026166	Aug	114.28	119.82	110.95	108.69	106.10	101.66	4.690	8.400	1.730	0.318	12.900	0.220	0.234	0.203	1.870	1.390	6.000
OWLS HEA	NY0026166	Sep	113.82	125.31	115.98	108.99	109.86	106.11	4.880	8.750	2.026	0.371	13.200	0.136	0.142	0.124	1.580	1.450	6.240
NYCDEP -	NY0026107	Oct	39.42	35.41	33.88	31.92	29.13	29.09	1.384	4.110	1.140	1.195	0.260	6.220	0.048	0.109	1.980	1.670	6.220
NYCDEP -	NY0026107	Nov	42.23	37.63	33.30	31.78	30.83	29.38	1.483	4.390	1.075	1.123	0.467	6.870	0.060	0.135	2.040	2.130	6.660
NYCDEP -	NY0026107	Dec	38.33	36.97	33.38	31.78	30.82	30.38	2.154	6.400	0.798	0.835	0.517	7.830	0.102	0.230	2.130	1.910	6.450
NYCDEP -	NY0026107	Jan	39.00	36.63	36.51	31.42	30.67	30.17	2.900	8.630	1.026	1.075	0.403	8.000	0.158	0.357	1.710	1.810	6.520
NYCDEP -	NY0026107	Feb	39.79	37.34	35.17	30.86	30.06	29.21	2.845	8.480	0.972	1.017	0.471	9.060	0.088	0.200	1.700	1.720	6.410
NYCDEP -	NY0026107	Mar	40.79	35.56	35.21	31.81	33.31	31.61	2.042	6.070	0.534	0.560	0.440	6.770	0.133	0.300	1.530	2.280	6.140
NYCDEP -	NY0026107	Apr	40.14	36.30	34.12	32.16	29.81	31.55	3.430	10.190	1.277	1.338	0.473	8.880	0.077	0.174	1.880	0.988	6.170
NYCDEP -	NY0026107	May	43.45	36.71	34.94	33.02	30.77	31.61	2.799	8.330	1.873	1.970	0.883	7.160	0.086	0.194	2.020	1.650	6.310
NYCDEP -	NY0026107	Jun	40.81	35.71	32.92	32.05	31.22	31.82	2.185	6.490	1.031	1.079	0.622	8.040	0.051	0.115	2.460	1.290	6.550
NYCDEP -	NY0026107	Jul	40.07	36.89	33.10	33.60	30.14	28.78	2.159	6.440	0.925	0.969	0.811	5.380	0.180	0.404	1.940	1.740	6.490
NYCDEP -	NY0026107	Aug	41.33	34.91	35.43	32.46	30.18	30.51	2.670	7.930	1.602	1.685	0.220	7.020	0.197	0.443	2.370	1.610	6.010
NYCDEP -	NY0026107	Sep	41.41	37.38	36.87	32.08	31.66	31.74	2.116	6.290	3.164	3.319	0.381	7.410	0.003	0.006	2.240	1.710	6.360
RED HOOK	NY0027073	Oct	42.10	38.30	33.85	33.00	29.58	28.85	3.620	7.030	4.360	0.523	12.400	0.336	0.104	0.109	1.600	2.450	6.170
RED HOOK	NY0027073	Nov	45.21	40.48	33.33	32.28	31.83	29.30	6.110	11.820	3.289	0.393	11.000	0.407	0.197	0.207	1.110	1.150	6.510
RED HOOK	NY0027073	Dec	41.07	39.93	33.31	33.12	31.78	30.89	8.310	16.090	3.830	0.458	13.700	0.456	0.113	0.118	1.330	2.880	6.440
RED HOOK	NY0027073	Jan	42.11	39.50	37.33	32.86	32.59	30.52	7.510	14.560	5.270	0.630	13.100	0.348	0.182	0.190	0.950	2.290	6.400
RED HOOK	NY0027073	Feb	43.27	40.26	35.71	32.26	31.40	29.21	6.920	13.380	4.610	0.551	13.200	0.540	0.119	0.126	1.090	2.600	6.540
RED HOOK	NY0027073	Mar	43.69	37.98	35.78	32.52	34.84	32.01	2.175	4.230	4.160	0.498	13.500	0.247	0.106	0.112	1.090	3.160	6.200
RED HOOK	NY0027073	Apr	44.27	38.98	34.16	33.29	30.51	31.62	3.700	7.170	4.470	0.534	11.300	2.260	0.139	0.146	1.230	2.510	6.310
RED HOOK	NY0027073	May	47.12	39.58	35.14	33.23	31.08	31.36	6.010	11.670	6.450	0.774	17.900	0.268	0.243	0.256	1.880	3.080	6.410
RED HOOK	NY0027073	Jun	44.60	38.45	32.16	33.98	33.04	31.70	3.660	7.070	6.490	0.779	11.900	0.362	0.244	0.255	1.620	2.520	6.230
RED HOOK	NY0027073	Jul	43.21	39.39	32.55	34.92	30.56	28.99	6.020	11.640	4.170	0.499	12.900	0.320	0.284	0.297	1.210	2.540	6.400
RED HOOK	NY0027073	Aug	43.78	37.15	34.08	33.34	31.32	31.04	7.100	13.760	4.910	0.588	10.100	0.153	0.209	0.220	1.150	2.400	6.060
RED HOOK	NY0027073	Sep	43.70	39.65	36.56	33.68	33.07	32.96	5.240	10.160	3.129	0.376	13.500	0.266	0.081	0.085	0.696	2.520	6.380
ROCKAWAY	NY0026221	Oct	26.45	23.17	19.23	19.28	18.08	18.09	6.500	11.780	4.590	0.841	2.290	4.250	0.548	0.475	1.330	3.120	6.250
ROCKAWAY	NY0026221	Nov	26.86	23.39	19.15	19.27	18.55	18.11	6.230	11.300	4.550	0.837	2.710	3.900	0.187	0.163	1.430	2.990	5.990
ROCKAWAY	NY0026221	Dec	26.18	23.36	19.12	19.29	18.35	18.26	6.860	11.840	3.830	0.706	2.160	4.330	0.621	0.540	1.370	3.000	6.000
ROCKAWAY	NY0026221	Jan	26.29	23.41	19.84	19.23	18.33	18.29	6.830	12.060	5.420	0.997	3.280	4.980	0.143	0.124	1.420	3.120	6.250
ROCKAWAY	NY0026221	Feb	26.40	23.37	19.37	19.18	18.25	18.10	7.020	11.850	5.610	1.030	5.330	3.110	0.243	0.211	1.500	2.940	5.880
ROCKAWAY	NY0026221	Mar	26.53	23.17	19.43	19.49	18.85	18.43	8.090	12.880	5.100	0.933	5.860	2.570	0.316	0.274	1.370	2.990	5.990
ROCKAWAY	NY0026221	Apr	26.50	23.30	19.25	19.50	18.26	18.46	8.090	12.880	5.500	1.011	7.170	2.570	0.873	0.759	0.000	2.990	5.990
ROCKAWAY	NY0026221	May	27.31	23.42	19.43	19.48	18.31	18.44	9.130	14.060	5.100	0.939	9.030	2.010	0.199	0.173	1.390	3.140	6.290
ROCKAWAY	NY002622																		



Plant	NPDES	Month	Flow (MGD)								Concentration (mg/L)									
			8889	9495	9899	9900	0001	0102	POC	DOC	PON	DON	NH3T	NO23	POP	DOP	PO4T	SIT	DO	
RAHWAY V	NJ0024643	Jan	27.16	27.16	27.16	27.16	27.16	27.16	27.16	8.420	11.520	1.153	0.347	8.540	3.110	0.226	0.276	1.540	6.050	5.990
RAHWAY V	NJ0024643	Feb	26.70	26.70	26.70	26.70	26.70	26.70	26.70	12.690	17.350	1.731	0.522	12.900	4.700	0.339	0.415	2.310	6.380	6.000
RAHWAY V	NJ0024643	Mar	28.76	28.76	28.76	28.69	28.76	28.76	28.76	10.550	14.410	1.442	0.434	10.700	3.900	0.283	0.346	1.920	6.740	5.990
RAHWAY V	NJ0024643	Apr	25.34	25.34	25.34	25.45	25.34	25.34	25.34	12.220	16.730	1.672	0.503	12.400	4.520	0.328	0.401	2.240	6.300	5.990
RAHWAY V	NJ0024643	May	24.42	24.42	24.42	24.45	24.42	24.42	24.42	12.070	16.490	1.654	0.497	12.200	4.470	0.324	0.395	2.200	7.360	6.000
RAHWAY V	NJ0024643	Jun	24.42	24.42	24.42	24.42	24.42	24.42	24.42	10.710	14.640	1.469	0.440	10.900	3.960	0.287	0.351	1.960	6.610	5.990
RAHWAY V	NJ0024643	Jul	26.02	26.02	26.02	25.97	26.02	26.02	26.02	10.270	14.020	1.404	0.422	10.400	3.800	0.275	0.338	1.880	6.390	5.990
RAHWAY V	NJ0024643	Aug	23.51	23.51	23.51	23.59	23.51	23.51	23.51	13.210	18.040	1.803	0.544	13.400	4.890	0.353	0.433	2.420	6.390	5.990
RAHWAY V	NJ0024643	Sep	23.28	23.28	23.28	23.29	23.28	23.28	23.28	11.390	15.560	1.558	0.467	11.500	4.230	0.304	0.373	2.080	6.390	6.000
BLIND BR	NY0026719	Oct	2.40	2.40	2.40	2.40	2.40	2.40	2.40	5.310	10.500	1.557	0.284	0.160	8.700	0.224	0.250	1.500	2.990	5.990
BLIND BR	NY0026719	Nov	2.51	2.51	2.51	2.51	2.51	2.51	2.51	5.310	10.480	1.044	0.192	0.359	8.310	0.269	0.297	1.800	3.000	6.000
BLIND BR	NY0026719	Dec	3.20	3.20	3.20	3.20	3.20	3.20	3.20	5.300	10.510	3.610	0.662	0.431	7.200	0.056	0.064	0.375	3.000	5.990
BLIND BR	NY0026719	Jan	3.49	3.49	3.49	3.49	3.49	3.49	3.49	6.230	11.290	2.529	0.466	1.200	5.810	0.079	0.089	0.534	3.000	5.990
BLIND BR	NY0026719	Feb	2.99	2.99	2.99	2.99	2.99	2.99	2.99	5.310	10.490	0.167	0.032	4.100	5.200	0.172	0.192	1.150	2.990	5.990
BLIND BR	NY0026719	Mar	3.31	3.31	3.31	3.30	3.31	3.31	3.31	5.300	10.510	0.891	0.163	0.439	5.700	0.007	0.011	0.062	2.990	5.990
BLIND BR	NY0026719	Apr	2.90	2.90	2.90	2.91	2.90	2.90	2.90	7.470	12.380	2.056	0.375	0.570	7.400	0.170	0.186	1.120	3.010	5.990
BLIND BR	NY0026719	May	2.81	2.81	2.81	2.81	2.81	2.81	2.81	5.610	10.780	1.276	0.236	0.389	12.000	0.090	0.098	0.598	3.000	6.000
BLIND BR	NY0026719	Jun	2.40	2.40	2.40	2.41	2.40	2.40	2.40	5.600	10.770	0.929	0.170	1.200	7.680	0.190	0.210	1.270	2.990	5.990
BLIND BR	NY0026719	Jul	2.40	2.40	2.40	2.40	2.40	2.40	2.40	5.600	10.770	1.318	0.240	0.140	7.680	0.215	0.234	1.420	2.990	5.990
BLIND BR	NY0026719	Aug	2.20	2.20	2.20	2.21	2.20	2.20	2.20	5.290	10.500	1.247	0.229	0.218	7.680	0.174	0.191	1.160	3.000	6.000
BLIND BR	NY0026719	Sep	2.20	2.20	2.20	2.20	2.20	2.20	2.20	5.590	10.760	1.687	0.310	12.000	8.090	0.426	0.473	2.860	3.000	6.000
CEDARHUR	NY0022462	Oct	0.81	0.81	0.81	0.81	0.81	0.81	0.81	10.880	15.230	2.541	0.473	19.000	1.000	1.901	1.771	2.890	3.000	5.990
CEDARHUR	NY0022462	Nov	0.74	0.74	0.74	0.74	0.74	0.74	0.74	10.560	15.030	2.530	0.467	19.000	1.000	1.900	1.771	2.900	3.000	5.990
CEDARHUR	NY0022462	Dec	0.77	0.77	0.77	0.77	0.77	0.77	0.77	10.610	15.000	2.527	0.467	19.000	0.997	1.901	1.759	2.900	3.000	5.990
CEDARHUR	NY0022462	Jan	0.74	0.74	0.74	0.74	0.74	0.74	0.74	12.770	16.860	5.060	0.924	16.000	1.010	1.958	1.830	3.000	3.000	6.000
CEDARHUR	NY0022462	Feb	0.75	0.75	0.75	0.75	0.75	0.75	0.75	12.490	16.620	5.070	0.929	16.000	0.994	1.970	1.827	2.990	3.000	6.000
CEDARHUR	NY0022462	Mar	0.79	0.79	0.79	0.79	0.79	0.79	0.79	11.830	16.030	5.060	0.923	16.000	1.000	1.970	1.830	3.000	3.000	6.000
CEDARHUR	NY0022462	Apr	0.77	0.77	0.77	0.77	0.77	0.77	0.77	11.560	15.770	2.542	0.467	18.000	0.995	2.169	2.012	3.300	3.000	6.000
CEDARHUR	NY0022462	May	0.79	0.79	0.79	0.79	0.79	0.79	0.79	12.490	16.580	2.531	0.470	18.000	1.000	2.170	2.014	3.300	3.000	6.000
CEDARHUR	NY0022462	Jun	0.81	0.81	0.81	0.81	0.81	0.81	0.81	12.130	16.320	2.528	0.459	18.000	0.993	2.169	2.014	3.310	3.000	6.000
CEDARHUR	NY0022462	Jul	0.74	0.74	0.74	0.74	0.74	0.74	0.74	12.130	16.290	2.543	0.468	16.000	1.010	0.857	0.792	1.290	3.000	6.000
CEDARHUR	NY0022462	Aug	0.69	0.69	0.69	0.69	0.69	0.69	0.69	11.520	15.810	2.527	0.470	16.000	0.991	0.854	0.783	1.310	3.000	6.000
CEDARHUR	NY0022462	Sep	0.73	0.73	0.73	0.73	0.73	0.73	0.73	10.580	14.990	2.526	0.473	16.000	0.993	0.849	0.800	1.300	2.990	6.000
HAVRSTR	NY0028533	Oct	4.56	4.56	4.56	4.56	4.56	4.56	4.56	7.170	12.100	1.370	0.252	11.000	4.590	0.315	0.273	1.900	2.990	6.000
HAVRSTR	NY0028533	Nov	4.75	4.75	4.75	4.75	4.75	4.75	4.75	8.110	12.890	1.089	0.199	8.700	3.400	0.423	0.366	1.900	3.000	6.000
HAVRSTR	NY0028533	Dec	5.16	5.16	5.16	5.16	5.16	5.16	5.16	7.480	12.350	1.108	0.205	8.880	1.500	0.212	0.183	1.000	3.000	5.990
HAVRSTR	NY0028533	Jan	5.48	5.48	5.48	5.48	5.48	5.48	5.48	7.170	12.090	1.219	0.225	9.730	2.900	0.052	0.046	1.100	3.000	5.990
HAVRSTR	NY0028533	Feb	4.06	4.06	4.06	4.06	4.06	4.06	4.06	7.790	12.630	0.827	0.153	6.620	3.300	0.210	0.183	1.300	3.000	6.000
HAVRSTR	NY0028533	Mar	4.25	4.25	4.25	4.24	4.25	4.25	4.25	8.110	12.870	0.850	0.156	6.800	2.200	0.263	0.230	0.499	3.000	6.000
HAVRSTR	NY0028533	Apr	3.95	3.95	3.95	3.96	3.95	3.95	3.95	6.550	11.540	1.770	0.322	14.100	2.000	0.368	0.320	1.200	2.990	6.000
HAVRSTR	NY0028533	May	3.58	3.58	3.58	3.60	3.58	3.58	3.58	8.410	13.140	2.071	0.380	16.500	0.200	0.107	0.090	1.300	3.000	5.990
HAVRSTR	NY0028533	Jun	3.33	3.33	3.33	3.34	3.33	3.33	3.33	8.430	13.160	2.088	0.386	16.700	0.400	0.159	0.137	2.490	3.000	5.990
HAVRSTR	NY0028533	Jul	3.26	3.26	3.26	3.27	3.26	3.26	3.26	7.170	12.080	2.027	0.374	16.200	0.202	0.000	0.000	2.990	3.000	5.990
HAVRSTR	NY0028533	Aug	3.67	3.67	3.67	3.66	3.67	3.67	3.67	7.480	12.350	2.126	0.390	17.000	0.500	0.000	0.000	3.200	3.000	6.000
HAVRSTR	NY0028533	Sep	4.36	4.36	4.36	4.34	4.36	4.36	4.36	8.100	12.880	2.183	0.399	17.400	0.201	0.999	0.870	3.090	3.000	6.000
INWOOD	NY0026441	Oct	1.10	1.10	1.10	0.00	0.00	0.00	1.10	16.450	19.990	3.710	0.686	11.700	2.960	0.457	0.403	2.700	3.000	6.000
INWOOD	NY0026441	Nov	1.00	1.00	1.00	0.00	0.00	0.00	1.00	18.040	21.380	3.710	0.683	11.700	2.960	0.456	0.395	2.690	3.000	5.970
INWOOD	NY0026441	Dec	1.00	1.00	1.00	0.00	0.00	0.00	1.00	17.430	20.800	3.710	0.683	11.700	2.960	0.456	0.395	2.690	3.000	5.970
INWOOD	NY0026441	Jan	1.00	1.00	1.00	0.00	0.00	0.00	1.00	18.040	21.380	5.660	1.042	15.700	1.750	0.287	0.252	2.790	3.000	5.970
INWOOD	NY0026441	Feb	1.00	1.00	0.00	0.00	0.00	0.00	1.00	23.330	25.800	5.660	1.042	15.700	1.750	0.287	0.252	2.790	3.000	5.970
INWOOD	NY0026441	Mar	1.00	1.00	0.00	0.00	0.00	0.00	1.00	35.700	36.380	5.660	1.042	15.700	1.750	0.287	0.252	2.790	3.000	5.970
INWOOD	NY0026441	Apr	1.00	1.00	0.00	0.00	0.00	0.00	1.00	42.700	42.300	6.500	1.199	22.400	0.108	0.755	0.659	2.680	3.000	5.970
INWOOD	NY0026441	May	1.10	1.10	0.00	0.00	0													

Plant	NPDES	Month	Flow (MGD)								Concentration (mg/L)									
			8889	9495	9899	9900	0001	0102	POC	DOC	PON	DON	NH3T	NO23	POP	DOP	PO4T	SIT	DO	
			Refractory Labile Reactive	30% 70%	25% 25%	30% 70%	30% 70%	-	-	-	-	-	30% 70%	30% 70%	-	-	-	-	-	
OSSINING	NY0108324	Oct	5.50	5.50	5.50	5.50	5.50	5.50	9.350	13.940	1.958	0.360	15.700	8.790	0.052	0.046	1.400	3.000	5.990	
OSSINING	NY0108324	Nov	5.80	5.80	5.80	5.80	5.80	5.80	7.800	12.610	1.958	0.358	15.700	4.630	0.157	0.137	1.800	3.000	5.990	
OSSINING	NY0108324	Dec	6.60	6.60	6.60	6.60	6.60	6.60	9.340	13.930	1.517	0.279	12.200	7.040	0.374	0.325	0.889	2.990	6.000	
OSSINING	NY0108324	Jan	7.10	7.10	7.10	7.10	7.10	7.10	7.470	12.360	1.845	0.339	14.800	0.708	0.316	0.276	1.400	3.000	6.000	
OSSINING	NY0108324	Feb	6.30	6.30	6.30	6.30	6.30	6.30	8.410	13.150	1.742	0.320	13.900	9.390	0.158	0.137	1.600	2.990	6.000	
OSSINING	NY0108324	Mar	6.60	6.60	6.60	6.59	6.60	6.60	9.340	13.930	2.614	0.479	20.900	4.270	0.263	0.229	2.700	2.990	6.000	
OSSINING	NY0108324	Apr	6.30	6.30	6.30	6.31	6.30	6.30	11.840	16.070	1.630	0.300	13.100	7.350	0.464	0.404	1.200	2.990	6.000	
OSSINING	NY0108324	May	6.09	6.09	6.09	6.10	6.09	6.09	6.09	7.800	12.610	0.479	0.088	3.830	12.800	0.106	0.092	1.390	3.000	5.990
OSSINING	NY0108324	Jun	5.71	5.71	5.71	5.72	5.71	5.71	6.550	11.550	0.469	0.086	3.740	14.200	0.053	0.046	1.800	2.990	6.000	
OSSINING	NY0108324	Jul	5.66	5.66	5.66	5.66	5.66	5.66	6.540	11.560	1.743	0.320	13.900	4.600	0.106	0.091	2.000	3.000	5.990	
OSSINING	NY0108324	Aug	5.41	5.41	5.41	5.42	5.41	5.41	10.900	15.270	1.630	0.299	13.000	1.270	0.223	0.193	0.978	2.990	6.000	
OSSINING	NY0108324	Sep	5.09	5.09	5.09	5.10	5.09	5.09	7.790	12.610	1.415	0.260	11.300	4.600	0.106	0.092	1.900	2.990	6.000	
PEEKSKIL	NY0100803	Oct	5.50	5.50	5.50	5.50	5.50	5.50	5.930	11.030	1.090	0.200	8.700	0.483	0.263	0.229	1.200	3.000	5.990	
PEEKSKIL	NY0100803	Nov	6.00	6.00	6.00	6.00	6.00	6.00	6.860	11.830	0.783	0.143	6.270	0.350	0.000	0.000	0.995	2.990	6.000	
PEEKSKIL	NY0100803	Dec	6.00	6.00	6.00	6.00	6.00	6.00	6.240	11.300	0.783	0.143	6.270	0.350	0.000	0.000	0.898	2.990	6.000	
PEEKSKIL	NY0100803	Jan	7.19	7.19	7.19	7.19	7.19	7.19	7.19	7.170	12.090	0.685	0.127	5.480	0.305	0.158	0.136	0.998	2.990	6.000
PEEKSKIL	NY0100803	Feb	7.69	7.69	7.69	7.69	7.69	7.69	7.69	8.100	12.880	1.742	0.320	13.900	0.775	0.526	0.457	1.400	3.000	6.000
PEEKSKIL	NY0100803	Mar	6.89	6.89	6.89	6.92	6.89	6.89	8.100	12.880	1.629	0.301	13.000	0.727	0.474	0.411	0.599	2.990	6.000	
PEEKSKIL	NY0100803	Apr	6.00	6.00	6.00	6.03	6.00	6.00	6.00	8.420	13.130	1.630	0.300	13.000	0.726	0.737	0.641	0.699	2.990	6.000
PEEKSKIL	NY0100803	May	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.240	11.300	0.871	0.160	6.970	0.387	0.106	0.092	0.995	2.990	6.000
PEEKSKIL	NY0100803	Jun	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.930	11.030	0.306	0.056	2.440	0.136	0.000	0.000	1.300	2.990	6.000
PEEKSKIL	NY0100803	Jul	5.50	5.50	5.50	5.52	5.50	5.50	6.230	11.290	1.024	0.188	8.180	0.455	0.242	0.211	0.939	3.000	5.990	
PEEKSKIL	NY0100803	Aug	5.59	5.59	5.59	5.59	5.59	5.59	5.910	11.020	1.196	0.220	9.530	0.533	0.317	0.274	0.299	3.000	5.990	
PEEKSKIL	NY0100803	Sep	5.30	5.30	5.30	5.31	5.30	5.30	5.920	11.030	1.306	0.239	10.500	0.581	0.269	0.232	0.141	3.000	5.990	
PORT CHE	NY0026786	Oct	3.70	3.70	3.70	3.70	3.70	3.70	3.70	9.960	14.460	2.013	0.369	14.400	0.884	0.333	0.340	2.230	3.000	6.000
PORT CHE	NY0026786	Nov	3.49	3.49	3.49	3.49	3.49	3.49	3.49	8.110	12.890	2.012	0.369	14.400	0.883	0.216	0.220	1.440	3.000	5.990
PORT CHE	NY0026786	Dec	3.90	3.90	3.90	3.90	3.90	3.90	3.90	8.410	13.150	2.013	0.368	14.400	0.882	0.236	0.240	1.570	2.990	6.000
PORT CHE	NY0026786	Jan	3.70	3.70	3.70	3.70	3.70	3.70	3.70	8.410	13.130	1.900	0.349	13.600	0.835	0.237	0.239	1.570	3.000	6.000
PORT CHE	NY0026786	Feb	3.40	3.40	3.40	3.40	3.40	3.40	3.40	10.890	15.250	2.070	0.380	14.800	0.909	0.395	0.398	2.630	3.000	6.000
PORT CHE	NY0026786	Mar	3.49	3.49	3.49	3.49	3.49	3.49	3.49	11.220	15.520	2.044	0.377	14.600	0.900	0.414	0.420	2.760	3.000	5.990
PORT CHE	NY0026786	Apr	3.61	3.61	3.61	3.60	3.61	3.61	3.61	12.460	16.570	2.000	0.367	14.300	0.879	0.493	0.499	3.290	2.990	5.990
PORT CHE	NY0026786	May	3.61	3.61	3.61	3.61	3.61	3.61	3.61	15.570	19.210	2.015	0.369	14.400	0.885	0.690	0.699	4.590	2.990	5.990
PORT CHE	NY0026786	Jun	3.31	3.31	3.31	3.32	3.31	3.31	3.31	11.210	15.510	2.173	0.400	15.600	0.959	0.414	0.421	2.750	2.990	5.990
PORT CHE	NY0026786	Jul	3.49	3.49	3.49	3.49	3.49	3.49	3.49	7.490	12.350	2.012	0.369	14.400	0.883	0.178	0.182	1.180	3.000	5.990
PORT CHE	NY0026786	Aug	3.49	3.49	3.49	3.49	3.49	3.49	3.49	6.850	11.840	1.985	0.363	14.200	0.873	0.137	0.140	0.918	3.000	5.990
PORT CHE	NY0026786	Sep	3.61	3.61	3.61	3.60	3.61	3.61	3.61	7.490	12.340	1.885	0.346	13.500	0.825	0.176	0.180	1.180	2.990	5.990
ROCKLAND	NY0031895	Oct	16.34	16.34	16.34	16.34	16.34	16.34	16.34	13.120	13.570	1.985	0.141	21.800	2.800	0.513	0.484	2.800	5.620	6.010
ROCKLAND	NY0031895	Nov	17.39	17.39	17.39	17.39	17.39	17.39	17.39	12.670	13.120	2.069	0.147	22.800	0.060	0.515	0.485	2.100	5.440	5.980
ROCKLAND	NY0031895	Dec	18.67	18.67	18.67	18.67	18.67	18.67	18.67	12.730	13.210	1.321	0.094	14.600	2.410	0.103	0.097	1.800	4.640	6.000
ROCKLAND	NY0031895	Jan	21.50	21.50	21.50	21.50	21.50	21.50	21.50	12.210	12.680	2.315	0.164	25.600	1.690	0.257	0.243	2.300	5.970	6.000
ROCKLAND	NY0031895	Feb	19.58	19.58	19.58	19.58	19.58	19.58	19.58	10.710	11.120	1.074	0.076	11.800	1.600	0.000	0.000	2.300	5.640	5.990
ROCKLAND	NY0031895	Mar	21.50	21.50	21.50	21.44	21.50	21.50	21.50	10.720	11.120	1.900	0.135	20.900	0.529	0.618	0.583	1.600	4.770	6.000
ROCKLAND	NY0031895	Apr	20.66	20.66	20.66	20.68	20.66	20.66	20.66	12.630	13.090	0.008	0.001	0.091	0.200	0.206	0.194	2.500	6.800	5.980
ROCKLAND	NY0031895	May	19.49	19.49	19.49	19.53	19.49	19.49	19.49	15.430	16.040	1.656	0.117	18.200	0.550	0.257	0.242	2.200	6.100	5.990
ROCKLAND	NY0031895	Jun	17.60	17.60	17.60	17.66	17.60	17.60	17.60	18.450	19.120	4.370	0.310	48.300	0.160	0.000	0.000	2.880	5.730	6.000
ROCKLAND	NY0031895	Jul	17.80	17.80	17.80	17.80	17.80	17.80	17.80	15.140	15.650	2.485	0.176	27.300	1.000	0.154	0.146	3.210	5.640	6.000
ROCKLAND	NY0031895	Aug	16.75	16.75	16.75	16.79	16.75	16.75	16.75	12.830	13.270	2.071	0.146	22.800	4.000	0.567	0.532	2.900	5.640	5.990
ROCKLAND	NY0031895	Sep	16.48	16.48	16.48	16.49	16.48	16.48	16.48	12.310	12.740	0.041	0.003	0.455	4.910	0.618	0.581	3.000	5.640	6.000
STONY PO	NY0028851	Oct	0.83	0.83	0.83	0.83	0.83	0.83	0.83	8.970	13.610	2.057	0.374	16.500	0.403	0.274	0.274	1.810	3.000	5.990
STONY PO	NY0028851	Nov	0.89	0.89	0.89	0.89	0.89	0.89	0.89	7.910	12.710	1.558	0.283	12.500	0.310	0.202	0.202	1.360	3.000	6.000
STONY PO	NY0028851	Dec	0.93	0.93	0.93	0.93	0.93	0.93	0.93	9.380	14.020	2.275	0.414	18.200	0.440	0.297	0.297	1.990	3.000	5.990
STONY PO	NY0028851	Jan	1.00	1.00	1.00	1.00	1.00	1.00	1.00	8.890	13.580	2.031	0.374	16.300	0.398	0.266	0.277	1.790	3.000	6.010
STONY PO	NY0028851	Feb	0.87	0.87	0.87	0.87	0.87	0.87	0.87	9.890	14.450	2.503	0.468	20.100	0.496	0.330	0.330	2.200	3.000	5.990
STONY PO	NY0028851	Mar	0.93	0.93	0.93	0.93	0.93	0.93	0.93	9.110	13.750	2.118	0.387	17.000	0.219	0.284	0.284	1.860	2.990	5.980
STONY PO	NY0028851	Apr	0.83	0.83	0.83	0.83	0.83	0.83	0.83	9.980	14.490	2.533	0.462	20.300	0.505	0.331	0.346	2.230	2.990	6.000
STONY PO	NY0028851	May	0.87	0.87	0.87	0.87	0.87	0.87	0.87	8.650	13.330	1.916	0.357	15.300	0.370	0.247	0.261	1.690	3.000	6.000
STONY PO	NY0028851	Jun	0.88	0.88	0.88	0.88	0.88	0.88	0.88	8.700	13.390	1.928	0.356	15.400	0.383	0.260	0.260	1.690	3.000	5.990
STONY PO	NY0028851	Jul	0.91	0.91	0.91	0.91	0.91	0.91	0.91	8.280	13.040	1.728	0.317	13.900	0.343	0.225	0.237	1.520	3.000	5.990
STONY PO	NY0028851	Aug	0.86																	

Plant	NPDES	Month	Flow (MGD)													Concentration (mg/L)					
			8889	9495	9899	9900	0001	0102	POC	DOC	PON	DON	NH3T	NO23	POP	DOP	PO4T	SIT	DO		
			Refractory Labile Reactive	30% 70%	25% 25%	30% 70%	30% 70%	-	-	-	-	-	30% 70%	30% 70%	-	-	-	-	-		
GREAT NE	NY0022128	Jul	1.02	1.02	1.02	1.02	1.02	1.02	10.280	14.720	2.400	0.446	16.900	0.528	0.353	0.364	2.360	3.000	6.010		
GREAT NE	NY0022128	Aug	0.90	0.90	0.90	0.91	0.90	0.90	10.280	14.730	3.033	0.557	21.400	0.679	0.359	0.359	2.360	3.000	5.970		
GREAT NE	NY0022128	Sep	1.06	1.06	1.06	1.06	1.06	1.06	11.220	15.510	2.900	0.530	20.400	0.641	0.417	0.417	2.750	3.000	6.010		
GREAT NE	NY0026999	Oct	2.51	2.51	2.51	2.51	2.51	2.51	11.830	16.070	3.890	0.714	8.540	9.790	0.450	0.459	3.020	3.000	6.000		
GREAT NE	NY0026999	Nov	2.40	2.40	2.40	2.40	2.40	2.40	11.820	16.060	5.910	1.083	13.000	14.900	0.453	0.459	3.020	2.990	5.990		
GREAT NE	NY0026999	Dec	2.40	2.40	2.40	2.40	2.40	2.40	11.540	15.780	3.870	0.714	8.540	9.770	0.434	0.440	2.880	2.990	5.990		
GREAT NE	NY0026999	Jan	2.51	2.51	2.51	2.51	2.51	2.51	9.660	14.200	3.890	0.714	8.540	9.790	0.317	0.320	2.100	3.000	6.000		
GREAT NE	NY0026999	Feb	2.31	2.31	2.31	2.31	2.31	2.31	10.270	14.730	3.970	0.729	8.750	10.000	0.354	0.361	2.370	2.990	6.000		
GREAT NE	NY0026999	Mar	2.51	2.51	2.51	2.50	2.51	2.51	9.660	14.200	3.660	0.676	8.050	9.240	0.317	0.320	2.100	3.000	6.000		
GREAT NE	NY0026999	Apr	2.40	2.40	2.40	2.40	2.40	2.40	9.670	14.190	4.180	0.764	9.160	10.500	0.314	0.321	2.100	2.990	5.990		
GREAT NE	NY0026999	May	2.40	2.40	2.40	2.40	2.40	2.40	9.340	13.940	3.740	0.689	8.230	9.440	0.294	0.300	1.970	2.990	5.990		
GREAT NE	NY0026999	Jun	2.51	2.51	2.51	2.51	2.51	2.51	10.910	15.230	4.230	0.775	9.300	10.700	0.393	0.398	2.620	3.000	6.000		
GREAT NE	NY0026999	Jul	2.60	2.60	2.60	2.60	2.60	2.60	10.910	15.260	3.630	0.667	8.010	9.160	0.391	0.400	2.620	3.010	5.990		
GREAT NE	NY0026999	Aug	2.51	2.51	2.51	2.51	2.51	2.51	10.910	15.230	3.590	0.661	7.880	9.050	0.393	0.398	2.620	3.000	6.000		
GREAT NE	NY0026999	Sep	2.51	2.51	2.51	2.51	2.51	2.51	10.910	15.230	4.050	0.742	8.920	10.200	0.393	0.398	2.620	3.000	6.000		
PORT WAS	NY0026778	Oct	2.69	2.69	2.69	2.69	2.69	2.69	7.790	12.600	2.559	0.470	18.200	2.330	0.196	0.200	1.310	2.990	5.990		
PORT WAS	NY0026778	Nov	2.60	2.60	2.60	2.60	2.60	2.60	9.020	13.650	2.558	0.470	18.200	2.320	0.276	0.281	1.840	3.010	5.990		
PORT WAS	NY0026778	Dec	2.60	2.60	2.60	2.60	2.60	2.60	8.110	12.860	2.530	0.465	18.000	2.300	0.217	0.222	1.440	3.010	5.990		
PORT WAS	NY0026778	Jan	2.60	2.60	2.60	2.60	2.60	2.60	9.340	13.910	2.558	0.470	18.200	2.320	0.295	0.299	1.970	3.010	5.990		
PORT WAS	NY0026778	Feb	2.51	2.51	2.51	2.51	2.51	2.51	10.590	14.980	2.415	0.447	17.100	2.200	0.374	0.377	2.490	3.000	6.000		
PORT WAS	NY0026778	Mar	2.51	2.51	2.51	2.51	2.51	2.51	9.950	14.450	2.986	0.552	21.100	2.710	0.336	0.341	2.220	3.000	6.000		
PORT WAS	NY0026778	Apr	2.60	2.60	2.60	2.60	2.60	2.60	9.680	14.210	2.643	0.488	18.800	2.400	0.313	0.319	2.090	3.010	5.990		
PORT WAS	NY0026778	May	2.60	2.60	2.60	2.60	2.60	2.60	8.720	13.410	2.829	0.520	20.100	2.580	0.258	0.258	1.700	3.010	5.990		
PORT WAS	NY0026778	Jun	2.69	2.69	2.69	2.69	2.69	2.69	7.470	12.360	2.414	0.444	17.100	2.190	0.177	0.182	1.180	2.990	5.990		
PORT WAS	NY0026778	Jul	2.69	2.69	2.69	2.69	2.69	2.69	10.590	15.010	2.627	0.484	18.600	2.390	0.372	0.382	2.490	2.990	5.990		
PORT WAS	NY0026778	Aug	2.60	2.60	2.60	2.60	2.60	2.60	9.680	14.210	2.385	0.438	16.900	2.170	0.313	0.319	2.090	3.010	5.990		
PORT WAS	NY0026778	Sep	2.51	2.51	2.51	2.51	2.51	2.51	9.950	14.450	2.169	0.398	15.400	1.970	0.336	0.341	2.220	3.000	6.000		
GLEN COV	NY0026620	Oct	4.43	4.43	4.43	4.43	4.43	4.43	6.820	11.790	1.130	0.209	9.050	15.200	0.052	0.046	1.800	3.000	6.000		
GLEN COV	NY0026620	Nov	4.59	4.59	4.59	4.59	4.59	4.59	7.730	12.570	1.199	0.219	9.570	13.500	0.052	0.045	1.800	3.000	6.000		
GLEN COV	NY0026620	Dec	4.34	4.34	4.34	4.34	4.34	4.34	7.070	12.000	1.198	0.219	9.580	14.500	0.053	0.047	1.790	3.000	5.990		
GLEN COV	NY0026620	Jan	4.43	4.43	4.43	4.43	4.43	4.43	7.550	12.400	0.892	0.165	7.130	17.300	0.211	0.184	2.100	2.990	6.000		
GLEN COV	NY0026620	Feb	4.22	4.22	4.22	4.22	4.22	4.22	7.430	12.310	1.374	0.253	11.000	15.500	0.209	0.183	2.100	2.990	6.000		
GLEN COV	NY0026620	Mar	4.36	4.36	4.36	4.36	4.36	4.36	6.770	11.750	1.071	0.196	8.560	12.100	0.210	0.183	2.100	3.000	6.000		
GLEN COV	NY0026620	Apr	4.36	4.36	4.36	4.36	4.36	4.36	7.130	12.070	1.192	0.220	9.550	13.500	0.000	0.000	2.100	2.990	6.000		
GLEN COV	NY0026620	May	4.34	4.34	4.34	4.34	4.34	4.34	7.170	12.080	1.099	0.202	8.800	12.400	0.000	0.000	2.090	2.990	5.990		
GLEN COV	NY0026620	Jun	4.36	4.36	4.36	4.36	4.36	4.36	6.930	11.880	1.066	0.195	8.520	12.000	0.000	0.000	2.090	3.000	6.000		
GLEN COV	NY0026620	Jul	4.54	4.54	4.54	4.54	4.54	4.54	6.700	11.680	1.209	0.222	9.670	13.600	0.000	0.000	2.400	3.000	5.990		
GLEN COV	NY0026620	Aug	4.52	4.52	4.52	4.52	4.52	4.52	6.860	11.830	1.196	0.220	9.560	13.400	0.000	0.000	2.400	2.990	6.000		
GLEN COV	NY0026620	Sep	4.47	4.47	4.47	4.48	4.47	4.47	7.010	11.940	1.783	0.327	14.300	20.000	0.000	0.000	2.390	3.000	5.990		
BELGRAVE	NY0026841	Oct	1.29	1.29	1.29	1.29	1.29	1.29	12.420	17.930	2.600	0.482	2.780	16.800	0.881	0.770	0.695	3.000	6.010		
BELGRAVE	NY0026841	Nov	1.27	1.27	1.27	1.27	1.27	1.27	12.460	16.610	5.070	0.932	5.400	32.700	0.884	0.772	0.698	3.000	5.980		
BELGRAVE	NY0026841	Dec	1.27	1.27	1.27	1.27	1.27	1.27	13.100	17.110	2.610	0.480	2.780	16.800	0.883	0.772	0.697	3.000	5.980		
BELGRAVE	NY0026841	Jan	1.30	1.30	1.30	1.30	1.30	1.30	12.440	16.600	2.615	0.480	2.780	16.800	0.470	0.414	3.390	3.000	5.980		
BELGRAVE	NY0026841	Feb	1.26	1.26	1.26	1.26	1.26	1.26	13.400	17.330	2.602	0.477	2.780	16.800	0.477	0.410	3.390	3.000	6.020		
BELGRAVE	NY0026841	Mar	1.29	1.29	1.29	1.29	1.29	1.29	13.390	17.360	2.714	0.501	2.890	17.600	0.474	0.408	3.400	3.000	5.980		
BELGRAVE	NY0026841	Apr	1.28	1.28	1.28	1.28	1.28	1.28	43.600	43.100	3.084	0.570	3.280	19.900	0.261	0.224	2.600	3.000	5.980		
BELGRAVE	NY0026841	May	1.31	1.31	1.31	1.31	1.31	1.31	16.140	19.720	3.186	0.586	3.400	20.600	0.266	0.229	2.600	3.000	6.010		
BELGRAVE	NY0026841	Jun	1.35	1.35	1.35	1.35	1.35	1.35	14.590	18.400	2.827	0.516	3.020	18.300	0.267	0.231	2.600	3.000	6.000		
BELGRAVE	NY0026841	Jul	1.37	1.37	1.37	1.37	1.37	1.37	10.290	14.720	2.015	0.367	2.150	13.000	3.099	2.699	3.400	3.000	6.010		
BELGRAVE	NY0026841	Aug	1.31	1.31	1.31	1.31	1.31	1.31	10.590	14.990	2.190	0.404	2.340	14.200	3.101	2.700	3.400	3.000	5.990		
BELGRAVE	NY0026841	Sep	1.32	1.32	1.32	1.32	1.32	1.32	7.810	12.630	2.213	0.407	2.360	14.200	3.101	2.701	3.390	3.000	5.990		
OYSTER B	NY0021822	Oct	1.01	1.01	1.01	1.01	1.01	1.01	11.240	15.520	1.959	0.366	3.540	10.700	0.260	0.224	2.100	3.000	5.990		
OYSTER B	NY0021822	Nov	1.00	1.00	1.00	1.00	1.00	1.00	11.530	15.820	1.970	0.361	3.550	10.700	0.266	0.230	2.100	3.000	6.010		
OYSTER B	NY0021822	Dec	1.11	1.11	1.11	1.11	1.11	1.11	8.420	13.130	1.939	0.355	3.500	10.600	0.258	0.226	2.100	3.000	5.980		
OYSTER B	NY0021822	Jan	1.11	1.11	1.11	1.11	1.11	1.11	8.090	12.870	1.970	0.356	3.540	10.700	0.313	0.270	2.000	3.000	6.000		
OYSTER B	NY0021822	Feb	1.08	1.08	1.08	1.08	1.08	1.08	8.120	12.860	2.013	0.367	3.630	11.000	0.311	0.278	2.000	3.000	5.980		
OYSTER B	NY0021822	Mar	1.19	1.19	1.19	1.19	1.19	1.19	7.810	12.630	1.942	0.353	3.490	10.500	0.313	0.273	2.000	3.000	6.000		
OYSTER B	NY0021822	Apr	0.95	0.95	0.95	0.96	0.95	0.95	7.470	12.380	1.931	0.351	3.470	10.500	0.000	0.000	2.590	3.000	5.980		
OYSTER B	NY0021822	May	1.02	1.02	1.02	1.02	1.02	1.02	7.500	12.370	2.084	0.385	3.740	11.300	0.000	0.000	2.590	3.000	5.980		
OYSTER B	NY0021822	Jun	0.95	0.95	0.95	0.95	0.95	0.95	7.170	12.100	2.258	0.415	4.060	12.300	0.000	0.000	2.590	3.000	6.000		
OYSTER B	NY0021822	Jul	0.92	0.92	0.92	0.93	0.92	0.92	8.100	1											

Plant	NPDES	Month	Flow (MGD)								Concentration (mg/L)								
			8889	9495	9899	9900	0001	0102	POC	DOC	PON	DON	NH3T	NO23	POP	DOP	PO4T	SIT	DO
NORTH HU	NJ0026085	Apr	10.36	10.36	10.36	10.37	10.36	10.36	4.470	10.620	0.795	0.640	1.660	9.840	0.167	0.150	1.450	3.170	6.020
NORTH HU	NJ0026085	May	10.80	10.80	10.80	10.78	10.80	10.80	6.130	14.590	1.145	0.916	1.790	14.100	0.229	0.206	1.990	2.830	6.020
NORTH HU	NJ0026085	Jun	10.80	10.80	10.80	10.80	10.80	10.80	6.990	16.730	2.186	1.758	2.840	27.100	0.260	0.235	2.270	2.780	6.020
NORTH HU	NJ0026085	Jul	11.39	11.39	11.39	11.37	11.39	11.39	5.260	12.520	1.442	1.159	1.690	17.800	0.196	0.177	1.710	2.840	5.980
NORTH HU	NJ0026085	Aug	9.91	9.91	9.91	9.95	9.91	9.91	5.250	12.500	2.186	1.757	2.350	27.100	0.196	0.177	1.710	3.170	5.980
NORTH HU	NJ0026085	Sep	9.77	9.77	9.77	9.77	9.77	9.77	6.570	15.670	1.687	1.358	3.540	20.900	0.244	0.221	2.130	2.070	6.000
NORTH BE	NJ0034339	Oct	6.00	6.00	6.00	6.00	6.00	6.00	13.690	39.140	1.396	0.463	12.300	0.661	0.143	0.147	0.783	7.060	6.000
NORTH BE	NJ0034339	Nov	6.19	6.19	6.19	6.19	6.19	6.19	12.010	34.440	1.157	0.383	10.200	0.546	0.101	0.103	0.544	5.350	5.990
NORTH BE	NJ0034339	Dec	7.05	7.05	7.05	7.05	7.05	7.05	9.900	28.440	1.231	0.407	10.900	0.581	0.100	0.102	0.544	5.360	5.990
NORTH BE	NJ0034339	Jan	6.39	6.39	6.39	6.39	6.39	6.39	12.040	34.640	1.174	0.388	10.400	0.554	0.103	0.105	0.558	6.350	5.990
NORTH BE	NJ0034339	Feb	6.39	6.39	6.39	6.39	6.39	6.39	16.860	48.400	1.288	0.427	11.400	0.609	0.088	0.092	0.485	5.360	5.990
NORTH BE	NJ0034339	Mar	6.12	6.12	6.12	6.13	6.12	6.12	13.350	38.400	1.298	0.432	11.500	0.616	0.118	0.120	0.639	5.890	5.990
NORTH BE	NJ0034339	Apr	5.39	5.39	5.39	5.41	5.39	5.39	14.720	42.400	1.458	0.485	12.900	0.690	0.129	0.134	0.708	5.360	6.000
NORTH BE	NJ0034339	May	5.80	5.80	5.80	5.78	5.80	5.80	13.650	39.100	1.427	0.473	12.600	0.673	0.107	0.112	0.591	4.460	5.990
NORTH BE	NJ0034339	Jun	5.89	5.89	5.89	5.89	5.89	5.89	12.390	35.580	1.511	0.499	13.300	0.711	0.141	0.144	0.766	5.440	5.990
NORTH BE	NJ0034339	Jul	6.25	6.25	6.25	6.24	6.25	6.25	7.240	20.800	1.360	0.452	13.800	0.641	0.128	0.130	0.698	3.630	6.000
NORTH BE	NJ0034339	Aug	5.39	5.39	5.39	5.41	5.39	5.39	13.670	39.220	1.612	0.534	14.200	0.758	0.147	0.151	0.805	5.360	5.990
NORTH BE	NJ0034339	Sep	5.41	5.41	5.41	5.41	5.41	5.41	9.750	28.020	1.543	0.513	15.100	0.729	0.166	0.170	0.909	4.670	5.990
WOODCLIF	NJ0029084	Oct	2.35	2.35	2.35	2.35	2.35	2.35	12.900	17.540	2.345	1.118	1.410	12.400	0.537	0.388	2.180	3.710	5.990
WOODCLIF	NJ0029084	Nov	2.42	2.42	2.42	2.42	2.42	2.42	18.280	24.840	2.517	1.198	1.070	12.400	0.759	0.553	3.090	2.940	6.000
WOODCLIF	NJ0029084	Dec	2.69	2.69	2.69	2.69	2.69	2.69	13.100	17.820	2.085	0.988	1.840	12.400	0.544	0.396	2.220	2.930	5.990
WOODCLIF	NJ0029084	Jan	2.67	2.67	2.67	2.67	2.67	2.67	14.420	19.560	0.935	0.443	2.070	11.700	0.594	0.434	2.440	3.630	5.990
WOODCLIF	NJ0029084	Feb	2.69	2.69	2.69	2.69	2.69	2.69	21.290	29.000	0.173	0.085	5.020	11.000	0.884	0.644	3.610	2.920	6.000
WOODCLIF	NJ0029084	Mar	2.49	2.49	2.49	2.49	2.49	2.49	18.420	25.000	1.529	0.726	4.370	10.300	0.763	0.557	3.110	3.710	5.990
WOODCLIF	NJ0029084	Apr	2.37	2.37	2.37	2.38	2.37	2.37	17.310	23.600	0.804	0.386	3.870	11.300	0.719	0.521	2.930	2.930	5.990
WOODCLIF	NJ0029084	May	2.60	2.60	2.60	2.59	2.60	2.60	13.570	18.460	1.351	0.643	1.710	12.300	0.561	0.409	2.290	2.780	6.000
WOODCLIF	NJ0029084	Jun	2.60	2.60	2.60	2.60	2.60	2.60	11.520	15.620	2.757	1.313	1.410	13.200	0.473	0.346	1.940	2.220	5.990
WOODCLIF	NJ0029084	Jul	2.51	2.51	2.51	2.51	2.51	2.51	10.210	13.860	2.083	0.988	1.960	12.100	0.423	0.309	1.730	2.220	6.000
WOODCLIF	NJ0029084	Aug	2.31	2.31	2.31	2.31	2.31	2.31	12.290	16.690	2.271	1.077	0.883	12.500	0.511	0.370	2.080	2.940	5.990
WOODCLIF	NJ0029084	Sep	2.35	2.35	2.35	2.35	2.35	2.35	9.690	13.180	1.944	0.924	0.478	12.800	0.403	0.291	1.640	2.250	5.990
SECAUCUS	NJ0025038	Oct	2.85	2.85	2.85	2.85	2.85	2.85	7.010	13.970	1.913	0.926	0.662	33.100	0.444	0.478	2.990	4.660	5.990
SECAUCUS	NJ0025038	Nov	2.88	2.88	2.88	2.88	2.88	2.88	6.390	12.780	1.331	0.643	0.491	23.100	0.445	0.478	2.990	3.500	5.990
SECAUCUS	NJ0025038	Dec	3.08	3.08	3.08	3.08	3.08	3.08	7.840	15.660	0.782	0.377	0.264	13.600	0.373	0.400	2.510	3.500	5.990
SECAUCUS	NJ0025038	Jan	3.20	3.20	3.20	3.20	3.20	3.20	7.120	14.220	1.360	0.659	0.456	23.600	0.368	0.397	2.480	4.060	6.000
SECAUCUS	NJ0025038	Feb	3.06	3.06	3.06	3.06	3.06	3.06	9.310	18.570	1.616	0.786	0.519	28.100	0.394	0.426	2.670	3.500	6.000
SECAUCUS	NJ0025038	Mar	3.15	3.15	3.15	3.15	3.15	3.15	7.130	14.260	2.897	1.401	0.281	18.100	0.444	0.478	3.000	4.170	5.990
SECAUCUS	NJ0025038	Apr	2.92	2.92	2.92	2.93	2.92	2.92	11.960	23.840	2.889	1.401	0.373	17.500	0.425	0.458	2.870	3.500	5.990
SECAUCUS	NJ0025038	May	3.01	3.01	3.01	3.01	3.01	3.01	7.420	14.830	2.897	1.401	0.466	16.900	0.449	0.485	3.030	3.100	5.990
SECAUCUS	NJ0025038	Jun	3.01	3.01	3.01	3.01	3.01	3.01	5.430	10.850	1.655	0.798	0.588	28.700	0.433	0.468	2.920	2.940	5.990
SECAUCUS	NJ0025038	Jul	3.29	3.29	3.29	3.28	3.29	3.29	5.920	11.820	0.926	0.447	0.313	16.000	0.392	0.426	2.650	2.870	6.000
SECAUCUS	NJ0025038	Aug	3.01	3.01	3.01	3.02	3.01	3.01	7.130	14.230	1.128	0.549	0.401	19.600	0.480	0.521	3.240	3.500	5.990
SECAUCUS	NJ0025038	Sep	3.26	3.26	3.26	3.26	3.26	3.26	6.520	13.030	1.333	0.644	0.484	23.100	0.401	0.434	2.710	2.780	5.990
WEST NEW	NJ0025321	Oct	9.29	9.29	9.29	9.29	9.29	9.29	16.440	23.500	1.442	0.784	2.870	9.600	0.605	0.344	1.700	3.350	6.020
WEST NEW	NJ0025321	Nov	9.75	9.75	9.75	9.75	9.75	9.75	13.790	19.720	1.207	0.657	3.220	9.650	0.532	0.289	1.430	2.400	6.020
WEST NEW	NJ0025321	Dec	10.11	10.11	10.11	10.11	10.11	10.11	10.380	14.840	1.586	0.866	2.640	9.610	0.402	0.218	1.070	2.400	6.010
WEST NEW	NJ0025321	Jan	10.41	10.41	10.41	10.41	10.41	10.41	11.250	16.130	0.863	0.470	5.230	5.890	0.435	0.236	1.160	2.690	5.990
WEST NEW	NJ0025321	Feb	10.25	10.25	10.25	10.25	10.25	10.25	14.580	20.900	0.366	0.200	4.920	6.700	0.563	0.306	1.510	2.400	5.970
WEST NEW	NJ0025321	Mar	9.45	9.45	9.45	9.48	9.45	9.45	13.590	19.460	1.263	0.688	2.450	7.500	0.524	0.284	1.400	2.930	5.990
WEST NEW	NJ0025321	Apr	9.13	9.13	9.13	9.14	9.13	9.13	23.400	33.480	0.499	0.272	4.660	6.890	0.902	0.491	2.410	2.400	6.020
WEST NEW	NJ0025321	May	8.99	8.99	8.99	9.00	8.99	8.99	14.190	20.220	2.199	1.202	3.060	6.290	0.547	0.296	1.460	2.210	6.000
WEST NEW	NJ0025321	Jun	8.92	8.92	8.92	8.93	8.92	8.92	11.930	17.050	2.438	1.328	2.110	9.770	0.460	0.250	1.230	1.760	5.980
WEST NEW	NJ0025321	Jul	8.26	8.26	8.26	8.28	8.26	8.26	14.600	20.960	2.900	1.584	0.678	13.900	0.566	0.308	1.510	2.020	6.000
WEST NEW	NJ0025321	Aug	6.76	6.76	6.76	6.80	6.76	6.76	10.070	14.370	2.187	1.195	0.340	12.200	0.388	0.211	1.040	2.400	6.000
WEST NEW	NJ0025321	Sep	6.64	6.64	6.64	6.65	6.64	6.64	10.060	14.360	1.180	0.641	0.470	10.300	0.387	0.211	1.040	1.850	5.990
WEST POI	NY0023761	Oct	1.88	1.88	1.88	1.88	1.88	1.88	8.740	13.450	2.013	0.369	0.477	0.025	0.254	0.261	1.710	3.000	6.000
WEST POI	NY0023761	Nov	1.71	1.71	1.71	1.71	1.71	1.71	8.560	13.240	2.012	0.371	0.476	0.028	0.246	0.252	1.640	3.000	5.990
WEST POI	NY0023761	Dec	1.78	1.78	1.78	1.78	1.78	1.78	9.670	14.200	2.013	0.369	0.476	0.027	0.316	0.322	2.100	2.990	6.010
WEST POI	NY0023761	Jan	2.01	2.01	2.01	2.01	2.01	2.01	7.800	12.610	0.977	0.179	0.238	0.012	0.197	0.203	1.310	2.990	5.990
WEST POI	NY0023761	Feb	1.71	1.71	1.71	1.71	1.71	1.71	9.050	13.690	0.975	0.183	0.238	0.014	0.273	0.280	1.840	3.000	6.000
WEST POI	NY0023761	Mar	1.80	1.80	1.80	1.80	1.80	1.80	10.270	14.760	0.972	0.180	0.233	0.013	0.353	0.359	2.360	2.990	5.980
WEST POI	NY0023761	Apr	1.64	1.64	1.64	1.65	1.64	1.64	9.960	14.490	1.727	0.313	0.350	0.022	0.336	0.343	2.230	3.000	6.010



Plant	NPDES	Month	Flow (MGD)								Concentration (mg/L)										
			8889	9495	9899	9900	0001	0102	POC	DOC	PON	DON	NH3T	NO23	POP	DOP	PO4T	SIT	DO		
TWO RIVE	NJ0026735	Oct	10.59	10.59	10.59	10.59	10.59	10.59	10.59	10.59	8.110	12.870	1.513	0.277	11.000	0.957	0.217	0.220	1.450	3.000	5.980
TWO RIVE	NJ0026735	Nov	10.50	10.50	10.50	10.50	10.50	10.50	10.50	10.50	9.340	13.900	2.059	0.377	15.000	1.310	0.296	0.300	1.970	3.000	5.990
TWO RIVE	NJ0026735	Dec	10.11	10.11	10.11	10.11	10.11	10.11	10.11	10.11	8.080	12.870	1.513	0.277	11.000	0.957	0.217	0.220	1.440	3.000	6.020
TWO RIVE	NJ0026735	Jan	10.20	10.20	10.20	10.20	10.20	10.20	10.20	10.20	7.780	12.620	1.375	0.253	10.000	0.870	0.197	0.200	1.310	3.000	6.010
TWO RIVE	NJ0026735	Feb	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	7.490	12.360	1.236	0.227	9.030	0.787	0.177	0.180	1.180	3.000	5.970
TWO RIVE	NJ0026735	Mar	10.11	10.11	10.11	10.11	10.11	10.11	10.11	10.11	8.430	13.170	1.644	0.303	12.000	1.050	0.236	0.240	1.570	3.000	6.020
TWO RIVE	NJ0026735	Apr	9.49	9.49	9.49	9.52	9.49	9.49	9.49	9.49	9.050	13.680	1.928	0.353	14.100	1.220	0.277	0.280	1.840	3.000	6.010
TWO RIVE	NJ0026735	May	9.79	9.79	9.79	9.78	9.79	9.79	9.79	9.79	9.940	14.460	2.331	0.429	17.000	1.480	0.335	0.340	2.230	3.000	5.980
TWO RIVE	NJ0026735	Jun	10.00	10.00	10.00	9.99	10.00	10.00	10.00	10.00	12.160	16.300	3.288	0.606	24.100	2.090	0.472	0.480	3.150	3.000	5.970
TWO RIVE	NJ0026735	Jul	10.41	10.41	10.41	10.39	10.41	10.41	10.41	10.41	10.290	14.730	2.472	0.454	18.100	1.570	0.355	0.359	2.360	3.000	5.990
TWO RIVE	NJ0026735	Aug	10.50	10.50	10.50	10.50	10.50	10.50	10.50	10.50	11.510	15.780	3.016	0.555	22.100	1.920	0.433	0.439	2.890	3.000	5.990
TWO RIVE	NJ0026735	Sep	9.79	9.79	9.79	9.82	9.79	9.79	9.79	9.79	10.930	15.300	2.745	0.505	20.100	1.740	0.393	0.400	2.630	3.000	5.980
LONG BRA	NJ0024783	Oct	2.76	2.76	2.76	2.76	2.76	2.76	2.76	2.76	6.110	11.200	0.630	0.118	4.630	0.401	0.091	0.091	0.605	2.990	5.990
LONG BRA	NJ0024783	Nov	3.36	3.36	3.36	3.36	3.36	3.36	3.36	3.36	6.990	11.920	1.012	0.186	7.390	0.643	0.147	0.147	0.969	2.990	5.990
LONG BRA	NJ0024783	Dec	3.74	3.74	3.74	3.74	3.74	3.74	3.74	3.74	7.040	11.990	1.044	0.192	7.620	0.661	0.150	0.153	0.996	3.000	6.000
LONG BRA	NJ0024783	Jan	3.74	3.74	3.74	3.74	3.74	3.74	3.74	3.74	5.890	10.990	0.537	0.099	3.920	0.338	0.077	0.077	0.511	3.000	6.000
LONG BRA	NJ0024783	Feb	3.56	3.56	3.56	3.56	3.56	3.56	3.56	3.56	5.680	10.840	0.440	0.081	3.230	0.278	0.064	0.064	0.423	3.000	5.990
LONG BRA	NJ0024783	Mar	3.10	3.10	3.10	3.12	3.10	3.10	3.10	3.10	7.390	12.280	1.194	0.220	8.730	0.757	0.170	0.174	1.140	3.000	5.990
LONG BRA	NJ0024783	Apr	3.99	3.99	3.99	3.96	3.99	3.99	3.99	3.99	7.480	12.360	1.234	0.228	9.030	0.785	0.177	0.180	1.180	3.000	6.000
LONG BRA	NJ0024783	May	4.52	4.52	4.52	4.50	4.52	4.52	4.52	4.52	6.360	11.410	0.742	0.136	5.420	0.470	0.106	0.109	0.709	3.000	6.000
LONG BRA	NJ0024783	Jun	4.63	4.63	4.63	4.63	4.63	4.63	4.63	4.63	7.170	12.090	1.098	0.202	8.030	0.697	0.157	0.160	1.050	2.990	5.990
LONG BRA	NJ0024783	Jul	4.84	4.84	4.84	4.83	4.84	4.84	4.84	4.84	7.430	12.310	1.208	0.223	8.830	0.767	0.173	0.176	1.160	3.000	5.990
LONG BRA	NJ0024783	Aug	4.70	4.70	4.70	4.71	4.70	4.70	4.70	4.70	7.600	12.450	1.290	0.237	9.430	0.818	0.186	0.189	1.240	3.000	5.990
LONG BRA	NJ0024783	Sep	4.77	4.77	4.77	4.77	4.77	4.77	4.77	4.77	7.070	12.020	1.058	0.193	7.730	0.672	0.150	0.153	1.010	3.000	5.990
OCEAN TW	NJ0024520	Oct	4.59	4.59	4.59	4.59	4.59	4.59	4.59	4.59	6.330	11.380	1.658	0.306	11.200	0.706	0.105	0.107	0.695	3.000	5.990
OCEAN TW	NJ0024520	Nov	4.59	4.59	4.59	4.59	4.59	4.59	4.59	4.59	7.050	11.990	1.713	0.316	11.700	0.728	0.149	0.151	0.996	3.000	6.000
OCEAN TW	NJ0024520	Dec	5.18	5.18	5.18	5.18	5.18	5.18	5.18	5.18	6.850	11.810	1.913	0.351	12.800	0.813	0.137	0.139	0.917	2.990	6.000
OCEAN TW	NJ0024520	Jan	5.39	5.39	5.39	5.39	5.39	5.39	5.39	5.39	6.960	11.910	1.858	0.342	10.100	0.793	0.144	0.147	0.957	3.000	5.990
OCEAN TW	NJ0024520	Feb	5.16	5.16	5.16	5.16	5.16	5.16	5.16	5.16	7.100	12.030	1.627	0.300	12.300	0.691	0.153	0.155	1.020	3.000	5.990
OCEAN TW	NJ0024520	Mar	5.18	5.18	5.18	5.18	5.18	5.18	5.18	5.18	6.860	11.830	2.414	0.445	15.300	1.030	0.139	0.141	0.917	3.000	5.990
OCEAN TW	NJ0024520	Apr	4.13	4.13	4.13	4.17	4.13	4.13	4.13	4.13	6.240	11.310	1.785	0.328	12.900	0.760	0.099	0.099	0.655	3.000	5.990
OCEAN TW	NJ0024520	May	4.29	4.29	4.29	4.29	4.29	4.29	4.29	4.29	5.990	11.080	2.045	0.377	15.000	0.872	0.084	0.084	0.551	3.000	5.990
OCEAN TW	NJ0024520	Jun	4.31	4.31	4.31	4.31	4.31	4.31	4.31	4.31	6.540	11.560	2.013	0.369	12.700	0.854	0.120	0.120	0.788	3.000	6.000
OCEAN TW	NJ0024520	Jul	4.98	4.98	4.98	4.95	4.98	4.98	4.98	4.98	6.860	11.830	1.700	0.312	12.700	0.724	0.137	0.140	0.918	3.000	6.000
OCEAN TW	NJ0024520	Aug	4.63	4.63	4.63	4.64	4.63	4.63	4.63	4.63	6.670	11.670	1.871	0.343	15.000	0.798	0.127	0.127	0.837	2.990	5.990
OCEAN TW	NJ0024520	Sep	4.02	4.02	4.02	4.04	4.02	4.02	4.02	4.02	6.540	11.560	1.872	0.344	15.000	0.798	0.120	0.120	0.786	2.990	6.000
ASBURY P	NJ0025241	Oct	2.67	2.67	2.67	2.67	2.67	2.67	2.67	2.67	7.780	12.620	1.371	0.251	10.000	0.873	0.197	0.201	1.310	3.000	6.000
ASBURY P	NJ0025241	Nov	2.58	2.58	2.58	2.58	2.58	2.58	2.58	2.58	7.790	12.610	1.371	0.251	10.000	0.872	0.196	0.200	1.310	3.000	6.000
ASBURY P	NJ0025241	Dec	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83	8.120	12.890	1.502	0.276	11.000	0.959	0.217	0.221	1.440	3.000	6.000
ASBURY P	NJ0025241	Jan	2.85	2.85	2.85	2.85	2.85	2.85	2.85	2.85	7.780	12.640	1.372	0.253	10.000	0.871	0.198	0.198	1.310	2.990	6.000
ASBURY P	NJ0025241	Feb	2.74	2.74	2.74	2.74	2.74	2.74	2.74	2.74	8.420	13.150	1.644	0.301	12.000	1.050	0.236	0.240	1.570	3.000	5.990
ASBURY P	NJ0025241	Mar	3.06	3.06	3.06	3.05	3.06	3.06	3.06	3.06	7.800	12.610	1.371	0.252	10.000	0.871	0.197	0.200	1.310	3.000	5.990
ASBURY P	NJ0025241	Apr	2.69	2.69	2.69	2.71	2.69	2.69	2.69	2.69	7.640	12.470	1.307	0.240	9.540	0.827	0.187	0.191	1.250	3.000	5.990
ASBURY P	NJ0025241	May	2.90	2.90	2.90	2.89	2.90	2.90	2.90	2.90	8.410	13.130	1.645	0.303	12.000	1.050	0.236	0.240	1.570	2.990	5.990
ASBURY P	NJ0025241	Jun	2.83	2.83	2.83	2.83	2.83	2.83	2.83	2.83	8.410	13.140	1.645	0.303	12.100	1.050	0.238	0.238	1.570	3.000	6.000
ASBURY P	NJ0025241	Jul	2.92	2.92	2.92	2.92	2.92	2.92	2.92	2.92	8.420	13.160	1.643	0.302	12.100	1.040	0.237	0.242	1.570	3.000	6.000
ASBURY P	NJ0025241	Aug	3.01	3.01	3.01	3.01	3.01	3.01	3.01	3.01	8.100	12.880	1.513	0.277	11.000	0.956	0.219	0.219	1.440	2.990	5.990
ASBURY P	NJ0025241	Sep	2.97	2.97	2.97	2.97	2.97	2.97	2.97	2.97	7.790	12.620	1.372	0.253	10.000	0.873	0.197	0.201	1.310	3.000	6.000
TNSA SEW	NJ0024872	Oct	4.52	4.52	4.52	4.52	4.52	4.52	4.52	4.52	7.800	12.630	1.544	0.284	13.600	0.660	0.196	0.199	1.310	2.990	6.000
TNSA SEW	NJ0024872	Nov	4.29	4.29	4.29	4.29	4.29	4.29	4.29	4.29	10.280	14.730	1.687	0.309	14.600	0.717	0.354	0.360	2.360	3.000	6.000
TNSA SEW	NJ0024872	Dec	4.38	4.38	4.38	4.38	4.38	4.38	4.38	4.38	9.660	14.200	1.188	0.219	8.820	0.507	0.315	0.320	2.100	2.990	6.000
TNSA SEW	NJ0024872	Jan	4.63	4.63	4.63	4.63	4.63	4.63	4.63	4.63	7.780	12.600	1.968	0.361	14.900	0.833	0.197	0.199	1.310	2.990	6.000
TNSA SEW	NJ0024872	Feb	4.41	4.41	4.41	4.41	4.41	4.41	4.41	4.41	8.100	12.880	1.613	0.297	12.200	0.686	0.218	0.221	1.440	3.000	5.990
TNSA SEW	NJ0024872	Mar	4.52	4.52	4.52	4.52	4.52	4.52	4.52	4.52	8.110	12.870	2.803	0.517	25.200	1.190	0.217	0.220	1.450	3.000	5.990
TNSA SEW	NJ0024872	Apr	5.43	5.43	5.43	5.40	5.43	5.43	5.43	5.43	8.100	12.880	2.600	0.477	21.600	1.110	0.217	0.221	1.440	3.000	5.990
TNSA SEW	NJ0024872	May	5.27	5.27	5.27	5.28	5.27	5.27	5.27	5.27	8.420	13.150	1.773	0.326	17.100	0.755	0.237				





Plant	NPDES	Month	Flow (MGD)								Concentration (mg/L)								
			8889	9495	9899	9900	0001	0102	POC	DOC	PON	DON	NH3T	NO23	POP	DOP	PO4T	SIT	DO
NCSD#2 -	NY0026450	Apr	50.67	50.67	51.81	51.77	51.81	50.67	4.400	9.960	1.800	0.000	30.700	0.250	0.102	0.189	3.270	6.790	5.990
NCSD#2 -	NY0026450	May	53.41	53.41	54.32	54.24	54.32	53.41	7.340	16.610	6.800	0.000	29.000	0.390	0.082	0.151	2.810	5.770	6.000
NCSD#2 -	NY0026450	Jun	56.60	56.60	57.52	57.41	57.52	56.60	6.370	14.400	3.900	0.000	31.000	0.120	0.088	0.162	2.800	5.350	5.990
NCSD#2 -	NY0026450	Jul	56.38	56.38	57.52	57.52	57.52	56.38	7.590	17.160	3.900	0.000	23.900	1.860	0.129	0.238	2.870	3.040	6.000
NCSD#2 -	NY0026450	Aug	58.43	58.43	59.57	59.51	59.57	58.43	7.590	17.170	3.400	0.000	26.700	1.970	0.047	0.086	2.580	5.260	6.000
NCSD#2 -	NY0026450	Sep	57.29	57.29	58.43	58.47	58.43	57.29	11.500	26.020	4.700	0.000	24.800	1.400	0.120	0.222	3.190	5.260	5.990
LAWRENCE	NY0020354	Oct	1.23	1.23	1.23	1.23	1.23	1.23	12.110	16.270	3.271	0.605	23.900	2.080	0.469	0.478	3.120	3.000	5.980
LAWRENCE	NY0020354	Nov	1.14	1.14	1.14	1.14	1.14	1.14	12.570	16.680	3.490	0.640	25.500	2.210	0.504	0.504	3.330	3.000	5.970
LAWRENCE	NY0020354	Dec	1.17	1.17	1.17	1.17	1.17	1.17	10.950	15.320	2.769	0.511	20.300	1.760	0.398	0.409	2.640	3.000	5.990
LAWRENCE	NY0020354	Jan	1.18	1.18	1.18	1.18	1.18	1.18	11.080	15.410	2.828	0.519	20.700	1.790	0.407	0.407	2.700	3.000	6.010
LAWRENCE	NY0020354	Feb	1.18	1.18	1.18	1.18	1.18	1.18	11.350	15.630	2.958	0.546	21.600	1.870	0.426	0.426	2.820	3.000	5.980
LAWRENCE	NY0020354	Mar	1.21	1.21	1.21	1.21	1.21	1.21	11.090	15.420	2.830	0.524	20.700	1.800	0.406	0.416	2.700	3.000	6.020
LAWRENCE	NY0020354	Apr	1.13	1.13	1.13	1.13	1.13	1.13	13.310	17.320	3.820	0.701	27.900	2.420	0.552	0.552	3.650	3.000	5.990
LAWRENCE	NY0020354	May	1.20	1.20	1.20	1.19	1.20	1.20	11.290	15.570	2.900	0.531	21.300	1.840	0.421	0.421	2.780	3.000	6.010
LAWRENCE	NY0020354	Jun	1.26	1.26	1.26	1.26	1.26	1.26	10.660	15.030	2.638	0.486	19.300	1.670	0.380	0.380	2.520	3.000	6.000
LAWRENCE	NY0020354	Jul	1.18	1.18	1.18	1.19	1.18	1.18	8.730	13.390	1.786	0.324	13.000	1.130	0.253	0.263	1.710	3.000	5.980
LAWRENCE	NY0020354	Aug	1.12	1.12	1.12	1.12	1.12	1.12	9.690	14.230	2.214	0.406	16.200	1.400	0.320	0.320	2.110	3.000	5.980
LAWRENCE	NY0020354	Sep	1.17	1.17	1.17	1.16	1.17	1.17	13.270	17.290	3.800	0.699	27.700	2.410	0.545	0.554	3.620	3.000	5.980
SUFFOLK	NY0104809	Oct	20.13	20.13	20.13	20.13	20.13	20.13	7.310	13.620	2.458	0.141	0.798	19.000	0.229	0.361	2.440	4.650	5.990
SUFFOLK	NY0104809	Nov	20.13	20.13	20.13	20.13	20.13	20.13	9.370	17.520	2.457	0.141	0.800	19.000	0.294	0.464	3.120	4.670	6.010
SUFFOLK	NY0104809	Dec	20.66	20.66	20.66	20.66	20.66	20.66	8.330	15.580	2.457	0.141	0.798	19.000	0.262	0.413	2.790	3.630	5.980
SUFFOLK	NY0104809	Jan	20.20	20.20	20.20	20.20	20.20	20.20	8.330	15.590	3.400	0.196	12.900	15.000	0.262	0.412	2.770	5.210	5.990
SUFFOLK	NY0104809	Feb	19.79	19.79	19.79	19.79	19.79	19.79	11.130	20.800	3.400	0.196	12.900	15.000	0.349	0.549	3.710	4.640	6.000
SUFFOLK	NY0104809	Mar	19.90	19.90	19.90	19.90	19.90	19.90	8.690	16.240	3.400	0.194	12.900	15.000	0.272	0.429	2.890	5.710	6.000
SUFFOLK	NY0104809	Apr	20.29	20.29	20.29	20.28	20.29	20.29	7.290	13.640	2.555	0.147	21.400	18.000	0.229	0.361	2.440	4.810	5.990
SUFFOLK	NY0104809	May	20.50	20.50	20.50	20.49	20.50	20.50	9.380	17.520	2.555	0.147	21.400	18.000	0.294	0.464	3.140	4.720	6.010
SUFFOLK	NY0104809	Jun	20.79	20.79	20.79	20.78	20.79	20.79	6.970	12.980	2.555	0.146	21.400	18.000	0.217	0.344	2.320	3.730	5.990
SUFFOLK	NY0104809	Jul	19.61	19.61	19.61	19.64	19.61	19.61	5.550	10.400	9.730	0.559	4.390	19.100	0.174	0.275	1.860	4.640	5.980
SUFFOLK	NY0104809	Aug	19.31	19.31	19.31	19.32	19.31	19.31	3.820	7.120	9.750	0.559	4.410	19.100	0.120	0.189	1.280	4.630	6.000
SUFFOLK	NY0104809	Sep	19.99	19.99	19.99	19.97	19.99	19.99	5.920	11.020	9.750	0.559	4.390	19.100	0.185	0.293	1.970	4.620	6.000
NCSD#3 C	NY0026859	Oct	51.13	51.13	51.13	51.13	51.13	51.13	6.670	14.240	0.000	0.000	31.800	0.420	0.193	0.263	3.710	2.950	6.000
NCSD#3 C	NY0026859	Nov	52.95	52.95	52.95	52.95	52.95	52.95	8.500	18.140	0.000	0.000	31.800	0.420	0.194	0.262	3.710	2.950	5.990
NCSD#3 C	NY0026859	Dec	56.60	56.60	56.60	56.60	56.60	56.60	8.500	18.140	0.000	0.000	31.800	0.420	0.194	0.262	3.710	2.950	5.990
NCSD#3 C	NY0026859	Jan	58.66	58.66	58.66	58.66	58.66	58.66	4.250	9.080	4.100	0.000	36.600	0.390	0.218	0.296	4.190	2.450	5.990
NCSD#3 C	NY0026859	Feb	55.01	55.01	55.01	55.01	55.01	55.01	7.290	15.530	4.100	0.000	36.600	0.389	0.217	0.296	4.180	2.940	5.990
NCSD#3 C	NY0026859	Mar	53.18	53.18	53.18	53.24	53.18	53.18	6.070	12.940	4.100	0.000	36.700	0.390	0.217	0.296	4.180	3.140	6.000
NCSD#3 C	NY0026859	Apr	53.64	53.64	53.64	53.62	53.64	53.64	4.850	10.370	4.090	0.000	33.600	0.420	0.216	0.293	4.140	3.870	5.990
NCSD#3 C	NY0026859	May	51.13	51.13	51.13	51.21	51.13	51.13	6.070	12.950	4.090	0.000	33.700	0.420	0.216	0.293	4.140	3.180	6.000
NCSD#3 C	NY0026859	Jun	53.18	53.18	53.18	53.11	53.18	53.18	6.680	14.260	4.100	0.000	33.700	0.419	0.216	0.293	4.140	3.250	6.000
NCSD#3 C	NY0026859	Jul	56.83	56.83	56.83	56.71	56.83	56.83	4.860	10.360	2.400	0.000	37.200	0.460	0.224	0.304	4.300	1.820	6.000
NCSD#3 C	NY0026859	Aug	55.69	55.69	55.69	55.73	55.69	55.69	6.070	12.950	2.399	0.000	37.300	0.460	0.224	0.304	4.300	2.950	6.000
NCSD#3 C	NY0026859	Sep	54.32	54.32	54.32	54.37	54.32	54.32	5.450	11.650	2.399	0.000	37.300	0.459	0.224	0.303	4.300	2.950	5.990
NEW CANA	CT0101273	Oct	0.78	0.78	0.78	0.78	0.78	0.78	6.850	11.830	0.968	0.170	7.050	0.614	0.138	0.138	0.921	3.000	6.000
NEW CANA	CT0101273	Nov	0.89	0.89	0.89	0.89	0.89	0.89	7.170	12.060	1.096	0.203	8.040	0.703	0.162	0.162	1.050	3.000	6.020
NEW CANA	CT0101273	Dec	1.30	1.30	1.30	1.30	1.30	1.30	8.120	12.900	1.515	0.276	11.100	0.959	0.211	0.221	1.450	3.000	6.010
NEW CANA	CT0101273	Jan	1.70	1.70	1.70	1.70	1.70	1.70	8.430	13.140	1.644	0.303	12.100	1.040	0.240	0.240	1.570	3.000	6.000
NEW CANA	CT0101273	Feb	1.40	1.40	1.40	1.40	1.40	1.40	8.090	12.890	1.503	0.274	11.100	0.959	0.214	0.223	1.450	3.000	6.000
NEW CANA	CT0101273	Mar	1.50	1.50	1.50	1.50	1.50	1.50	7.150	12.100	1.092	0.200	8.030	0.694	0.160	0.160	1.050	3.000	5.990
NEW CANA	CT0101273	Apr	1.30	1.30	1.30	1.31	1.30	1.30	7.150	12.100	1.097	0.203	8.050	0.699	0.157	0.157	1.050	3.000	6.010
NEW CANA	CT0101273	May	1.30	1.30	1.30	1.30	1.30	1.30	6.440	11.470	0.773	0.138	5.690	0.496	0.110	0.110	0.748	3.000	6.010
NEW CANA	CT0101273	Jun	1.12	1.12	1.12	1.13	1.12	1.12	6.750	11.710	0.922	0.171	6.750	0.590	0.128	0.139	0.877	3.000	5.990
NEW CANA	CT0101273	Jul	1.00	1.00	1.00	1.00	1.00	1.00	6.460	11.500	0.792	0.143	5.760	0.503	0.108	0.120	0.756	3.000	5.970
NEW CANA	CT0101273	Aug	0.98	0.98	0.98	0.98	0.98	0.98	6.540	11.540	0.815	0.146	6.030	0.525	0.122	0.122	0.791	3.000	5.970
NEW CANA	CT0101273	Sep	1.00	1.00	1.00	1.00	1.00	1.00	6.860	11.840	0.958	0.180	7.030	0.613	0.143	0.143	0.925	3.000	5.970
NORWALK	CT010124																		

Plant	NPDES	Month	Flow (MGD)								Concentration (mg/L)								DO
			8889	9495	9899	9900	0001	0102	POC	DOC	PON	DON	NH3T	NO23	POP	DOP	PO4T	SIT	
			Refractory Labile Reactive	30% 70%	25% 50%	30% 70%	30% 70%	-	-	-	-	30% 70%	30% 70%	-	-	-	-	-	
FAIRFIEL	CT0101044	Jan	9.11	9.11	9.11	9.11	9.11	9.11	9.360	13.930	1.069	0.197	14.600	0.000	0.280	0.312	1.880	3.000	5.980
FAIRFIEL	CT0101044	Feb	8.03	8.03	8.03	8.03	8.03	8.03	9.360	13.930	1.069	0.196	14.600	0.000	0.280	0.310	1.880	3.000	5.990
FAIRFIEL	CT0101044	Mar	8.95	8.95	8.95	8.92	8.95	8.95	9.640	14.190	1.140	0.210	15.600	0.000	0.299	0.331	2.000	3.000	5.970
FAIRFIEL	CT0101044	Apr	7.90	7.90	7.90	7.93	7.90	7.90	9.650	14.190	1.137	0.209	15.600	0.000	0.299	0.330	2.010	3.000	5.990
FAIRFIEL	CT0101044	May	7.69	7.69	7.69	7.70	7.69	7.69	9.660	14.170	1.137	0.209	15.600	0.000	0.299	0.332	2.000	3.000	6.000
FAIRFIEL	CT0101044	Jun	6.80	6.80	6.80	6.83	6.80	6.80	9.970	14.450	1.210	0.222	16.500	0.000	0.317	0.352	2.130	3.000	6.000
FAIRFIEL	CT0101044	Jul	6.37	6.37	6.37	6.38	6.37	6.37	9.660	14.200	1.269	0.232	15.300	0.000	0.403	0.446	2.700	3.000	6.000
FAIRFIEL	CT0101044	Aug	6.21	6.21	6.21	6.21	6.21	6.21	9.030	13.670	0.844	0.154	15.200	0.000	0.247	0.273	1.650	3.000	6.000
FAIRFIEL	CT0101044	Sep	6.35	6.35	6.35	6.34	6.35	6.35	9.660	14.200	1.181	0.218	14.100	0.000	0.213	0.236	1.430	3.000	5.990
SUFFOLK	NY0023311	Oct	0.71	0.71	0.71	0.71	0.71	0.71	5.300	10.510	1.200	0.219	3.220	13.500	0.776	0.674	1.490	3.000	6.000
SUFFOLK	NY0023311	Nov	0.69	0.69	0.69	0.69	0.69	0.69	5.290	10.500	0.926	0.174	2.500	10.500	0.768	0.663	1.490	3.000	5.990
SUFFOLK	NY0023311	Dec	0.66	0.66	0.66	0.66	0.66	0.66	5.300	10.510	1.189	0.220	3.220	13.500	0.770	0.659	1.490	3.000	6.000
SUFFOLK	NY0023311	Jan	0.59	0.59	0.59	0.59	0.59	0.59	5.300	10.490	1.202	0.224	3.220	13.600	0.449	0.387	1.590	3.000	5.990
SUFFOLK	NY0023311	Feb	0.62	0.62	0.62	0.62	0.62	0.62	5.620	10.760	1.572	0.291	4.230	17.800	0.447	0.387	1.590	3.000	5.990
SUFFOLK	NY0023311	Mar	0.57	0.57	0.57	0.57	0.57	0.57	5.910	11.040	1.332	0.253	3.590	15.100	0.443	0.401	1.580	3.000	5.990
SUFFOLK	NY0023311	Apr	0.52	0.52	0.52	0.53	0.52	0.52	5.290	10.510	1.301	0.251	3.510	14.800	1.232	1.073	1.480	3.000	6.000
SUFFOLK	NY0023311	May	0.56	0.56	0.56	0.56	0.56	0.56	5.300	10.490	1.158	0.215	3.110	13.200	1.224	1.074	1.480	3.000	5.990
SUFFOLK	NY0023311	Jun	0.57	0.57	0.57	0.57	0.57	0.57	5.290	10.490	1.118	0.211	3.040	12.700	1.224	1.076	1.480	2.990	6.000
SUFFOLK	NY0023311	Jul	0.58	0.58	0.58	0.57	0.58	0.58	5.910	11.030	1.209	0.230	3.250	13.700	1.527	1.313	2.940	3.000	5.990
SUFFOLK	NY0023311	Aug	0.64	0.64	0.64	0.64	0.64	0.64	5.300	10.500	0.874	0.167	2.380	10.000	1.512	1.323	2.940	2.990	6.000
SUFFOLK	NY0023311	Sep	0.64	0.64	0.64	0.64	0.64	0.64	5.310	10.490	0.975	0.187	2.620	11.000	1.526	1.312	2.940	3.000	5.990
BRIDGEPO	CT0100056	Oct	20.68	20.68	20.68	20.68	20.68	20.68	14.720	9.150	2.272	0.120	9.530	0.063	0.486	0.112	0.736	2.990	6.000
BRIDGEPO	CT0100056	Nov	20.47	20.47	20.47	20.47	20.47	20.47	25.990	16.170	4.010	0.213	16.800	0.111	0.858	0.198	1.300	2.990	5.990
BRIDGEPO	CT0100056	Dec	23.28	23.28	23.28	23.28	23.28	23.28	21.580	13.470	3.350	0.177	14.000	0.092	0.713	0.165	1.080	3.000	5.990
BRIDGEPO	CT0100056	Jan	20.70	20.70	20.70	20.70	20.70	20.70	17.280	10.810	2.674	0.141	11.200	0.074	0.572	0.132	0.865	2.990	6.000
BRIDGEPO	CT0100056	Feb	21.66	21.66	21.66	21.66	21.66	21.66	13.830	8.640	2.142	0.113	8.980	0.059	0.457	0.106	0.693	3.000	6.000
BRIDGEPO	CT0100056	Mar	27.62	27.62	27.62	27.43	27.62	27.62	11.250	7.000	1.742	0.092	7.300	0.048	0.370	0.086	0.563	3.000	5.990
BRIDGEPO	CT0100056	Apr	22.37	22.37	22.37	22.54	22.37	22.37	21.600	13.490	3.340	0.177	14.000	0.093	0.715	0.165	1.080	3.000	6.000
BRIDGEPO	CT0100056	May	20.98	20.98	20.98	21.02	20.98	20.98	12.990	8.090	2.012	0.106	8.410	0.055	0.429	0.099	0.650	3.000	5.990
BRIDGEPO	CT0100056	Jun	19.56	19.56	19.56	19.61	19.56	19.56	21.590	13.490	3.340	0.177	14.000	0.092	0.714	0.165	1.080	3.000	6.000
BRIDGEPO	CT0100056	Jul	22.62	22.62	22.62	22.52	22.62	22.62	17.280	10.750	2.673	0.142	11.200	0.074	0.571	0.132	0.866	2.990	6.000
BRIDGEPO	CT0100056	Aug	23.51	23.51	23.51	23.48	23.51	23.51	10.370	6.460	1.603	0.085	6.720	0.044	0.344	0.079	0.519	3.000	6.000
BRIDGEPO	CT0100056	Sep	22.78	22.78	22.78	22.80	22.78	22.78	7.790	4.850	1.206	0.064	5.050	0.033	0.257	0.059	0.389	2.990	6.000
BRIDGEPO	CT0101010	Oct	6.71	6.71	6.71	6.71	6.71	6.71	8.410	13.150	0.934	0.171	7.470	0.865	0.155	0.173	1.040	3.000	6.000
BRIDGEPO	CT0101010	Nov	5.68	5.68	5.68	5.68	5.68	5.68	10.280	14.740	0.886	0.162	7.090	0.600	0.179	0.197	1.200	3.000	6.000
BRIDGEPO	CT0101010	Dec	6.98	6.98	6.98	6.98	6.98	6.98	7.790	12.610	0.874	0.161	6.990	0.998	0.168	0.187	1.130	3.000	5.990
BRIDGEPO	CT0101010	Jan	7.33	7.33	7.33	7.33	7.33	7.33	8.420	13.140	0.850	0.156	6.790	0.029	0.109	0.121	0.736	3.000	6.000
BRIDGEPO	CT0101010	Feb	6.92	6.92	6.92	6.92	6.92	6.92	7.480	12.340	1.049	0.192	8.400	0.699	0.112	0.124	0.750	3.000	5.990
BRIDGEPO	CT0101010	Mar	6.85	6.85	6.85	6.85	6.85	6.85	7.480	12.360	0.974	0.179	7.800	0.996	0.123	0.137	0.826	3.000	5.990
BRIDGEPO	CT0101010	Apr	7.01	7.01	7.01	7.00	7.01	7.01	7.790	12.610	0.825	0.151	6.600	1.700	0.168	0.187	1.120	3.000	5.990
BRIDGEPO	CT0101010	May	7.12	7.12	7.12	7.12	7.12	7.12	7.790	12.610	0.887	0.163	7.090	0.801	0.113	0.124	0.749	3.000	6.000
BRIDGEPO	CT0101010	Jun	6.16	6.16	6.16	6.19	6.16	6.16	8.730	13.410	1.037	0.191	8.290	1.400	0.157	0.173	1.050	3.000	5.990
BRIDGEPO	CT0101010	Jul	6.46	6.46	6.46	6.45	6.46	6.46	10.270	14.740	1.250	0.230	9.990	0.868	0.224	0.249	1.500	3.000	6.000
BRIDGEPO	CT0101010	Aug	6.71	6.71	6.71	6.70	6.71	6.71	8.420	13.130	1.100	0.202	8.820	0.061	0.157	0.173	1.050	3.000	5.990
BRIDGEPO	CT0101010	Sep	6.71	6.71	6.71	6.71	6.71	6.71	8.100	12.880	0.537	0.098	4.300	1.400	0.202	0.223	1.350	3.000	5.990
SUFFOLK	NY0206644	Oct	2.19	2.19	2.19	2.19	2.19	2.19	5.610	10.780	0.679	0.126	1.150	0.458	0.793	0.690	2.240	2.990	5.980
SUFFOLK	NY0206644	Nov	2.14	2.14	2.14	2.14	2.14	2.14	5.610	10.760	0.980	0.179	1.650	0.662	0.793	0.688	2.240	2.990	6.000
SUFFOLK	NY0206644	Dec	1.94	1.94	1.94	1.94	1.94	1.94	5.600	10.770	1.858	0.340	3.160	1.260	0.797	0.693	2.240	3.000	5.990
SUFFOLK	NY0206644	Jan	1.76	1.76	1.76	1.76	1.76	1.76	5.310	10.510	0.587	0.109	0.054	2.310	0.755	0.660	1.370	3.000	6.000
SUFFOLK	NY0206644	Feb	2.08	2.08	2.08	2.08	2.08	2.08	5.620	10.770	0.904	0.167	0.086	3.560	0.761	0.657	1.370	3.000	5.990
SUFFOLK	NY0206644	Mar	2.13	2.13	2.13	2.13	2.13	2.13	5.920	11.010	1.166	0.214	0.113	4.590	0.759	0.658	1.370	3.000	6.000
SUFFOLK	NY0206644	Apr	2.21	2.21	2.21	2.21	2.21	2.21	5.920	11.020	1.083	0.200	1.180	2.030	0.390	0.336	1.790	2.990	6.000
SUFFOLK	NY0206644	May	2.14	2.14	2.14	2.14	2.14	2.14	5.610	10.760	0.955	0.173	1.040	1.800	0.392	0.336	1.780	2.990	6.000
SUFFOLK	NY0206644	Jun	2.17	2.17	2.17	2.17	2.17	2.17	5.290	10.520	0.480	0.088	0.519	0.901	0.393	0.337	1.790	2.990	5.990
SUFFOLK	NY0206644	Jul	2.40	2.40	2.40	2.39	2.40	2.40	4.990	10.250	0.000	0.000	0.150	4.200	0.040	0.035	2.520	3.010	5.990
SUFFOLK	NY0206644	Aug	2.49	2.49	2.49	2.48	2.49	2.49	5.300	10.480	0.000	0.000	0.174	4.900	0.044	0.039	2.540	3.000	5.990
SUFFOLK	NY0206644	Sep	2.23	2.23	2.23	2.24	2.23	2.23	5.610	10.780	0.000	0.000	0.209	5.850	0.043	0.038	2.540	3.010	5.990
PORT JEF	NY0021750	Oct	0.53	0.53	0.53	0.53	0.53	0.53	9.960	14.450	2.085	0.382	17.700	0.380	1.231	1.076	3.600	3.000	5.990
PORT JEF	NY0021750	Nov	0.72	0.72	0.72	0.72	0.72	0.72	8.970	13.630	1.699	0.316	14.300	0.299	1.226	1.066	3.610	3.000	5.990
PORT JEF	NY0021750	Dec	0.73	0.73	0.73	0.73	0.73	0.73	11.490	15.770	1.687	0.312	14.300	0.295	1.230	1.066	3.610	3.000	5.990
PORT JEF	NY002175																		

Plant	NPDES	Month	Flow (MGD)								Concentration (mg/L)										
			8889	9495	9899	9900	0001	0102	POC	DOC	PON	DON	NH3T	NO23	POP	DOP	PO4T	SIT	DO		
MILFORD-	CT0100749	Oct	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	7.150	12.070	1.941	0.360	4.970	3.140	0.452	0.501	3.020	3.000	6.000
MILFORD-	CT0100749	Nov	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	6.850	11.830	1.699	0.314	4.360	2.750	0.397	0.434	2.640	3.000	6.010
MILFORD-	CT0100749	Dec	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	7.160	12.080	1.941	0.354	4.980	3.140	0.449	0.503	3.020	2.990	5.990
MILFORD-	CT0100749	Jan	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	6.220	11.280	1.210	0.223	3.120	1.960	0.280	0.314	1.890	2.990	5.990
MILFORD-	CT0100749	Feb	1.90	1.90	1.90	1.90	1.90	1.90	1.90	1.90	6.240	11.330	1.212	0.221	3.110	1.970	0.284	0.309	1.890	3.000	6.010
MILFORD-	CT0100749	Mar	2.10	2.10	2.10	2.09	2.10	2.10	2.10	2.10	6.220	11.280	1.210	0.223	3.120	1.960	0.280	0.314	1.890	2.990	5.990
MILFORD-	CT0100749	Apr	1.90	1.90	1.90	1.91	1.90	1.90	1.90	1.90	6.870	11.820	1.699	0.309	4.370	2.750	0.397	0.436	2.640	3.000	6.010
MILFORD-	CT0100749	May	1.90	1.90	1.90	1.90	1.90	1.90	1.90	1.90	6.240	11.330	1.212	0.221	3.110	1.970	0.284	0.309	1.890	3.000	6.010
MILFORD-	CT0100749	Jun	1.70	1.70	1.70	1.71	1.70	1.70	1.70	1.70	6.220	11.320	1.212	0.226	3.110	1.970	0.282	0.310	1.890	3.000	6.000
MILFORD-	CT0100749	Jul	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	6.550	11.560	1.456	0.270	3.730	2.360	0.337	0.374	2.270	3.000	6.010
MILFORD-	CT0100749	Aug	1.70	1.70	1.70	1.70	1.70	1.70	1.70	1.70	6.260	11.320	1.527	0.282	2.700	1.400	0.282	0.310	1.870	3.000	6.000
MILFORD-	CT0100749	Sep	1.50	1.50	1.50	1.51	1.50	1.50	1.50	1.50	6.540	11.560	1.015	0.184	4.300	3.190	0.344	0.383	2.320	3.000	5.990
DERBY WP	CT0100161	Oct	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	9.980	14.510	1.166	0.217	7.050	6.430	0.202	0.180	1.810	3.000	6.000
DERBY WP	CT0100161	Nov	1.62	1.62	1.62	1.62	1.62	1.62	1.62	1.62	11.190	15.520	1.165	0.214	7.060	6.440	0.206	0.177	1.810	3.000	5.990
DERBY WP	CT0100161	Dec	2.05	2.05	2.05	2.05	2.05	2.05	2.05	2.05	7.790	12.600	1.165	0.217	7.050	6.430	0.206	0.176	1.810	3.000	5.990
DERBY WP	CT0100161	Jan	2.24	2.24	2.24	2.24	2.24	2.24	2.24	2.24	8.420	13.140	1.429	0.263	2.810	7.390	0.107	0.091	1.100	3.000	5.990
DERBY WP	CT0100161	Feb	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	9.350	13.930	0.336	0.060	9.900	3.400	0.108	0.090	1.900	3.010	5.990
DERBY WP	CT0100161	Mar	2.08	2.08	2.08	2.07	2.08	2.08	2.08	2.08	7.780	12.610	0.818	0.150	10.800	1.230	0.156	0.138	1.300	3.000	6.000
DERBY WP	CT0100161	Apr	1.86	1.86	1.86	1.87	1.86	1.86	1.86	1.86	8.110	12.870	1.068	0.200	15.500	1.230	0.316	0.277	1.600	2.980	6.000
DERBY WP	CT0100161	May	1.77	1.77	1.77	1.77	1.77	1.77	1.77	1.77	7.170	12.080	1.441	0.264	1.300	6.610	0.156	0.136	1.500	2.990	6.010
DERBY WP	CT0100161	Jun	1.60	1.60	1.60	1.61	1.60	1.60	1.60	1.60	6.230	11.290	0.150	0.030	15.500	0.822	0.263	0.232	2.300	3.000	6.010
DERBY WP	CT0100161	Jul	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	7.150	12.100	0.032	0.008	3.590	12.500	0.320	0.271	2.700	3.000	5.990
DERBY WP	CT0100161	Aug	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	7.150	12.100	1.904	0.351	2.800	10.500	0.264	0.231	2.000	3.000	5.990
DERBY WP	CT0100161	Sep	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	7.490	12.340	0.926	0.167	1.400	16.900	0.160	0.136	1.900	3.000	5.990
SHELTON	CT0100714	Oct	2.06	2.06	2.06	2.06	2.06	2.06	2.06	2.06	7.790	12.620	2.659	0.489	21.300	1.130	0.198	0.198	1.310	3.010	5.990
SHELTON	CT0100714	Nov	2.03	2.03	2.03	2.03	2.03	2.03	2.03	2.03	7.480	12.370	2.670	0.491	21.400	1.140	0.177	0.177	1.180	3.000	5.990
SHELTON	CT0100714	Dec	2.53	2.53	2.53	2.53	2.53	2.53	2.53	2.53	7.460	12.350	1.728	0.317	13.800	0.734	0.176	0.180	1.180	2.990	6.000
SHELTON	CT0100714	Jan	2.60	2.60	2.60	2.60	2.60	2.60	2.60	2.60	7.490	12.370	1.614	0.297	12.900	0.684	0.179	0.179	1.180	2.990	5.990
SHELTON	CT0100714	Feb	2.31	2.31	2.31	2.31	2.31	2.31	2.31	2.31	7.780	12.610	2.416	0.443	19.400	1.030	0.198	0.198	1.310	3.010	5.990
SHELTON	CT0100714	Mar	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37	7.800	12.590	1.614	0.298	12.900	0.687	0.197	0.203	1.320	2.990	6.000
SHELTON	CT0100714	Apr	2.06	2.06	2.06	2.07	2.06	2.06	2.06	2.06	7.470	12.340	2.386	0.436	19.100	1.010	0.174	0.180	1.180	3.000	6.000
SHELTON	CT0100714	May	2.08	2.08	2.08	2.08	2.08	2.08	2.08	2.08	7.470	12.370	2.528	0.467	20.200	1.080	0.179	0.179	1.180	2.990	5.990
SHELTON	CT0100714	Jun	1.95	1.95	1.95	1.96	1.95	1.95	1.95	1.95	7.460	12.330	2.371	0.437	19.000	1.010	0.177	0.177	1.180	3.000	6.010
SHELTON	CT0100714	Jul	1.95	1.95	1.95	1.95	1.95	1.95	1.95	1.95	6.850	11.800	0.177	0.031	1.400	0.074	0.135	0.141	0.920	3.000	6.010
SHELTON	CT0100714	Aug	1.85	1.85	1.85	1.85	1.85	1.85	1.85	1.85	7.180	12.120	0.259	0.045	2.100	0.110	0.156	0.162	1.050	3.000	6.000
SHELTON	CT0100714	Sep	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	7.480	12.360	1.009	0.186	8.080	0.431	0.180	0.180	1.180	3.000	6.010
ANSONIA	CT0100013	Oct	1.82	1.82	1.82	1.82	1.82	1.82	1.82	1.82	6.220	11.300	0.415	0.079	4.880	0.092	0.066	0.086	0.427	2.990	6.010
ANSONIA	CT0100013	Nov	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	7.800	12.590	0.831	0.153	9.750	0.193	0.127	0.167	0.860	2.990	5.990
ANSONIA	CT0100013	Dec	2.44	2.44	2.44	2.44	2.44	2.44	2.44	2.44	7.490	12.370	0.745	0.137	8.770	0.172	0.118	0.147	0.771	2.990	6.000
ANSONIA	CT0100013	Jan	2.94	2.94	2.94	2.94	2.94	2.94	2.94	2.94	7.160	12.100	0.667	0.122	7.810	0.150	0.106	0.134	0.686	2.990	6.000
ANSONIA	CT0100013	Feb	2.58	2.58	2.58	2.58	2.58	2.58	2.58	2.58	8.110	12.890	0.915	0.167	10.700	0.209	0.144	0.181	0.942	2.990	6.000
ANSONIA	CT0100013	Mar	2.78	2.78	2.78	2.78	2.78	2.78	2.78	2.78	6.850	11.810	0.584	0.107	6.820	0.133	0.090	0.116	0.600	2.990	6.000
ANSONIA	CT0100013	Apr	2.09	2.09	2.09	2.11	2.09	2.09	2.09	2.09	9.020	13.650	1.163	0.212	13.700	0.263	0.183	0.236	1.200	3.010	5.990
ANSONIA	CT0100013	May	1.92	1.92	1.92	1.93	1.92	1.92	1.92	1.92	8.730	13.430	1.082	0.200	12.700	0.250	0.169	0.219	1.120	3.000	6.000
ANSONIA	CT0100013	Jun	1.72	1.72	1.72	1.73	1.72	1.72	1.72	1.72	7.780	12.620	0.830	0.153	9.740	0.188	0.132	0.167	0.857	3.000	5.990
ANSONIA	CT0100013	Jul	1.63	1.63	1.63	1.63	1.63	1.63	1.63	1.63	8.710	13.390	1.079	0.199	12.700	0.250	0.169	0.213	1.120	3.000	6.000
ANSONIA	CT0100013	Aug	1.62	1.62	1.62	1.62	1.62	1.62	1.62	1.62	10.890	15.270	0.960	0.177	18.500	0.362	0.133	0.177	0.903	3.000	6.000
ANSONIA	CT0100013	Sep	1.55	1.55	1.55	1.55	1.55	1.55	1.55	1.55	9.340	13.910	1.772	0.325	15.400	0.301	0.286	0.371	1.900	3.000	6.000
SEYMOUR	CT0100501	Oct	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	6.230	11.310	0.022	0.000	0.196	0.011	0.098	0.098	0.653	3.000	6.000
SEYMOUR	CT0100501	Nov	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	6.230	11.280	0.027	0.000	0.253	0.013	0.093	0.107	0.652	3.000	5.990
SEYMOUR	CT0100501	Dec	1.22	1.22	1.22	1.22	1.22	1.22	1.22	1.22	7.240	12.140	0.049	0.010	0.						

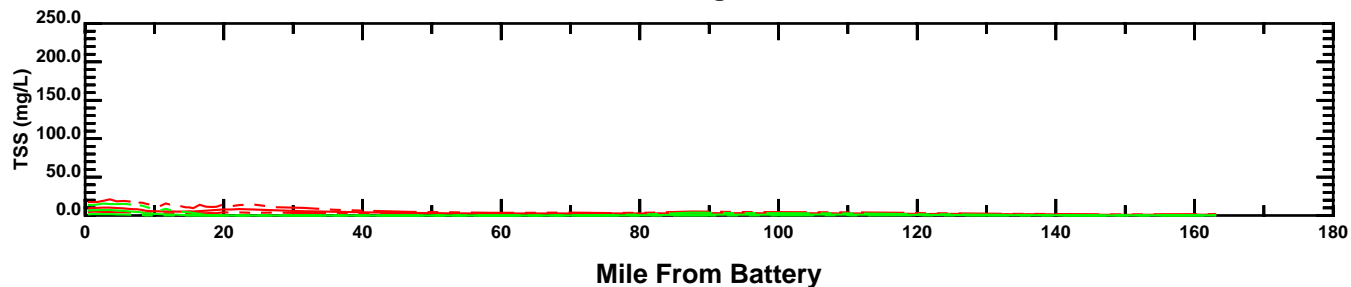
Plant	NPDES	Month	Flow (MGD)								Concentration (mg/L)								
			8889	9495	9899	9900	0001	0102	POC	DOC	PON	DON	NH3T	NO23	POP	DOP	PO4T	SIT	DO
			Refractory Labile Reactive	30% 70%	25% 25%	30% 70%	30% 70%	-	-	-	-	30% 70%	30% 70%	-	-	-	-	-	-
NEW HAVE	CT0100366	Jul	32.18	32.18	32.18	32.15	32.18	32.18	8.620	12.230	1.602	0.892	11.300	0.000	0.565	0.334	1.890	3.000	5.990
NEW HAVE	CT0100366	Aug	30.81	30.81	30.81	30.86	30.81	30.81	8.620	12.220	1.092	0.605	12.000	0.200	0.376	0.223	0.899	2.990	6.000
NEW HAVE	CT0100366	Sep	29.90	29.90	29.90	29.93	29.90	29.90	8.640	12.220	0.898	0.499	12.900	0.000	0.314	0.186	1.400	3.000	5.990
NORTH HA	CT0100404	Oct	2.69	2.69	2.69	2.69	2.69	2.69	7.470	12.360	0.000	0.000	5.090	20.400	0.276	0.240	5.190	2.990	5.990
NORTH HA	CT0100404	Nov	2.69	2.69	2.69	2.69	2.69	2.69	7.470	12.360	2.072	0.382	0.701	20.400	0.276	0.240	5.190	2.990	5.990
NORTH HA	CT0100404	Dec	3.61	3.61	3.61	3.61	3.61	3.61	7.790	12.630	2.586	0.476	0.100	20.400	0.306	0.266	5.750	2.990	5.990
NORTH HA	CT0100404	Jan	4.20	4.20	4.20	4.20	4.20	4.20	7.790	12.620	2.244	0.413	0.499	20.400	0.306	0.266	5.750	2.990	6.000
NORTH HA	CT0100404	Feb	3.49	3.49	3.49	3.49	3.49	3.49	8.110	12.890	1.571	0.287	1.300	20.400	0.336	0.291	6.330	3.000	5.990
NORTH HA	CT0100404	Mar	3.79	3.79	3.79	3.78	3.79	3.79	9.650	14.200	0.558	0.104	2.500	20.400	0.488	0.426	9.200	3.000	5.990
NORTH HA	CT0100404	Apr	3.20	3.20	3.20	3.22	3.20	3.20	8.420	13.150	1.149	0.210	1.800	20.300	0.368	0.318	6.900	3.000	5.990
NORTH HA	CT0100404	May	3.10	3.10	3.10	3.11	3.10	3.10	6.230	11.300	2.084	0.383	0.699	20.500	0.150	0.131	2.880	3.000	6.000
NORTH HA	CT0100404	Jun	2.90	2.90	2.90	2.91	2.90	2.90	6.850	11.800	1.729	0.318	0.401	19.500	0.103	0.091	2.700	3.010	5.990
NORTH HA	CT0100404	Jul	2.51	2.51	2.51	2.52	2.51	2.51	6.550	11.570	1.858	0.341	1.200	19.300	0.264	0.230	3.700	3.000	6.000
NORTH HA	CT0100404	Aug	2.69	2.69	2.69	2.69	2.69	2.69	6.230	11.300	2.370	0.436	0.599	22.700	0.421	0.363	2.900	2.990	5.990
NORTH HA	CT0100404	Sep	2.60	2.60	2.60	2.60	2.60	2.60	6.240	11.290	1.941	0.354	1.100	20.100	0.000	0.000	3.600	3.010	5.990
BRANFORD	CT0100048	Oct	3.65	3.65	3.65	3.65	3.65	3.65	7.790	12.630	1.371	0.253	10.000	0.870	0.197	0.200	1.310	3.000	5.990
BRANFORD	CT0100048	Nov	3.56	3.56	3.56	3.56	3.56	3.56	7.170	12.080	1.097	0.201	8.040	0.699	0.157	0.161	1.050	3.000	5.990
BRANFORD	CT0100048	Dec	4.13	4.13	4.13	4.13	4.13	4.13	7.780	12.610	1.372	0.253	10.000	0.872	0.197	0.201	1.310	3.000	5.990
BRANFORD	CT0100048	Jan	4.29	4.29	4.29	4.29	4.29	4.29	6.860	11.830	0.960	0.176	7.030	0.608	0.137	0.140	0.919	2.990	6.000
BRANFORD	CT0100048	Feb	4.09	4.09	4.09	4.09	4.09	4.09	9.350	13.930	2.058	0.379	15.000	1.310	0.296	0.300	1.970	2.990	6.000
BRANFORD	CT0100048	Mar	4.13	4.13	4.13	4.13	4.13	4.13	11.210	15.530	2.885	0.530	21.100	1.830	0.412	0.420	2.750	2.990	6.000
BRANFORD	CT0100048	Apr	3.97	3.97	3.97	3.98	3.97	3.97	12.460	16.570	3.430	0.631	25.200	2.180	0.493	0.500	3.270	2.990	5.990
BRANFORD	CT0100048	May	3.99	3.99	3.99	3.99	3.99	3.99	11.220	15.530	2.884	0.530	21.100	1.840	0.413	0.419	2.760	3.000	6.000
BRANFORD	CT0100048	Jun	3.83	3.83	3.83	3.84	3.83	3.83	10.910	15.260	2.754	0.505	20.100	1.750	0.393	0.399	2.630	3.000	6.000
BRANFORD	CT0100048	Jul	3.72	3.72	3.72	3.72	3.72	3.72	10.910	15.270	2.743	0.504	20.100	1.740	0.394	0.401	2.620	2.990	6.000
BRANFORD	CT0100048	Aug	3.61	3.61	3.61	3.61	3.61	3.61	12.770	16.870	3.570	0.658	26.100	2.270	0.511	0.521	3.410	3.000	6.000
BRANFORD	CT0100048	Sep	3.54	3.54	3.54	3.54	3.54	3.54	11.210	15.530	2.885	0.530	21.100	1.830	0.414	0.421	2.750	2.990	6.000
NEW LOND	CT0100382	Oct	6.39	6.39	6.39	6.39	6.39	6.39	7.170	12.090	1.099	0.201	8.030	0.696	0.157	0.160	1.050	3.000	6.000
NEW LOND	CT0100382	Nov	6.46	6.46	6.46	6.46	6.46	6.46	6.540	11.560	0.824	0.152	6.020	0.523	0.119	0.120	0.786	3.000	5.990
NEW LOND	CT0100382	Dec	7.81	7.81	7.81	7.81	7.81	7.81	6.860	11.810	0.962	0.177	7.040	0.610	0.138	0.139	0.921	3.000	5.990
NEW LOND	CT0100382	Jan	7.71	7.71	7.71	7.71	7.71	7.71	7.480	12.350	1.234	0.227	9.050	0.788	0.177	0.180	1.180	2.990	6.000
NEW LOND	CT0100382	Feb	8.06	8.06	8.06	8.06	8.06	8.06	8.100	12.880	1.513	0.277	11.000	0.958	0.216	0.220	1.440	3.000	5.990
NEW LOND	CT0100382	Mar	9.47	9.47	9.47	9.43	9.47	9.47	6.540	11.580	0.822	0.152	6.030	0.523	0.118	0.120	0.787	3.000	5.970
NEW LOND	CT0100382	Apr	9.22	9.22	9.22	9.23	9.22	9.22	7.470	12.370	1.236	0.227	9.050	0.785	0.177	0.179	1.180	3.000	6.020
NEW LOND	CT0100382	May	10.20	10.20	10.20	10.17	10.20	10.20	7.770	12.630	1.375	0.252	10.000	0.869	0.197	0.200	1.310	3.000	6.000
NEW LOND	CT0100382	Jun	8.60	8.60	8.60	8.66	8.60	8.60	7.480	12.380	1.236	0.227	9.020	0.785	0.177	0.180	1.180	2.990	6.000
NEW LOND	CT0100382	Jul	8.13	8.13	8.13	8.14	8.13	8.13	6.550	11.560	0.823	0.152	6.030	0.522	0.118	0.120	0.787	3.000	5.990
NEW LOND	CT0100382	Aug	6.14	6.14	6.14	6.20	6.14	6.14	7.170	12.080	1.099	0.200	8.030	0.697	0.158	0.160	1.050	2.990	6.000
NEW LOND	CT0100382	Sep	6.09	6.09	6.09	6.10	6.09	6.09	7.160	12.090	1.097	0.202	8.030	0.697	0.157	0.160	1.050	3.000	5.990
GROTON (	CT0101184	Oct	3.17	3.17	3.17	3.17	3.17	3.17	8.100	12.880	1.209	0.223	2.140	0.102	0.241	0.309	1.590	3.000	5.990
GROTON (	CT0101184	Nov	3.17	3.17	3.17	3.17	3.17	3.17	8.100	12.880	1.209	0.223	2.140	0.102	0.241	0.309	1.590	3.000	5.990
GROTON (	CT0101184	Dec	3.67	3.67	3.67	3.67	3.67	3.67	8.720	13.410	1.427	0.261	2.530	0.117	0.284	0.366	1.890	2.990	5.990
GROTON (	CT0101184	Jan	3.67	3.67	3.67	3.67	3.67	3.67	9.050	13.680	1.540	0.283	2.730	0.127	0.306	0.394	2.030	3.000	6.000
GROTON (	CT0101184	Feb	3.47	3.47	3.47	3.47	3.47	3.47	8.420	13.160	1.315	0.242	2.340	0.111	0.263	0.340	1.740	3.000	6.000
GROTON (	CT0101184	Mar	3.63	3.63	3.63	3.62	3.63	3.63	8.410	13.140	1.316	0.242	2.330	0.109	0.264	0.337	1.730	3.000	5.990
GROTON (	CT0101184	Apr	3.29	3.29	3.29	3.30	3.29	3.29	8.410	13.160	1.315	0.241	2.340	0.110	0.263	0.336	1.740	3.000	6.000
GROTON (	CT0101184	May	3.42	3.42	3.42	3.42	3.42	3.42	7.790	12.610	1.098	0.203	1.950	0.091	0.220	0.283	1.450	3.000	6.000
GROTON (	CT0101184	Jun	3.31	3.31	3.31	3.31	3.31	3.31	8.410	13.160	1.319	0.242	2.330	0.109	0.264	0.337	1.740	3.000	6.000
GROTON (	CT0101184	Jul	2.94	2.94	2.94	2.96	2.94	2.94	9.960	14.480	1.870	0.343	3.310	0.155	0.371	0.478	2.470	2.990	6.000
GROTON (	CT0101184	Aug	3.33	3.33	3.33	3.32	3.33	3.33	9.030	13.670	1.530	0.283	2.730	0.129	0.306	0.391	2.030	3.000	5.990
GROTON (	CT0101184	Sep	2.92	2.92	2.92	2.94	2.92	2.92	8.410	13.130	1.316	0.243	2.340	0.111	0.264	0.337	1.740	2.990	6.000
TOWN OF	CT0100242	Oct	0.07	0.07	0.07	0.07	0.07	0.07	5.640	10.760	0.855	0.171	6.150	0.342	0.000	0.000	0.342	2.990	5.990
TOWN OF	CT0100242	Nov	0.11	0.11	0.11	0.11	0.11	0.11	5.660	10.760	0.436	0.109	3.160	0.218	0.109	0.109	0.436	3.000	6.000
TOWN OF	CT0100242	Dec	0.24	0.24	0.24	0.24	0.24	0.24	5.940	11.030	0.500	0.100	3.900	0.200	0.100	0.100	0.548	3.000	5.990
TOWN OF	CT0100242	Jan	0.51	0.51	0.51	0.51	0.51	0.51	5.620	10.760	0.400	0.070	3.190	0.165	0.070	0.070	0.399	2.990	6.000
TOWN OF	CT0100242	Feb	0.28	0.28	0.28	0.28	0.28	0.28	5.600	10.800	0.599	0.128	4.700	0.257	0.043	0.043	0.385	3.000	6.000
TOWN OF	CT0100242	Mar	0.44	0.44	0.44	0.44	0.44	0.44	5.610	10.760	0.463	0.082	3.590	0.191	0.054	0.054	0.381	3.000	5.990
TOWN OF	CT0100242	Apr	0.33	0.33	0.33	0.33	0.33	0.33	5.440	10.630	0.507	0.109	3.990	0.218	0.036	0.036	0.327	2.990	5.990
TOWN OF	CT0100242	May	0.23	0.23	0.23	0.23	0.23	0.23	5.310	10.540	0.521	0.104	4.230	0.208	0.052	0.052	0.259	2.990	5.990
TOWN OF	CT0100242	Jun	0.23	0.23	0.23	0.23	0.23	0.23	4.990	10.260	0.781	0.156	6.200	0.312	0.000	0.000	0.156	2.990	5.990
TOWN OF	CT0100242	Jul	0.31	0.31	0.31	0.31	0.31	0.31	4.990										

Plant	NPDES	Month	Flow (MGD)								Concentration (mg/L)								
			8889	9495	9899	9900	0001	0102	POC	DOC	PON	DON	NH3T	NO23	POP	DOP	PO4T	SIT	DO
NORWICH	CT0100412	Apr	6.80	6.80	6.80	6.82	6.80	6.80	11.540	15.830	3.890	0.714	3.000	1.000	0.000	0.000	5.000	3.000	6.000
NORWICH	CT0100412	May	6.50	6.50	6.50	6.51	6.50	6.50	12.440	16.590	2.244	0.413	1.800	1.530	0.267	0.233	4.300	3.000	6.000
NORWICH	CT0100412	Jun	3.90	3.90	3.90	3.99	3.90	3.90	11.520	15.780	1.973	0.362	1.590	1.340	0.234	0.203	3.790	2.990	6.000
NORWICH	CT0100412	Jul	2.90	2.90	2.90	2.93	2.90	2.90	8.720	13.400	0.124	0.025	0.099	13.300	0.103	0.091	1.400	3.010	5.990
NORWICH	CT0100412	Aug	2.99	2.99	2.99	2.99	2.99	2.99	9.330	13.950	1.351	0.247	1.080	0.914	0.160	0.140	2.570	2.990	5.990
NORWICH	CT0100412	Sep	3.10	3.10	3.10	3.10	3.10	3.10	8.720	13.420	1.165	0.217	0.936	0.793	0.139	0.120	2.230	3.000	6.000
ARLINGTON	NY0026271	Oct	2.69	2.69	2.69	2.69	2.69	2.69	5.930	11.040	1.856	0.342	14.800	0.826	0.080	0.080	0.524	2.990	5.990
ARLINGTON	NY0026271	Nov	2.81	2.81	2.81	2.81	2.81	2.81	6.550	11.550	1.743	0.321	13.900	0.774	0.120	0.120	0.787	3.000	6.000
ARLINGTON	NY0026271	Dec	3.40	3.40	3.40	3.40	3.40	3.40	5.610	10.760	1.630	0.300	13.100	0.726	0.060	0.060	0.395	3.000	6.000
ARLINGTON	NY0026271	Jan	3.79	3.79	3.79	3.79	3.79	3.79	6.230	11.280	1.034	0.189	8.270	0.460	0.098	0.101	0.656	3.000	5.990
ARLINGTON	NY0026271	Feb	3.20	3.20	3.20	3.20	3.20	3.20	6.230	11.290	1.845	0.340	14.800	0.824	0.097	0.101	0.655	3.000	5.990
ARLINGTON	NY0026271	Mar	3.61	3.61	3.61	3.59	3.61	3.61	6.220	11.290	1.855	0.340	14.800	0.825	0.100	0.100	0.656	2.990	5.990
ARLINGTON	NY0026271	Apr	3.20	3.20	3.20	3.21	3.20	3.20	6.860	11.830	1.066	0.194	8.540	0.476	0.139	0.139	0.918	3.000	5.990
ARLINGTON	NY0026271	May	2.99	2.99	2.99	3.00	2.99	2.99	6.870	11.840	1.956	0.360	15.700	0.870	0.140	0.140	0.919	2.990	5.990
ARLINGTON	NY0026271	Jun	2.81	2.81	2.81	2.81	2.81	2.81	5.610	10.780	2.173	0.398	17.400	0.972	0.060	0.060	0.394	3.000	6.000
ARLINGTON	NY0026271	Jul	2.81	2.81	2.81	2.81	2.81	2.81	6.230	11.300	1.629	0.299	13.100	0.727	0.098	0.098	0.655	3.000	6.000
ARLINGTON	NY0026271	Aug	2.81	2.81	2.81	2.81	2.81	2.81	5.610	10.780	0.868	0.159	6.960	0.389	0.060	0.060	0.394	3.000	6.000
ARLINGTON	NY0026271	Sep	2.90	2.90	2.90	2.90	2.90	2.90	6.850	11.800	2.069	0.380	16.500	0.922	0.136	0.141	0.916	3.010	5.990
HIGHLAND	NY0022586	Oct	0.57	0.57	0.57	0.57	0.57	0.57	6.240	11.300	0.688	0.125	5.010	0.438	0.104	0.104	0.647	3.000	5.990
HIGHLAND	NY0022586	Nov	0.63	0.63	0.63	0.63	0.63	0.63	5.930	11.020	0.548	0.095	4.020	0.341	0.076	0.076	0.530	3.000	5.990
HIGHLAND	NY0022586	Dec	0.76	0.76	0.76	0.76	0.76	0.76	6.230	11.300	0.690	0.126	5.030	0.440	0.094	0.094	0.659	3.000	6.000
HIGHLAND	NY0022586	Jan	0.87	0.87	0.87	0.87	0.87	0.87	5.920	11.030	0.550	0.096	4.010	0.344	0.082	0.082	0.522	3.000	5.990
HIGHLAND	NY0022586	Feb	0.63	0.63	0.63	0.63	0.63	0.63	5.910	11.040	0.550	0.095	4.020	0.341	0.076	0.076	0.531	3.000	5.990
HIGHLAND	NY0022586	Mar	0.72	0.72	0.72	0.72	0.72	0.72	6.230	11.290	0.681	0.133	5.020	0.432	0.100	0.100	0.648	3.000	5.990
HIGHLAND	NY0022586	Apr	0.59	0.59	0.59	0.60	0.59	0.59	6.860	11.810	0.953	0.183	7.040	0.608	0.142	0.142	0.912	3.000	6.000
HIGHLAND	NY0022586	May	0.56	0.56	0.56	0.56	0.56	0.56	5.560	11.560	0.830	0.149	6.020	0.532	0.128	0.128	0.787	2.990	6.000
HIGHLAND	NY0022586	Jun	0.50	0.50	0.50	0.50	0.50	0.50	6.540	11.540	0.836	0.143	6.010	0.525	0.119	0.119	0.787	3.000	6.000
HIGHLAND	NY0022586	Jul	0.48	0.48	0.48	0.48	0.48	0.48	5.920	11.030	0.547	0.099	4.020	0.347	0.075	0.075	0.522	2.990	6.000
HIGHLAND	NY0022586	Aug	0.47	0.47	0.47	0.47	0.47	0.47	6.530	11.550	0.832	0.151	6.030	0.529	0.126	0.126	0.782	2.990	6.000
HIGHLAND	NY0022586	Sep	0.48	0.48	0.48	0.48	0.48	0.48	5.600	10.760	0.424	0.075	3.010	0.249	0.050	0.050	0.399	3.000	6.000
CAPE MAY	NJ0020371	Oct	1.14	1.14	1.14	1.14	1.14	1.14	6.830	11.850	0.954	0.179	7.040	0.612	0.137	0.137	0.913	3.000	5.980
CAPE MAY	NJ0020371	Nov	0.94	0.94	0.94	0.94	0.94	0.94	7.480	12.360	1.237	0.230	9.050	0.793	0.179	0.179	1.190	3.000	6.010
CAPE MAY	NJ0020371	Dec	0.93	0.93	0.93	0.93	0.93	0.93	6.550	11.570	0.826	0.154	6.020	0.528	0.116	0.116	0.784	3.000	6.020
CAPE MAY	NJ0020371	Jan	0.92	0.92	0.92	0.92	0.92	0.92	6.540	11.580	0.820	0.156	6.030	0.521	0.117	0.117	0.781	3.000	5.970
CAPE MAY	NJ0020371	Feb	0.94	0.94	0.94	0.94	0.94	0.94	6.860	11.820	0.956	0.179	7.030	0.613	0.140	0.140	0.916	3.000	6.010
CAPE MAY	NJ0020371	Mar	0.99	0.99	0.99	0.99	0.99	0.99	7.480	12.370	1.235	0.230	9.020	0.785	0.181	0.181	1.180	3.000	5.980
CAPE MAY	NJ0020371	Apr	0.99	0.99	0.99	0.99	0.99	0.99	6.860	11.840	0.954	0.181	7.050	0.603	0.133	0.145	0.918	3.000	5.980
CAPE MAY	NJ0020371	May	1.40	1.40	1.40	1.39	1.40	1.40	7.770	12.600	1.370	0.248	10.000	0.872	0.197	0.197	1.310	3.000	6.000
CAPE MAY	NJ0020371	Jun	1.56	1.56	1.56	1.56	1.56	1.56	6.720	13.410	1.785	0.330	13.000	1.130	0.253	0.261	1.700	3.000	5.990
CAPE MAY	NJ0020371	Jul	1.89	1.89	1.89	1.88	1.89	1.89	9.340	13.940	2.058	0.380	15.100	1.310	0.299	0.299	1.970	2.990	5.980
CAPE MAY	NJ0020371	Aug	1.86	1.86	1.86	1.86	1.86	1.86	8.730	13.400	1.784	0.329	13.000	1.130	0.257	0.257	1.710	3.010	5.990
CAPE MAY	NJ0020371	Sep	1.46	1.46	1.46	1.47	1.46	1.46	7.180	12.080	1.101	0.206	8.030	0.698	0.156	0.156	1.050	3.000	6.010
OCEAN CI	NJ0035343	Oct	2.72	2.72	2.72	2.72	2.72	2.72	7.170	12.100	1.095	0.203	8.020	0.695	0.159	0.159	1.050	2.990	6.000
OCEAN CI	NJ0035343	Nov	2.49	2.49	2.49	2.49	2.49	2.49	7.480	12.360	1.236	0.227	9.030	0.782	0.179	0.179	1.180	3.000	5.990
OCEAN CI	NJ0035343	Dec	2.67	2.67	2.67	2.67	2.67	2.67	7.480	12.350	1.235	0.229	9.020	0.786	0.174	0.180	1.180	2.990	6.000
OCEAN CI	NJ0035343	Jan	2.65	2.65	2.65	2.65	2.65	2.65	8.090	12.900	1.513	0.276	11.000	0.959	0.217	0.221	1.440	2.990	6.000
OCEAN CI	NJ0035343	Feb	2.49	2.49	2.49	2.49	2.49	2.49	7.480	12.360	1.236	0.227	9.030	0.782	0.179	0.179	1.180	3.000	5.990
OCEAN CI	NJ0035343	Mar	2.33	2.33	2.33	2.33	2.33	2.33	6.870	11.840	0.961	0.176	7.040	0.610	0.140	0.140	0.920	3.010	5.990
OCEAN CI	NJ0035343	Apr	2.42	2.42	2.42	2.42	2.42	2.42	7.480	12.360	1.237	0.227	9.020	0.785	0.177	0.177	1.180	3.000	6.000
OCEAN CI	NJ0035343	May	3.47	3.47	3.47	3.44	3.47	3.47	7.780	12.600	1.375	0.253	10.000	0.869	0.197	0.200	1.310	3.000	6.000
OCEAN CI	NJ0035343	Jun	4.22	4.22	4.22	4.20	4.22	4.22	9.660	14.190	2.198	0.402	16.100	1.400	0.314	0.320	2.100	3.000	6.000
OCEAN CI	NJ0035343	Jul	5.73	5.73	5.73	5.68	5.73	5.73	11.530	15.800	3.026	0.555	22.100	1.910	0.433	0.441	2.890	3.000	5.990
OCEAN CI	NJ0035343	Aug	5.75	5.75	5.75	5.75	5.75	5.75	10.600	15.000	2.613	0.478	19.100	1.650	0.373	0.380	2.490	3.000	5.990
OCEAN CI	NJ0035343	Sep	3.79	3.79	3.79	3.85	3.79	3.79	8.100	12.900	1.513	0.278	11.000	0.958	0.218	0.220	1.450	3.000	5.990

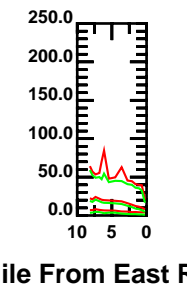
## **APPENDIX 4**

### **SUSPENDED SEDIMENT MODEL AND DATA COMPARISONS OVER SIX WATER YEARS**

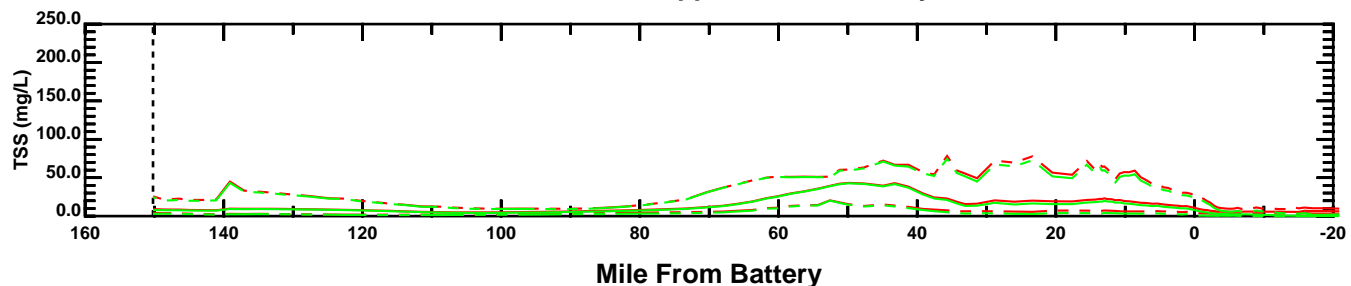
East River and Long Island Sound



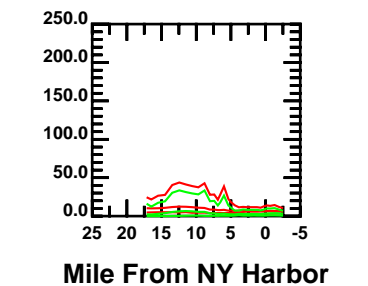
Harlem River



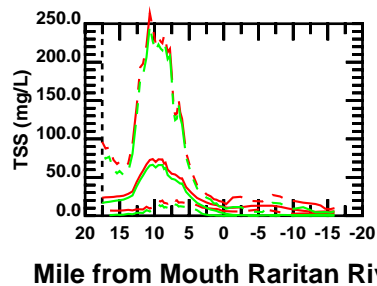
Hudson River, Upper and Lower Bay, Ocean



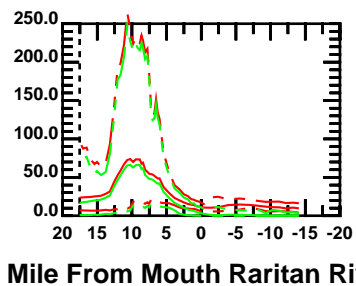
Arthur Kill and Kill Van Kull



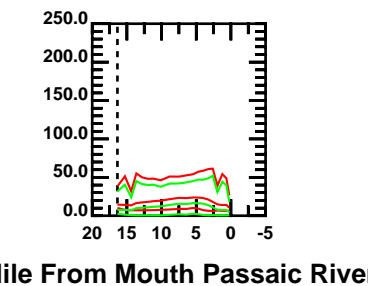
Raritan River and North Shore of Raritan Bay



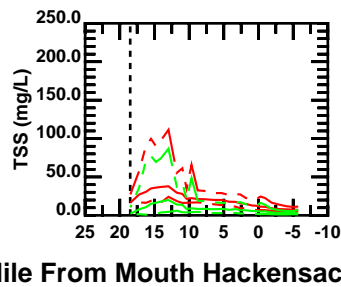
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



July 27 - August 25

DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

MODEL

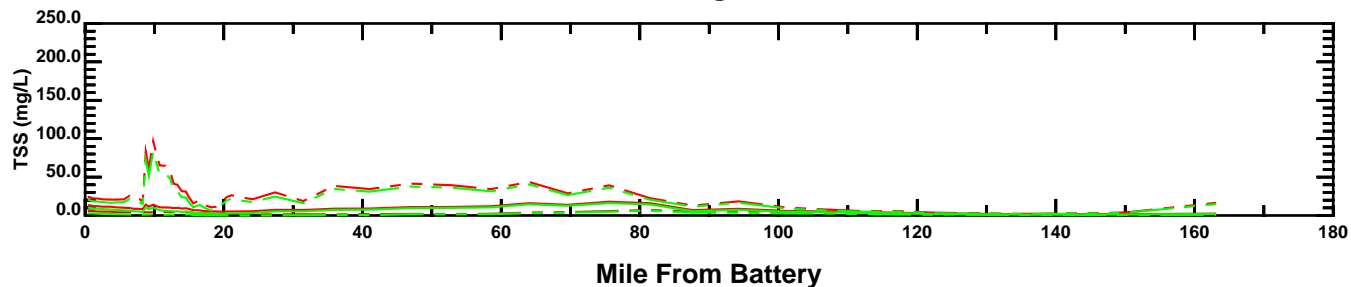
—	TSS SURFACE 30-DAY MEAN
- - -	TSS SURFACE 30-DAY MAX / MIN
—	COSS SURFACE 30-DAY MEAN
- - -	COSS SURFACE 30-DAY MAX / MIN

Mile From Mouth Hackensack River

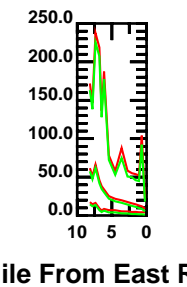
Surface Layer TSS (mg/L)  
Water Year Starting Oct 1, 1988



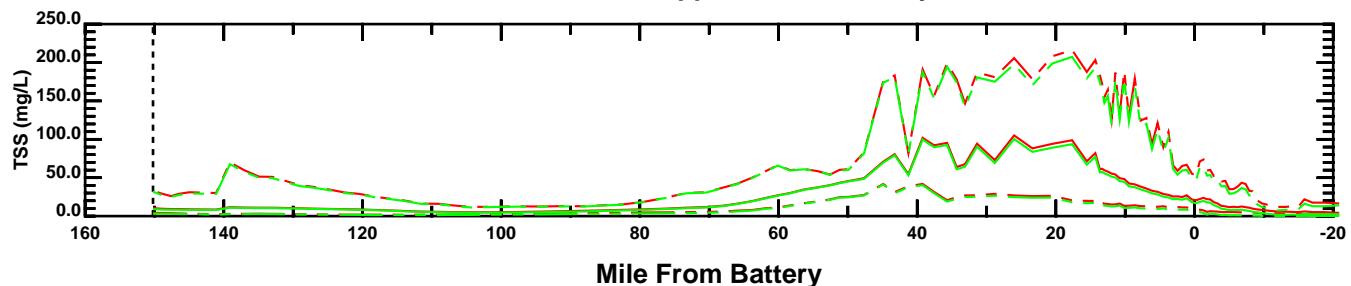
East River and Long Island Sound



Harlem River

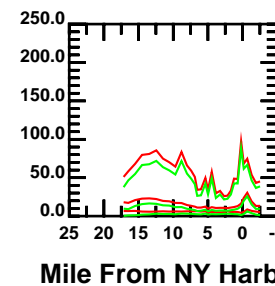


Hudson River, Upper and Lower Bay, Ocean

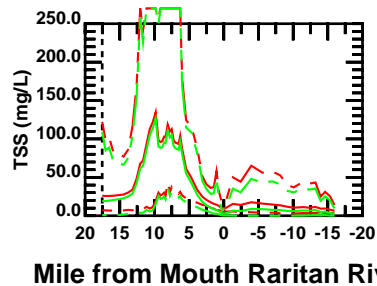


Mile From East River

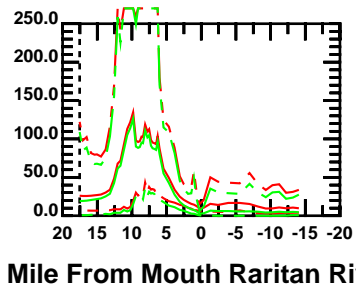
Arthur Kill and Kill Van Kull



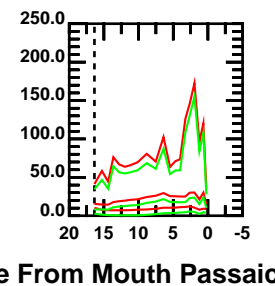
Raritan River and North Shore of Raritan Bay



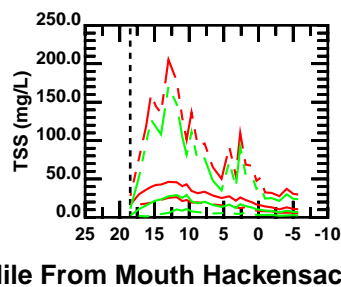
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



July 27 - August 25

DATA	TRANSECT	EMBAYMENT
NP	▼	▽
GFF	▲	▽

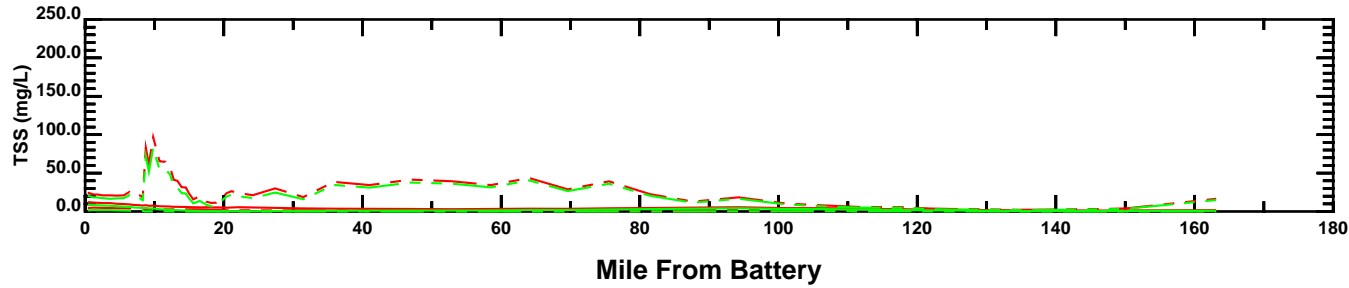
MODEL

—	TSS BOTTOM 30-DAY MEAN
- - -	TSS BOTTOM 30-DAY MAX / MIN
—	COSS BOTTOM 30-DAY MEAN
- - -	COSS BOTTOM 30-DAY MAX / MIN

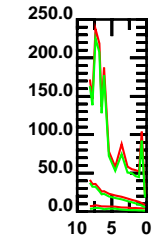
Mile From Mouth Hackensack River

Bottom Layer TSS (mg/L)  
Water Year Starting Oct 1, 1988

East River and Long Island Sound

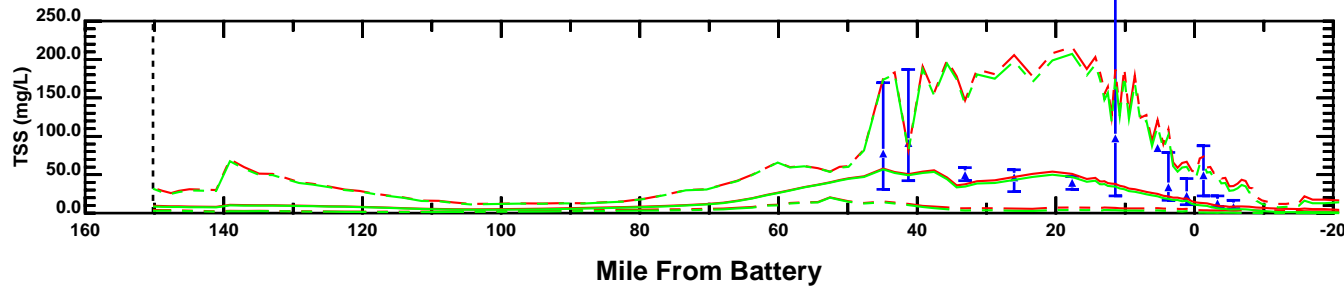


Harlem River

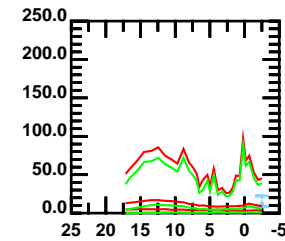


Mile From East River

Hudson River, Upper and Lower Bay, Ocean

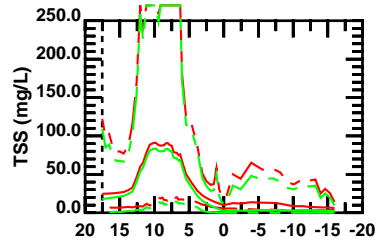


Arthur Kill and Kill Van Kull



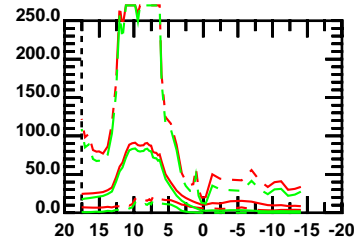
Mile From NY Harbor

Raritan River and North Shore of Raritan Bay



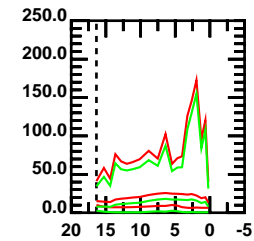
Mile from Mouth Raritan River

Raritan River and South Shore of Raritan Bay



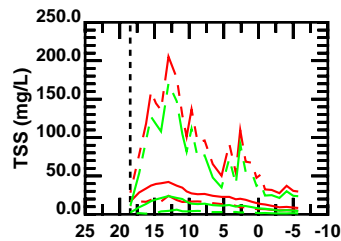
Mile From Mouth Raritan River

Passaic River



Mile From Mouth Passaic River

Hackensack River and Newark Bay



Mile From Mouth Hackensack River

July 27 - August 25

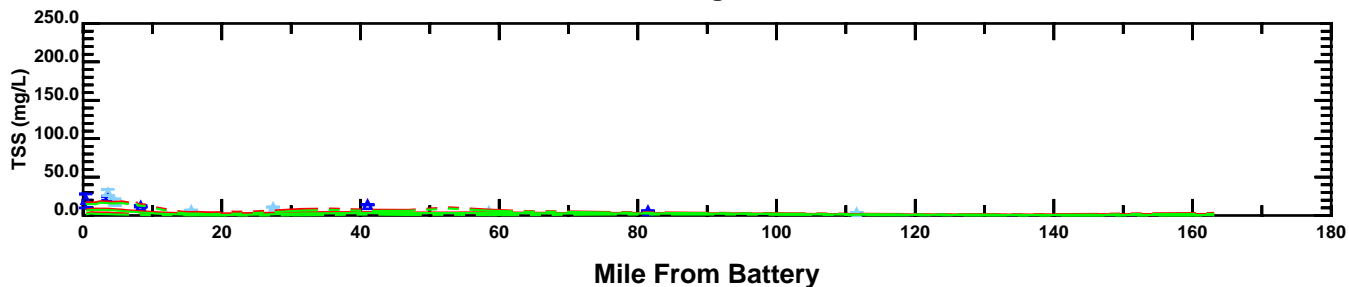
DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

MODEL

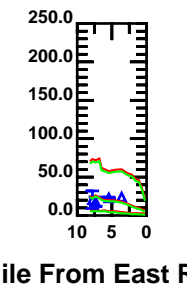
—	TSS 30-DAY MEAN
- - -	TSS 30-DAY MAX / MIN
—	COSS 30-DAY MEAN
- - -	COSS 30-DAY MAX / MIN

TSS (mg/L) Averaged Over Full Depth  
Water Year Starting Oct 1, 1988

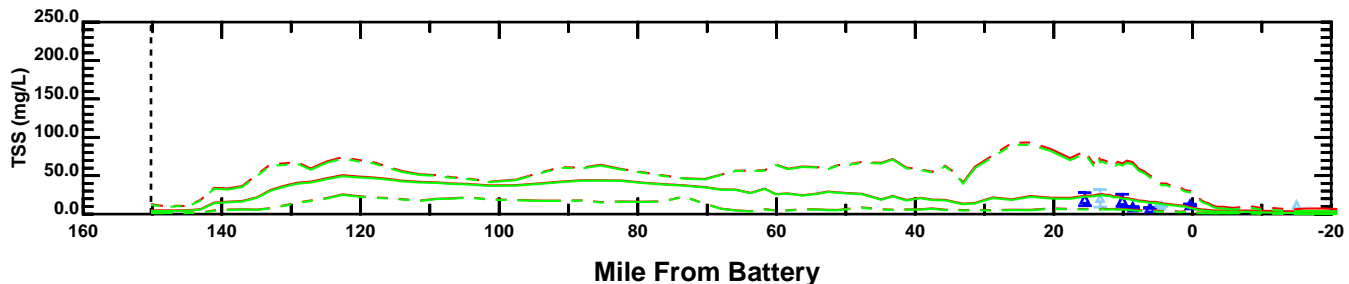
East River and Long Island Sound



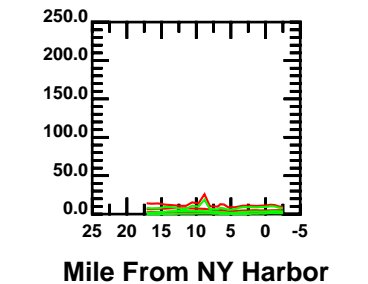
Harlem River



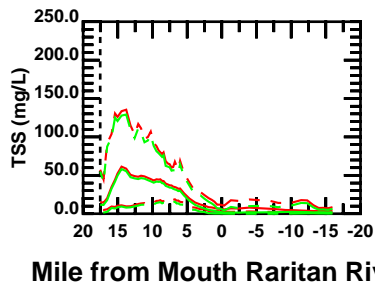
Hudson River, Upper and Lower Bay, Ocean



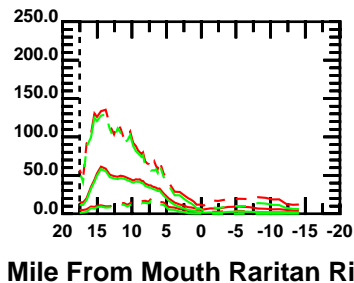
Arthur Kill and Kill Van Kull



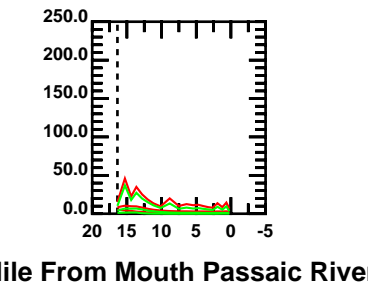
Raritan River and North Shore of Raritan Bay



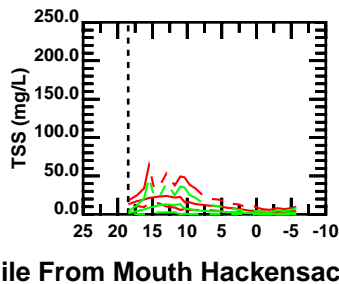
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



October 1 - October 30

DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

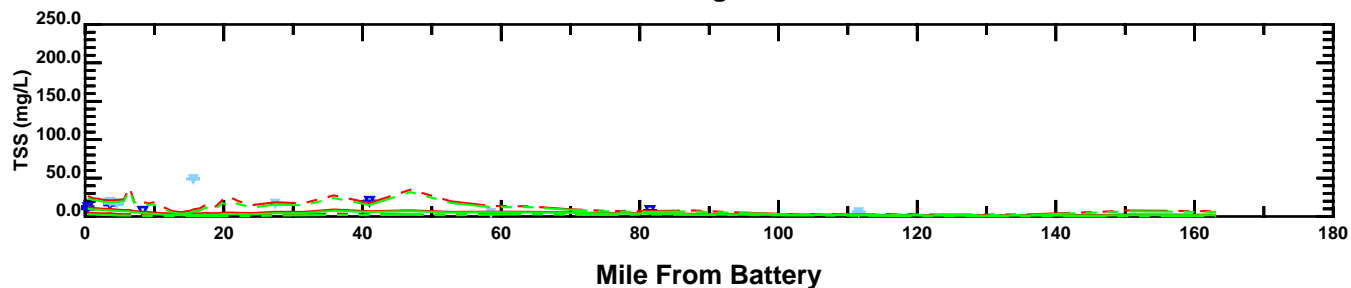
MODEL

—	TSS SURFACE 30-DAY MEAN
- - -	TSS SURFACE 30-DAY MAX / MIN
—	COSS SURFACE 30-DAY MEAN
- - -	COSS SURFACE 30-DAY MAX / MIN

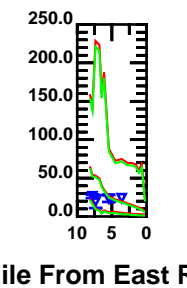
Mile From Mouth Hackensack River

Surface Layer TSS (mg/L)  
Water Year Starting Oct 1, 1994

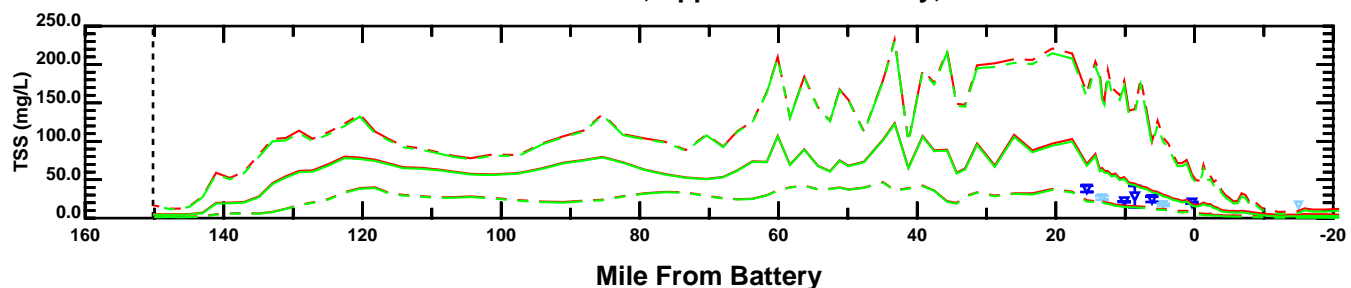
East River and Long Island Sound



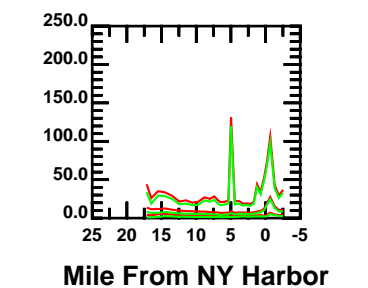
Harlem River



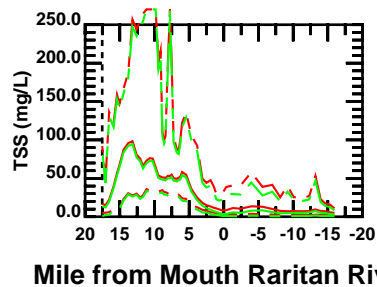
Hudson River, Upper and Lower Bay, Ocean



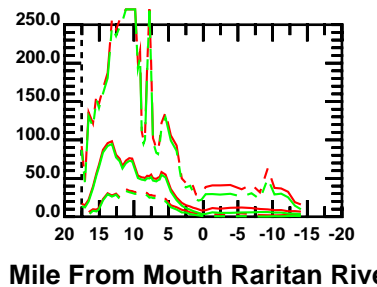
Arthur Kill and Kill Van Kull



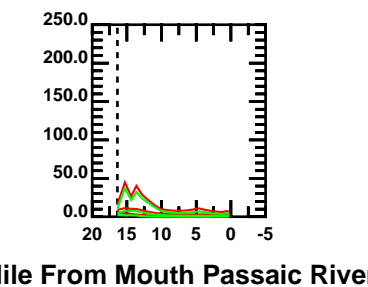
Raritan River and North Shore of Raritan Bay



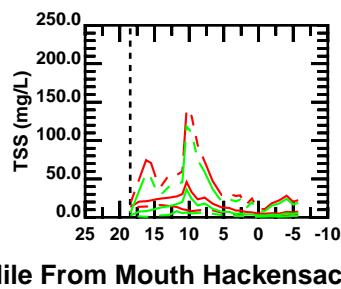
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



October 1 - October 30

DATA	TRANSECT	EMBAYMENT
NP	▼	▽
GFF	▲	△

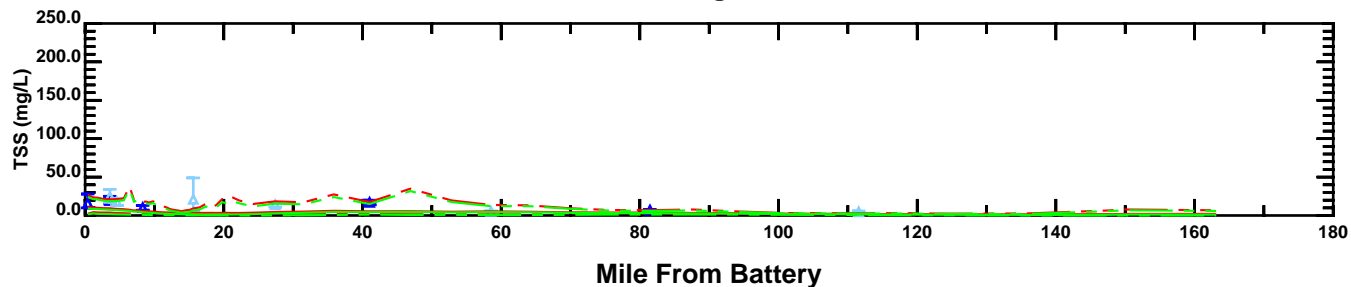
MODEL

—	TSS BOTTOM 30-DAY MEAN
- - -	TSS BOTTOM 30-DAY MAX / MIN
—	COSS BOTTOM 30-DAY MEAN
- - -	COSS BOTTOM 30-DAY MAX / MIN

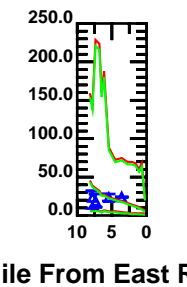
Mile From Mouth Hackensack River

Bottom Layer TSS (mg/L)  
Water Year Starting Oct 1, 1994

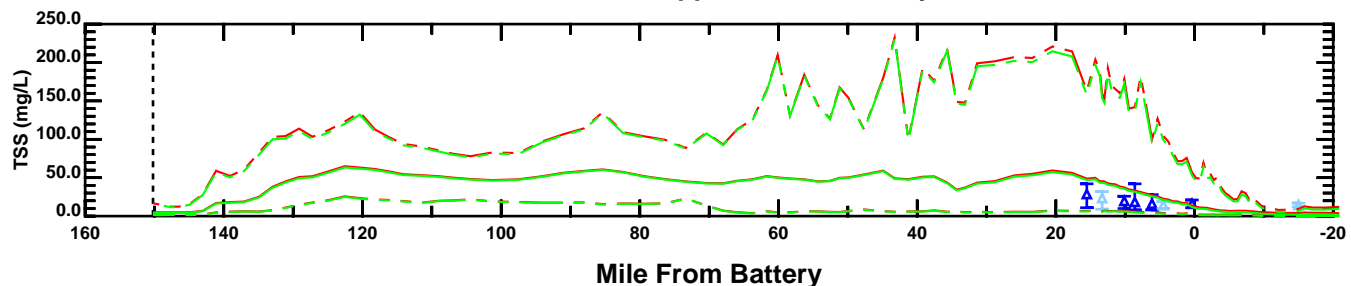
East River and Long Island Sound



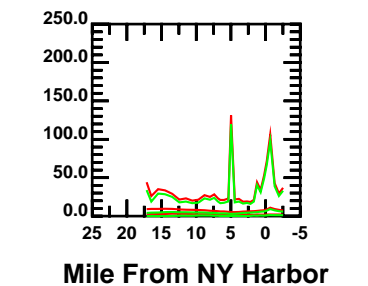
Harlem River



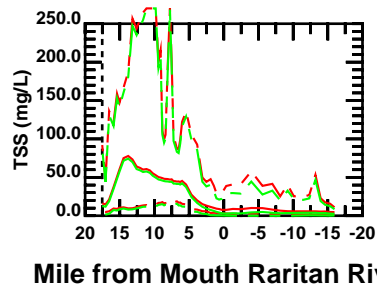
Hudson River, Upper and Lower Bay, Ocean



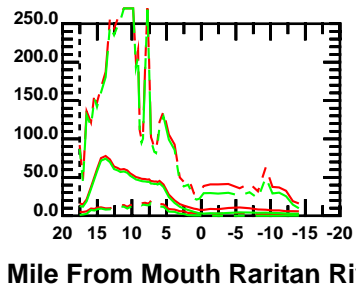
Arthur Kill and Kill Van Kull



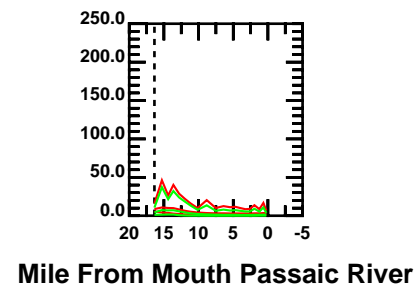
Raritan River and North Shore of Raritan Bay



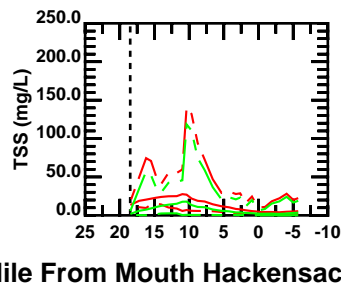
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



October 1 - October 30

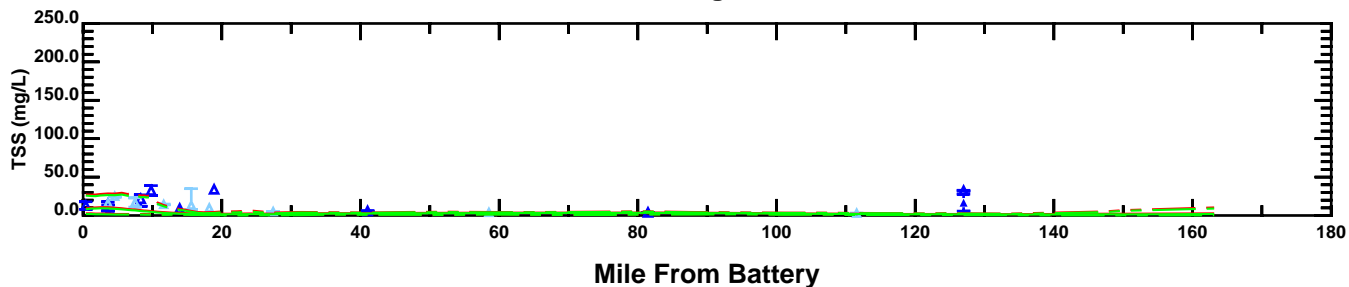
DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

MODEL	
—	TSS 30-DAY MEAN
- - -	TSS 30-DAY MAX / MIN
—	COSS 30-DAY MEAN
- - -	COSS 30-DAY MAX / MIN

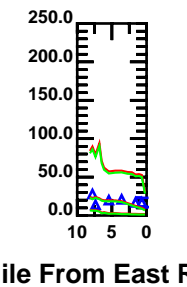
Mile From Mouth Hackensack River

TSS (mg/L) Averaged Over Full Depth  
Water Year Starting Oct 1, 1994

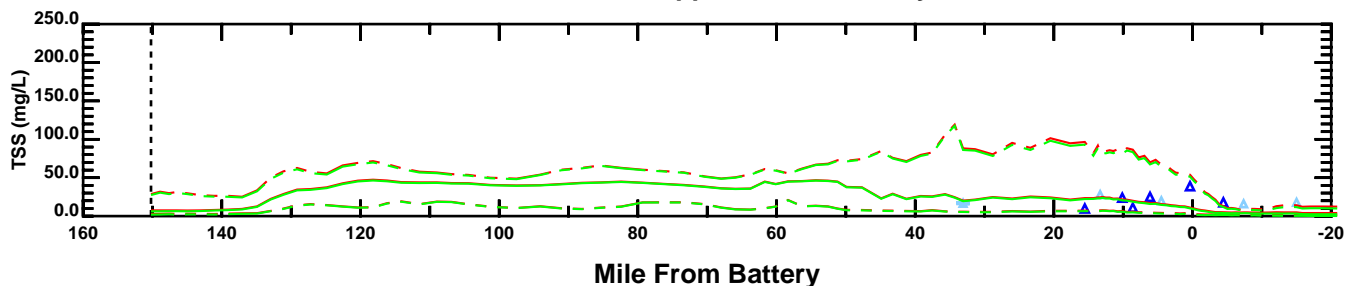
East River and Long Island Sound



Harlem River

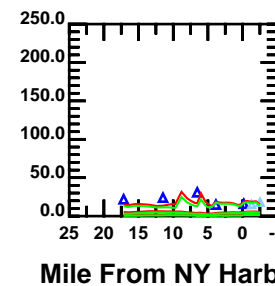


Hudson River, Upper and Lower Bay, Ocean

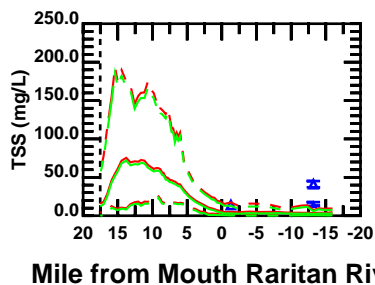


Mile From East River

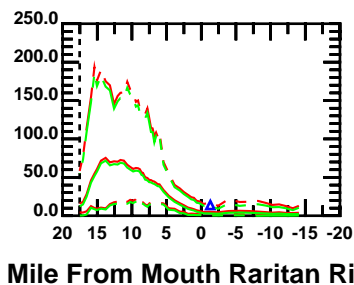
Arthur Kill and Kill Van Kull



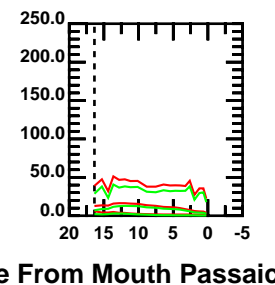
Raritan River and North Shore of Raritan Bay



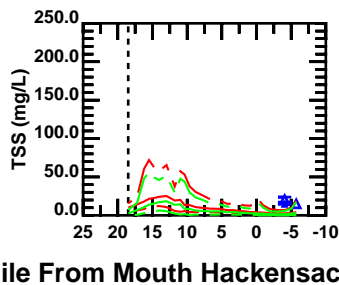
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



October 31 - November 29

DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

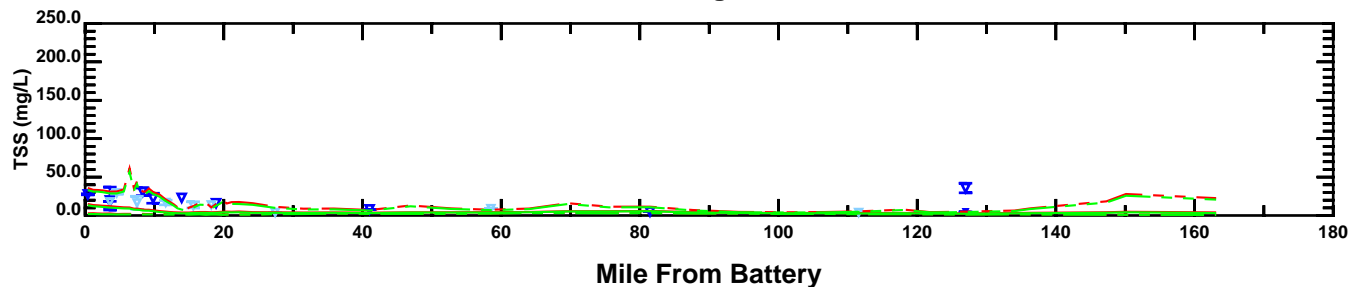
MODEL

—	TSS SURFACE 30-DAY MEAN
- - -	TSS SURFACE 30-DAY MAX / MIN
—	COSS SURFACE 30-DAY MEAN
- - -	COSS SURFACE 30-DAY MAX / MIN

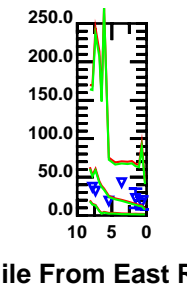
Mile From Mouth Hackensack River

Surface Layer TSS (mg/L)  
Water Year Starting Oct 1, 1994

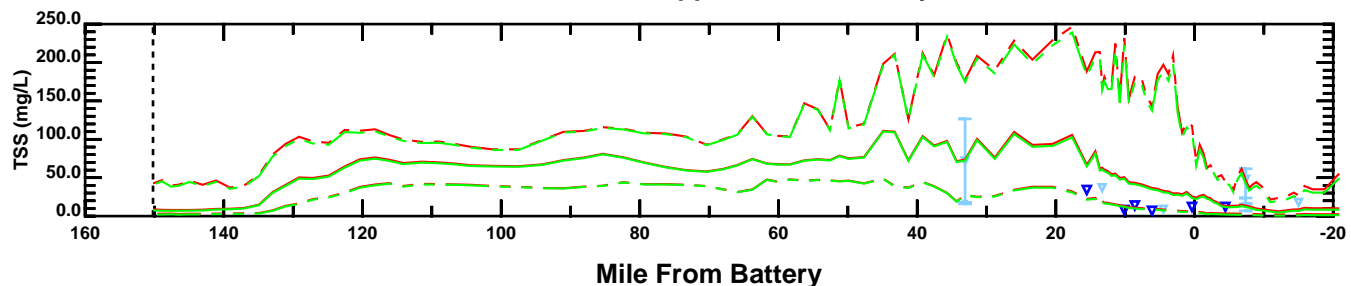
East River and Long Island Sound



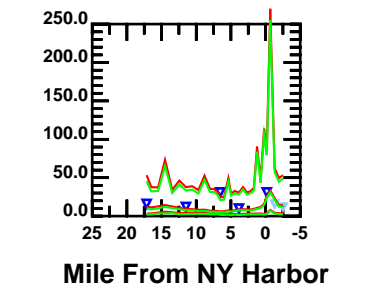
Harlem River



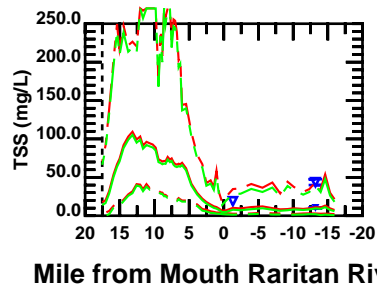
Hudson River, Upper and Lower Bay, Ocean



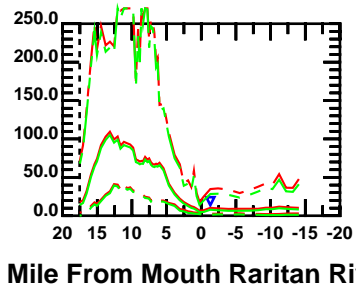
Arthur Kill and Kill Van Kull



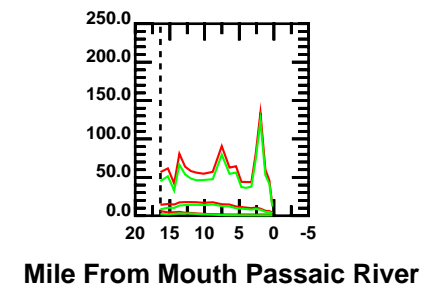
Raritan River and North Shore of Raritan Bay



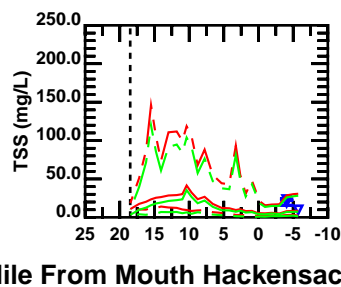
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



October 31 - November 29

DATA	TRANSECT	EMBAYMENT
NP	▼	▽
GFF	▼	▽

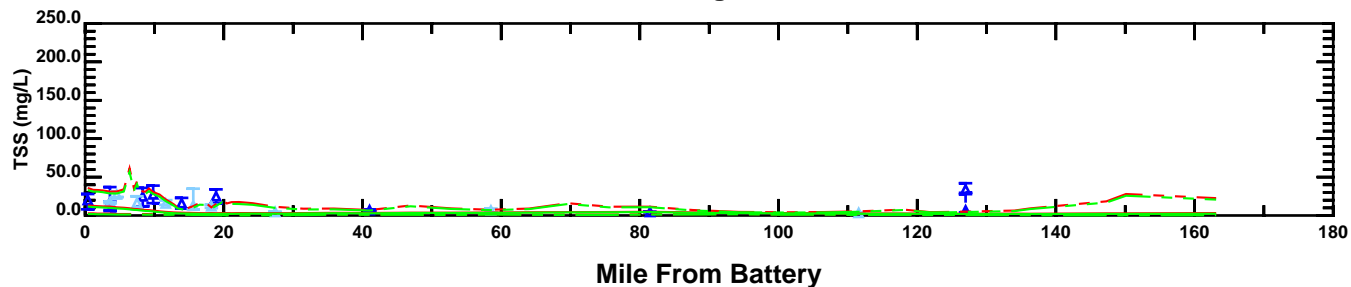
MODEL

—	TSS BOTTOM 30-DAY MEAN
- - -	TSS BOTTOM 30-DAY MAX / MIN
—	COSS BOTTOM 30-DAY MEAN
- - -	COSS BOTTOM 30-DAY MAX / MIN

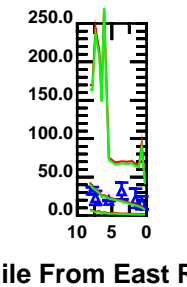
Mile From Mouth Hackensack River

Bottom Layer TSS (mg/L)  
Water Year Starting Oct 1, 1994

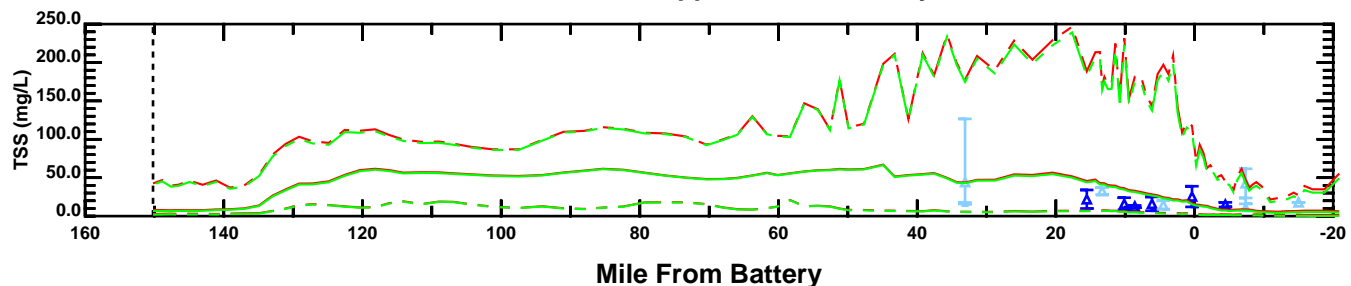
East River and Long Island Sound



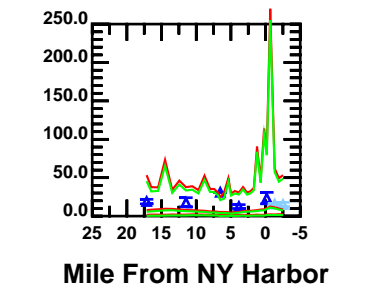
Harlem River



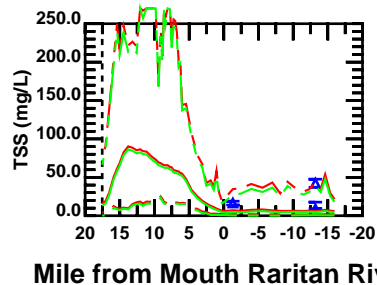
Hudson River, Upper and Lower Bay, Ocean



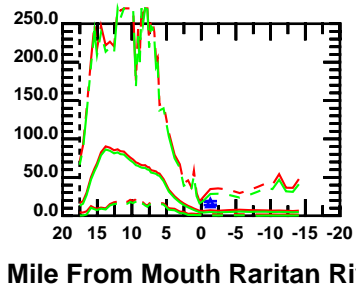
Arthur Kill and Kill Van Kull



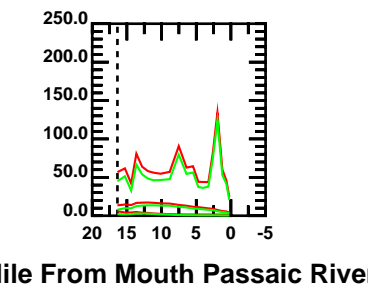
Raritan River and North Shore of Raritan Bay



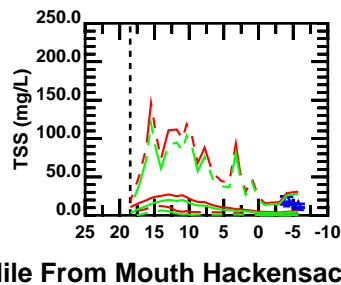
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



October 31 - November 29

DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

MODEL

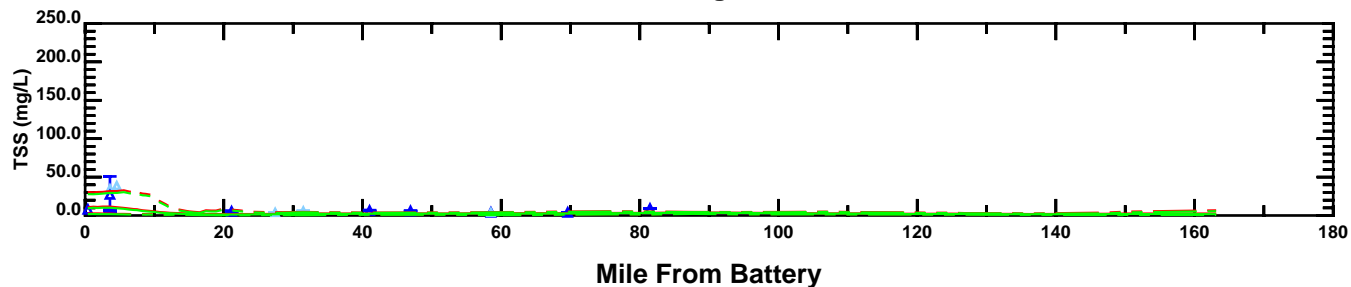
—	TSS 30-DAY MEAN
- - -	TSS 30-DAY MAX / MIN
—	COSS 30-DAY MEAN
- - -	COSS 30-DAY MAX / MIN

Mile From Mouth Hackensack River

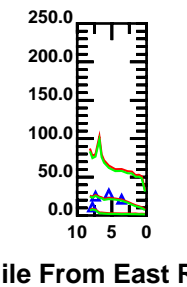
TSS (mg/L) Averaged Over Full Depth  
Water Year Starting Oct 1, 1994



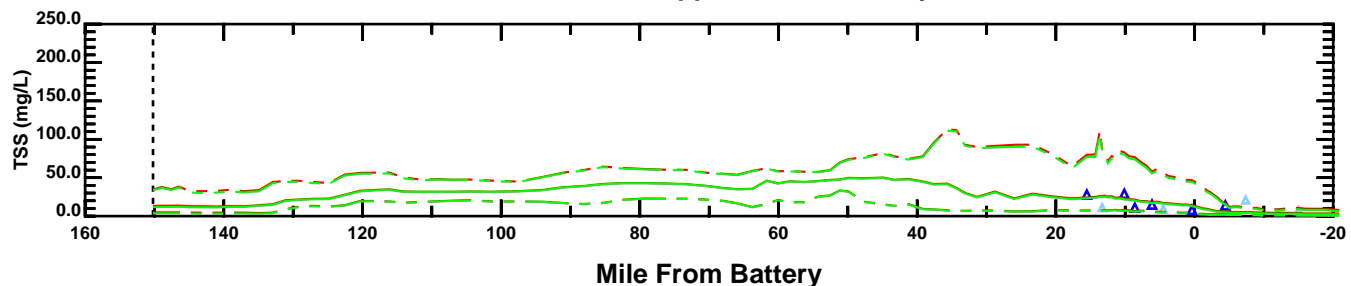
East River and Long Island Sound



Harlem River

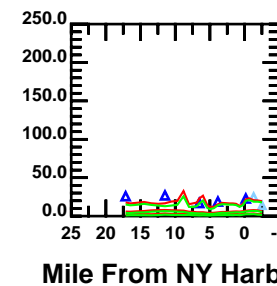


Hudson River, Upper and Lower Bay, Ocean

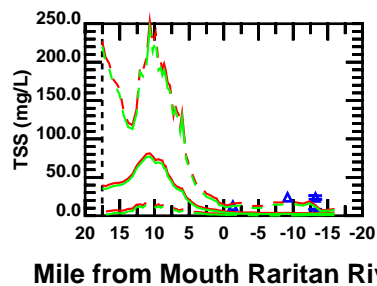


Mile From East River

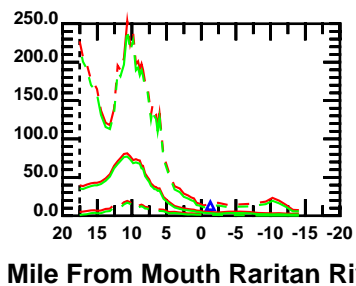
Arthur Kill and Kill Van Kull



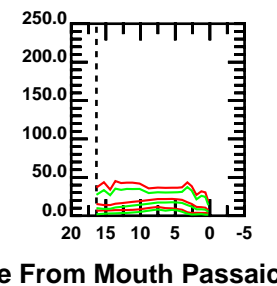
Raritan River and North Shore of Raritan Bay



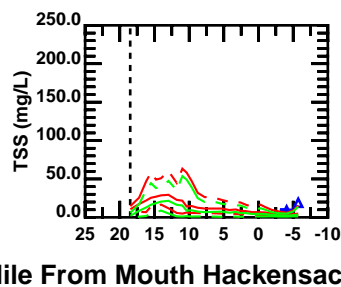
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



November 30 - December 29

DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

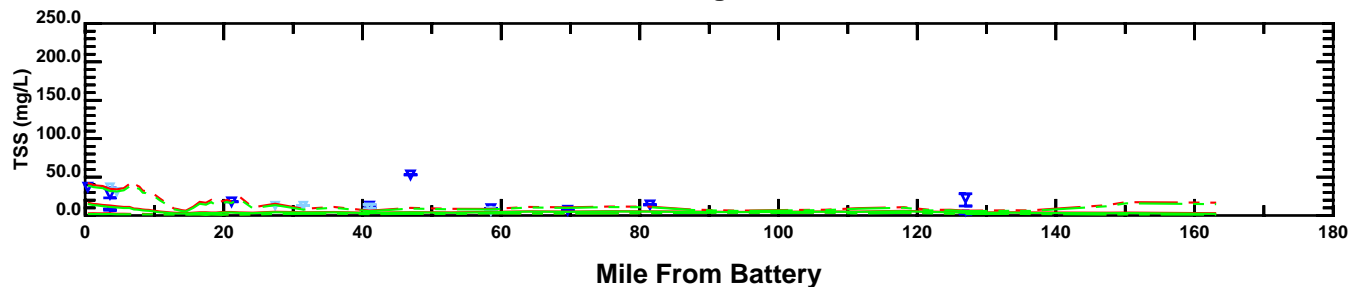
MODEL

—	TSS SURFACE 30-DAY MEAN
- - -	TSS SURFACE 30-DAY MAX / MIN
—	COSS SURFACE 30-DAY MEAN
- - -	COSS SURFACE 30-DAY MAX / MIN

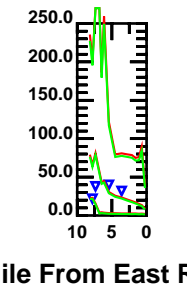
Mile From Mouth Hackensack River

Surface Layer TSS (mg/L)  
Water Year Starting Oct 1, 1994

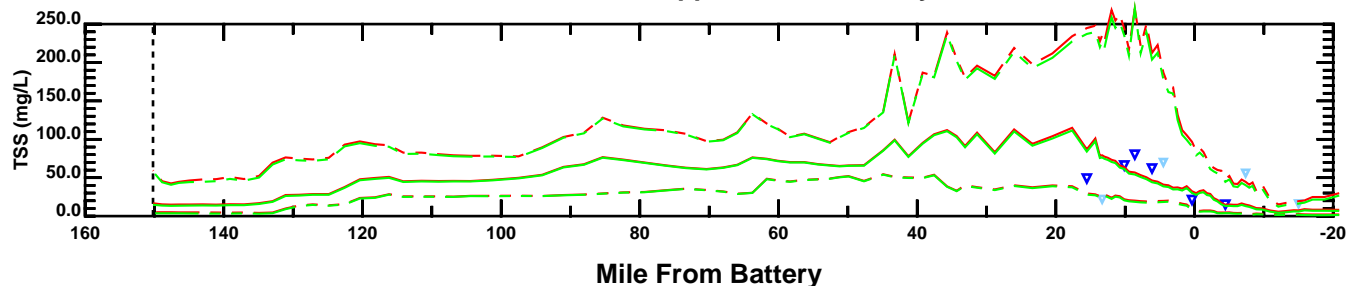
East River and Long Island Sound



Harlem River

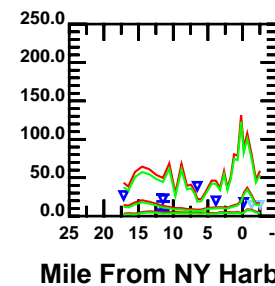


Hudson River, Upper and Lower Bay, Ocean

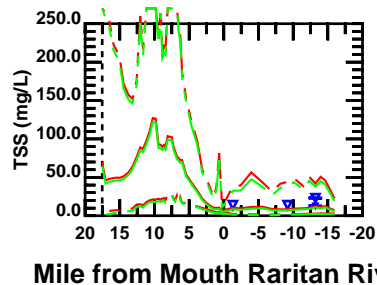


Mile From East River

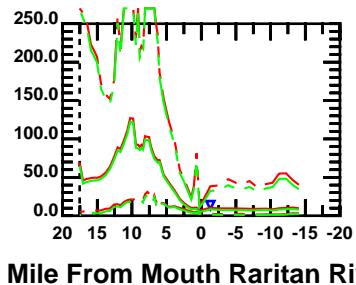
Arthur Kill and Kill Van Kull



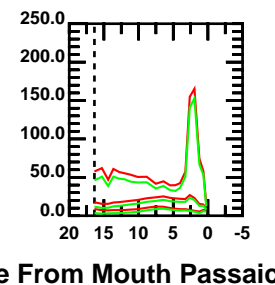
Raritan River and North Shore of Raritan Bay



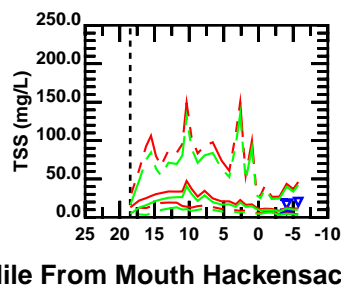
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



November 30 - December 29

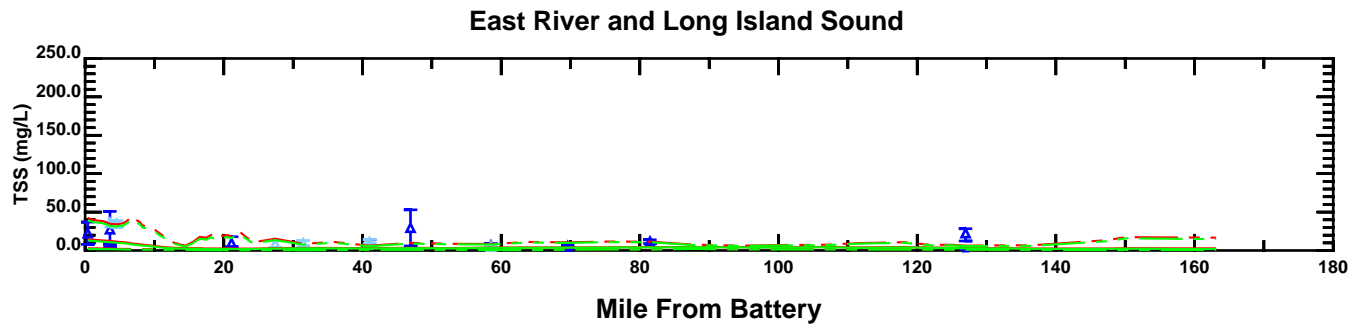
DATA	TRANSECT	EMBAYMENT
NP	▼	▽
GFF	▲	△

MODEL

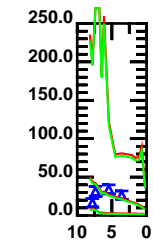
—	TSS BOTTOM 30-DAY MEAN
- - -	TSS BOTTOM 30-DAY MAX / MIN
—	COSS BOTTOM 30-DAY MEAN
- - -	COSS BOTTOM 30-DAY MAX / MIN

Mile From Mouth Hackensack River

Bottom Layer TSS (mg/L)  
Water Year Starting Oct 1, 1994

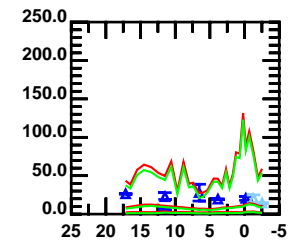


### Harlem River

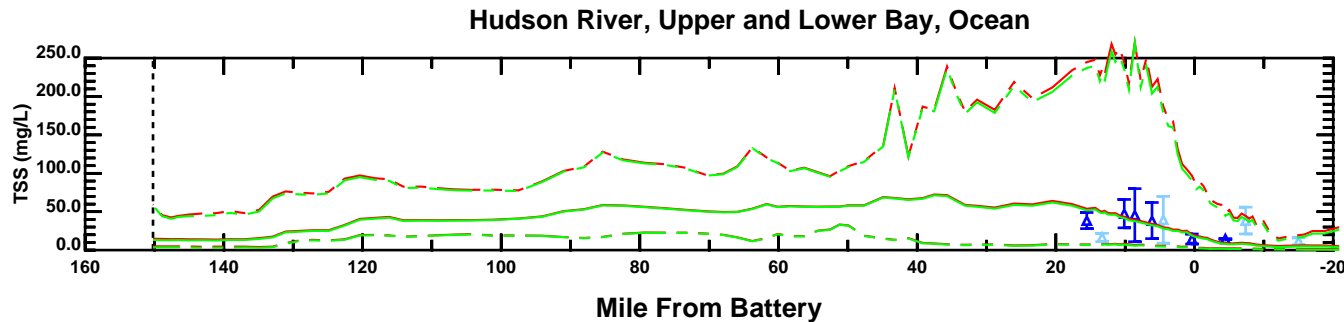


### Arthur Kill and Kill Van Kull

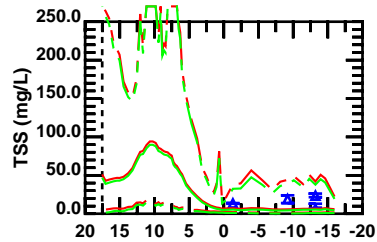
### Arthur Kill and Kill Van Kull



### Mile From NY Harbor

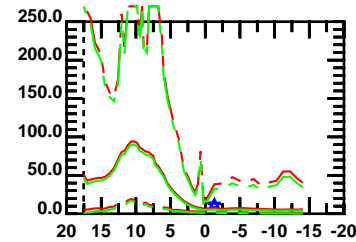


### Raritan River and North Shore of Raritan Bay



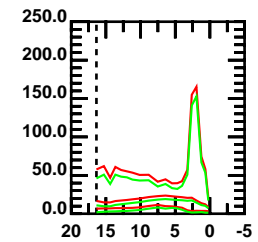
### Mile from Mouth Raritan River

### Raritan River and South Shore of Raritan Bay



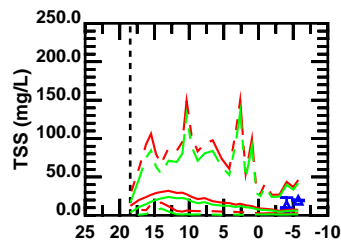
### Mile From Mouth Raritan River

### Passaic River



### Mile From Mouth Passaic River

### Hackensack River and Newark Bay



### Mile From Mouth Hackensack River

November 30 - December 29

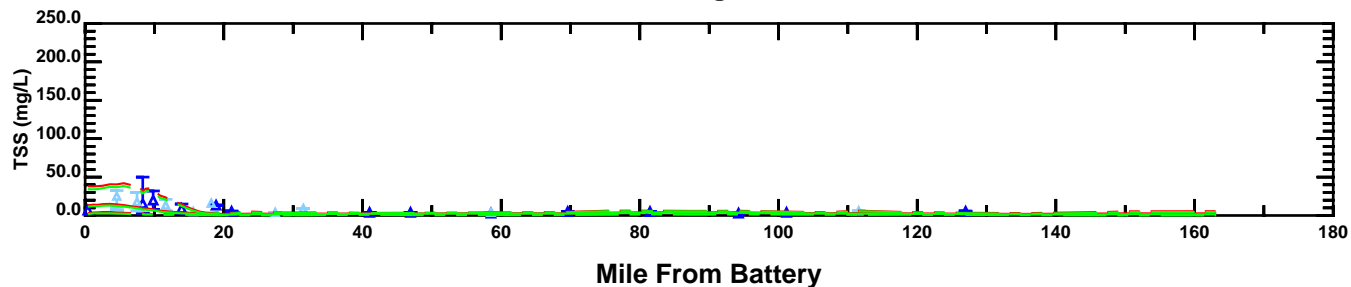
DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

MODEL

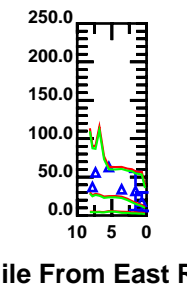
—	TSS 30-DAY MEAN
- - -	TSS 30-DAY MAX / MIN
—	COSS 30-DAY MEAN
- - -	COSS 30-DAY MAX / MIN

**TSS (mg/L) Averaged Over Full Depth  
Water Year Starting Oct 1, 1994**

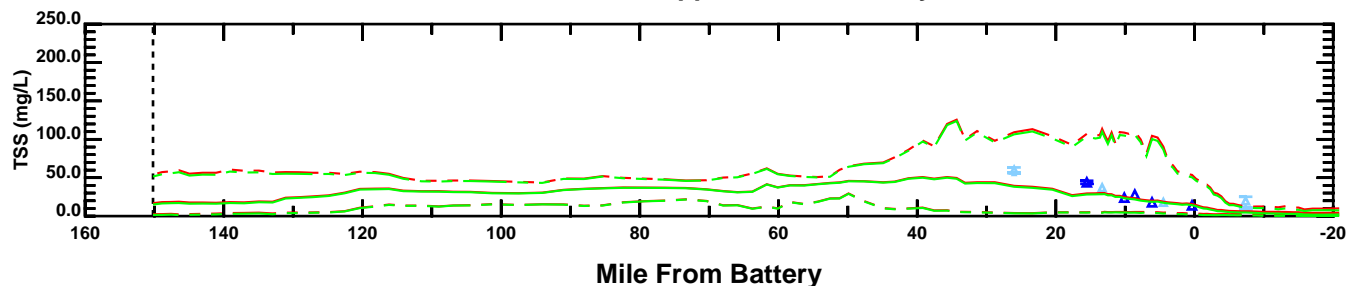
East River and Long Island Sound



Harlem River

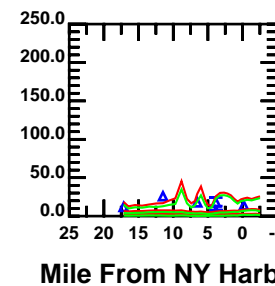


Hudson River, Upper and Lower Bay, Ocean

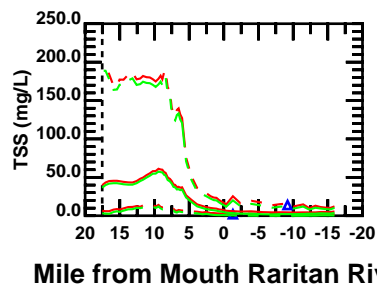


Mile From East River

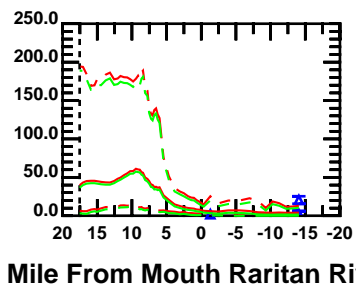
Arthur Kill and Kill Van Kull



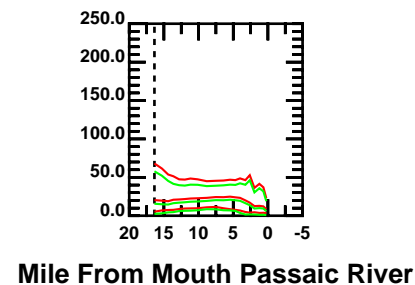
Raritan River and North Shore of Raritan Bay



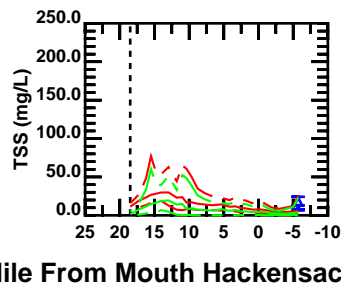
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



December 30 - January 28

DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

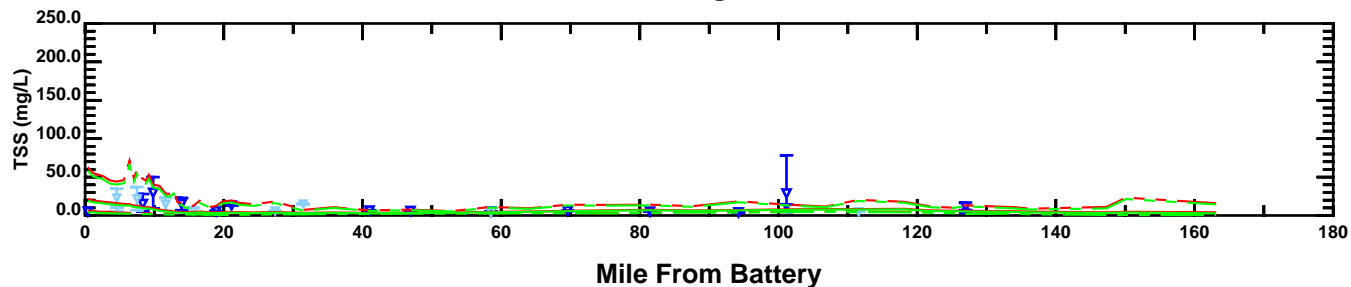
MODEL

—	TSS SURFACE 30-DAY MEAN
- - -	TSS SURFACE 30-DAY MAX / MIN
—	COSS SURFACE 30-DAY MEAN
- - -	COSS SURFACE 30-DAY MAX / MIN

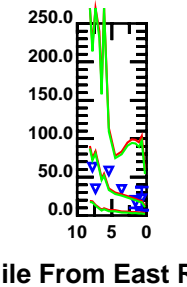
Mile From Mouth Hackensack River

Surface Layer TSS (mg/L)  
Water Year Starting Oct 1, 1994

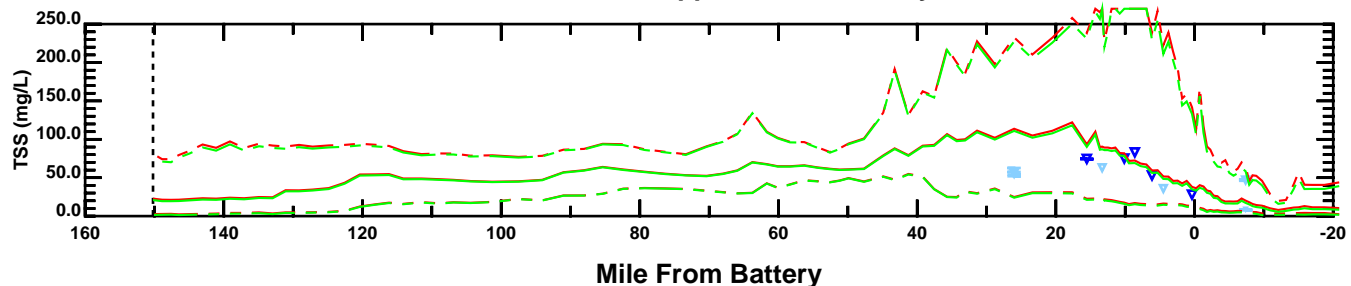
East River and Long Island Sound



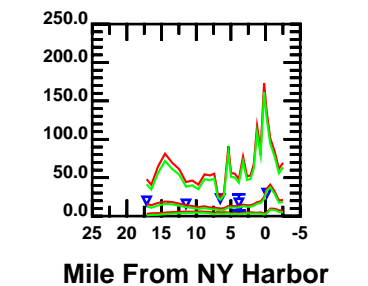
Harlem River



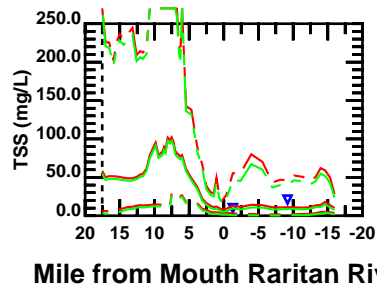
Hudson River, Upper and Lower Bay, Ocean



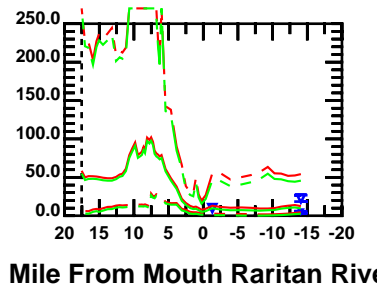
Arthur Kill and Kill Van Kull



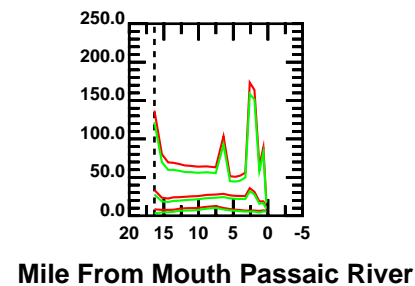
Raritan River and North Shore of Raritan Bay



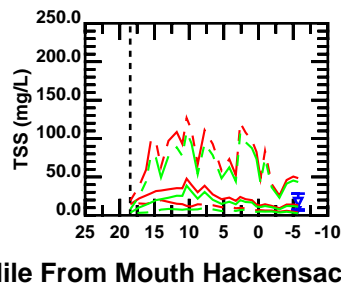
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



December 30 - January 28

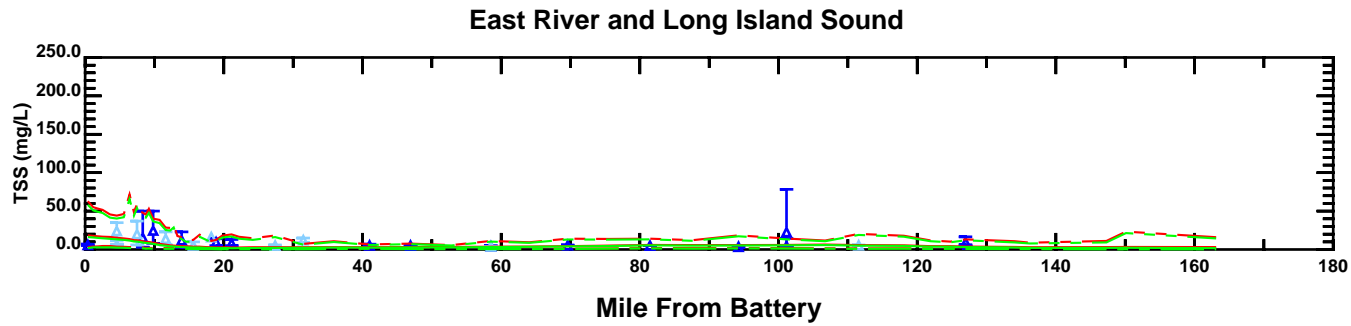
DATA	TRANSECT	EMBAYMENT
NP	▼	▽
GFF	▲	▽

MODEL

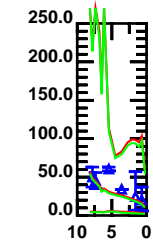
—	TSS BOTTOM 30-DAY MEAN
- - -	TSS BOTTOM 30-DAY MAX / MIN
—	COSS BOTTOM 30-DAY MEAN
- - -	COSS BOTTOM 30-DAY MAX / MIN

Mile From Mouth Hackensack River

Bottom Layer TSS (mg/L)  
Water Year Starting Oct 1, 1994

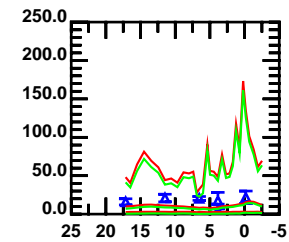


### Harlem River

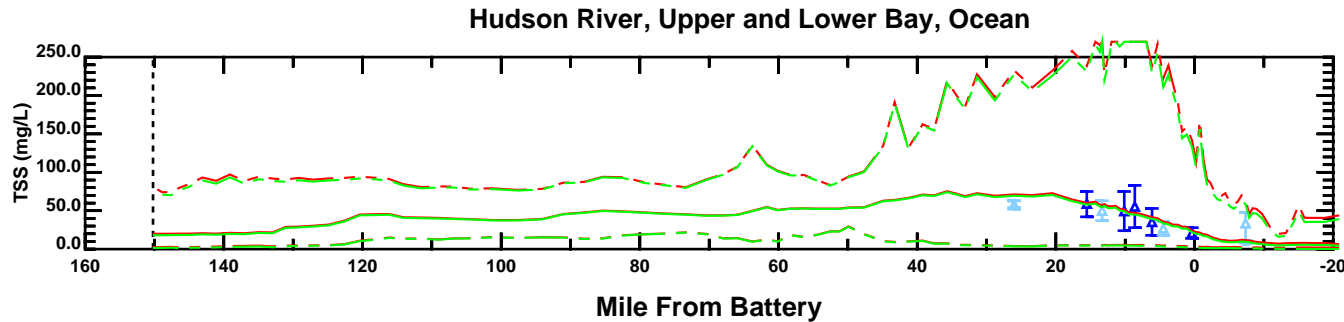


### Arthur Kill and Kill Van Kull

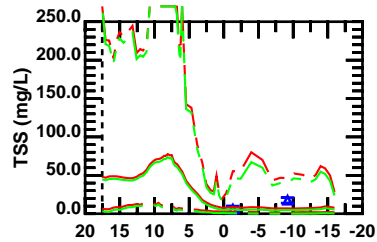
### Arthur Kill and Kill Van Kull



### Mile From NY Harbor

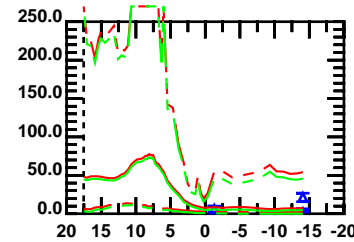


### Raritan River and North Shore of Raritan Bay



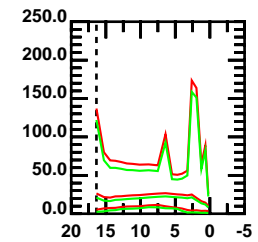
### Mile from Mouth Raritan River

### Raritan River and South Shore of Raritan Bay



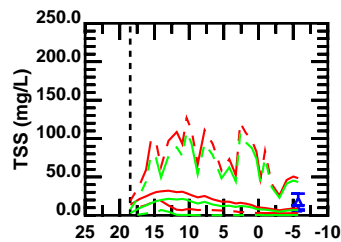
### Mile From Mouth Raritan River

### Passaic River



### Mile From Mouth Passaic River

### Hackensack River and Newark Bay



### Mile From Mouth Hackensack River

December 30 - January 28

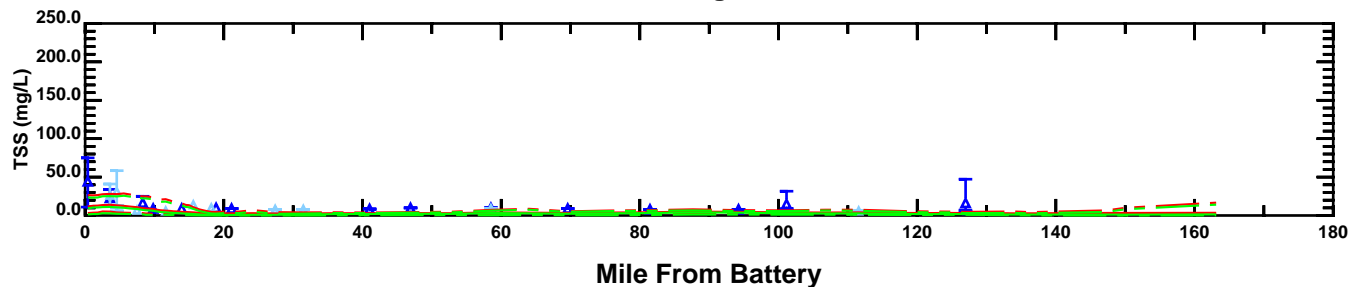
DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

MODEL

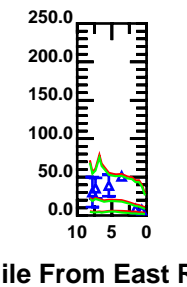
—	TSS 30-DAY MEAN
- - -	TSS 30-DAY MAX / MIN
—	COSS 30-DAY MEAN
- - -	COSS 30-DAY MAX / MIN

TSS (mg/L) Averaged Over Full Depth  
Water Year Starting Oct 1, 1994

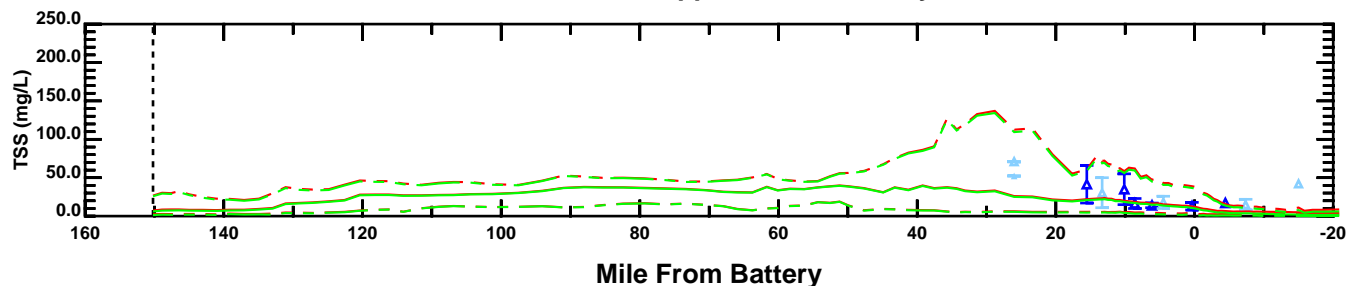
East River and Long Island Sound



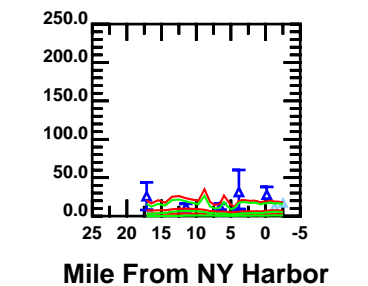
Harlem River



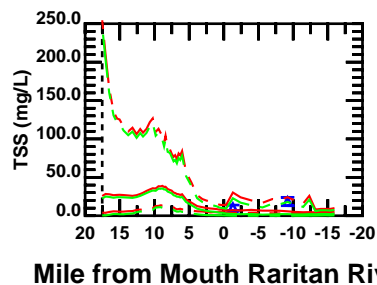
Hudson River, Upper and Lower Bay, Ocean



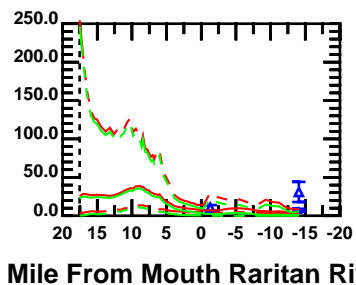
Arthur Kill and Kill Van Kull



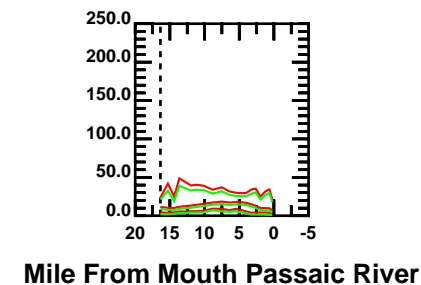
Raritan River and North Shore of Raritan Bay



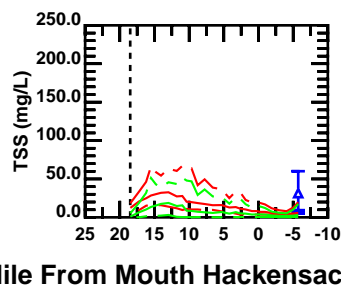
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



January 29 - February 27

DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

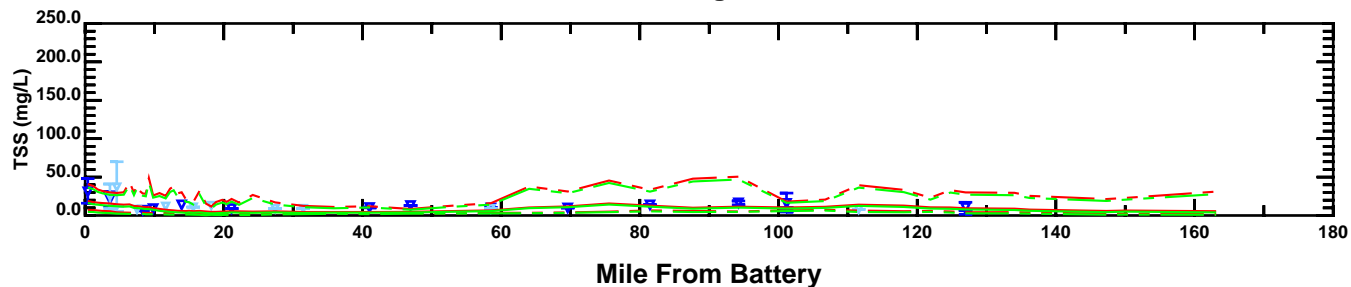
MODEL

—	TSS SURFACE 30-DAY MEAN
- - -	TSS SURFACE 30-DAY MAX / MIN
—	COSS SURFACE 30-DAY MEAN
- - -	COSS SURFACE 30-DAY MAX / MIN

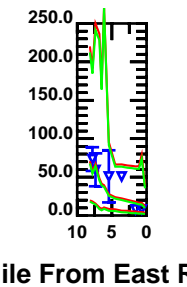
Mile From Mouth Hackensack River

Surface Layer TSS (mg/L)  
Water Year Starting Oct 1, 1994

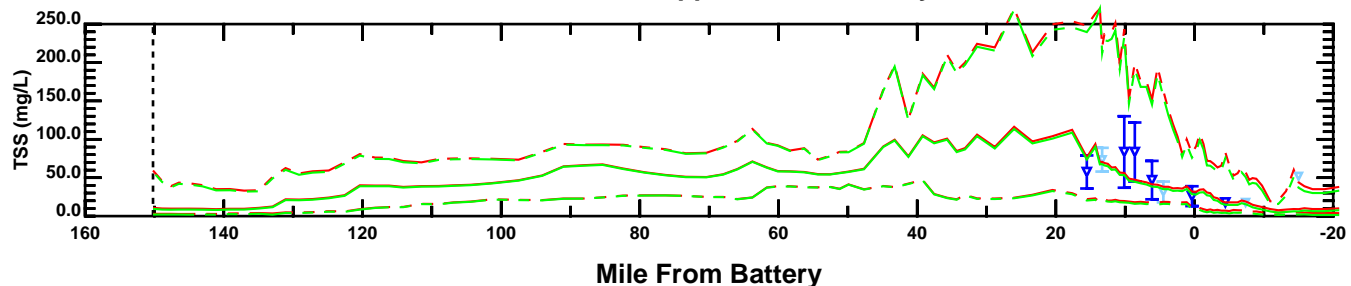
East River and Long Island Sound



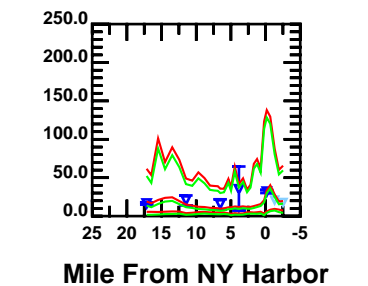
Harlem River



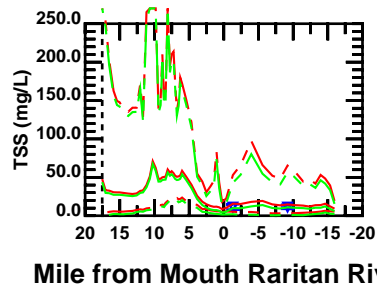
Hudson River, Upper and Lower Bay, Ocean



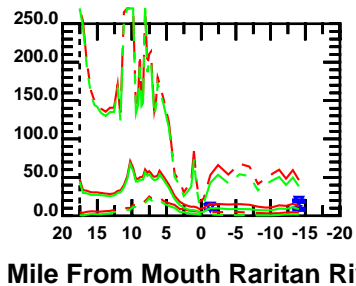
Arthur Kill and Kill Van Kull



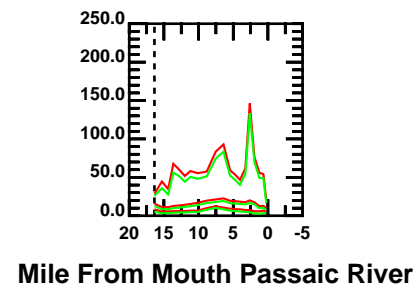
Raritan River and North Shore of Raritan Bay



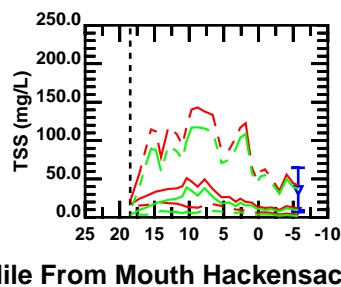
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



January 29 - February 27

DATA	TRANSECT	EMBAYMENT
NP	▼	▽
GFF	▲	▽

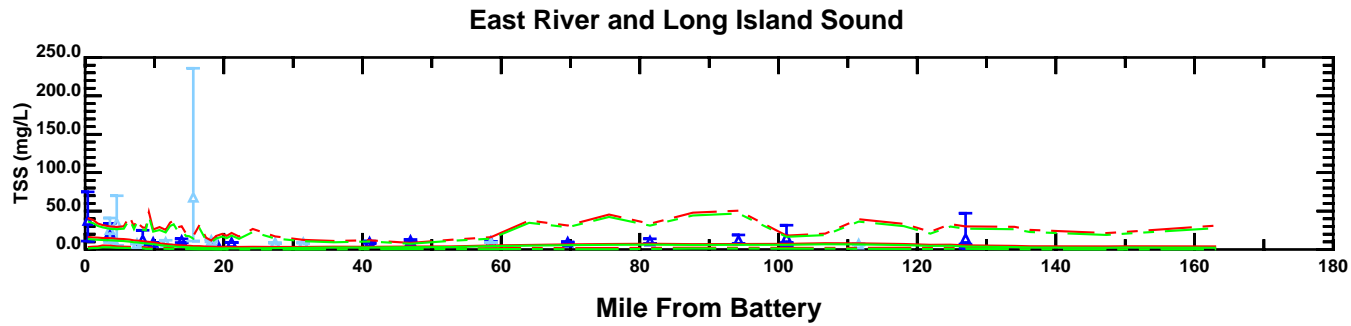
MODEL

—	TSS BOTTOM 30-DAY MEAN
- - -	TSS BOTTOM 30-DAY MAX / MIN
—	COSS BOTTOM 30-DAY MEAN
- - -	COSS BOTTOM 30-DAY MAX / MIN

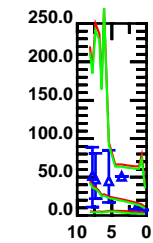
Mile From Mouth Hackensack River

Bottom Layer TSS (mg/L)  
Water Year Starting Oct 1, 1994

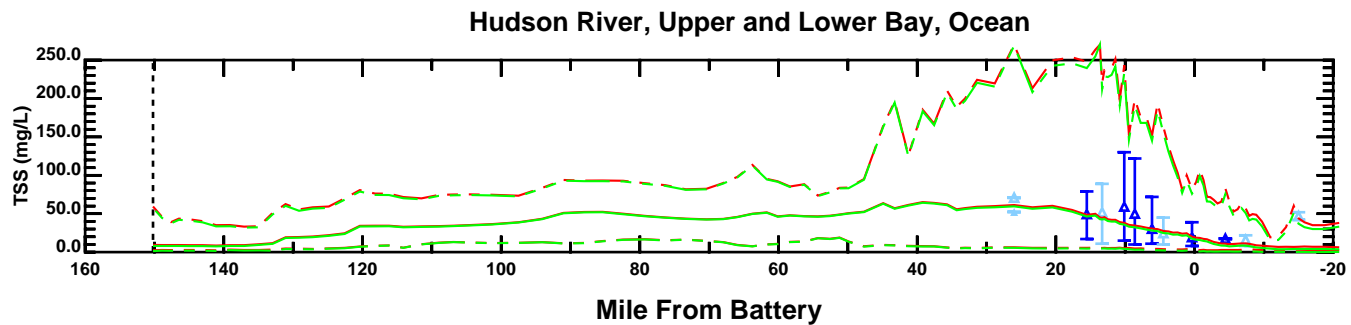




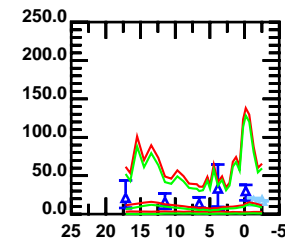
### Harlem River



Mile From East River

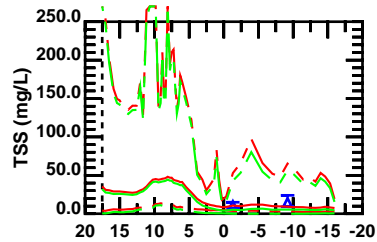


### Arthur Kill and Kill Van Kull



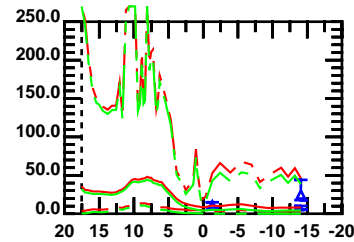
Mile From NY Harbor

### Raritan River and North Shore of Raritan Bay



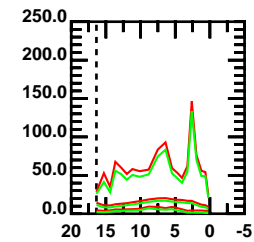
Mile from Mouth Raritan River

### Raritan River and South Shore of Raritan Bay



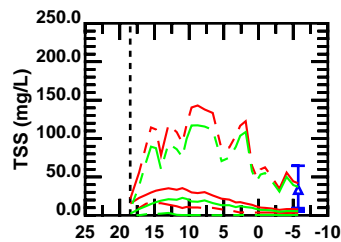
Mile From Mouth Raritan River

### Passaic River



Mile From Mouth Passaic River

### Hackensack River and Newark Bay



Mile From Mouth Hackensack River

January 29 - February 27

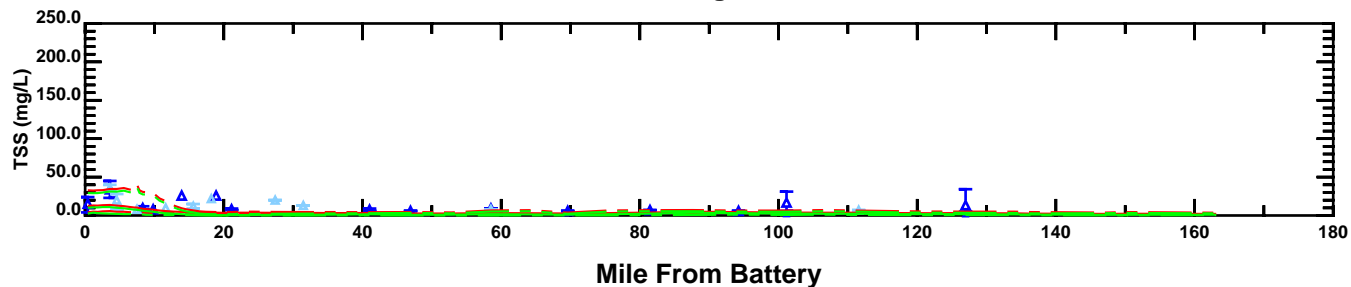
DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

MODEL

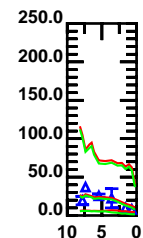
—	TSS 30-DAY MEAN
- - -	TSS 30-DAY MAX / MIN
—	COSS 30-DAY MEAN
- - -	COSS 30-DAY MAX / MIN

**TSS (mg/L) Averaged Over Full Depth  
Water Year Starting Oct 1, 1994**

East River and Long Island Sound

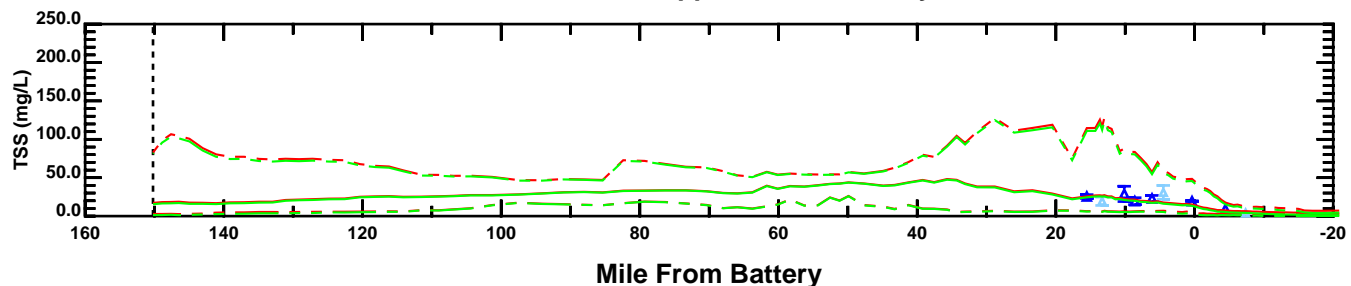


Harlem River

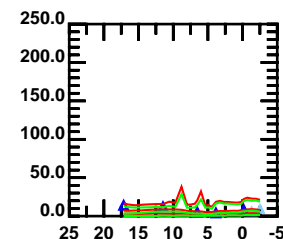


Mile From East River

Hudson River, Upper and Lower Bay, Ocean

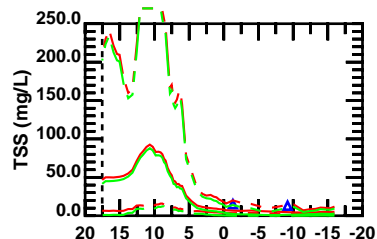


Arthur Kill and Kill Van Kull



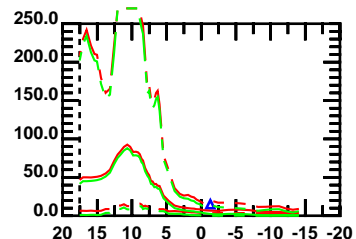
Mile From NY Harbor

Raritan River and North Shore of Raritan Bay



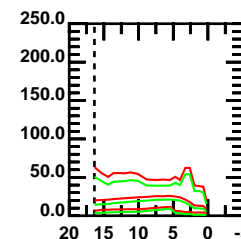
Mile from Mouth Raritan River

Raritan River and South Shore of Raritan Bay



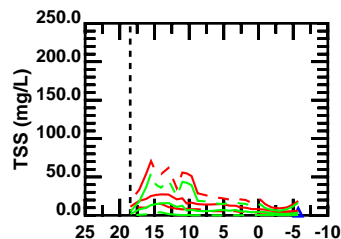
Mile From Mouth Raritan River

Passaic River



Mile From Mouth Passaic River

Hackensack River and Newark Bay



Mile From Mouth Hackensack River

February 28 - March 28

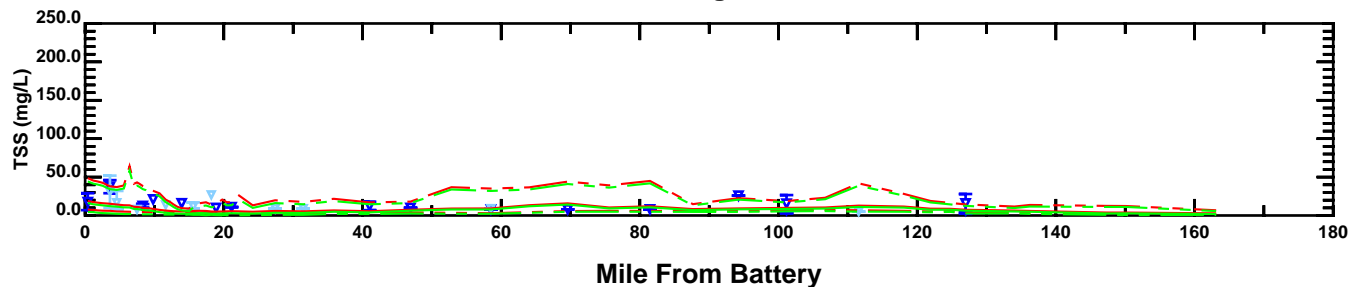
DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

MODEL

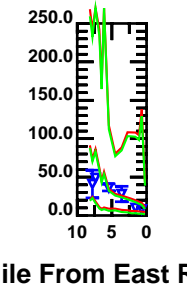
—	TSS SURFACE 30-DAY MEAN
- - -	TSS SURFACE 30-DAY MAX / MIN
—	COSS SURFACE 30-DAY MEAN
- - -	COSS SURFACE 30-DAY MAX / MIN

Surface Layer TSS (mg/L)  
Water Year Starting Oct 1, 1994

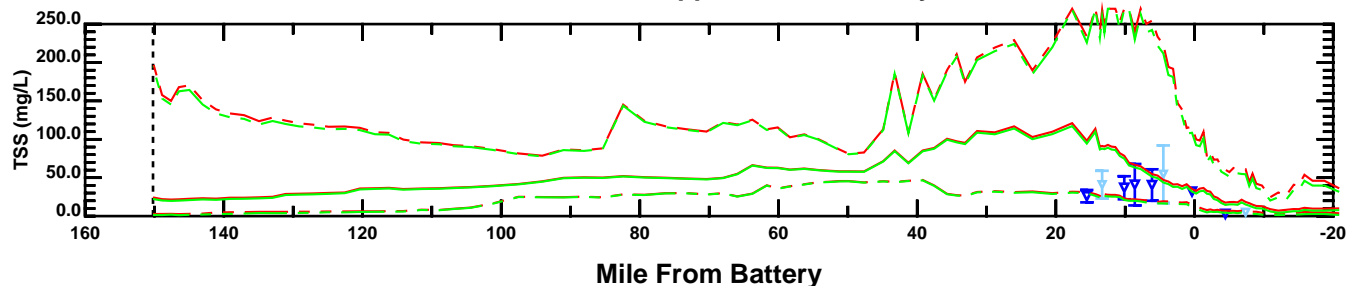
East River and Long Island Sound



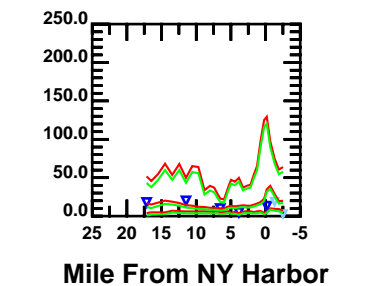
Harlem River



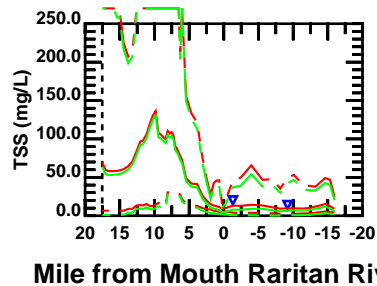
Hudson River, Upper and Lower Bay, Ocean



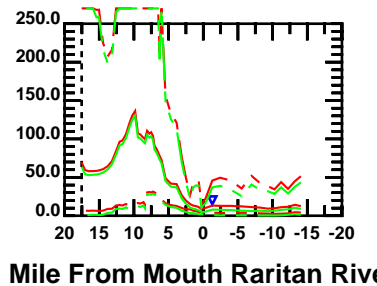
Arthur Kill and Kill Van Kull



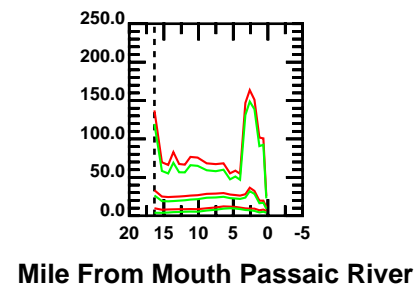
Raritan River and North Shore of Raritan Bay



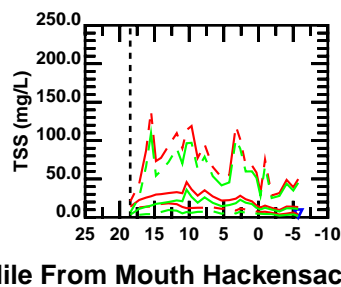
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



February 28 - March 28

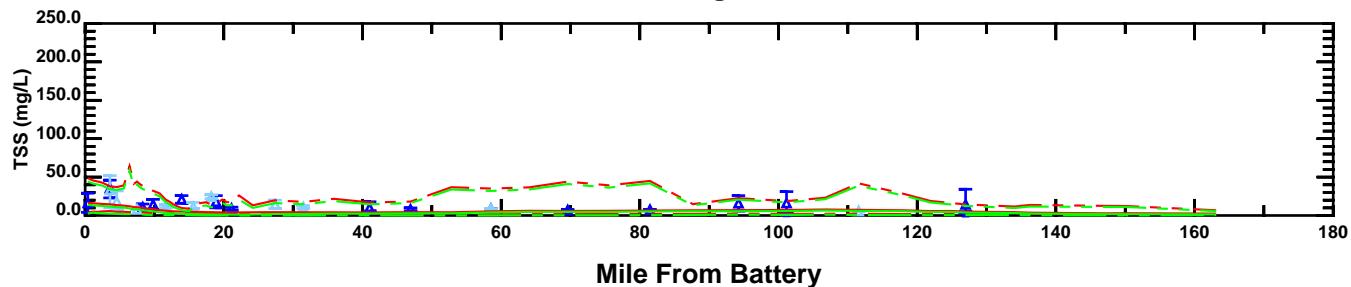
DATA	TRANSECT	EMBAYMENT
NP	▼	▽
GFF	▲	▽

MODEL	
—	TSS BOTTOM 30-DAY MEAN
- - -	TSS BOTTOM 30-DAY MAX / MIN
—	COSS BOTTOM 30-DAY MEAN
- - -	COSS BOTTOM 30-DAY MAX / MIN

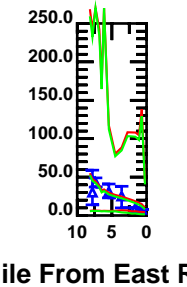
Mile From Mouth Hackensack River

Bottom Layer TSS (mg/L)  
Water Year Starting Oct 1, 1994

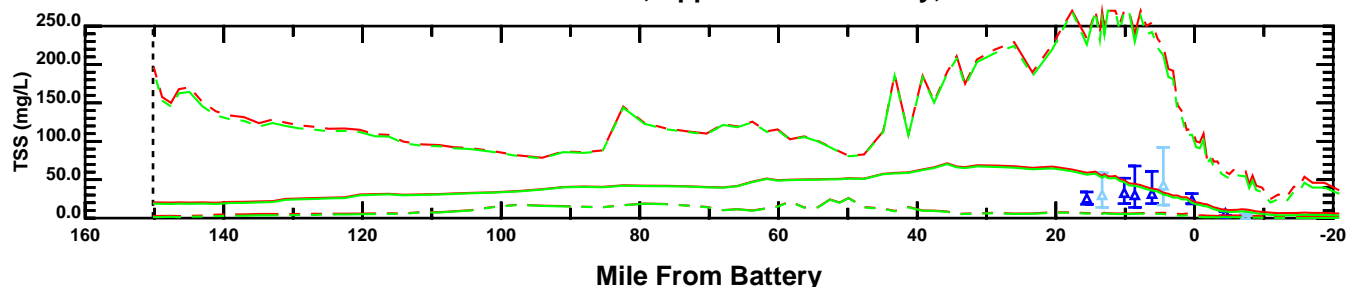
East River and Long Island Sound



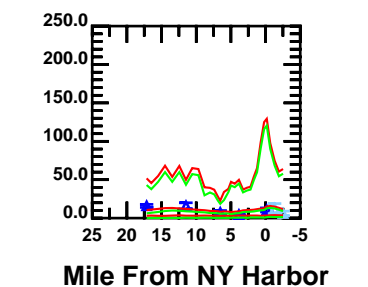
Harlem River



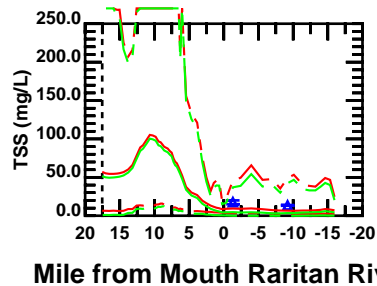
Hudson River, Upper and Lower Bay, Ocean



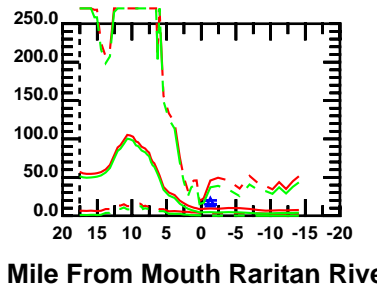
Arthur Kill and Kill Van Kull



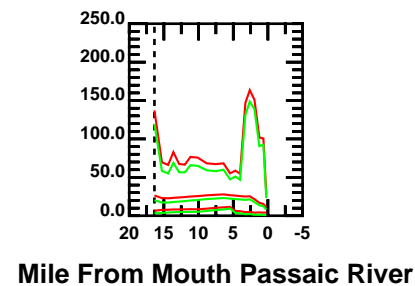
Raritan River and North Shore of Raritan Bay



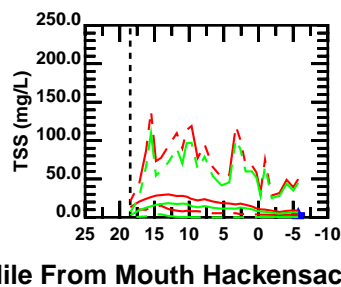
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



February 28 - March 28

DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

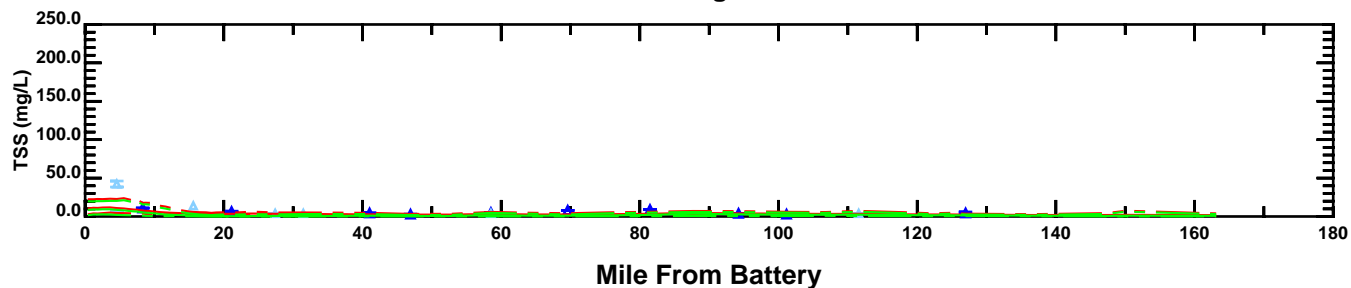
MODEL

—	TSS 30-DAY MEAN
- - -	TSS 30-DAY MAX / MIN
—	COSS 30-DAY MEAN
- - -	COSS 30-DAY MAX / MIN

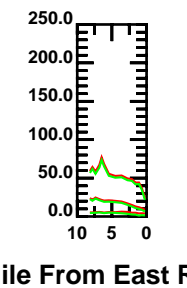
Mile From Mouth Hackensack River

TSS (mg/L) Averaged Over Full Depth  
Water Year Starting Oct 1, 1994

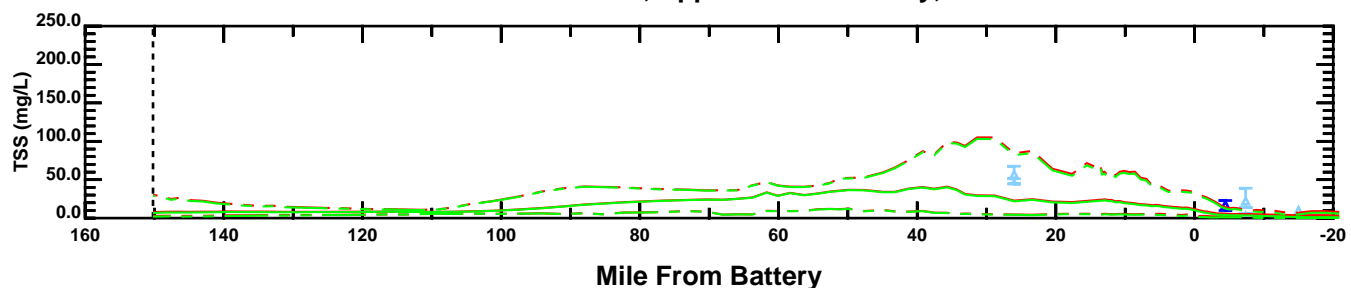
East River and Long Island Sound



Harlem River

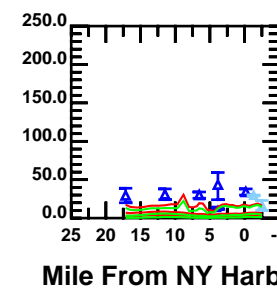


Hudson River, Upper and Lower Bay, Ocean

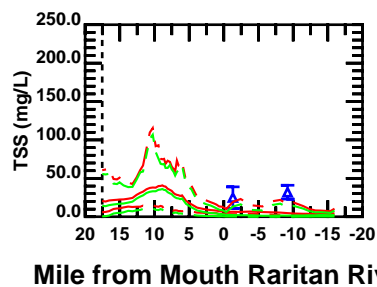


Mile From East River

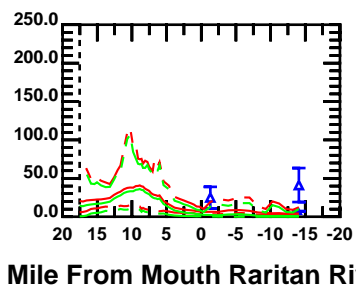
Arthur Kill and Kill Van Kull



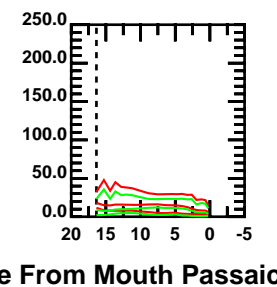
Raritan River and North Shore of Raritan Bay



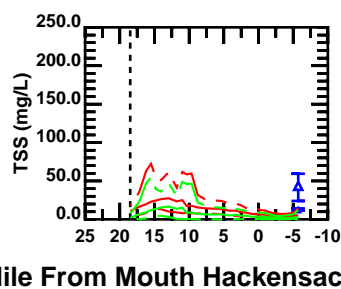
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



March 29 - April 27

DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

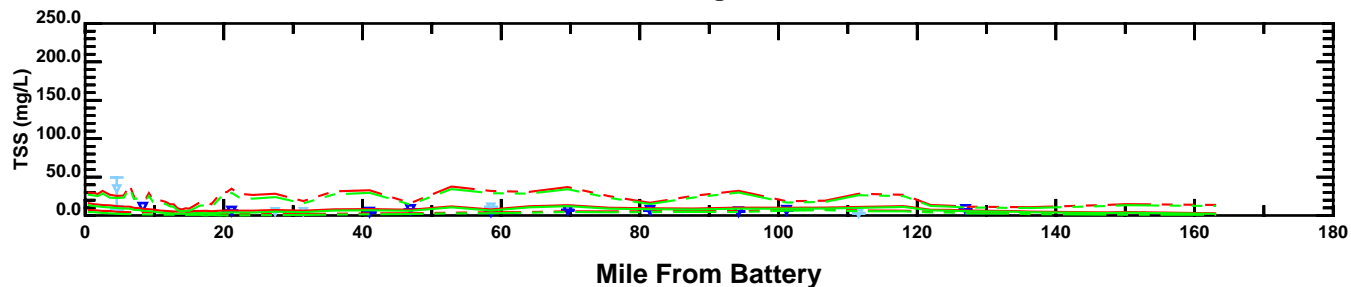
MODEL

—	TSS SURFACE 30-DAY MEAN
- - -	TSS SURFACE 30-DAY MAX / MIN
—	COSS SURFACE 30-DAY MEAN
- - -	COSS SURFACE 30-DAY MAX / MIN

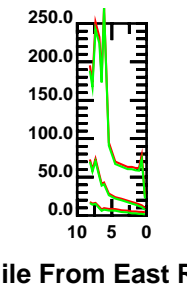
Mile From Mouth Hackensack River

Surface Layer TSS (mg/L)  
Water Year Starting Oct 1, 1994

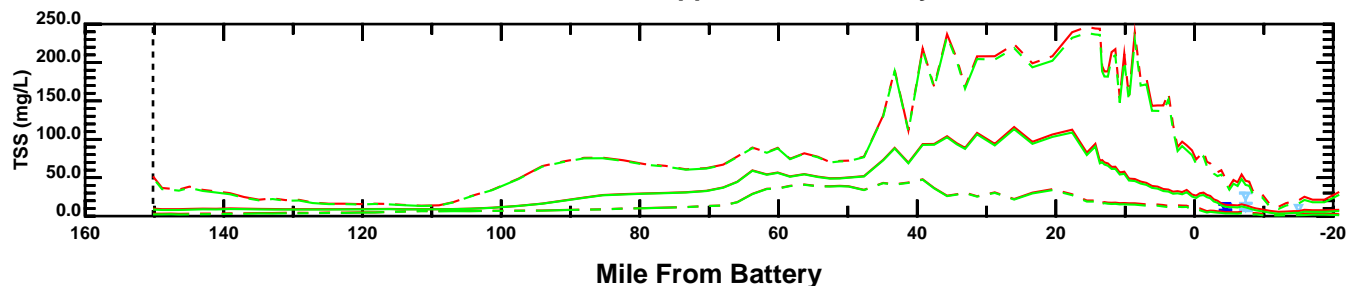
East River and Long Island Sound



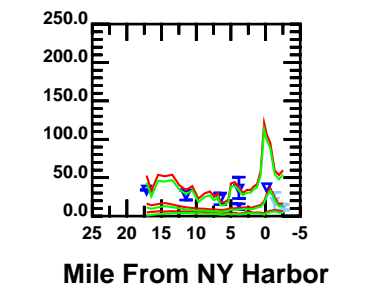
Harlem River



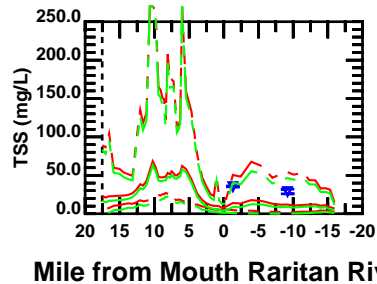
Hudson River, Upper and Lower Bay, Ocean



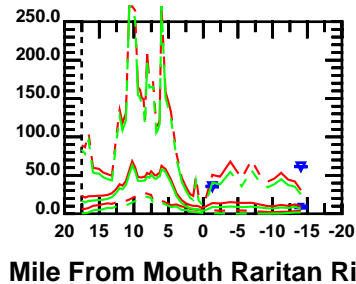
Arthur Kill and Kill Van Kull



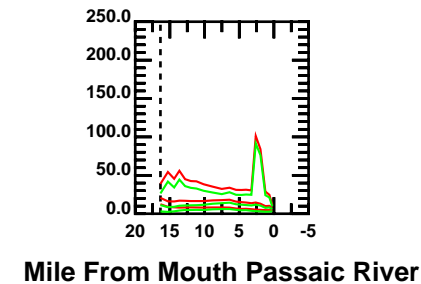
Raritan River and North Shore of Raritan Bay



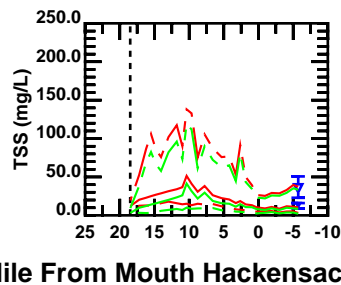
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



March 29 - April 27

DATA	TRANSECT	EMBAYMENT
NP	▼	▽
GFF	▲	▽

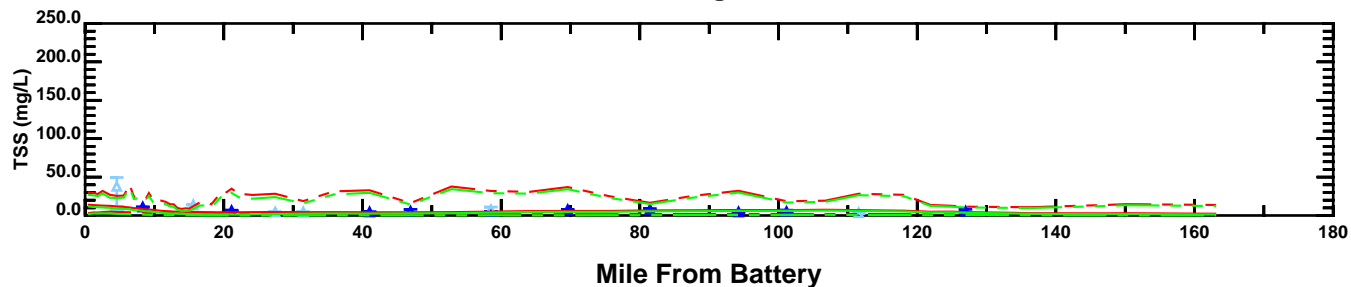
MODEL

—	TSS BOTTOM 30-DAY MEAN
- - -	TSS BOTTOM 30-DAY MAX / MIN
—	COSS BOTTOM 30-DAY MEAN
- - -	COSS BOTTOM 30-DAY MAX / MIN

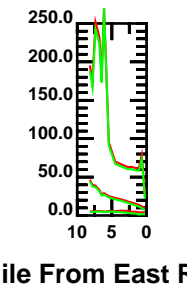
Mile From Mouth Hackensack River

Bottom Layer TSS (mg/L)  
Water Year Starting Oct 1, 1994

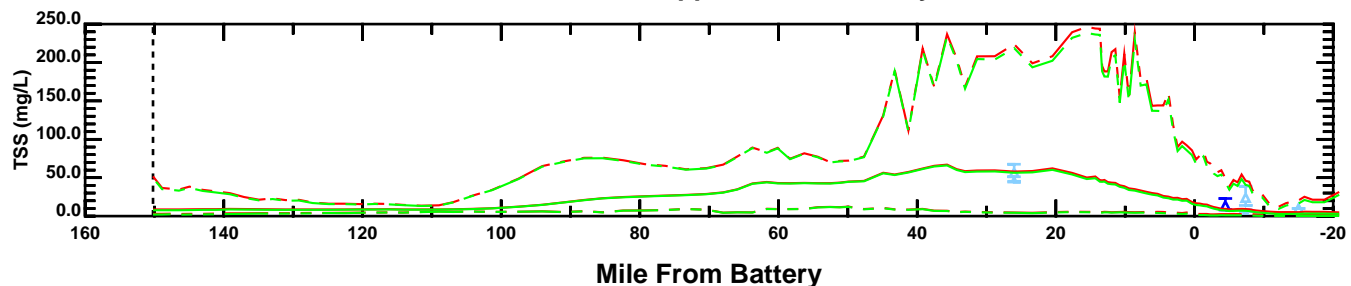
East River and Long Island Sound



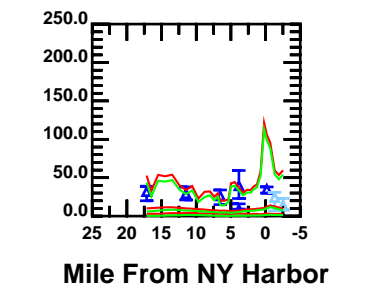
Harlem River



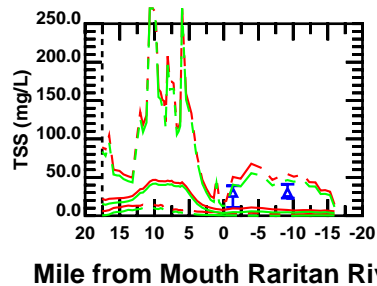
Hudson River, Upper and Lower Bay, Ocean



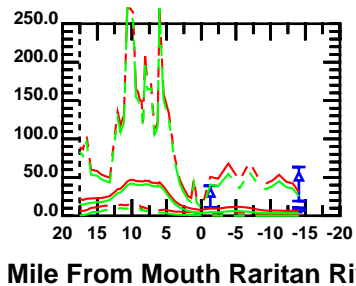
Arthur Kill and Kill Van Kull



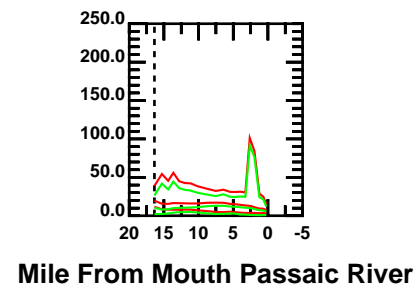
Raritan River and North Shore of Raritan Bay



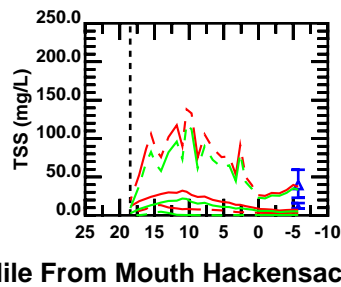
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



March 29 - April 27

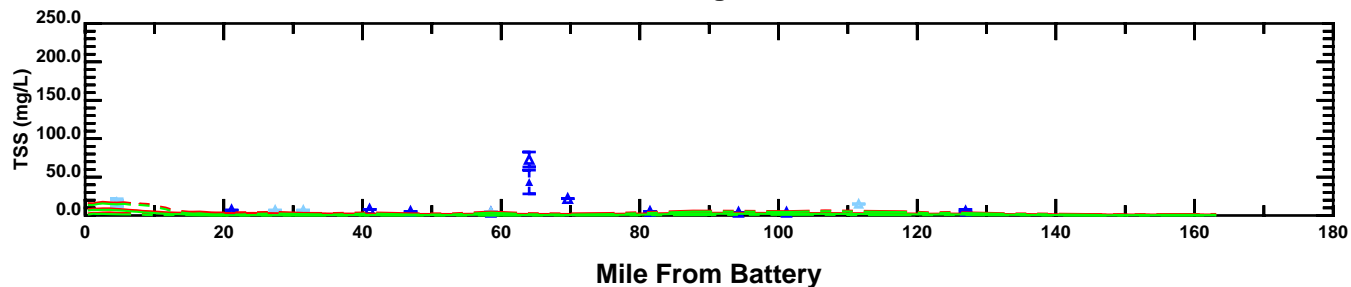
DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

MODEL	
—	TSS 30-DAY MEAN
- - -	TSS 30-DAY MAX / MIN
—	COSS 30-DAY MEAN
- - -	COSS 30-DAY MAX / MIN

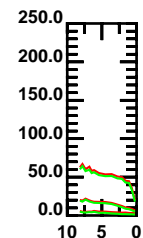
Mile From Mouth Hackensack River

TSS (mg/L) Averaged Over Full Depth  
Water Year Starting Oct 1, 1994

East River and Long Island Sound

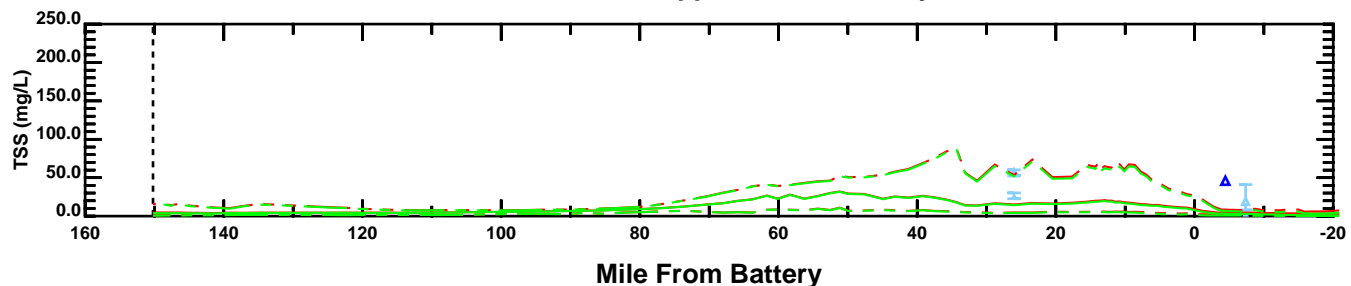


Harlem River

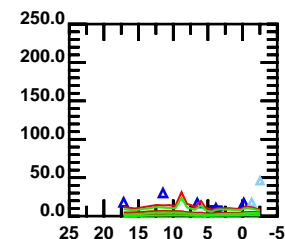


Mile From East River

Hudson River, Upper and Lower Bay, Ocean

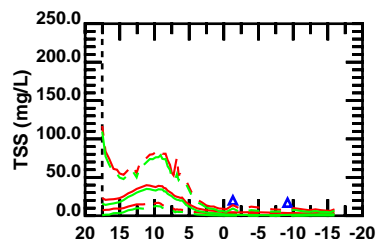


Arthur Kill and Kill Van Kull



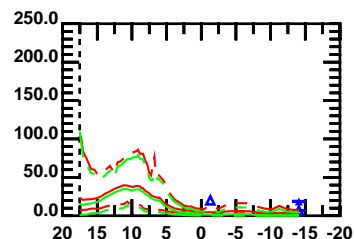
Mile From NY Harbor

Raritan River and North Shore of Raritan Bay



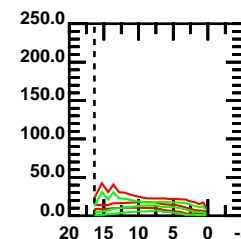
Mile from Mouth Raritan River

Raritan River and South Shore of Raritan Bay



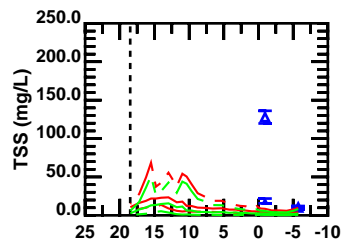
Mile From Mouth Raritan River

Passaic River



Mile From Mouth Passaic River

Hackensack River and Newark Bay



Mile From Mouth Hackensack River

April 28 - May 27

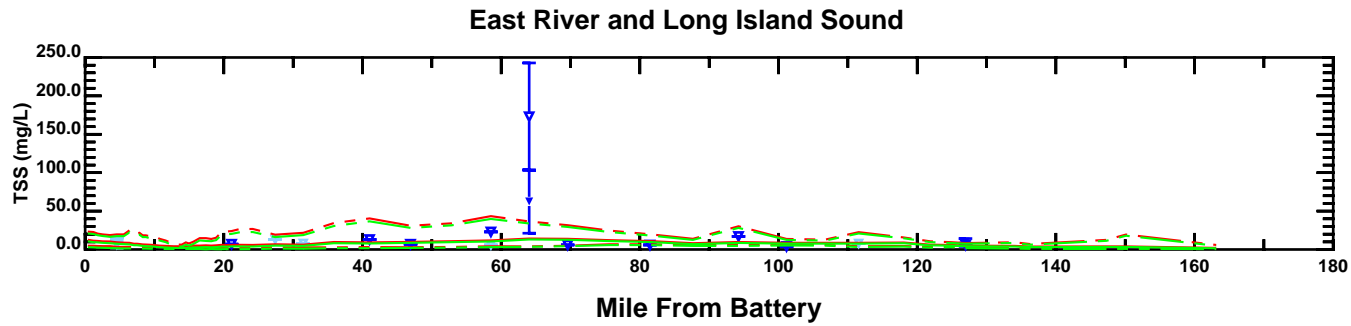
DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

MODEL

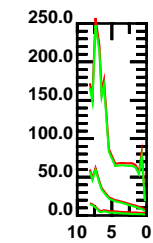
—	TSS SURFACE 30-DAY MEAN
- - -	TSS SURFACE 30-DAY MAX / MIN
—	COSS SURFACE 30-DAY MEAN
- - -	COSS SURFACE 30-DAY MAX / MIN

Surface Layer TSS (mg/L)  
Water Year Starting Oct 1, 1994



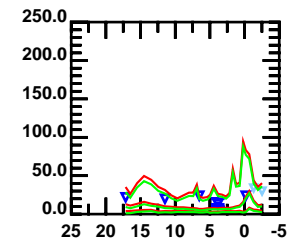


### Harlem River

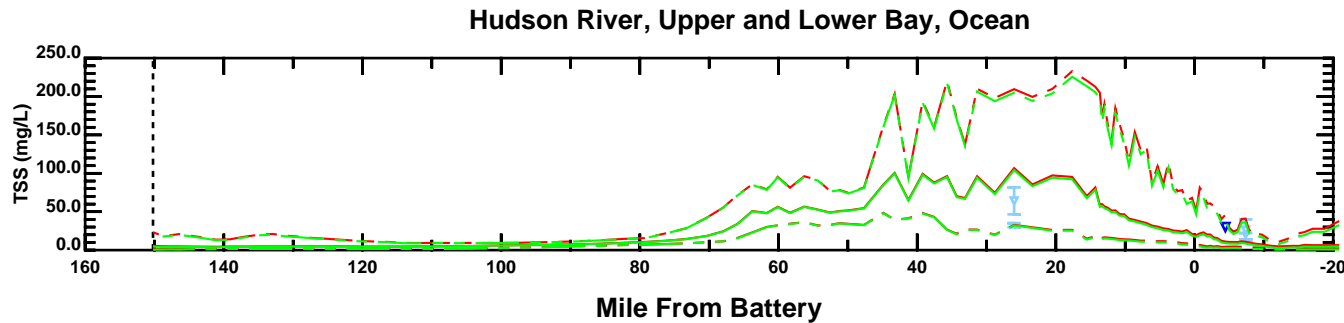


### Arthur Kill and Kill Van Kull

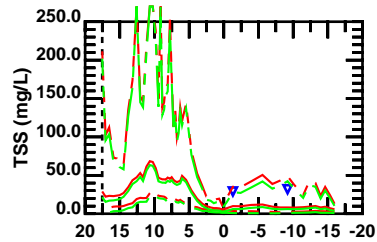
### Arthur Kill and Kill Van Kull



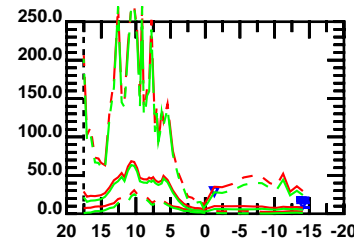
### Mile From NY Harbor



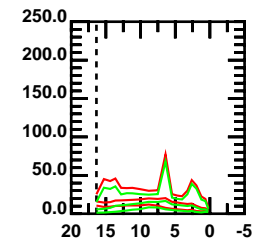
### Raritan River and North Shore of Raritan Bay



### Raritan River and South Shore of Raritan Bay

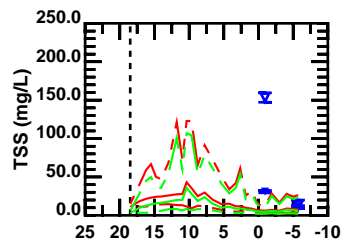


### Passaic River



### Mile From Mouth Passaic River

### Hackensack River and Newark Bay



### Mile From Mouth Hackensack River

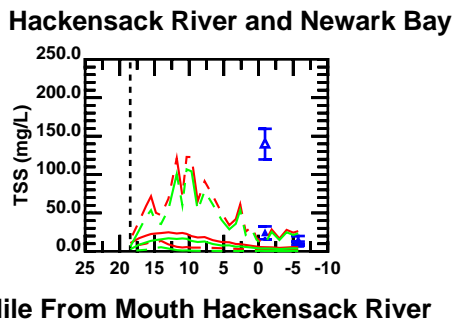
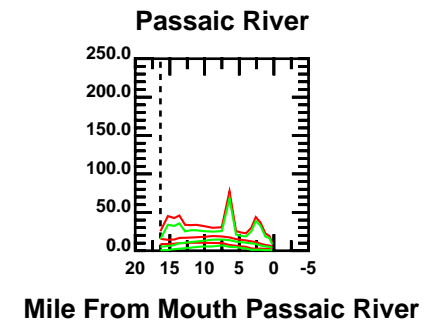
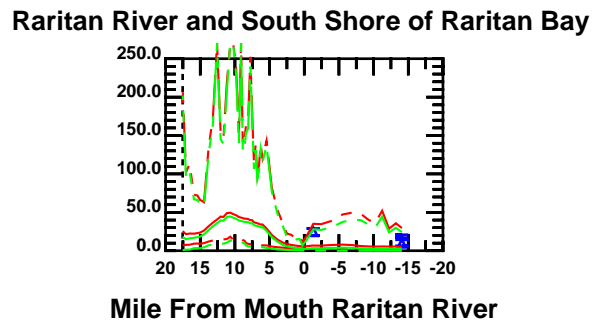
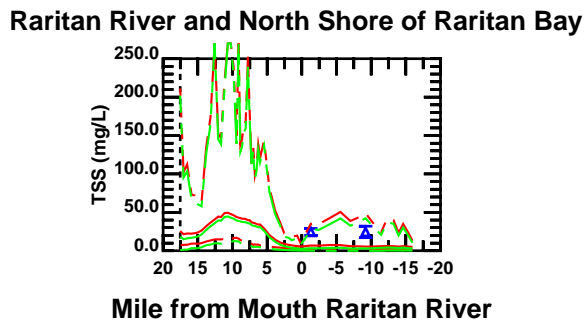
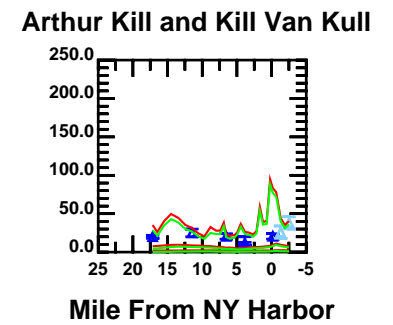
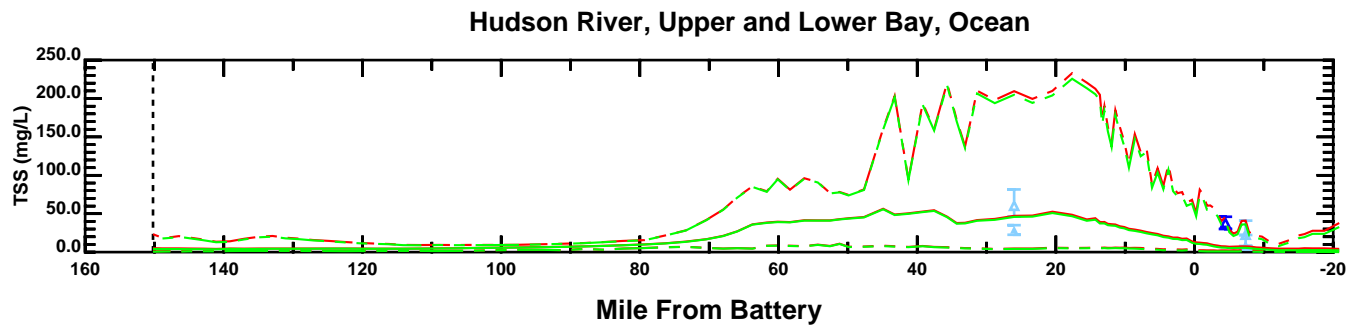
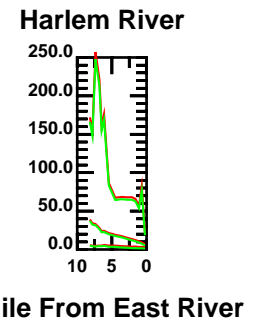
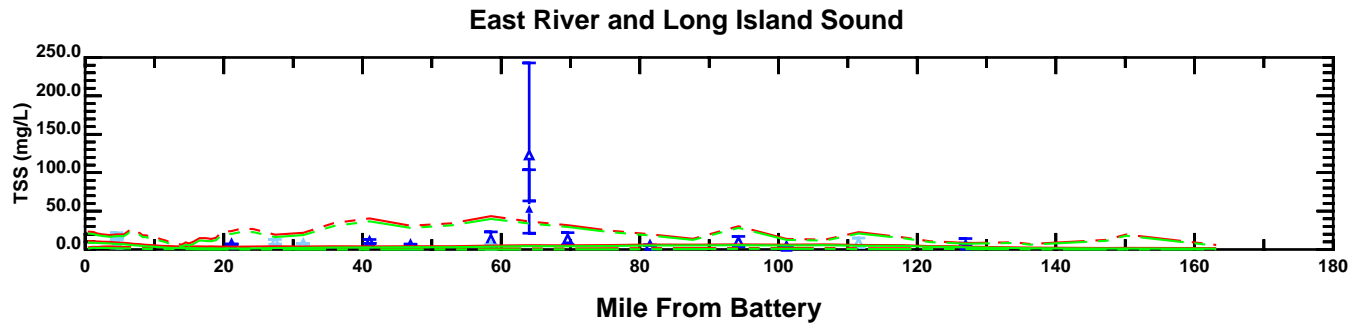
April 28 - May 27

DATA	TRANSECT	EMBAYMENT
NP	▼	▽
GFF	▲	▽

MODEL

—	TSS BOTTOM 30-DAY MEAN
- - -	TSS BOTTOM 30-DAY MAX / MIN
—	COSS BOTTOM 30-DAY MEAN
- - -	COSS BOTTOM 30-DAY MAX / MIN

**Bottom Layer TSS (mg/L)**  
**Water Year Starting Oct 1, 1994**



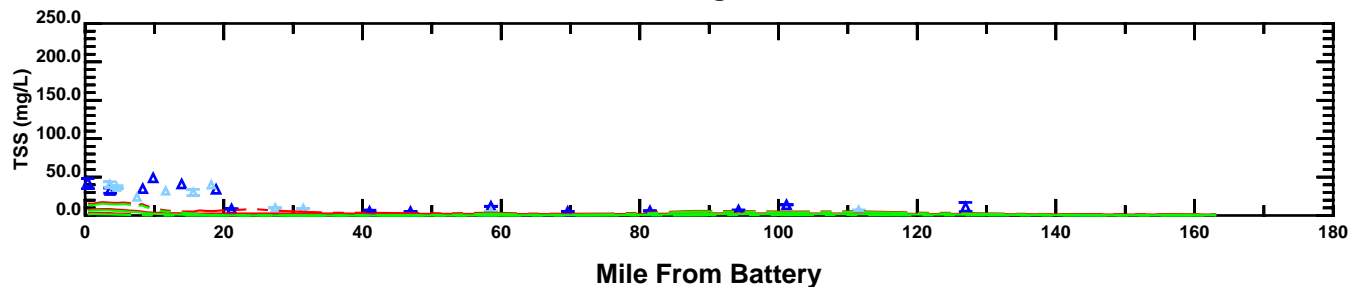
April 28 - May 27

DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

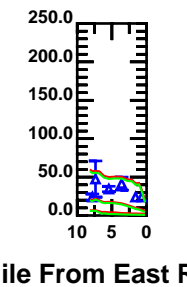
MODEL	
—	TSS 30-DAY MEAN
- - -	TSS 30-DAY MAX / MIN
—	COSS 30-DAY MEAN
- - -	COSS 30-DAY MAX / MIN

**TSS (mg/L) Averaged Over Full Depth  
Water Year Starting Oct 1, 1994**

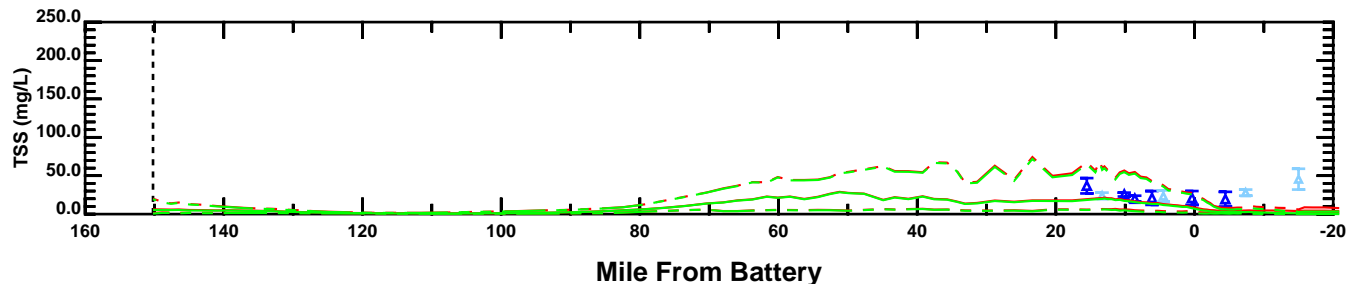
East River and Long Island Sound



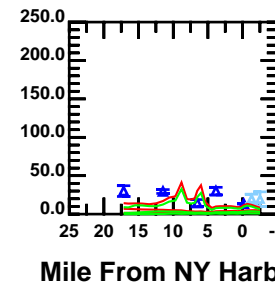
Harlem River



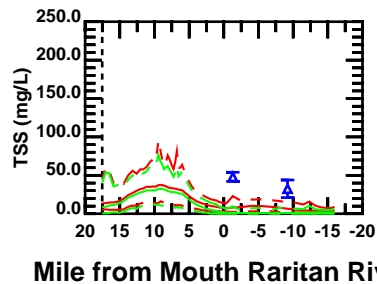
Hudson River, Upper and Lower Bay, Ocean



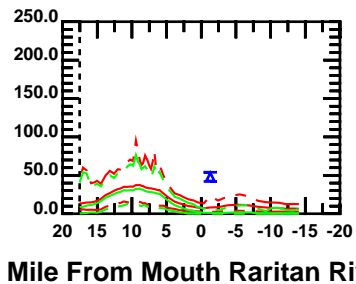
Arthur Kill and Kill Van Kull



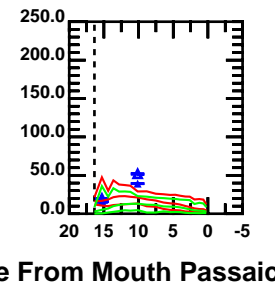
Raritan River and North Shore of Raritan Bay



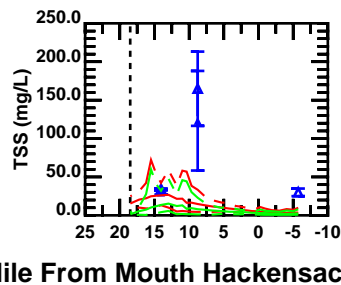
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



May 28 - June 26

DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

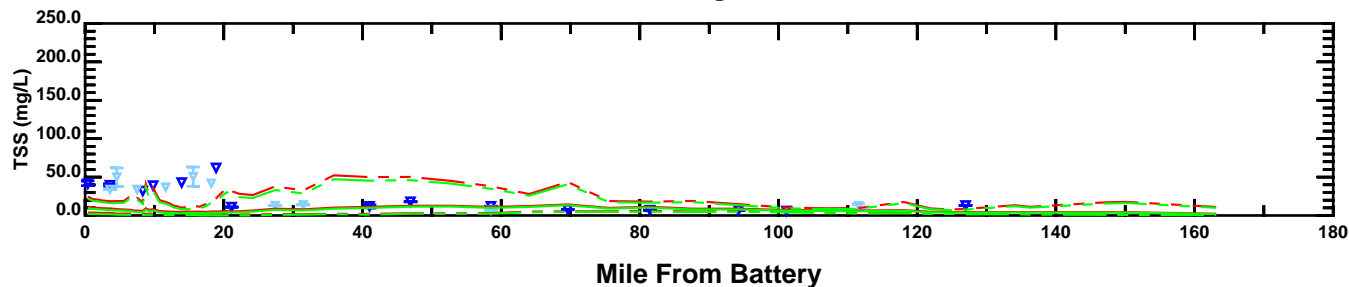
MODEL

—	TSS SURFACE 30-DAY MEAN
- - -	TSS SURFACE 30-DAY MAX / MIN
—	COSS SURFACE 30-DAY MEAN
- - -	COSS SURFACE 30-DAY MAX / MIN

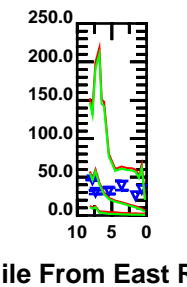
Mile From Mouth Hackensack River

Surface Layer TSS (mg/L)  
Water Year Starting Oct 1, 1994

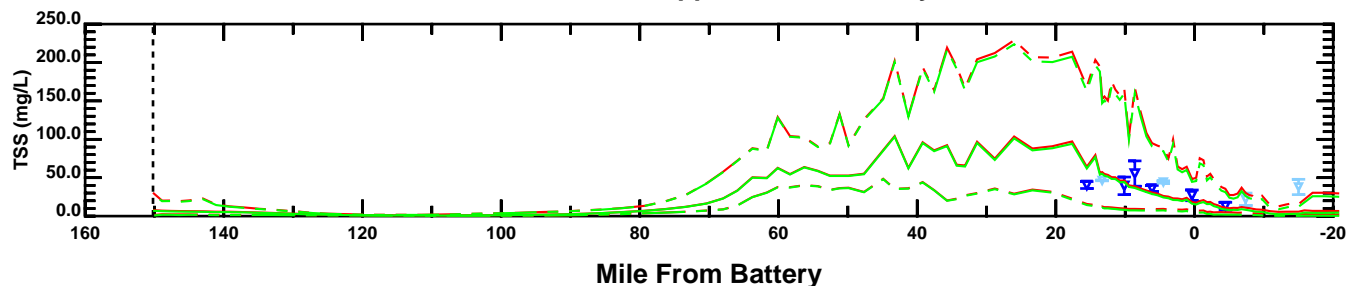
East River and Long Island Sound



Harlem River

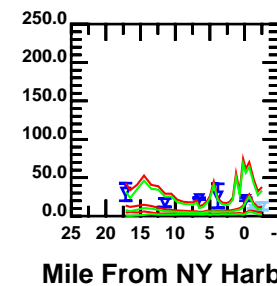


Hudson River, Upper and Lower Bay, Ocean

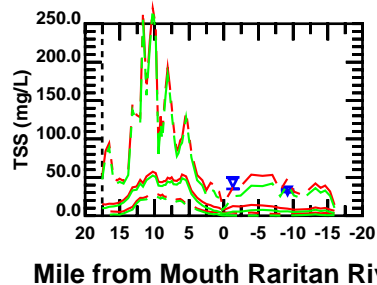


Mile From East River

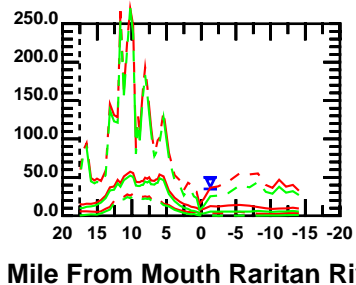
Arthur Kill and Kill Van Kull



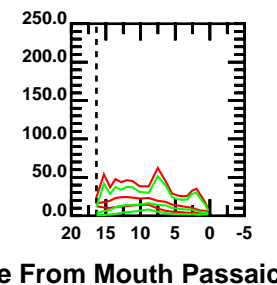
Raritan River and North Shore of Raritan Bay



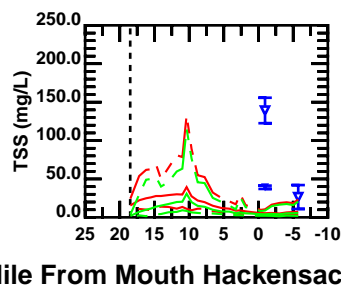
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



May 28 - June 26

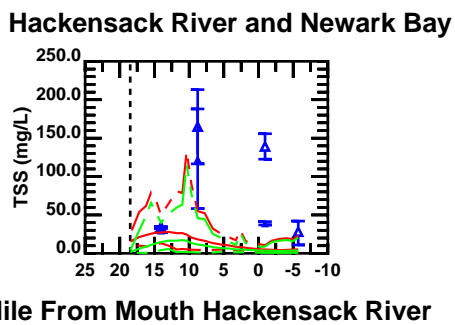
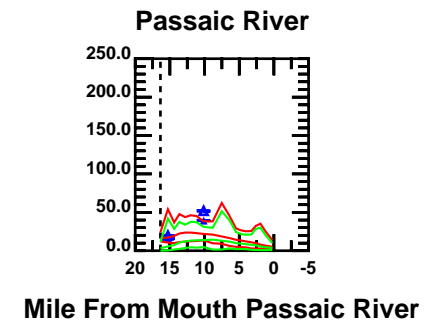
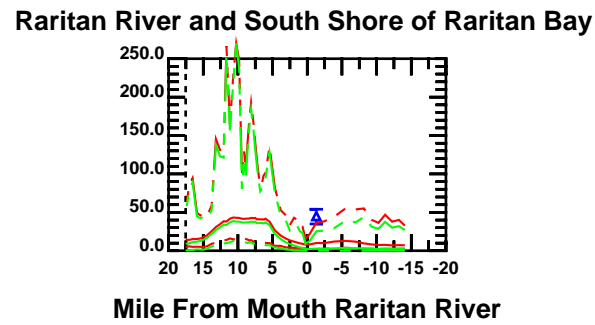
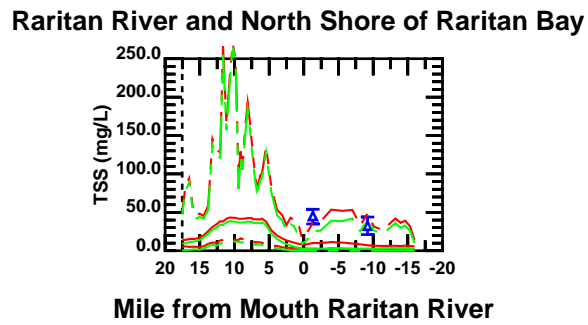
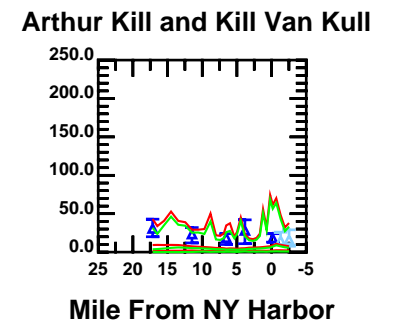
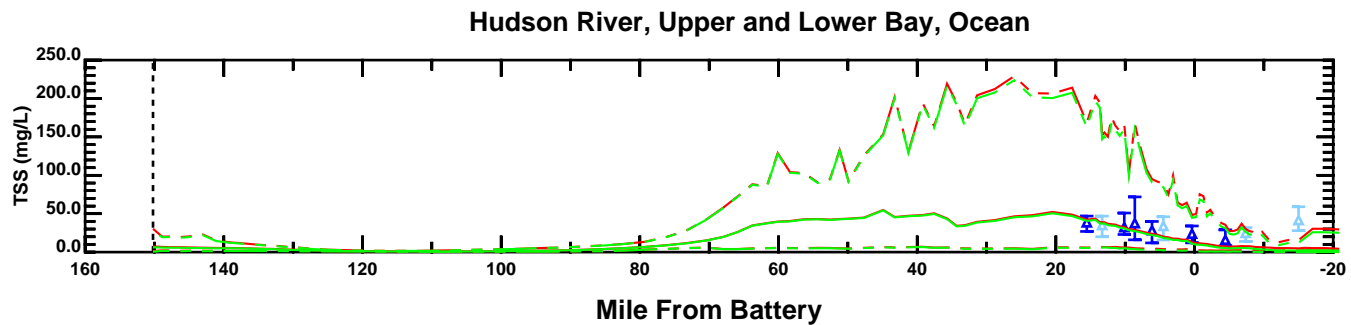
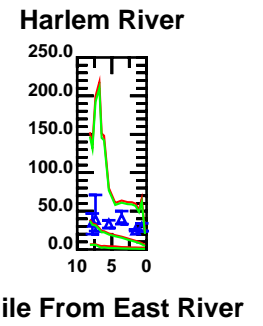
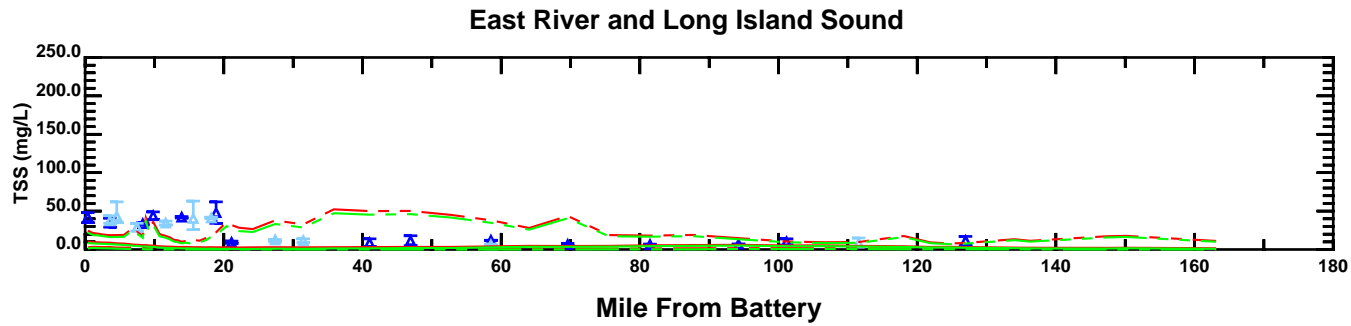
DATA	TRANSECT	EMBAYMENT
NP	▼	▽
GFF	▲	▽

MODEL

—	TSS BOTTOM 30-DAY MEAN
- - -	TSS BOTTOM 30-DAY MAX / MIN
—	COSS BOTTOM 30-DAY MEAN
- - -	COSS BOTTOM 30-DAY MAX / MIN

Mile From Mouth Hackensack River

Bottom Layer TSS (mg/L)  
Water Year Starting Oct 1, 1994



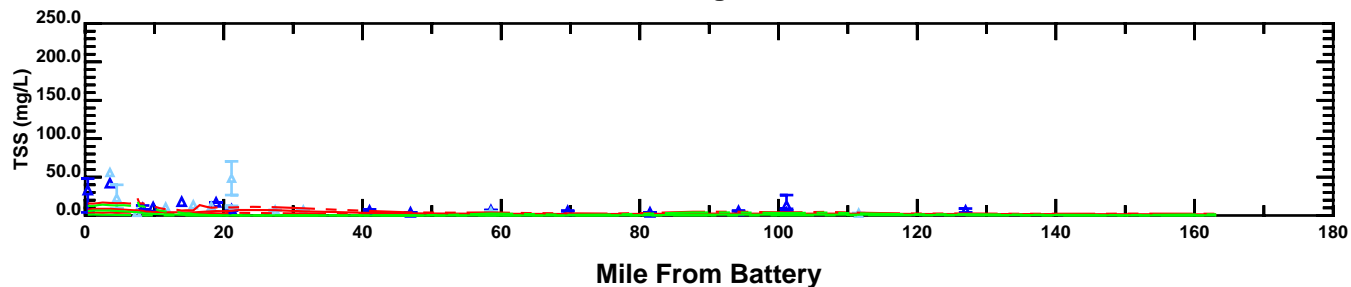
May 28 - June 26

DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

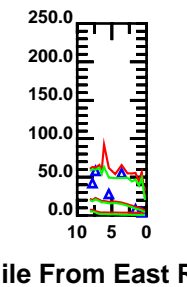
MODEL	
—	TSS 30-DAY MEAN
- - -	TSS 30-DAY MAX / MIN
—	COSS 30-DAY MEAN
- - -	COSS 30-DAY MAX / MIN

**TSS (mg/L) Averaged Over Full Depth  
Water Year Starting Oct 1, 1994**

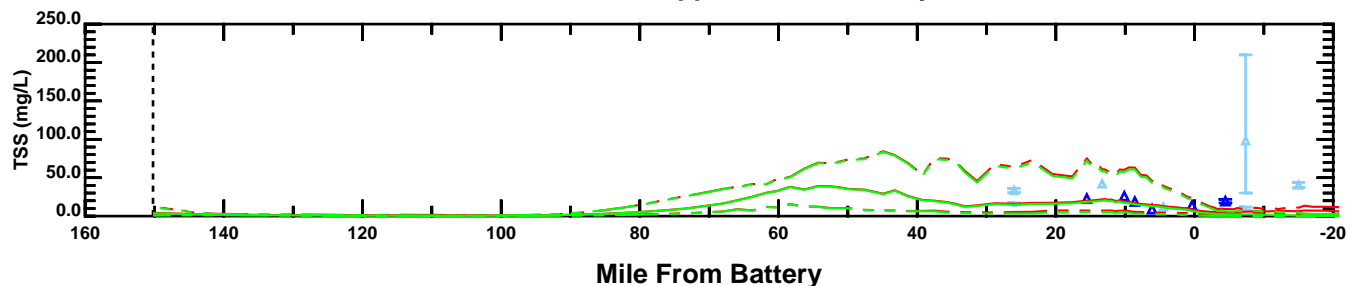
East River and Long Island Sound



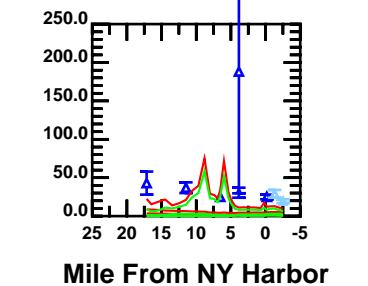
Harlem River



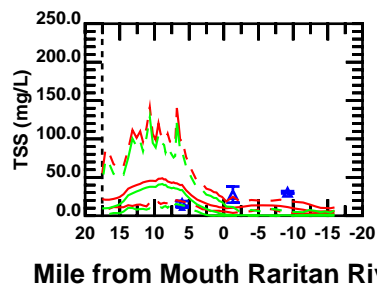
Hudson River, Upper and Lower Bay, Ocean



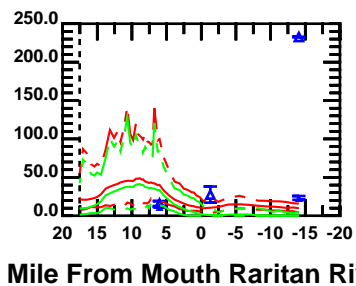
Arthur Kill and Kill Van Kull



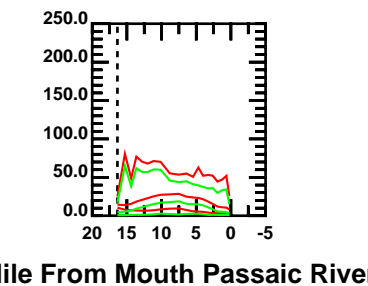
Raritan River and North Shore of Raritan Bay



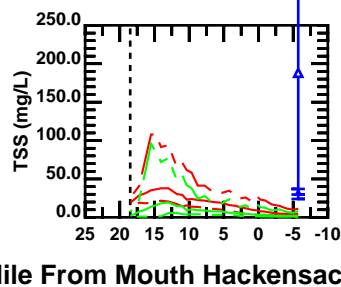
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



June 27 - July 26

DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

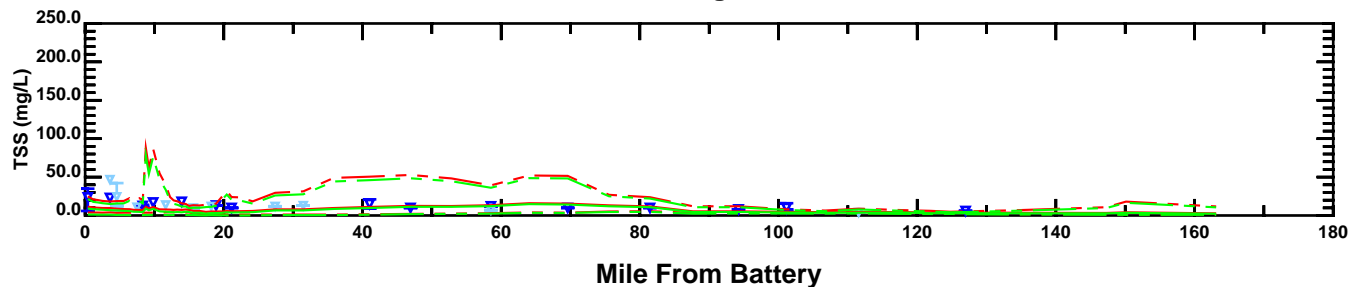
MODEL

—	TSS SURFACE 30-DAY MEAN
- - -	TSS SURFACE 30-DAY MAX / MIN
—	COSS SURFACE 30-DAY MEAN
- - -	COSS SURFACE 30-DAY MAX / MIN

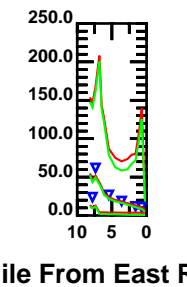
Mile From Mouth Hackensack River

Surface Layer TSS (mg/L)  
Water Year Starting Oct 1, 1994

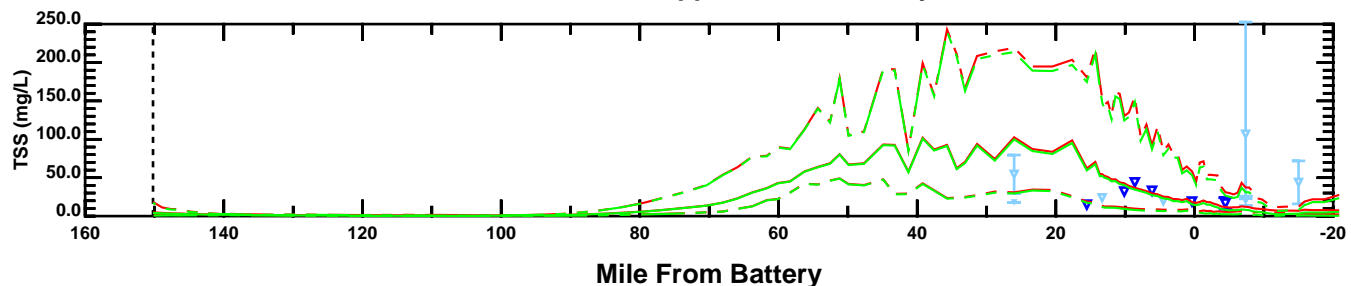
East River and Long Island Sound



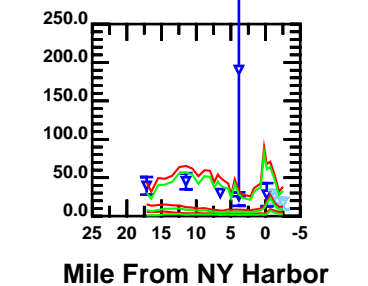
Harlem River



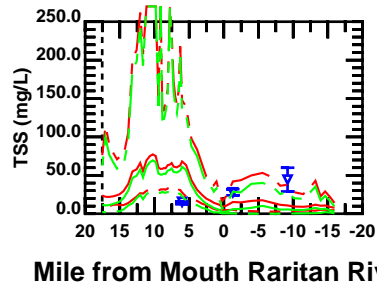
Hudson River, Upper and Lower Bay, Ocean



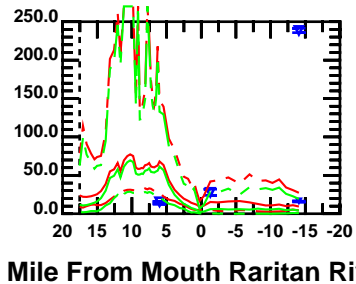
Arthur Kill and Kill Van Kull



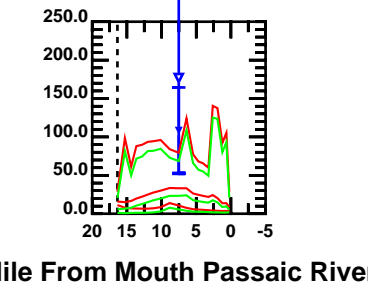
Raritan River and North Shore of Raritan Bay



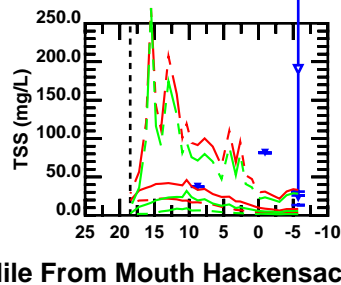
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



June 27 - July 26

DATA	TRANSECT	EMBAYMENT
NP	▼	▽
GFF	▲	▽

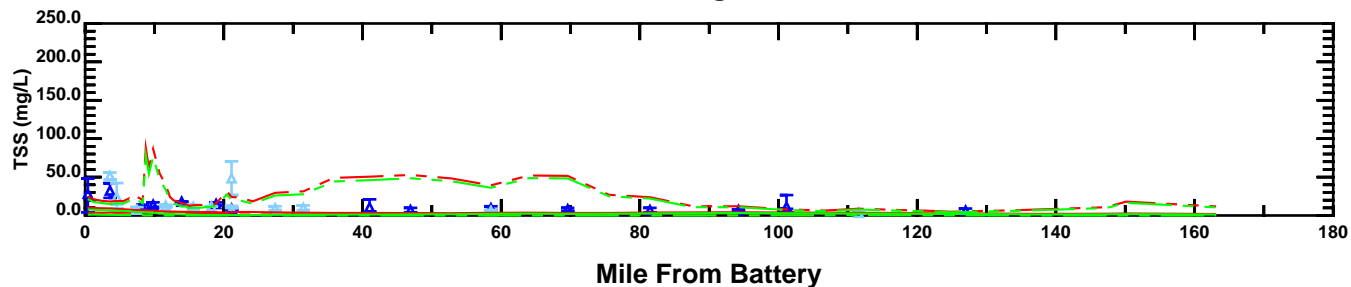
MODEL

—	TSS BOTTOM 30-DAY MEAN
- - -	TSS BOTTOM 30-DAY MAX / MIN
—	COSS BOTTOM 30-DAY MEAN
- - -	COSS BOTTOM 30-DAY MAX / MIN

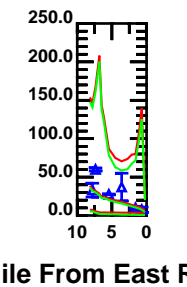
Mile From Mouth Hackensack River

Bottom Layer TSS (mg/L)  
Water Year Starting Oct 1, 1994

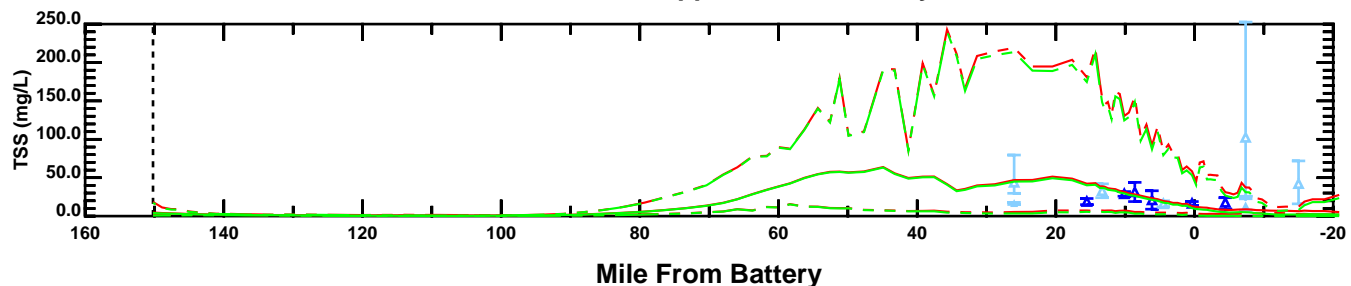
East River and Long Island Sound



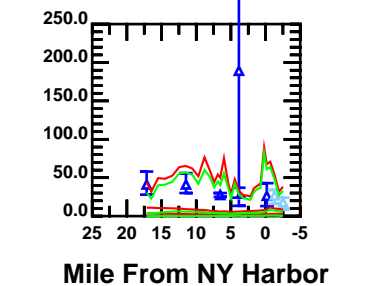
Harlem River



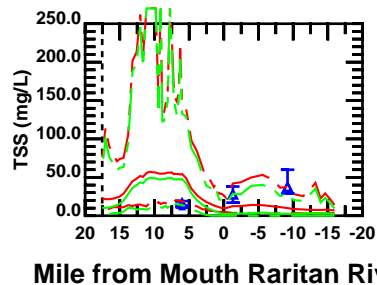
Hudson River, Upper and Lower Bay, Ocean



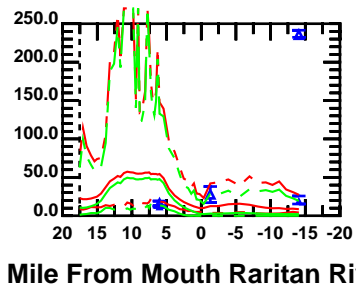
Arthur Kill and Kill Van Kull



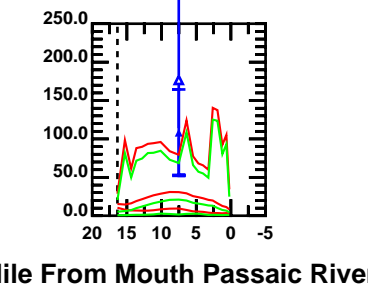
Raritan River and North Shore of Raritan Bay



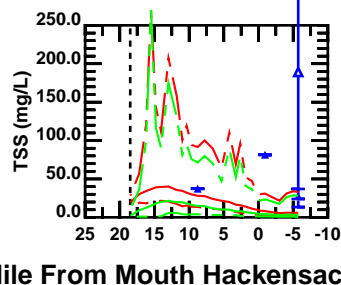
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



June 27 - July 26

DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

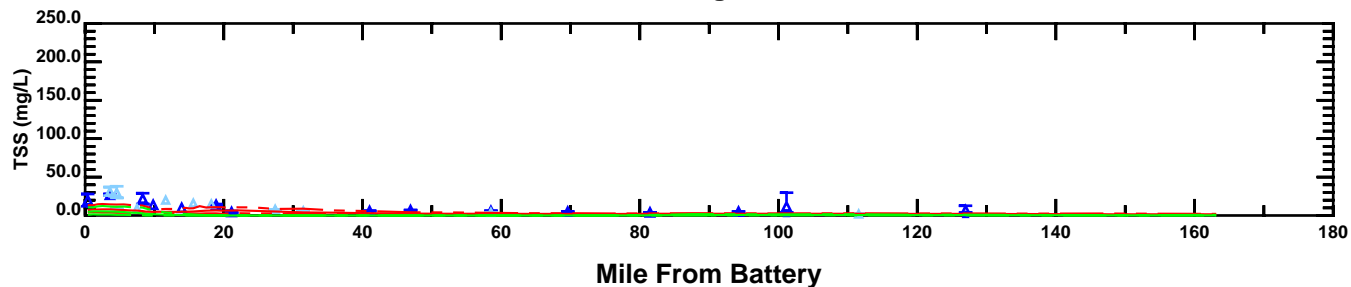
MODEL	
—	TSS 30-DAY MEAN
- - -	TSS 30-DAY MAX / MIN
—	COSS 30-DAY MEAN
- - -	COSS 30-DAY MAX / MIN

Mile From Mouth Hackensack River

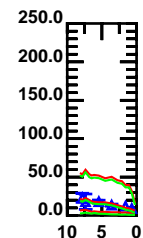
TSS (mg/L) Averaged Over Full Depth  
Water Year Starting Oct 1, 1994



East River and Long Island Sound

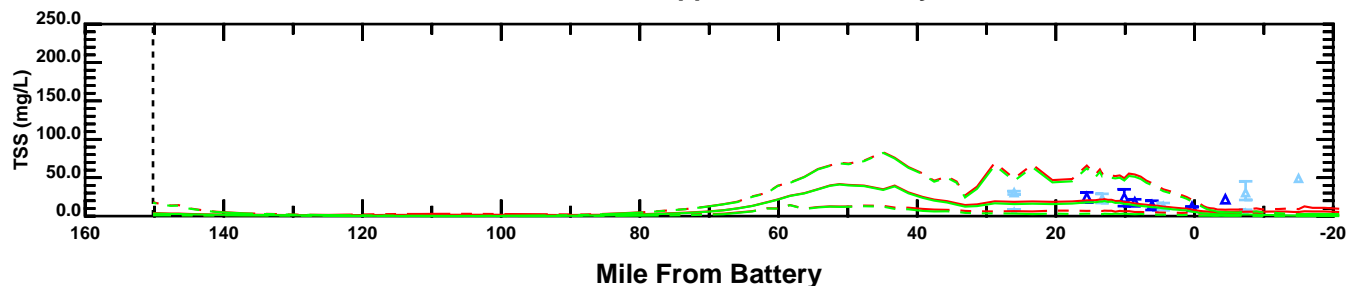


Harlem River

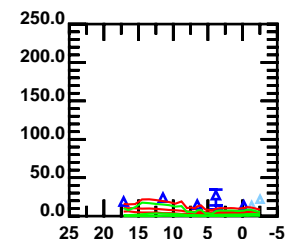


Mile From East River

Hudson River, Upper and Lower Bay, Ocean

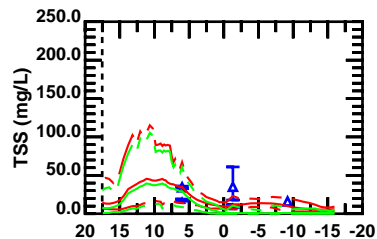


Arthur Kill and Kill Van Kull



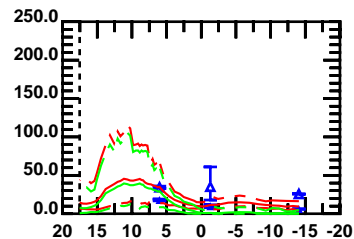
Mile From NY Harbor

Raritan River and North Shore of Raritan Bay



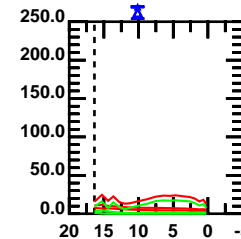
Mile from Mouth Raritan River

Raritan River and South Shore of Raritan Bay



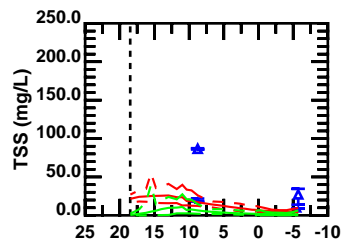
Mile From Mouth Raritan River

Passaic River



Mile From Mouth Passaic River

Hackensack River and Newark Bay



Mile From Mouth Hackensack River

July 27 - August 25

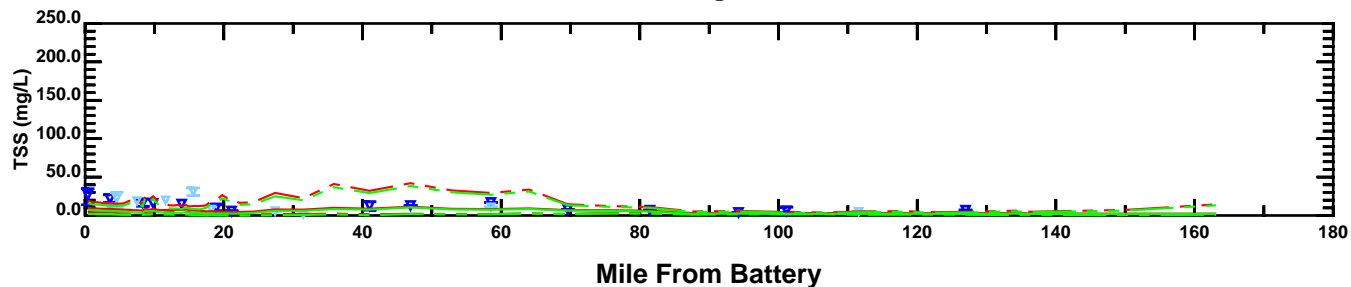
DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

MODEL

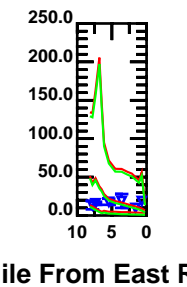
—	TSS SURFACE 30-DAY MEAN
- - -	TSS SURFACE 30-DAY MAX / MIN
—	COSS SURFACE 30-DAY MEAN
- - -	COSS SURFACE 30-DAY MAX / MIN

Surface Layer TSS (mg/L)  
Water Year Starting Oct 1, 1994

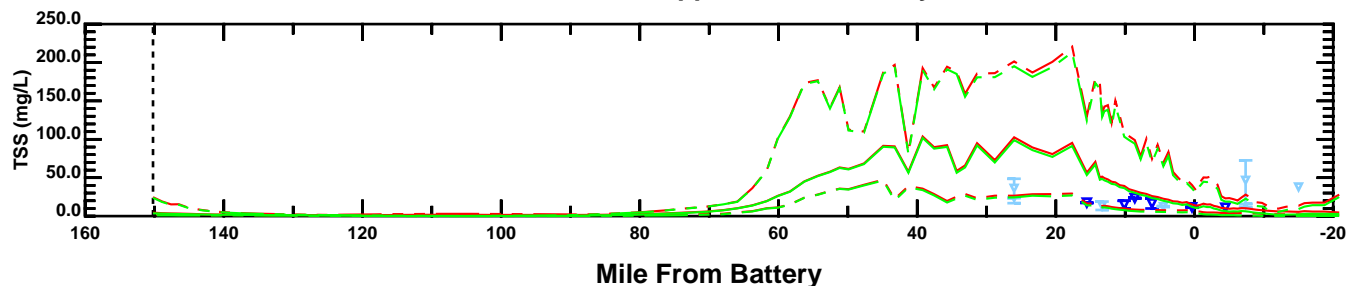
East River and Long Island Sound



Harlem River

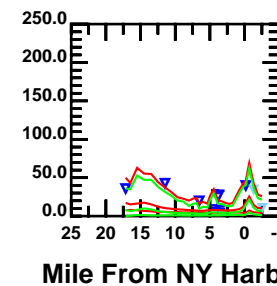


Hudson River, Upper and Lower Bay, Ocean

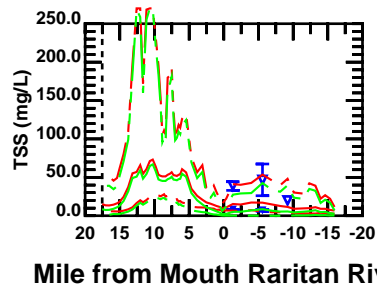


Mile From East River

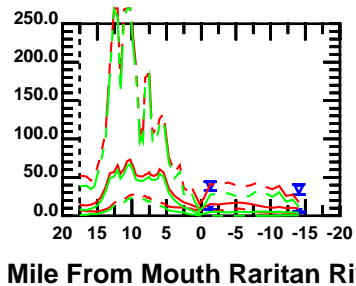
Arthur Kill and Kill Van Kull



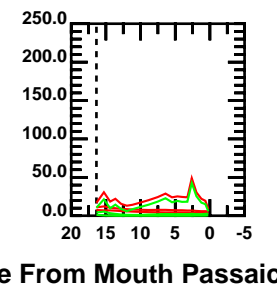
Raritan River and North Shore of Raritan Bay



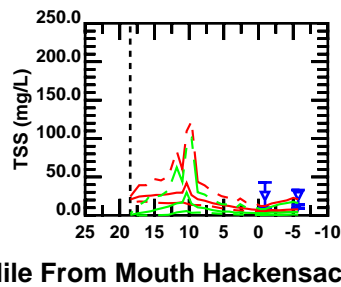
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



July 27 - August 25

DATA	TRANSECT	EMBAYMENT
NP	▼	▽
GFF	▲	▽

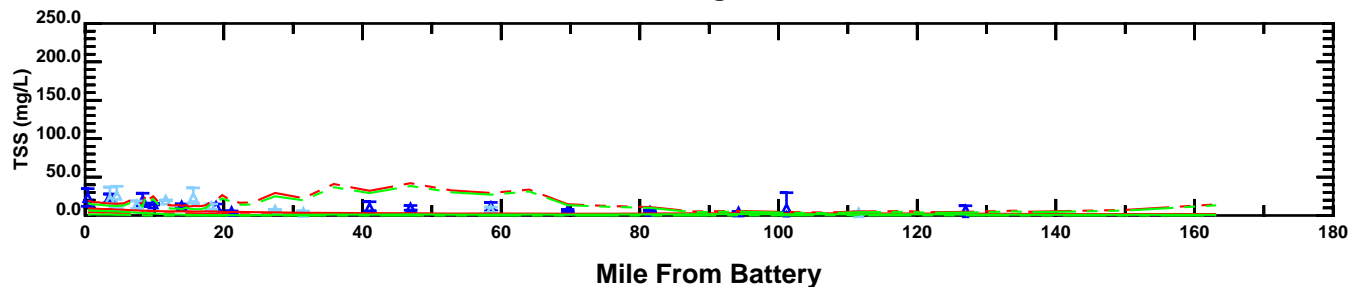
MODEL

—	TSS BOTTOM 30-DAY MEAN
- - -	TSS BOTTOM 30-DAY MAX / MIN
—	COSS BOTTOM 30-DAY MEAN
- - -	COSS BOTTOM 30-DAY MAX / MIN

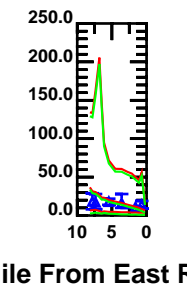
Mile From Mouth Hackensack River

Bottom Layer TSS (mg/L)  
Water Year Starting Oct 1, 1994

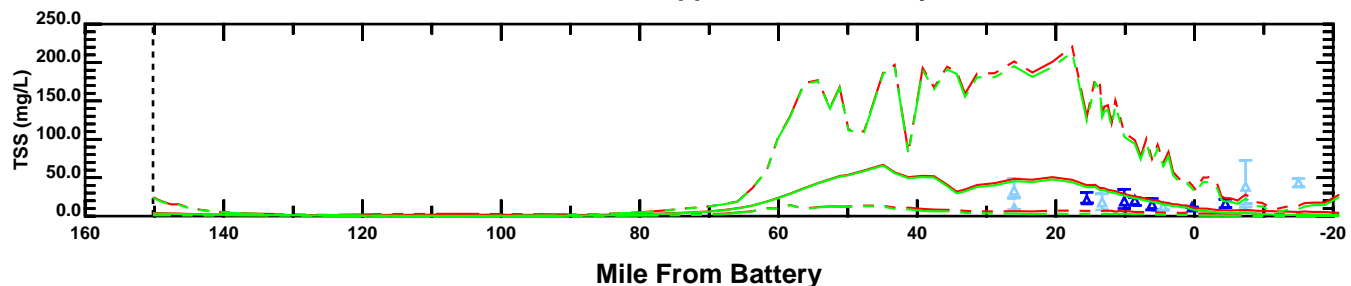
East River and Long Island Sound



Harlem River

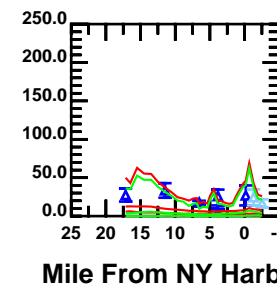


Hudson River, Upper and Lower Bay, Ocean

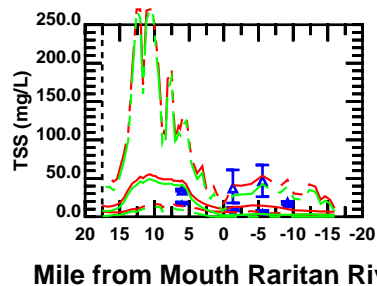


Mile From East River

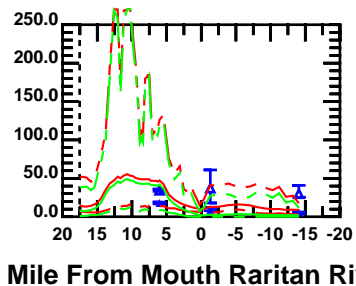
Arthur Kill and Kill Van Kull



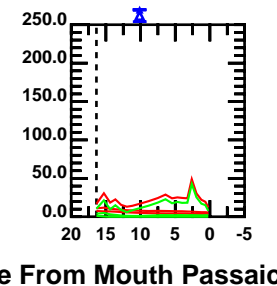
Raritan River and North Shore of Raritan Bay



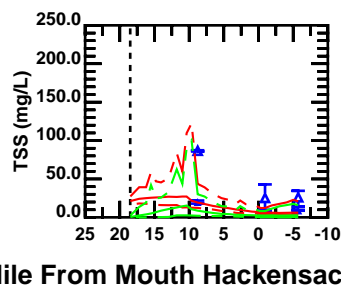
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



July 27 - August 25

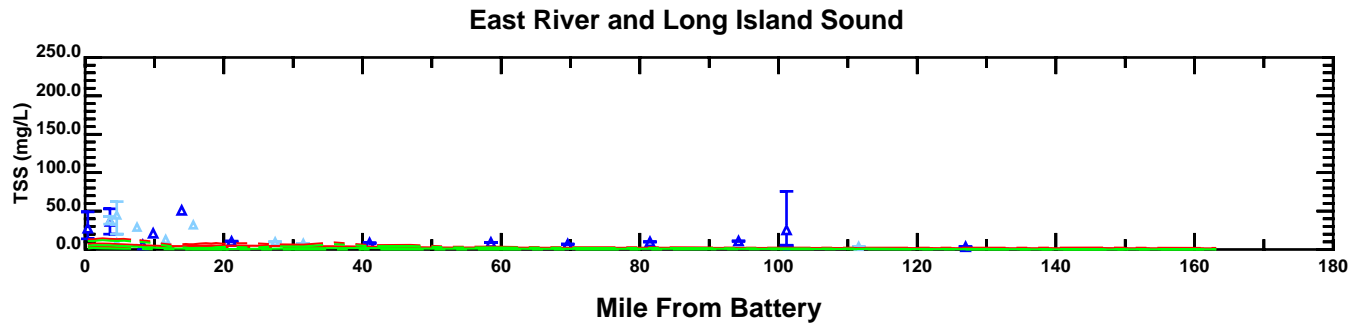
DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

MODEL

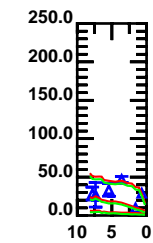
—	TSS 30-DAY MEAN
- - -	TSS 30-DAY MAX / MIN
—	COSS 30-DAY MEAN
- - -	COSS 30-DAY MAX / MIN

Mile From Mouth Hackensack River

TSS (mg/L) Averaged Over Full Depth  
Water Year Starting Oct 1, 1994

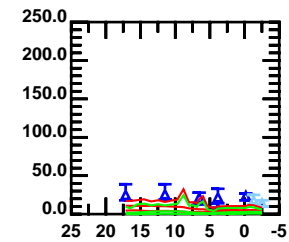


### Harlem River

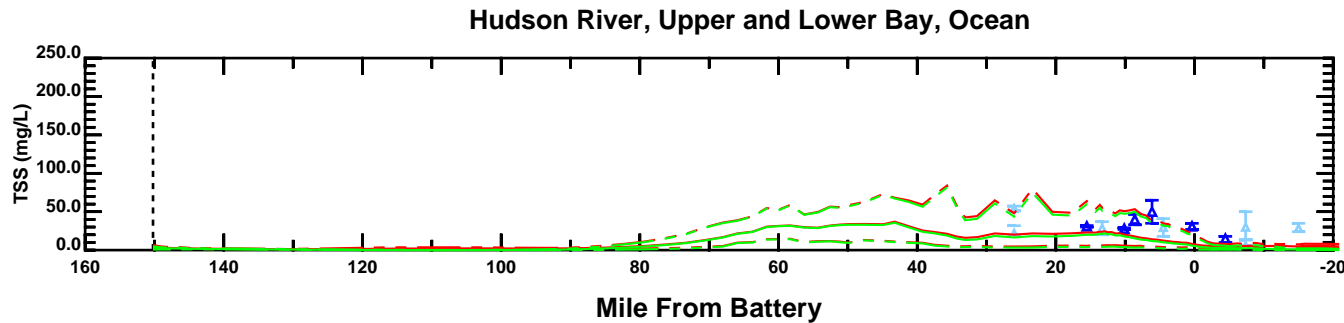


### Arthur Kill and Kill Van Kull

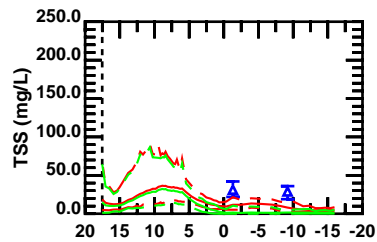
### Arthur Kill and Kill Van Kull



### Mile From NY Harbor

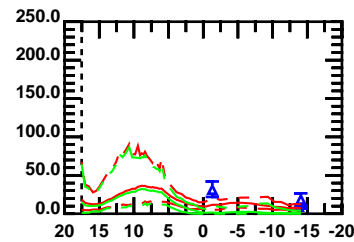


### Raritan River and North Shore of Raritan Bay



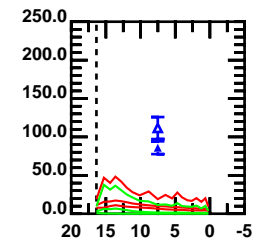
### Mile from Mouth Raritan River

### Raritan River and South Shore of Raritan Bay



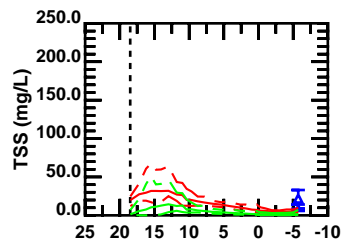
### Mile From Mouth Raritan River

### Passaic River



### Mile From Mouth Passaic River

### Hackensack River and Newark Bay



### Mile From Mouth Hackensack River

August 26 - September 24

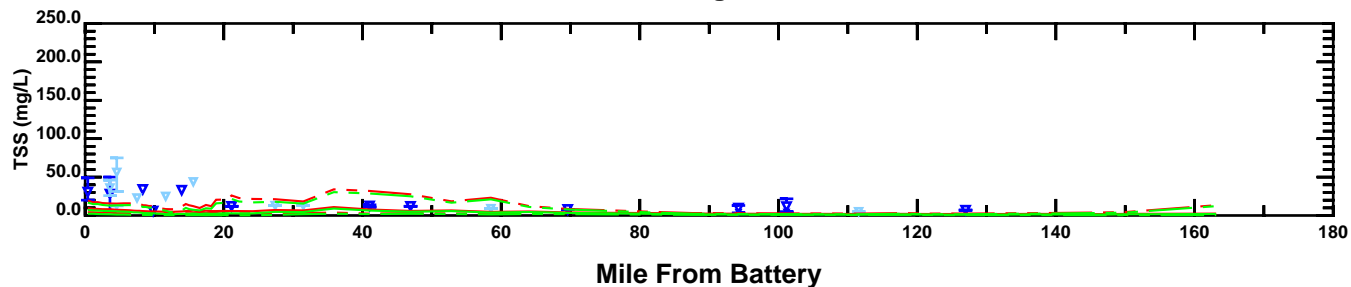
DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

MODEL

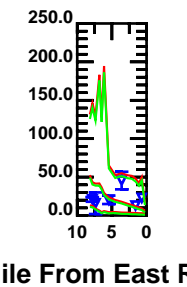
—	TSS SURFACE 30-DAY MEAN
- - -	TSS SURFACE 30-DAY MAX / MIN
—	COSS SURFACE 30-DAY MEAN
- - -	COSS SURFACE 30-DAY MAX / MIN

Surface Layer TSS (mg/L)  
Water Year Starting Oct 1, 1994

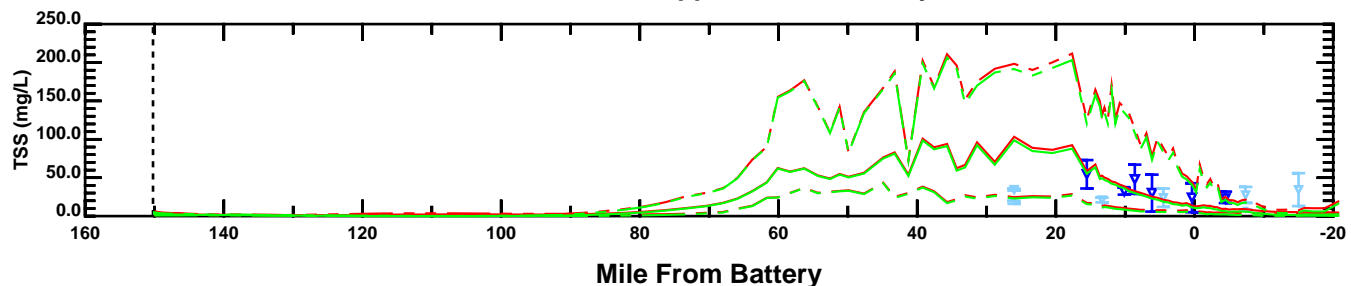
East River and Long Island Sound



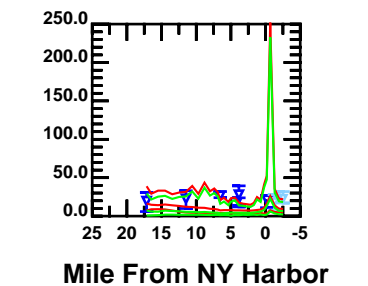
Harlem River



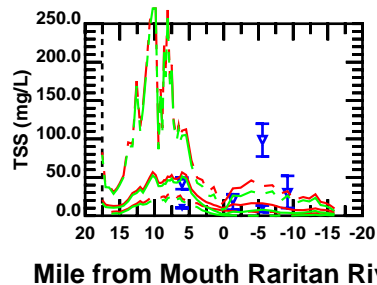
Hudson River, Upper and Lower Bay, Ocean



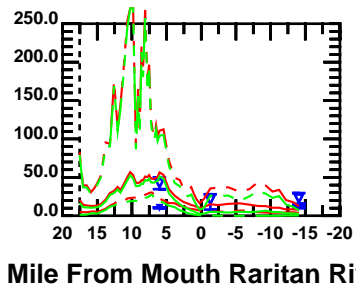
Arthur Kill and Kill Van Kull



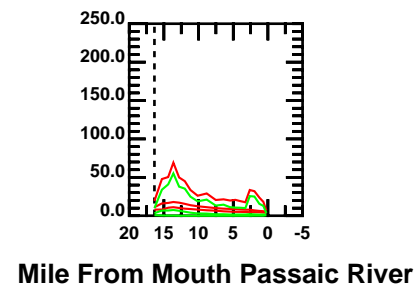
Raritan River and North Shore of Raritan Bay



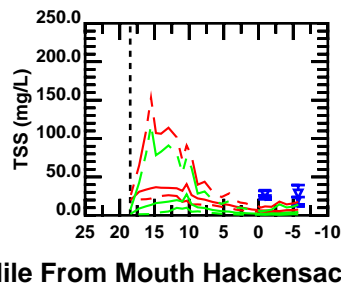
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



August 26 - September 24

DATA	TRANSECT	EMBAYMENT
NP	▼	▽
GFF	▲	▽

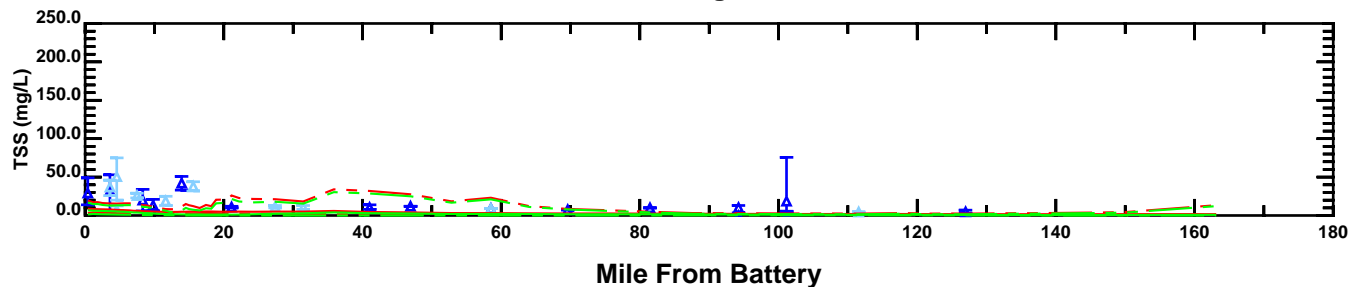
MODEL

—	TSS BOTTOM 30-DAY MEAN
- - -	TSS BOTTOM 30-DAY MAX / MIN
—	COSS BOTTOM 30-DAY MEAN
- - -	COSS BOTTOM 30-DAY MAX / MIN

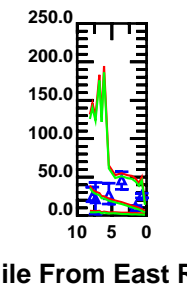
Mile From Mouth Hackensack River

Bottom Layer TSS (mg/L)  
Water Year Starting Oct 1, 1994

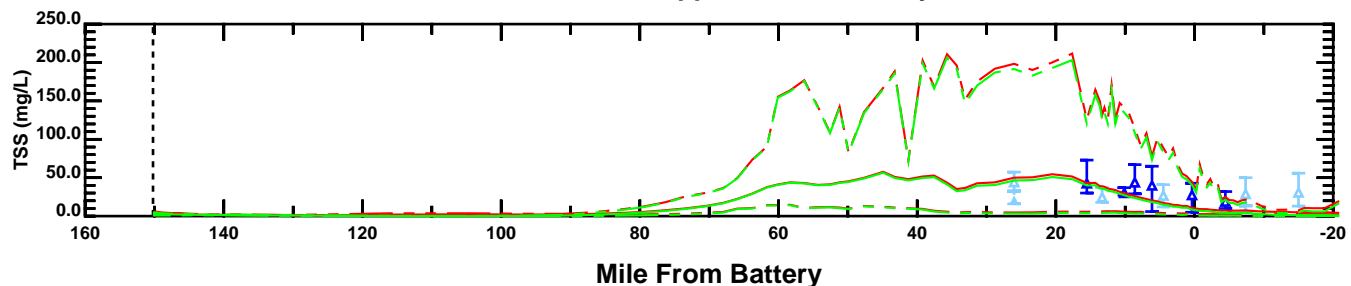
East River and Long Island Sound



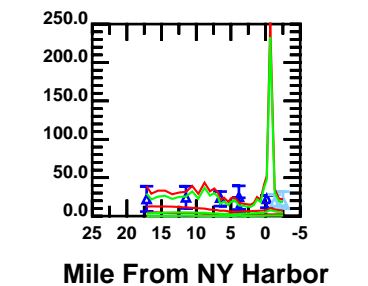
Harlem River



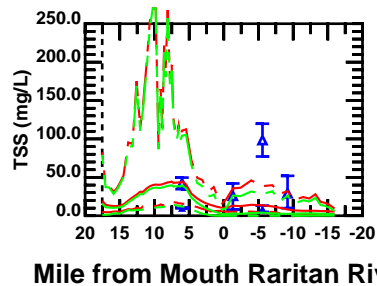
Hudson River, Upper and Lower Bay, Ocean



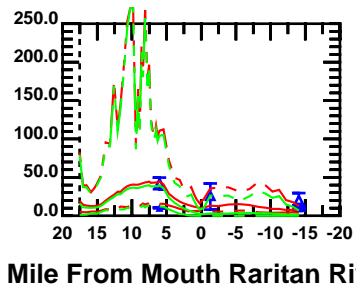
Arthur Kill and Kill Van Kull



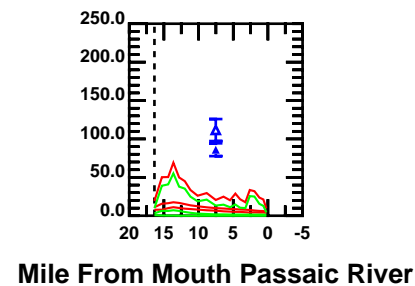
Raritan River and North Shore of Raritan Bay



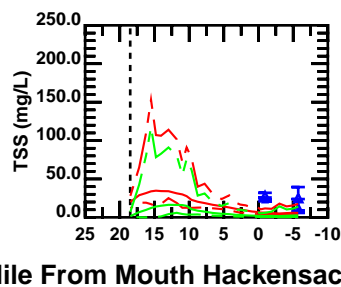
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



August 26 - September 24

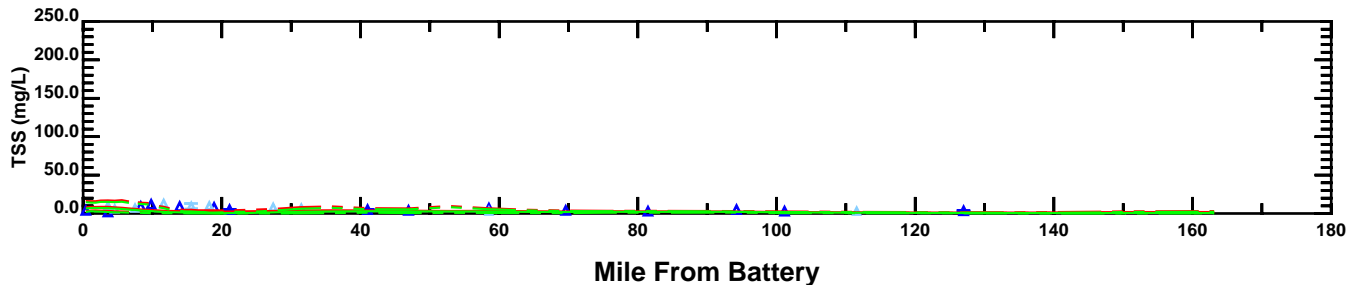
DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

MODEL	
—	TSS 30-DAY MEAN
- - -	TSS 30-DAY MAX / MIN
—	COSS 30-DAY MEAN
- - -	COSS 30-DAY MAX / MIN

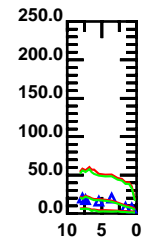
Mile From Mouth Hackensack River

TSS (mg/L) Averaged Over Full Depth  
Water Year Starting Oct 1, 1994

East River and Long Island Sound

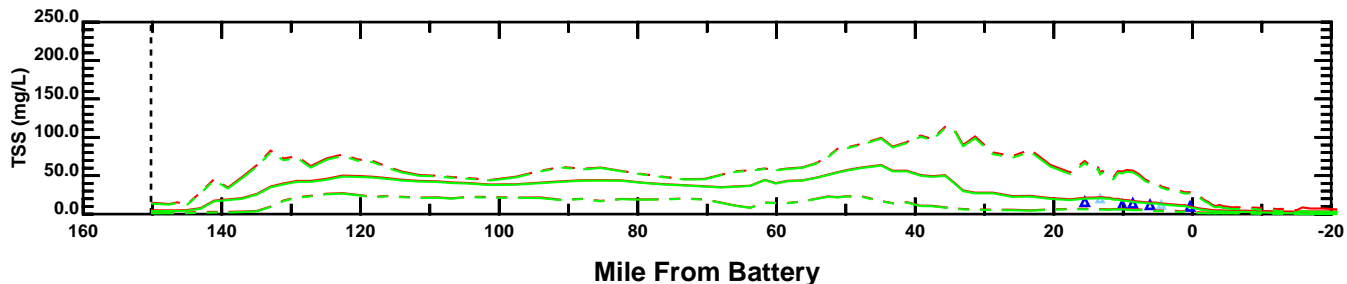


Harlem River

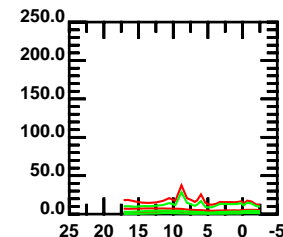


Mile From East River

Hudson River, Upper and Lower Bay, Ocean

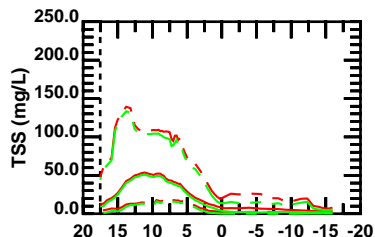


Arthur Kill and Kill Van Kull



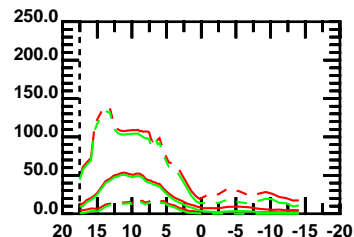
Mile From NY Harbor

Raritan River and North Shore of Raritan Bay



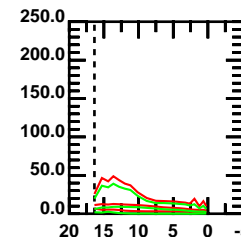
Mile from Mouth Raritan River

Raritan River and South Shore of Raritan Bay



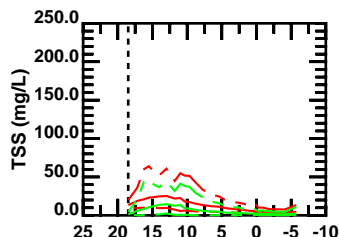
Mile From Mouth Raritan River

Passaic River



Mile From Mouth Passaic River

Hackensack River and Newark Bay



Mile From Mouth Hackensack River

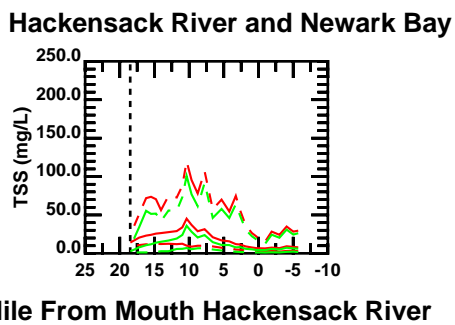
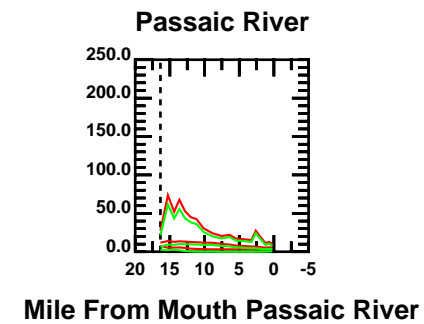
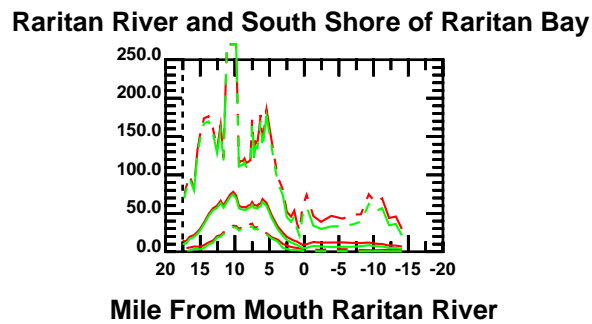
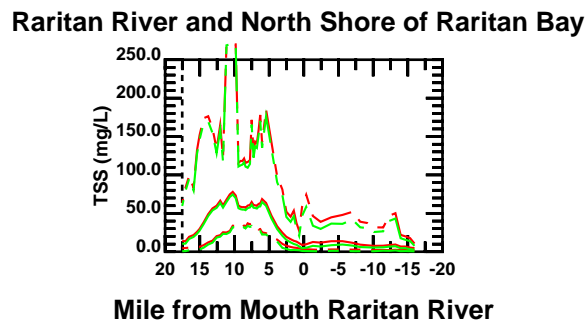
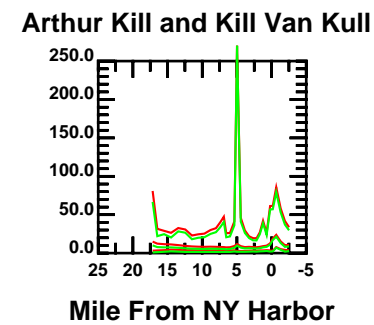
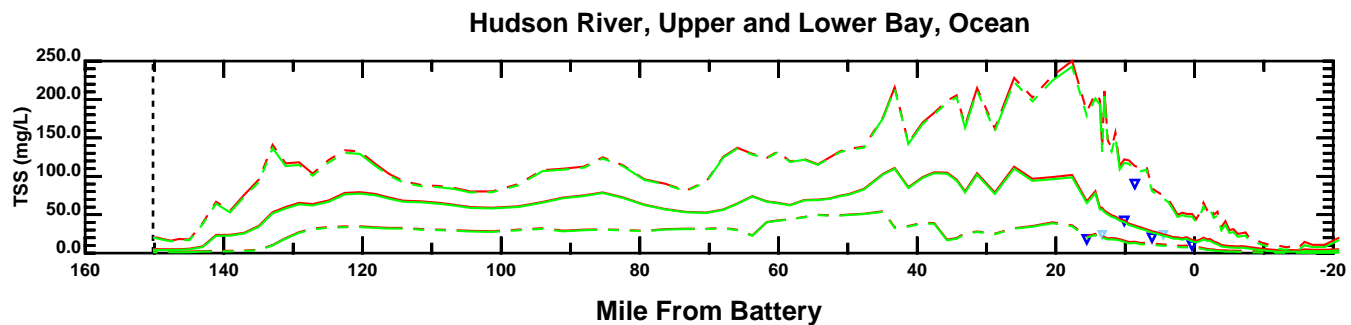
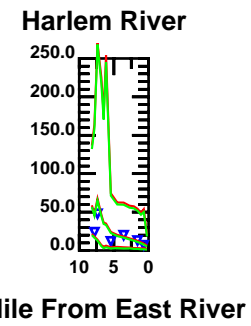
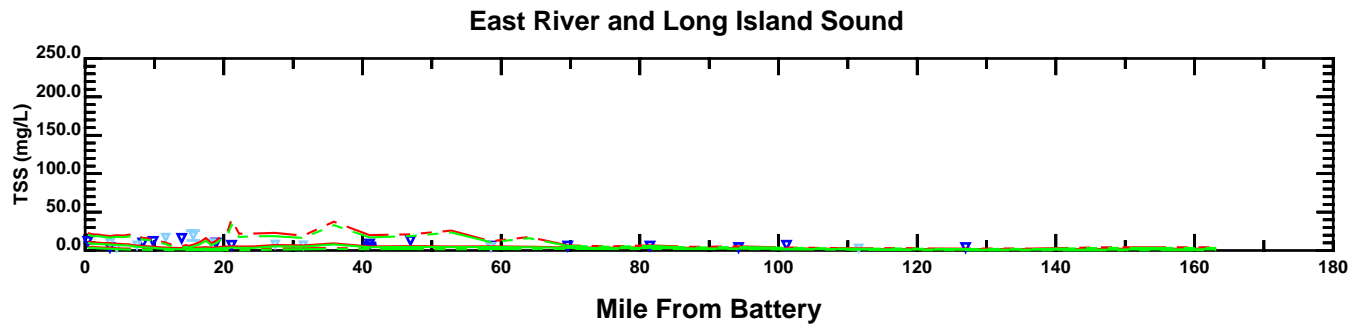
October 1 - October 30

DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

MODEL

—	TSS SURFACE 30-DAY MEAN
- - -	TSS SURFACE 30-DAY MAX / MIN
—	COSS SURFACE 30-DAY MEAN
- - -	COSS SURFACE 30-DAY MAX / MIN

Surface Layer TSS (mg/L)  
Water Year Starting Oct 1, 1998



October 1 - October 30

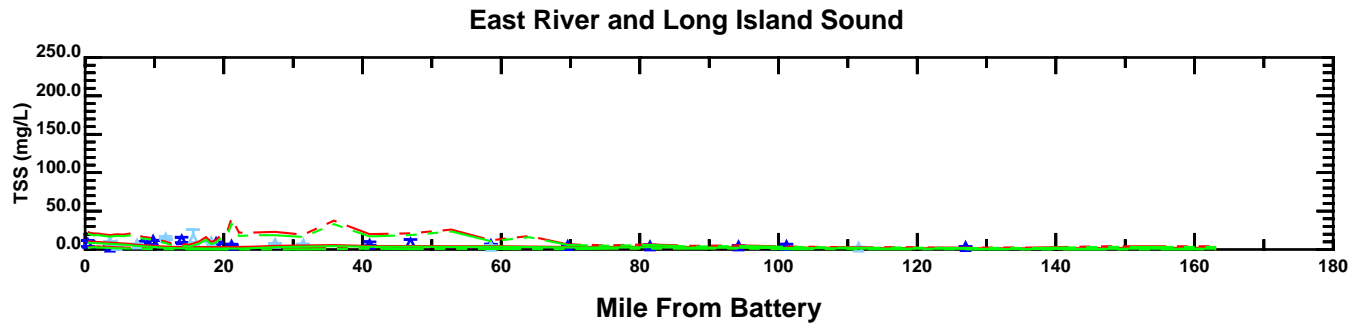
DATA	TRANSECT	EMBAYMENT
NP	▼	▽
GFF	▼	▽

MODEL

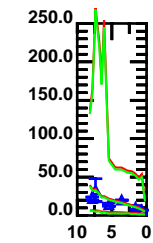
—	TSS BOTTOM 30-DAY MEAN
- - -	TSS BOTTOM 30-DAY MAX / MIN
—	COSS BOTTOM 30-DAY MEAN
- - -	COSS BOTTOM 30-DAY MAX / MIN

**Bottom Layer TSS (mg/L)  
Water Year Starting Oct 1, 1998**



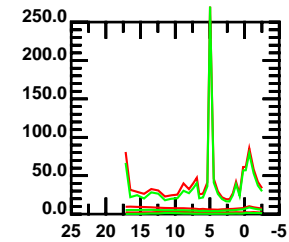


### Harlem River

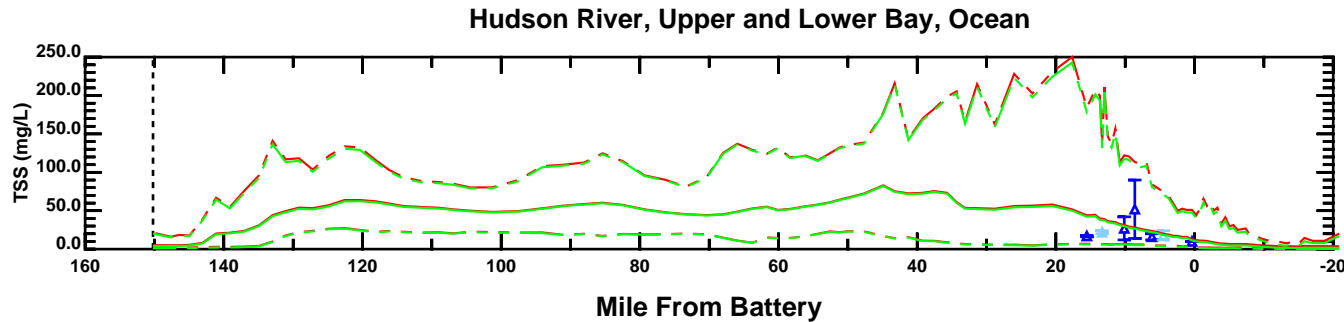


### Arthur Kill and Kill Van Kull

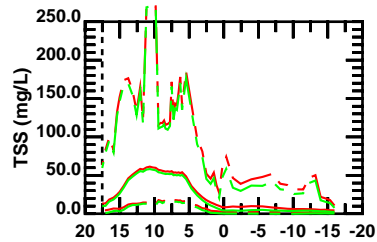
### Arthur Kill and Kill Van Kull



### Mile From NY Harbor

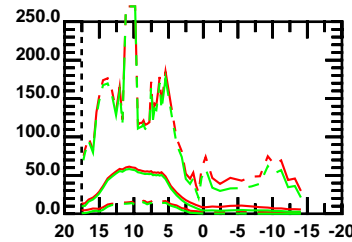


### Raritan River and North Shore of Raritan Bay



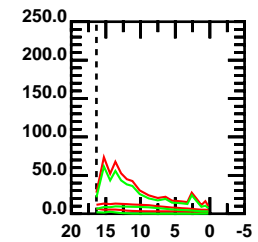
### Mile from Mouth Raritan River

### Raritan River and South Shore of Raritan Bay



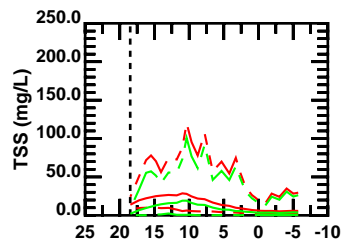
### Mile From Mouth Raritan River

### Passaic River



### Mile From Mouth Passaic River

### Hackensack River and Newark Bay



### Mile From Mouth Hackensack River

October 1 - October 30

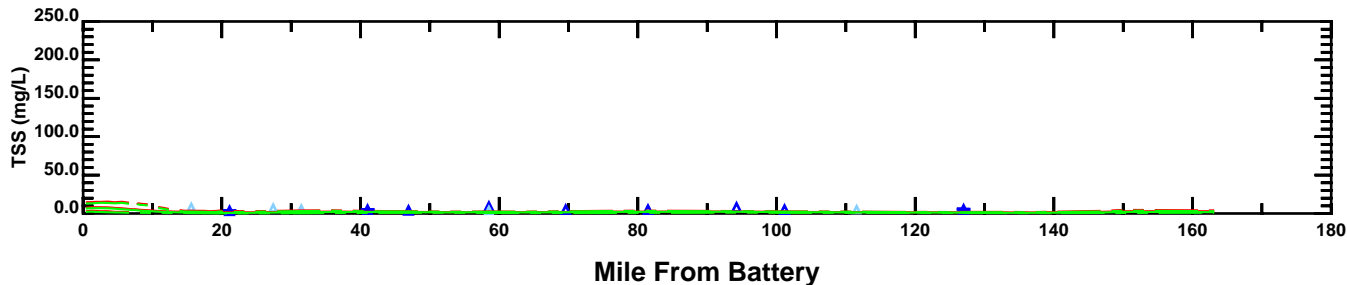
DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

MODEL

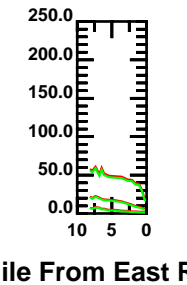
—	TSS 30-DAY MEAN
- - -	TSS 30-DAY MAX / MIN
—	COSS 30-DAY MEAN
- - -	COSS 30-DAY MAX / MIN

**TSS (mg/L) Averaged Over Full Depth  
Water Year Starting Oct 1, 1998**

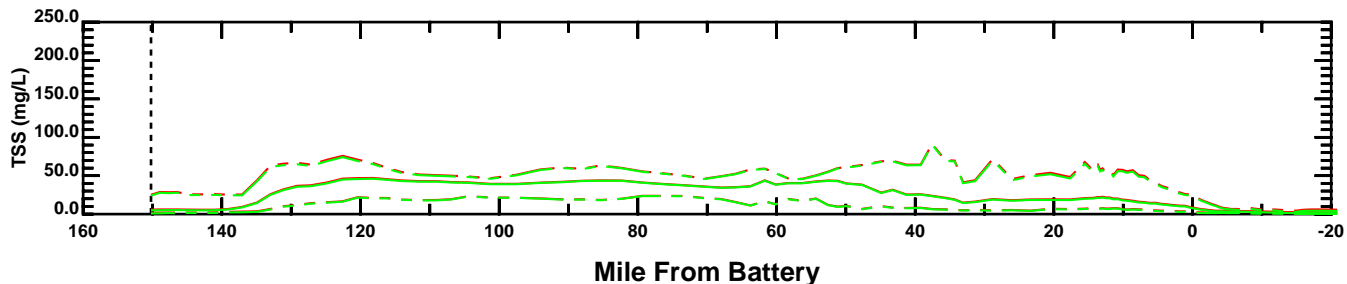
East River and Long Island Sound



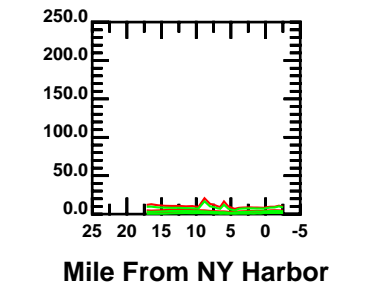
Harlem River



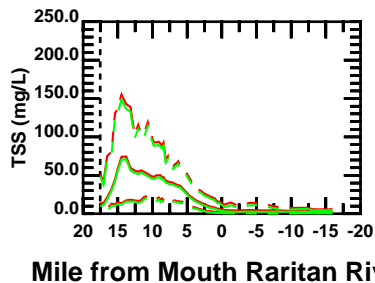
Hudson River, Upper and Lower Bay, Ocean



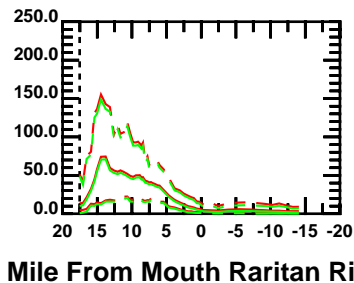
Arthur Kill and Kill Van Kull



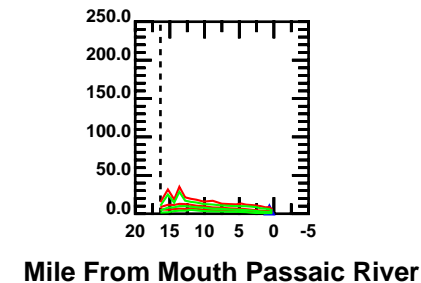
Raritan River and North Shore of Raritan Bay



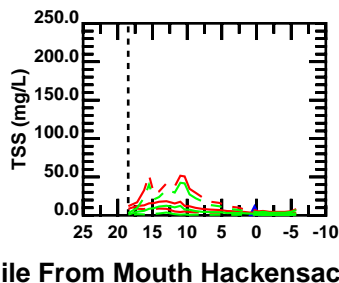
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



October 31 - November 29

DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

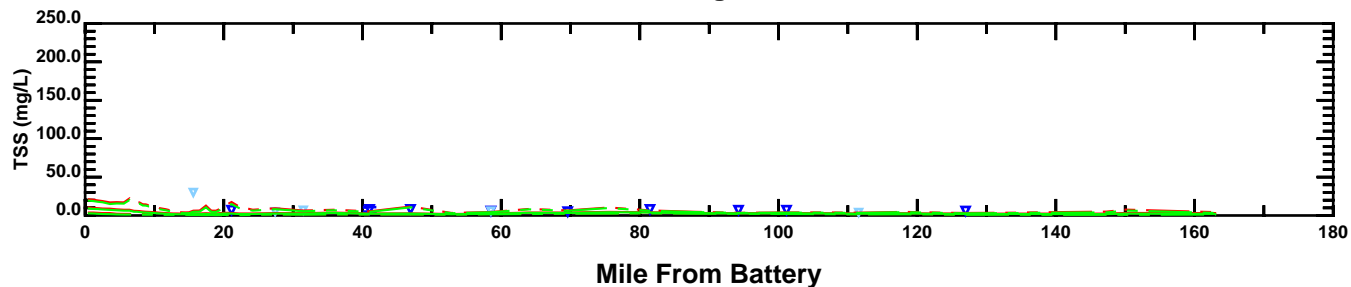
MODEL

—	TSS SURFACE 30-DAY MEAN
- - -	TSS SURFACE 30-DAY MAX / MIN
—	COSS SURFACE 30-DAY MEAN
- - -	COSS SURFACE 30-DAY MAX / MIN

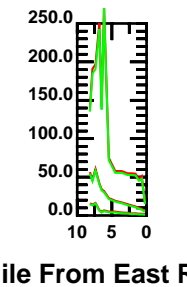
Mile From Mouth Hackensack River

Surface Layer TSS (mg/L)  
Water Year Starting Oct 1, 1998

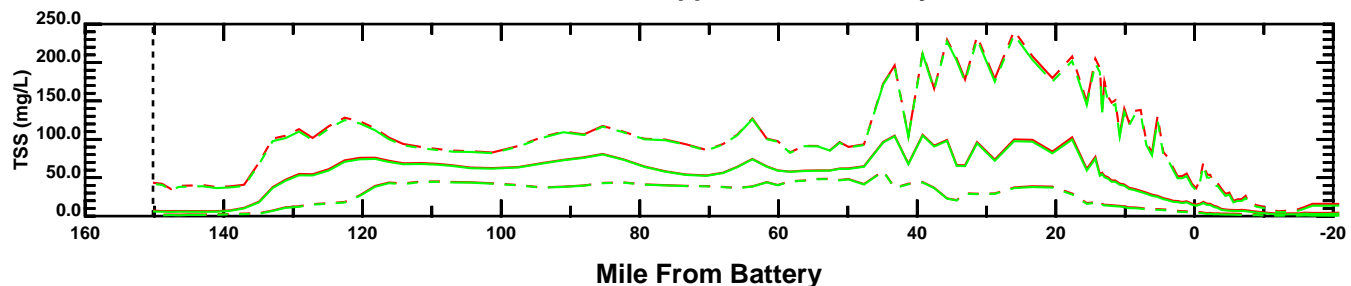
East River and Long Island Sound



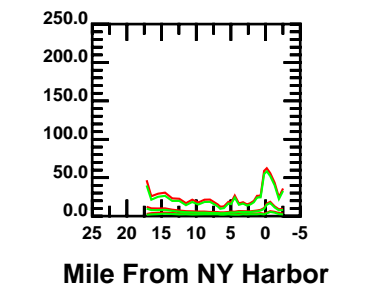
Harlem River



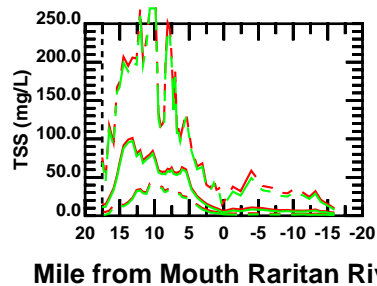
Hudson River, Upper and Lower Bay, Ocean



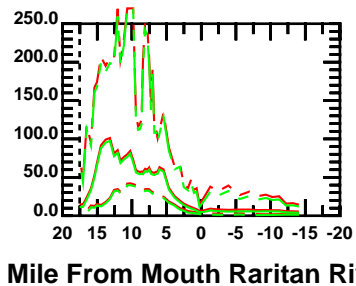
Arthur Kill and Kill Van Kull



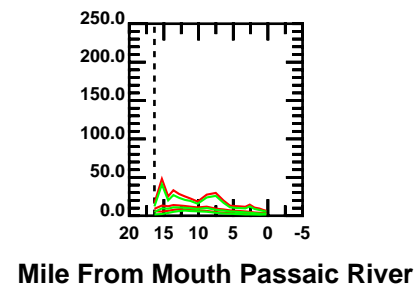
Raritan River and North Shore of Raritan Bay



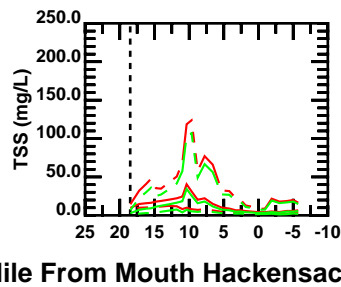
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



October 31 - November 29

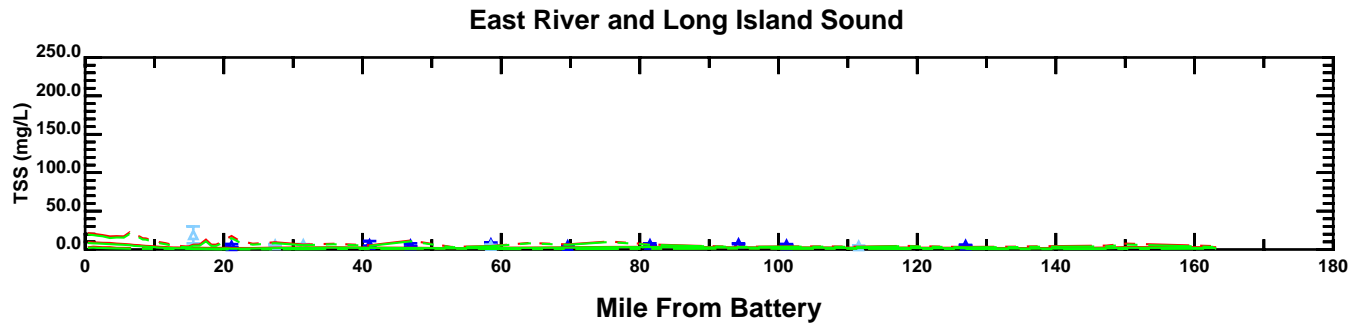
DATA	TRANSECT	EMBAYMENT
NP	▼	▽
GFF	▲	▽

MODEL

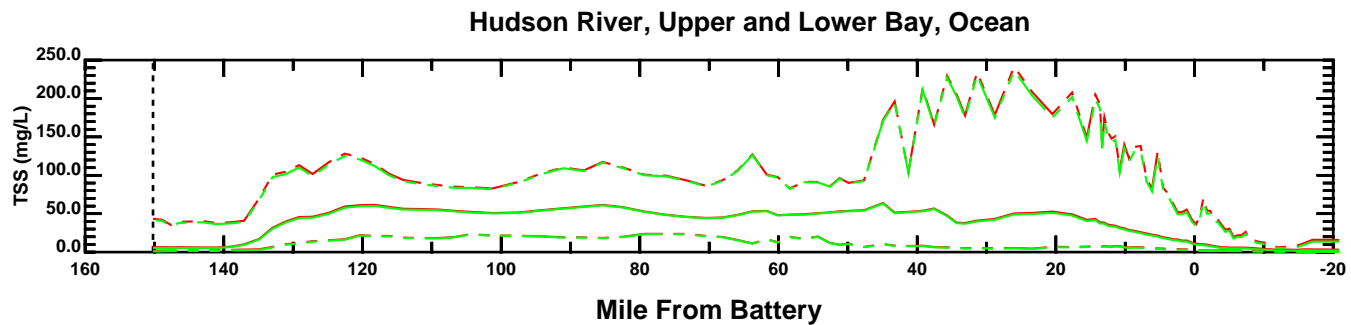
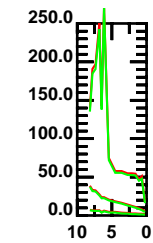
—	TSS BOTTOM 30-DAY MEAN
- - -	TSS BOTTOM 30-DAY MAX / MIN
—	COSS BOTTOM 30-DAY MEAN
- - -	COSS BOTTOM 30-DAY MAX / MIN

Mile From Mouth Hackensack River

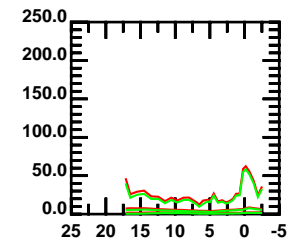
Bottom Layer TSS (mg/L)  
Water Year Starting Oct 1, 1998



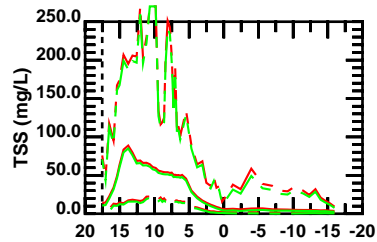
### Harlem River



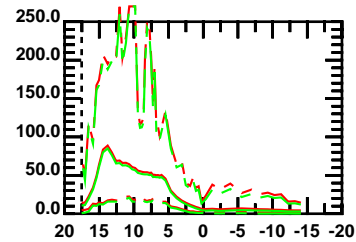
### Arthur Kill and Kill Van Kull



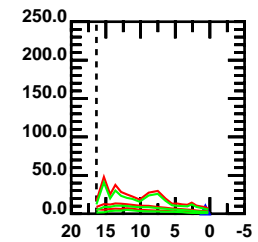
### Raritan River and North Shore of Raritan Bay



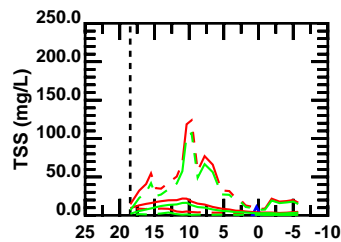
### Raritan River and South Shore of Raritan Bay



### Passaic River



### Hackensack River and Newark Bay



October 31 - November 29

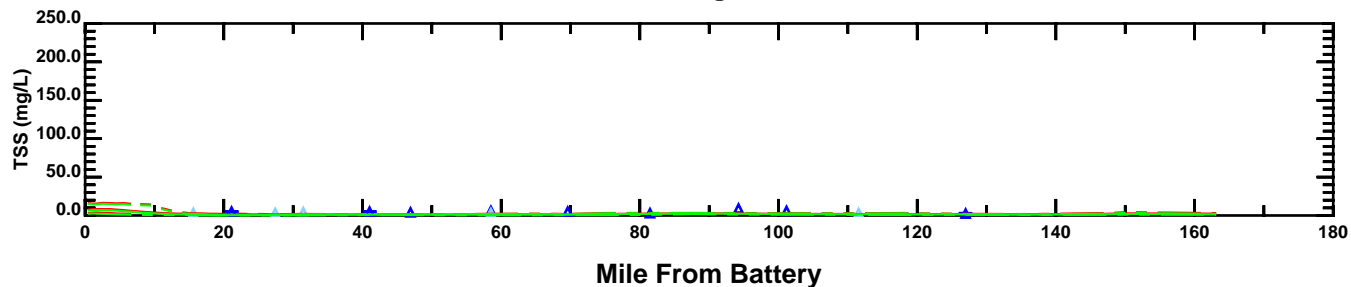
DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

MODEL

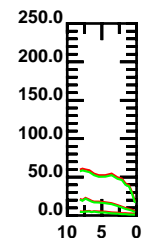
—	TSS 30-DAY MEAN
- - -	TSS 30-DAY MAX / MIN
—	COSS 30-DAY MEAN
- - -	COSS 30-DAY MAX / MIN

**TSS (mg/L) Averaged Over Full Depth  
Water Year Starting Oct 1, 1998**

East River and Long Island Sound

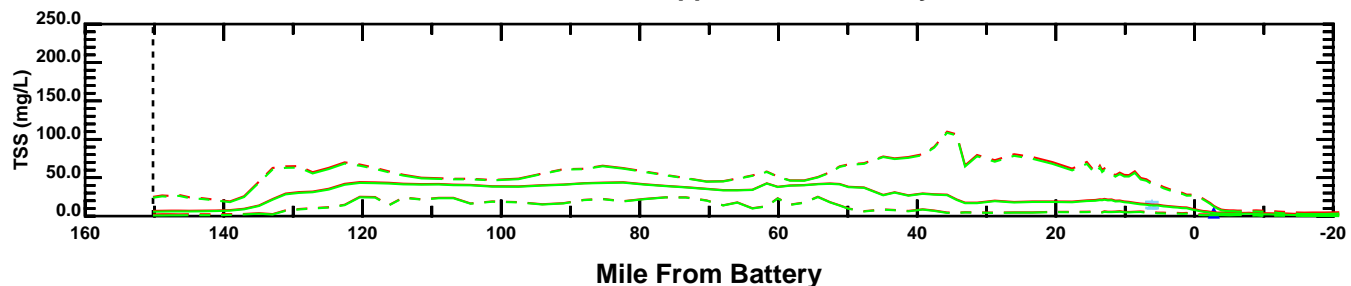


Harlem River

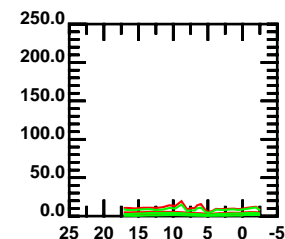


Mile From East River

Hudson River, Upper and Lower Bay, Ocean

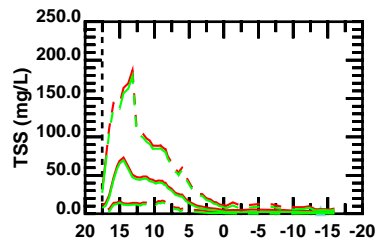


Arthur Kill and Kill Van Kull



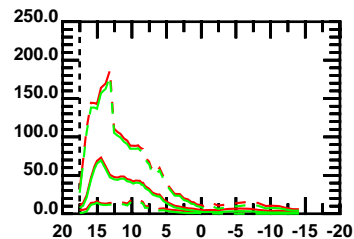
Mile From NY Harbor

Raritan River and North Shore of Raritan Bay



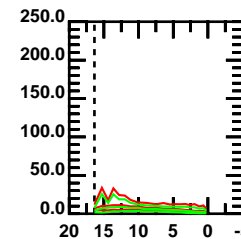
Mile from Mouth Raritan River

Raritan River and South Shore of Raritan Bay



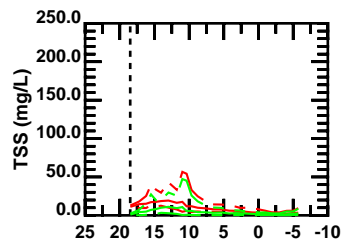
Mile From Mouth Raritan River

Passaic River



Mile From Mouth Passaic River

Hackensack River and Newark Bay



Mile From Mouth Hackensack River

November 30 - December 29

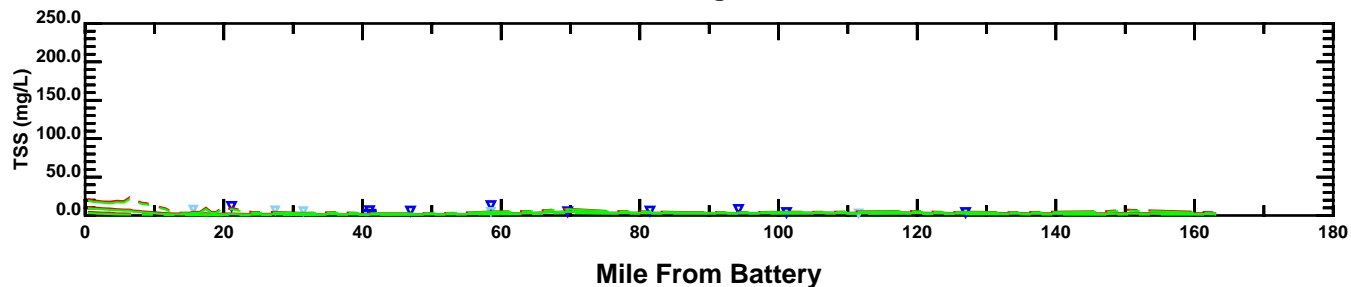
DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

MODEL

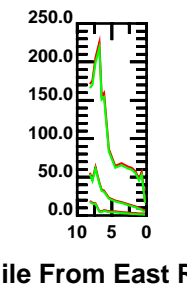
—	TSS SURFACE 30-DAY MEAN
- - -	TSS SURFACE 30-DAY MAX / MIN
—	COSS SURFACE 30-DAY MEAN
- - -	COSS SURFACE 30-DAY MAX / MIN

Surface Layer TSS (mg/L)  
Water Year Starting Oct 1, 1998

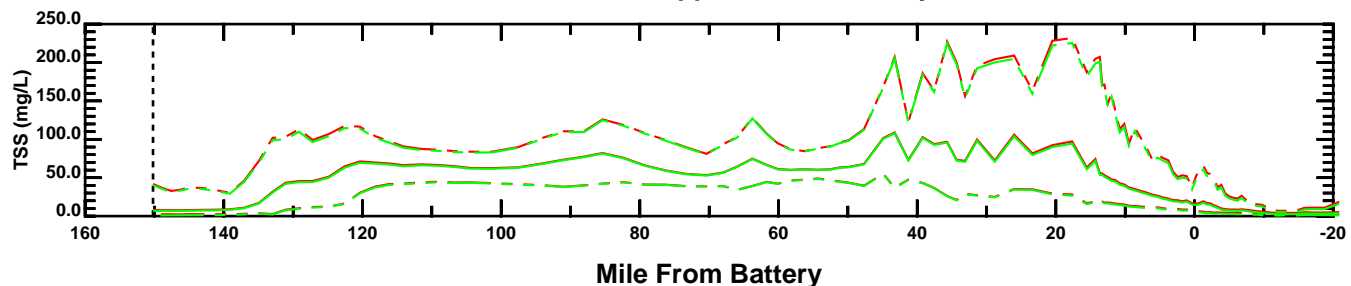
East River and Long Island Sound



Harlem River

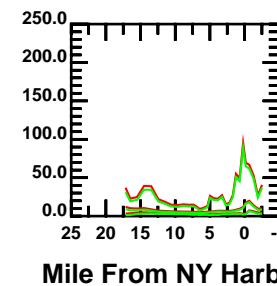


Hudson River, Upper and Lower Bay, Ocean

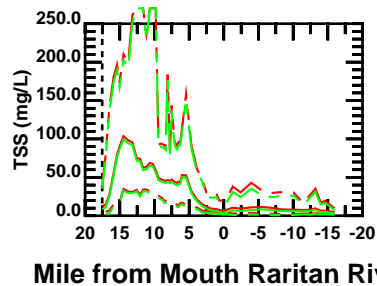


Mile From East River

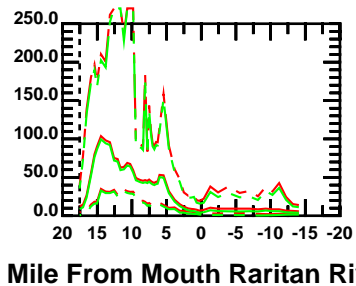
Arthur Kill and Kill Van Kull



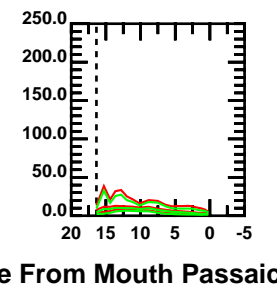
Raritan River and North Shore of Raritan Bay



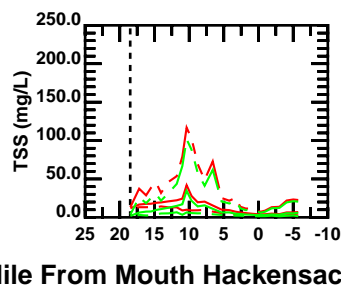
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



November 30 - December 29

DATA	TRANSECT	EMBAYMENT
NP	▼	▽
GFF	▲	▽

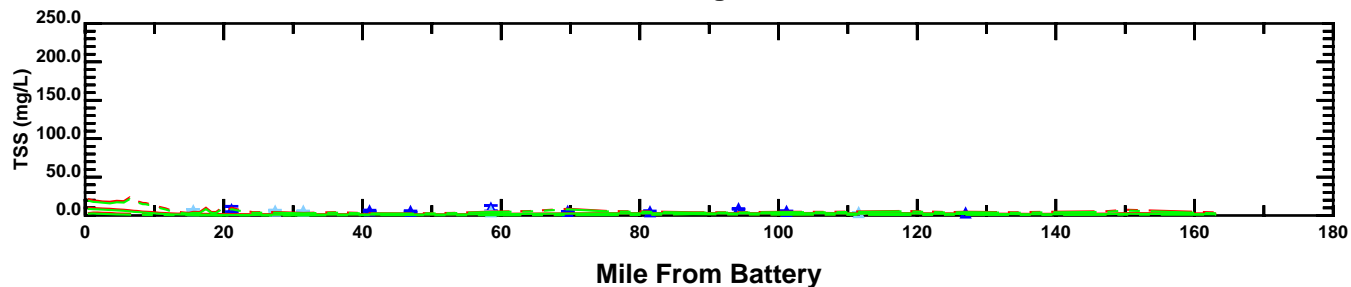
MODEL

—	TSS BOTTOM 30-DAY MEAN
- - -	TSS BOTTOM 30-DAY MAX / MIN
—	COSS BOTTOM 30-DAY MEAN
- - -	COSS BOTTOM 30-DAY MAX / MIN

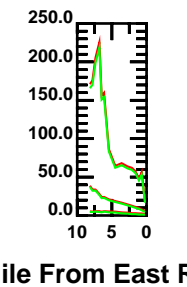
Mile From Mouth Hackensack River

Bottom Layer TSS (mg/L)  
Water Year Starting Oct 1, 1998

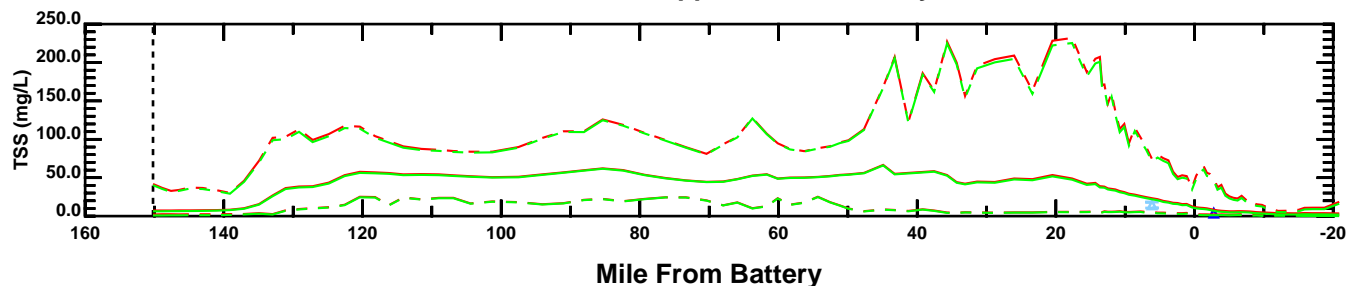
East River and Long Island Sound



Harlem River

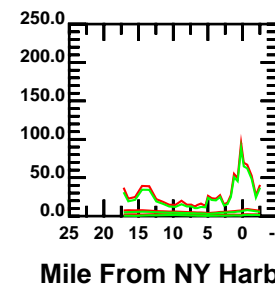


Hudson River, Upper and Lower Bay, Ocean

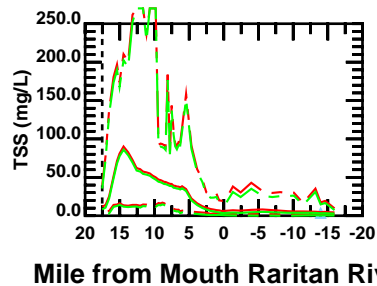


Mile From East River

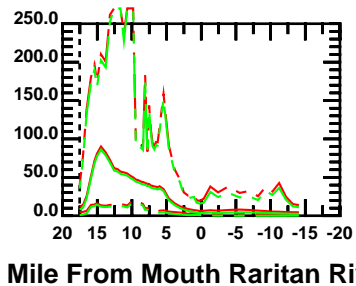
Arthur Kill and Kill Van Kull



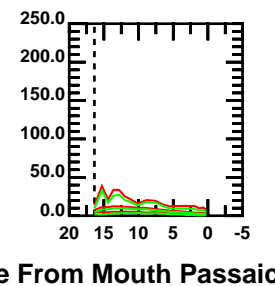
Raritan River and North Shore of Raritan Bay



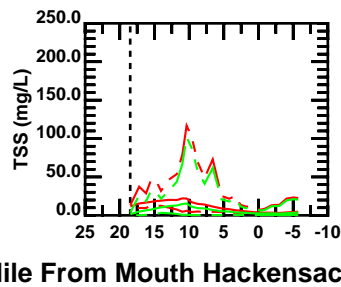
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



November 30 - December 29

DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

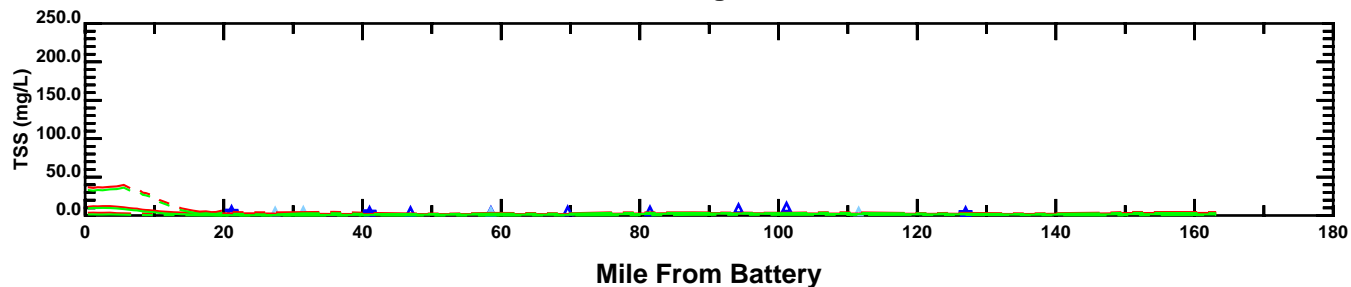
MODEL

—	TSS 30-DAY MEAN
- - -	TSS 30-DAY MAX / MIN
—	COSS 30-DAY MEAN
- - -	COSS 30-DAY MAX / MIN

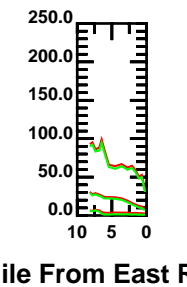
Mile From Mouth Hackensack River

TSS (mg/L) Averaged Over Full Depth  
Water Year Starting Oct 1, 1998

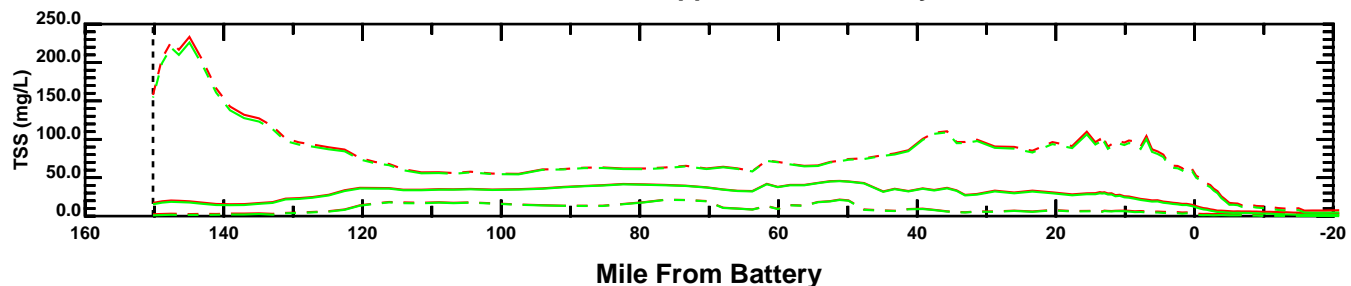
East River and Long Island Sound



Harlem River

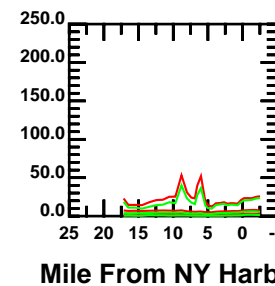


Hudson River, Upper and Lower Bay, Ocean

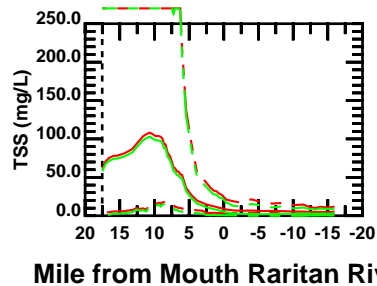


Mile From East River

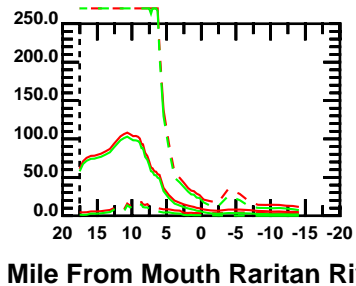
Arthur Kill and Kill Van Kull



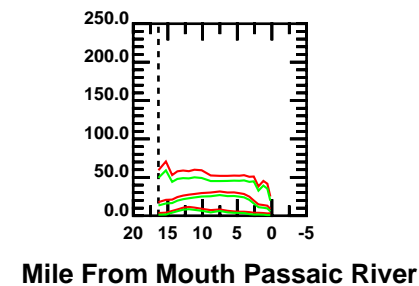
Raritan River and North Shore of Raritan Bay



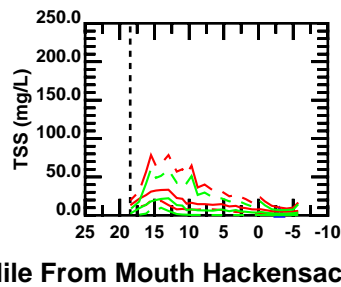
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



December 30 - January 28

DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

MODEL

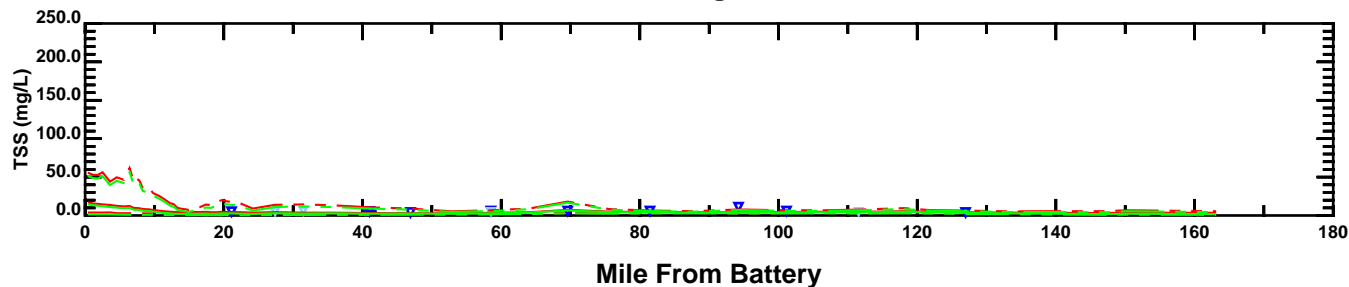
—	TSS SURFACE 30-DAY MEAN
- - -	TSS SURFACE 30-DAY MAX / MIN
—	COSS SURFACE 30-DAY MEAN
- - -	COSS SURFACE 30-DAY MAX / MIN

Mile From Mouth Hackensack River

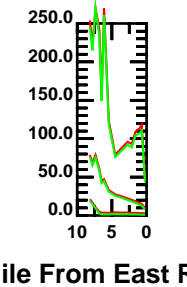
Surface Layer TSS (mg/L)  
Water Year Starting Oct 1, 1998



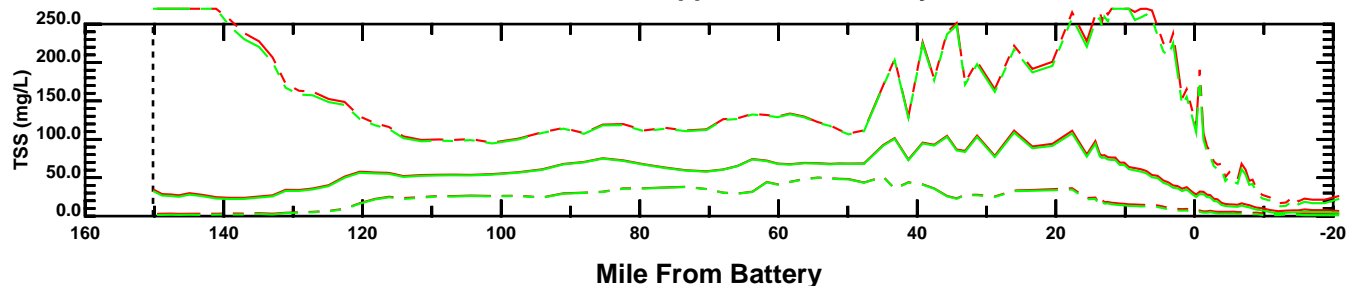
East River and Long Island Sound



Harlem River

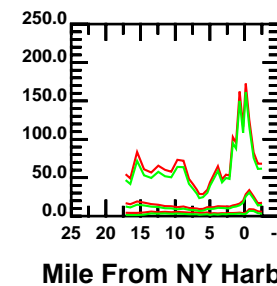


Hudson River, Upper and Lower Bay, Ocean

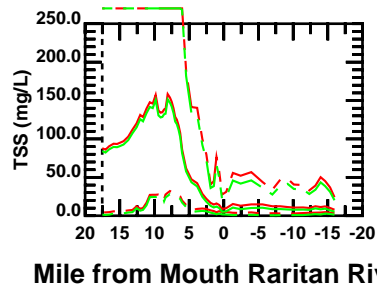


Mile From East River

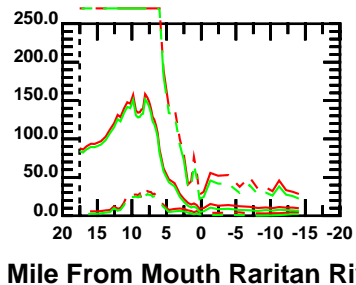
Arthur Kill and Kill Van Kull



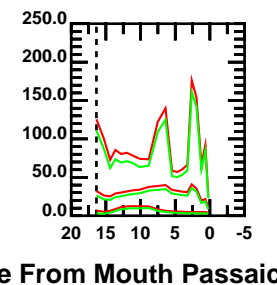
Raritan River and North Shore of Raritan Bay



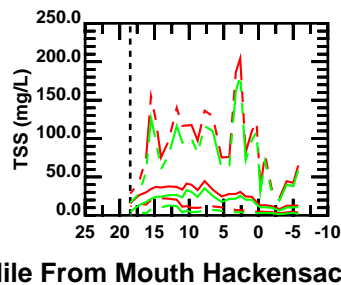
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



December 30 - January 28

DATA	TRANSECT	EMBAYMENT
NP	▼	▽
GFF	▲	▽

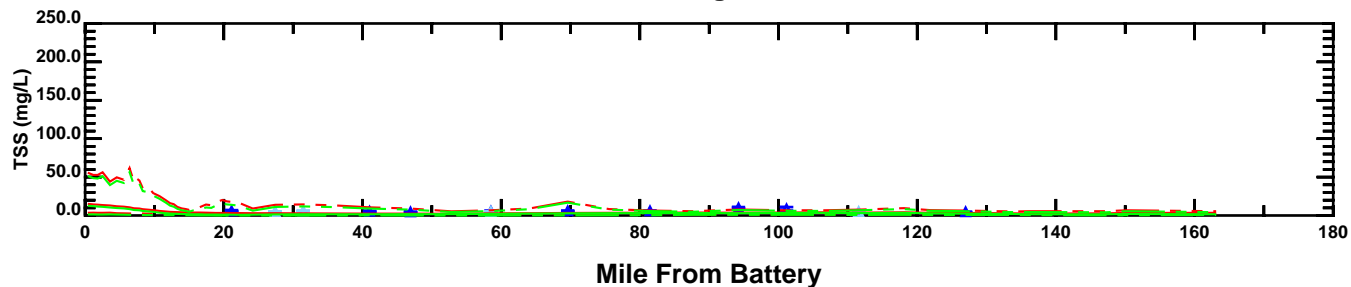
MODEL

—	TSS BOTTOM 30-DAY MEAN
- - -	TSS BOTTOM 30-DAY MAX / MIN
—	COSS BOTTOM 30-DAY MEAN
- - -	COSS BOTTOM 30-DAY MAX / MIN

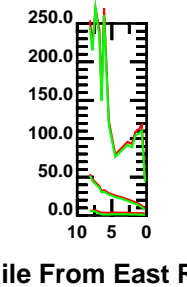
Mile From Mouth Hackensack River

Bottom Layer TSS (mg/L)  
Water Year Starting Oct 1, 1998

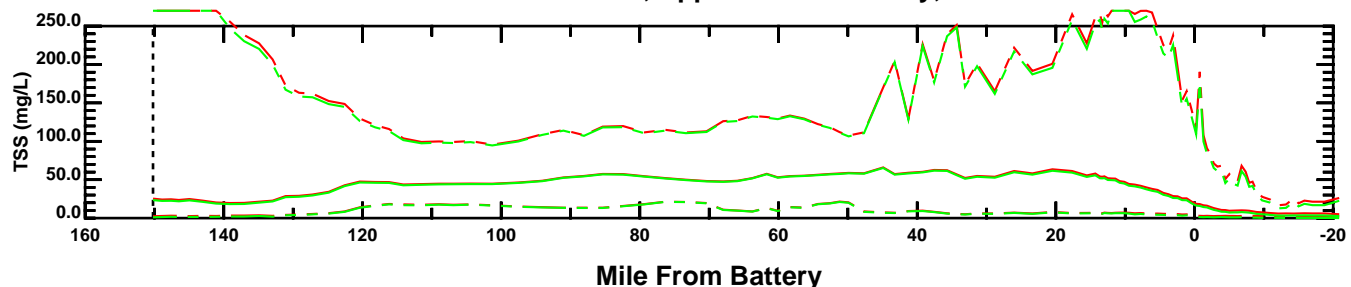
East River and Long Island Sound



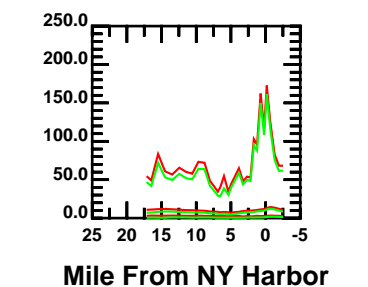
Harlem River



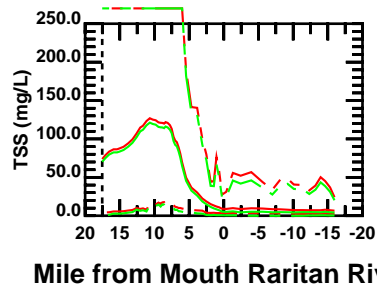
Hudson River, Upper and Lower Bay, Ocean



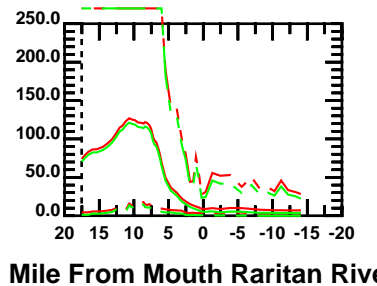
Arthur Kill and Kill Van Kull



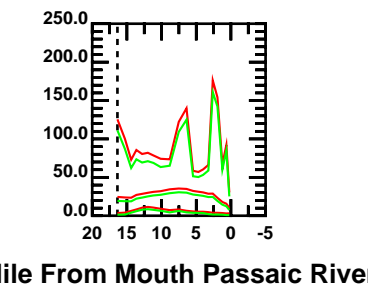
Raritan River and North Shore of Raritan Bay



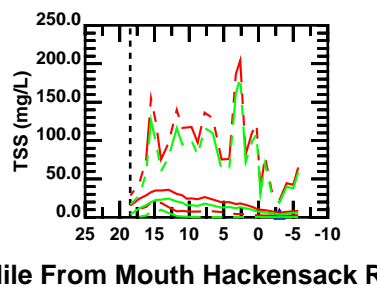
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



December 30 - January 28

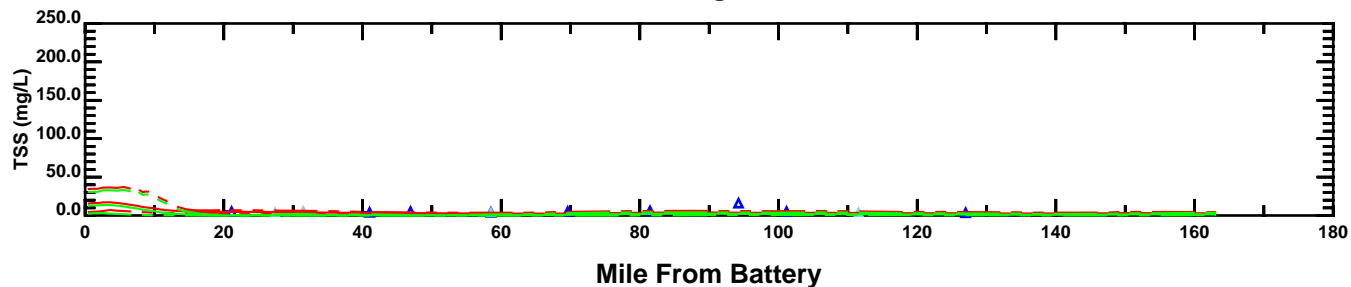
DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

MODEL	
—	TSS 30-DAY MEAN
- - -	TSS 30-DAY MAX / MIN
—	COSS 30-DAY MEAN
- - -	COSS 30-DAY MAX / MIN

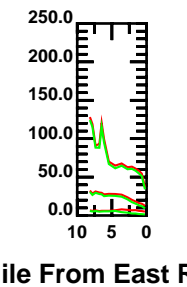
Mile From Mouth Hackensack River

TSS (mg/L) Averaged Over Full Depth  
Water Year Starting Oct 1, 1998

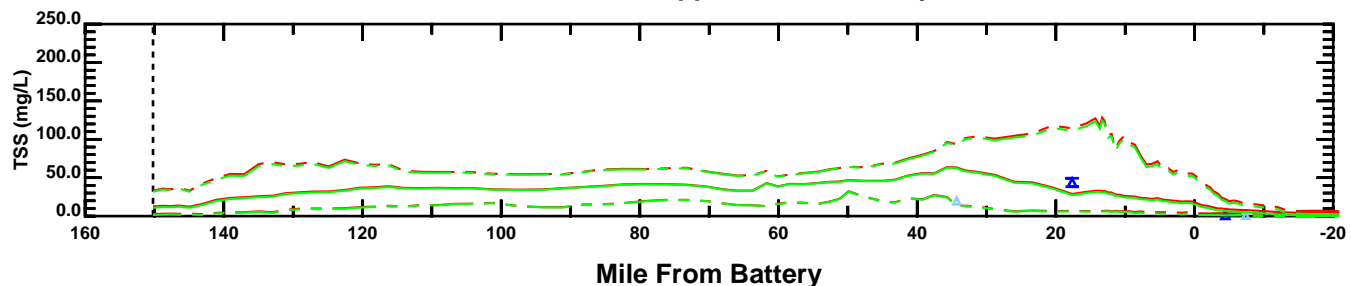
East River and Long Island Sound



Harlem River

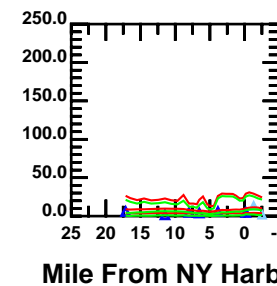


Hudson River, Upper and Lower Bay, Ocean

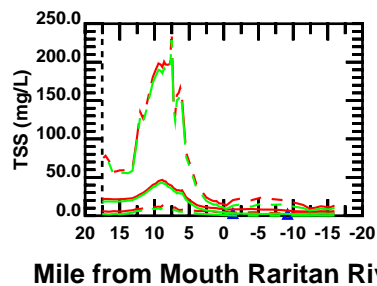


Mile From East River

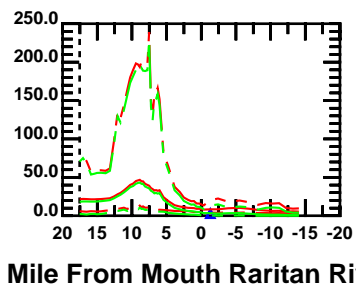
Arthur Kill and Kill Van Kull



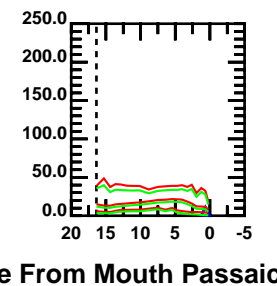
Raritan River and North Shore of Raritan Bay



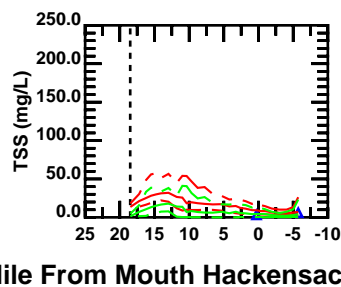
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



January 29 - February 27

DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

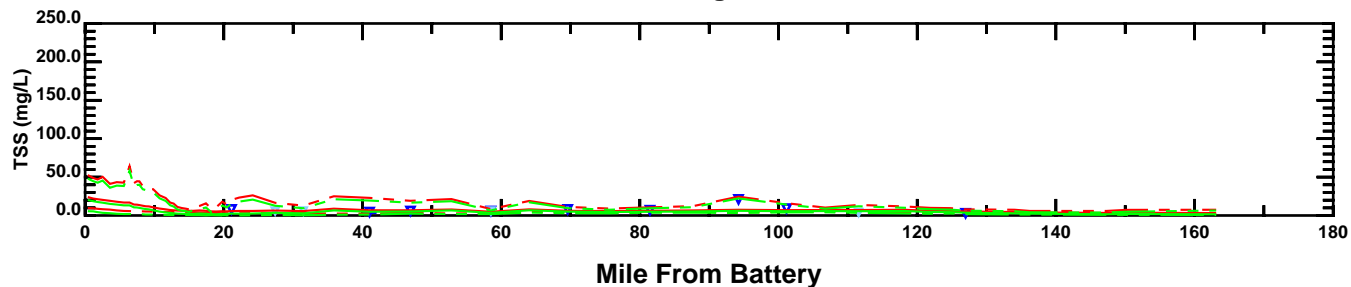
MODEL

—	TSS SURFACE 30-DAY MEAN
- - -	TSS SURFACE 30-DAY MAX / MIN
—	COSS SURFACE 30-DAY MEAN
- - -	COSS SURFACE 30-DAY MAX / MIN

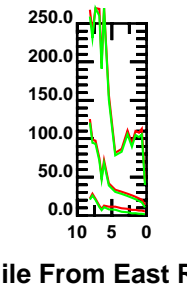
Mile From Mouth Hackensack River

Surface Layer TSS (mg/L)  
Water Year Starting Oct 1, 1998

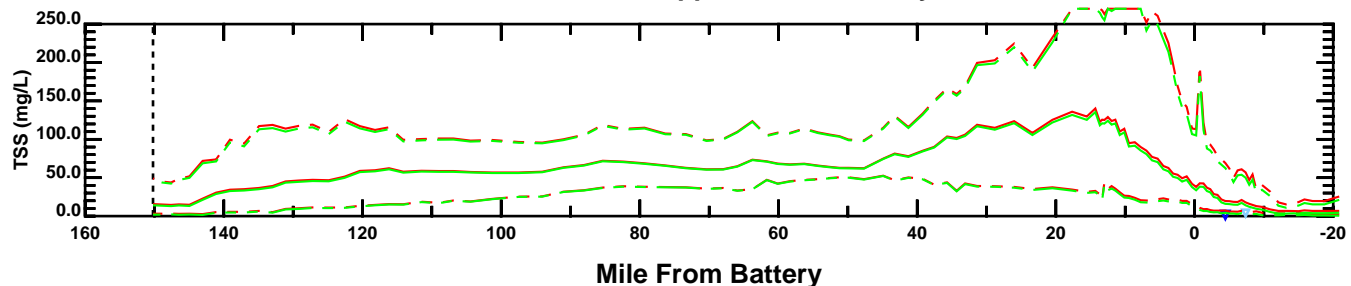
East River and Long Island Sound



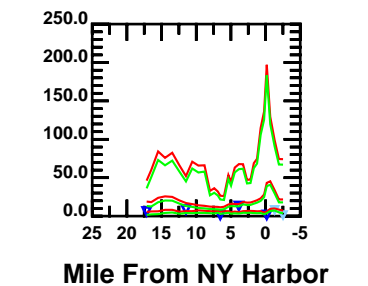
Harlem River



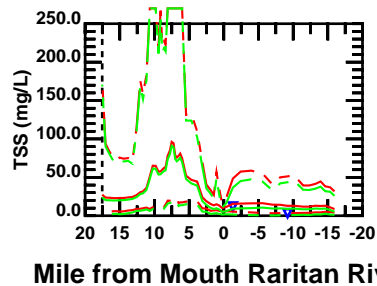
Hudson River, Upper and Lower Bay, Ocean



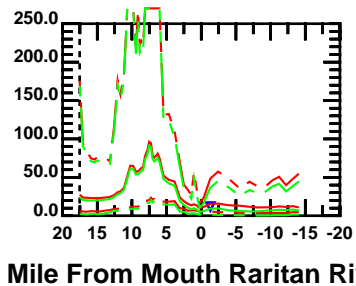
Arthur Kill and Kill Van Kull



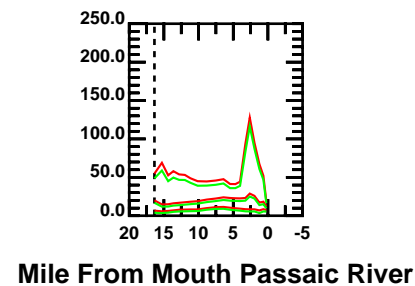
Raritan River and North Shore of Raritan Bay



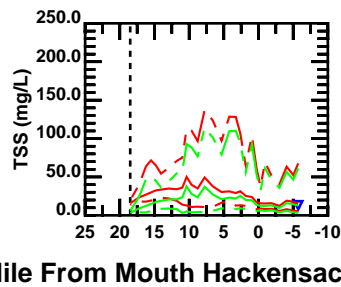
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



January 29 - February 27

DATA	TRANSECT	EMBAYMENT
NP	▼	▽
GFF	▲	▽

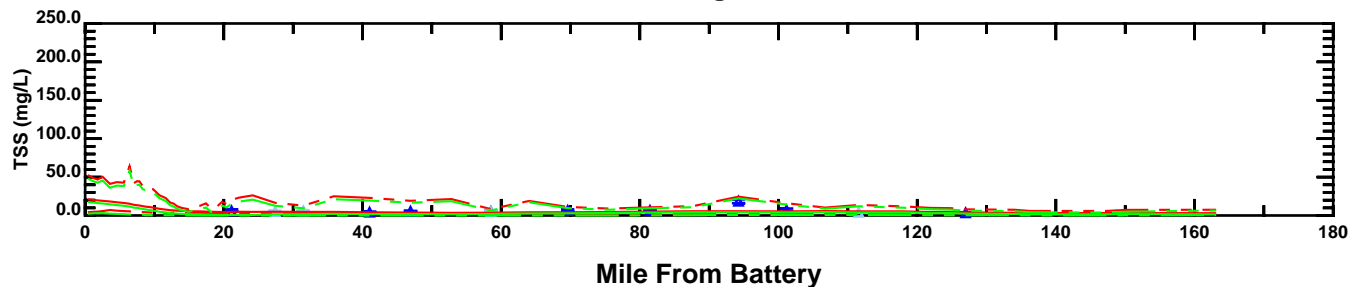
MODEL

—	TSS BOTTOM 30-DAY MEAN
- - -	TSS BOTTOM 30-DAY MAX / MIN
—	COSS BOTTOM 30-DAY MEAN
- - -	COSS BOTTOM 30-DAY MAX / MIN

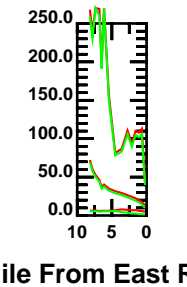
Mile From Mouth Hackensack River

Bottom Layer TSS (mg/L)  
Water Year Starting Oct 1, 1998

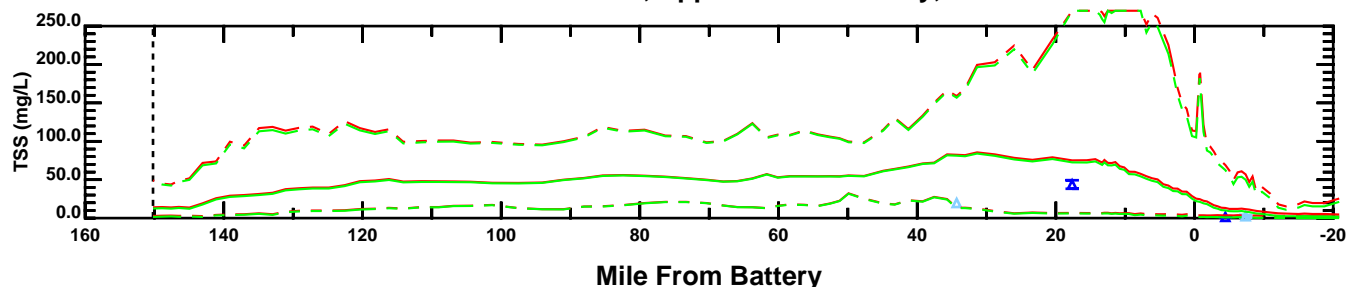
East River and Long Island Sound



Harlem River

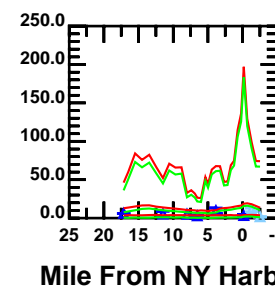


Hudson River, Upper and Lower Bay, Ocean

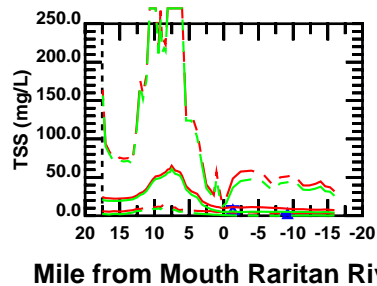


Mile From East River

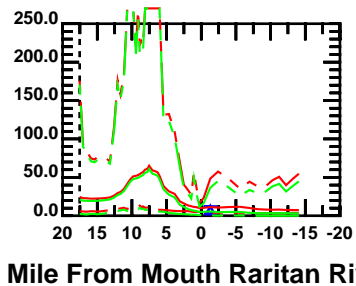
Arthur Kill and Kill Van Kull



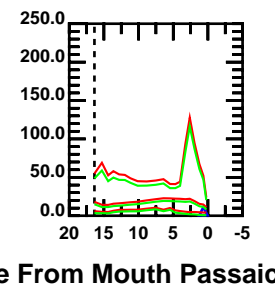
Raritan River and North Shore of Raritan Bay



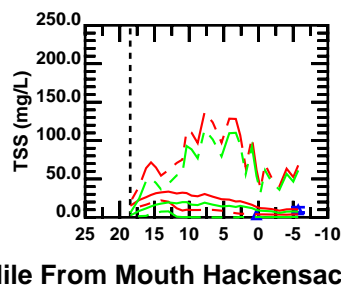
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



January 29 - February 27

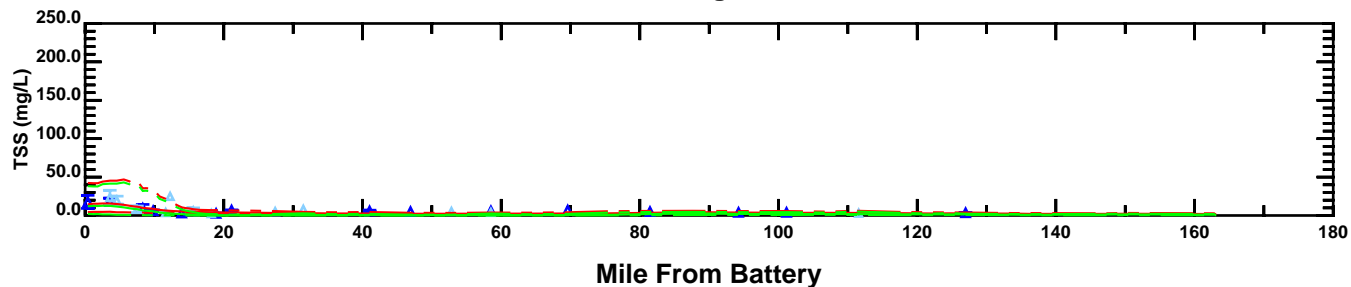
DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

MODEL	
—	TSS 30-DAY MEAN
- - -	TSS 30-DAY MAX / MIN
—	COSS 30-DAY MEAN
- - -	COSS 30-DAY MAX / MIN

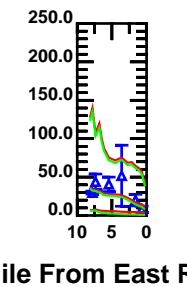
Mile From Mouth Hackensack River

TSS (mg/L) Averaged Over Full Depth  
Water Year Starting Oct 1, 1998

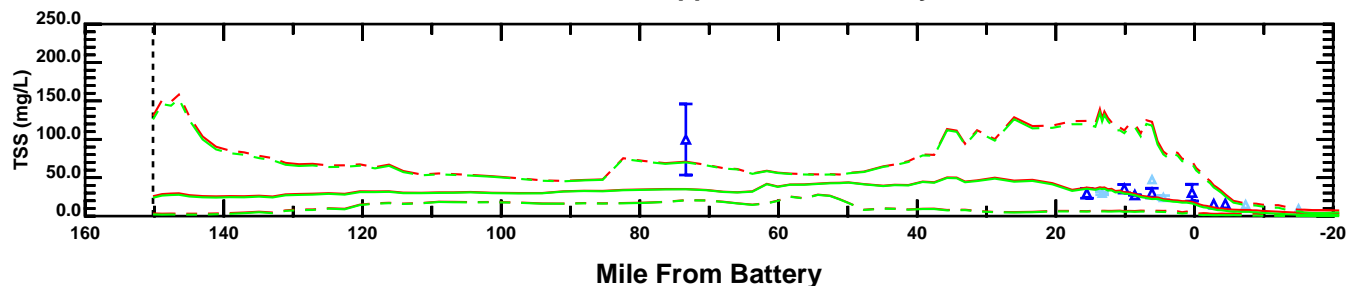
East River and Long Island Sound



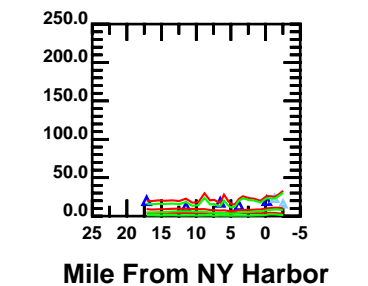
Harlem River



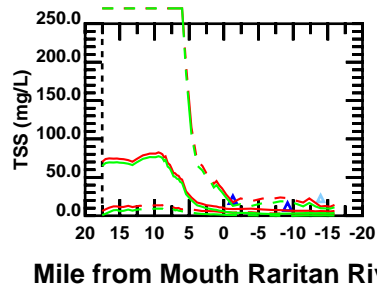
Hudson River, Upper and Lower Bay, Ocean



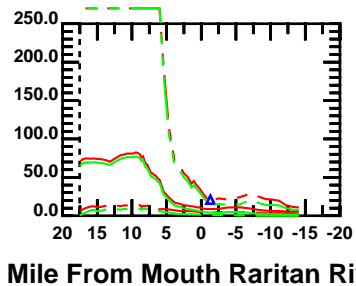
Arthur Kill and Kill Van Kull



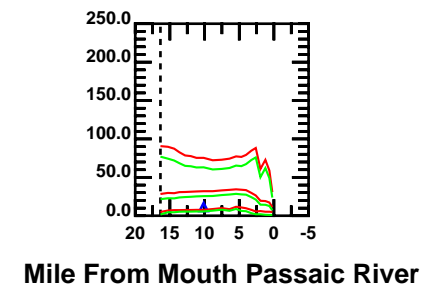
Raritan River and North Shore of Raritan Bay



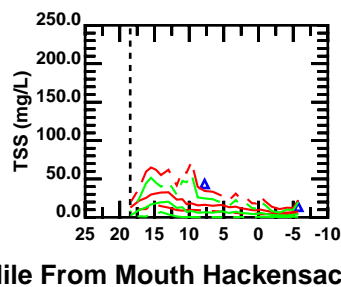
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



February 28 - March 28

DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

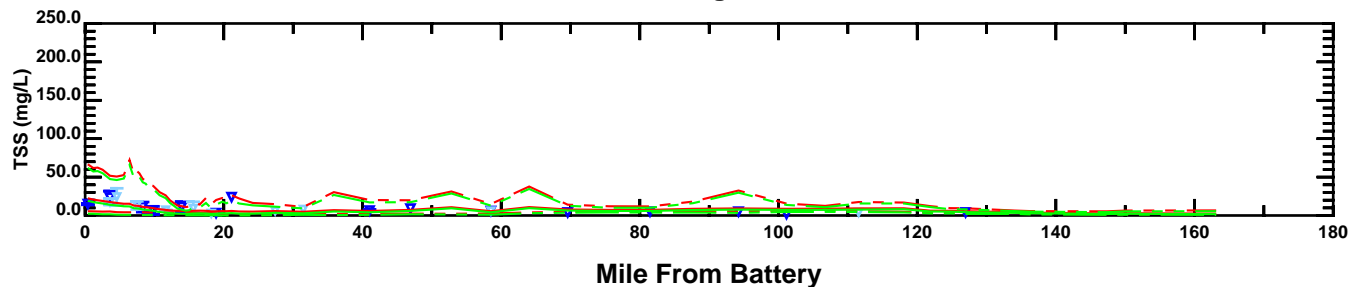
MODEL

—	TSS SURFACE 30-DAY MEAN
- - -	TSS SURFACE 30-DAY MAX / MIN
—	COSS SURFACE 30-DAY MEAN
- - -	COSS SURFACE 30-DAY MAX / MIN

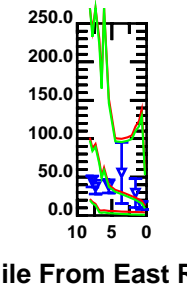
Mile From Mouth Hackensack River

Surface Layer TSS (mg/L)  
Water Year Starting Oct 1, 1998

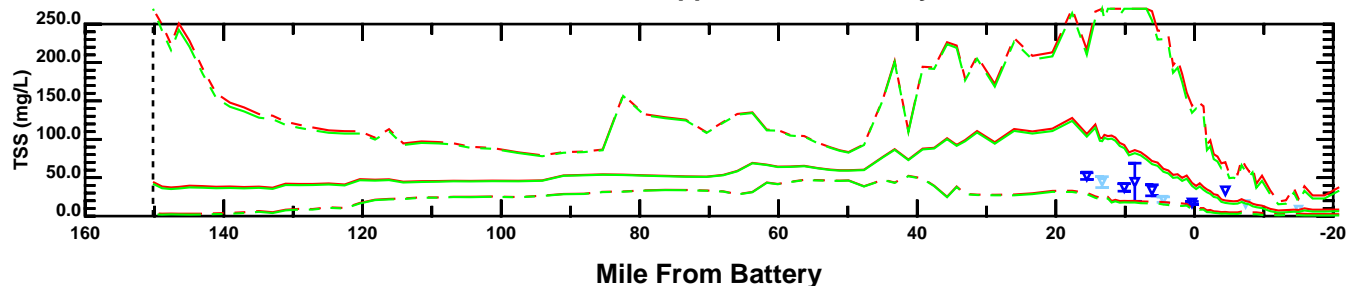
East River and Long Island Sound



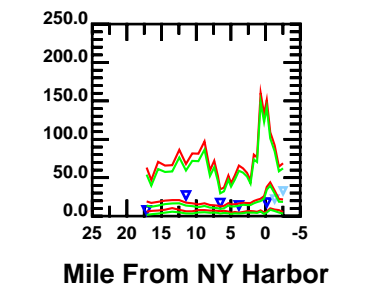
Harlem River



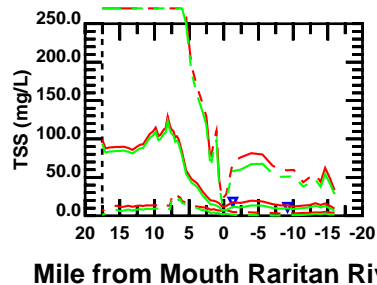
Hudson River, Upper and Lower Bay, Ocean



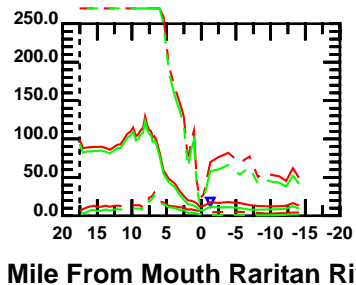
Arthur Kill and Kill Van Kull



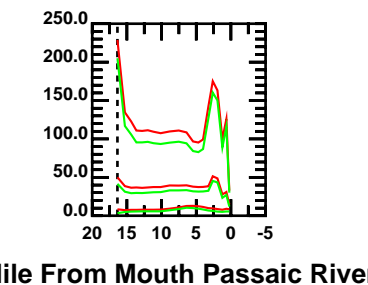
Raritan River and North Shore of Raritan Bay



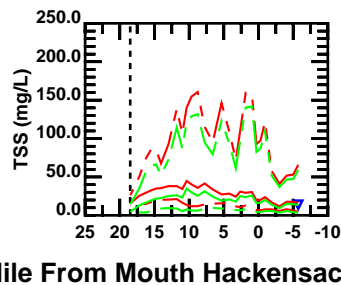
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



February 28 - March 28

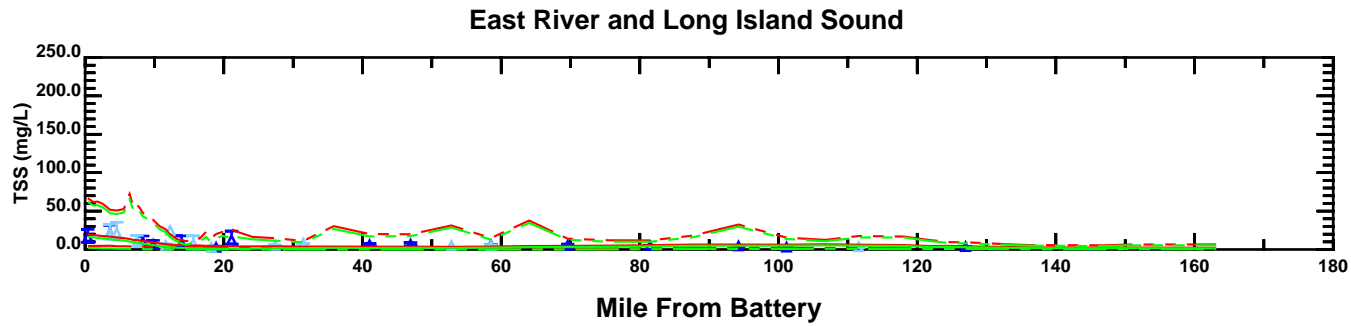
DATA	TRANSECT	EMBAYMENT
NP	▼	▽
GFF	▲	▽

MODEL

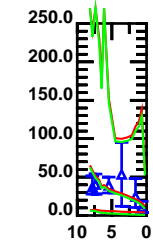
—	TSS BOTTOM 30-DAY MEAN
- - -	TSS BOTTOM 30-DAY MAX / MIN
—	COSS BOTTOM 30-DAY MEAN
- - -	COSS BOTTOM 30-DAY MAX / MIN

Mile From Mouth Hackensack River

Bottom Layer TSS (mg/L)  
Water Year Starting Oct 1, 1998

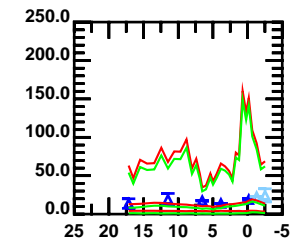


### Harlem River

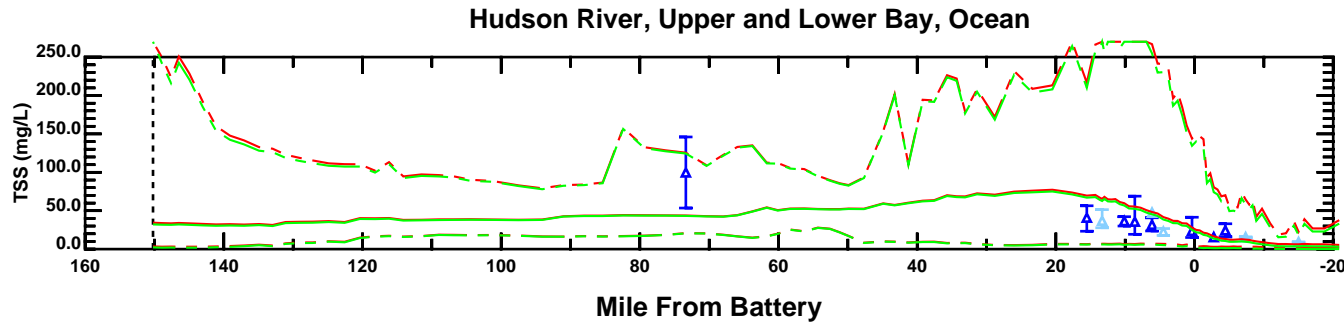


### Arthur Kill and Kill Van Kull

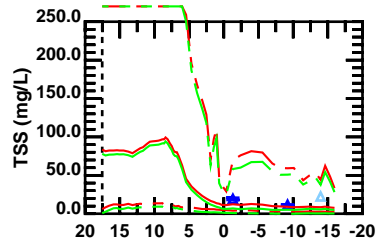
### Arthur Kill and Kill Van Kull



### Mile From NY Harbor

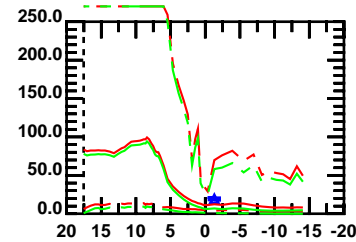


### Raritan River and North Shore of Raritan Bay



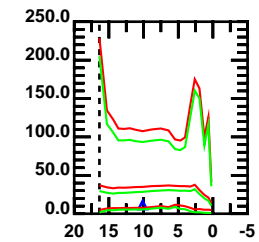
### Mile from Mouth Raritan River

### Raritan River and South Shore of Raritan Bay



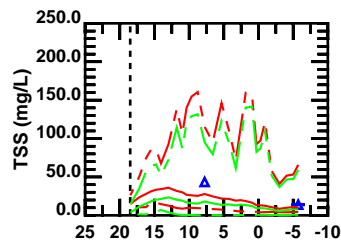
### Mile From Mouth Raritan River

### Passaic River



### Mile From Mouth Passaic River

### Hackensack River and Newark Bay



### Mile From Mouth Hackensack River

February 28 - March 28

DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

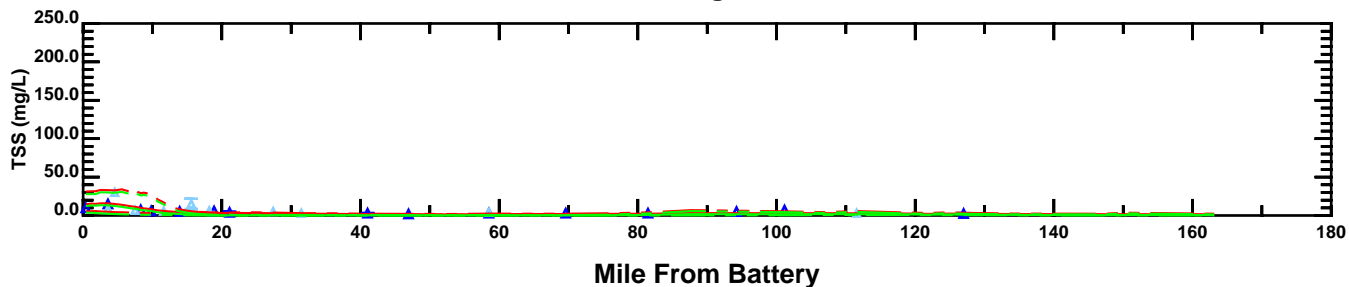
MODEL

—	TSS 30-DAY MEAN
- - -	TSS 30-DAY MAX / MIN
—	COSS 30-DAY MEAN
- - -	COSS 30-DAY MAX / MIN

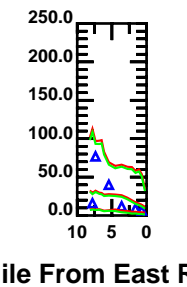
**TSS (mg/L) Averaged Over Full Depth  
Water Year Starting Oct 1, 1998**



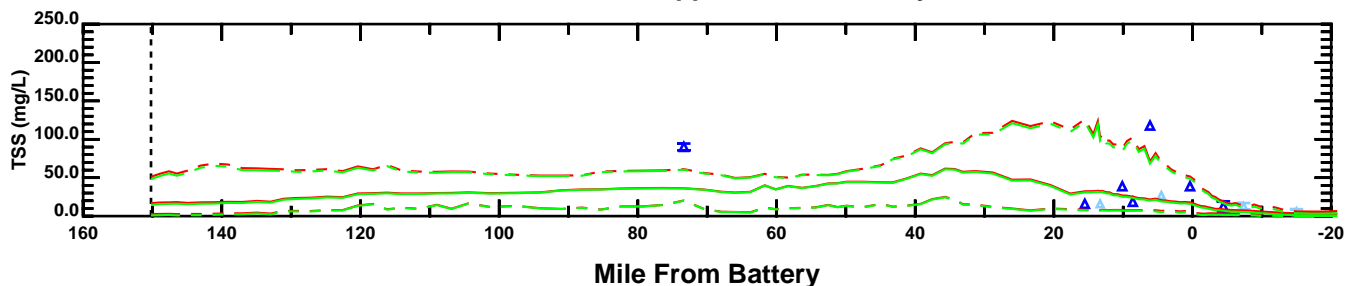
East River and Long Island Sound



Harlem River

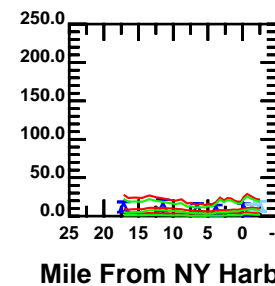


Hudson River, Upper and Lower Bay, Ocean

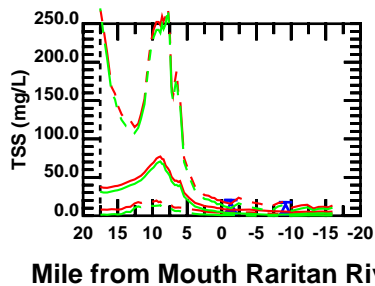


Mile From East River

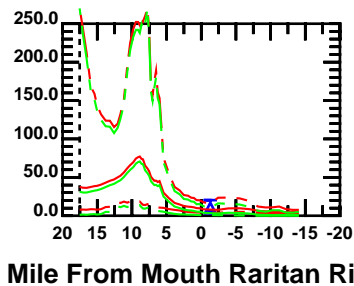
Arthur Kill and Kill Van Kull



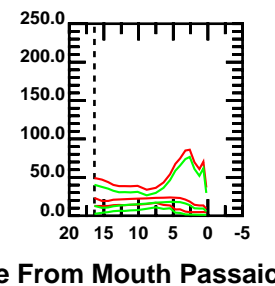
Raritan River and North Shore of Raritan Bay



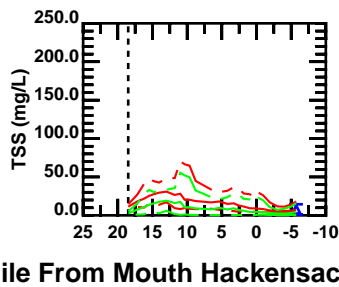
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



March 29 - April 27

DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

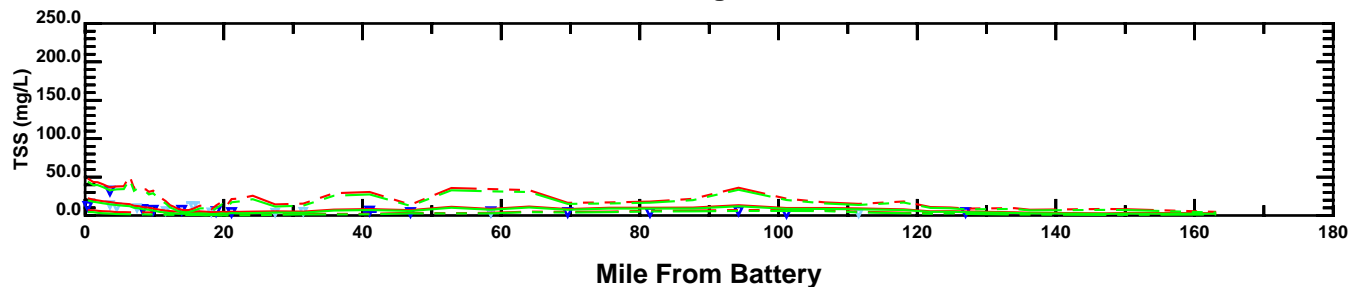
MODEL

—	TSS SURFACE 30-DAY MEAN
- - -	TSS SURFACE 30-DAY MAX / MIN
—	COSS SURFACE 30-DAY MEAN
- - -	COSS SURFACE 30-DAY MAX / MIN

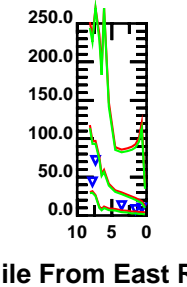
Mile From Mouth Hackensack River

Surface Layer TSS (mg/L)  
Water Year Starting Oct 1, 1998

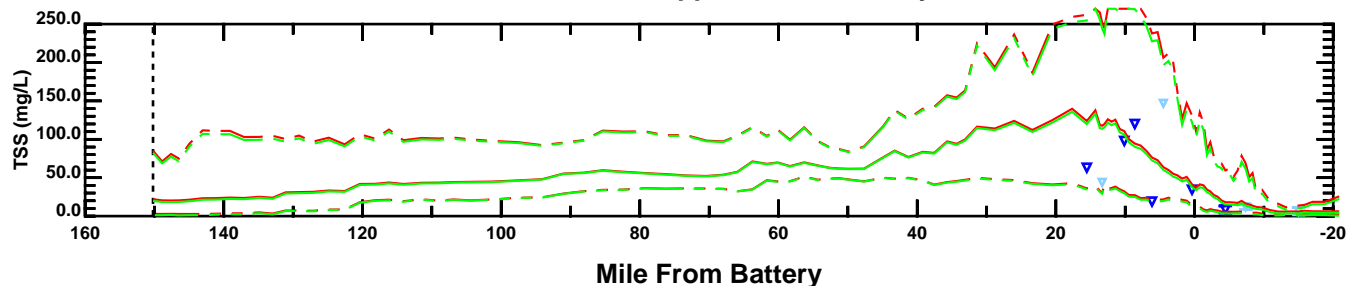
East River and Long Island Sound



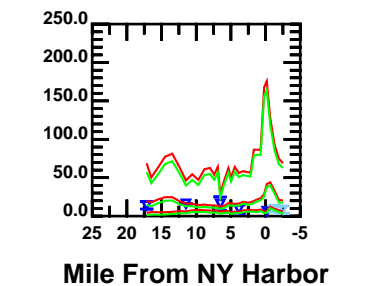
Harlem River



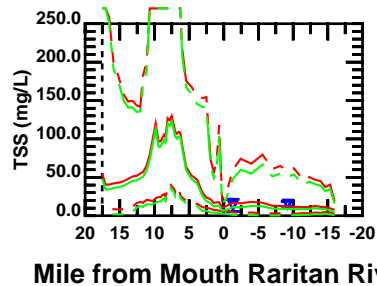
Hudson River, Upper and Lower Bay, Ocean



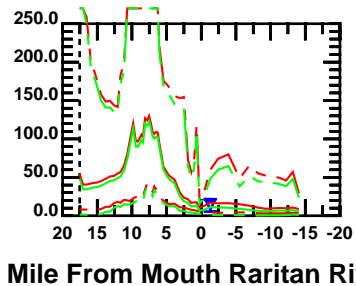
Arthur Kill and Kill Van Kull



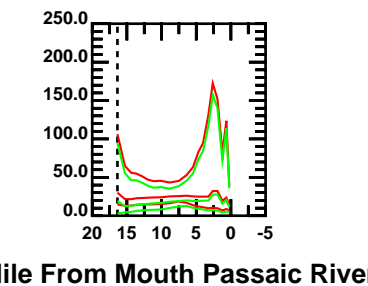
Raritan River and North Shore of Raritan Bay



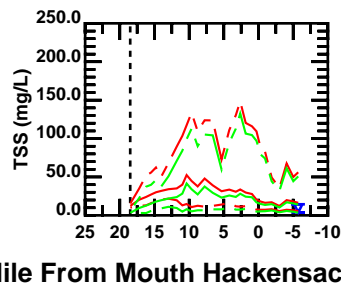
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



March 29 - April 27

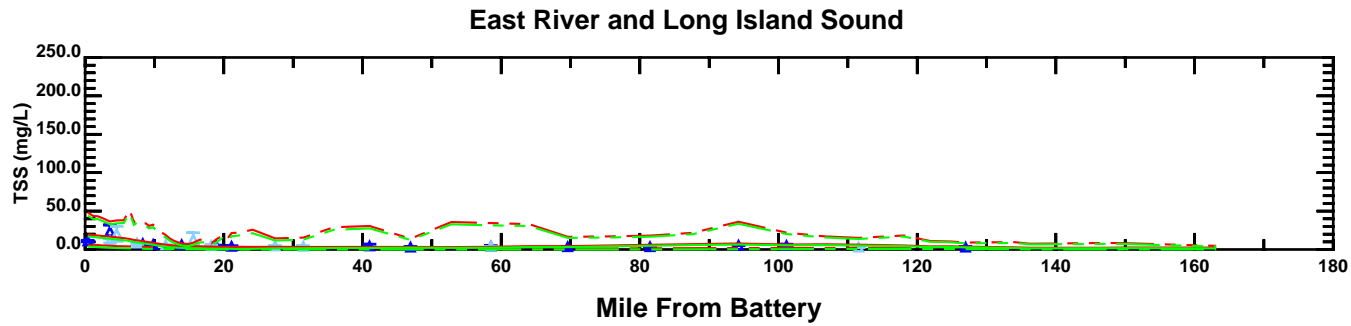
DATA	TRANSECT	EMBAYMENT
NP	▼	▽
GFF	▲	▽

MODEL

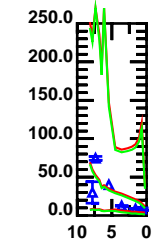
—	TSS BOTTOM 30-DAY MEAN
- - -	TSS BOTTOM 30-DAY MAX / MIN
—	COSS BOTTOM 30-DAY MEAN
- - -	COSS BOTTOM 30-DAY MAX / MIN

Mile From Mouth Hackensack River

Bottom Layer TSS (mg/L)  
Water Year Starting Oct 1, 1998

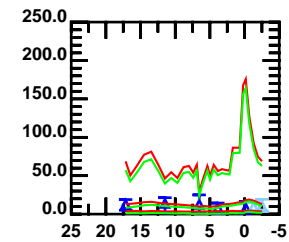


### Harlem River

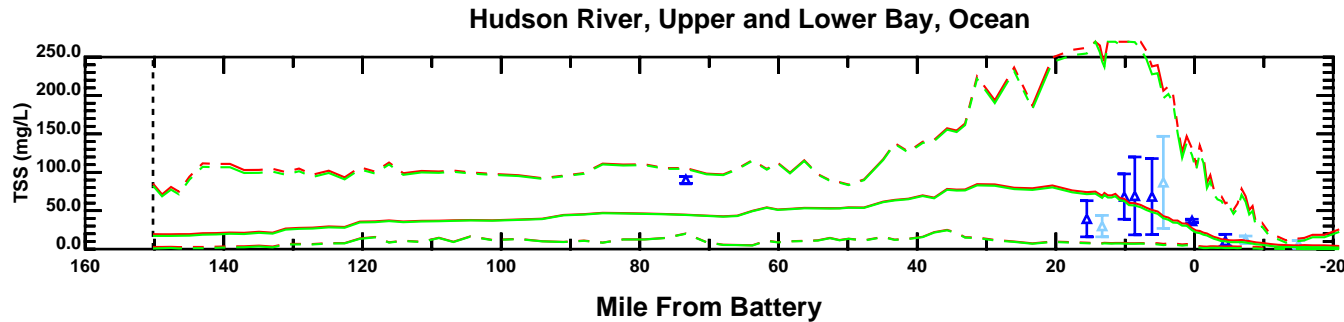


### Arthur Kill and Kill Van Kull

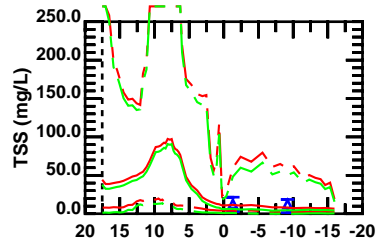
### Arthur Kill and Kill Van Kull



### Mile From NY Harbor

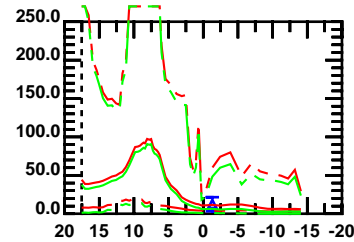


### Raritan River and North Shore of Raritan Bay



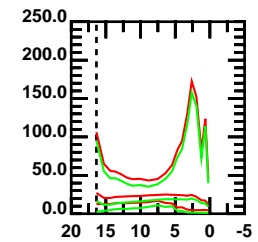
### Mile from Mouth Raritan River

### Raritan River and South Shore of Raritan Bay



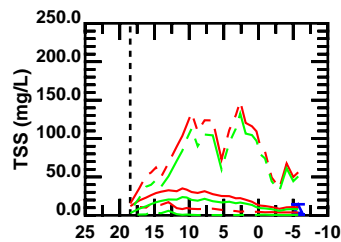
### Mile From Mouth Raritan River

### Passaic River



### Mile From Mouth Passaic River

### Hackensack River and Newark Bay



### Mile From Mouth Hackensack River

March 29 - April 27

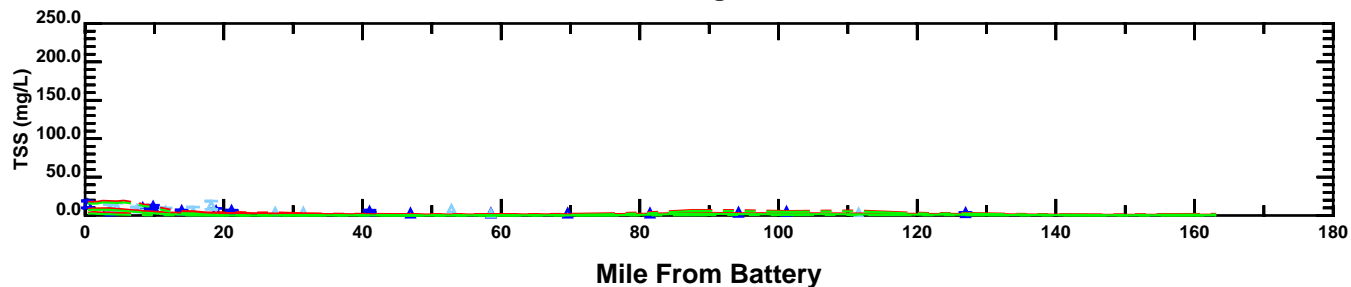
DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

MODEL

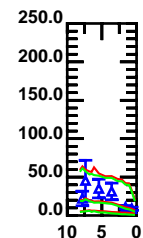
—	TSS 30-DAY MEAN
- - -	TSS 30-DAY MAX / MIN
—	COSS 30-DAY MEAN
- - -	COSS 30-DAY MAX / MIN

**TSS (mg/L) Averaged Over Full Depth  
Water Year Starting Oct 1, 1998**

East River and Long Island Sound

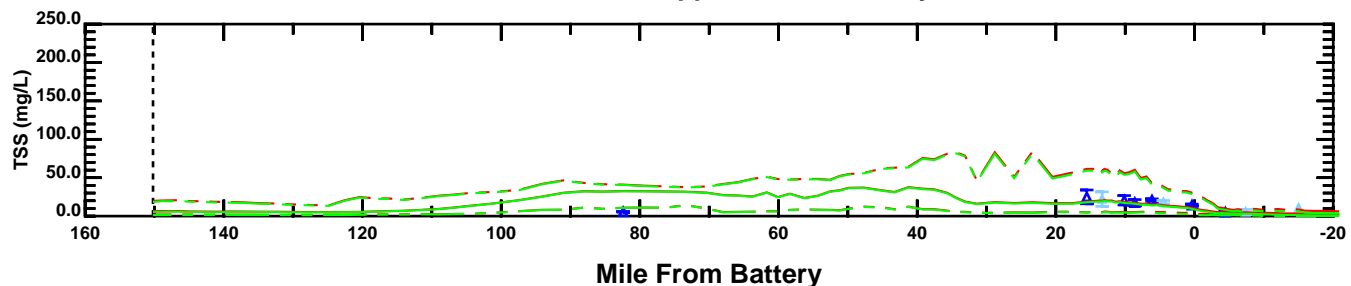


Harlem River

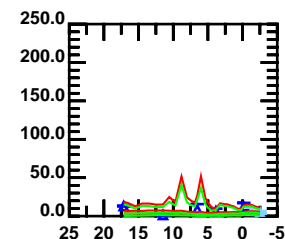


Mile From East River

Hudson River, Upper and Lower Bay, Ocean

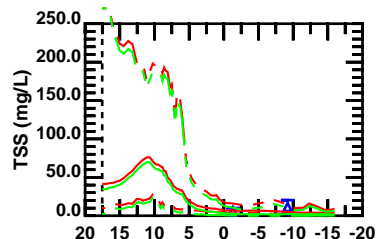


Arthur Kill and Kill Van Kull



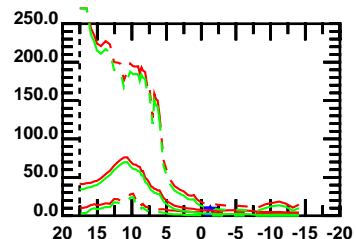
Mile From NY Harbor

Raritan River and North Shore of Raritan Bay



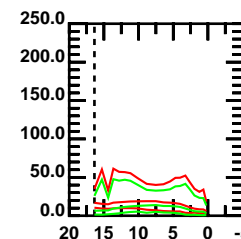
Mile from Mouth Raritan River

Raritan River and South Shore of Raritan Bay



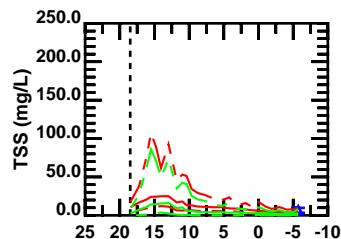
Mile From Mouth Raritan River

Passaic River



Mile From Mouth Passaic River

Hackensack River and Newark Bay



Mile From Mouth Hackensack River

April 28 - May 27

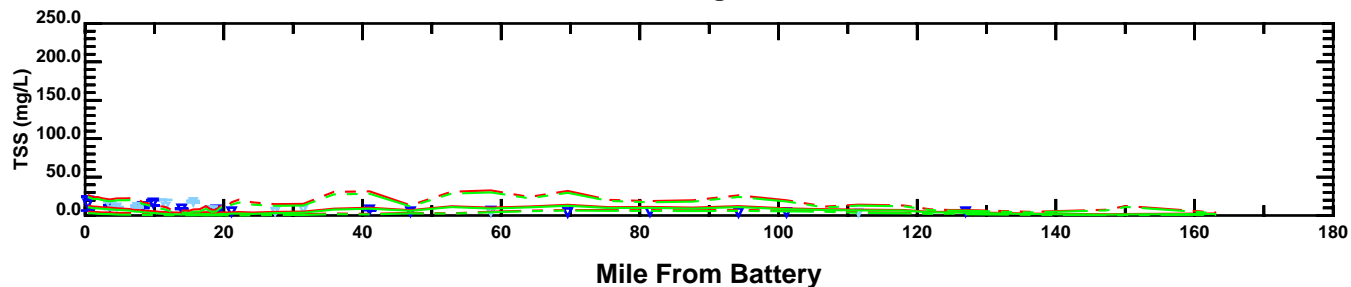
DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

MODEL

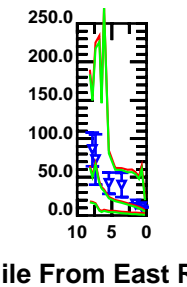
—	TSS SURFACE 30-DAY MEAN
- - -	TSS SURFACE 30-DAY MAX / MIN
—	COSS SURFACE 30-DAY MEAN
- - -	COSS SURFACE 30-DAY MAX / MIN

Surface Layer TSS (mg/L)  
Water Year Starting Oct 1, 1998

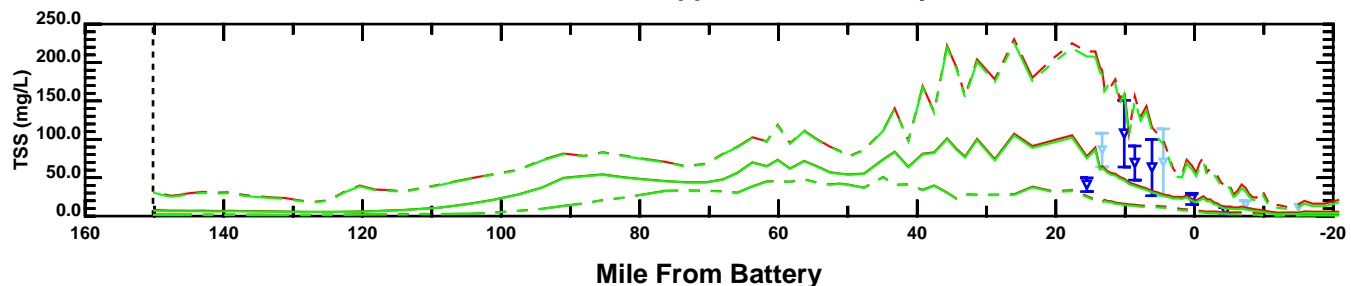
East River and Long Island Sound



Harlem River

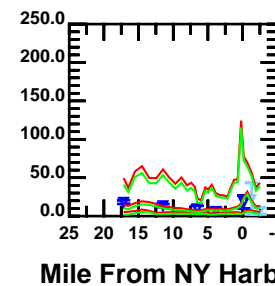


Hudson River, Upper and Lower Bay, Ocean

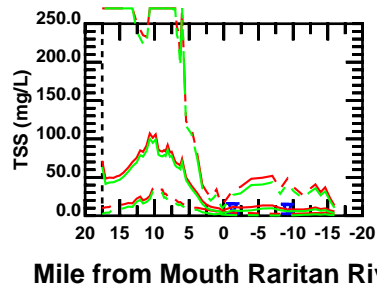


Mile From East River

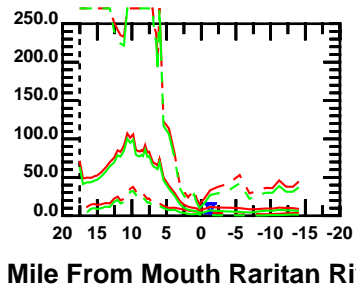
Arthur Kill and Kill Van Kull



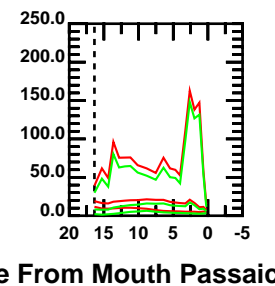
Raritan River and North Shore of Raritan Bay



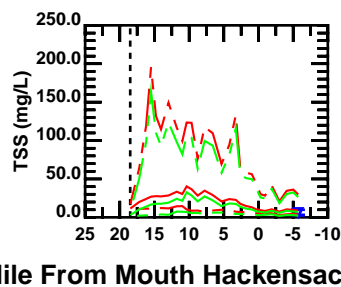
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



April 28 - May 27

DATA	TRANSECT	EMBAYMENT
NP	▼	▽
GFF	▲	▽

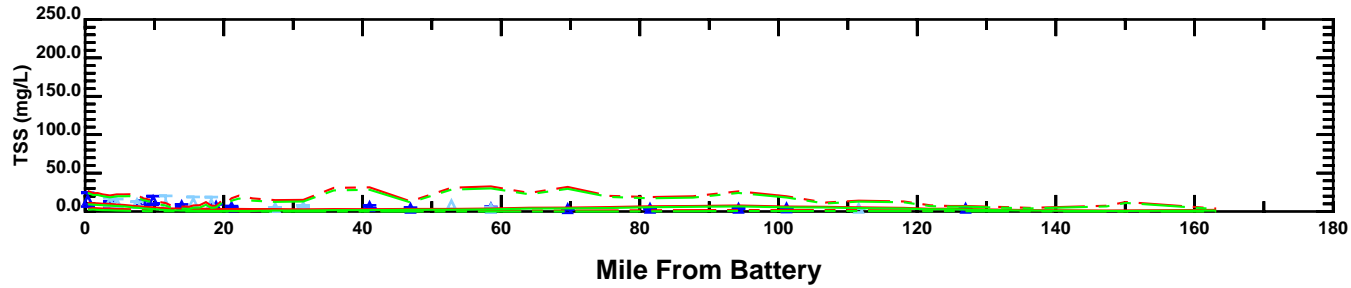
MODEL

—	TSS BOTTOM 30-DAY MEAN
- - -	TSS BOTTOM 30-DAY MAX / MIN
—	COSS BOTTOM 30-DAY MEAN
- - -	COSS BOTTOM 30-DAY MAX / MIN

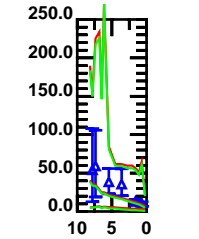
Mile From Mouth Hackensack River

Bottom Layer TSS (mg/L)  
Water Year Starting Oct 1, 1998

East River and Long Island Sound

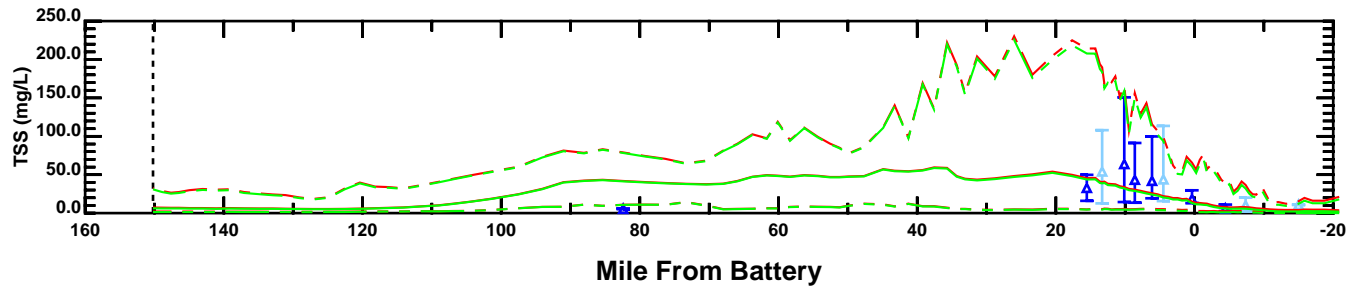


Harlem River

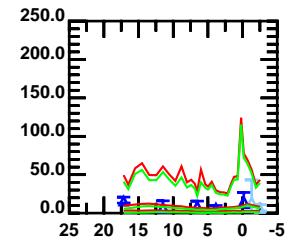


Mile From East River

Hudson River, Upper and Lower Bay, Ocean

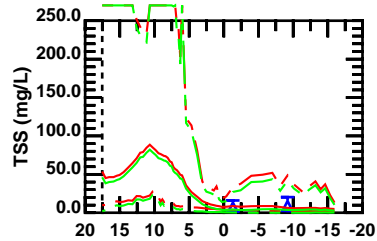


Arthur Kill and Kill Van Kull



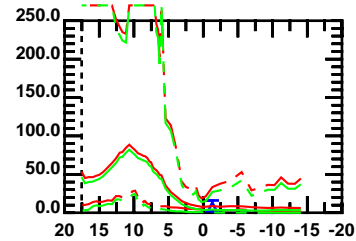
Mile From NY Harbor

Raritan River and North Shore of Raritan Bay



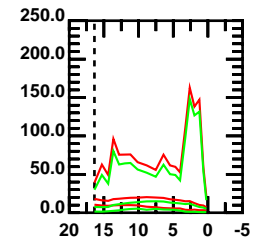
Mile from Mouth Raritan River

Raritan River and South Shore of Raritan Bay



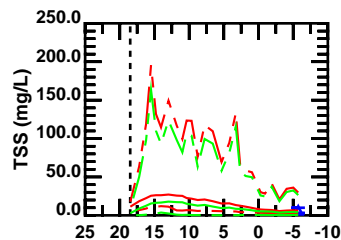
Mile From Mouth Raritan River

Passaic River



Mile From Mouth Passaic River

Hackensack River and Newark Bay



Mile From Mouth Hackensack River

April 28 - May 27

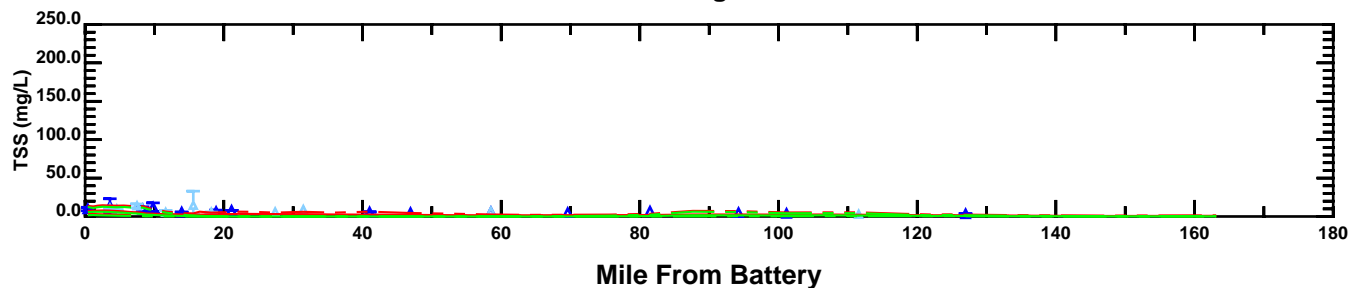
DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

MODEL

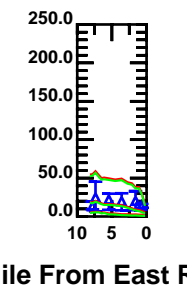
—	TSS 30-DAY MEAN
- - -	TSS 30-DAY MAX / MIN
—	COSS 30-DAY MEAN
- - -	COSS 30-DAY MAX / MIN

TSS (mg/L) Averaged Over Full Depth  
Water Year Starting Oct 1, 1998

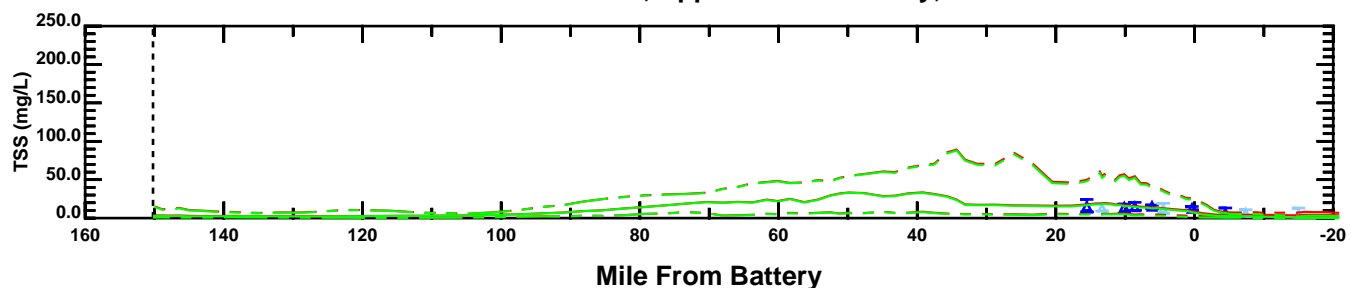
East River and Long Island Sound



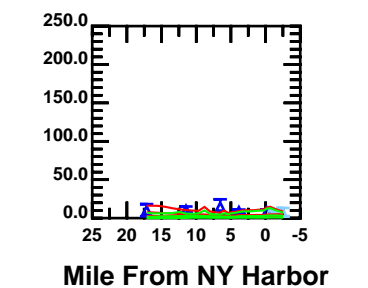
Harlem River



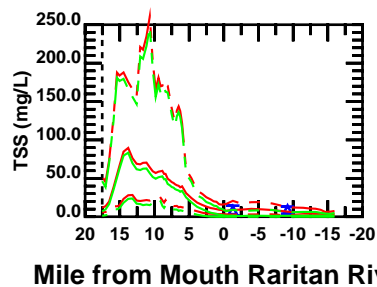
Hudson River, Upper and Lower Bay, Ocean



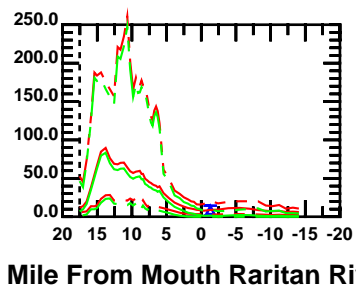
Arthur Kill and Kill Van Kull



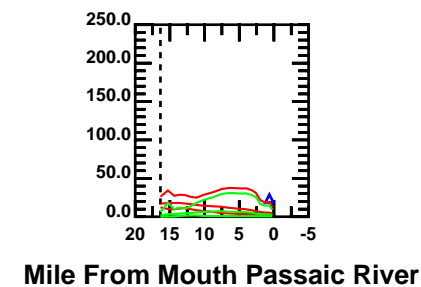
Raritan River and North Shore of Raritan Bay



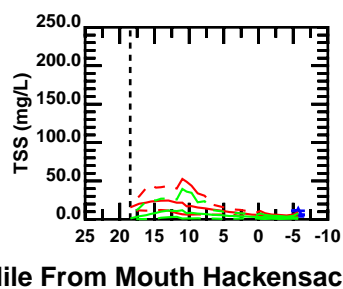
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



May 28 - June 26

DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

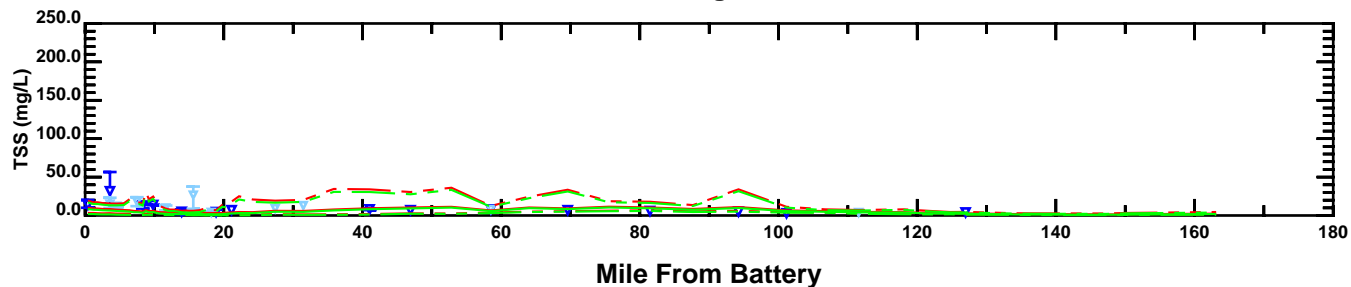
MODEL

—	TSS SURFACE 30-DAY MEAN
- - -	TSS SURFACE 30-DAY MAX / MIN
—	COSS SURFACE 30-DAY MEAN
- - -	COSS SURFACE 30-DAY MAX / MIN

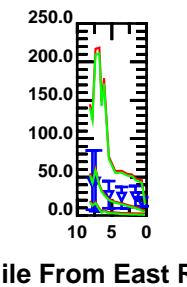
Mile From Mouth Hackensack River

Surface Layer TSS (mg/L)  
Water Year Starting Oct 1, 1998

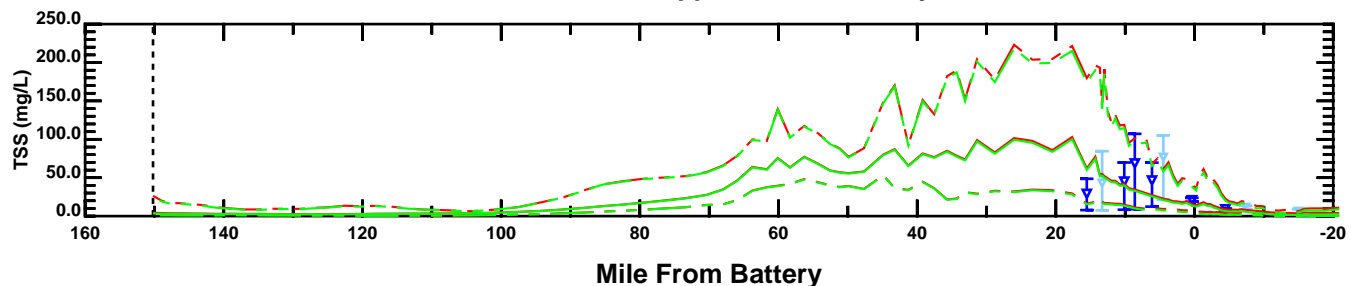
East River and Long Island Sound



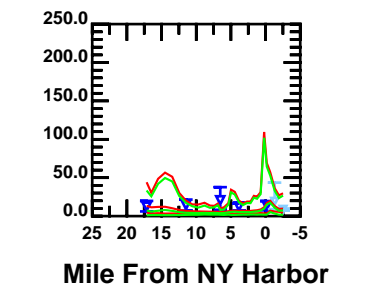
Harlem River



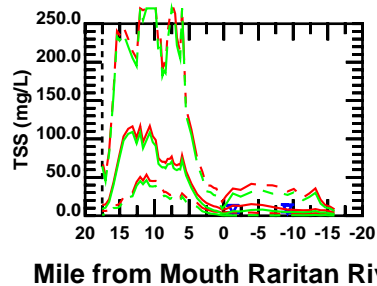
Hudson River, Upper and Lower Bay, Ocean



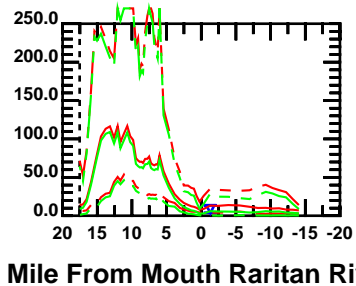
Arthur Kill and Kill Van Kull



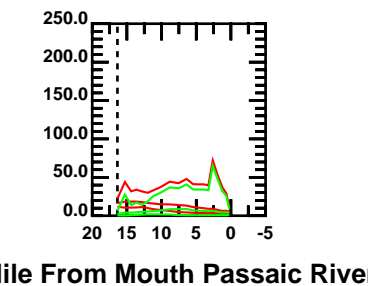
Raritan River and North Shore of Raritan Bay



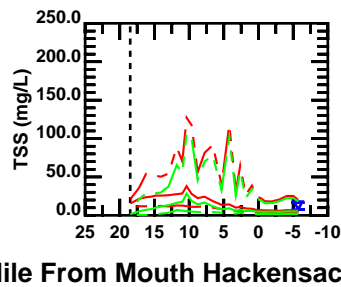
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



May 28 - June 26

DATA	TRANSECT	EMBAYMENT
NP	▼	▽
GFF	▲	▽

MODEL

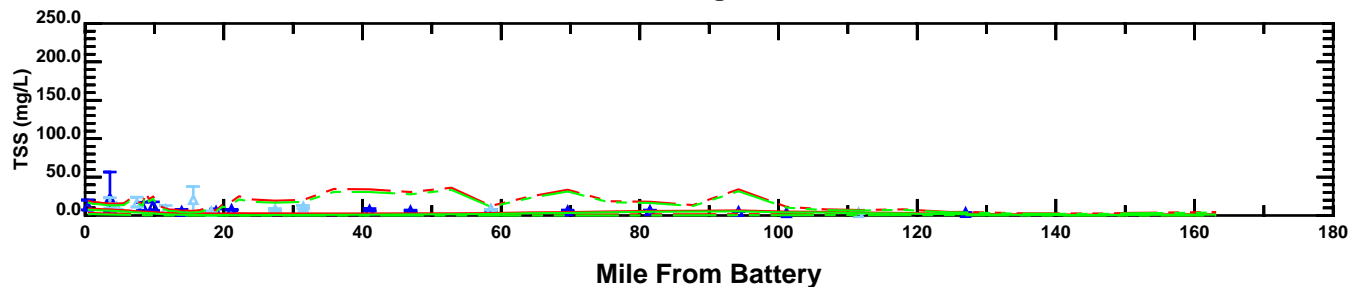
—	TSS BOTTOM 30-DAY MEAN
- - -	TSS BOTTOM 30-DAY MAX / MIN
—	COSS BOTTOM 30-DAY MEAN
- - -	COSS BOTTOM 30-DAY MAX / MIN

Mile From Mouth Hackensack River

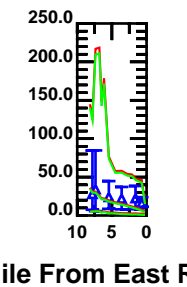
Bottom Layer TSS (mg/L)  
Water Year Starting Oct 1, 1998



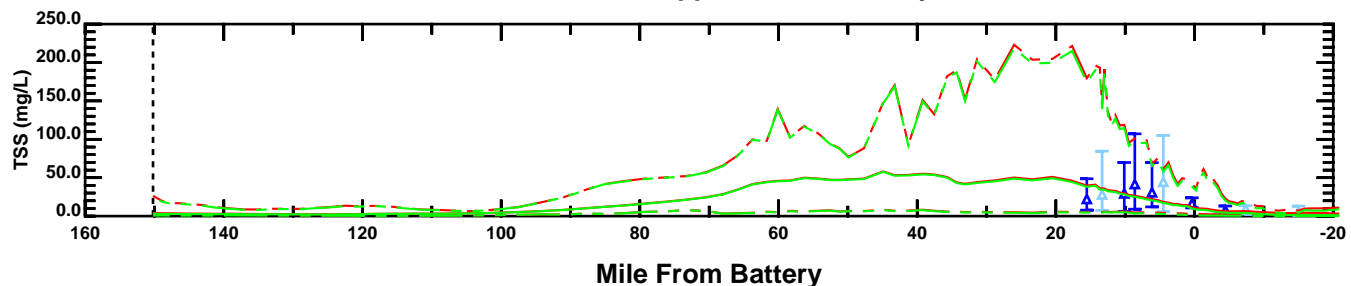
East River and Long Island Sound



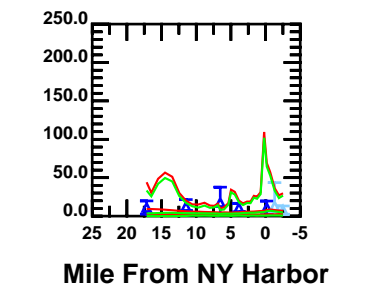
Harlem River



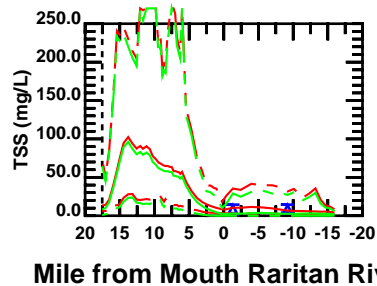
Hudson River, Upper and Lower Bay, Ocean



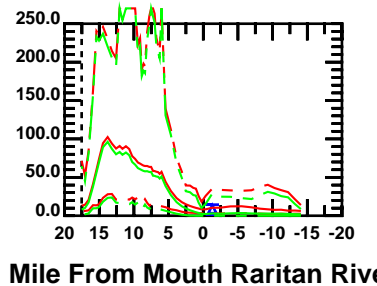
Arthur Kill and Kill Van Kull



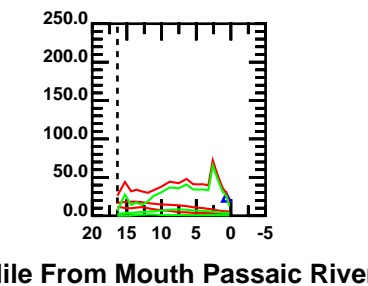
Raritan River and North Shore of Raritan Bay



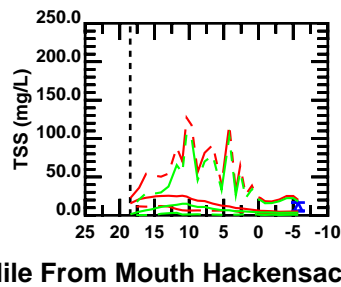
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



May 28 - June 26

DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

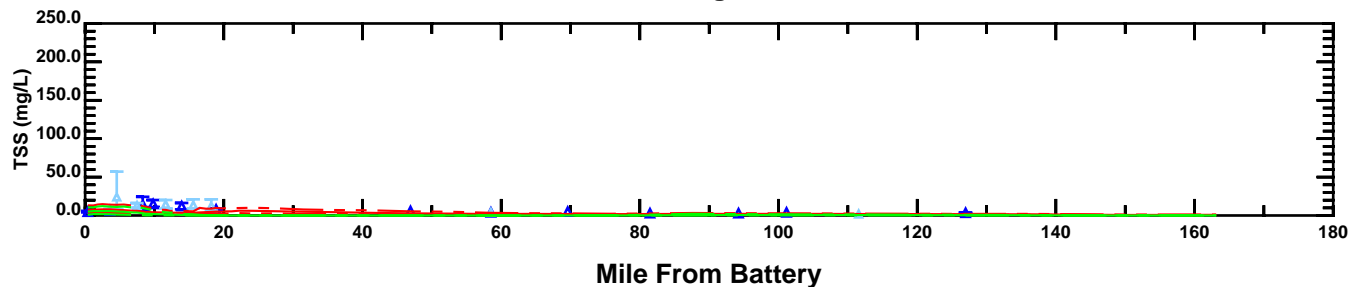
MODEL

—	TSS 30-DAY MEAN
- - -	TSS 30-DAY MAX / MIN
—	COSS 30-DAY MEAN
- - -	COSS 30-DAY MAX / MIN

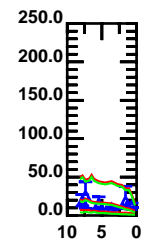
Mile From Mouth Hackensack River

TSS (mg/L) Averaged Over Full Depth  
Water Year Starting Oct 1, 1998

East River and Long Island Sound

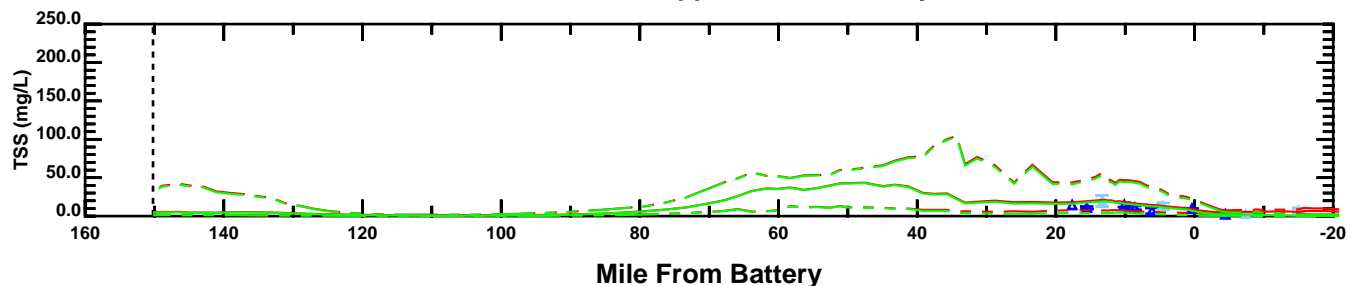


Harlem River

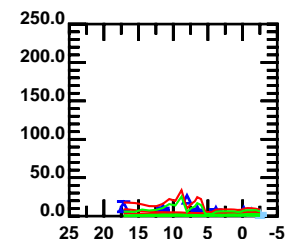


Mile From East River

Hudson River, Upper and Lower Bay, Ocean

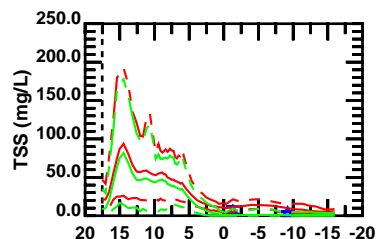


Arthur Kill and Kill Van Kull



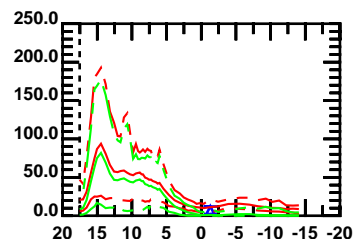
Mile From NY Harbor

Raritan River and North Shore of Raritan Bay



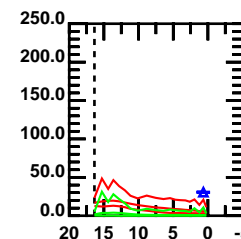
Mile from Mouth Raritan River

Raritan River and South Shore of Raritan Bay



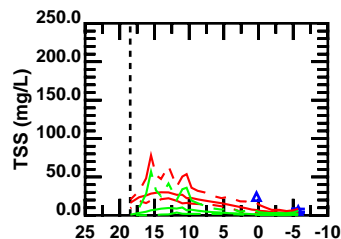
Mile From Mouth Raritan River

Passaic River



Mile From Mouth Passaic River

Hackensack River and Newark Bay



Mile From Mouth Hackensack River

June 27 - July 26

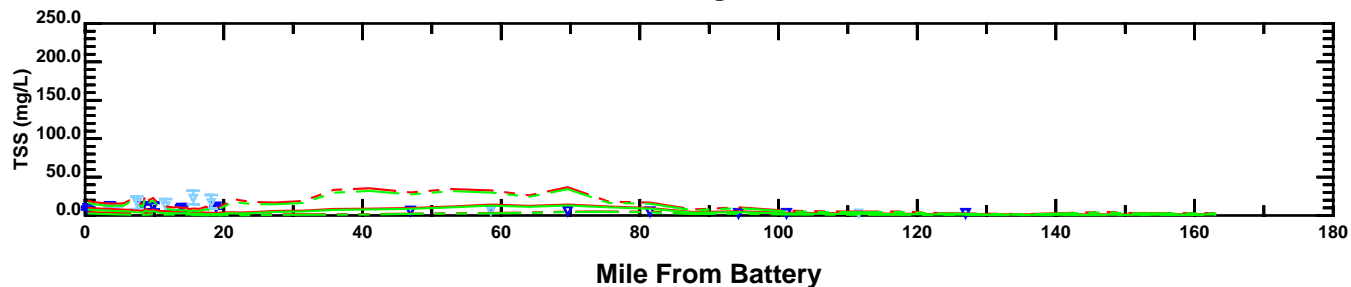
DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

MODEL

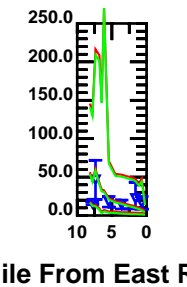
—	TSS SURFACE 30-DAY MEAN
- - -	TSS SURFACE 30-DAY MAX / MIN
—	COSS SURFACE 30-DAY MEAN
- - -	COSS SURFACE 30-DAY MAX / MIN

Surface Layer TSS (mg/L)  
Water Year Starting Oct 1, 1998

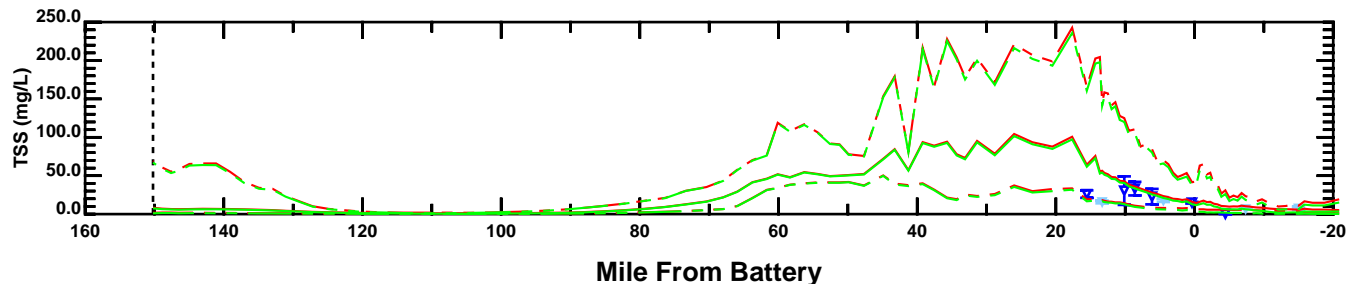
East River and Long Island Sound



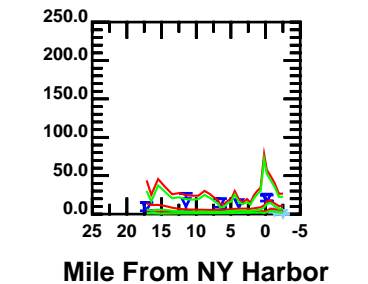
Harlem River



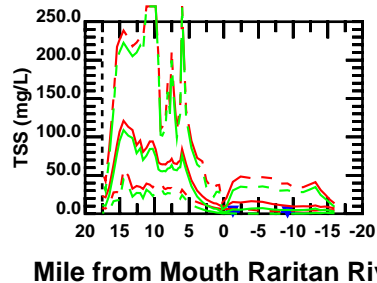
Hudson River, Upper and Lower Bay, Ocean



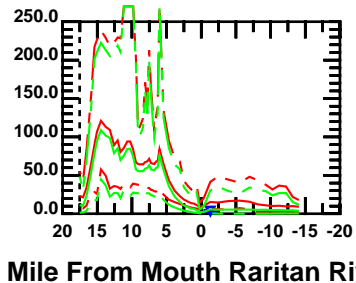
Arthur Kill and Kill Van Kull



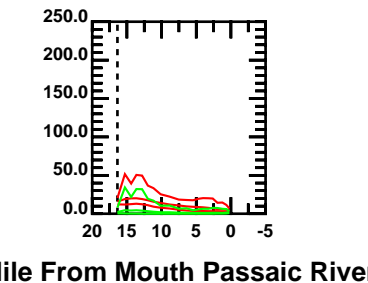
Raritan River and North Shore of Raritan Bay



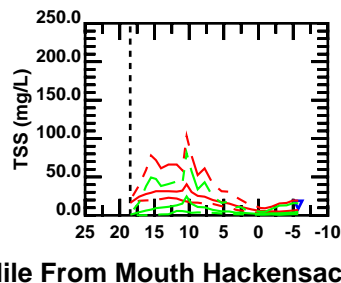
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



June 27 - July 26

DATA	TRANSECT	EMBAYMENT
NP	▼	▽
GFF	▲	▽

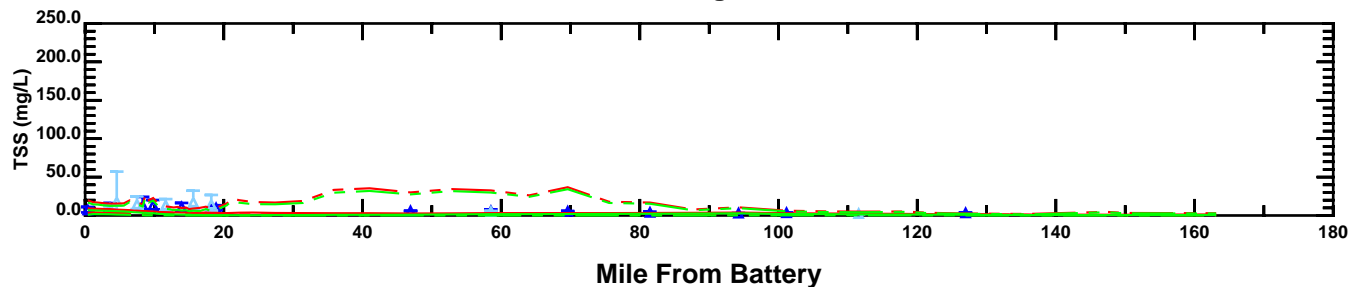
MODEL

—	TSS BOTTOM 30-DAY MEAN
- - -	TSS BOTTOM 30-DAY MAX / MIN
—	COSS BOTTOM 30-DAY MEAN
- - -	COSS BOTTOM 30-DAY MAX / MIN

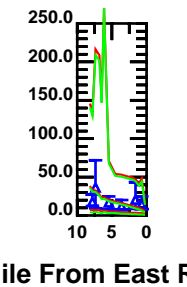
Mile From Mouth Hackensack River

Bottom Layer TSS (mg/L)  
Water Year Starting Oct 1, 1998

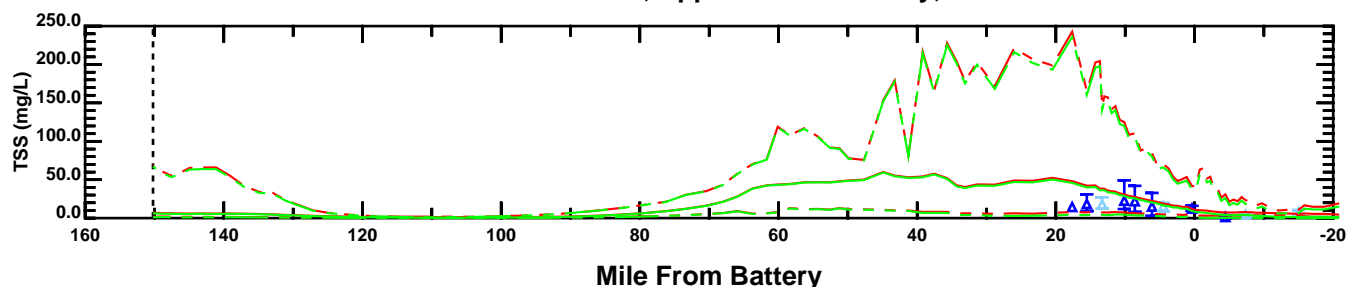
East River and Long Island Sound



Harlem River

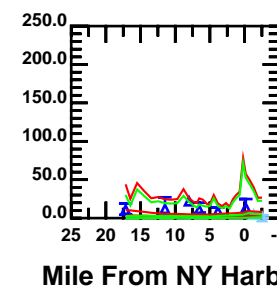


Hudson River, Upper and Lower Bay, Ocean

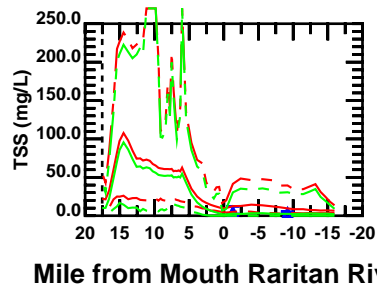


Mile From East River

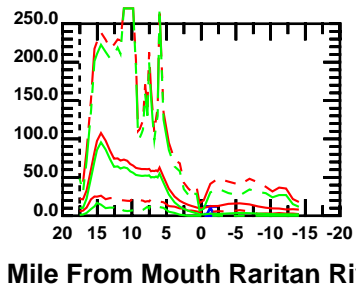
Arthur Kill and Kill Van Kull



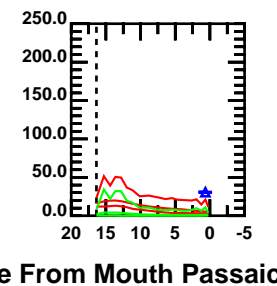
Raritan River and North Shore of Raritan Bay



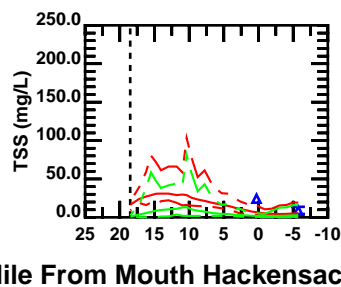
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



June 27 - July 26

DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

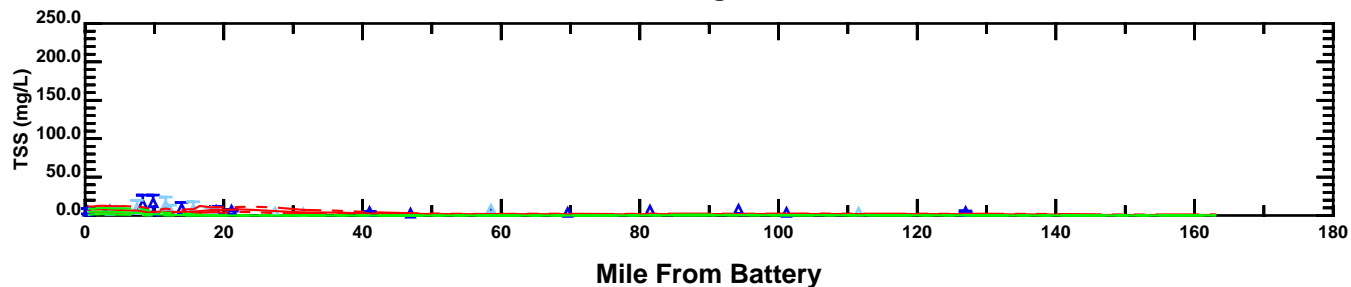
MODEL

—	TSS 30-DAY MEAN
- - -	TSS 30-DAY MAX / MIN
—	COSS 30-DAY MEAN
- - -	COSS 30-DAY MAX / MIN

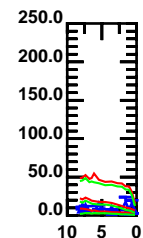
Mile From Mouth Hackensack River

TSS (mg/L) Averaged Over Full Depth  
Water Year Starting Oct 1, 1998

East River and Long Island Sound

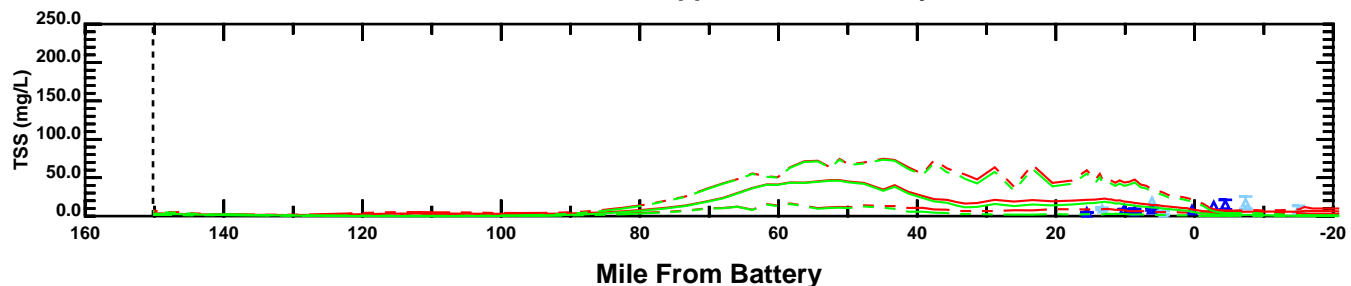


Harlem River

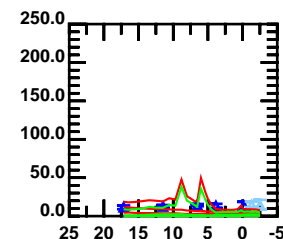


Mile From East River

Hudson River, Upper and Lower Bay, Ocean

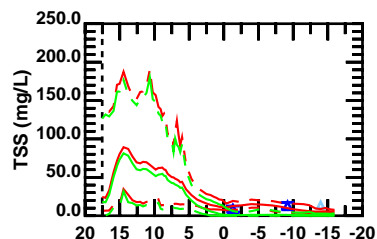


Arthur Kill and Kill Van Kull



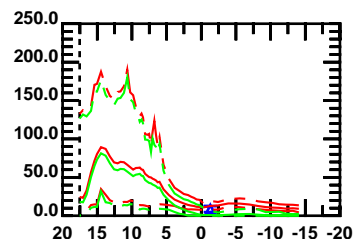
Mile From NY Harbor

Raritan River and North Shore of Raritan Bay



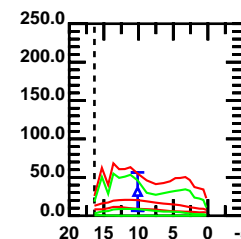
Mile from Mouth Raritan River

Raritan River and South Shore of Raritan Bay



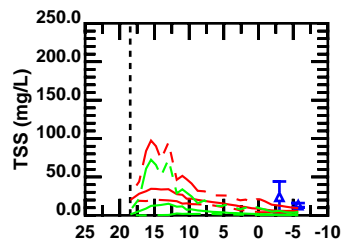
Mile From Mouth Raritan River

Passaic River



Mile From Mouth Passaic River

Hackensack River and Newark Bay



Mile From Mouth Hackensack River

July 27 - August 25

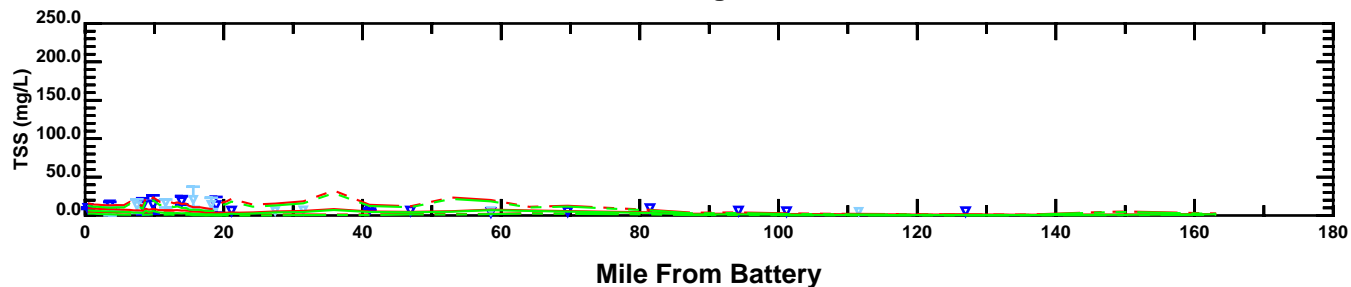
DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

MODEL

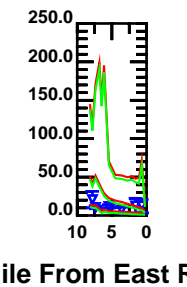
—	TSS SURFACE 30-DAY MEAN
- - -	TSS SURFACE 30-DAY MAX / MIN
—	COSS SURFACE 30-DAY MEAN
- - -	COSS SURFACE 30-DAY MAX / MIN

Surface Layer TSS (mg/L)  
Water Year Starting Oct 1, 1998

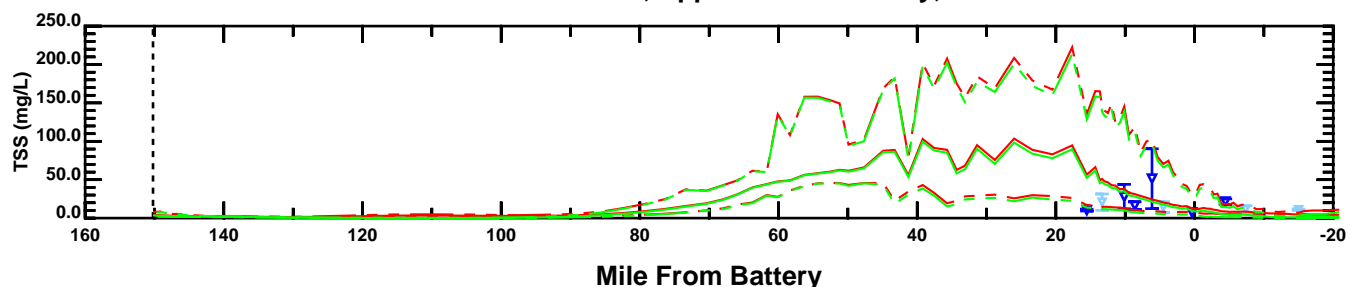
East River and Long Island Sound



Harlem River

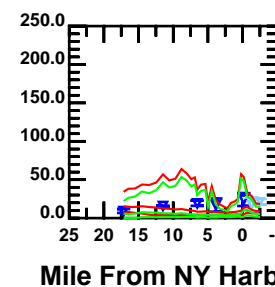


Hudson River, Upper and Lower Bay, Ocean

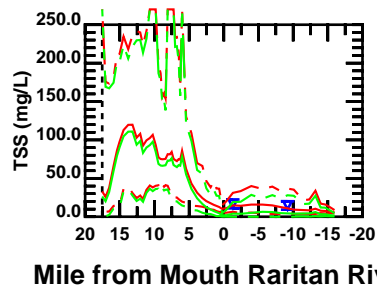


Mile From East River

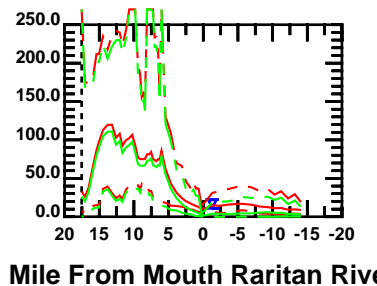
Arthur Kill and Kill Van Kull



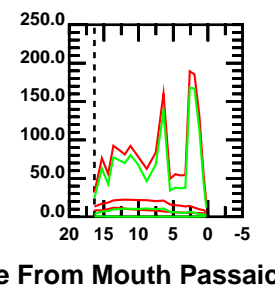
Raritan River and North Shore of Raritan Bay



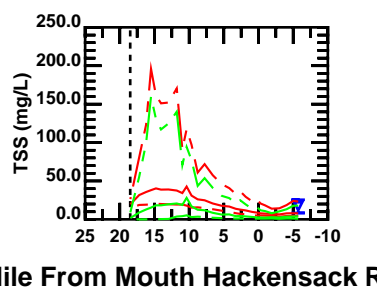
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



July 27 - August 25

DATA	TRANSECT	EMBAYMENT
NP	▼	▽
GFF	▲	▽

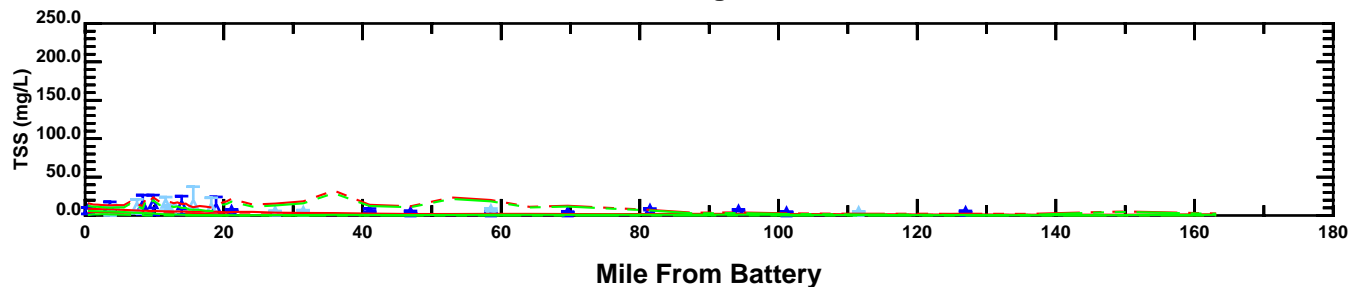
MODEL

—	TSS BOTTOM 30-DAY MEAN
- - -	TSS BOTTOM 30-DAY MAX / MIN
—	COSS BOTTOM 30-DAY MEAN
- - -	COSS BOTTOM 30-DAY MAX / MIN

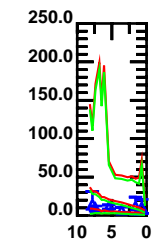
Mile From Mouth Hackensack River

Bottom Layer TSS (mg/L)  
Water Year Starting Oct 1, 1998

East River and Long Island Sound

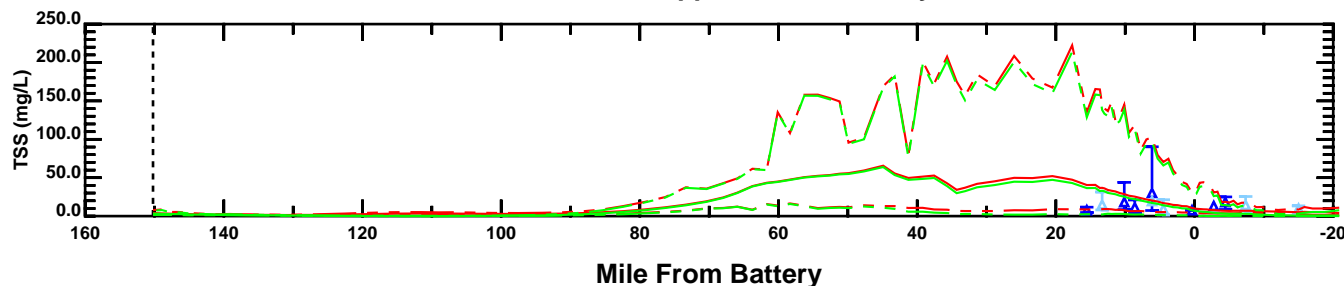


Harlem River

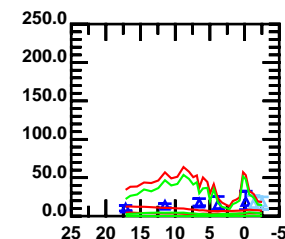


Mile From East River

Hudson River, Upper and Lower Bay, Ocean

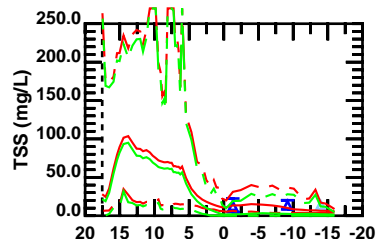


Arthur Kill and Kill Van Kull



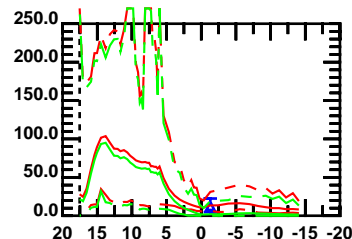
Mile From NY Harbor

Raritan River and North Shore of Raritan Bay



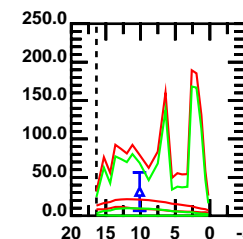
Mile from Mouth Raritan River

Raritan River and South Shore of Raritan Bay



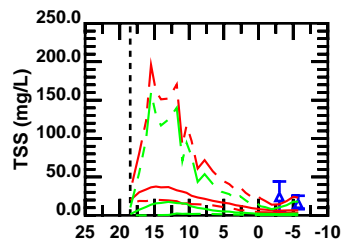
Mile From Mouth Raritan River

Passaic River



Mile From Mouth Passaic River

Hackensack River and Newark Bay



Mile From Mouth Hackensack River

July 27 - August 25

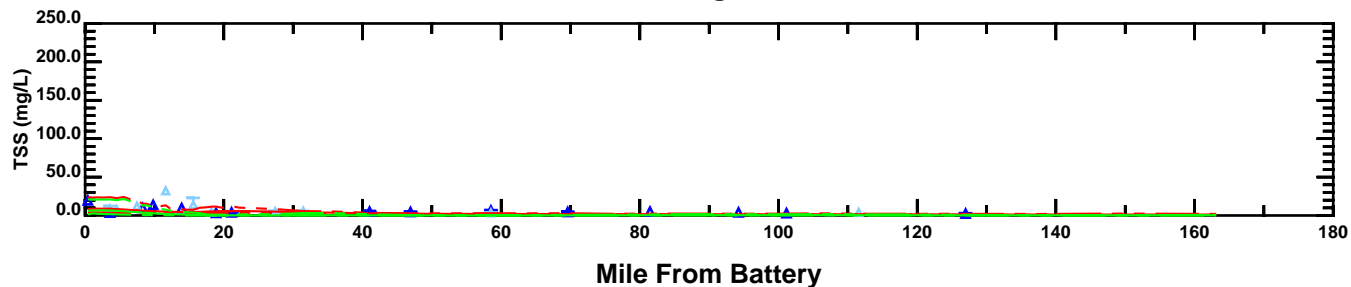
DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

MODEL

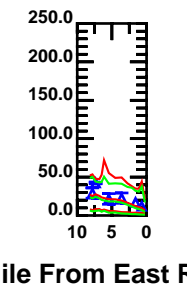
—	TSS 30-DAY MEAN
- - -	TSS 30-DAY MAX / MIN
—	COSS 30-DAY MEAN
- - -	COSS 30-DAY MAX / MIN

TSS (mg/L) Averaged Over Full Depth  
Water Year Starting Oct 1, 1998

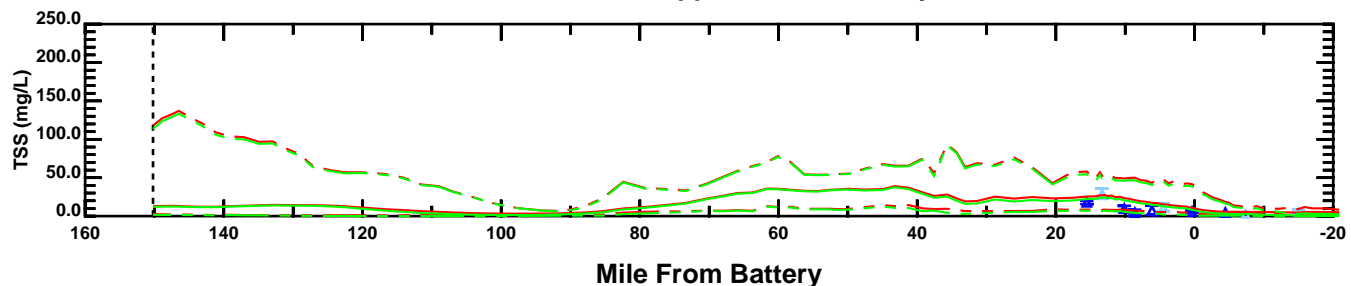
East River and Long Island Sound



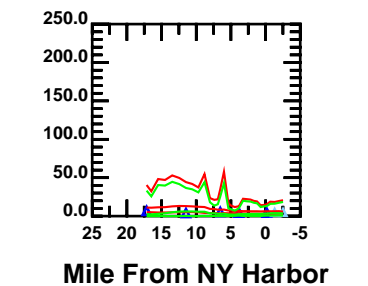
Harlem River



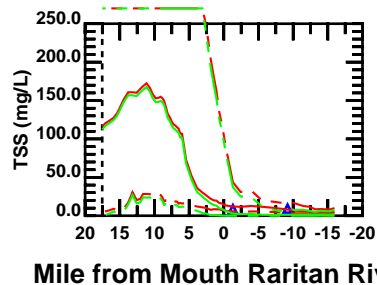
Hudson River, Upper and Lower Bay, Ocean



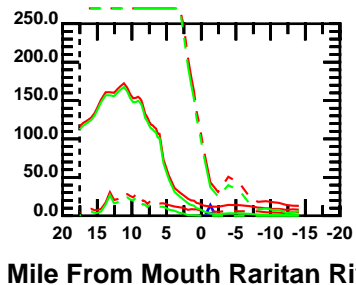
Arthur Kill and Kill Van Kull



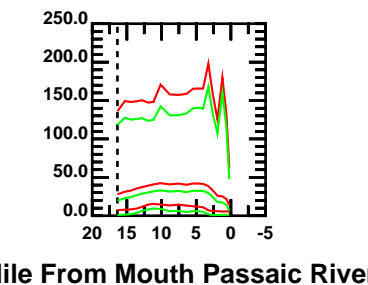
Raritan River and North Shore of Raritan Bay



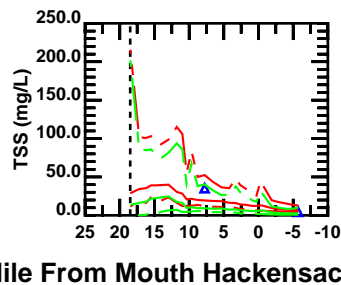
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



August 26 - September 24

DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

MODEL

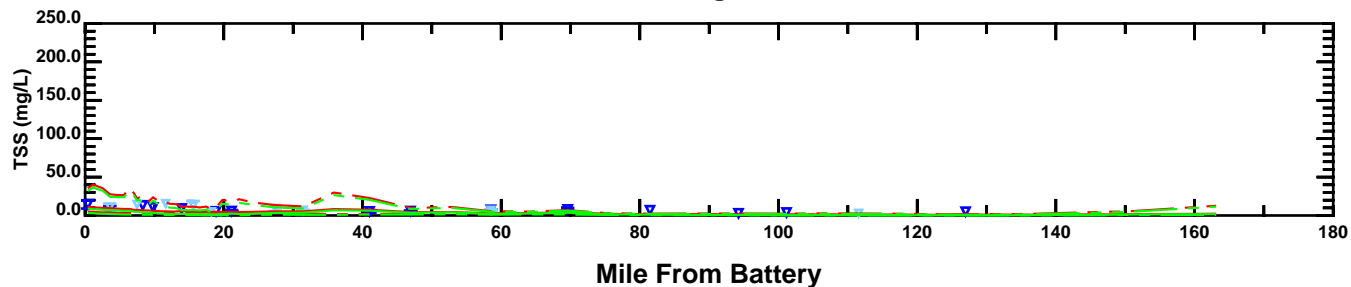
—	TSS SURFACE 30-DAY MEAN
- - -	TSS SURFACE 30-DAY MAX / MIN
—	COSS SURFACE 30-DAY MEAN
- - -	COSS SURFACE 30-DAY MAX / MIN

Mile From Mouth Hackensack River

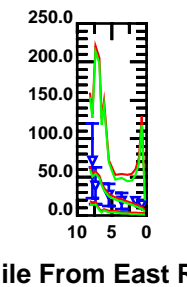
Surface Layer TSS (mg/L)  
Water Year Starting Oct 1, 1998



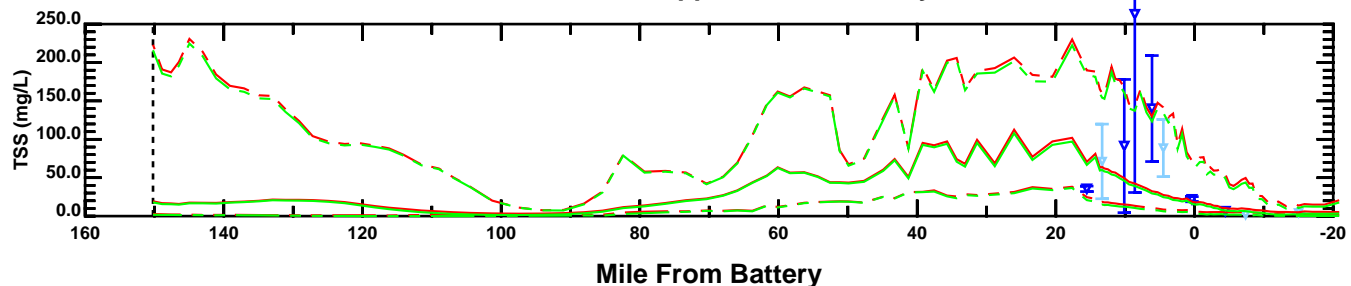
East River and Long Island Sound



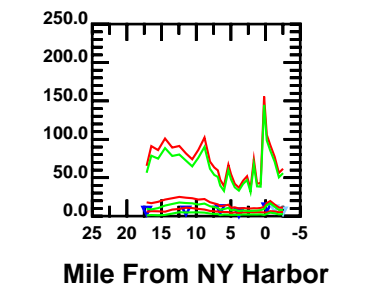
Harlem River



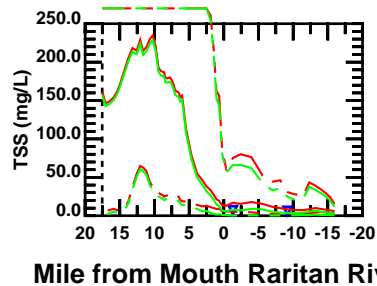
Hudson River, Upper and Lower Bay, Ocean



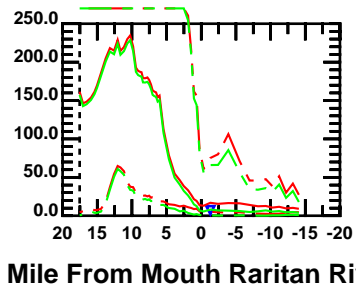
Arthur Kill and Kill Van Kull



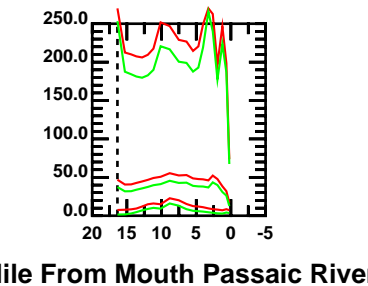
Raritan River and North Shore of Raritan Bay



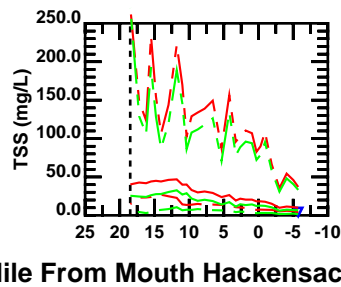
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



August 26 - September 24

DATA	TRANSECT	EMBAYMENT
NP	▼	▽
GFF	▲	▽

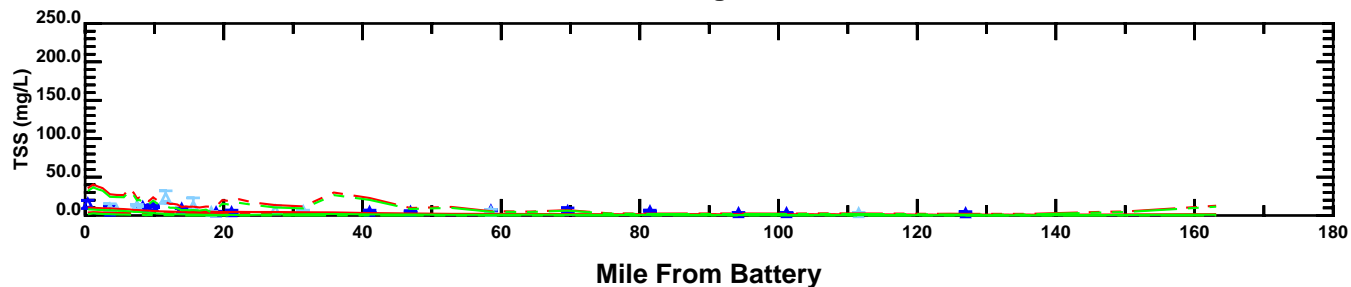
MODEL

—	TSS BOTTOM 30-DAY MEAN
- - -	TSS BOTTOM 30-DAY MAX / MIN
—	COSS BOTTOM 30-DAY MEAN
- - -	COSS BOTTOM 30-DAY MAX / MIN

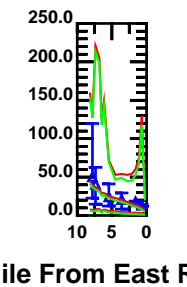
Mile From Mouth Hackensack River

Bottom Layer TSS (mg/L)  
Water Year Starting Oct 1, 1998

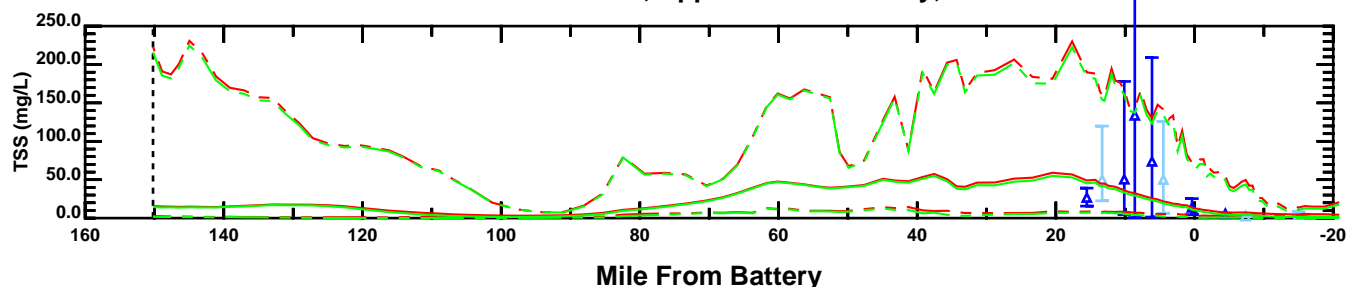
East River and Long Island Sound



Harlem River

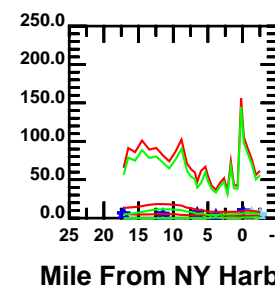


Hudson River, Upper and Lower Bay, Ocean

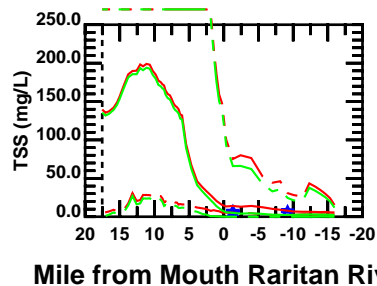


Mile From East River

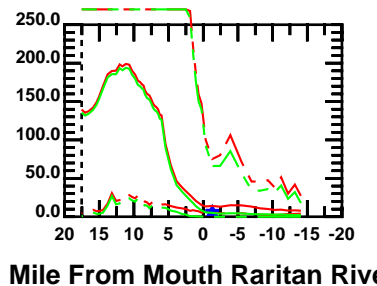
Arthur Kill and Kill Van Kull



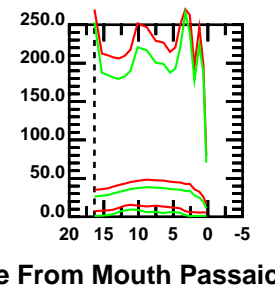
Raritan River and North Shore of Raritan Bay



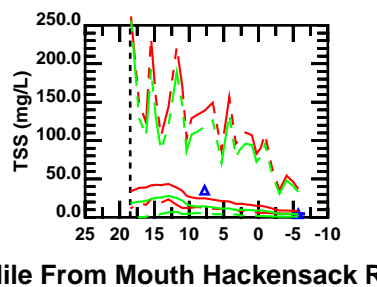
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



August 26 - September 24

DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

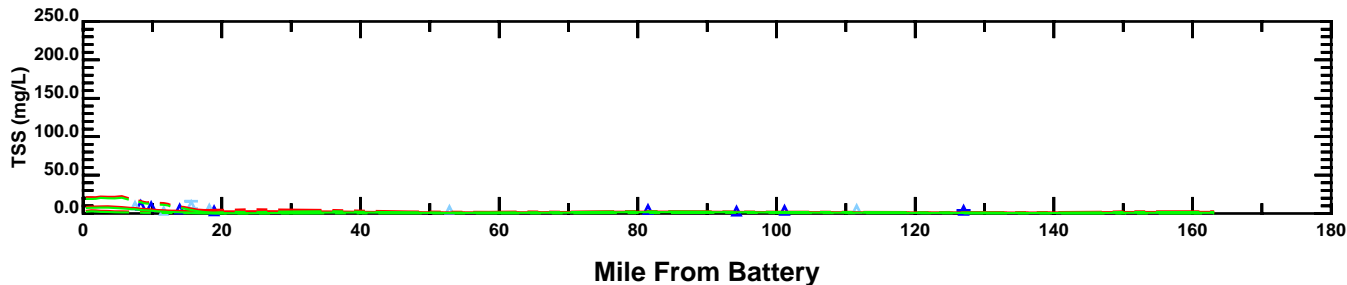
MODEL

—	TSS 30-DAY MEAN
- - -	TSS 30-DAY MAX / MIN
—	COSS 30-DAY MEAN
- - -	COSS 30-DAY MAX / MIN

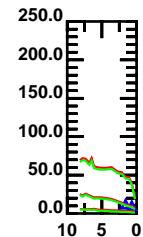
Mile From Mouth Hackensack River

TSS (mg/L) Averaged Over Full Depth  
Water Year Starting Oct 1, 1998

East River and Long Island Sound

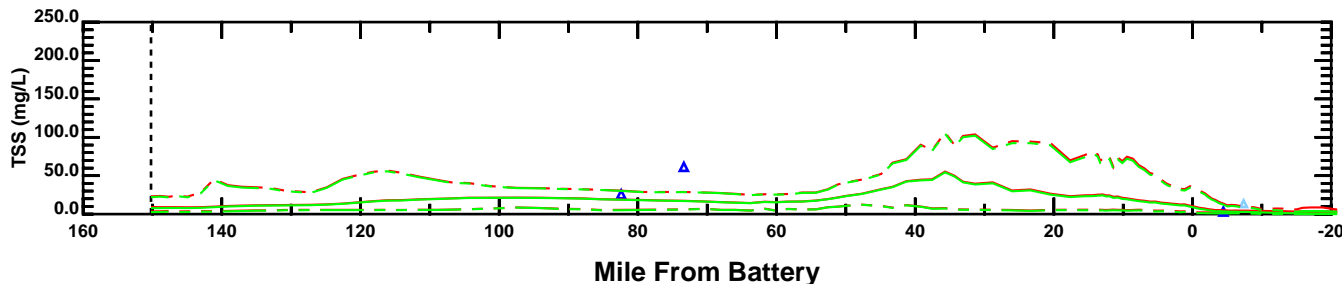


Harlem River

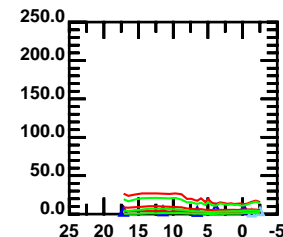


Mile From East River

Hudson River, Upper and Lower Bay, Ocean

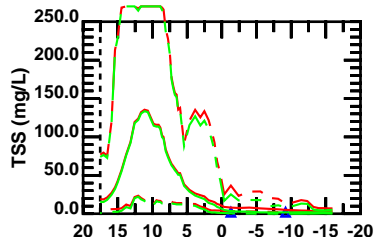


Arthur Kill and Kill Van Kull



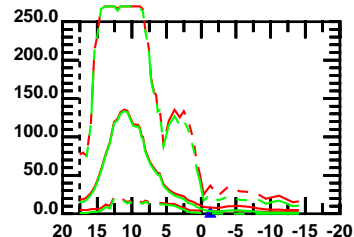
Mile From NY Harbor

Raritan River and North Shore of Raritan Bay



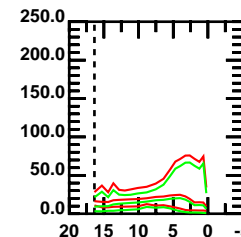
Mile from Mouth Raritan River

Raritan River and South Shore of Raritan Bay



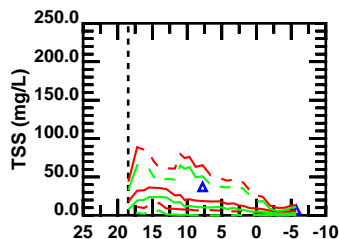
Mile From Mouth Raritan River

Passaic River



Mile From Mouth Passaic River

Hackensack River and Newark Bay



Mile From Mouth Hackensack River

October 1 - October 30

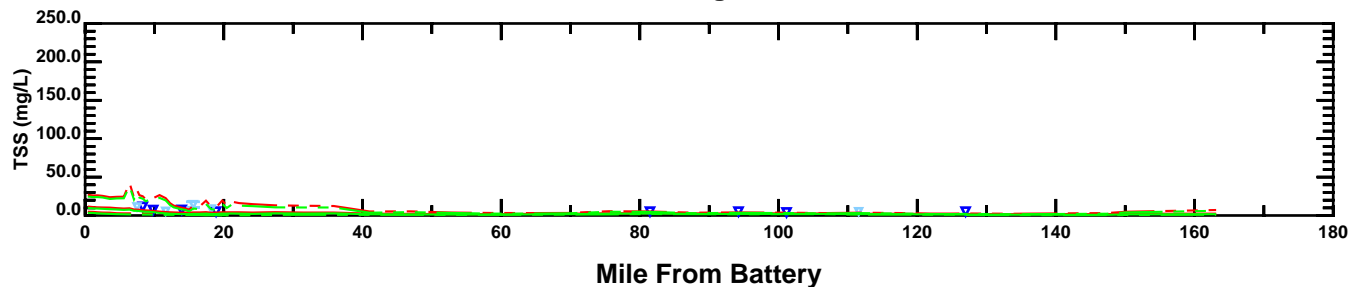
DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

MODEL

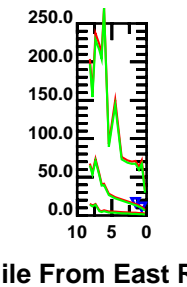
—	TSS SURFACE 30-DAY MEAN
- - -	TSS SURFACE 30-DAY MAX / MIN
—	COSS SURFACE 30-DAY MEAN
- - -	COSS SURFACE 30-DAY MAX / MIN

Surface Layer TSS (mg/L)  
Water Year Starting Oct 1, 1999

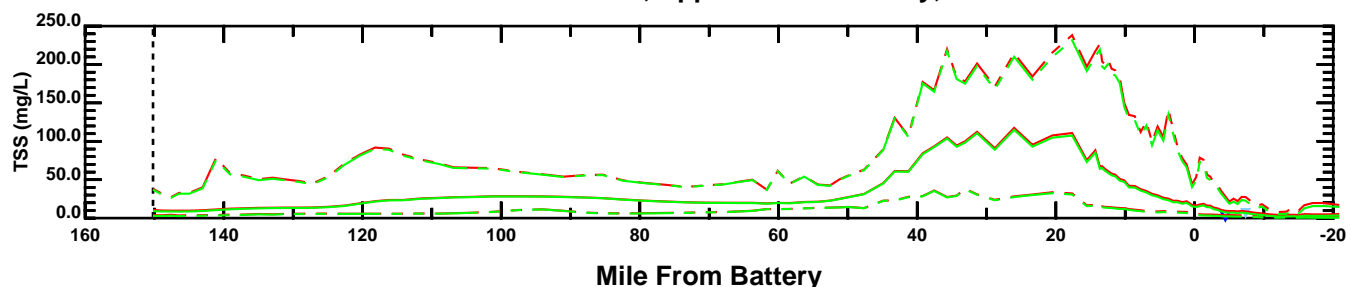
East River and Long Island Sound



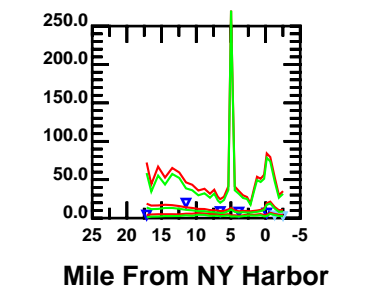
Harlem River



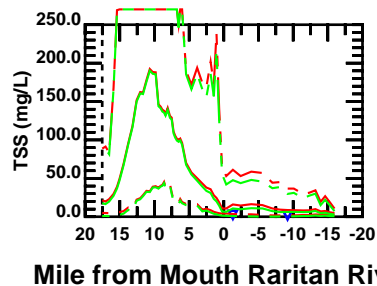
Hudson River, Upper and Lower Bay, Ocean



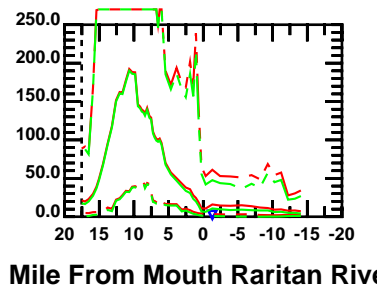
Arthur Kill and Kill Van Kull



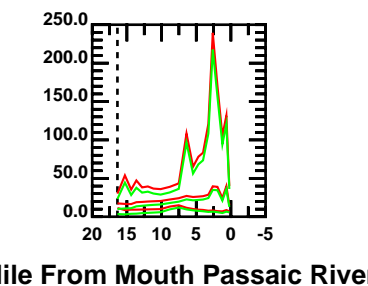
Raritan River and North Shore of Raritan Bay



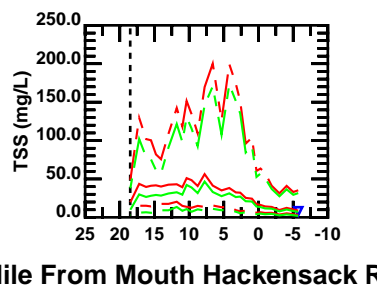
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



October 1 - October 30

DATA	TRANSECT	EMBAYMENT
NP	▼	▽
GFF	▲	▽

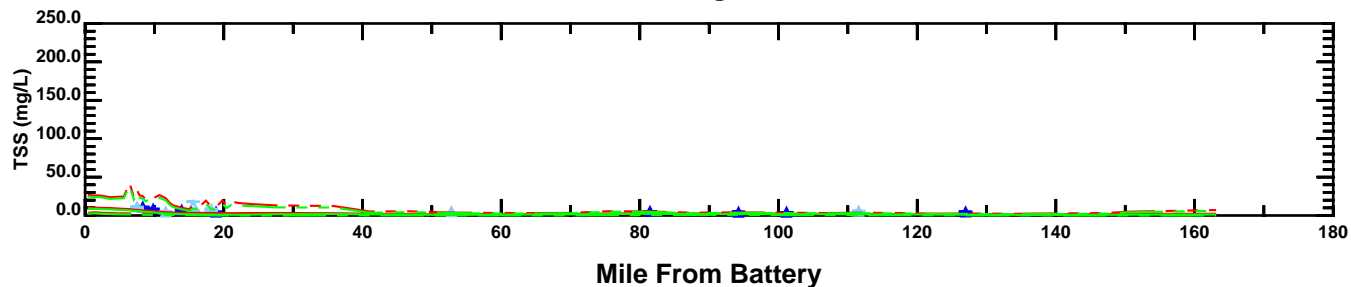
MODEL

—	TSS BOTTOM 30-DAY MEAN
- - -	TSS BOTTOM 30-DAY MAX / MIN
—	COSS BOTTOM 30-DAY MEAN
- - -	COSS BOTTOM 30-DAY MAX / MIN

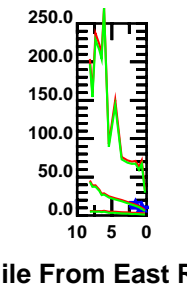
Mile From Mouth Hackensack River

Bottom Layer TSS (mg/L)  
Water Year Starting Oct 1, 1999

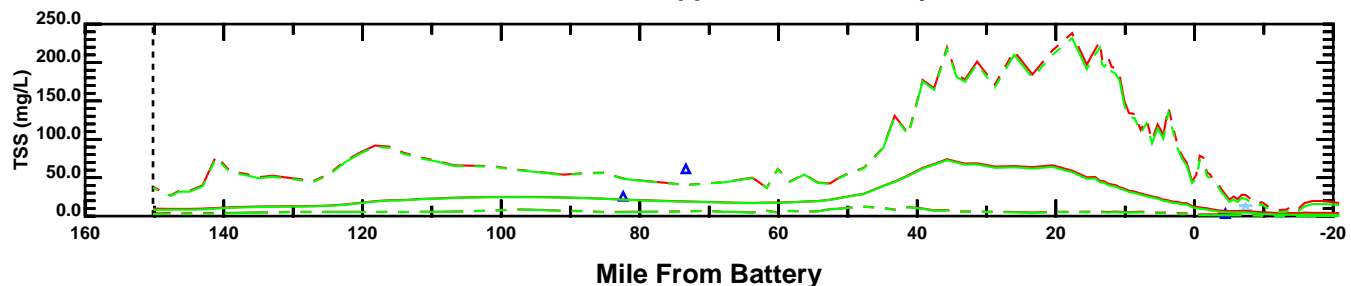
East River and Long Island Sound



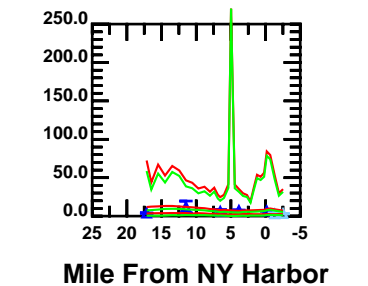
Harlem River



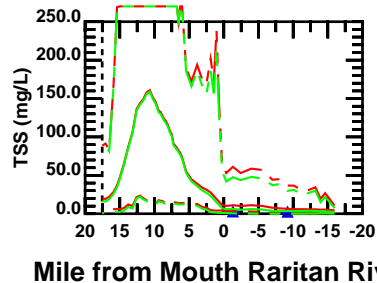
Hudson River, Upper and Lower Bay, Ocean



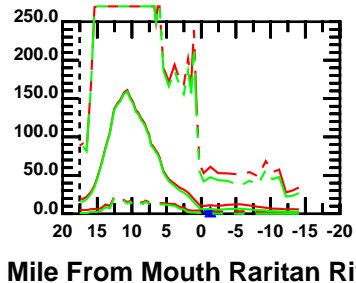
Arthur Kill and Kill Van Kull



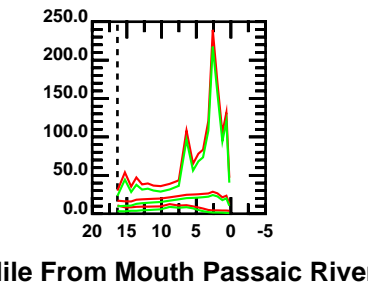
Raritan River and North Shore of Raritan Bay



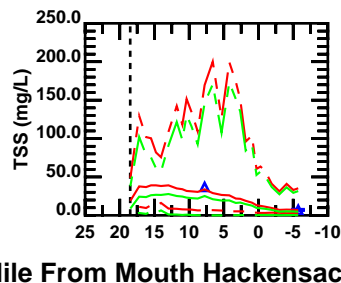
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



October 1 - October 30

DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

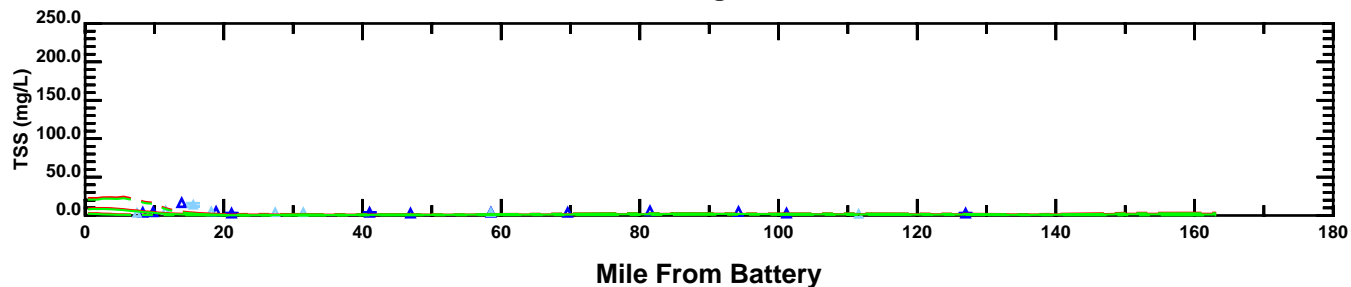
MODEL

—	TSS 30-DAY MEAN
- - -	TSS 30-DAY MAX / MIN
—	COSS 30-DAY MEAN
- - -	COSS 30-DAY MAX / MIN

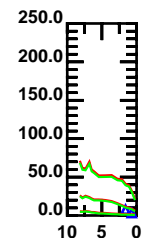
Mile From Mouth Hackensack River

TSS (mg/L) Averaged Over Full Depth  
Water Year Starting Oct 1, 1999

East River and Long Island Sound

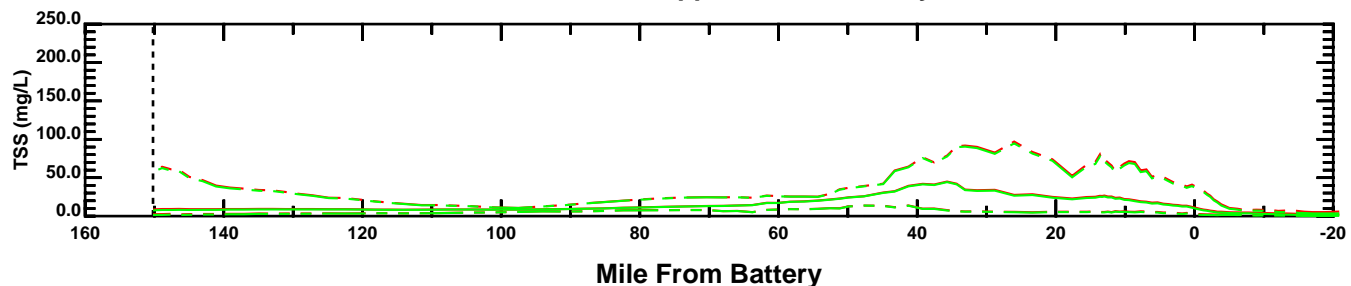


Harlem River

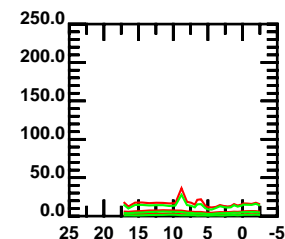


Mile From East River

Hudson River, Upper and Lower Bay, Ocean

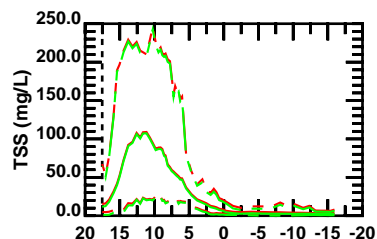


Arthur Kill and Kill Van Kull



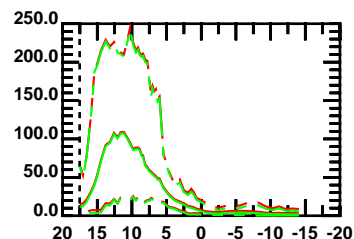
Mile From NY Harbor

Raritan River and North Shore of Raritan Bay



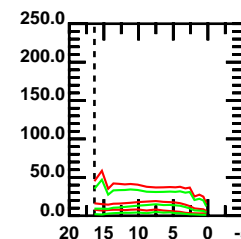
Mile from Mouth Raritan River

Raritan River and South Shore of Raritan Bay



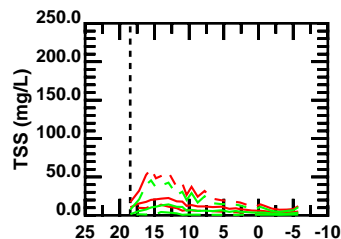
Mile From Mouth Raritan River

Passaic River



Mile From Mouth Passaic River

Hackensack River and Newark Bay



Mile From Mouth Hackensack River

October 31 - November 29

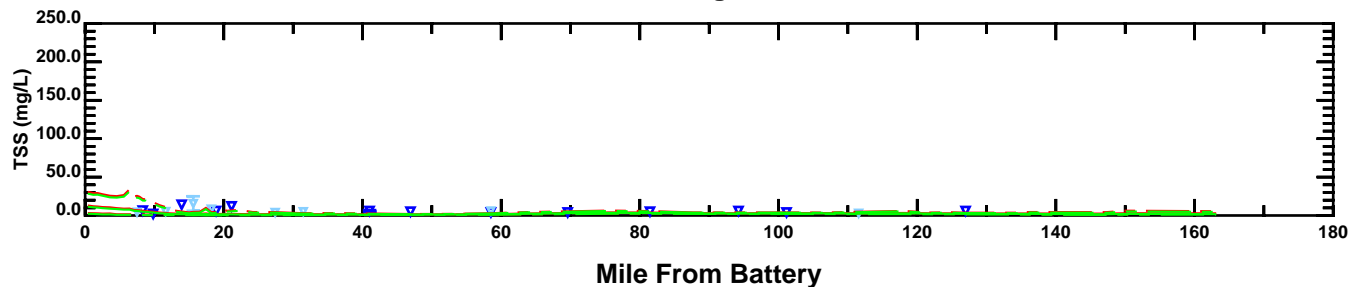
DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

MODEL

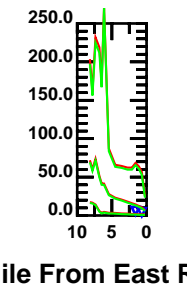
—	TSS SURFACE 30-DAY MEAN
- - -	TSS SURFACE 30-DAY MAX / MIN
—	COSS SURFACE 30-DAY MEAN
- - -	COSS SURFACE 30-DAY MAX / MIN

Surface Layer TSS (mg/L)  
Water Year Starting Oct 1, 1999

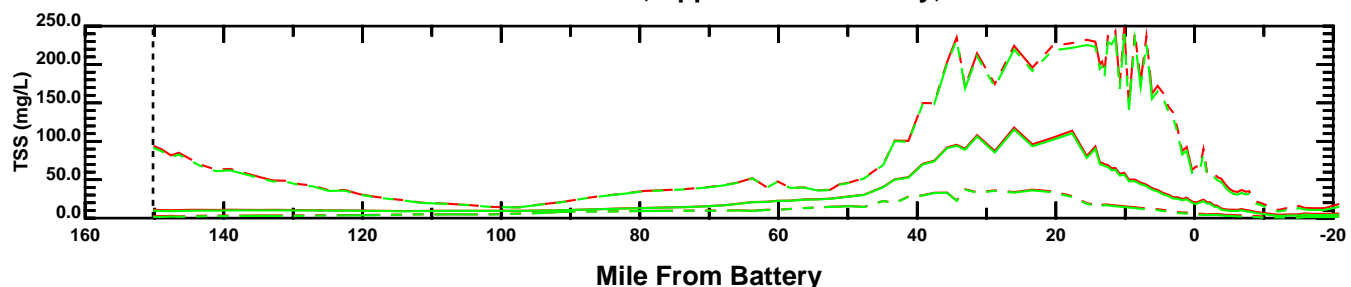
East River and Long Island Sound



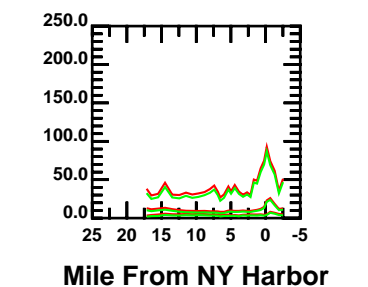
Harlem River



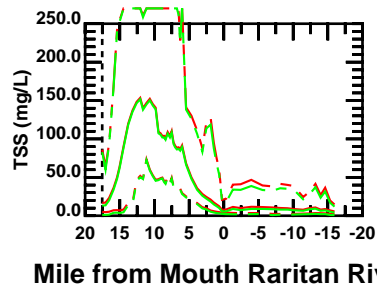
Hudson River, Upper and Lower Bay, Ocean



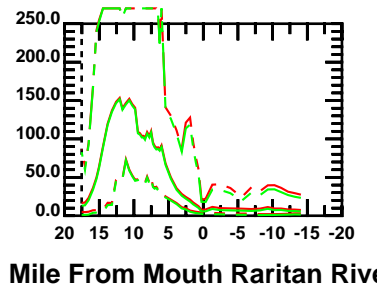
Arthur Kill and Kill Van Kull



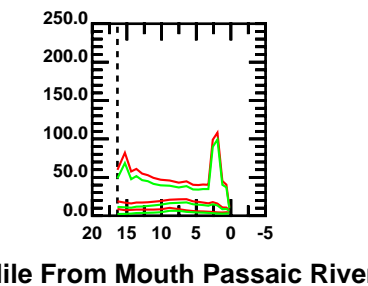
Raritan River and North Shore of Raritan Bay



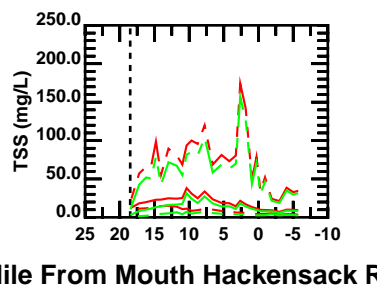
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



October 31 - November 29

DATA	TRANSECT	EMBAYMENT
NP	▼	▽
GFF	▼	▽

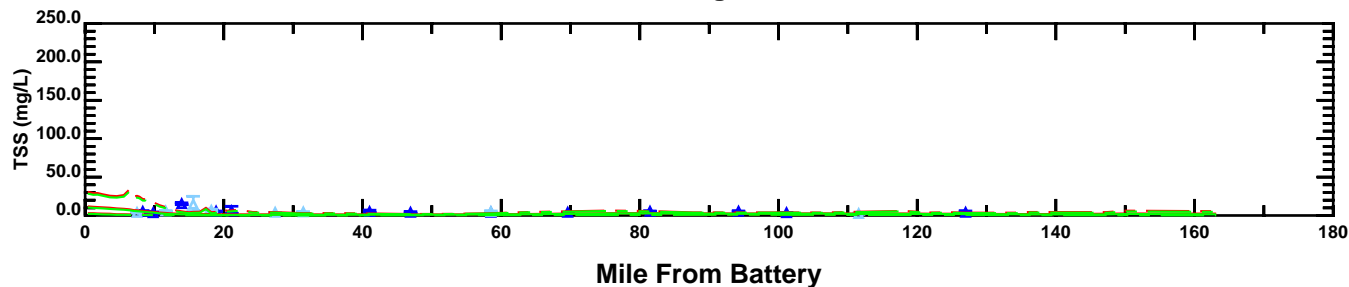
MODEL

—	TSS BOTTOM 30-DAY MEAN
- - -	TSS BOTTOM 30-DAY MAX / MIN
—	COSS BOTTOM 30-DAY MEAN
- - -	COSS BOTTOM 30-DAY MAX / MIN

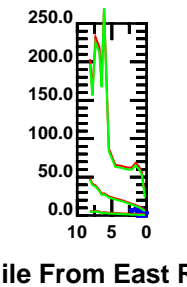
Mile From Mouth Hackensack River

Bottom Layer TSS (mg/L)  
Water Year Starting Oct 1, 1999

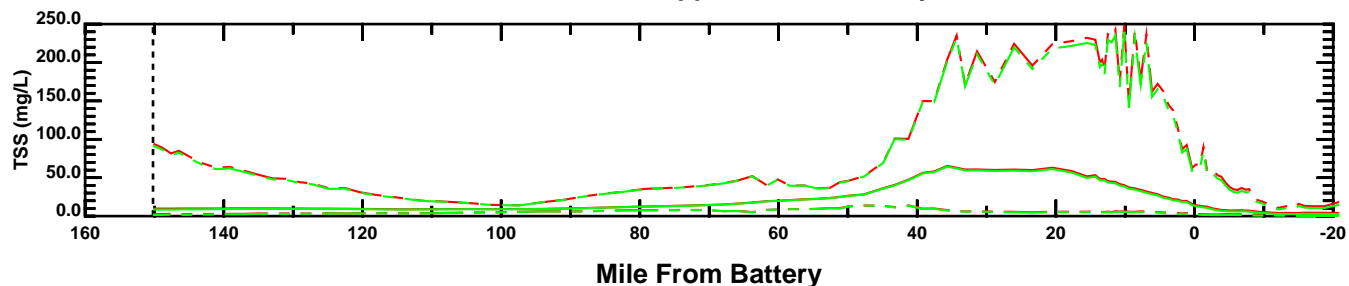
East River and Long Island Sound



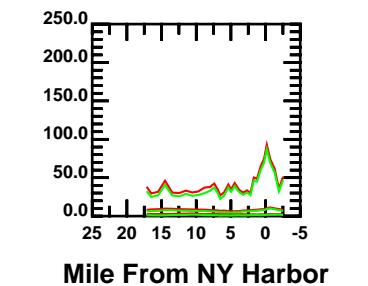
Harlem River



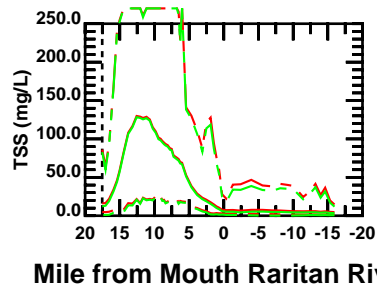
Hudson River, Upper and Lower Bay, Ocean



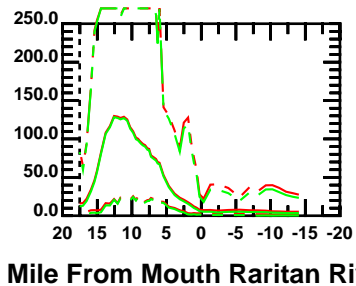
Arthur Kill and Kill Van Kull



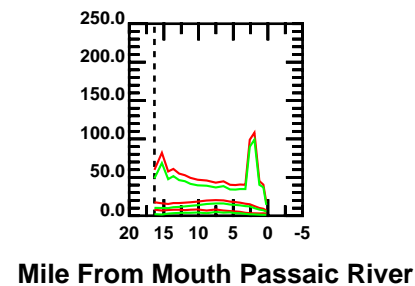
Raritan River and North Shore of Raritan Bay



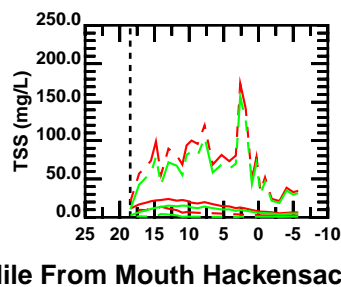
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



October 31 - November 29

DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

MODEL

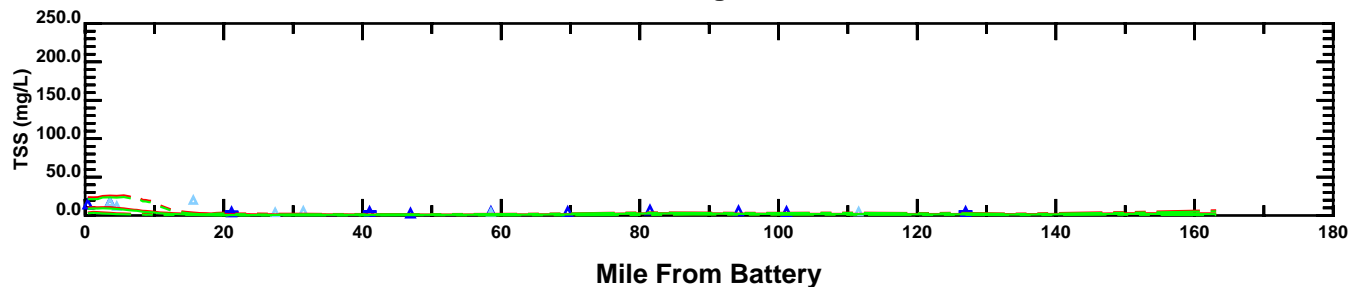
—	TSS 30-DAY MEAN
- - -	TSS 30-DAY MAX / MIN
—	COSS 30-DAY MEAN
- - -	COSS 30-DAY MAX / MIN

Mile From Mouth Hackensack River

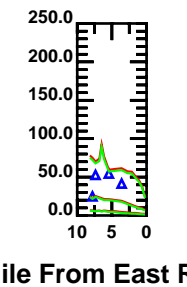
TSS (mg/L) Averaged Over Full Depth  
Water Year Starting Oct 1, 1999



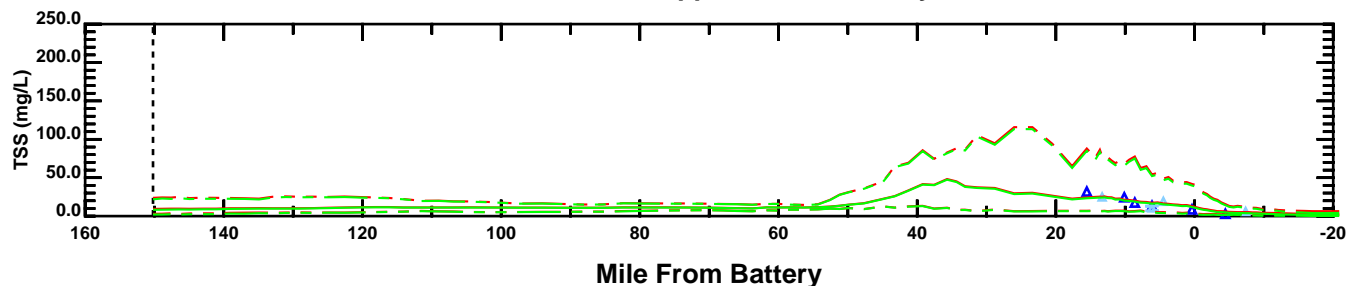
East River and Long Island Sound



Harlem River

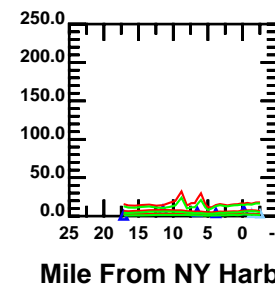


Hudson River, Upper and Lower Bay, Ocean

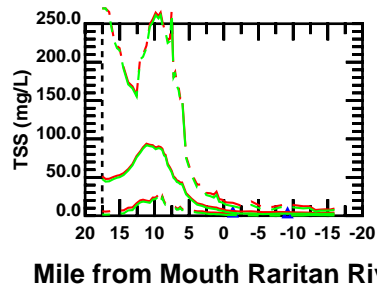


Mile From East River

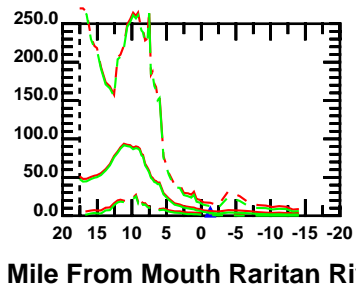
Arthur Kill and Kill Van Kull



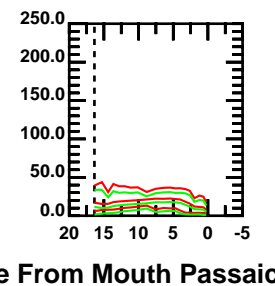
Raritan River and North Shore of Raritan Bay



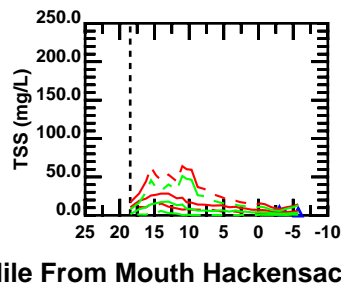
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



November 30 - December 29

DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

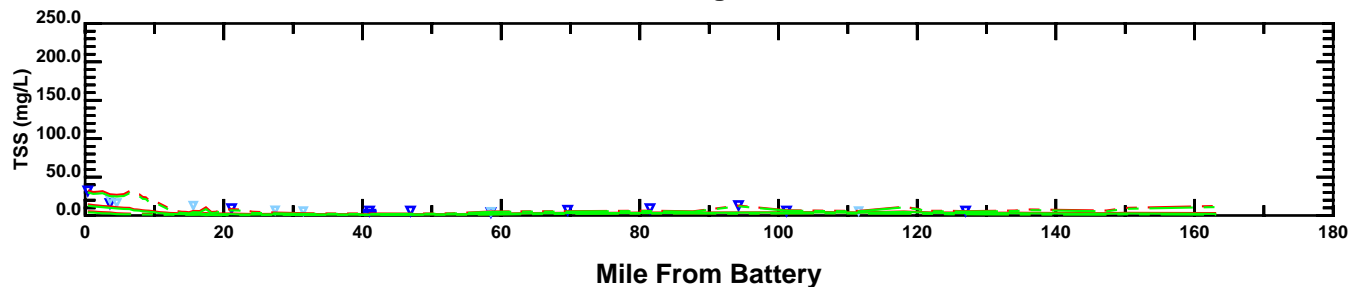
MODEL

—	TSS SURFACE 30-DAY MEAN
- - -	TSS SURFACE 30-DAY MAX / MIN
—	COSS SURFACE 30-DAY MEAN
- - -	COSS SURFACE 30-DAY MAX / MIN

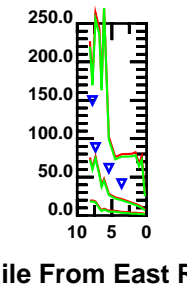
Mile From Mouth Hackensack River

Surface Layer TSS (mg/L)  
Water Year Starting Oct 1, 1999

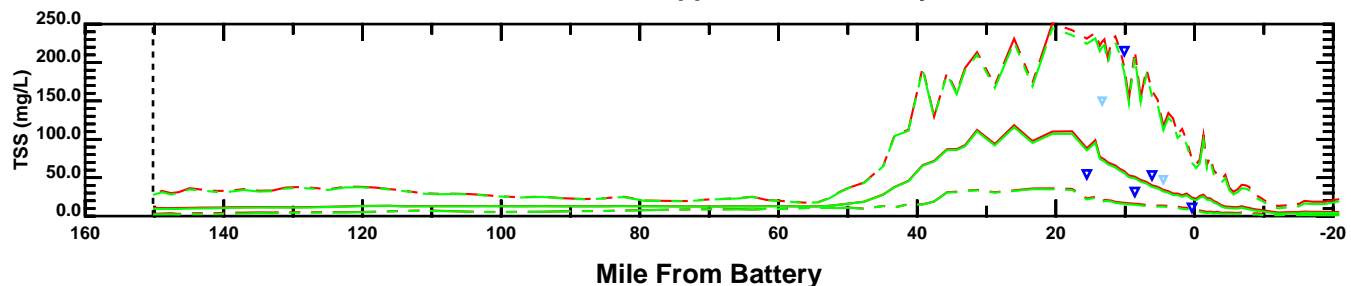
East River and Long Island Sound



Harlem River

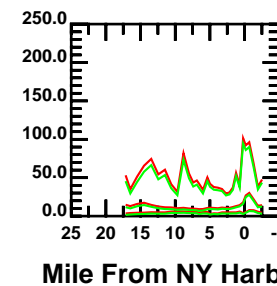


Hudson River, Upper and Lower Bay, Ocean

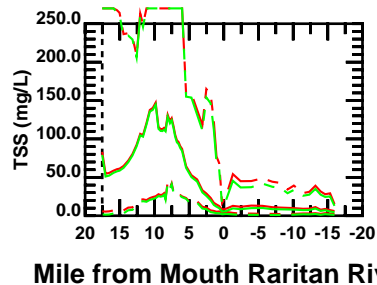


Mile From East River

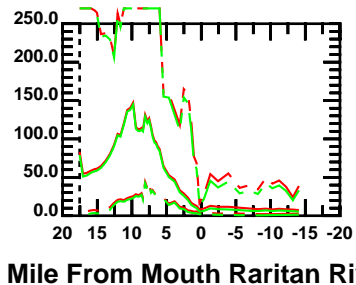
Arthur Kill and Kill Van Kull



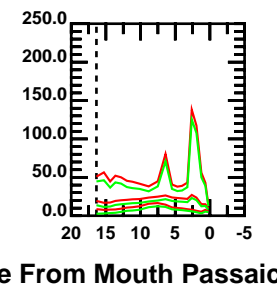
Raritan River and North Shore of Raritan Bay



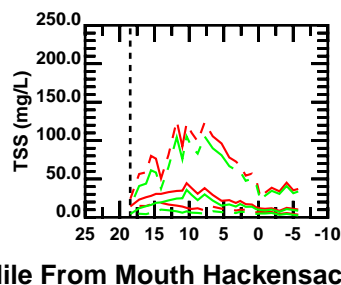
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



November 30 - December 29

DATA	TRANSECT	EMBAYMENT
NP	▼	▽
GFF	▼	▽

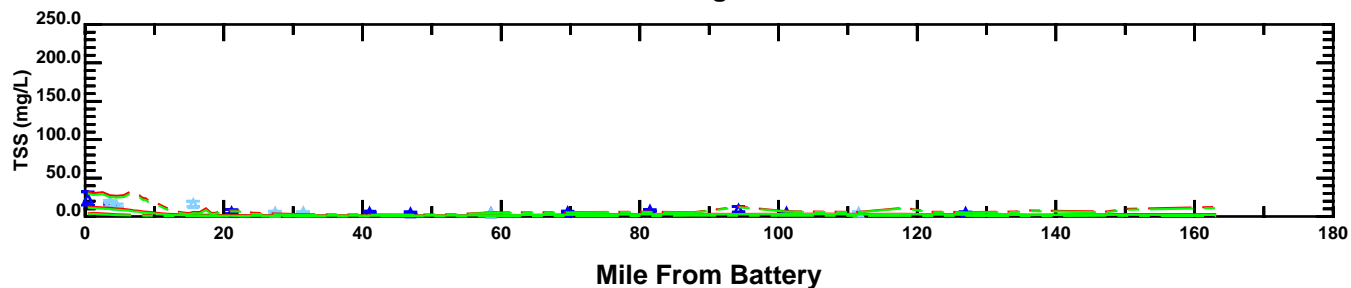
MODEL

—	TSS BOTTOM 30-DAY MEAN
- - -	TSS BOTTOM 30-DAY MAX / MIN
—	COSS BOTTOM 30-DAY MEAN
- - -	COSS BOTTOM 30-DAY MAX / MIN

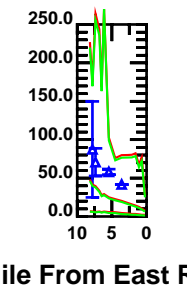
Mile From Mouth Hackensack River

Bottom Layer TSS (mg/L)  
Water Year Starting Oct 1, 1999

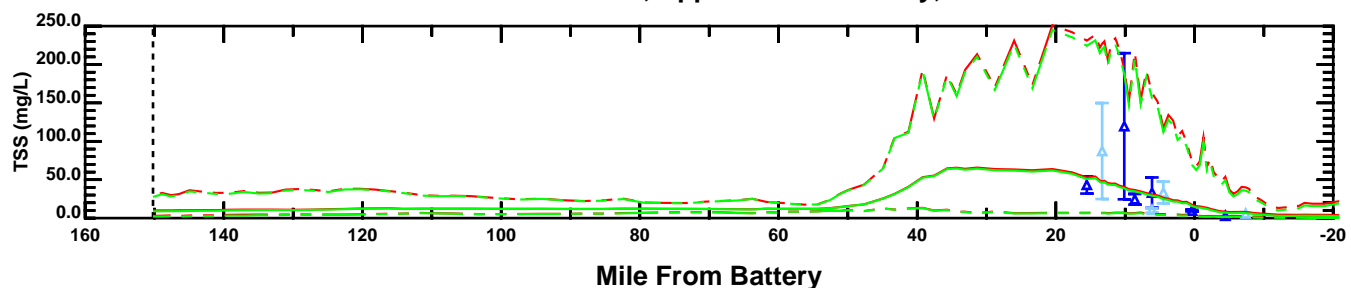
East River and Long Island Sound



Harlem River

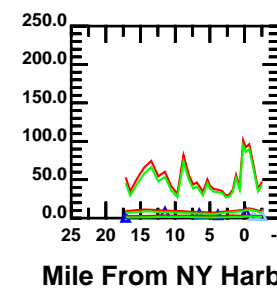


Hudson River, Upper and Lower Bay, Ocean

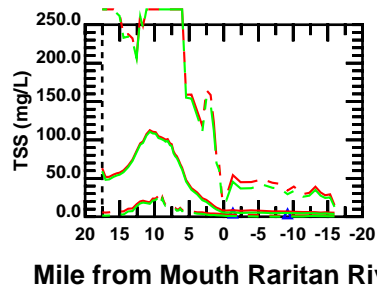


Mile From East River

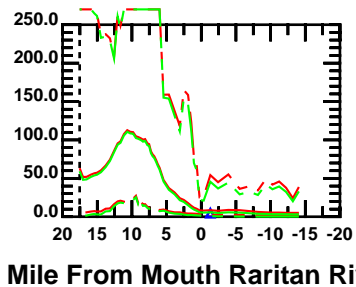
Arthur Kill and Kill Van Kull



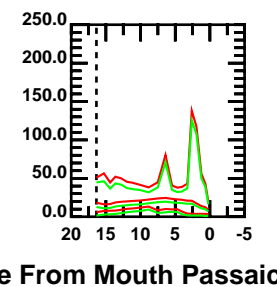
Raritan River and North Shore of Raritan Bay



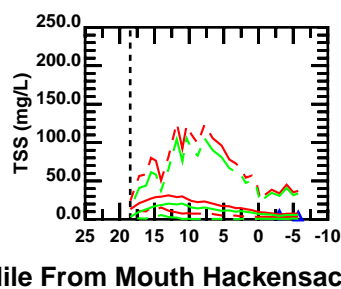
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



November 30 - December 29

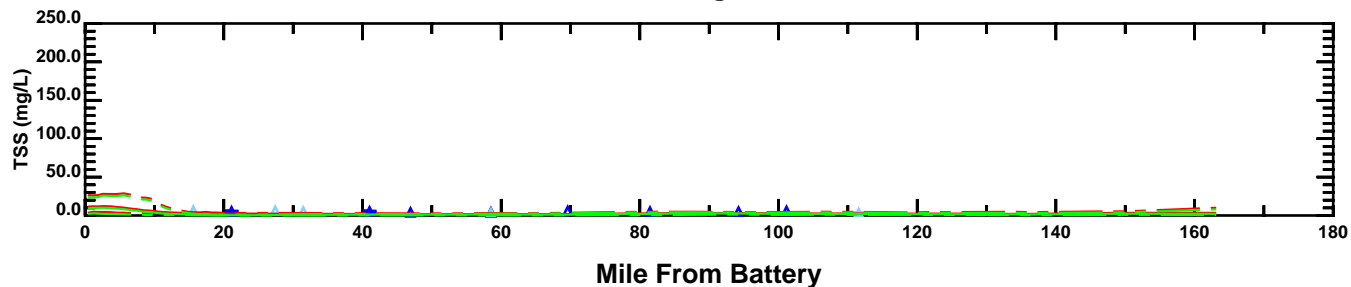
DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

MODEL	
—	TSS 30-DAY MEAN
- - -	TSS 30-DAY MAX / MIN
—	COSS 30-DAY MEAN
- - -	COSS 30-DAY MAX / MIN

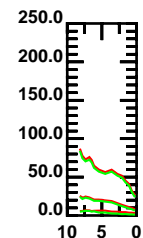
Mile From Mouth Hackensack River

TSS (mg/L) Averaged Over Full Depth  
Water Year Starting Oct 1, 1999

East River and Long Island Sound

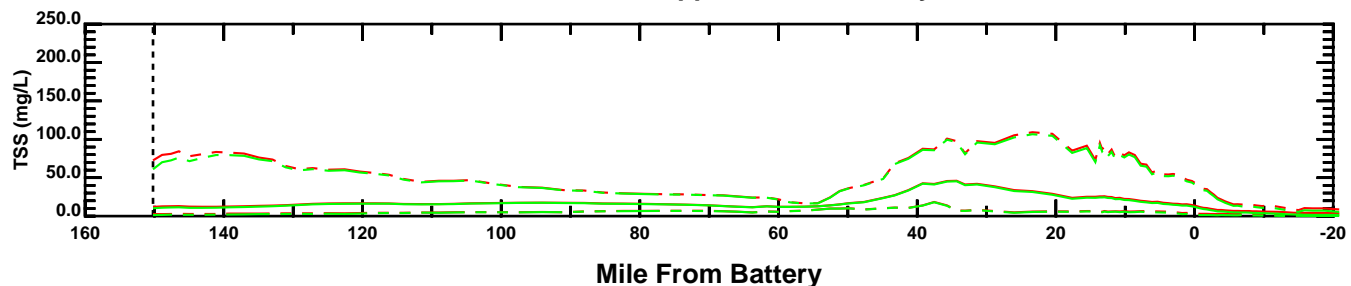


Harlem River

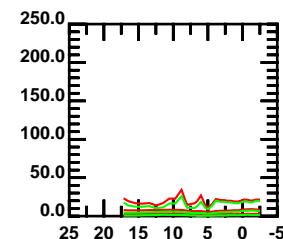


Mile From East River

Hudson River, Upper and Lower Bay, Ocean

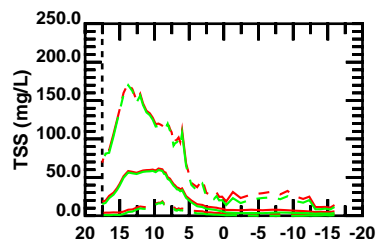


Arthur Kill and Kill Van Kull



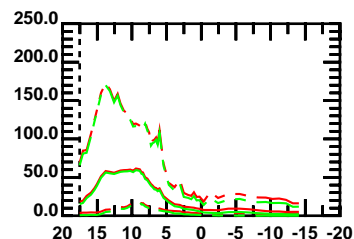
Mile From NY Harbor

Raritan River and North Shore of Raritan Bay



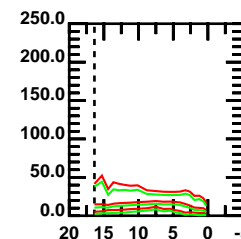
Mile from Mouth Raritan River

Raritan River and South Shore of Raritan Bay



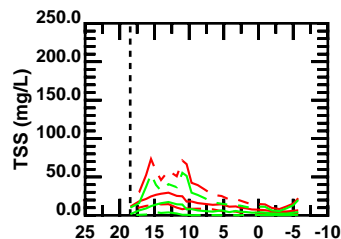
Mile From Mouth Raritan River

Passaic River



Mile From Mouth Passaic River

Hackensack River and Newark Bay



Mile From Mouth Hackensack River

December 30 - January 28

DATA TRANSECT EMBAYMENT

NP ▲ ▲

GFF ▲ ▲

MODEL

— TSS SURFACE 30-DAY MEAN

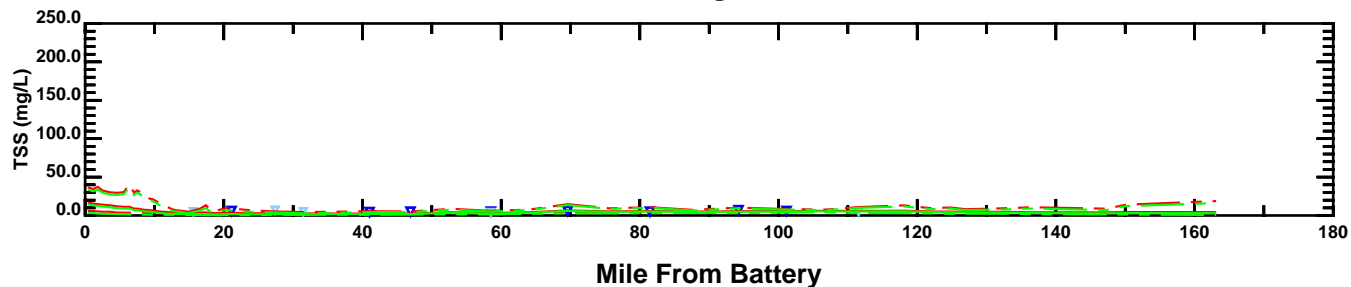
- - - TSS SURFACE 30-DAY MAX / MIN

— COSS SURFACE 30-DAY MEAN

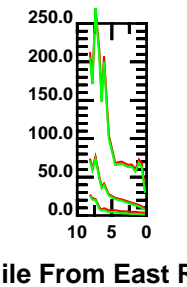
- - - COSS SURFACE 30-DAY MAX / MIN

Surface Layer TSS (mg/L)  
Water Year Starting Oct 1, 1999

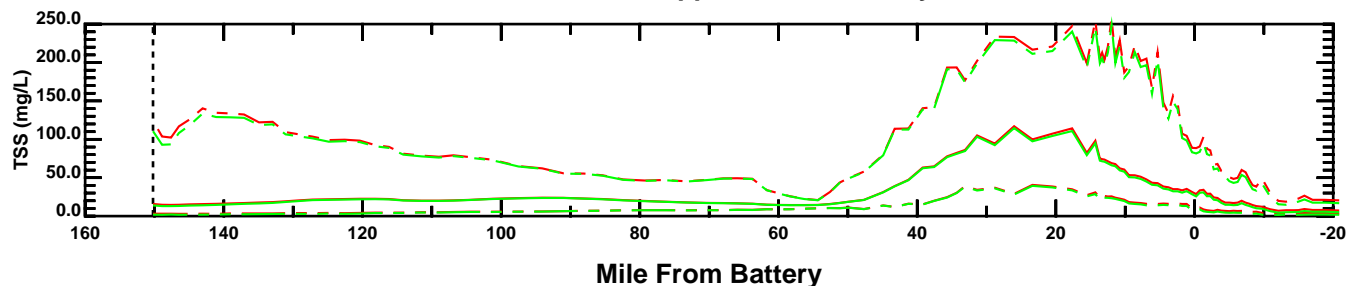
East River and Long Island Sound



Harlem River

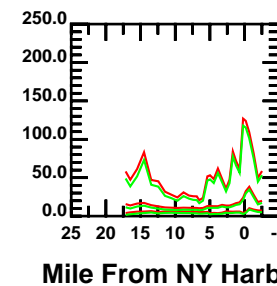


Hudson River, Upper and Lower Bay, Ocean

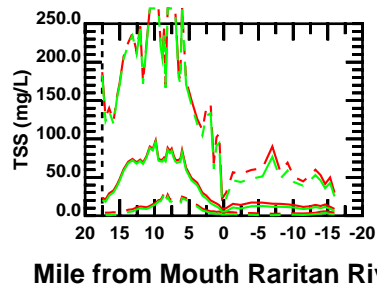


Mile From East River

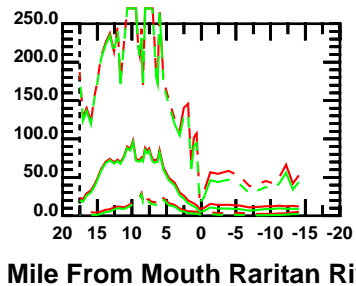
Arthur Kill and Kill Van Kull



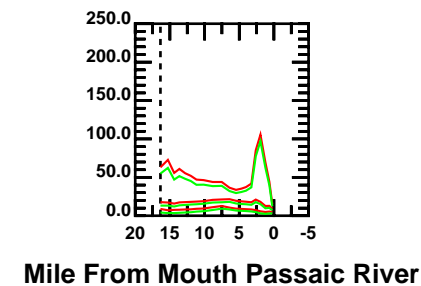
Raritan River and North Shore of Raritan Bay



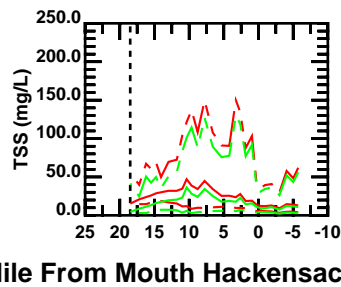
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



December 30 - January 28

DATA	TRANSECT	EMBAYMENT
NP	▼	▽
GFF	▲	▽

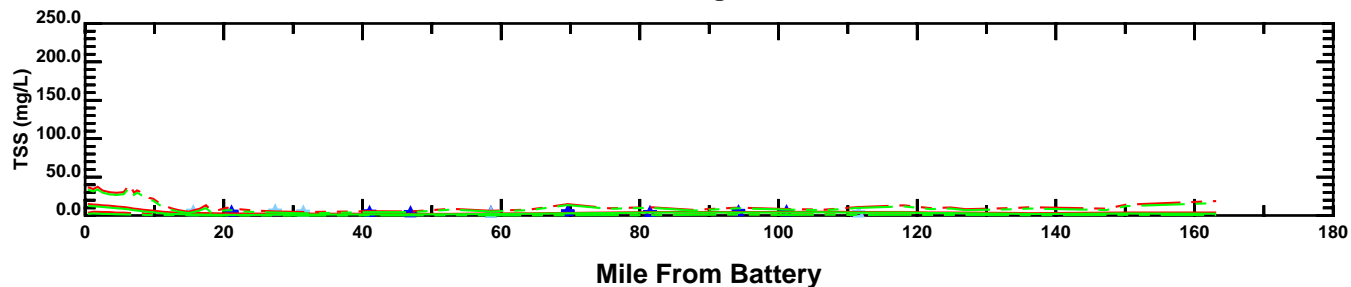
MODEL

—	TSS BOTTOM 30-DAY MEAN
- - -	TSS BOTTOM 30-DAY MAX / MIN
—	COSS BOTTOM 30-DAY MEAN
- - -	COSS BOTTOM 30-DAY MAX / MIN

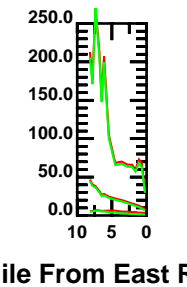
Mile From Mouth Hackensack River

Bottom Layer TSS (mg/L)  
Water Year Starting Oct 1, 1999

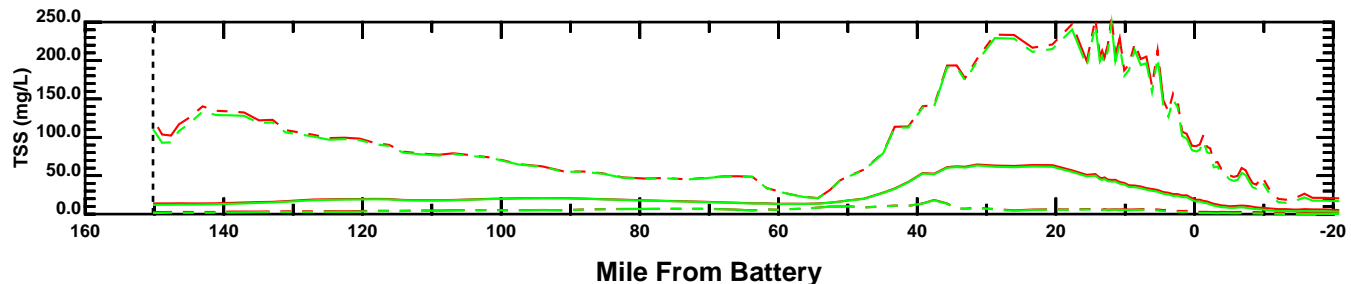
East River and Long Island Sound



Harlem River

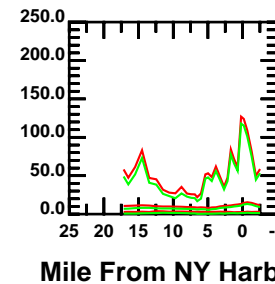


Hudson River, Upper and Lower Bay, Ocean

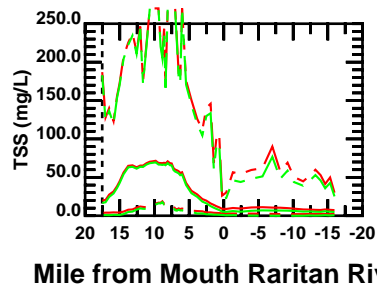


Mile From East River

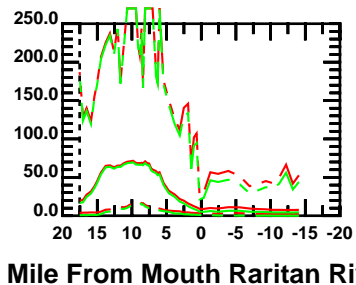
Arthur Kill and Kill Van Kull



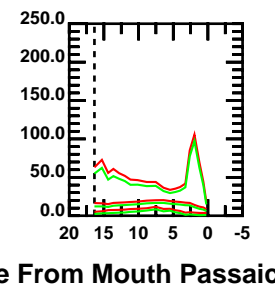
Raritan River and North Shore of Raritan Bay



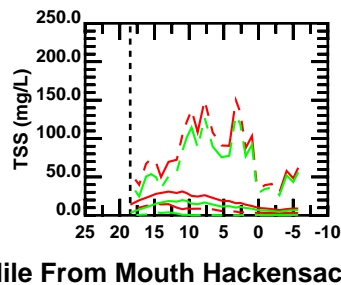
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



December 30 - January 28

DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

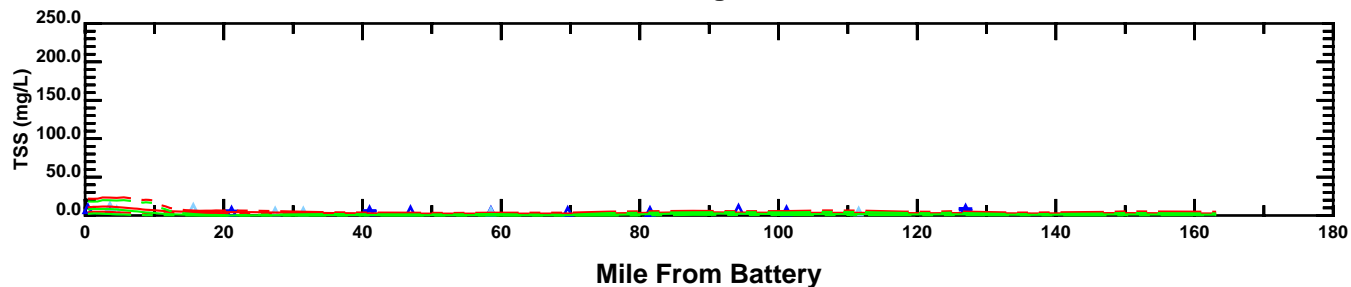
MODEL

—	TSS 30-DAY MEAN
- - -	TSS 30-DAY MAX / MIN
—	COSS 30-DAY MEAN
- - -	COSS 30-DAY MAX / MIN

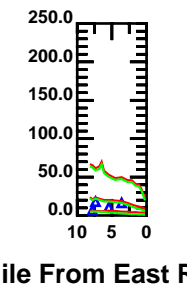
Mile From Mouth Hackensack River

TSS (mg/L) Averaged Over Full Depth  
Water Year Starting Oct 1, 1999

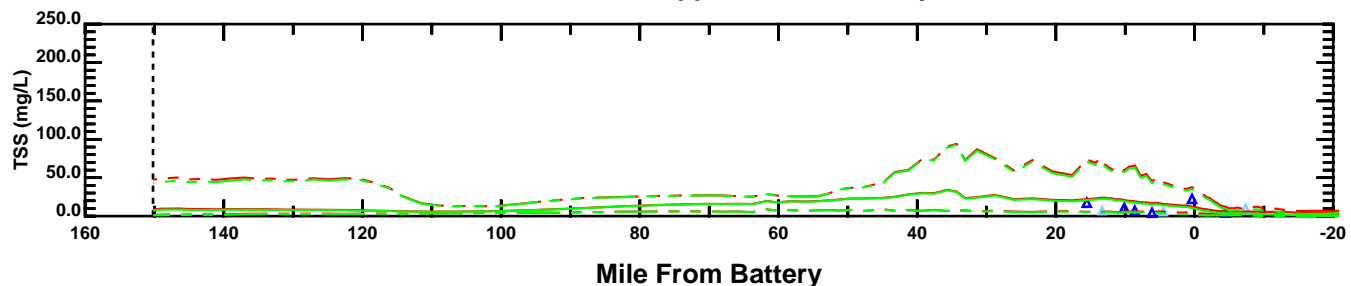
East River and Long Island Sound



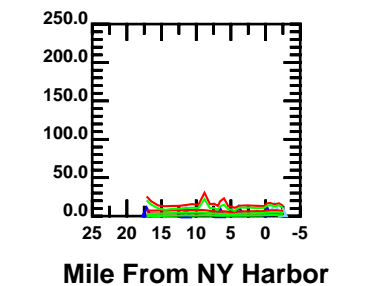
Harlem River



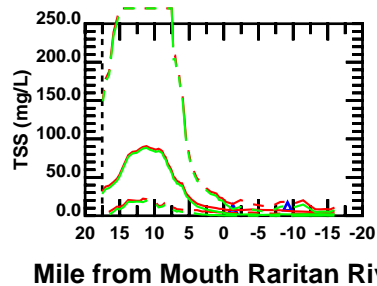
Hudson River, Upper and Lower Bay, Ocean



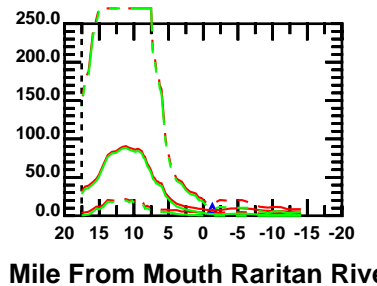
Arthur Kill and Kill Van Kull



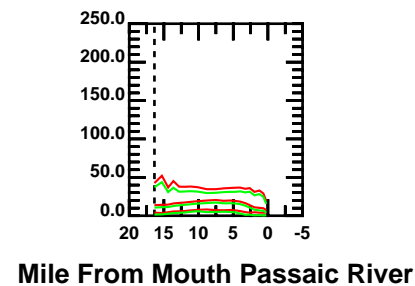
Raritan River and North Shore of Raritan Bay



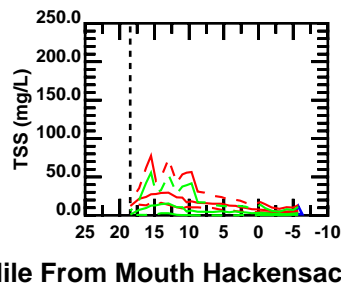
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



January 29 - February 27

DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

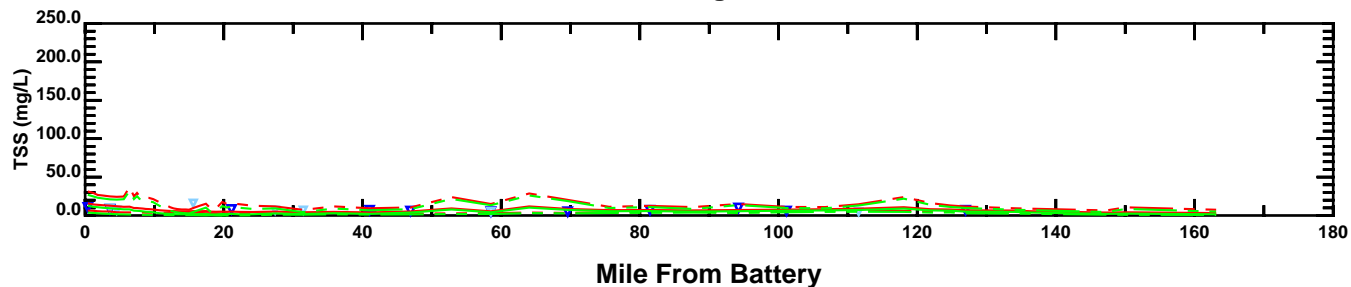
MODEL

—	TSS SURFACE 30-DAY MEAN
- - -	TSS SURFACE 30-DAY MAX / MIN
—	COSS SURFACE 30-DAY MEAN
- - -	COSS SURFACE 30-DAY MAX / MIN

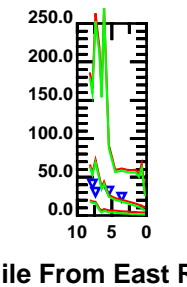
Mile From Mouth Hackensack River

Surface Layer TSS (mg/L)  
Water Year Starting Oct 1, 1999

East River and Long Island Sound

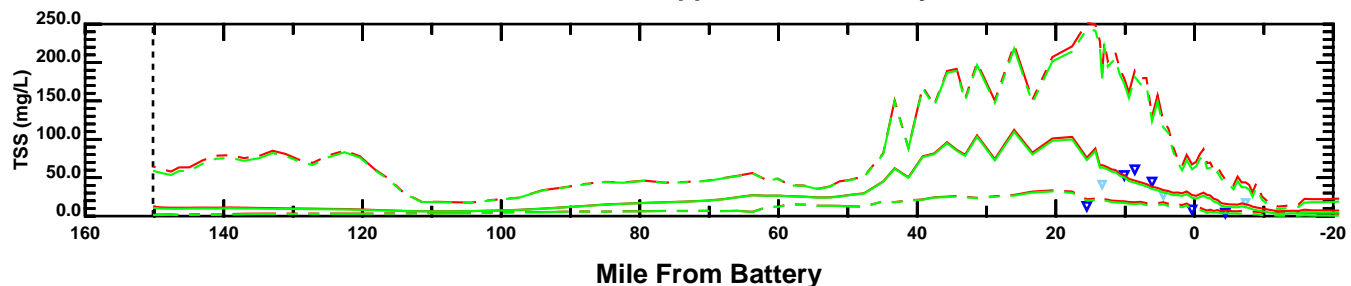


Harlem River

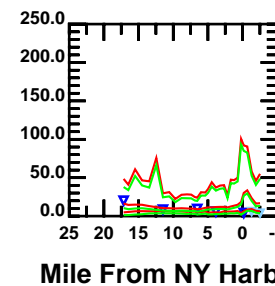


Mile From East River

Hudson River, Upper and Lower Bay, Ocean

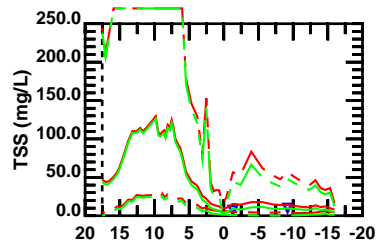


Arthur Kill and Kill Van Kull



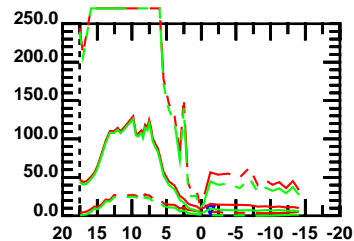
Mile From NY Harbor

Raritan River and North Shore of Raritan Bay



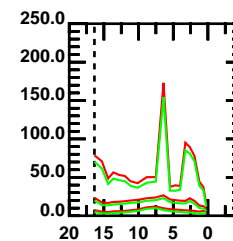
Mile from Mouth Raritan River

Raritan River and South Shore of Raritan Bay



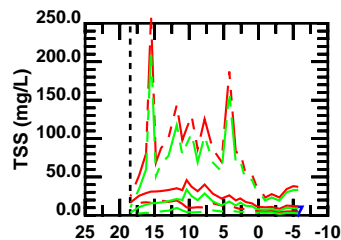
Mile From Mouth Raritan River

Passaic River



Mile From Mouth Passaic River

Hackensack River and Newark Bay



Mile From Mouth Hackensack River

January 29 - February 27

DATA	TRANSECT	EMBAYMENT
NP	▼	▽
GFF	▼	▽

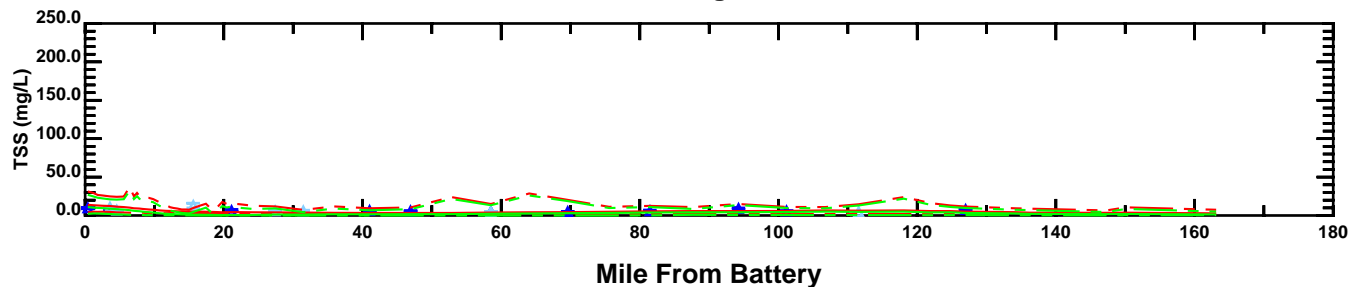
MODEL

—	TSS BOTTOM 30-DAY MEAN
- - -	TSS BOTTOM 30-DAY MAX / MIN
—	COSS BOTTOM 30-DAY MEAN
- - -	COSS BOTTOM 30-DAY MAX / MIN

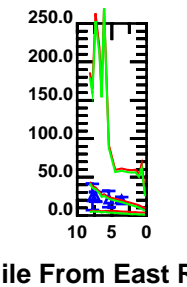
Bottom Layer TSS (mg/L)  
Water Year Starting Oct 1, 1999



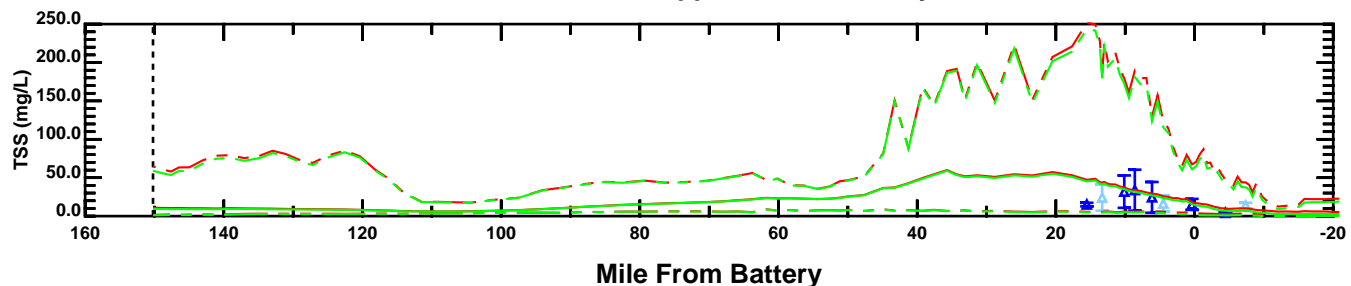
East River and Long Island Sound



Harlem River

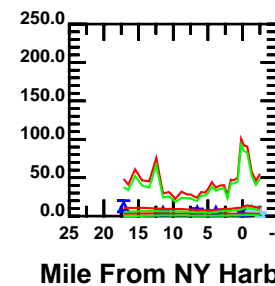


Hudson River, Upper and Lower Bay, Ocean

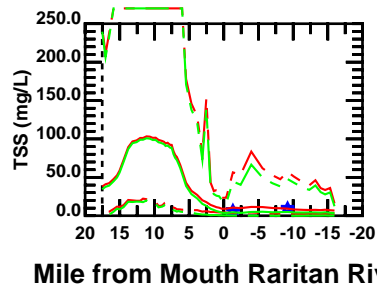


Mile From East River

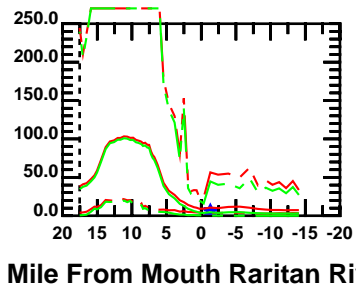
Arthur Kill and Kill Van Kull



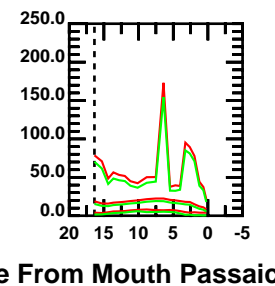
Raritan River and North Shore of Raritan Bay



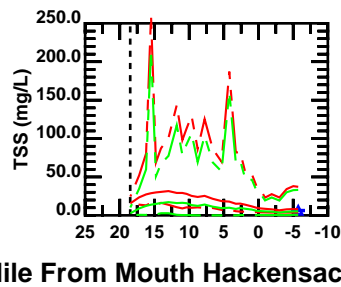
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



January 29 - February 27

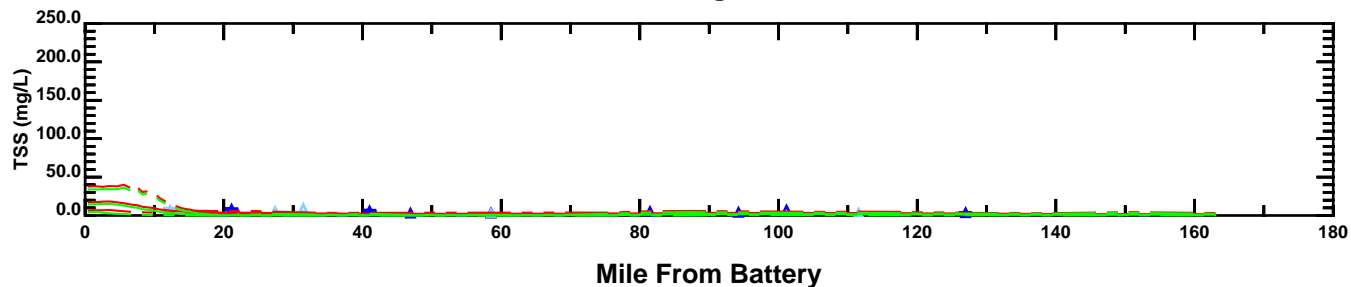
DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

MODEL	
—	TSS 30-DAY MEAN
- - -	TSS 30-DAY MAX / MIN
—	COSS 30-DAY MEAN
- - -	COSS 30-DAY MAX / MIN

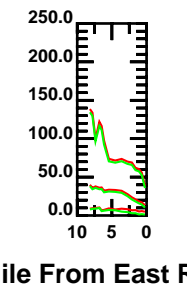
Mile From Mouth Hackensack River

TSS (mg/L) Averaged Over Full Depth  
Water Year Starting Oct 1, 1999

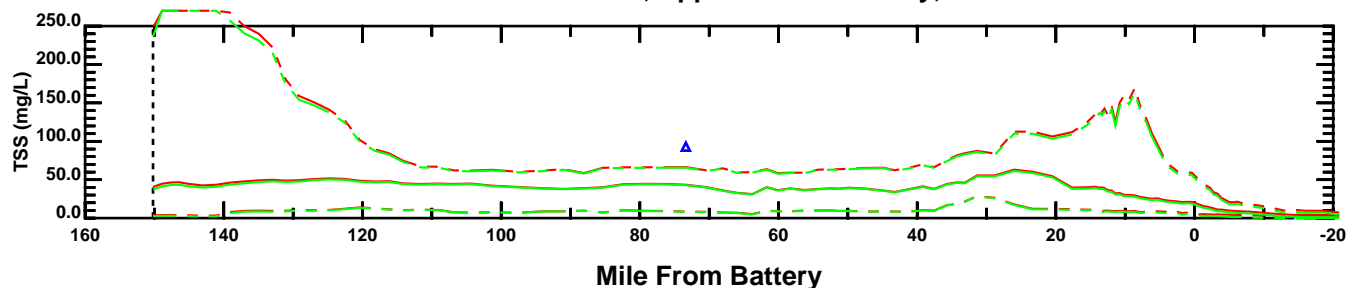
East River and Long Island Sound



Harlem River

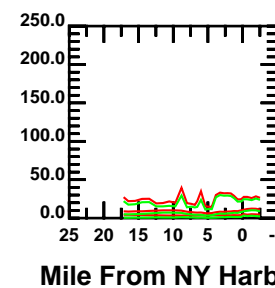


Hudson River, Upper and Lower Bay, Ocean

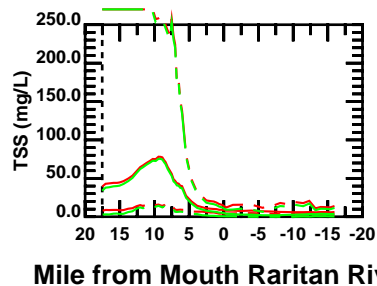


Mile From East River

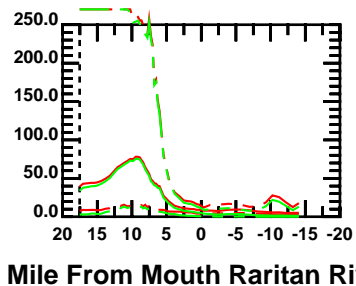
Arthur Kill and Kill Van Kull



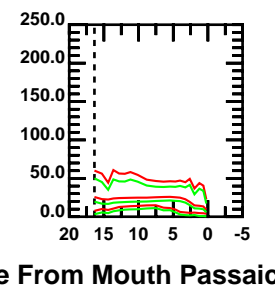
Raritan River and North Shore of Raritan Bay



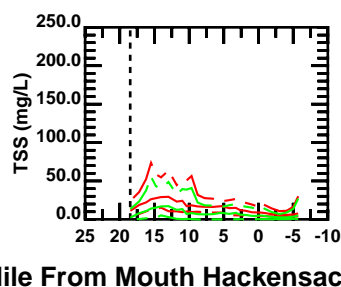
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



February 28 - March 28

DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

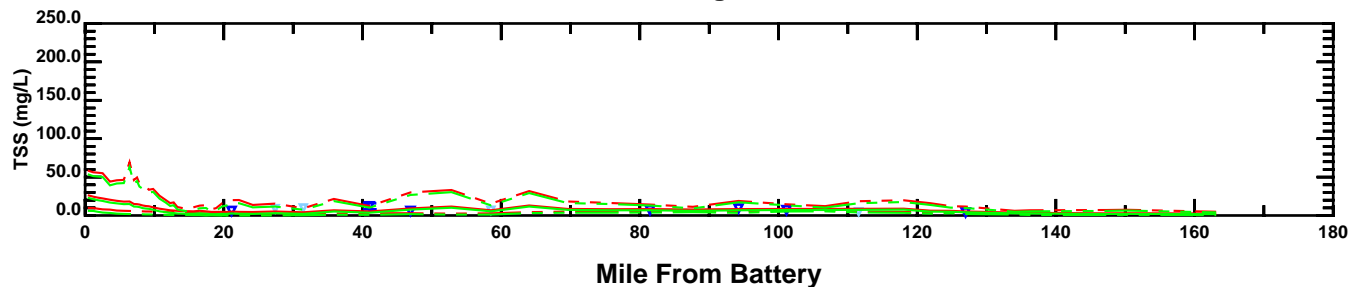
MODEL

—	TSS SURFACE 30-DAY MEAN
- - -	TSS SURFACE 30-DAY MAX / MIN
—	COSS SURFACE 30-DAY MEAN
- - -	COSS SURFACE 30-DAY MAX / MIN

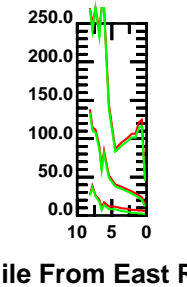
Mile From Mouth Hackensack River

Surface Layer TSS (mg/L)  
Water Year Starting Oct 1, 1999

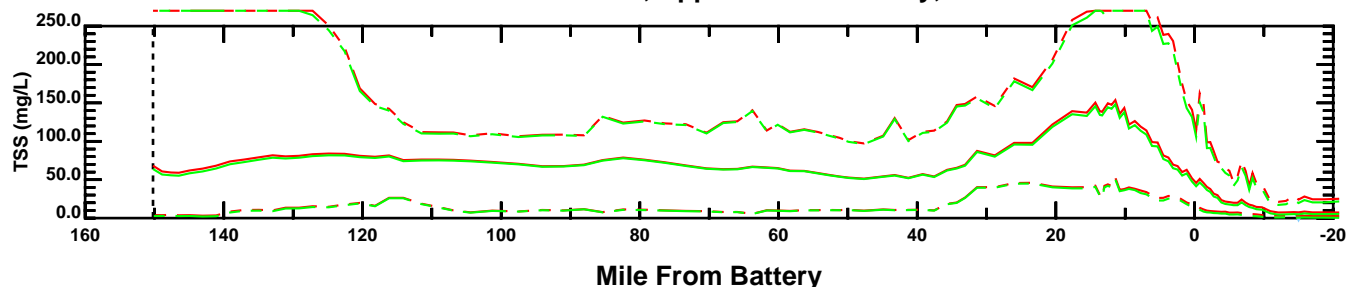
East River and Long Island Sound



Harlem River

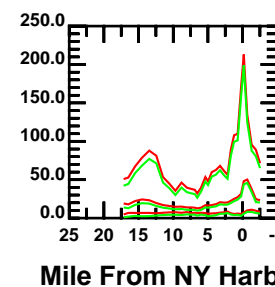


Hudson River, Upper and Lower Bay, Ocean

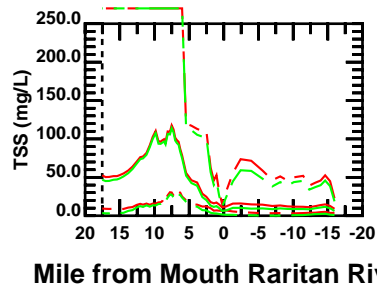


Mile From East River

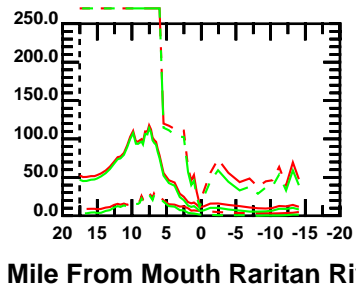
Arthur Kill and Kill Van Kull



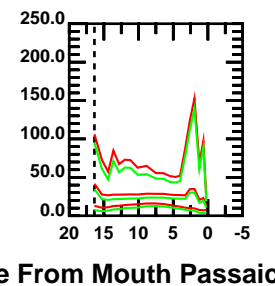
Raritan River and North Shore of Raritan Bay



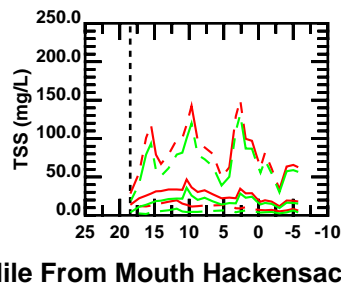
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



February 28 - March 28

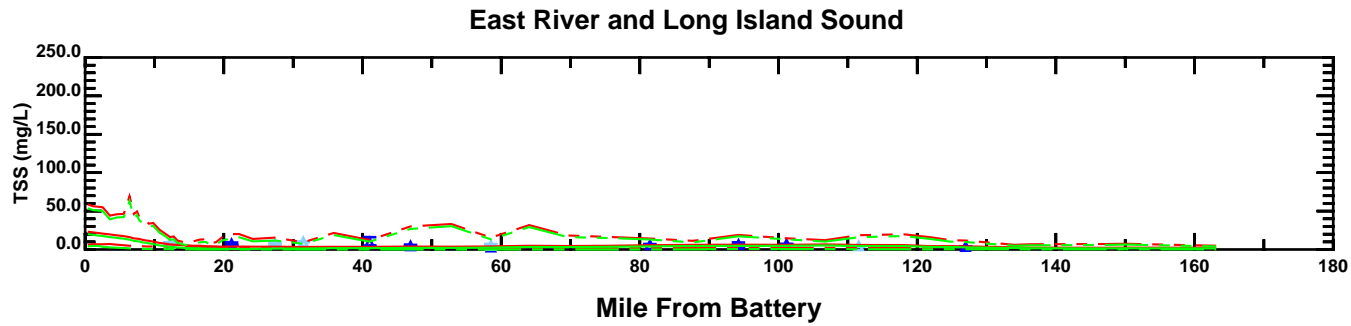
DATA	TRANSECT	EMBAYMENT
NP	▼	▽
GFF	▲	▽

MODEL

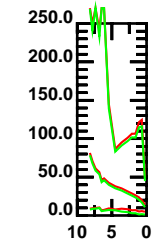
—	TSS BOTTOM 30-DAY MEAN
- - -	TSS BOTTOM 30-DAY MAX / MIN
—	COSS BOTTOM 30-DAY MEAN
- - -	COSS BOTTOM 30-DAY MAX / MIN

Mile From Mouth Hackensack River

Bottom Layer TSS (mg/L)  
Water Year Starting Oct 1, 1999

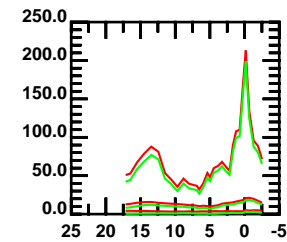


### Harlem River

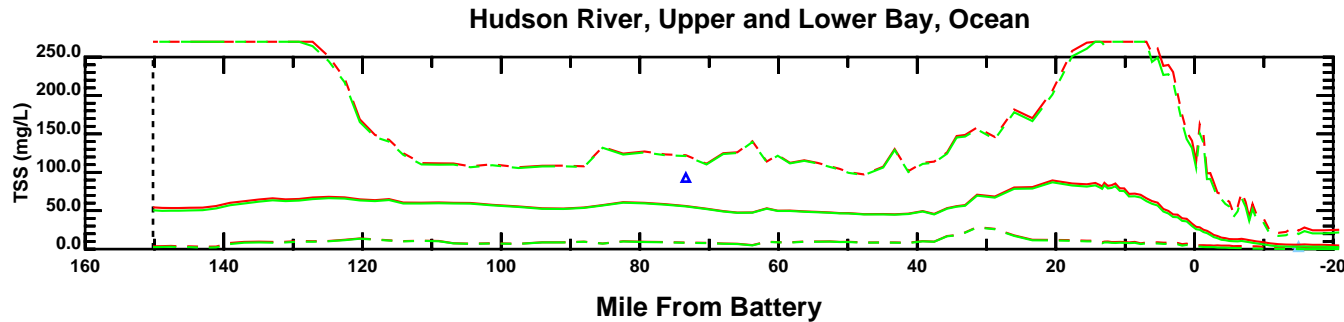


### Arthur Kill and Kill Van Kull

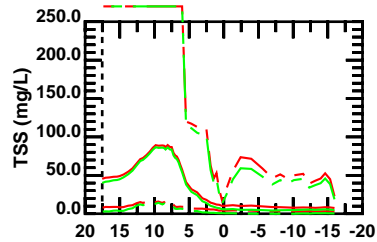
### Arthur Kill and Kill Van Kull



### Mile From NY Harbor

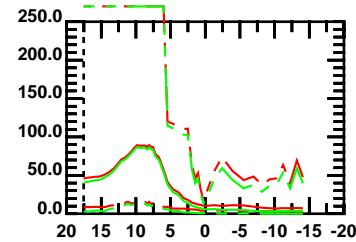


### Raritan River and North Shore of Raritan Bay



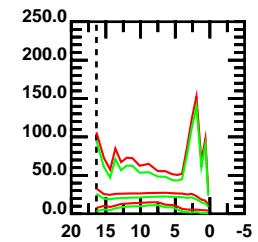
### Mile from Mouth Raritan River

### Raritan River and South Shore of Raritan Bay



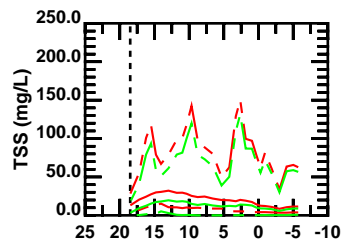
### Mile From Mouth Raritan River

### Passaic River



### Mile From Mouth Passaic River

### Hackensack River and Newark Bay



### Mile From Mouth Hackensack River

February 28 - March 28

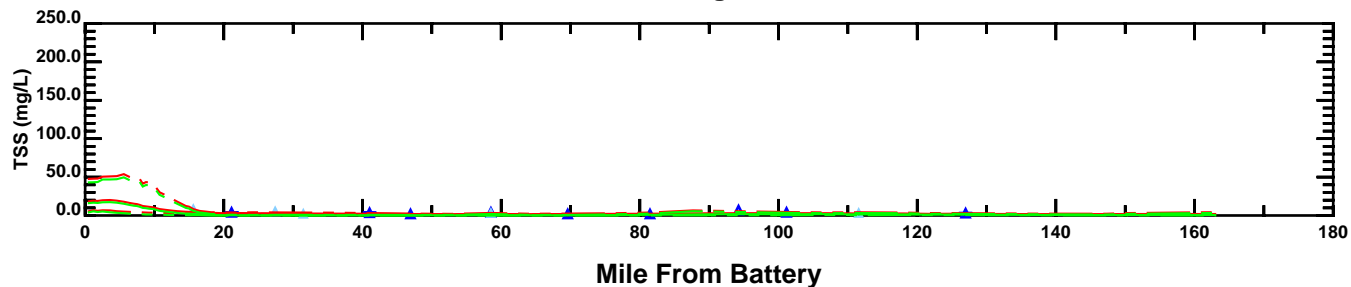
DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

MODEL

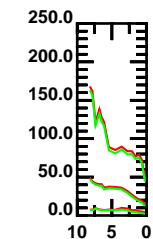
—	TSS 30-DAY MEAN
- - -	TSS 30-DAY MAX / MIN
—	COSS 30-DAY MEAN
- - -	COSS 30-DAY MAX / MIN

**TSS (mg/L) Averaged Over Full Depth  
Water Year Starting Oct 1, 1999**

East River and Long Island Sound

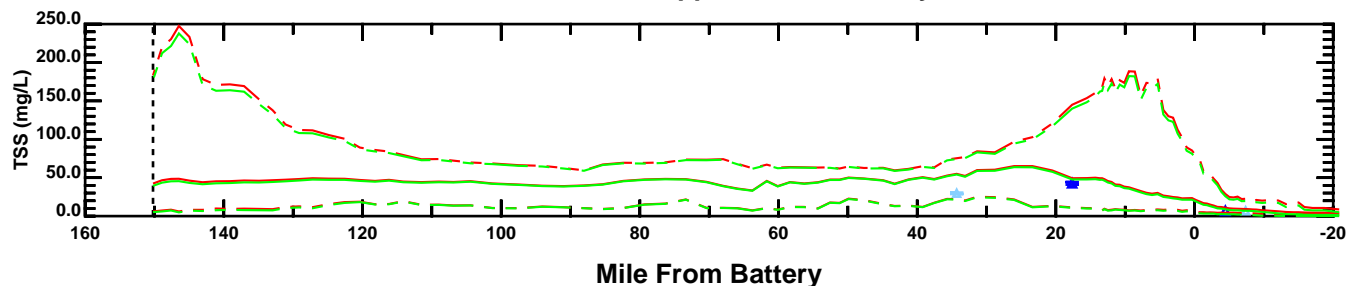


Harlem River

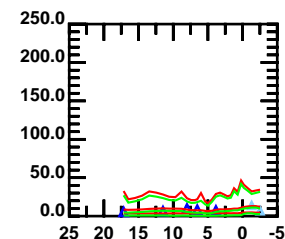


Mile From East River

Hudson River, Upper and Lower Bay, Ocean

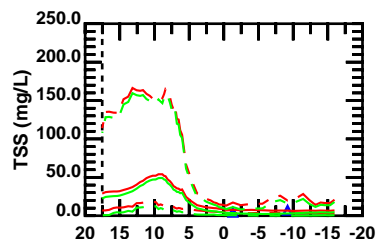


Arthur Kill and Kill Van Kull



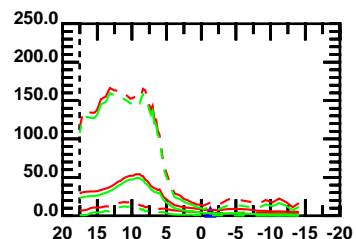
Mile From NY Harbor

Raritan River and North Shore of Raritan Bay



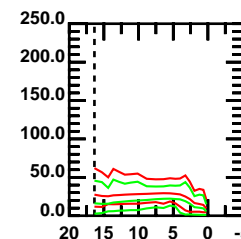
Mile from Mouth Raritan River

Raritan River and South Shore of Raritan Bay



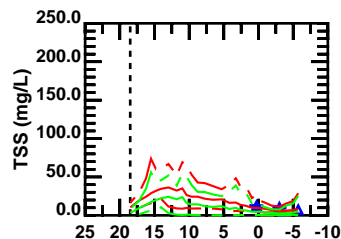
Mile From Mouth Raritan River

Passaic River



Mile From Mouth Passaic River

Hackensack River and Newark Bay



Mile From Mouth Hackensack River

March 29 - April 27

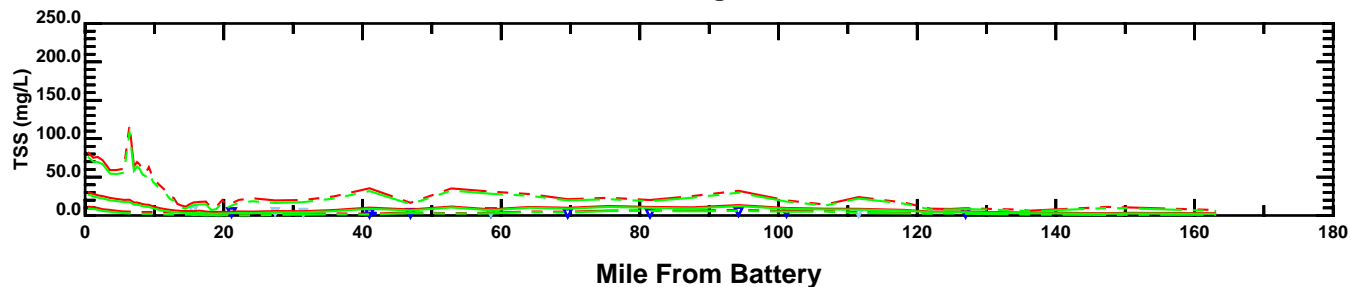
DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

MODEL

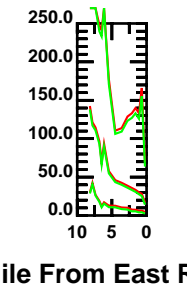
—	TSS SURFACE 30-DAY MEAN
- - -	TSS SURFACE 30-DAY MAX / MIN
—	COSS SURFACE 30-DAY MEAN
- - -	COSS SURFACE 30-DAY MAX / MIN

Surface Layer TSS (mg/L)  
Water Year Starting Oct 1, 1999

East River and Long Island Sound

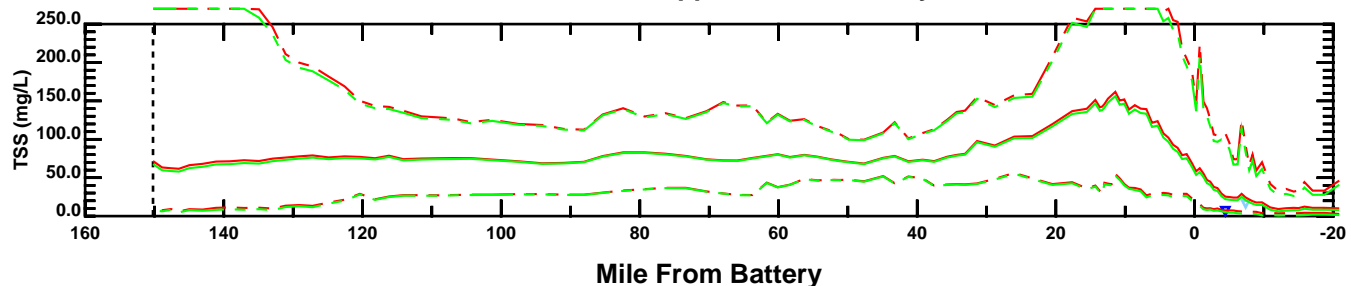


Harlem River

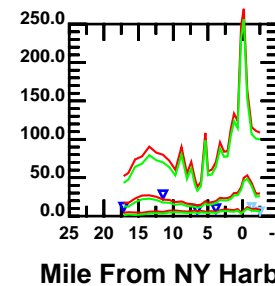


Mile From East River

Hudson River, Upper and Lower Bay, Ocean

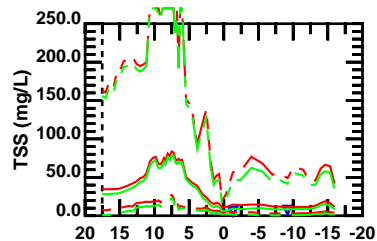


Arthur Kill and Kill Van Kull



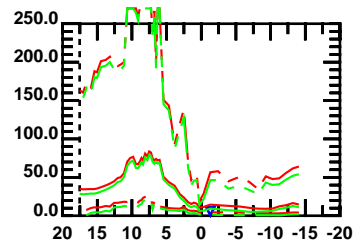
Mile From NY Harbor

Raritan River and North Shore of Raritan Bay



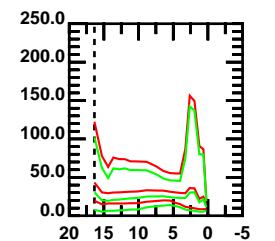
Mile from Mouth Raritan River

Raritan River and South Shore of Raritan Bay



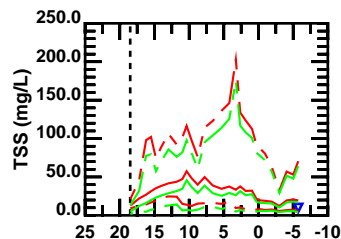
Mile From Mouth Raritan River

Passaic River



Mile From Mouth Passaic River

Hackensack River and Newark Bay



Mile From Mouth Hackensack River

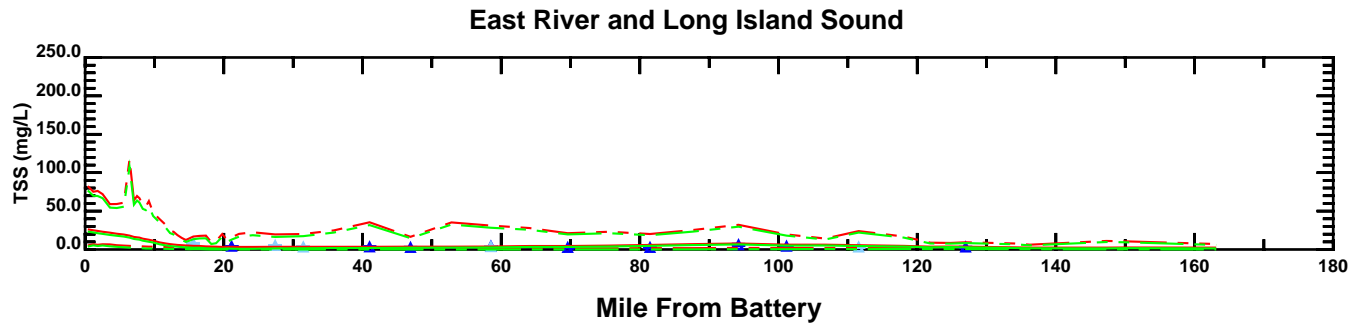
March 29 - April 27

DATA	TRANSECT	EMBAYMENT
NP	▼	▽
GFF	▼	▽

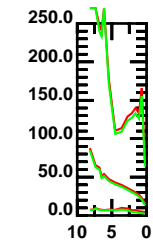
MODEL

—	TSS BOTTOM 30-DAY MEAN
- - -	TSS BOTTOM 30-DAY MAX / MIN
—	COSS BOTTOM 30-DAY MEAN
- - -	COSS BOTTOM 30-DAY MAX / MIN

Bottom Layer TSS (mg/L)  
Water Year Starting Oct 1, 1999

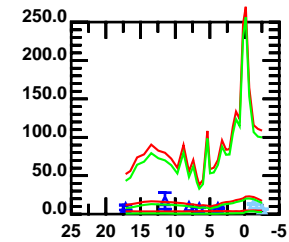


### Harlem River

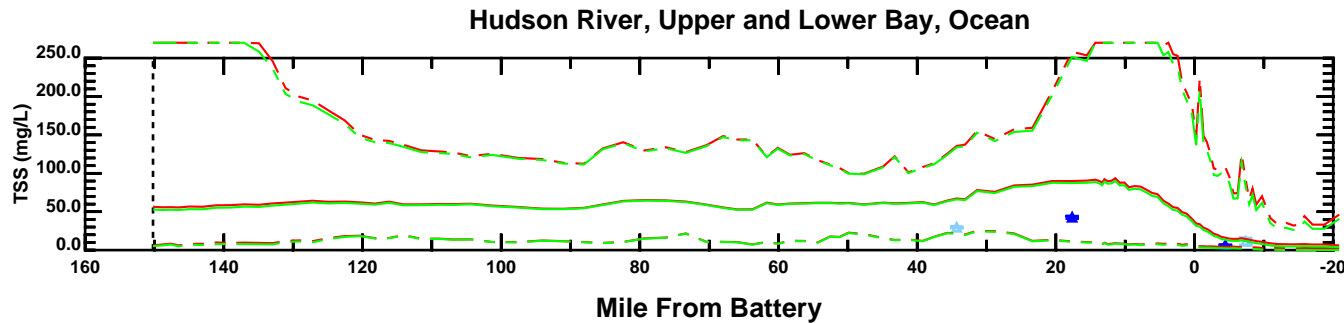


### Arthur Kill and Kill Van Kull

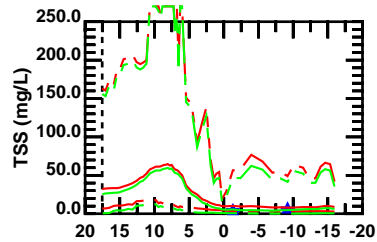
### Arthur Kill and Kill Van Kull



### Mile From NY Harbor

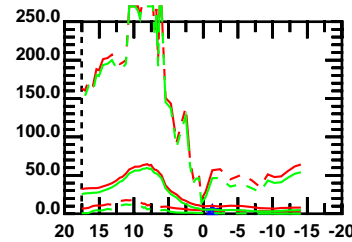


### Raritan River and North Shore of Raritan Bay



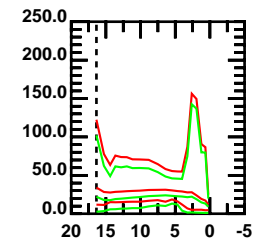
### Mile from Mouth Raritan River

### Raritan River and South Shore of Raritan Bay



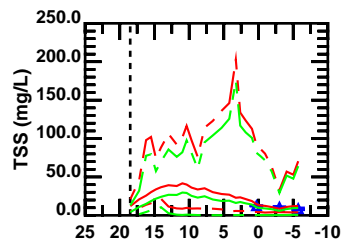
### Mile From Mouth Raritan River

### Passaic River



### Mile From Mouth Passaic River

### Hackensack River and Newark Bay



### Mile From Mouth Hackensack River

March 29 - April 27

DATA    TRANSECT    EMBAYMENT

NP            ▲                    △

GFF          ▲                    △

MODEL

— TSS 30-DAY MEAN

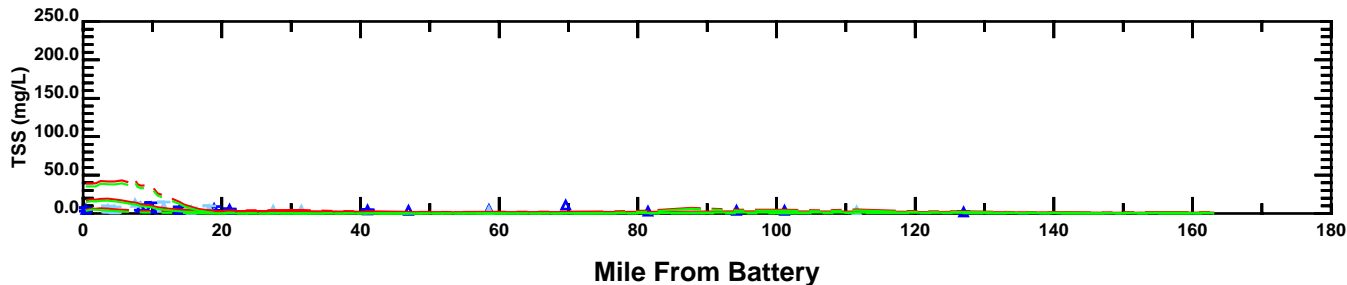
- - - TSS 30-DAY MAX / MIN

— COSS 30-DAY MEAN

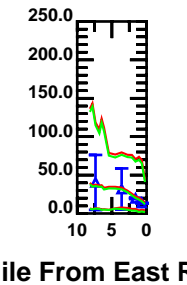
- - - COSS 30-DAY MAX / MIN

**TSS (mg/L) Averaged Over Full Depth  
Water Year Starting Oct 1, 1999**

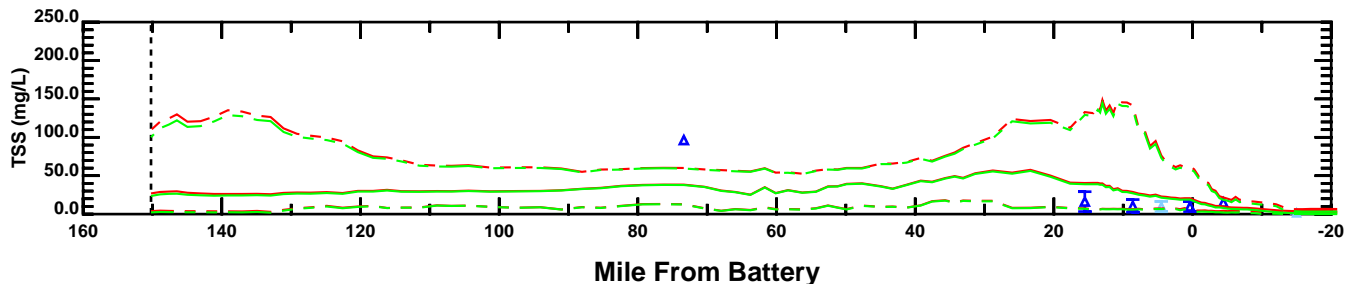
East River and Long Island Sound



Harlem River

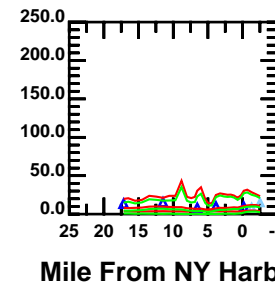


Hudson River, Upper and Lower Bay, Ocean

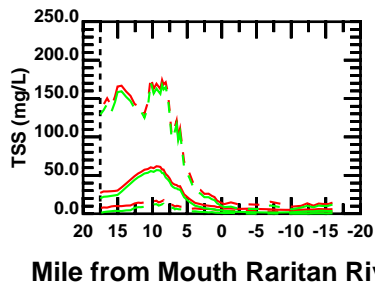


Mile From East River

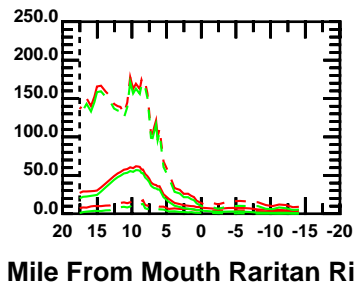
Arthur Kill and Kill Van Kull



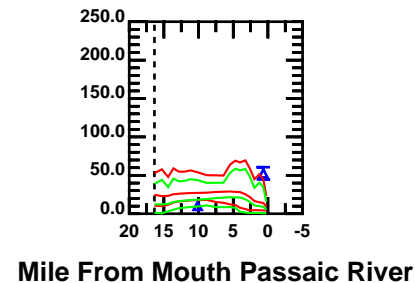
Raritan River and North Shore of Raritan Bay



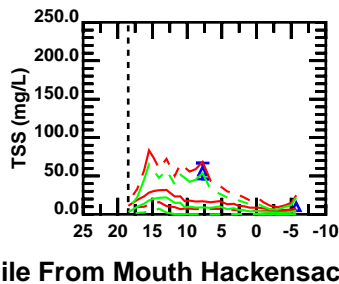
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



April 28 - May 27

DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

MODEL

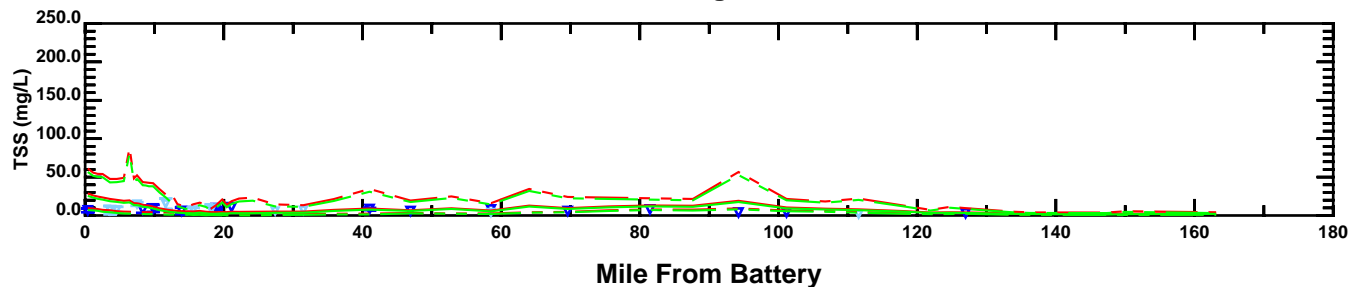
—	TSS SURFACE 30-DAY MEAN
- - -	TSS SURFACE 30-DAY MAX / MIN
—	COSS SURFACE 30-DAY MEAN
- - -	COSS SURFACE 30-DAY MAX / MIN

Mile From Mouth Hackensack River

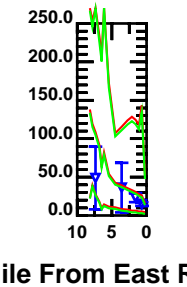
Surface Layer TSS (mg/L)  
Water Year Starting Oct 1, 1999



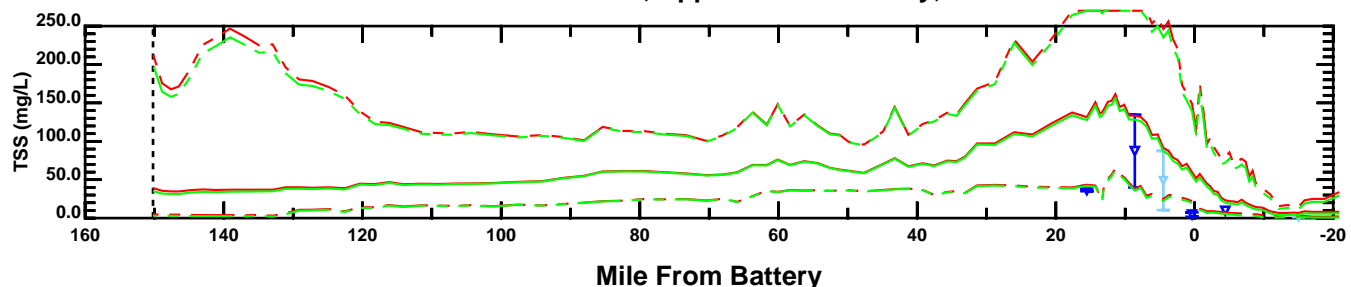
East River and Long Island Sound



Harlem River

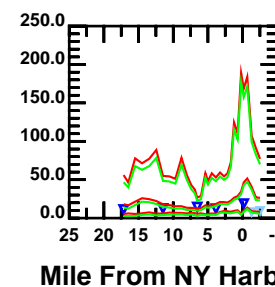


Hudson River, Upper and Lower Bay, Ocean

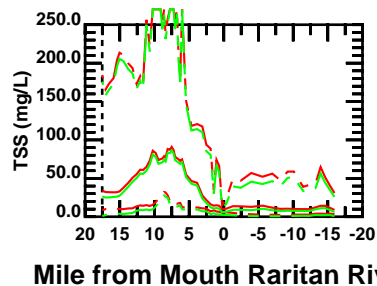


Mile From East River

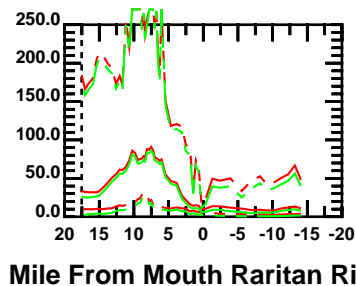
Arthur Kill and Kill Van Kull



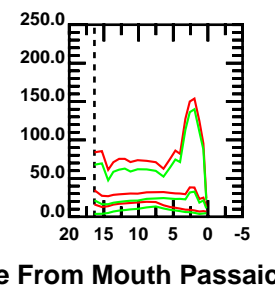
Raritan River and North Shore of Raritan Bay



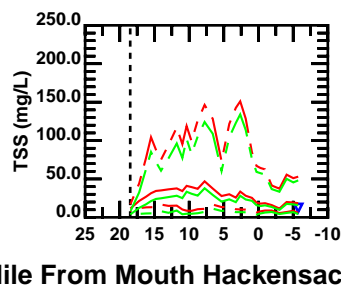
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



April 28 - May 27

DATA	TRANSECT	EMBAYMENT
NP	▼	▽
GFF	▲	▽

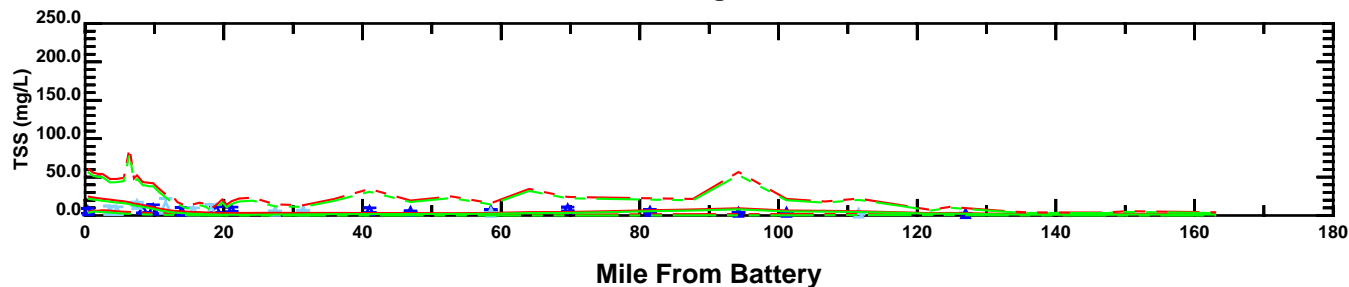
MODEL

—	TSS BOTTOM 30-DAY MEAN
- - -	TSS BOTTOM 30-DAY MAX / MIN
—	COSS BOTTOM 30-DAY MEAN
- - -	COSS BOTTOM 30-DAY MAX / MIN

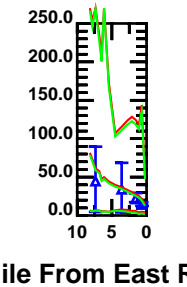
Mile From Mouth Hackensack River

Bottom Layer TSS (mg/L)  
Water Year Starting Oct 1, 1999

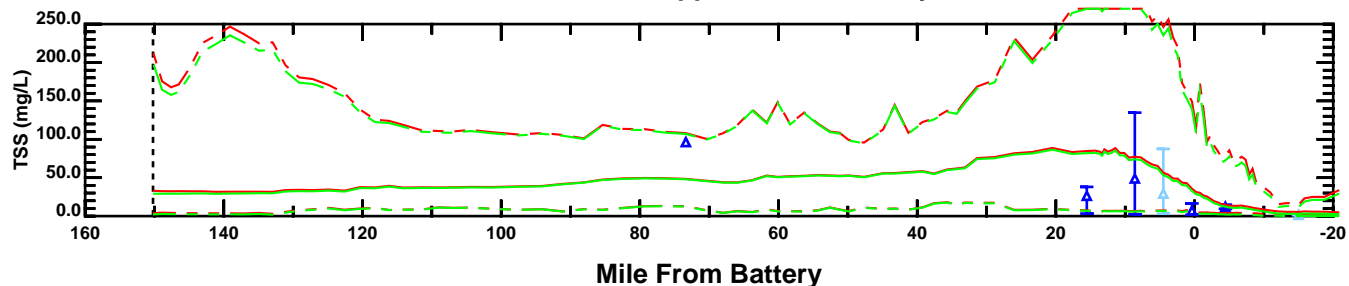
East River and Long Island Sound



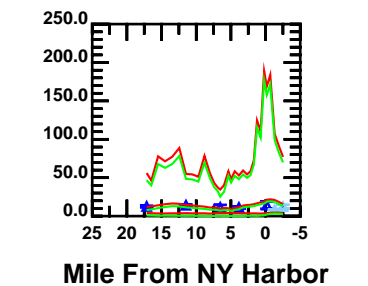
Harlem River



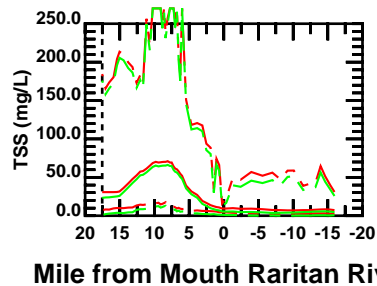
Hudson River, Upper and Lower Bay, Ocean



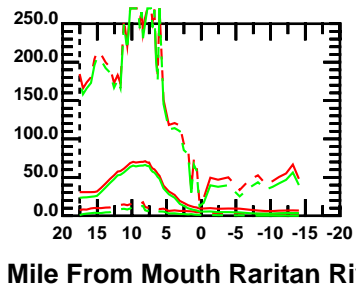
Arthur Kill and Kill Van Kull



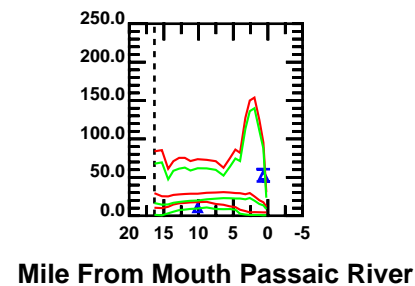
Raritan River and North Shore of Raritan Bay



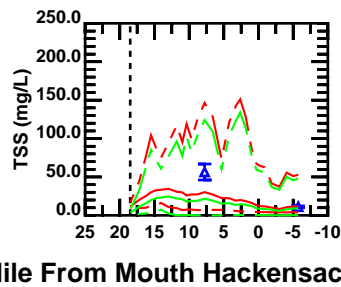
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



April 28 - May 27

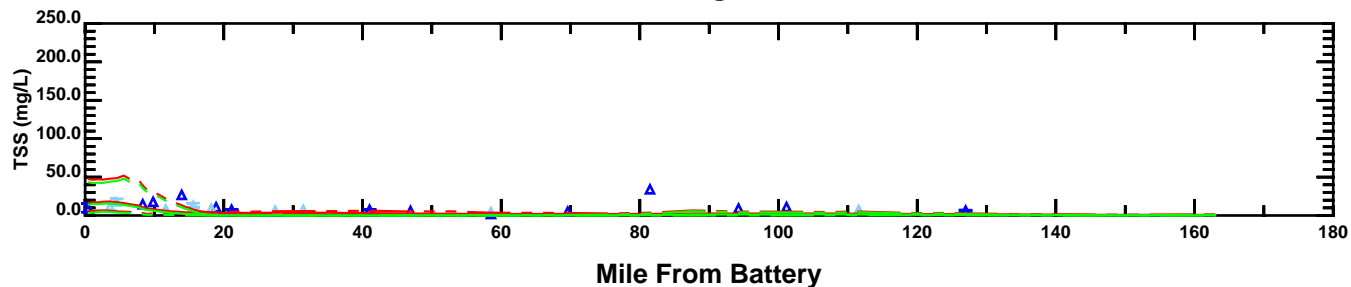
DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

MODEL	
—	TSS 30-DAY MEAN
- - -	TSS 30-DAY MAX / MIN
—	COSS 30-DAY MEAN
- - -	COSS 30-DAY MAX / MIN

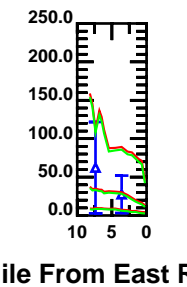
Mile From Mouth Hackensack River

TSS (mg/L) Averaged Over Full Depth  
Water Year Starting Oct 1, 1999

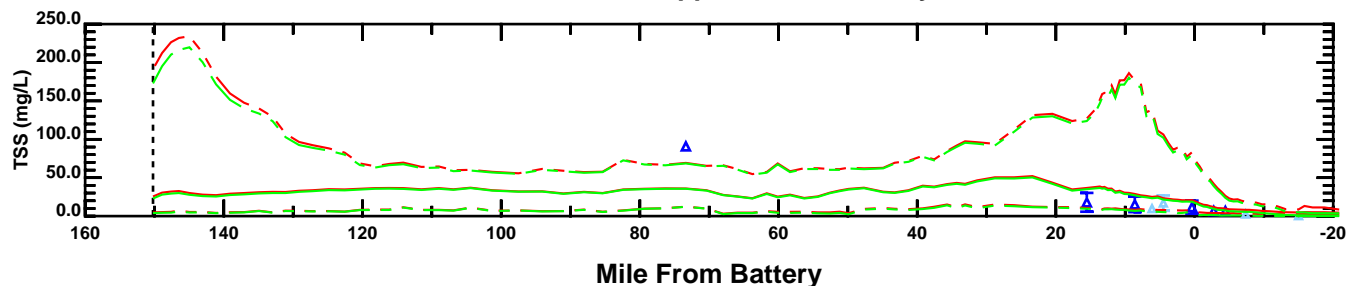
East River and Long Island Sound



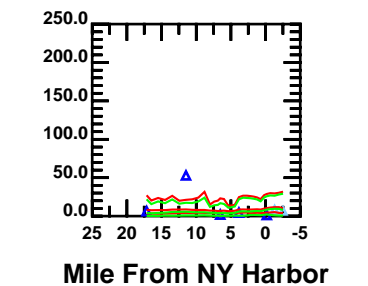
Harlem River



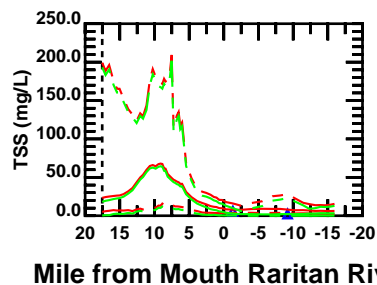
Hudson River, Upper and Lower Bay, Ocean



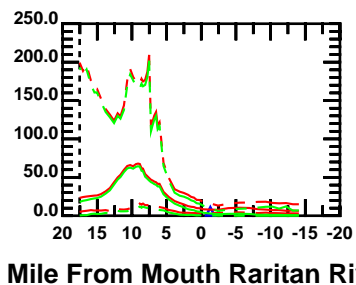
Arthur Kill and Kill Van Kull



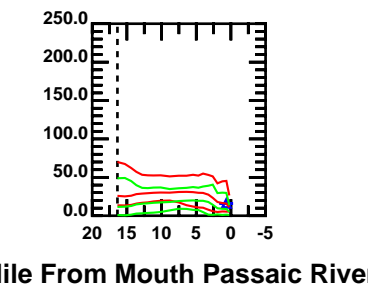
Raritan River and North Shore of Raritan Bay



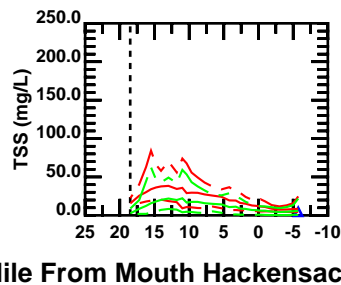
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



May 28 - June 26

DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

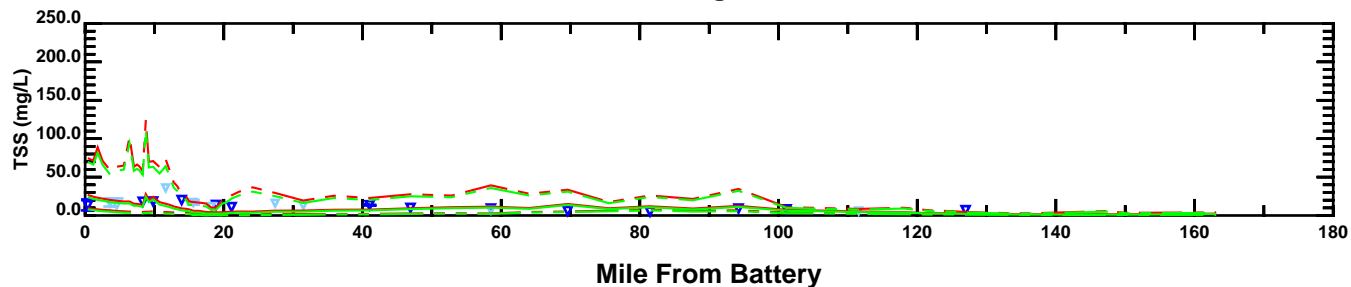
MODEL

—	TSS SURFACE 30-DAY MEAN
- - -	TSS SURFACE 30-DAY MAX / MIN
—	COSS SURFACE 30-DAY MEAN
- - -	COSS SURFACE 30-DAY MAX / MIN

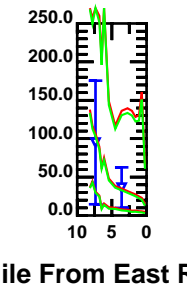
Mile From Mouth Hackensack River

Surface Layer TSS (mg/L)  
Water Year Starting Oct 1, 1999

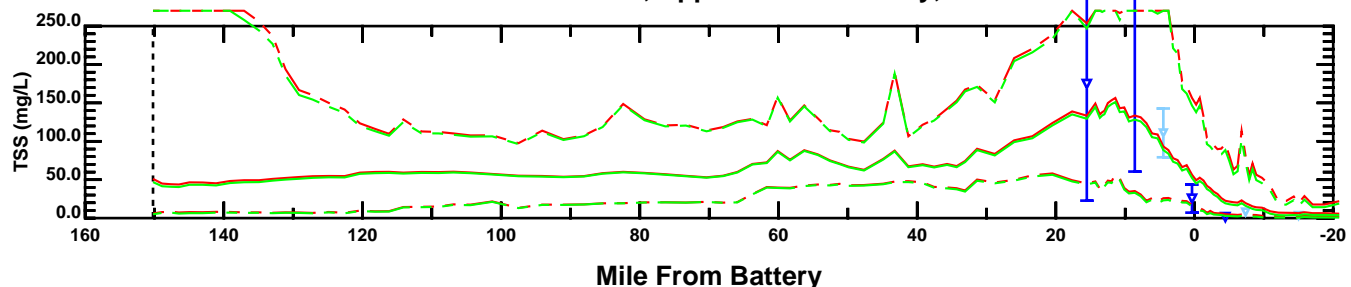
East River and Long Island Sound



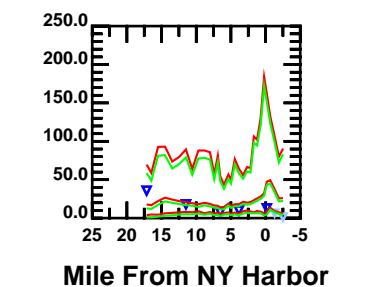
Harlem River



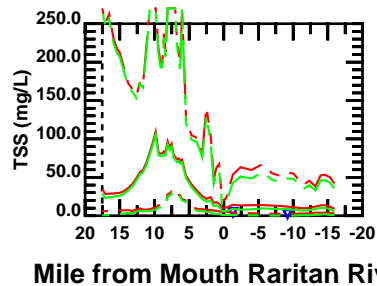
Hudson River, Upper and Lower Bay, Ocean



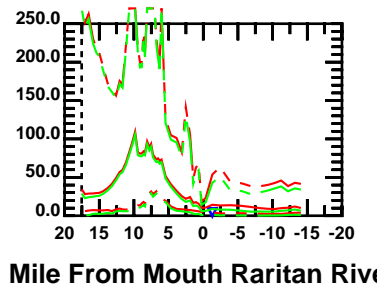
Arthur Kill and Kill Van Kull



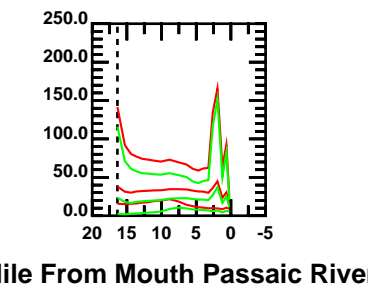
Raritan River and North Shore of Raritan Bay



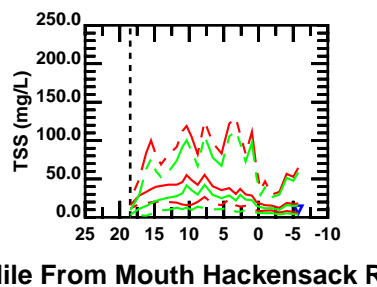
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



May 28 - June 26

DATA	TRANSECT	EMBAYMENT
NP	▼	▽
GFF	▲	▽

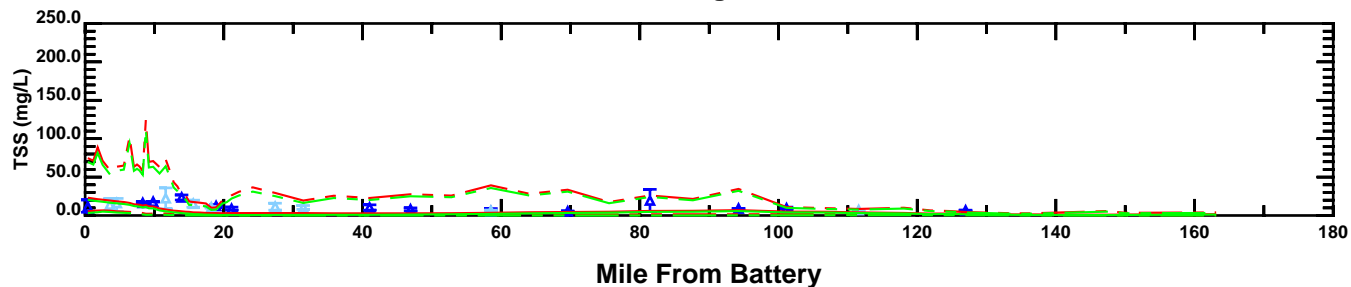
MODEL

—	TSS BOTTOM 30-DAY MEAN
- - -	TSS BOTTOM 30-DAY MAX / MIN
—	COSS BOTTOM 30-DAY MEAN
- - -	COSS BOTTOM 30-DAY MAX / MIN

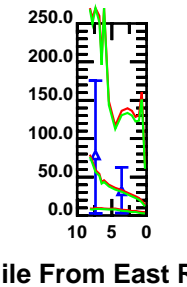
Mile From Mouth Hackensack River

Bottom Layer TSS (mg/L)  
Water Year Starting Oct 1, 1999

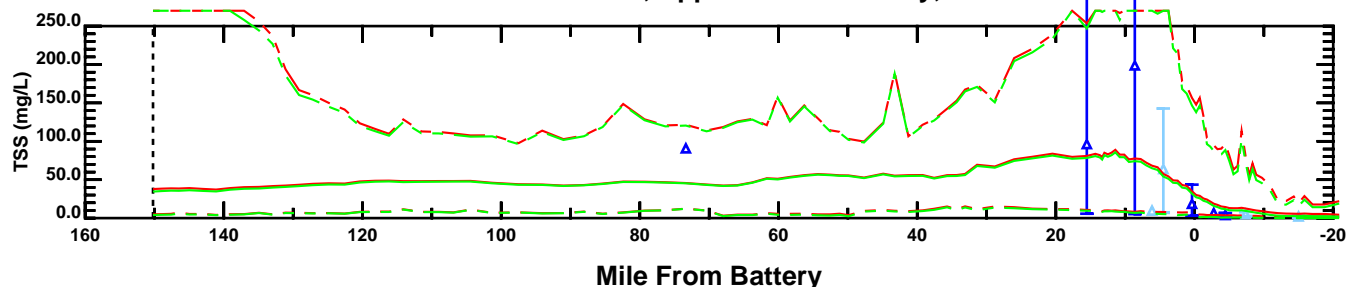
East River and Long Island Sound



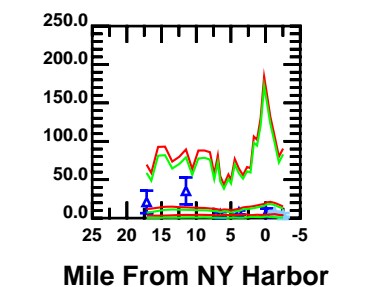
Harlem River



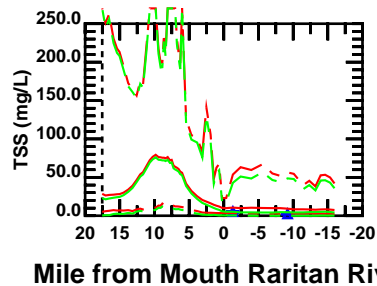
Hudson River, Upper and Lower Bay, Ocean



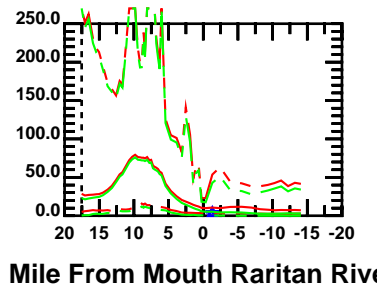
Arthur Kill and Kill Van Kull



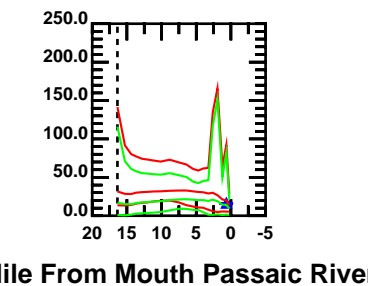
Raritan River and North Shore of Raritan Bay



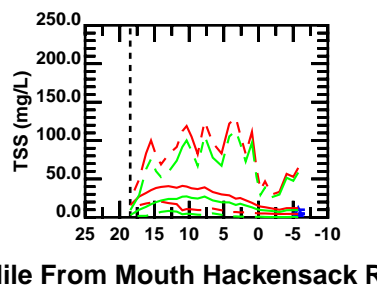
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



May 28 - June 26

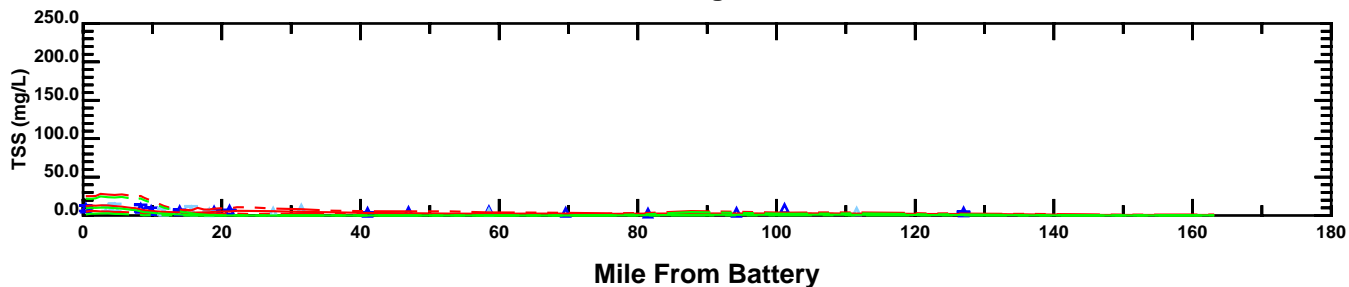
DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

MODEL	
—	TSS 30-DAY MEAN
- - -	TSS 30-DAY MAX / MIN
—	COSS 30-DAY MEAN
- - -	COSS 30-DAY MAX / MIN

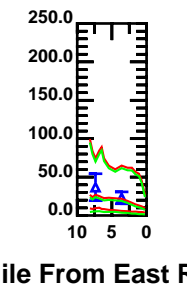
Mile From Mouth Hackensack River

TSS (mg/L) Averaged Over Full Depth  
Water Year Starting Oct 1, 1999

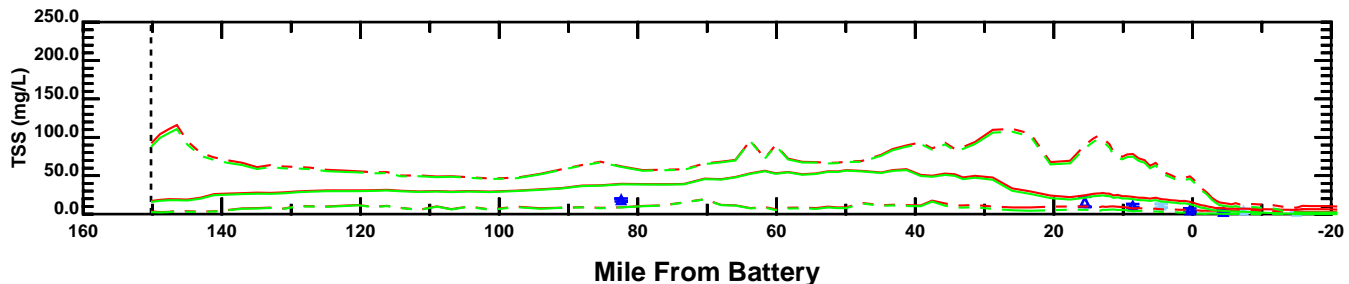
East River and Long Island Sound



Harlem River

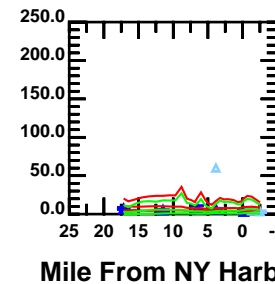


Hudson River, Upper and Lower Bay, Ocean

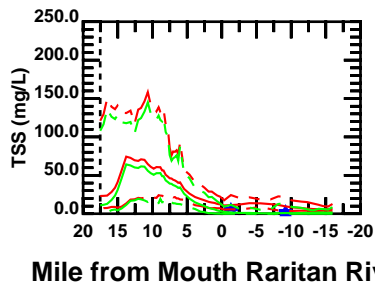


Mile From East River

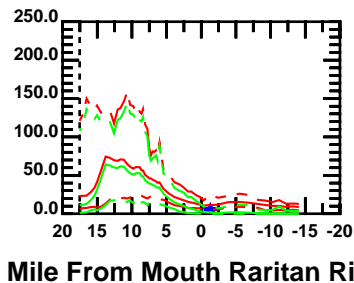
Arthur Kill and Kill Van Kull



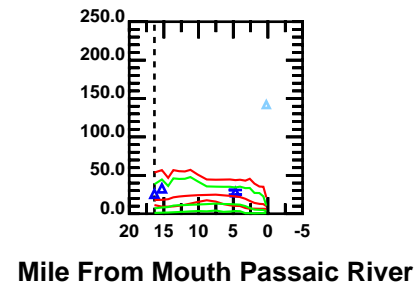
Raritan River and North Shore of Raritan Bay



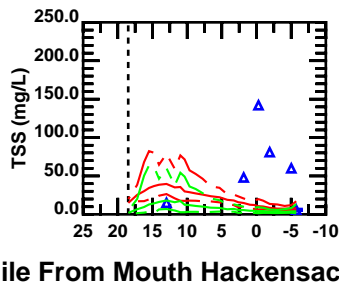
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



June 27 - July 26

DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

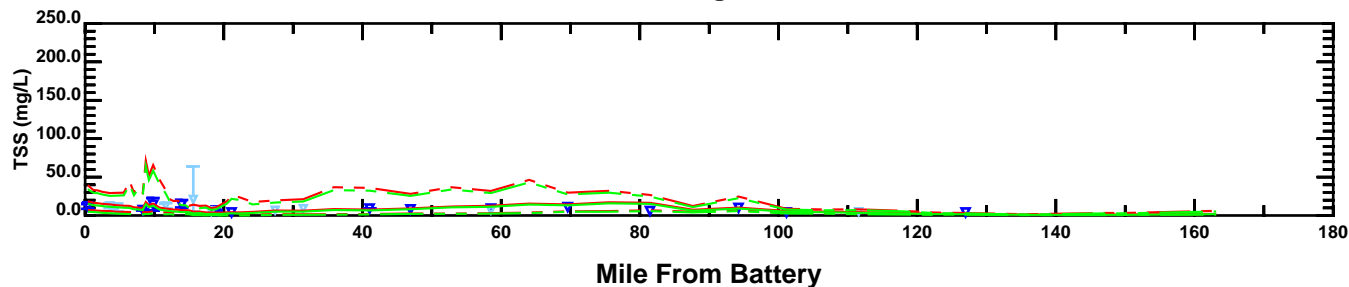
MODEL

—	TSS SURFACE 30-DAY MEAN
- - -	TSS SURFACE 30-DAY MAX / MIN
—	COSS SURFACE 30-DAY MEAN
- - -	COSS SURFACE 30-DAY MAX / MIN

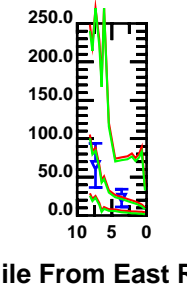
Mile From Mouth Hackensack River

Surface Layer TSS (mg/L)  
Water Year Starting Oct 1, 1999

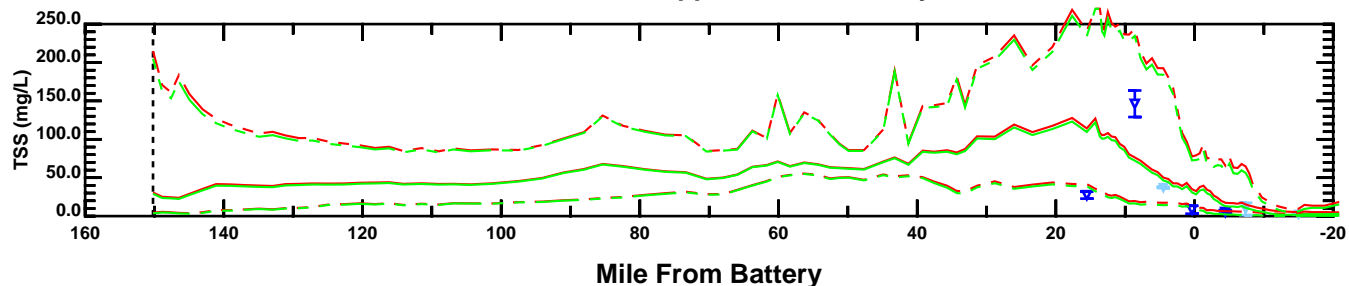
East River and Long Island Sound



Harlem River

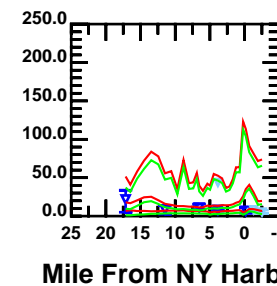


Hudson River, Upper and Lower Bay, Ocean

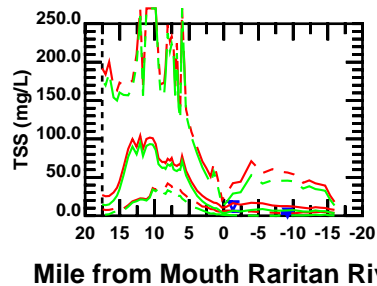


Mile From East River

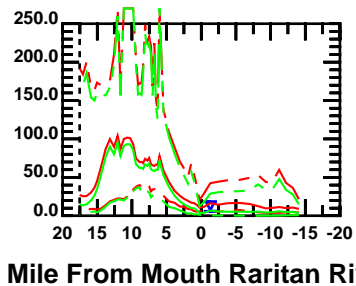
Arthur Kill and Kill Van Kull



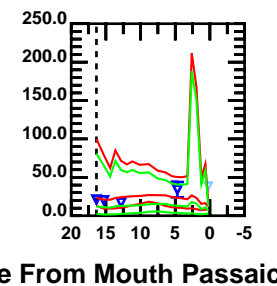
Raritan River and North Shore of Raritan Bay



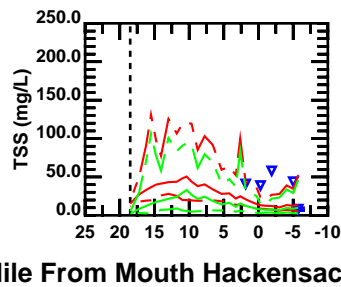
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



June 27 - July 26

DATA	TRANSECT	EMBAYMENT
NP	▼	▽
GFF	▲	▽

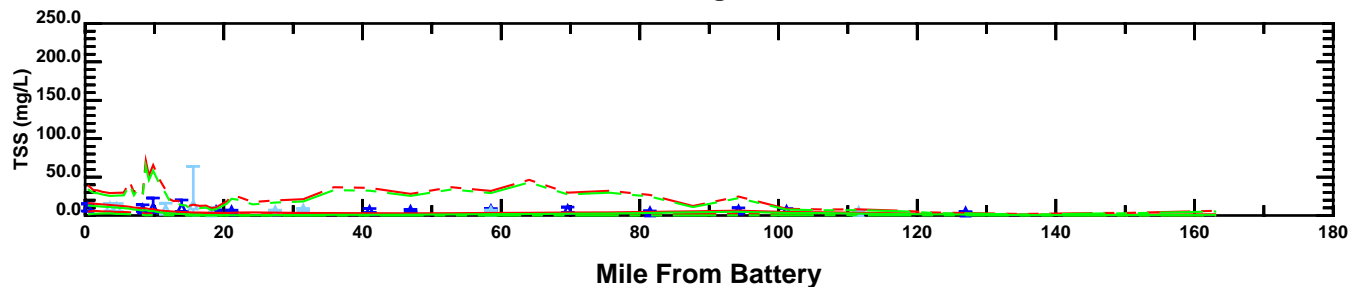
MODEL

—	TSS BOTTOM 30-DAY MEAN
- - -	TSS BOTTOM 30-DAY MAX / MIN
—	COSS BOTTOM 30-DAY MEAN
- - -	COSS BOTTOM 30-DAY MAX / MIN

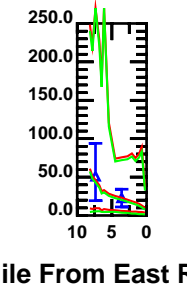
Mile From Mouth Hackensack River

Bottom Layer TSS (mg/L)  
Water Year Starting Oct 1, 1999

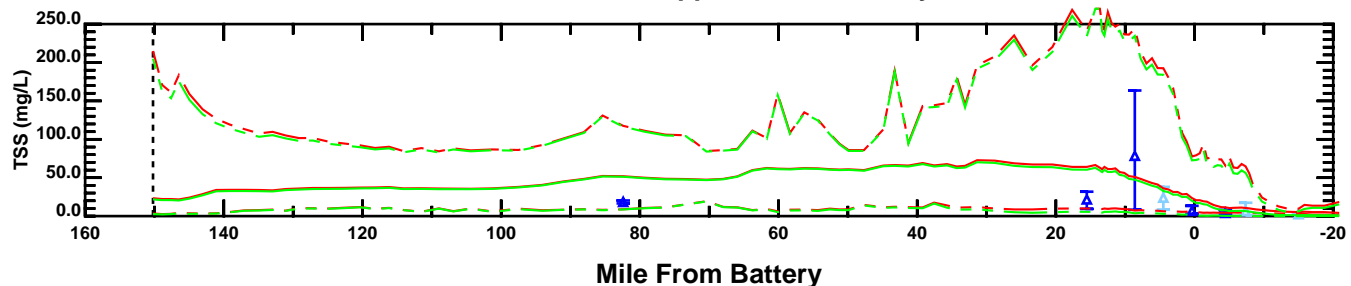
East River and Long Island Sound



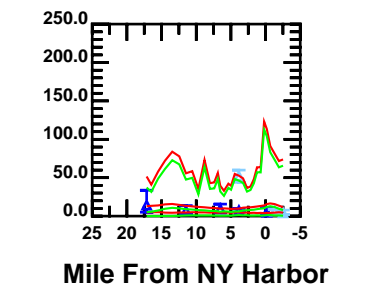
Harlem River



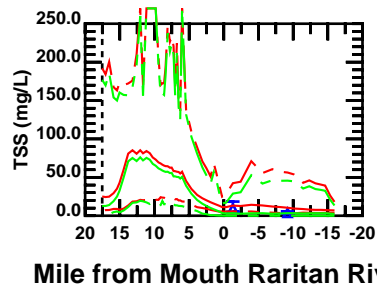
Hudson River, Upper and Lower Bay, Ocean



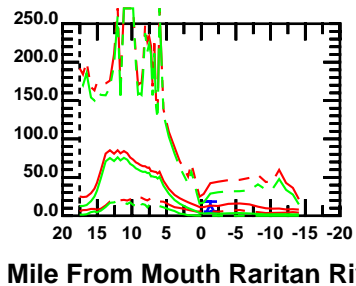
Arthur Kill and Kill Van Kull



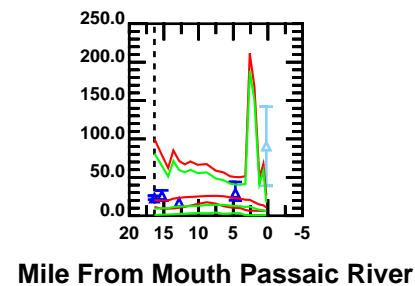
Raritan River and North Shore of Raritan Bay



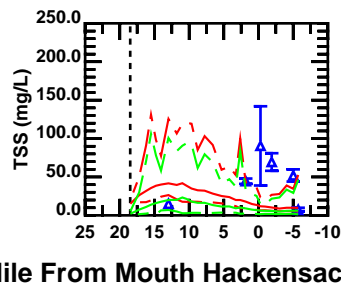
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



June 27 - July 26

DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

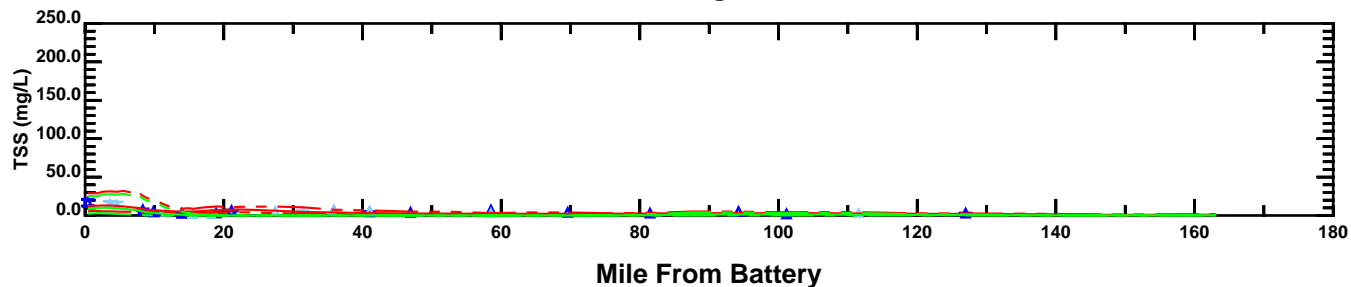
MODEL	
—	TSS 30-DAY MEAN
- - -	TSS 30-DAY MAX / MIN
—	COSS 30-DAY MEAN
- - -	COSS 30-DAY MAX / MIN

Mile From Mouth Hackensack River

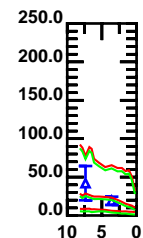
TSS (mg/L) Averaged Over Full Depth  
Water Year Starting Oct 1, 1999



East River and Long Island Sound

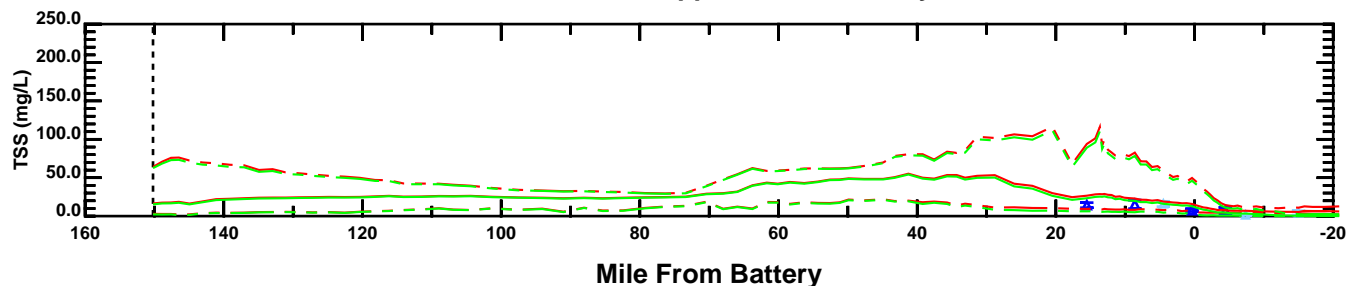


Harlem River

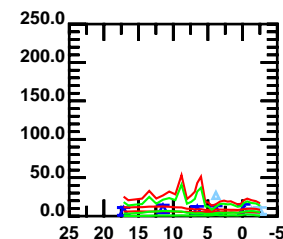


Mile From East River

Hudson River, Upper and Lower Bay, Ocean

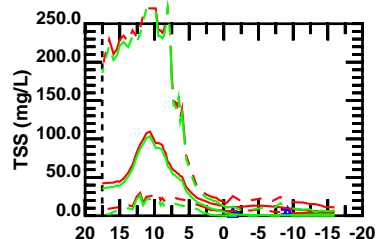


Arthur Kill and Kill Van Kull



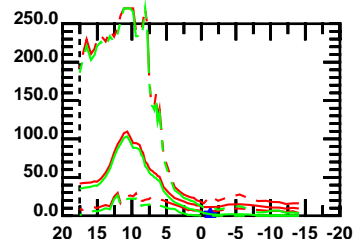
Mile From NY Harbor

Raritan River and North Shore of Raritan Bay



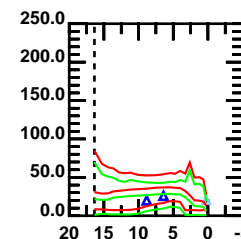
Mile from Mouth Raritan River

Raritan River and South Shore of Raritan Bay



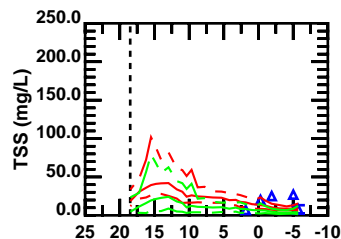
Mile From Mouth Raritan River

Passaic River



Mile From Mouth Passaic River

Hackensack River and Newark Bay



Mile From Mouth Hackensack River

July 27 - August 25

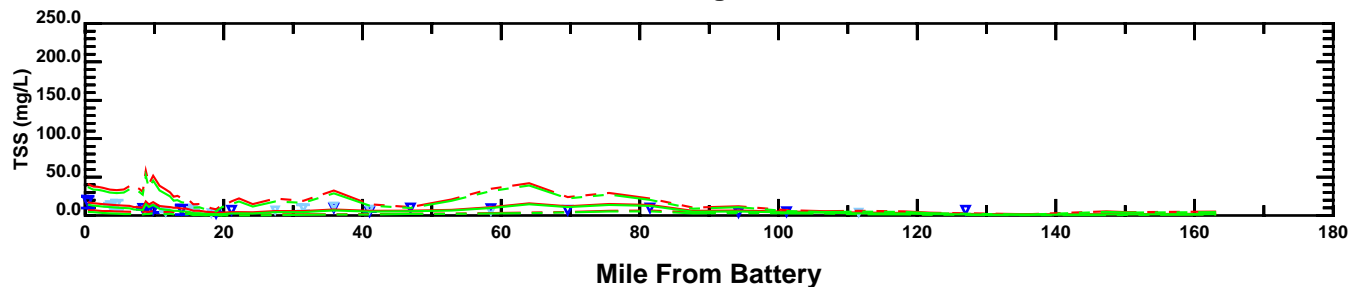
DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

MODEL

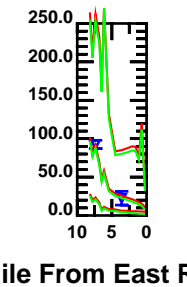
—	TSS SURFACE 30-DAY MEAN
- - -	TSS SURFACE 30-DAY MAX / MIN
—	COSS SURFACE 30-DAY MEAN
- - -	COSS SURFACE 30-DAY MAX / MIN

Surface Layer TSS (mg/L)  
Water Year Starting Oct 1, 1999

East River and Long Island Sound

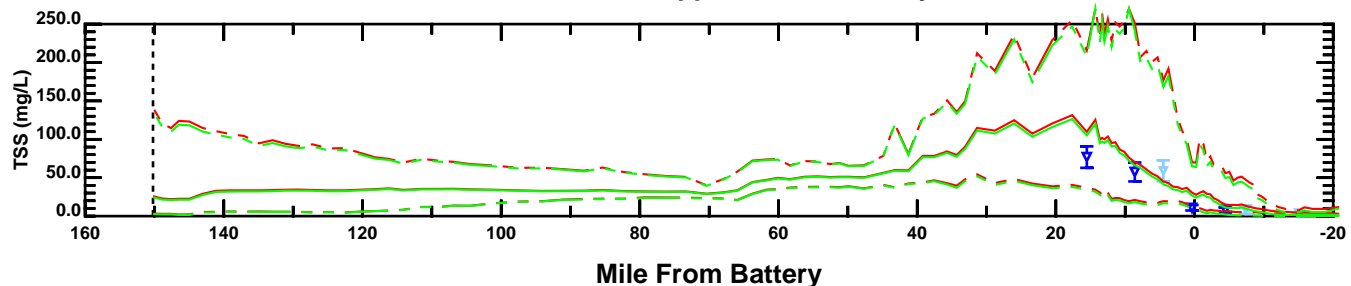


Harlem River

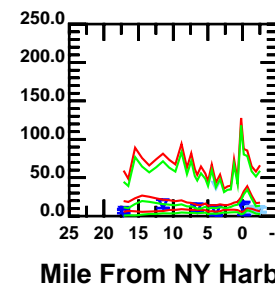


Mile From East River

Hudson River, Upper and Lower Bay, Ocean

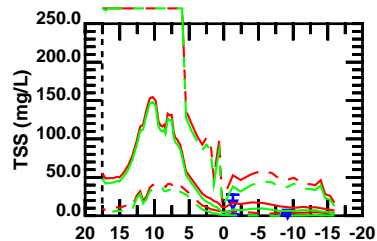


Arthur Kill and Kill Van Kull



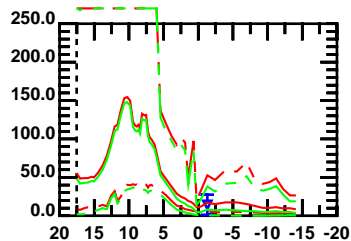
Mile From NY Harbor

Raritan River and North Shore of Raritan Bay



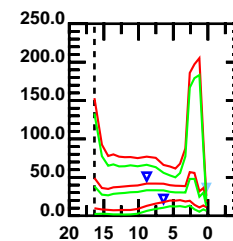
Mile from Mouth Raritan River

Raritan River and South Shore of Raritan Bay



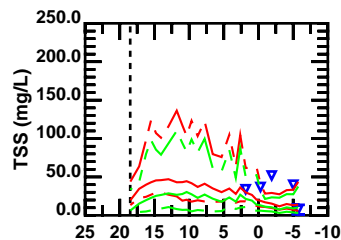
Mile From Mouth Raritan River

Passaic River



Mile From Mouth Passaic River

Hackensack River and Newark Bay



Mile From Mouth Hackensack River

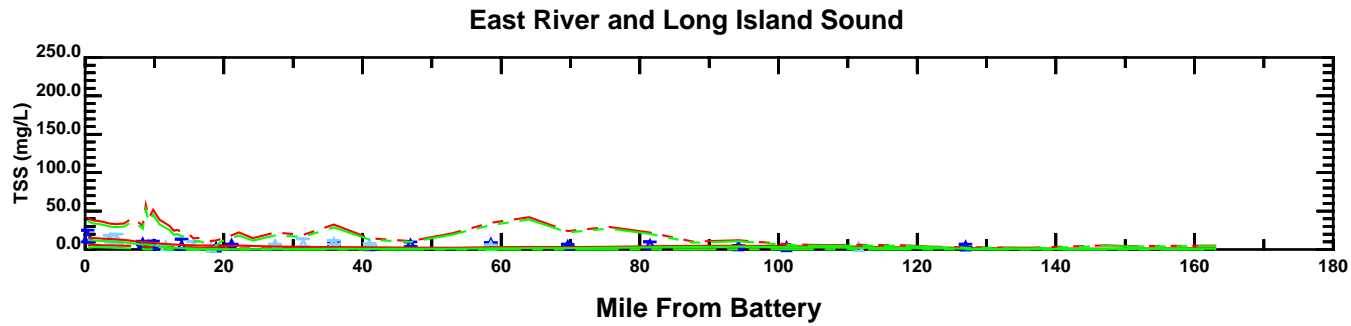
July 27 - August 25

DATA	TRANSECT	EMBAYMENT
NP	▼	▽
GFF	▲	▽

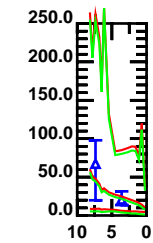
MODEL

—	TSS BOTTOM 30-DAY MEAN
- - -	TSS BOTTOM 30-DAY MAX / MIN
—	COSS BOTTOM 30-DAY MEAN
- - -	COSS BOTTOM 30-DAY MAX / MIN

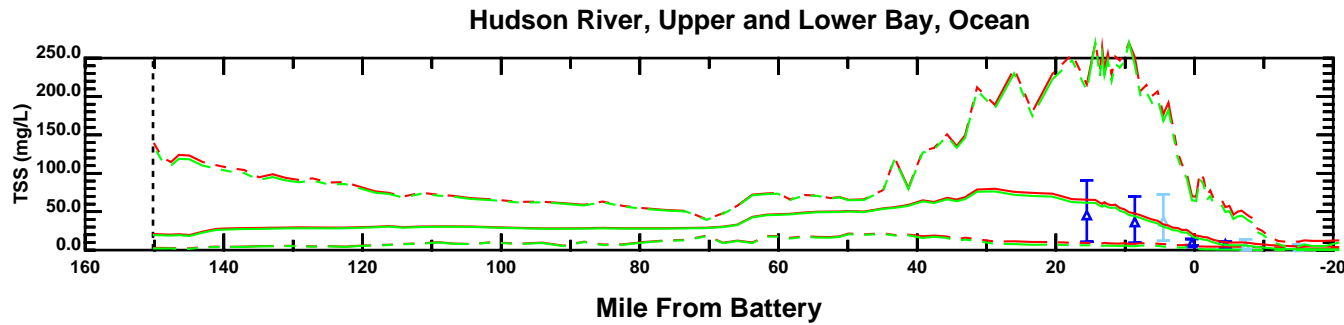
Bottom Layer TSS (mg/L)  
Water Year Starting Oct 1, 1999



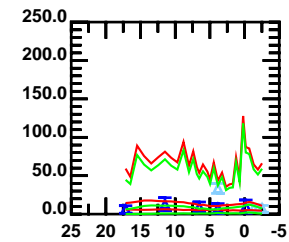
### Harlem River



Mile From East River

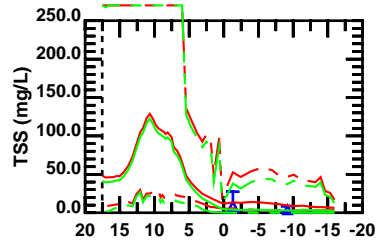


### Arthur Kill and Kill Van Kull



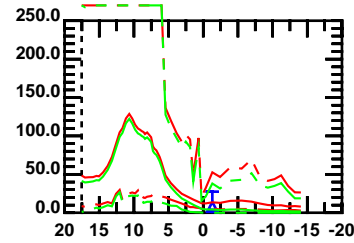
Mile From NY Harbor

### Raritan River and North Shore of Raritan Bay



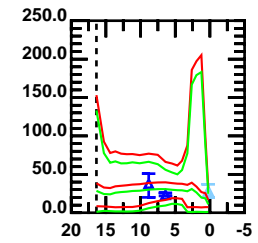
Mile from Mouth Raritan River

### Raritan River and South Shore of Raritan Bay



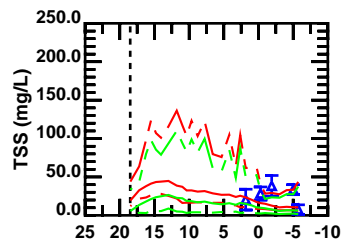
Mile From Mouth Raritan River

### Passaic River



Mile From Mouth Passaic River

### Hackensack River and Newark Bay



Mile From Mouth Hackensack River

July 27 - August 25

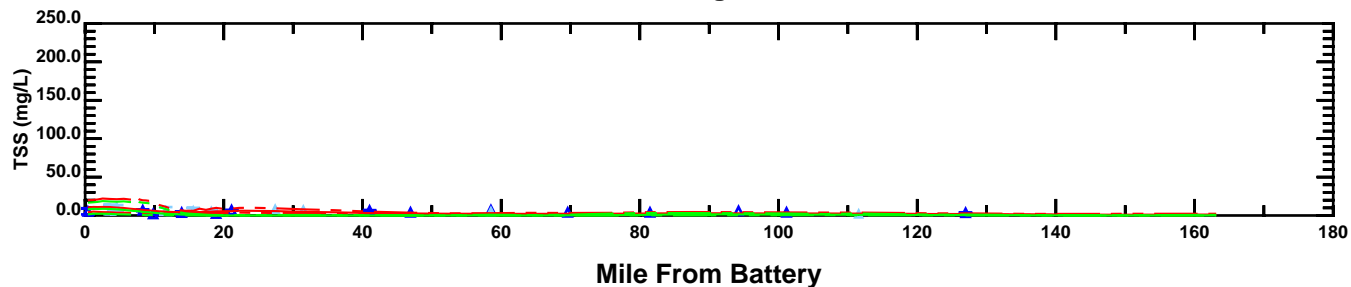
DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

MODEL

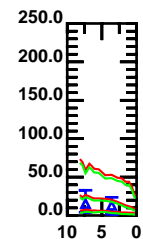
—	TSS 30-DAY MEAN
- - -	TSS 30-DAY MAX / MIN
—	COSS 30-DAY MEAN
- - -	COSS 30-DAY MAX / MIN

**TSS (mg/L) Averaged Over Full Depth  
Water Year Starting Oct 1, 1999**

East River and Long Island Sound

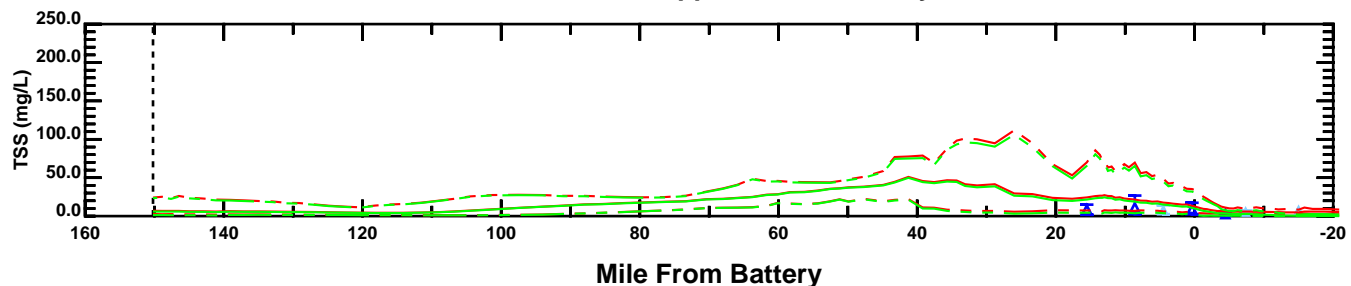


Harlem River

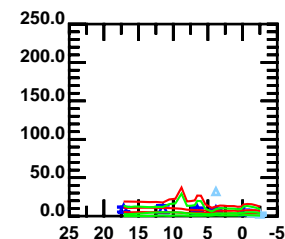


Mile From East River

Hudson River, Upper and Lower Bay, Ocean

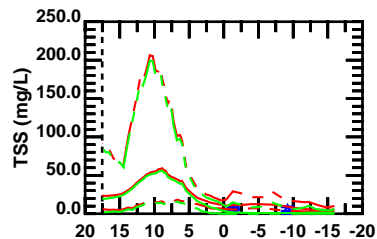


Arthur Kill and Kill Van Kull



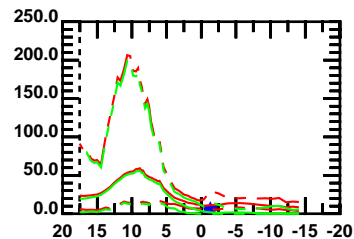
Mile From NY Harbor

Raritan River and North Shore of Raritan Bay



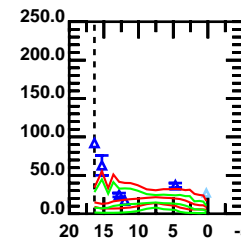
Mile from Mouth Raritan River

Raritan River and South Shore of Raritan Bay



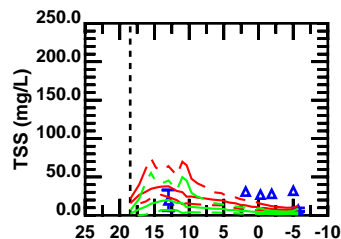
Mile From Mouth Raritan River

Passaic River



Mile From Mouth Passaic River

Hackensack River and Newark Bay



Mile From Mouth Hackensack River

August 26 - September 24

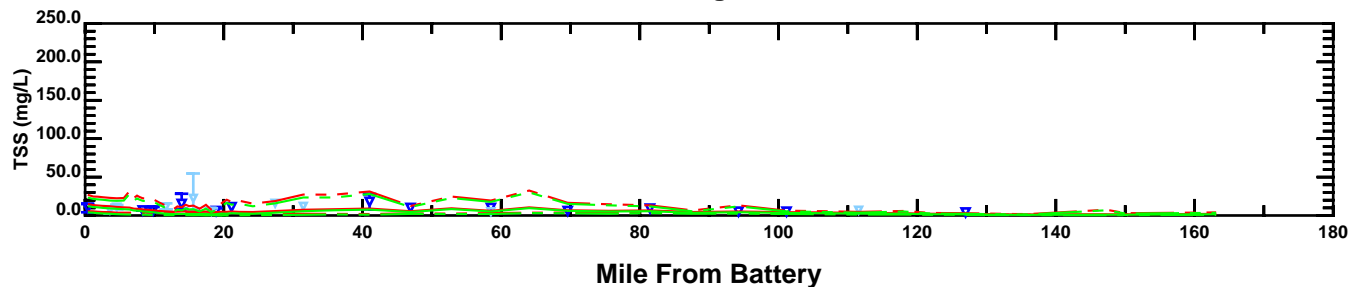
DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

MODEL

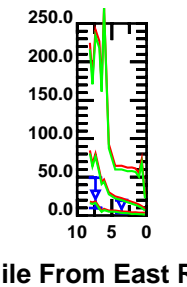
—	TSS SURFACE 30-DAY MEAN
- - -	TSS SURFACE 30-DAY MAX / MIN
—	COSS SURFACE 30-DAY MEAN
- - -	COSS SURFACE 30-DAY MAX / MIN

Surface Layer TSS (mg/L)  
Water Year Starting Oct 1, 1999

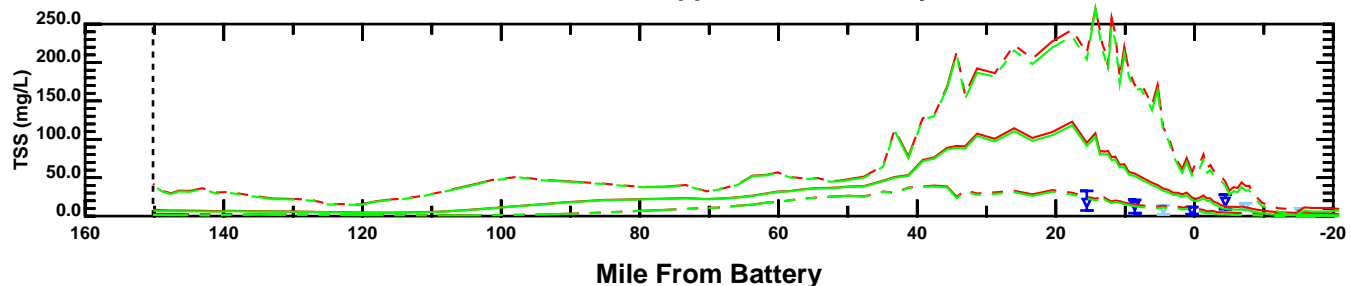
East River and Long Island Sound



Harlem River

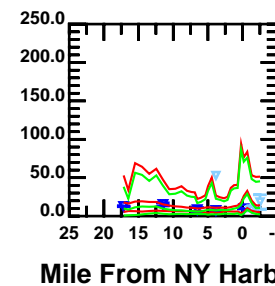


Hudson River, Upper and Lower Bay, Ocean

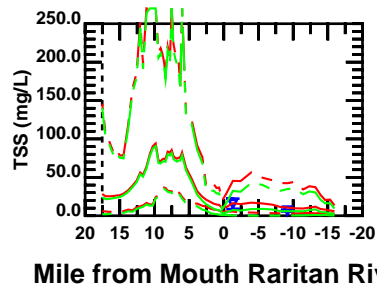


Mile From East River

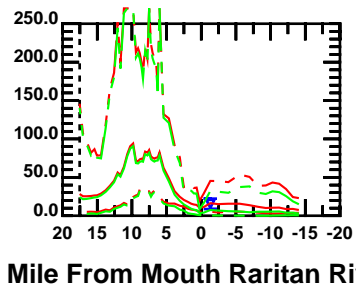
Arthur Kill and Kill Van Kull



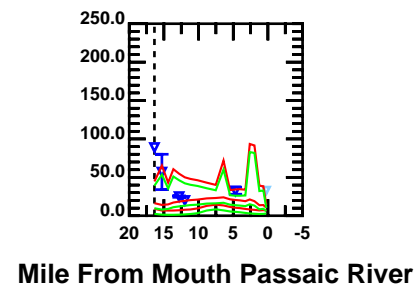
Raritan River and North Shore of Raritan Bay



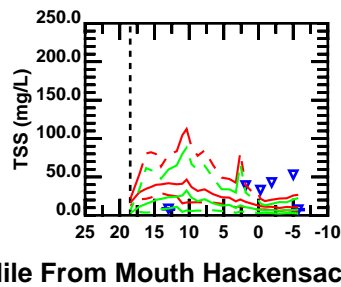
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



August 26 - September 24

DATA	TRANSECT	EMBAYMENT
NP	▼	▽
GFF	▲	▽

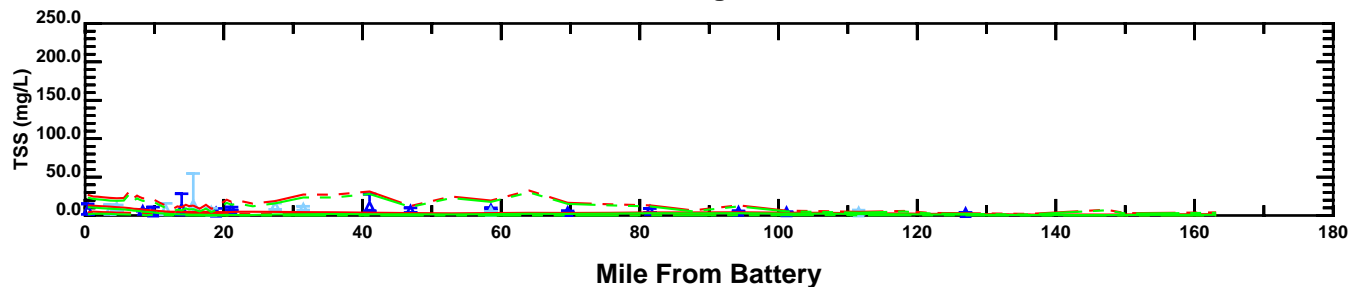
MODEL

—	TSS BOTTOM 30-DAY MEAN
- - -	TSS BOTTOM 30-DAY MAX / MIN
—	COSS BOTTOM 30-DAY MEAN
- - -	COSS BOTTOM 30-DAY MAX / MIN

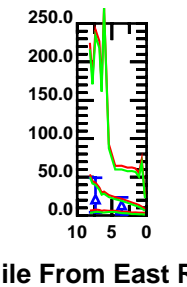
Mile From Mouth Hackensack River

Bottom Layer TSS (mg/L)  
Water Year Starting Oct 1, 1999

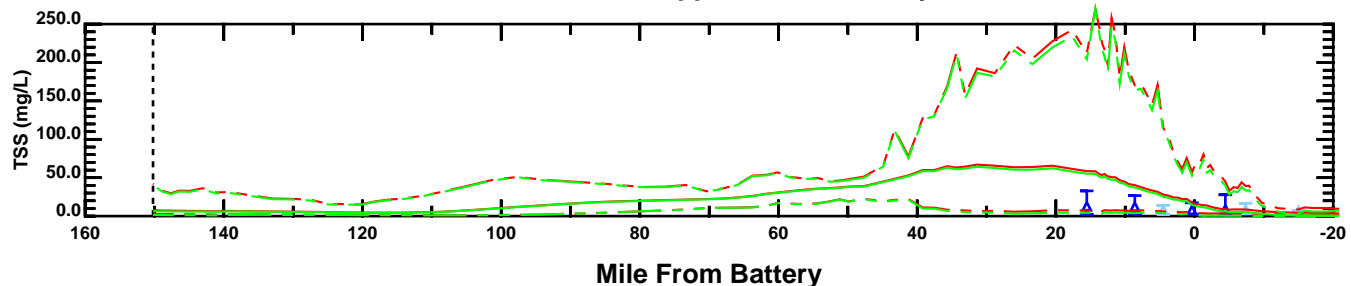
East River and Long Island Sound



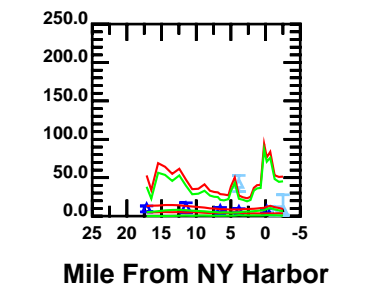
Harlem River



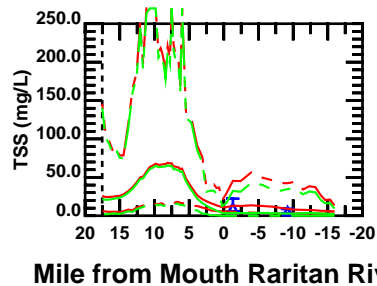
Hudson River, Upper and Lower Bay, Ocean



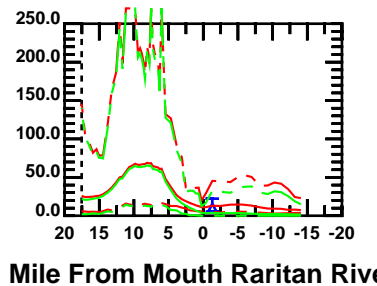
Arthur Kill and Kill Van Kull



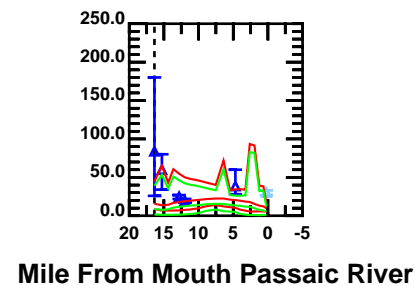
Raritan River and North Shore of Raritan Bay



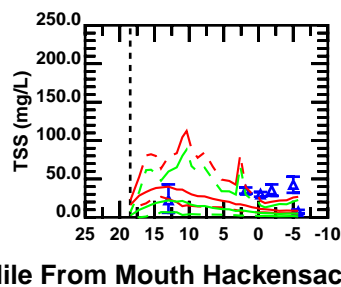
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



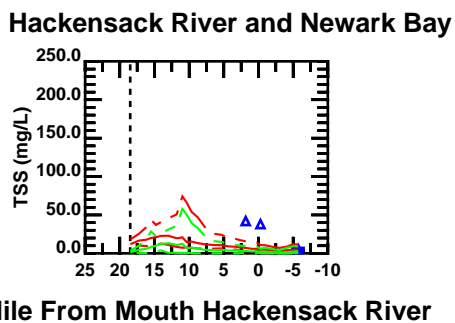
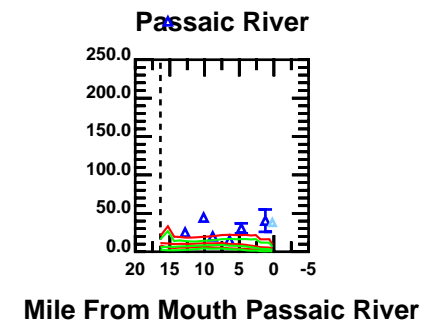
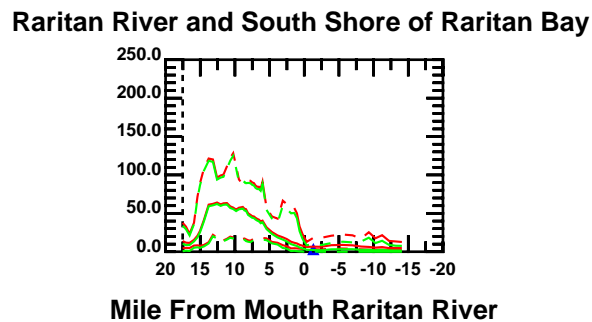
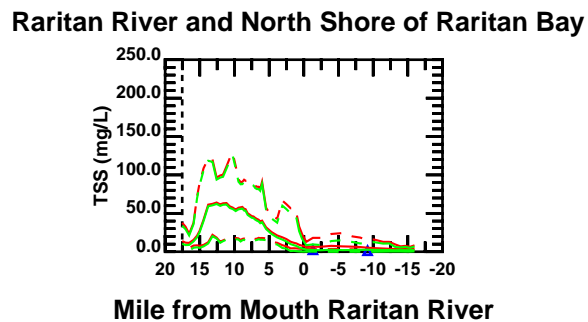
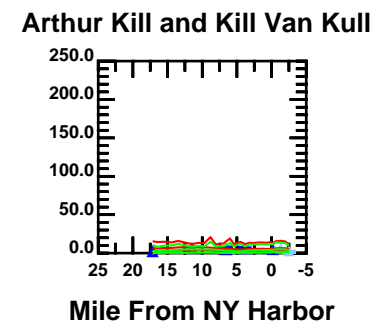
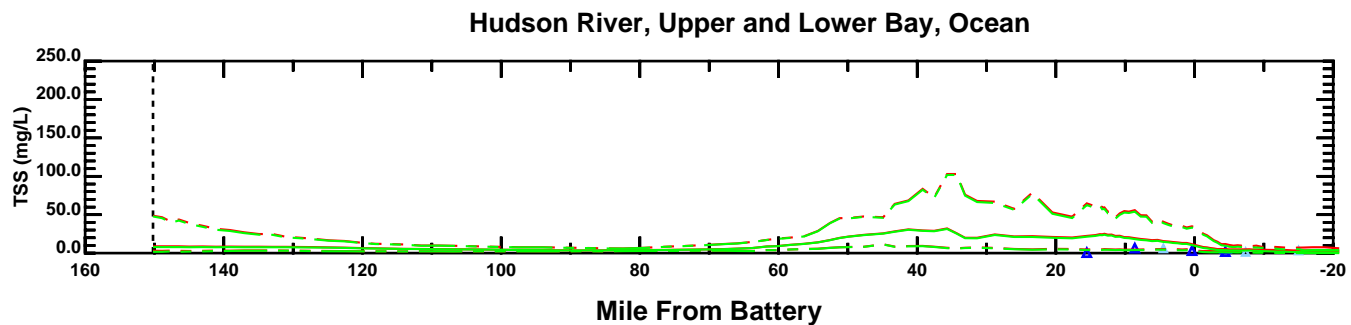
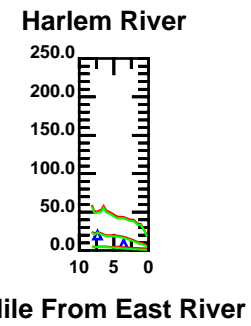
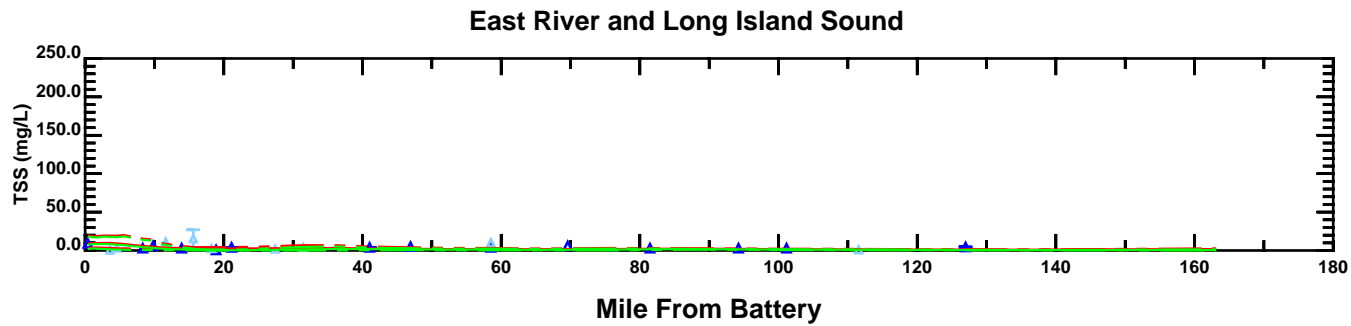
August 26 - September 24

DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

MODEL	
—	TSS 30-DAY MEAN
- - -	TSS 30-DAY MAX / MIN
—	COSS 30-DAY MEAN
- - -	COSS 30-DAY MAX / MIN

Mile From Mouth Hackensack River

TSS (mg/L) Averaged Over Full Depth  
Water Year Starting Oct 1, 1999



October 1 - October 30

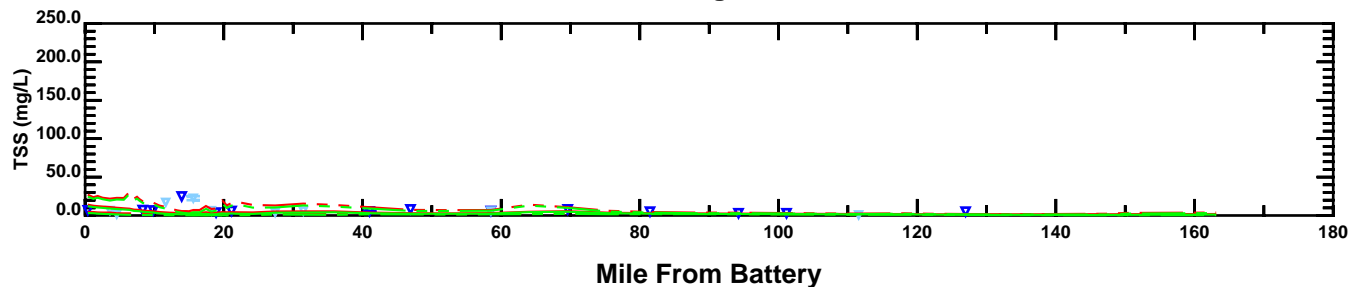
DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

MODEL

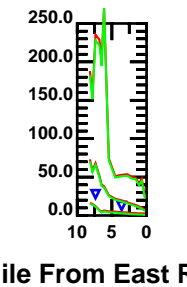
—	TSS SURFACE 30-DAY MEAN
- - -	TSS SURFACE 30-DAY MAX / MIN
—	COSS SURFACE 30-DAY MEAN
- - -	COSS SURFACE 30-DAY MAX / MIN

Surface Layer TSS (mg/L)  
Water Year Starting Oct 1, 2000

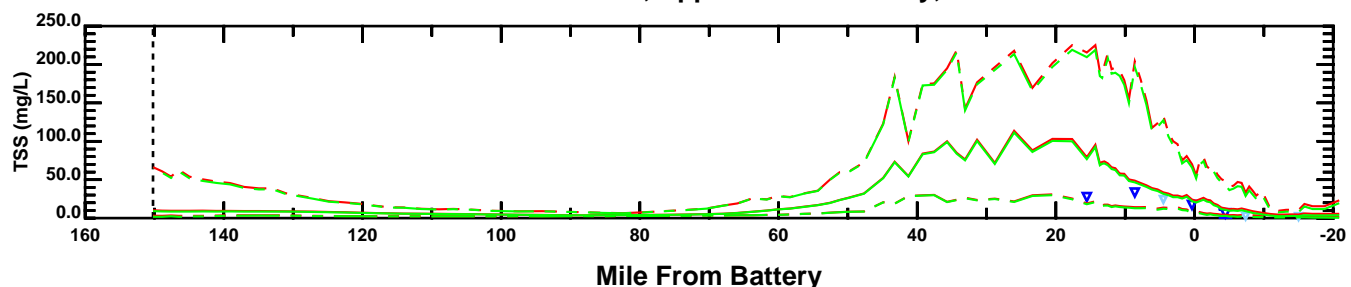
East River and Long Island Sound



Harlem River

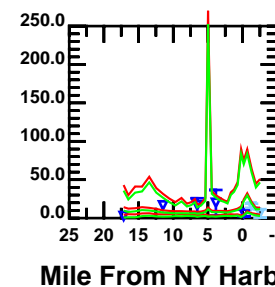


Hudson River, Upper and Lower Bay, Ocean

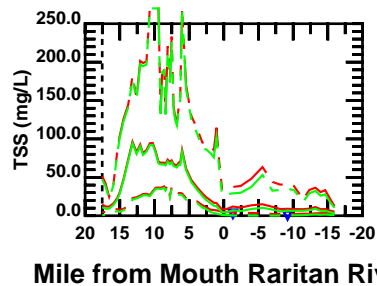


Mile From East River

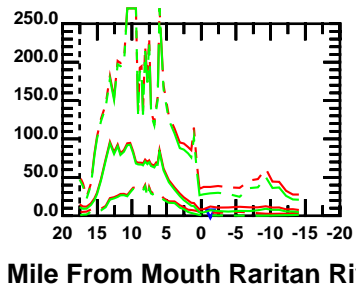
Arthur Kill and Kill Van Kull



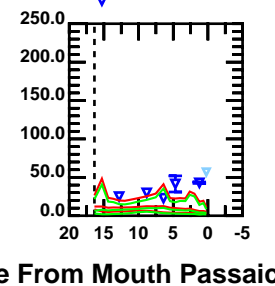
Raritan River and North Shore of Raritan Bay



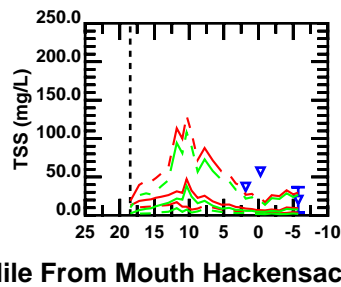
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



October 1 - October 30

DATA	TRANSECT	EMBAYMENT
NP	▼	▽
GFF	▼	▽

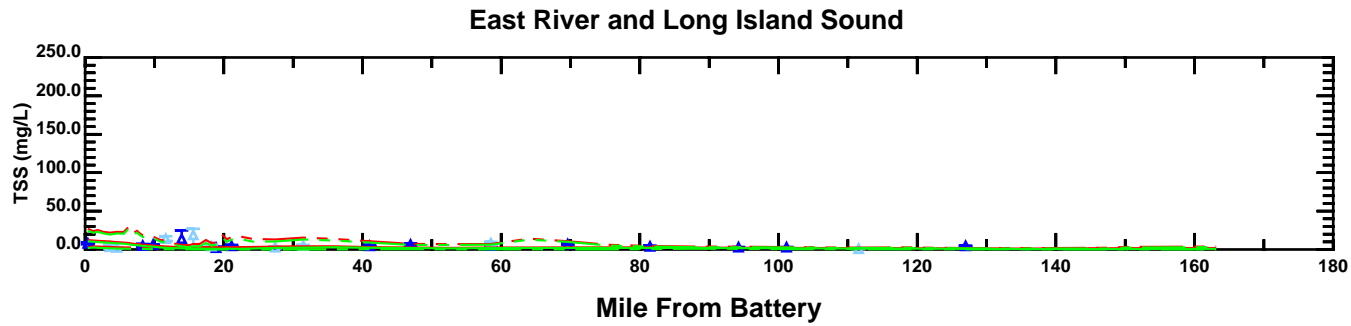
MODEL

—	TSS BOTTOM 30-DAY MEAN
- - -	TSS BOTTOM 30-DAY MAX / MIN
—	COSS BOTTOM 30-DAY MEAN
- - -	COSS BOTTOM 30-DAY MAX / MIN

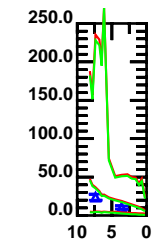
Mile From Mouth Hackensack River

Bottom Layer TSS (mg/L)  
Water Year Starting Oct 1, 2000



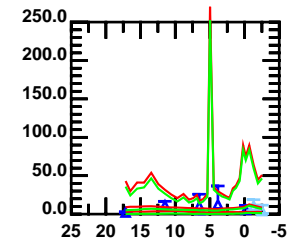


### Harlem River

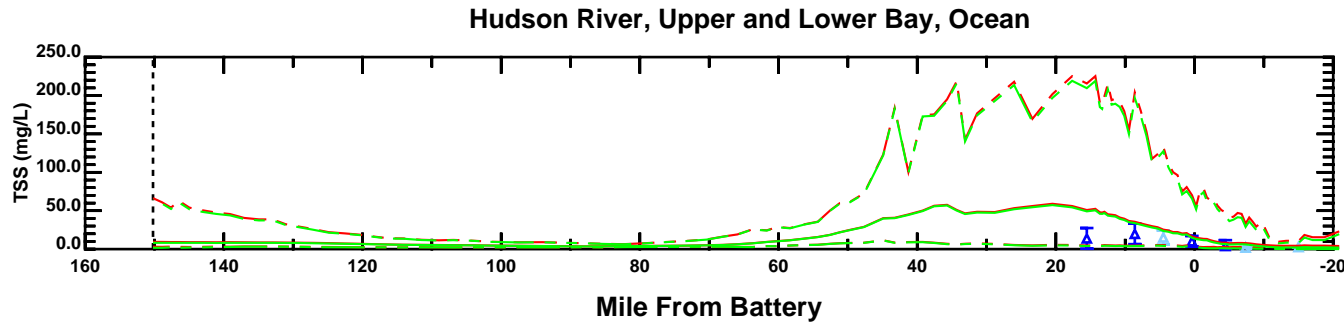


### Arthur Kill and Kill Van Kull

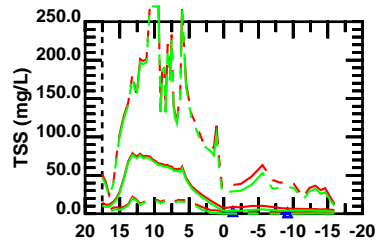
### Arthur Kill and Kill Van Kull



### Mile From NY Harbor

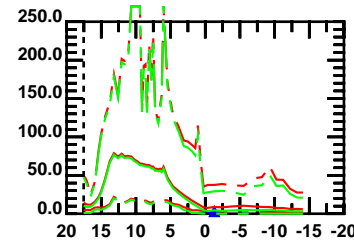


### Raritan River and North Shore of Raritan Bay



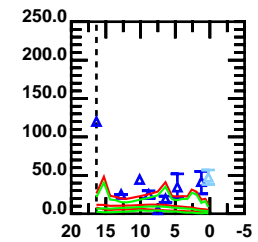
### Mile from Mouth Raritan River

### Raritan River and South Shore of Raritan Bay



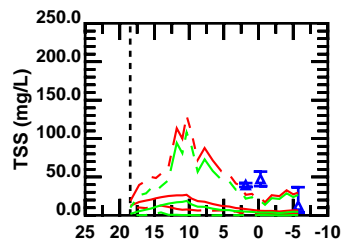
### Mile From Mouth Raritan River

### Passaic River



### Mile From Mouth Passaic River

### Hackensack River and Newark Bay



### Mile From Mouth Hackensack River

October 1 - October 30

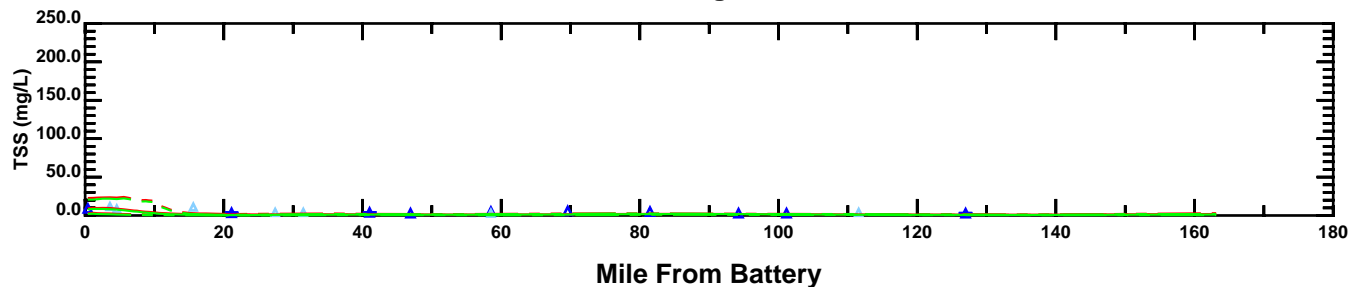
DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

MODEL

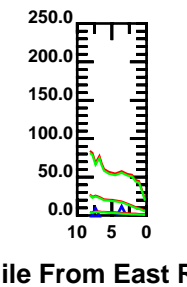
—	TSS 30-DAY MEAN
- - -	TSS 30-DAY MAX / MIN
—	COSS 30-DAY MEAN
- - -	COSS 30-DAY MAX / MIN

**TSS (mg/L) Averaged Over Full Depth  
Water Year Starting Oct 1, 2000**

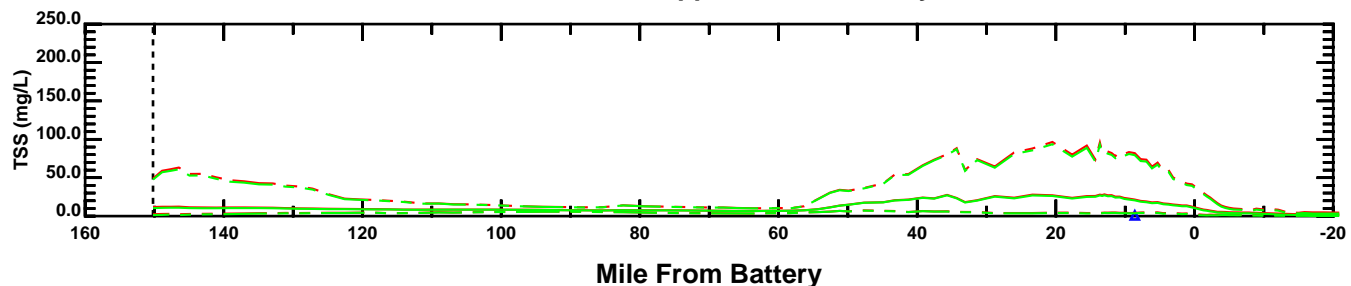
East River and Long Island Sound



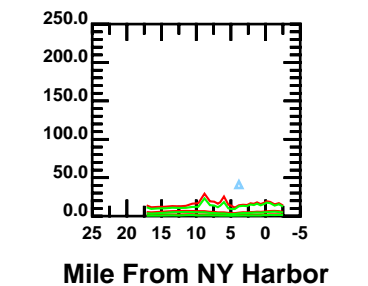
Harlem River



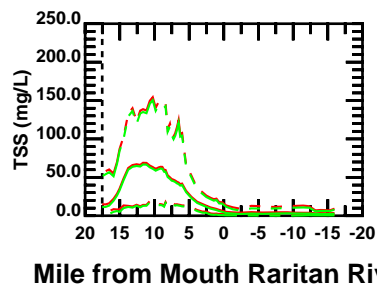
Hudson River, Upper and Lower Bay, Ocean



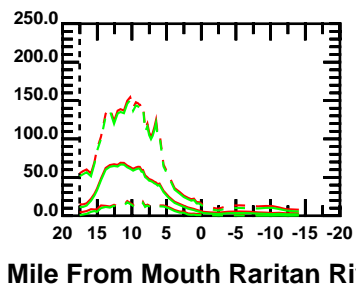
Arthur Kill and Kill Van Kull



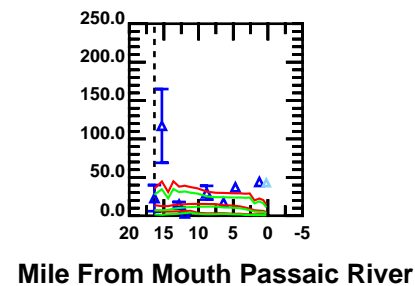
Raritan River and North Shore of Raritan Bay



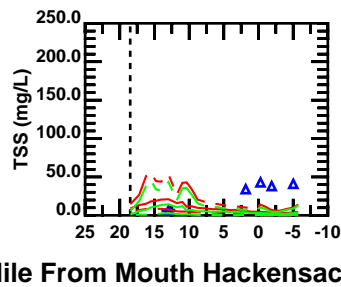
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



October 31 - November 29

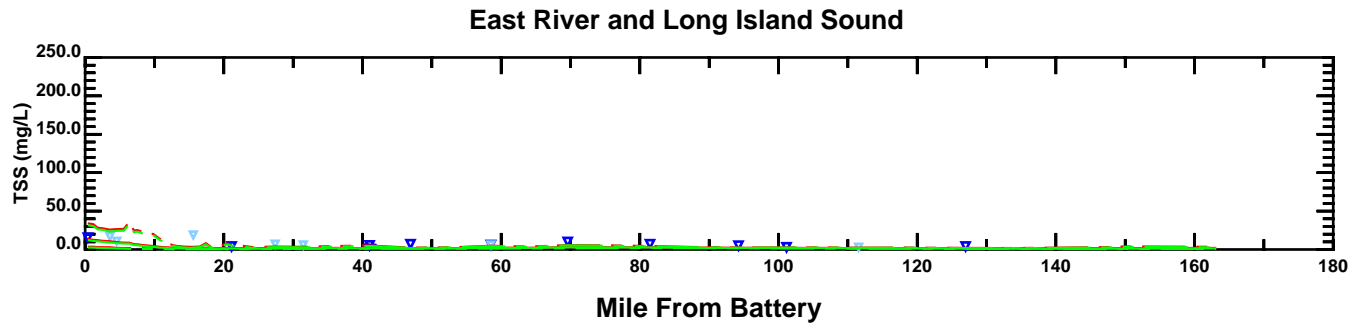
DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

MODEL

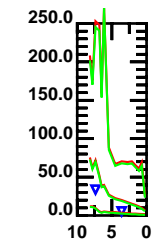
—	TSS SURFACE 30-DAY MEAN
- - -	TSS SURFACE 30-DAY MAX / MIN
—	COSS SURFACE 30-DAY MEAN
- - -	COSS SURFACE 30-DAY MAX / MIN

Mile From Mouth Hackensack River

Surface Layer TSS (mg/L)  
Water Year Starting Oct 1, 2000

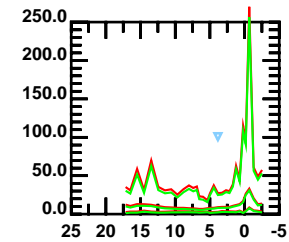


### Harlem River

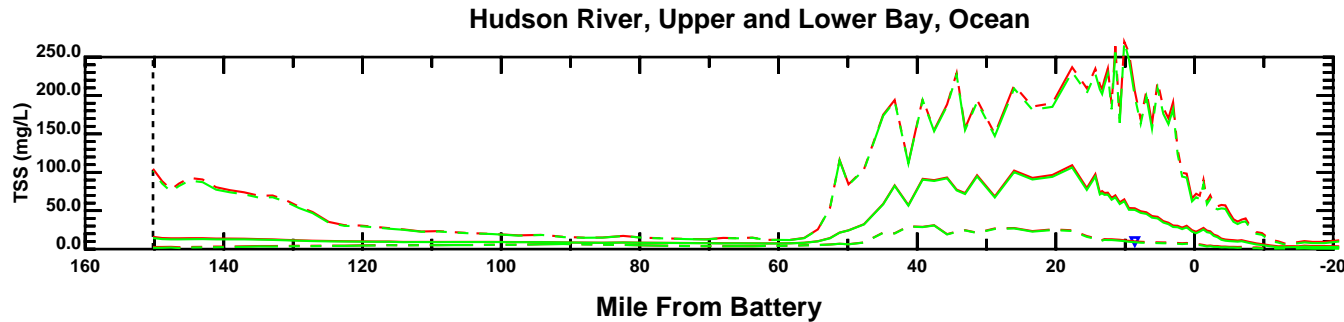


### Arthur Kill and Kill Van Kull

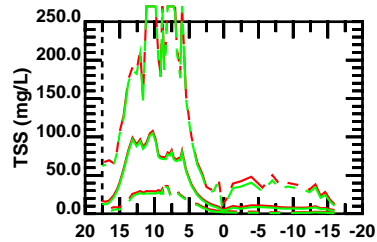
### Arthur Kill and Kill Van Kull



### Mile From NY Harbor

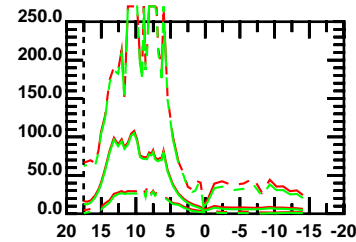


### Raritan River and North Shore of Raritan Bay



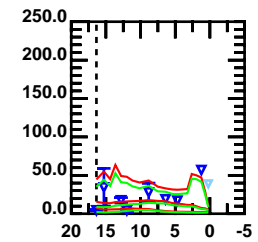
### Mile from Mouth Raritan River

### Raritan River and South Shore of Raritan Bay



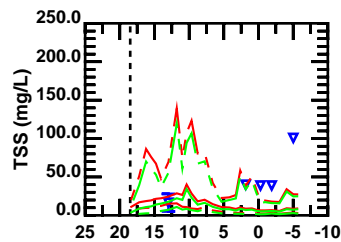
### Mile From Mouth Raritan River

### Passaic River



### Mile From Mouth Passaic River

### Hackensack River and Newark Bay



### Mile From Mouth Hackensack River

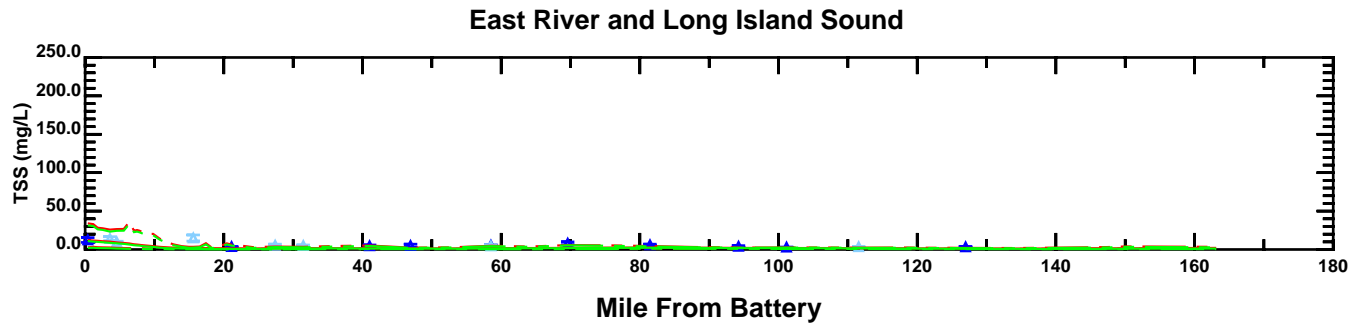
October 31 - November 29

DATA	TRANSECT	EMBAYMENT
NP	▼	▽
GFF	▼	▽

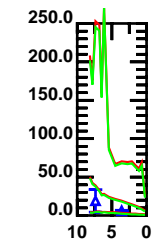
MODEL

—	TSS BOTTOM 30-DAY MEAN
- - -	TSS BOTTOM 30-DAY MAX / MIN
—	COSS BOTTOM 30-DAY MEAN
- - -	COSS BOTTOM 30-DAY MAX / MIN

**Bottom Layer TSS (mg/L)**  
**Water Year Starting Oct 1, 2000**

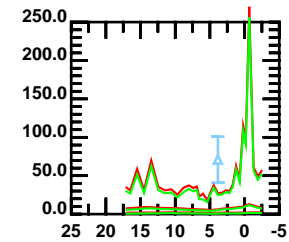


### Harlem River

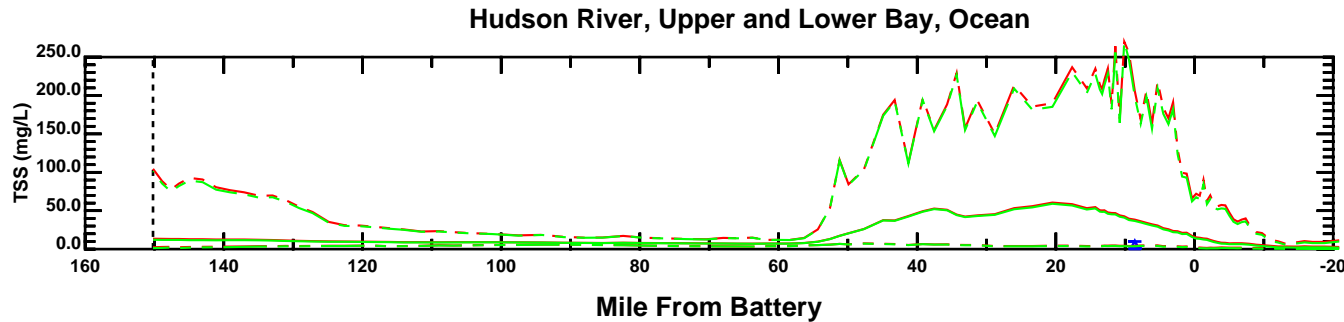


### Arthur Kill and Kill Van Kull

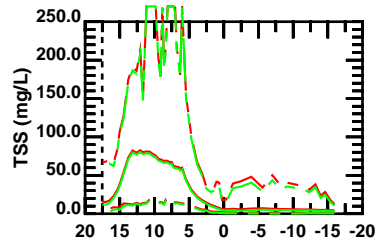
### Arthur Kill and Kill Van Kull



### Mile From NY Harbor

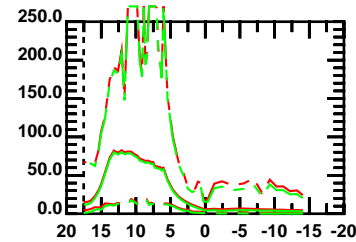


### Raritan River and North Shore of Raritan Bay



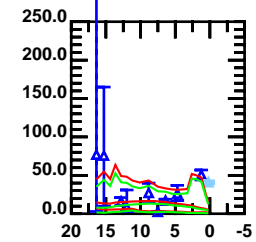
### Mile from Mouth Raritan River

### Raritan River and South Shore of Raritan Bay



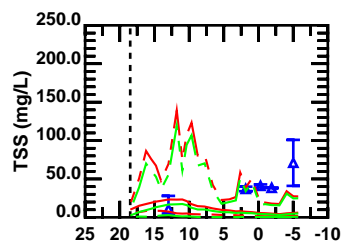
### Mile From Mouth Raritan River

### Passaic River



### Mile From Mouth Passaic River

### Hackensack River and Newark Bay



### Mile From Mouth Hackensack River

October 31 - November 29

DATA    TRANSECT    EMBAYMENT

NP        ▲                    △

GFF      ▲                    △

MODEL

— TSS 30-DAY MEAN

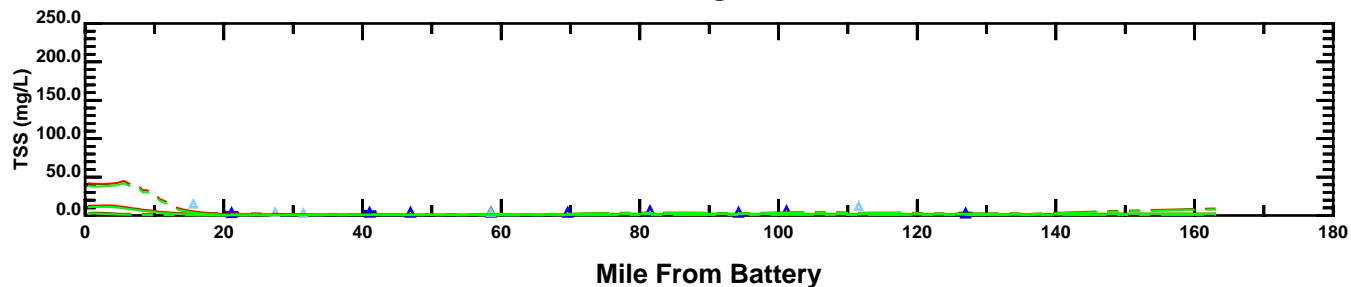
- - - TSS 30-DAY MAX / MIN

— COSS 30-DAY MEAN

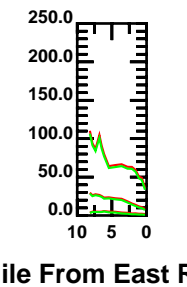
- - - COSS 30-DAY MAX / MIN

**TSS (mg/L) Averaged Over Full Depth  
Water Year Starting Oct 1, 2000**

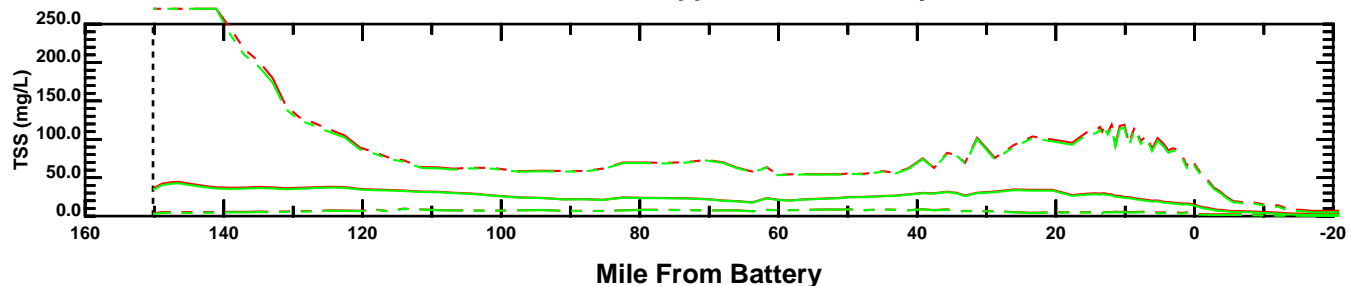
East River and Long Island Sound



Harlem River

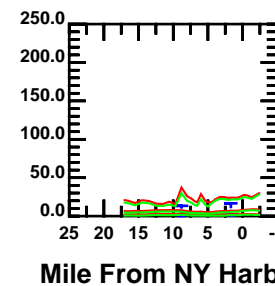


Hudson River, Upper and Lower Bay, Ocean

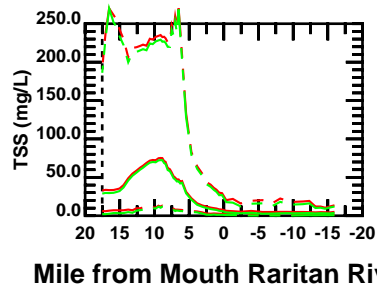


Mile From East River

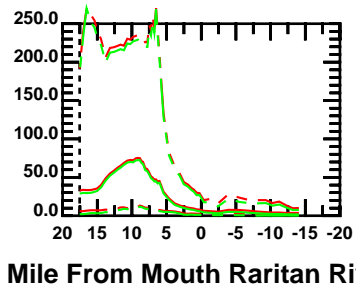
Arthur Kill and Kill Van Kull



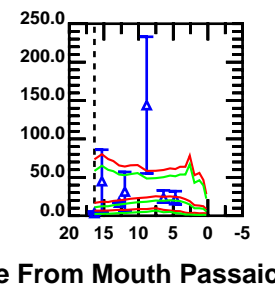
Raritan River and North Shore of Raritan Bay



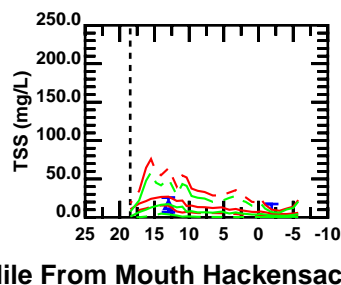
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



November 30 - December 29

DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

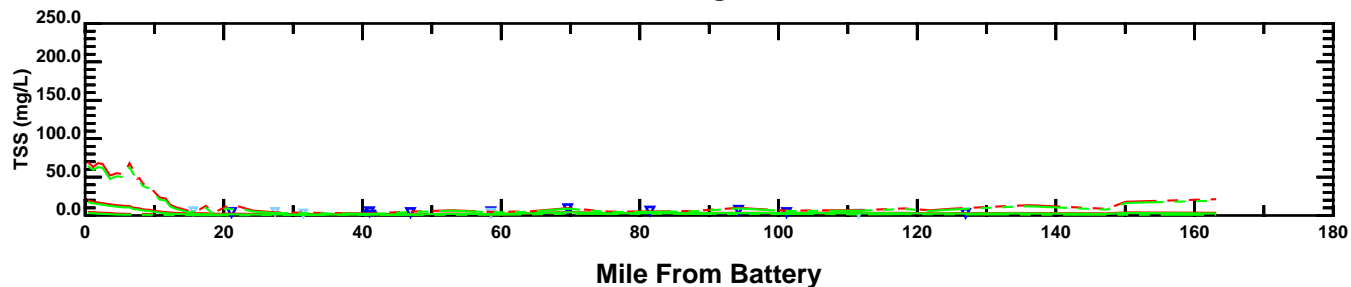
MODEL

—	TSS SURFACE 30-DAY MEAN
- - -	TSS SURFACE 30-DAY MAX / MIN
—	COSS SURFACE 30-DAY MEAN
- - -	COSS SURFACE 30-DAY MAX / MIN

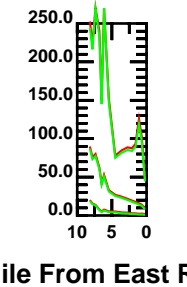
Mile From Mouth Hackensack River

Surface Layer TSS (mg/L)  
Water Year Starting Oct 1, 2000

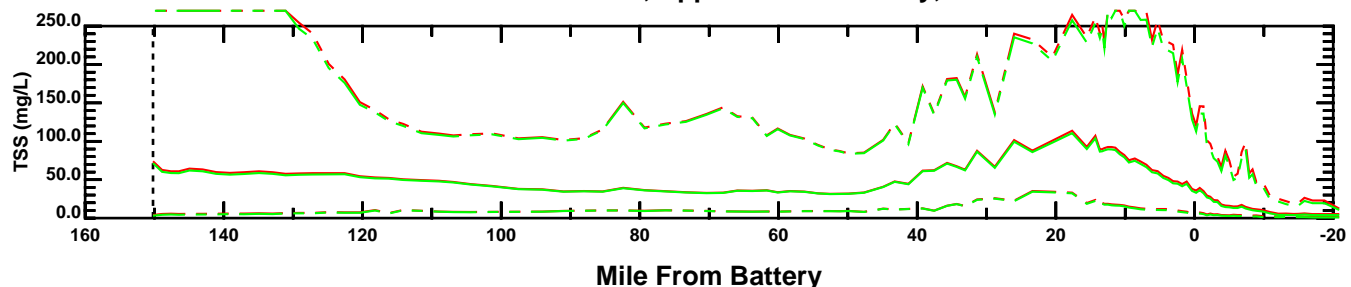
East River and Long Island Sound



Harlem River

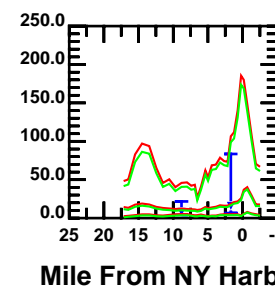


Hudson River, Upper and Lower Bay, Ocean

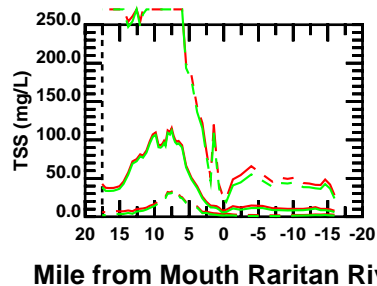


Mile From East River

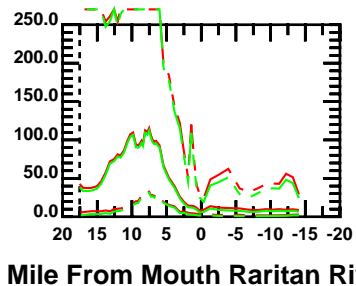
Arthur Kill and Kill Van Kull



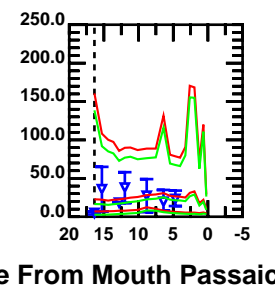
Raritan River and North Shore of Raritan Bay



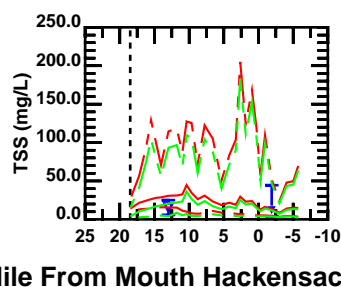
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



November 30 - December 29

DATA	TRANSECT	EMBAYMENT
NP	▼	▽
GFF	▲	▽

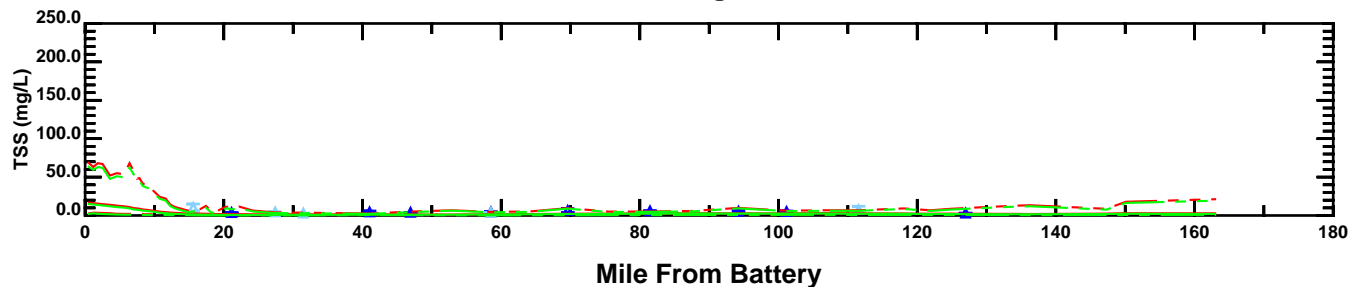
MODEL

—	TSS BOTTOM 30-DAY MEAN
- - -	TSS BOTTOM 30-DAY MAX / MIN
—	COSS BOTTOM 30-DAY MEAN
- - -	COSS BOTTOM 30-DAY MAX / MIN

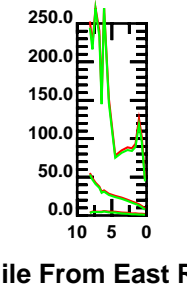
Mile From Mouth Hackensack River

Bottom Layer TSS (mg/L)  
Water Year Starting Oct 1, 2000

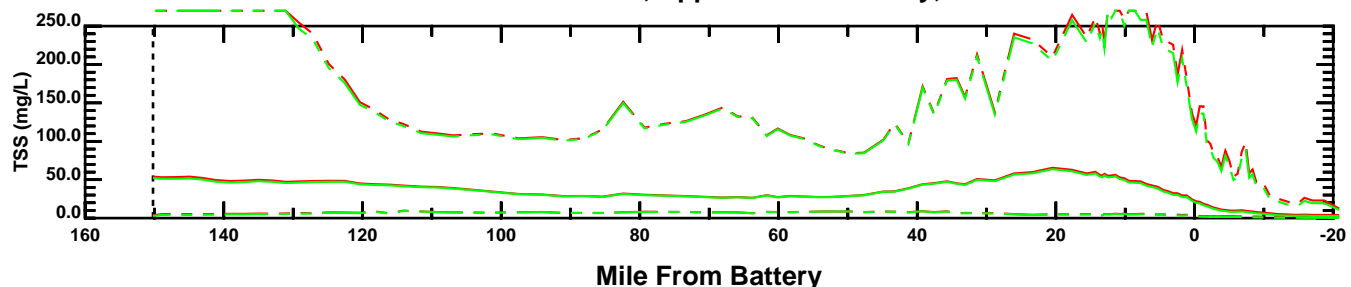
East River and Long Island Sound



Harlem River

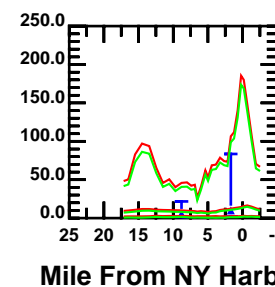


Hudson River, Upper and Lower Bay, Ocean

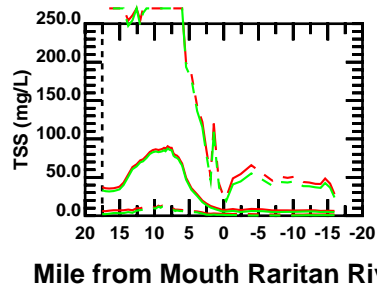


Mile From East River

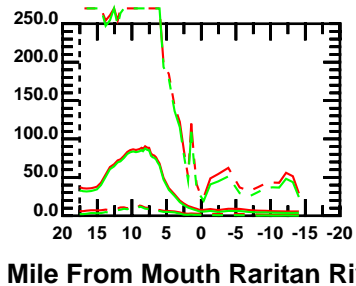
Arthur Kill and Kill Van Kull



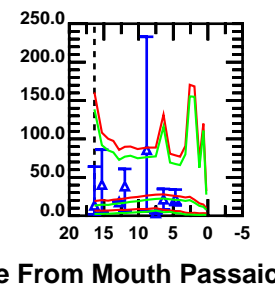
Raritan River and North Shore of Raritan Bay



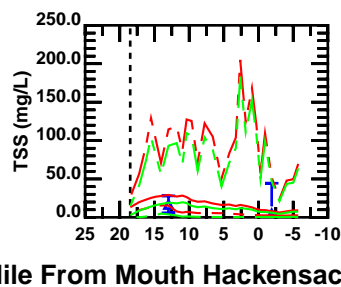
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



November 30 - December 29

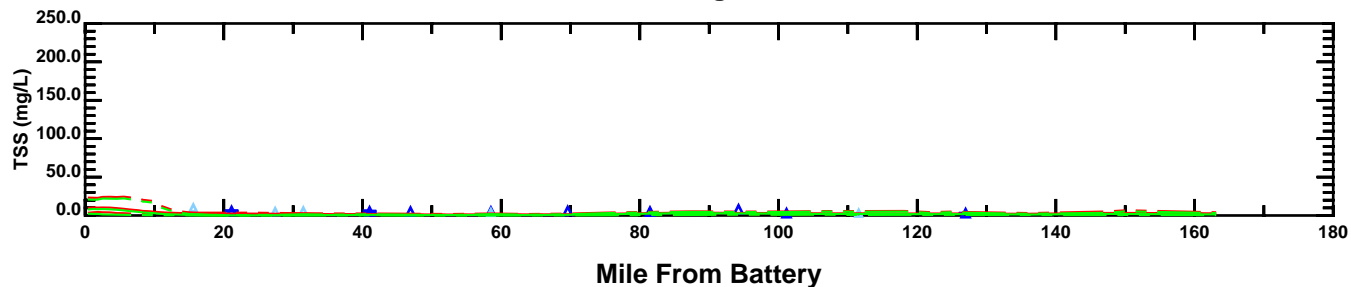
DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

MODEL	
—	TSS 30-DAY MEAN
- - -	TSS 30-DAY MAX / MIN
—	COSS 30-DAY MEAN
- - -	COSS 30-DAY MAX / MIN

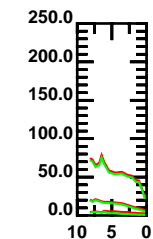
Mile From Mouth Hackensack River

TSS (mg/L) Averaged Over Full Depth  
Water Year Starting Oct 1, 2000

East River and Long Island Sound

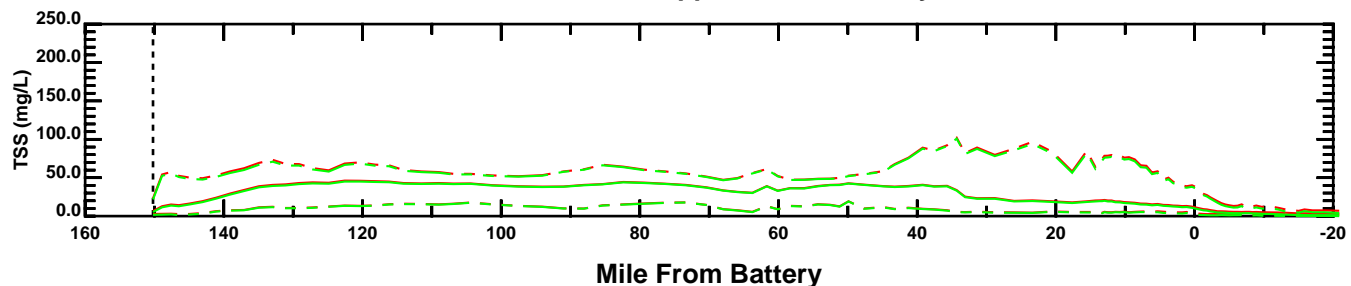


Harlem River

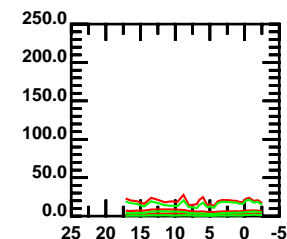


Mile From East River

Hudson River, Upper and Lower Bay, Ocean

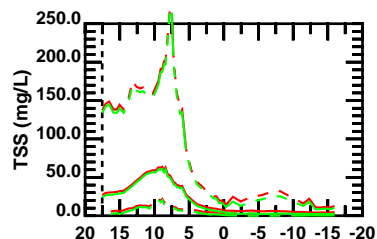


Arthur Kill and Kill Van Kull



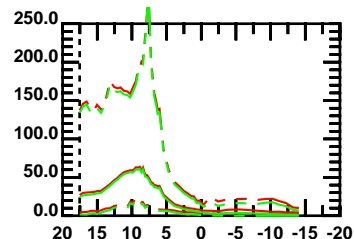
Mile From NY Harbor

Raritan River and North Shore of Raritan Bay



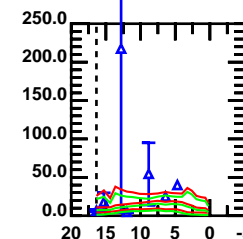
Mile from Mouth Raritan River

Raritan River and South Shore of Raritan Bay



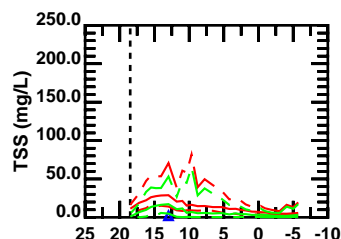
Mile From Mouth Raritan River

Passaic River



Mile From Mouth Passaic River

Hackensack River and Newark Bay



Mile From Mouth Hackensack River

December 30 - January 28

DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

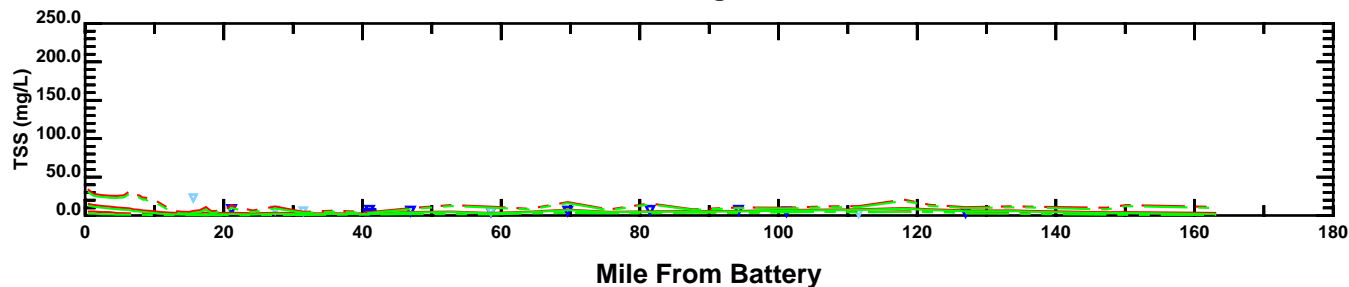
MODEL

—	TSS SURFACE 30-DAY MEAN
- - -	TSS SURFACE 30-DAY MAX / MIN
—	COSS SURFACE 30-DAY MEAN
- - -	COSS SURFACE 30-DAY MAX / MIN

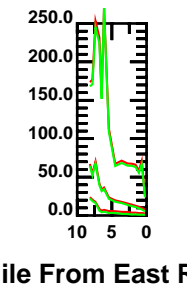
Surface Layer TSS (mg/L)  
Water Year Starting Oct 1, 2000



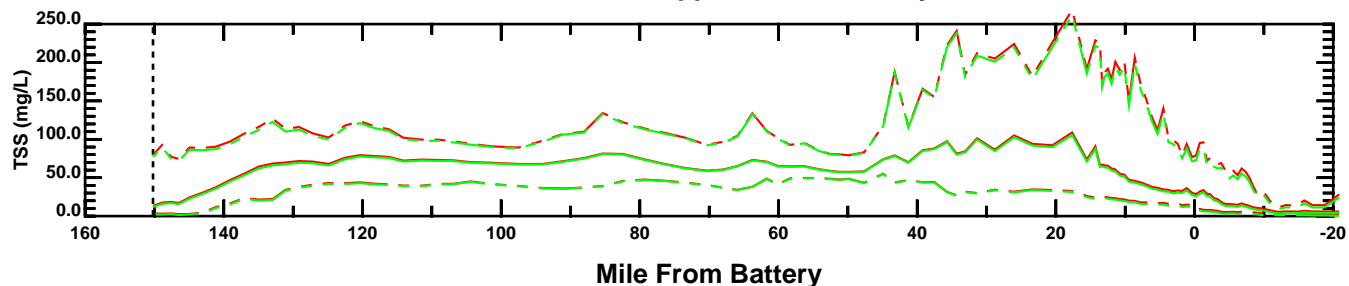
East River and Long Island Sound



Harlem River

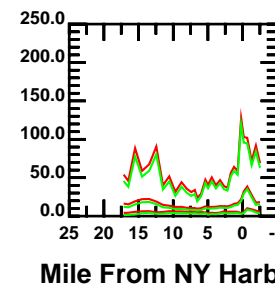


Hudson River, Upper and Lower Bay, Ocean

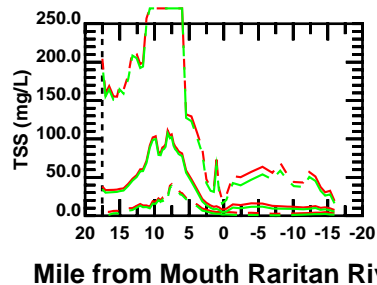


Mile From East River

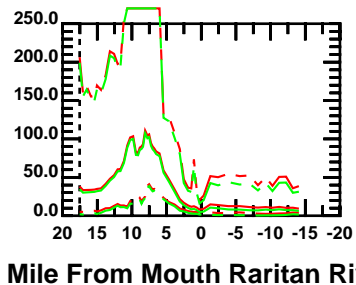
Arthur Kill and Kill Van Kull



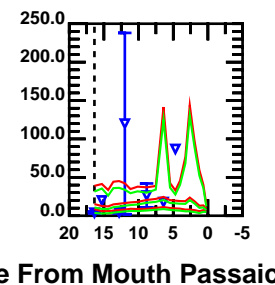
Raritan River and North Shore of Raritan Bay



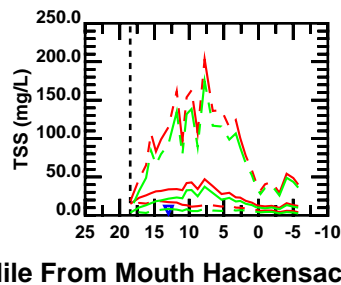
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



December 30 - January 28

DATA	TRANSECT	EMBAYMENT
NP	▼	▽
GFF	▲	▽

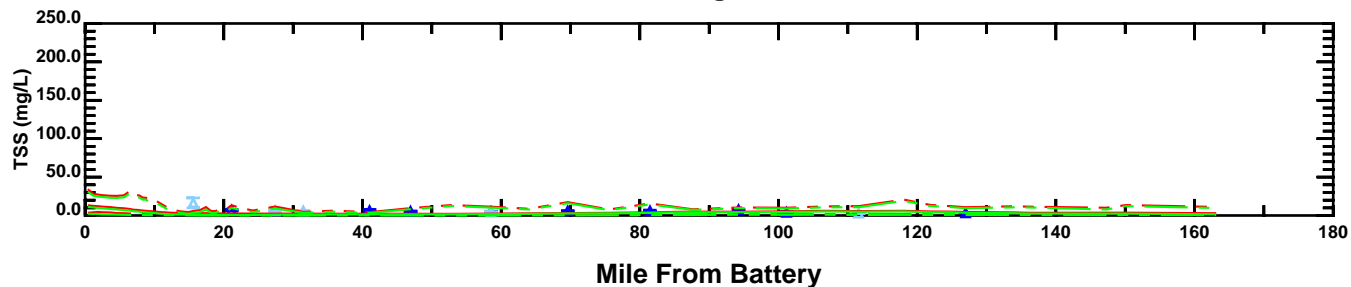
MODEL

—	TSS BOTTOM 30-DAY MEAN
- - -	TSS BOTTOM 30-DAY MAX / MIN
—	COSS BOTTOM 30-DAY MEAN
- - -	COSS BOTTOM 30-DAY MAX / MIN

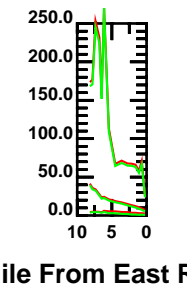
Mile From Mouth Hackensack River

Bottom Layer TSS (mg/L)  
Water Year Starting Oct 1, 2000

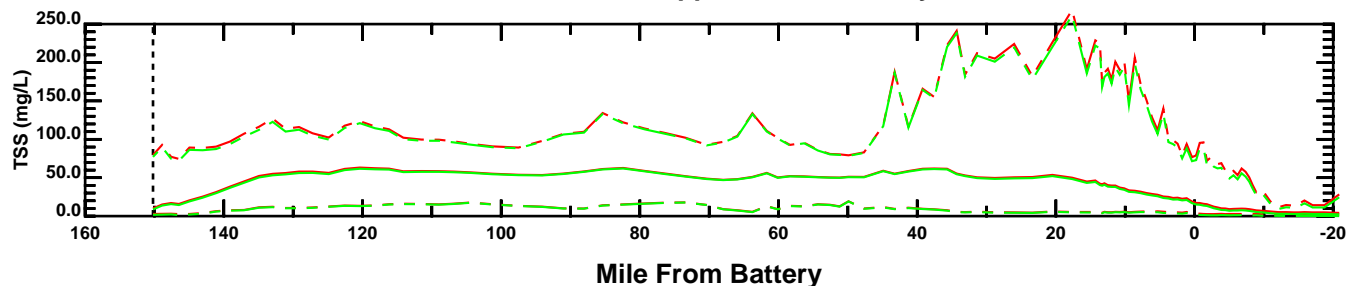
East River and Long Island Sound



Harlem River

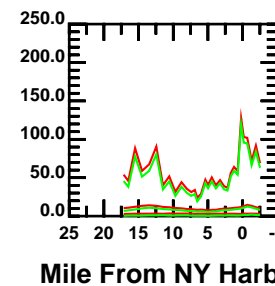


Hudson River, Upper and Lower Bay, Ocean

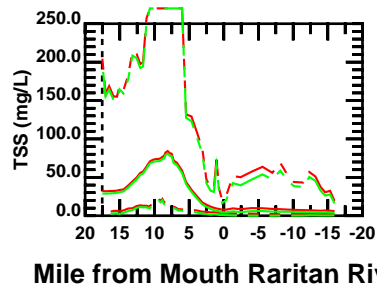


Mile From East River

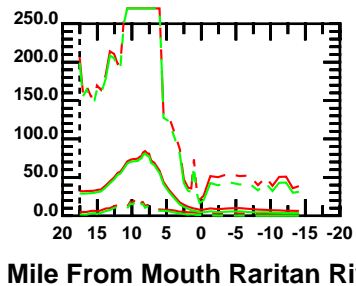
Arthur Kill and Kill Van Kull



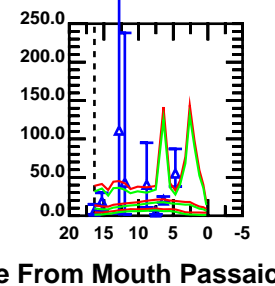
Raritan River and North Shore of Raritan Bay



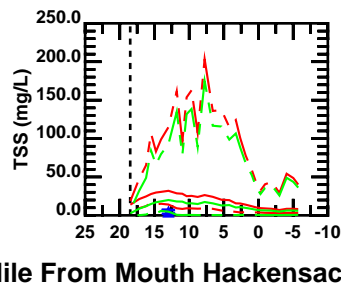
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



December 30 - January 28

DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

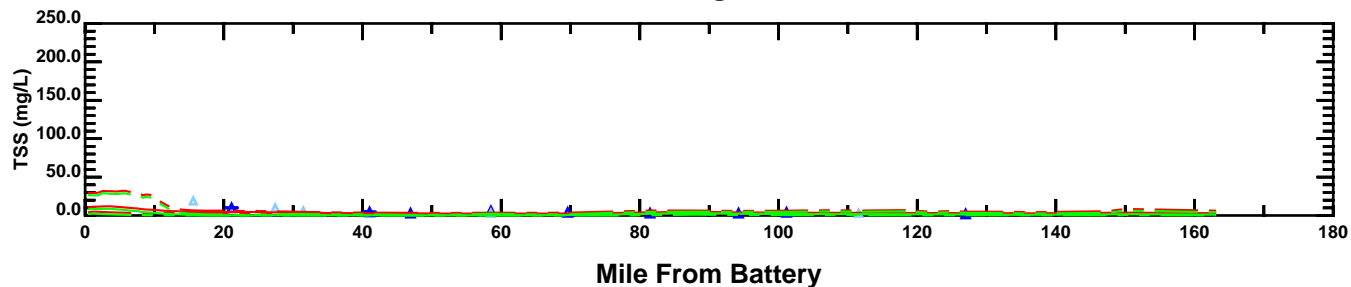
MODEL

—	TSS 30-DAY MEAN
- - -	TSS 30-DAY MAX / MIN
—	COSS 30-DAY MEAN
- - -	COSS 30-DAY MAX / MIN

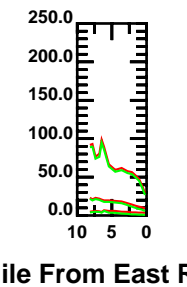
Mile From Mouth Hackensack River

TSS (mg/L) Averaged Over Full Depth  
Water Year Starting Oct 1, 2000

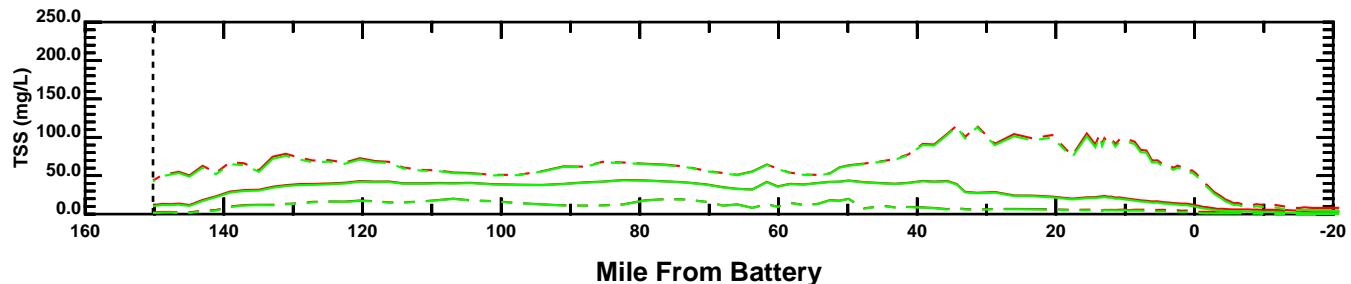
East River and Long Island Sound



Harlem River

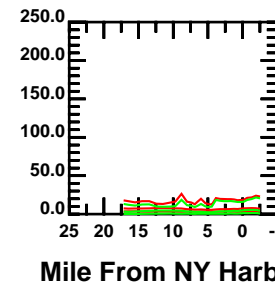


Hudson River, Upper and Lower Bay, Ocean

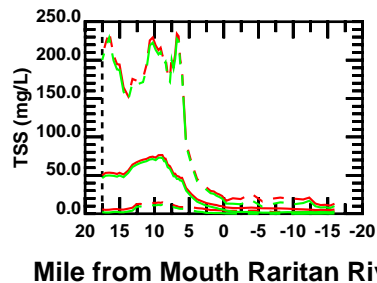


Mile From East River

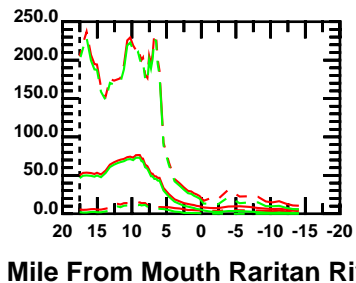
Arthur Kill and Kill Van Kull



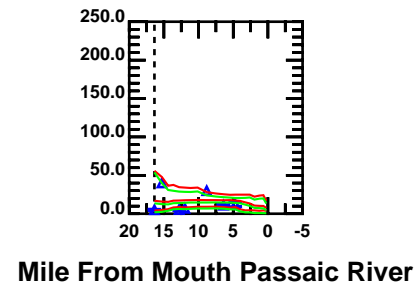
Raritan River and North Shore of Raritan Bay



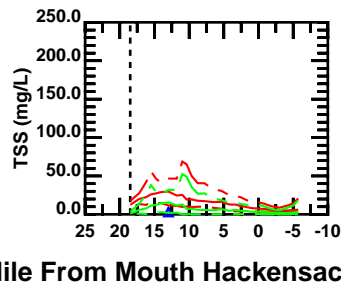
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



January 29 - February 27

DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

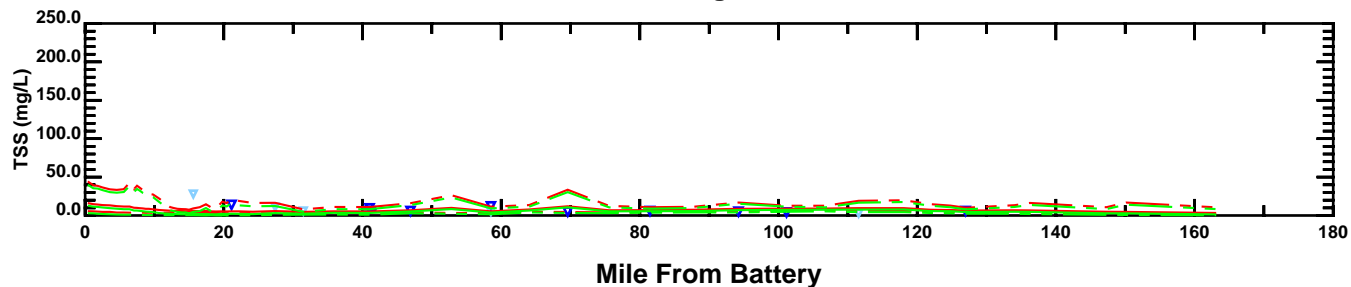
MODEL

—	TSS SURFACE 30-DAY MEAN
- - -	TSS SURFACE 30-DAY MAX / MIN
—	COSS SURFACE 30-DAY MEAN
- - -	COSS SURFACE 30-DAY MAX / MIN

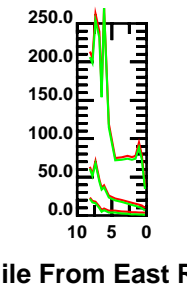
Mile From Mouth Hackensack River

Surface Layer TSS (mg/L)  
Water Year Starting Oct 1, 2000

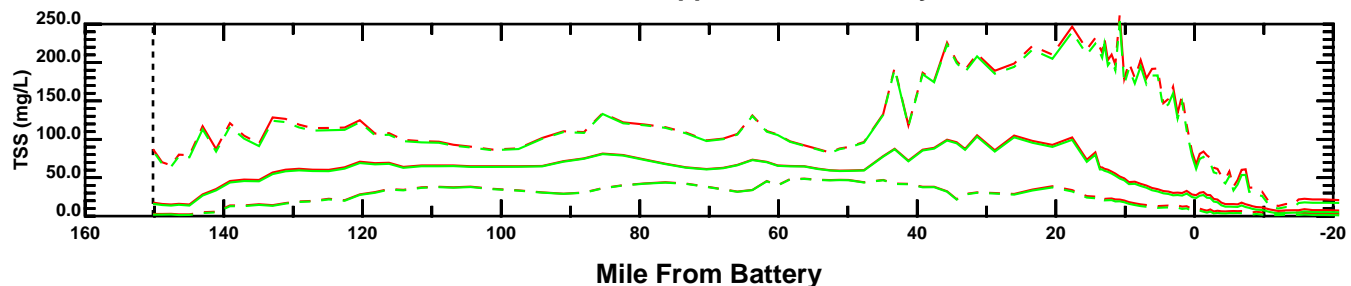
East River and Long Island Sound



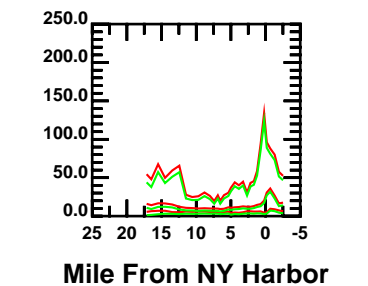
Harlem River



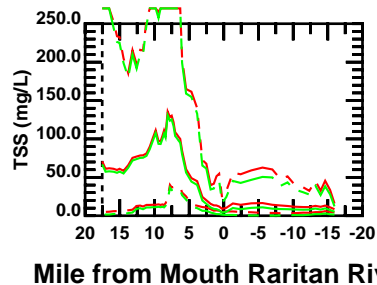
Hudson River, Upper and Lower Bay, Ocean



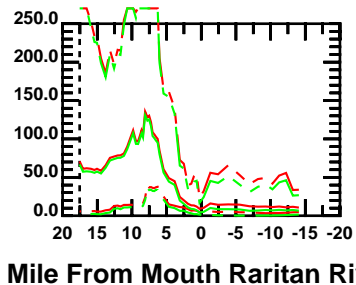
Arthur Kill and Kill Van Kull



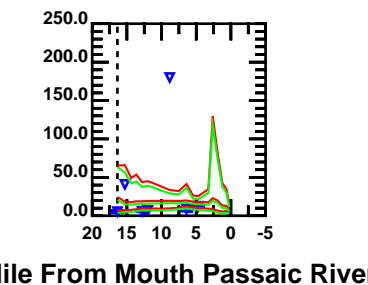
Raritan River and North Shore of Raritan Bay



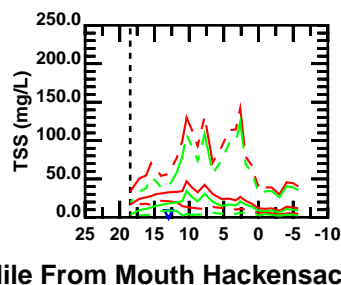
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



January 29 - February 27

DATA	TRANSECT	EMBAYMENT
NP	▼	▽
GFF	▲	▽

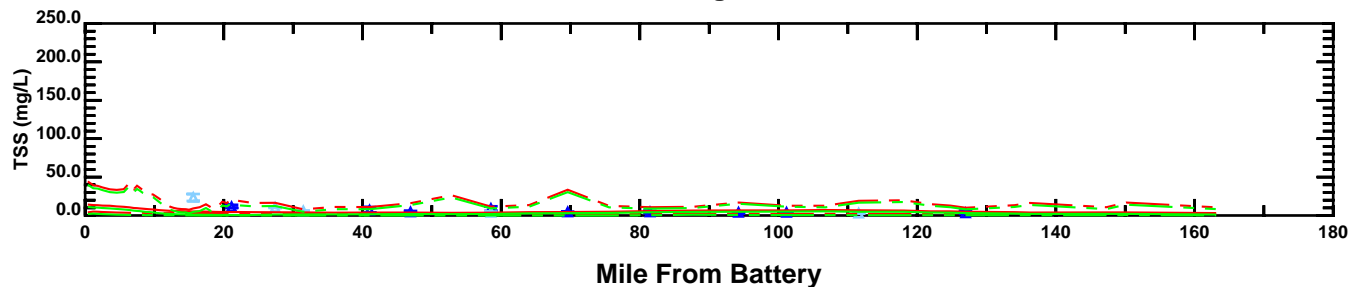
MODEL

—	TSS BOTTOM 30-DAY MEAN
- - -	TSS BOTTOM 30-DAY MAX / MIN
—	COSS BOTTOM 30-DAY MEAN
- - -	COSS BOTTOM 30-DAY MAX / MIN

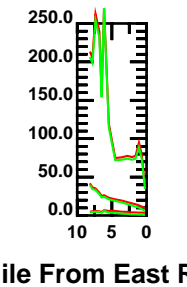
Mile From Mouth Hackensack River

Bottom Layer TSS (mg/L)  
Water Year Starting Oct 1, 2000

East River and Long Island Sound

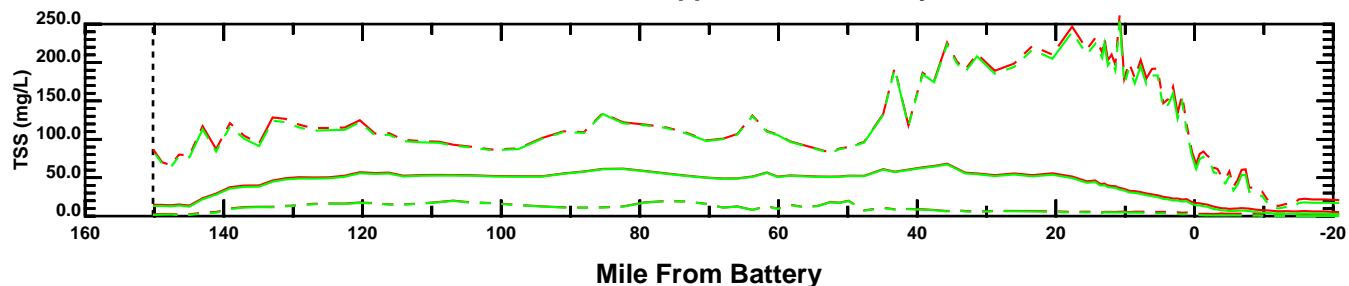


Harlem River

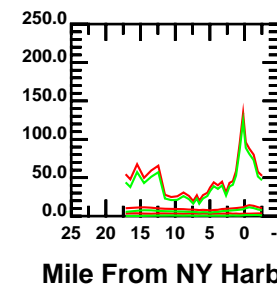


Mile From East River

Hudson River, Upper and Lower Bay, Ocean

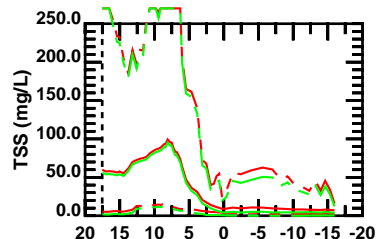


Arthur Kill and Kill Van Kull



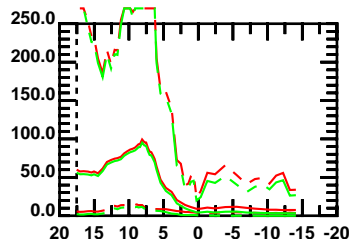
Mile From NY Harbor

Raritan River and North Shore of Raritan Bay



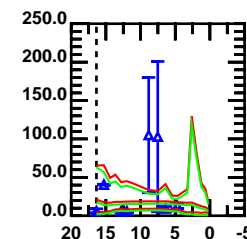
Mile from Mouth Raritan River

Raritan River and South Shore of Raritan Bay



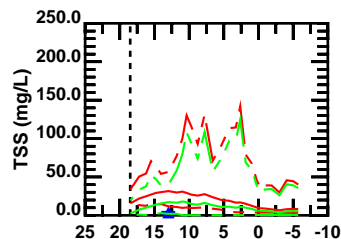
Mile From Mouth Raritan River

Passaic River



Mile From Mouth Passaic River

Hackensack River and Newark Bay



Mile From Mouth Hackensack River

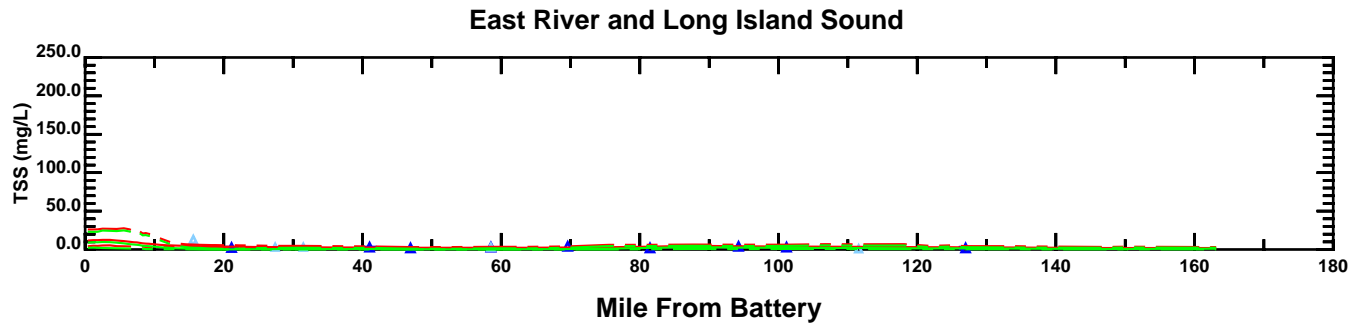
January 29 - February 27

DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

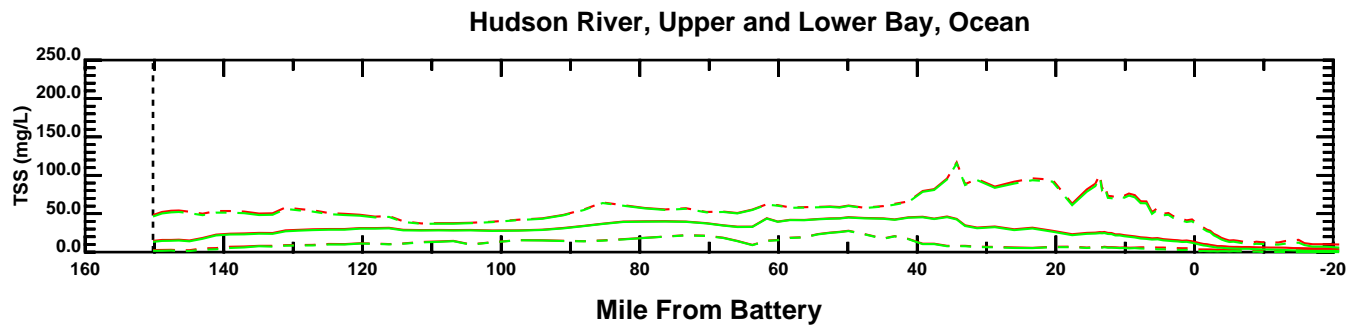
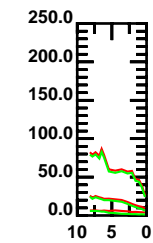
MODEL

—	TSS 30-DAY MEAN
- - -	TSS 30-DAY MAX / MIN
—	COSS 30-DAY MEAN
- - -	COSS 30-DAY MAX / MIN

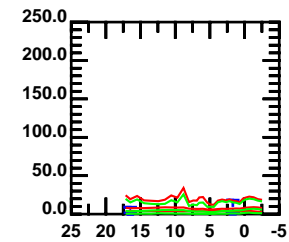
TSS (mg/L) Averaged Over Full Depth  
Water Year Starting Oct 1, 2000



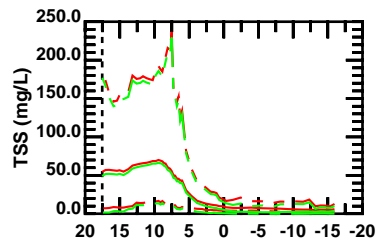
### Harlem River



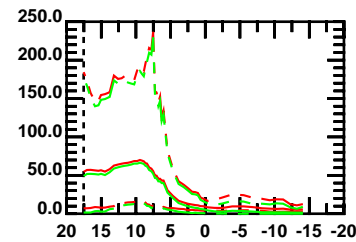
### Arthur Kill and Kill Van Kull



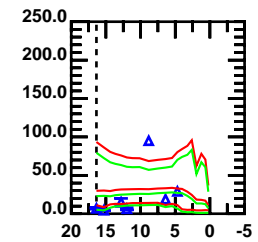
### Raritan River and North Shore of Raritan Bay



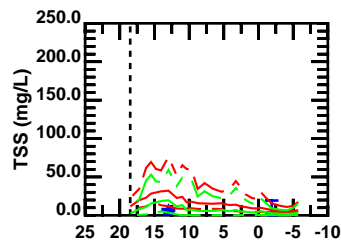
### Raritan River and South Shore of Raritan Bay



### Passaic River



### Hackensack River and Newark Bay



February 28 - March 28

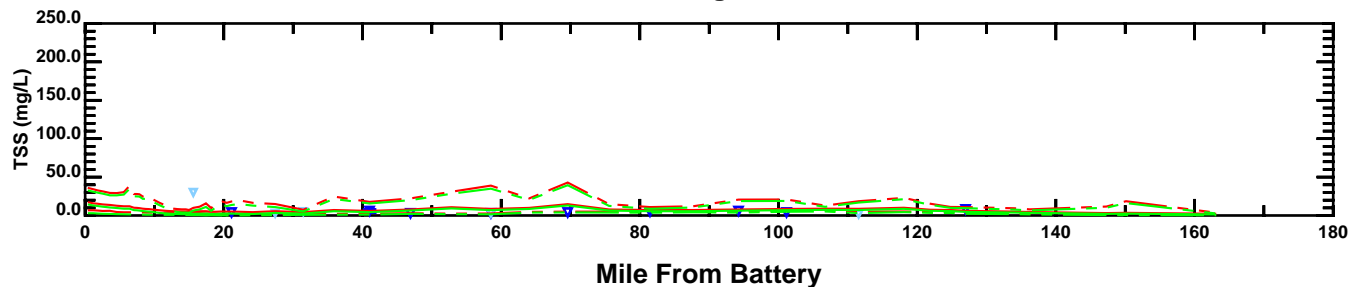
DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

MODEL

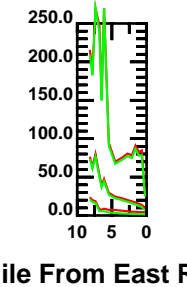
—	TSS SURFACE 30-DAY MEAN
- - -	TSS SURFACE 30-DAY MAX / MIN
—	COSS SURFACE 30-DAY MEAN
- - -	COSS SURFACE 30-DAY MAX / MIN

**Surface Layer TSS (mg/L)  
Water Year Starting Oct 1, 2000**

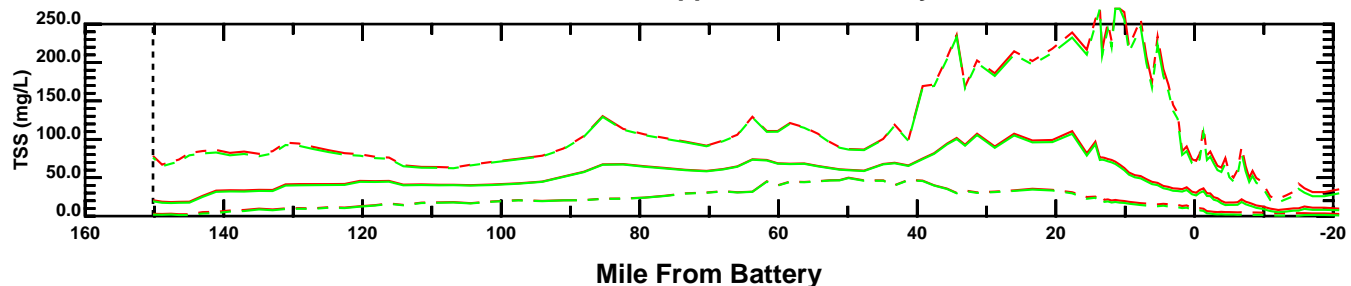
East River and Long Island Sound



Harlem River

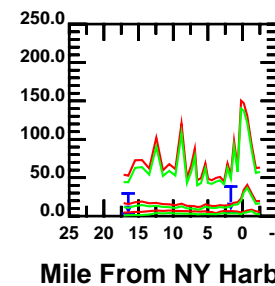


Hudson River, Upper and Lower Bay, Ocean

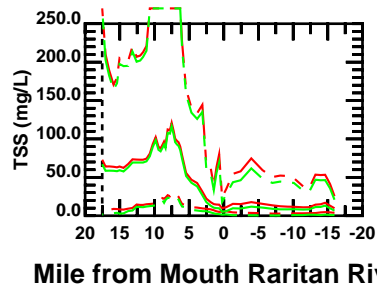


Mile From East River

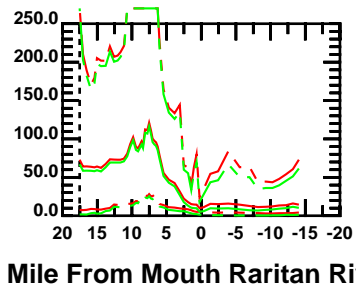
Arthur Kill and Kill Van Kull



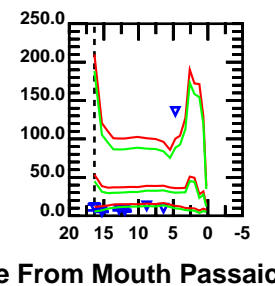
Raritan River and North Shore of Raritan Bay



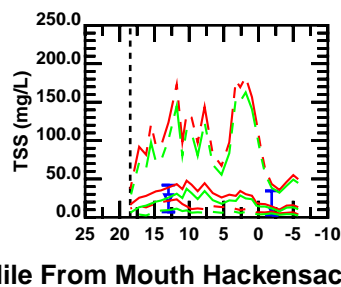
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



February 28 - March 28

DATA	TRANSECT	EMBAYMENT
NP	▼	▽
GFF	▲	▽

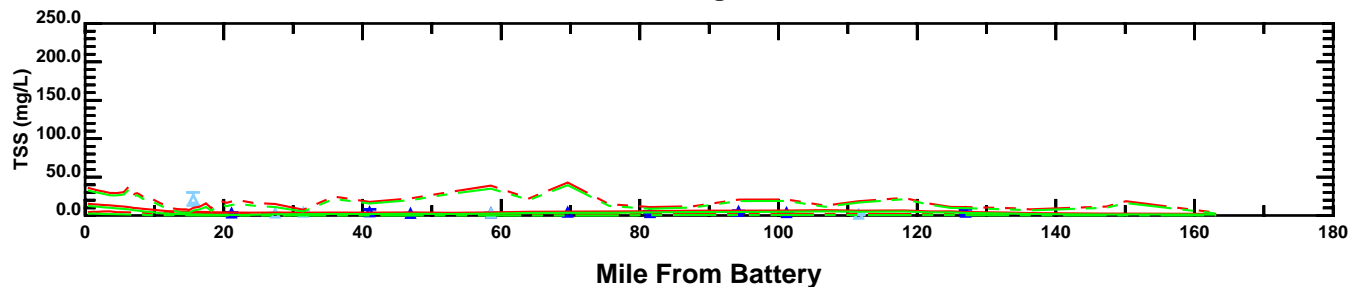
MODEL

—	TSS BOTTOM 30-DAY MEAN
- - -	TSS BOTTOM 30-DAY MAX / MIN
—	COSS BOTTOM 30-DAY MEAN
- - -	COSS BOTTOM 30-DAY MAX / MIN

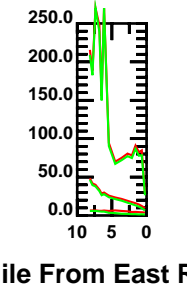
Mile From Mouth Hackensack River

Bottom Layer TSS (mg/L)  
Water Year Starting Oct 1, 2000

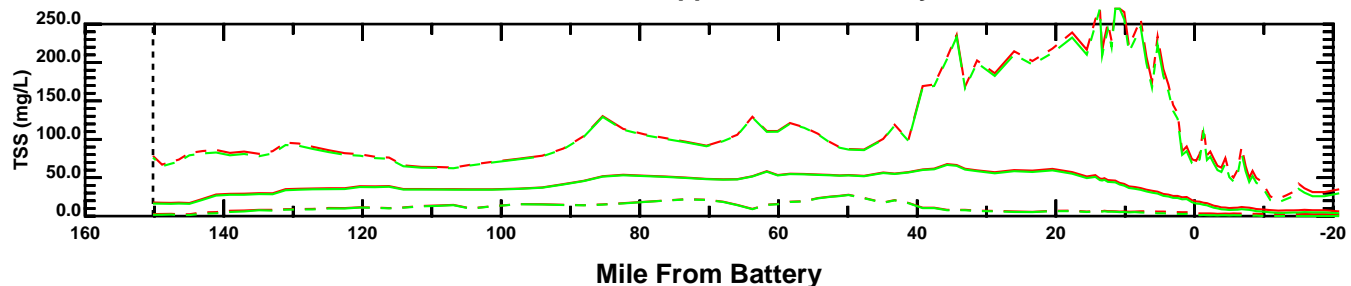
East River and Long Island Sound



Harlem River

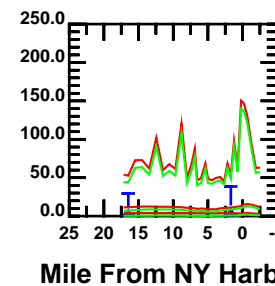


Hudson River, Upper and Lower Bay, Ocean

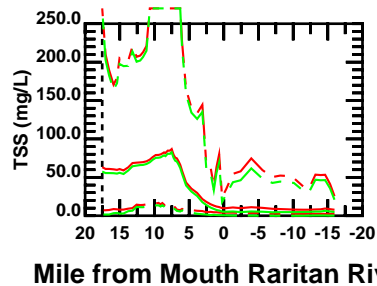


Mile From East River

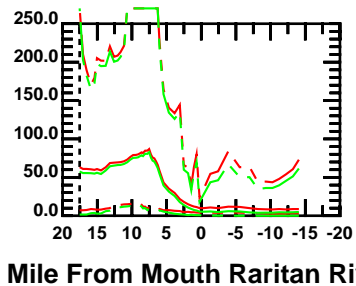
Arthur Kill and Kill Van Kull



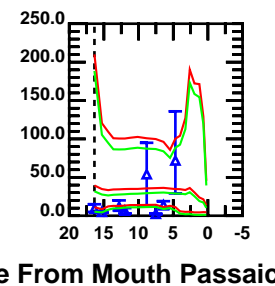
Raritan River and North Shore of Raritan Bay



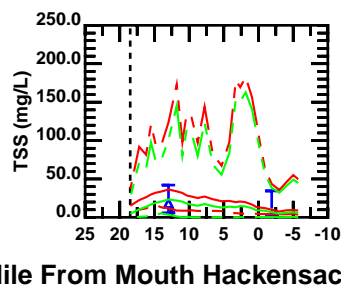
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



February 28 - March 28

DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

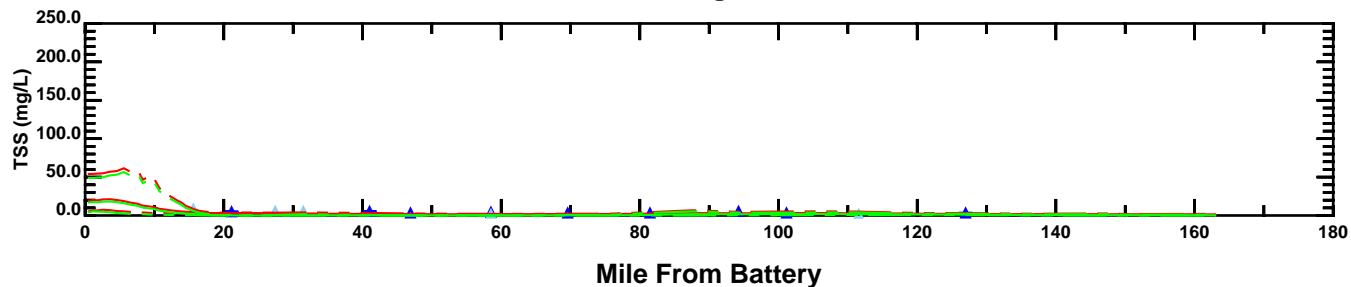
MODEL	
—	TSS 30-DAY MEAN
- - -	TSS 30-DAY MAX / MIN
—	COSS 30-DAY MEAN
- - -	COSS 30-DAY MAX / MIN

Mile From Mouth Hackensack River

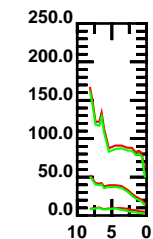
TSS (mg/L) Averaged Over Full Depth  
Water Year Starting Oct 1, 2000



East River and Long Island Sound

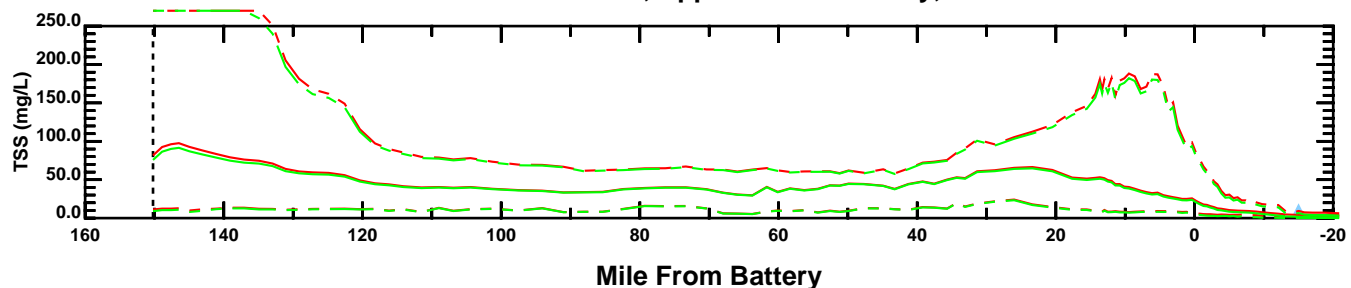


Harlem River

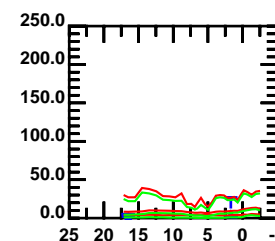


Mile From East River

Hudson River, Upper and Lower Bay, Ocean

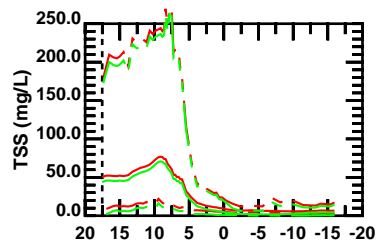


Arthur Kill and Kill Van Kull



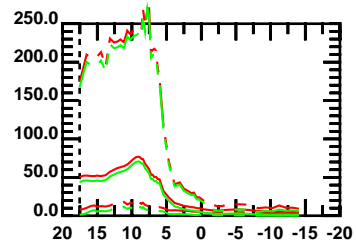
Mile From NY Harbor

Raritan River and North Shore of Raritan Bay



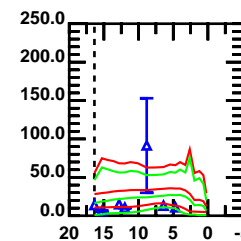
Mile from Mouth Raritan River

Raritan River and South Shore of Raritan Bay



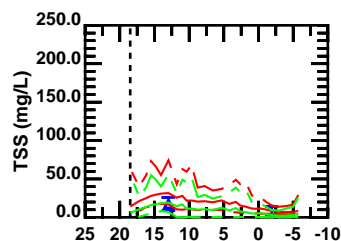
Mile From Mouth Raritan River

Passaic River



Mile From Mouth Passaic River

Hackensack River and Newark Bay



Mile From Mouth Hackensack River

March 29 - April 27

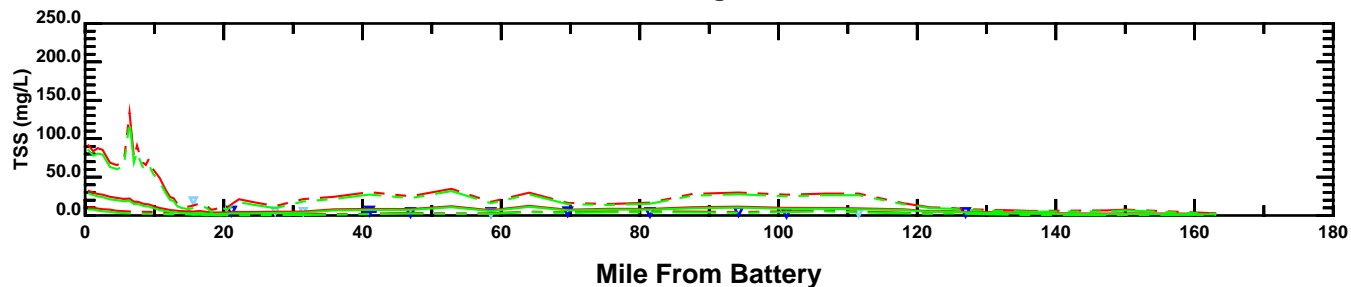
DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

MODEL

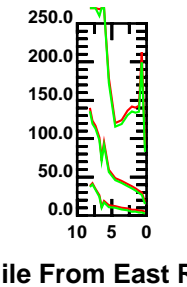
—	TSS SURFACE 30-DAY MEAN
- - -	TSS SURFACE 30-DAY MAX / MIN
—	COSS SURFACE 30-DAY MEAN
- - -	COSS SURFACE 30-DAY MAX / MIN

Surface Layer TSS (mg/L)  
Water Year Starting Oct 1, 2000

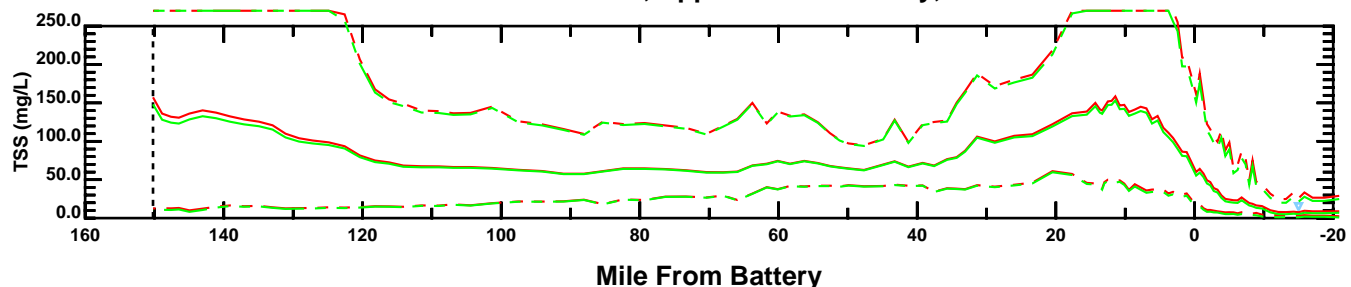
East River and Long Island Sound



Harlem River

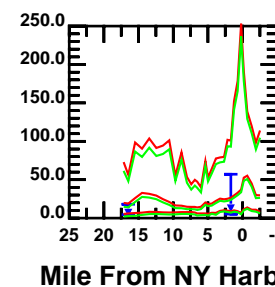


Hudson River, Upper and Lower Bay, Ocean

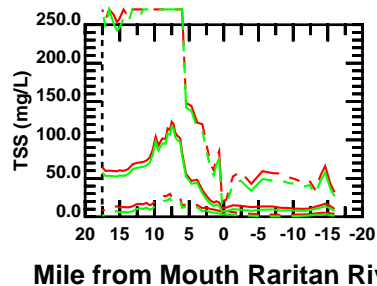


Mile From East River

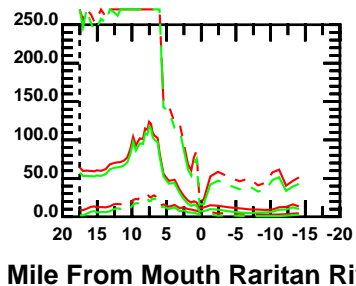
Arthur Kill and Kill Van Kull



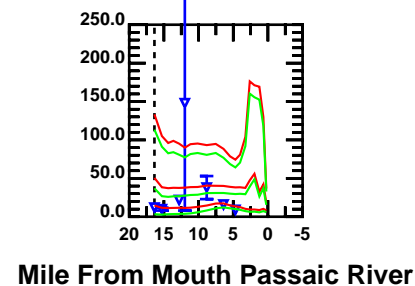
Raritan River and North Shore of Raritan Bay



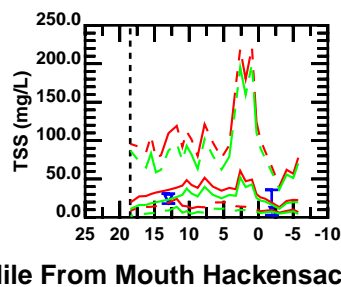
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



March 29 - April 27

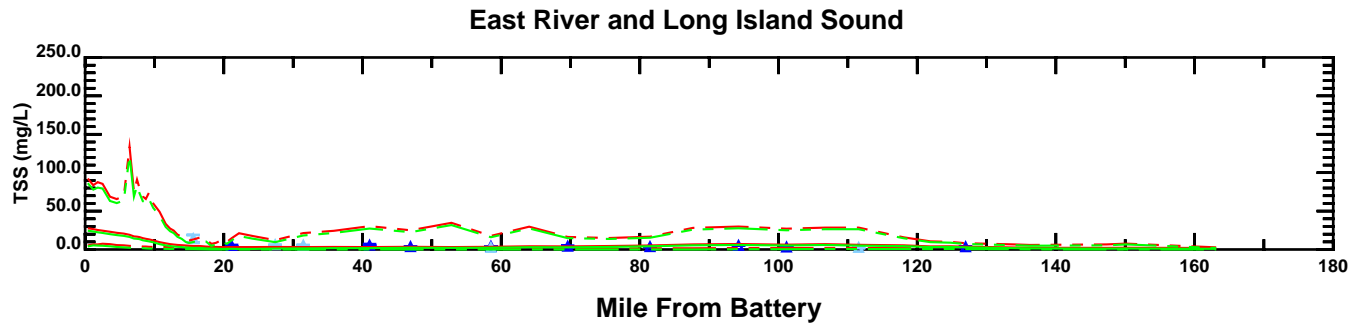
DATA	TRANSECT	EMBAYMENT
NP	▼	▽
GFF	▲	▽

MODEL

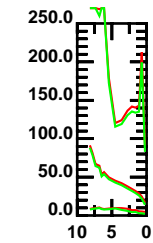
—	TSS BOTTOM 30-DAY MEAN
- - -	TSS BOTTOM 30-DAY MAX / MIN
—	COSS BOTTOM 30-DAY MEAN
- - -	COSS BOTTOM 30-DAY MAX / MIN

Mile From Mouth Hackensack River

Bottom Layer TSS (mg/L)  
Water Year Starting Oct 1, 2000

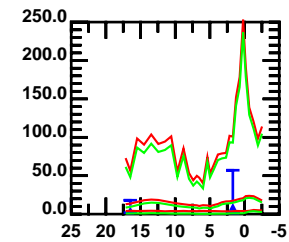


### Harlem River

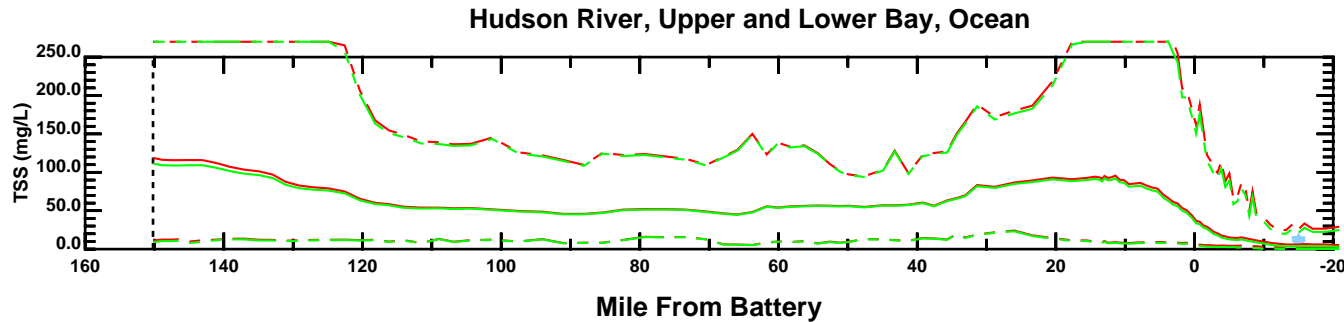


### Arthur Kill and Kill Van Kull

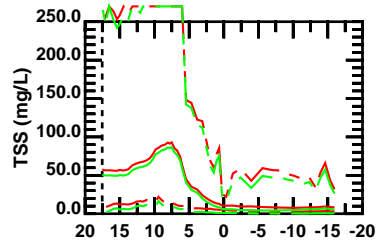
### Arthur Kill and Kill Van Kull



### Mile From NY Harbor

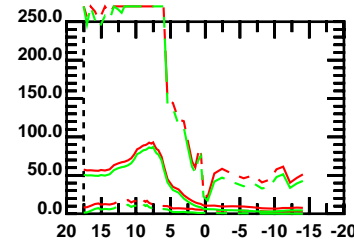


### Raritan River and North Shore of Raritan Bay



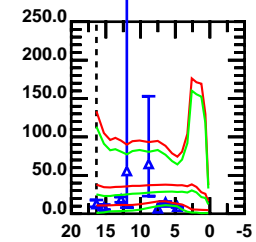
### Mile from Mouth Raritan River

### Raritan River and South Shore of Raritan Bay



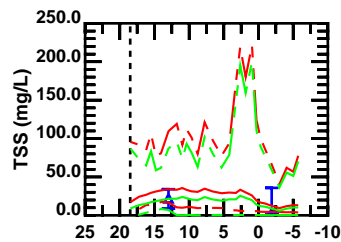
### Mile From Mouth Raritan River

### Passaic River



### Mile From Mouth Passaic River

### Hackensack River and Newark Bay



### Mile From Mouth Hackensack River

March 29 - April 27

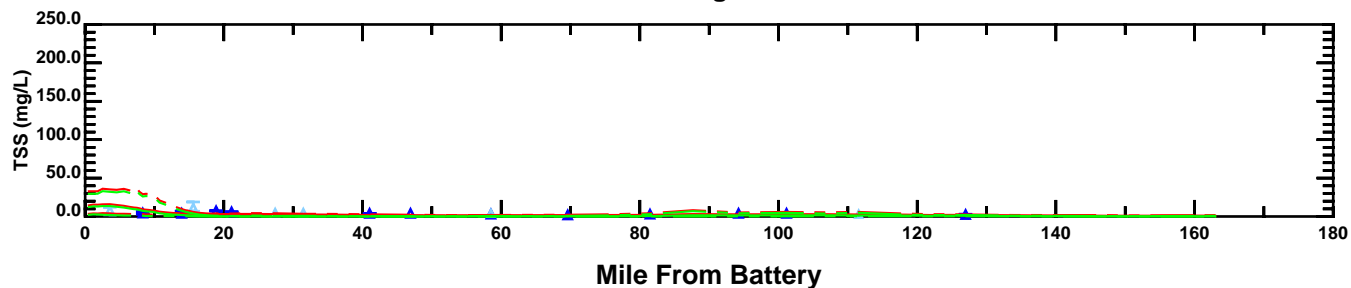
DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

MODEL

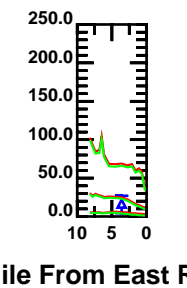
—	TSS 30-DAY MEAN
- - -	TSS 30-DAY MAX / MIN
—	COSS 30-DAY MEAN
- - -	COSS 30-DAY MAX / MIN

TSS (mg/L) Averaged Over Full Depth  
Water Year Starting Oct 1, 2000

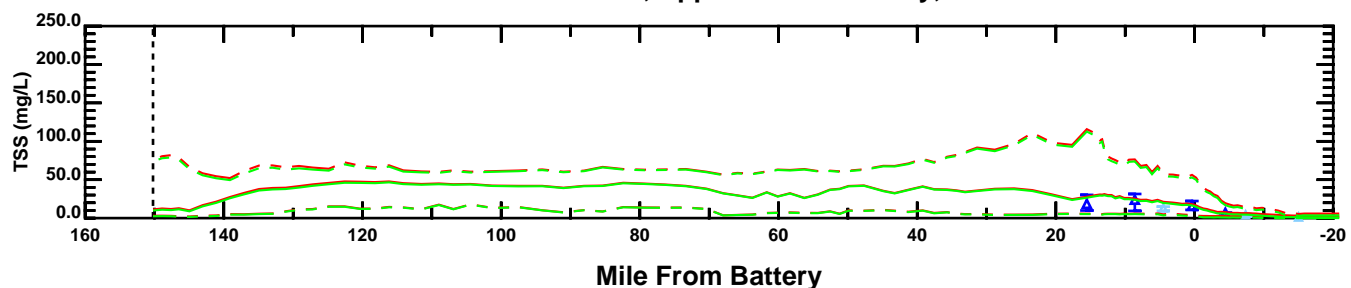
East River and Long Island Sound



Harlem River

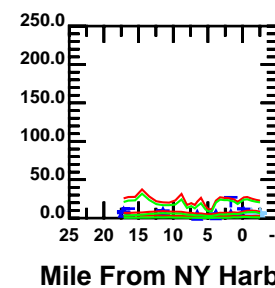


Hudson River, Upper and Lower Bay, Ocean

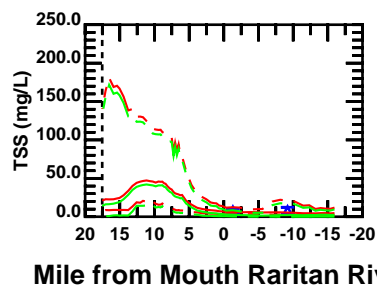


Mile From East River

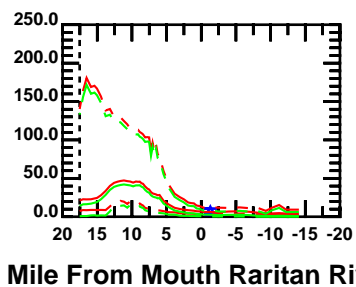
Arthur Kill and Kill Van Kull



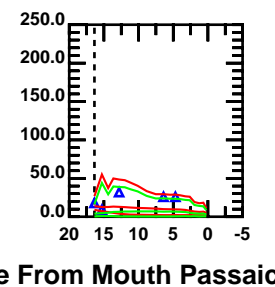
Raritan River and North Shore of Raritan Bay



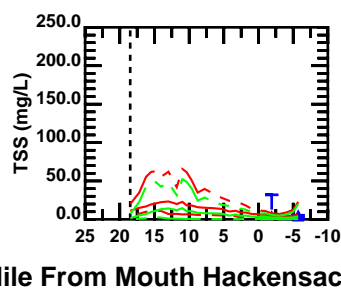
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



April 28 - May 27

DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

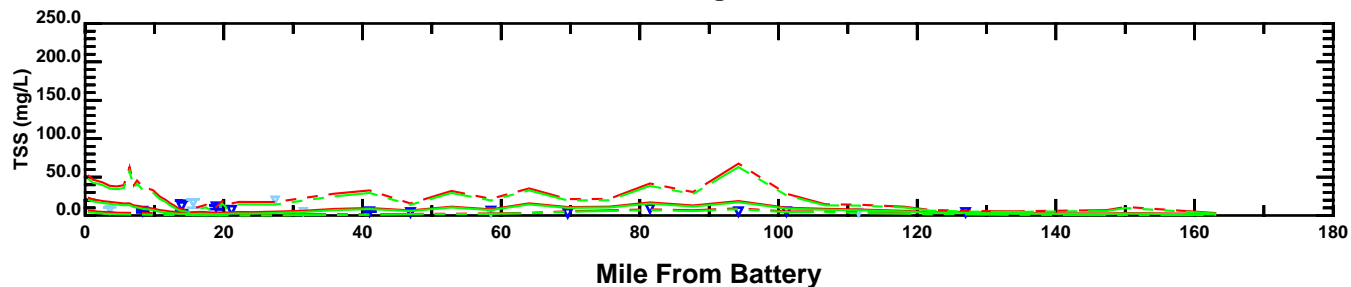
MODEL

—	TSS SURFACE 30-DAY MEAN
- - -	TSS SURFACE 30-DAY MAX / MIN
—	COSS SURFACE 30-DAY MEAN
- - -	COSS SURFACE 30-DAY MAX / MIN

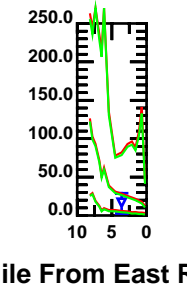
Mile From Mouth Hackensack River

Surface Layer TSS (mg/L)  
Water Year Starting Oct 1, 2000

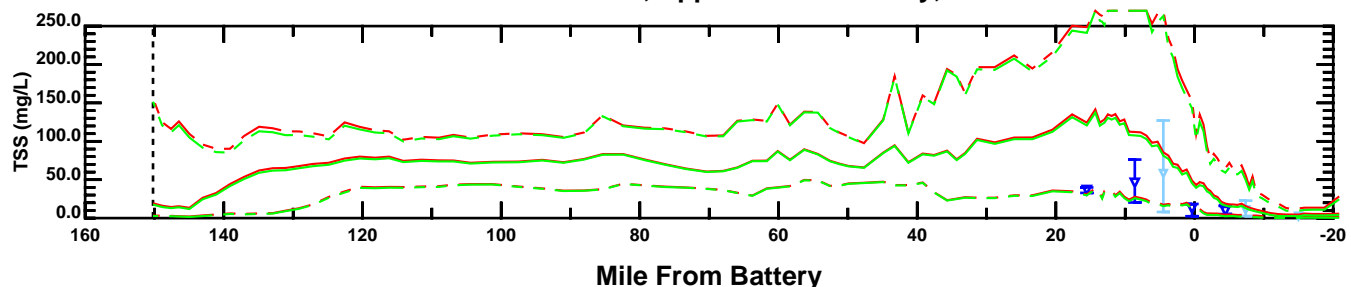
East River and Long Island Sound



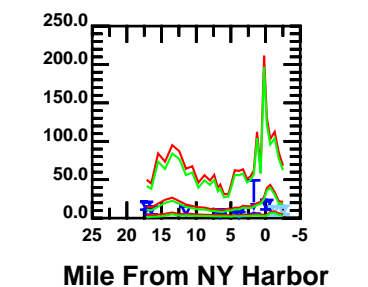
Harlem River



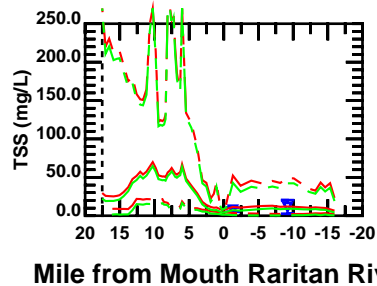
Hudson River, Upper and Lower Bay, Ocean



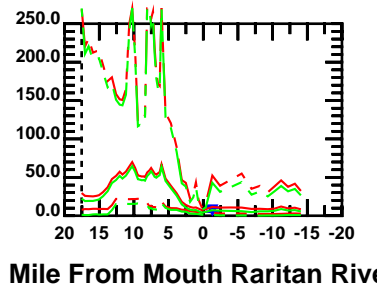
Arthur Kill and Kill Van Kull



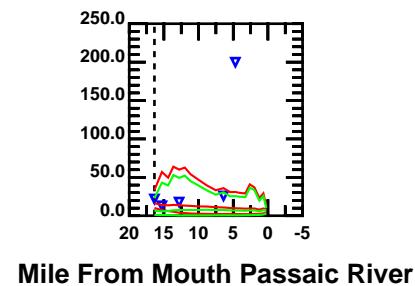
Raritan River and North Shore of Raritan Bay



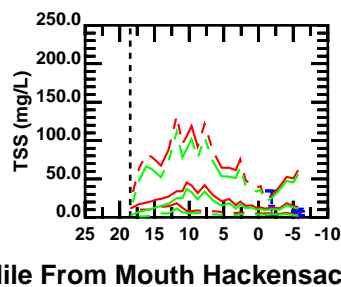
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



April 28 - May 27

DATA	TRANSECT	EMBAYMENT
NP	▼	▽
GFF	▲	▽

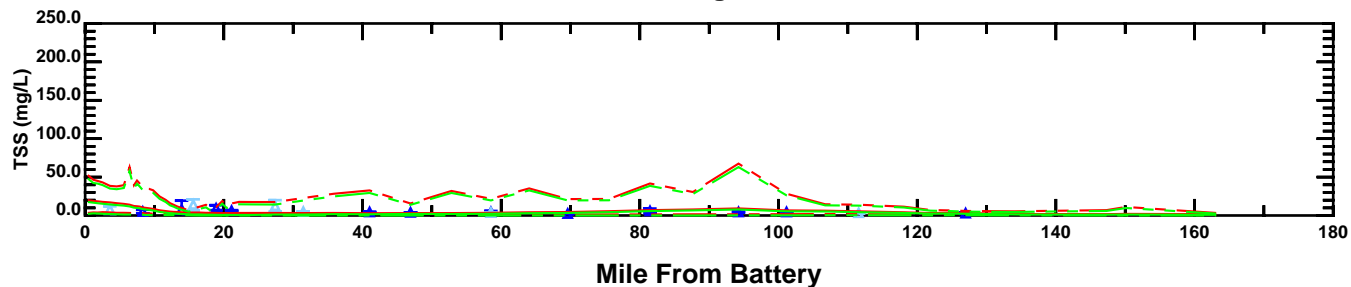
MODEL

—	TSS BOTTOM 30-DAY MEAN
- - -	TSS BOTTOM 30-DAY MAX / MIN
—	COSS BOTTOM 30-DAY MEAN
- - -	COSS BOTTOM 30-DAY MAX / MIN

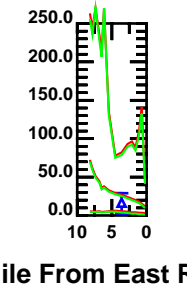
Mile From Mouth Hackensack River

Bottom Layer TSS (mg/L)  
Water Year Starting Oct 1, 2000

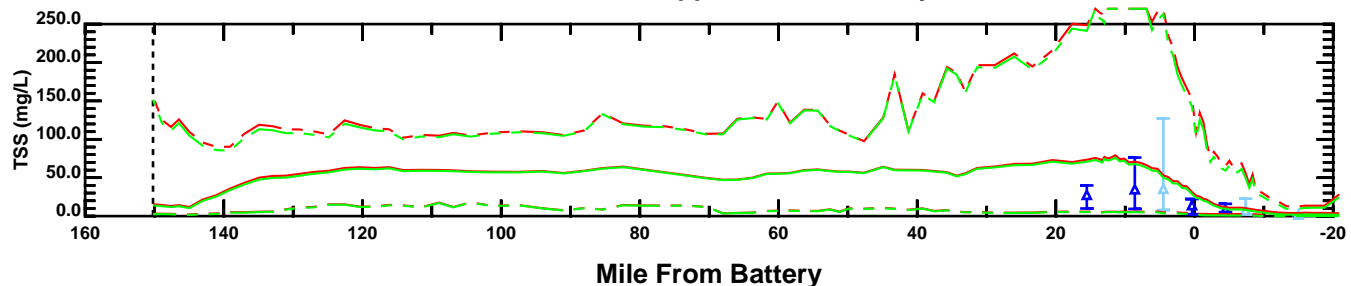
East River and Long Island Sound



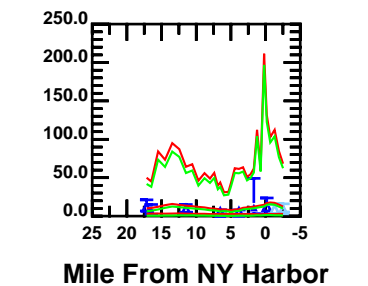
Harlem River



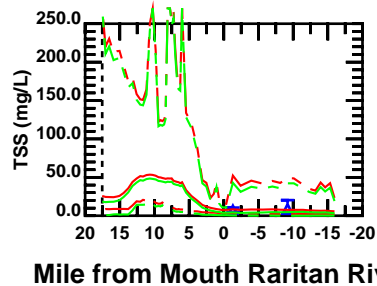
Hudson River, Upper and Lower Bay, Ocean



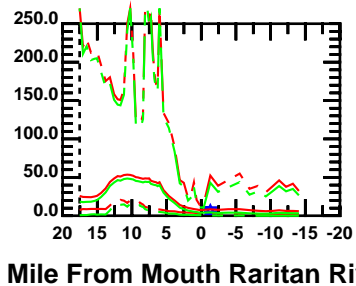
Arthur Kill and Kill Van Kull



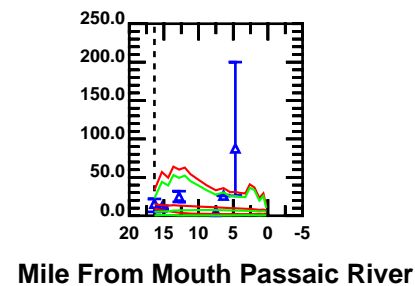
Raritan River and North Shore of Raritan Bay



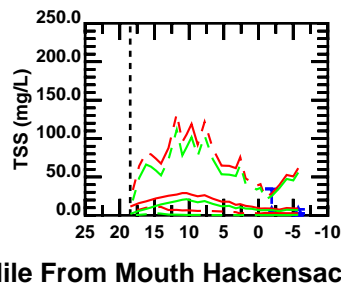
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



April 28 - May 27

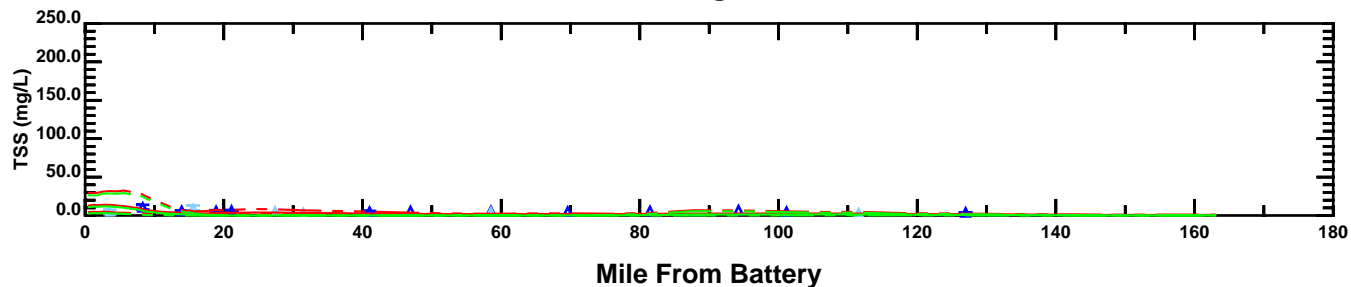
DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

MODEL	
—	TSS 30-DAY MEAN
- - -	TSS 30-DAY MAX / MIN
—	COSS 30-DAY MEAN
- - -	COSS 30-DAY MAX / MIN

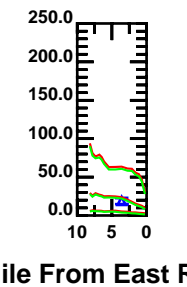
Mile From Mouth Hackensack River

TSS (mg/L) Averaged Over Full Depth  
Water Year Starting Oct 1, 2000

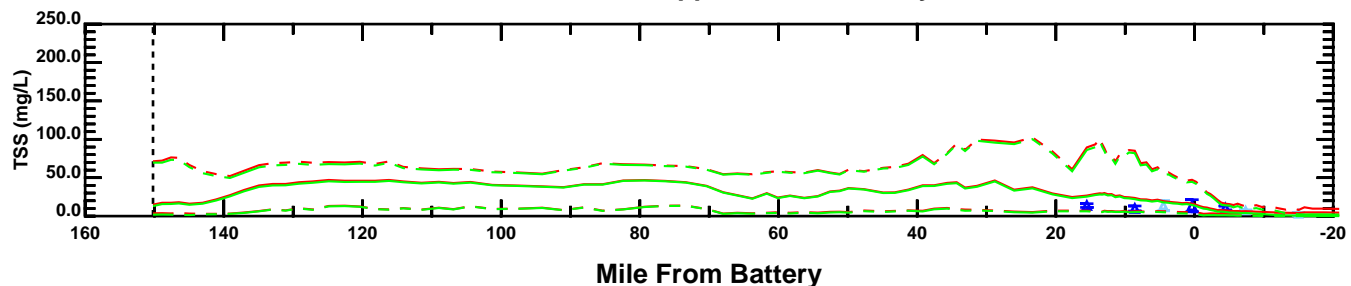
East River and Long Island Sound



Harlem River

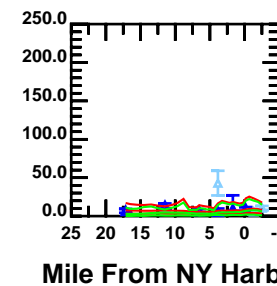


Hudson River, Upper and Lower Bay, Ocean

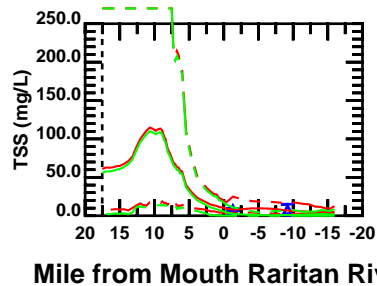


Mile From East River

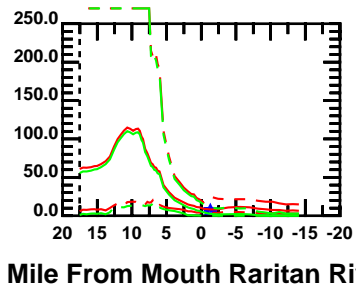
Arthur Kill and Kill Van Kull



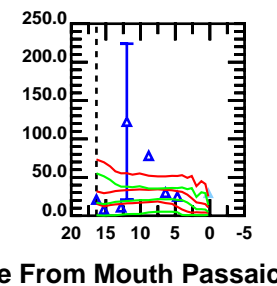
Raritan River and North Shore of Raritan Bay



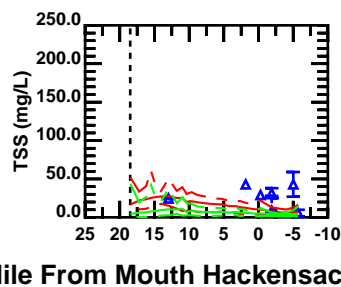
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



May 28 - June 26

DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

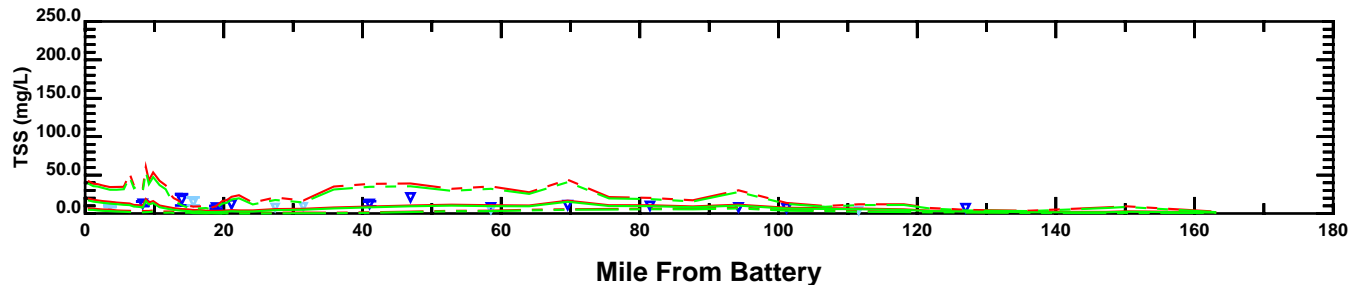
MODEL

—	TSS SURFACE 30-DAY MEAN
- - -	TSS SURFACE 30-DAY MAX / MIN
—	COSS SURFACE 30-DAY MEAN
- - -	COSS SURFACE 30-DAY MAX / MIN

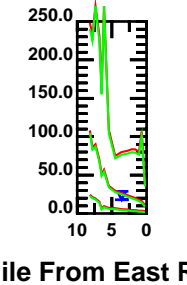
Mile From Mouth Hackensack River

Surface Layer TSS (mg/L)  
Water Year Starting Oct 1, 2000

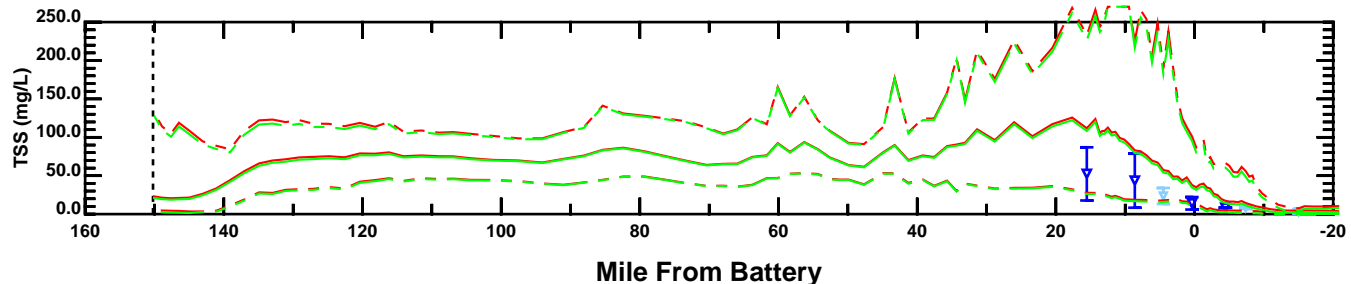
East River and Long Island Sound



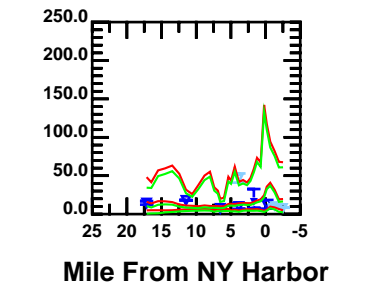
Harlem River



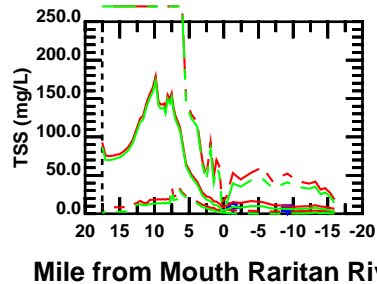
Hudson River, Upper and Lower Bay, Ocean



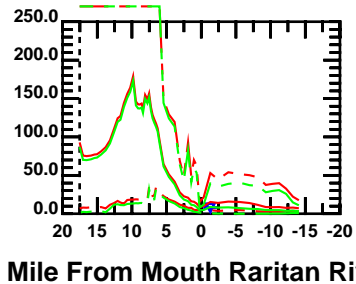
Arthur Kill and Kill Van Kull



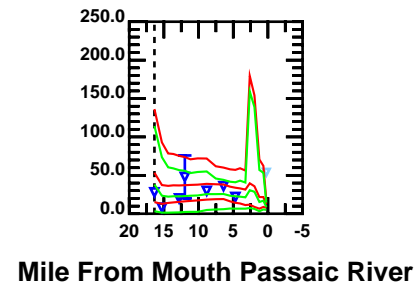
Raritan River and North Shore of Raritan Bay



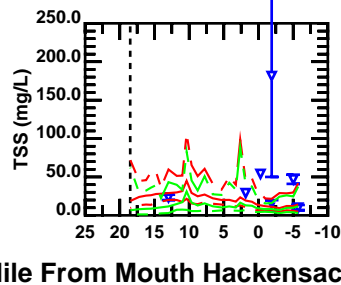
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



May 28 - June 26

DATA	TRANSECT	EMBAYMENT
NP	▼	▽
GFF	▲	▽

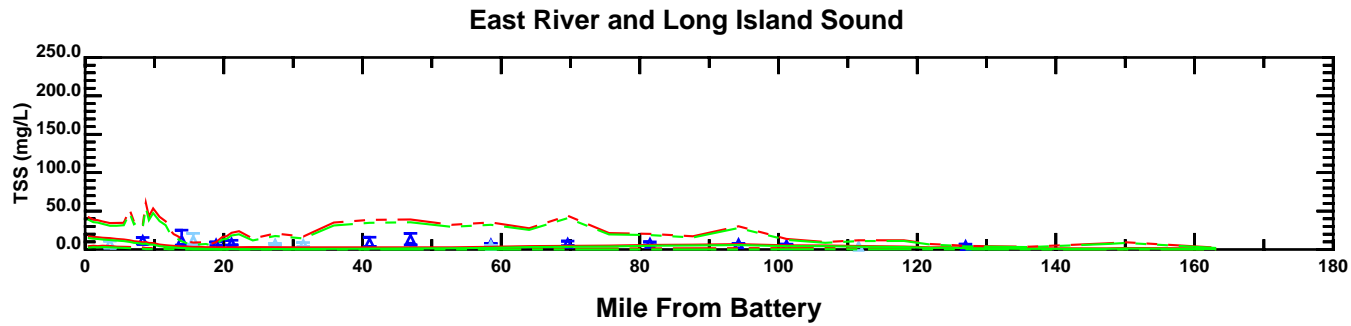
MODEL

—	TSS BOTTOM 30-DAY MEAN
- - -	TSS BOTTOM 30-DAY MAX / MIN
—	COSS BOTTOM 30-DAY MEAN
- - -	COSS BOTTOM 30-DAY MAX / MIN

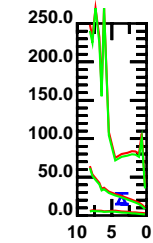
Mile From Mouth Hackensack River

Bottom Layer TSS (mg/L)  
Water Year Starting Oct 1, 2000



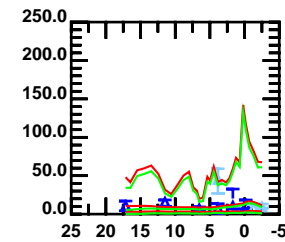


### Harlem River

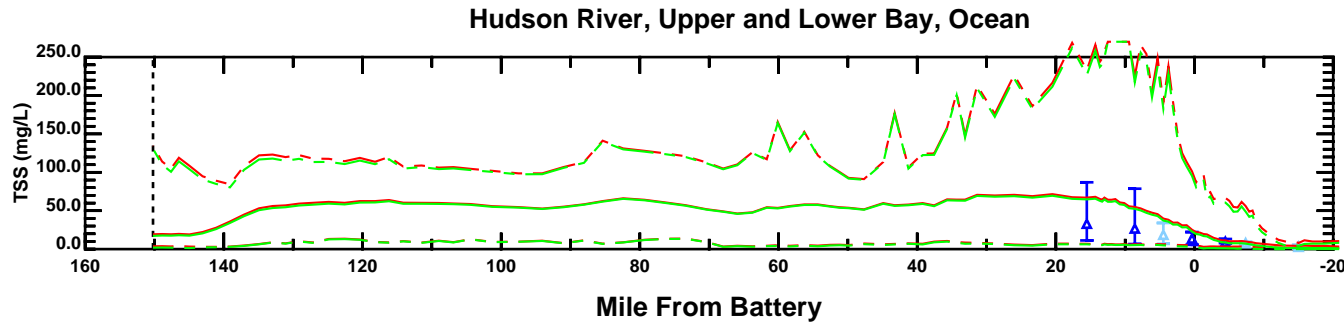


### Arthur Kill and Kill Van Kull

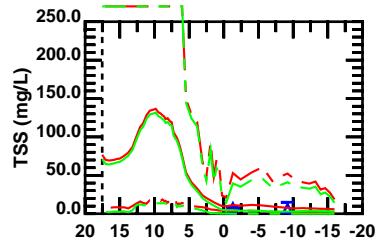
### Arthur Kill and Kill Van Kull



### Mile From NY Harbor

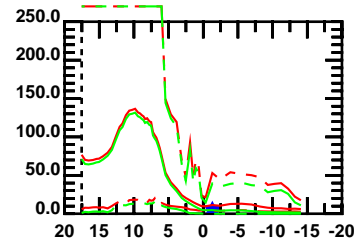


### Raritan River and North Shore of Raritan Bay



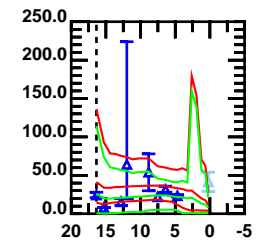
### Mile from Mouth Raritan River

### Raritan River and South Shore of Raritan Bay



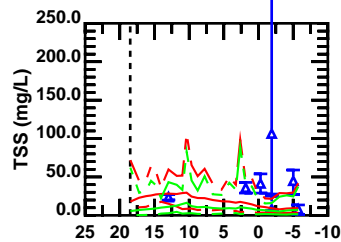
### Mile From Mouth Raritan River

### Passaic River



### Mile From Mouth Passaic River

### Hackensack River and Newark Bay



### Mile From Mouth Hackensack River

May 28 - June 26

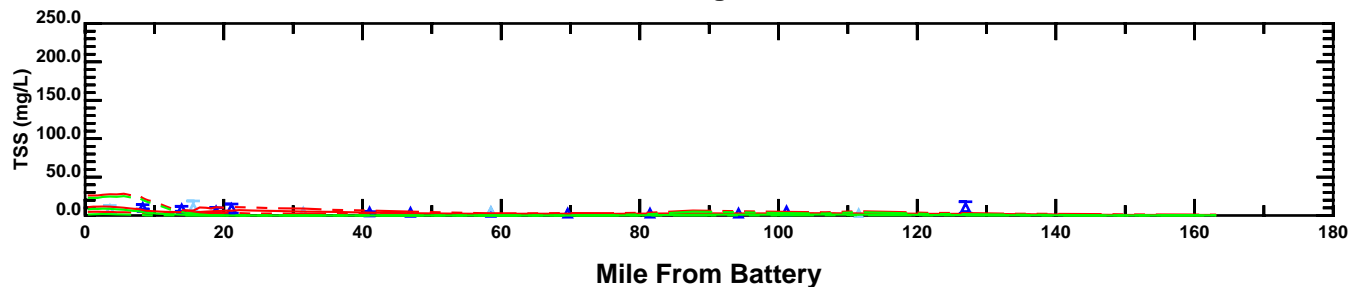
DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

MODEL

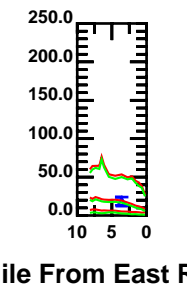
—	TSS 30-DAY MEAN
- - -	TSS 30-DAY MAX / MIN
—	COSS 30-DAY MEAN
- - -	COSS 30-DAY MAX / MIN

TSS (mg/L) Averaged Over Full Depth  
Water Year Starting Oct 1, 2000

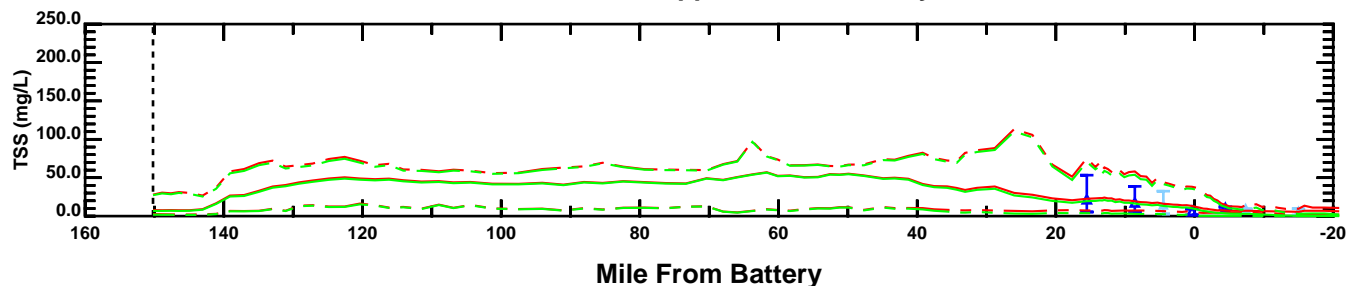
East River and Long Island Sound



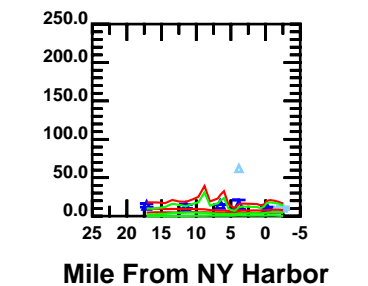
Harlem River



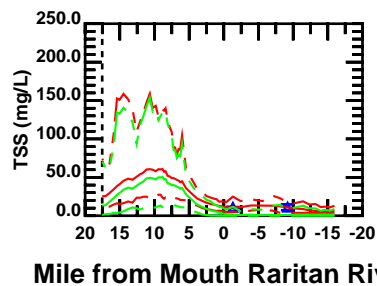
Hudson River, Upper and Lower Bay, Ocean



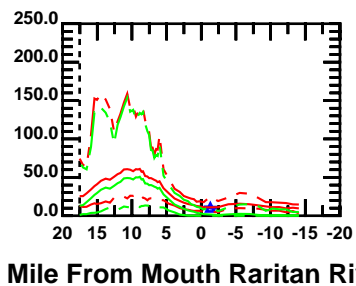
Arthur Kill and Kill Van Kull



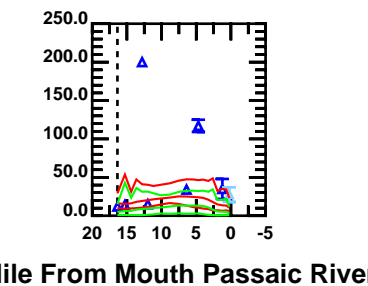
Raritan River and North Shore of Raritan Bay



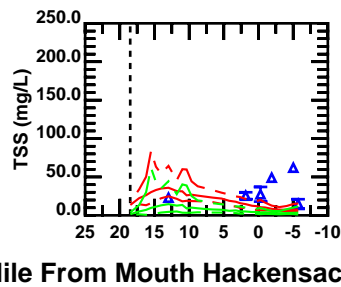
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



June 27 - July 26

DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

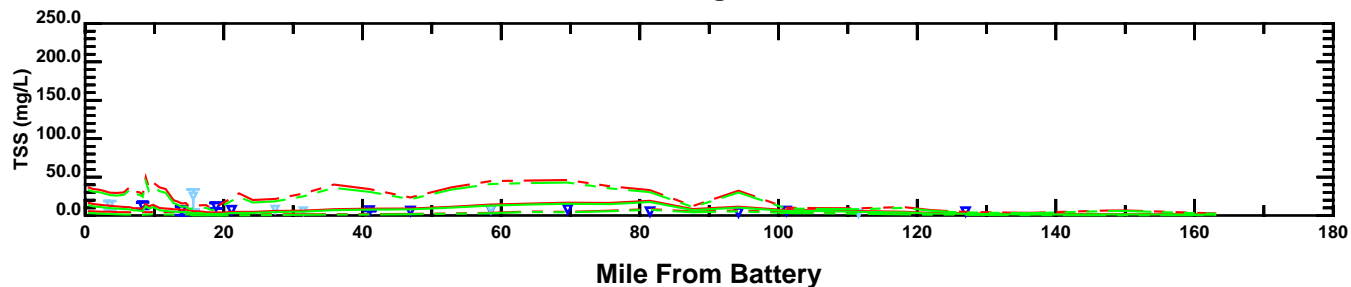
MODEL

—	TSS SURFACE 30-DAY MEAN
- - -	TSS SURFACE 30-DAY MAX / MIN
—	COSS SURFACE 30-DAY MEAN
- - -	COSS SURFACE 30-DAY MAX / MIN

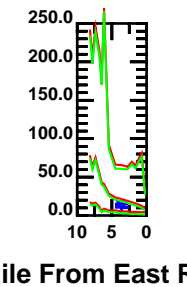
Mile From Mouth Hackensack River

Surface Layer TSS (mg/L)  
Water Year Starting Oct 1, 2000

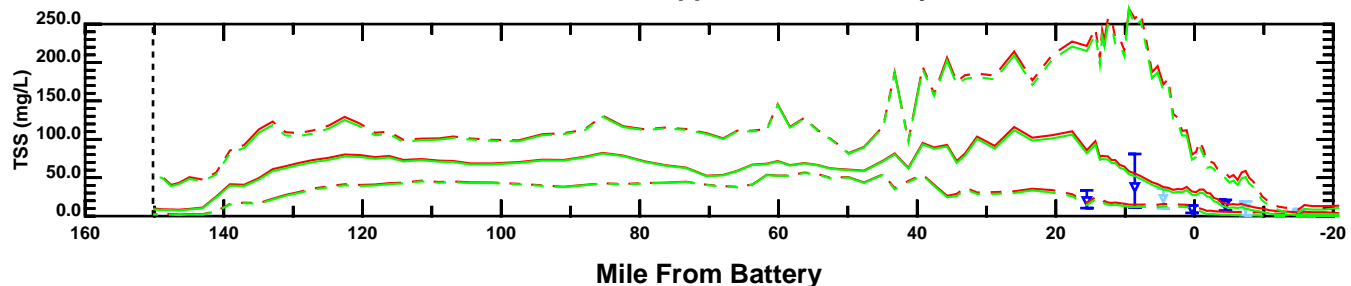
East River and Long Island Sound



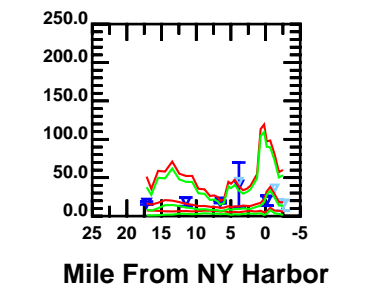
Harlem River



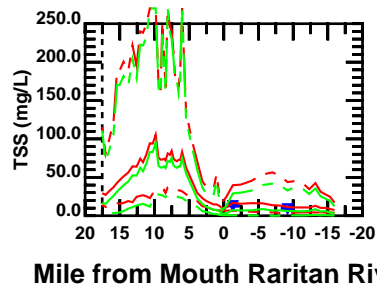
Hudson River, Upper and Lower Bay, Ocean



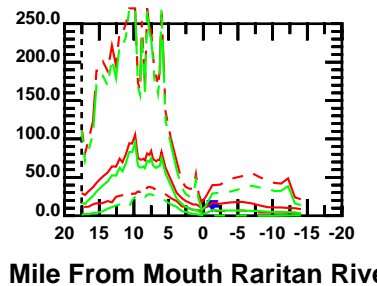
Arthur Kill and Kill Van Kull



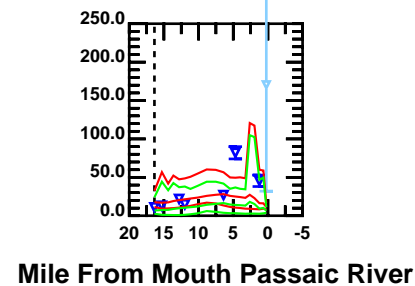
Raritan River and North Shore of Raritan Bay



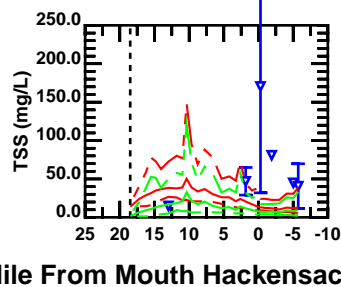
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



June 27 - July 26

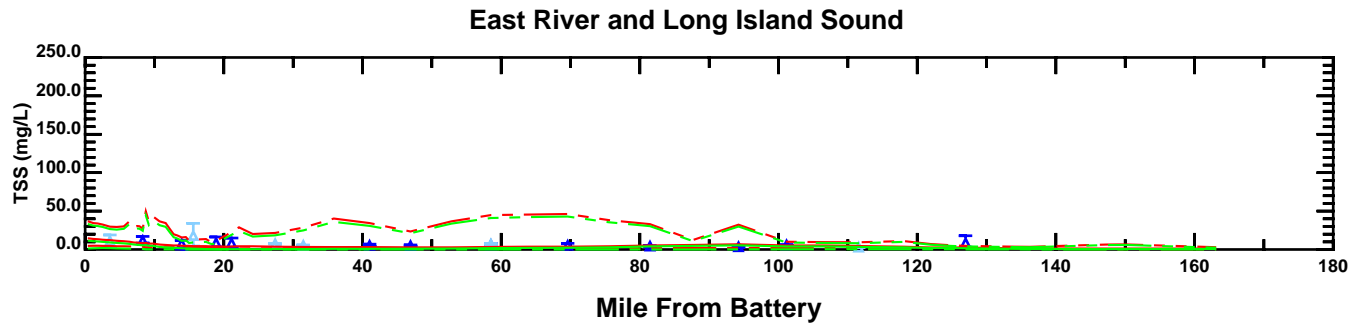
DATA	TRANSECT	EMBAYMENT
NP	▼	▽
GFF	▲	▽

MODEL

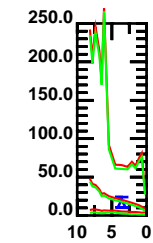
—	TSS BOTTOM 30-DAY MEAN
- - -	TSS BOTTOM 30-DAY MAX / MIN
—	COSS BOTTOM 30-DAY MEAN
- - -	COSS BOTTOM 30-DAY MAX / MIN

Mile From Mouth Hackensack River

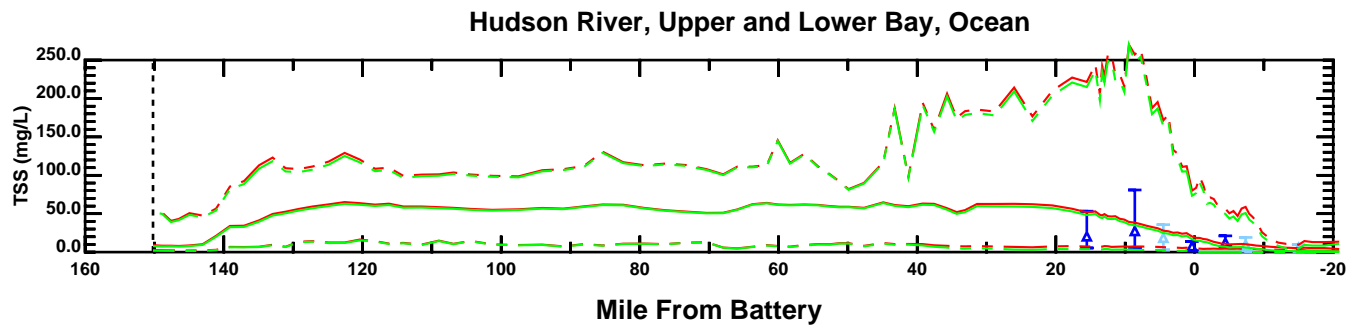
Bottom Layer TSS (mg/L)  
Water Year Starting Oct 1, 2000



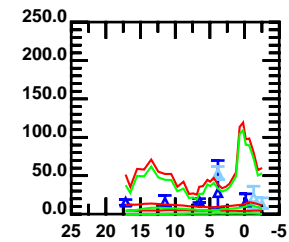
### Harlem River



### Mile From East River

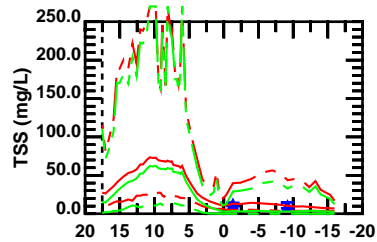


### Arthur Kill and Kill Van Kull



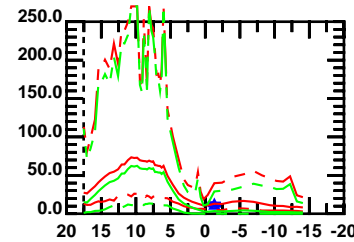
### Mile From NY Harbor

### Raritan River and North Shore of Raritan Bay



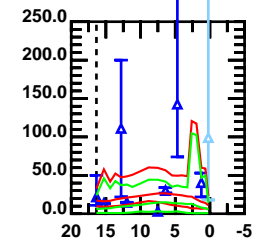
### Mile from Mouth Raritan River

### Raritan River and South Shore of Raritan Bay



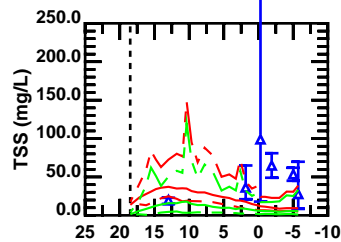
### Mile From Mouth Raritan River

### Passaic River



### Mile From Mouth Passaic River

### Hackensack River and Newark Bay



### Mile From Mouth Hackensack River

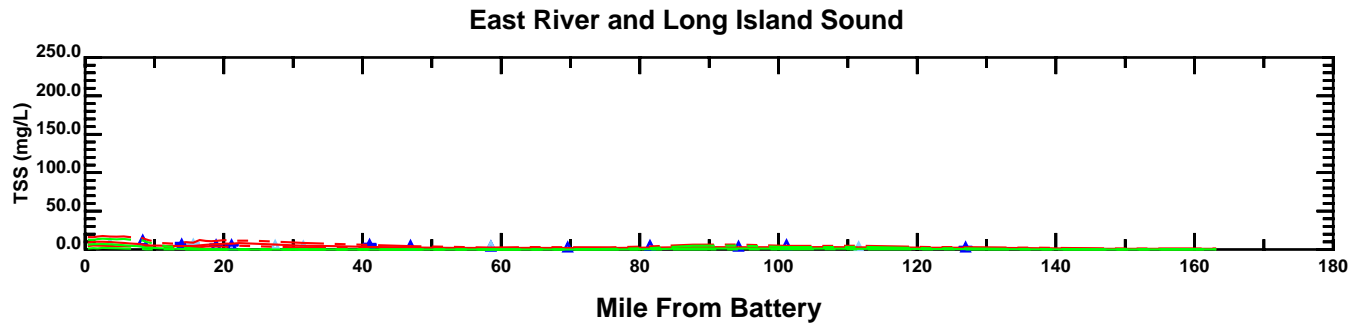
June 27 - July 26

DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

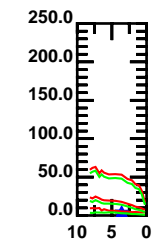
MODEL

—	TSS 30-DAY MEAN
- - -	TSS 30-DAY MAX / MIN
—	COSS 30-DAY MEAN
- - -	COSS 30-DAY MAX / MIN

**TSS (mg/L) Averaged Over Full Depth  
Water Year Starting Oct 1, 2000**

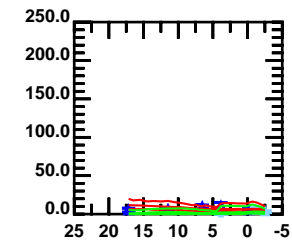


### Harlem River

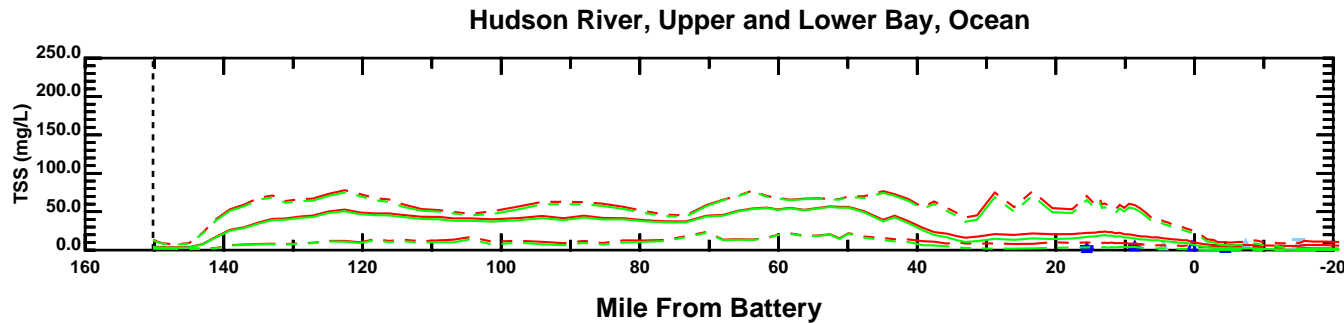


### Arthur Kill and Kill Van Kull

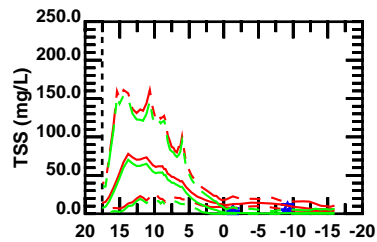
### Arthur Kill and Kill Van Kull



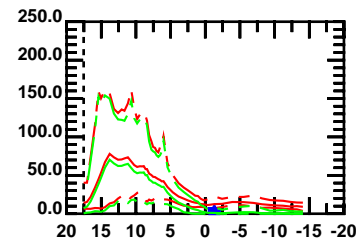
### Mile From NY Harbor



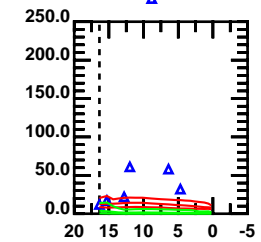
### Raritan River and North Shore of Raritan Bay



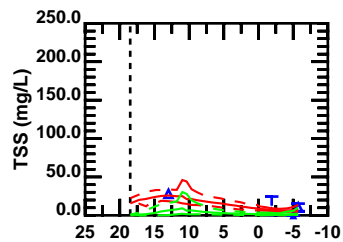
### Raritan River and South Shore of Raritan Bay



### Passaic River



### Hackensack River and Newark Bay



July 27 - August 25

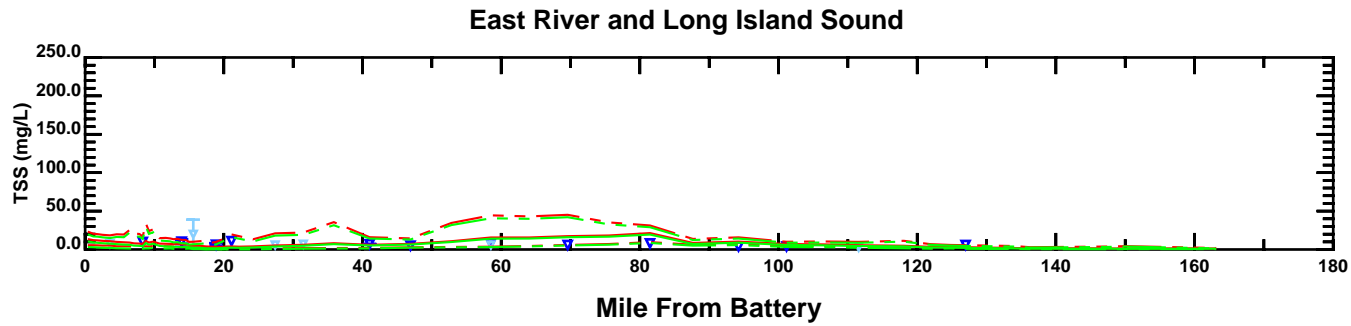
DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

MODEL

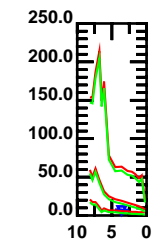
—	TSS SURFACE 30-DAY MEAN
- - -	TSS SURFACE 30-DAY MAX / MIN
—	COSS SURFACE 30-DAY MEAN
- - -	COSS SURFACE 30-DAY MAX / MIN

### Mile From Mouth Hackensack River

Surface Layer TSS (mg/L)  
Water Year Starting Oct 1, 2000

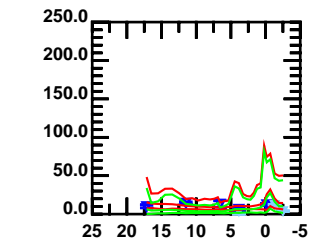


### Harlem River

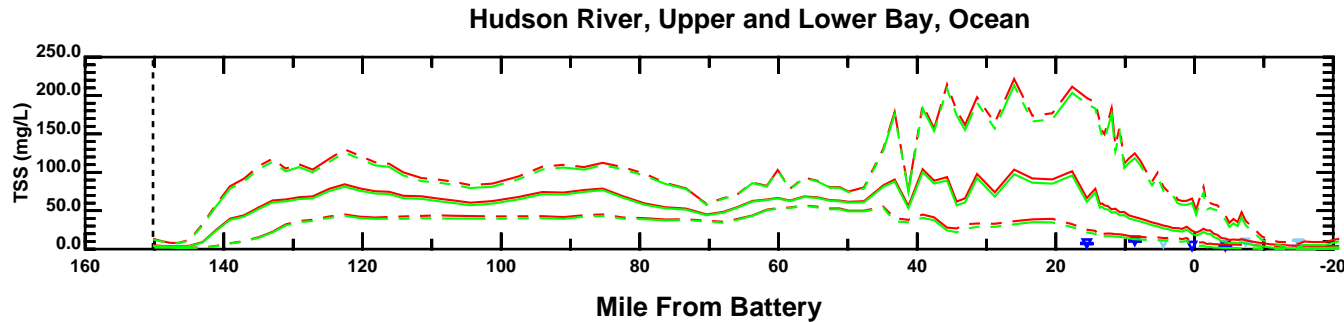


### Arthur Kill and Kill Van Kull

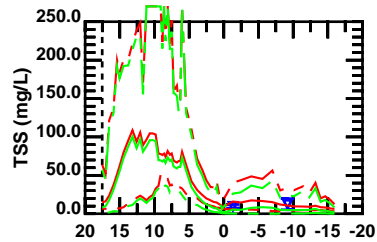
### Arthur Kill and Kill Van Kull



### Mile From NY Harbor

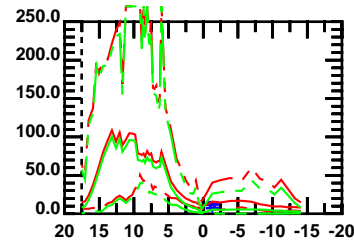


### Raritan River and North Shore of Raritan Bay



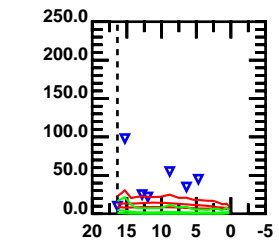
### Mile from Mouth Raritan River

### Raritan River and South Shore of Raritan Bay



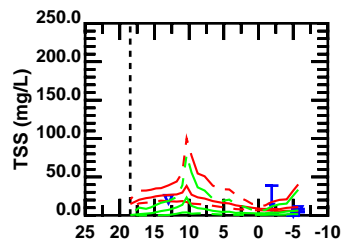
### Mile From Mouth Raritan River

### Passaic River



### Mile From Mouth Passaic River

### Hackensack River and Newark Bay



### Mile From Mouth Hackensack River

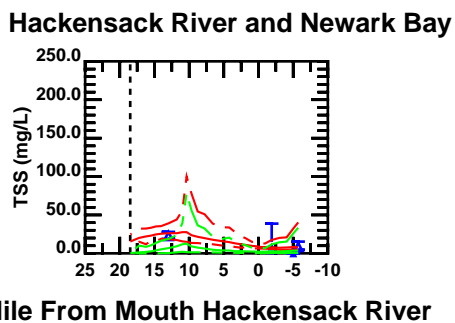
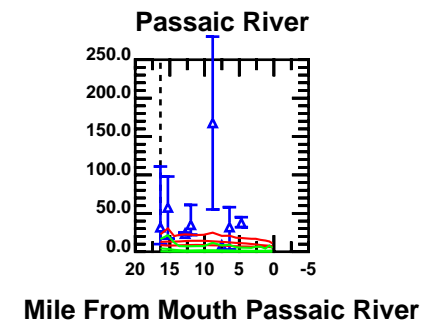
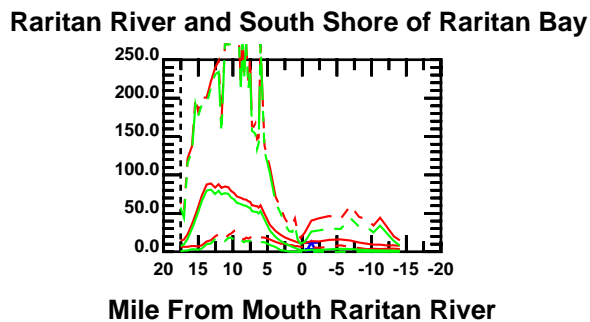
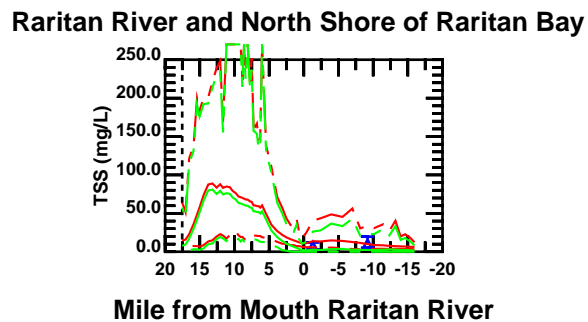
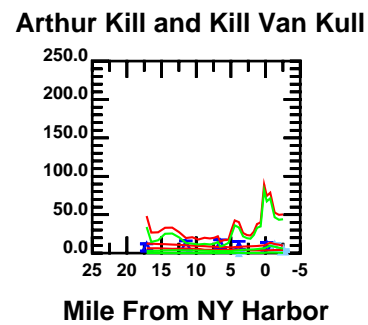
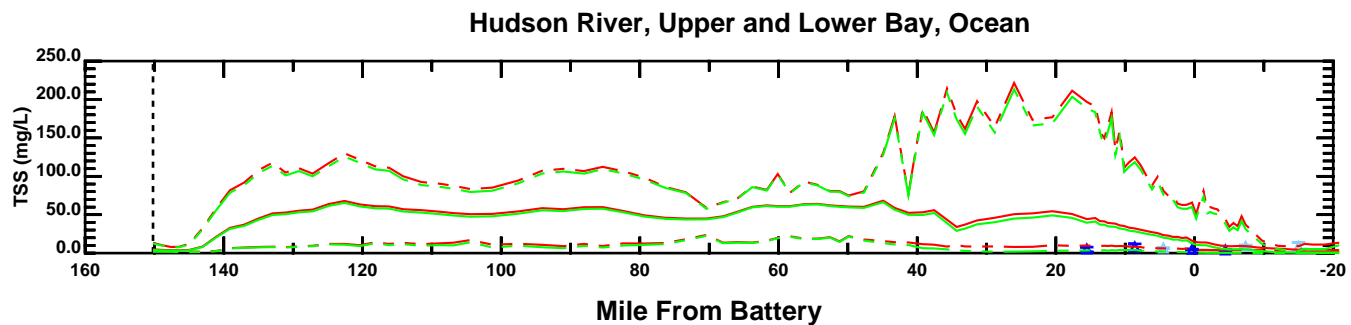
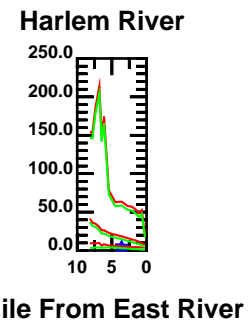
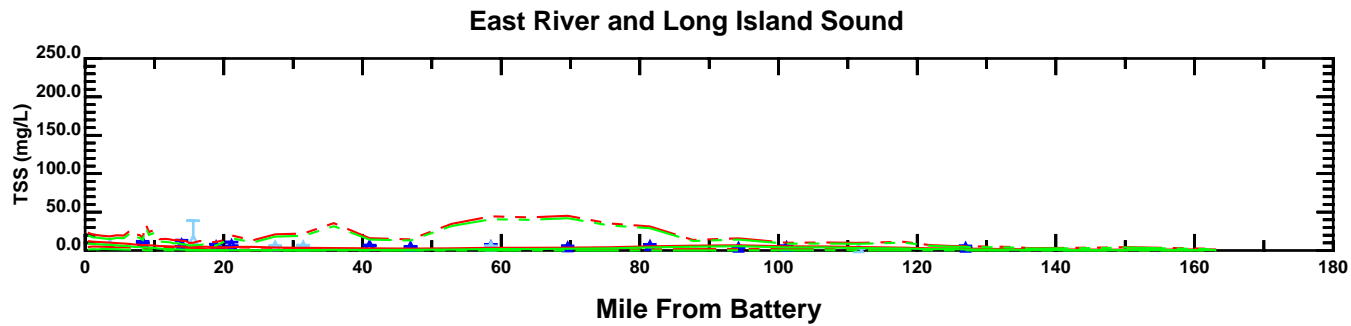
July 27 - August 25

DATA	TRANSECT	EMBAYMENT
NP	▼	▽
GFF	▲	▽

MODEL

—	TSS BOTTOM 30-DAY MEAN
- - -	TSS BOTTOM 30-DAY MAX / MIN
—	COSS BOTTOM 30-DAY MEAN
- - -	COSS BOTTOM 30-DAY MAX / MIN

**Bottom Layer TSS (mg/L)**  
**Water Year Starting Oct 1, 2000**

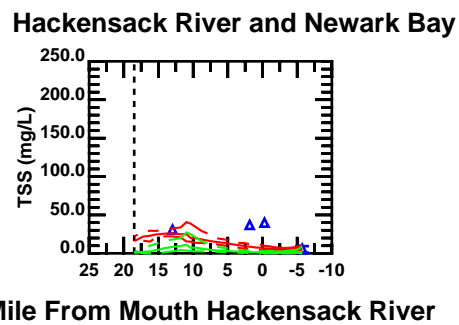
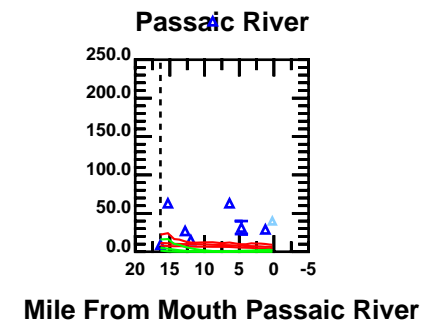
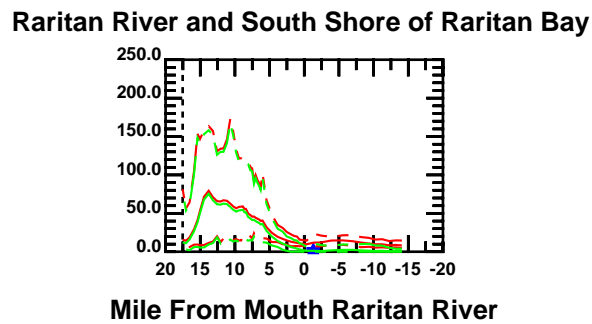
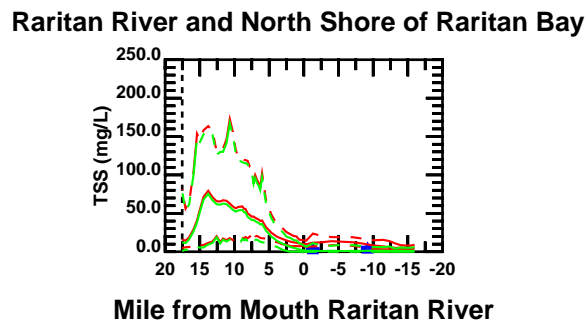
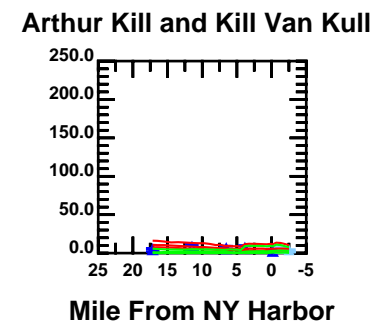
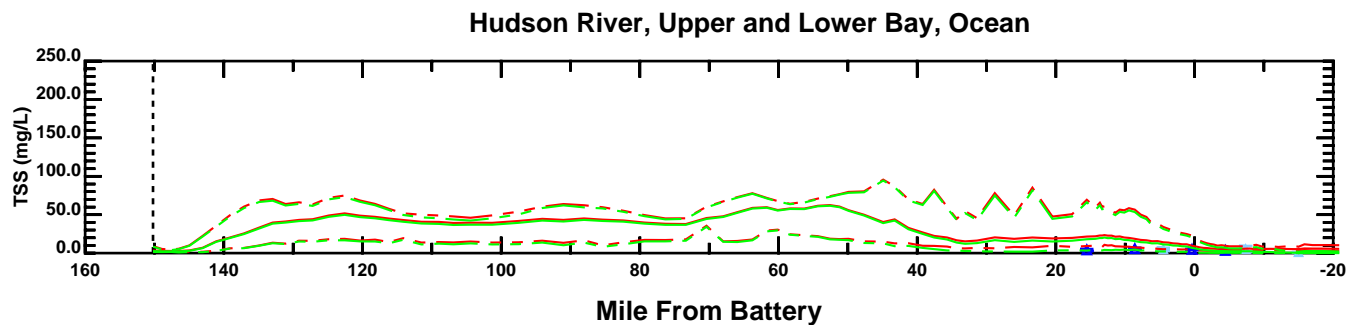
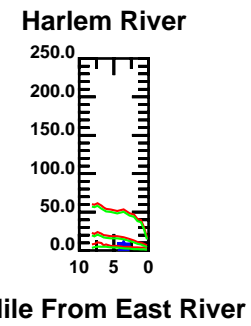
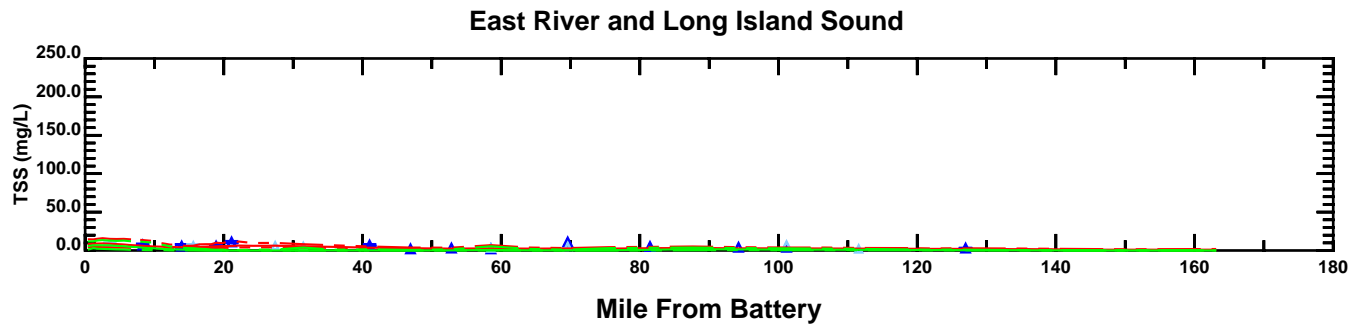


July 27 - August 25

DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

MODEL	
—	TSS 30-DAY MEAN
- - -	TSS 30-DAY MAX / MIN
—	COSS 30-DAY MEAN
- - -	COSS 30-DAY MAX / MIN

**TSS (mg/L) Averaged Over Full Depth  
Water Year Starting Oct 1, 2000**



August 26 - September 24

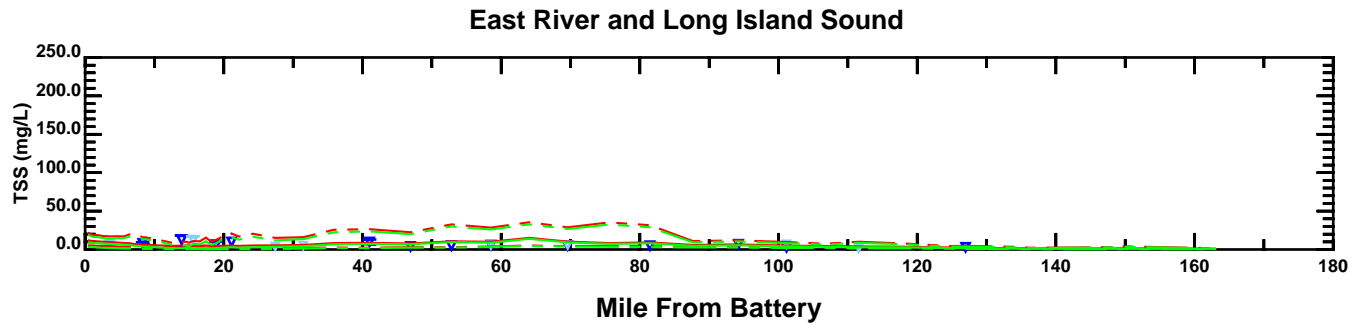
DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

MODEL

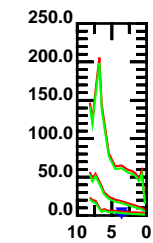
—	TSS SURFACE 30-DAY MEAN
- - -	TSS SURFACE 30-DAY MAX / MIN
—	COSS SURFACE 30-DAY MEAN
- - -	COSS SURFACE 30-DAY MAX / MIN

Surface Layer TSS (mg/L)  
Water Year Starting Oct 1, 2000



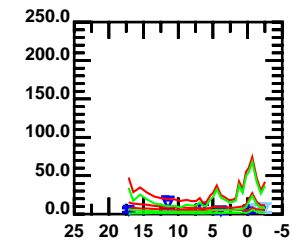


### Harlem River

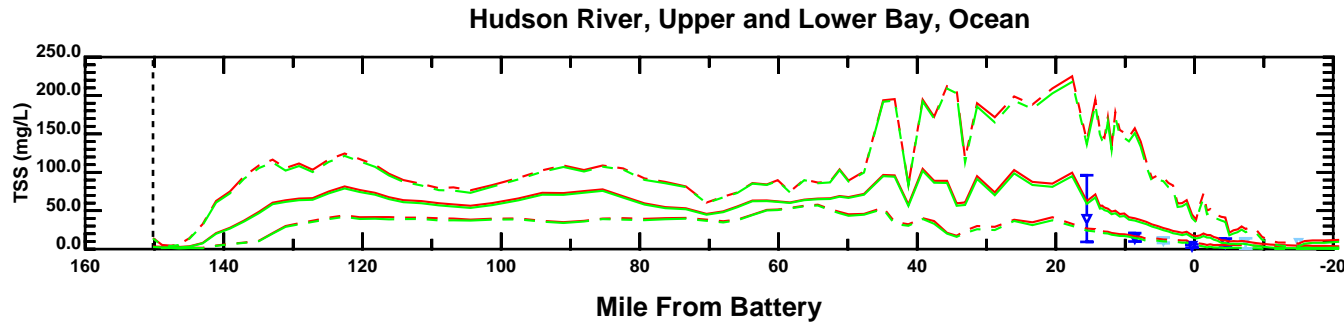


### Arthur Kill and Kill Van Kull

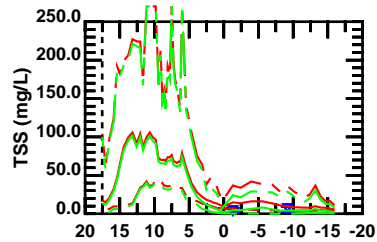
### Arthur Kill and Kill Van Kull



### Mile From NY Harbor

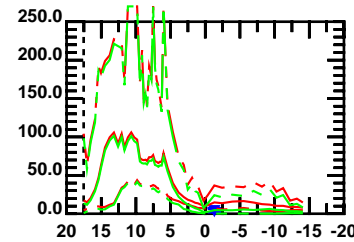


### Raritan River and North Shore of Raritan Bay



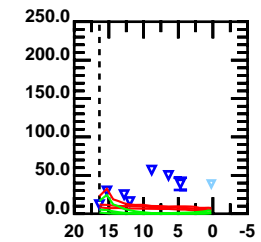
### Mile from Mouth Raritan River

### Raritan River and South Shore of Raritan Bay



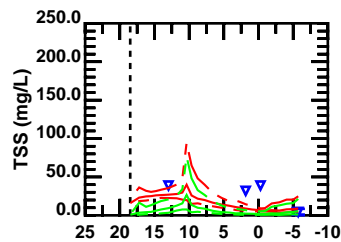
### Mile From Mouth Raritan River

### Passaic River



### Mile From Mouth Passaic River

### Hackensack River and Newark Bay



### Mile From Mouth Hackensack River

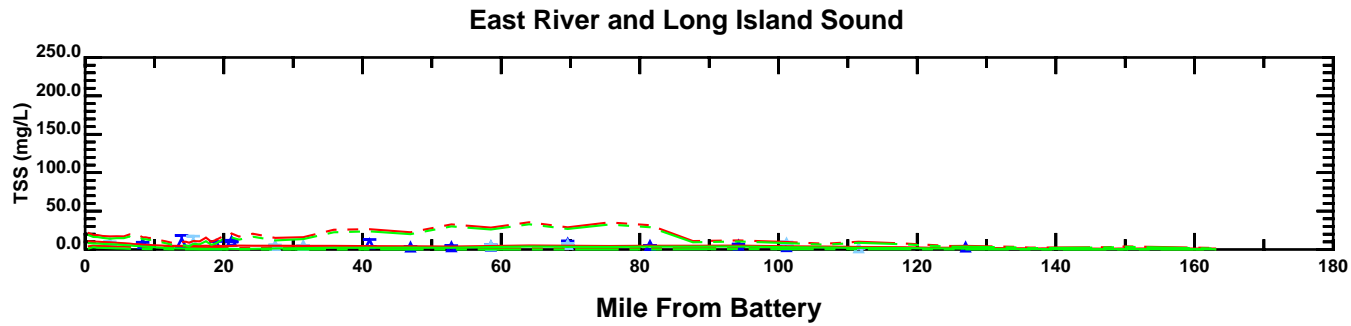
August 26 - September 24

DATA	TRANSECT	EMBAYMENT
NP	▼	▽
GFF	▼	▽

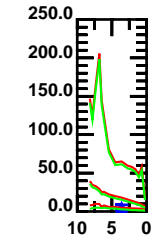
MODEL

—	TSS BOTTOM 30-DAY MEAN
- - -	TSS BOTTOM 30-DAY MAX / MIN
—	COSS BOTTOM 30-DAY MEAN
- - -	COSS BOTTOM 30-DAY MAX / MIN

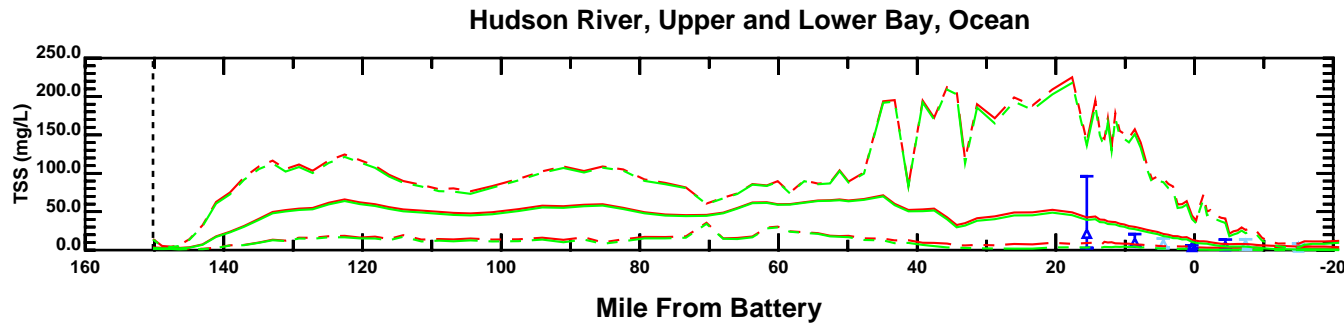
**Bottom Layer TSS (mg/L)**  
**Water Year Starting Oct 1, 2000**



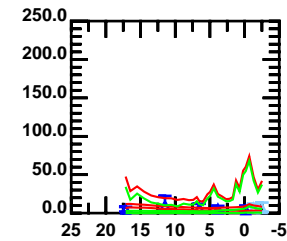
### Harlem River



Mile From East River

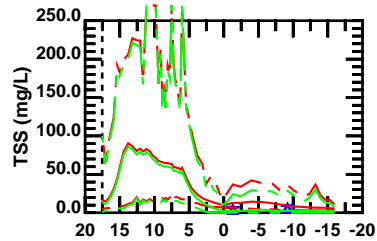


### Arthur Kill and Kill Van Kull



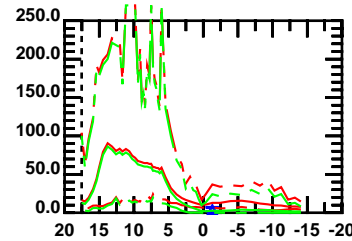
Mile From NY Harbor

### Raritan River and North Shore of Raritan Bay



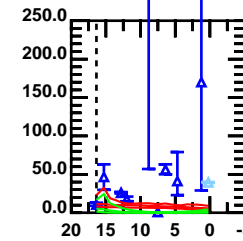
Mile from Mouth Raritan River

### Raritan River and South Shore of Raritan Bay



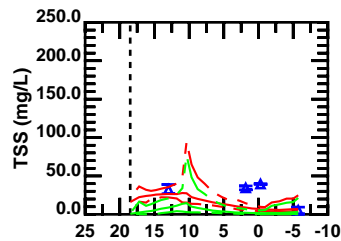
Mile From Mouth Raritan River

### Passaic River



Mile From Mouth Passaic River

### Hackensack River and Newark Bay



Mile From Mouth Hackensack River

August 26 - September 24

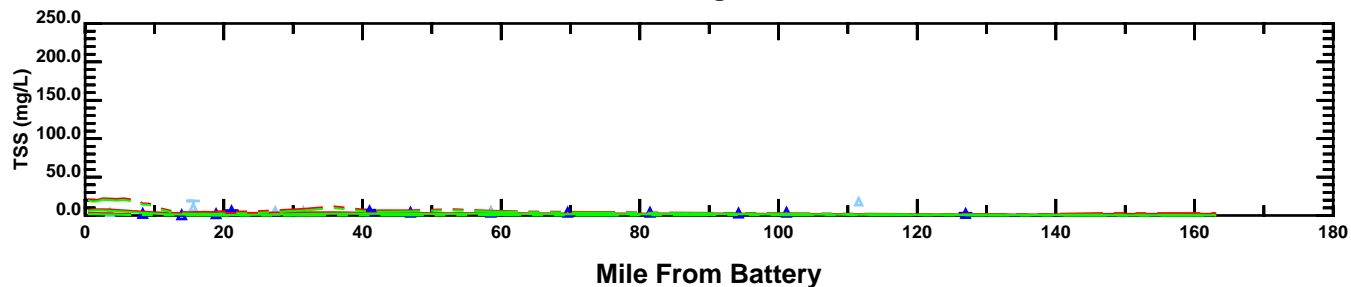
DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

MODEL

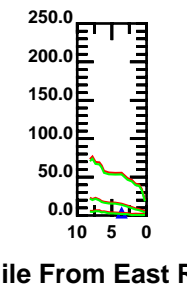
—	TSS 30-DAY MEAN
- - -	TSS 30-DAY MAX / MIN
—	COSS 30-DAY MEAN
- - -	COSS 30-DAY MAX / MIN

**TSS (mg/L) Averaged Over Full Depth  
Water Year Starting Oct 1, 2000**

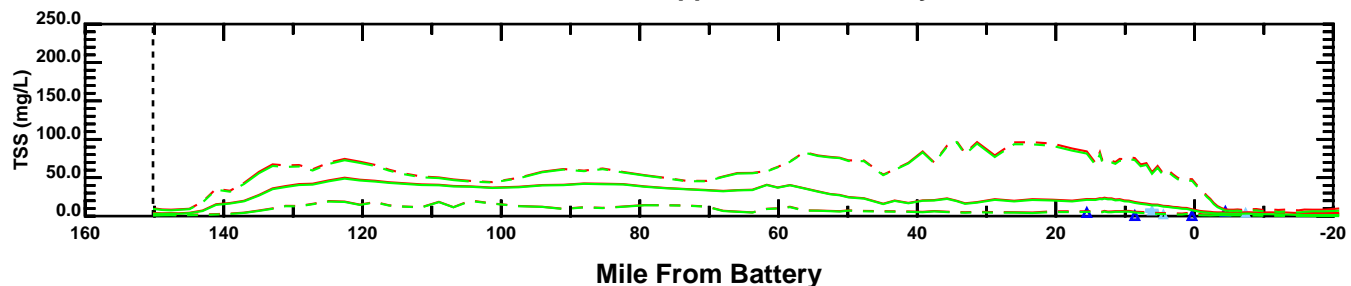
East River and Long Island Sound



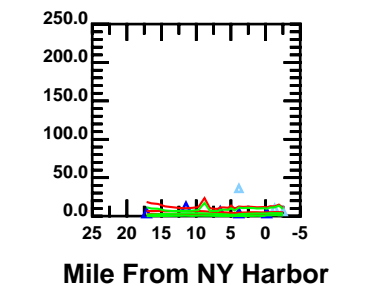
Harlem River



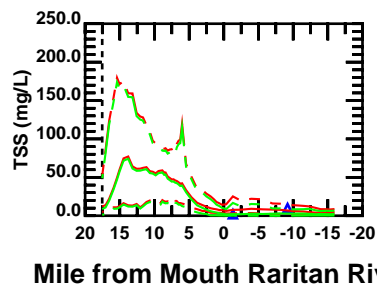
Hudson River, Upper and Lower Bay, Ocean



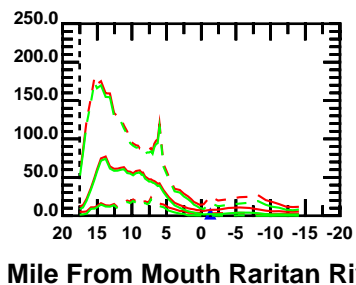
Arthur Kill and Kill Van Kull



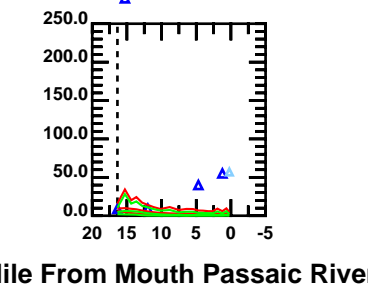
Raritan River and North Shore of Raritan Bay



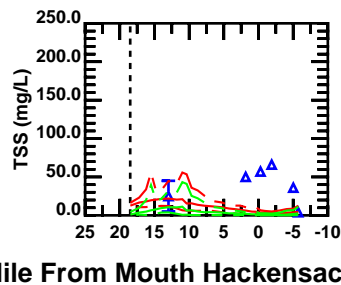
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



October 1 - October 30

DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

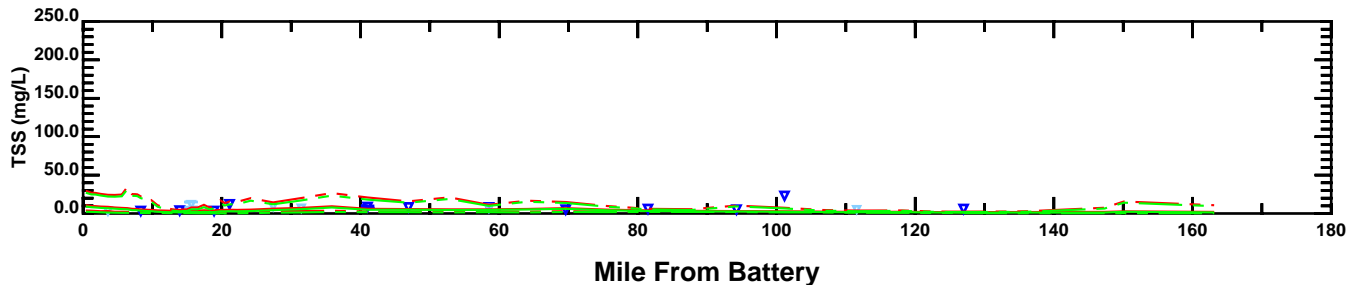
MODEL

—	TSS SURFACE 30-DAY MEAN
- - -	TSS SURFACE 30-DAY MAX / MIN
—	COSS SURFACE 30-DAY MEAN
- - -	COSS SURFACE 30-DAY MAX / MIN

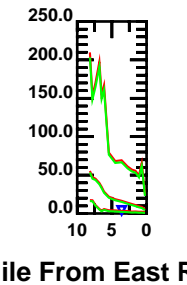
Mile From Mouth Hackensack River

Surface Layer TSS (mg/L)  
Water Year Starting Oct 1, 2001

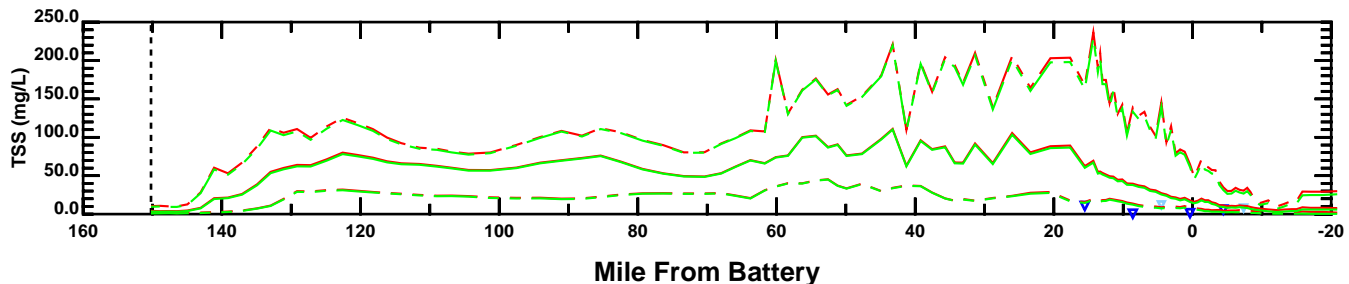
East River and Long Island Sound



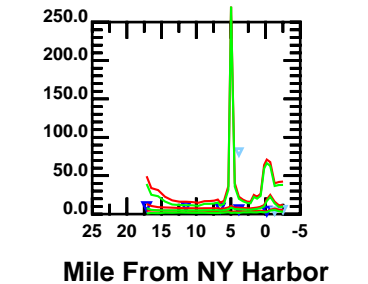
Harlem River



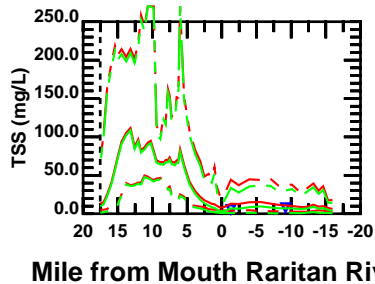
Hudson River, Upper and Lower Bay, Ocean



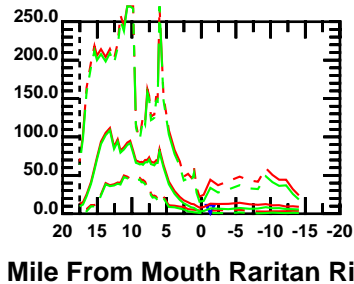
Arthur Kill and Kill Van Kull



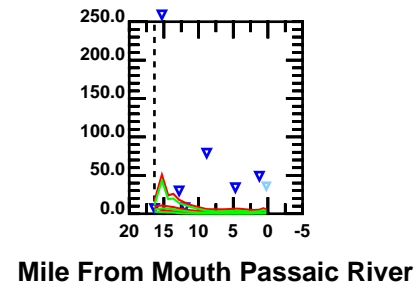
Raritan River and North Shore of Raritan Bay



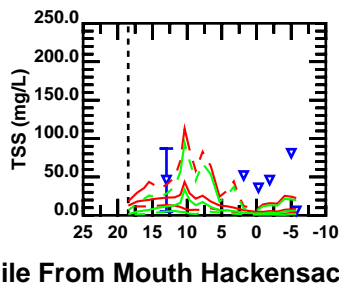
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



October 1 - October 30

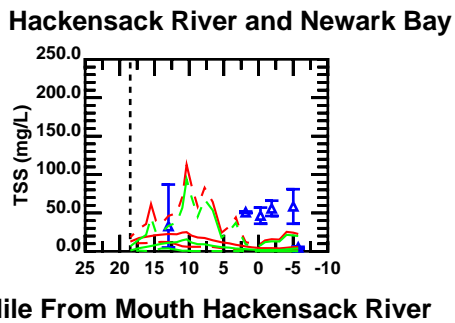
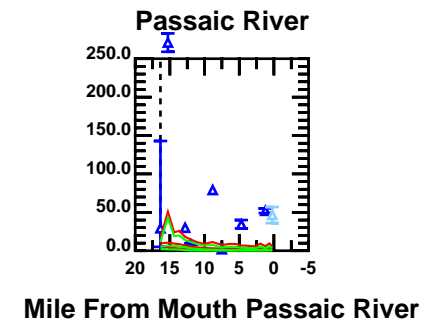
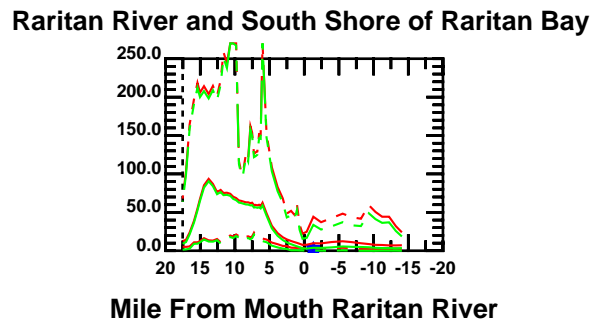
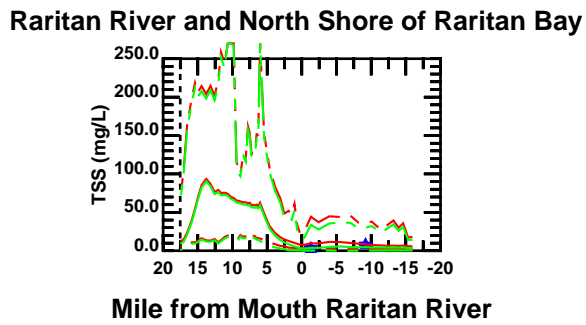
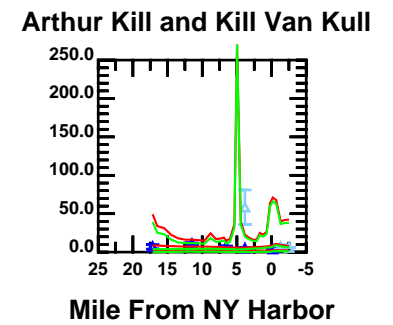
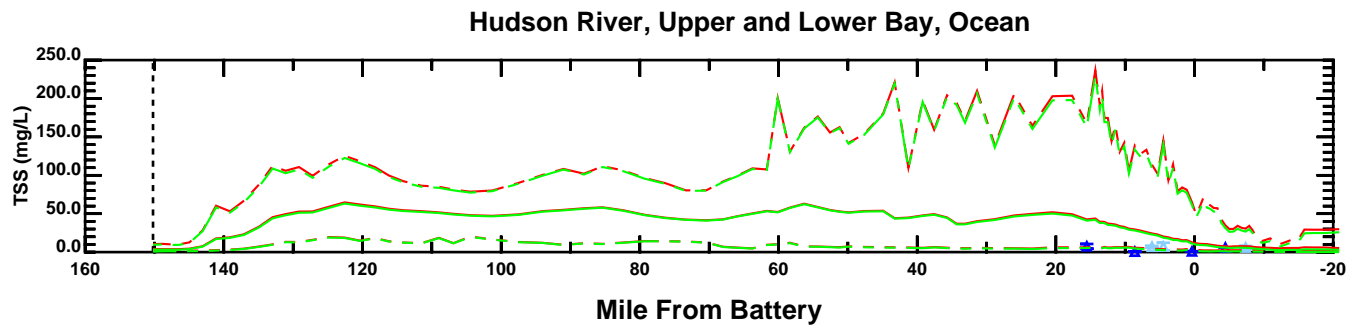
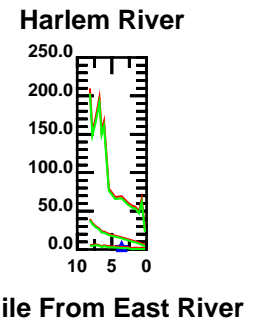
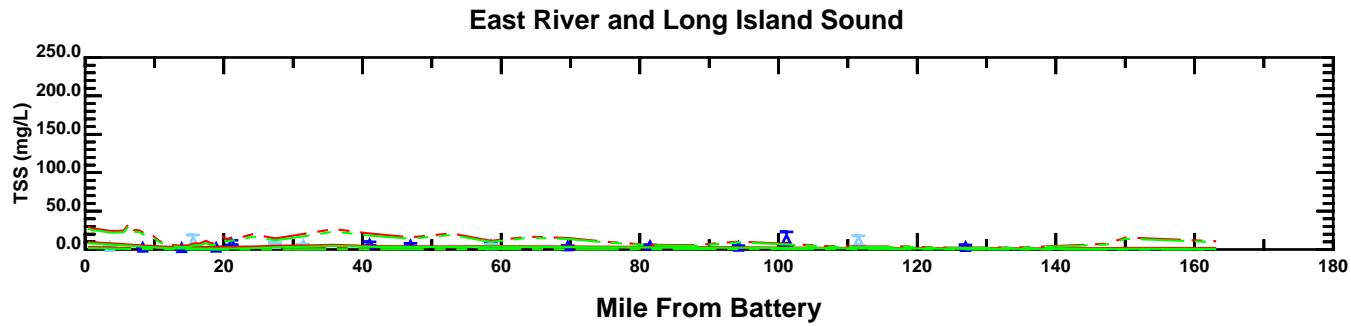
DATA	TRANSECT	EMBAYMENT
NP	▼	▽
GFF	▲	▽

MODEL

—	TSS BOTTOM 30-DAY MEAN
- - -	TSS BOTTOM 30-DAY MAX / MIN
—	COSS BOTTOM 30-DAY MEAN
- - -	COSS BOTTOM 30-DAY MAX / MIN

Mile From Mouth Hackensack River

Bottom Layer TSS (mg/L)  
Water Year Starting Oct 1, 2001



October 1 - October 30

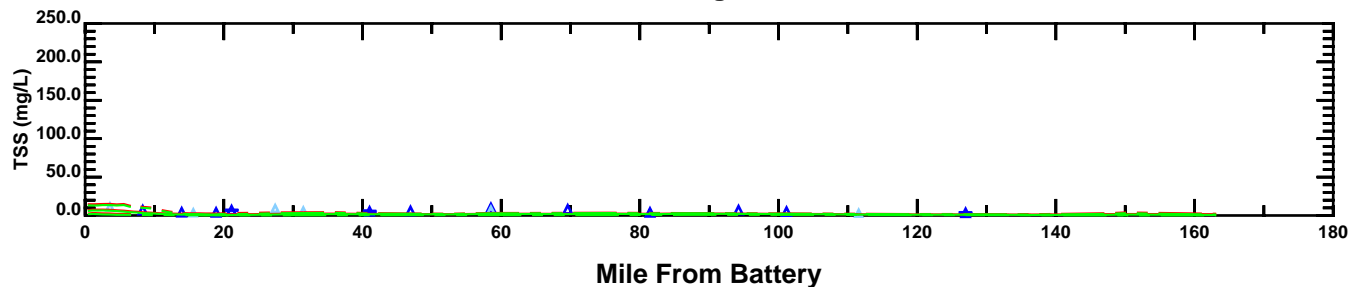
DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

MODEL

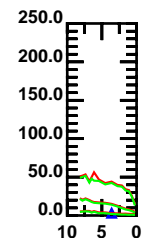
—	TSS 30-DAY MEAN
- - -	TSS 30-DAY MAX / MIN
—	COSS 30-DAY MEAN
- - -	COSS 30-DAY MAX / MIN

**TSS (mg/L) Averaged Over Full Depth  
Water Year Starting Oct 1, 2001**

East River and Long Island Sound

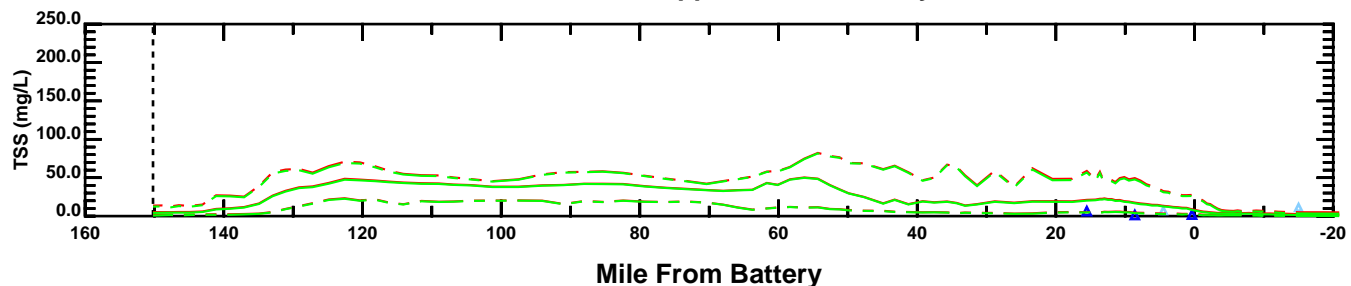


Harlem River

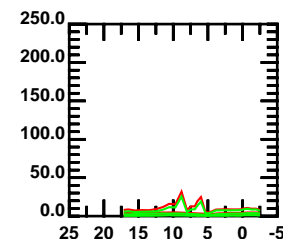


Mile From East River

Hudson River, Upper and Lower Bay, Ocean

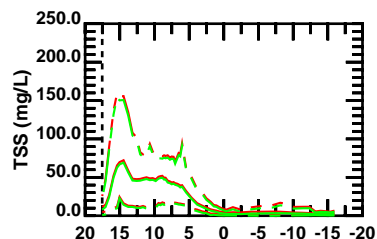


Arthur Kill and Kill Van Kull



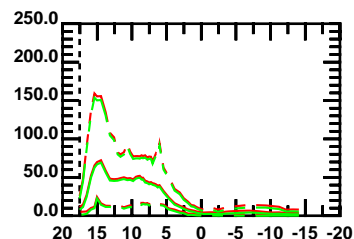
Mile From NY Harbor

Raritan River and North Shore of Raritan Bay



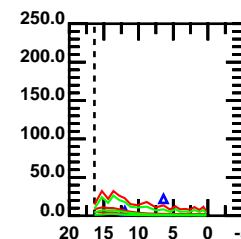
Mile from Mouth Raritan River

Raritan River and South Shore of Raritan Bay



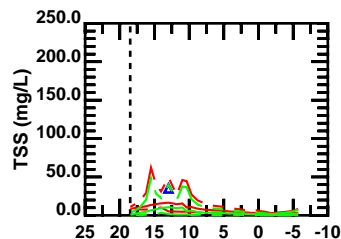
Mile From Mouth Raritan River

Passaic River



Mile From Mouth Passaic River

Hackensack River and Newark Bay



Mile From Mouth Hackensack River

October 31 - November 29

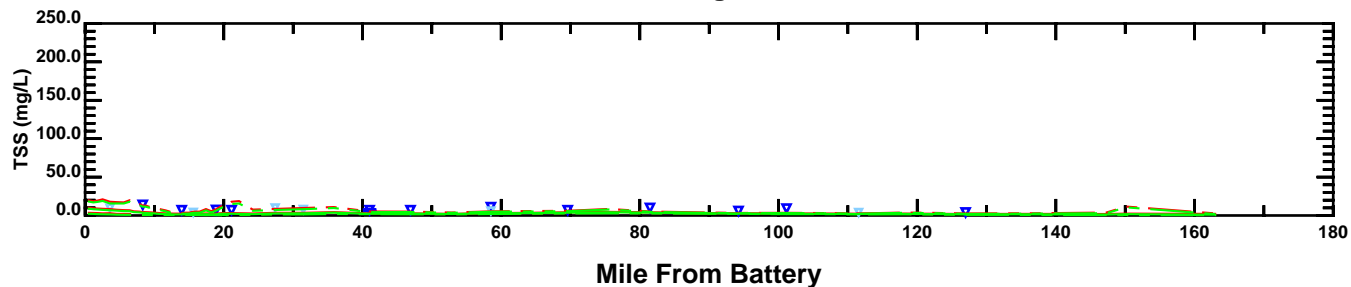
DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

MODEL

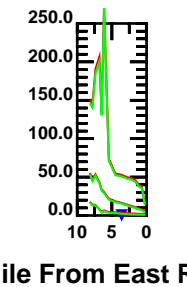
—	TSS SURFACE 30-DAY MEAN
- - -	TSS SURFACE 30-DAY MAX / MIN
—	COSS SURFACE 30-DAY MEAN
- - -	COSS SURFACE 30-DAY MAX / MIN

Surface Layer TSS (mg/L)  
Water Year Starting Oct 1, 2001

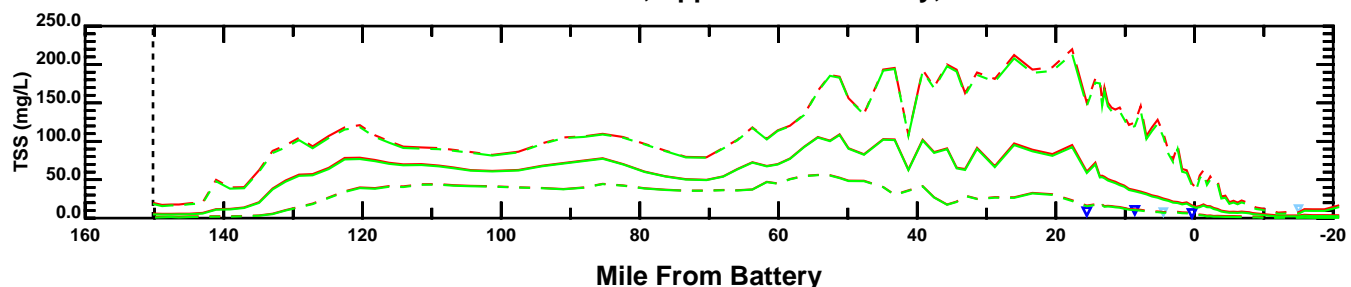
East River and Long Island Sound



Harlem River

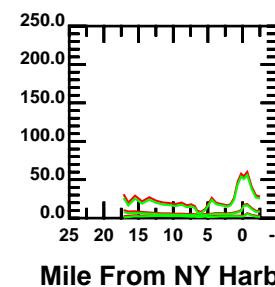


Hudson River, Upper and Lower Bay, Ocean

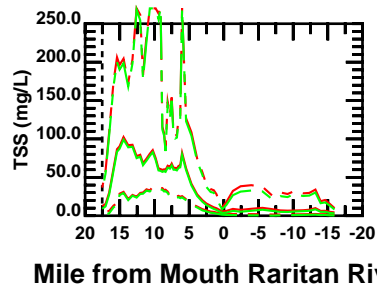


Mile From East River

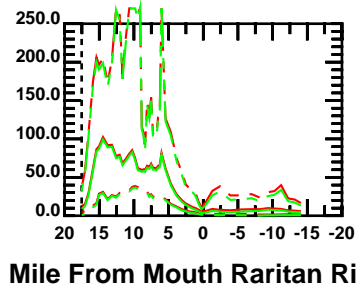
Arthur Kill and Kill Van Kull



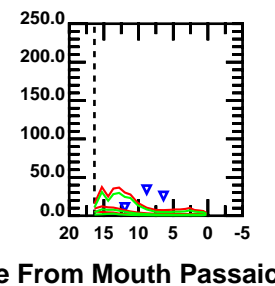
Raritan River and North Shore of Raritan Bay



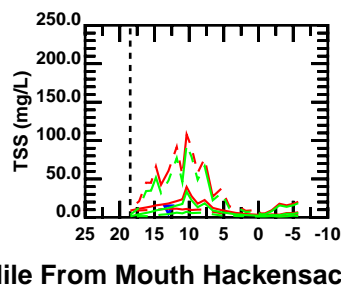
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



October 31 - November 29

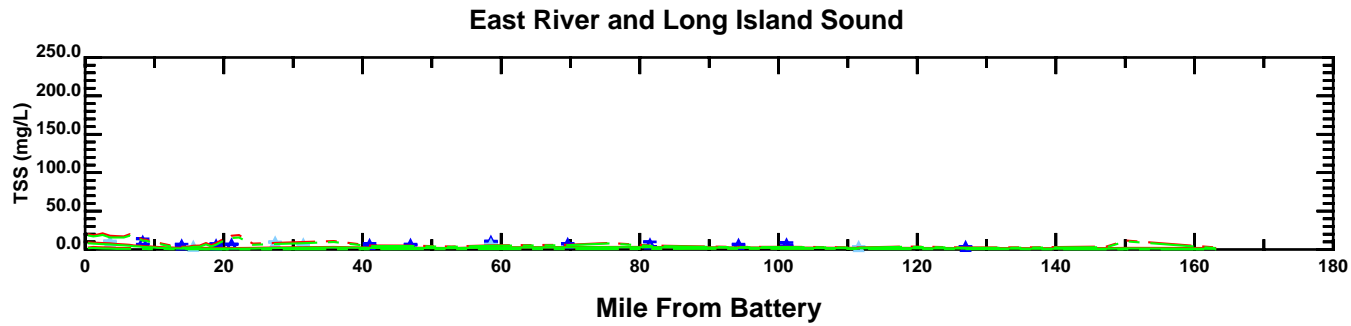
DATA	TRANSECT	EMBAYMENT
NP	▼	▽
GFF	▲	▽

MODEL

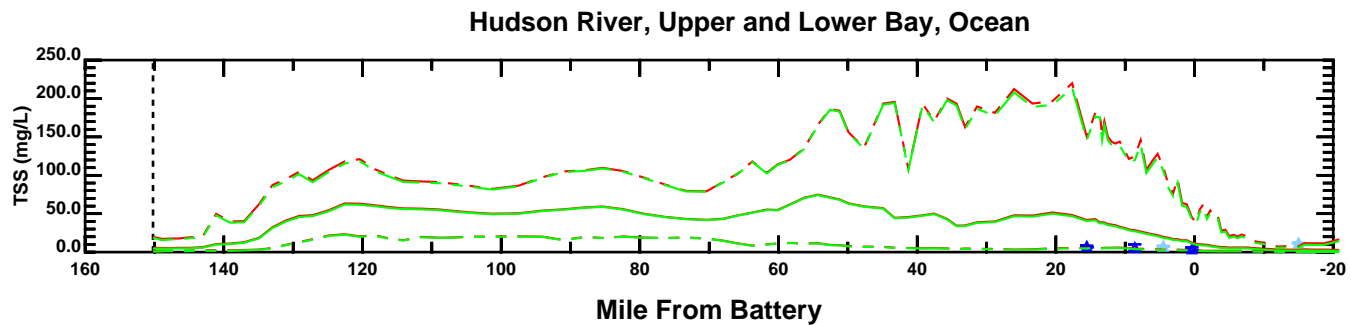
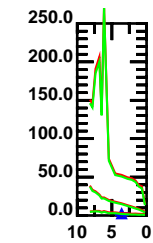
—	TSS BOTTOM 30-DAY MEAN
- - -	TSS BOTTOM 30-DAY MAX / MIN
—	COSS BOTTOM 30-DAY MEAN
- - -	COSS BOTTOM 30-DAY MAX / MIN

Mile From Mouth Hackensack River

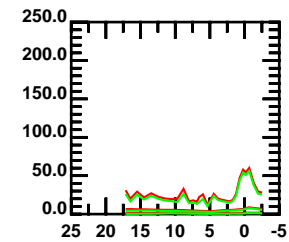
Bottom Layer TSS (mg/L)  
Water Year Starting Oct 1, 2001



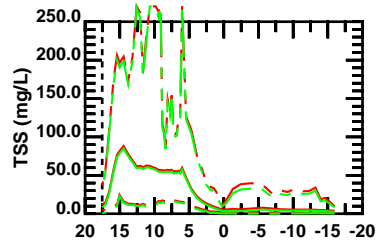
### Harlem River



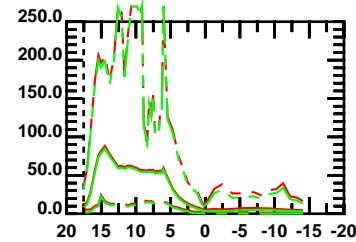
### Arthur Kill and Kill Van Kull



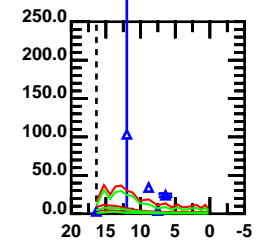
### Raritan River and North Shore of Raritan Bay



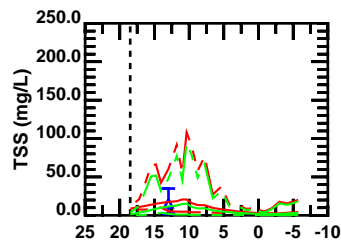
### Raritan River and South Shore of Raritan Bay



### Passaic River



### Hackensack River and Newark Bay



October 31 - November 29

DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

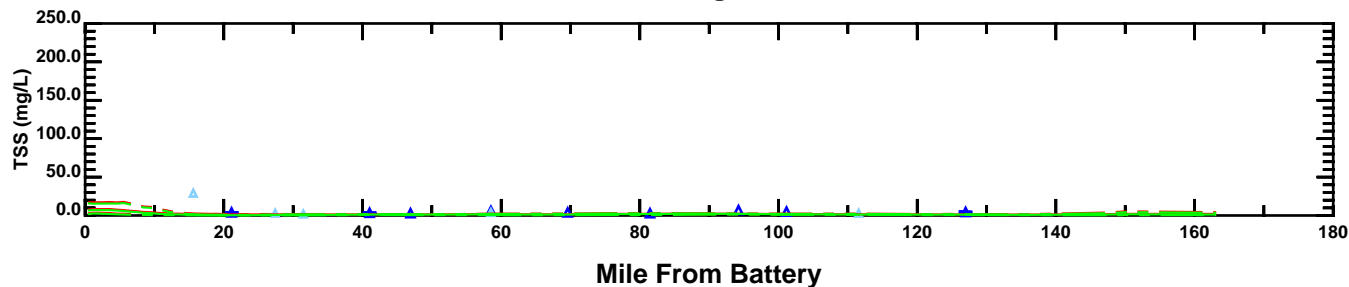
MODEL

—	TSS 30-DAY MEAN
- - -	TSS 30-DAY MAX / MIN
—	COSS 30-DAY MEAN
- - -	COSS 30-DAY MAX / MIN

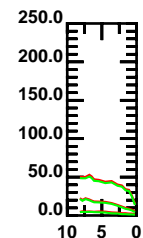
**TSS (mg/L) Averaged Over Full Depth  
Water Year Starting Oct 1, 2001**



East River and Long Island Sound

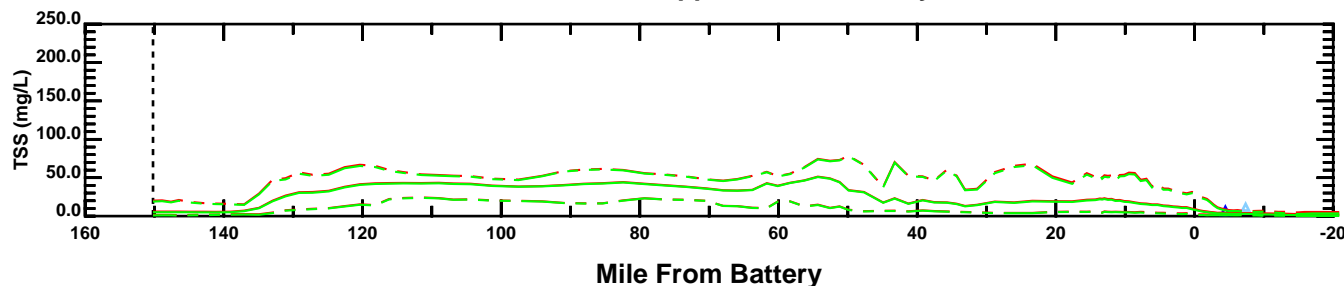


Harlem River

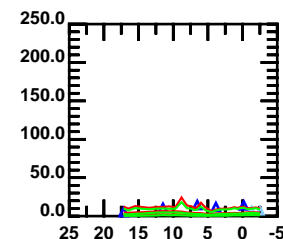


Mile From East River

Hudson River, Upper and Lower Bay, Ocean

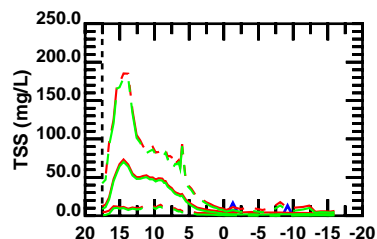


Arthur Kill and Kill Van Kull



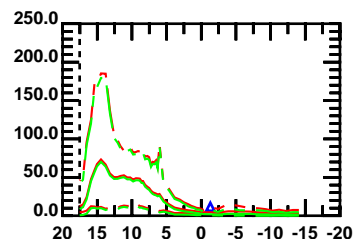
Mile From NY Harbor

Raritan River and North Shore of Raritan Bay



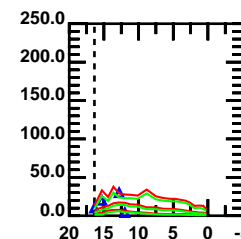
Mile from Mouth Raritan River

Raritan River and South Shore of Raritan Bay



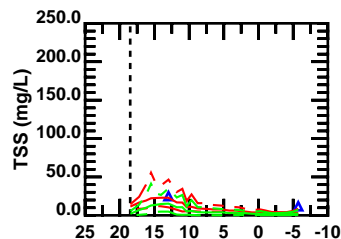
Mile From Mouth Raritan River

Passaic River



Mile From Mouth Passaic River

Hackensack River and Newark Bay



Mile From Mouth Hackensack River

November 30 - December 29

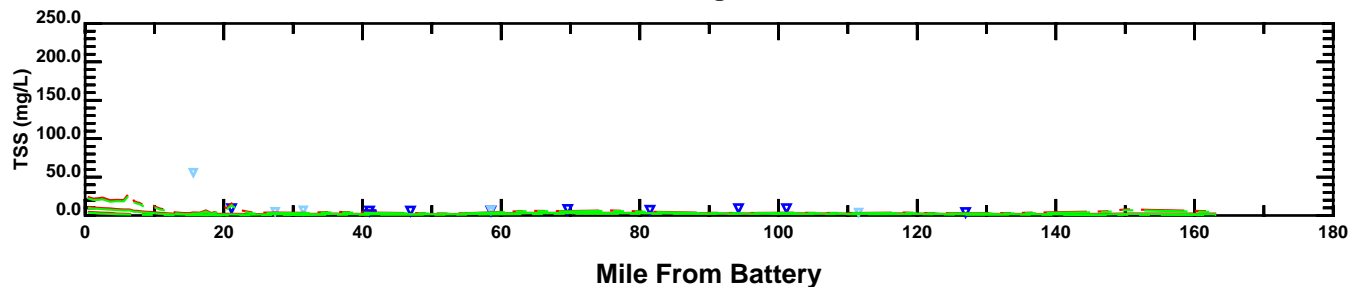
DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

MODEL

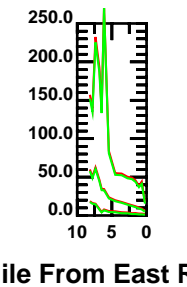
—	TSS SURFACE 30-DAY MEAN
- - -	TSS SURFACE 30-DAY MAX / MIN
—	COSS SURFACE 30-DAY MEAN
- - -	COSS SURFACE 30-DAY MAX / MIN

Surface Layer TSS (mg/L)  
Water Year Starting Oct 1, 2001

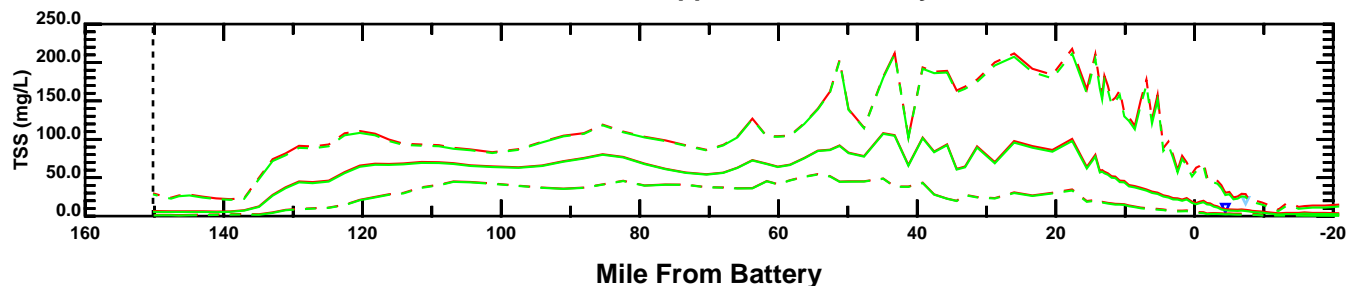
East River and Long Island Sound



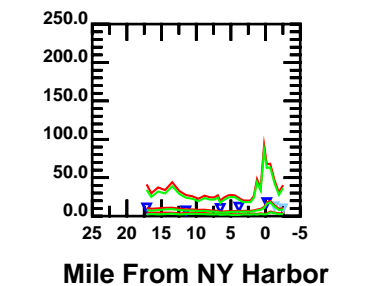
Harlem River



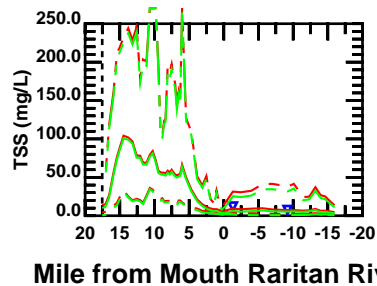
Hudson River, Upper and Lower Bay, Ocean



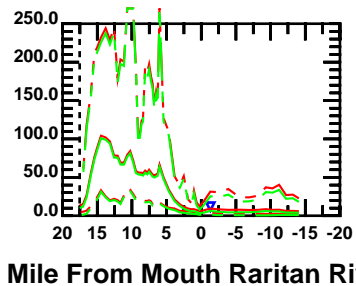
Arthur Kill and Kill Van Kull



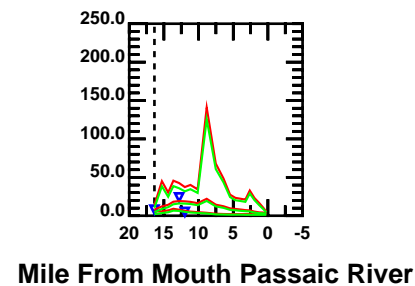
Raritan River and North Shore of Raritan Bay



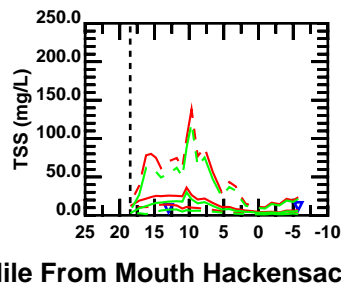
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



November 30 - December 29

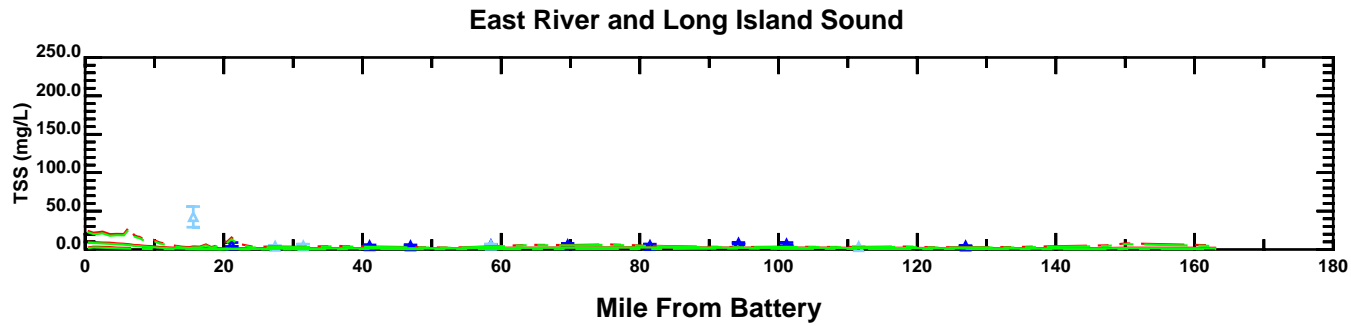
DATA	TRANSECT	EMBAYMENT
NP	▼	▽
GFF	▼	▽

MODEL

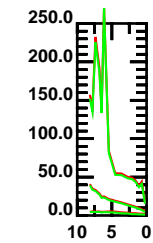
—	TSS BOTTOM 30-DAY MEAN
- - -	TSS BOTTOM 30-DAY MAX / MIN
—	COSS BOTTOM 30-DAY MEAN
- - -	COSS BOTTOM 30-DAY MAX / MIN

Mile From Mouth Hackensack River

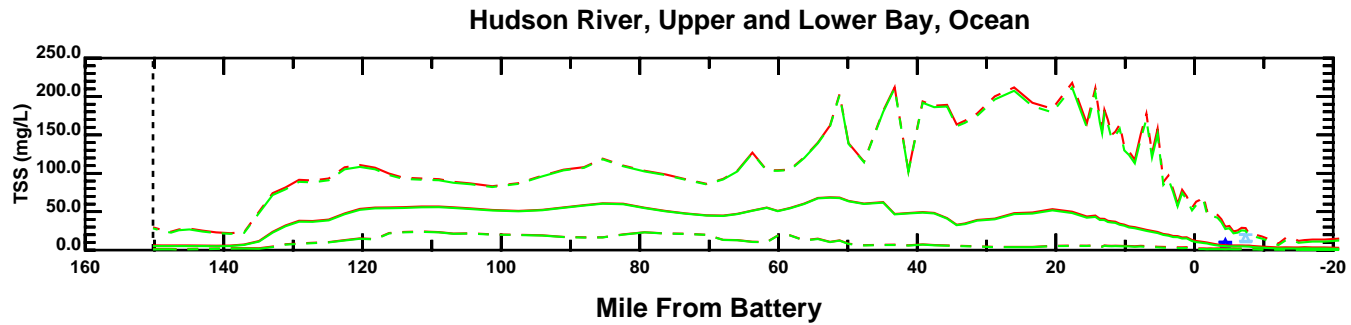
Bottom Layer TSS (mg/L)  
Water Year Starting Oct 1, 2001



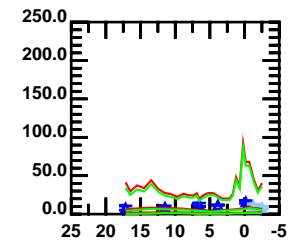
### Harlem River



Mile From East River

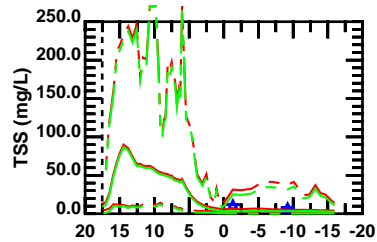


### Arthur Kill and Kill Van Kull



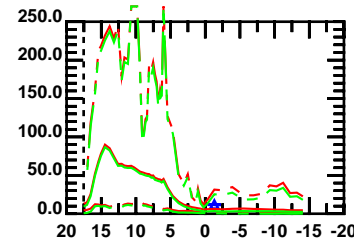
Mile From NY Harbor

### Raritan River and North Shore of Raritan Bay



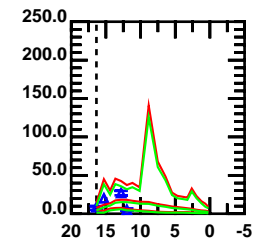
Mile from Mouth Raritan River

### Raritan River and South Shore of Raritan Bay



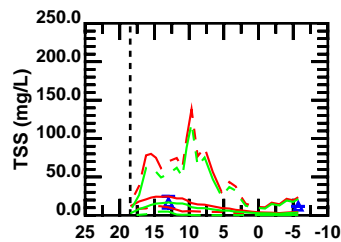
Mile From Mouth Raritan River

### Passaic River



Mile From Mouth Passaic River

### Hackensack River and Newark Bay



Mile From Mouth Hackensack River

November 30 - December 29

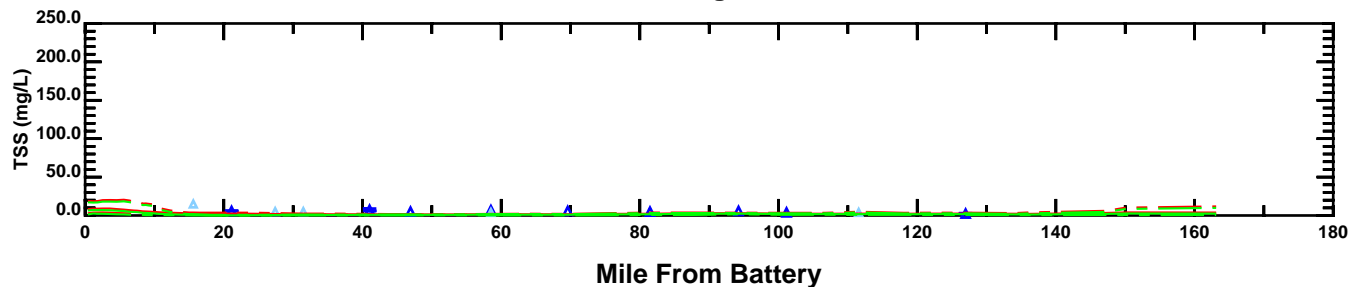
DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

MODEL

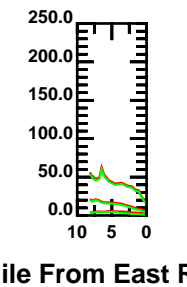
—	TSS 30-DAY MEAN
- - -	TSS 30-DAY MAX / MIN
—	COSS 30-DAY MEAN
- - -	COSS 30-DAY MAX / MIN

**TSS (mg/L) Averaged Over Full Depth  
Water Year Starting Oct 1, 2001**

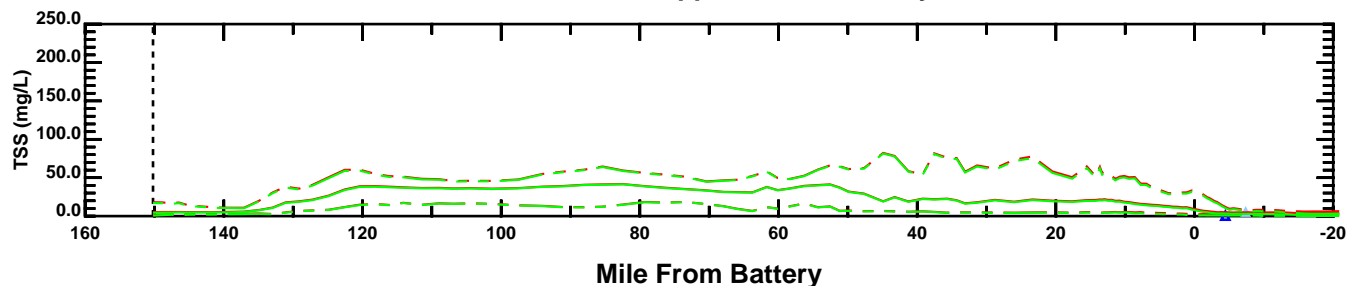
East River and Long Island Sound



Harlem River

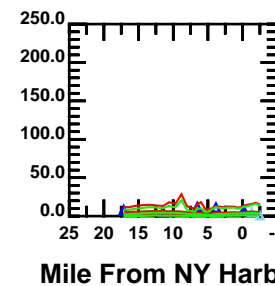


Hudson River, Upper and Lower Bay, Ocean

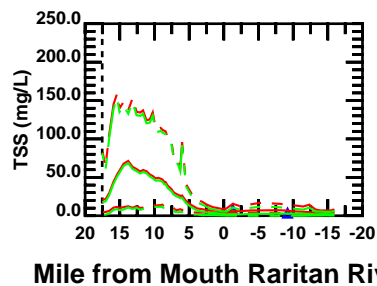


Mile From East River

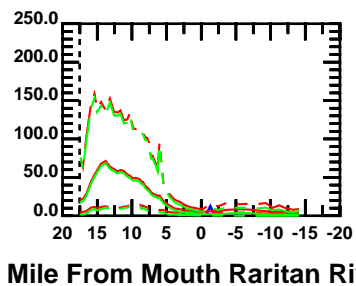
Arthur Kill and Kill Van Kull



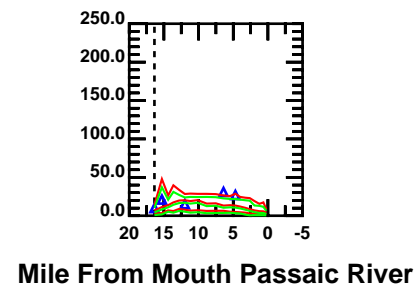
Raritan River and North Shore of Raritan Bay



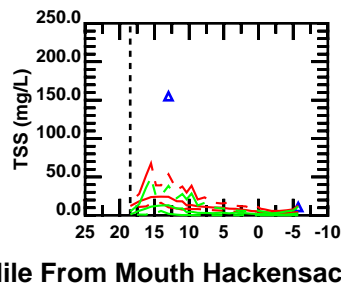
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



December 30 - January 28

DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

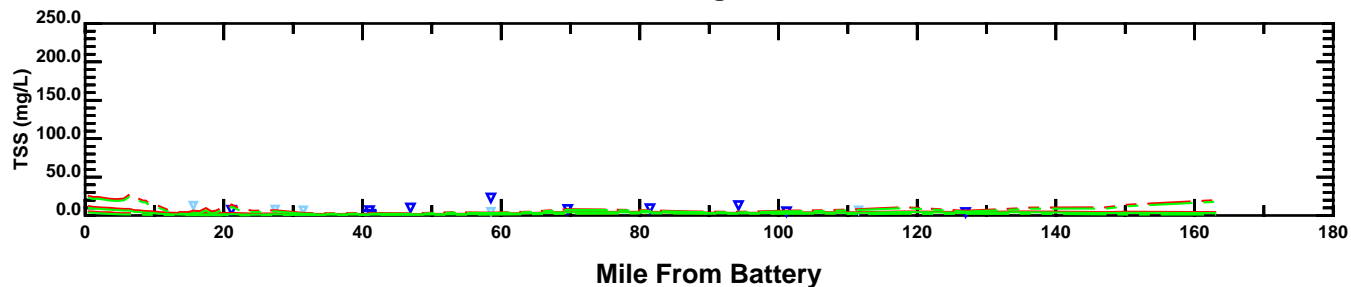
MODEL

—	TSS SURFACE 30-DAY MEAN
- - -	TSS SURFACE 30-DAY MAX / MIN
—	COSS SURFACE 30-DAY MEAN
- - -	COSS SURFACE 30-DAY MAX / MIN

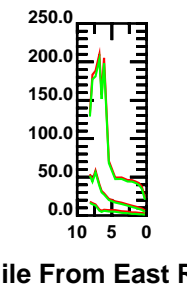
Mile From Mouth Hackensack River

Surface Layer TSS (mg/L)  
Water Year Starting Oct 1, 2001

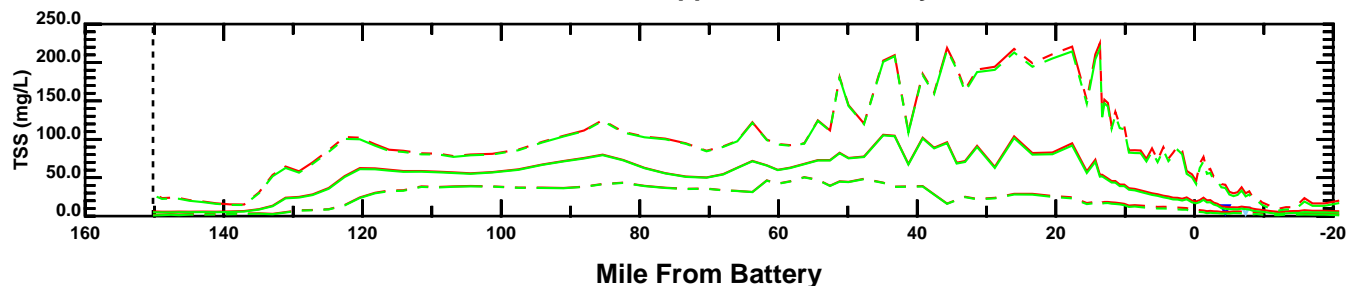
East River and Long Island Sound



Harlem River

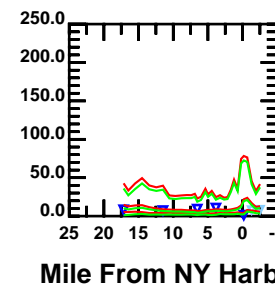


Hudson River, Upper and Lower Bay, Ocean

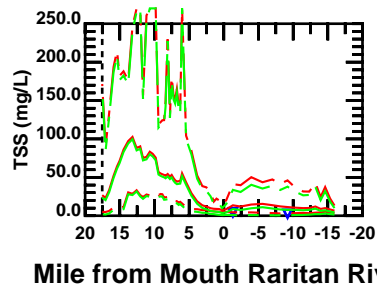


Mile From East River

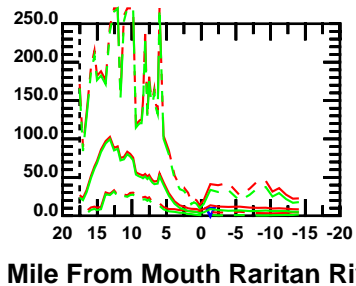
Arthur Kill and Kill Van Kull



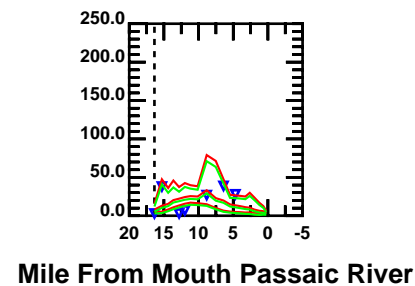
Raritan River and North Shore of Raritan Bay



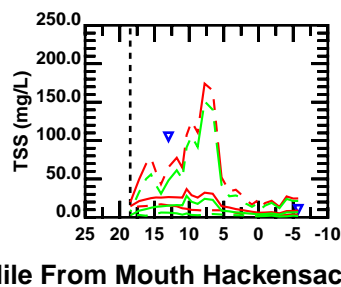
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



December 30 - January 28

DATA	TRANSECT	EMBAYMENT
NP	▼	▽
GFF	▼	▽

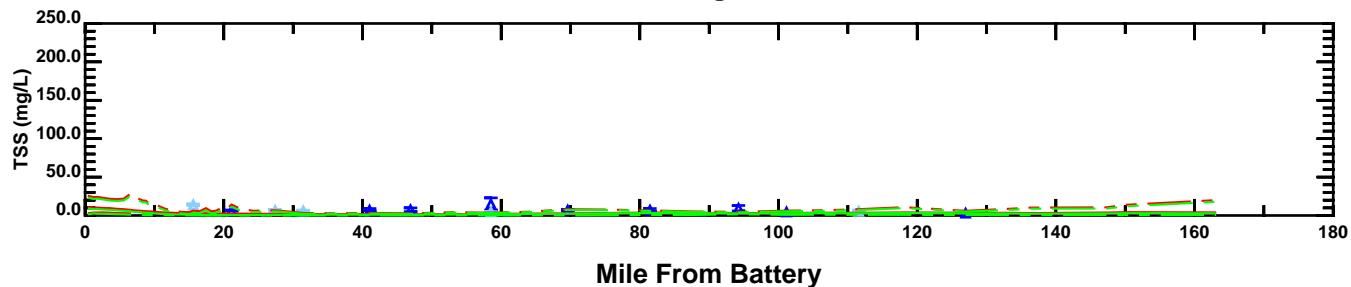
MODEL

—	TSS BOTTOM 30-DAY MEAN
- - -	TSS BOTTOM 30-DAY MAX / MIN
—	COSS BOTTOM 30-DAY MEAN
- - -	COSS BOTTOM 30-DAY MAX / MIN

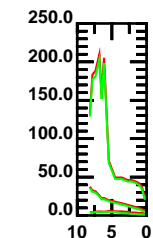
Mile From Mouth Hackensack River

Bottom Layer TSS (mg/L)  
Water Year Starting Oct 1, 2001

East River and Long Island Sound

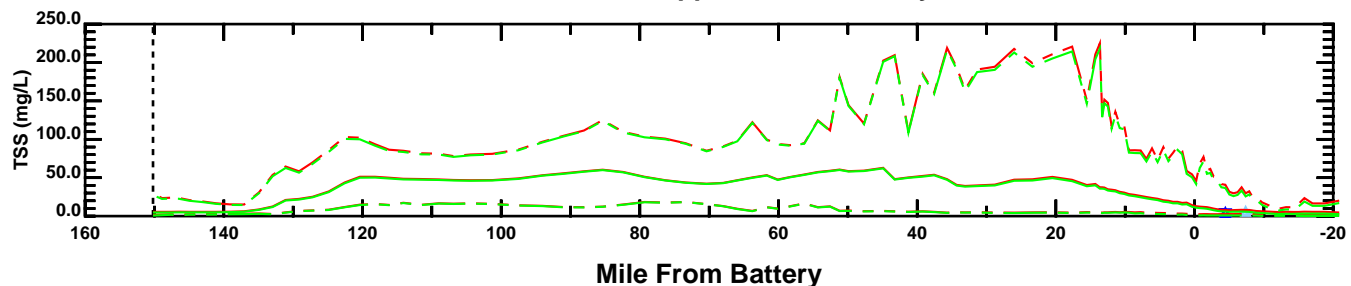


Harlem River

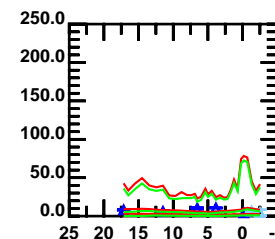


Mile From East River

Hudson River, Upper and Lower Bay, Ocean

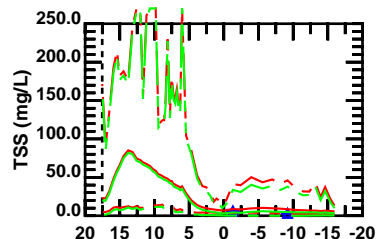


Arthur Kill and Kill Van Kull



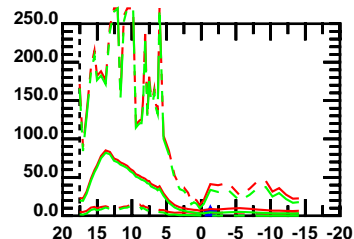
Mile From NY Harbor

Raritan River and North Shore of Raritan Bay



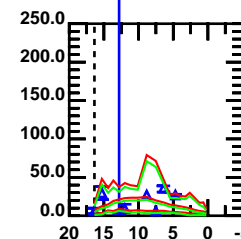
Mile from Mouth Raritan River

Raritan River and South Shore of Raritan Bay



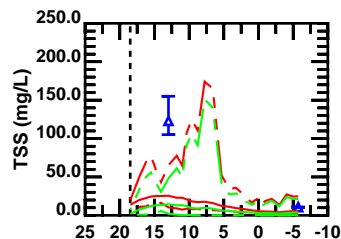
Mile From Mouth Raritan River

Passaic River



Mile From Mouth Passaic River

Hackensack River and Newark Bay



Mile From Mouth Hackensack River

December 30 - January 28

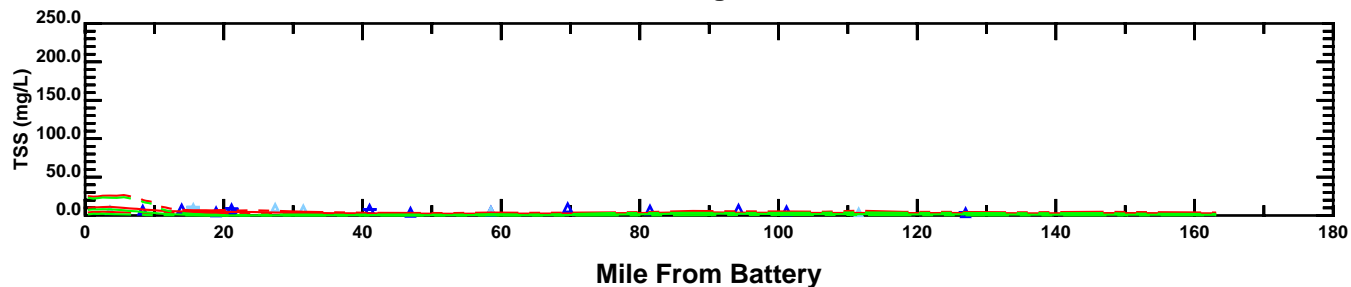
DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

MODEL

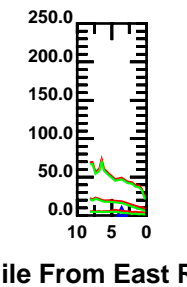
—	TSS 30-DAY MEAN
- - -	TSS 30-DAY MAX / MIN
—	COSS 30-DAY MEAN
- - -	COSS 30-DAY MAX / MIN

TSS (mg/L) Averaged Over Full Depth  
Water Year Starting Oct 1, 2001

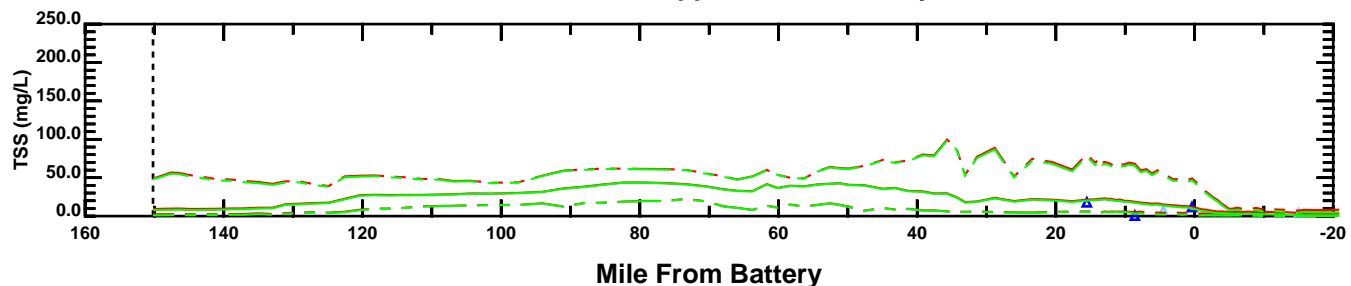
East River and Long Island Sound



Harlem River

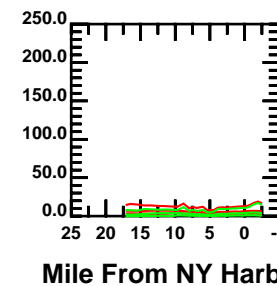


Hudson River, Upper and Lower Bay, Ocean

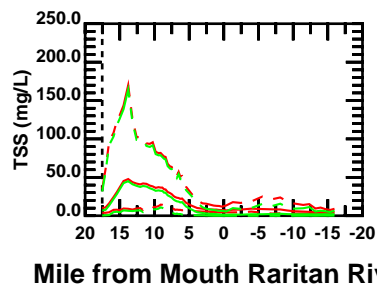


Mile From East River

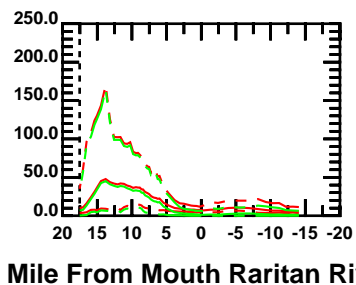
Arthur Kill and Kill Van Kull



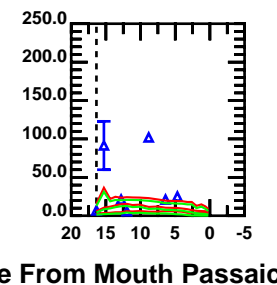
Raritan River and North Shore of Raritan Bay



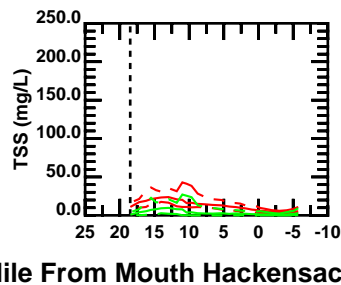
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



January 29 - February 27

DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

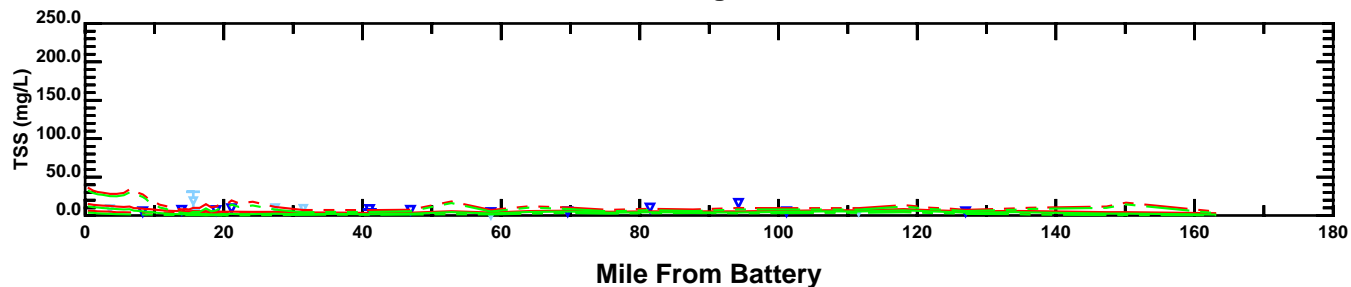
MODEL

—	TSS SURFACE 30-DAY MEAN
- - -	TSS SURFACE 30-DAY MAX / MIN
—	COSS SURFACE 30-DAY MEAN
- - -	COSS SURFACE 30-DAY MAX / MIN

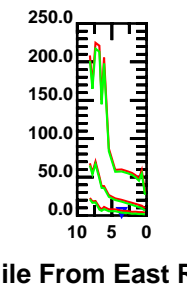
Mile From Mouth Hackensack River

Surface Layer TSS (mg/L)  
Water Year Starting Oct 1, 2001

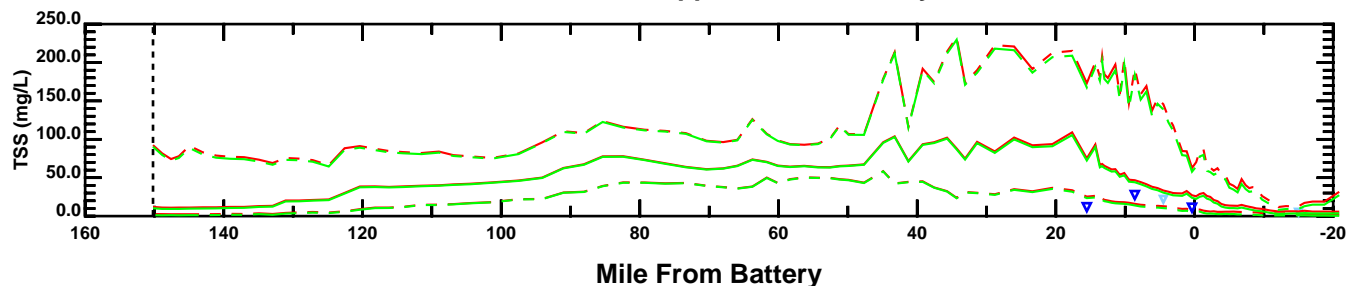
East River and Long Island Sound



Harlem River

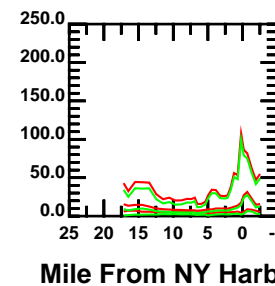


Hudson River, Upper and Lower Bay, Ocean

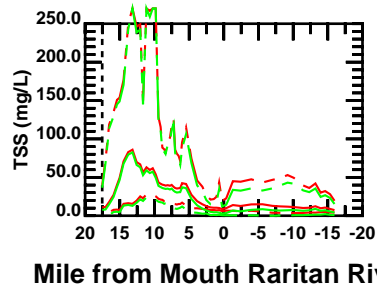


Mile From East River

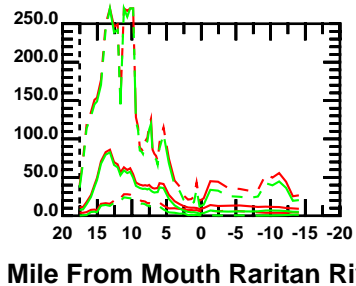
Arthur Kill and Kill Van Kull



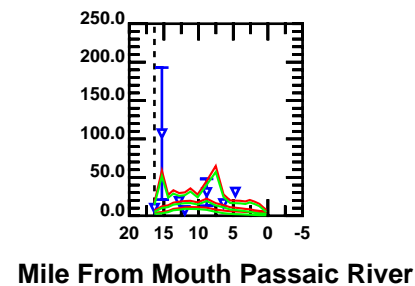
Raritan River and North Shore of Raritan Bay



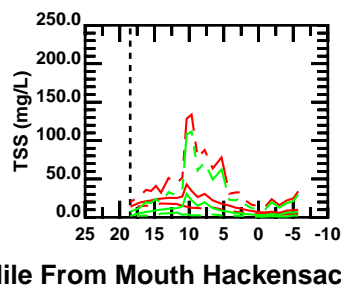
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



January 29 - February 27

DATA	TRANSECT	EMBAYMENT
NP	▼	▽
GFF	▼	▽

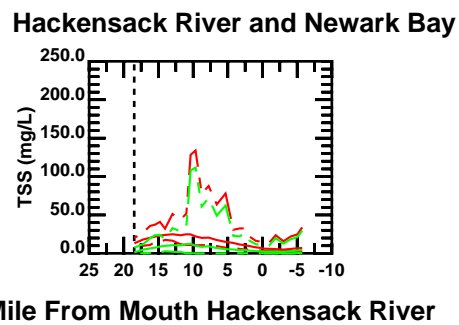
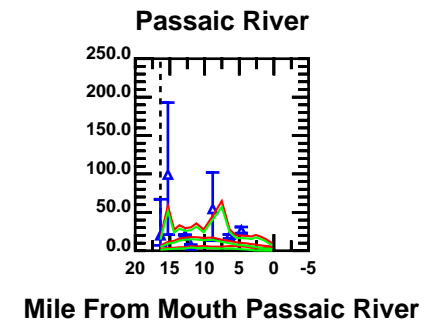
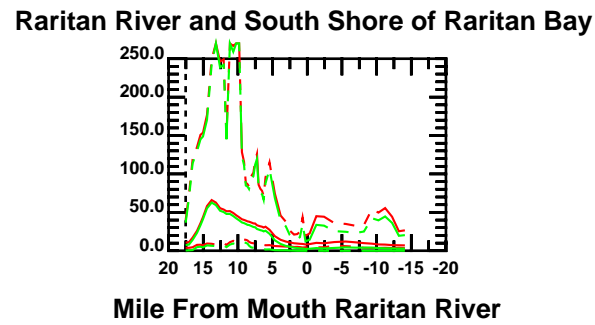
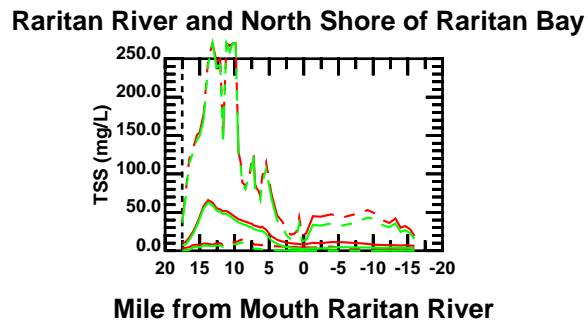
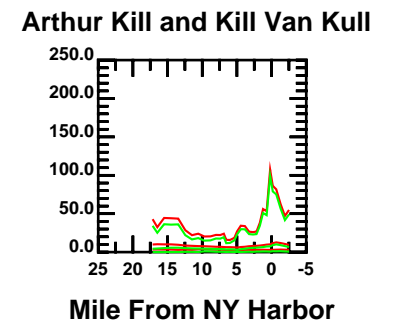
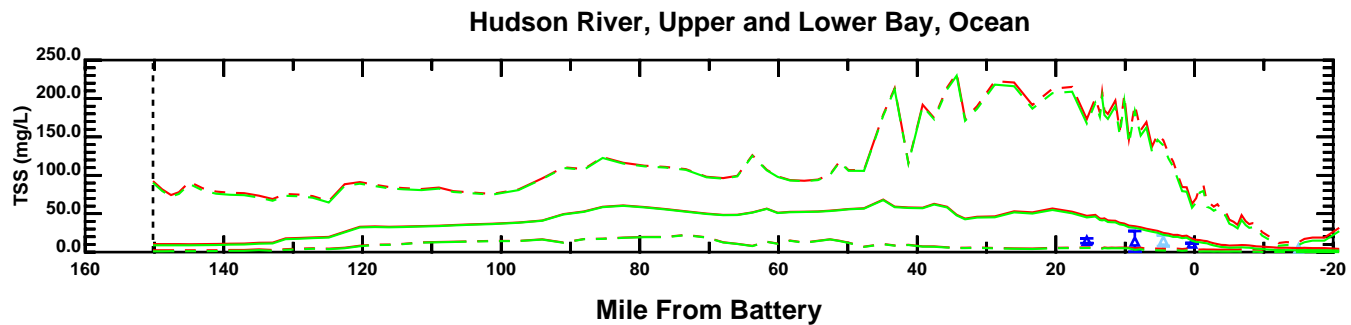
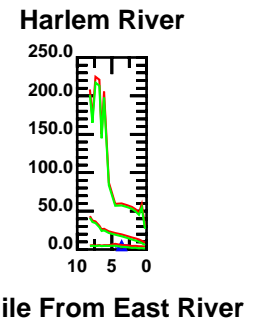
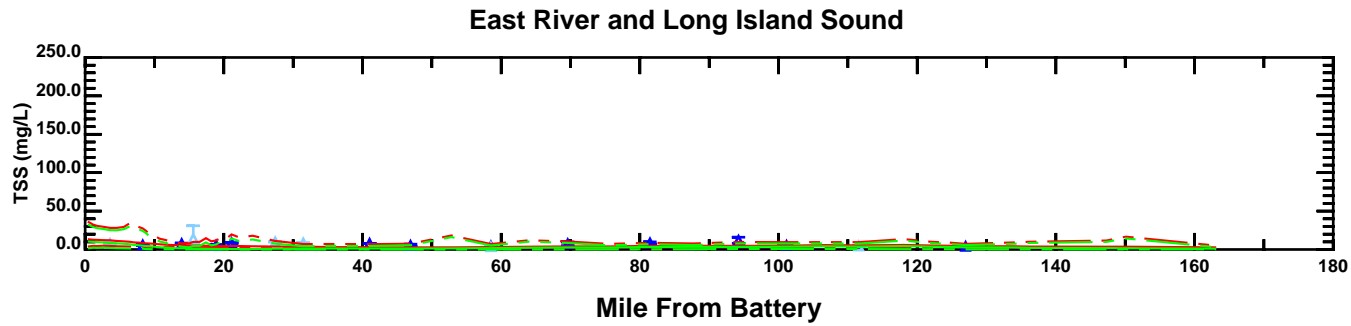
MODEL

—	TSS BOTTOM 30-DAY MEAN
- - -	TSS BOTTOM 30-DAY MAX / MIN
—	COSS BOTTOM 30-DAY MEAN
- - -	COSS BOTTOM 30-DAY MAX / MIN

Mile From Mouth Hackensack River

Bottom Layer TSS (mg/L)  
Water Year Starting Oct 1, 2001





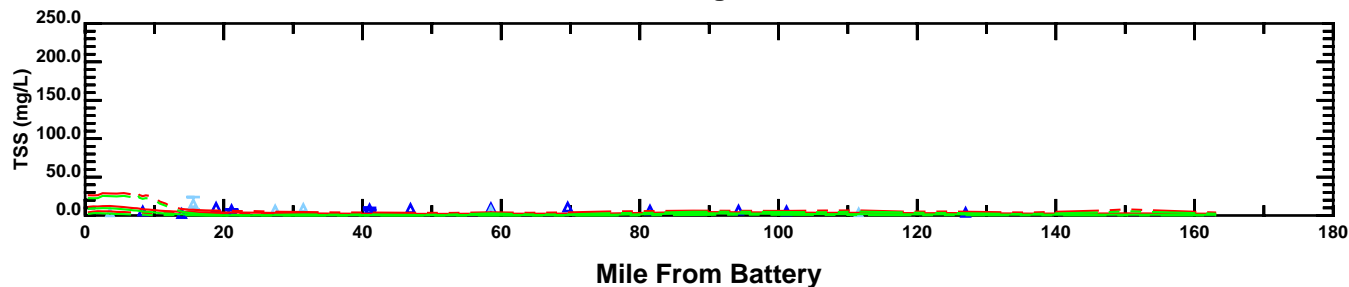
January 29 - February 27

DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

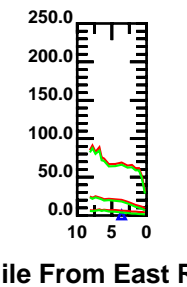
MODEL	
—	TSS 30-DAY MEAN
- - -	TSS 30-DAY MAX / MIN
—	COSS 30-DAY MEAN
- - -	COSS 30-DAY MAX / MIN

**TSS (mg/L) Averaged Over Full Depth  
Water Year Starting Oct 1, 2001**

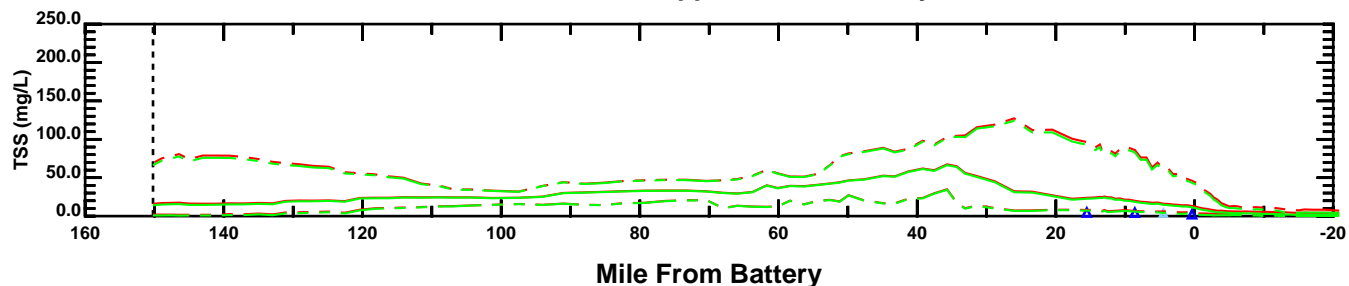
East River and Long Island Sound



Harlem River

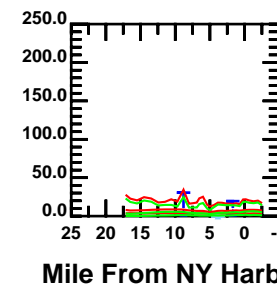


Hudson River, Upper and Lower Bay, Ocean

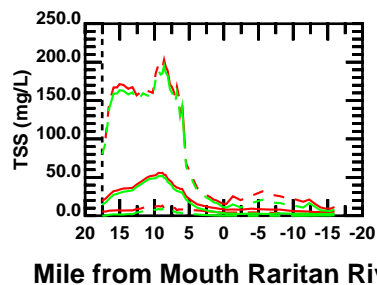


Mile From East River

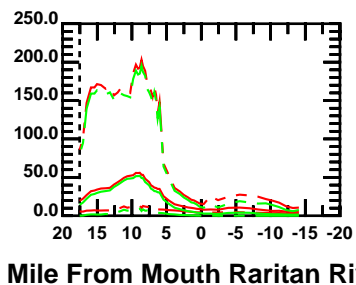
Arthur Kill and Kill Van Kull



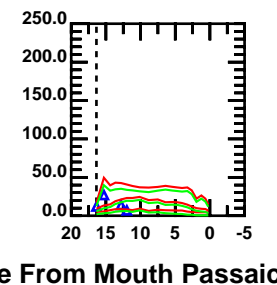
Raritan River and North Shore of Raritan Bay



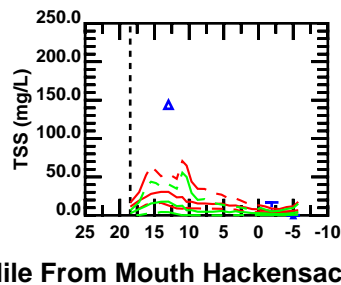
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



February 28 - March 28

DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

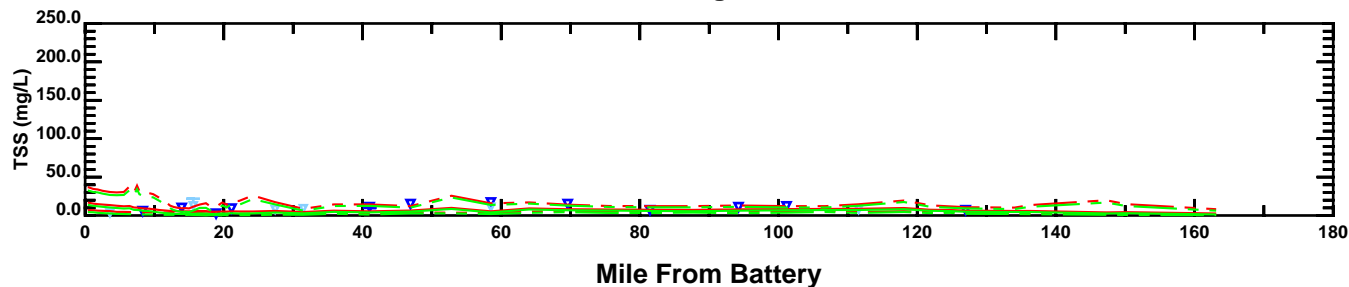
MODEL

—	TSS SURFACE 30-DAY MEAN
- - -	TSS SURFACE 30-DAY MAX / MIN
—	COSS SURFACE 30-DAY MEAN
- - -	COSS SURFACE 30-DAY MAX / MIN

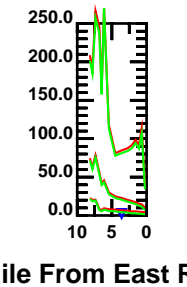
Mile From Mouth Hackensack River

Surface Layer TSS (mg/L)  
Water Year Starting Oct 1, 2001

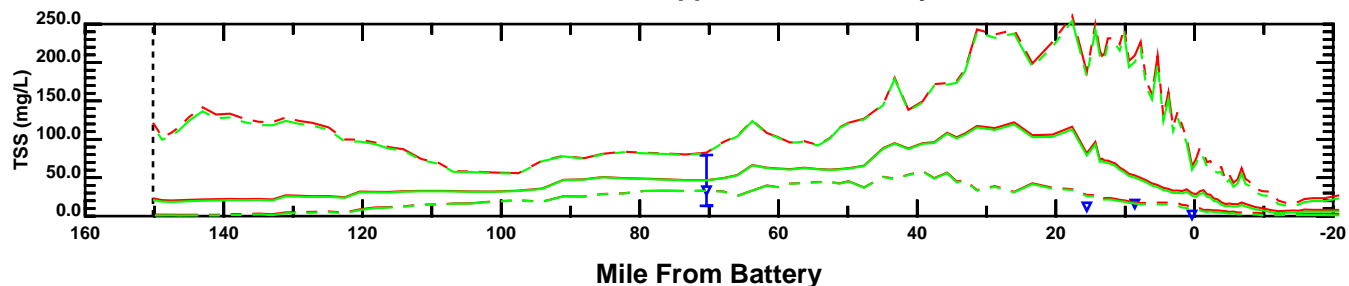
East River and Long Island Sound



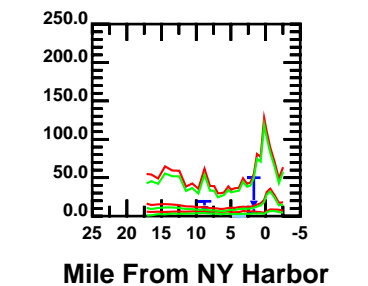
Harlem River



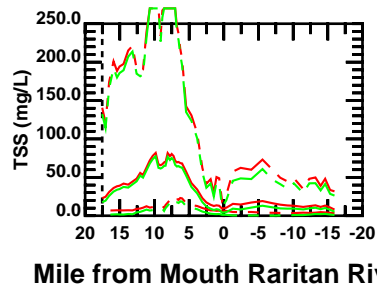
Hudson River, Upper and Lower Bay, Ocean



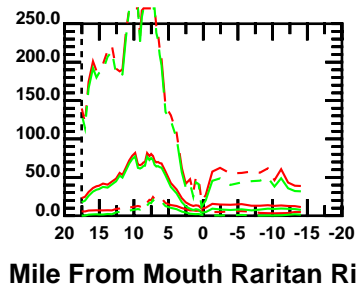
Arthur Kill and Kill Van Kull



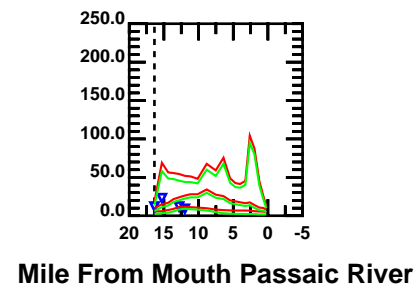
Raritan River and North Shore of Raritan Bay



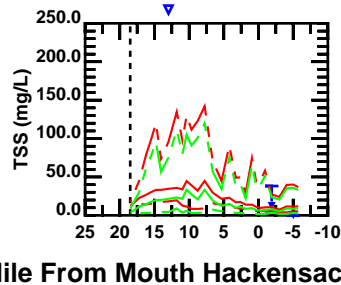
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



February 28 - March 28

DATA	TRANSECT	EMBAYMENT
NP	▼	▽
GFF	▲	▽

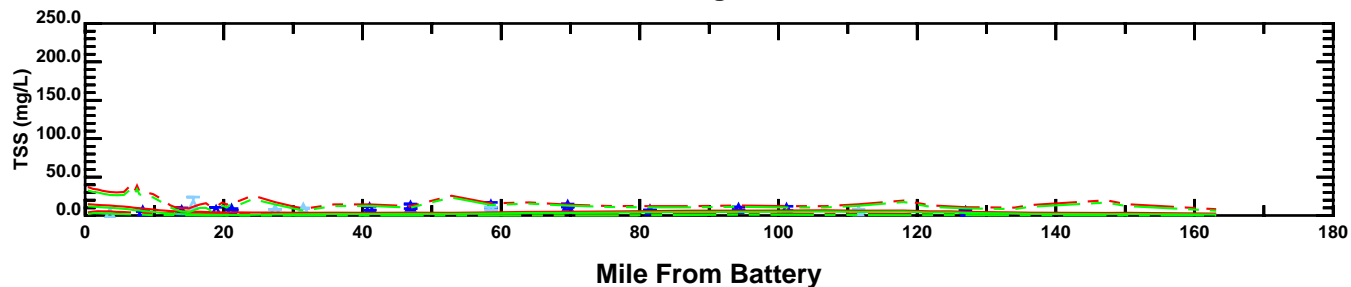
MODEL

—	TSS BOTTOM 30-DAY MEAN
- - -	TSS BOTTOM 30-DAY MAX / MIN
—	COSS BOTTOM 30-DAY MEAN
- - -	COSS BOTTOM 30-DAY MAX / MIN

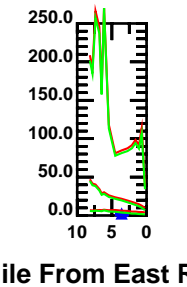
Mile From Mouth Hackensack River

Bottom Layer TSS (mg/L)  
Water Year Starting Oct 1, 2001

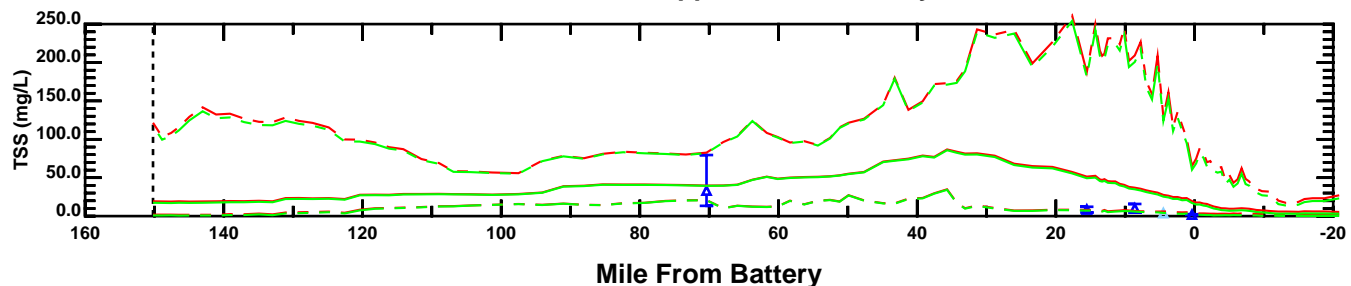
East River and Long Island Sound



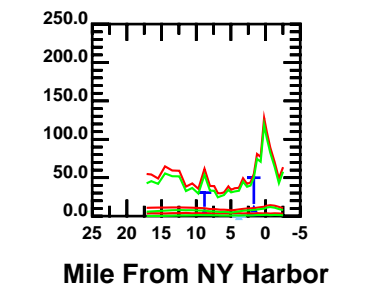
Harlem River



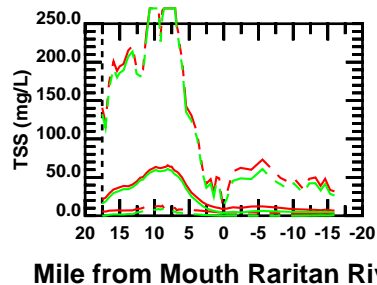
Hudson River, Upper and Lower Bay, Ocean



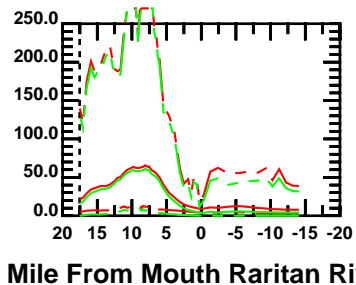
Arthur Kill and Kill Van Kull



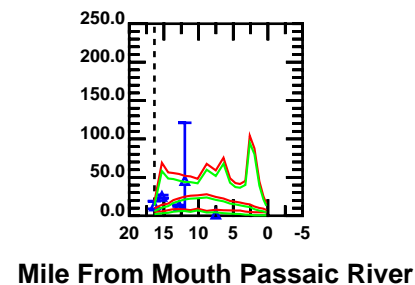
Raritan River and North Shore of Raritan Bay



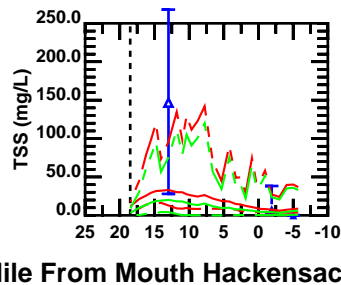
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



February 28 - March 28

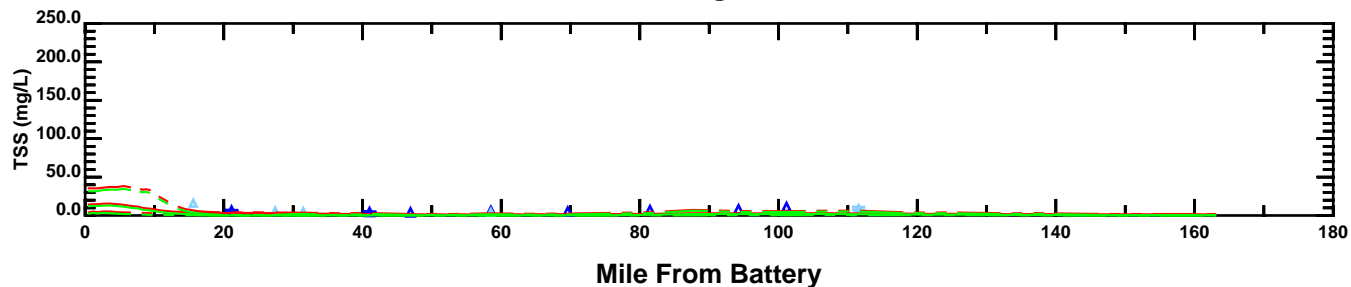
DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

MODEL	
—	TSS 30-DAY MEAN
- - -	TSS 30-DAY MAX / MIN
—	COSS 30-DAY MEAN
- - -	COSS 30-DAY MAX / MIN

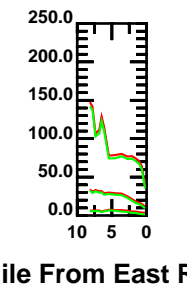
Mile From Mouth Hackensack River

TSS (mg/L) Averaged Over Full Depth  
Water Year Starting Oct 1, 2001

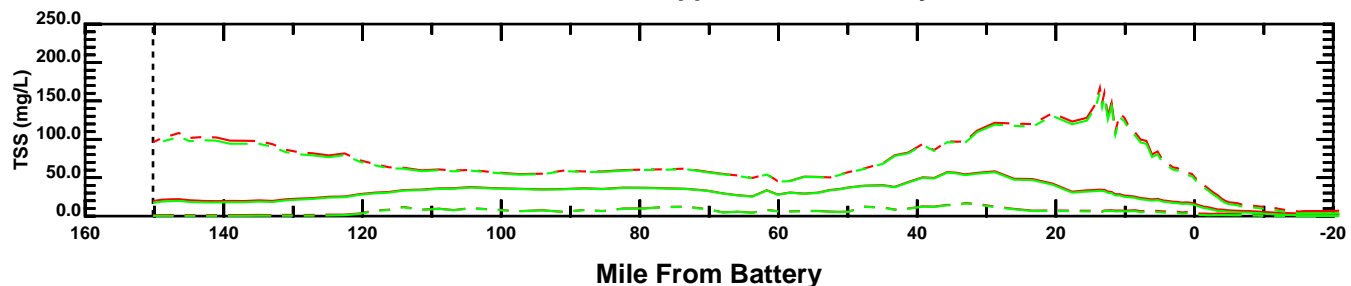
East River and Long Island Sound



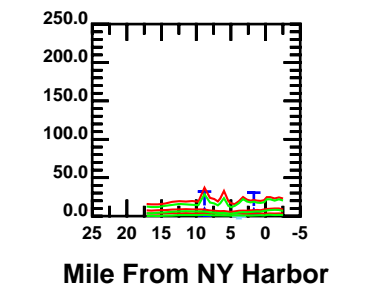
Harlem River



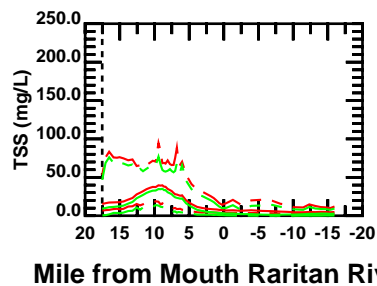
Hudson River, Upper and Lower Bay, Ocean



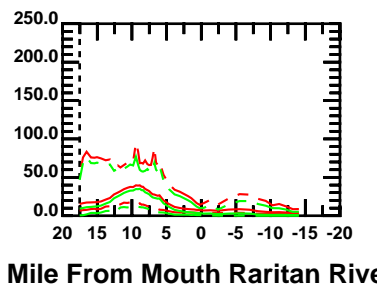
Arthur Kill and Kill Van Kull



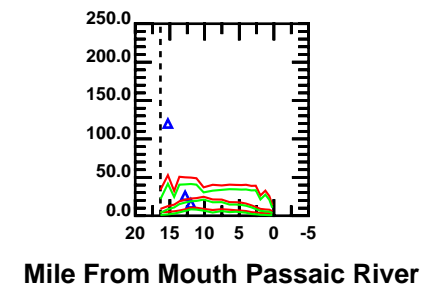
Raritan River and North Shore of Raritan Bay



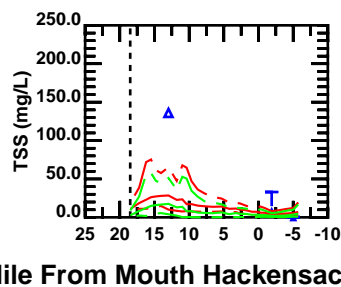
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



March 29 - April 27

DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

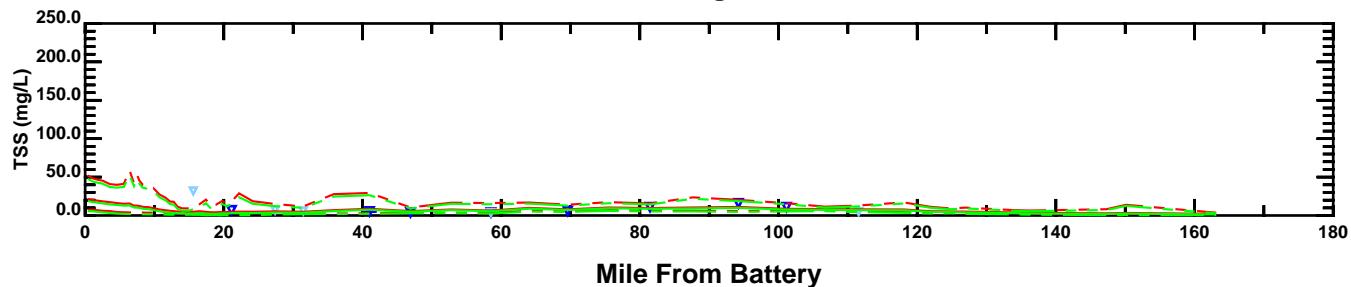
MODEL

—	TSS SURFACE 30-DAY MEAN
- - -	TSS SURFACE 30-DAY MAX / MIN
—	COSS SURFACE 30-DAY MEAN
- - -	COSS SURFACE 30-DAY MAX / MIN

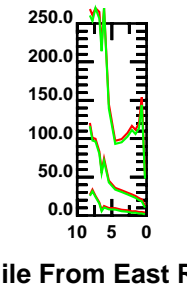
Mile From Mouth Hackensack River

Surface Layer TSS (mg/L)  
Water Year Starting Oct 1, 2001

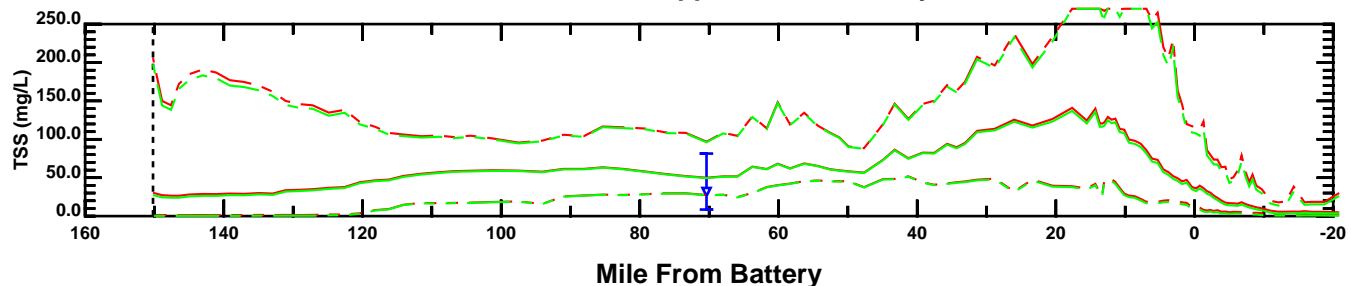
East River and Long Island Sound



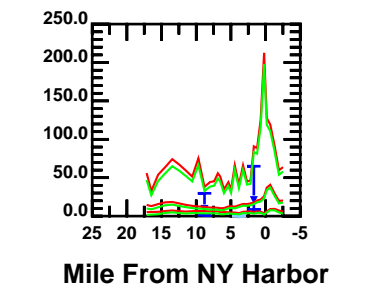
Harlem River



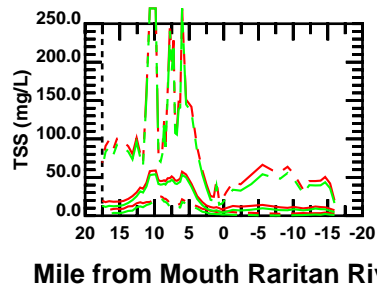
Hudson River, Upper and Lower Bay, Ocean



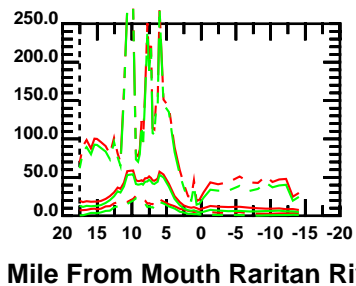
Arthur Kill and Kill Van Kull



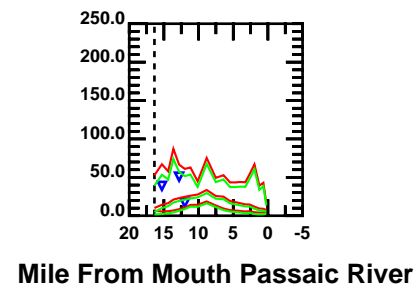
Raritan River and North Shore of Raritan Bay



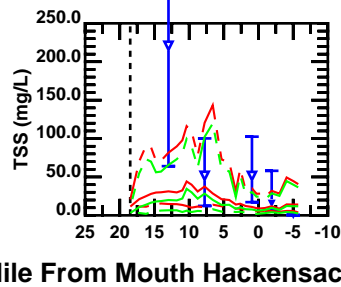
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



March 29 - April 27

DATA	TRANSECT	EMBAYMENT
NP	▼	▽
GFF	▲	▽

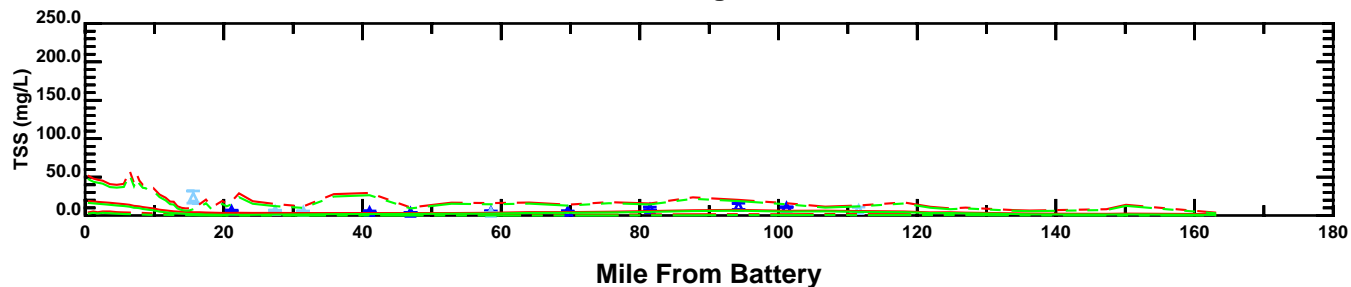
MODEL

—	TSS BOTTOM 30-DAY MEAN
- - -	TSS BOTTOM 30-DAY MAX / MIN
—	COSS BOTTOM 30-DAY MEAN
- - -	COSS BOTTOM 30-DAY MAX / MIN

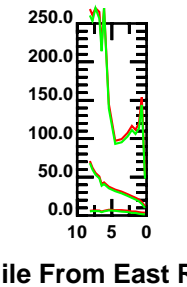
Mile From Mouth Hackensack River

Bottom Layer TSS (mg/L)  
Water Year Starting Oct 1, 2001

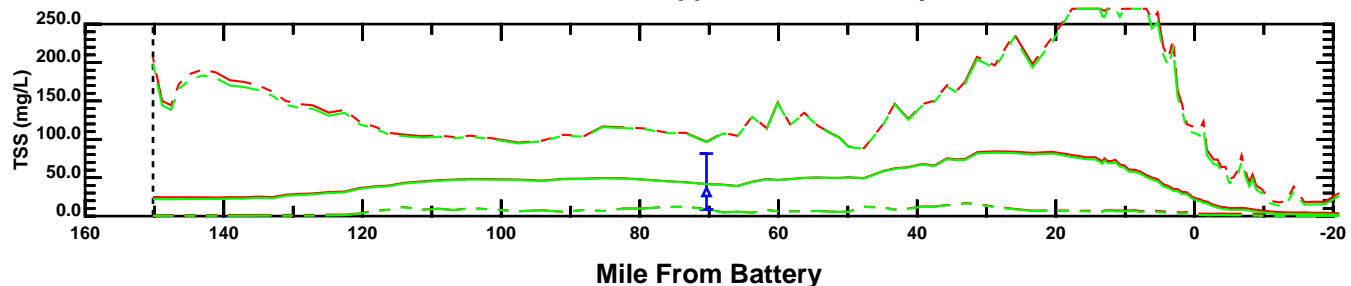
East River and Long Island Sound



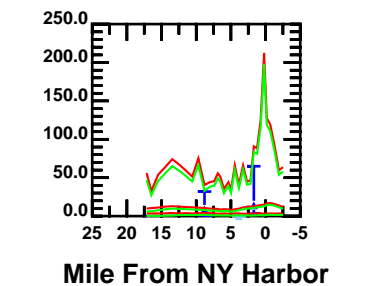
Harlem River



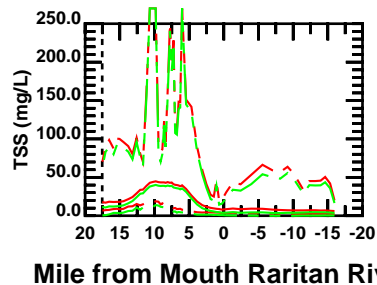
Hudson River, Upper and Lower Bay, Ocean



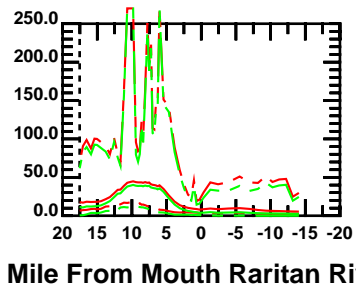
Arthur Kill and Kill Van Kull



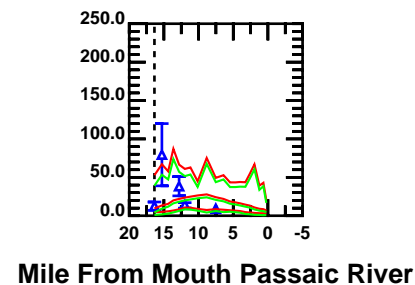
Raritan River and North Shore of Raritan Bay



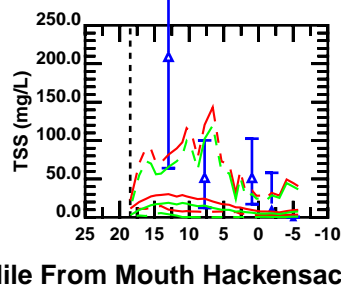
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



March 29 - April 27

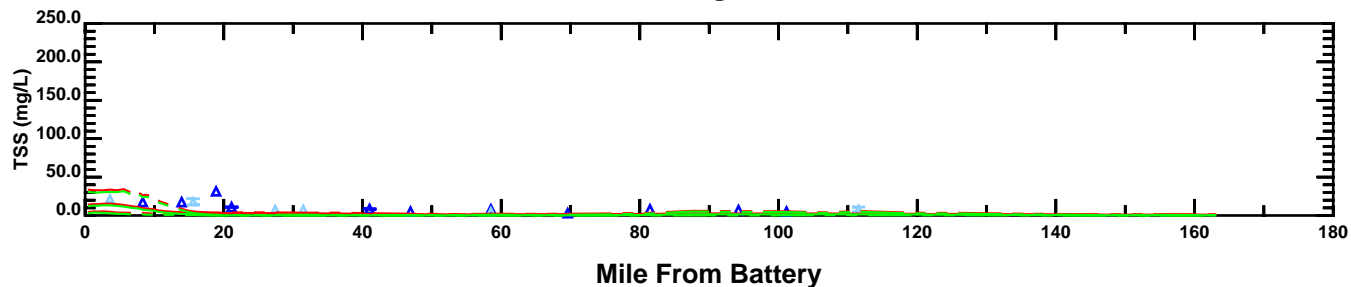
DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

MODEL	
—	TSS 30-DAY MEAN
- - -	TSS 30-DAY MAX / MIN
—	COSS 30-DAY MEAN
- - -	COSS 30-DAY MAX / MIN

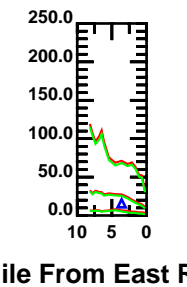
Mile From Mouth Hackensack River

TSS (mg/L) Averaged Over Full Depth  
Water Year Starting Oct 1, 2001

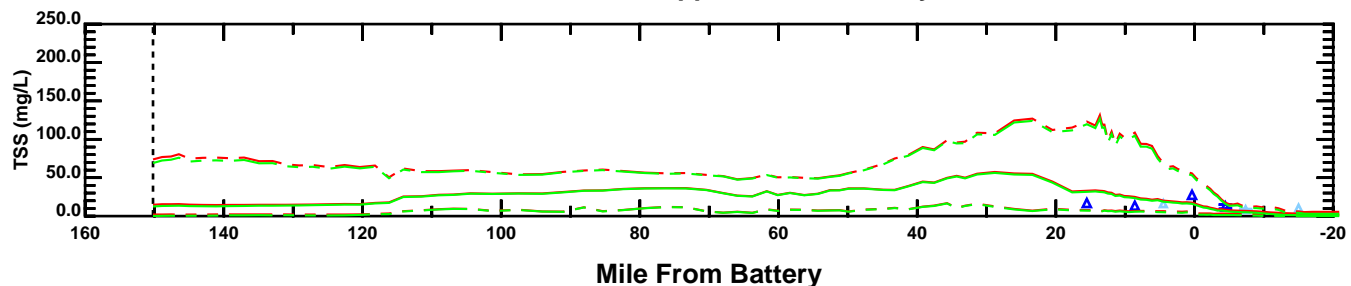
East River and Long Island Sound



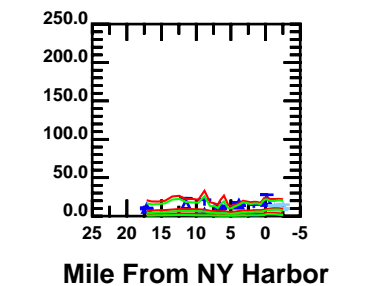
Harlem River



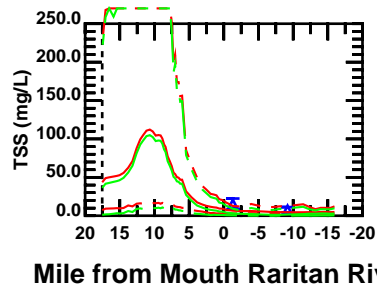
Hudson River, Upper and Lower Bay, Ocean



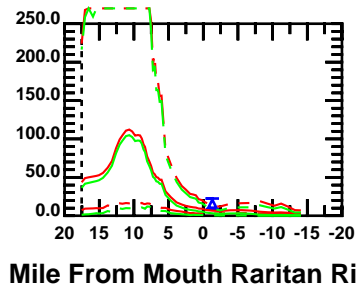
Arthur Kill and Kill Van Kull



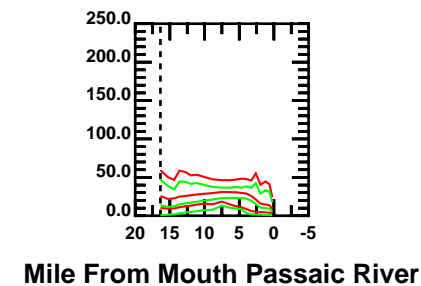
Raritan River and North Shore of Raritan Bay



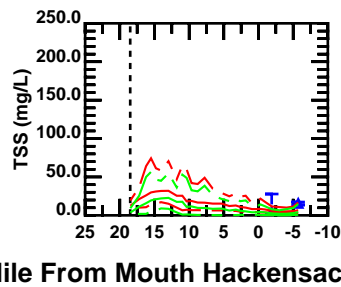
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



April 28 - May 27

DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

MODEL

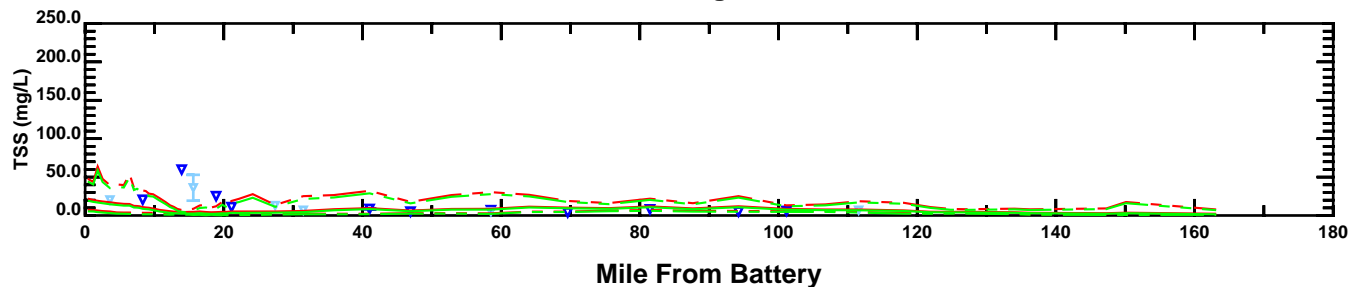
—	TSS SURFACE 30-DAY MEAN
- - -	TSS SURFACE 30-DAY MAX / MIN
—	COSS SURFACE 30-DAY MEAN
- - -	COSS SURFACE 30-DAY MAX / MIN

Mile From Mouth Hackensack River

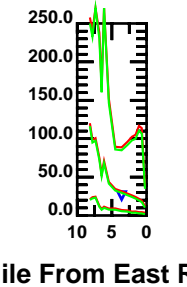
Surface Layer TSS (mg/L)  
Water Year Starting Oct 1, 2001



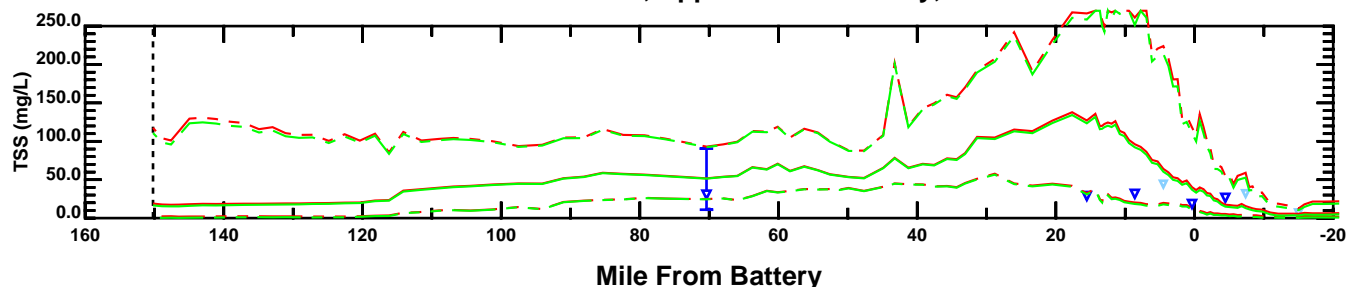
East River and Long Island Sound



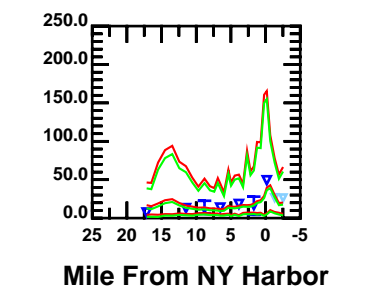
Harlem River



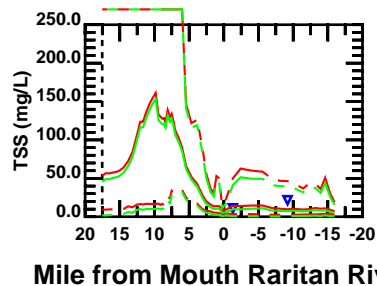
Hudson River, Upper and Lower Bay, Ocean



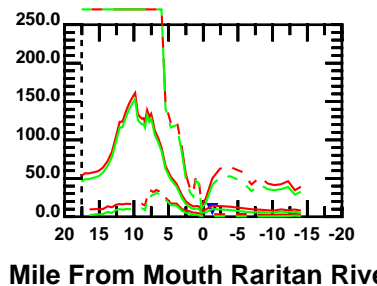
Arthur Kill and Kill Van Kull



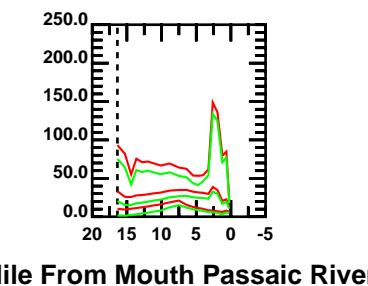
Raritan River and North Shore of Raritan Bay



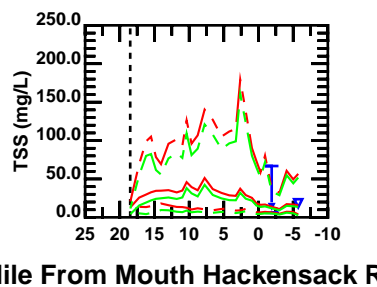
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



April 28 - May 27

DATA	TRANSECT	EMBAYMENT
NP	▼	▽
GFF	▼	▽

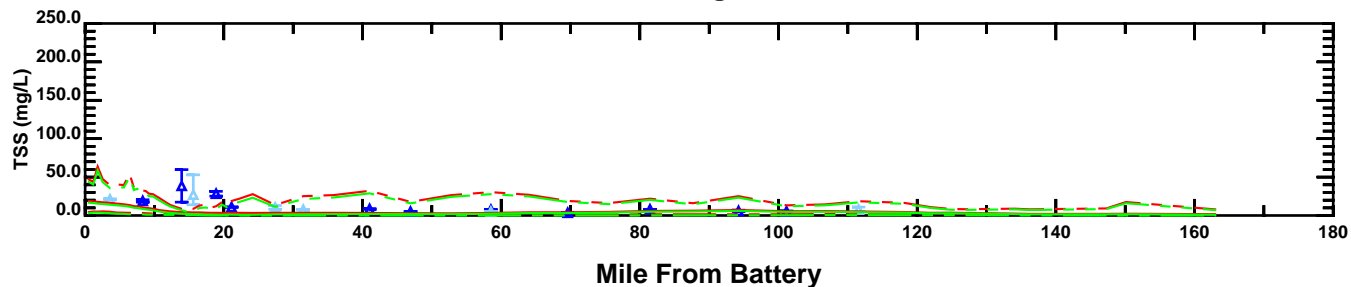
MODEL

—	TSS BOTTOM 30-DAY MEAN
- - -	TSS BOTTOM 30-DAY MAX / MIN
—	COSS BOTTOM 30-DAY MEAN
- - -	COSS BOTTOM 30-DAY MAX / MIN

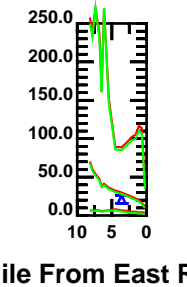
Mile From Mouth Hackensack River

Bottom Layer TSS (mg/L)  
Water Year Starting Oct 1, 2001

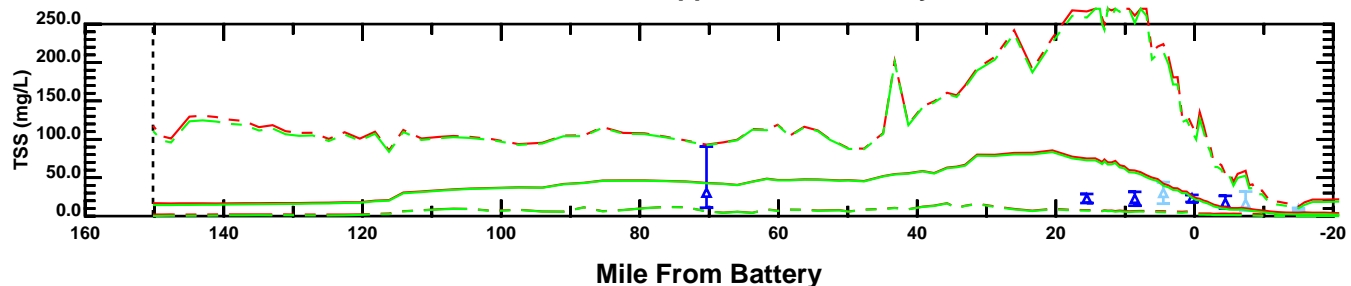
East River and Long Island Sound



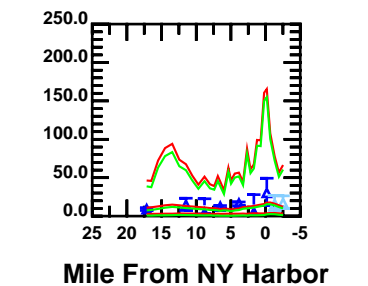
Harlem River



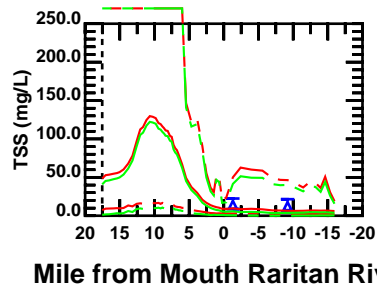
Hudson River, Upper and Lower Bay, Ocean



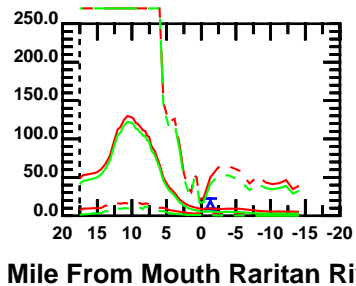
Arthur Kill and Kill Van Kull



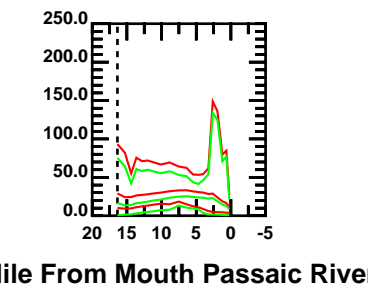
Raritan River and North Shore of Raritan Bay



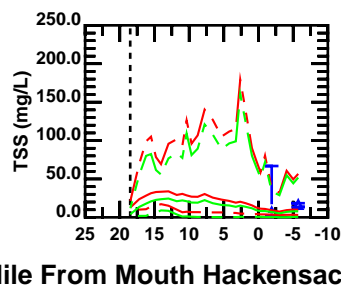
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



April 28 - May 27

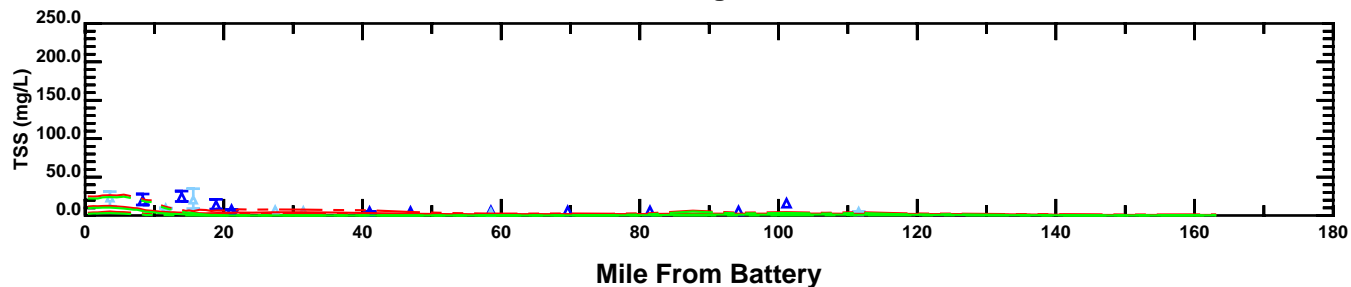
DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

MODEL	
—	TSS 30-DAY MEAN
- - -	TSS 30-DAY MAX / MIN
—	COSS 30-DAY MEAN
- - -	COSS 30-DAY MAX / MIN

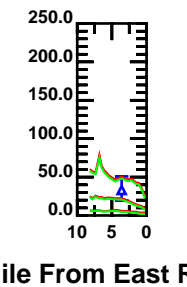
Mile From Mouth Hackensack River

TSS (mg/L) Averaged Over Full Depth  
Water Year Starting Oct 1, 2001

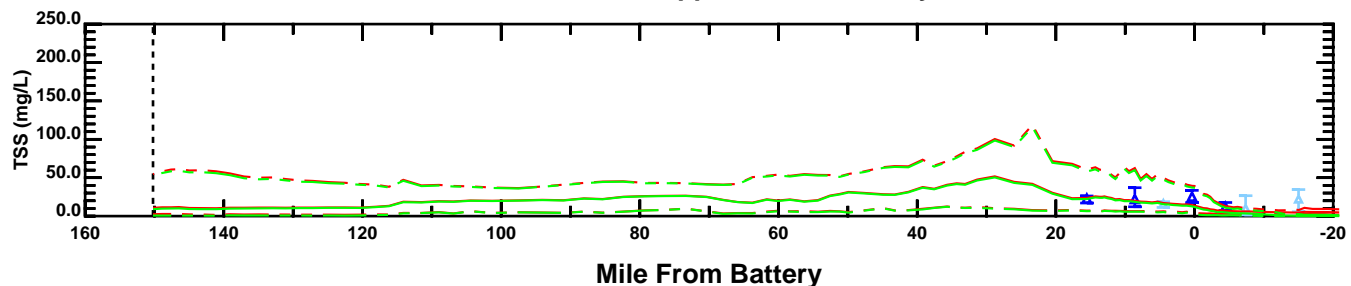
East River and Long Island Sound



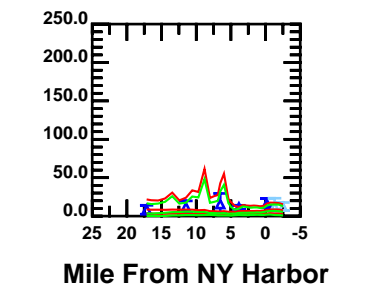
Harlem River



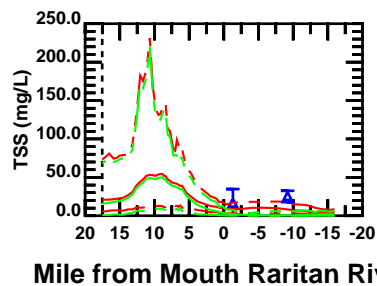
Hudson River, Upper and Lower Bay, Ocean



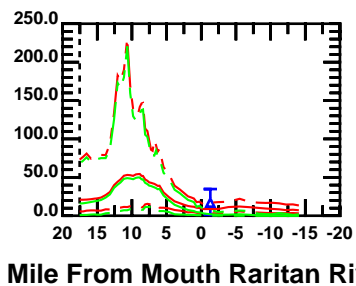
Arthur Kill and Kill Van Kull



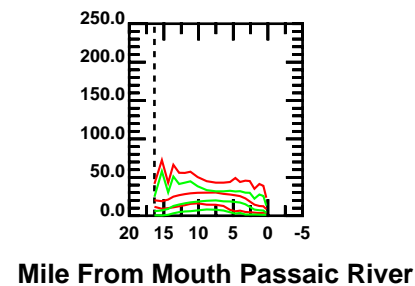
Raritan River and North Shore of Raritan Bay



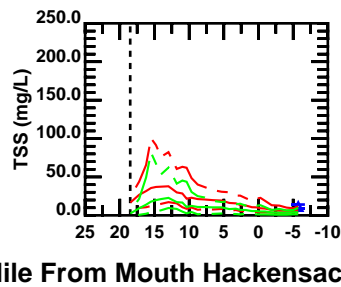
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



May 28 - June 26

DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

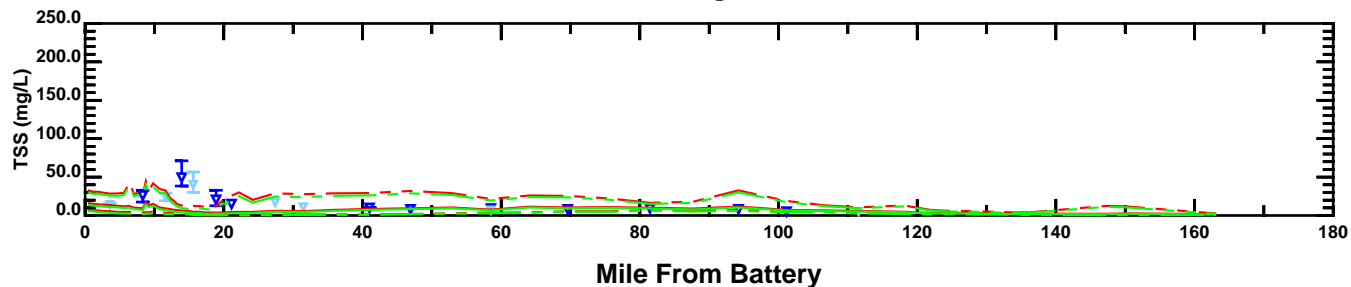
MODEL

—	TSS SURFACE 30-DAY MEAN
- - -	TSS SURFACE 30-DAY MAX / MIN
—	COSS SURFACE 30-DAY MEAN
- - -	COSS SURFACE 30-DAY MAX / MIN

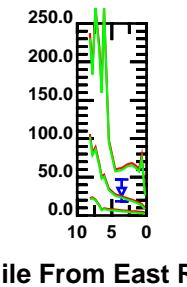
Mile From Mouth Hackensack River

Surface Layer TSS (mg/L)  
Water Year Starting Oct 1, 2001

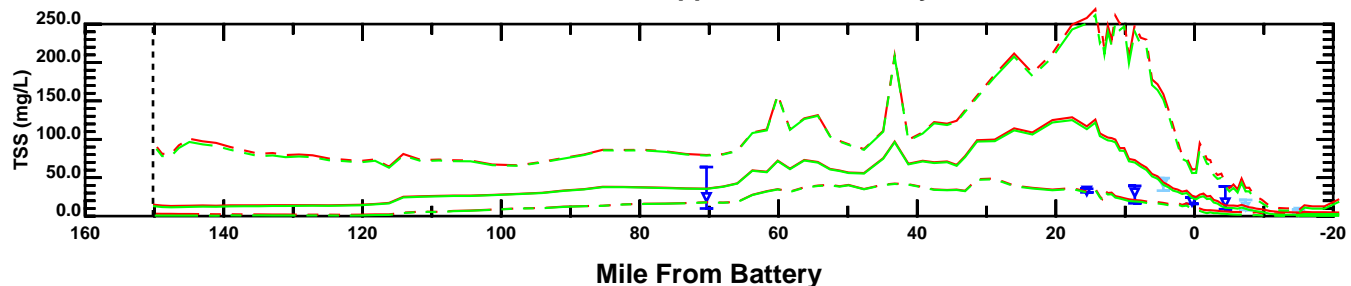
East River and Long Island Sound



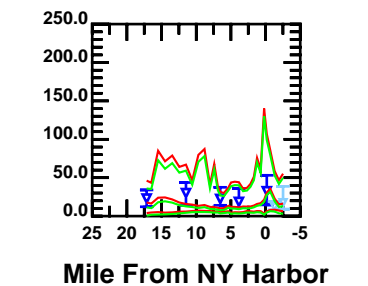
Harlem River



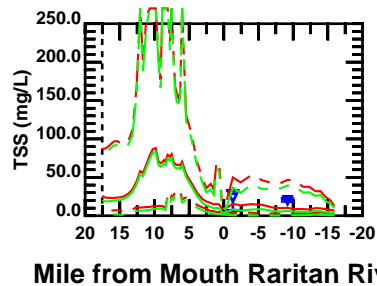
Hudson River, Upper and Lower Bay, Ocean



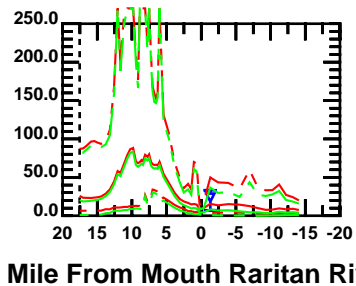
Arthur Kill and Kill Van Kull



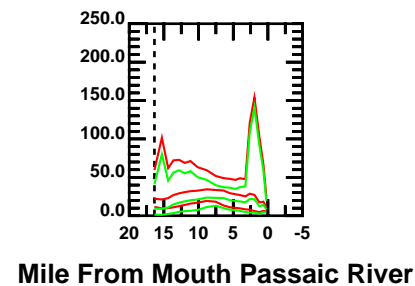
Raritan River and North Shore of Raritan Bay



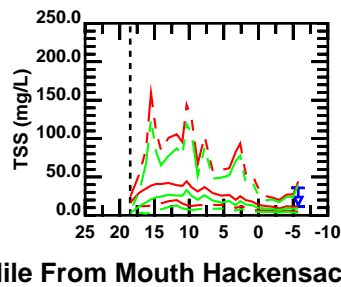
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



May 28 - June 26

DATA	TRANSECT	EMBAYMENT
NP	▼	▽
GFF	▲	▽

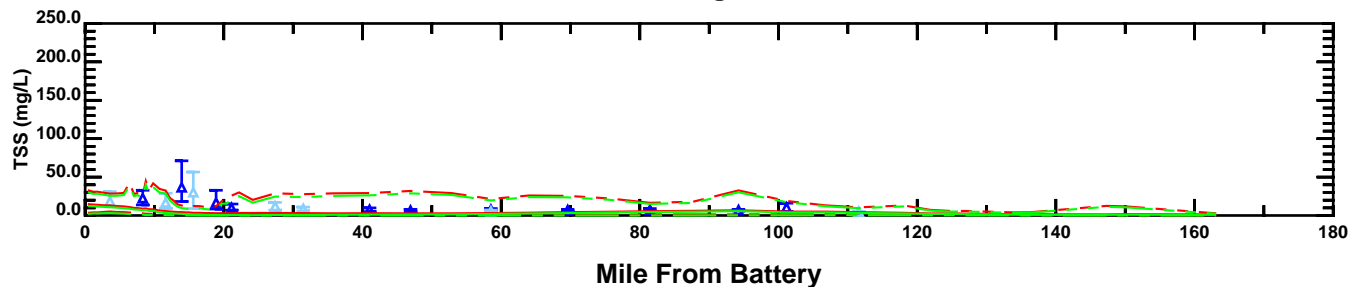
MODEL

—	TSS BOTTOM 30-DAY MEAN
- - -	TSS BOTTOM 30-DAY MAX / MIN
—	COSS BOTTOM 30-DAY MEAN
- - -	COSS BOTTOM 30-DAY MAX / MIN

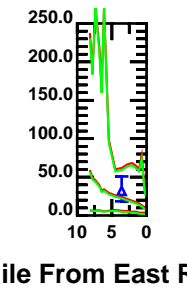
Mile From Mouth Hackensack River

Bottom Layer TSS (mg/L)  
Water Year Starting Oct 1, 2001

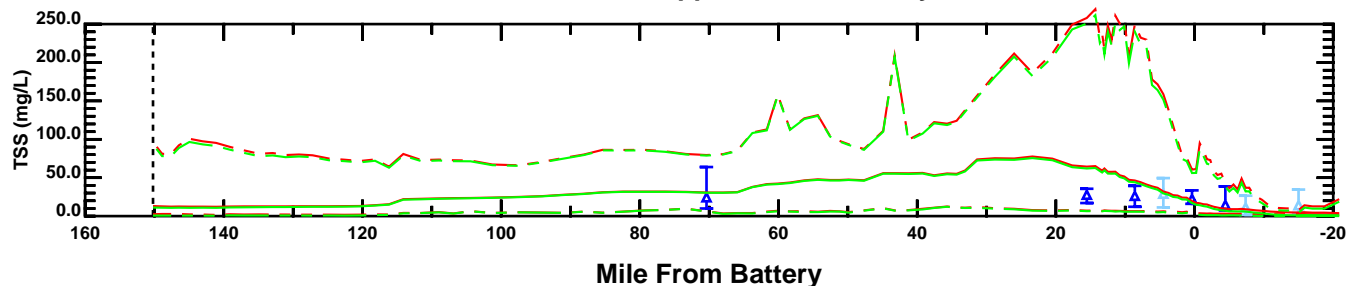
East River and Long Island Sound



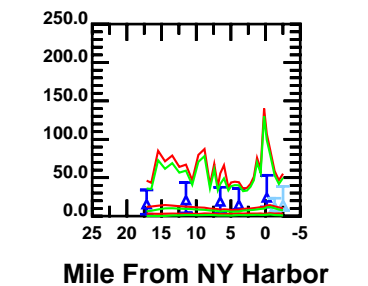
Harlem River



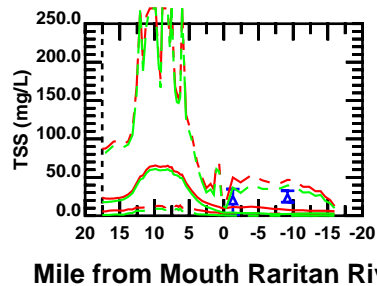
Hudson River, Upper and Lower Bay, Ocean



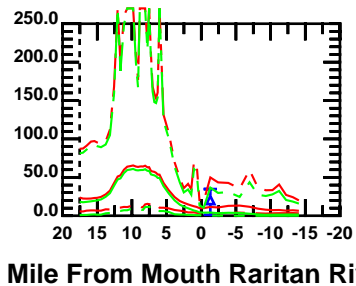
Arthur Kill and Kill Van Kull



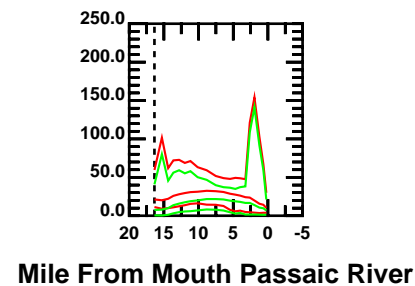
Raritan River and North Shore of Raritan Bay



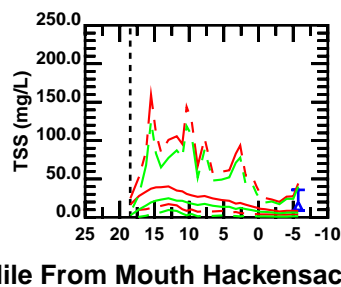
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



May 28 - June 26

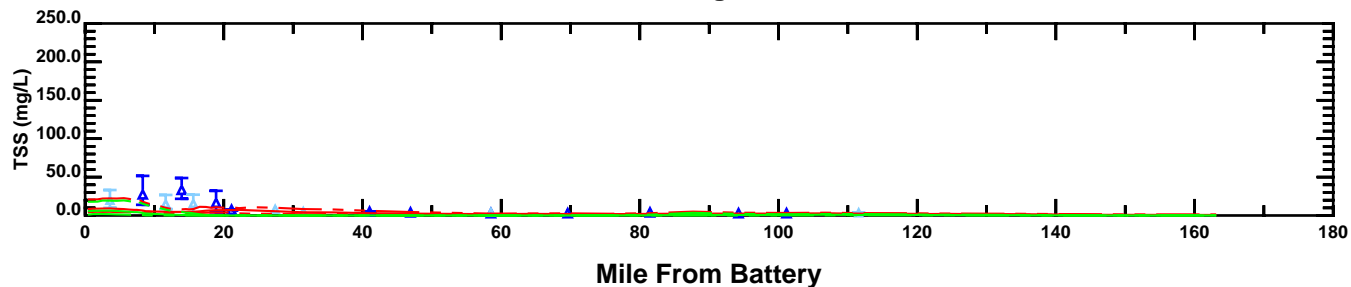
DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

MODEL	
—	TSS 30-DAY MEAN
- - -	TSS 30-DAY MAX / MIN
—	COSS 30-DAY MEAN
- - -	COSS 30-DAY MAX / MIN

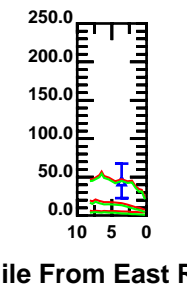
Mile From Mouth Hackensack River

TSS (mg/L) Averaged Over Full Depth  
Water Year Starting Oct 1, 2001

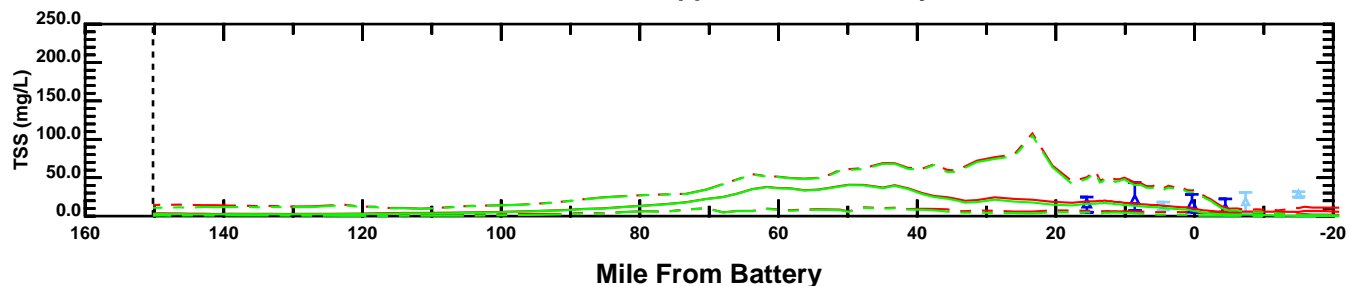
East River and Long Island Sound



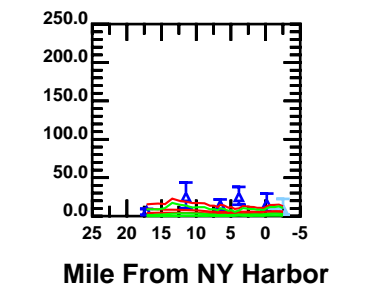
Harlem River



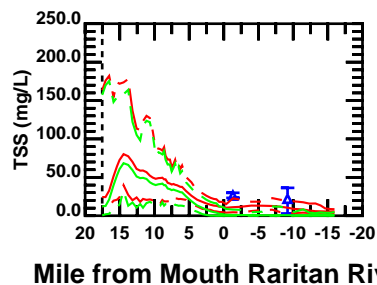
Hudson River, Upper and Lower Bay, Ocean



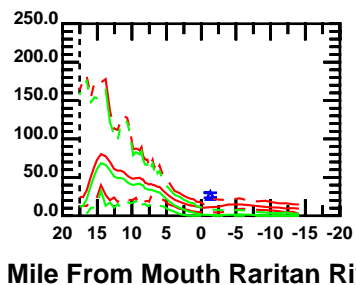
Arthur Kill and Kill Van Kull



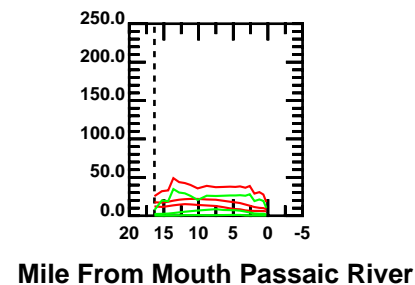
Raritan River and North Shore of Raritan Bay



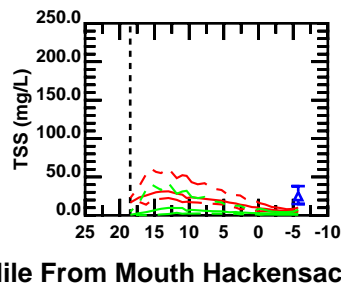
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



June 27 - July 26

DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

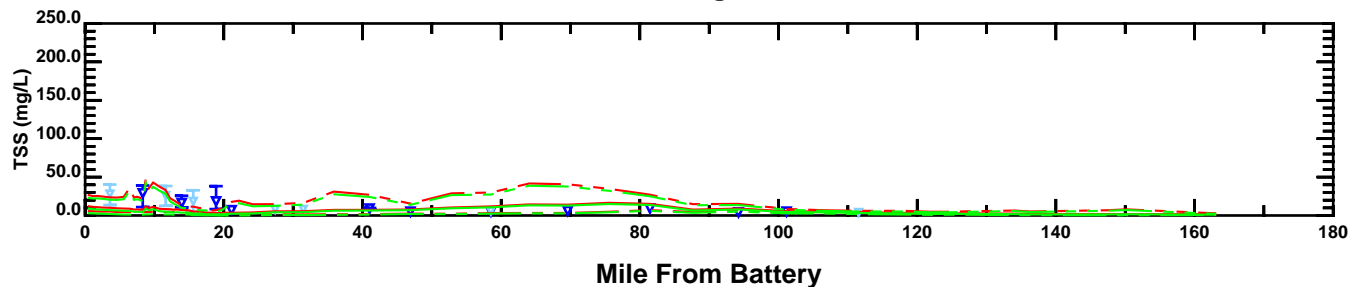
MODEL

—	TSS SURFACE 30-DAY MEAN
- - -	TSS SURFACE 30-DAY MAX / MIN
—	COSS SURFACE 30-DAY MEAN
- - -	COSS SURFACE 30-DAY MAX / MIN

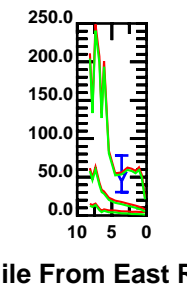
Mile From Mouth Hackensack River

Surface Layer TSS (mg/L)  
Water Year Starting Oct 1, 2001

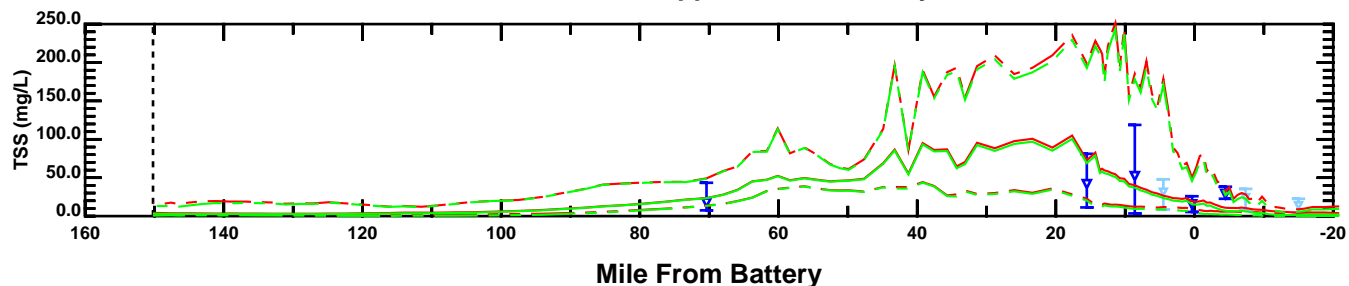
East River and Long Island Sound



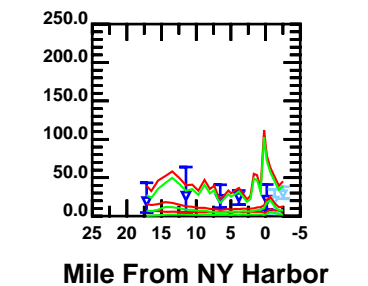
Harlem River



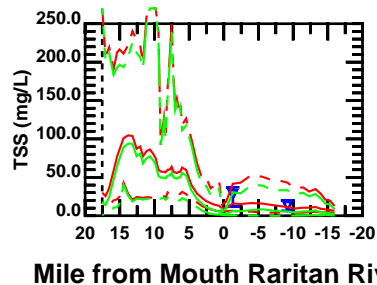
Hudson River, Upper and Lower Bay, Ocean



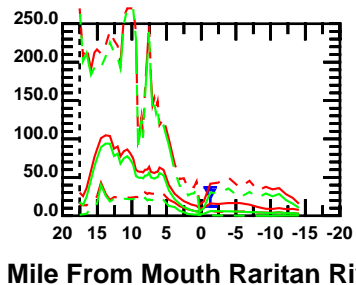
Arthur Kill and Kill Van Kull



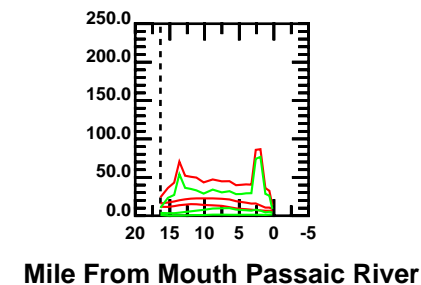
Raritan River and North Shore of Raritan Bay



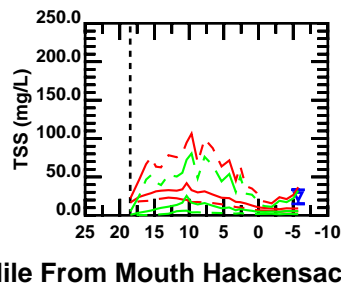
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



June 27 - July 26

DATA	TRANSECT	EMBAYMENT
NP	▼	▽
GFF	▲	▽

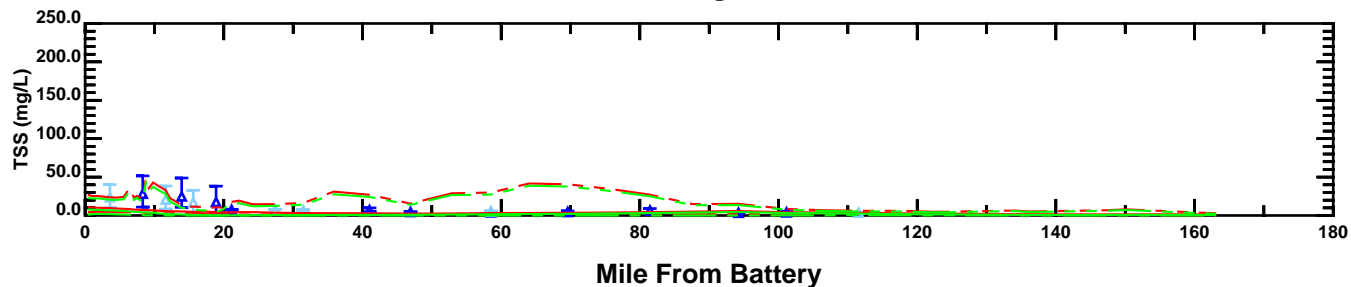
MODEL

—	TSS BOTTOM 30-DAY MEAN
- - -	TSS BOTTOM 30-DAY MAX / MIN
—	COSS BOTTOM 30-DAY MEAN
- - -	COSS BOTTOM 30-DAY MAX / MIN

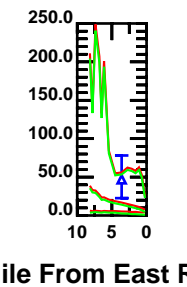
Mile From Mouth Hackensack River

Bottom Layer TSS (mg/L)  
Water Year Starting Oct 1, 2001

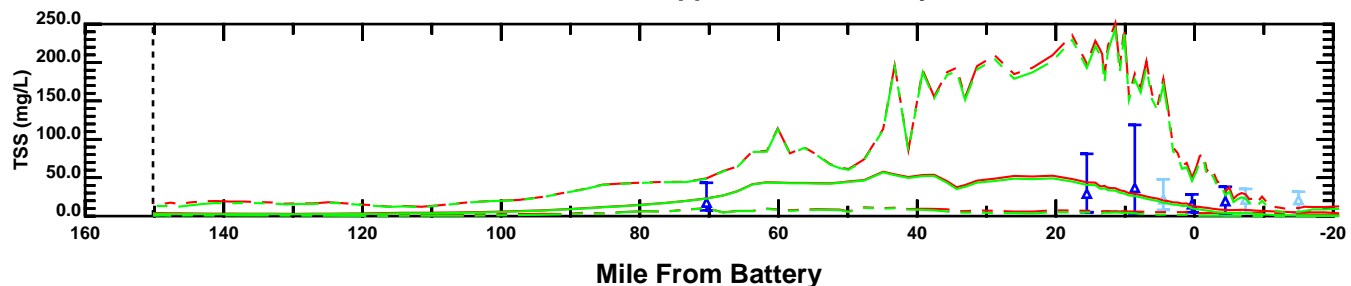
East River and Long Island Sound



Harlem River

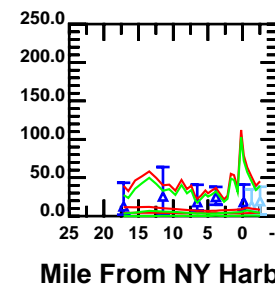


Hudson River, Upper and Lower Bay, Ocean

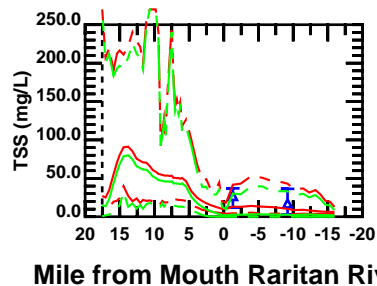


Mile From East River

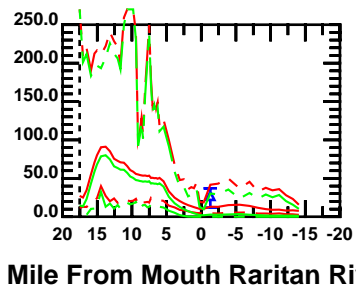
Arthur Kill and Kill Van Kull



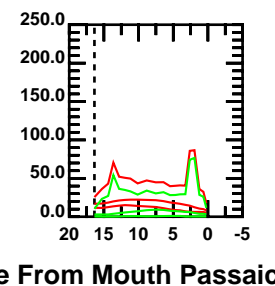
Raritan River and North Shore of Raritan Bay



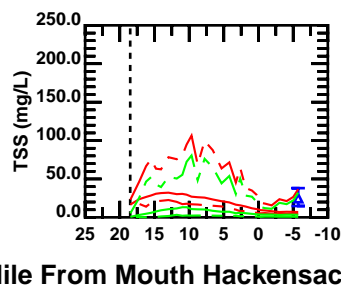
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



June 27 - July 26

DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

MODEL

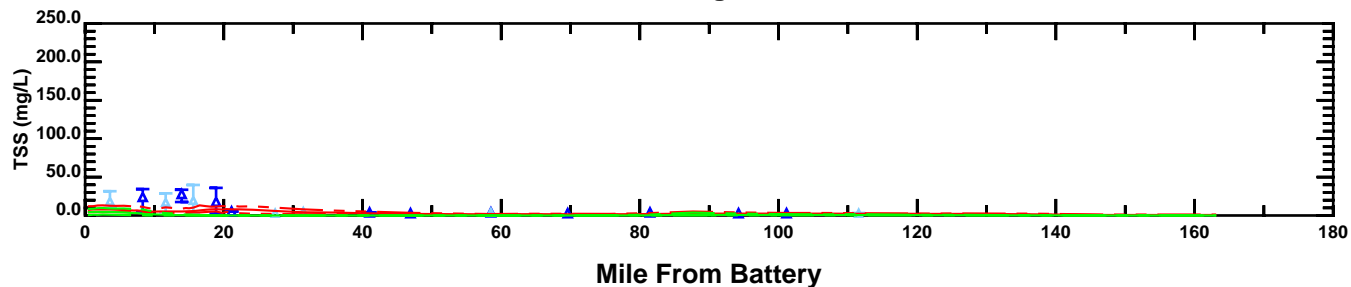
—	TSS 30-DAY MEAN
- - -	TSS 30-DAY MAX / MIN
—	COSS 30-DAY MEAN
- - -	COSS 30-DAY MAX / MIN

Mile From Mouth Hackensack River

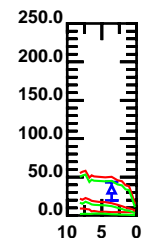
TSS (mg/L) Averaged Over Full Depth  
Water Year Starting Oct 1, 2001



East River and Long Island Sound

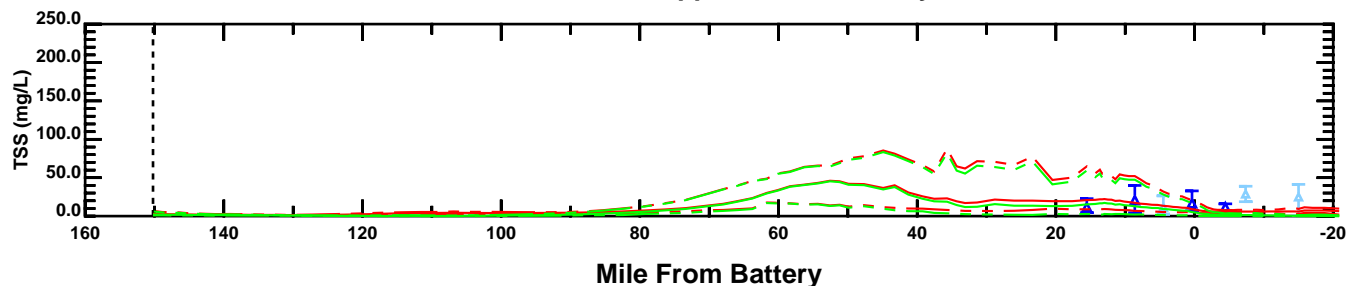


Harlem River

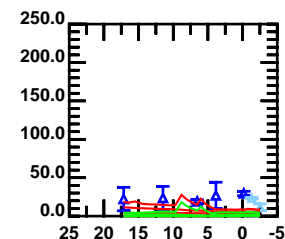


Mile From East River

Hudson River, Upper and Lower Bay, Ocean

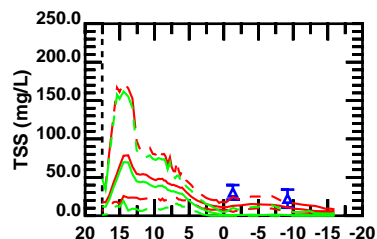


Arthur Kill and Kill Van Kull



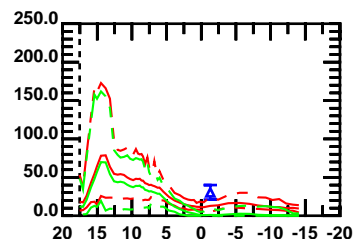
Mile From NY Harbor

Raritan River and North Shore of Raritan Bay



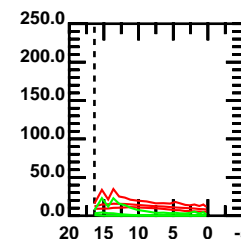
Mile from Mouth Raritan River

Raritan River and South Shore of Raritan Bay



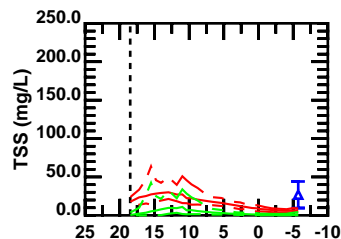
Mile From Mouth Raritan River

Passaic River



Mile From Mouth Passaic River

Hackensack River and Newark Bay



Mile From Mouth Hackensack River

July 27 - August 25

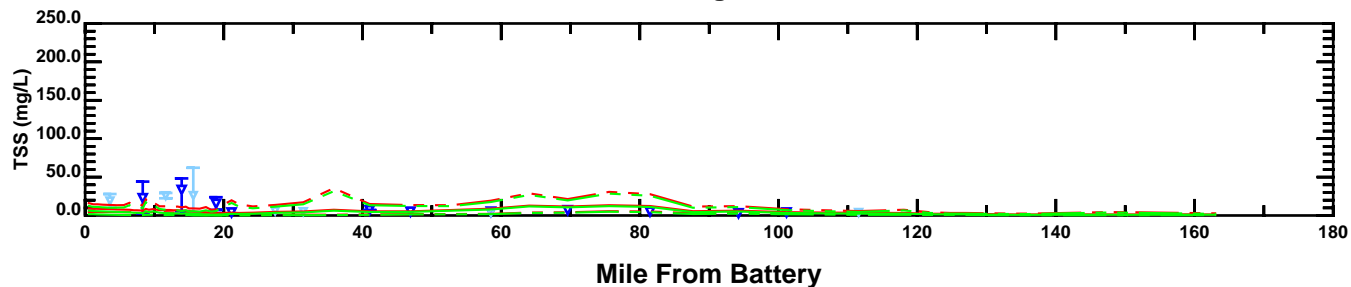
DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

MODEL

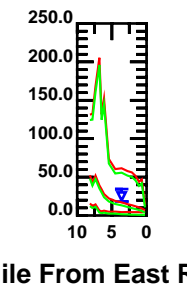
—	TSS SURFACE 30-DAY MEAN
- - -	TSS SURFACE 30-DAY MAX / MIN
—	COSS SURFACE 30-DAY MEAN
- - -	COSS SURFACE 30-DAY MAX / MIN

Surface Layer TSS (mg/L)  
Water Year Starting Oct 1, 2001

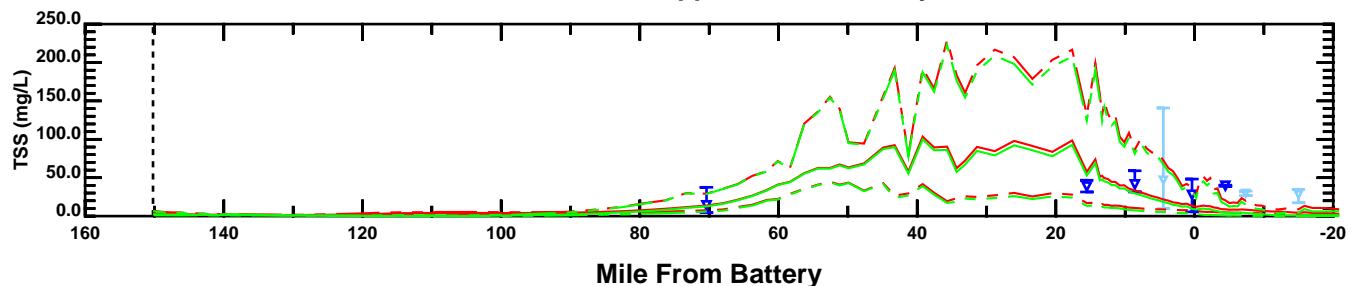
East River and Long Island Sound



Harlem River

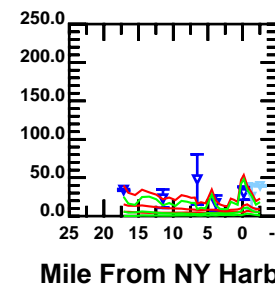


Hudson River, Upper and Lower Bay, Ocean

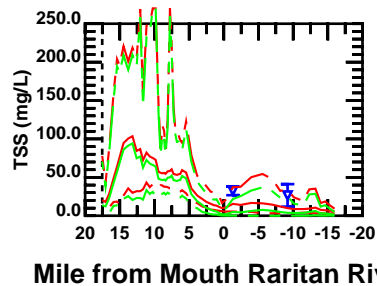


Mile From East River

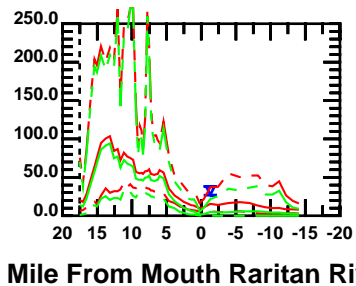
Arthur Kill and Kill Van Kull



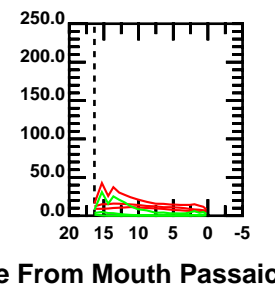
Raritan River and North Shore of Raritan Bay



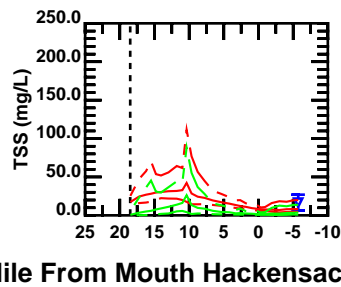
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



July 27 - August 25

DATA	TRANSECT	EMBAYMENT
NP	▼	▽
GFF	▲	▽

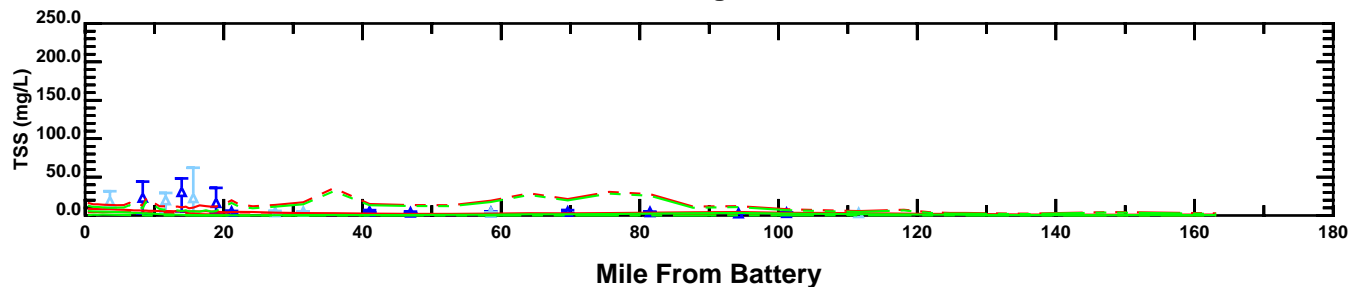
MODEL

—	TSS BOTTOM 30-DAY MEAN
- - -	TSS BOTTOM 30-DAY MAX / MIN
—	COSS BOTTOM 30-DAY MEAN
- - -	COSS BOTTOM 30-DAY MAX / MIN

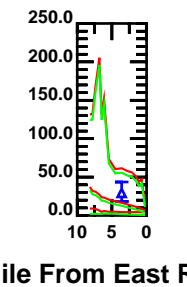
Mile From Mouth Hackensack River

Bottom Layer TSS (mg/L)  
Water Year Starting Oct 1, 2001

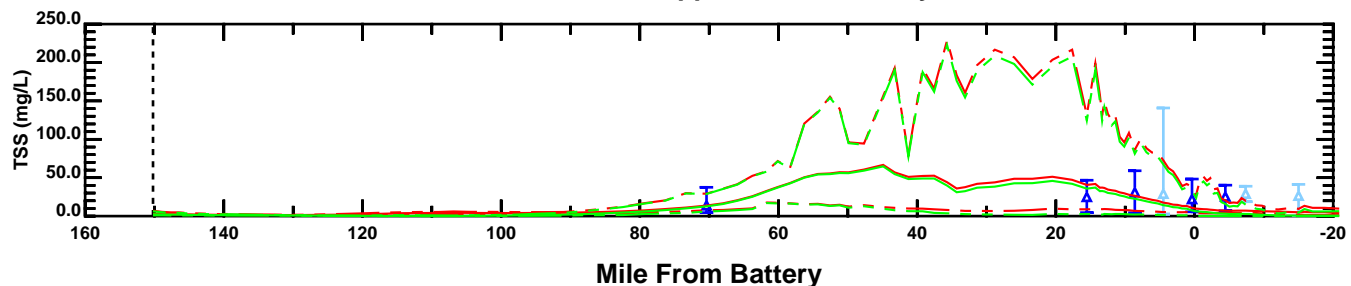
East River and Long Island Sound



Harlem River

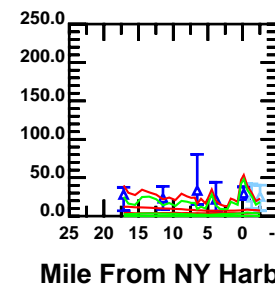


Hudson River, Upper and Lower Bay, Ocean

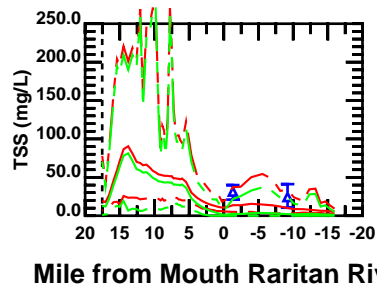


Mile From East River

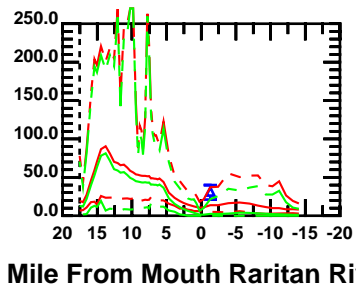
Arthur Kill and Kill Van Kull



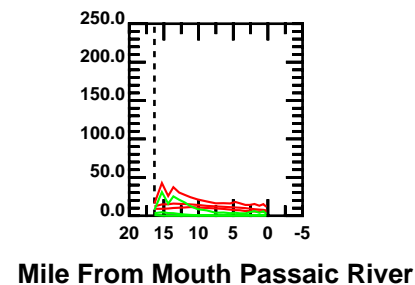
Raritan River and North Shore of Raritan Bay



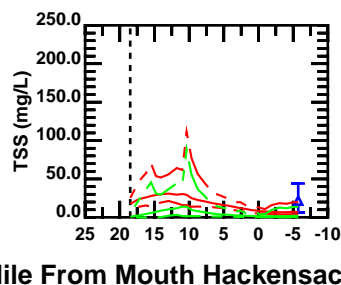
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



July 27 - August 25

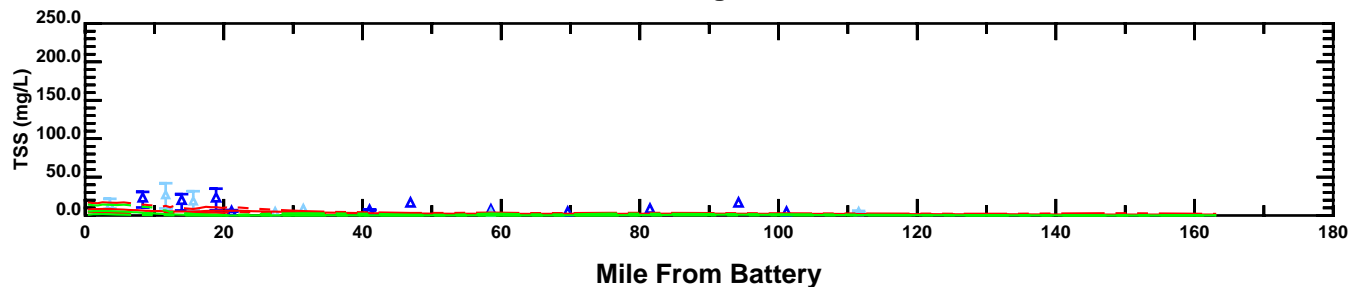
DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

MODEL	
—	TSS 30-DAY MEAN
- - -	TSS 30-DAY MAX / MIN
—	COSS 30-DAY MEAN
- - -	COSS 30-DAY MAX / MIN

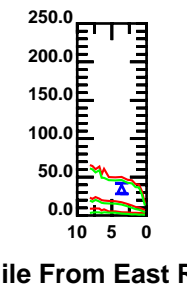
Mile From Mouth Hackensack River

TSS (mg/L) Averaged Over Full Depth  
Water Year Starting Oct 1, 2001

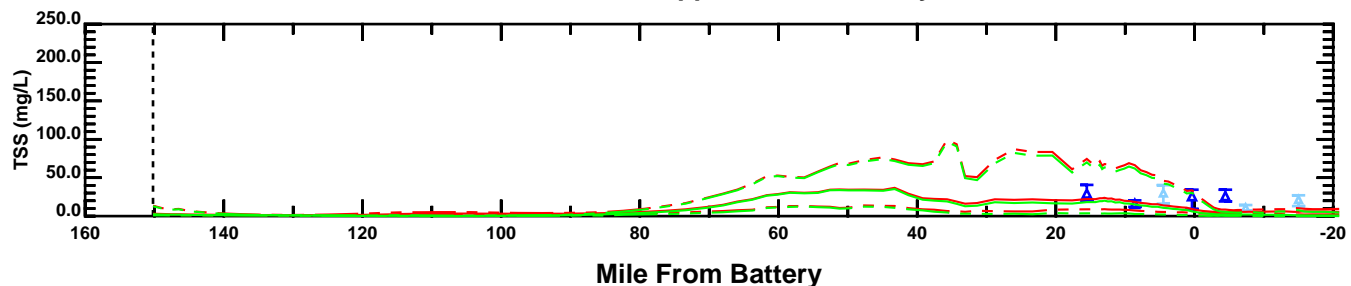
East River and Long Island Sound



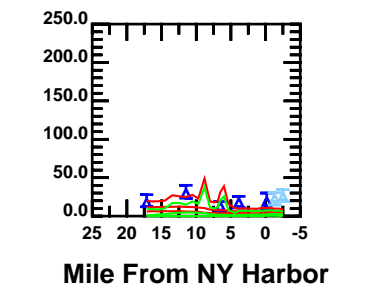
Harlem River



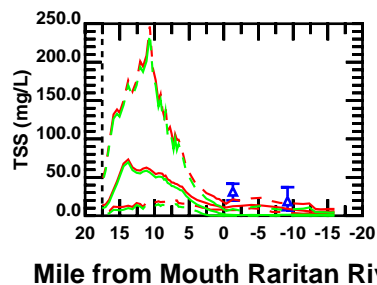
Hudson River, Upper and Lower Bay, Ocean



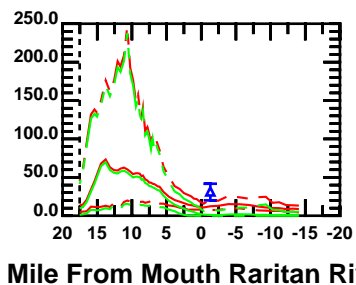
Arthur Kill and Kill Van Kull



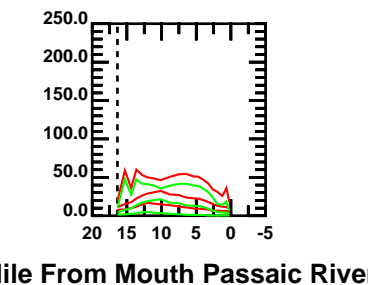
Raritan River and North Shore of Raritan Bay



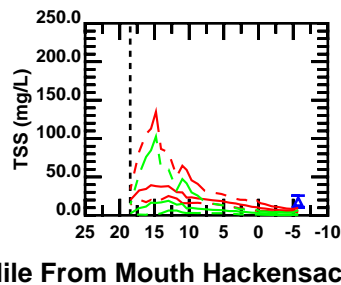
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



August 26 - September 24

DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

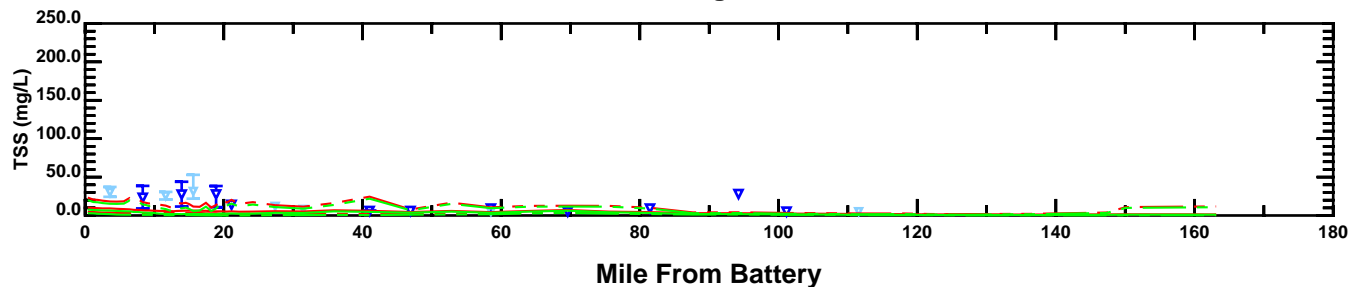
MODEL

—	TSS SURFACE 30-DAY MEAN
- - -	TSS SURFACE 30-DAY MAX / MIN
—	COSS SURFACE 30-DAY MEAN
- - -	COSS SURFACE 30-DAY MAX / MIN

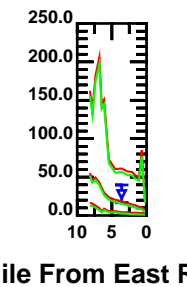
Mile From Mouth Hackensack River

Surface Layer TSS (mg/L)  
Water Year Starting Oct 1, 2001

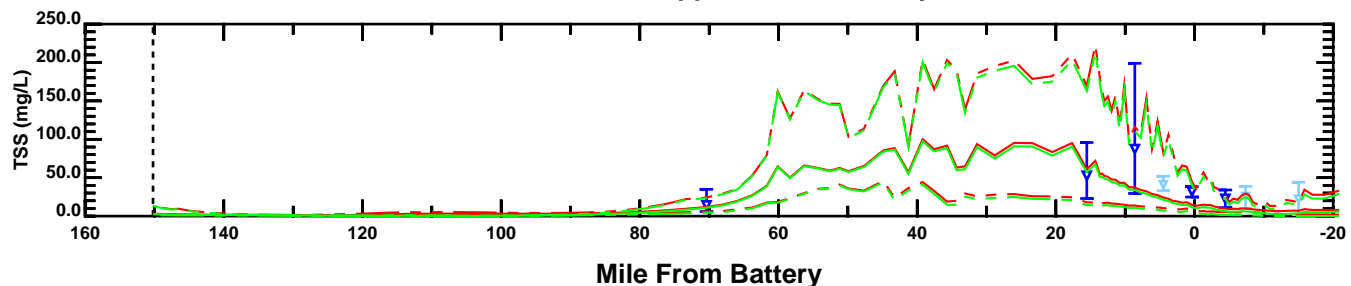
East River and Long Island Sound



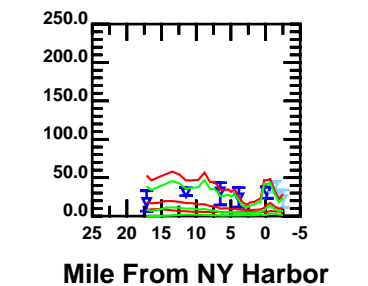
Harlem River



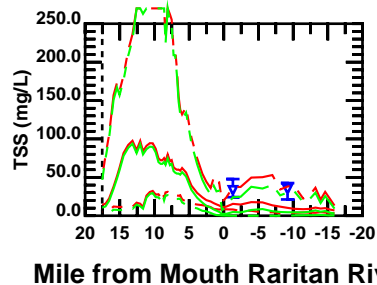
Hudson River, Upper and Lower Bay, Ocean



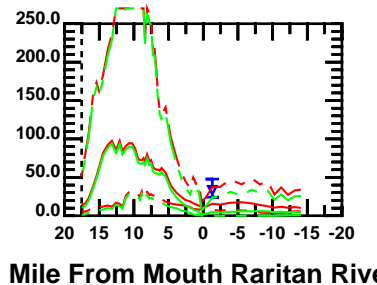
Arthur Kill and Kill Van Kull



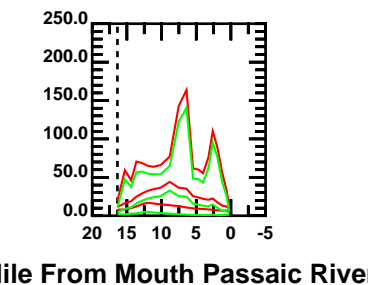
Raritan River and North Shore of Raritan Bay



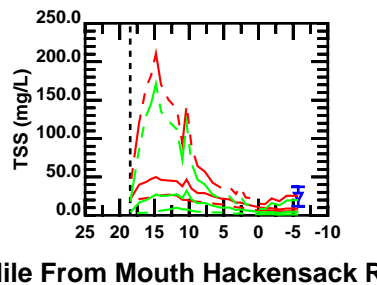
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



August 26 - September 24

DATA	TRANSECT	EMBAYMENT
NP	▼	▽
GFF	▲	▽

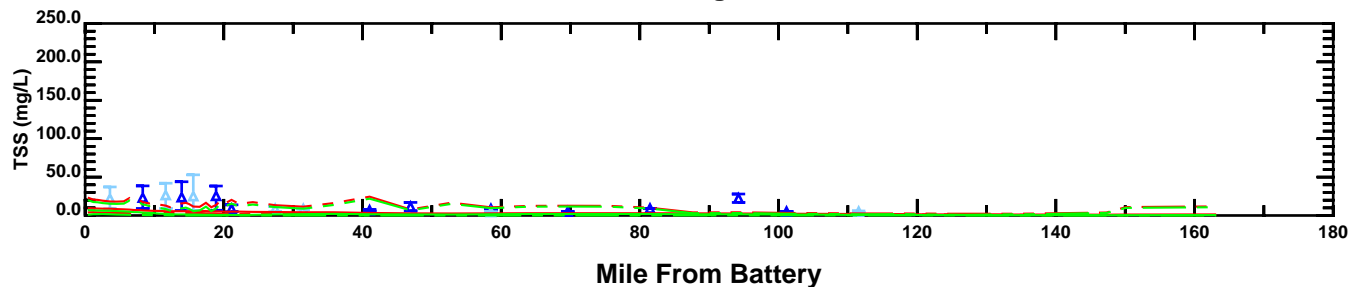
MODEL

—	TSS BOTTOM 30-DAY MEAN
- - -	TSS BOTTOM 30-DAY MAX / MIN
—	COSS BOTTOM 30-DAY MEAN
- - -	COSS BOTTOM 30-DAY MAX / MIN

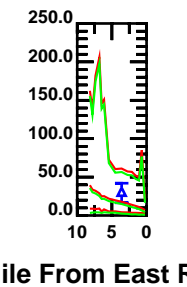
Mile From Mouth Hackensack River

Bottom Layer TSS (mg/L)  
Water Year Starting Oct 1, 2001

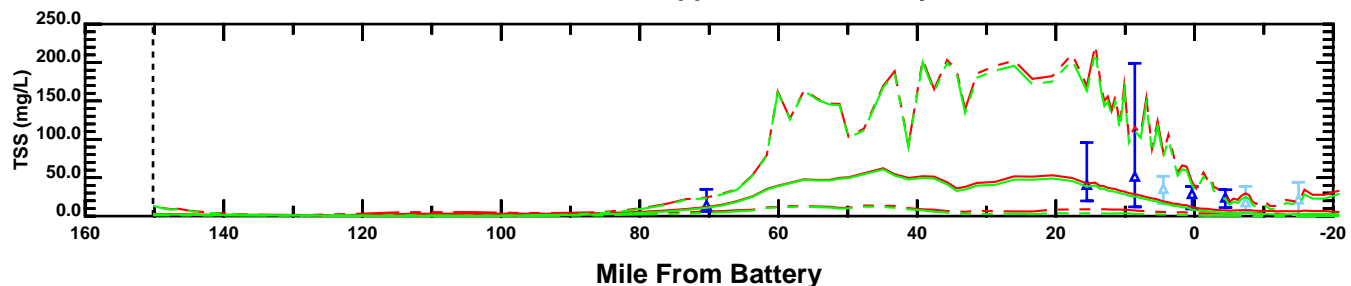
East River and Long Island Sound



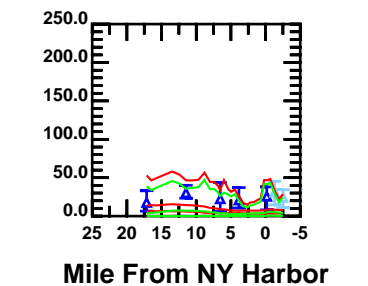
Harlem River



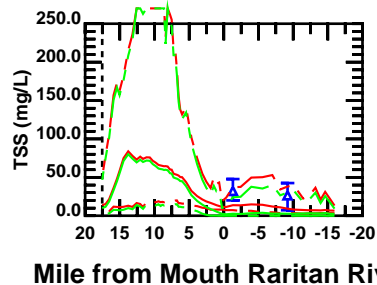
Hudson River, Upper and Lower Bay, Ocean



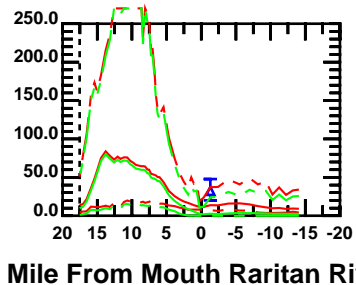
Arthur Kill and Kill Van Kull



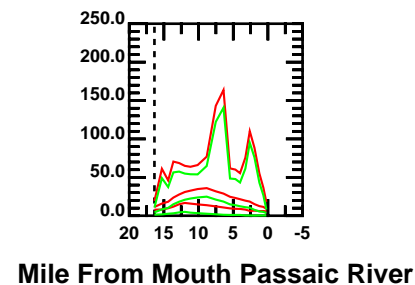
Raritan River and North Shore of Raritan Bay



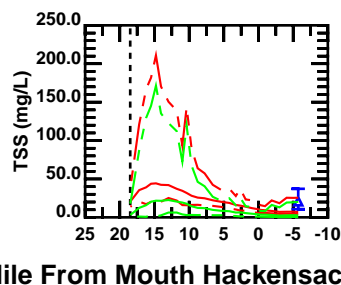
Raritan River and South Shore of Raritan Bay



Passaic River



Hackensack River and Newark Bay



August 26 - September 24

DATA	TRANSECT	EMBAYMENT
NP	▲	△
GFF	▲	△

MODEL

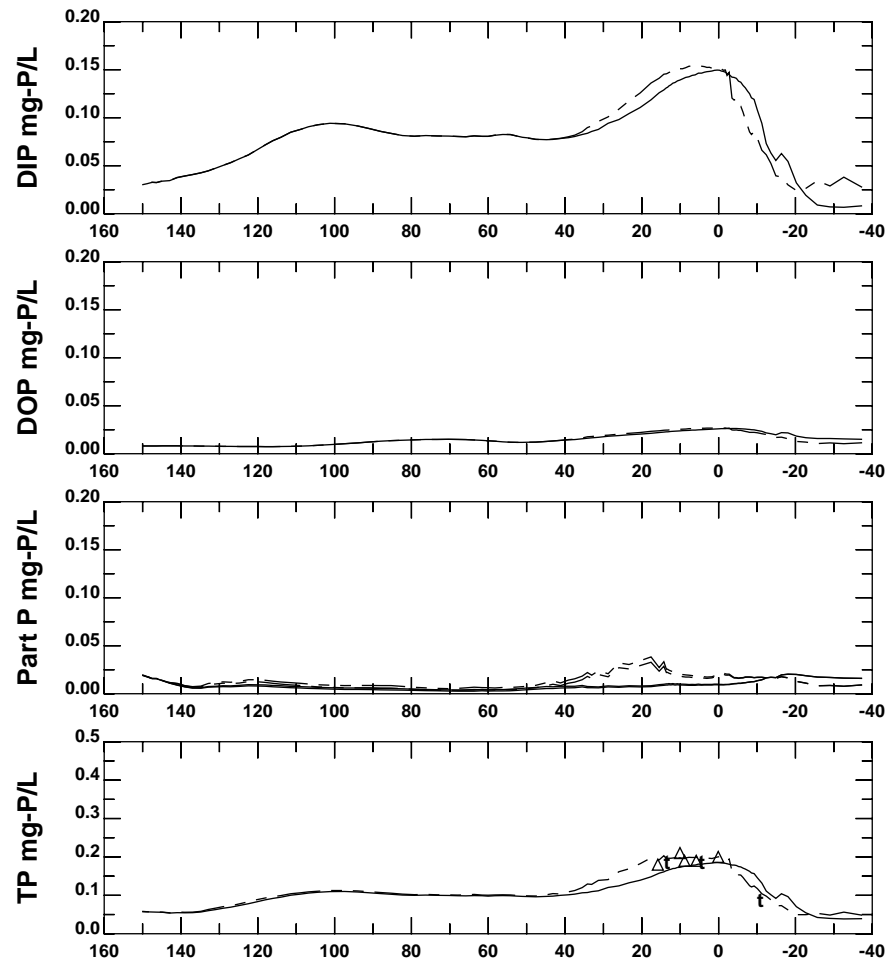
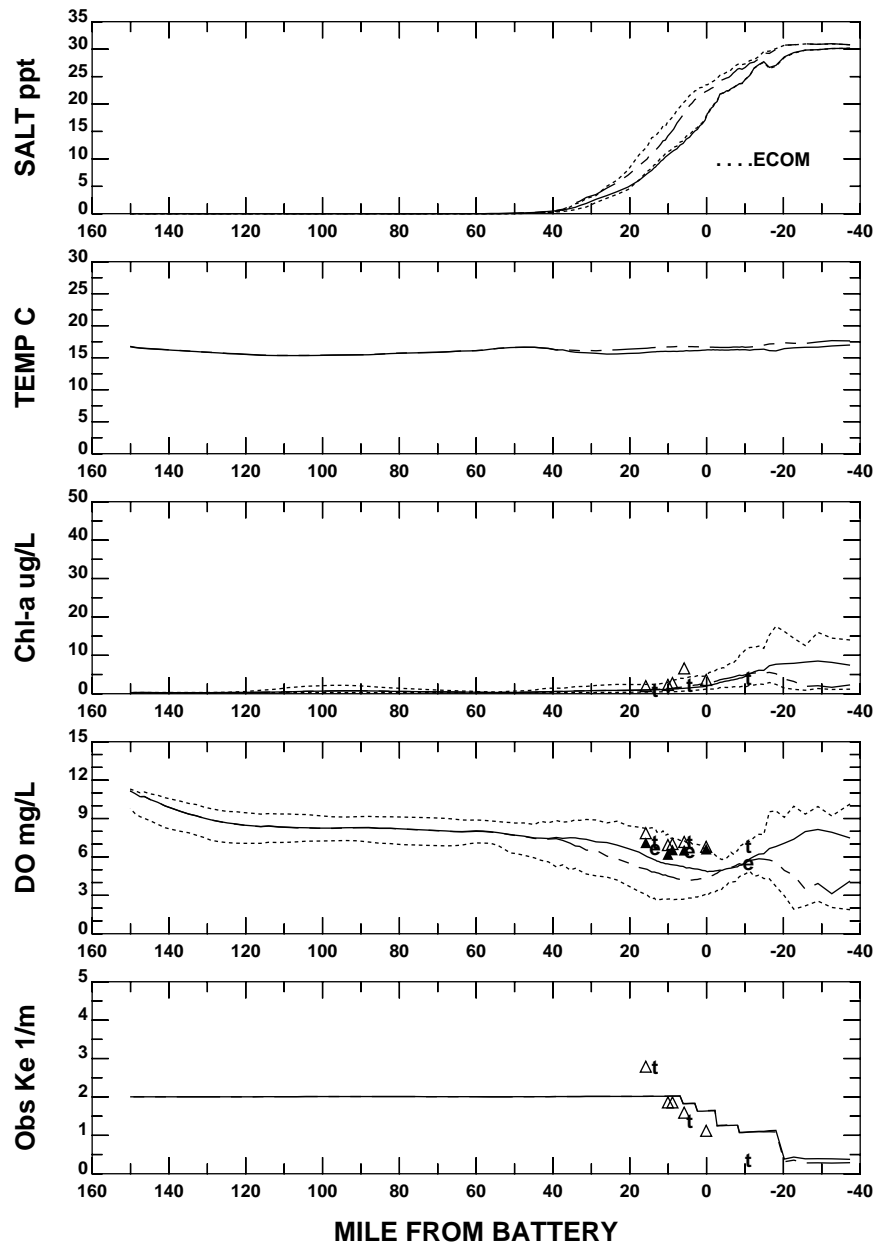
—	TSS 30-DAY MEAN
- - -	TSS 30-DAY MAX / MIN
—	COSS 30-DAY MEAN
- - -	COSS 30-DAY MAX / MIN

Mile From Mouth Hackensack River

TSS (mg/L) Averaged Over Full Depth  
Water Year Starting Oct 1, 2001

**APPENDIX 5**

**NUTRIENT VALIDATION DIAGRAMS 1998-2002**



DATA Oct 1-30,1998

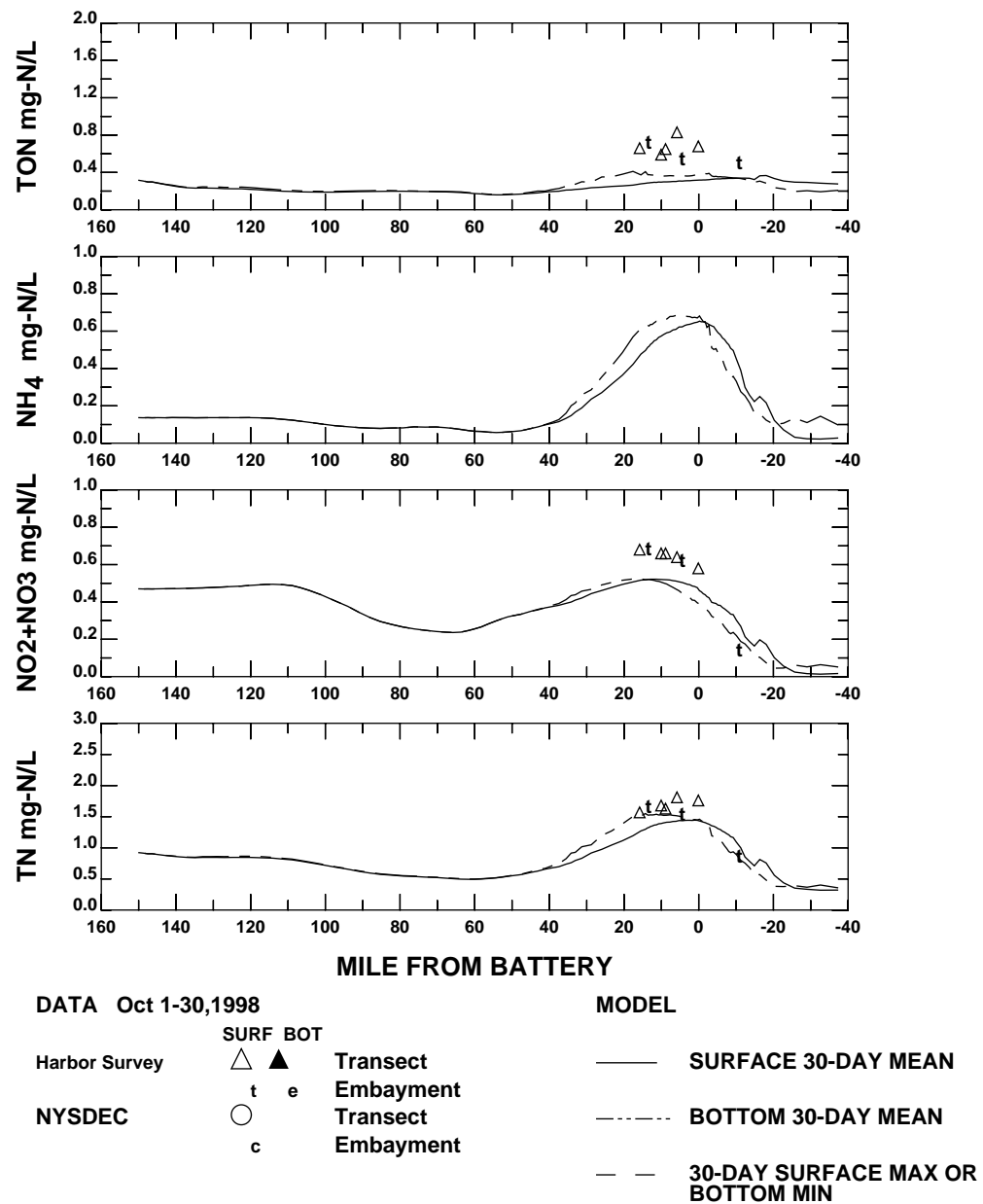
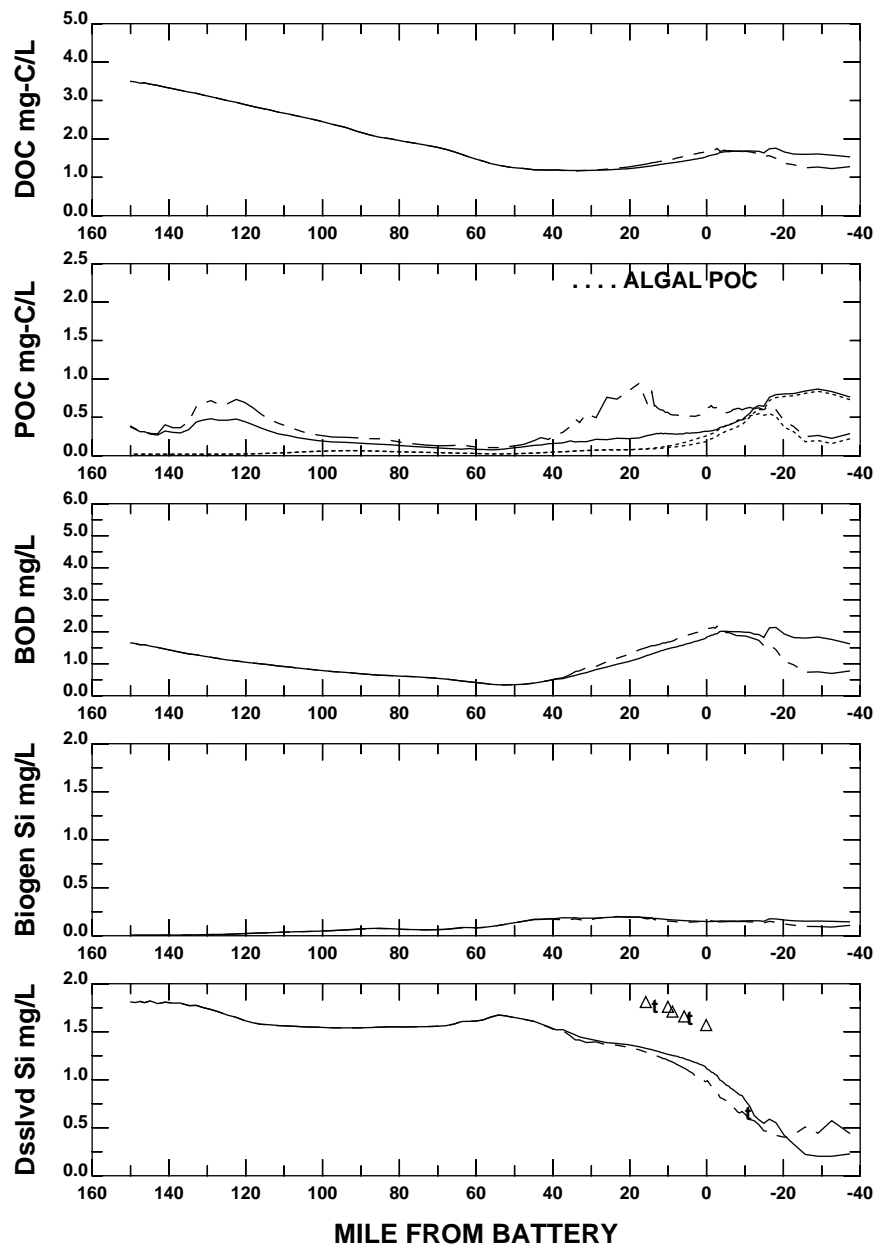
Harbor Survey  $\triangle$   $\blacktriangle$  Transect  
 t e Embayment  
 NYSDEC  $\circ$  Transect  
 c Embayment

MODEL

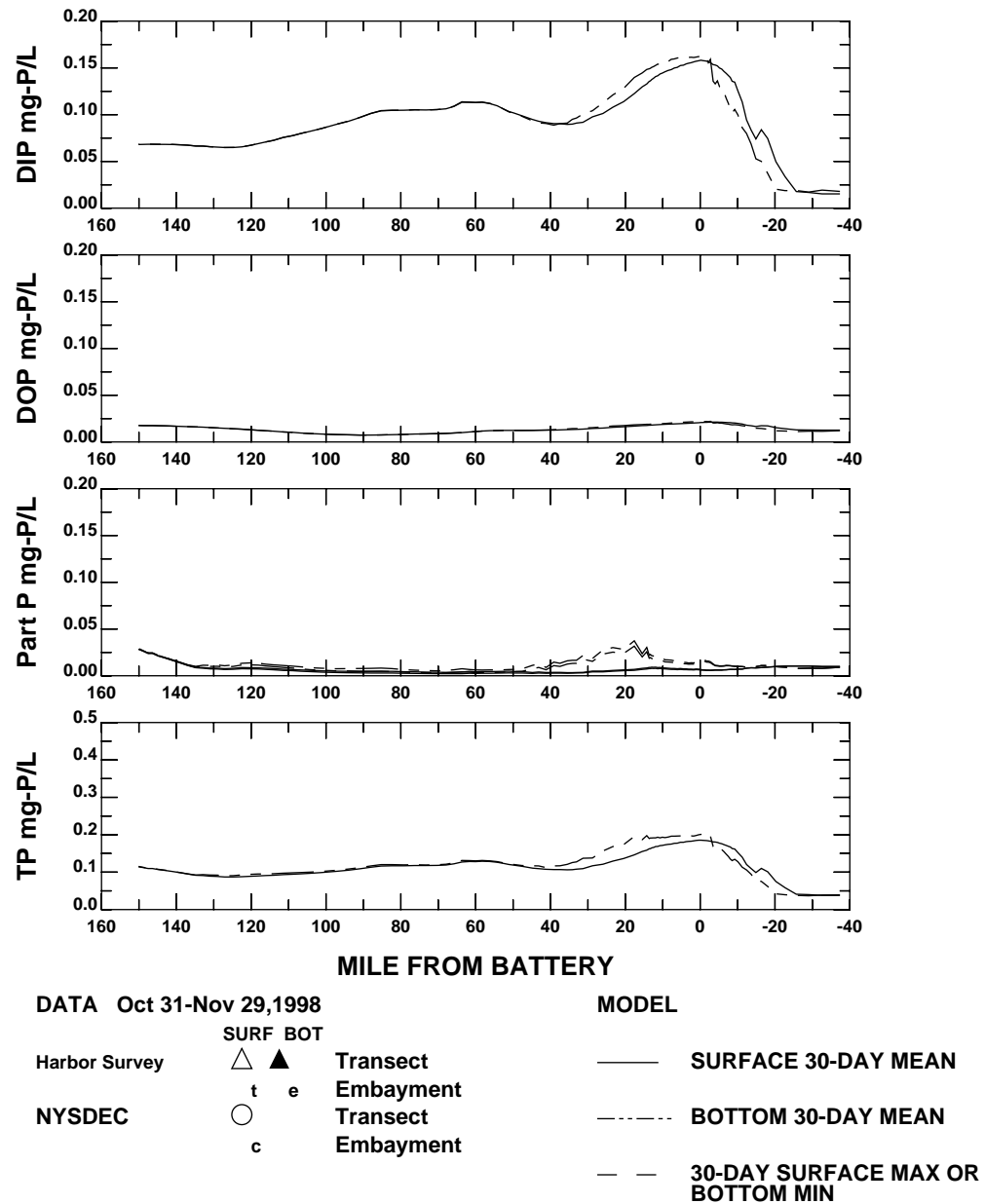
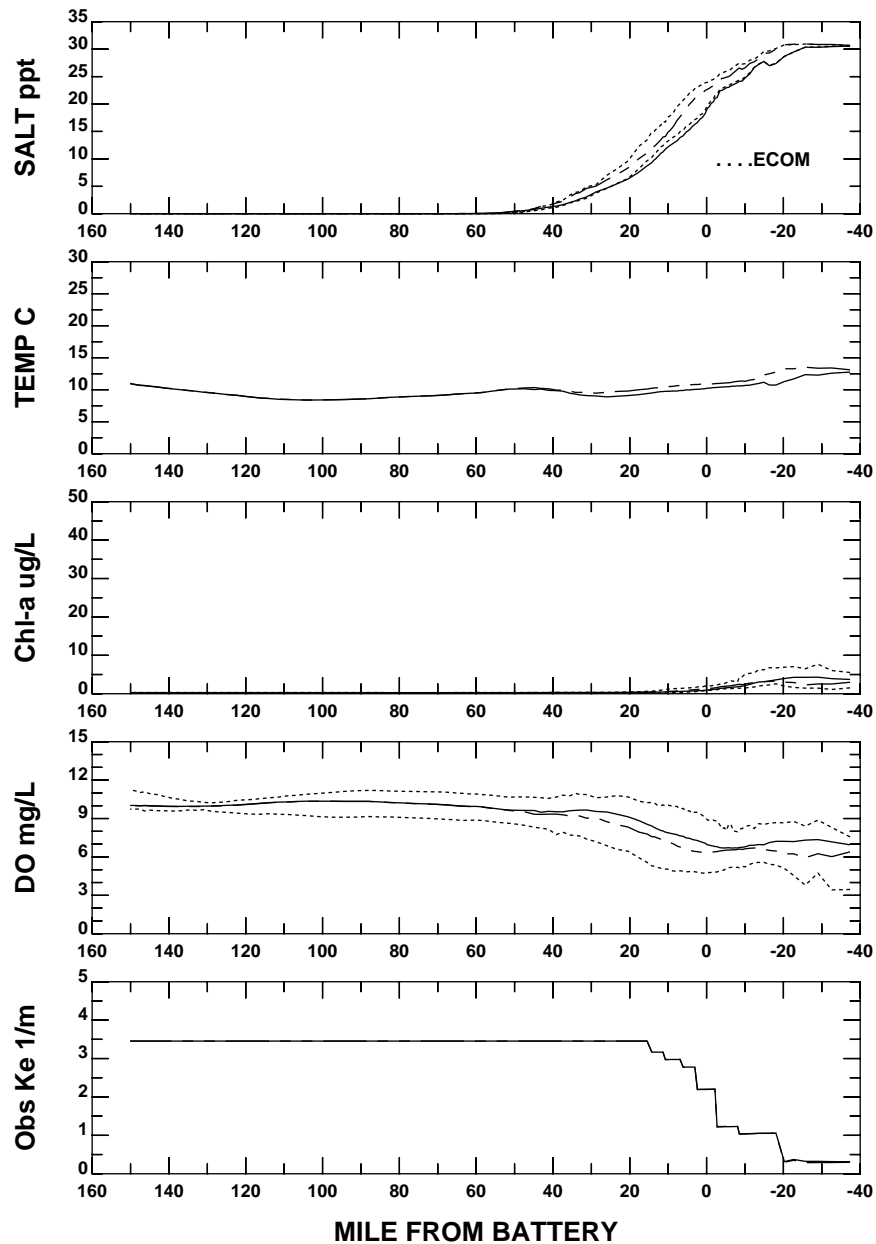
— SURFACE 30-DAY MEAN  
 - - - BOTTOM 30-DAY MEAN  
 - - - 30-DAY SURFACE MAX OR  
 BOTTOM MIN

# HUDSON RIVER, UPPER AND LOWER BAY, OCEAN

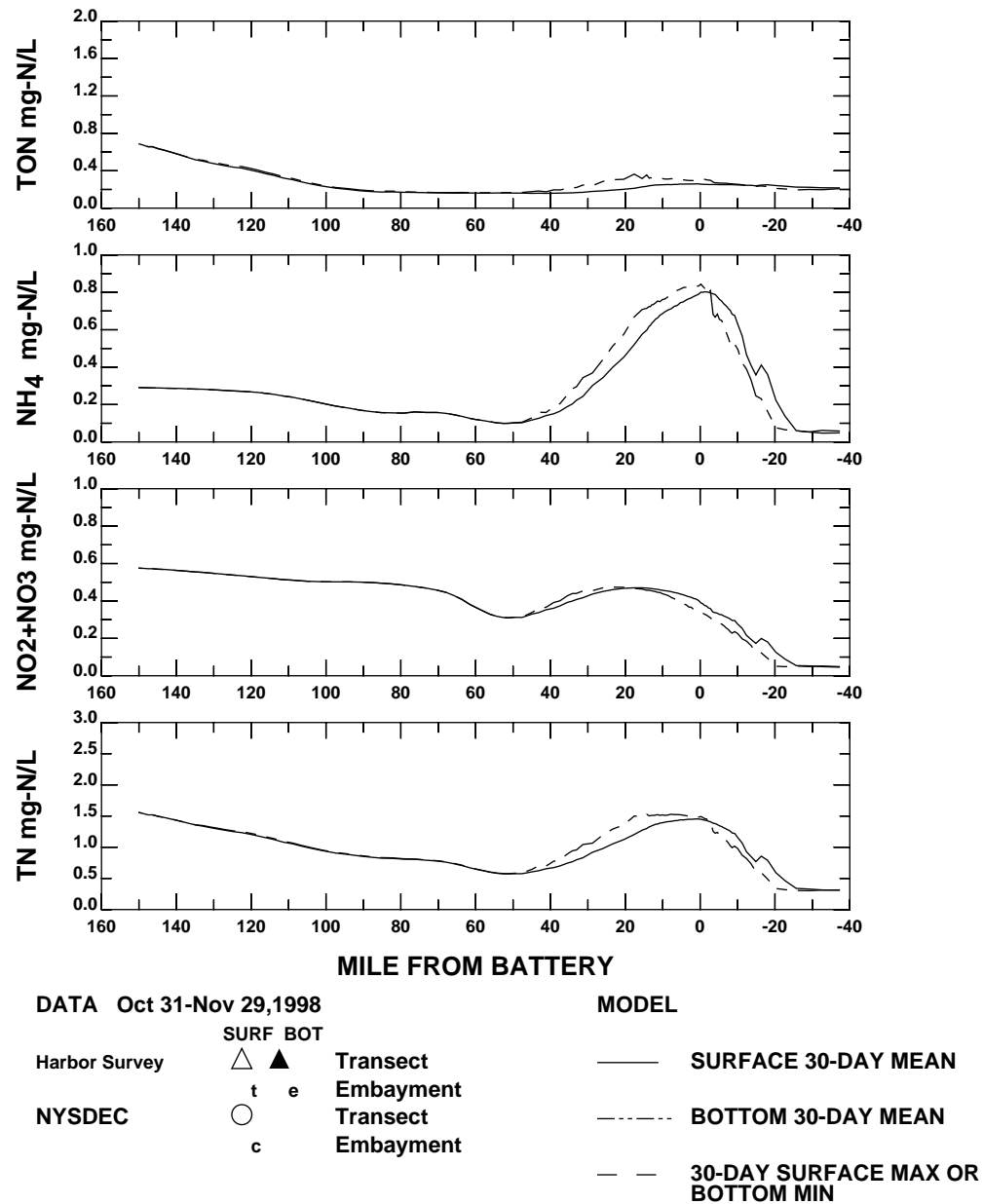
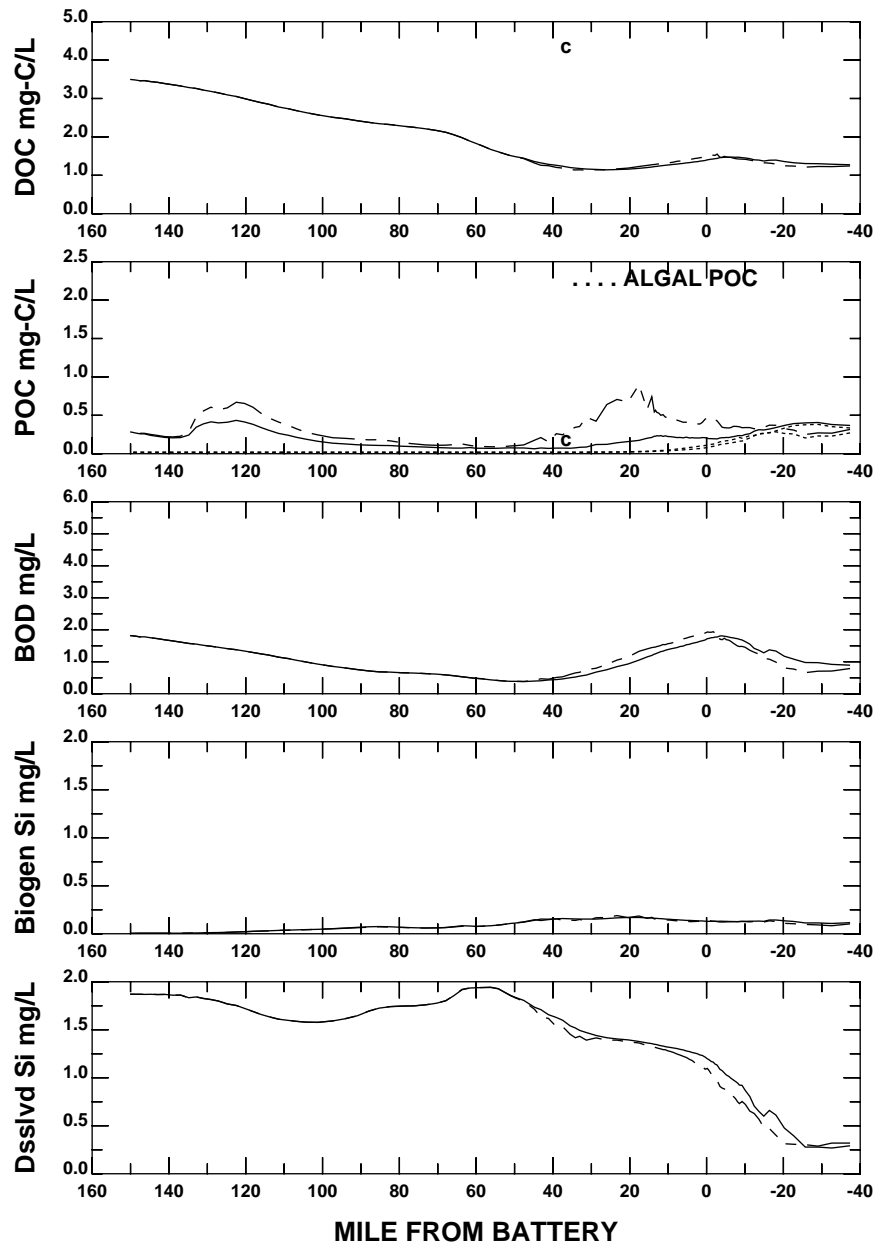




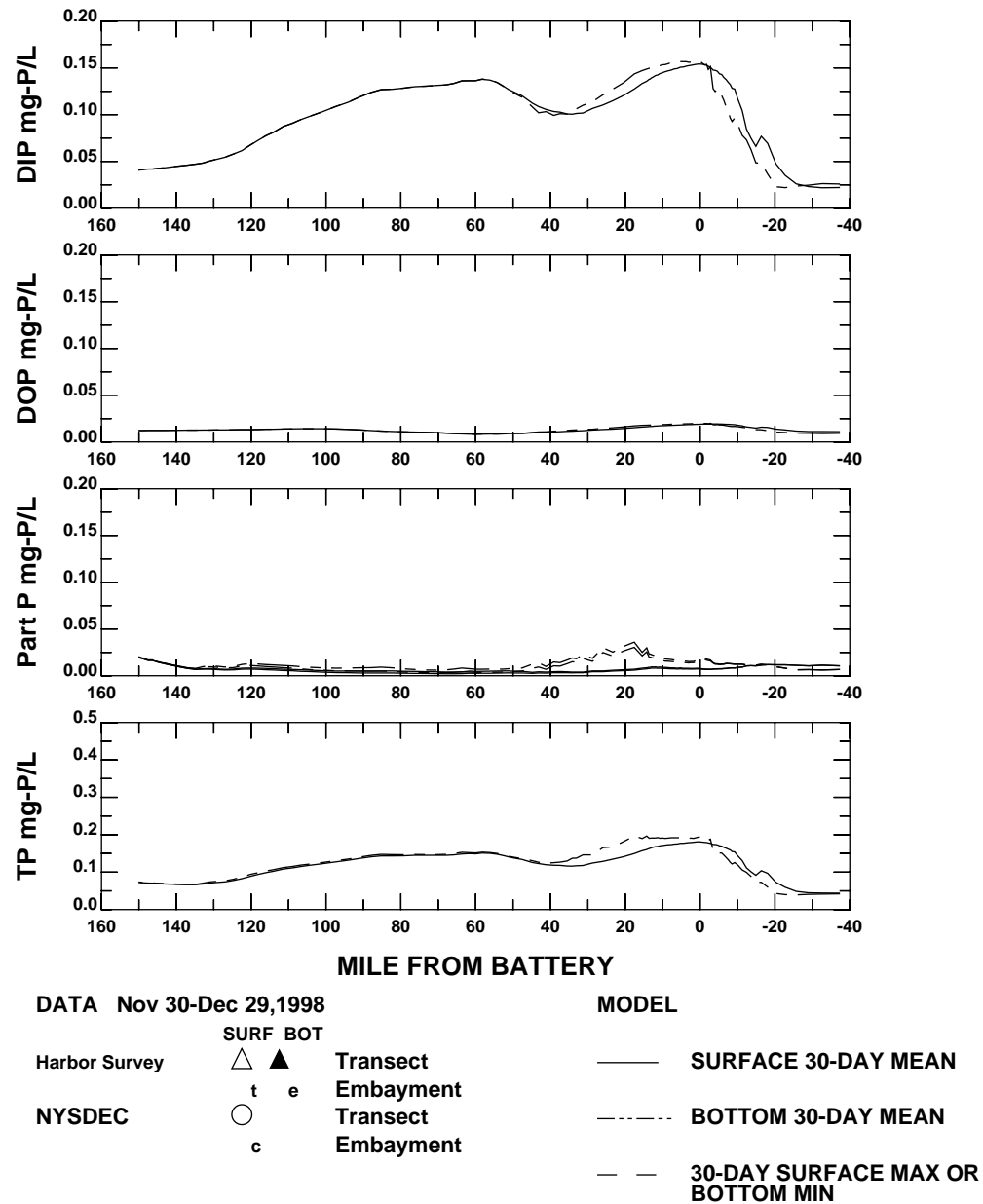
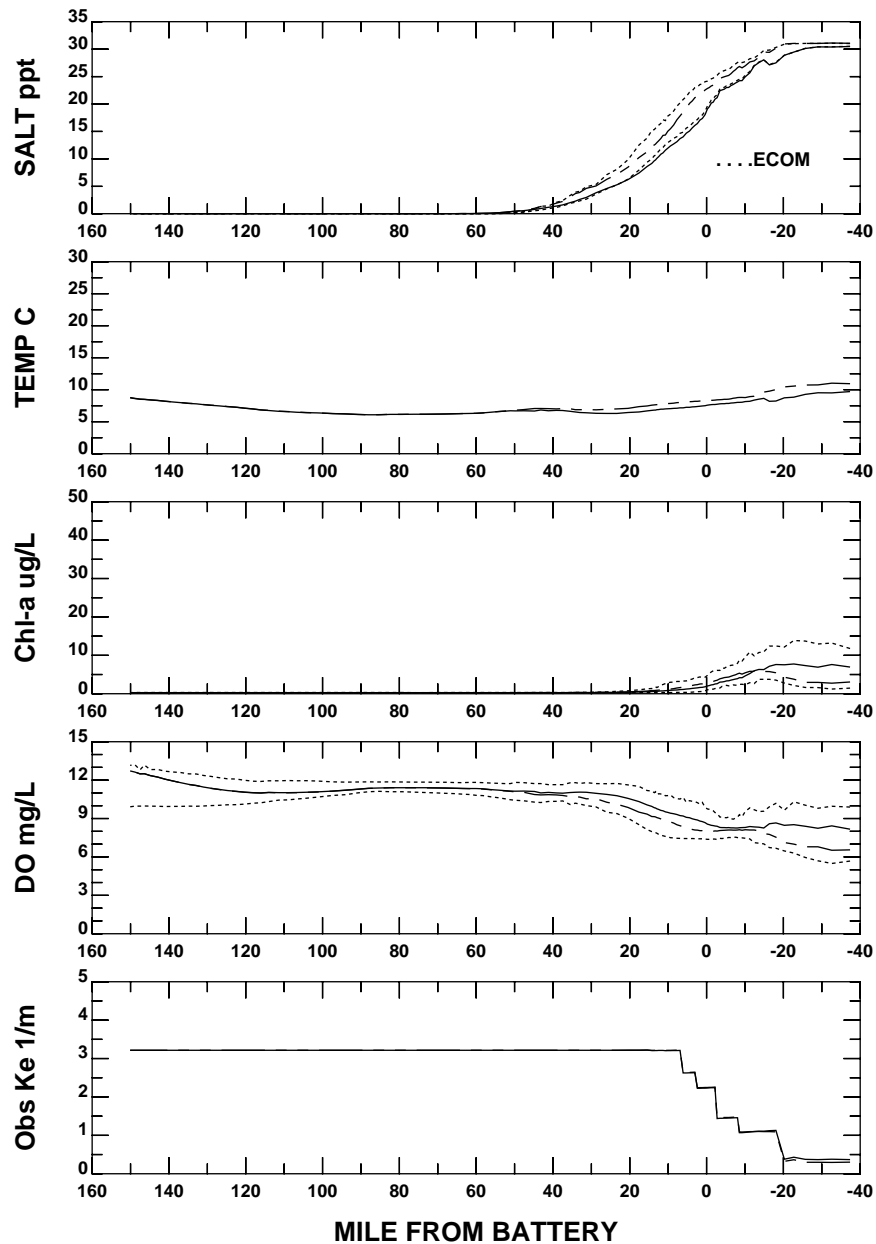
### HUDSON RIVER, UPPER AND LOWER BAY, OCEAN



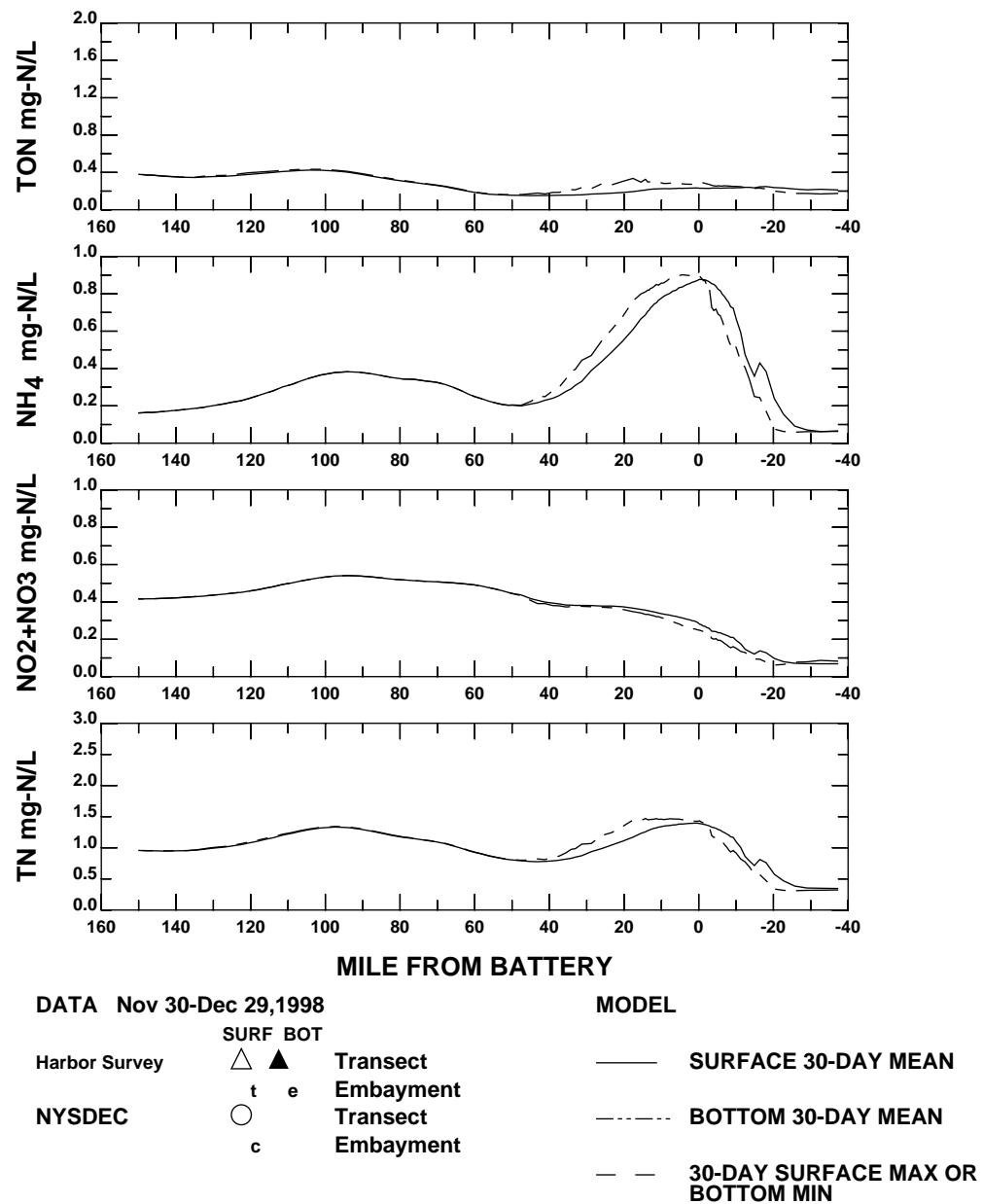
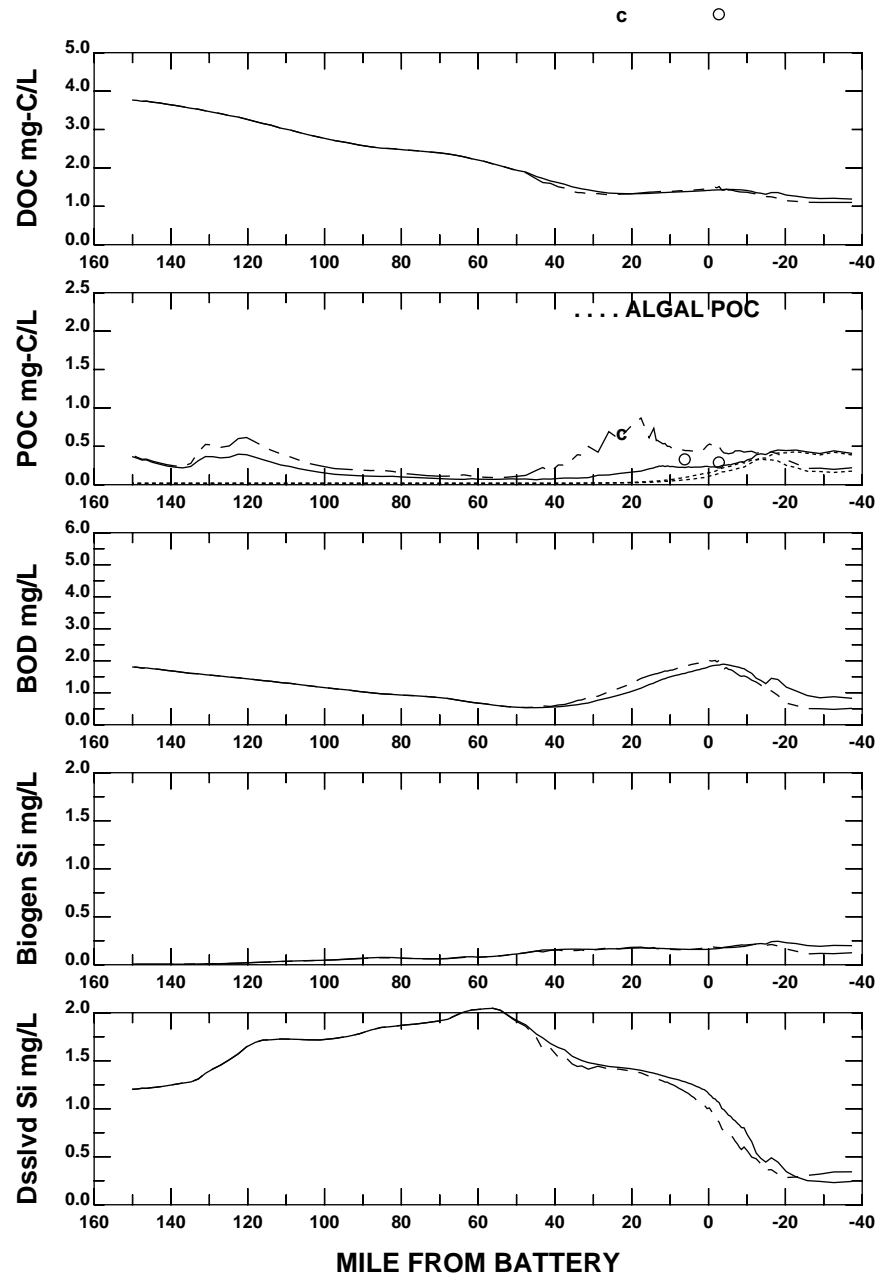
**HUDSON RIVER, UPPER AND LOWER BAY, OCEAN**



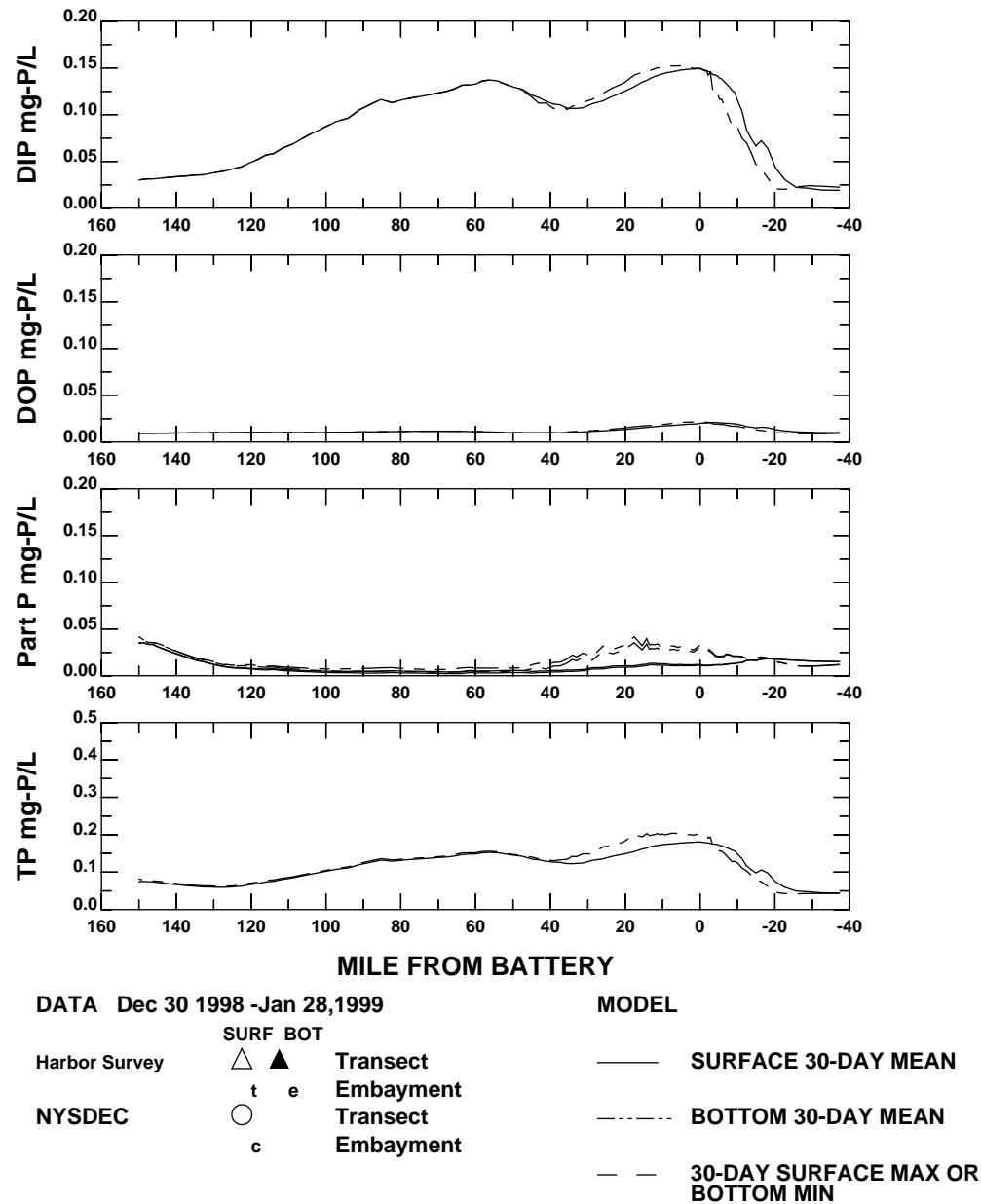
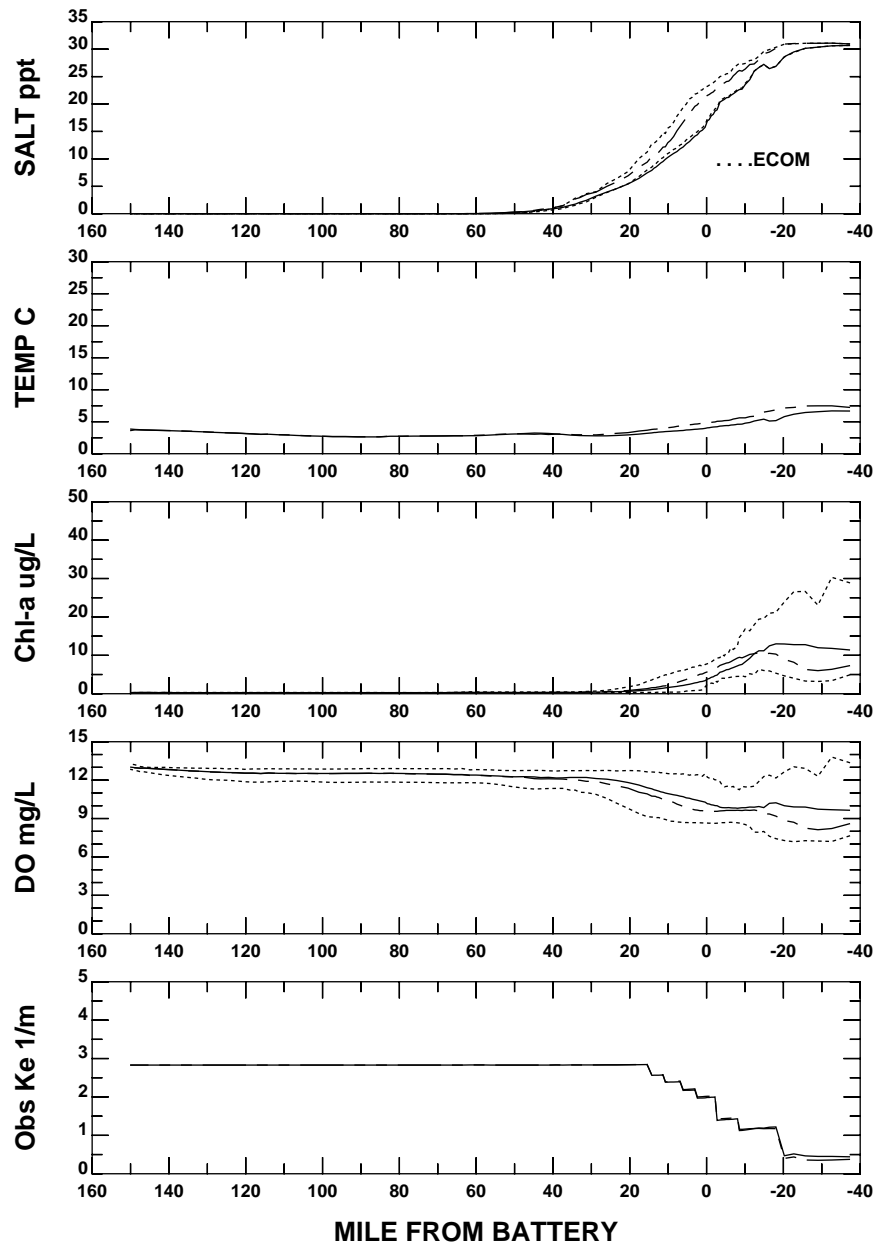
## HUDSON RIVER, UPPER AND LOWER BAY, OCEAN



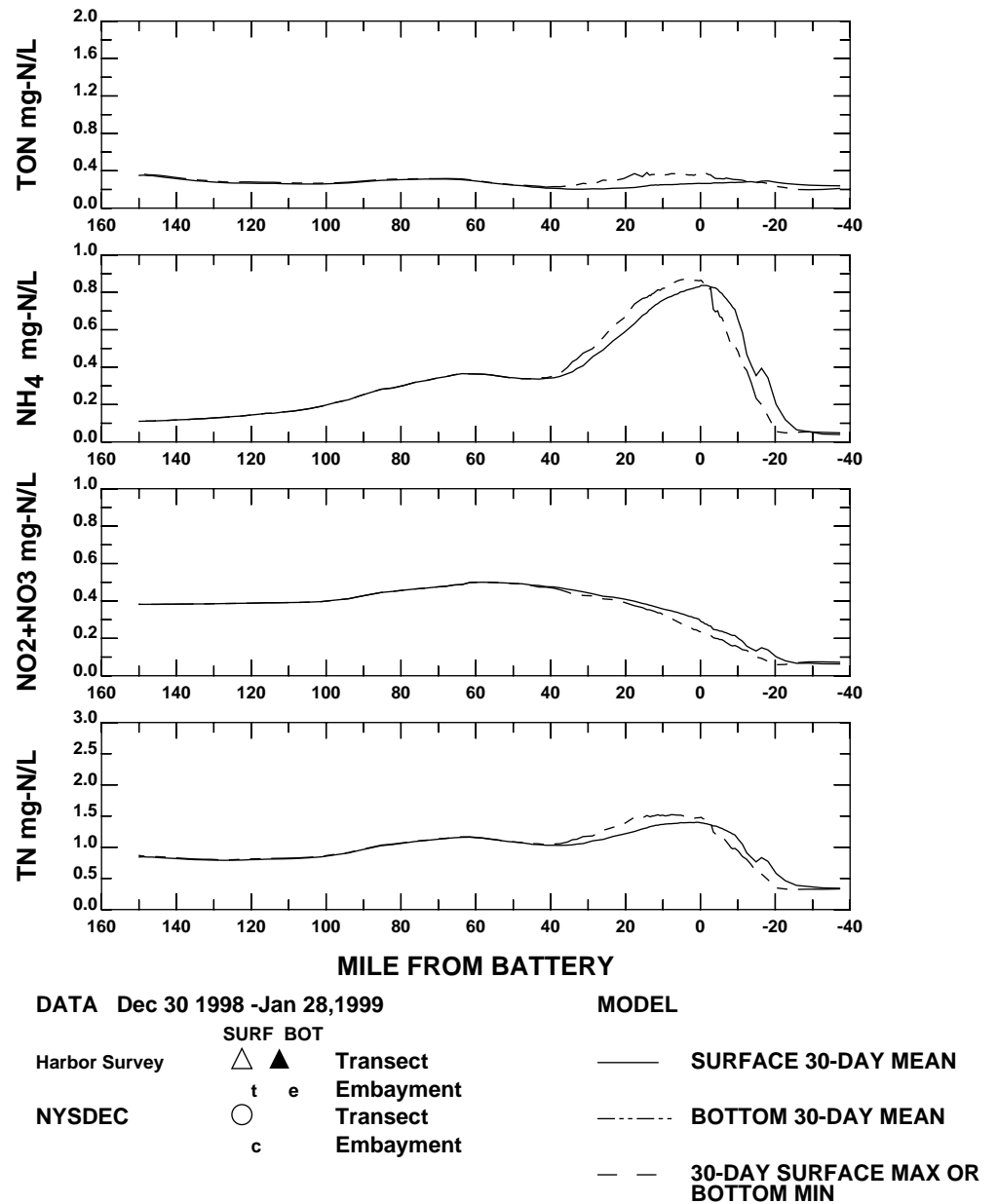
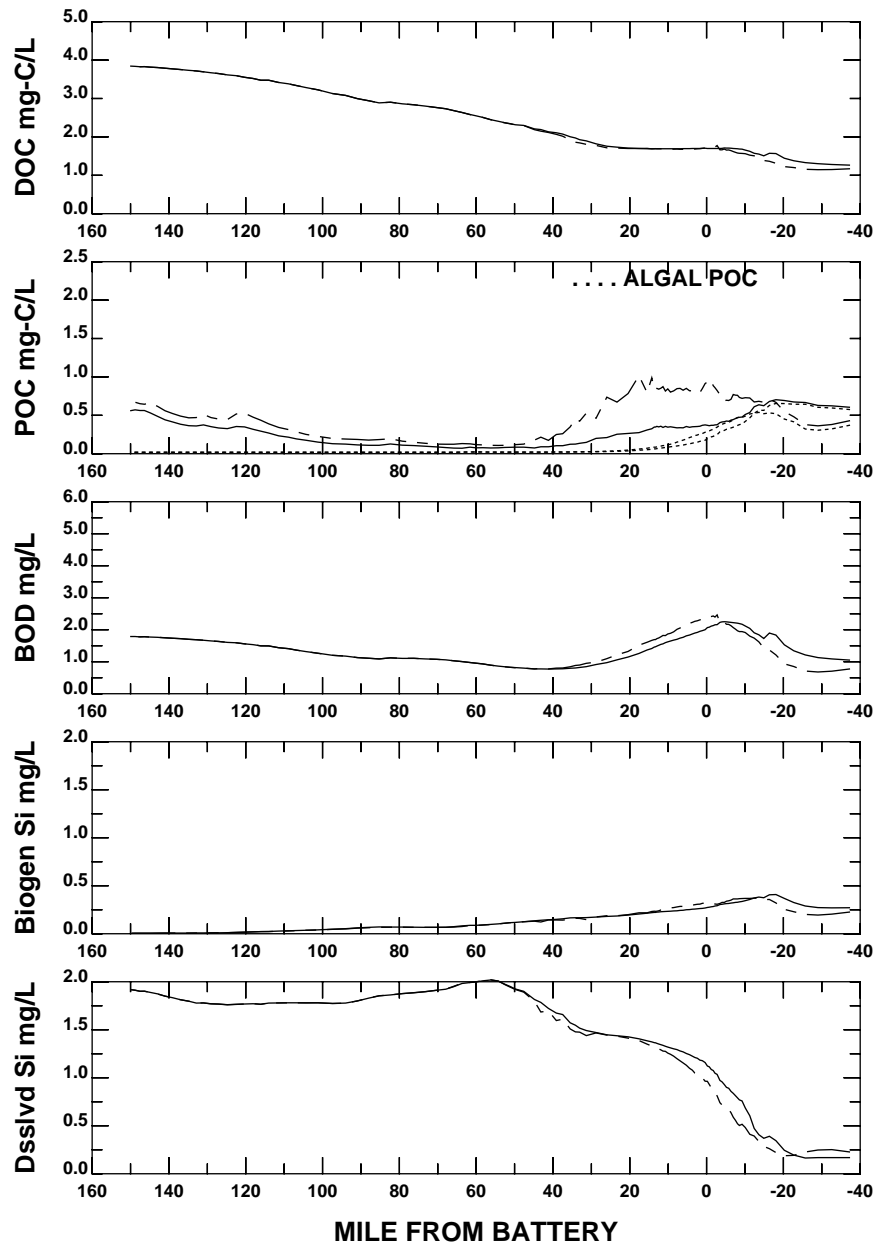
## HUDSON RIVER, UPPER AND LOWER BAY, OCEAN



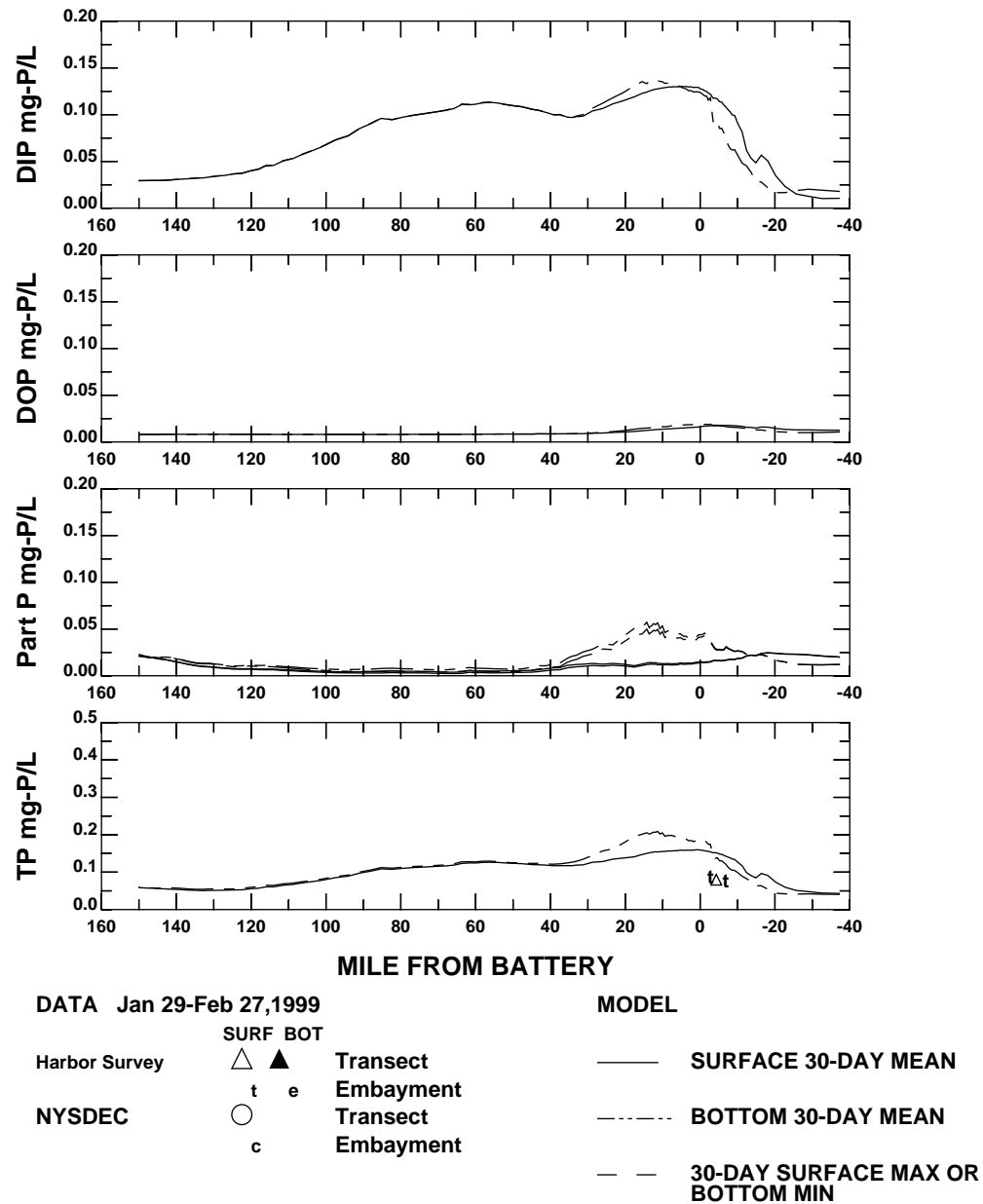
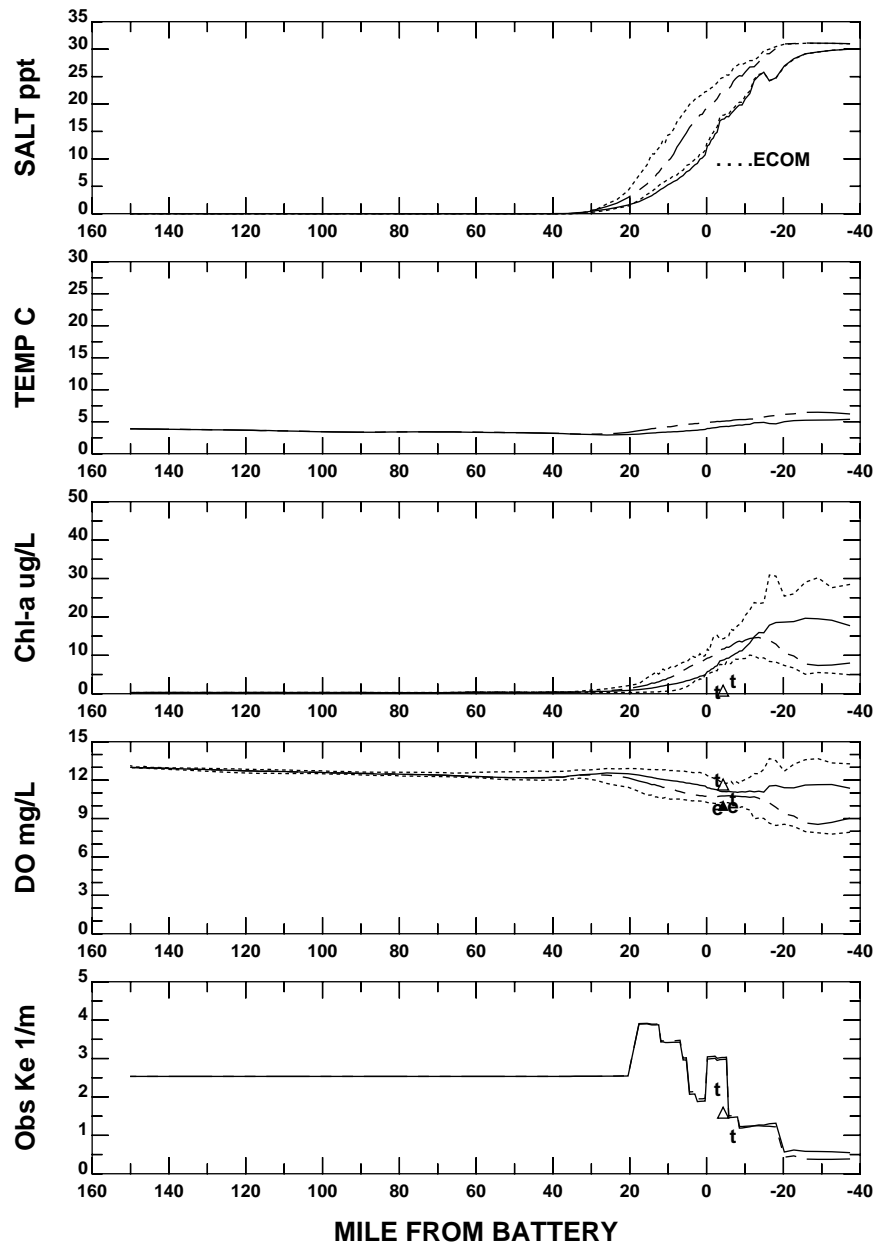
## HUDSON RIVER, UPPER AND LOWER BAY, OCEAN



# HUDSON RIVER, UPPER AND LOWER BAY, OCEAN

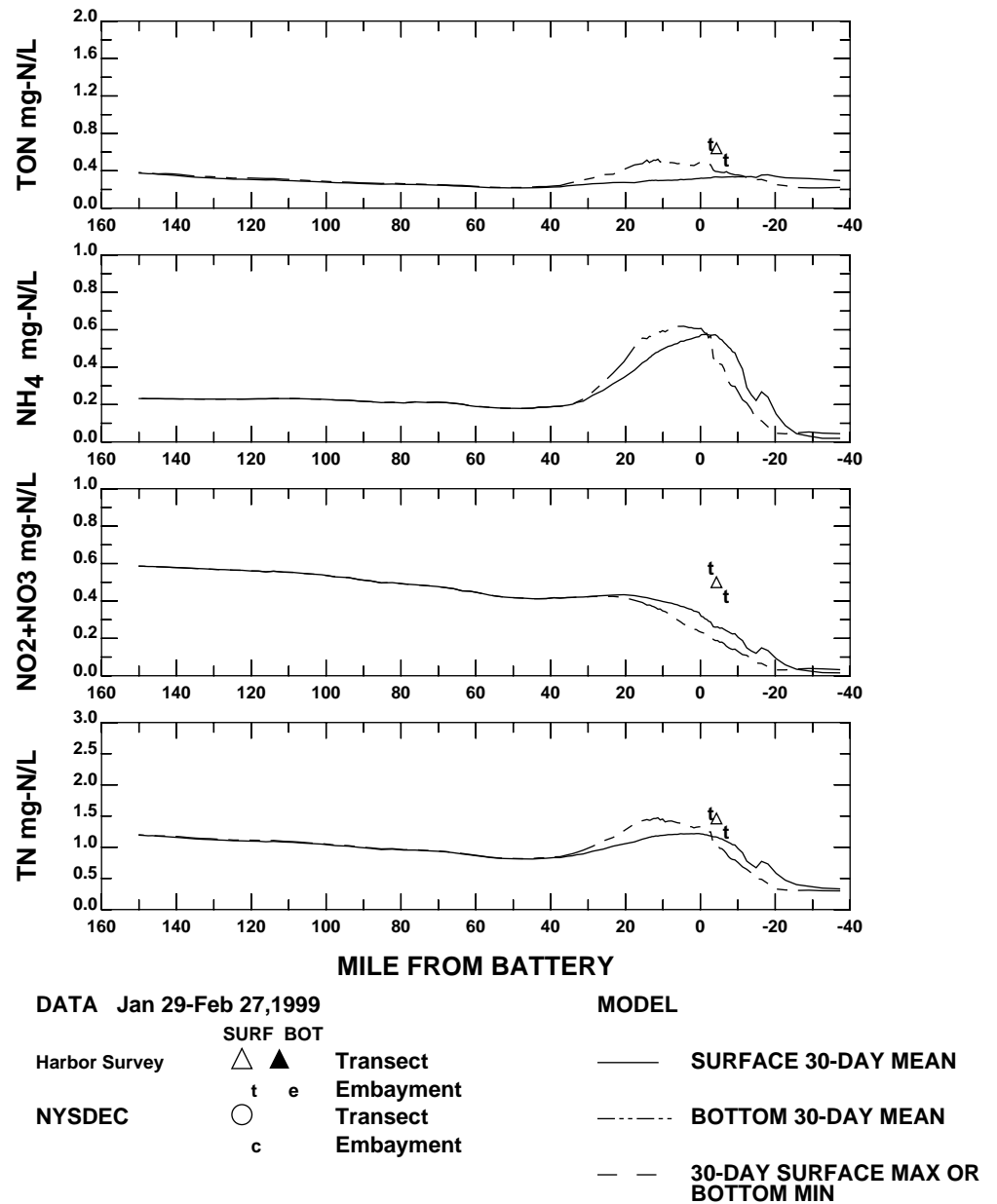
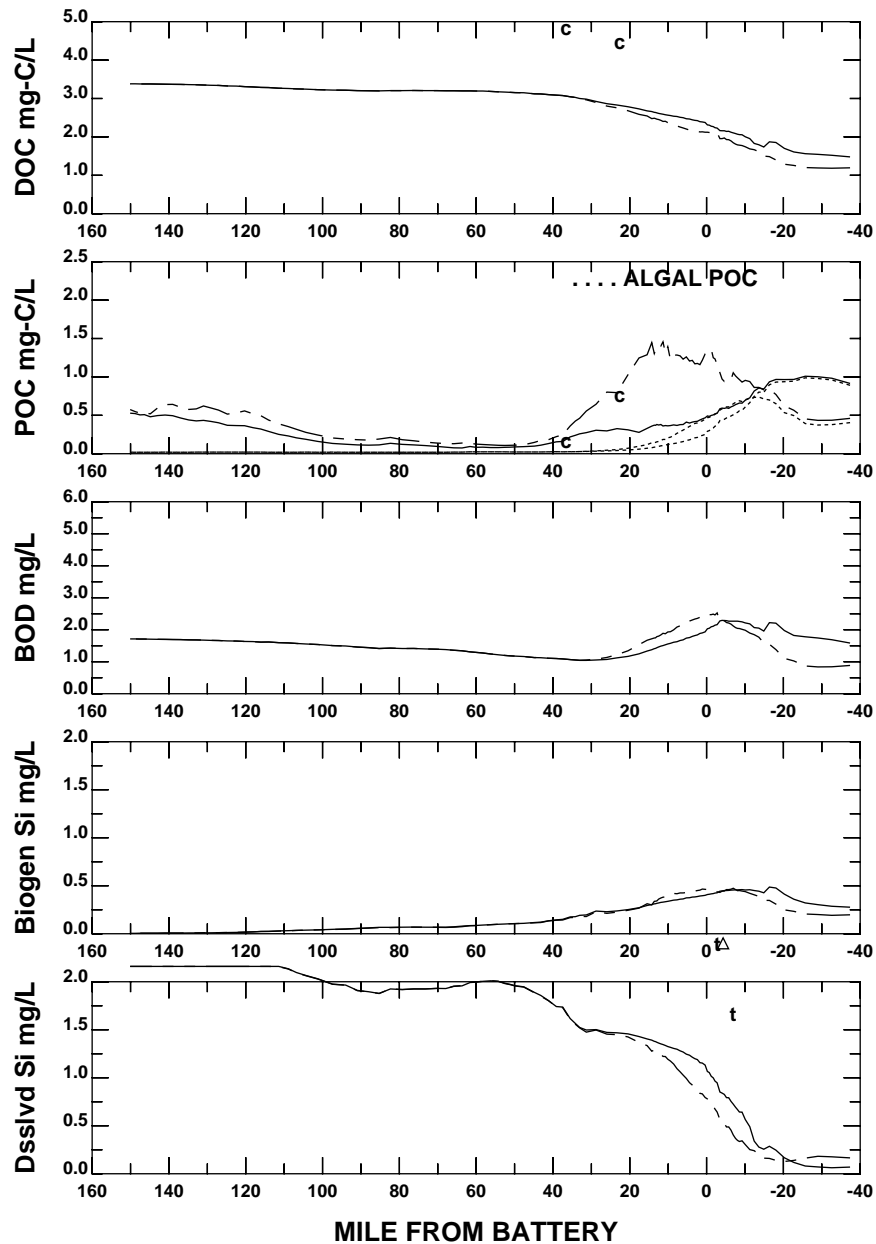


## HUDSON RIVER, UPPER AND LOWER BAY, OCEAN

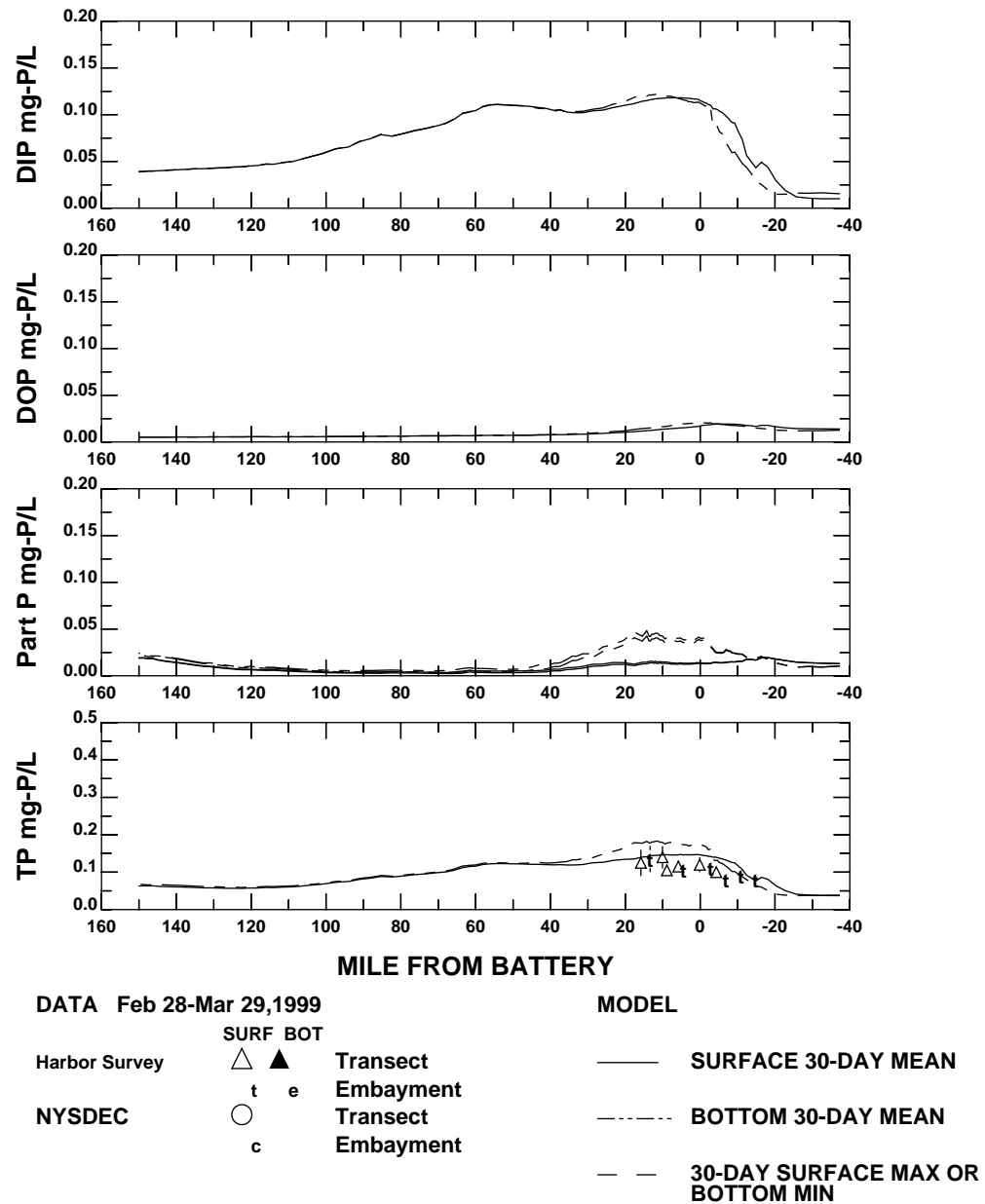
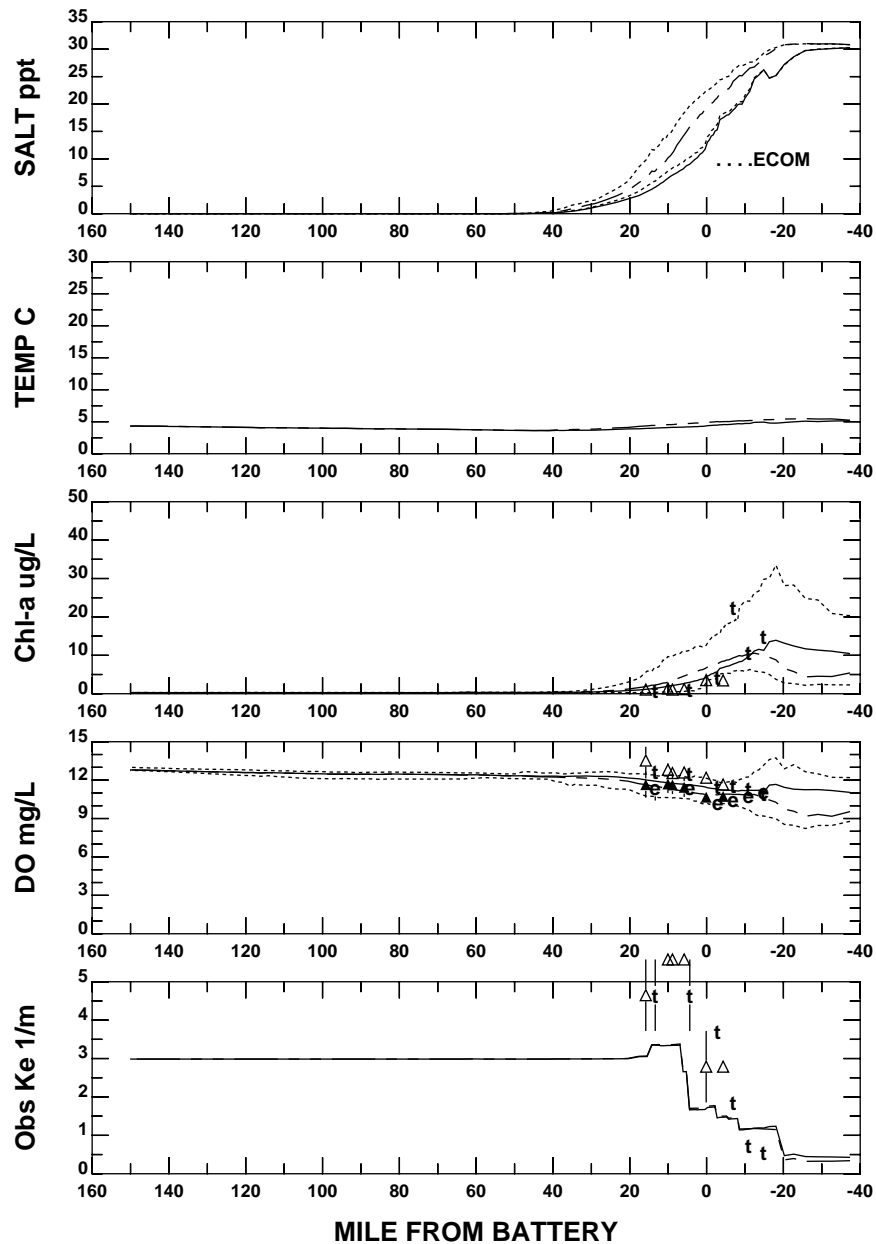


## HUDSON RIVER, UPPER AND LOWER BAY, OCEAN

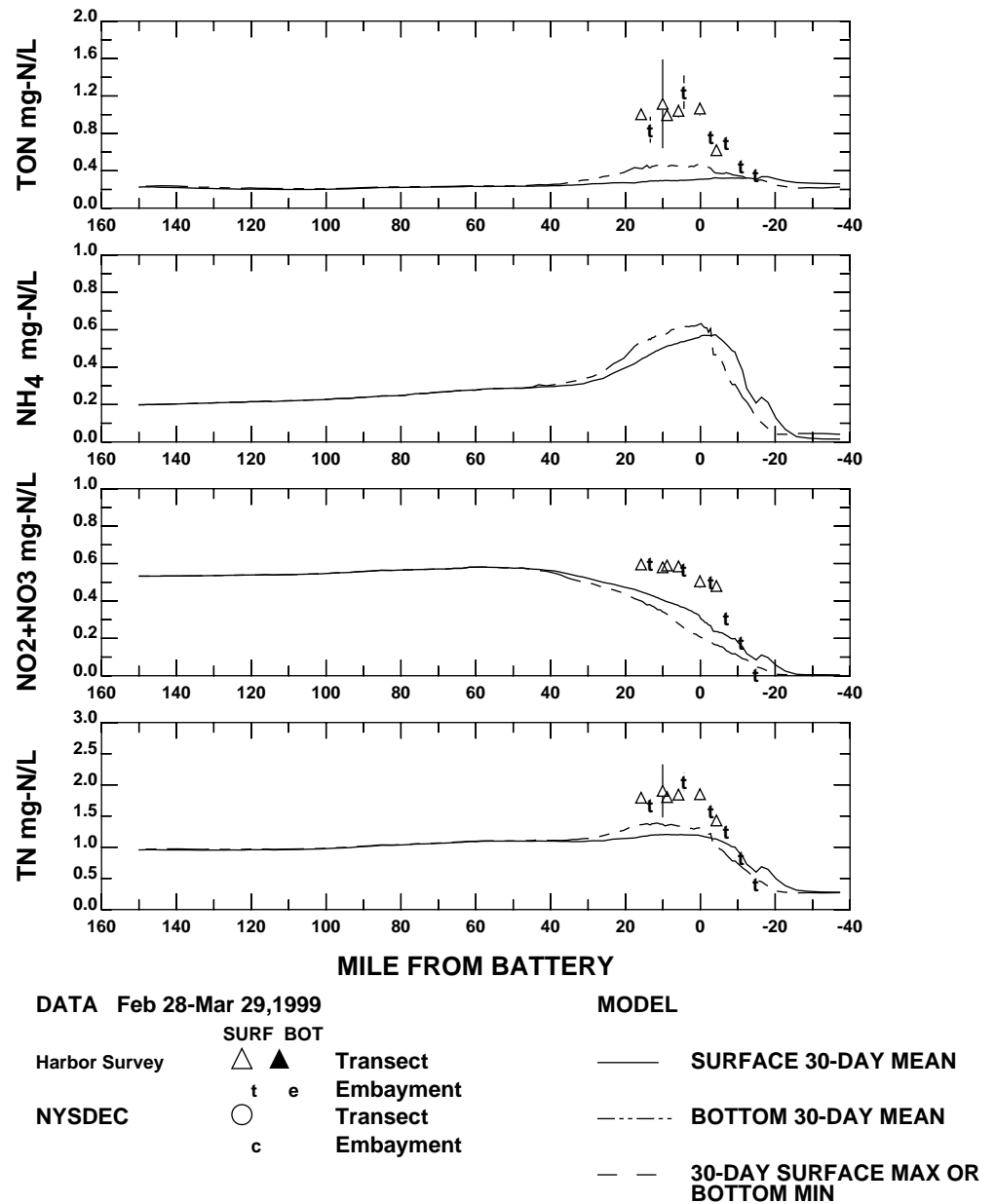
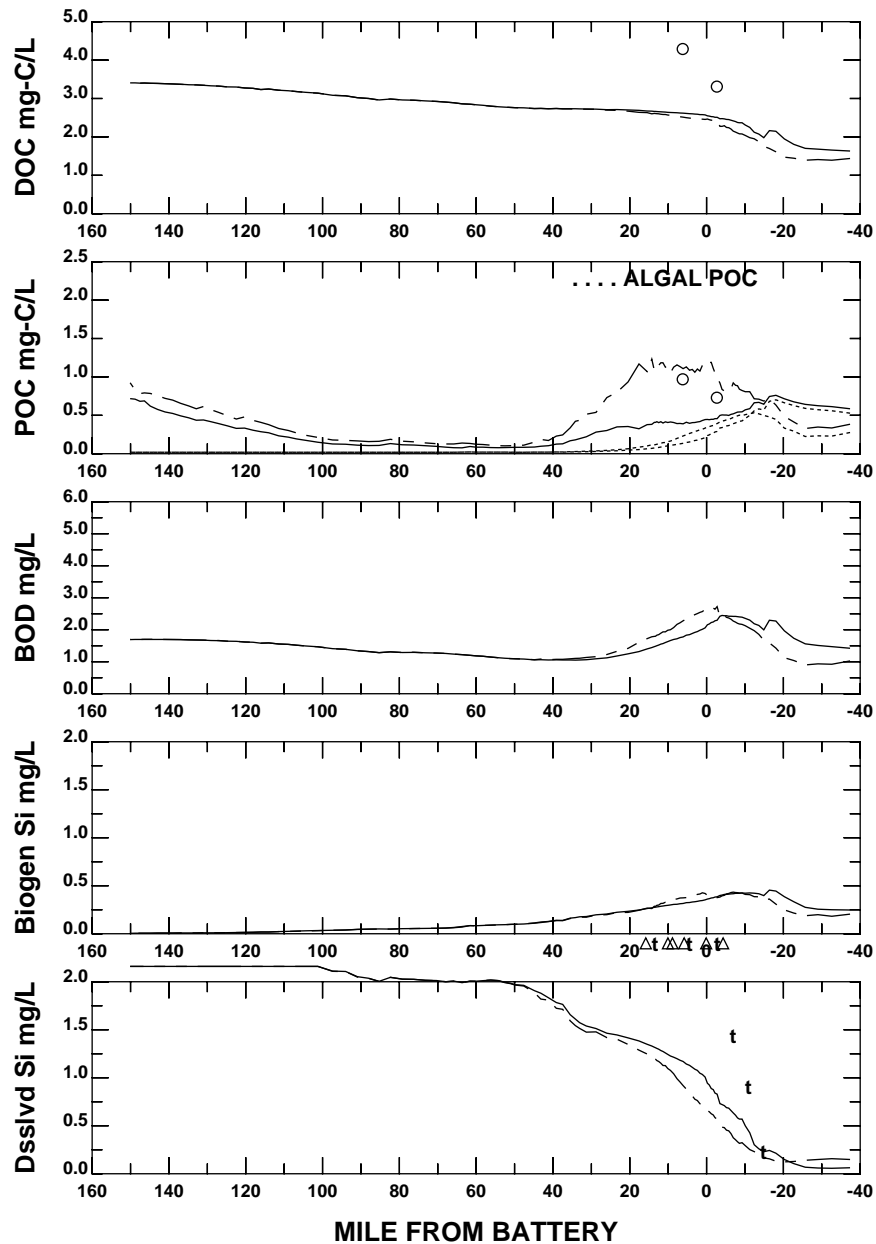




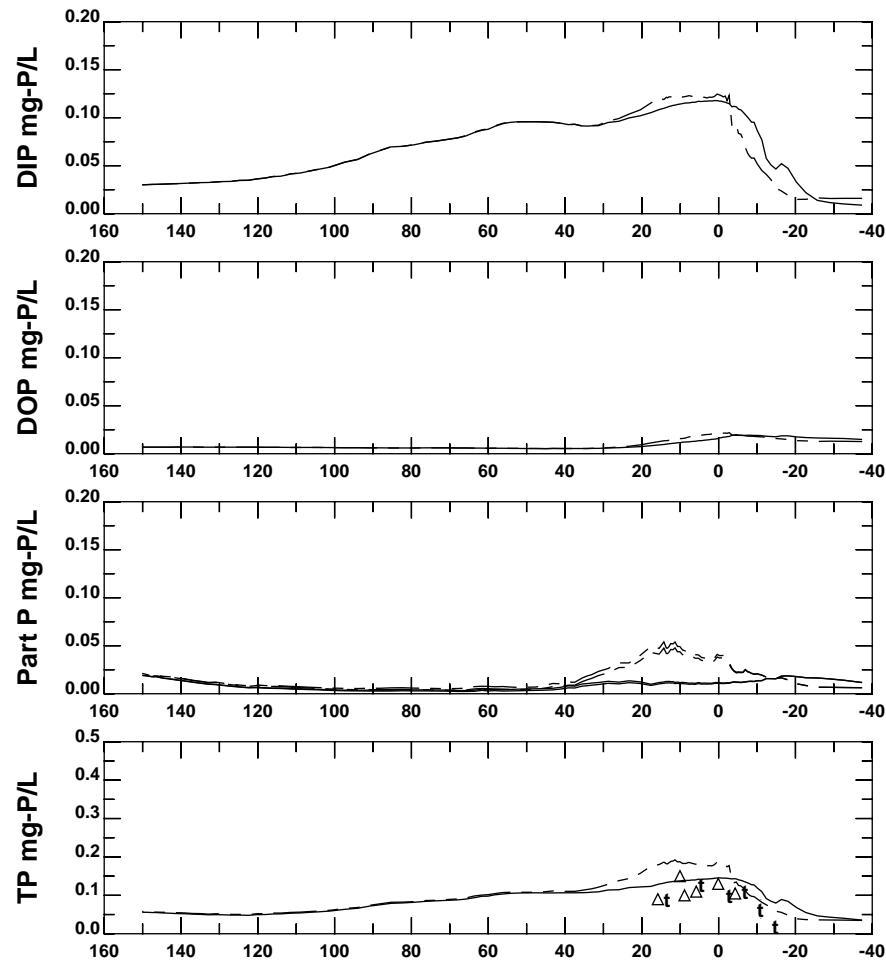
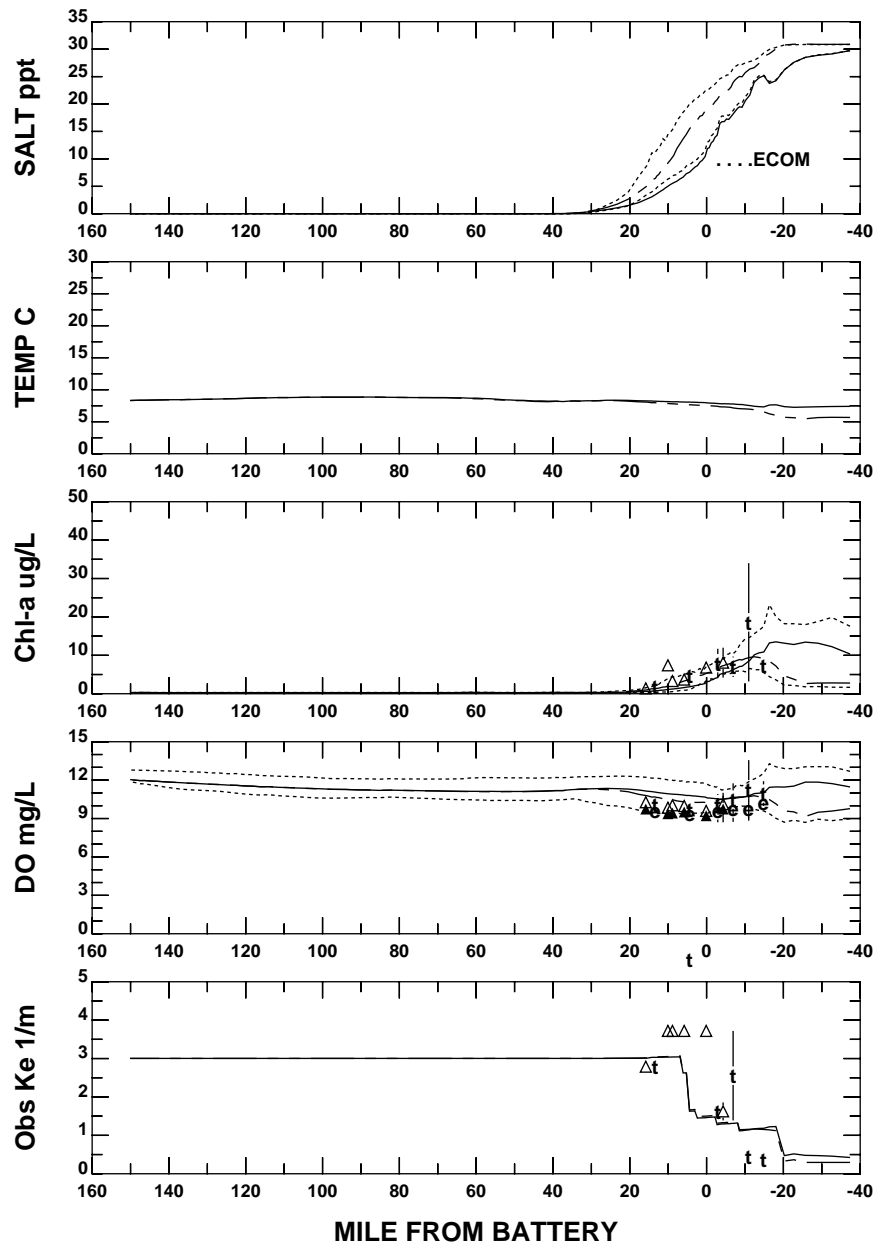
## HUDSON RIVER, UPPER AND LOWER BAY, OCEAN



**HUDSON RIVER, UPPER AND LOWER BAY, OCEAN**



HUDSON RIVER, UPPER AND LOWER BAY, OCEAN



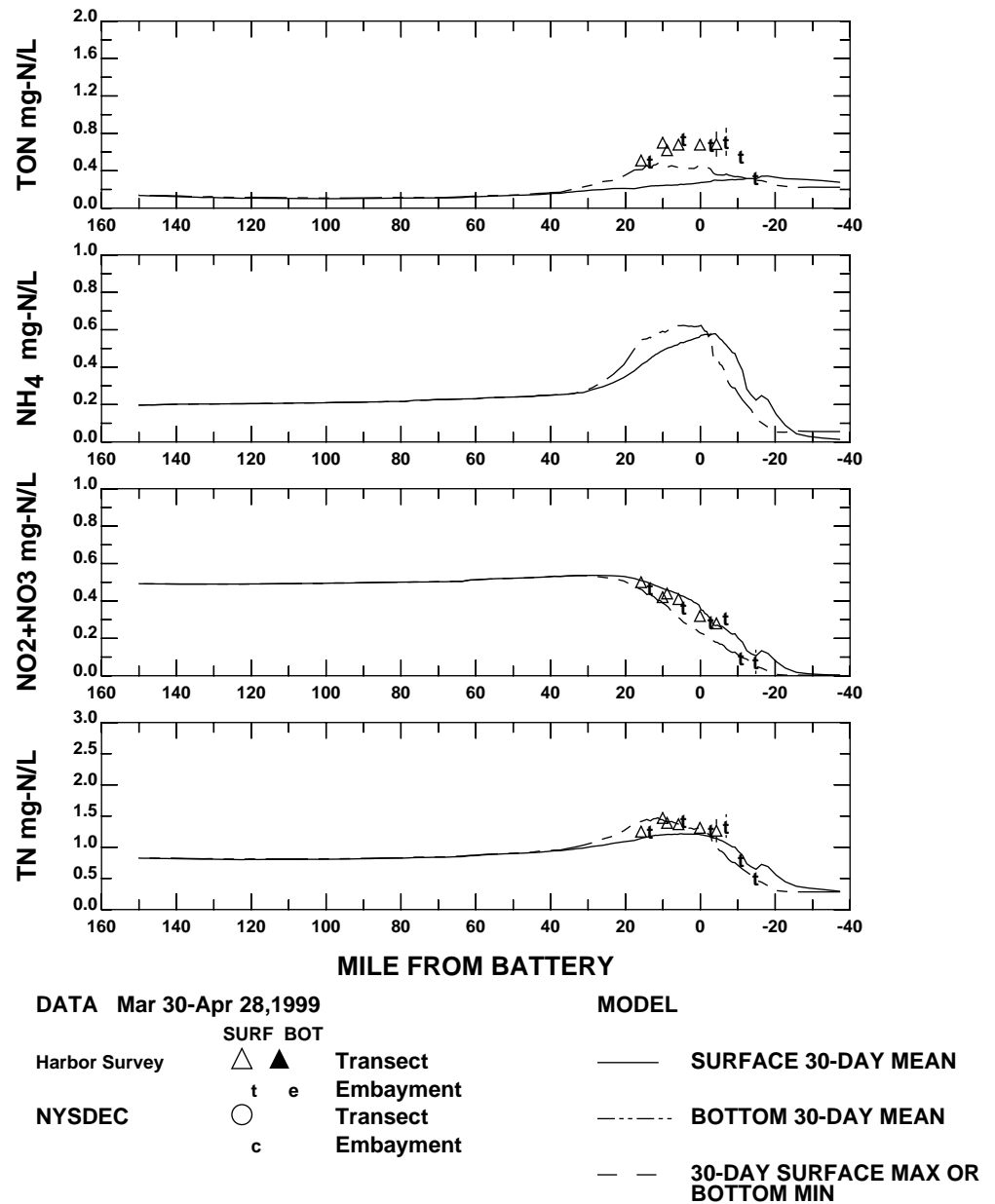
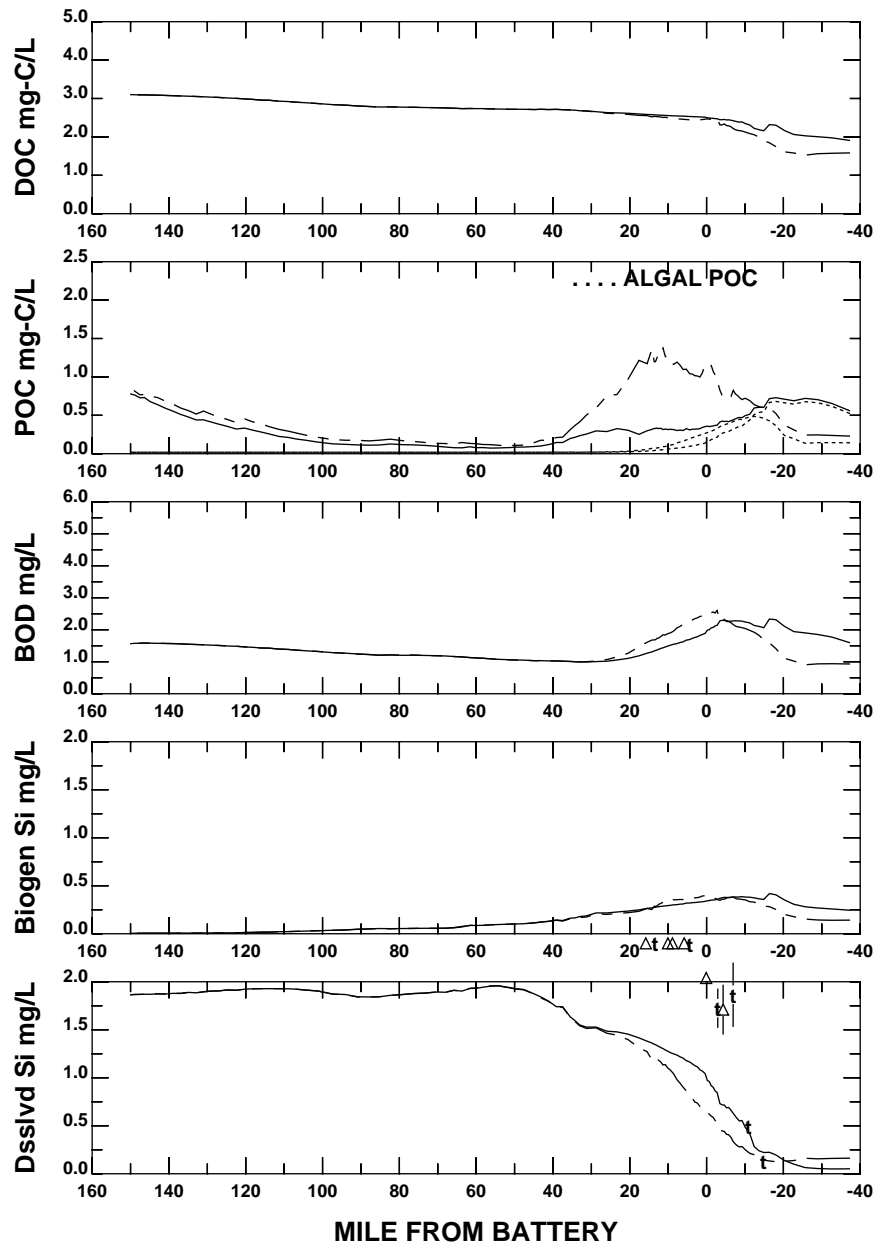
DATA Mar 30-Apr 28, 1999

MODEL

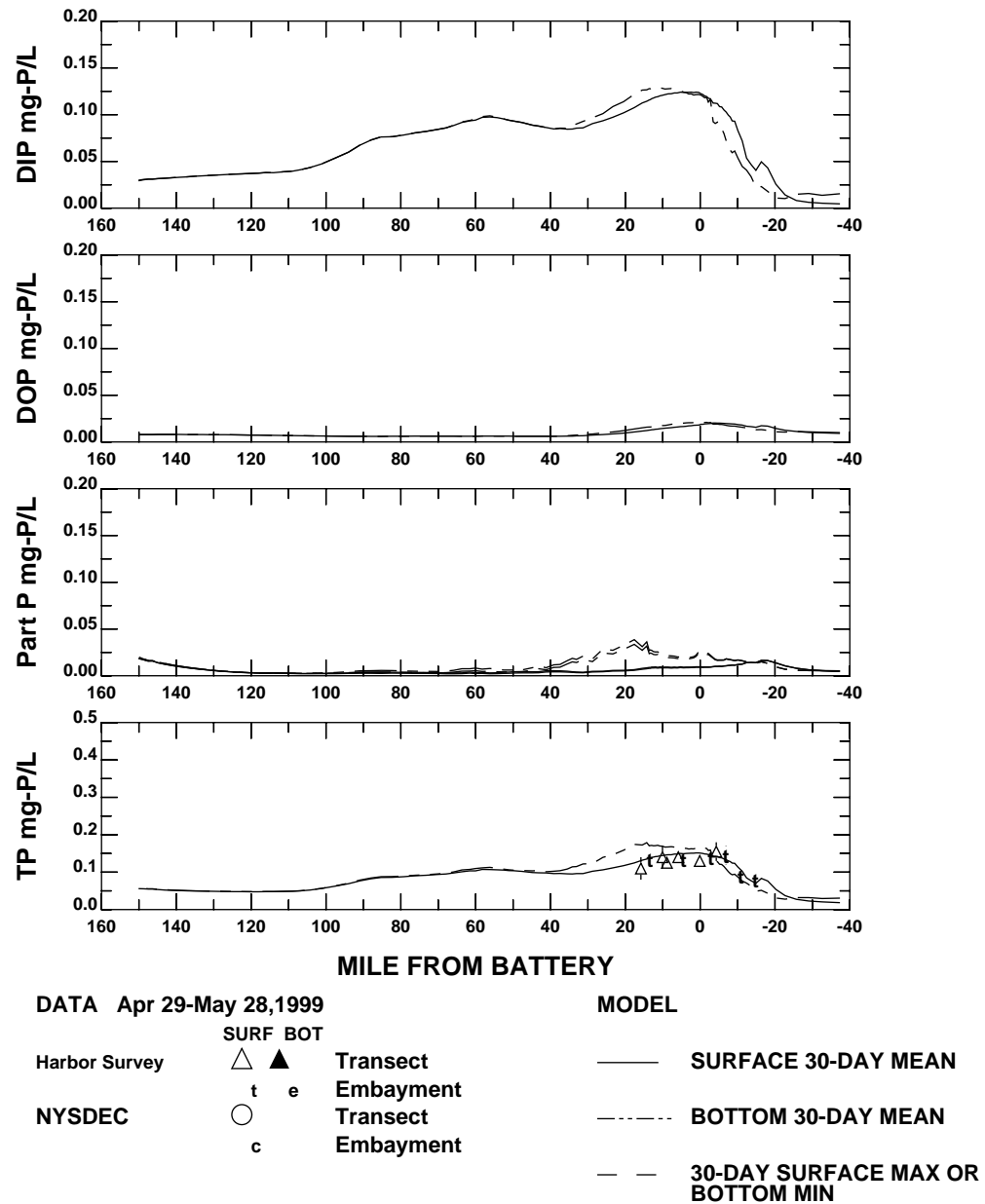
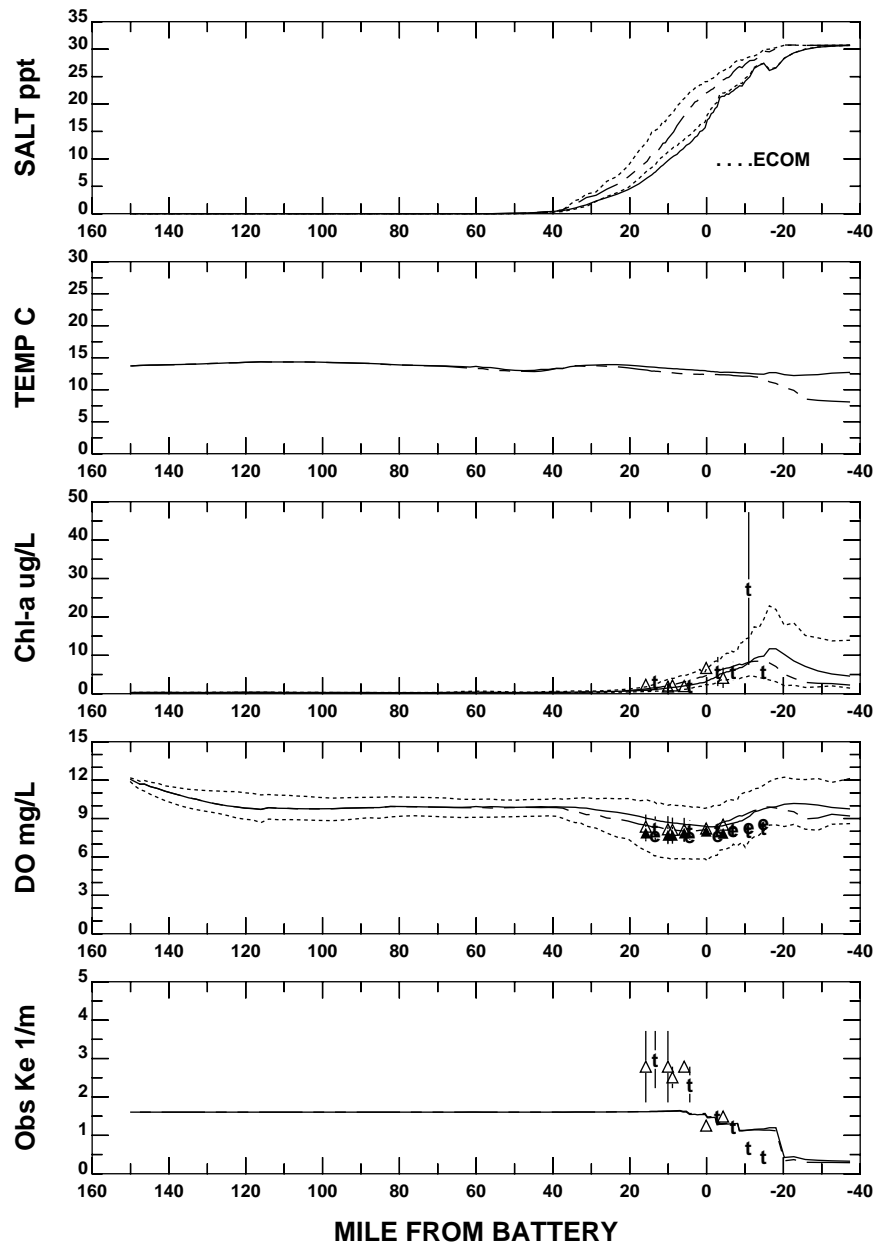
Harbor Survey SURF BOT  
 △ ▲ Transect  
 t e Embayment  
 NYSDEC ○ Transect  
 c Embayment

— SURFACE 30-DAY MEAN  
 - - - BOTTOM 30-DAY MEAN  
 - - - 30-DAY SURFACE MAX OR BOTTOM MIN

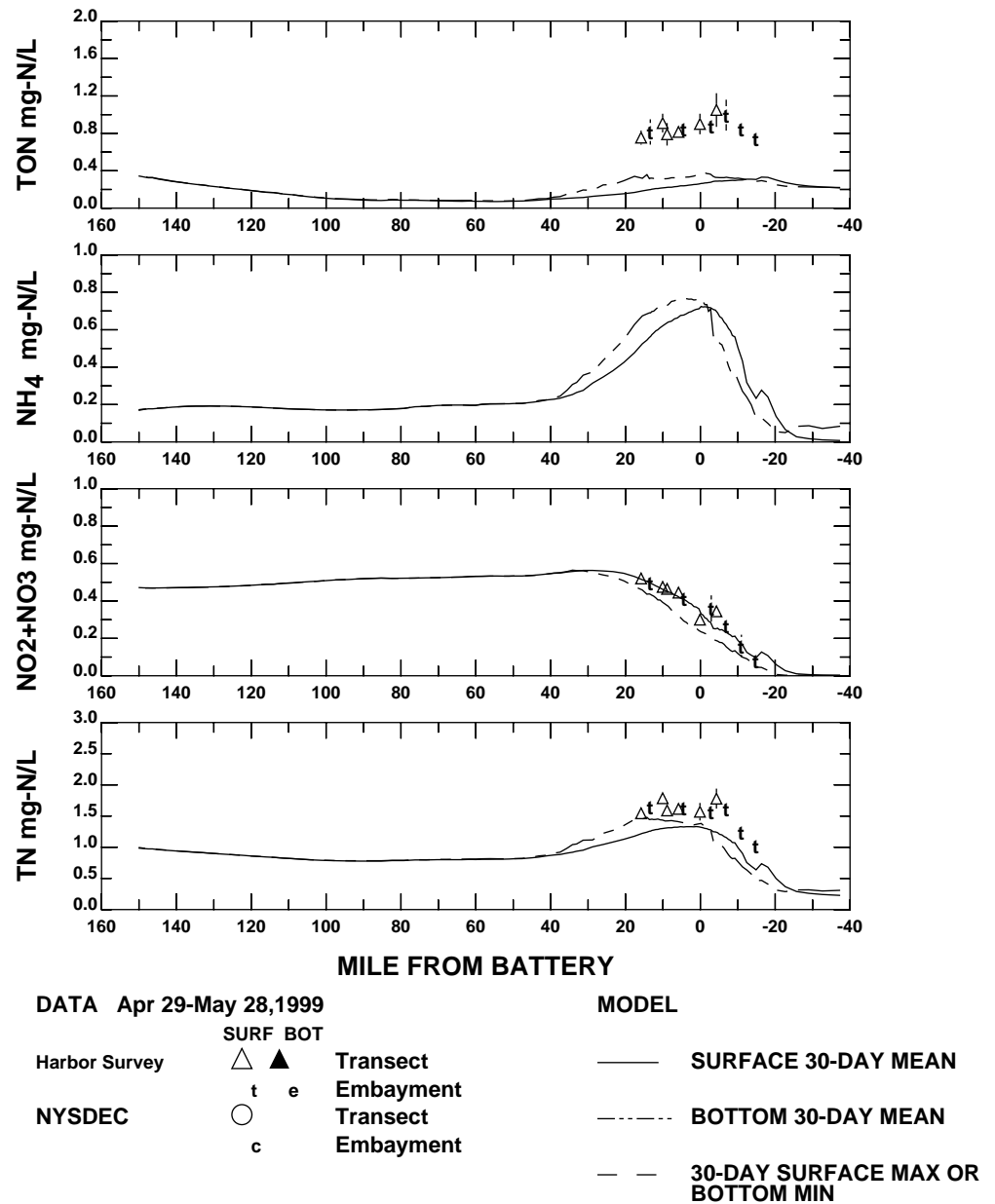
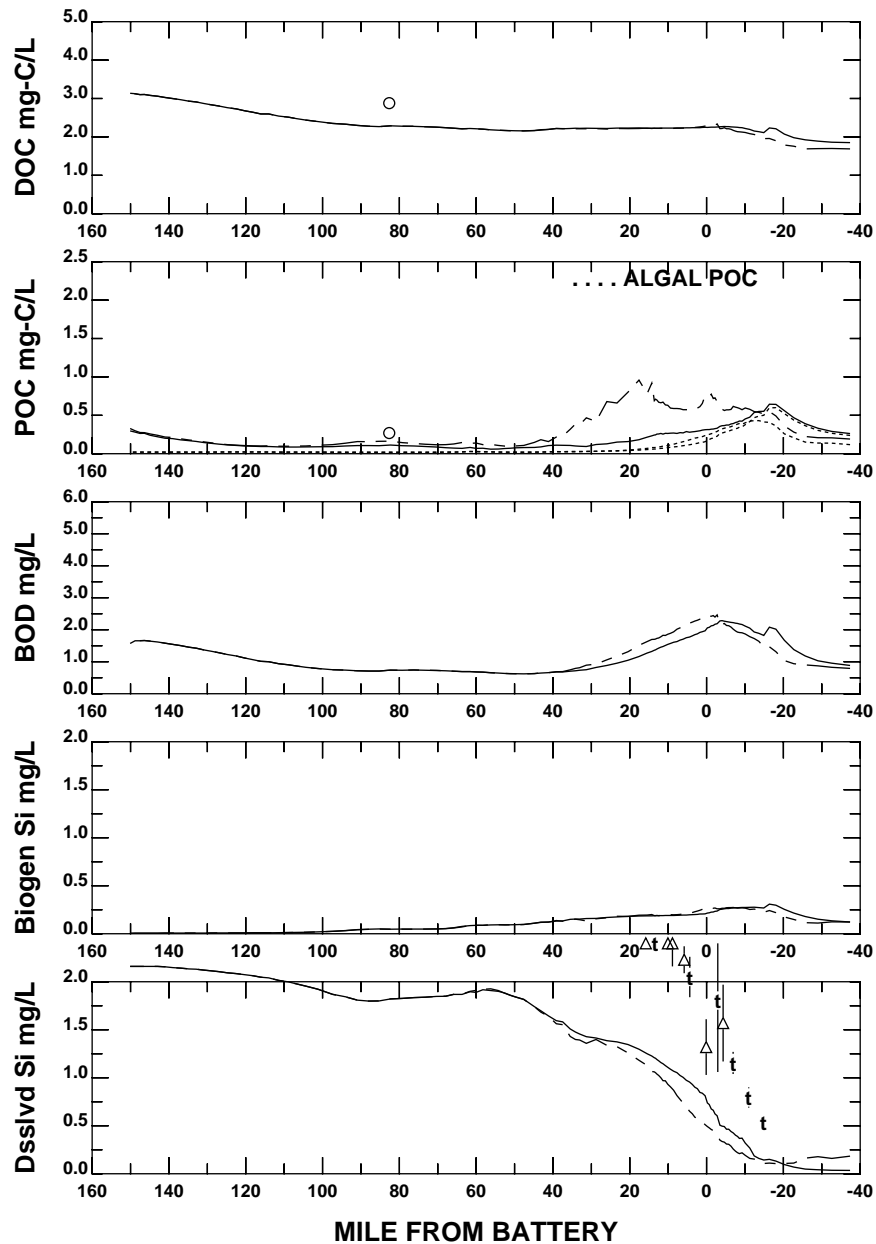
**HUDSON RIVER, UPPER AND LOWER BAY, OCEAN**



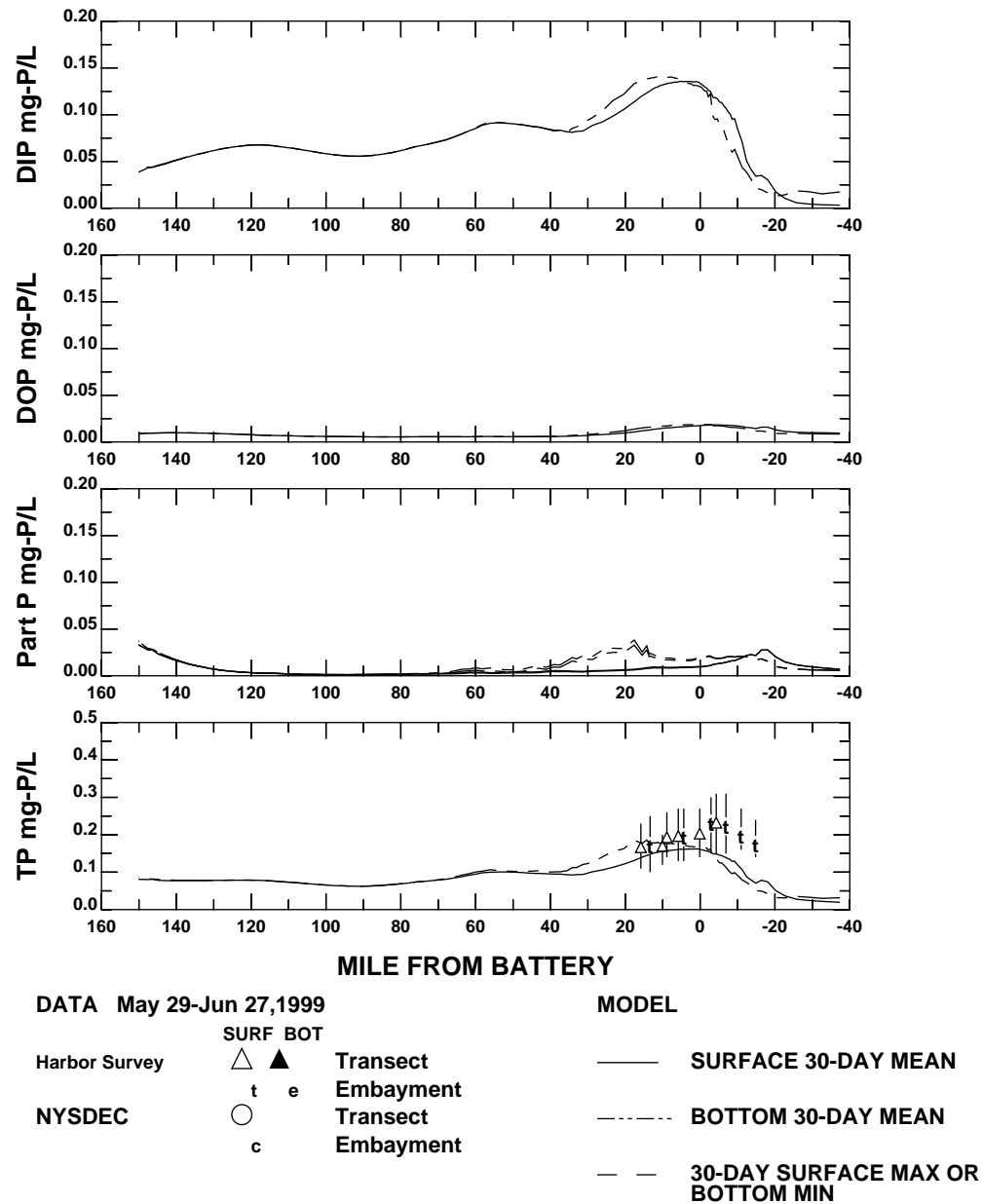
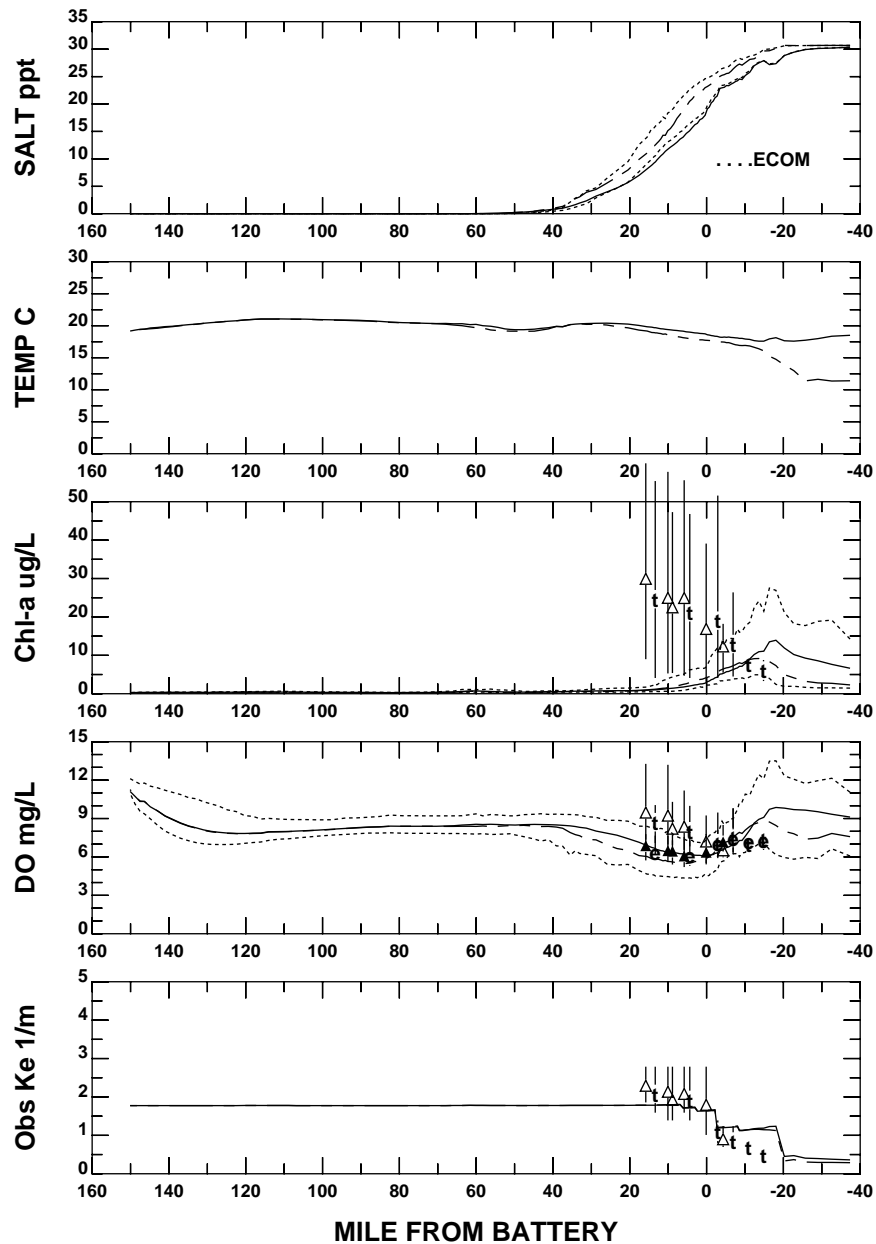
# HUDSON RIVER, UPPER AND LOWER BAY, OCEAN



## HUDSON RIVER, UPPER AND LOWER BAY, OCEAN

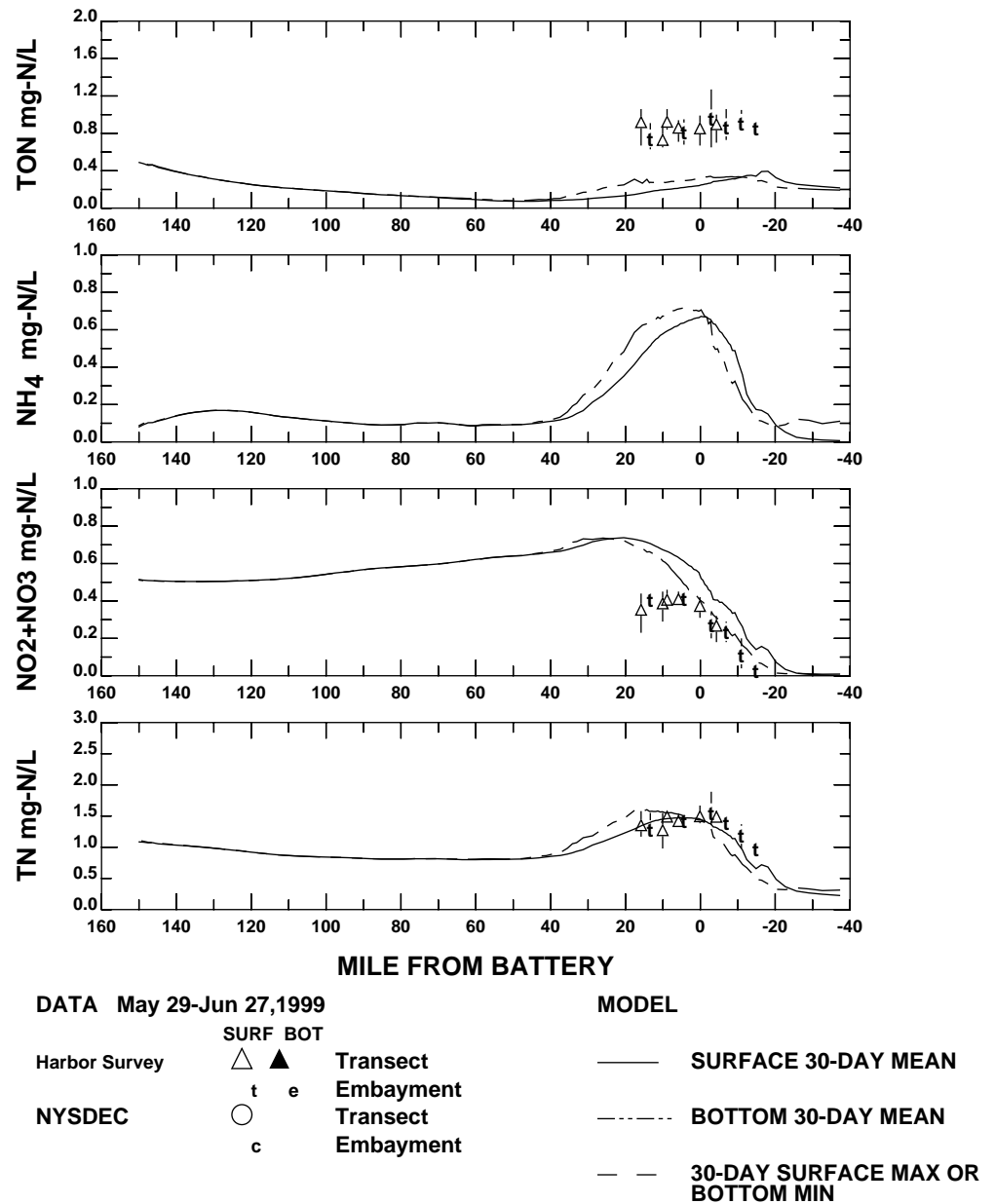
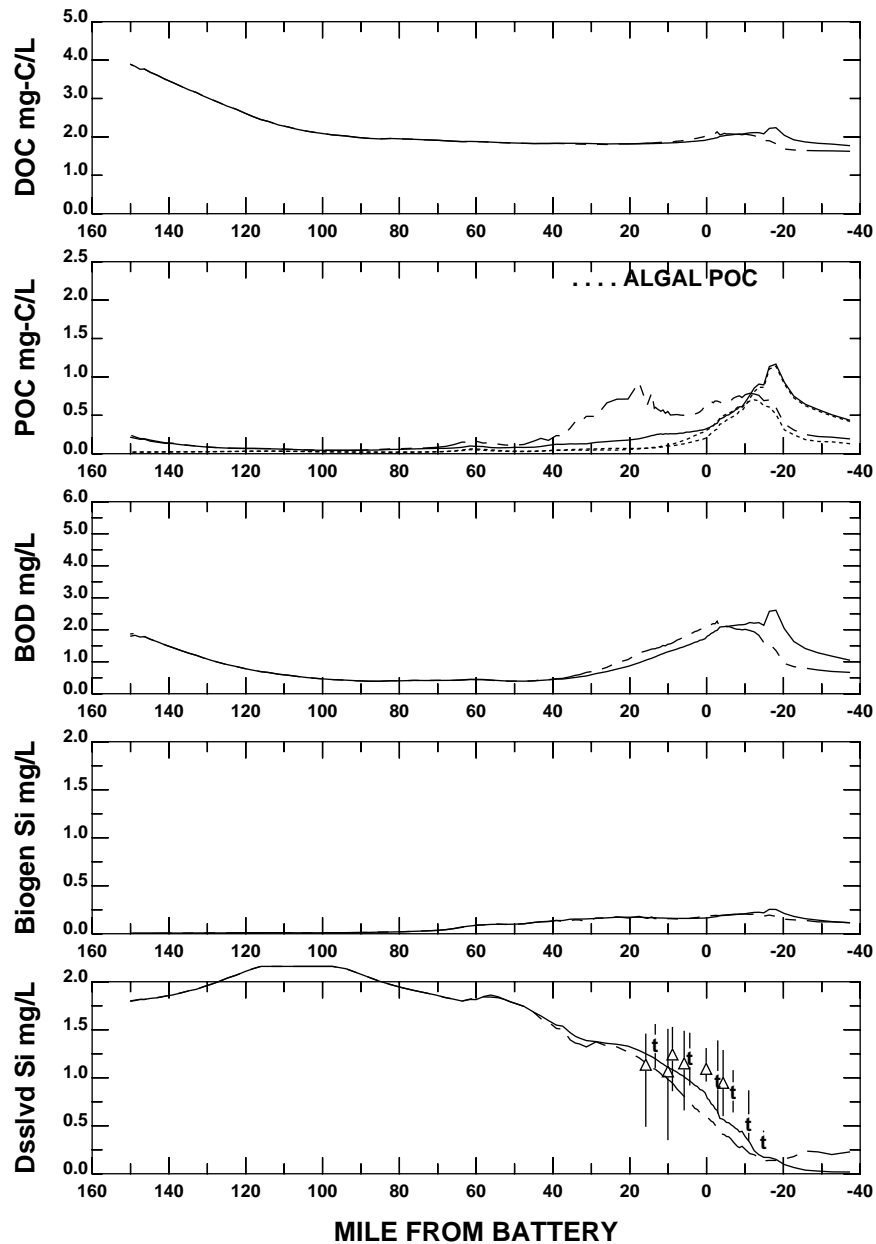


### HUDSON RIVER, UPPER AND LOWER BAY, OCEAN

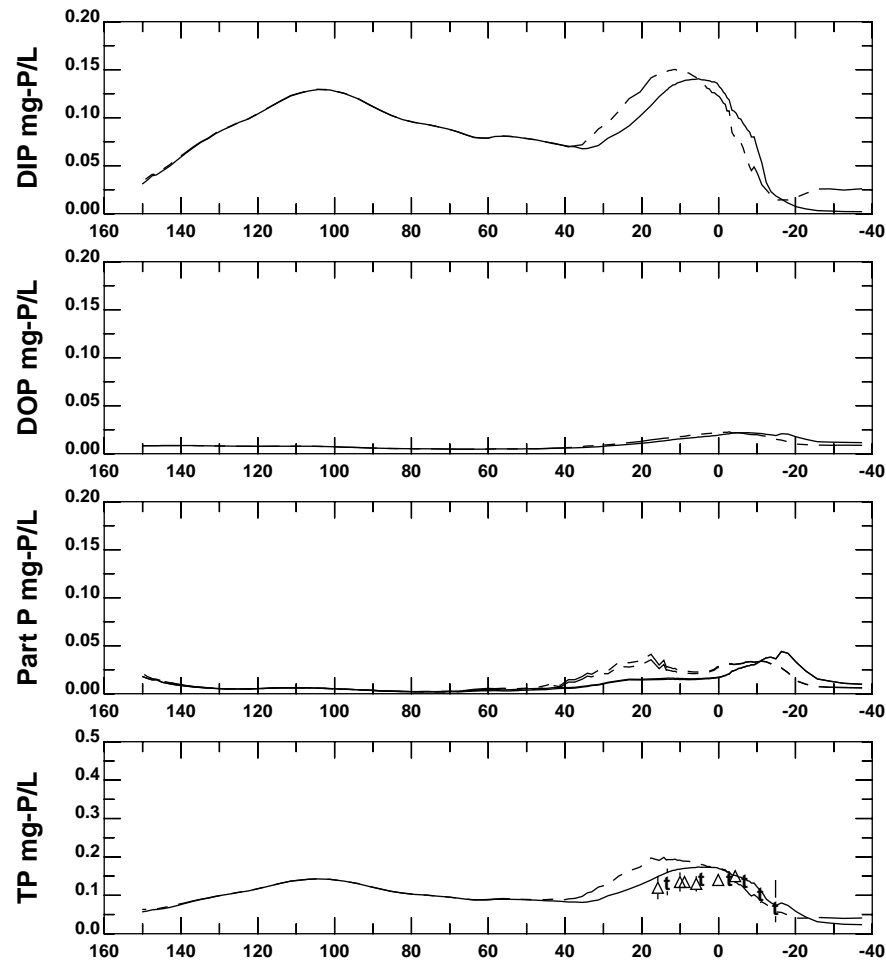
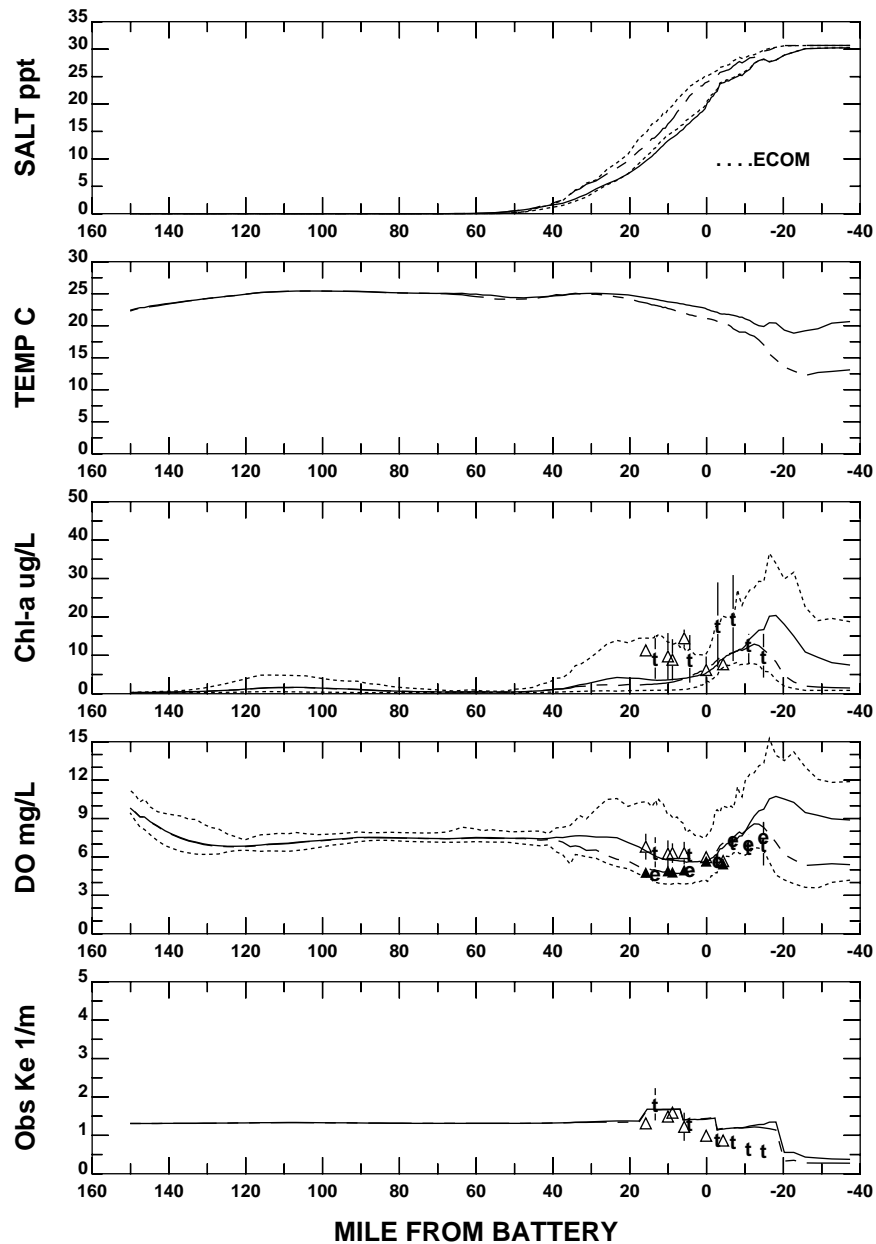


**HUDSON RIVER, UPPER AND LOWER BAY, OCEAN**





## HUDSON RIVER, UPPER AND LOWER BAY, OCEAN



DATA Jun 28-Jul 27,1999

MODEL

Harbor Survey

NYSDEC

SURF BOT

△ ▲ Transect

t e Embayment

○ ○ Transect

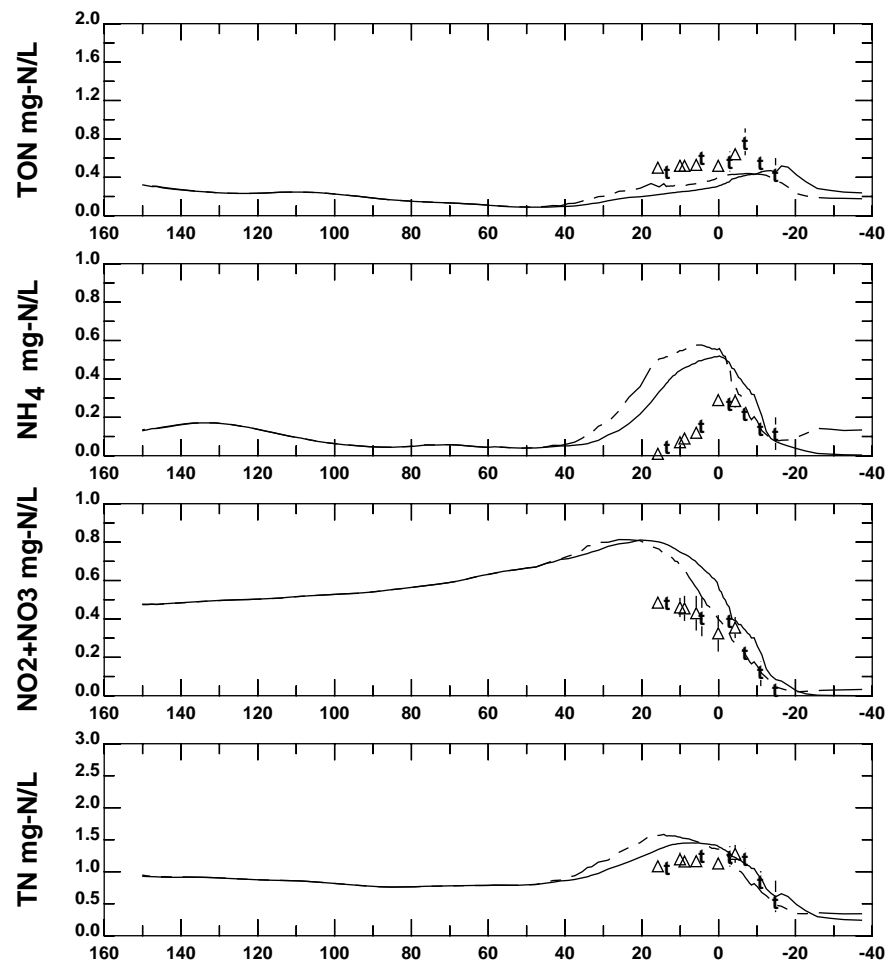
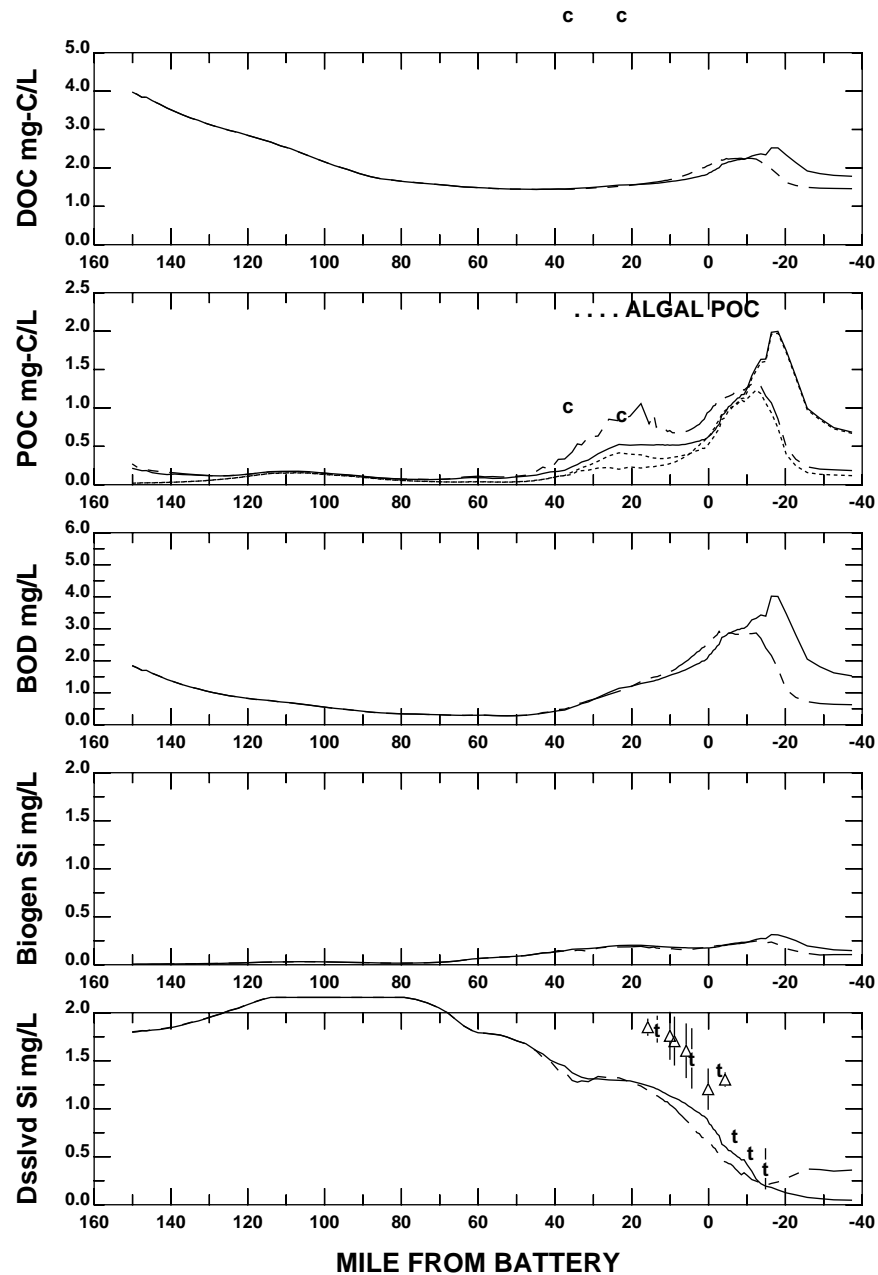
c c Embayment

— SURFACE 30-DAY MEAN

- - - BOTTOM 30-DAY MEAN

- - - 30-DAY SURFACE MAX OR BOTTOM MIN

# HUDSON RIVER, UPPER AND LOWER BAY, OCEAN



DATA Jun 28-Jul 27,1999

Harbor Survey

NYSDEC

SURF BOT

△ ▲ Transect

t e Embayment

○ Transect

c Embayment

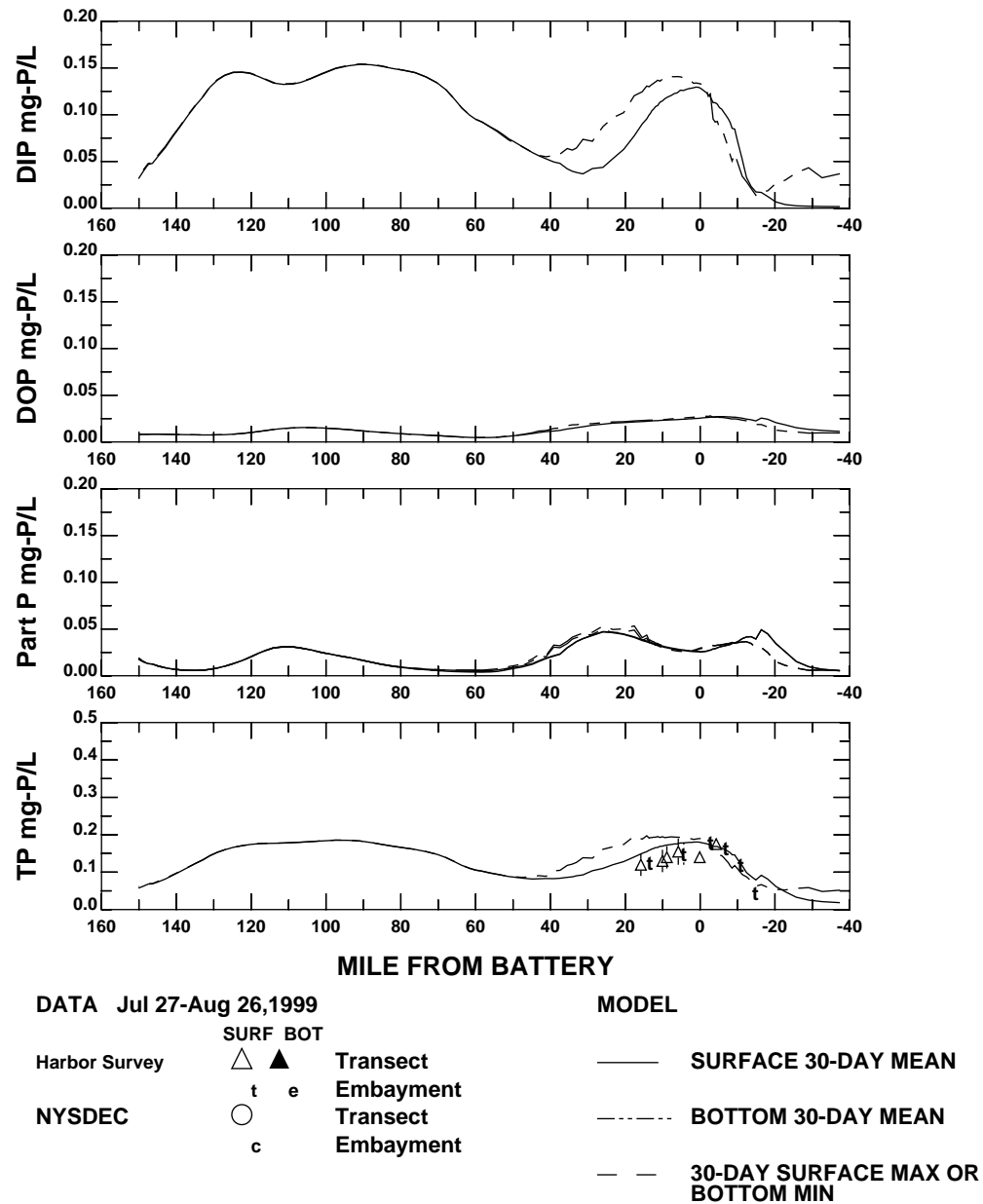
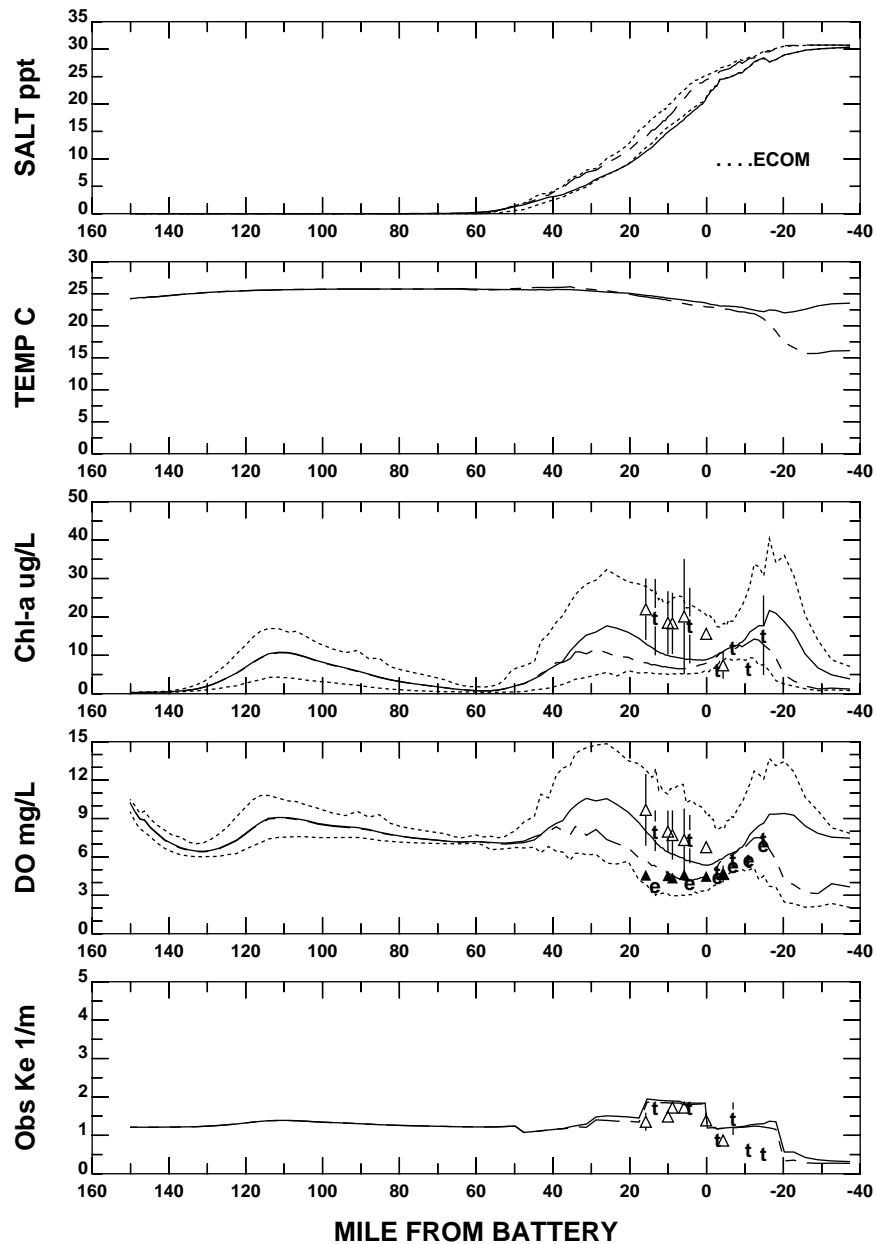
MODEL

— SURFACE 30-DAY MEAN

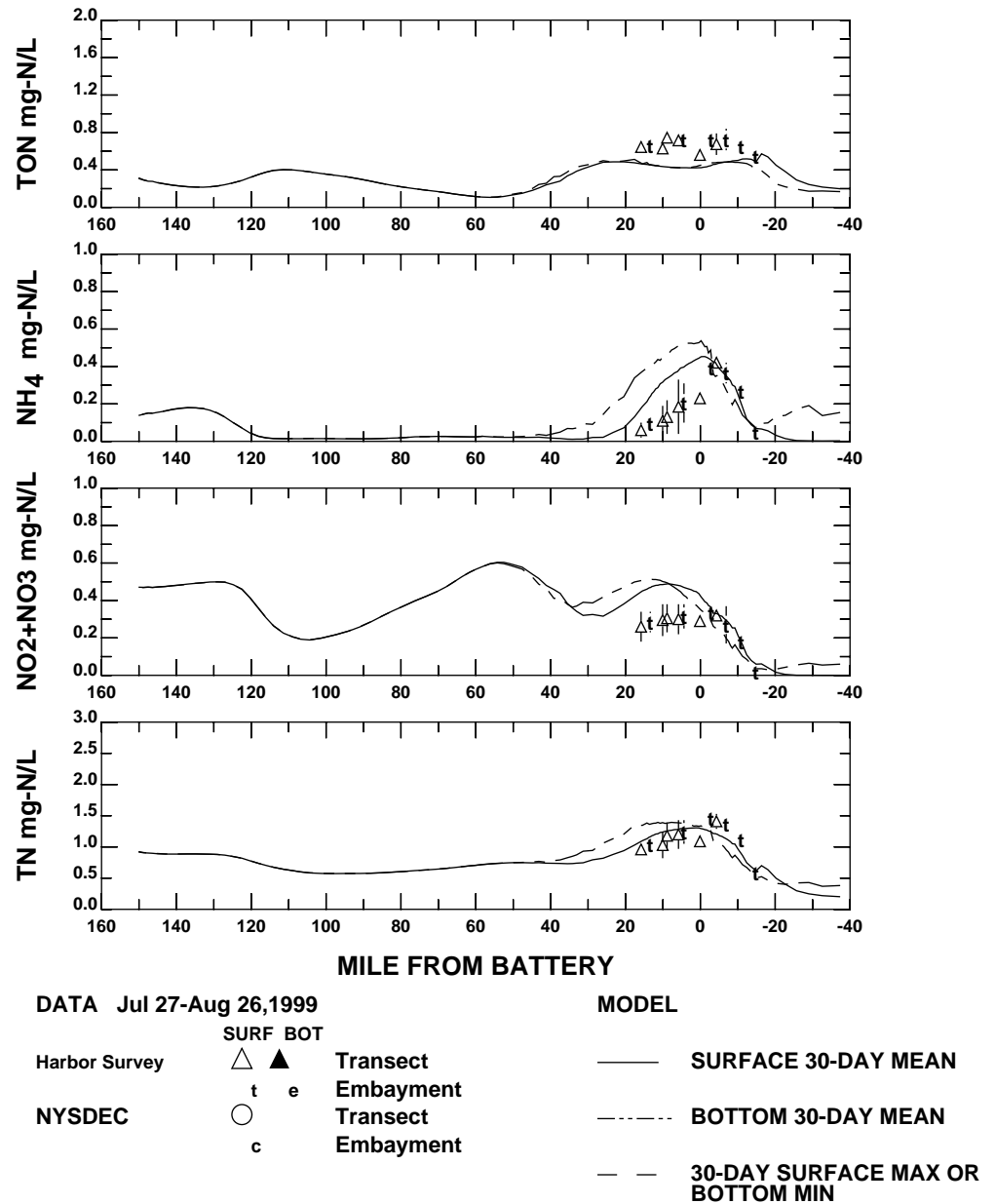
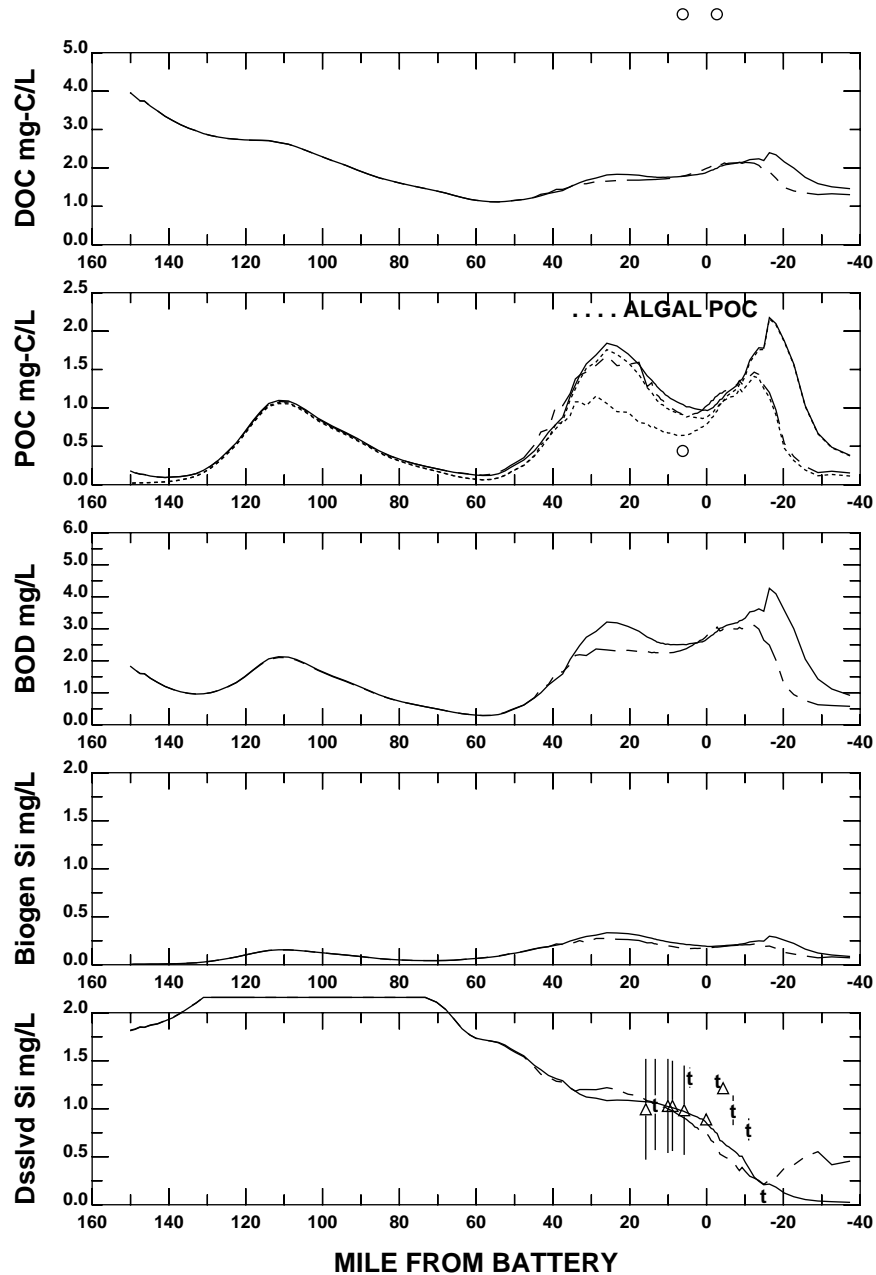
----- BOTTOM 30-DAY MEAN

- - - 30-DAY SURFACE MAX OR BOTTOM MIN

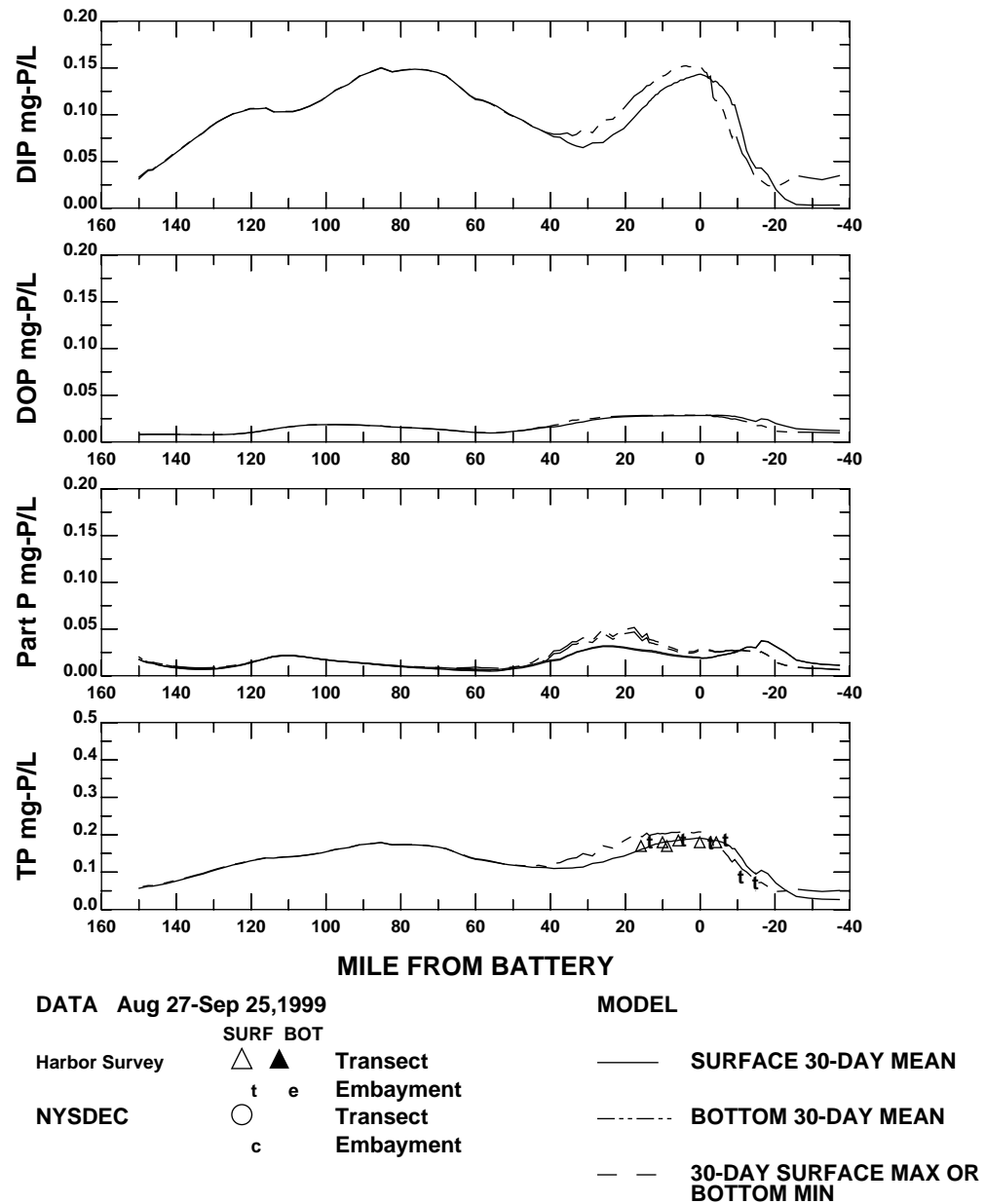
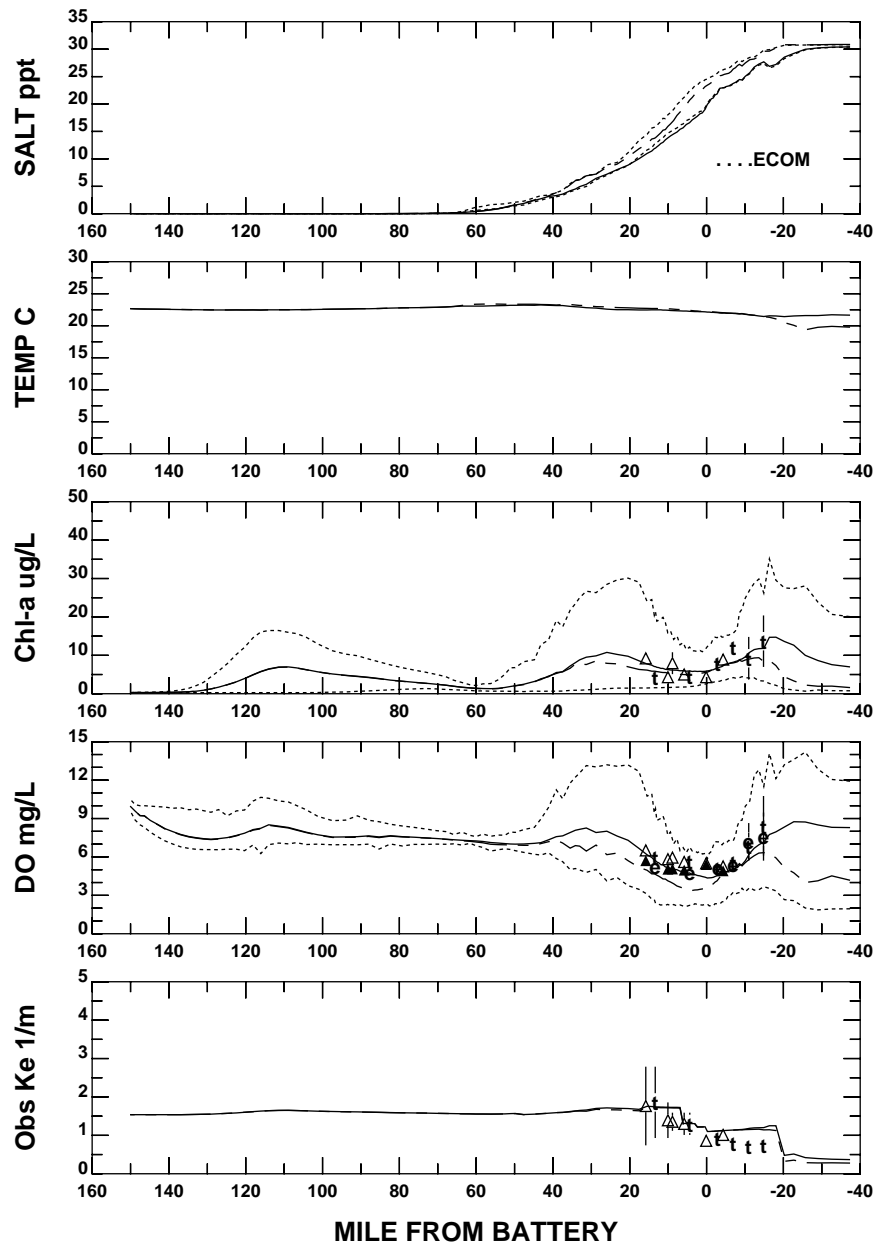
## HUDSON RIVER, UPPER AND LOWER BAY, OCEAN



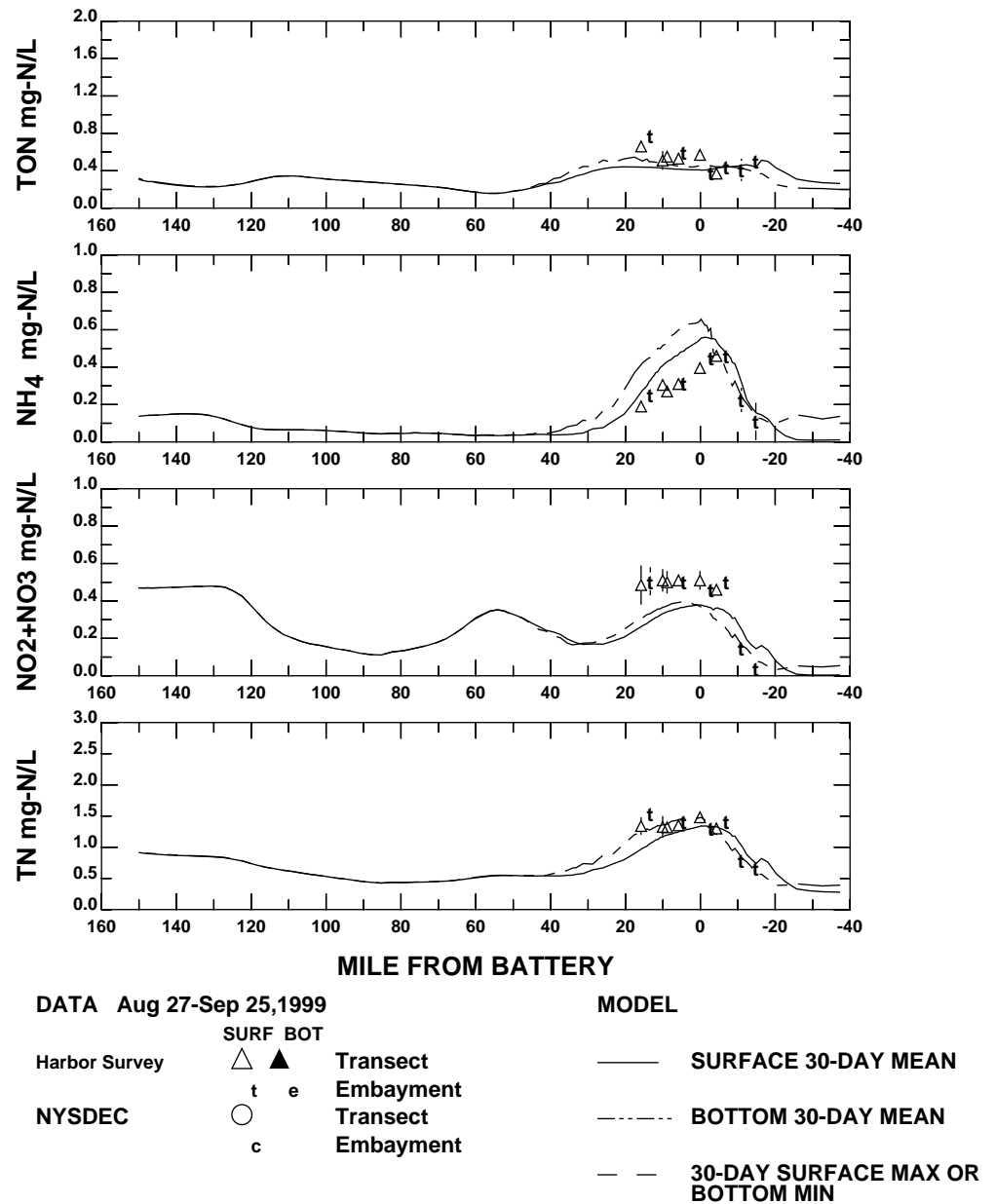
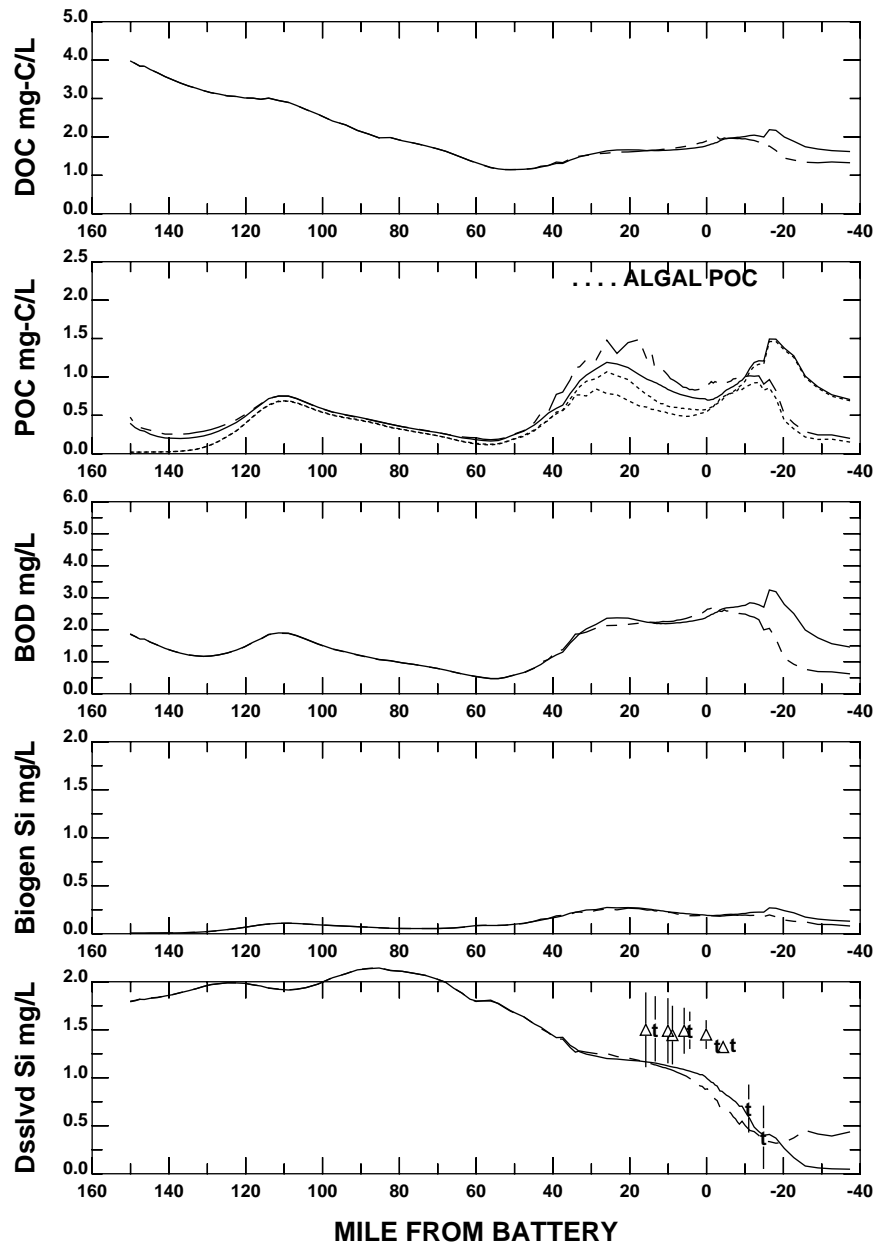
## HUDSON RIVER, UPPER AND LOWER BAY, OCEAN



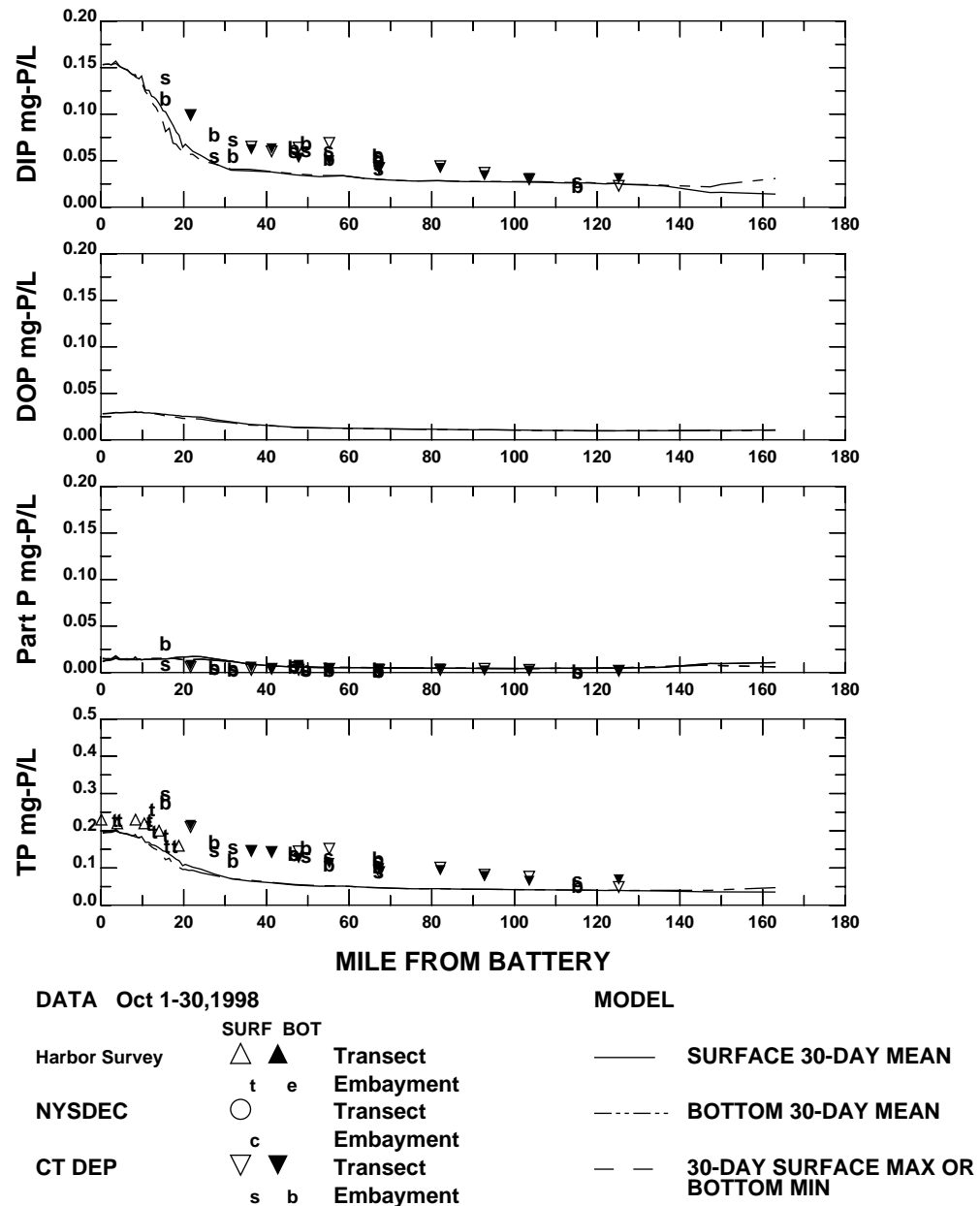
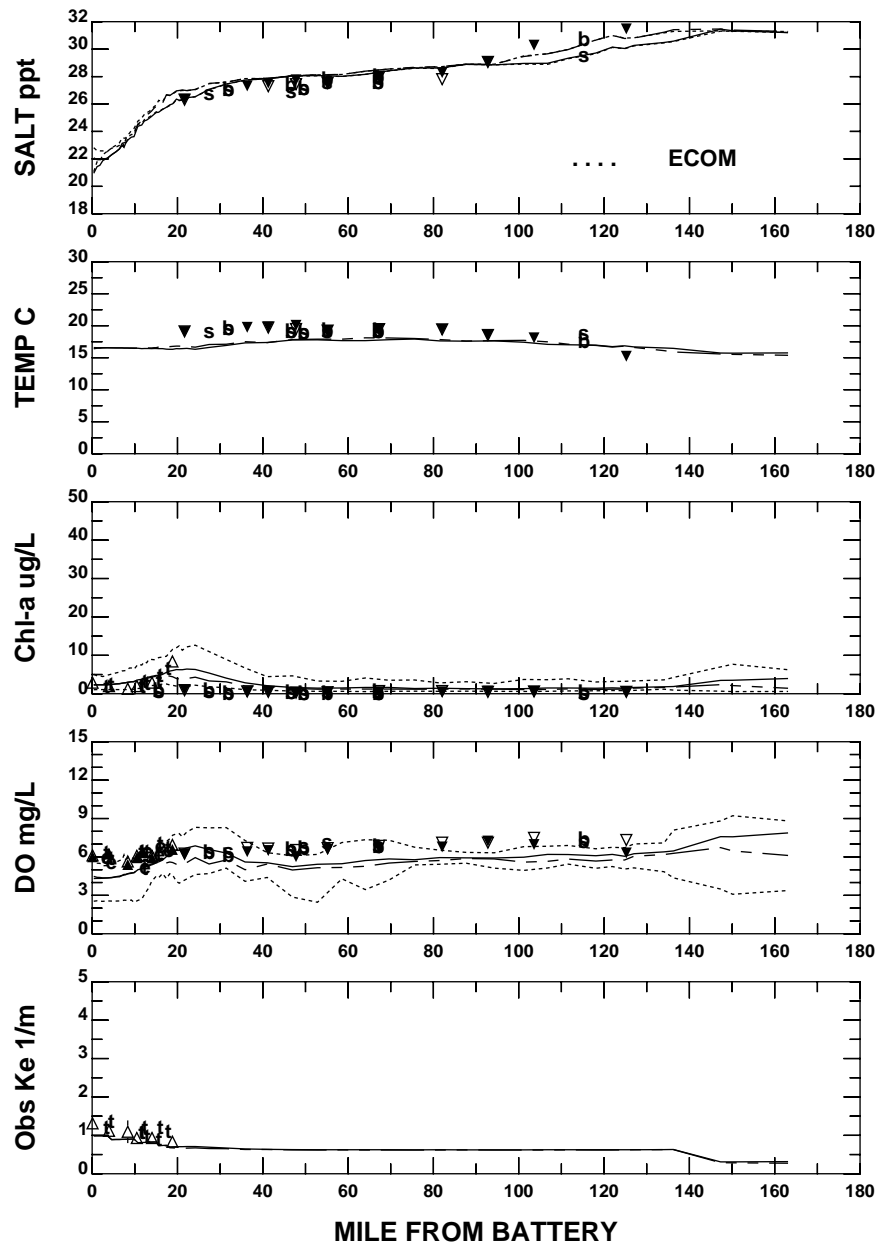
## HUDSON RIVER, UPPER AND LOWER BAY, OCEAN



# HUDSON RIVER, UPPER AND LOWER BAY, OCEAN

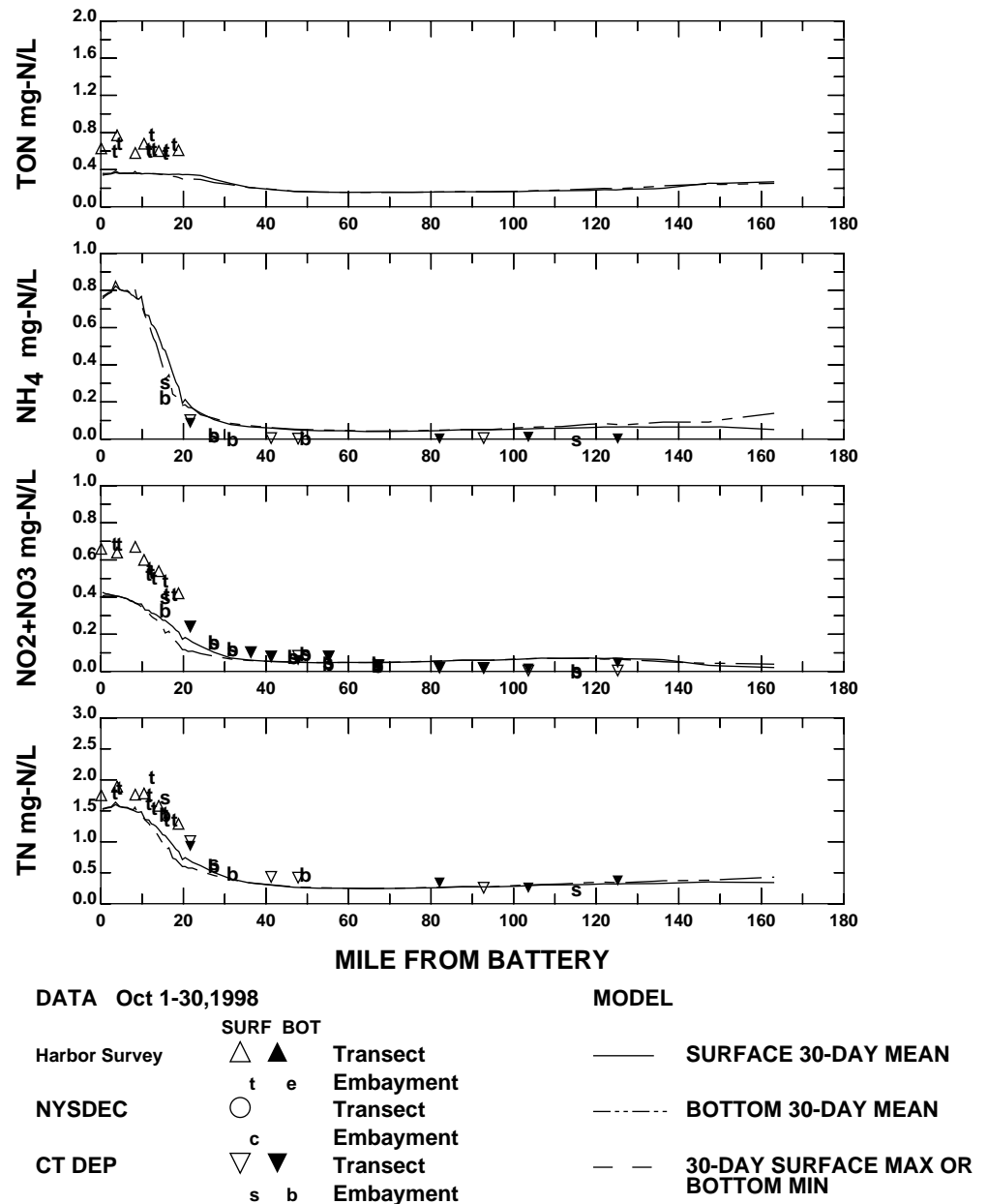
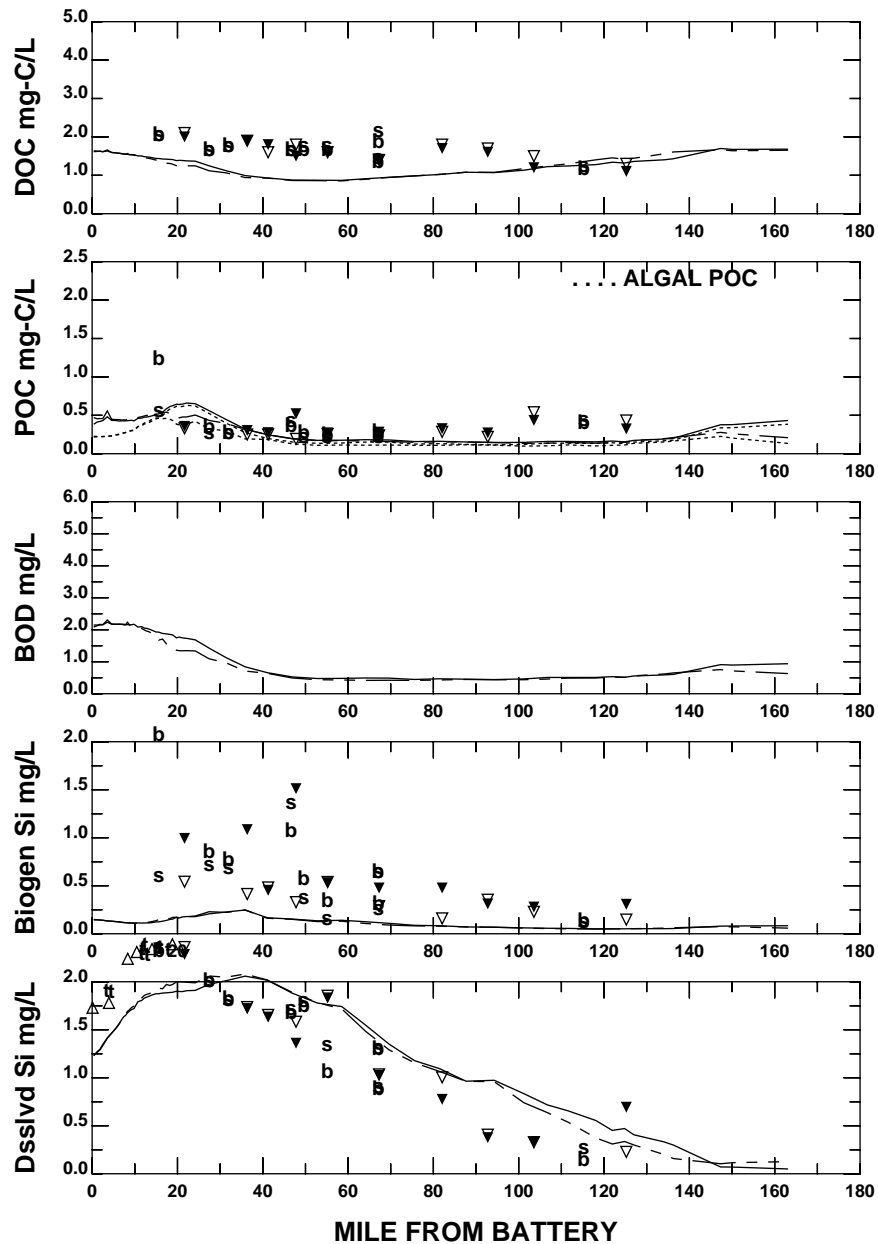


## HUDSON RIVER, UPPER AND LOWER BAY, OCEAN

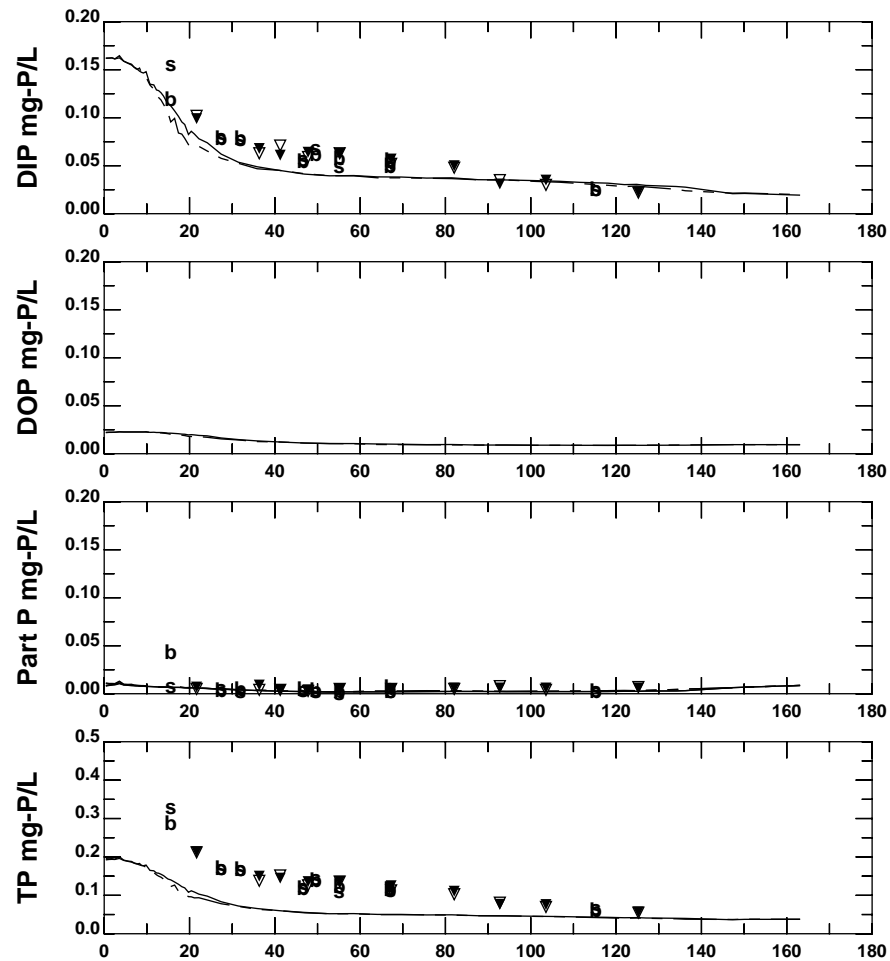
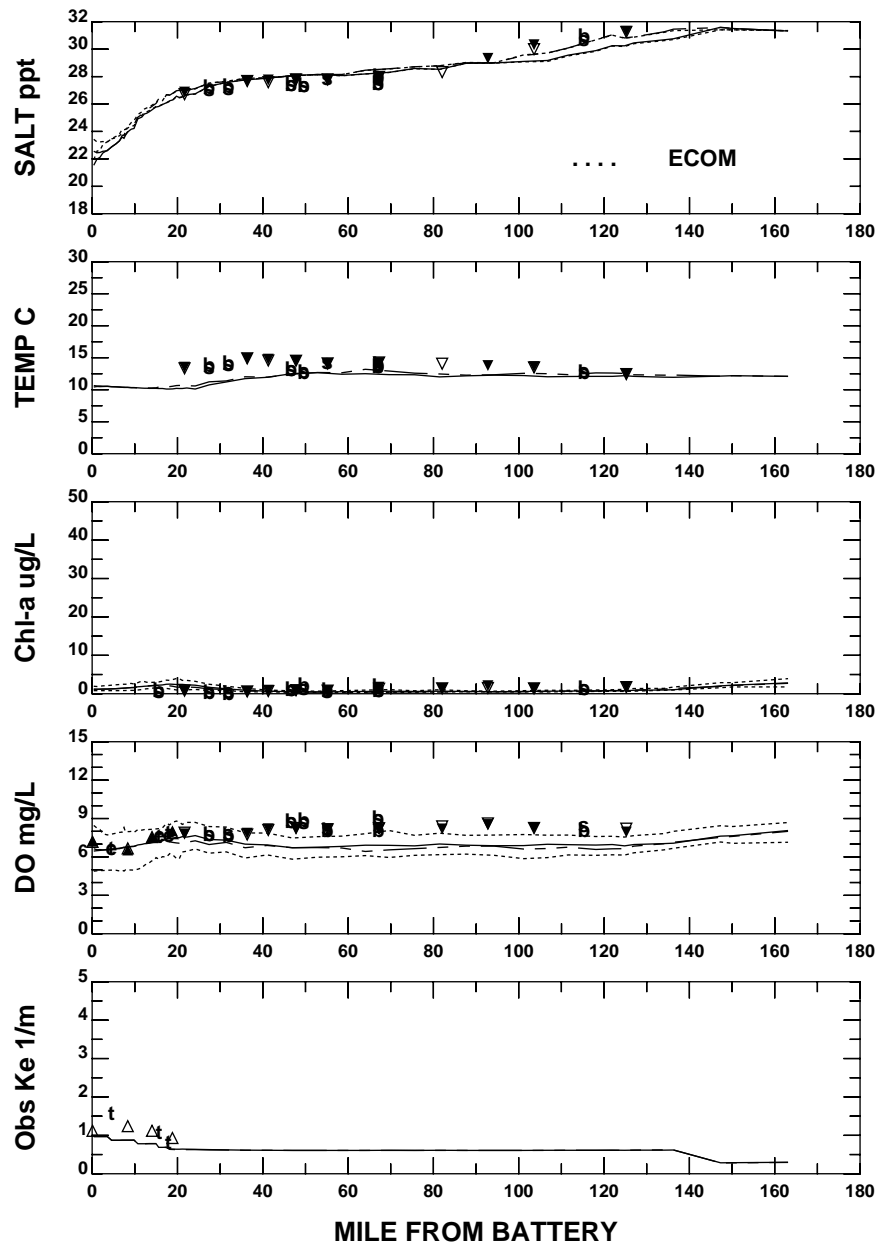


**EAST RIVER AND LONG ISLAND SOUND**





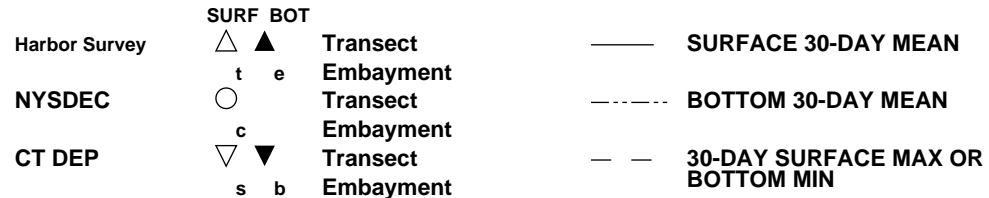
### EAST RIVER AND LONG ISLAND SOUND



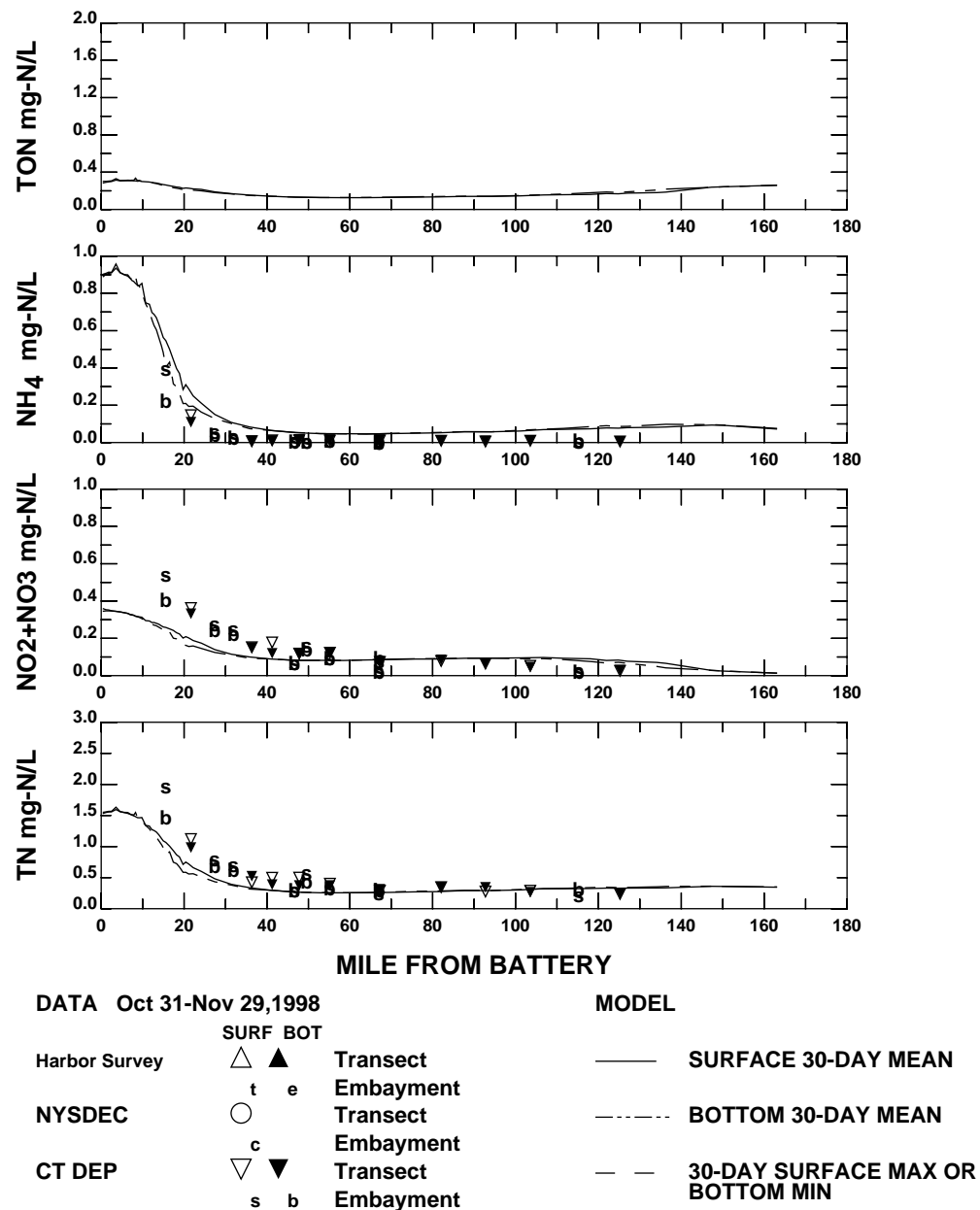
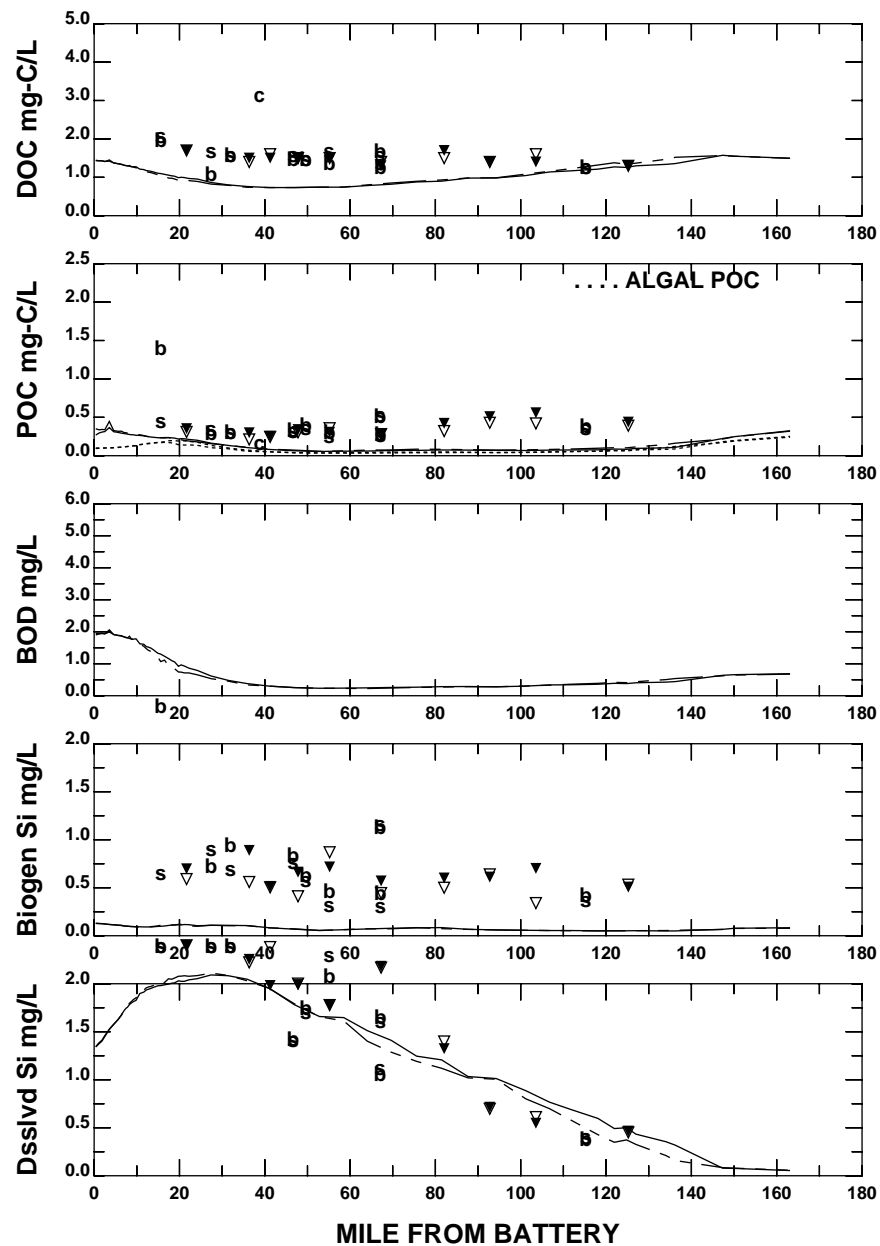
MILE FROM BATTERY

DATA Oct 31-Nov 29, 1998

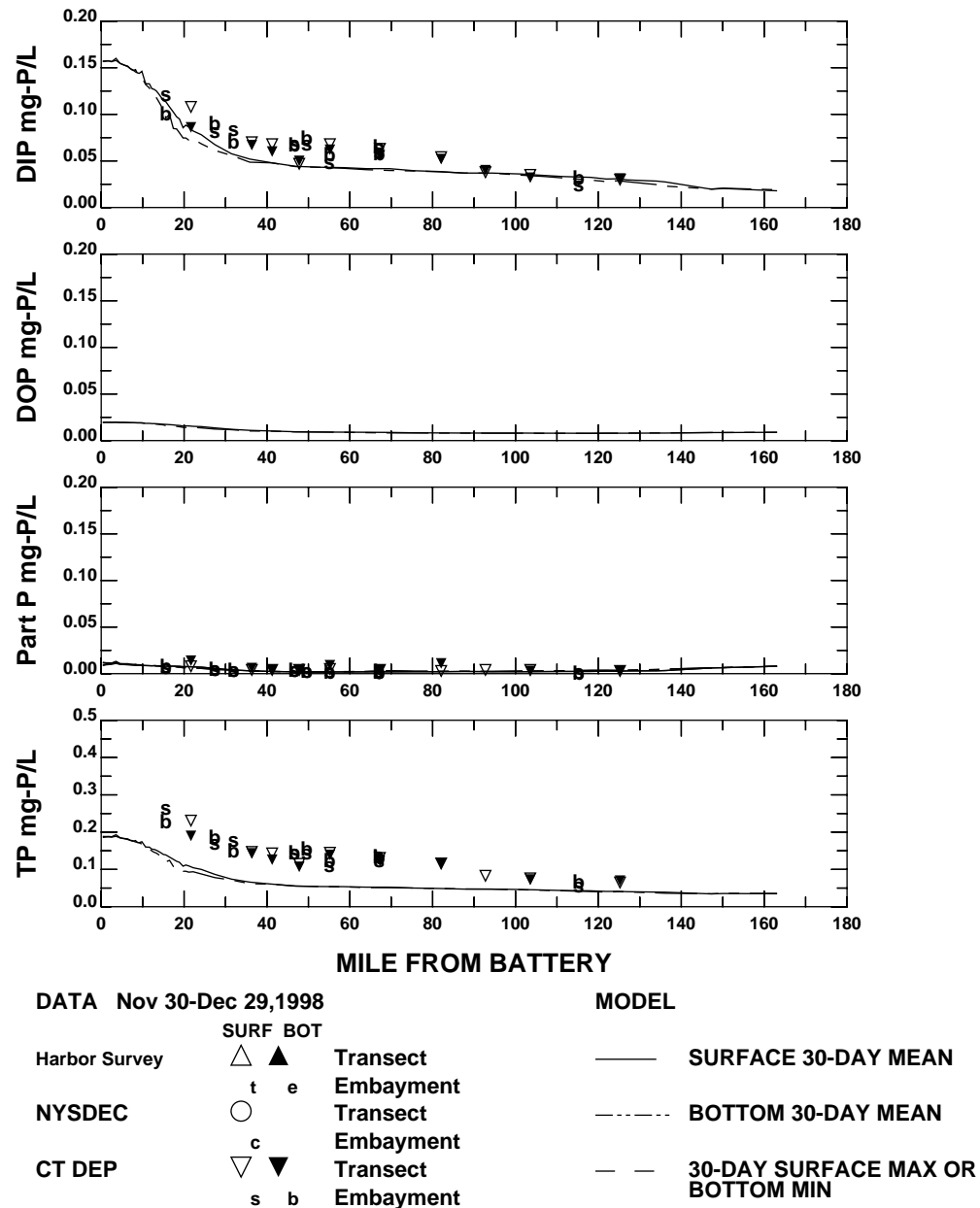
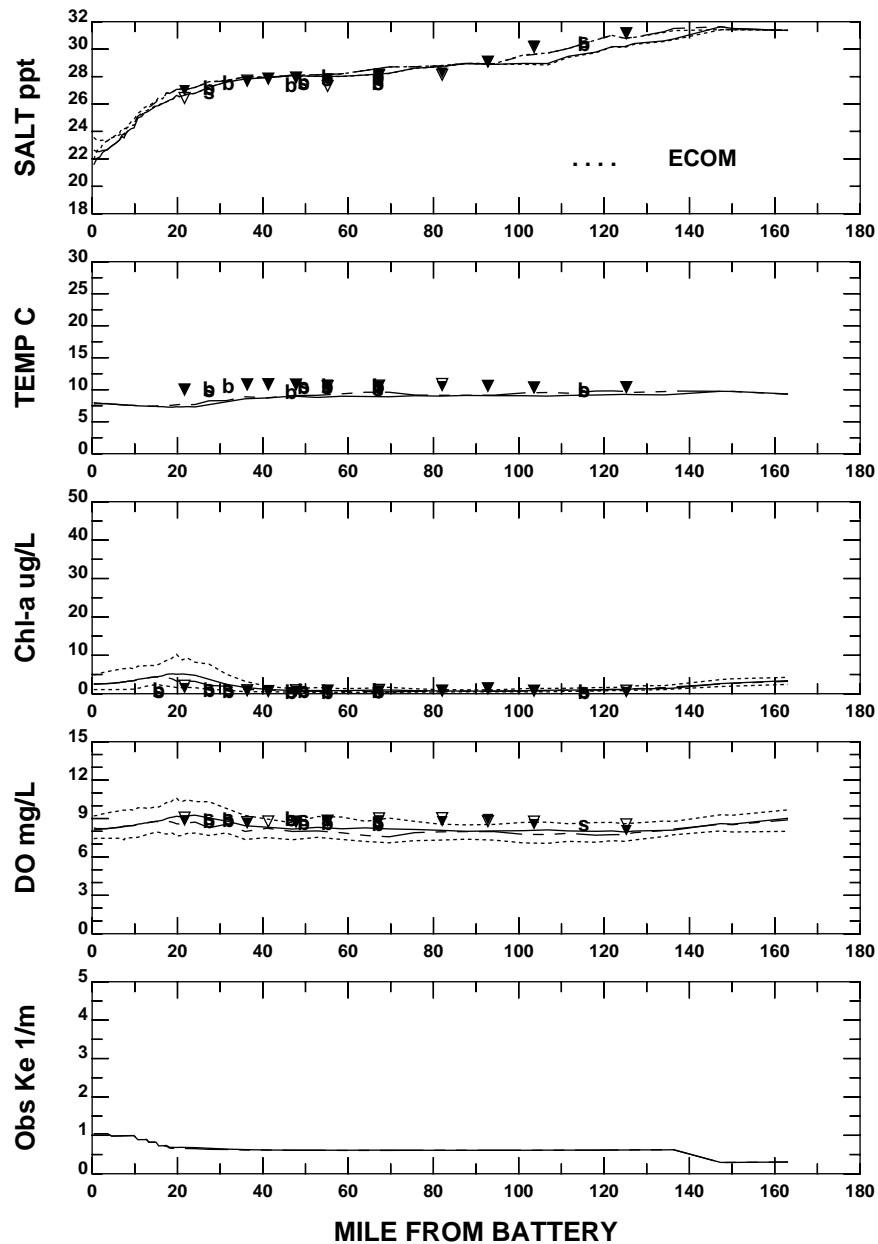
MODEL



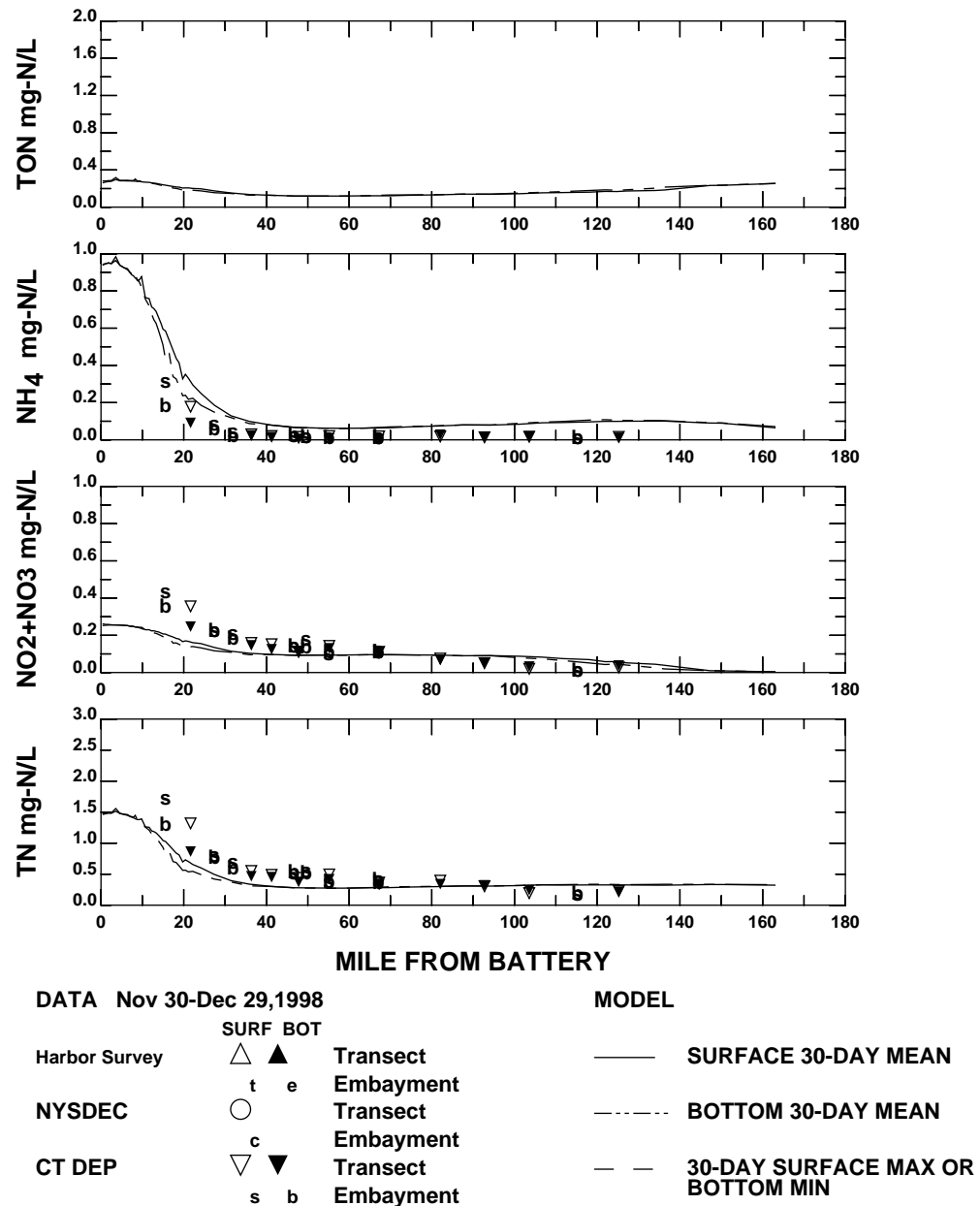
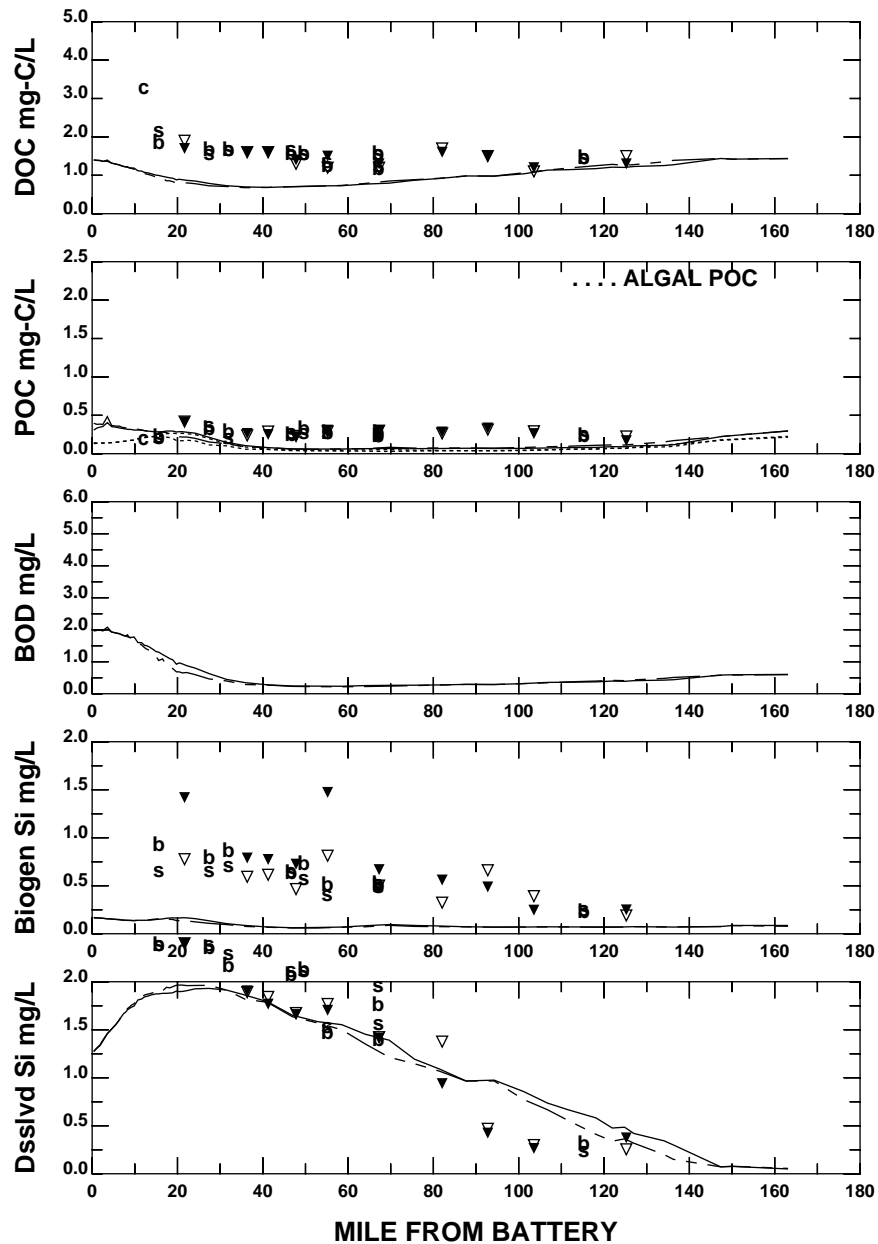
**EAST RIVER AND LONG ISLAND SOUND**



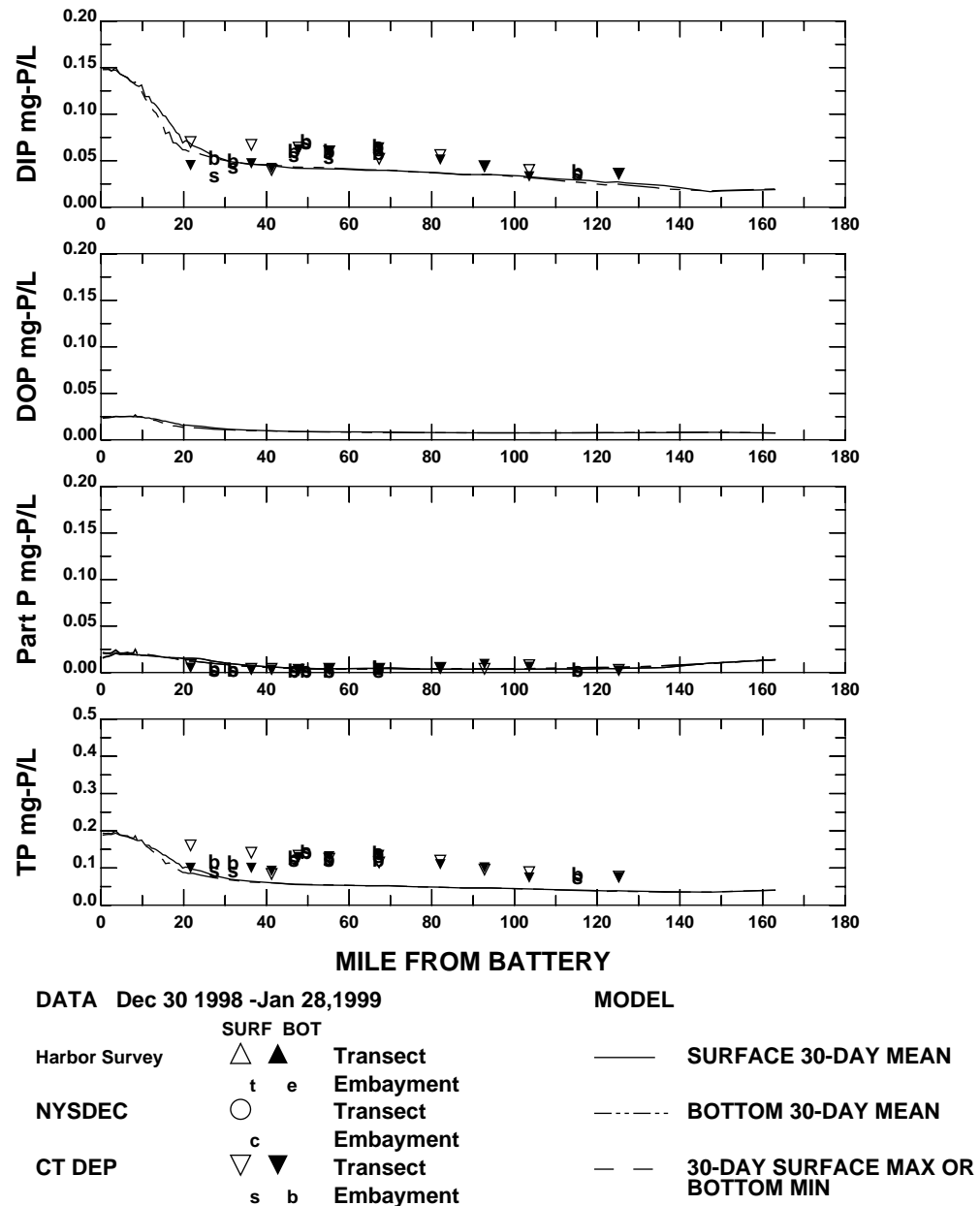
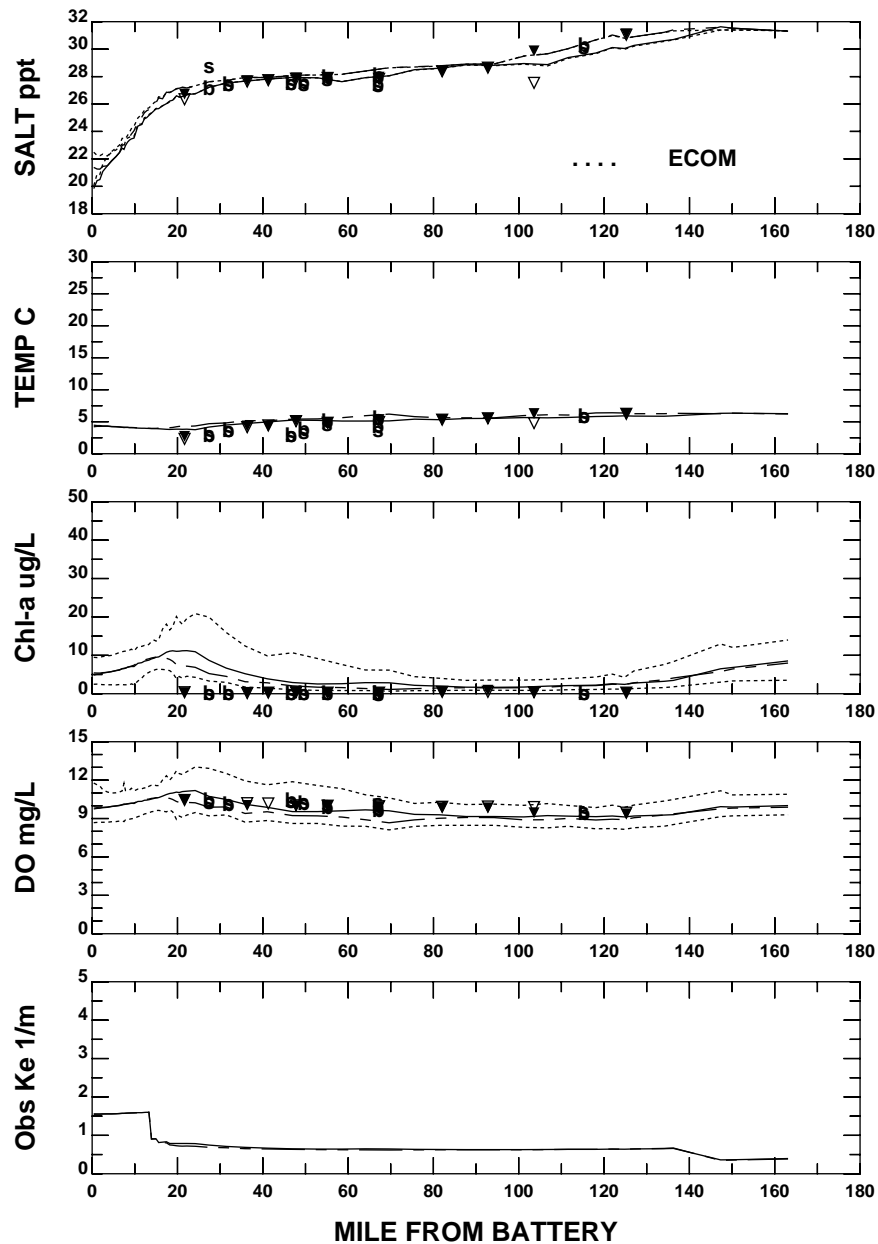
# EAST RIVER AND LONG ISLAND SOUND



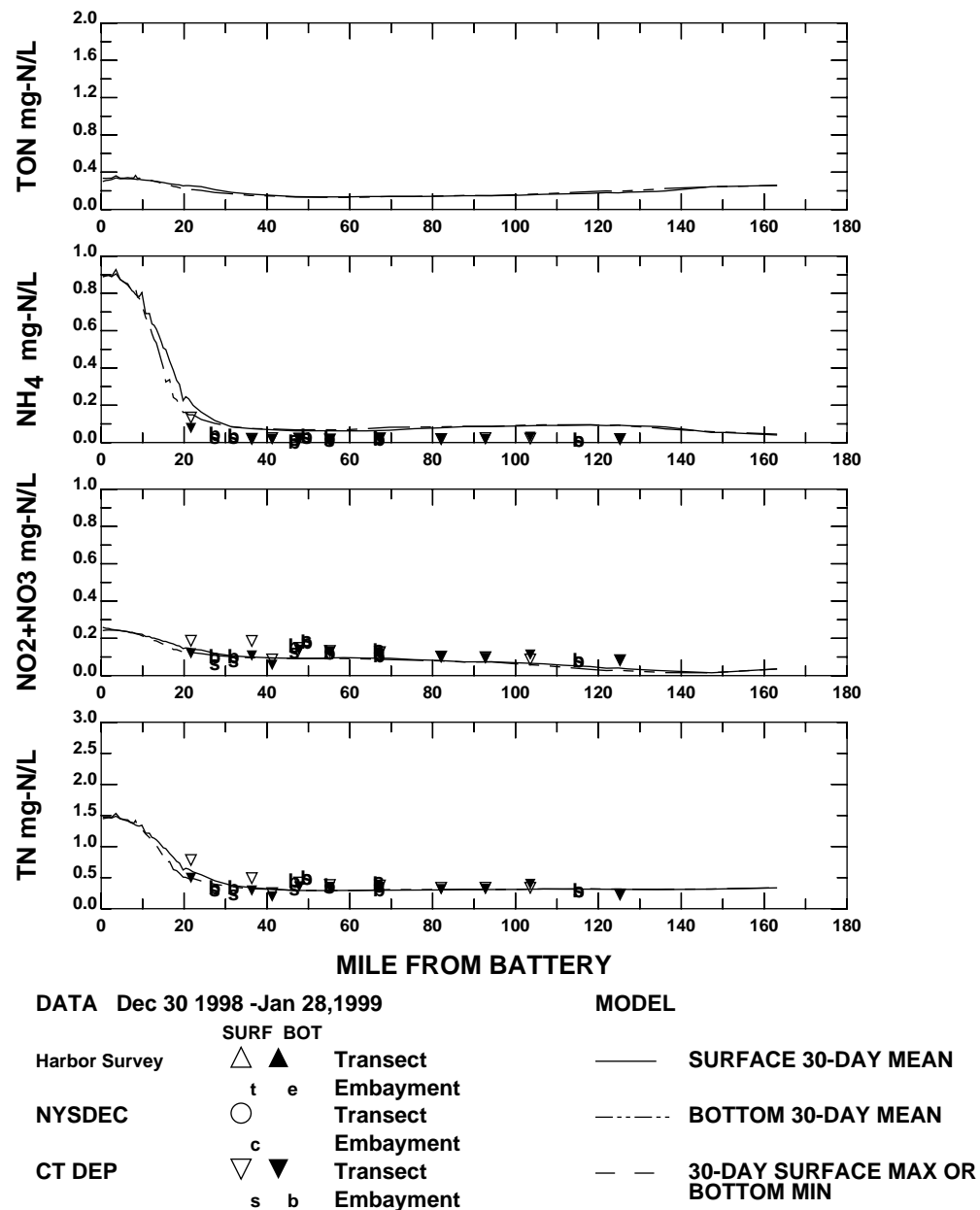
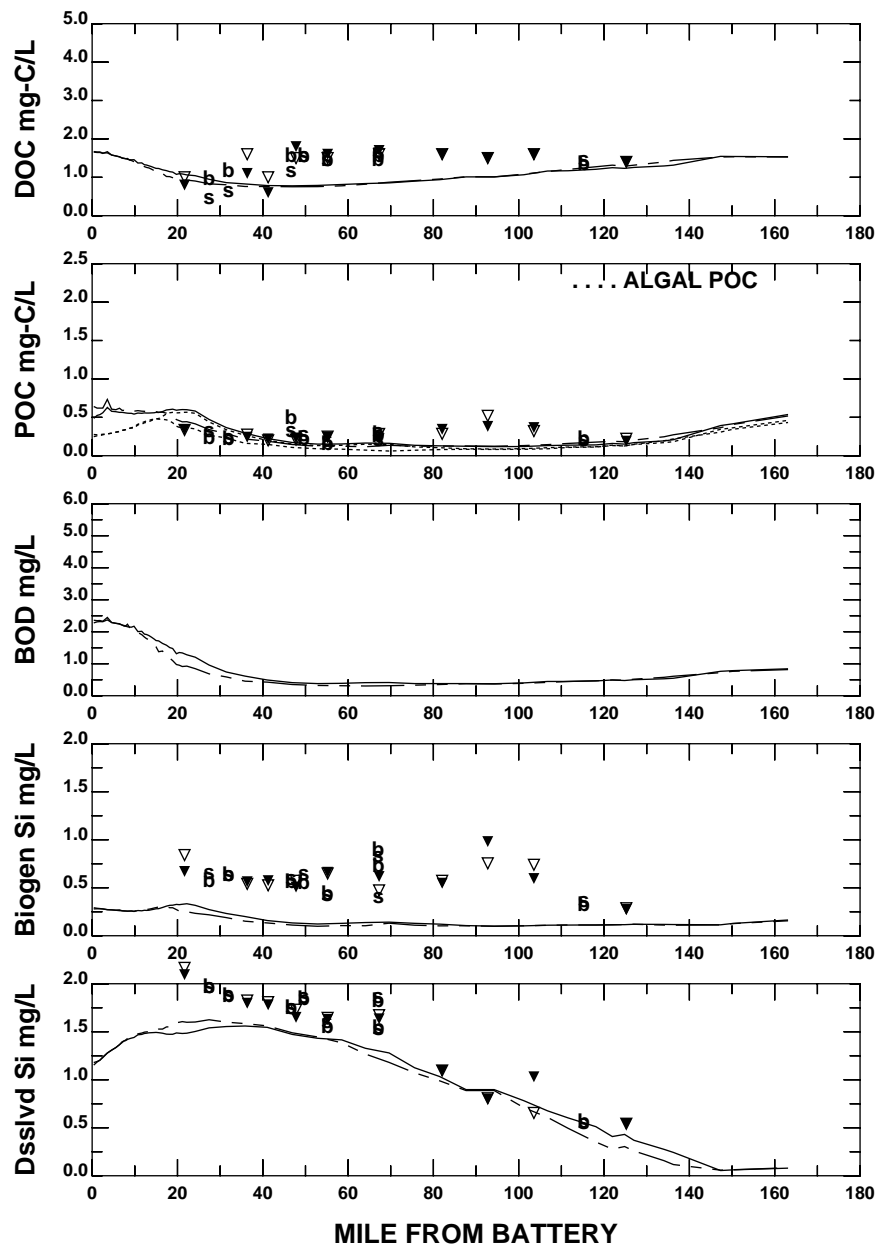
### EAST RIVER AND LONG ISLAND SOUND



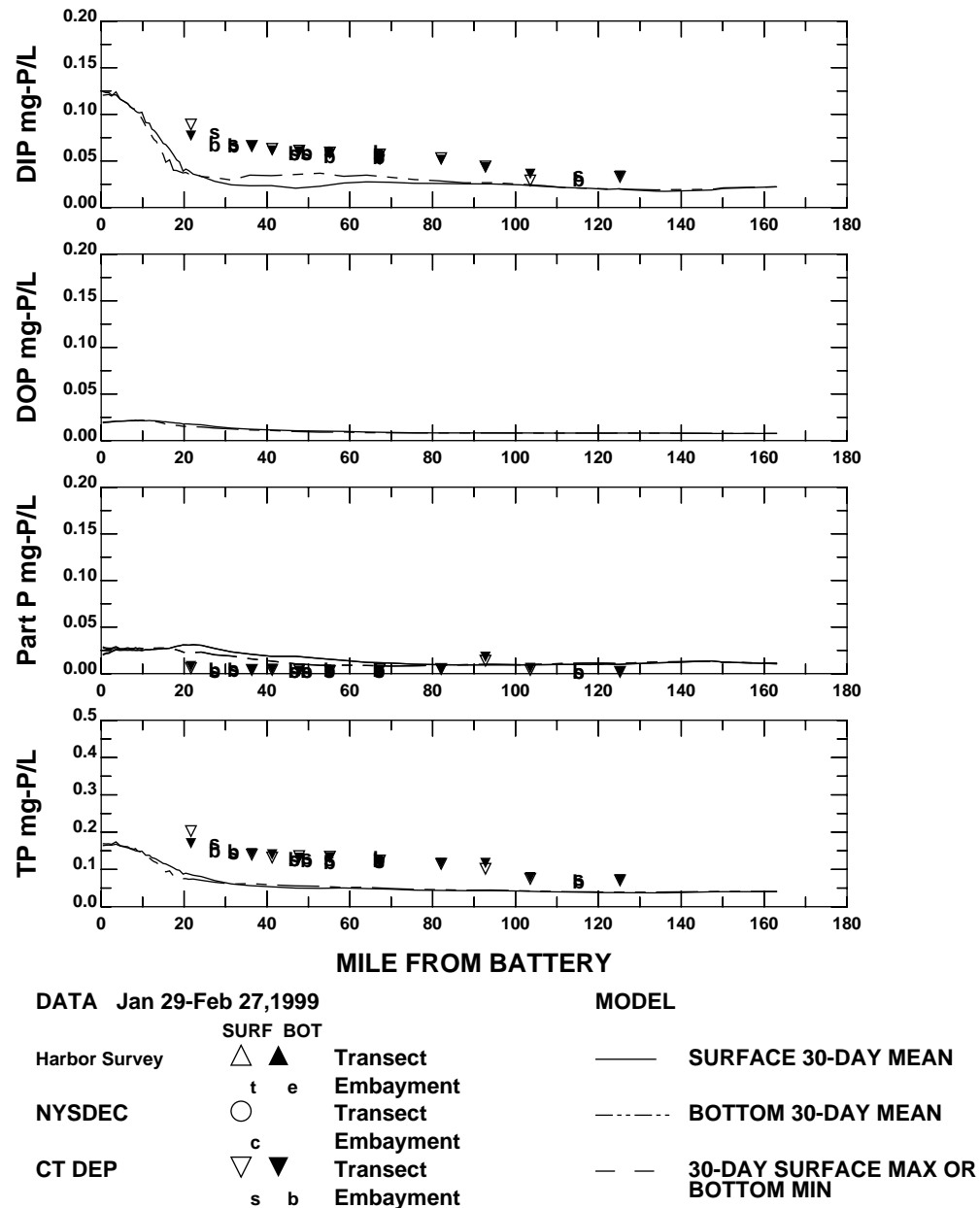
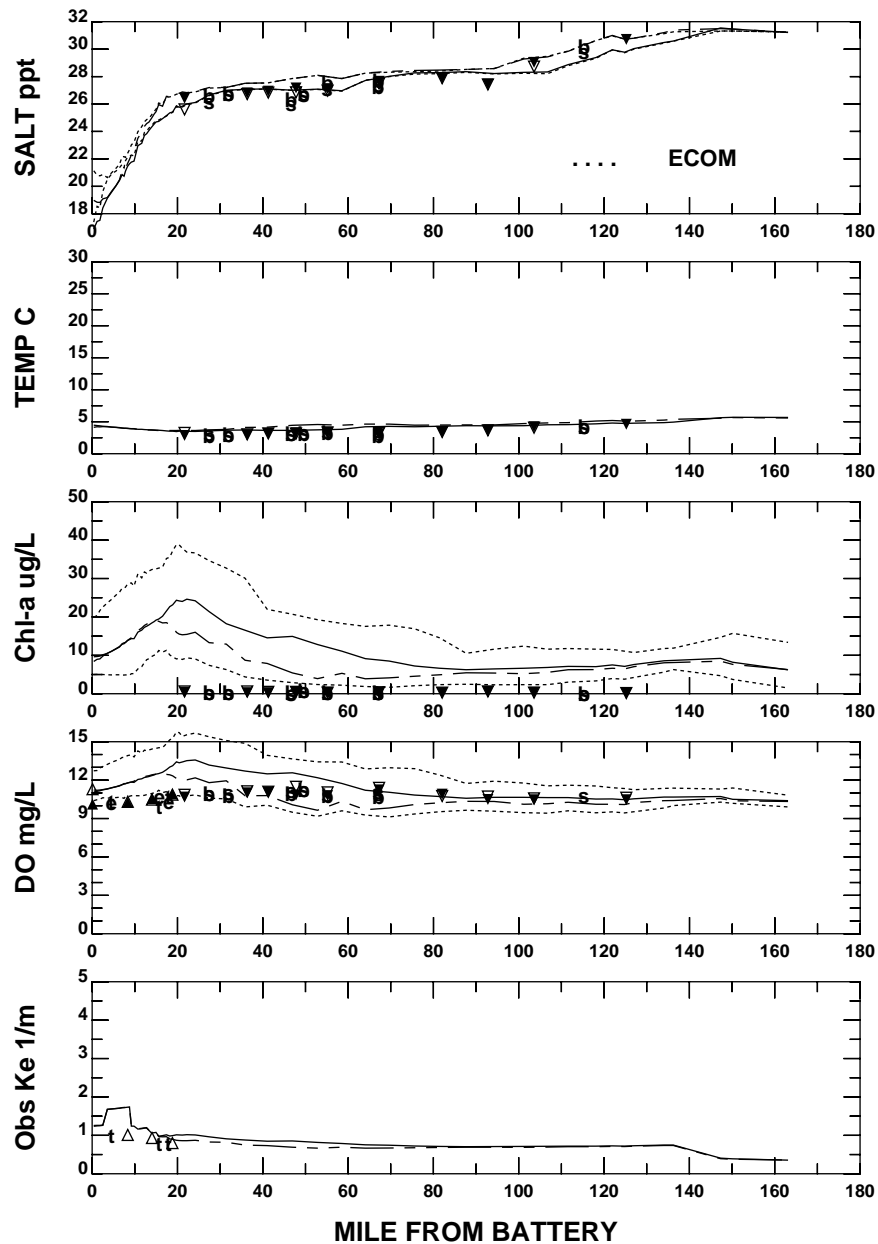
# EAST RIVER AND LONG ISLAND SOUND



**EAST RIVER AND LONG ISLAND SOUND**

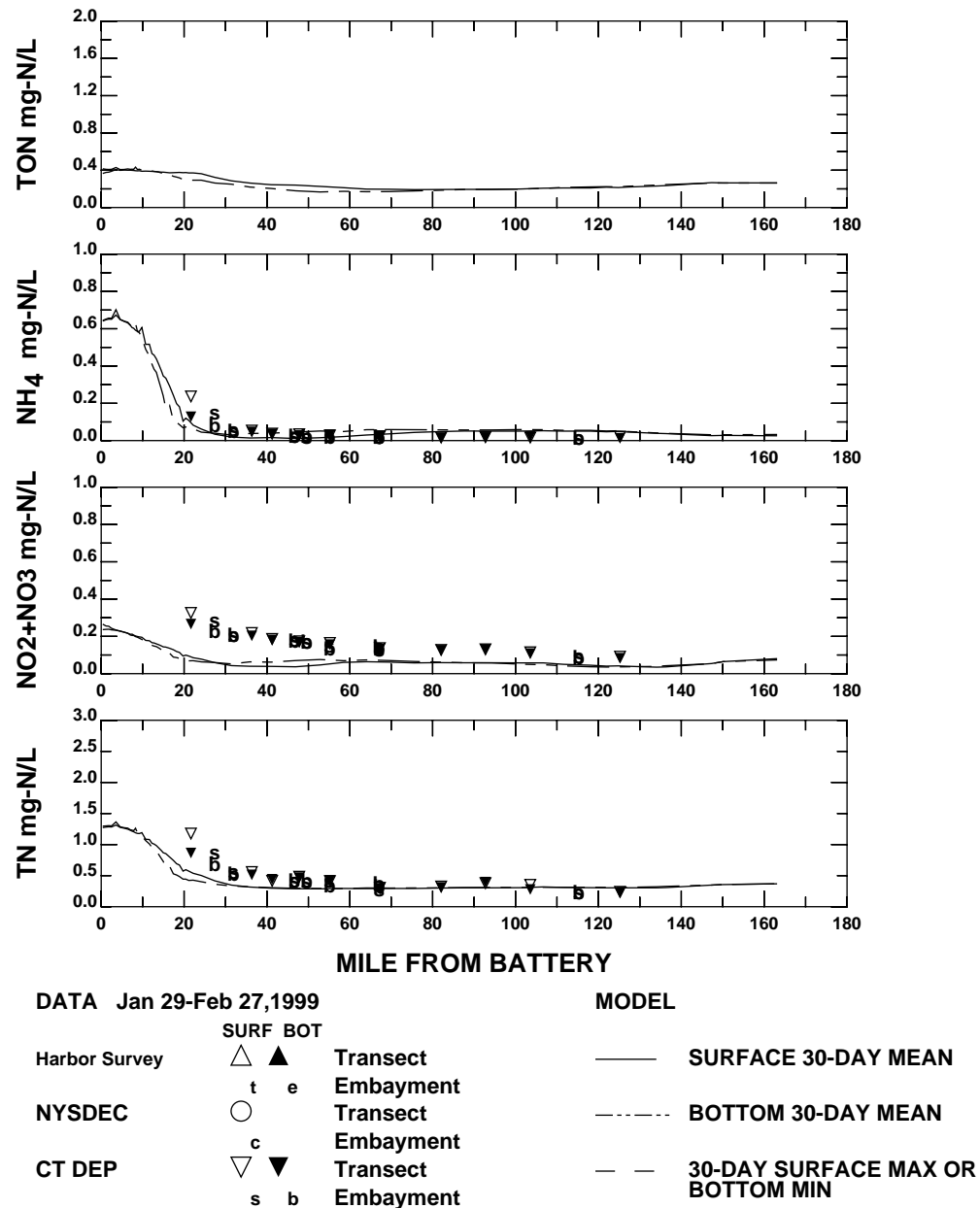
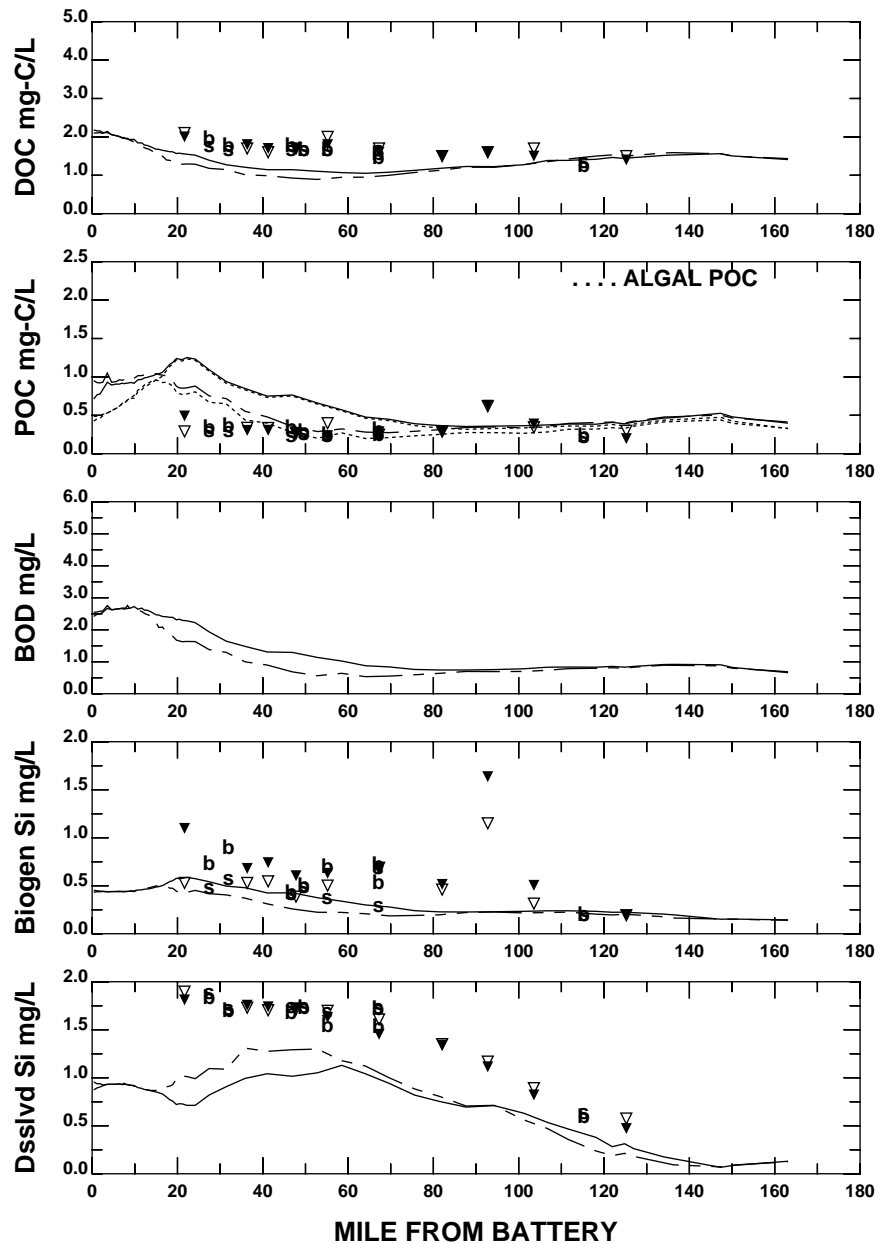


# EAST RIVER AND LONG ISLAND SOUND

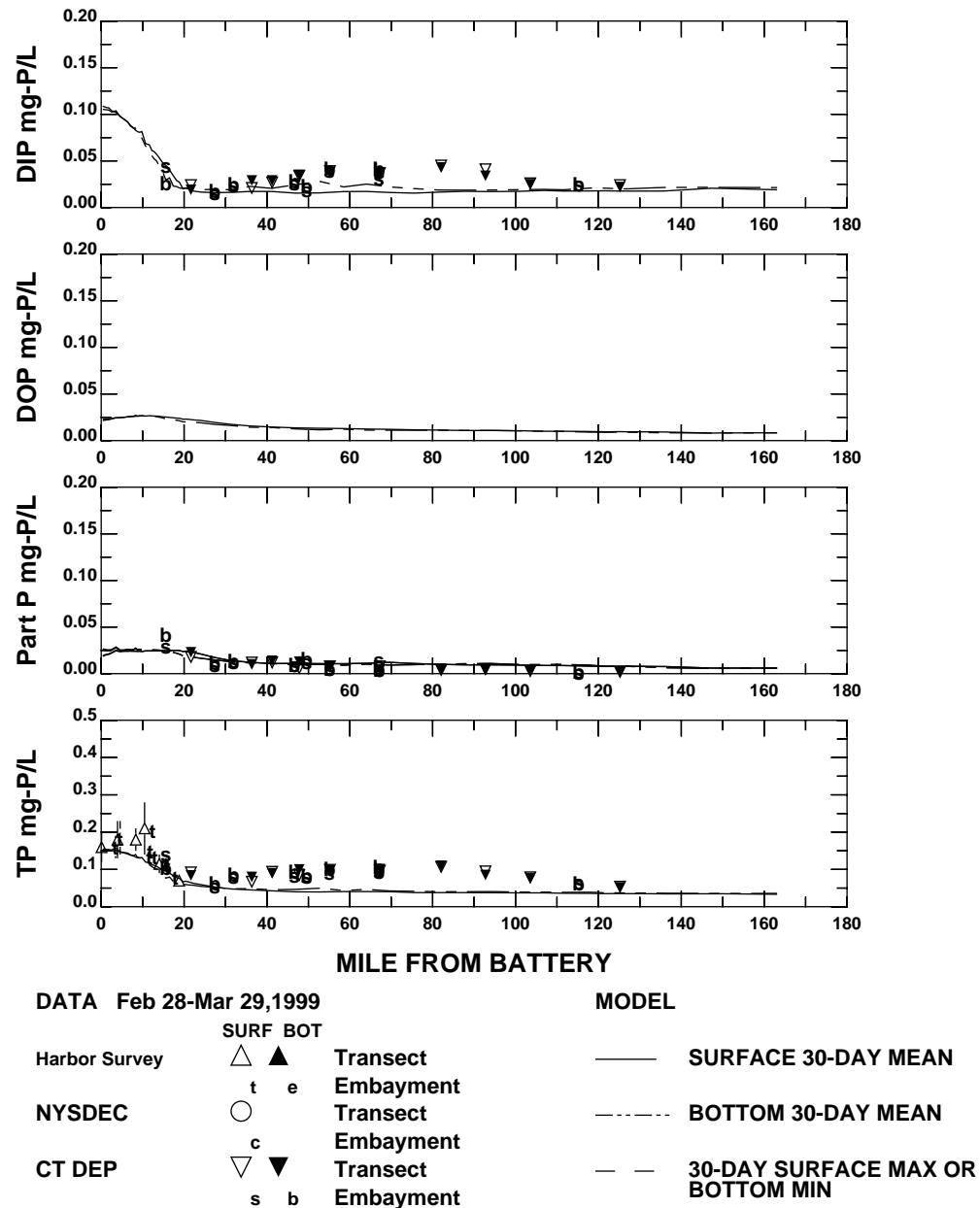
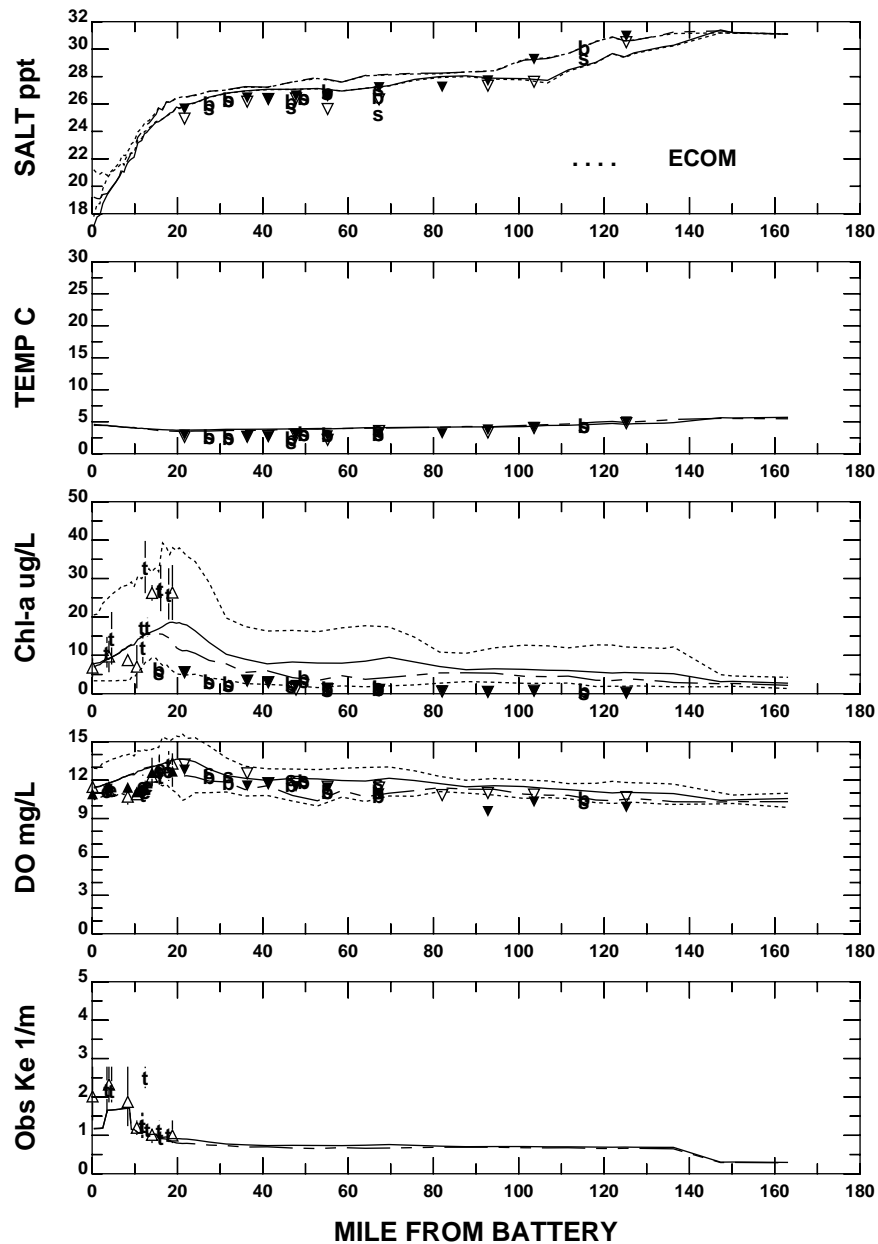


### EAST RIVER AND LONG ISLAND SOUND

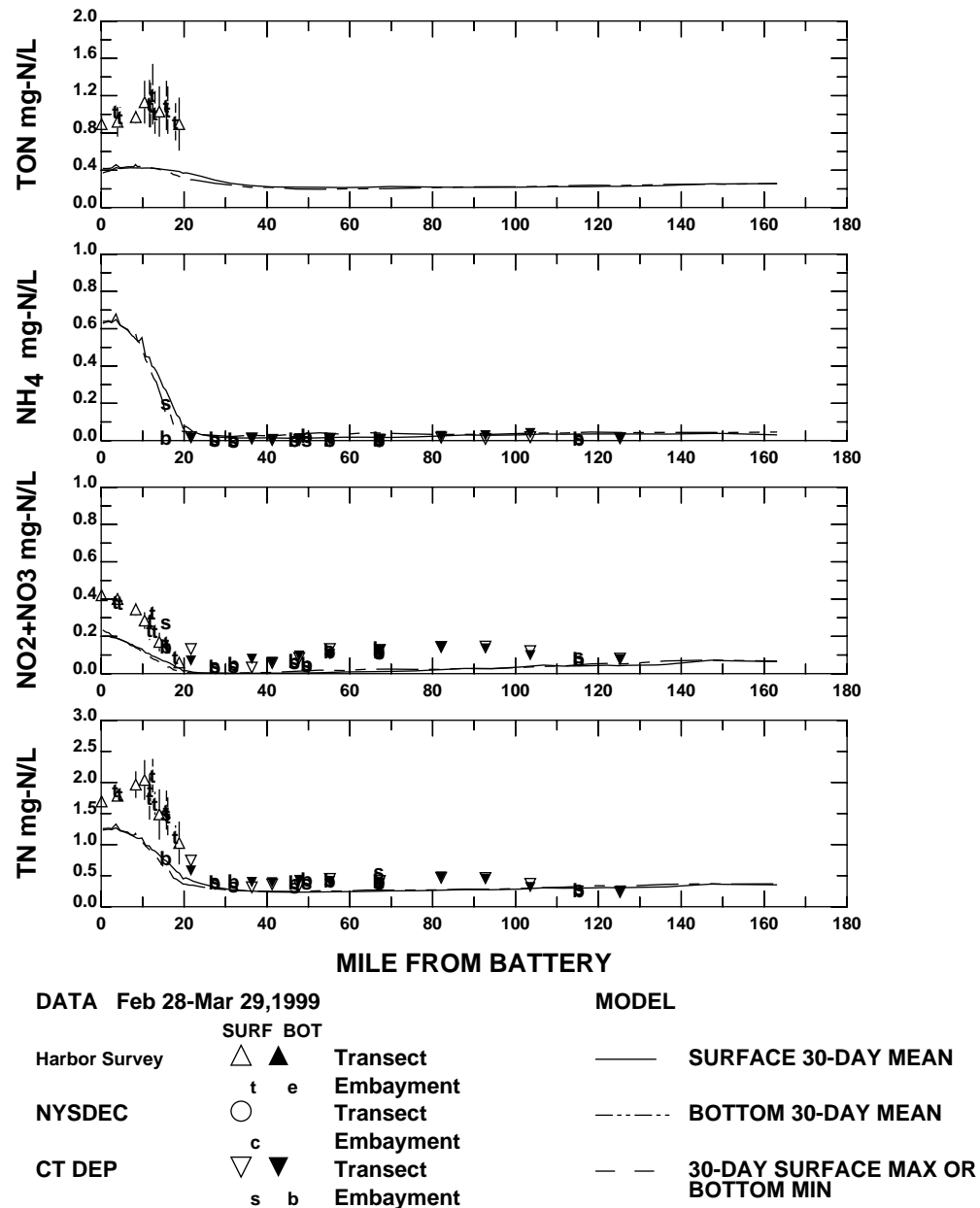
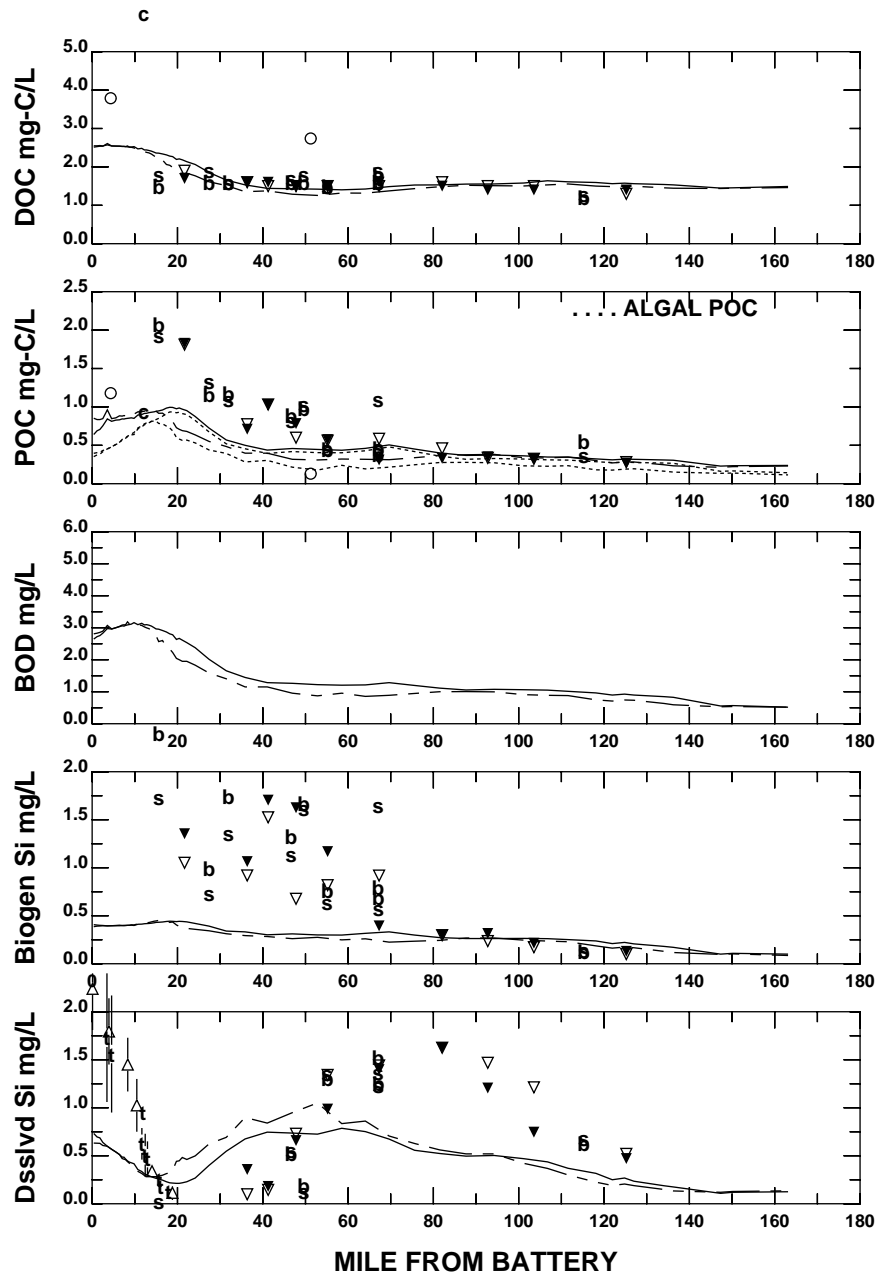




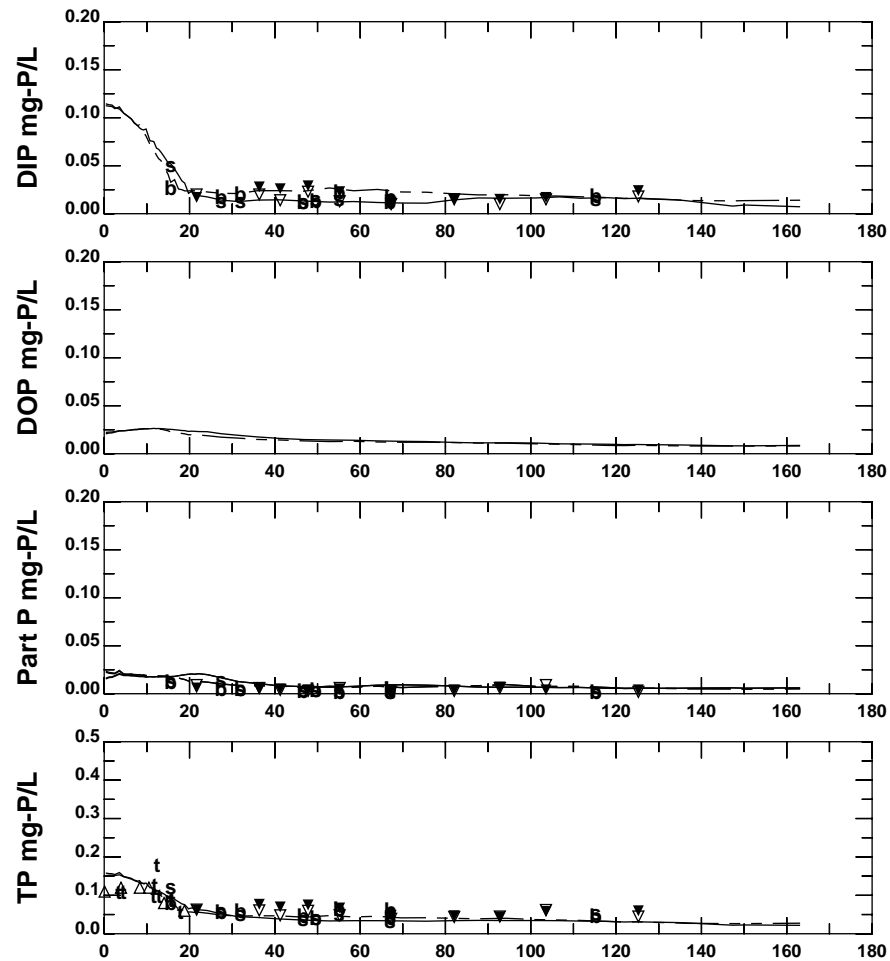
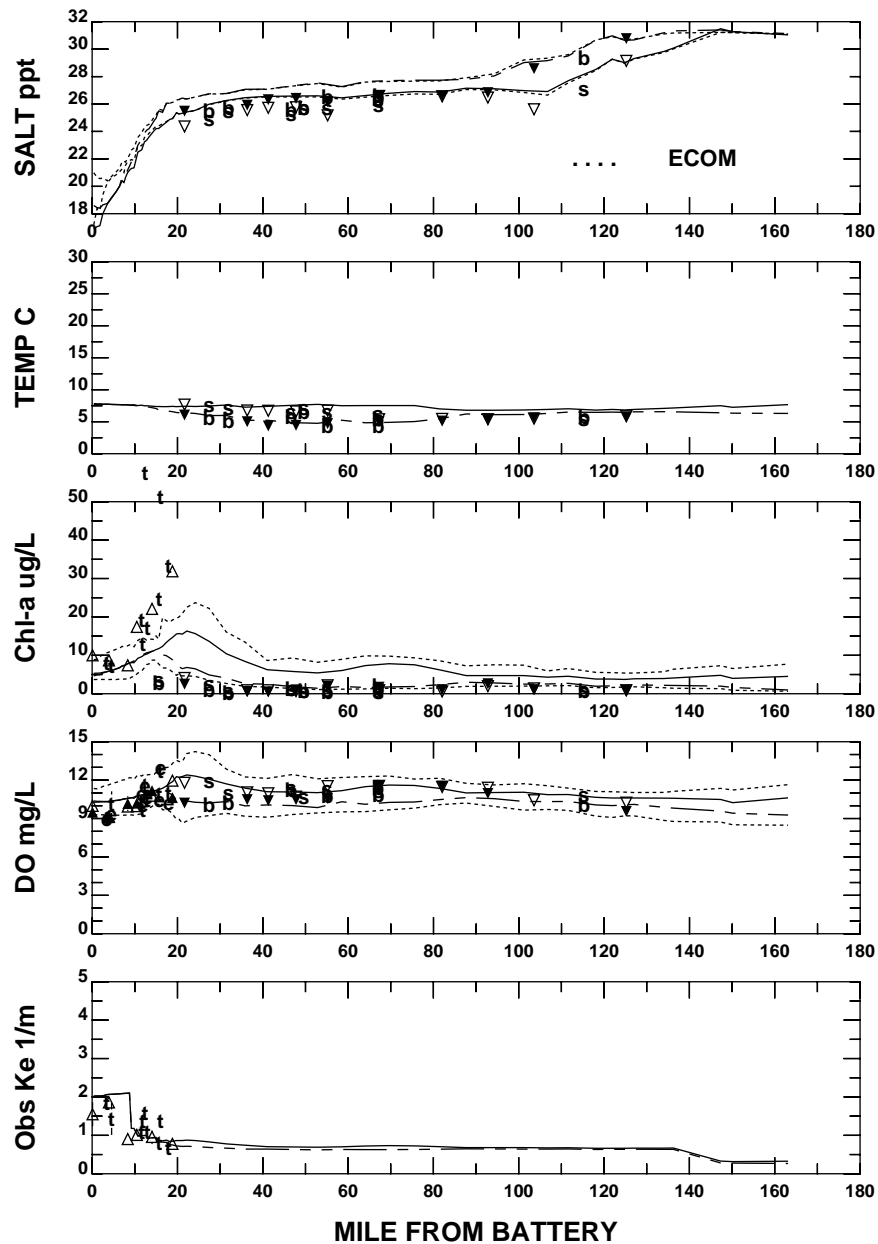
# EAST RIVER AND LONG ISLAND SOUND



**EAST RIVER AND LONG ISLAND SOUND**



# EAST RIVER AND LONG ISLAND SOUND



DATA Mar 30-Apr 28, 1999

MODEL

SURF BOT

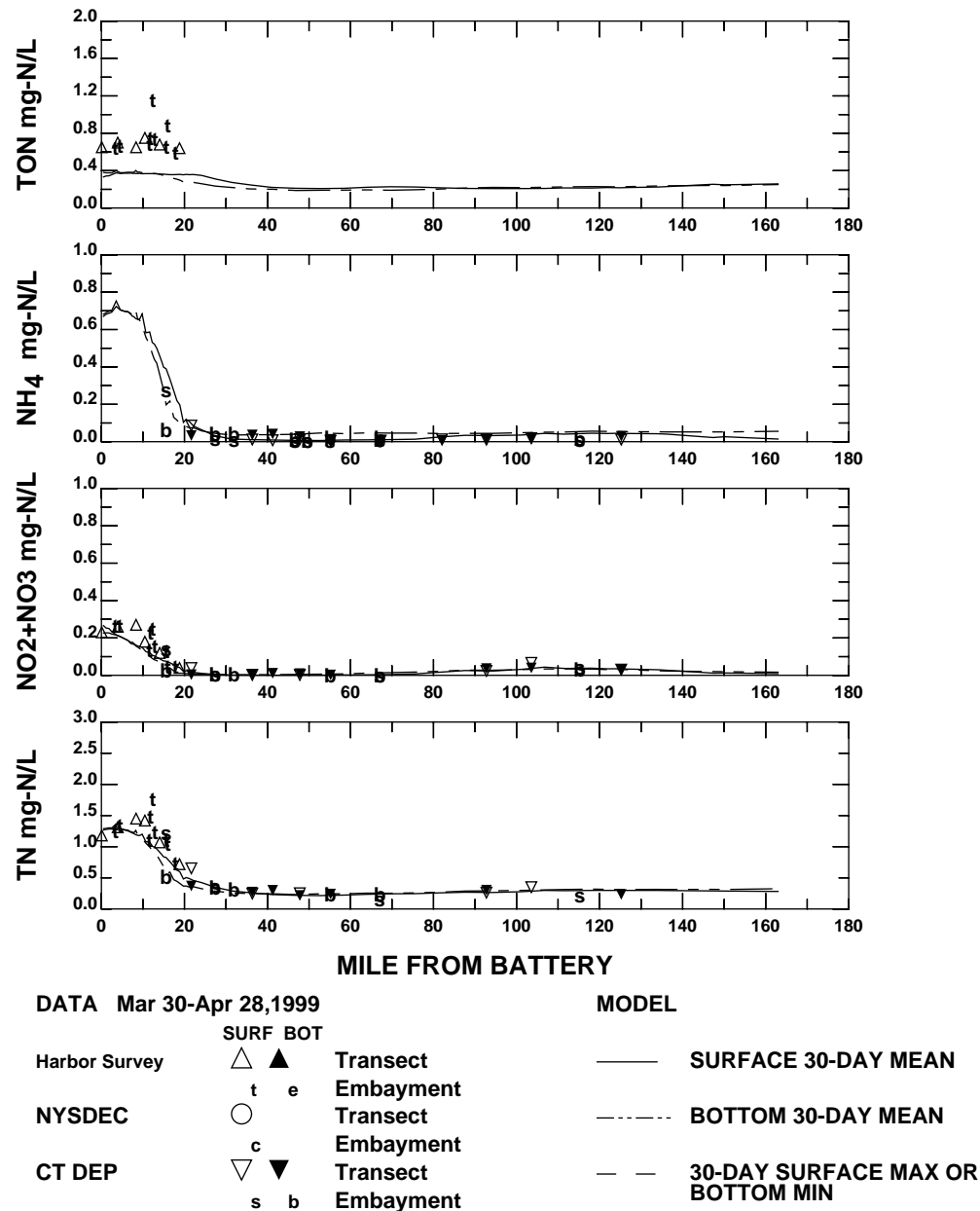
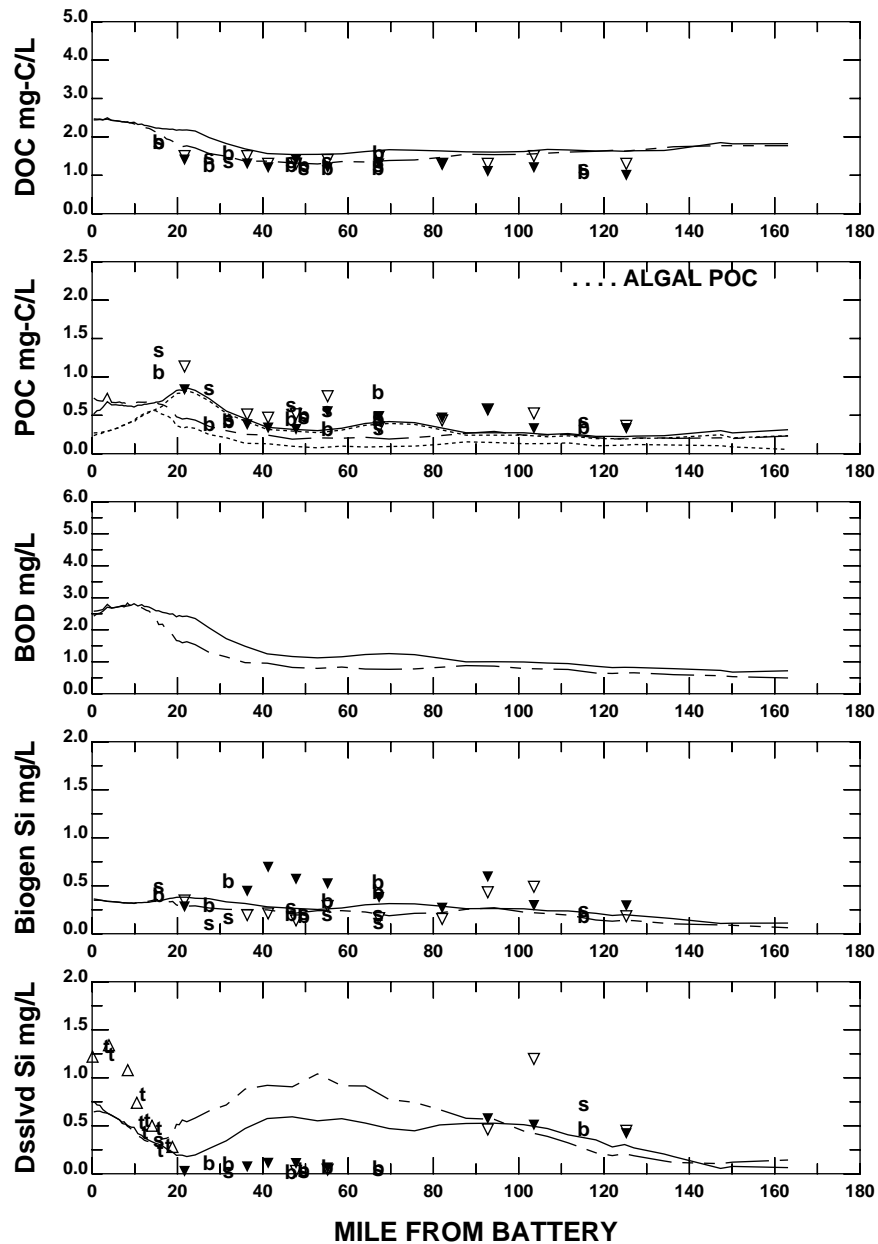
Harbor Survey  $\triangle$   $\blacktriangle$  Transect  
 t e Embayment

NYSDEC  $\circ$   $\bullet$  Transect  
 c Embayment

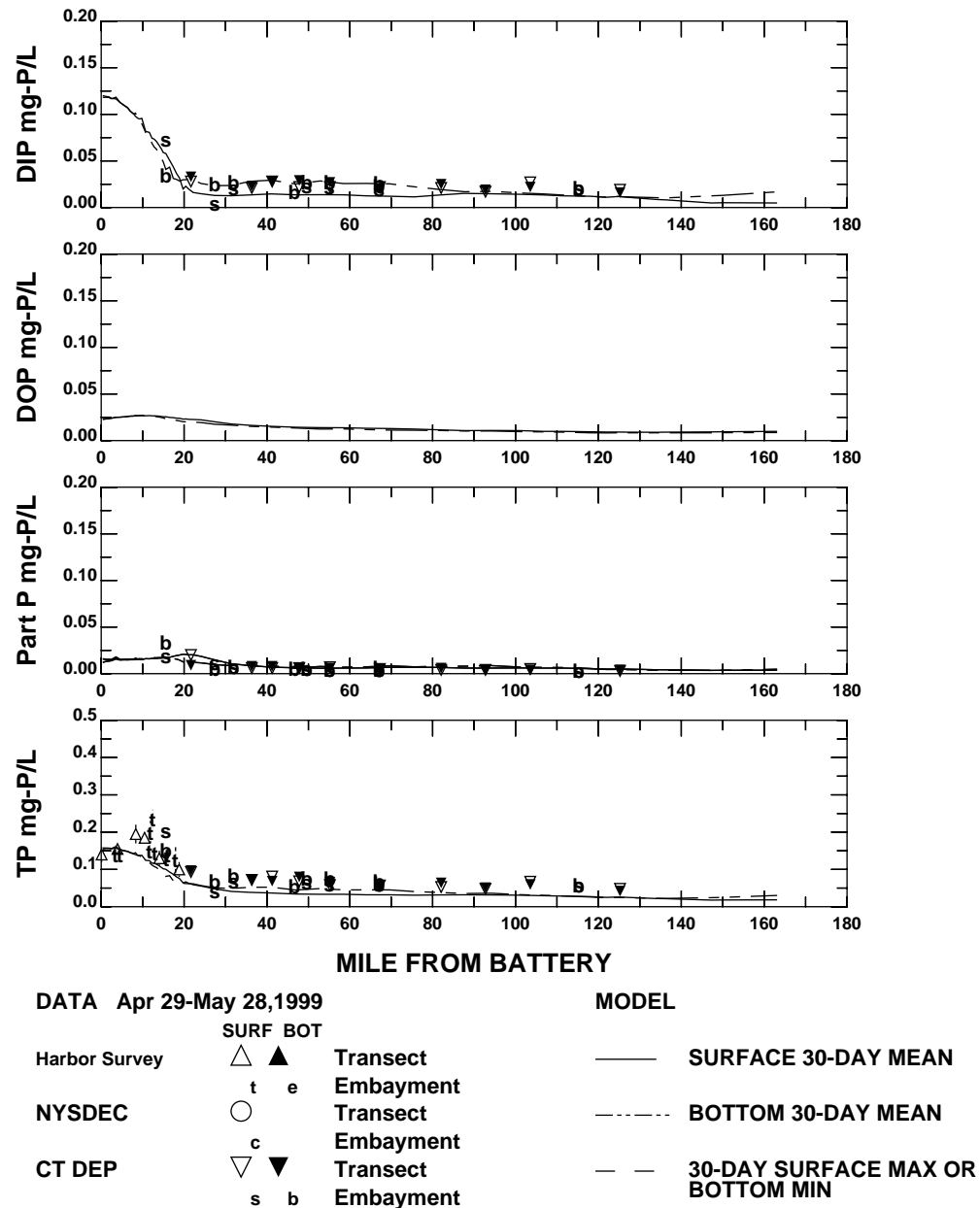
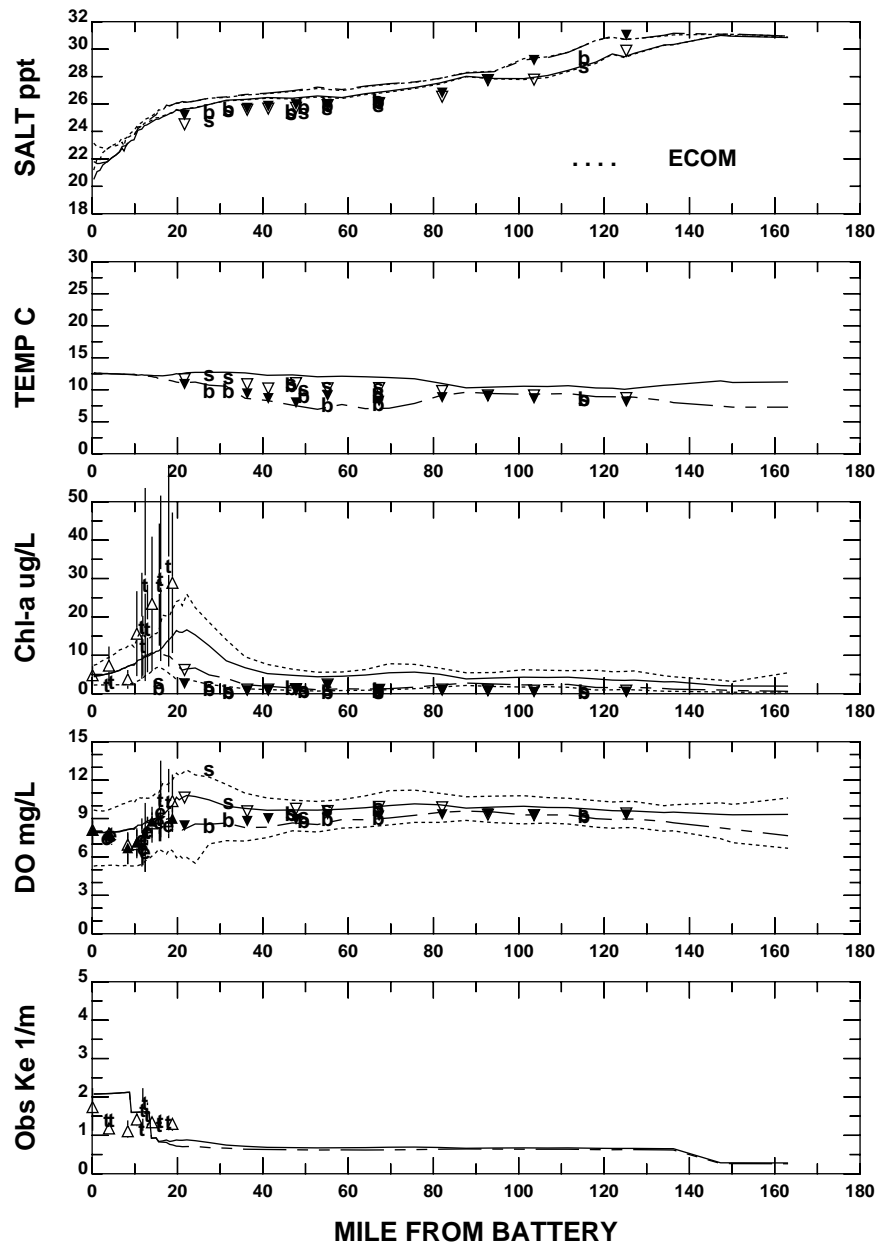
CT DEP  $\nabla$   $\blacktriangledown$  Transect  
 s b Embayment

— SURFACE 30-DAY MEAN  
 - - - - - BOTTOM 30-DAY MEAN  
 - - - - - 30-DAY SURFACE MAX OR  
 BOTTOM MIN

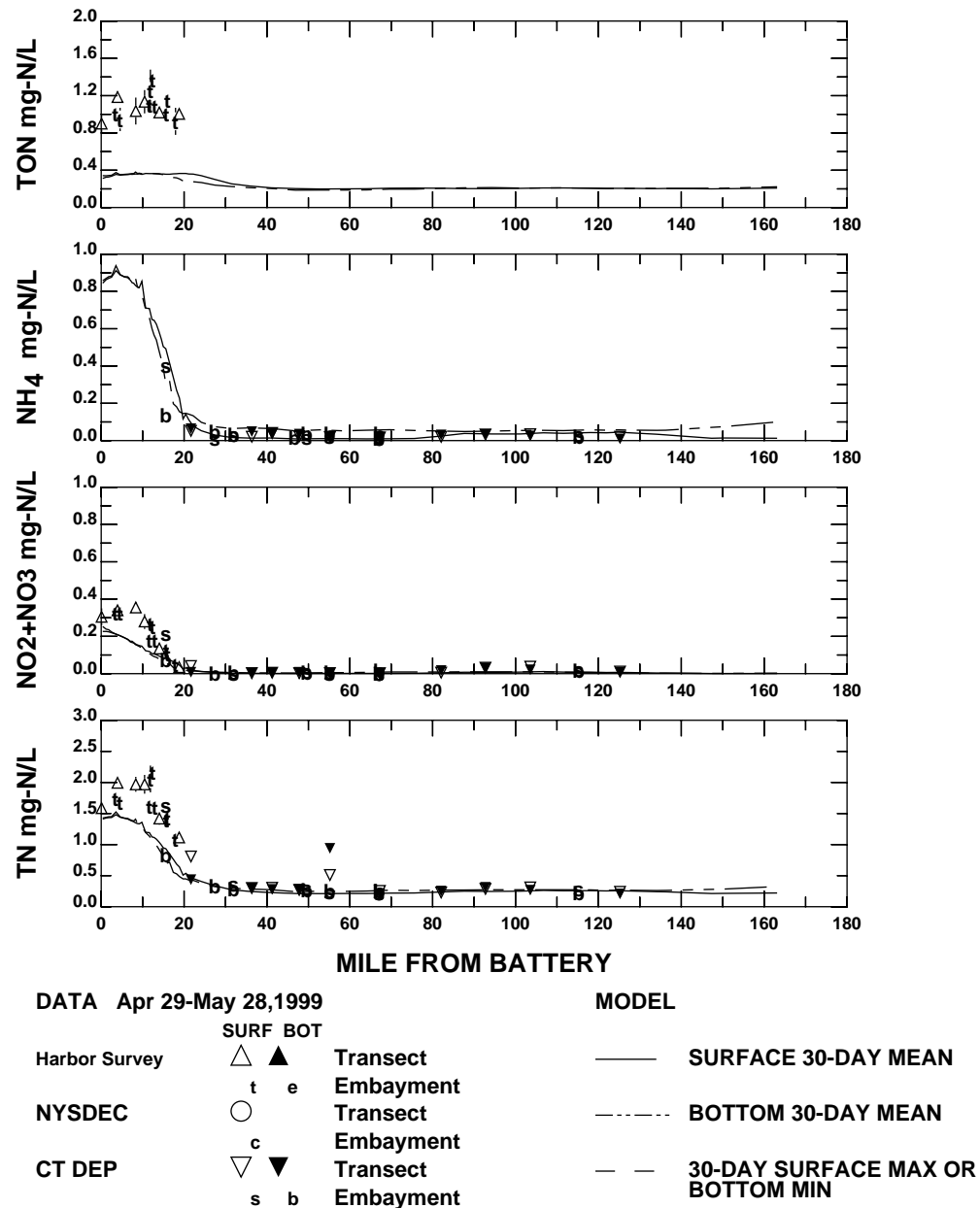
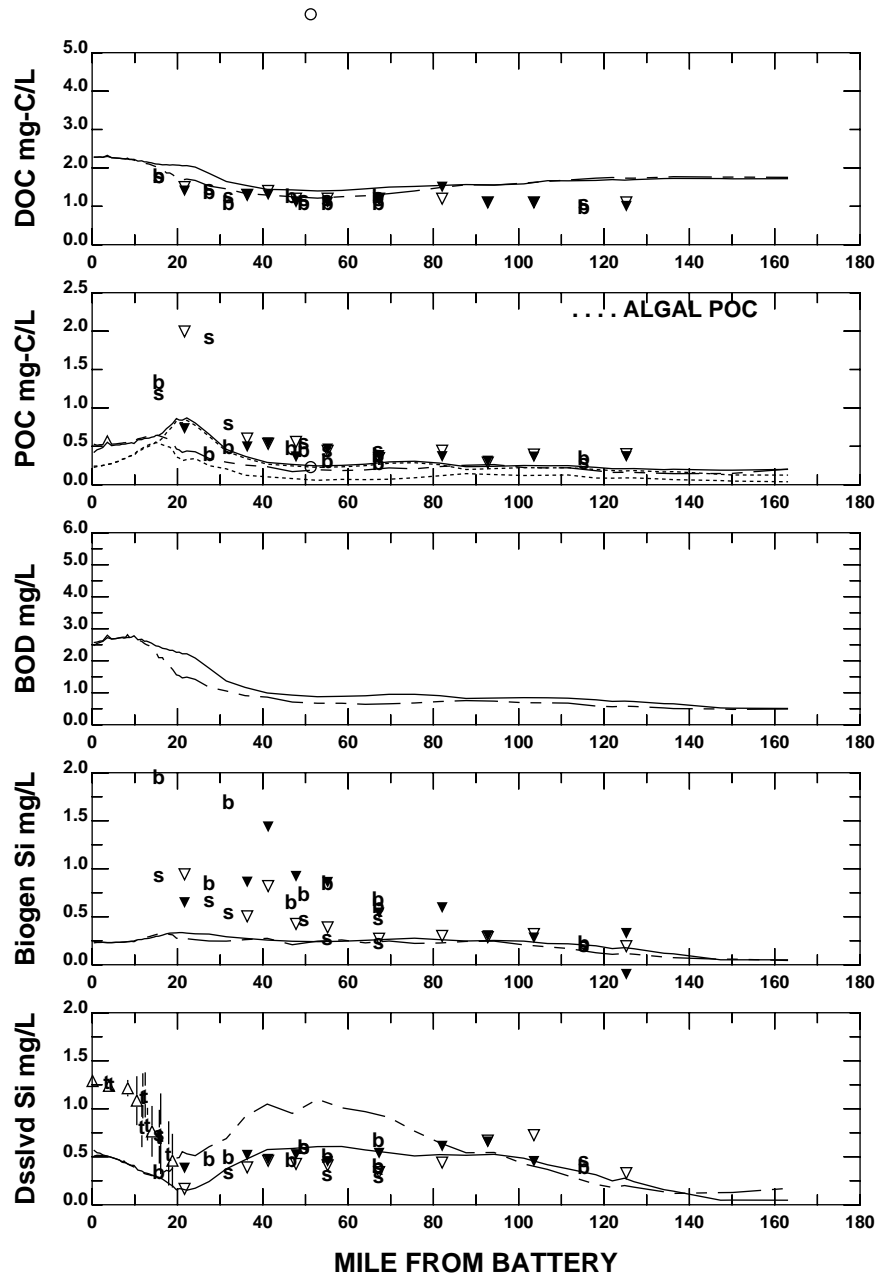
**EAST RIVER AND LONG ISLAND SOUND**



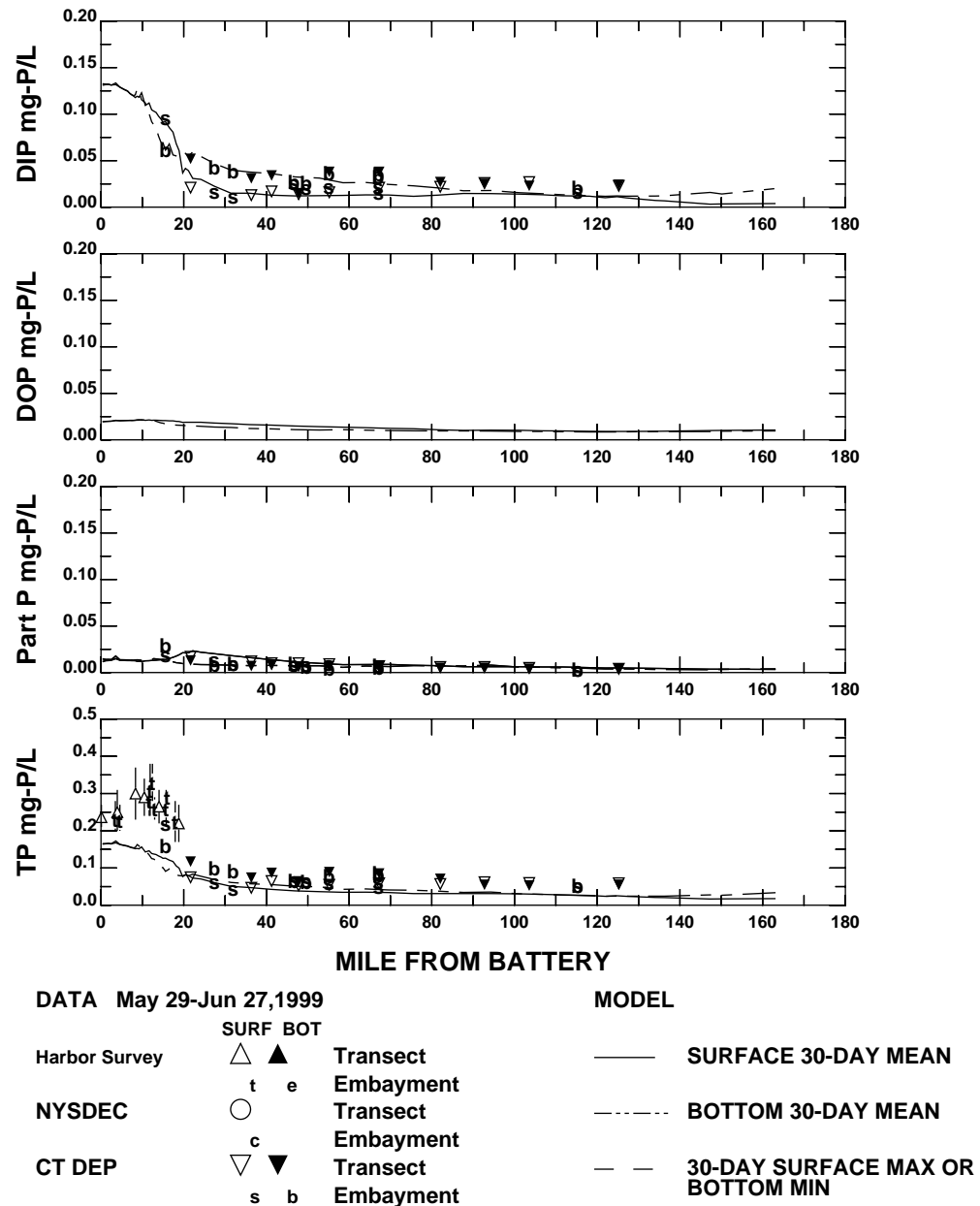
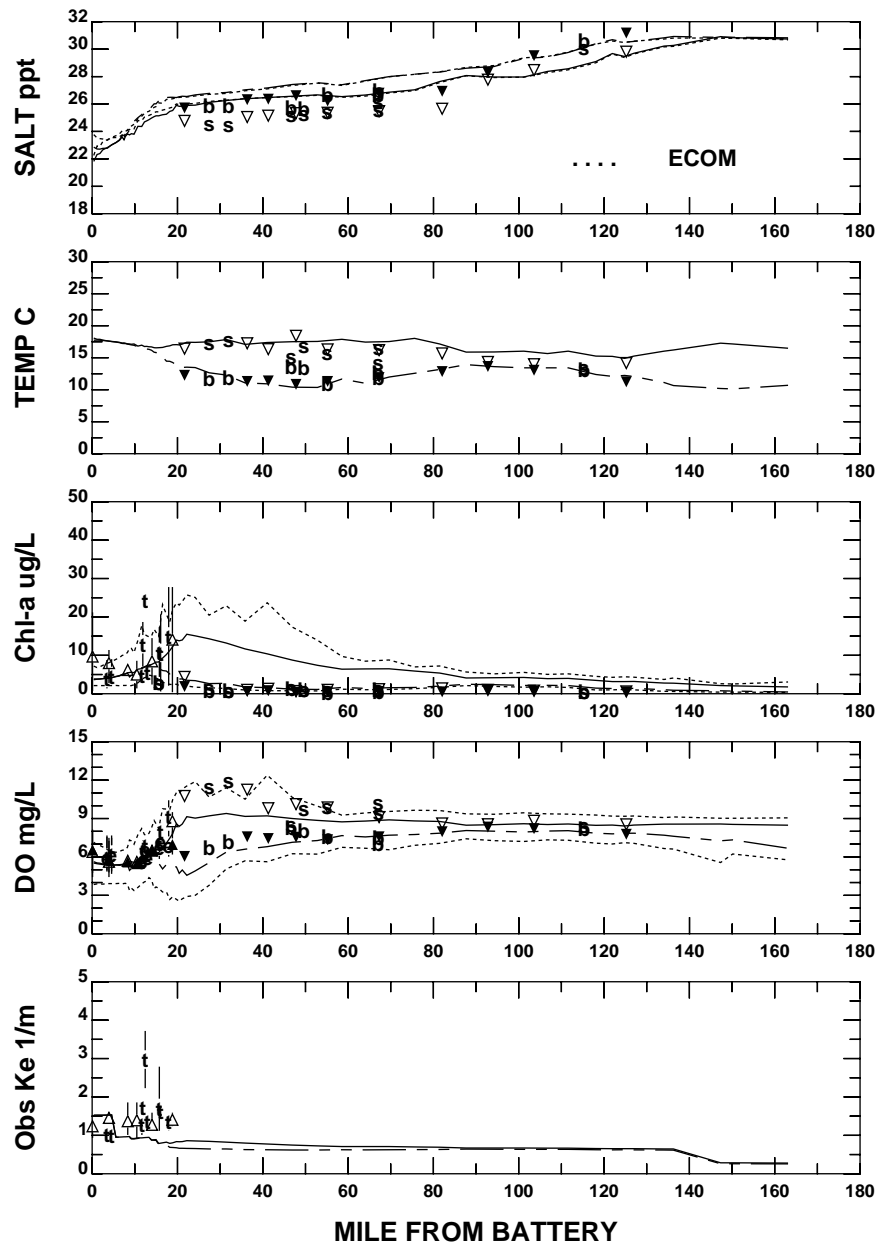
### EAST RIVER AND LONG ISLAND SOUND



**EAST RIVER AND LONG ISLAND SOUND**

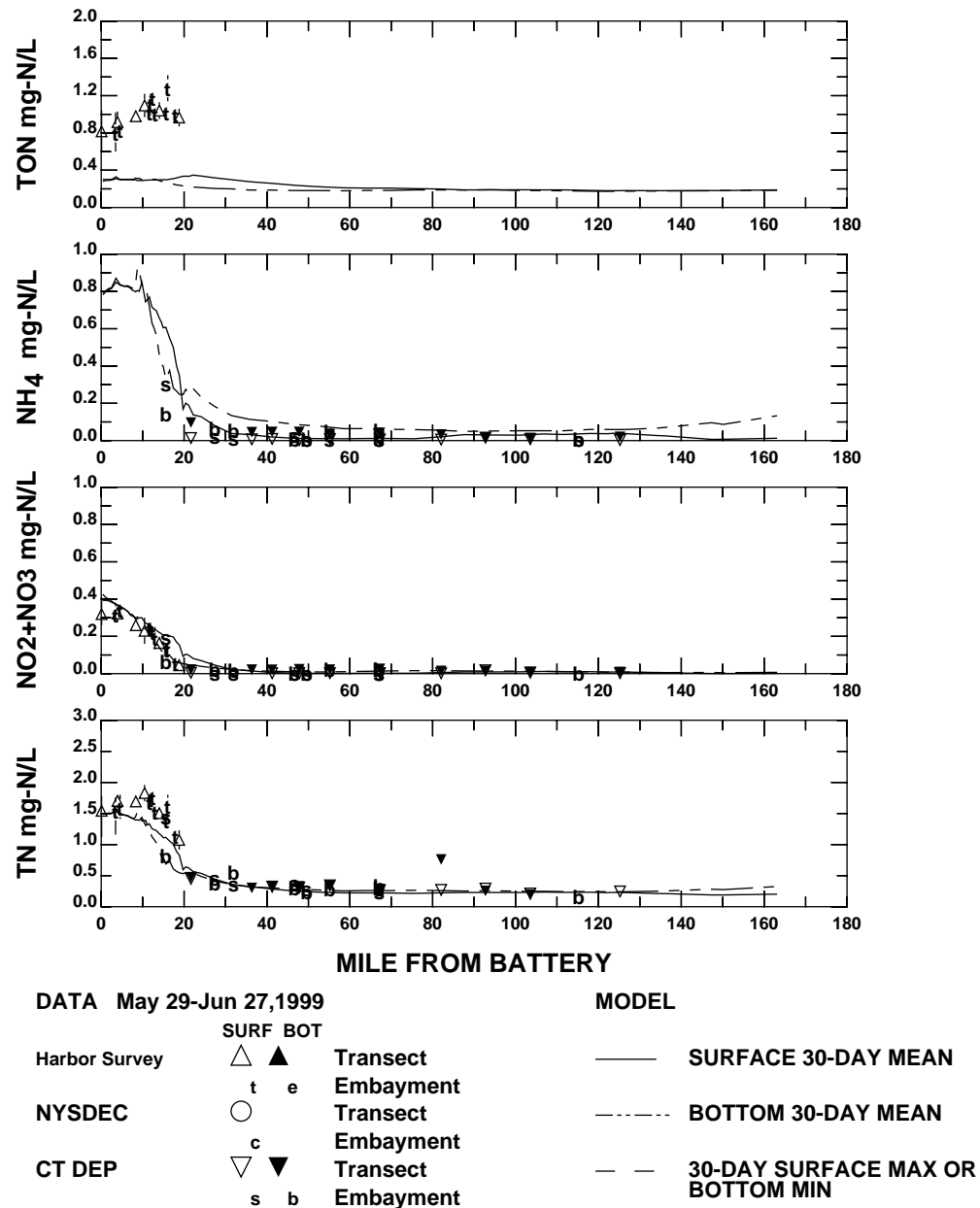
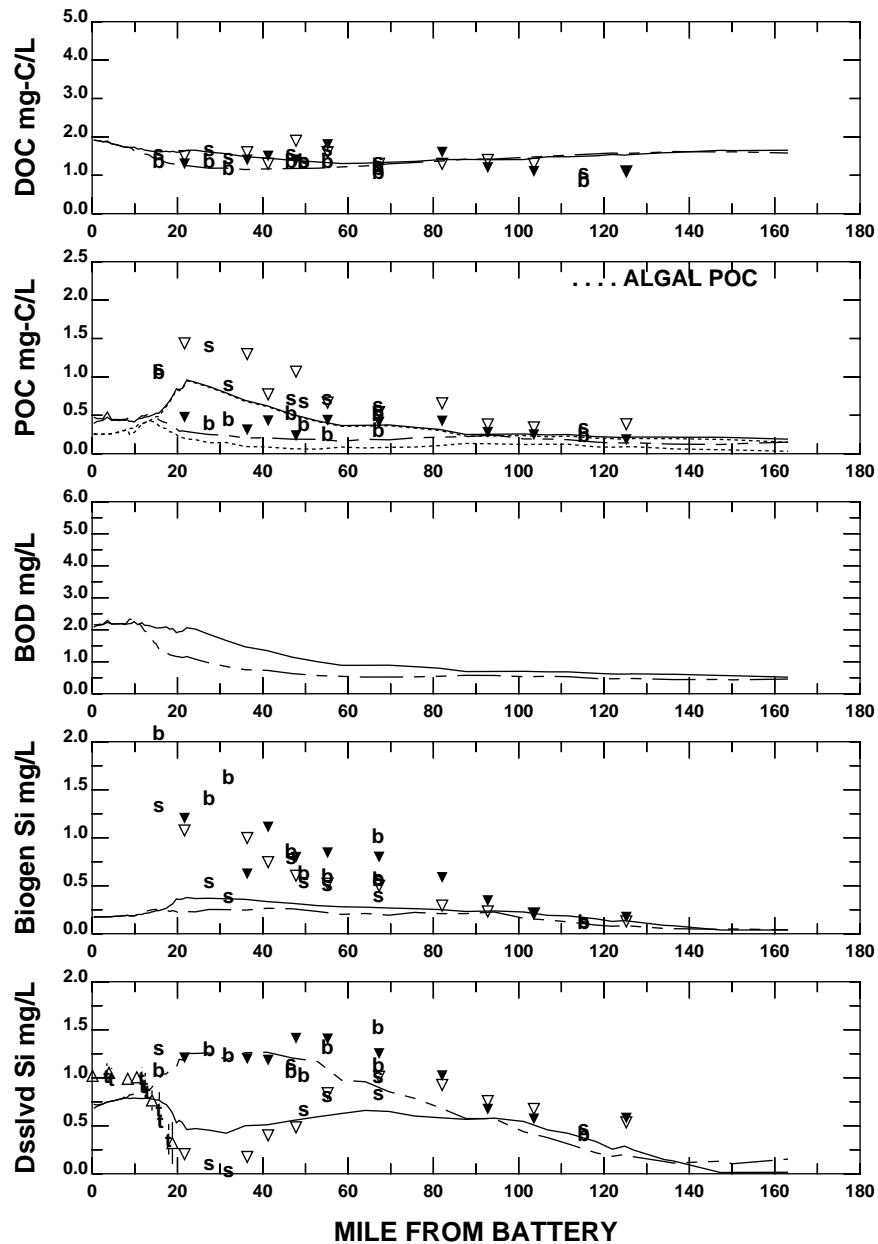


### EAST RIVER AND LONG ISLAND SOUND

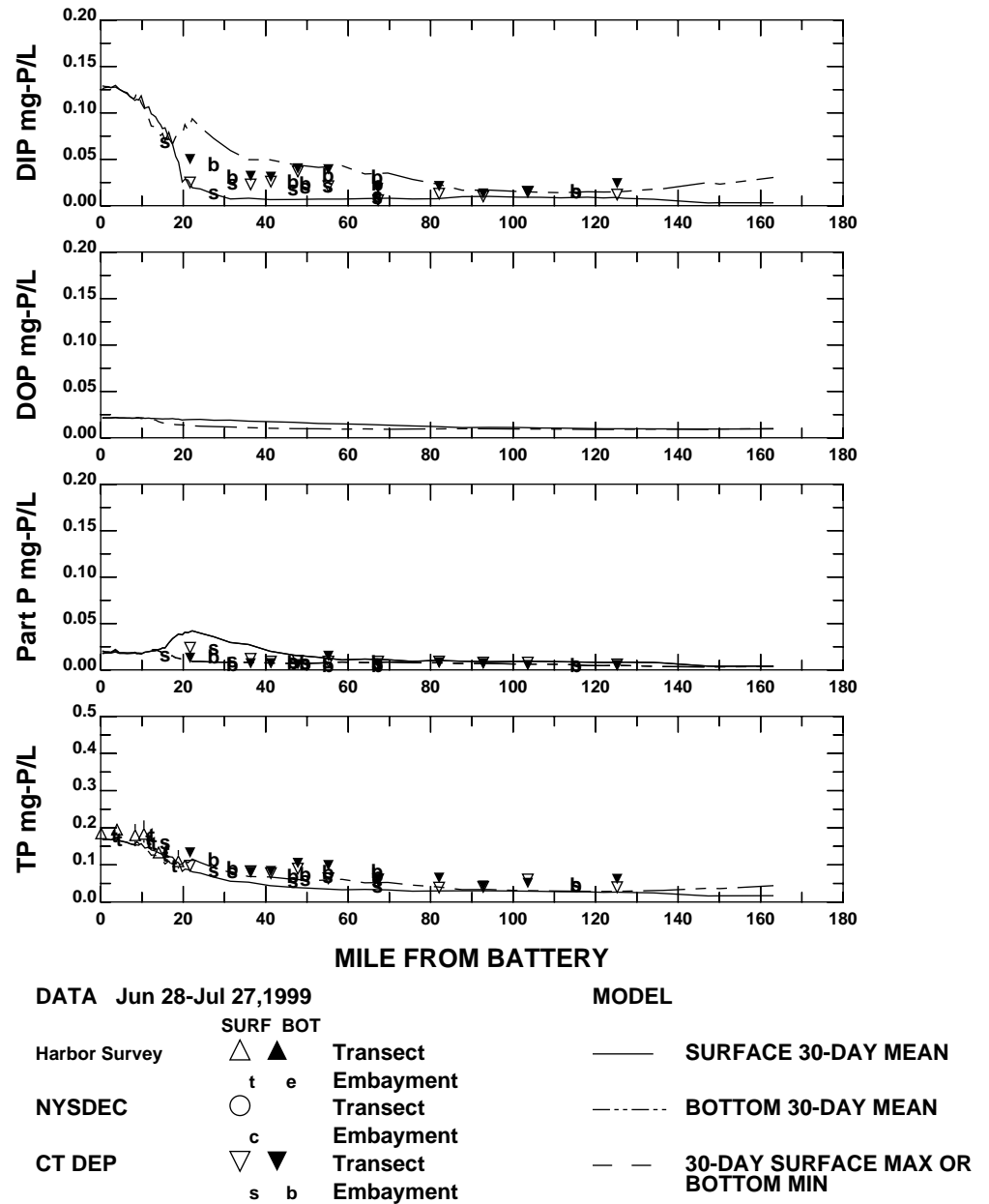
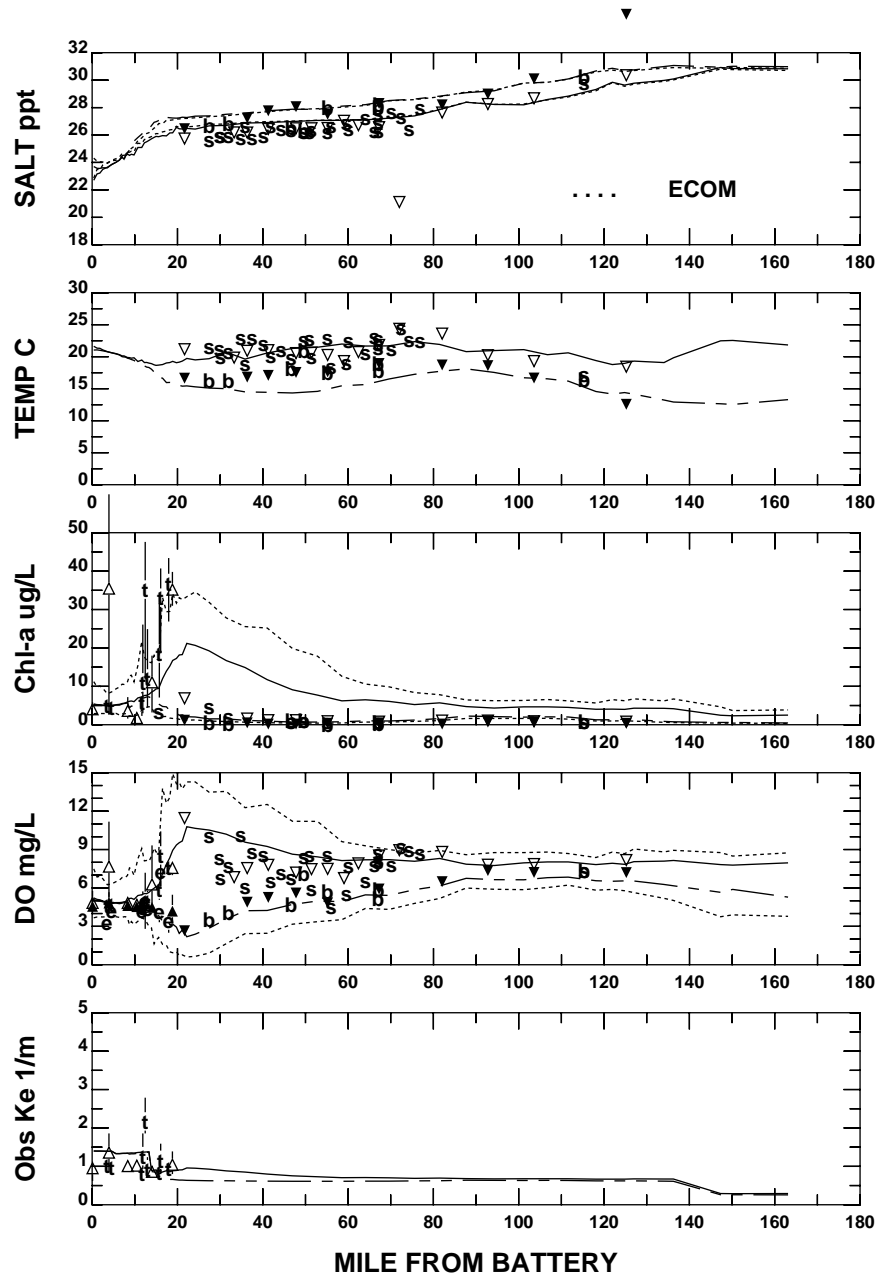


**EAST RIVER AND LONG ISLAND SOUND**

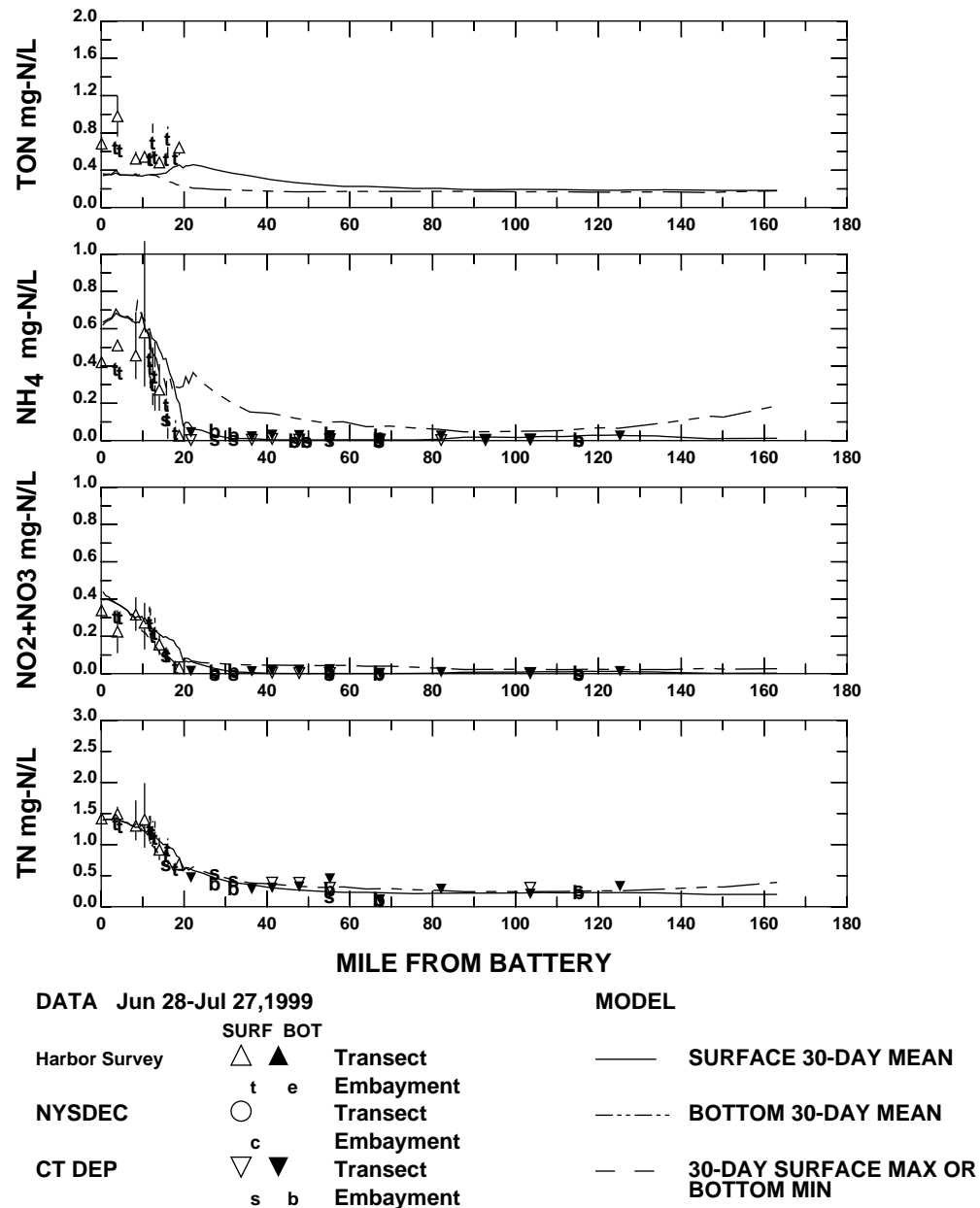
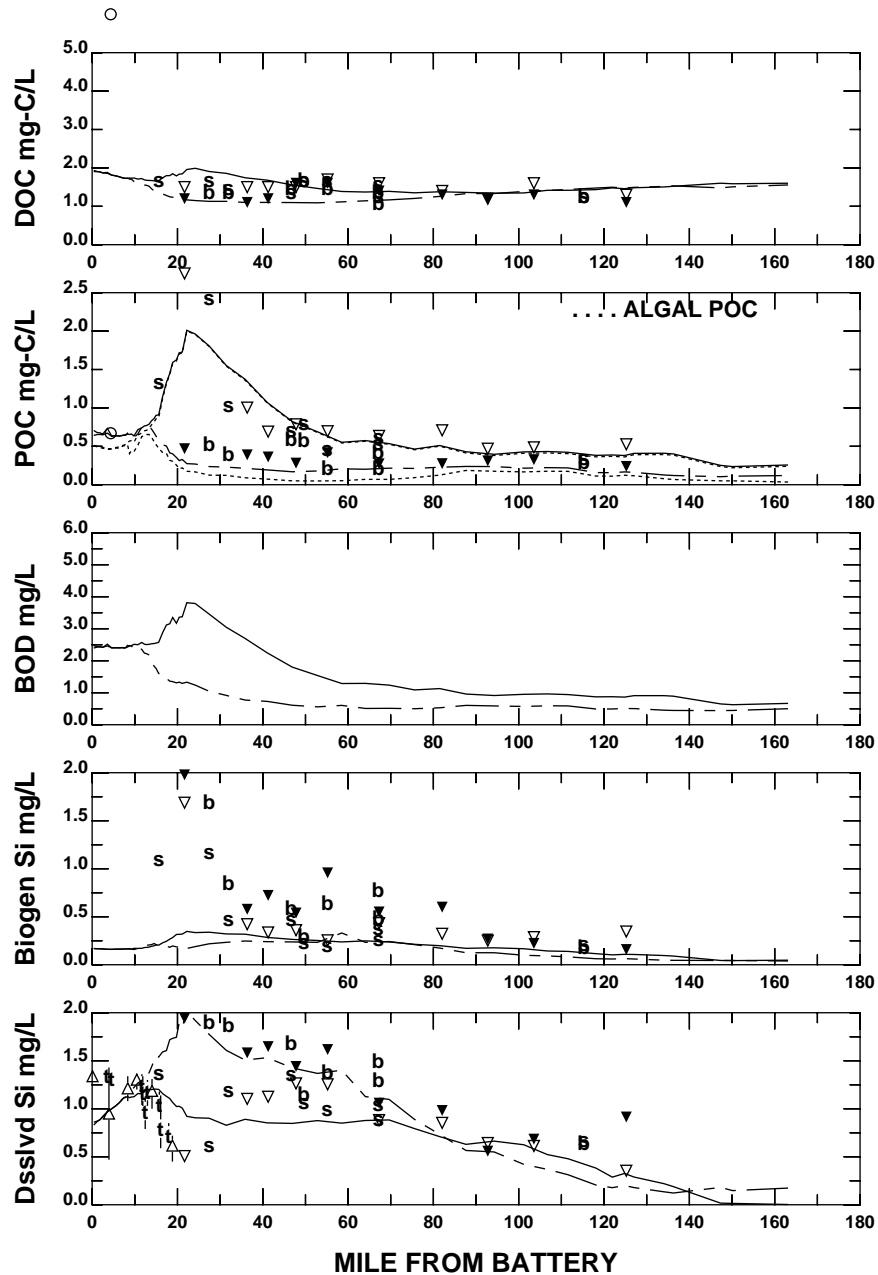




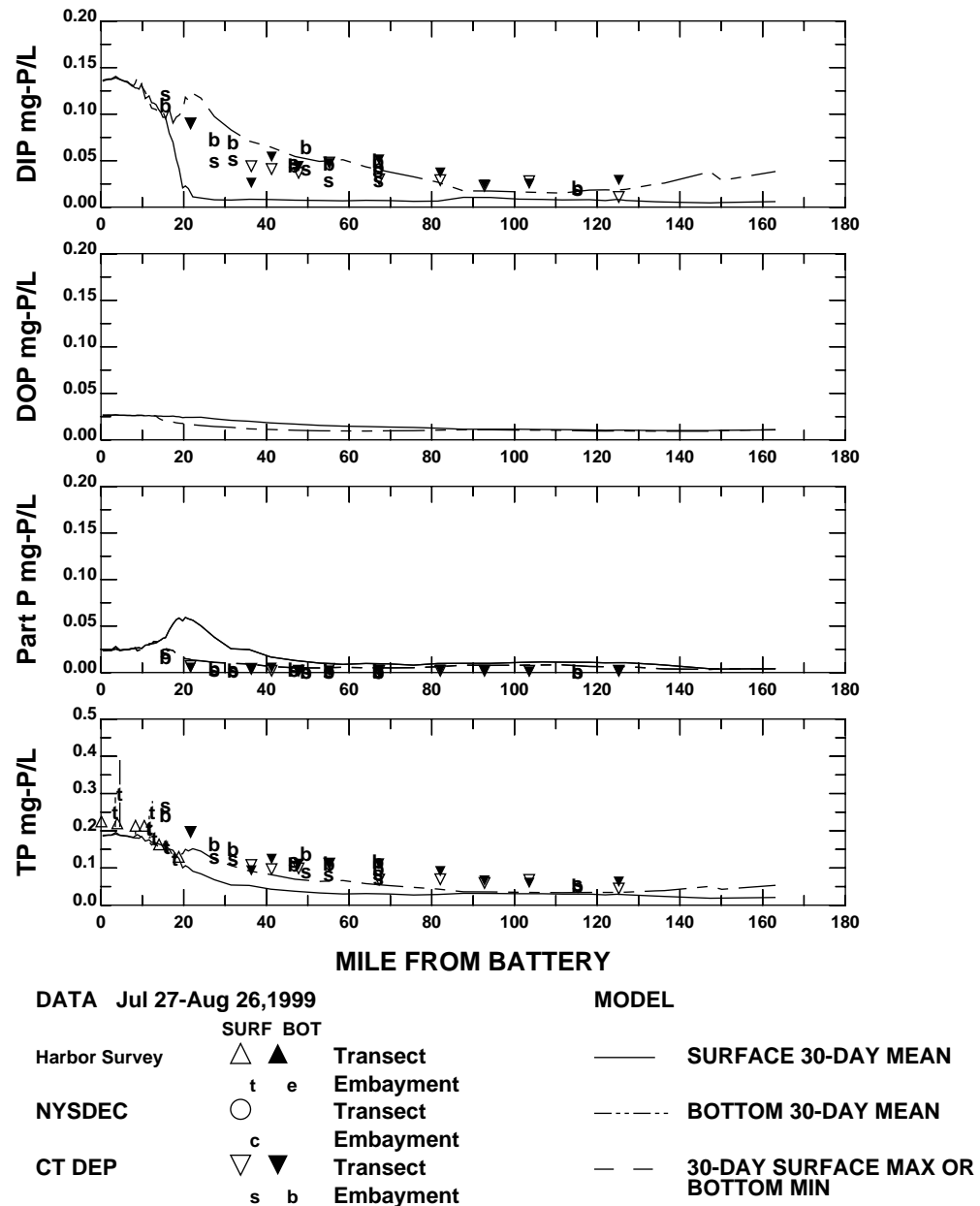
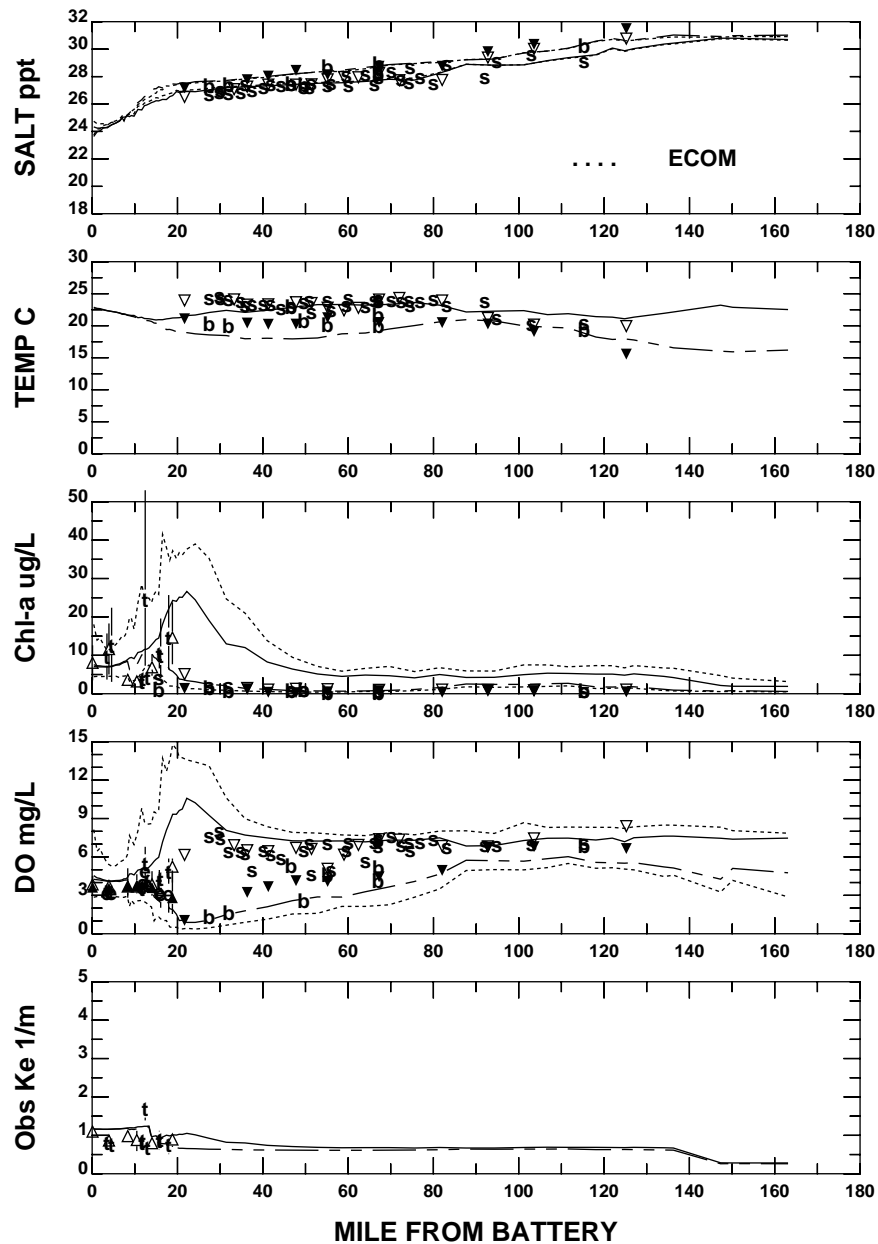
# EAST RIVER AND LONG ISLAND SOUND



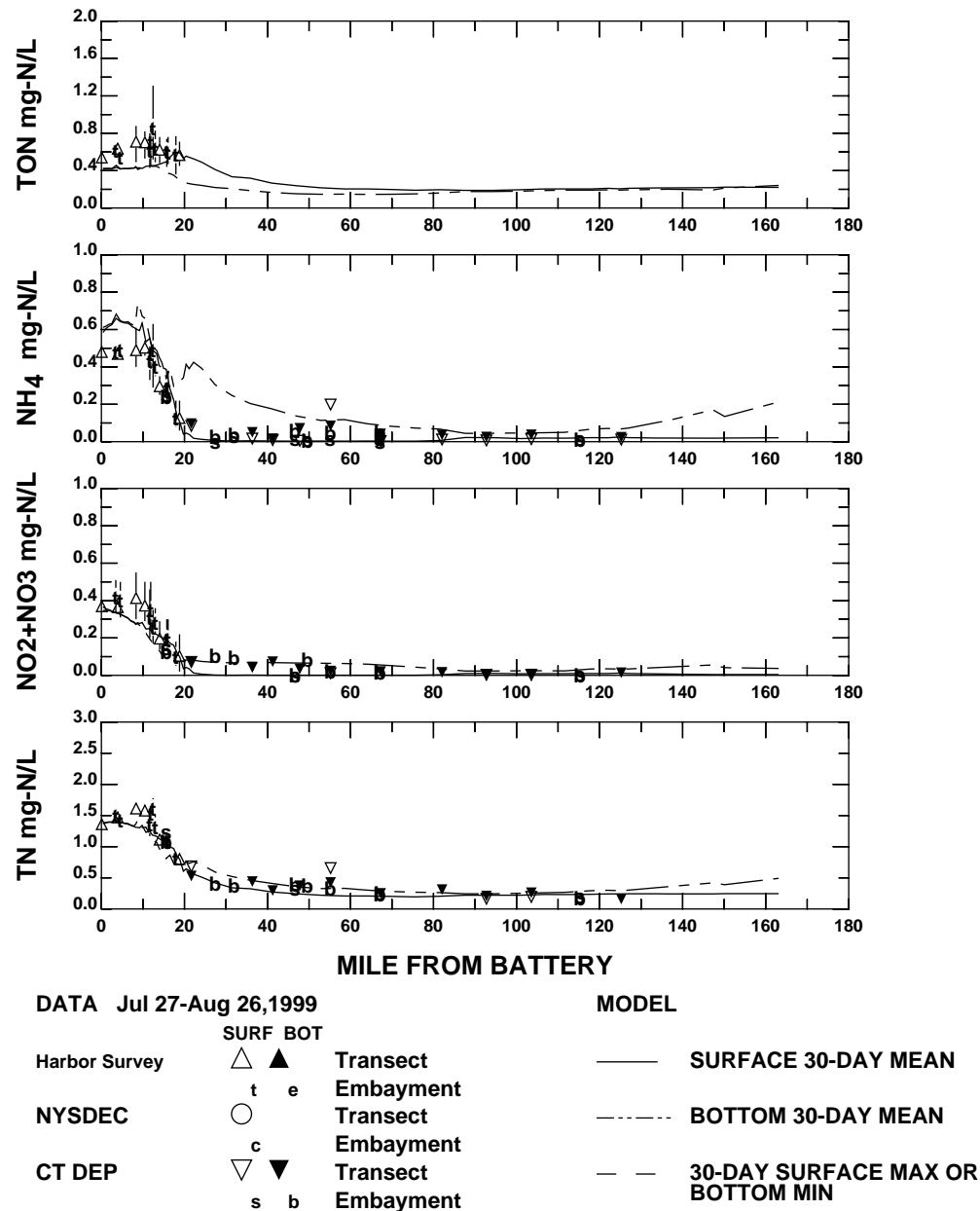
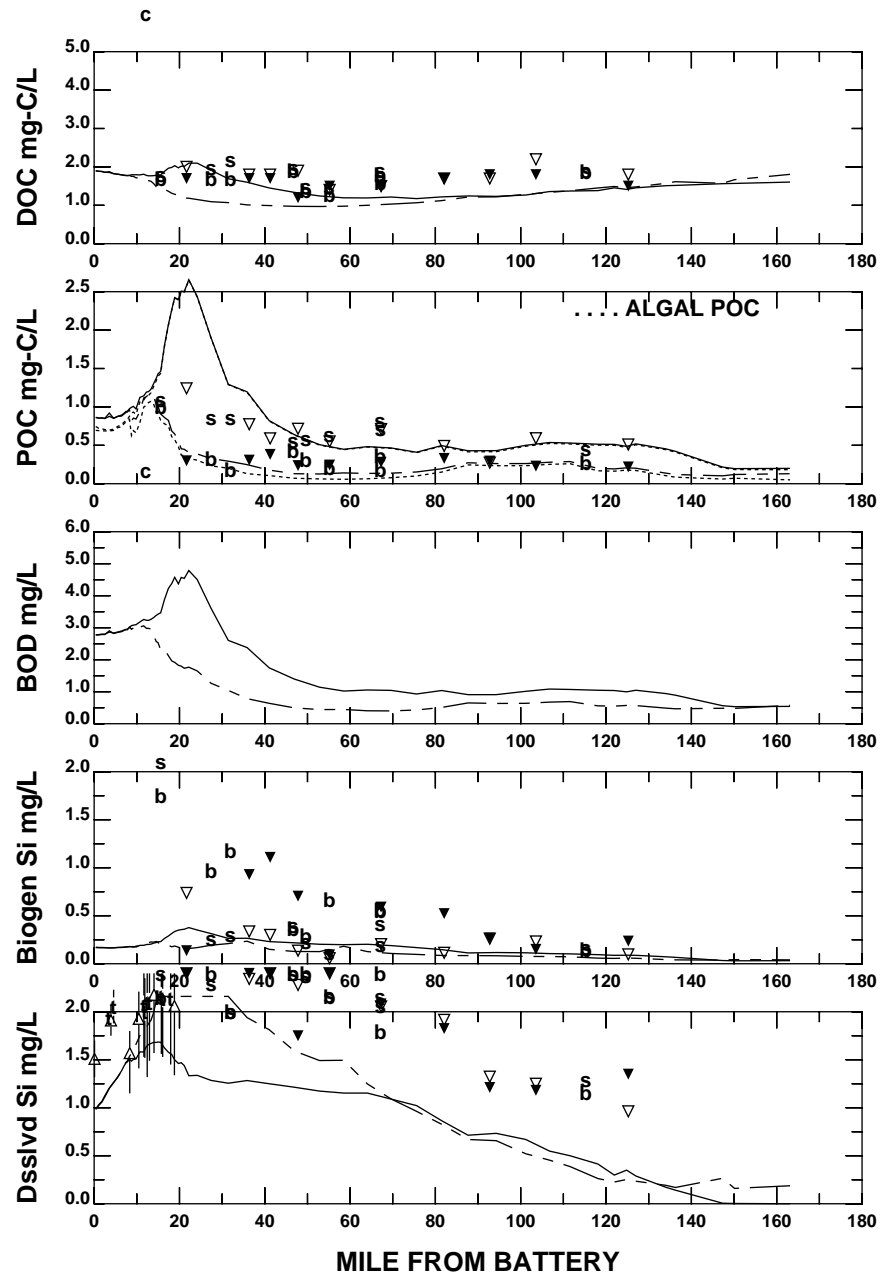
# EAST RIVER AND LONG ISLAND SOUND



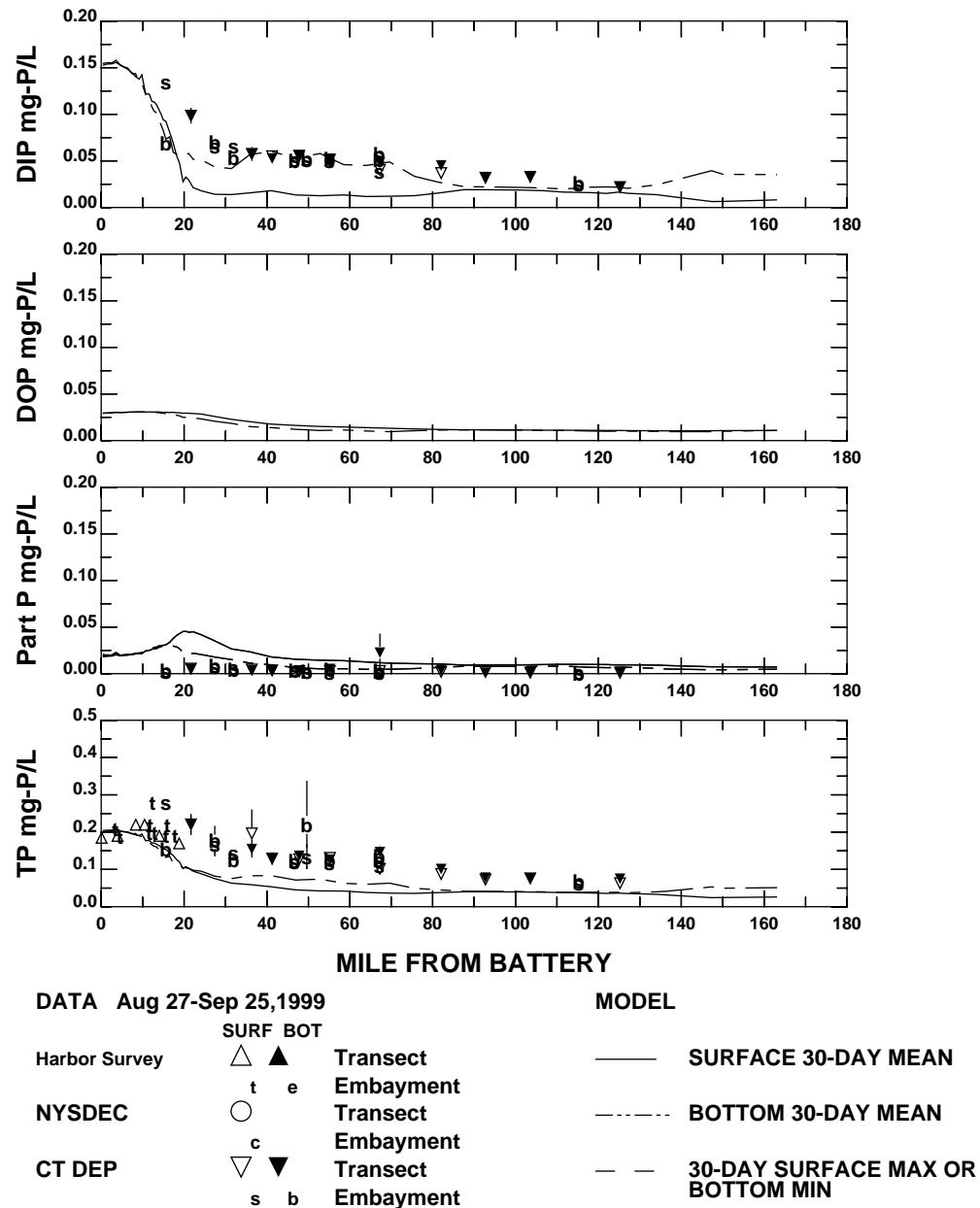
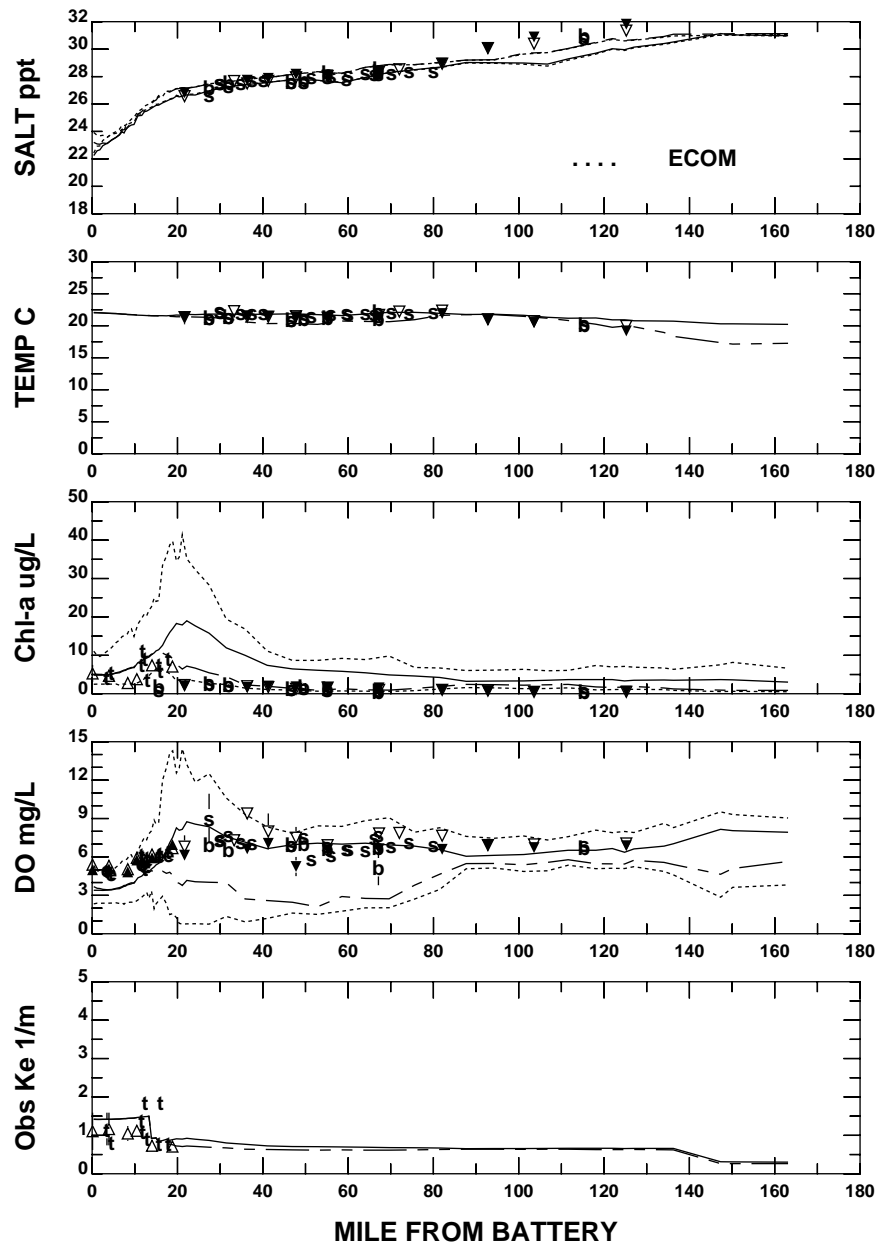
# EAST RIVER AND LONG ISLAND SOUND



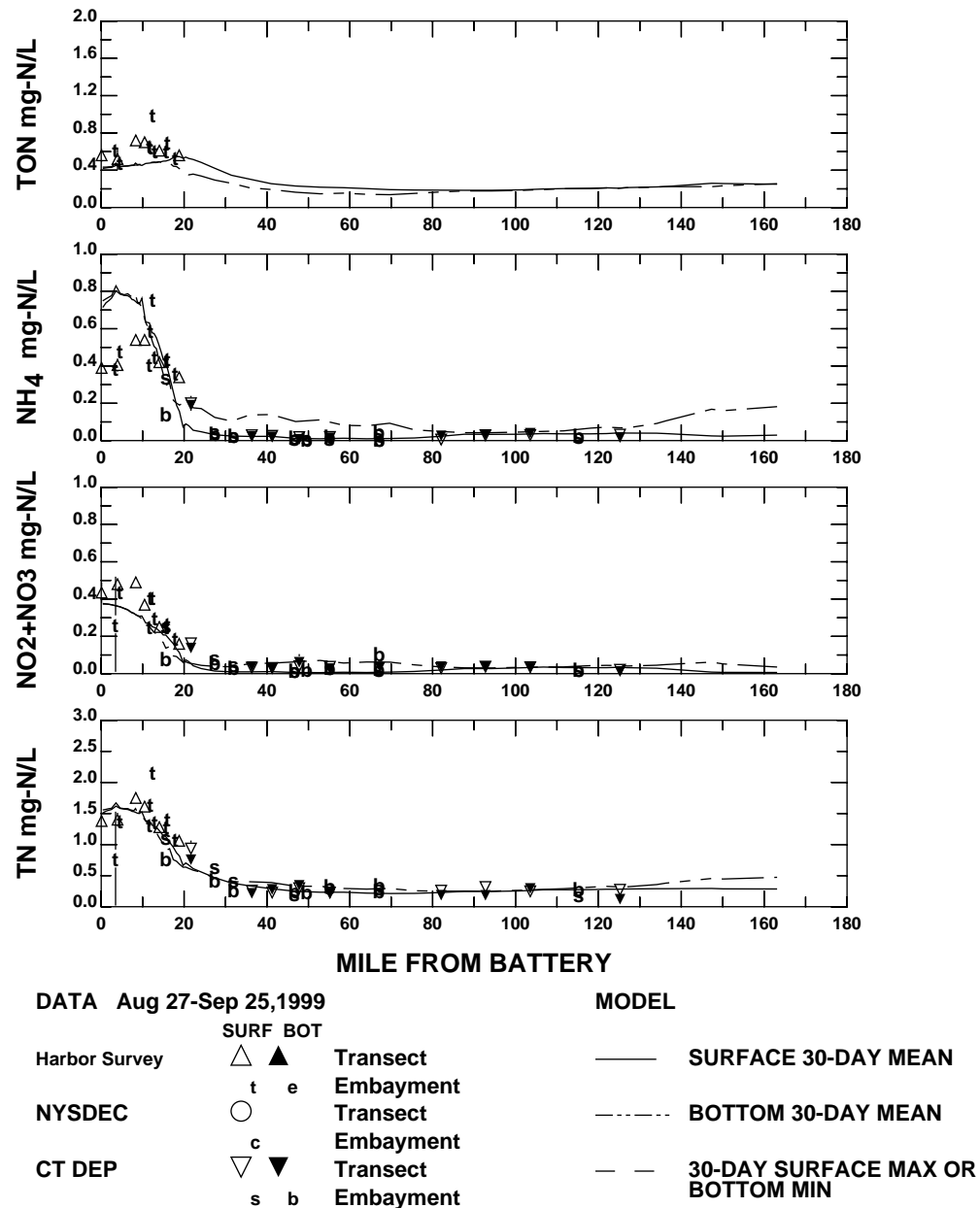
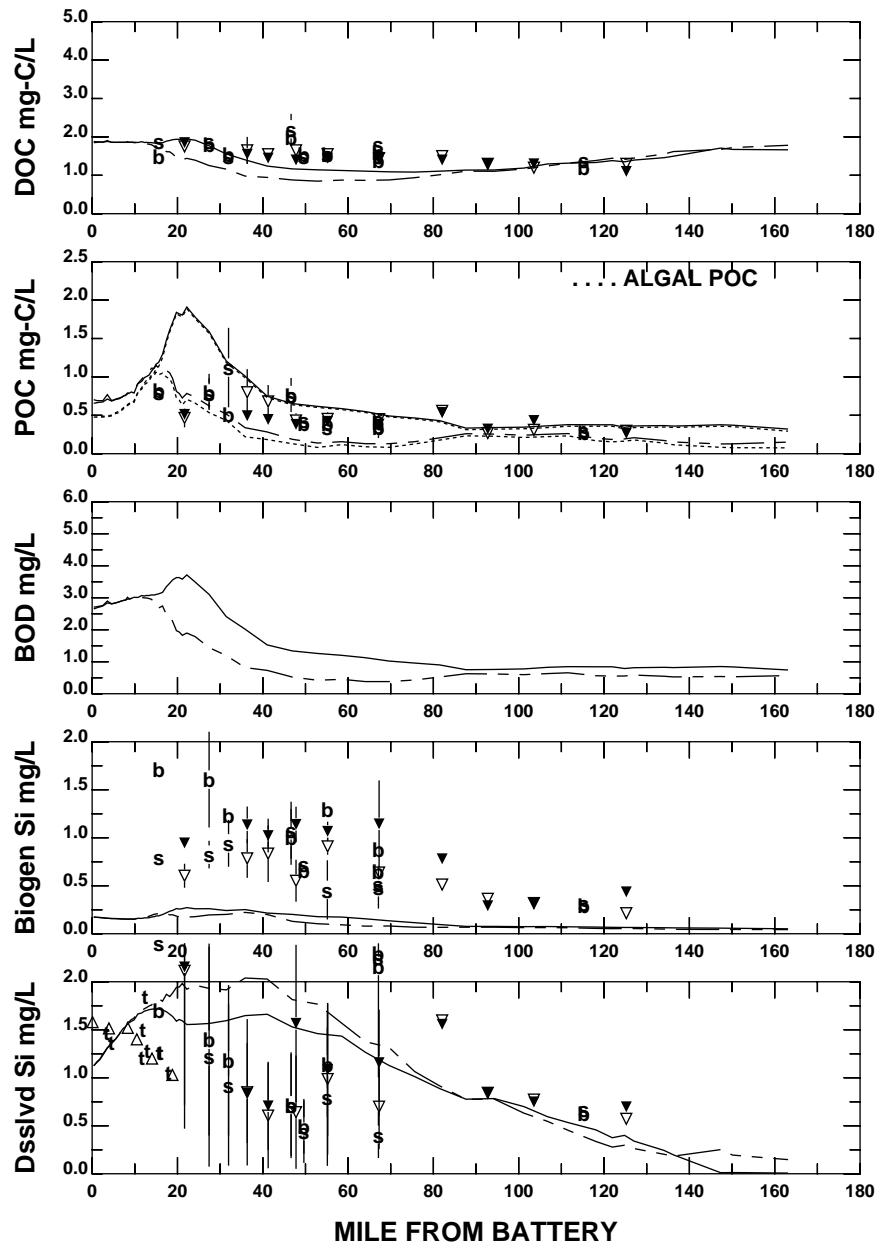
**EAST RIVER AND LONG ISLAND SOUND**



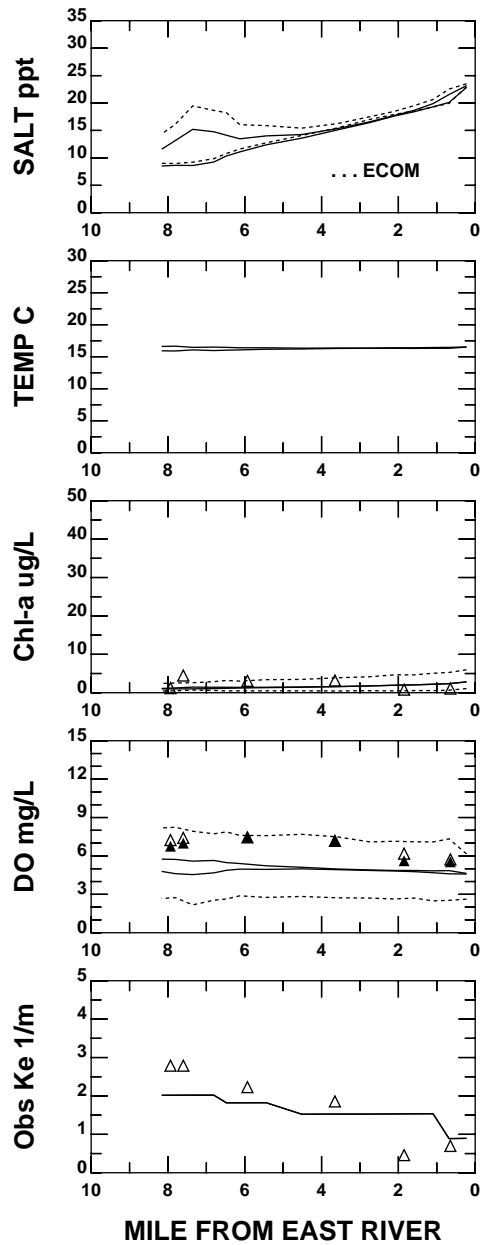
# EAST RIVER AND LONG ISLAND SOUND



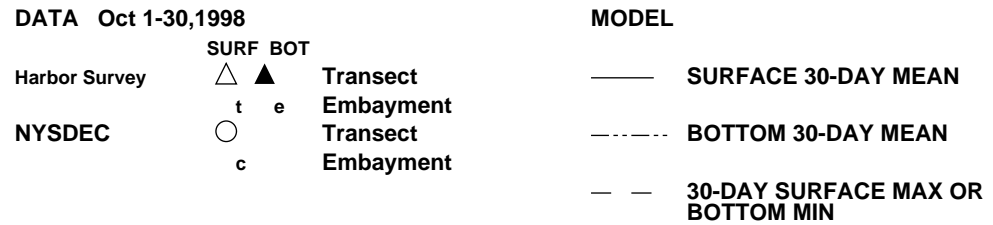
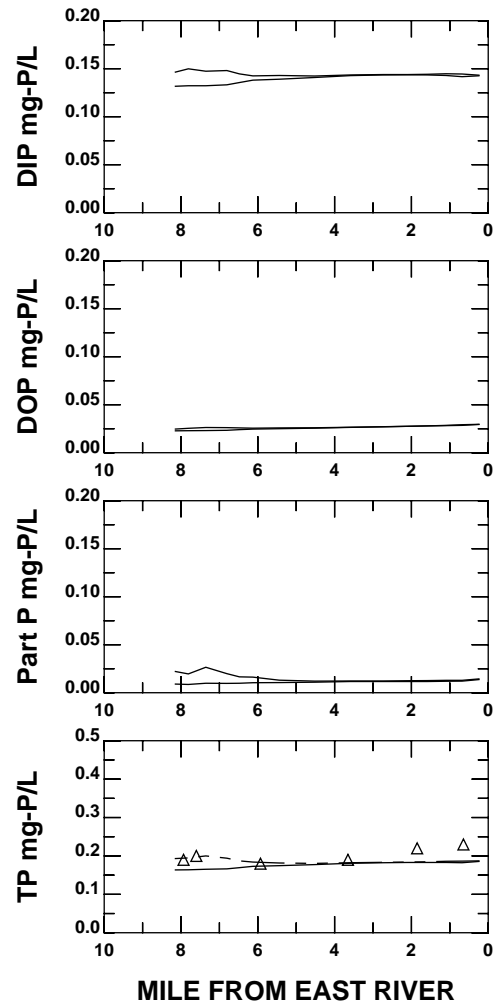
**EAST RIVER AND LONG ISLAND SOUND**



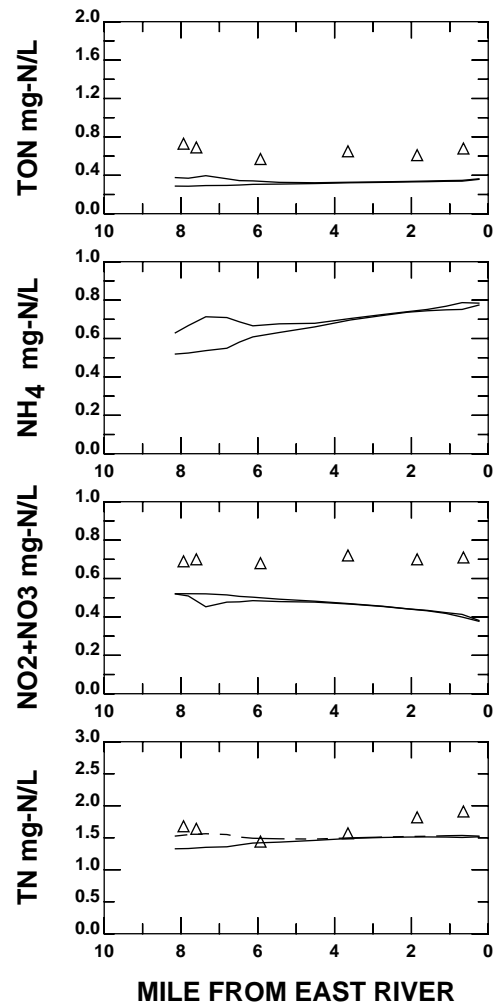
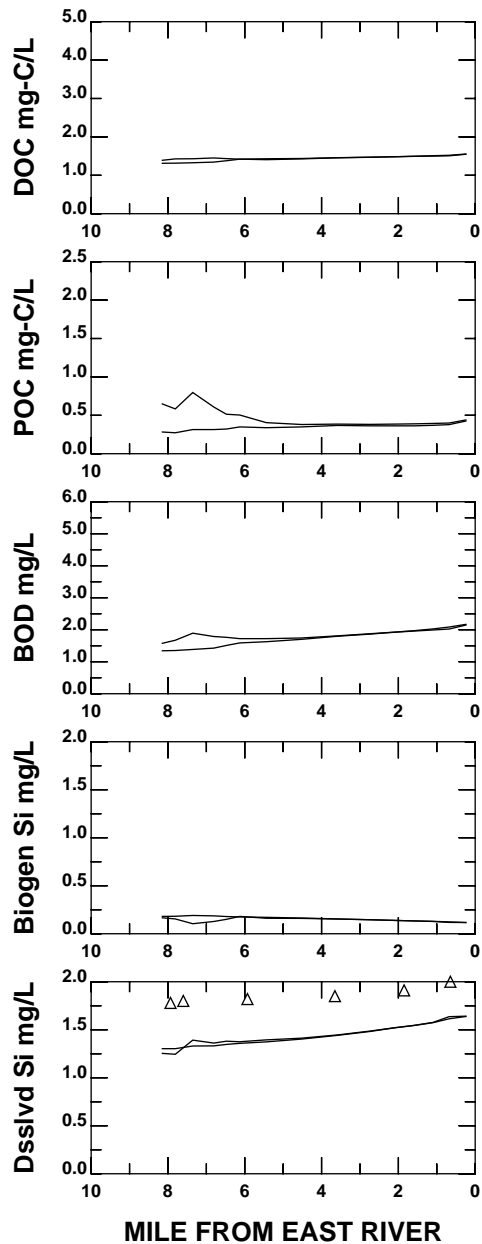
### EAST RIVER AND LONG ISLAND SOUND



**HARLEM RIVER**







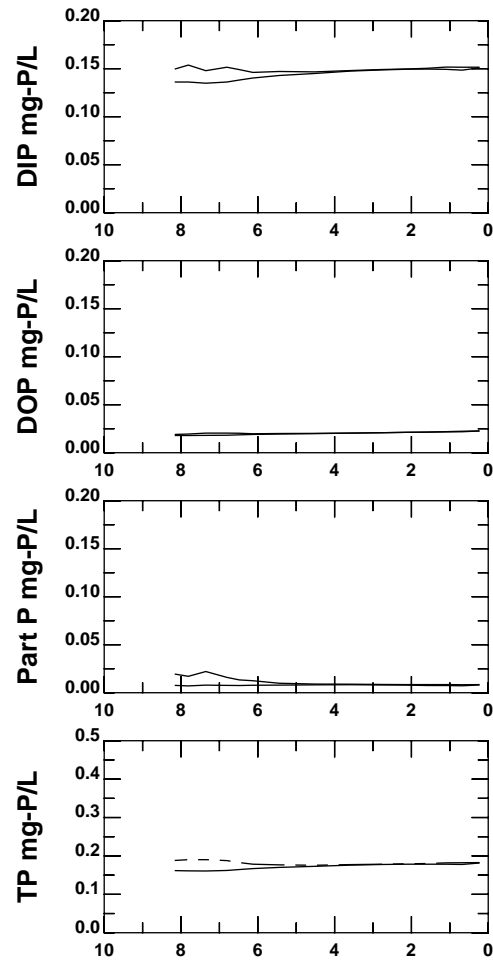
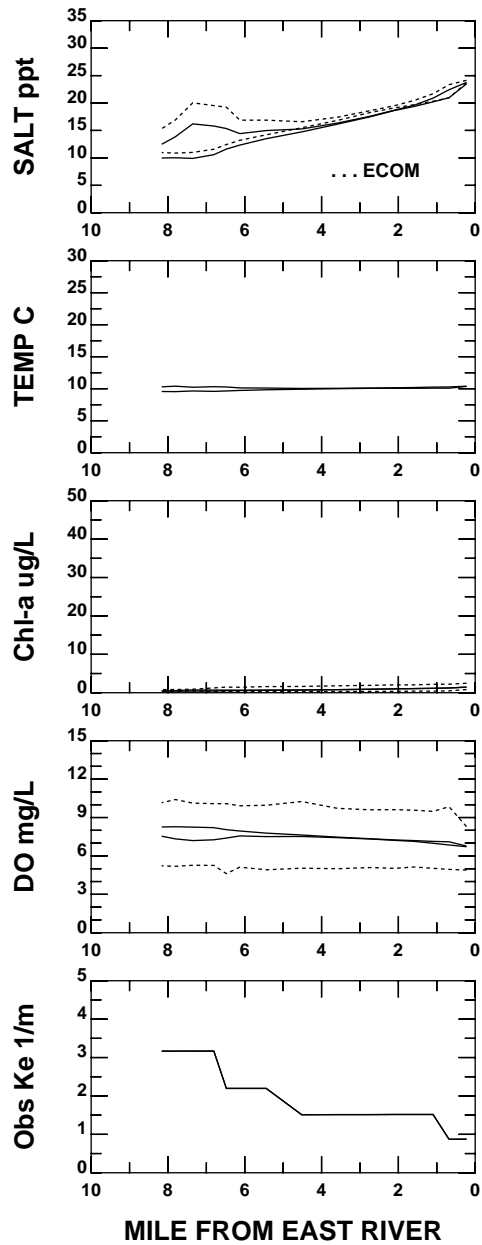
DATA Oct 1-30, 1998

	SURF BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment

MODEL

————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

## HARLEM RIVER



**DATA Oct 31-Nov 29, 1998**

Harbor Survey    SURF BOT     $\triangle$   $\blacktriangle$     Transect

NYSDEC            t e            Embayment

                          o            Transect

                          c            Embayment

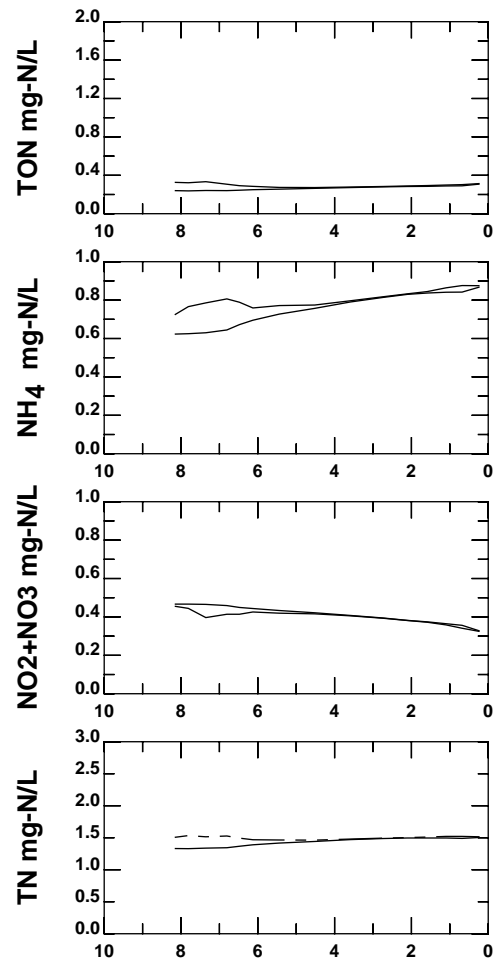
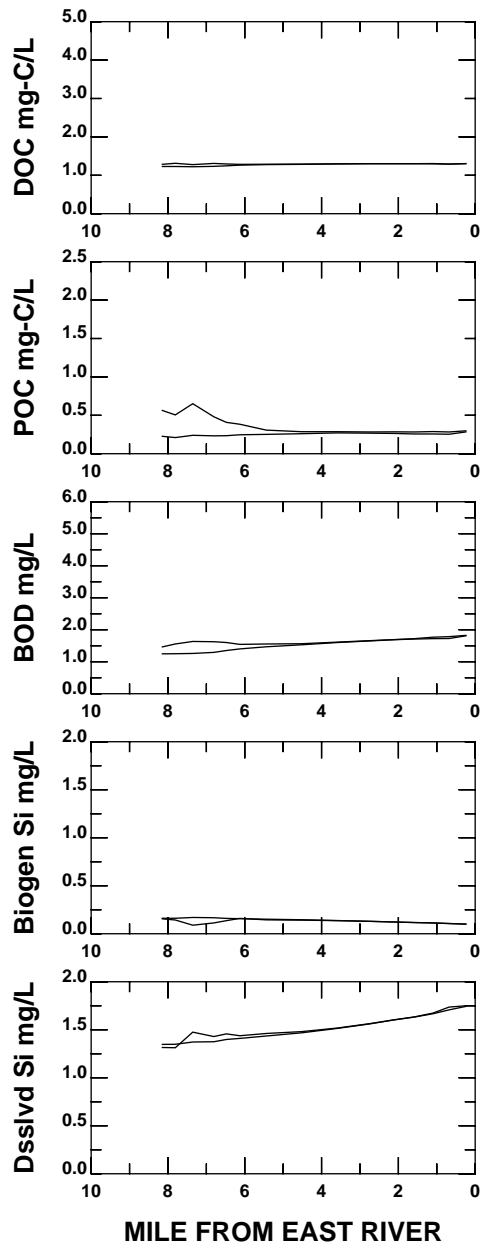
**MODEL**

———— SURFACE 30-DAY MEAN

----- BOTTOM 30-DAY MEAN

- - - 30-DAY SURFACE MAX OR BOTTOM MIN

**HARLEM RIVER**



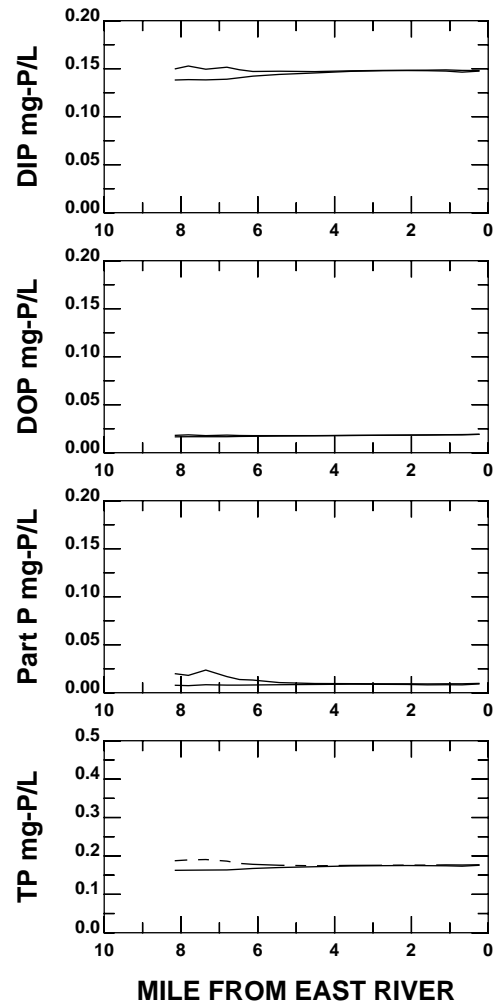
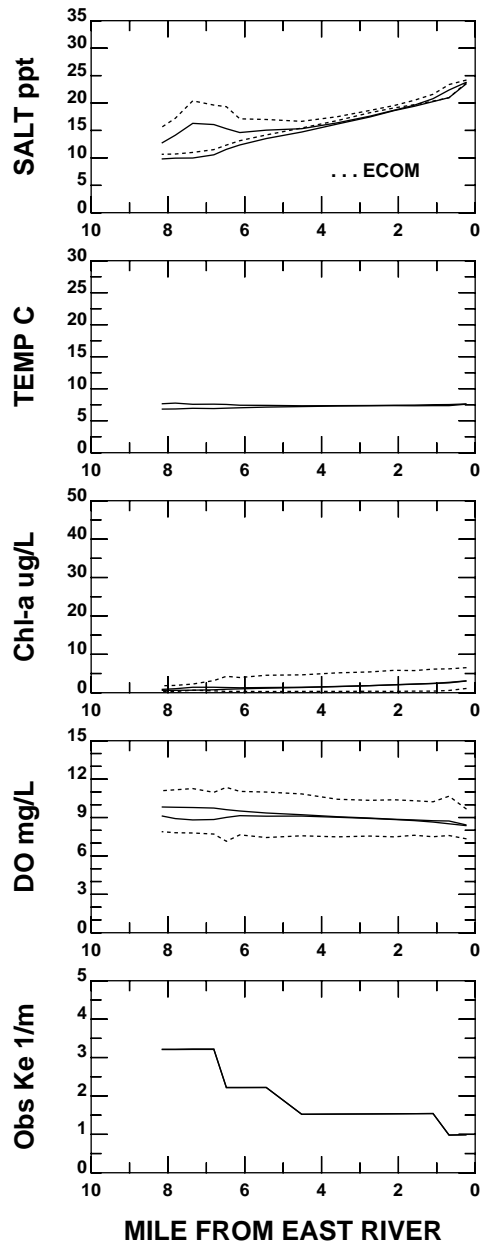
DATA Oct 31-Nov 29, 1998

	SURF BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment

MODEL

————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

## HARLEM RIVER



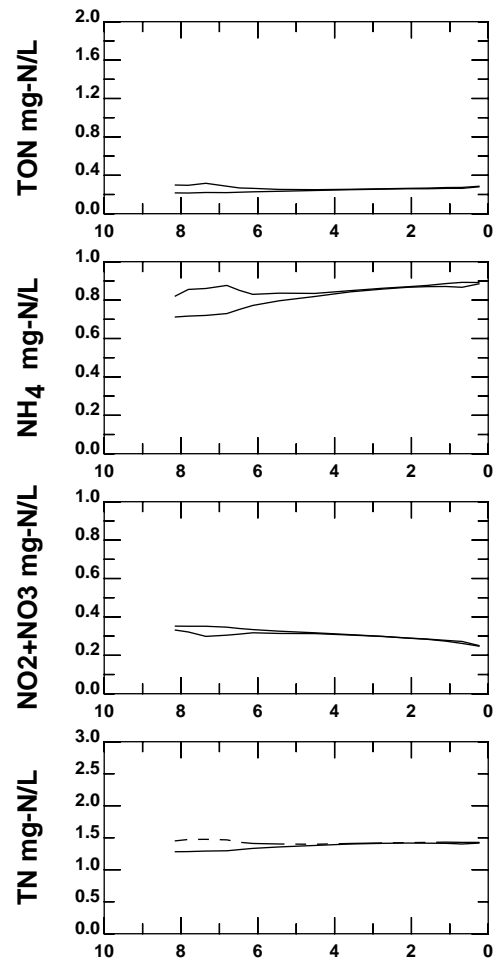
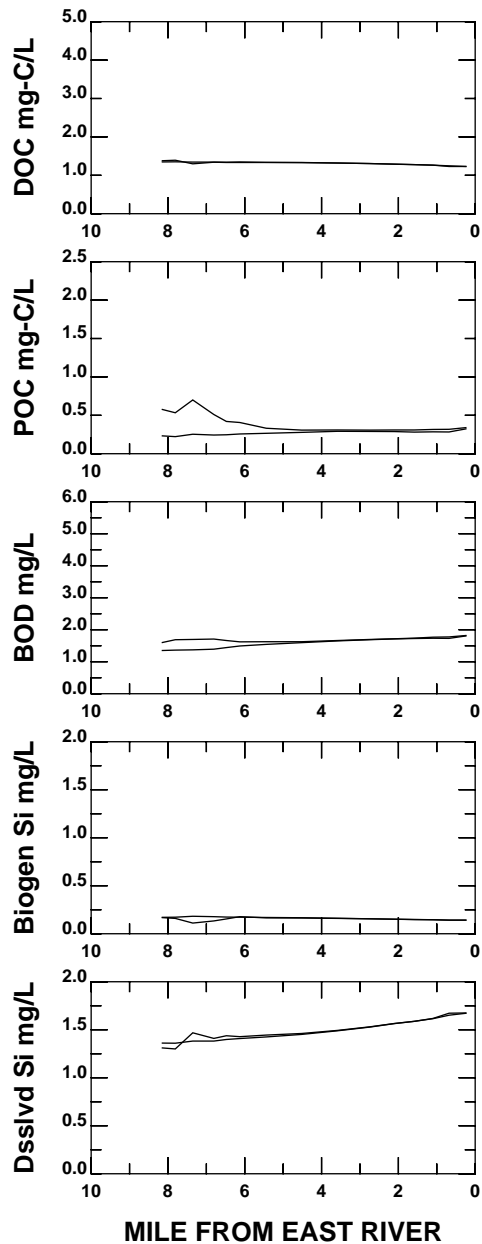
DATA Nov 30-Dec 29, 1998

	SURF BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment

MODEL

————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

**HARLEM RIVER**



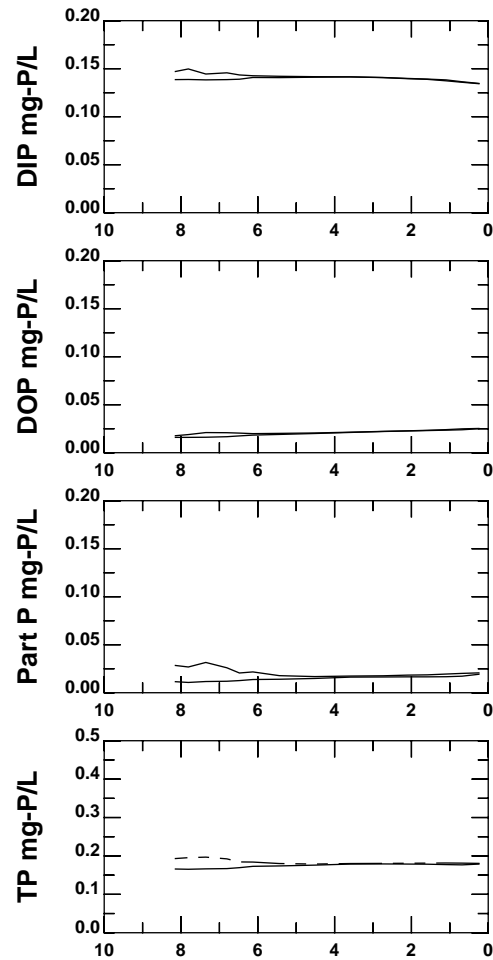
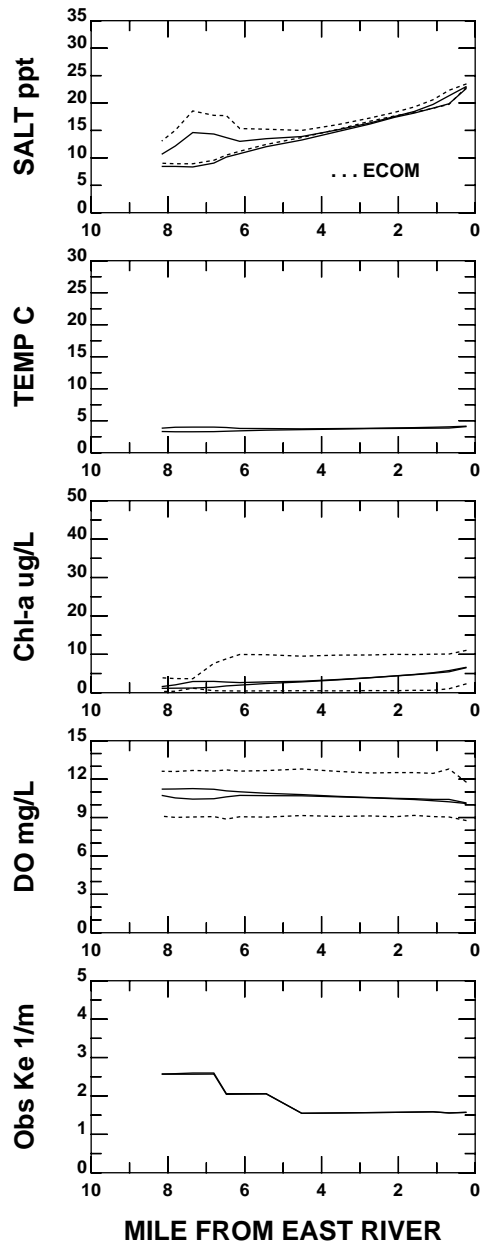
**DATA Nov 30-Dec 29, 1998**

	SURF BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment

**MODEL**

————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

**HARLEM RIVER**



**DATA** Dec 30 1998 -Jan 28, 1999

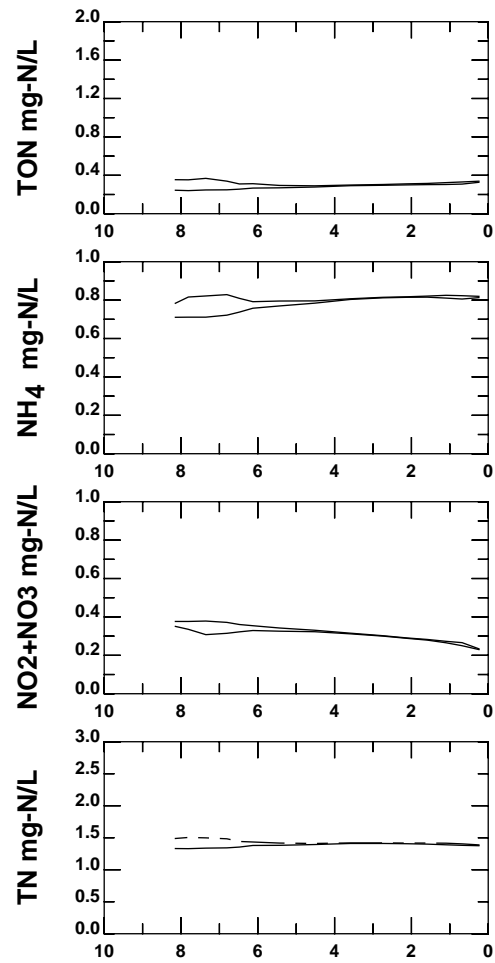
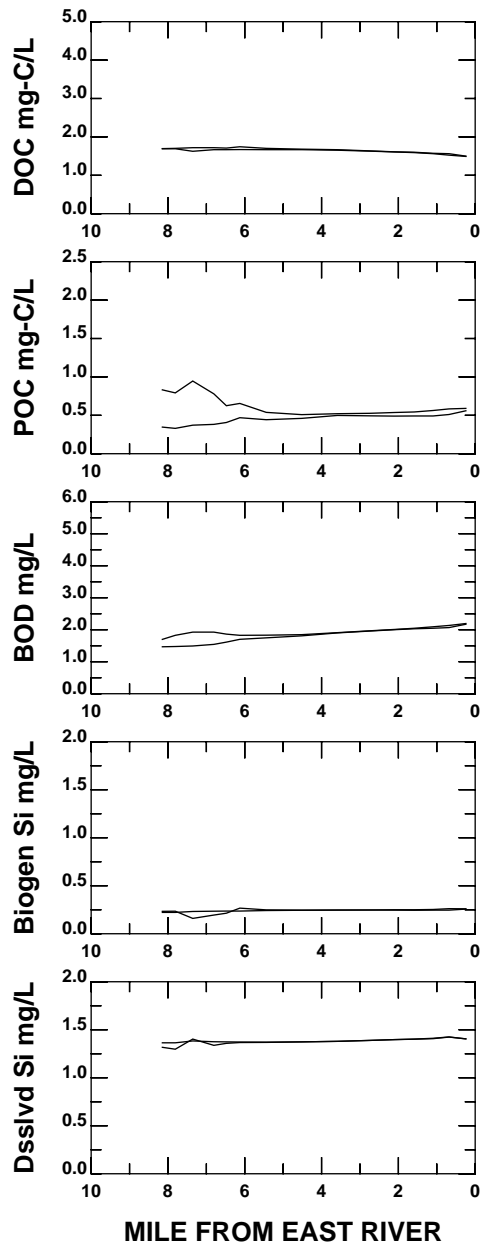
**MODEL**

	<b>SURF BOT</b>		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment

————	<b>SURFACE 30-DAY MEAN</b>
-----	<b>BOTTOM 30-DAY MEAN</b>
- - - -	<b>30-DAY SURFACE MAX OR BOTTOM MIN</b>

**HARLEM RIVER**



DATA Dec 30 1998 -Jan 28, 1999

	SURF BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment

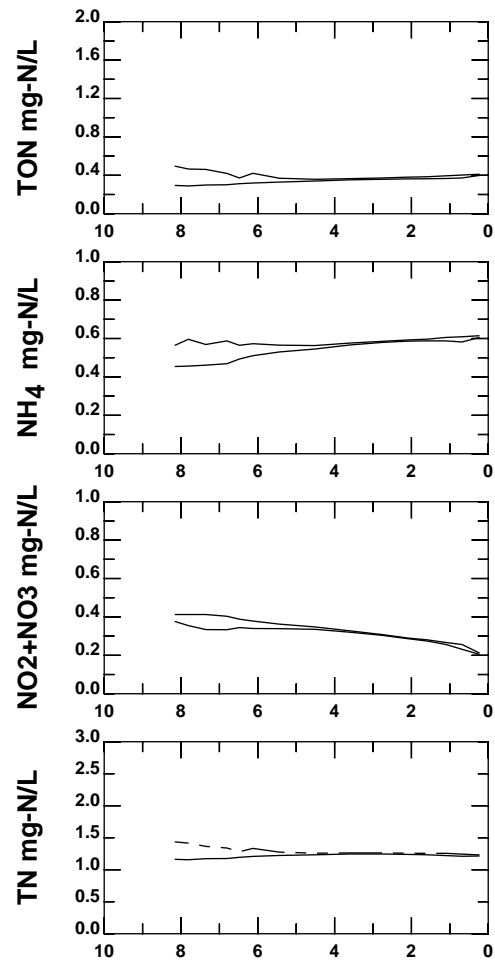
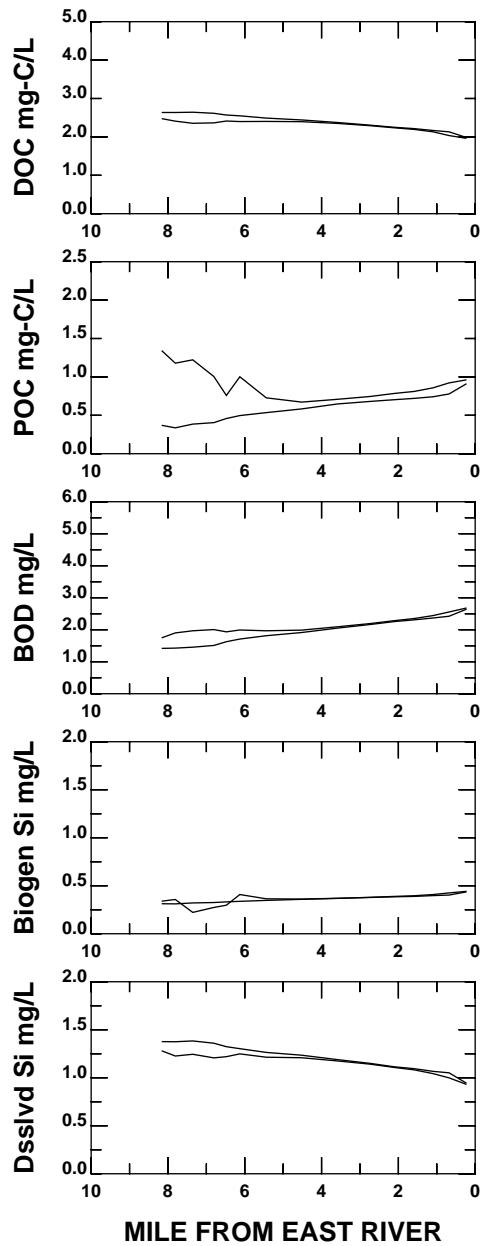
MODEL

————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

## HARLEM RIVER







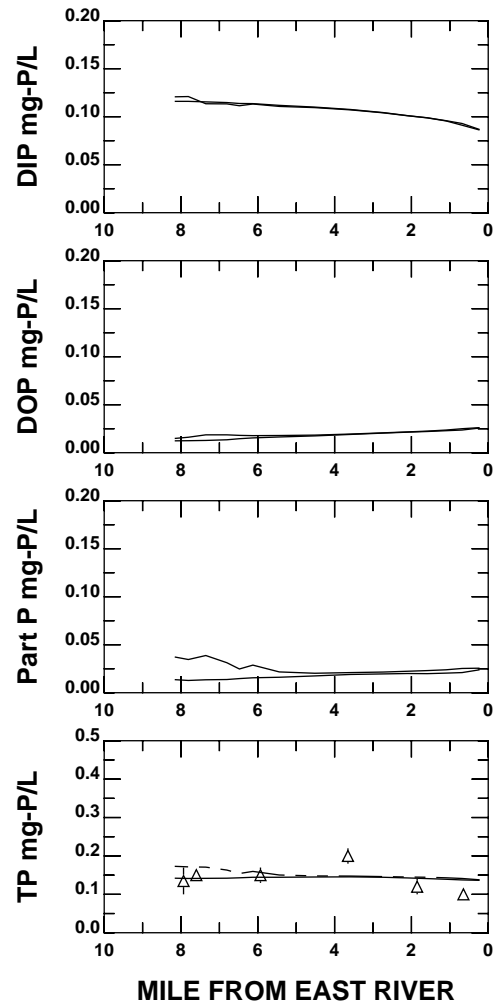
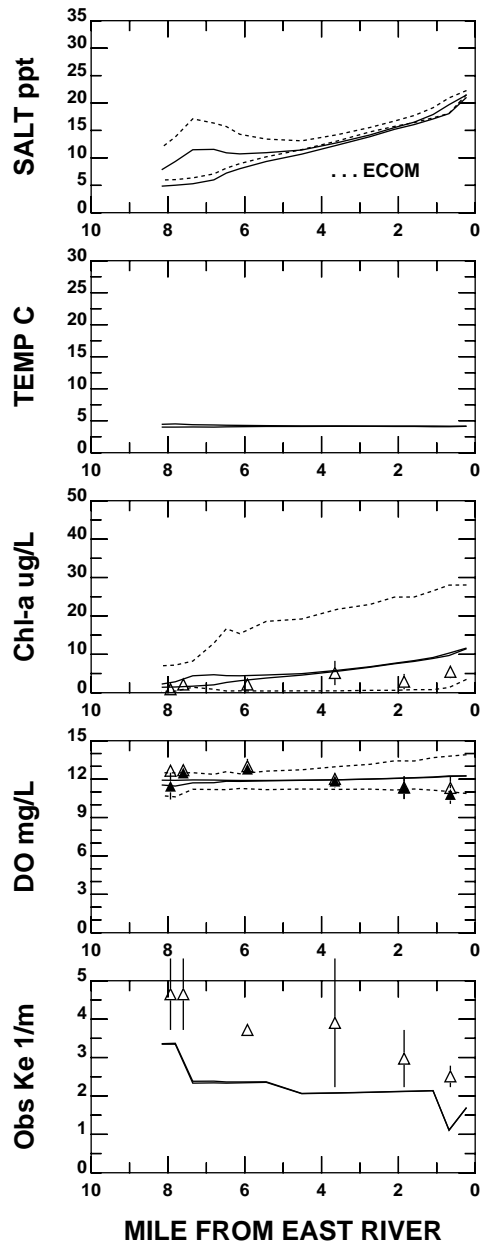
DATA Jan 29-Feb 27, 1999

Harbor Survey SURF BOT  
 △ ▲ Transect  
 t e Embayment  
 NYSDEC ○ ○ Transect  
 c c Embayment

MODEL

— SURFACE 30-DAY MEAN  
 - - - - - BOTTOM 30-DAY MEAN  
 - - - 30-DAY SURFACE MAX OR  
 BOTTOM MIN

**HARLEM RIVER**



DATA Feb 28-Mar 29, 1999

Harbor Survey    SURF BOT  
 △    ▲    Transect  
 t    e    Embayment  
 NYSDEC    ○    Transect  
           c    Embayment

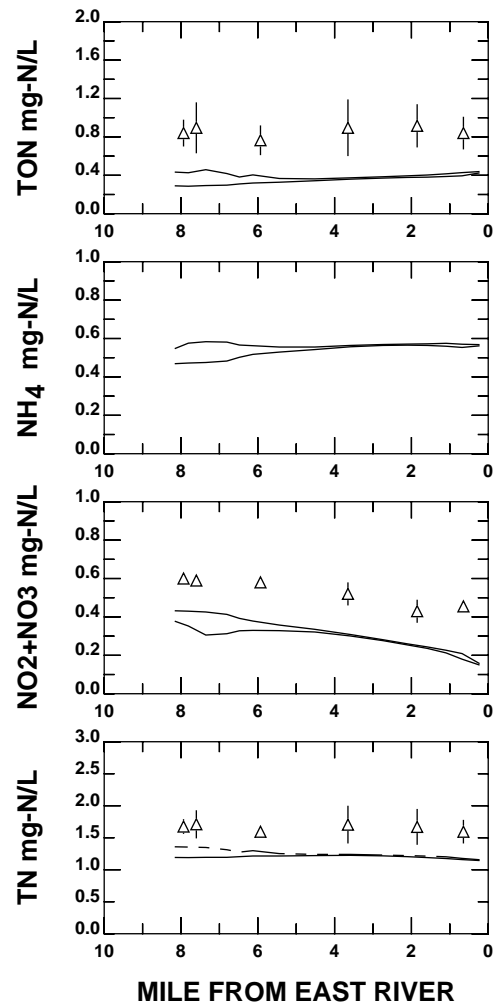
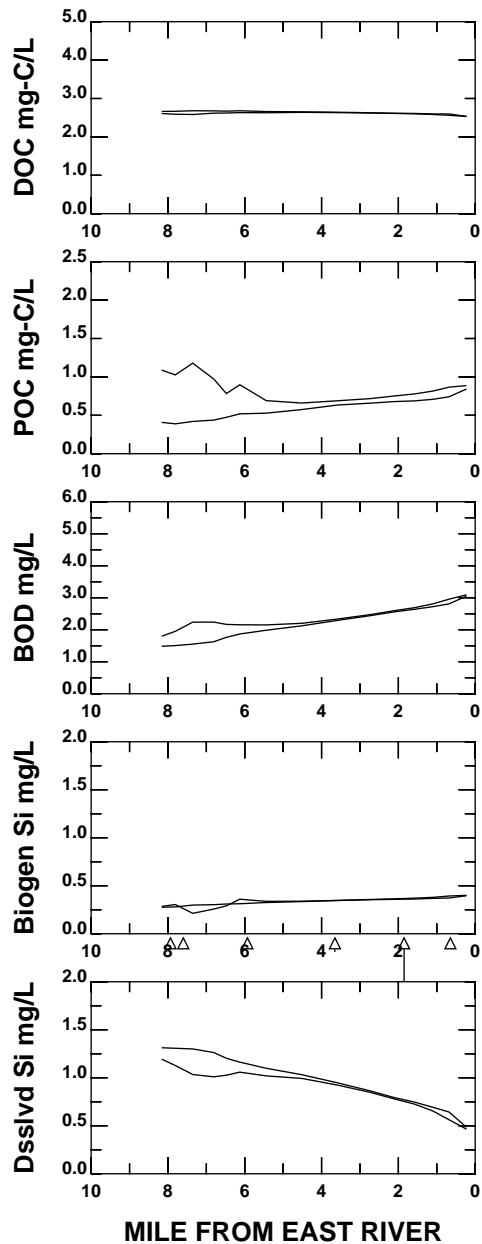
**MODEL**

—    SURFACE 30-DAY MEAN

- - -    BOTTOM 30-DAY MEAN

- - -    30-DAY SURFACE MAX OR BOTTOM MIN

**HARLEM RIVER**



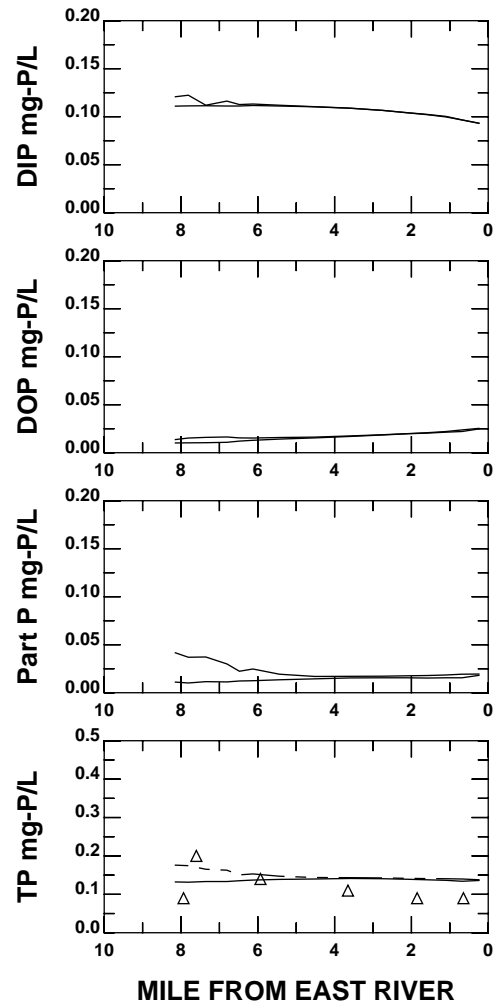
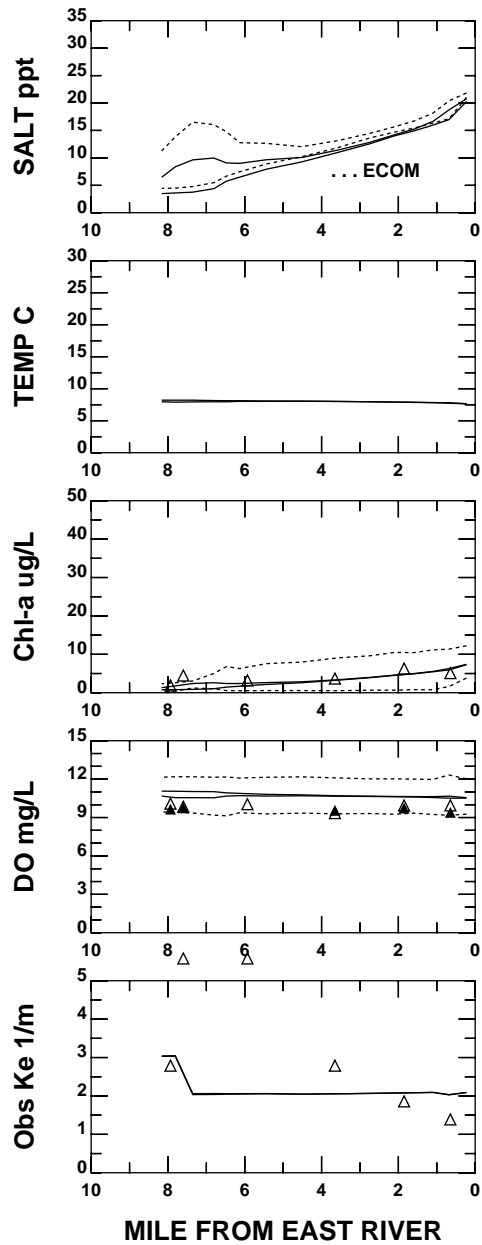
DATA Feb 28-Mar 29, 1999

	SURF		BOT	
Harbor Survey	△	▲	Transect	Embayment
NYSDEC	t	e	Transect	Embayment
	○	c	Transect	Embayment

MODEL

—	SURFACE 30-DAY MEAN
---	BOTTOM 30-DAY MEAN
- - -	30-DAY SURFACE MAX OR BOTTOM MIN

## HARLEM RIVER



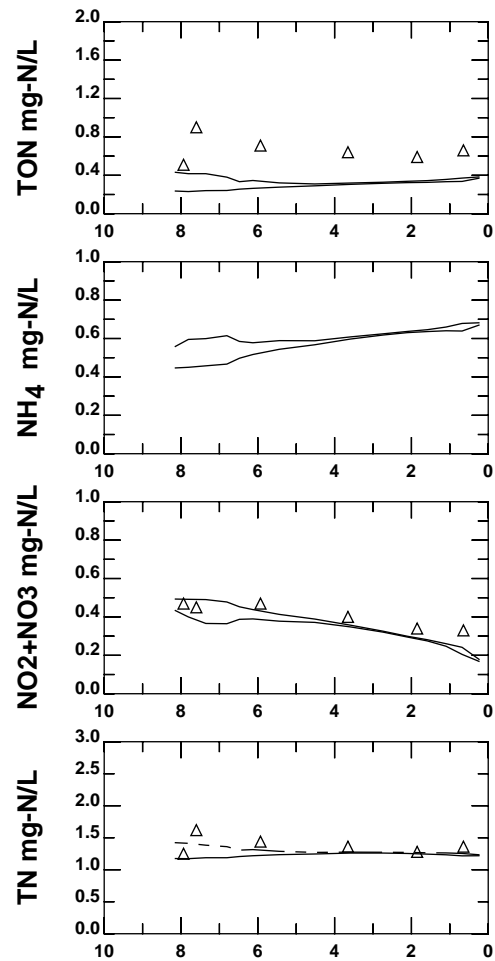
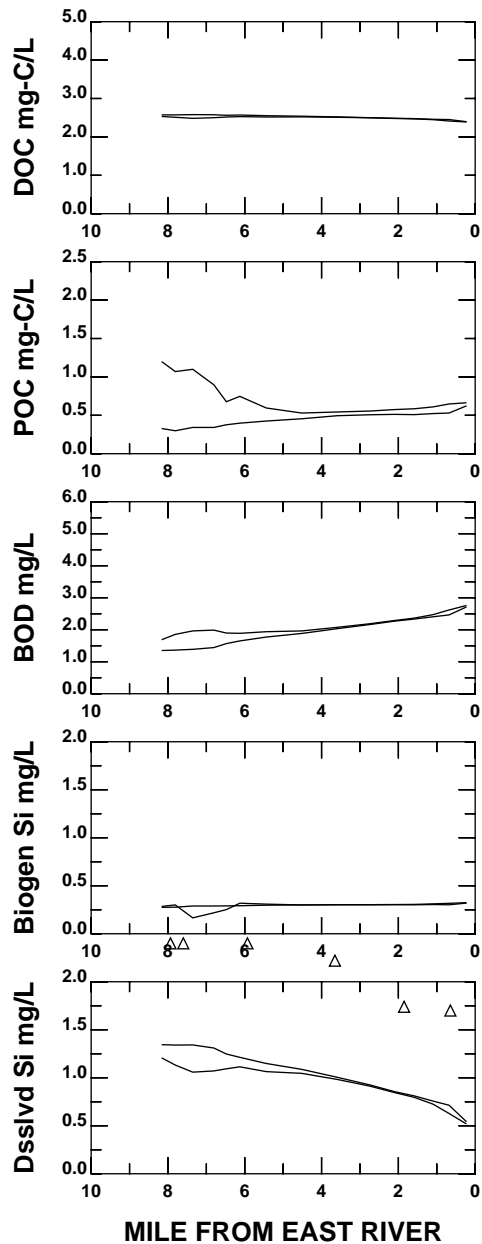
DATA Mar 30-Apr 28, 1999

Harbor Survey    SURF BOT  
 △ ▲    Transect  
 t e    Embayment  
 NYSDEC    ○    Transect  
           c    Embayment

MODEL

— SURFACE 30-DAY MEAN  
 - - - - - BOTTOM 30-DAY MEAN  
 - - - 30-DAY SURFACE MAX OR  
 BOTTOM MIN

**HARLEM RIVER**



MILE FROM EAST RIVER

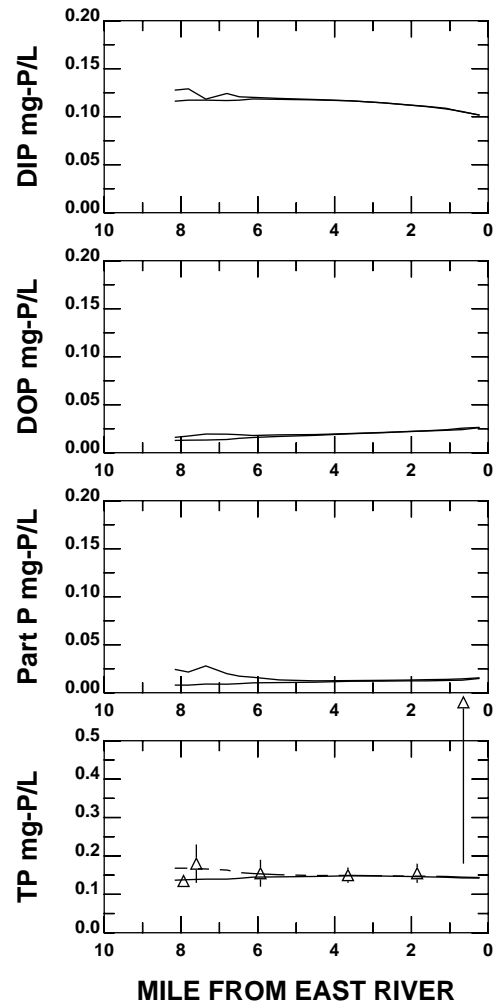
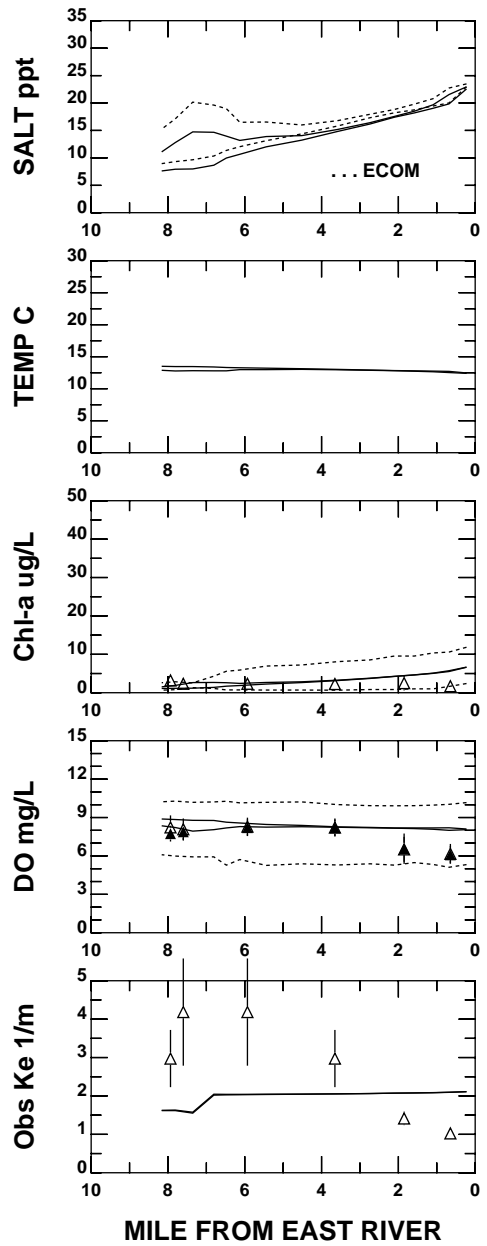
DATA Mar 30-Apr 28, 1999

	SURF BOT		
Harbor Survey	△	▲	Transect Embayment
NYSDEC	○	●	Transect Embayment

MODEL

—	SURFACE 30-DAY MEAN
- - -	BOTTOM 30-DAY MEAN
- - -	30-DAY SURFACE MAX OR BOTTOM MIN

**HARLEM RIVER**



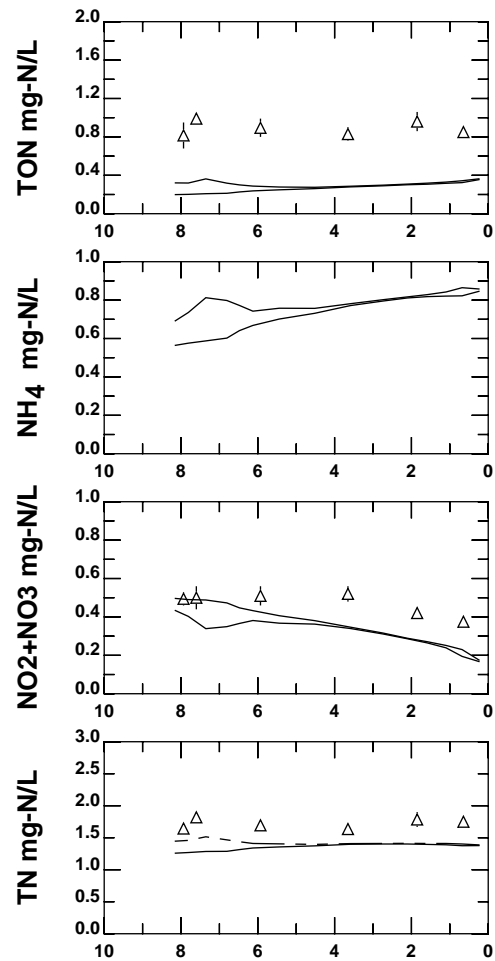
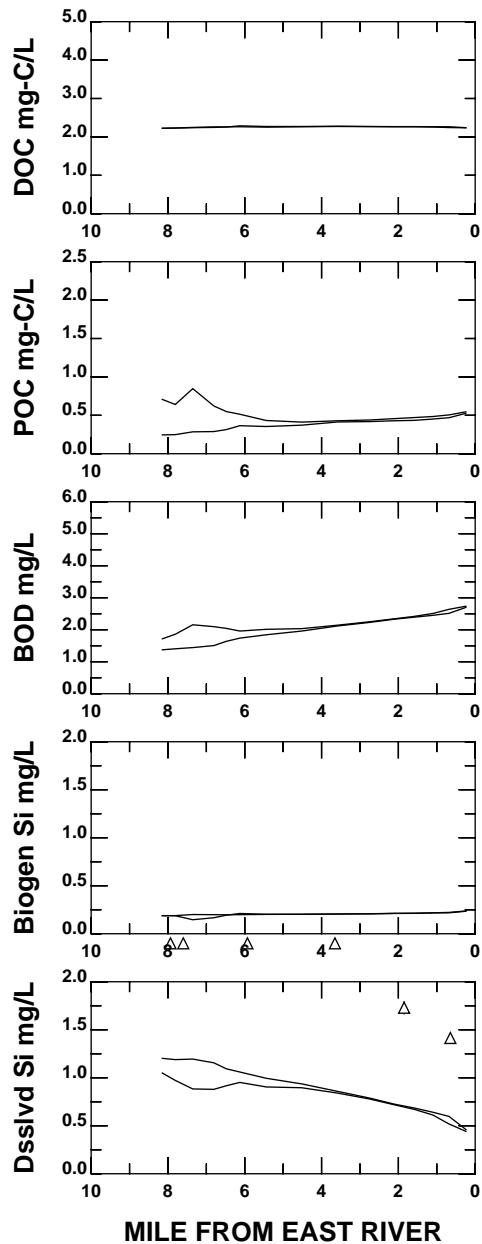
DATA Apr 29-May 28, 1999

Harbor Survey    SURF BOT  
 NYSDEC            t e    Transect  
                           c    Embayment

MODEL

— SURFACE 30-DAY MEAN  
 - - - - - BOTTOM 30-DAY MEAN  
 - - - 30-DAY SURFACE MAX OR  
 BOTTOM MIN

**HARLEM RIVER**



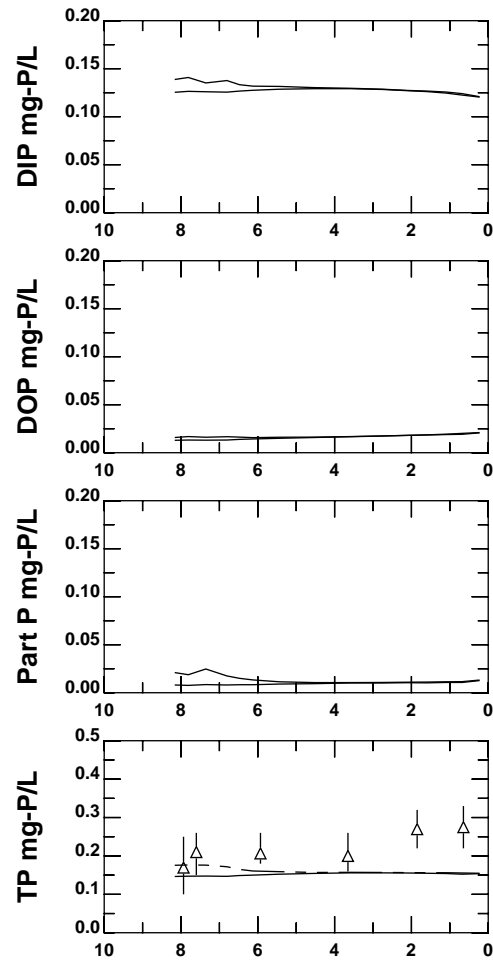
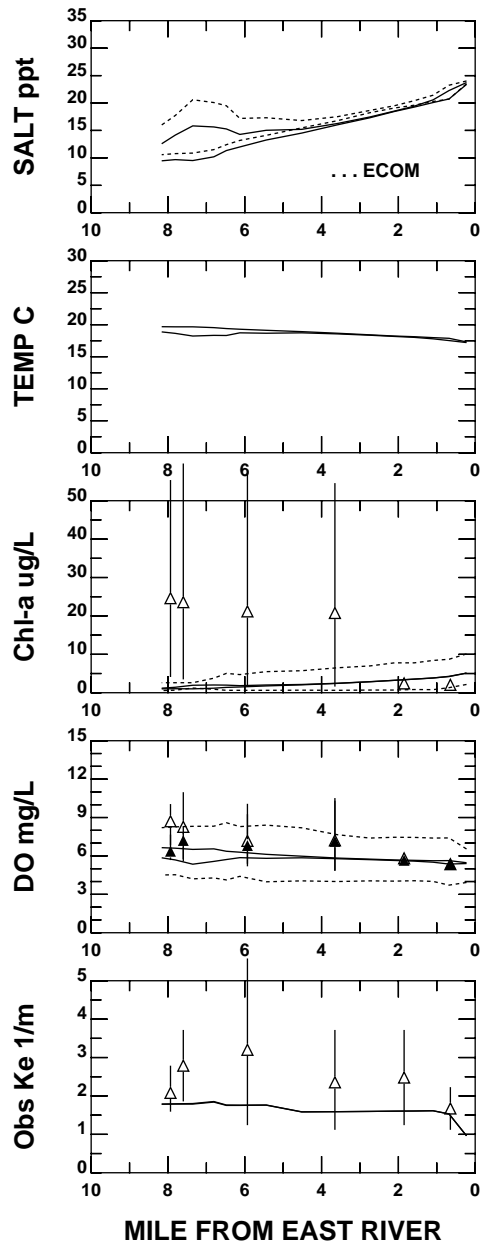
**DATA** Apr 29-May 28, 1999

	SURF BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment

**MODEL**

————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

**HARLEM RIVER**



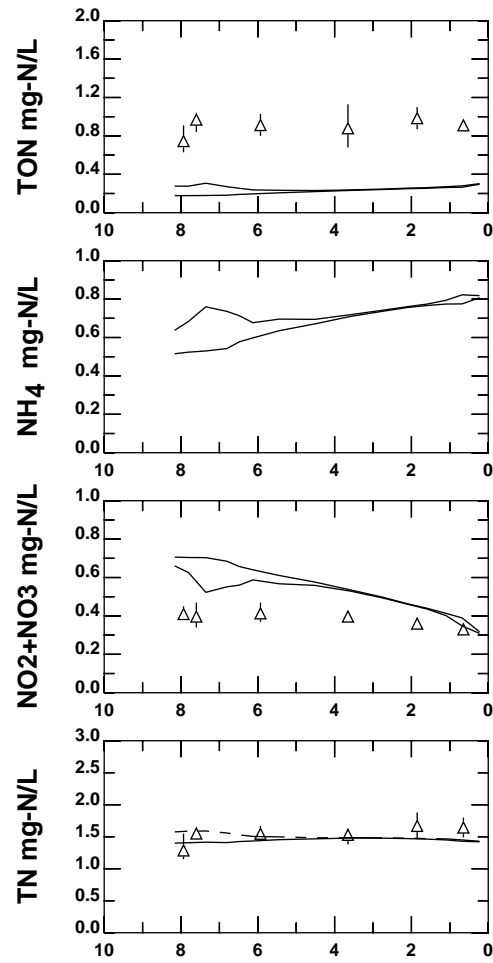
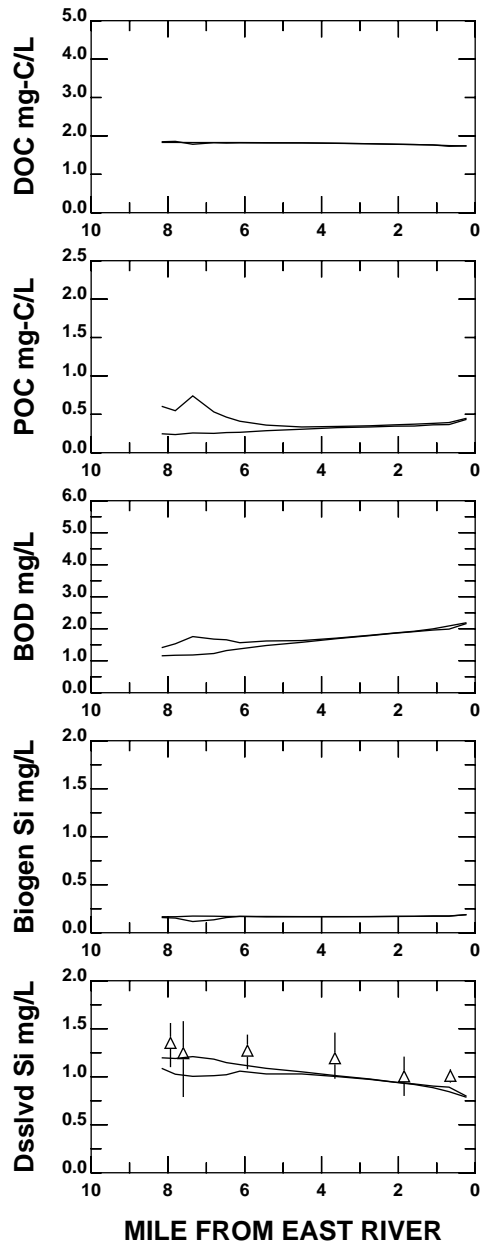
**DATA** May 29-Jun 27, 1999

**MODEL**

Harbor Survey    SURF BOT    **Transect**    ——— **SURFACE 30-DAY MEAN**  
 t e    **Embayment**  
 NYSDEC    ○    **Transect**    - - - **BOTTOM 30-DAY MEAN**  
 c    **Embayment**    - - - **30-DAY SURFACE MAX OR BOTTOM MIN**

**HARLEM RIVER**





**MILE FROM EAST RIVER**

**DATA** May 29-Jun 27, 1999

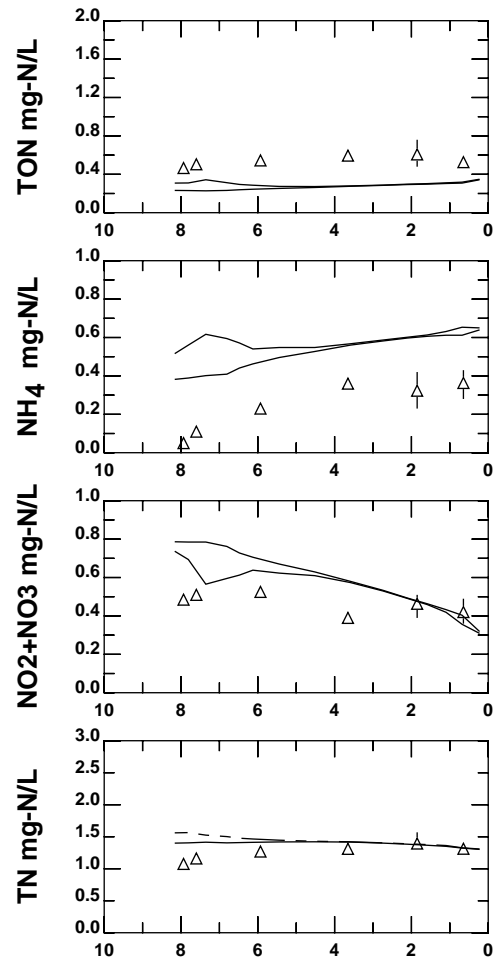
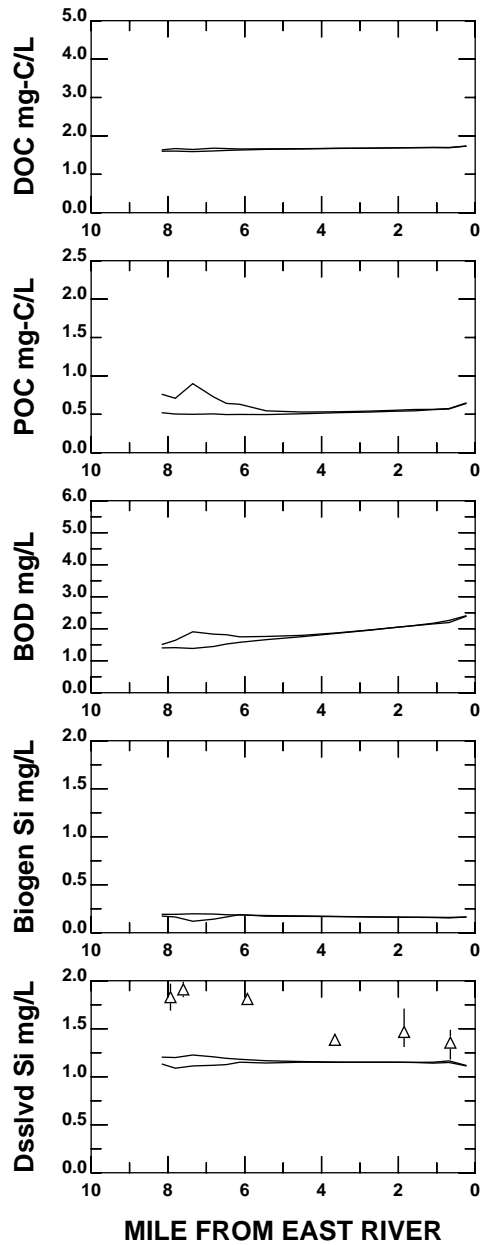
	<b>SURF</b>	<b>BOT</b>	
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment

**MODEL**

————	<b>SURFACE 30-DAY MEAN</b>
-----	<b>BOTTOM 30-DAY MEAN</b>
- - - -	<b>30-DAY SURFACE MAX OR BOTTOM MIN</b>

**HARLEM RIVER**





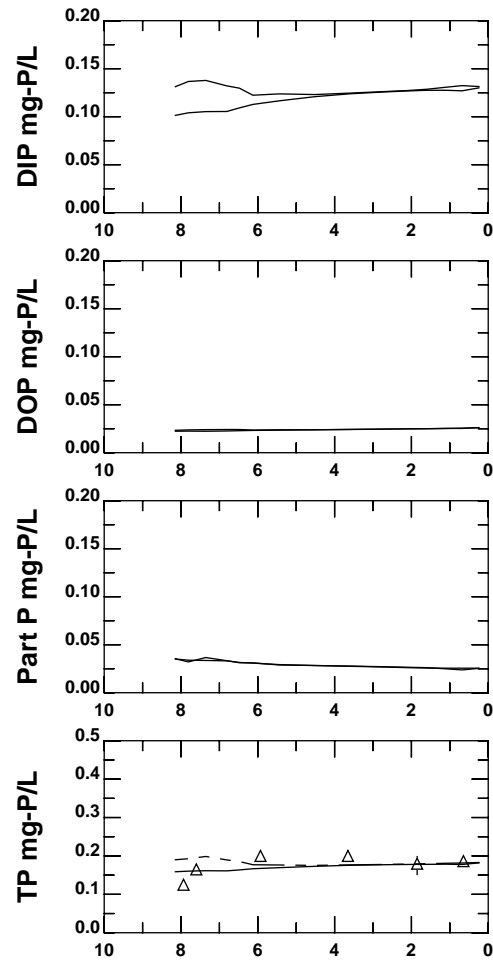
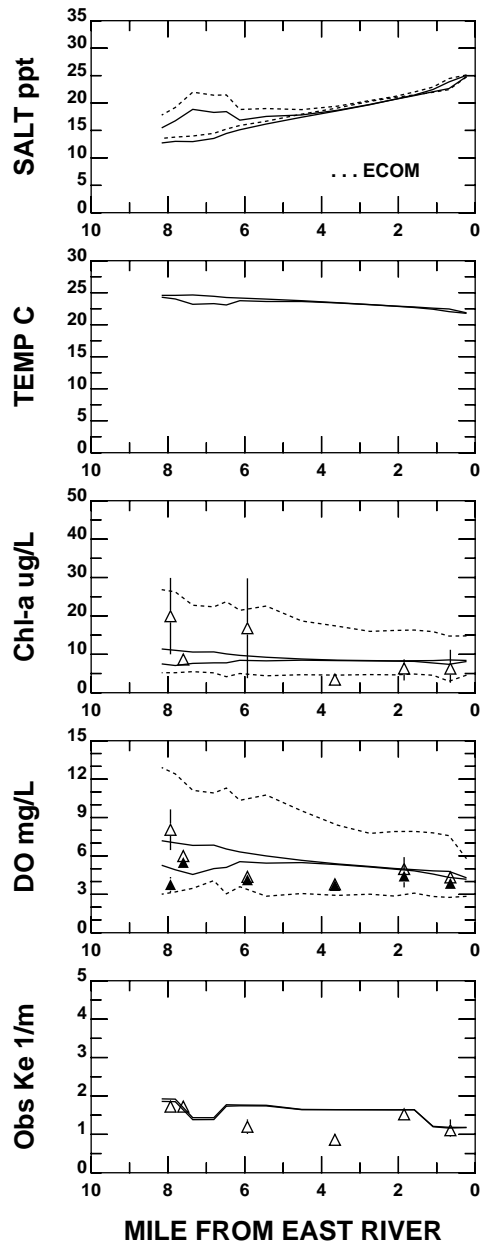
DATA Jun 28-Jul 27, 1999

	SURF BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment

MODEL

—	SURFACE 30-DAY MEAN
- - -	BOTTOM 30-DAY MEAN
- - -	30-DAY SURFACE MAX OR BOTTOM MIN

## HARLEM RIVER



**DATA Jul 27-Aug 26,1999**

Harbor Survey    SURF BOT

                  △ ▲    Transect

                  t e    Embayment

NYSDEC           ○    Transect

                  c    Embayment

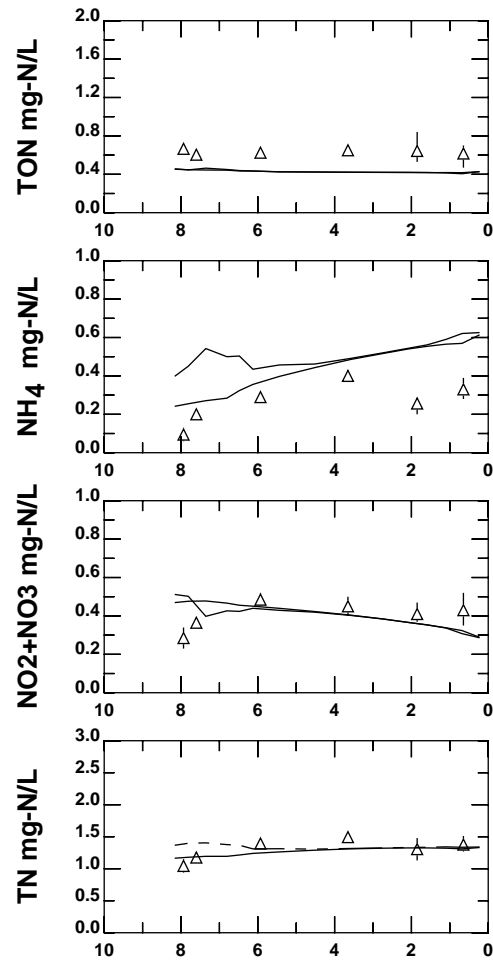
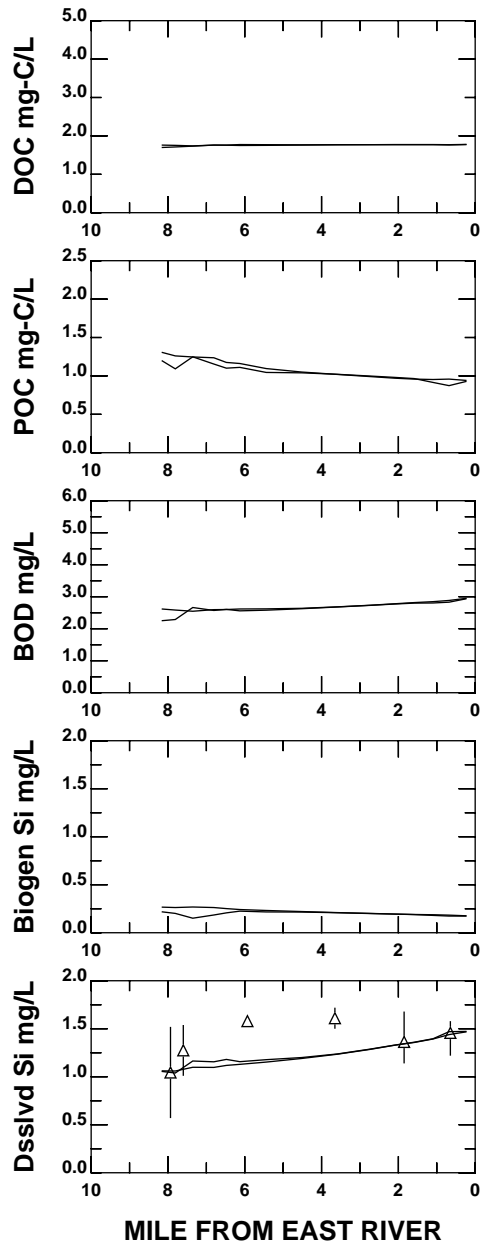
**MODEL**

———— SURFACE 30-DAY MEAN

----- BOTTOM 30-DAY MEAN

- - - 30-DAY SURFACE MAX OR BOTTOM MIN

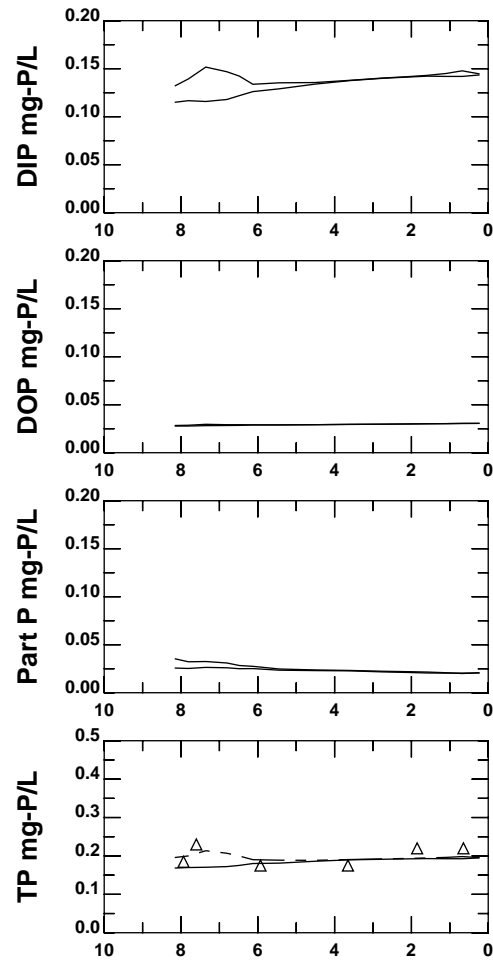
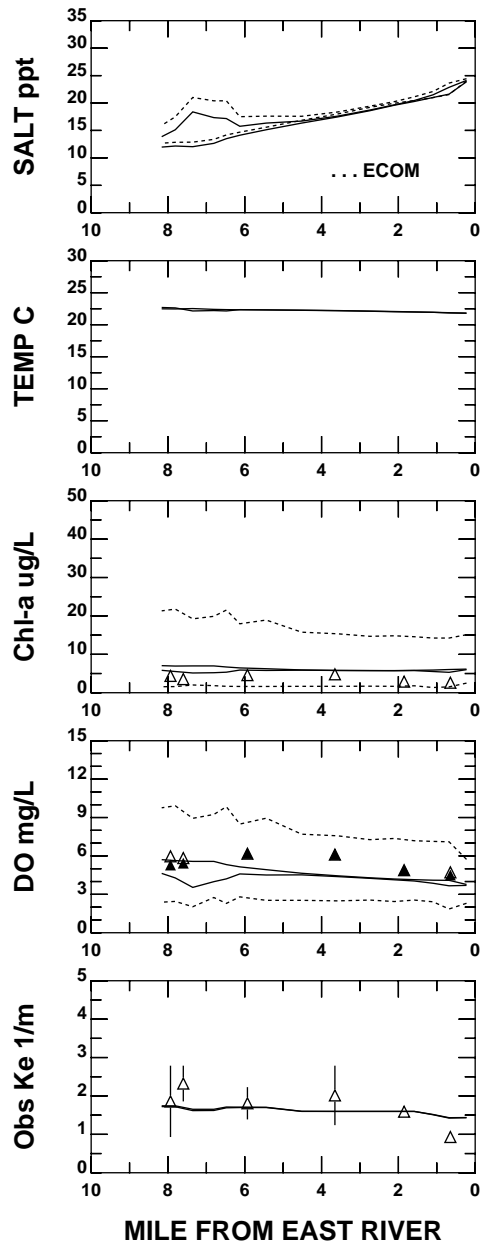
**HARLEM RIVER**



DATA Jul 27-Aug 26, 1999

Harbor Survey	△	▲	Transect	—	SURFACE 30-DAY MEAN
	t	e	Embayment	-----	BOTTOM 30-DAY MEAN
NYSDEC	○		Transect	- - -	30-DAY SURFACE MAX OR BOTTOM MIN
	c		Embayment		

**HARLEM RIVER**



**DATA** Aug 27-Sep 25,1999

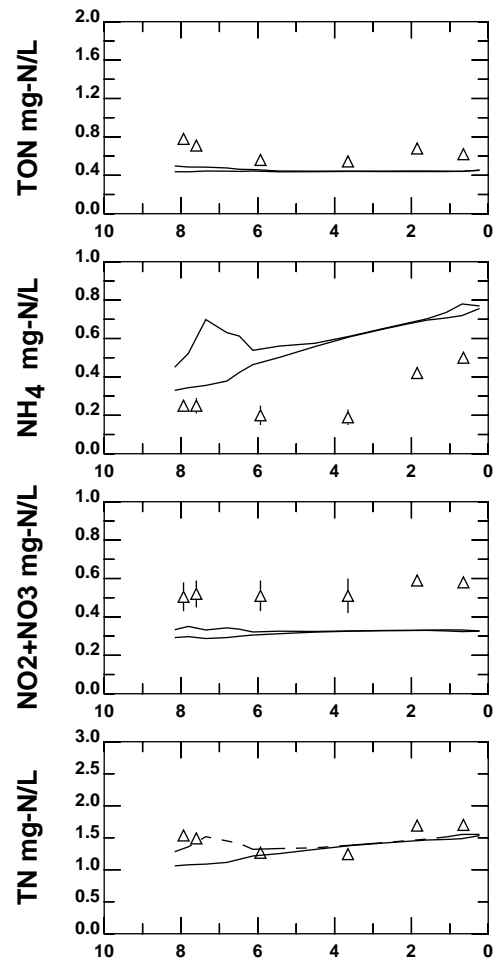
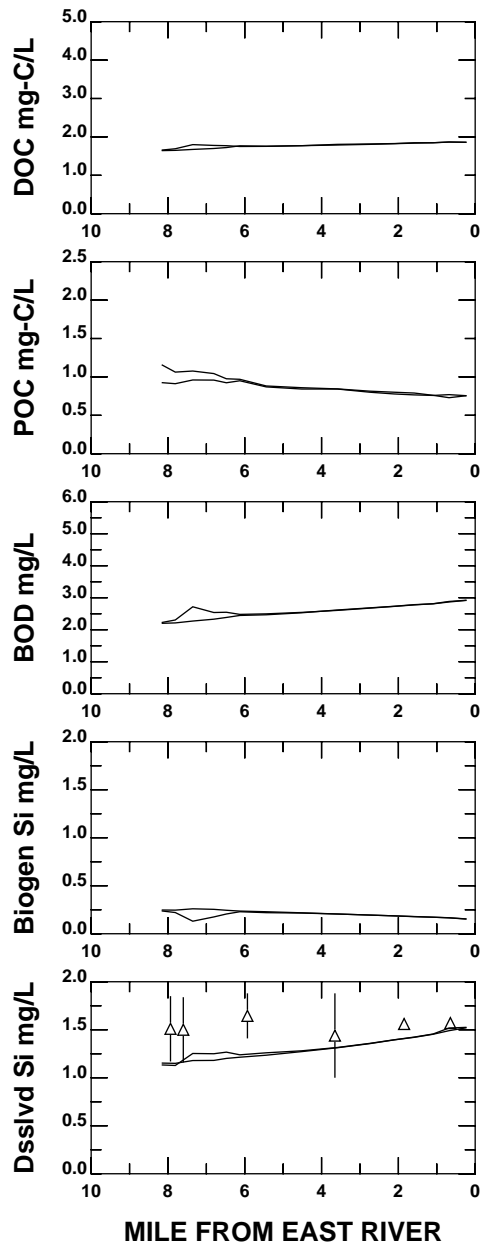
**MODEL**

	<b>SURF BOT</b>		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment

—	<b>SURFACE 30-DAY MEAN</b>
- - -	<b>BOTTOM 30-DAY MEAN</b>
- - -	<b>30-DAY SURFACE MAX OR BOTTOM MIN</b>

**HARLEM RIVER**



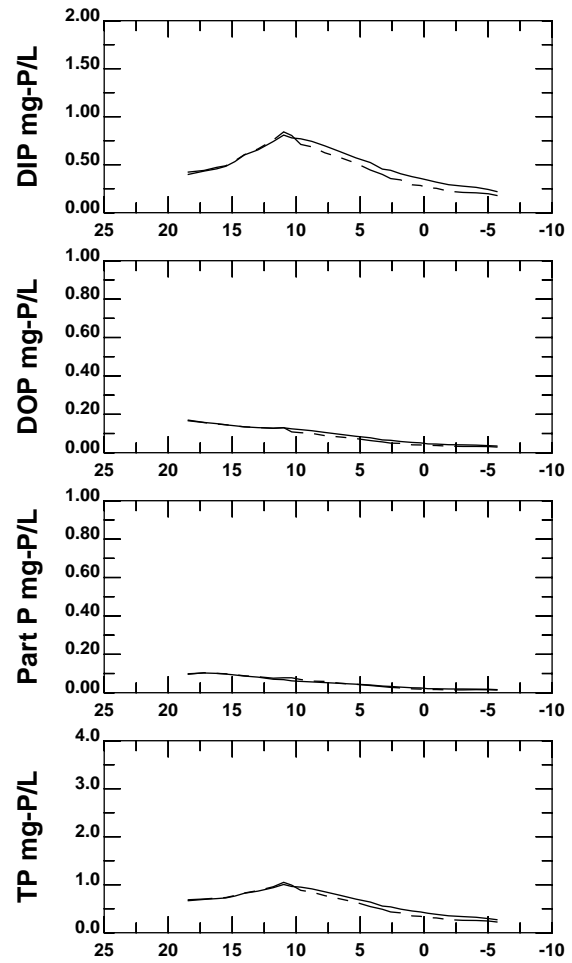
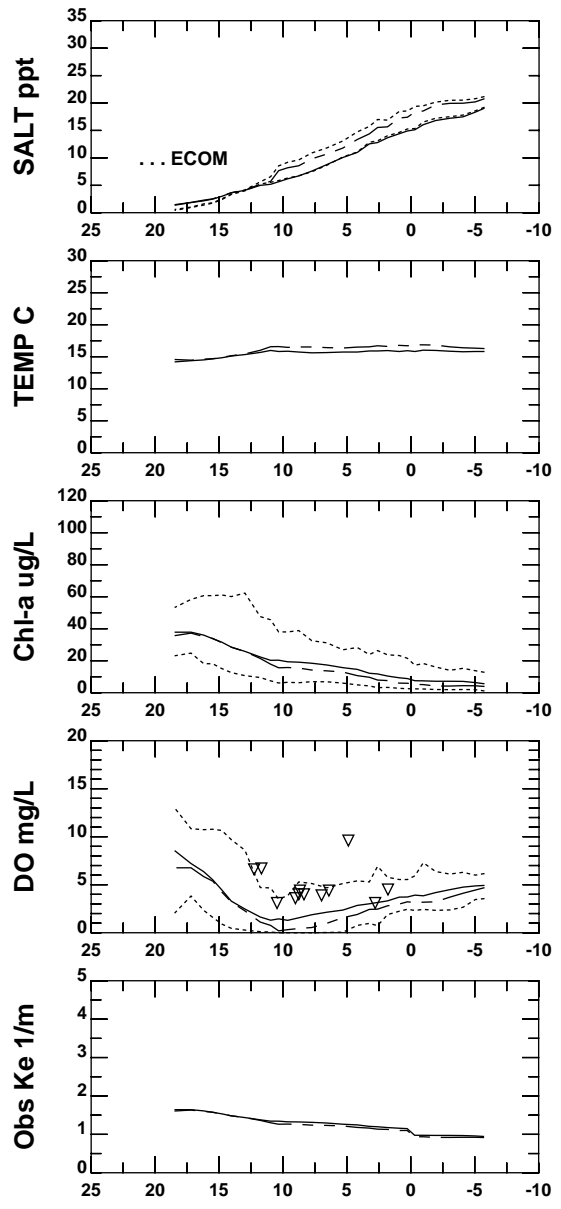
DATA Aug 27-Sep 25, 1999

	SURF BOT		
Harbor Survey	△	▲	Transect Embayment
NYSDEC	○	c	Transect Embayment

MODEL

—	SURFACE 30-DAY MEAN
- - -	BOTTOM 30-DAY MEAN
- - -	30-DAY SURFACE MAX OR BOTTOM MIN

**HARLEM RIVER**

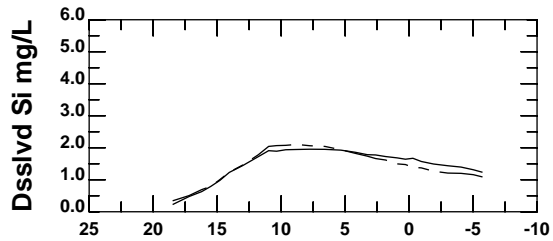
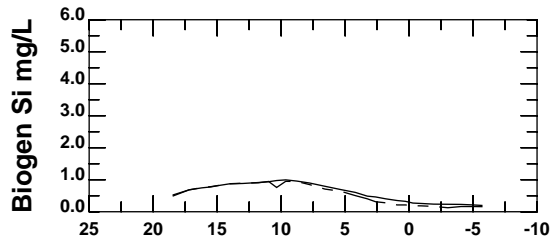
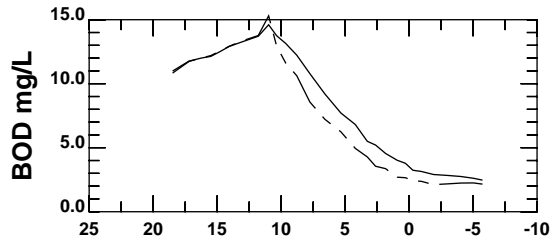
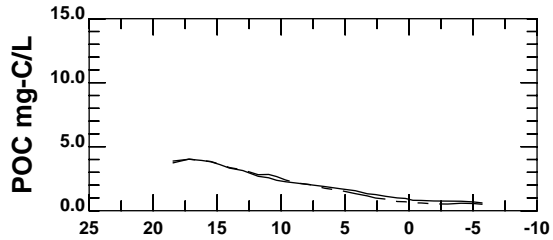
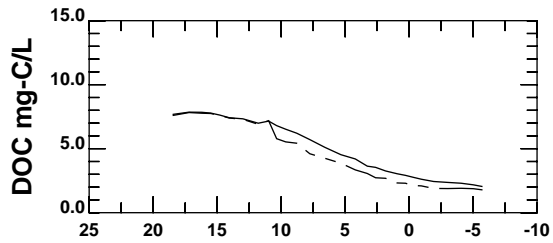


**MILE FROM MOUTH HACKENSACK RIVER  
HACKENSACK RIVER AND NEWARK BAY**

**MILE FROM MOUTH HACKENSACK RIVER**  
DATA Oct 1-30,1998

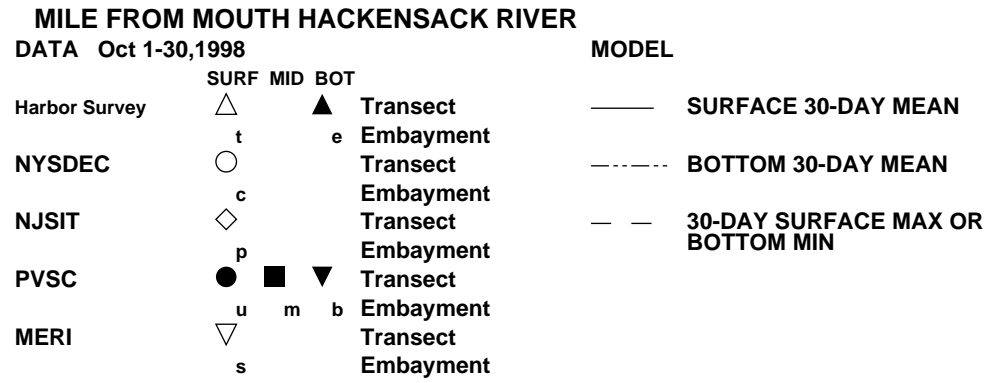
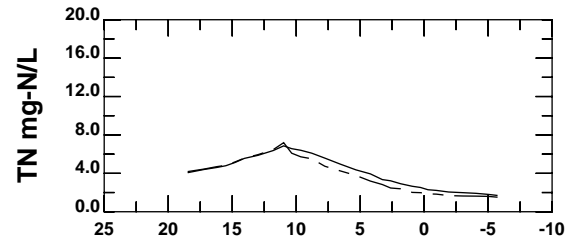
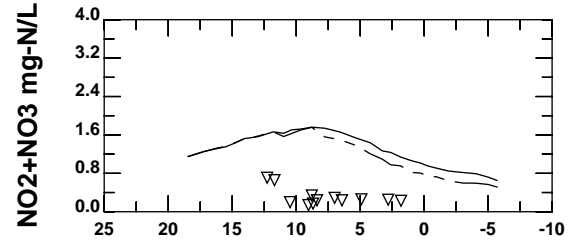
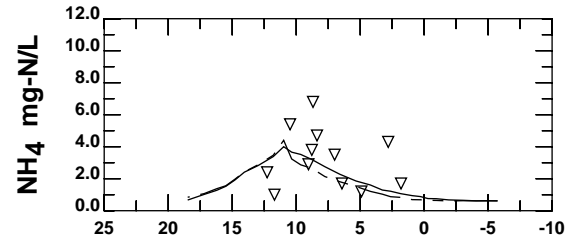
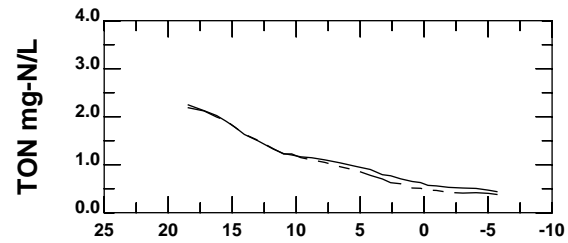
	<b>SURF MID BOT</b>			
Harbor Survey	△	▲	Transect	— SURFACE 30-DAY MEAN
	t	e	Embayment	- - - - - BOTTOM 30-DAY MEAN
NYSDEC	○		Transect	- - - - - 30-DAY SURFACE MAX OR BOTTOM MIN
	c		Embayment	
NJSIT	◇		Transect	
	p		Embayment	
PVSC	●	■	Transect	
	u	m	Embayment	
MERI	▽		Transect	
	s		Embayment	

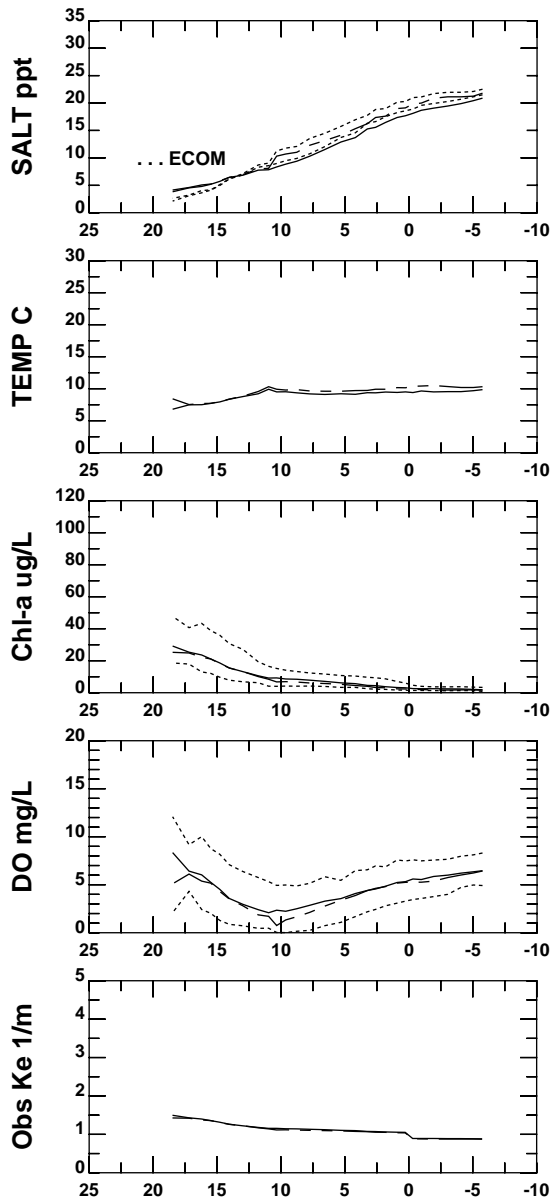




**MILE FROM MOUTH HACKENSACK RIVER**  
**HACKENSACK RIVER AND NEWARK BAY**

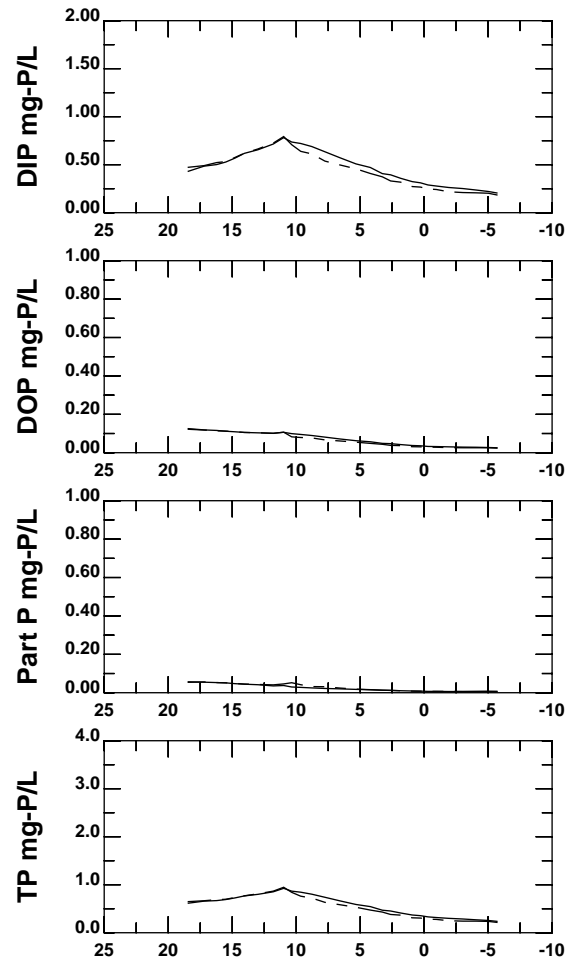
DATE: 4/07/2006 TIME: 11:14:25





**MILE FROM MOUTH HACKENSACK RIVER  
HACKENSACK RIVER AND NEWARK BAY**

DATE: 4/07/2006 TIME: 11:14:28



**MILE FROM MOUTH HACKENSACK RIVER**

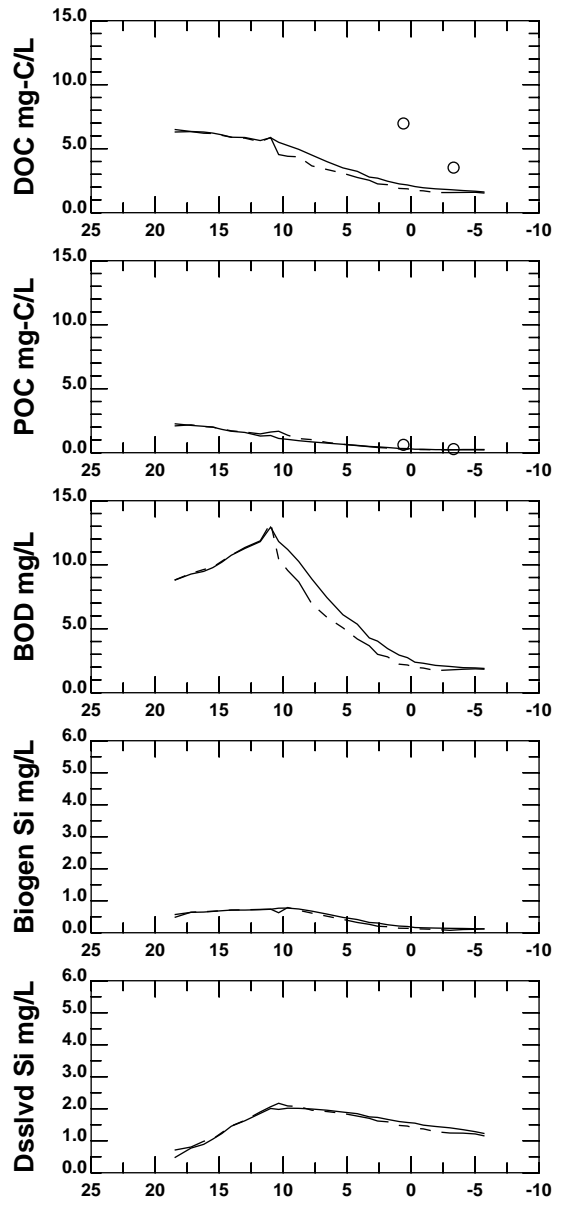
DATA Oct 31-Nov 29,1998

MODEL

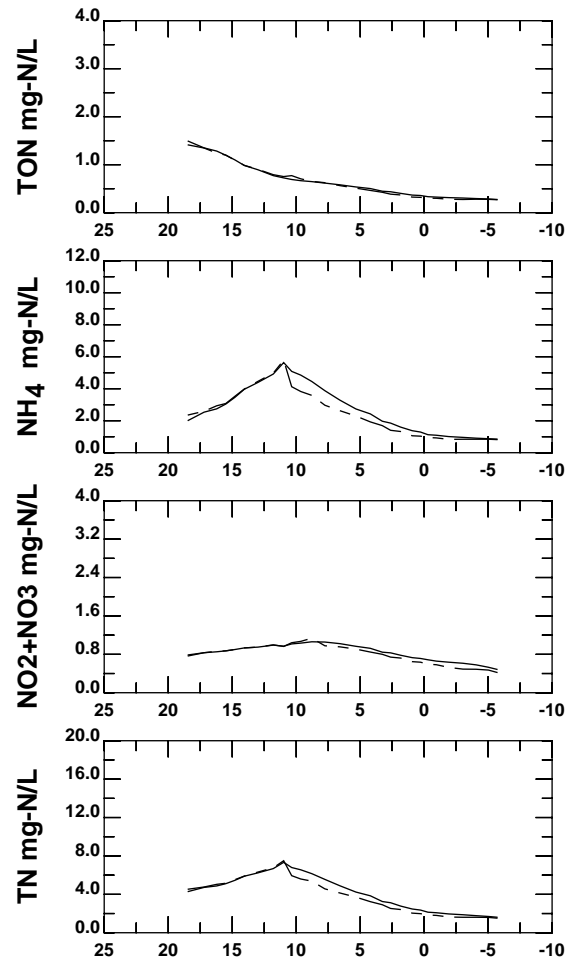
	SURF MID BOT			
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

—	SURFACE 30-DAY MEAN
- - - -	BOTTOM 30-DAY MEAN
- · - ·	30-DAY SURFACE MAX OR BOTTOM MIN



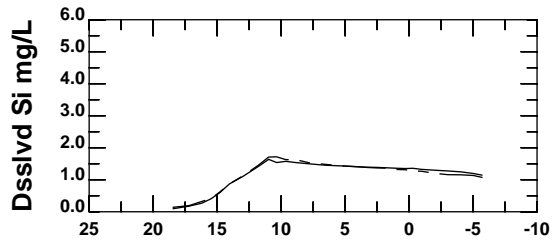
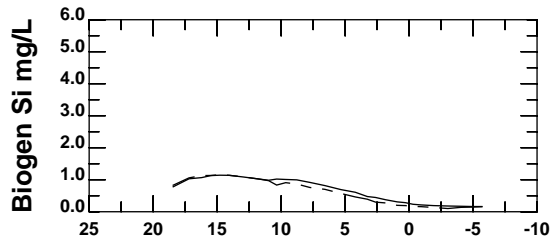
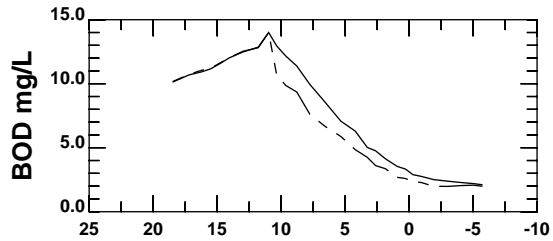
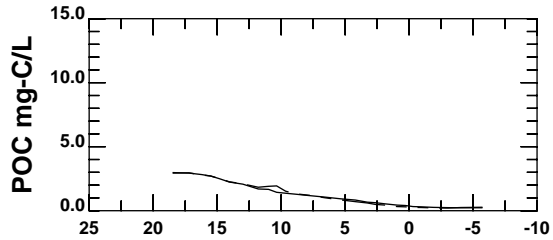
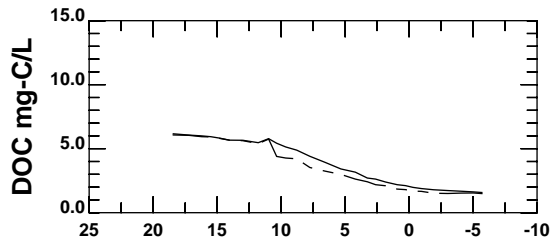
MILE FROM MOUTH HACKENSACK RIVER  
**HACKENSACK RIVER AND NEWARK BAY**



**MILE FROM MOUTH HACKENSACK RIVER**  
 DATA Oct 31-Nov 29,1998

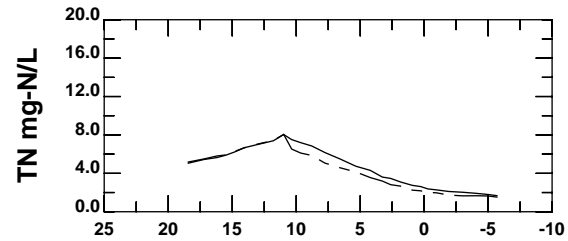
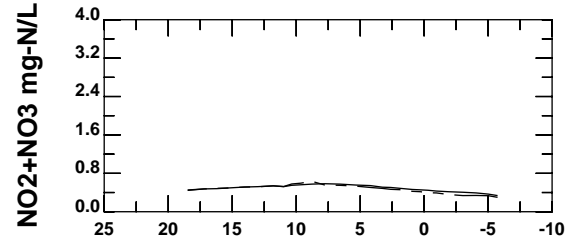
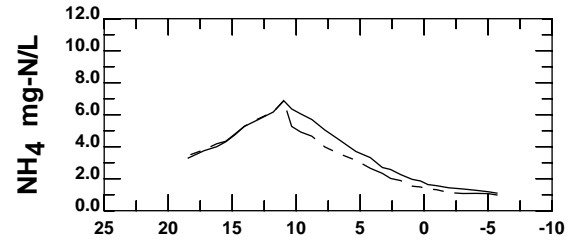
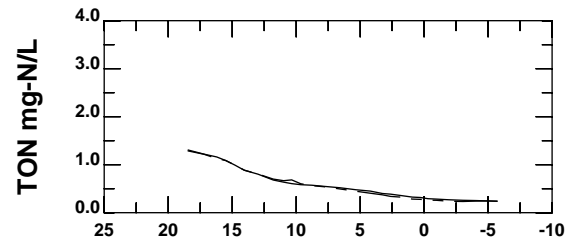
	SURF MID BOT			
Harbor Survey	△	▲	Transect	— SURFACE 30-DAY MEAN
	t	e	Embayment	- - - - - BOTTOM 30-DAY MEAN
NYSDEC	○		Transect	- - - - - 30-DAY SURFACE MAX OR
	c		Embayment	— — — — — BOTTOM MIN
NJSIT	◇		Transect	
	p		Embayment	
PVSC	●	■	Transect	
	u	m	Embayment	
MERI	▽		Transect	
	s		Embayment	





**MILE FROM MOUTH HACKENSACK RIVER  
HACKENSACK RIVER AND NEWARK BAY**

DATE: 4/07/2006 TIME: 11:14:32



**MILE FROM MOUTH HACKENSACK RIVER**

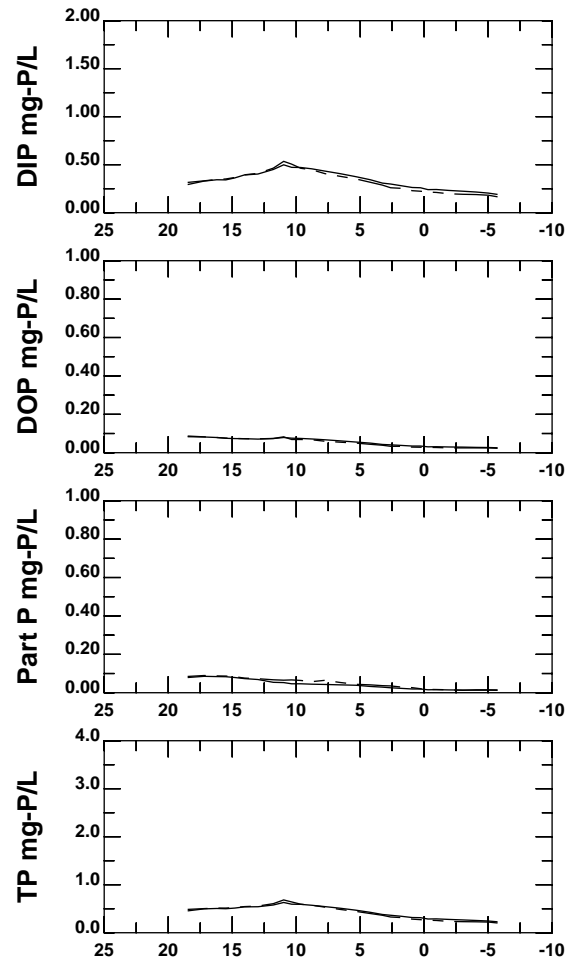
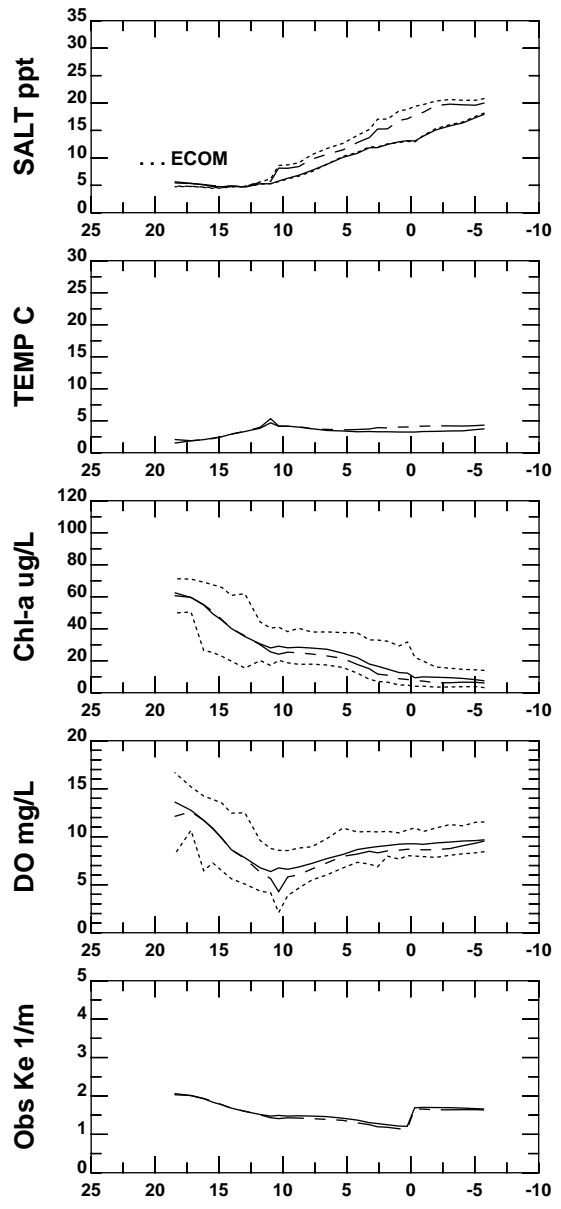
DATA Nov 30-Dec 29,1998

MODEL

	SURF MID BOT			
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

—	SURFACE 30-DAY MEAN
- - - -	BOTTOM 30-DAY MEAN
- - -	30-DAY SURFACE MAX OR BOTTOM MIN



**MILE FROM MOUTH HACKENSACK RIVER  
HACKENSACK RIVER AND NEWARK BAY**

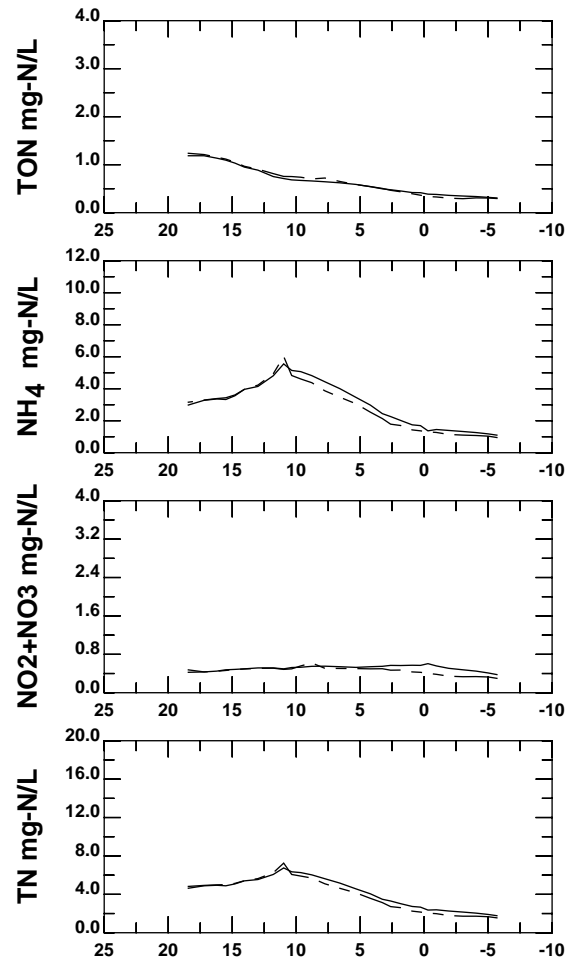
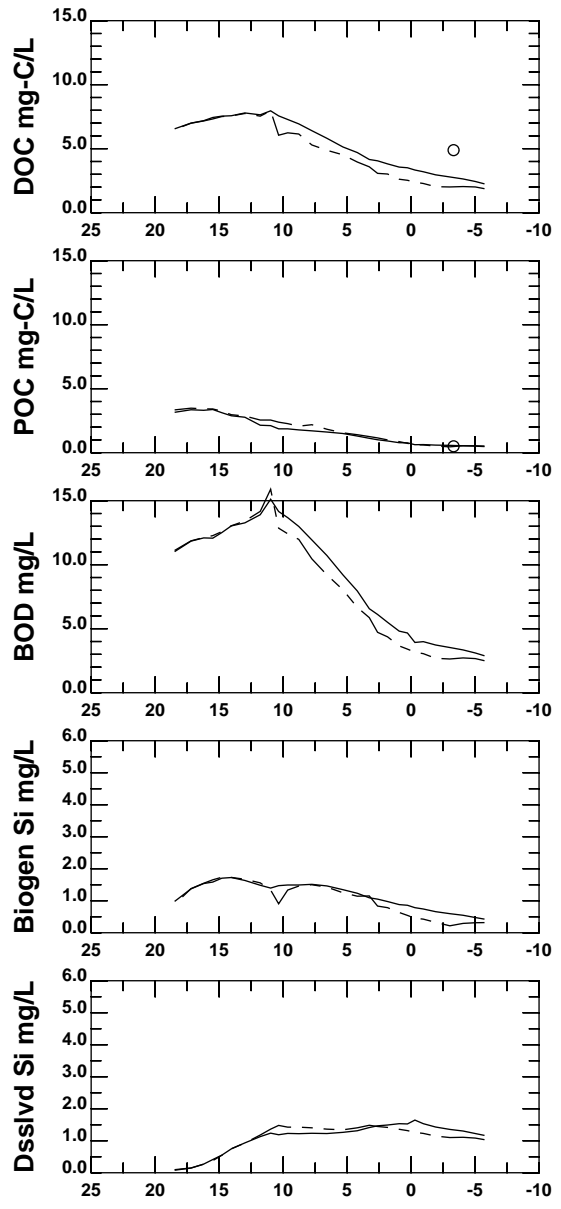
**MILE FROM MOUTH HACKENSACK RIVER**

DATA Dec 30 1998 -Jan 28,1999

- |               | SURF MID BOT |   |           |  |
|---------------|--------------|---|-----------|--|
| Harbor Survey | △            | ▲ | Transect  |  |
|               | t            | e | Embayment |  |
| NYSDEC        | ○            |   | Transect  |  |
|               | c            |   | Embayment |  |
| NJSIT         | ◇            |   | Transect  |  |
|               | p            |   | Embayment |  |
| PVSC          | ●            | ■ | Transect  |  |
|               | u            | m | Embayment |  |
| MERI          | ▽            |   | Transect  |  |
|               | s            |   | Embayment |  |

**MODEL**

- |         |                                  |
|---------|----------------------------------|
| —       | SURFACE 30-DAY MEAN              |
| - - - - | BOTTOM 30-DAY MEAN               |
| - · - · | 30-DAY SURFACE MAX OR BOTTOM MIN |



MILE FROM MOUTH HACKENSACK RIVER  
**HACKENSACK RIVER AND NEWARK BAY**

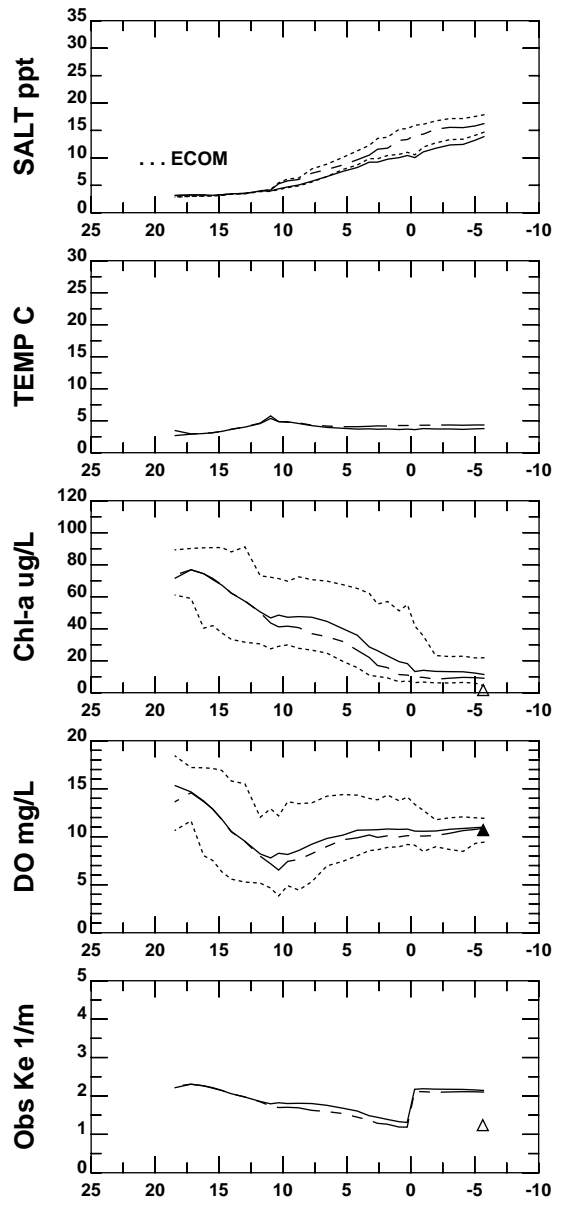
**MILE FROM MOUTH HACKENSACK RIVER**

DATA Dec 30 1998 -Jan 28,1999

	SURF MID BOT			
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

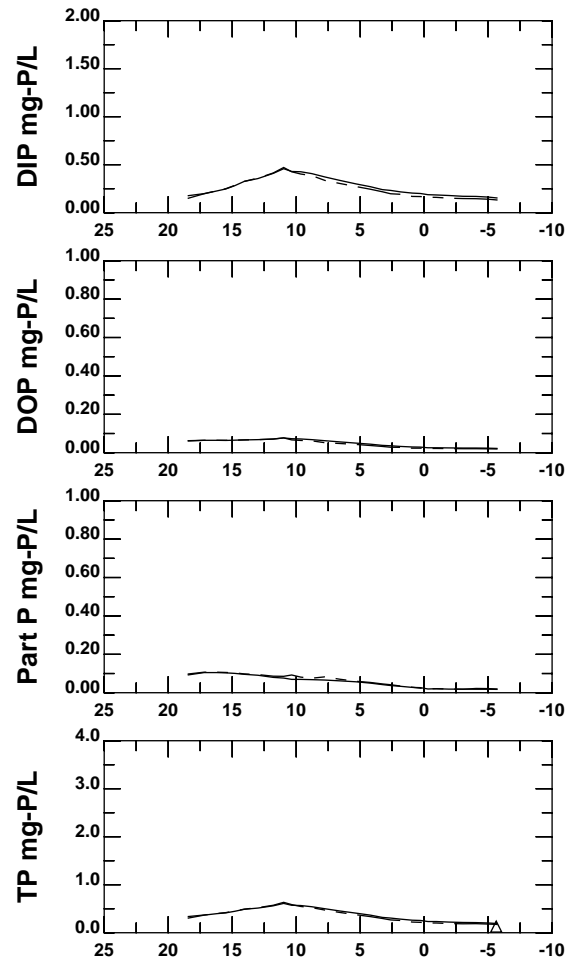
**MODEL**

————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN



MILE FROM MOUTH HACKENSACK RIVER  
**HACKENSACK RIVER AND NEWARK BAY**

DATE: 4/07/2006 TIME: 11:14:38



MILE FROM MOUTH HACKENSACK RIVER

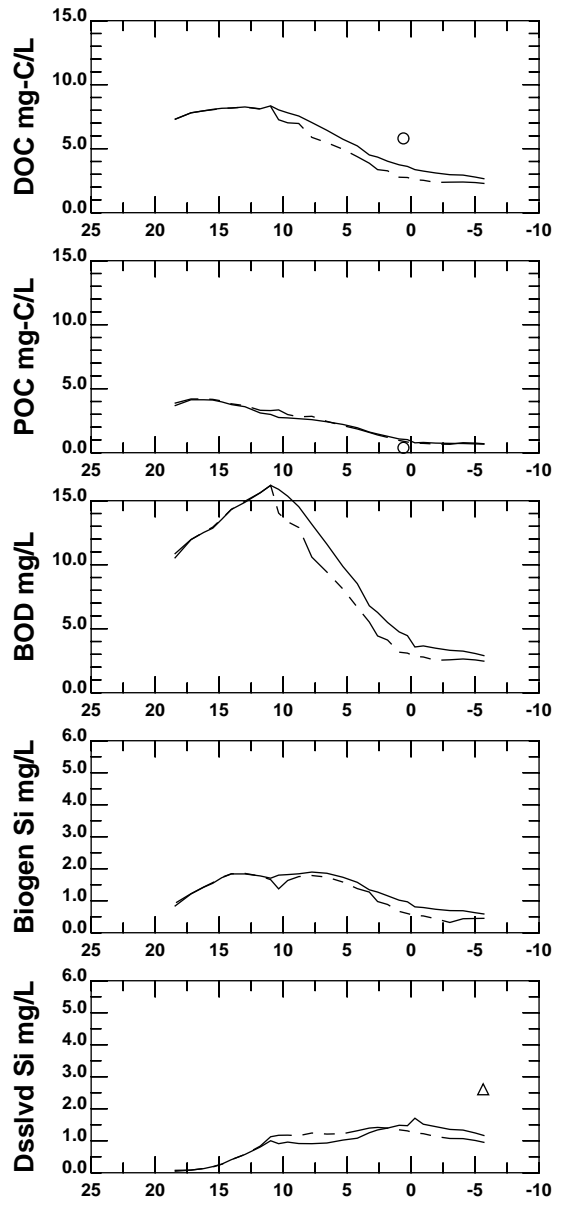
DATA Jan 29-Feb 27, 1999

	SURF MID BOT			
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

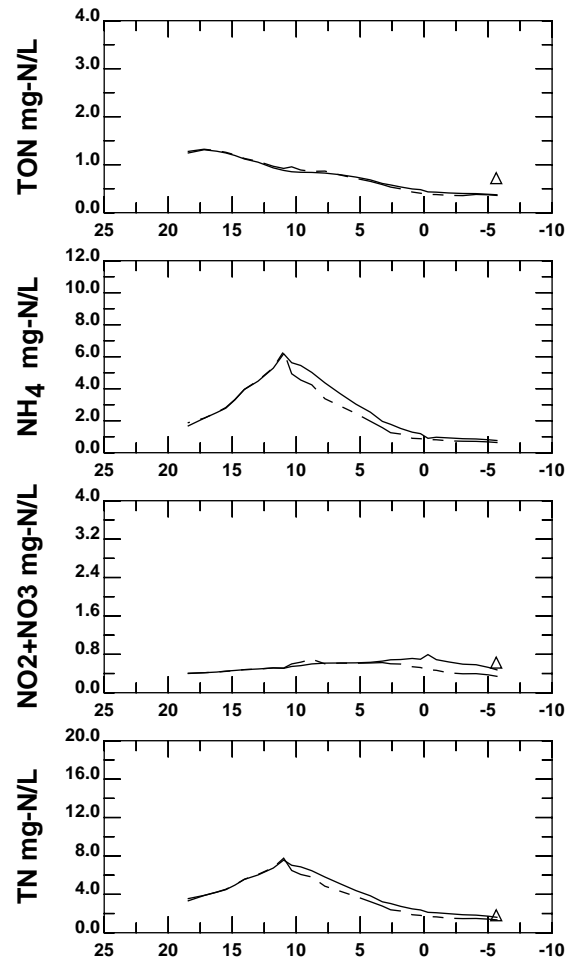
MODEL

—	SURFACE 30-DAY MEAN
- - - -	BOTTOM 30-DAY MEAN
- . - .	30-DAY SURFACE MAX OR BOTTOM MIN



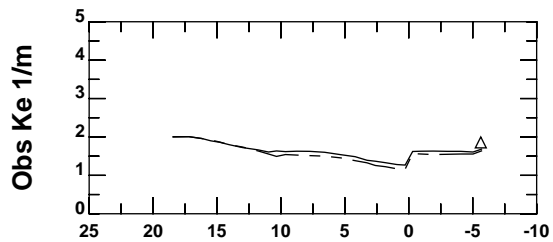
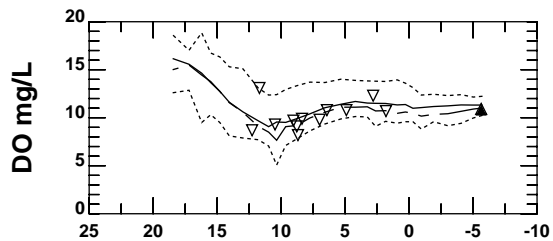
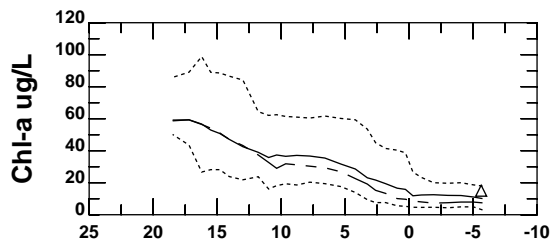
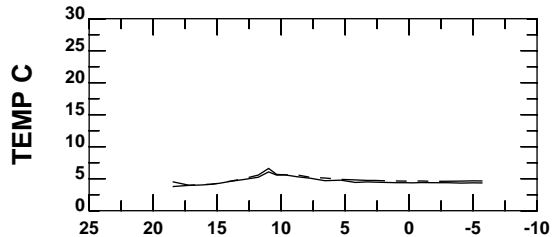
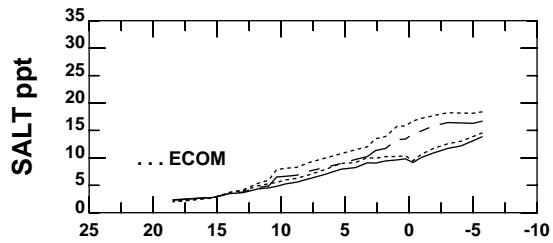


MILE FROM MOUTH HACKENSACK RIVER  
**HACKENSACK RIVER AND NEWARK BAY**



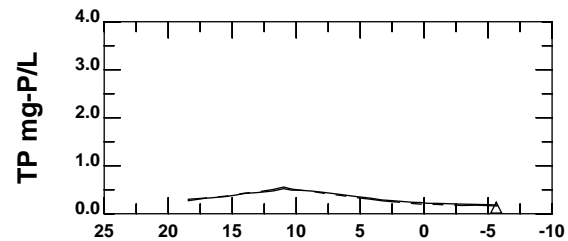
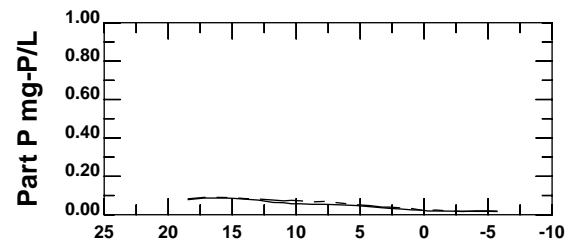
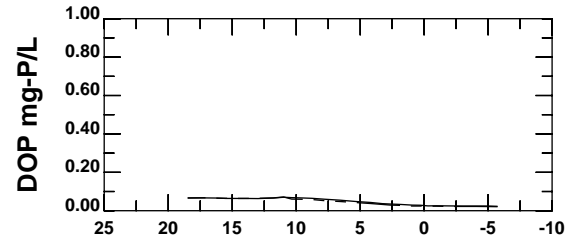
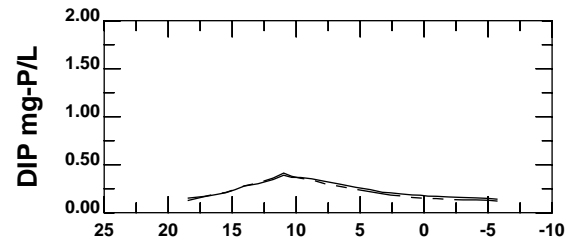
**MILE FROM MOUTH HACKENSACK RIVER**  
 DATA Jan 29-Feb 27, 1999

	SURF MID BOT			MODEL
Harbor Survey	△		▲	— SURFACE 30-DAY MEAN
	t		e	--- BOTTOM 30-DAY MEAN
NYSDEC	○			-·-·- 30-DAY SURFACE MAX OR BOTTOM MIN
	c			
NJSIT	◇			
	p			
PVSC	●	■	▼	
	u	m	b	
MERI	▽			
	s			



MILE FROM MOUTH HACKENSACK RIVER  
**HACKENSACK RIVER AND NEWARK BAY**

DATE: 4/07/2006 TIME: 11:14:42

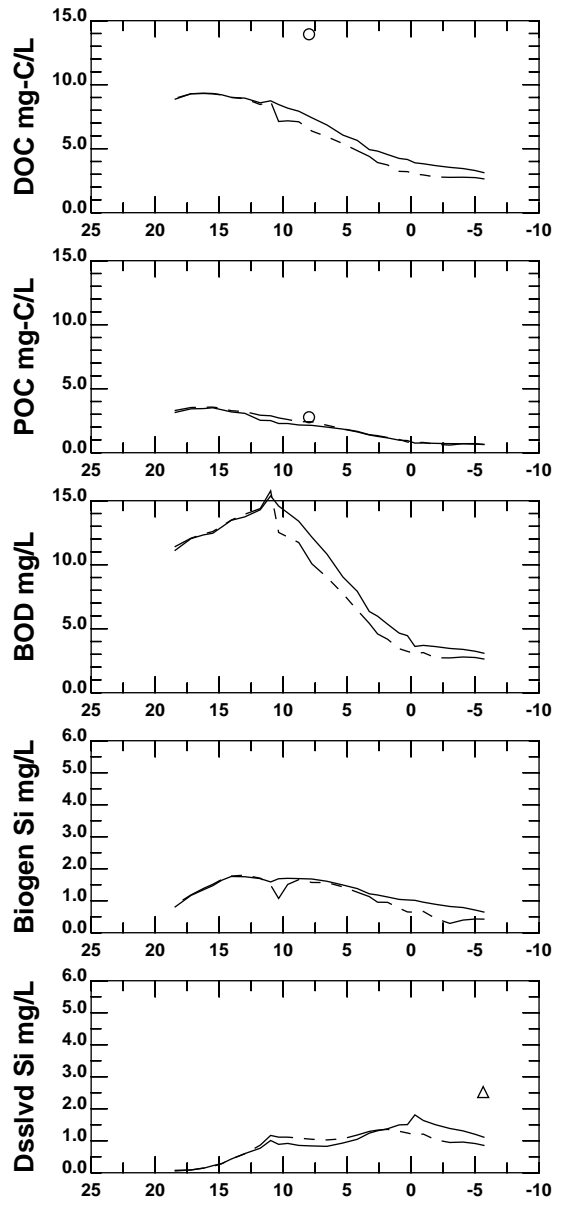


**MILE FROM MOUTH HACKENSACK RIVER**

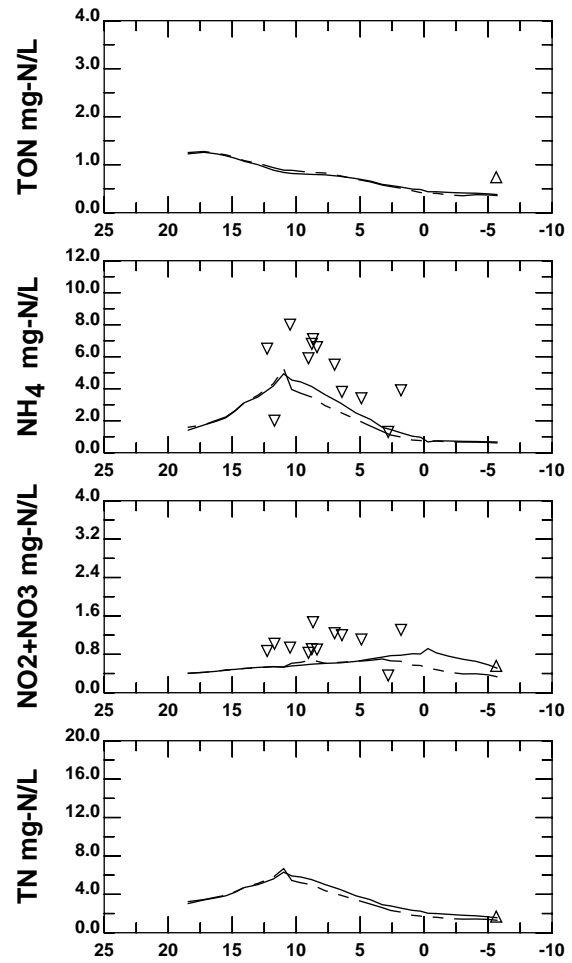
DATA Feb 28-Mar 29,1999

MODEL

	SURF MID BOT			
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment
				— SURFACE 30-DAY MEAN
				- - - - - BOTTOM 30-DAY MEAN
				- - - 30-DAY SURFACE MAX OR BOTTOM MIN

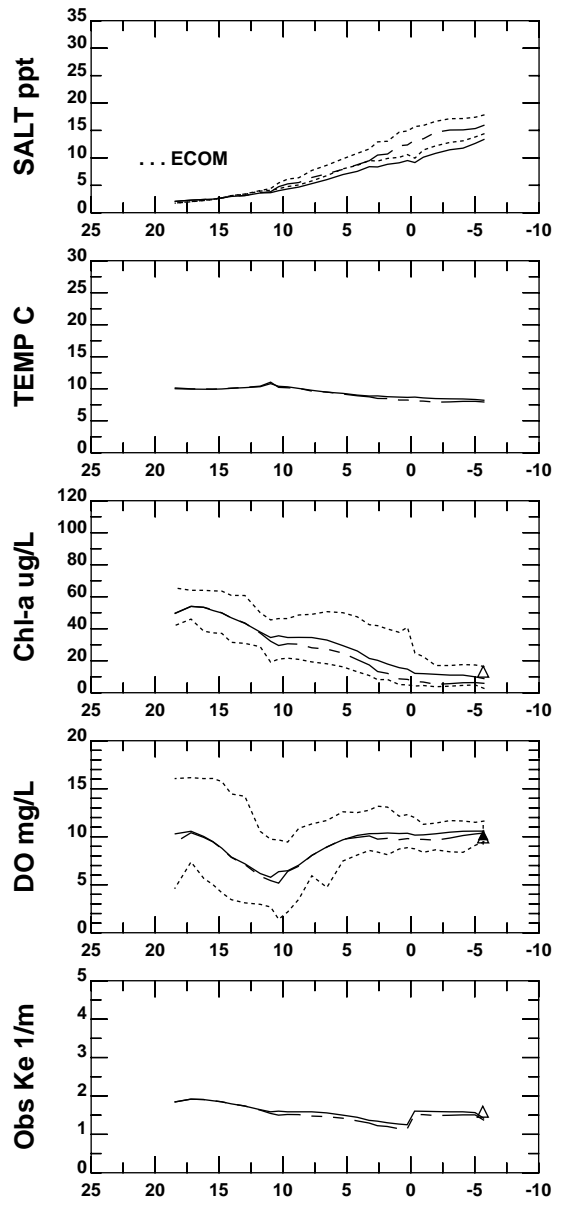


MILE FROM MOUTH HACKENSACK RIVER  
**HACKENSACK RIVER AND NEWARK BAY**



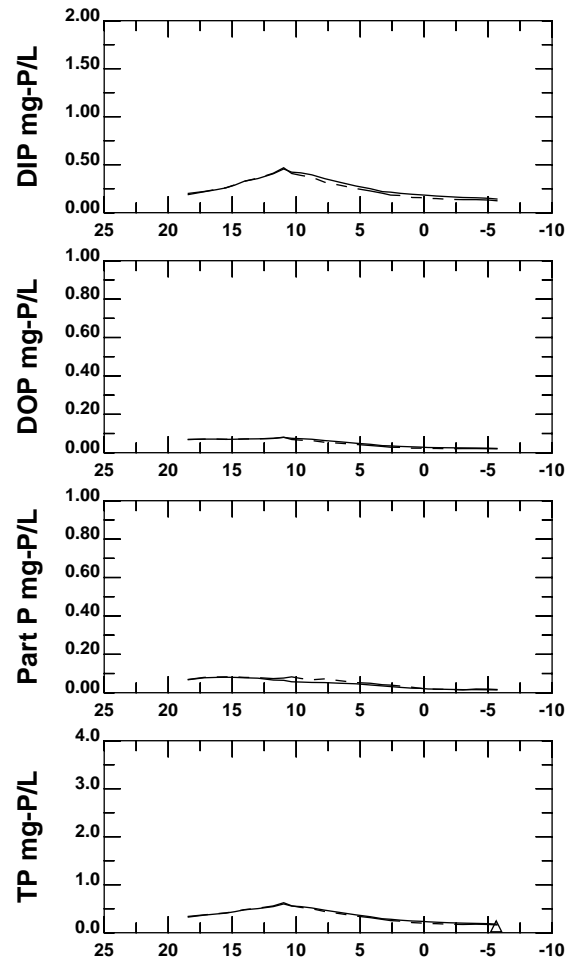
**MILE FROM MOUTH HACKENSACK RIVER**  
 DATA Feb 28-Mar 29, 1999

	SURF MID BOT			MODEL
Harbor Survey	△	▲	Transect	— SURFACE 30-DAY MEAN
	t	e	Embayment	----- BOTTOM 30-DAY MEAN
NYSDEC	○	c	Transect	- - - 30-DAY SURFACE MAX OR
			Embayment	BOTTOM MIN
NJSIT	◇	p	Transect	
			Embayment	
PVSC	●	■	Transect	
	u	m	Embayment	
MERI	▽	b	Transect	
	s		Embayment	



MILE FROM MOUTH HACKENSACK RIVER  
**HACKENSACK RIVER AND NEWARK BAY**

DATE: 4/07/2006 TIME: 11:14:46



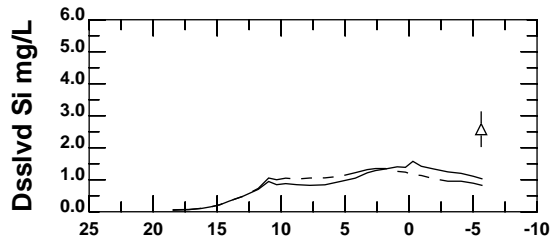
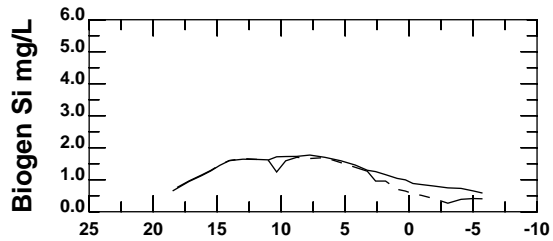
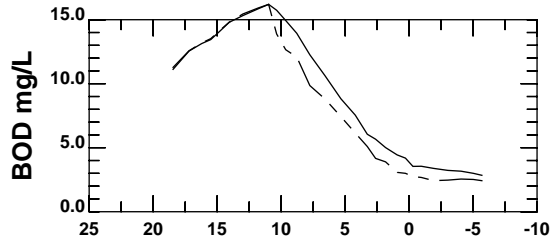
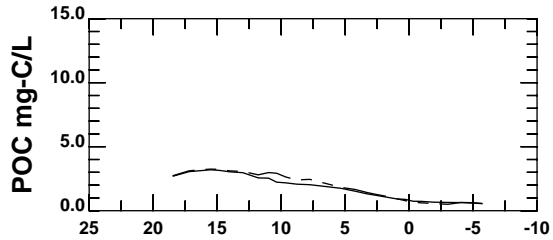
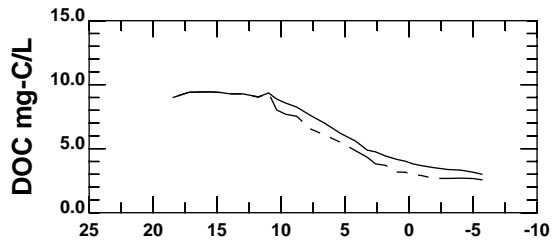
MILE FROM MOUTH HACKENSACK RIVER

DATA Mar 30-Apr 28,1999

	SURF MID BOT			
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

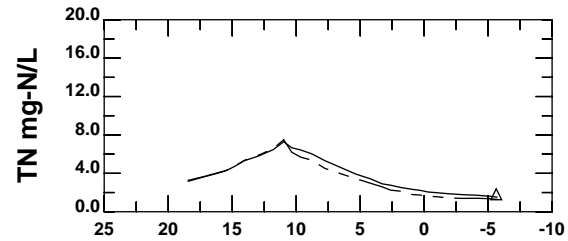
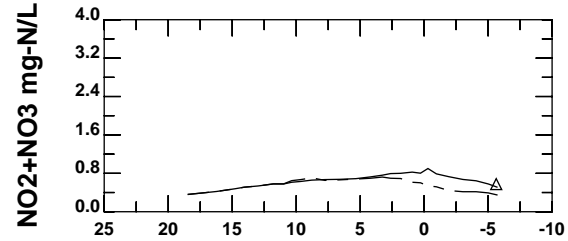
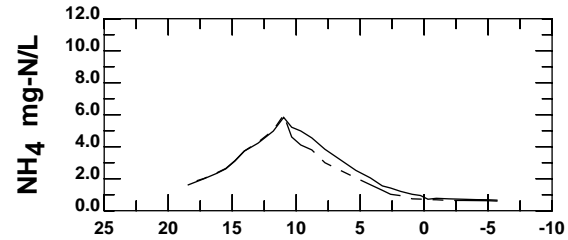
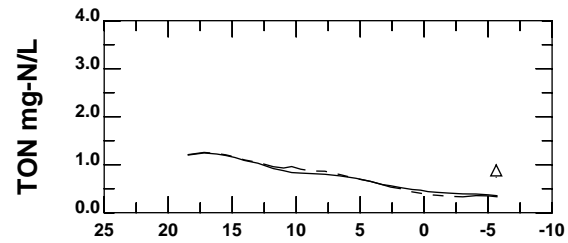
MODEL

—	SURFACE 30-DAY MEAN
- - - -	BOTTOM 30-DAY MEAN
- - -	30-DAY SURFACE MAX OR BOTTOM MIN



**MILE FROM MOUTH HACKENSACK RIVER  
HACKENSACK RIVER AND NEWARK BAY**

DATE: 4/07/2006 TIME: 11:14:46

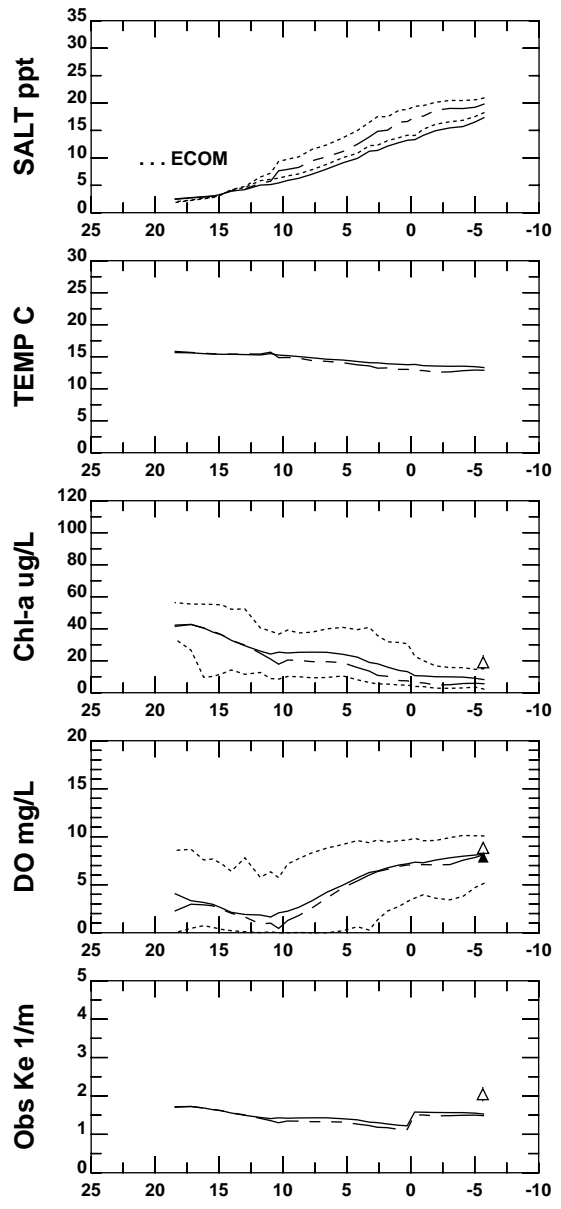


**MILE FROM MOUTH HACKENSACK RIVER**

DATA Mar 30-Apr 28,1999

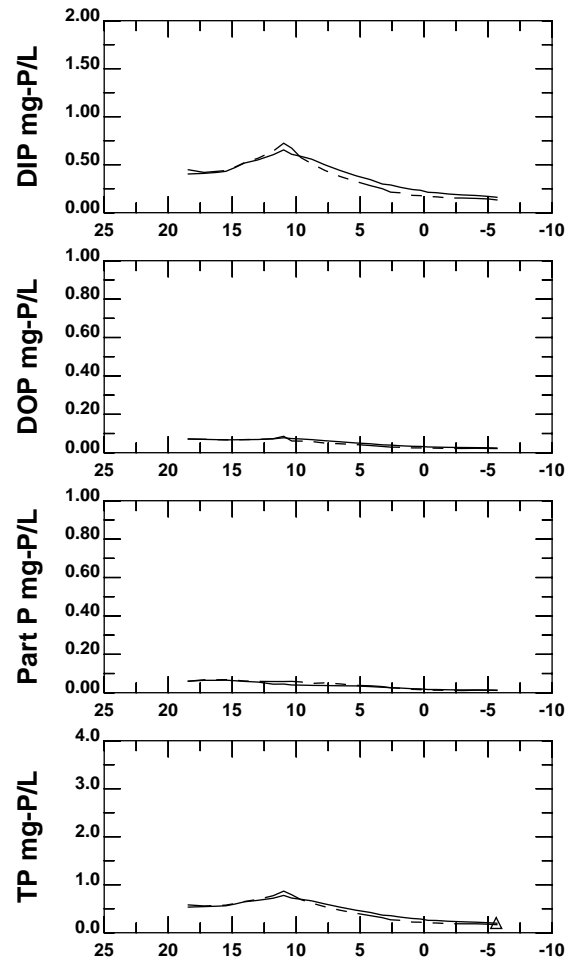
MODEL

	SURF MID BOT			
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment
				— SURFACE 30-DAY MEAN
				- - - - - BOTTOM 30-DAY MEAN
				- - - 30-DAY SURFACE MAX OR BOTTOM MIN



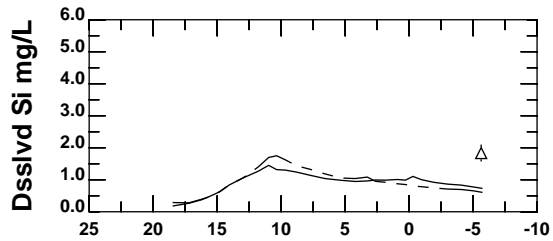
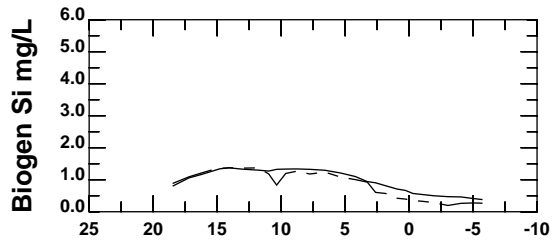
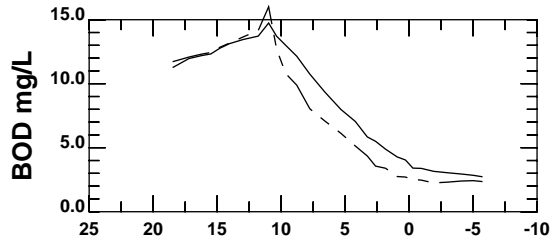
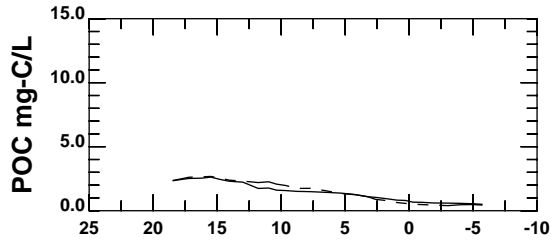
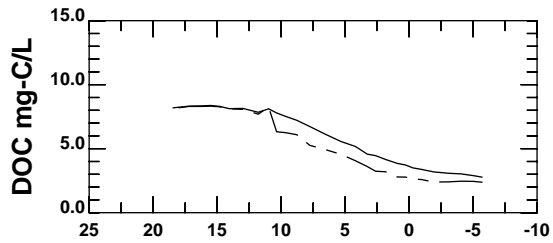
MILE FROM MOUTH HACKENSACK RIVER  
**HACKENSACK RIVER AND NEWARK BAY**

DATE: 4/07/2006 TIME: 11:14:50



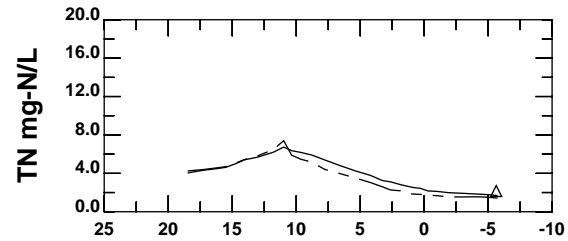
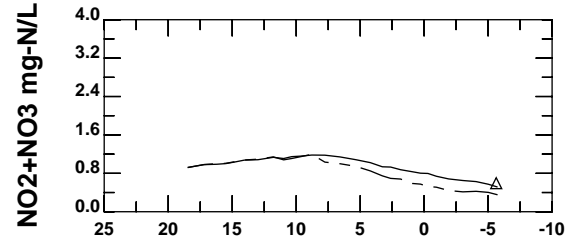
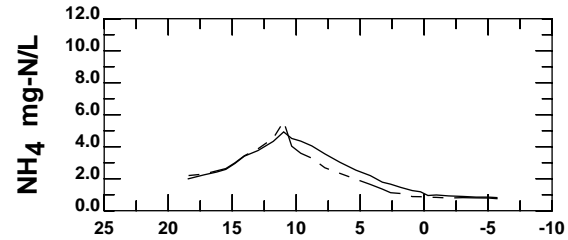
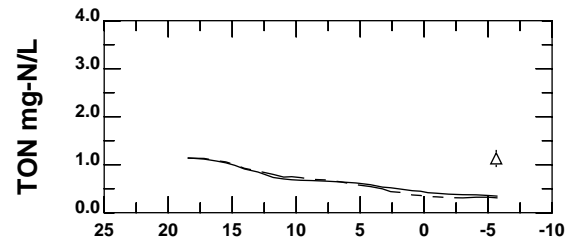
MILE FROM MOUTH HACKENSACK RIVER  
 DATA Apr 29-May 28,1999

	SURF MID BOT			MODEL
Harbor Survey	△	▲	▲	— SURFACE 30-DAY MEAN
	t	e	e	- - - - - BOTTOM 30-DAY MEAN
NYSDEC	○			- - - - - 30-DAY SURFACE MAX OR BOTTOM MIN
	c			
NJSIT	◇			
	p			
PVSC	●	■	▼	
	u	m	b	
MERI	▽			
	s			



**MILE FROM MOUTH HACKENSACK RIVER**  
**HACKENSACK RIVER AND NEWARK BAY**

DATE: 4/07/2006 TIME: 11:14:50



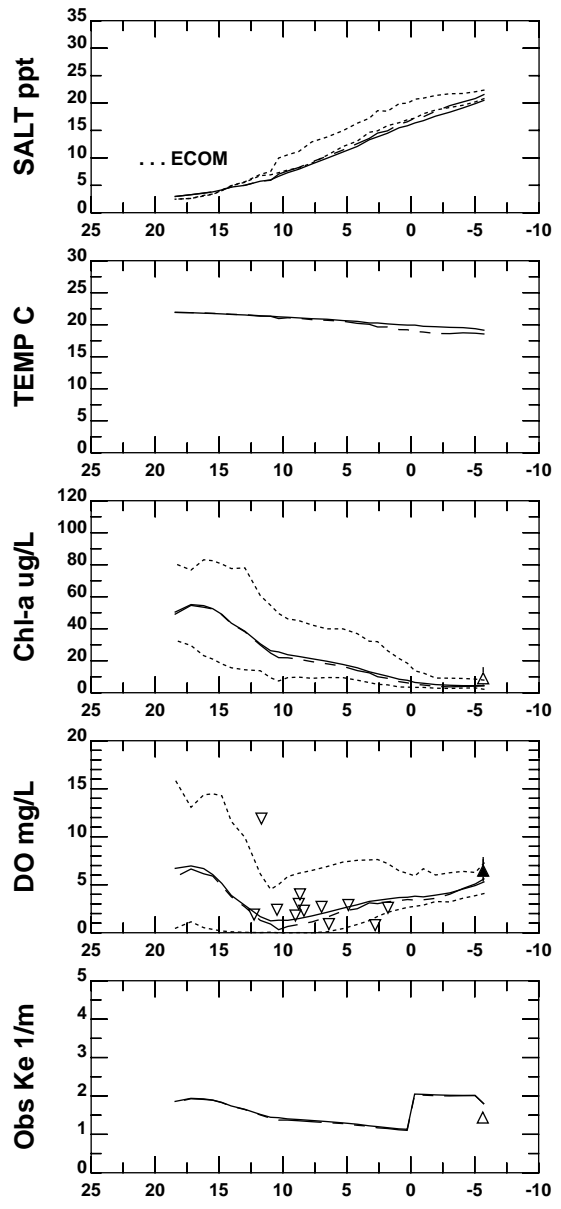
**MILE FROM MOUTH HACKENSACK RIVER**

DATA Apr 29-May 28,1999

	SURF MID BOT			
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

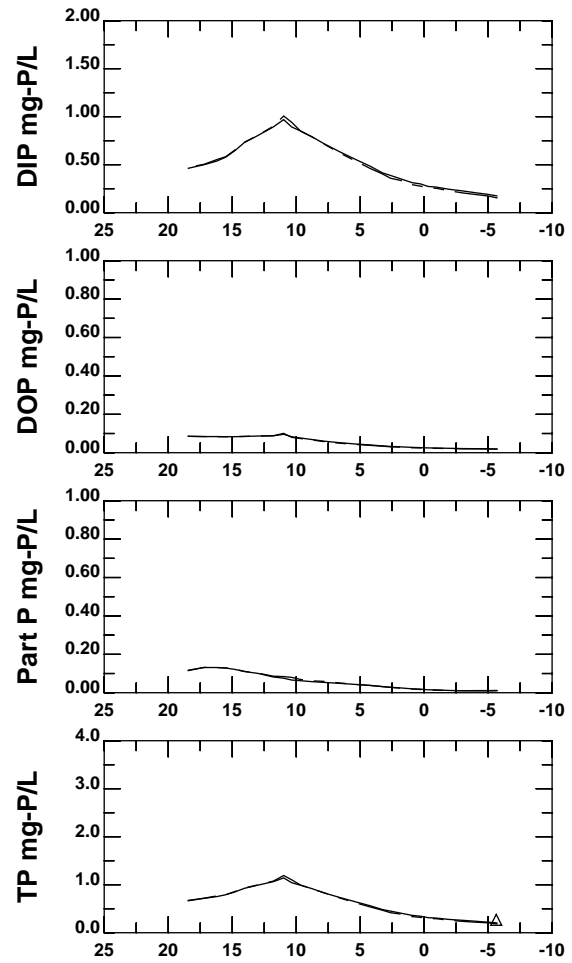
**MODEL**

————	SURFACE 30-DAY MEAN
- - - - -	BOTTOM 30-DAY MEAN
— — —	30-DAY SURFACE MAX OR BOTTOM MIN



MILE FROM MOUTH HACKENSACK RIVER  
**HACKENSACK RIVER AND NEWARK BAY**

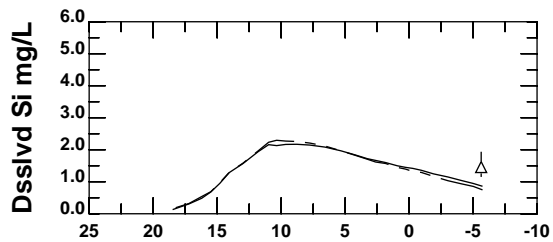
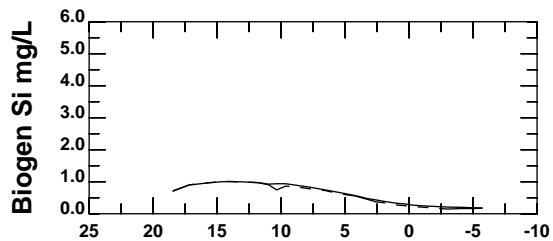
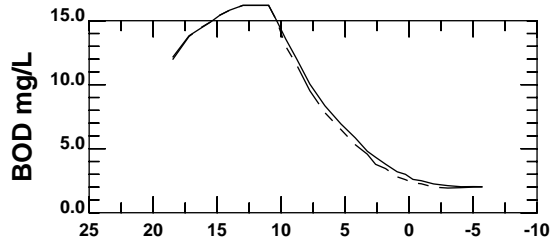
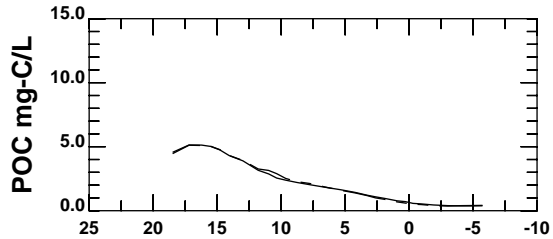
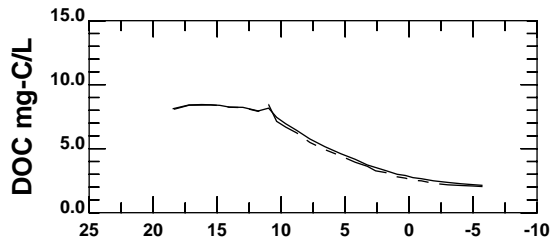
DATE: 4/07/2006 TIME: 11:14:54



MILE FROM MOUTH HACKENSACK RIVER  
 DATA May 29-Jun 27,1999

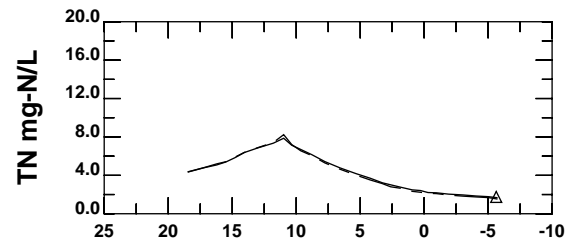
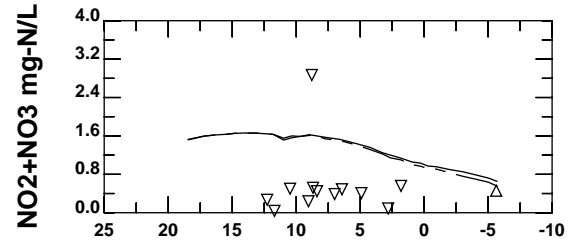
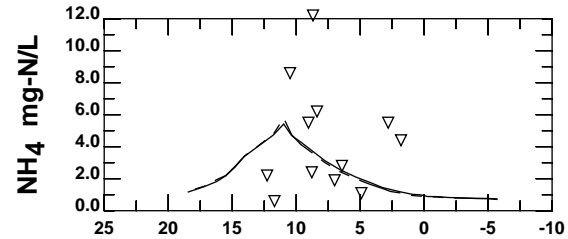
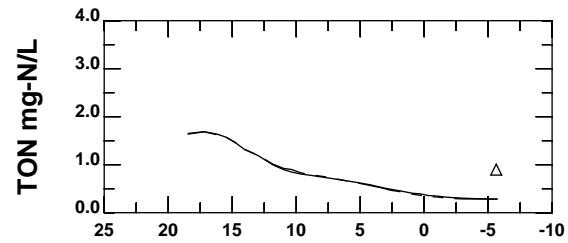
	SURF MID BOT			MODEL
Harbor Survey	△	▲	▲	— SURFACE 30-DAY MEAN
	t	e	e	- - - - - BOTTOM 30-DAY MEAN
NYSDEC	○			- - - - - 30-DAY SURFACE MAX OR BOTTOM MIN
	c			
NJSIT	◇			
	p			
PVSC	●	■	▼	
	u	m	b	
MERI	▽			
	s			





**MILE FROM MOUTH HACKENSACK RIVER**  
**HACKENSACK RIVER AND NEWARK BAY**

DATE: 4/07/2006 TIME: 11:14:54



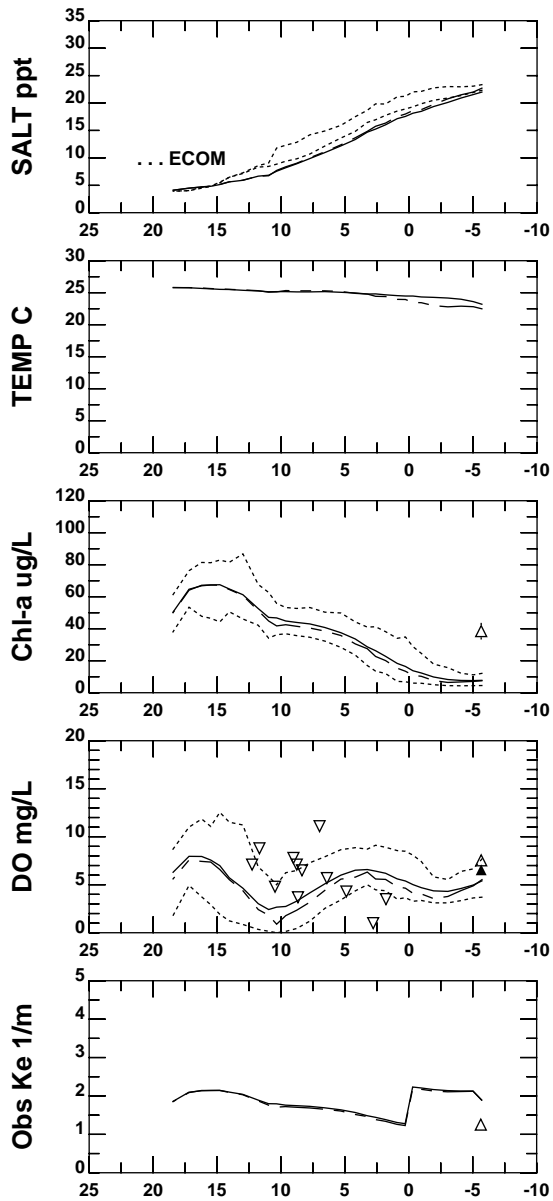
**MILE FROM MOUTH HACKENSACK RIVER**

DATA May 29-Jun 27, 1999

MODEL

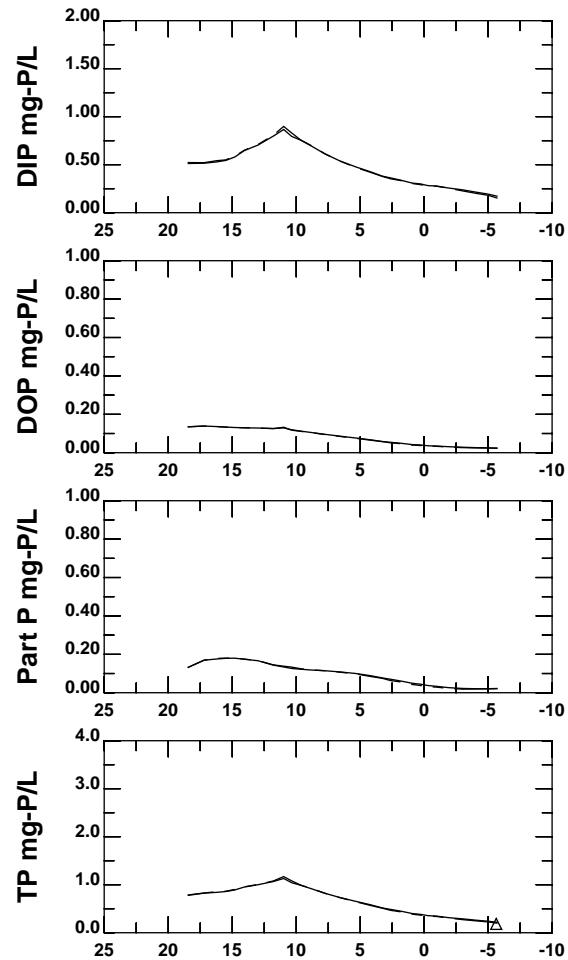
	SURF MID BOT			
Harbor Survey	△	▲	Transect	—
	t	e	Embayment	---
NYSDEC	○		Transect	---
	c		Embayment	---
NJSIT	◇		Transect	---
	p		Embayment	---
PVSC	●	■	Transect	---
	u	m	Embayment	---
MERI	▽		Transect	---
	s		Embayment	---

— SURFACE 30-DAY MEAN  
 --- BOTTOM 30-DAY MEAN  
 --- 30-DAY SURFACE MAX OR BOTTOM MIN



**MILE FROM MOUTH HACKENSACK RIVER  
HACKENSACK RIVER AND NEWARK BAY**

DATE: 4/07/2006 TIME: 11:14:58



**MILE FROM MOUTH HACKENSACK RIVER**

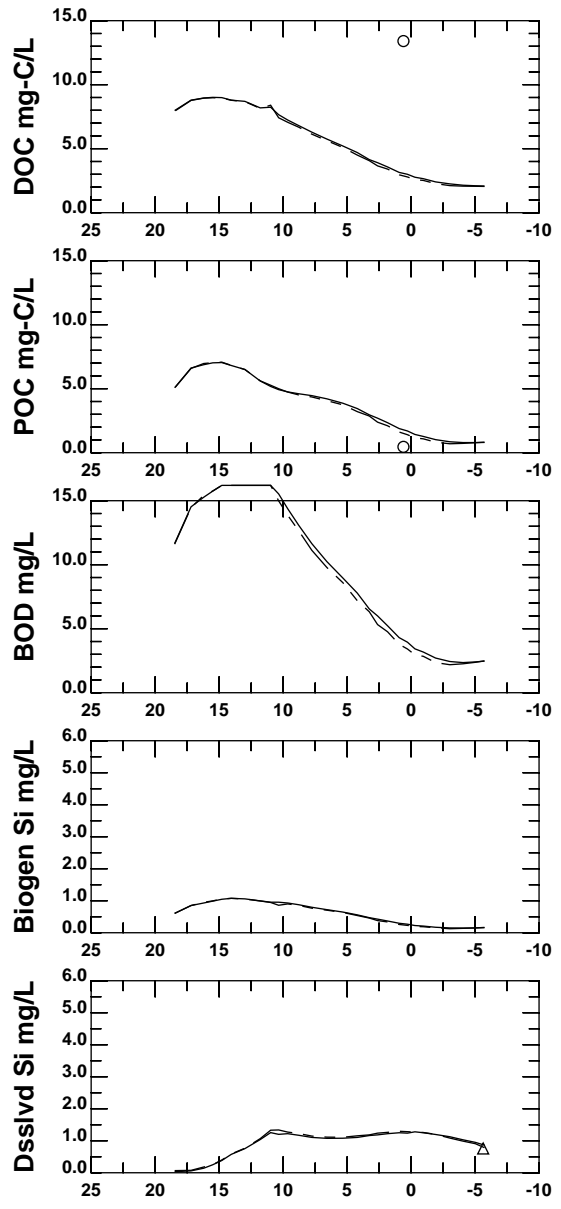
DATA Jun 28-Jul 27,1999

MODEL

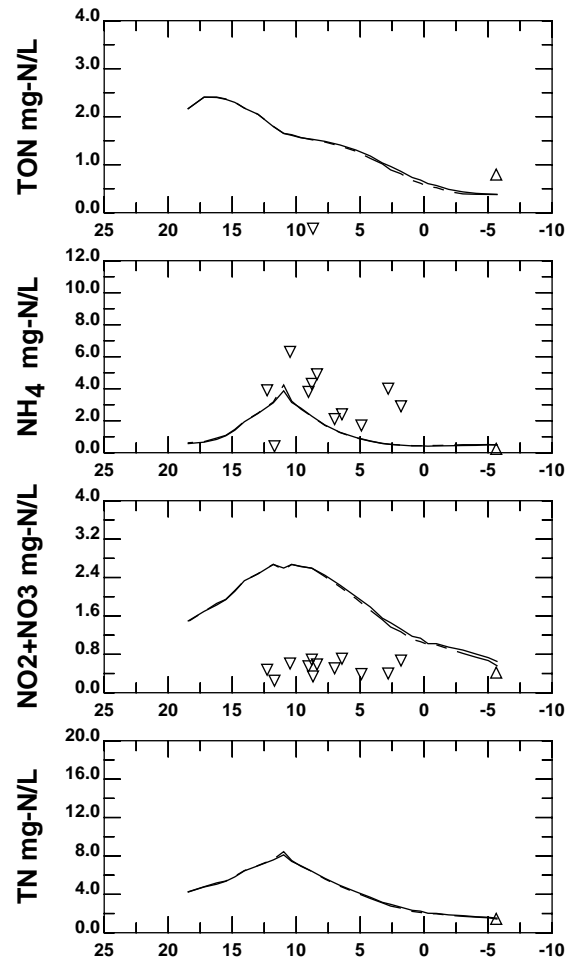
	SURF MID BOT			
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

—	SURFACE 30-DAY MEAN
- - - -	BOTTOM 30-DAY MEAN
- · - ·	30-DAY SURFACE MAX OR BOTTOM MIN

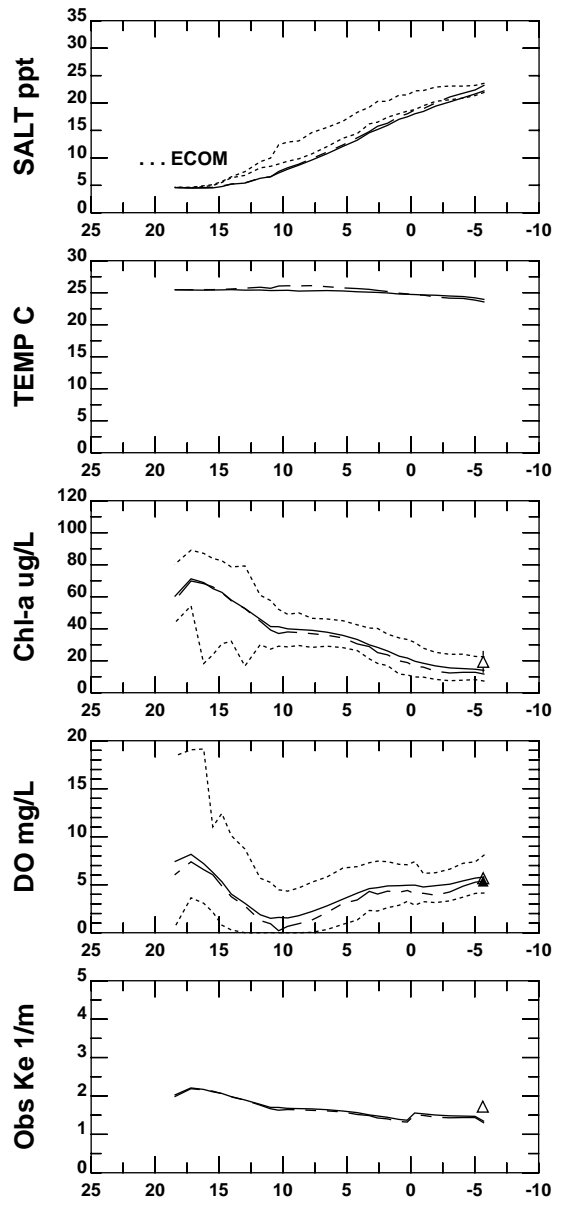


MILE FROM MOUTH HACKENSACK RIVER  
**HACKENSACK RIVER AND NEWARK BAY**



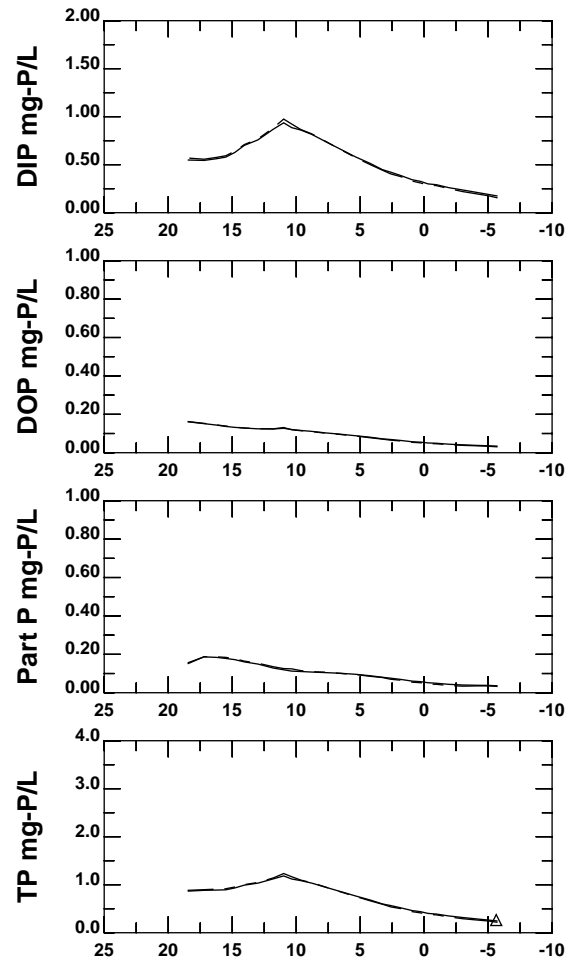
**MILE FROM MOUTH HACKENSACK RIVER**  
 DATA Jun 28-Jul 27, 1999

	SURF MID BOT			
Harbor Survey	△	▲	Transect	— SURFACE 30-DAY MEAN
	t	e	Embayment	- - - - - BOTTOM 30-DAY MEAN
NYSDEC	○	c	Transect	- - - - - 30-DAY SURFACE MAX OR
			Embayment	— - - - - BOTTOM MIN
NJSIT	◇	p	Transect	
			Embayment	
PVSC	●	■	Transect	
	u	m	Embayment	
MERI	▽	b	Transect	
	s		Embayment	



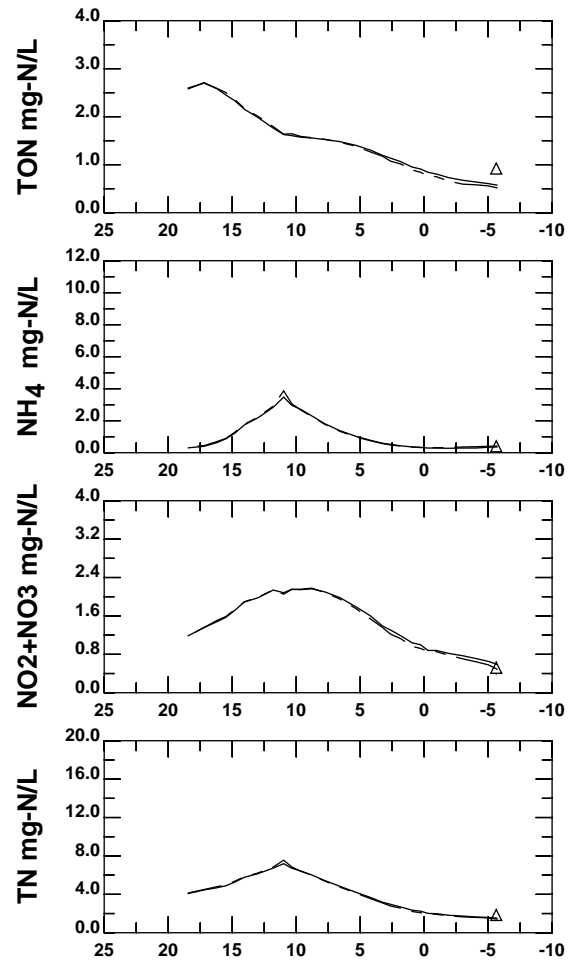
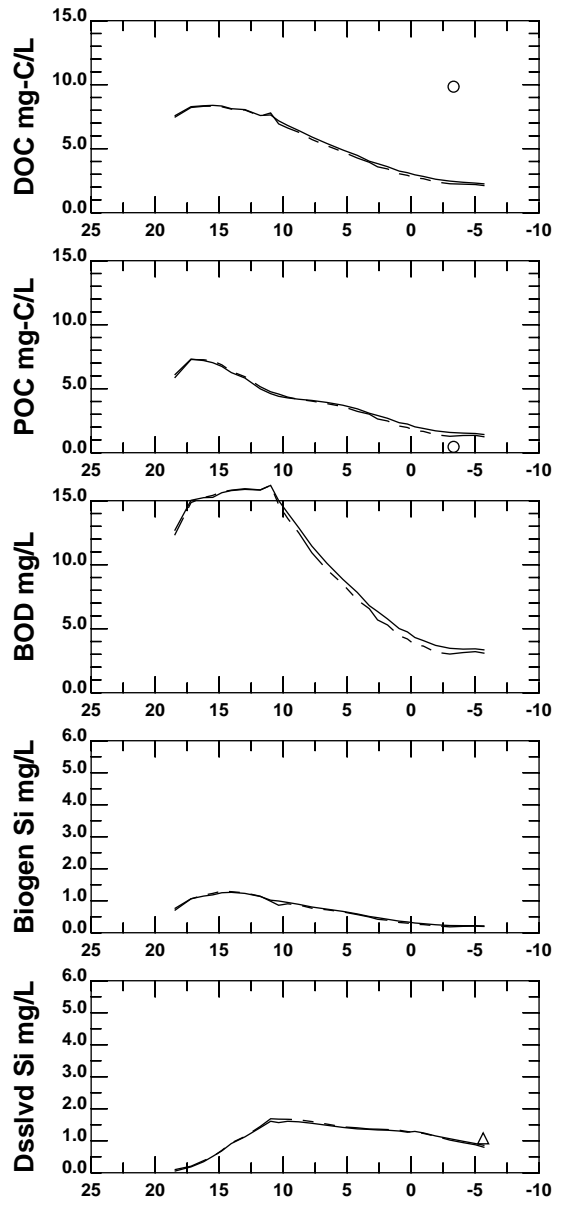
MILE FROM MOUTH HACKENSACK RIVER  
**HACKENSACK RIVER AND NEWARK BAY**

DATE: 4/07/2006 TIME: 11:15: 2



MILE FROM MOUTH HACKENSACK RIVER  
 DATA Jul 27-Aug 26,1999

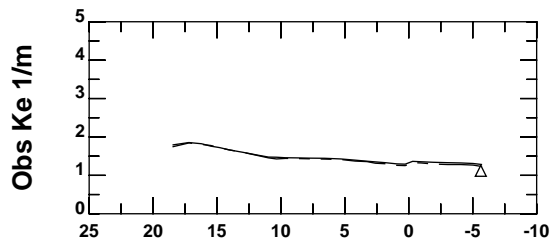
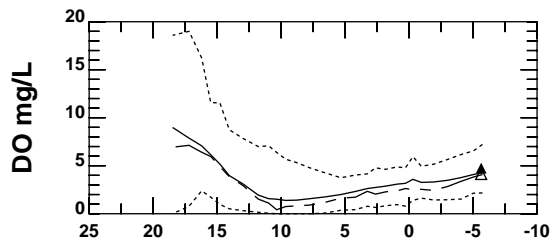
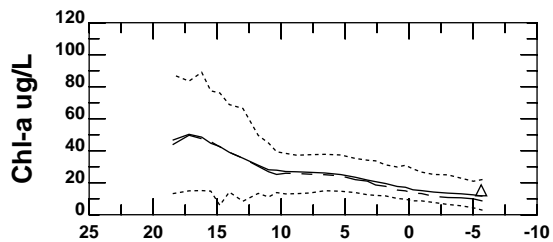
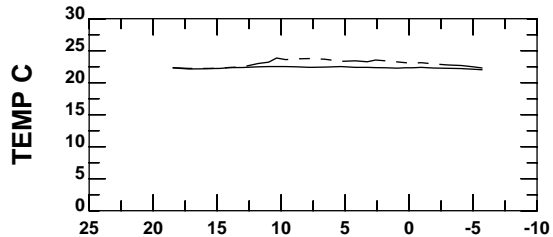
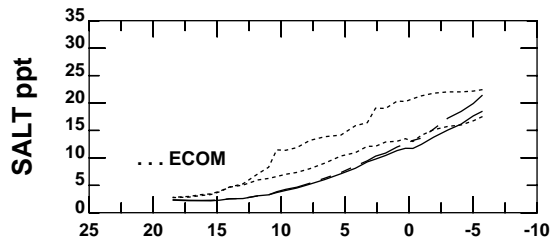
	SURF MID BOT			MODEL
Harbor Survey	△	▲	▲	— SURFACE 30-DAY MEAN
	t	e	e	- - - - - BOTTOM 30-DAY MEAN
NYSDEC	○			- - - - - 30-DAY SURFACE MAX OR BOTTOM MIN
	c			
NJSIT	◇			
	p			
PVSC	●	■	▼	
	u	m	b	
MERI	▽			
	s			



MILE FROM MOUTH HACKENSACK RIVER  
**HACKENSACK RIVER AND NEWARK BAY**

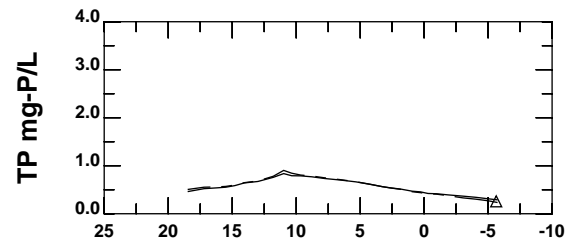
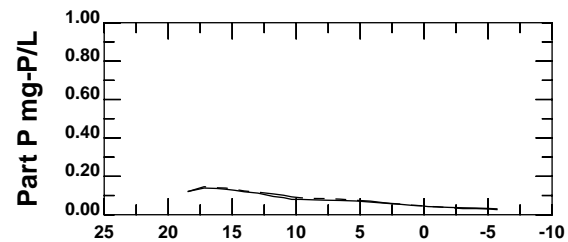
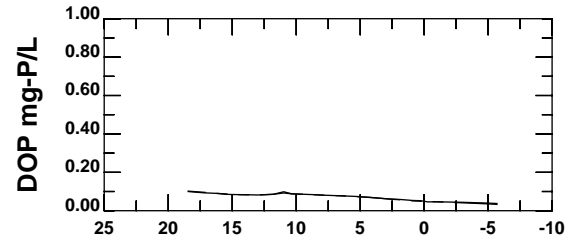
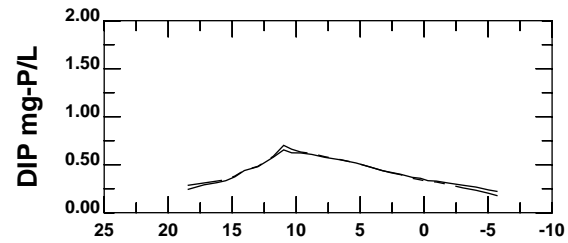
MILE FROM MOUTH HACKENSACK RIVER  
 DATA Jul 27-Aug 26, 1999

	SURF MID BOT			MODEL
Harbor Survey	△	▲	Transect	— SURFACE 30-DAY MEAN
	t	e	Embayment	--- BOTTOM 30-DAY MEAN
NYSDEC	○	c	Transect	— 30-DAY SURFACE MAX OR
	c		Embayment	--- BOTTOM MIN
NJSIT	◇	p	Transect	
	p		Embayment	
PVSC	●	■	Transect	
	u	m	Embayment	
MERI	▽	b	Transect	
	s		Embayment	



**MILE FROM MOUTH HACKENSACK RIVER  
HACKENSACK RIVER AND NEWARK BAY**

DATE: 4/07/2006 TIME: 11:15: 7

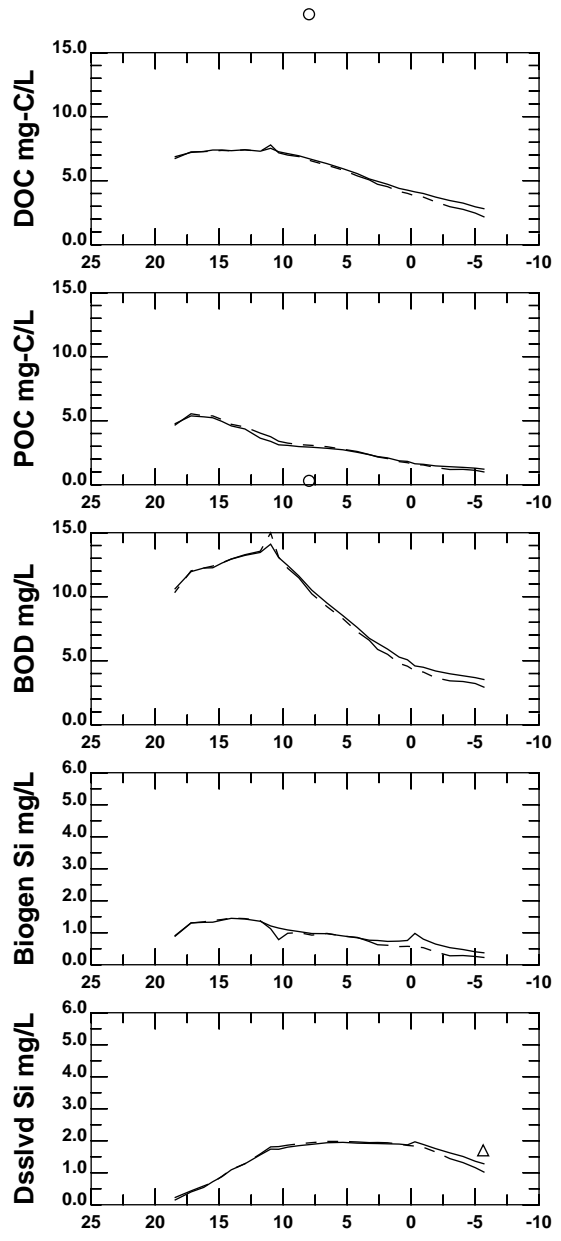


**MILE FROM MOUTH HACKENSACK RIVER**

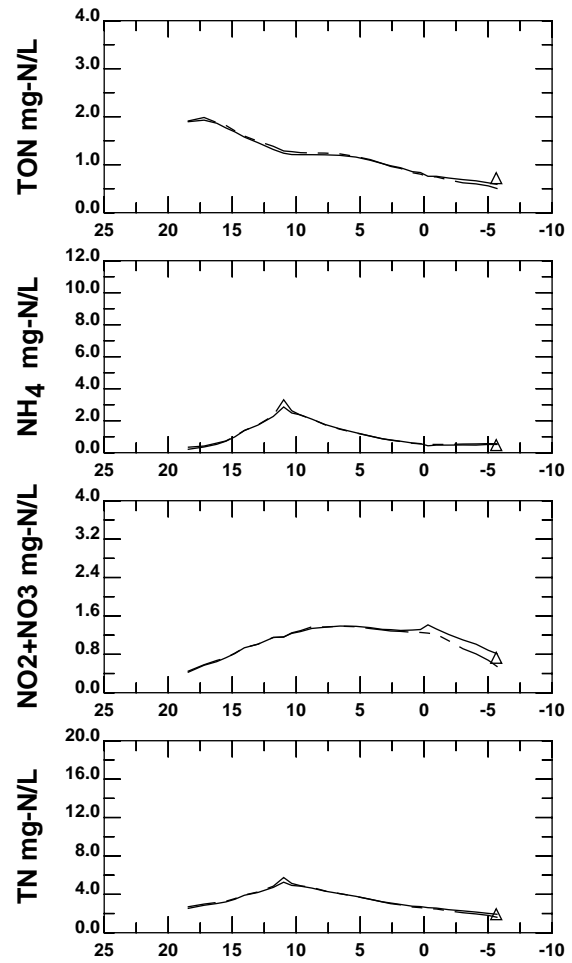
DATA Aug 27-Sep 25,1999

MODEL

	SURF MID BOT			
Harbor Survey	△	▲	Transect	—
	t	e	Embayment	-----
NYSDEC	○		Transect	
	c		Embayment	
NJSIT	◇		Transect	
	p		Embayment	
PVSC	●	■	Transect	
	u	m	Embayment	
MERI	▽		Transect	
	s		Embayment	
				---
				30-DAY SURFACE MAX OR BOTTOM MIN

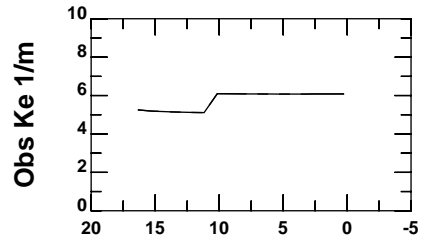
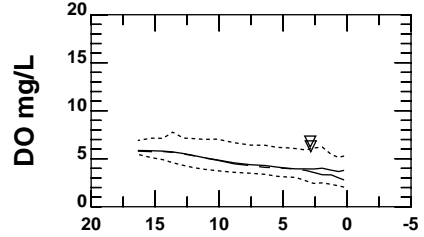
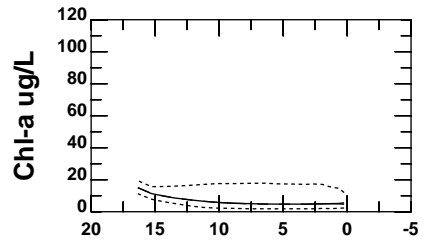
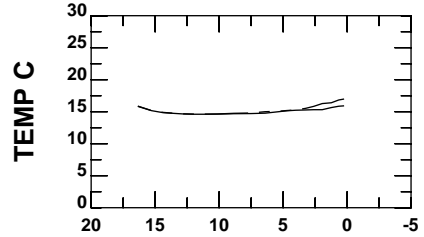
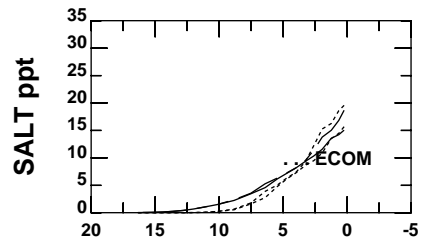


MILE FROM MOUTH HACKENSACK RIVER  
**HACKENSACK RIVER AND NEWARK BAY**



**MILE FROM MOUTH HACKENSACK RIVER**  
 DATA Aug 27-Sep 25, 1999

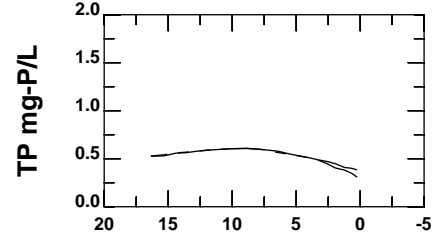
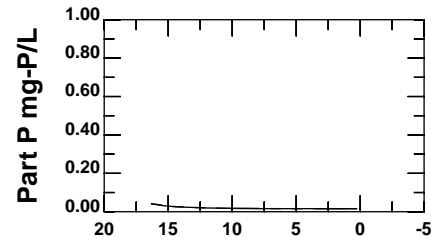
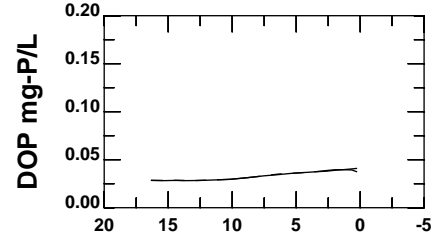
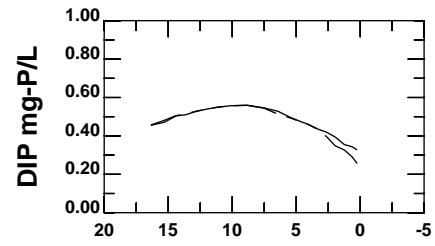
	SURF MID BOT			MODEL
Harbor Survey	△	▲	Transect	— SURFACE 30-DAY MEAN
	t	e	Embayment	--- BOTTOM 30-DAY MEAN
NYSDEC	○	c	Transect	- - - 30-DAY SURFACE MAX OR
			Embayment	BOTTOM MIN
NJSIT	◇	p	Transect	
			Embayment	
PVSC	●	■	Transect	
	u	m	Embayment	
MERI	▽	b	Transect	
	s		Embayment	



MILE FROM MOUTH PASSAIC RIVER

### PASSAIC RIVER

DATE: 4/07/2006 TIME: 11:15:12



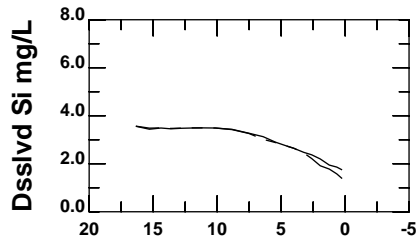
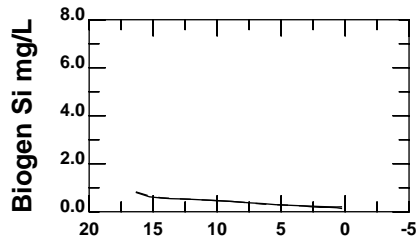
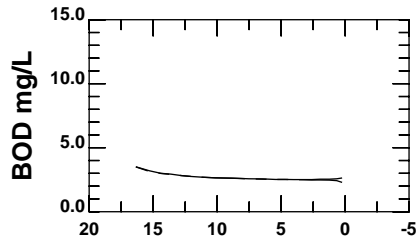
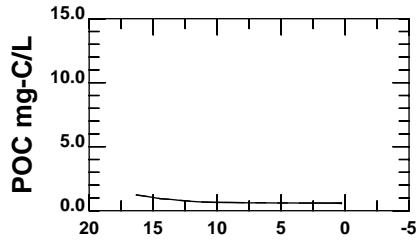
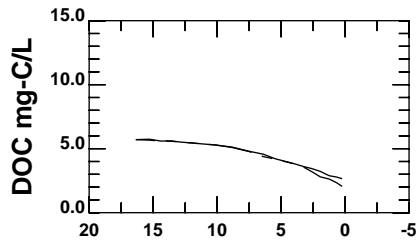
MILE FROM MOUTH PASSAIC RIVER  
DATA Oct 1-30,1998

	SURF MID BOT			
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

MODEL

- SURFACE 30-DAY MEAN
- - - - - BOTTOM 30-DAY MEAN
- - - 30-DAY SURFACE MAX OR BOTTOM MIN

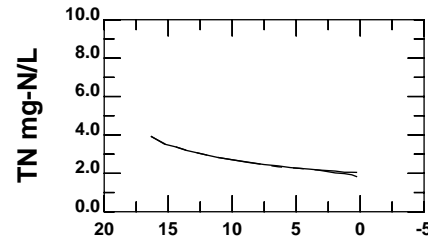
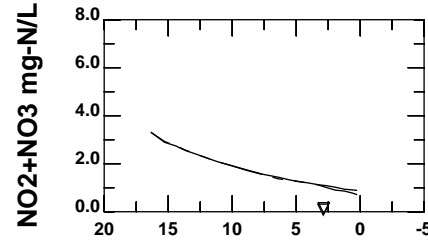
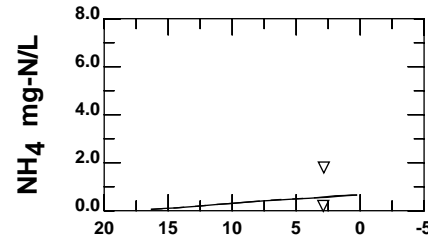
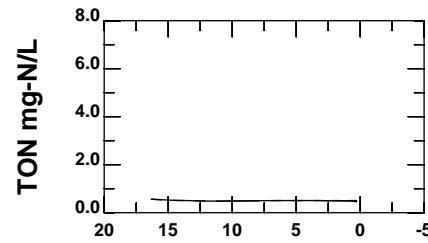




MILE FROM MOUTH PASSAIC RIVER

### PASSAIC RIVER

DATE: 4/07/2006 TIME: 11:15:12

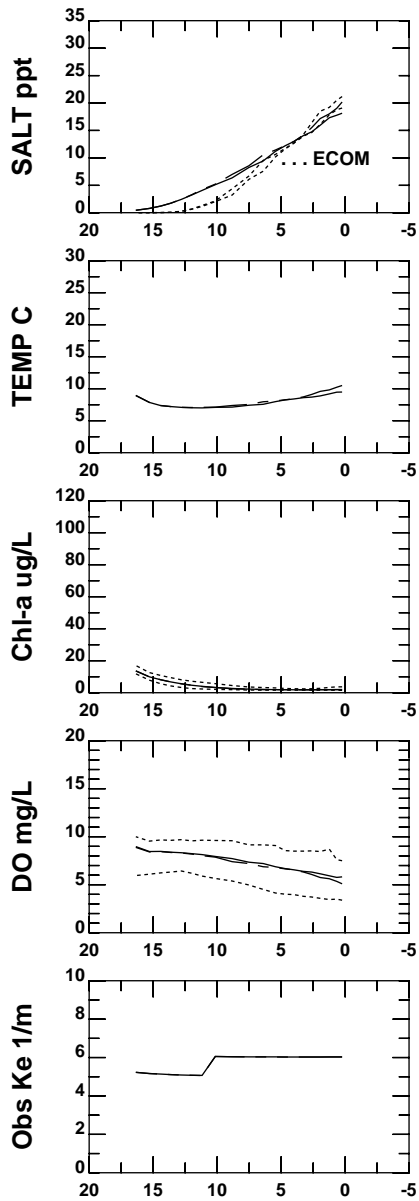


MILE FROM MOUTH PASSAIC RIVER  
DATA Oct 1-30,1998

	SURF	MID	BOT	
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

MODEL

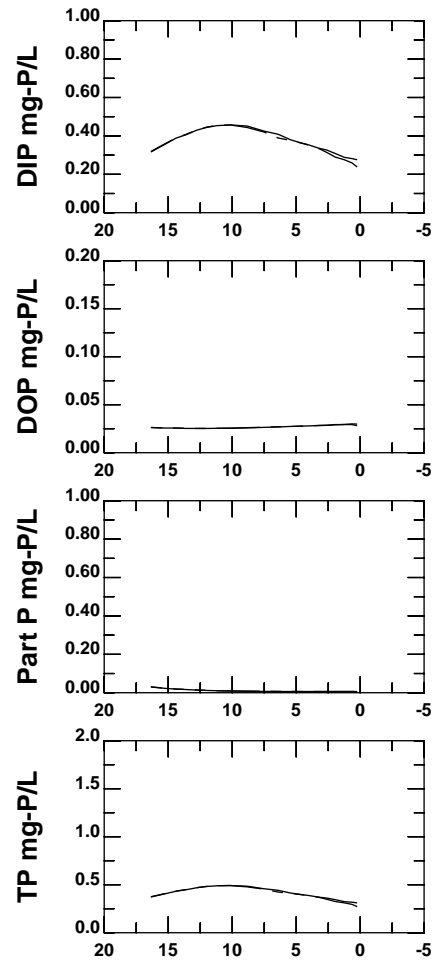
—	SURFACE 30-DAY MEAN
- - - -	BOTTOM 30-DAY MEAN
- - -	30-DAY SURFACE MAX OR BOTTOM MIN



MILE FROM MOUTH PASSAIC RIVER

**PASSAIC RIVER**

DATE: 4/07/2006 TIME: 11:15:15



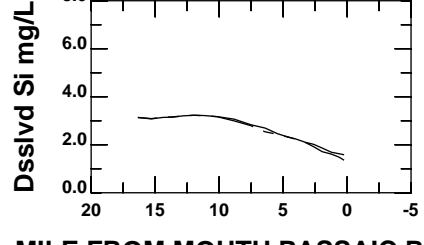
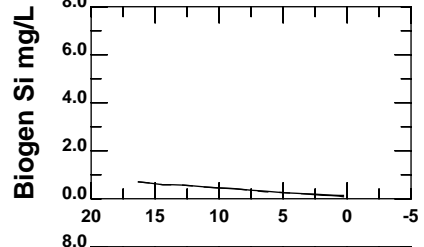
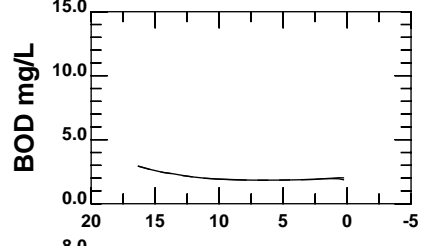
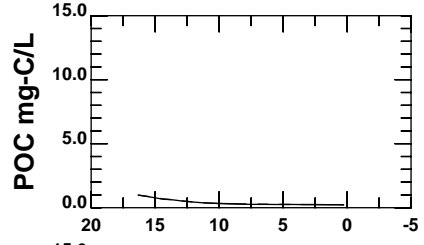
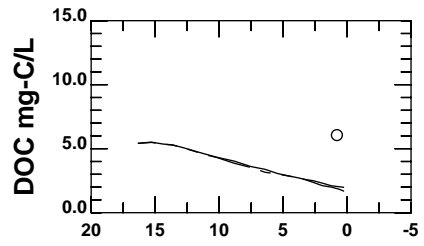
**MILE FROM MOUTH PASSAIC RIVER**

DATA Oct 31-Nov 29,1998

	SURF MID BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment
PVSC	●	■ ▼	Transect
	u	m b	Embayment
MERI	▽		Transect
	s		Embayment

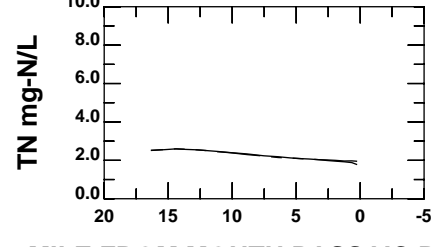
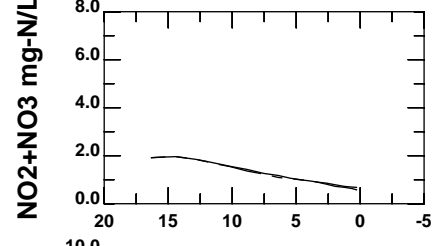
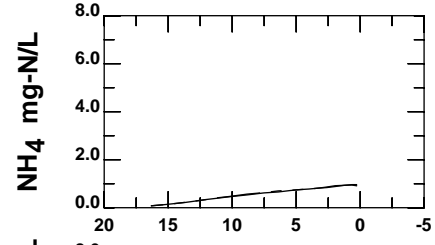
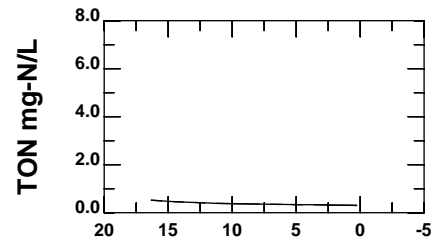
**MODEL**

—	SURFACE 30-DAY MEAN
- - - -	BOTTOM 30-DAY MEAN
- · - ·	30-DAY SURFACE MAX OR BOTTOM MIN



MILE FROM MOUTH PASSAIC RIVER

**PASSAIC RIVER**

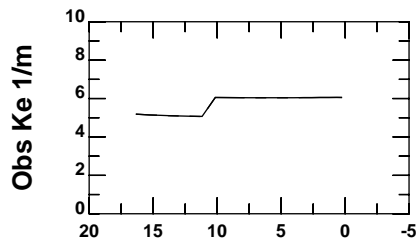
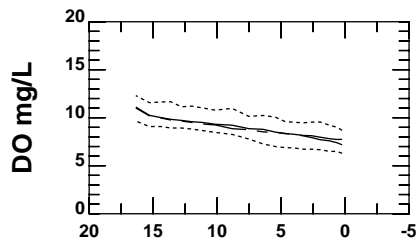
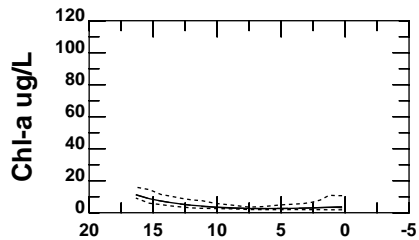
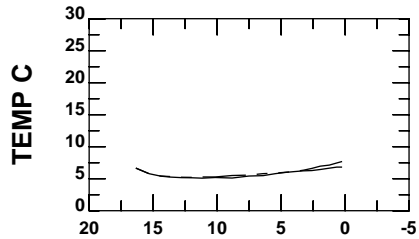
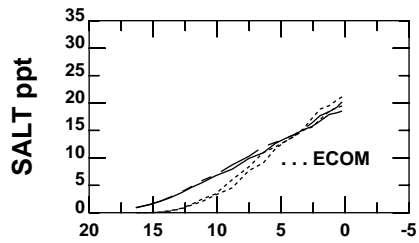


MILE FROM MOUTH PASSAIC RIVER  
DATA Oct 31-Nov 29,1998

	SURF	MID	BOT	
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

MODEL

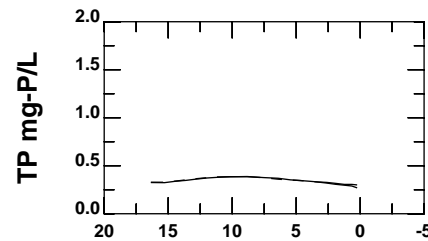
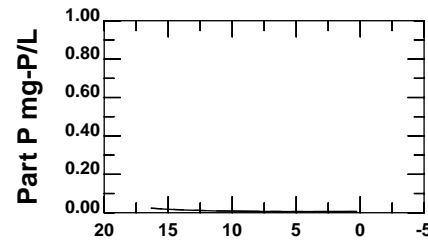
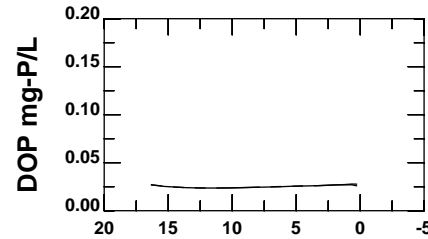
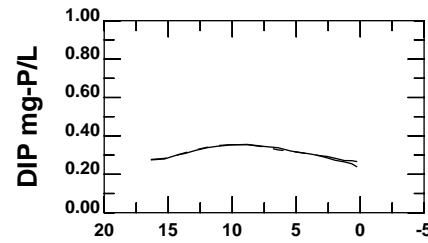
- SURFACE 30-DAY MEAN
- - - - - BOTTOM 30-DAY MEAN
- - - 30-DAY SURFACE MAX OR BOTTOM MIN



MILE FROM MOUTH PASSAIC RIVER

### PASSAIC RIVER

DATE: 4/07/2006 TIME: 11:15:18



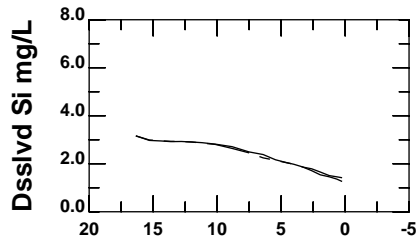
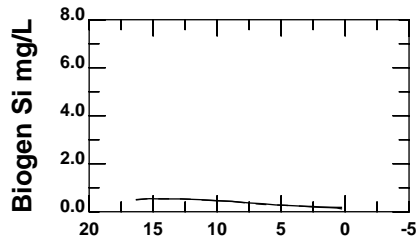
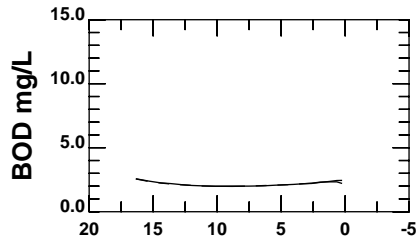
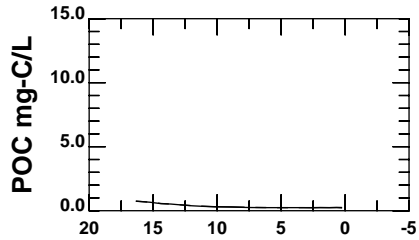
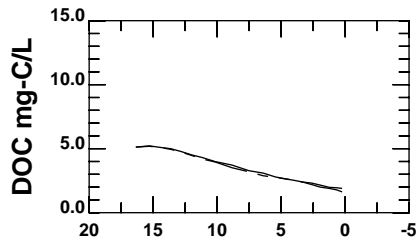
### MILE FROM MOUTH PASSAIC RIVER

DATA Nov 30-Dec 29,1998

	SURF MID BOT			
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

### MODEL

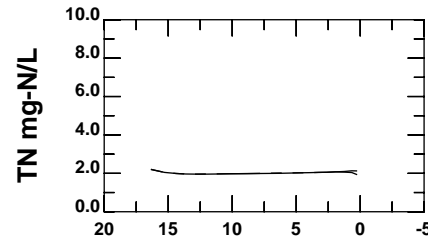
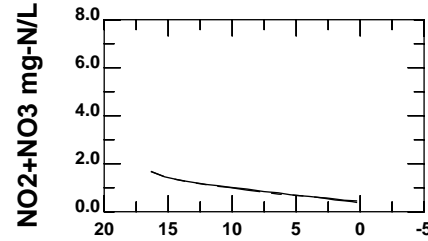
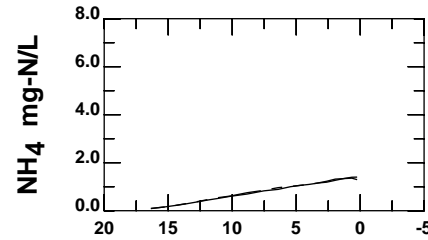
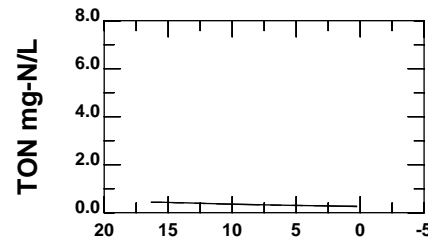
—	SURFACE 30-DAY MEAN
- - - -	BOTTOM 30-DAY MEAN
- · - ·	30-DAY SURFACE MAX OR BOTTOM MIN



MILE FROM MOUTH PASSAIC RIVER

**PASSAIC RIVER**

DATE: 4/07/2006 TIME: 11:15:18



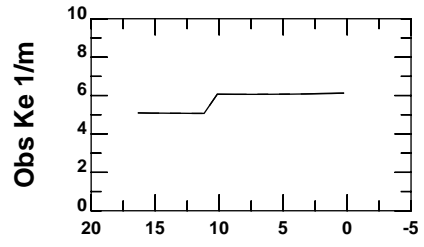
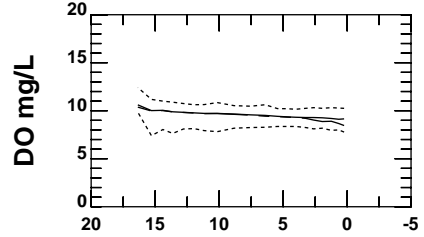
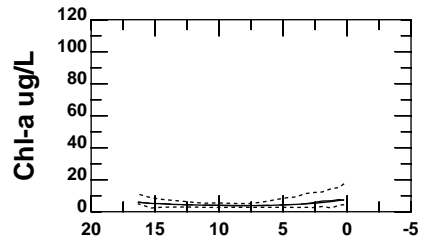
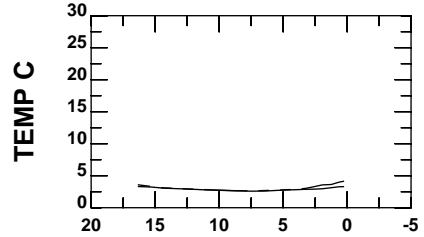
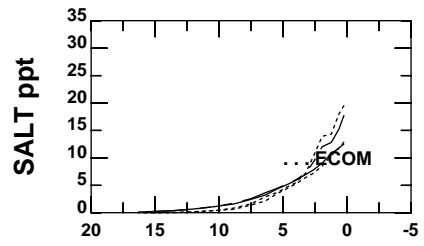
MILE FROM MOUTH PASSAIC RIVER

DATA Nov 30-Dec 29,1998

	SURF MID BOT			
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

MODEL

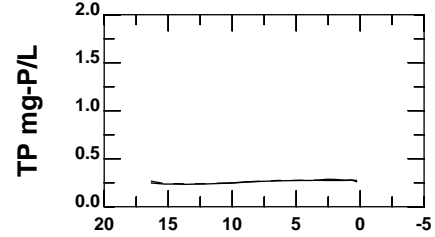
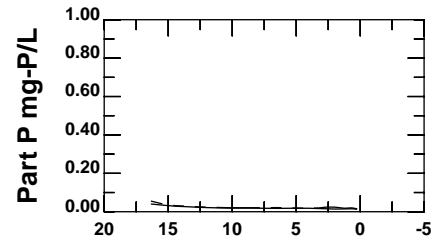
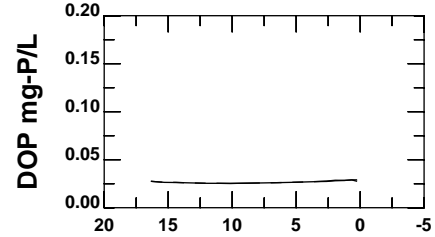
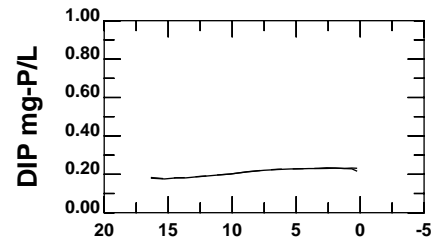
————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN



MILE FROM MOUTH PASSAIC RIVER

### PASSAIC RIVER

DATE: 4/07/2006 TIME: 11:15:21



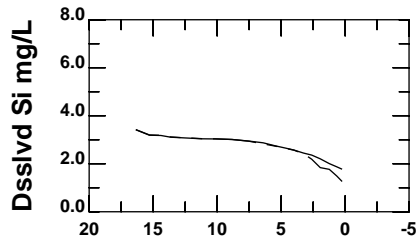
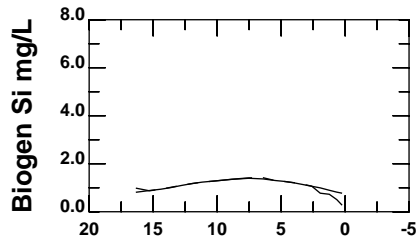
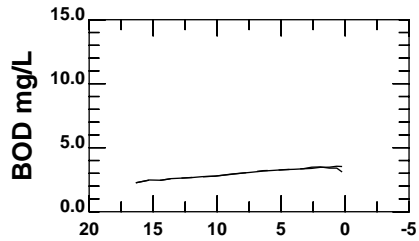
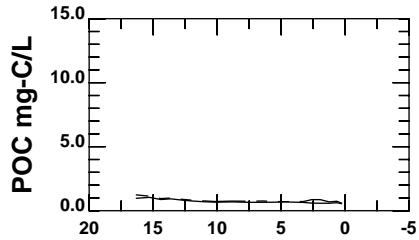
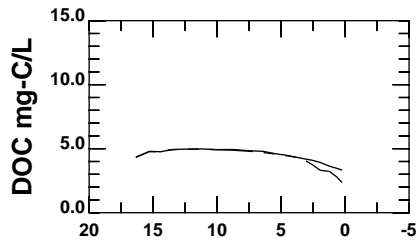
### MILE FROM MOUTH PASSAIC RIVER

DATA Dec 30 1998 -Jan 28,1999

	SURF MID BOT			
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

### MODEL

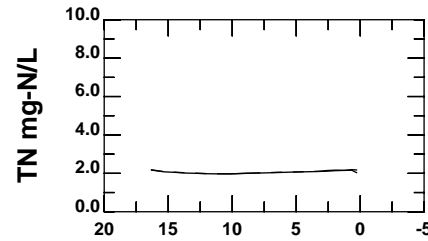
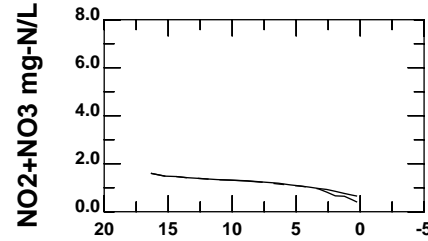
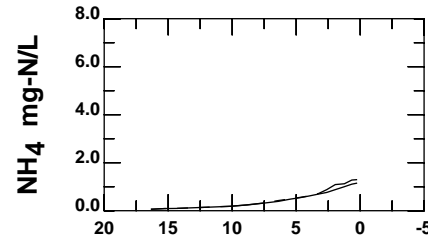
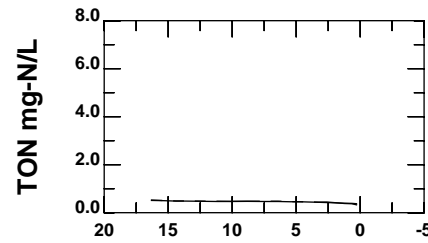
- SURFACE 30-DAY MEAN
- - - - - BOTTOM 30-DAY MEAN
- - - 30-DAY SURFACE MAX OR BOTTOM MIN



MILE FROM MOUTH PASSAIC RIVER

### PASSAIC RIVER

DATE: 4/07/2006 TIME: 11:15:21



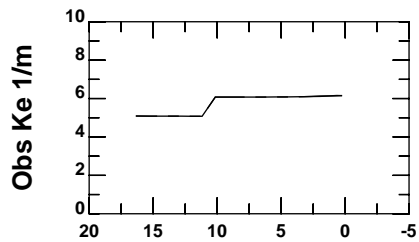
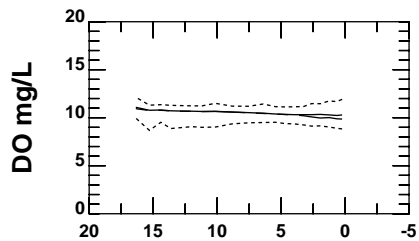
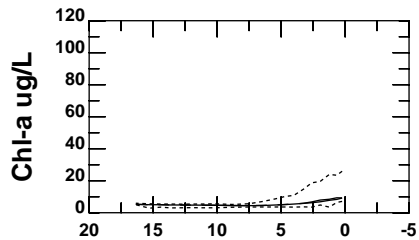
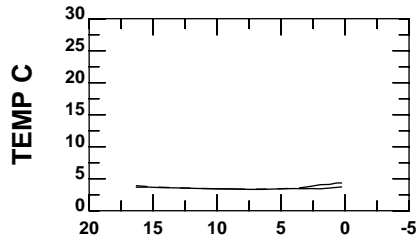
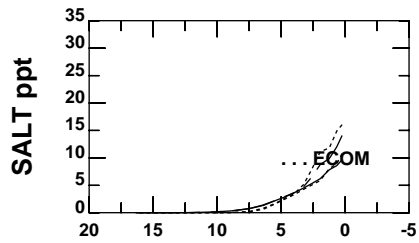
### MILE FROM MOUTH PASSAIC RIVER

DATA Dec 30 1998 -Jan 28,1999

	SURF MID BOT			
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

### MODEL

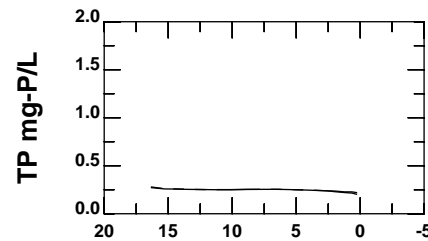
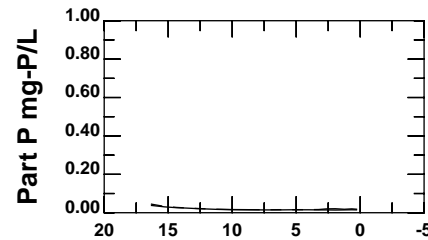
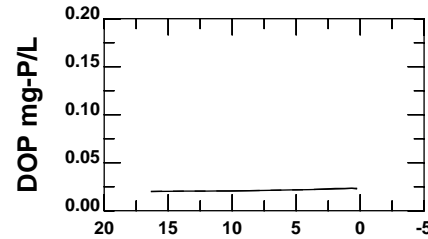
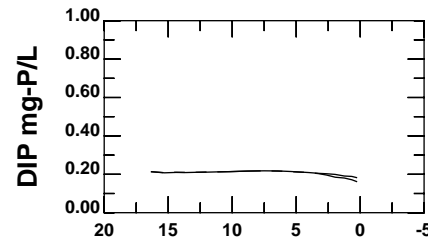
—	SURFACE 30-DAY MEAN
- - - -	BOTTOM 30-DAY MEAN
- - -	30-DAY SURFACE MAX OR BOTTOM MIN



MILE FROM MOUTH PASSAIC RIVER

## PASSAIC RIVER

DATE: 4/07/2006 TIME: 11:15:25



### MILE FROM MOUTH PASSAIC RIVER

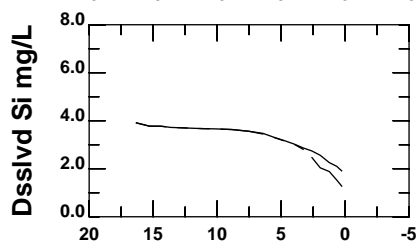
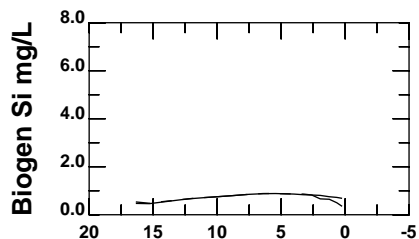
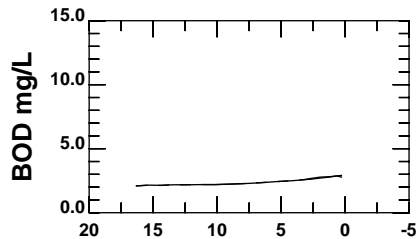
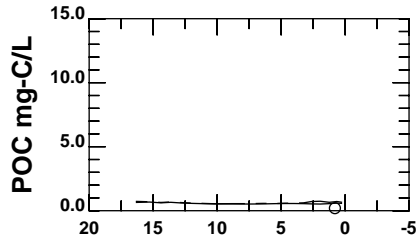
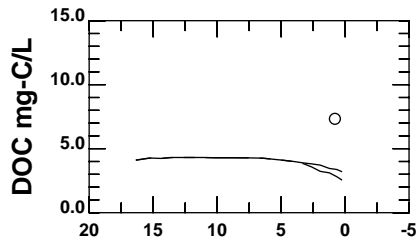
DATA Jan 29-Feb 27,1999

	SURF MID BOT			
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

### MODEL

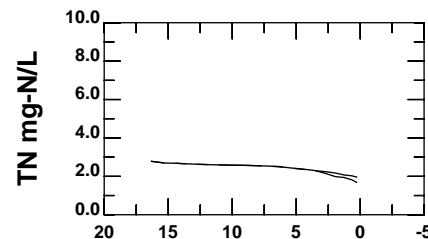
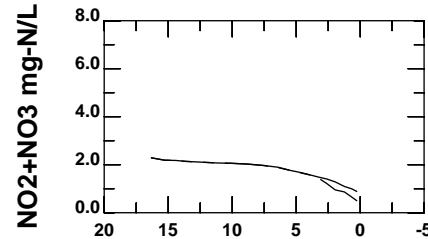
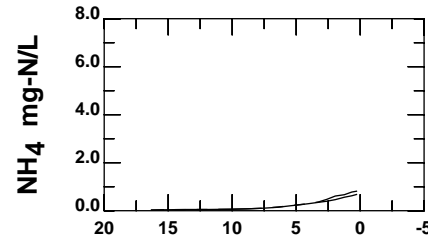
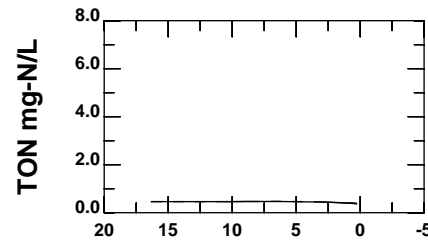
—	SURFACE 30-DAY MEAN
- - - -	BOTTOM 30-DAY MEAN
- · - ·	30-DAY SURFACE MAX OR BOTTOM MIN





MILE FROM MOUTH PASSAIC RIVER

PASSAIC RIVER



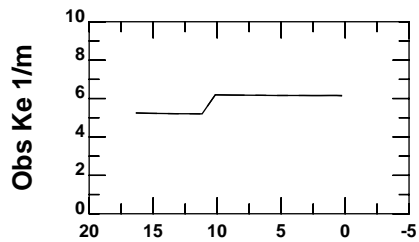
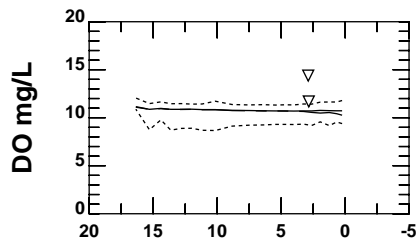
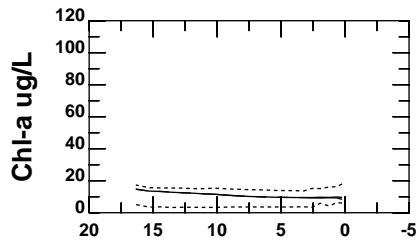
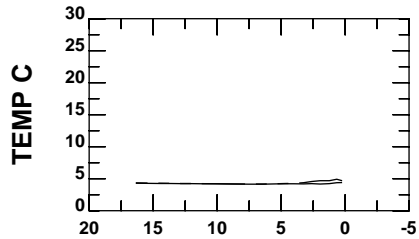
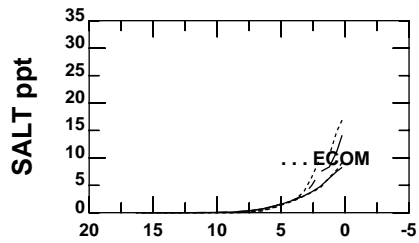
MILE FROM MOUTH PASSAIC RIVER

DATA Jan 29-Feb 27, 1999

	SURF	MID	BOT	
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

MODEL

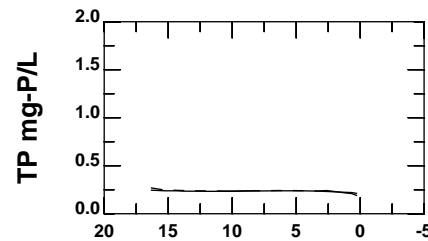
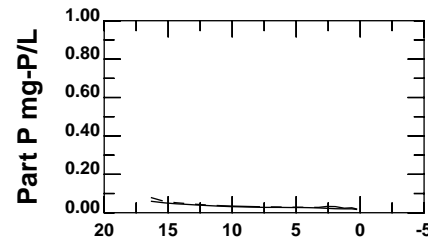
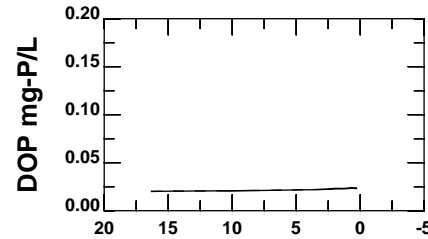
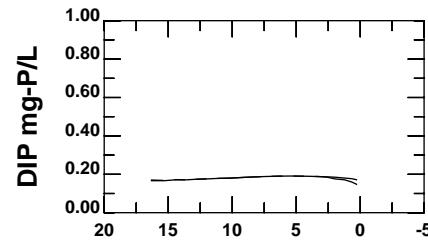
—	SURFACE 30-DAY MEAN
- - - -	BOTTOM 30-DAY MEAN
- · - ·	30-DAY SURFACE MAX OR BOTTOM MIN



MILE FROM MOUTH PASSAIC RIVER

## PASSAIC RIVER

DATE: 4/07/2006 TIME: 11:15:29



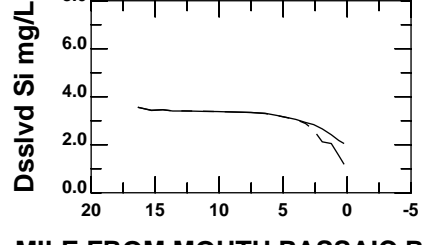
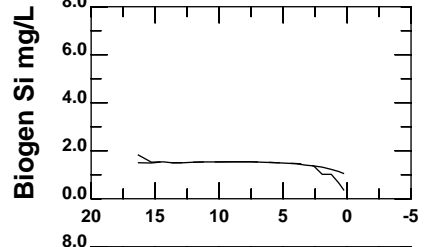
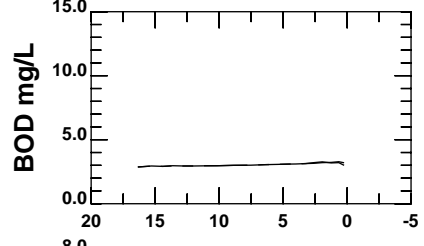
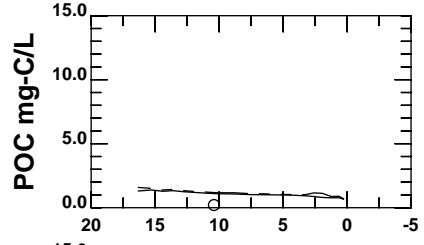
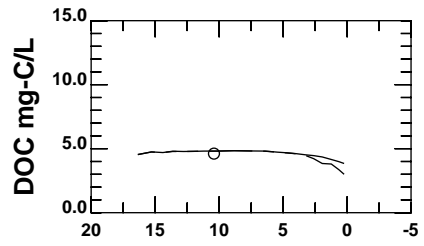
### MILE FROM MOUTH PASSAIC RIVER

DATA Feb 28-Mar 29,1999

	SURF	MID	BOT	
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

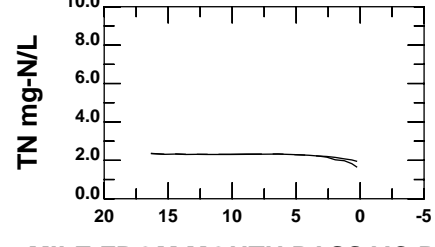
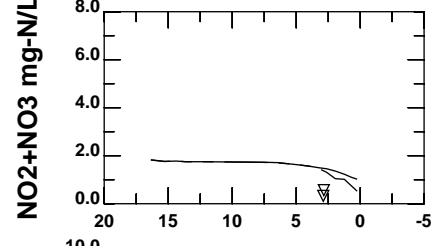
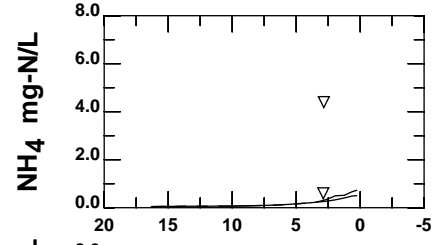
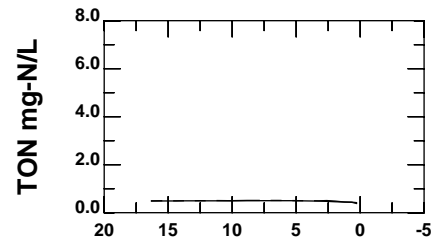
### MODEL

—	SURFACE 30-DAY MEAN
- - - -	BOTTOM 30-DAY MEAN
- · - ·	30-DAY SURFACE MAX OR BOTTOM MIN



MILE FROM MOUTH PASSAIC RIVER

### PASSAIC RIVER

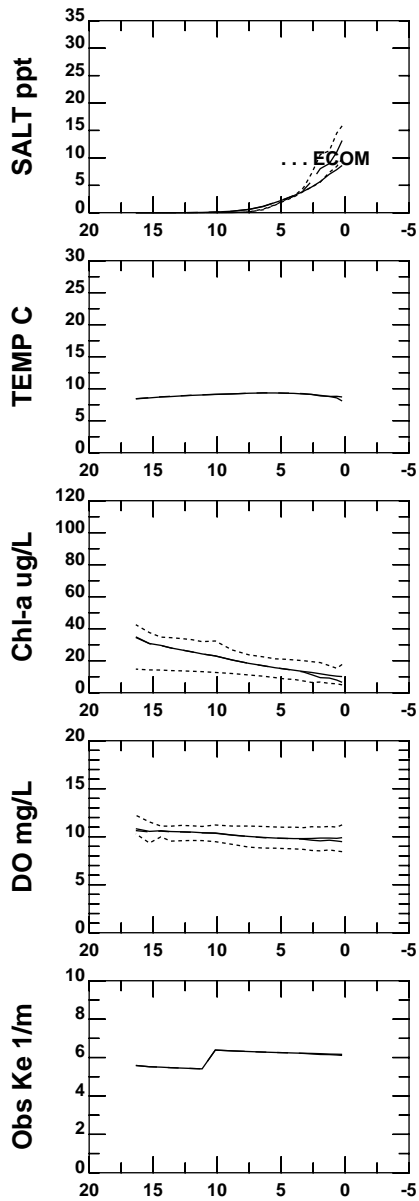


MILE FROM MOUTH PASSAIC RIVER  
DATA Feb 28-Mar 29,1999

	SURF	MID	BOT	
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

MODEL

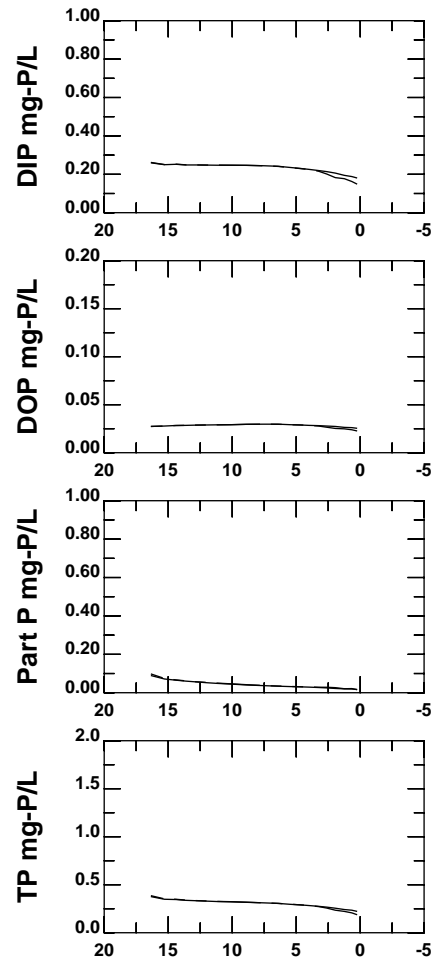
- SURFACE 30-DAY MEAN
- - - - - BOTTOM 30-DAY MEAN
- - - 30-DAY SURFACE MAX OR BOTTOM MIN



MILE FROM MOUTH PASSAIC RIVER

### PASSAIC RIVER

DATE: 4/07/2006 TIME: 11:15:32



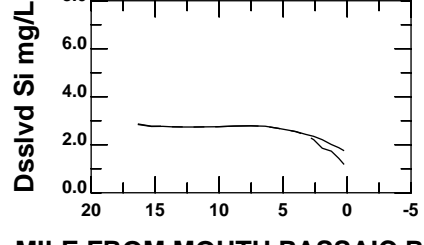
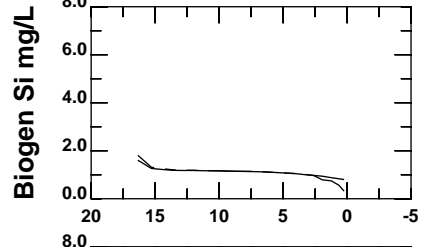
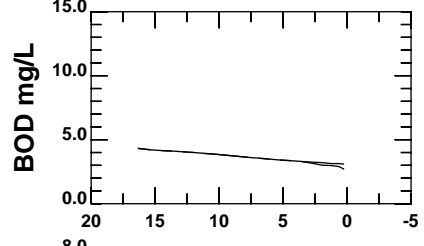
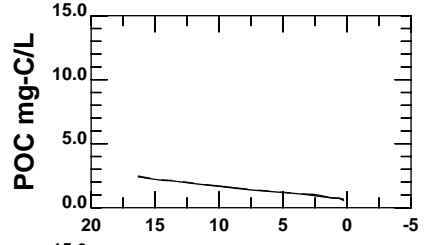
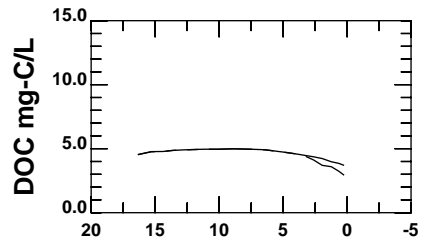
### MILE FROM MOUTH PASSAIC RIVER

DATA Mar 30-Apr 28,1999

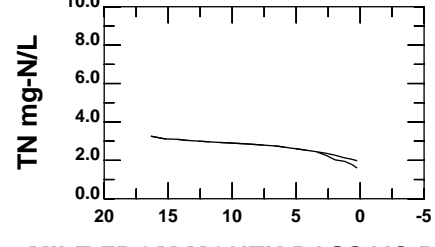
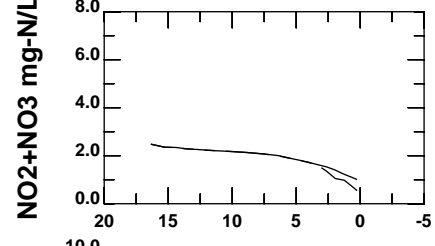
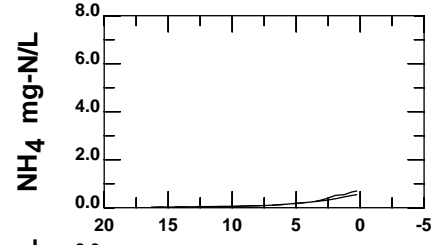
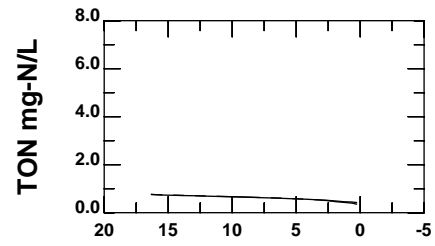
	SURF MID BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment
PVSC	●	■ ▼	Transect
	u	m b	Embayment
MERI	▽		Transect
	s		Embayment

### MODEL

————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN



MILE FROM MOUTH PASSAIC RIVER



MILE FROM MOUTH PASSAIC RIVER

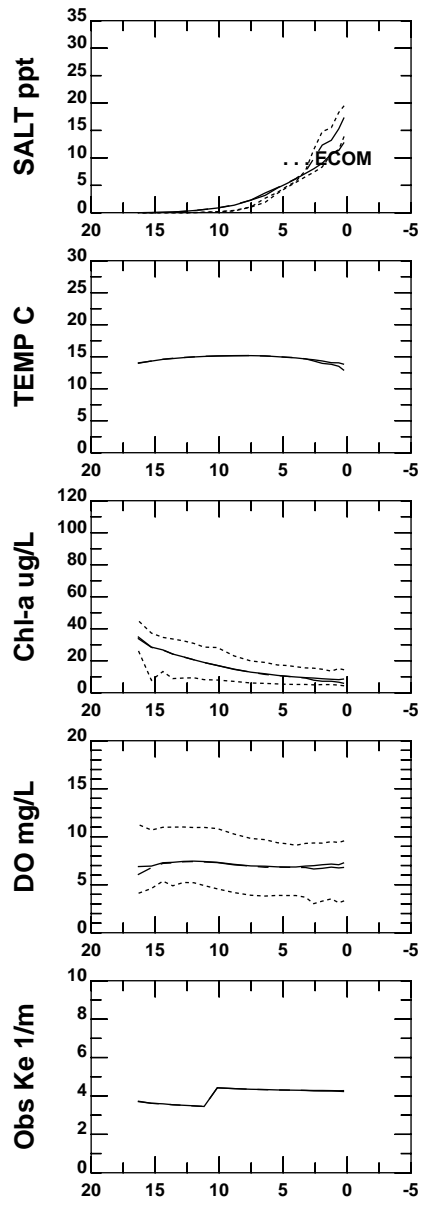
DATA Mar 30-Apr 28, 1999

	SURF	MID	BOT	
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

MODEL

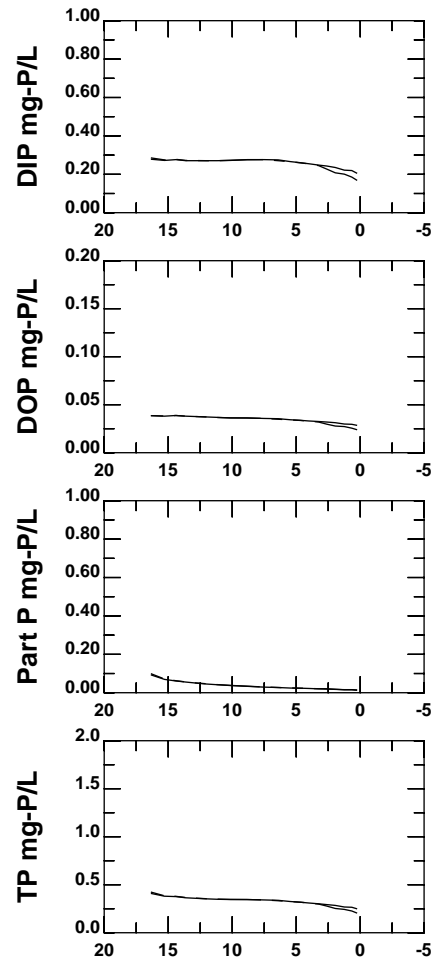
- SURFACE 30-DAY MEAN
- - - - - BOTTOM 30-DAY MEAN
- - - 30-DAY SURFACE MAX OR BOTTOM MIN

PASSAIC RIVER



MILE FROM MOUTH PASSAIC RIVER

### PASSAIC RIVER

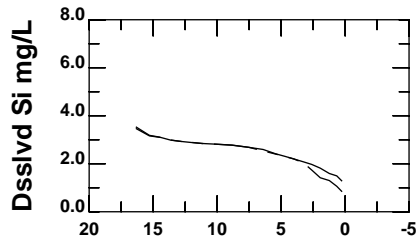
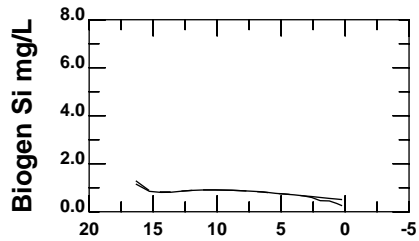
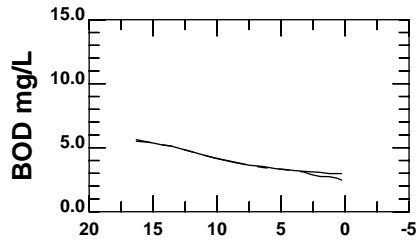
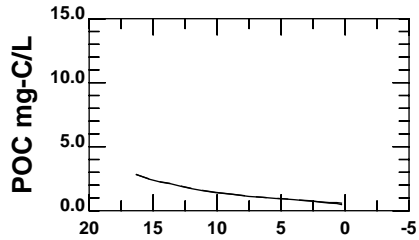
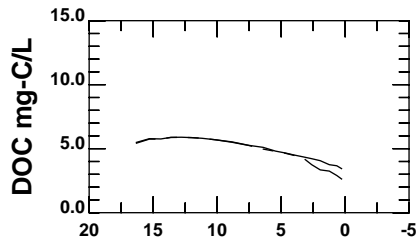


MILE FROM MOUTH PASSAIC RIVER  
DATA Apr 29-May 28,1999

	SURF MID BOT			
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

MODEL

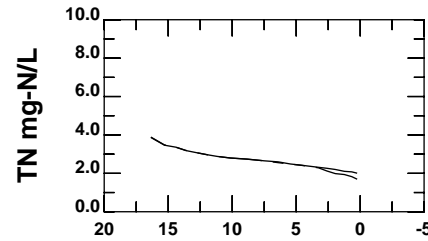
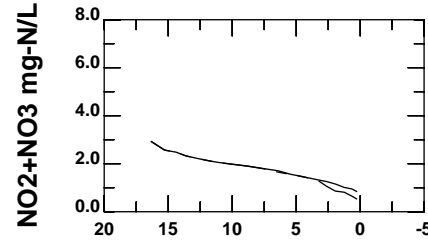
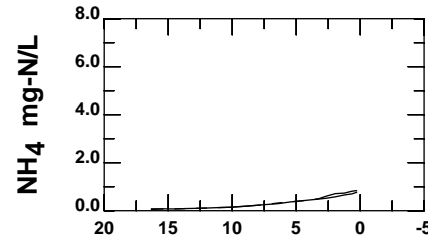
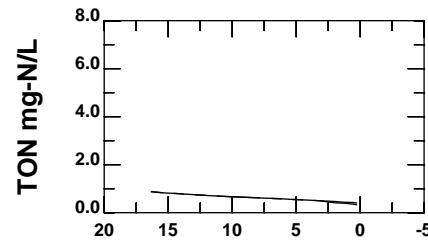
- SURFACE 30-DAY MEAN
- - - - - BOTTOM 30-DAY MEAN
- - - 30-DAY SURFACE MAX OR BOTTOM MIN



MILE FROM MOUTH PASSAIC RIVER

### PASSAIC RIVER

DATE: 4/07/2006 TIME: 11:15:36



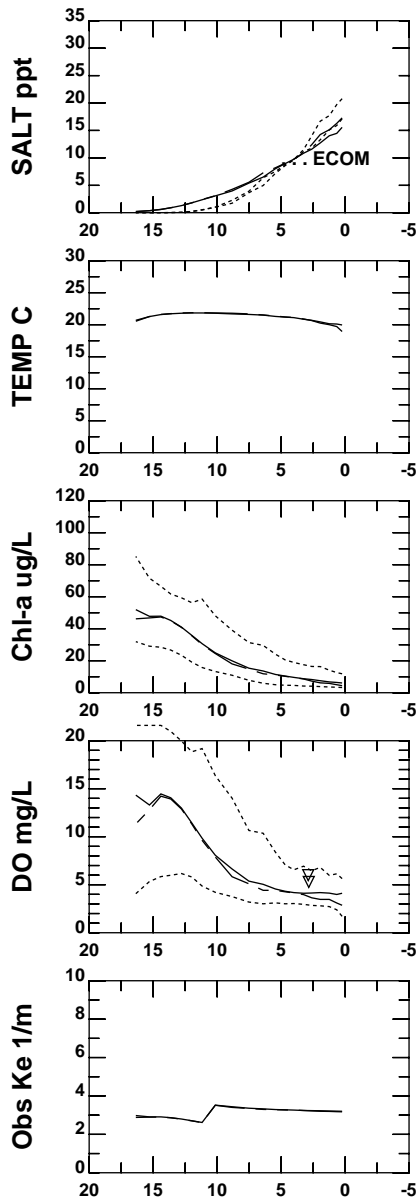
### MILE FROM MOUTH PASSAIC RIVER

DATA Apr 29-May 28,1999

	SURF	MID	BOT	
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

### MODEL

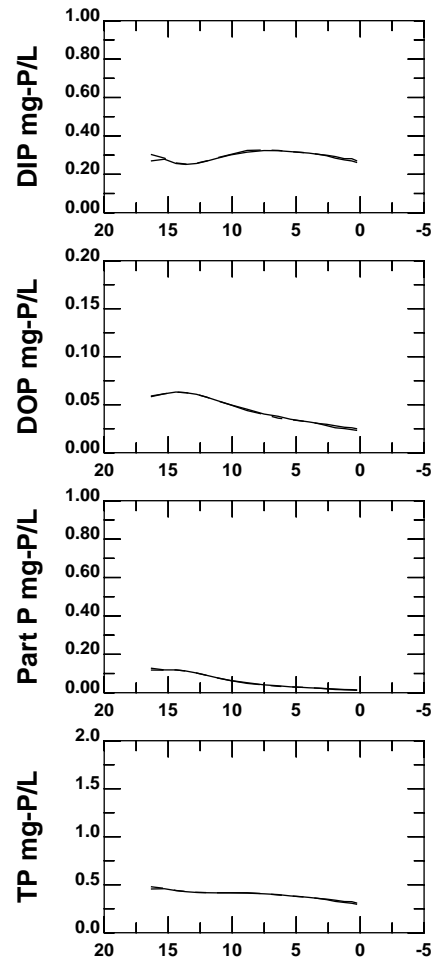
—	SURFACE 30-DAY MEAN
- - - -	BOTTOM 30-DAY MEAN
- - -	30-DAY SURFACE MAX OR BOTTOM MIN



MILE FROM MOUTH PASSAIC RIVER

**PASSAIC RIVER**

DATE: 4/07/2006 TIME: 11:15:41



**MILE FROM MOUTH PASSAIC RIVER**

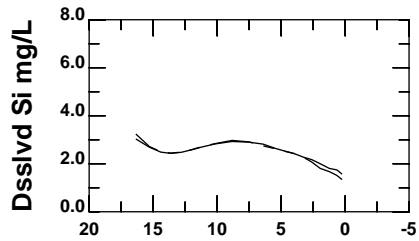
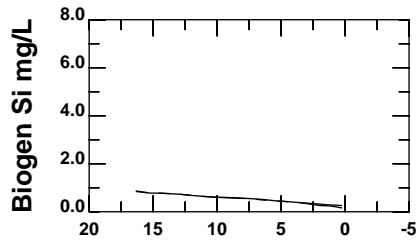
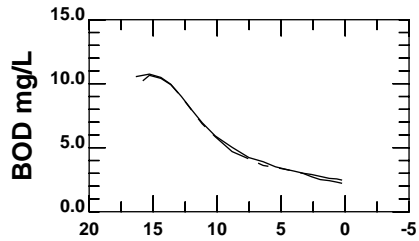
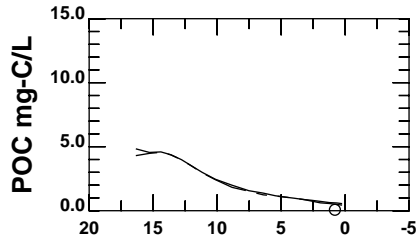
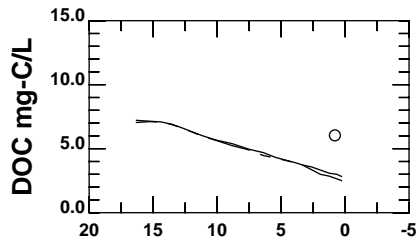
DATA May 29-Jun 27,1999

	SURF MID BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment
PVSC	●	■	Transect
	u	m	Embayment
MERI	▽		Transect
	s		Embayment

**MODEL**

—	SURFACE 30-DAY MEAN
- - - -	BOTTOM 30-DAY MEAN
- · - ·	30-DAY SURFACE MAX OR BOTTOM MIN

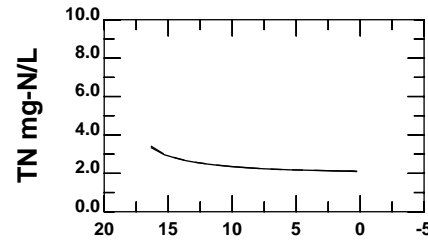
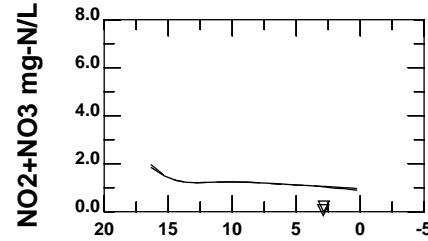
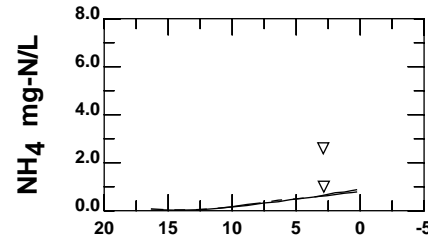
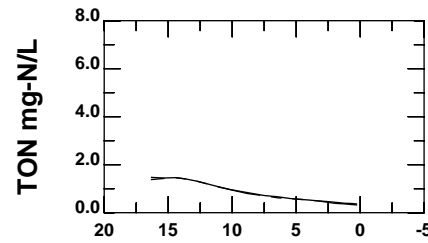




MILE FROM MOUTH PASSAIC RIVER

### PASSAIC RIVER

DATE: 4/07/2006 TIME: 11:15:41



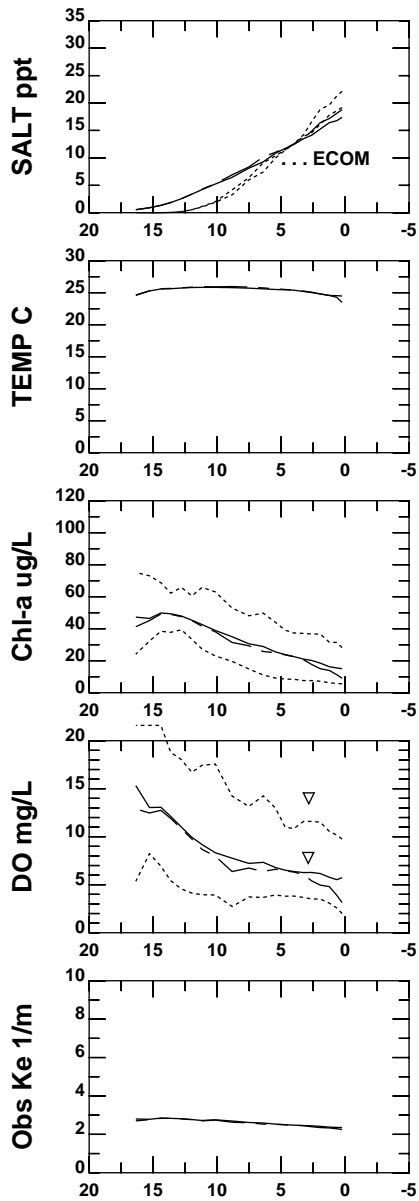
### MILE FROM MOUTH PASSAIC RIVER

DATA May 29-Jun 27, 1999

	SURF	MID	BOT	
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

### MODEL

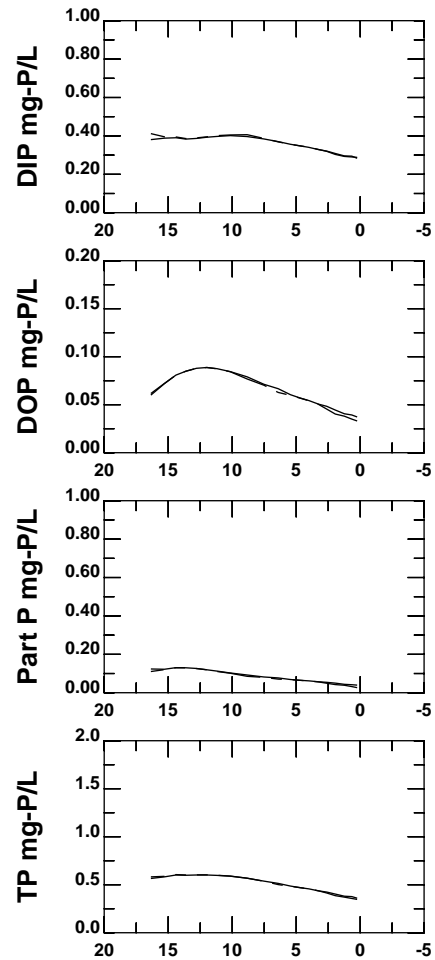
—	SURFACE 30-DAY MEAN
- - - -	BOTTOM 30-DAY MEAN
- - -	30-DAY SURFACE MAX OR BOTTOM MIN



MILE FROM MOUTH PASSAIC RIVER

### PASSAIC RIVER

DATE: 4/07/2006 TIME: 11:15:45



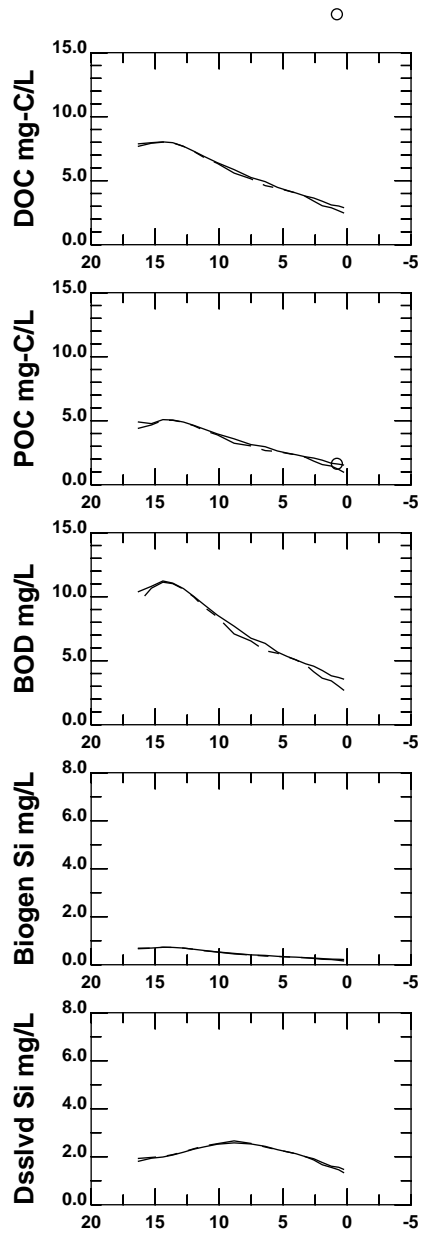
### MILE FROM MOUTH PASSAIC RIVER

DATA Jun 28-Jul 27,1999

	SURF MID BOT			
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

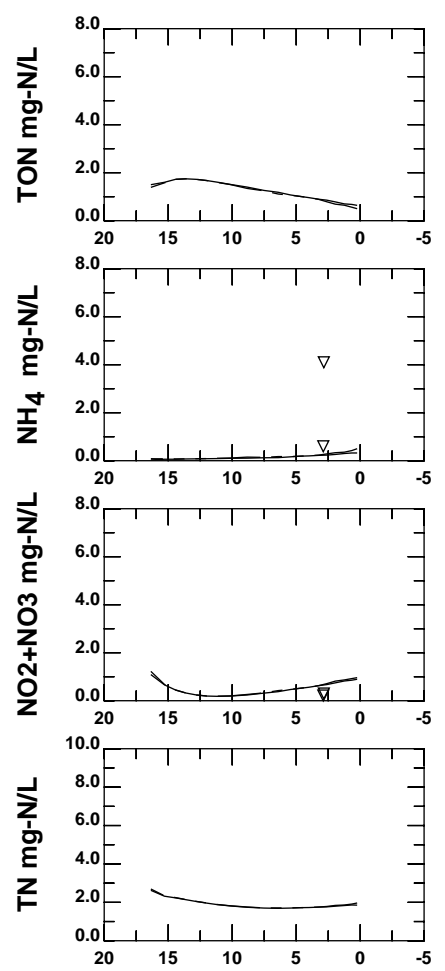
### MODEL

—	SURFACE 30-DAY MEAN
- - - -	BOTTOM 30-DAY MEAN
- · - ·	30-DAY SURFACE MAX OR BOTTOM MIN



MILE FROM MOUTH PASSAIC RIVER

**PASSAIC RIVER**

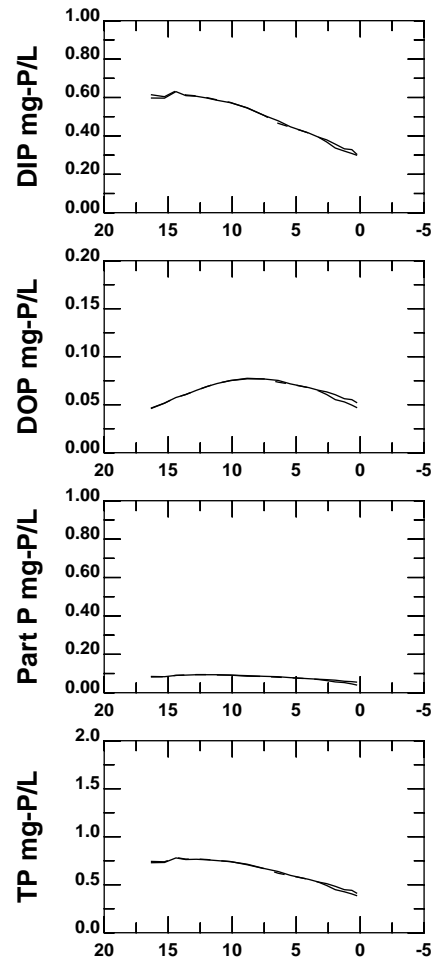
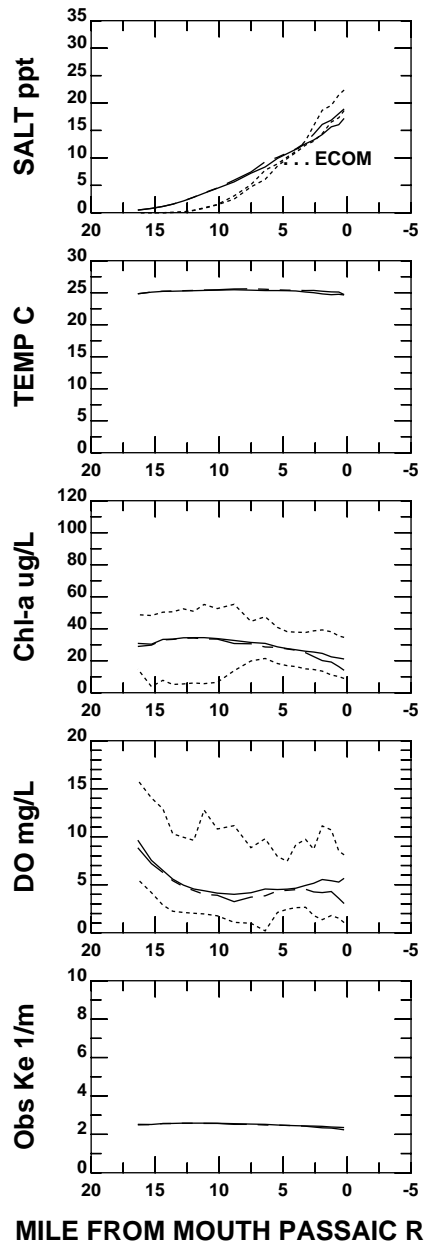


MILE FROM MOUTH PASSAIC RIVER  
DATA Jun 28-Jul 27, 1999

	SURF MID BOT			
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

MODEL

- SURFACE 30-DAY MEAN
- - - - - BOTTOM 30-DAY MEAN
- - - 30-DAY SURFACE MAX OR BOTTOM MIN



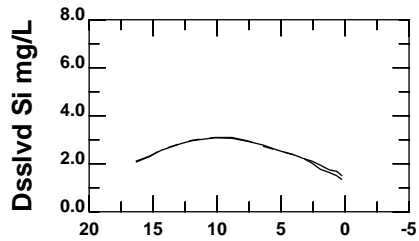
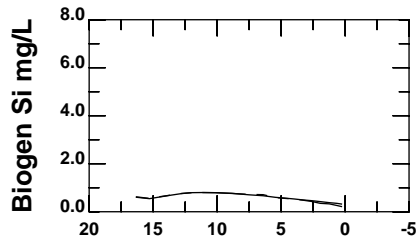
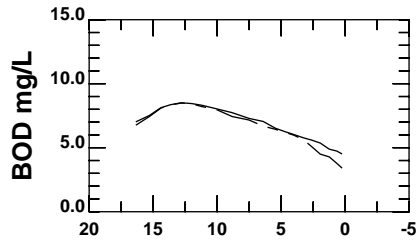
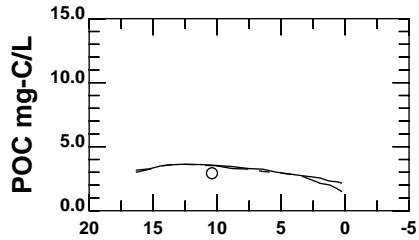
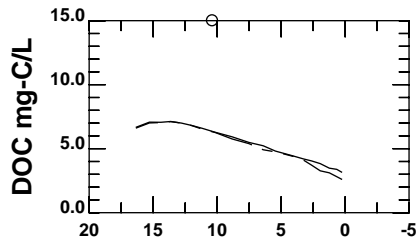
**MILE FROM MOUTH PASSAIC RIVER**  
 DATA Jul 27-Aug 26, 1999

	SURF MID BOT			
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

**MODEL**

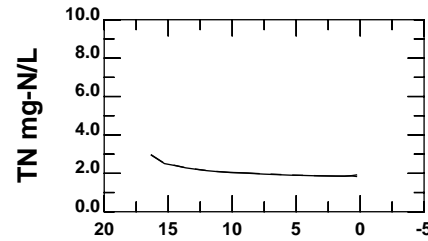
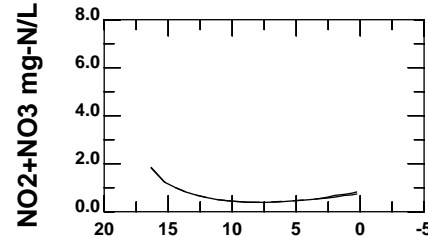
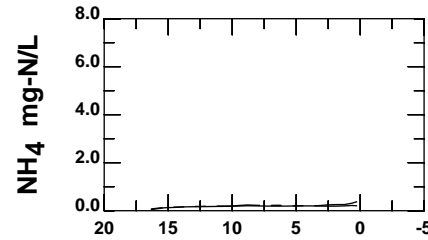
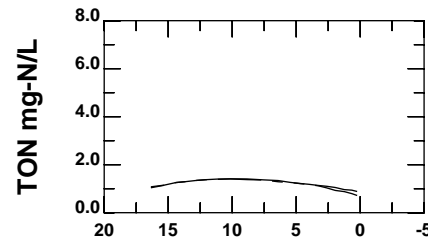
————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

**MILE FROM MOUTH PASSAIC RIVER**  
**PASSAIC RIVER**



MILE FROM MOUTH PASSAIC RIVER

**PASSAIC RIVER**



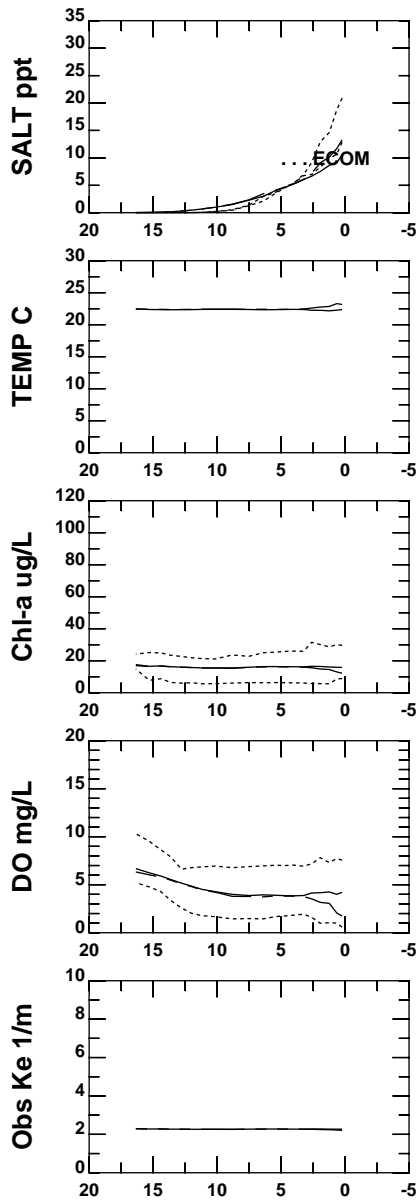
MILE FROM MOUTH PASSAIC RIVER

DATA Jul 27-Aug 26, 1999

	SURF MID BOT			
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

MODEL

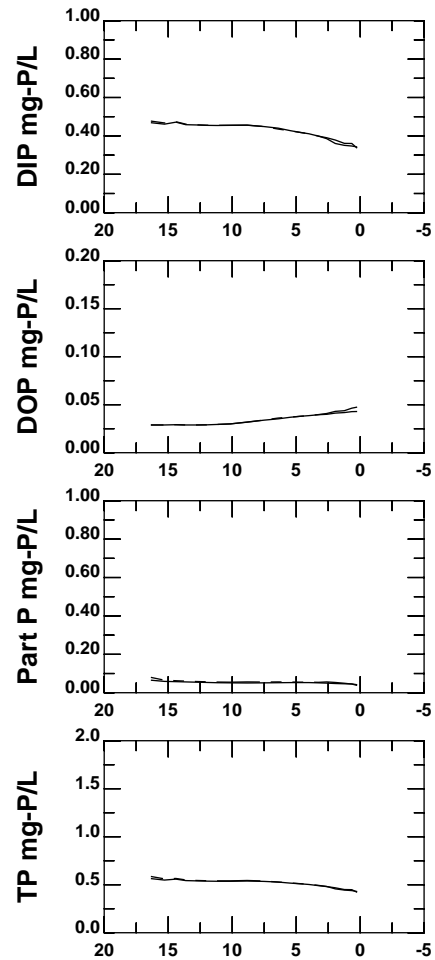
—	SURFACE 30-DAY MEAN
- - - -	BOTTOM 30-DAY MEAN
- · - ·	30-DAY SURFACE MAX OR BOTTOM MIN



MILE FROM MOUTH PASSAIC RIVER

### PASSAIC RIVER

DATE: 4/07/2006 TIME: 11:15:54



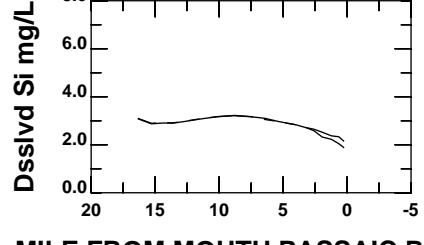
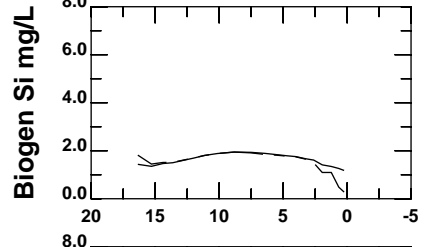
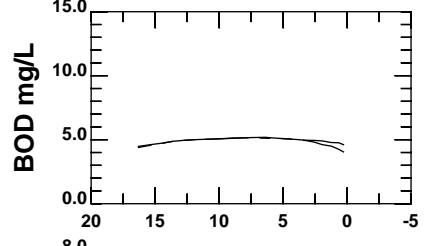
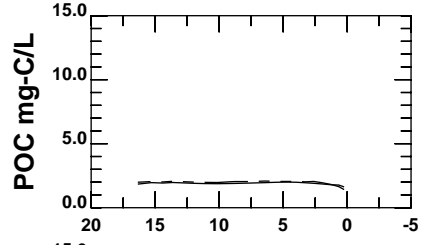
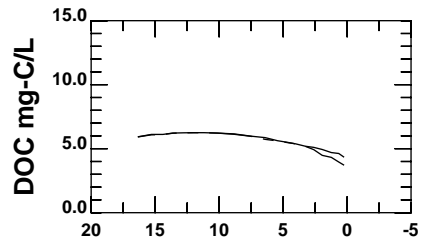
### MILE FROM MOUTH PASSAIC RIVER

DATA Aug 27-Sep 25, 1999

	SURF MID BOT			
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

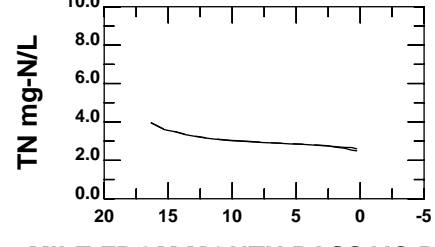
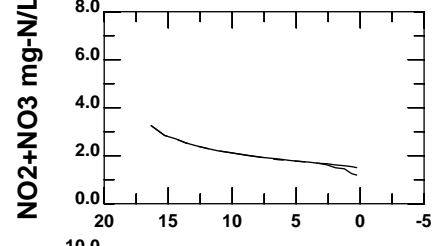
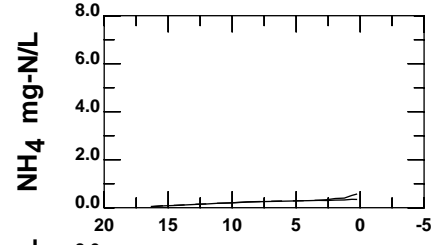
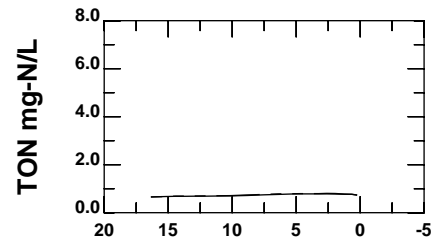
### MODEL

————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN



MILE FROM MOUTH PASSAIC RIVER

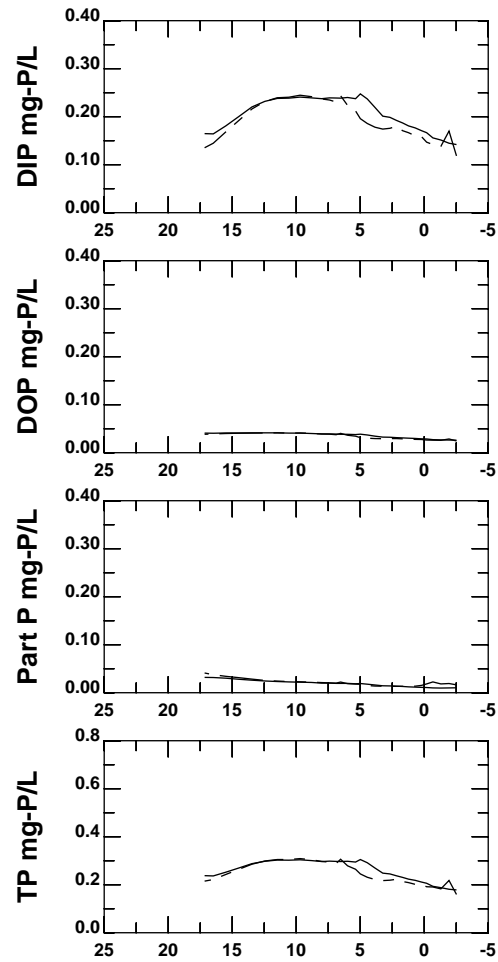
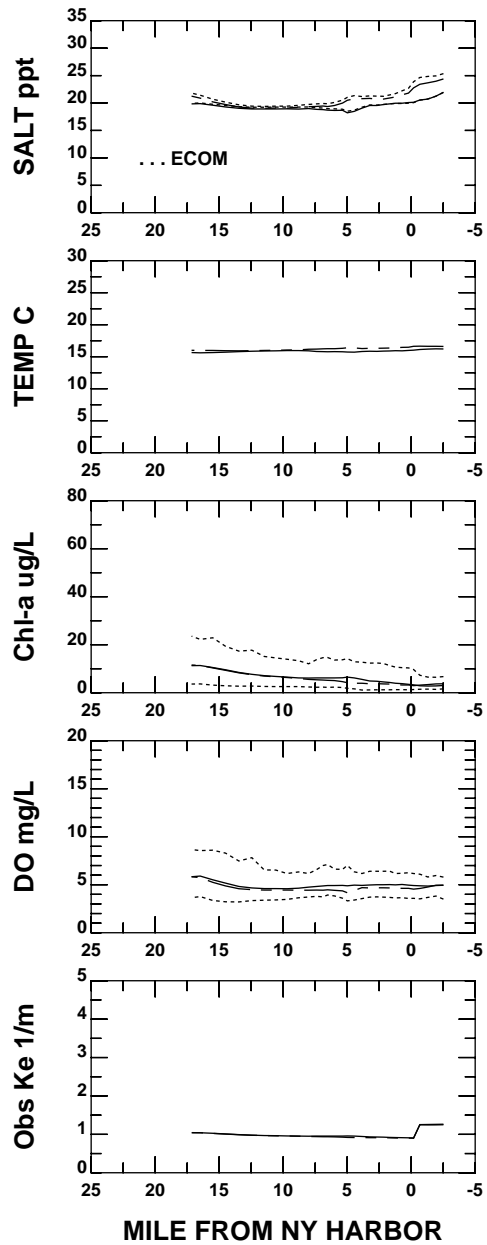
# PASSAIC RIVER



MILE FROM MOUTH PASSAIC RIVER  
DATA Aug 27-Sep 25, 1999

	SURF MID BOT			
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

MODEL	
—	SURFACE 30-DAY MEAN
- - - -	BOTTOM 30-DAY MEAN
- - -	30-DAY SURFACE MAX OR BOTTOM MIN



**MILE FROM UPPER NY BAY**

DATA Oct 1-30,1998

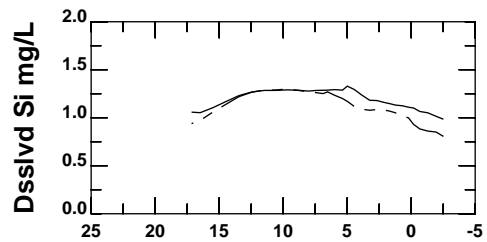
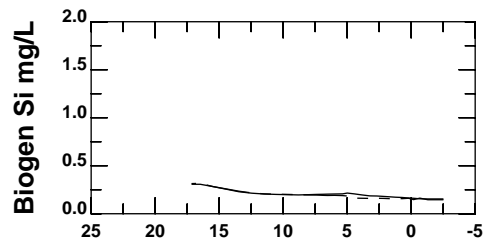
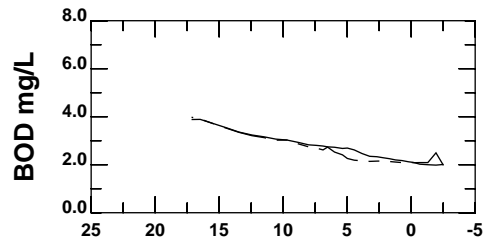
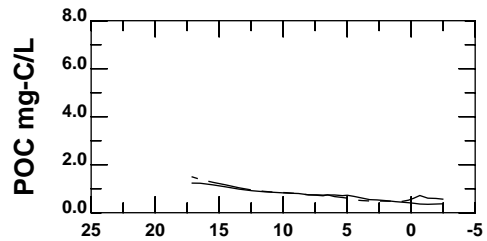
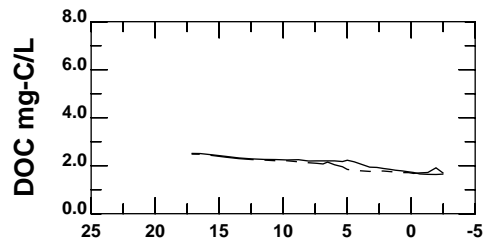
- |               |              |   |           |
|---------------|--------------|---|-----------|
|               | SURF MID BOT |   |           |
| Harbor Survey | △            | ▲ | Transect  |
| NYSDEC        | t            | e | Embayment |
|               | ○            |   | Transect  |
|               | c            |   | Embayment |
| NJSIT         | ◇            |   | Transect  |
|               | p            |   | Embayment |
| PVSC          | ●            | ■ | Transect  |
|               | u            | m | Embayment |
|               |              | ▼ | Transect  |
|               |              | b | Embayment |

**MODEL**

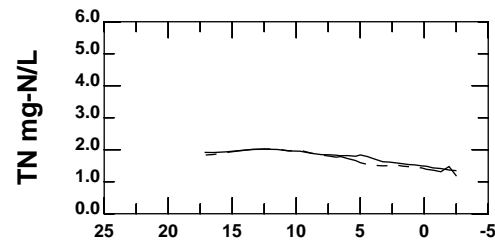
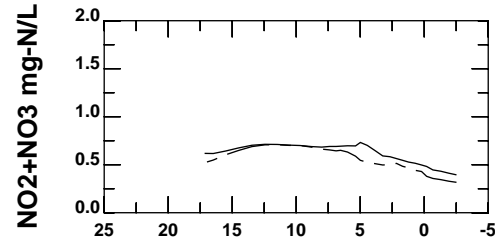
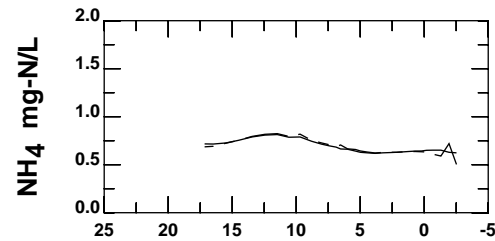
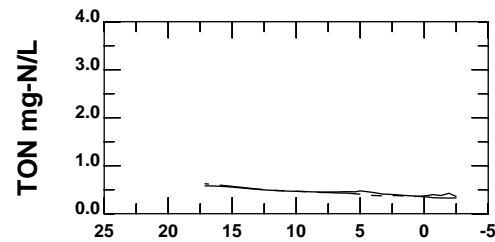
- |         |                                  |
|---------|----------------------------------|
| ————    | SURFACE 30-DAY MEAN              |
| -----   | BOTTOM 30-DAY MEAN               |
| - - - - | 30-DAY SURFACE MAX OR BOTTOM MIN |

**ARTHUR KILL AND KILL VAN KULL**



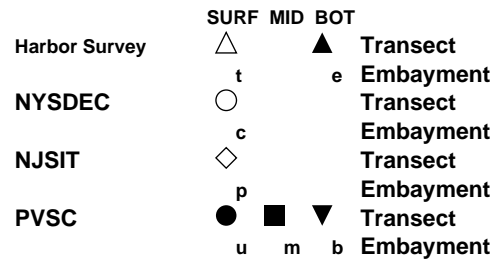


MILE FROM NY HARBOR

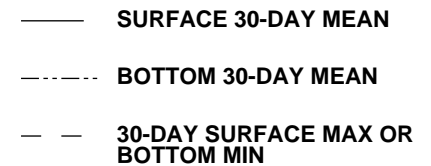


MILE FROM UPPER NY BAY

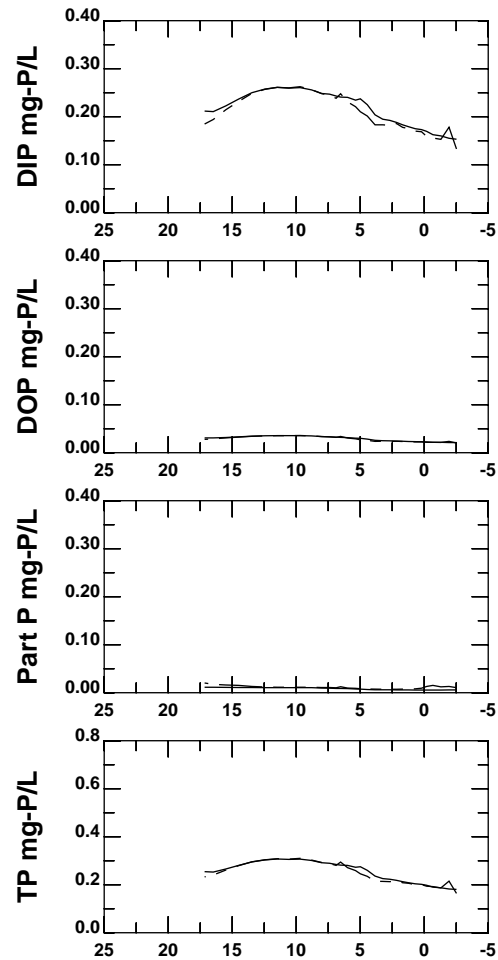
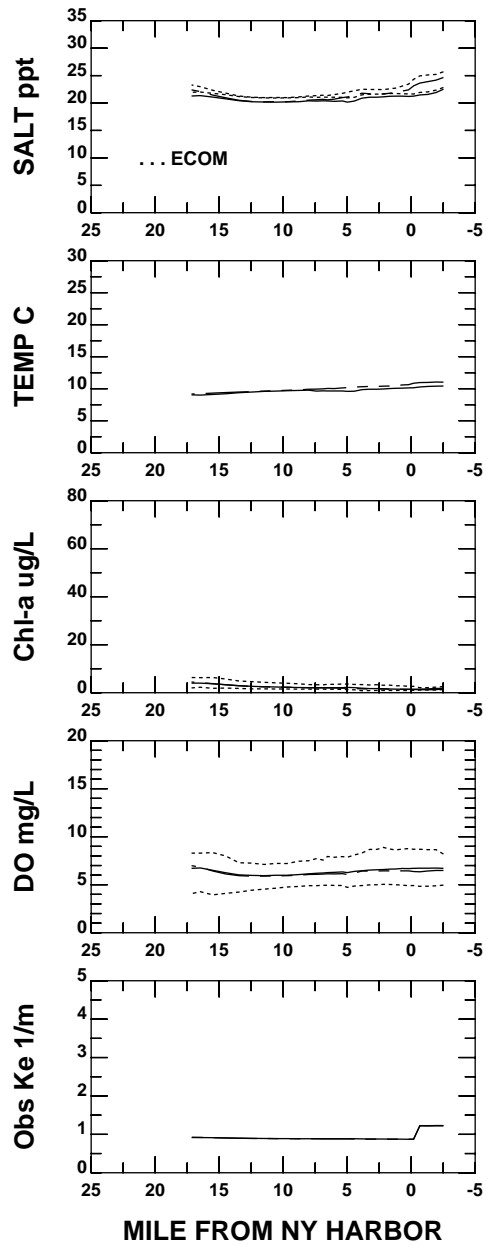
DATA Oct 1-30,1998



MODEL



# ARTHUR KILL AND KILL VAN KULL



**MILE FROM UPPER NY BAY**

DATA Oct 31-Nov 29, 1998

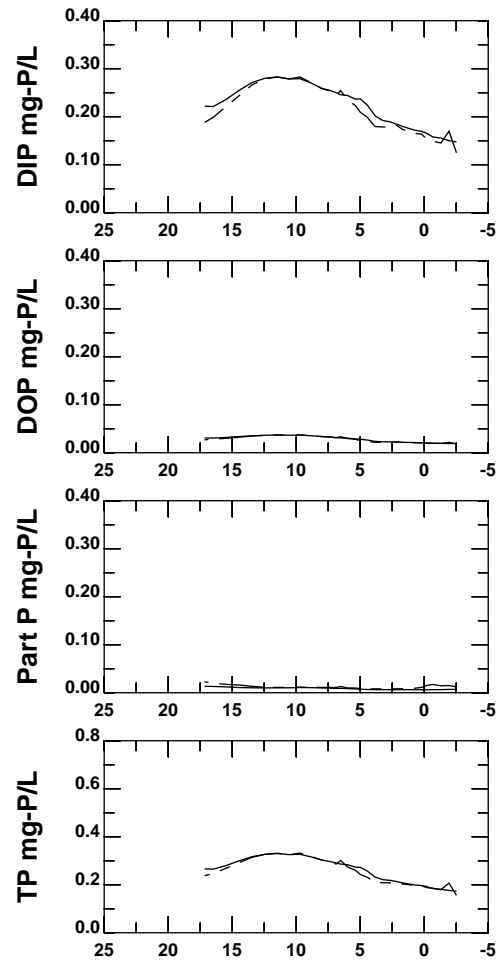
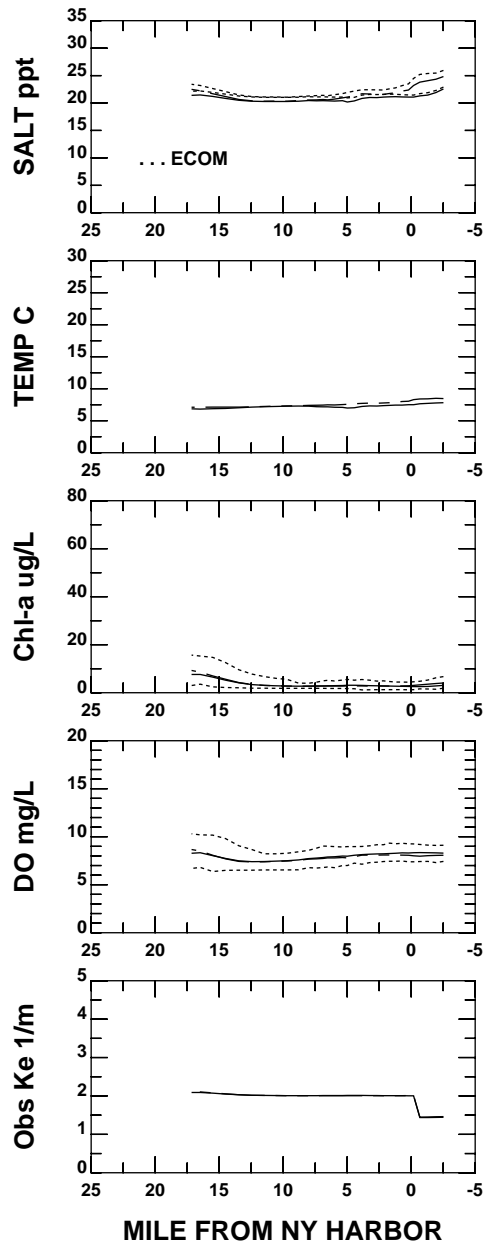
	SURF MID BOT			
Harbor Survey	△		▲	Transect
NYSDEC	t		e	Embayment
	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment

**MODEL**

————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

**ARTHUR KILL AND KILL VAN KULL**





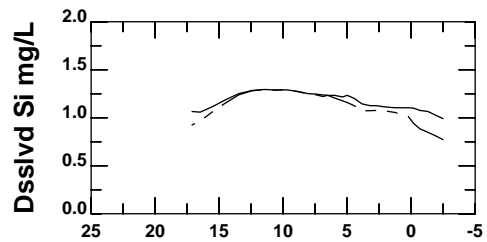
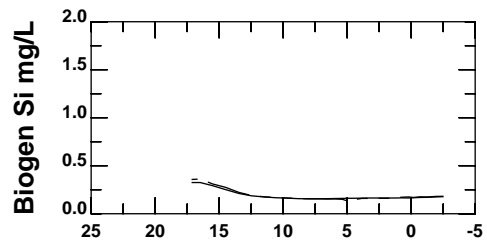
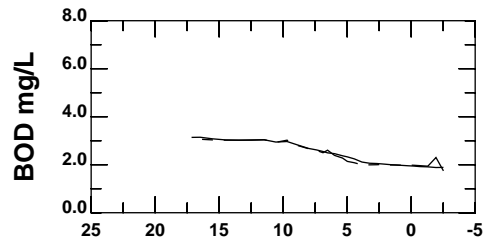
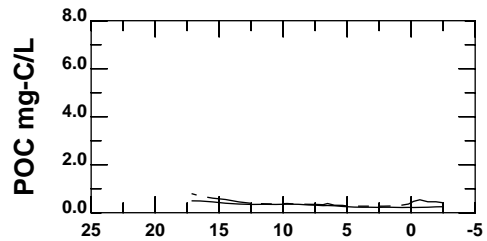
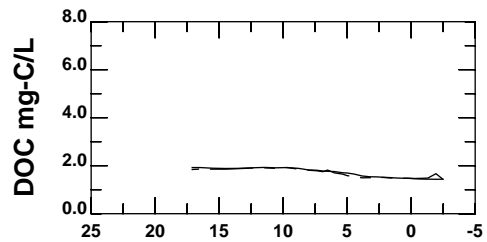
DATA Nov 30-Dec 29, 1998

	SURF	MID	BOT	
Harbor Survey	△		▲	Transect
NYSDEC	t		e	Embayment
	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment

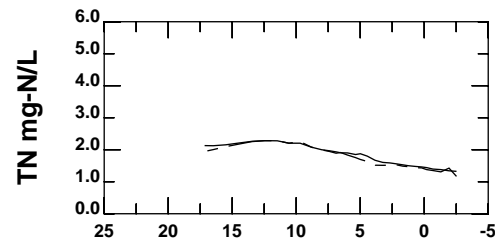
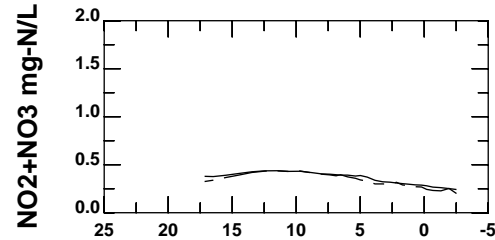
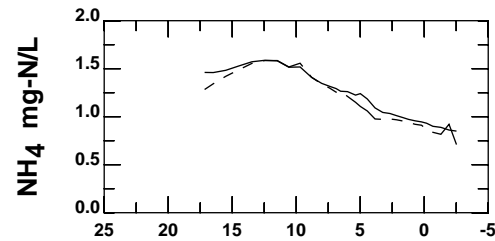
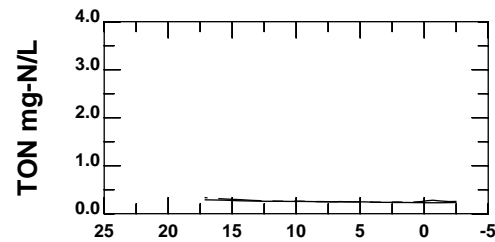
MODEL

————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

## ARTHUR KILL AND KILL VAN KULL

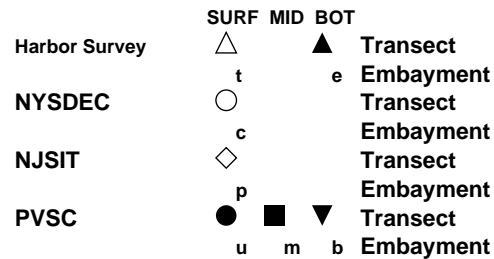


MILE FROM NY HARBOR

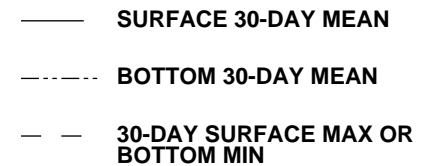


MILE FROM UPPER NY BAY

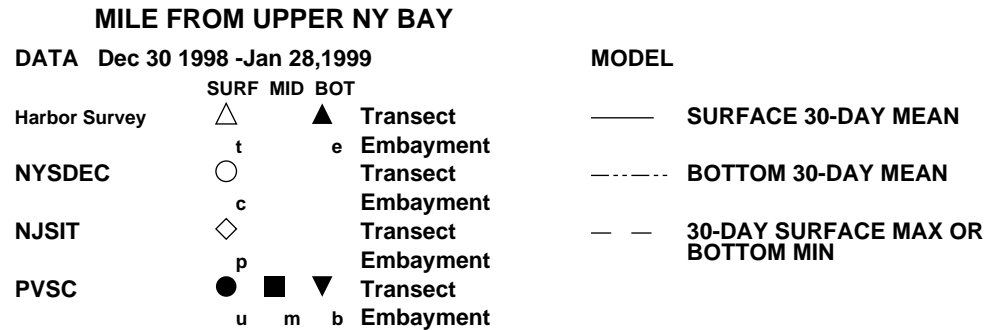
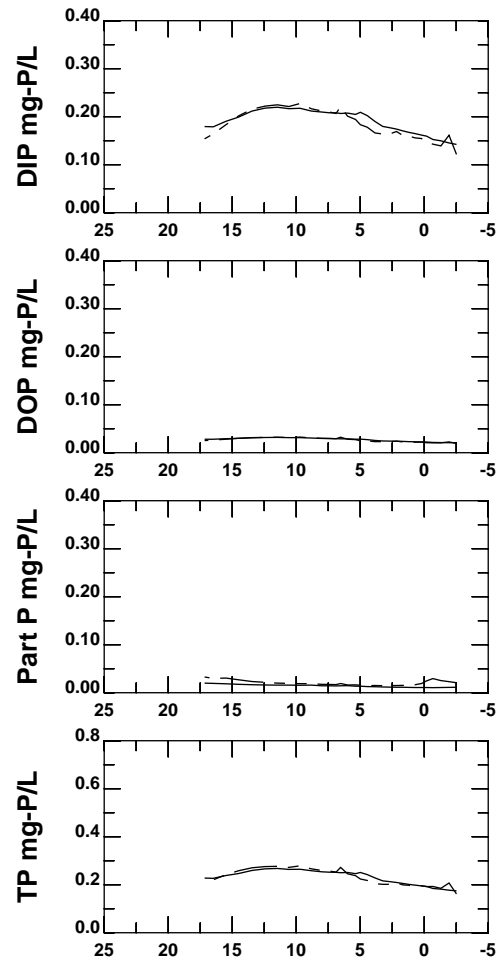
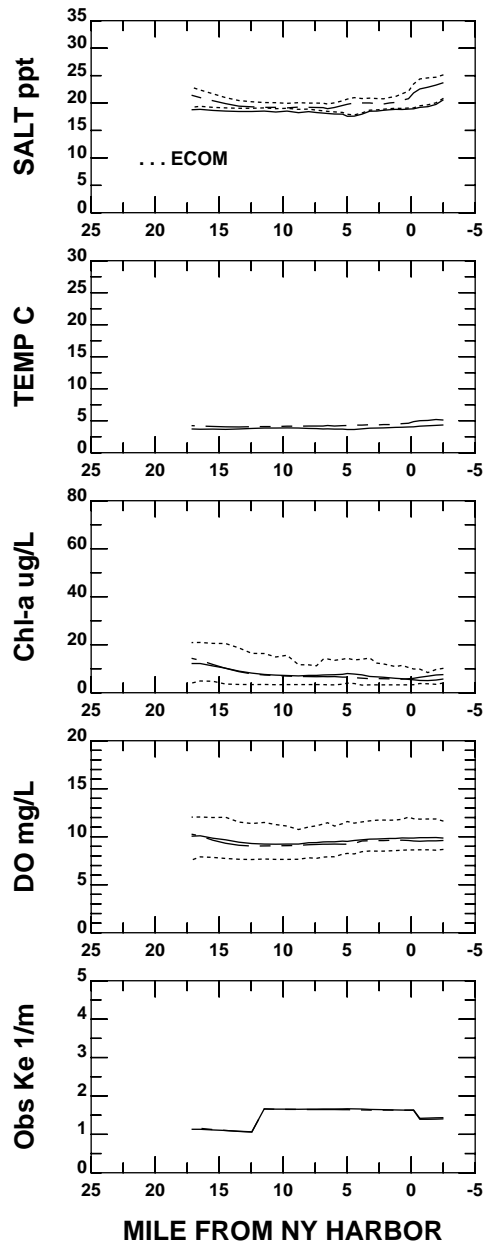
DATA Nov 30-Dec 29, 1998

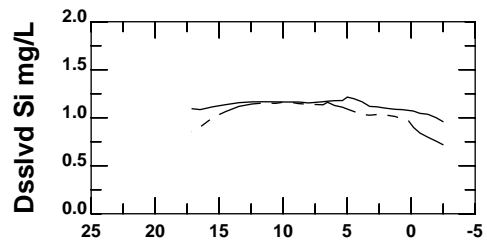
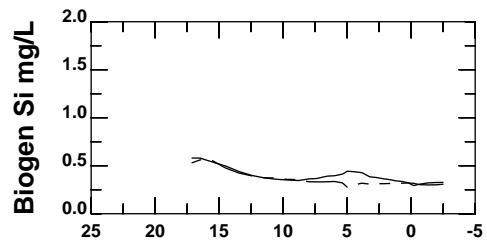
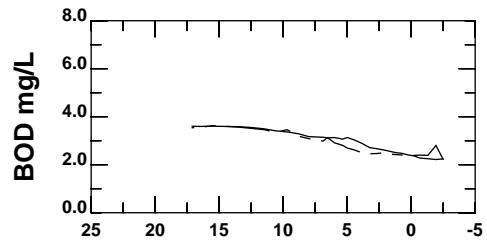
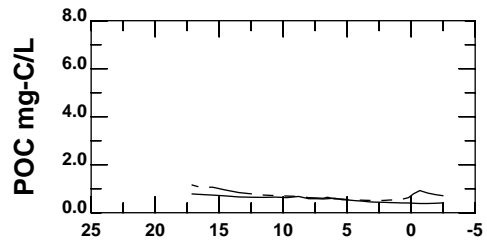
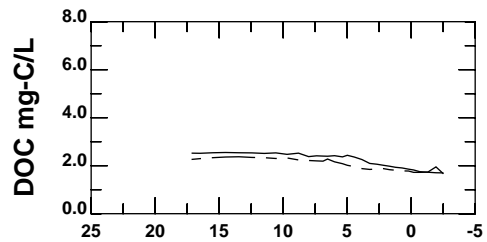


MODEL

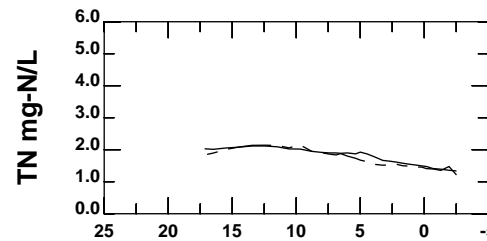
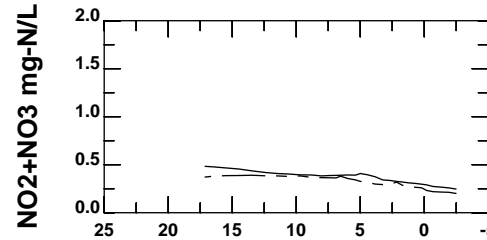
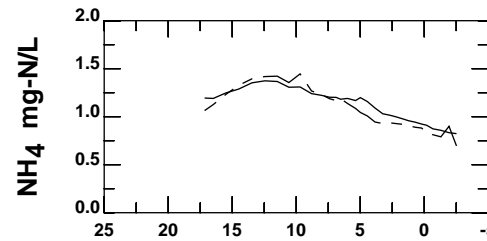
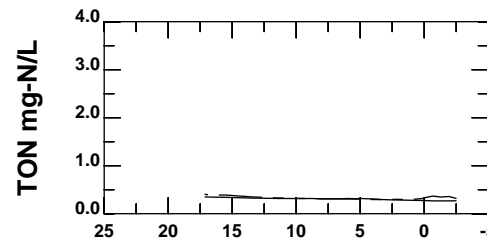


ARTHUR KILL AND KILL VAN KULL





MILE FROM NY HARBOR



MILE FROM UPPER NY BAY

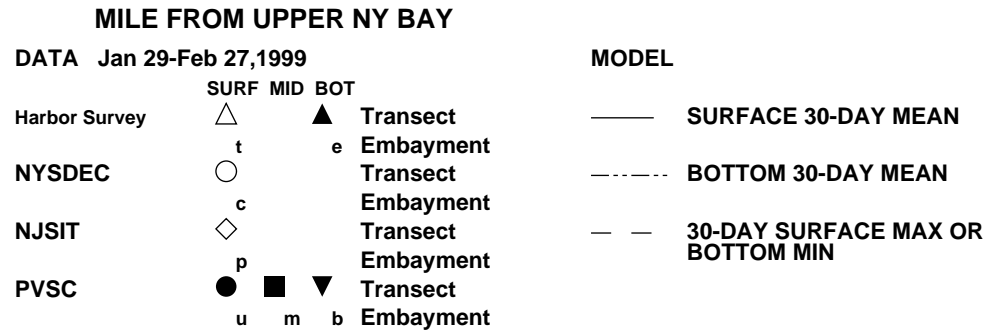
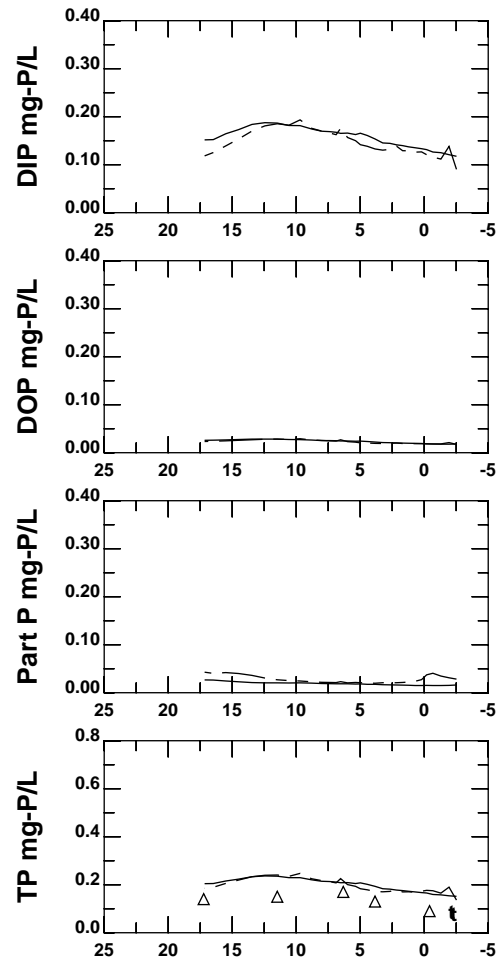
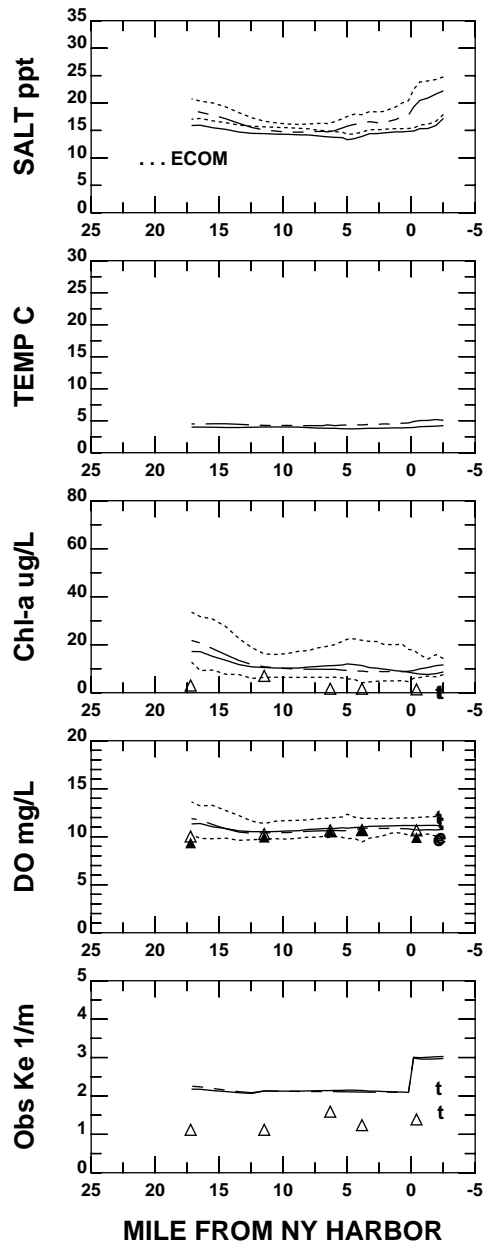
DATA Dec 30 1998 -Jan 28, 1999

	SURF MID BOT			
Harbor Survey	△	▲	Transect	
NYSDEC	t	e	Embayment	
	○		Transect	
	c		Embayment	
NJSIT	◇		Transect	
	p		Embayment	
PVSC	●	■	Transect	
	u	m	Embayment	
		▼	Transect	
		b	Embayment	

MODEL

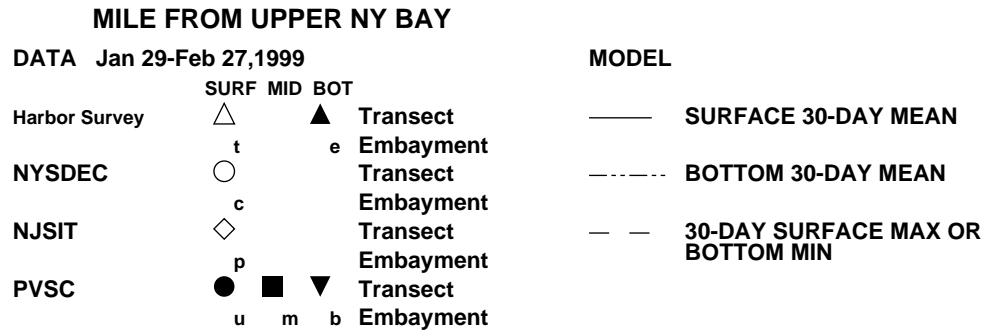
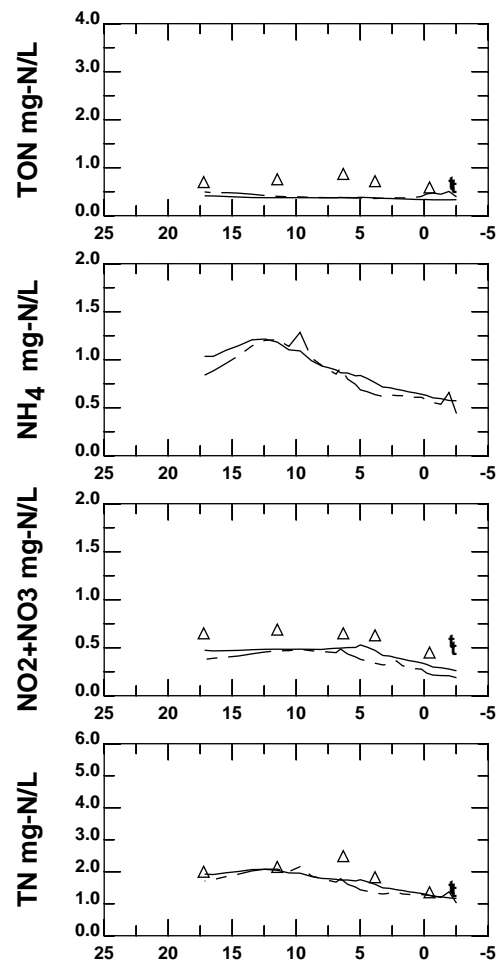
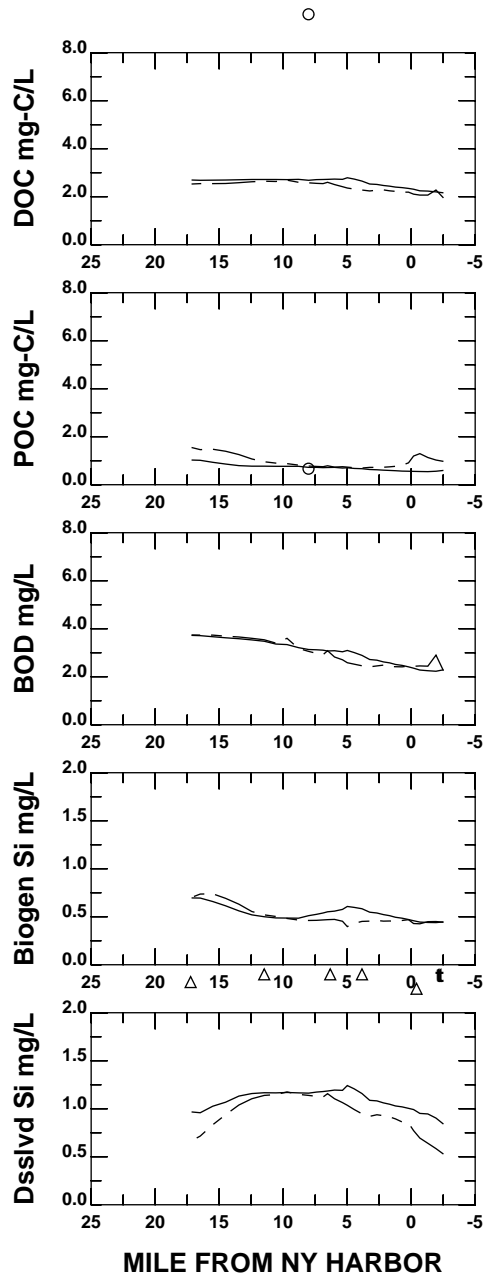
————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

ARTHUR KILL AND KILL VAN KULL

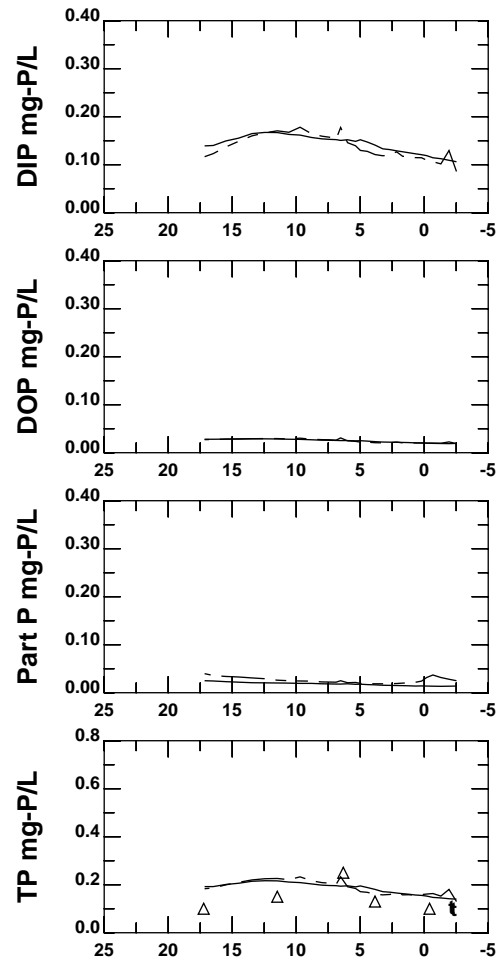
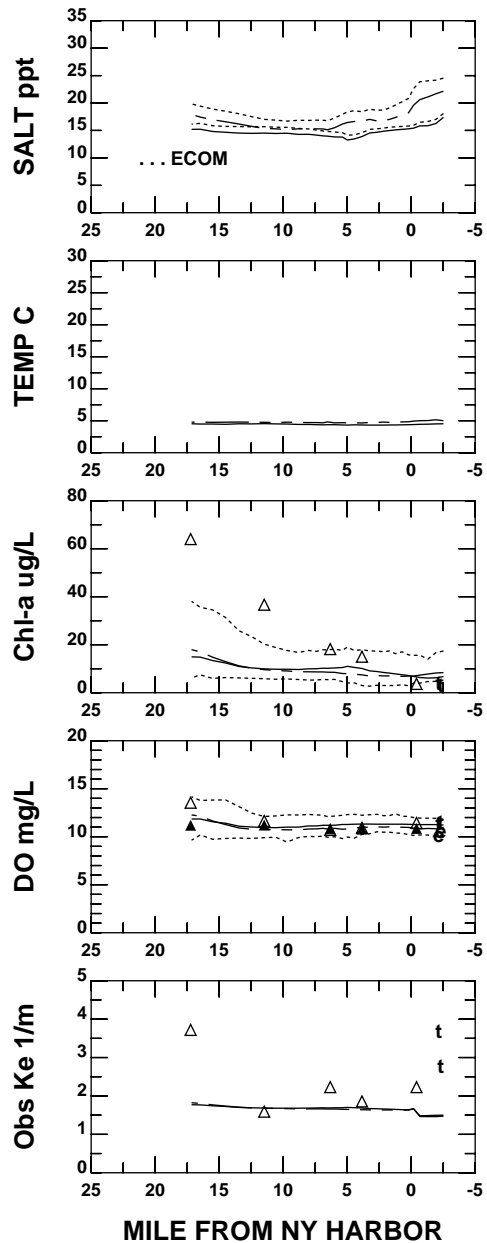


**ARTHUR KILL AND KILL VAN KULL**





**ARTHUR KILL AND KILL VAN KULL**



**MILE FROM UPPER NY BAY**

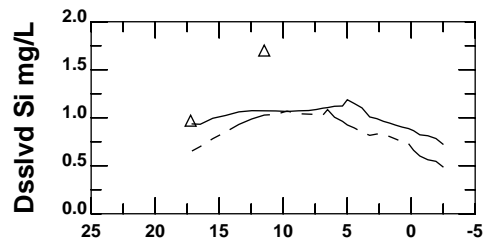
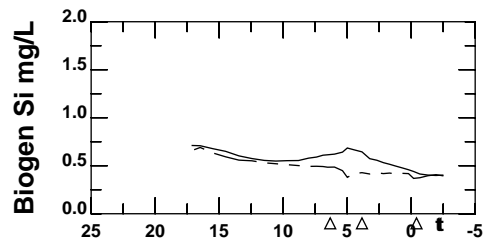
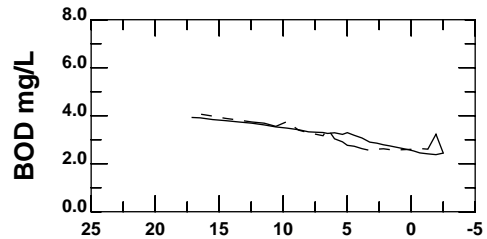
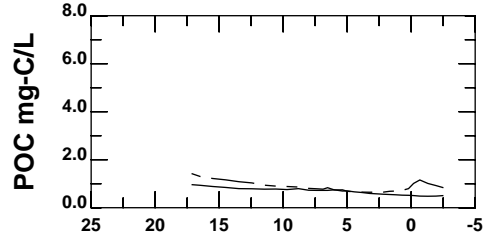
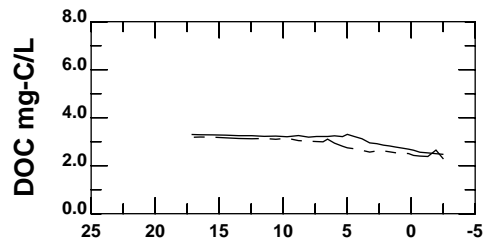
DATA Feb 28-Mar 29, 1999

- |               |              |   |           |
|---------------|--------------|---|-----------|
|               | SURF MID BOT |   |           |
| Harbor Survey | △            | ▲ | Transect  |
| NYSDEC        | t            | e | Embayment |
|               | ○            |   | Transect  |
|               | c            |   | Embayment |
| NJSIT         | ◇            |   | Transect  |
|               | p            |   | Embayment |
| PVSC          | ●            | ■ | Transect  |
|               | u            | m | Embayment |
|               |              | ▼ | Transect  |
|               |              | b | Embayment |

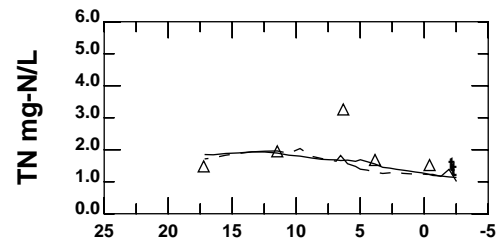
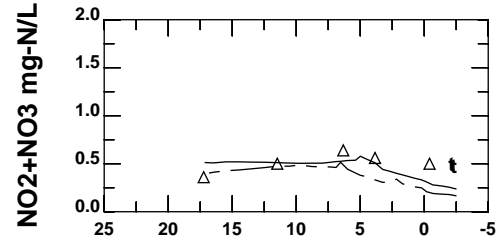
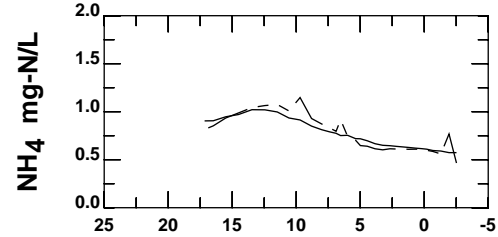
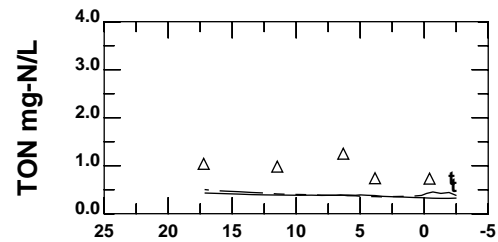
**MODEL**

- |         |                                  |
|---------|----------------------------------|
| ————    | SURFACE 30-DAY MEAN              |
| -----   | BOTTOM 30-DAY MEAN               |
| - - - - | 30-DAY SURFACE MAX OR BOTTOM MIN |

**ARTHUR KILL AND KILL VAN KULL**



MILE FROM NY HARBOR



MILE FROM UPPER NY BAY

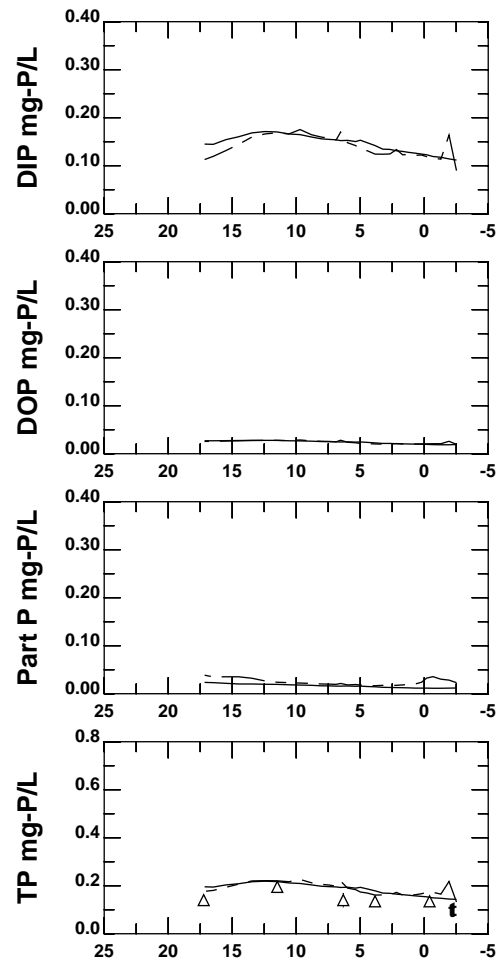
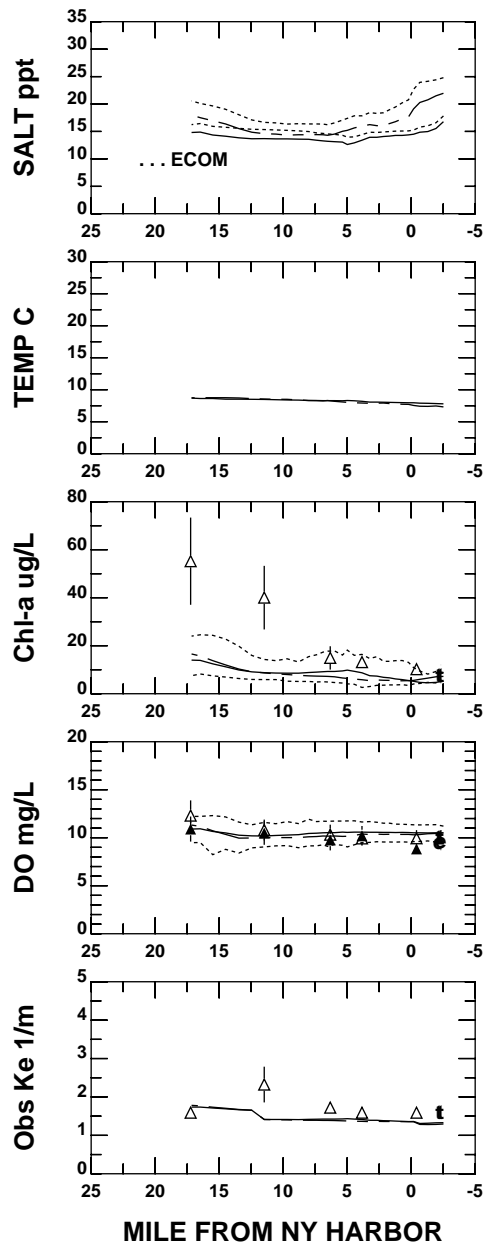
DATA Feb 28-Mar 29, 1999

	SURF		MID		BOT	
Harbor Survey	△	▲	△	▲	△	▲
NYSDEC	t	e	○	○	○	○
NJSIT	c		◇	◇	◇	◇
PVSC	p		●	■	▼	▼
	u	m	b	b	b	b

MODEL

————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

ARTHUR KILL AND KILL VAN KULL



**MILE FROM UPPER NY BAY**

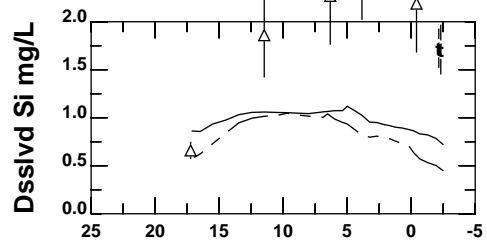
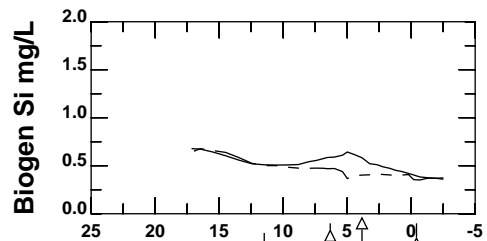
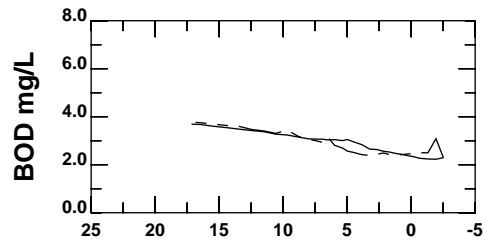
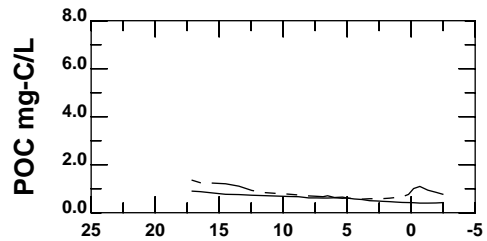
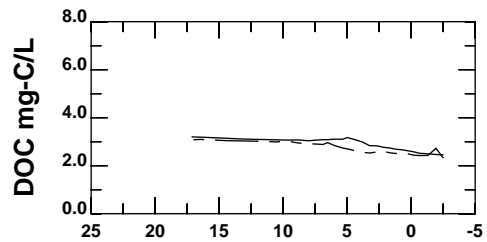
DATA Mar 30-Apr 28, 1999

- |               |              |   |           |
|---------------|--------------|---|-----------|
|               | SURF MID BOT |   |           |
| Harbor Survey | △            | ▲ | Transect  |
|               | t            | e | Embayment |
| NYSDEC        | ○            |   | Transect  |
|               | c            |   | Embayment |
| NJSIT         | ◇            |   | Transect  |
|               | p            |   | Embayment |
| PVSC          | ●            | ■ | Transect  |
|               | u            | m | Embayment |
|               |              | ▼ | Transect  |
|               |              | b | Embayment |

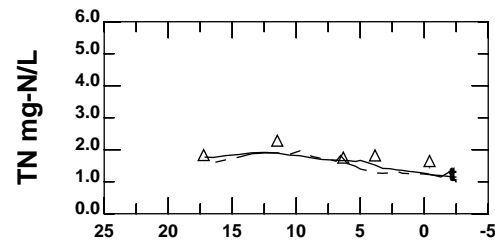
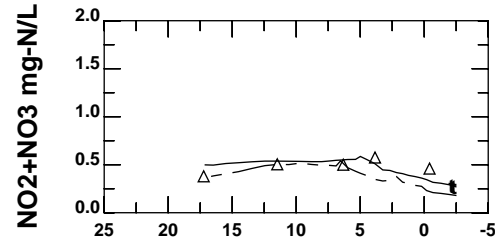
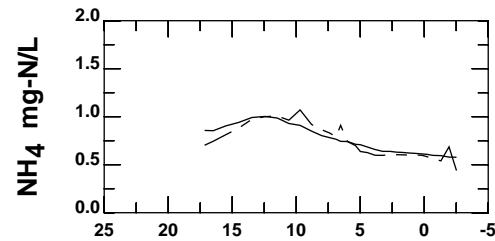
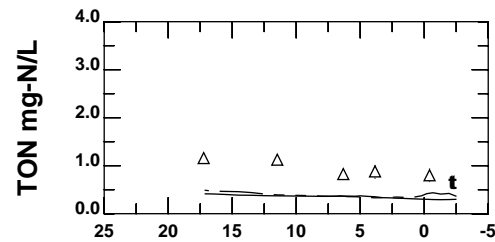
**MODEL**

- |         |                                  |
|---------|----------------------------------|
| —       | SURFACE 30-DAY MEAN              |
| - - - - | BOTTOM 30-DAY MEAN               |
| - - -   | 30-DAY SURFACE MAX OR BOTTOM MIN |

**ARTHUR KILL AND KILL VAN KULL**

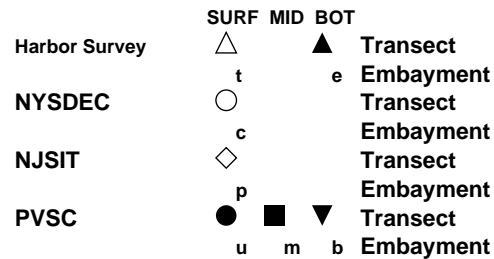


MILE FROM NY HARBOR

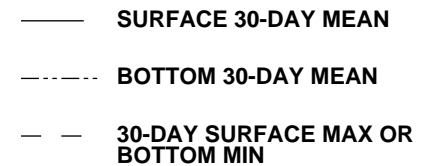


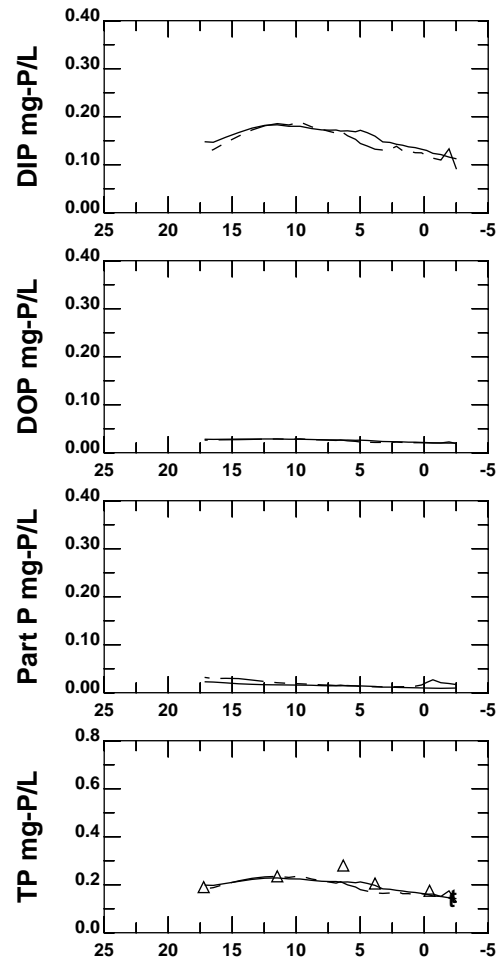
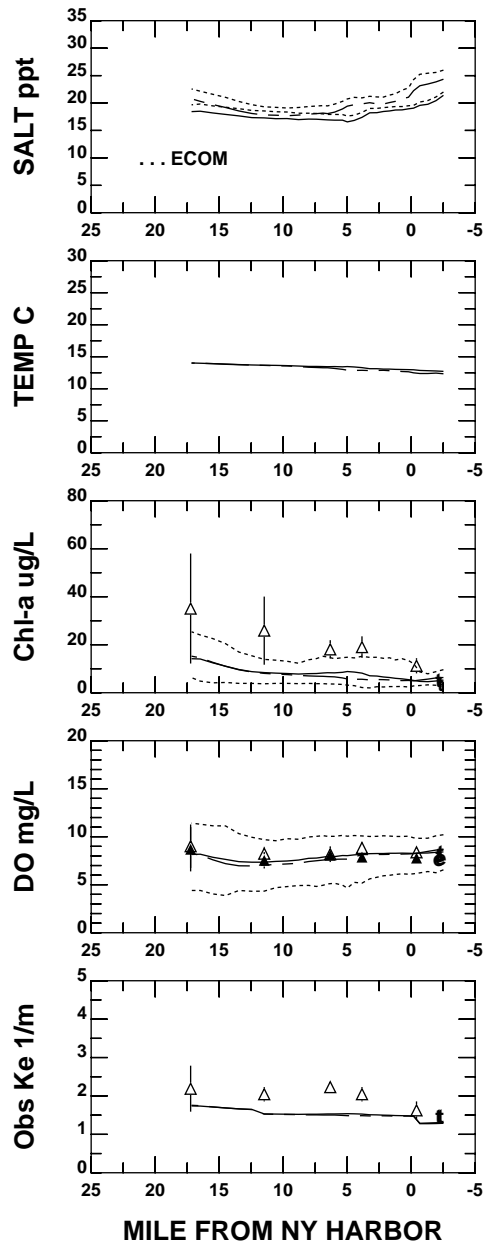
MILE FROM UPPER NY BAY

DATA Mar 30-Apr 28, 1999



MODEL





**MILE FROM UPPER NY BAY**

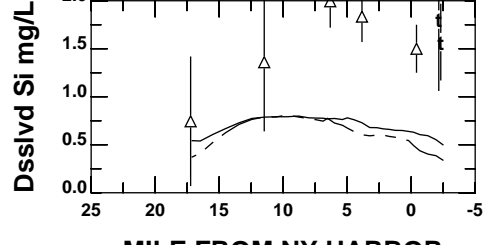
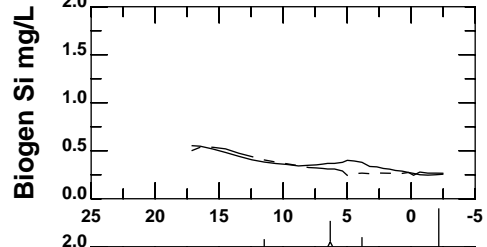
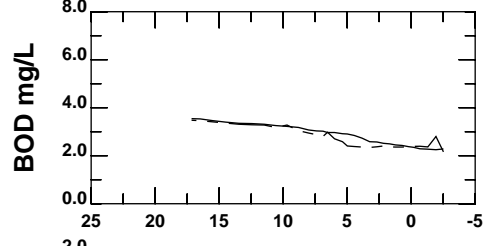
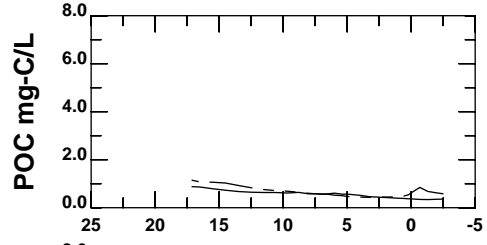
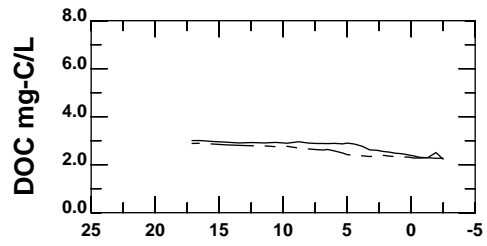
DATA Apr 29-May 28, 1999

	SURF MID BOT		
Harbor Survey	△	▲	Transect
NYSDEC	t	e	Embayment
	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment
PVSC	●	■	Transect
	u	m	Embayment
		▼	Transect
		b	Embayment

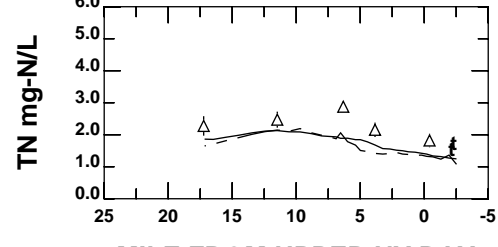
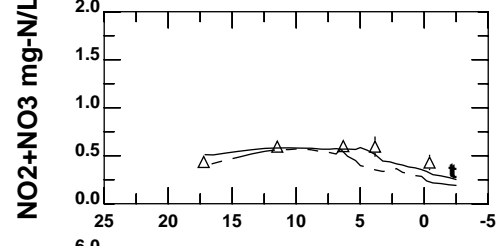
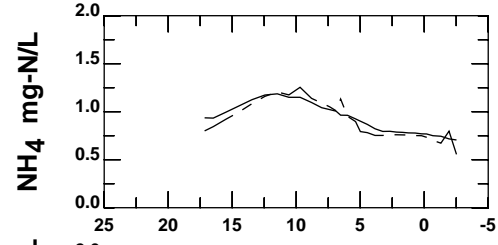
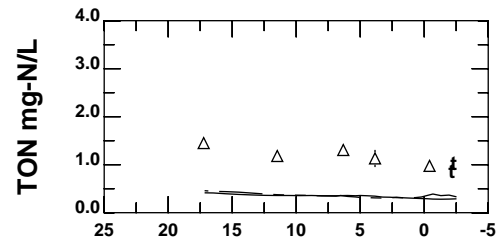
**MODEL**

—	SURFACE 30-DAY MEAN
- - -	BOTTOM 30-DAY MEAN
- - -	30-DAY SURFACE MAX OR BOTTOM MIN

**ARTHUR KILL AND KILL VAN KULL**



MILE FROM NY HARBOR



MILE FROM UPPER NY BAY

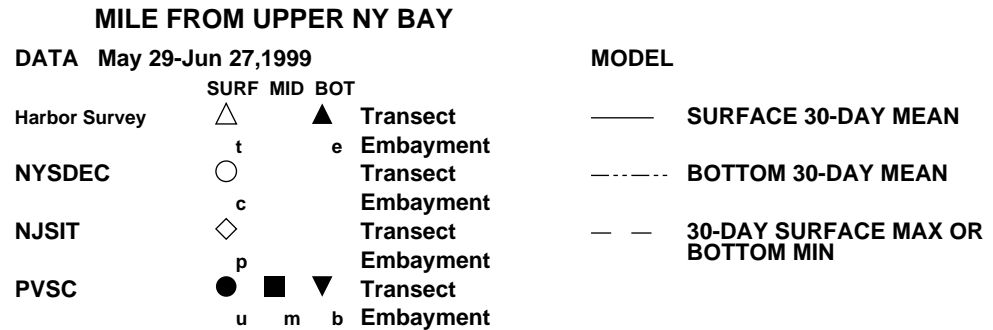
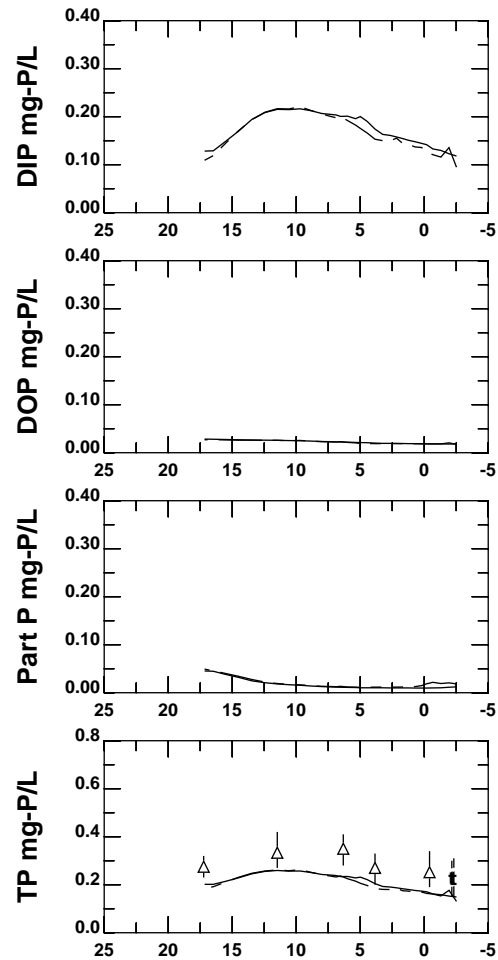
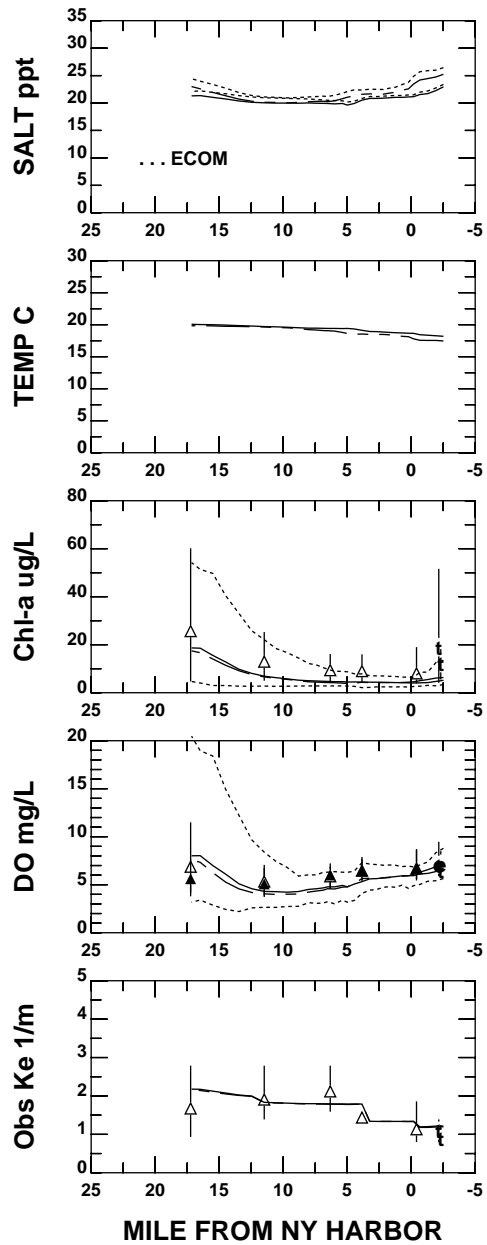
DATA Apr 29-May 28, 1999

- |               |      |   |           |  |     |  |  |
|---------------|------|---|-----------|--|-----|--|--|
|               | SURF |   | MID       |  | BOT |  |  |
| Harbor Survey | △    | ▲ | Transect  |  |     |  |  |
| NYSDEC        | t    | e | Embayment |  |     |  |  |
|               | ○    |   | Transect  |  |     |  |  |
|               | c    |   | Embayment |  |     |  |  |
| NJSIT         | ◇    |   | Transect  |  |     |  |  |
|               | p    |   | Embayment |  |     |  |  |
| PVSC          | ●    | ■ | Transect  |  |     |  |  |
|               | u    | m | Embayment |  |     |  |  |
|               |      | ▼ | Transect  |  |     |  |  |
|               |      | b | Embayment |  |     |  |  |

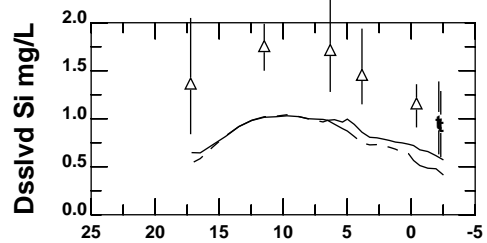
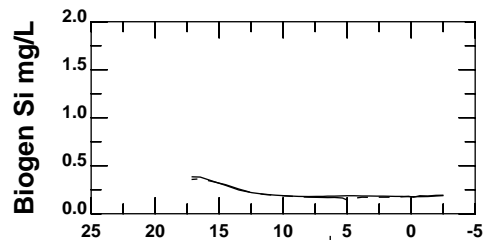
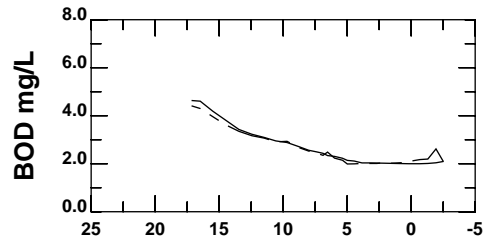
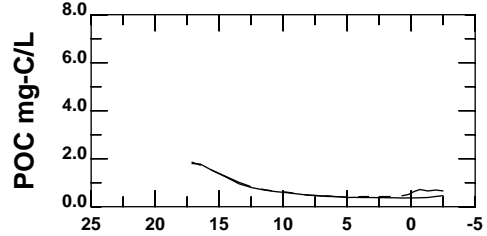
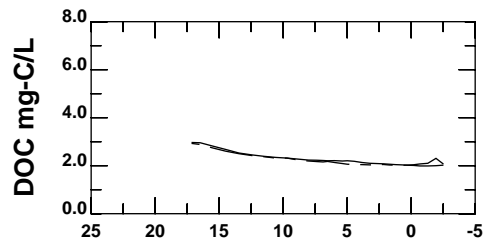
MODEL

- |         |                                  |
|---------|----------------------------------|
| —       | SURFACE 30-DAY MEAN              |
| - - - - | BOTTOM 30-DAY MEAN               |
| - - -   | 30-DAY SURFACE MAX OR BOTTOM MIN |

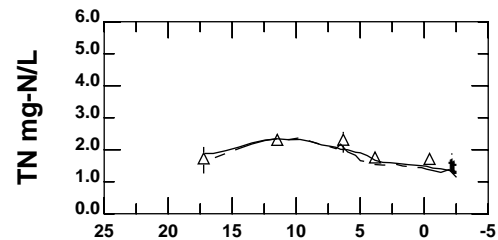
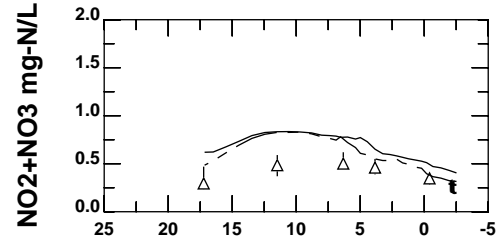
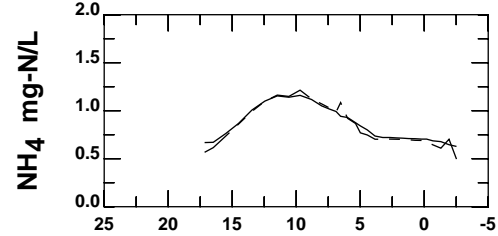
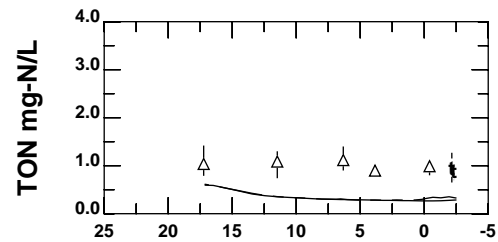
ARTHUR KILL AND KILL VAN KULL





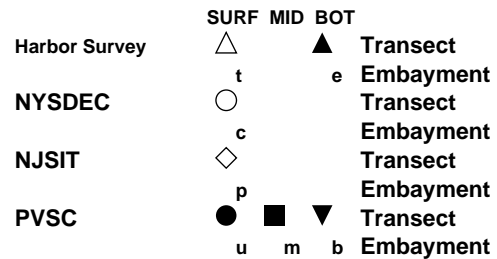


MILE FROM NY HARBOR

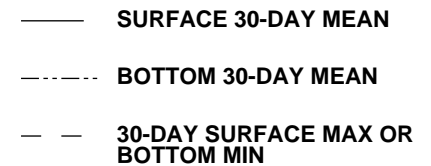


MILE FROM UPPER NY BAY

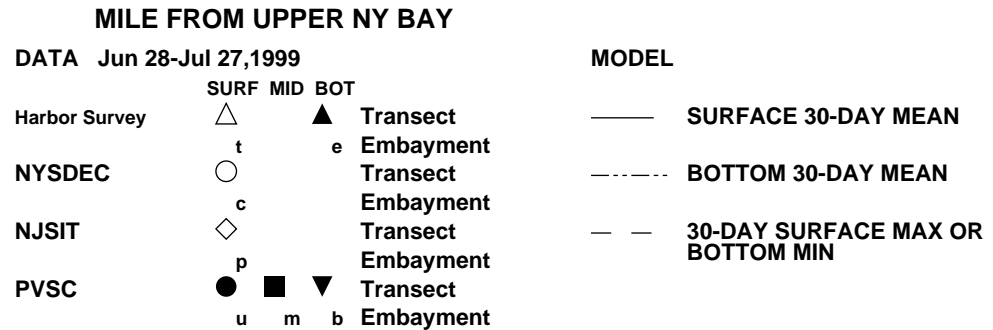
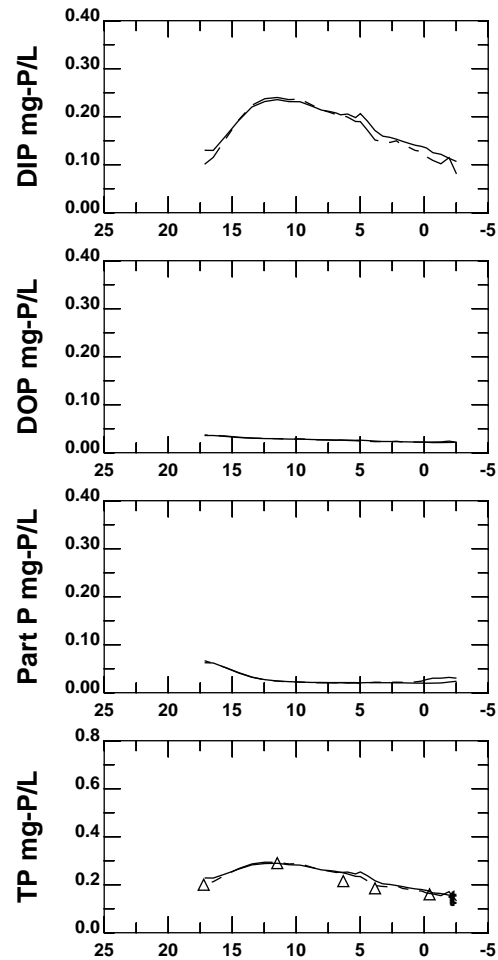
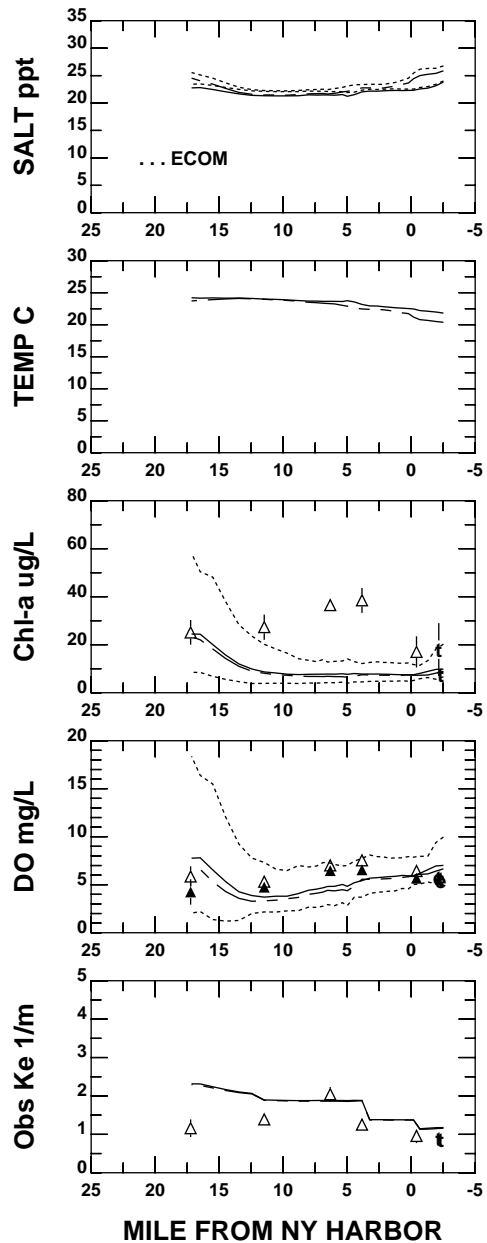
DATA May 29-Jun 27, 1999

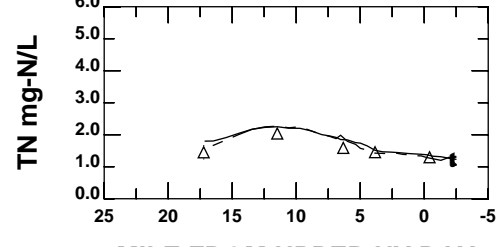
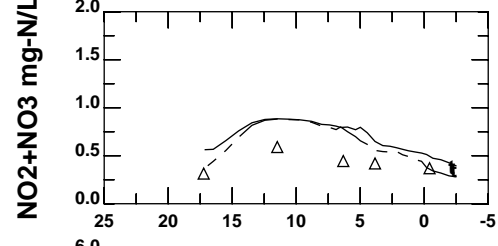
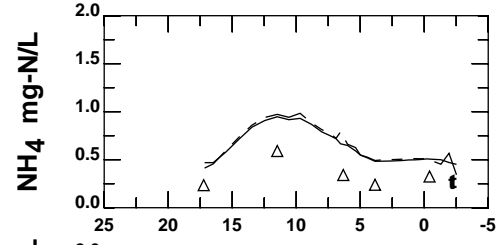
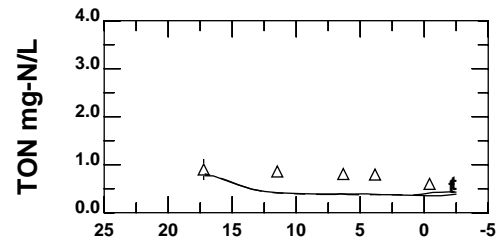
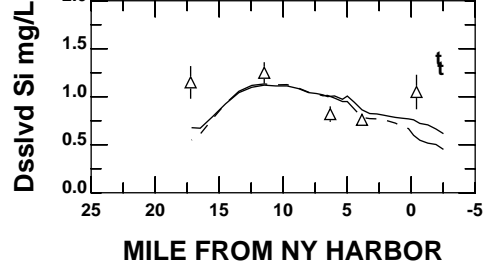
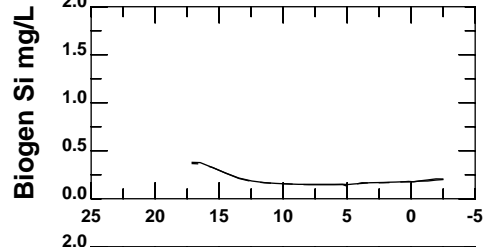
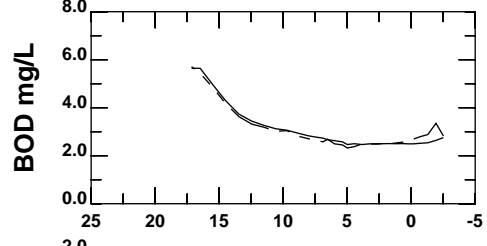
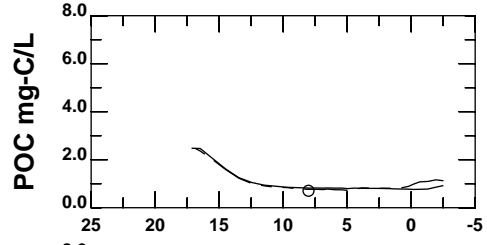
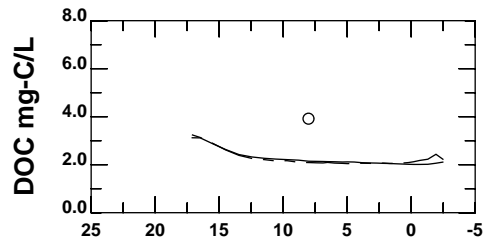


MODEL



ARTHUR KILL AND KILL VAN KULL





MILE FROM UPPER NY BAY

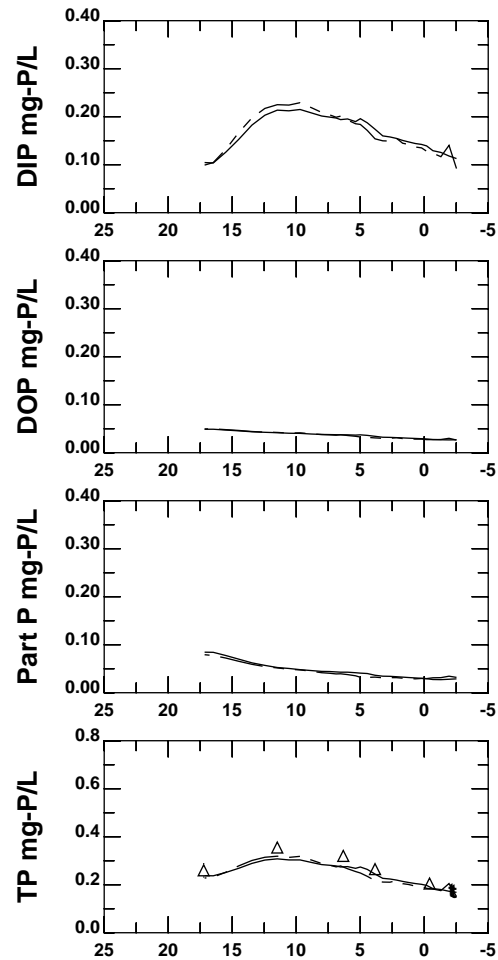
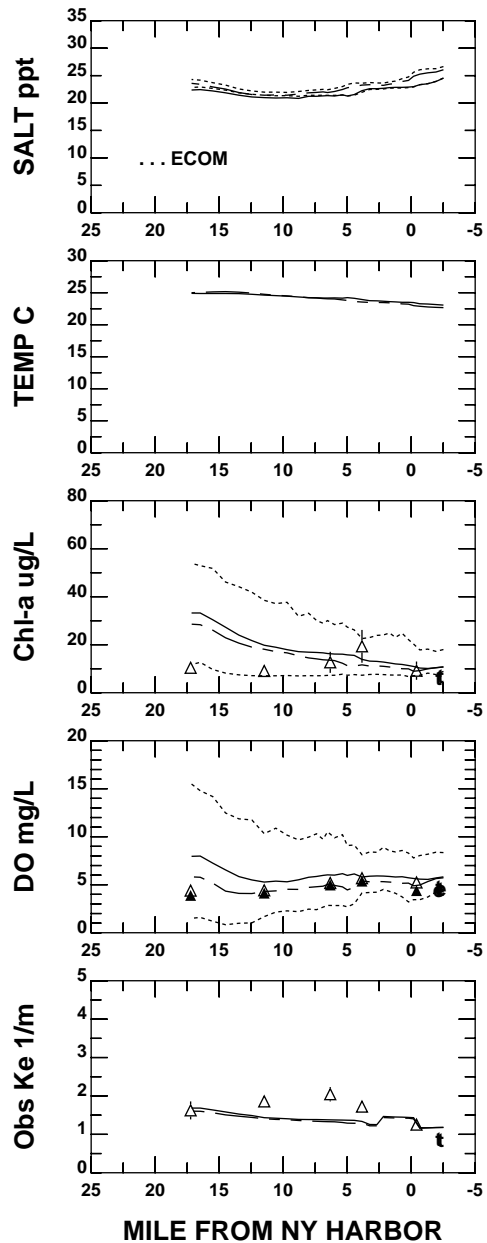
DATA Jun 28-Jul 27, 1999

	SURF	MID	BOT	
Harbor Survey	△		▲	Transect
NYSDEC	t		e	Embayment
	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment

MODEL

—	SURFACE 30-DAY MEAN
---	BOTTOM 30-DAY MEAN
- - -	30-DAY SURFACE MAX OR BOTTOM MIN

ARTHUR KILL AND KILL VAN KULL



**MILE FROM UPPER NY BAY**

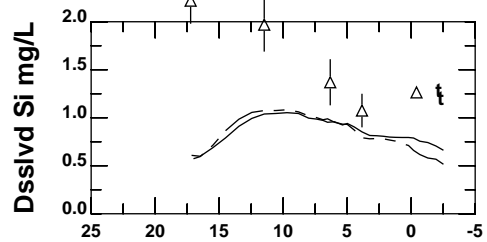
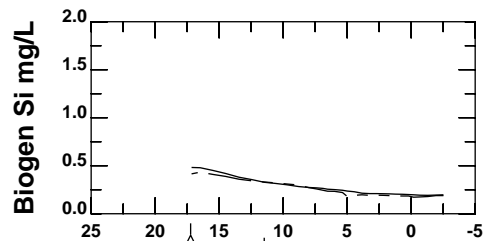
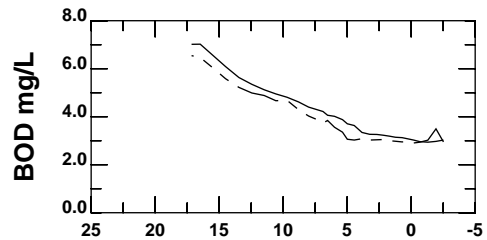
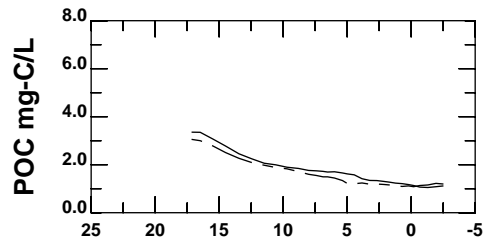
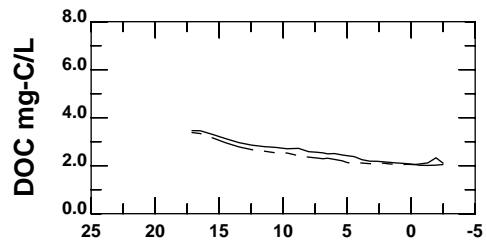
DATA Jul 27-Aug 26, 1999

- |               |              |   |           |
|---------------|--------------|---|-----------|
|               | SURF MID BOT |   |           |
| Harbor Survey | △            | ▲ | Transect  |
|               | t            | e | Embayment |
| NYSDEC        | ○            |   | Transect  |
|               | c            |   | Embayment |
| NJSIT         | ◇            |   | Transect  |
|               | p            |   | Embayment |
| PVSC          | ●            | ■ | Transect  |
|               | u            | m | Embayment |
|               |              | ▼ | Transect  |
|               |              | b | Embayment |

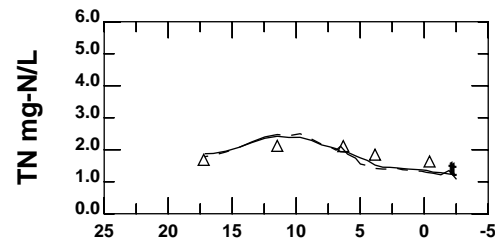
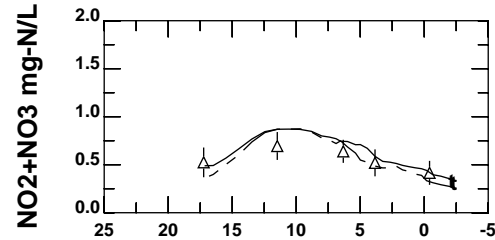
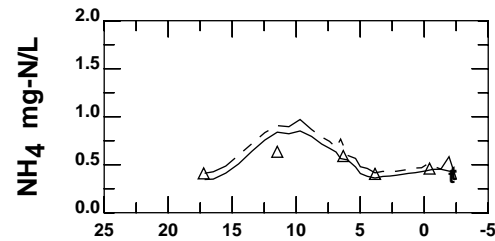
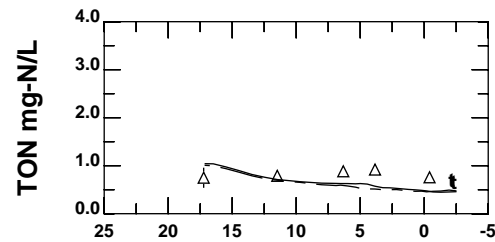
**MODEL**

- |       |                                  |
|-------|----------------------------------|
| —     | SURFACE 30-DAY MEAN              |
| - - - | BOTTOM 30-DAY MEAN               |
| - - - | 30-DAY SURFACE MAX OR BOTTOM MIN |

**ARTHUR KILL AND KILL VAN KULL**

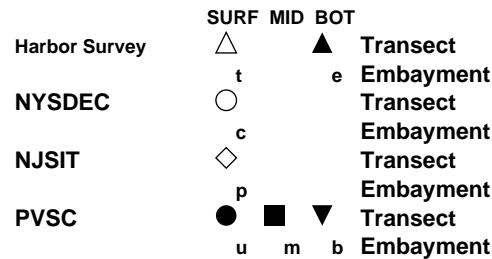


MILE FROM NY HARBOR

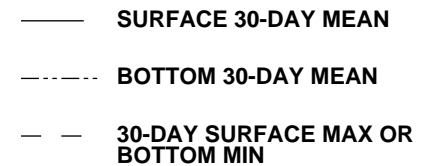


MILE FROM UPPER NY BAY

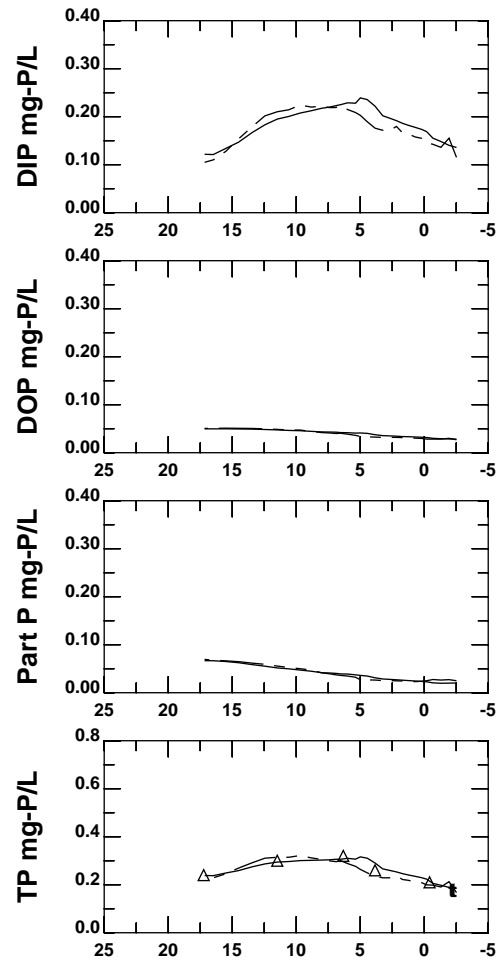
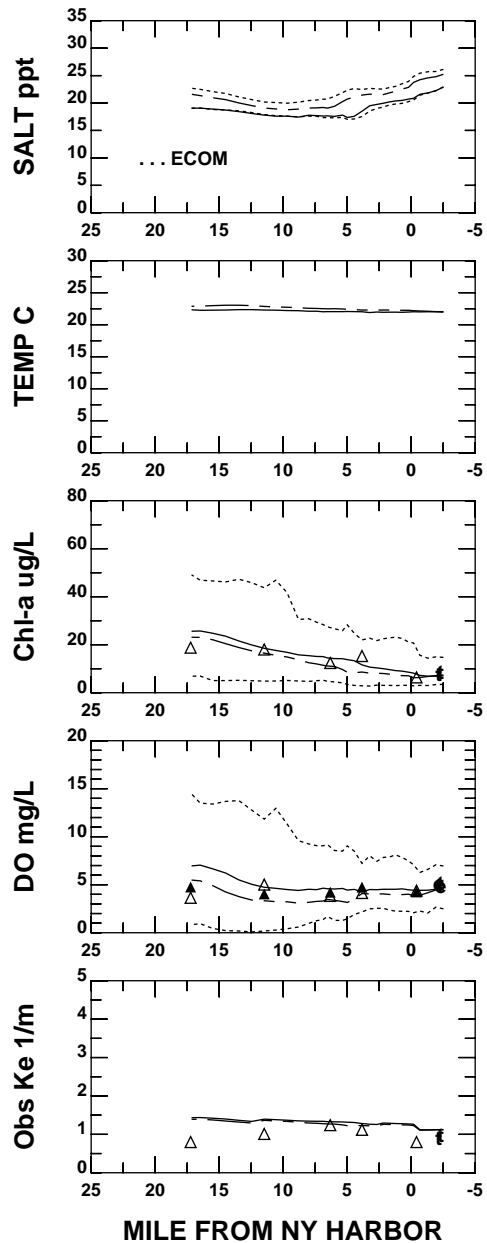
DATA Jul 27-Aug 26, 1999



MODEL

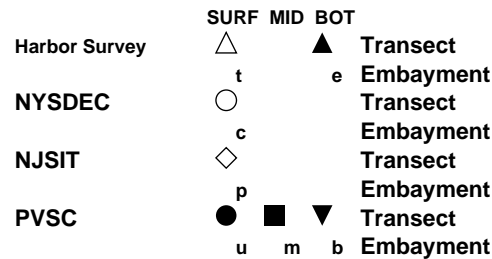


ARTHUR KILL AND KILL VAN KULL

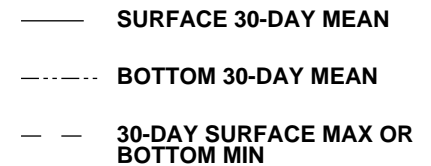


MILE FROM UPPER NY BAY

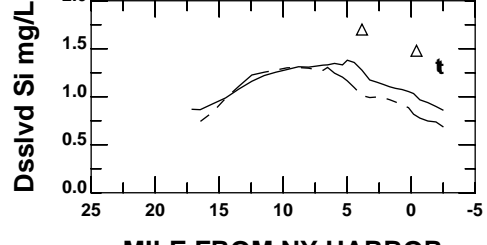
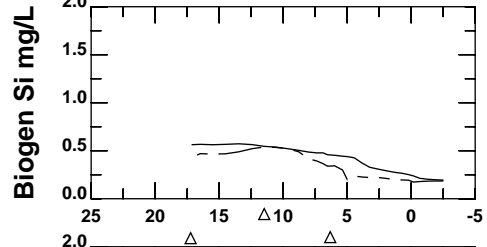
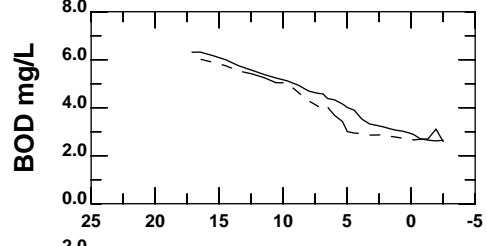
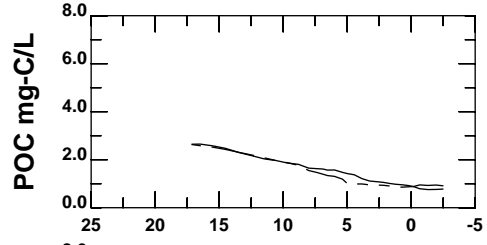
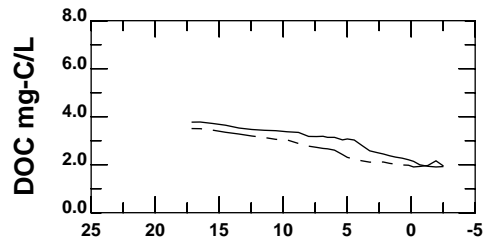
DATA Aug 27-Sep 25, 1999



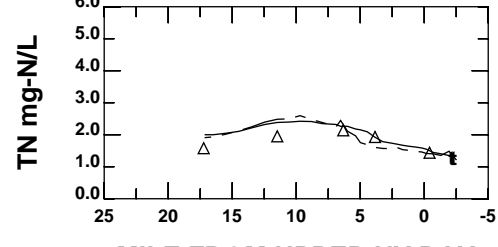
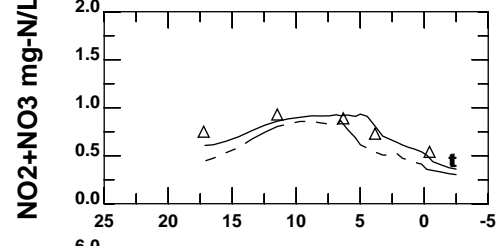
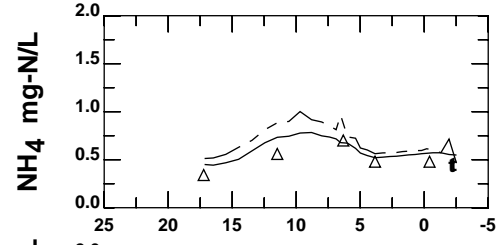
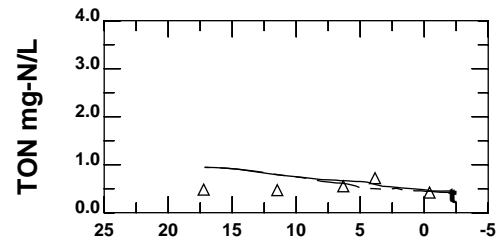
MODEL



ARTHUR KILL AND KILL VAN KULL



MILE FROM NY HARBOR



MILE FROM UPPER NY BAY

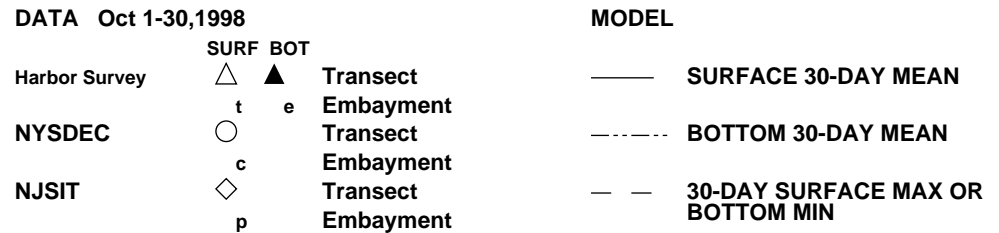
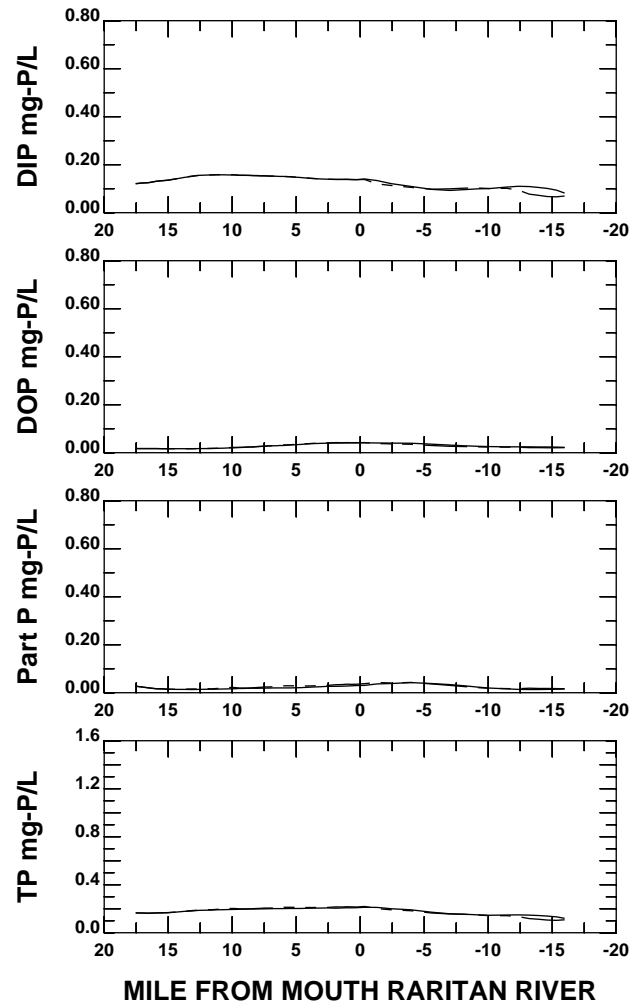
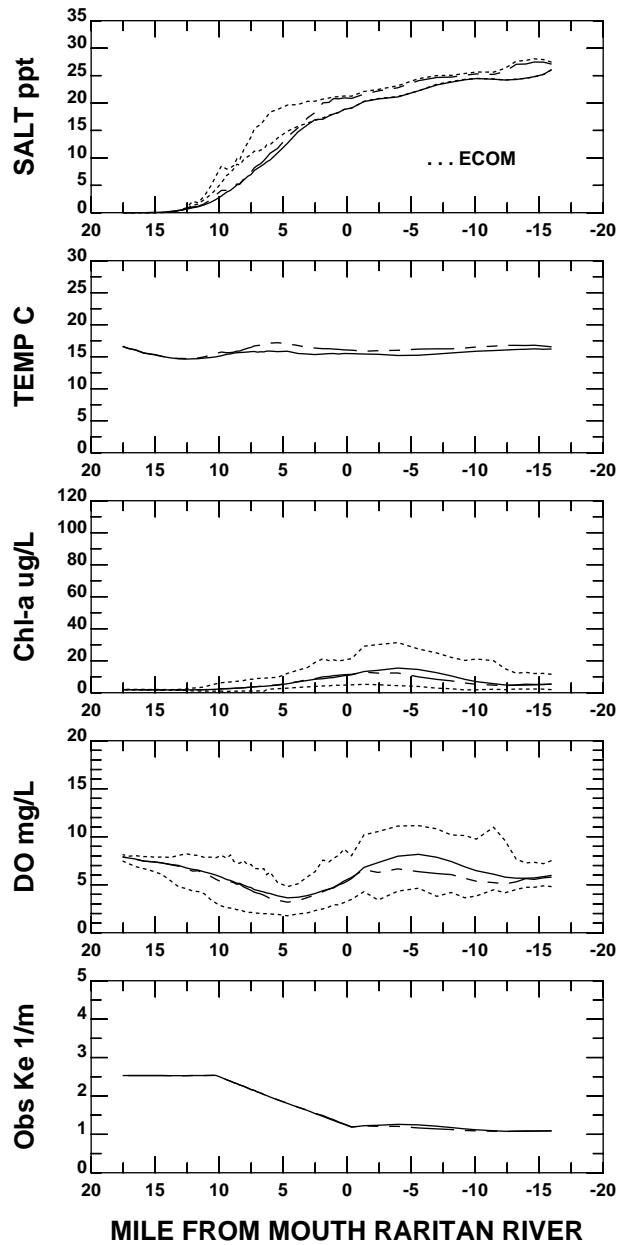
DATA Aug 27-Sep 25, 1999

	SURF	MID	BOT	
Harbor Survey	△		▲	Transect
NYSDEC	t		e	Embayment
	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment

MODEL

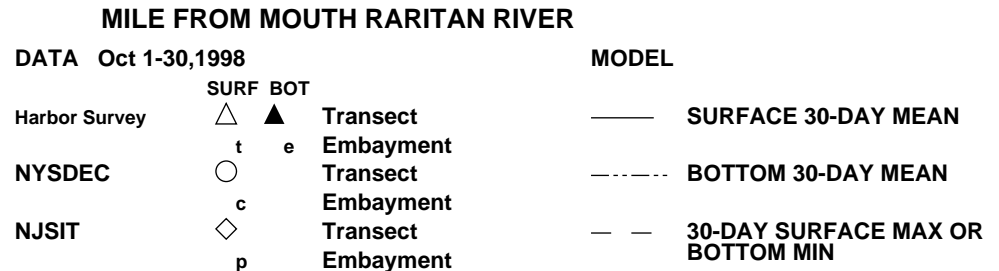
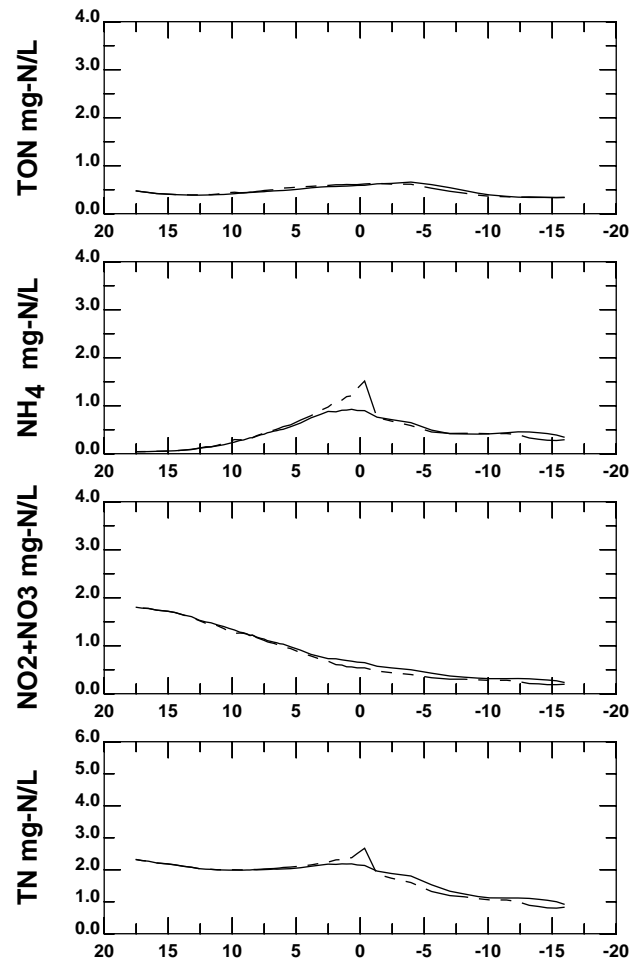
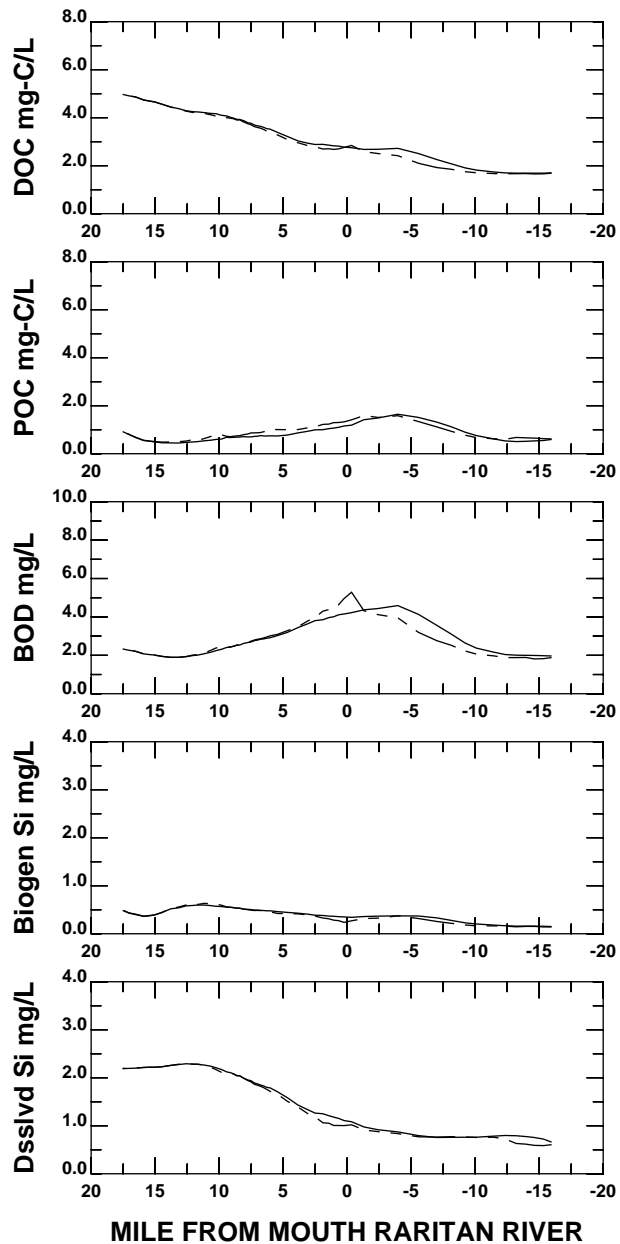
————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

ARTHUR KILL AND KILL VAN KULL

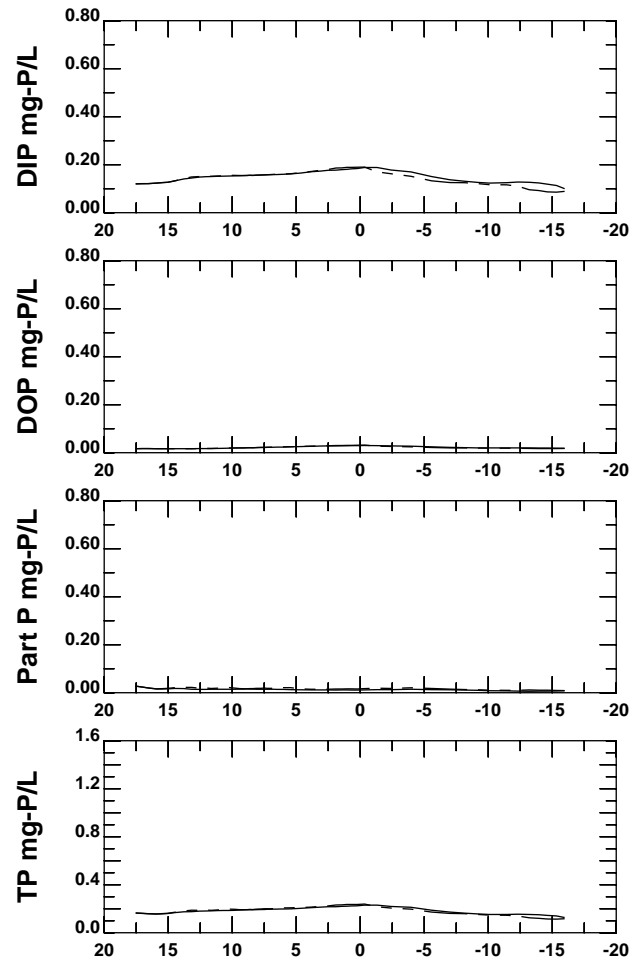
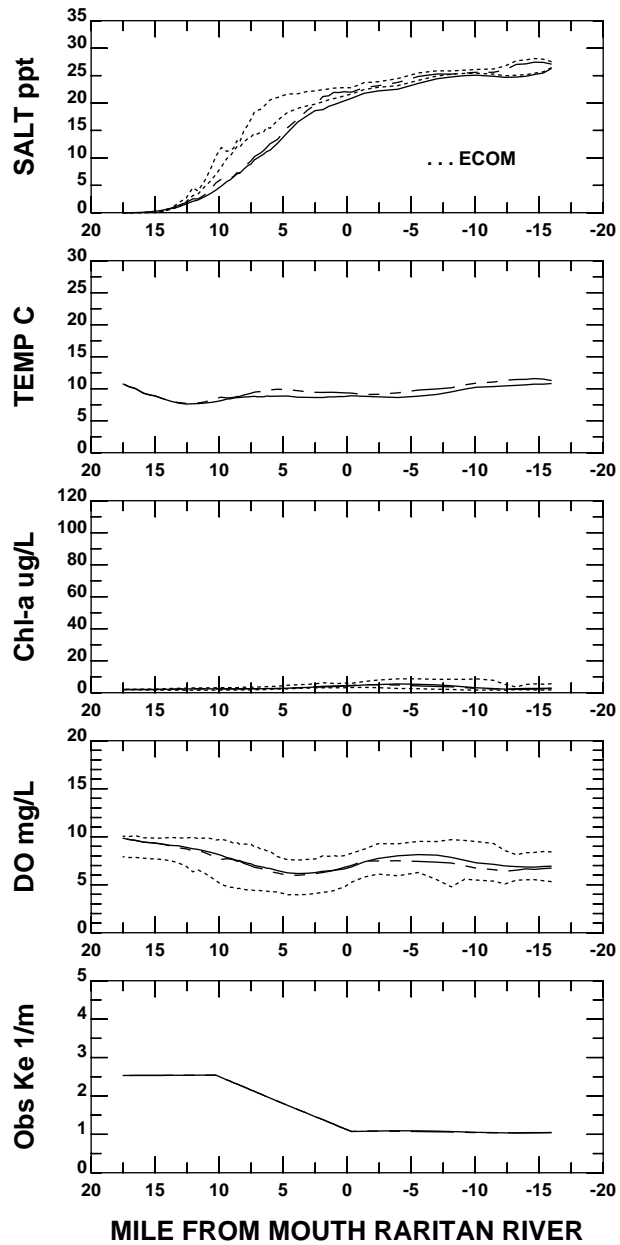


**RARITAN RIVER AND NORTH SHORE OF RARITAN BAY**





**RARITAN RIVER AND NORTH SHORE RARITAN BAY**



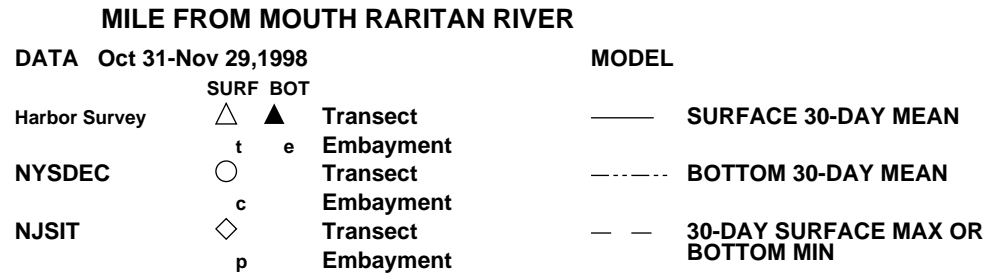
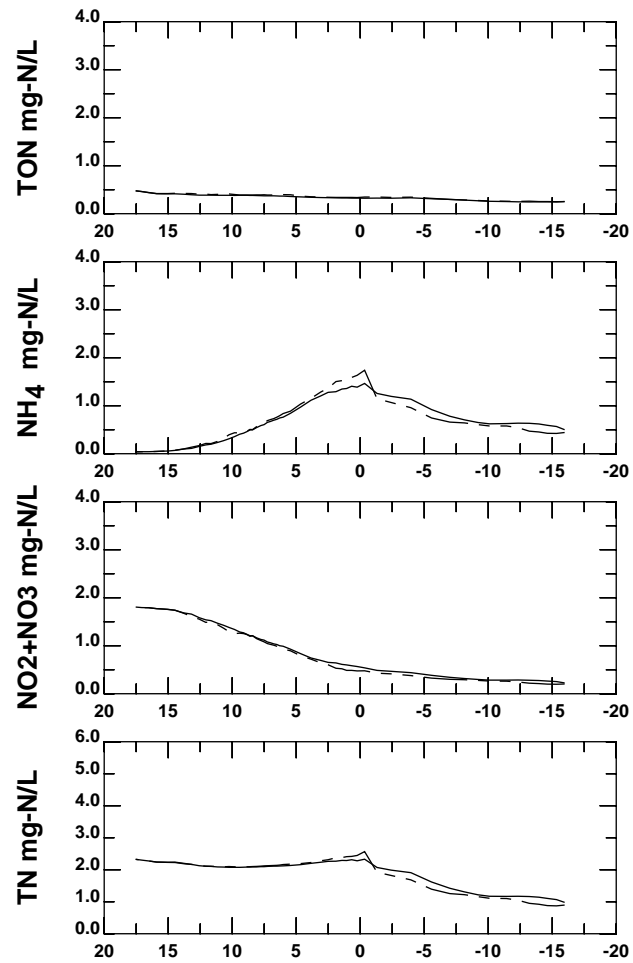
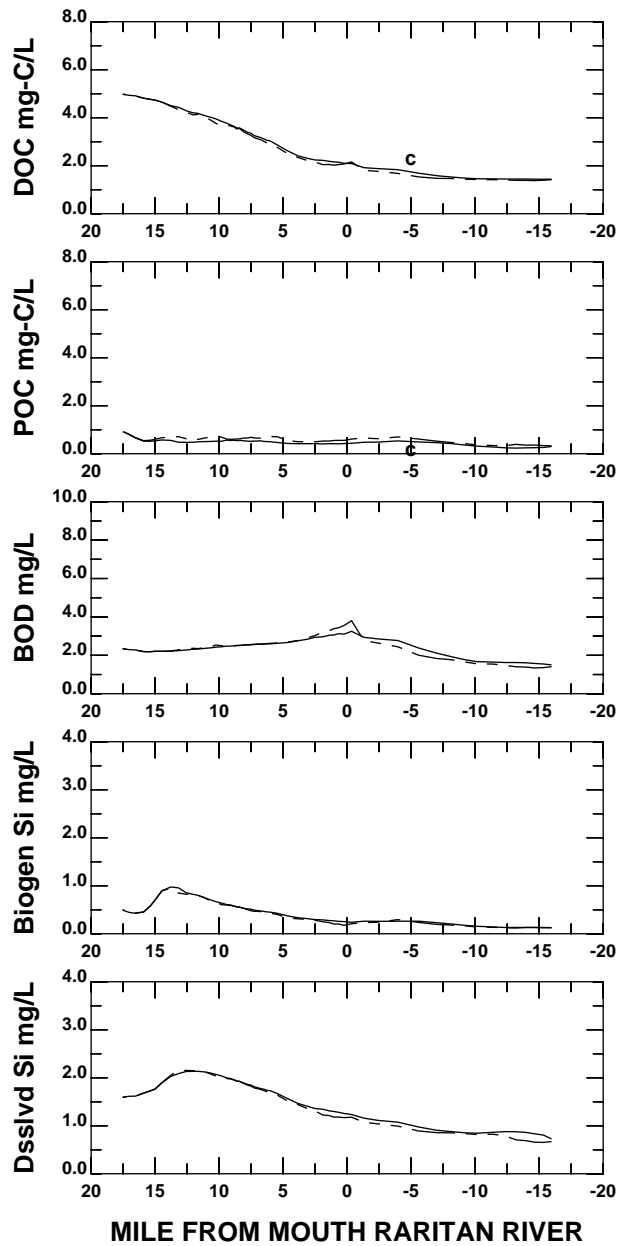
**DATA Oct 31-Nov 29, 1998**

	<b>SURF BOT</b>		
Harbor Survey	△	▲	Transect
NYSDEC	t	e	Embayment
	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment

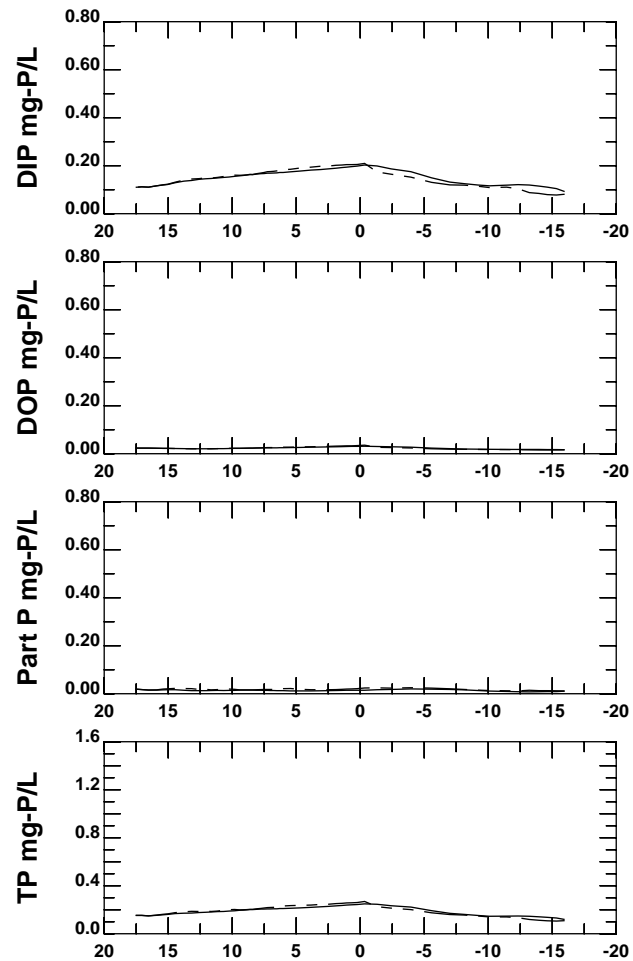
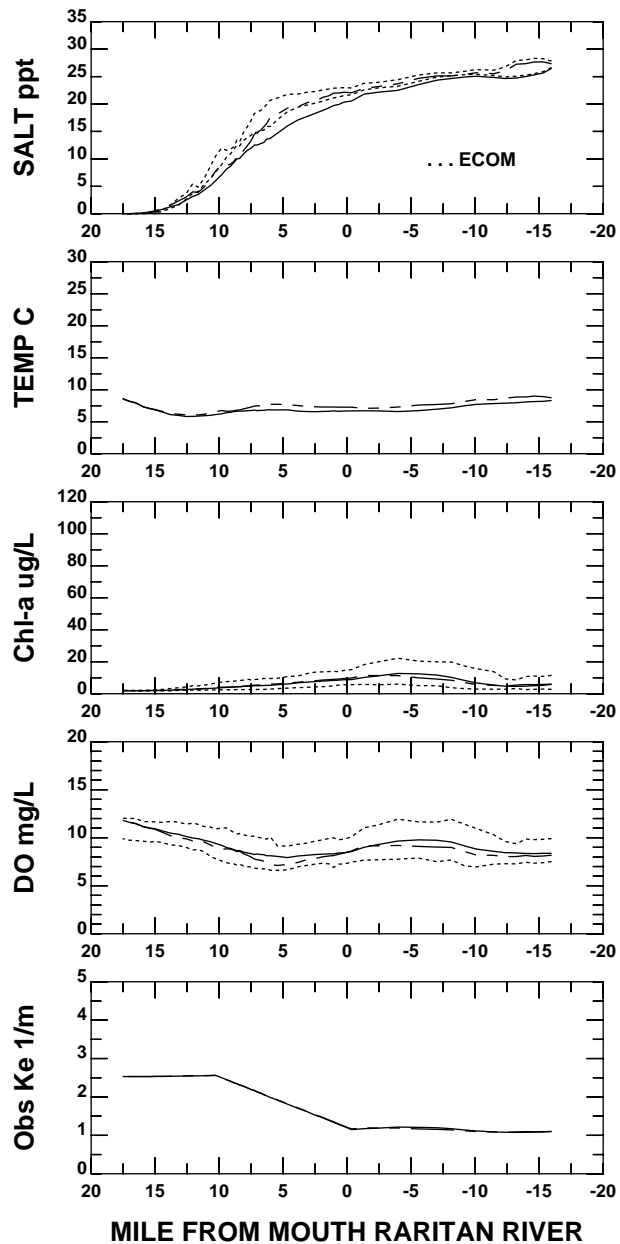
**MODEL**

————	<b>SURFACE 30-DAY MEAN</b>
-----	<b>BOTTOM 30-DAY MEAN</b>
- - - -	<b>30-DAY SURFACE MAX OR BOTTOM MIN</b>

**RARITAN RIVER AND NORTH SHORE OF RARITAN BAY**



**RARITAN RIVER AND NORTH SHORE RARITAN BAY**



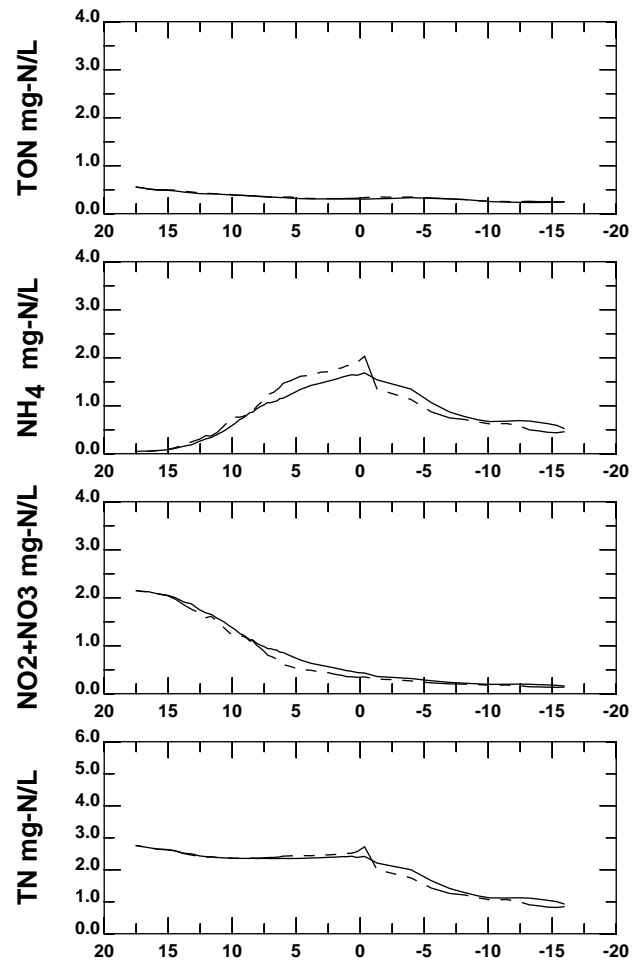
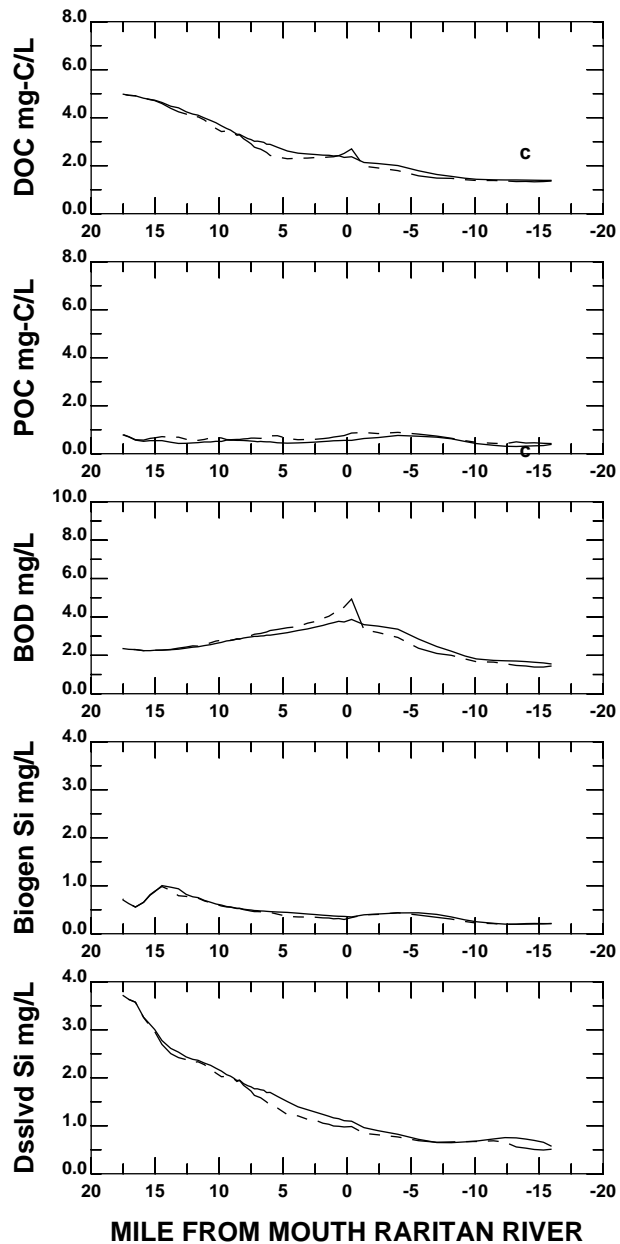
DATA Nov 30-Dec 29, 1998

MODEL

	SURF BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment

—	SURFACE 30-DAY MEAN
- - -	BOTTOM 30-DAY MEAN
- - -	30-DAY SURFACE MAX OR BOTTOM MIN

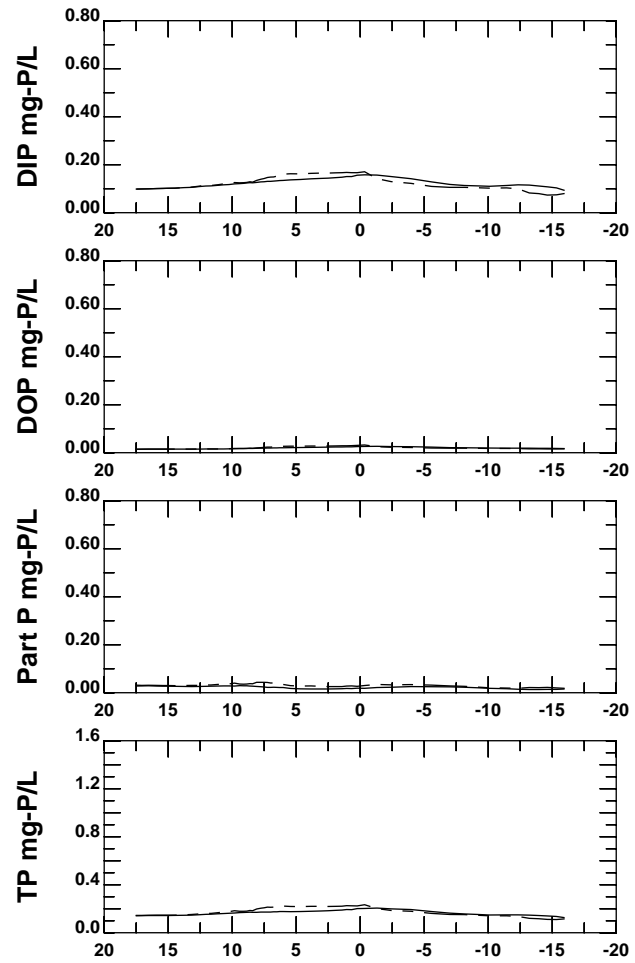
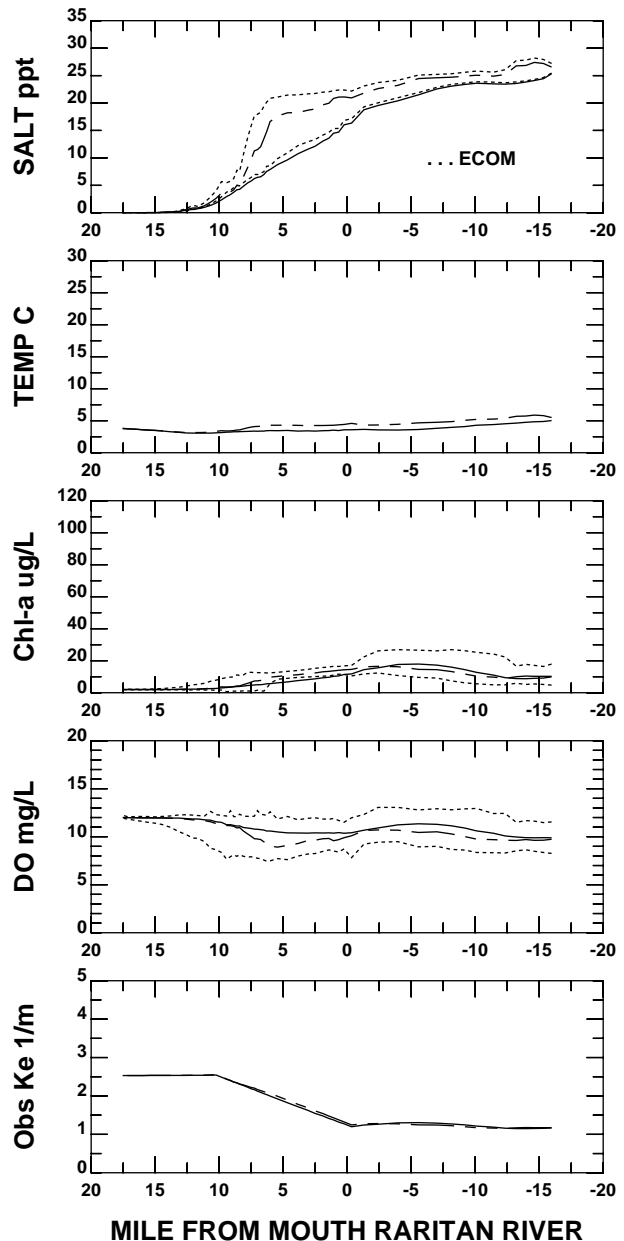
## RARITAN RIVER AND NORTH SHORE OF RARITAN BAY



**DATA Nov 30-Dec 29, 1998**

	<b>SURF</b>	<b>BOT</b>		<b>MODEL</b>
Harbor Survey	△	▲	Transect	— SURFACE 30-DAY MEAN
	t	e	Embayment	- - - - - BOTTOM 30-DAY MEAN
NYSDEC	○		Transect	
	c		Embayment	
NJSIT	◇		Transect	- - - - - 30-DAY SURFACE MAX OR
	p		Embayment	BOTTOM MIN

**RARITAN RIVER AND NORTH SHORE RARITAN BAY**

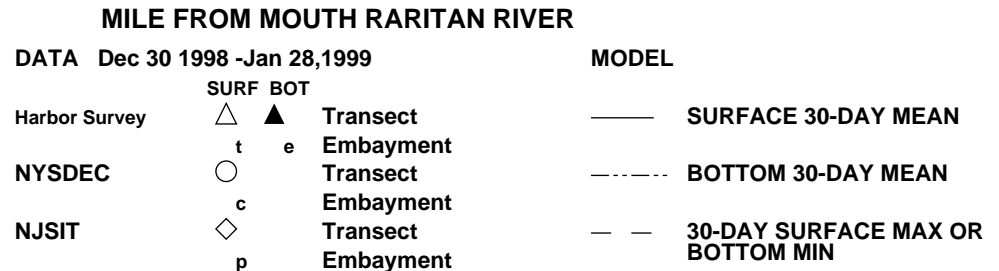
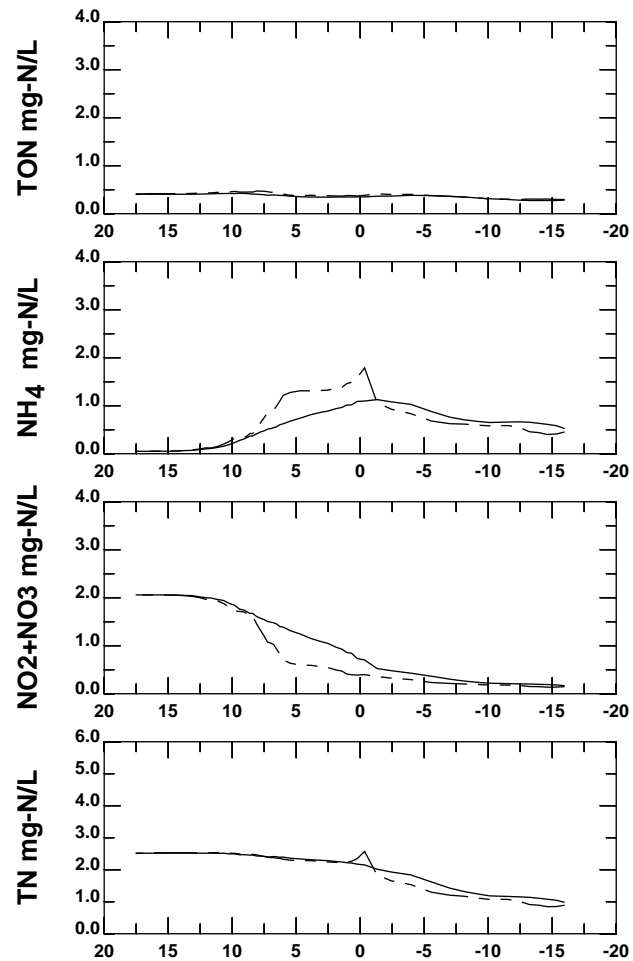
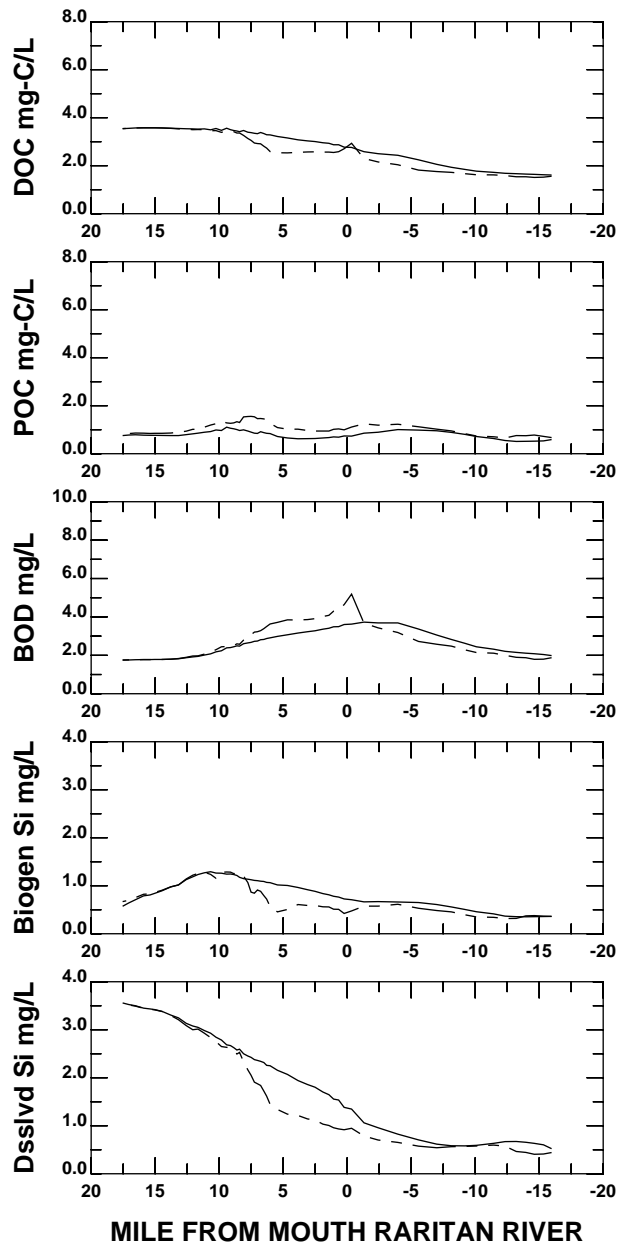


**MILE FROM MOUTH RARITAN RIVER**

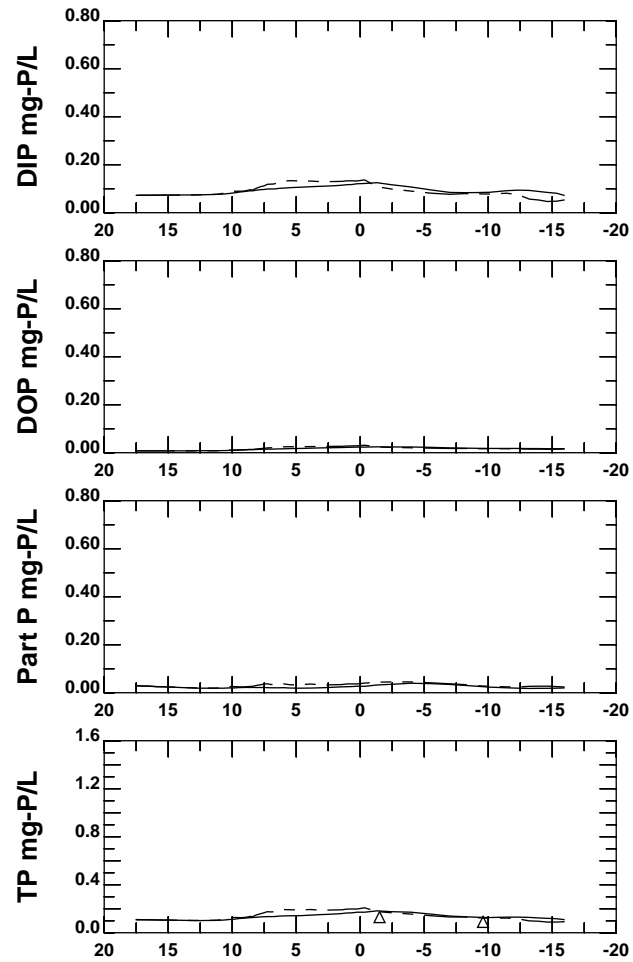
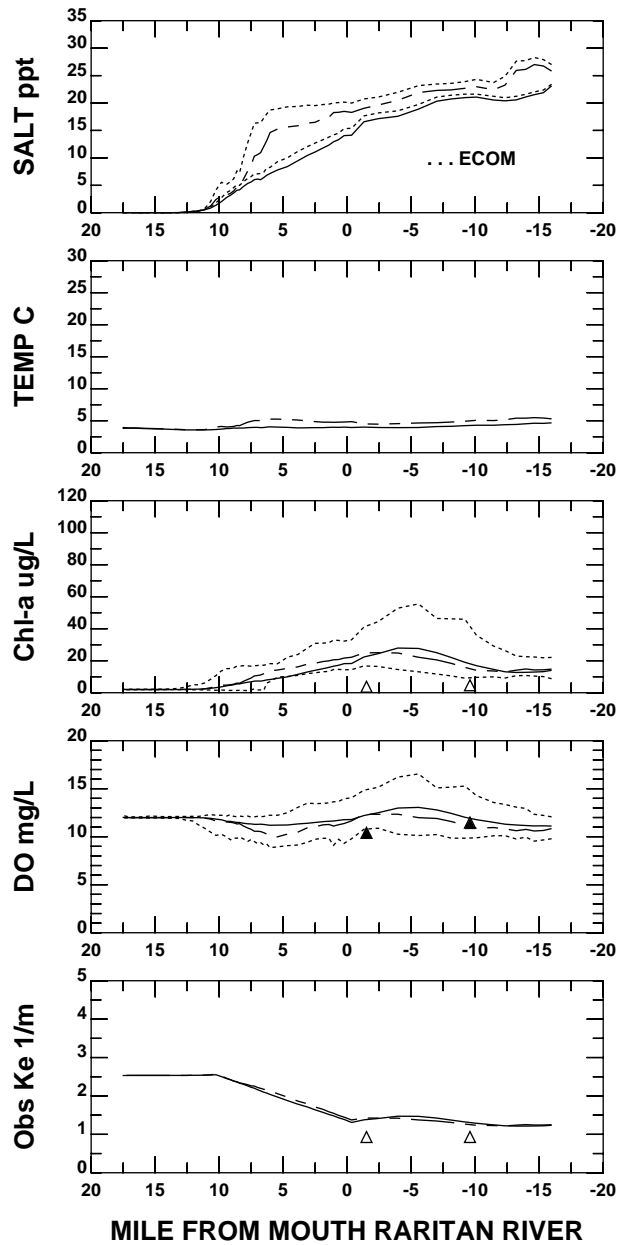
<b>DATA</b> Dec 30 1998 -Jan 28,1999	<b>MODEL</b>
Harbor Survey	— SURFACE 30-DAY MEAN
NYSDEC	--- BOTTOM 30-DAY MEAN
NJSIT	- - 30-DAY SURFACE MAX OR BOTTOM MIN

<b>SURF BOT</b>		
△	▲	Transect
t	e	Embayment
○		Transect
c		Embayment
◇		Transect
p		Embayment

**RARITAN RIVER AND NORTH SHORE OF RARITAN BAY**



**RARITAN RIVER AND NORTH SHORE RARITAN BAY**



DATA Jan 29-Feb 27, 1999

MODEL

SURF BOT

Harbor Survey  $\triangle$   $\blacktriangle$  Transect

t e Embayment

NYSDEC  $\circ$  Transect

c Embayment

NJSIT  $\diamond$  Transect

p Embayment

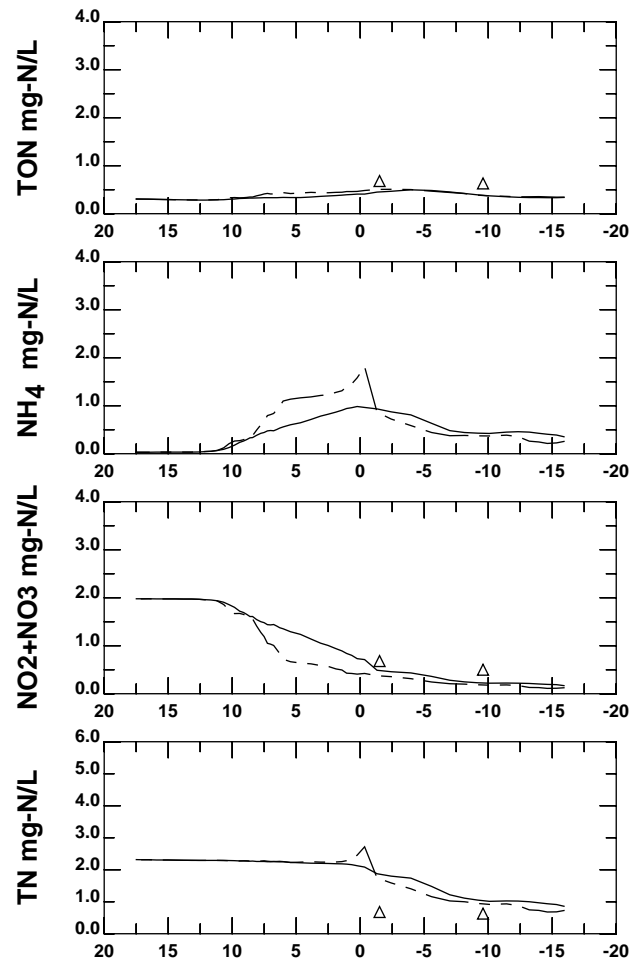
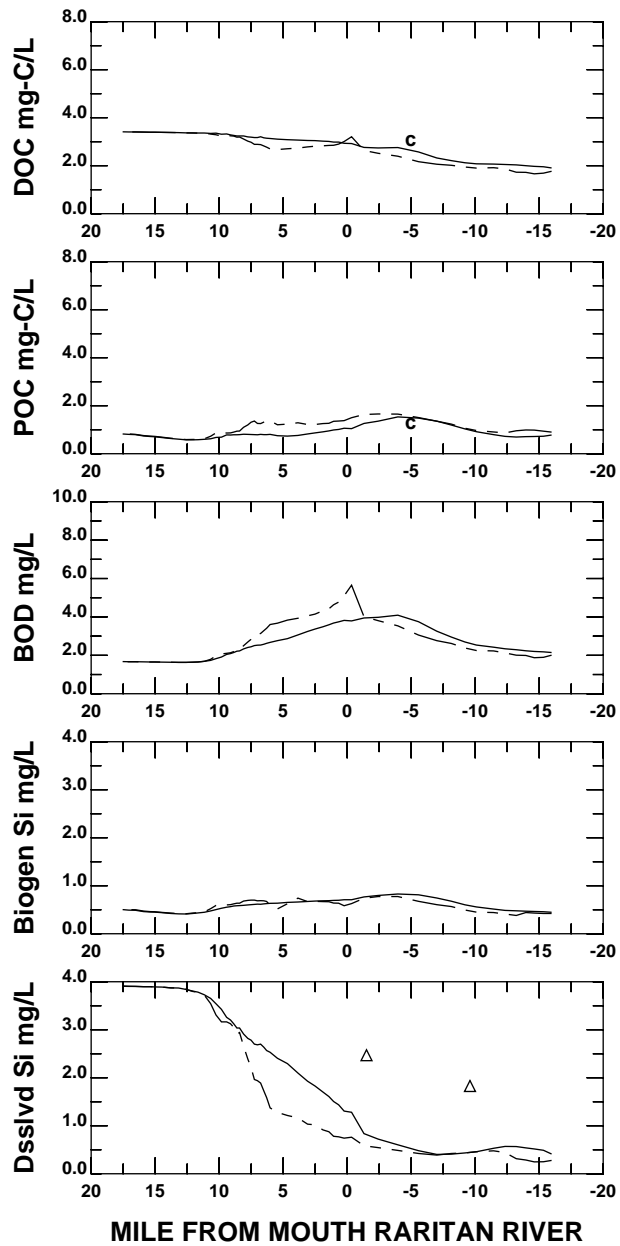
— SURFACE 30-DAY MEAN

--- BOTTOM 30-DAY MEAN

- - - 30-DAY SURFACE MAX OR BOTTOM MIN

**RARITAN RIVER AND NORTH SHORE OF RARITAN BAY**

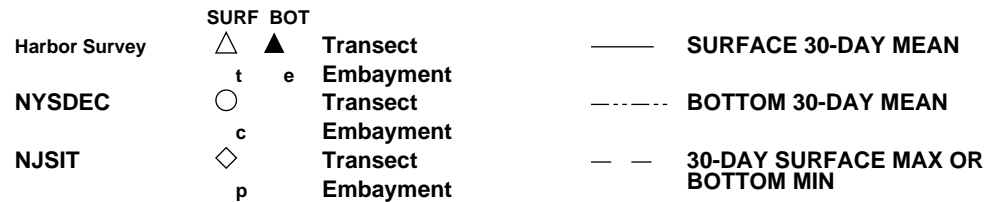




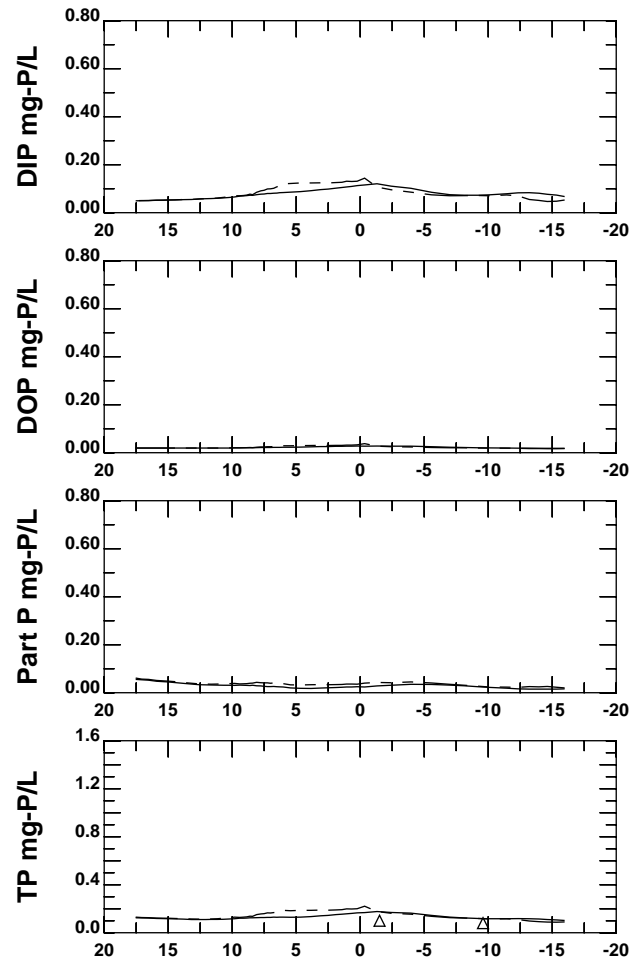
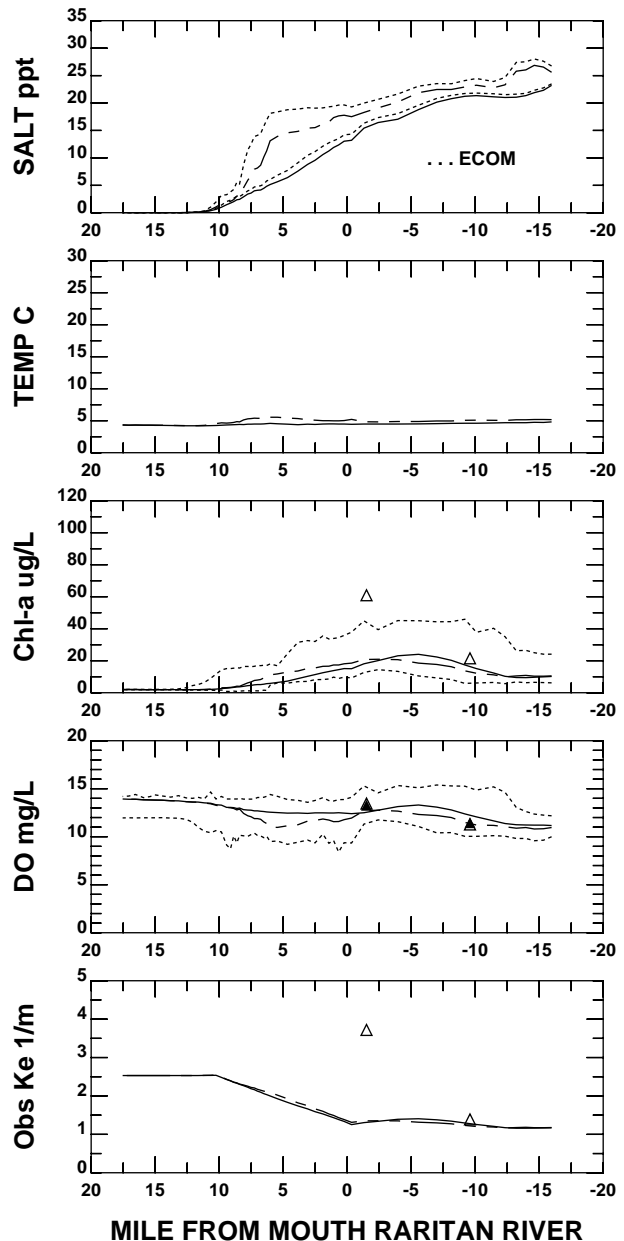
MILE FROM MOUTH RARITAN RIVER

DATA Jan 29-Feb 27, 1999

MODEL



## RARITAN RIVER AND NORTH SHORE RARITAN BAY



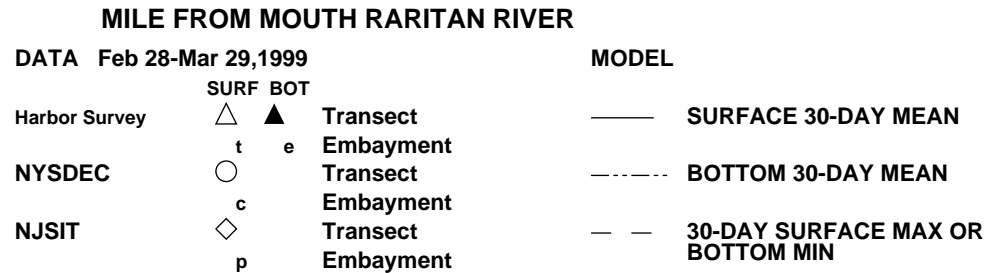
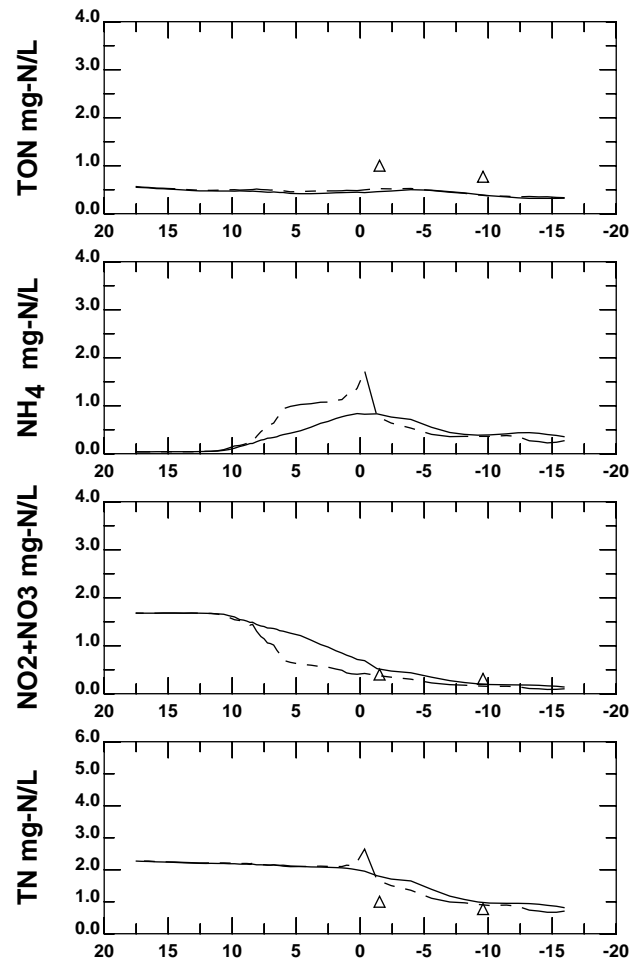
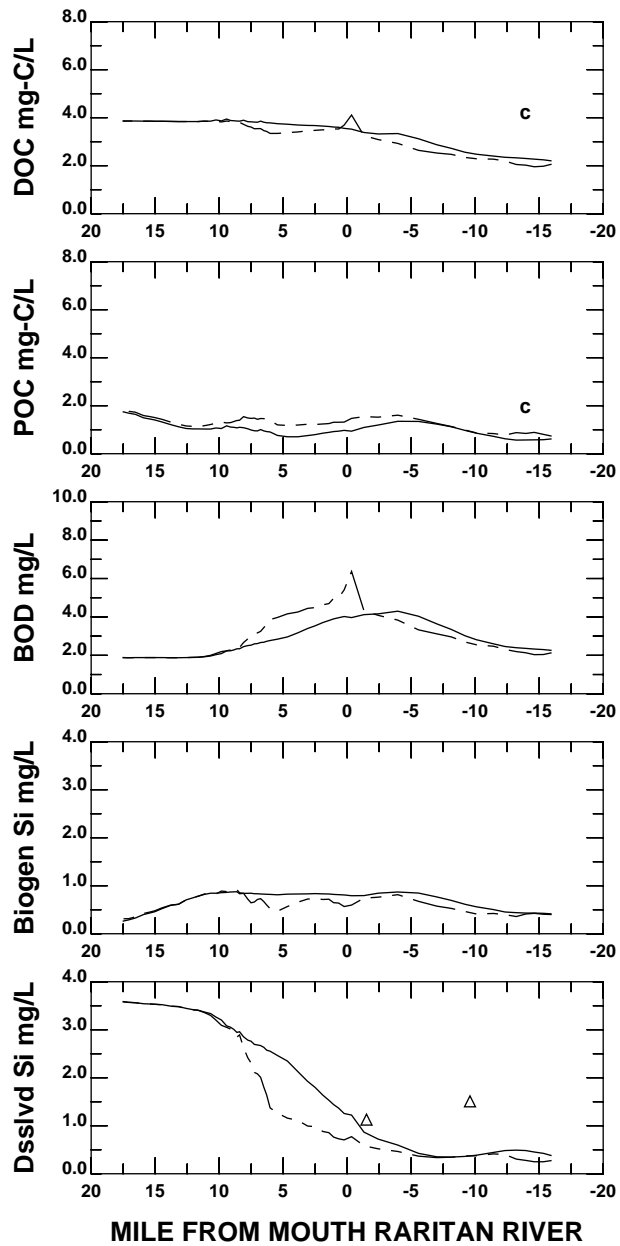
**DATA Feb 28-Mar 29, 1999**

	<b>SURF BOT</b>		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment

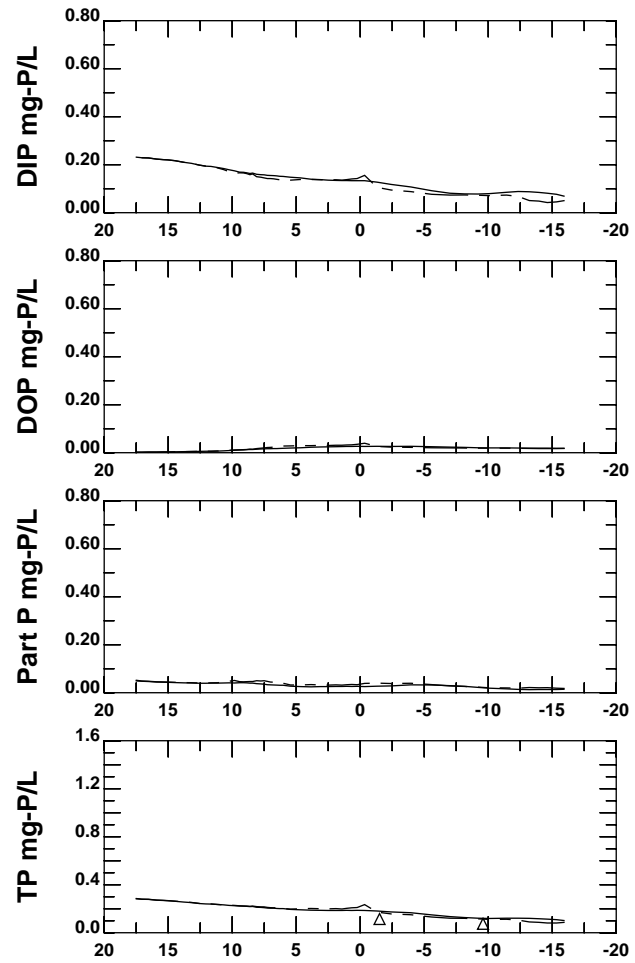
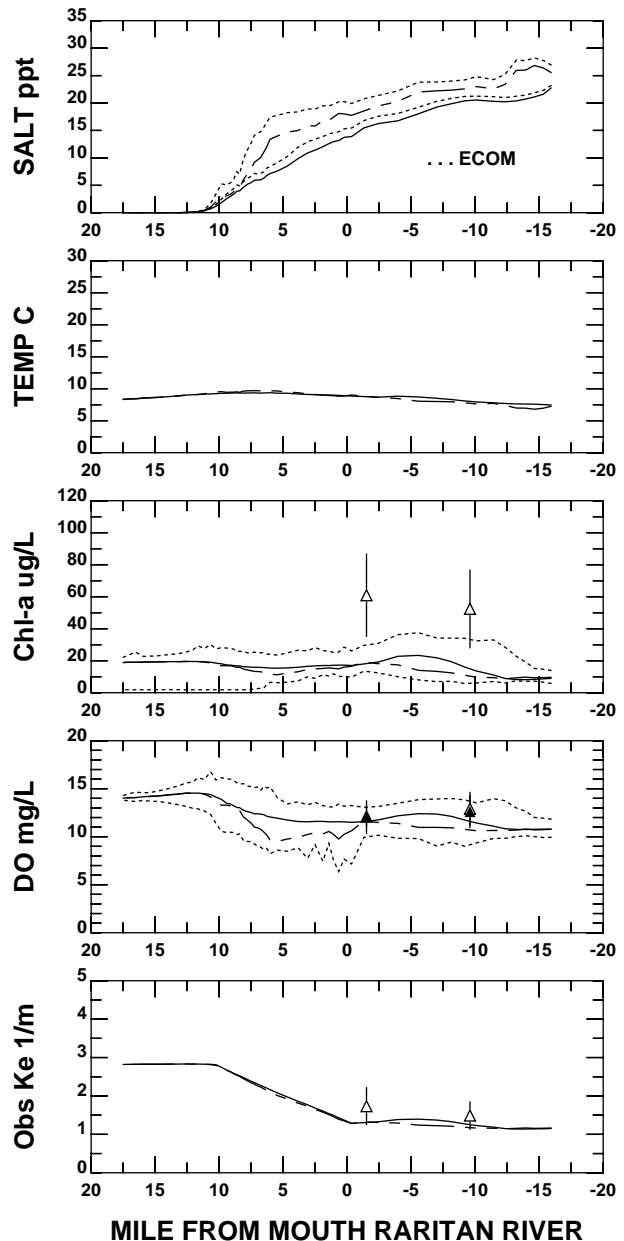
  

<b>MODEL</b>	—	<b>SURFACE 30-DAY MEAN</b>
	---	<b>BOTTOM 30-DAY MEAN</b>
	- - -	<b>30-DAY SURFACE MAX OR BOTTOM MIN</b>

**RARITAN RIVER AND NORTH SHORE OF RARITAN BAY**



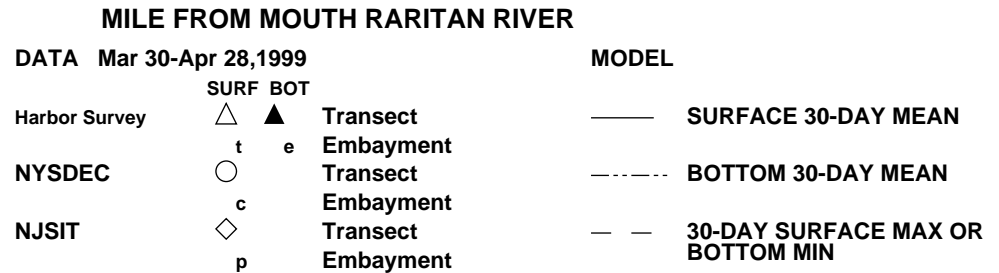
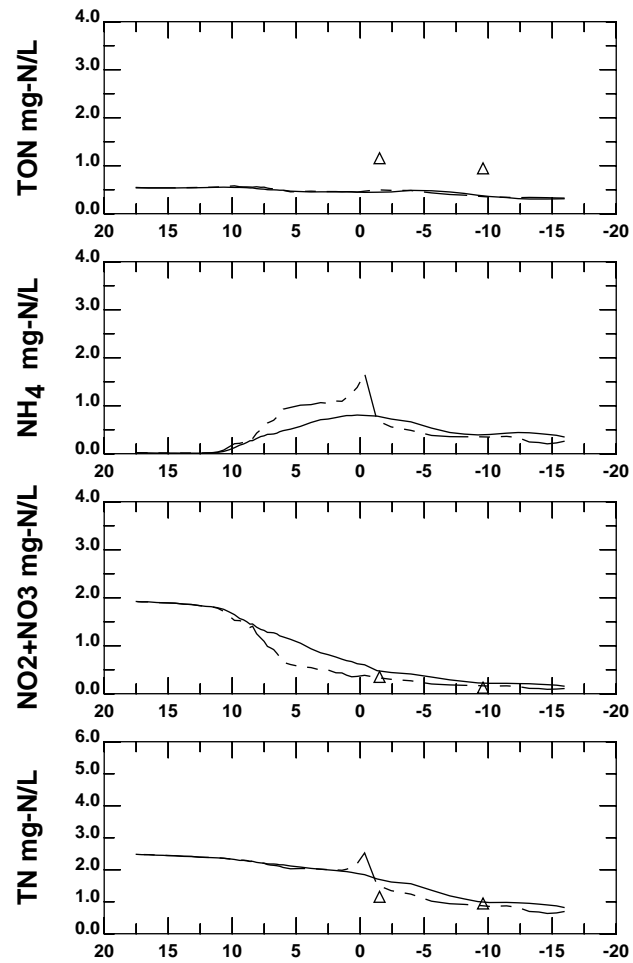
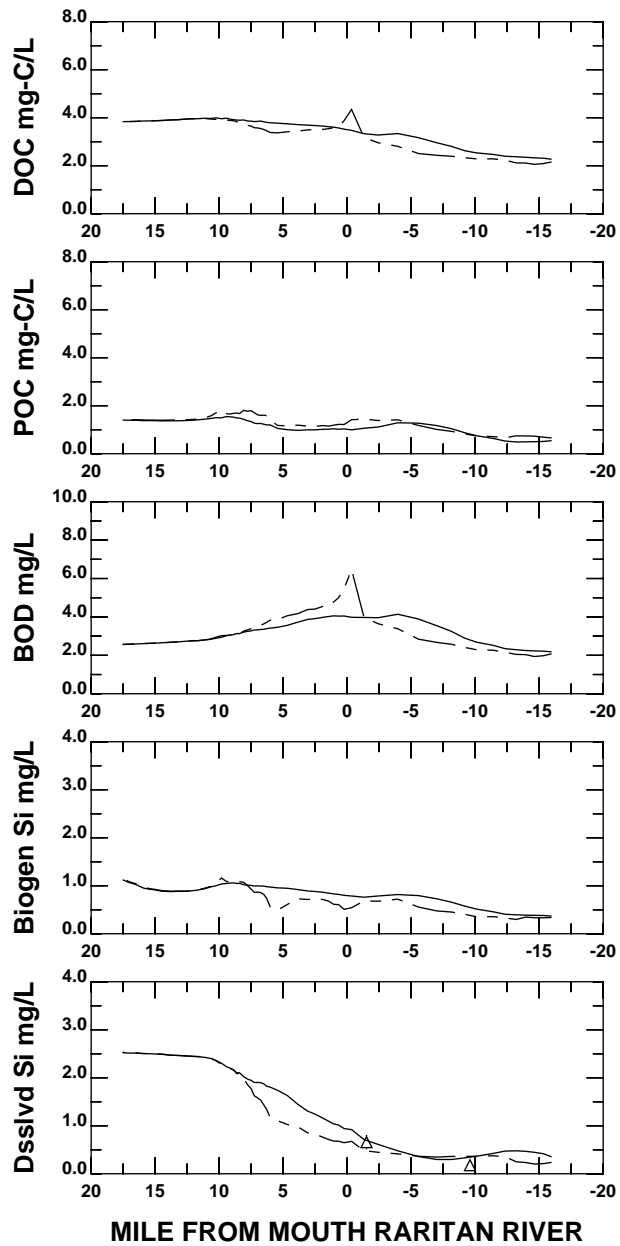
**RARITAN RIVER AND NORTH SHORE RARITAN BAY**



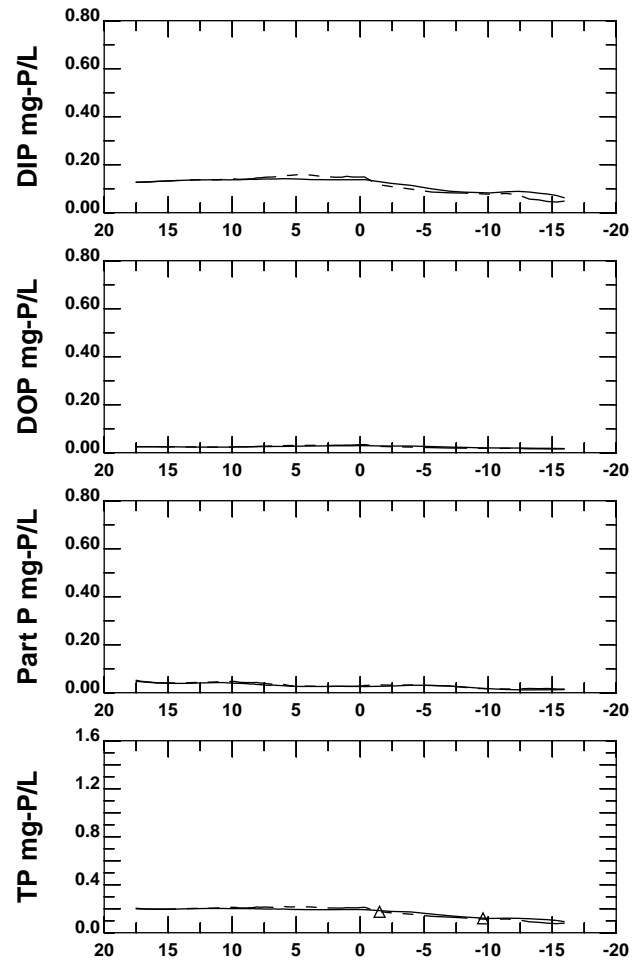
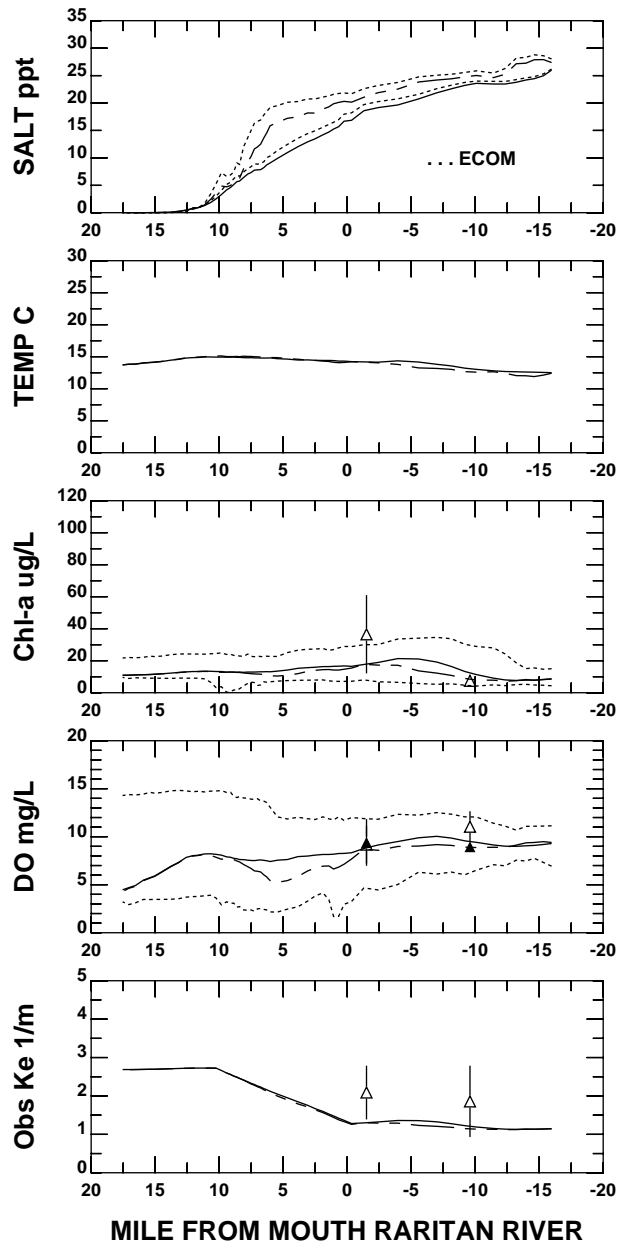
**DATA Mar 30-Apr 28, 1999**

	<b>SURF BOT</b>		<b>MODEL</b>
Harbor Survey	△	▲	— SURFACE 30-DAY MEAN
	t	e	- - - BOTTOM 30-DAY MEAN
NYSDEC	○		- - - 30-DAY SURFACE MAX OR BOTTOM MIN
	c		
NJSIT	◇		
	p		

**RARITAN RIVER AND NORTH SHORE OF RARITAN BAY**



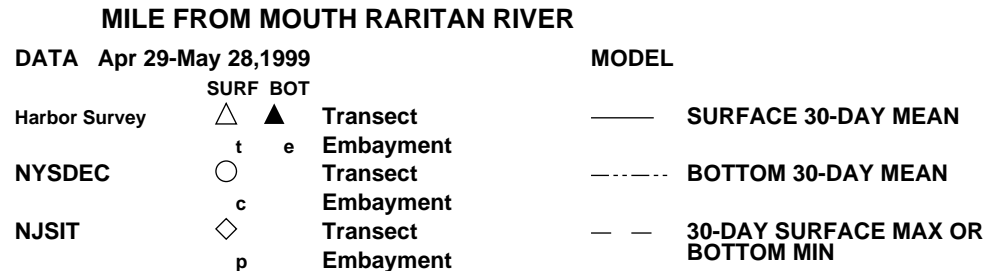
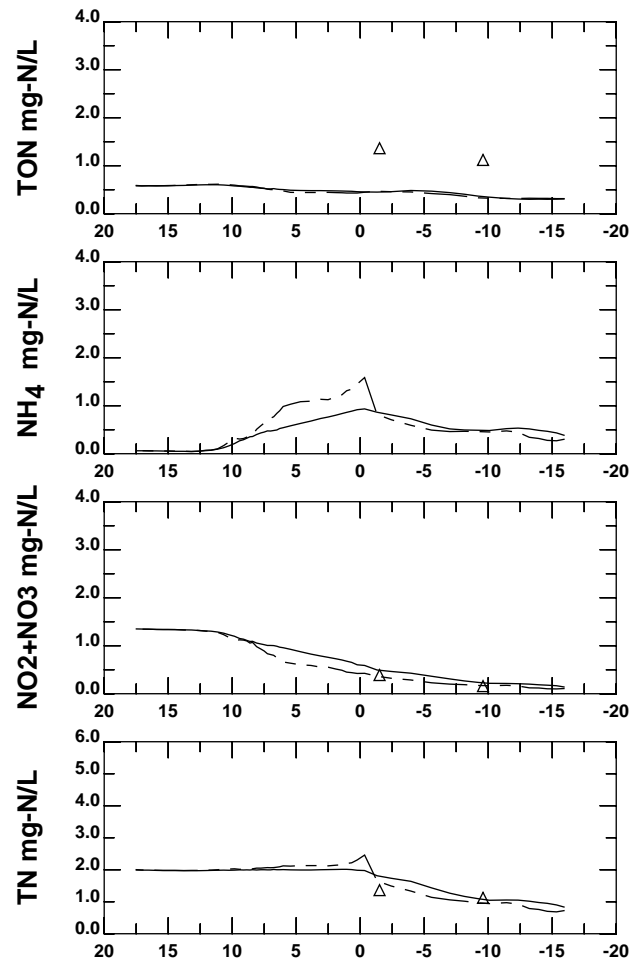
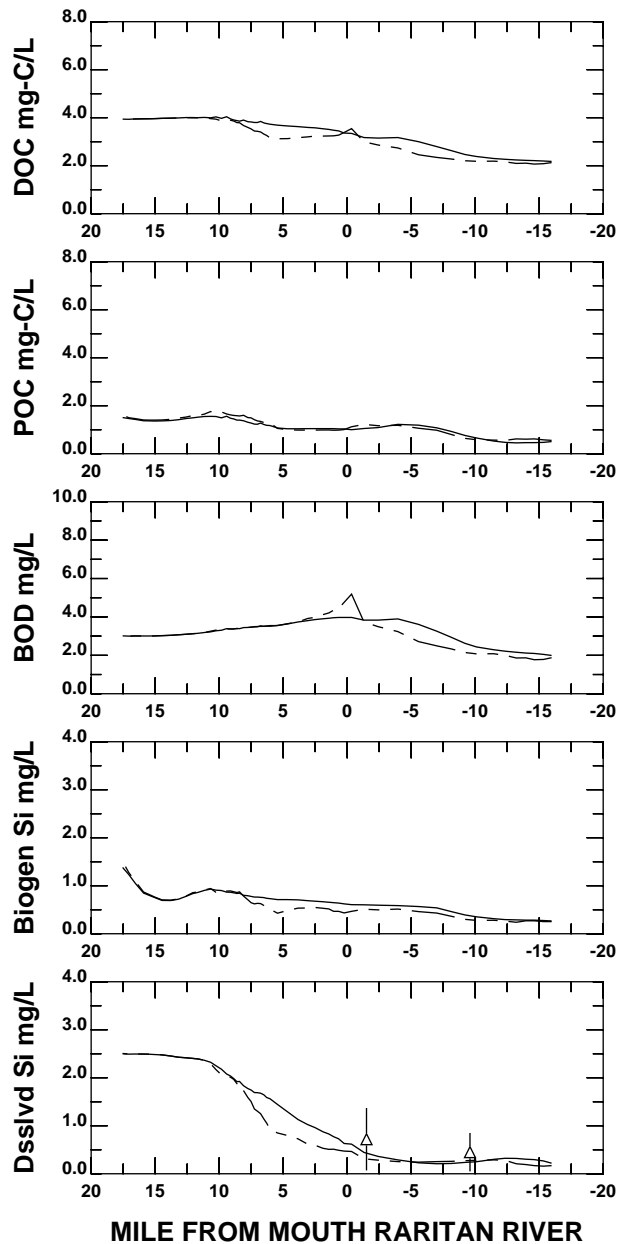
**RARITAN RIVER AND NORTH SHORE RARITAN BAY**



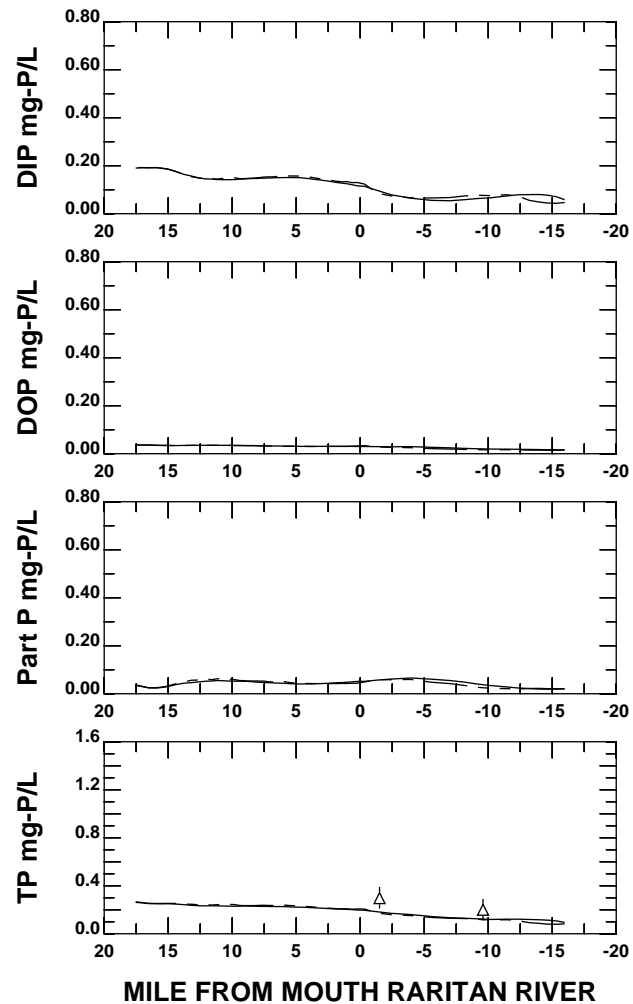
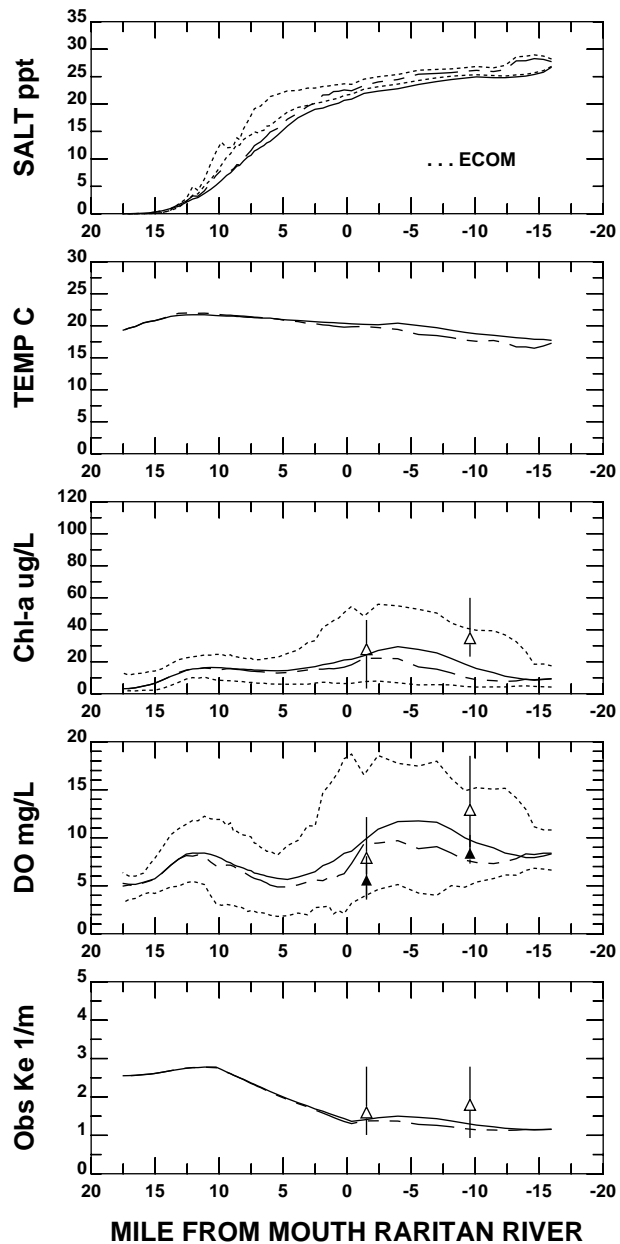
**MILE FROM MOUTH RARITAN RIVER**

<b>DATA</b> Apr 29-May 28, 1999		<b>MODEL</b>
	<b>SURF BOT</b>	
Harbor Survey	△ ▲	Transect
	t e	Embayment
NYSDEC	○	Transect
	c	Embayment
NJSIT	◇	Transect
	p	Embayment
	—	SURFACE 30-DAY MEAN
	- - -	BOTTOM 30-DAY MEAN
	- - -	30-DAY SURFACE MAX OR BOTTOM MIN

**RARITAN RIVER AND NORTH SHORE OF RARITAN BAY**

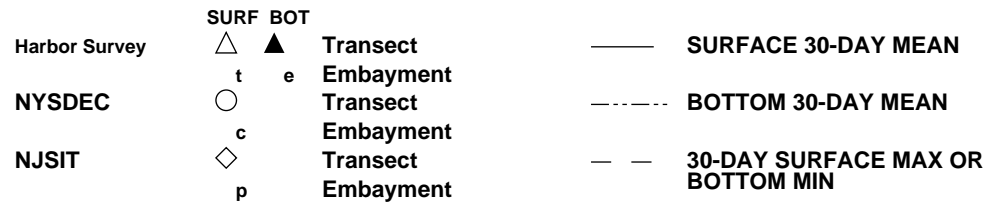


**RARITAN RIVER AND NORTH SHORE RARITAN BAY**



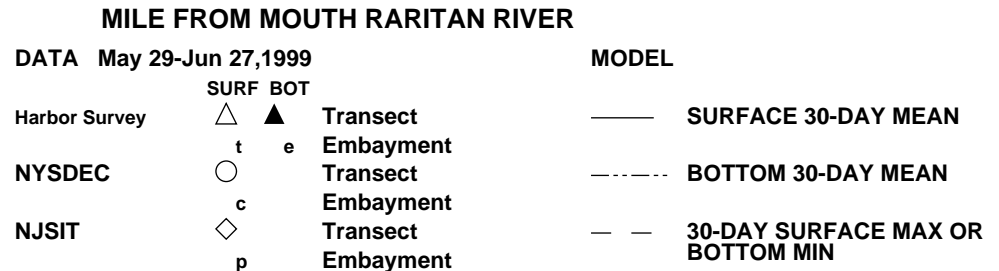
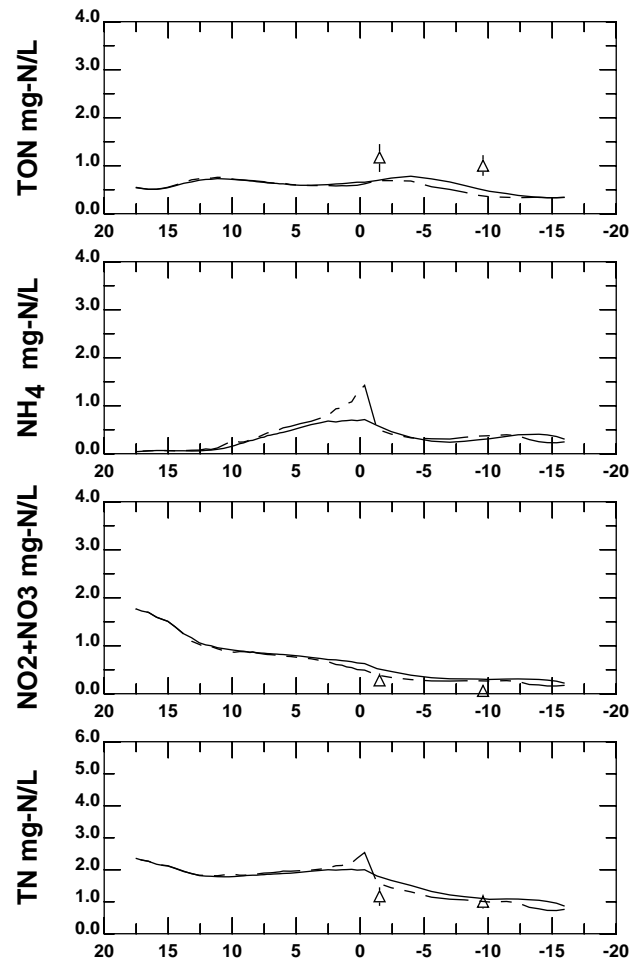
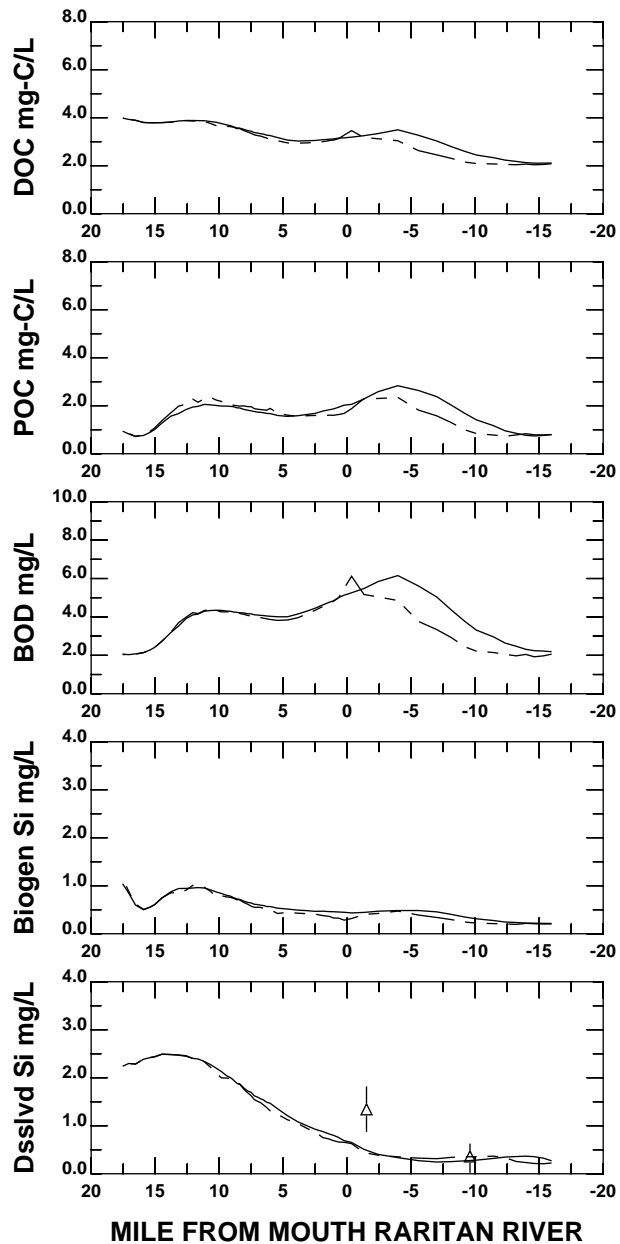
DATA May 29-Jun 27, 1999

MODEL

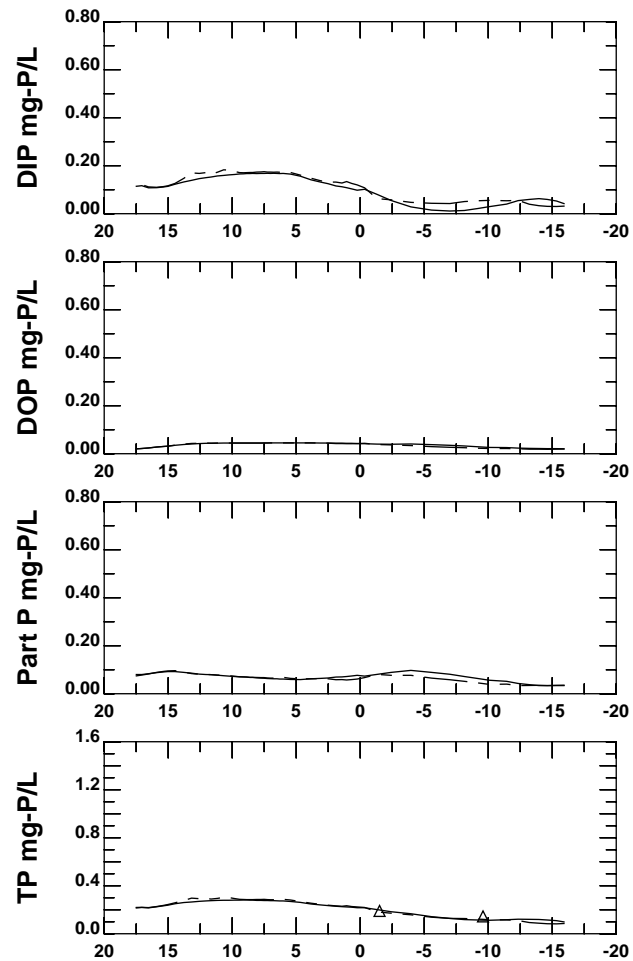
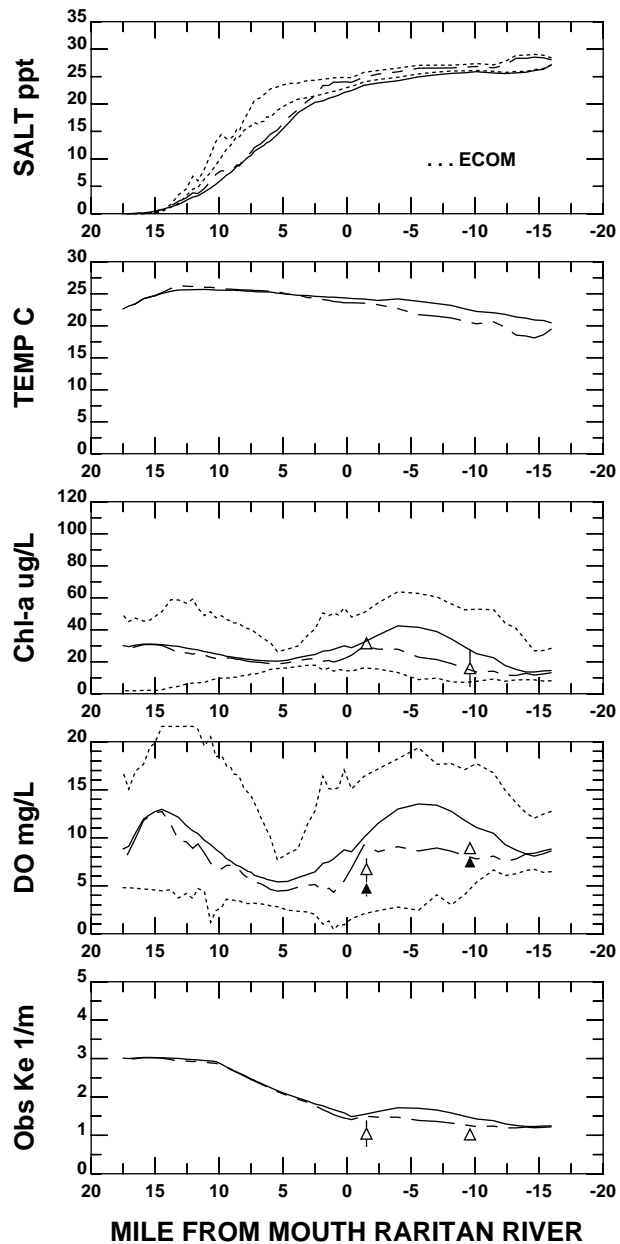


## RARITAN RIVER AND NORTH SHORE OF RARITAN BAY





**RARITAN RIVER AND NORTH SHORE RARITAN BAY**



**DATA Jun 28-Jul 27,1999**

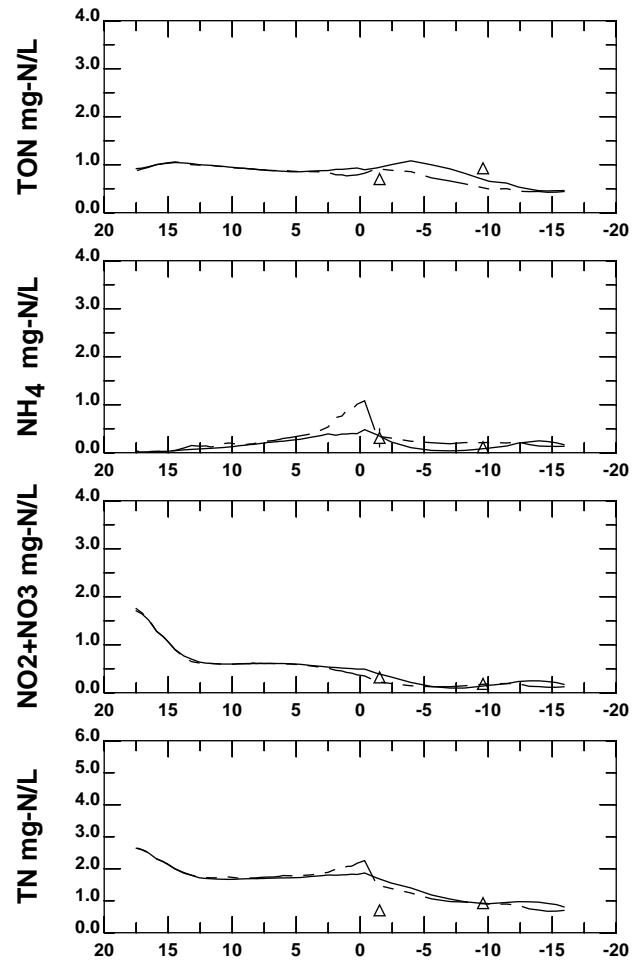
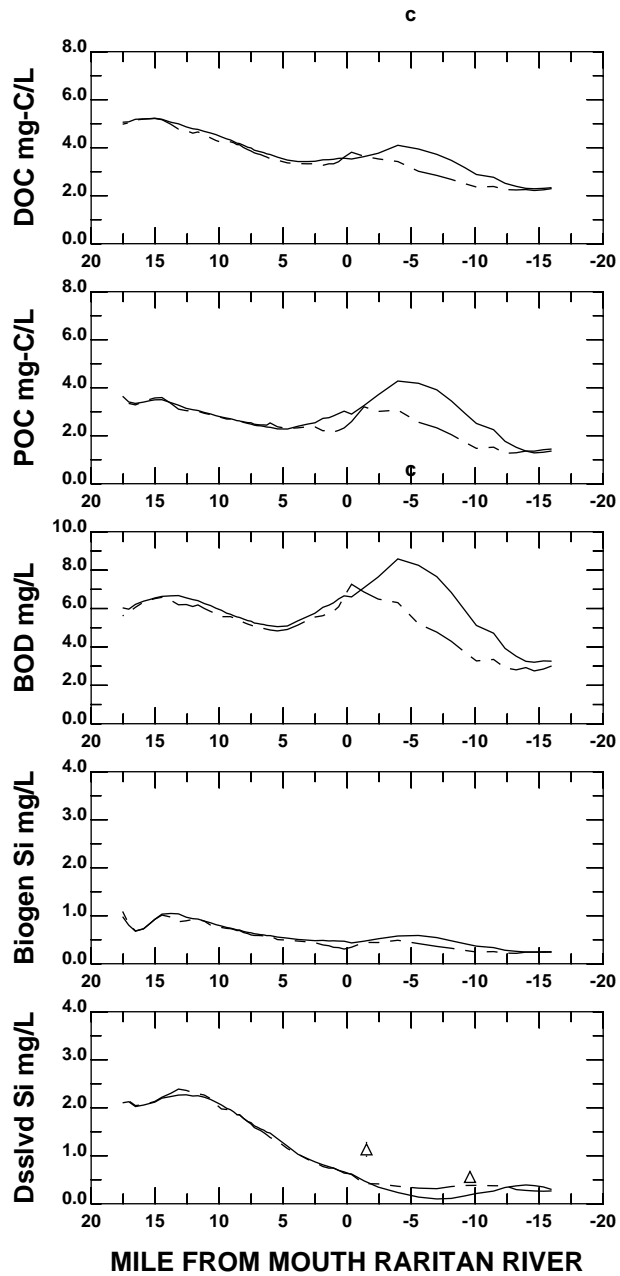
**MODEL**

	<b>SURF BOT</b>		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment

—	<b>SURFACE 30-DAY MEAN</b>
---	<b>BOTTOM 30-DAY MEAN</b>
- - -	<b>30-DAY SURFACE MAX OR BOTTOM MIN</b>

## RARITAN RIVER AND NORTH SHORE OF RARITAN BAY



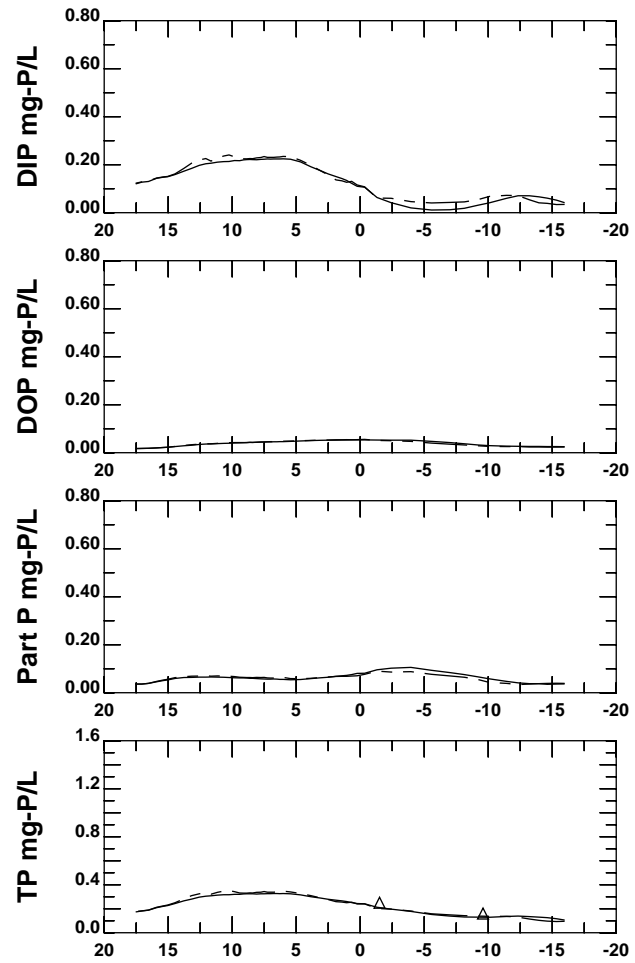
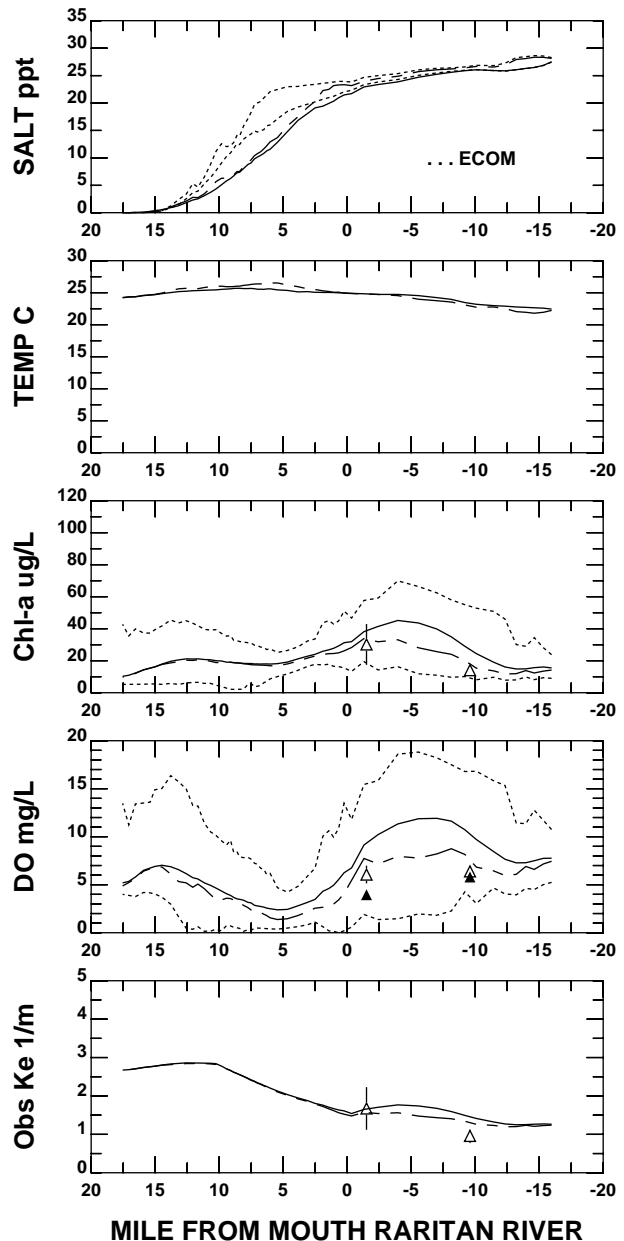
DATA Jun 28-Jul 27,1999

MODEL

	SURF	BOT	
Harbor Survey	△	▲	Transect
NYSDEC	t	e	Embayment
	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment

—	SURFACE 30-DAY MEAN
- - -	BOTTOM 30-DAY MEAN
- - -	30-DAY SURFACE MAX OR BOTTOM MIN

## RARITAN RIVER AND NORTH SHORE RARITAN BAY



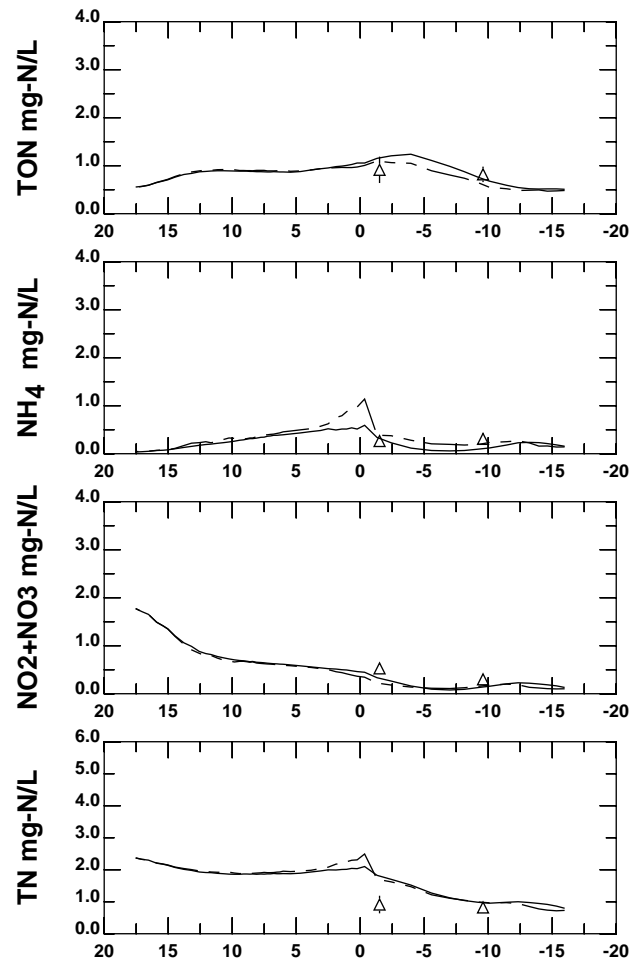
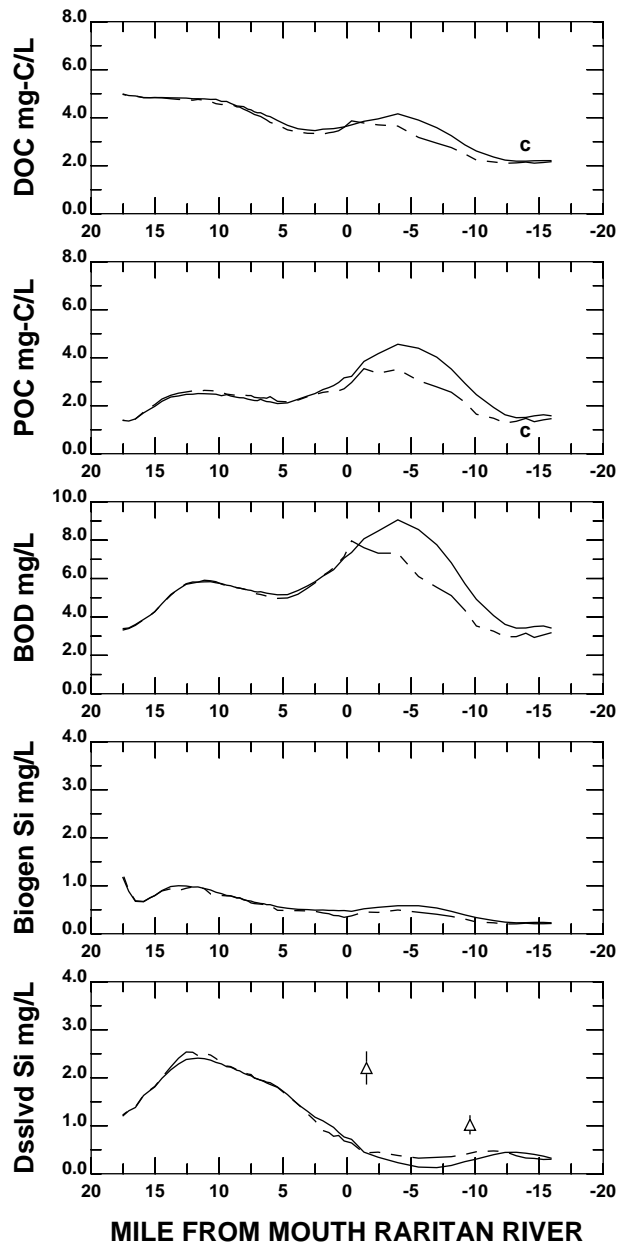
**DATA Jul 27-Aug 26, 1999**

	<b>SURF BOT</b>		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment

<b>MODEL</b>	—	<b>SURFACE 30-DAY MEAN</b>
	- - -	<b>BOTTOM 30-DAY MEAN</b>
	- - -	<b>30-DAY SURFACE MAX OR BOTTOM MIN</b>

**RARITAN RIVER AND NORTH SHORE OF RARITAN BAY**

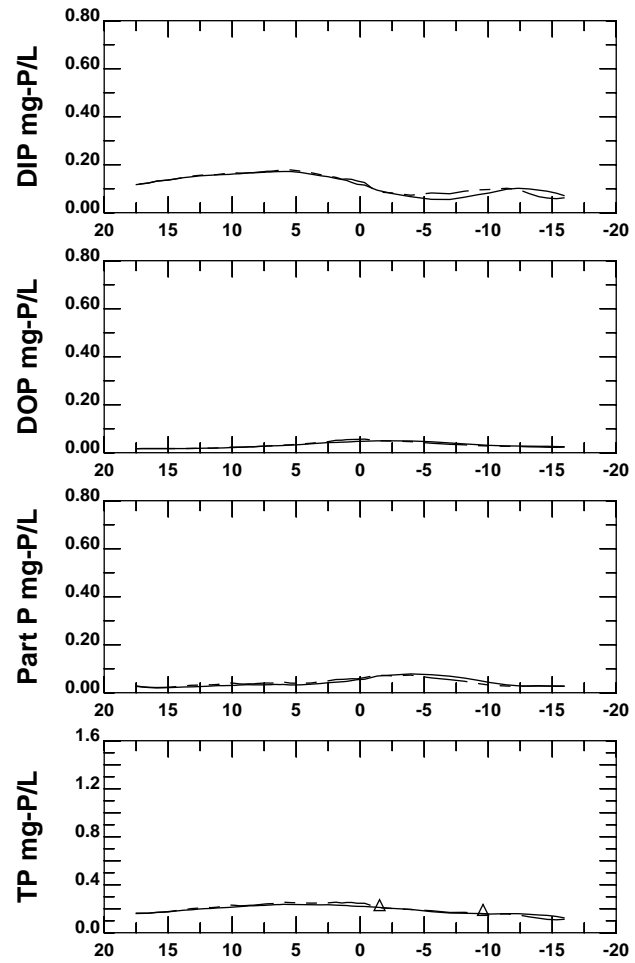
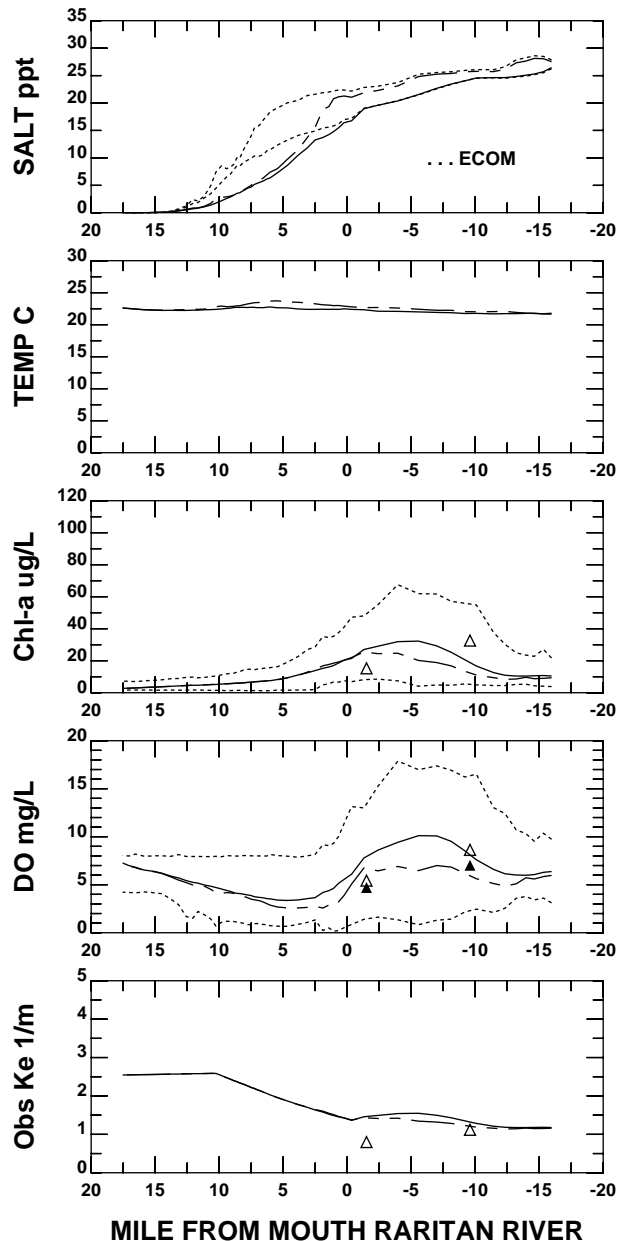


DATA Jul 27-Aug 26, 1999

	SURF BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment

MODEL	—	SURFACE 30-DAY MEAN
	- - -	BOTTOM 30-DAY MEAN
	- - -	30-DAY SURFACE MAX OR BOTTOM MIN

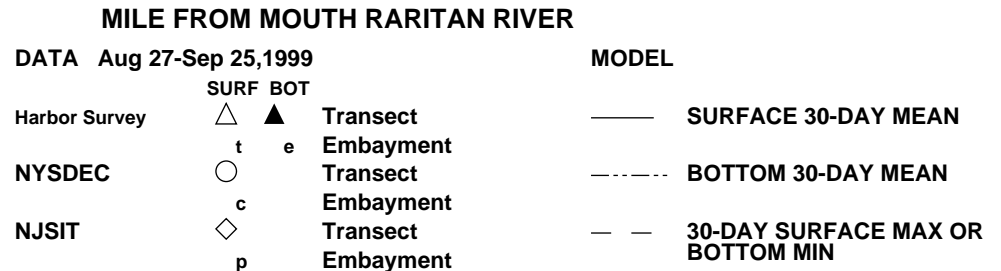
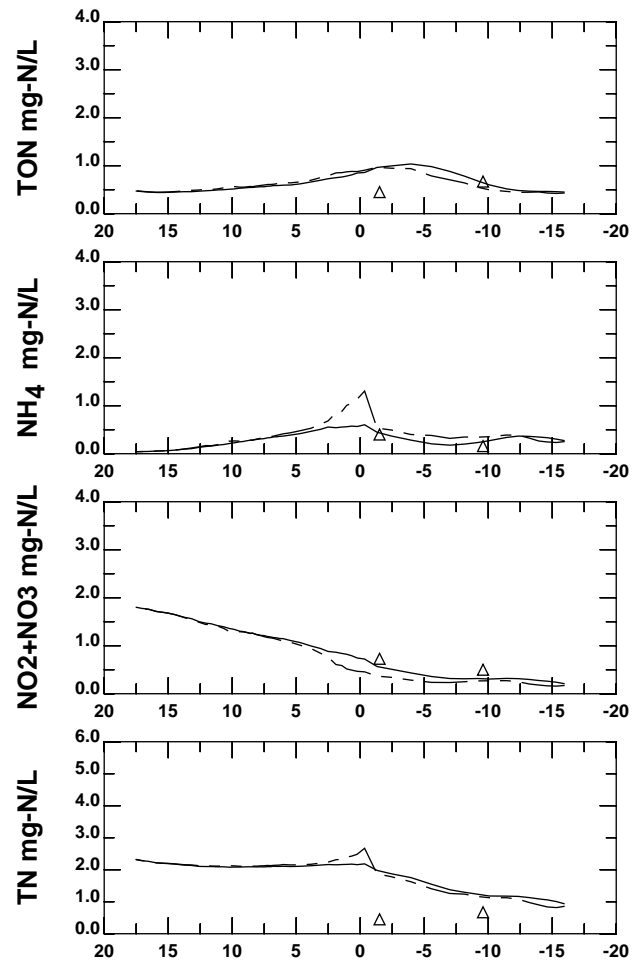
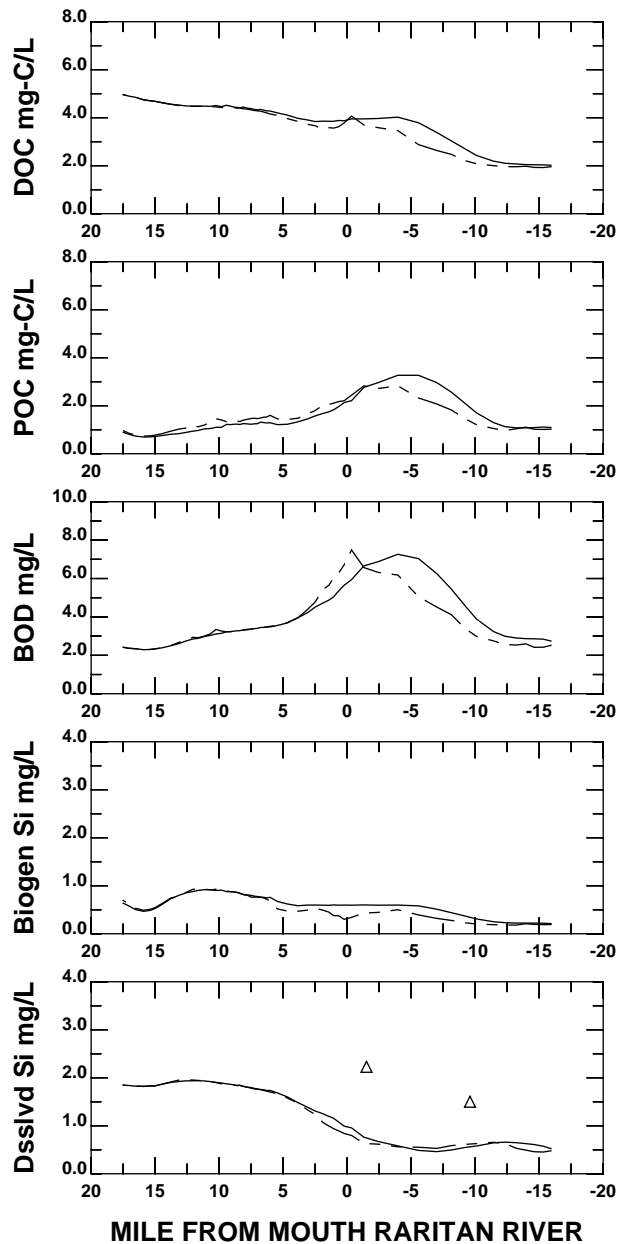
## RARITAN RIVER AND NORTH SHORE RARITAN BAY



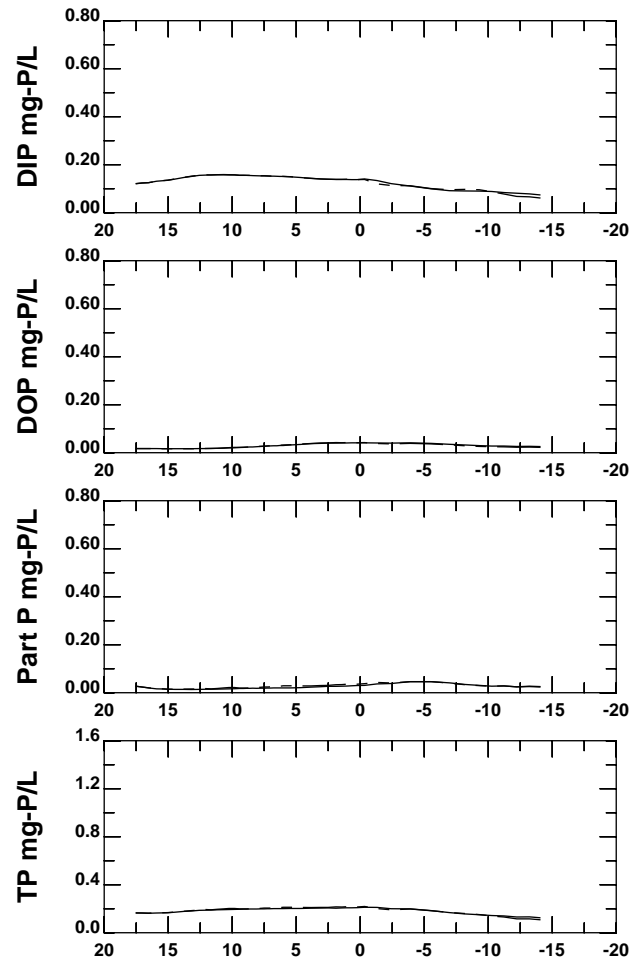
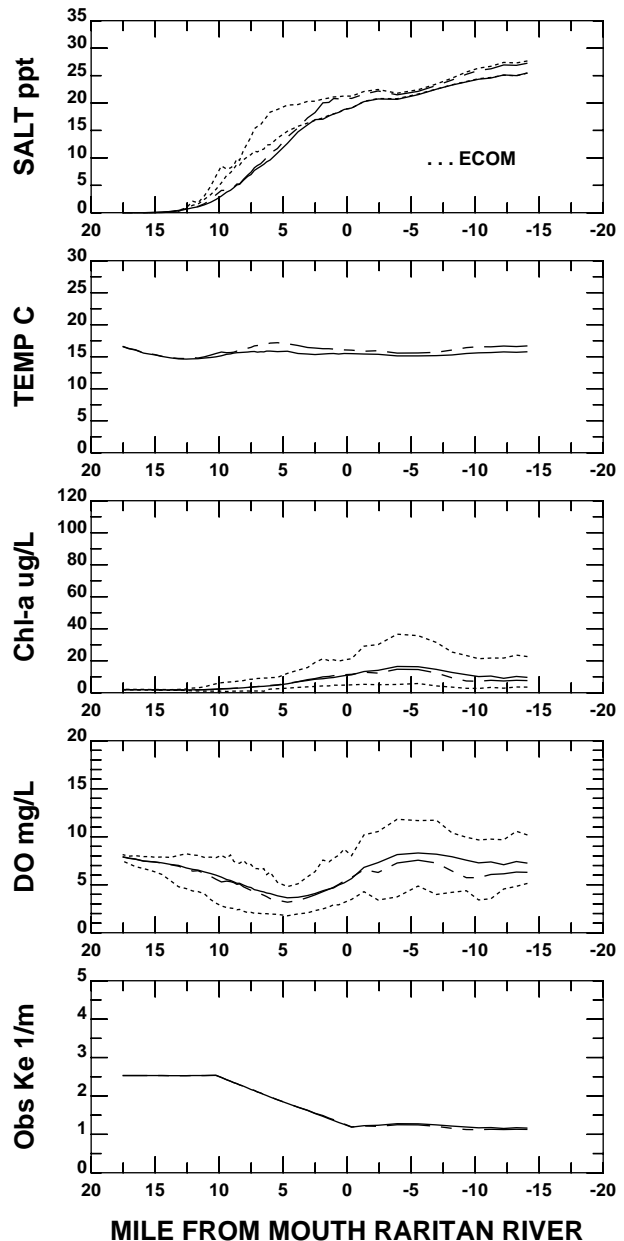
**DATA Aug 27-Sep 25, 1999**

	<b>SURF</b>	<b>BOT</b>		<b>MODEL</b>
Harbor Survey	△	▲	Transect	— SURFACE 30-DAY MEAN
NYSDEC	t	e	Embayment	- - - BOTTOM 30-DAY MEAN
	○		Transect	— 30-DAY SURFACE MAX OR
	c		Embayment	BOTTOM MIN
NJSIT	◇		Transect	
	p		Embayment	

**RARITAN RIVER AND NORTH SHORE OF RARITAN BAY**



**RARITAN RIVER AND NORTH SHORE RARITAN BAY**

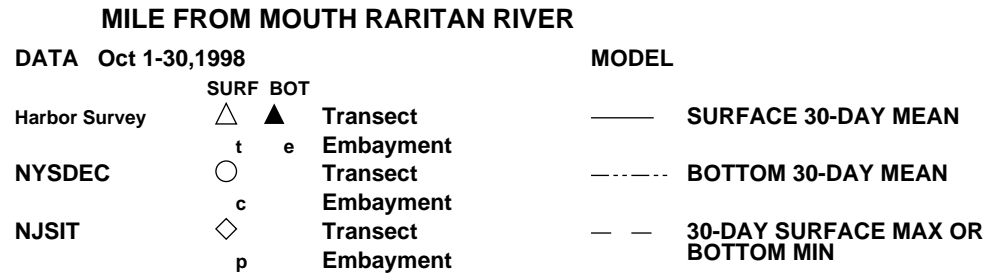
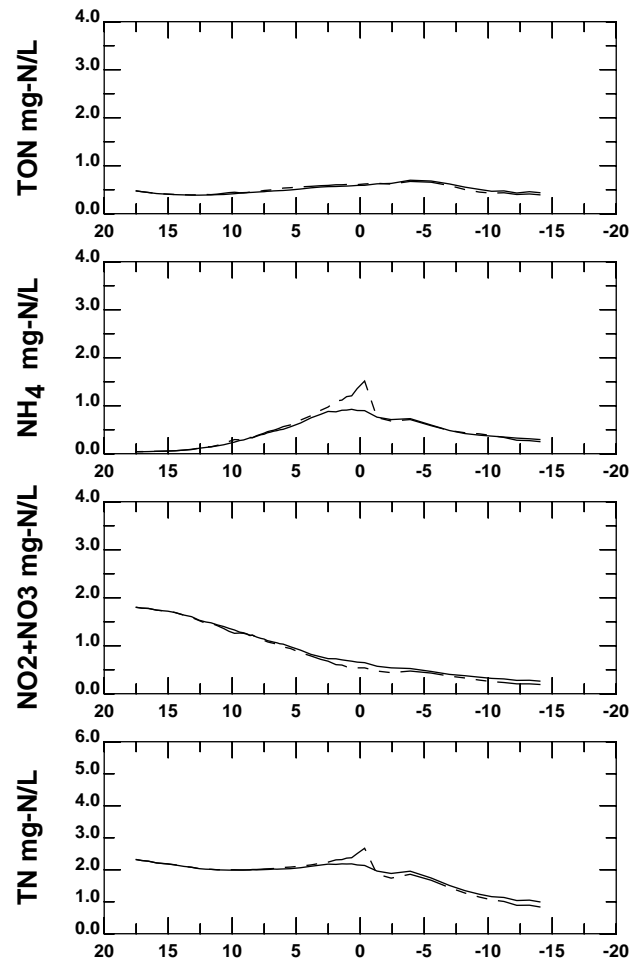
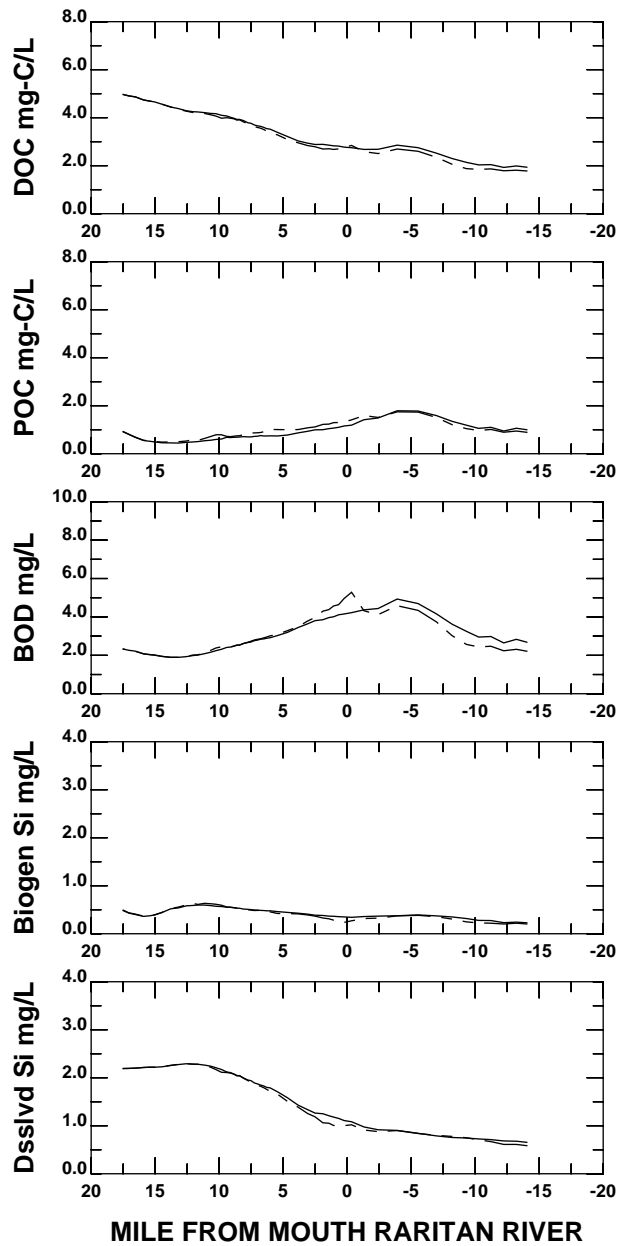


**DATA Oct 1-30,1998**

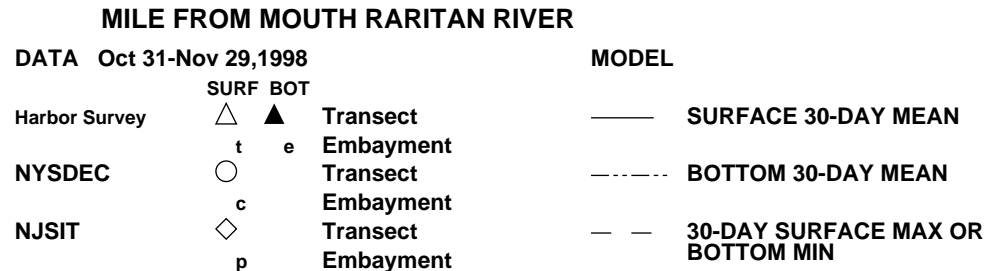
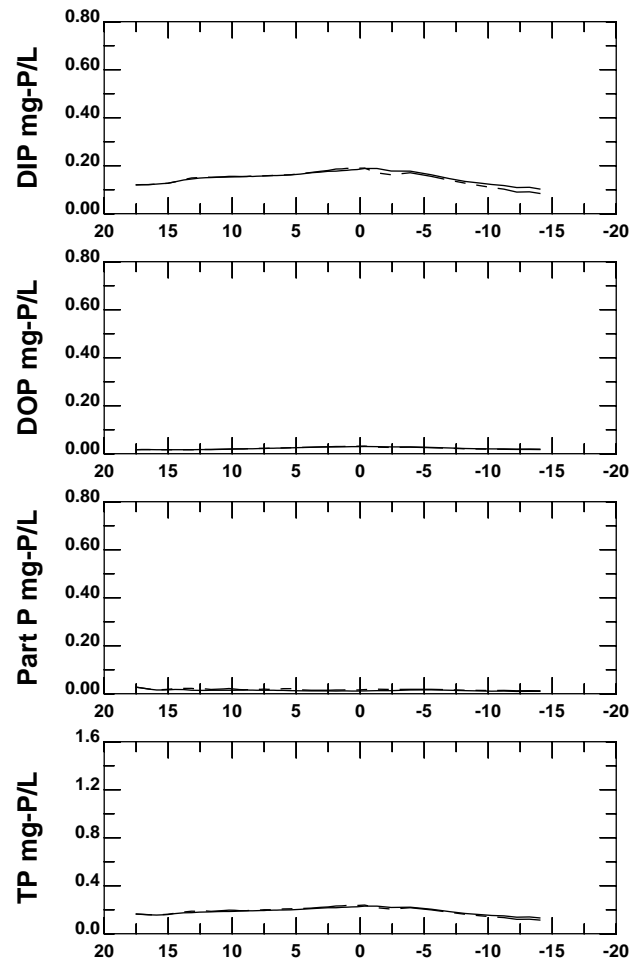
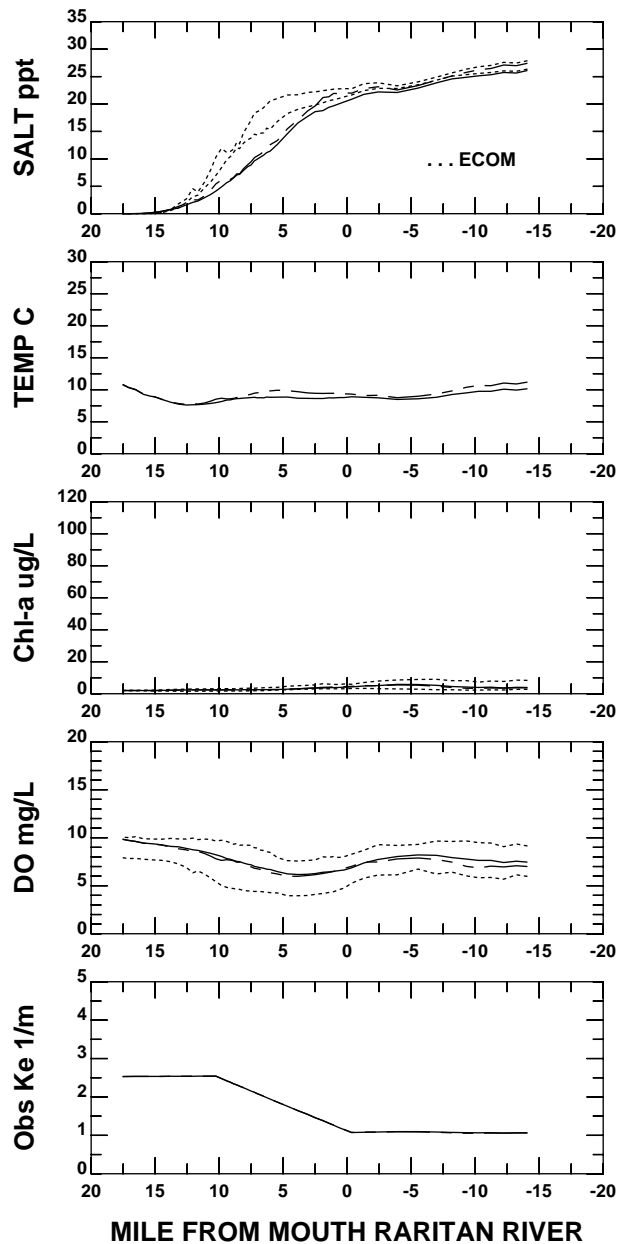
	<b>SURF</b>	<b>BOT</b>		<b>MODEL</b>
Harbor Survey	△	▲	Transect	— SURFACE 30-DAY MEAN
NYSDEC	○	◐	Embayment	- - - - - BOTTOM 30-DAY MEAN
NJSIT	◇	◑	Embayment	— — — 30-DAY SURFACE MAX OR BOTTOM MIN
			Transect	
			Embayment	

**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**

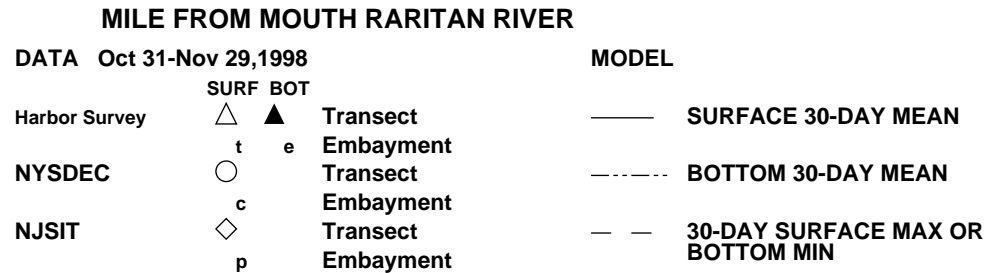
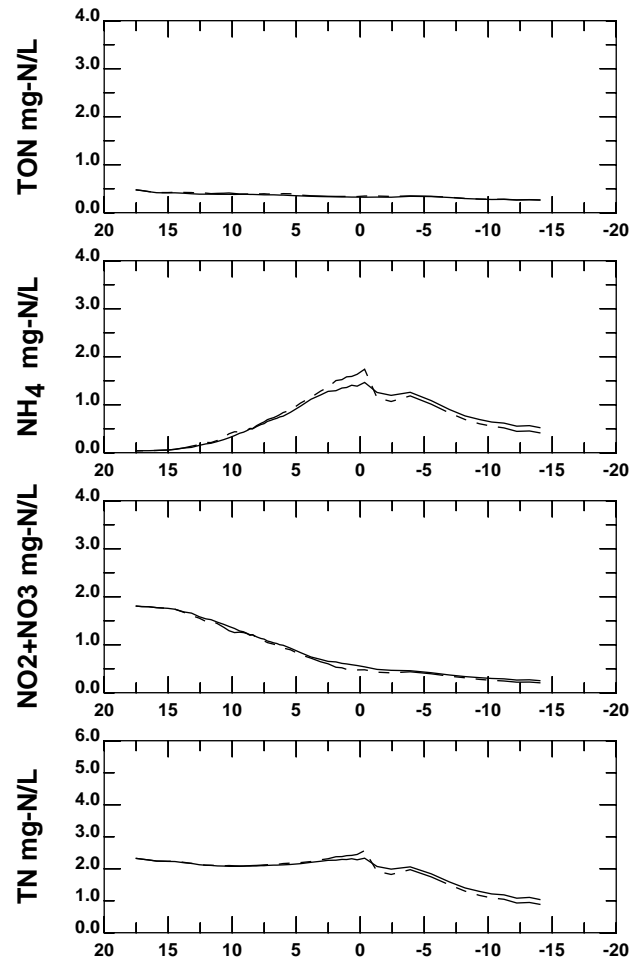
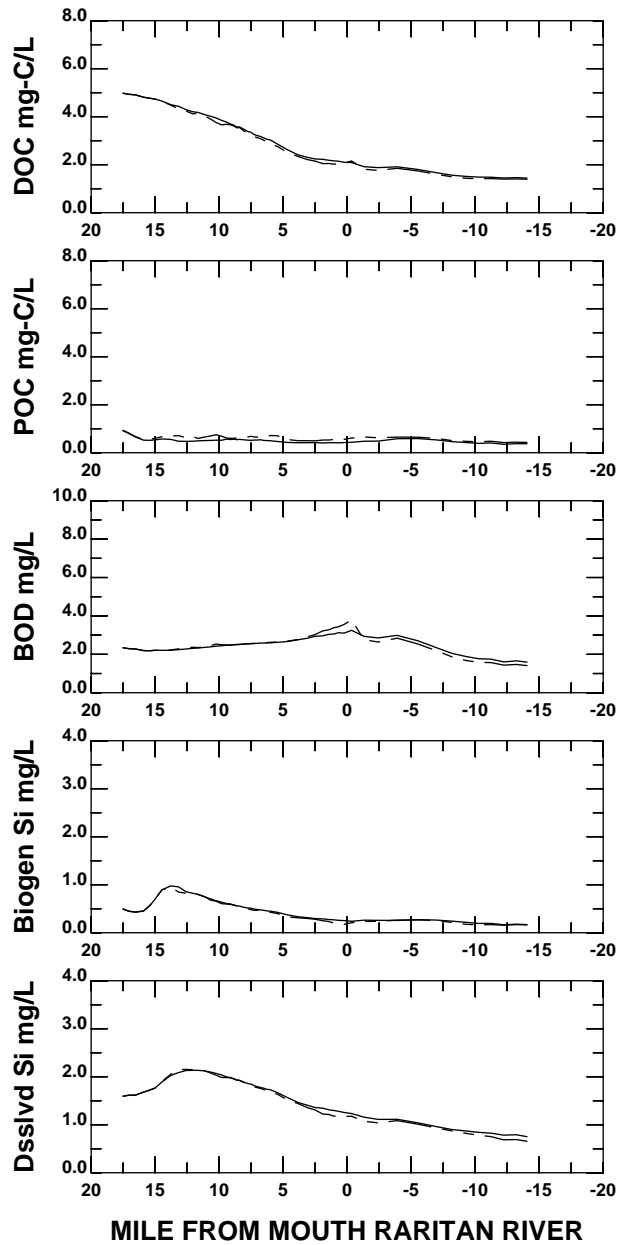




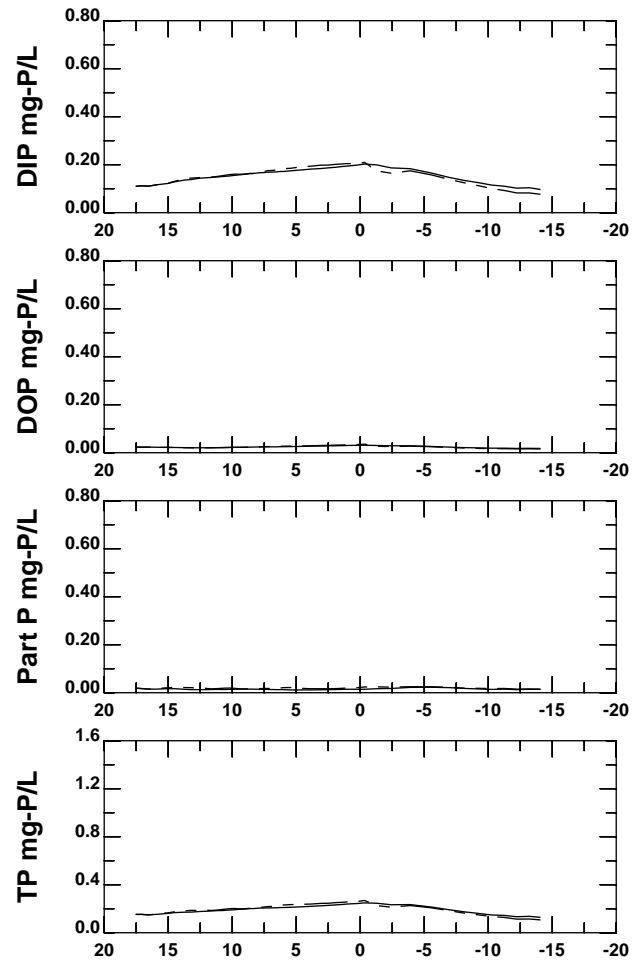
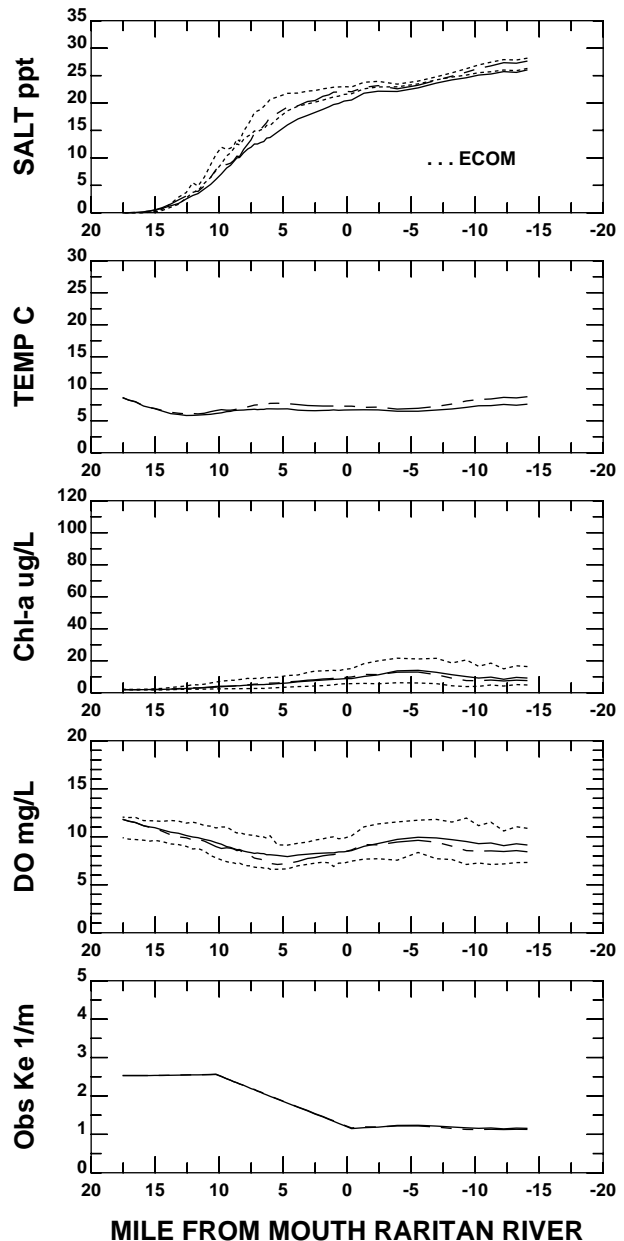
**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**



**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**



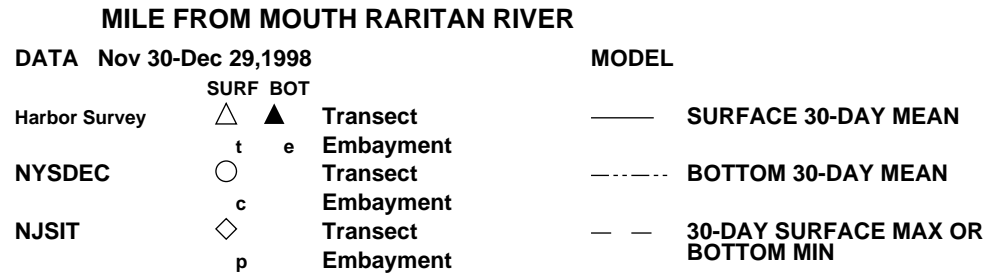
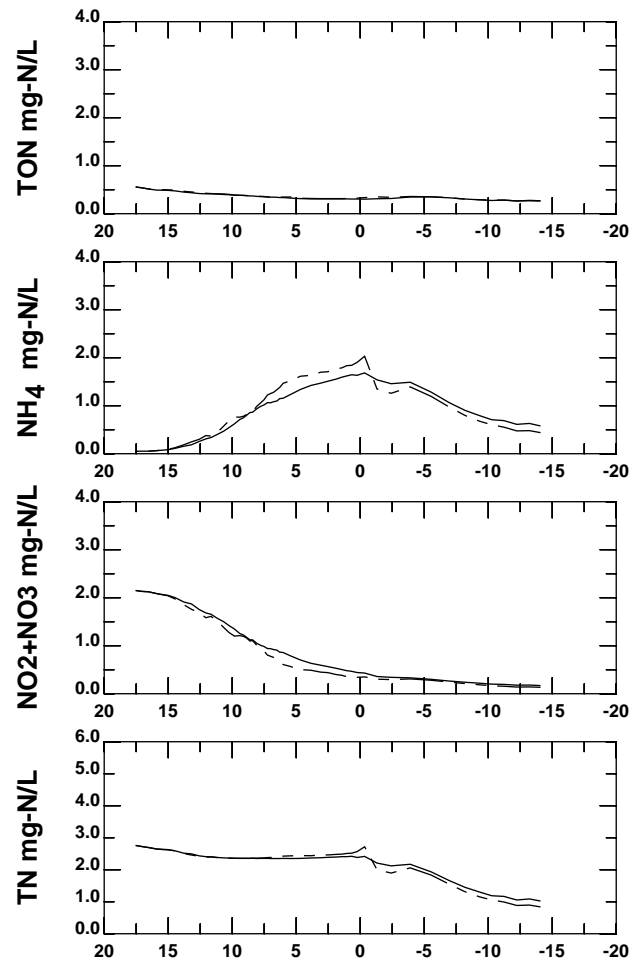
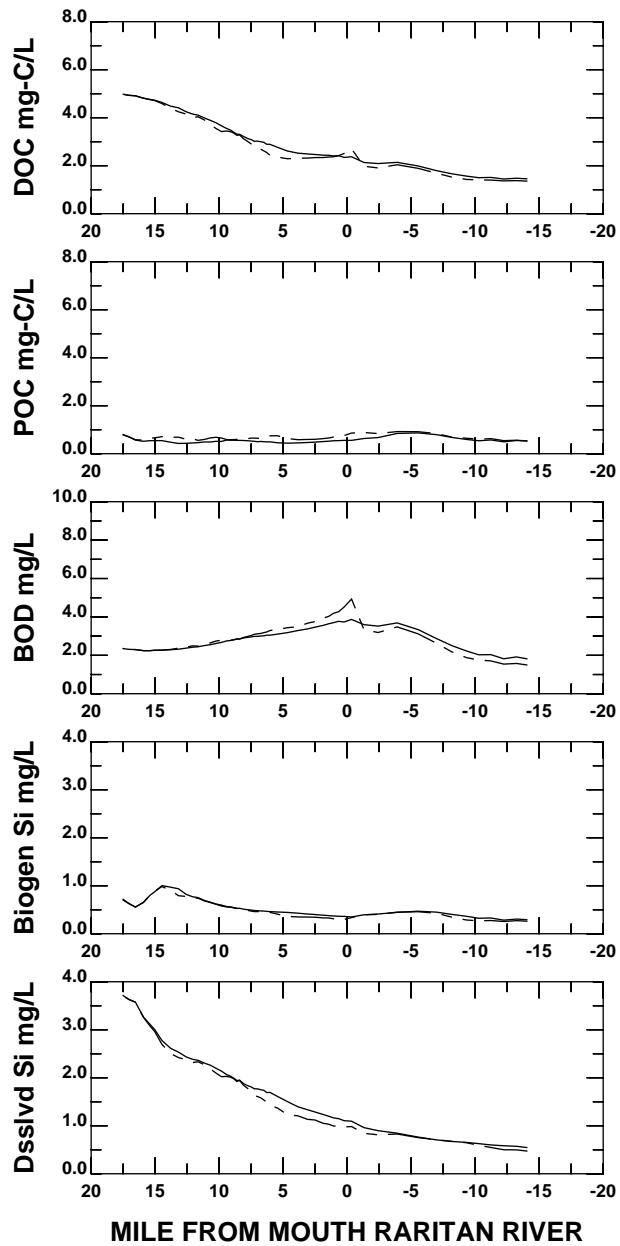
## RARITAN RIVER AND SOUTH SHORE RARITAN BAY



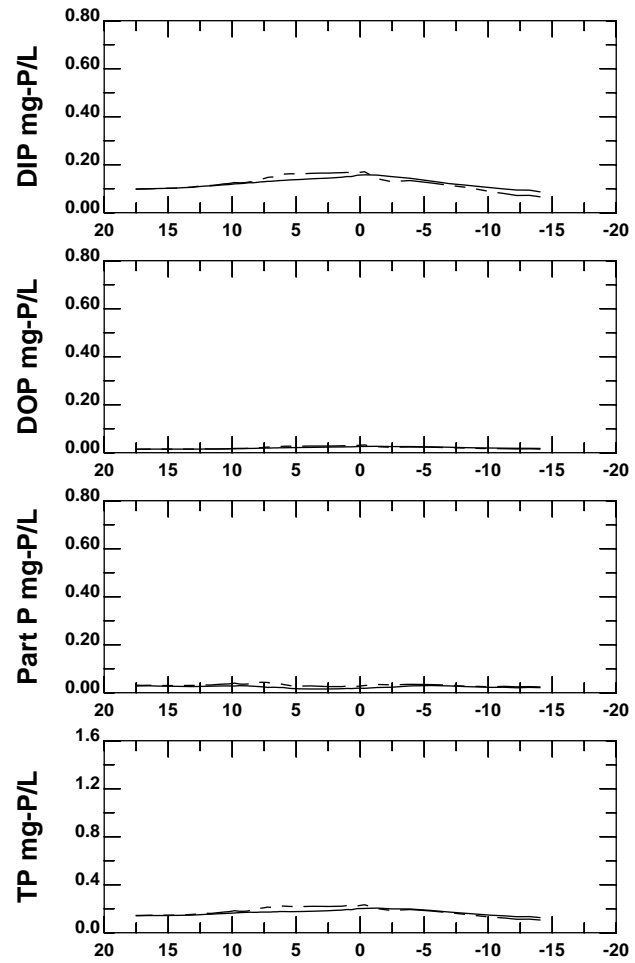
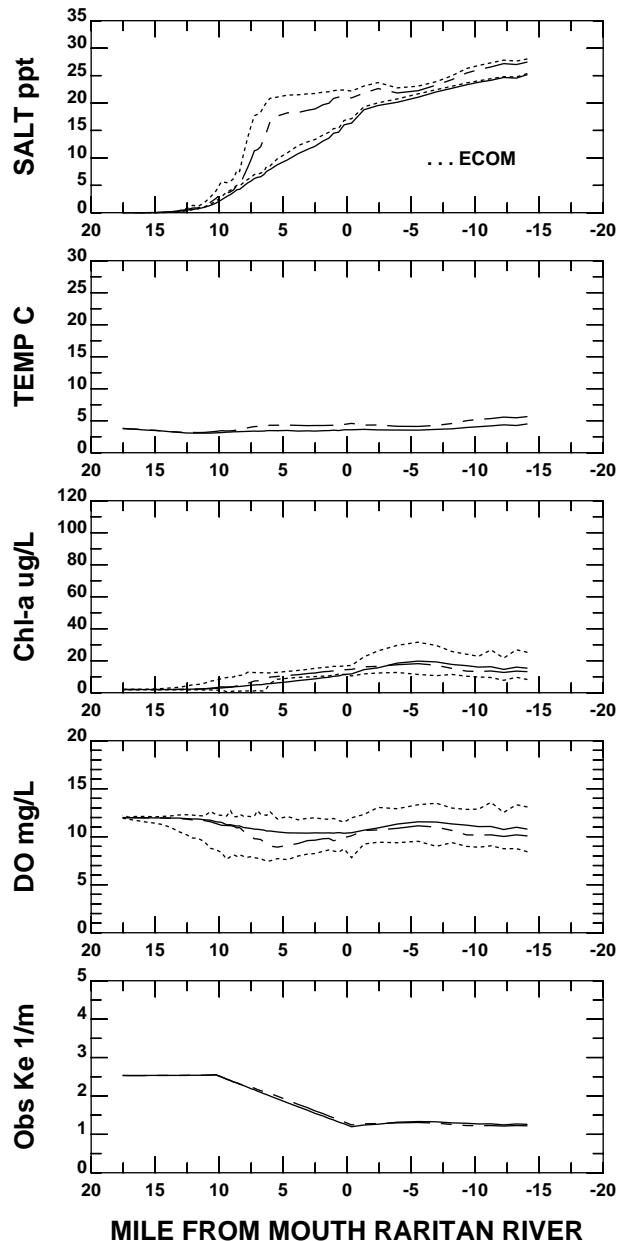
**MILE FROM MOUTH RARITAN RIVER**

<b>DATA</b> Nov 30-Dec 29, 1998		<b>MODEL</b>
	<b>SURF BOT</b>	
Harbor Survey	△ ▲	Transect
	t e	Embayment
NYSDEC	○	Transect
	c	Embayment
NJSIT	◇	Transect
	p	Embayment
	—	SURFACE 30-DAY MEAN
	- - -	BOTTOM 30-DAY MEAN
	- - -	30-DAY SURFACE MAX OR BOTTOM MIN

**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**



**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**



**DATA** Dec 30 1998 -Jan 28,1999

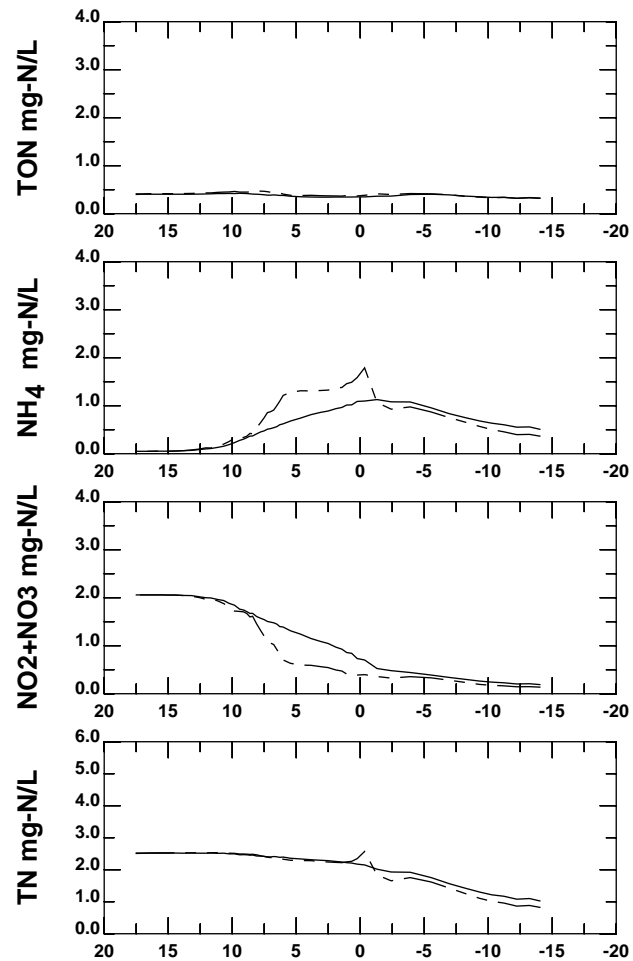
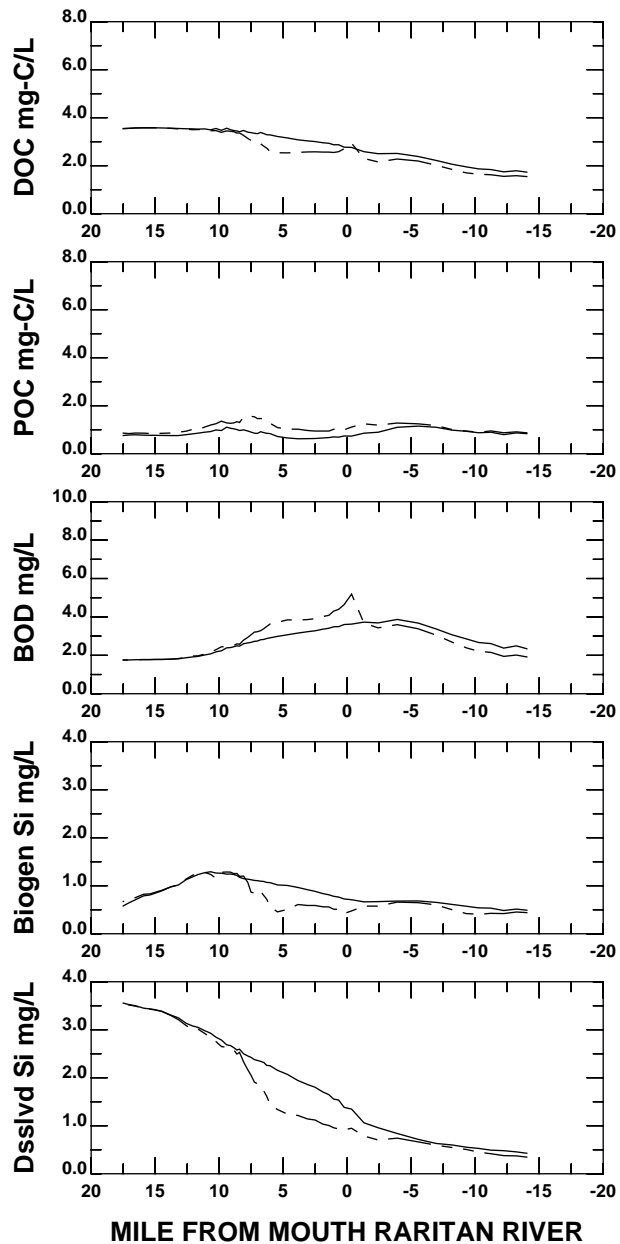
**MODEL**

	<b>SURF BOT</b>		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment

————	<b>SURFACE 30-DAY MEAN</b>
-----	<b>BOTTOM 30-DAY MEAN</b>
- - - -	<b>30-DAY SURFACE MAX OR BOTTOM MIN</b>

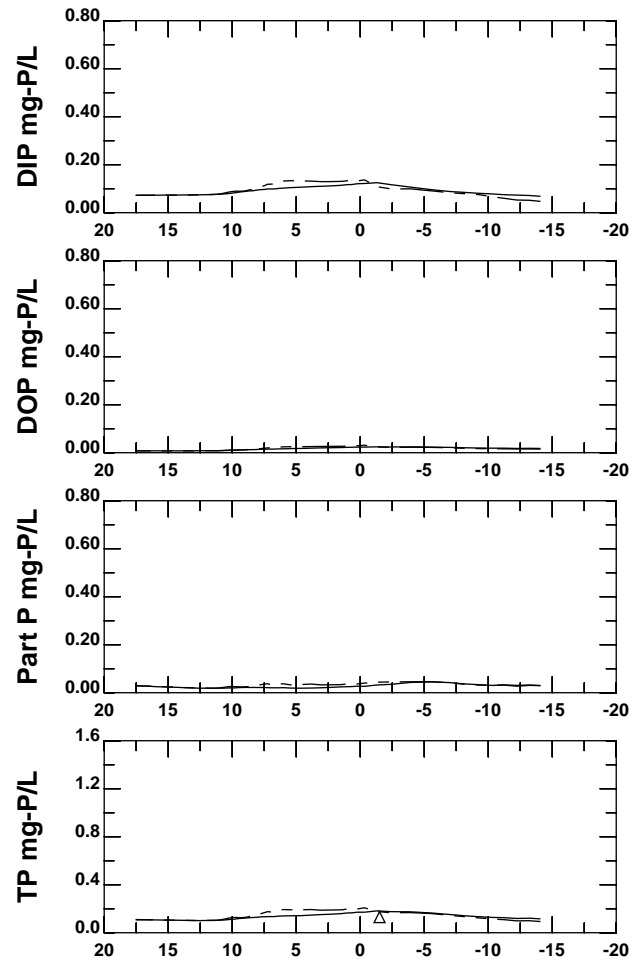
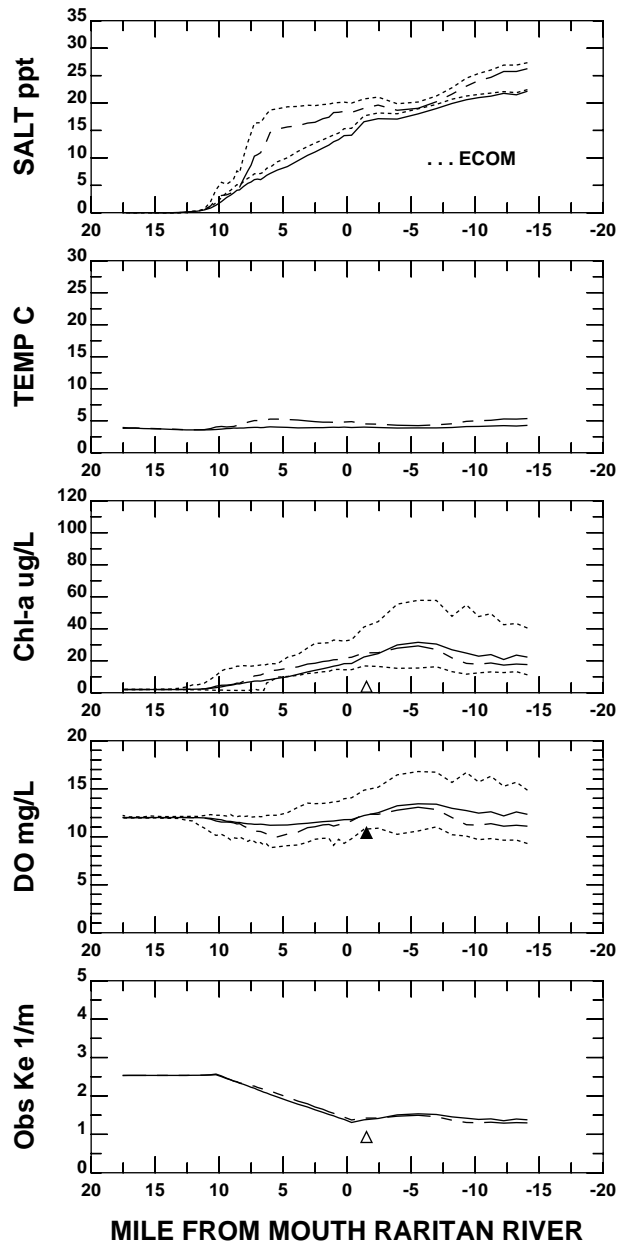
**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**



**MILE FROM MOUTH RARITAN RIVER**

<b>DATA</b> Dec 30 1998 -Jan 28,1999		<b>MODEL</b>
	<b>SURF BOT</b>	
Harbor Survey	△ ▲ Transect	—— SURFACE 30-DAY MEAN
	t e Embayment	----- BOTTOM 30-DAY MEAN
NYSDEC	○ Transect	--- 30-DAY SURFACE MAX OR
	c Embayment	--- BOTTOM MIN
NJSIT	◇ Transect	
	p Embayment	

## RARITAN RIVER AND SOUTH SHORE RARITAN BAY



**DATA Jan 29-Feb 27, 1999**

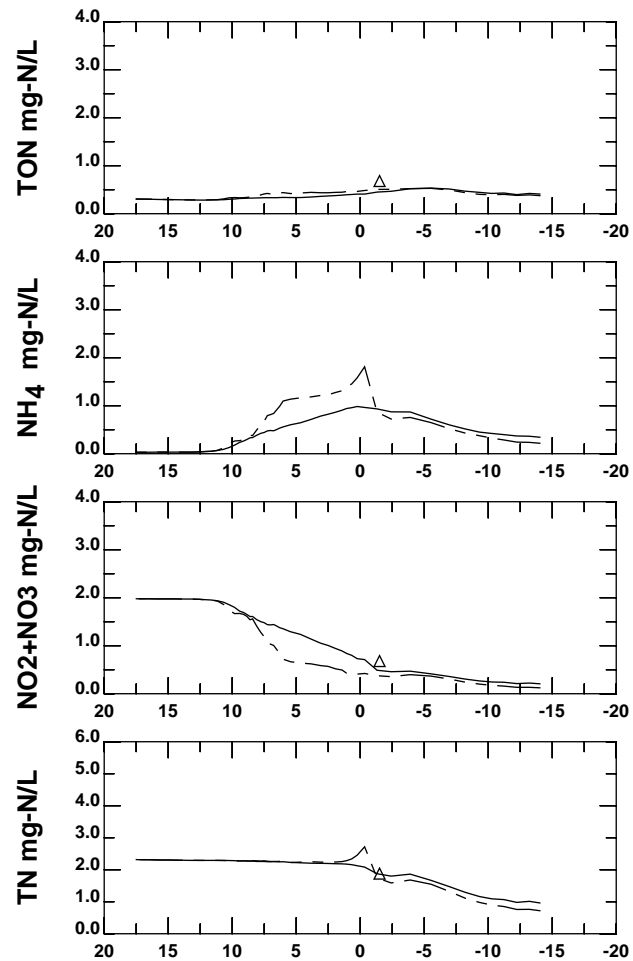
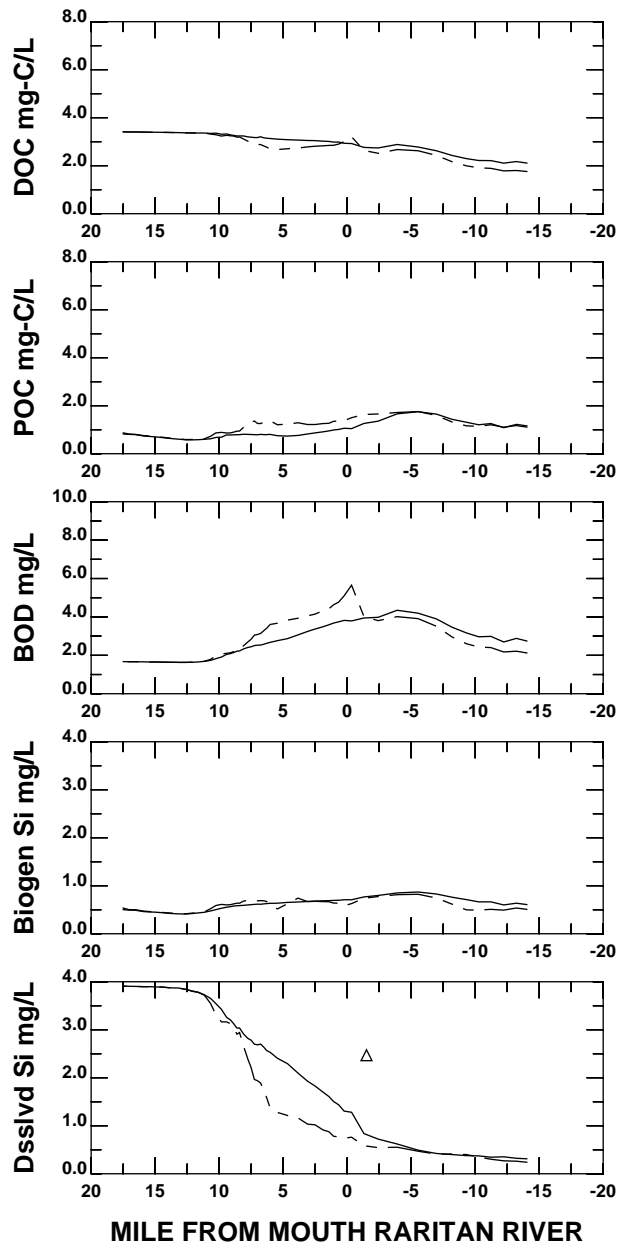
	<b>SURF BOT</b>		
Harbor Survey	△	▲	Transect
NYSDEC	○	◐	Embayment
NJSIT	◇	◑	Transect
		◒	Embayment

<b>MODEL</b>	—	<b>SURFACE 30-DAY MEAN</b>
	---	<b>BOTTOM 30-DAY MEAN</b>
	- - -	<b>30-DAY SURFACE MAX OR BOTTOM MIN</b>

**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**





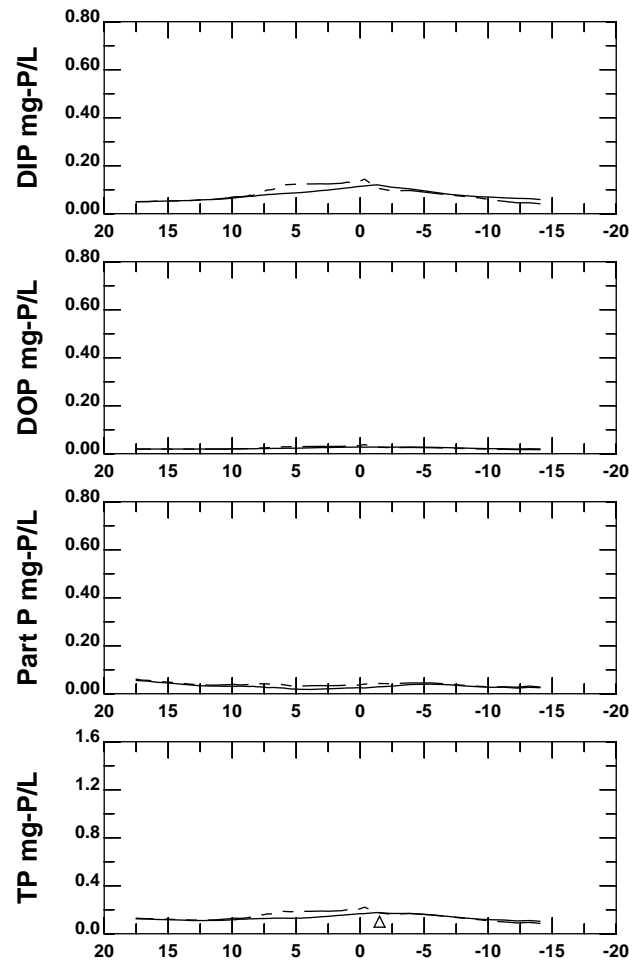
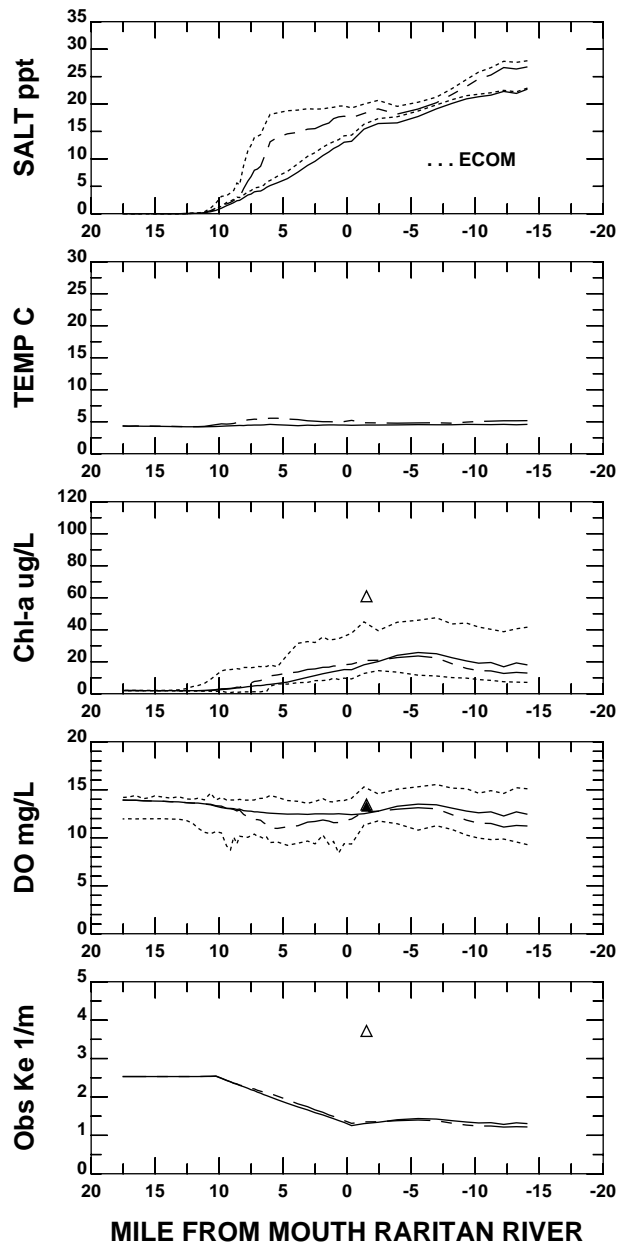
**DATA** Jan 29-Feb 27, 1999

**MODEL**

	<b>SURF</b>		<b>BOT</b>	
Harbor Survey	△	▲	Transect	—
	t	e	Embayment	---
NYSDEC	○		Transect	---
	c		Embayment	---
NJSIT	◇		Transect	---
	p		Embayment	---

— SURFACE 30-DAY MEAN  
 --- BOTTOM 30-DAY MEAN  
 - - 30-DAY SURFACE MAX OR BOTTOM MIN

**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**

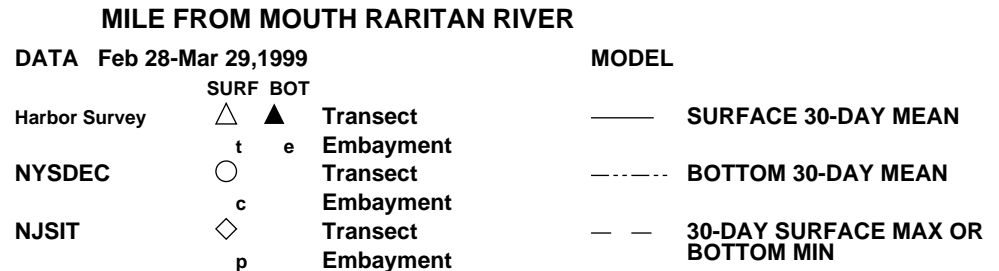
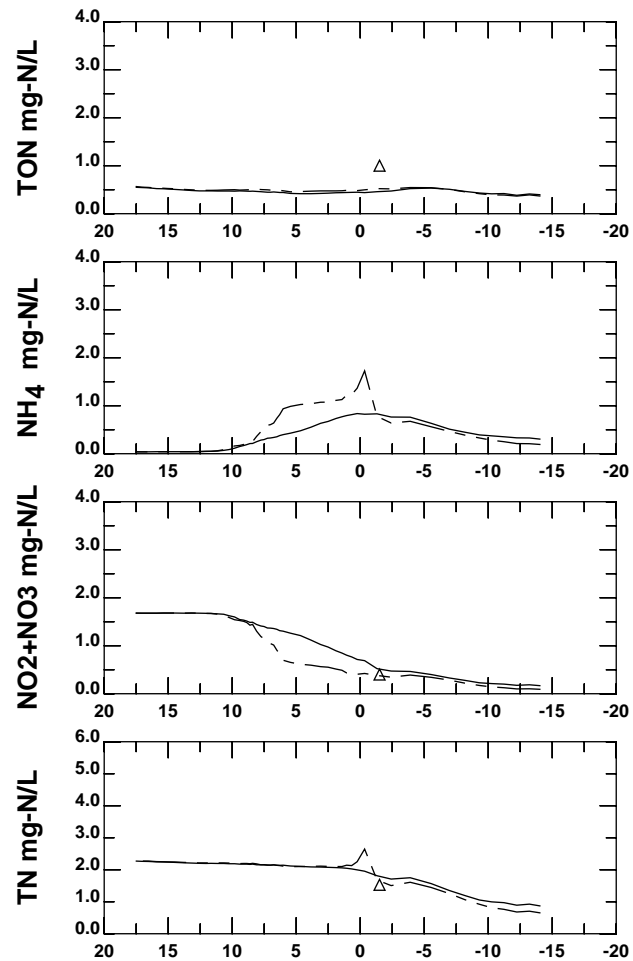
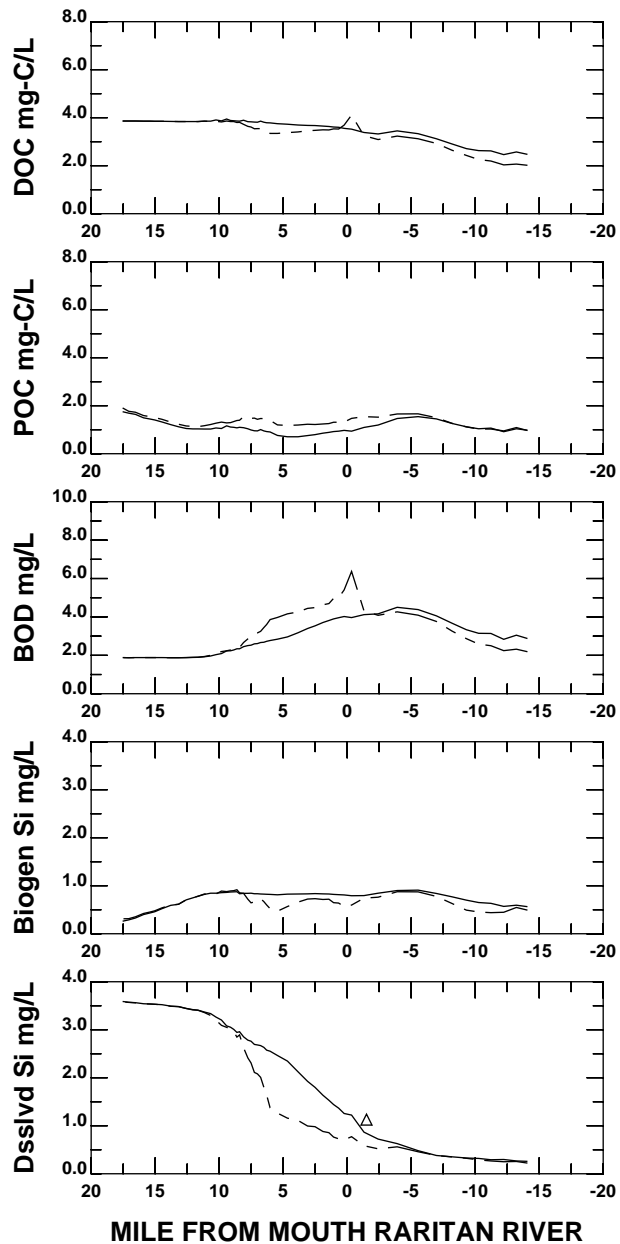


DATA Feb 28-Mar 29, 1999

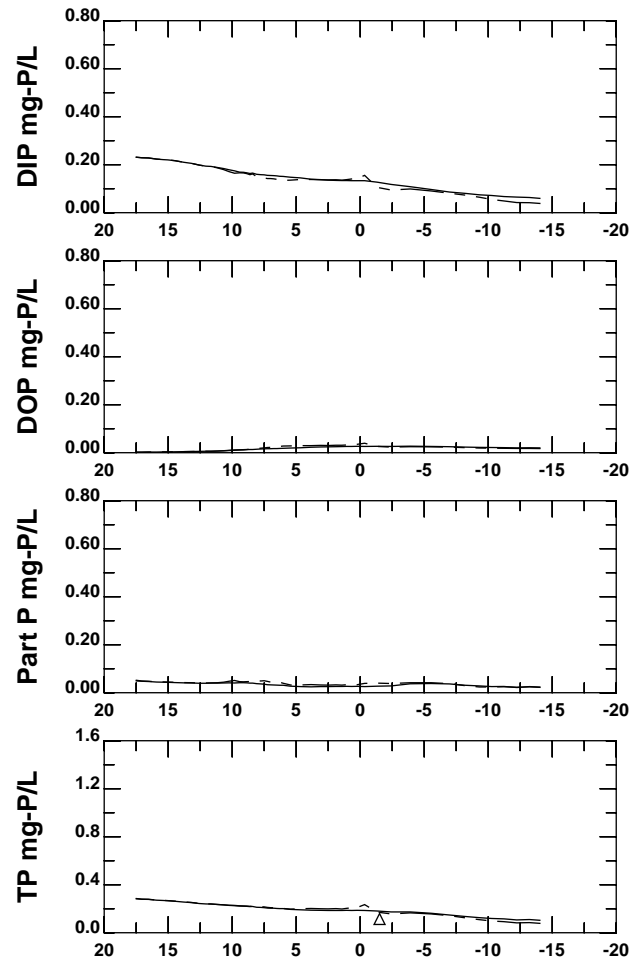
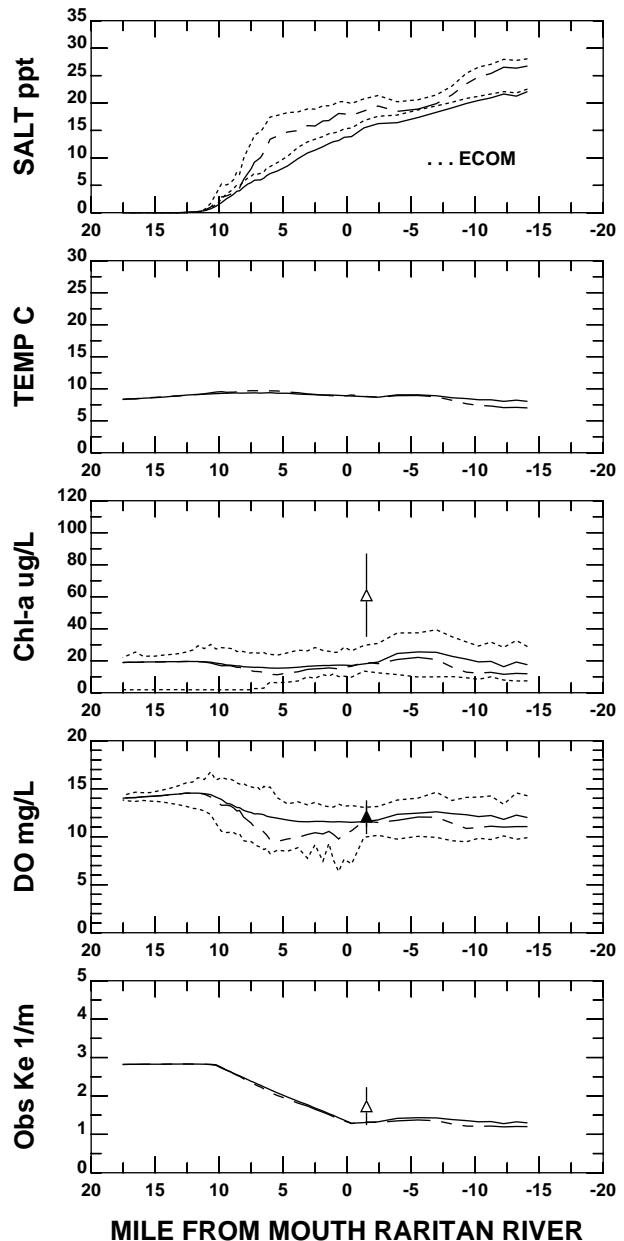
MODEL



## RARITAN RIVER AND SOUTH SHORE RARITAN BAY



**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**



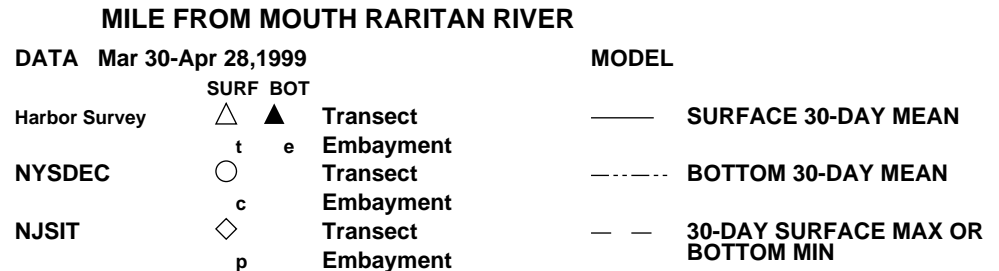
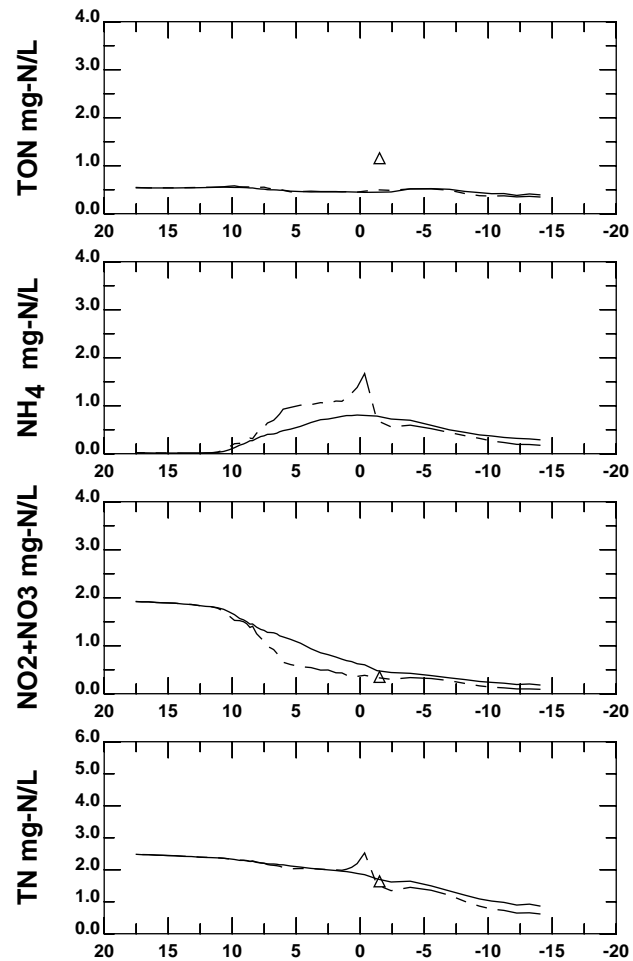
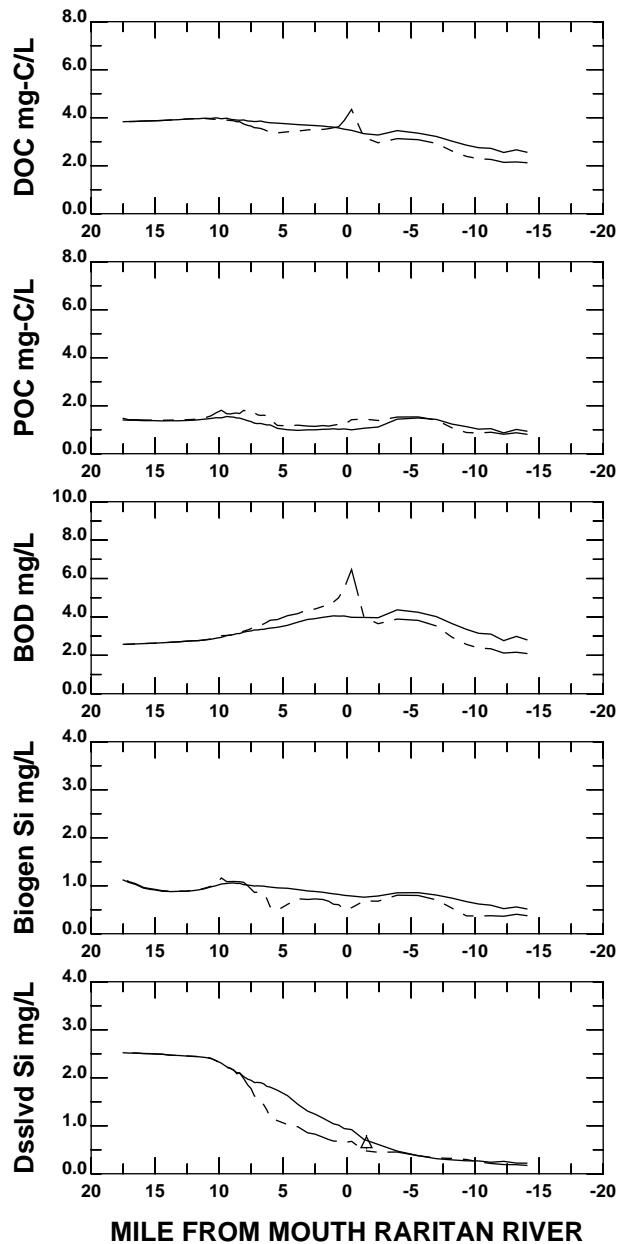
**DATA Mar 30-Apr 28, 1999**

	<b>SURF BOT</b>		
Harbor Survey	△	▲	Transect
NYSDEC	○	◐	Embayment
NJSIT	◇	◑	Transect
		◒	Embayment

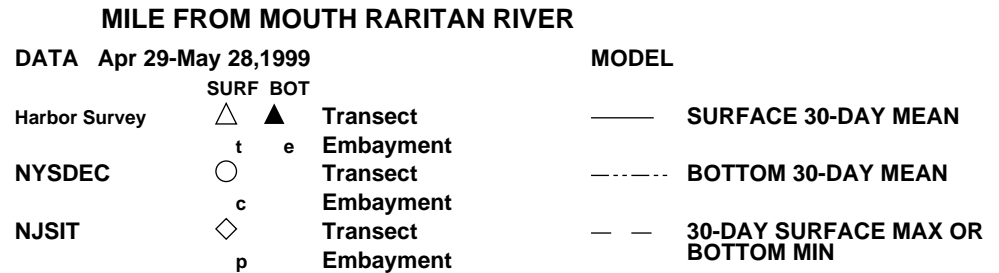
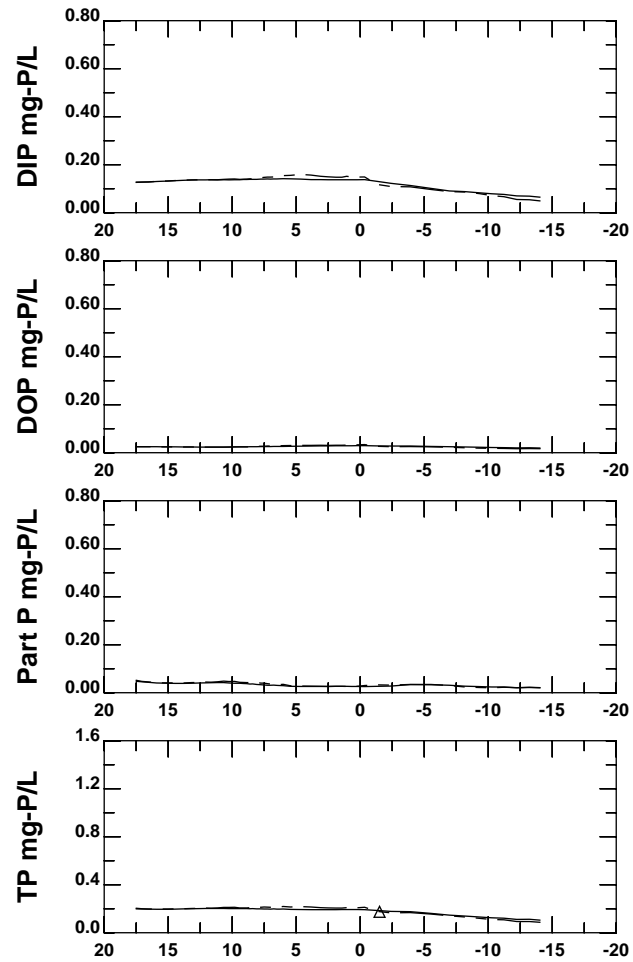
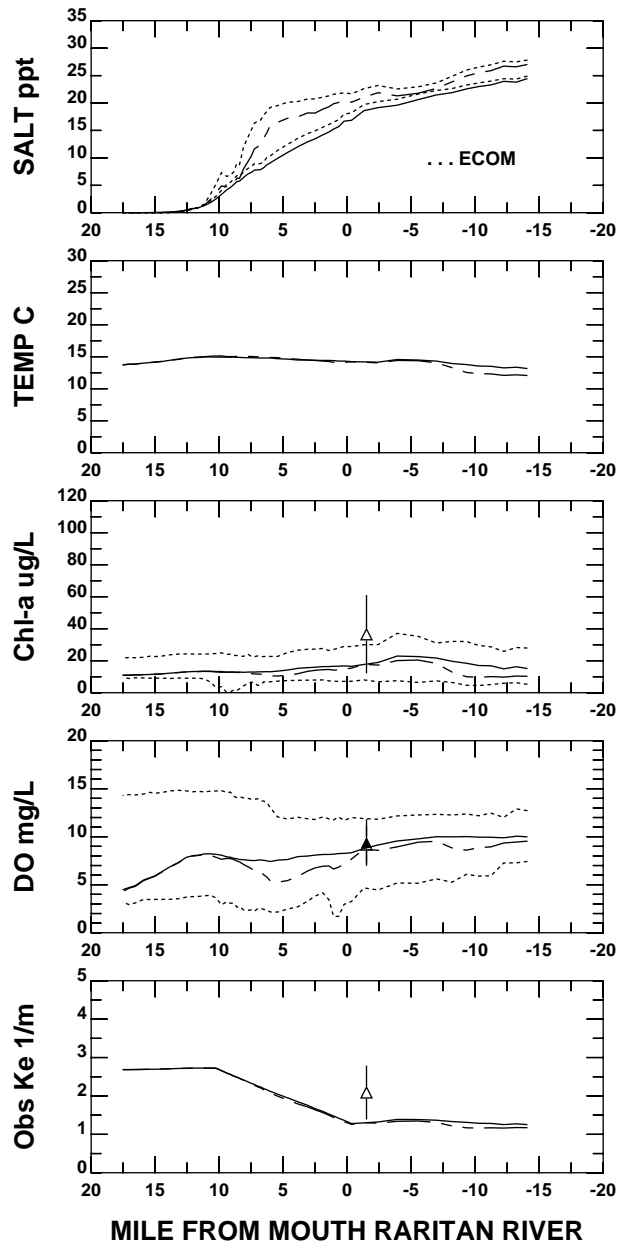
  

<b>MODEL</b>	—	<b>SURFACE 30-DAY MEAN</b>
	---	<b>BOTTOM 30-DAY MEAN</b>
	- - -	<b>30-DAY SURFACE MAX OR BOTTOM MIN</b>

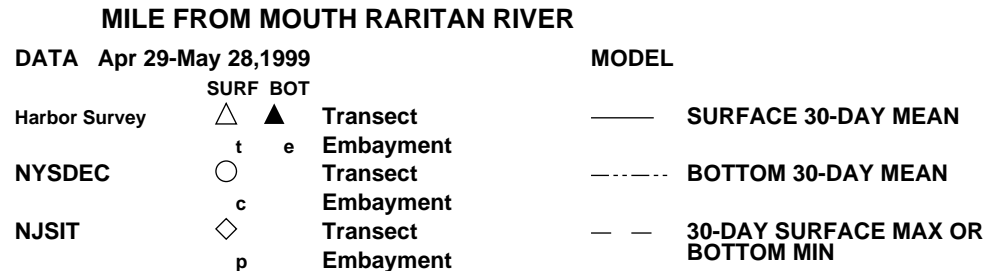
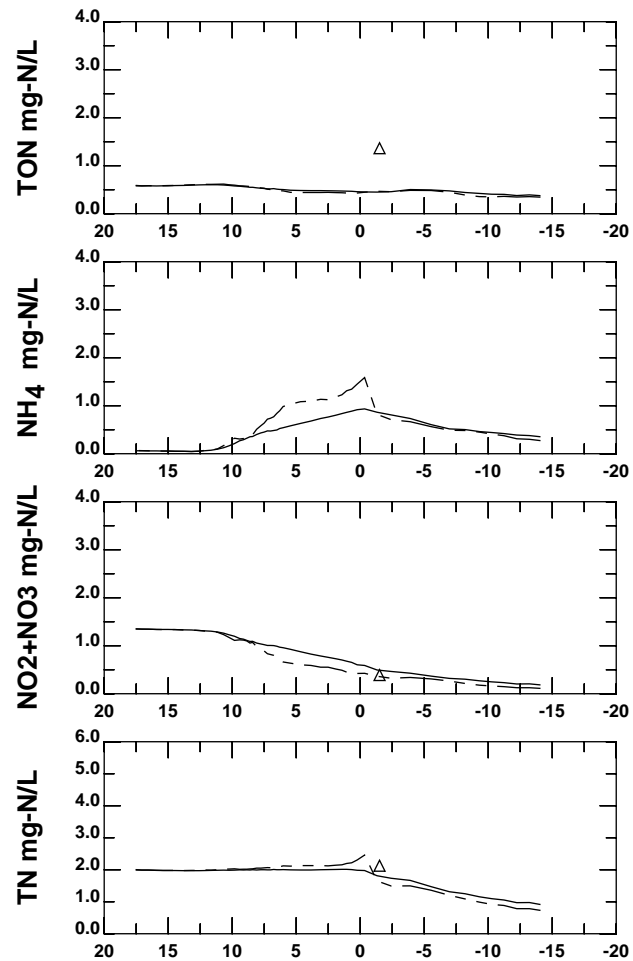
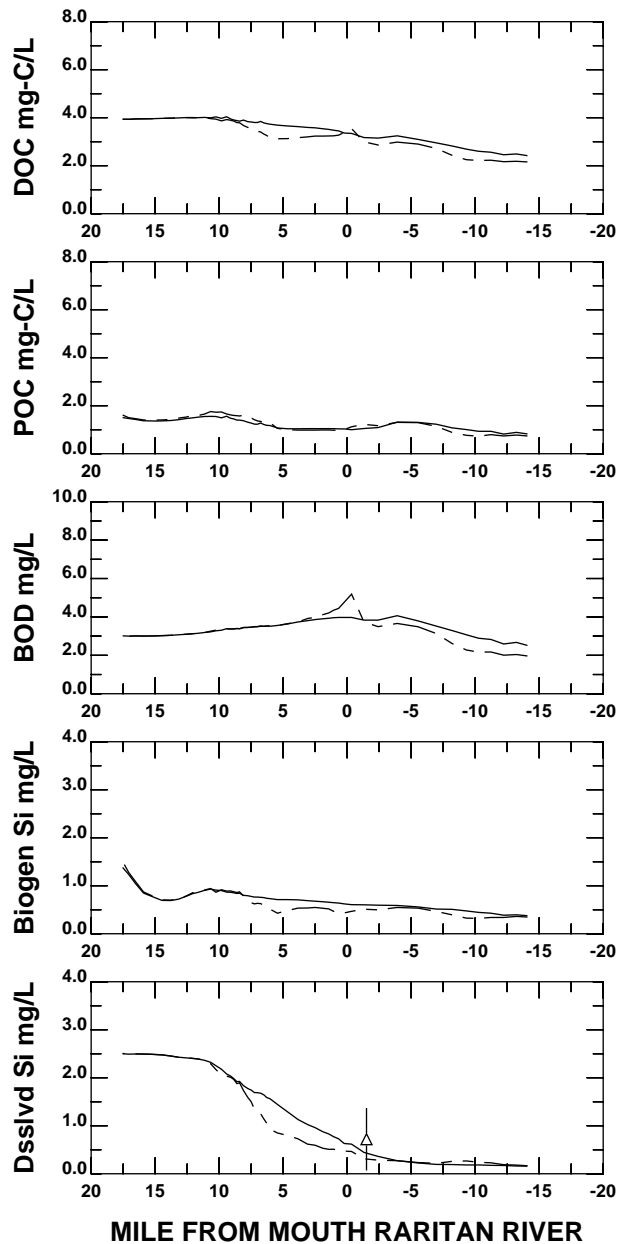
**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**



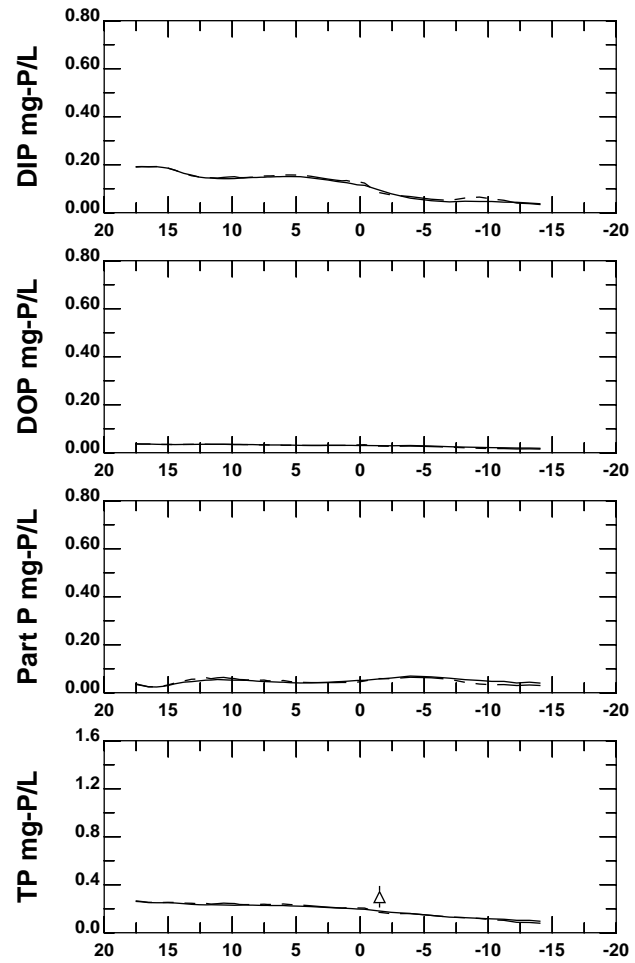
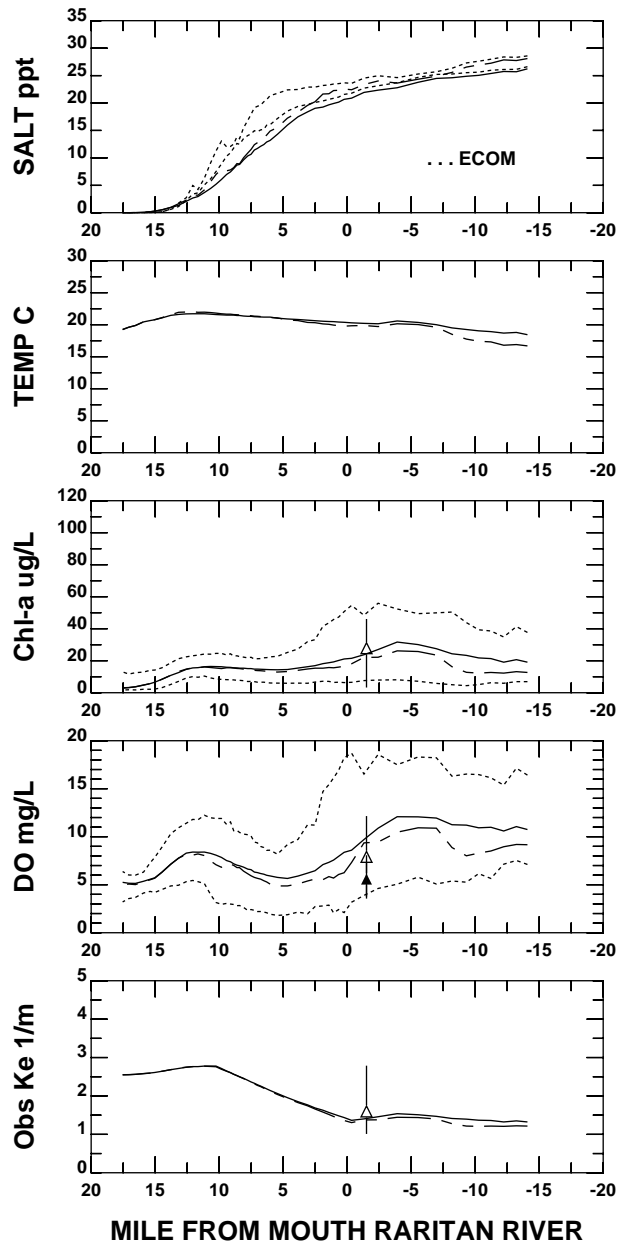
**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**



**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**



**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**

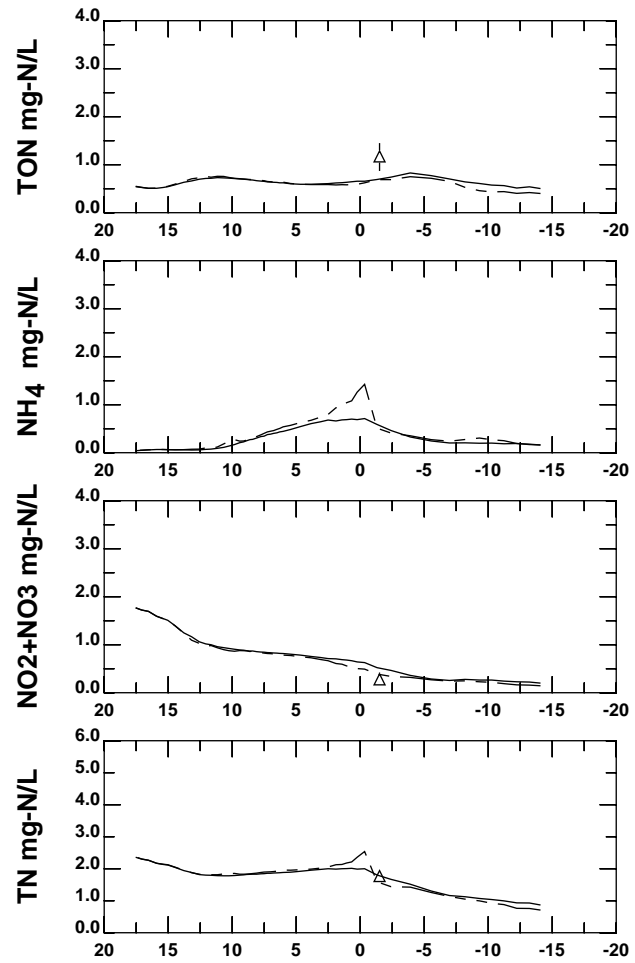
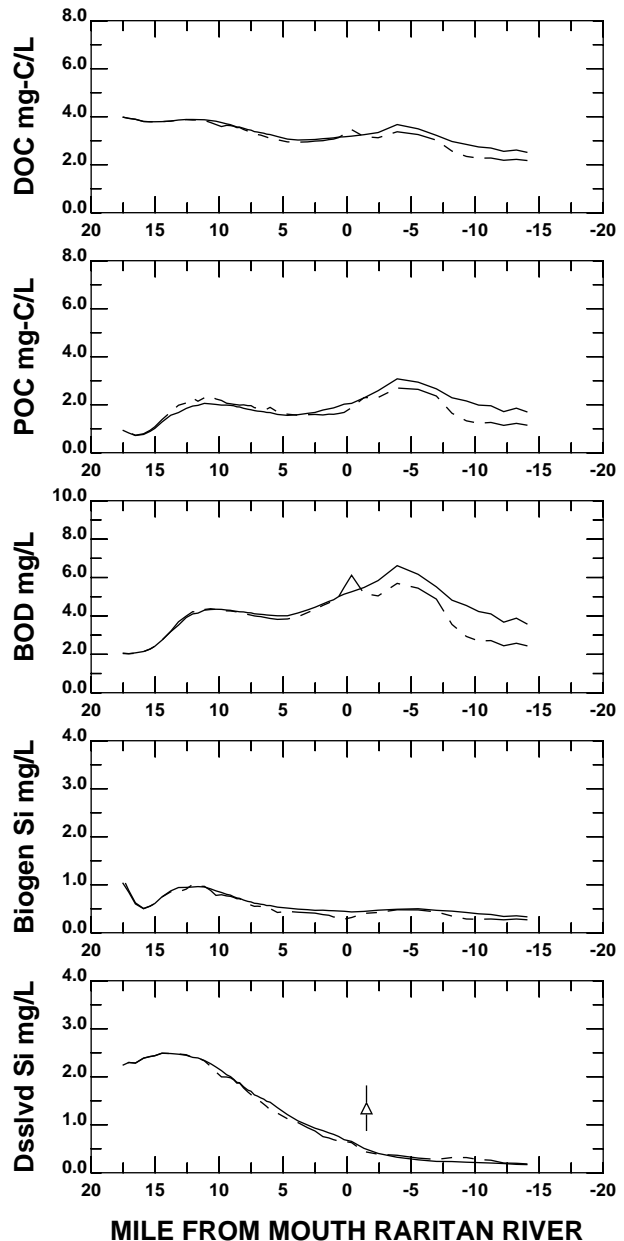


**MILE FROM MOUTH RARITAN RIVER**

<b>DATA</b> May 29-Jun 27, 1999		<b>MODEL</b>
	<b>SURF BOT</b>	
Harbor Survey	△ ▲	Transect
	t e	Embayment
NYSDEC	○	Transect
	c	Embayment
NJSIT	◇	Transect
	p	Embayment
	—	SURFACE 30-DAY MEAN
	---	BOTTOM 30-DAY MEAN
	- - -	30-DAY SURFACE MAX OR BOTTOM MIN

**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**





**DATA** May 29-Jun 27, 1999

	<b>SURF</b>		<b>BOT</b>	
Harbor Survey	△	▲	Transect	—
	t	e	Embayment	---
NYSDEC	○		Transect	- - -
	c		Embayment	
NJSIT	◇		Transect	- - -
	p		Embayment	

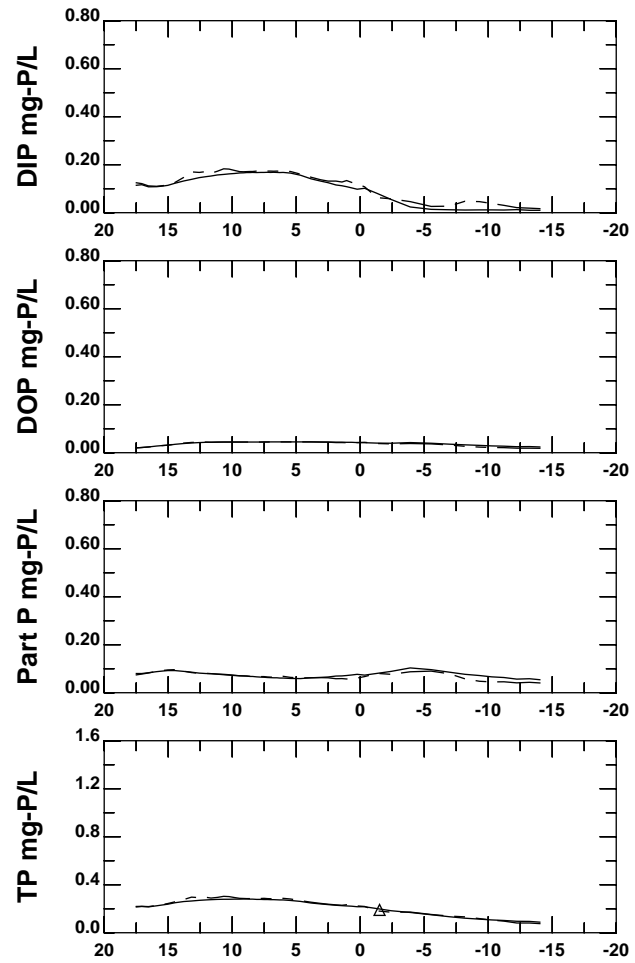
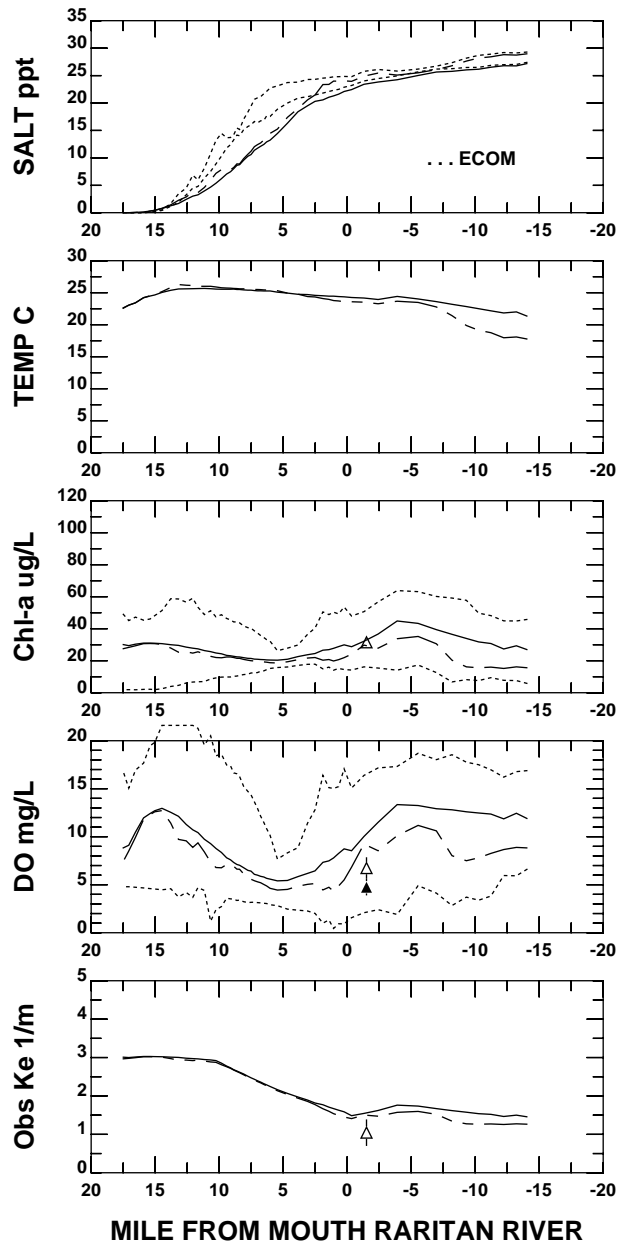
**MODEL**

— SURFACE 30-DAY MEAN

--- BOTTOM 30-DAY MEAN

- - - 30-DAY SURFACE MAX OR BOTTOM MIN

**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**



**DATA Jun 28-Jul 27,1999**

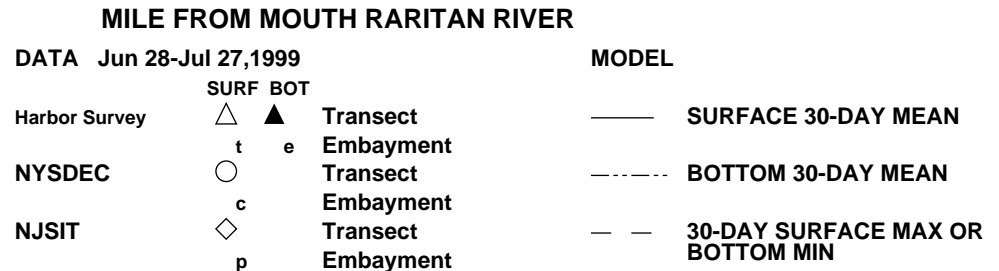
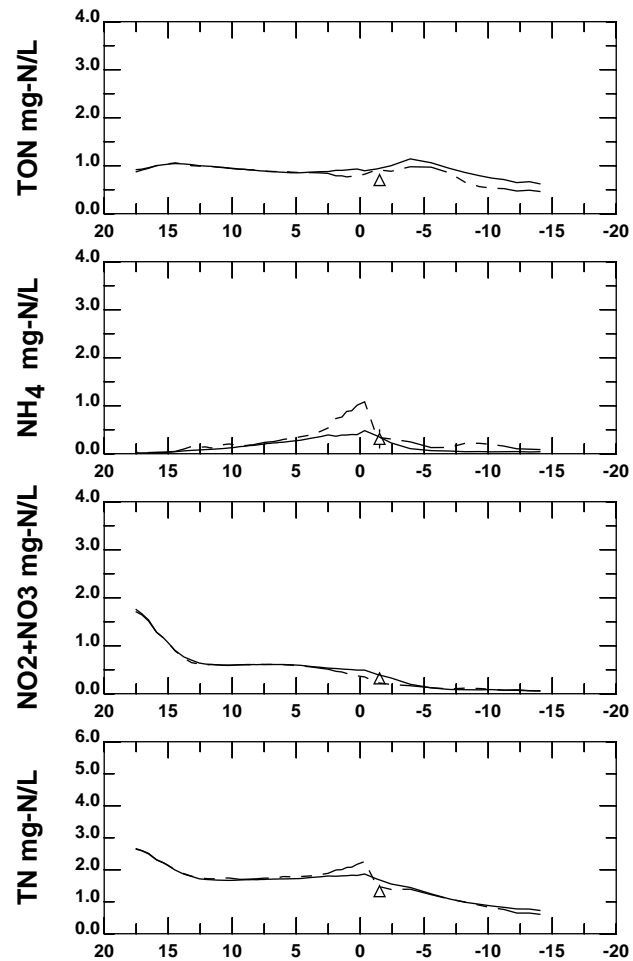
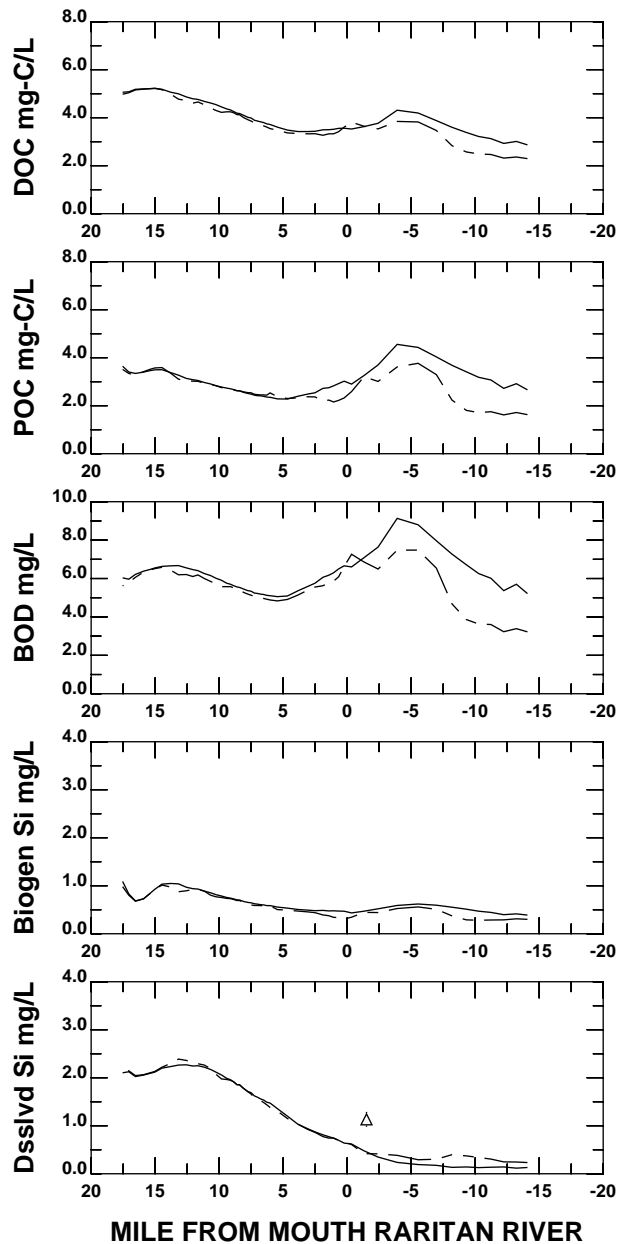
**MODEL**

	<b>SURF BOT</b>		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment

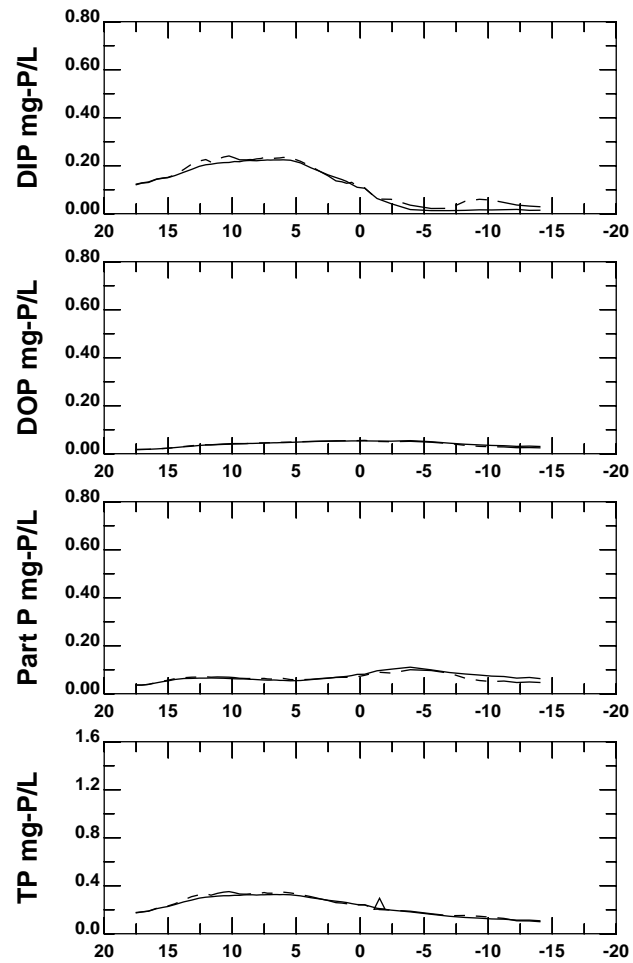
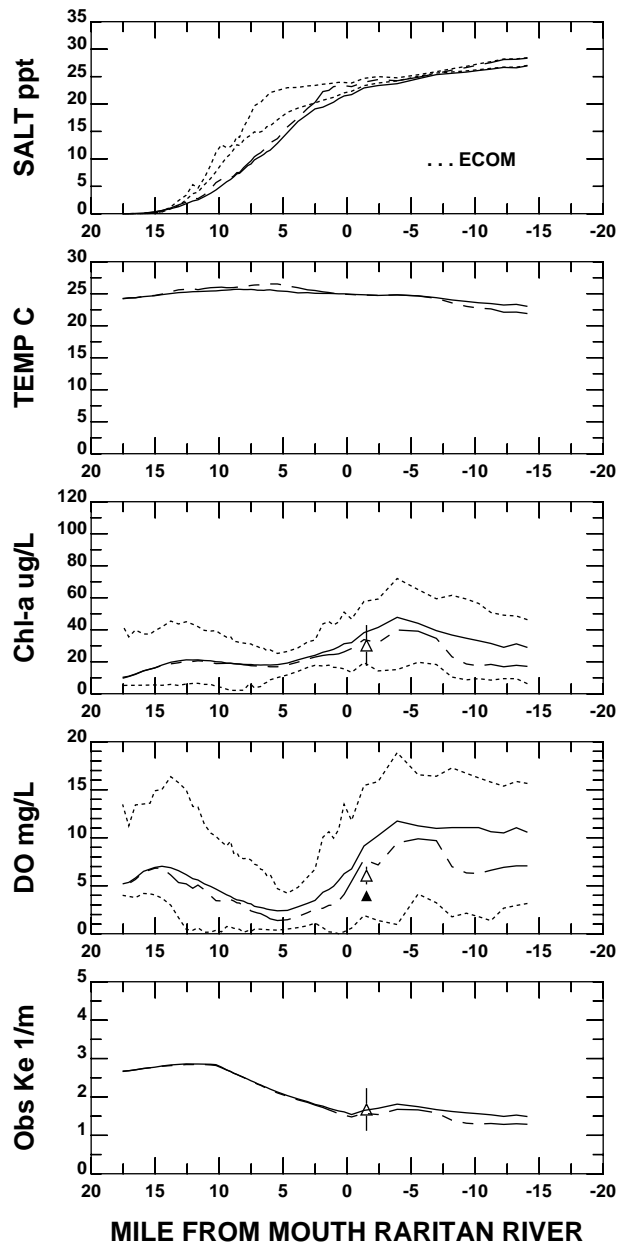
  

—	<b>SURFACE 30-DAY MEAN</b>
- - -	<b>BOTTOM 30-DAY MEAN</b>
- - -	<b>30-DAY SURFACE MAX OR BOTTOM MIN</b>

**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**



### RARITAN RIVER AND SOUTH SHORE RARITAN BAY



DATA Jul 27-Aug 26, 1999

MODEL

SURF BOT

Harbor Survey  $\triangle$   $\blacktriangle$  Transect

t e Embayment

NYSDEC  $\circ$  Transect

c Embayment

NJSIT  $\diamond$  Transect

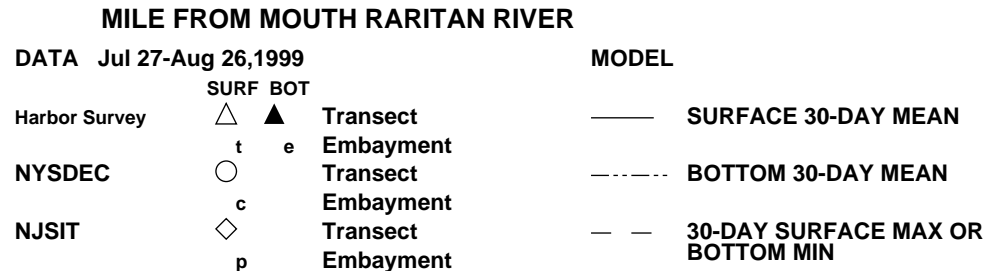
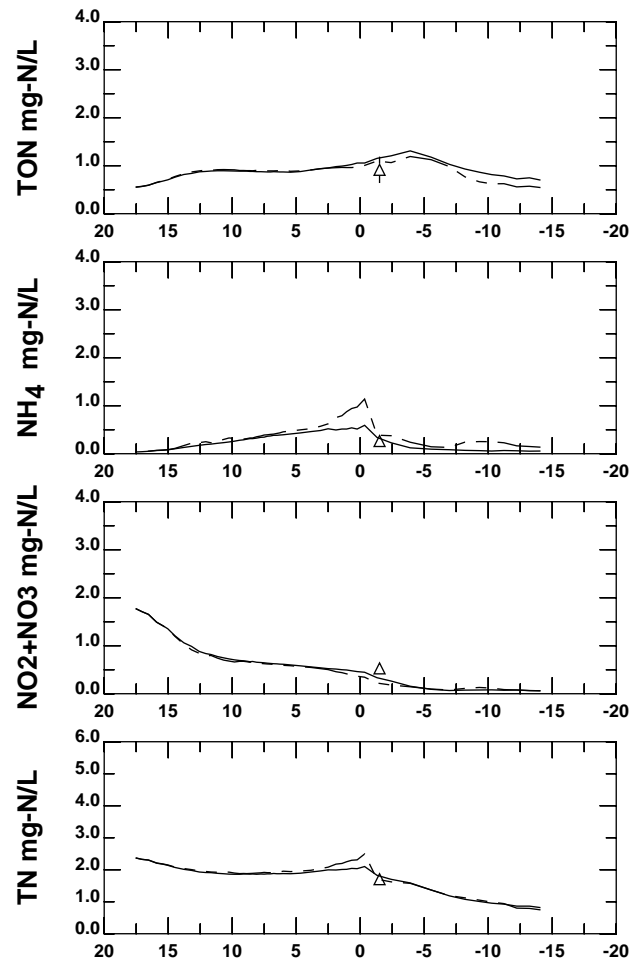
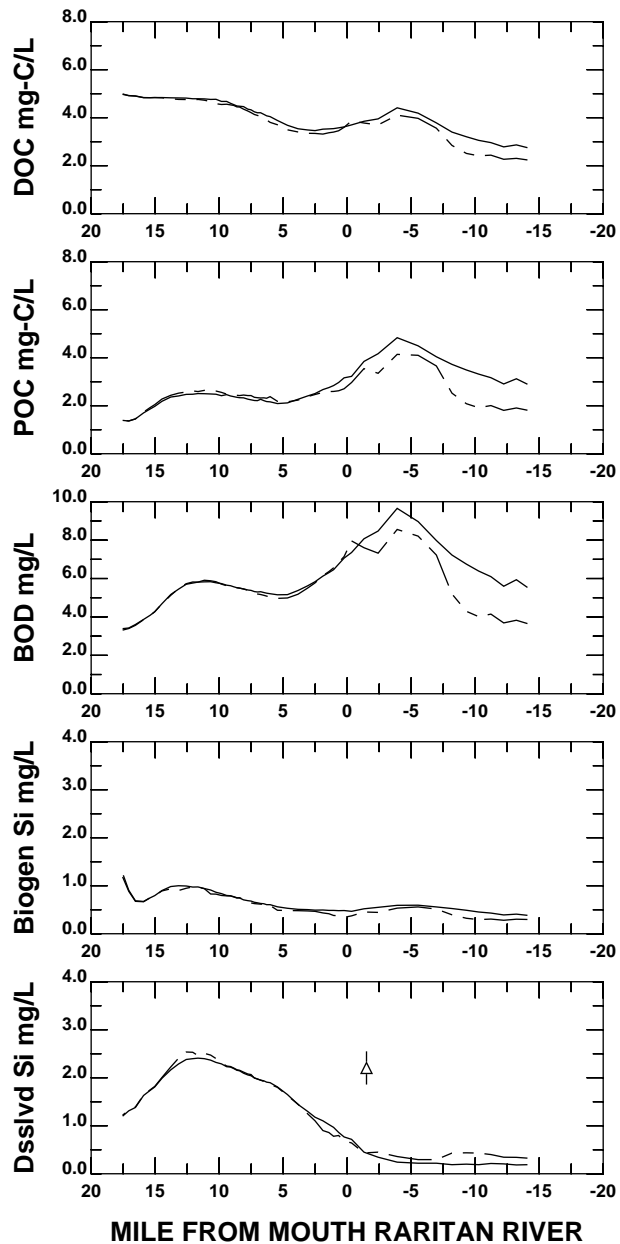
p Embayment

— SURFACE 30-DAY MEAN

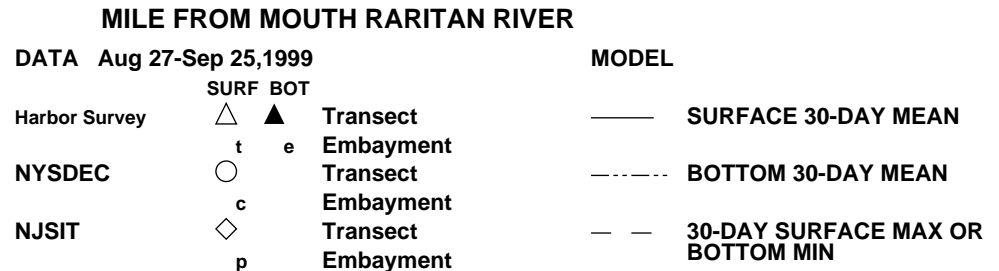
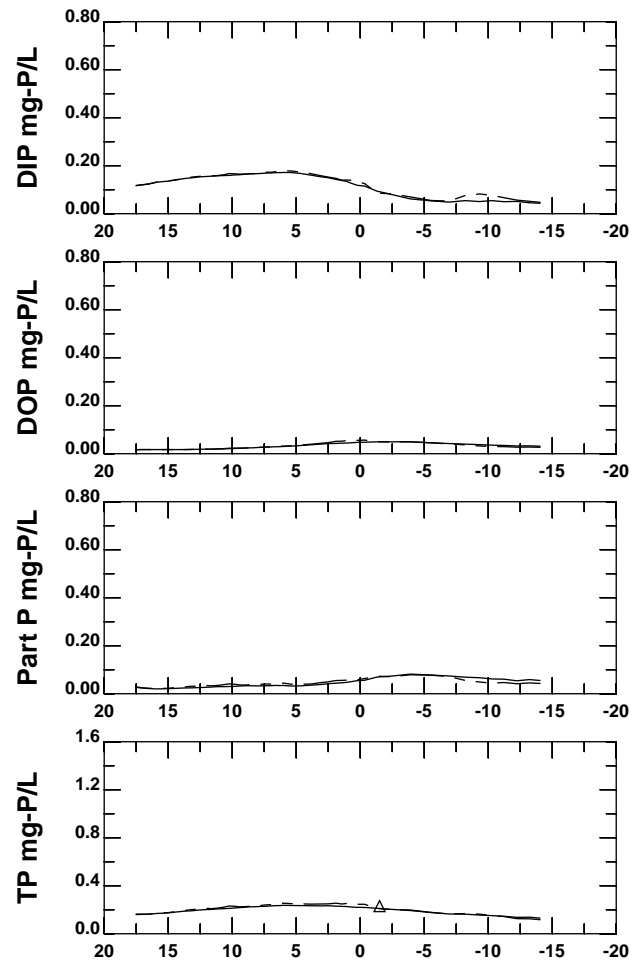
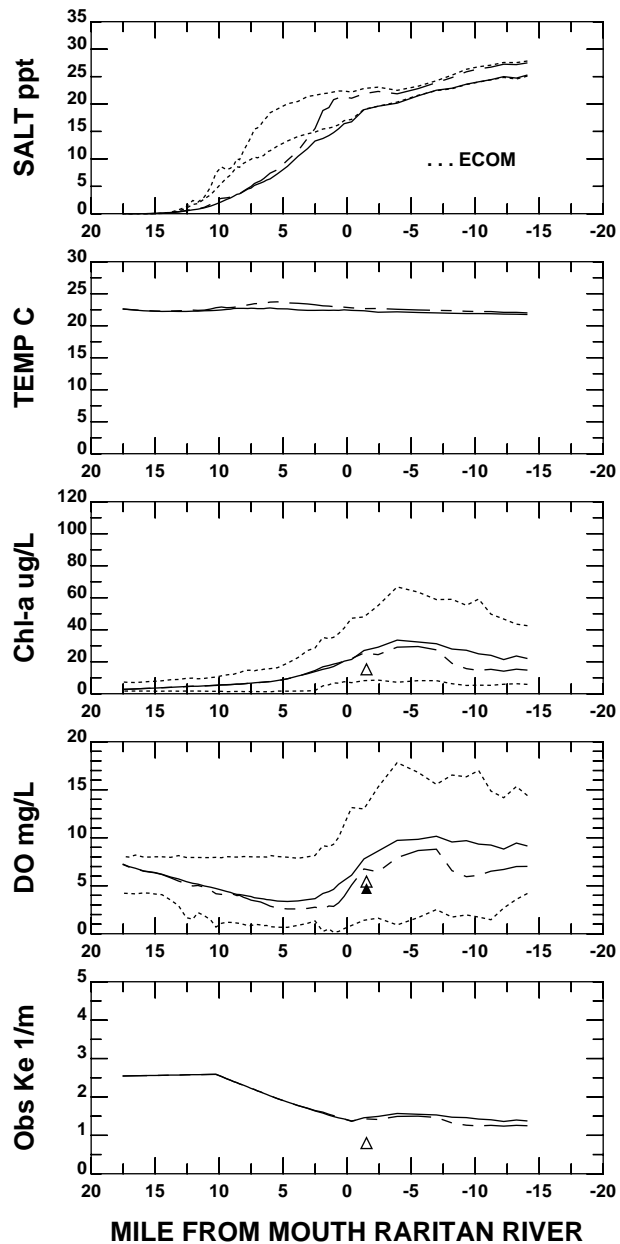
--- BOTTOM 30-DAY MEAN

- - 30-DAY SURFACE MAX OR BOTTOM MIN

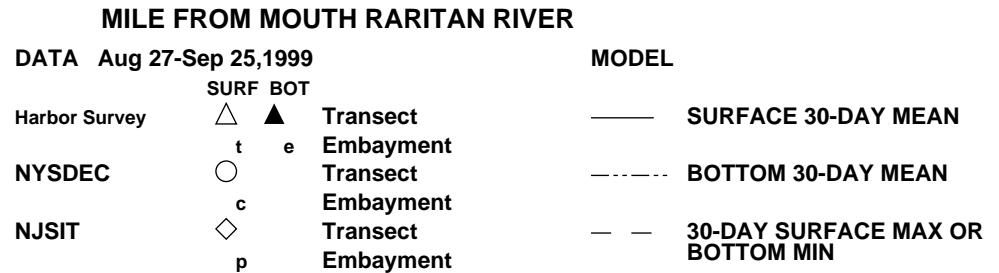
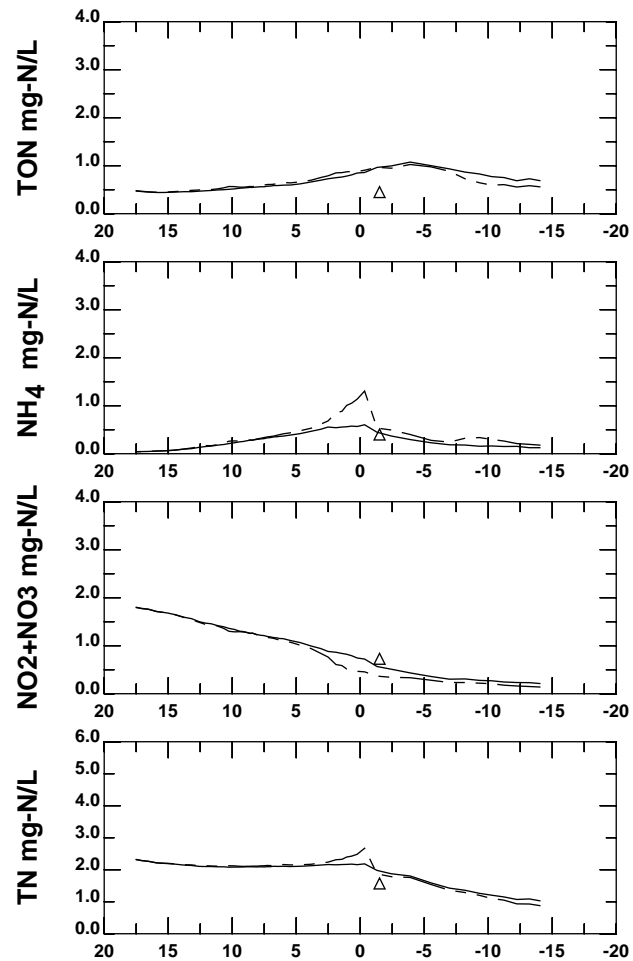
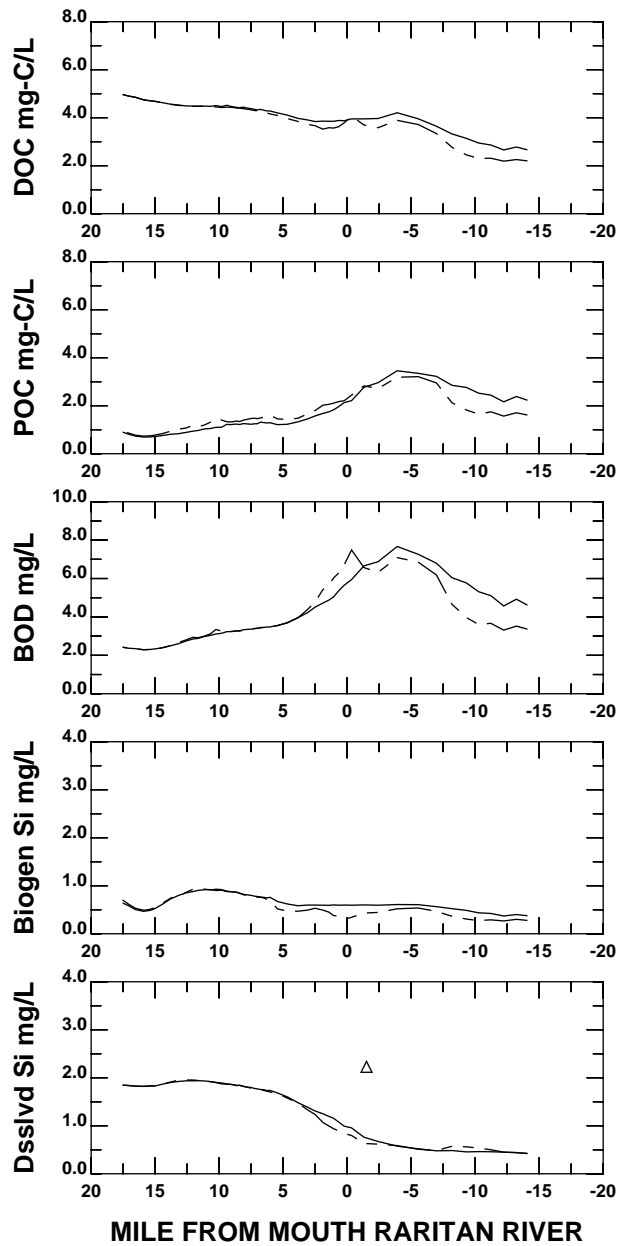
**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**



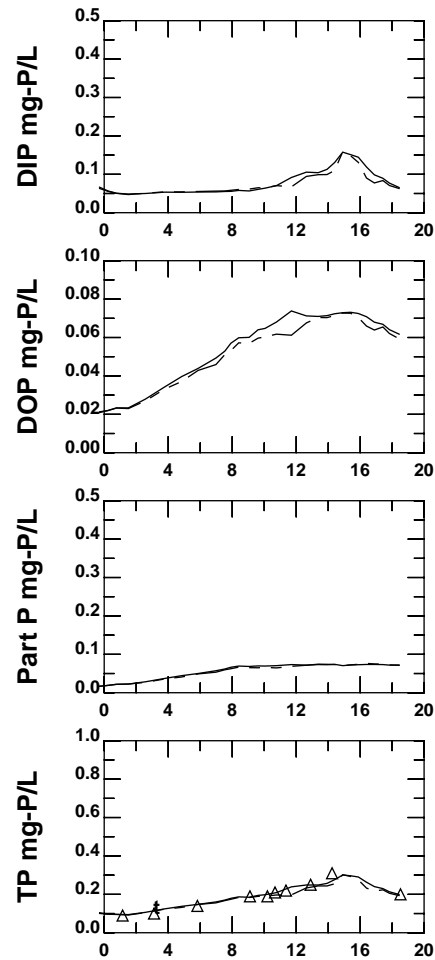
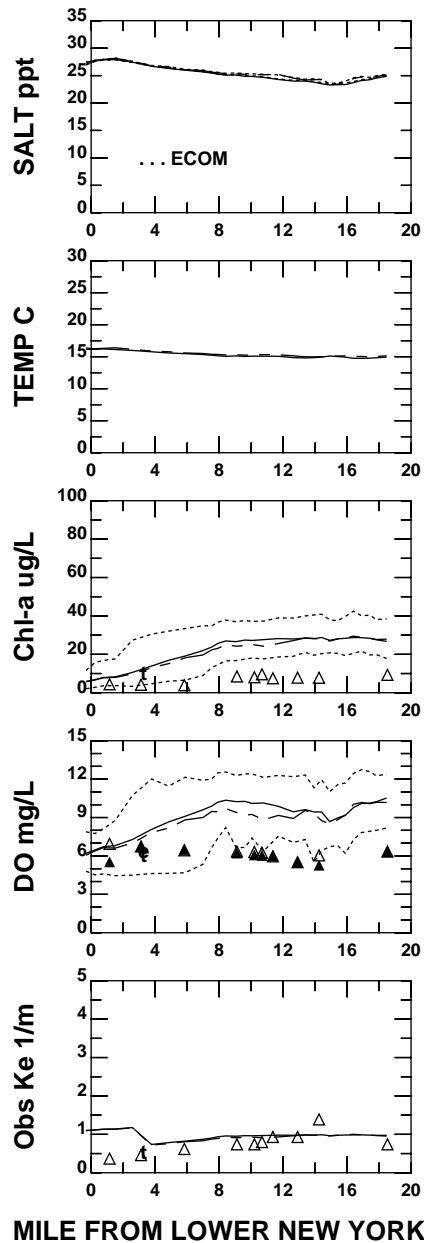
## RARITAN RIVER AND SOUTH SHORE RARITAN BAY



**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**



**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**



**MILE FROM LOWER NEW YORK BAY**

DATA Oct 1-30, 1998

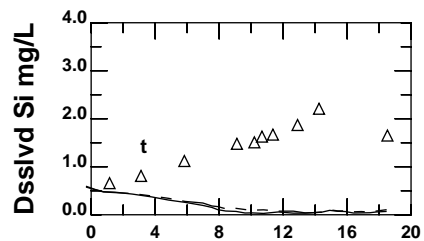
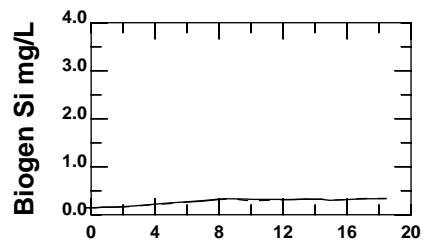
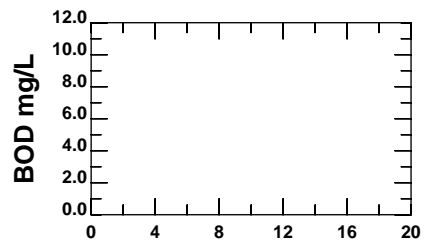
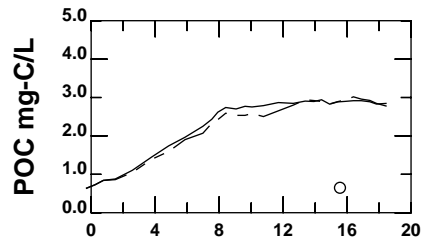
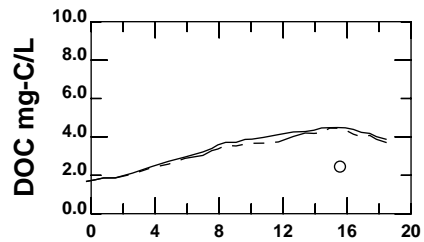
Harbor Survey    △    ▲    Transect  
                          t    e    Embayment  
 NYSDEC            ○       Transect  
                          c       Embayment

**MODEL**

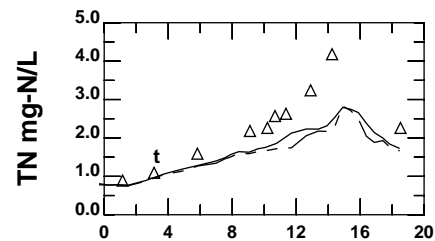
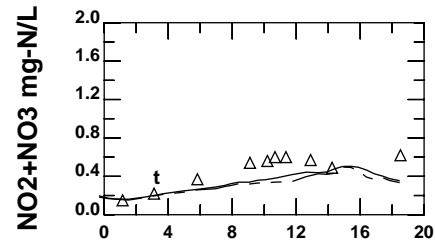
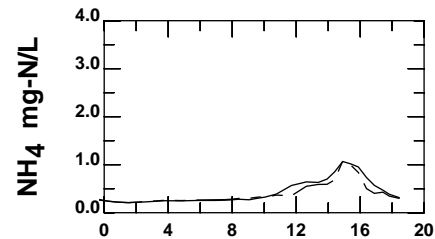
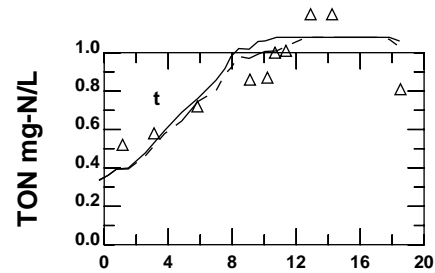
—— SURFACE 30-DAY MEAN  
 - - - - - BOTTOM 30-DAY MEAN  
 - - - - - 30-DAY SURFACE MAX OR  
 BOTTOM MIN

**CONEY ISLAND JAMAICA BAY TRANSECT**





MILE FROM LOWER NEW YORK BAY



MILE FROM LOWER NEW YORK BAY

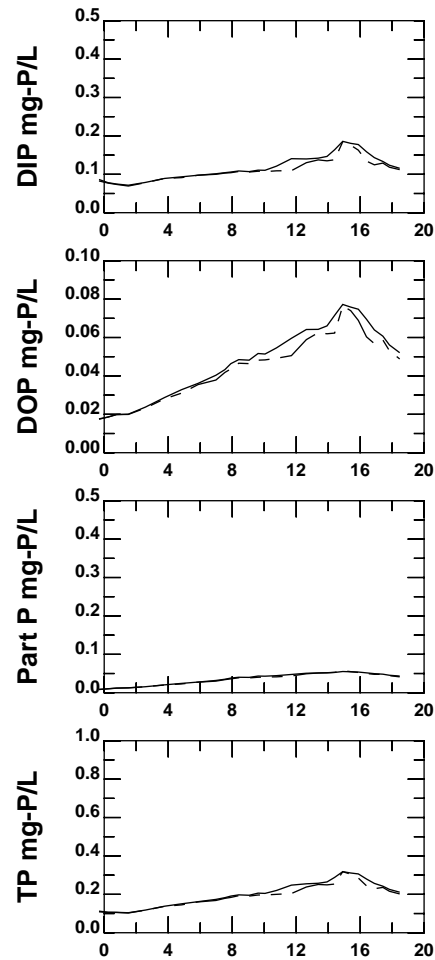
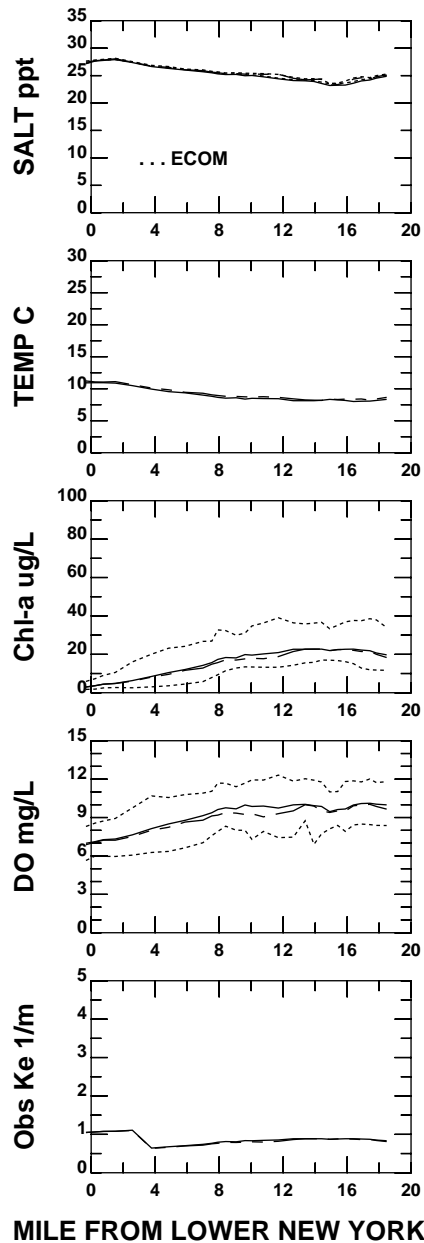
DATA Oct 1-30, 1998

	SURF		BOT	
Harbor Survey	△	▲	Transect	
	t	e	Embayment	
NYSDEC	○		Transect	
	c		Embayment	

MODEL

————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

## CONEY ISLAND JAMAICA BAY TRANSECT



MILE FROM LOWER NEW YORK BAY

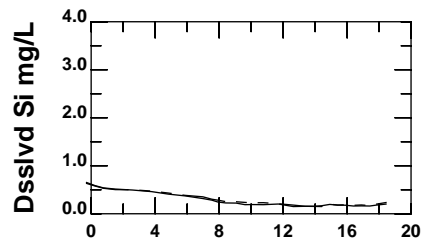
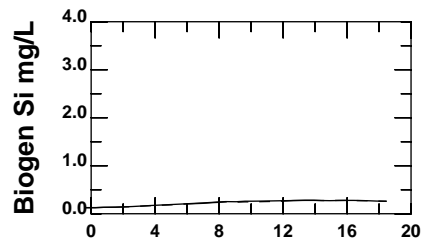
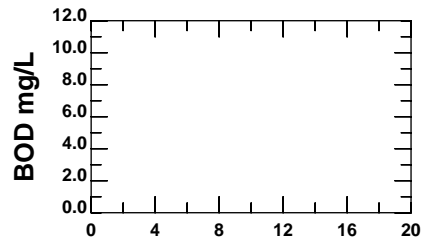
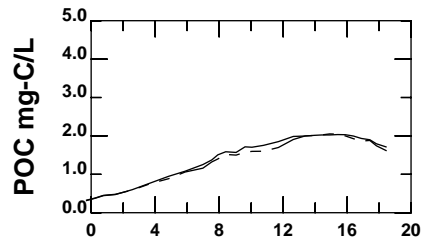
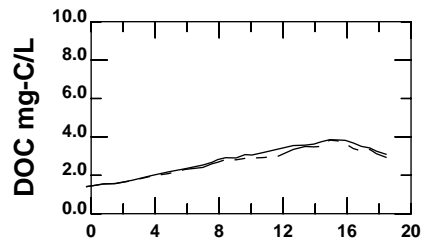
DATA Oct 31-Nov 29, 1998

Harbor Survey    SURF    BOT  
 △    ▲    Transect  
 t    e    Embayment  
 NYSDEC    ○    Transect  
           c    Embayment

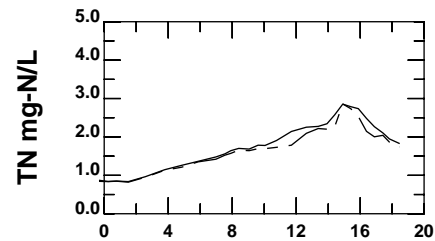
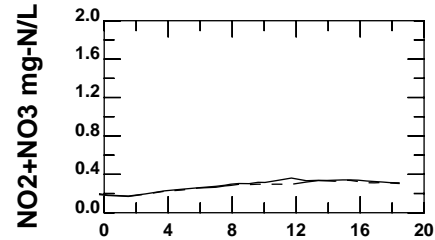
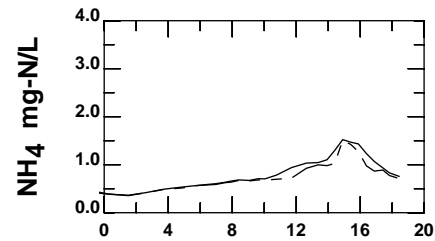
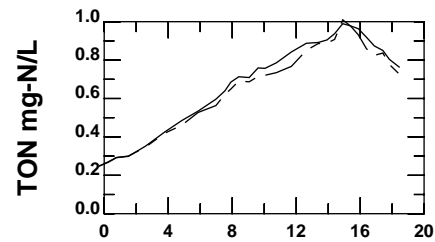
MODEL

—    SURFACE 30-DAY MEAN  
 - - -    BOTTOM 30-DAY MEAN  
 - - -    30-DAY SURFACE MAX OR  
 BOTTOM MIN

**CONEY ISLAND JAMAICA BAY TRANSECT**



MILE FROM LOWER NEW YORK BAY



MILE FROM LOWER NEW YORK BAY

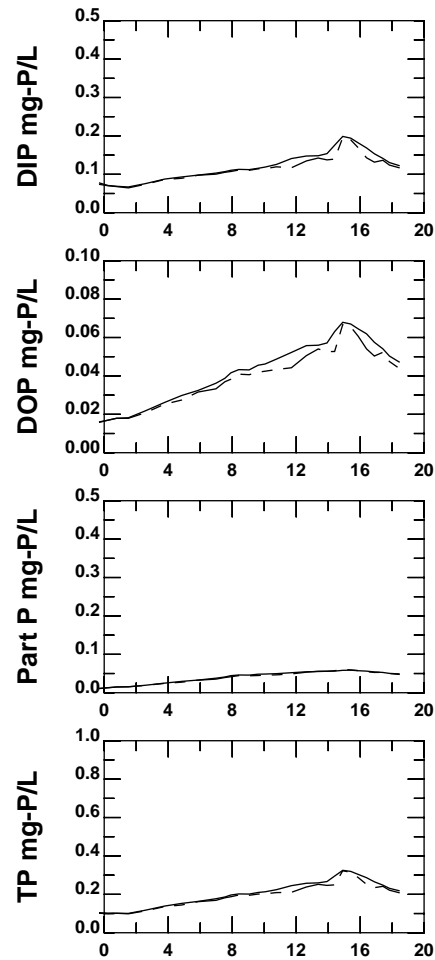
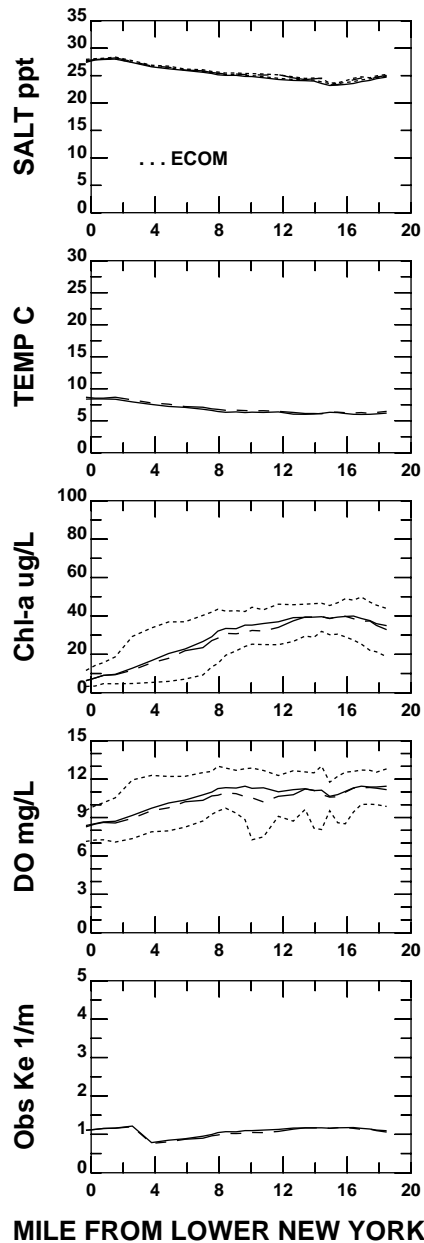
DATA Oct 31-Nov 29, 1998

	SURF		BOT	
Harbor Survey	△	▲	Transect	
	t	e	Embayment	
NYSDEC	○		Transect	
	c		Embayment	

MODEL

————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

## CONEY ISLAND JAMAICA BAY TRANSECT



MILE FROM LOWER NEW YORK BAY

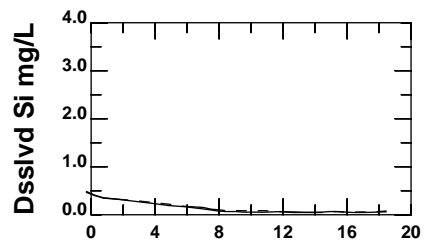
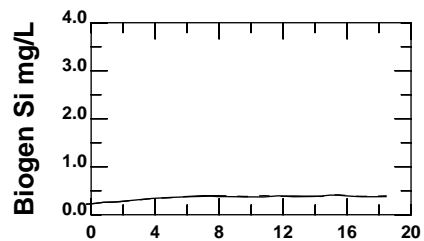
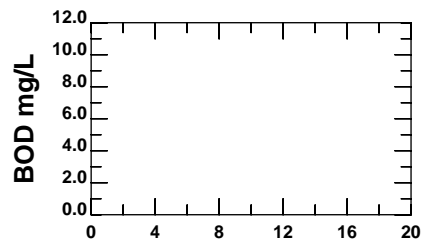
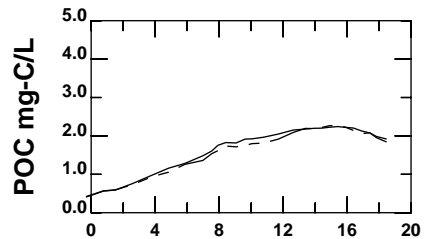
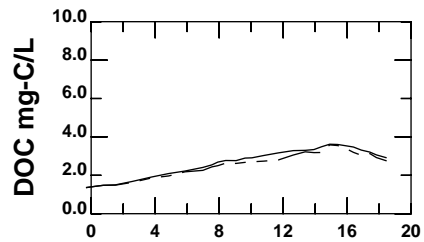
DATA Nov 30-Dec 29, 1998

Harbor Survey    SURF    BOT  
 △    ▲    Transect  
 t    e    Embayment  
 NYSDEC    ○    Transect  
           c    Embayment

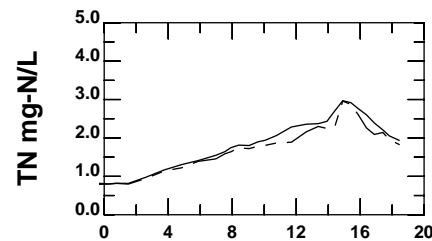
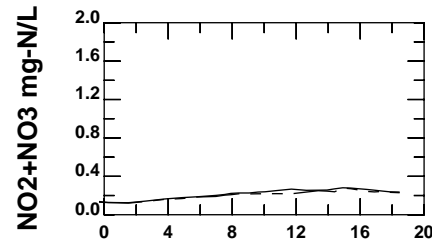
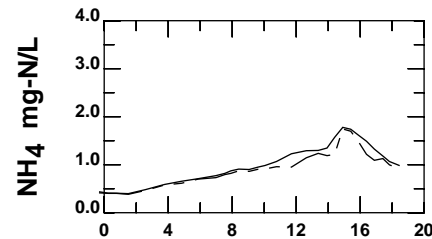
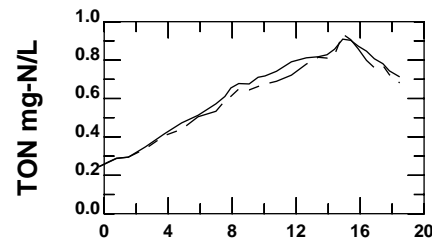
MODEL

—— SURFACE 30-DAY MEAN  
 - - - - - BOTTOM 30-DAY MEAN  
 - - - - - 30-DAY SURFACE MAX OR  
 BOTTOM MIN

**CONEY ISLAND JAMAICA BAY TRANSECT**



MILE FROM LOWER NEW YORK BAY



MILE FROM LOWER NEW YORK BAY

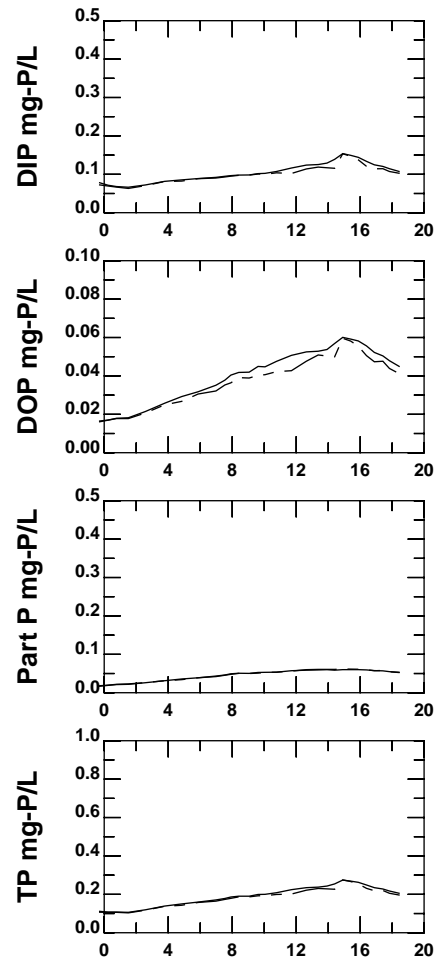
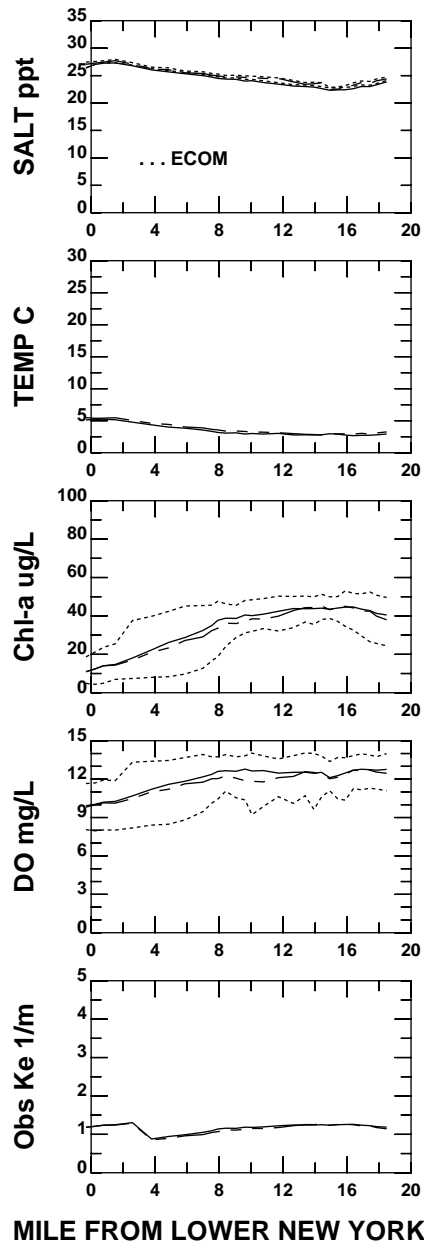
DATA Nov 30-Dec 29, 1998

	SURF		BOT	
Harbor Survey	△	▲	Transect	
	t	e	Embayment	
NYSDEC	○		Transect	
	c		Embayment	

MODEL

————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

## CONEY ISLAND JAMAICA BAY TRANSECT



**MILE FROM LOWER NEW YORK BAY**

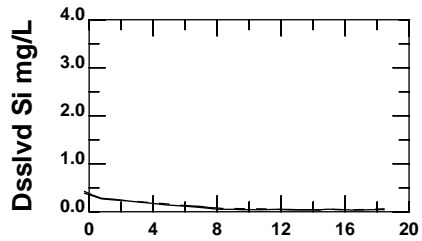
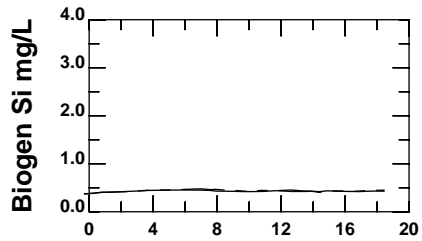
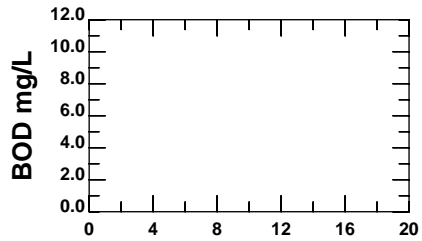
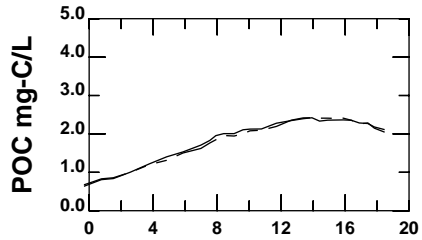
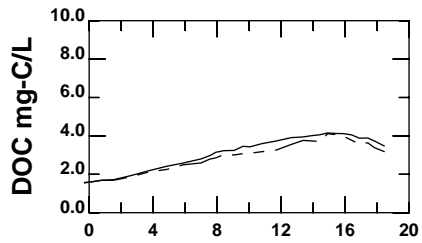
DATA Dec 30 1998 -Jan 28, 1999

Harbor Survey SURF BOT  
 △ ▲ Transect  
 t e Embayment  
 NYSDEC ○ ○ Transect  
 c c Embayment

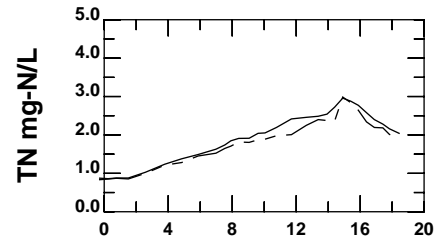
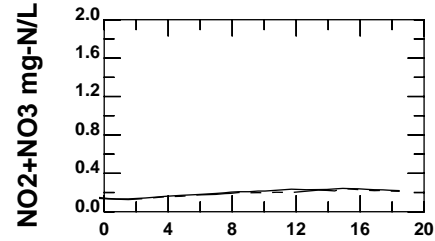
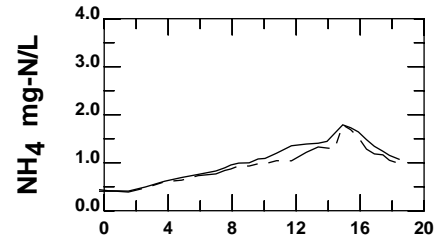
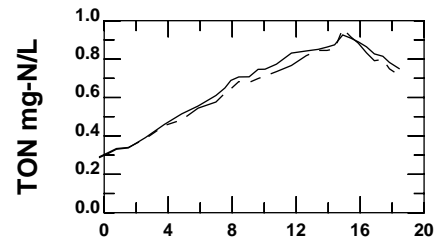
**MODEL**

— SURFACE 30-DAY MEAN  
 - - - - - BOTTOM 30-DAY MEAN  
 - - 30-DAY SURFACE MAX OR BOTTOM MIN

**CONEY ISLAND JAMAICA BAY TRANSECT**



MILE FROM LOWER NEW YORK BAY



MILE FROM LOWER NEW YORK BAY

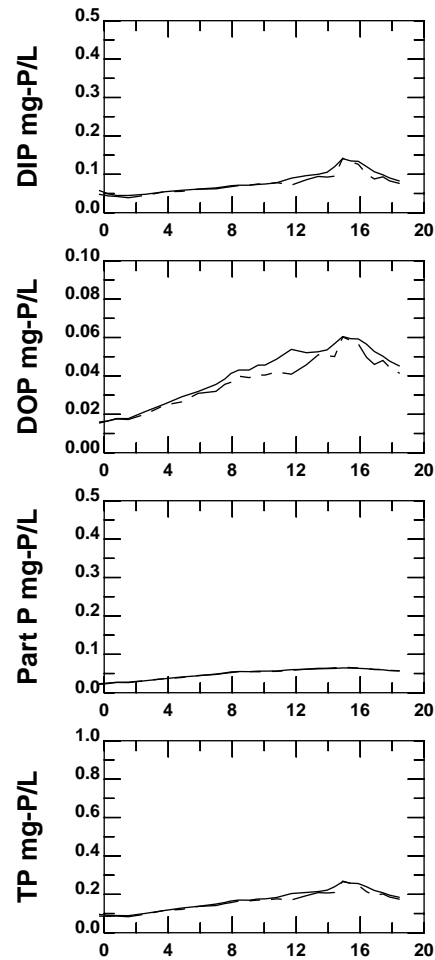
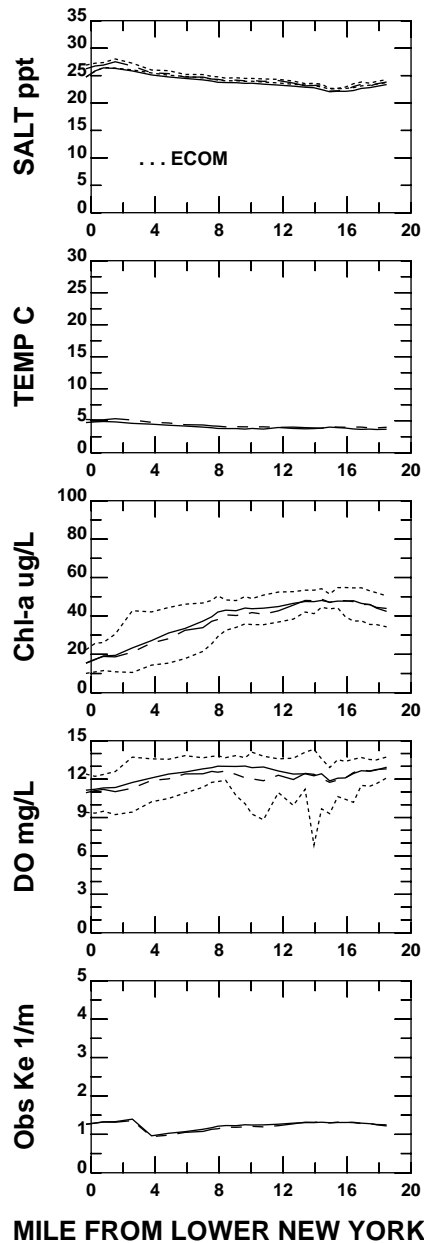
DATA Dec 30 1998 -Jan 28,1999

	SURF	BOT	
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment

MODEL

————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

## CONEY ISLAND JAMAICA BAY TRANSECT



**MILE FROM LOWER NEW YORK BAY**

DATA Jan 29-Feb 27, 1999

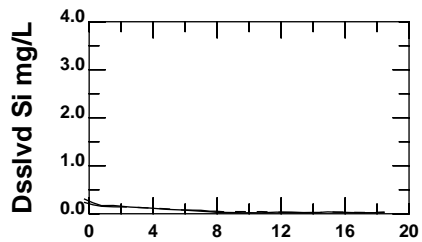
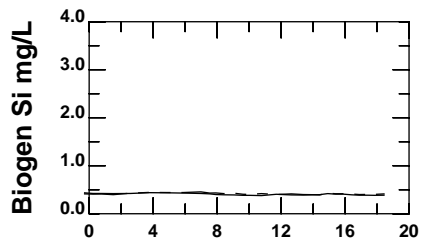
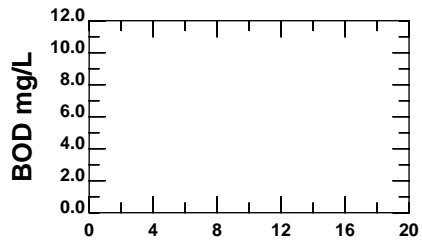
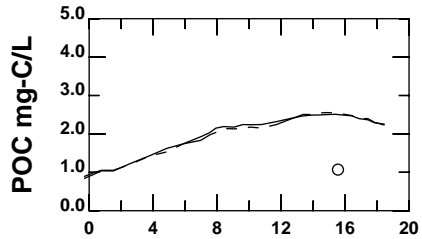
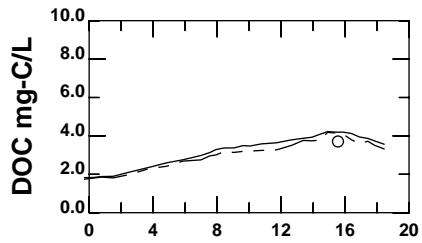
Harbor Survey SURF BOT  
 △ ▲ Transect  
 t e Embayment  
 NYSDEC ○ ○ Transect  
 c c Embayment

**MODEL**

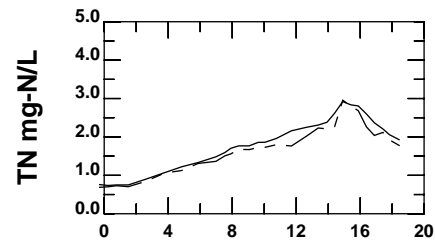
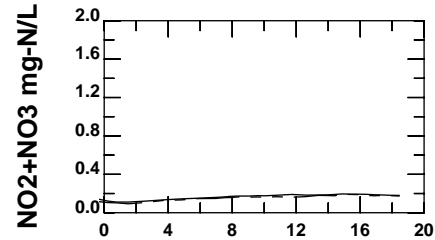
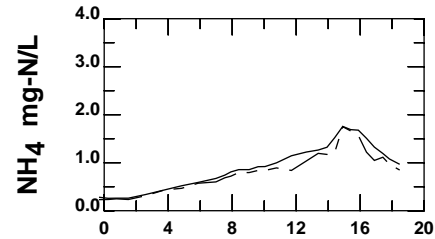
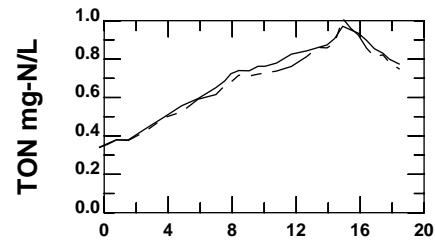
— SURFACE 30-DAY MEAN  
 - - - - - BOTTOM 30-DAY MEAN  
 - - 30-DAY SURFACE MAX OR BOTTOM MIN

**CONEY ISLAND JAMAICA BAY TRANSECT**





MILE FROM LOWER NEW YORK BAY



MILE FROM LOWER NEW YORK BAY

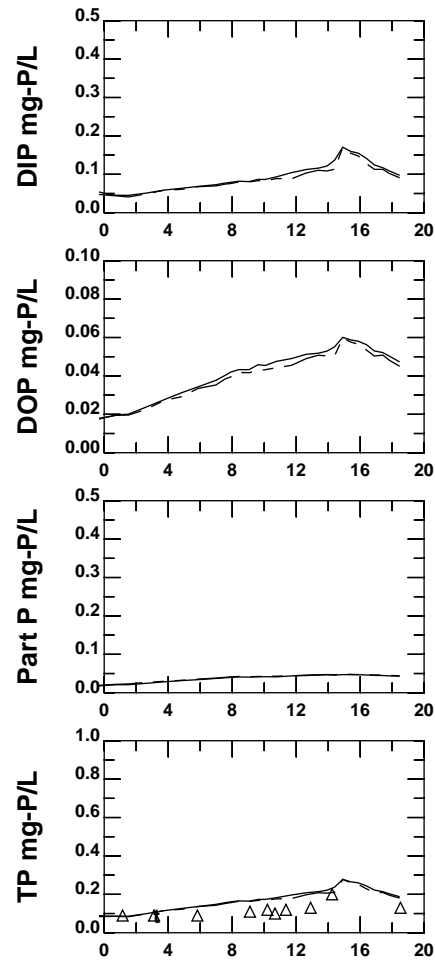
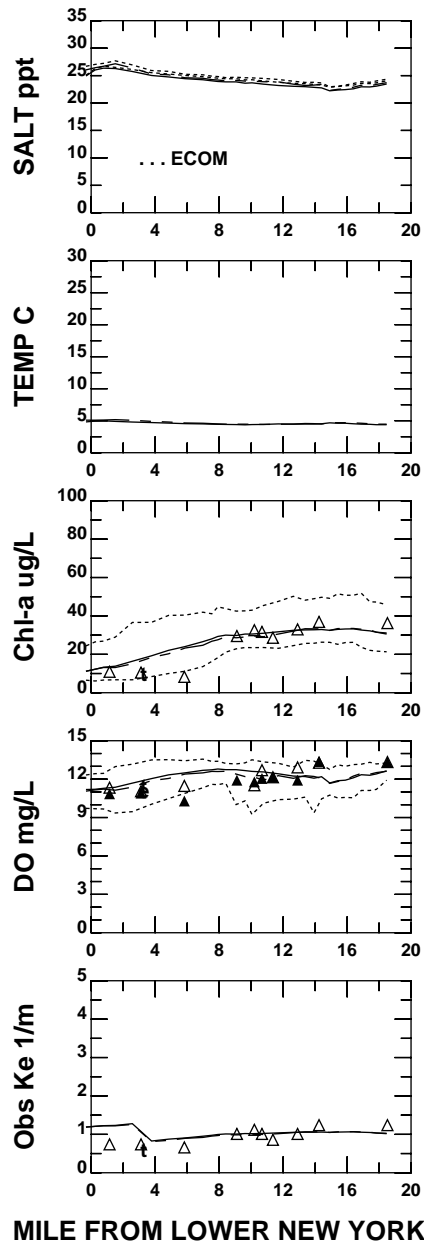
DATA Jan 29-Feb 27, 1999

	SURF		BOT	
Harbor Survey	△	▲	Transect	
	t	e	Embayment	
NYSDEC	○		Transect	
	c		Embayment	

MODEL

————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

## CONEY ISLAND JAMAICA BAY TRANSECT



MILE FROM LOWER NEW YORK BAY

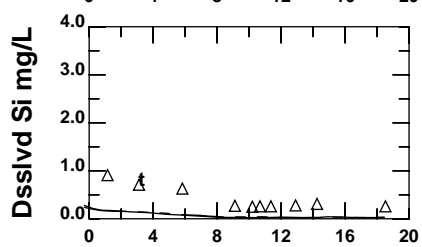
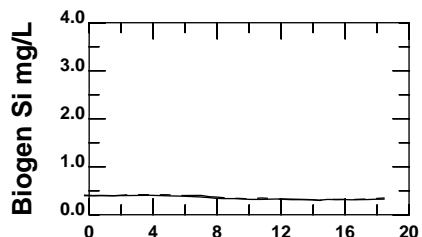
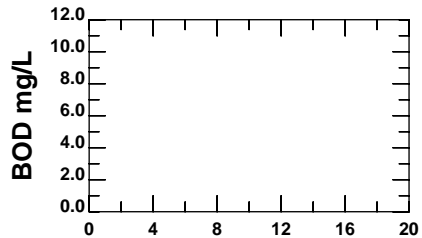
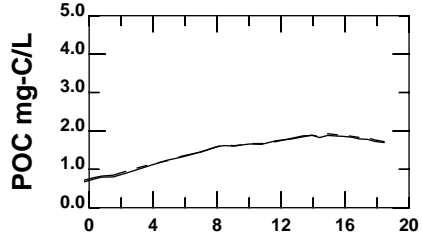
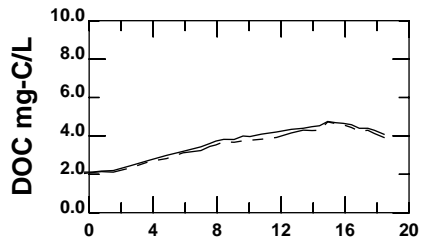
DATA Feb 28-Mar 29, 1999

	SURF		BOT	
Harbor Survey	△	▲	Transect	Embayment
NYSDEC	t	e	Transect	Embayment
	○	c	Transect	Embayment

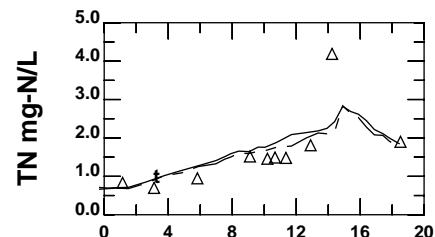
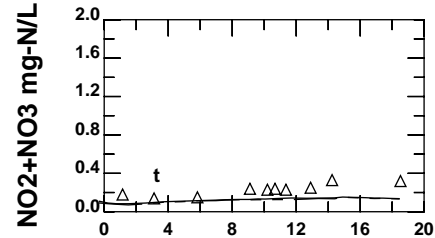
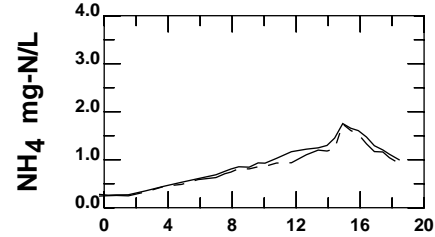
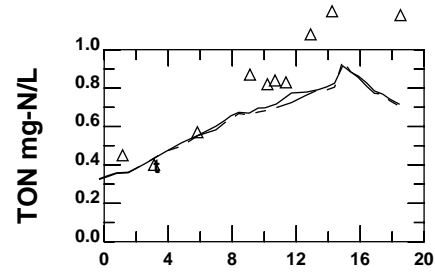
MODEL

————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

## CONEY ISLAND JAMAICA BAY TRANSECT



MILE FROM LOWER NEW YORK BAY



MILE FROM LOWER NEW YORK BAY

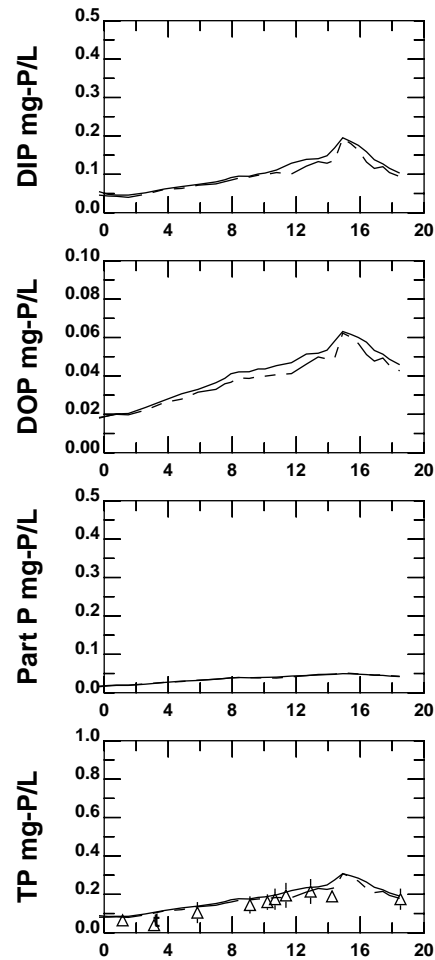
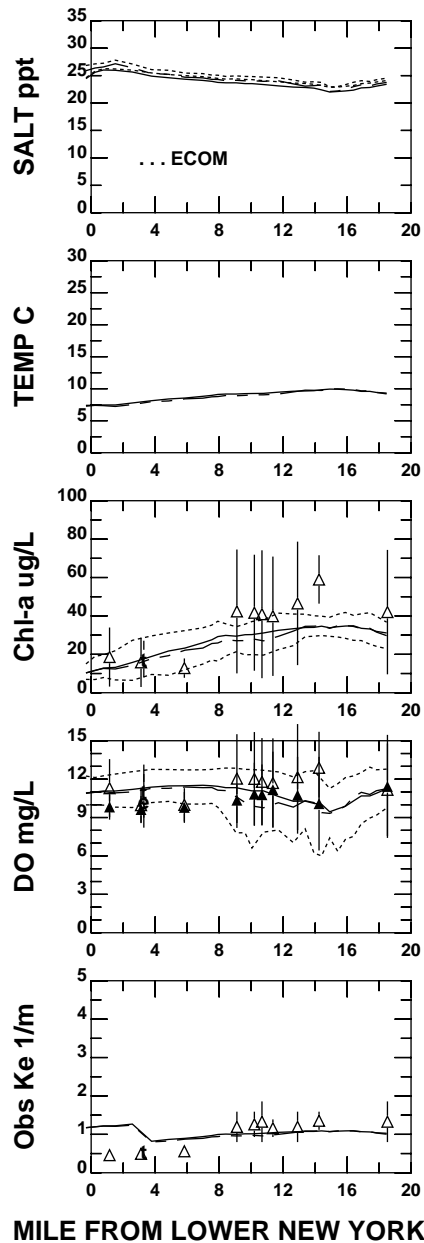
DATA Feb 28-Mar 29, 1999

	SURF		BOT	
Harbor Survey	△	▲	Transect	Embayment
NYSDEC	t	e	Transect	Embayment
	○	c	Transect	Embayment

MODEL

—	SURFACE 30-DAY MEAN
- - -	BOTTOM 30-DAY MEAN
- - -	30-DAY SURFACE MAX OR BOTTOM MIN

### CONEY ISLAND JAMAICA BAY TRANSECT



**MILE FROM LOWER NEW YORK BAY**

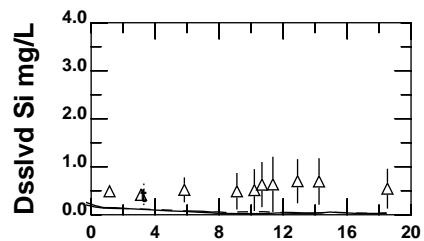
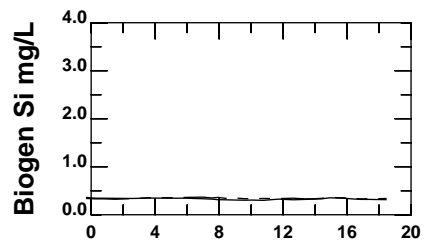
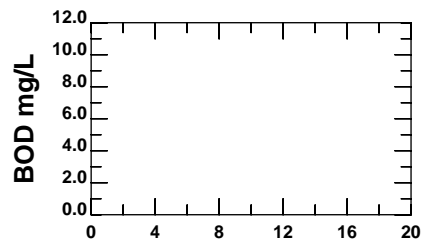
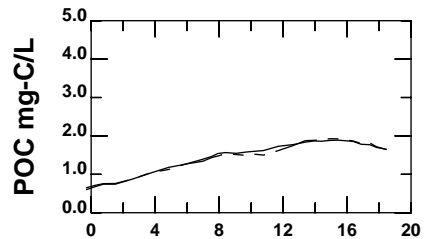
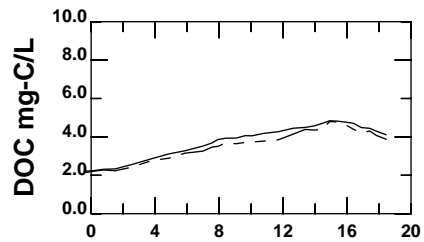
DATA Mar 30-Apr 28, 1999

Harbor Survey SURF BOT  
 △ ▲ Transect  
 t e Embayment  
 NYSDEC ○ c Transect  
 Embayment

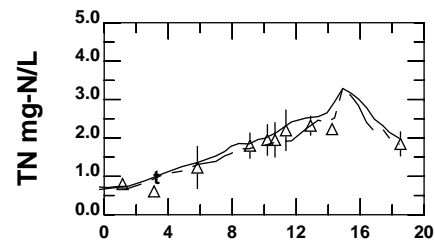
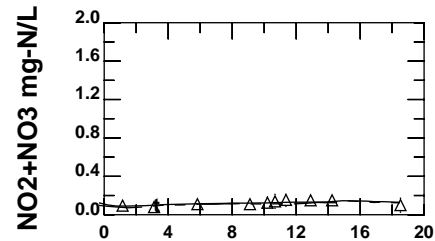
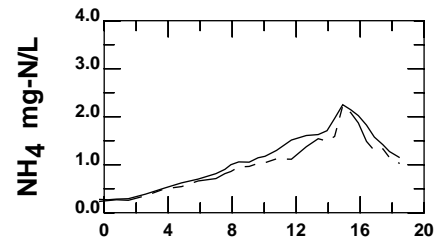
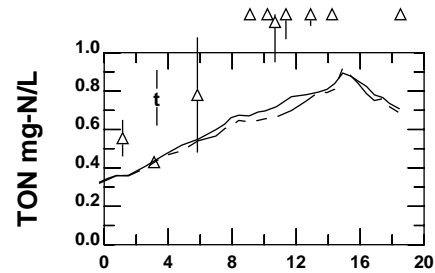
**MODEL**

— SURFACE 30-DAY MEAN  
 - - - - - BOTTOM 30-DAY MEAN  
 - - 30-DAY SURFACE MAX OR  
 BOTTOM MIN

**CONEY ISLAND JAMAICA BAY TRANSECT**



MILE FROM LOWER NEW YORK BAY



MILE FROM LOWER NEW YORK BAY

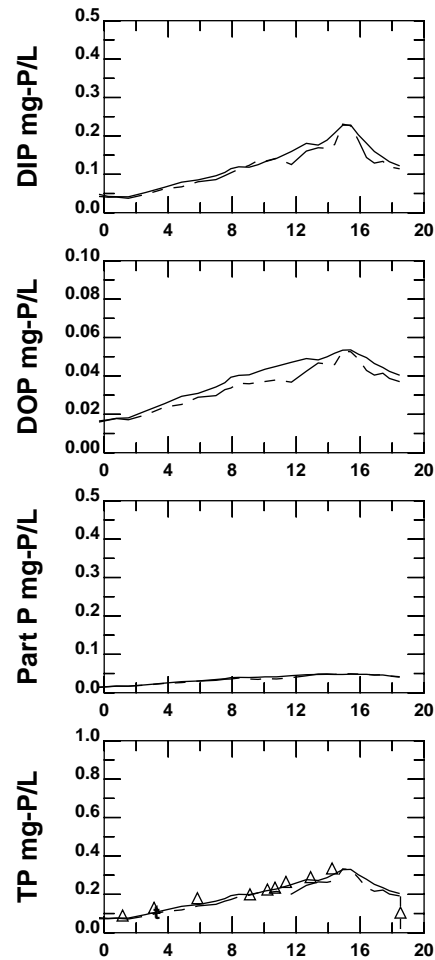
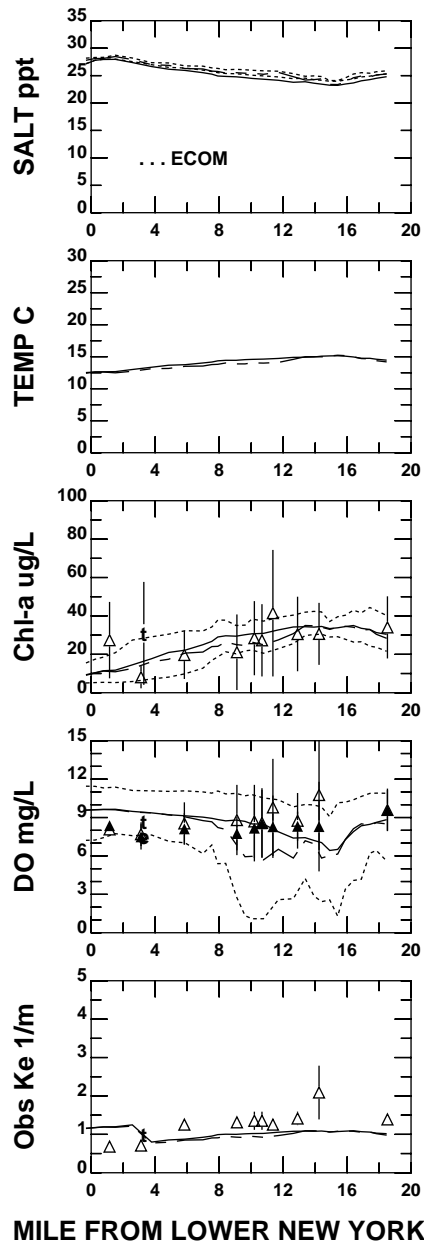
DATA Mar 30-Apr 28, 1999

	SURF		BOT	
Harbor Survey	△	▲	Transect	Transect
	t	e	Embayment	Embayment
NYSDEC	○		Transect	
	c		Embayment	

MODEL

—	SURFACE 30-DAY MEAN
- - -	BOTTOM 30-DAY MEAN
- · -	30-DAY SURFACE MAX OR BOTTOM MIN

## CONEY ISLAND JAMAICA BAY TRANSECT



MILE FROM LOWER NEW YORK BAY

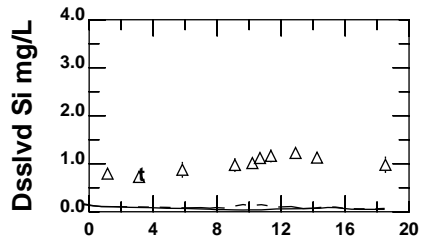
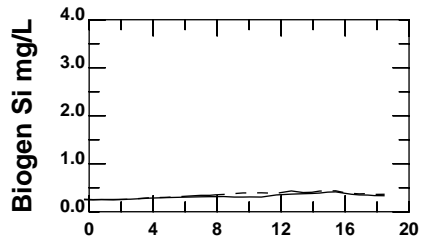
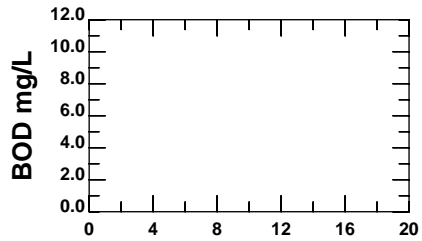
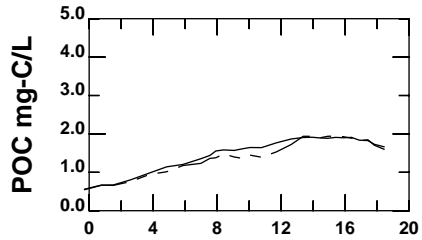
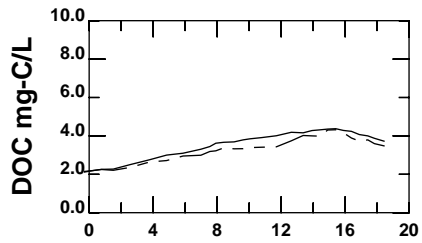
DATA Apr 29-May 28, 1999

	SURF		BOT	
Harbor Survey	△	▲	Transect	Embayment
NYSDEC	○	c	Transect	Embayment

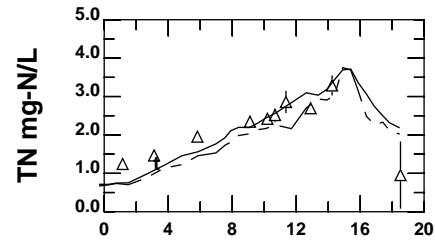
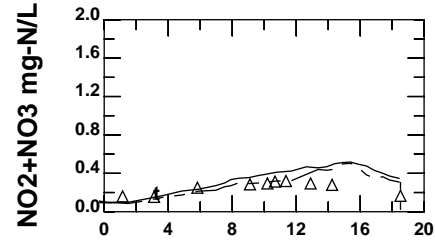
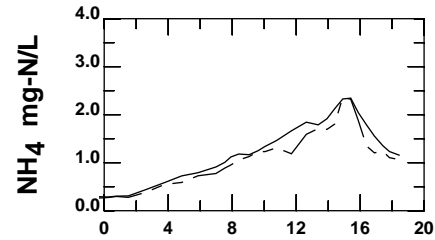
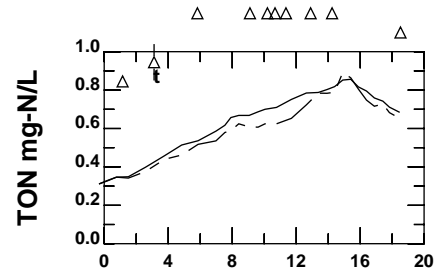
MODEL

————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

## CONEY ISLAND JAMAICA BAY TRANSECT



MILE FROM LOWER NEW YORK BAY



MILE FROM LOWER NEW YORK BAY

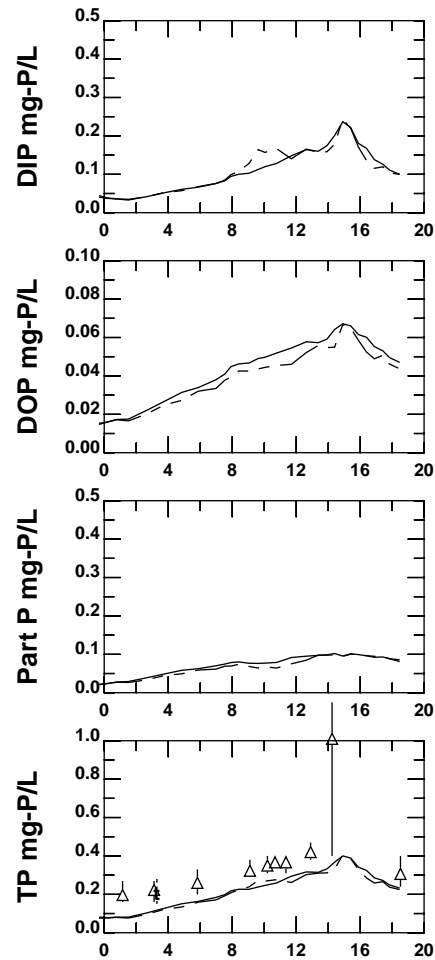
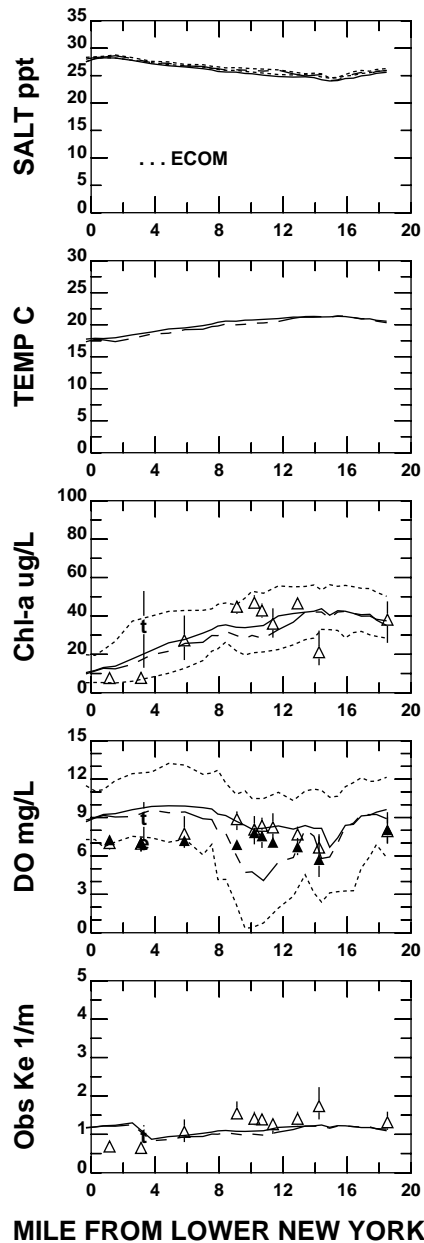
DATA Apr 29-May 28, 1999

	SURF		BOT	
Harbor Survey	△	▲	Transect	Embayment
NYSDEC	t	e	Transect	Embayment
	○	c	Transect	Embayment

MODEL

—	SURFACE 30-DAY MEAN
- - - -	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

## CONEY ISLAND JAMAICA BAY TRANSECT



**MILE FROM LOWER NEW YORK BAY**

**DATA May 29-Jun 27, 1999**

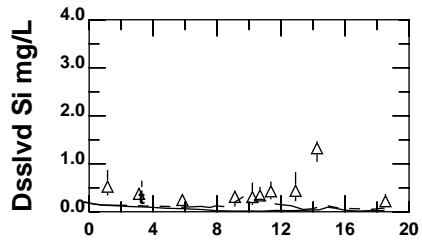
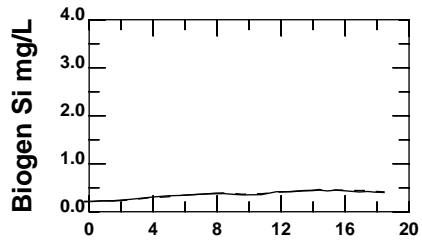
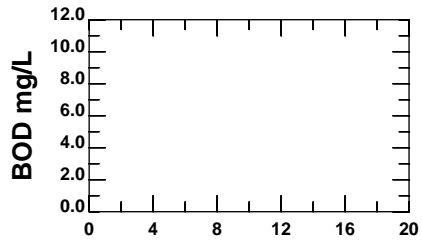
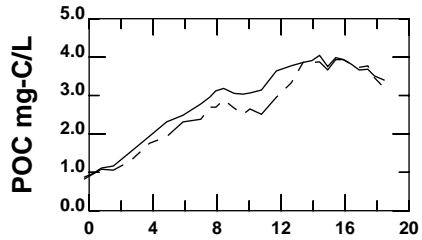
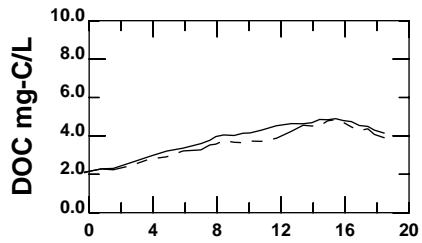
Harbor Survey    △    ▲    **Transect**  
                          t    e    **Embayment**  
 NYSDEC            ○            **Transect**  
                          c            **Embayment**

**MODEL**

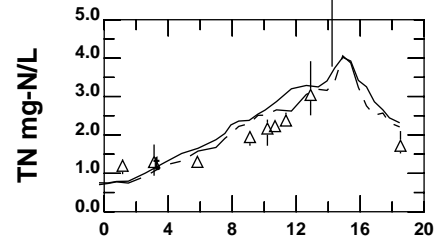
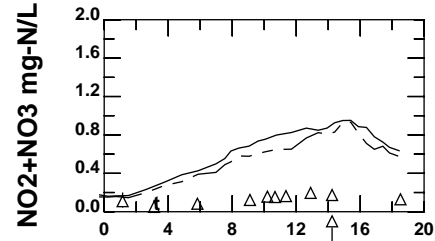
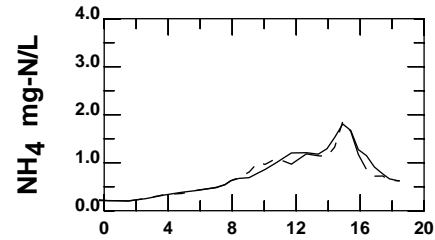
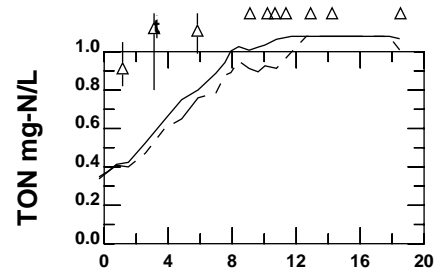
———— **SURFACE 30-DAY MEAN**  
 - - - - - **BOTTOM 30-DAY MEAN**  
 - - - - - **30-DAY SURFACE MAX OR BOTTOM MIN**

**CONEY ISLAND JAMAICA BAY TRANSECT**





MILE FROM LOWER NEW YORK BAY



MILE FROM LOWER NEW YORK BAY

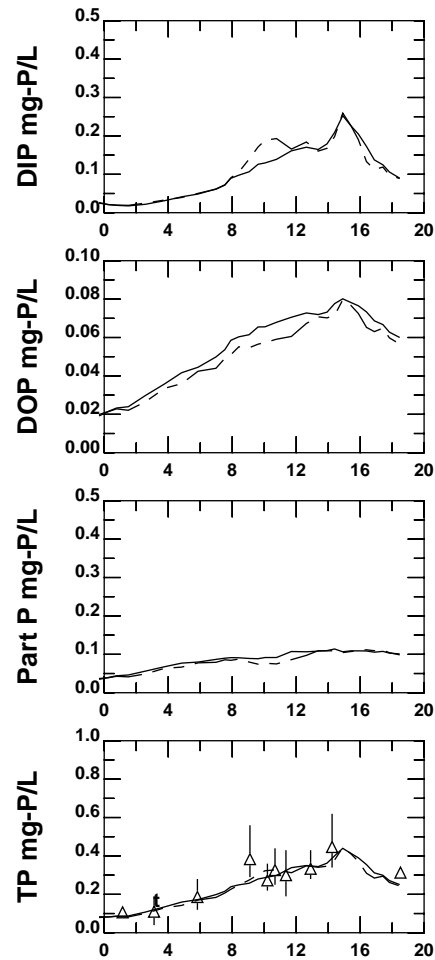
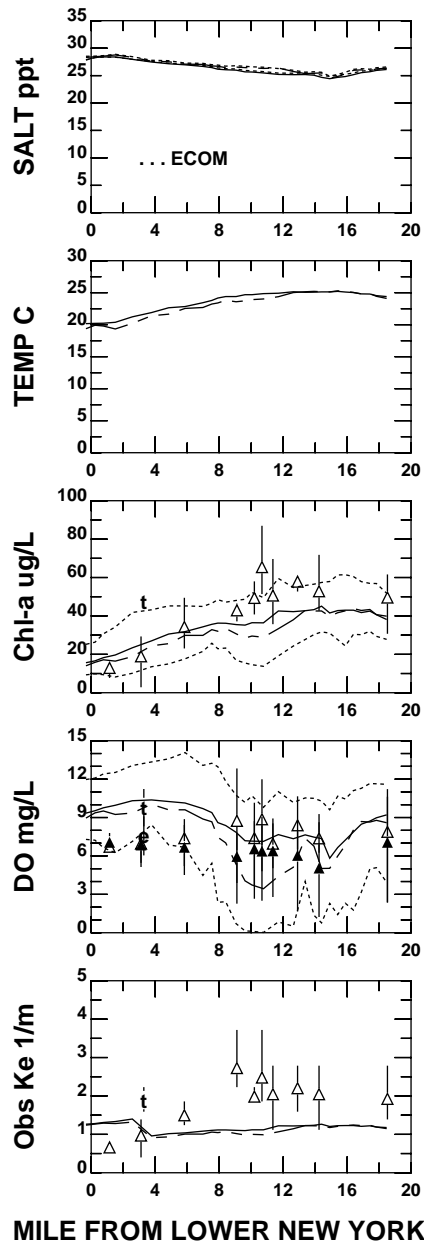
DATA May 29-Jun 27, 1999

	SURF		BOT	
Harbor Survey	△	▲	Transect	Embayment
NYSDEC	t	e	Transect	Embayment
	○	c	Transect	Embayment

MODEL

————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

# CONEY ISLAND JAMAICA BAY TRANSECT



**MILE FROM LOWER NEW YORK BAY**

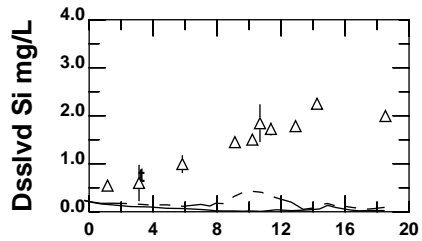
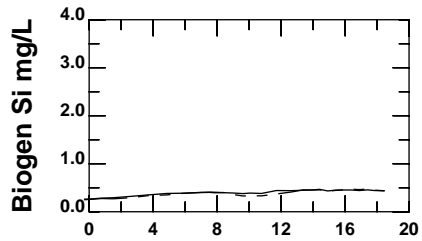
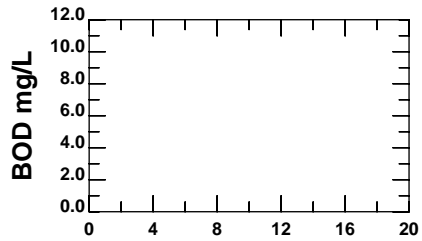
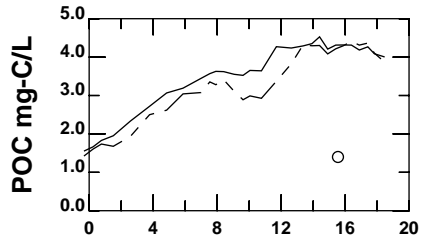
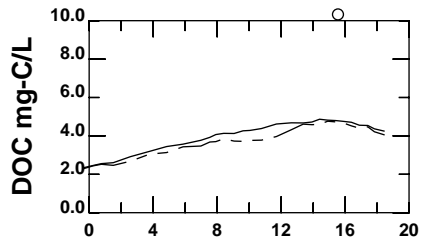
**DATA Jun 28-Jul 27,1999**

	<b>SURF BOT</b>		
Harbor Survey	△	▲	Transect Embayment
NYSDEC	t	e	Transect Embayment
	○	c	Transect Embayment

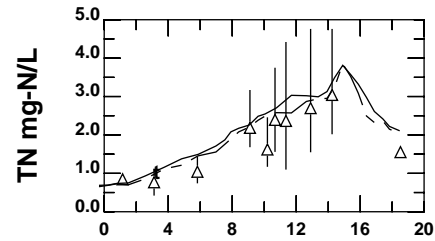
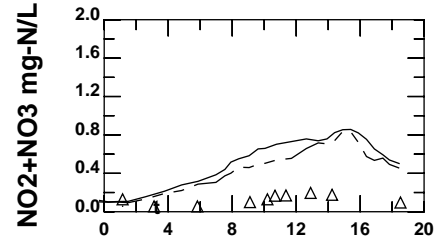
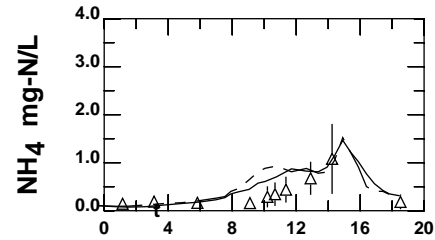
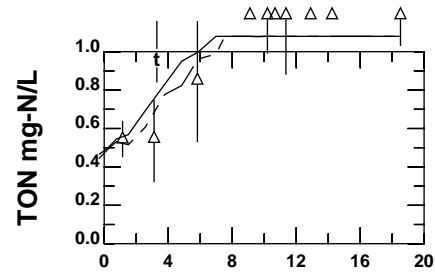
**MODEL**

————	<b>SURFACE 30-DAY MEAN</b>
-----	<b>BOTTOM 30-DAY MEAN</b>
- - - -	<b>30-DAY SURFACE MAX OR BOTTOM MIN</b>

**CONEY ISLAND JAMAICA BAY TRANSECT**



MILE FROM LOWER NEW YORK BAY



MILE FROM LOWER NEW YORK BAY

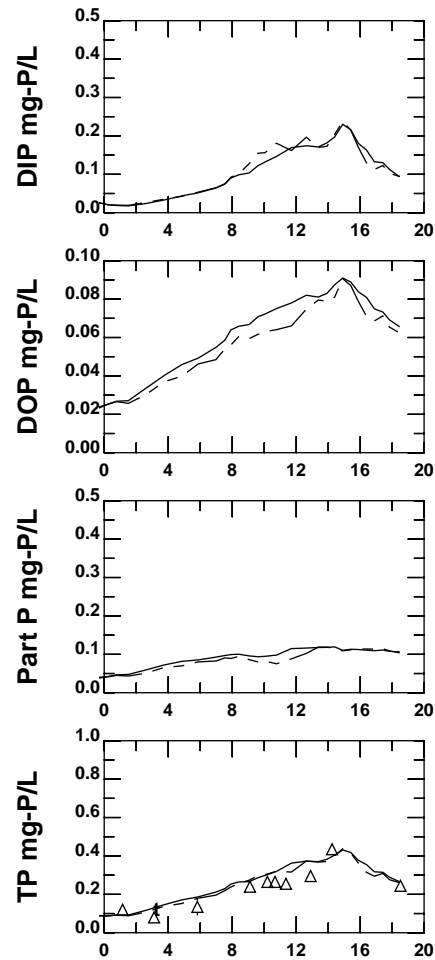
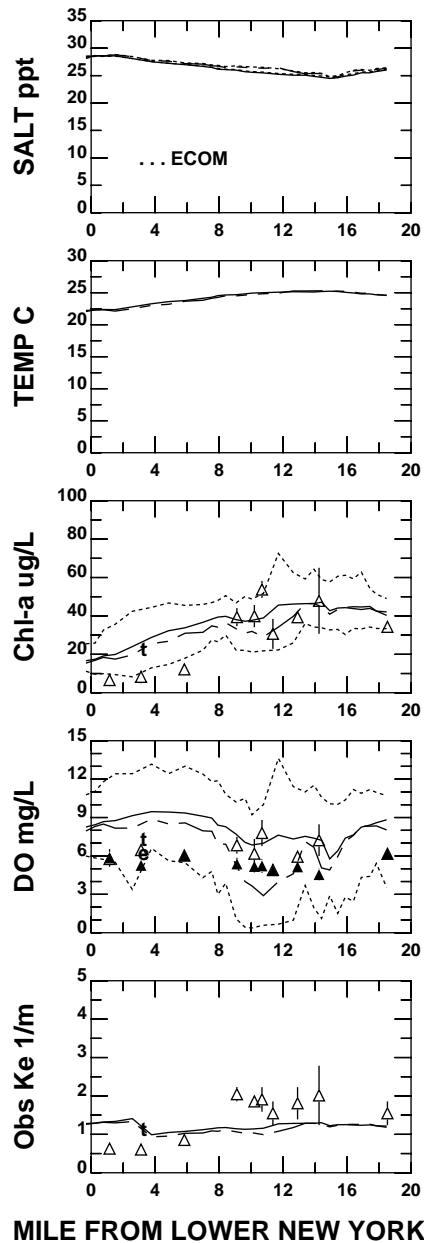
DATA Jun 28-Jul 27, 1999

	SURF BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment

MODEL

—	SURFACE 30-DAY MEAN
- - -	BOTTOM 30-DAY MEAN
- - -	30-DAY SURFACE MAX OR BOTTOM MIN

## CONEY ISLAND JAMAICA BAY TRANSECT



**MILE FROM LOWER NEW YORK BAY**

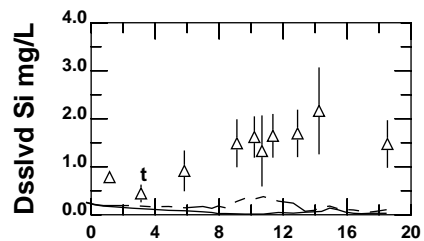
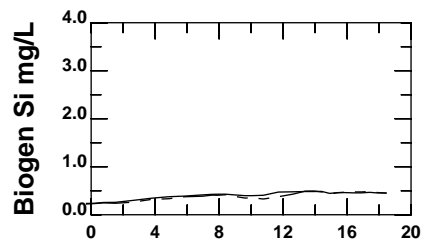
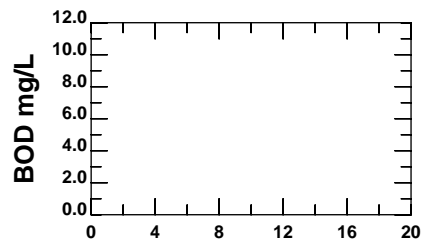
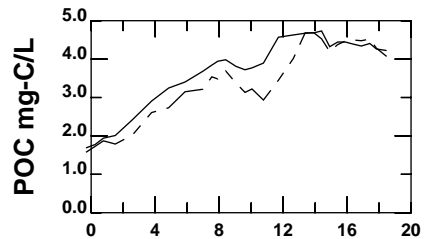
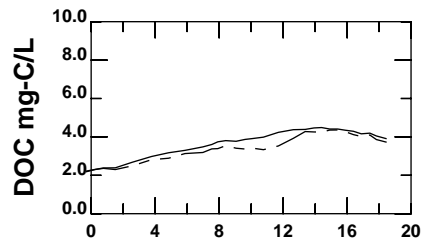
DATA Jul 27-Aug 26,1999

Harbor Survey    △    ▲    Transect  
                          t    e    Embayment  
 NYSDEC            ○       Transect  
                          c       Embayment

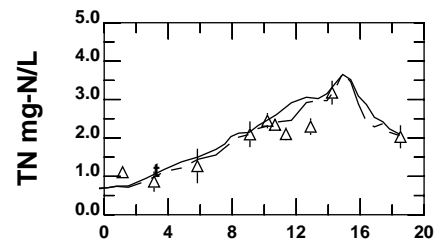
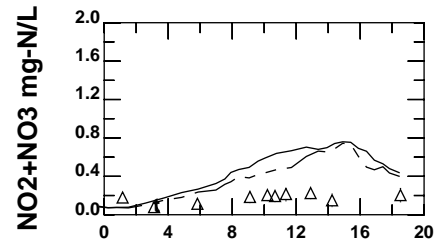
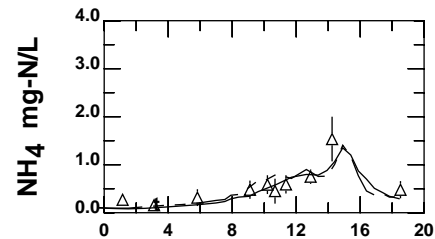
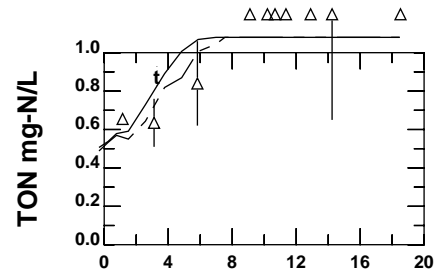
**MODEL**

———— SURFACE 30-DAY MEAN  
 - - - - - BOTTOM 30-DAY MEAN  
 - - - - - 30-DAY SURFACE MAX OR  
 BOTTOM MIN

**CONEY ISLAND JAMAICA BAY TRANSECT**



MILE FROM LOWER NEW YORK BAY



MILE FROM LOWER NEW YORK BAY

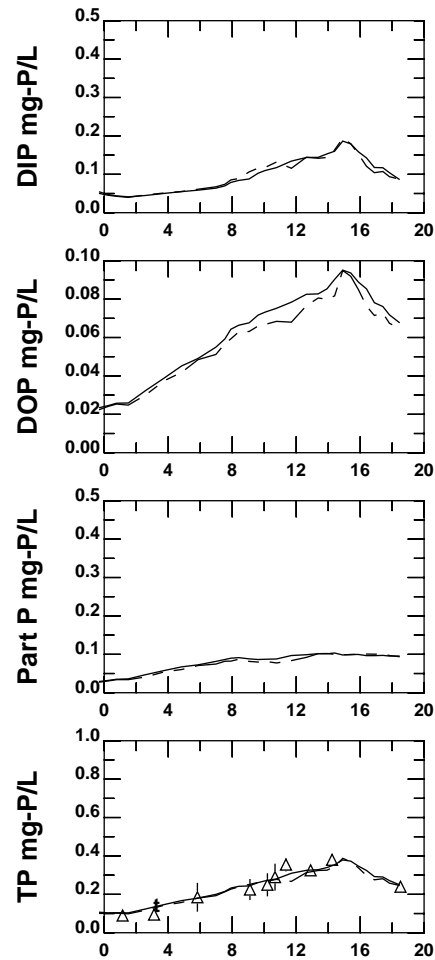
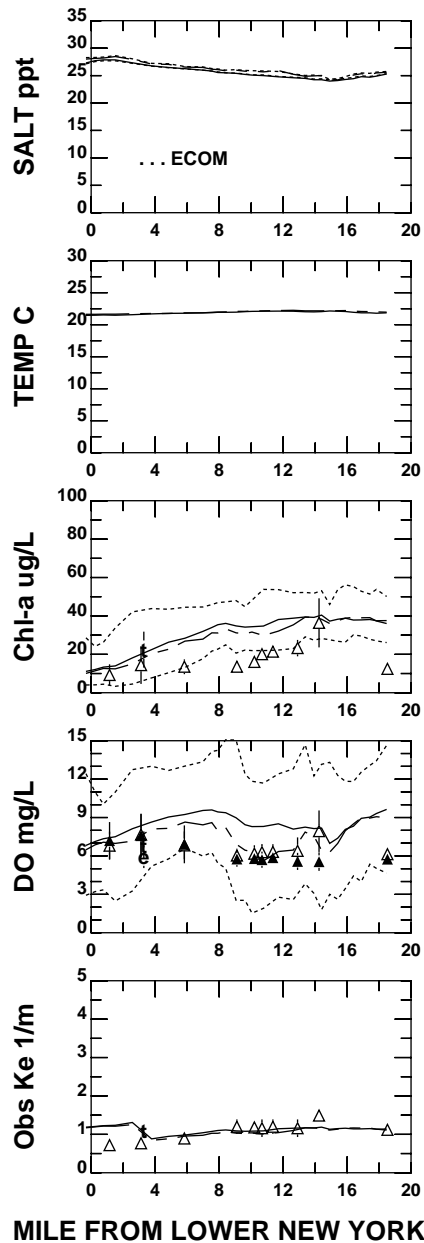
DATA Jul 27-Aug 26, 1999

	SURF		BOT	
Harbor Survey	△	▲	Transect	Transect
	t	e	Embayment	Embayment
NYSDEC	○		Transect	
	c		Embayment	

MODEL

————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

# CONEY ISLAND JAMAICA BAY TRANSECT



**MILE FROM LOWER NEW YORK BAY**

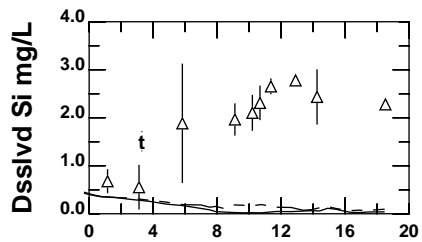
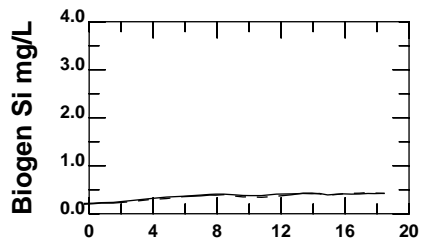
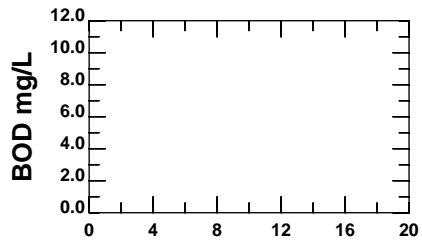
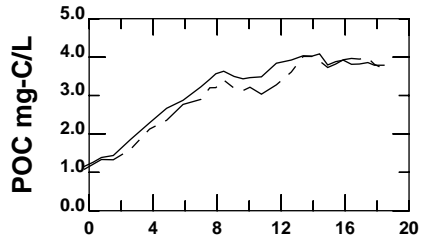
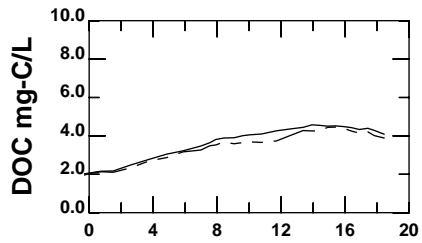
DATA Aug 27-Sep 25, 1999

Harbor Survey    SURF BOT  
 △    ▲    Transect  
 t    e    Embayment  
 NYSDEC    ○    Transect  
           c    Embayment

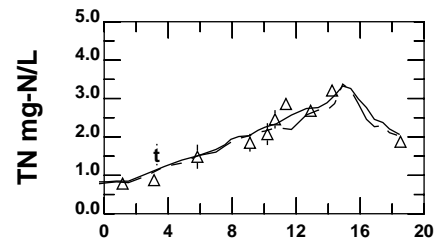
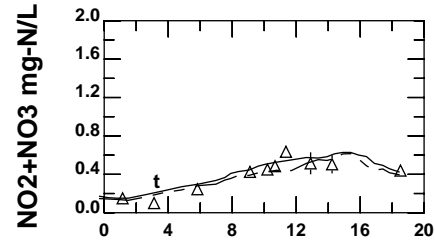
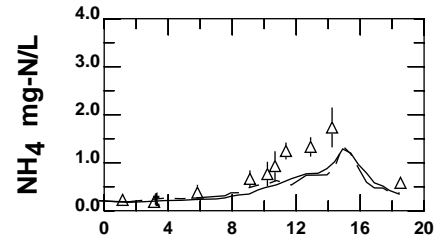
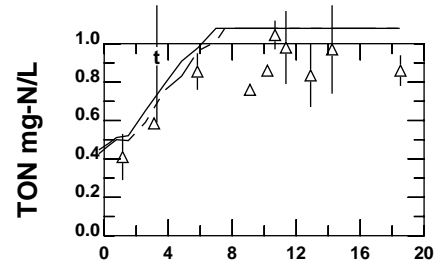
**MODEL**

—— SURFACE 30-DAY MEAN  
 - - - - - BOTTOM 30-DAY MEAN  
 - - - 30-DAY SURFACE MAX OR  
 BOTTOM MIN

**CONEY ISLAND JAMAICA BAY TRANSECT**



MILE FROM LOWER NEW YORK BAY



MILE FROM LOWER NEW YORK BAY

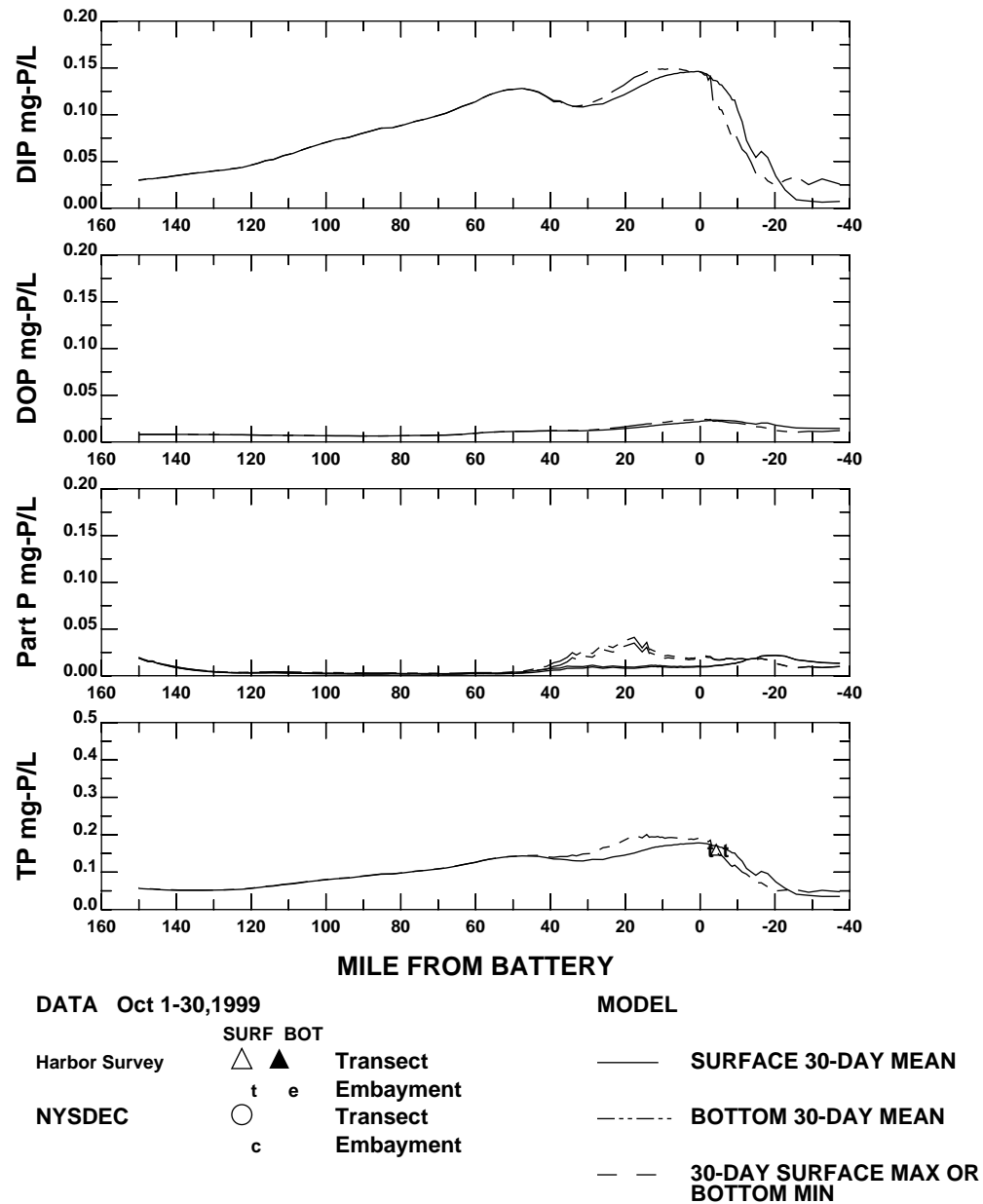
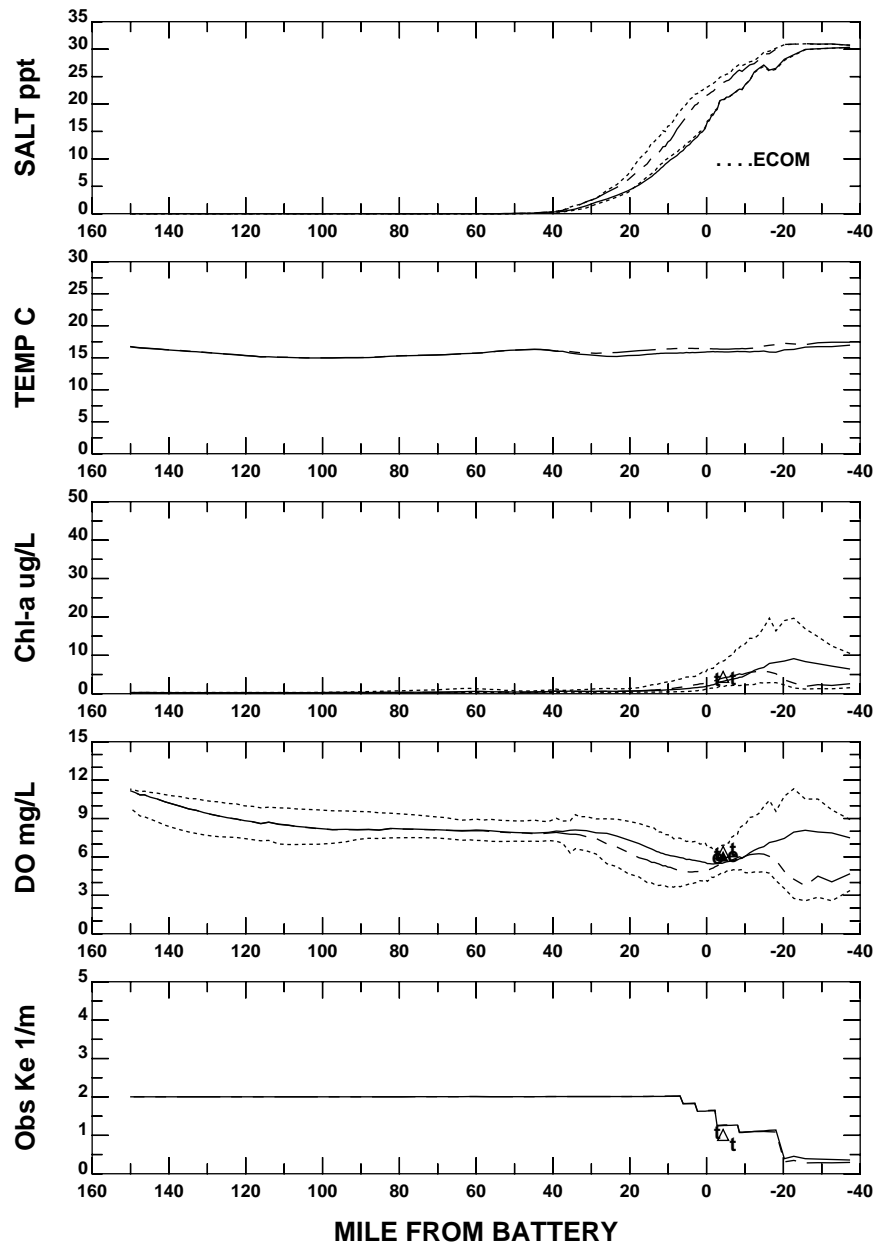
DATA Aug 27-Sep 25, 1999

	SURF BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment

MODEL

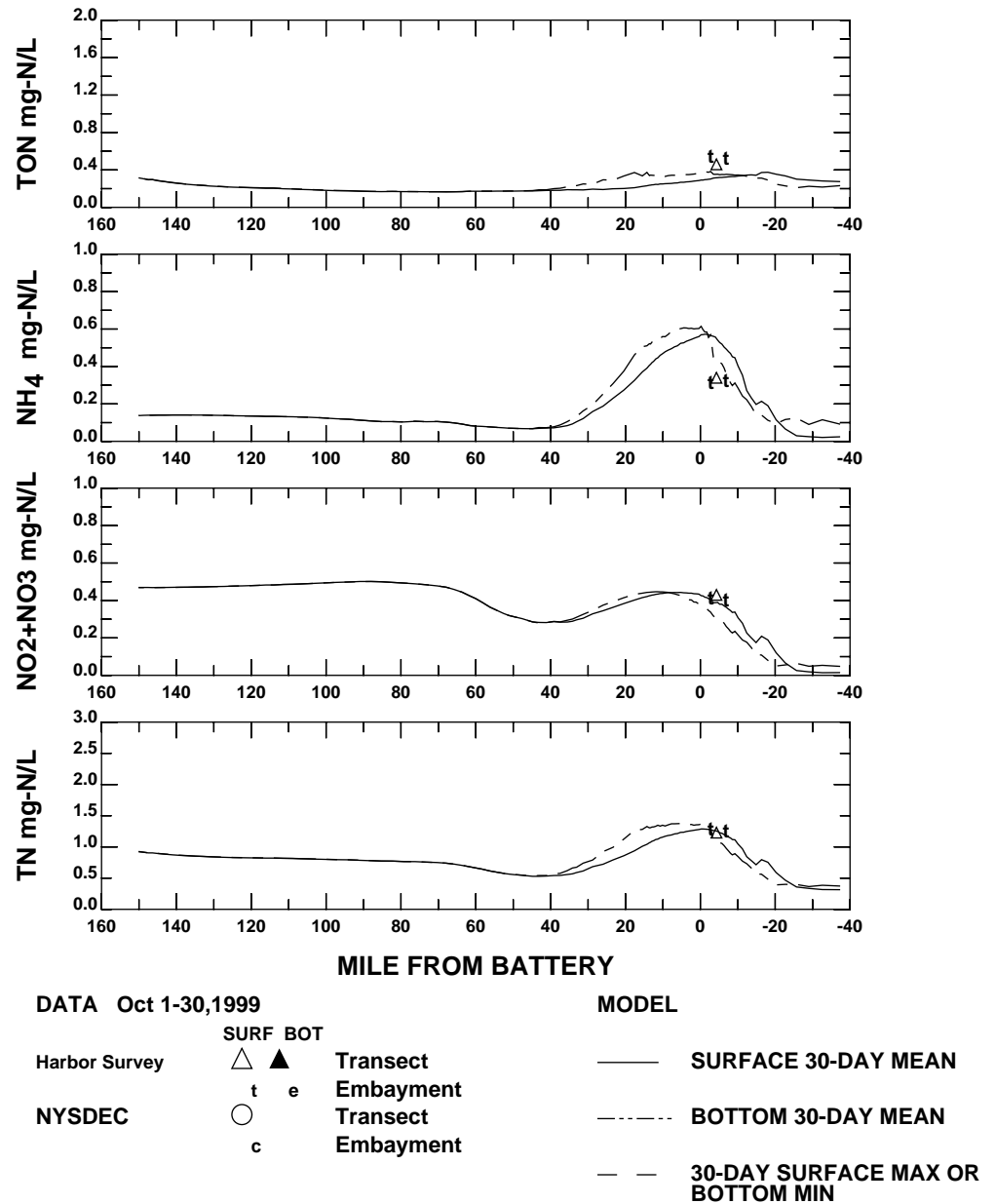
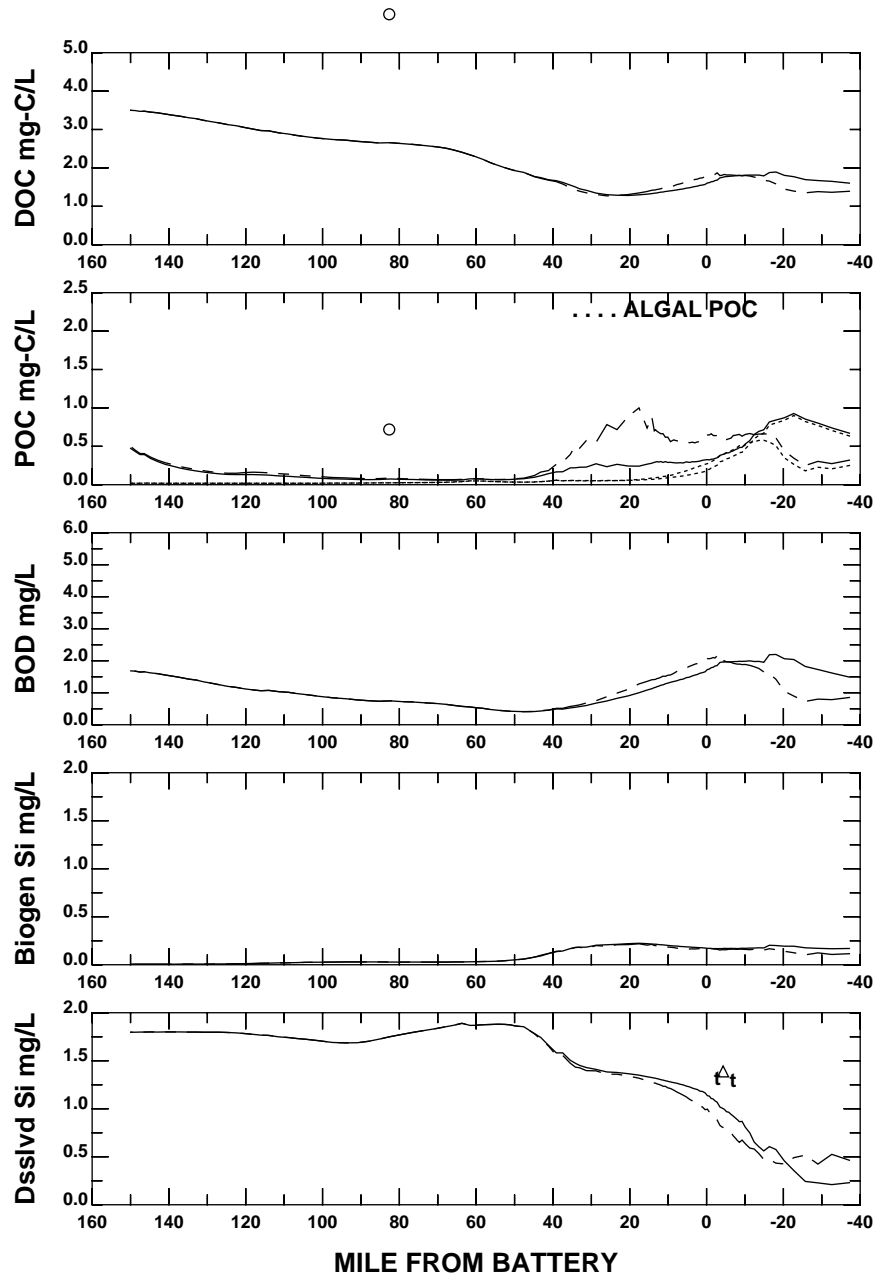
—	SURFACE 30-DAY MEAN
- - -	BOTTOM 30-DAY MEAN
- - -	30-DAY SURFACE MAX OR BOTTOM MIN

## CONEY ISLAND JAMAICA BAY TRANSECT

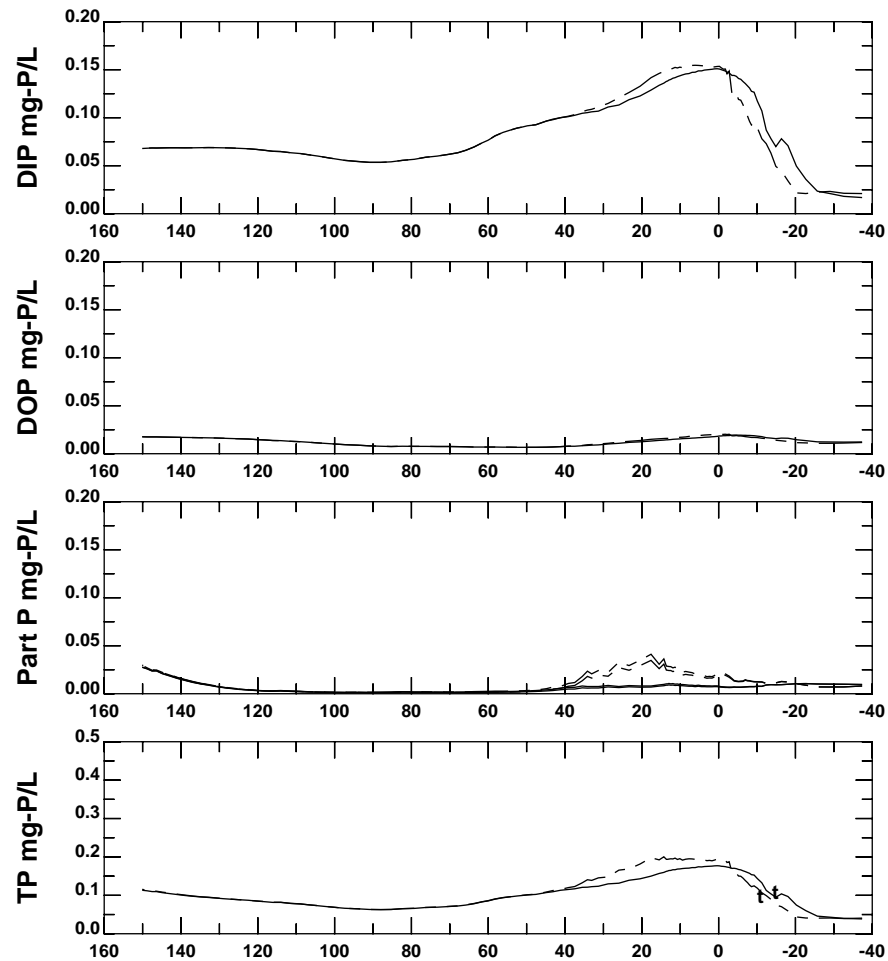
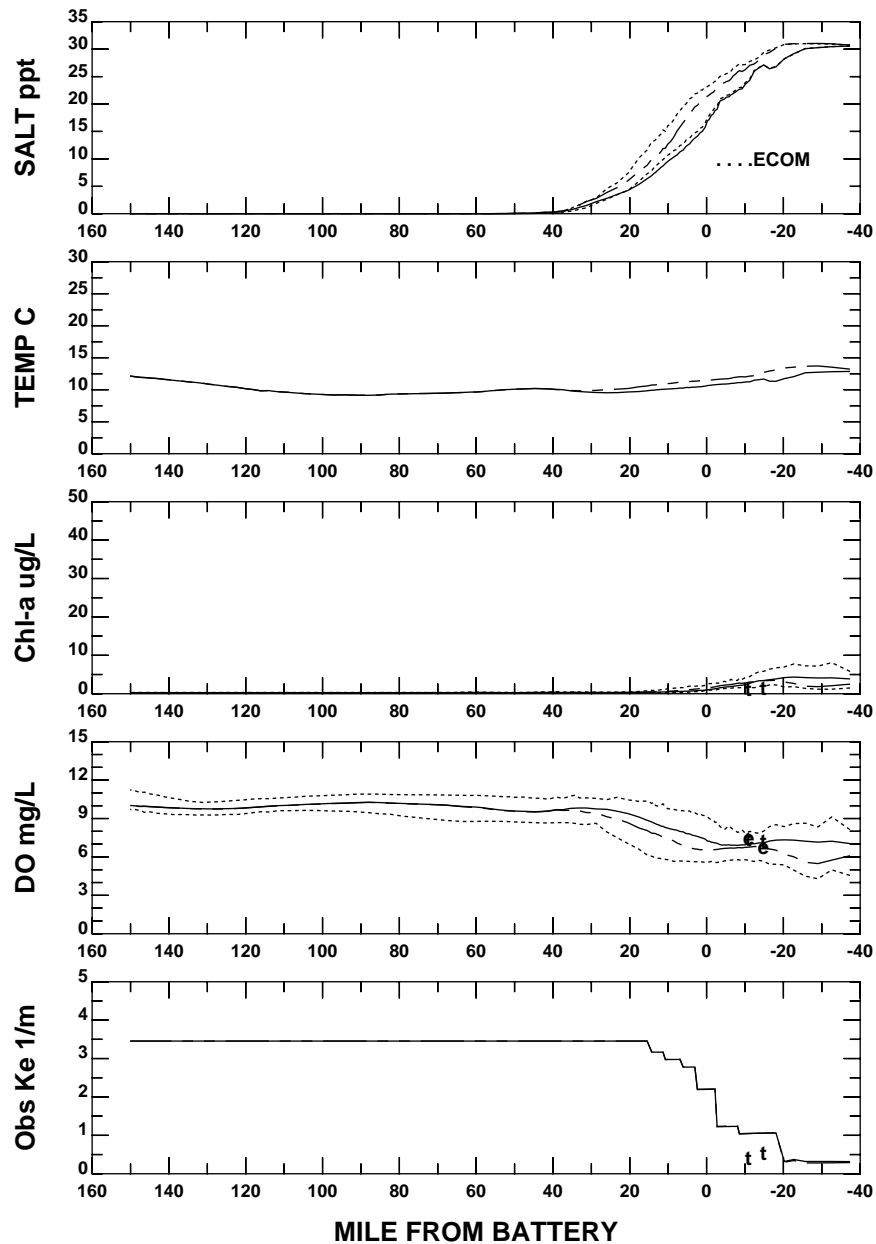


# HUDSON RIVER, UPPER AND LOWER BAY, OCEAN





### HUDSON RIVER, UPPER AND LOWER BAY, OCEAN



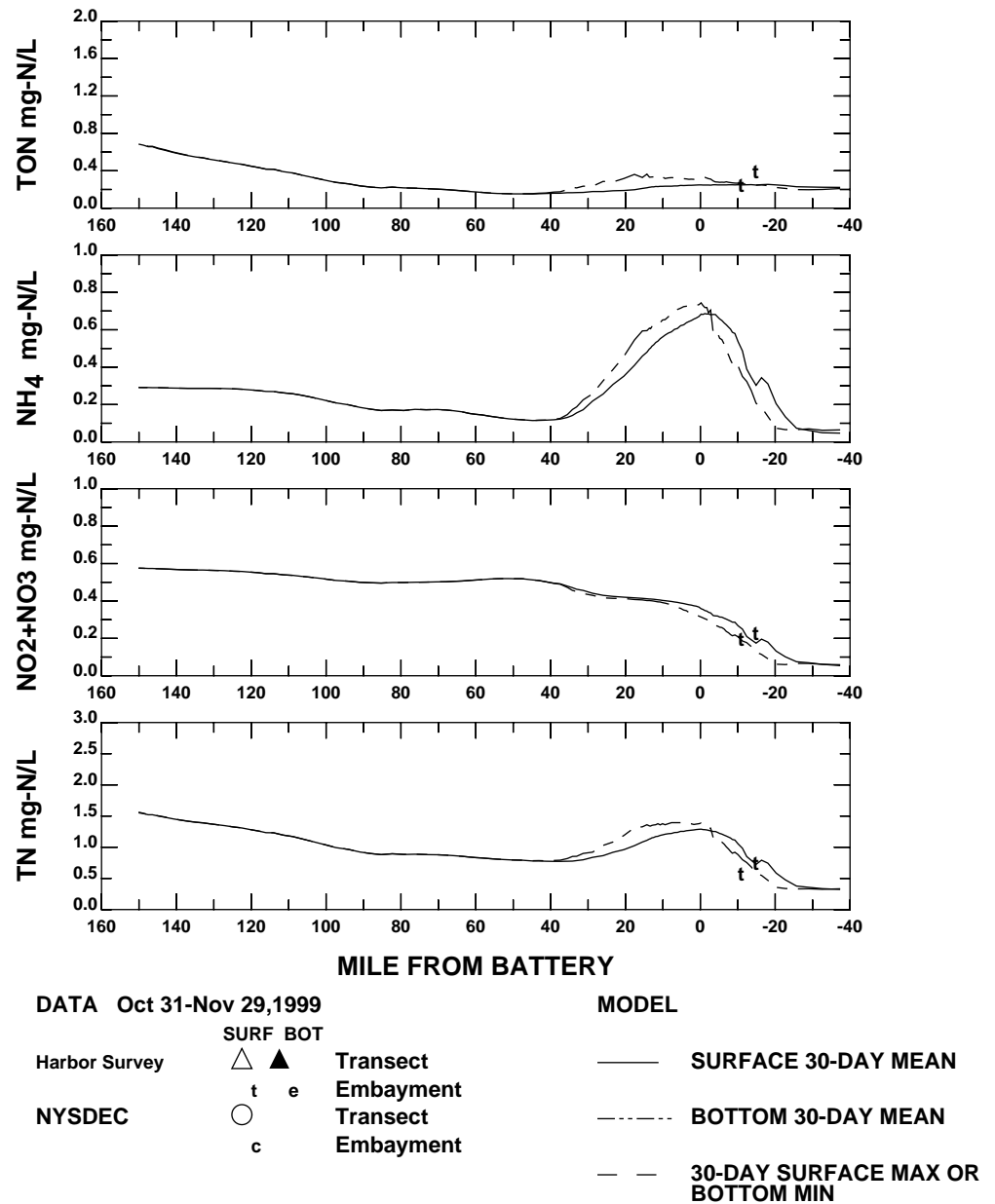
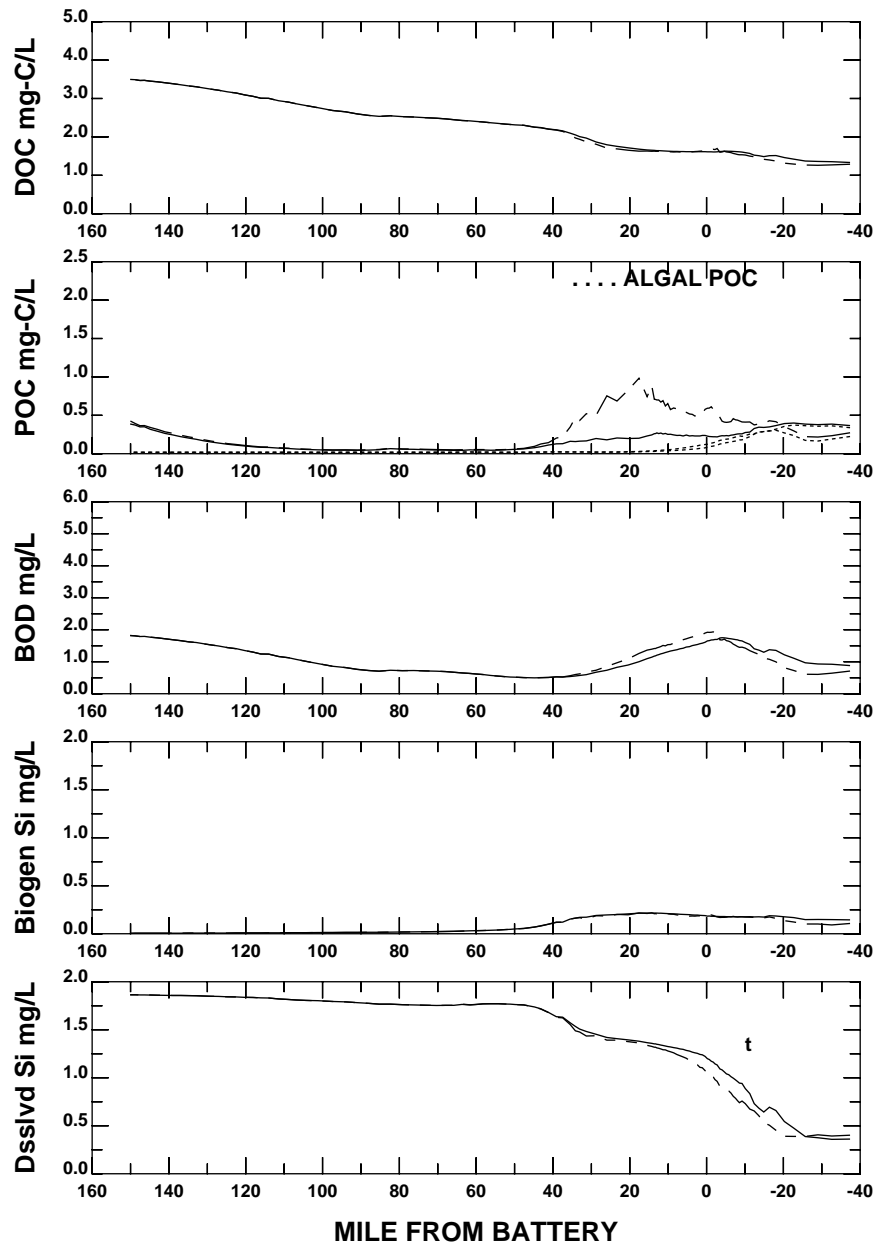
DATA Oct 31-Nov 29, 1999

MODEL

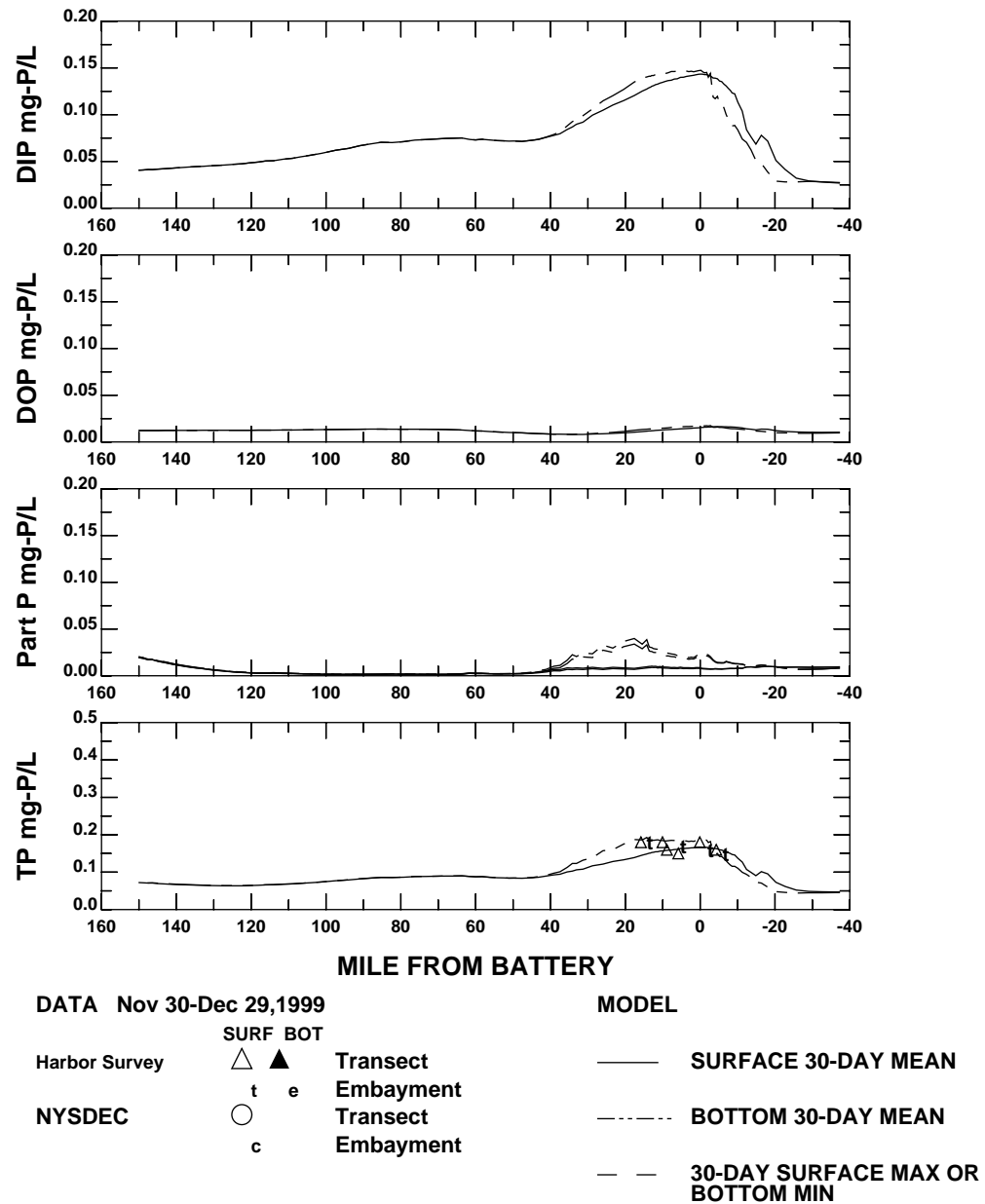
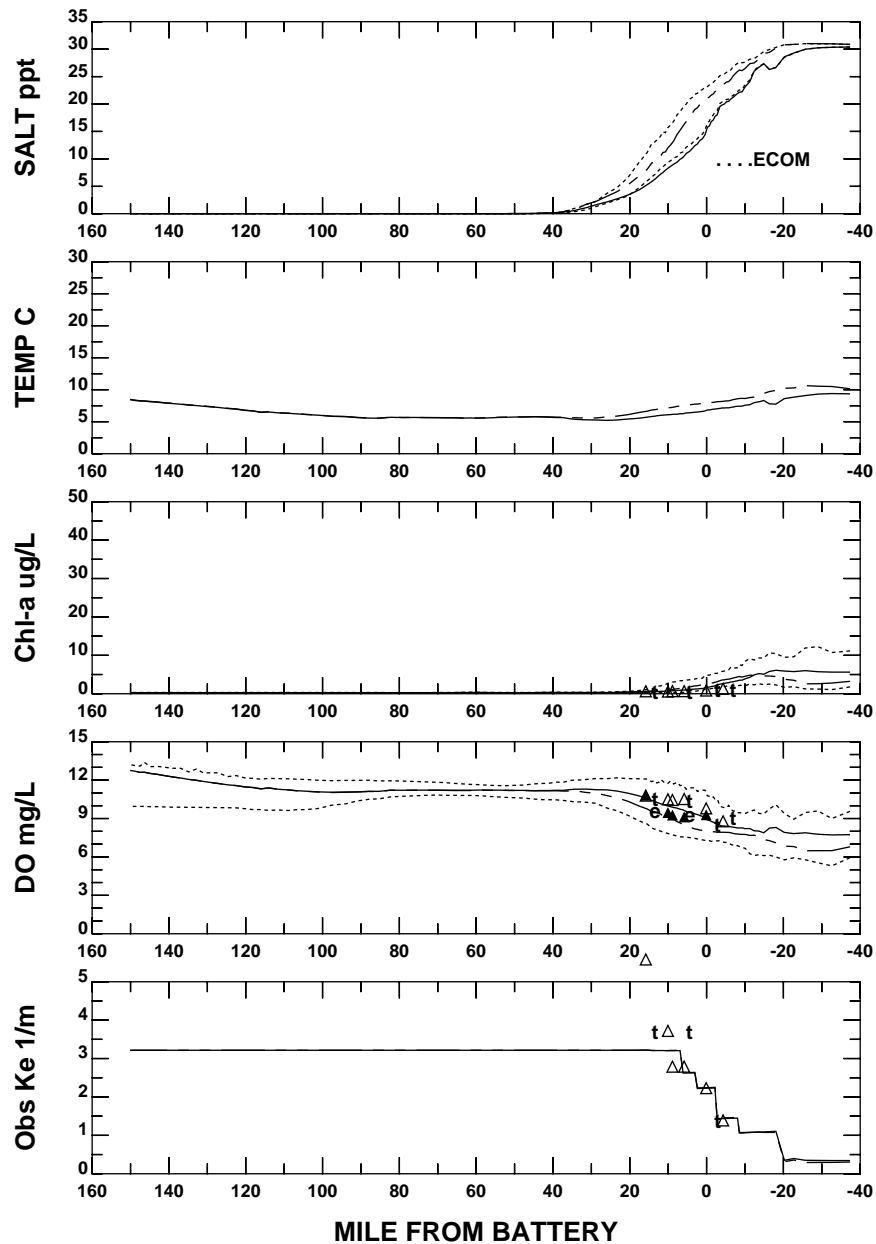
Harbor Survey SURF BOT  
 t e  
 NYSDEC o c

Transect  
 Embayment  
 Transect  
 Embayment  
 SURFACE 30-DAY MEAN  
 BOTTOM 30-DAY MEAN  
 30-DAY SURFACE MAX OR  
 BOTTOM MIN

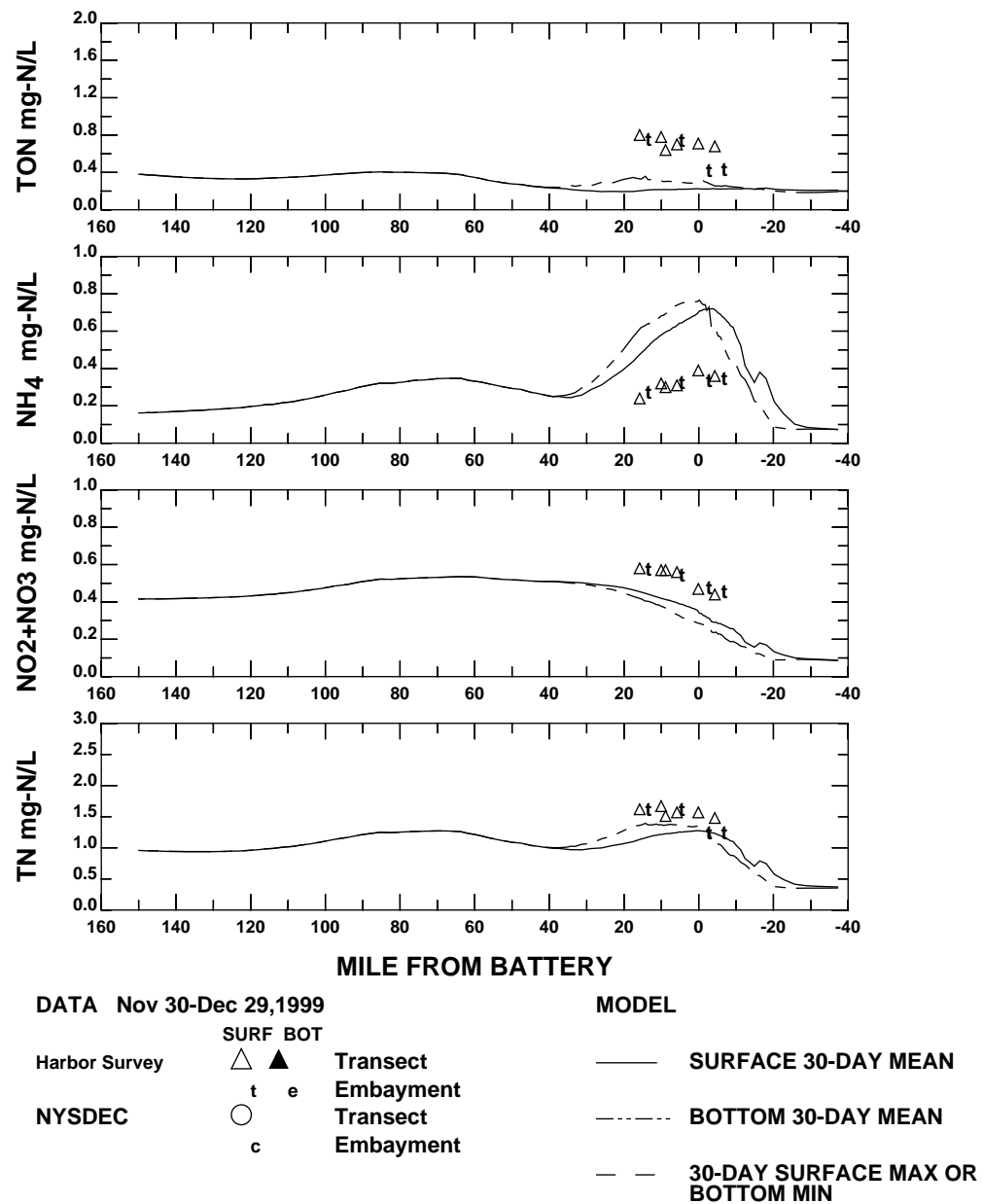
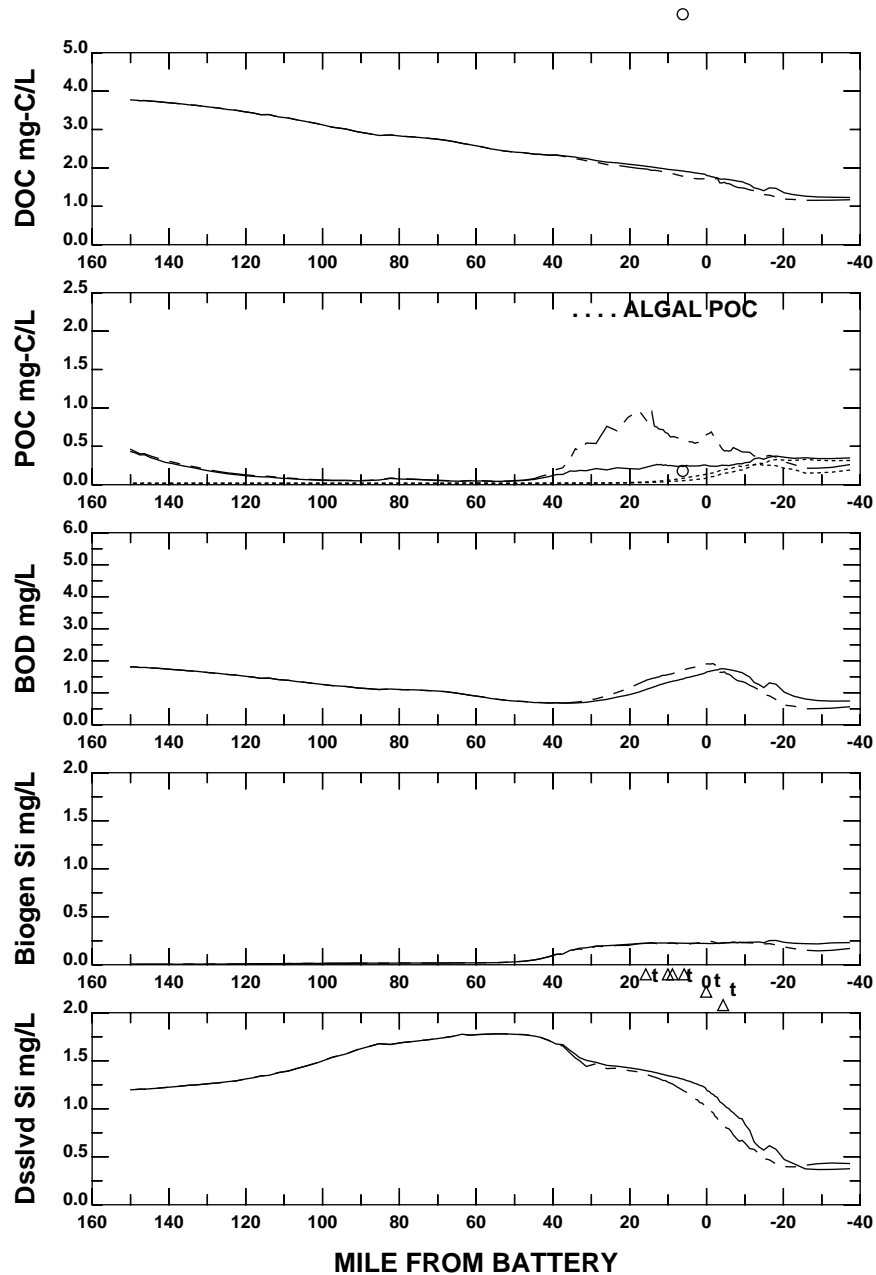
**HUDSON RIVER, UPPER AND LOWER BAY, OCEAN**



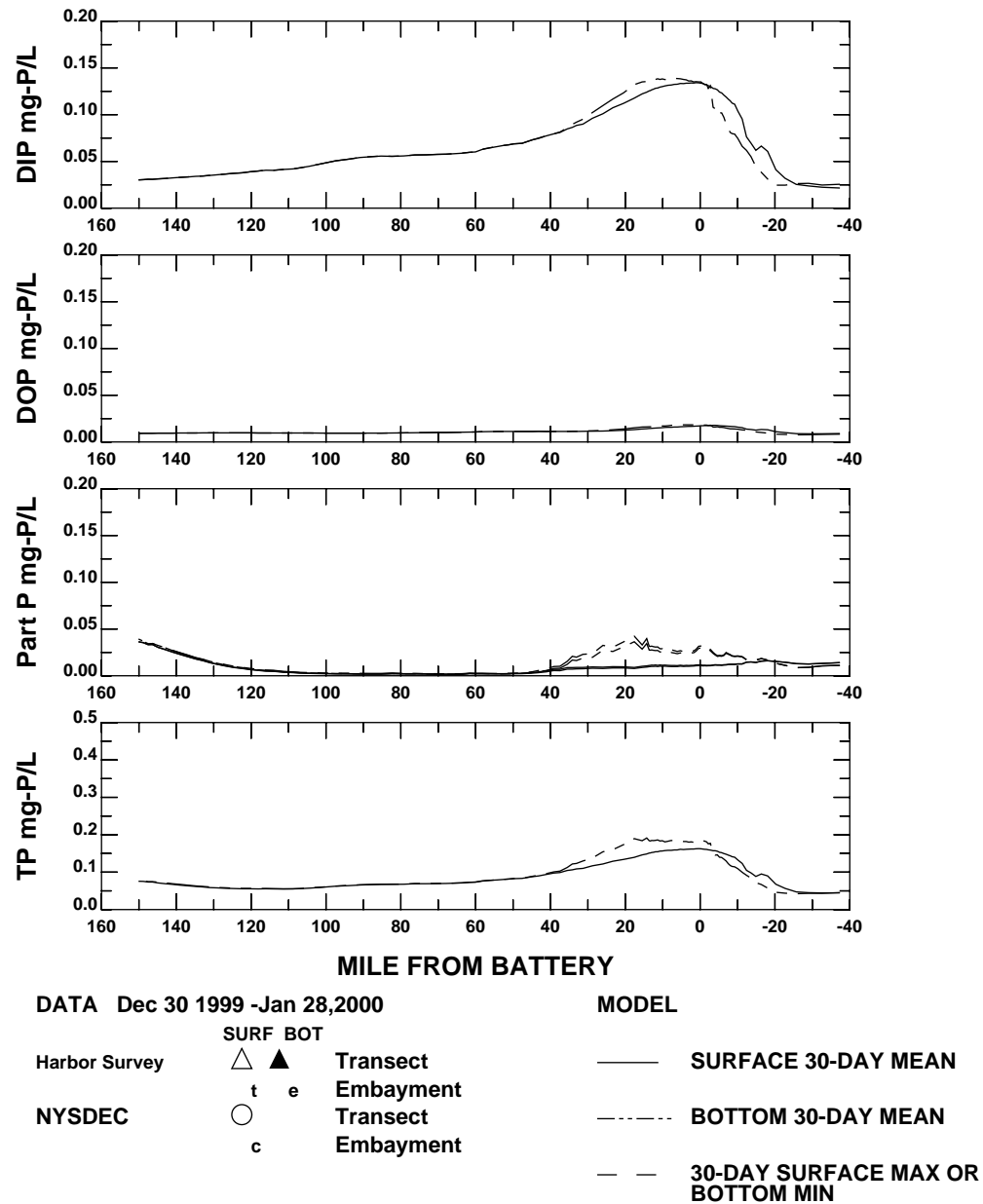
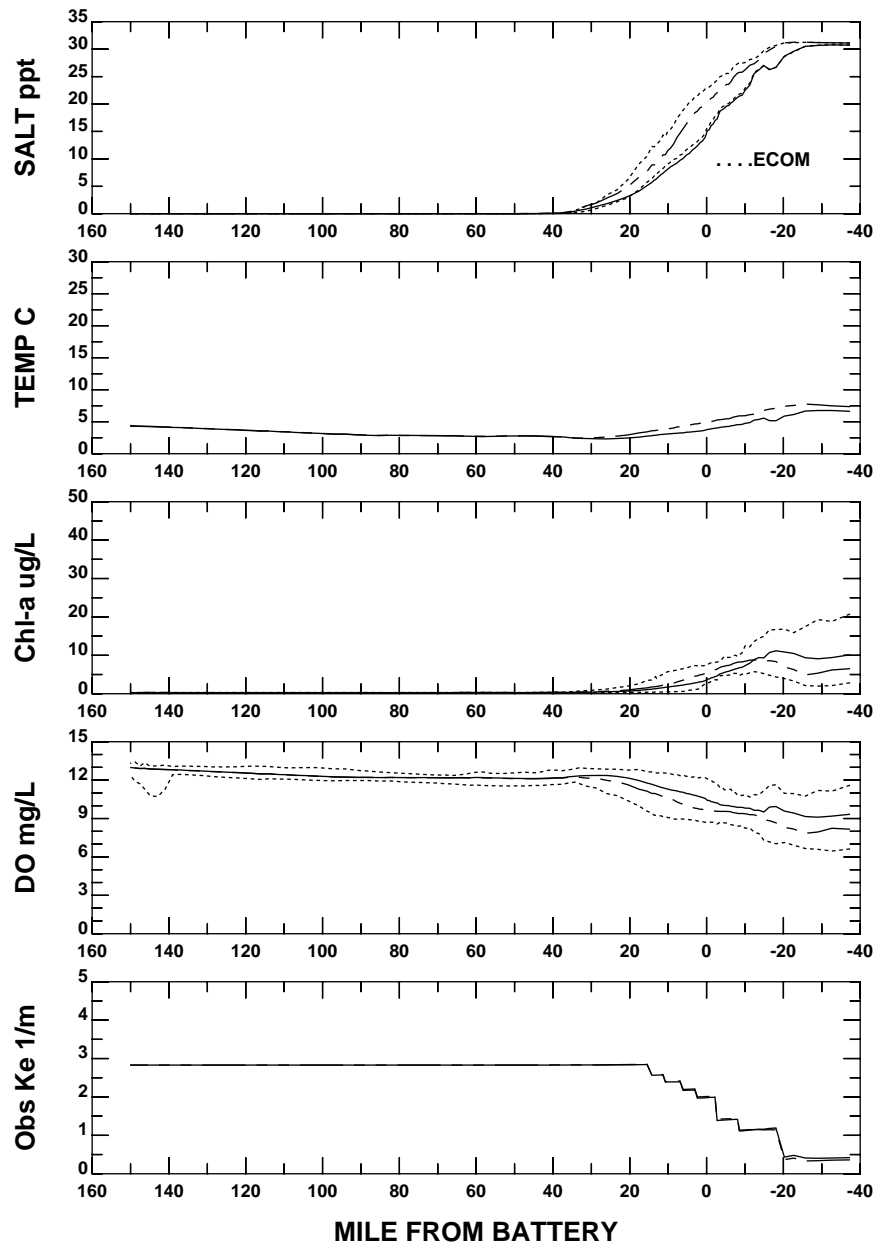
## HUDSON RIVER, UPPER AND LOWER BAY, OCEAN



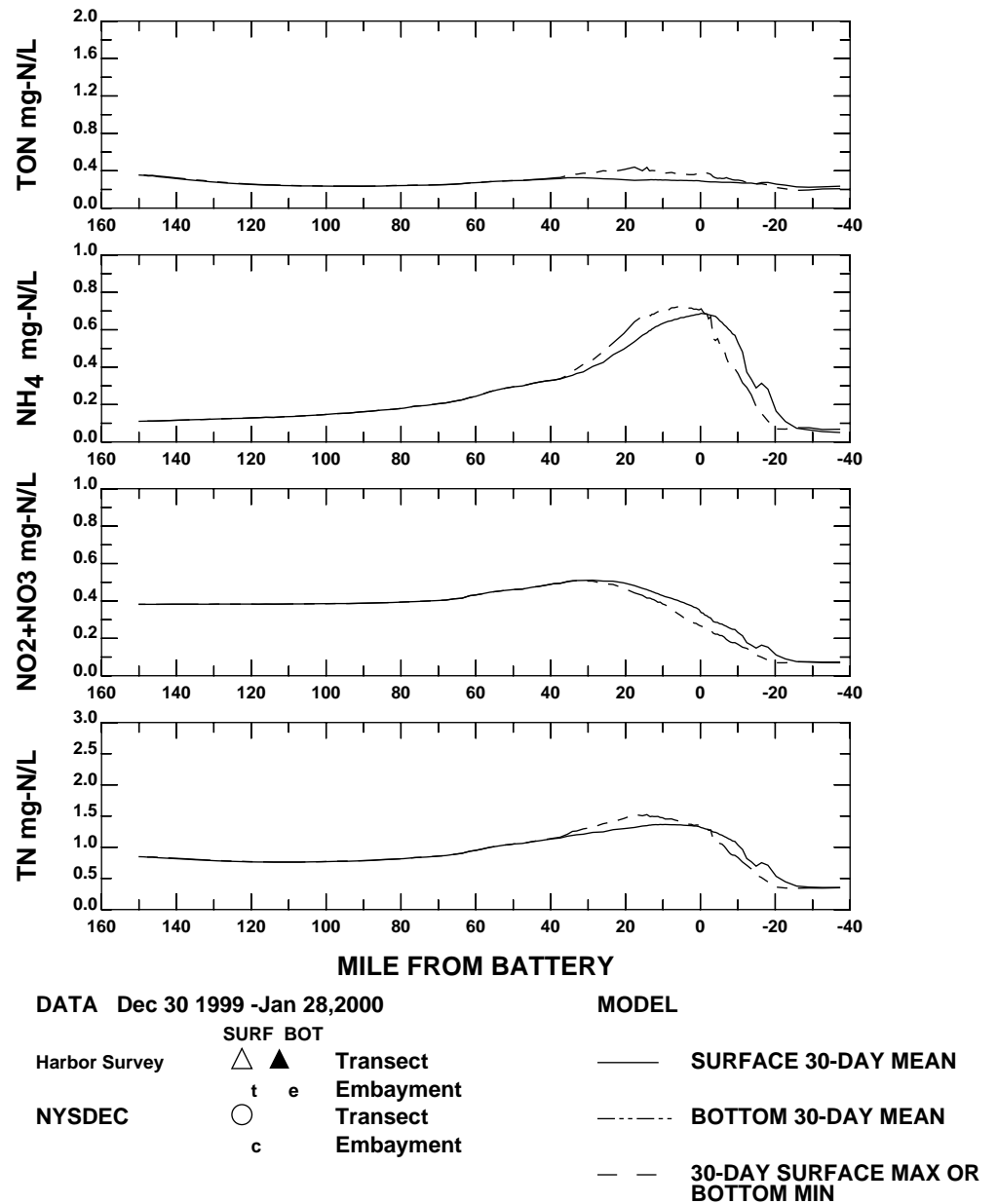
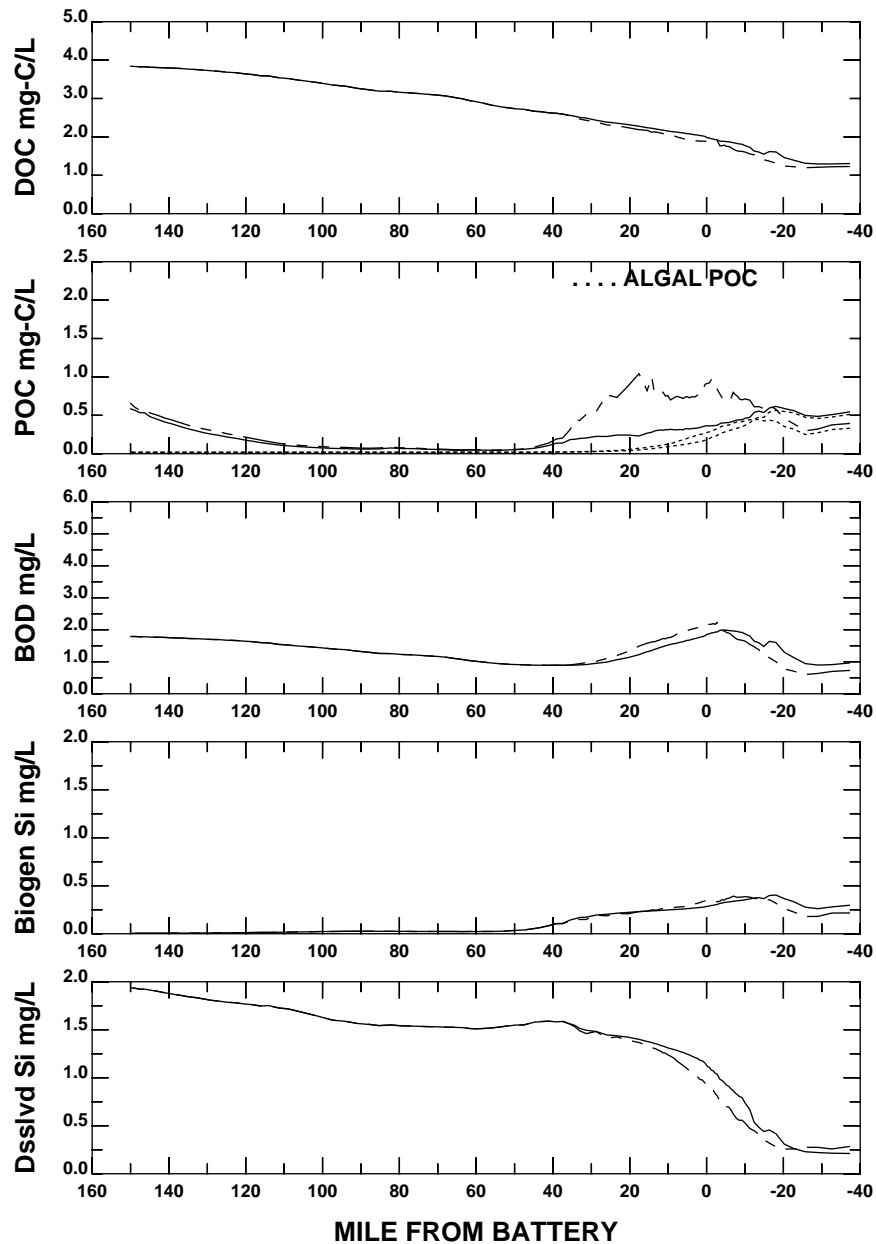
**HUDSON RIVER, UPPER AND LOWER BAY, OCEAN**



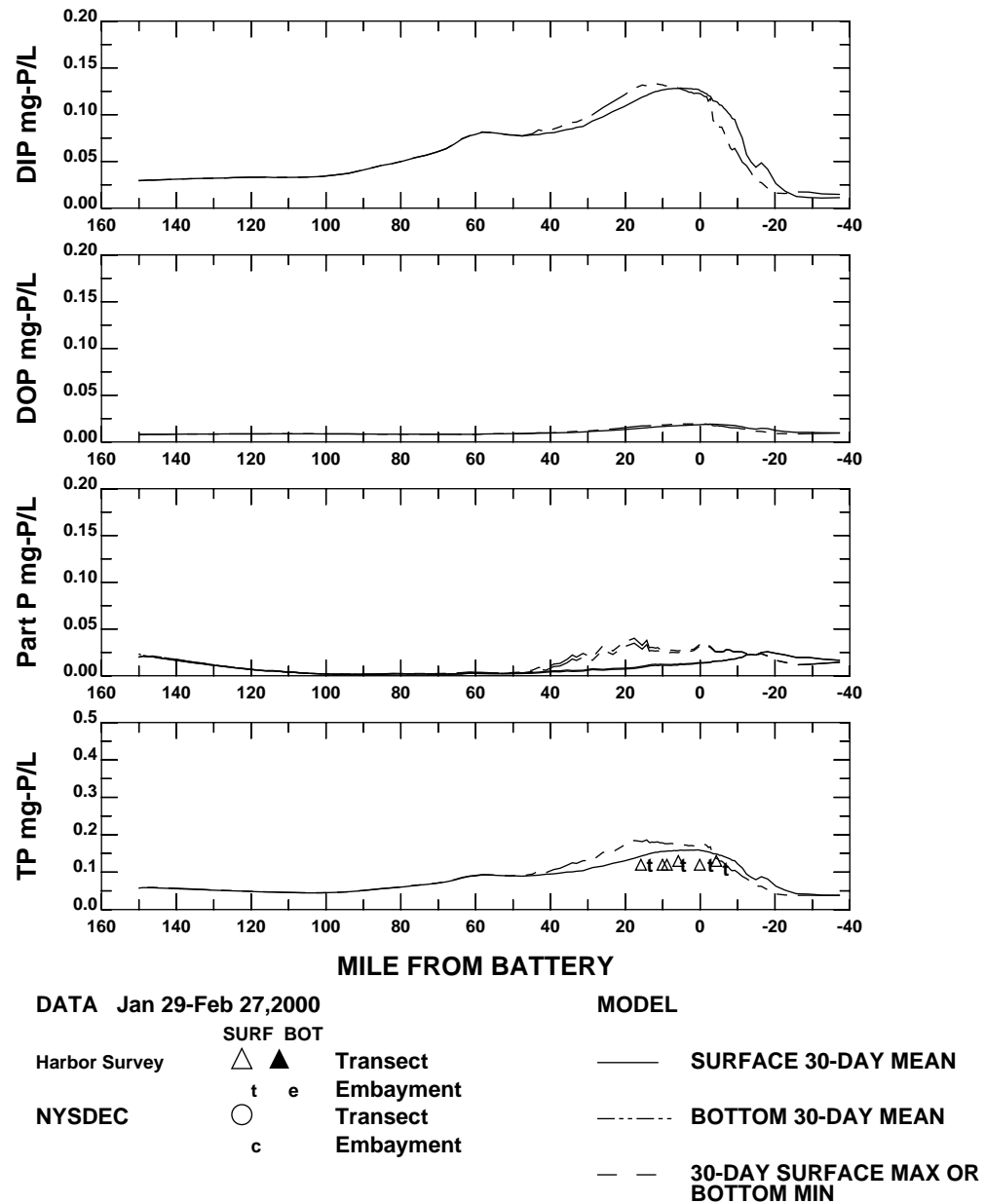
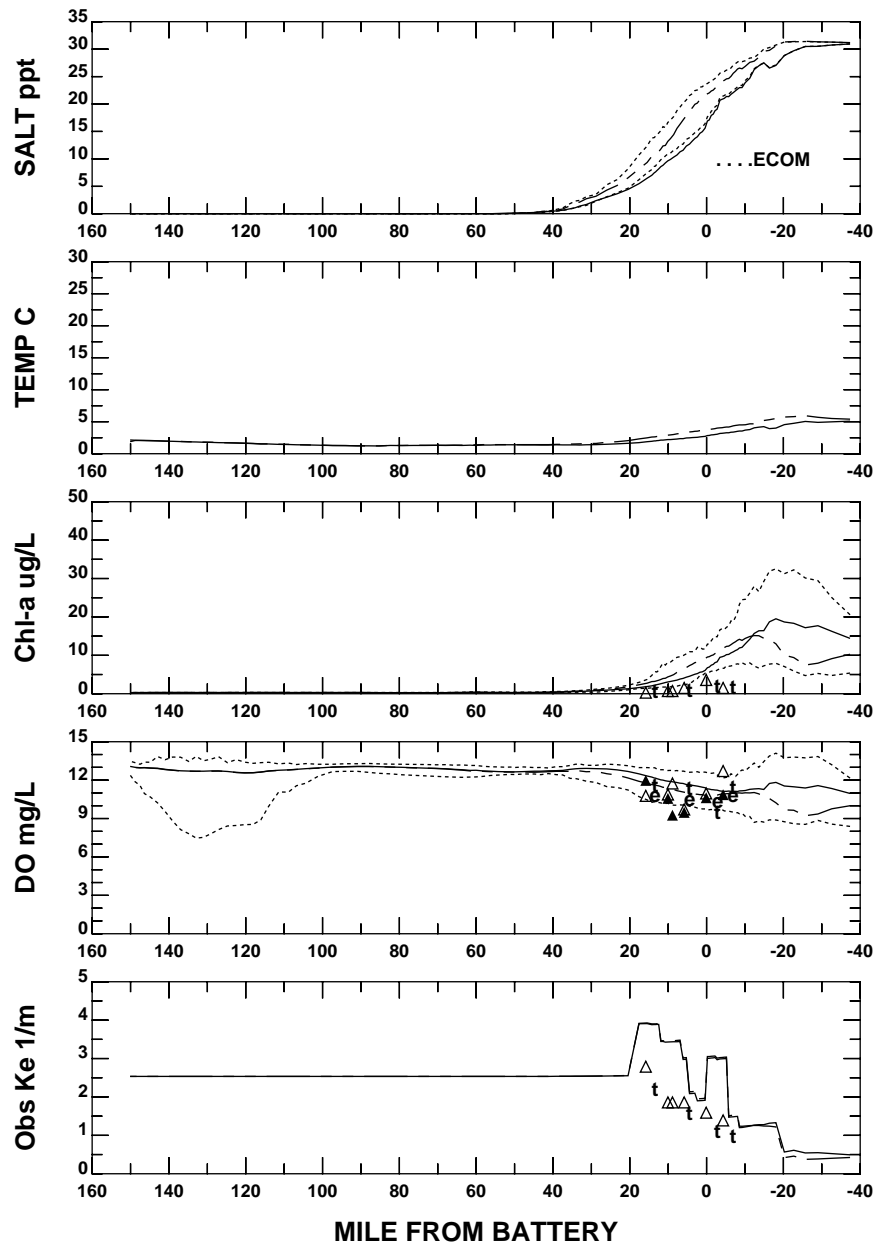
# HUDSON RIVER, UPPER AND LOWER BAY, OCEAN



**HUDSON RIVER, UPPER AND LOWER BAY, OCEAN**

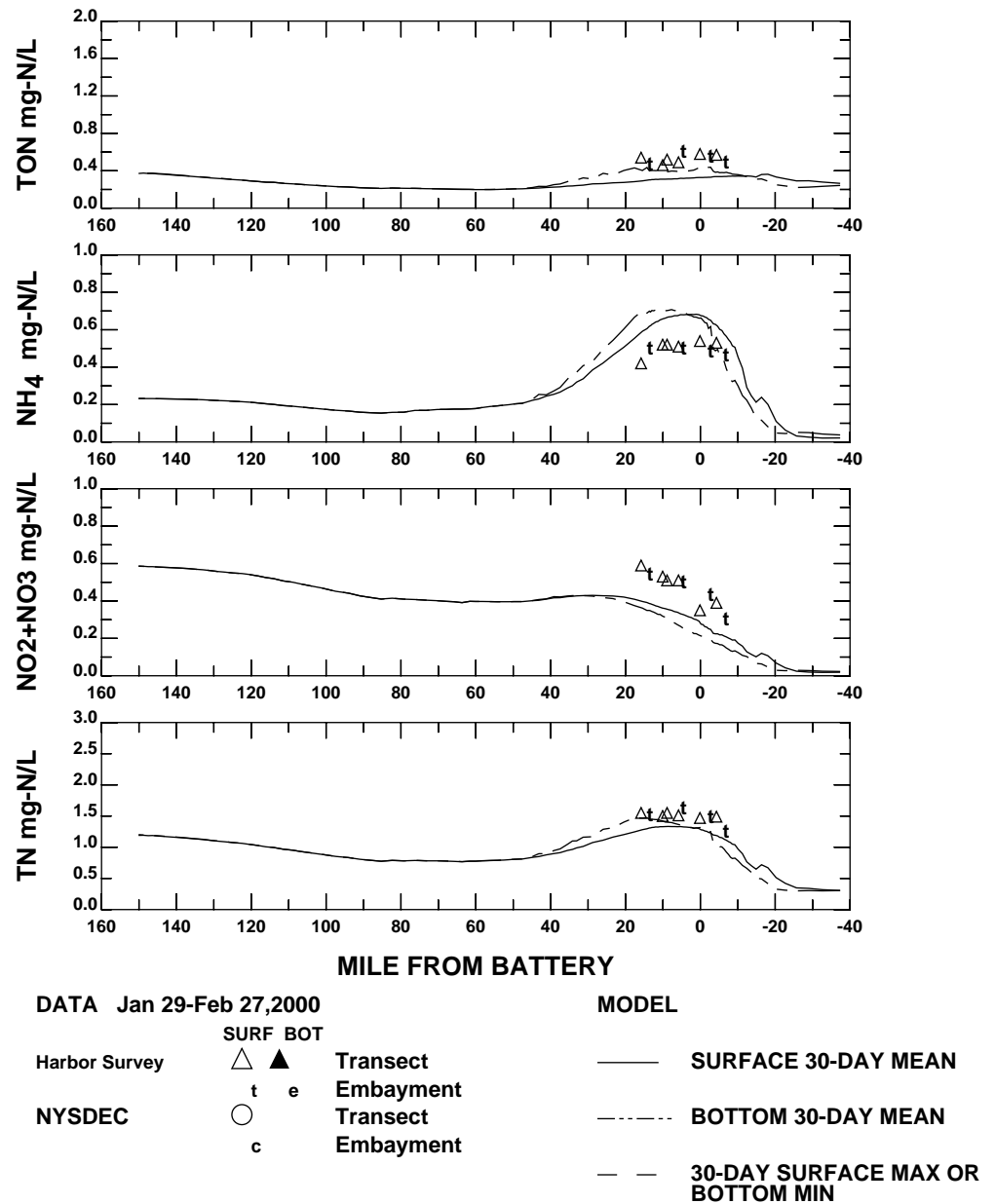
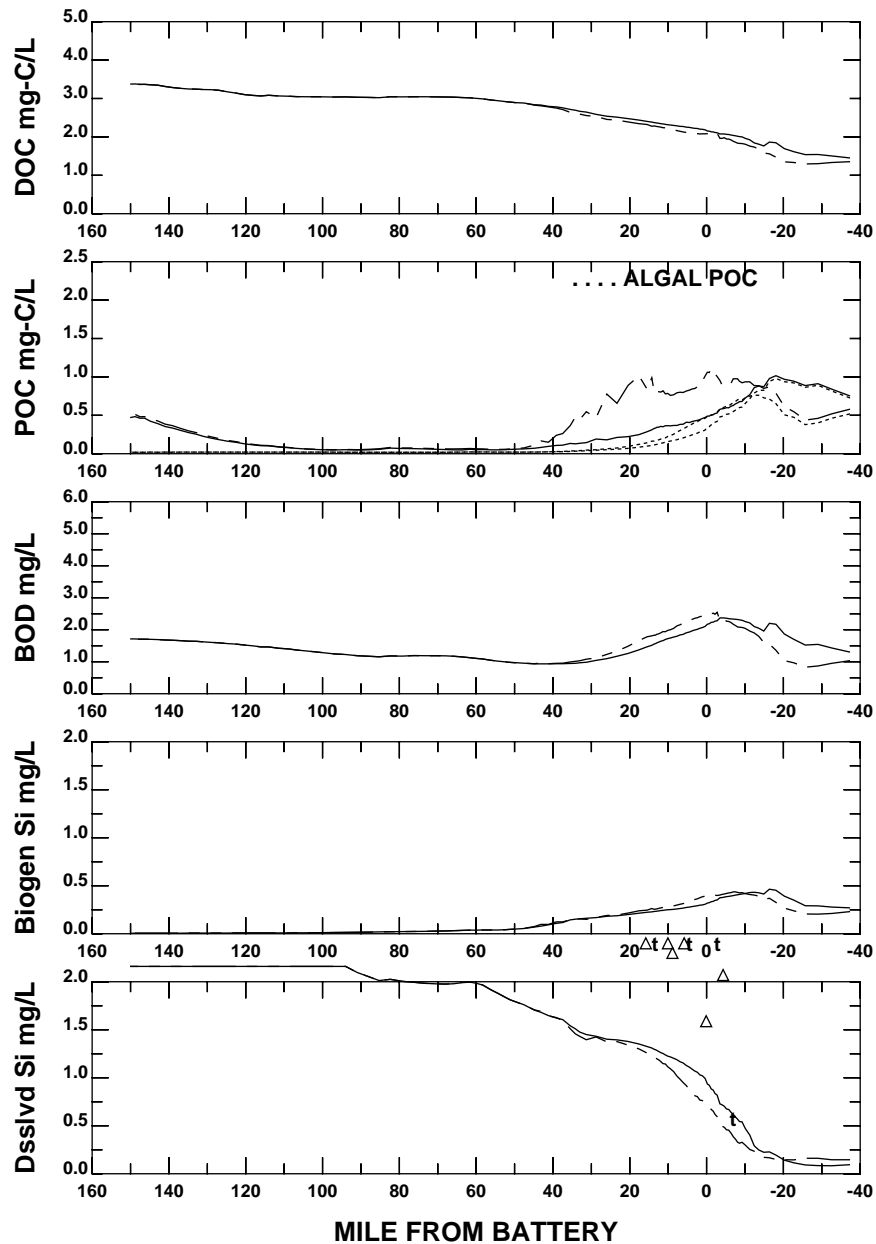


# HUDSON RIVER, UPPER AND LOWER BAY, OCEAN

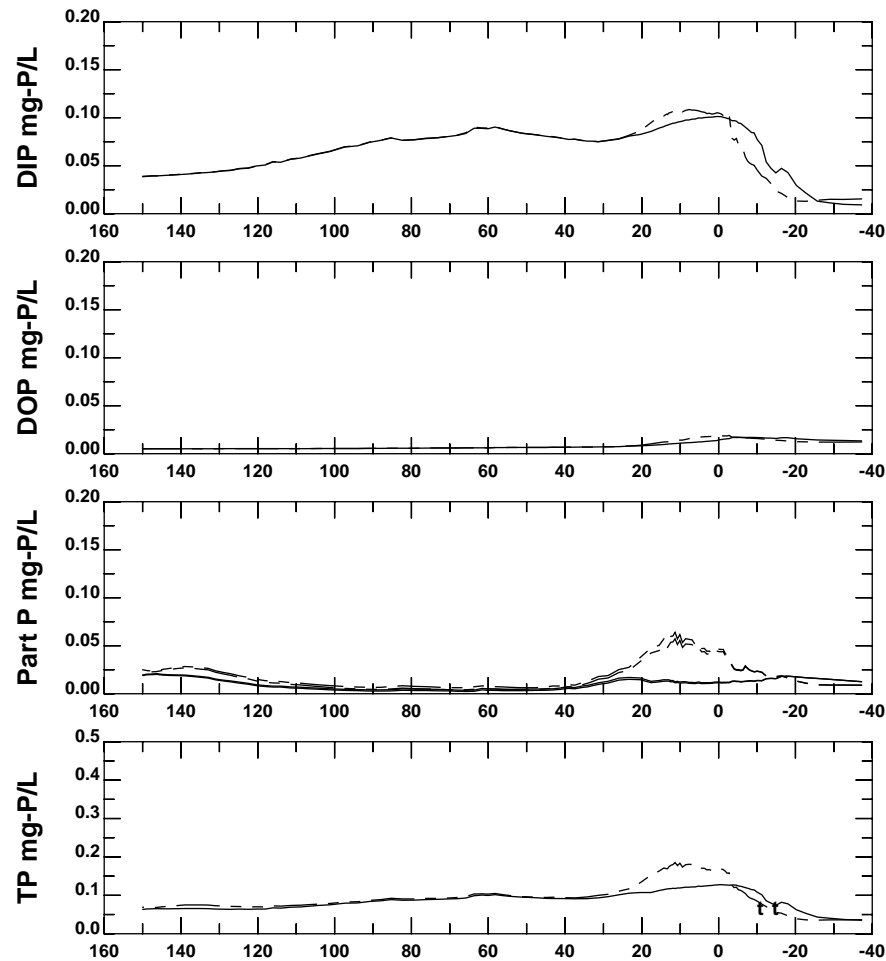
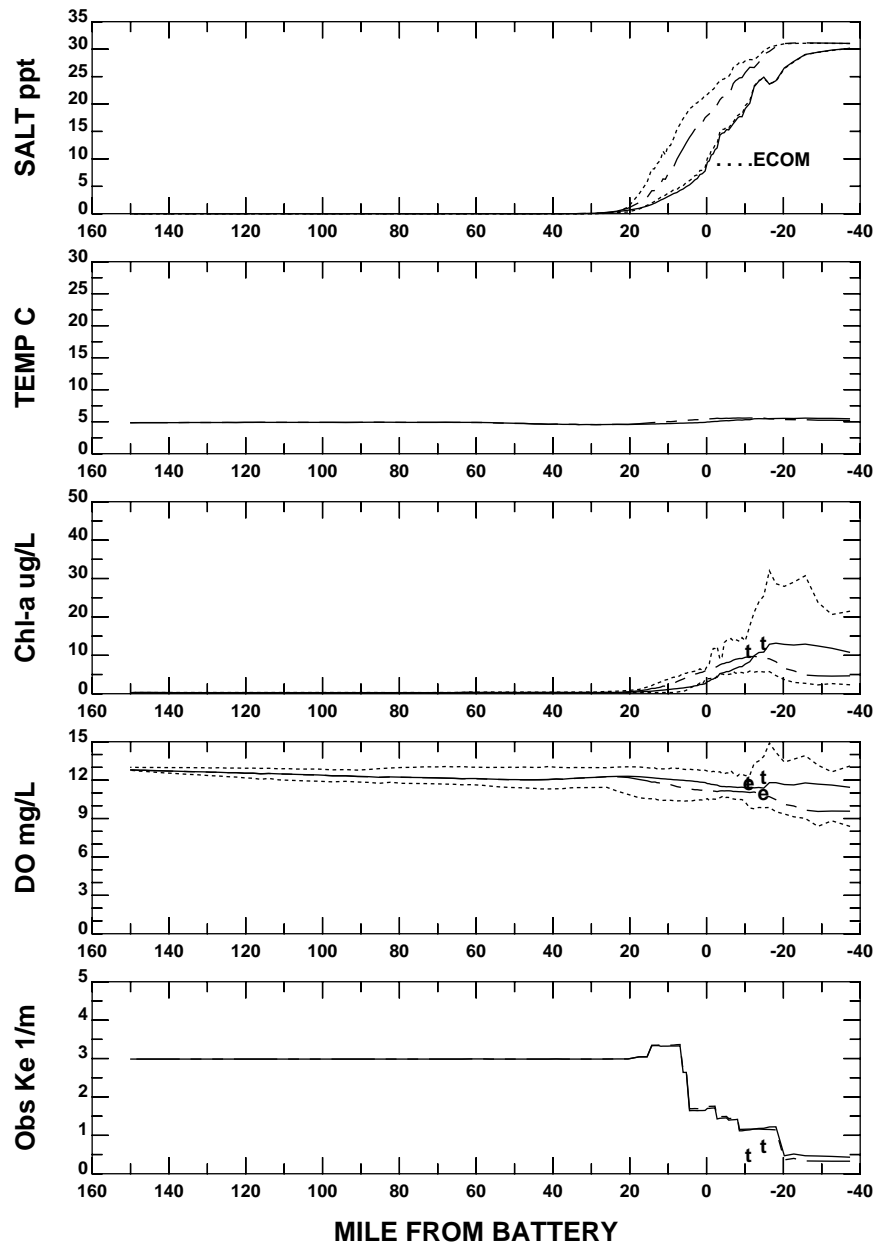


**HUDSON RIVER, UPPER AND LOWER BAY, OCEAN**





## HUDSON RIVER, UPPER AND LOWER BAY, OCEAN



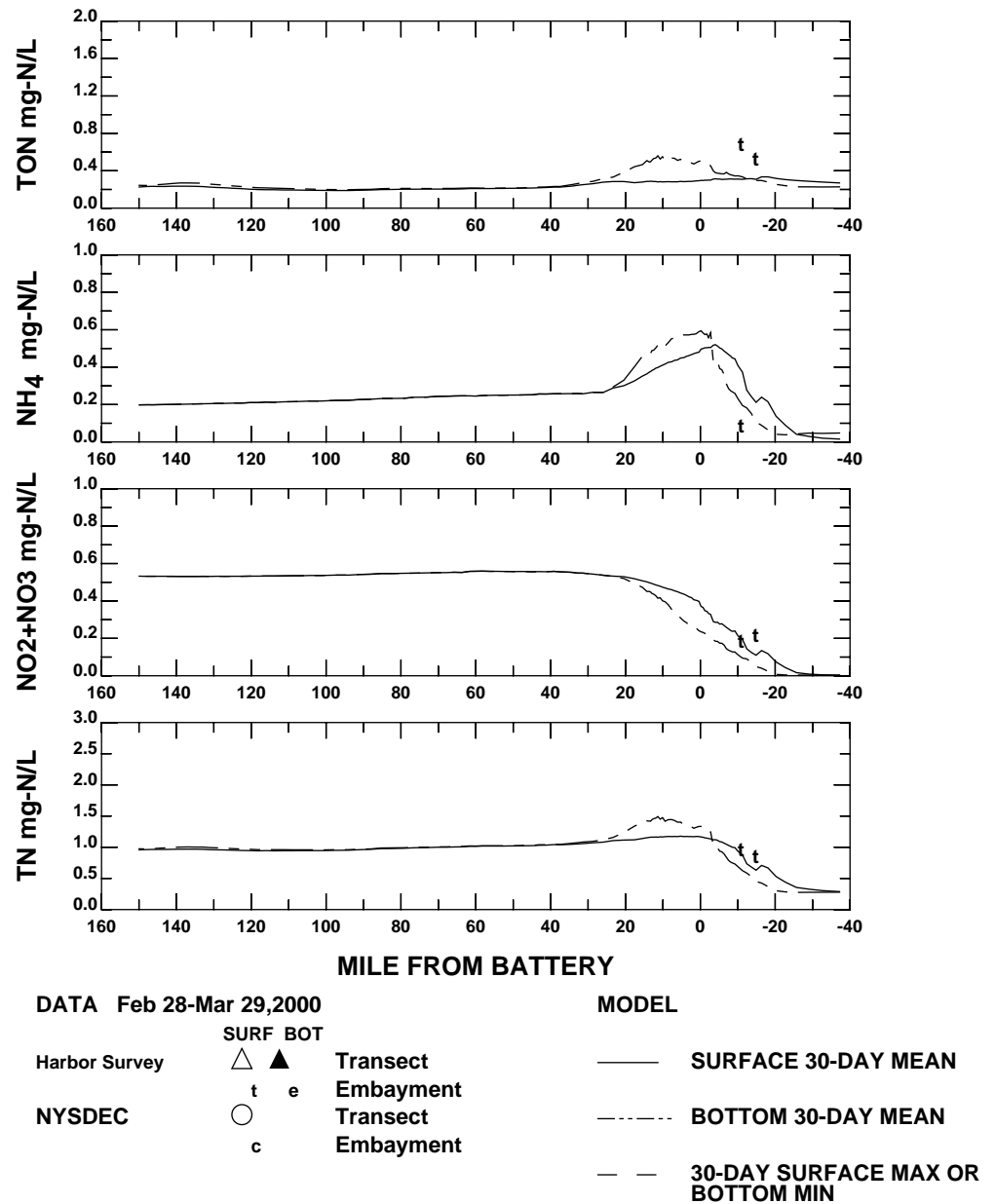
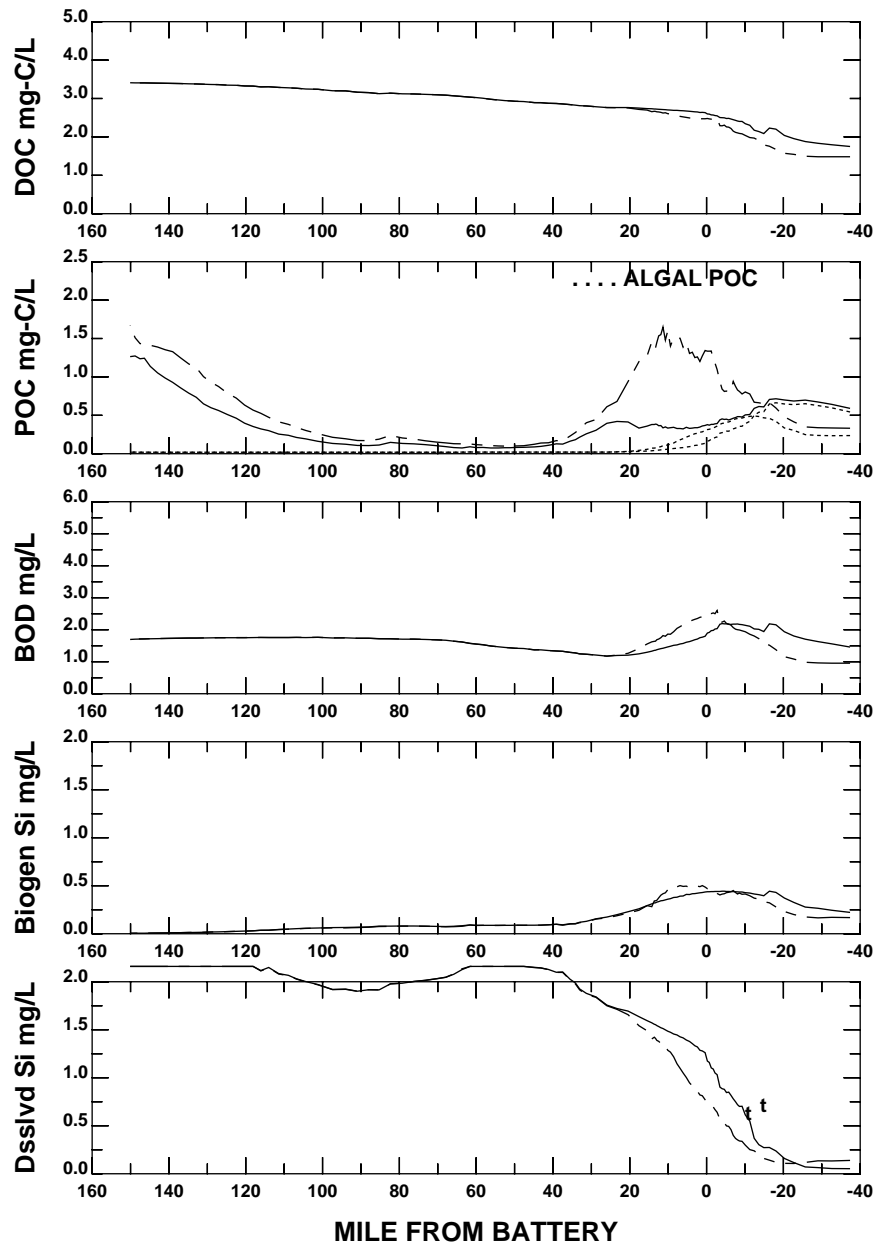
DATA Feb 28-Mar 29, 2000

MODEL

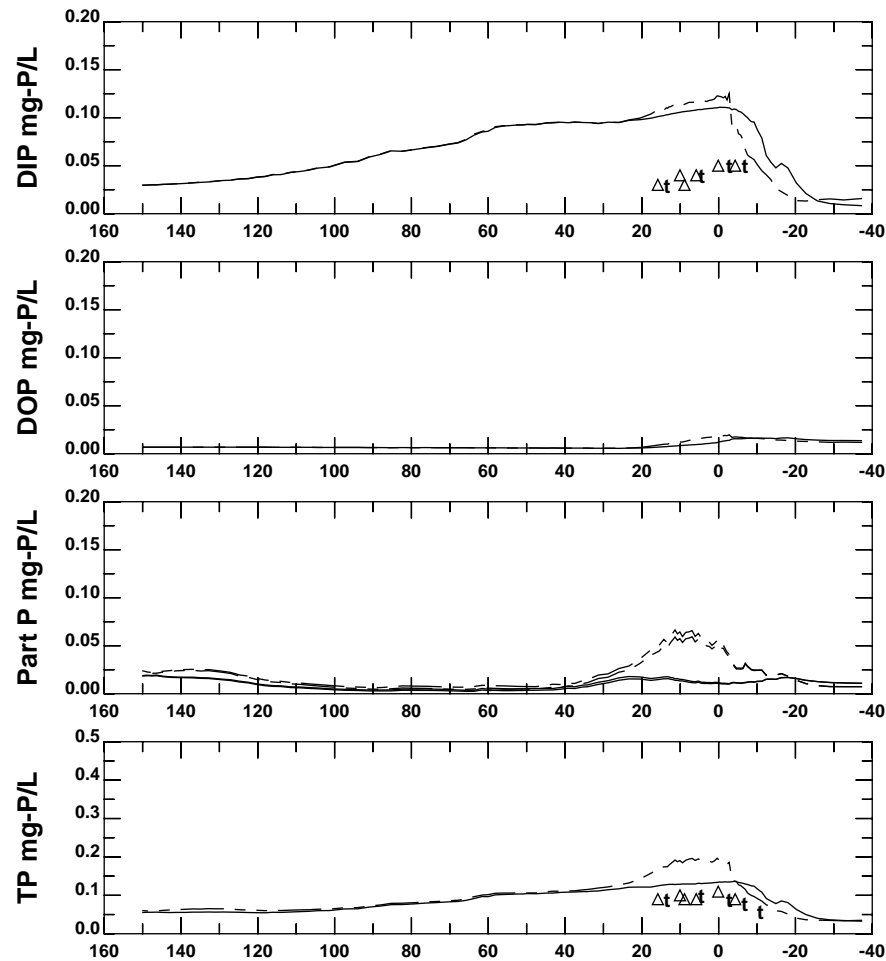
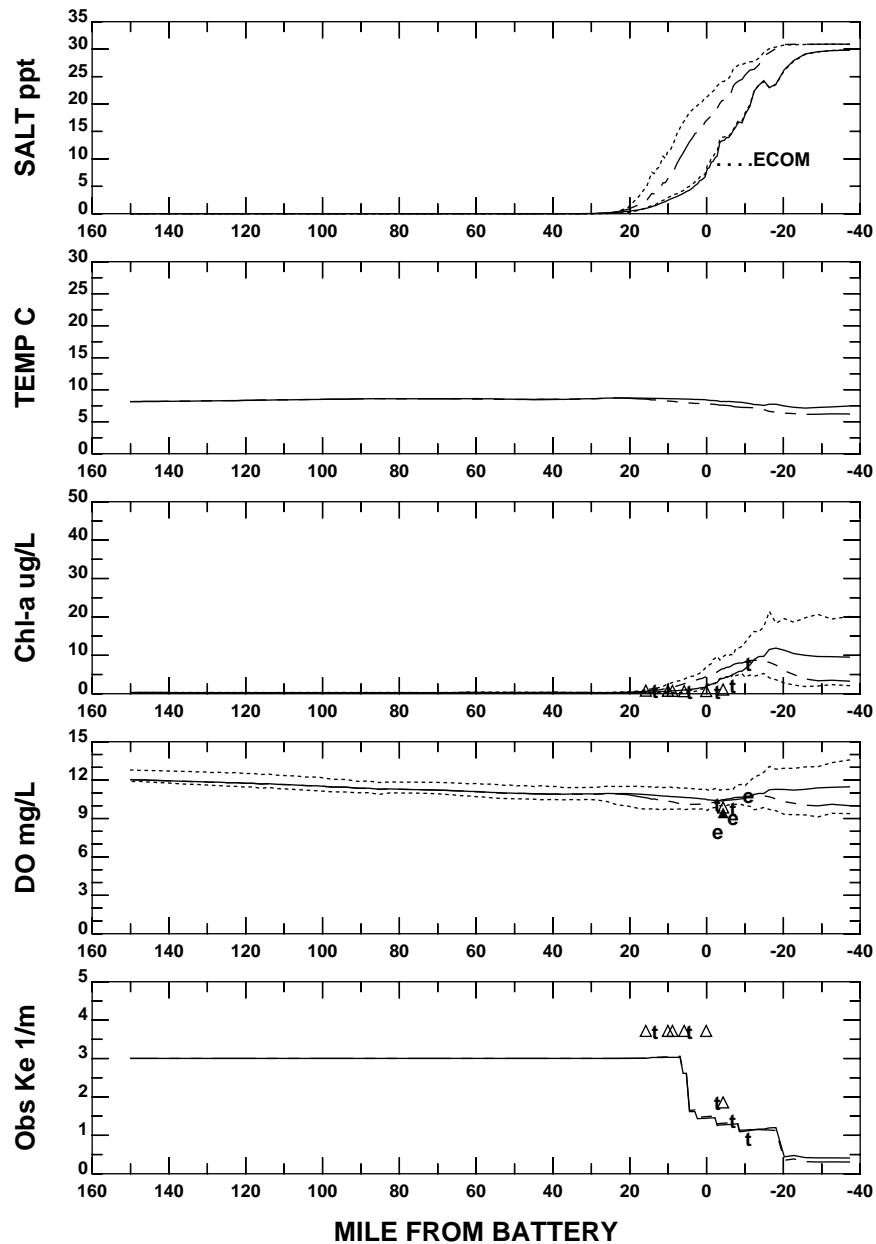
Harbor Survey SURF BOT  
 ▲ ▲ Transect  
 t e Embayment  
 NYSDEC ○ ○ Transect  
 c Embayment

— SURFACE 30-DAY MEAN  
 - - - BOTTOM 30-DAY MEAN  
 - - - 30-DAY SURFACE MAX OR BOTTOM MIN

# HUDSON RIVER, UPPER AND LOWER BAY, OCEAN



# HUDSON RIVER, UPPER AND LOWER BAY, OCEAN



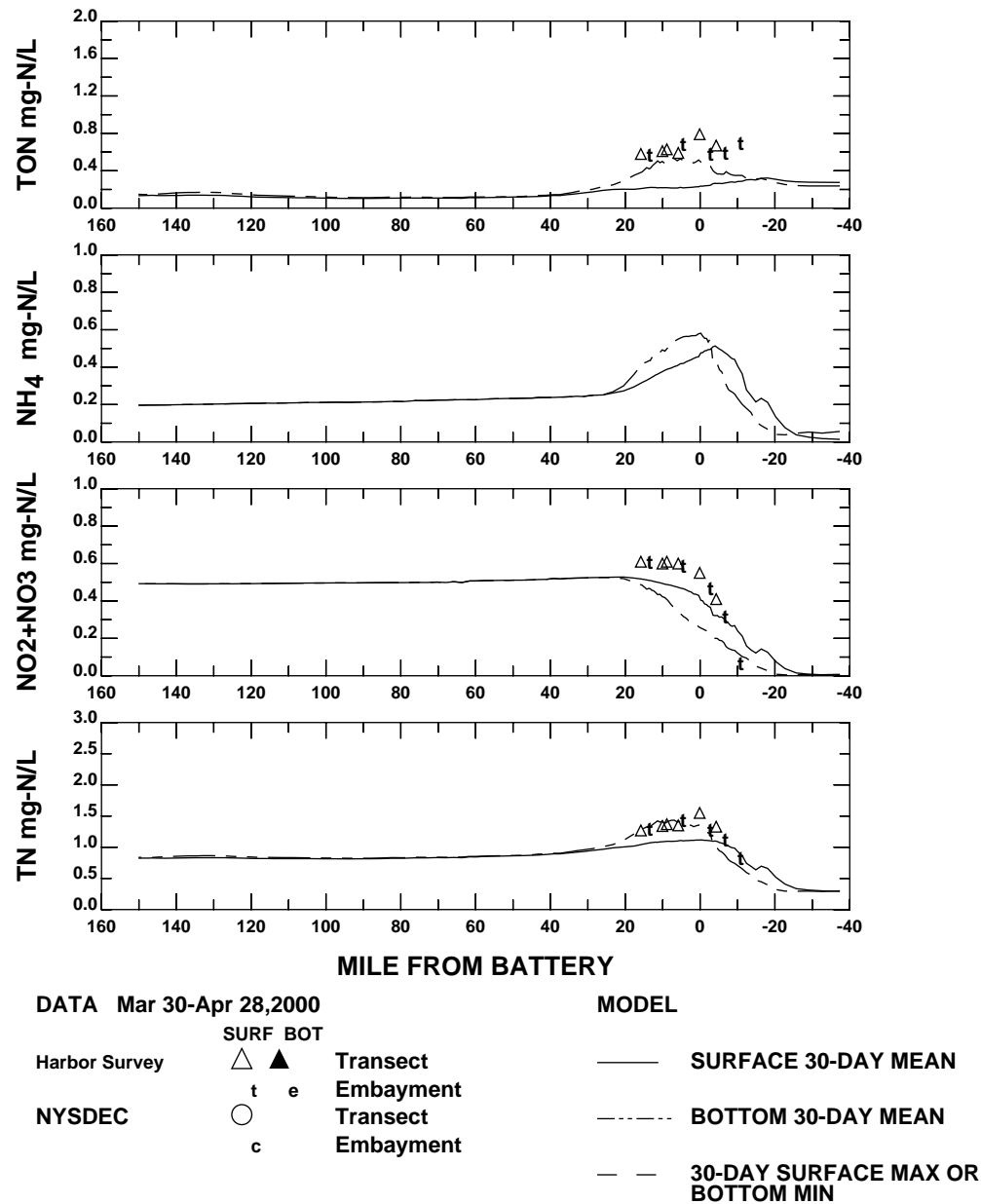
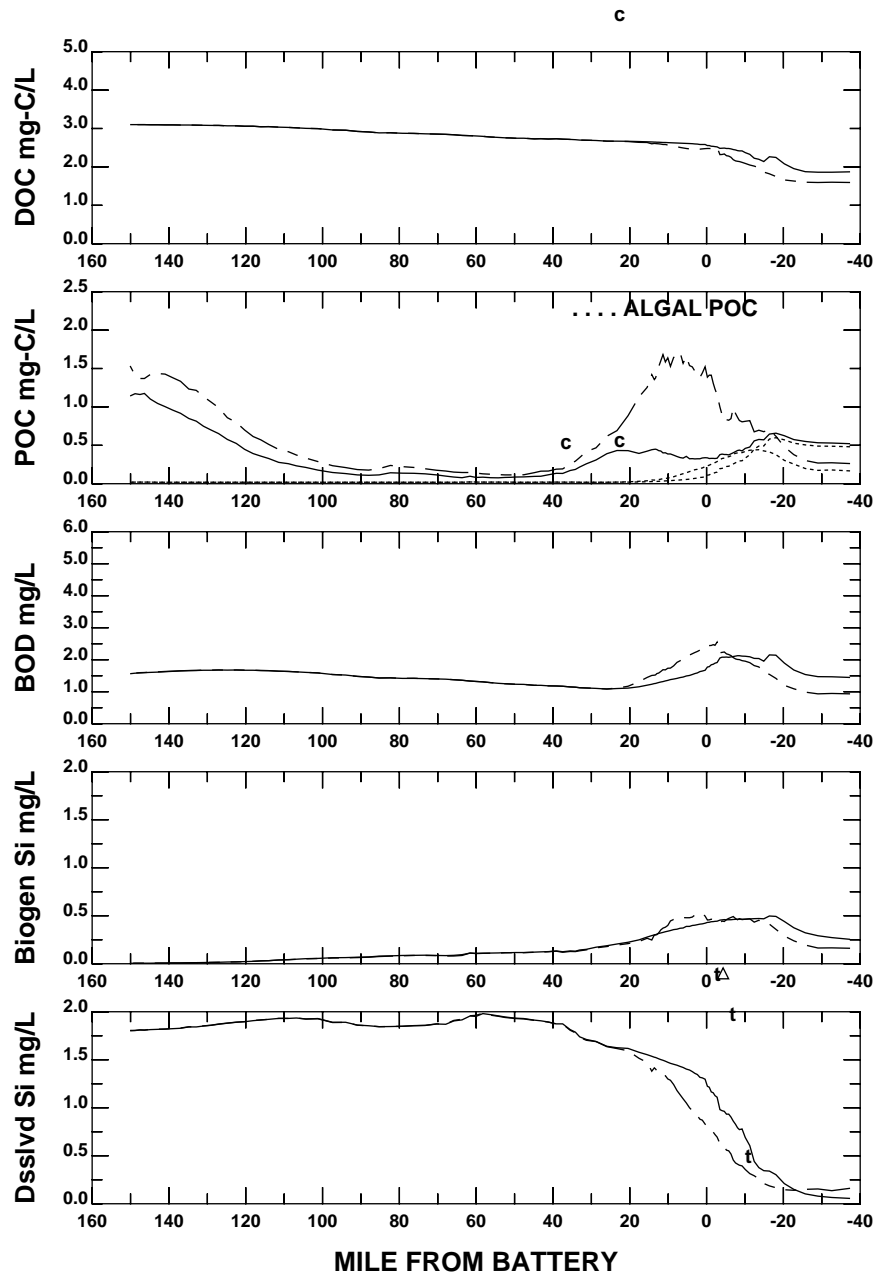
DATA Mar 30-Apr 28, 2000

MODEL

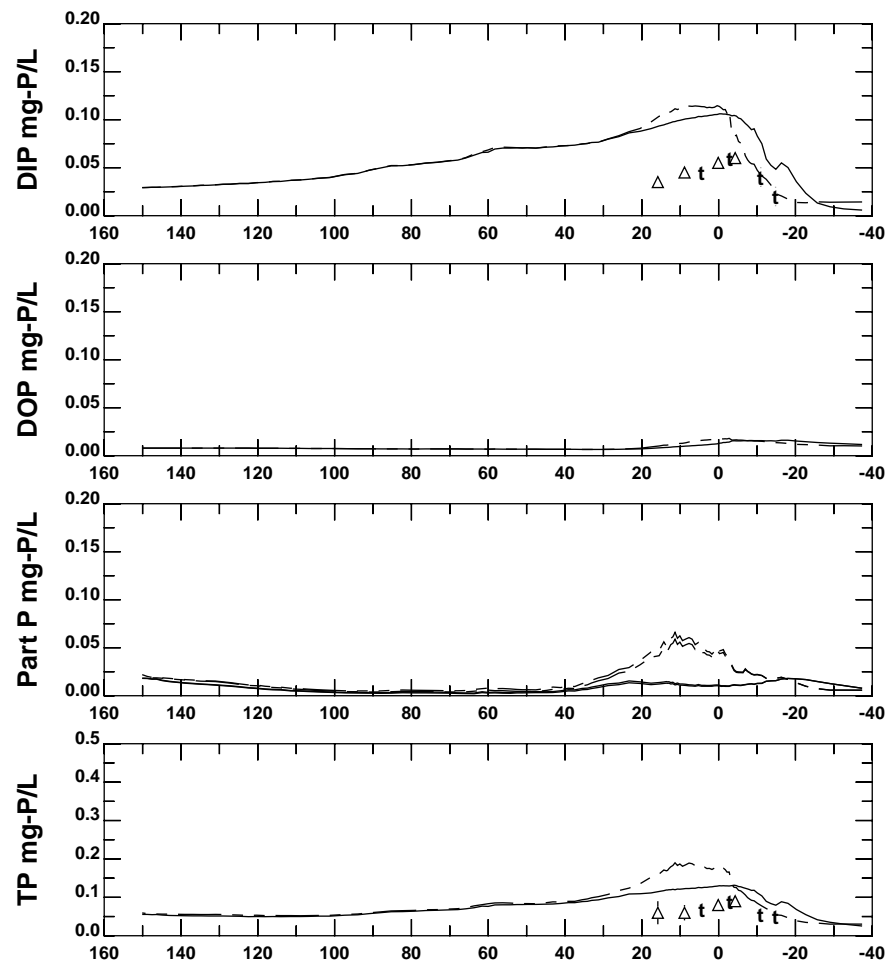
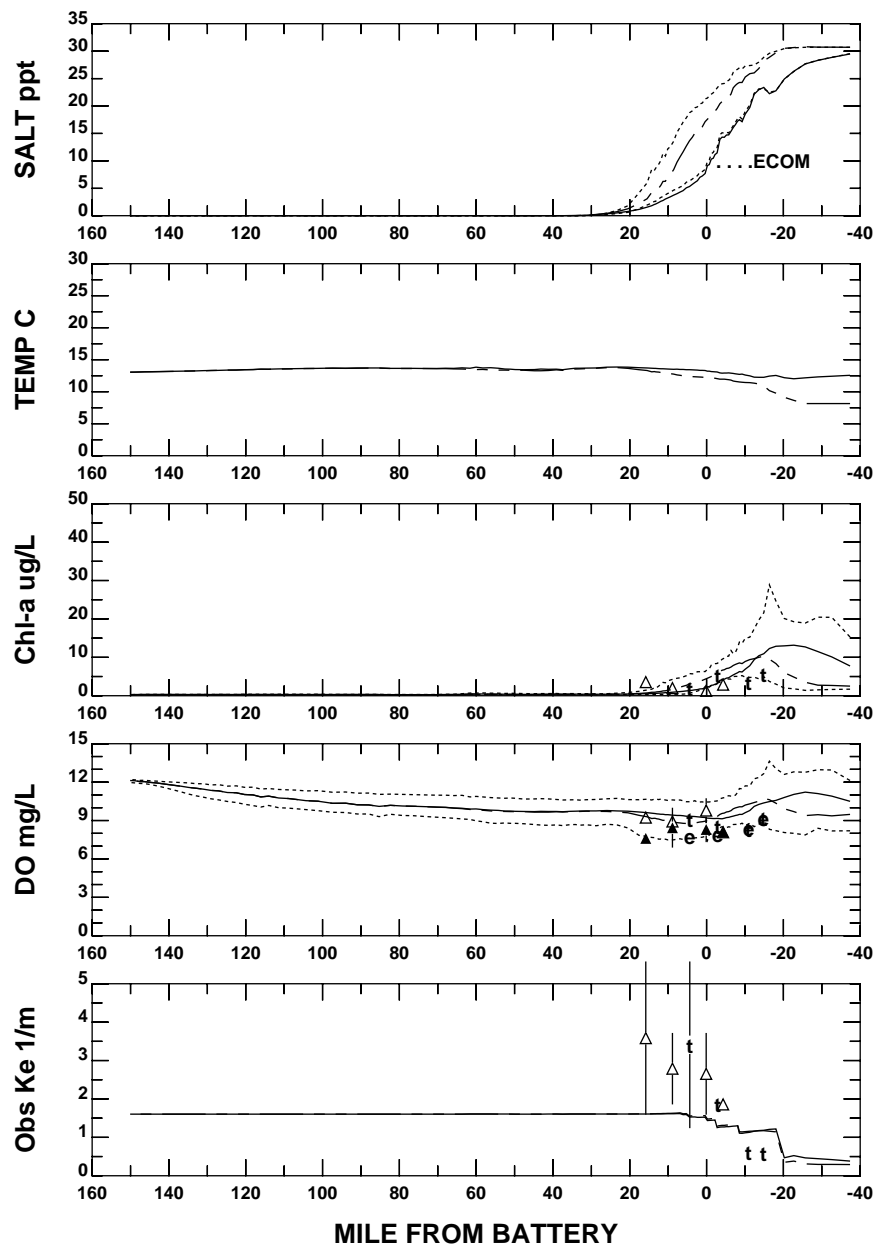
SURF BOT  
 Harbor Survey  $\triangle$   $\blacktriangle$  Transect  
 t e Embayment  
 NYSDEC  $\circ$  Transect  
 c Embayment

— SURFACE 30-DAY MEAN  
 - - - BOTTOM 30-DAY MEAN  
 - - - 30-DAY SURFACE MAX OR BOTTOM MIN

**HUDSON RIVER, UPPER AND LOWER BAY, OCEAN**



## HUDSON RIVER, UPPER AND LOWER BAY, OCEAN



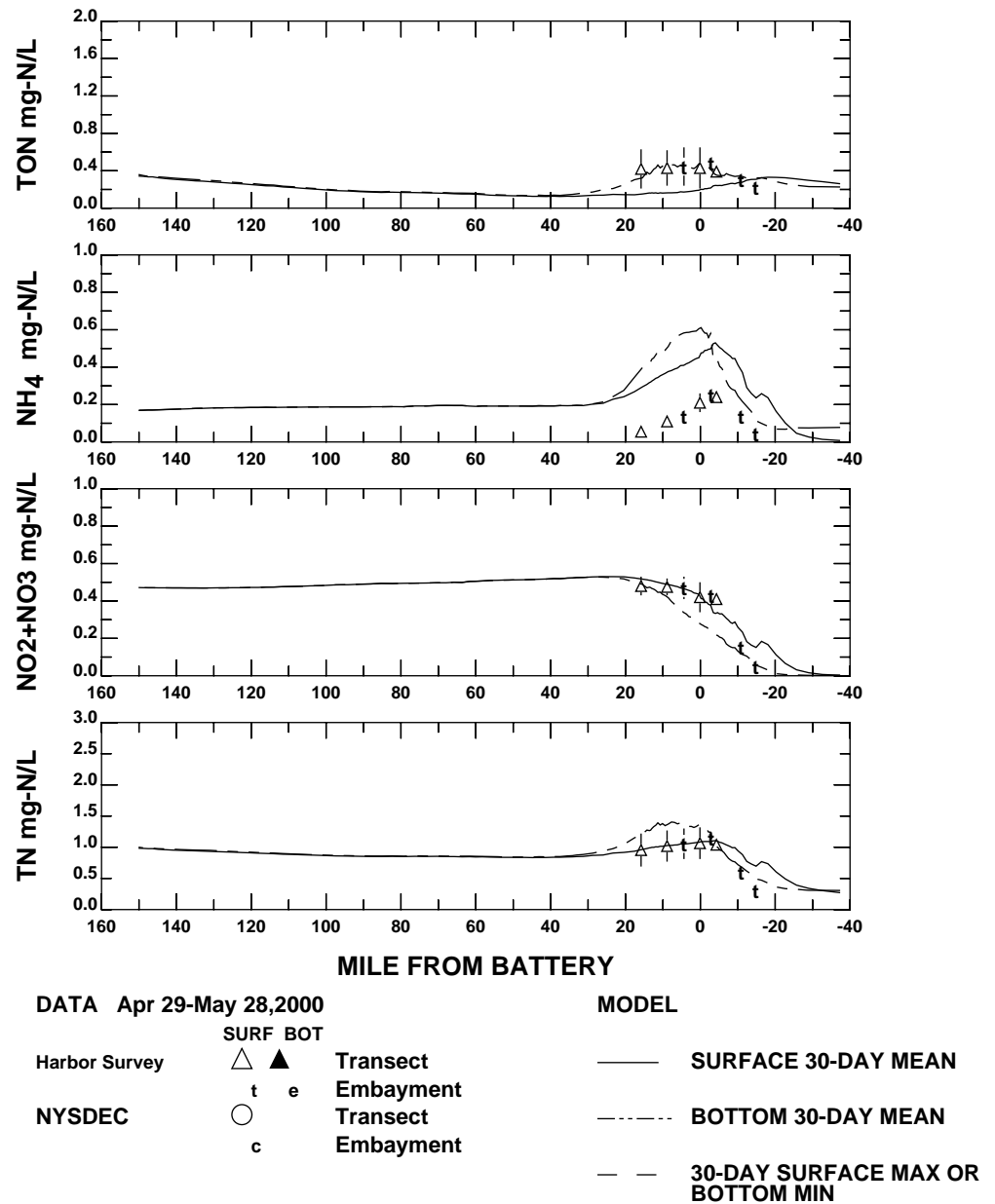
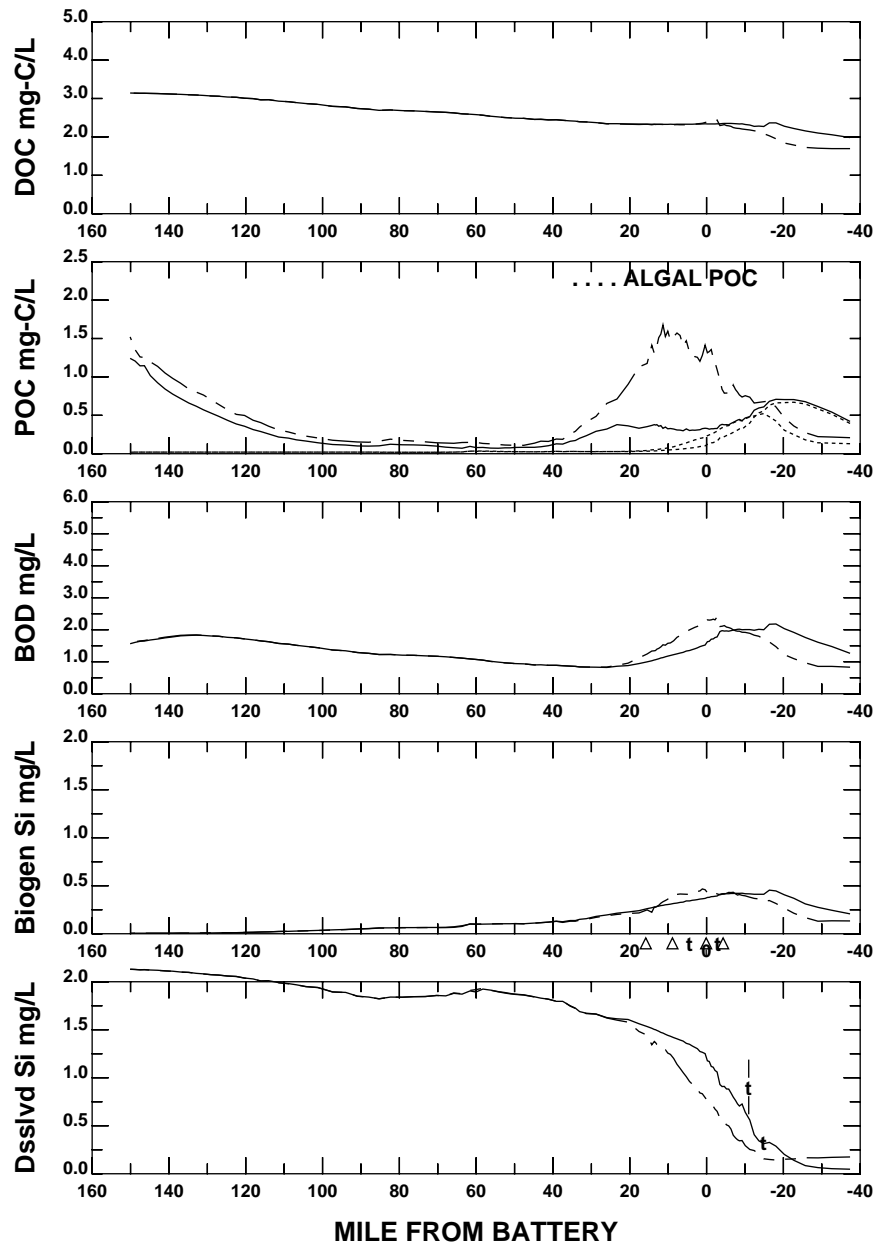
DATA Apr 29-May 28, 2000

Harbor Survey SURF BOT  
 ▲ ▲ Transect  
 t e Embayment  
 NYSDEC ○ ○ Transect  
 c Embayment

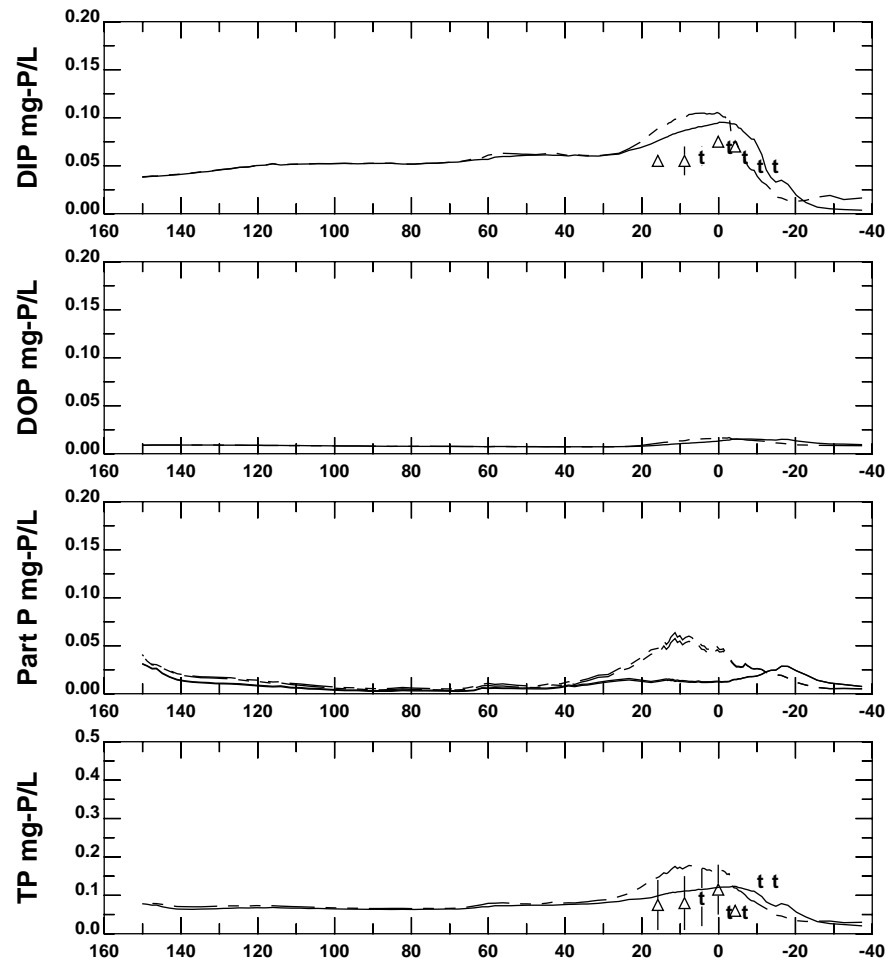
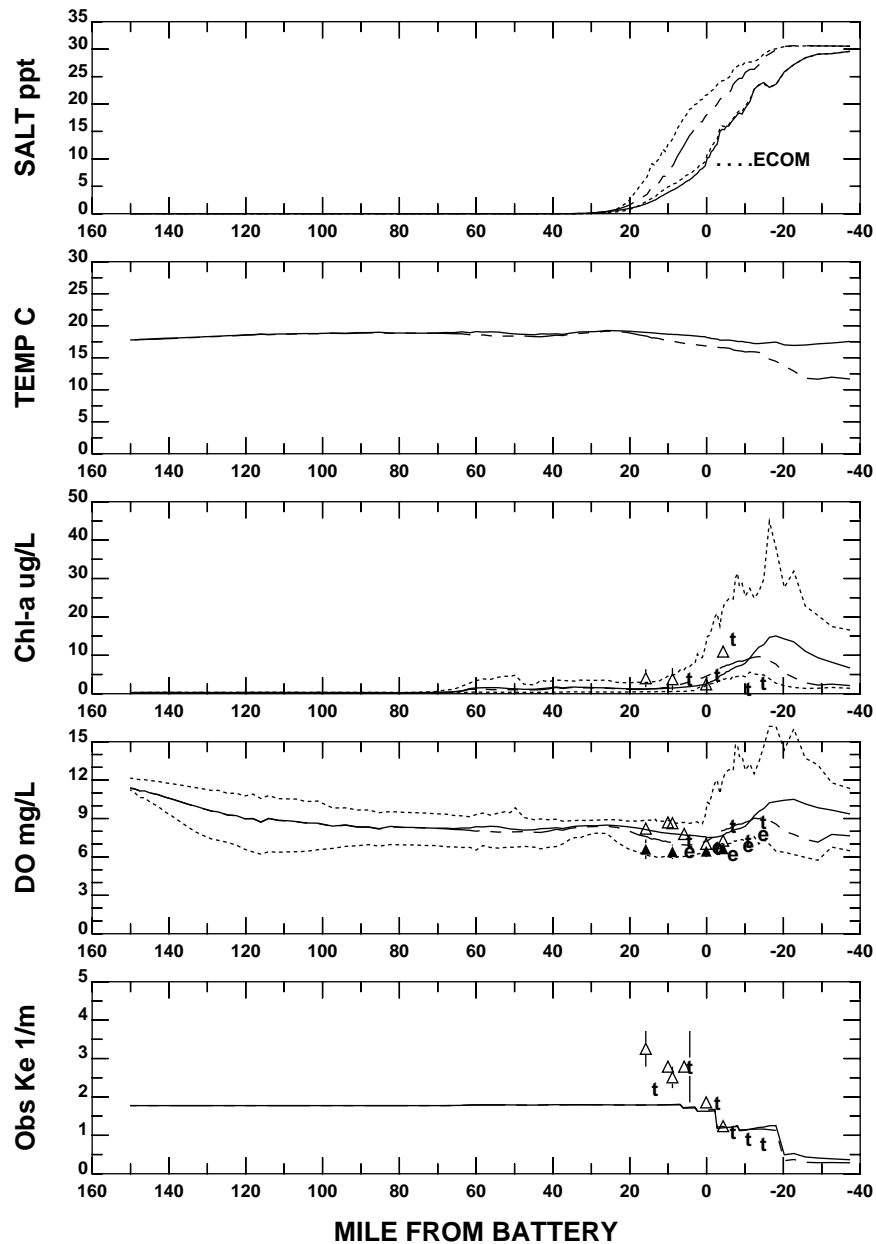
MODEL

— SURFACE 30-DAY MEAN  
 - - - - BOTTOM 30-DAY MEAN  
 - - 30-DAY SURFACE MAX OR BOTTOM MIN

## HUDSON RIVER, UPPER AND LOWER BAY, OCEAN



### HUDSON RIVER, UPPER AND LOWER BAY, OCEAN



MILE FROM BATTERY

DATA May 29-Jun 27, 2000

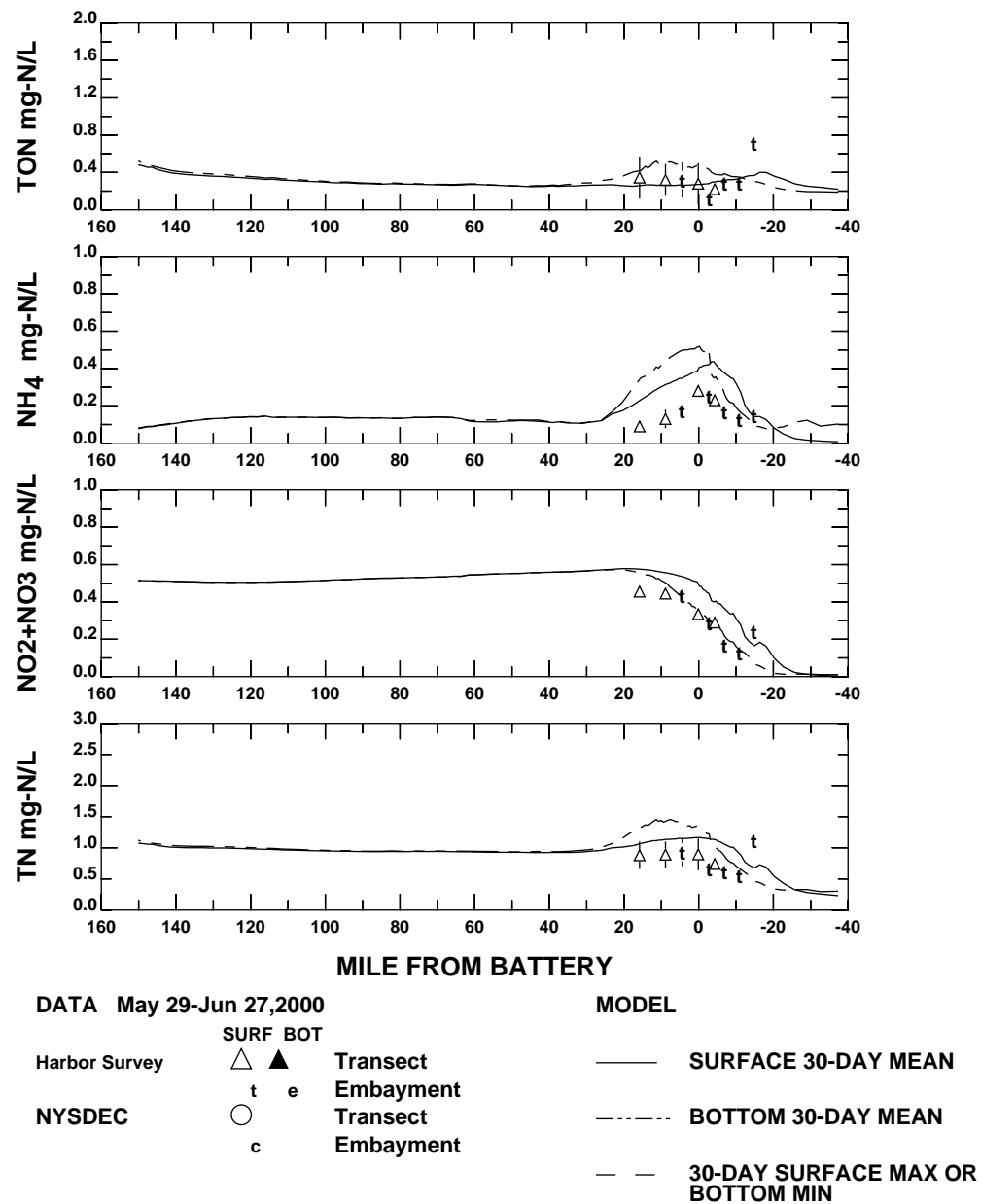
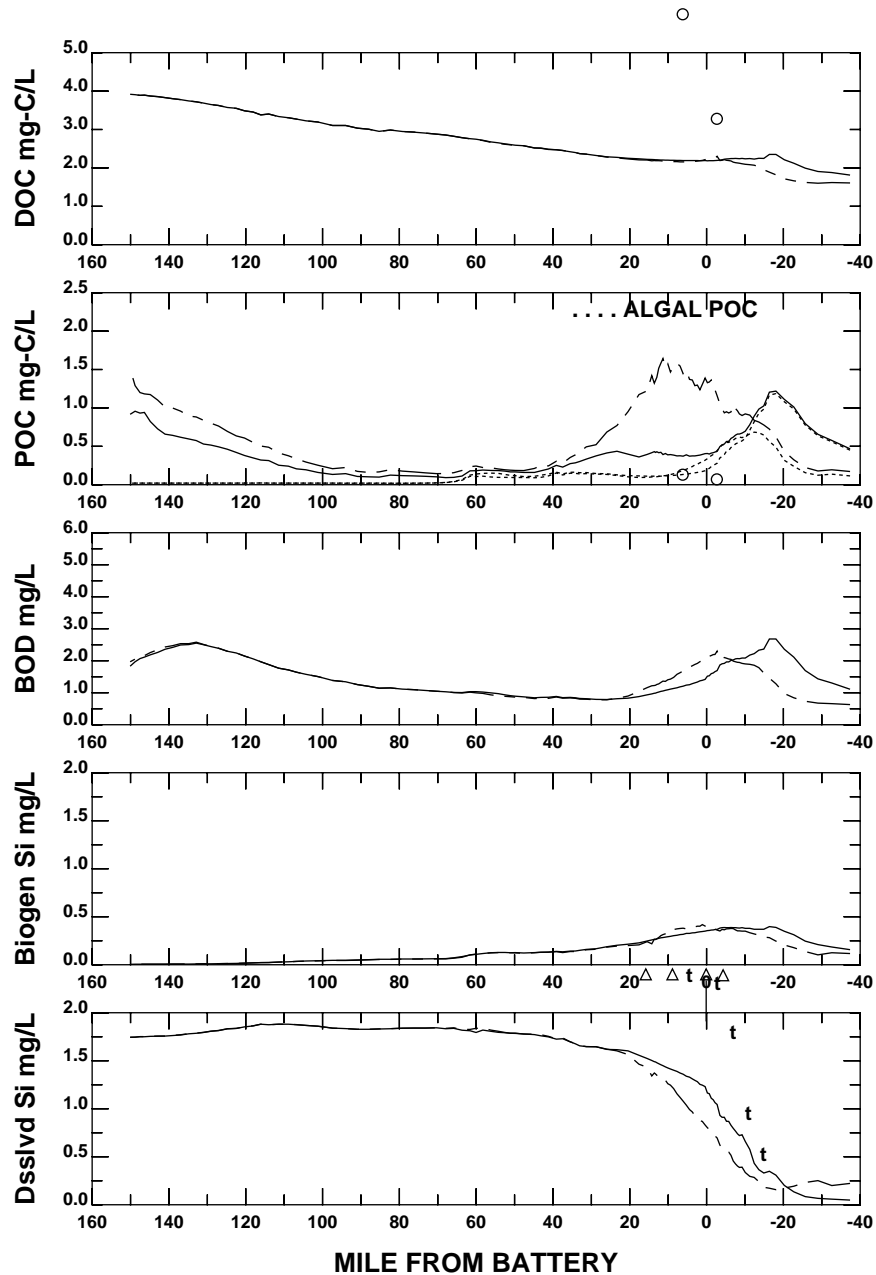
MODEL

Harbor Survey SURF BOT  
 ▲ ▲ Transect  
 t e Embayment  
 NYSDEC ○ ○ Transect  
 c Embayment

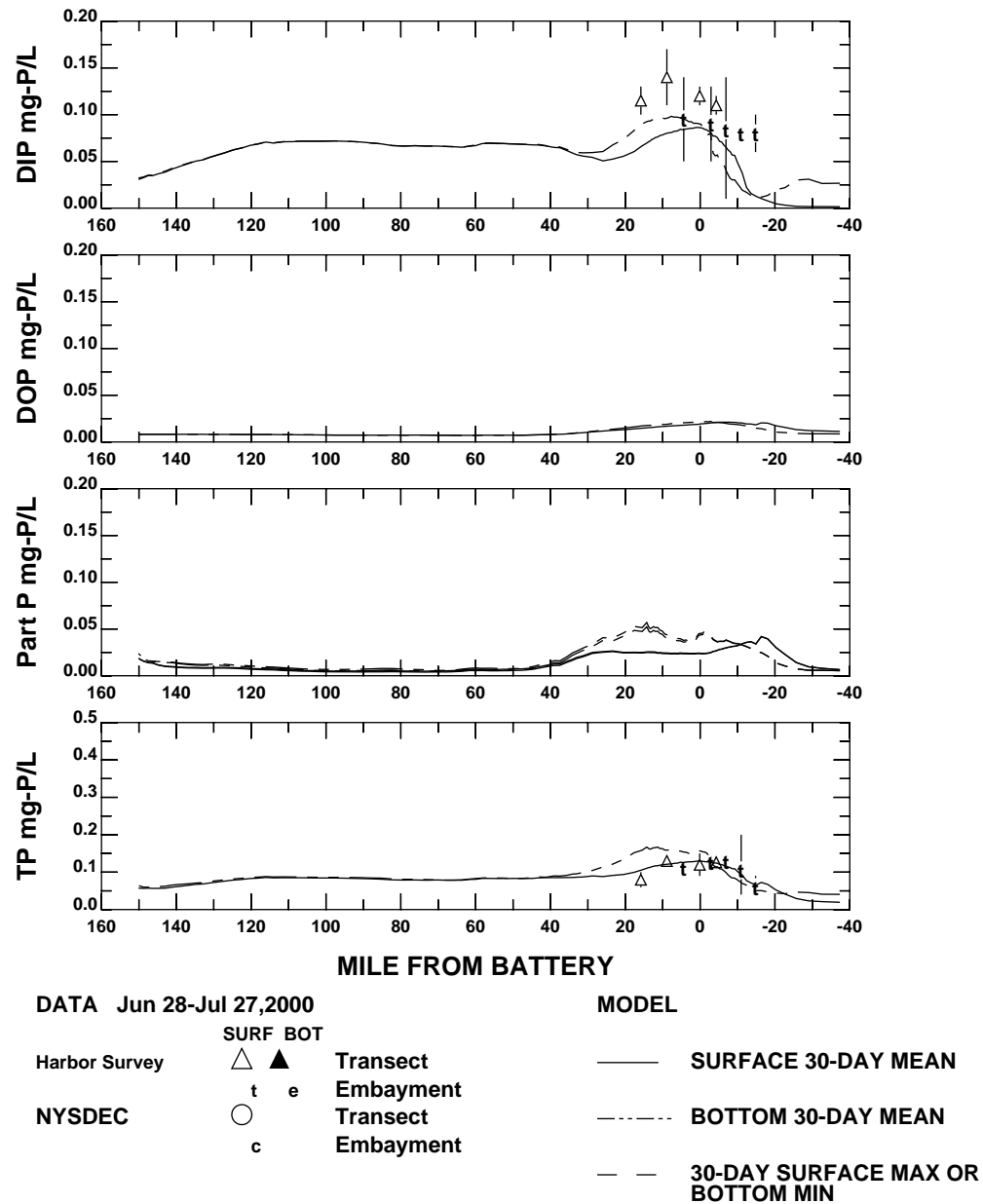
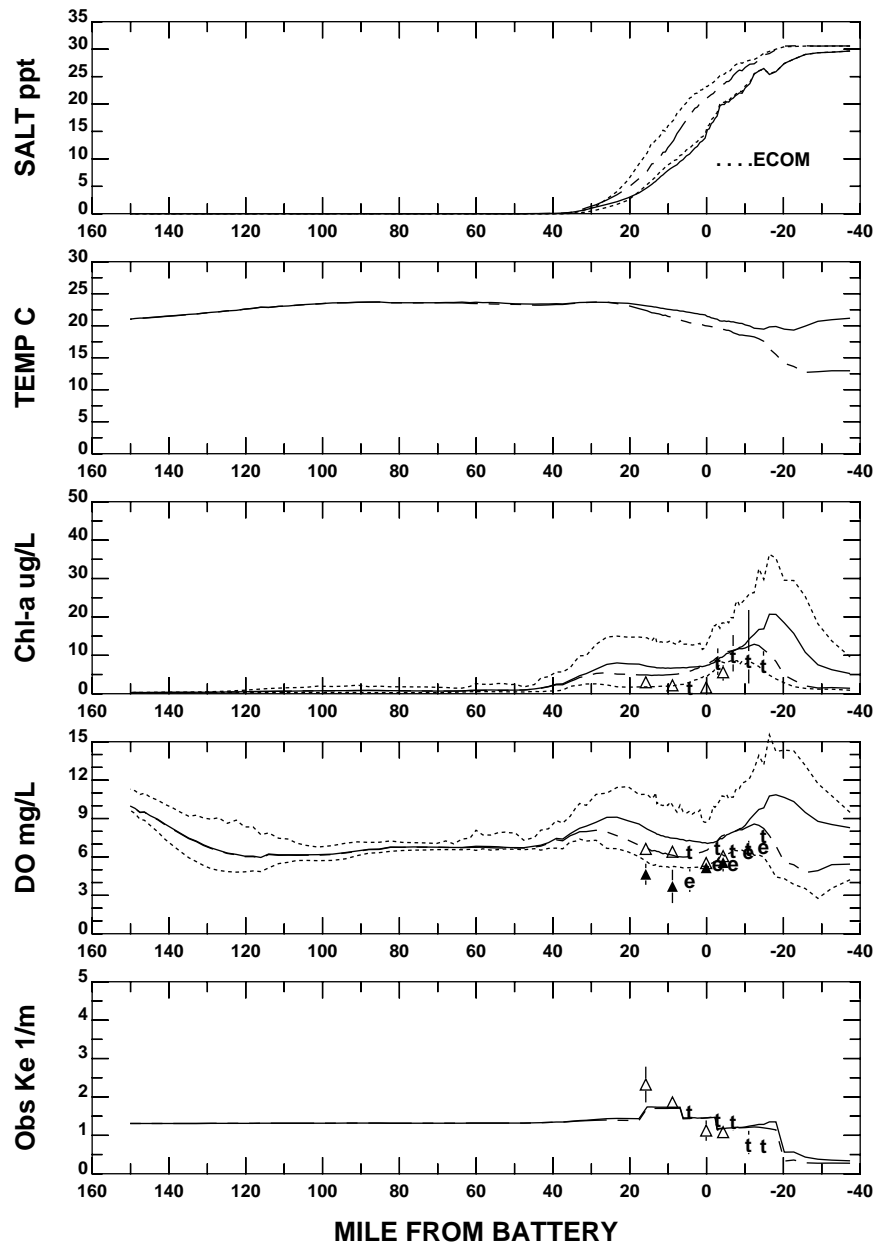
— SURFACE 30-DAY MEAN  
 - - - BOTTOM 30-DAY MEAN  
 - - - 30-DAY SURFACE MAX OR BOTTOM MIN

HUDSON RIVER, UPPER AND LOWER BAY, OCEAN

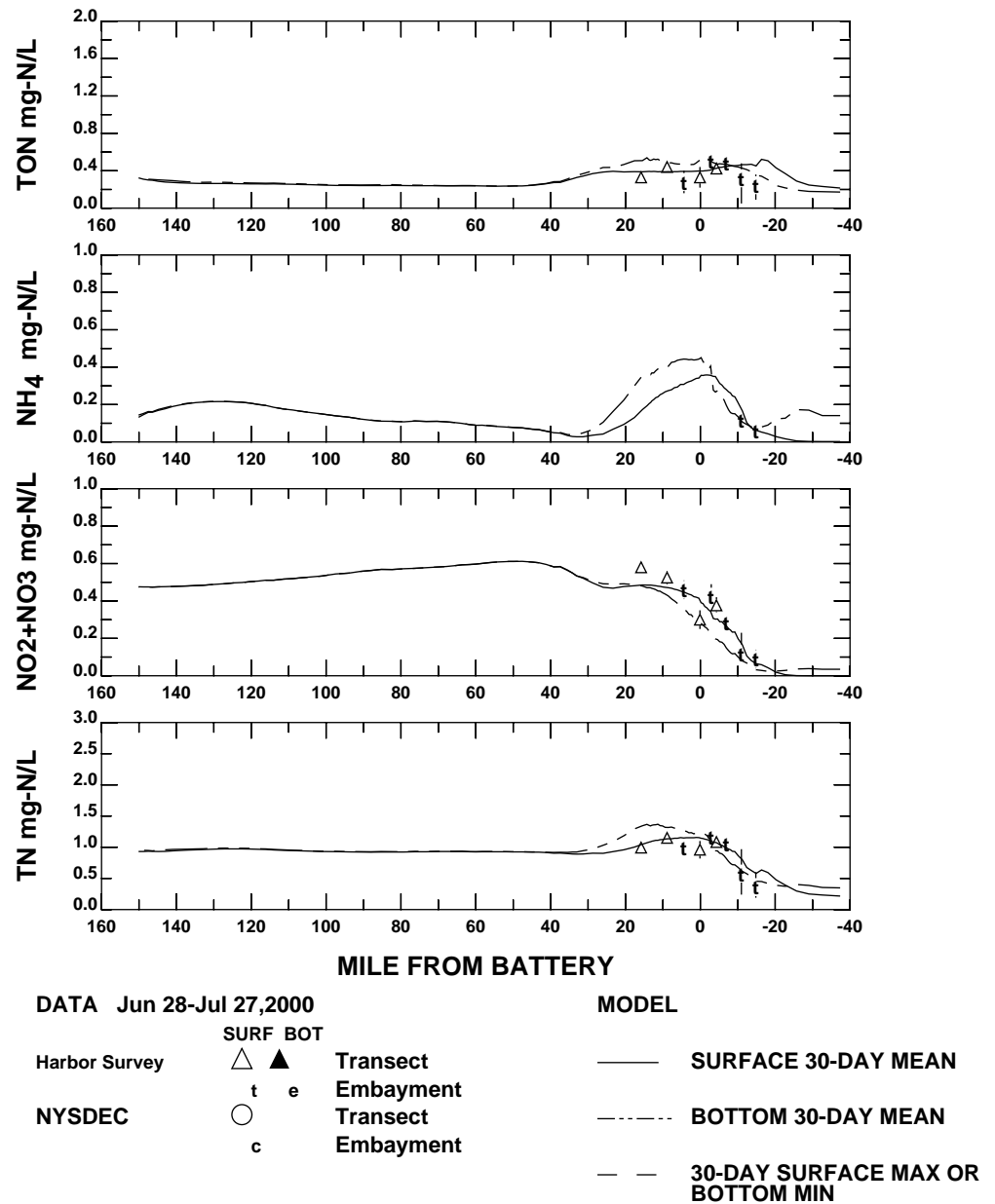
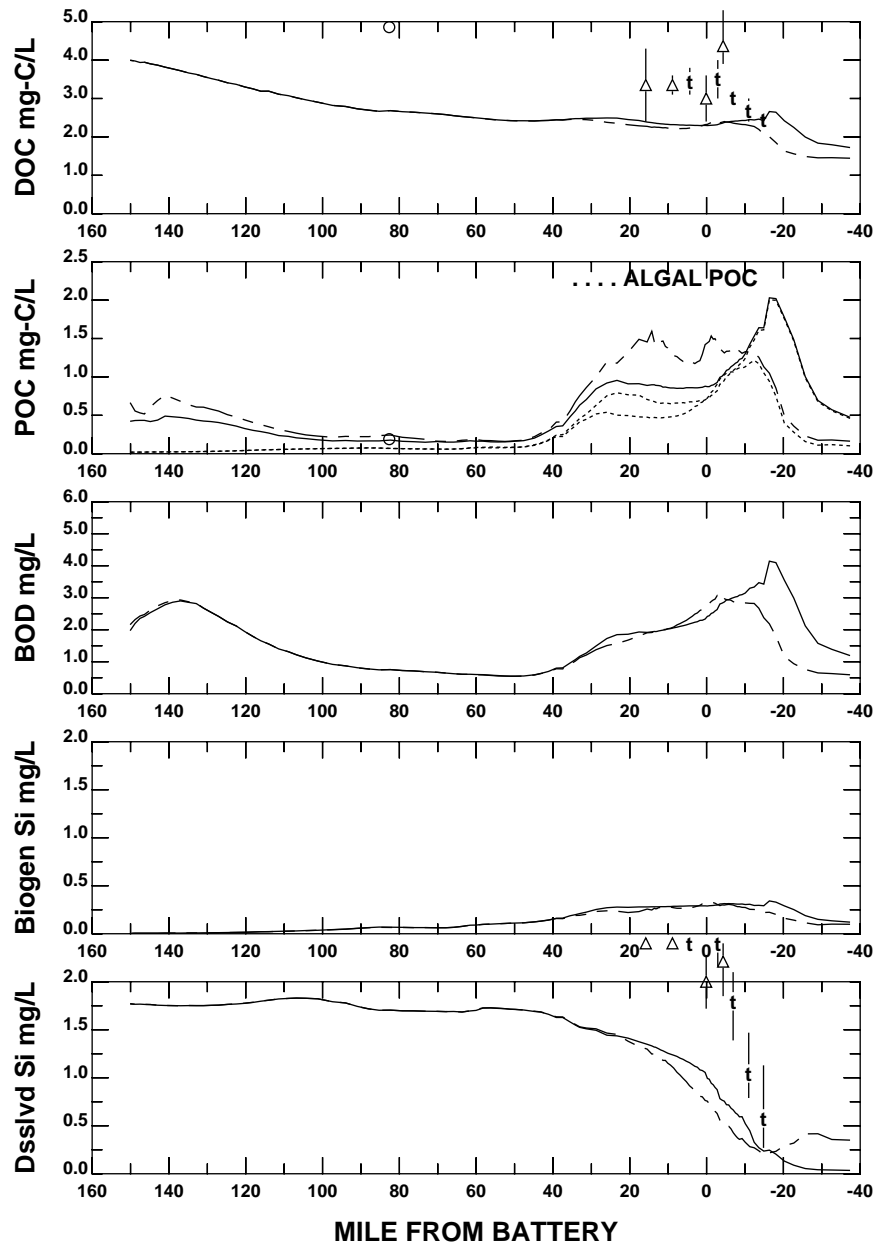




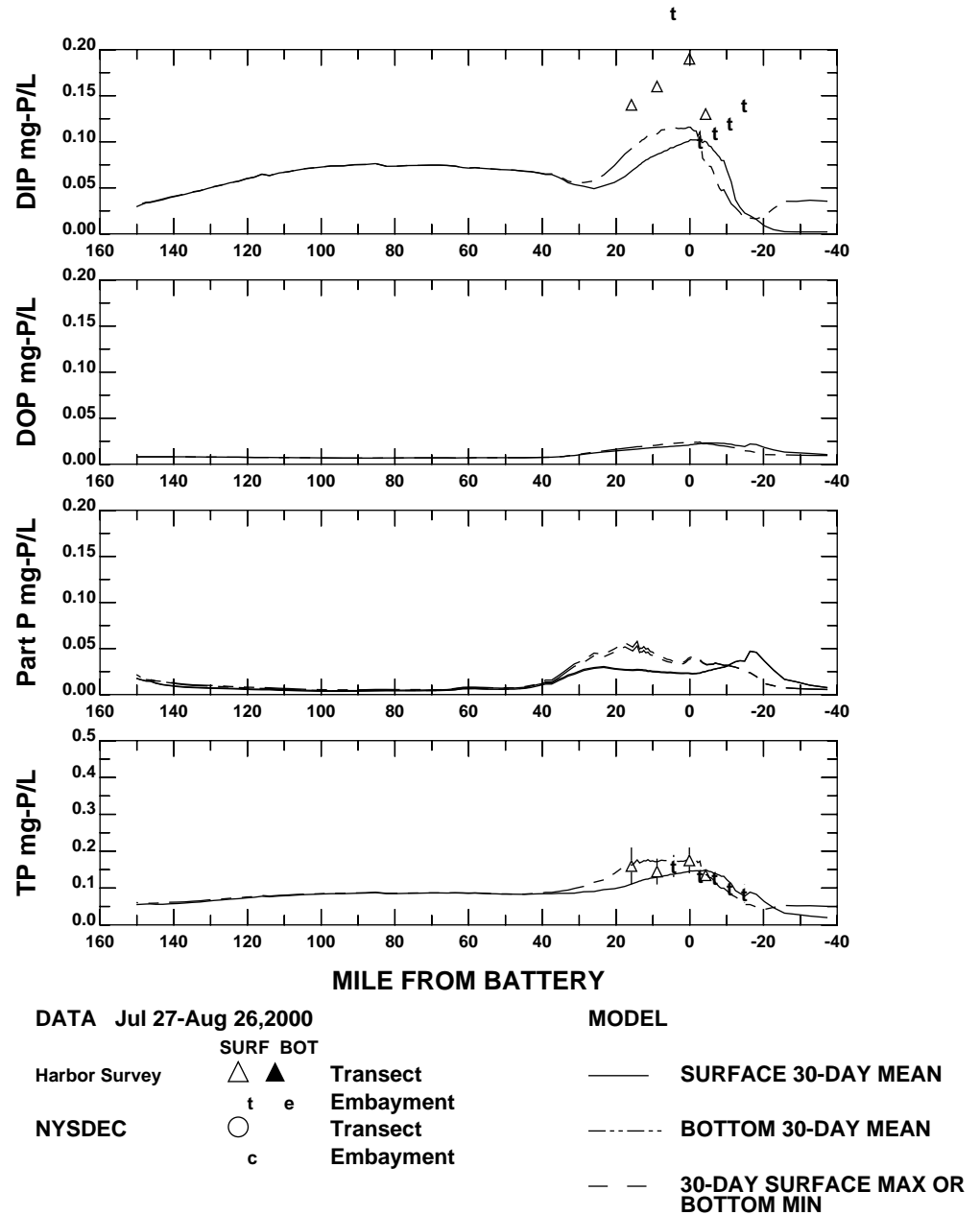
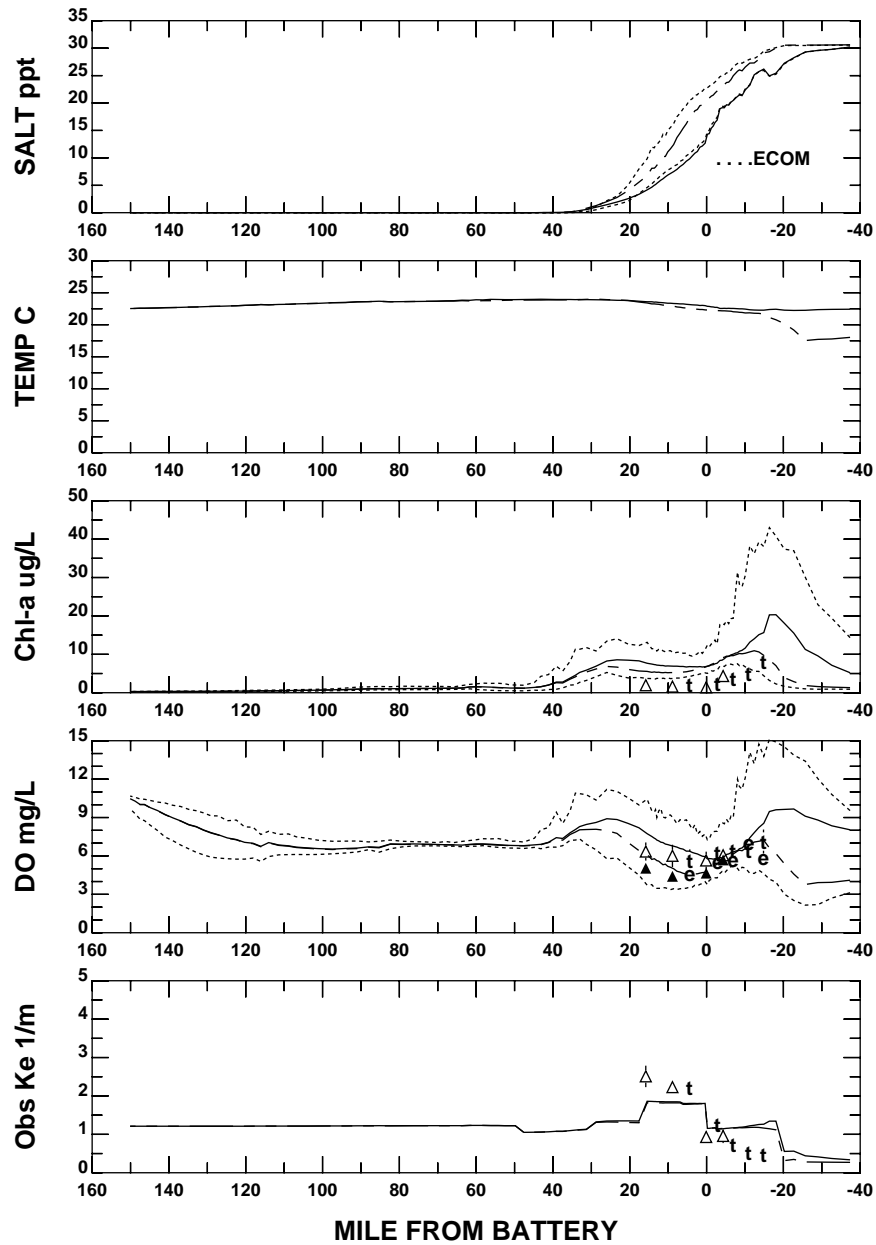
## HUDSON RIVER, UPPER AND LOWER BAY, OCEAN



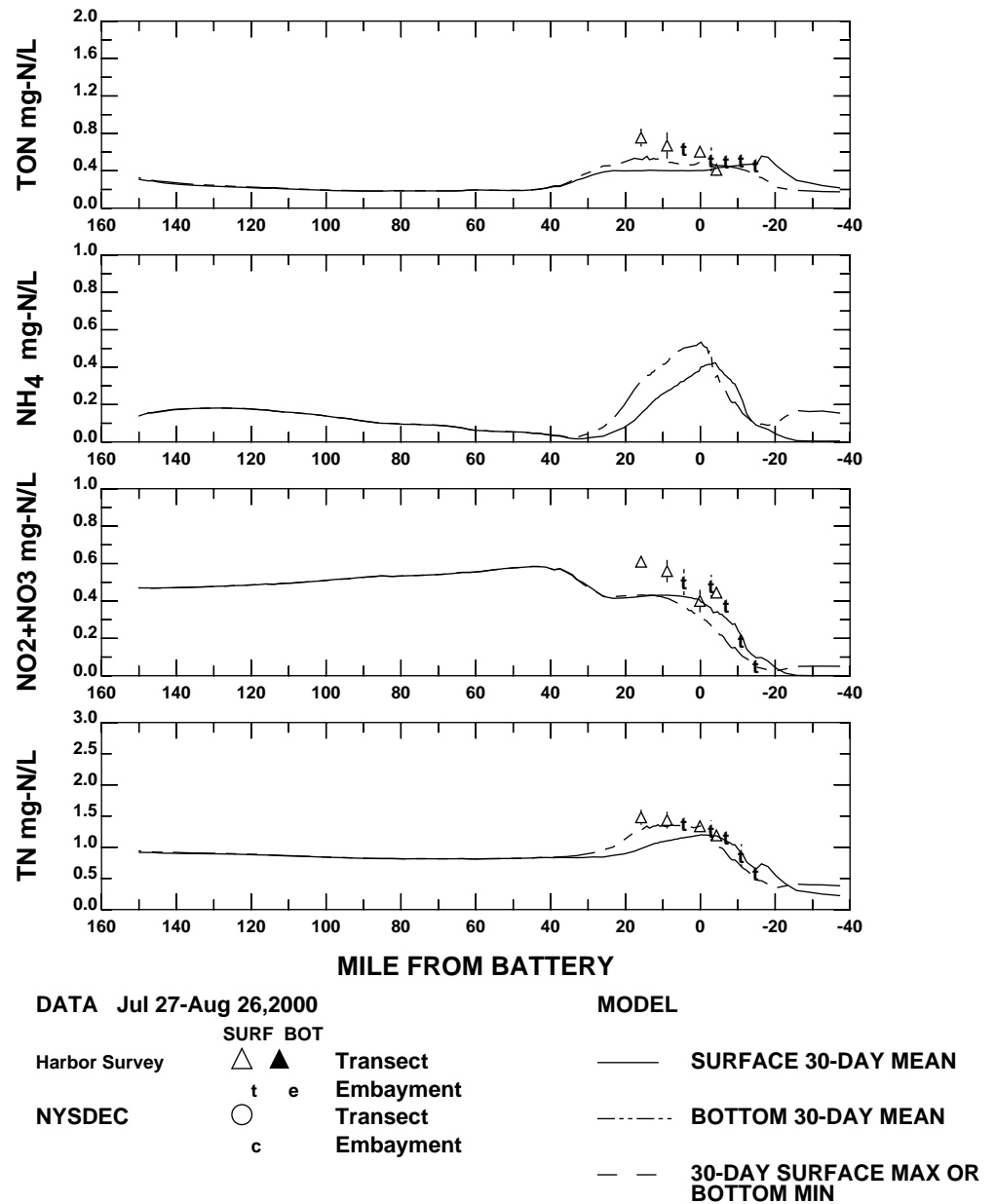
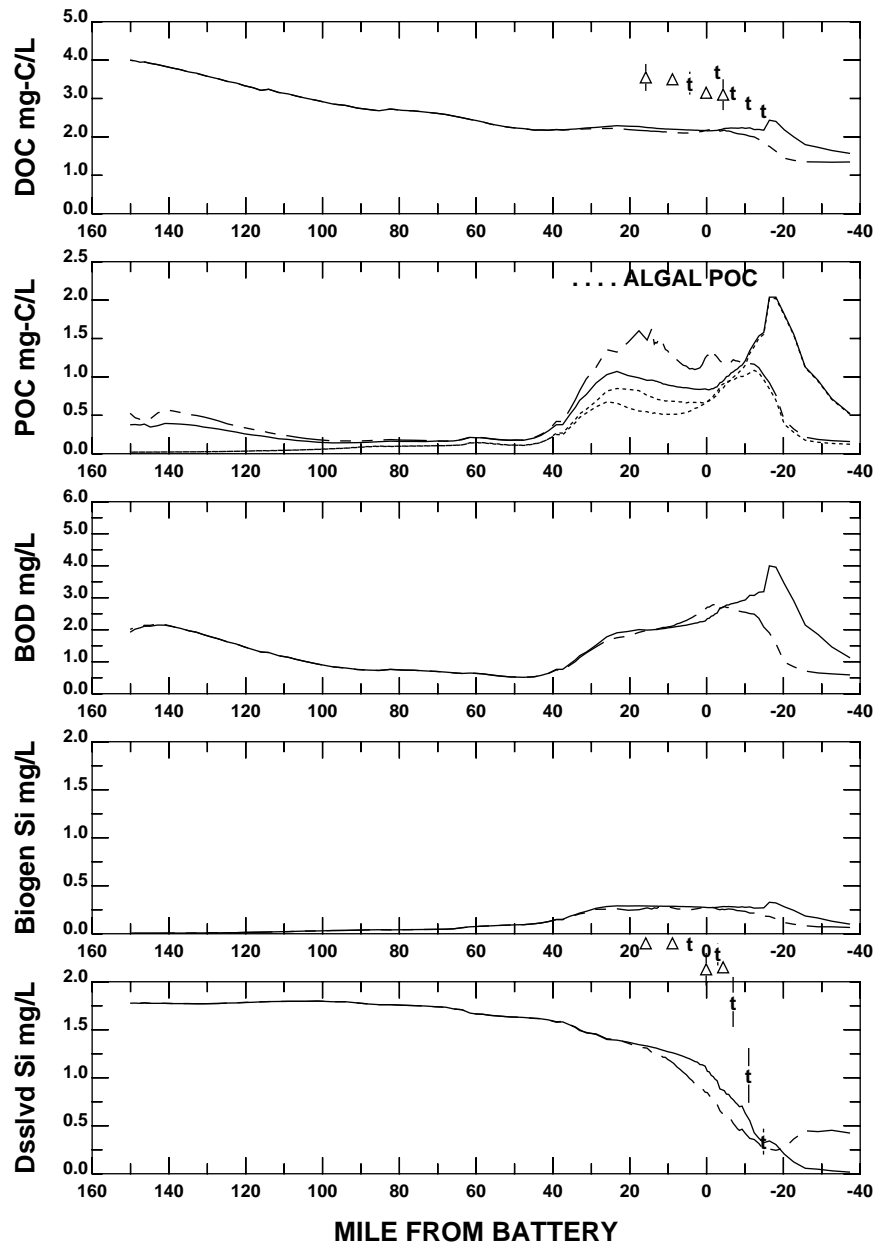
**HUDSON RIVER, UPPER AND LOWER BAY, OCEAN**



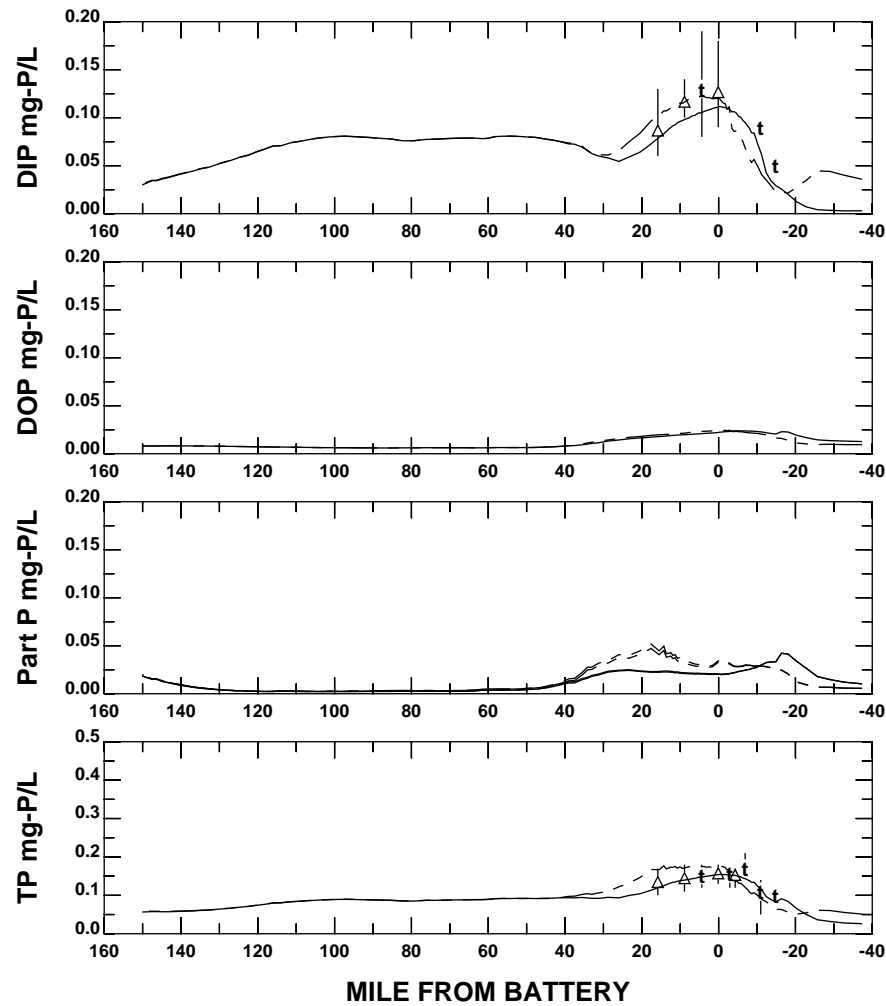
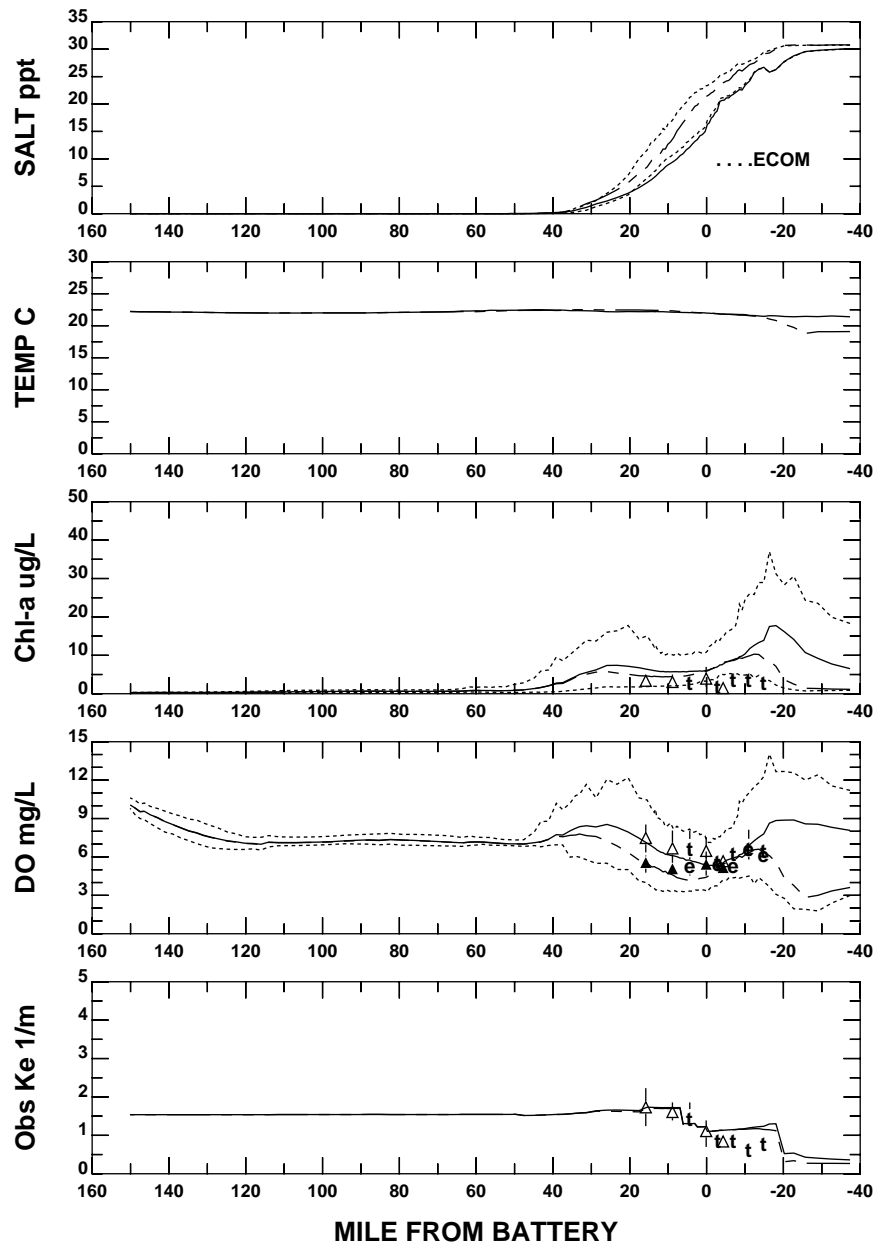
## HUDSON RIVER, UPPER AND LOWER BAY, OCEAN



**HUDSON RIVER, UPPER AND LOWER BAY, OCEAN**



## HUDSON RIVER, UPPER AND LOWER BAY, OCEAN



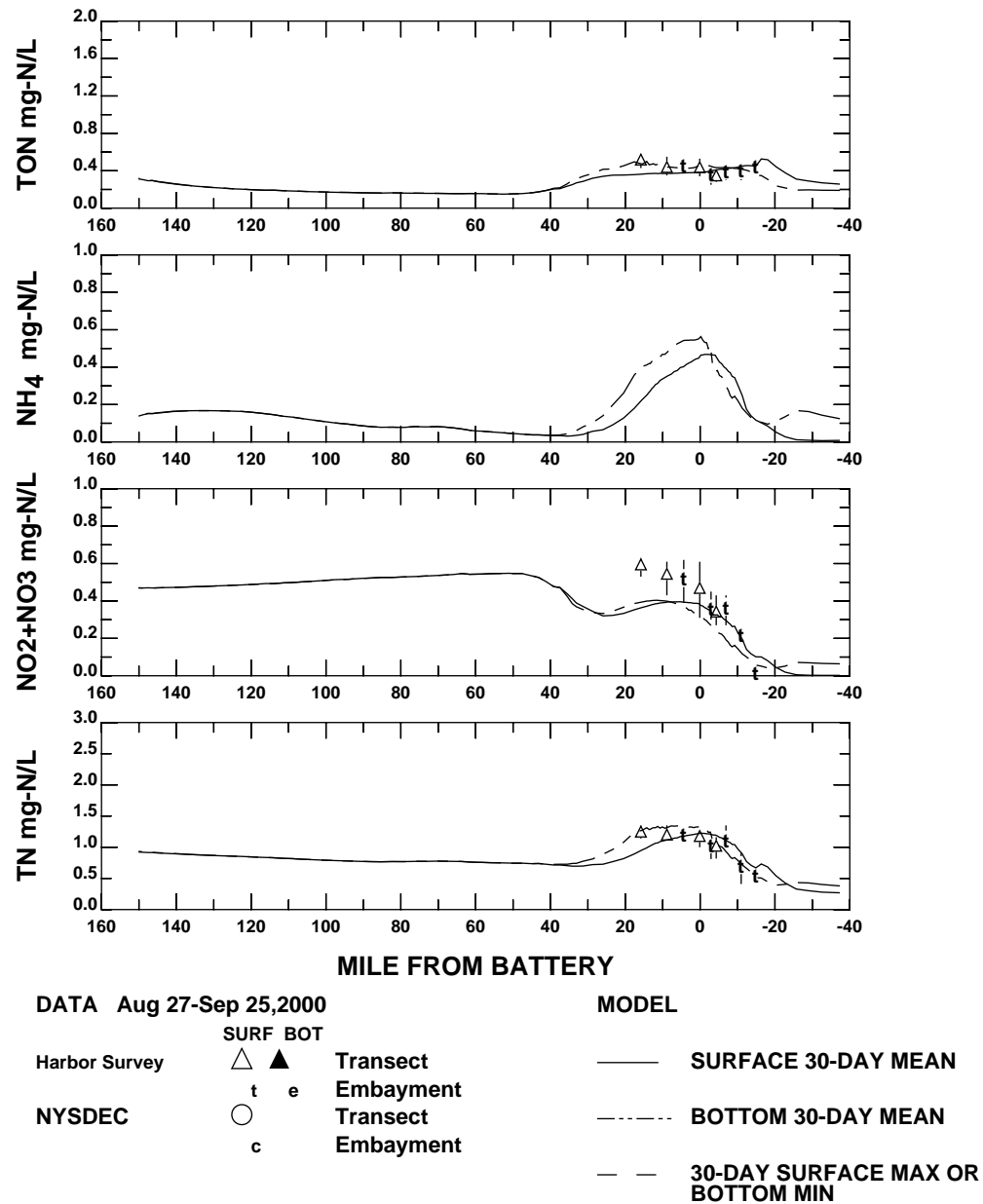
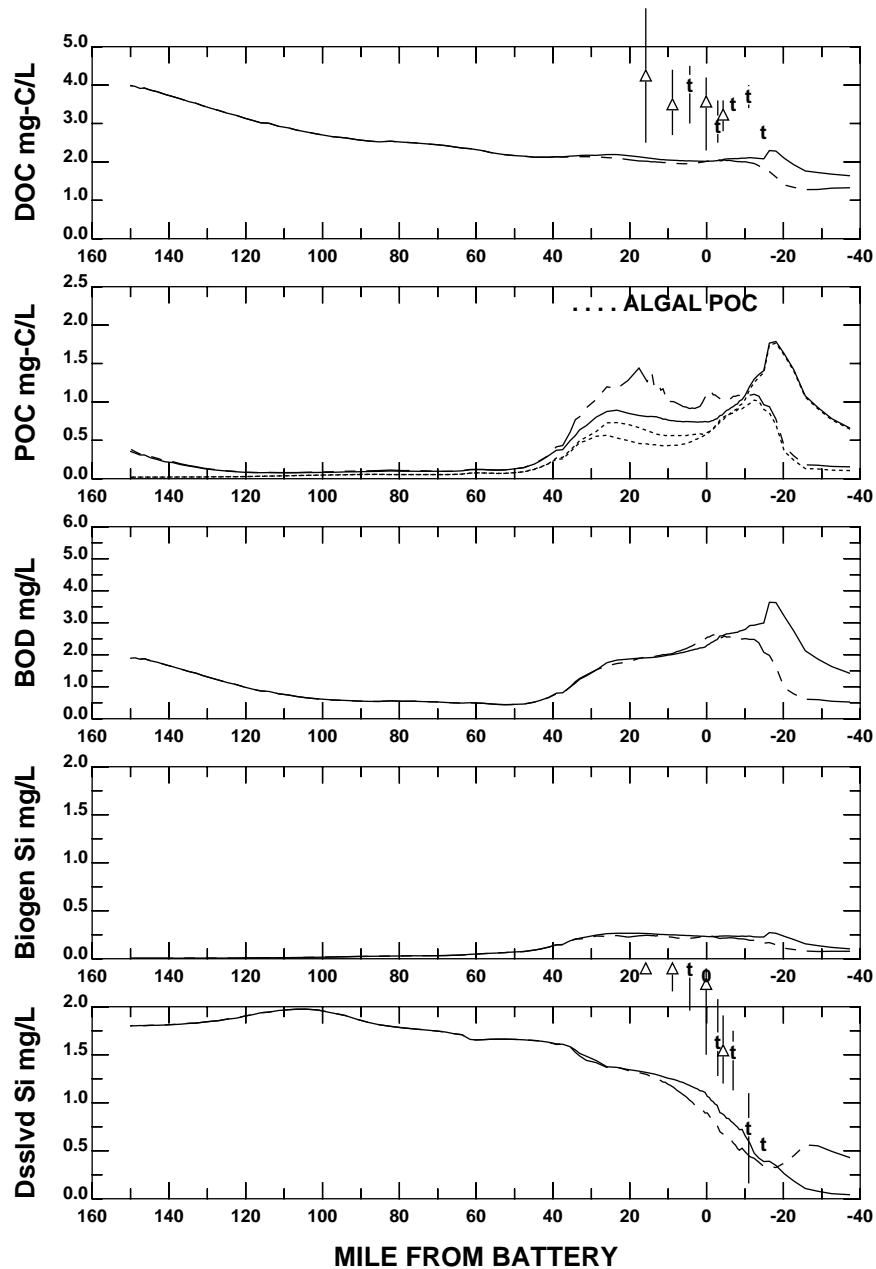
DATA Aug 27-Sep 25,2000

	SURF BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment

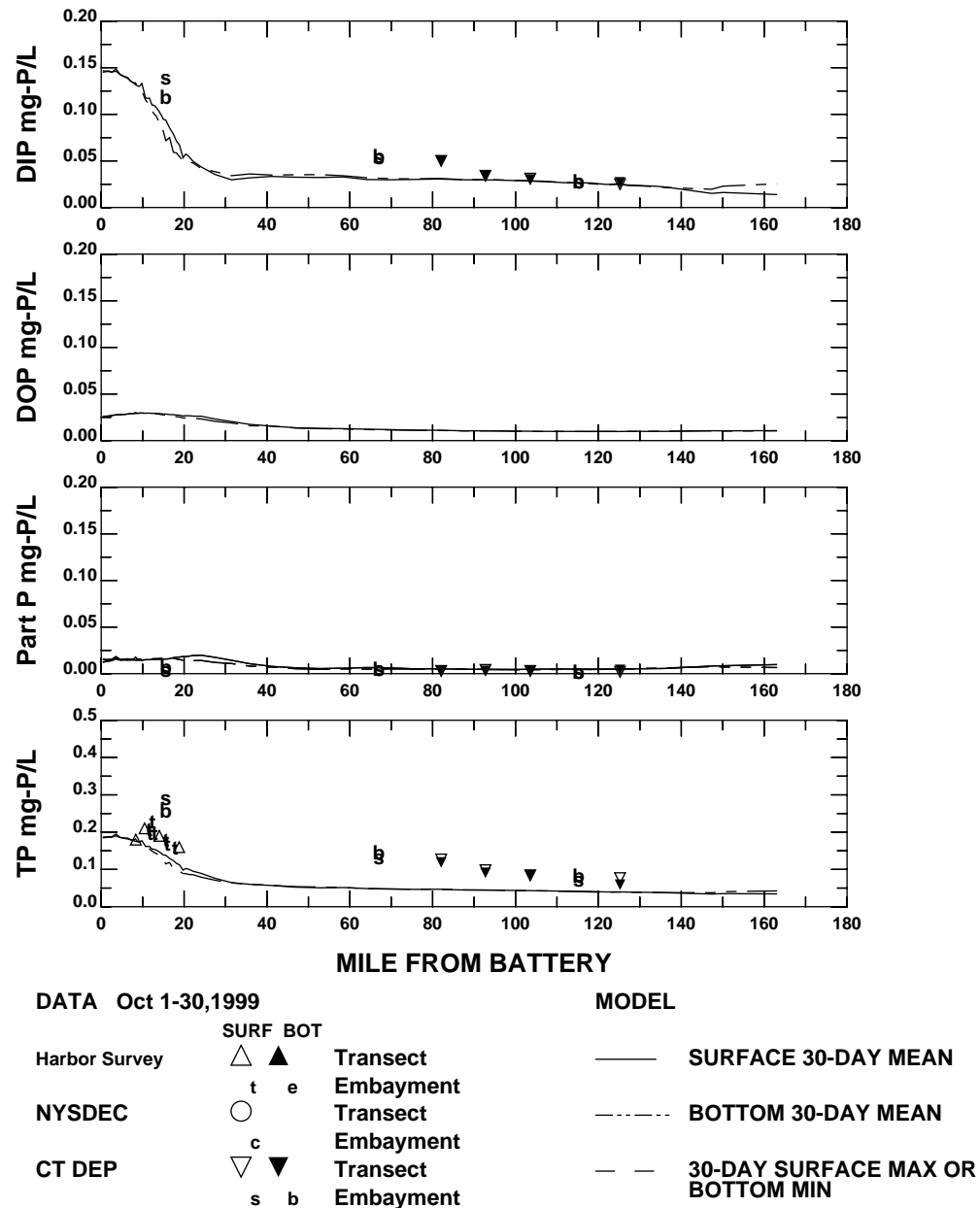
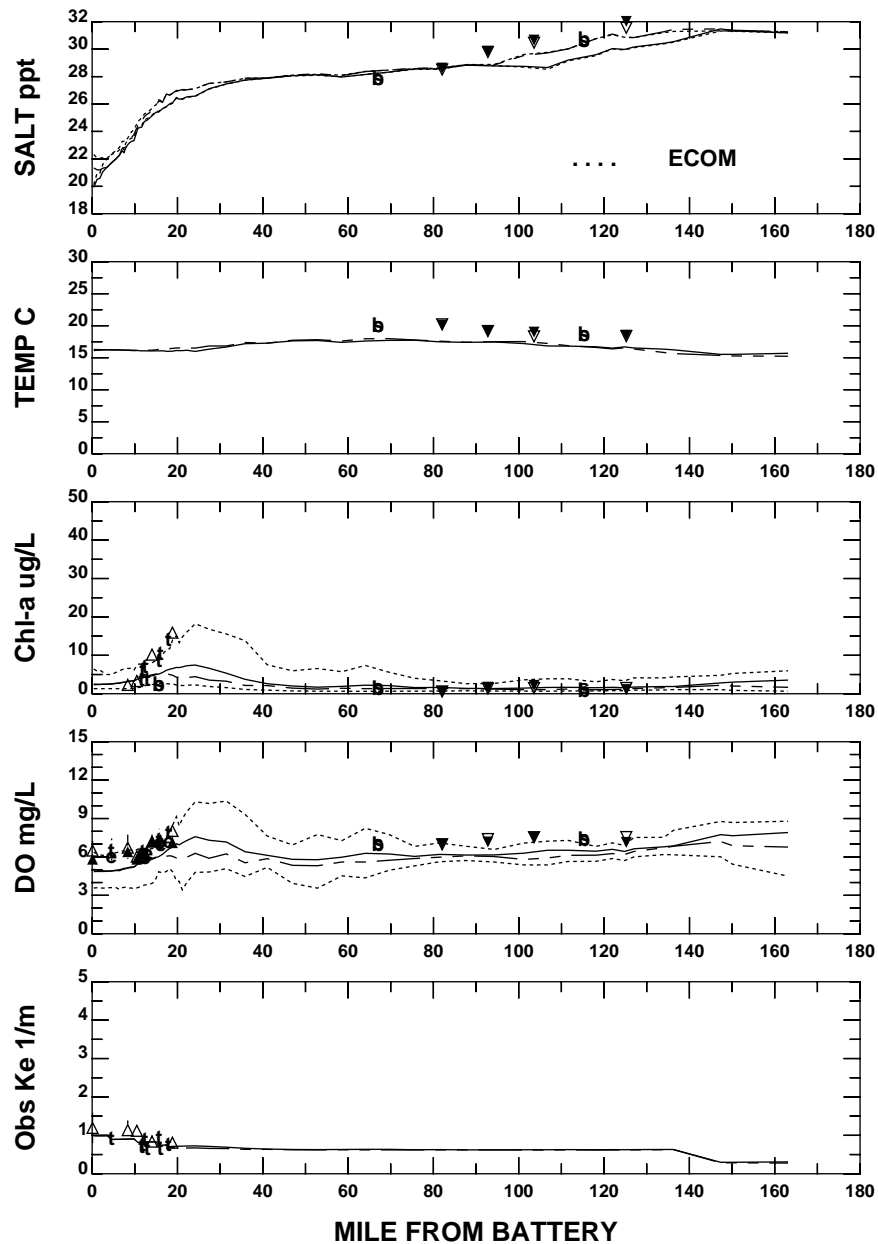
MODEL

—	SURFACE 30-DAY MEAN
- - -	BOTTOM 30-DAY MEAN
- - -	30-DAY SURFACE MAX OR BOTTOM MIN

### HUDSON RIVER, UPPER AND LOWER BAY, OCEAN

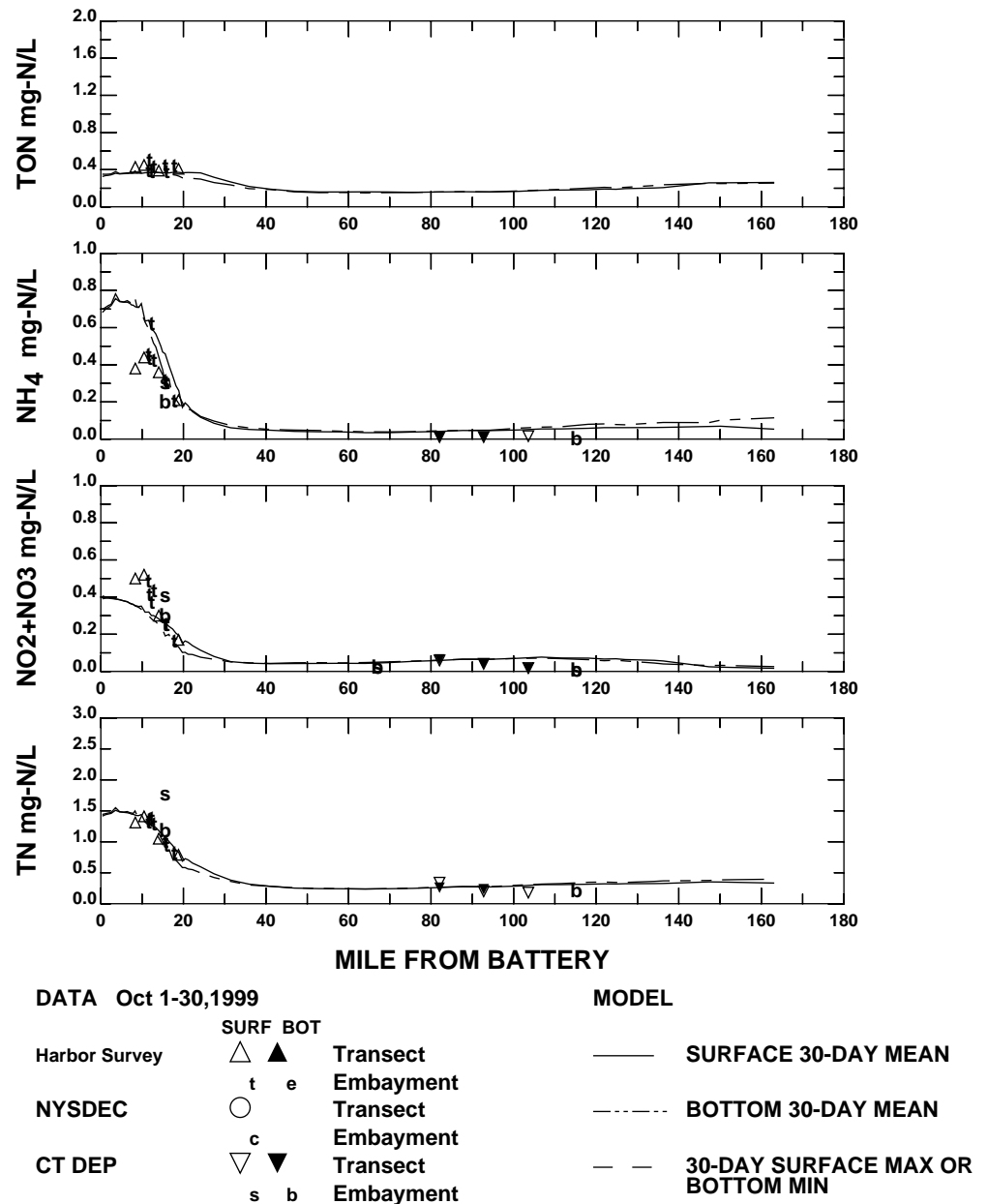
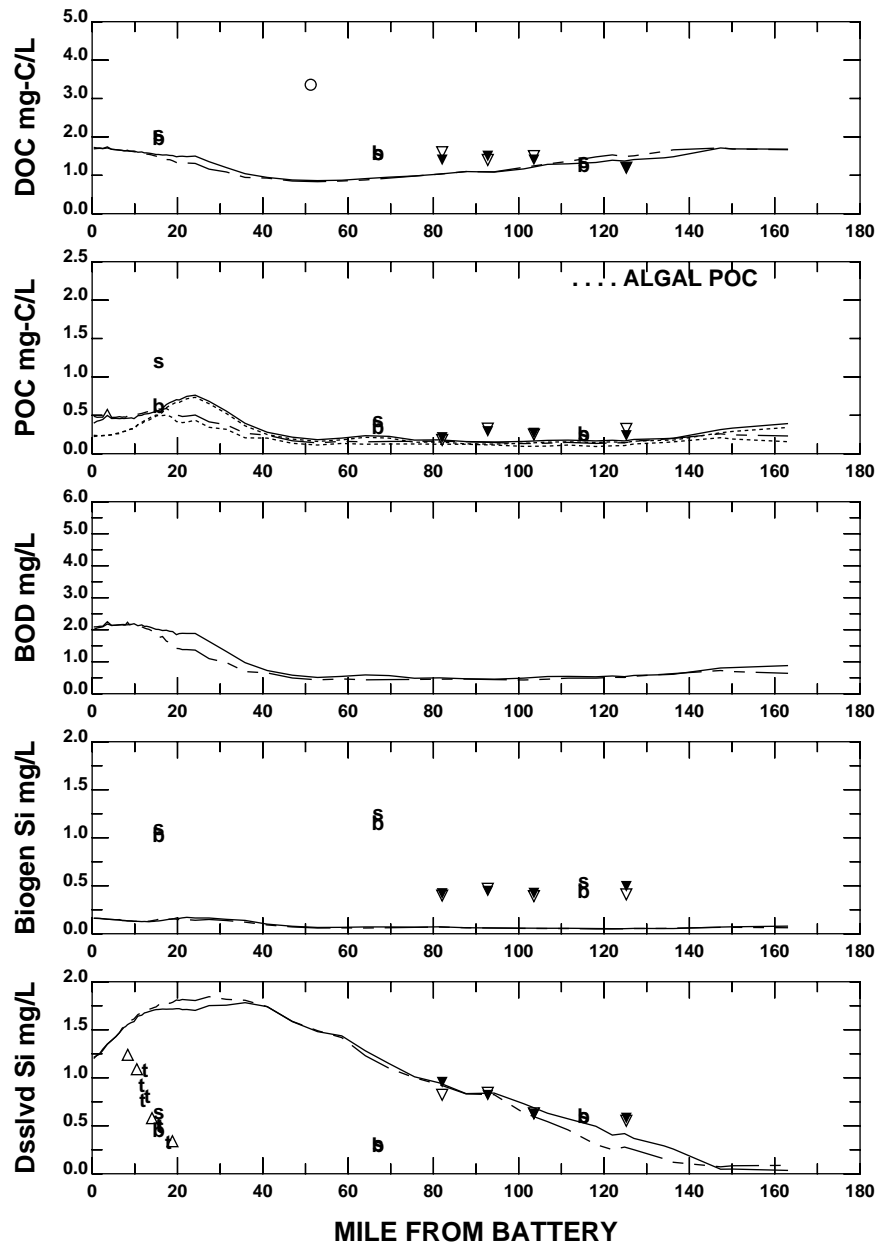


## HUDSON RIVER, UPPER AND LOWER BAY, OCEAN

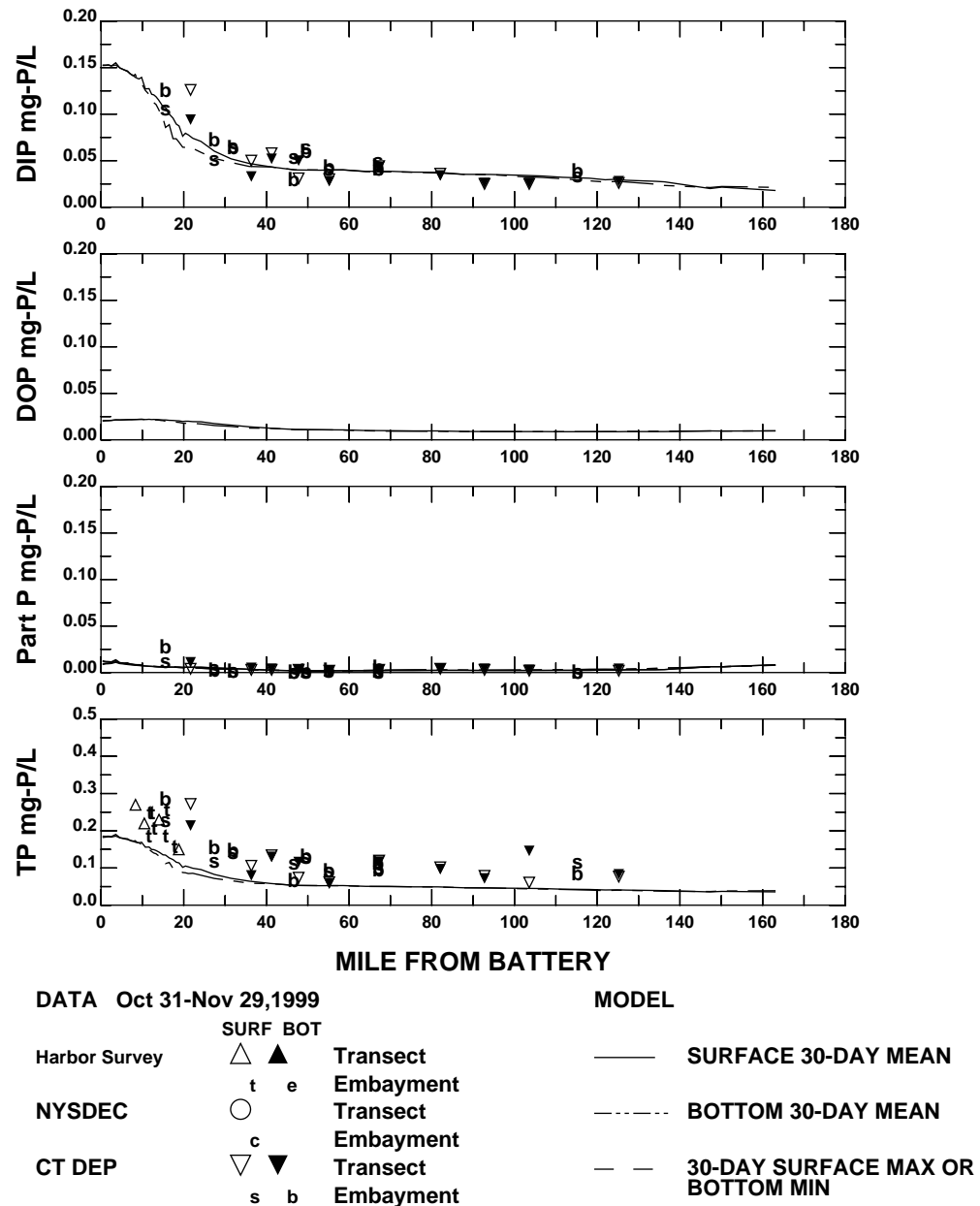
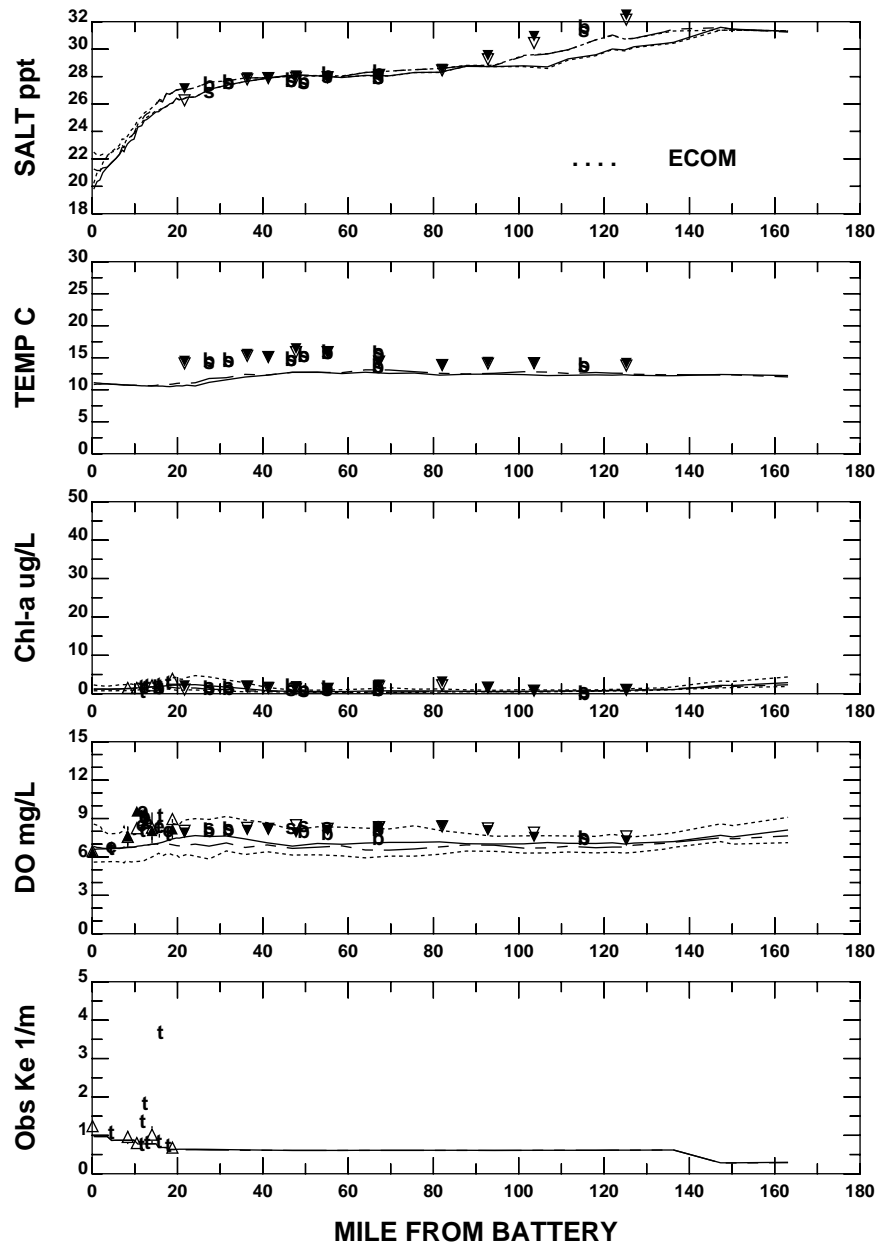


**EAST RIVER AND LONG ISLAND SOUND**

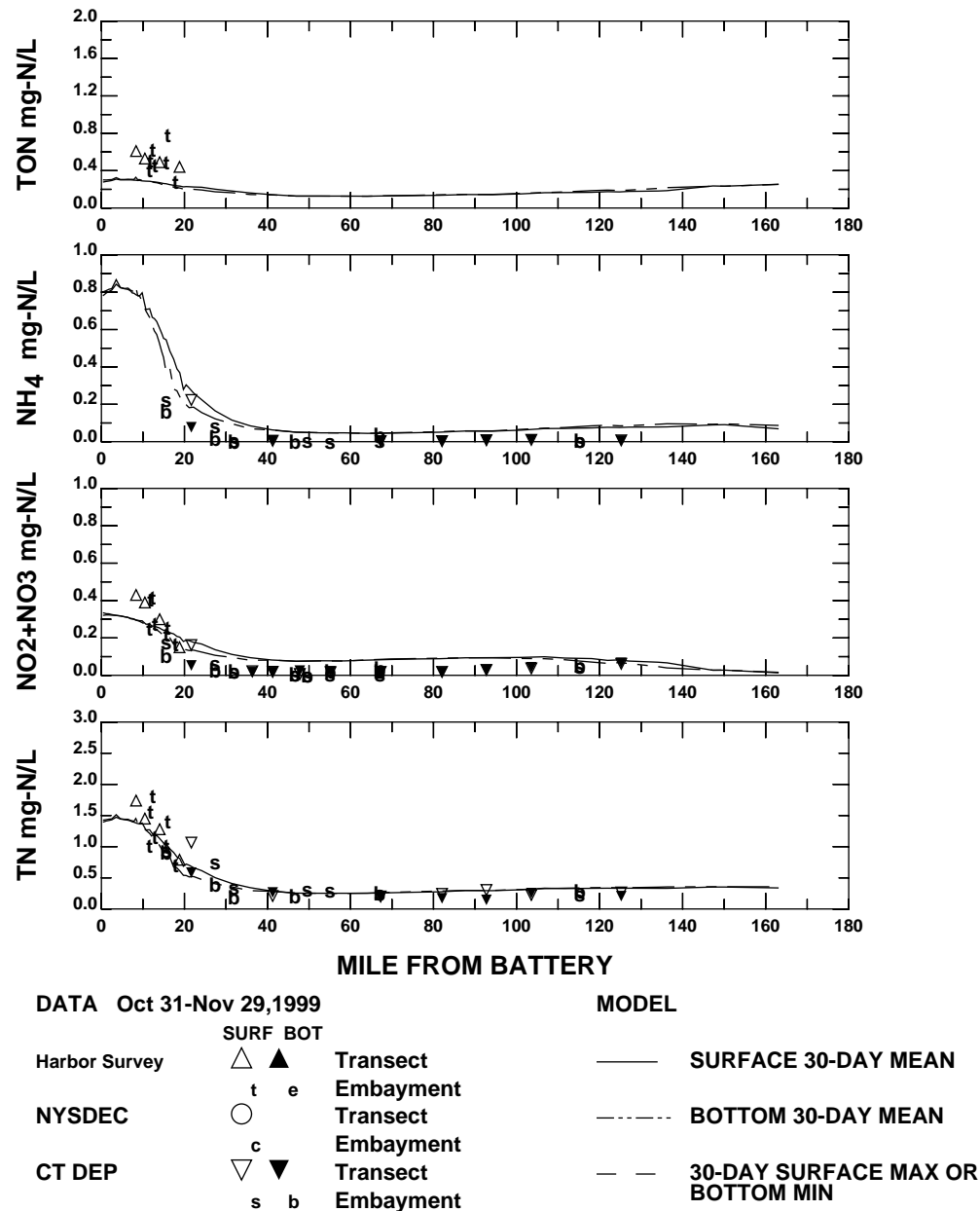
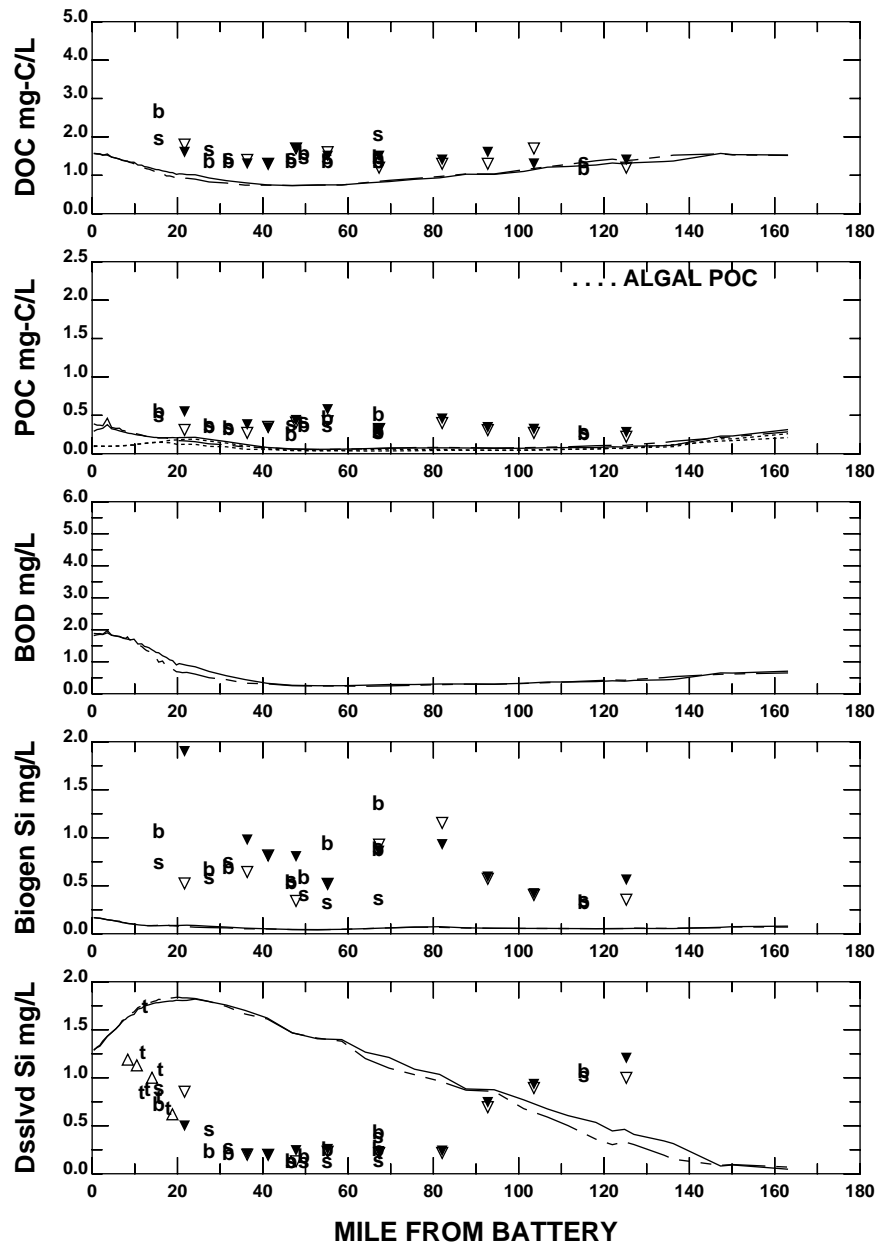




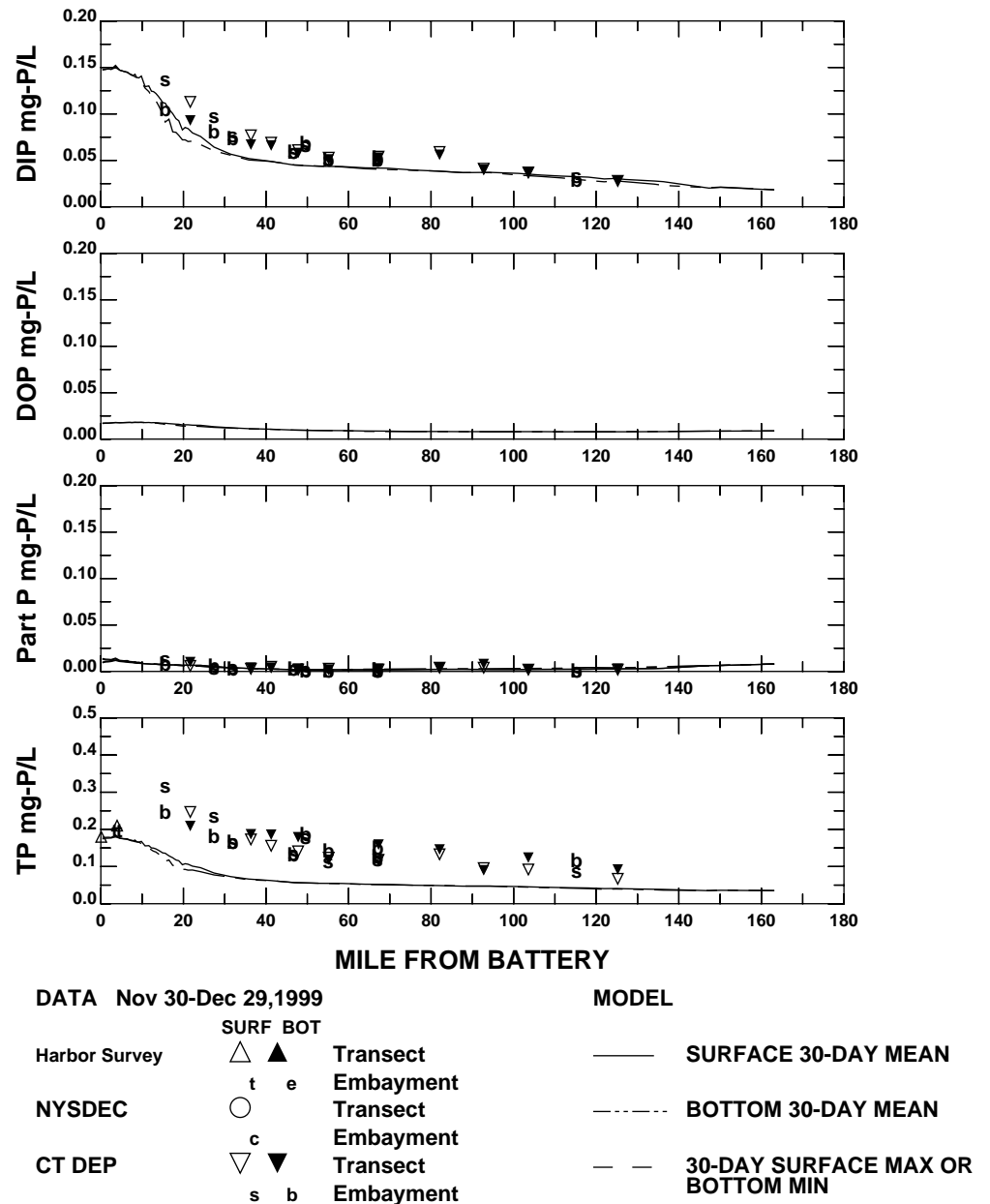
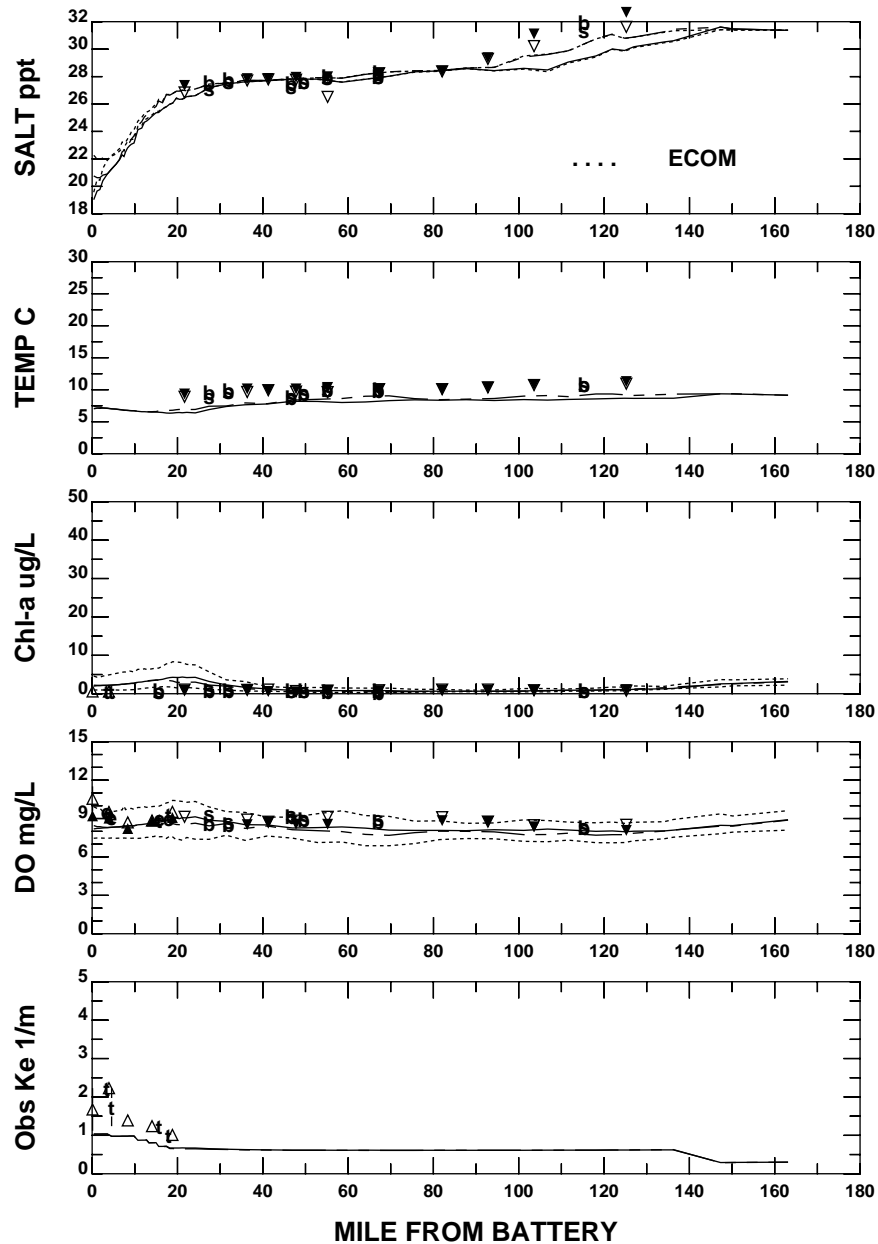
**EAST RIVER AND LONG ISLAND SOUND**



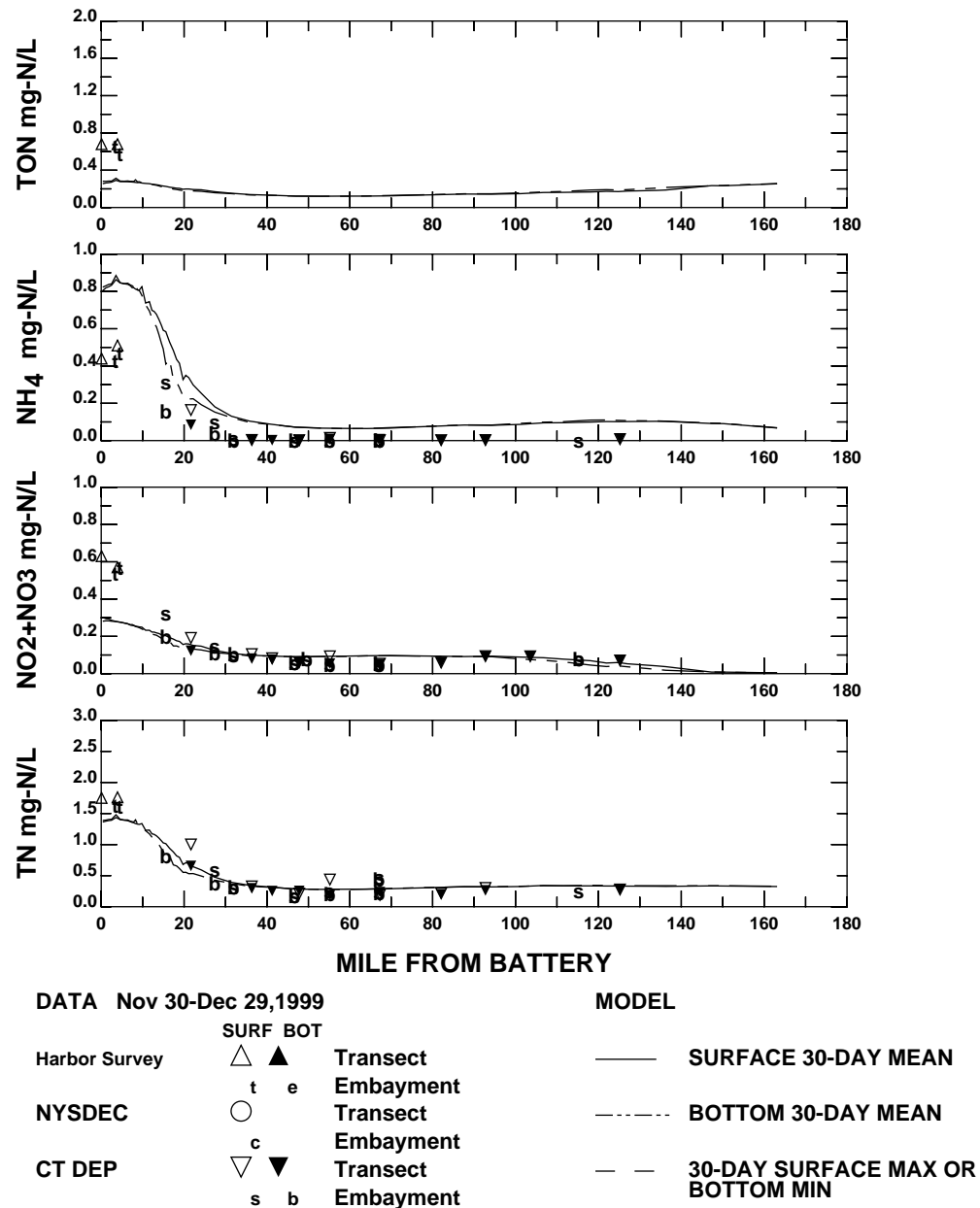
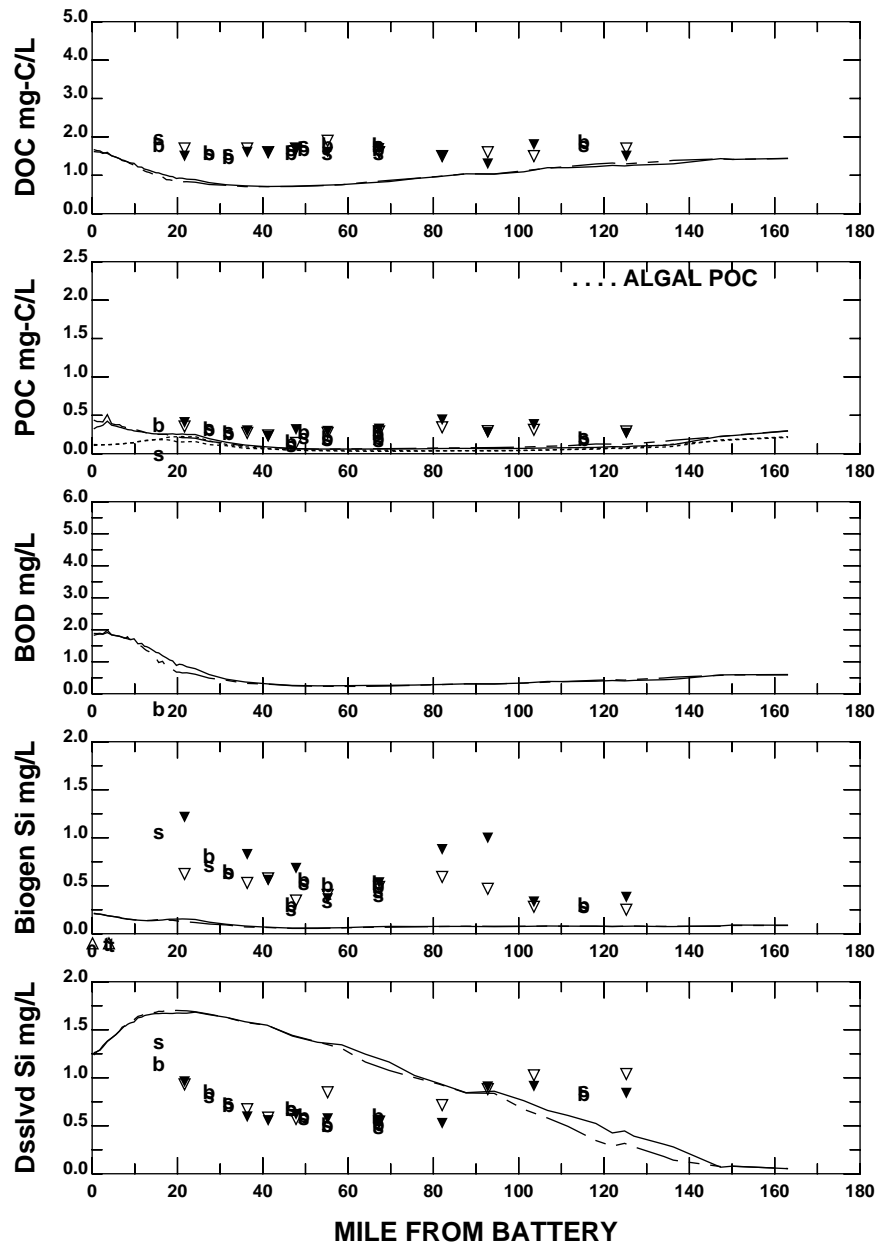
### EAST RIVER AND LONG ISLAND SOUND



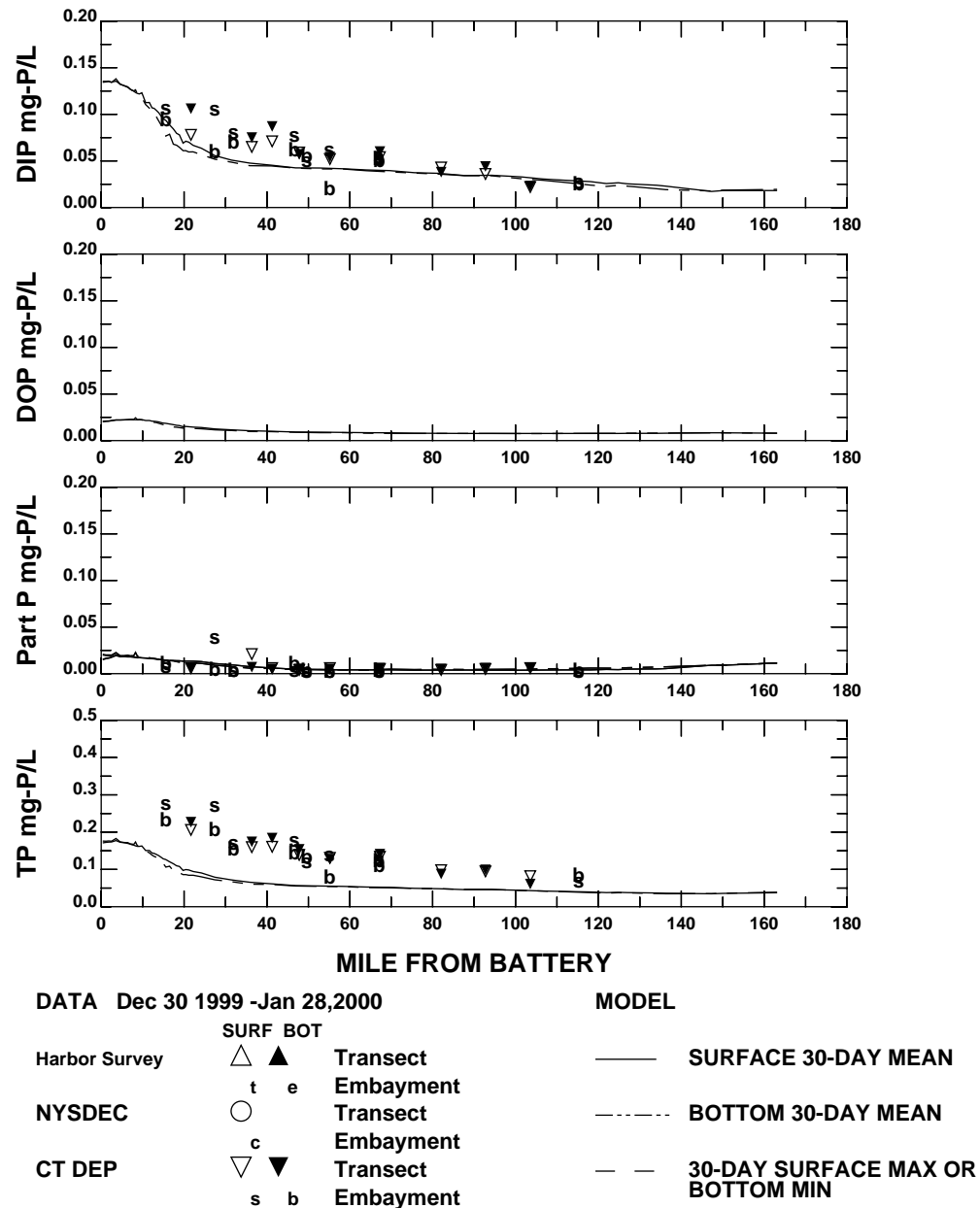
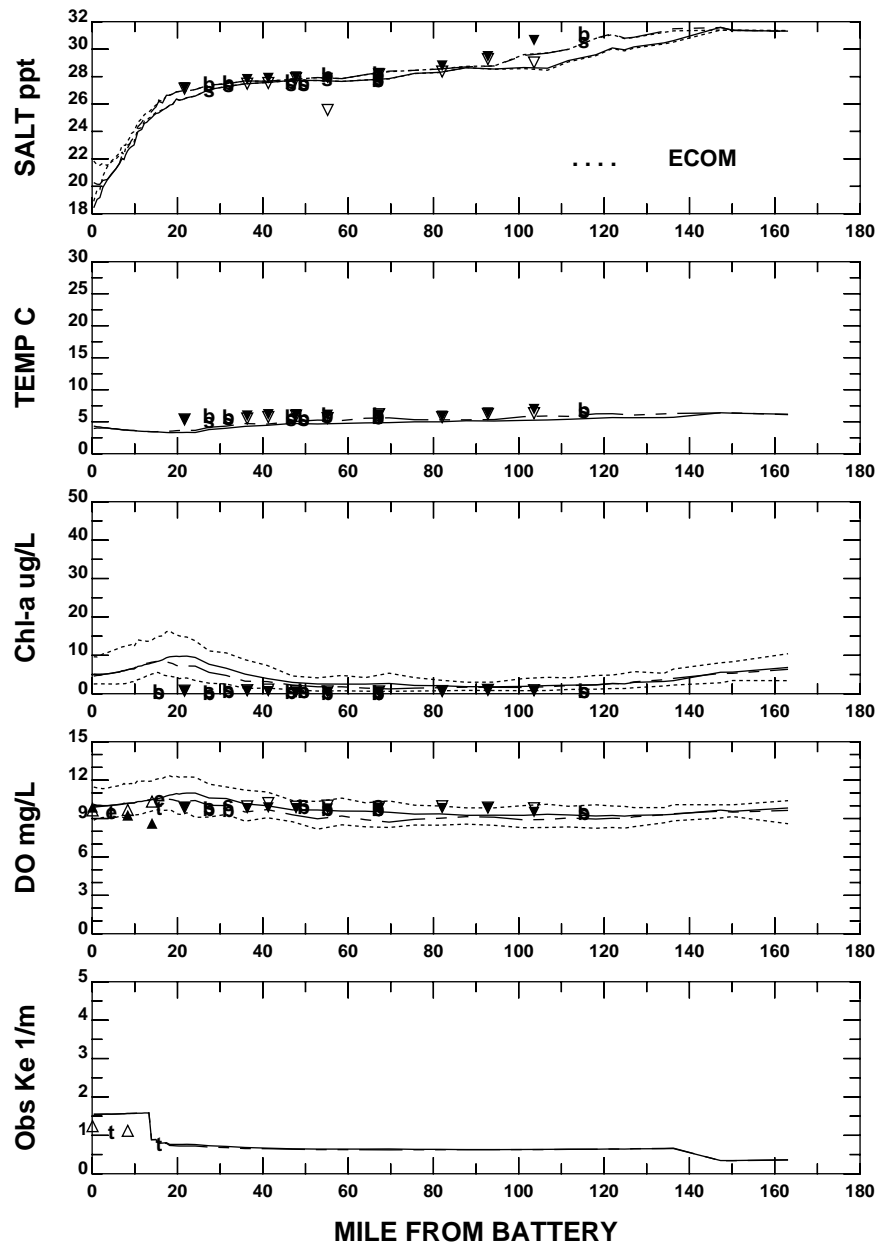
# EAST RIVER AND LONG ISLAND SOUND



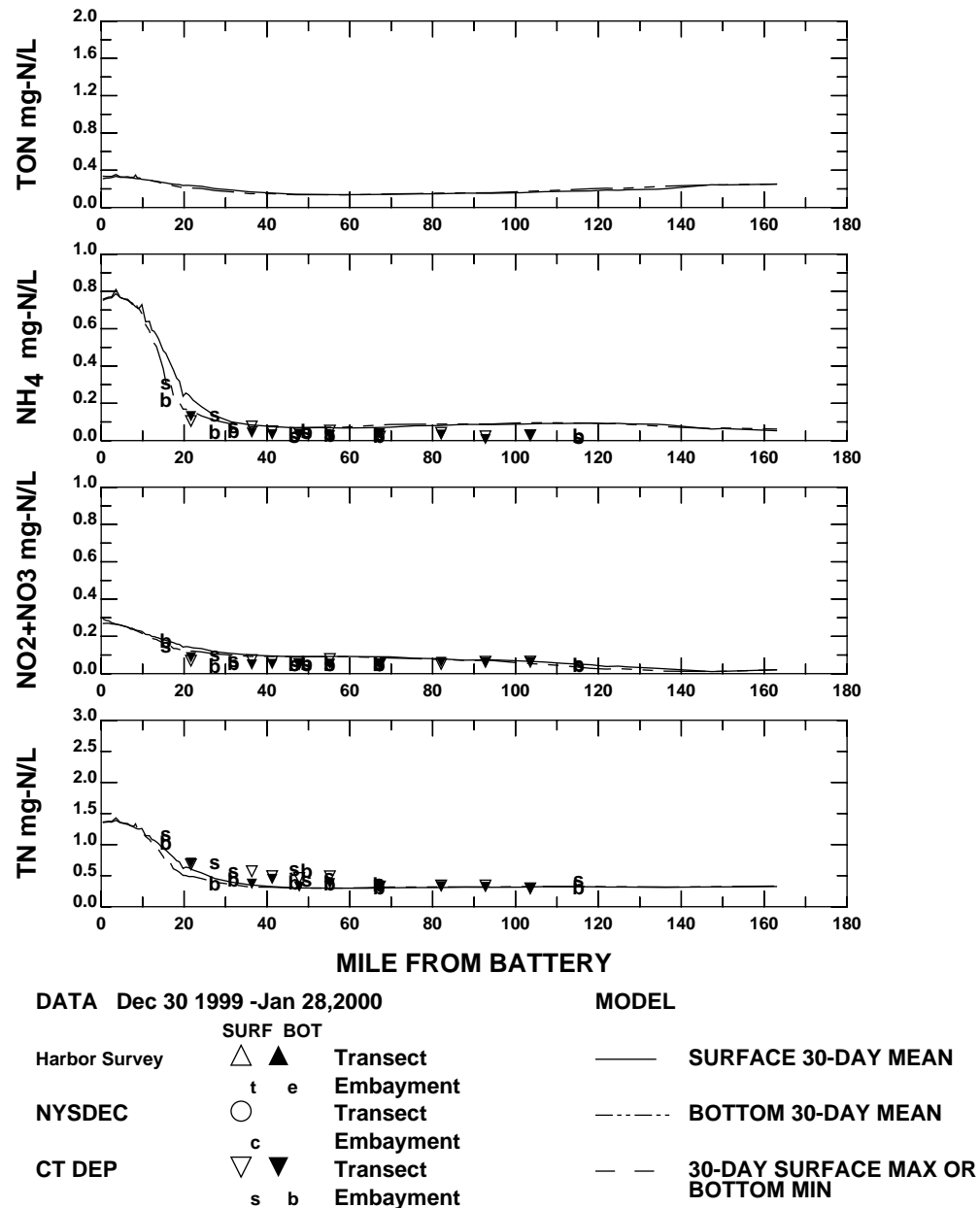
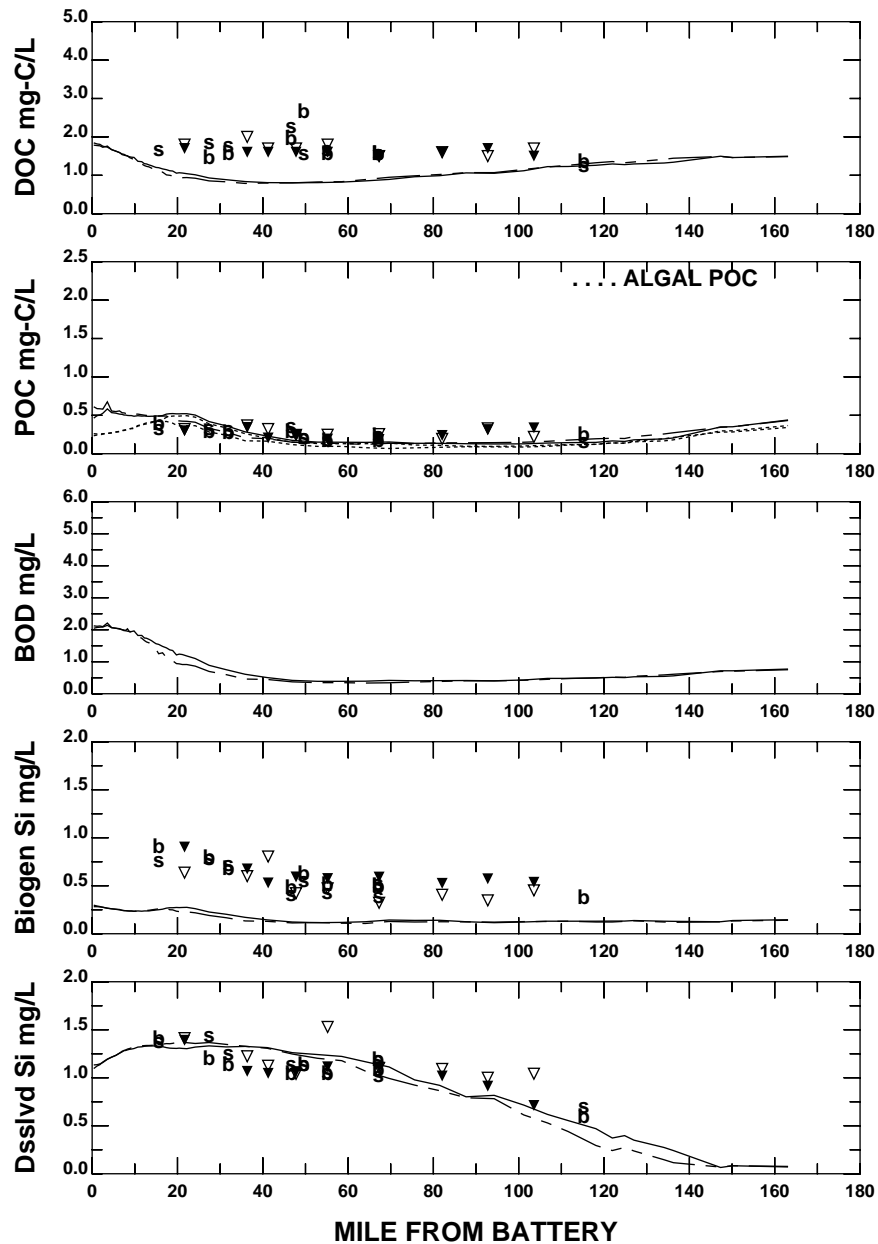
# EAST RIVER AND LONG ISLAND SOUND



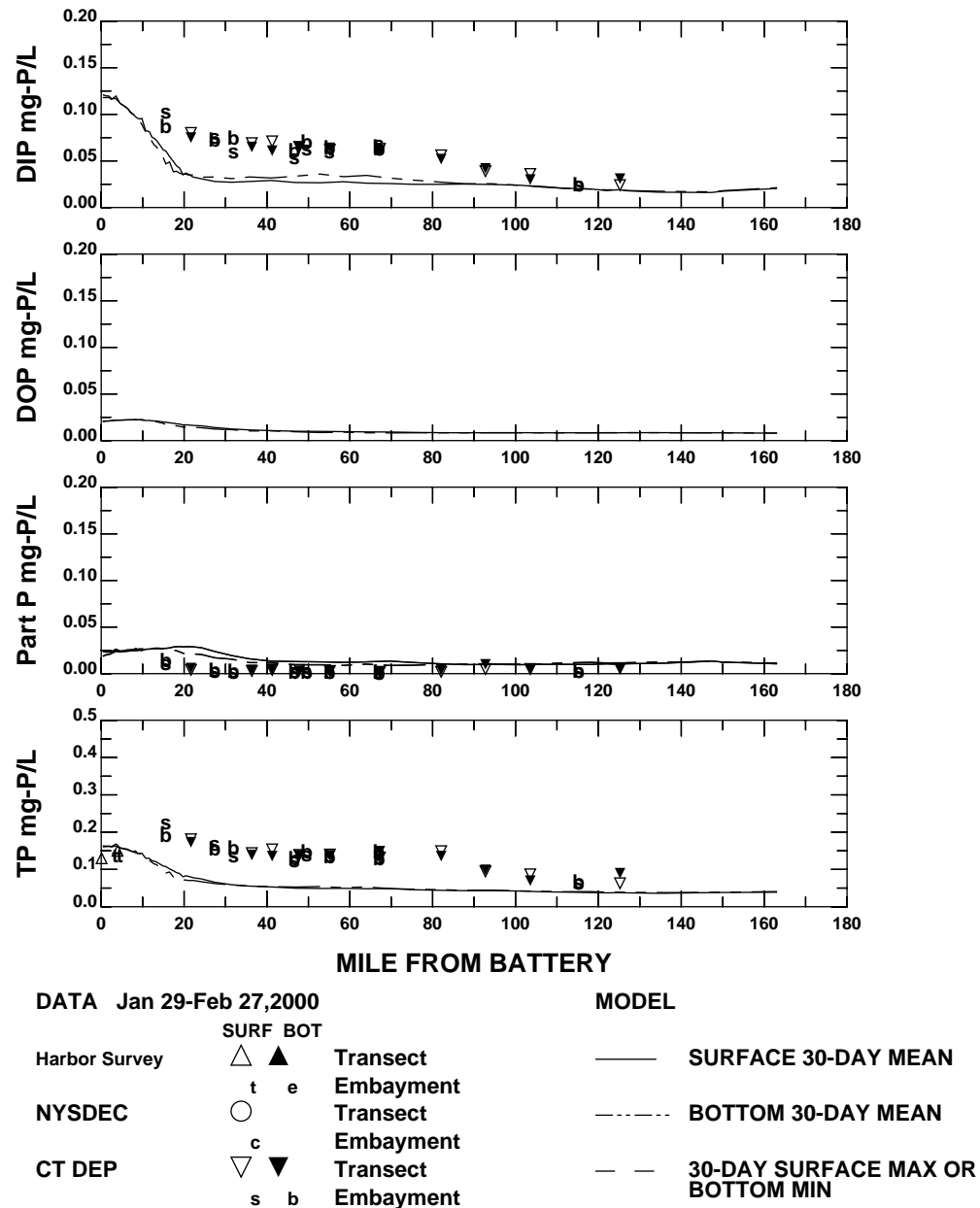
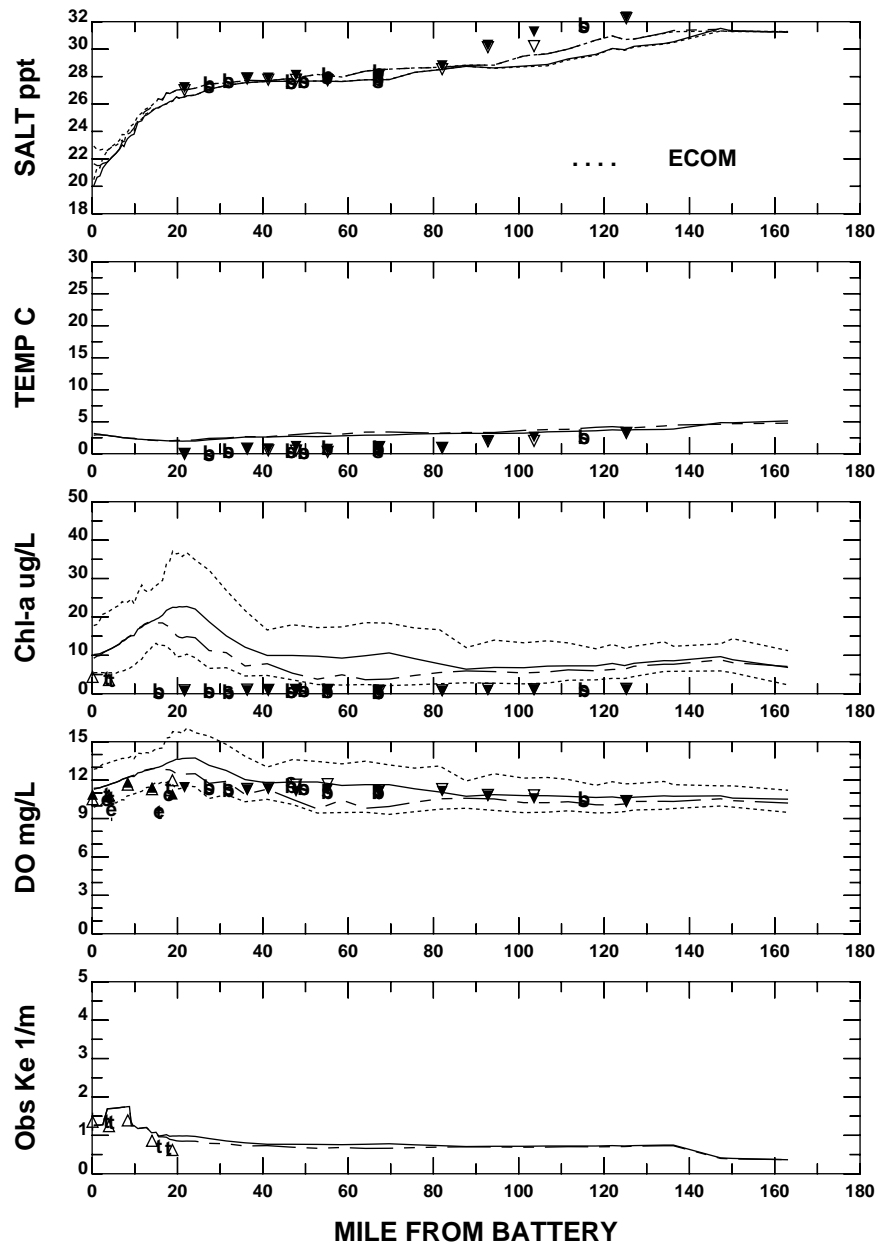
### EAST RIVER AND LONG ISLAND SOUND



**EAST RIVER AND LONG ISLAND SOUND**

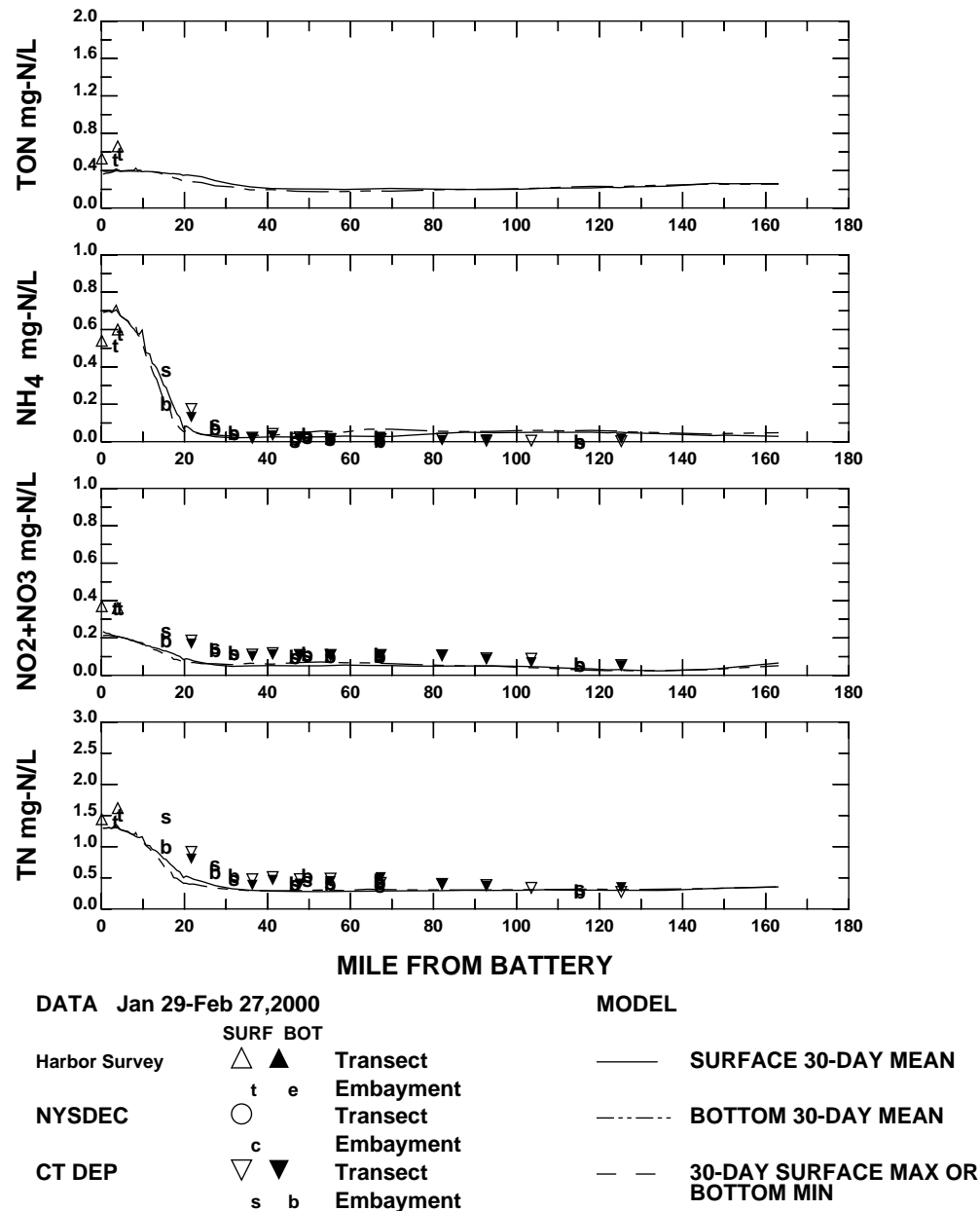
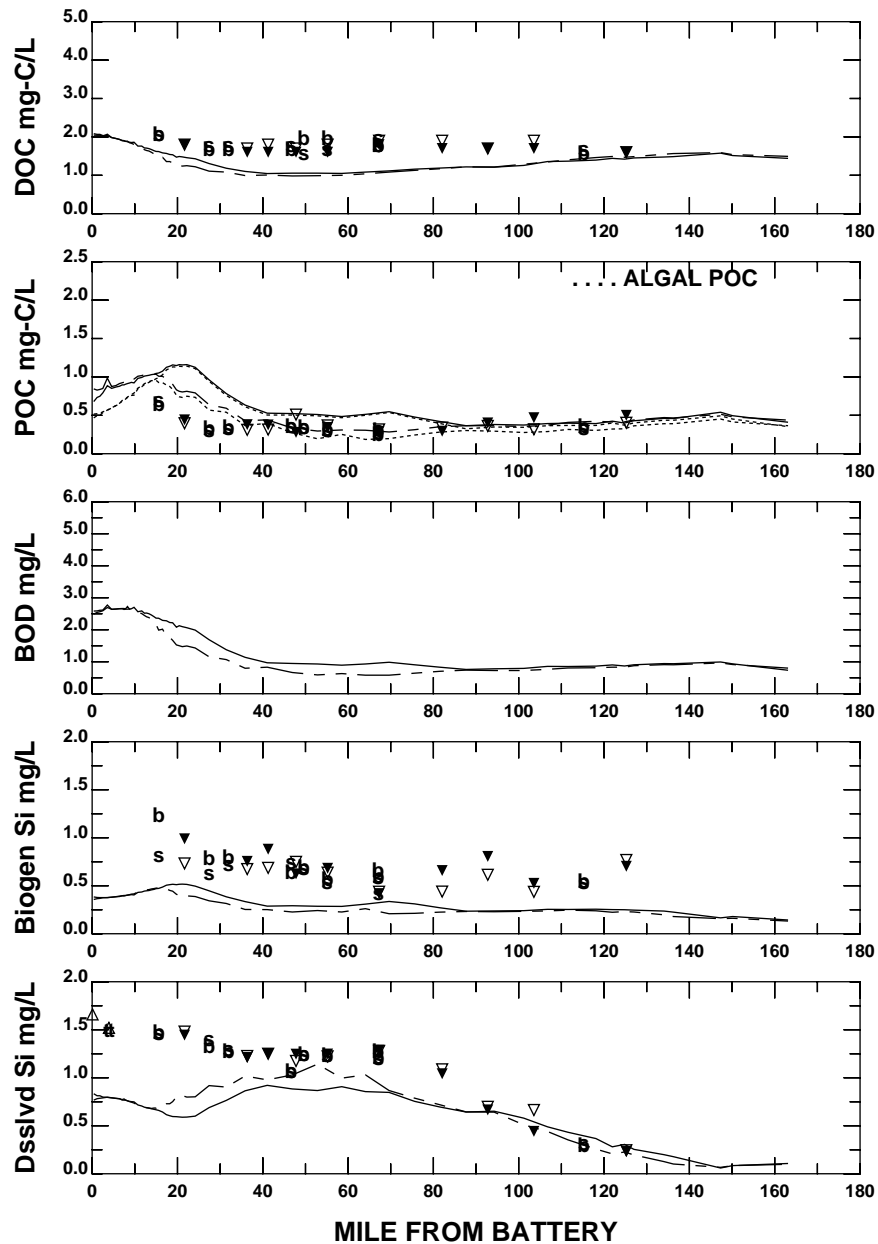


# EAST RIVER AND LONG ISLAND SOUND

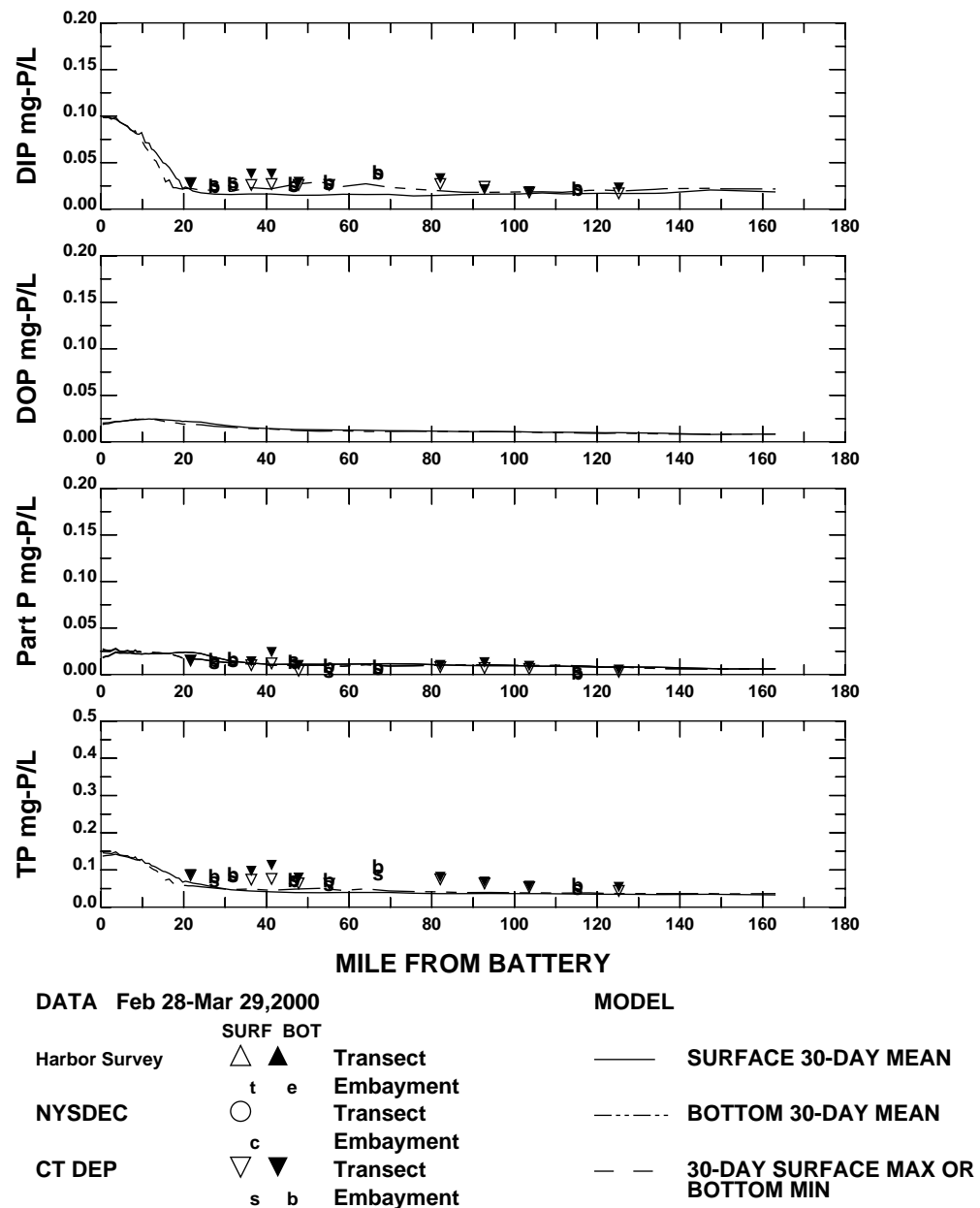
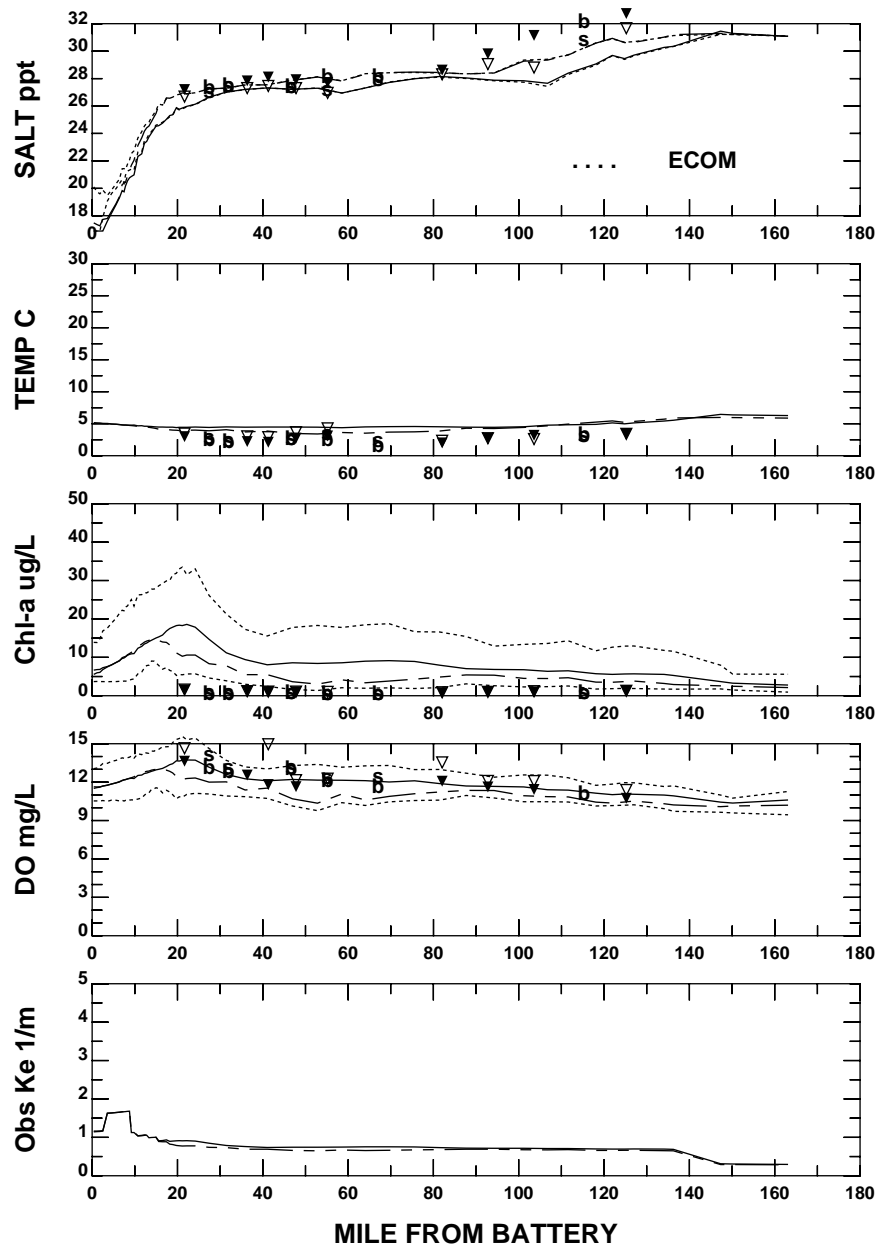


**EAST RIVER AND LONG ISLAND SOUND**

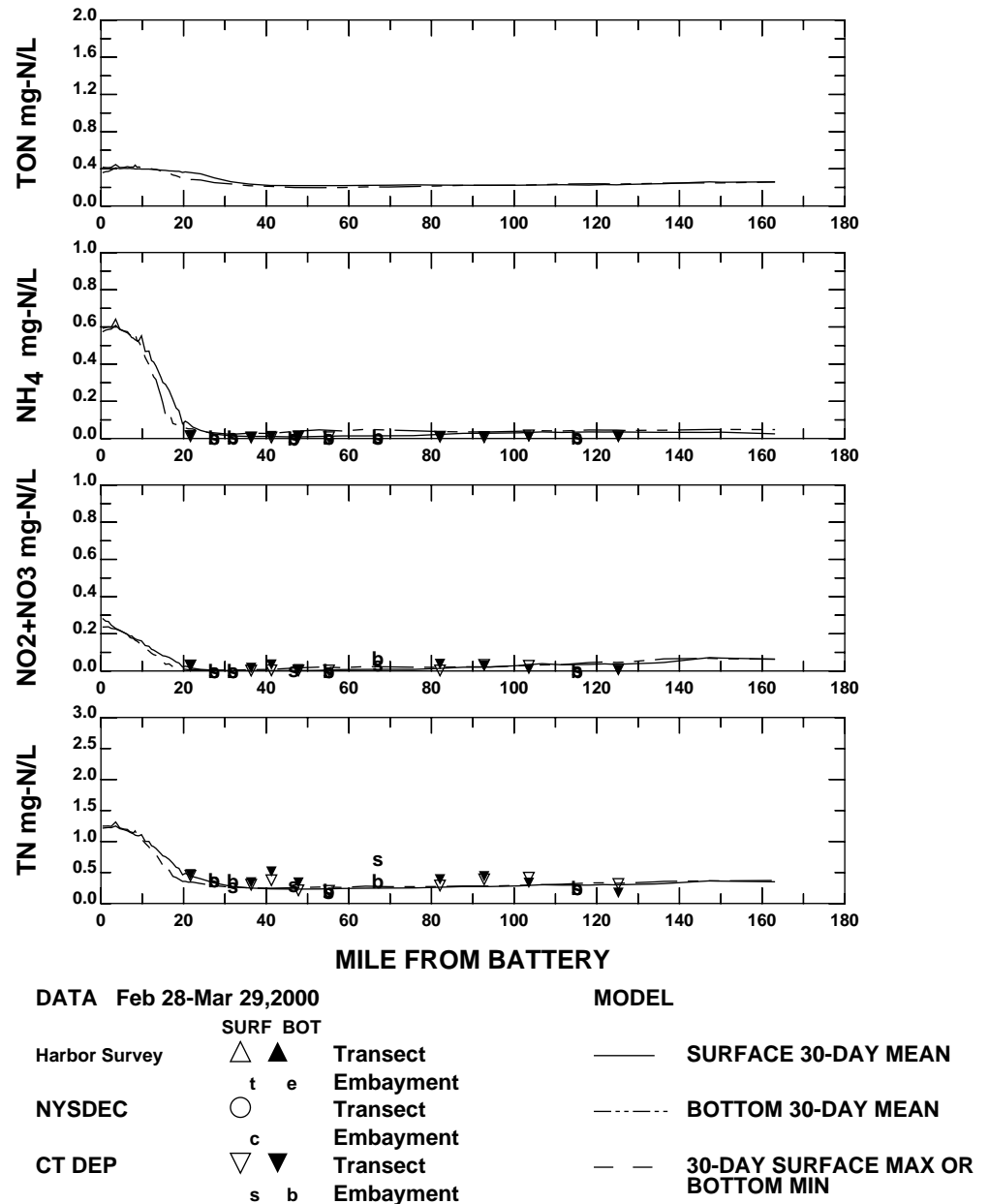
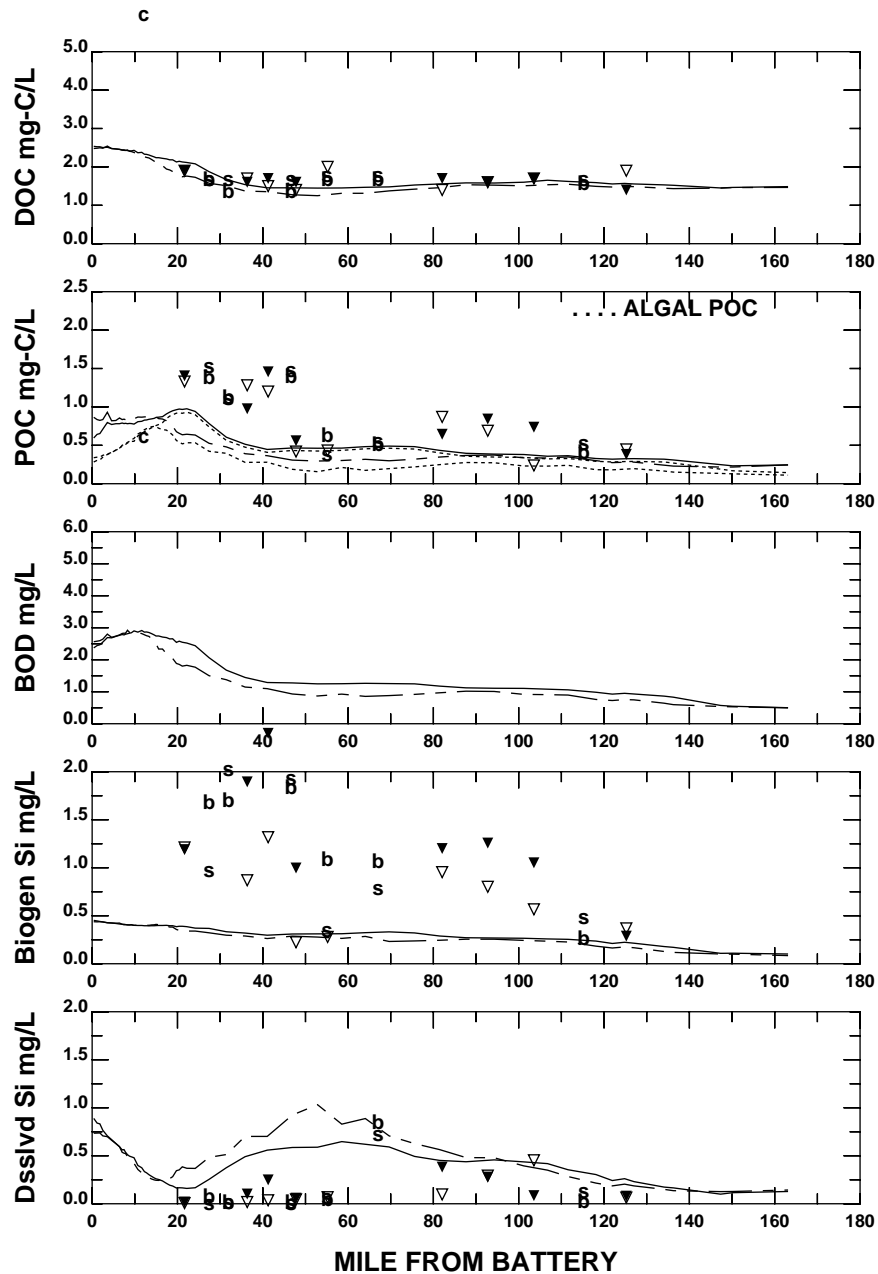




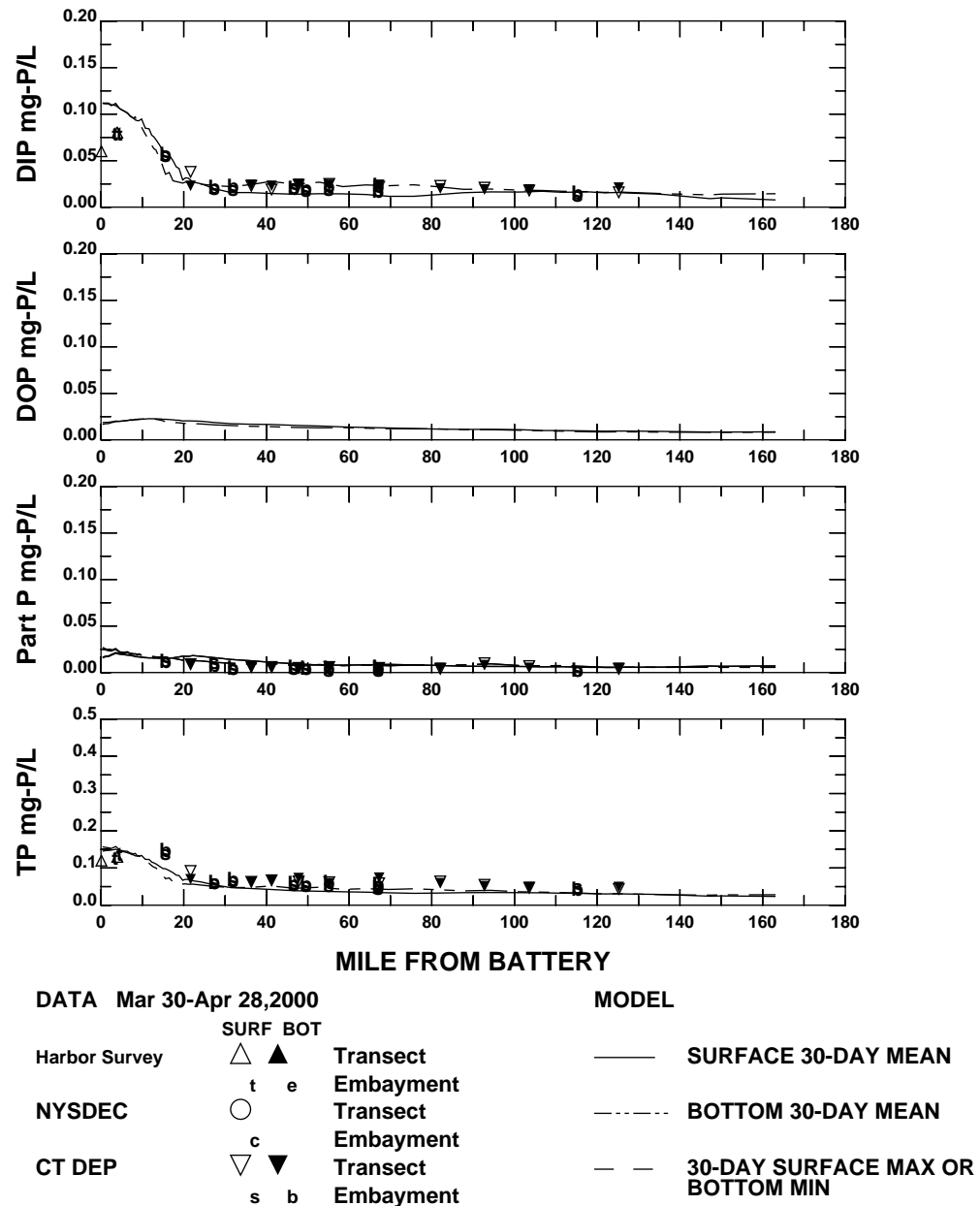
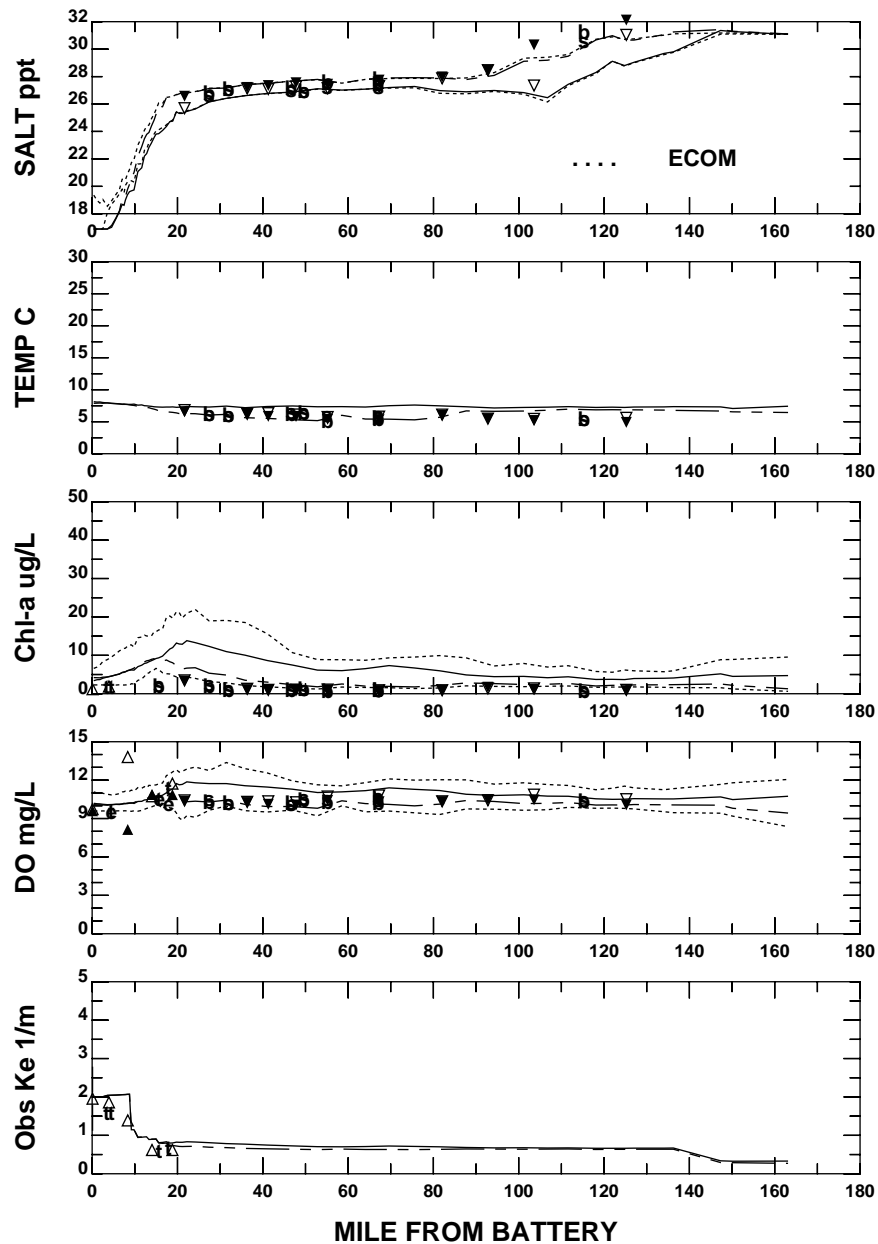
## EAST RIVER AND LONG ISLAND SOUND



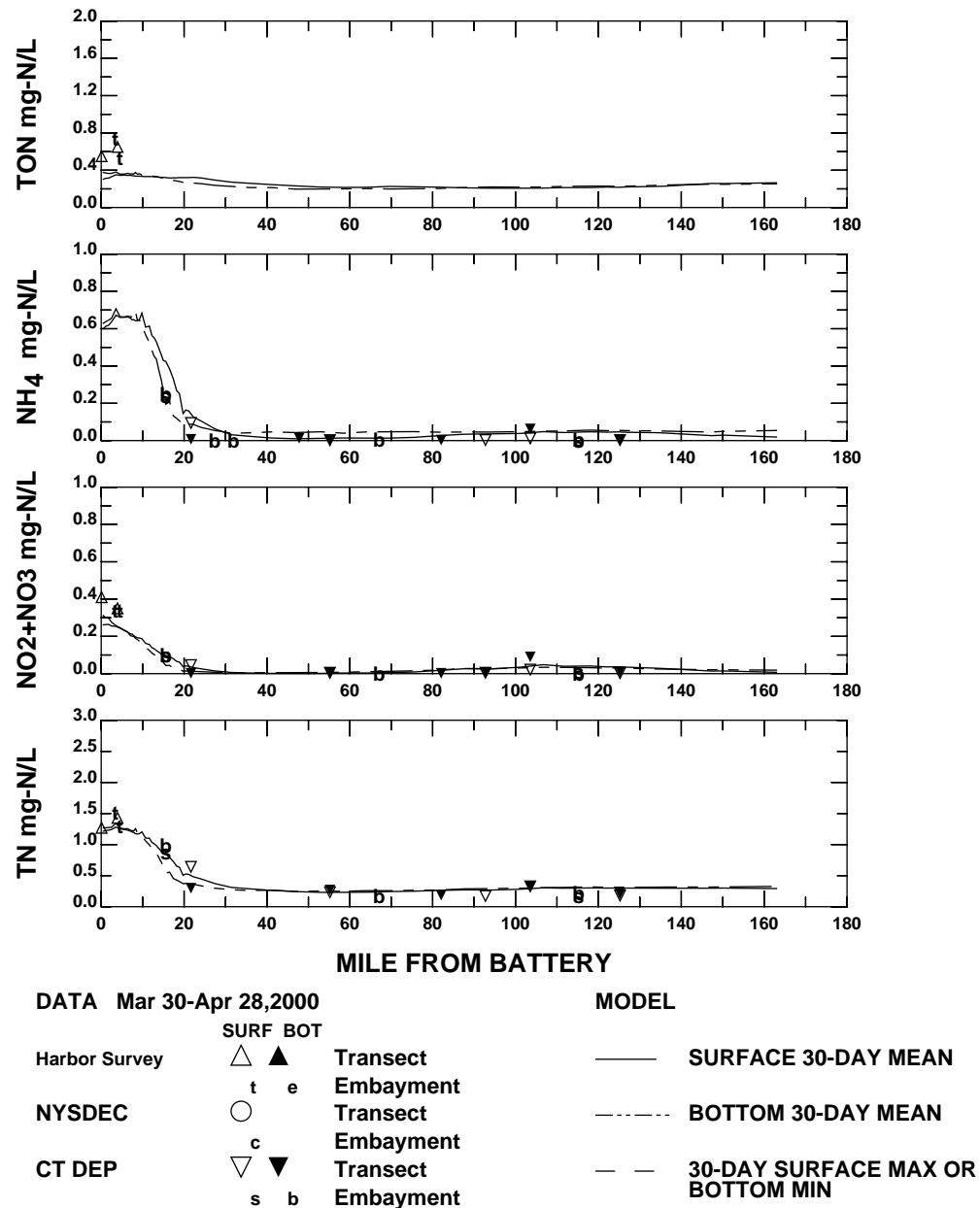
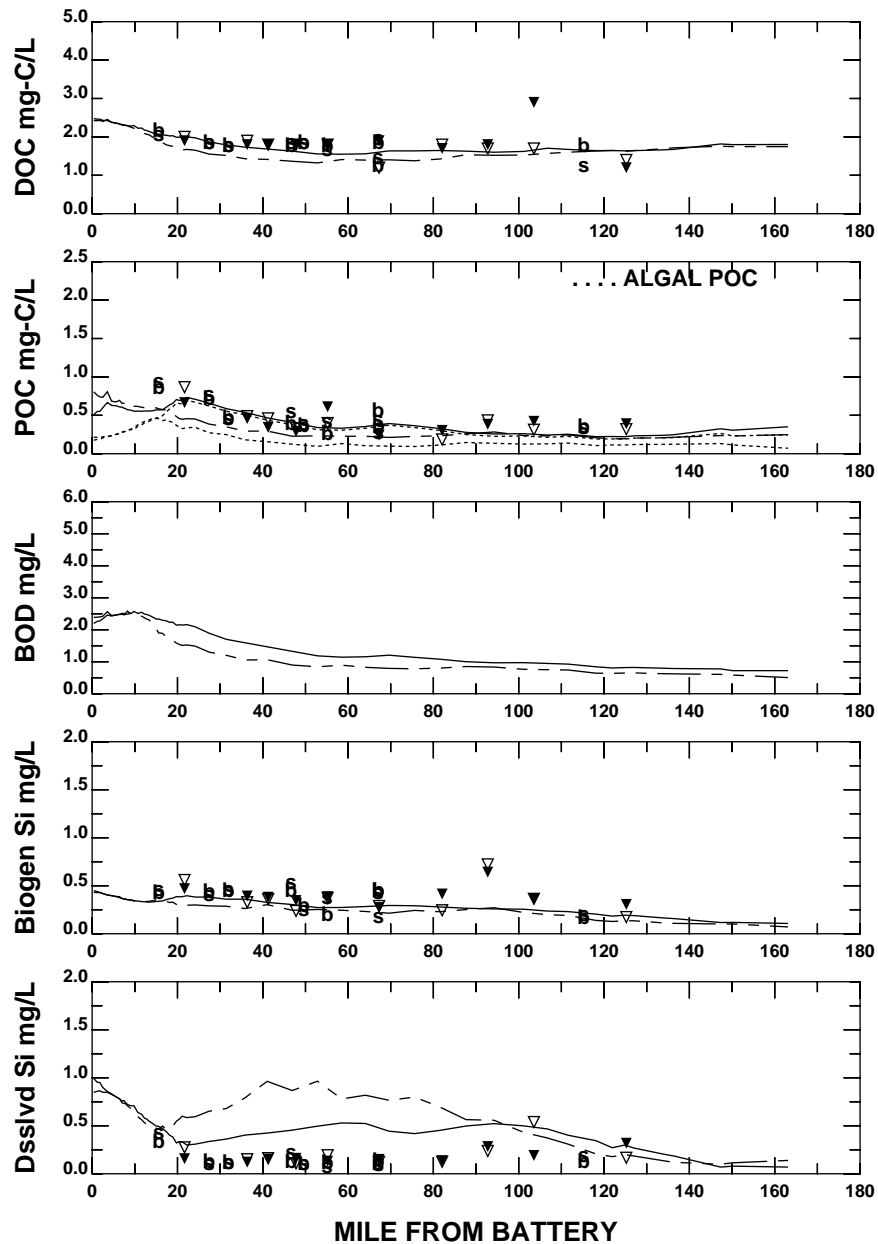
**EAST RIVER AND LONG ISLAND SOUND**



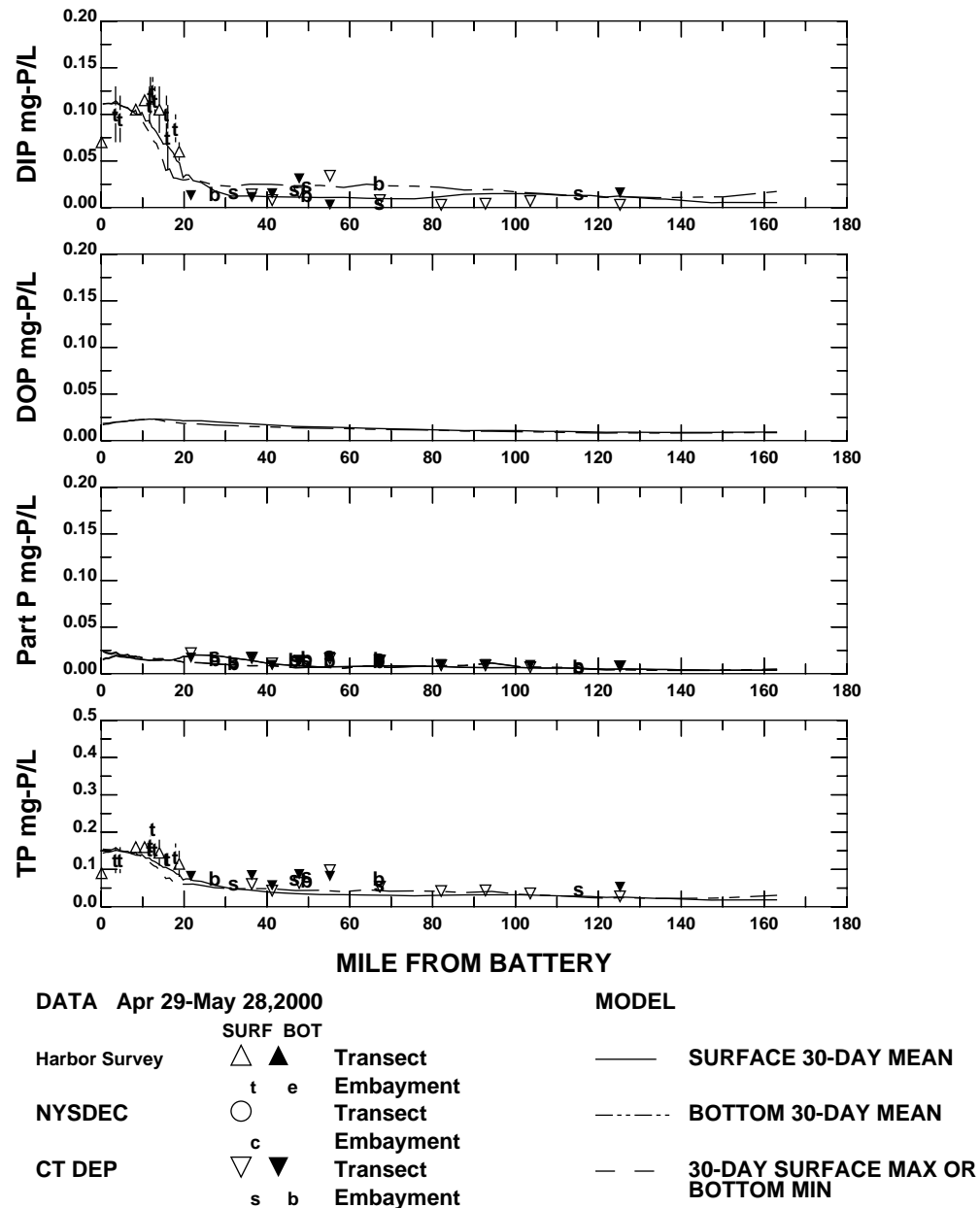
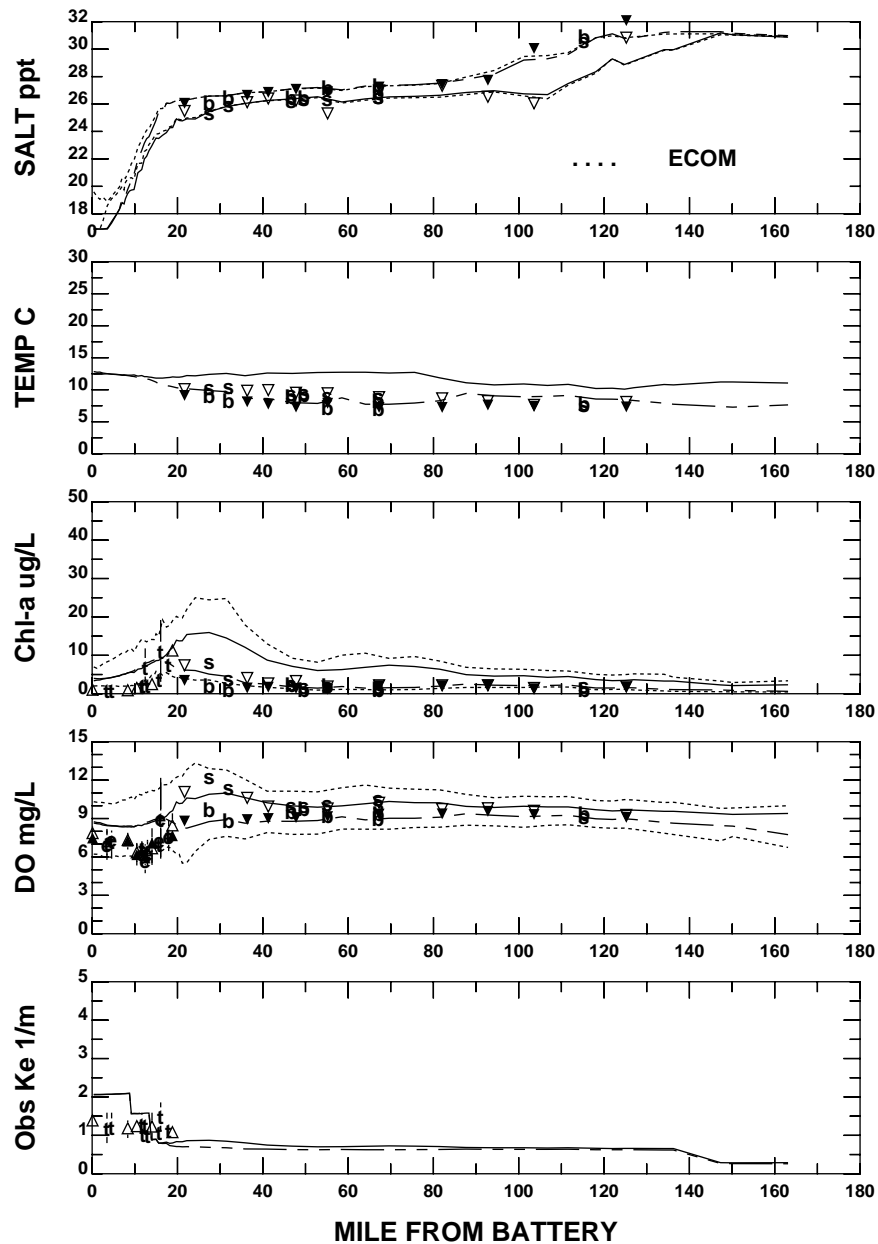
# EAST RIVER AND LONG ISLAND SOUND



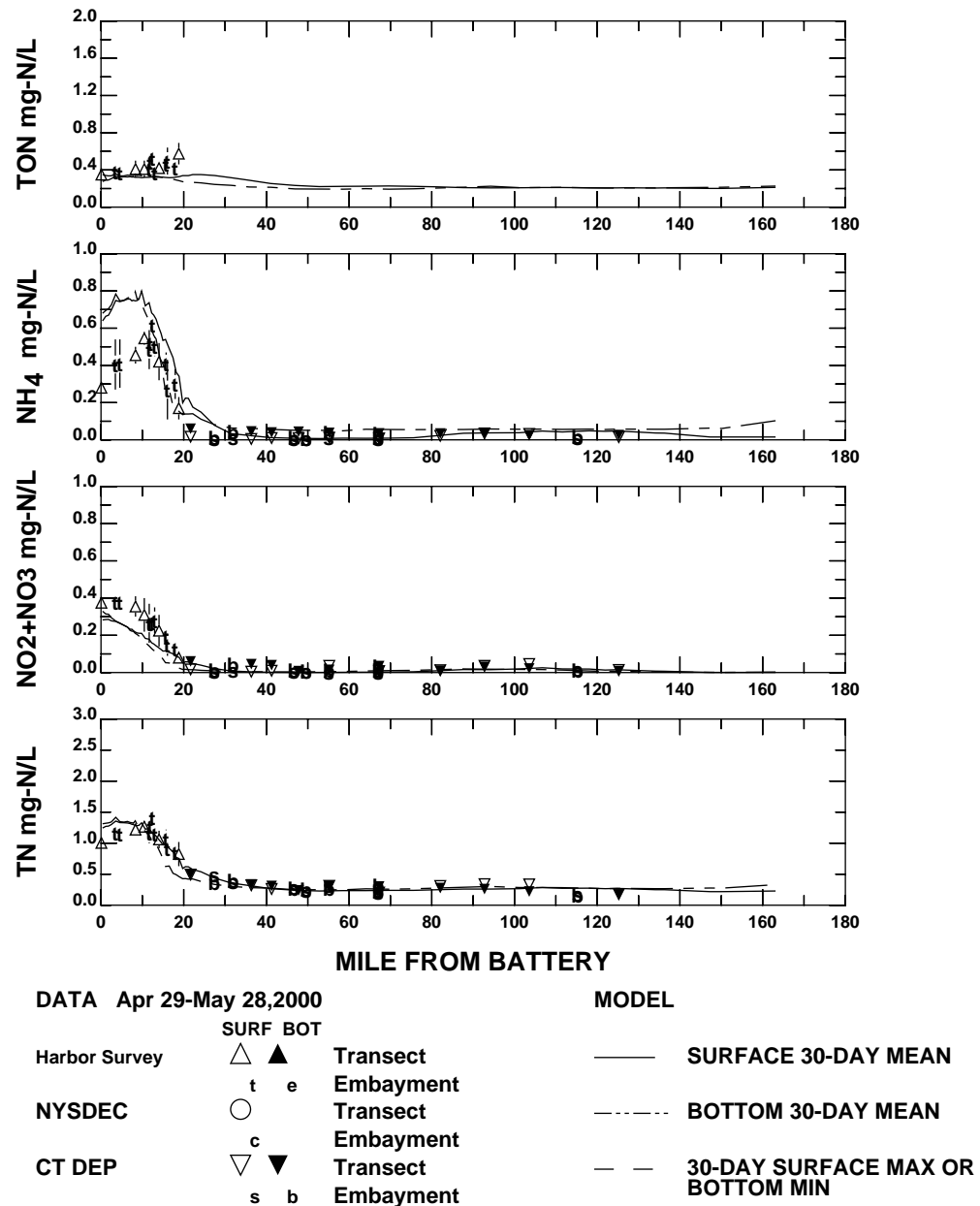
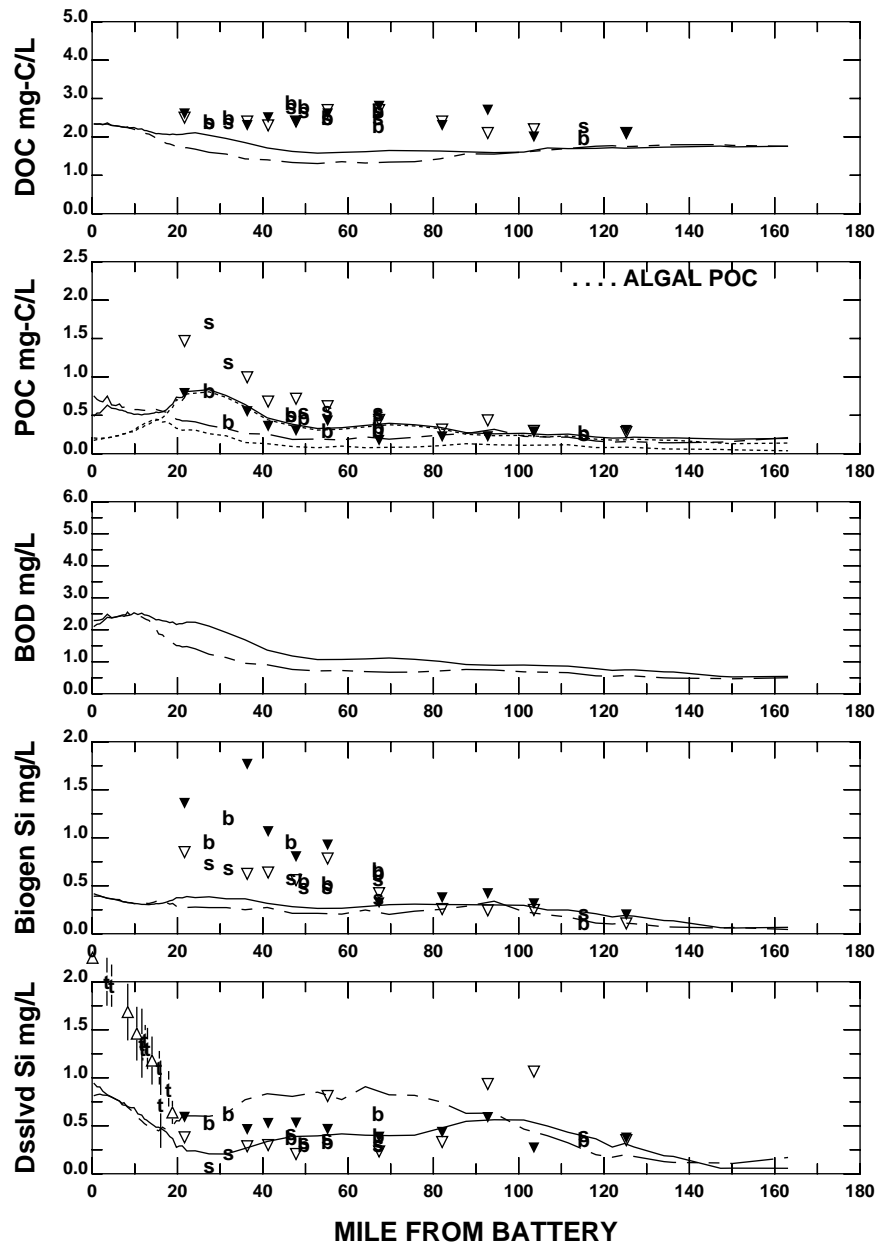
**EAST RIVER AND LONG ISLAND SOUND**



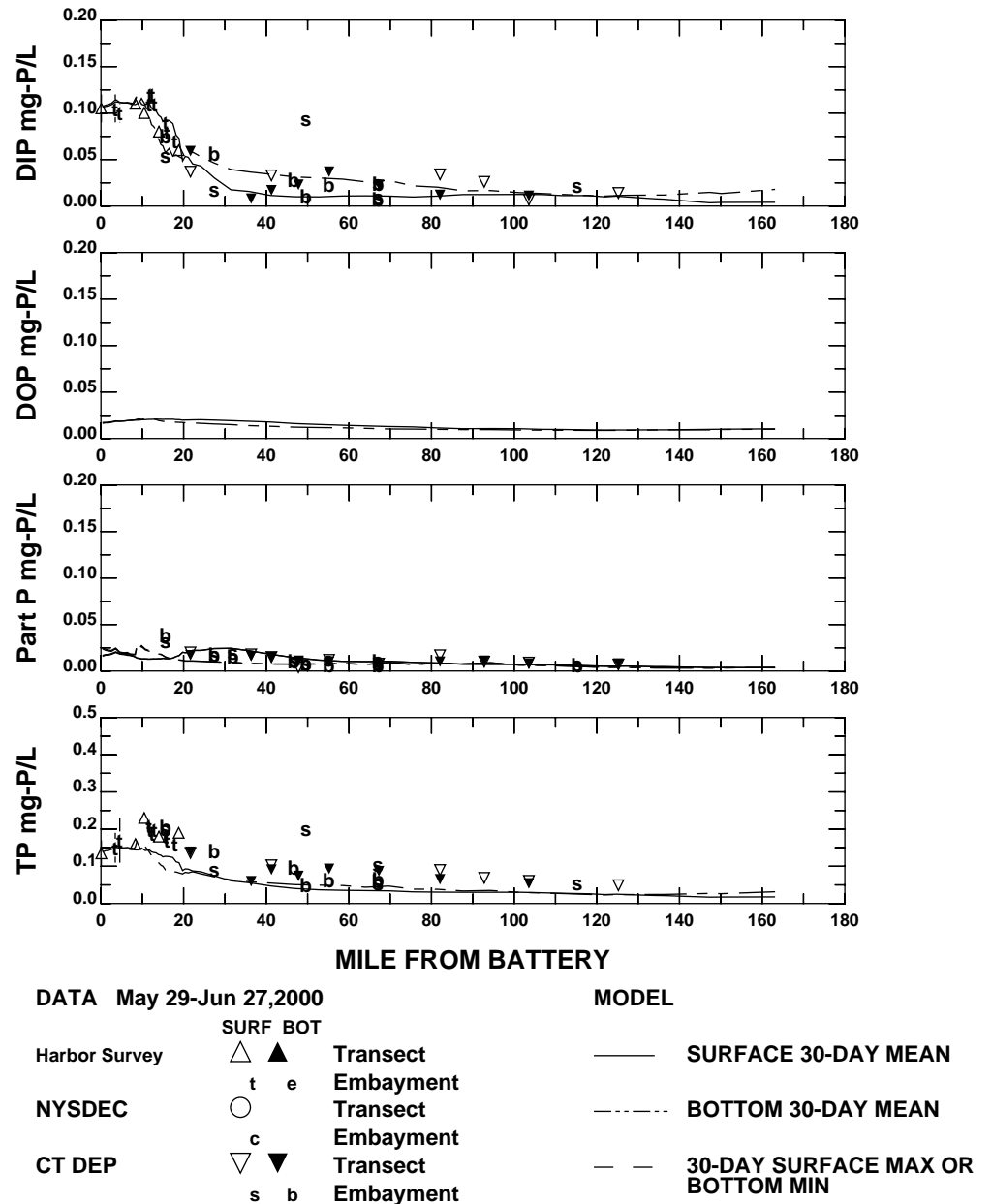
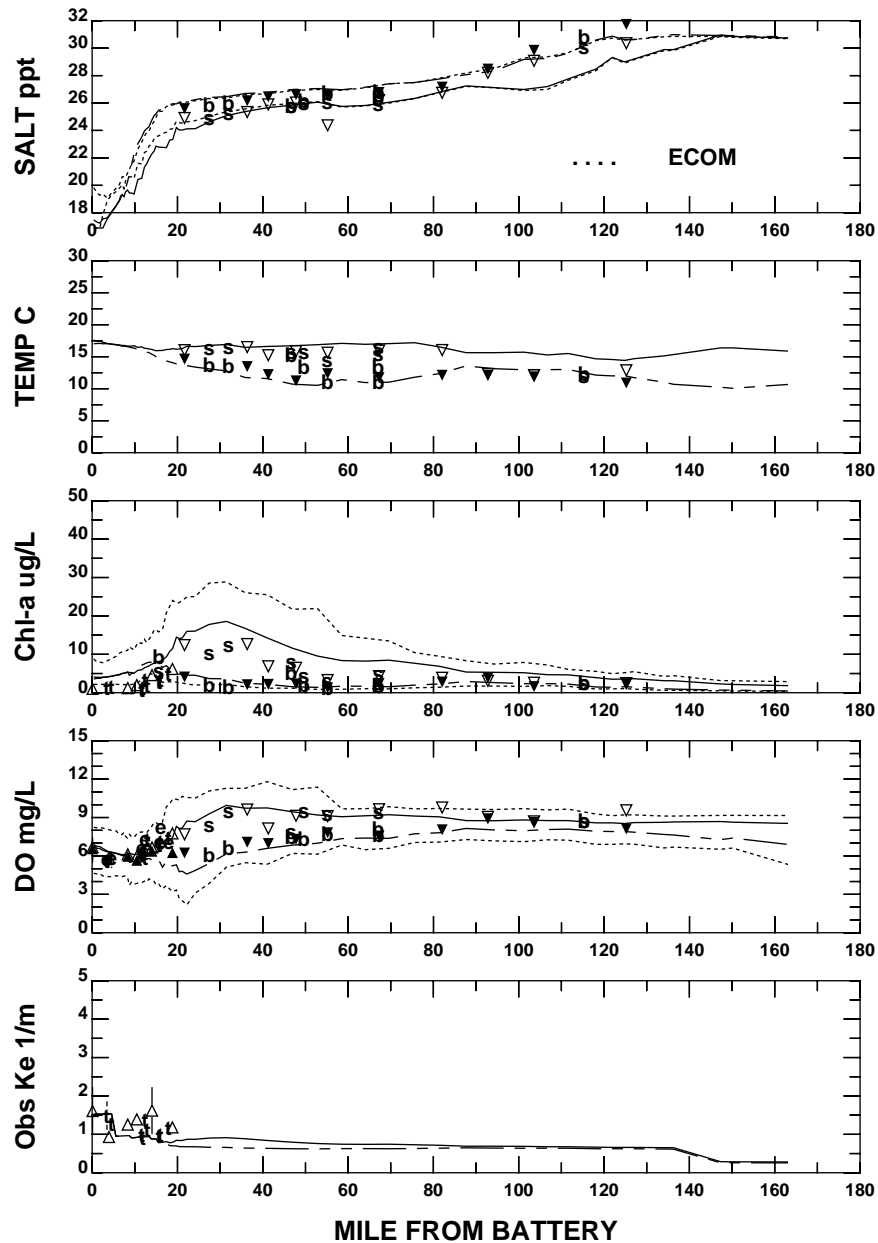
## EAST RIVER AND LONG ISLAND SOUND



**EAST RIVER AND LONG ISLAND SOUND**

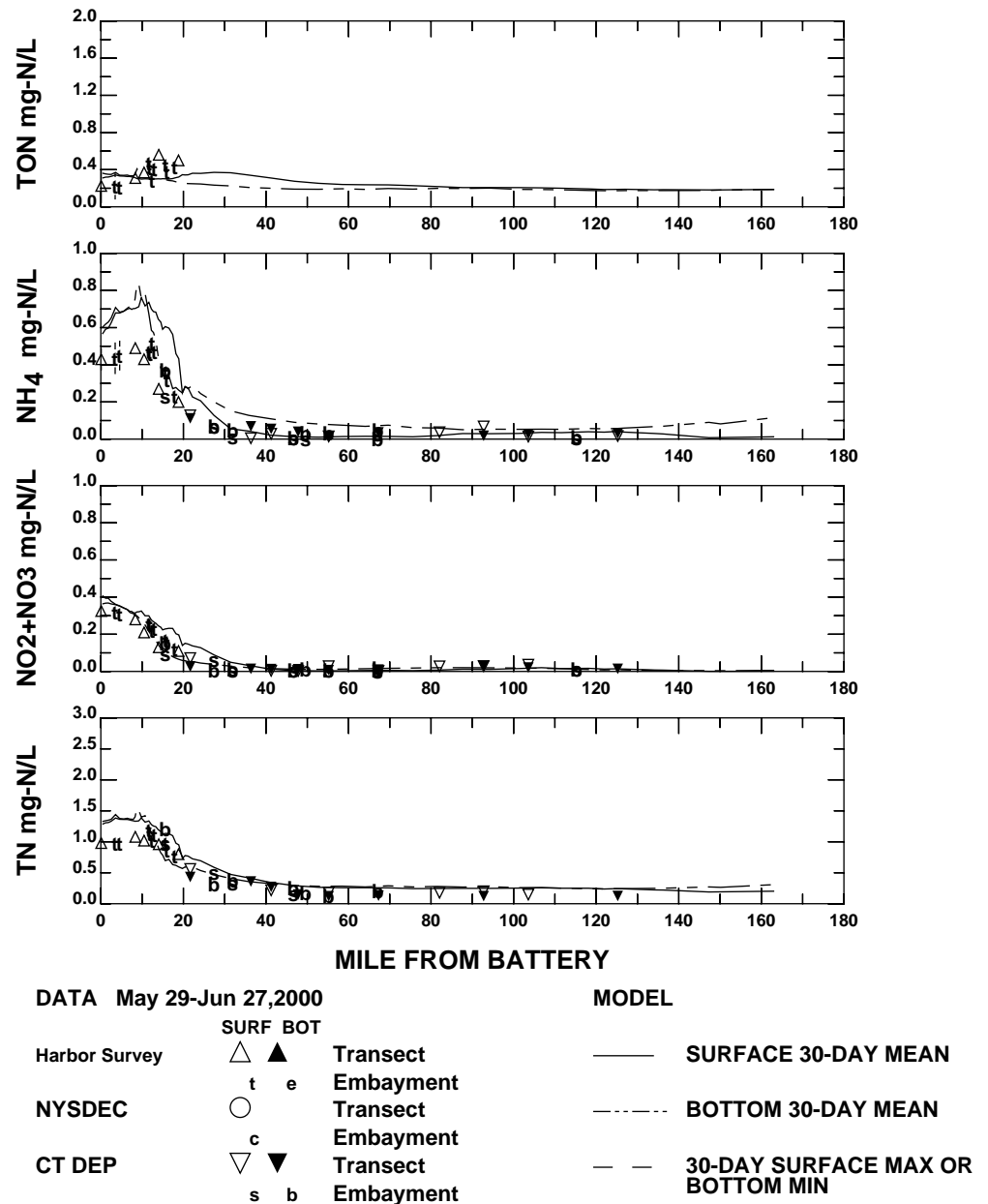
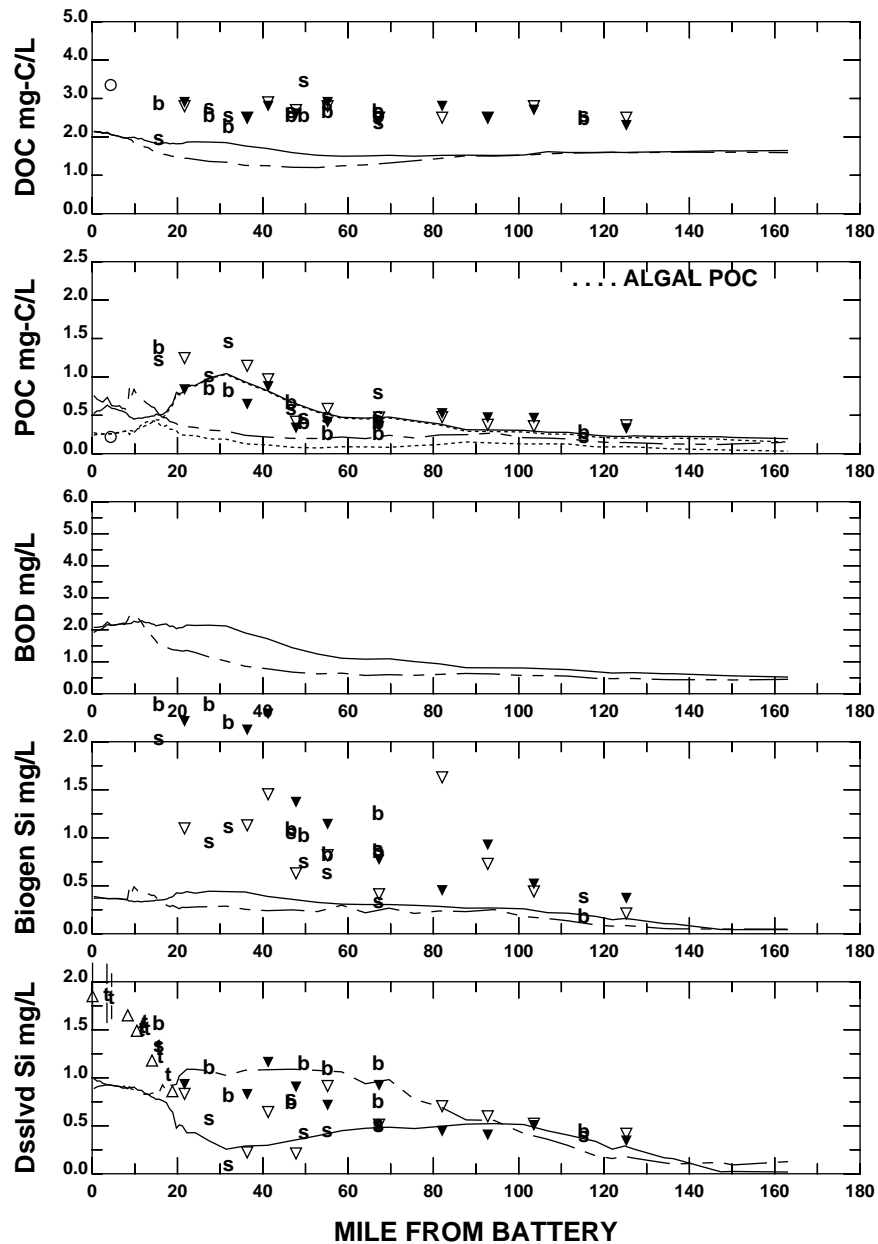


## EAST RIVER AND LONG ISLAND SOUND

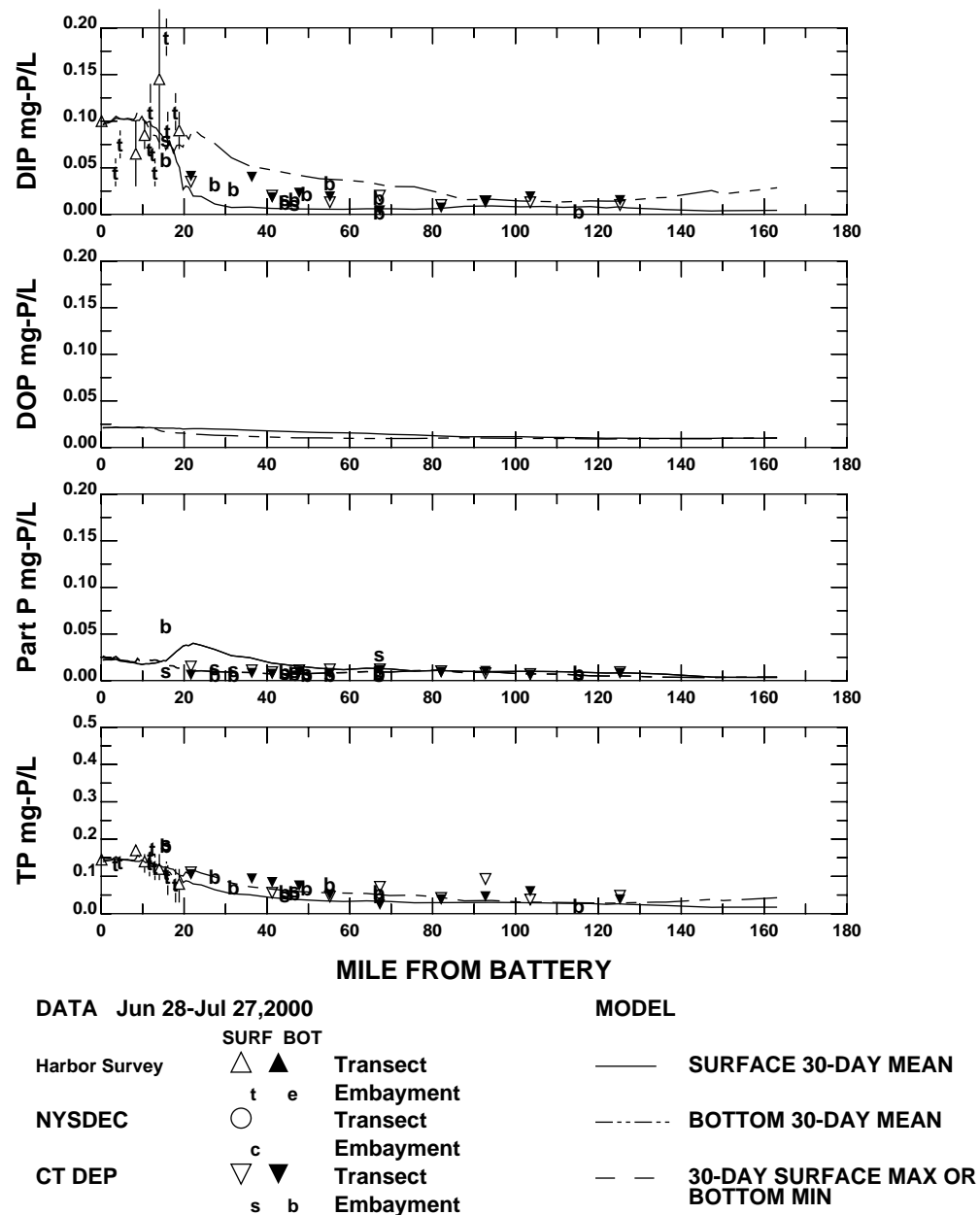
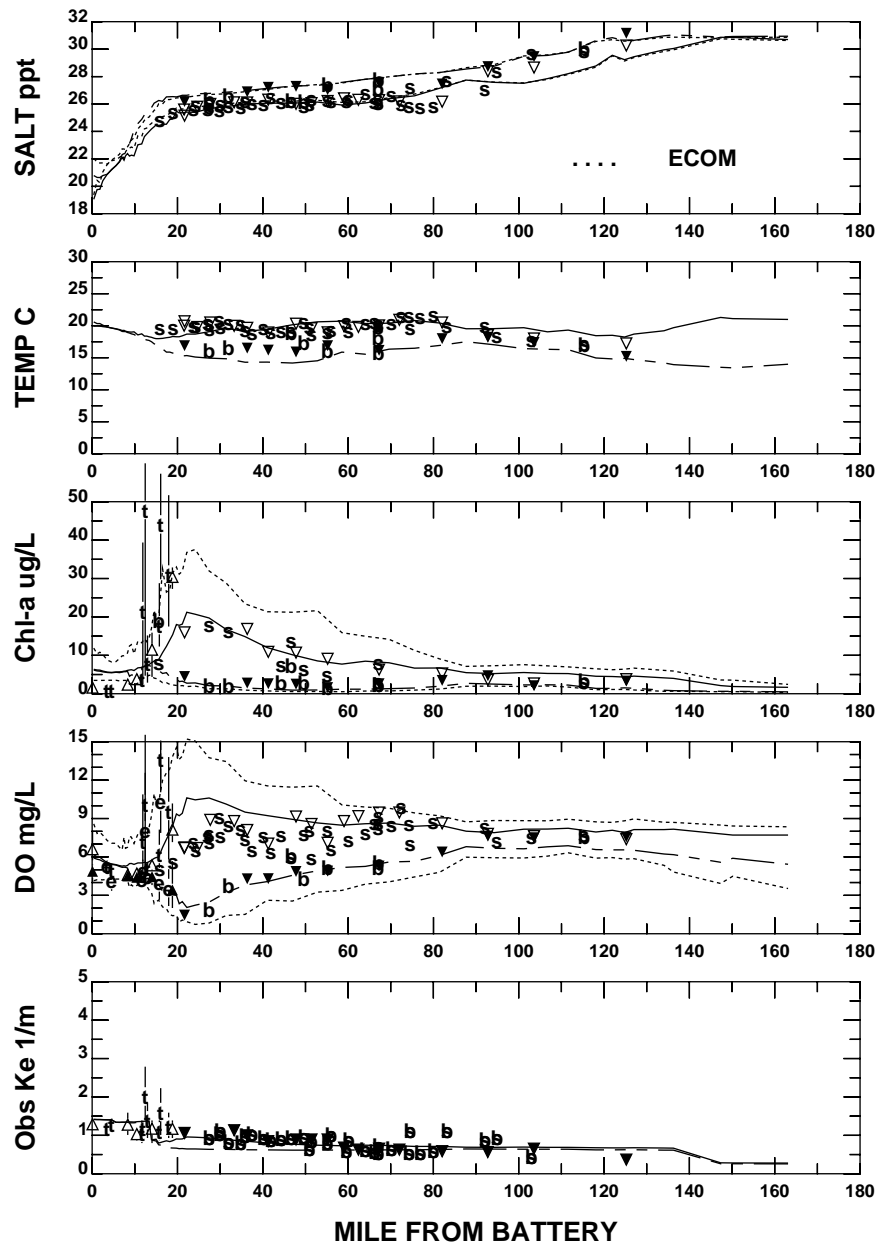


# EAST RIVER AND LONG ISLAND SOUND

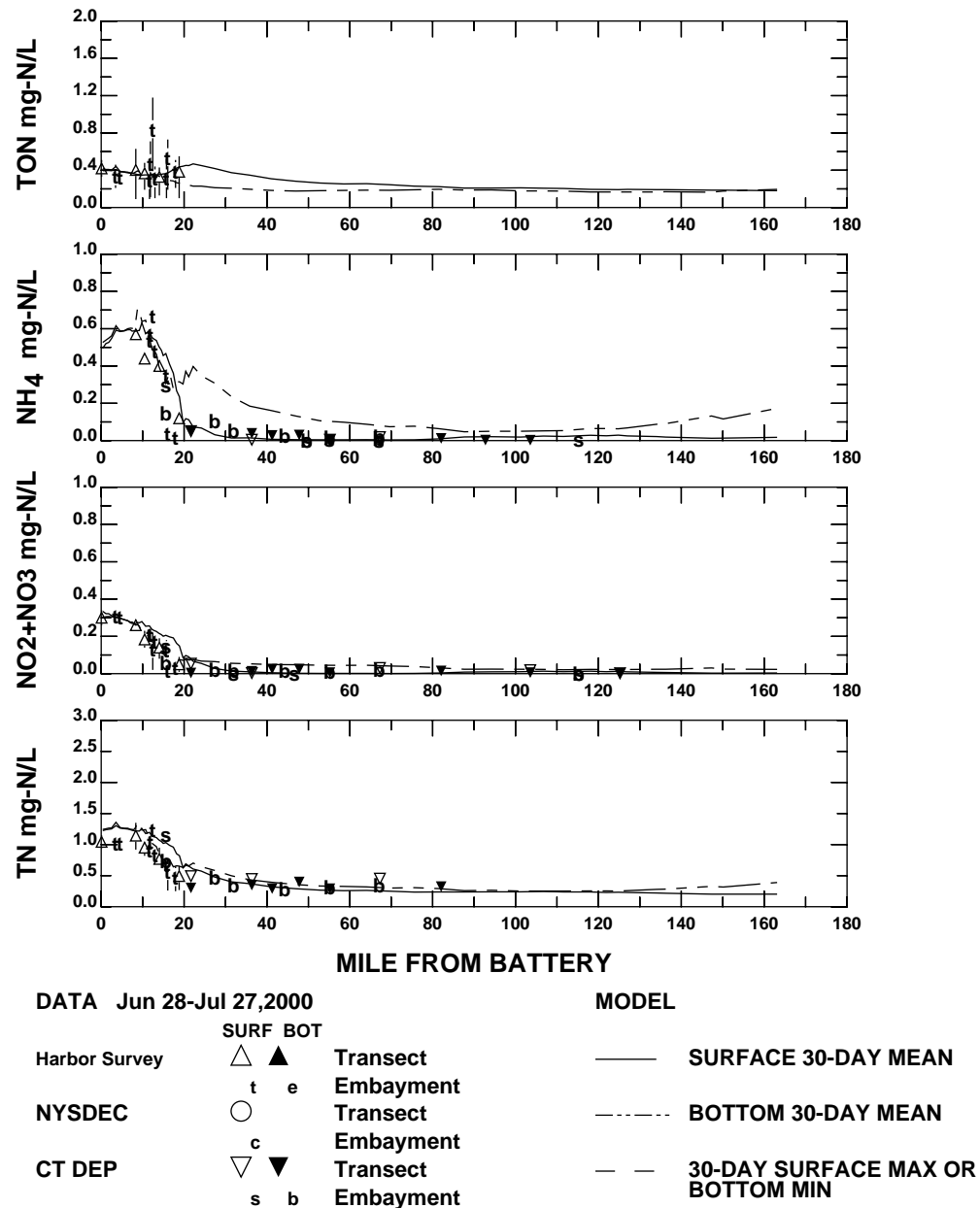
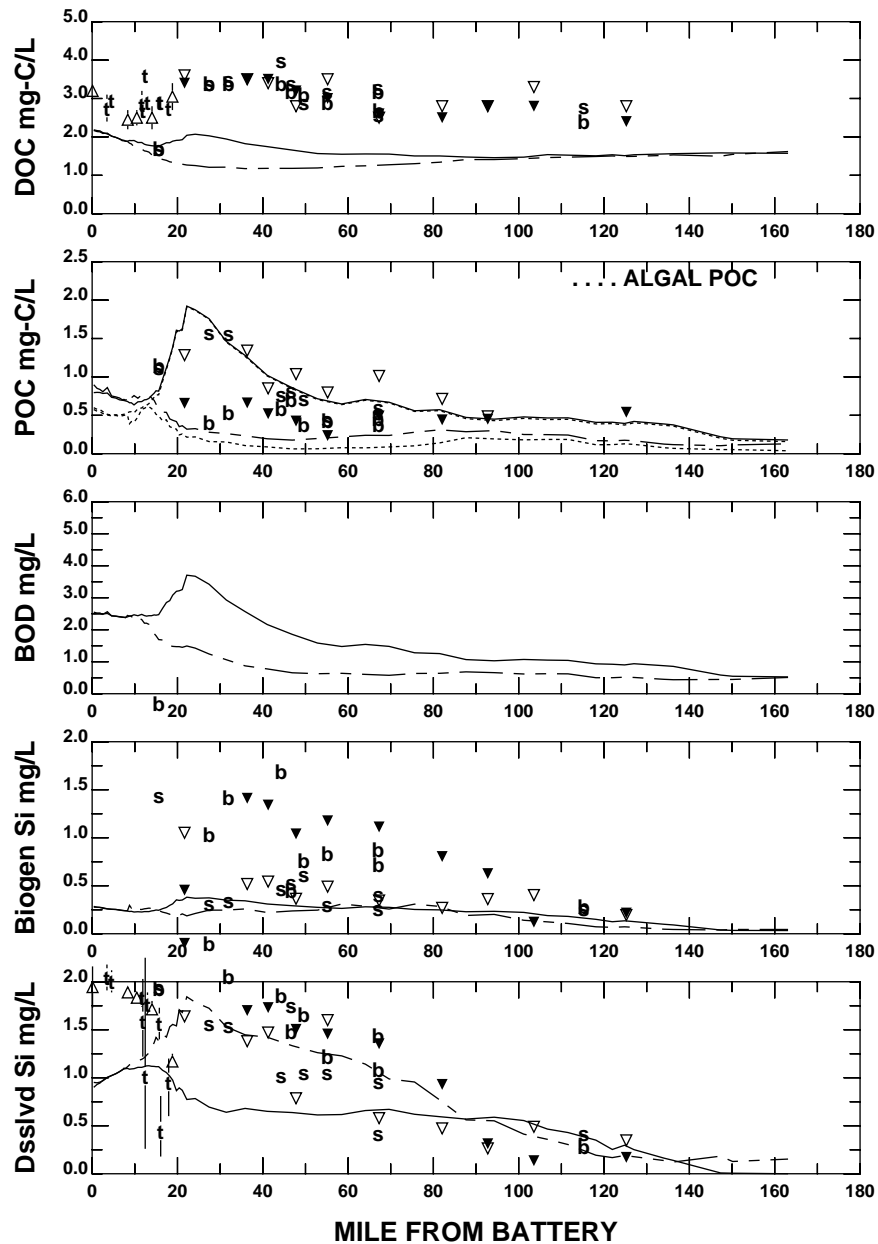




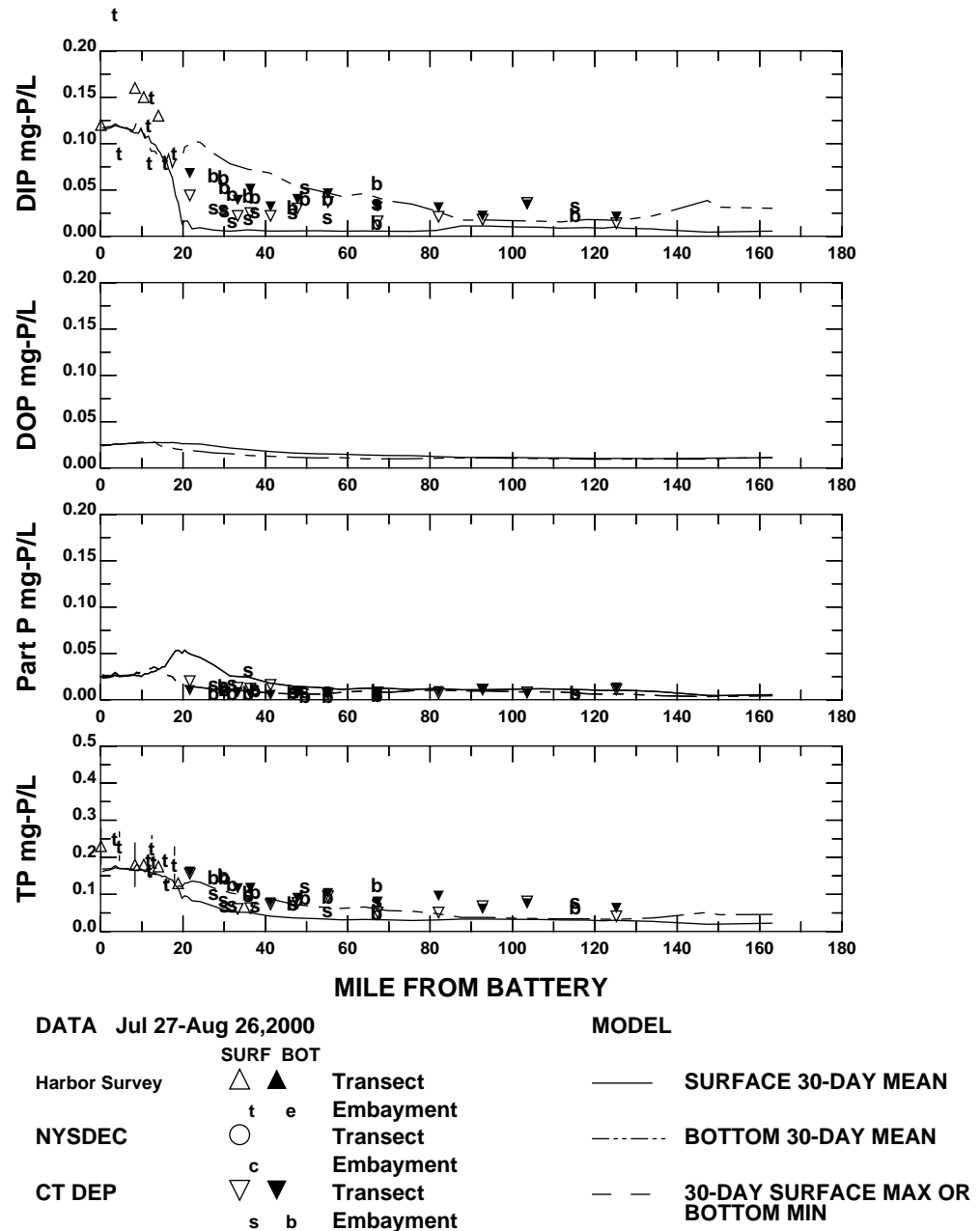
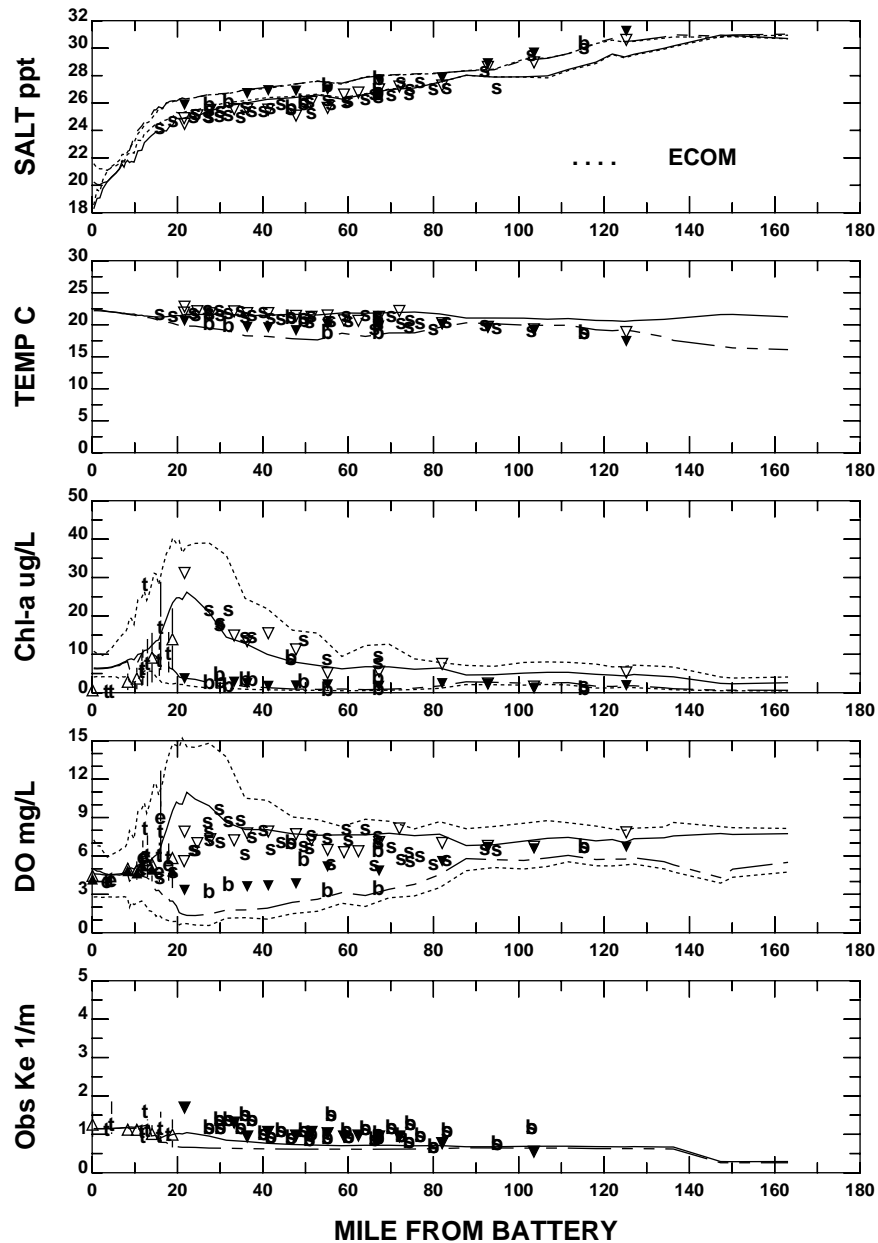
# EAST RIVER AND LONG ISLAND SOUND



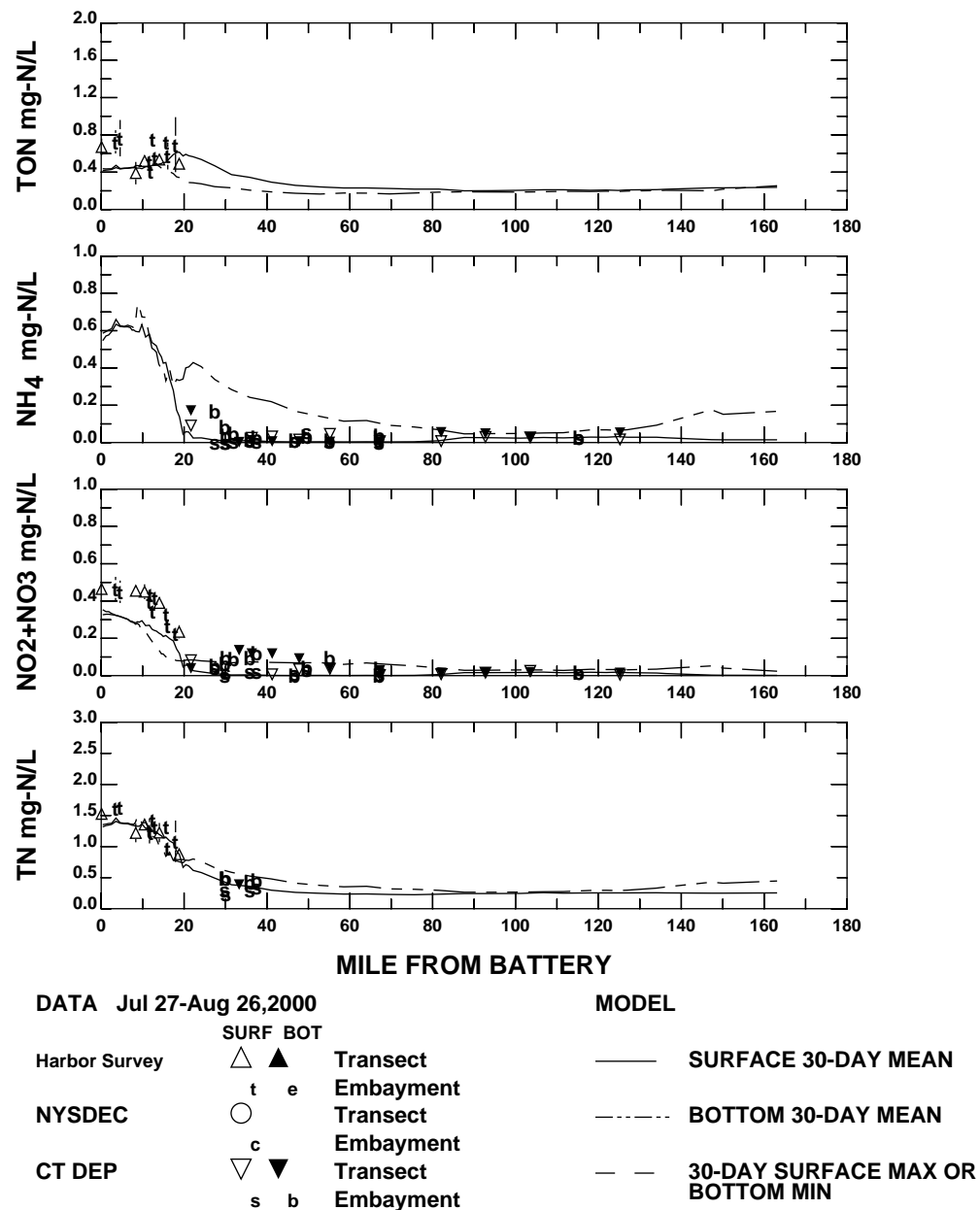
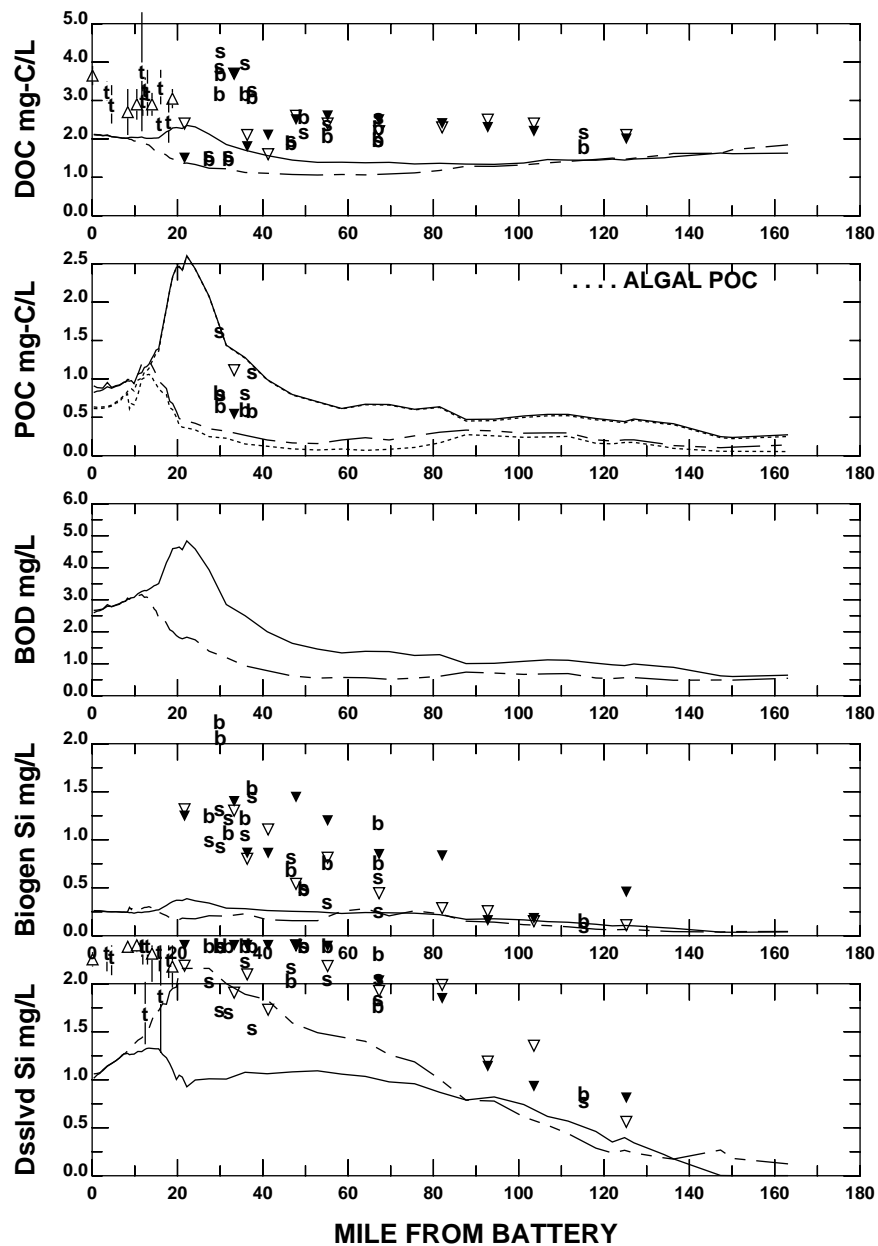
**EAST RIVER AND LONG ISLAND SOUND**



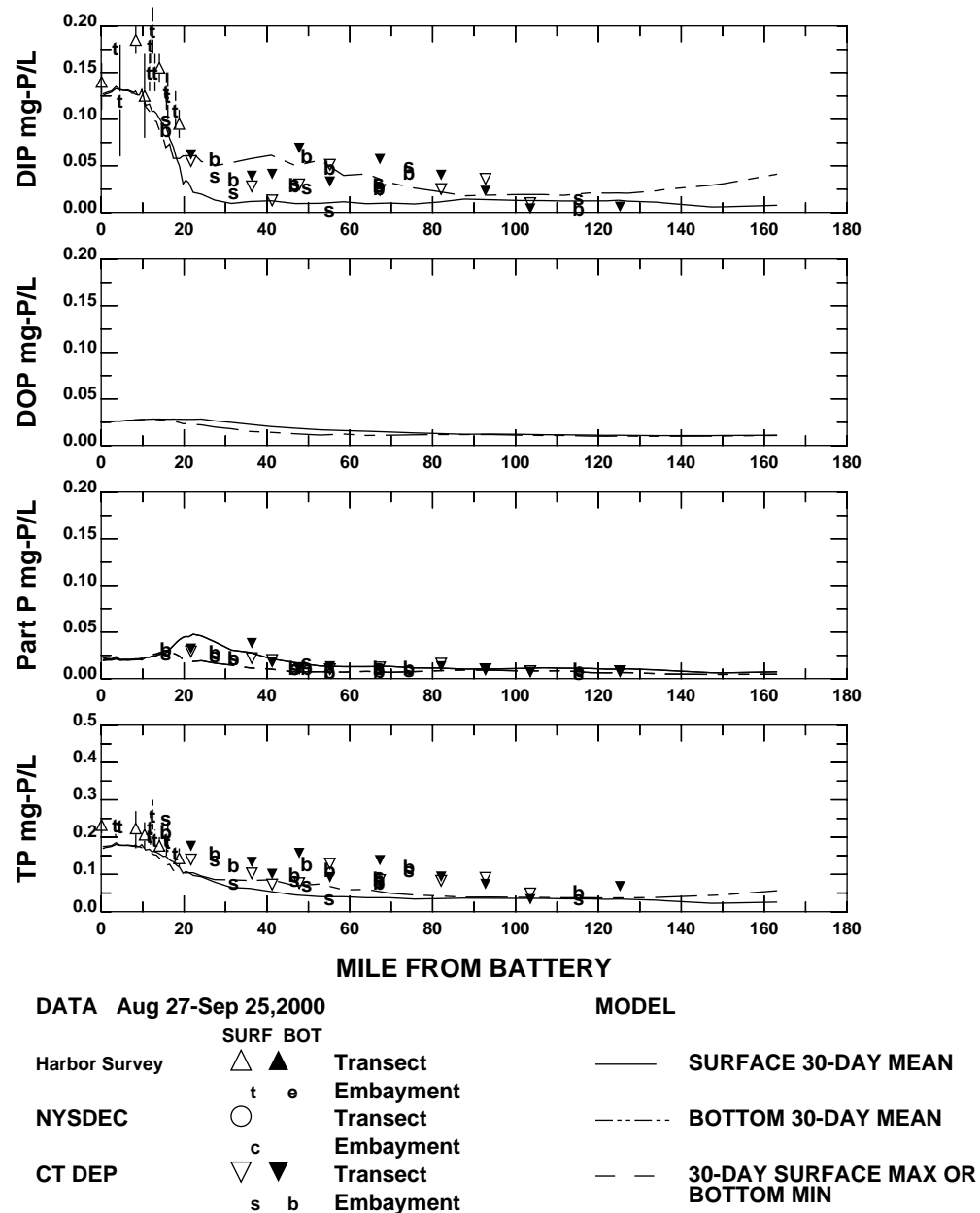
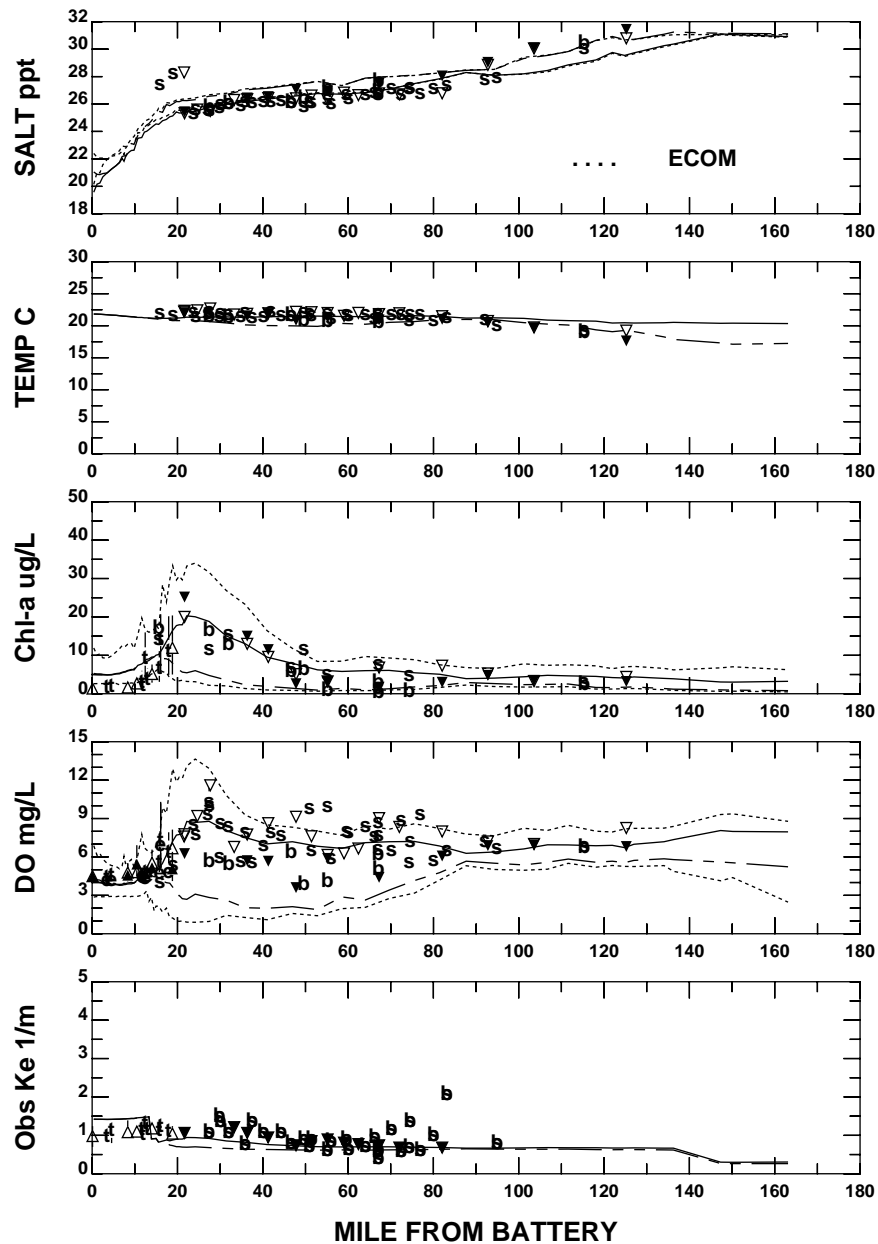
## EAST RIVER AND LONG ISLAND SOUND



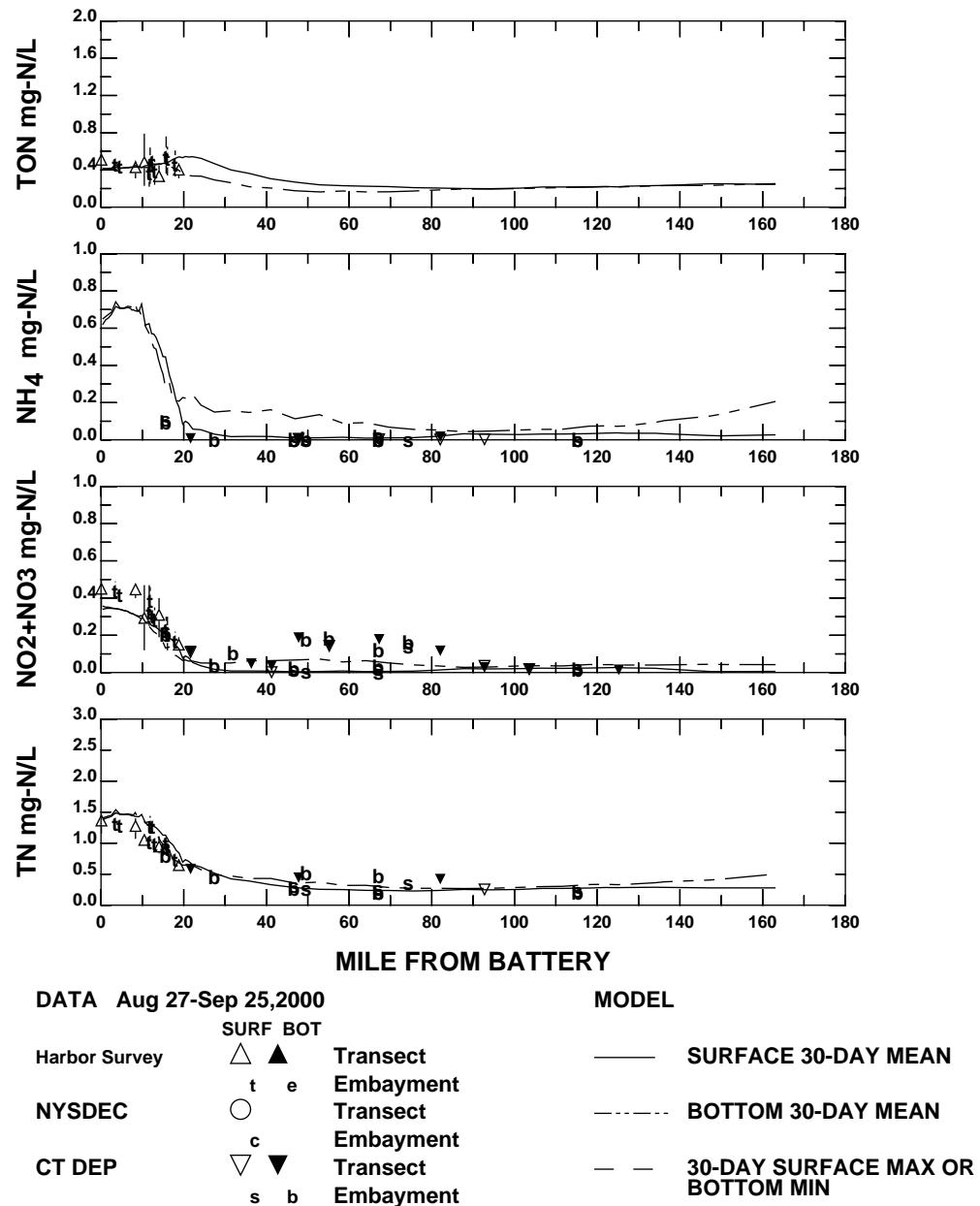
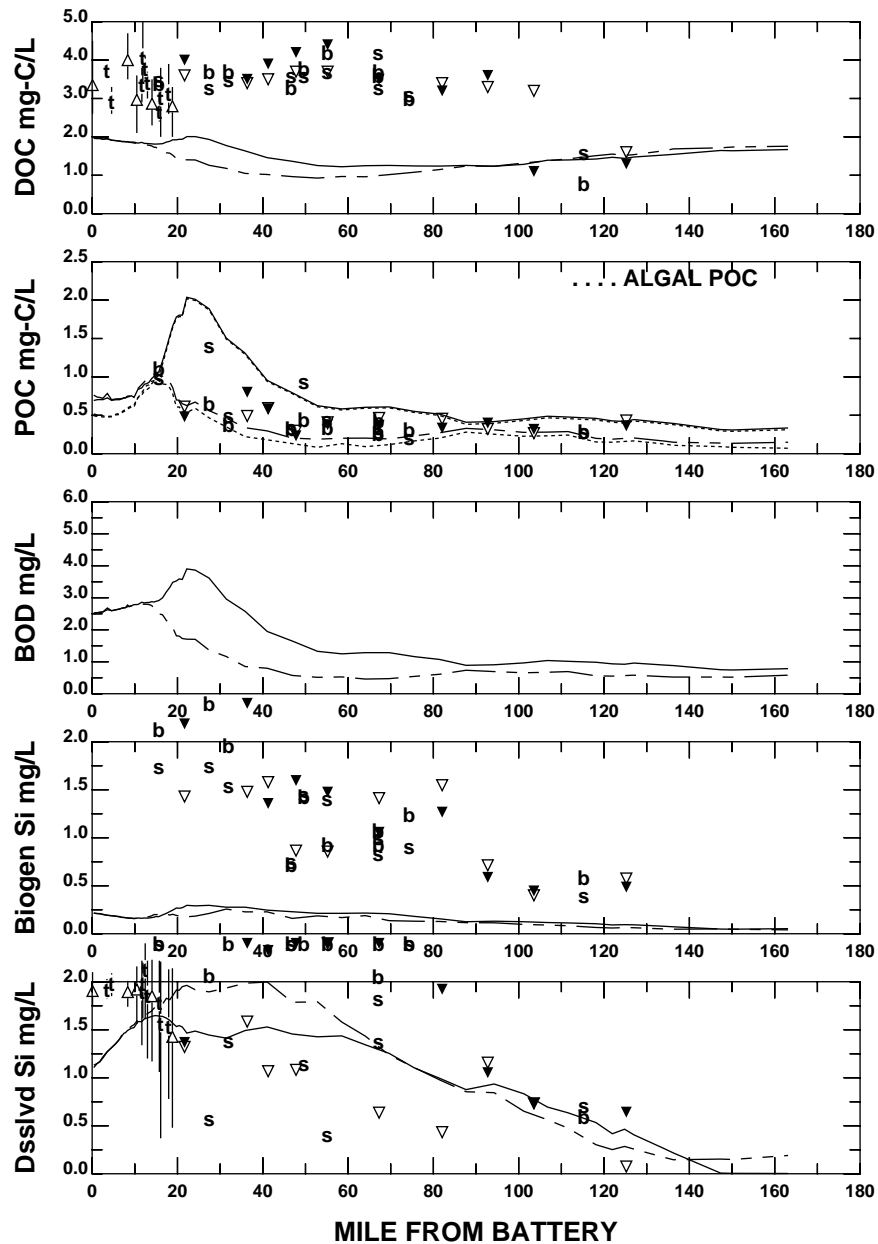
**EAST RIVER AND LONG ISLAND SOUND**



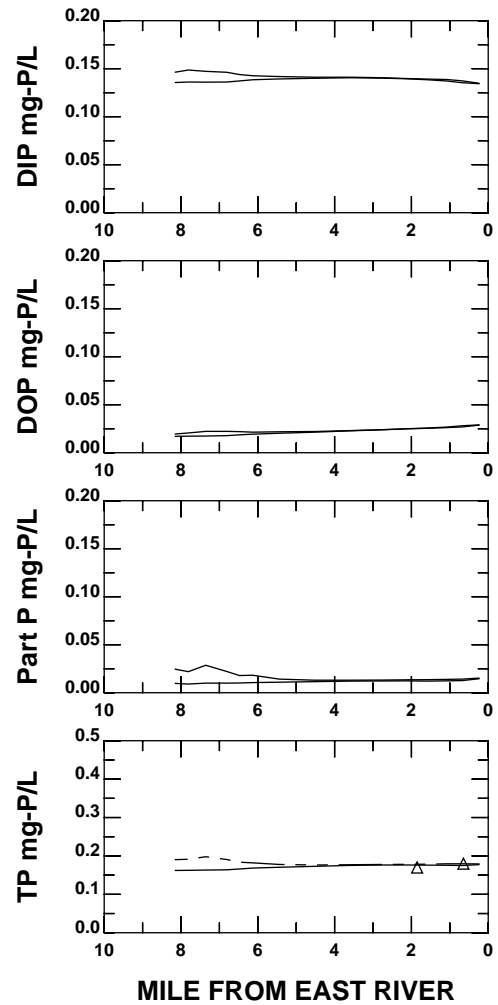
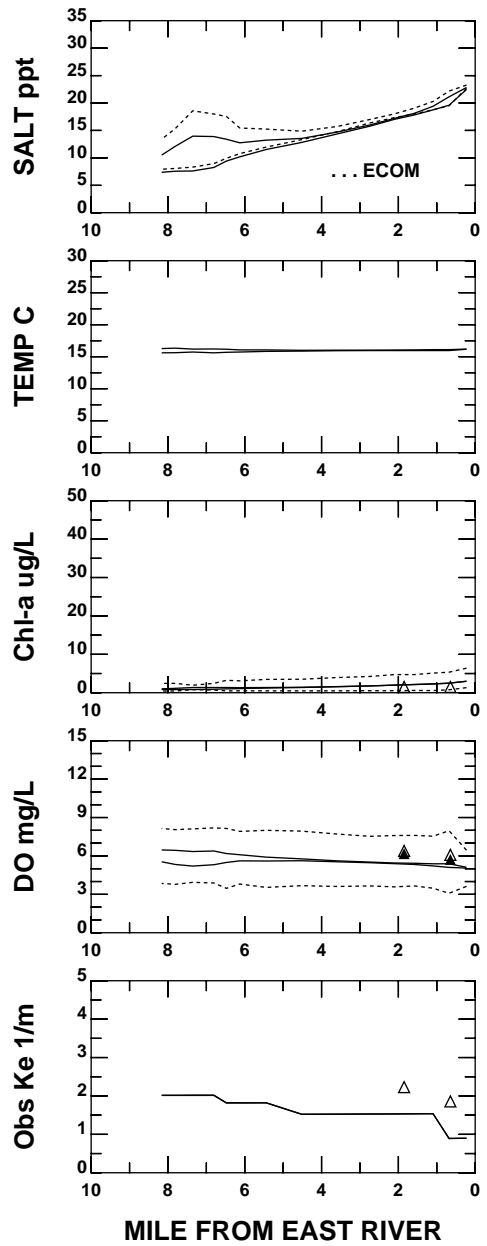
# EAST RIVER AND LONG ISLAND SOUND



**EAST RIVER AND LONG ISLAND SOUND**



## EAST RIVER AND LONG ISLAND SOUND



DATA Oct 1-30,1999

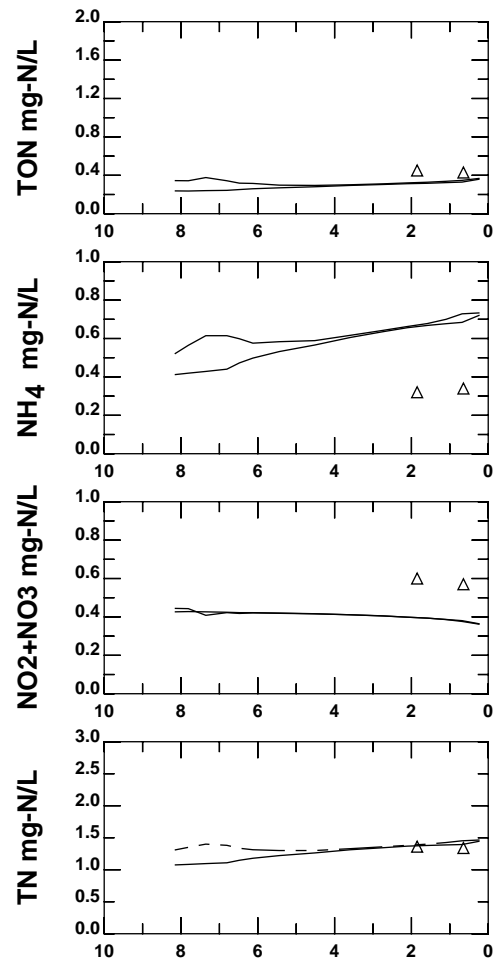
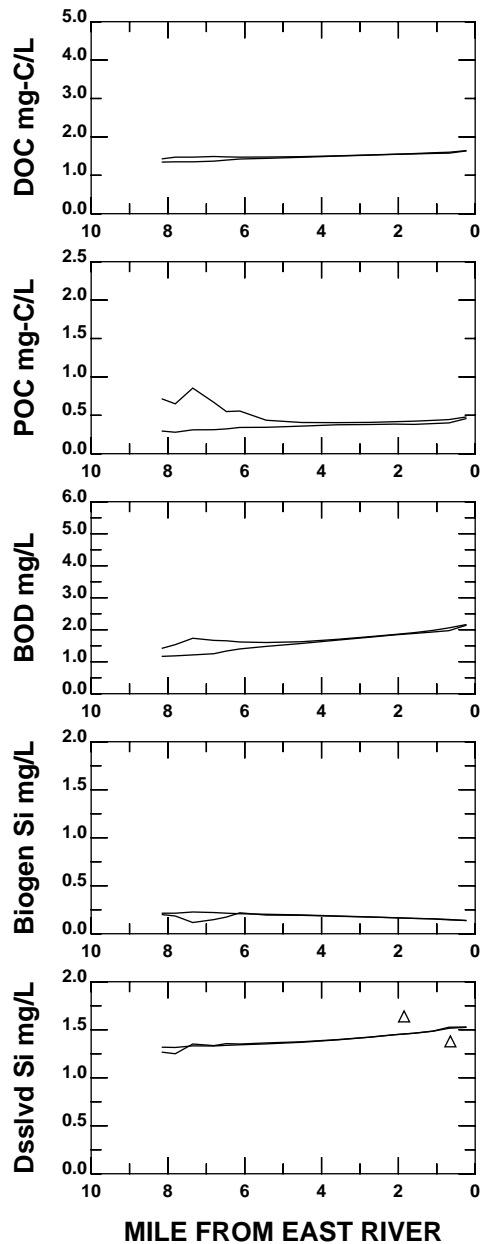
Harbor Survey    SURF BOT  
 △ ▲    Transect  
 t e    Embayment  
 NYSDEC    ○    Transect  
           c    Embayment

MODEL

— SURFACE 30-DAY MEAN  
 - - - - - BOTTOM 30-DAY MEAN  
 - - - 30-DAY SURFACE MAX OR  
 BOTTOM MIN

**HARLEM RIVER**





**MILE FROM EAST RIVER**

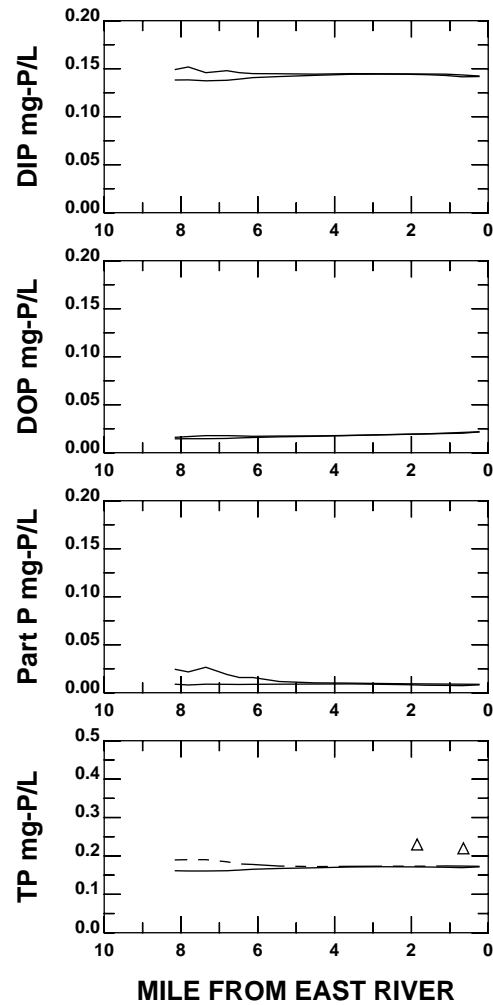
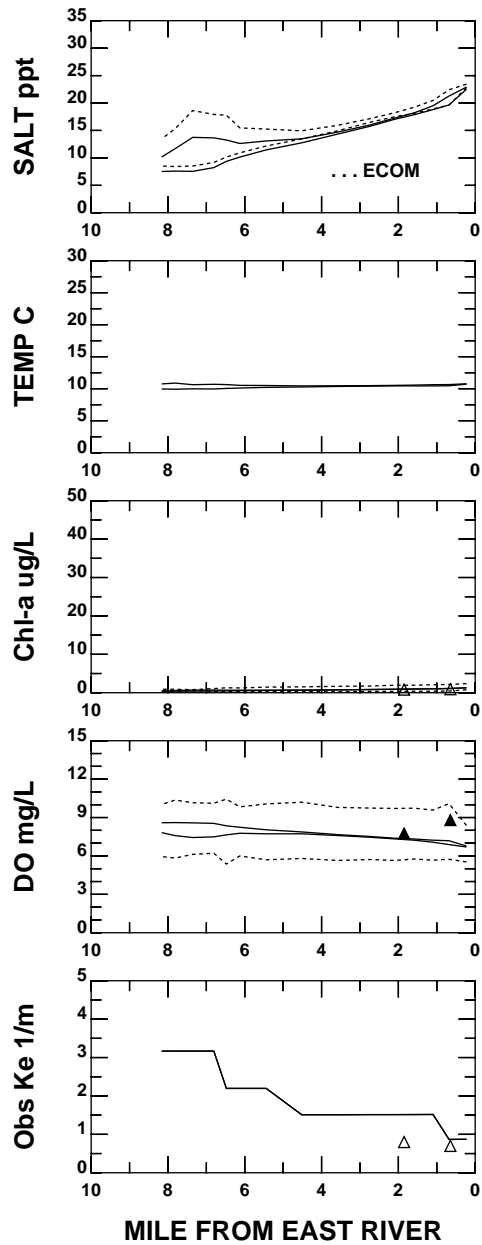
DATA Oct 1-30, 1999

	SURF	BOT	
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment

**MODEL**

————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

**HARLEM RIVER**



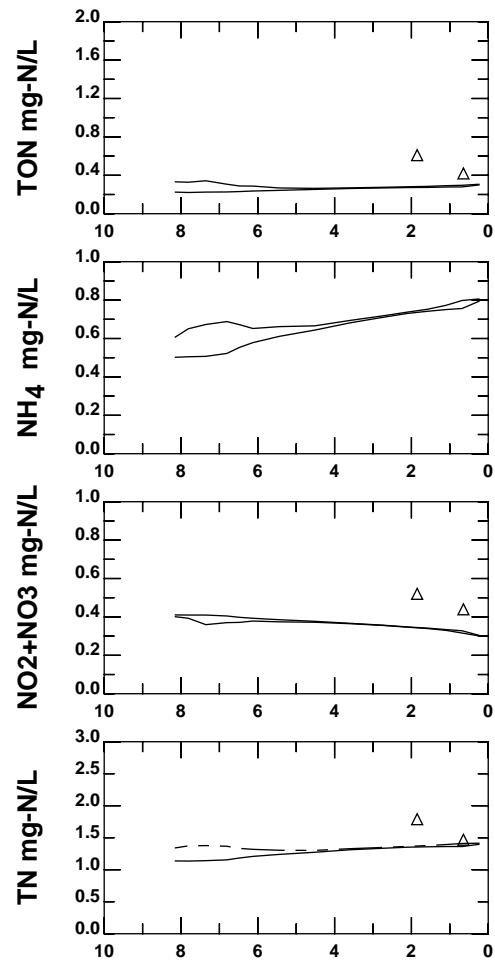
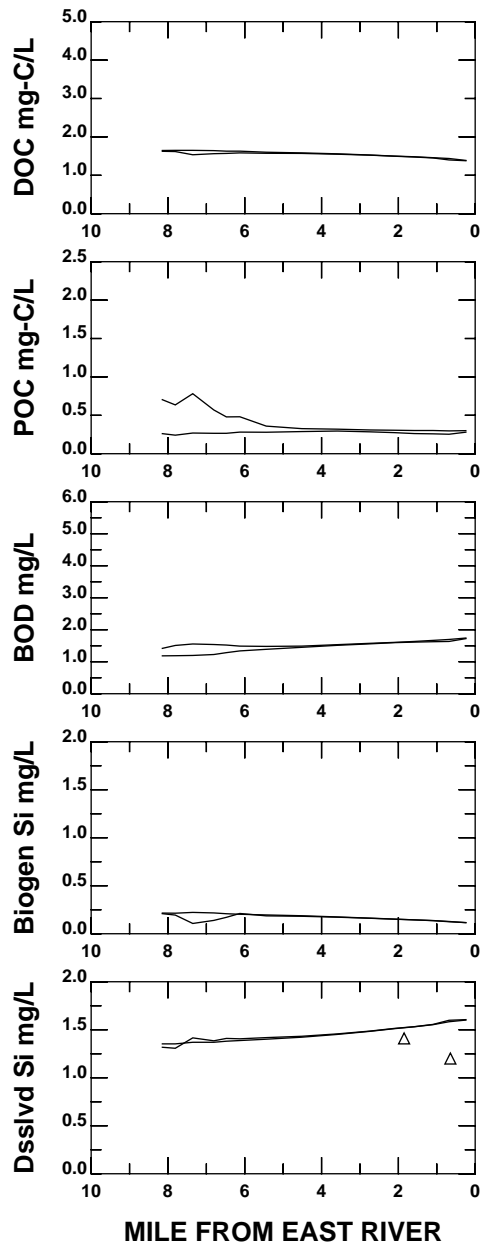
DATA Oct 31-Nov 29, 1999

Harbor Survey    SURF BOT  
 △ ▲    Transect  
 t e    Embayment  
 NYSDEC    ○    Transect  
           c    Embayment

MODEL

—    SURFACE 30-DAY MEAN  
 - - -    BOTTOM 30-DAY MEAN  
 - -    30-DAY SURFACE MAX OR  
 BOTTOM MIN

**HARLEM RIVER**



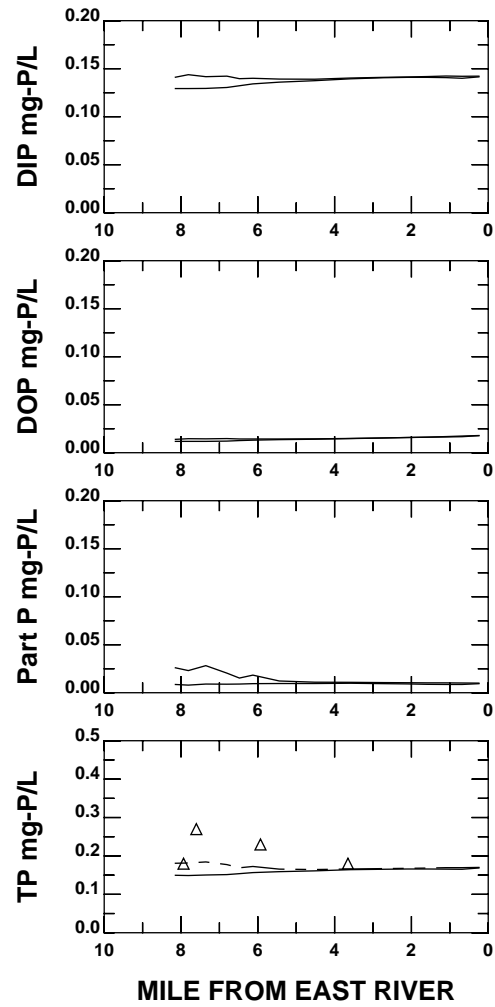
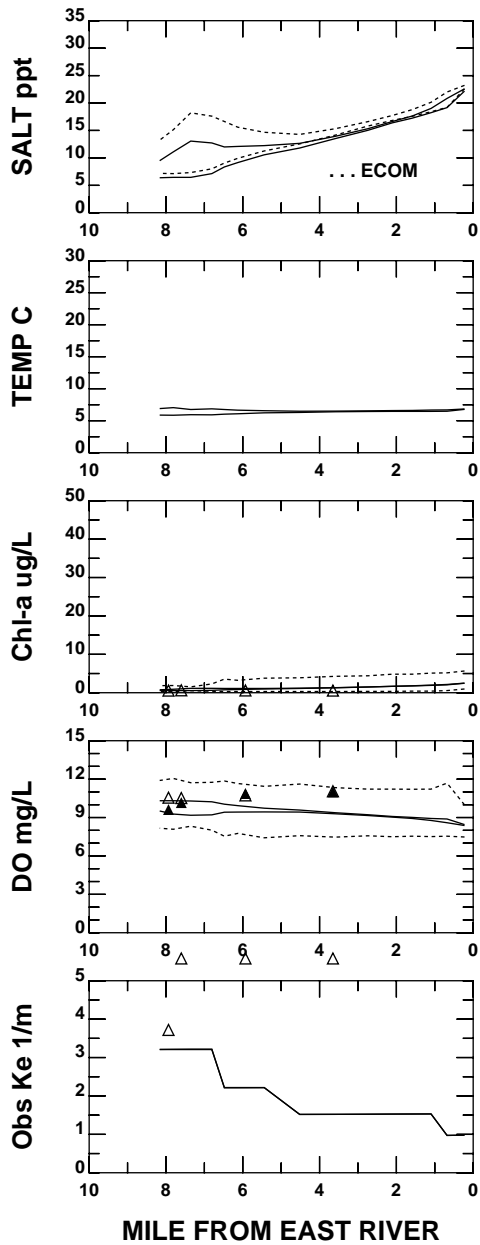
DATA Oct 31-Nov 29, 1999

	SURF BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment

MODEL

————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

## HARLEM RIVER



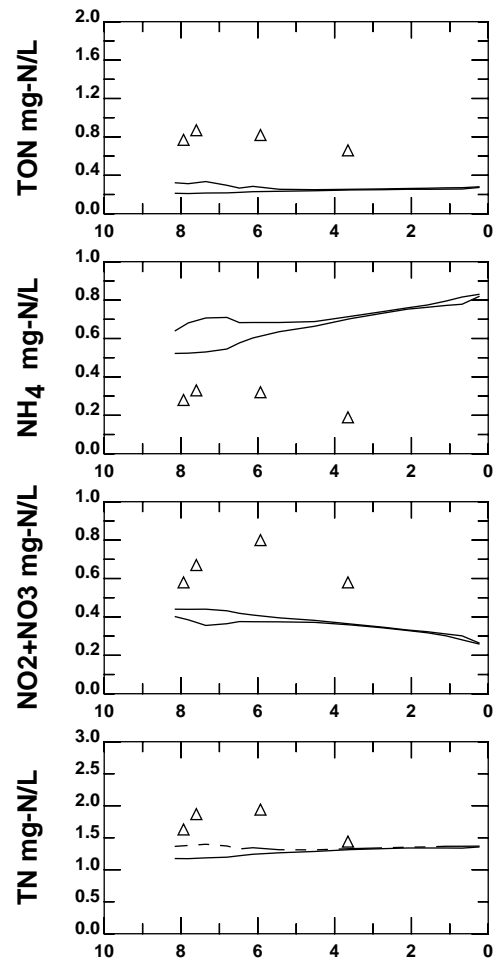
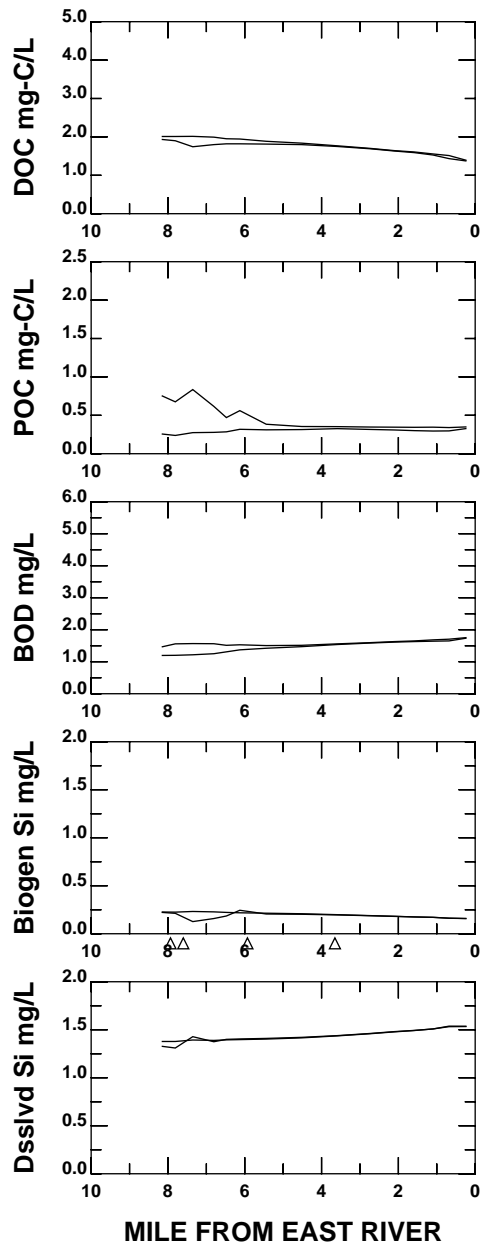
DATA Nov 30-Dec 29, 1999

Harbor Survey SURF BOT  
 △ ▲ Transect  
 t e Embayment  
 NYSDEC ○ Transect  
 c Embayment

MODEL

— SURFACE 30-DAY MEAN  
 - - - - BOTTOM 30-DAY MEAN  
 - - 30-DAY SURFACE MAX OR  
 BOTTOM MIN

**HARLEM RIVER**



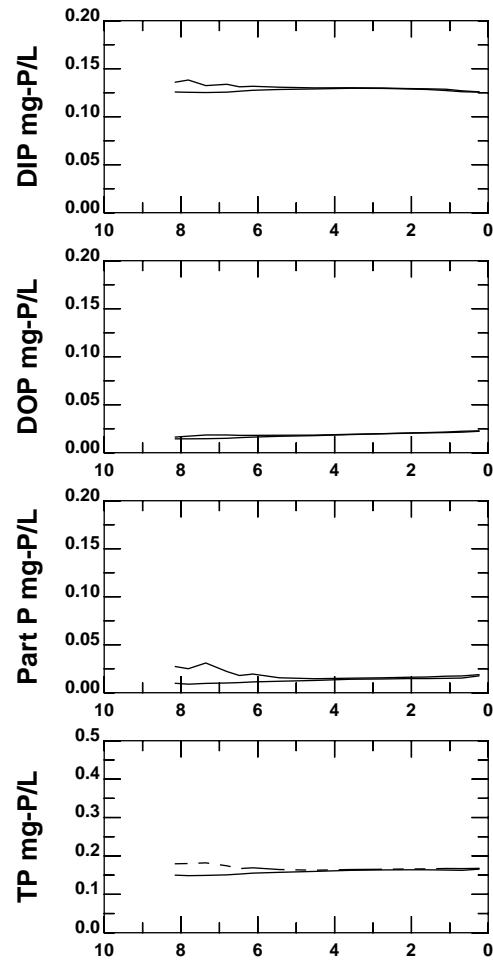
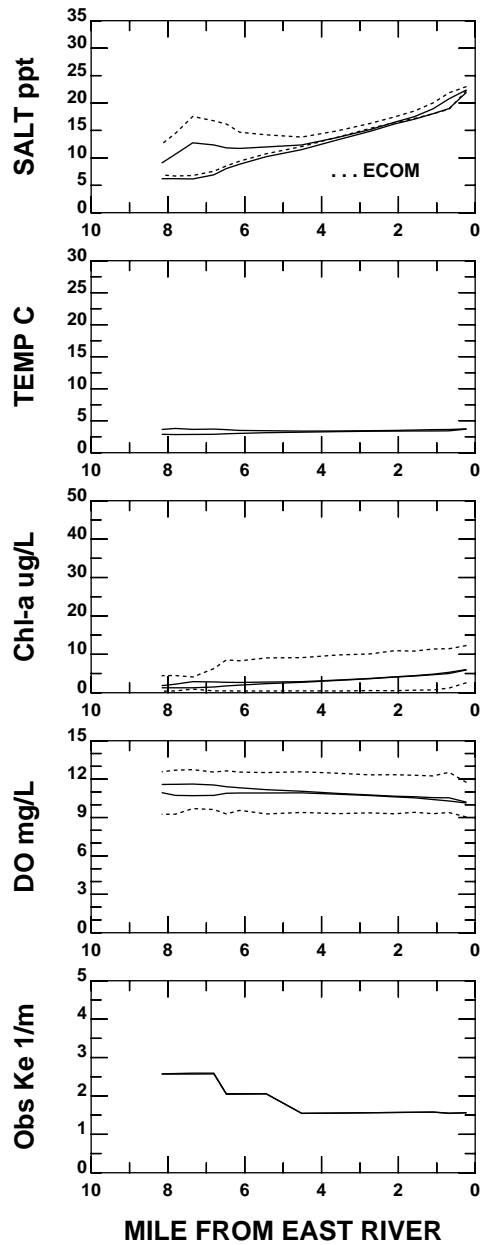
DATA Nov 30-Dec 29, 1999

	SURF	BOT	
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment

MODEL

—	SURFACE 30-DAY MEAN
- - - -	BOTTOM 30-DAY MEAN
- - -	30-DAY SURFACE MAX OR BOTTOM MIN

## HARLEM RIVER



**DATA** Dec 30 1999 -Jan 28,2000

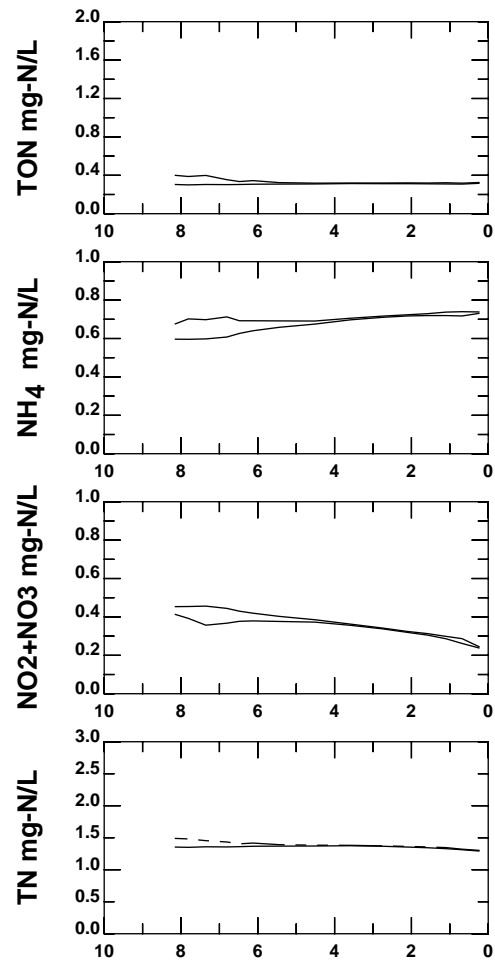
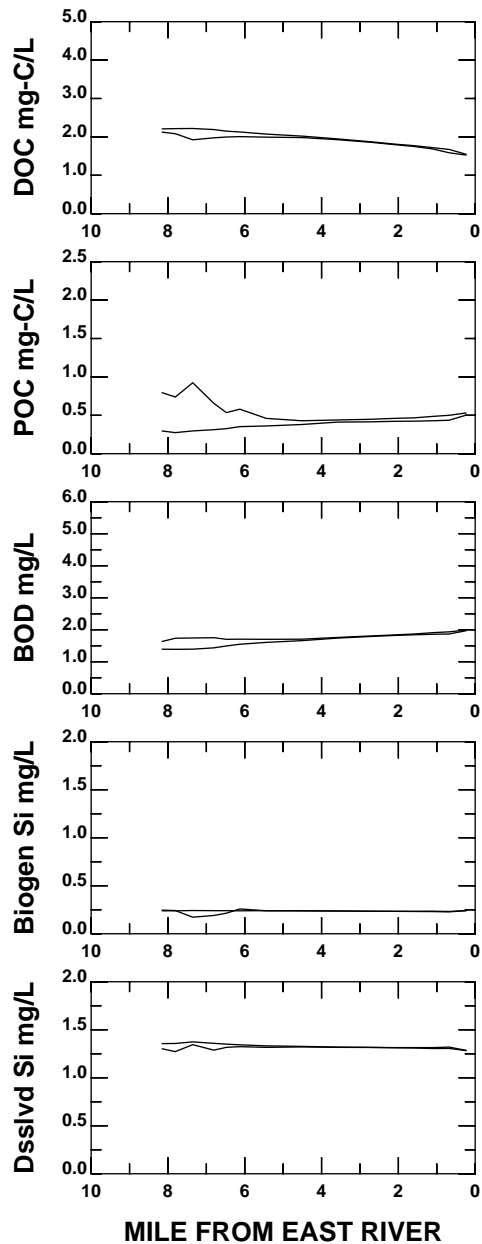
**MODEL**

	<b>SURF BOT</b>		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment

—	<b>SURFACE 30-DAY MEAN</b>
- - -	<b>BOTTOM 30-DAY MEAN</b>
- - -	<b>30-DAY SURFACE MAX OR BOTTOM MIN</b>

**HARLEM RIVER**



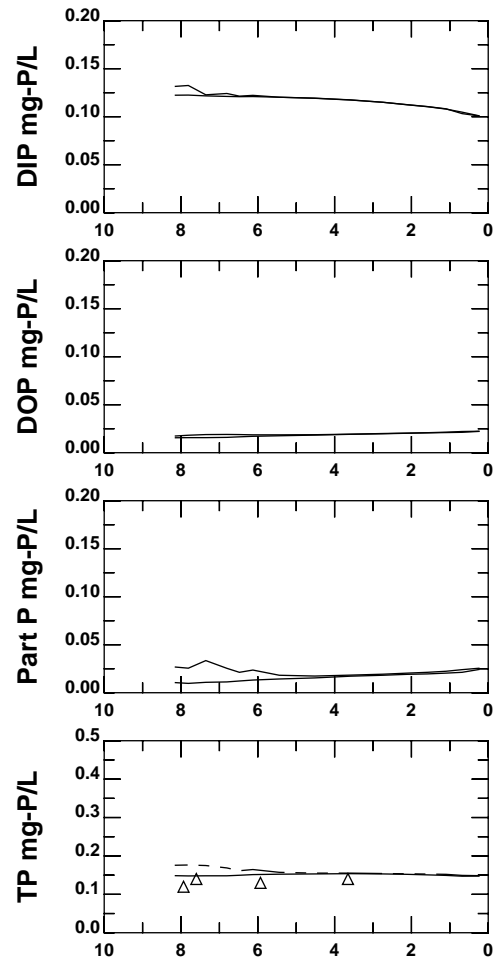
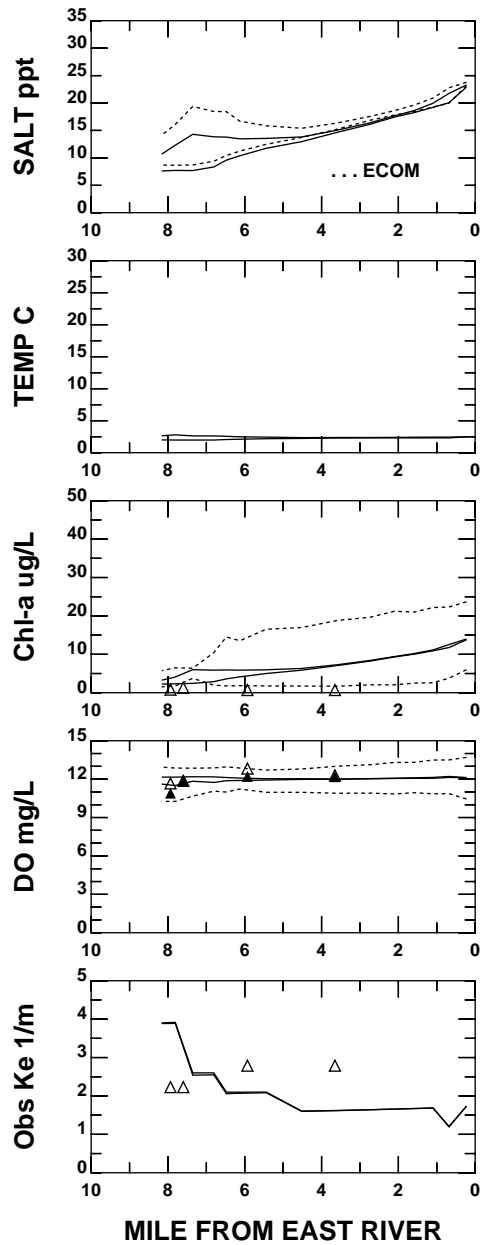
DATA Dec 30 1999 -Jan 28,2000

	SURF BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment

MODEL

————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

**HARLEM RIVER**



**DATA** Jan 29-Feb 27, 2000

**MODEL**

**Harbor Survey**    **SURF** **BOT**

                          △ ▲ **Transect**

                          t e **Embayment**

**NYSDEC**           ○ **Transect**

                          c **Embayment**

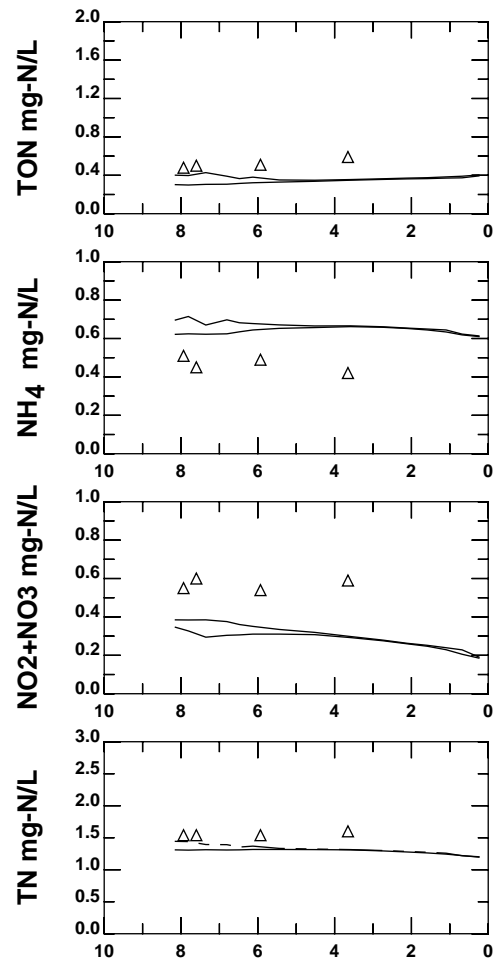
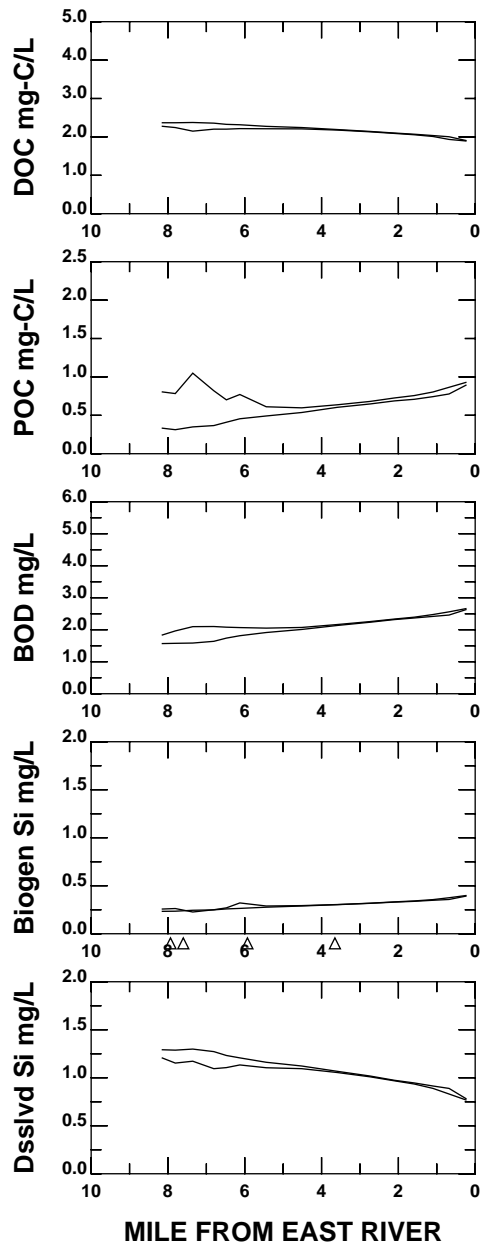
—    **SURFACE 30-DAY MEAN**

- - - **BOTTOM 30-DAY MEAN**

- - - **30-DAY SURFACE MAX OR BOTTOM MIN**

**HARLEM RIVER**





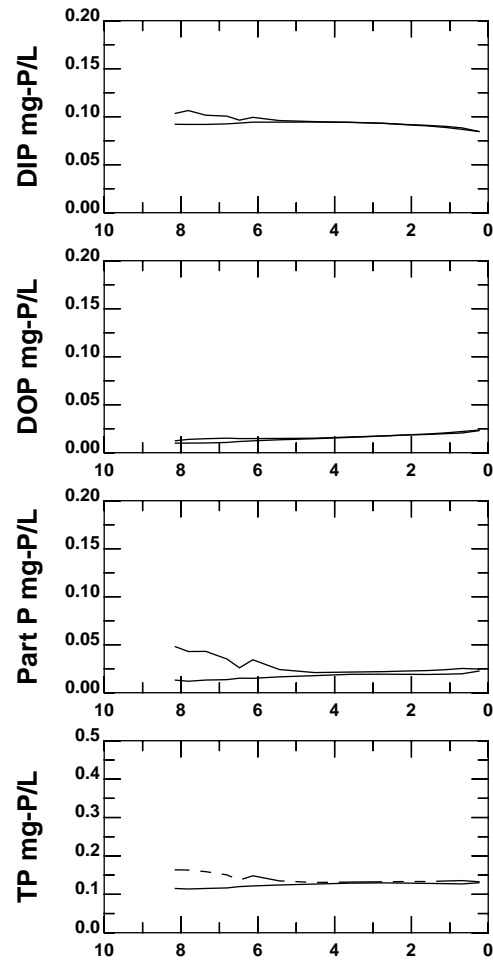
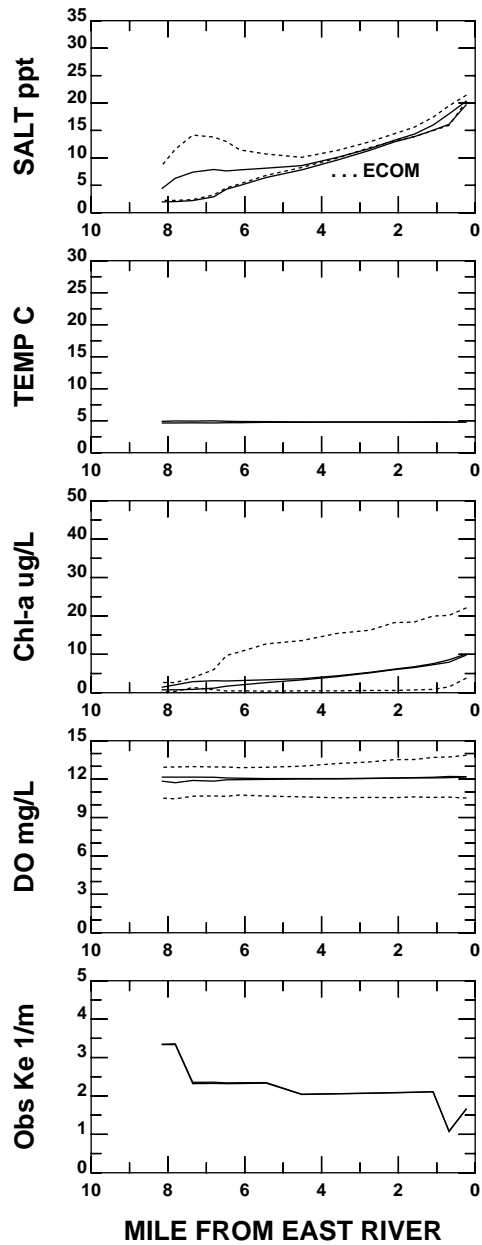
DATA Jan 29-Feb 27, 2000

	SURF BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment

MODEL

—	SURFACE 30-DAY MEAN
- - -	BOTTOM 30-DAY MEAN
- - -	30-DAY SURFACE MAX OR BOTTOM MIN

## HARLEM RIVER



MILE FROM EAST RIVER

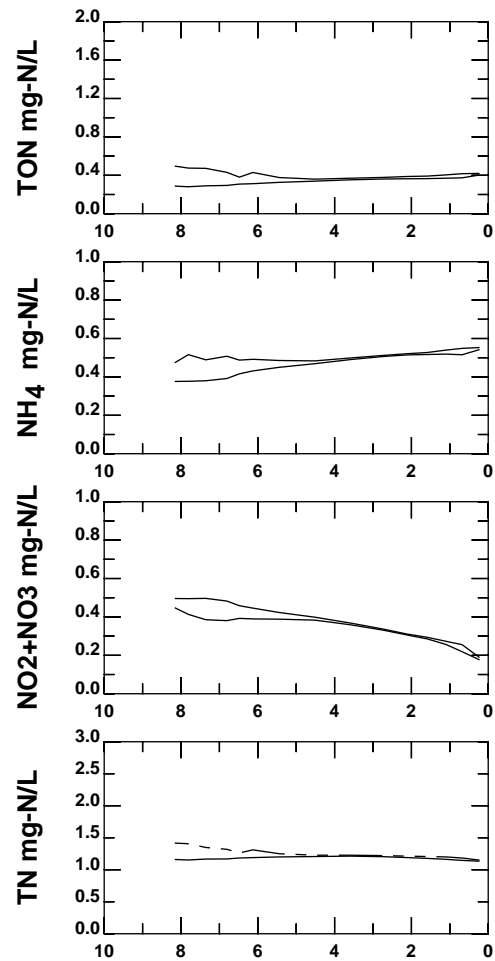
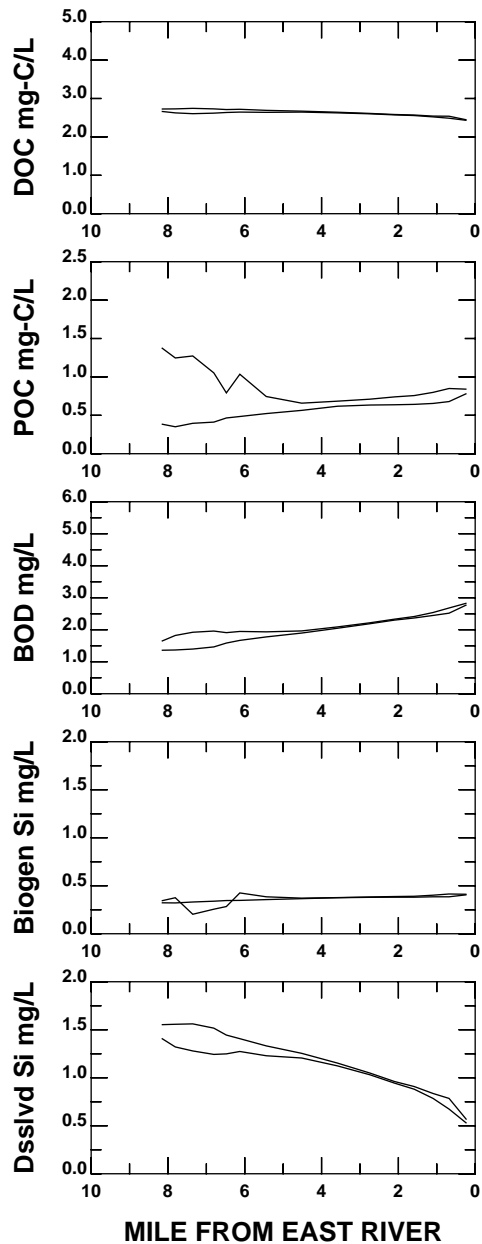
DATA Feb 28-Mar 29,2000

Harbor Survey    SURF BOT  
 △ ▲    Transect  
 t e    Embayment  
 NYSDEC    ○    Transect  
           c    Embayment

MODEL

—    SURFACE 30-DAY MEAN  
 - - -    BOTTOM 30-DAY MEAN  
 - -    30-DAY SURFACE MAX OR  
 BOTTOM MIN

**HARLEM RIVER**



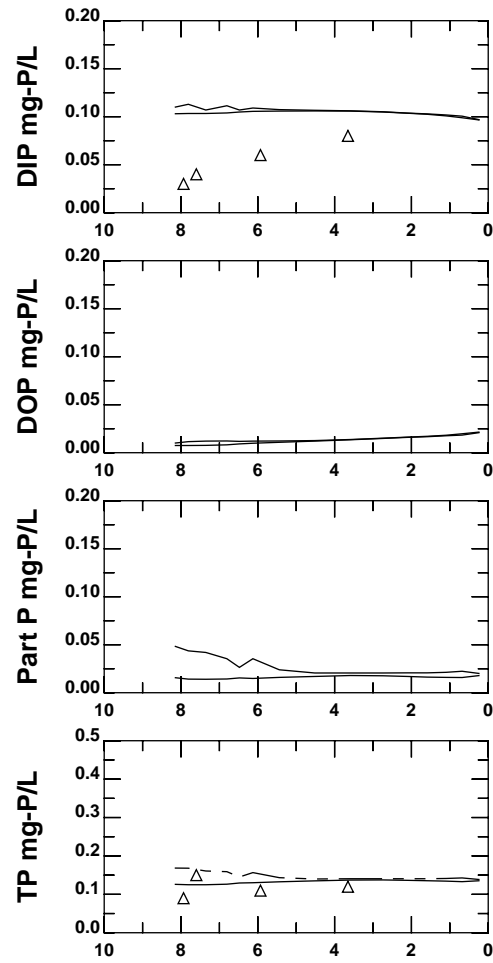
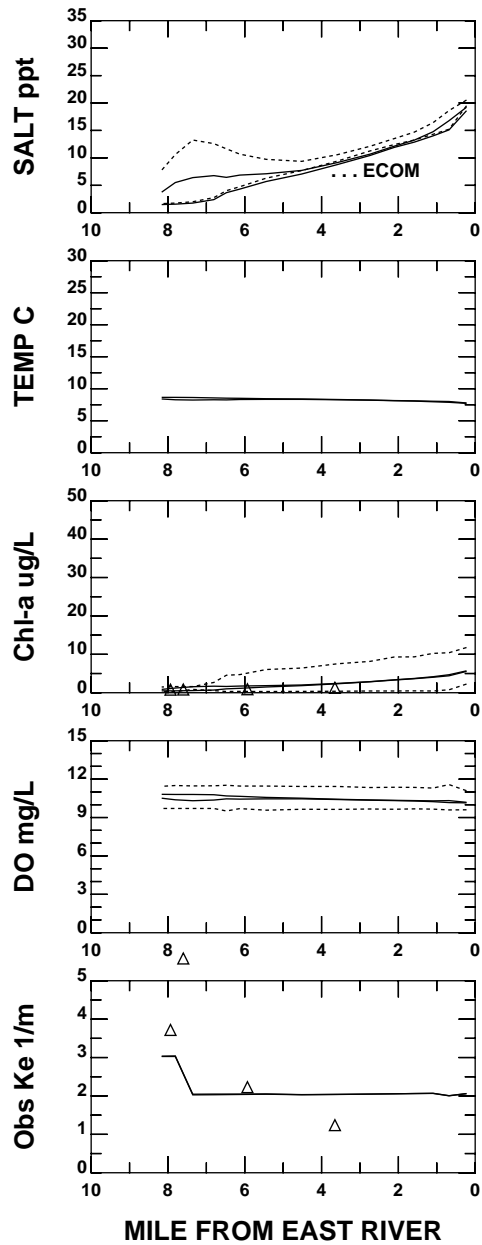
DATA Feb 28-Mar 29, 2000

	SURF BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment

MODEL

————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

## HARLEM RIVER



**MILE FROM EAST RIVER**

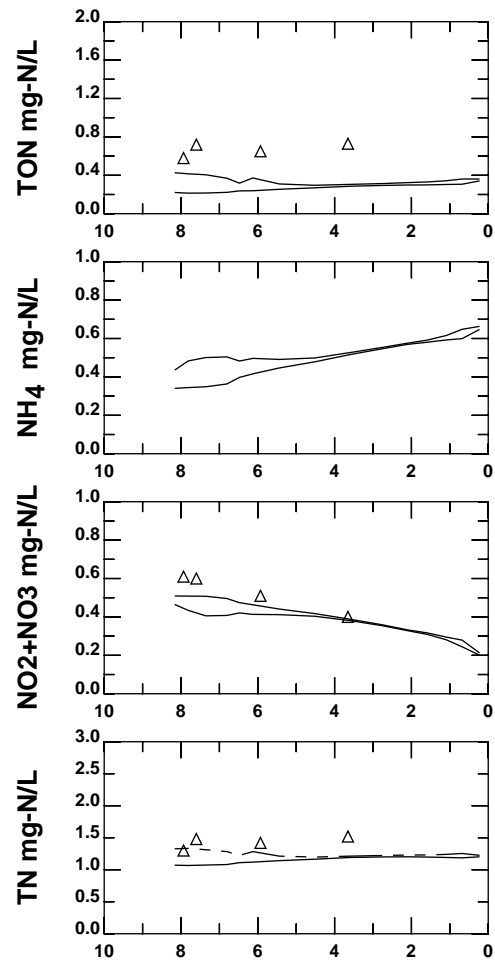
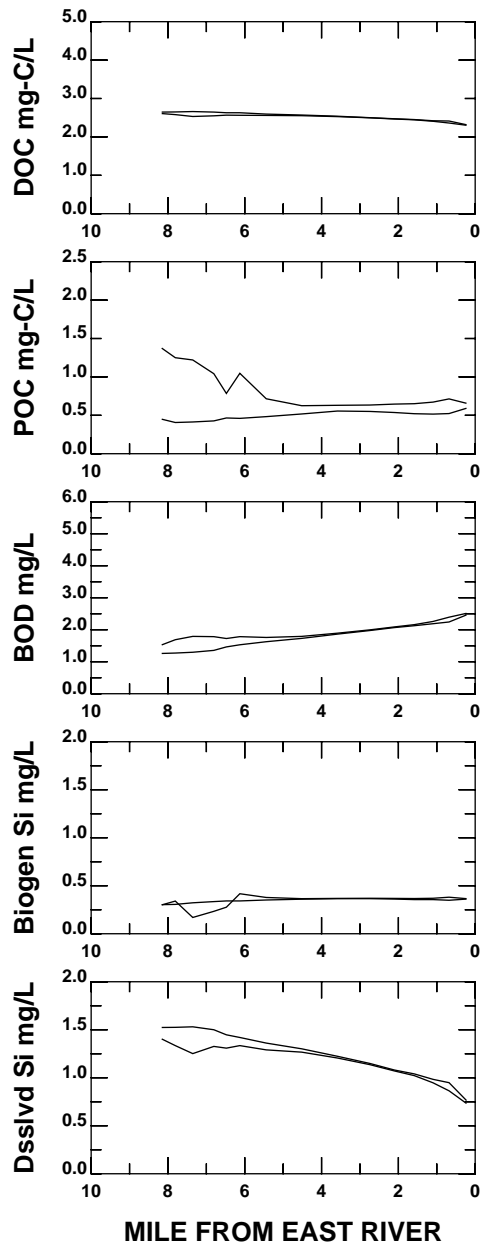
**DATA Mar 30-Apr 28,2000**

**SURF BOT**  
 Harbor Survey  $\triangle$   $\blacktriangle$  **Transect**  
 t e **Embayment**  
 NYSDEC  $\circ$  **Transect**  
 c **Embayment**

**MODEL**

— **SURFACE 30-DAY MEAN**  
 - - - **BOTTOM 30-DAY MEAN**  
 - - - **30-DAY SURFACE MAX OR BOTTOM MIN**

**HARLEM RIVER**



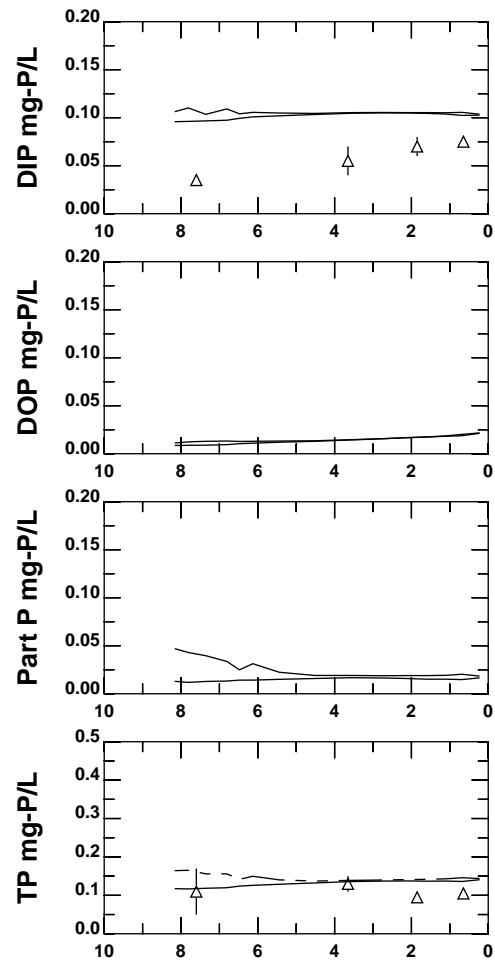
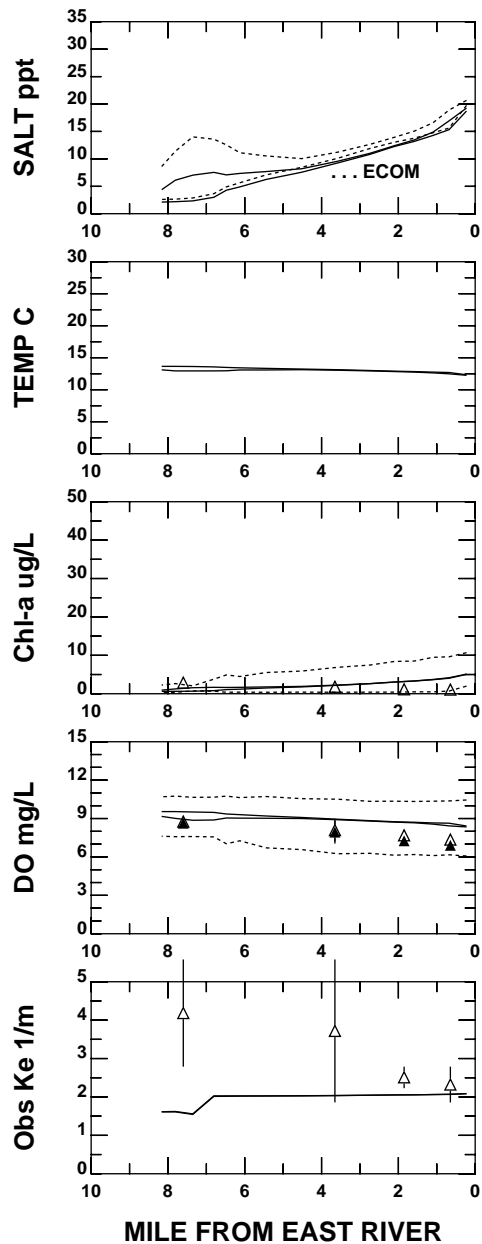
DATA Mar 30-Apr 28, 2000

	SURF		BOT	
Harbor Survey	△	▲	Transect	Embayment
NYSDEC	○	○	Transect	Embayment
	c			

MODEL

—	SURFACE 30-DAY MEAN
---	BOTTOM 30-DAY MEAN
- - -	30-DAY SURFACE MAX OR BOTTOM MIN

# HARLEM RIVER



**MILE FROM EAST RIVER**

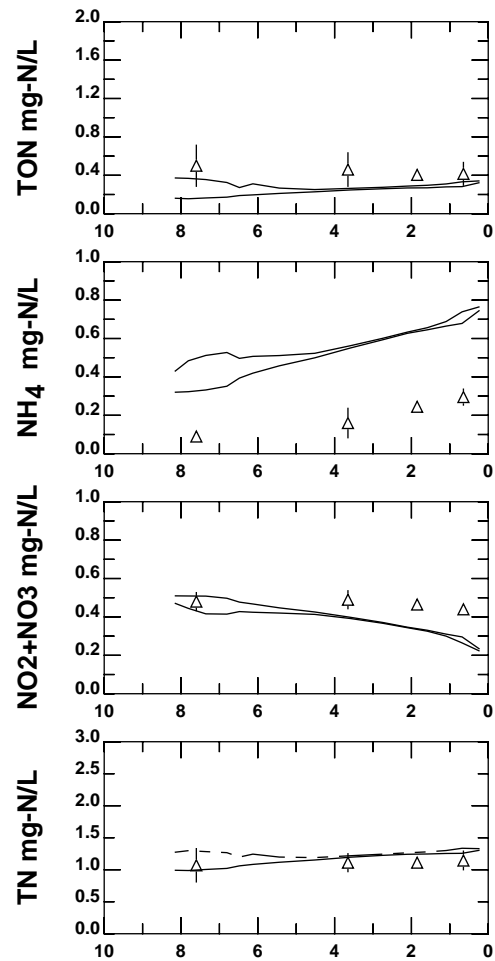
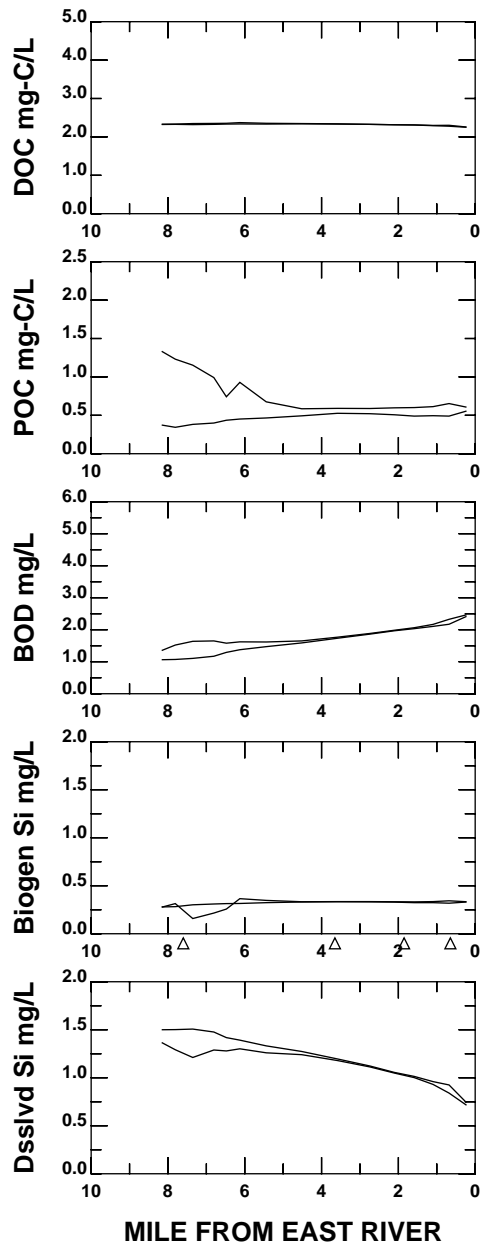
**DATA** Apr 29-May 28, 2000

**Harbor Survey**     $\triangle$   $\blacktriangle$  **Transect**  
                                   t e **Embayment**  
**NYSDEC**             $\circ$  **Transect**  
                                   c **Embayment**

**MODEL**

———— **SURFACE 30-DAY MEAN**  
 - - - - - **BOTTOM 30-DAY MEAN**  
 - - - - - **30-DAY SURFACE MAX OR BOTTOM MIN**

**HARLEM RIVER**



**MILE FROM EAST RIVER**

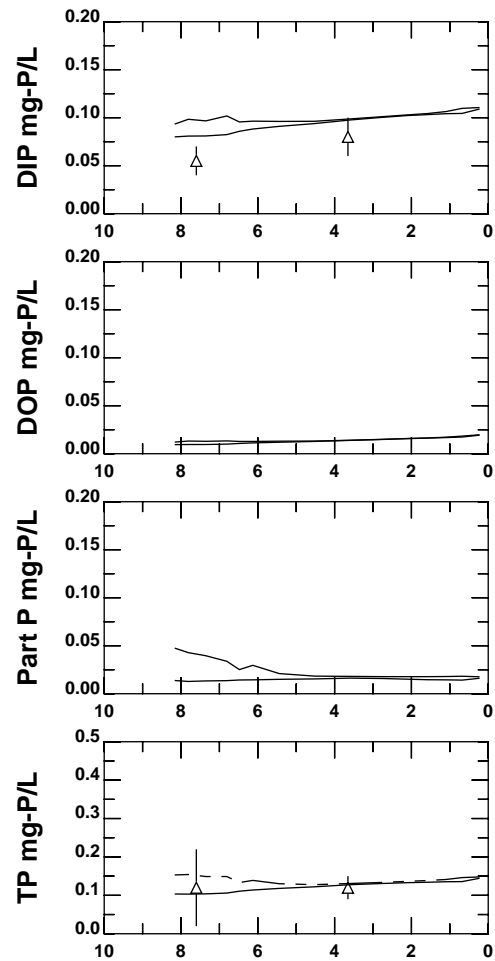
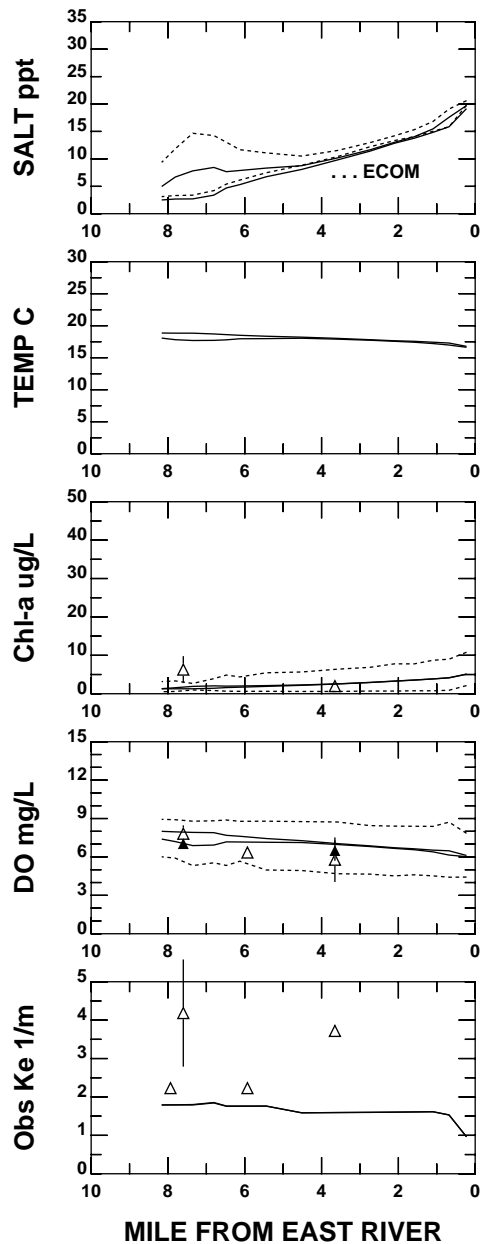
**DATA Apr 29-May 28, 2000**

	<b>SURF BOT</b>		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment

**MODEL**

—	<b>SURFACE 30-DAY MEAN</b>
- - -	<b>BOTTOM 30-DAY MEAN</b>
- - -	<b>30-DAY SURFACE MAX OR BOTTOM MIN</b>

**HARLEM RIVER**



**DATA** May 29-Jun 27, 2000

**MODEL**

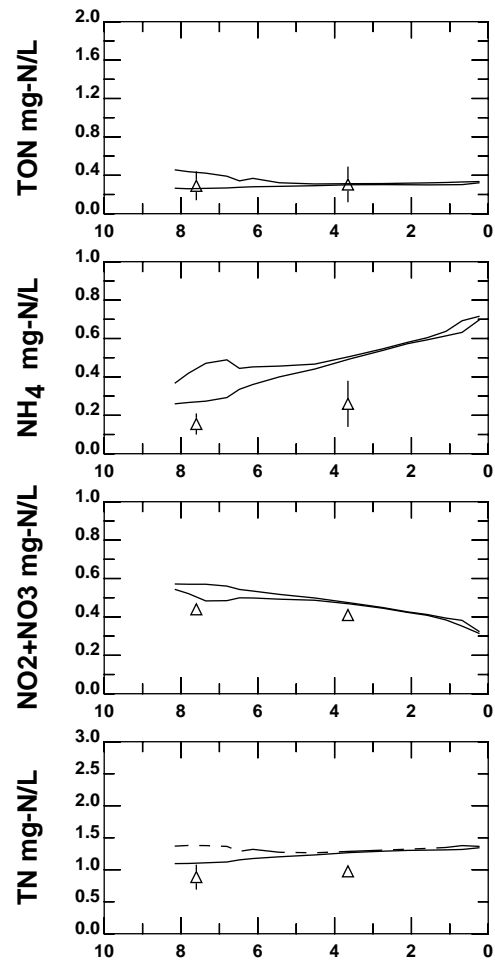
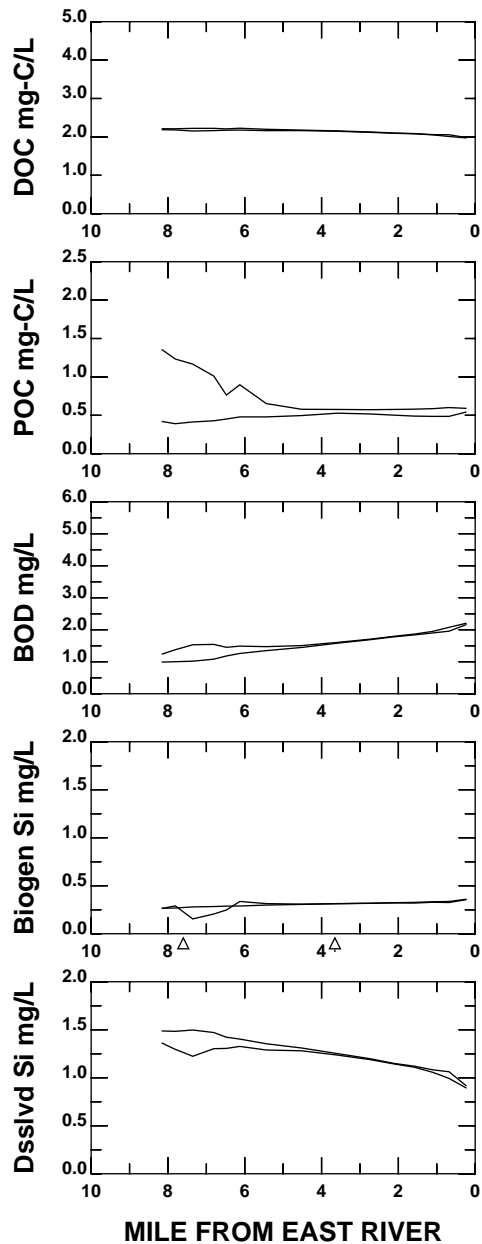
	<b>SURF</b>	<b>BOT</b>	
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment

—	<b>SURFACE 30-DAY MEAN</b>
---	<b>BOTTOM 30-DAY MEAN</b>
- - -	<b>30-DAY SURFACE MAX OR BOTTOM MIN</b>

**HARLEM RIVER**





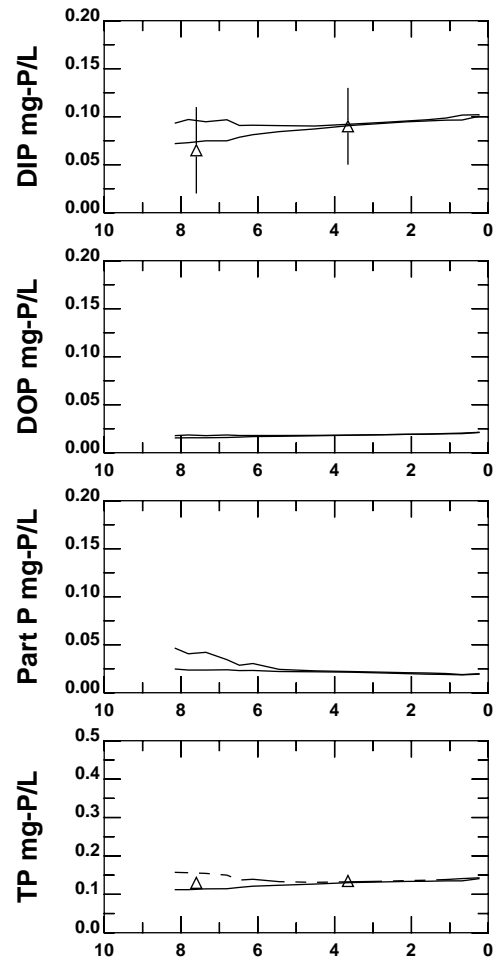
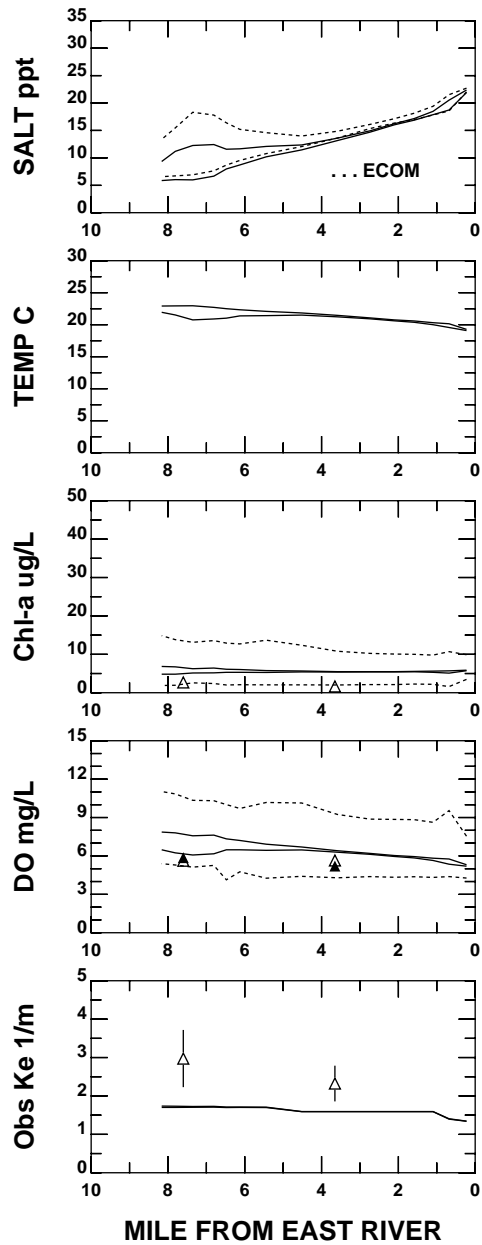
DATA May 29-Jun 27, 2000

	SURF BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment

MODEL

—	SURFACE 30-DAY MEAN
- - -	BOTTOM 30-DAY MEAN
- - -	30-DAY SURFACE MAX OR BOTTOM MIN

## HARLEM RIVER



**DATA Jun 28-Jul 27,2000**

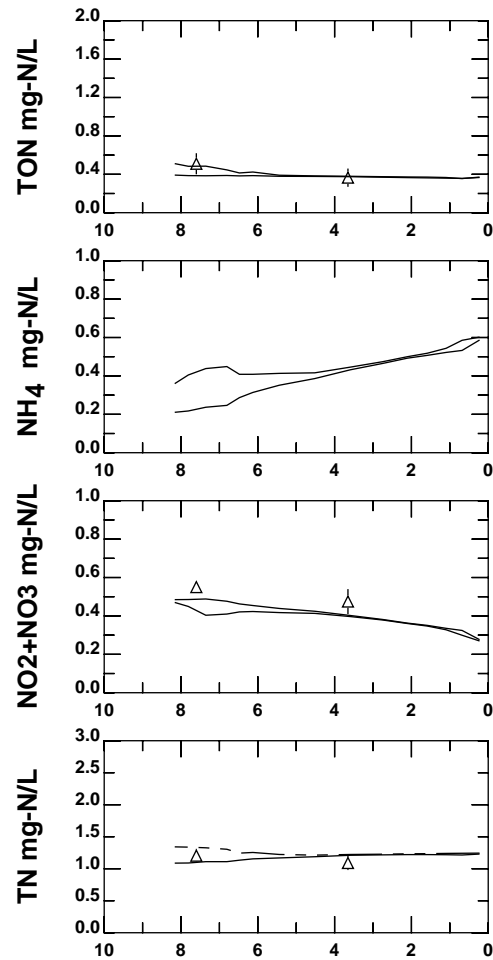
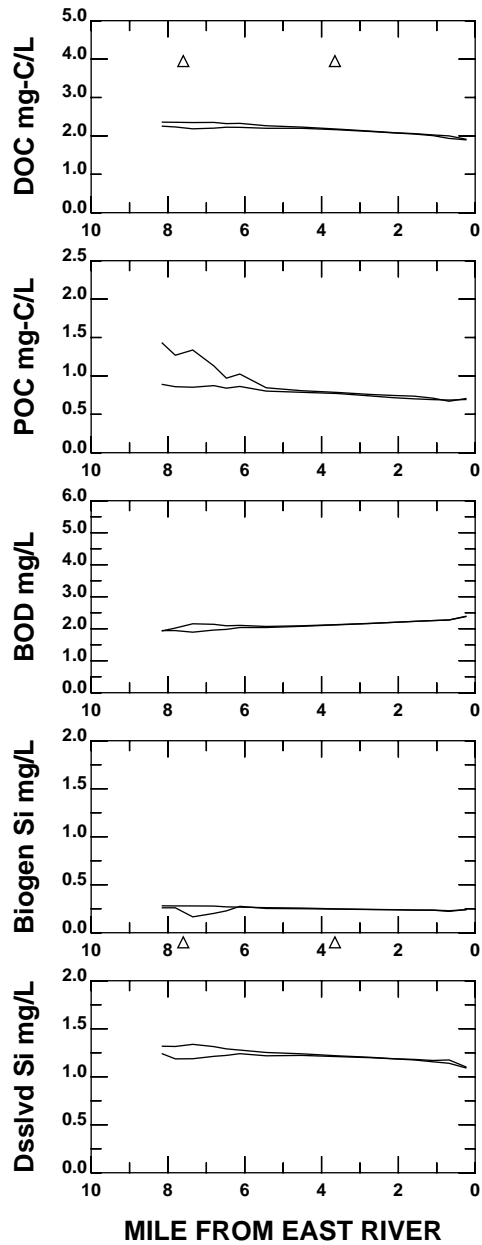
	<b>SURF BOT</b>		
Harbor Survey	△	▲	Transect Embayment
NYSDEC	○	c	Transect Embayment

**MODEL**

—	SURFACE 30-DAY MEAN
---	BOTTOM 30-DAY MEAN
- - -	30-DAY SURFACE MAX OR BOTTOM MIN

**HARLEM RIVER**



**DATA Jun 28-Jul 27, 2000**

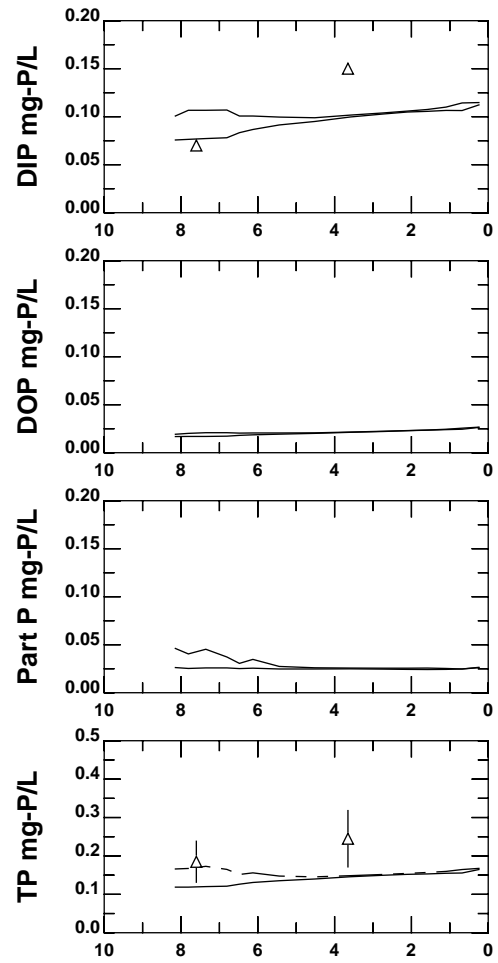
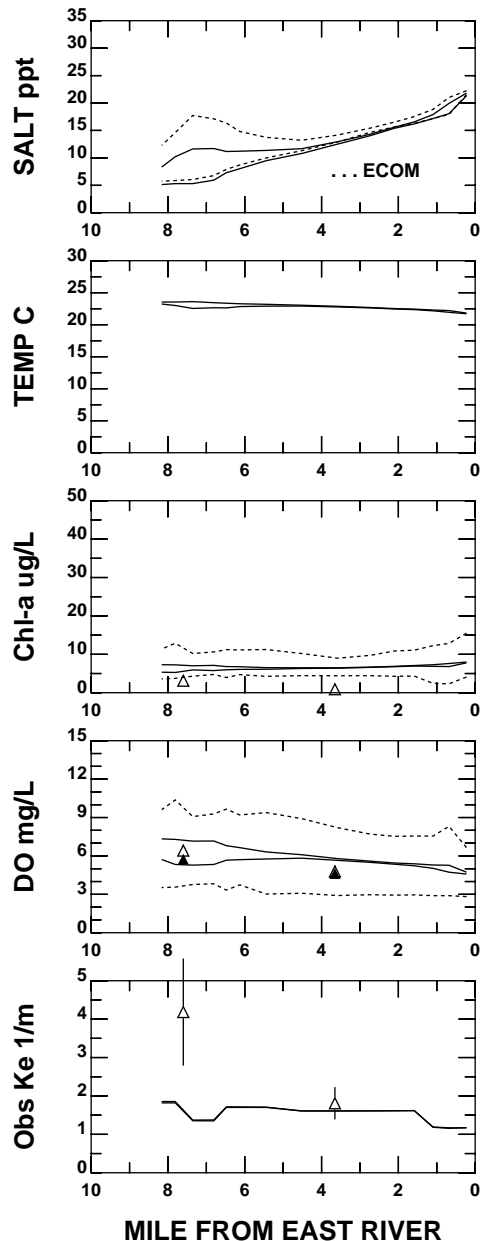
	<b>SURF BOT</b>		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment

**MODEL**

————	<b>SURFACE 30-DAY MEAN</b>
-----	<b>BOTTOM 30-DAY MEAN</b>
- - - -	<b>30-DAY SURFACE MAX OR BOTTOM MIN</b>

**HARLEM RIVER**



**DATA Jul 27-Aug 26,2000**

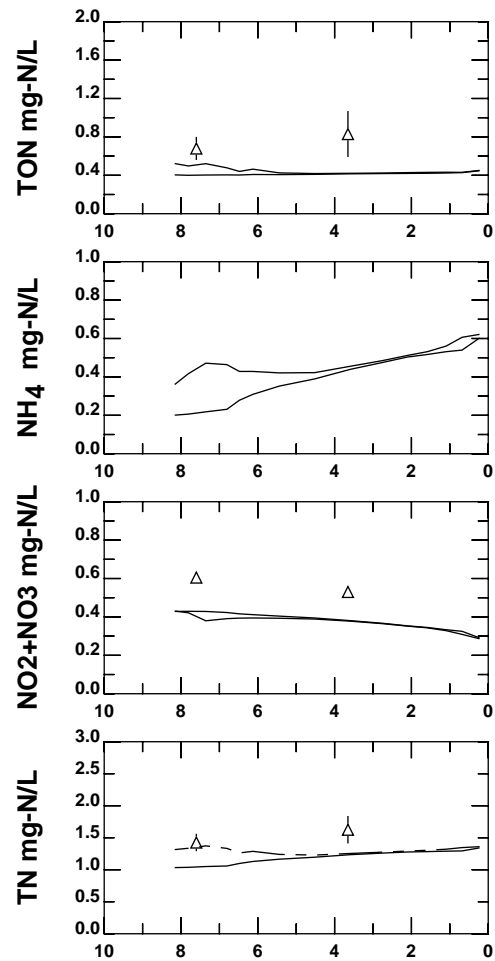
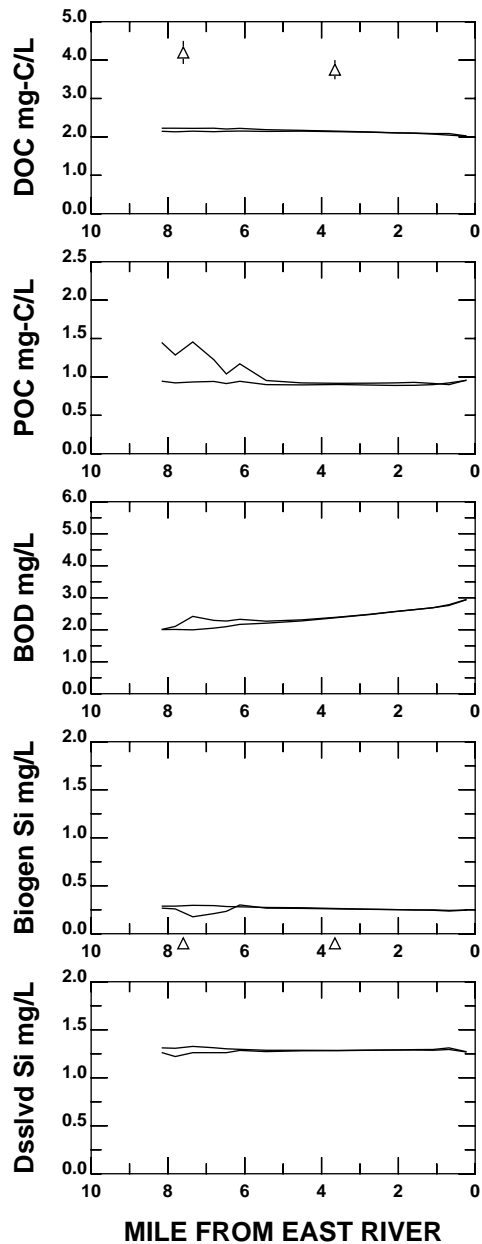
**MODEL**

— SURFACE 30-DAY MEAN

--- BOTTOM 30-DAY MEAN

- - - 30-DAY SURFACE MAX OR BOTTOM MIN

**HARLEM RIVER**



**MILE FROM EAST RIVER**

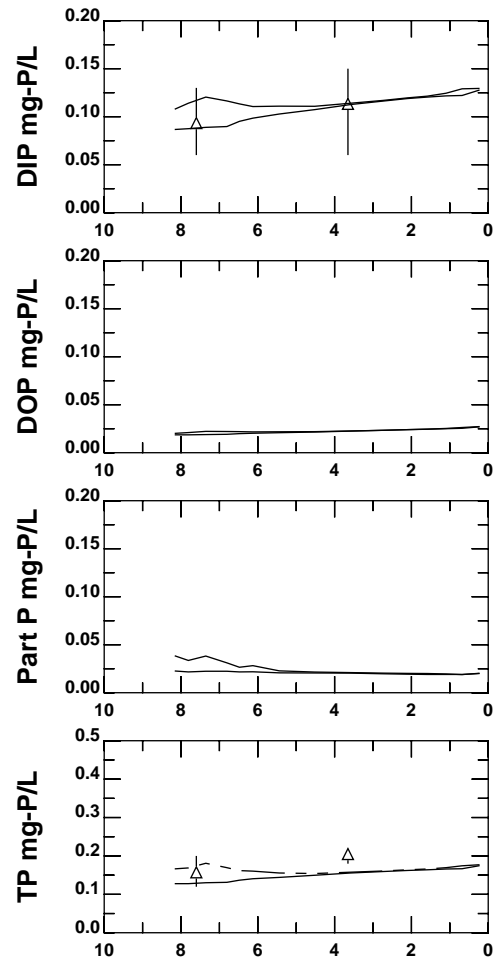
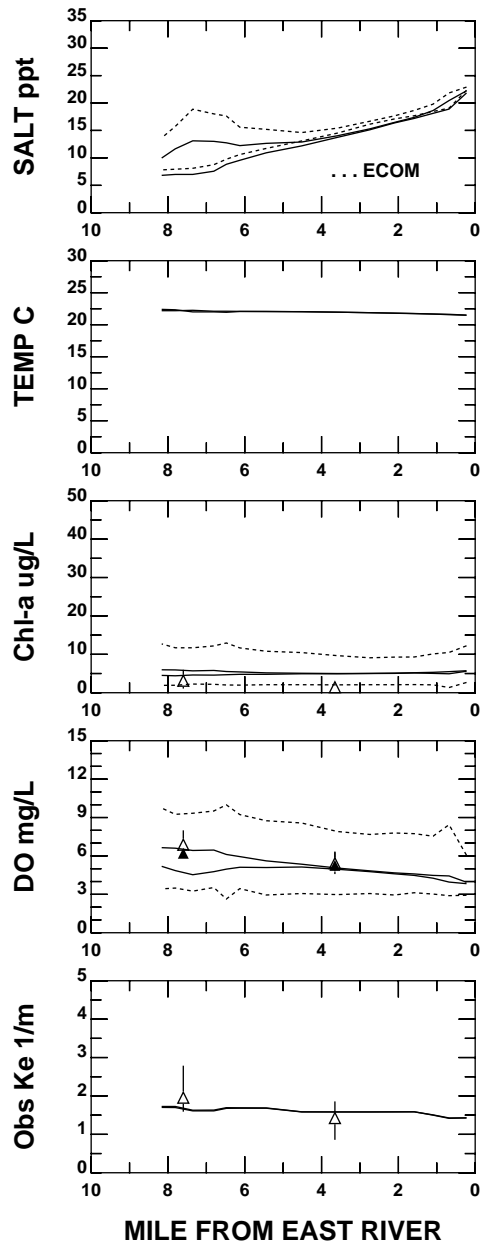
DATA Jul 27-Aug 26, 2000

	SURF BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment

**MODEL**

————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

**HARLEM RIVER**



**DATA Aug 27-Sep 25,2000**

Harbor Survey    SURF BOT    **Transect**

                         t e    **Embayment**

NYSDEC            o    **Transect**

                         c    **Embayment**

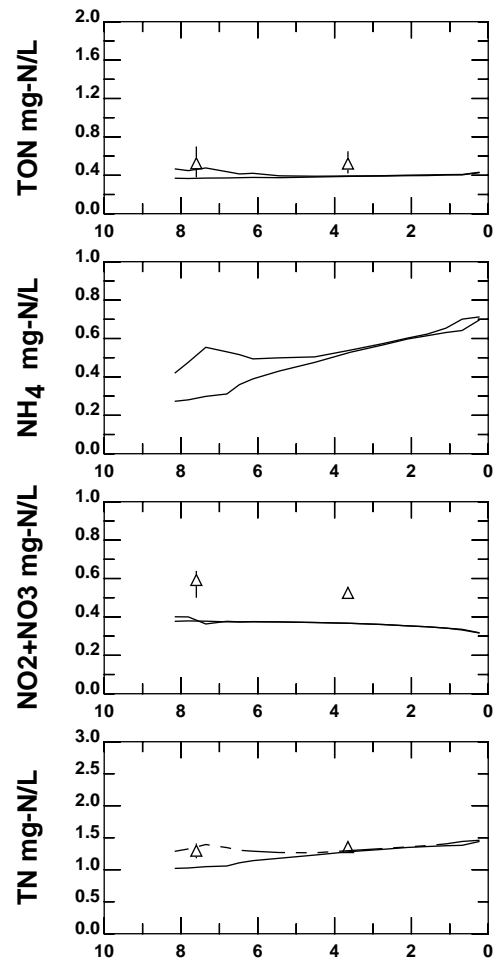
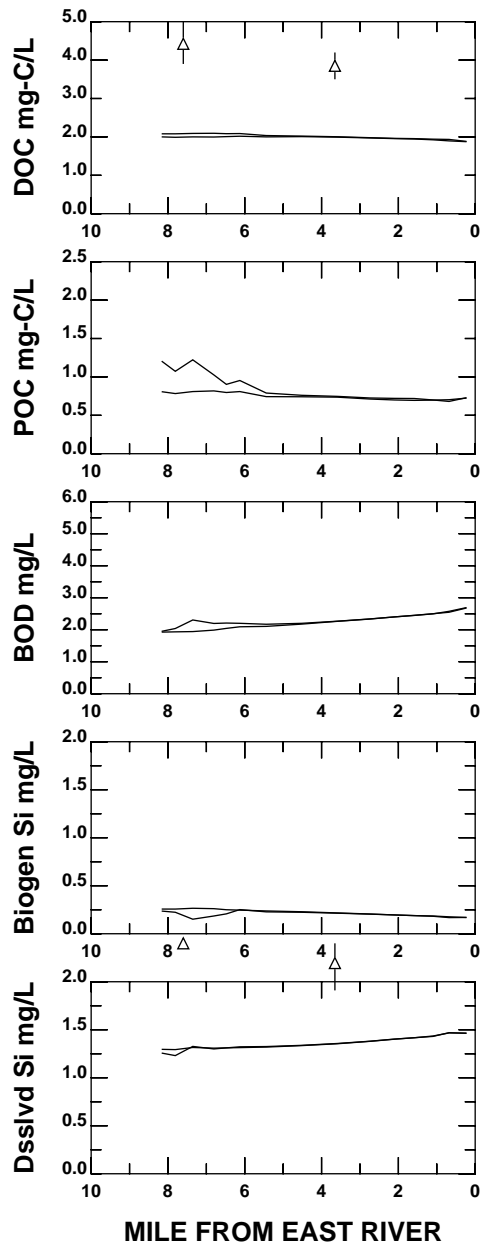
**MODEL**

—    **SURFACE 30-DAY MEAN**

- - -    **BOTTOM 30-DAY MEAN**

- - -    **30-DAY SURFACE MAX OR BOTTOM MIN**

**HARLEM RIVER**



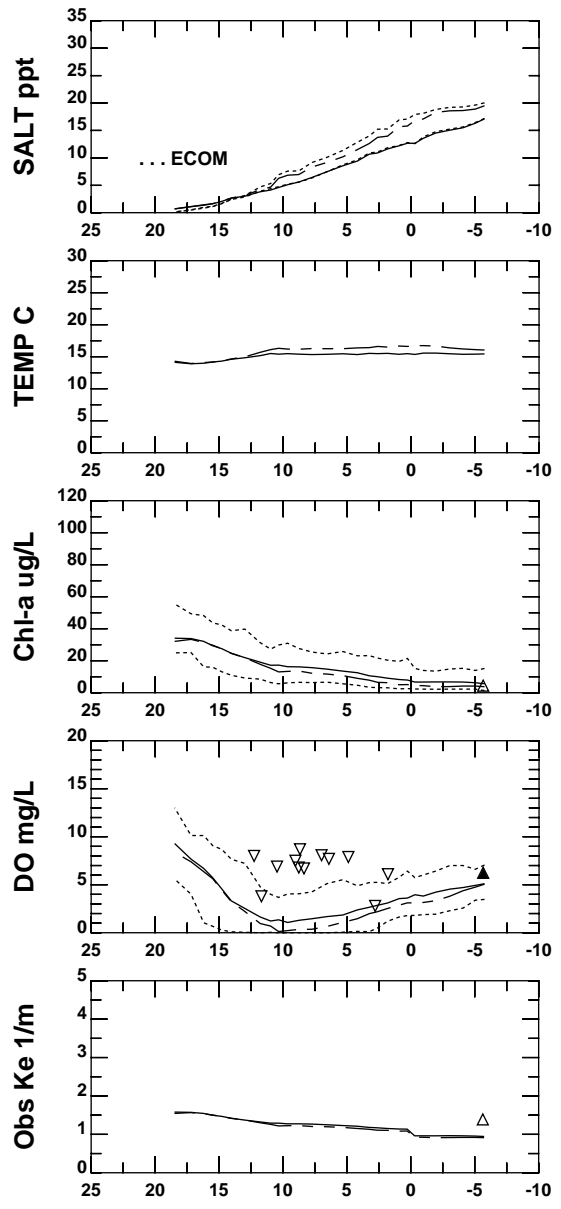
DATA Aug 27-Sep 25,2000

	SURF BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment

MODEL

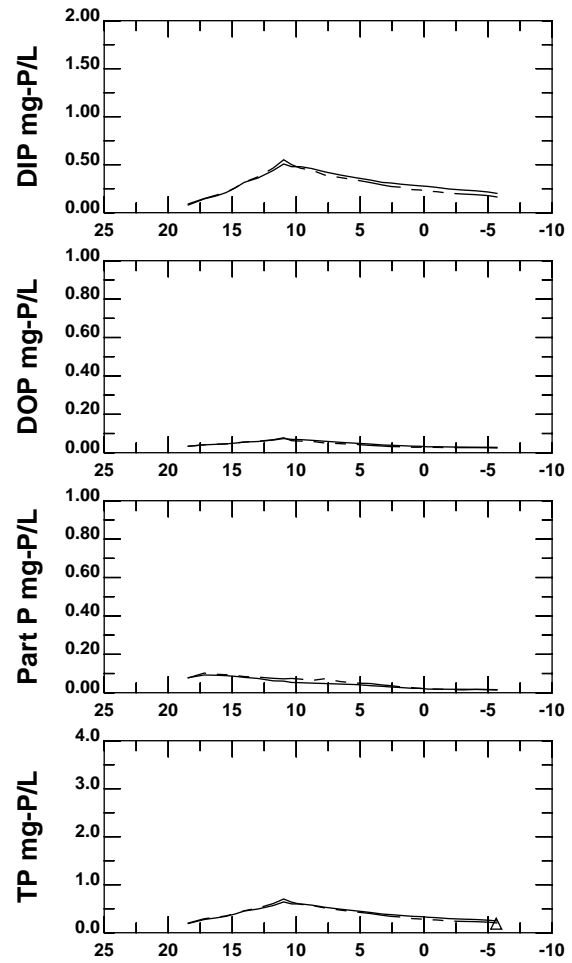
—	SURFACE 30-DAY MEAN
- - -	BOTTOM 30-DAY MEAN
- - -	30-DAY SURFACE MAX OR BOTTOM MIN

**HARLEM RIVER**



MILE FROM MOUTH HACKENSACK RIVER  
**HACKENSACK RIVER AND NEWARK BAY**

DATE: 4/07/2006 TIME: 11:21:39



MILE FROM MOUTH HACKENSACK RIVER

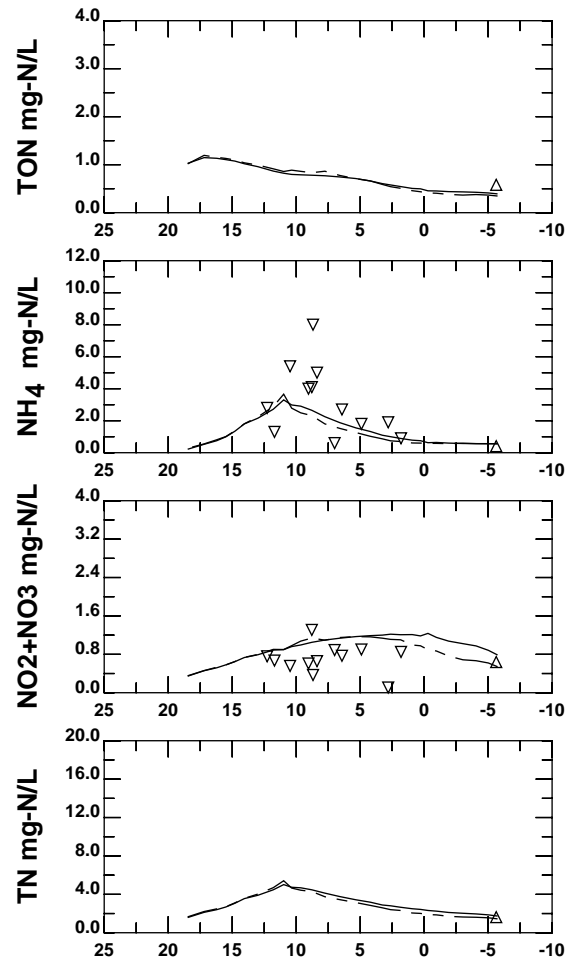
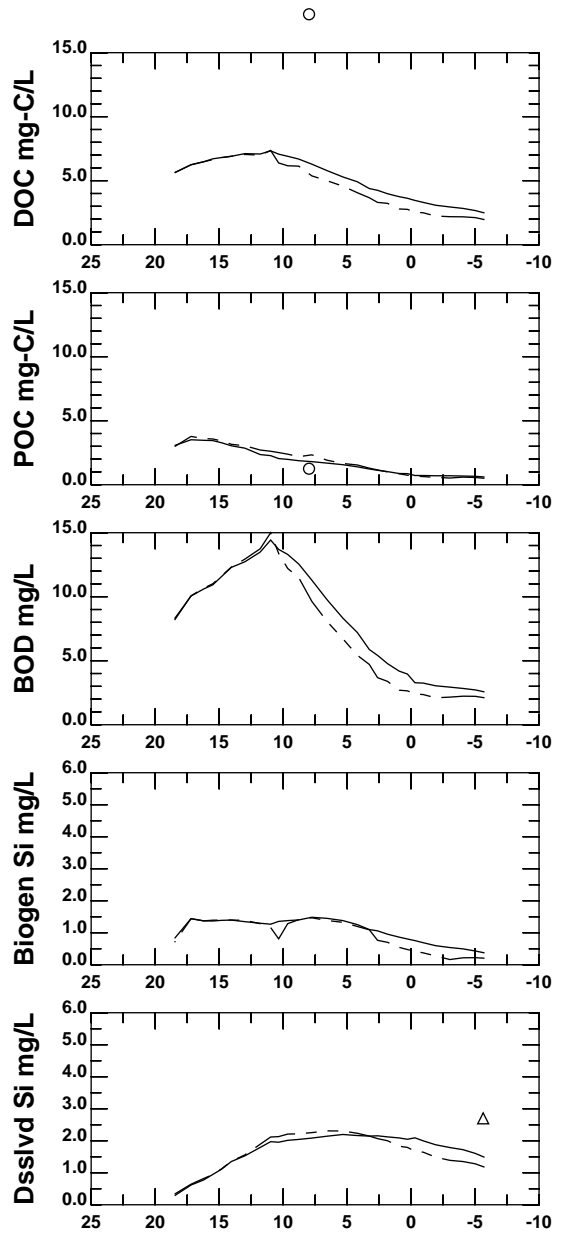
DATA Oct 1-30,1999

	SURF MID BOT			
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

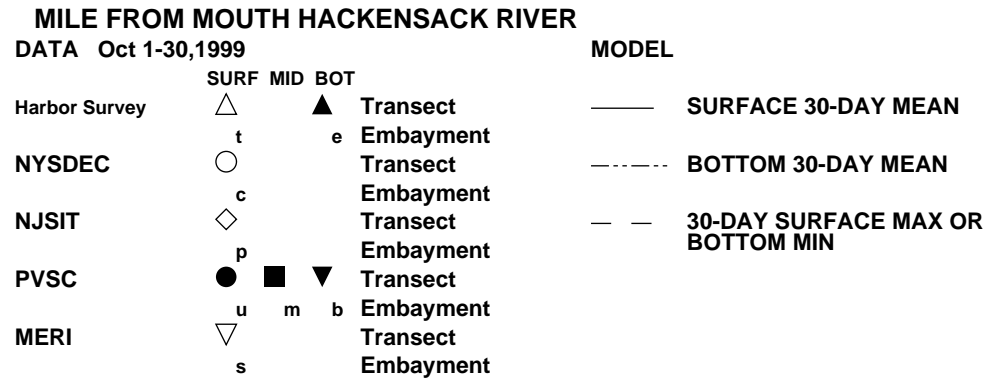
MODEL

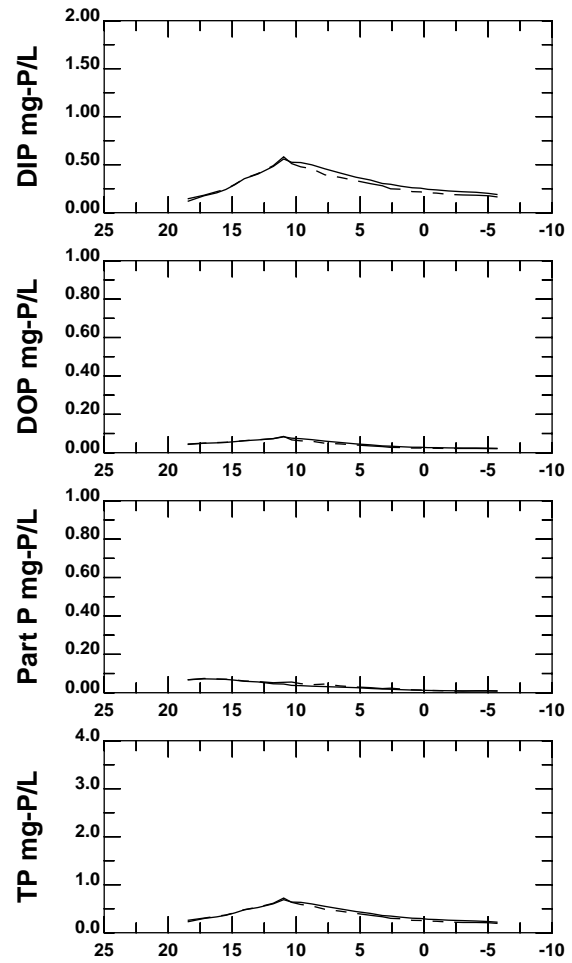
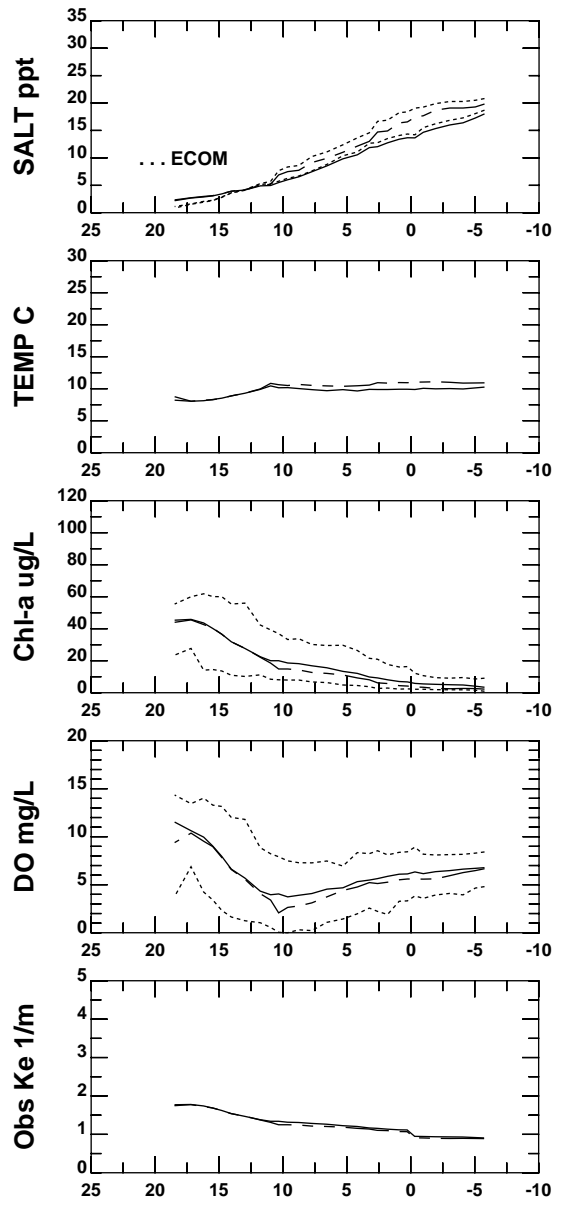
—	SURFACE 30-DAY MEAN
- - - -	BOTTOM 30-DAY MEAN
- · - ·	30-DAY SURFACE MAX OR BOTTOM MIN





MILE FROM MOUTH HACKENSACK RIVER  
**HACKENSACK RIVER AND NEWARK BAY**





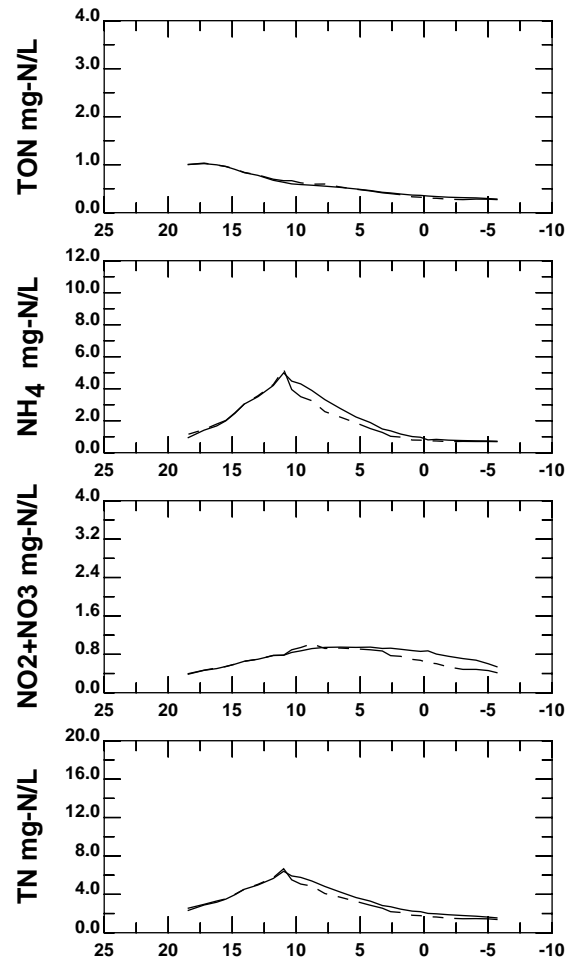
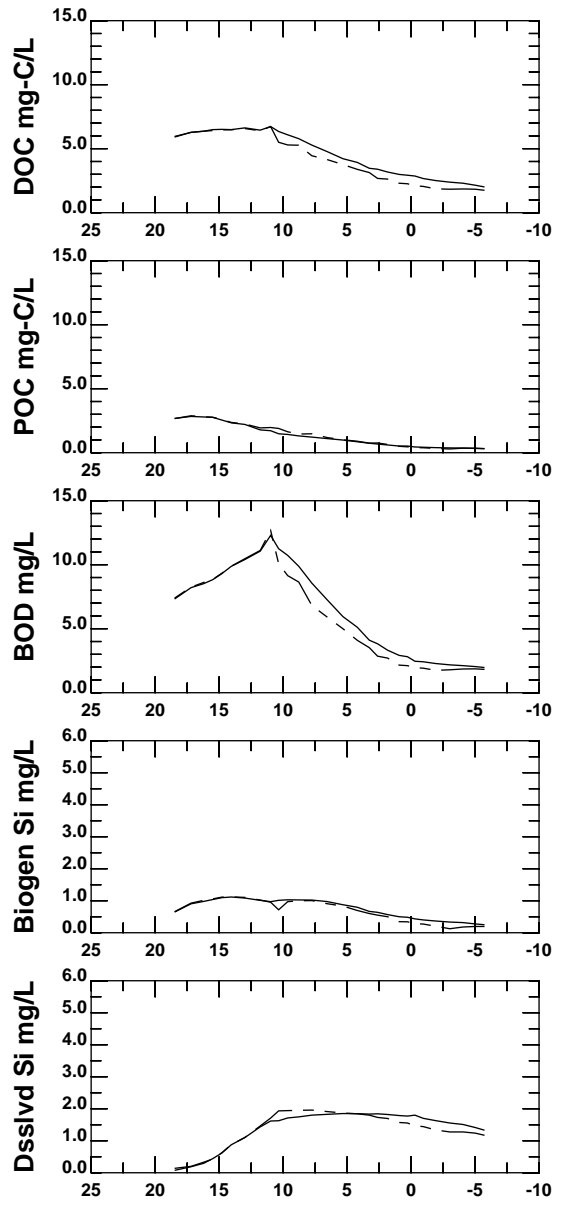
**MILE FROM MOUTH HACKENSACK RIVER**  
**HACKENSACK RIVER AND NEWARK BAY**

**MILE FROM MOUTH HACKENSACK RIVER**  
**DATA Oct 31-Nov 29,1999**

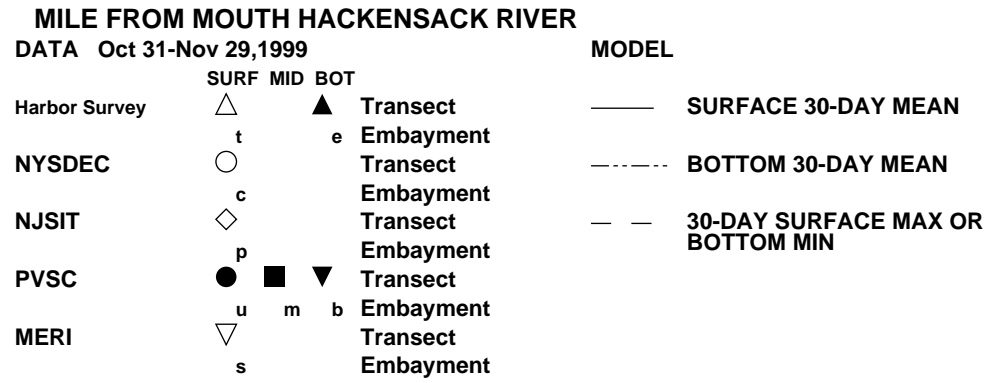
	<b>SURF MID BOT</b>	
Harbor Survey	△      ▲	Transect
	t      e	Embayment
NYSDEC	○      c	Transect
		Embayment
NJSIT	◇      p	Transect
		Embayment
PVSC	●      ■      ▼	Transect
	u      m      b	Embayment
MERI	▽      s	Transect
		Embayment

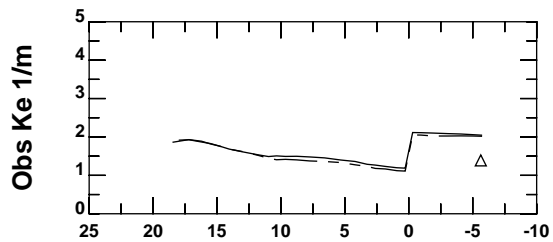
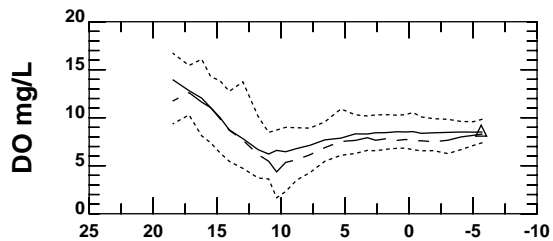
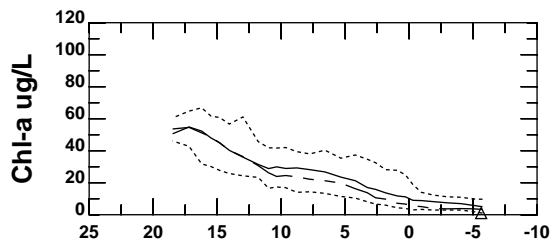
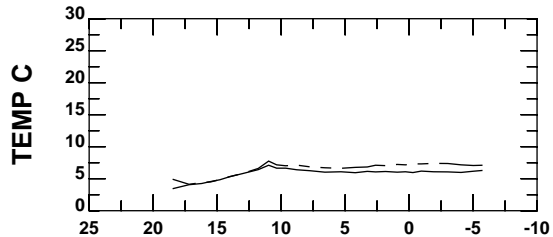
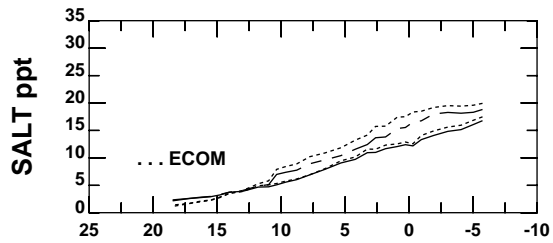
  

	<b>MODEL</b>
	—— SURFACE 30-DAY MEAN
	----- BOTTOM 30-DAY MEAN
	- - - 30-DAY SURFACE MAX OR BOTTOM MIN



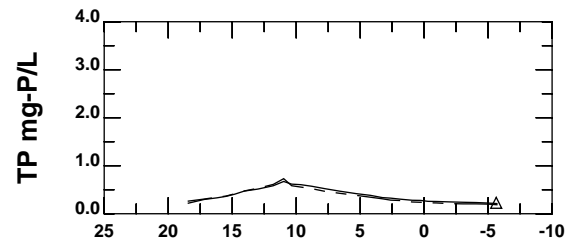
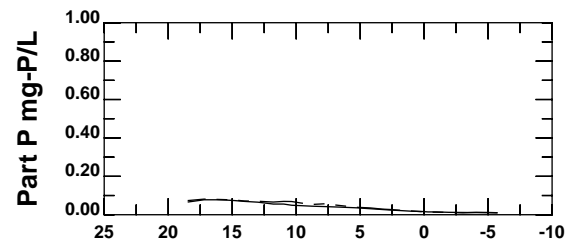
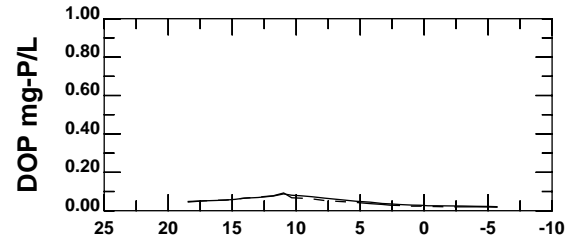
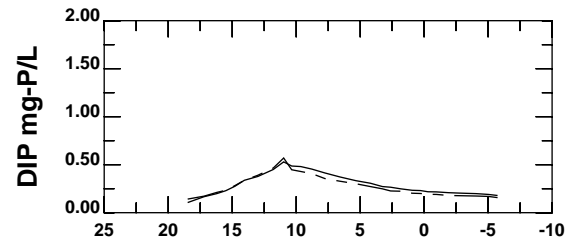
MILE FROM MOUTH HACKENSACK RIVER  
**HACKENSACK RIVER AND NEWARK BAY**





**MILE FROM MOUTH HACKENSACK RIVER  
HACKENSACK RIVER AND NEWARK BAY**

DATE: 4/07/2006 TIME: 11:21:45



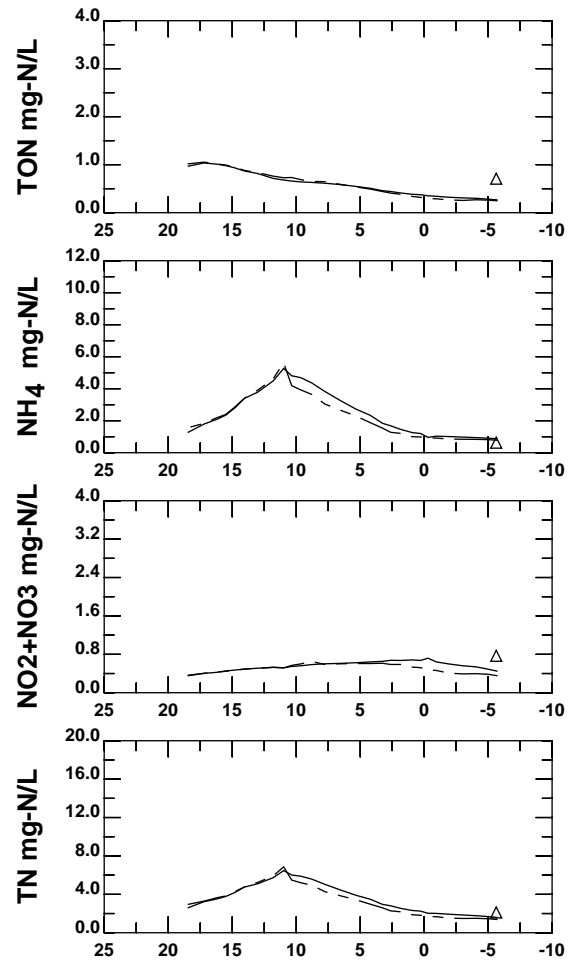
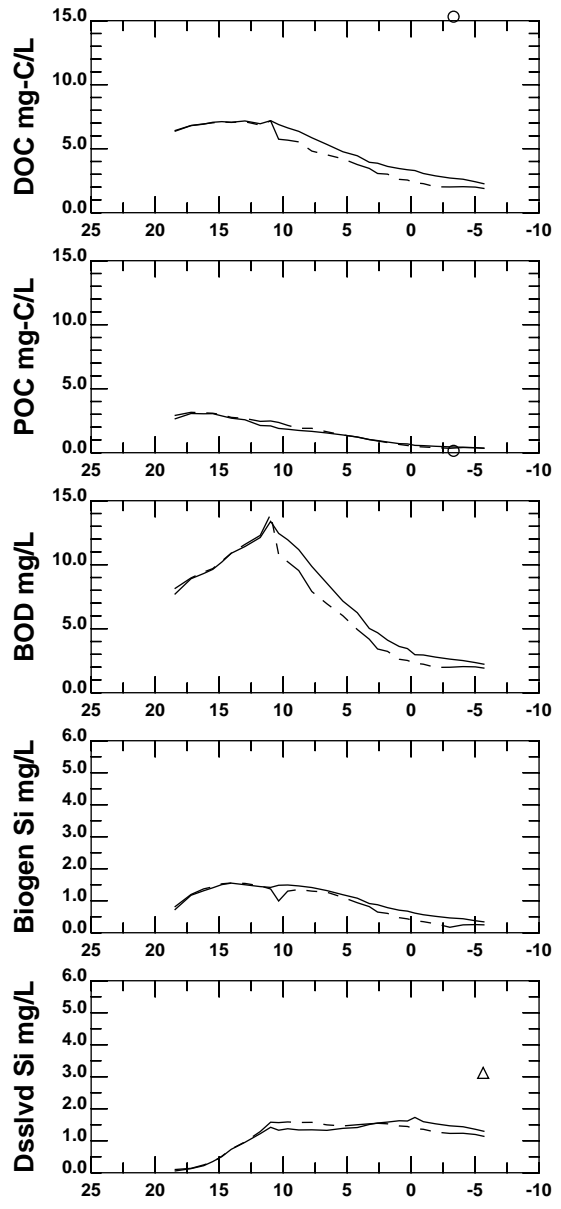
**MILE FROM MOUTH HACKENSACK RIVER**

DATA Nov 30-Dec 29,1999

	SURF MID BOT			
Harbor Survey	△	▲	▲	Transect
	t	e	e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

**MODEL**

- SURFACE 30-DAY MEAN
- - - - - BOTTOM 30-DAY MEAN
- - - 30-DAY SURFACE MAX OR BOTTOM MIN



MILE FROM MOUTH HACKENSACK RIVER  
**HACKENSACK RIVER AND NEWARK BAY**

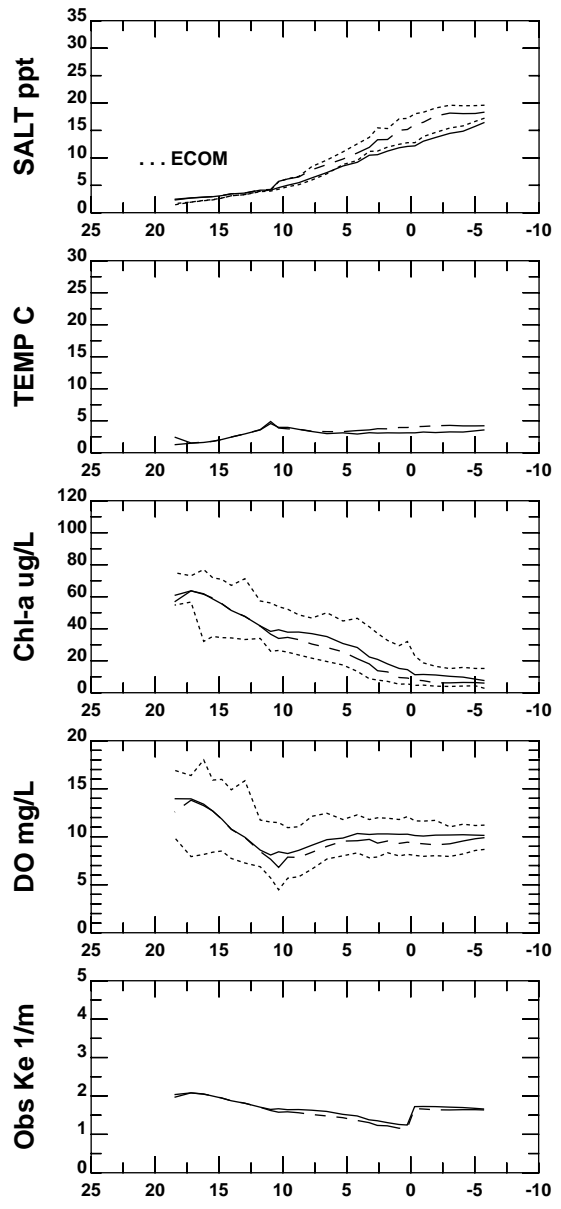
MILE FROM MOUTH HACKENSACK RIVER

DATA Nov 30-Dec 29, 1999

	SURF MID BOT			
Harbor Survey	△	▲	Transect	
	t	e	Embayment	
NYSDEC	○		Transect	
	c		Embayment	
NJSIT	◇		Transect	
	p		Embayment	
PVSC	●	■	Transect	
	u	m	Embayment	
MERI	▽		Transect	
	s		Embayment	

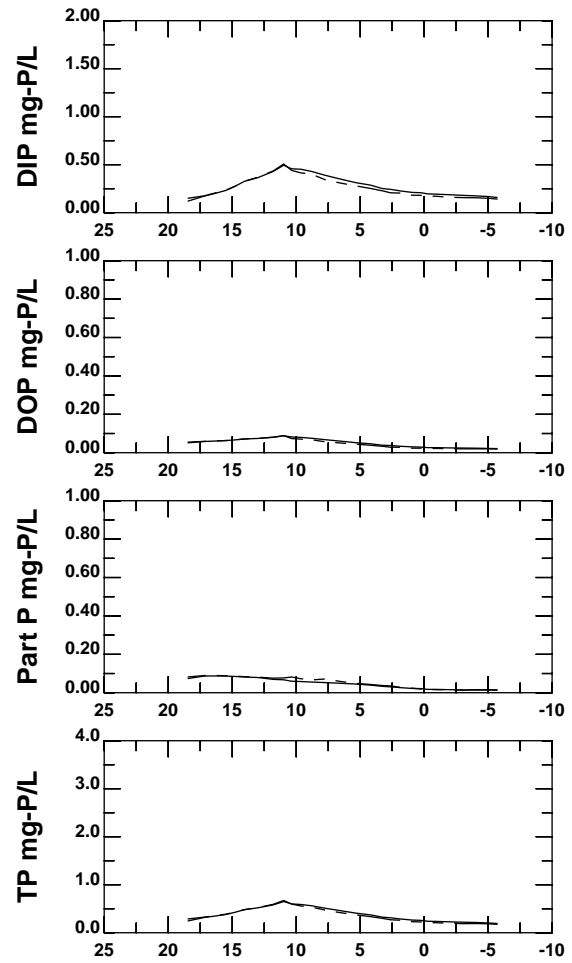
MODEL

—	SURFACE 30-DAY MEAN
- - - -	BOTTOM 30-DAY MEAN
- - -	30-DAY SURFACE MAX OR BOTTOM MIN



**MILE FROM MOUTH HACKENSACK RIVER**  
**HACKENSACK RIVER AND NEWARK BAY**

DATE: 4/07/2006 TIME: 11:21:48

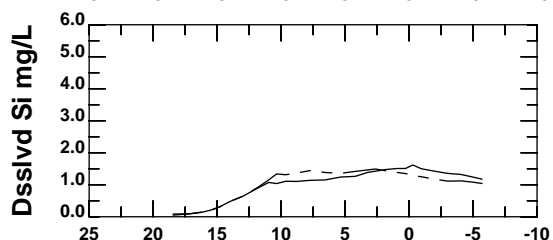
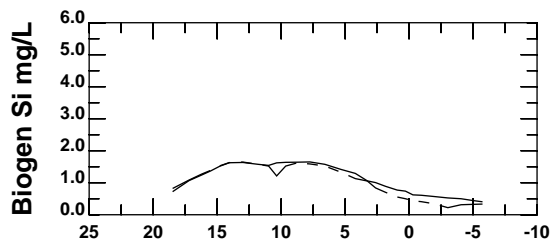
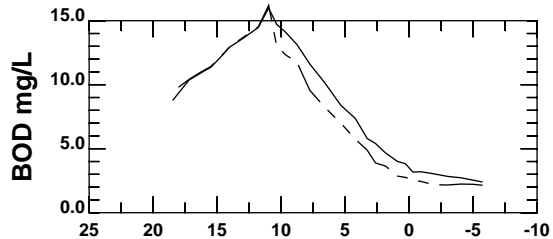
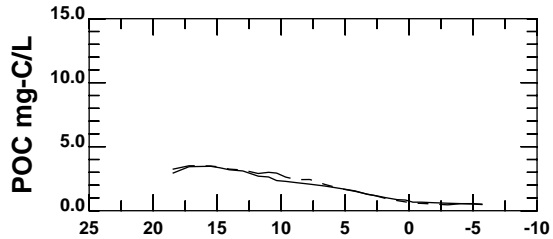
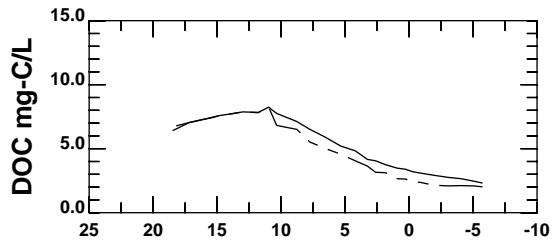


**MILE FROM MOUTH HACKENSACK RIVER**  
 DATA Dec 30 1999 -Jan 28,2000

	<b>SURF MID BOT</b>		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment
PVSC	●	■ ▼	Transect
	u	m b	Embayment
MERI	▽		Transect
	s		Embayment

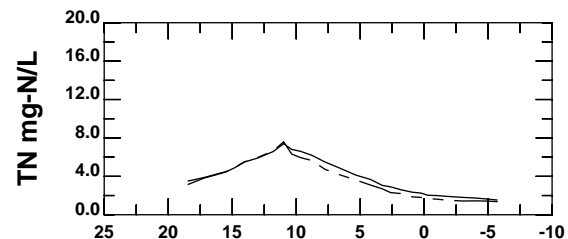
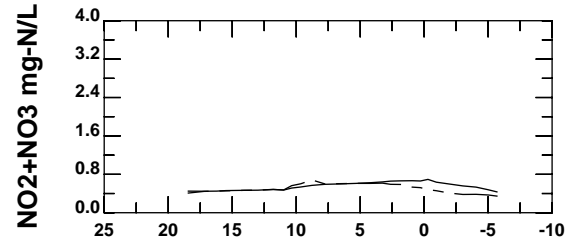
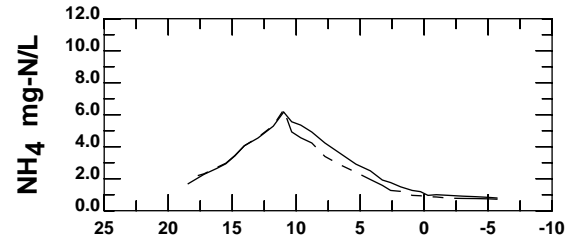
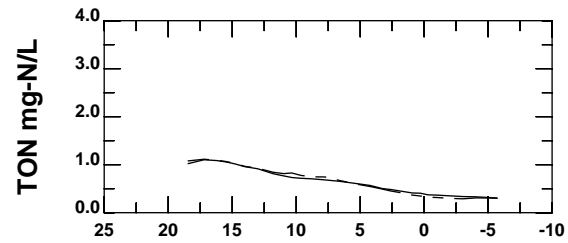
  

—	SURFACE 30-DAY MEAN
- - - -	BOTTOM 30-DAY MEAN
- · - ·	30-DAY SURFACE MAX OR BOTTOM MIN



**MILE FROM MOUTH HACKENSACK RIVER**  
**HACKENSACK RIVER AND NEWARK BAY**

DATE: 4/07/2006 TIME: 11:21:48



**MILE FROM MOUTH HACKENSACK RIVER**

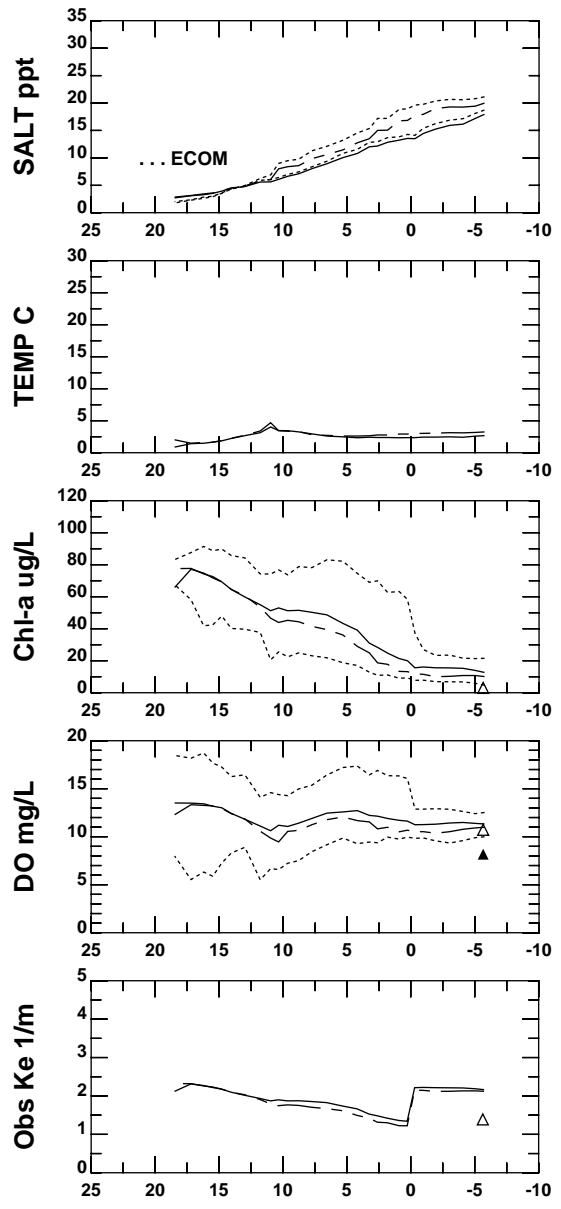
DATA Dec 30 1999 -Jan 28,2000

MODEL

	SURF MID BOT			
Harbor Survey	△	▲	Transect	—
	t	e	Embayment	---
NYSDEC	○	c	Transect	---
			Embayment	---
NJSIT	◇	p	Transect	---
			Embayment	---
PVSC	●	■	Transect	---
	u	m	Embayment	---
MERI	▽	b	Transect	---
	s		Embayment	---

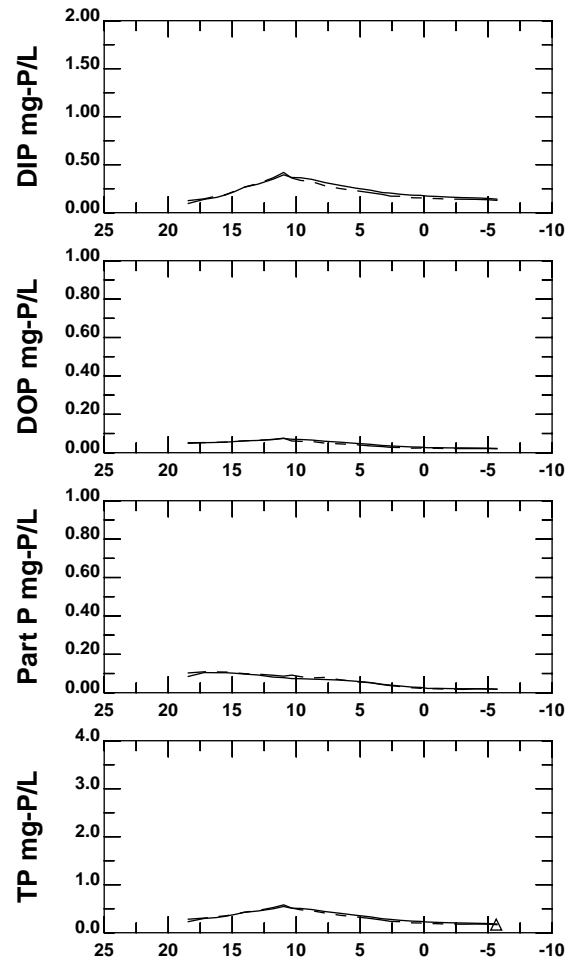
  

—	SURFACE 30-DAY MEAN
---	BOTTOM 30-DAY MEAN
---	30-DAY SURFACE MAX OR BOTTOM MIN



MILE FROM MOUTH HACKENSACK RIVER  
**HACKENSACK RIVER AND NEWARK BAY**

DATE: 4/07/2006 TIME: 11:21:52



MILE FROM MOUTH HACKENSACK RIVER

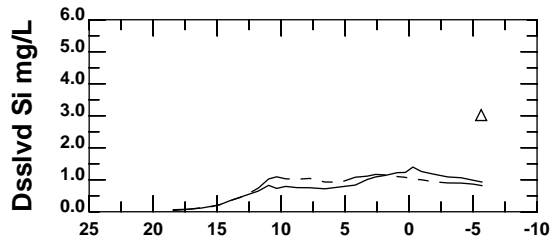
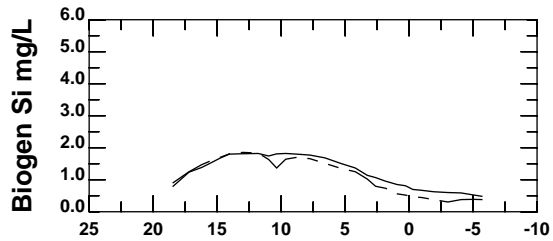
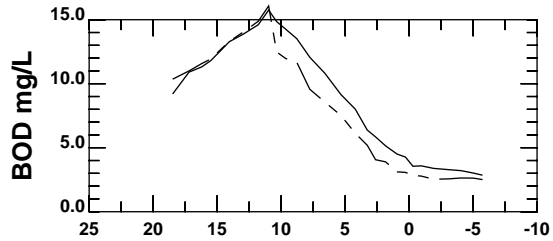
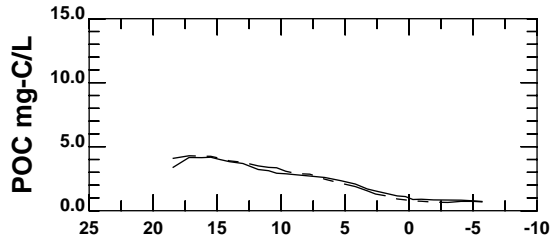
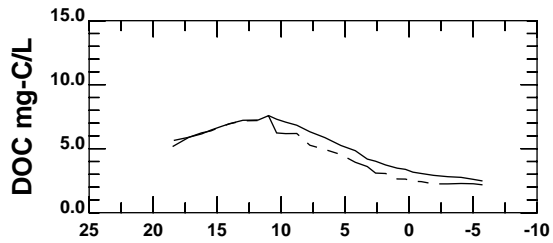
DATA Jan 29-Feb 27, 2000

	SURF MID BOT			
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

MODEL

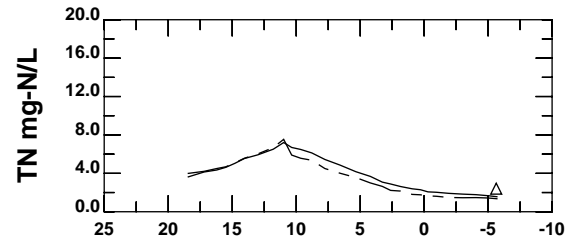
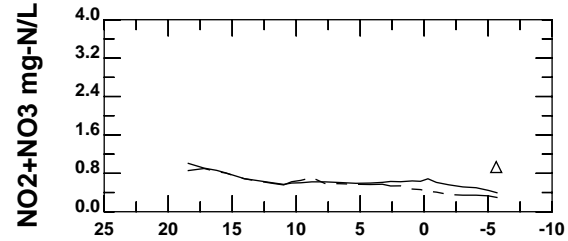
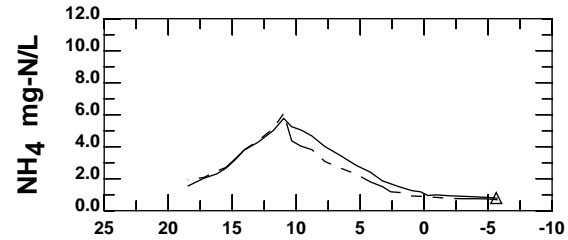
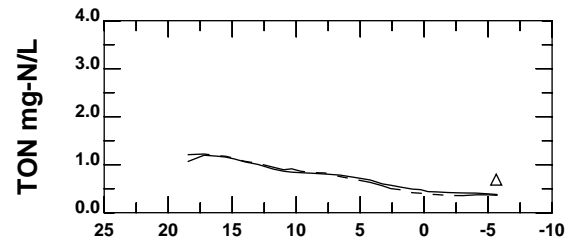
—	SURFACE 30-DAY MEAN
- - - -	BOTTOM 30-DAY MEAN
- . - .	30-DAY SURFACE MAX OR BOTTOM MIN





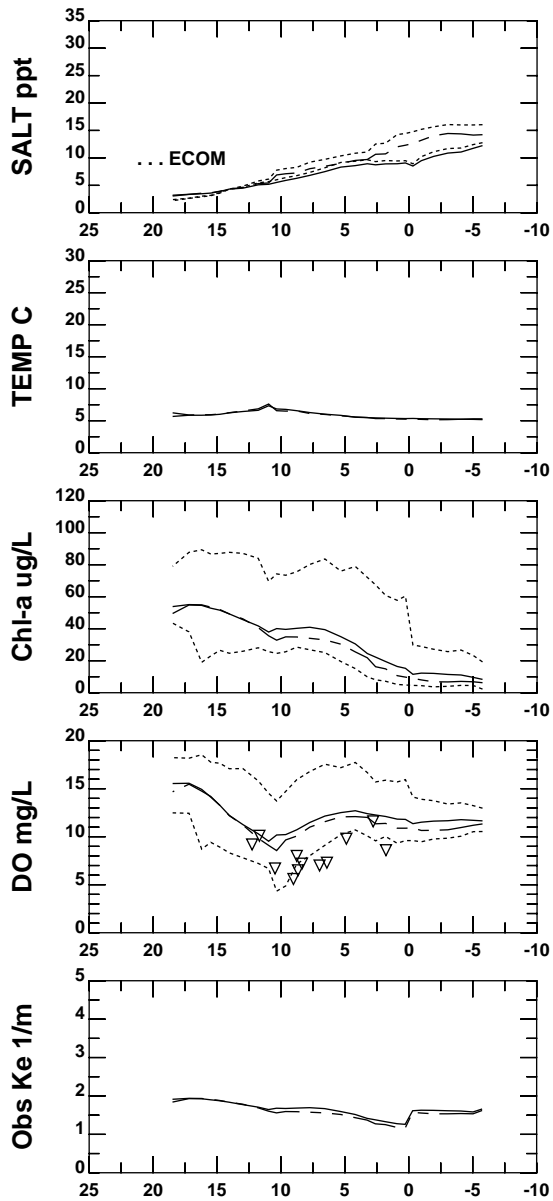
**MILE FROM MOUTH HACKENSACK RIVER**  
**HACKENSACK RIVER AND NEWARK BAY**

DATE: 4/07/2006 TIME: 11:21:52



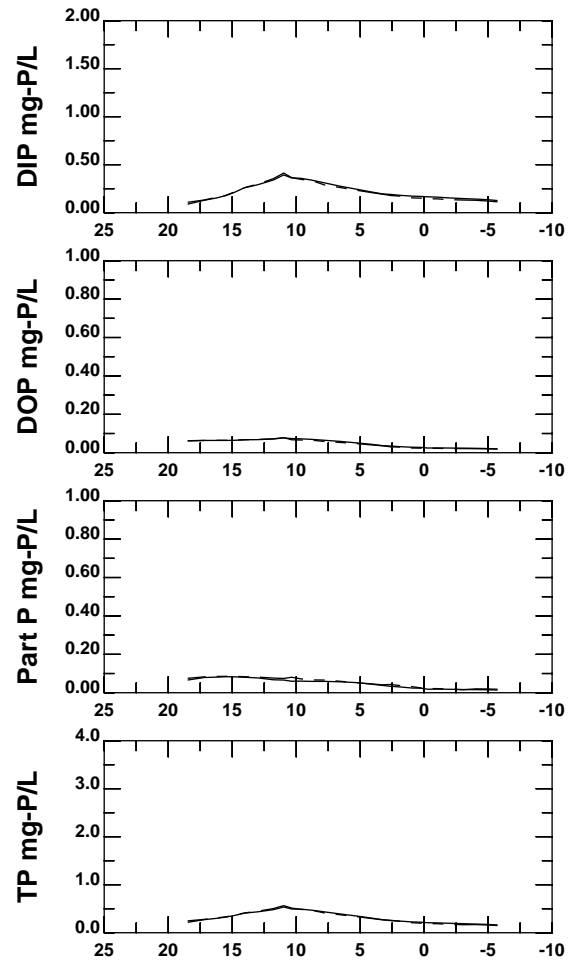
**MILE FROM MOUTH HACKENSACK RIVER**  
 DATA Jan 29-Feb 27,2000

	SURF MID BOT			MODEL
Harbor Survey	△	▲	Transect	— SURFACE 30-DAY MEAN
	t	e	Embayment	--- BOTTOM 30-DAY MEAN
NYSDEC	○		Transect	— 30-DAY SURFACE MAX OR
	c		Embayment	--- BOTTOM MIN
NJSIT	◇		Transect	
	p		Embayment	
PVSC	●	■	Transect	
	u	m	Embayment	
MERI	▽		Transect	
	s		Embayment	



**MILE FROM MOUTH HACKENSACK RIVER  
HACKENSACK RIVER AND NEWARK BAY**

DATE: 4/07/2006 TIME: 11:21:56

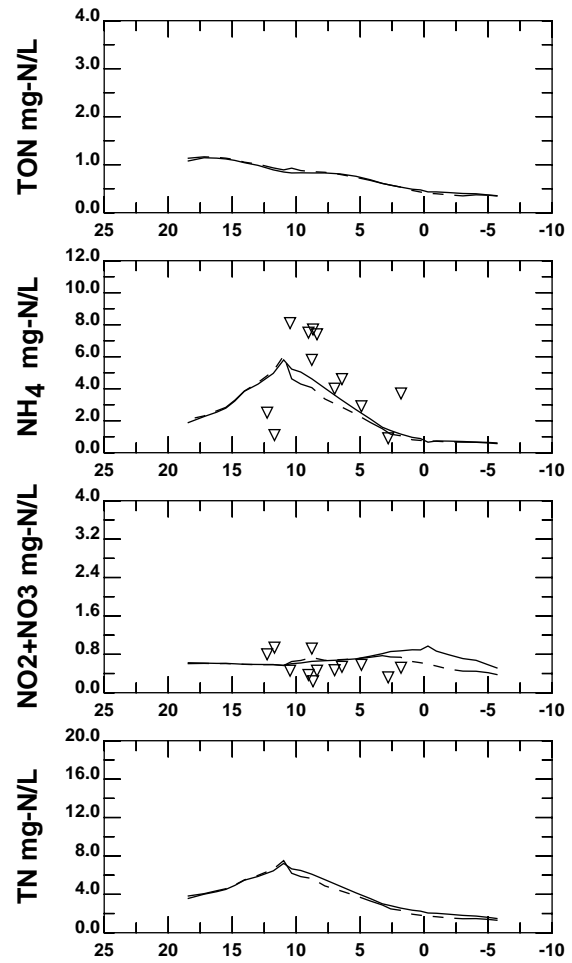
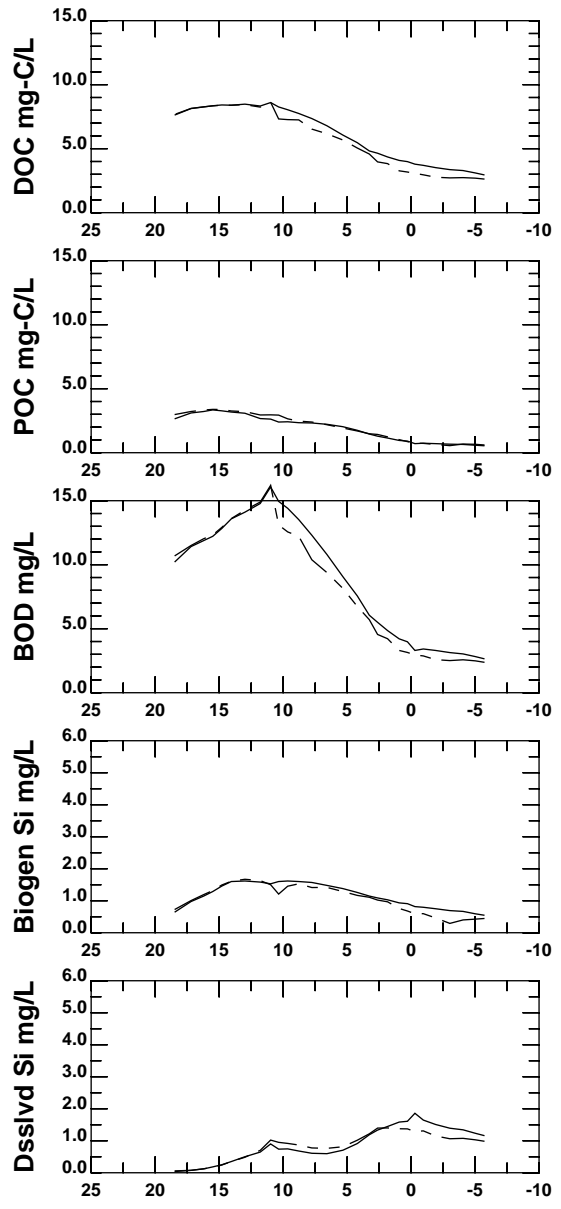


**MILE FROM MOUTH HACKENSACK RIVER  
DATA Feb 28-Mar 29,2000**

	SURF MID BOT			
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

**MODEL**

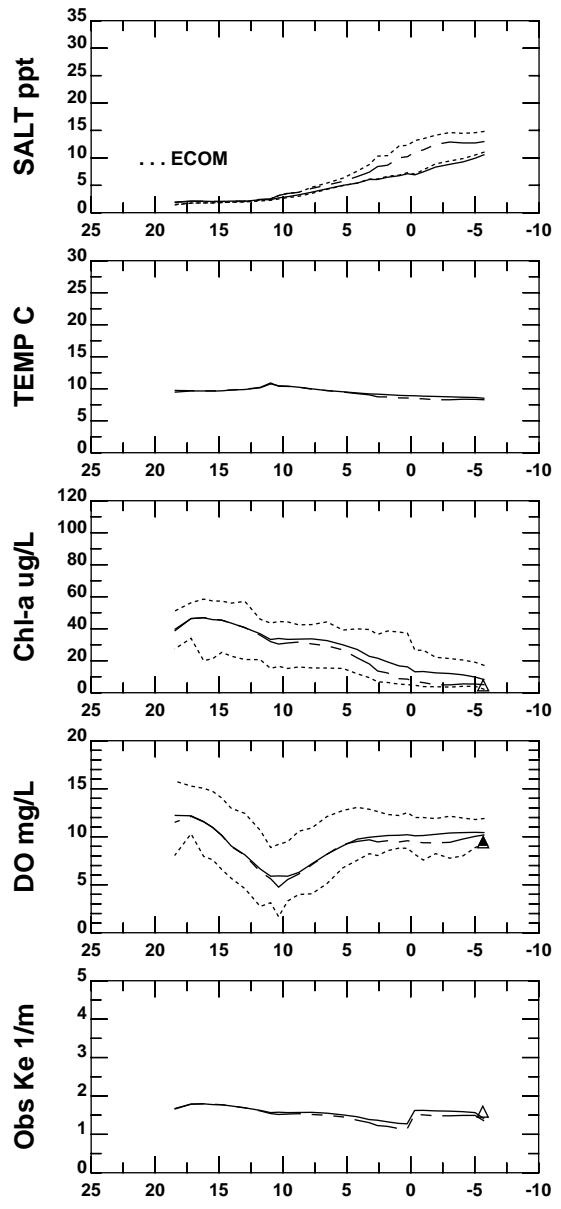
————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN



MILE FROM MOUTH HACKENSACK RIVER  
**HACKENSACK RIVER AND NEWARK BAY**

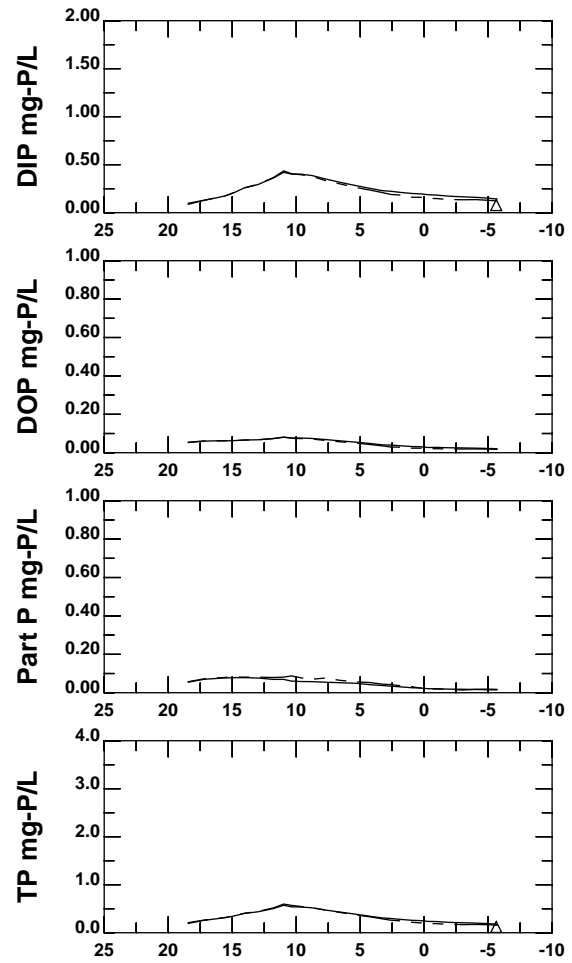
**MILE FROM MOUTH HACKENSACK RIVER**  
 DATA Feb 28-Mar 29, 2000

	SURF MID BOT			MODEL
Harbor Survey	△	▲	Transect	— SURFACE 30-DAY MEAN
	t	e	Embayment	- - - - - BOTTOM 30-DAY MEAN
NYSDEC	○	c	Transect	— 30-DAY SURFACE MAX OR
			Embayment	— - - - - BOTTOM MIN
NJSIT	◇	p	Transect	
			Embayment	
PVSC	●	■	Transect	
	u	m	Embayment	
MERI	▽	b	Transect	
	s		Embayment	



MILE FROM MOUTH HACKENSACK RIVER  
**HACKENSACK RIVER AND NEWARK BAY**

DATE: 4/07/2006 TIME: 11:21:59



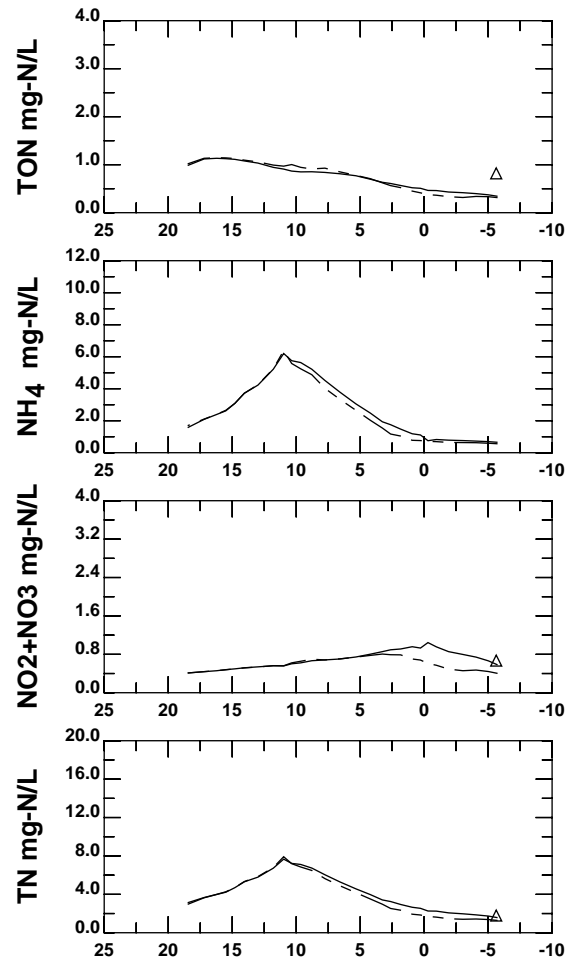
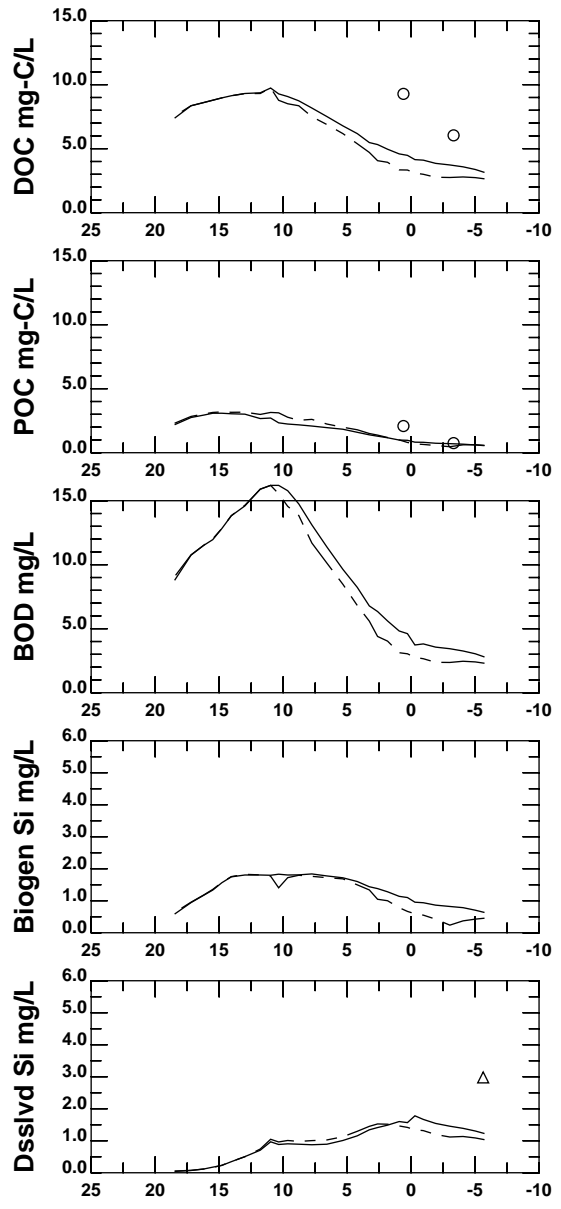
MILE FROM MOUTH HACKENSACK RIVER

DATA Mar 30-Apr 28,2000

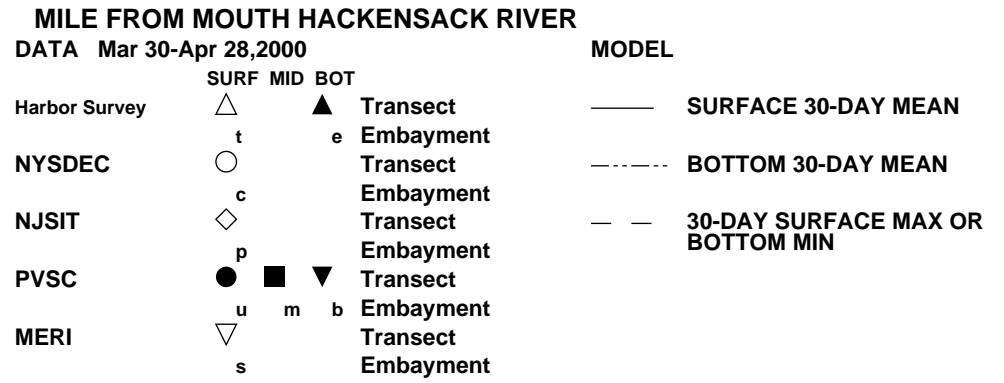
	SURF MID BOT			
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

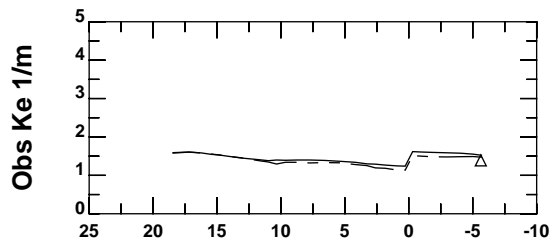
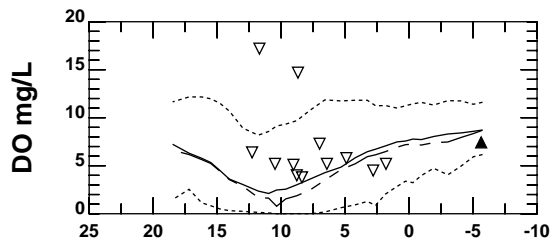
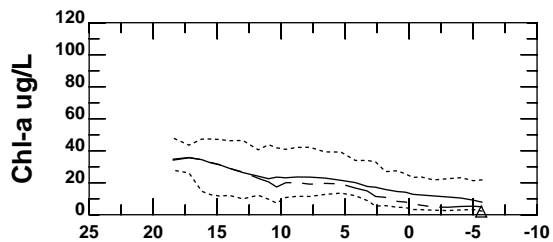
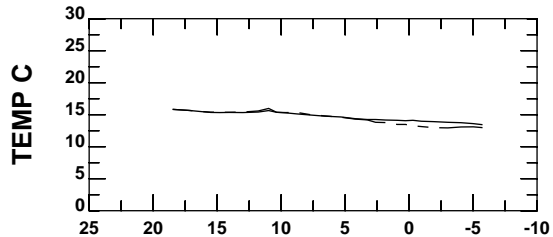
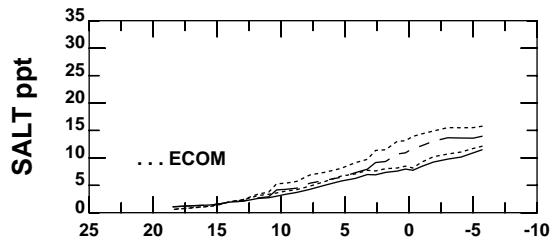
MODEL

—	SURFACE 30-DAY MEAN
- - - -	BOTTOM 30-DAY MEAN
- · - ·	30-DAY SURFACE MAX OR BOTTOM MIN



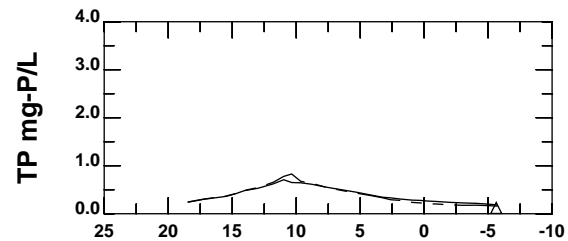
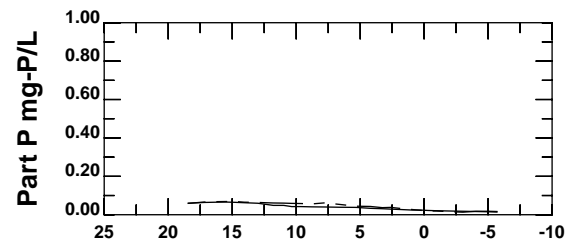
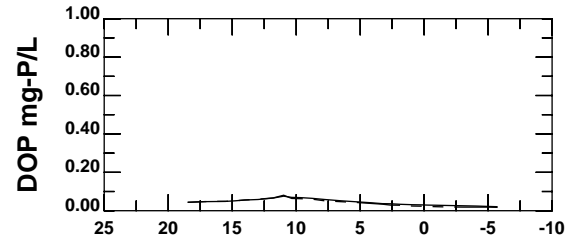
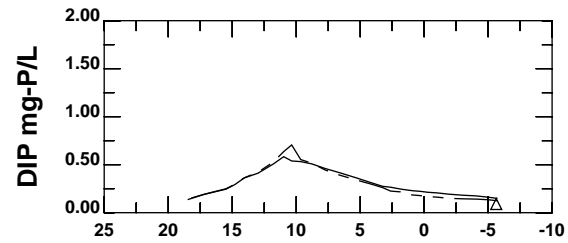
MILE FROM MOUTH HACKENSACK RIVER  
**HACKENSACK RIVER AND NEWARK BAY**





MILE FROM MOUTH HACKENSACK RIVER  
**HACKENSACK RIVER AND NEWARK BAY**

DATE: 4/07/2006 TIME: 11:22: 3

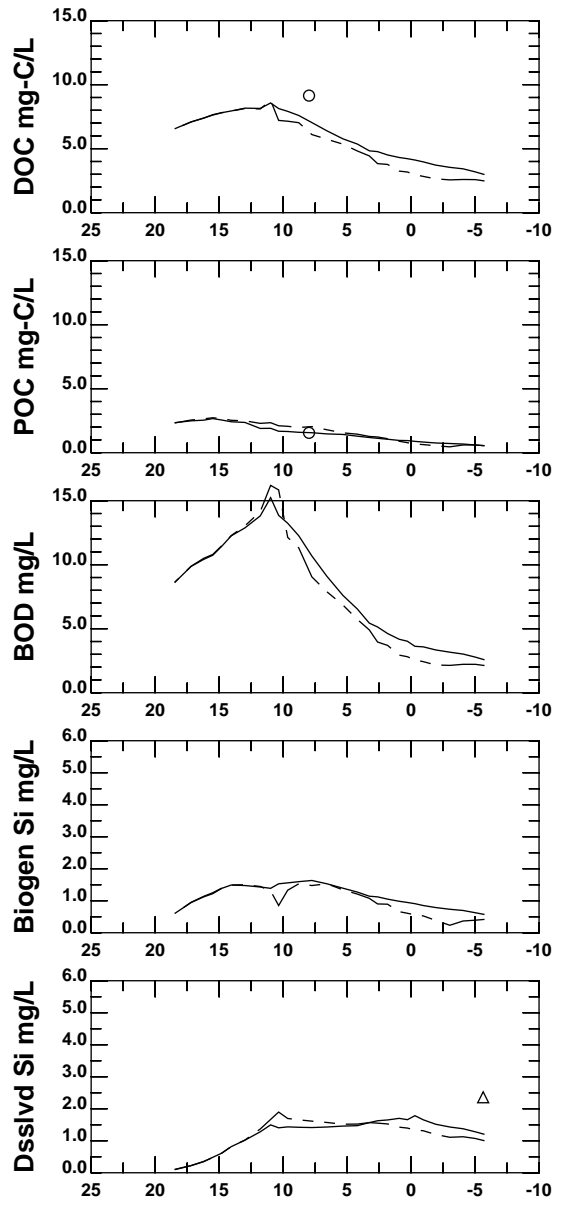


**MILE FROM MOUTH HACKENSACK RIVER**

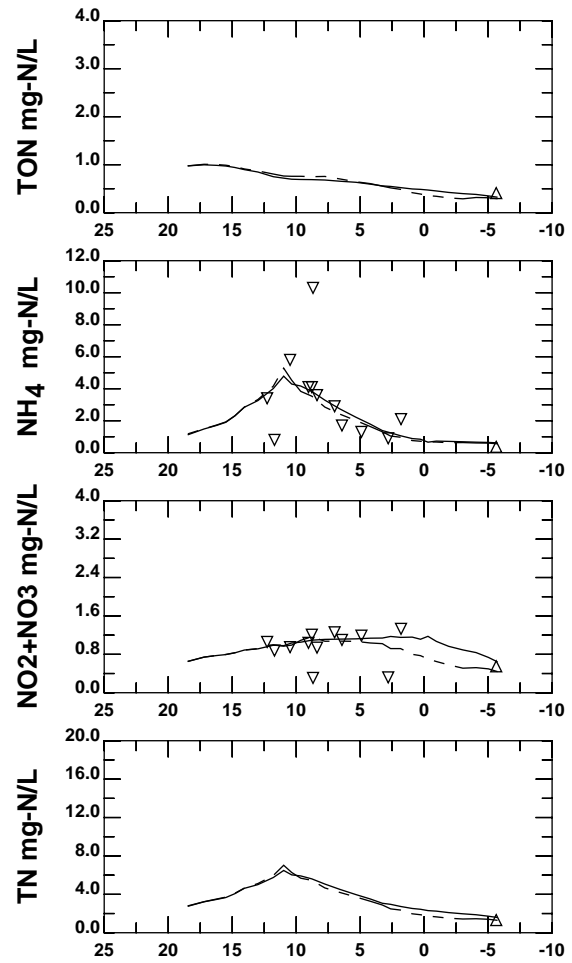
DATA Apr 29-May 28,2000

MODEL

	SURF MID BOT			
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment
			—	SURFACE 30-DAY MEAN
			- - -	BOTTOM 30-DAY MEAN
			- - -	30-DAY SURFACE MAX OR BOTTOM MIN

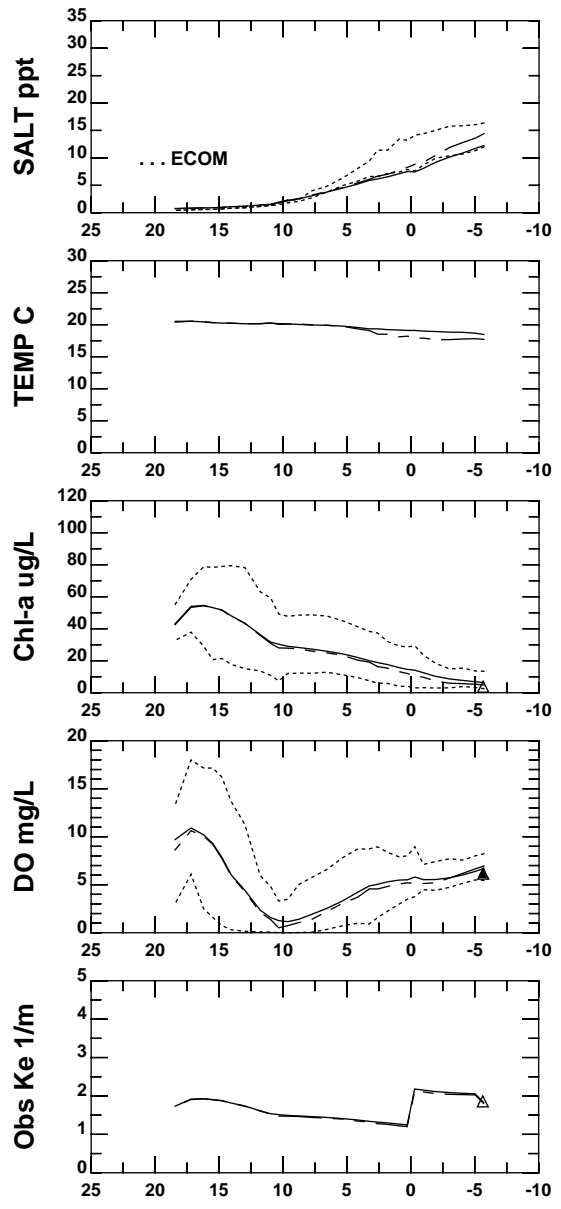


MILE FROM MOUTH HACKENSACK RIVER  
**HACKENSACK RIVER AND NEWARK BAY**



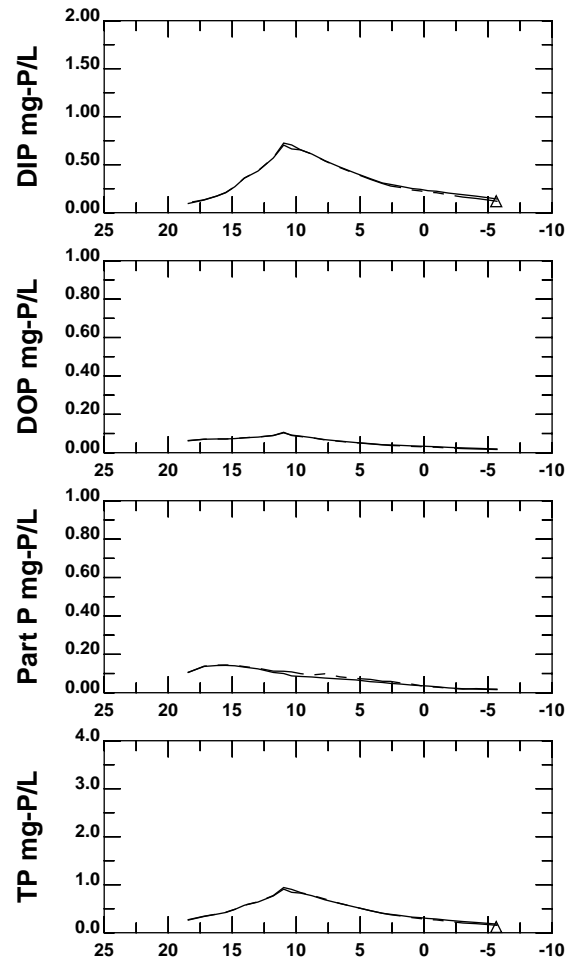
**MILE FROM MOUTH HACKENSACK RIVER**  
 DATA Apr 29-May 28,2000

	SURF MID BOT			MODEL
Harbor Survey	△	▲	Transect	— SURFACE 30-DAY MEAN
	t	e	Embayment	----- BOTTOM 30-DAY MEAN
NYSDEC	○	c	Transect	- - - 30-DAY SURFACE MAX OR
			Embayment	BOTTOM MIN
NJSIT	◇	p	Transect	
			Embayment	
PVSC	●	■	Transect	
	u	m	Embayment	
MERI	▽	b	Transect	
	s		Embayment	



**MILE FROM MOUTH HACKENSACK RIVER  
HACKENSACK RIVER AND NEWARK BAY**

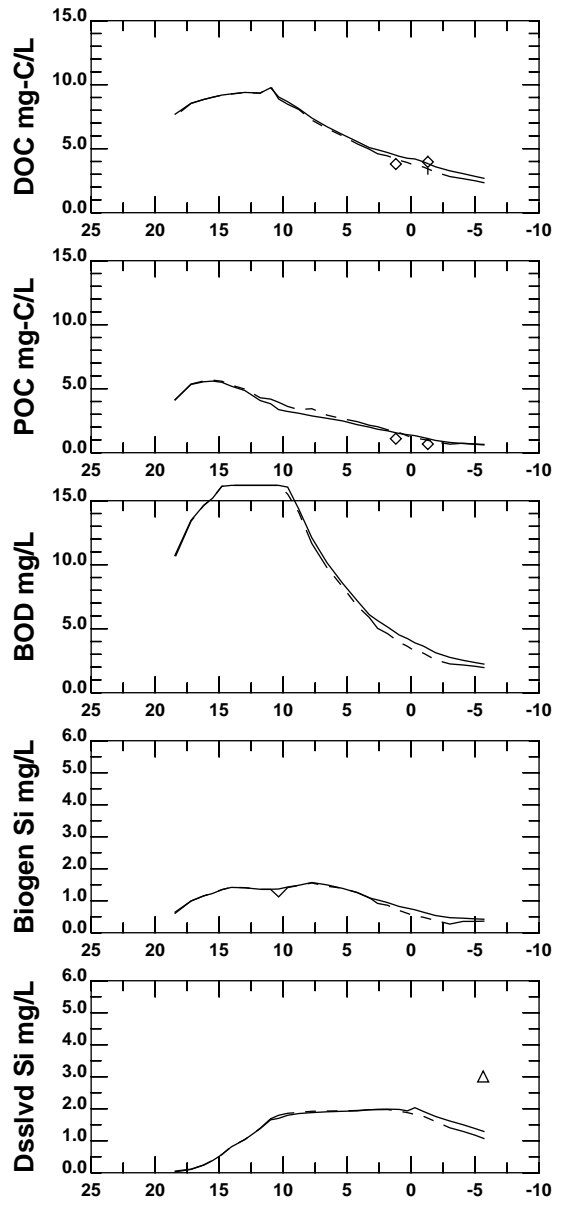
DATE: 4/07/2006 TIME: 11:22: 7



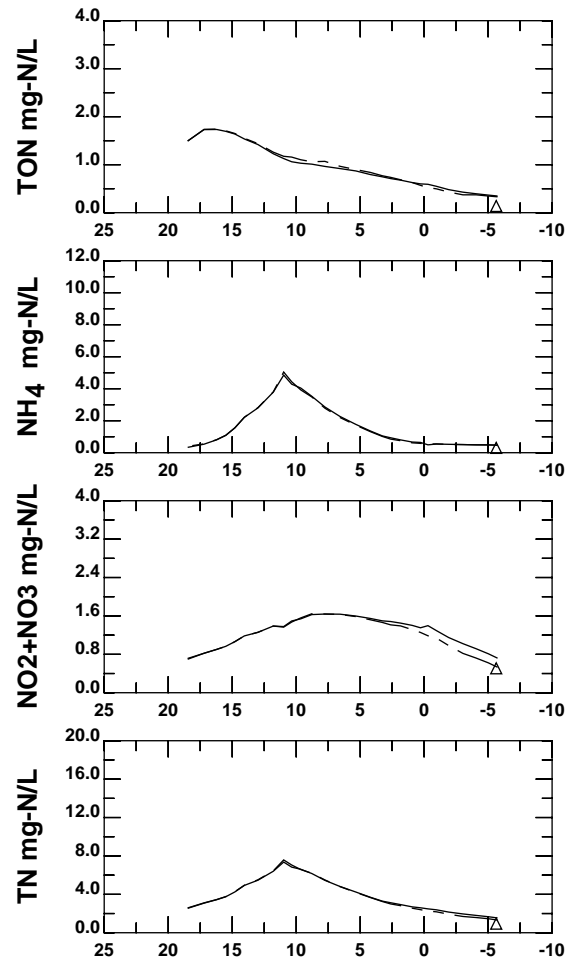
**MILE FROM MOUTH HACKENSACK RIVER  
DATA May 29-Jun 27,2000**

	SURF MID BOT			MODEL
Harbor Survey	△	▲	▲	— SURFACE 30-DAY MEAN
	t	e	e	- - - - - BOTTOM 30-DAY MEAN
NYSDEC	○			- - - - - 30-DAY SURFACE MAX OR BOTTOM MIN
	c			
NJSIT	◇			
	p			
PVSC	●	■	▼	
	u	m	b	
MERI	▽			
	s			



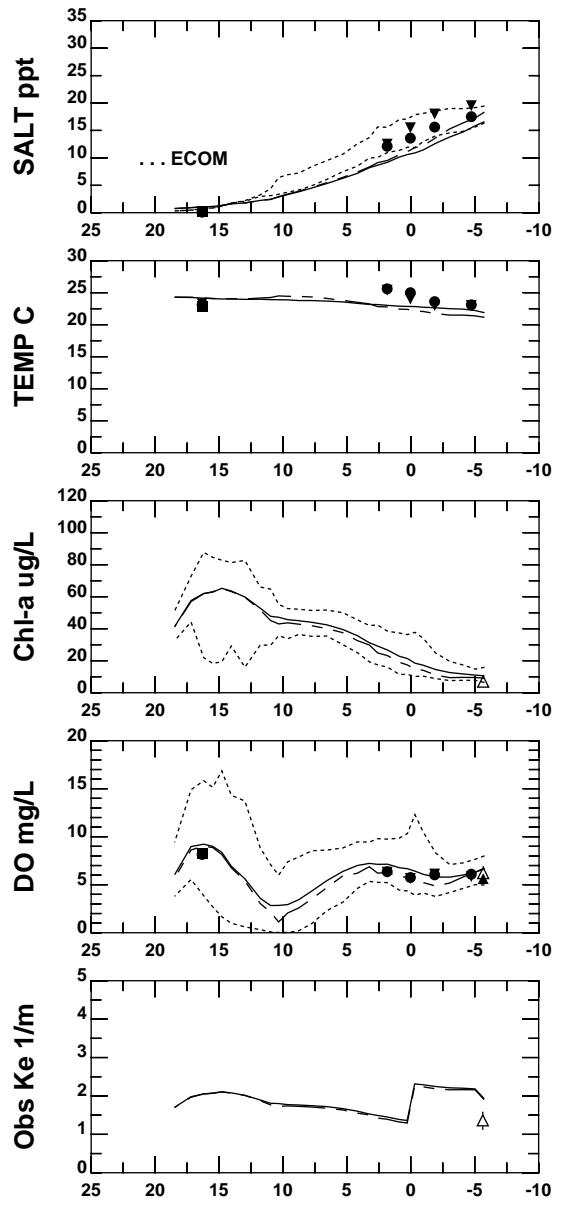


MILE FROM MOUTH HACKENSACK RIVER  
**HACKENSACK RIVER AND NEWARK BAY**

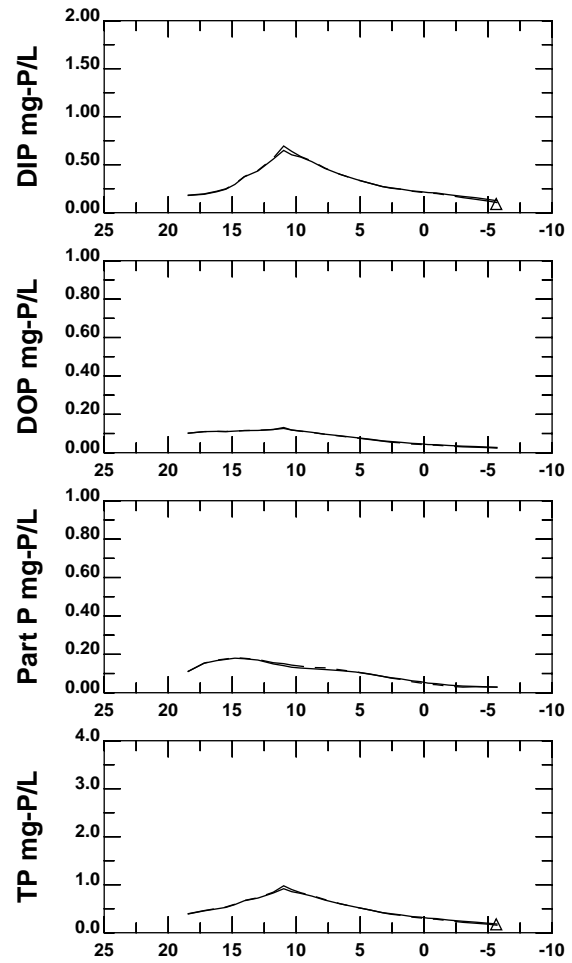


MILE FROM MOUTH HACKENSACK RIVER  
 DATA May 29-Jun 27,2000

	SURF MID BOT			MODEL
Harbor Survey	△	▲	Transect	— SURFACE 30-DAY MEAN
NYSDEC	t	e	Embayment	- - - - - BOTTOM 30-DAY MEAN
NJSIT	○	c	Transect	- - - - - 30-DAY SURFACE MAX OR
PVSC	◇	p	Embayment	— — — — — BOTTOM MIN
MERI	●	■	Transect	
	u	m	Embayment	
	▽	b	Transect	
	s		Embayment	

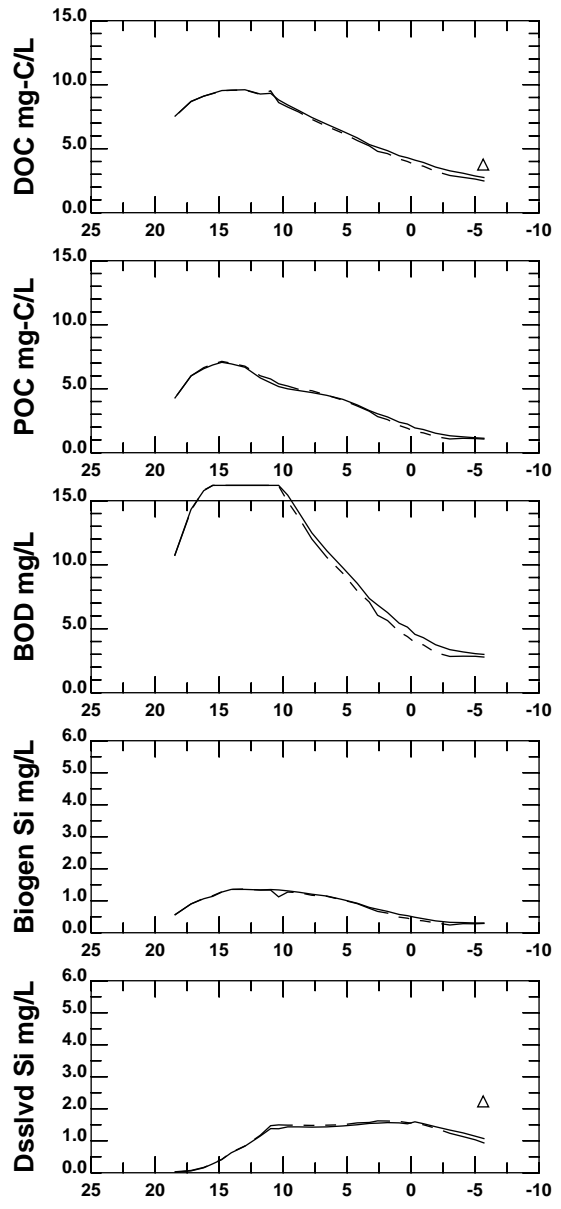


**MILE FROM MOUTH HACKENSACK RIVER**  
**HACKENSACK RIVER AND NEWARK BAY**

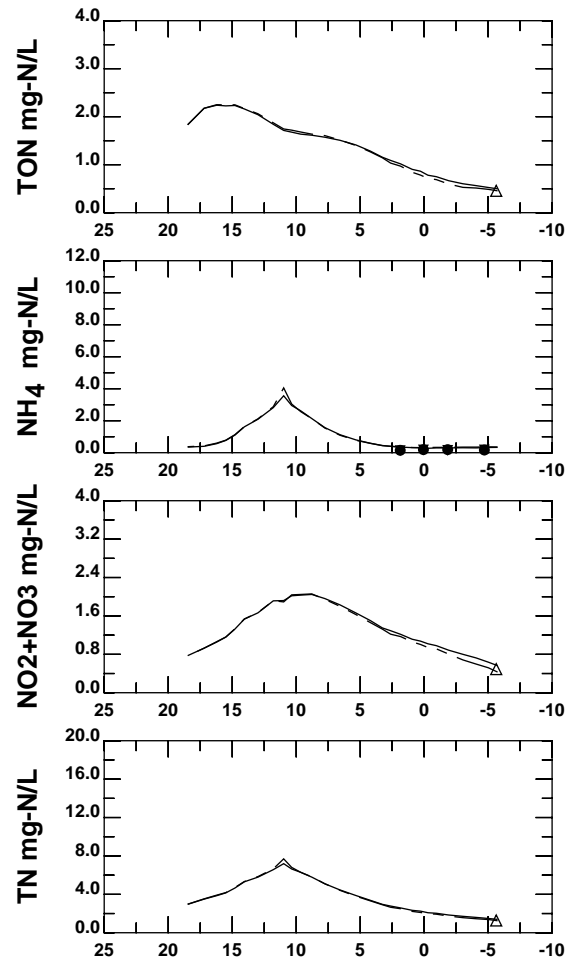


**MILE FROM MOUTH HACKENSACK RIVER**  
**DATA Jun 28-Jul 27,2000**

	SURF MID BOT			MODEL
Harbor Survey	△	▲	Transect	— SURFACE 30-DAY MEAN
	t	e	Embayment	- - - - - BOTTOM 30-DAY MEAN
NYSDEC	○		Transect	- - - - - 30-DAY SURFACE MAX OR
	c		Embayment	— — — — — BOTTOM MIN
NJSIT	◇		Transect	
	p		Embayment	
PVSC	●	■	Transect	
	u	m	Embayment	
MERI	▽		Transect	
	s		Embayment	

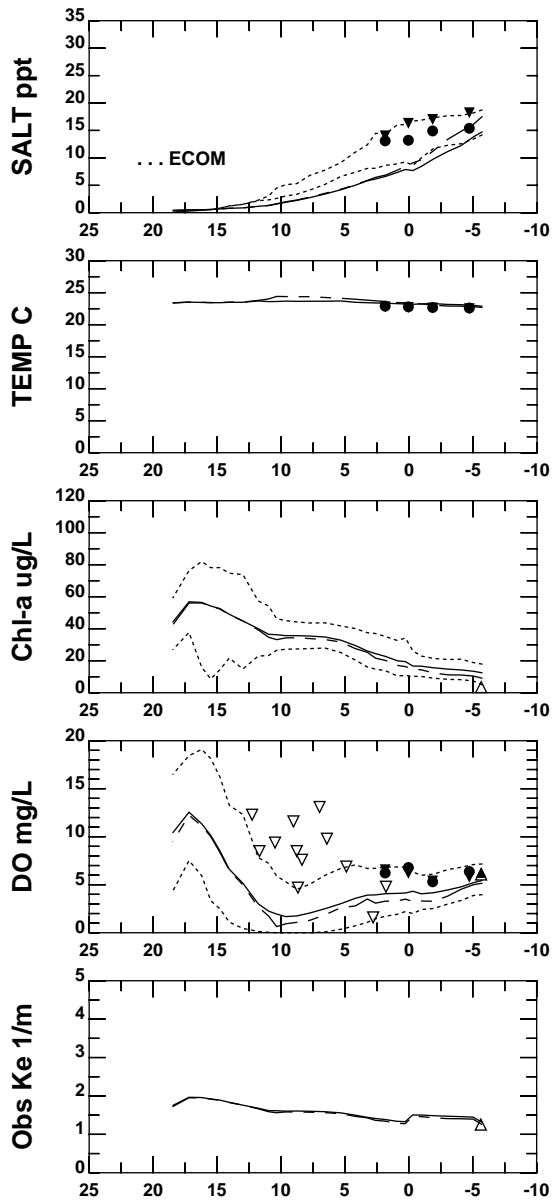


MILE FROM MOUTH HACKENSACK RIVER  
**HACKENSACK RIVER AND NEWARK BAY**



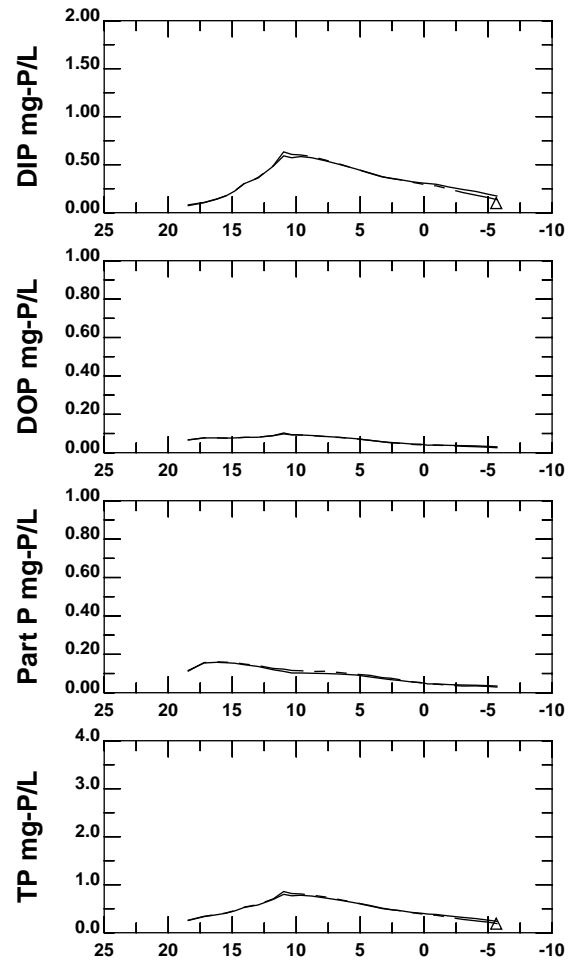
**MILE FROM MOUTH HACKENSACK RIVER**  
 DATA Jun 28-Jul 27,2000

	SURF MID BOT			
Harbor Survey	△	▲	Transect	— SURFACE 30-DAY MEAN
	t	e	Embayment	- - - - - BOTTOM 30-DAY MEAN
NYSDEC	○		Transect	- - - - - 30-DAY SURFACE MAX OR
	c		Embayment	— — — — — BOTTOM MIN
NJSIT	◇		Transect	
	p		Embayment	
PVSC	●	■	Transect	
	u	m	Embayment	
MERI	▽		Transect	
	s		Embayment	



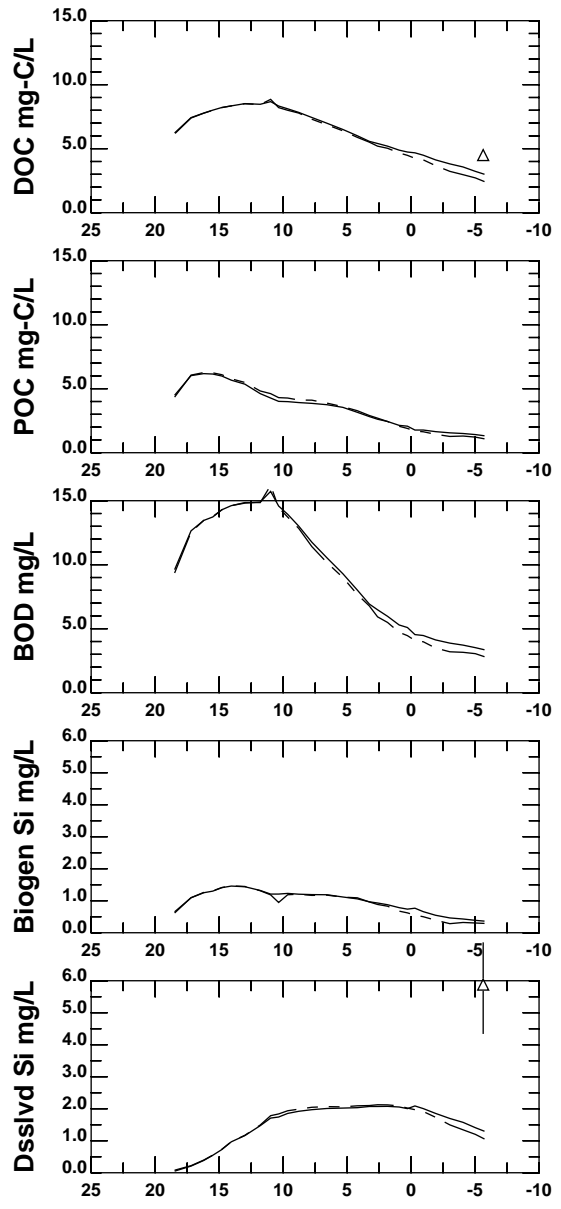
**MILE FROM MOUTH HACKENSACK RIVER  
HACKENSACK RIVER AND NEWARK BAY**

DATE: 4/07/2006 TIME: 11:22:16

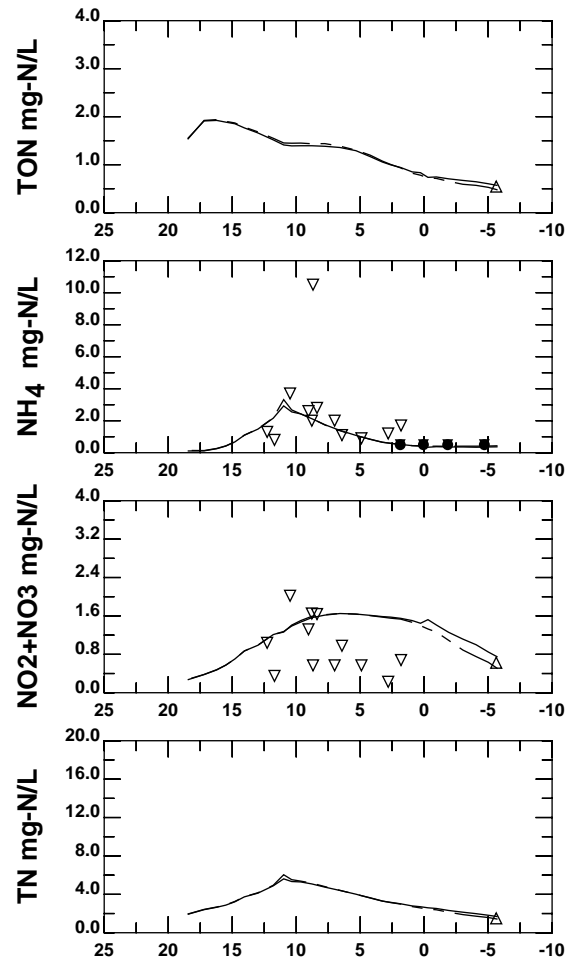


**MILE FROM MOUTH HACKENSACK RIVER  
DATA Jul 27-Aug 26,2000**

	SURF MID BOT			MODEL
Harbor Survey	△	▲	Transect	— SURFACE 30-DAY MEAN
NYSDEC	t	e	Embayment	- - - - - BOTTOM 30-DAY MEAN
NJSIT	○	c	Transect	- - - - - 30-DAY SURFACE MAX OR
PVSC	◇	p	Embayment	— — — — — BOTTOM MIN
MERI	●	■	Transect	
	u	m	Embayment	
	▽	b	Transect	
	s		Embayment	

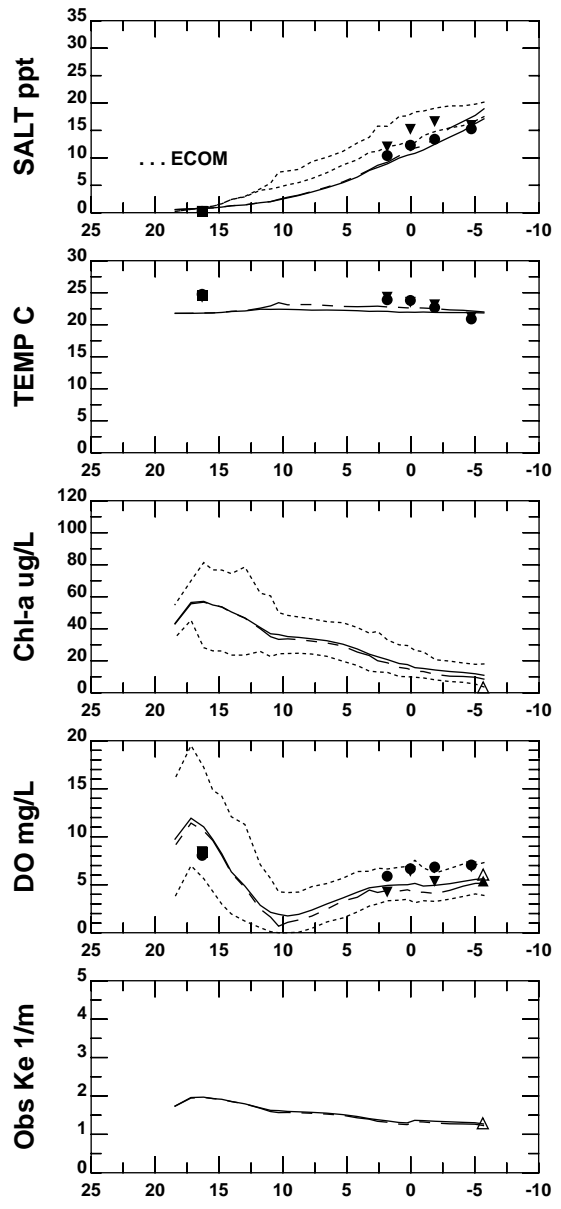


MILE FROM MOUTH HACKENSACK RIVER  
**HACKENSACK RIVER AND NEWARK BAY**



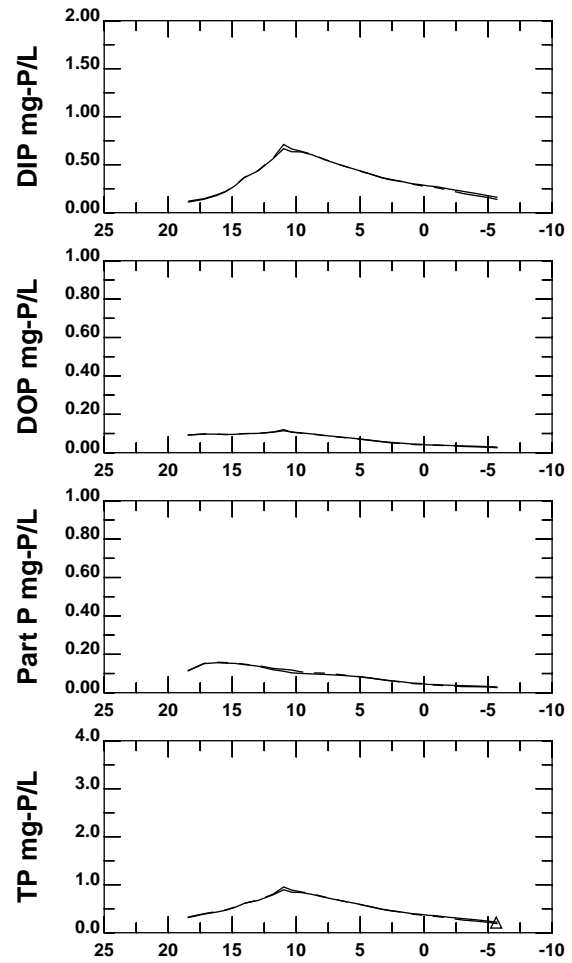
**MILE FROM MOUTH HACKENSACK RIVER**  
 DATA Jul 27-Aug 26, 2000

	SURF MID BOT			MODEL
Harbor Survey	△	▲	Transect	— SURFACE 30-DAY MEAN
	t	e	Embayment	--- BOTTOM 30-DAY MEAN
NYSDEC	○		Transect	- - - 30-DAY SURFACE MAX OR
	c		Embayment	BOTTOM MIN
NJSIT	◇		Transect	
	p		Embayment	
PVSC	●	■	Transect	
	u	m	Embayment	
MERI	▽		Transect	
	s		Embayment	



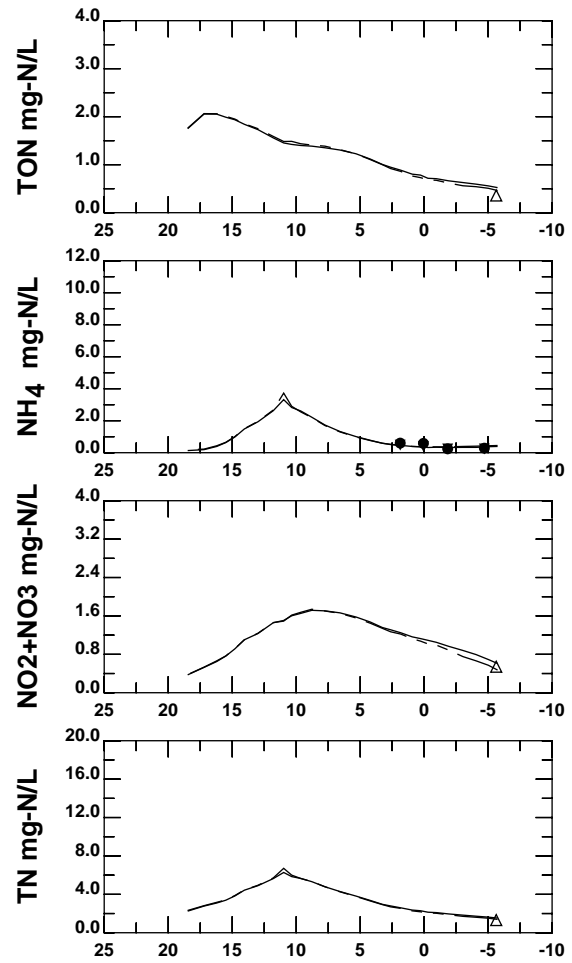
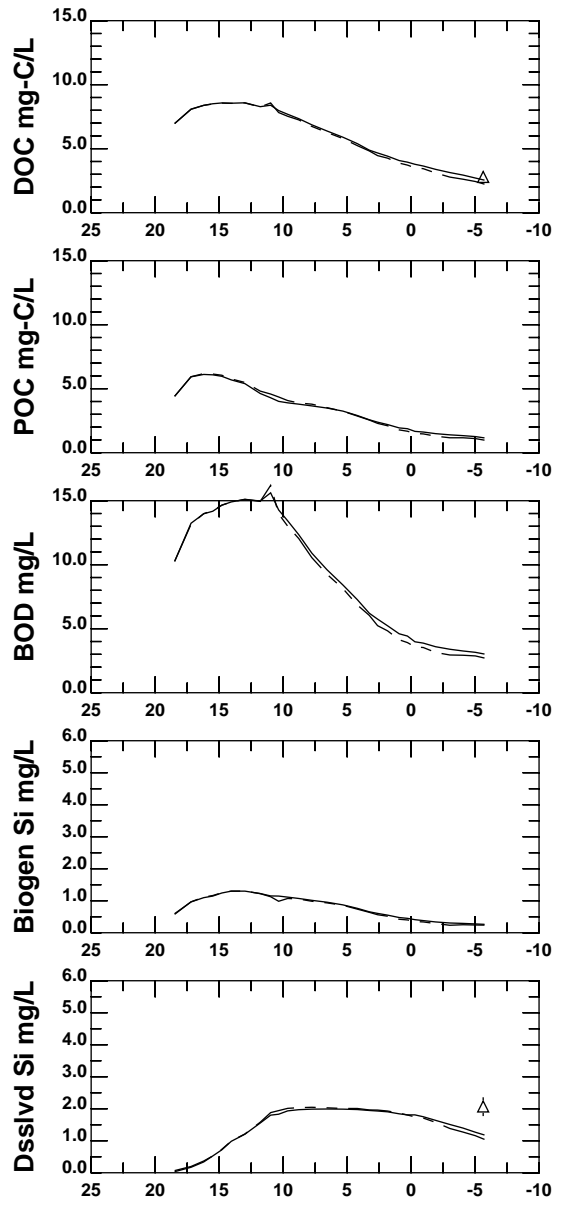
MILE FROM MOUTH HACKENSACK RIVER  
**HACKENSACK RIVER AND NEWARK BAY**

DATE: 4/07/2006 TIME: 11:22:21



MILE FROM MOUTH HACKENSACK RIVER  
 DATA Aug 27-Sep 25,2000

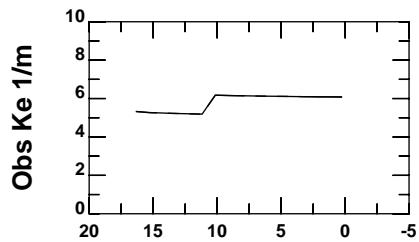
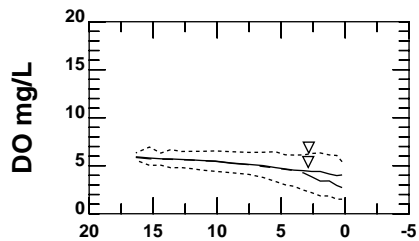
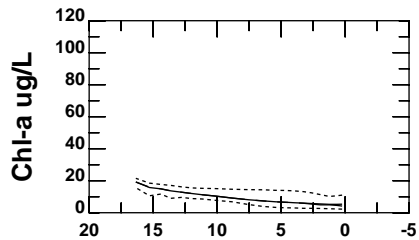
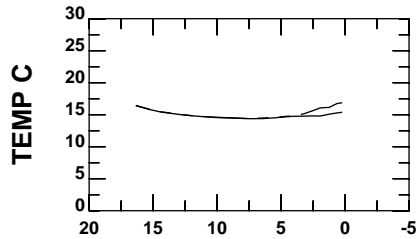
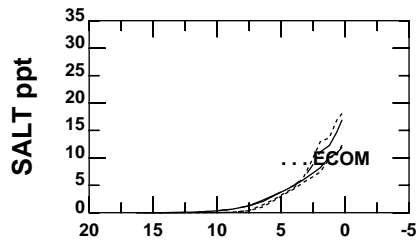
	SURF MID BOT			MODEL
Harbor Survey	△	▲	Transect	— SURFACE 30-DAY MEAN
	t	e	Embayment	- - - - - BOTTOM 30-DAY MEAN
NYSDEC	○		Transect	- - - - - 30-DAY SURFACE MAX OR
	c		Embayment	— — — — — BOTTOM MIN
NJSIT	◇		Transect	
	p		Embayment	
PVSC	●	■	Transect	
	u	m	Embayment	
MERI	▽		Transect	
	s		Embayment	



MILE FROM MOUTH HACKENSACK RIVER  
**HACKENSACK RIVER AND NEWARK BAY**

**MILE FROM MOUTH HACKENSACK RIVER**  
 DATA Aug 27-Sep 25,2000

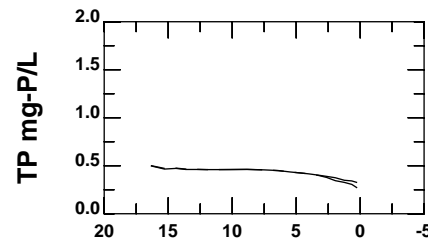
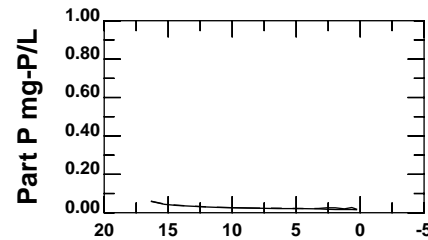
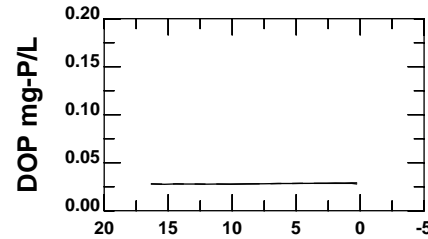
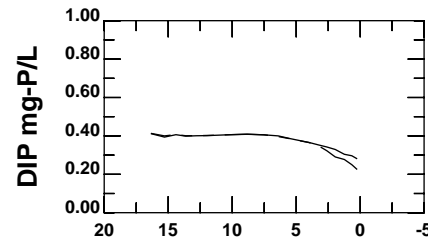
	SURF MID BOT			MODEL
Harbor Survey	△	▲	Transect	— SURFACE 30-DAY MEAN
NYSDEC	t	e	Embayment	- - - - BOTTOM 30-DAY MEAN
NJSIT	○	c	Transect	- - - - 30-DAY SURFACE MAX OR BOTTOM MIN
PVSC	◇	p	Embayment	
MERI	●	■	Transect	
	u	m	Embayment	
	▽	b	Transect	
	s		Embayment	



MILE FROM MOUTH PASSAIC RIVER

### PASSAIC RIVER

DATE: 4/07/2006 TIME: 11:22:25



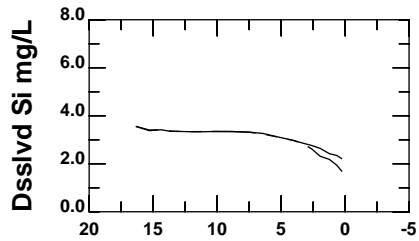
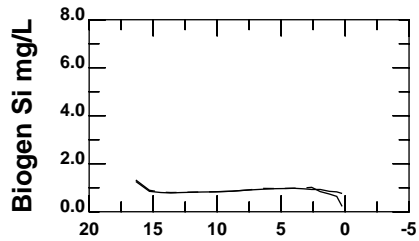
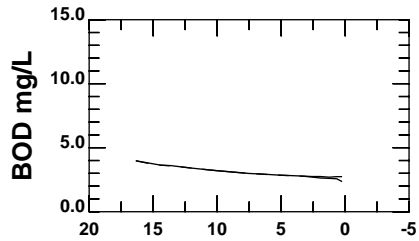
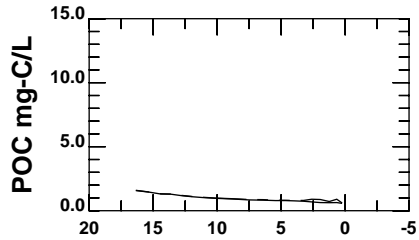
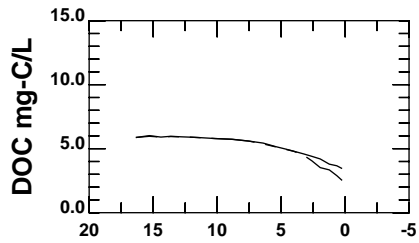
MILE FROM MOUTH PASSAIC RIVER  
DATA Oct 1-30,1999

	SURF	MID	BOT	
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

MODEL

—	SURFACE 30-DAY MEAN
- - - -	BOTTOM 30-DAY MEAN
- · - ·	30-DAY SURFACE MAX OR BOTTOM MIN

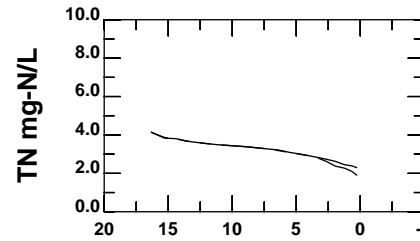
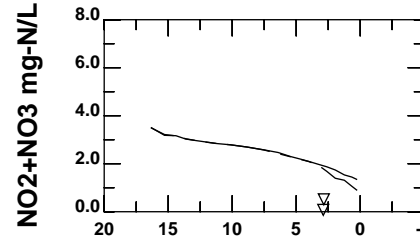
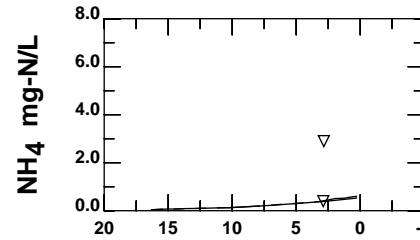
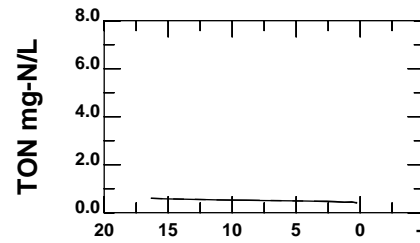




MILE FROM MOUTH PASSAIC RIVER

**PASSAIC RIVER**

DATE: 4/07/2006 TIME: 11:22:25

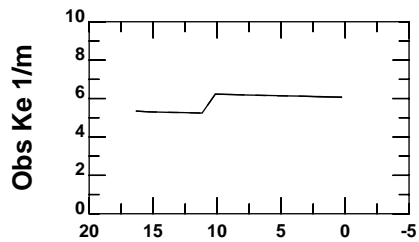
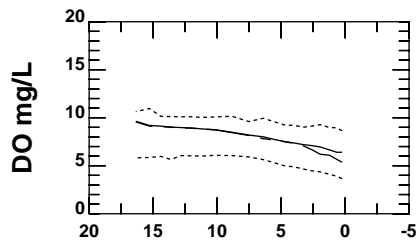
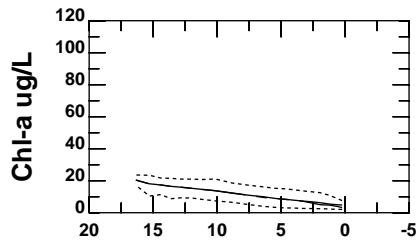
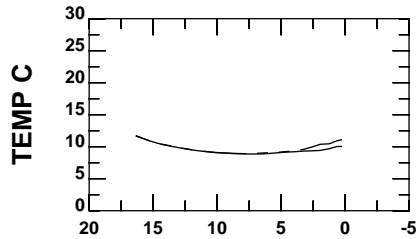
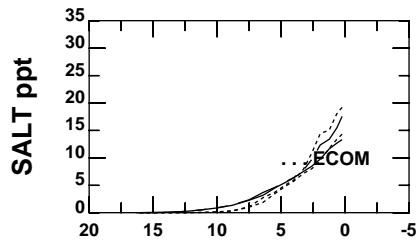


MILE FROM MOUTH PASSAIC RIVER  
DATA Oct 1-30,1999

	SURF	MID	BOT	
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

MODEL

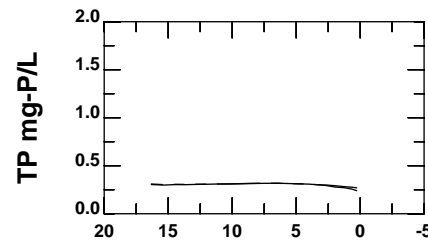
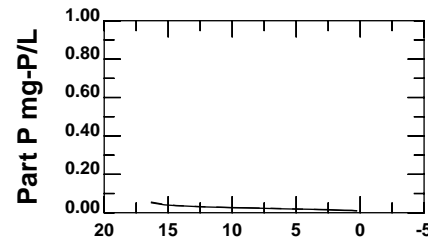
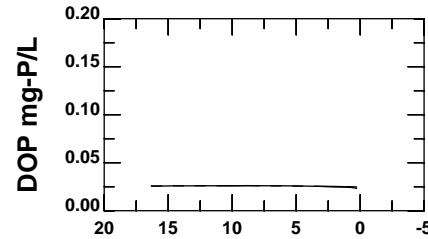
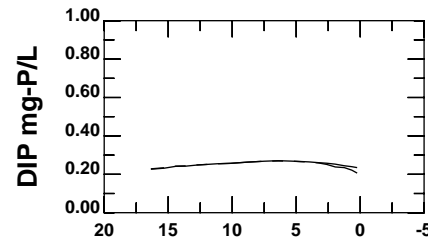
—	SURFACE 30-DAY MEAN
- - - -	BOTTOM 30-DAY MEAN
- - -	30-DAY SURFACE MAX OR BOTTOM MIN



MILE FROM MOUTH PASSAIC RIVER

### PASSAIC RIVER

DATE: 4/07/2006 TIME: 11:22:28

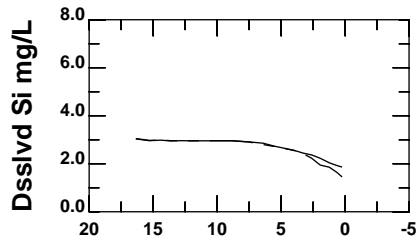
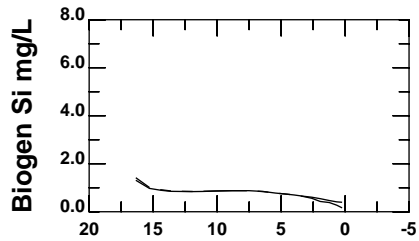
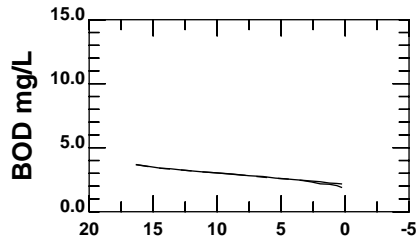
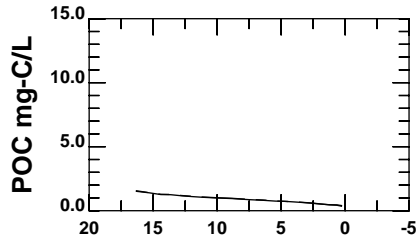
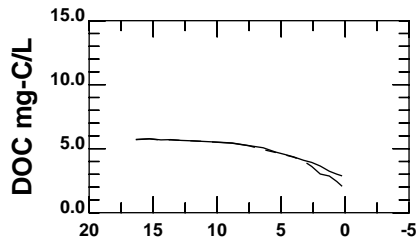


MILE FROM MOUTH PASSAIC RIVER  
DATA Oct 31-Nov 29,1999

	SURF MID BOT			
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

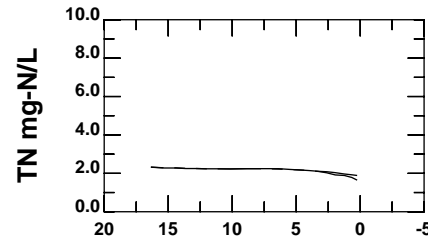
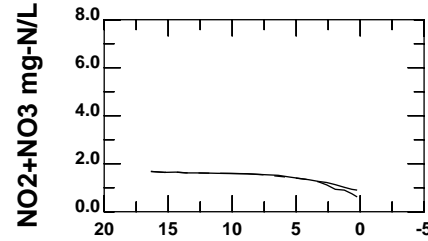
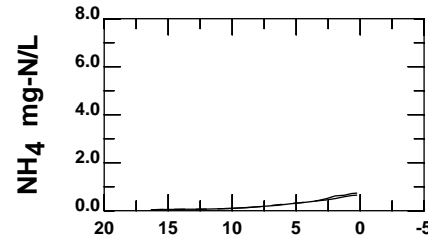
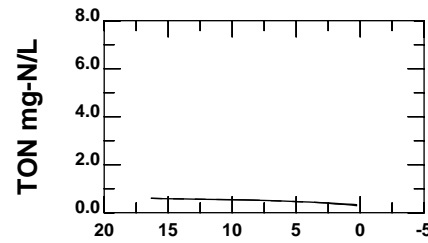
MODEL

—	SURFACE 30-DAY MEAN
- - - -	BOTTOM 30-DAY MEAN
- · - ·	30-DAY SURFACE MAX OR BOTTOM MIN



MILE FROM MOUTH PASSAIC RIVER

### PASSAIC RIVER



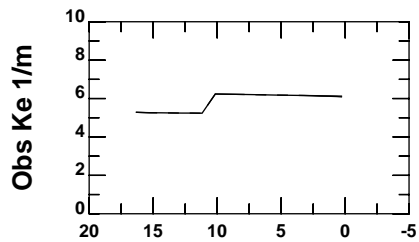
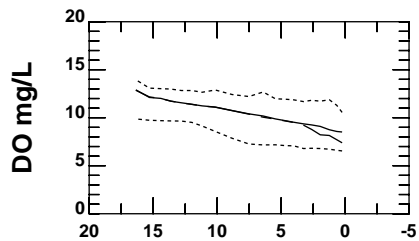
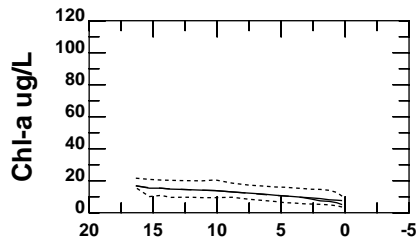
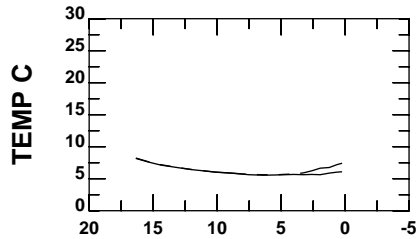
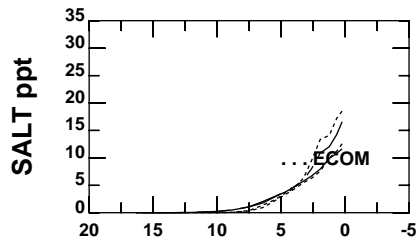
### MILE FROM MOUTH PASSAIC RIVER

DATA Oct 31-Nov 29,1999

	SURF	MID	BOT	
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

### MODEL

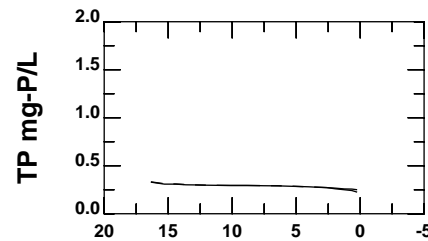
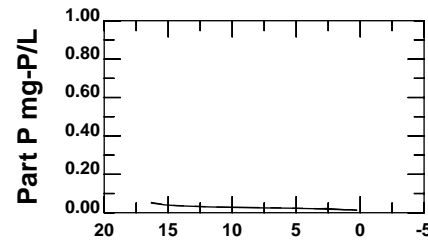
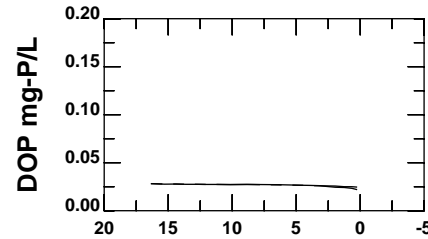
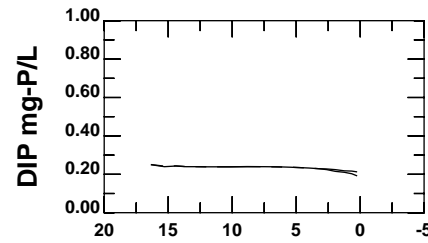
————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN



MILE FROM MOUTH PASSAIC RIVER

## PASSAIC RIVER

DATE: 4/07/2006 TIME: 11:22:32



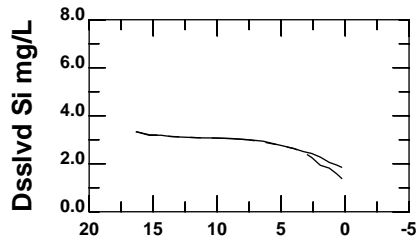
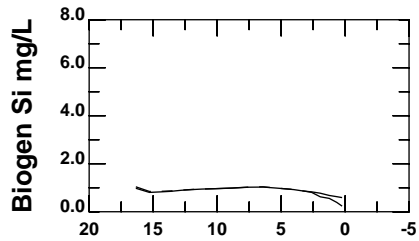
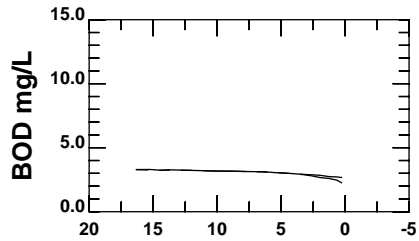
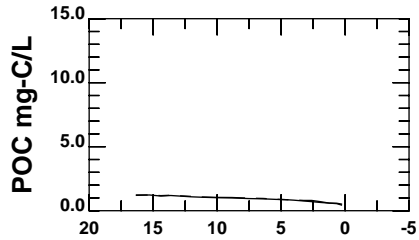
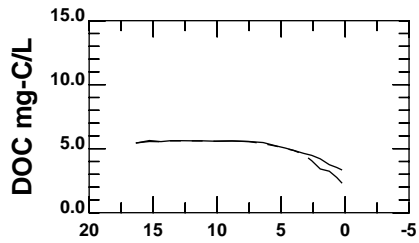
### MILE FROM MOUTH PASSAIC RIVER

DATA Nov 30-Dec 29,1999

	SURF MID BOT			
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

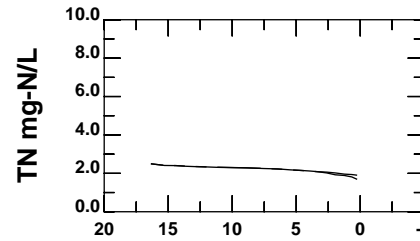
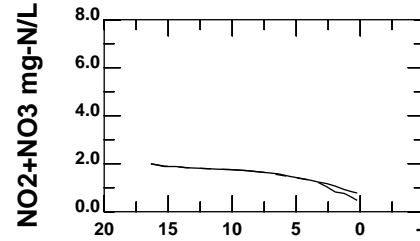
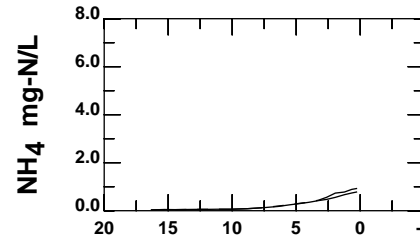
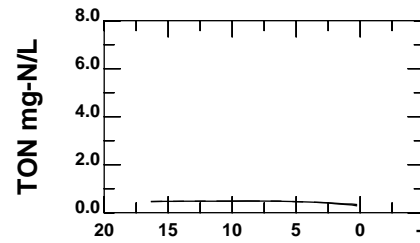
### MODEL

—	SURFACE 30-DAY MEAN
- - - -	BOTTOM 30-DAY MEAN
- · - ·	30-DAY SURFACE MAX OR BOTTOM MIN



MILE FROM MOUTH PASSAIC RIVER

**PASSAIC RIVER**



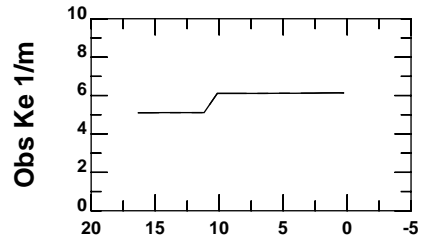
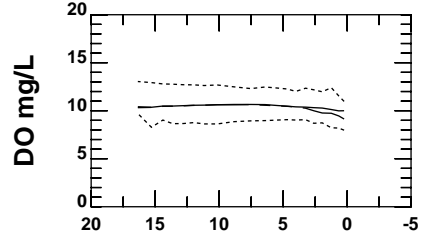
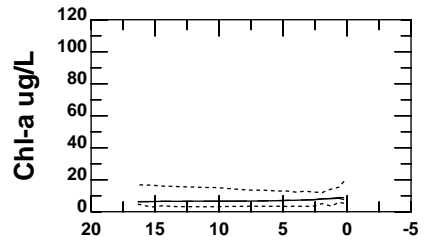
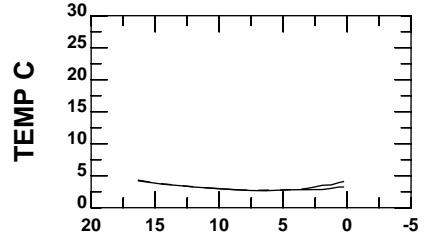
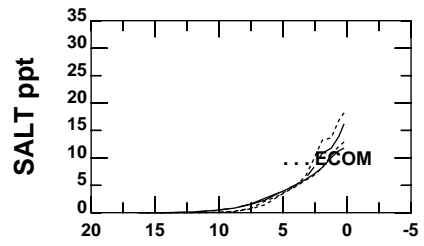
MILE FROM MOUTH PASSAIC RIVER

DATA Nov 30-Dec 29, 1999

	SURF	MID	BOT	
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

MODEL

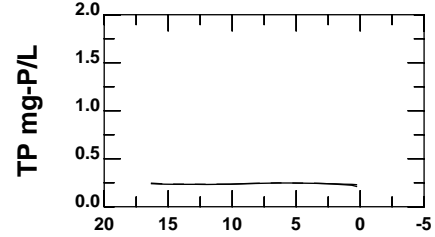
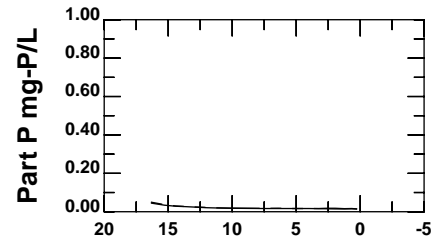
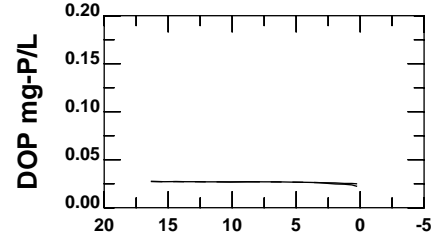
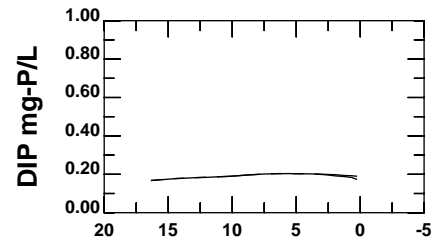
—	SURFACE 30-DAY MEAN
- - - -	BOTTOM 30-DAY MEAN
- - -	30-DAY SURFACE MAX OR BOTTOM MIN



MILE FROM MOUTH PASSAIC RIVER

### PASSAIC RIVER

DATE: 4/07/2006 TIME: 11:22:35

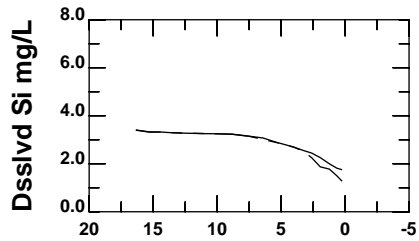
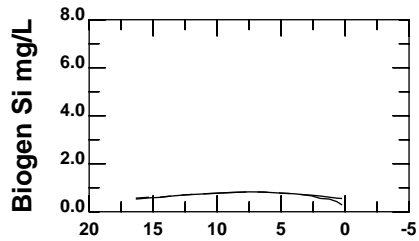
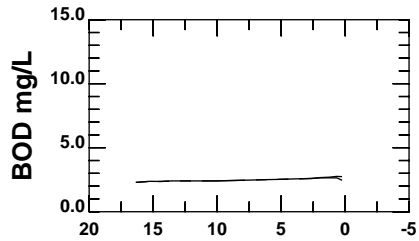
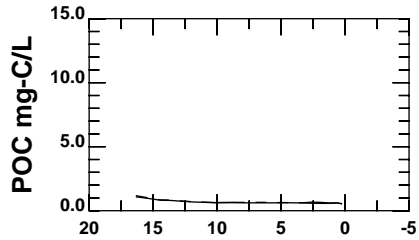
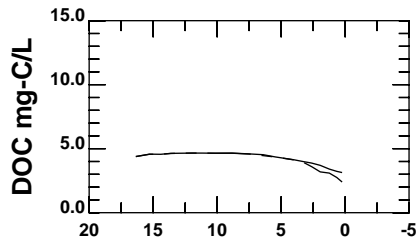


MILE FROM MOUTH PASSAIC RIVER  
DATA Dec 30 1999 -Jan 28,2000

	SURF MID BOT			
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

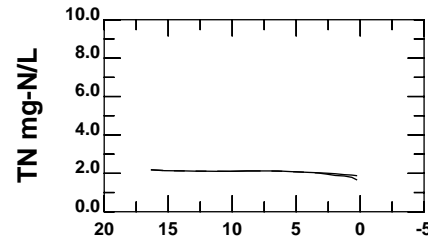
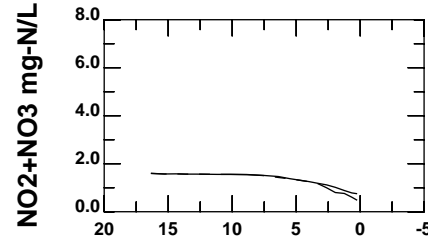
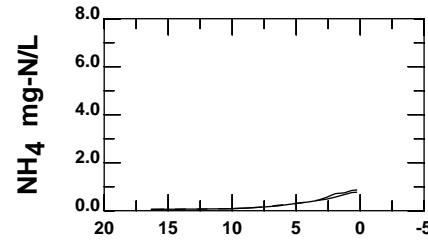
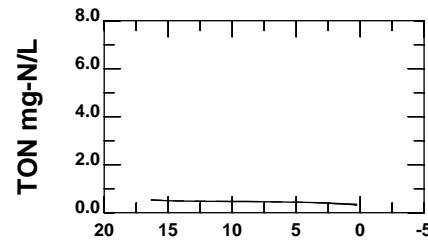
MODEL

- SURFACE 30-DAY MEAN
- - - - - BOTTOM 30-DAY MEAN
- - - 30-DAY SURFACE MAX OR BOTTOM MIN



MILE FROM MOUTH PASSAIC RIVER

**PASSAIC RIVER**



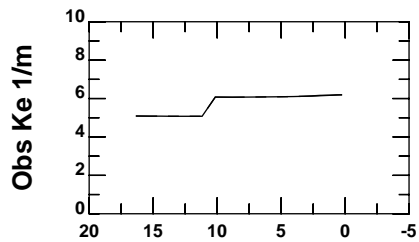
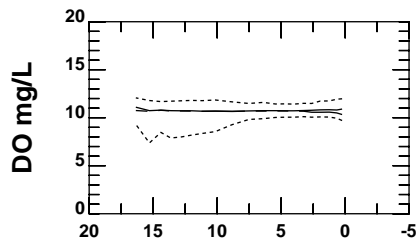
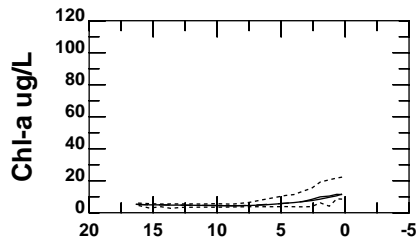
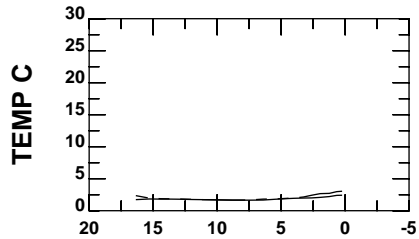
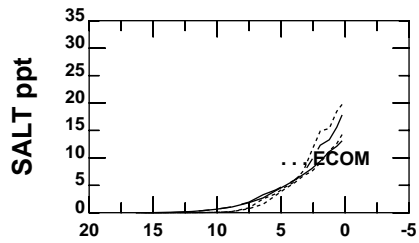
MILE FROM MOUTH PASSAIC RIVER

DATA Dec 30 1999 -Jan 28,2000

	SURF MID BOT			
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

MODEL

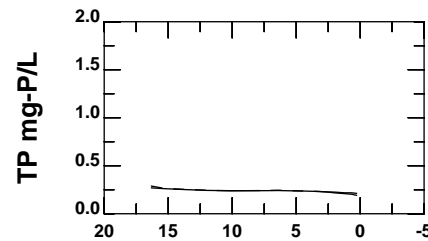
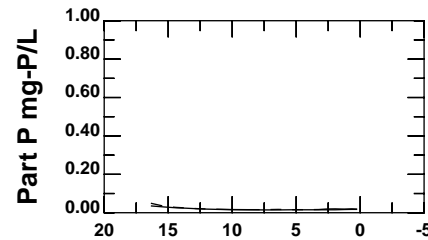
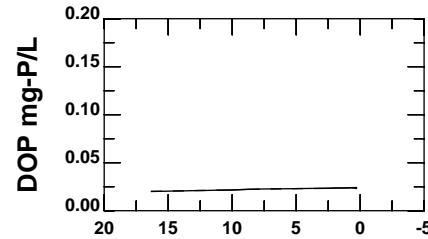
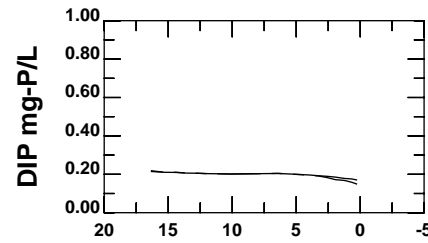
—	SURFACE 30-DAY MEAN
- - - -	BOTTOM 30-DAY MEAN
- - -	30-DAY SURFACE MAX OR BOTTOM MIN



MILE FROM MOUTH PASSAIC RIVER

### PASSAIC RIVER

DATE: 4/07/2006 TIME: 11:22:39



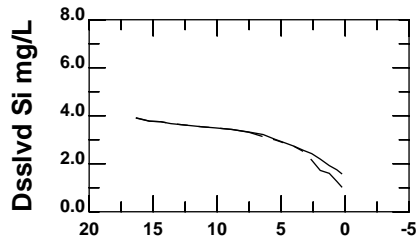
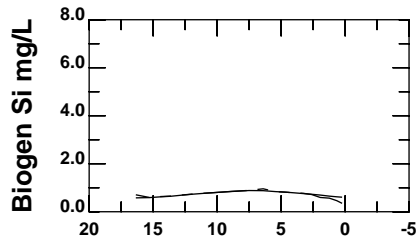
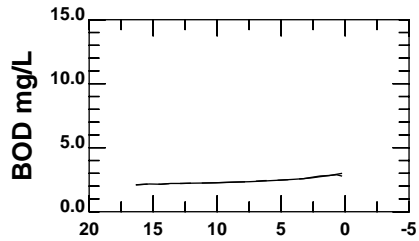
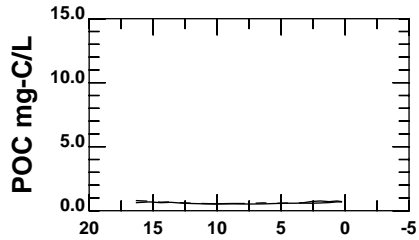
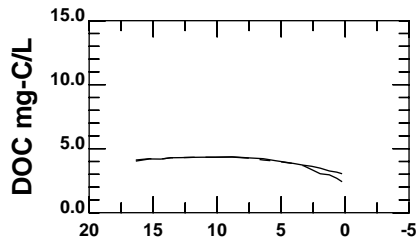
MILE FROM MOUTH PASSAIC RIVER  
DATA Jan 29-Feb 27,2000

	SURF MID BOT			
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

MODEL

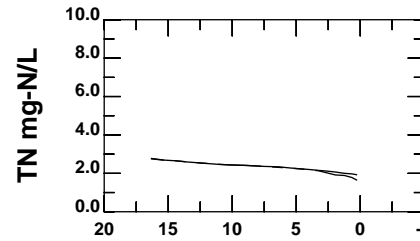
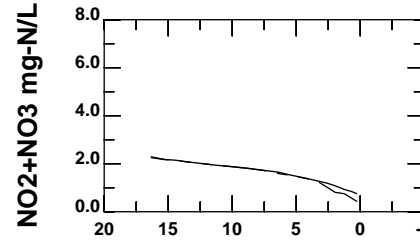
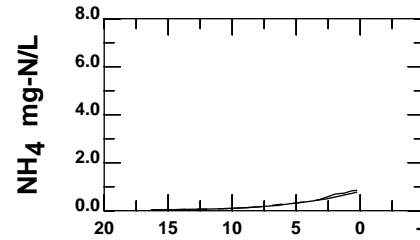
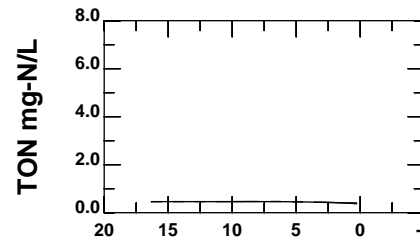
————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN





MILE FROM MOUTH PASSAIC RIVER

**PASSAIC RIVER**

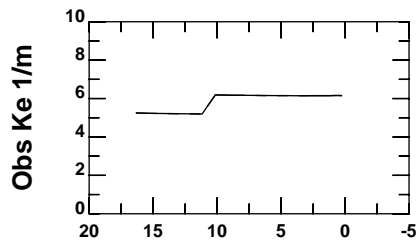
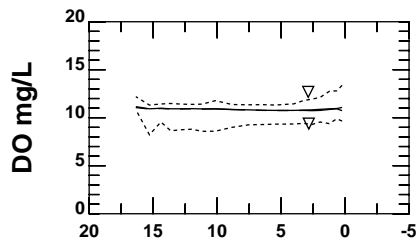
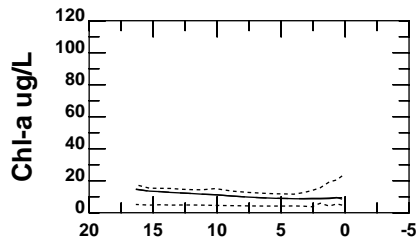
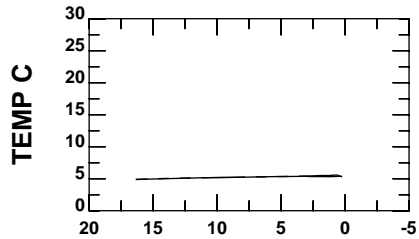
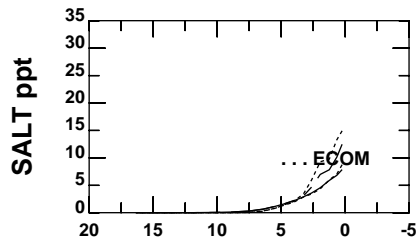


**MILE FROM MOUTH PASSAIC RIVER**  
DATA Jan 29-Feb 27, 2000

	SURF	MID	BOT	
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

**MODEL**

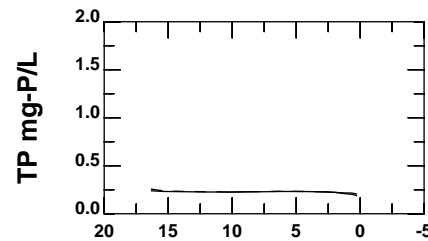
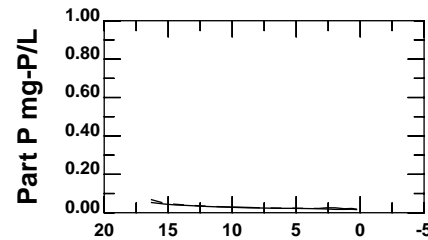
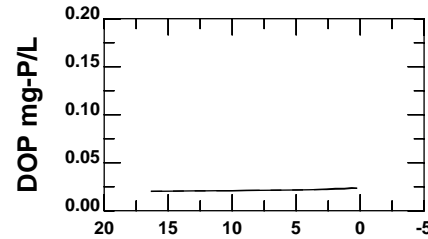
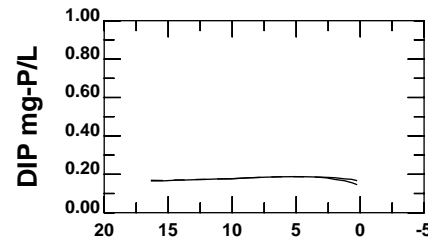
- SURFACE 30-DAY MEAN
- - - - - BOTTOM 30-DAY MEAN
- - - 30-DAY SURFACE MAX OR BOTTOM MIN



MILE FROM MOUTH PASSAIC RIVER

## PASSAIC RIVER

DATE: 4/07/2006 TIME: 11:22:42



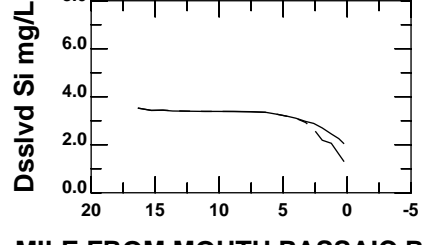
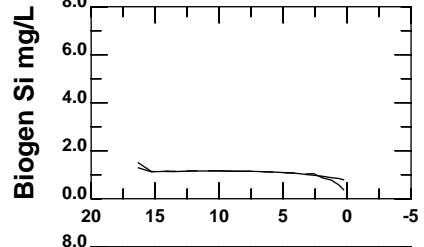
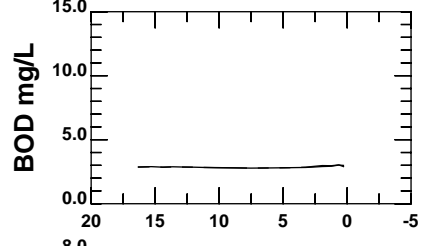
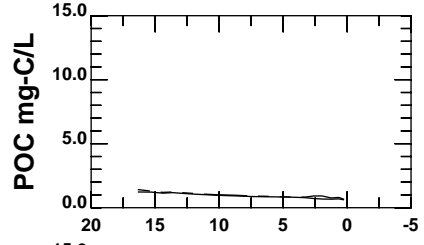
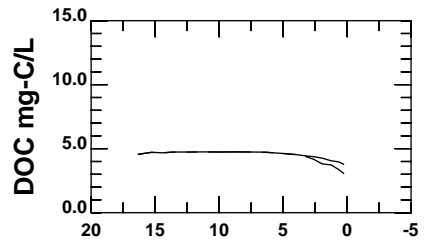
### MILE FROM MOUTH PASSAIC RIVER

DATA Feb 28-Mar 29,2000

	SURF MID BOT			
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

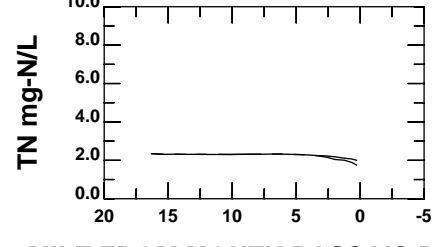
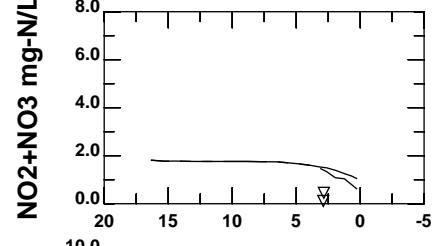
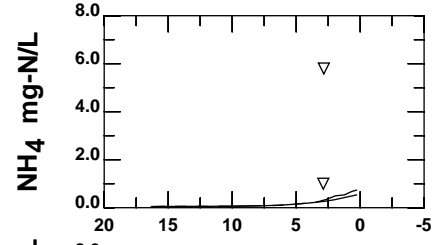
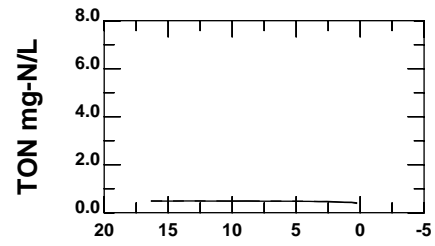
### MODEL

—	SURFACE 30-DAY MEAN
- - - -	BOTTOM 30-DAY MEAN
- · - ·	30-DAY SURFACE MAX OR BOTTOM MIN



MILE FROM MOUTH PASSAIC RIVER

**PASSAIC RIVER**

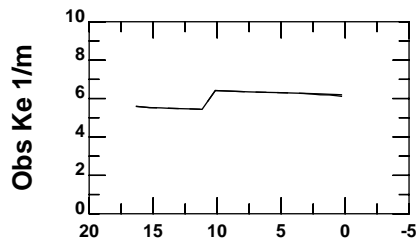
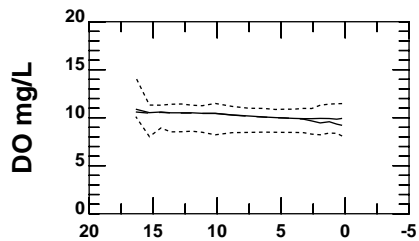
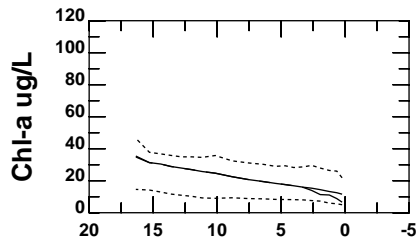
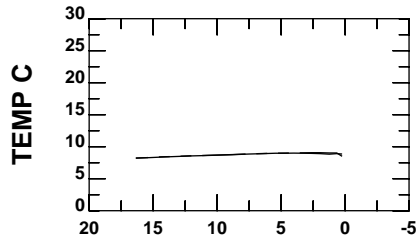
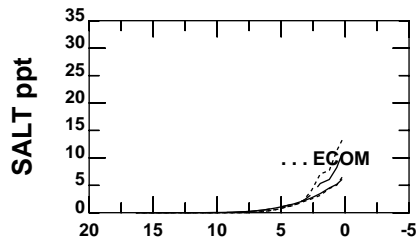


MILE FROM MOUTH PASSAIC RIVER  
DATA Feb 28-Mar 29,2000

	SURF	MID	BOT	
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

MODEL

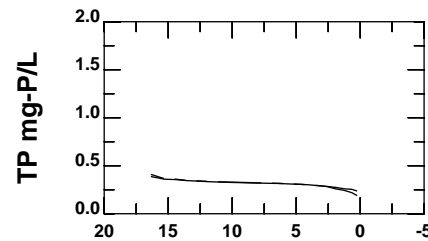
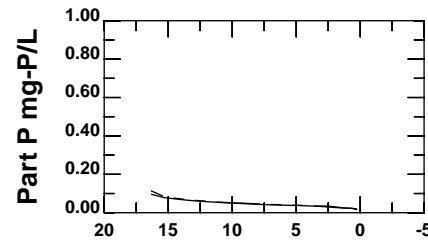
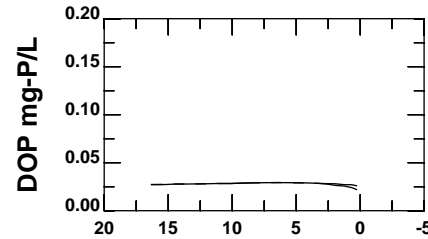
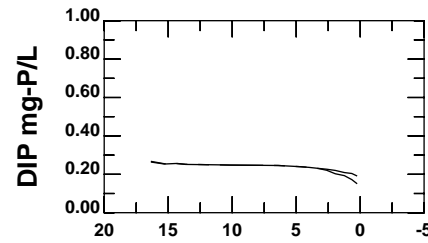
- SURFACE 30-DAY MEAN
- - - - - BOTTOM 30-DAY MEAN
- - - 30-DAY SURFACE MAX OR BOTTOM MIN



MILE FROM MOUTH PASSAIC RIVER

### PASSAIC RIVER

DATE: 4/07/2006 TIME: 11:22:46



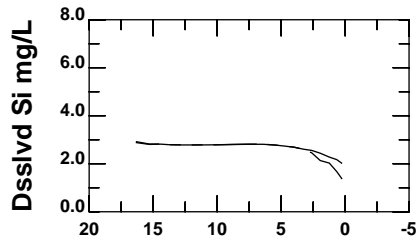
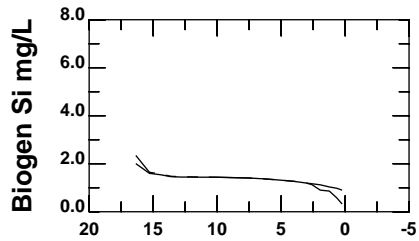
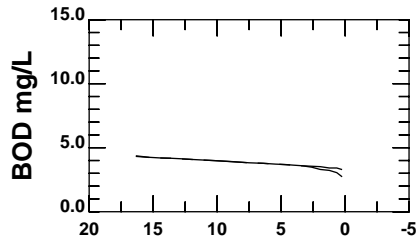
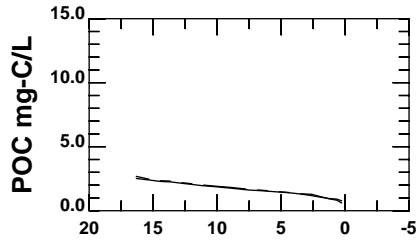
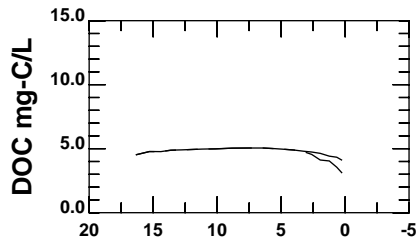
### MILE FROM MOUTH PASSAIC RIVER

DATA Mar 30-Apr 28,2000

	SURF	MID	BOT	
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

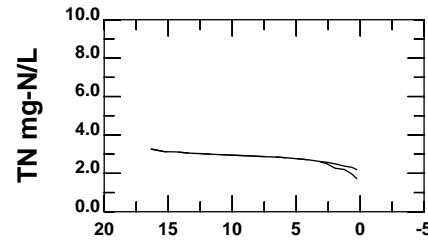
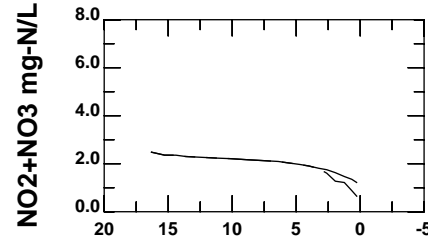
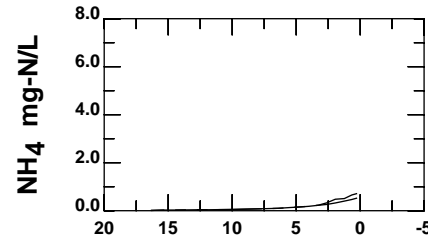
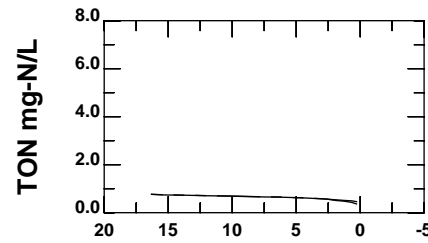
### MODEL

————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN



MILE FROM MOUTH PASSAIC RIVER

**PASSAIC RIVER**



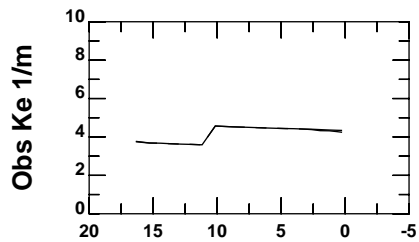
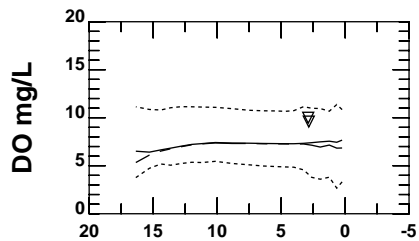
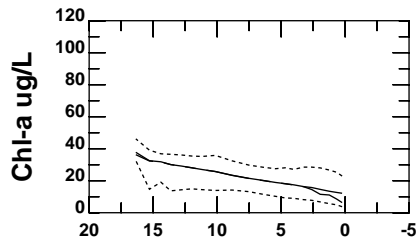
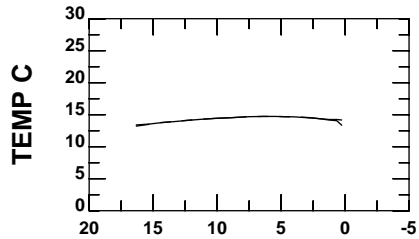
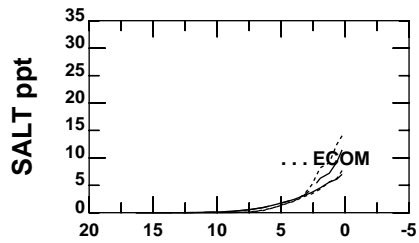
MILE FROM MOUTH PASSAIC RIVER

DATA Mar 30-Apr 28,2000

	SURF	MID	BOT	
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

MODEL

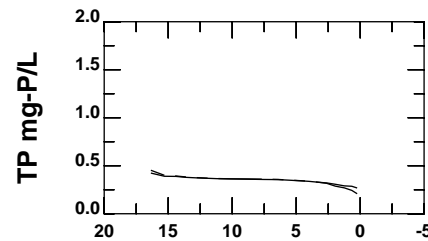
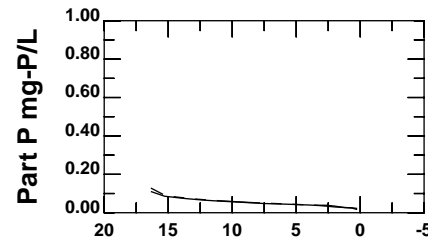
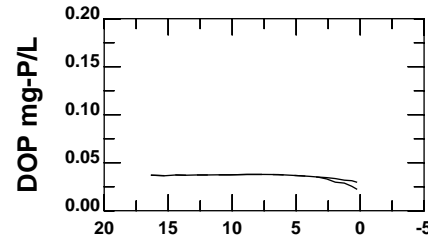
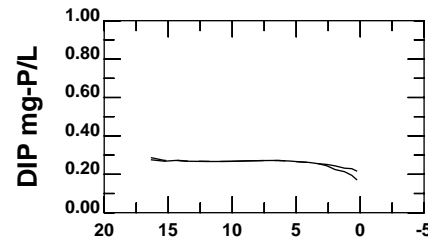
—	SURFACE 30-DAY MEAN
- - - -	BOTTOM 30-DAY MEAN
- - -	30-DAY SURFACE MAX OR BOTTOM MIN



MILE FROM MOUTH PASSAIC RIVER

### PASSAIC RIVER

DATE: 4/07/2006 TIME: 11:22:50



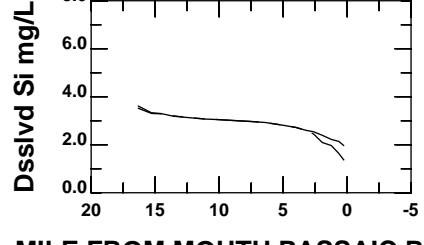
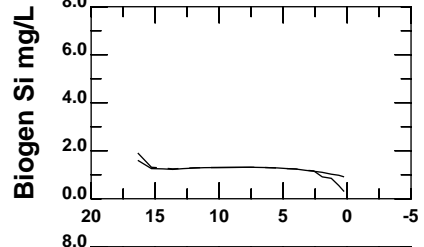
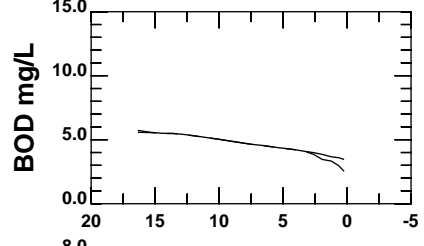
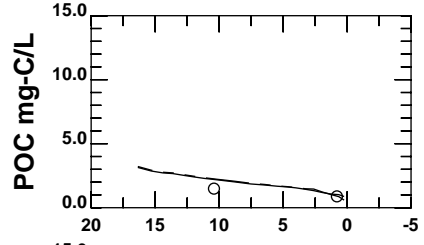
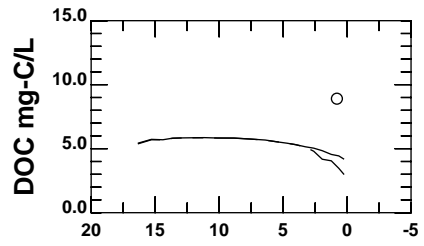
### MILE FROM MOUTH PASSAIC RIVER

DATA Apr 29-May 28,2000

	SURF MID BOT			
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

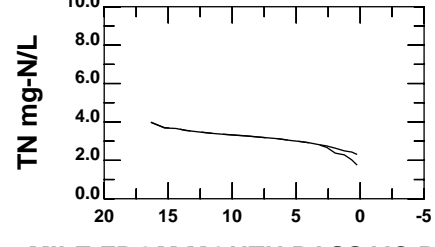
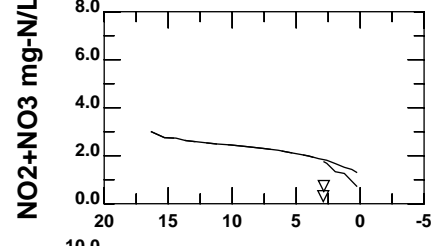
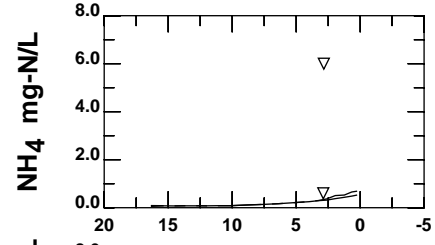
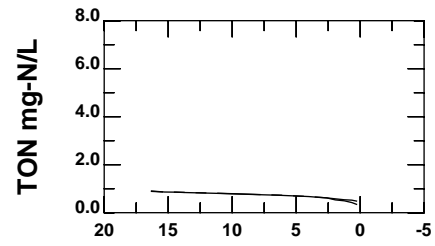
### MODEL

—	SURFACE 30-DAY MEAN
- - - -	BOTTOM 30-DAY MEAN
- · - ·	30-DAY SURFACE MAX OR BOTTOM MIN



MILE FROM MOUTH PASSAIC RIVER

**PASSAIC RIVER**

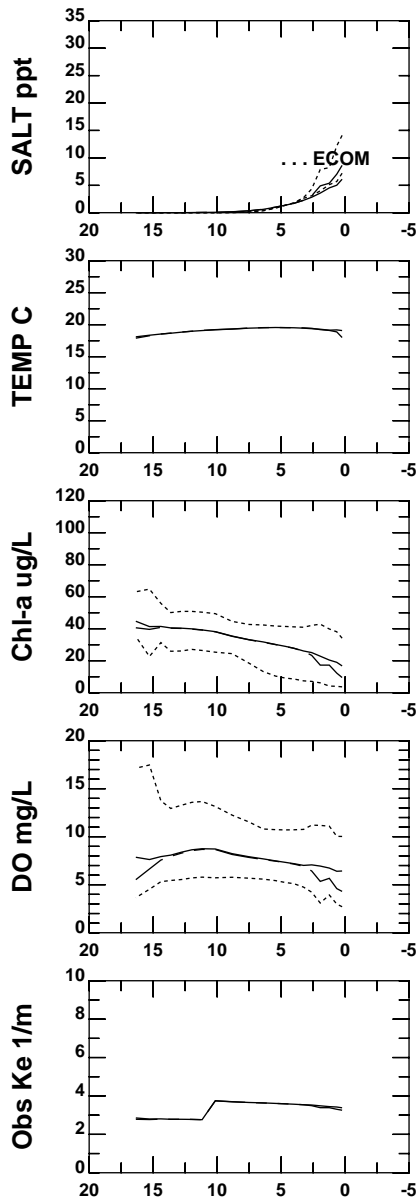


MILE FROM MOUTH PASSAIC RIVER  
DATA Apr 29-May 28,2000

	SURF MID BOT			
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

MODEL

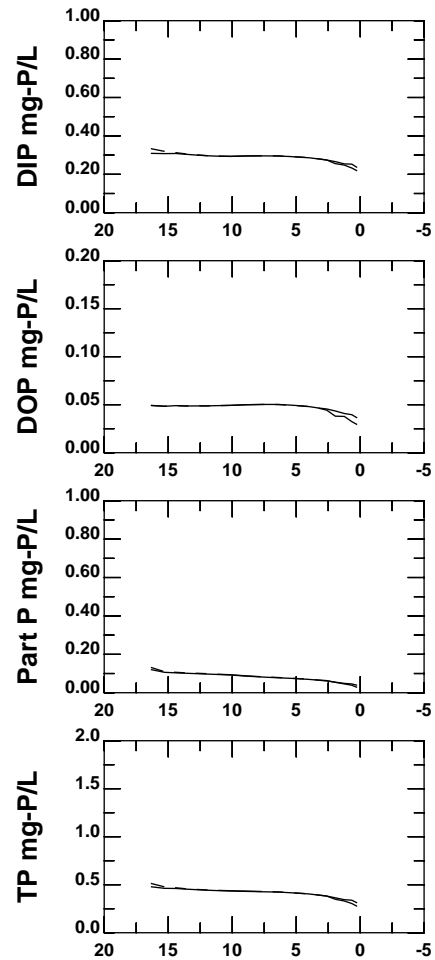
- SURFACE 30-DAY MEAN
- - - - - BOTTOM 30-DAY MEAN
- - - 30-DAY SURFACE MAX OR BOTTOM MIN



MILE FROM MOUTH PASSAIC RIVER

### PASSAIC RIVER

DATE: 4/07/2006 TIME: 11:22:54



### MILE FROM MOUTH PASSAIC RIVER

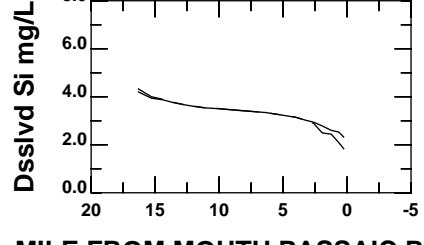
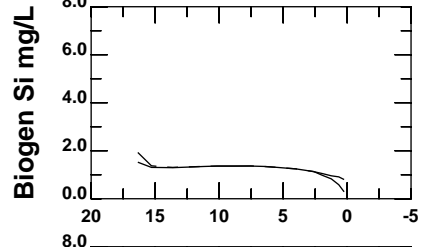
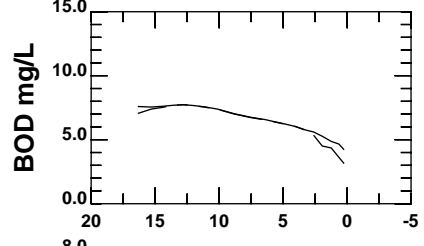
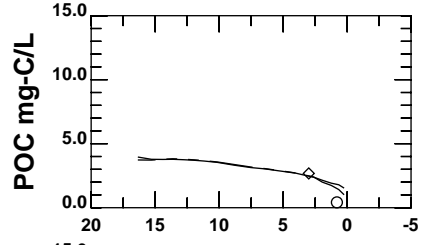
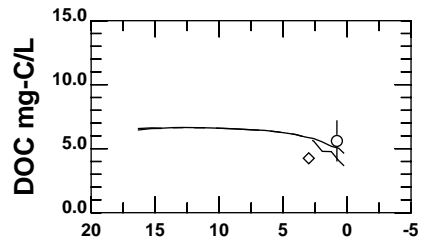
DATA May 29-Jun 27,2000

	SURF MID BOT			
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

### MODEL

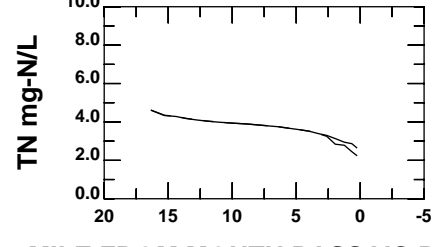
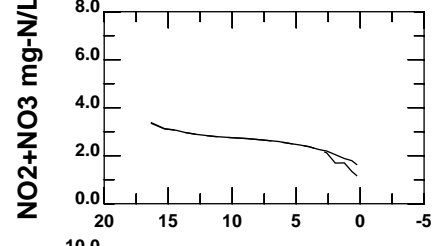
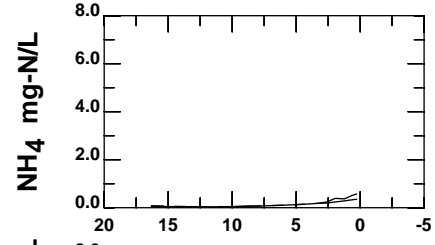
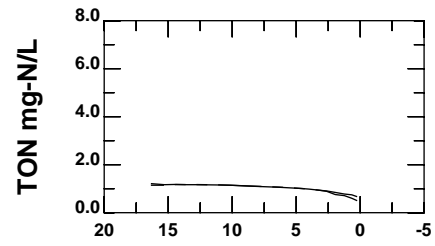
—	SURFACE 30-DAY MEAN
- - - -	BOTTOM 30-DAY MEAN
- · - ·	30-DAY SURFACE MAX OR BOTTOM MIN





MILE FROM MOUTH PASSAIC RIVER

### PASSAIC RIVER

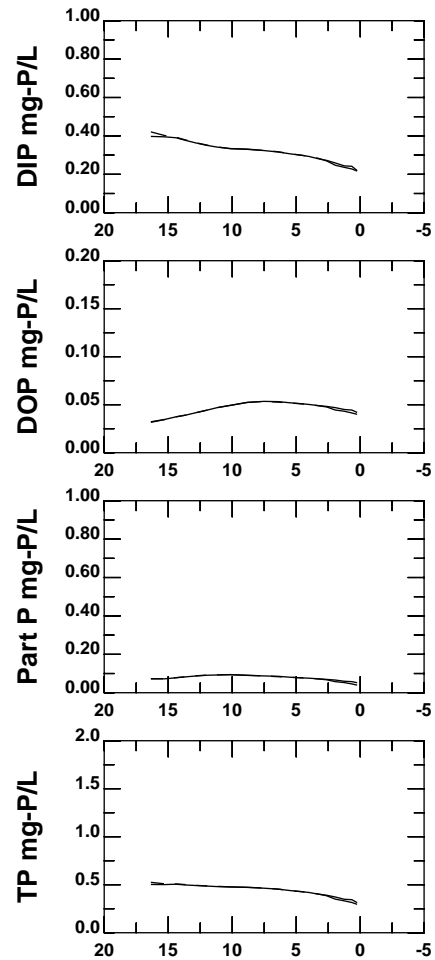
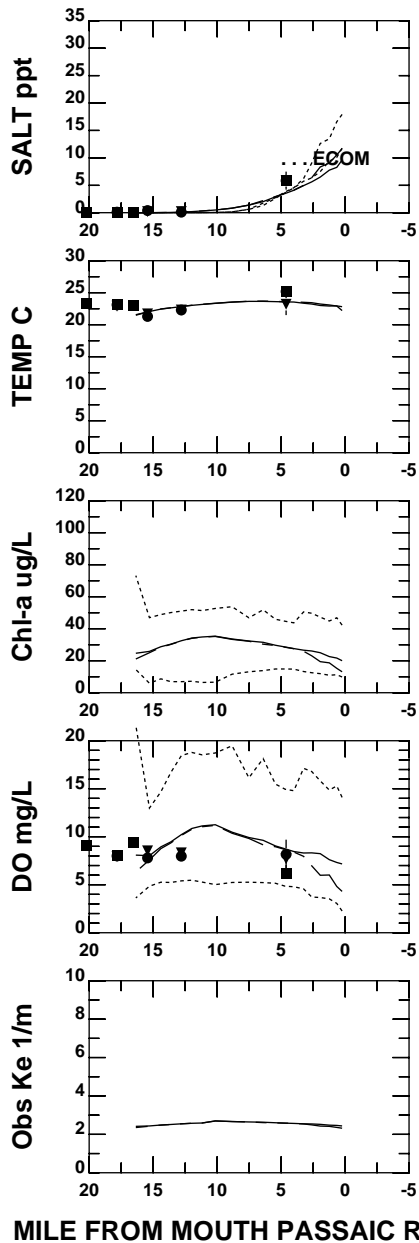


MILE FROM MOUTH PASSAIC RIVER  
DATA May 29-Jun 27,2000

	SURF MID BOT			
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

MODEL

- SURFACE 30-DAY MEAN
- - - - - BOTTOM 30-DAY MEAN
- - - 30-DAY SURFACE MAX OR BOTTOM MIN



**MILE FROM MOUTH PASSAIC RIVER**  
 DATA Jun 28-Jul 27,2000

	SURF		MID		BOT		
Harbor Survey	△				▲		Transect
	t				e		Embayment
NYSDEC	○						Transect
	c						Embayment
NJSIT	◇						Transect
	p						Embayment
PVSC	●		■		▼		Transect
	u		m		b		Embayment
MERI	▽						Transect
	s						Embayment

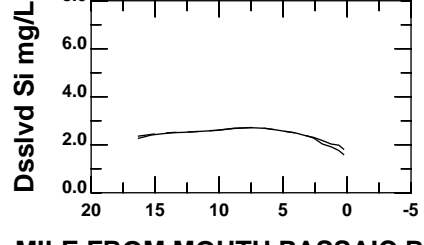
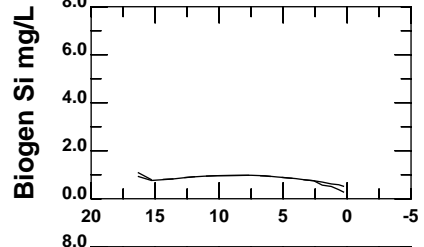
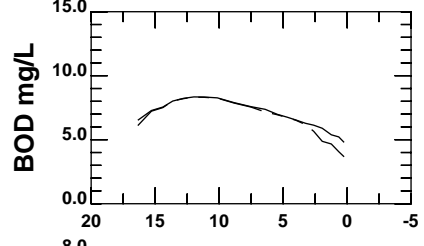
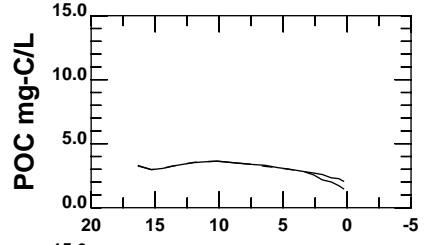
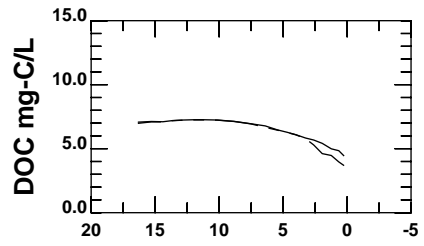
**MODEL**

———— SURFACE 30-DAY MEAN

----- BOTTOM 30-DAY MEAN

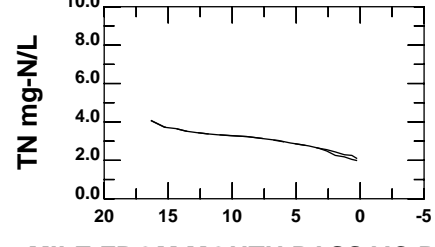
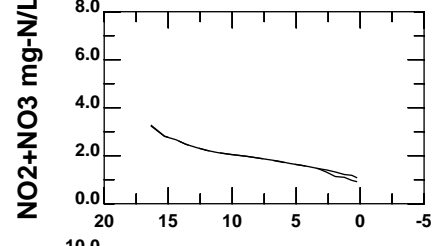
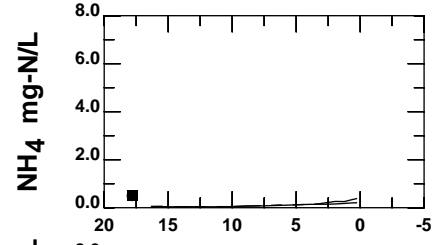
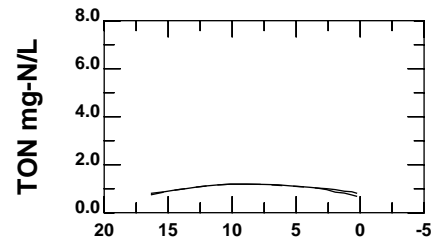
- - - 30-DAY SURFACE MAX OR BOTTOM MIN

**PASSAIC RIVER**



MILE FROM MOUTH PASSAIC RIVER

# PASSAIC RIVER

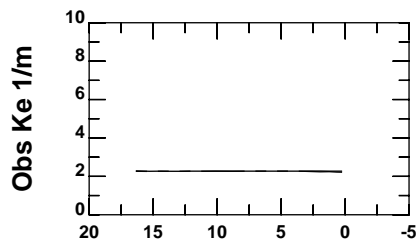
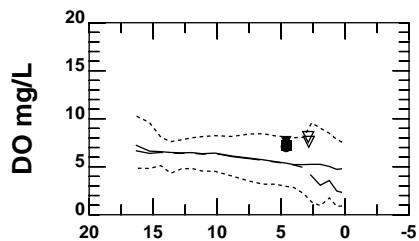
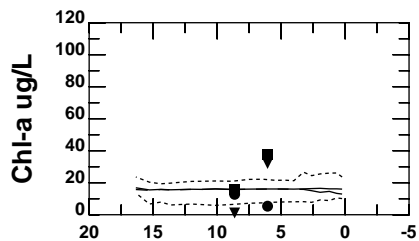
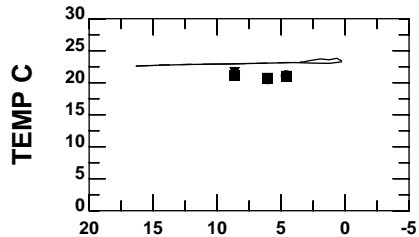
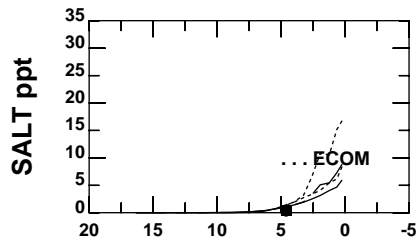


MILE FROM MOUTH PASSAIC RIVER  
DATA Jun 28-Jul 27,2000

	SURF	MID	BOT	
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

MODEL

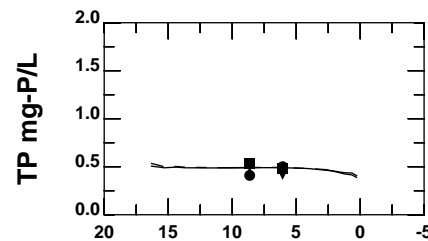
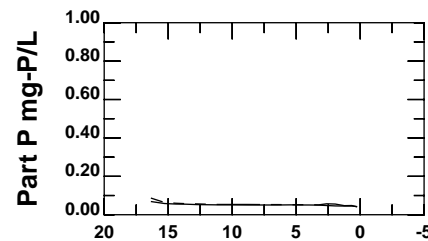
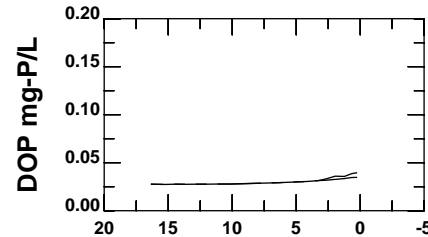
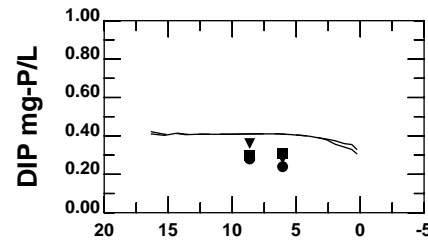
- SURFACE 30-DAY MEAN
- - - - - BOTTOM 30-DAY MEAN
- — — 30-DAY SURFACE MAX OR BOTTOM MIN



MILE FROM MOUTH PASSAIC RIVER

### PASSAIC RIVER

DATE: 4/07/2006 TIME: 11:23: 3



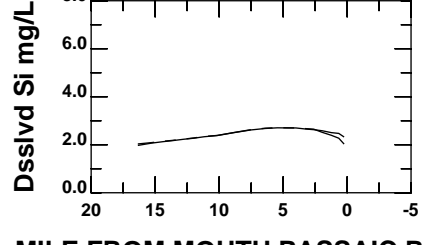
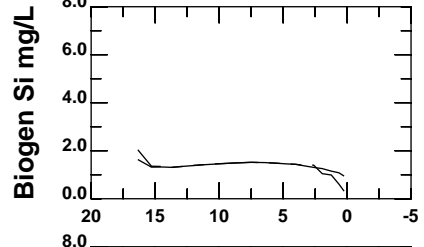
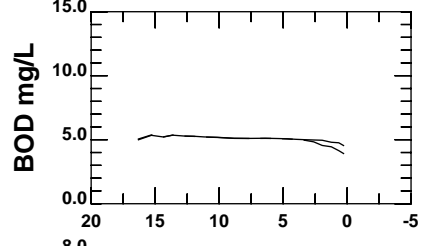
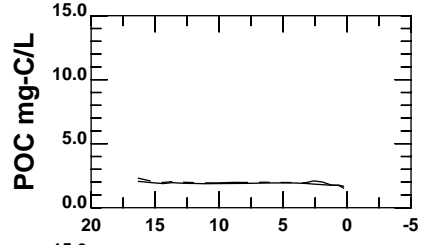
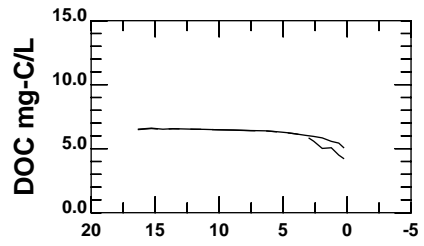
### MILE FROM MOUTH PASSAIC RIVER

DATA Jul 27-Aug 26,2000

	SURF MID BOT			
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

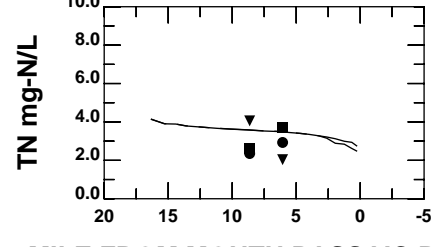
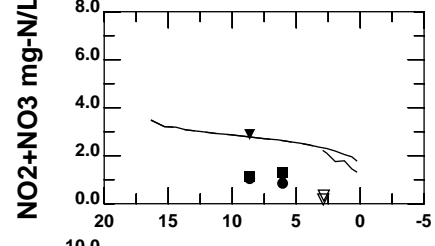
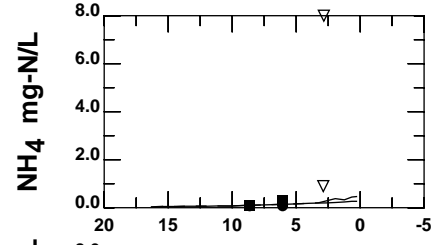
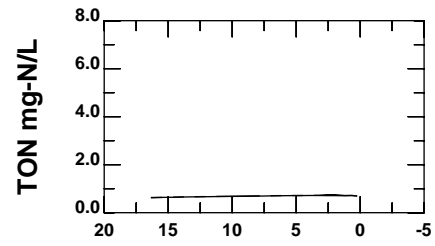
### MODEL

—	SURFACE 30-DAY MEAN
- - - -	BOTTOM 30-DAY MEAN
- · - ·	30-DAY SURFACE MAX OR BOTTOM MIN



MILE FROM MOUTH PASSAIC RIVER

# PASSAIC RIVER

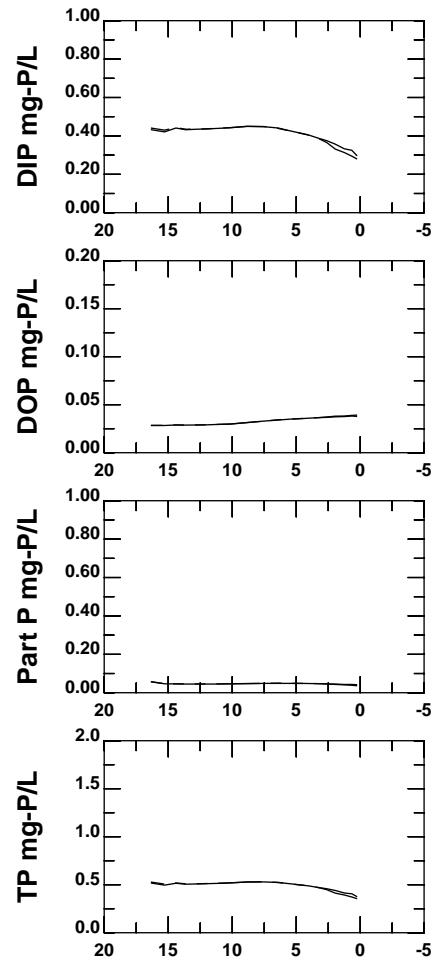
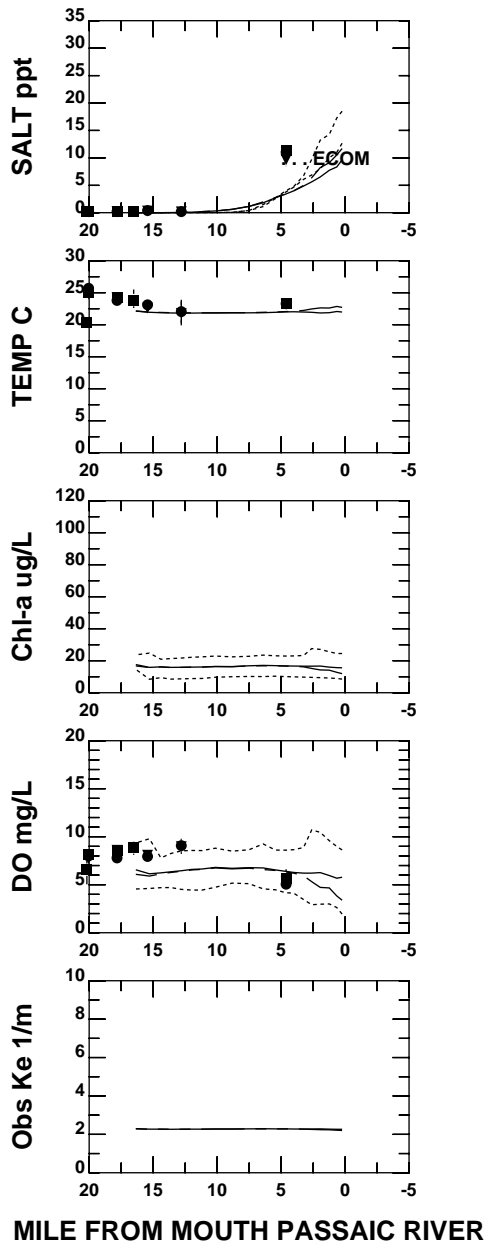


MILE FROM MOUTH PASSAIC RIVER  
DATA Jul 27-Aug 26,2000

	SURF	MID	BOT	
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

MODEL

- SURFACE 30-DAY MEAN
- - - - - BOTTOM 30-DAY MEAN
- - - 30-DAY SURFACE MAX OR BOTTOM MIN

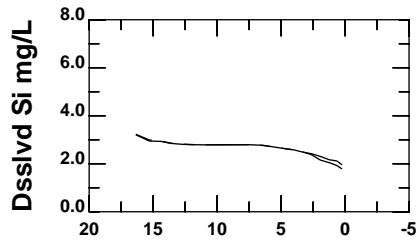
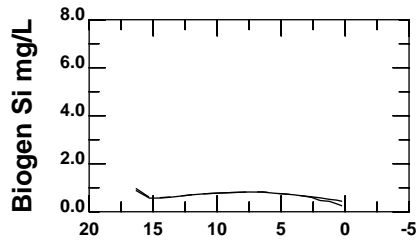
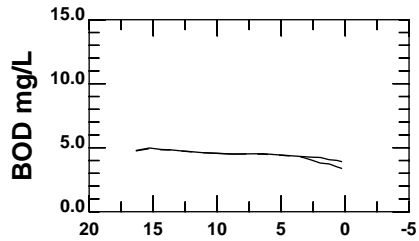
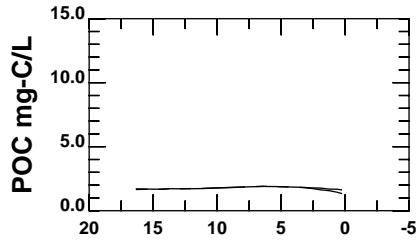
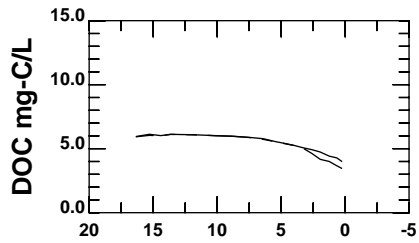


**MILE FROM MOUTH PASSAIC RIVER**  
 DATA Aug 27-Sep 25,2000

	SURF MID BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment
PVSC	●	■	Transect
	u	m	Embayment
MERI	▽		Transect
	s		Embayment

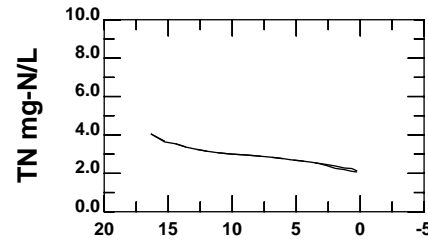
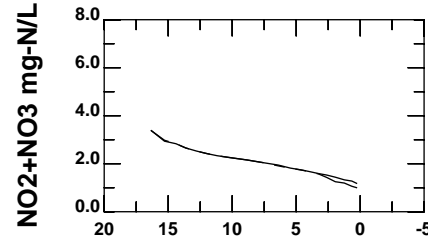
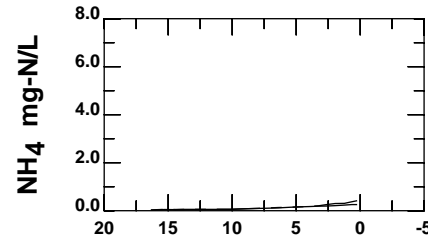
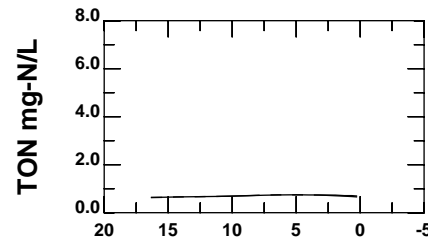
MODEL	
————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

**PASSAIC RIVER**



MILE FROM MOUTH PASSAIC RIVER

**PASSAIC RIVER**

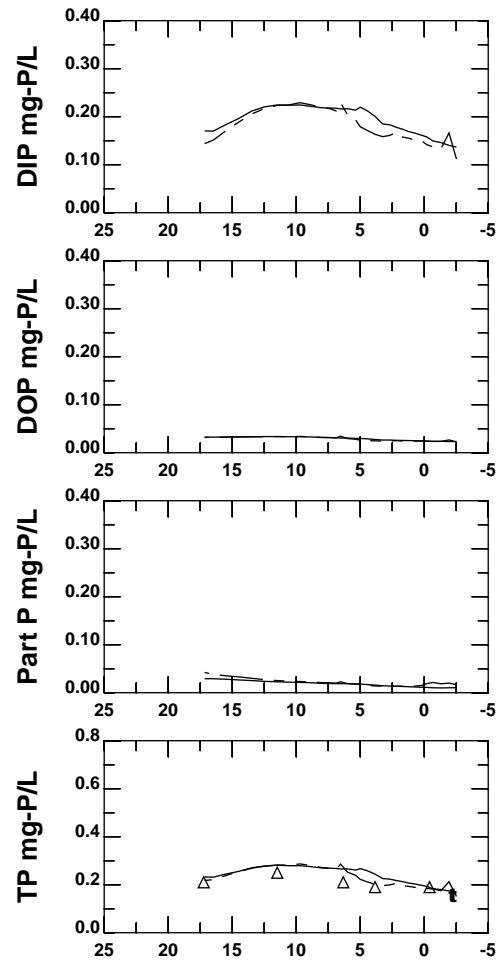
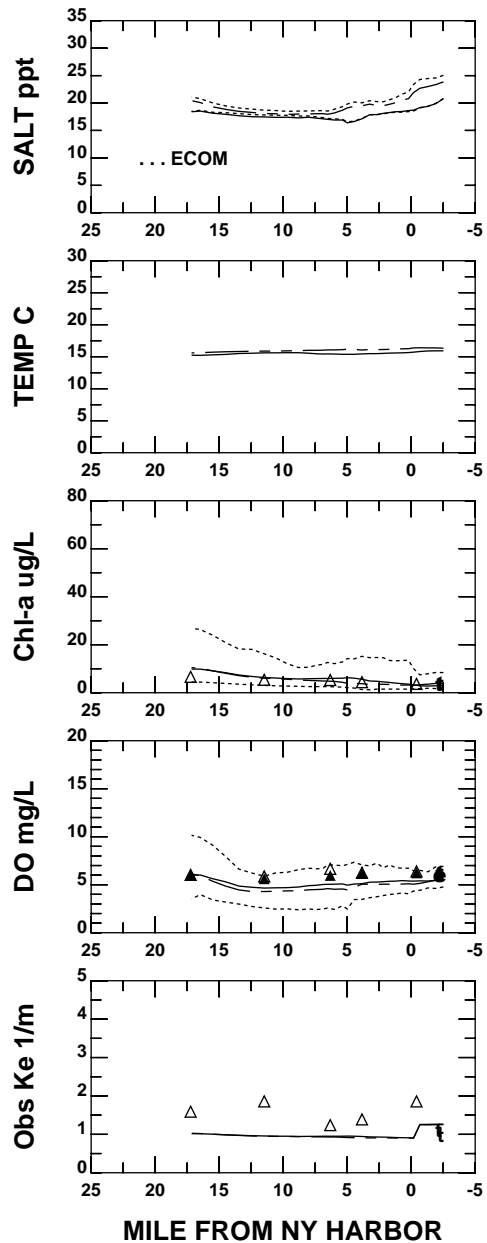


MILE FROM MOUTH PASSAIC RIVER  
DATA Aug 27-Sep 25,2000

	SURF	MID	BOT	
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

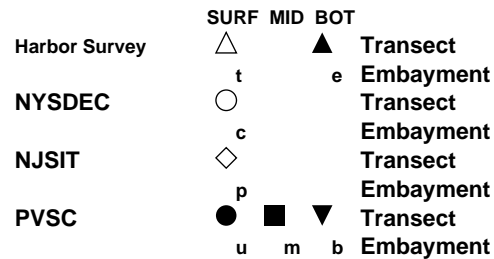
MODEL

- SURFACE 30-DAY MEAN
- - - - - BOTTOM 30-DAY MEAN
- - - 30-DAY SURFACE MAX OR BOTTOM MIN

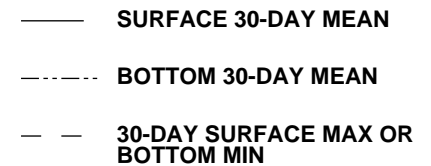


**MILE FROM UPPER NY BAY**

DATA Oct 1-30,1999

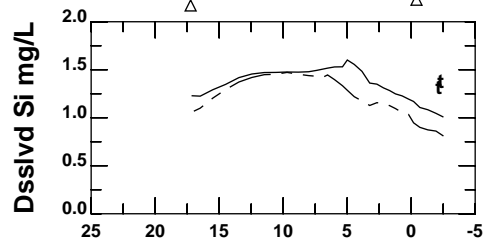
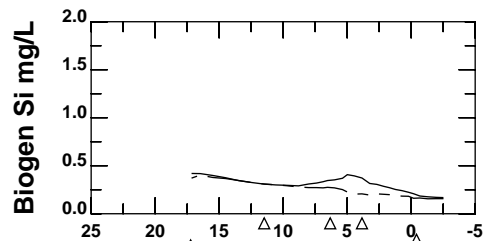
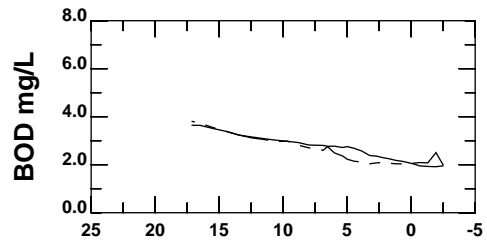
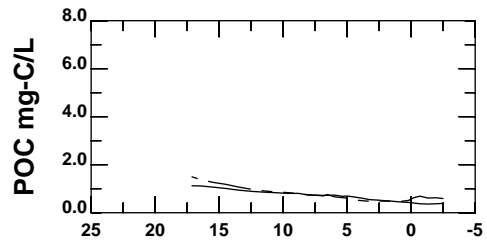
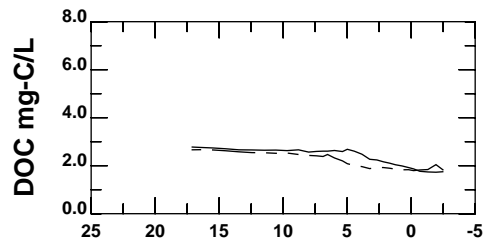


**MODEL**

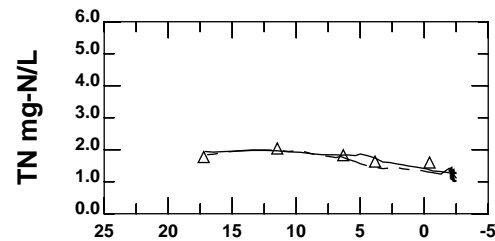
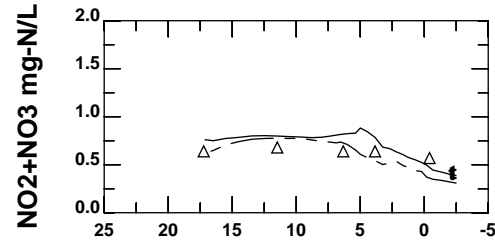
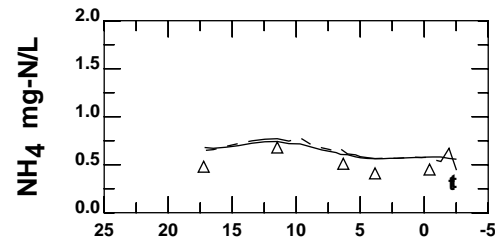
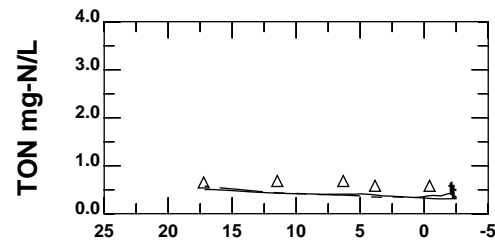


**ARTHUR KILL AND KILL VAN KULL**



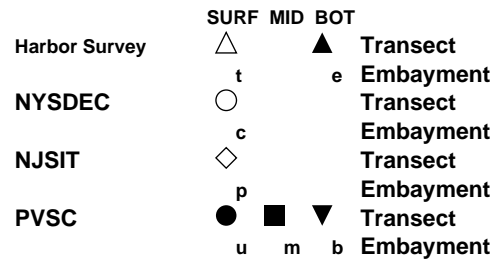


MILE FROM NY HARBOR

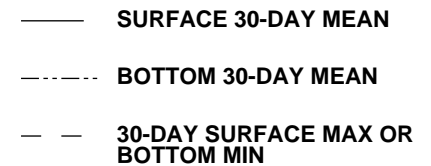


MILE FROM UPPER NY BAY

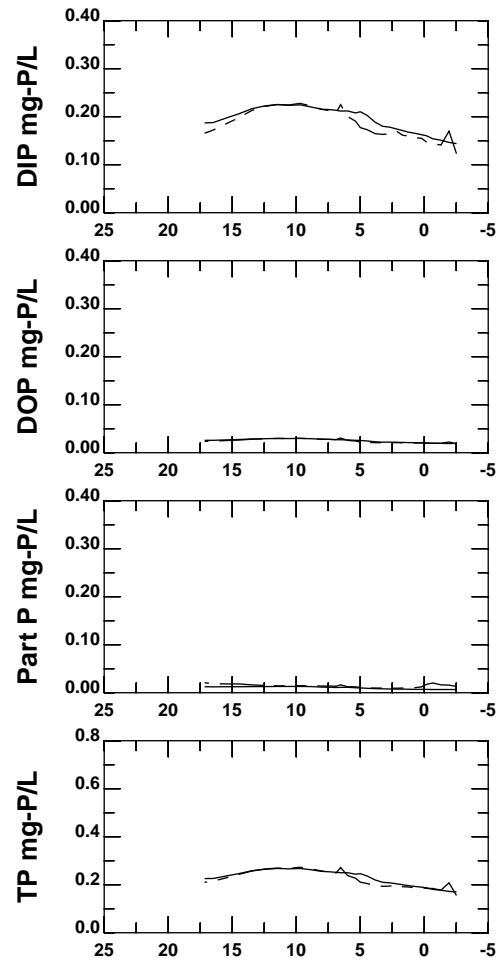
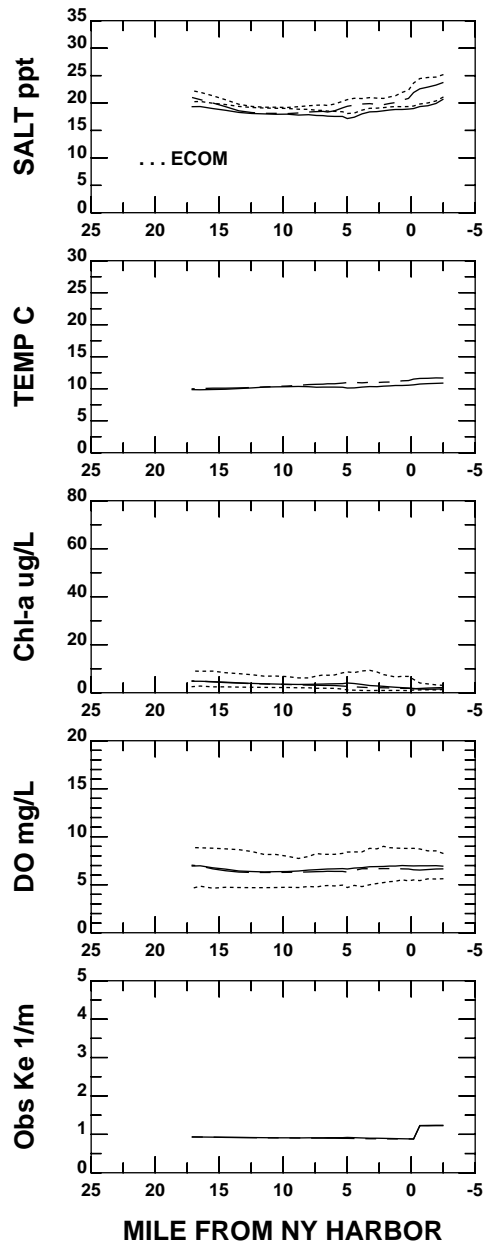
DATA Oct 1-30, 1999



MODEL



# ARTHUR KILL AND KILL VAN KULL



**MILE FROM UPPER NY BAY**

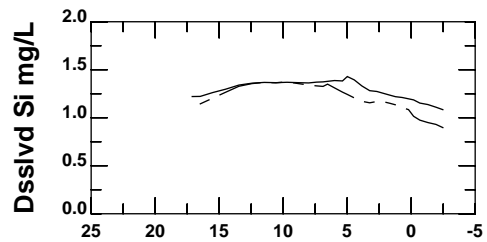
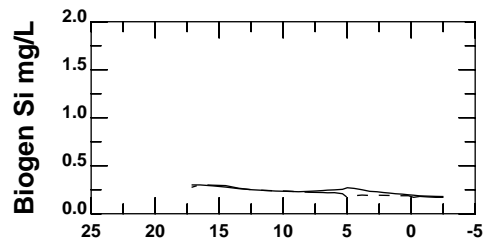
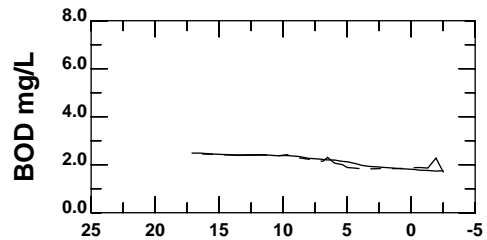
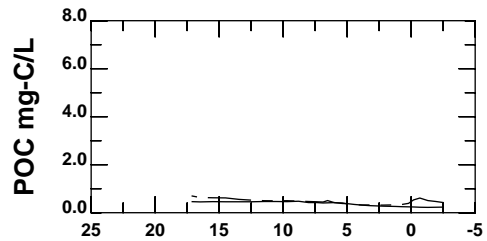
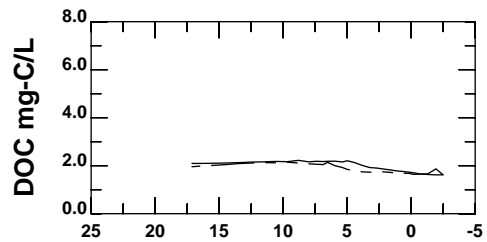
DATA Oct 31-Nov 29, 1999

	SURF		MID		BOT	
Harbor Survey	△				▲	Transect
NYSDEC	t				e	Embayment
	○					Transect
	c					Embayment
NJSIT	◇					Transect
	p					Embayment
PVSC	●	■			▼	Transect
	u	m			b	Embayment

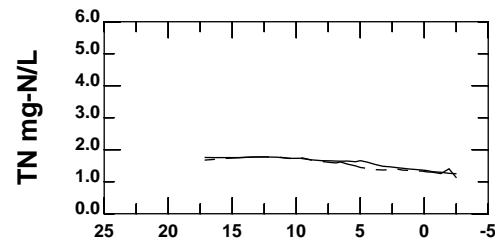
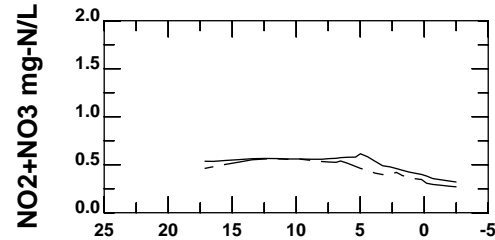
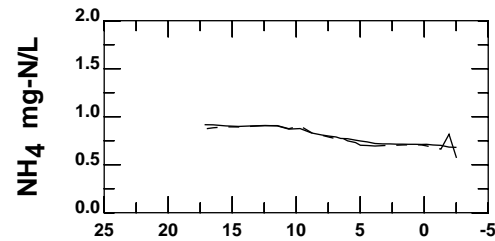
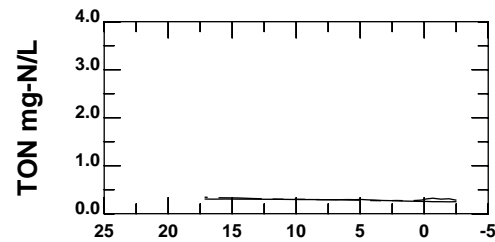
**MODEL**

————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

**ARTHUR KILL AND KILL VAN KULL**

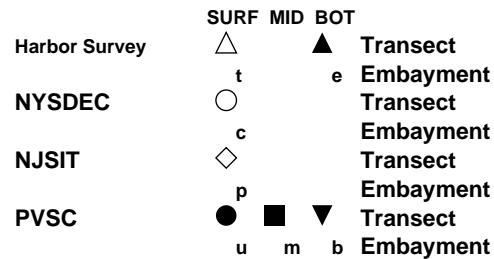


MILE FROM NY HARBOR

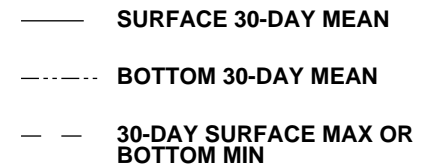


MILE FROM UPPER NY BAY

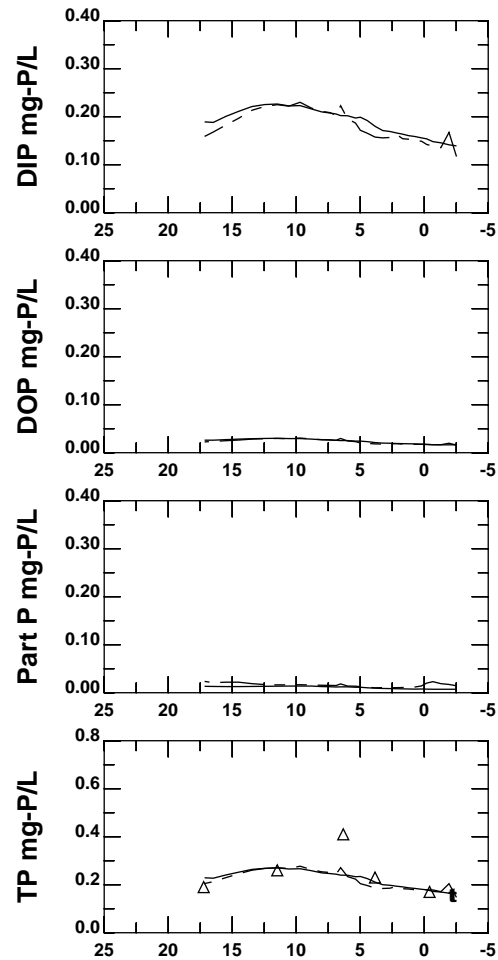
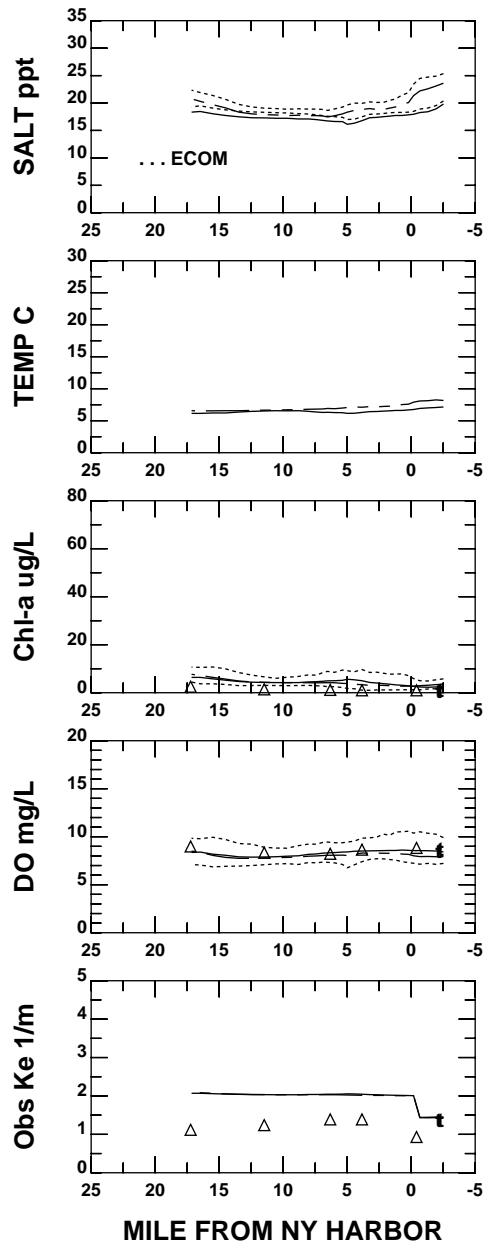
DATA Oct 31-Nov 29, 1999



MODEL



ARTHUR KILL AND KILL VAN KULL



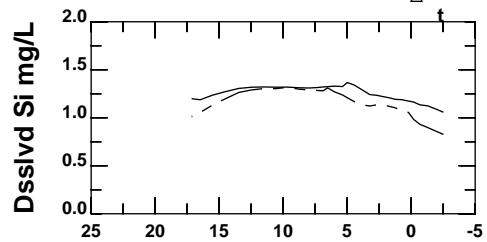
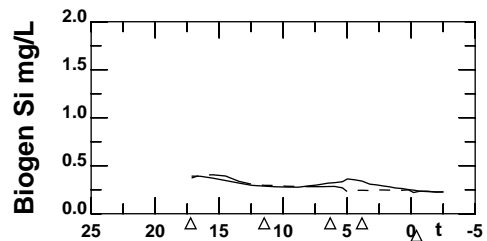
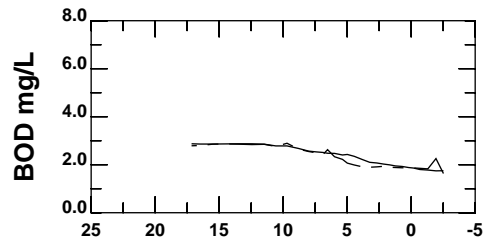
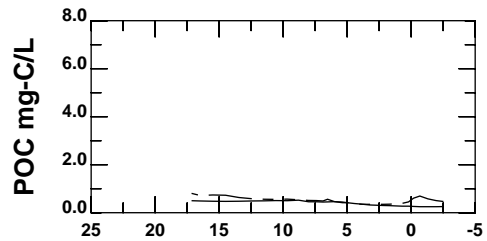
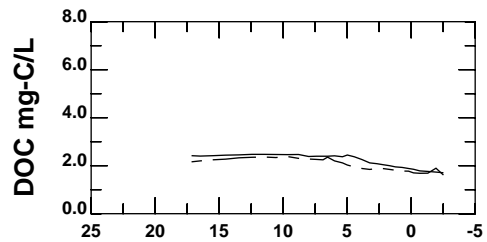
DATA Nov 30-Dec 29, 1999

	SURF MID BOT		
Harbor Survey	△	▲	Transect
NYSDEC	t	e	Embayment
	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment
PVSC	●	■	Transect
	u	m	Embayment
		▼	Transect
		b	Embayment

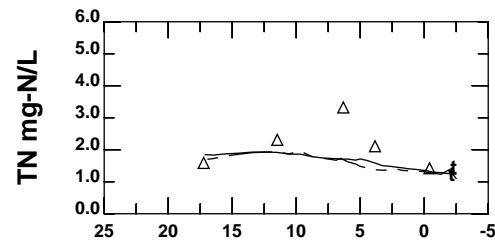
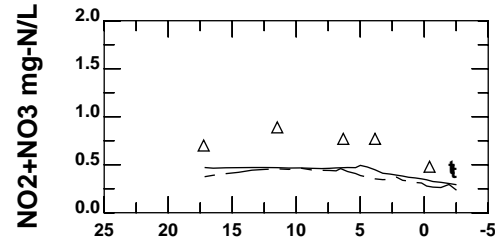
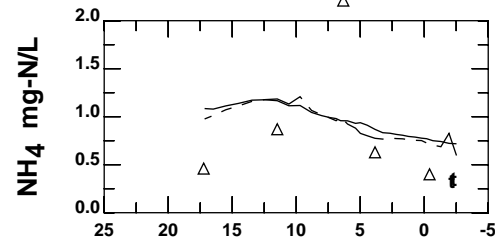
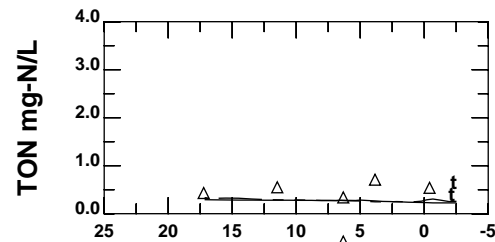
MODEL

————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

**ARTHUR KILL AND KILL VAN KULL**

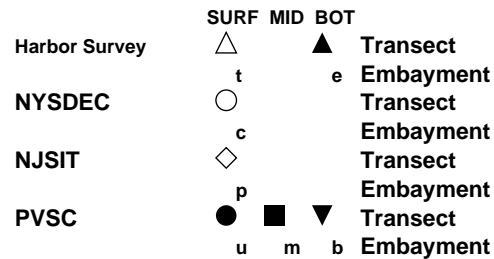


MILE FROM NY HARBOR

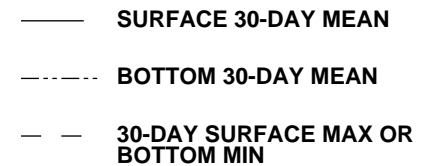


MILE FROM UPPER NY BAY

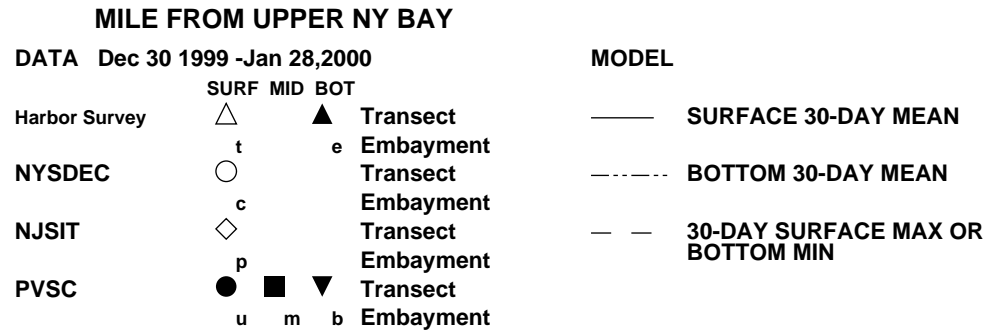
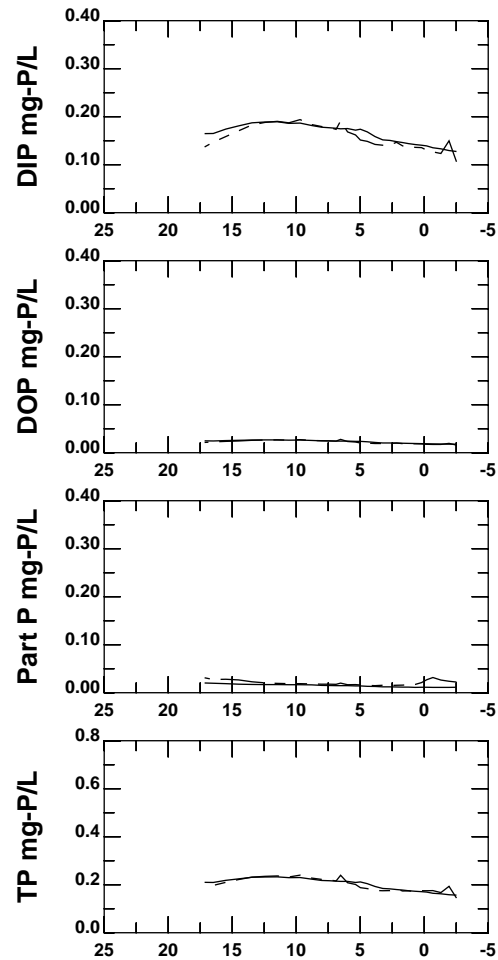
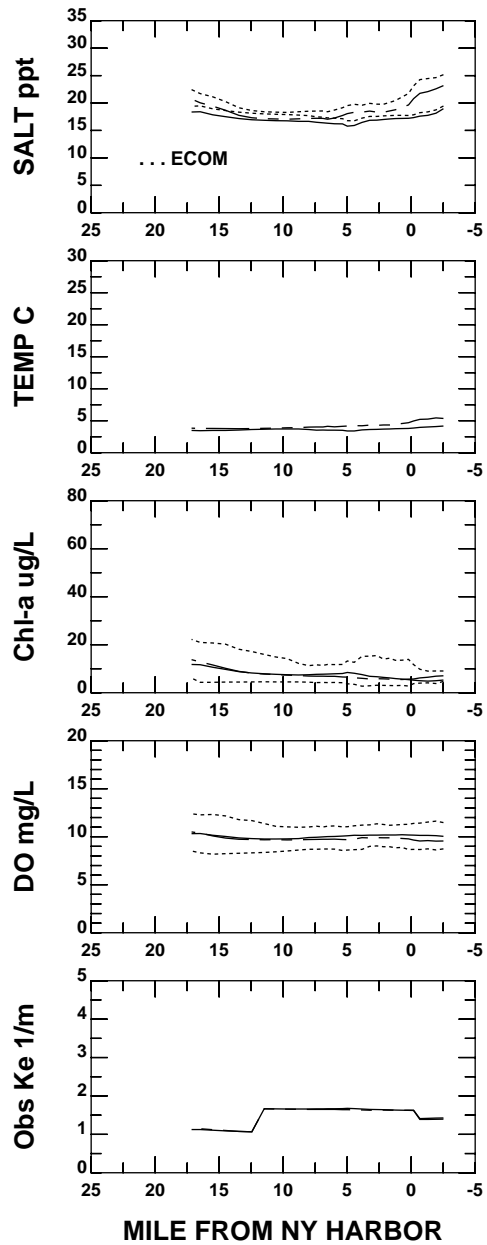
DATA Nov 30-Dec 29, 1999



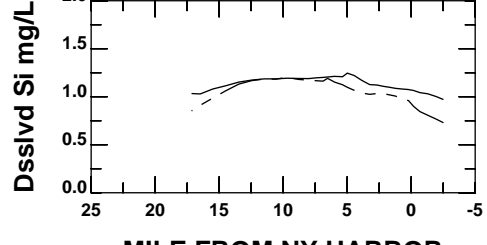
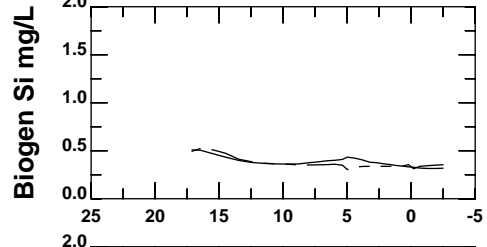
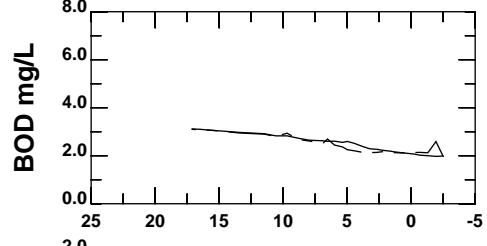
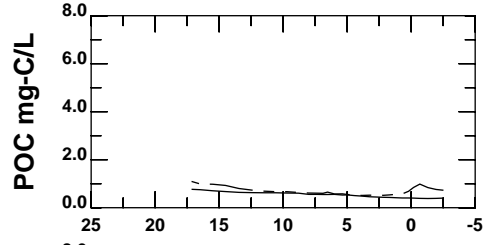
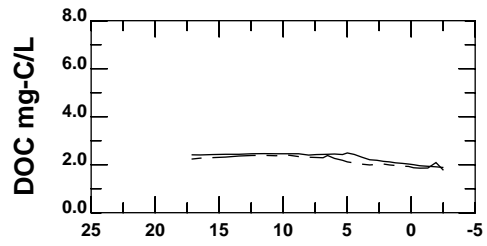
MODEL



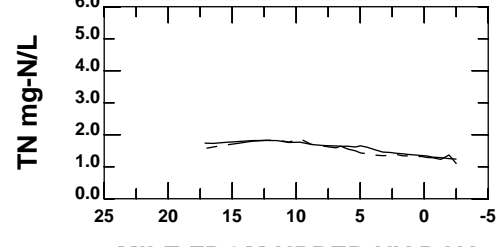
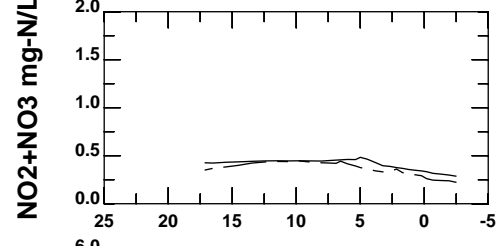
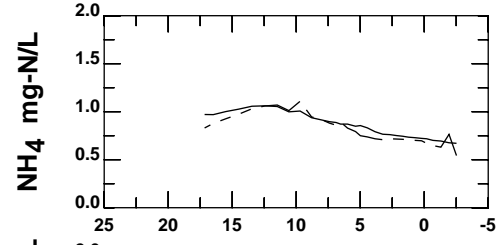
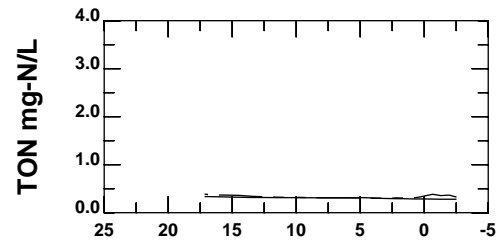
ARTHUR KILL AND KILL VAN KULL



**ARTHUR KILL AND KILL VAN KULL**



MILE FROM NY HARBOR



MILE FROM UPPER NY BAY

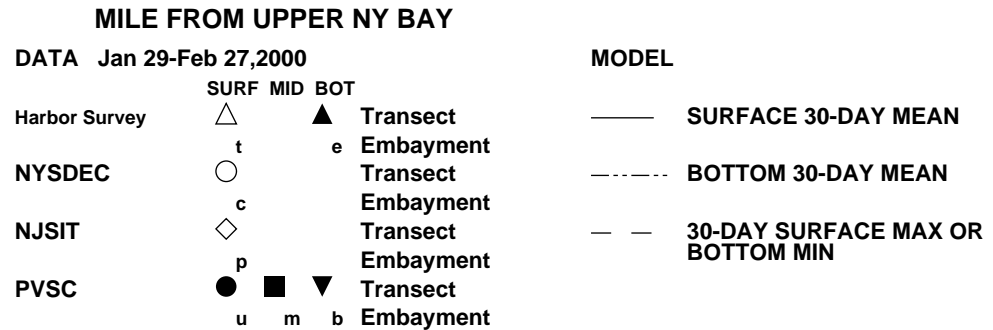
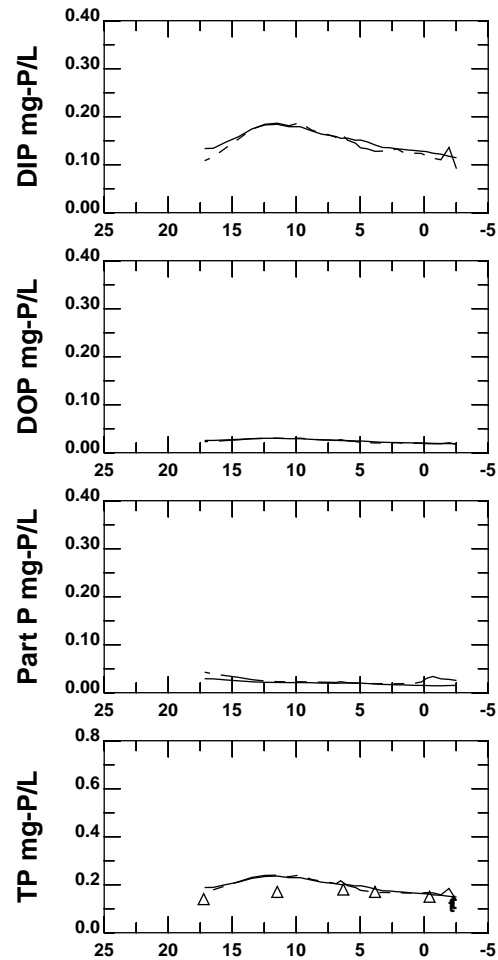
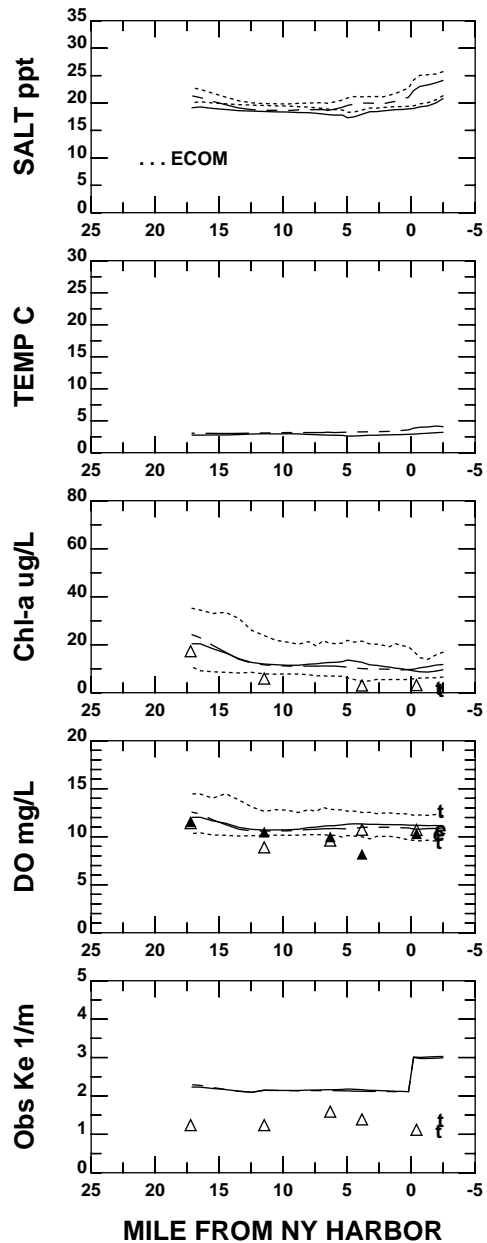
DATA Dec 30 1999 -Jan 28,2000

	SURF MID BOT			
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment

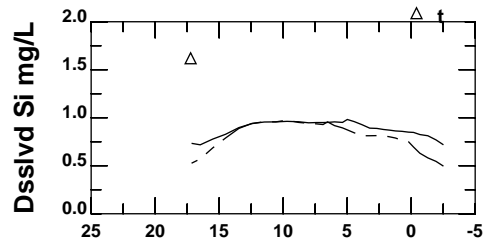
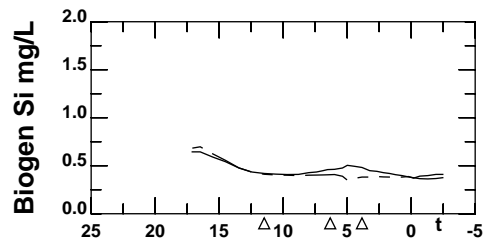
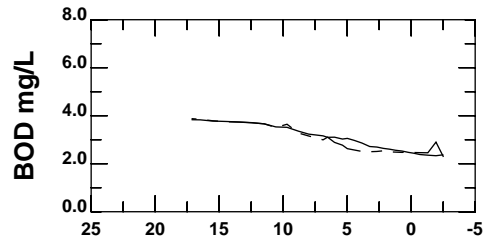
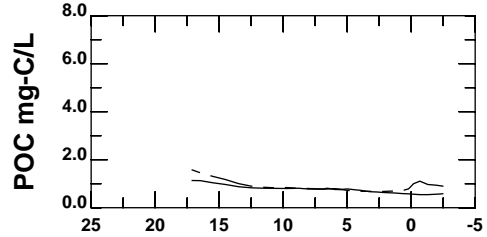
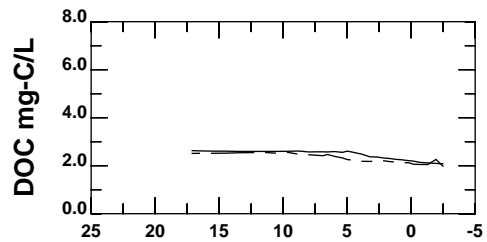
MODEL

————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

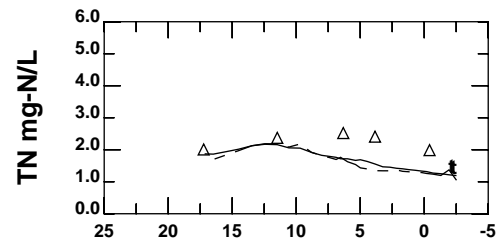
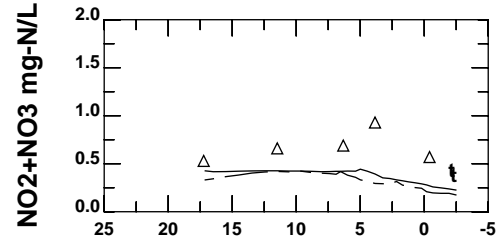
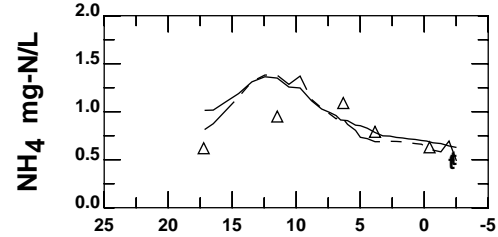
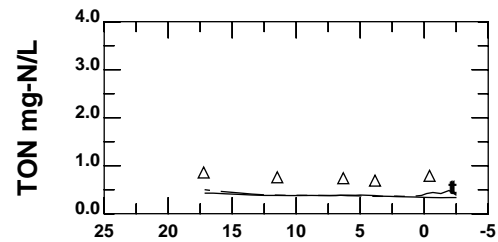
ARTHUR KILL AND KILL VAN KULL





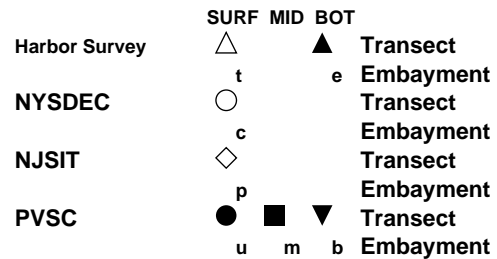


MILE FROM NY HARBOR

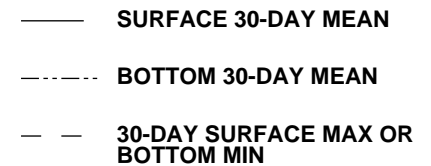


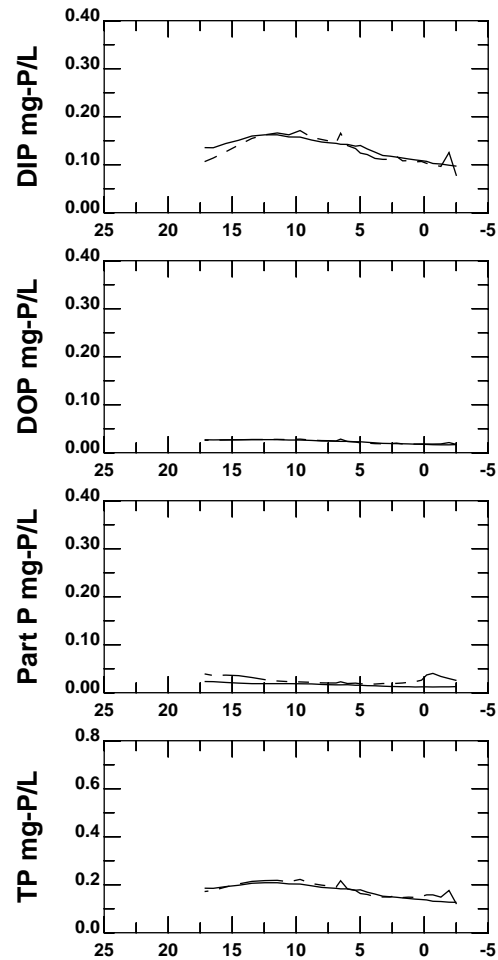
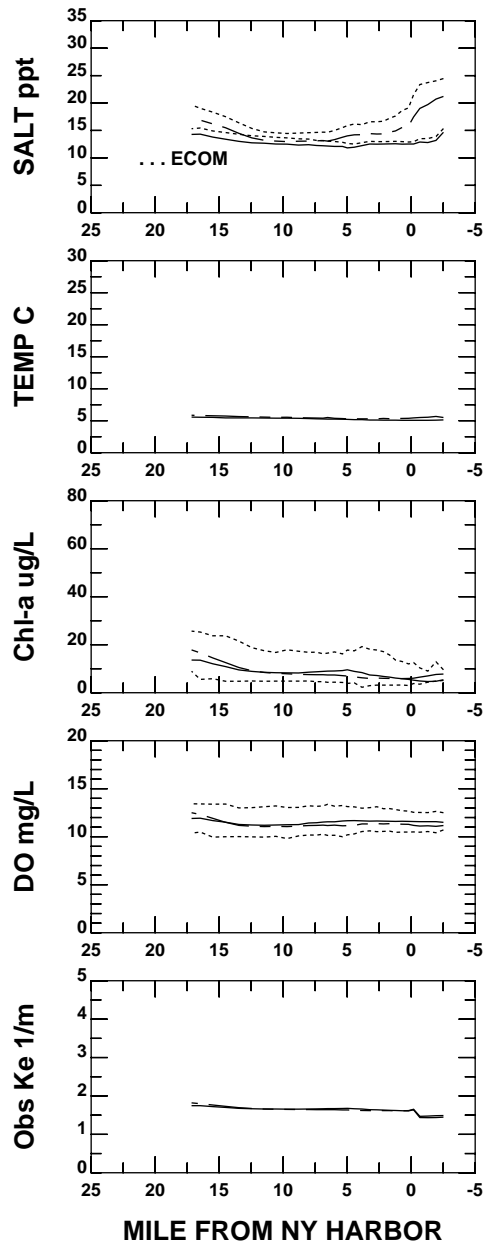
MILE FROM UPPER NY BAY

DATA Jan 29-Feb 27, 2000



MODEL





**MILE FROM UPPER NY BAY**

DATA Feb 28-Mar 29, 2000

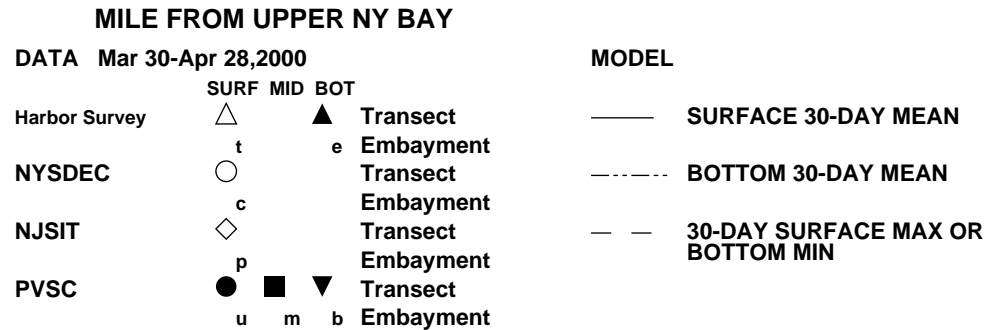
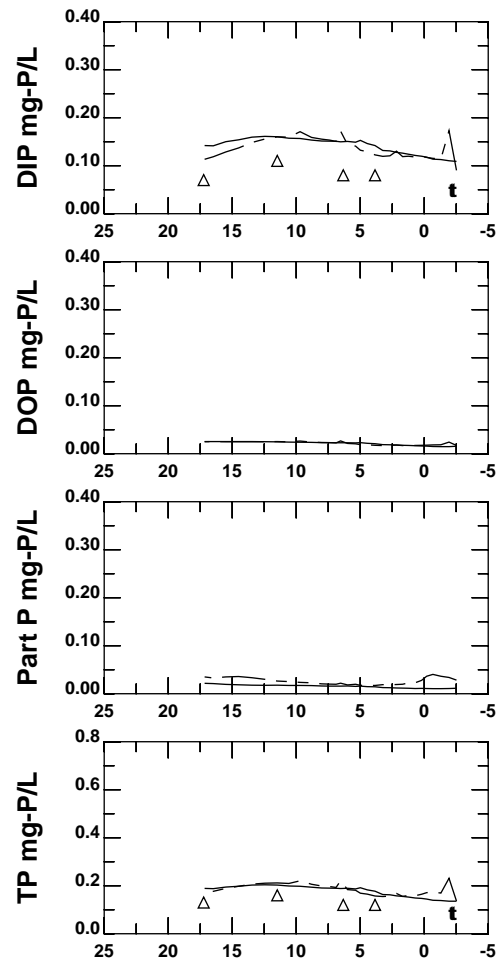
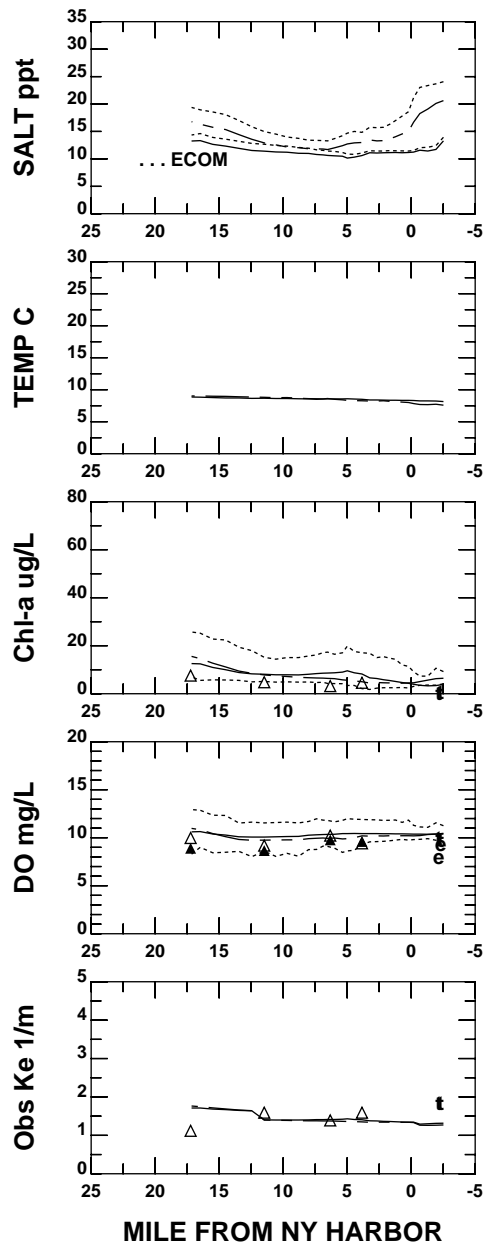
- |               |              |   |           |
|---------------|--------------|---|-----------|
|               | SURF MID BOT |   |           |
| Harbor Survey | △            | ▲ | Transect  |
|               | t            | e | Embayment |
| NYSDEC        | ○            |   | Transect  |
|               | c            |   | Embayment |
| NJSIT         | ◇            |   | Transect  |
|               | p            |   | Embayment |
| PVSC          | ●            | ■ | Transect  |
|               | u            | m | Embayment |
|               |              | ▼ | Transect  |
|               |              | b | Embayment |

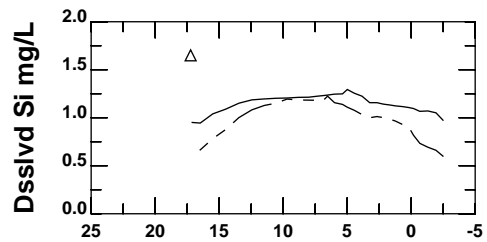
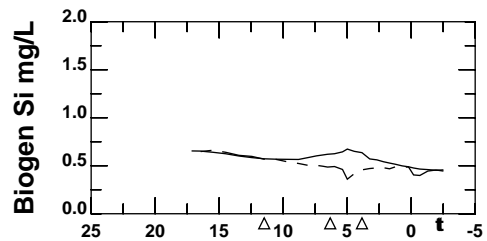
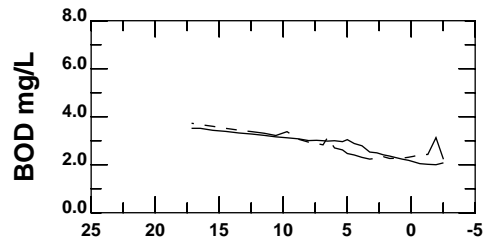
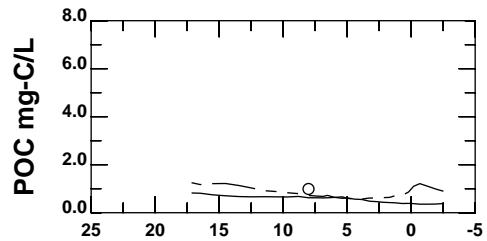
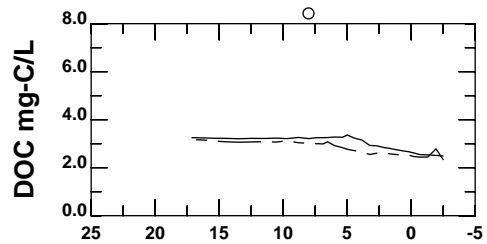
**MODEL**

- |         |                                  |
|---------|----------------------------------|
| ————    | SURFACE 30-DAY MEAN              |
| -----   | BOTTOM 30-DAY MEAN               |
| - - - - | 30-DAY SURFACE MAX OR BOTTOM MIN |

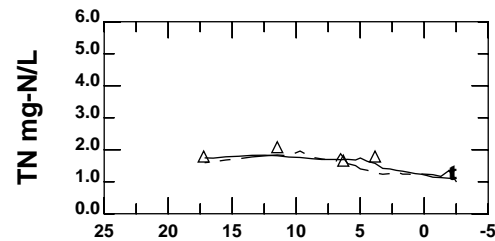
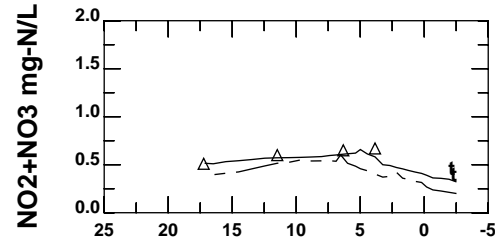
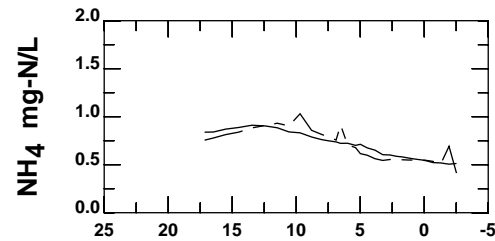
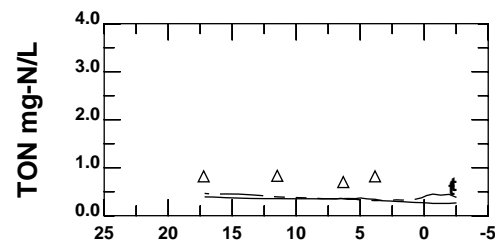
**ARTHUR KILL AND KILL VAN KULL**





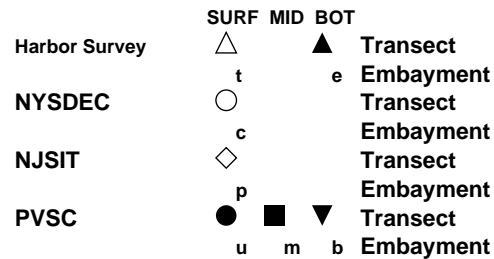


MILE FROM NY HARBOR

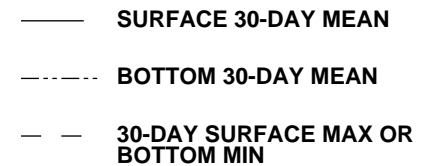


MILE FROM UPPER NY BAY

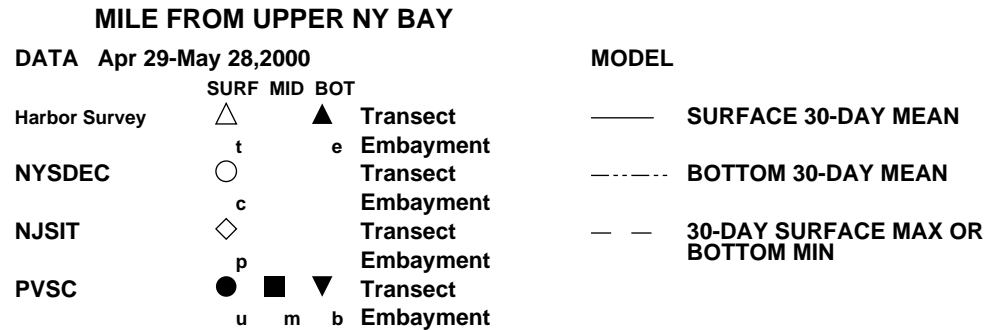
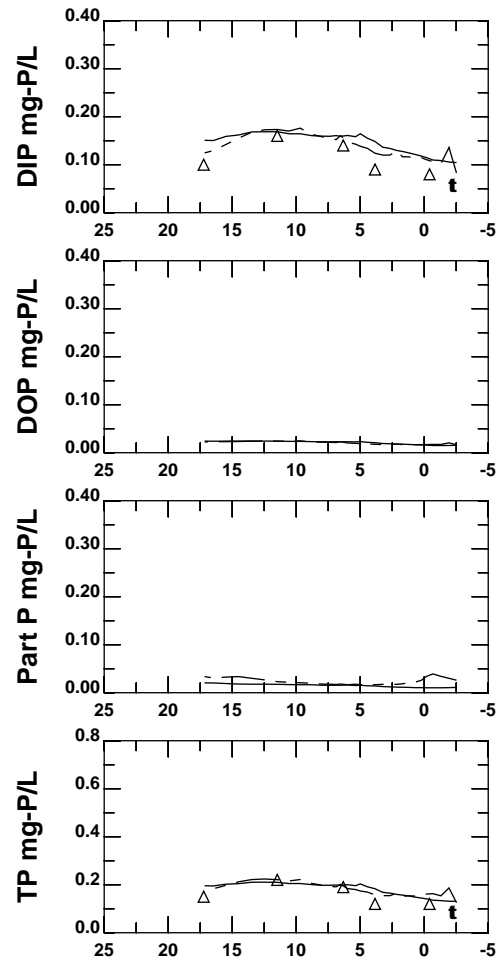
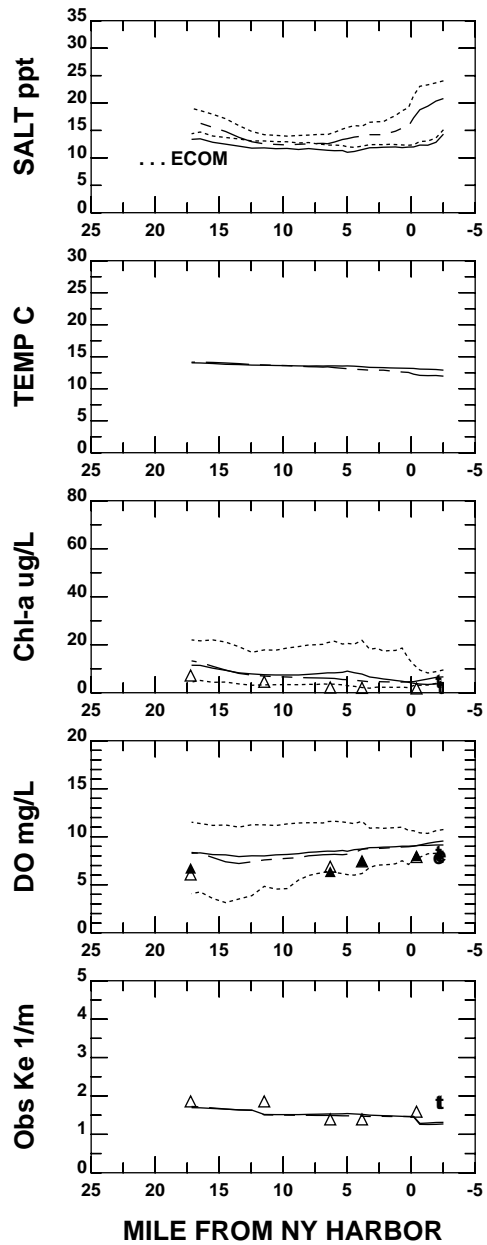
DATA Mar 30-Apr 28, 2000

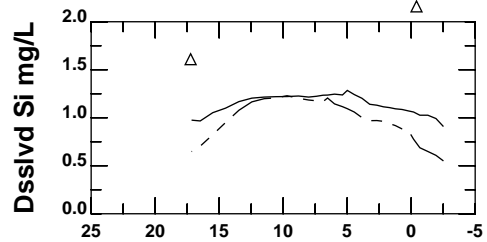
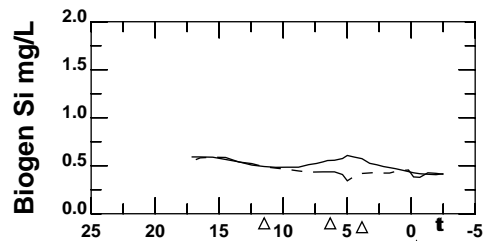
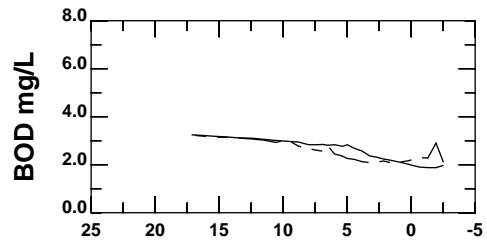
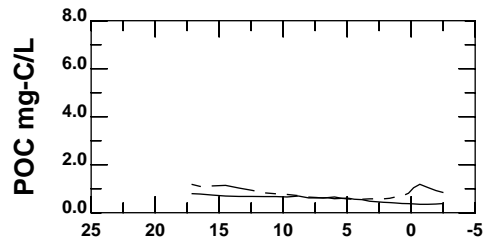
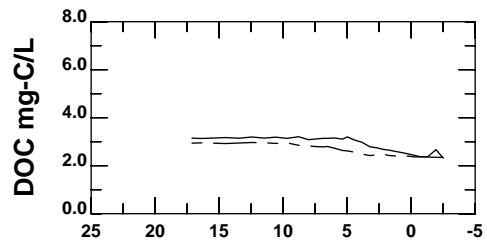


MODEL

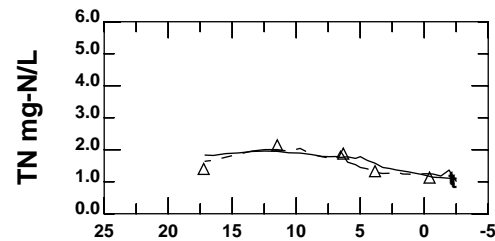
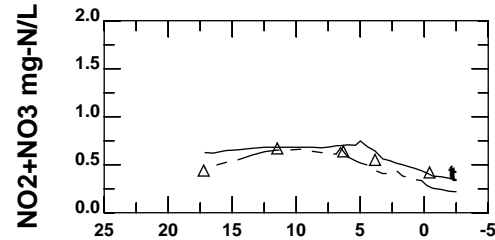
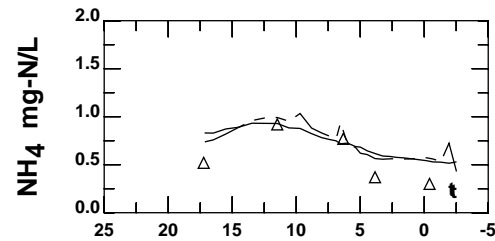
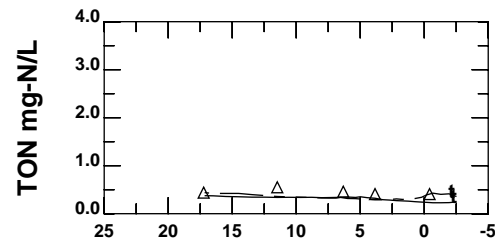


ARTHUR KILL AND KILL VAN KULL



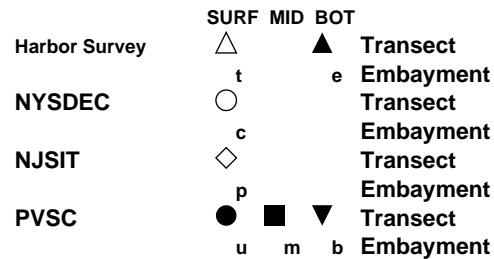


MILE FROM NY HARBOR

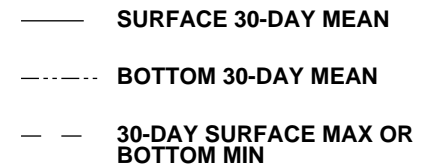


MILE FROM UPPER NY BAY

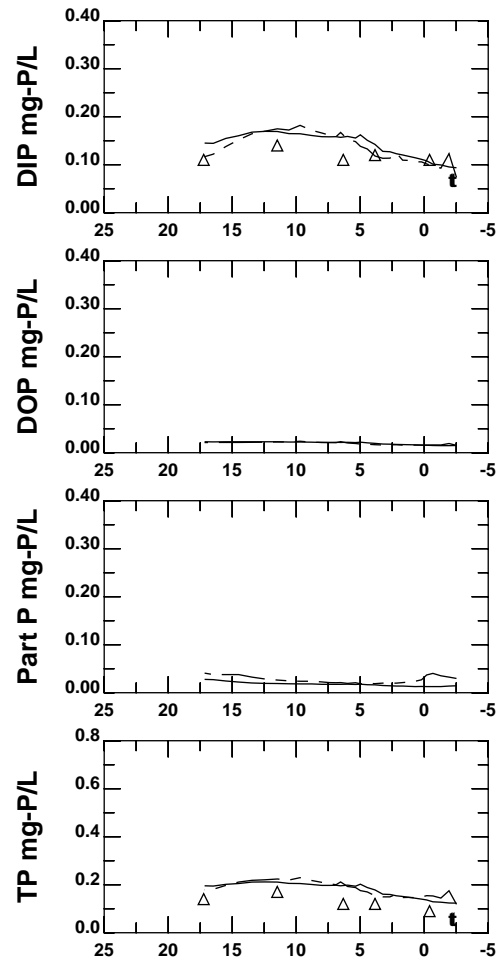
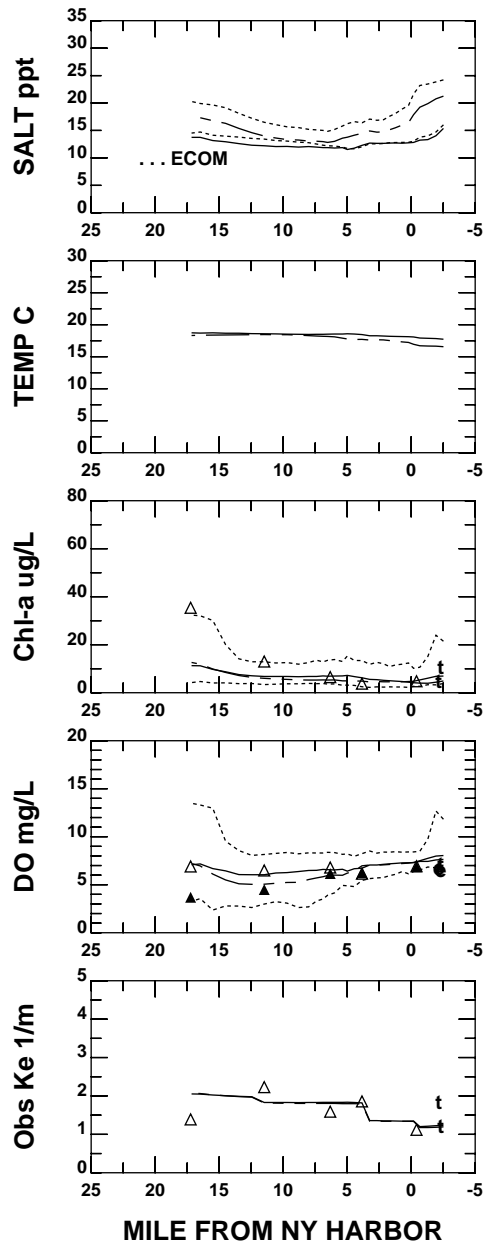
DATA Apr 29-May 28, 2000



MODEL



ARTHUR KILL AND KILL VAN KULL



**MILE FROM UPPER NY BAY**

DATA May 29-Jun 27, 2000

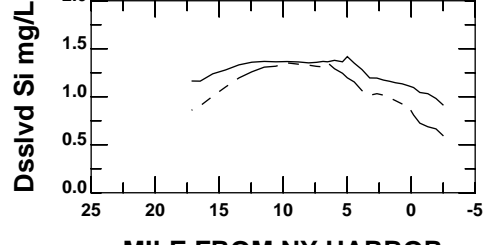
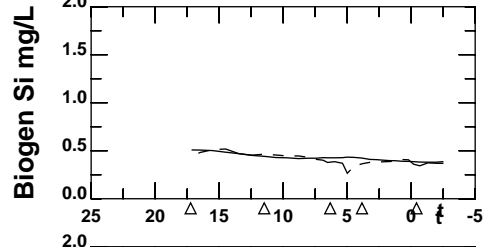
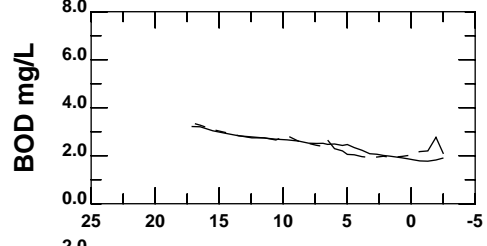
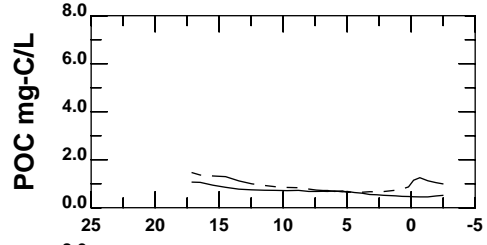
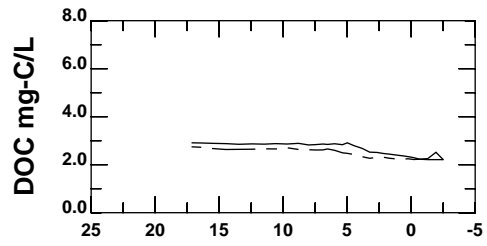
- |               |              |   |           |
|---------------|--------------|---|-----------|
|               | SURF MID BOT |   |           |
| Harbor Survey | △            | ▲ | Transect  |
|               | t            | e | Embayment |
| NYSDEC        | ○            |   | Transect  |
|               | c            |   | Embayment |
| NJSIT         | ◇            |   | Transect  |
|               | p            |   | Embayment |
| PVSC          | ●            | ■ | Transect  |
|               | u            | m | Embayment |

**MODEL**

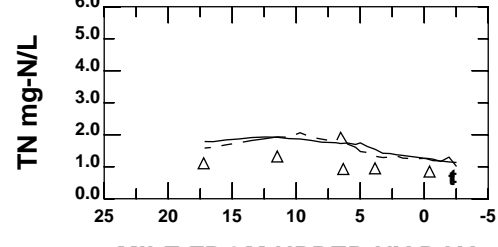
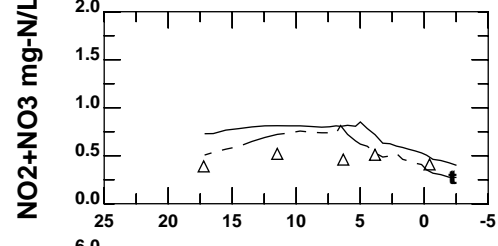
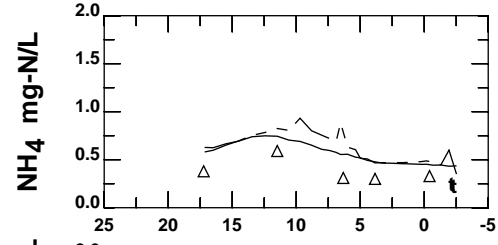
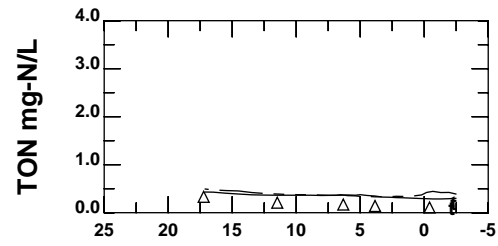
- |       |                                  |
|-------|----------------------------------|
| —     | SURFACE 30-DAY MEAN              |
| - - - | BOTTOM 30-DAY MEAN               |
| - - - | 30-DAY SURFACE MAX OR BOTTOM MIN |

**ARTHUR KILL AND KILL VAN KULL**





MILE FROM NY HARBOR



MILE FROM UPPER NY BAY

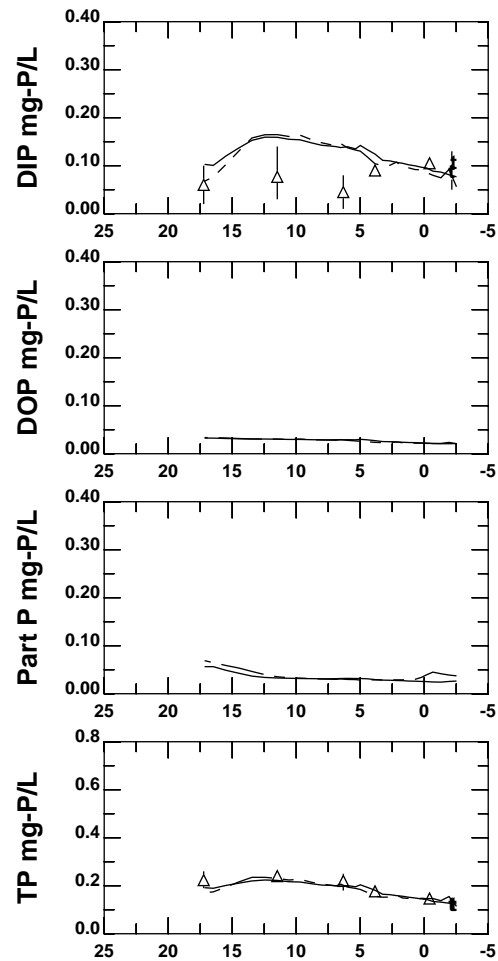
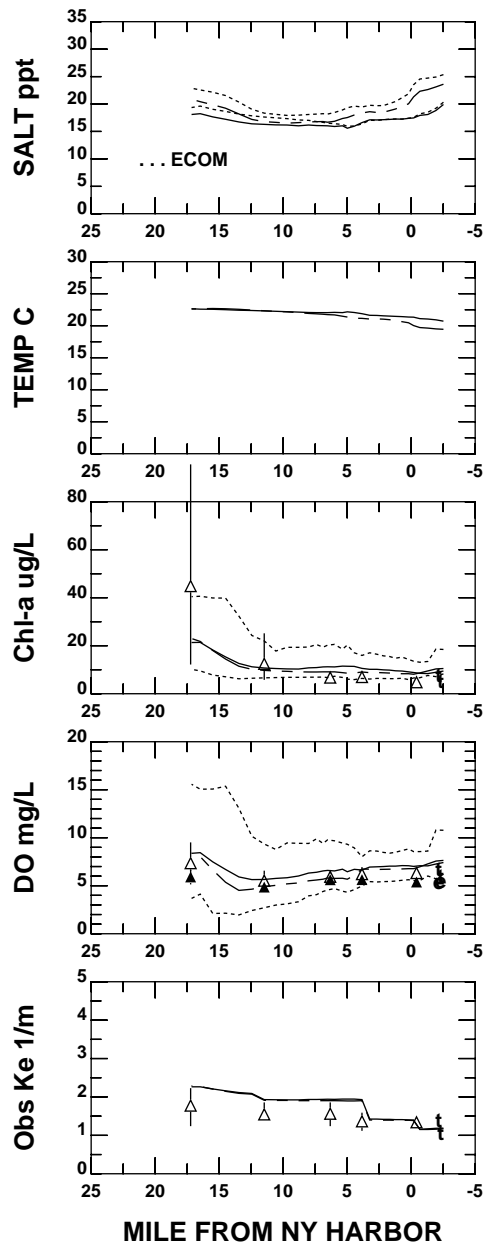
DATA May 29-Jun 27, 2000

	SURF		MID		BOT		
Harbor Survey	△	▲	△	▲	△	▲	Transect
NYSDEC	t	e	○	○	○	○	Embayment
NJSIT	c		◇	◇	◇	◇	Transect
PVSC	p		●	■	▼	▼	Embayment
	u	m	b				Transect
							Embayment

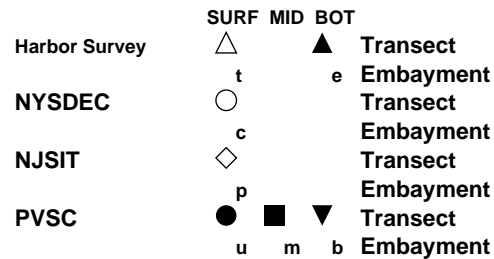
MODEL

————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

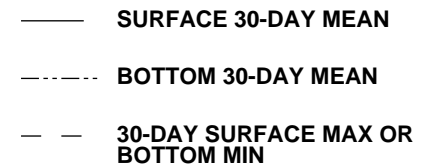
ARTHUR KILL AND KILL VAN KULL



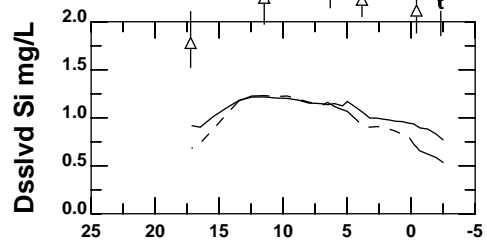
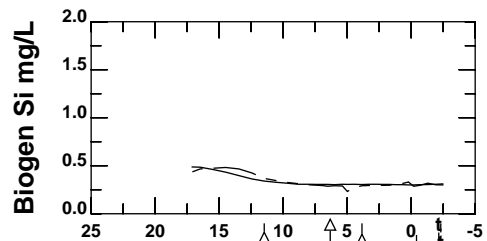
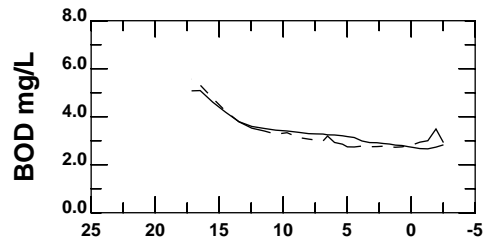
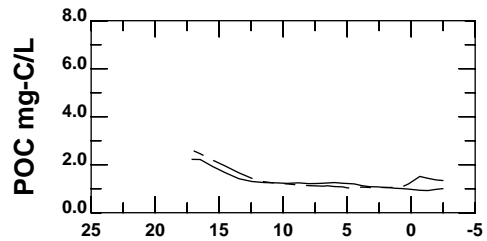
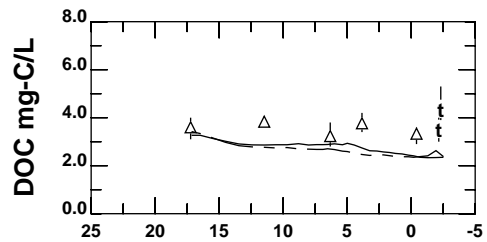
DATA Jun 28-Jul 27,2000



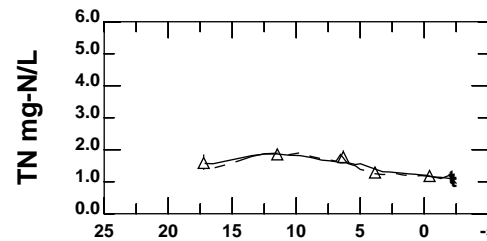
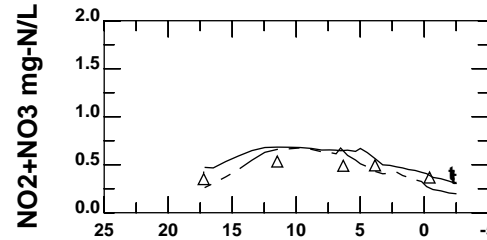
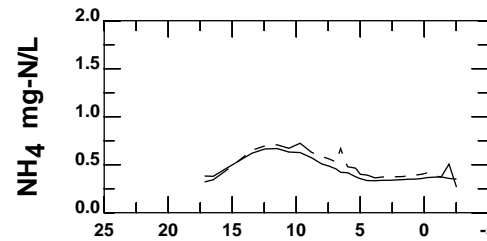
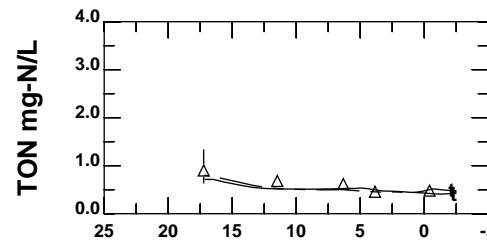
MODEL



**ARTHUR KILL AND KILL VAN KULL**



MILE FROM NY HARBOR



MILE FROM UPPER NY BAY

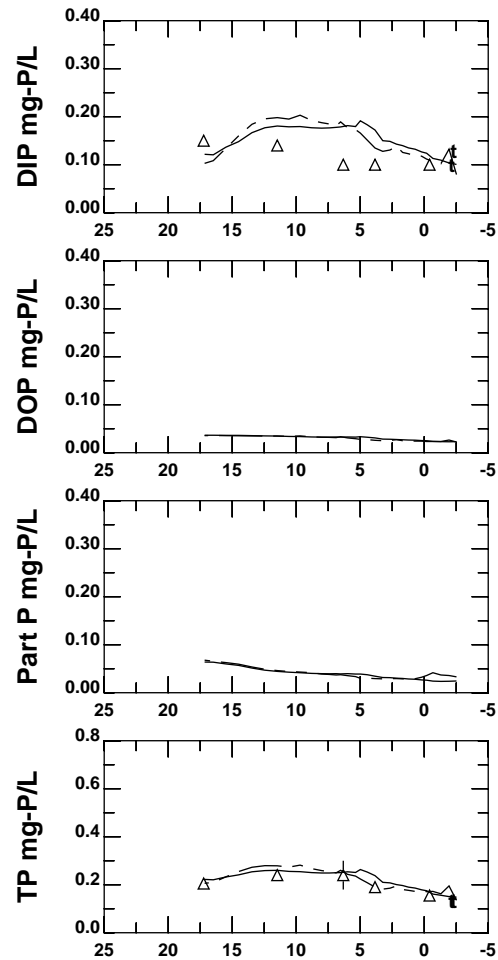
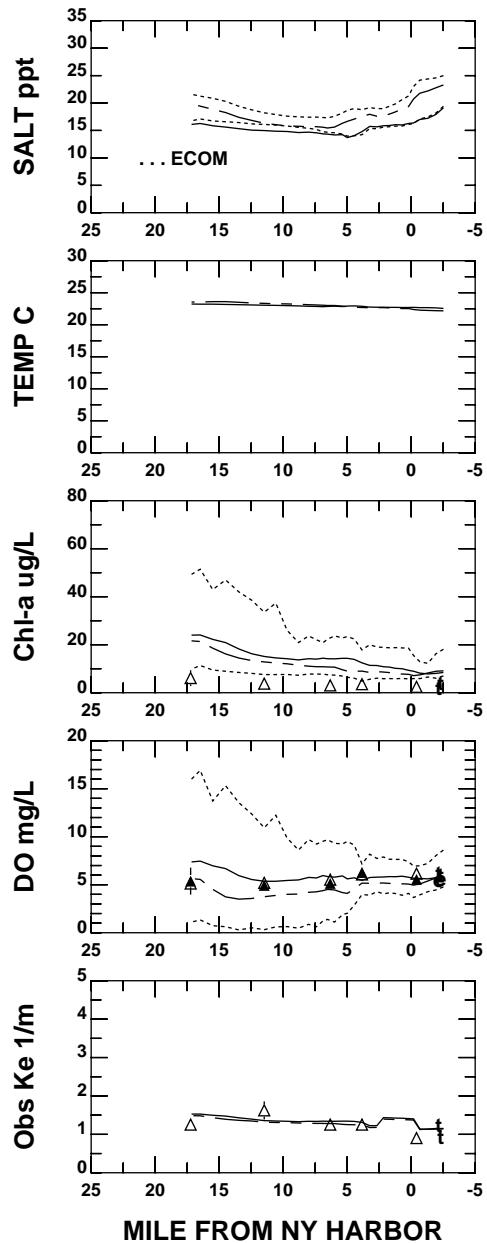
DATA Jun 28-Jul 27, 2000

	SURF MID BOT			
Harbor Survey	△	▲	▲	Transect
NYSDEC	t	e	e	Embayment
NJSIT	○	c	c	Transect
	◇	p	p	Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment

MODEL

————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

# ARTHUR KILL AND KILL VAN KULL



**MILE FROM UPPER NY BAY**

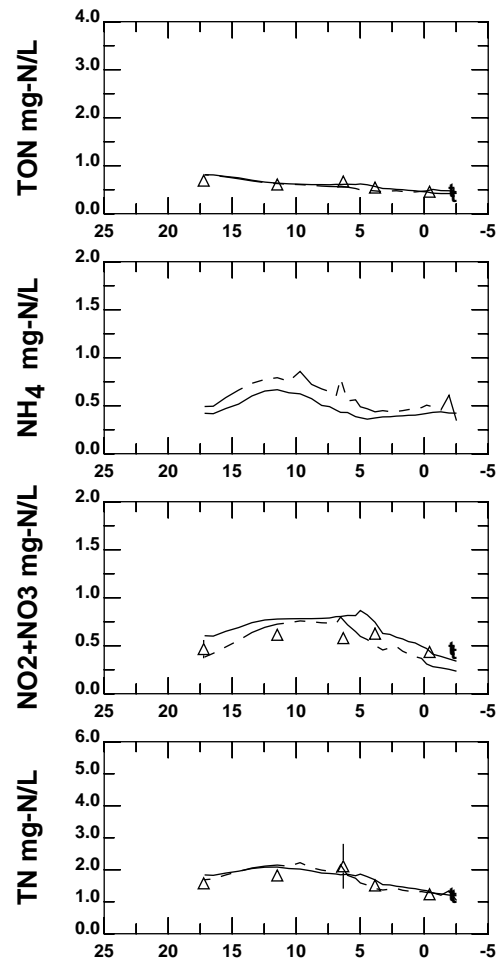
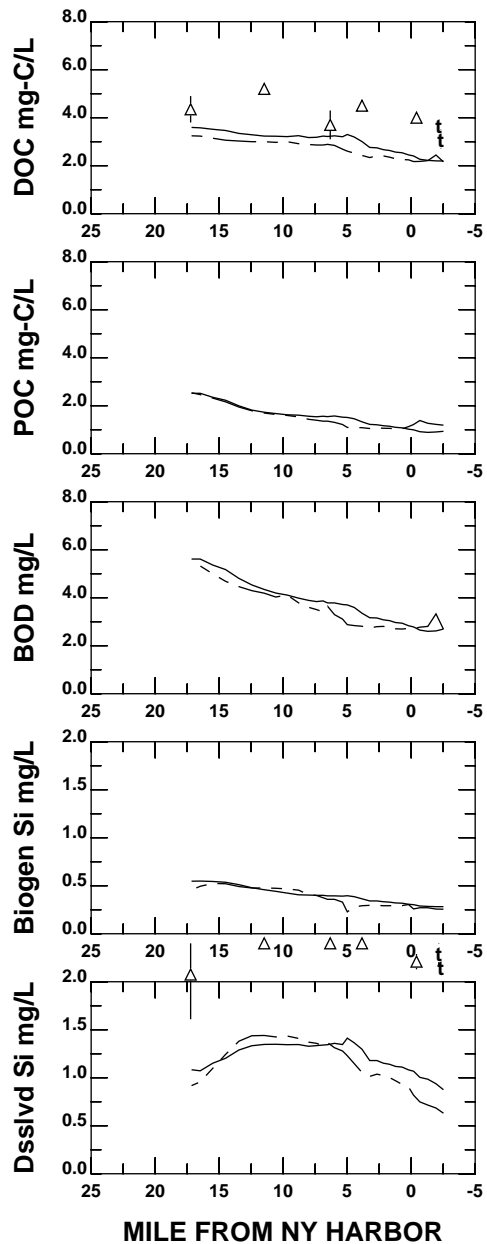
DATA Jul 27-Aug 26,2000

	SURF		MID		BOT	
Harbor Survey	△	▲	△	▲	△	▲
NYSDEC	t	e	○	○	○	○
NJSIT	c		◇	◇	◇	◇
PVSC	p		●	■	▼	▼
	u	m	b	b	b	b

**MODEL**

—	SURFACE 30-DAY MEAN
---	BOTTOM 30-DAY MEAN
- - -	30-DAY SURFACE MAX OR BOTTOM MIN

**ARTHUR KILL AND KILL VAN KULL**



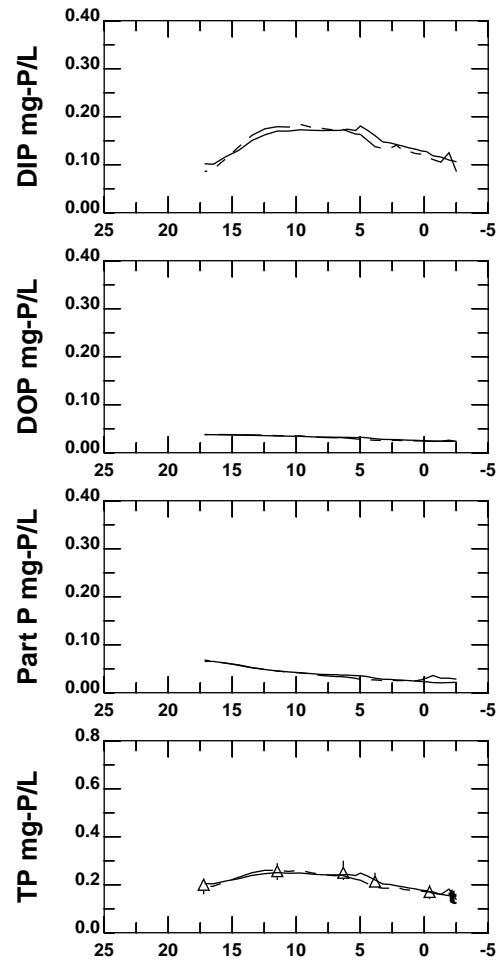
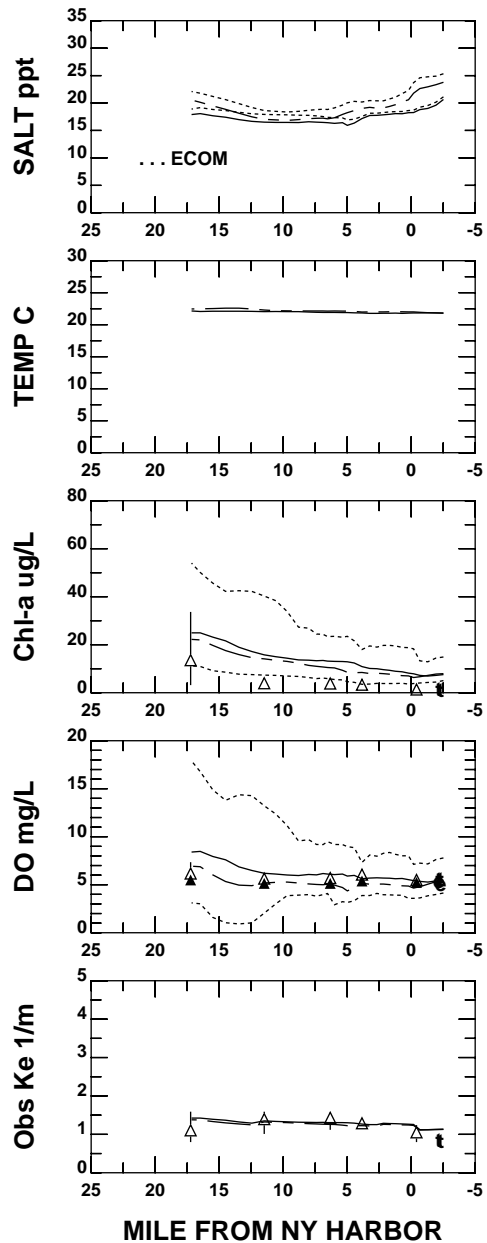
DATA Jul 27-Aug 26, 2000

	SURF		MID		BOT	
Harbor Survey	△				▲	Transect
NYSDEC	t				e	Embayment
	○					Transect
	c					Embayment
NJSIT	◇					Transect
	p					Embayment
PVSC	●	■			▼	Transect
	u	m			b	Embayment

MODEL

————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

## ARTHUR KILL AND KILL VAN KULL



**MILE FROM UPPER NY BAY**

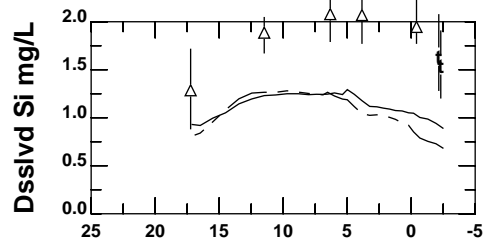
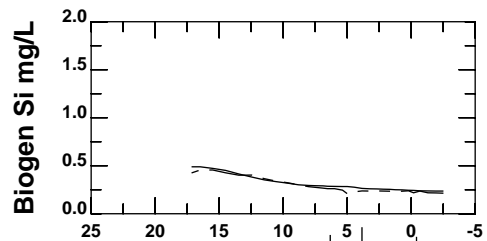
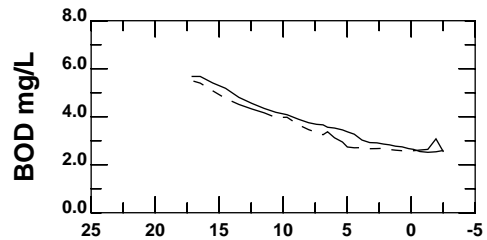
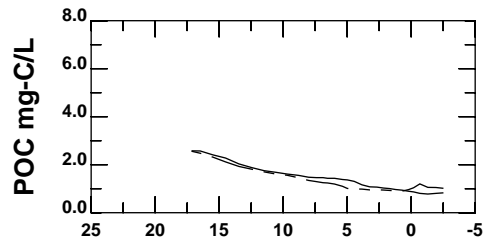
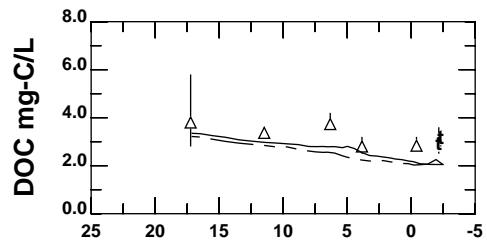
DATA Aug 27-Sep 25,2000

	SURF MID BOT		
Harbor Survey	△	▲	Transect
NYSDEC	t	e	Embayment
NJSIT	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment
PVSC	●	■	Transect
	u	m	Embayment
		▼	Transect
		▾	Embayment

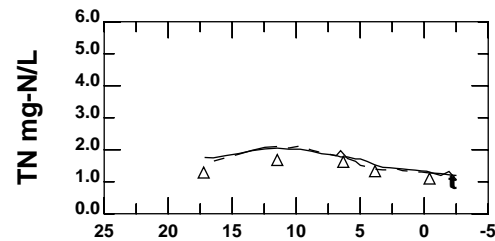
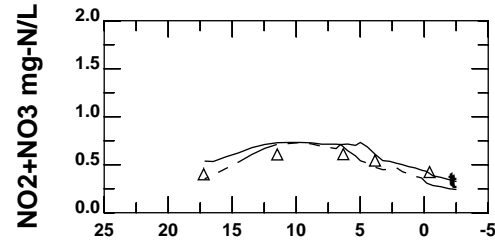
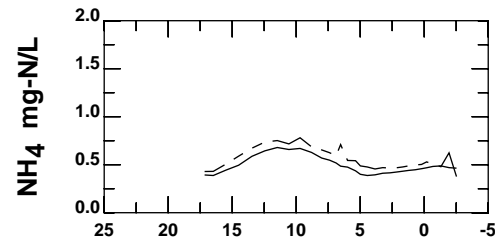
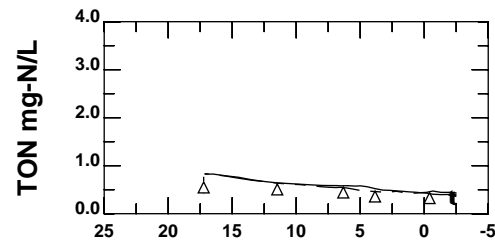
**MODEL**

—	SURFACE 30-DAY MEAN
- - -	BOTTOM 30-DAY MEAN
- · -	30-DAY SURFACE MAX OR BOTTOM MIN

**ARTHUR KILL AND KILL VAN KULL**

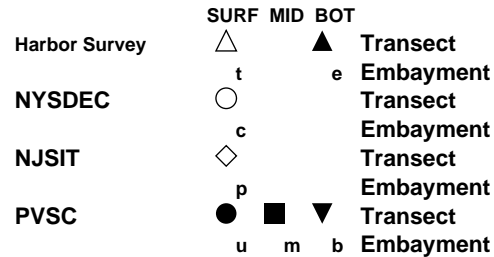


MILE FROM NY HARBOR

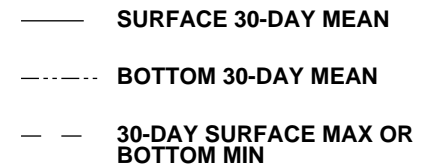


MILE FROM UPPER NY BAY

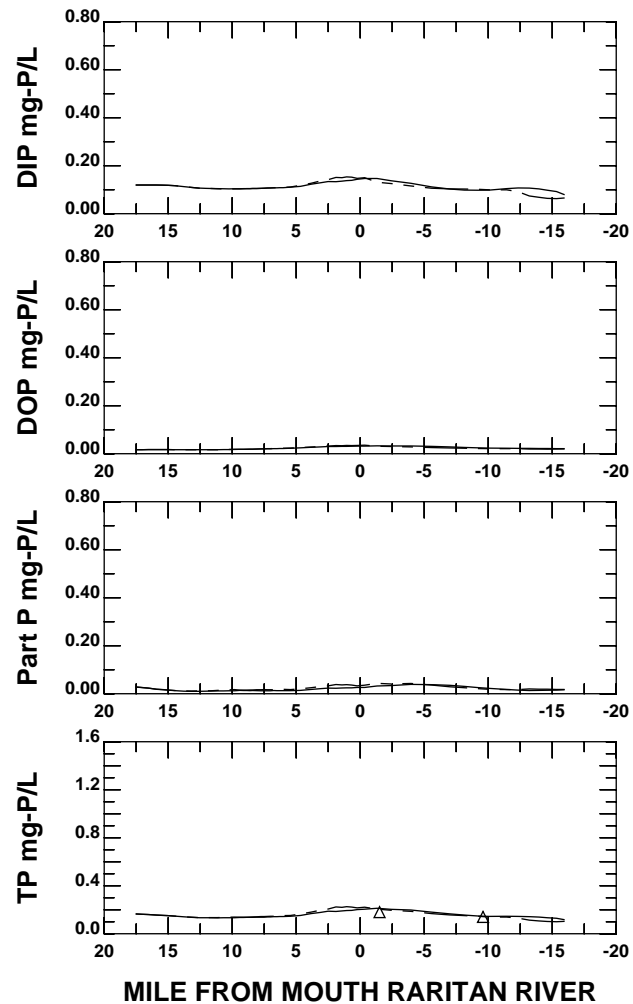
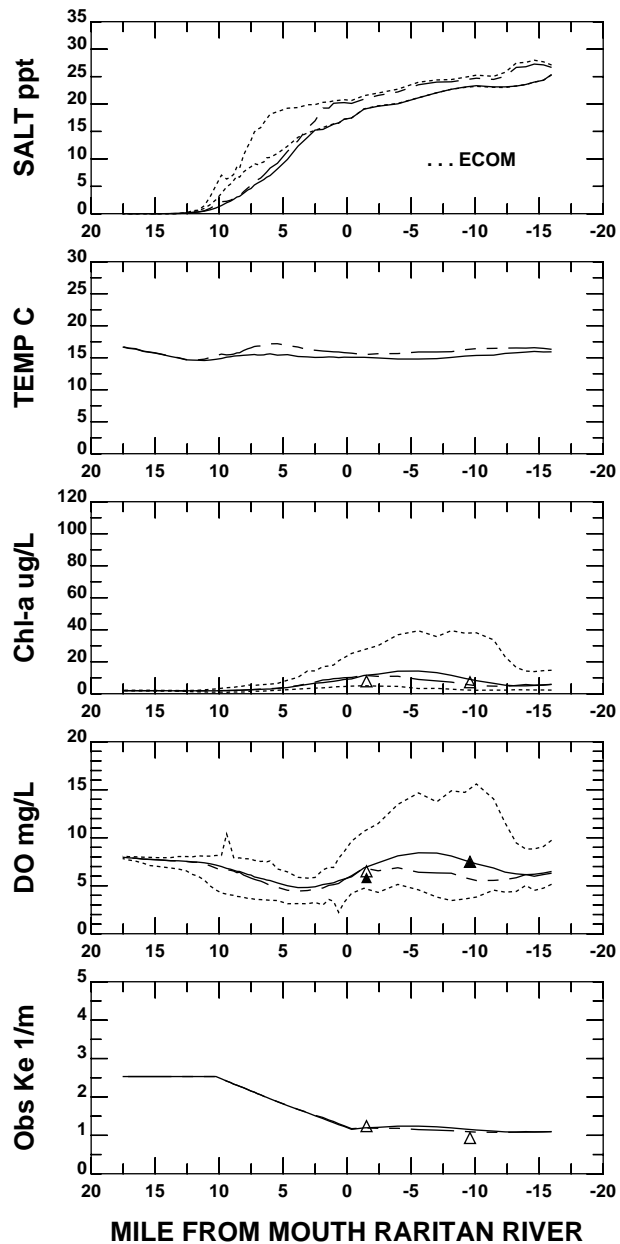
DATA Aug 27-Sep 25, 2000



MODEL



ARTHUR KILL AND KILL VAN KULL



DATA Oct 1-30,1999

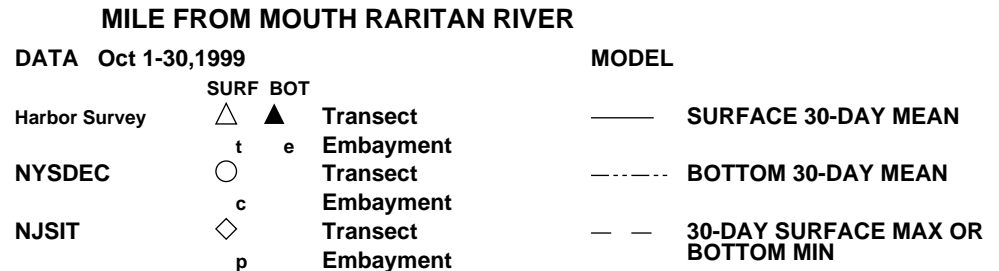
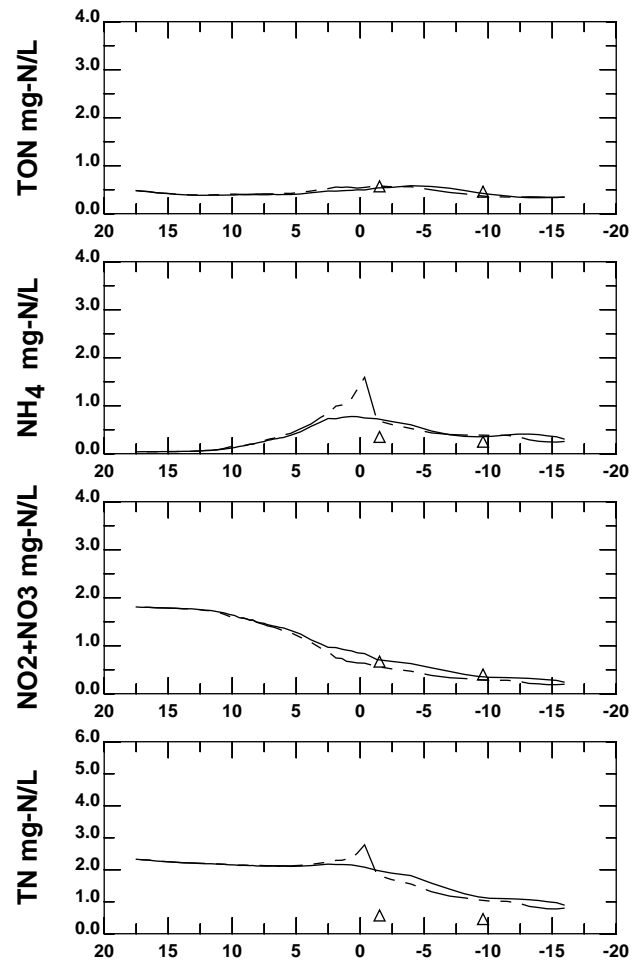
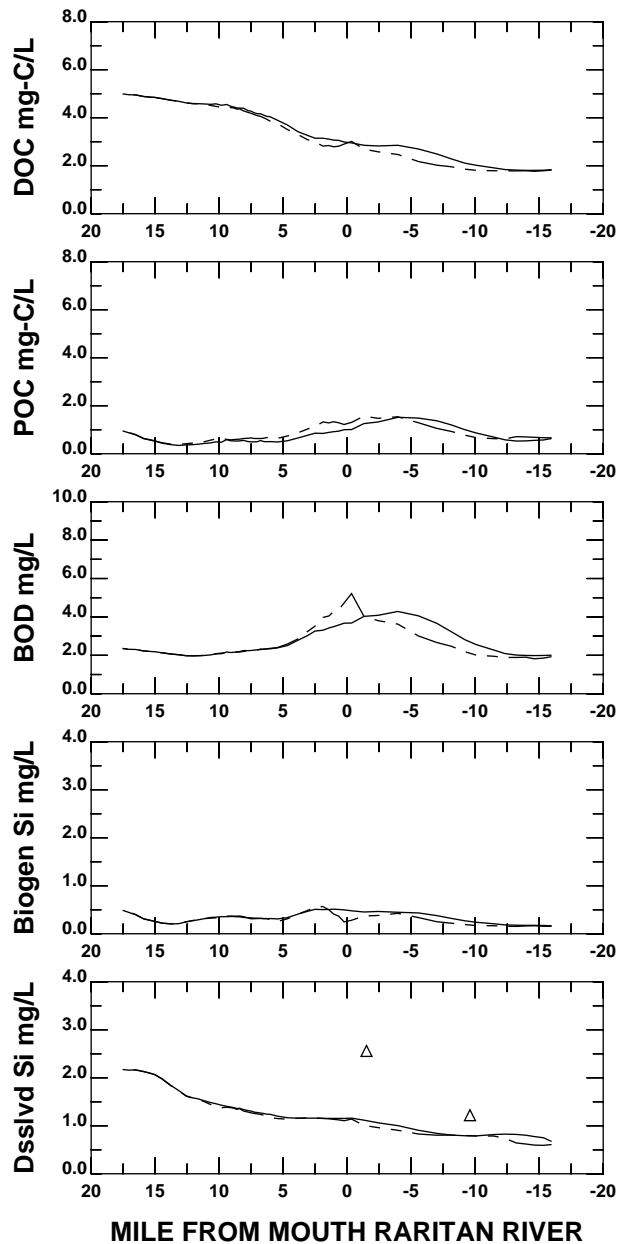
MODEL

	SURF	BOT	
Harbor Survey	△	▲	Transect
NYSDEC	t	e	Embayment
	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment

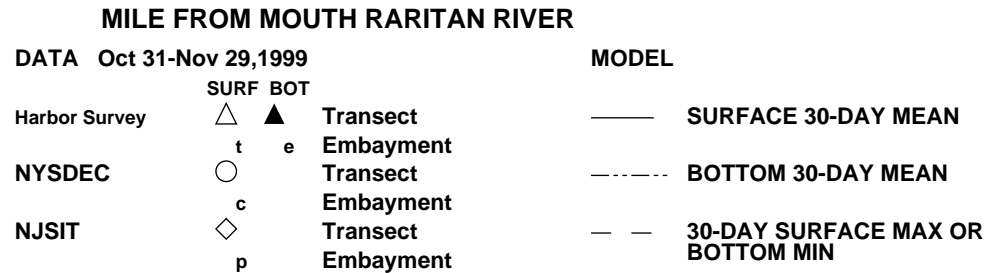
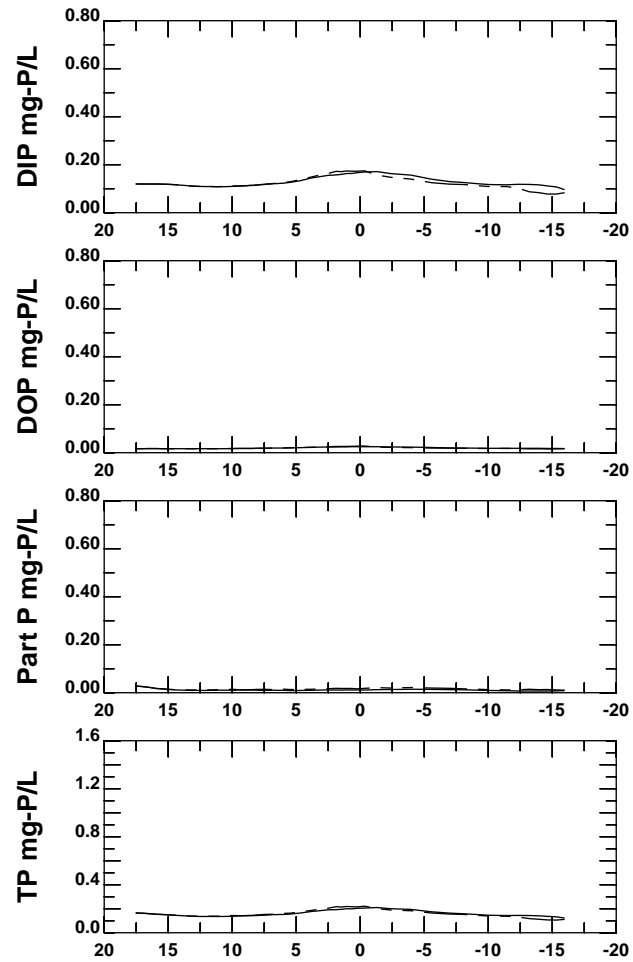
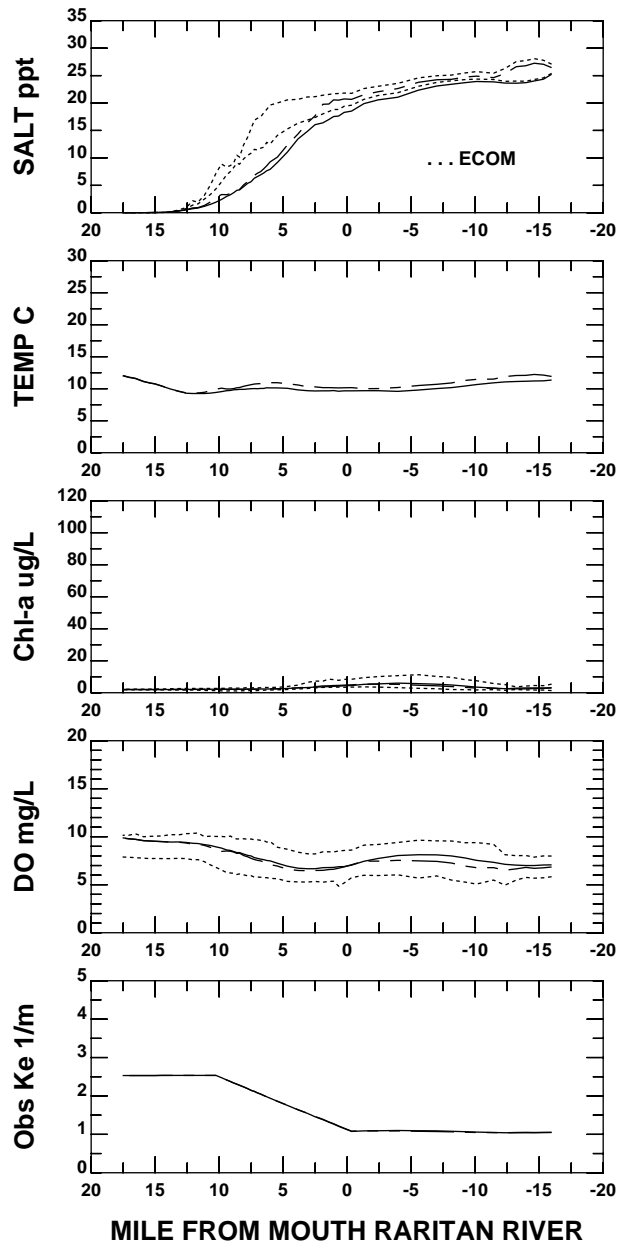
—	SURFACE 30-DAY MEAN
---	BOTTOM 30-DAY MEAN
- - -	30-DAY SURFACE MAX OR BOTTOM MIN

## RARITAN RIVER AND NORTH SHORE OF RARITAN BAY

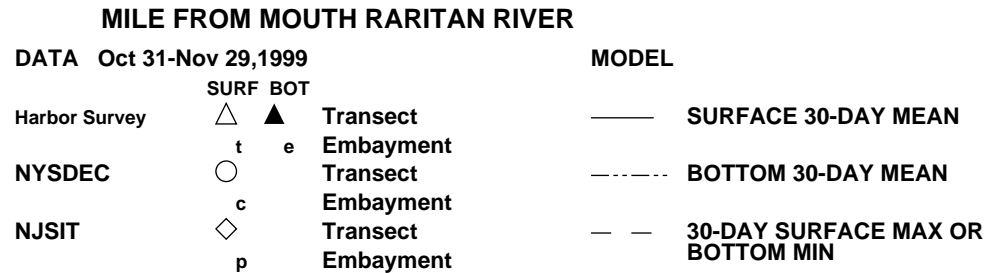
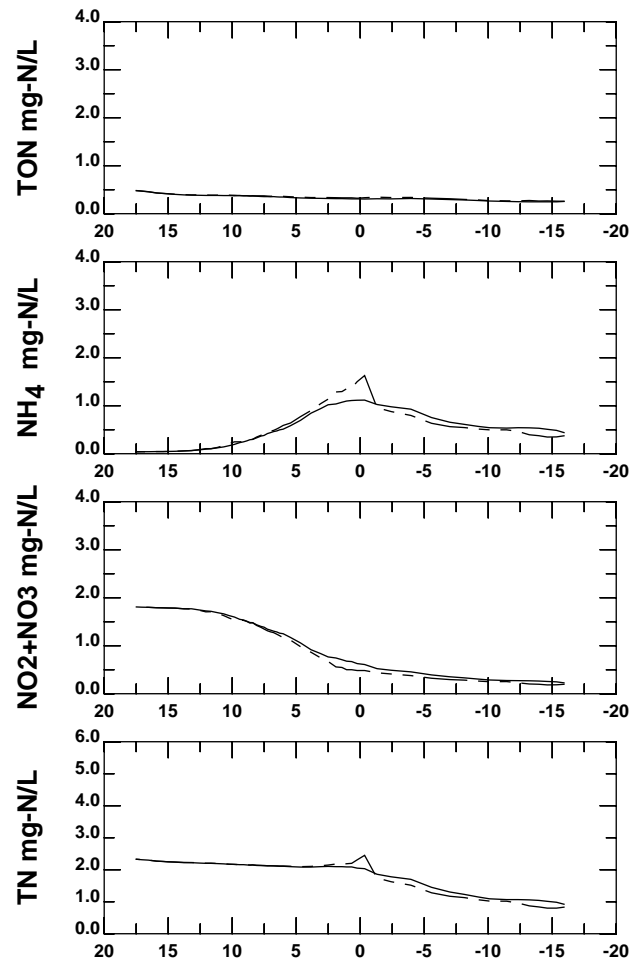
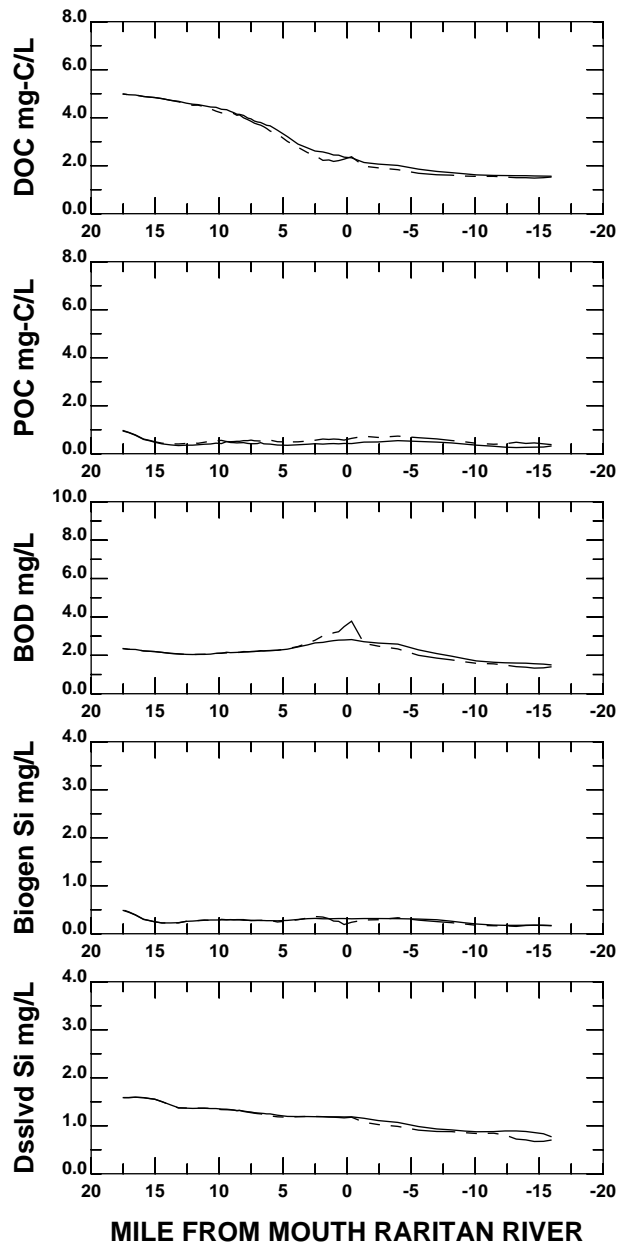




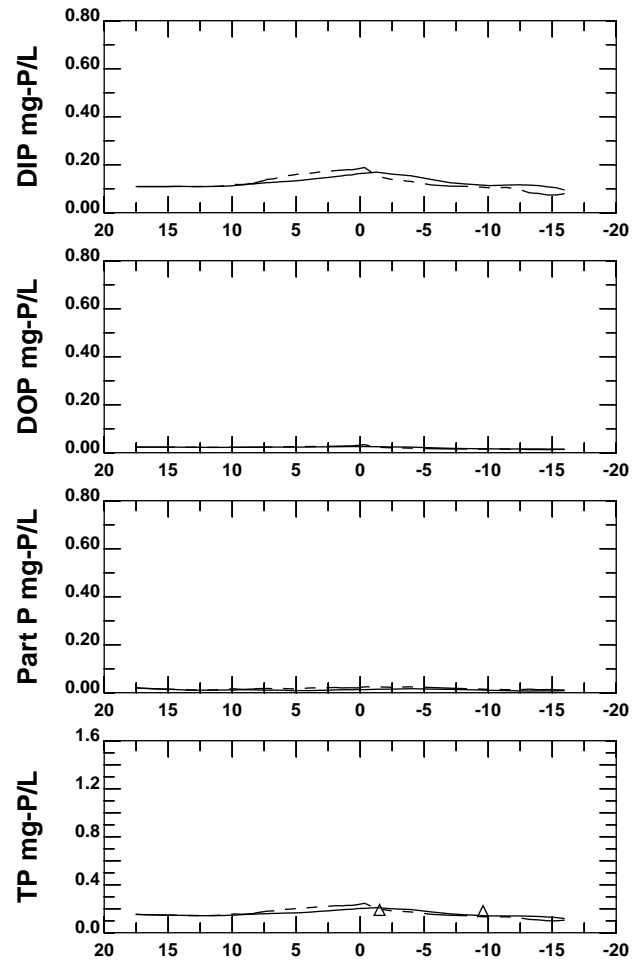
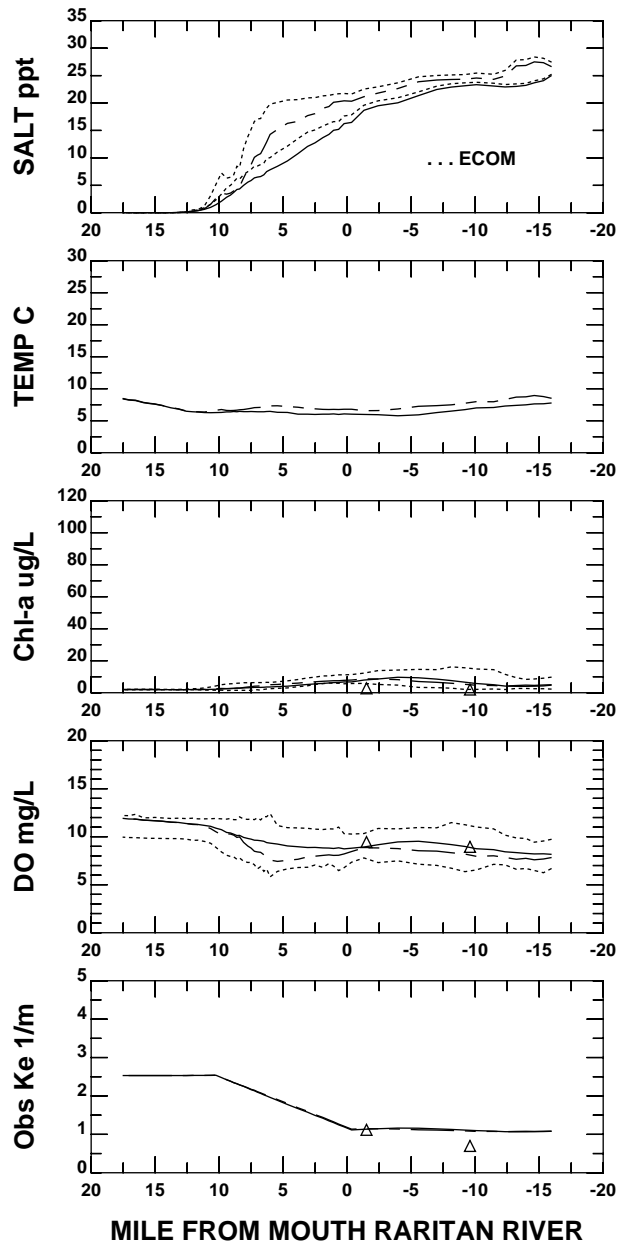
**RARITAN RIVER AND NORTH SHORE RARITAN BAY**



**RARITAN RIVER AND NORTH SHORE OF RARITAN BAY**



**RARITAN RIVER AND NORTH SHORE RARITAN BAY**



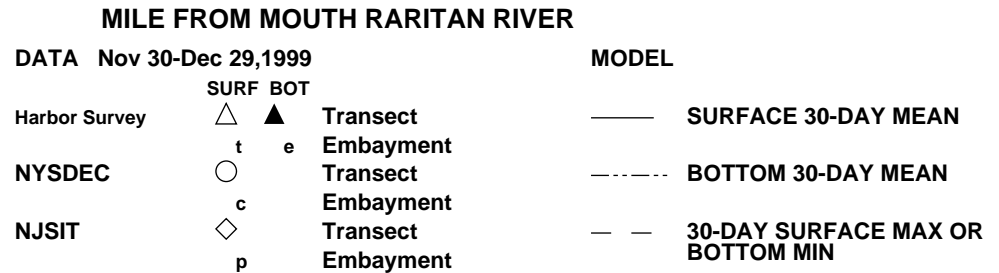
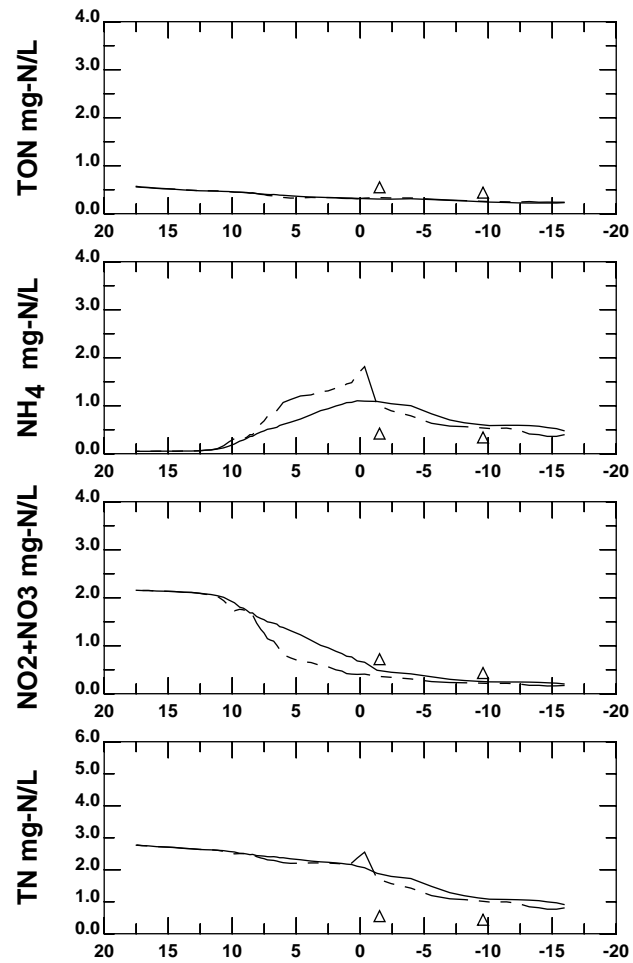
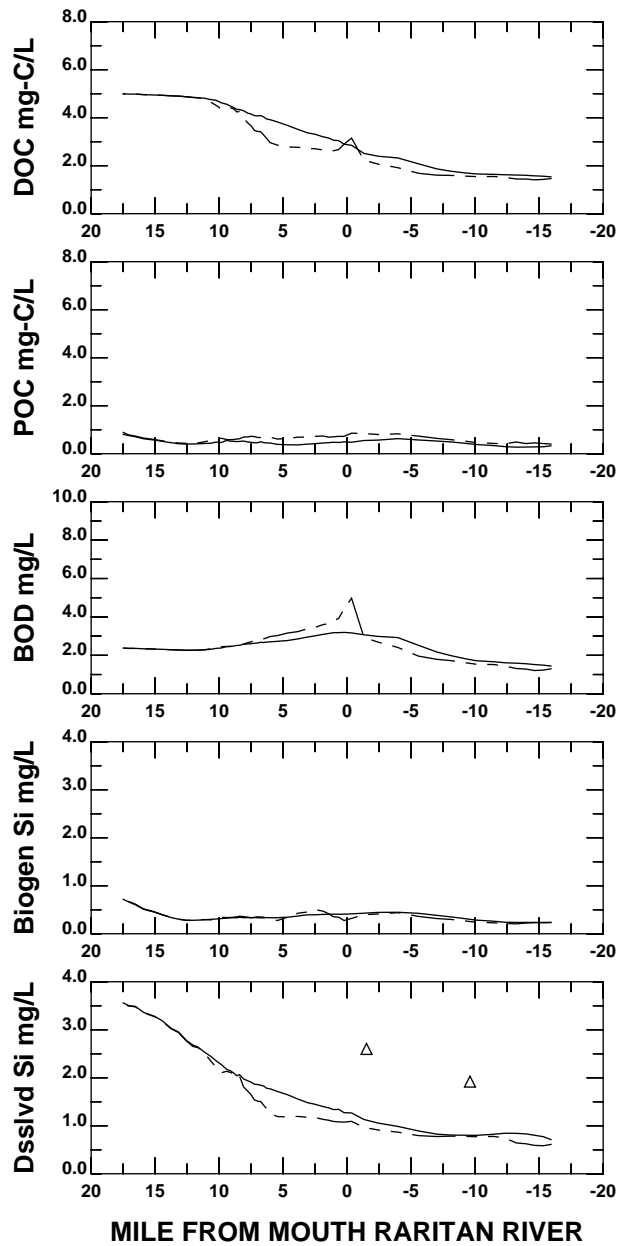
**DATA Nov 30-Dec 29,1999**

	<b>SURF BOT</b>		
Harbor Survey	△	▲	Transect
NYSDEC	t	e	Embayment
	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment

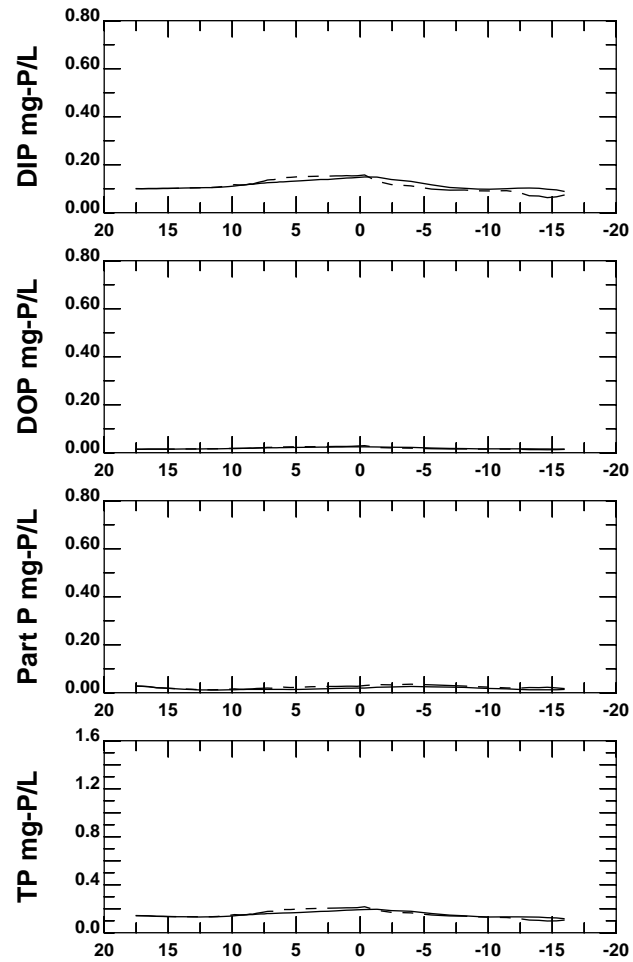
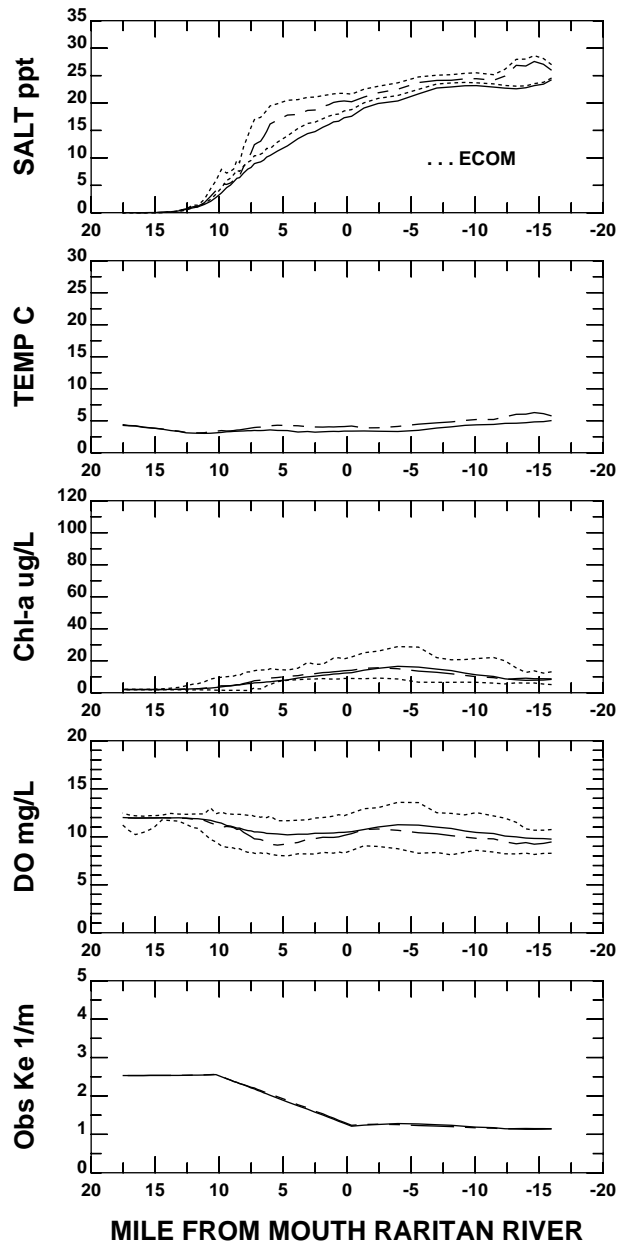
**MODEL**

————	<b>SURFACE 30-DAY MEAN</b>
-----	<b>BOTTOM 30-DAY MEAN</b>
- - - -	<b>30-DAY SURFACE MAX OR BOTTOM MIN</b>

**RARITAN RIVER AND NORTH SHORE OF RARITAN BAY**



**RARITAN RIVER AND NORTH SHORE RARITAN BAY**



**DATA Dec 30 1999 -Jan 28,2000**

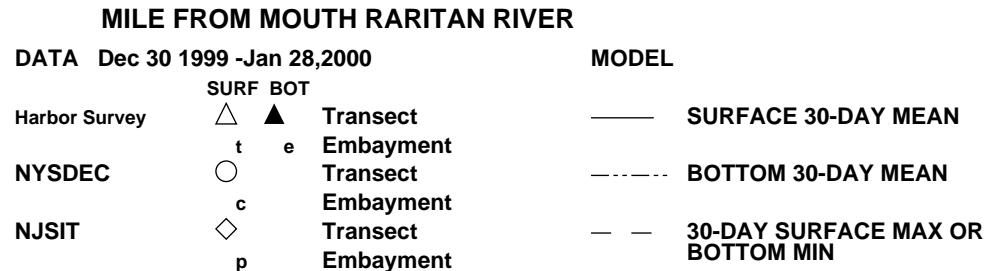
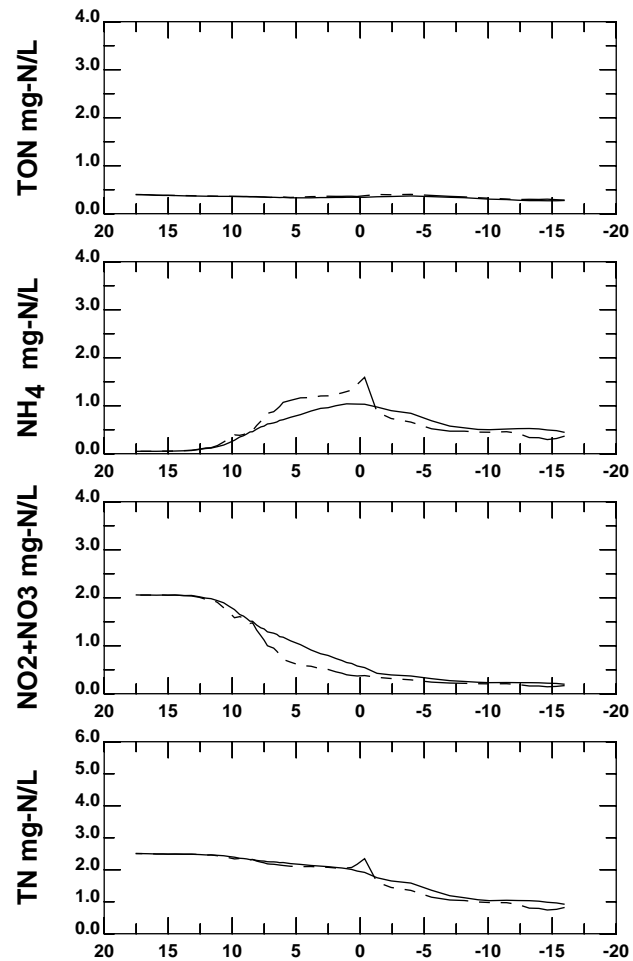
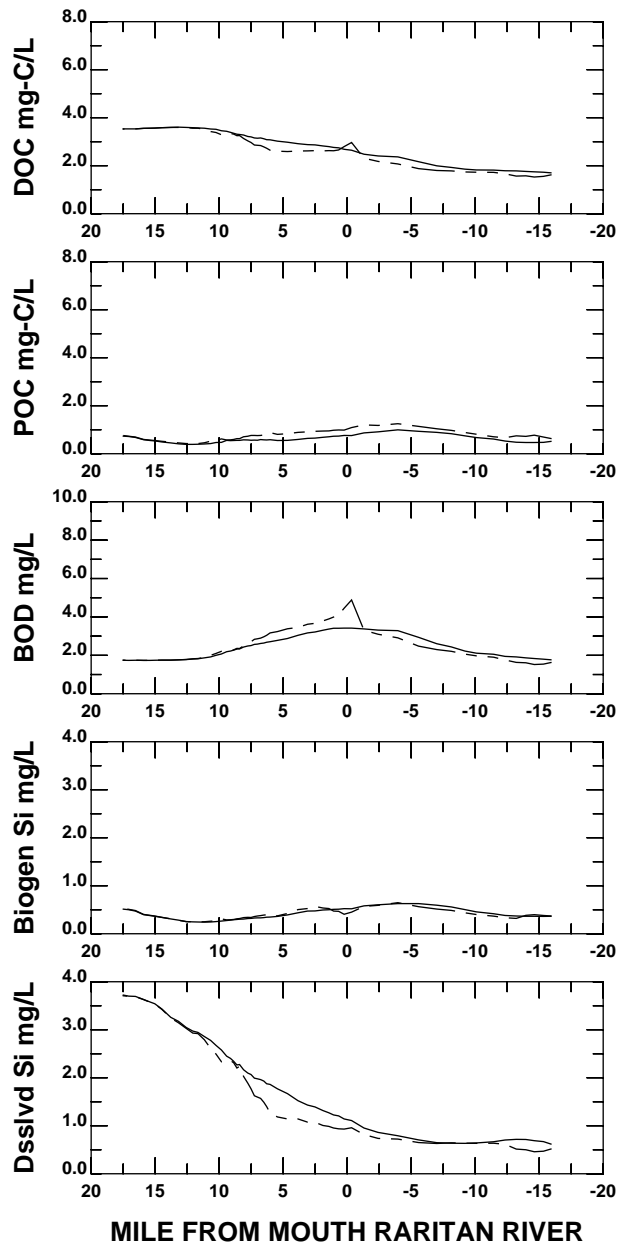
**MODEL**

	<b>SURF BOT</b>		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment

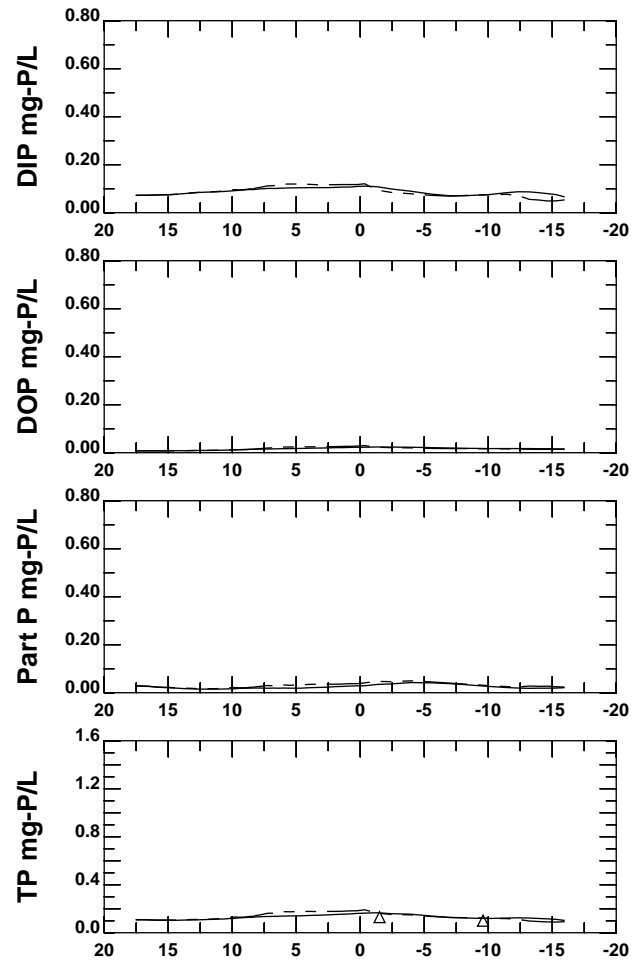
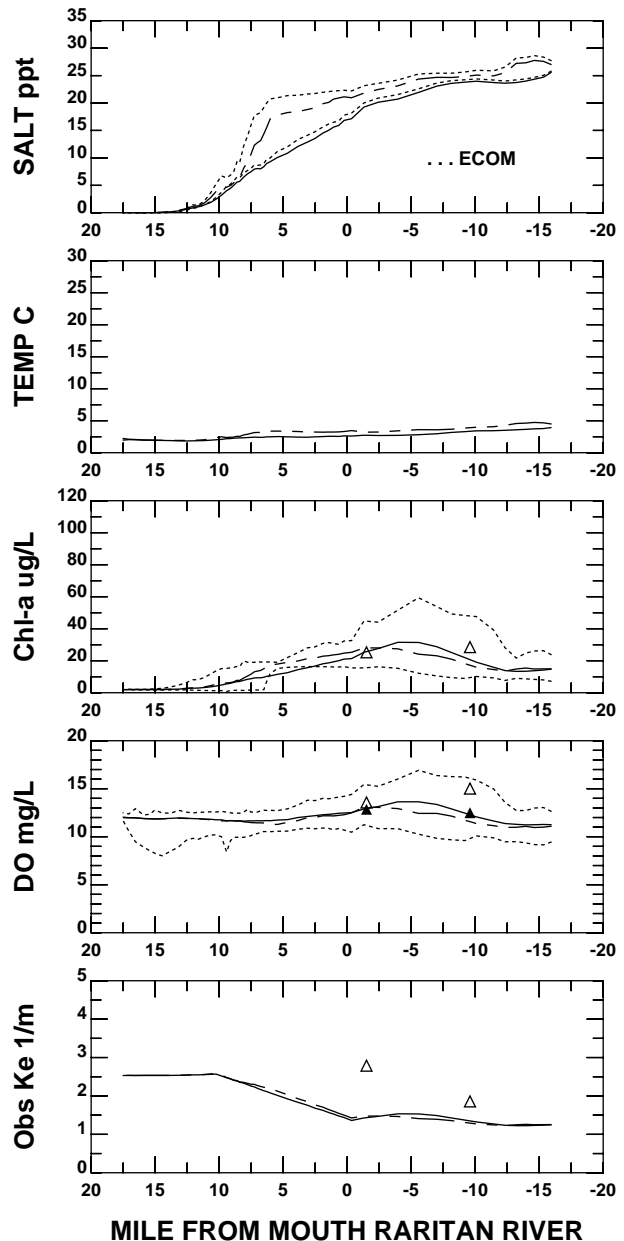
  

—	<b>SURFACE 30-DAY MEAN</b>
---	<b>BOTTOM 30-DAY MEAN</b>
- - -	<b>30-DAY SURFACE MAX OR BOTTOM MIN</b>

**RARITAN RIVER AND NORTH SHORE OF RARITAN BAY**



**RARITAN RIVER AND NORTH SHORE RARITAN BAY**

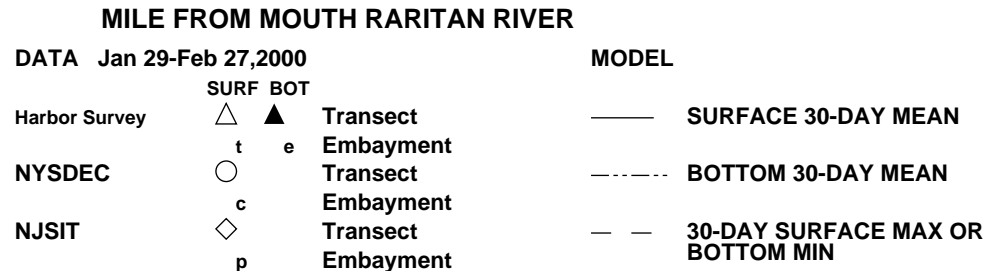
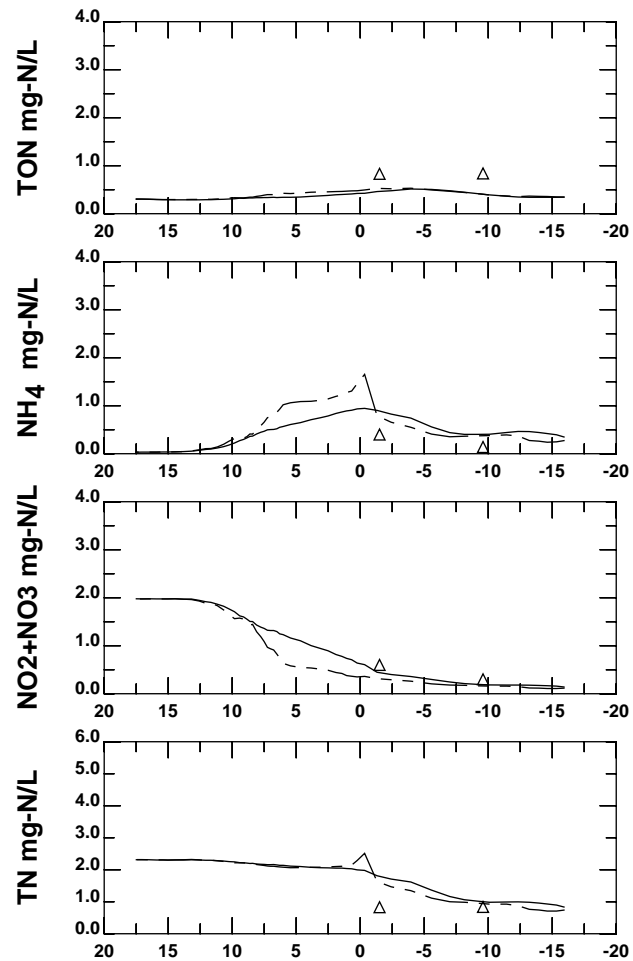
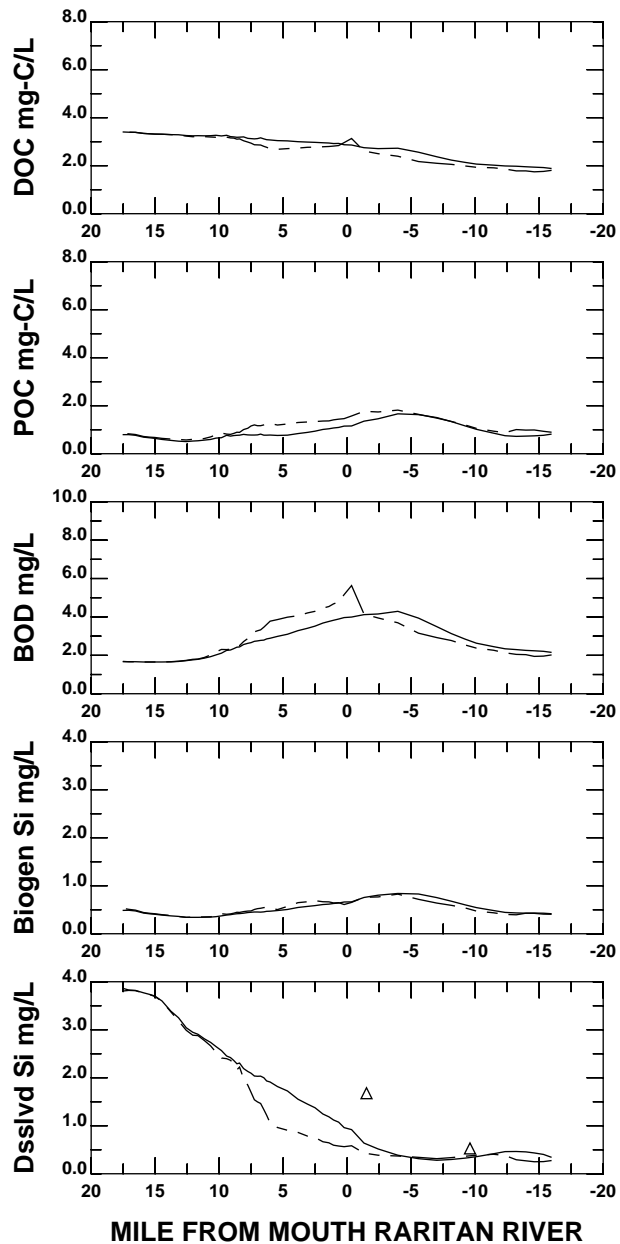


**MILE FROM MOUTH RARITAN RIVER**

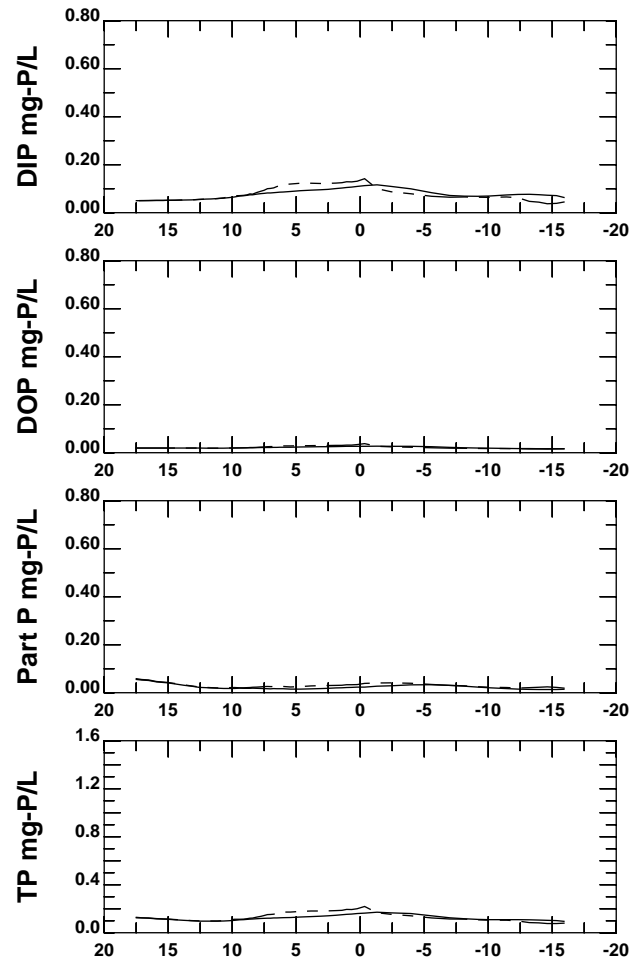
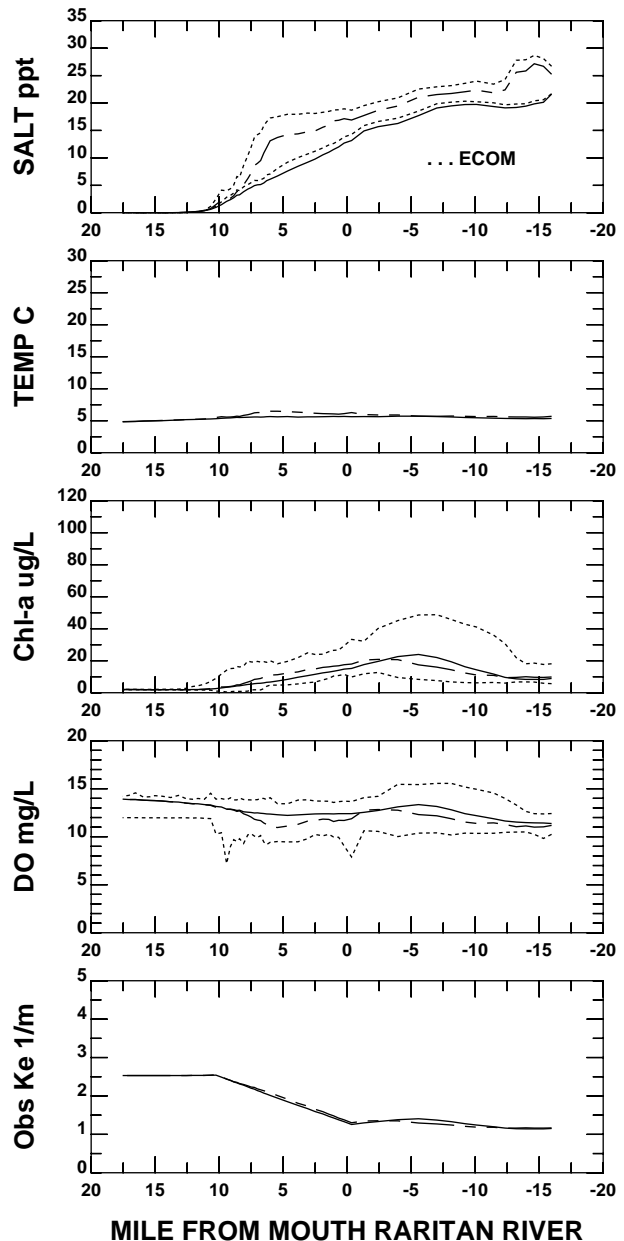
<b>DATA</b> Jan 29-Feb 27, 2000		<b>MODEL</b>
	<b>SURF BOT</b>	
Harbor Survey	△ ▲	Transect
	t e	Embayment
NYSDEC	○	Transect
	c	Embayment
NJSIT	◇	Transect
	p	Embayment
	—	SURFACE 30-DAY MEAN
	- - -	BOTTOM 30-DAY MEAN
	- - -	30-DAY SURFACE MAX OR BOTTOM MIN

**RARITAN RIVER AND NORTH SHORE OF RARITAN BAY**





**RARITAN RIVER AND NORTH SHORE RARITAN BAY**



**DATA Feb 28-Mar 29,2000**

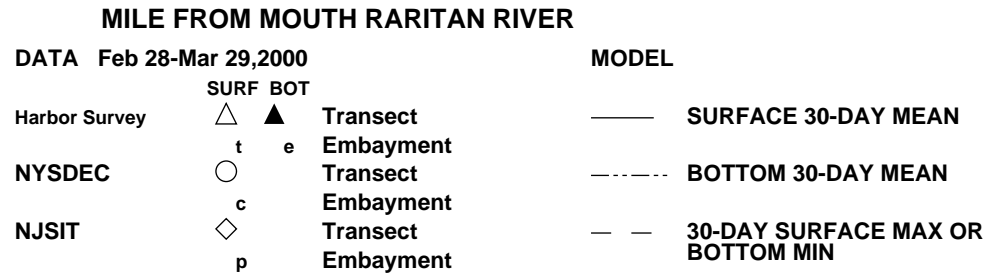
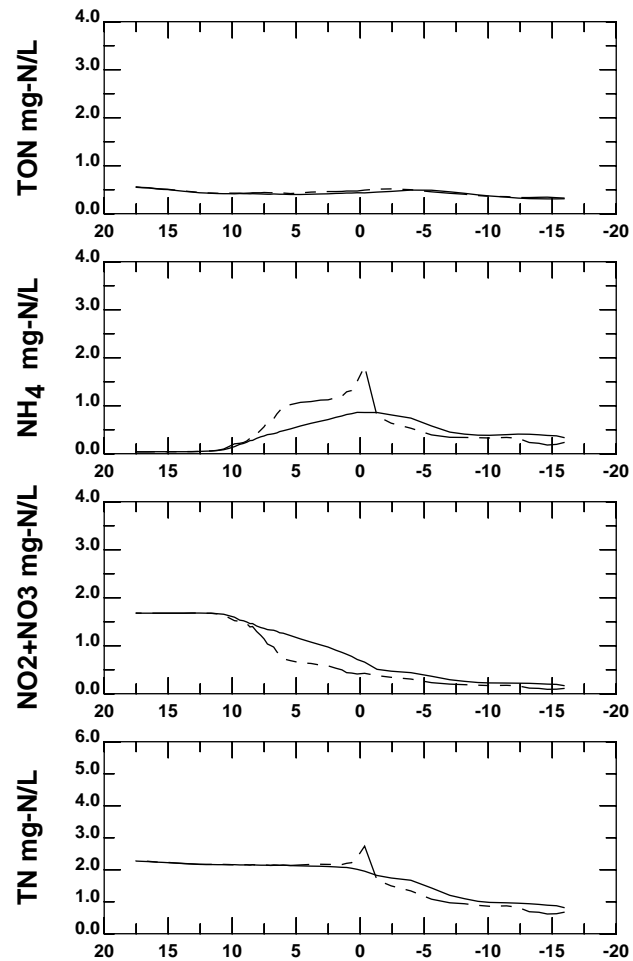
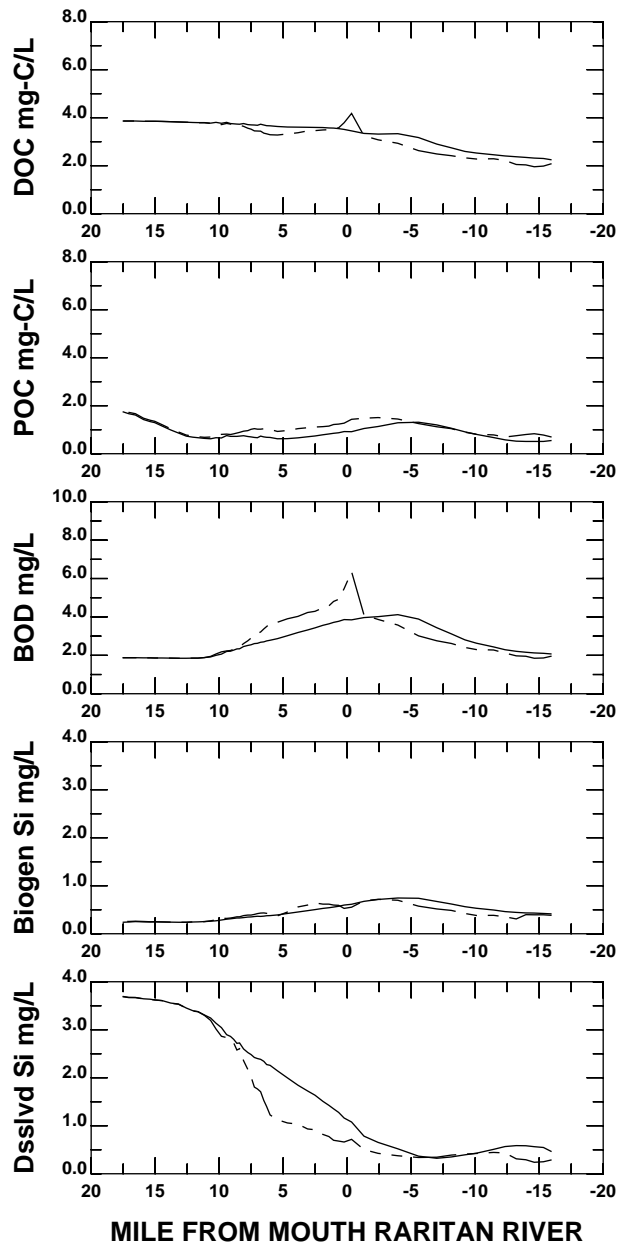
**MODEL**

	<b>SURF BOT</b>		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment

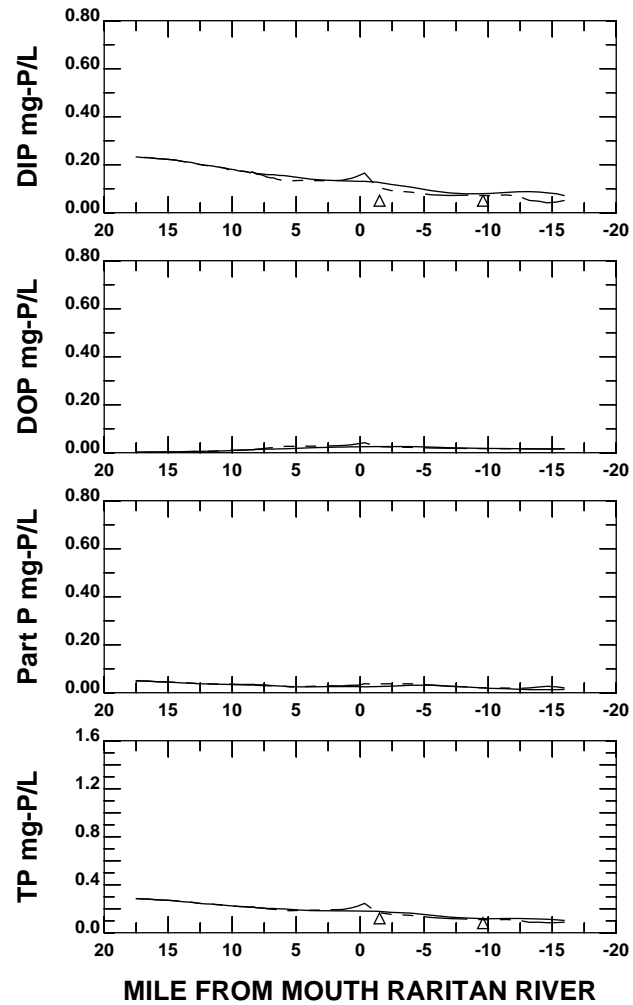
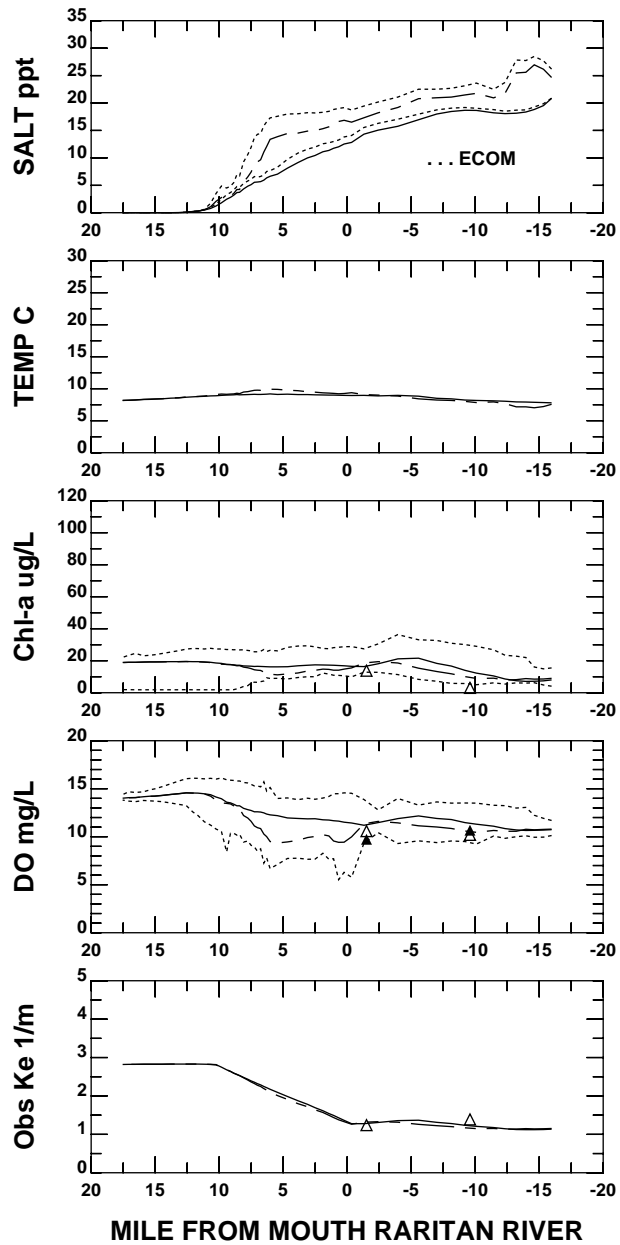
  

————	<b>SURFACE 30-DAY MEAN</b>
.....	<b>BOTTOM 30-DAY MEAN</b>
- - - -	<b>30-DAY SURFACE MAX OR BOTTOM MIN</b>

**RARITAN RIVER AND NORTH SHORE OF RARITAN BAY**



**RARITAN RIVER AND NORTH SHORE RARITAN BAY**



DATA Mar 30-Apr 28,2000

MODEL

SURF BOT

Harbor Survey  $\triangle$   $\blacktriangle$  Transect

t e Embayment

NYSDEC  $\circ$  Transect

c Embayment

NJSIT  $\diamond$  Transect

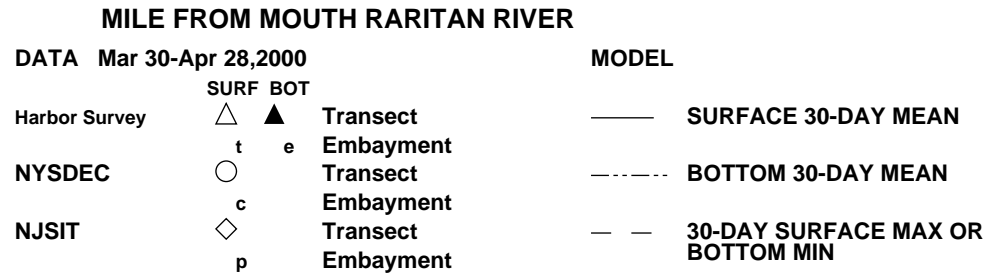
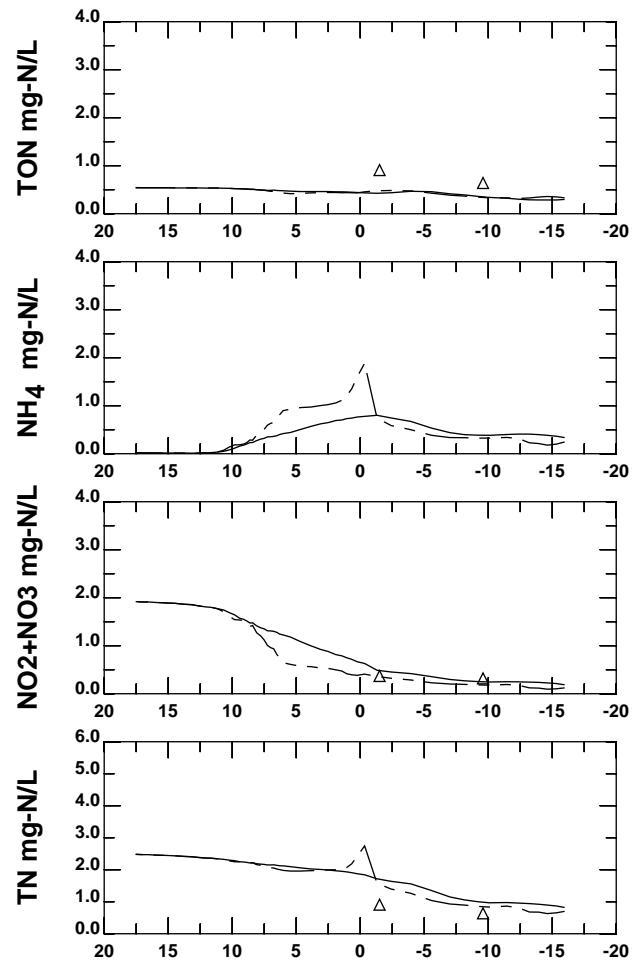
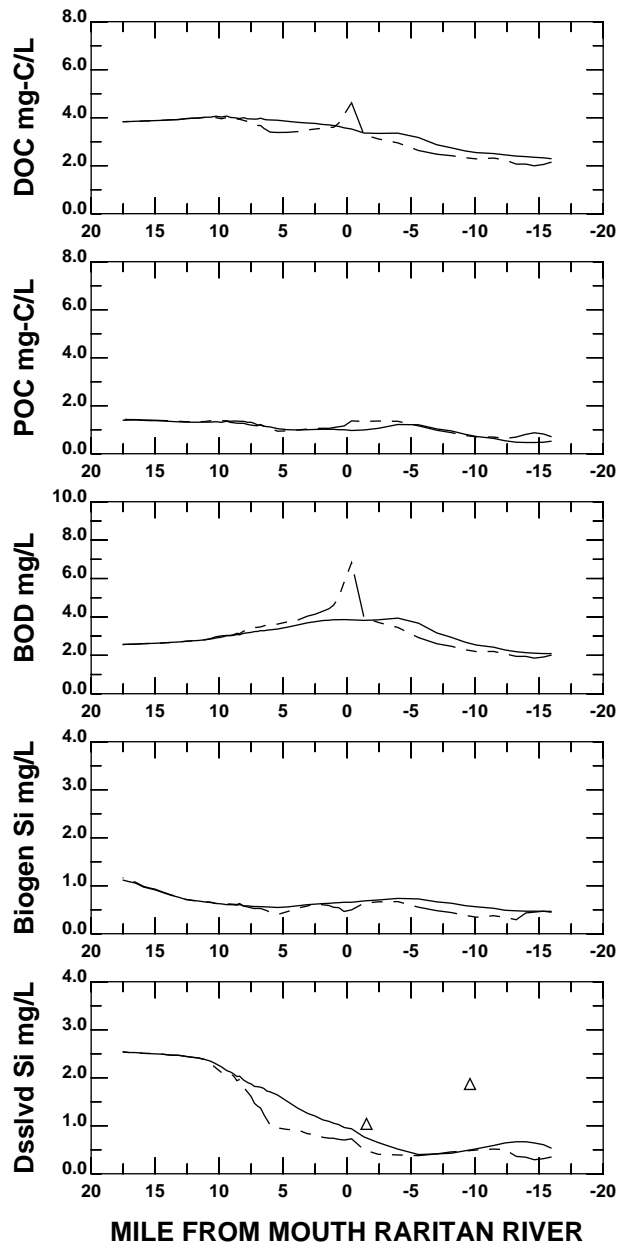
p Embayment

— SURFACE 30-DAY MEAN

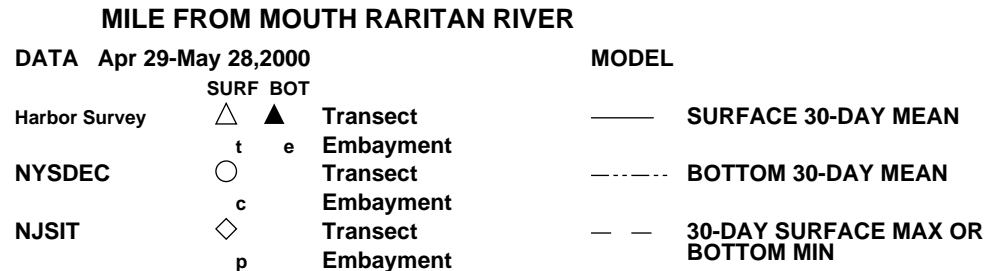
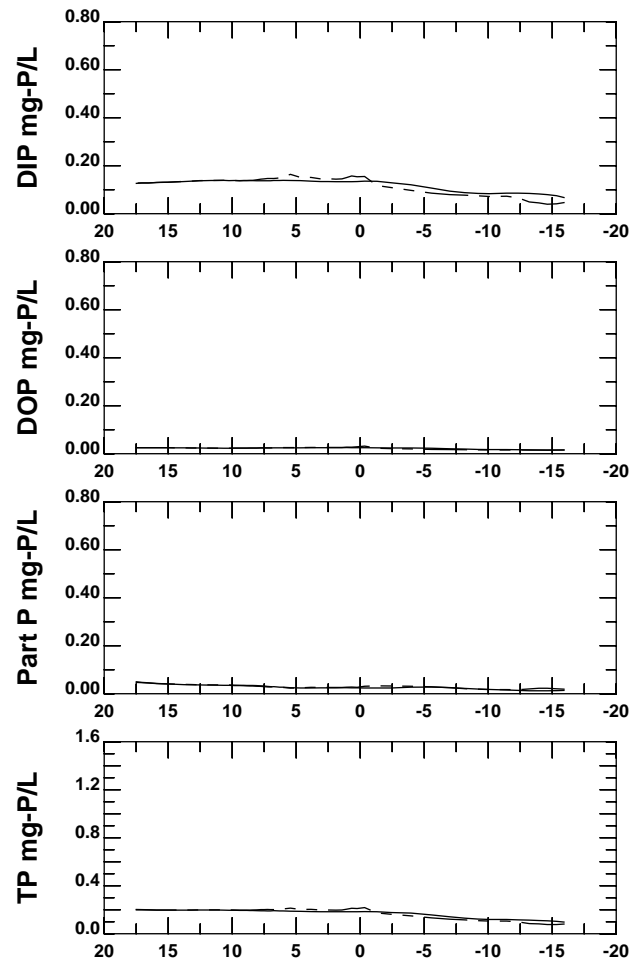
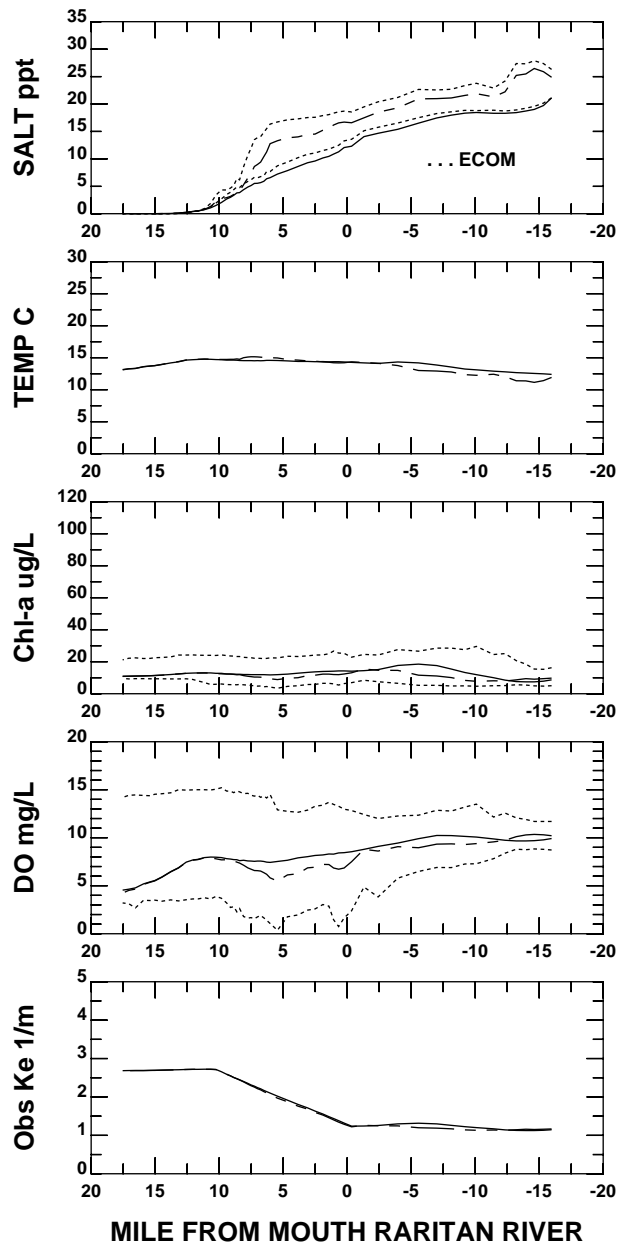
- - - - - BOTTOM 30-DAY MEAN

- - - 30-DAY SURFACE MAX OR BOTTOM MIN

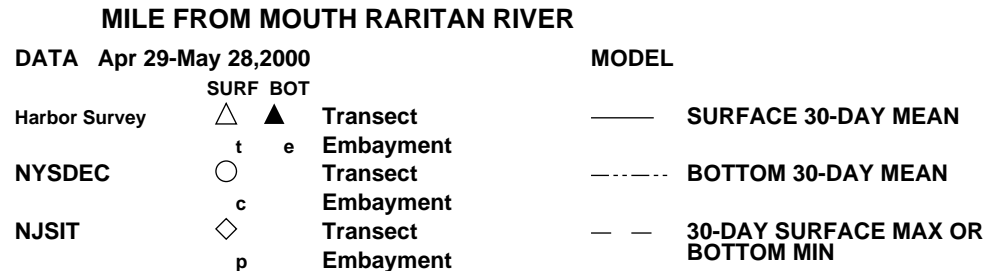
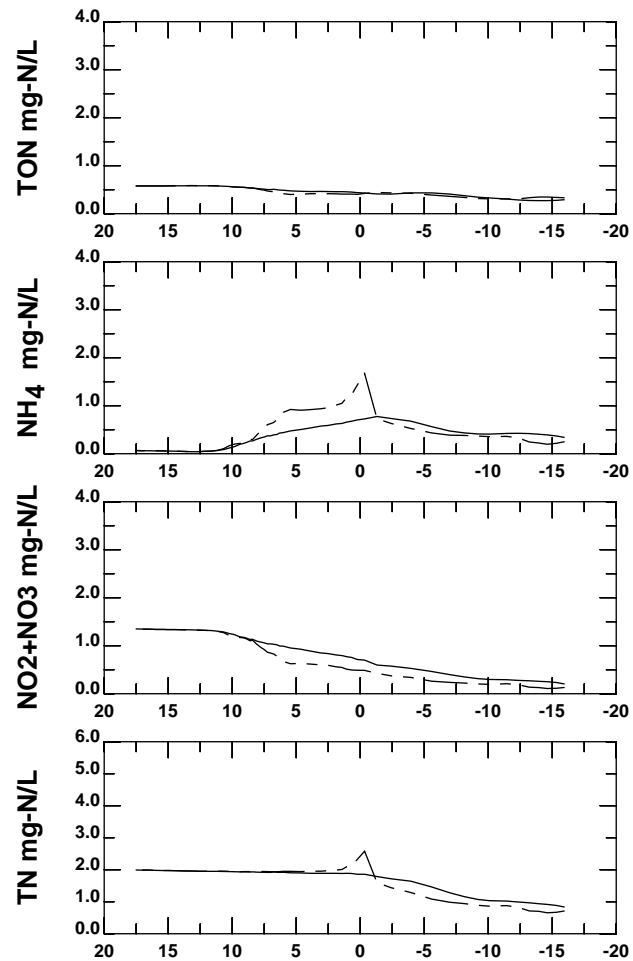
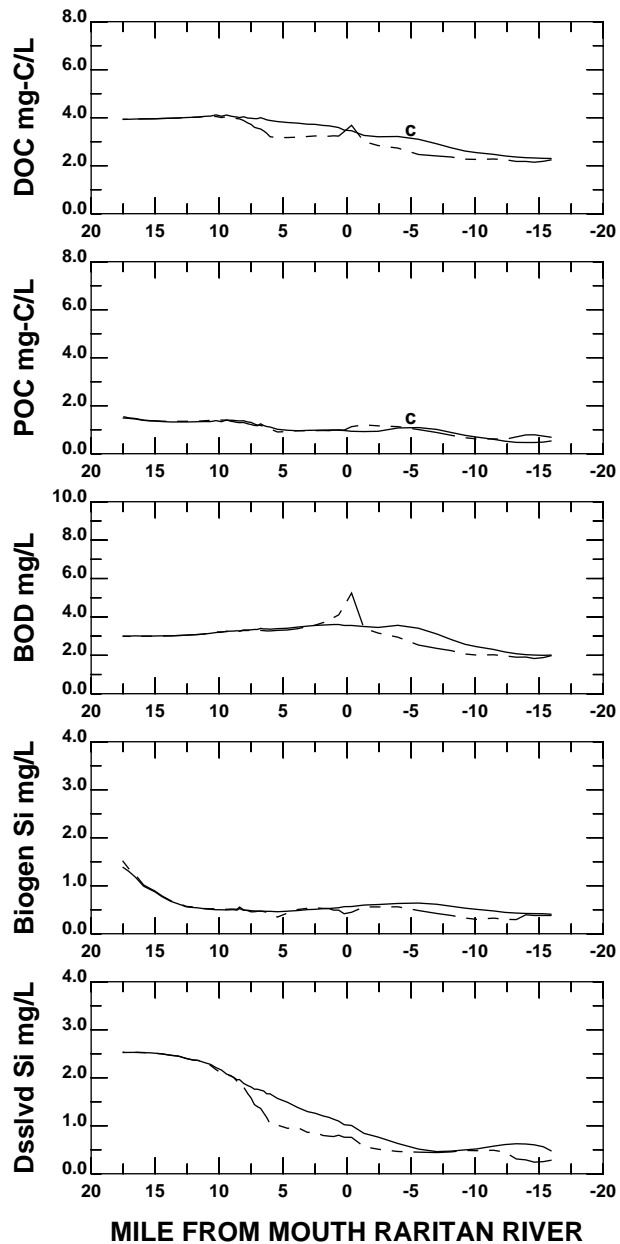
**RARITAN RIVER AND NORTH SHORE OF RARITAN BAY**



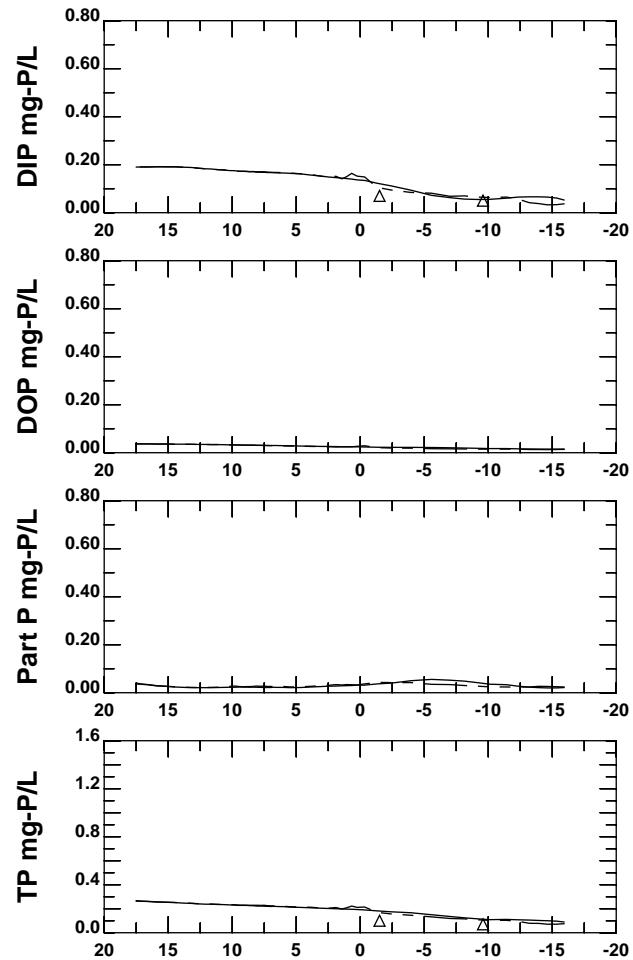
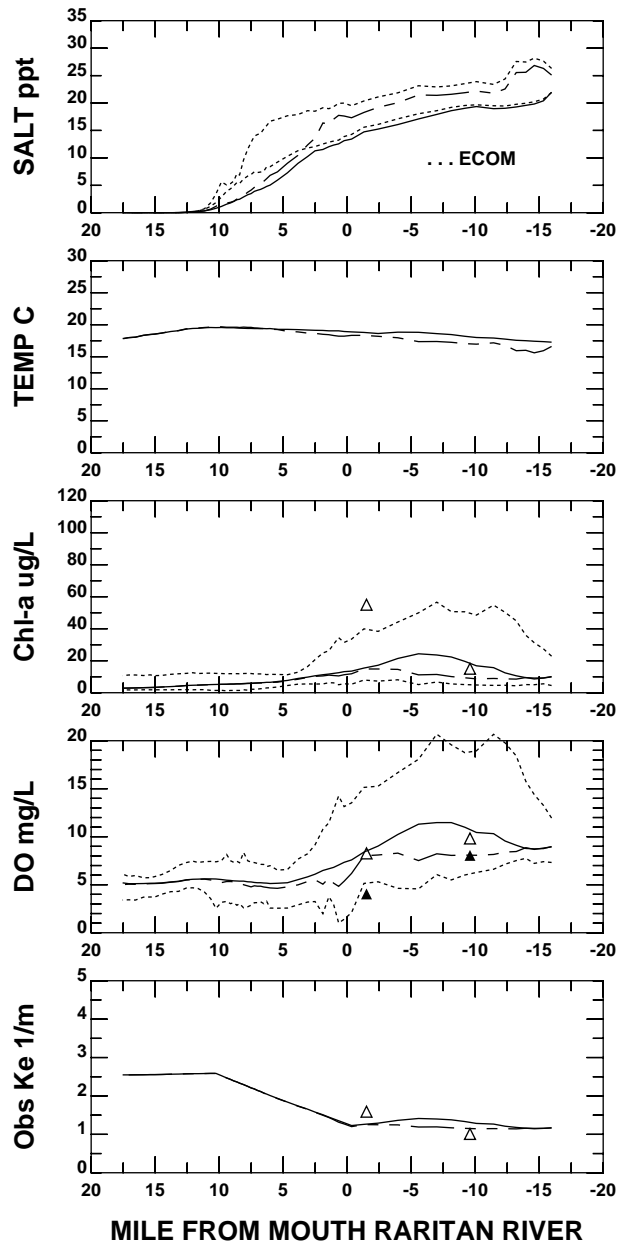
**RARITAN RIVER AND NORTH SHORE RARITAN BAY**



**RARITAN RIVER AND NORTH SHORE OF RARITAN BAY**



**RARITAN RIVER AND NORTH SHORE RARITAN BAY**



**DATA** May 29-Jun 27,2000

**MODEL**

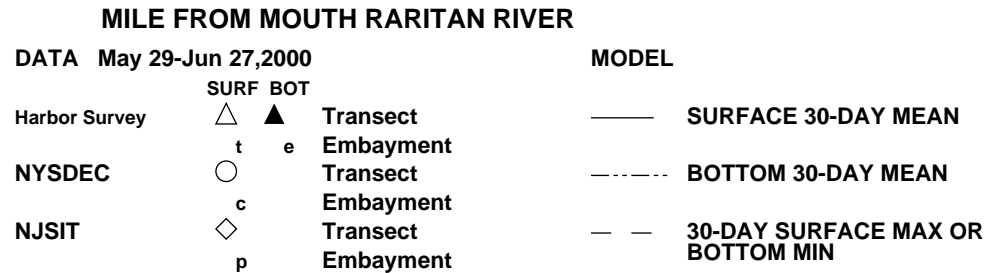
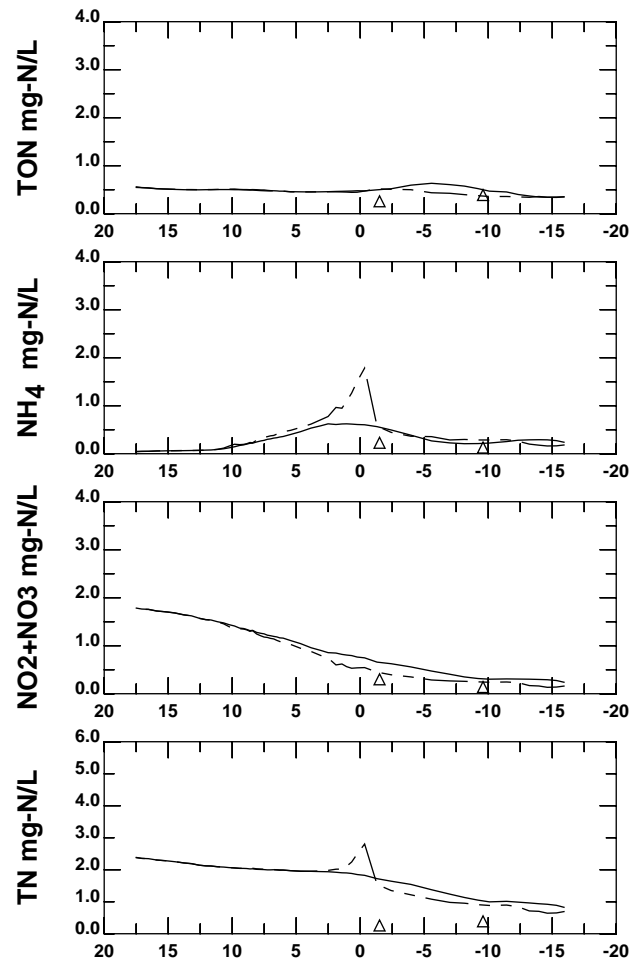
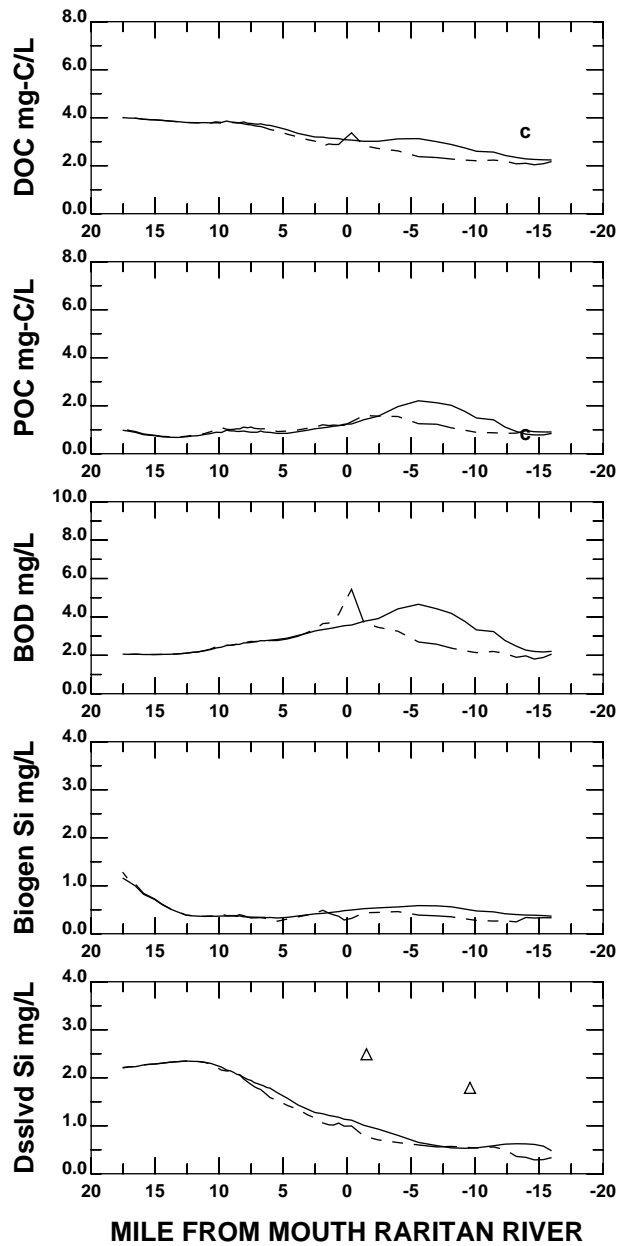
	SURF BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment

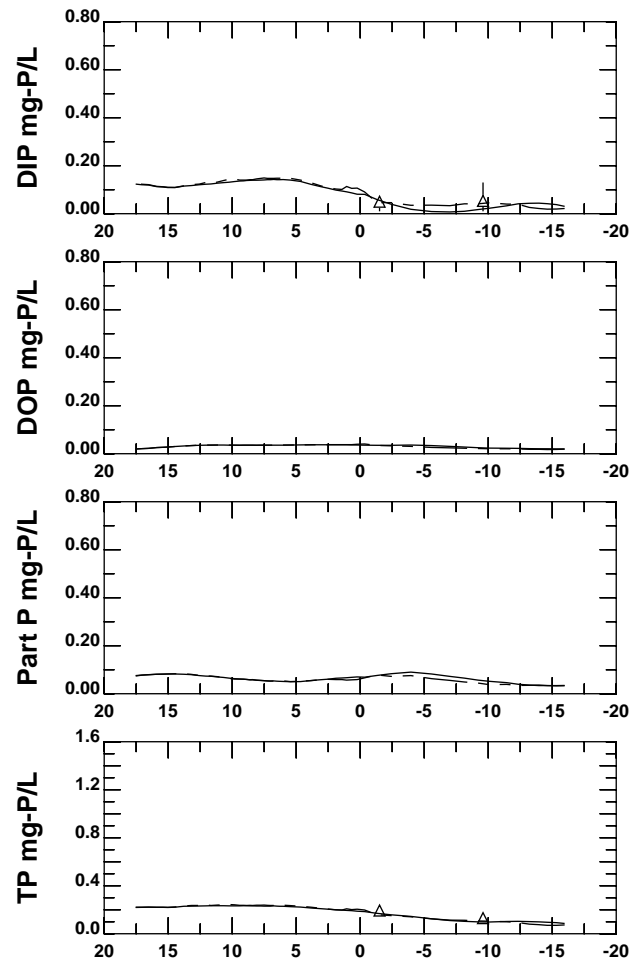
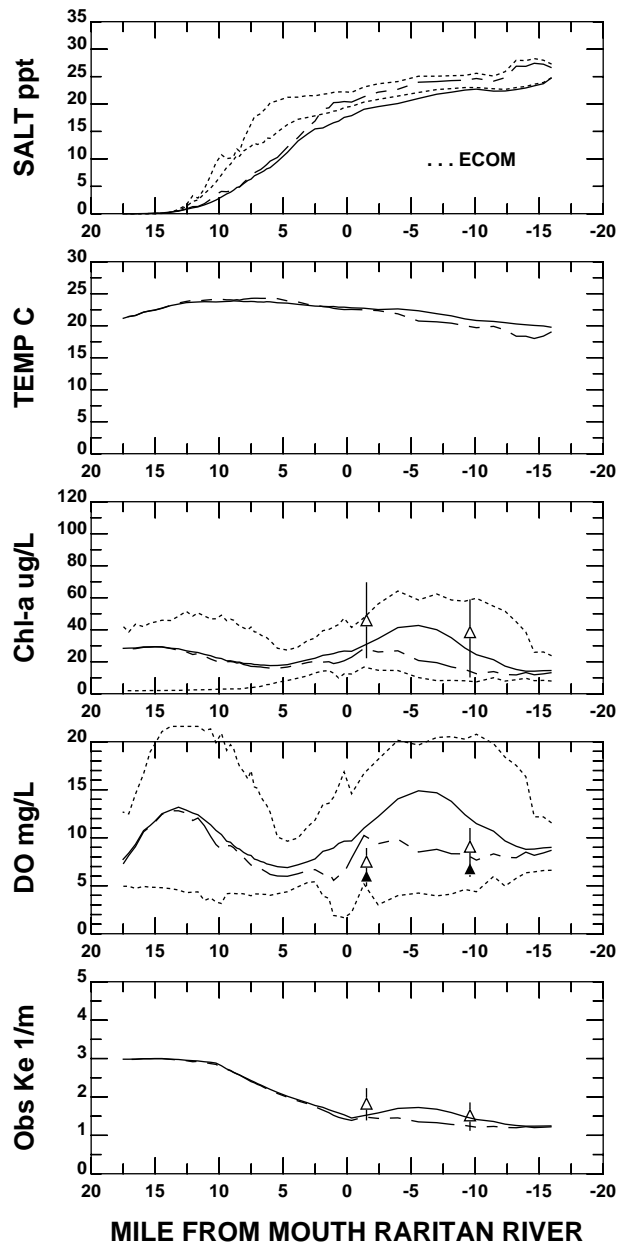
—	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - -	30-DAY SURFACE MAX OR BOTTOM MIN

## RARITAN RIVER AND NORTH SHORE OF RARITAN BAY





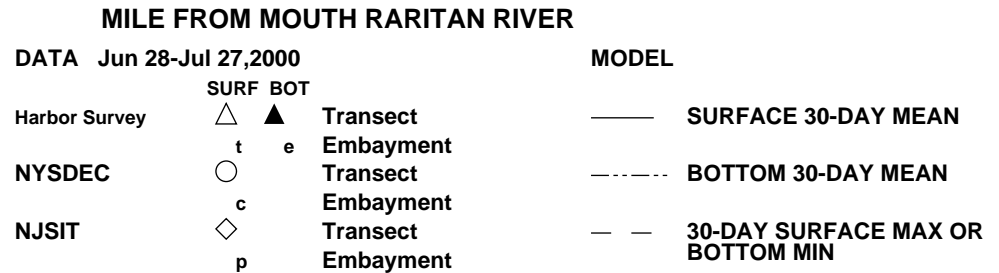
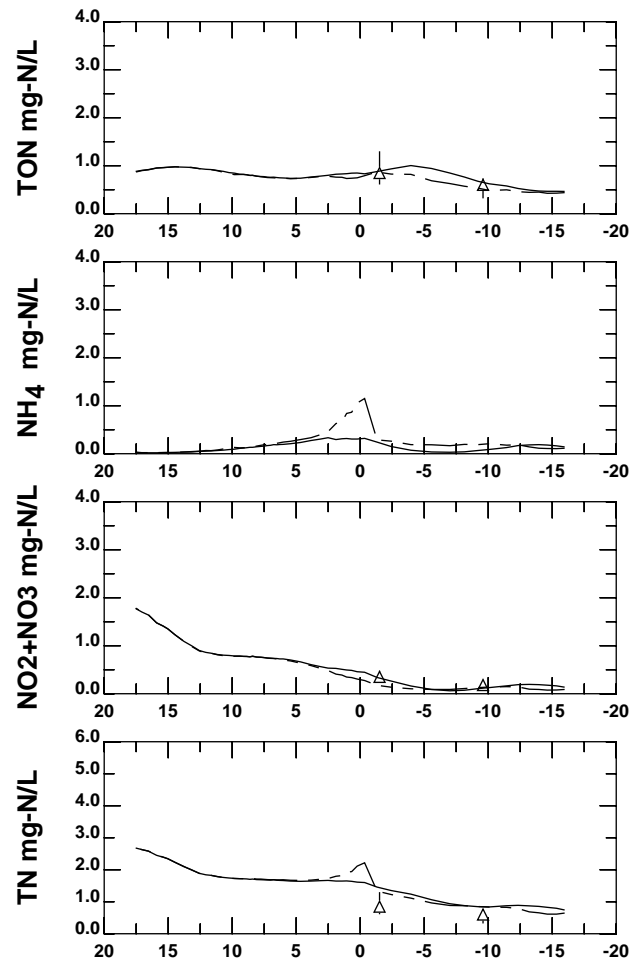
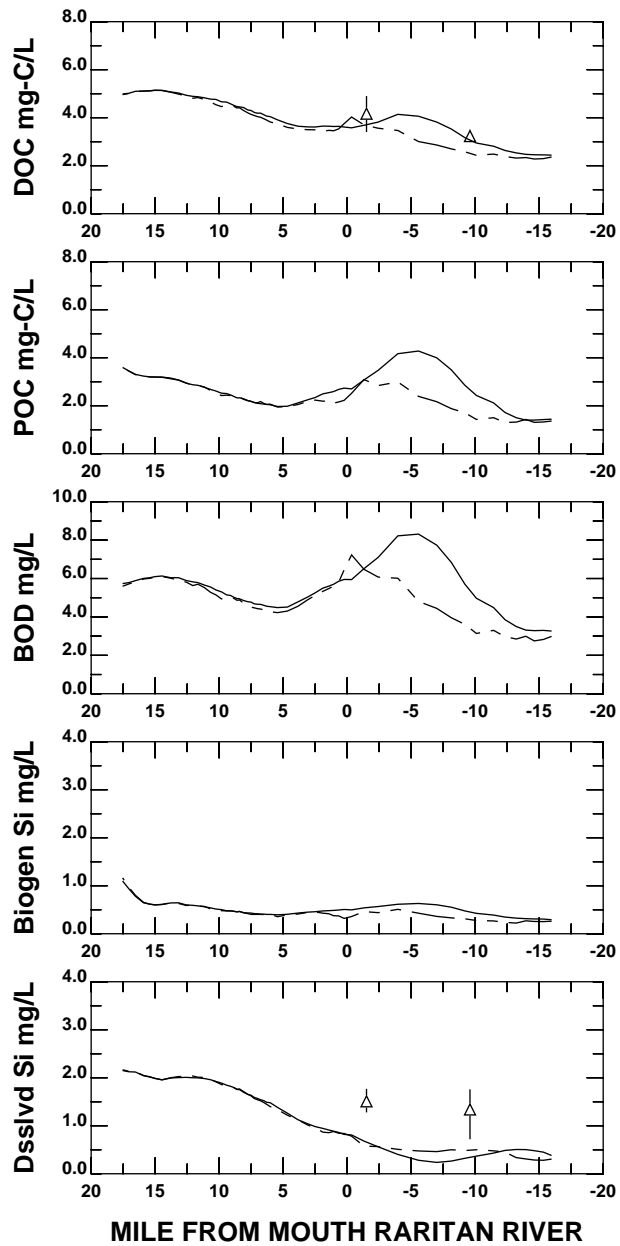
**RARITAN RIVER AND NORTH SHORE RARITAN BAY**



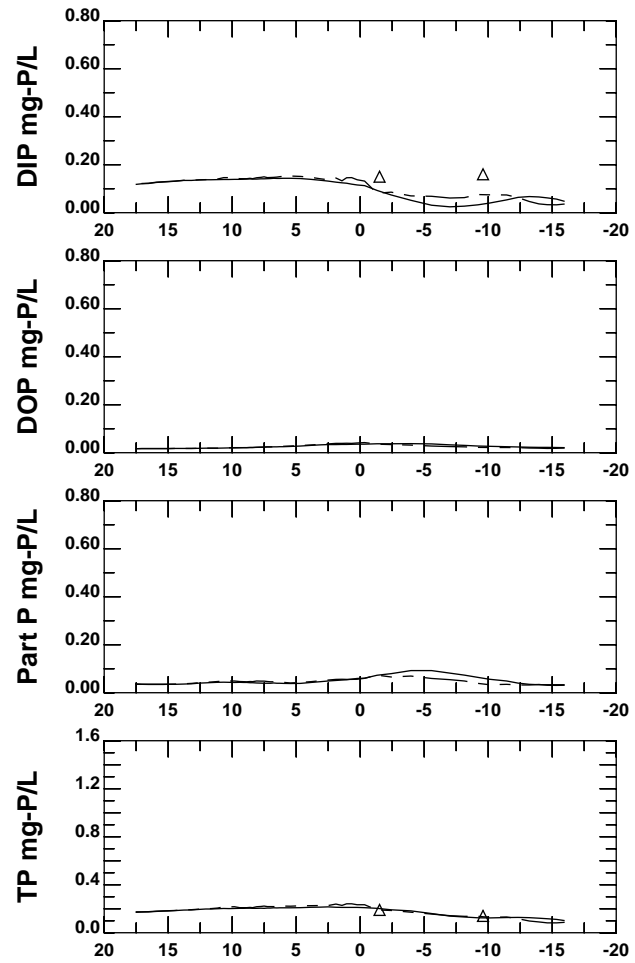
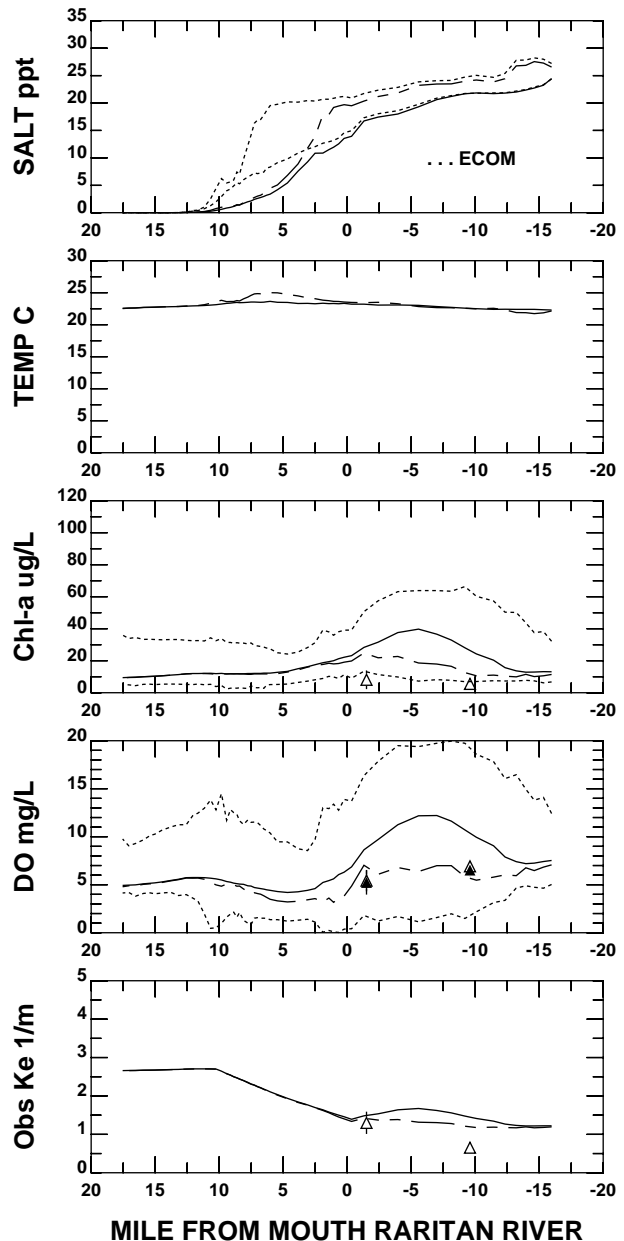
**DATA Jun 28-Jul 27,2000**

	<b>SURF BOT</b>		<b>MODEL</b>
Harbor Survey	△	▲	— SURFACE 30-DAY MEAN
	t	e	--- BOTTOM 30-DAY MEAN
NYSDEC	○		- - - 30-DAY SURFACE MAX OR BOTTOM MIN
	c		
NJSIT	◇		
	p		

**RARITAN RIVER AND NORTH SHORE OF RARITAN BAY**



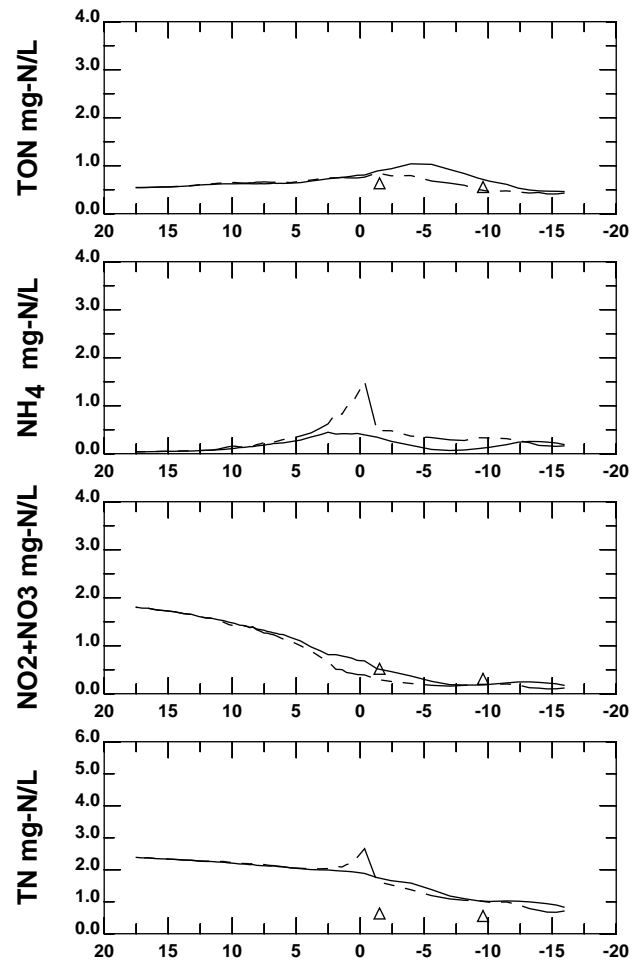
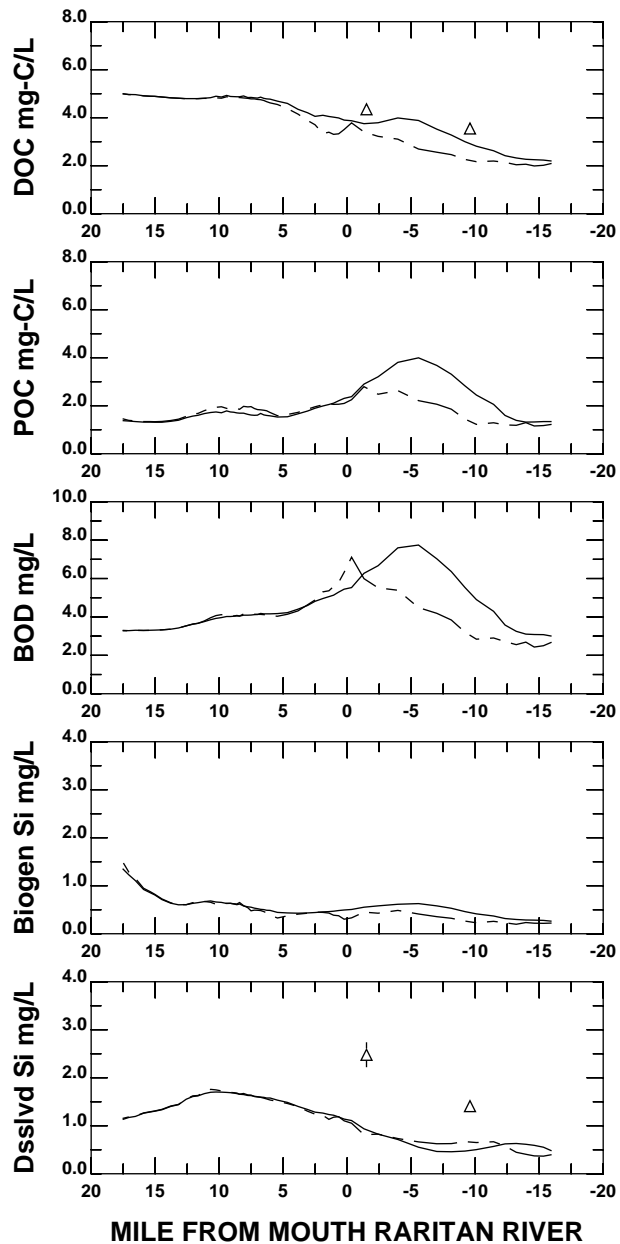
### RARITAN RIVER AND NORTH SHORE RARITAN BAY



**MILE FROM MOUTH RARITAN RIVER**

<b>DATA Jul 27-Aug 26, 2000</b>		<b>MODEL</b>
	<b>SURF BOT</b>	
Harbor Survey	△ ▲	Transect
	t e	Embayment
NYSDEC	○	Transect
	c	Embayment
NJSIT	◇	Transect
	p	Embayment
	—	SURFACE 30-DAY MEAN
	- - -	BOTTOM 30-DAY MEAN
	- - -	30-DAY SURFACE MAX OR BOTTOM MIN

**RARITAN RIVER AND NORTH SHORE OF RARITAN BAY**



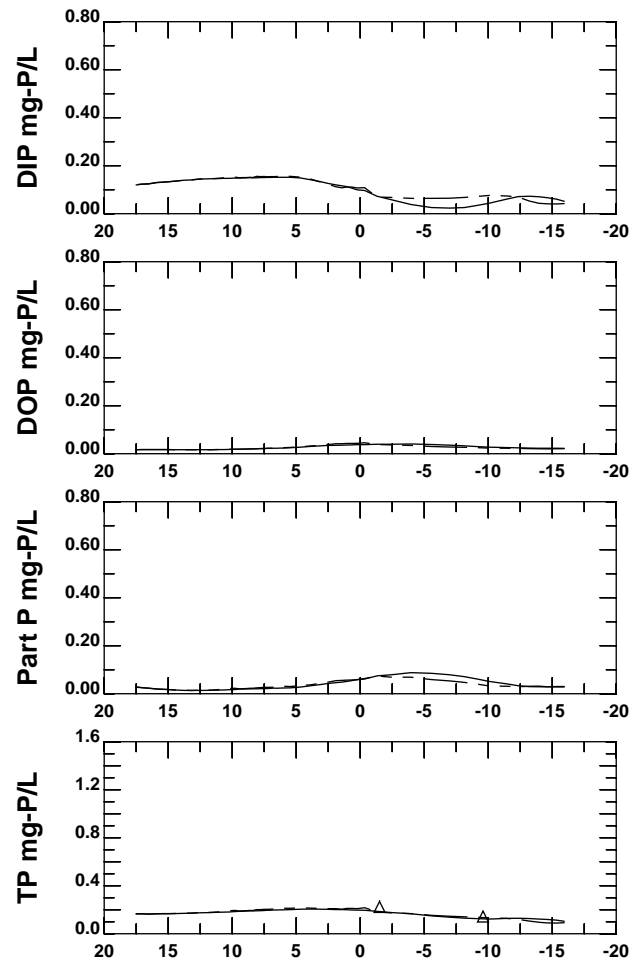
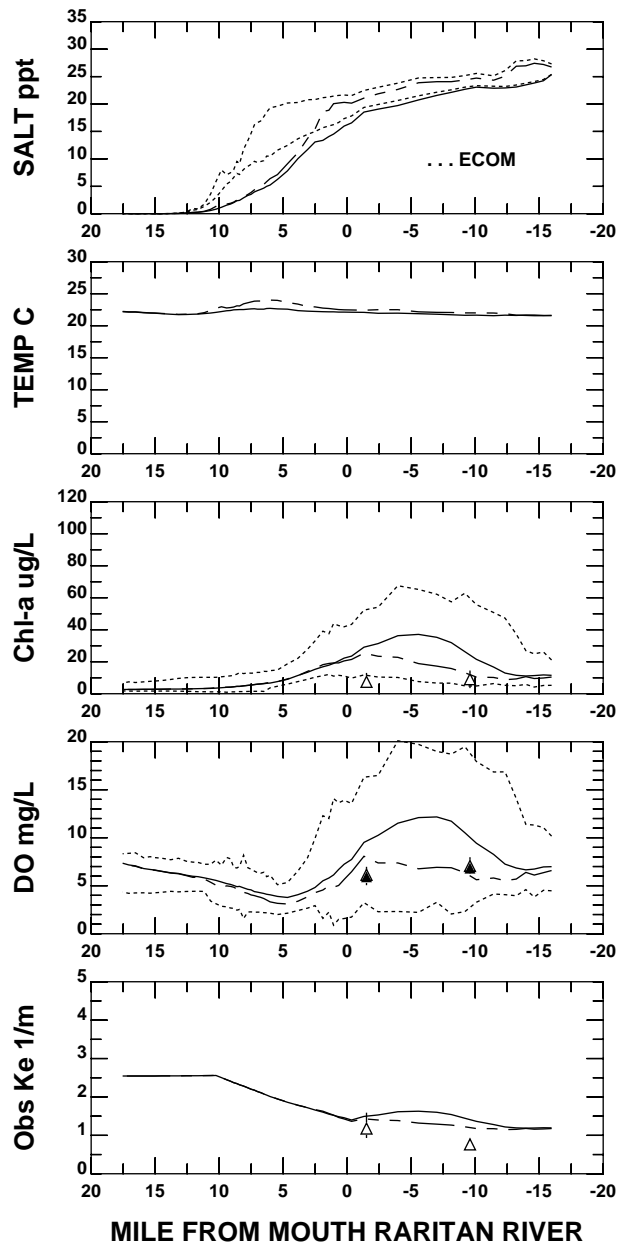
DATA Jul 27-Aug 26,2000

MODEL

	SURF BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment

—	SURFACE 30-DAY MEAN
- - -	BOTTOM 30-DAY MEAN
- - -	30-DAY SURFACE MAX OR BOTTOM MIN

## RARITAN RIVER AND NORTH SHORE RARITAN BAY



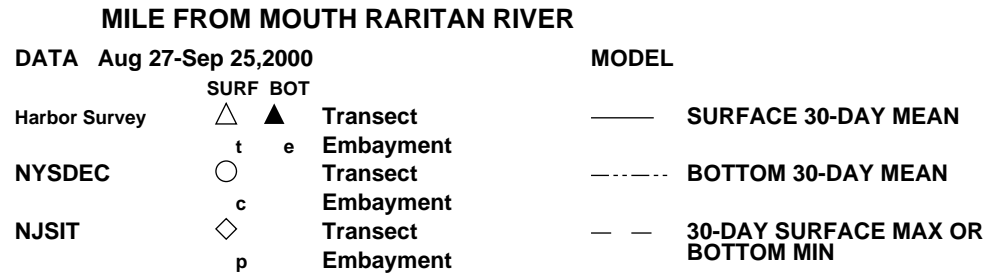
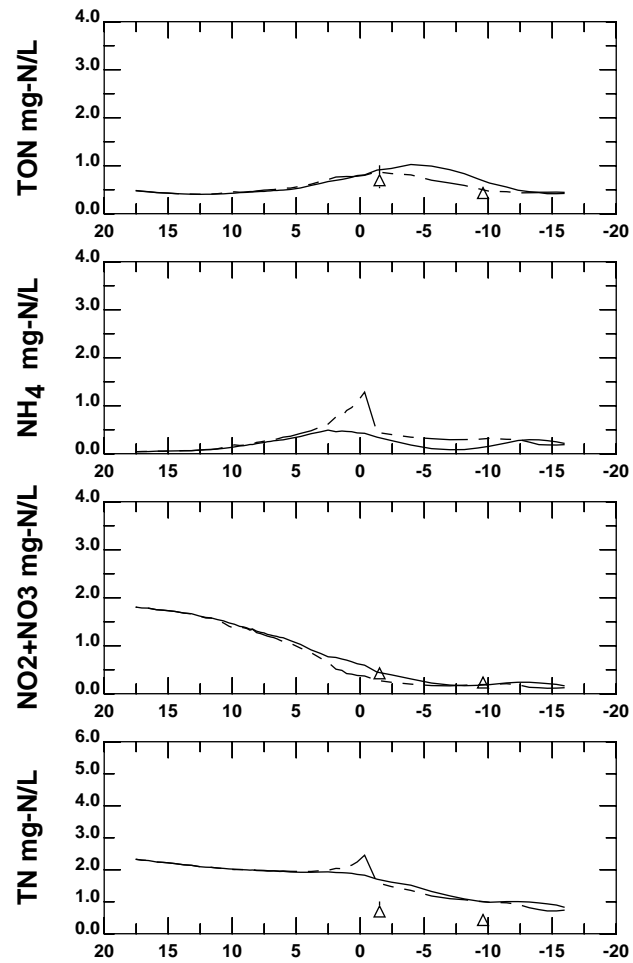
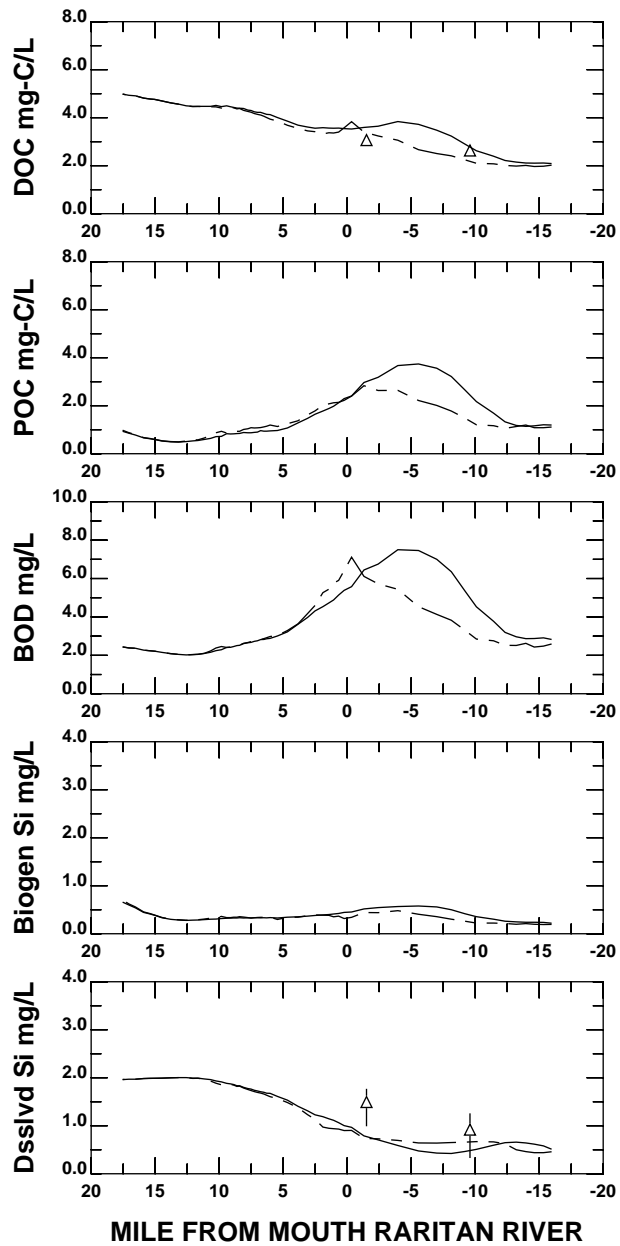
**DATA Aug 27-Sep 25,2000**

**MODEL**

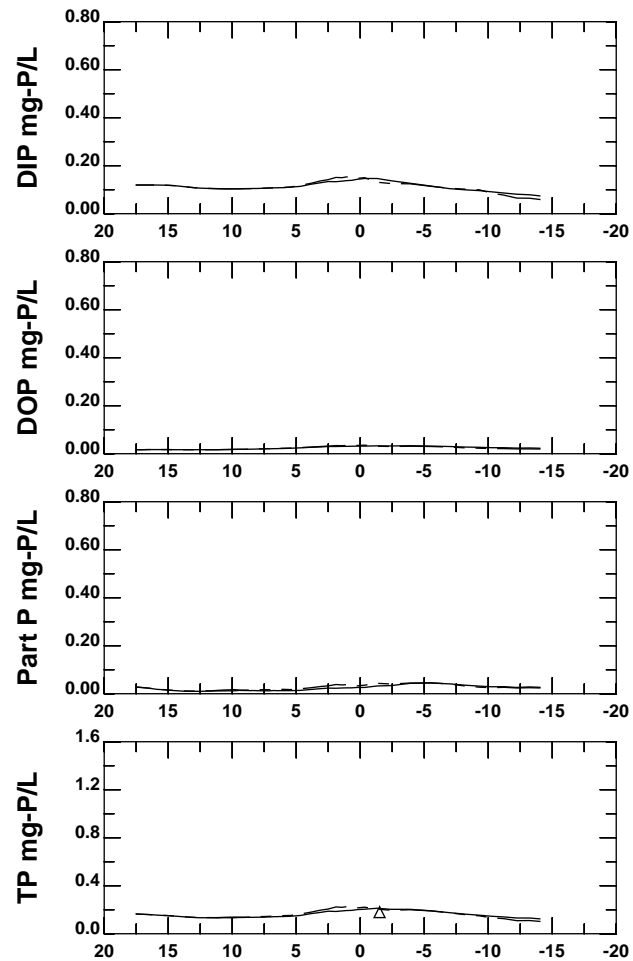
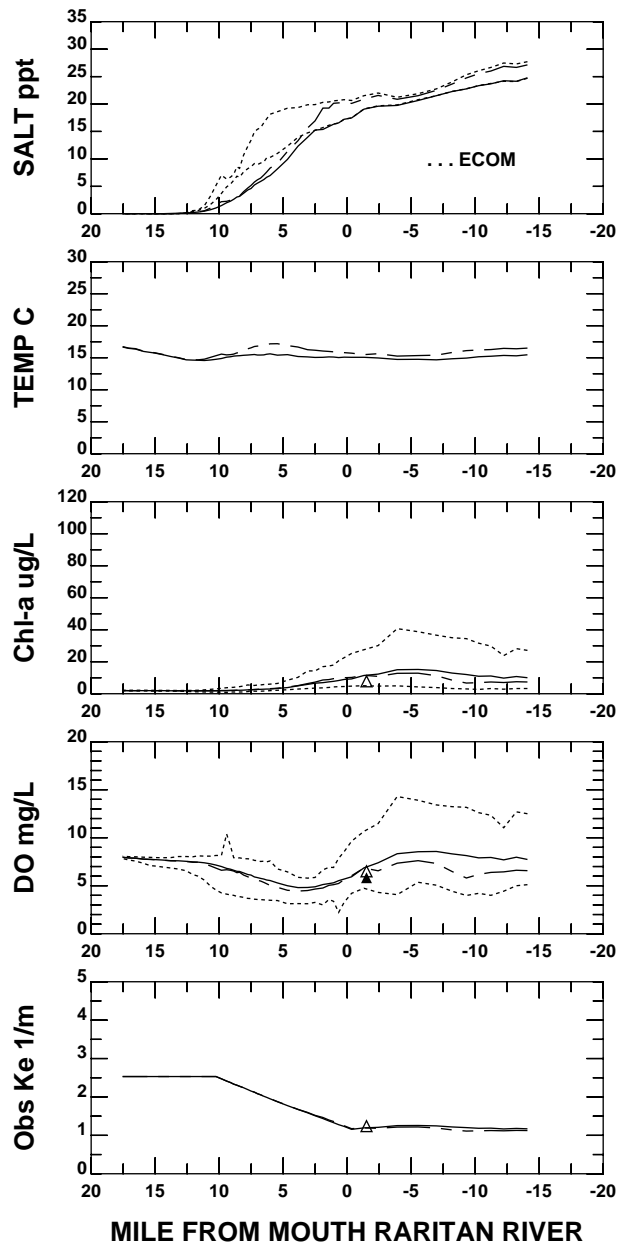
	SURF BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment

—	SURFACE 30-DAY MEAN
---	BOTTOM 30-DAY MEAN
- - -	30-DAY SURFACE MAX OR BOTTOM MIN



## RARITAN RIVER AND NORTH SHORE RARITAN BAY



DATA Oct 1-30,1999

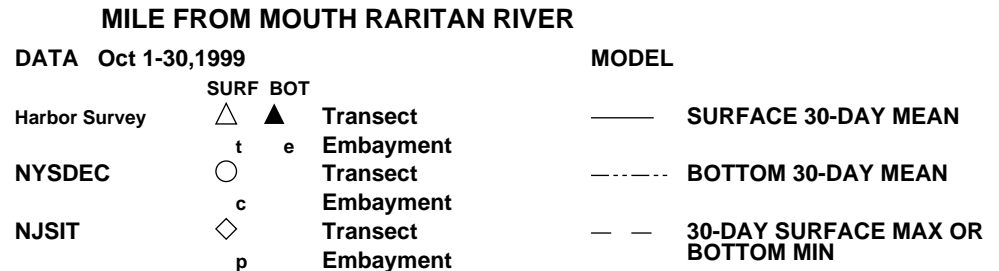
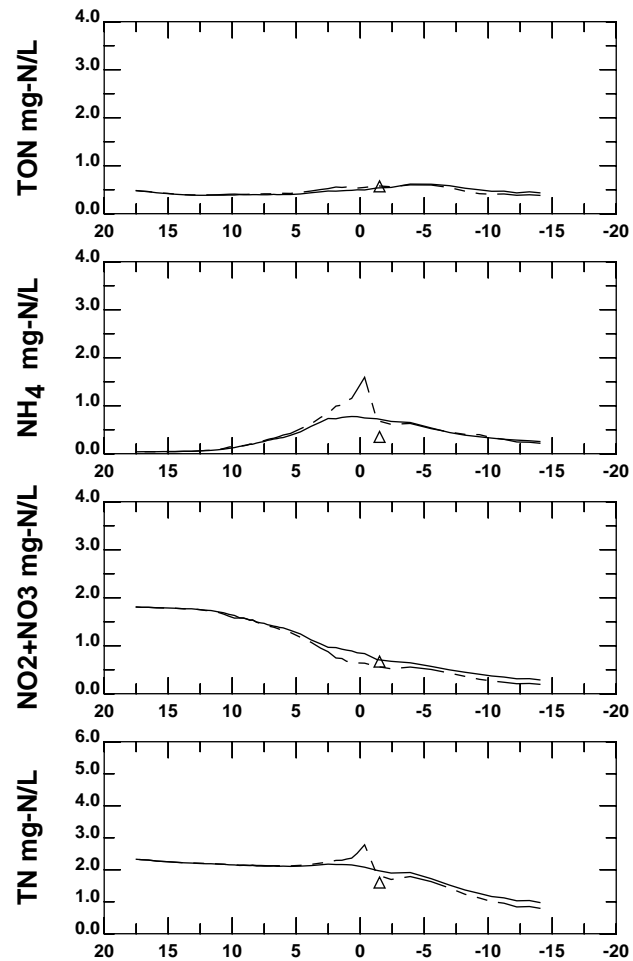
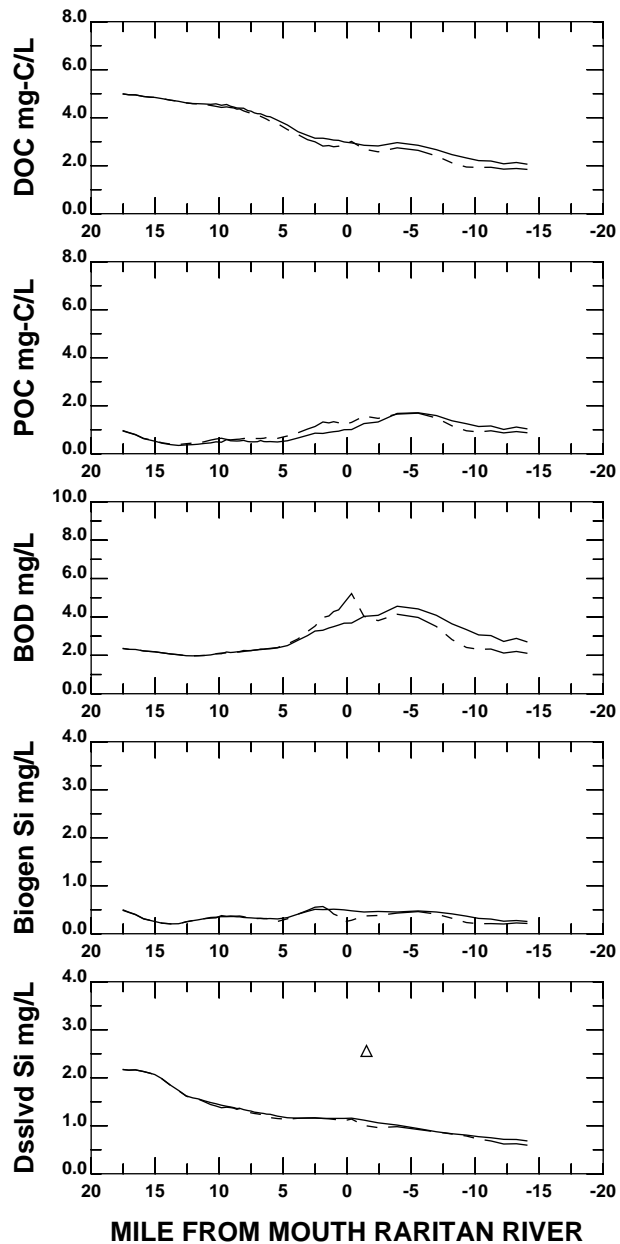
MODEL

	SURF	BOT	
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment

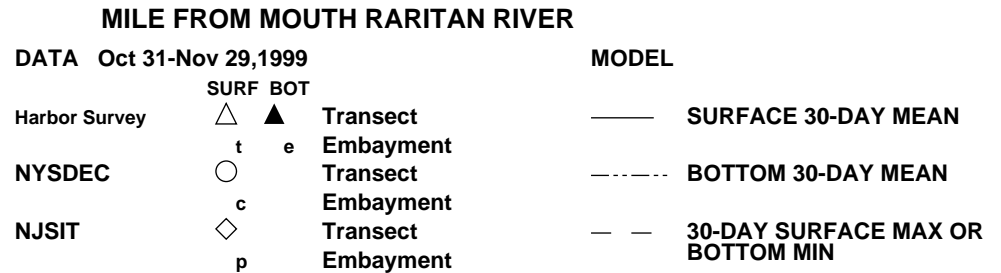
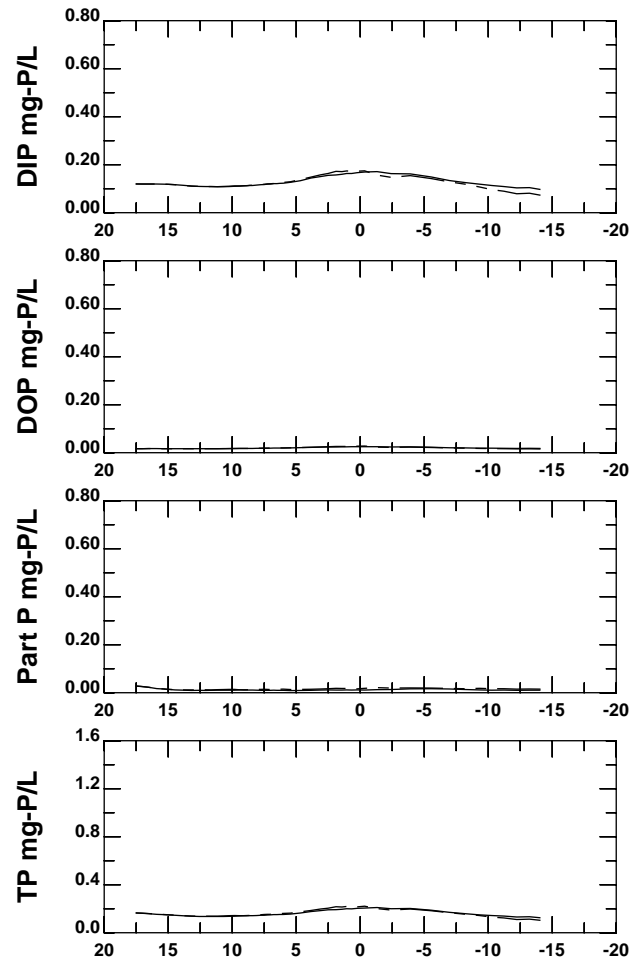
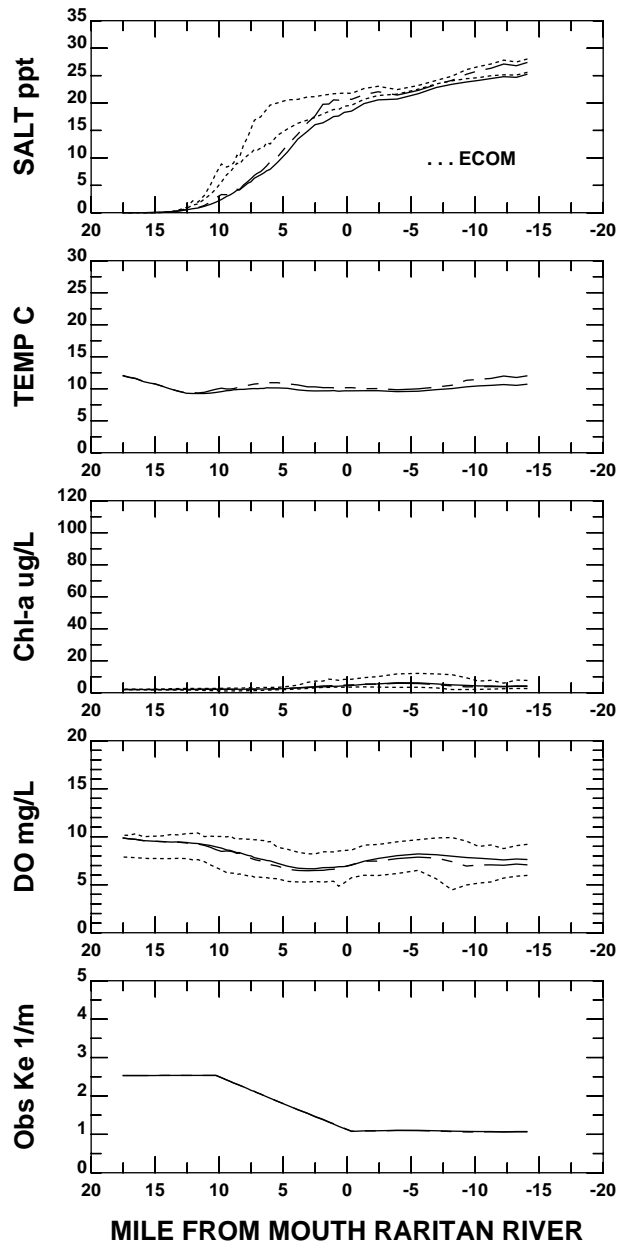
—	SURFACE 30-DAY MEAN
---	BOTTOM 30-DAY MEAN
- - -	30-DAY SURFACE MAX OR BOTTOM MIN

## RARITAN RIVER AND SOUTH SHORE RARITAN BAY

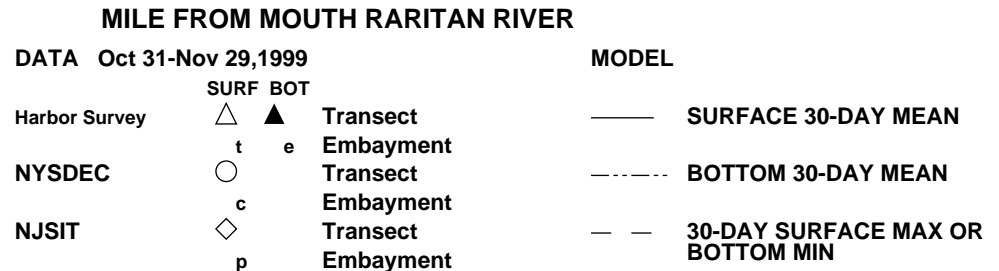
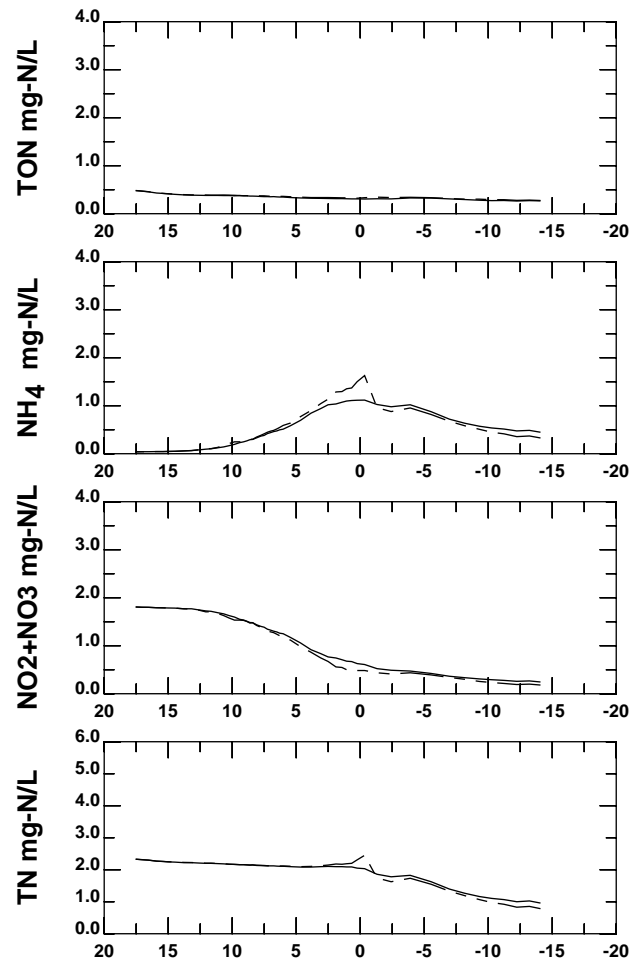
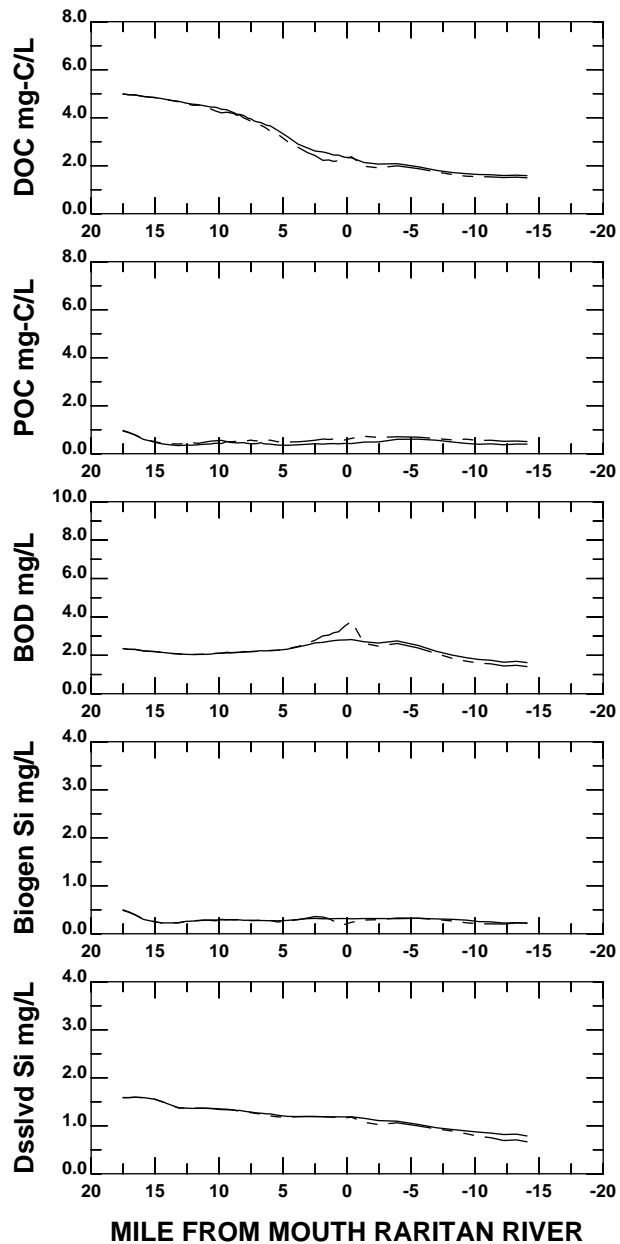




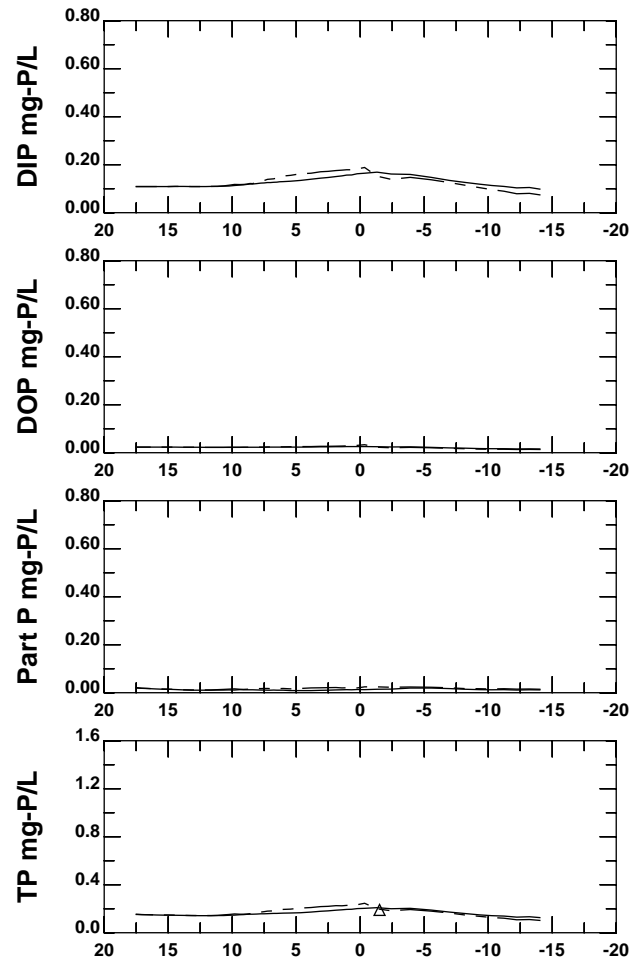
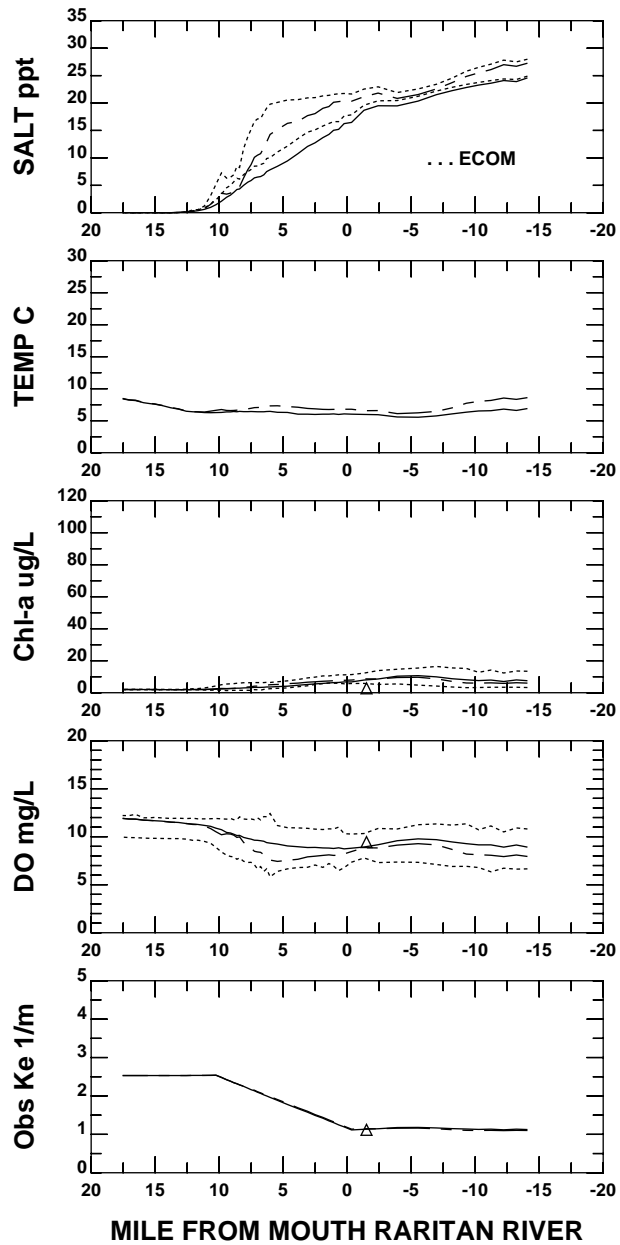
**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**



**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**



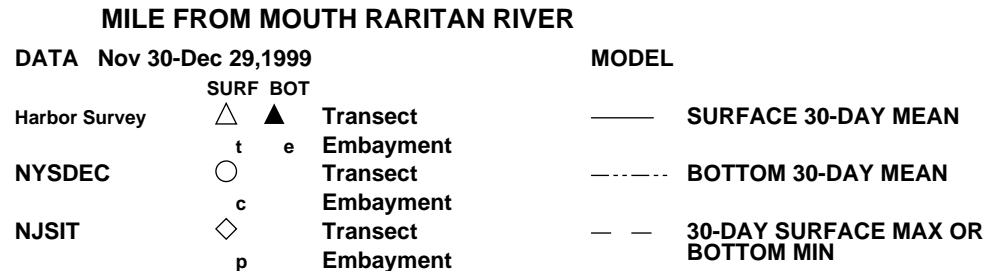
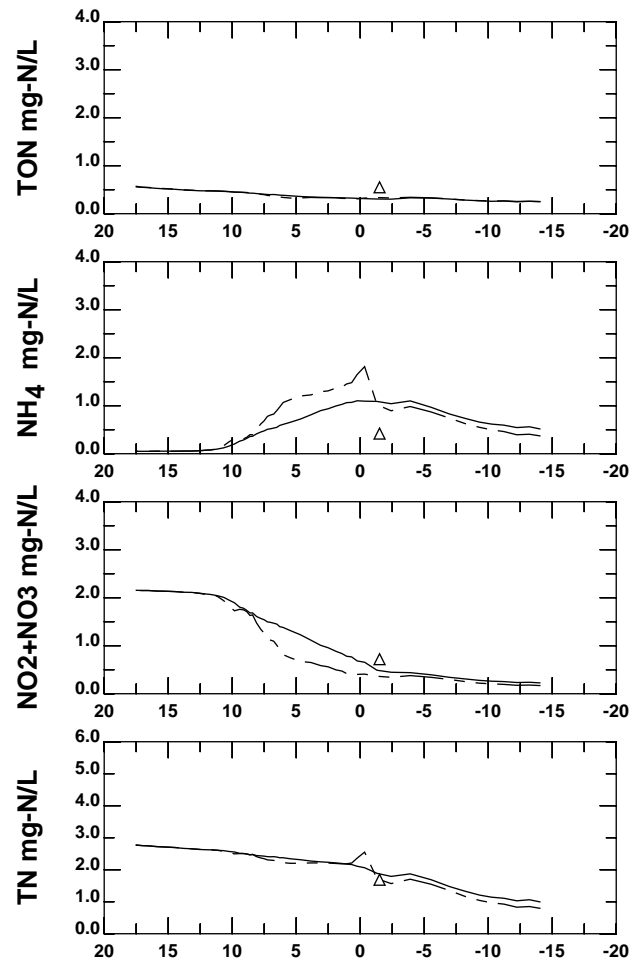
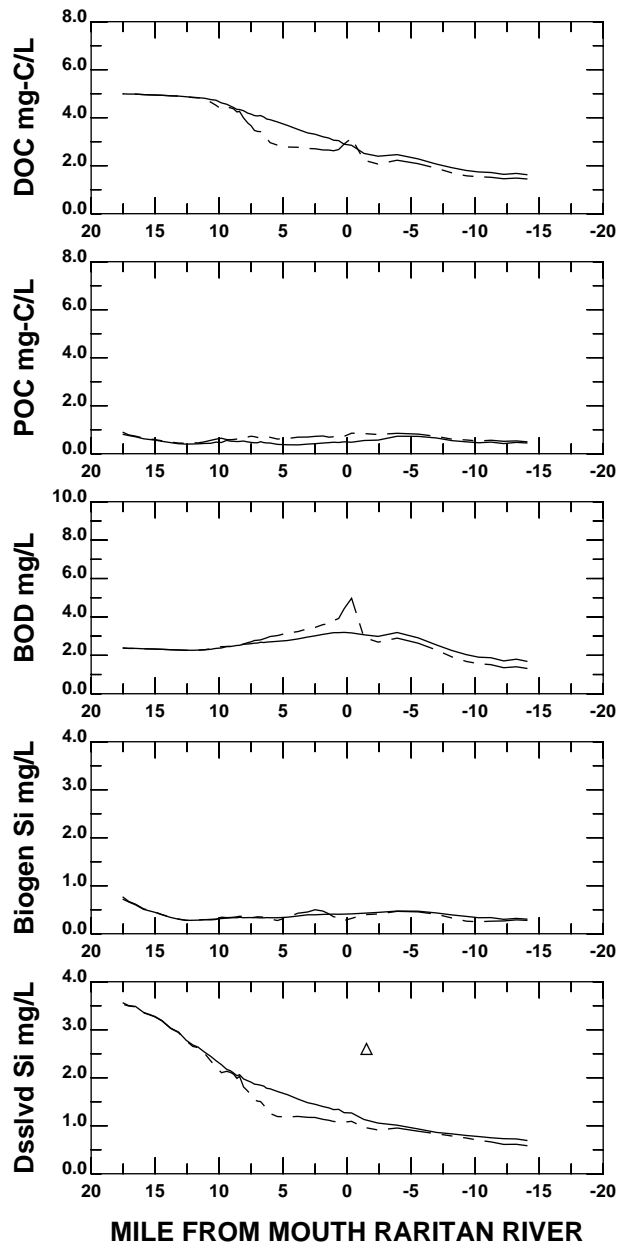
**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**



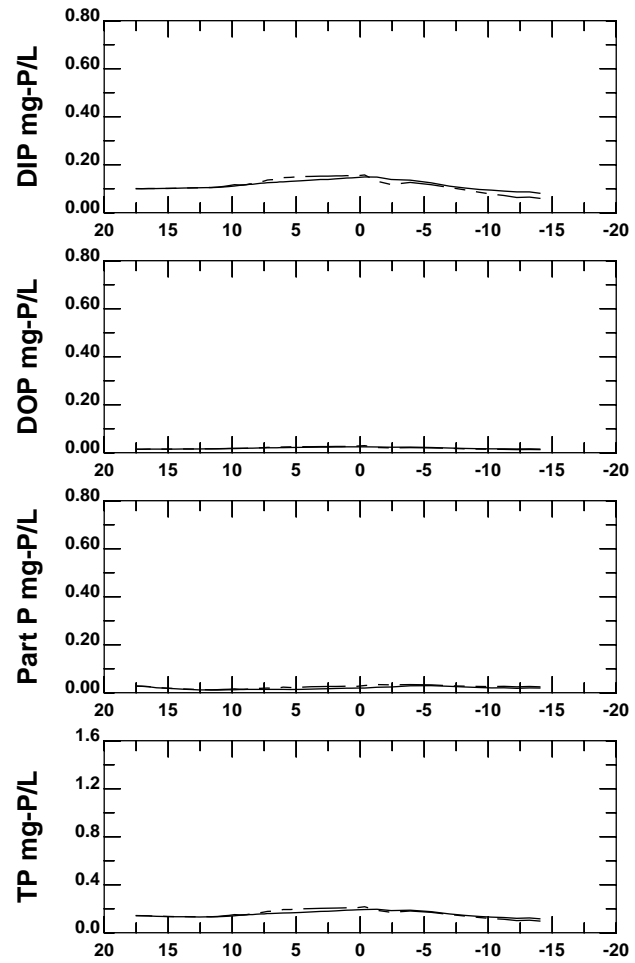
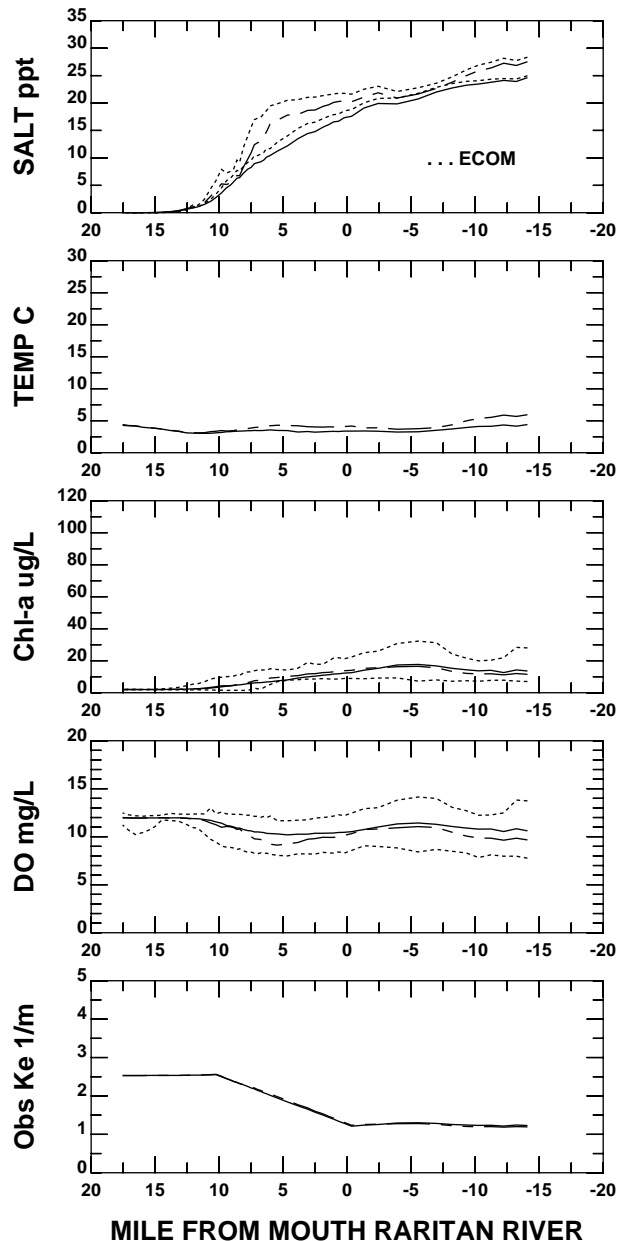
**DATA Nov 30-Dec 29,1999**

	<b>SURF</b>	<b>BOT</b>		<b>MODEL</b>
Harbor Survey	△	▲	Transect	— SURFACE 30-DAY MEAN
NYSDEC	t	e	Embayment	- - - - - BOTTOM 30-DAY MEAN
	○		Transect	
	c		Embayment	
NJSIT	◇		Transect	- - - - - 30-DAY SURFACE MAX OR
	p		Embayment	BOTTOM MIN

**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**



**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**



**DATA** Dec 30 1999 -Jan 28,2000

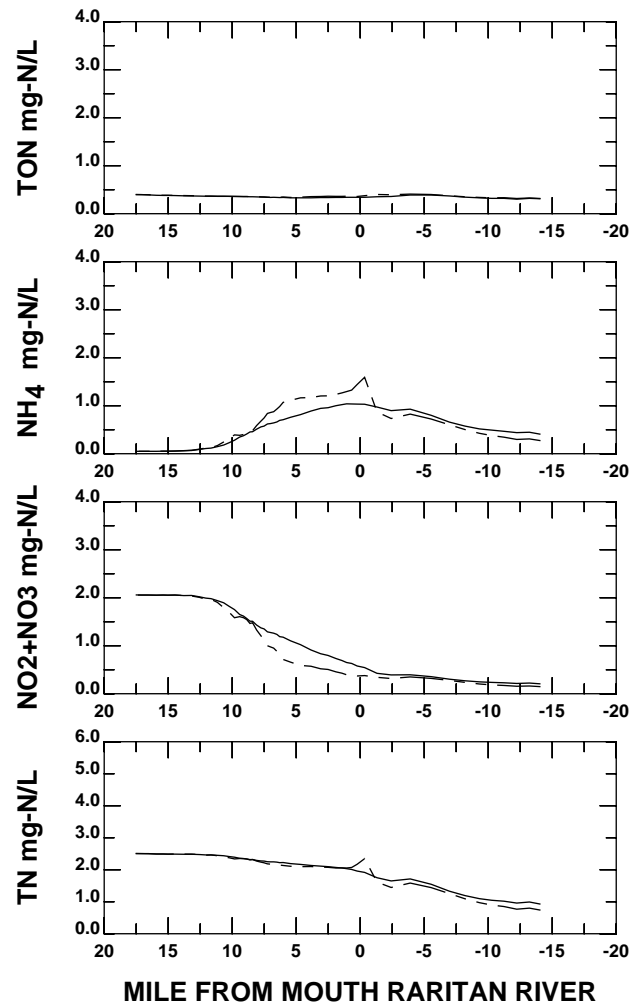
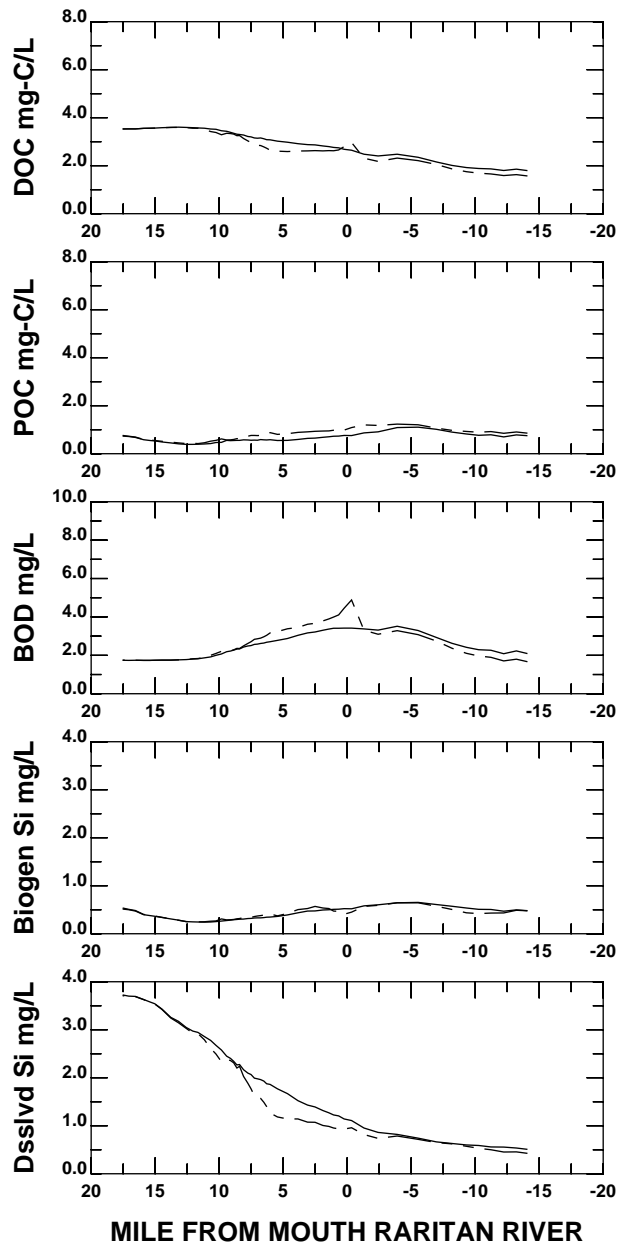
**MODEL**

	<b>SURF BOT</b>		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment

————	<b>SURFACE 30-DAY MEAN</b>
-----	<b>BOTTOM 30-DAY MEAN</b>
- - - -	<b>30-DAY SURFACE MAX OR BOTTOM MIN</b>

**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**

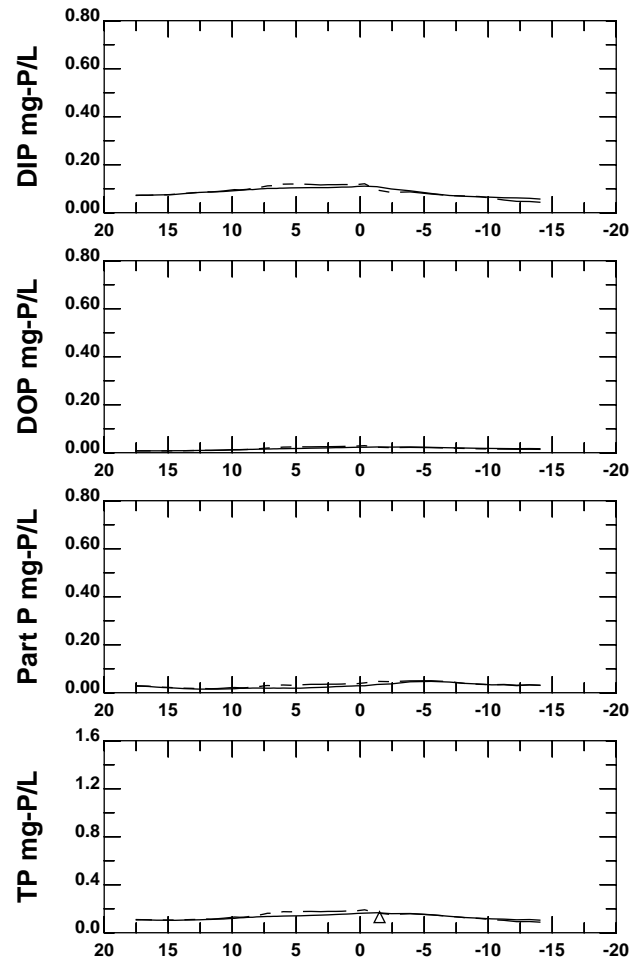
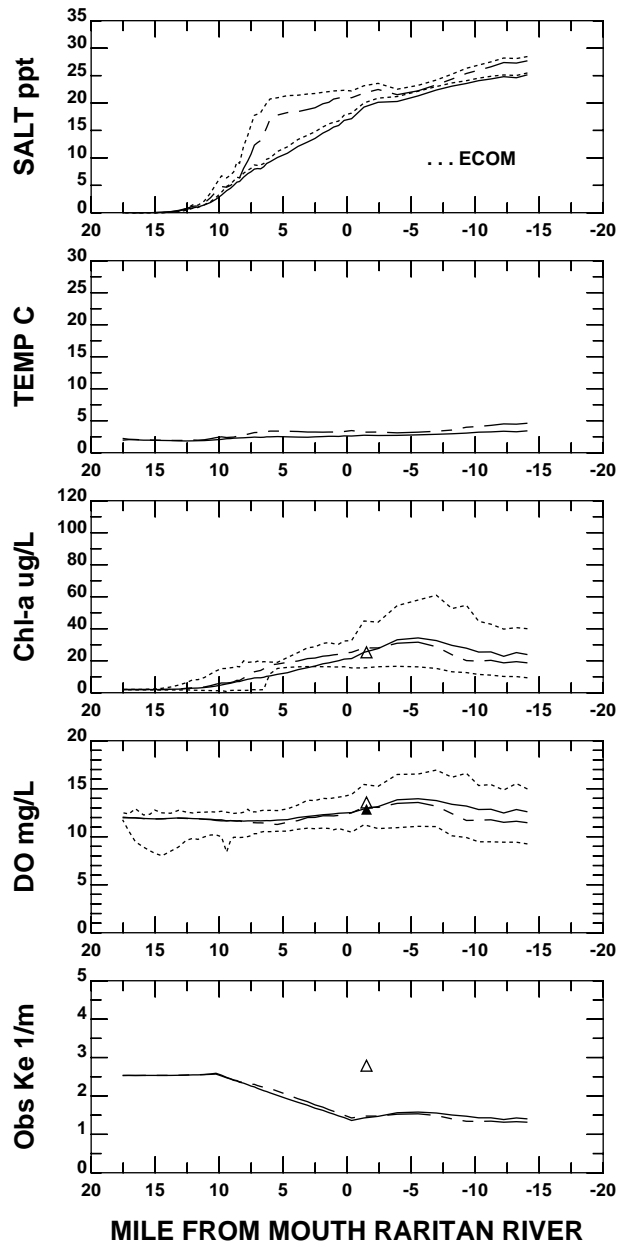


DATA Dec 30 1999 -Jan 28,2000

MODEL

	SURF BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment
			— SURFACE 30-DAY MEAN
			- - - - - BOTTOM 30-DAY MEAN
			- - - 30-DAY SURFACE MAX OR BOTTOM MIN

**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**



**DATA Jan 29-Feb 27, 2000**

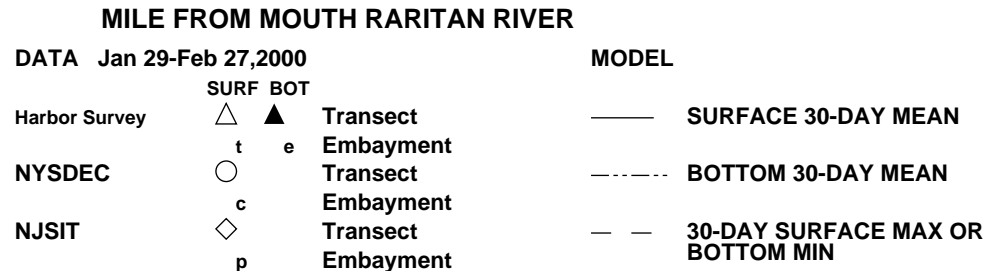
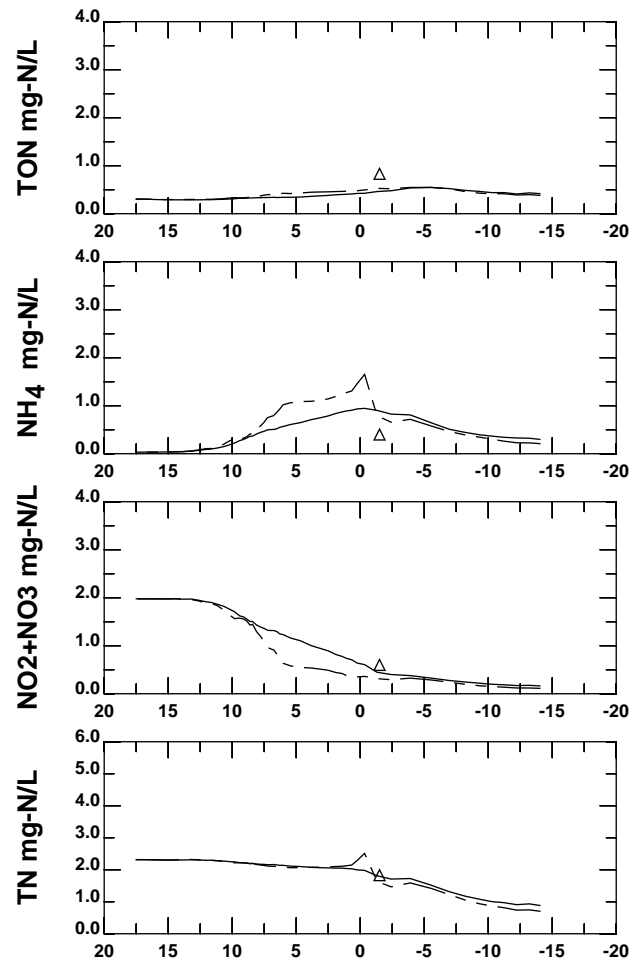
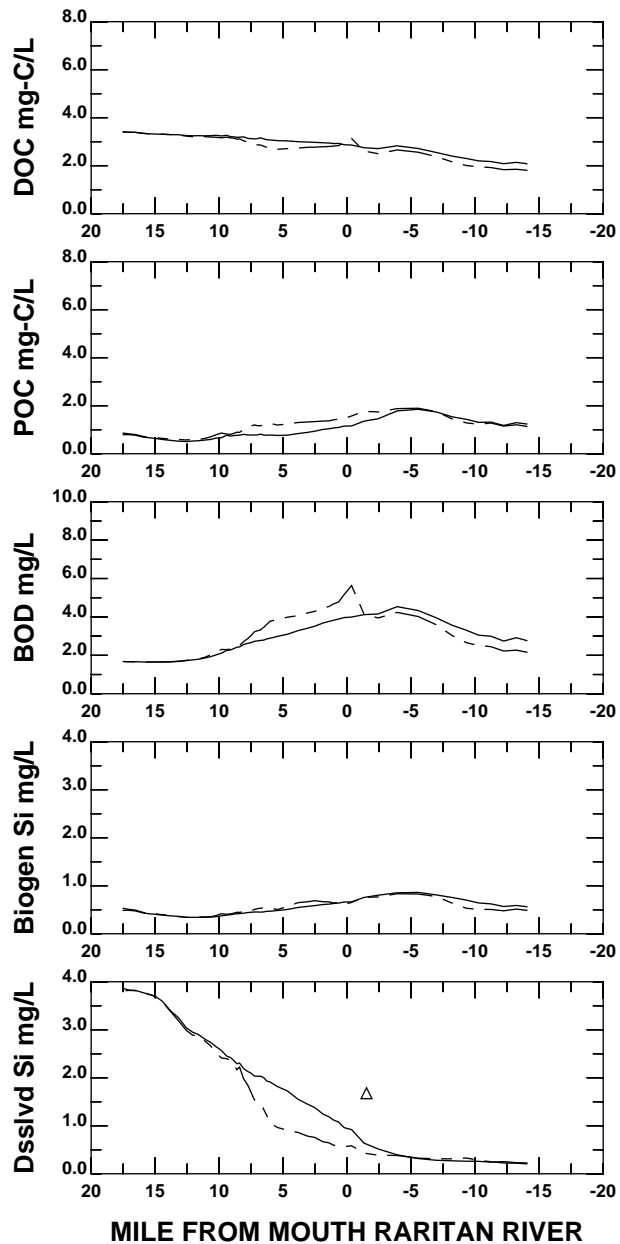
	<b>SURF BOT</b>		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment

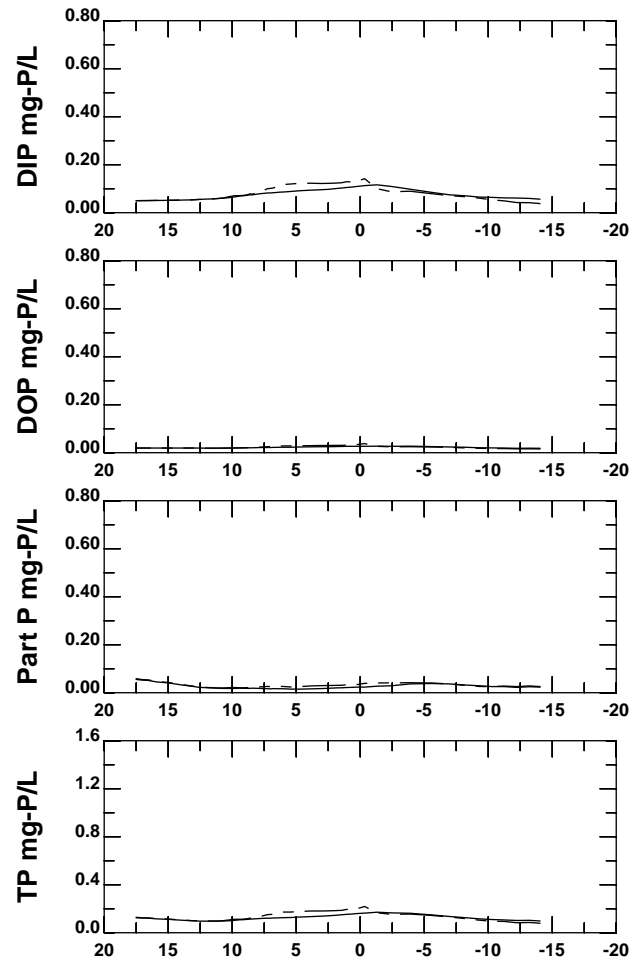
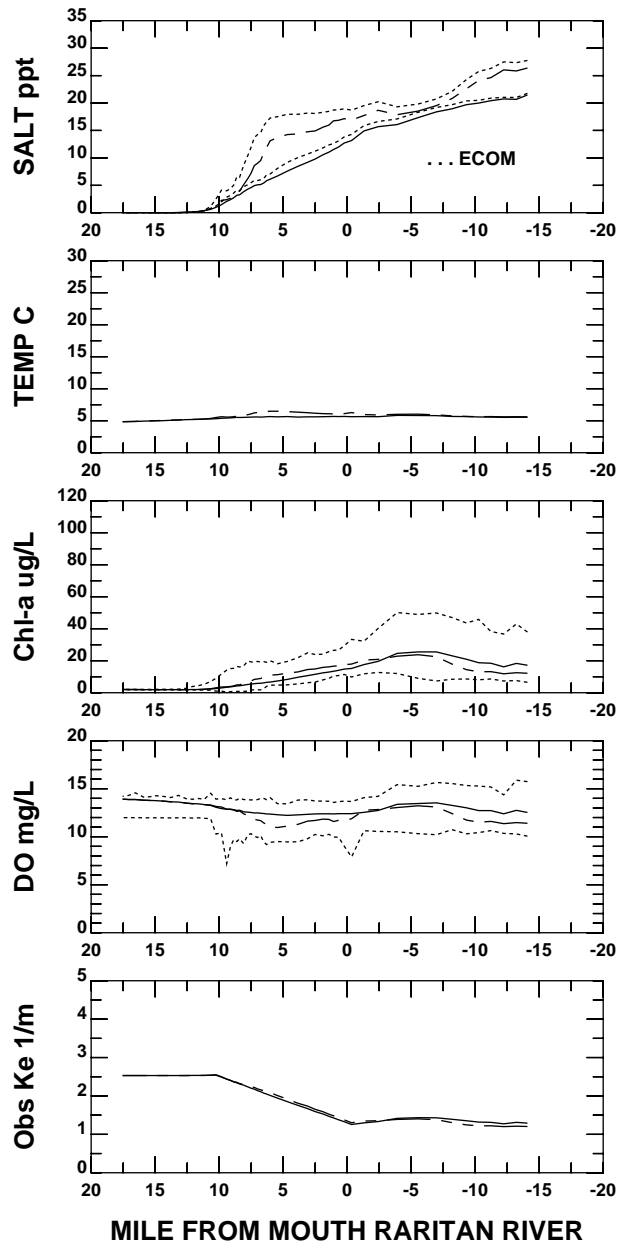
<b>MODEL</b>	—	<b>SURFACE 30-DAY MEAN</b>
	- - -	<b>BOTTOM 30-DAY MEAN</b>
	- - -	<b>30-DAY SURFACE MAX OR BOTTOM MIN</b>

**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**





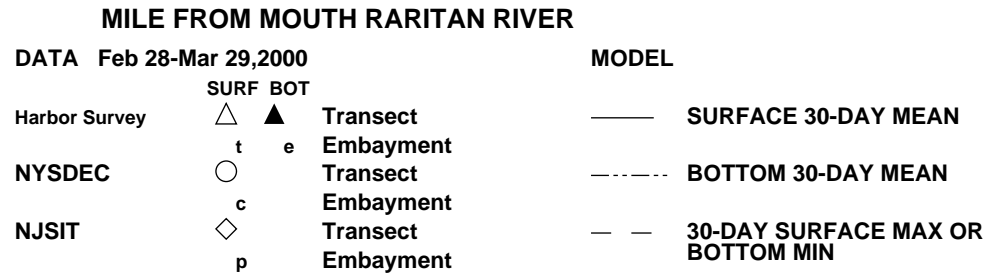
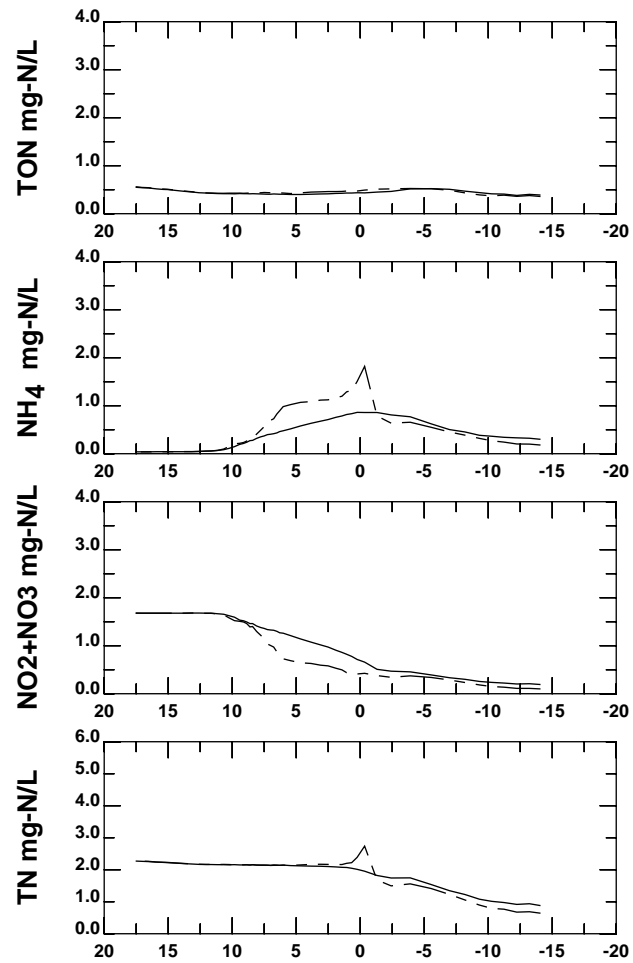
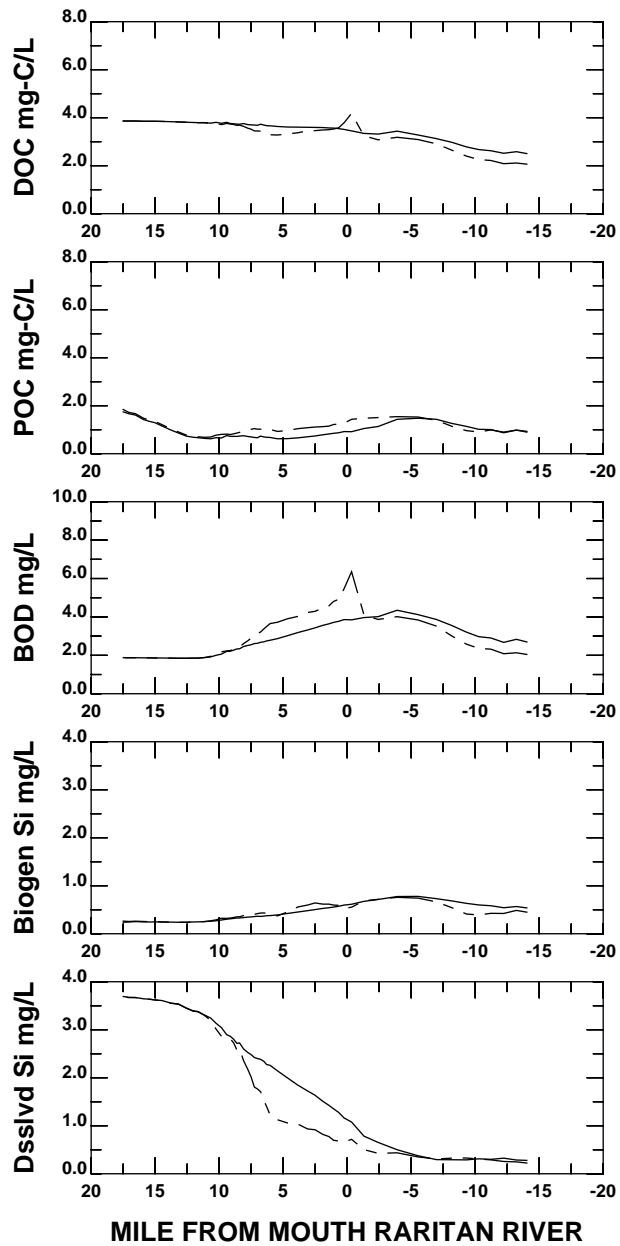
**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**



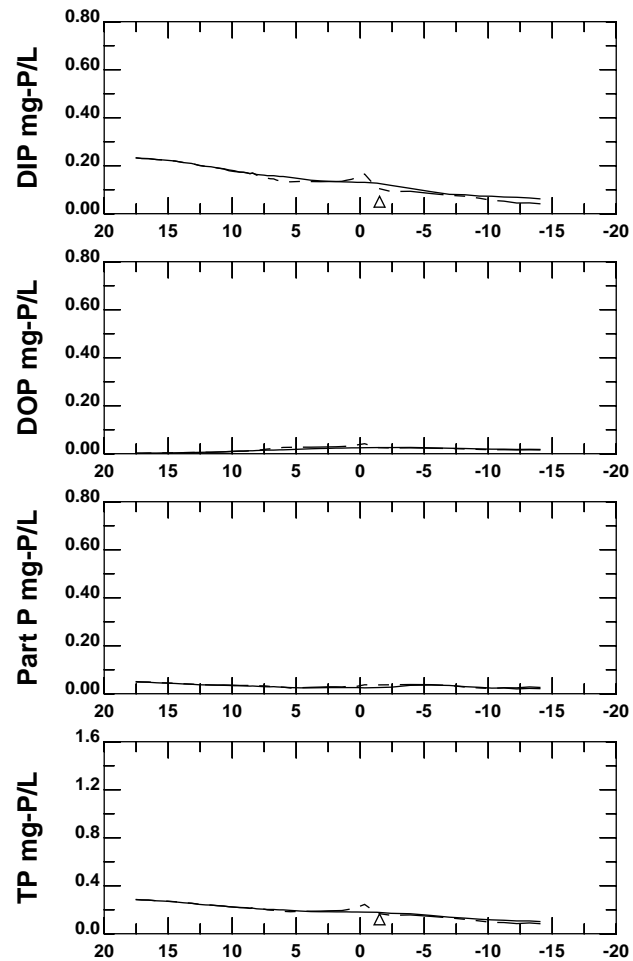
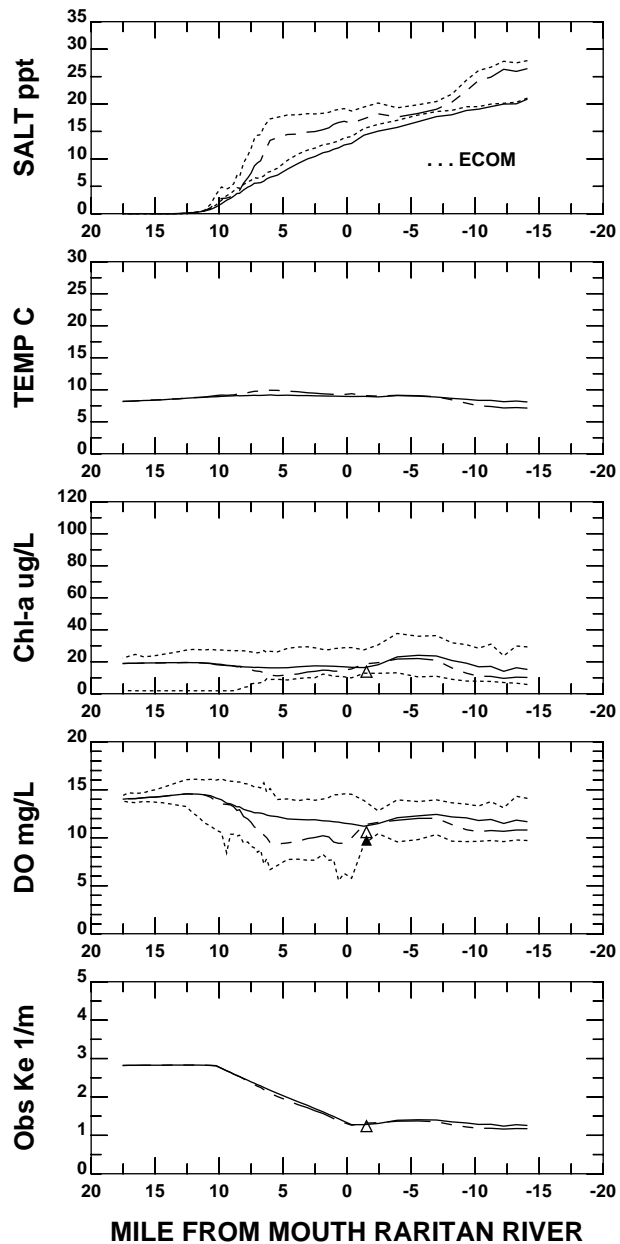
**MILE FROM MOUTH RARITAN RIVER**

<b>DATA</b> Feb 28-Mar 29, 2000		<b>MODEL</b>
	<b>SURF BOT</b>	
Harbor Survey	△ ▲	Transect
	t e	Embayment
NYSDEC	○	Transect
	c	Embayment
NJSIT	◇	Transect
	p	Embayment
	—	SURFACE 30-DAY MEAN
	---	BOTTOM 30-DAY MEAN
	- - -	30-DAY SURFACE MAX OR BOTTOM MIN

**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**



**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**



DATA Mar 30-Apr 28, 2000

MODEL

SURF BOT

Harbor Survey  $\triangle$   $\blacktriangle$  Transect

t e Embayment

NYSDEC  $\circ$  Transect

c Embayment

NJSIT  $\diamond$  Transect

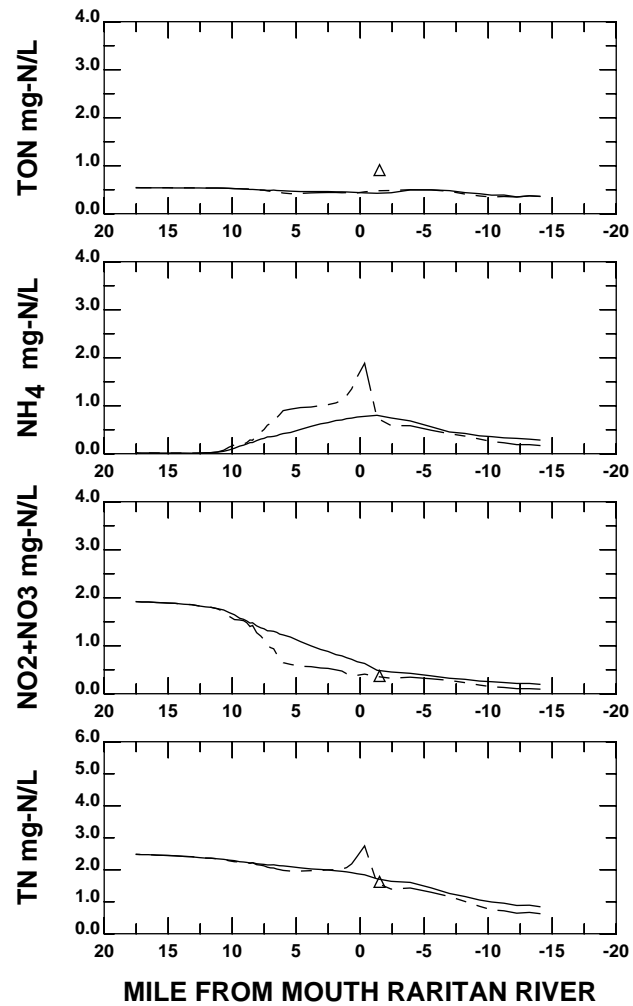
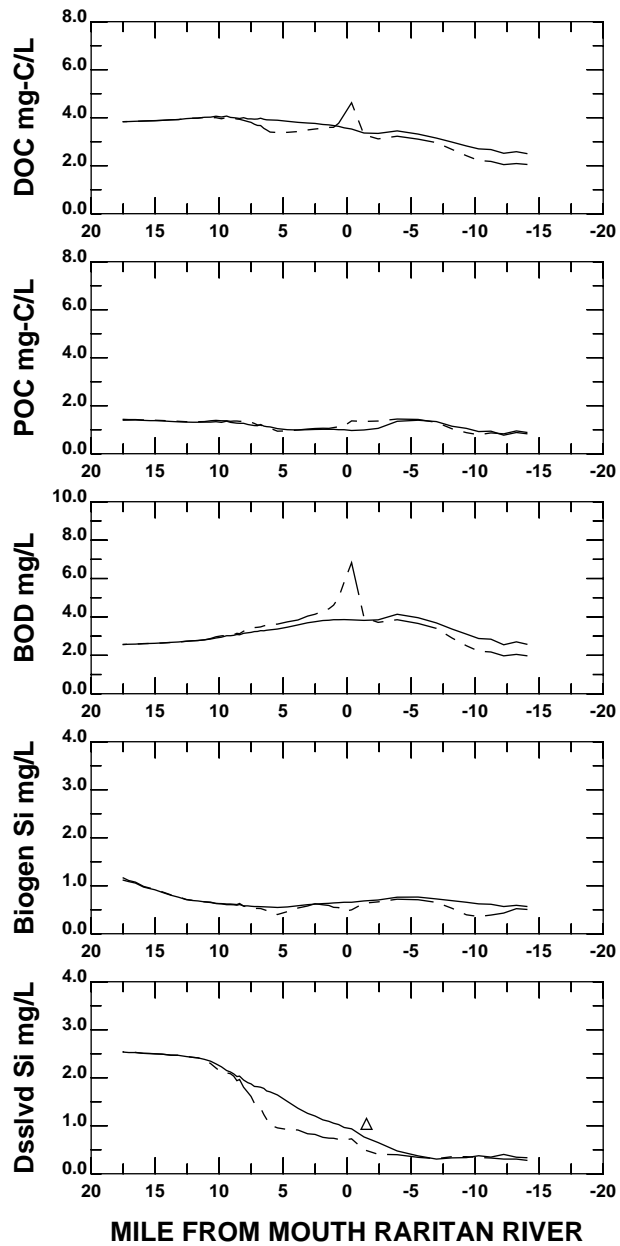
p Embayment

— SURFACE 30-DAY MEAN

--- BOTTOM 30-DAY MEAN

- - - 30-DAY SURFACE MAX OR BOTTOM MIN

## RARITAN RIVER AND SOUTH SHORE RARITAN BAY



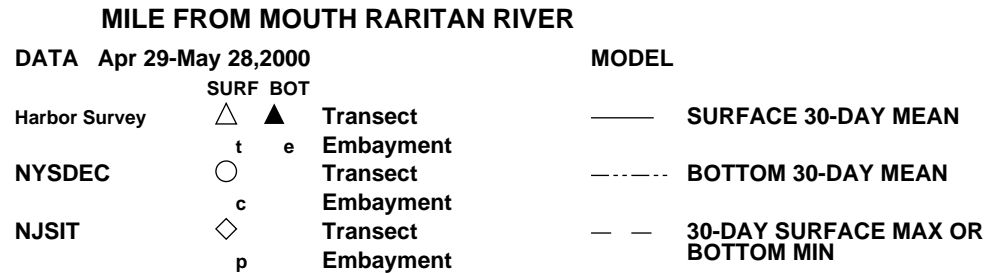
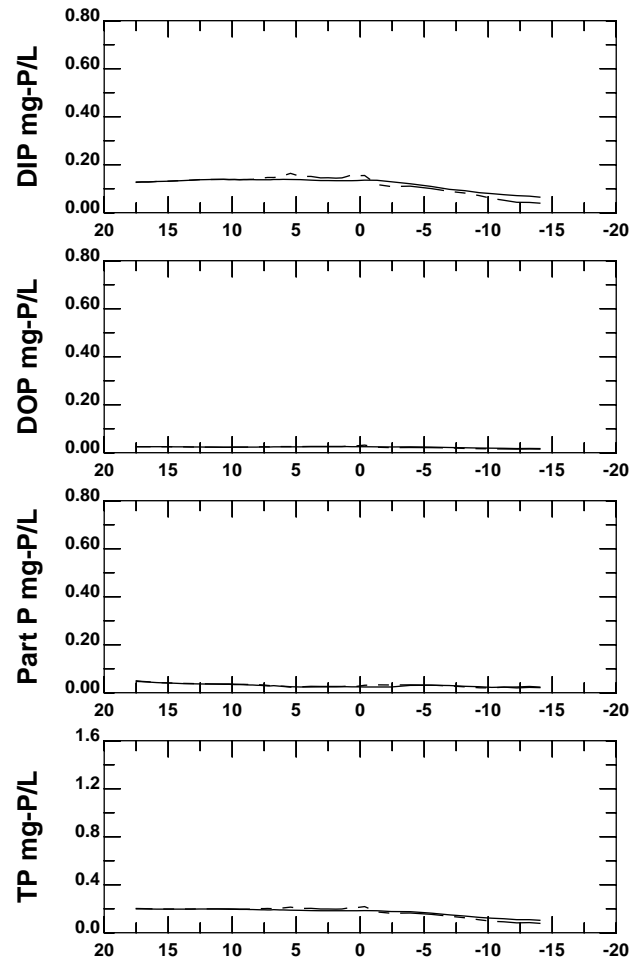
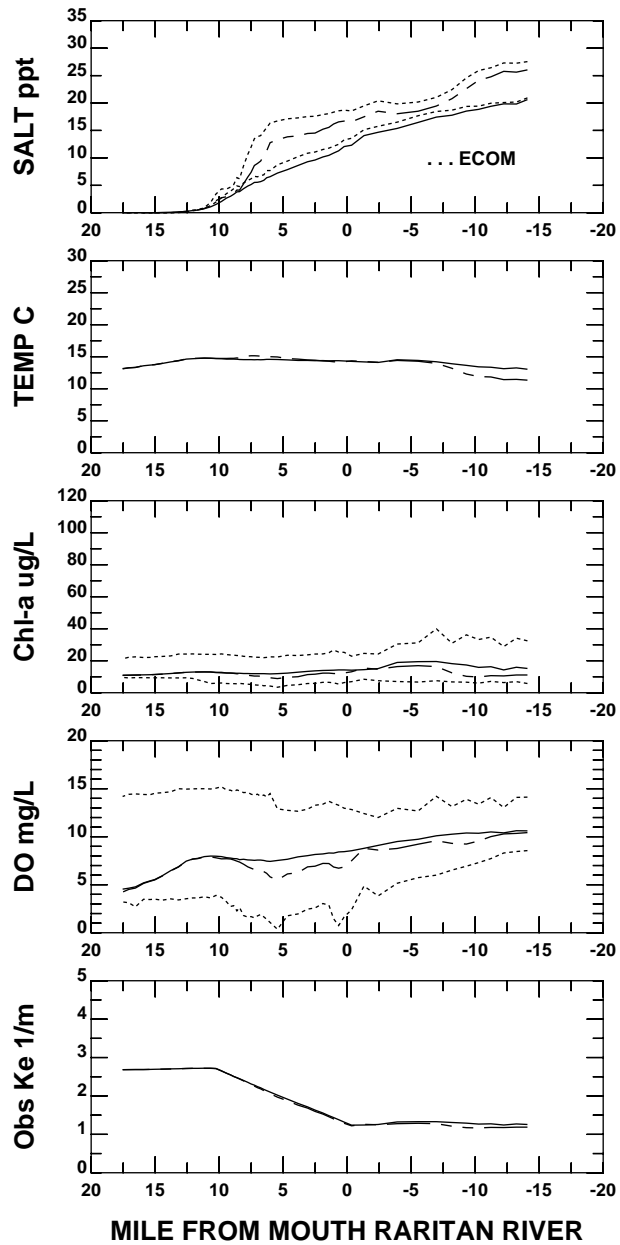
DATA Mar 30-Apr 28, 2000

MODEL

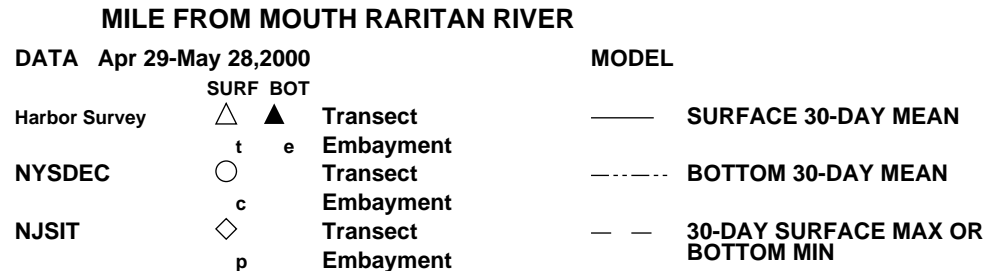
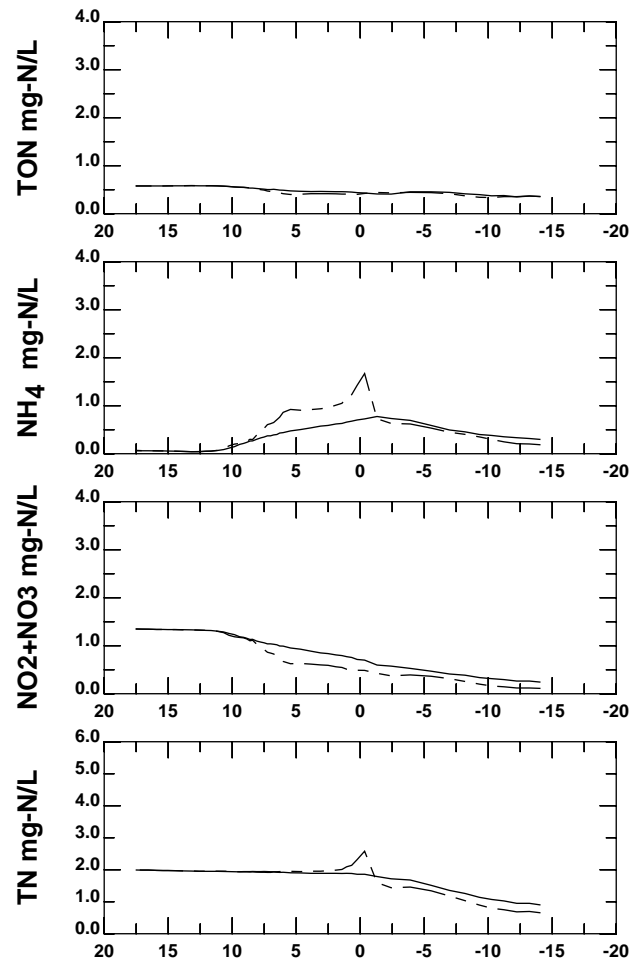
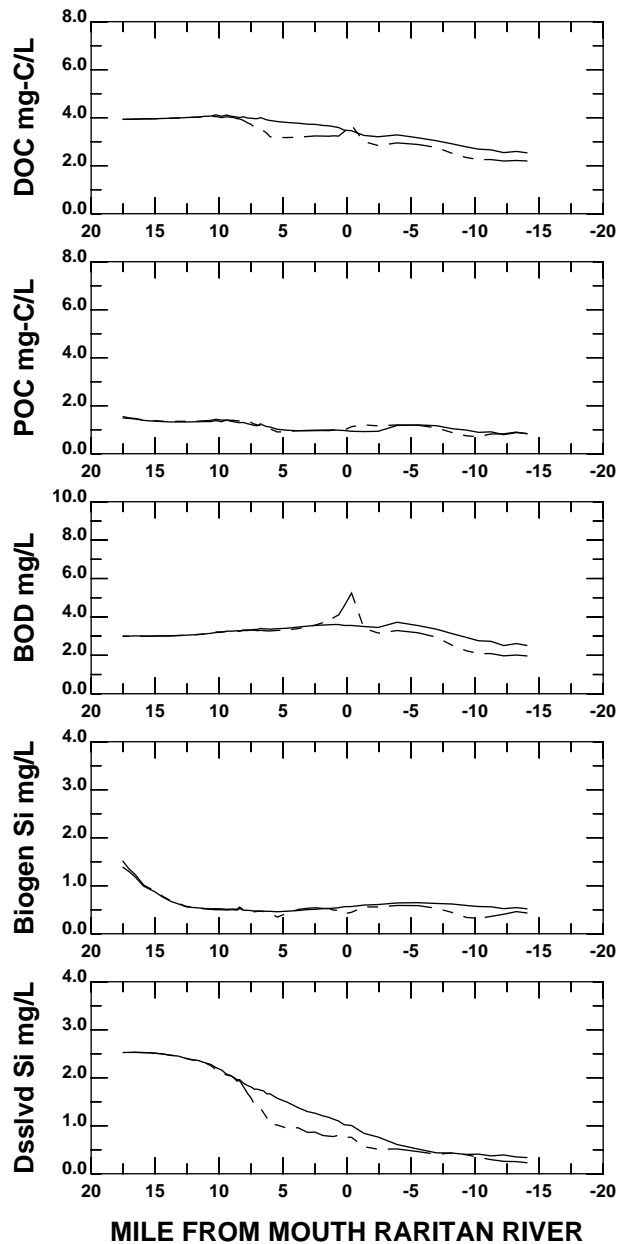
	SURF BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment

————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

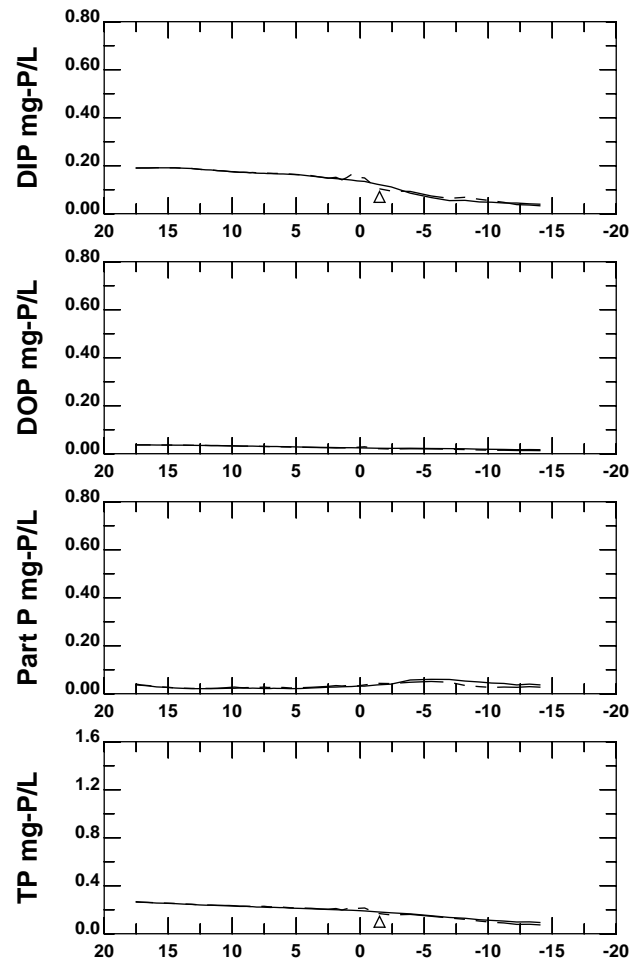
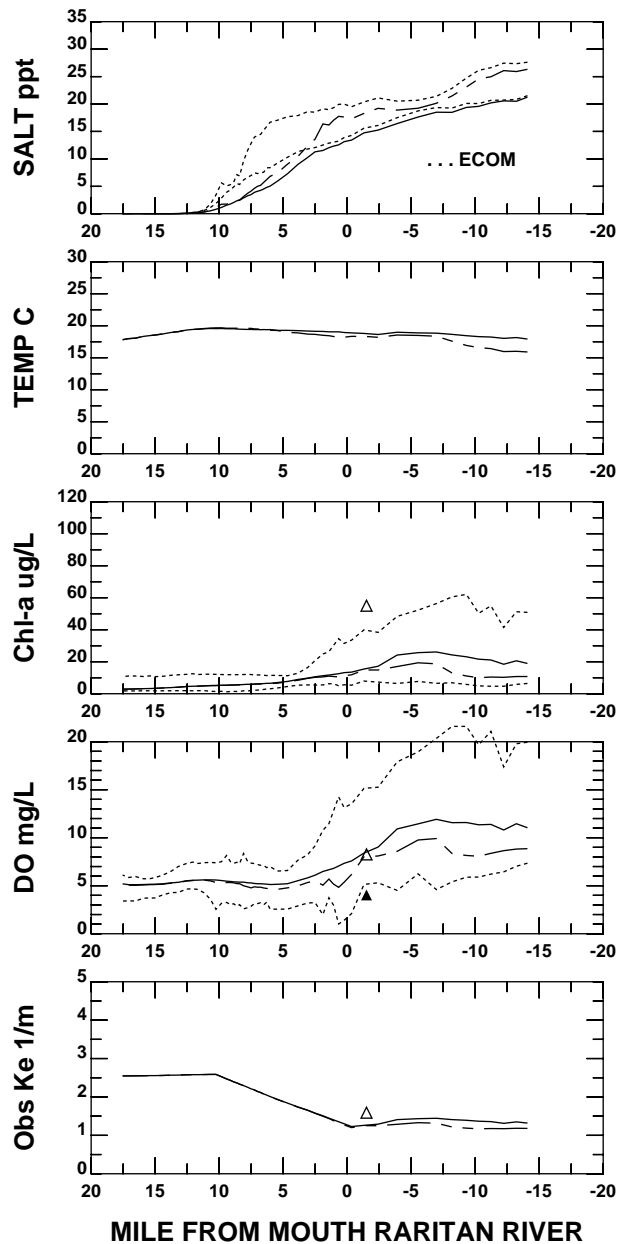
## RARITAN RIVER AND SOUTH SHORE RARITAN BAY



**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**



**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**



**DATA May 29-Jun 27,2000**

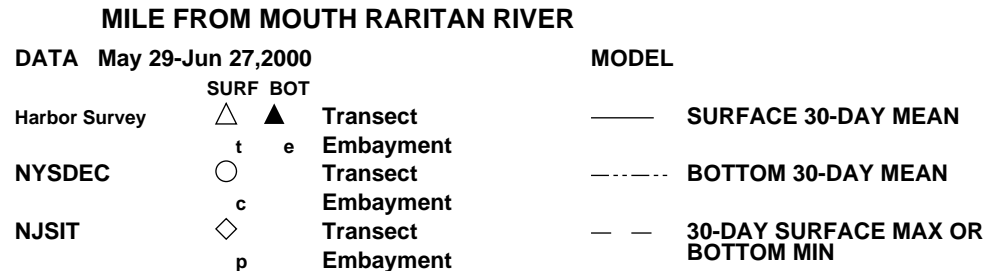
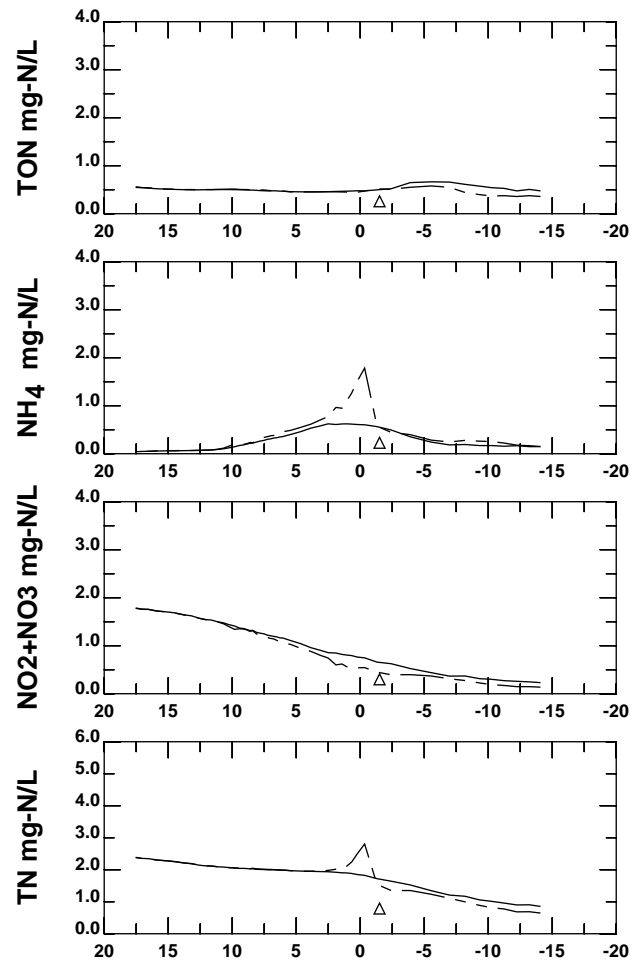
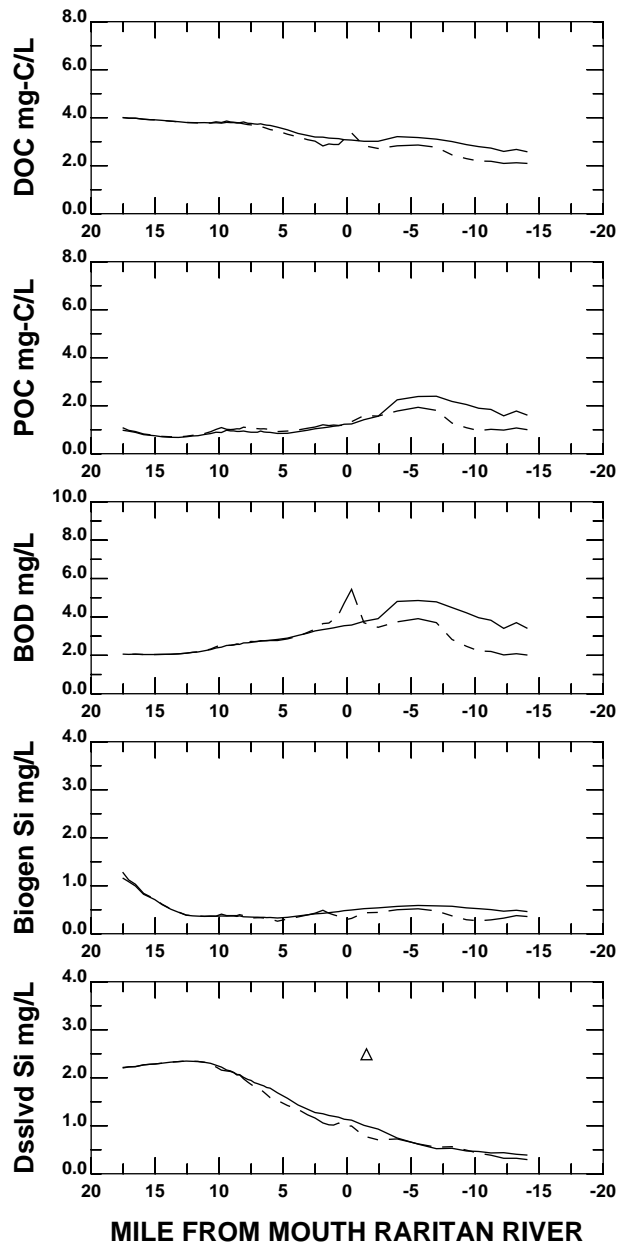
	<b>SURF BOT</b>		
Harbor Survey	△	▲	Transect
NYSDEC	t	e	Embayment
	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment

**MODEL**

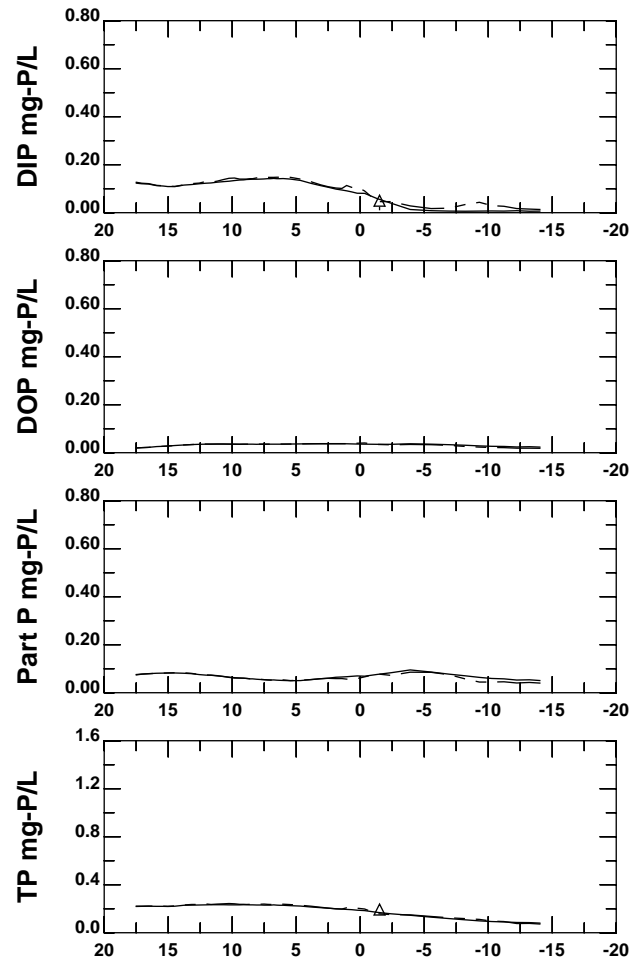
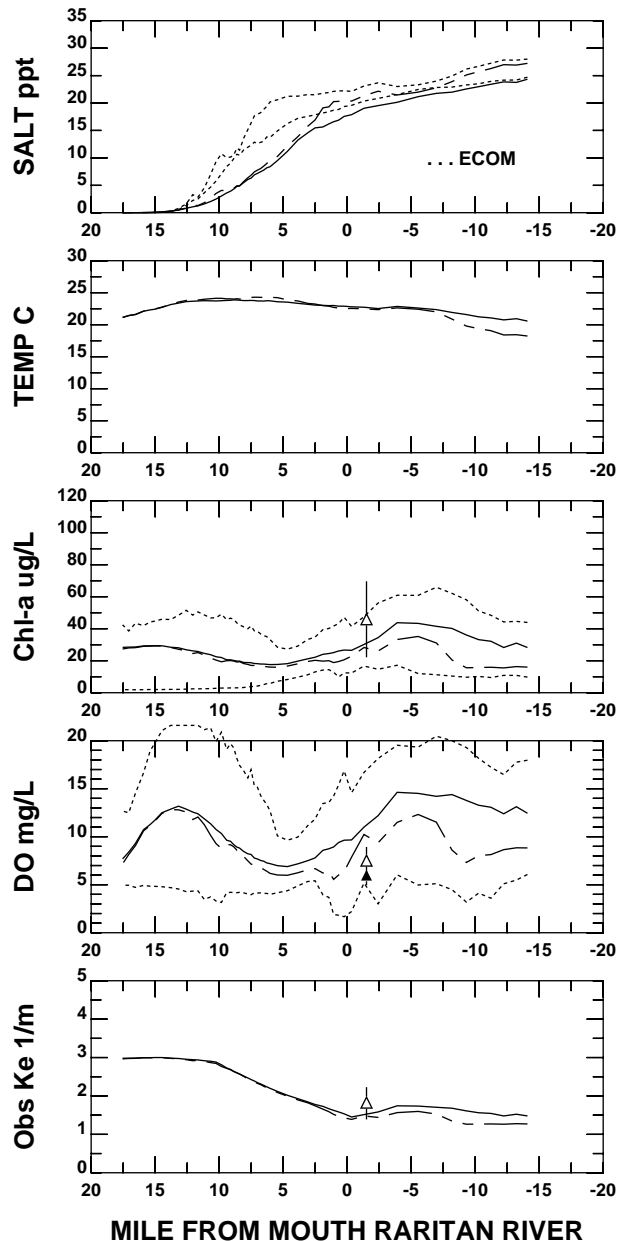
————	<b>SURFACE 30-DAY MEAN</b>
-----	<b>BOTTOM 30-DAY MEAN</b>
- - - -	<b>30-DAY SURFACE MAX OR BOTTOM MIN</b>

**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**





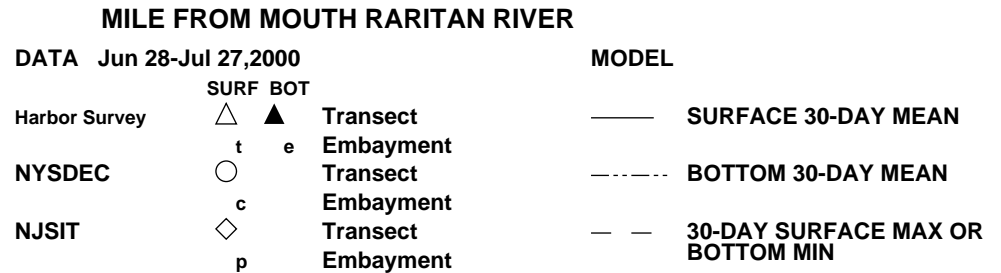
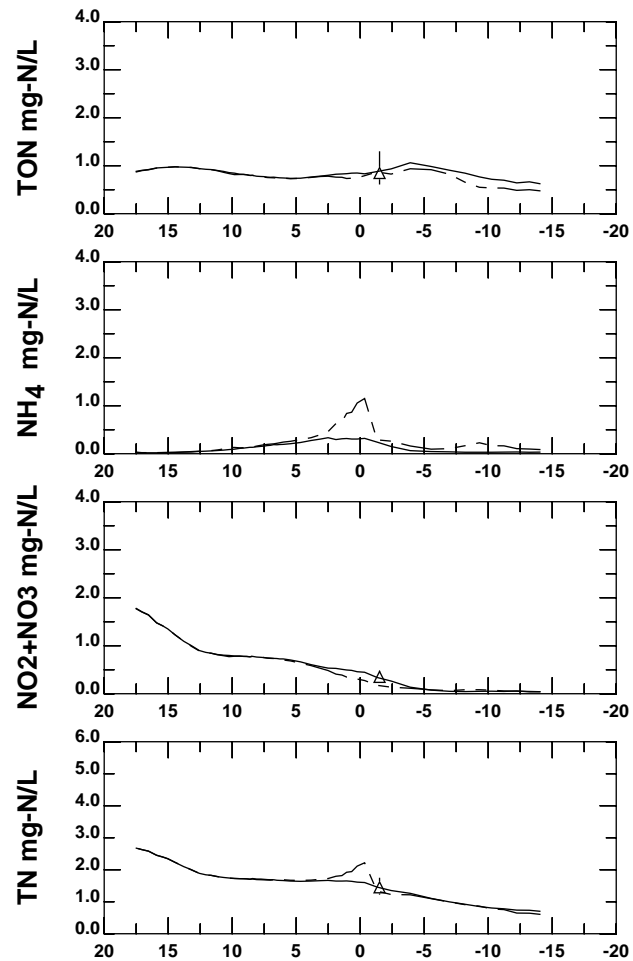
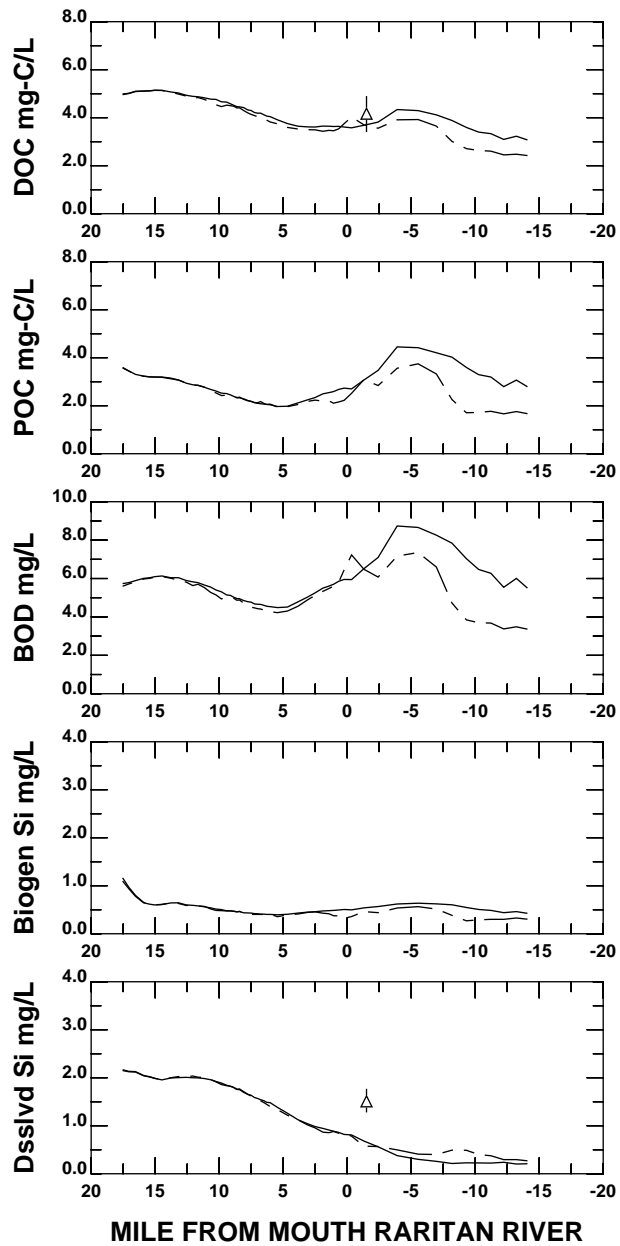
**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**



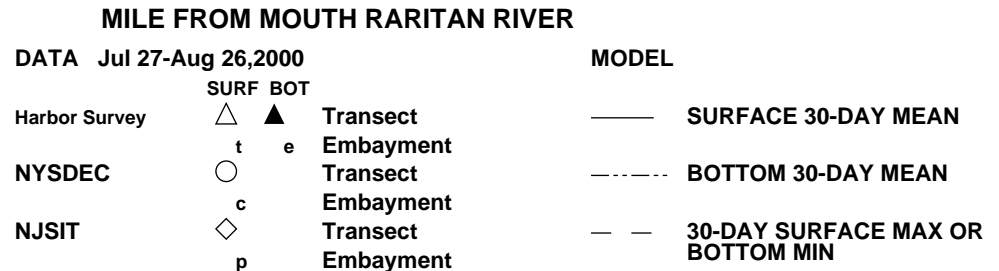
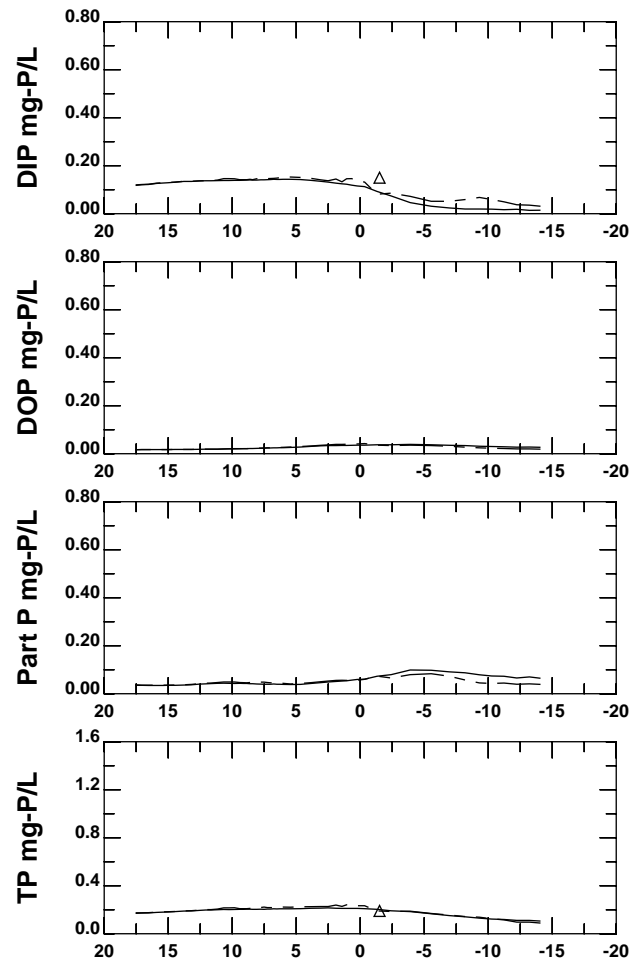
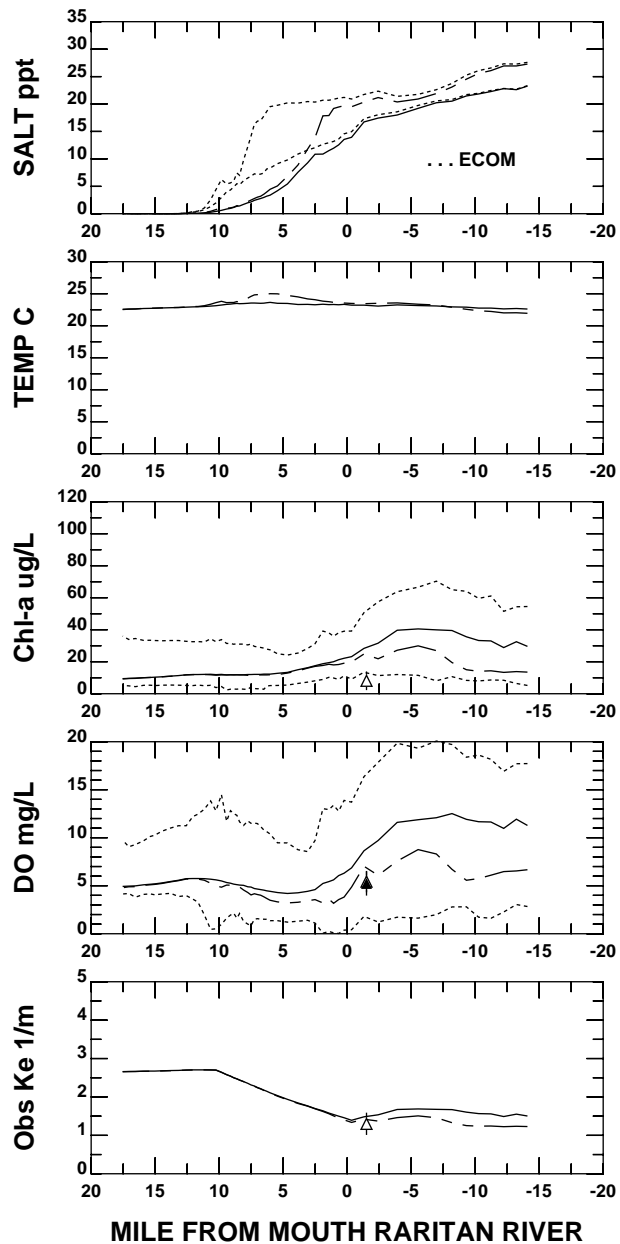
**DATA Jun 28-Jul 27,2000**

	<b>SURF BOT</b>		<b>MODEL</b>
Harbor Survey	△	▲	— SURFACE 30-DAY MEAN
	t	e	- - - - BOTTOM 30-DAY MEAN
NYSDEC	○		- - - - 30-DAY SURFACE MAX OR BOTTOM MIN
	c		
NJSIT	◇		
	p		

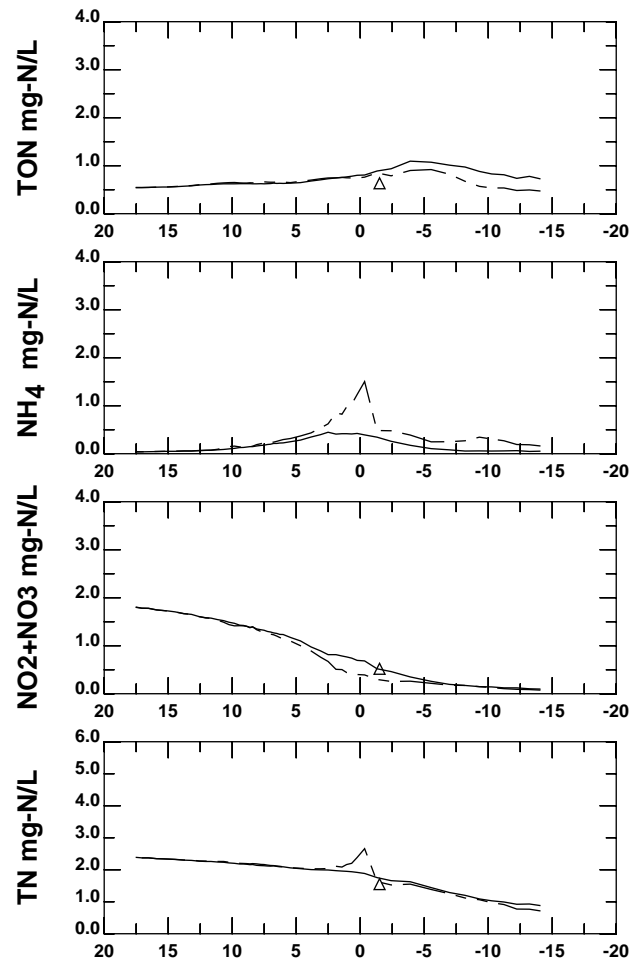
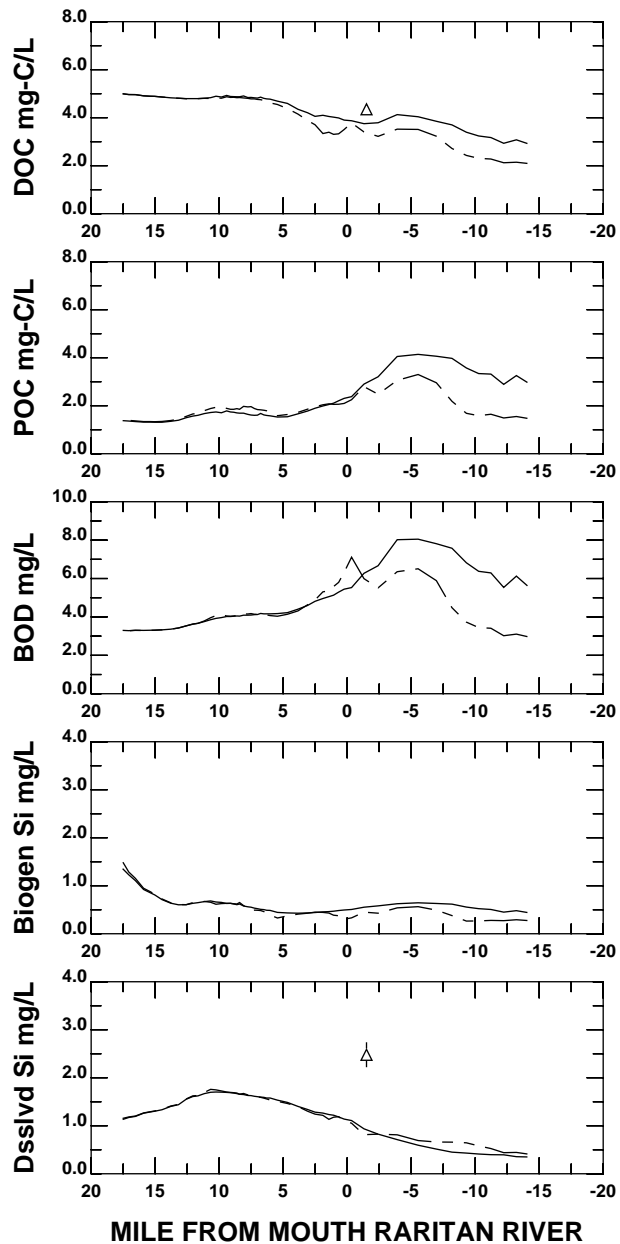
**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**



**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**



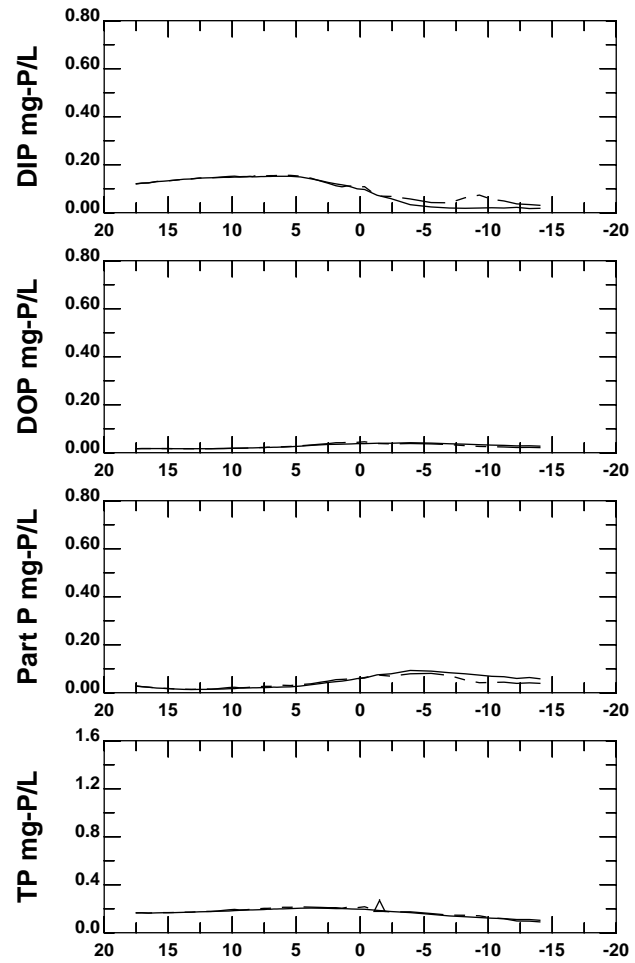
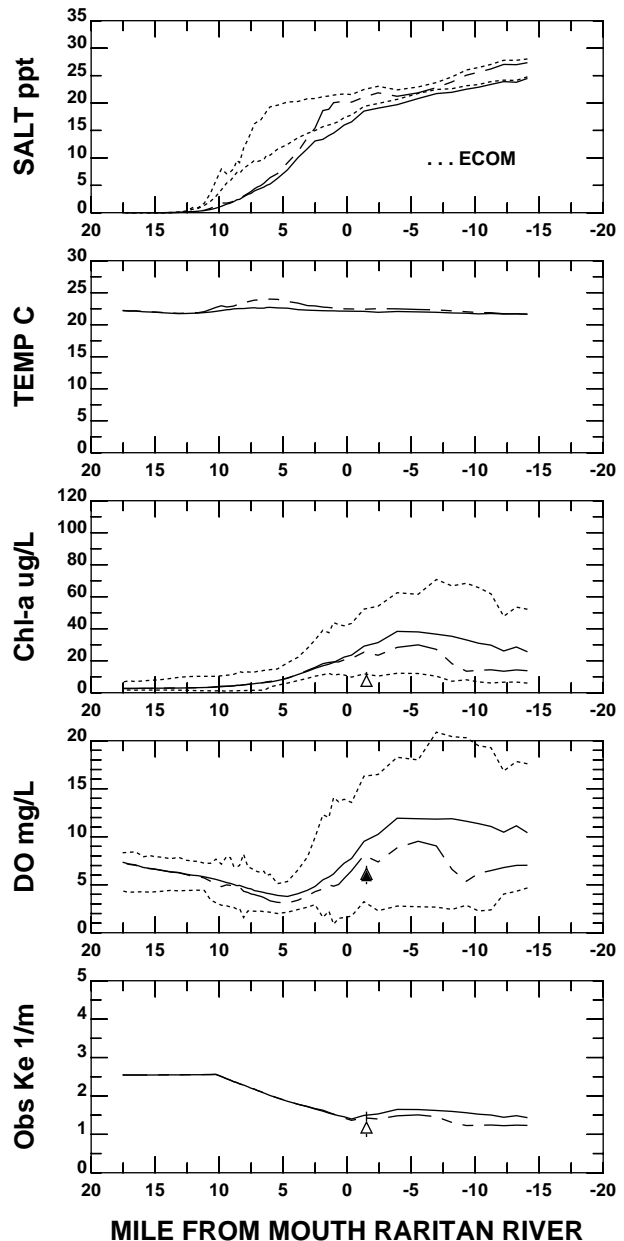
**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**



DATA Jul 27-Aug 26, 2000

	SURF BOT		MODEL
Harbor Survey	△	▲	— SURFACE 30-DAY MEAN
	t	e	--- BOTTOM 30-DAY MEAN
NYSDEC	○		- - - 30-DAY SURFACE MAX OR BOTTOM MIN
	c		
NJSIT	◇		
	p		

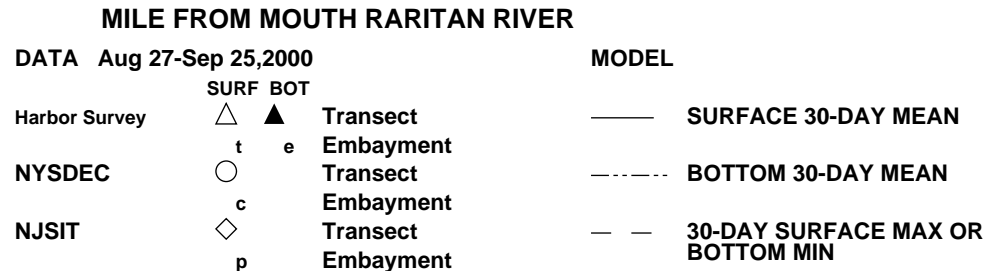
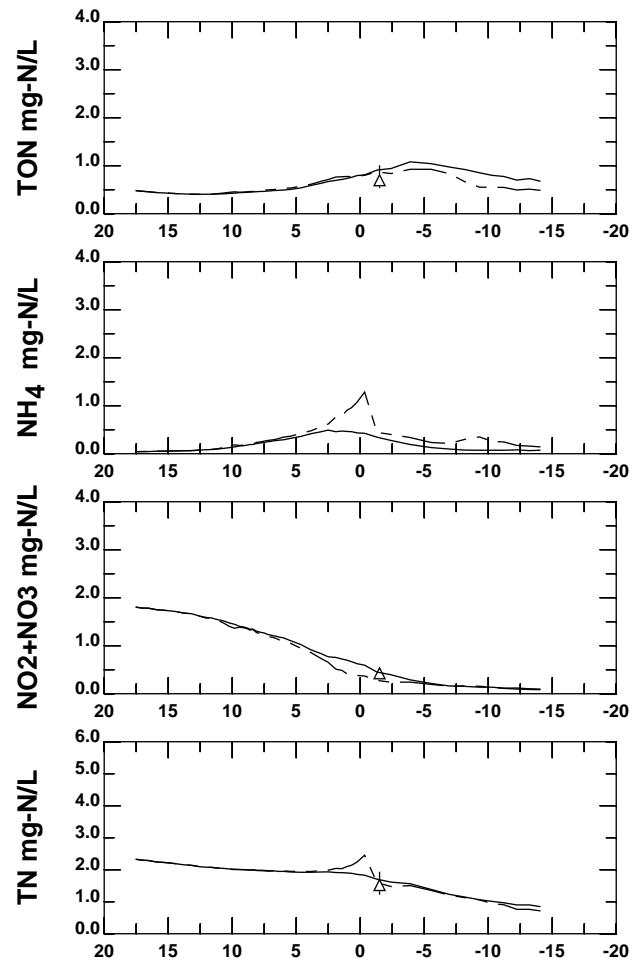
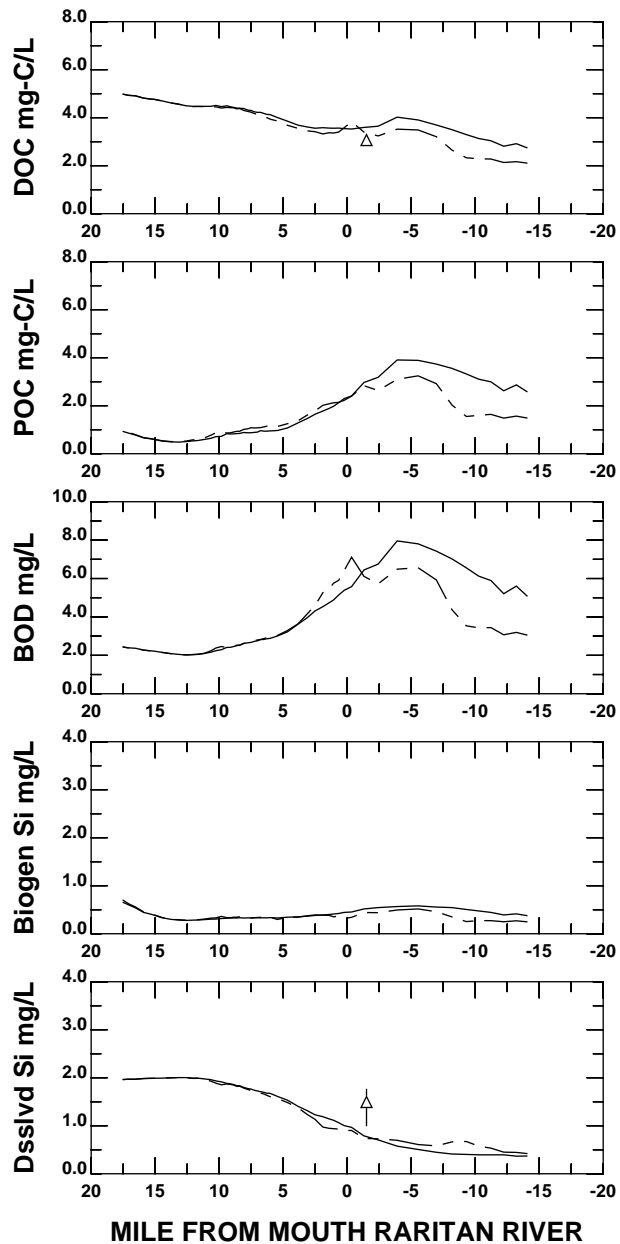
### RARITAN RIVER AND SOUTH SHORE RARITAN BAY



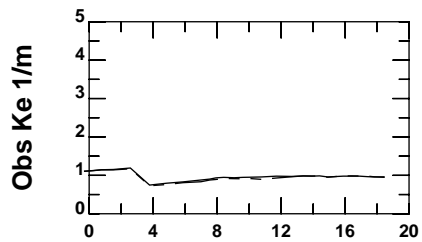
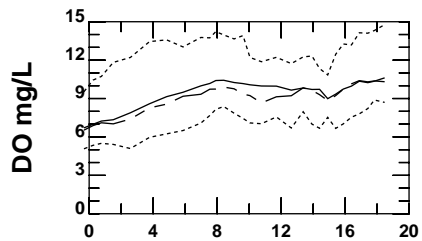
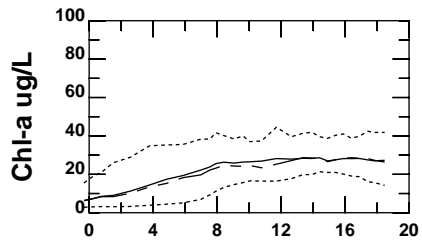
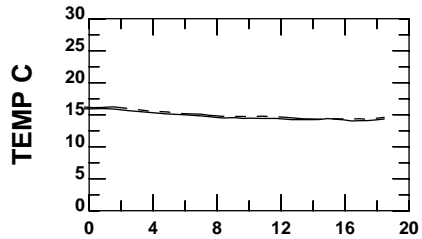
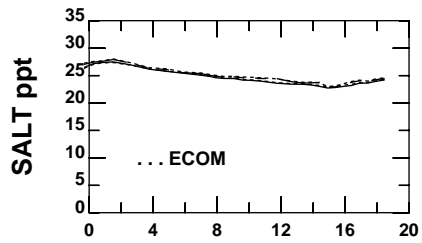
**MILE FROM MOUTH RARITAN RIVER**

<b>DATA</b> Aug 27-Sep 25,2000		<b>MODEL</b>
	<b>SURF BOT</b>	
Harbor Survey	△ ▲	Transect
	t e	Embayment
NYSDEC	○	Transect
	c	Embayment
NJSIT	◇	Transect
	p	Embayment
	—	SURFACE 30-DAY MEAN
	---	BOTTOM 30-DAY MEAN
	- - -	30-DAY SURFACE MAX OR BOTTOM MIN

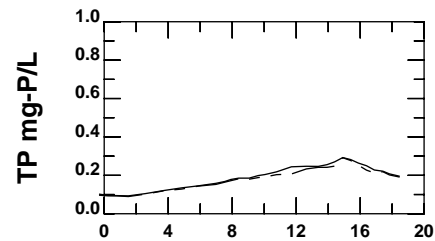
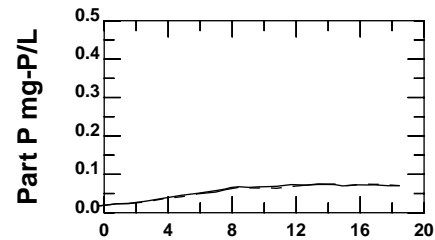
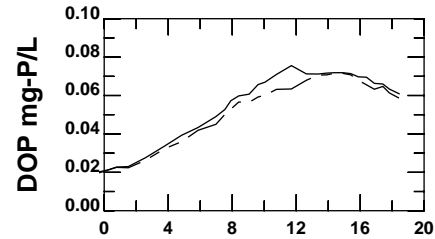
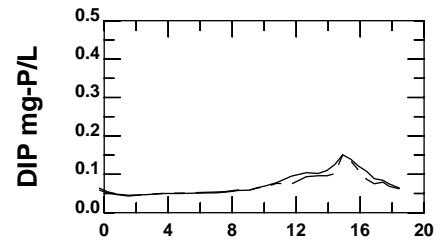
**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**



**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**



MILE FROM LOWER NEW YORK BAY



MILE FROM LOWER NEW YORK BAY

DATA Oct 1-30,1999

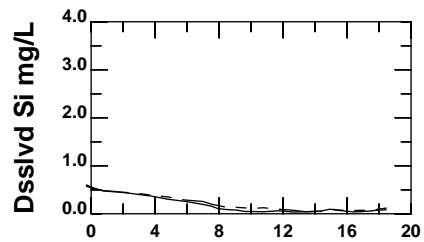
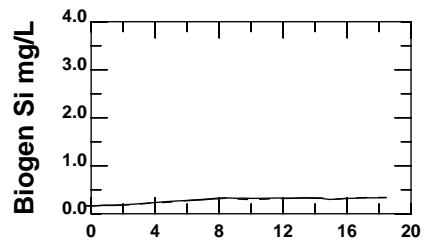
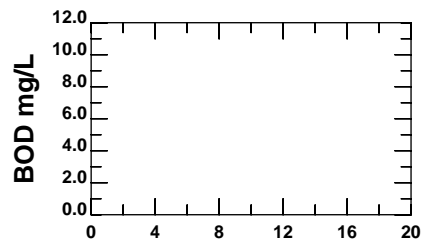
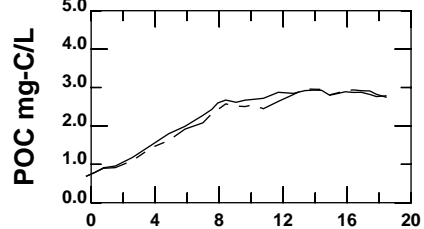
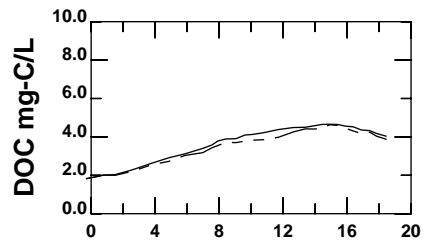
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment

MODEL

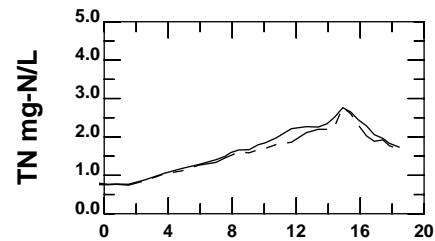
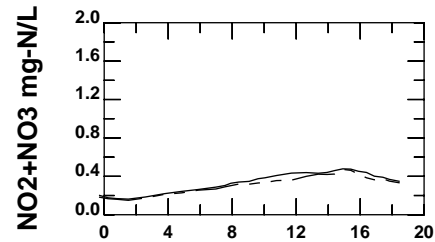
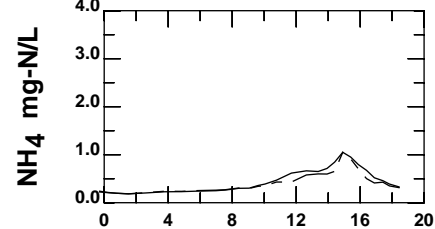
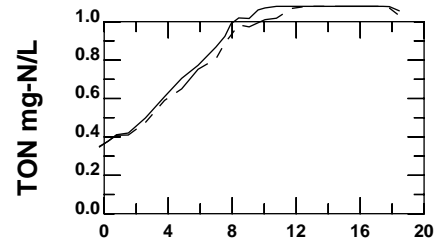
—	SURFACE 30-DAY MEAN
- - -	BOTTOM 30-DAY MEAN
- - -	30-DAY SURFACE MAX OR BOTTOM MIN

## CONEY ISLAND JAMAICA BAY TRANSECT





MILE FROM LOWER NEW YORK BAY



MILE FROM LOWER NEW YORK BAY

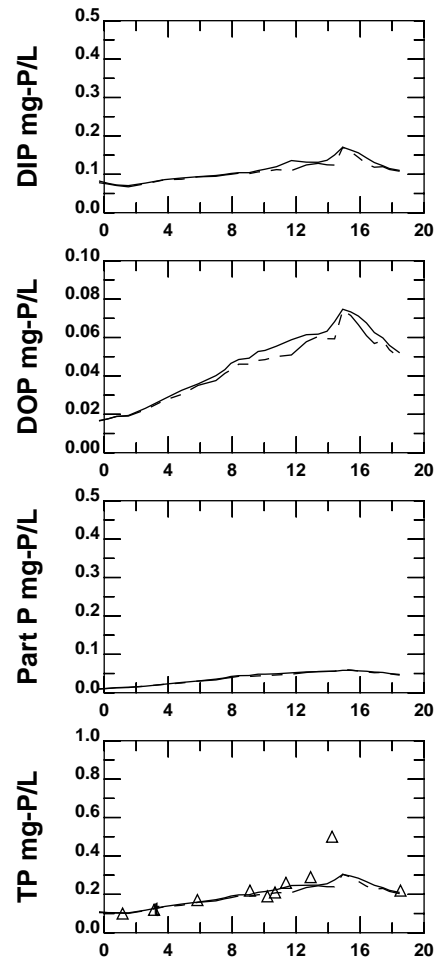
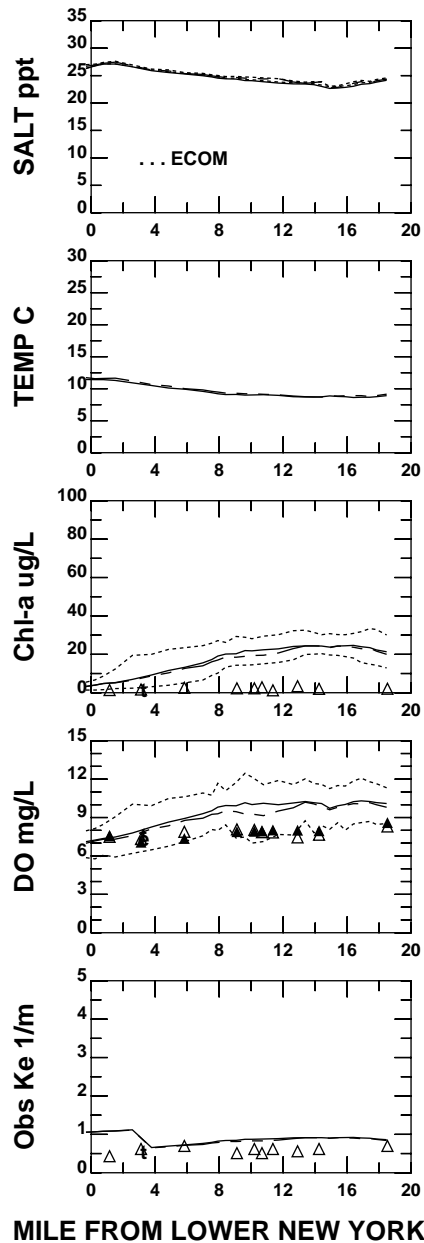
DATA Oct 1-30,1999

Harbor Survey	△	▲	Transect
NYSDEC	t	e	Embayment
	○		Transect
	c		Embayment

MODEL

————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

## CONEY ISLAND JAMAICA BAY TRANSECT



**MILE FROM LOWER NEW YORK BAY**

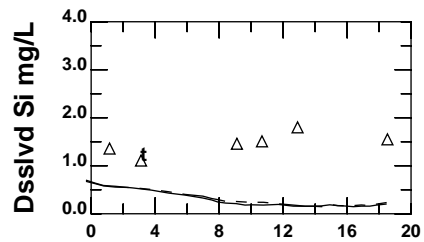
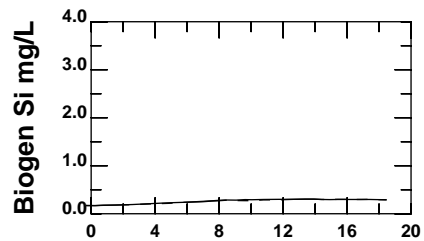
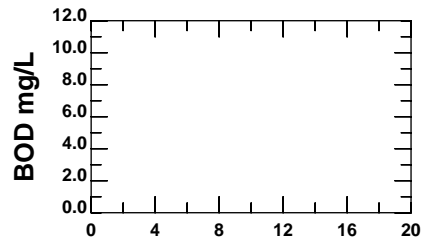
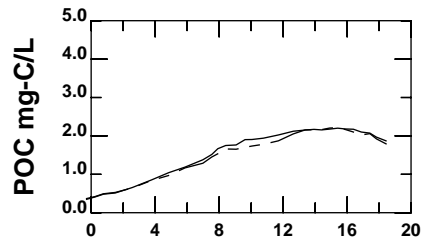
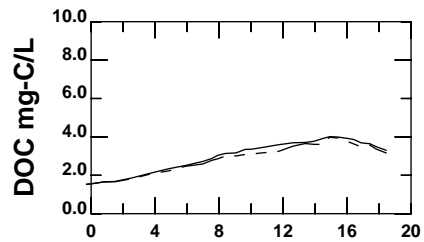
DATA Oct 31-Nov 29, 1999

Harbor Survey    △    ▲    Transect  
                          t    e    Embayment  
 NYSDEC            ○            Transect  
                          c            Embayment

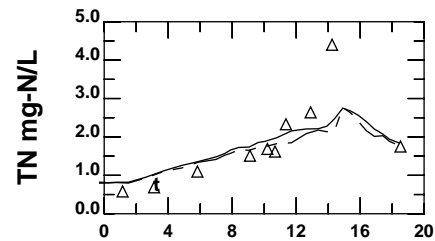
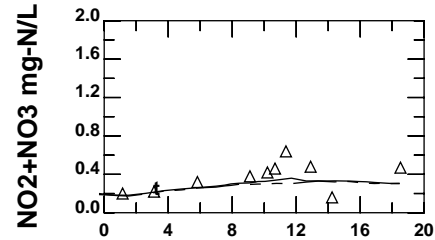
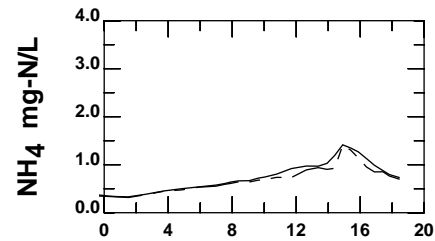
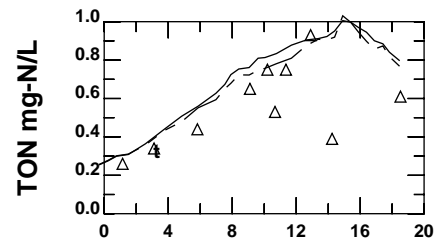
**MODEL**

———— SURFACE 30-DAY MEAN  
 - - - - - BOTTOM 30-DAY MEAN  
 - - - - - 30-DAY SURFACE MAX OR  
 BOTTOM MIN

**CONEY ISLAND JAMAICA BAY TRANSECT**



MILE FROM LOWER NEW YORK BAY



MILE FROM LOWER NEW YORK BAY

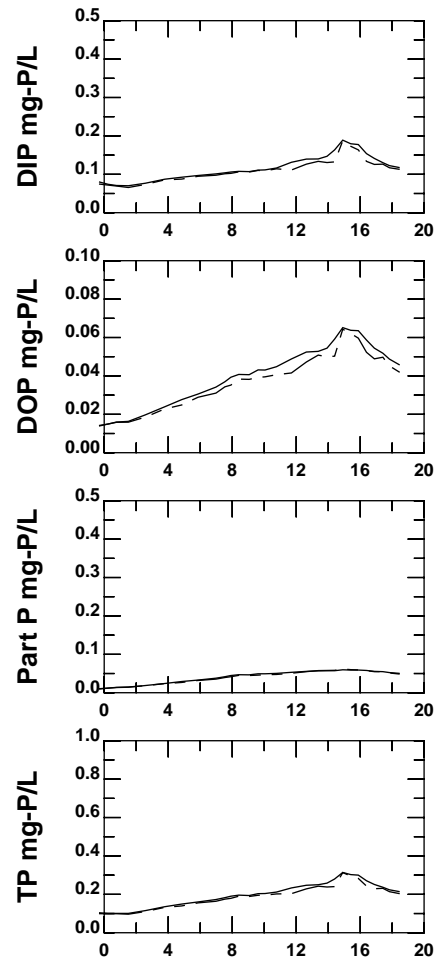
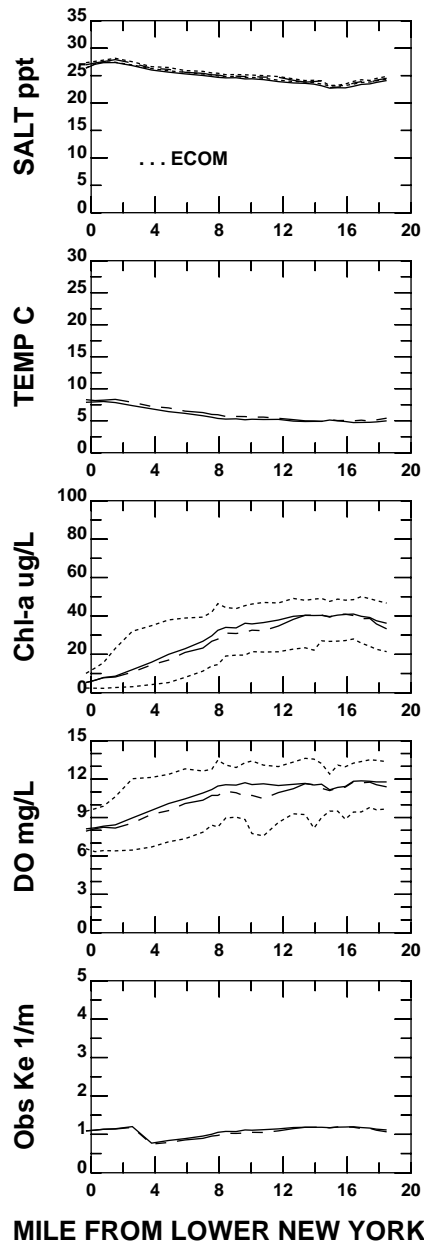
DATA Oct 31-Nov 29, 1999

	SURF		BOT	
Harbor Survey	△	▲	Transect	Embayment
NYSDEC	t	e	Transect	Embayment
	○	c	Transect	Embayment

MODEL

—	SURFACE 30-DAY MEAN
- - -	BOTTOM 30-DAY MEAN
- - -	30-DAY SURFACE MAX OR BOTTOM MIN

## CONEY ISLAND JAMAICA BAY TRANSECT



**MILE FROM LOWER NEW YORK BAY**

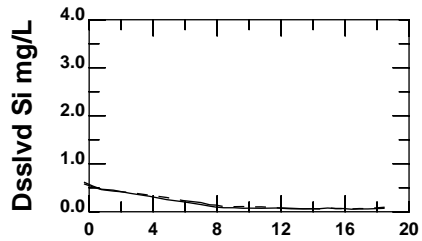
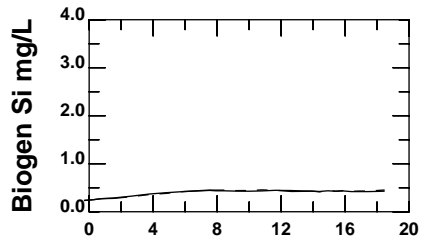
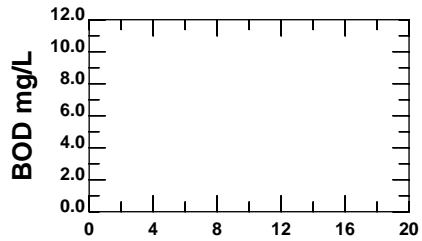
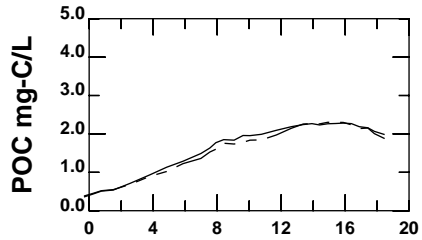
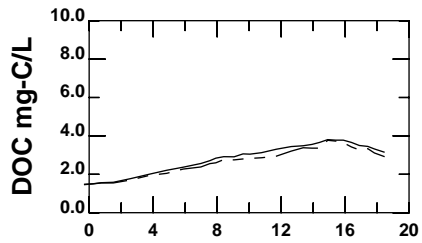
**DATA Nov 30-Dec 29,1999**

	<b>SURF</b>	<b>BOT</b>	
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment

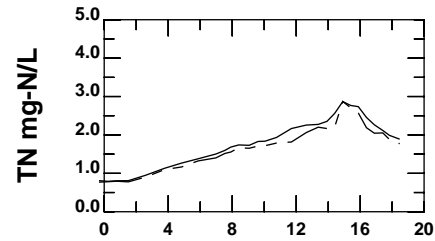
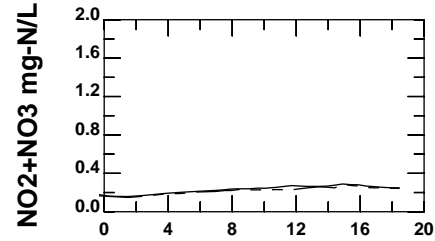
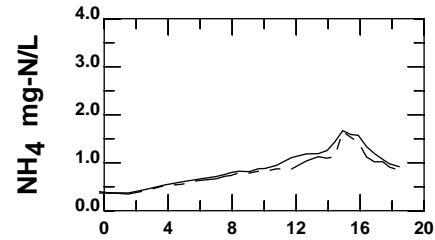
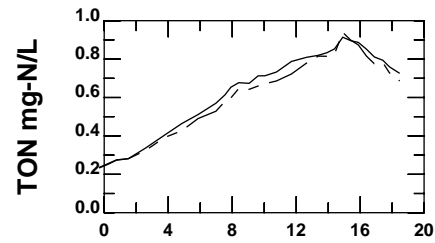
**MODEL**

————	<b>SURFACE 30-DAY MEAN</b>
-----	<b>BOTTOM 30-DAY MEAN</b>
- - - -	<b>30-DAY SURFACE MAX OR BOTTOM MIN</b>

**CONEY ISLAND JAMAICA BAY TRANSECT**



MILE FROM LOWER NEW YORK BAY



MILE FROM LOWER NEW YORK BAY

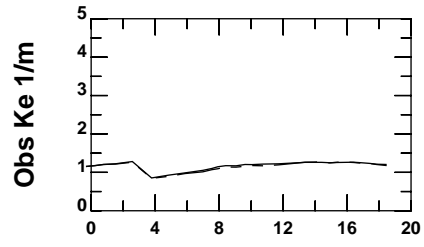
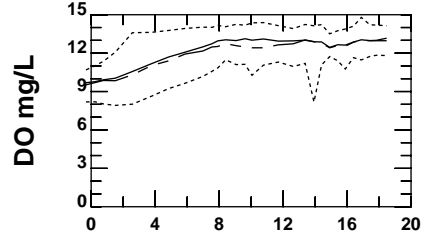
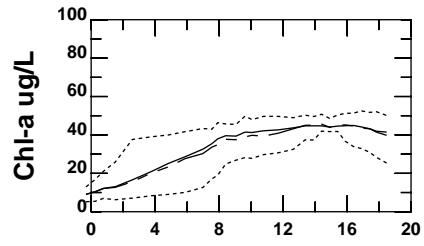
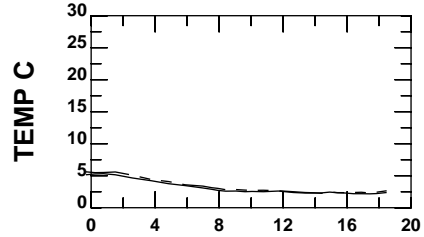
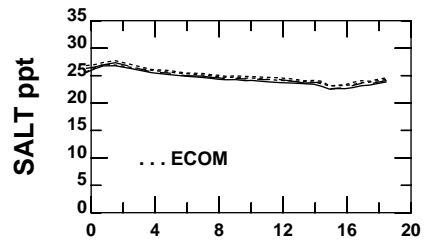
DATA Nov 30-Dec 29, 1999

	SURF		BOT	
Harbor Survey	△	▲	Transect	
	t	e	Embayment	
NYSDEC	○		Transect	
	c		Embayment	

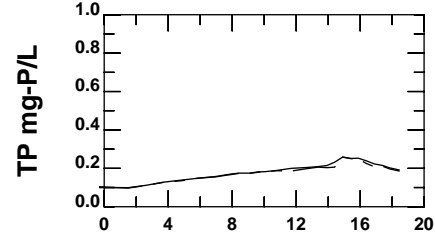
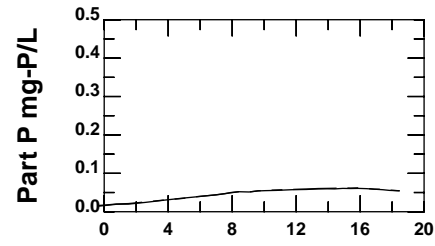
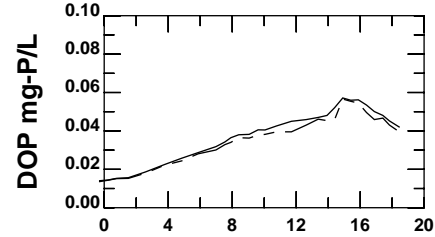
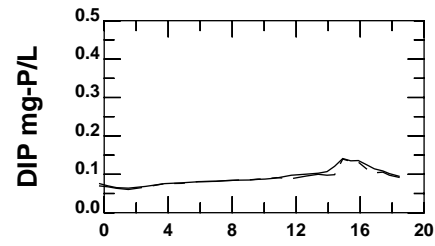
MODEL

————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

## CONEY ISLAND JAMAICA BAY TRANSECT



MILE FROM LOWER NEW YORK BAY



MILE FROM LOWER NEW YORK BAY

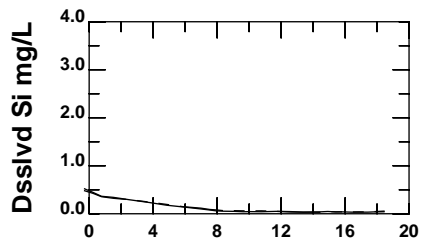
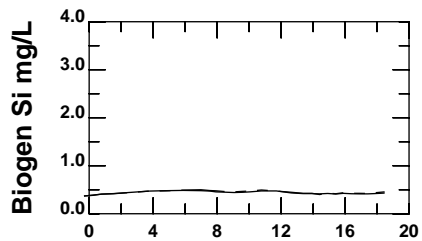
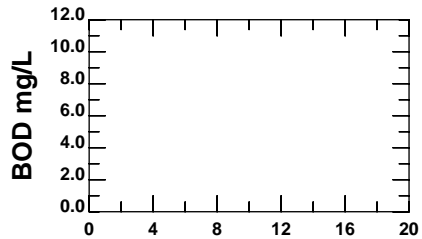
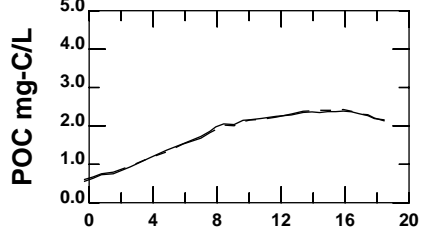
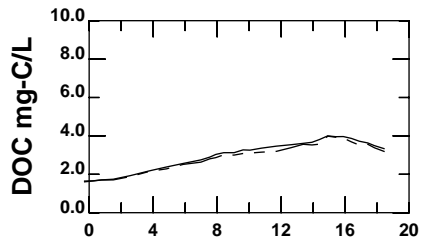
DATA Dec 30 1999 -Jan 28,2000

Harbor Survey    SURF BOT  
 △    ▲    Transect  
 t    e    Embayment  
 NYSDEC    ○    Transect  
           c    Embayment

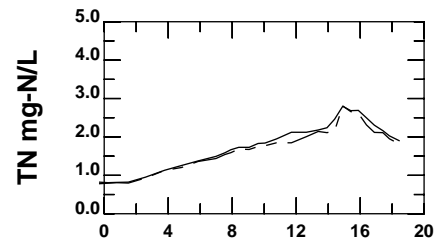
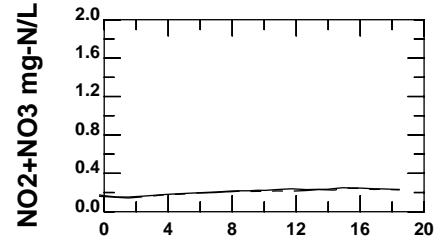
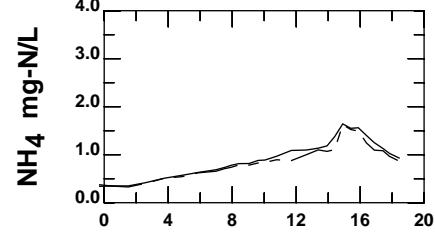
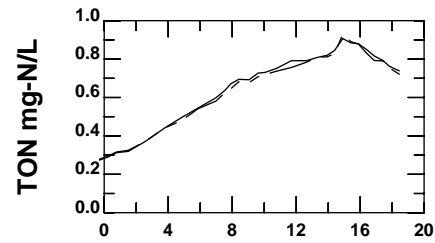
MODEL

—    SURFACE 30-DAY MEAN  
 - - -    BOTTOM 30-DAY MEAN  
 - - -    30-DAY SURFACE MAX OR  
           BOTTOM MIN

### CONEY ISLAND JAMAICA BAY TRANSECT



MILE FROM LOWER NEW YORK BAY



MILE FROM LOWER NEW YORK BAY

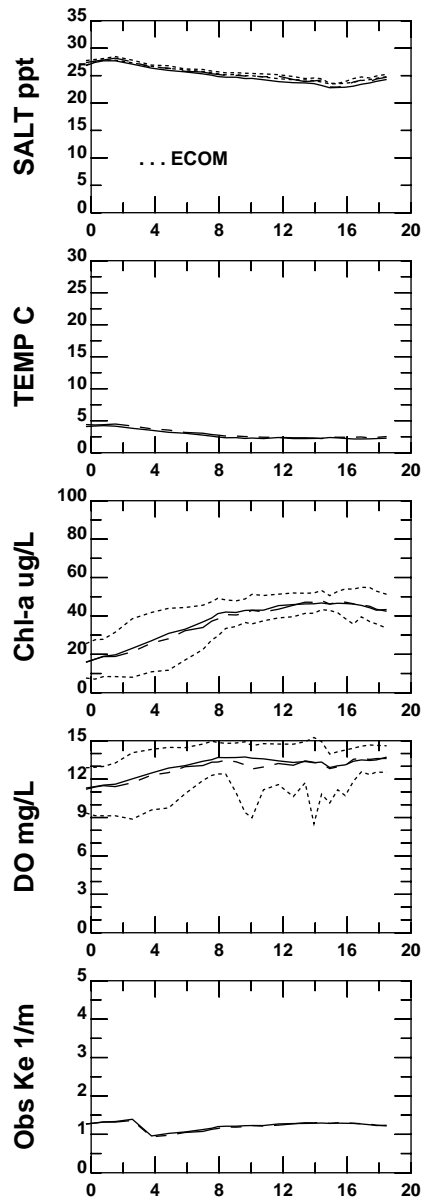
DATA Dec 30 1999 -Jan 28,2000

	SURF	BOT	
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment

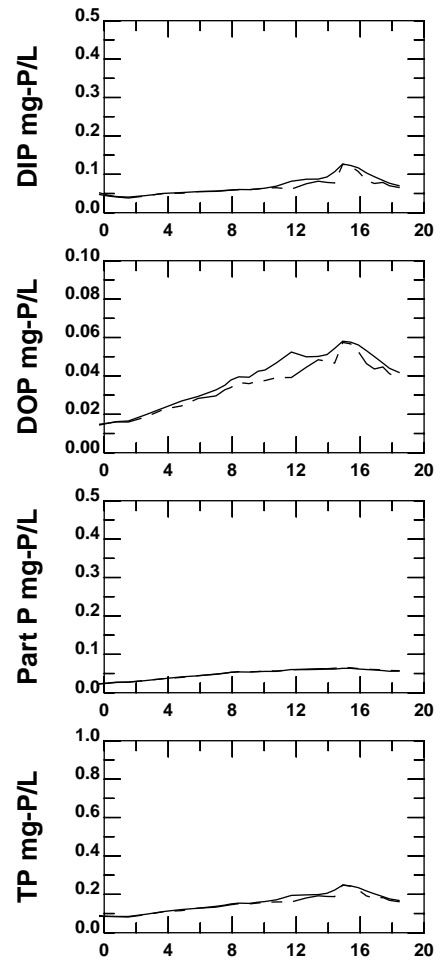
MODEL

————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

## CONEY ISLAND JAMAICA BAY TRANSECT



MILE FROM LOWER NEW YORK BAY



MILE FROM LOWER NEW YORK BAY

DATA Jan 29-Feb 27, 2000

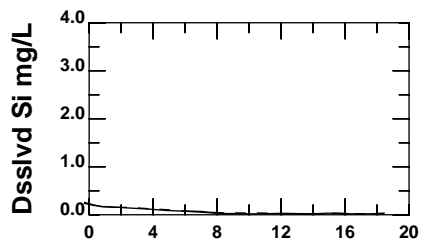
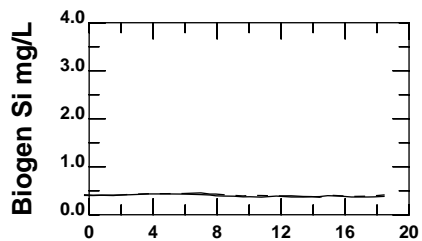
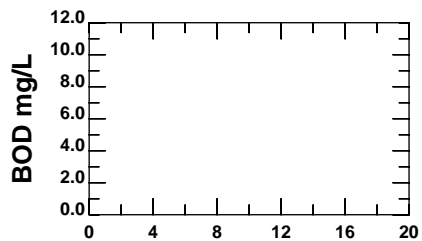
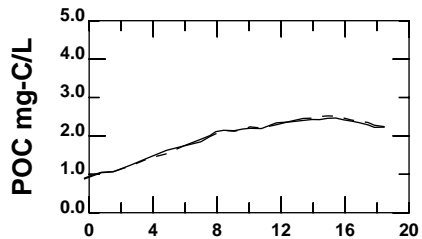
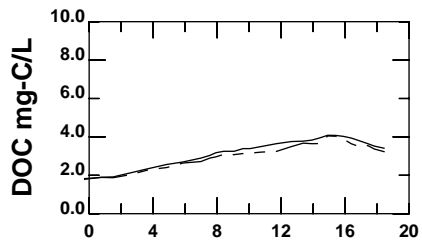
Harbor Survey    SURF BOT  
 △    ▲    Transect  
 t    e    Embayment  
 NYSDEC    ○    Transect  
           c    Embayment

MODEL

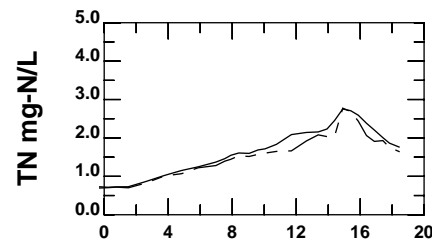
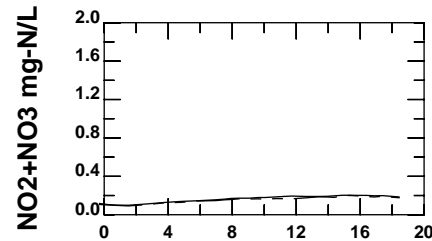
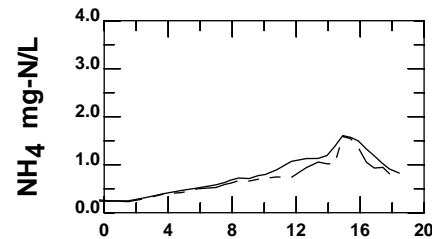
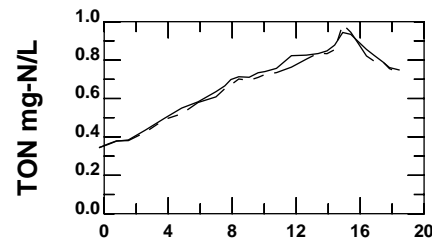
—— SURFACE 30-DAY MEAN  
 - - - - BOTTOM 30-DAY MEAN  
 - · - · 30-DAY SURFACE MAX OR  
 BOTTOM MIN

CONEY ISLAND JAMAICA BAY TRANSECT





MILE FROM LOWER NEW YORK BAY



MILE FROM LOWER NEW YORK BAY

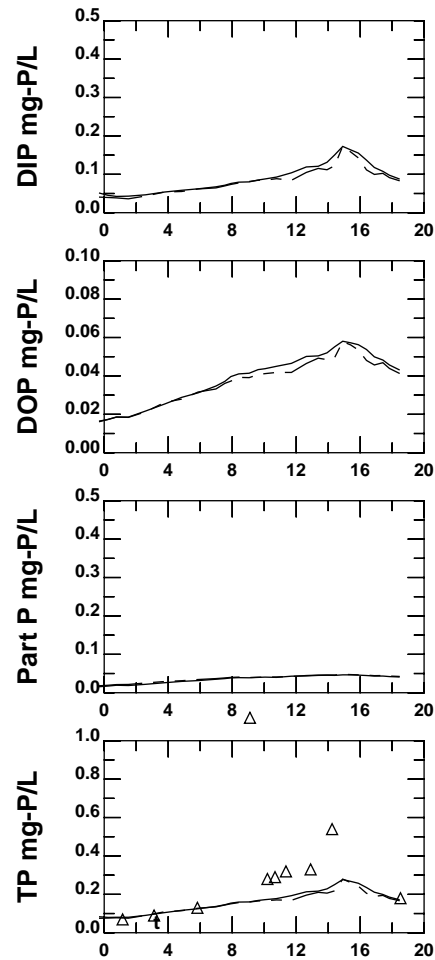
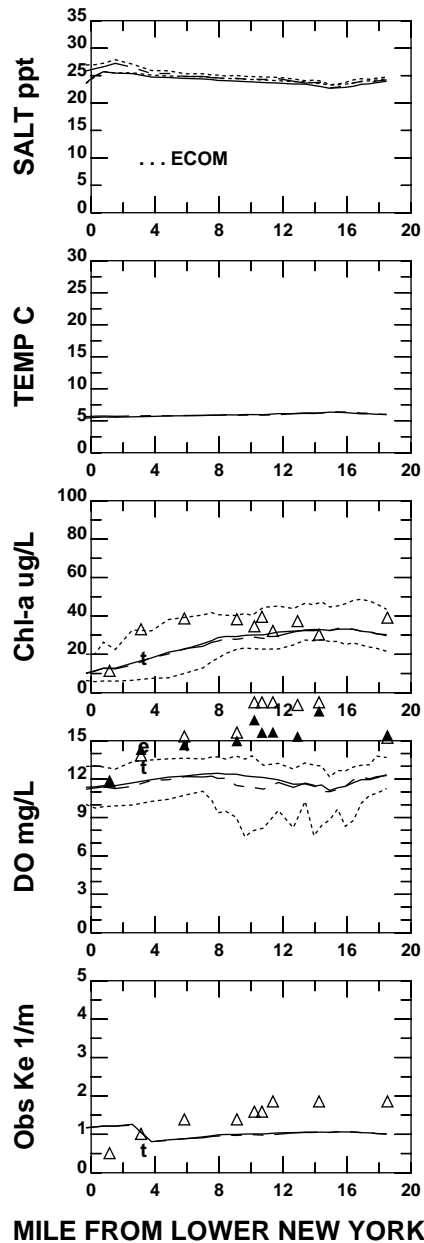
DATA Jan 29-Feb 27, 2000

	SURF		BOT	
Harbor Survey	△	▲	Transect	
	t	e	Embayment	
NYSDEC	○		Transect	
	c		Embayment	

MODEL

—	SURFACE 30-DAY MEAN
- - - -	BOTTOM 30-DAY MEAN
- · - ·	30-DAY SURFACE MAX OR BOTTOM MIN

## CONEY ISLAND JAMAICA BAY TRANSECT



**MILE FROM LOWER NEW YORK BAY**

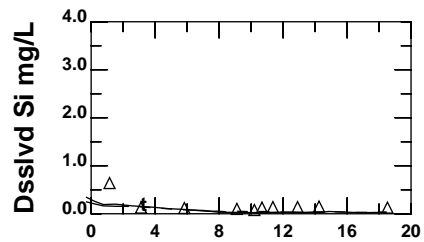
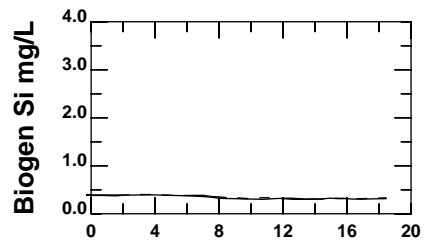
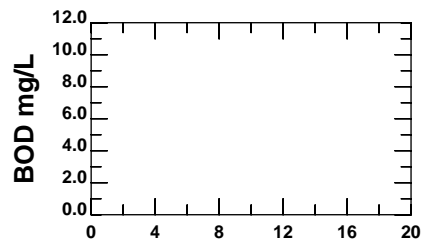
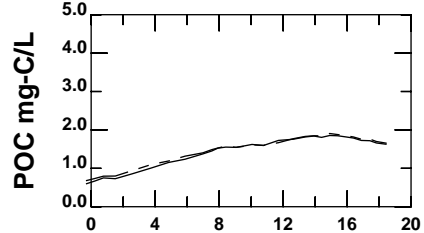
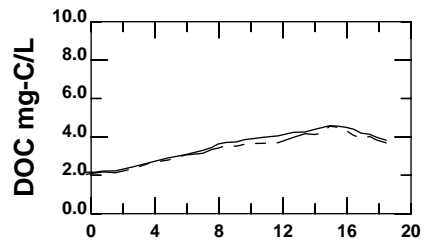
DATA Feb 28-Mar 29,2000

Harbor Survey    △    ▲    Transect  
                          t    e    Embayment  
 NYSDEC            ○            Transect  
                          c            Embayment

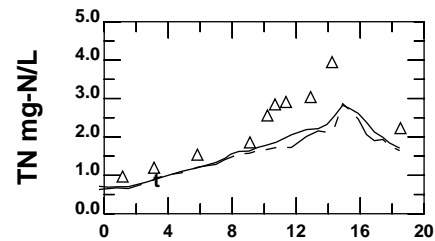
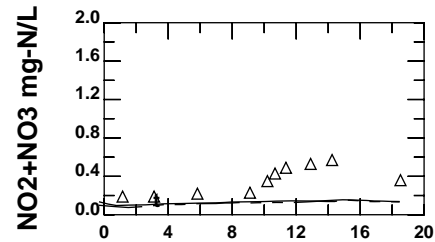
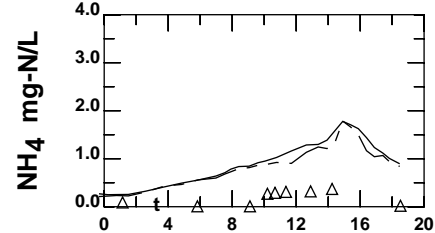
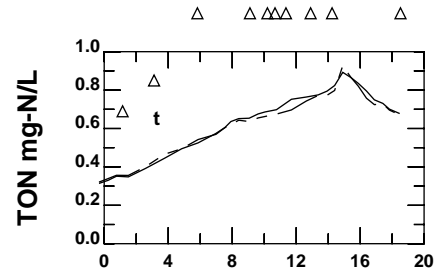
**MODEL**

———— SURFACE 30-DAY MEAN  
 - - - - - BOTTOM 30-DAY MEAN  
 - - - - - 30-DAY SURFACE MAX OR  
 BOTTOM MIN

**CONEY ISLAND JAMAICA BAY TRANSECT**



MILE FROM LOWER NEW YORK BAY



MILE FROM LOWER NEW YORK BAY

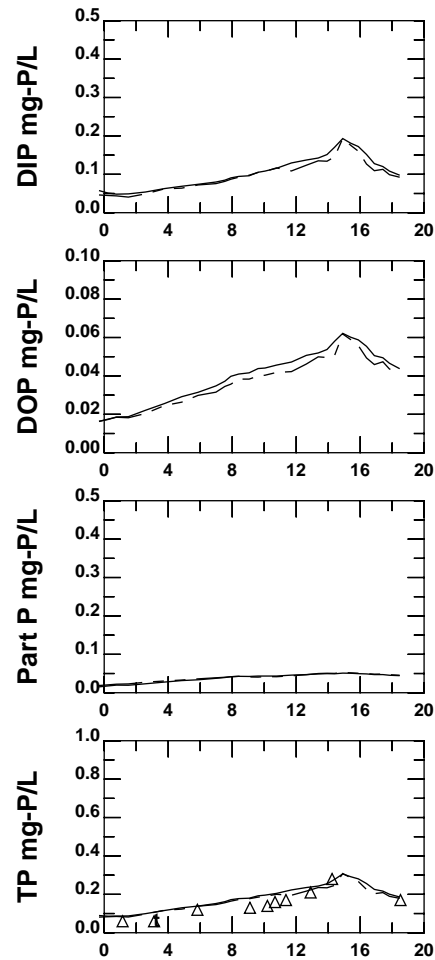
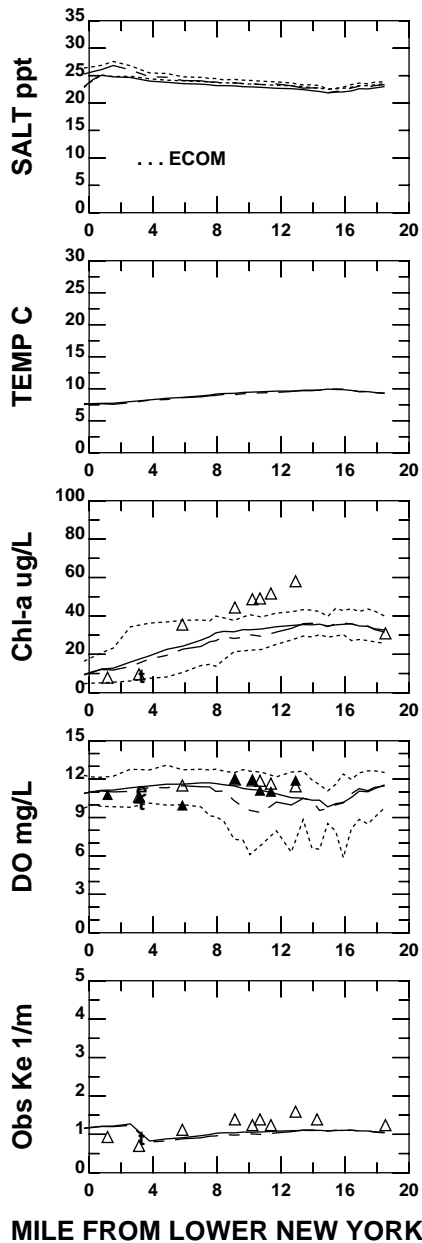
DATA Feb 28-Mar 29, 2000

	SURF		BOT	
Harbor Survey	△	▲	Transect	Embayment
NYSDEC	t	e	Transect	Embayment
	○	c	Transect	Embayment

MODEL

—	SURFACE 30-DAY MEAN
- - - -	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

# CONEY ISLAND JAMAICA BAY TRANSECT



**MILE FROM LOWER NEW YORK BAY**

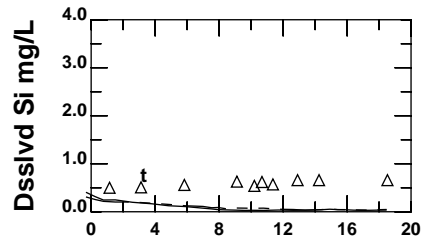
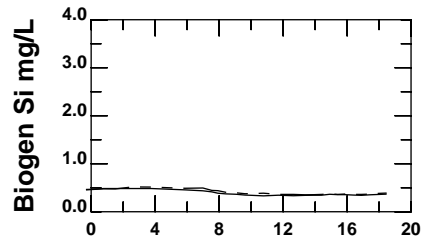
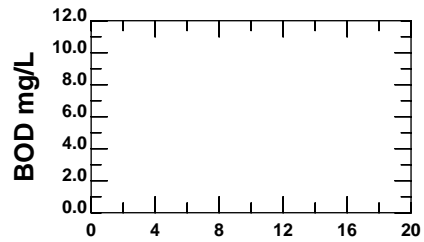
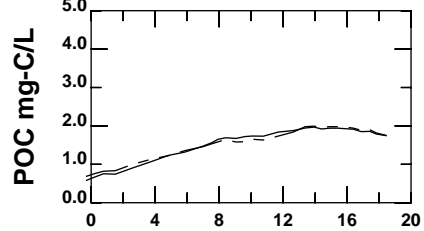
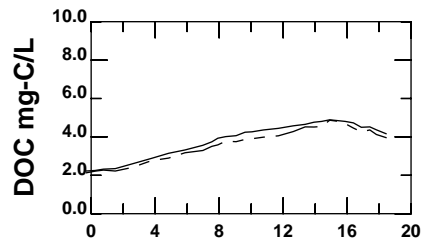
DATA Mar 30-Apr 28,2000

Harbor Survey SURF BOT  
 △ ▲ Transect  
 t e Embayment  
 NYSDEC ○ c Transect  
 Embayment

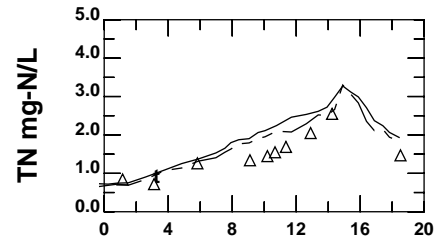
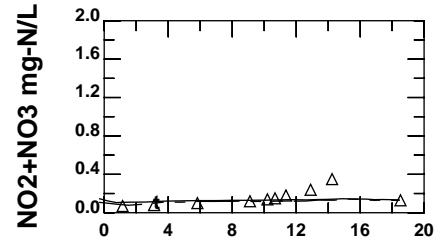
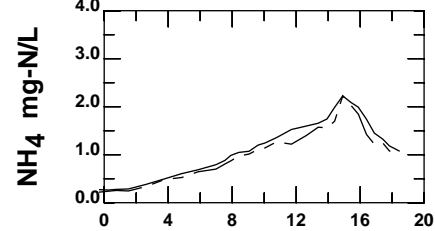
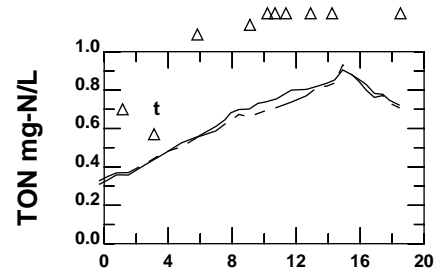
**MODEL**

— SURFACE 30-DAY MEAN  
 - - - - - BOTTOM 30-DAY MEAN  
 - - 30-DAY SURFACE MAX OR  
 BOTTOM MIN

**CONEY ISLAND JAMAICA BAY TRANSECT**



MILE FROM LOWER NEW YORK BAY



MILE FROM LOWER NEW YORK BAY

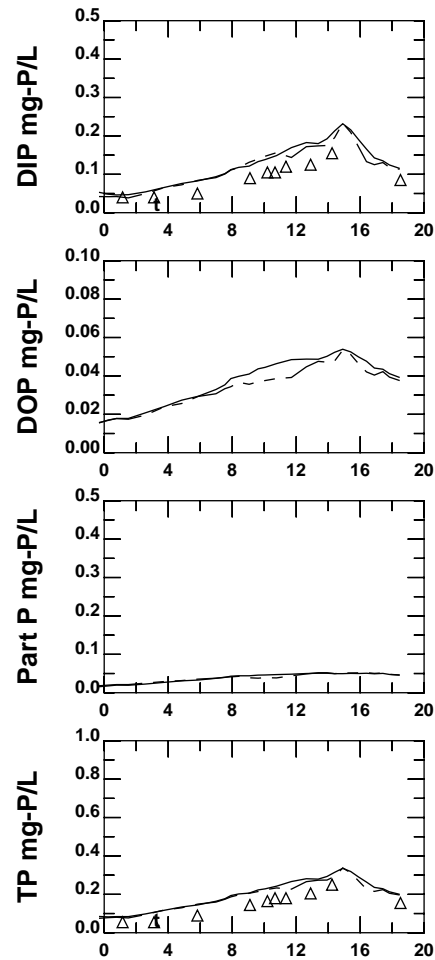
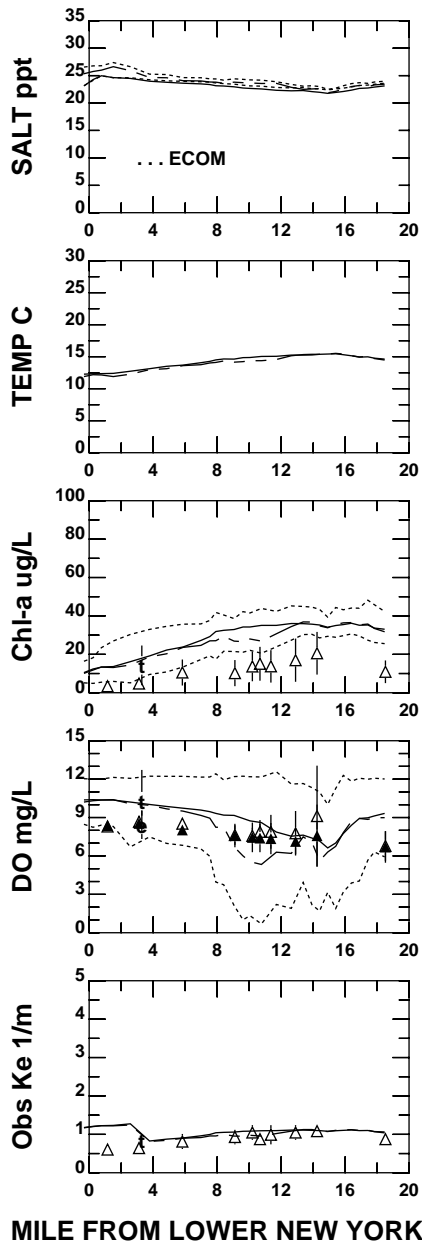
DATA Mar 30-Apr 28, 2000

	SURF		BOT	
Harbor Survey	△	▲	Transect	
	t	e	Embayment	
NYSDEC	○		Transect	
	c		Embayment	

MODEL

—	SURFACE 30-DAY MEAN
- - -	BOTTOM 30-DAY MEAN
- - -	30-DAY SURFACE MAX OR BOTTOM MIN

## CONEY ISLAND JAMAICA BAY TRANSECT



**MILE FROM LOWER NEW YORK BAY**

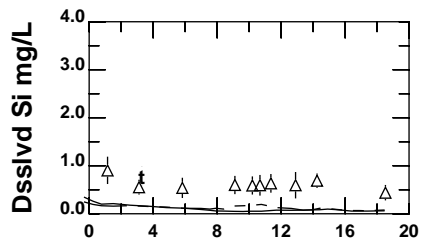
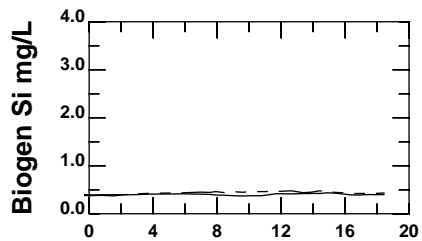
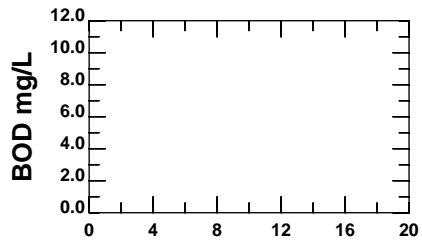
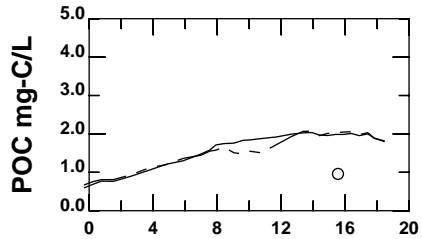
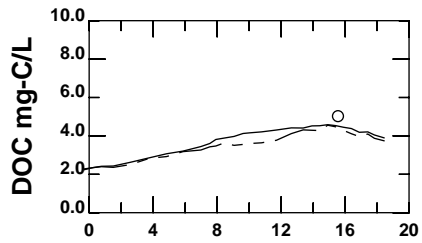
**DATA Apr 29-May 28, 2000**

	SURF		BOT	
Harbor Survey	△	▲	Transect	
	t	e	Embayment	
NYSDEC	○	Transect		
	c	Embayment		

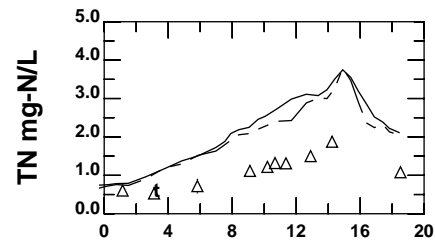
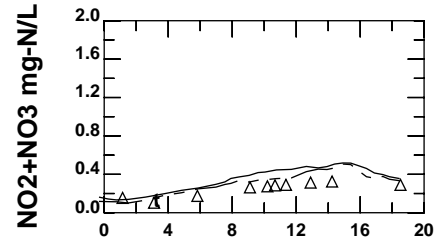
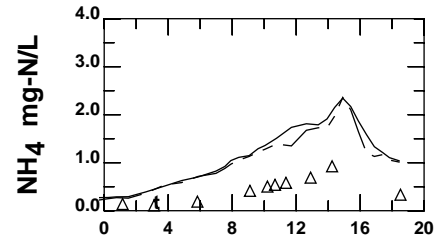
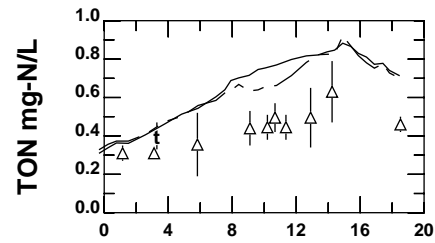
**MODEL**

————	<b>SURFACE 30-DAY MEAN</b>
-----	<b>BOTTOM 30-DAY MEAN</b>
- - - -	<b>30-DAY SURFACE MAX OR BOTTOM MIN</b>

**CONEY ISLAND JAMAICA BAY TRANSECT**



MILE FROM LOWER NEW YORK BAY



MILE FROM LOWER NEW YORK BAY

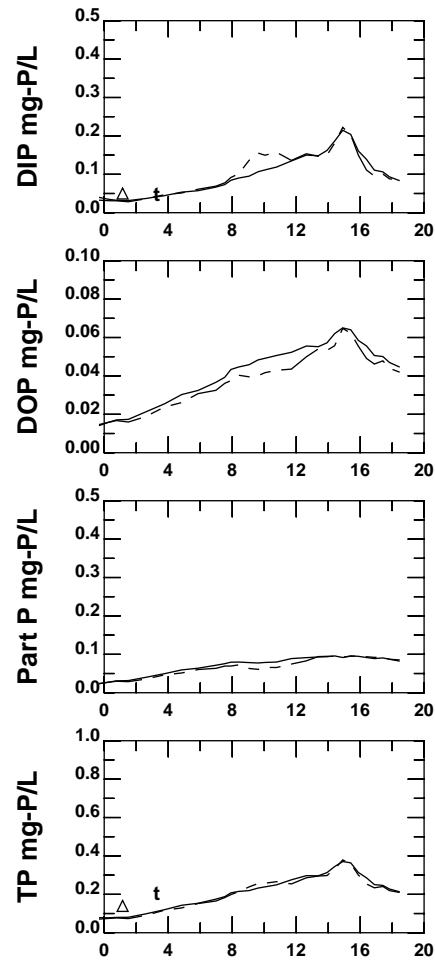
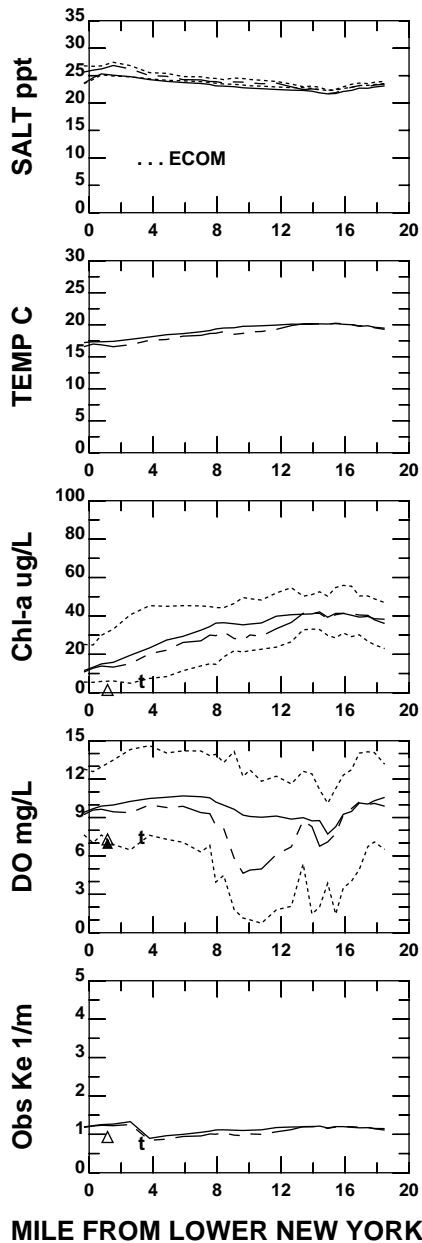
DATA Apr 29-May 28, 2000

	SURF BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment

MODEL

————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

# CONEY ISLAND JAMAICA BAY TRANSECT



**MILE FROM LOWER NEW YORK BAY**

**DATA May 29-Jun 27, 2000**

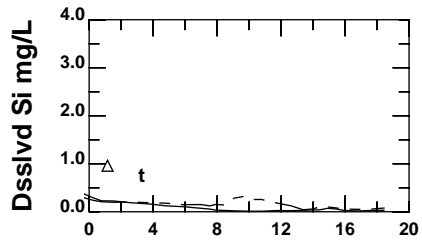
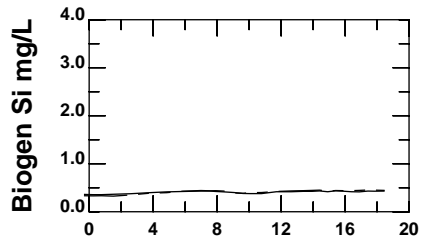
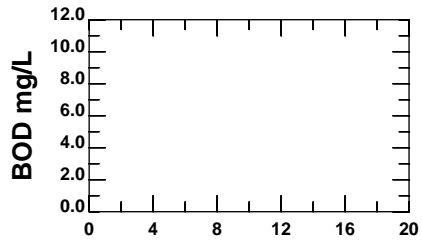
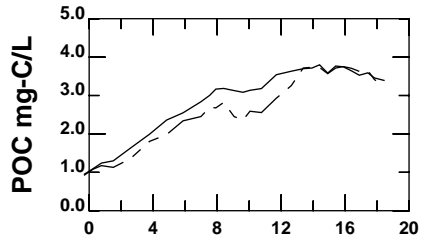
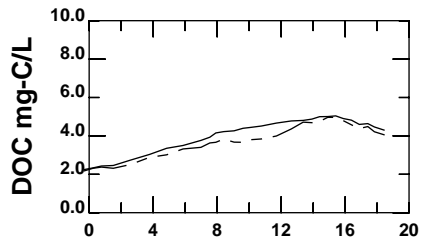
	<b>SURF BOT</b>		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment

**MODEL**

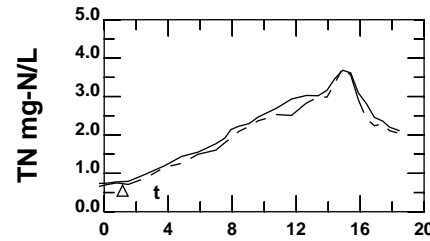
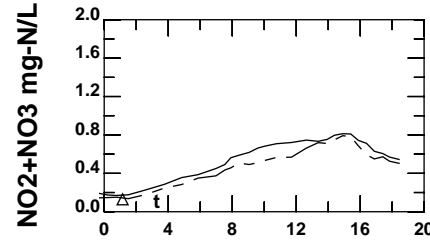
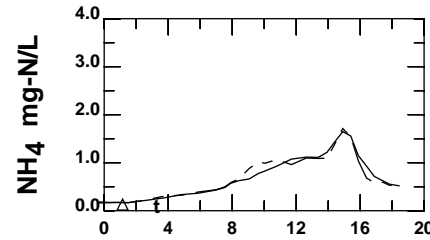
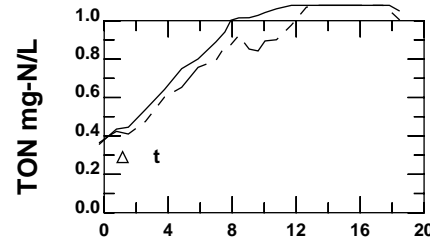
————	<b>SURFACE 30-DAY MEAN</b>
-----	<b>BOTTOM 30-DAY MEAN</b>
- - - -	<b>30-DAY SURFACE MAX OR BOTTOM MIN</b>

**CONEY ISLAND JAMAICA BAY TRANSECT**





MILE FROM LOWER NEW YORK BAY



MILE FROM LOWER NEW YORK BAY

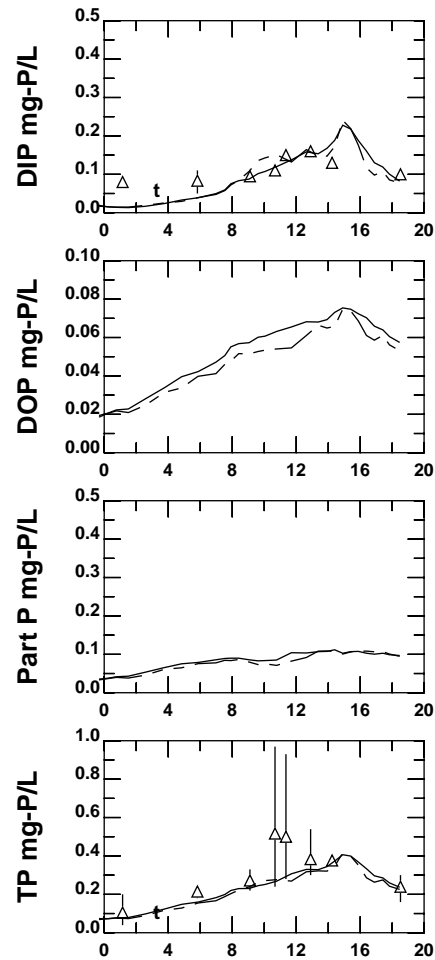
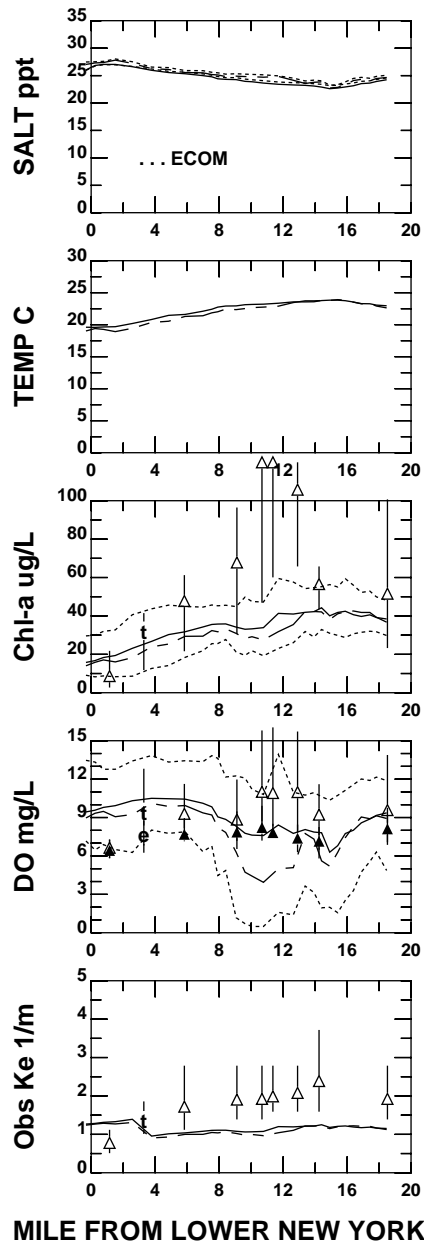
DATA May 29-Jun 27, 2000

	SURF BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment

MODEL

————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

## CONEY ISLAND JAMAICA BAY TRANSECT



MILE FROM LOWER NEW YORK BAY

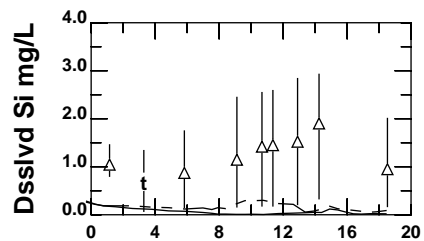
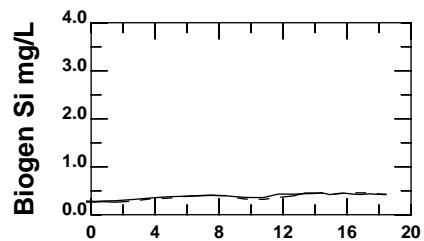
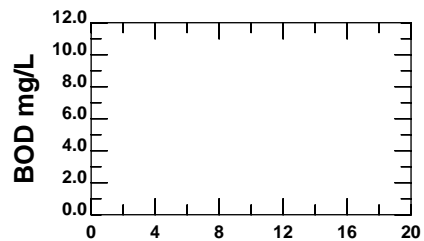
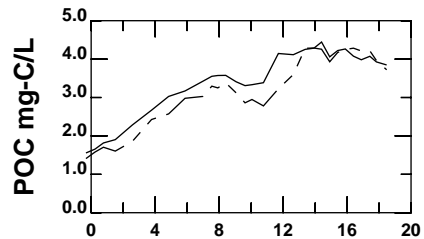
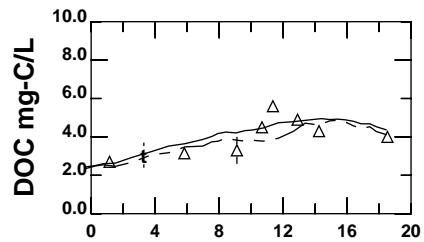
DATA Jun 28-Jul 27, 2000

Harbor Survey     $\triangle$     $\blacktriangle$    **Transect**  
                           t    e    **Embayment**  
 NYSDEC             $\circ$        **Transect**  
                           c       **Embayment**

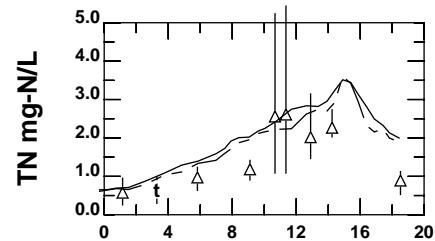
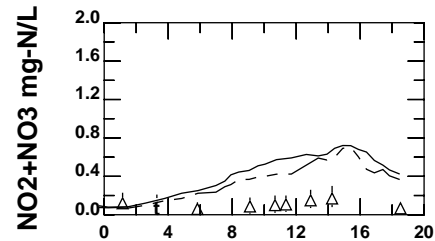
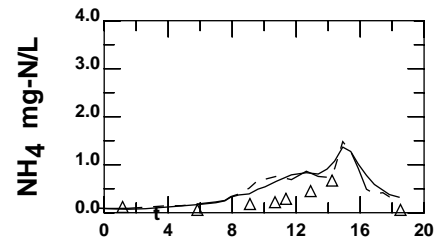
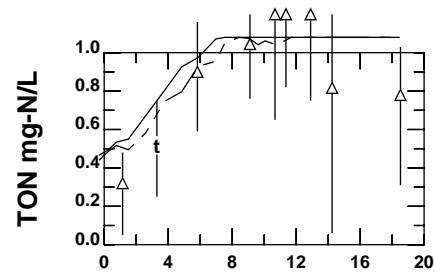
MODEL

———— **SURFACE 30-DAY MEAN**  
 - - - - - **BOTTOM 30-DAY MEAN**  
 - - - - - **30-DAY SURFACE MAX OR BOTTOM MIN**

**CONEY ISLAND JAMAICA BAY TRANSECT**



MILE FROM LOWER NEW YORK BAY



MILE FROM LOWER NEW YORK BAY

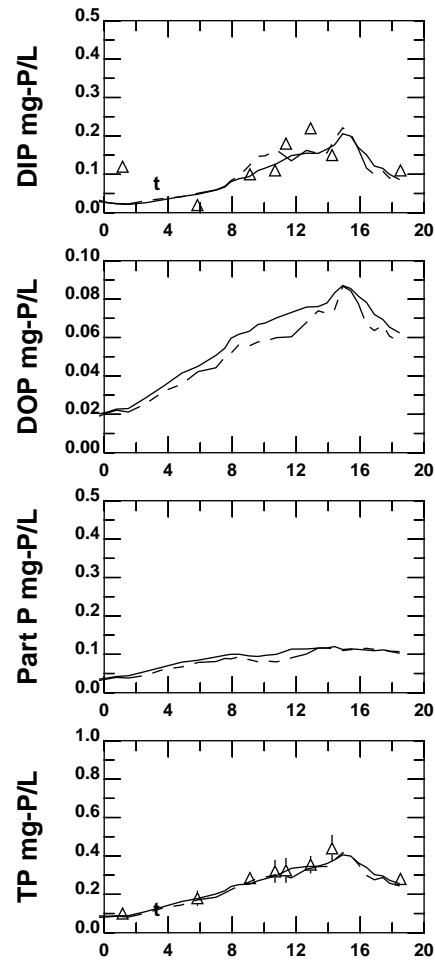
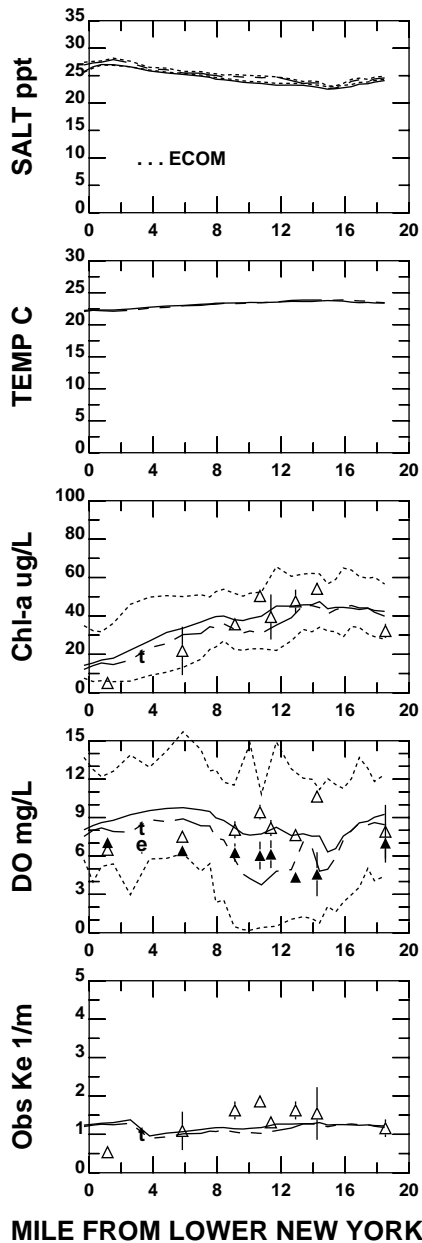
DATA Jun 28-Jul 27,2000

	SURF		BOT	
Harbor Survey	△	▲	Transect	
	t	e	Embayment	
NYSDEC	○		Transect	
	c		Embayment	

MODEL

————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

# CONEY ISLAND JAMAICA BAY TRANSECT



**MILE FROM LOWER NEW YORK BAY**

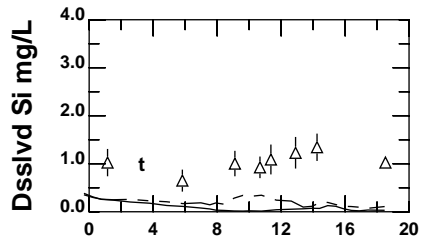
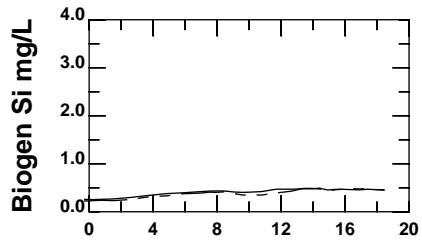
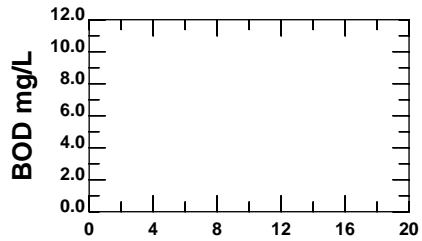
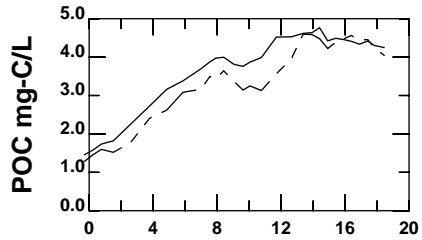
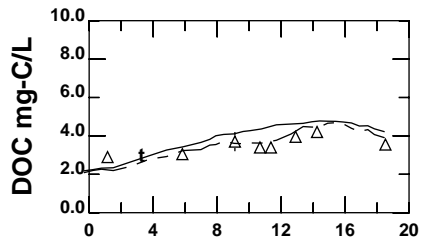
DATA Jul 27-Aug 26,2000

	SURF BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment

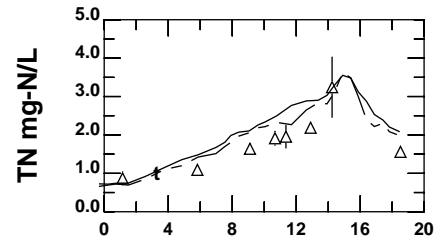
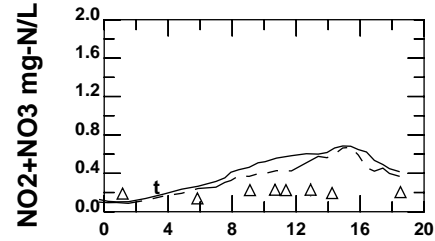
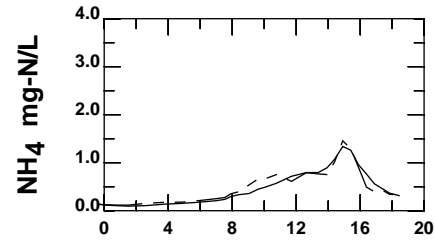
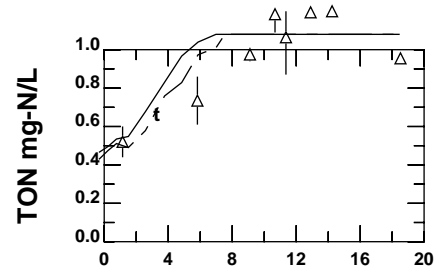
**MODEL**

————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

**CONEY ISLAND JAMAICA BAY TRANSECT**



MILE FROM LOWER NEW YORK BAY



MILE FROM LOWER NEW YORK BAY

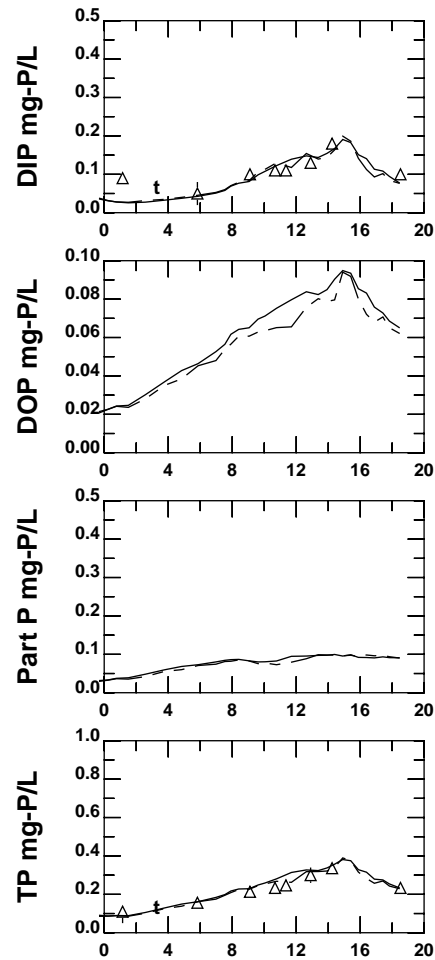
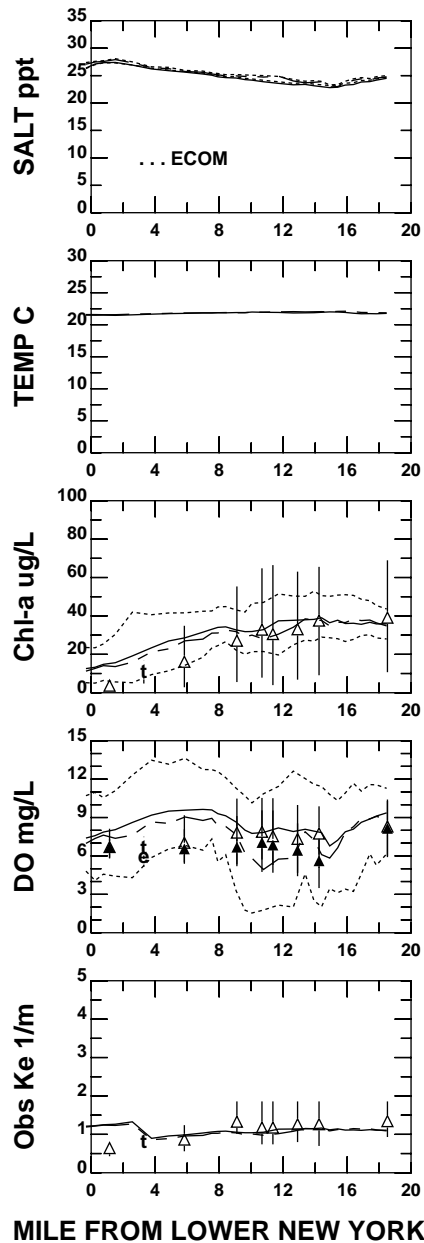
DATA Jul 27-Aug 26, 2000

	SURF		BOT	
Harbor Survey	△	▲	Transect	
	t	e	Embayment	
NYSDEC	○		Transect	
	c		Embayment	

MODEL

—	SURFACE 30-DAY MEAN
- - - -	BOTTOM 30-DAY MEAN
- - -	30-DAY SURFACE MAX OR BOTTOM MIN

# CONEY ISLAND JAMAICA BAY TRANSECT



**MILE FROM LOWER NEW YORK BAY**

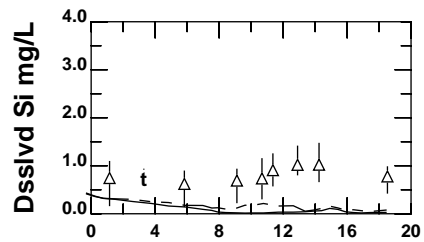
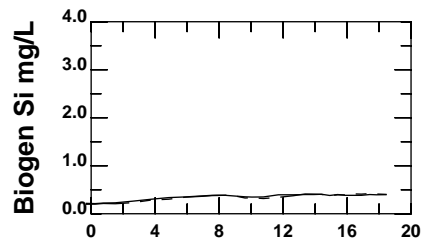
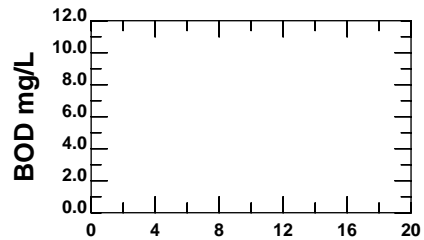
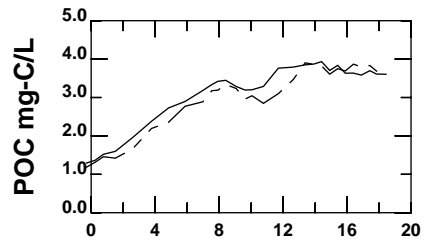
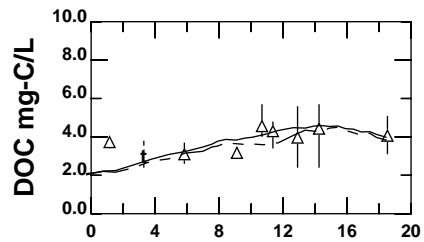
**DATA Aug 27-Sep 25,2000**

Harbor Survey    △    ▲    Transect  
                          t    e    Embayment  
 NYSDEC            ○            Transect  
                          c            Embayment

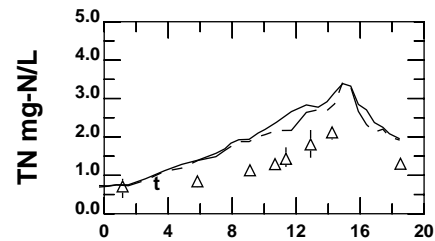
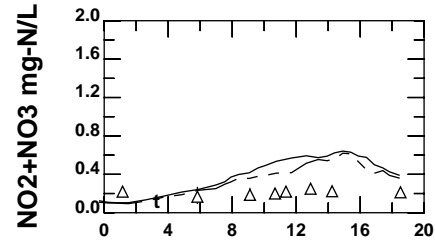
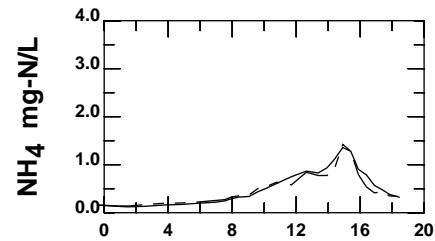
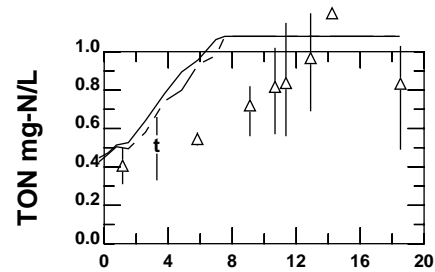
**MODEL**

——— SURFACE 30-DAY MEAN  
 - - - - - BOTTOM 30-DAY MEAN  
 - - - 30-DAY SURFACE MAX OR  
 BOTTOM MIN

**CONEY ISLAND JAMAICA BAY TRANSECT**



MILE FROM LOWER NEW YORK BAY



MILE FROM LOWER NEW YORK BAY

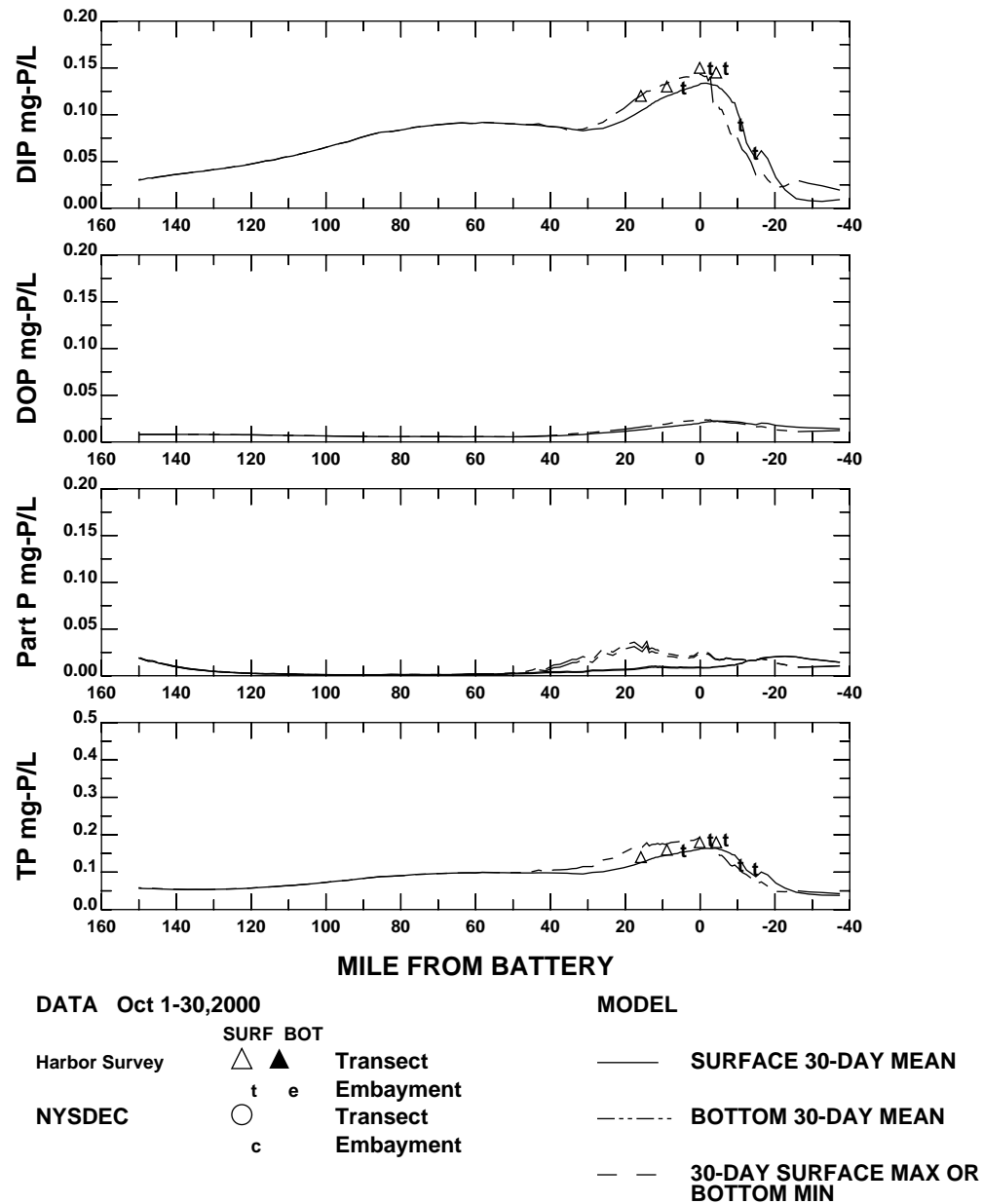
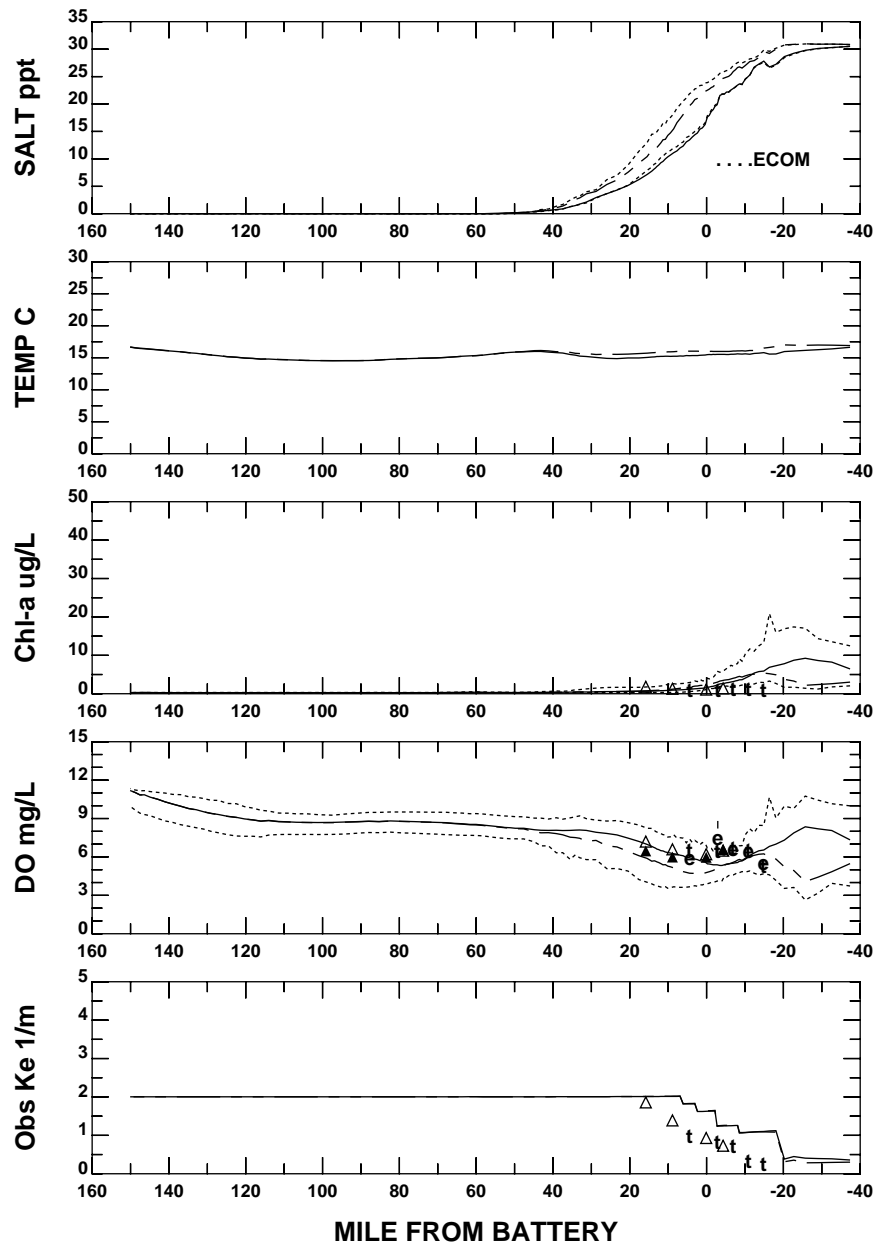
DATA Aug 27-Sep 25,2000

	SURF		BOT	
Harbor Survey	△	▲	Transect	
	t	e	Embayment	
NYSDEC	○		Transect	
	c		Embayment	

MODEL

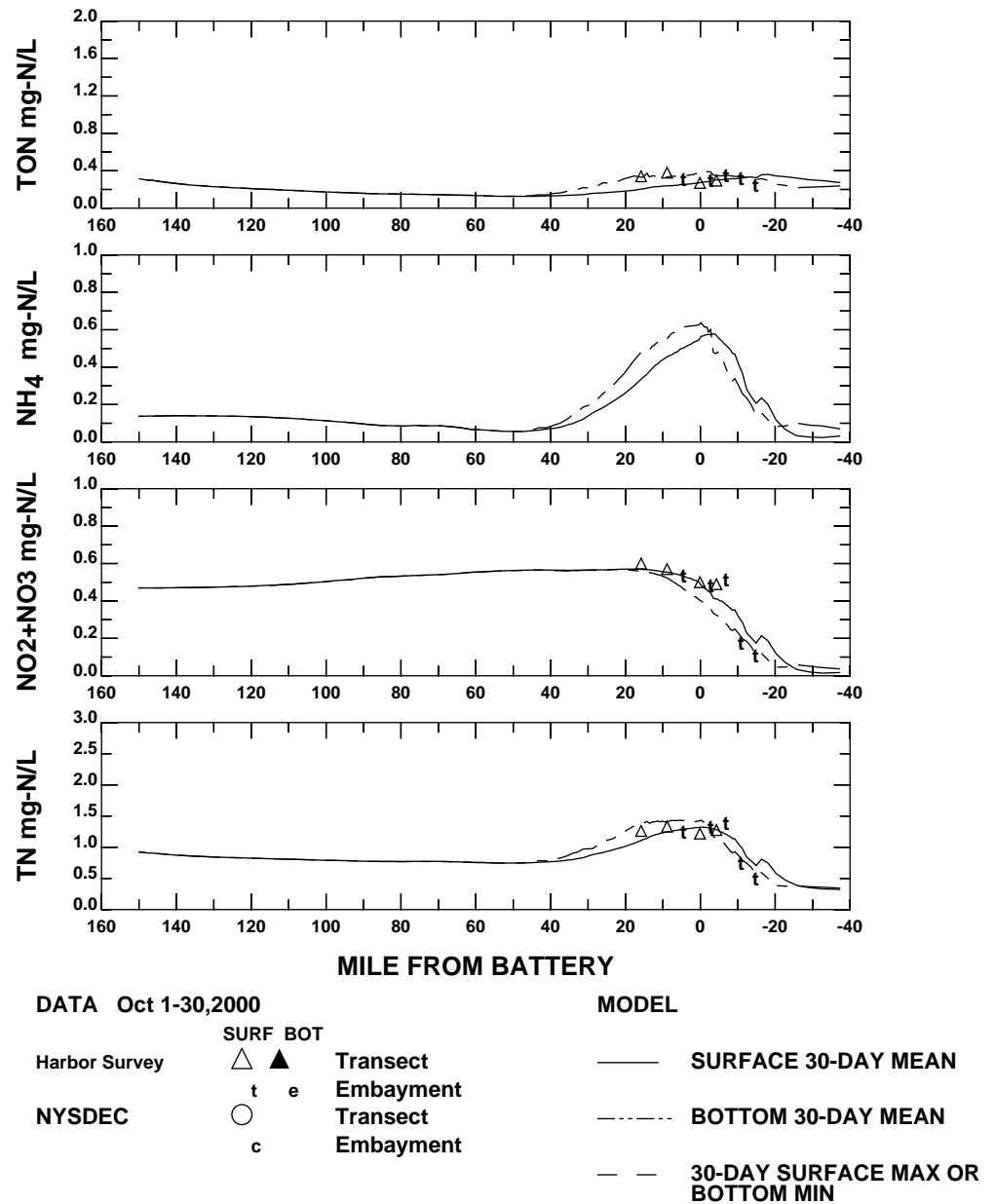
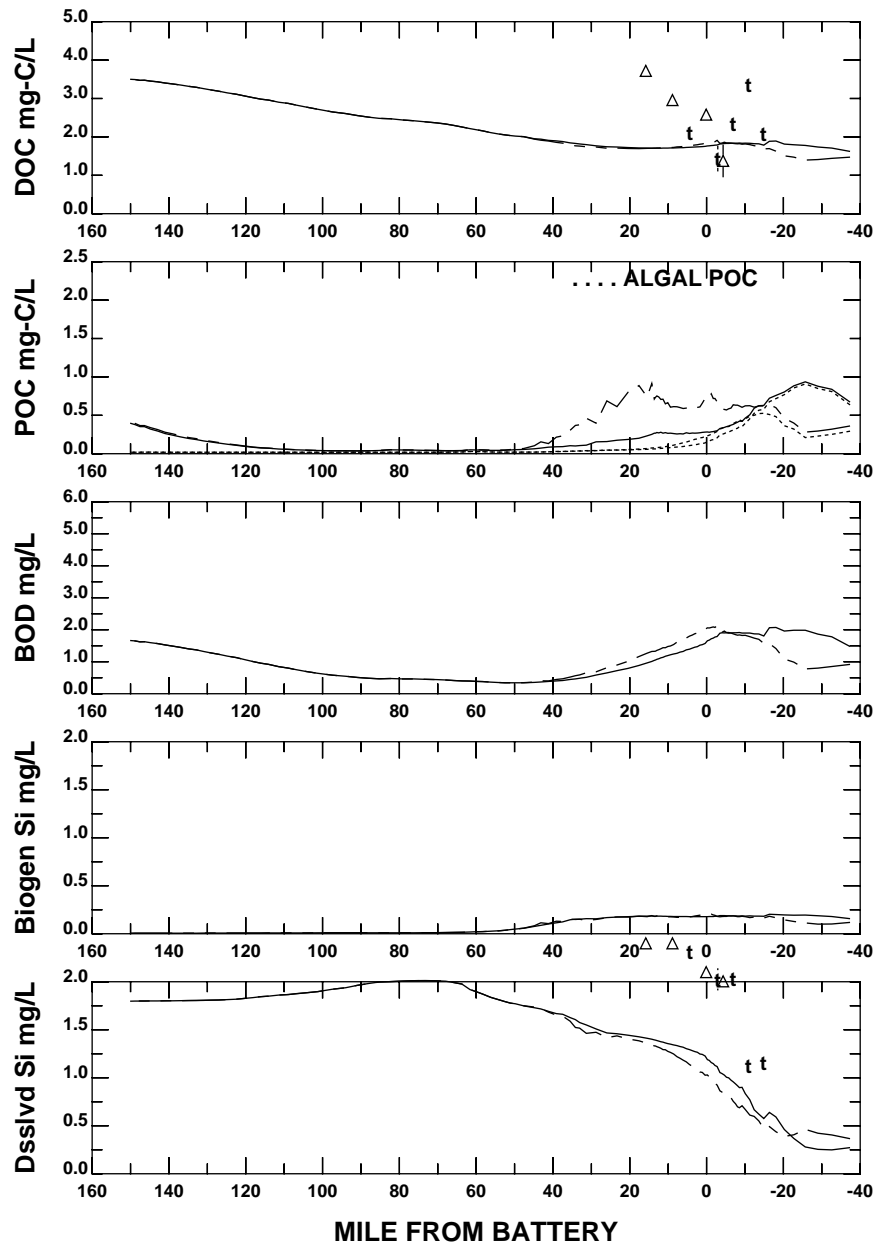
—	SURFACE 30-DAY MEAN
- - - -	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

## CONEY ISLAND JAMAICA BAY TRANSECT

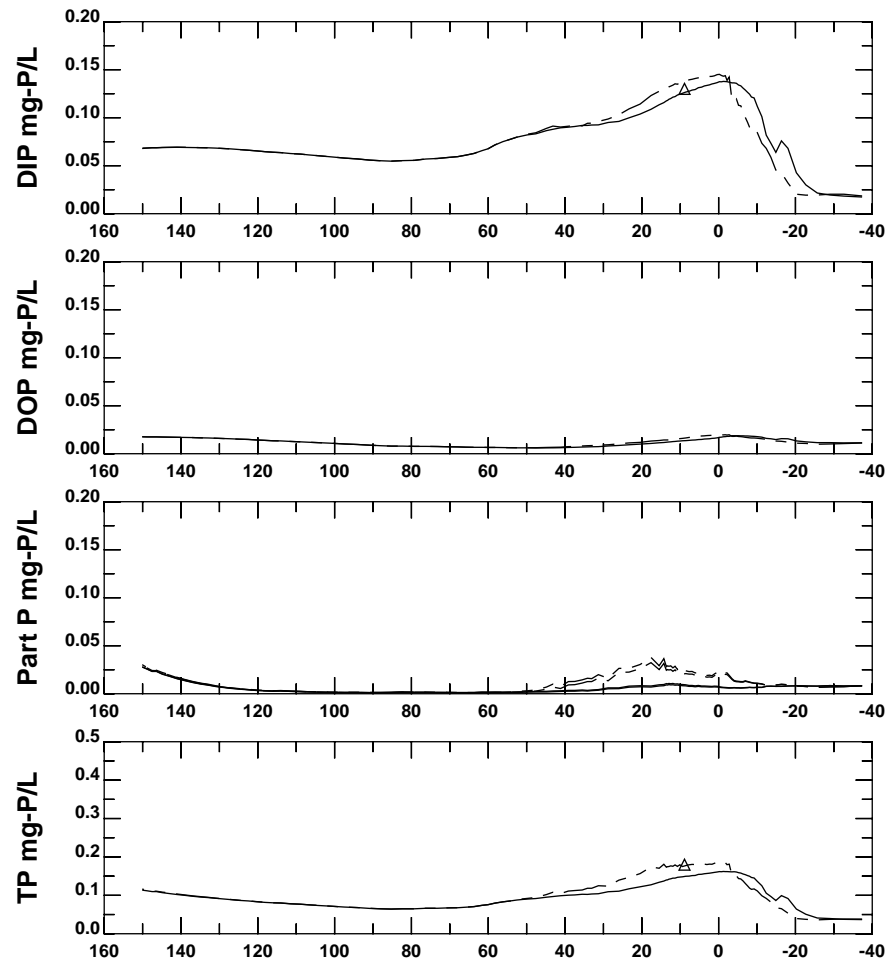
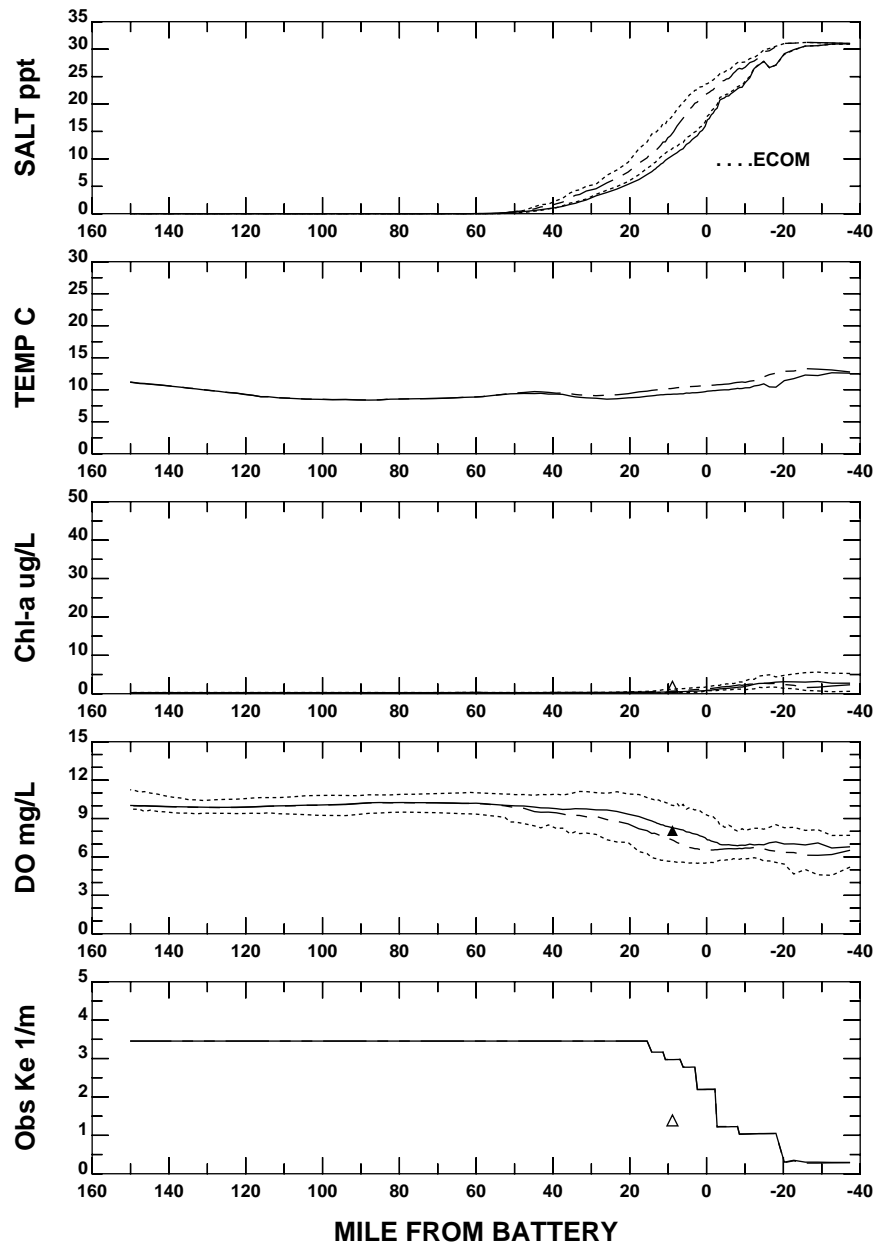


## HUDSON RIVER, UPPER AND LOWER BAY, OCEAN





## HUDSON RIVER, UPPER AND LOWER BAY, OCEAN



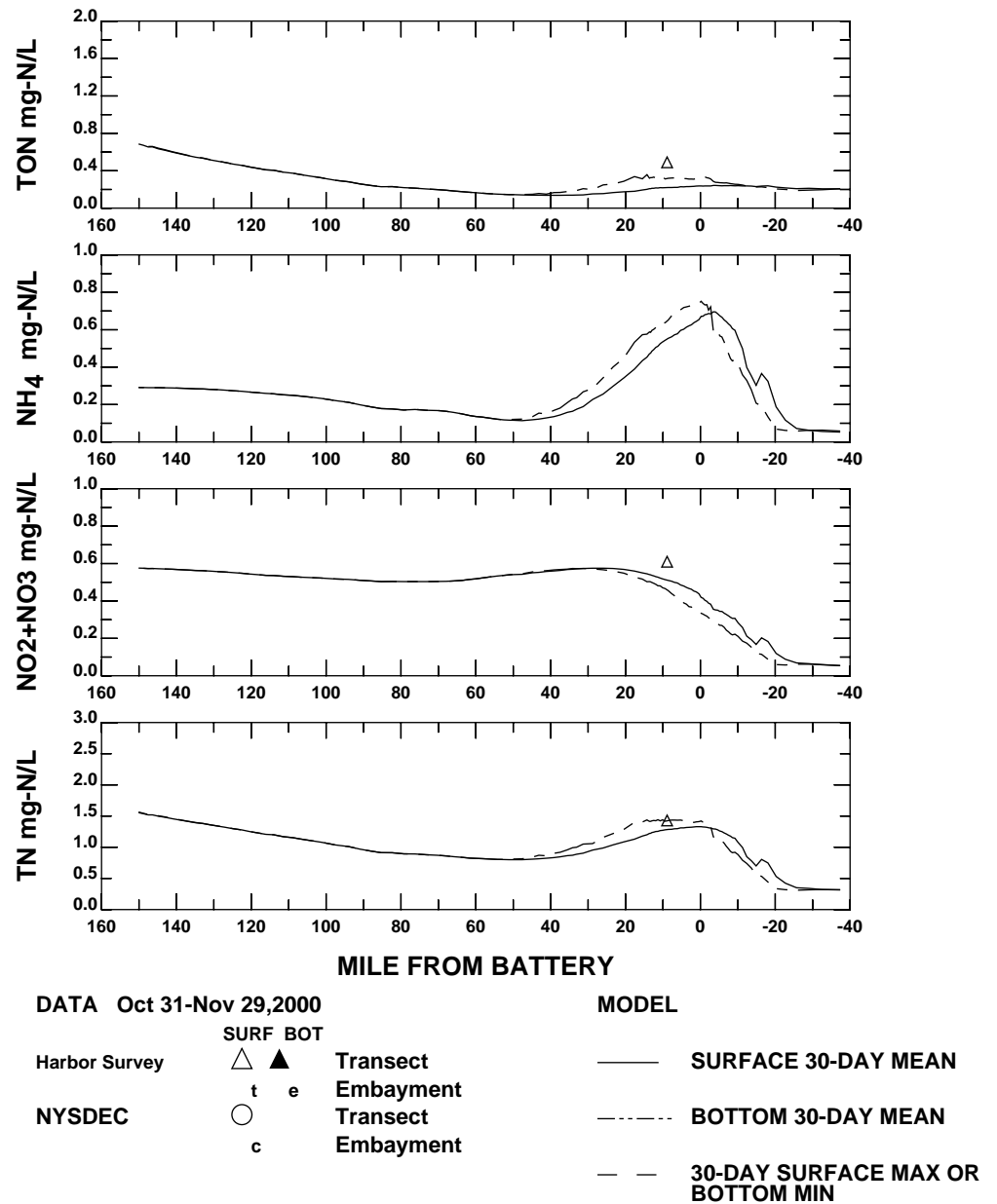
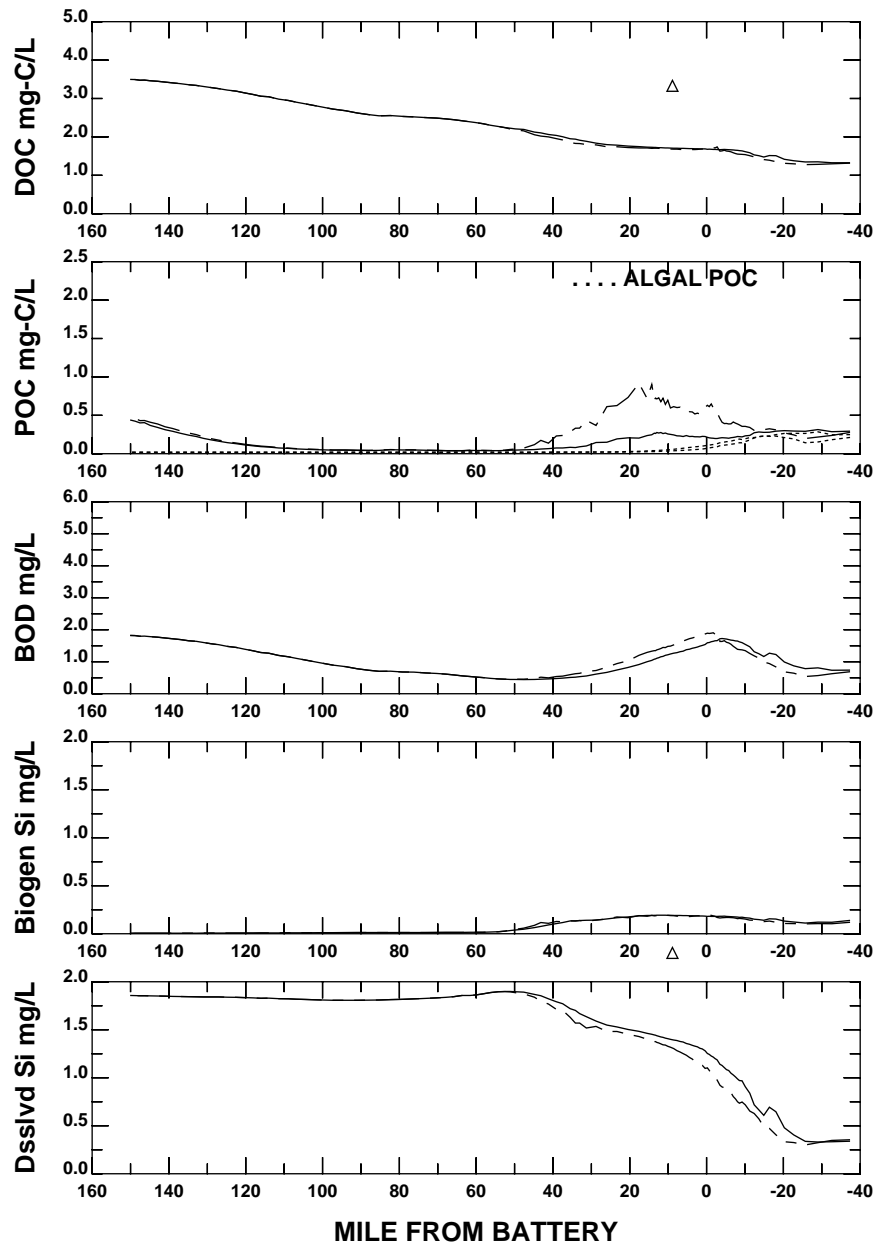
DATA Oct 31-Nov 29,2000

MODEL

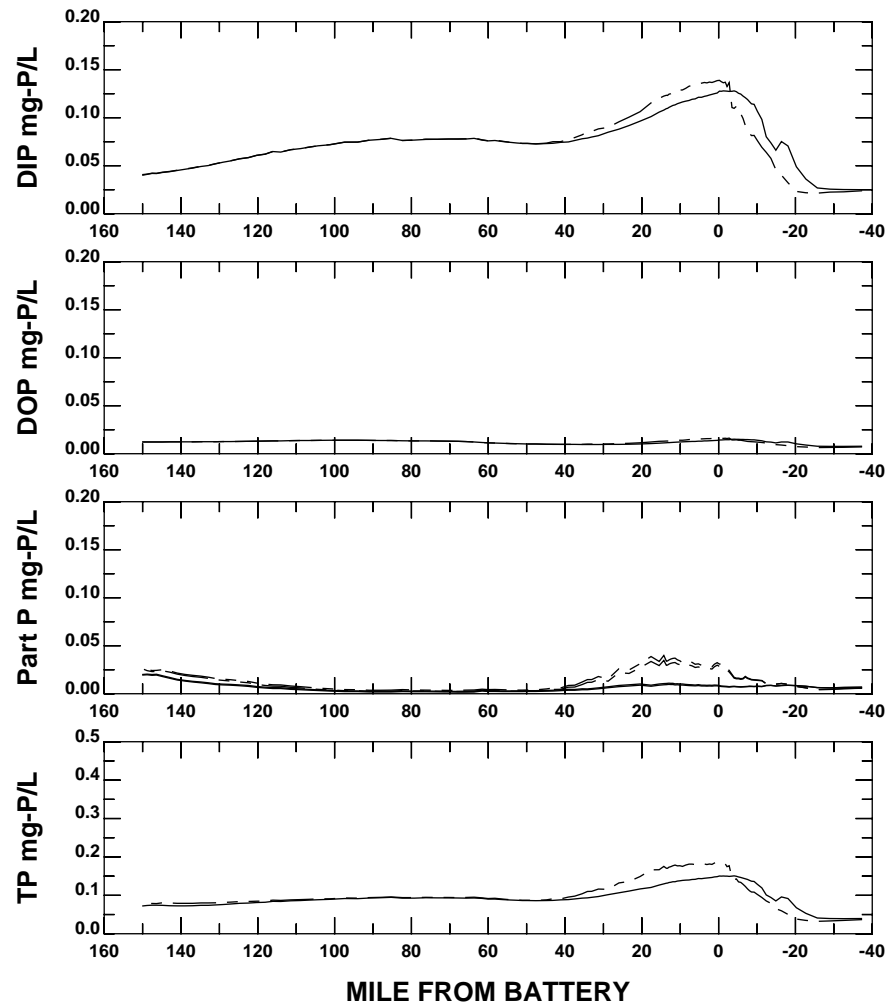
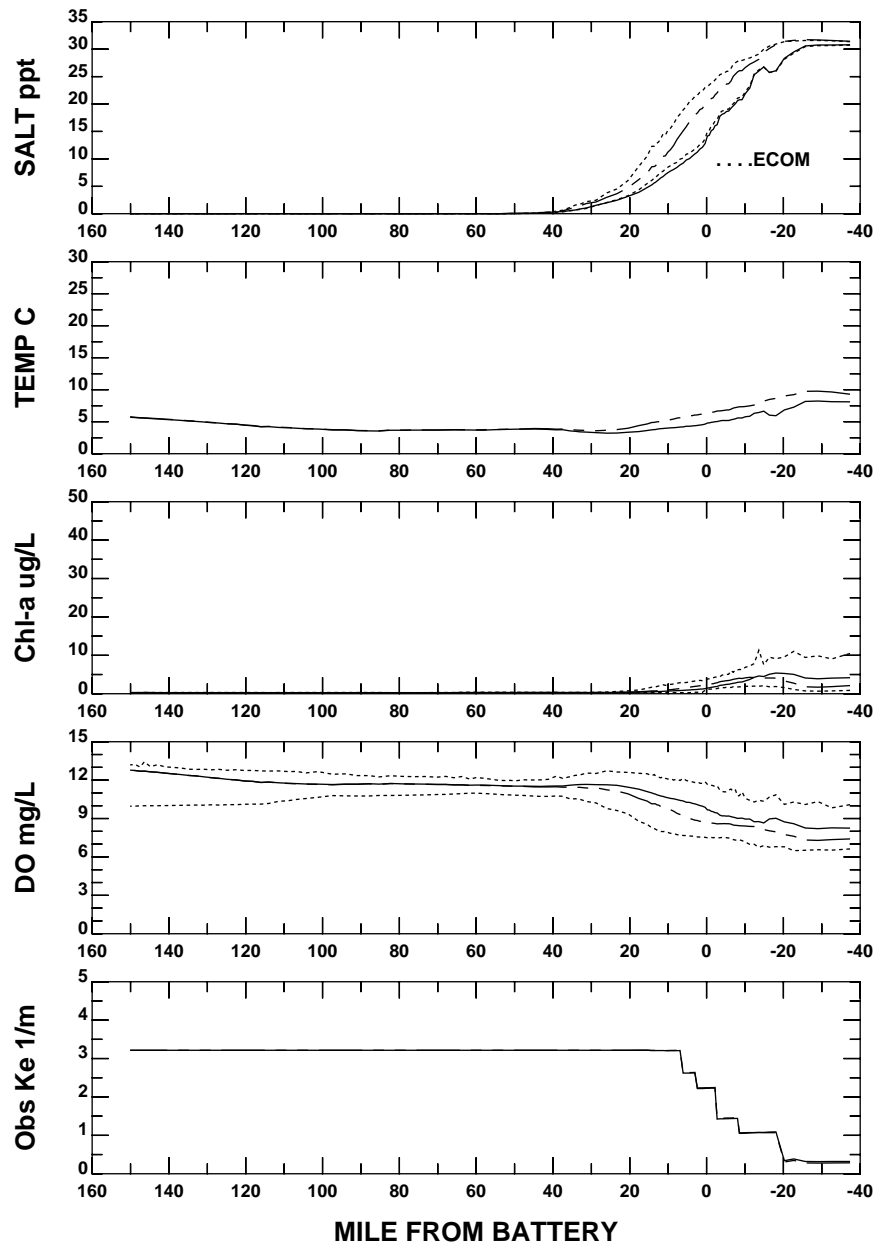
Harbor Survey SURF BOT  
 △ ▲ Transect  
 t e Embayment  
 NYSDEC ○ Transect  
 c Embayment

— SURFACE 30-DAY MEAN  
 - - - - - BOTTOM 30-DAY MEAN  
 - - - - - 30-DAY SURFACE MAX OR  
 BOTTOM MIN

**HUDSON RIVER, UPPER AND LOWER BAY, OCEAN**



## HUDSON RIVER, UPPER AND LOWER BAY, OCEAN



DATA Nov 30-Dec 29,2000

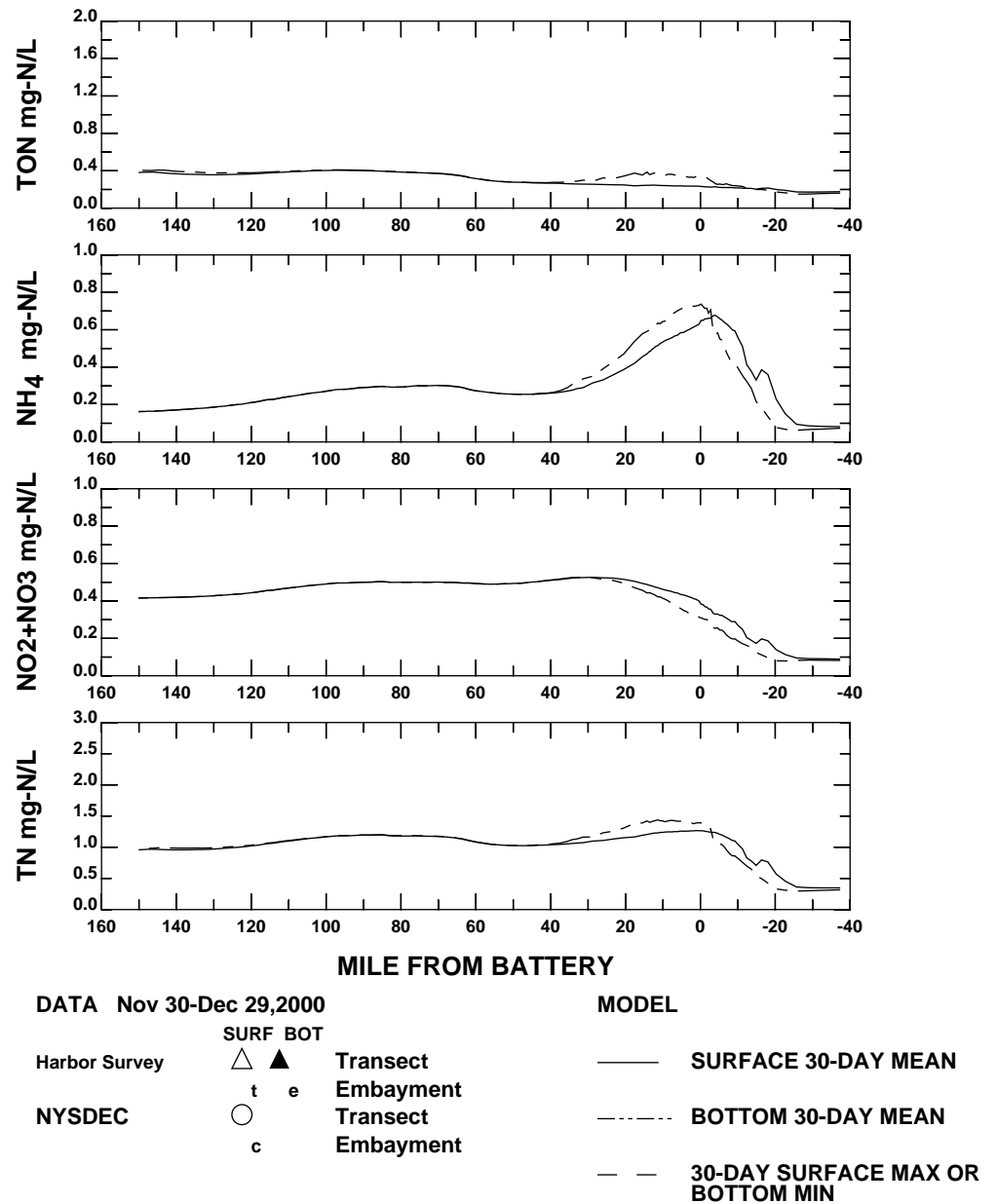
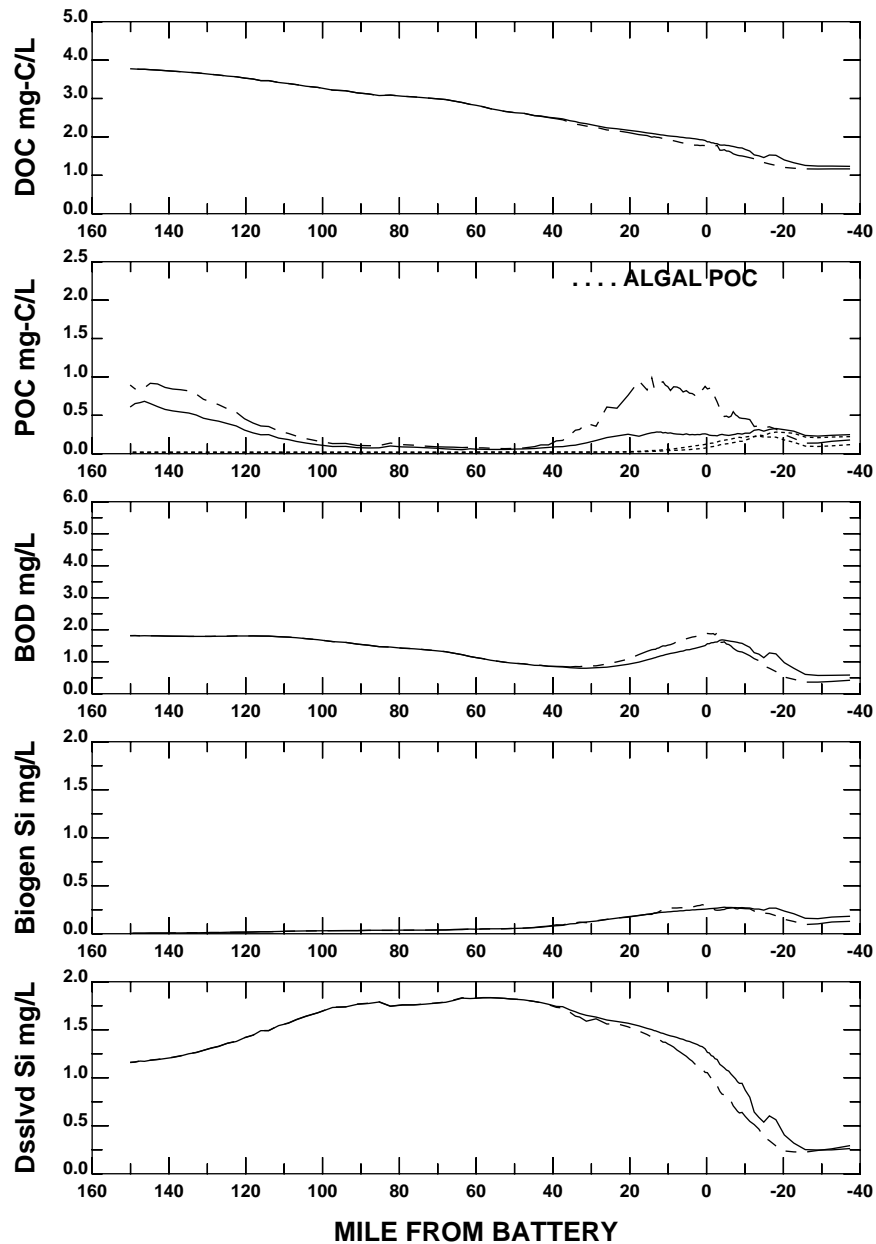
Harbor Survey SURF BOT  
 t e  
 NYSDEC o c

MILE FROM BATTERY

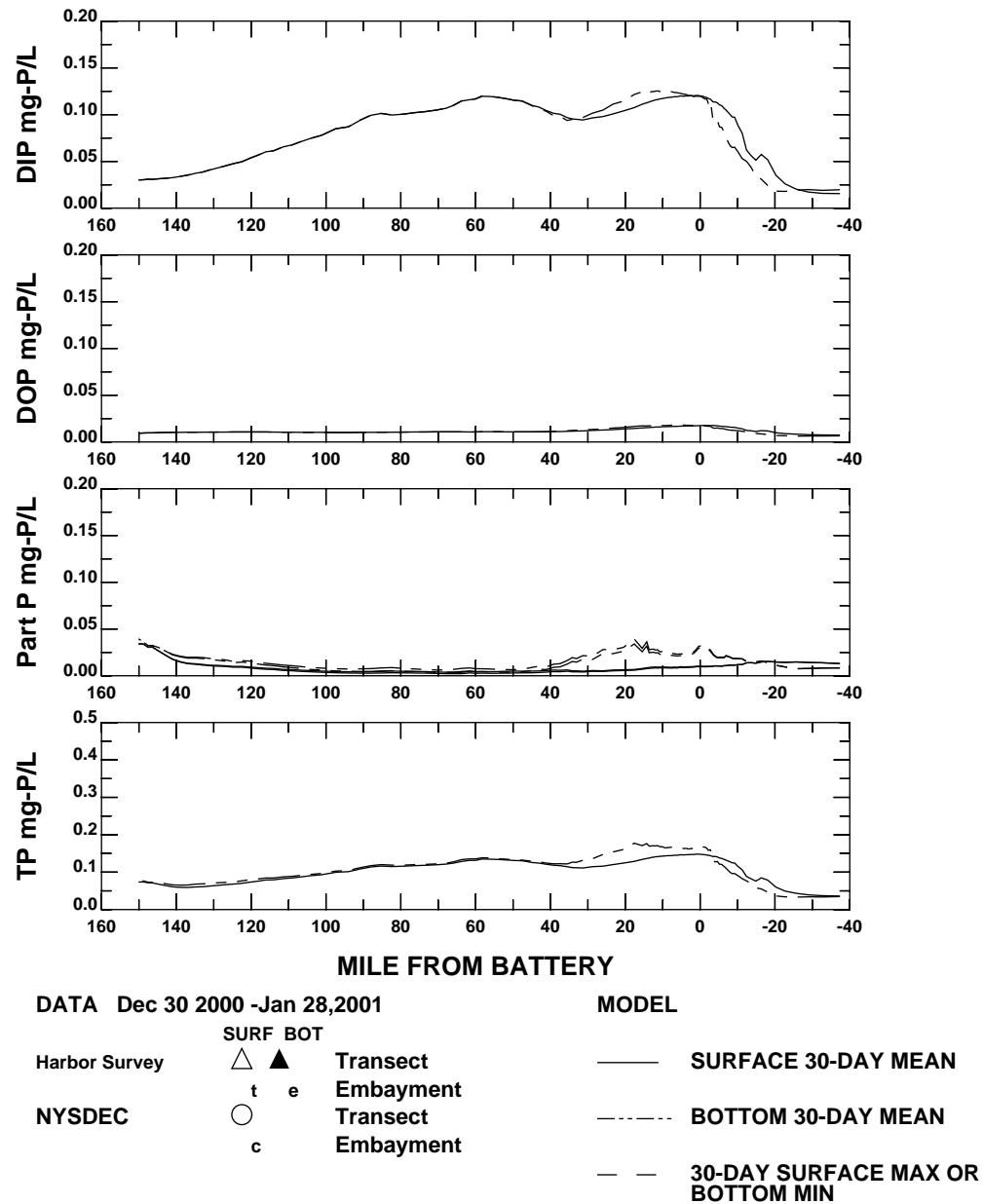
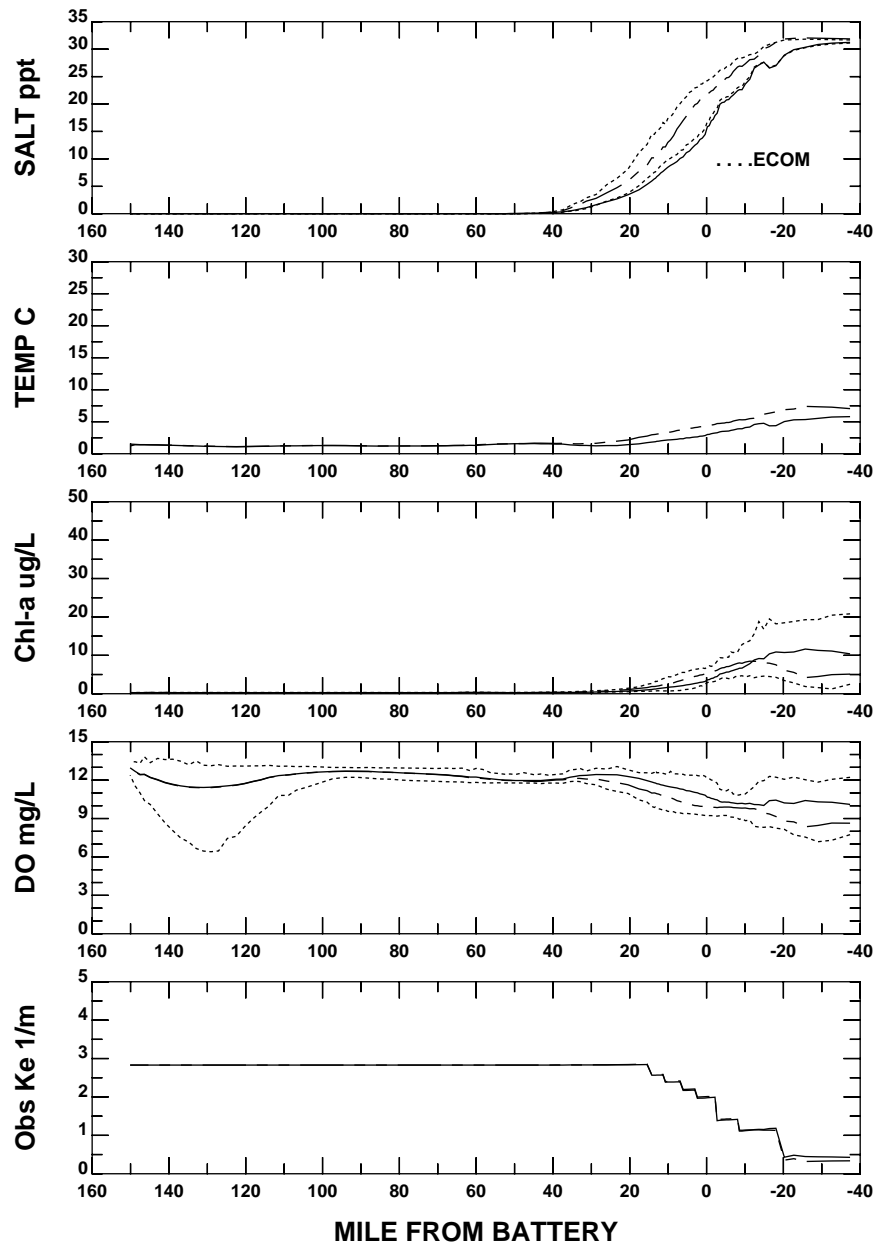
MODEL

— SURFACE 30-DAY MEAN  
 - - - - - BOTTOM 30-DAY MEAN  
 - - - 30-DAY SURFACE MAX OR  
 BOTTOM MIN

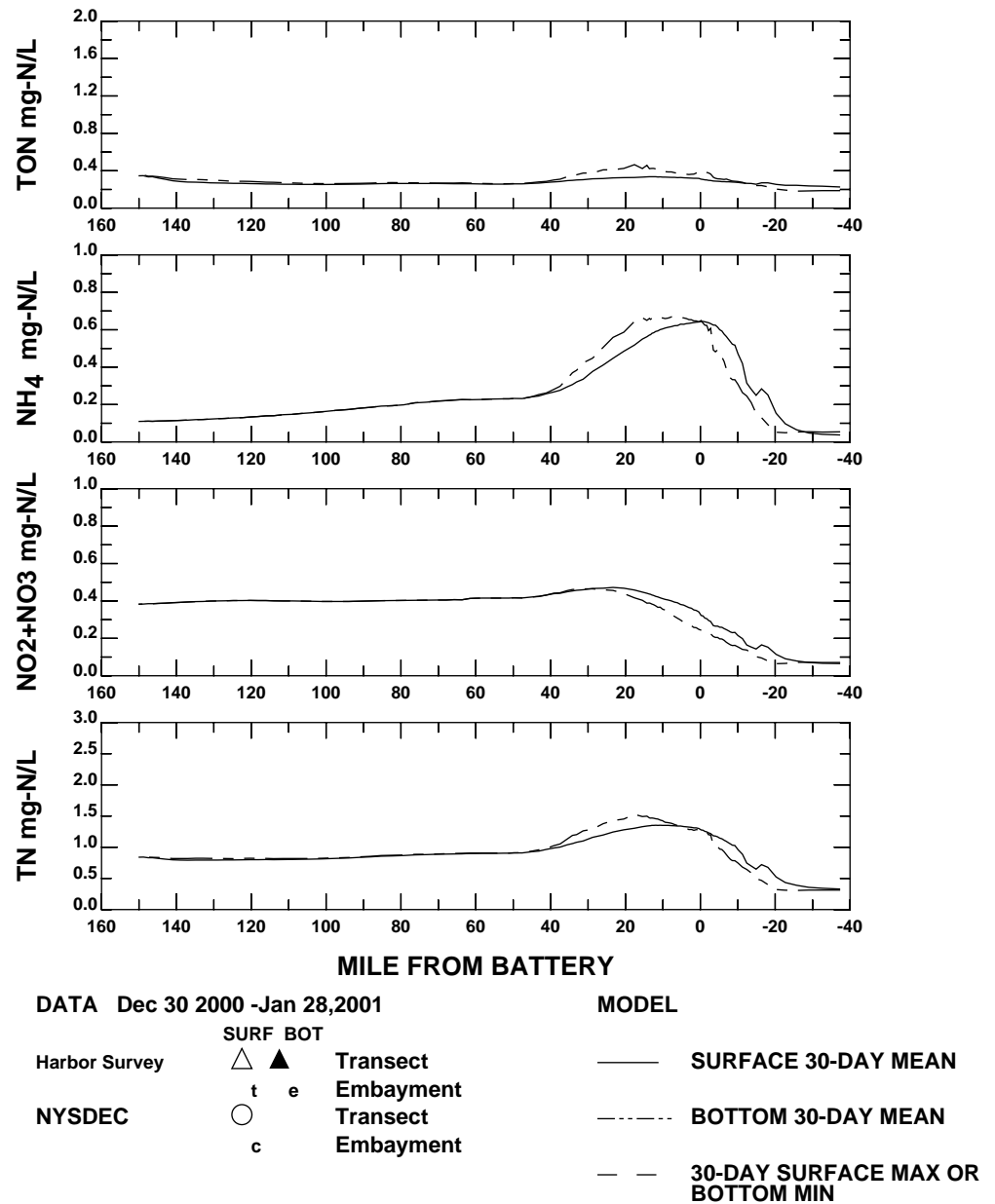
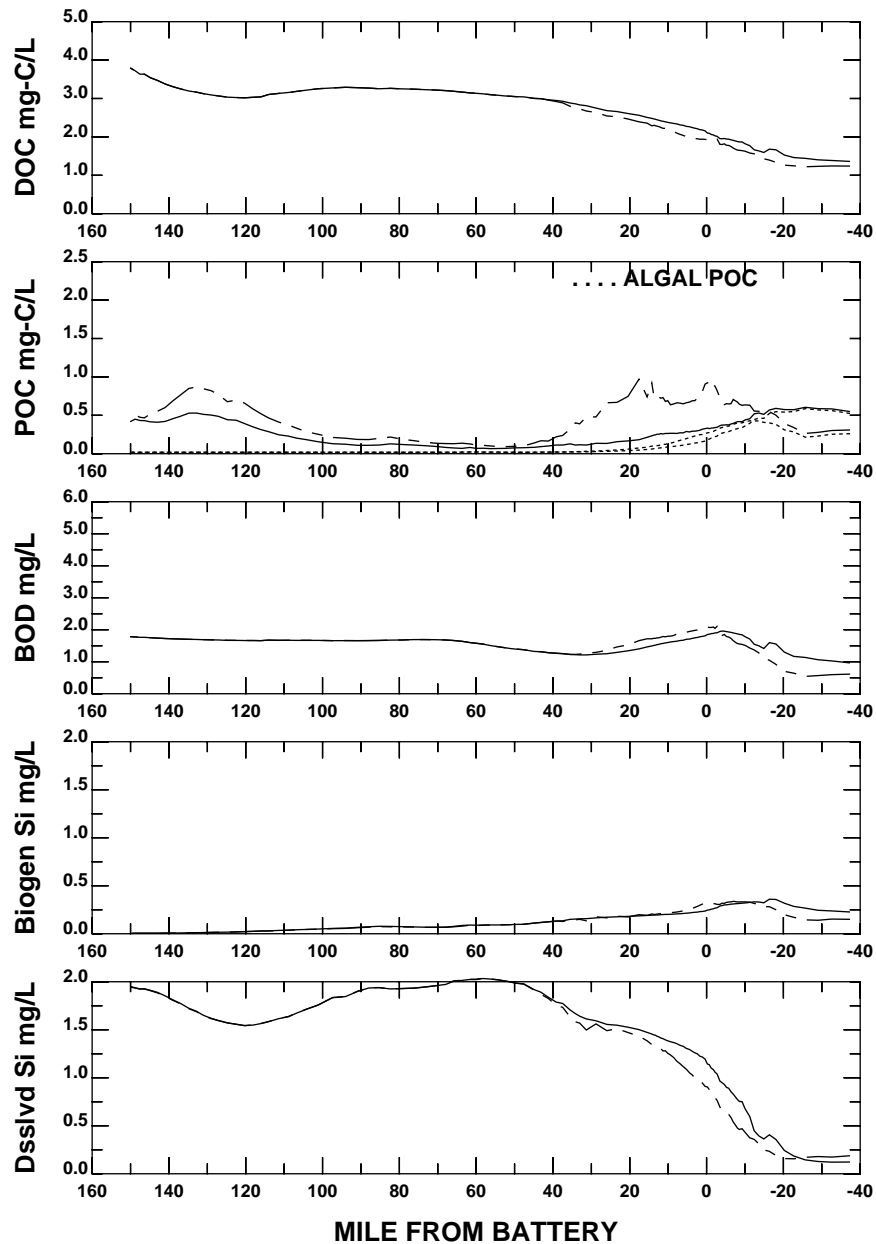
# HUDSON RIVER, UPPER AND LOWER BAY, OCEAN



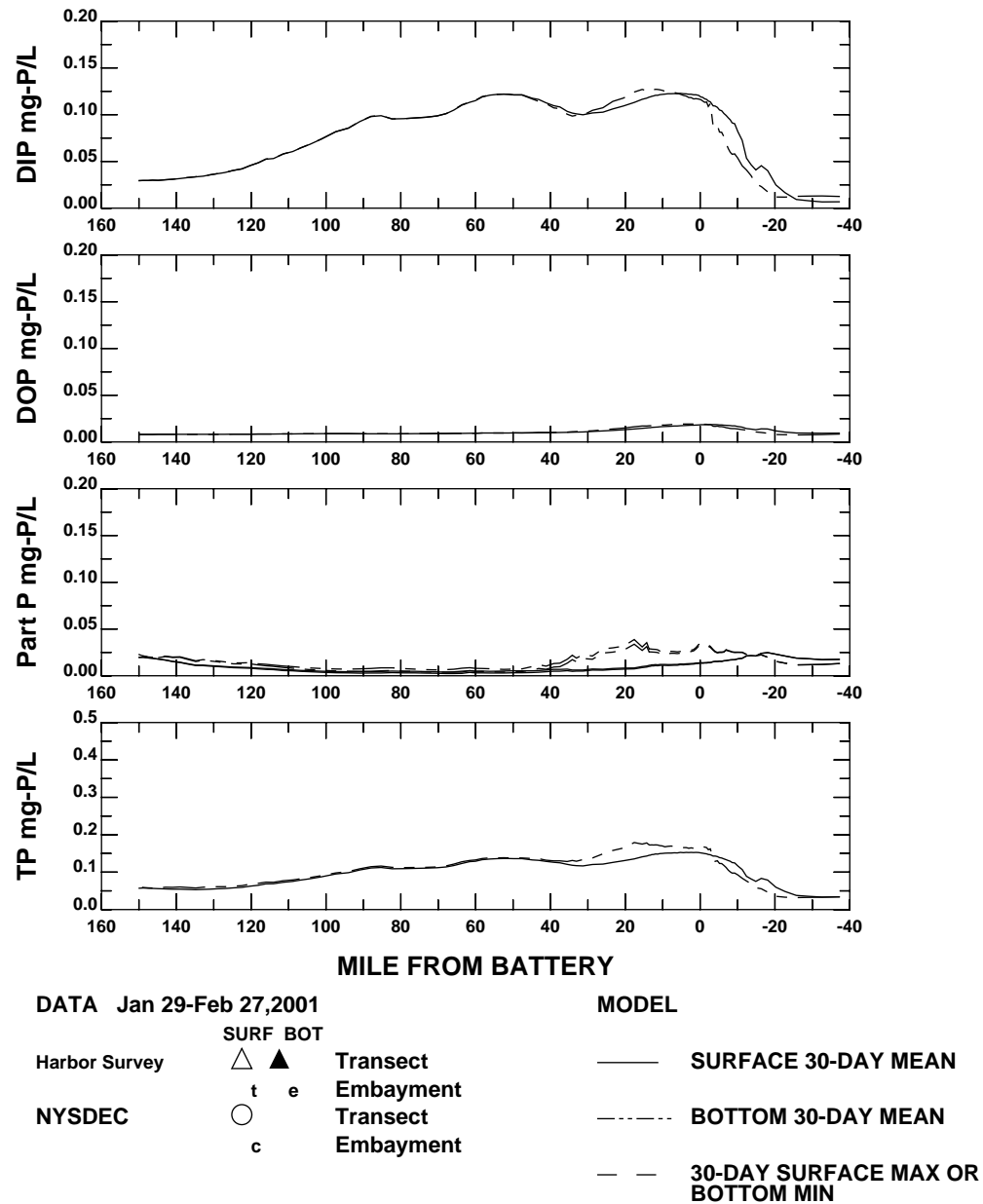
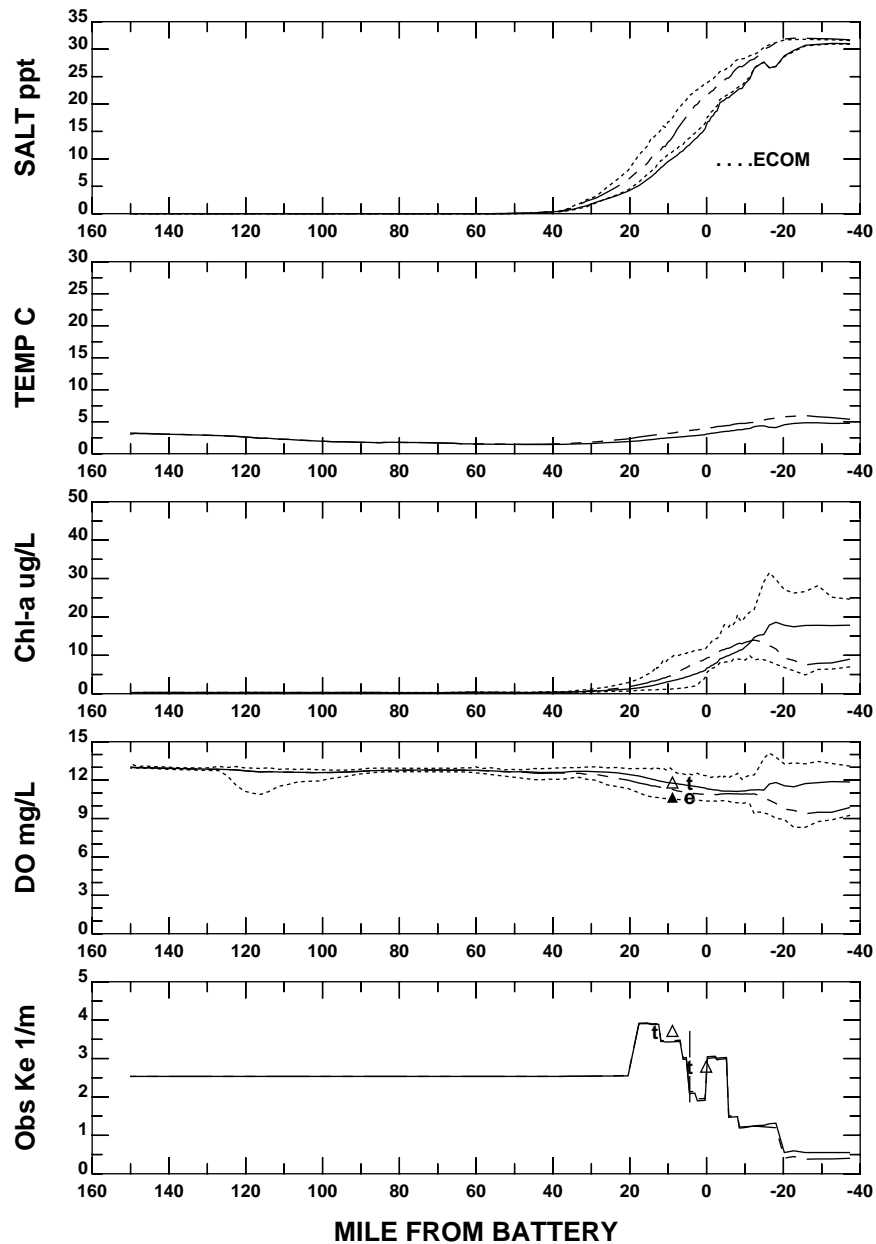
## HUDSON RIVER, UPPER AND LOWER BAY, OCEAN



## HUDSON RIVER, UPPER AND LOWER BAY, OCEAN

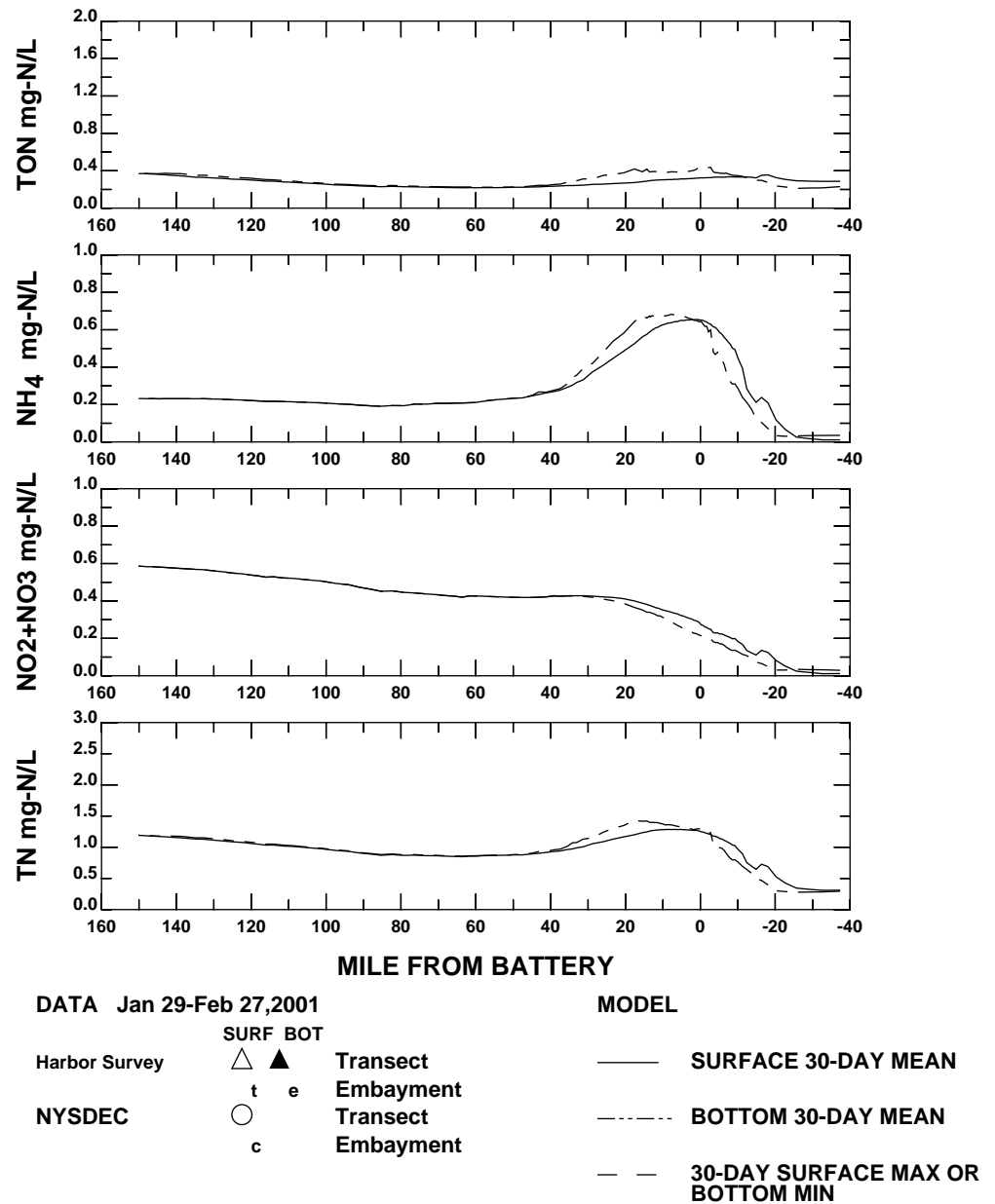
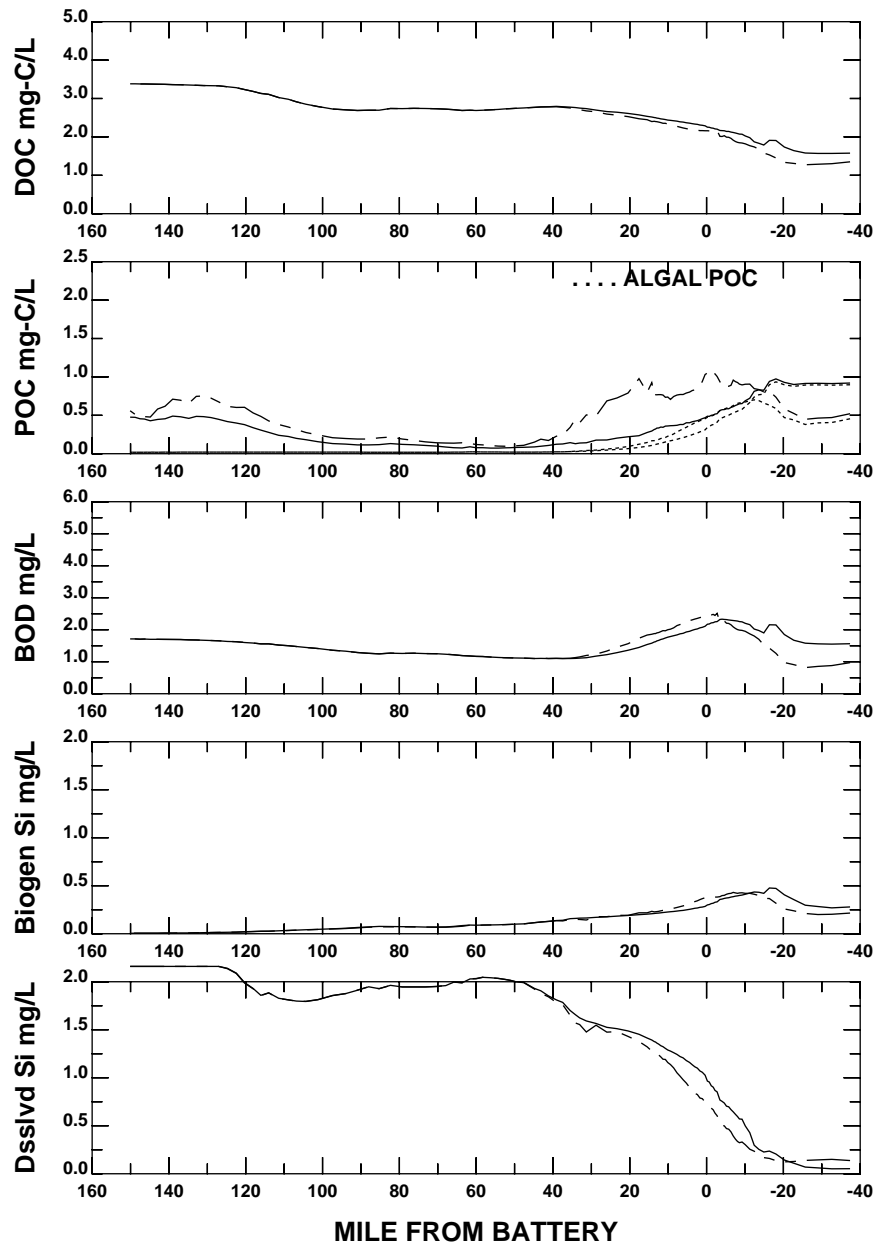


## HUDSON RIVER, UPPER AND LOWER BAY, OCEAN

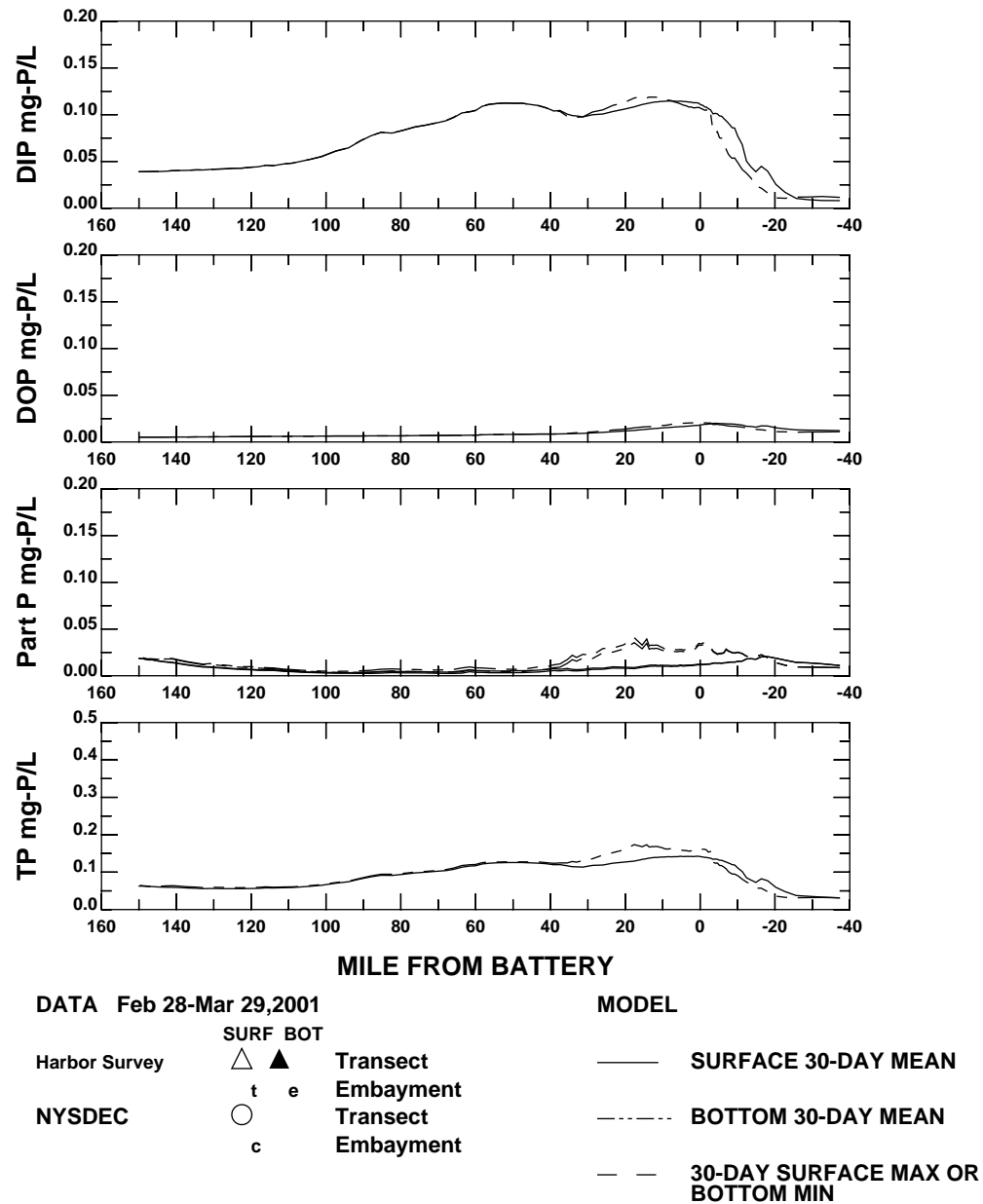
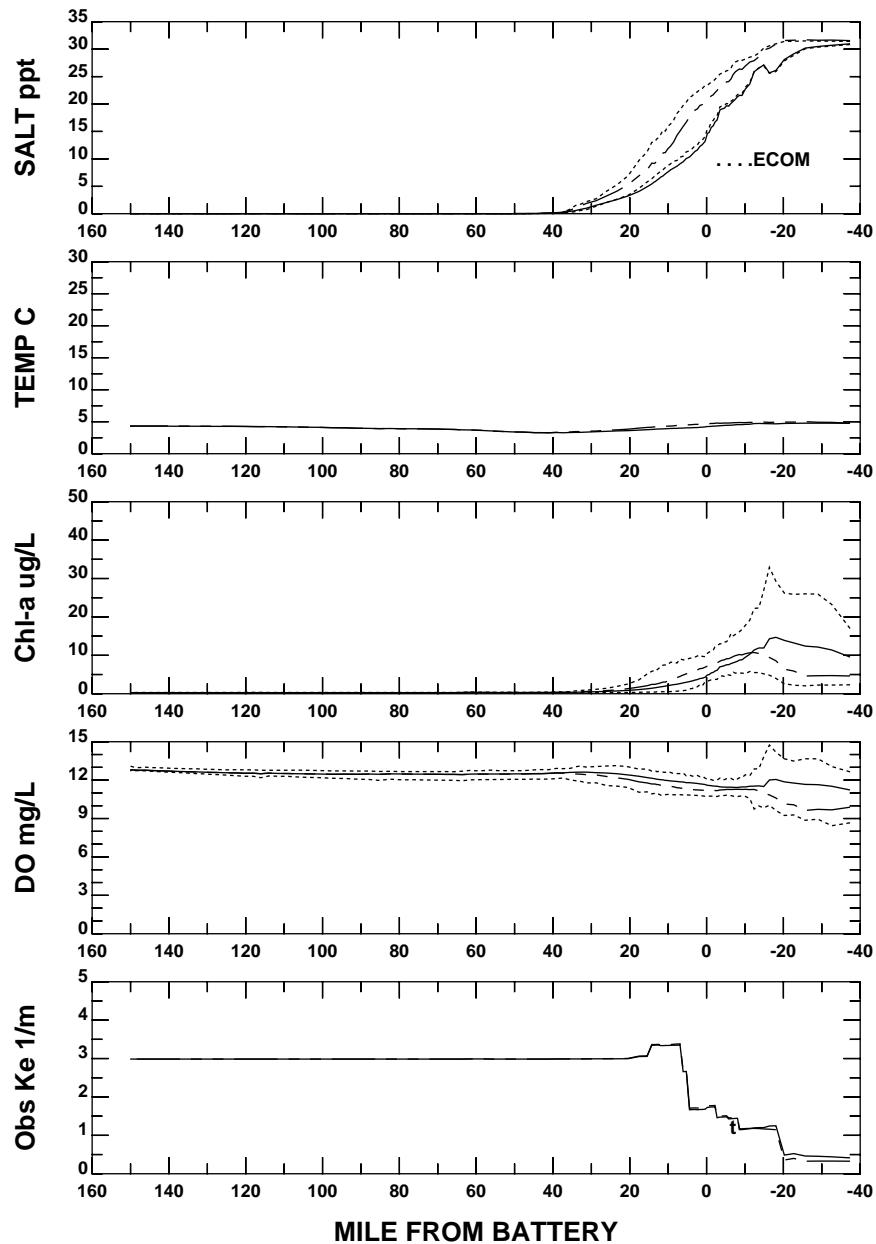


## HUDSON RIVER, UPPER AND LOWER BAY, OCEAN

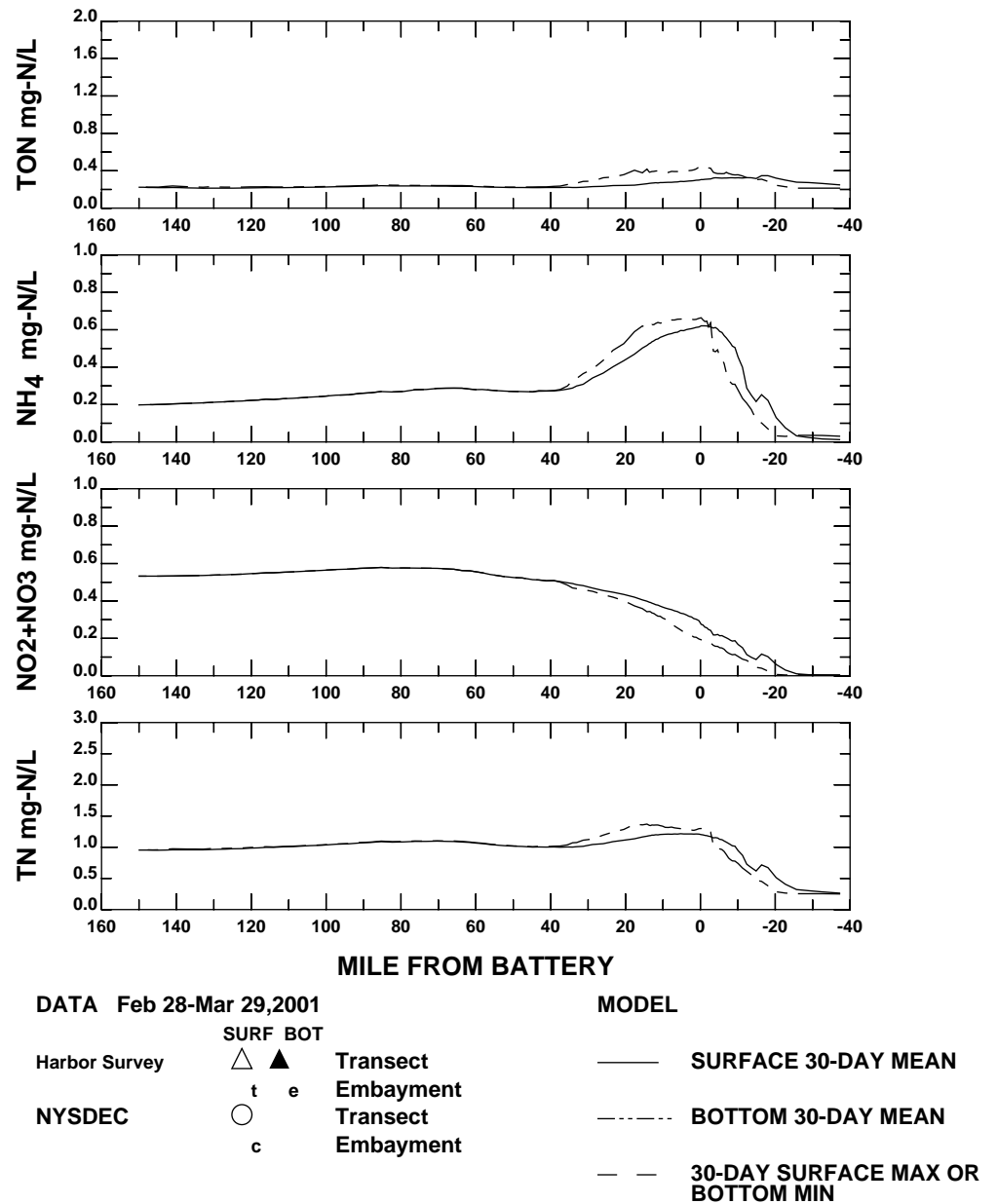
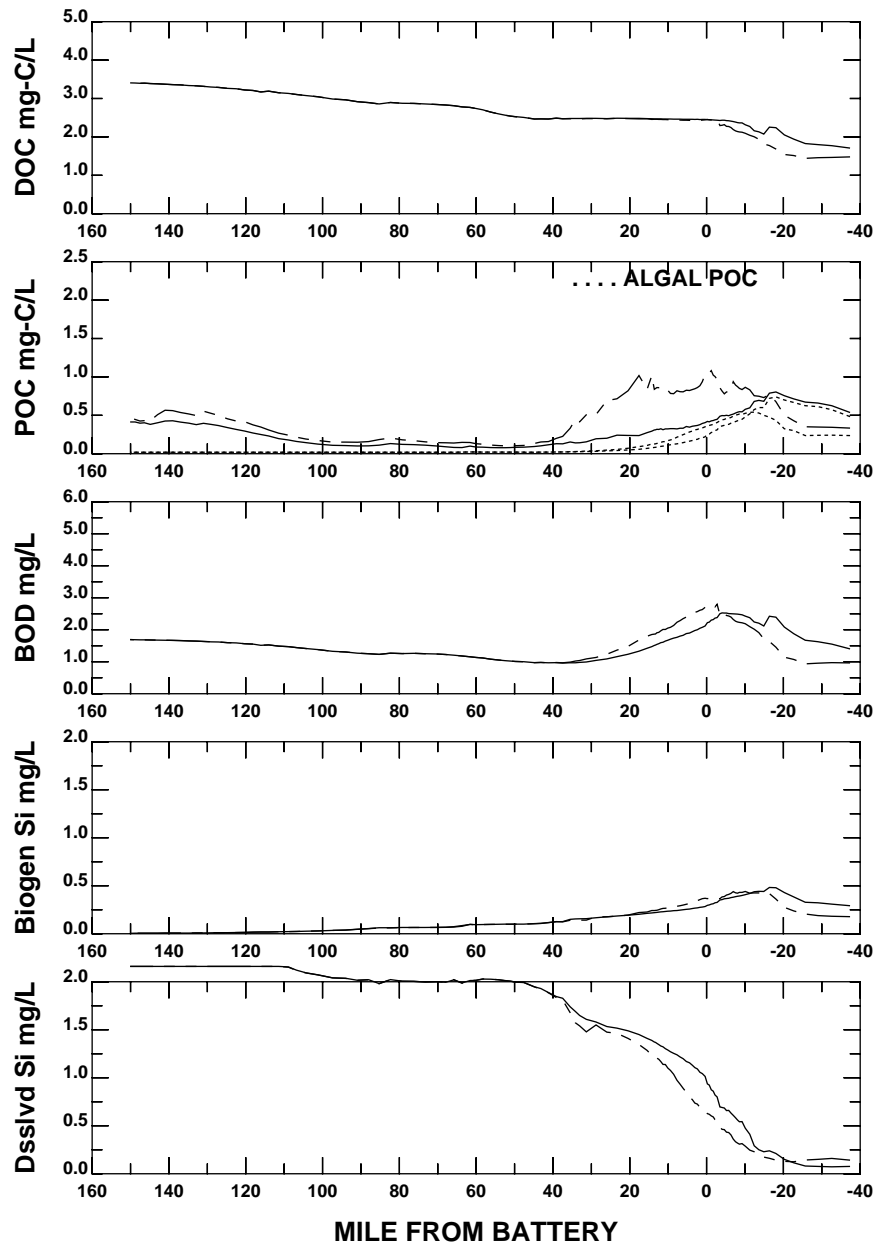




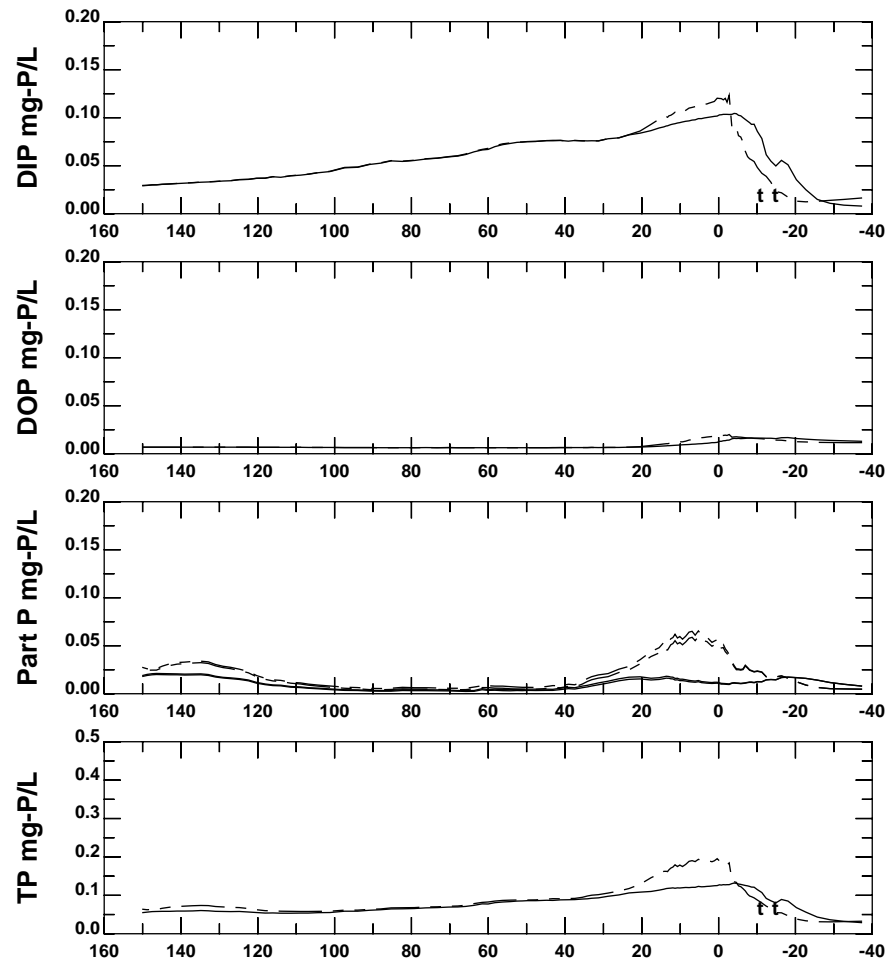
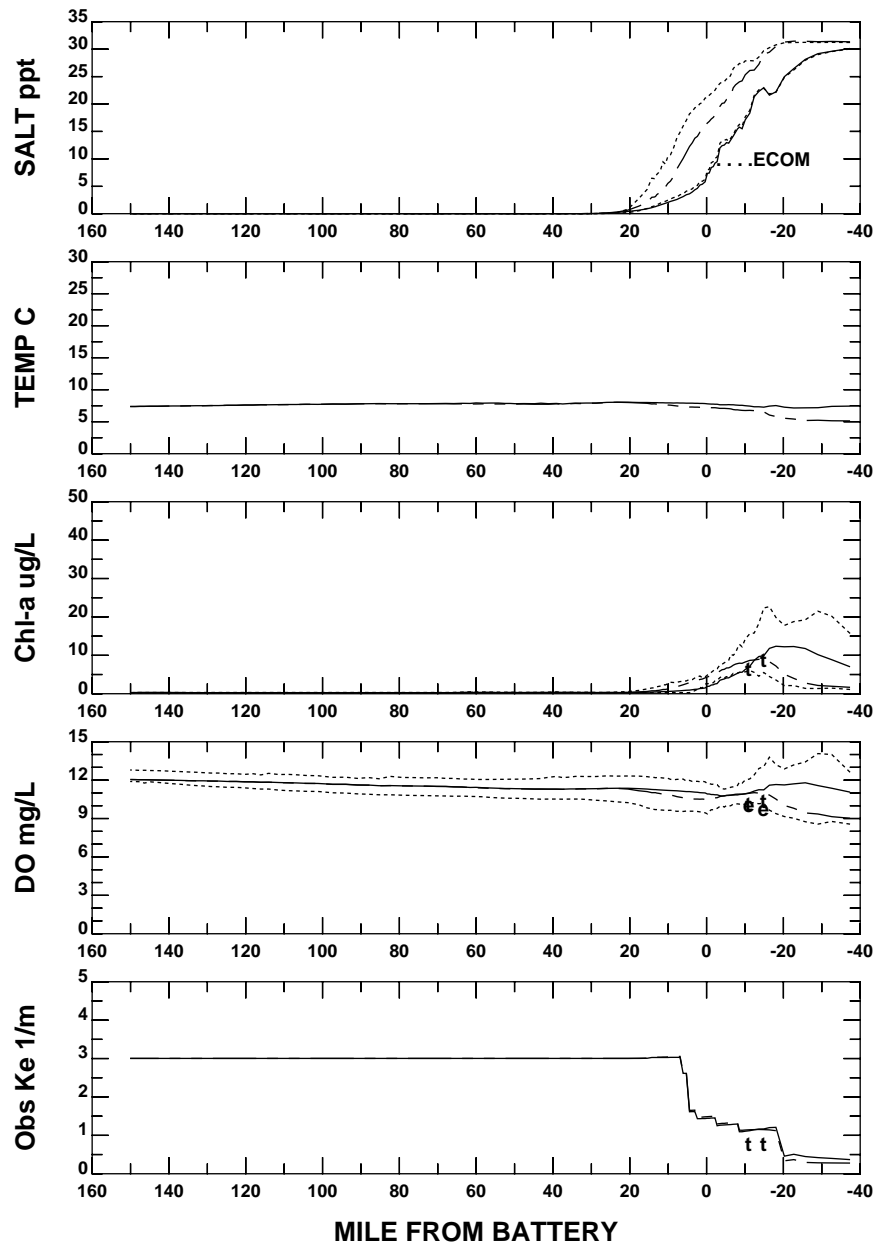
## HUDSON RIVER, UPPER AND LOWER BAY, OCEAN



**HUDSON RIVER, UPPER AND LOWER BAY, OCEAN**



# HUDSON RIVER, UPPER AND LOWER BAY, OCEAN



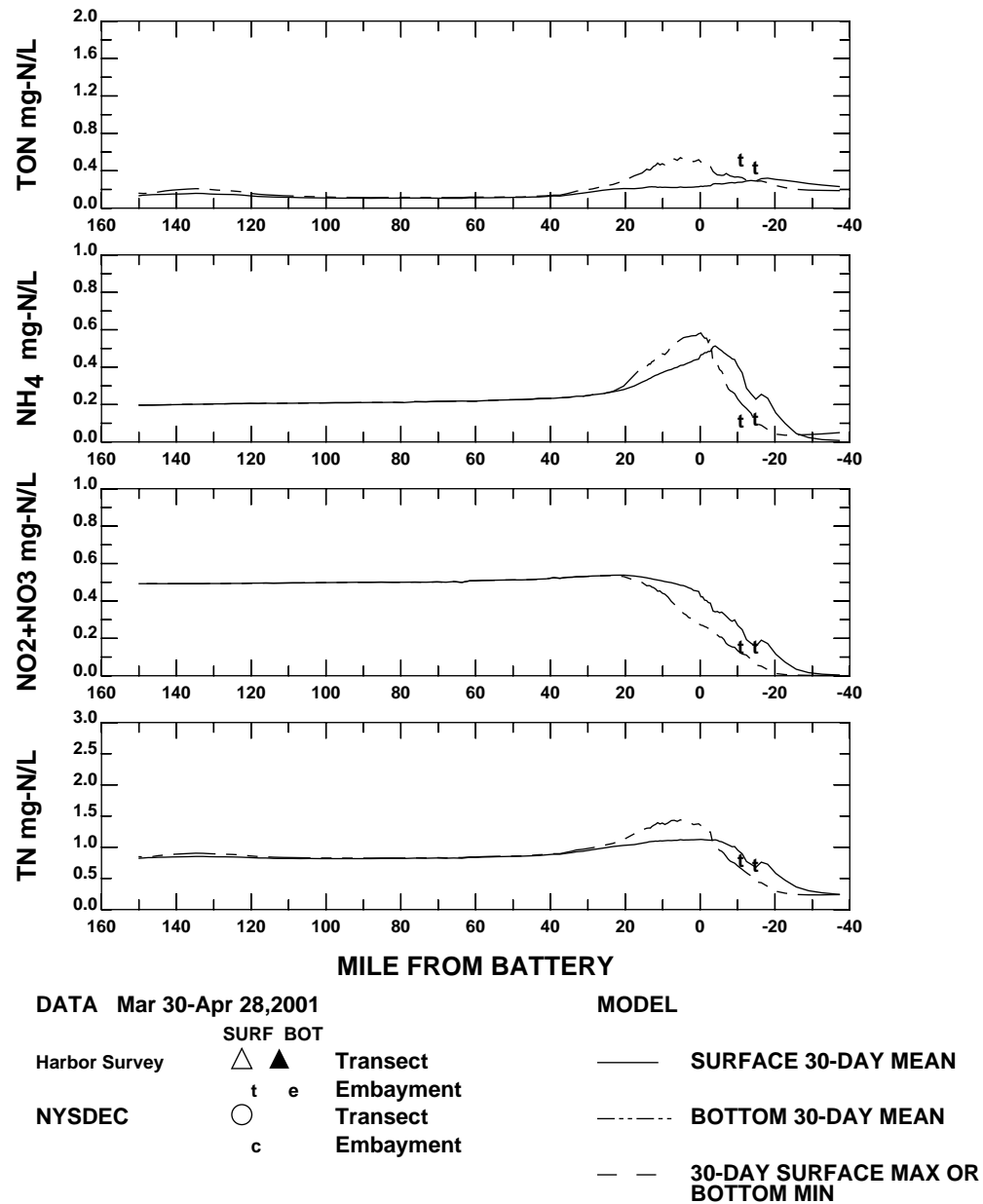
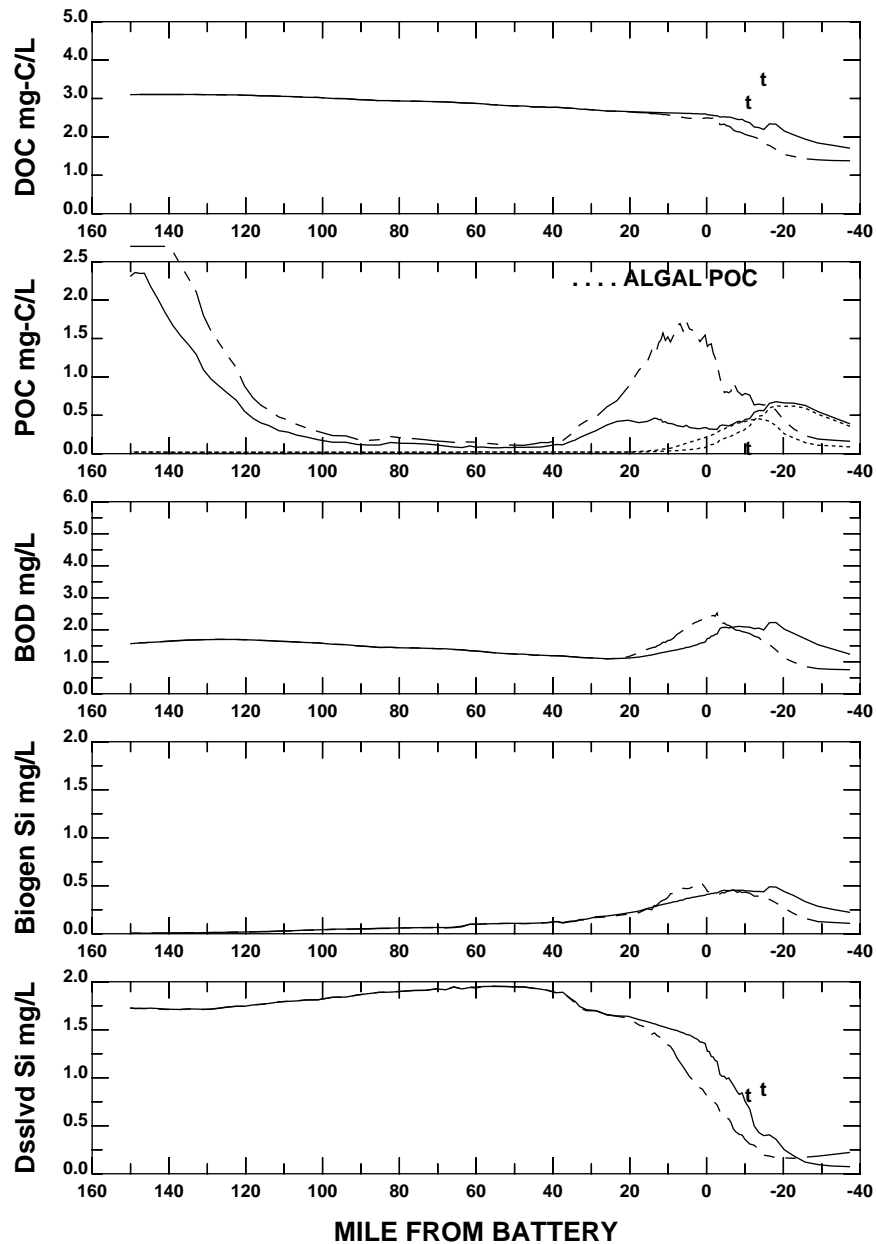
DATA Mar 30-Apr 28, 2001

MODEL

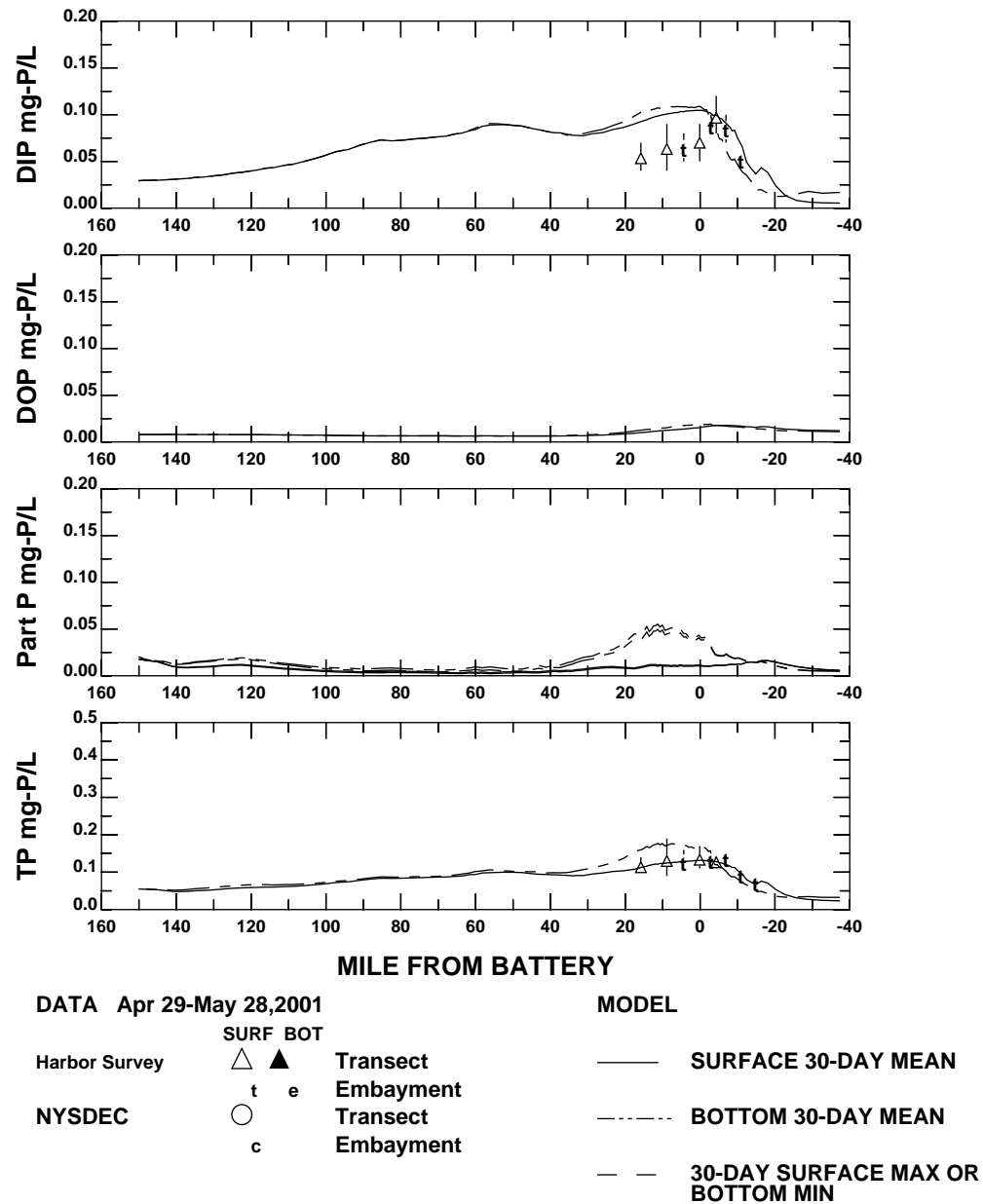
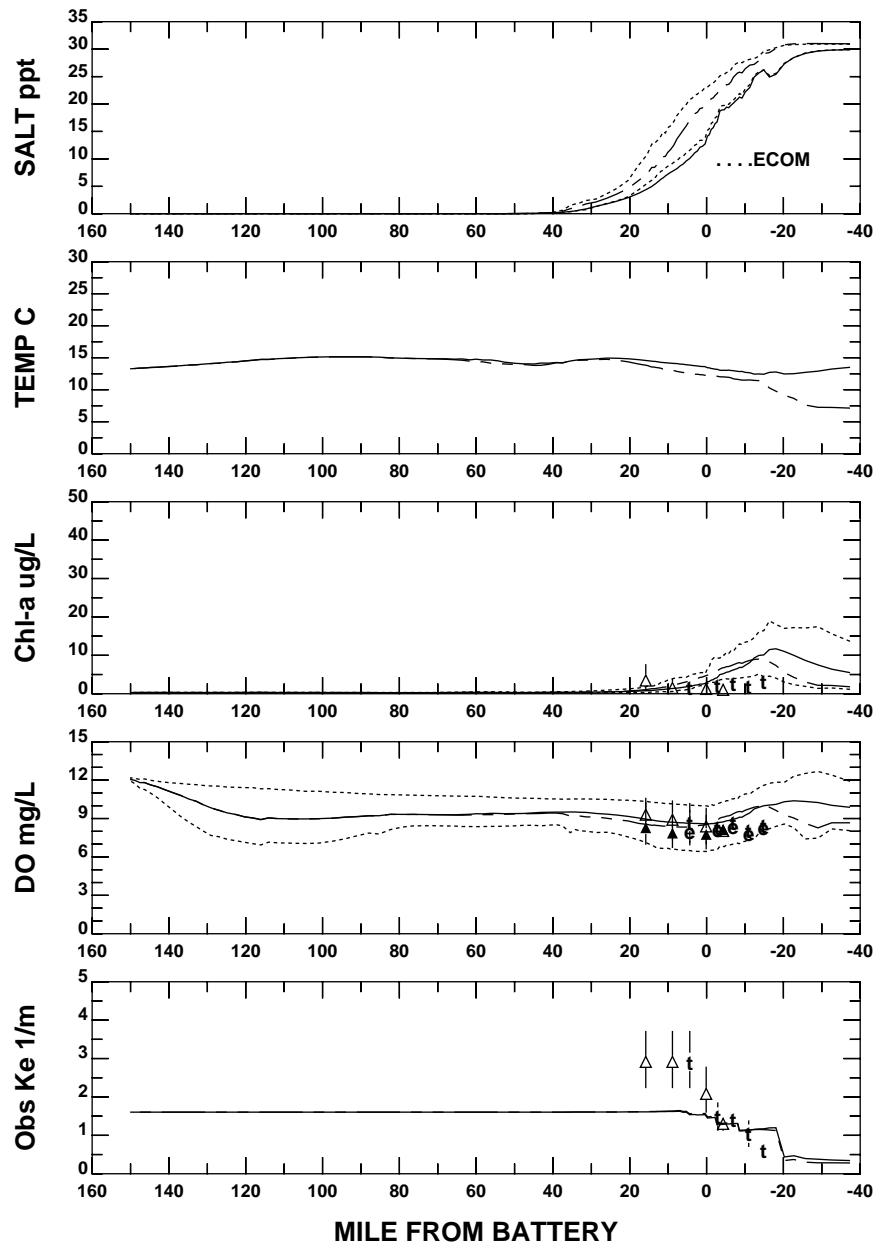
Harbor Survey SURF BOT  
 ▲ ▲ Transect  
 t e Embayment  
 NYSDEC ○ ○ Transect  
 c Embayment

— SURFACE 30-DAY MEAN  
 - - - BOTTOM 30-DAY MEAN  
 - - - 30-DAY SURFACE MAX OR BOTTOM MIN

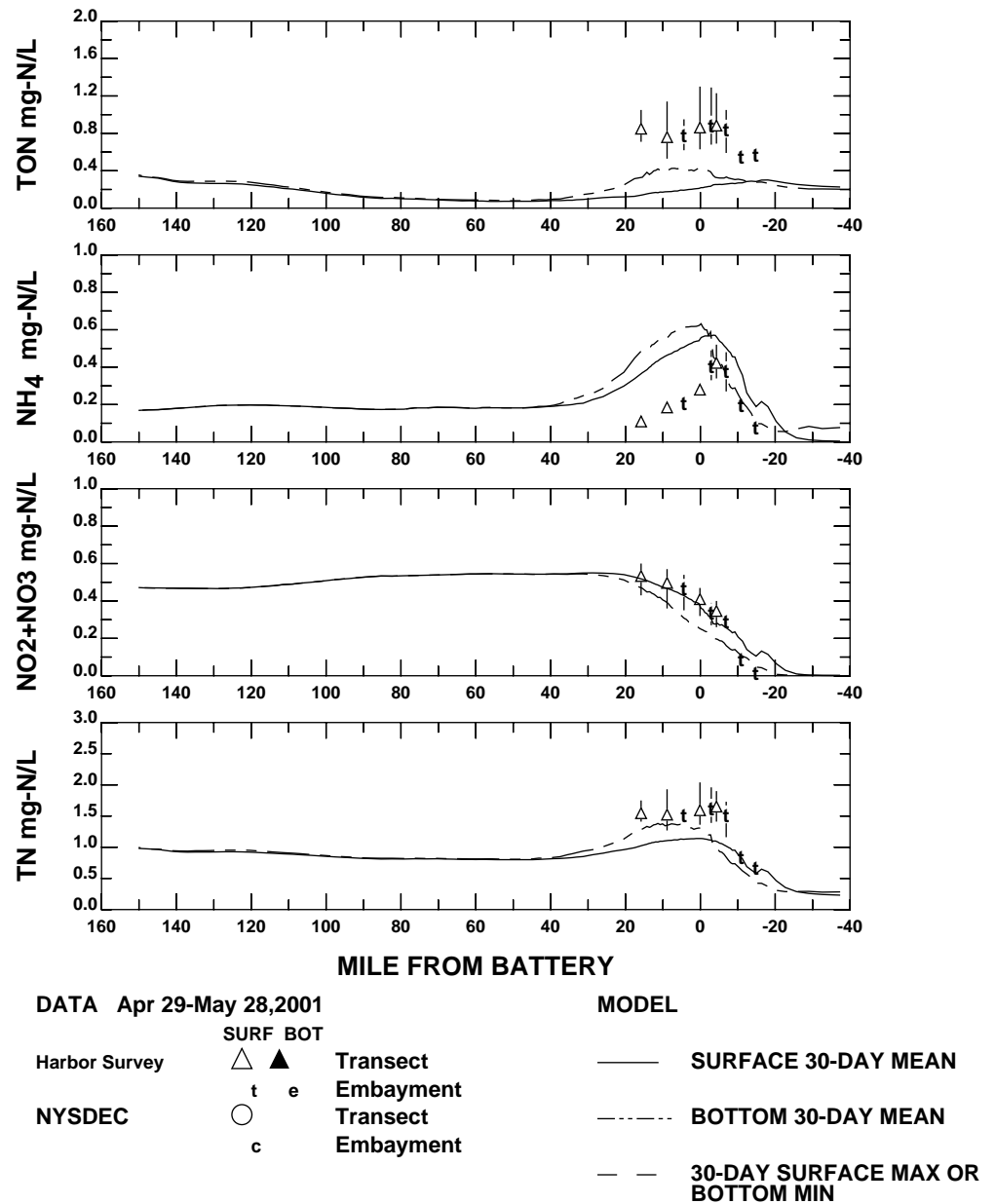
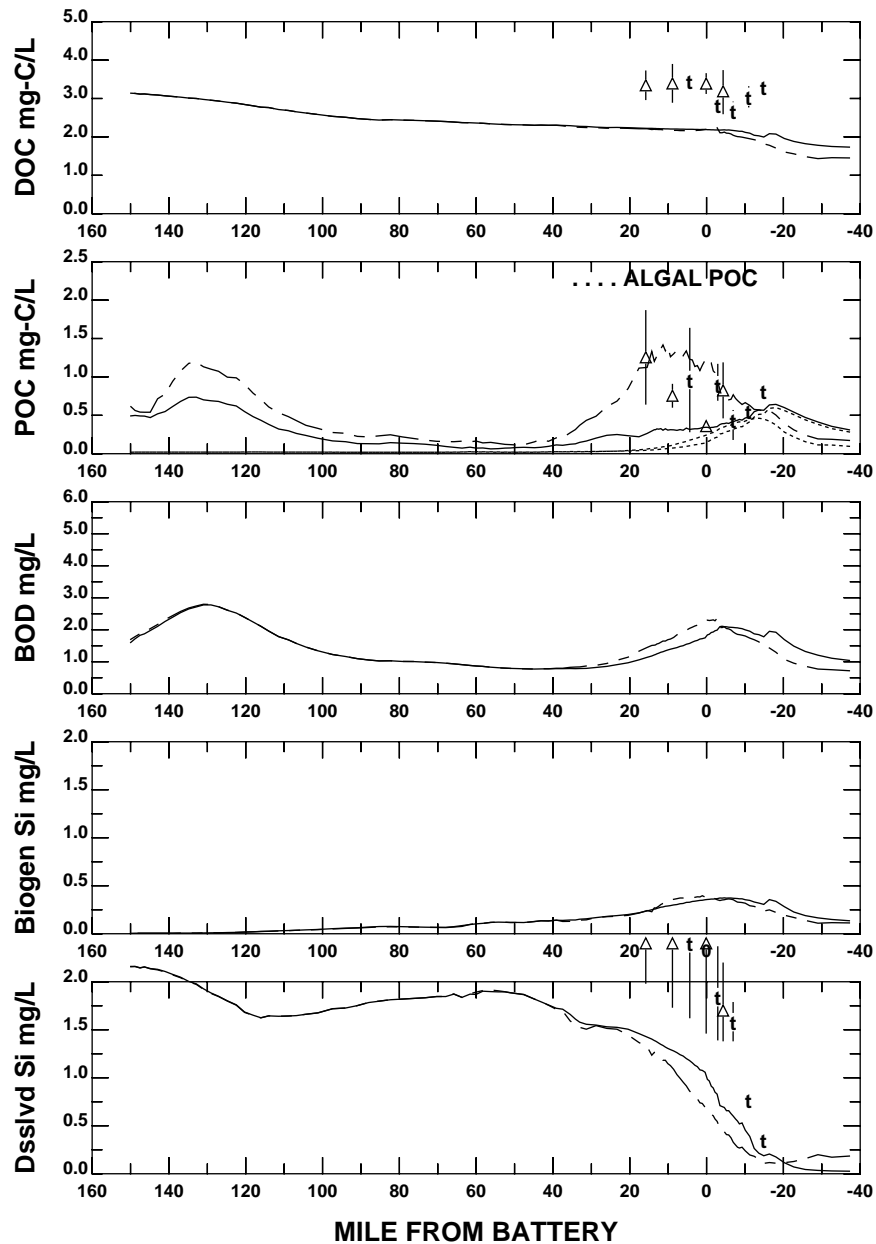
**HUDSON RIVER, UPPER AND LOWER BAY, OCEAN**



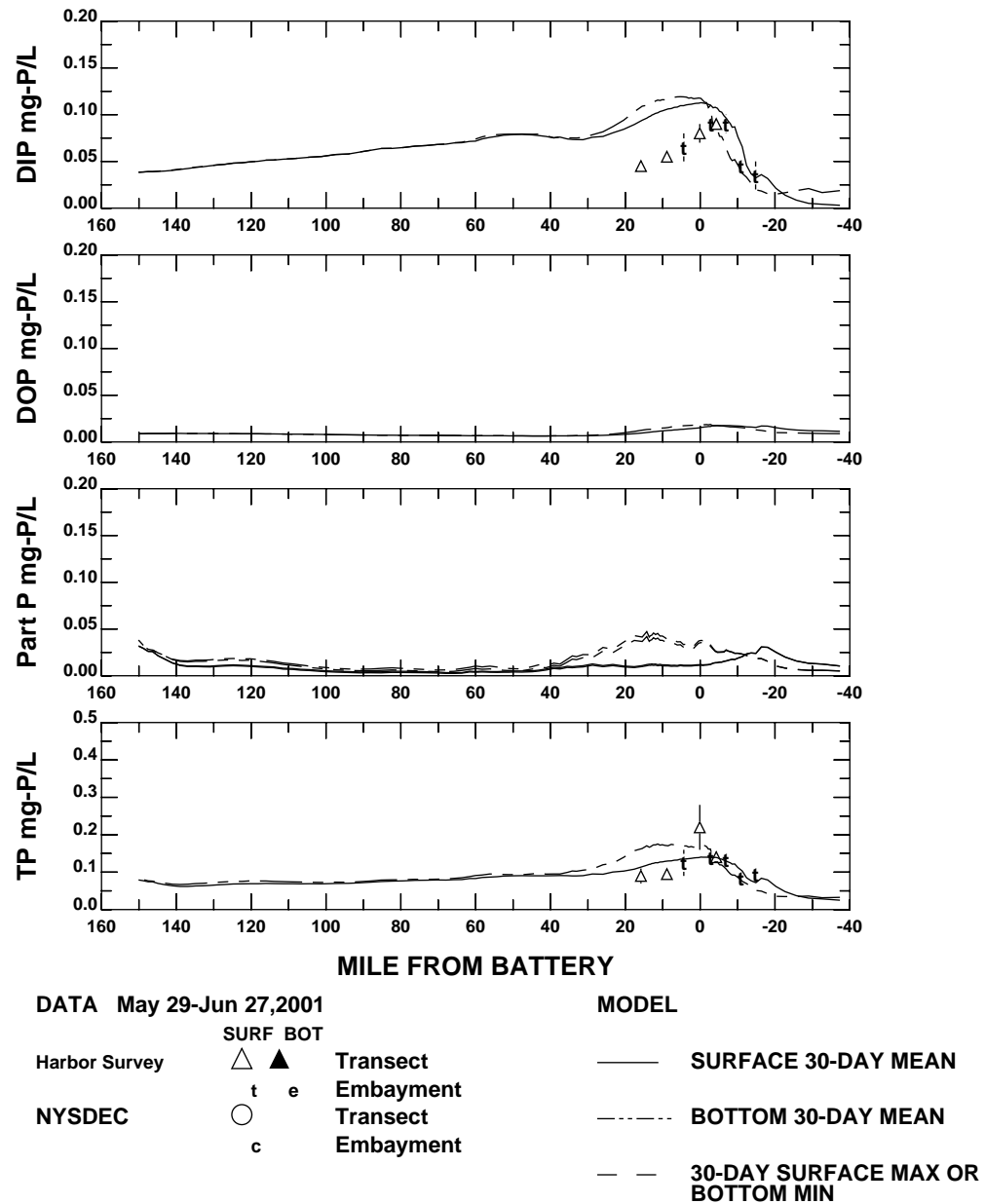
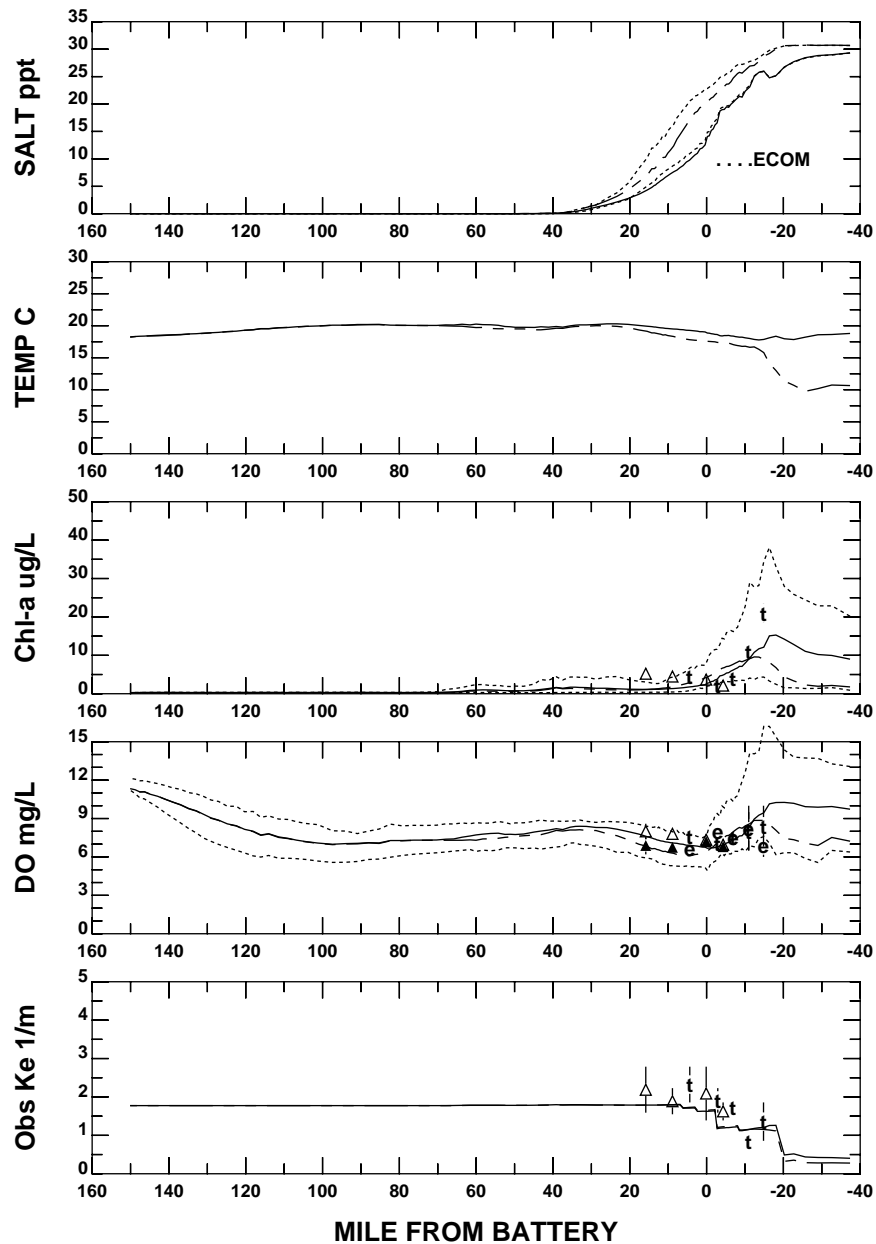
## HUDSON RIVER, UPPER AND LOWER BAY, OCEAN



## HUDSON RIVER, UPPER AND LOWER BAY, OCEAN

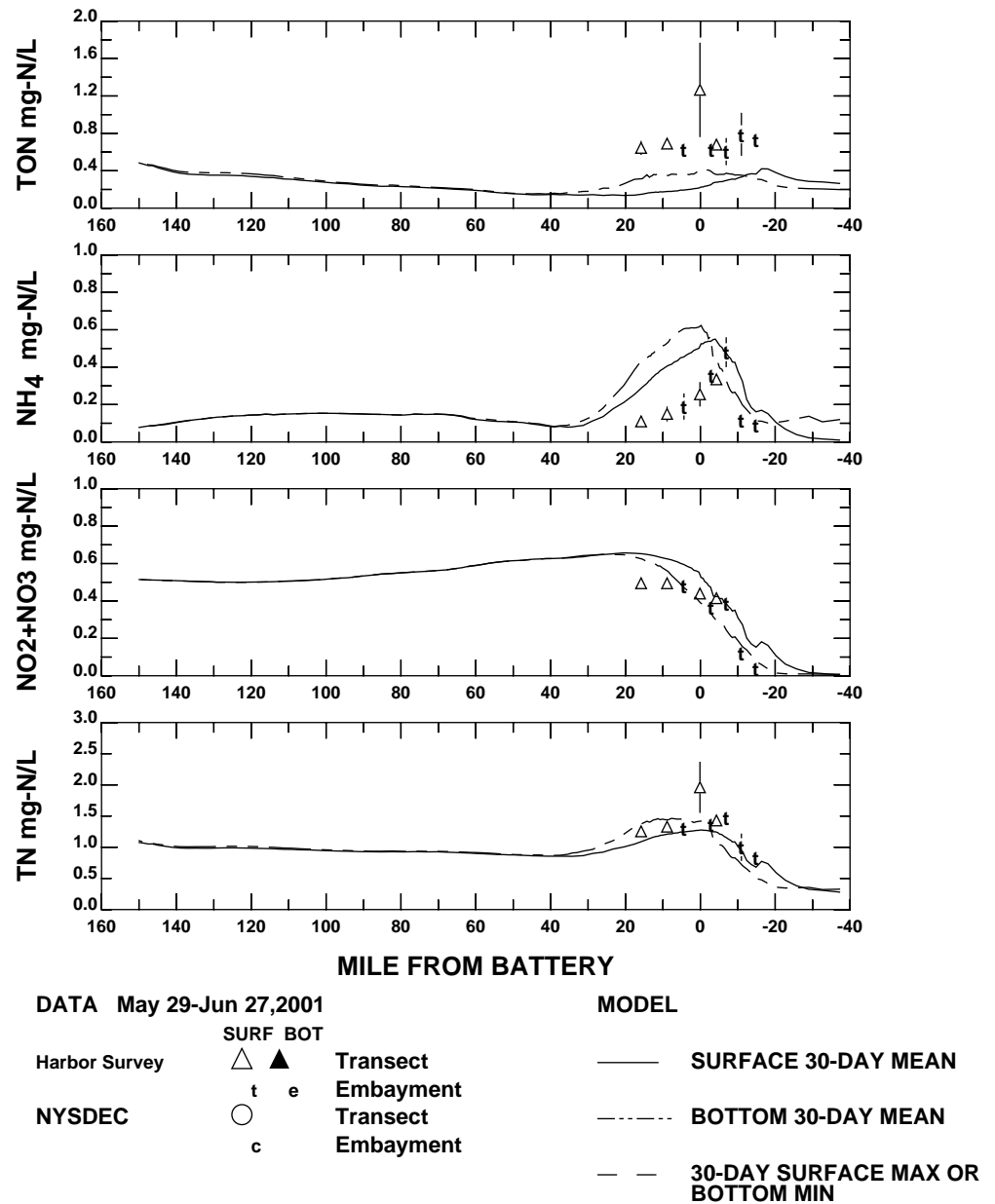
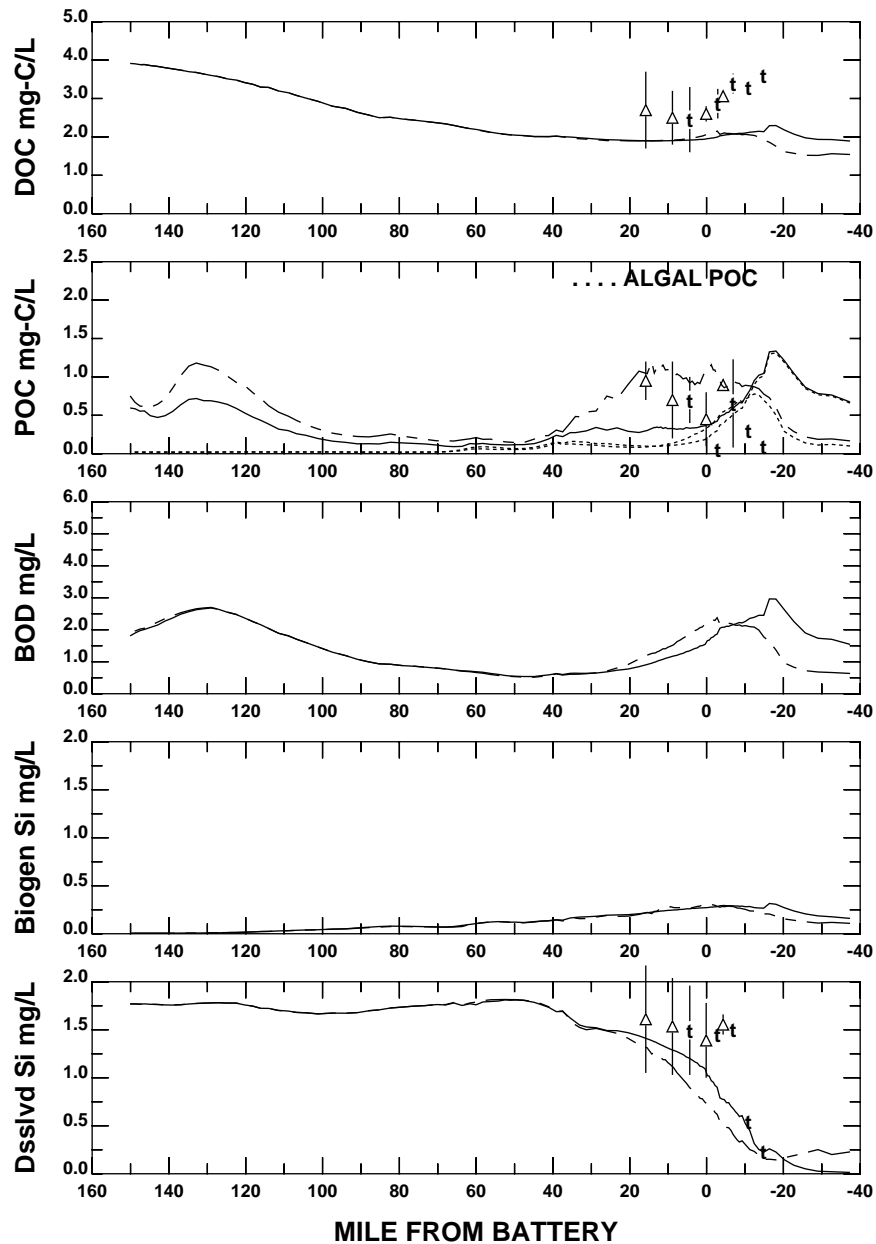


# HUDSON RIVER, UPPER AND LOWER BAY, OCEAN

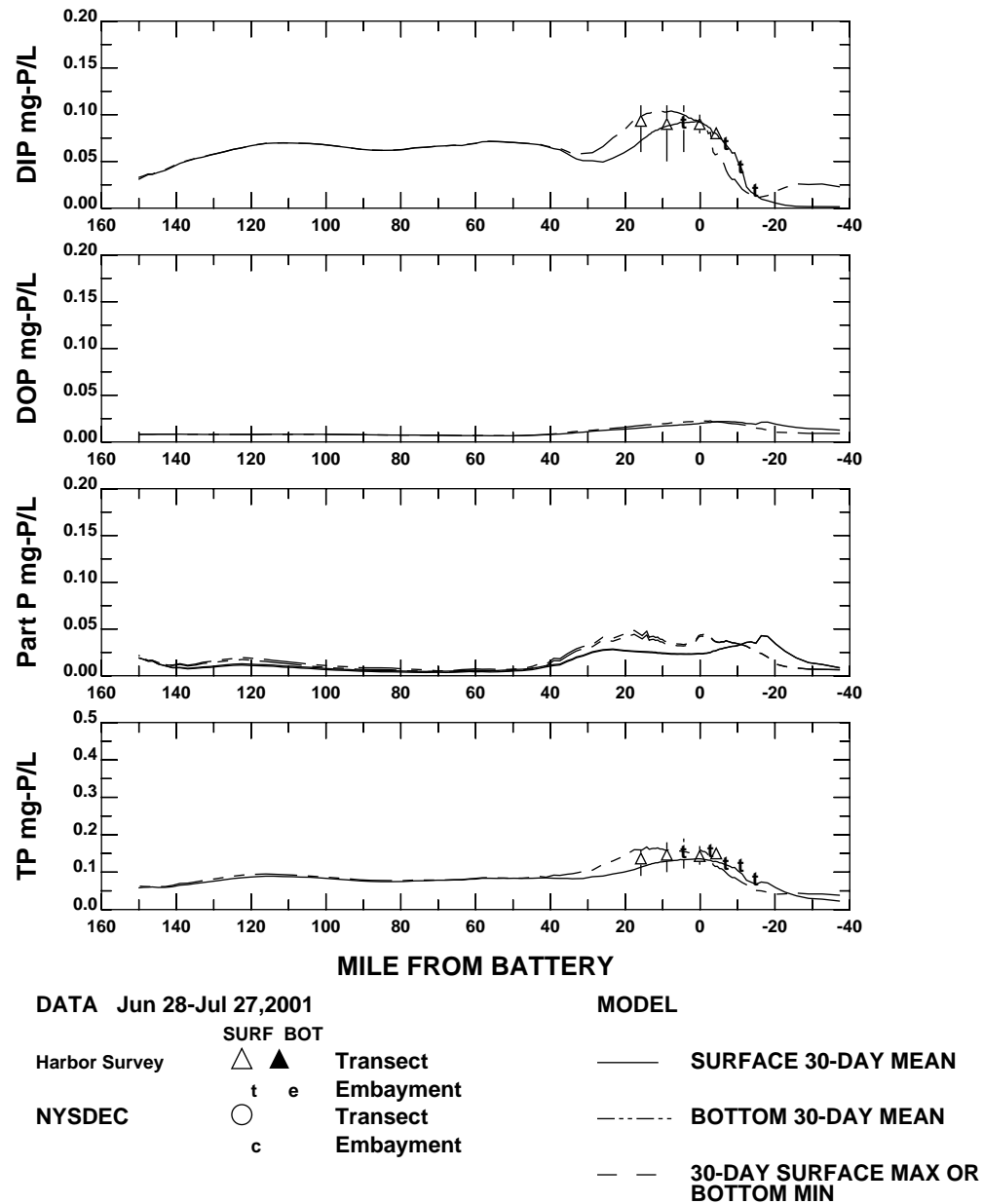
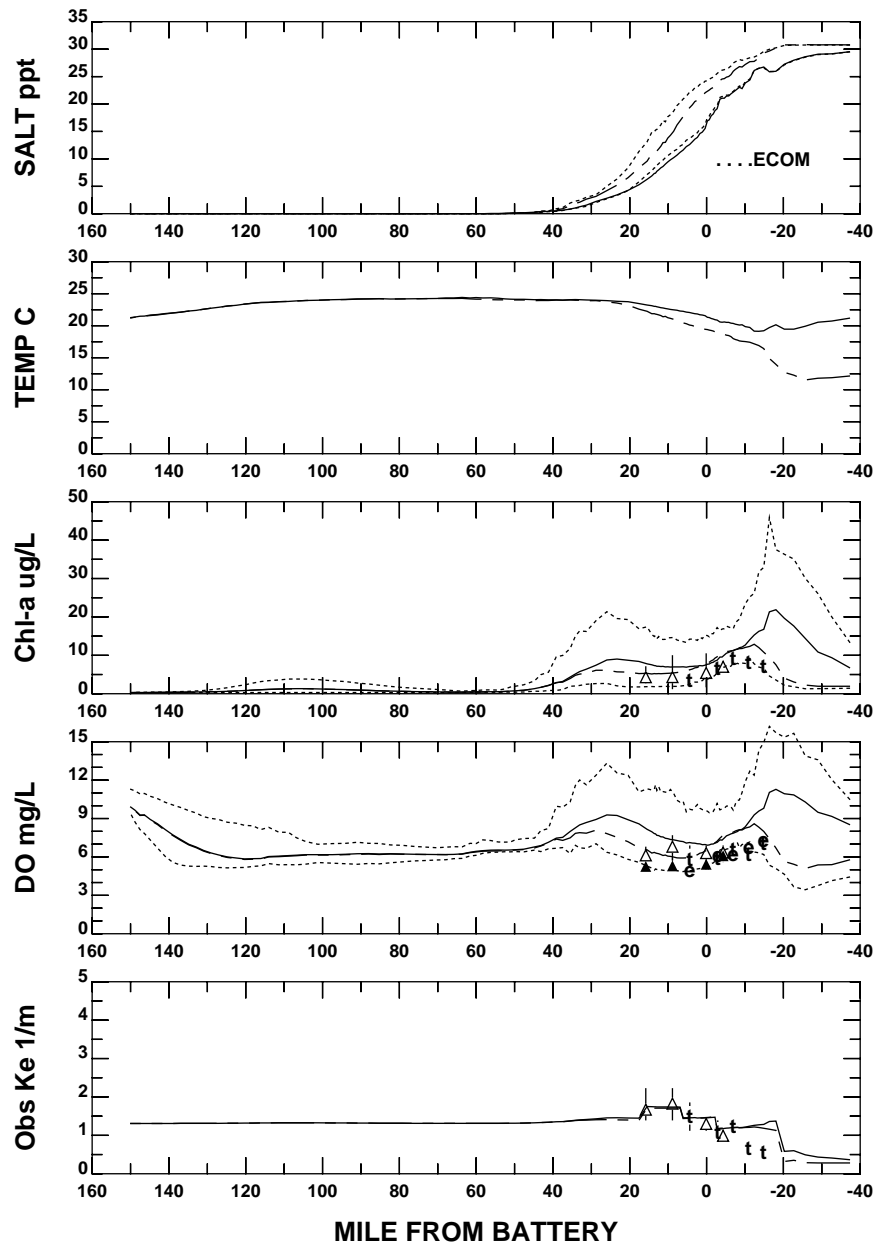


**HUDSON RIVER, UPPER AND LOWER BAY, OCEAN**

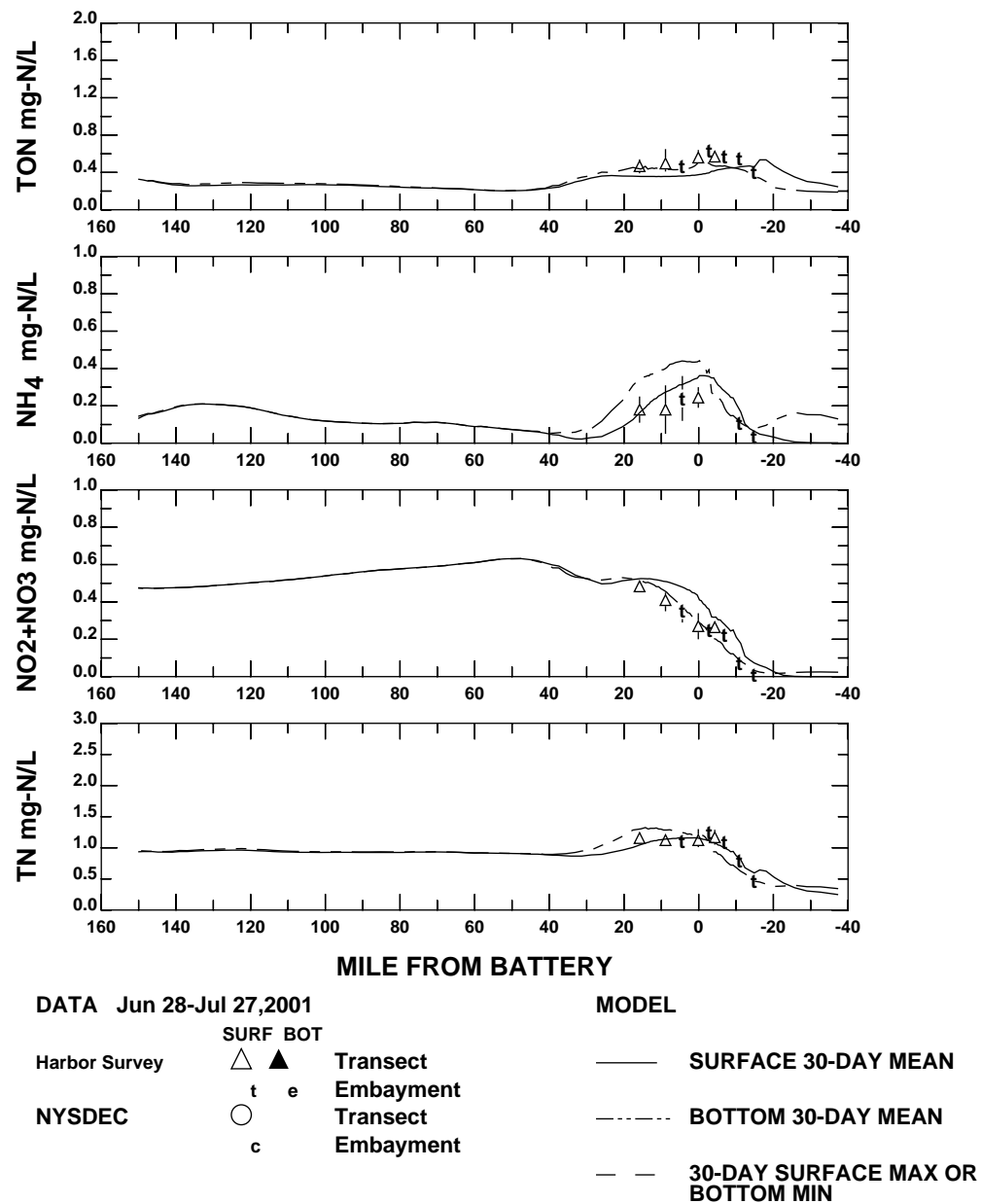
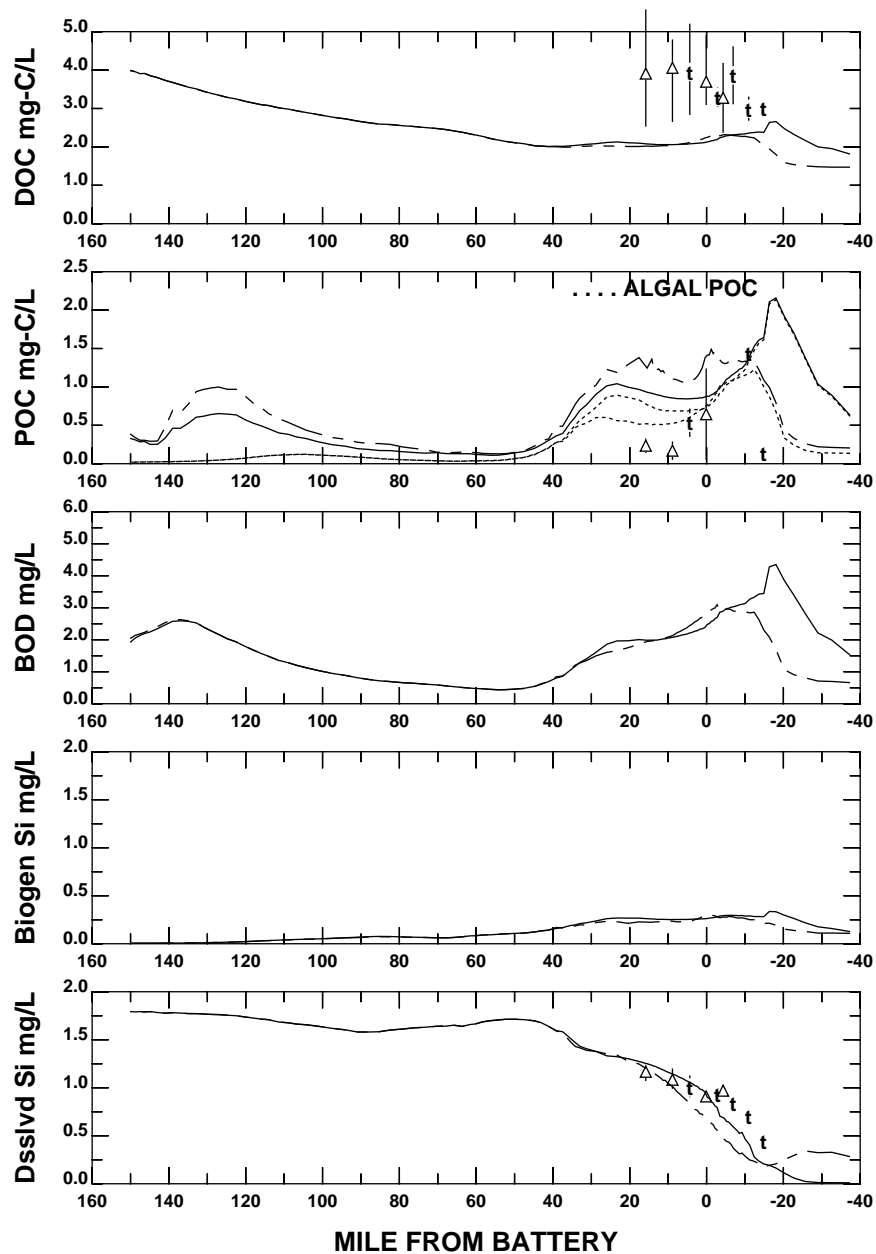




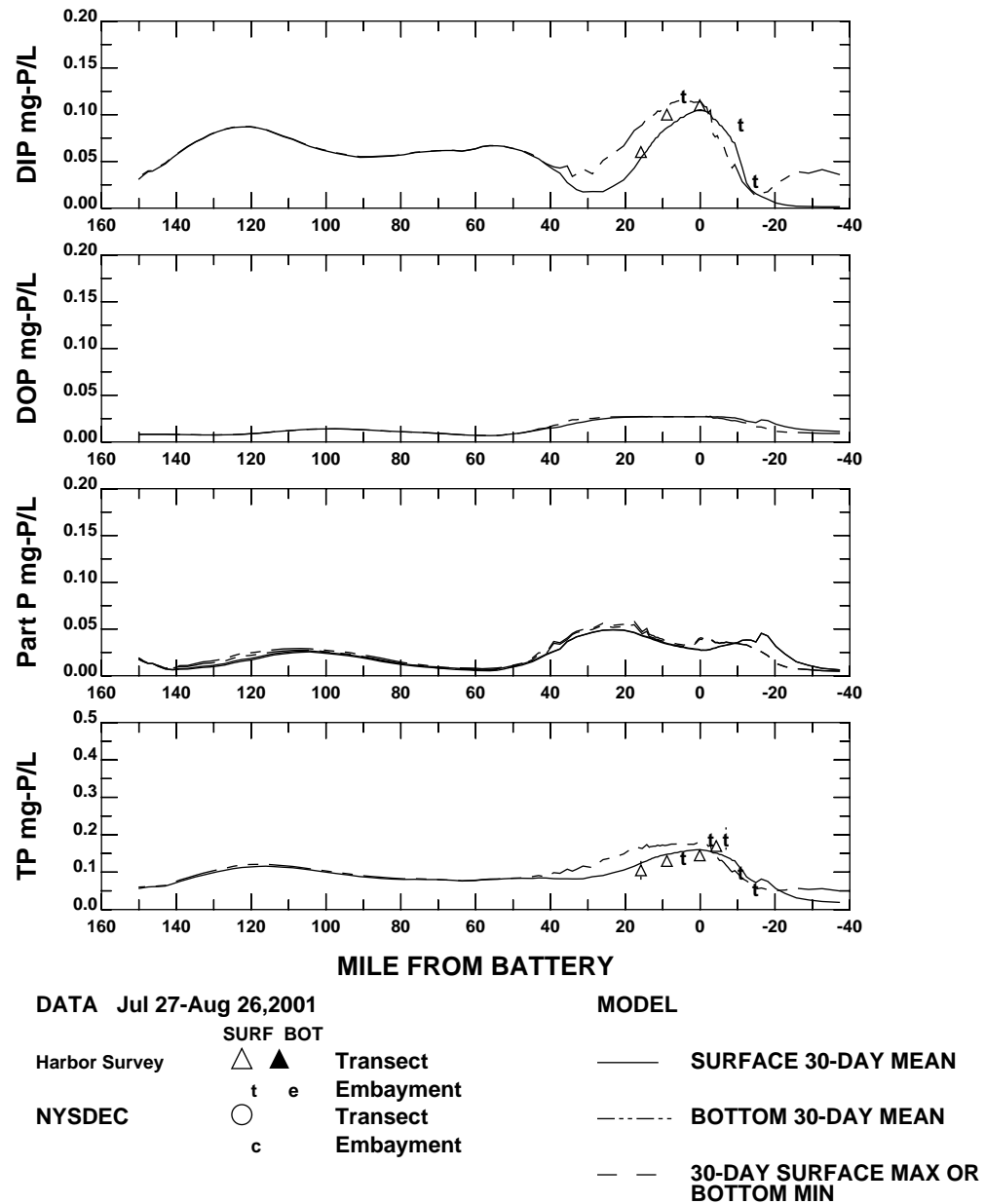
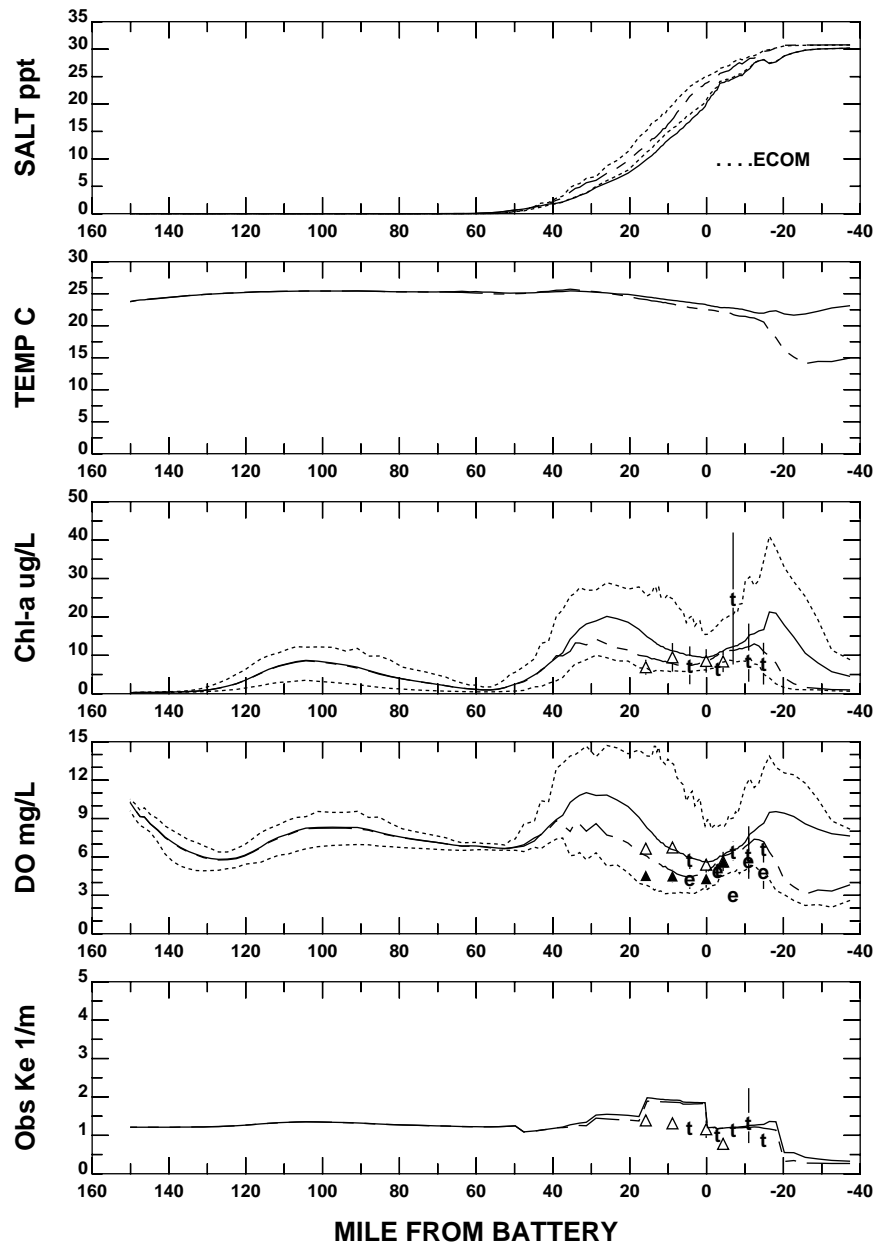
### HUDSON RIVER, UPPER AND LOWER BAY, OCEAN



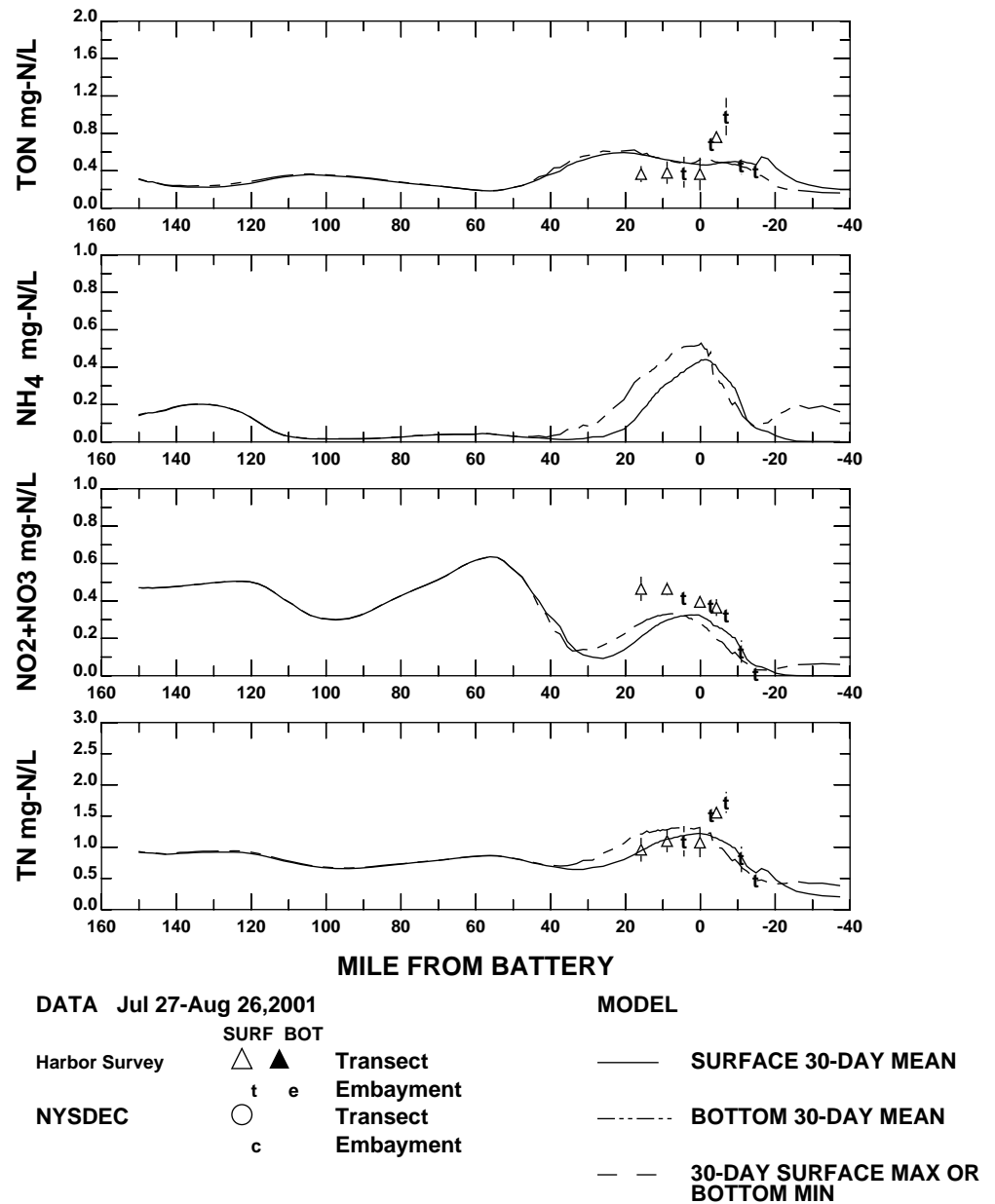
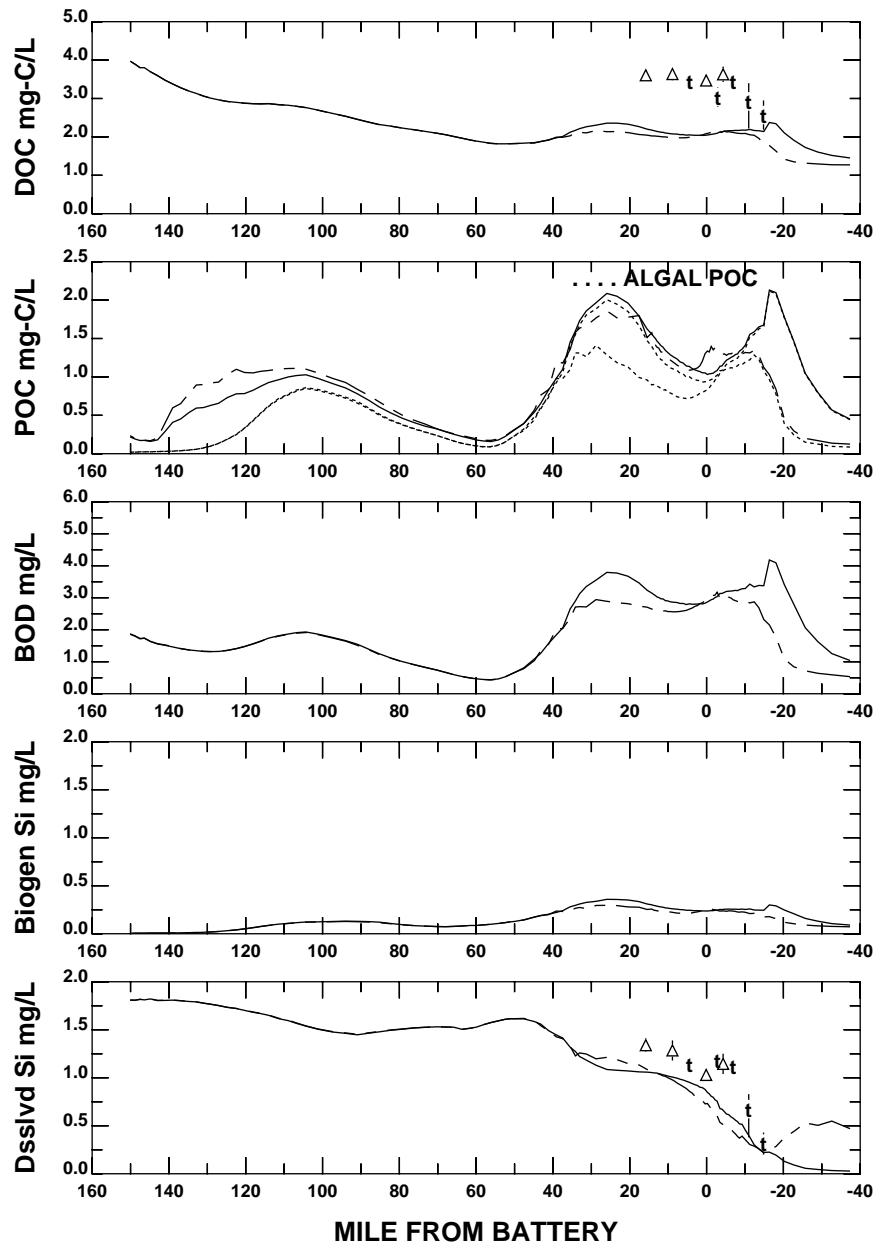
**HUDSON RIVER, UPPER AND LOWER BAY, OCEAN**



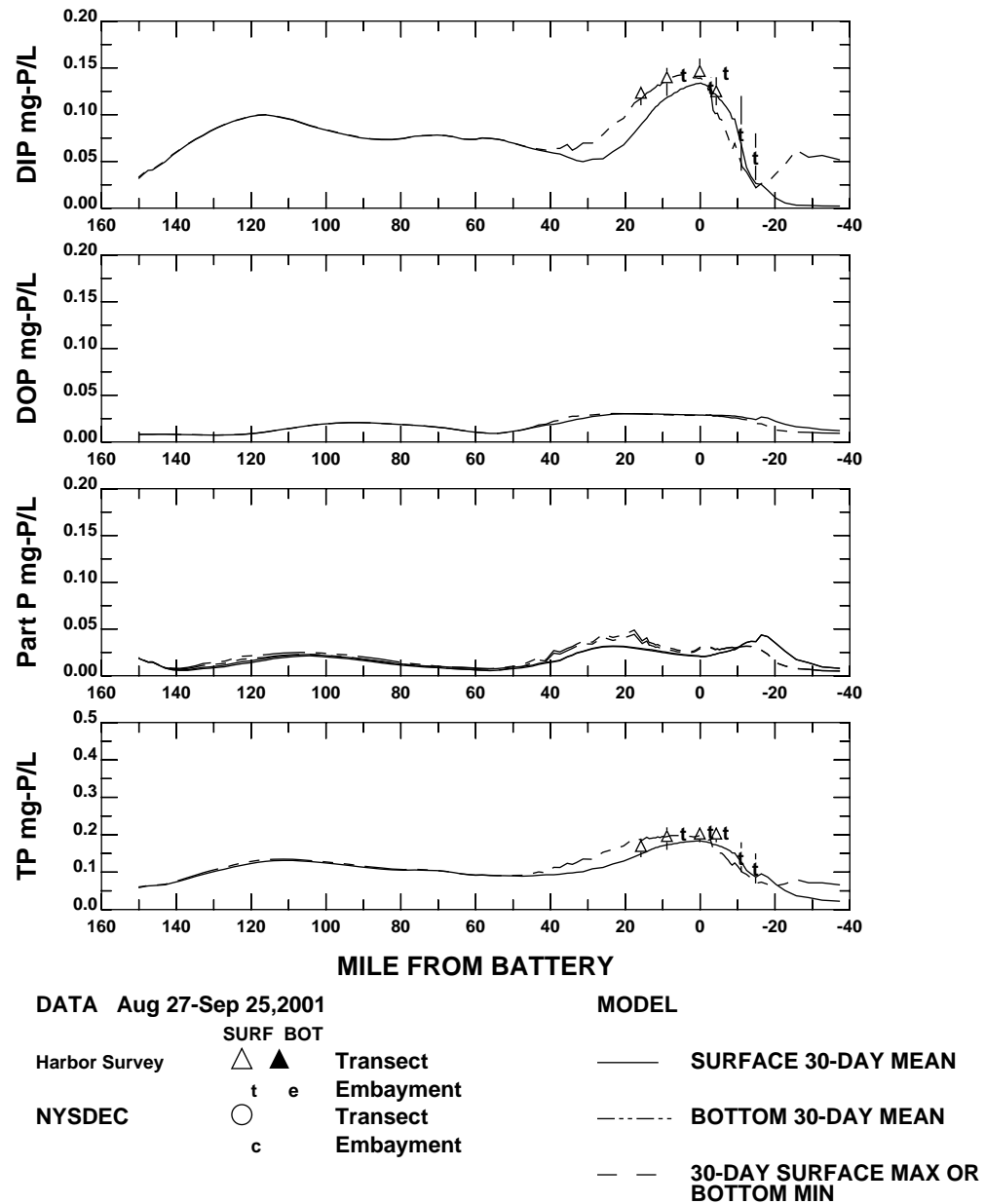
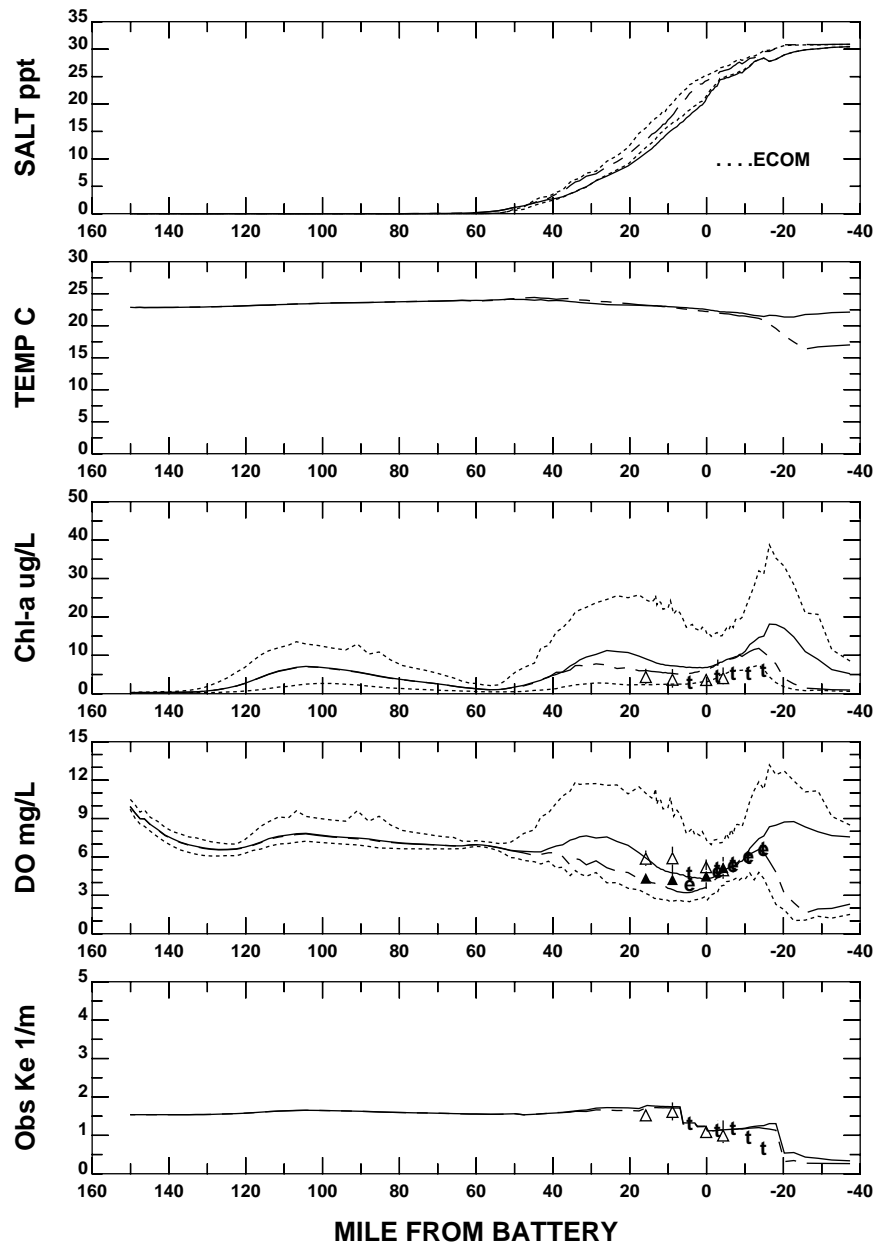
## HUDSON RIVER, UPPER AND LOWER BAY, OCEAN



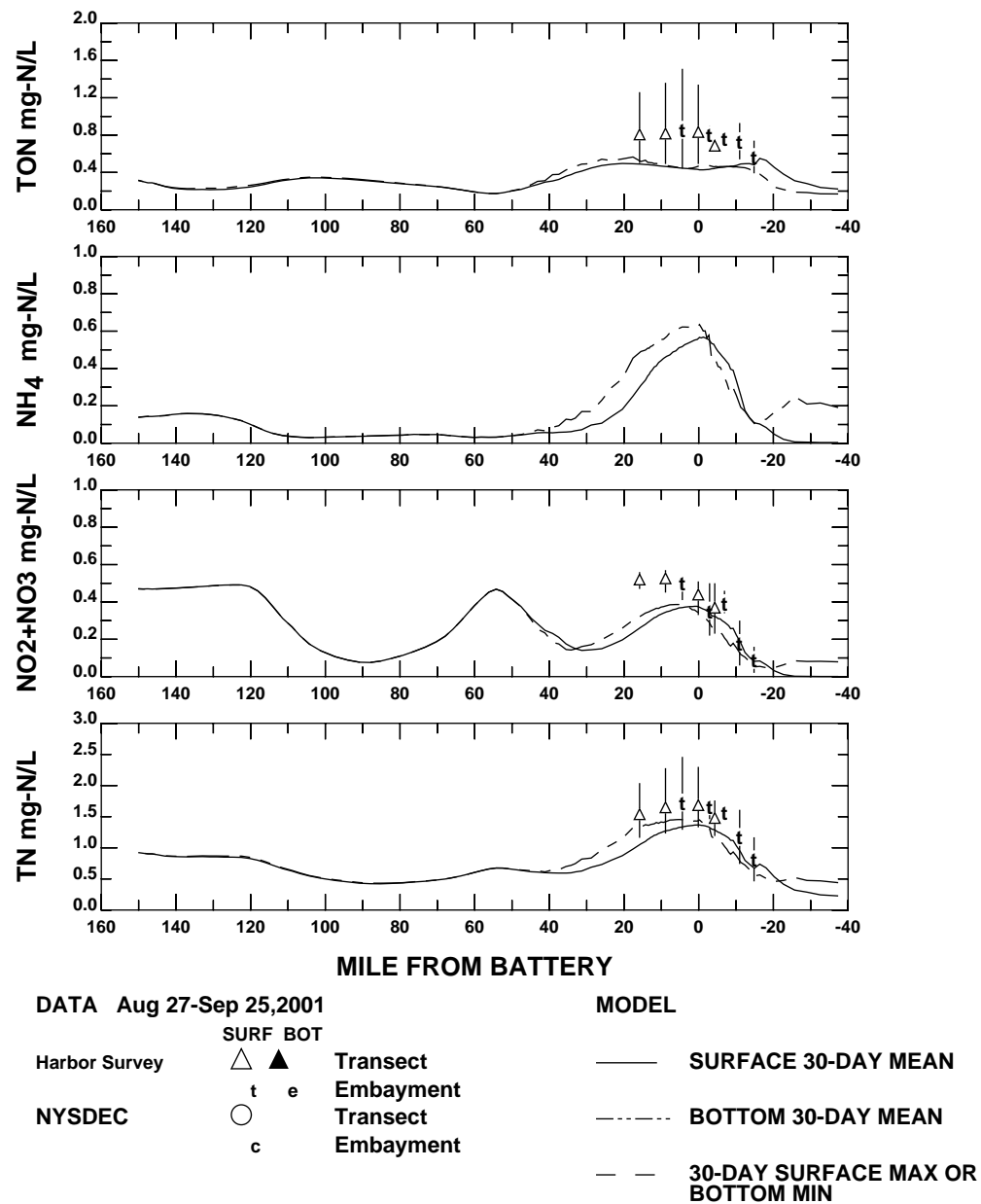
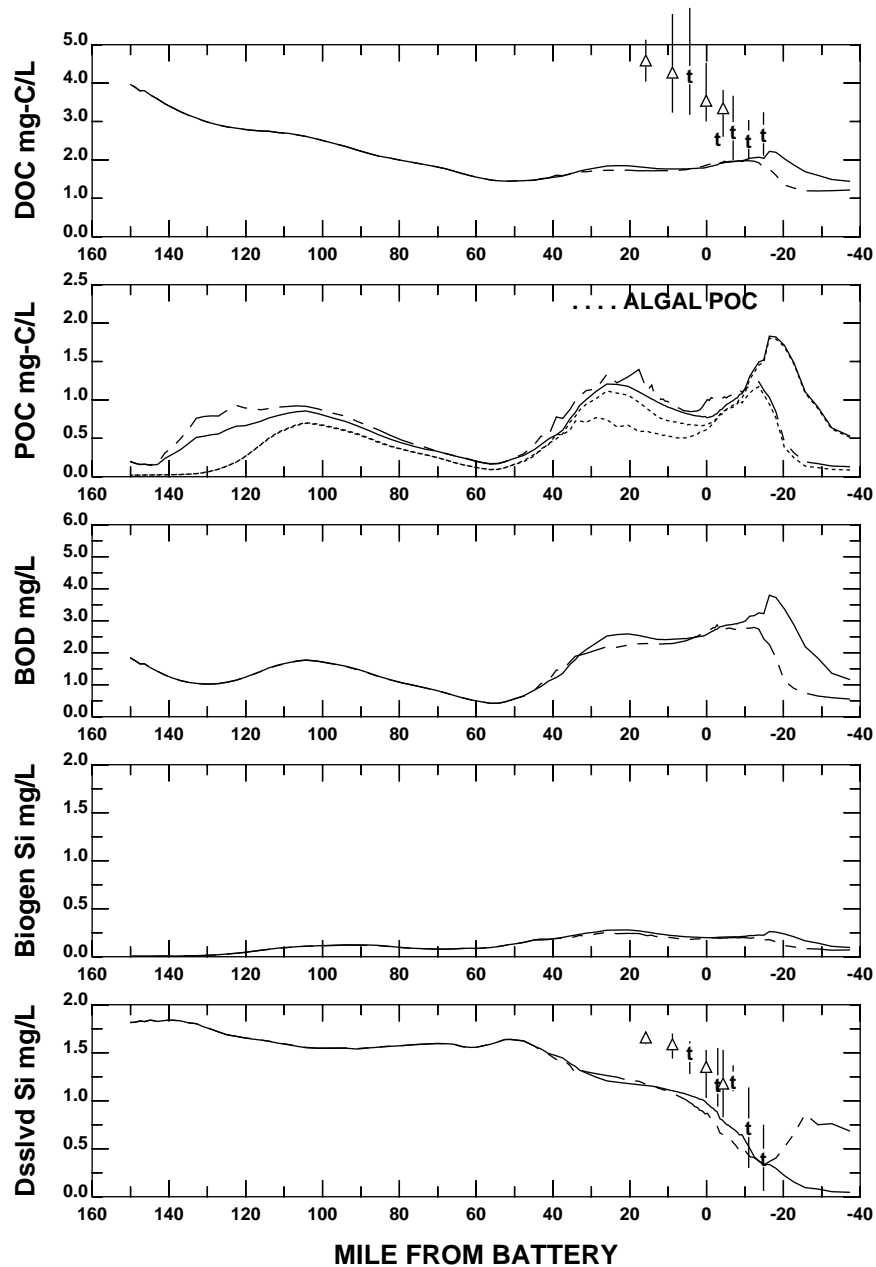
**HUDSON RIVER, UPPER AND LOWER BAY, OCEAN**



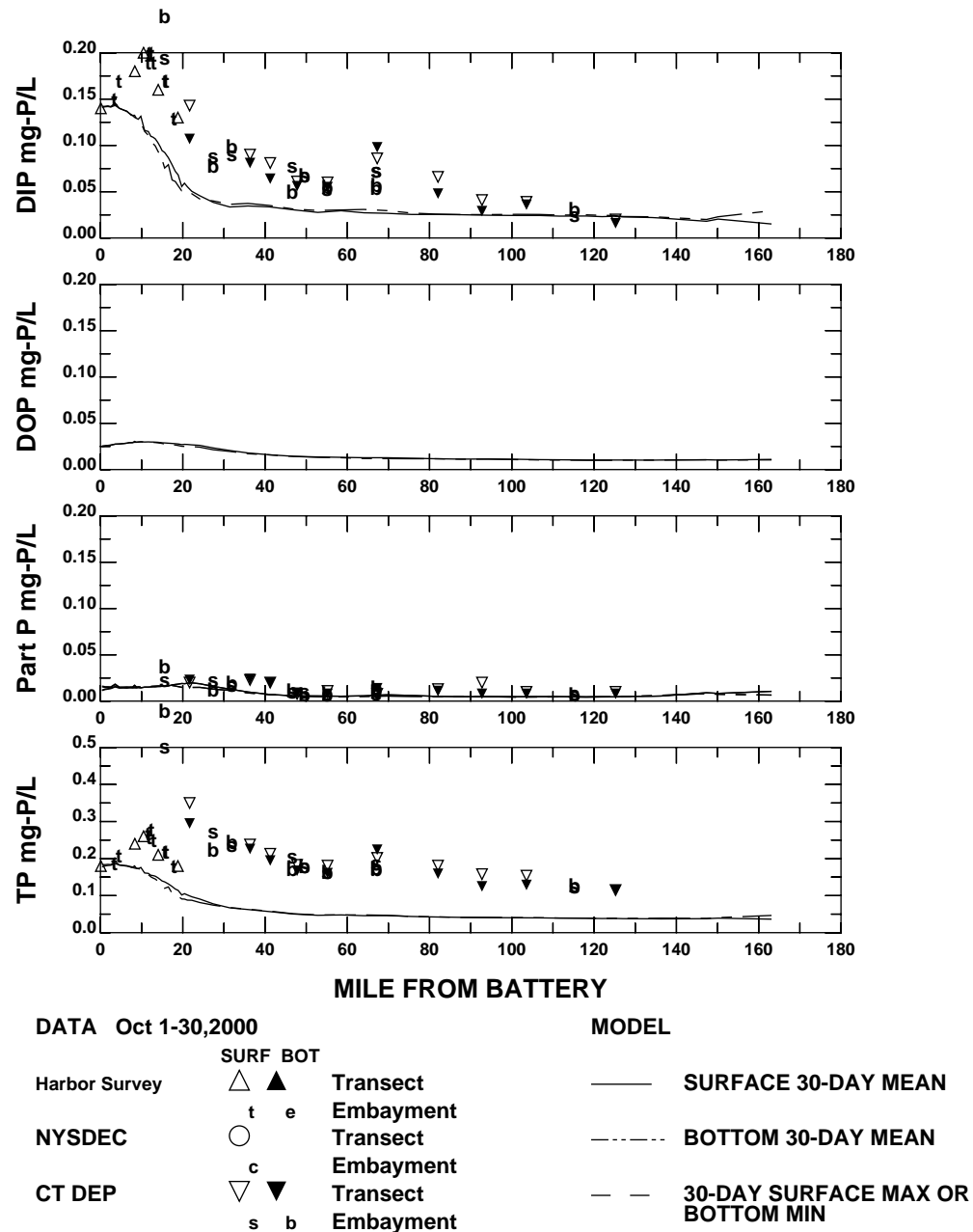
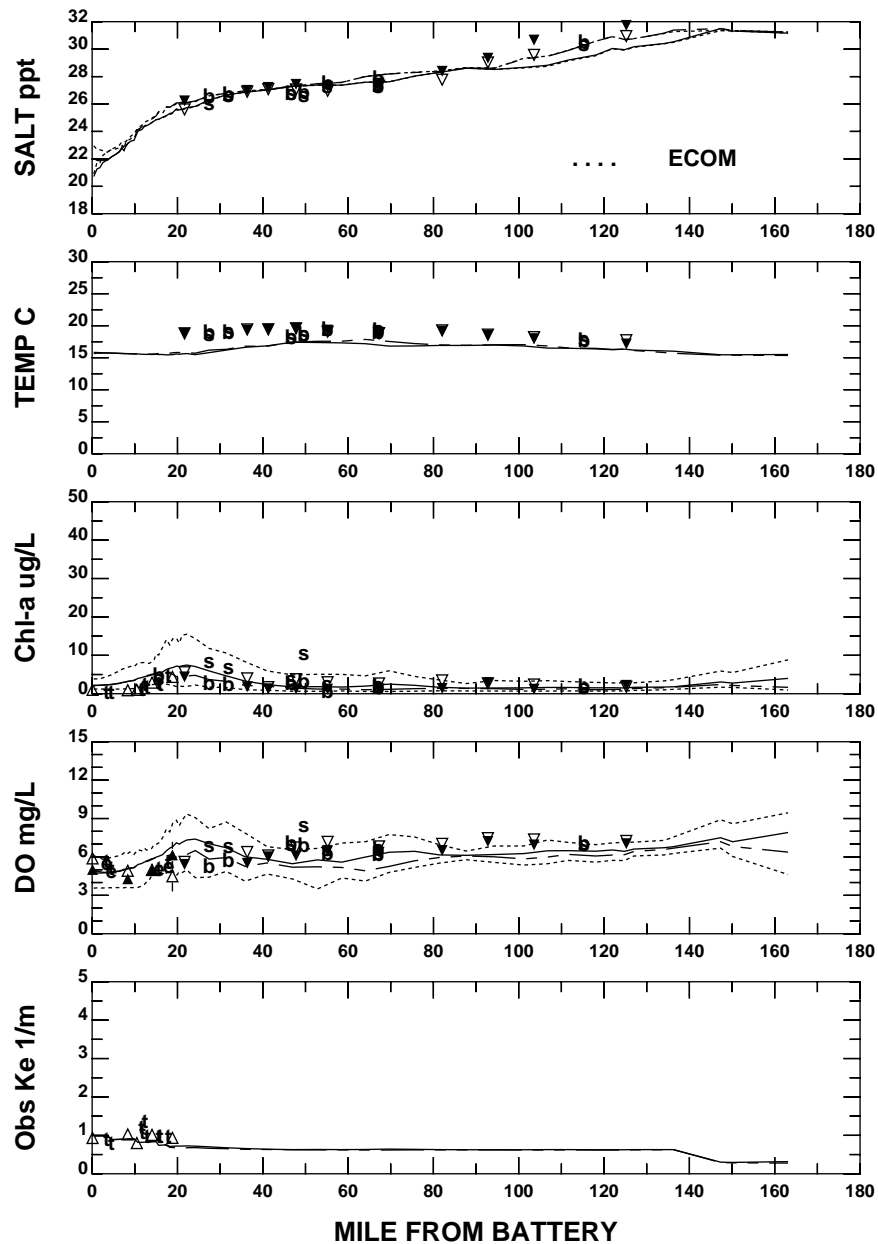
## HUDSON RIVER, UPPER AND LOWER BAY, OCEAN



# HUDSON RIVER, UPPER AND LOWER BAY, OCEAN

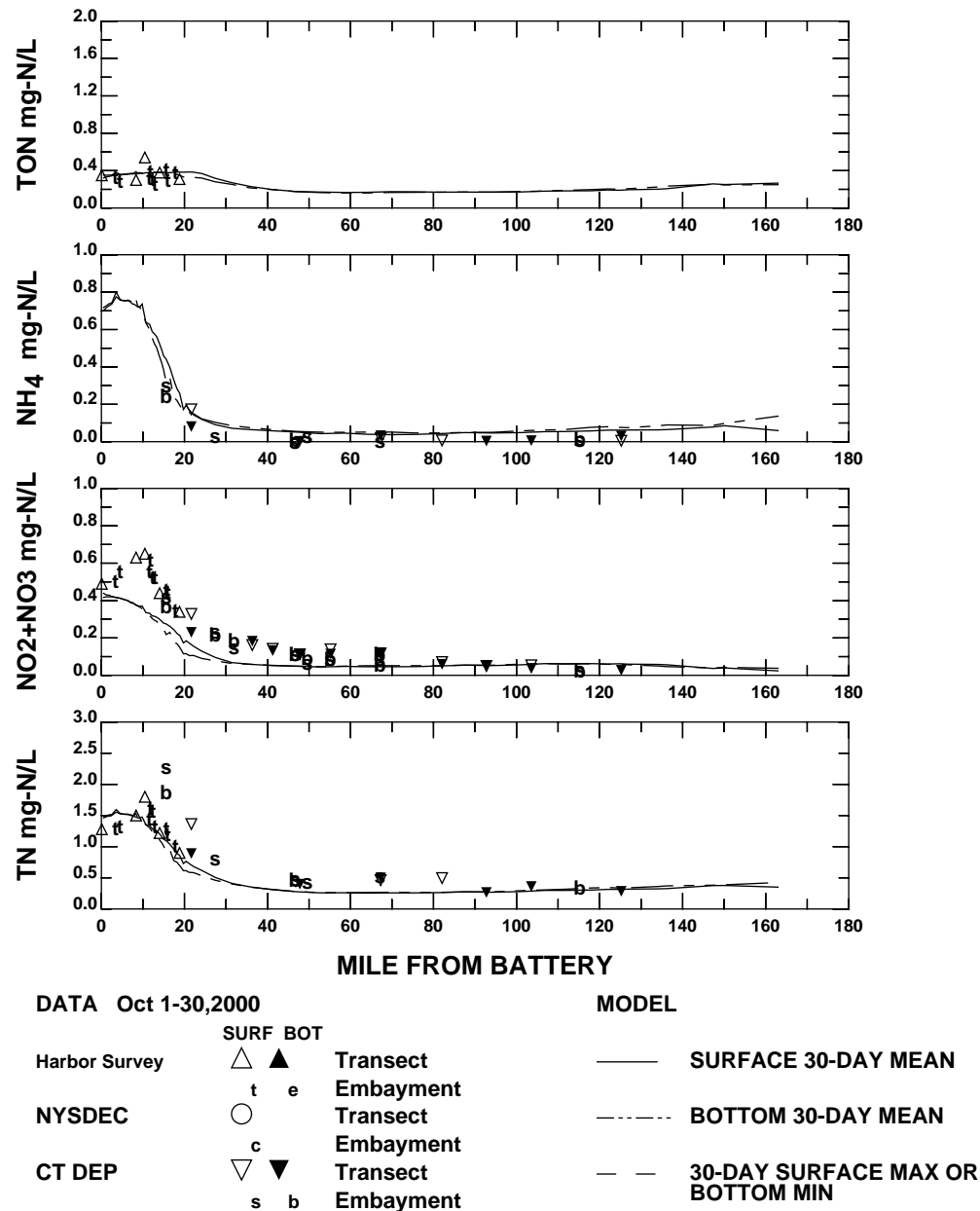
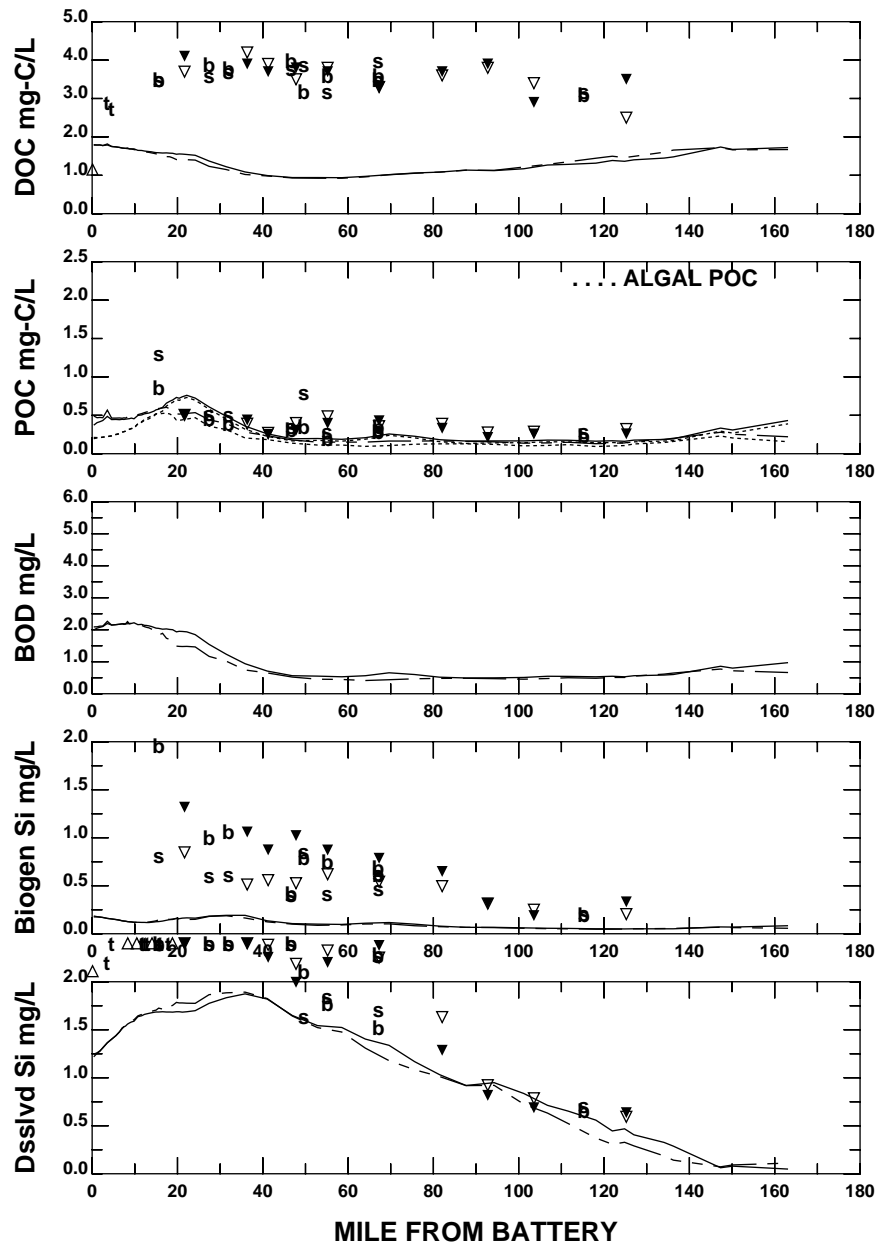


## HUDSON RIVER, UPPER AND LOWER BAY, OCEAN

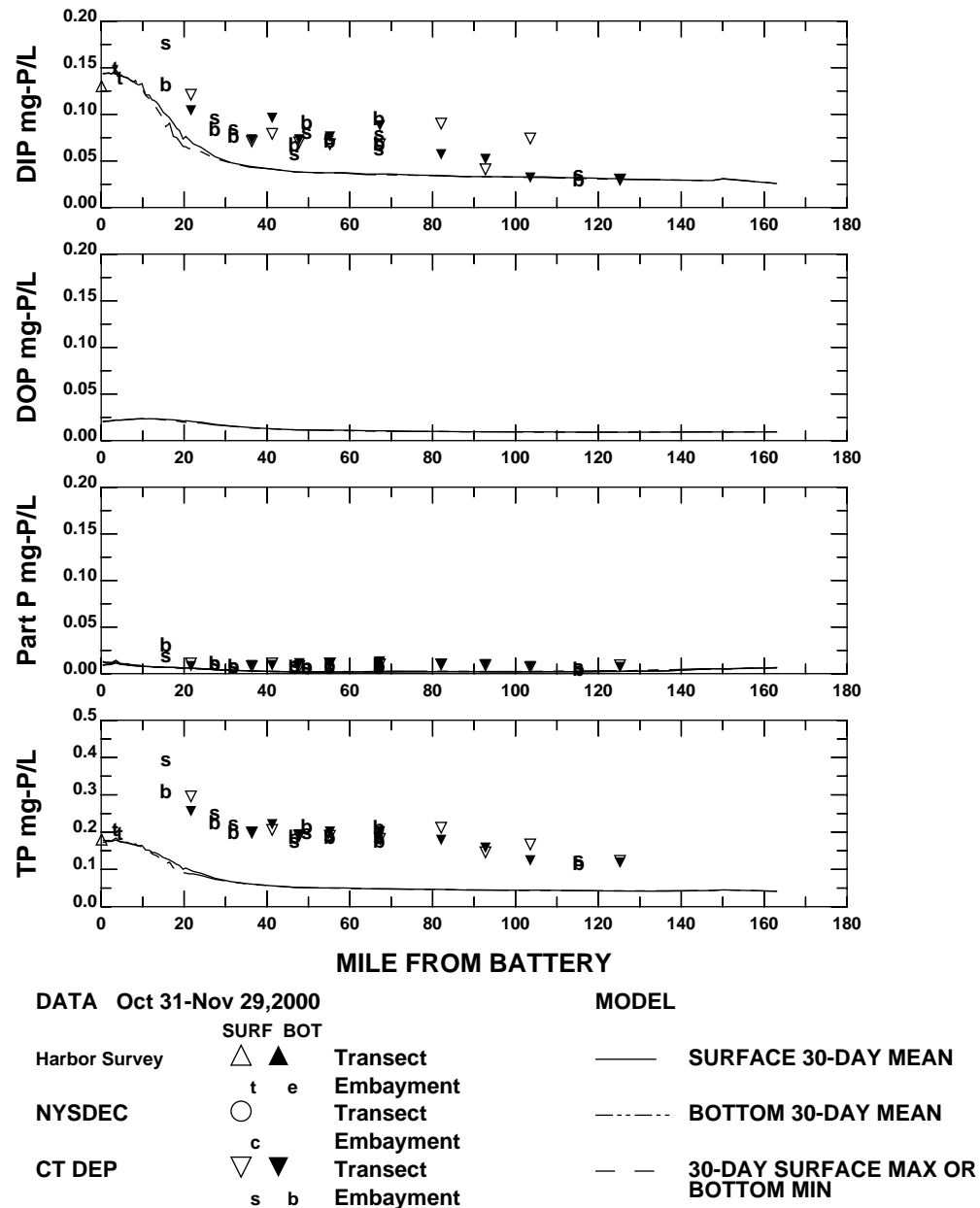
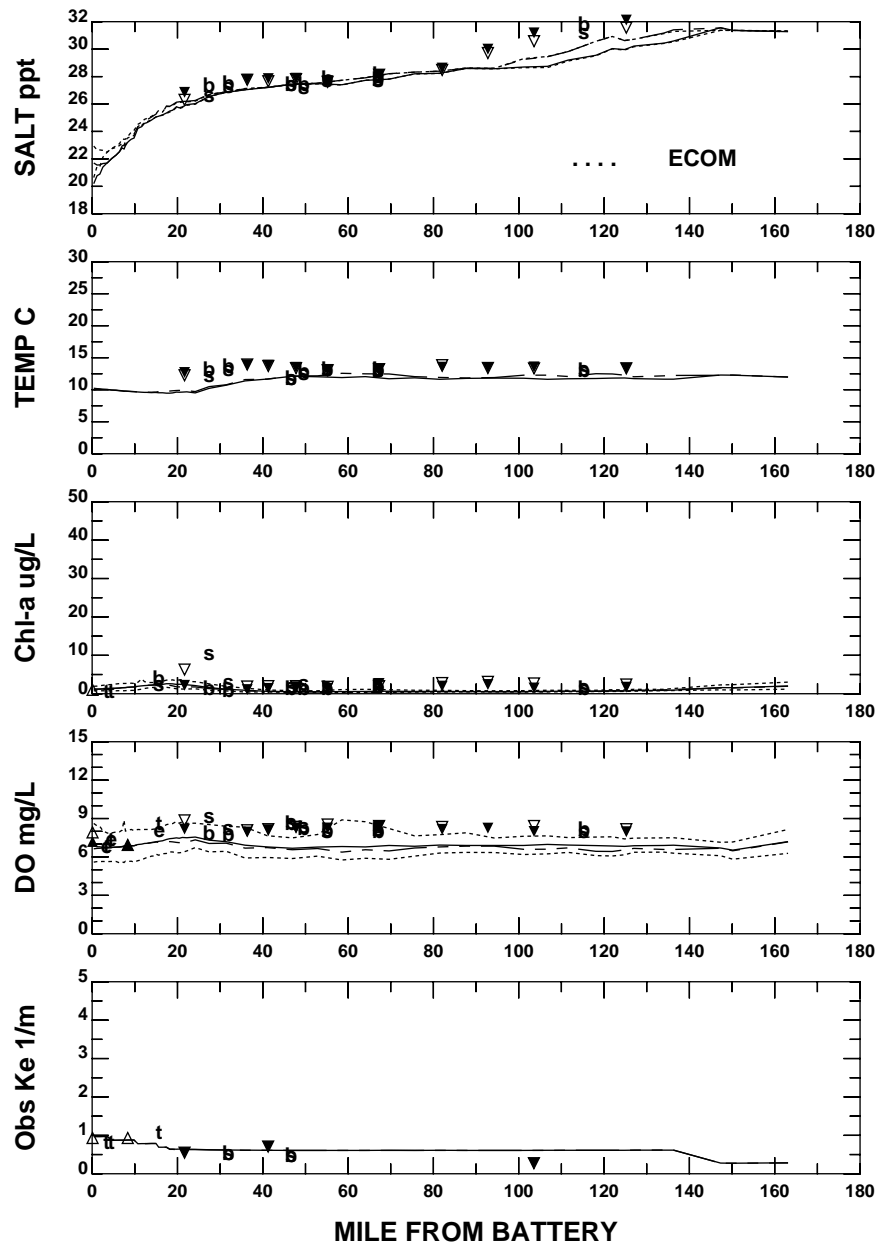


# EAST RIVER AND LONG ISLAND SOUND





## EAST RIVER AND LONG ISLAND SOUND



**DATA Oct 31-Nov 29, 2000**

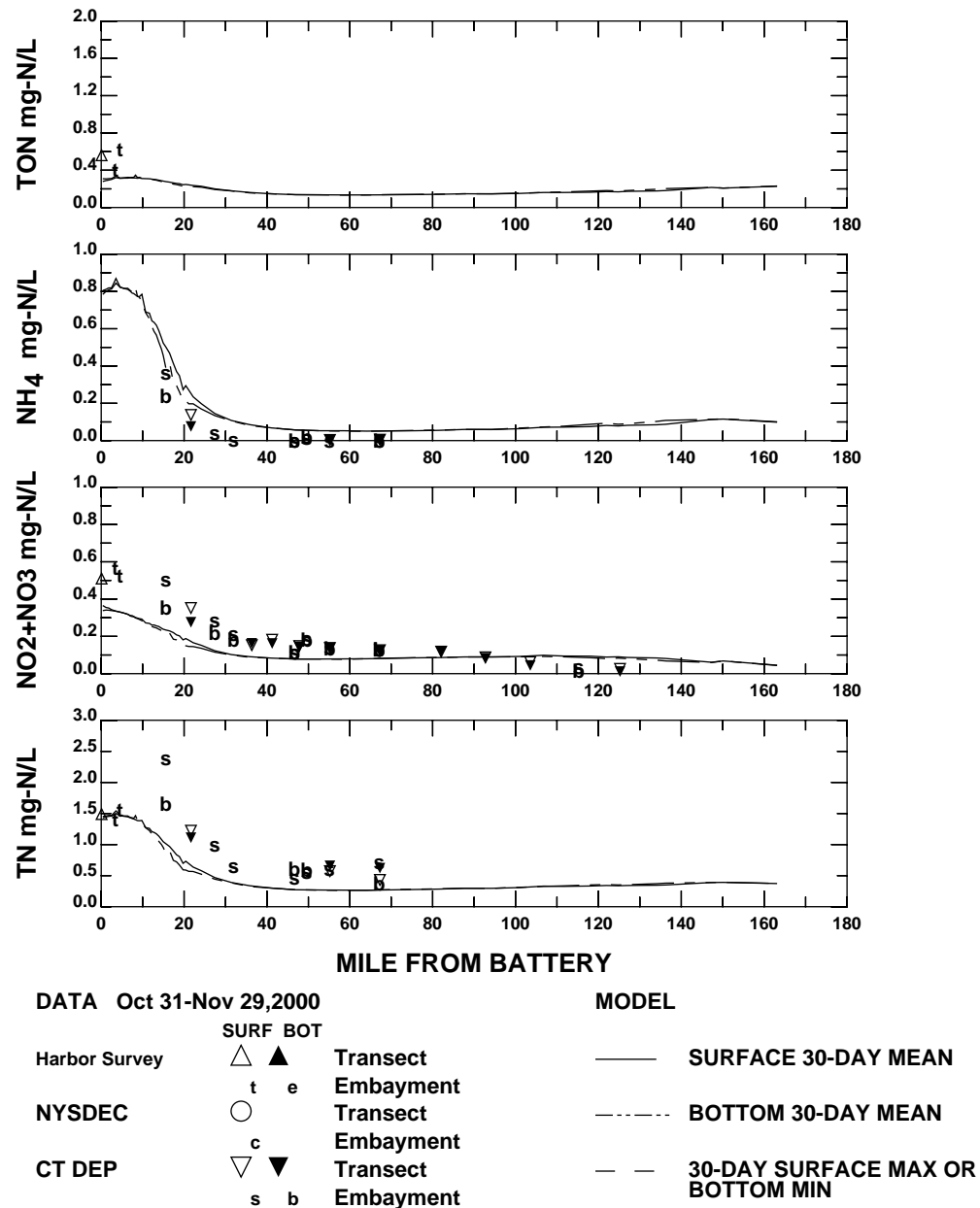
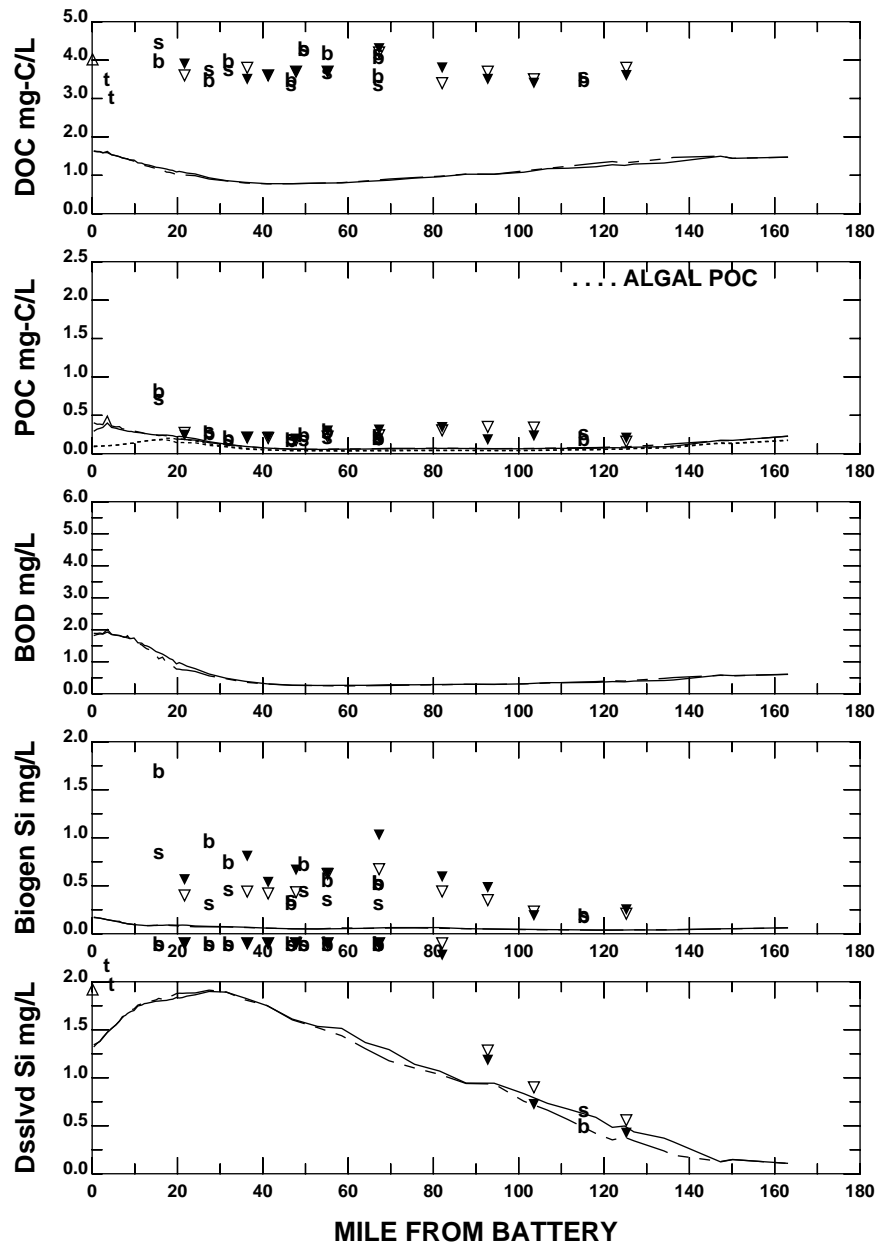
**SURF BOT**

Harbor Survey    △ ▲    Transect  
                           t e    Embayment

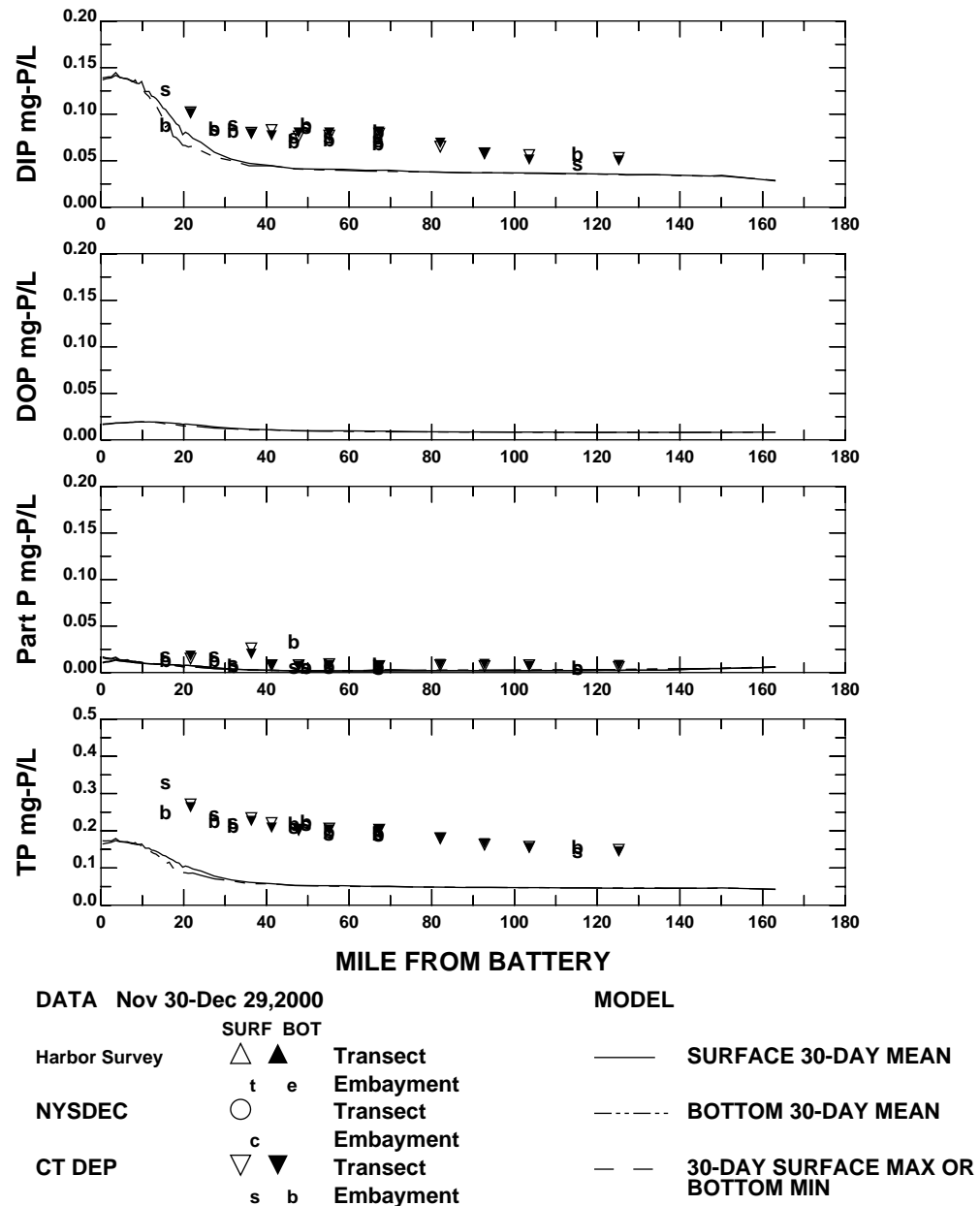
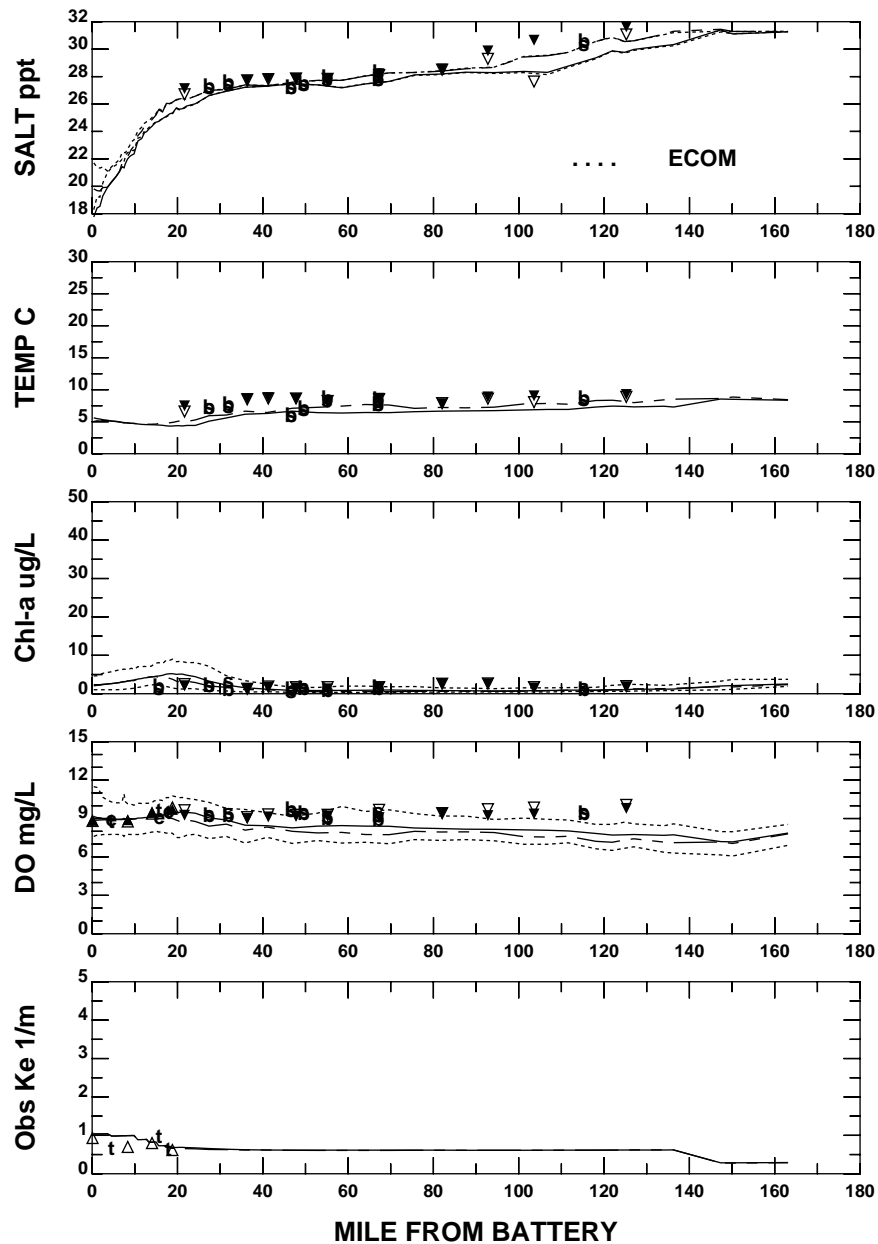
NYSDEC            ○    Transect  
                           c    Embayment

CT DEP            ▽ ▼    Transect  
                           s b    Embayment

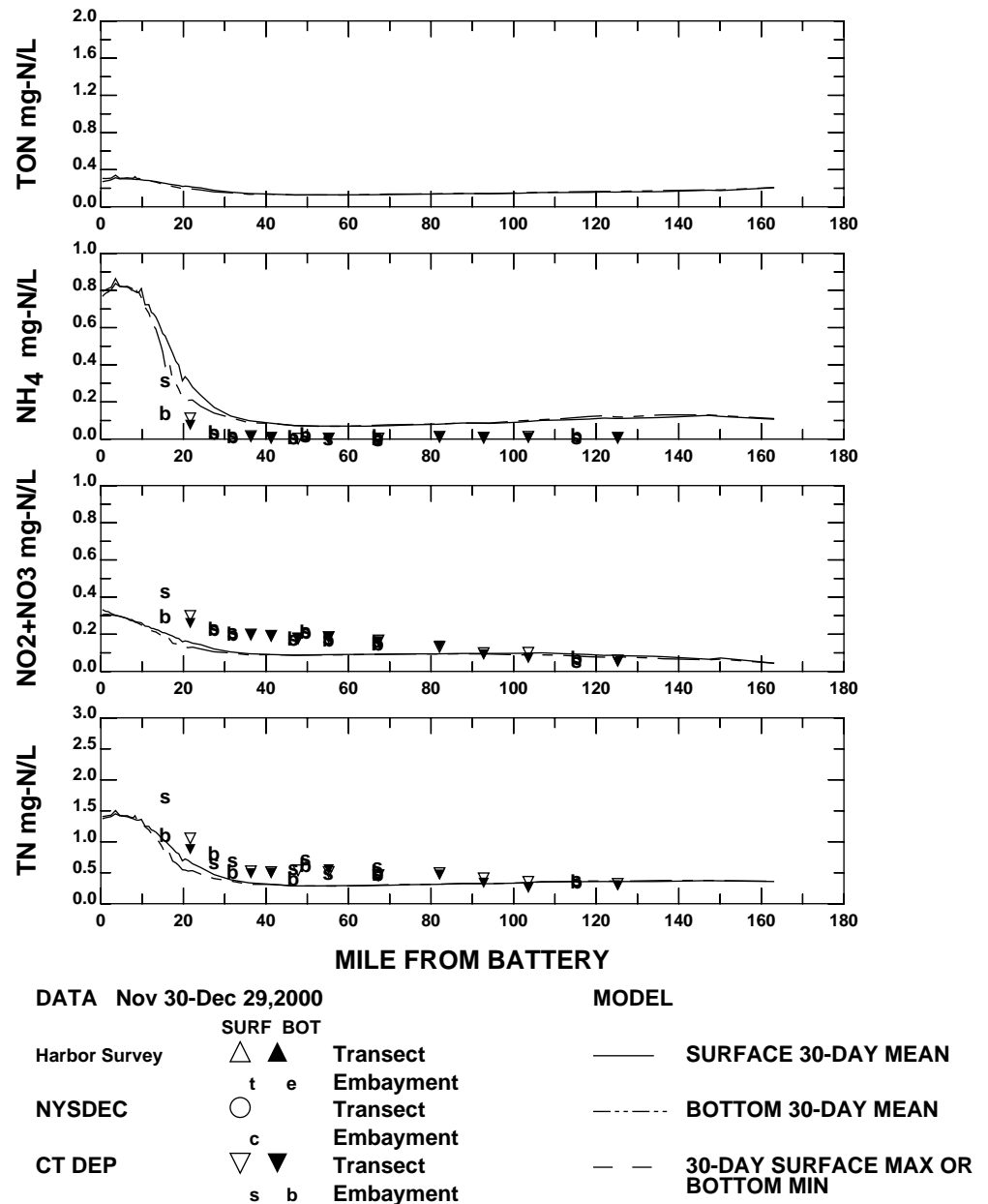
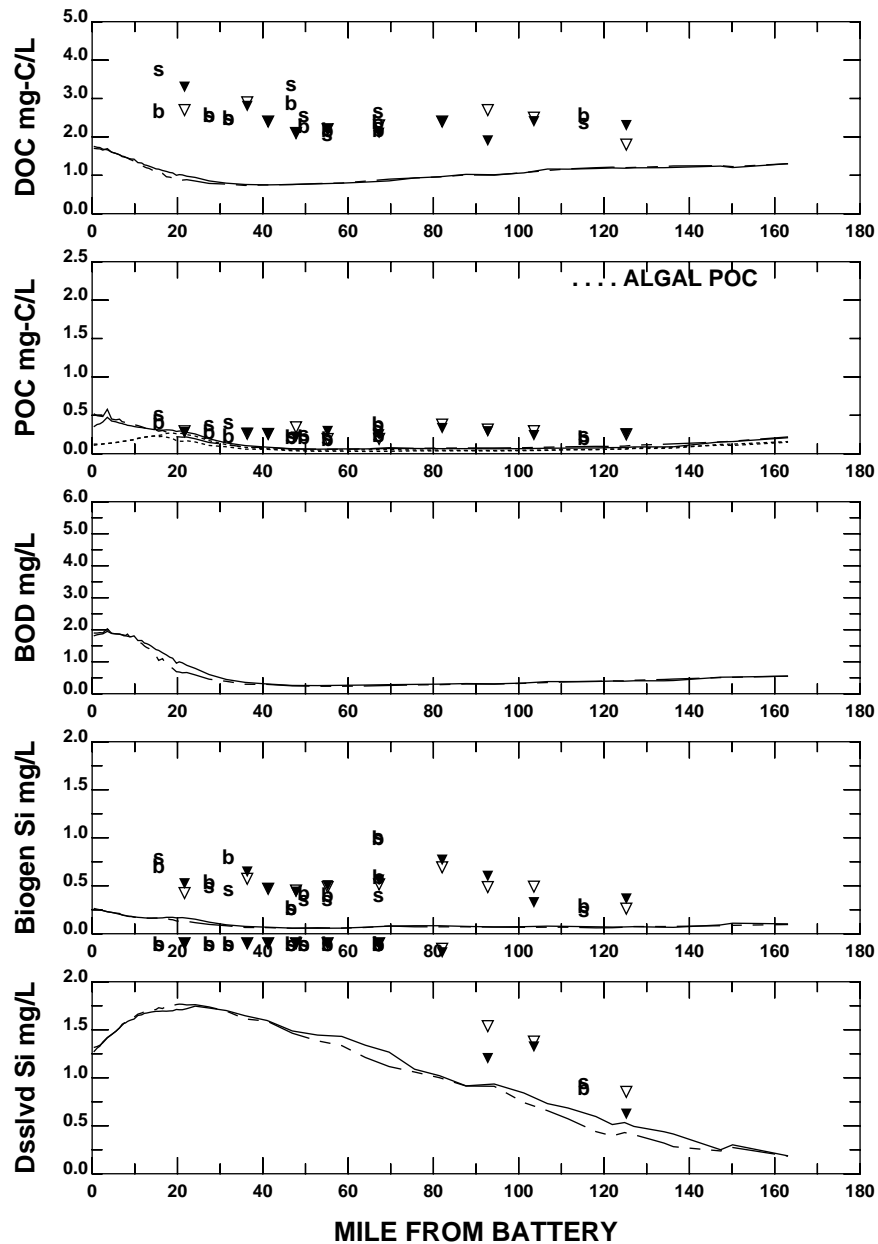
**EAST RIVER AND LONG ISLAND SOUND**



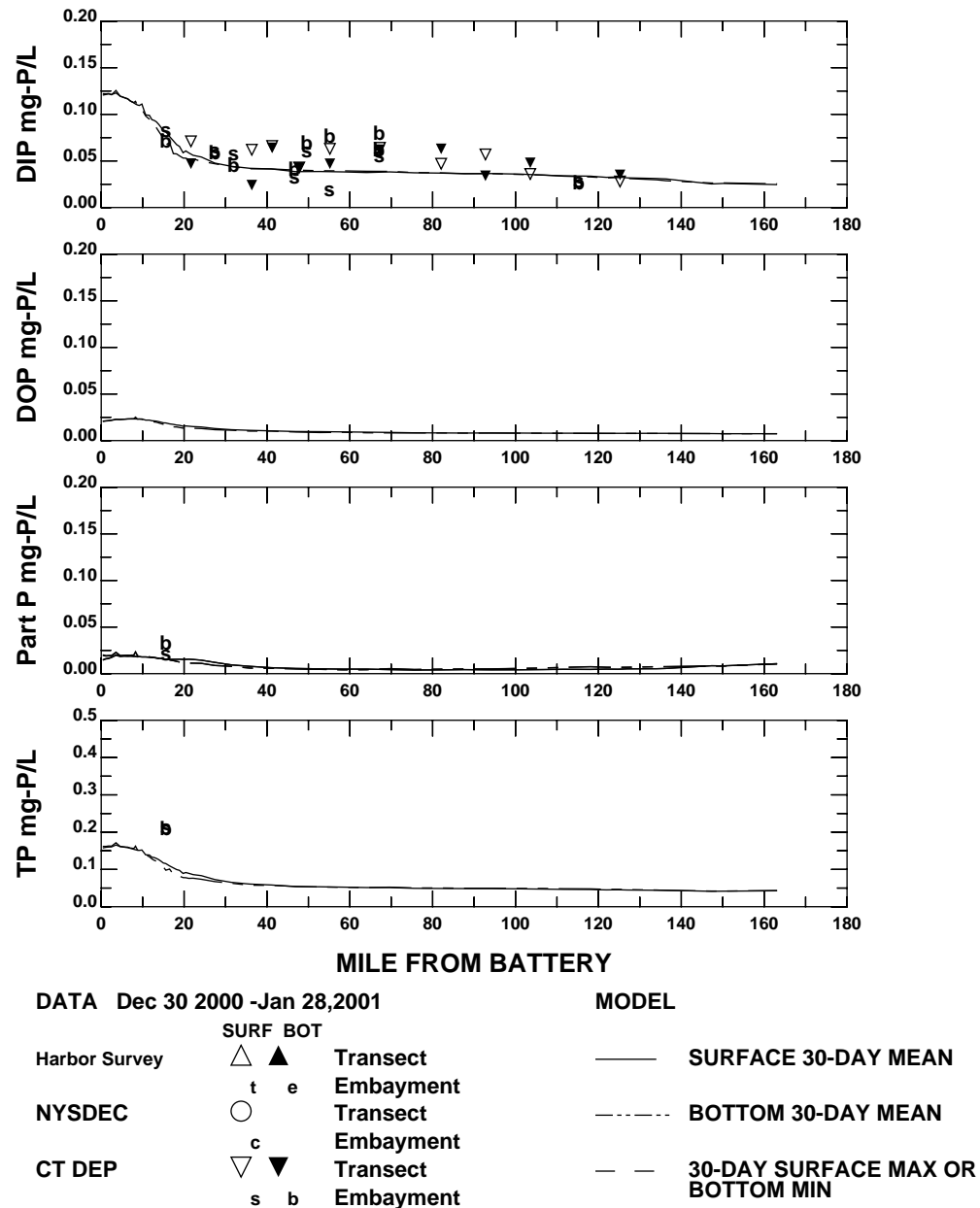
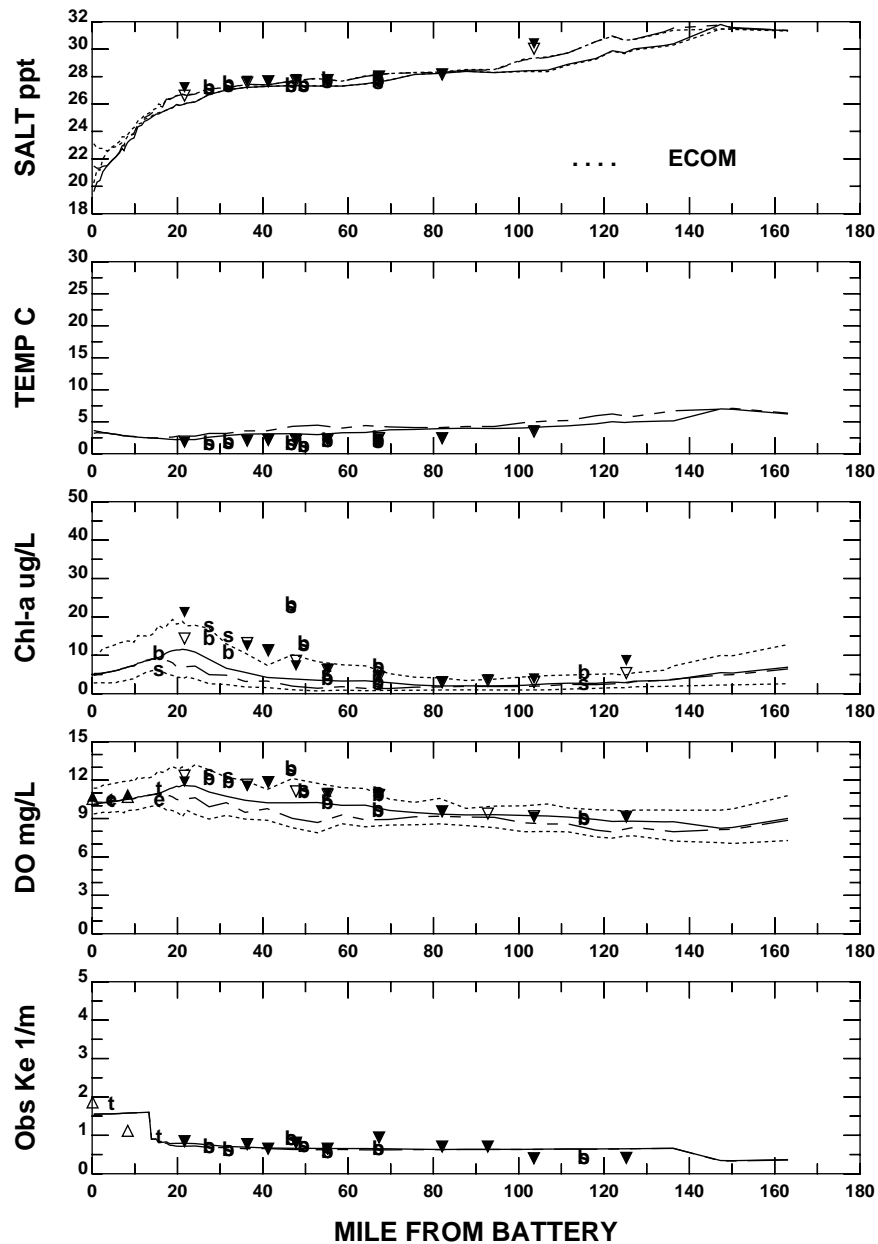
# EAST RIVER AND LONG ISLAND SOUND



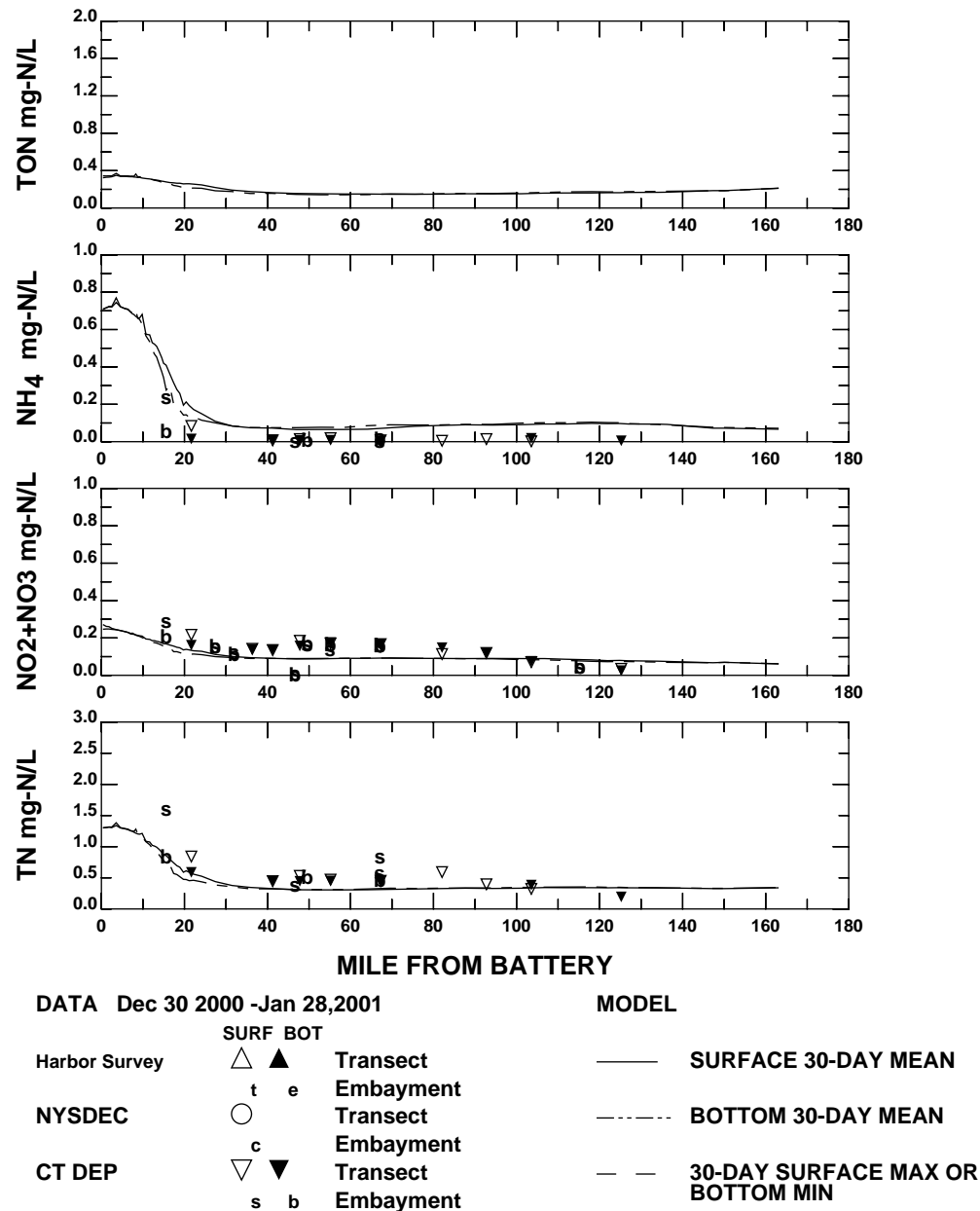
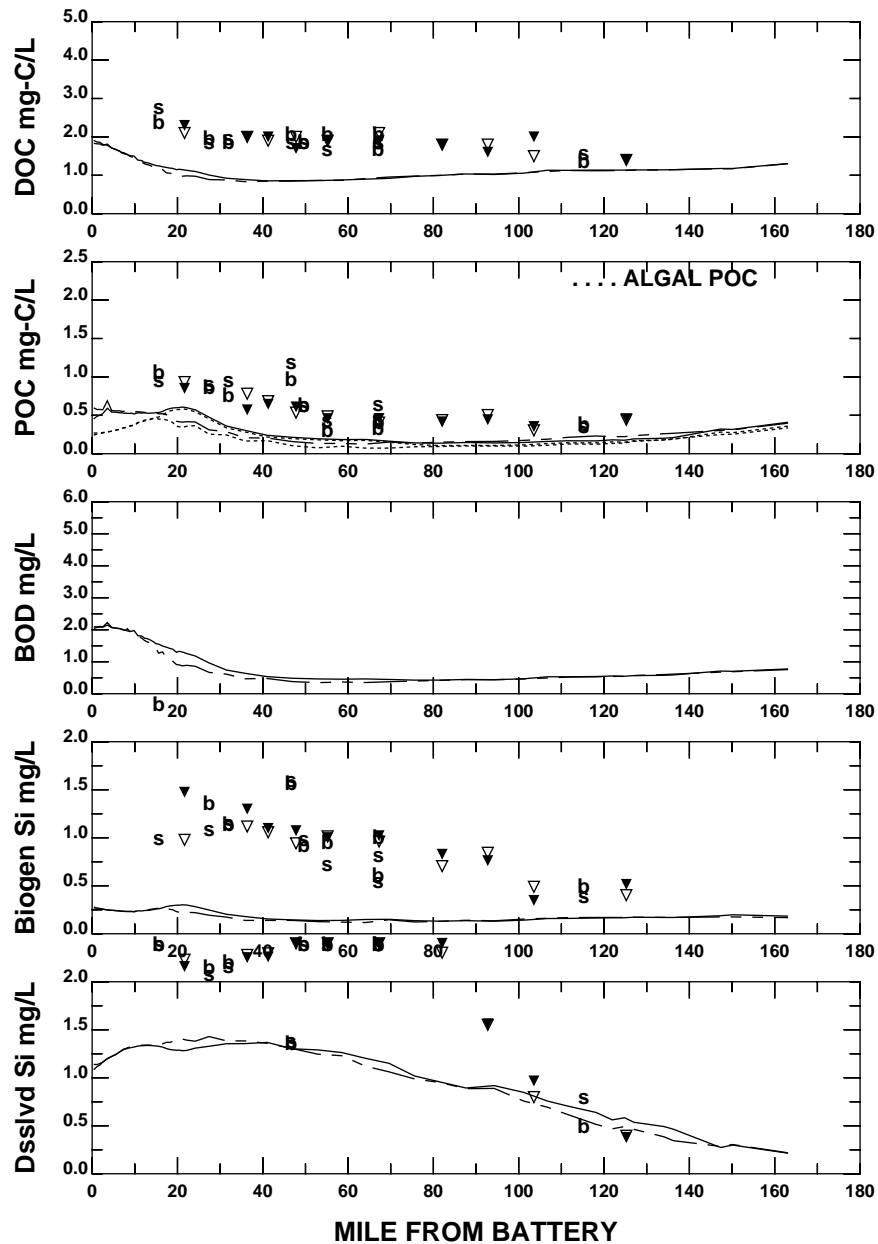
### EAST RIVER AND LONG ISLAND SOUND



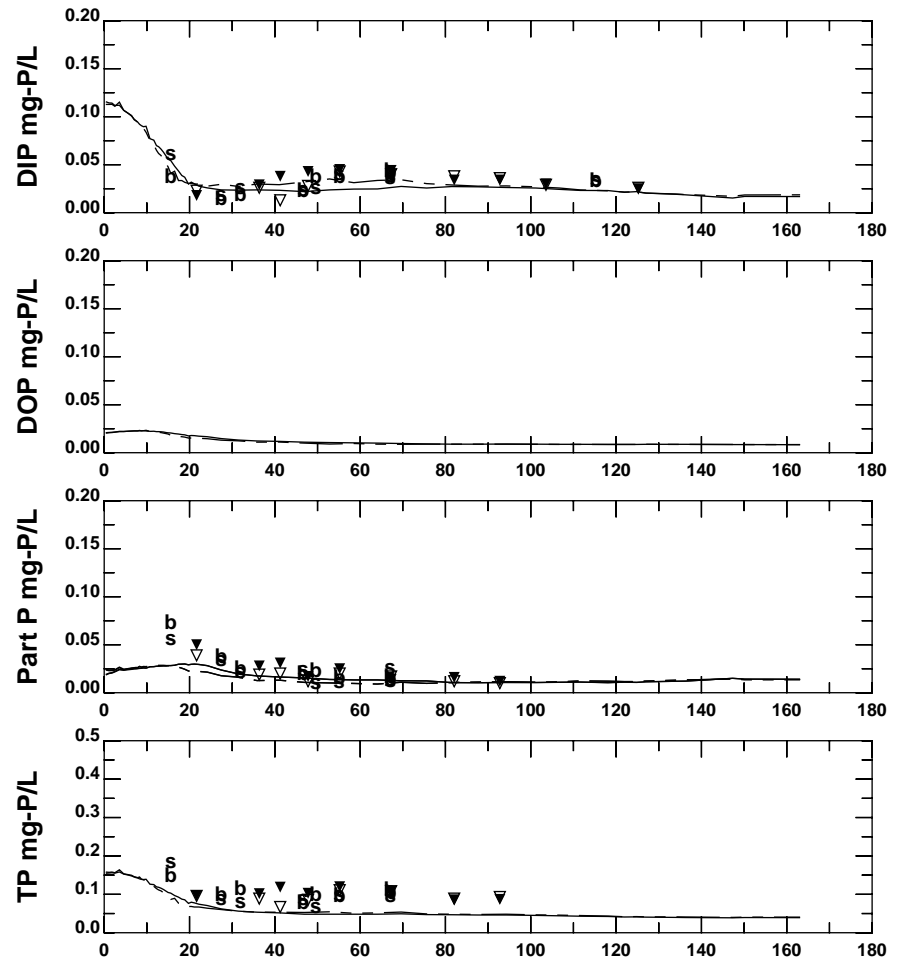
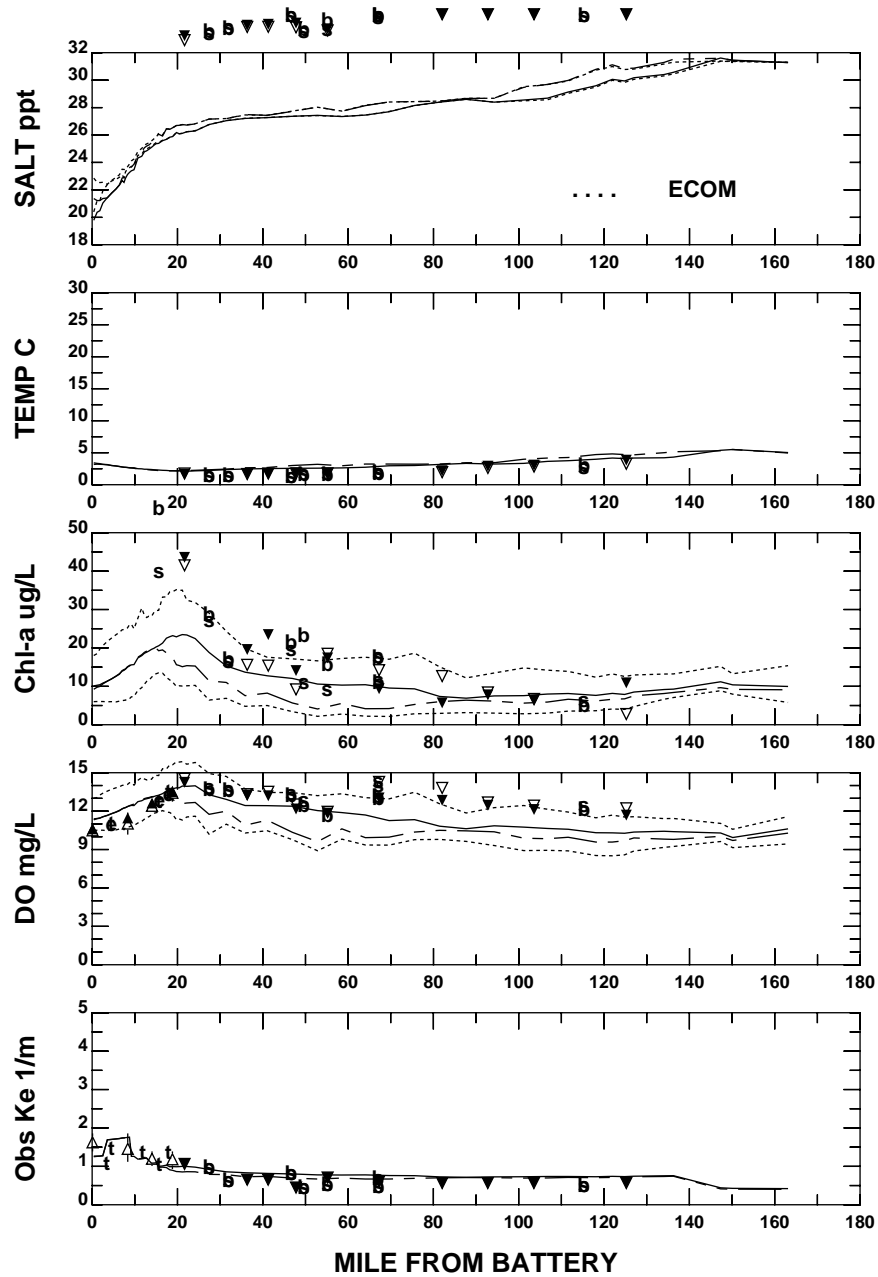
# EAST RIVER AND LONG ISLAND SOUND



**EAST RIVER AND LONG ISLAND SOUND**



## EAST RIVER AND LONG ISLAND SOUND



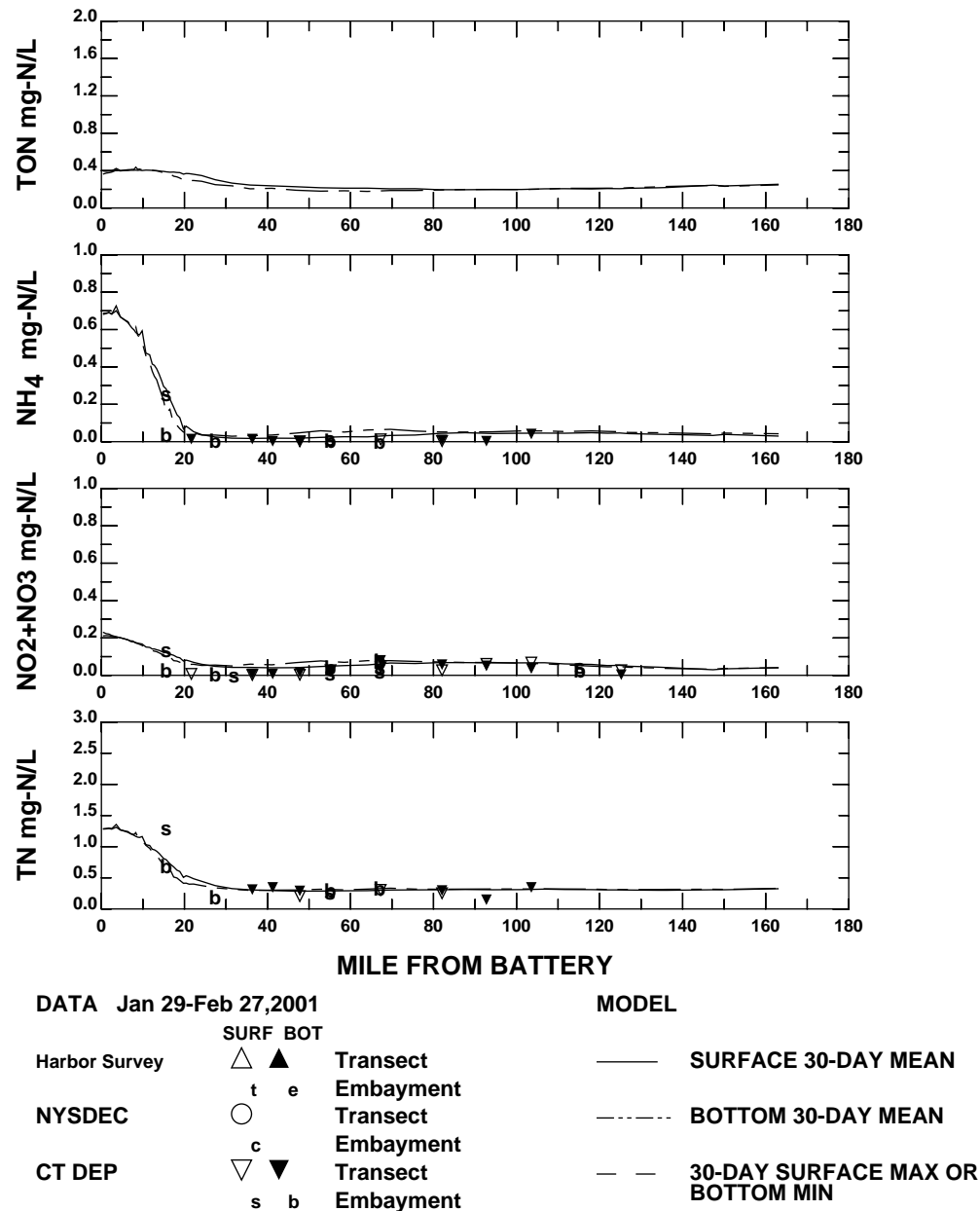
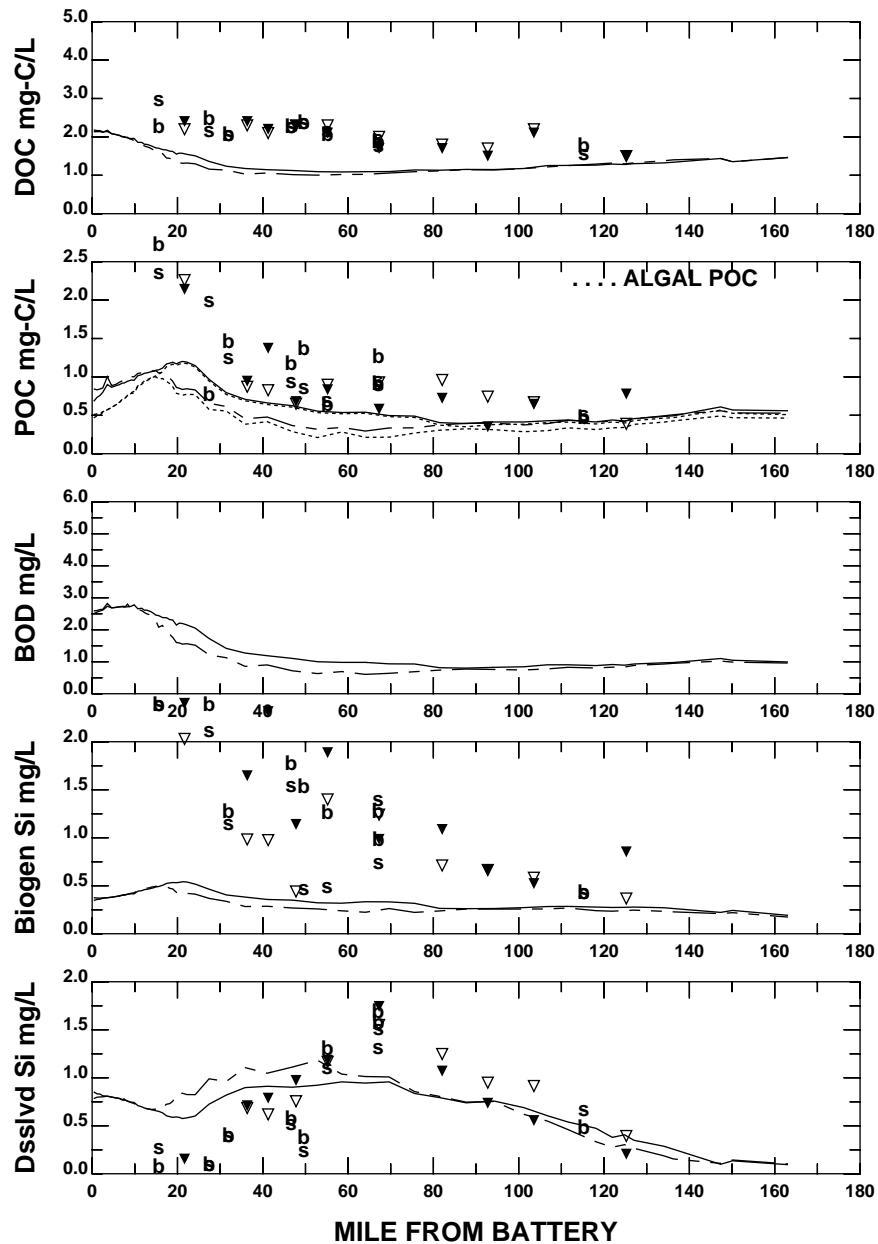
**DATA Jan 29-Feb 27, 2001**

**MODEL**

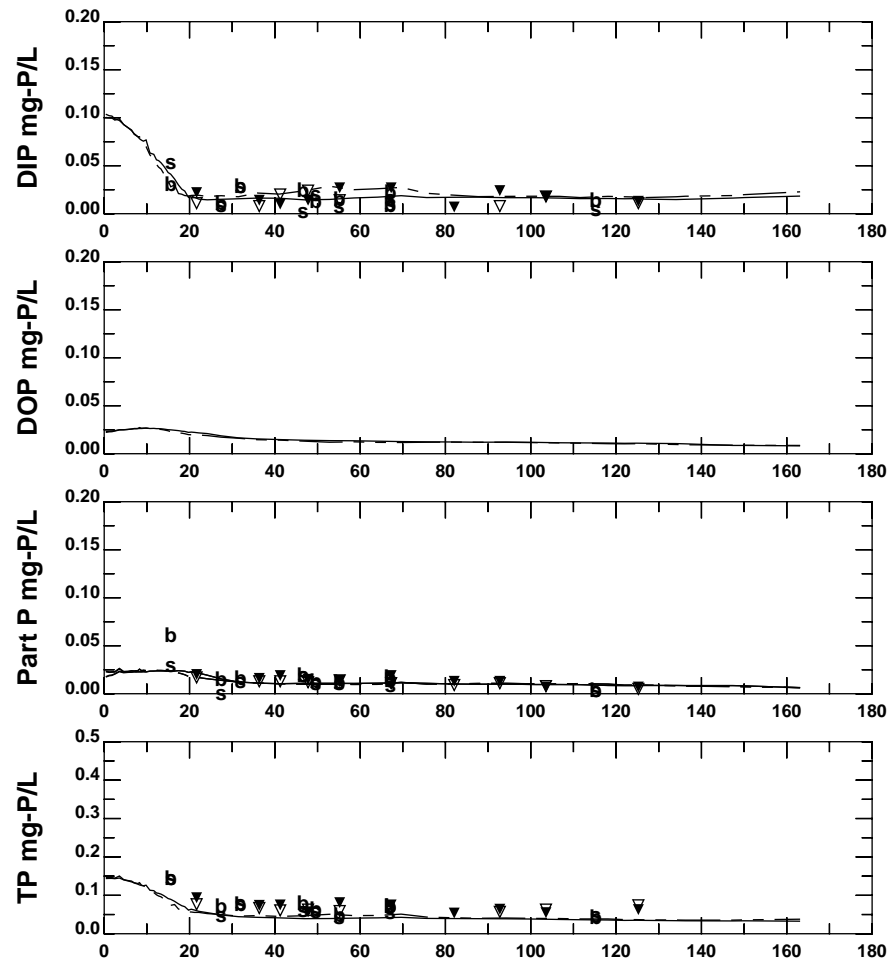
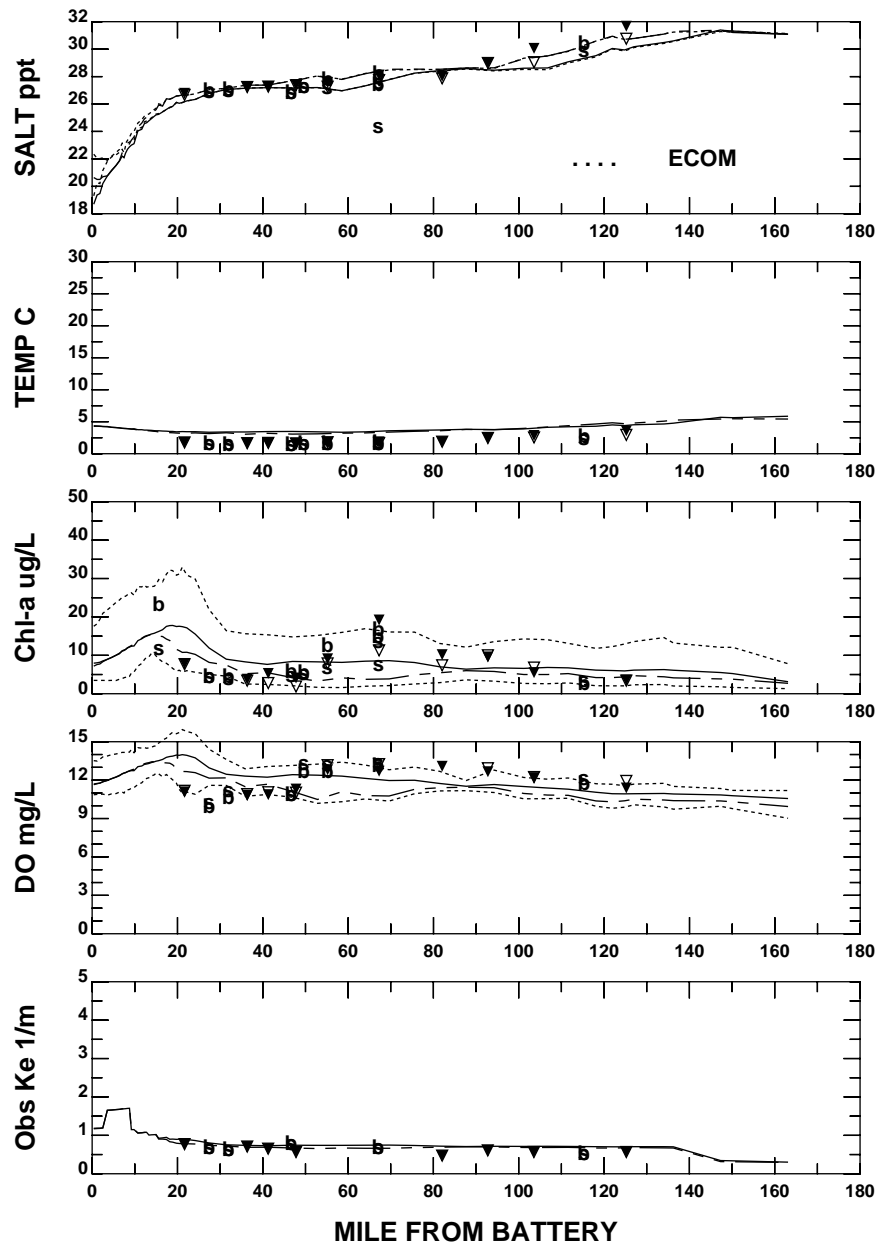
	<b>SURF BOT</b>		
Harbor Survey	△ ▲	Transect	— SURFACE 30-DAY MEAN
	t e	Embayment	----- BOTTOM 30-DAY MEAN
NYSDEC	○	Transect	- - - 30-DAY SURFACE MAX OR BOTTOM MIN
	c	Embayment	
CT DEP	▽ ▼	Transect	
	s b	Embayment	

**EAST RIVER AND LONG ISLAND SOUND**





# EAST RIVER AND LONG ISLAND SOUND



DATA Feb 28-Mar 29, 2001

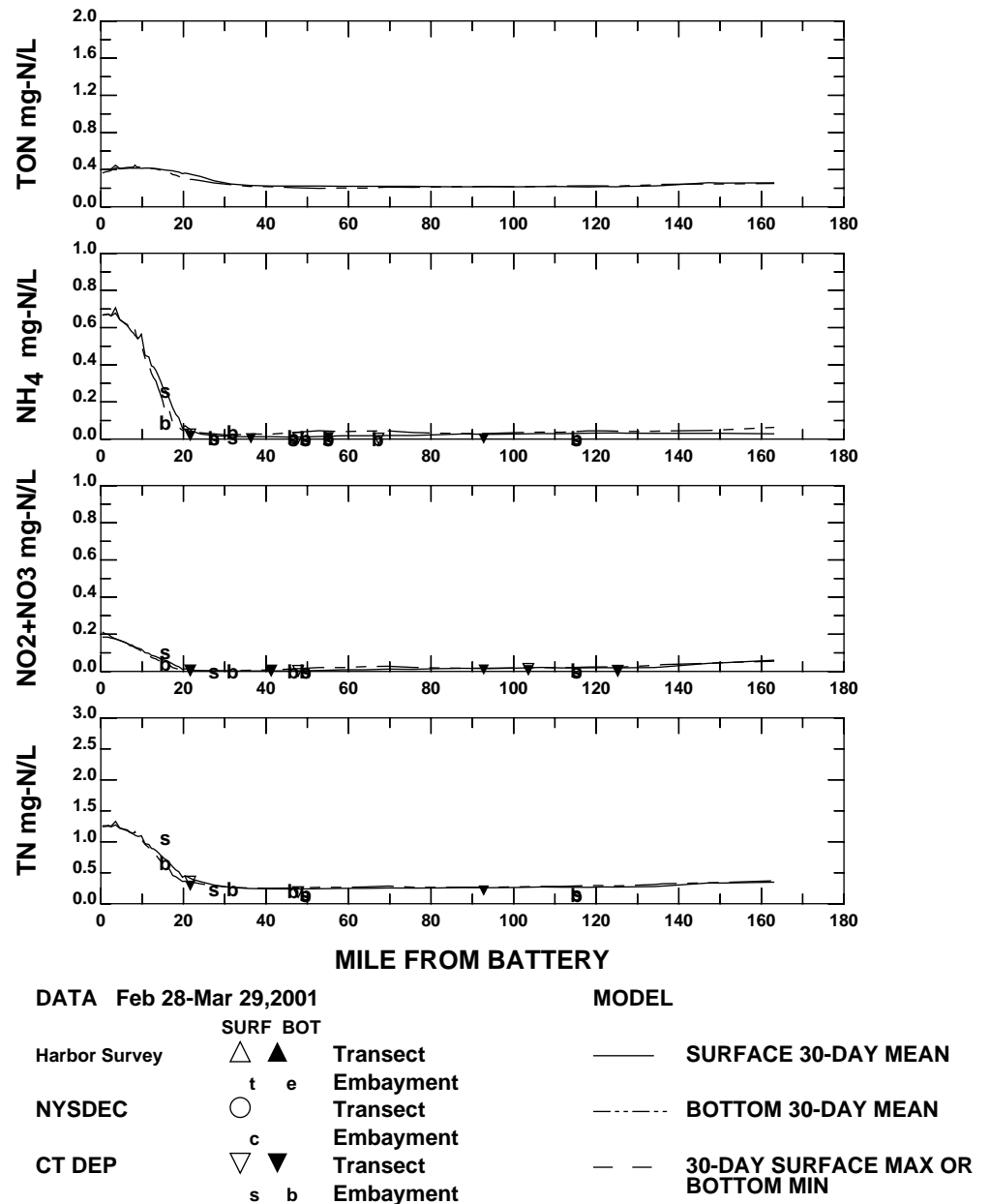
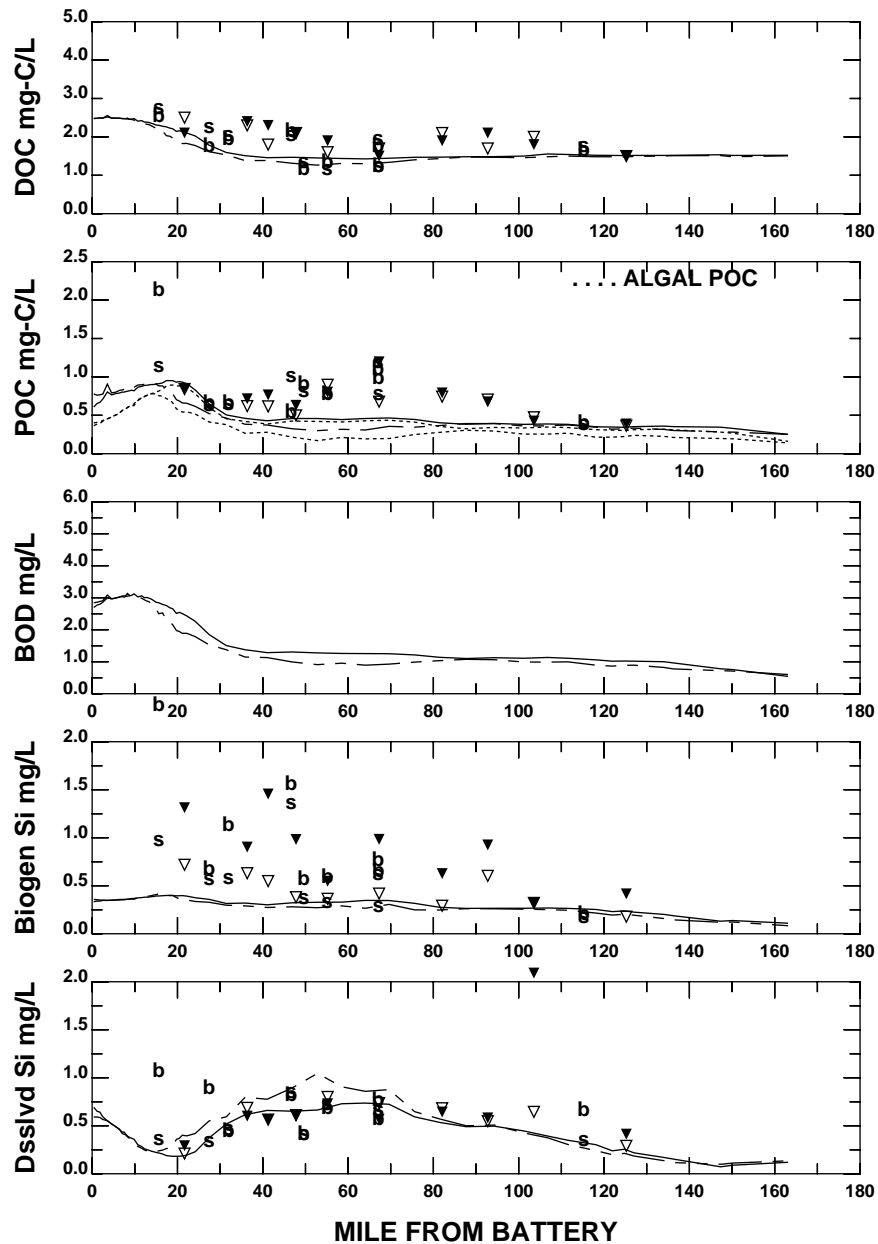
MODEL

Harbor Survey SURF BOT  
 NYSDEC  
 CT DEP

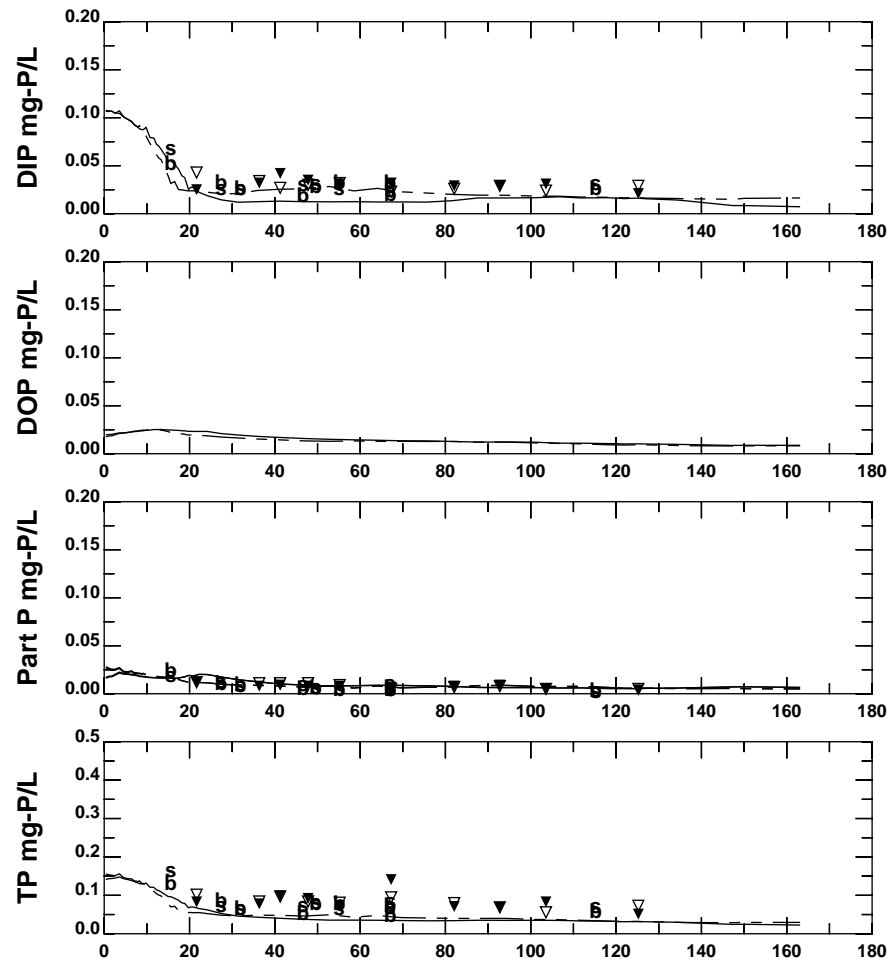
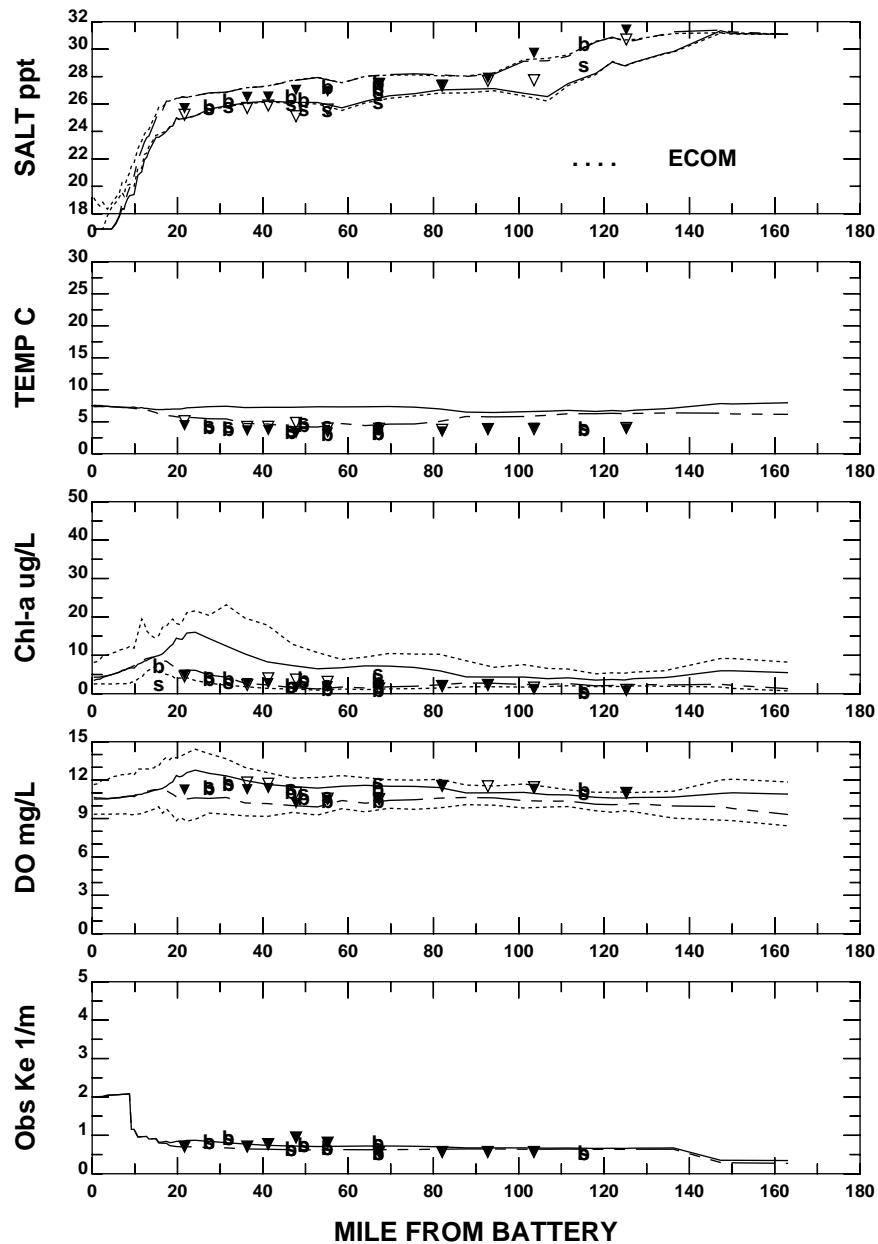
△ ▲ Transect  
 t e Embayment  
 ○ ○ Transect  
 c c Embayment  
 ▽ ▾ Transect  
 s b Embayment

— SURFACE 30-DAY MEAN  
 - - - BOTTOM 30-DAY MEAN  
 - - 30-DAY SURFACE MAX OR BOTTOM MIN

**EAST RIVER AND LONG ISLAND SOUND**



# EAST RIVER AND LONG ISLAND SOUND



DATA Mar 30-Apr 28, 2001

MODEL

SURF BOT

Harbor Survey  $\triangle$   $\blacktriangle$  Transect

NYSDEC  $\circ$   $\bullet$  Embayment

CT DEP  $\nabla$   $\blacktriangledown$  Transect

$\nabla$   $\blacktriangledown$  Embayment

$\nabla$   $\blacktriangledown$  Transect

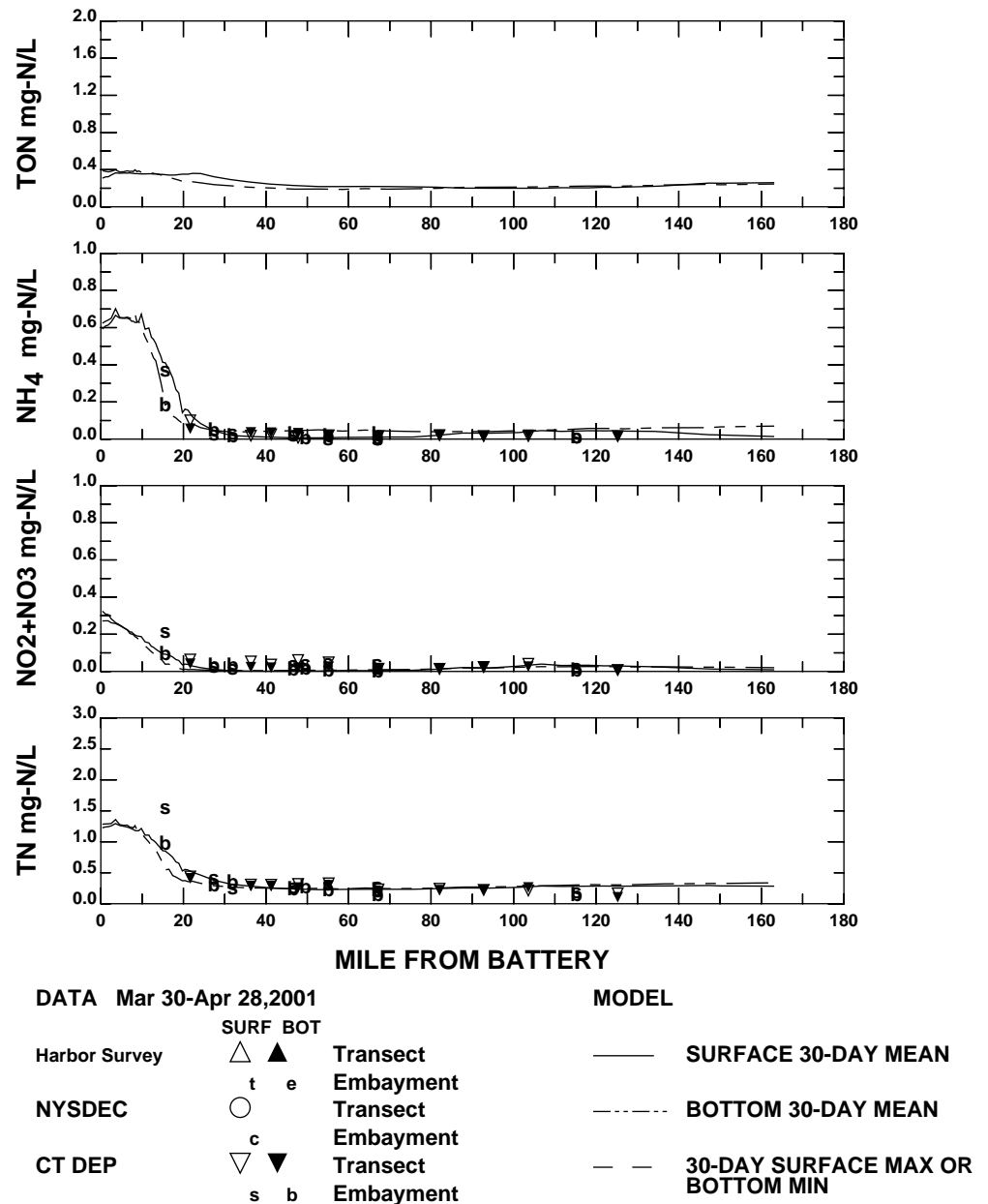
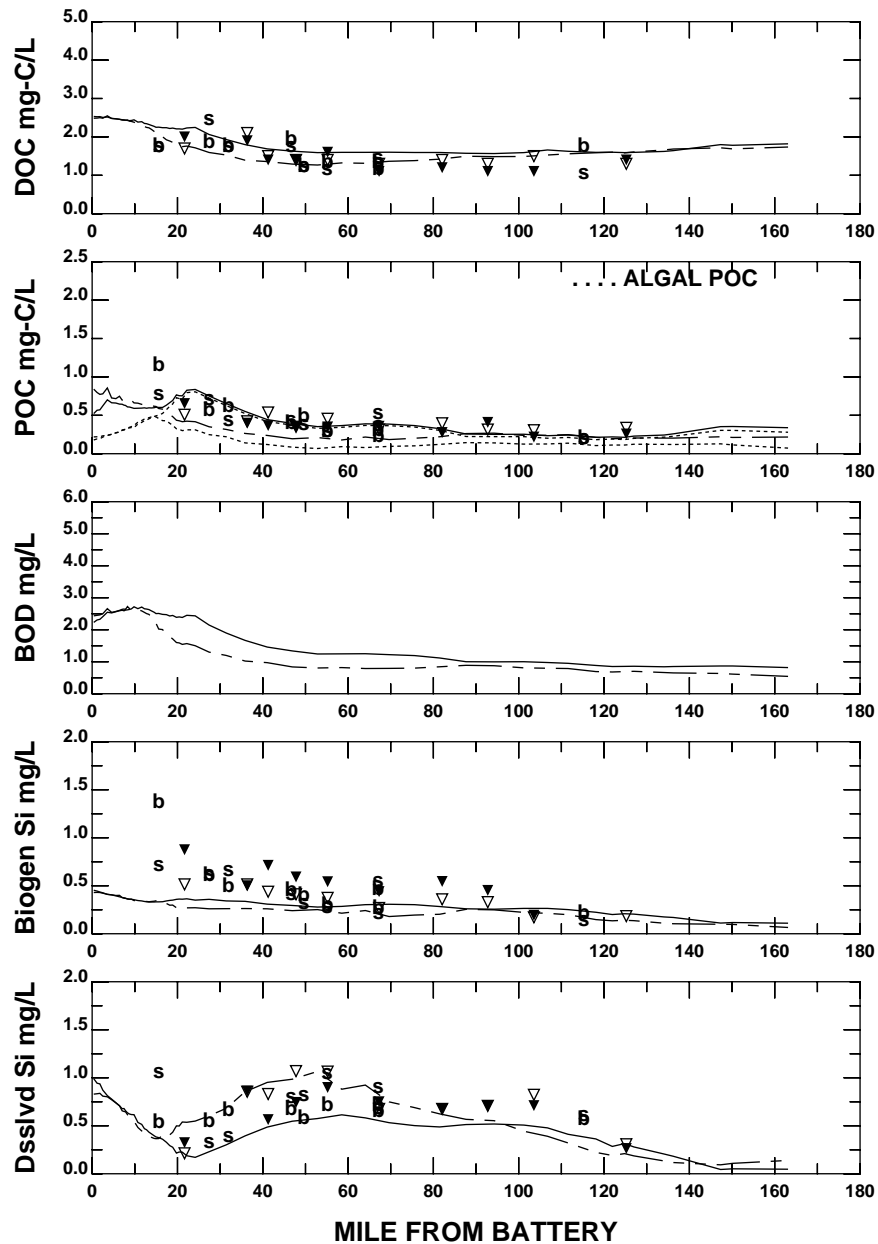
$\nabla$   $\blacktriangledown$  Embayment

— SURFACE 30-DAY MEAN

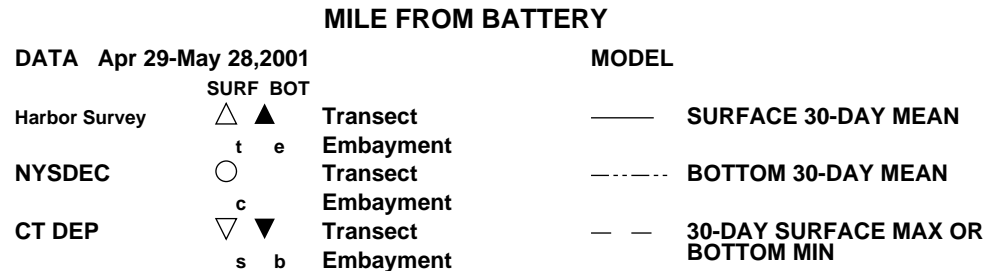
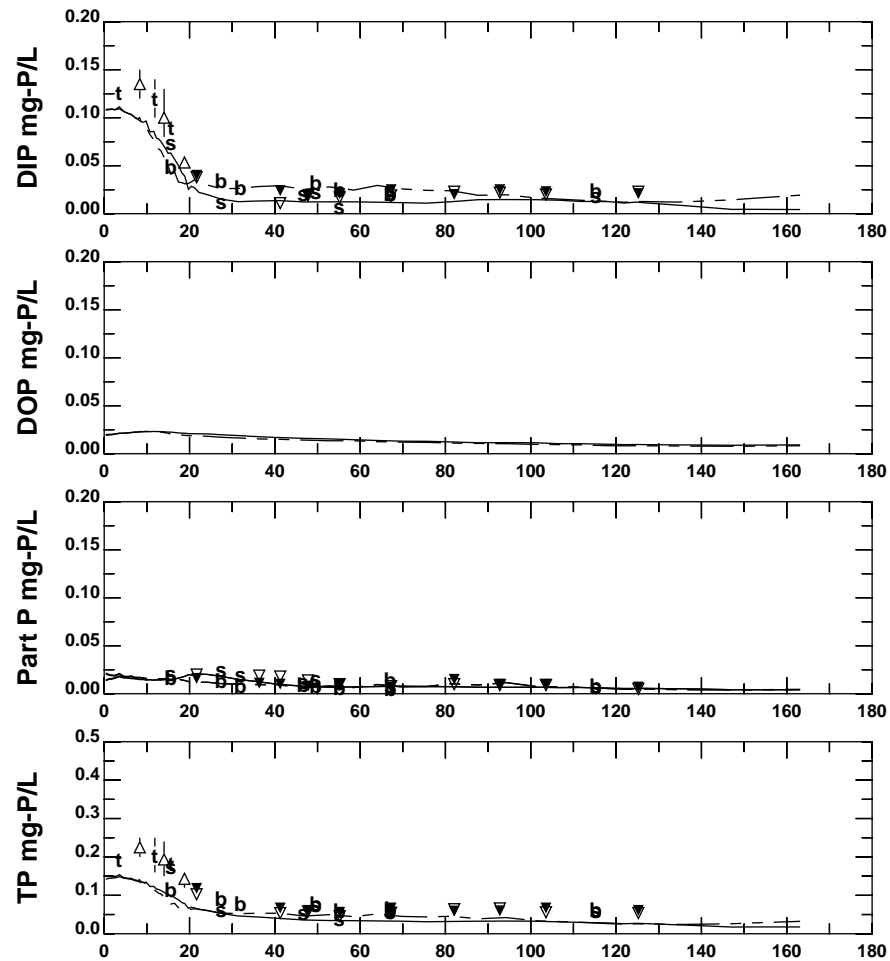
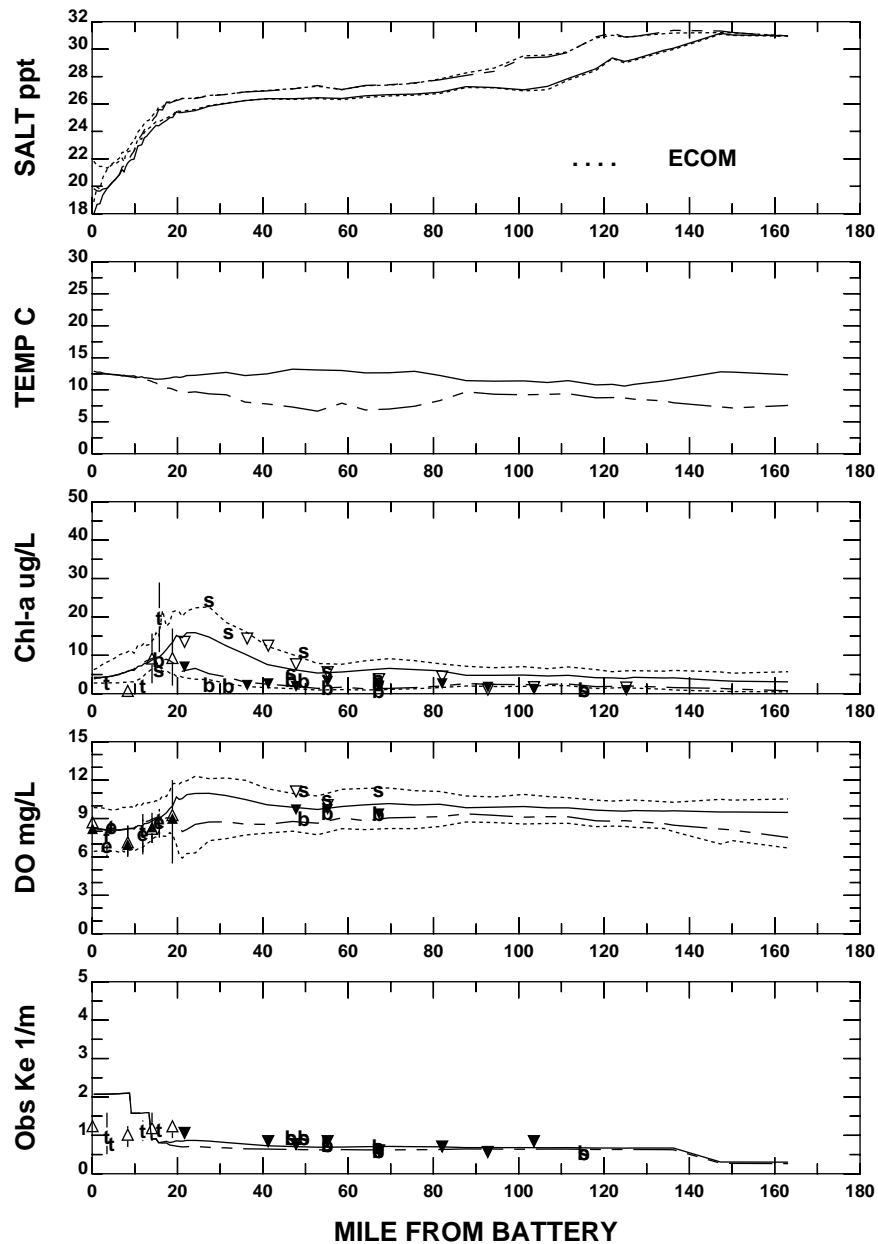
..... BOTTOM 30-DAY MEAN

- - - 30-DAY SURFACE MAX OR BOTTOM MIN

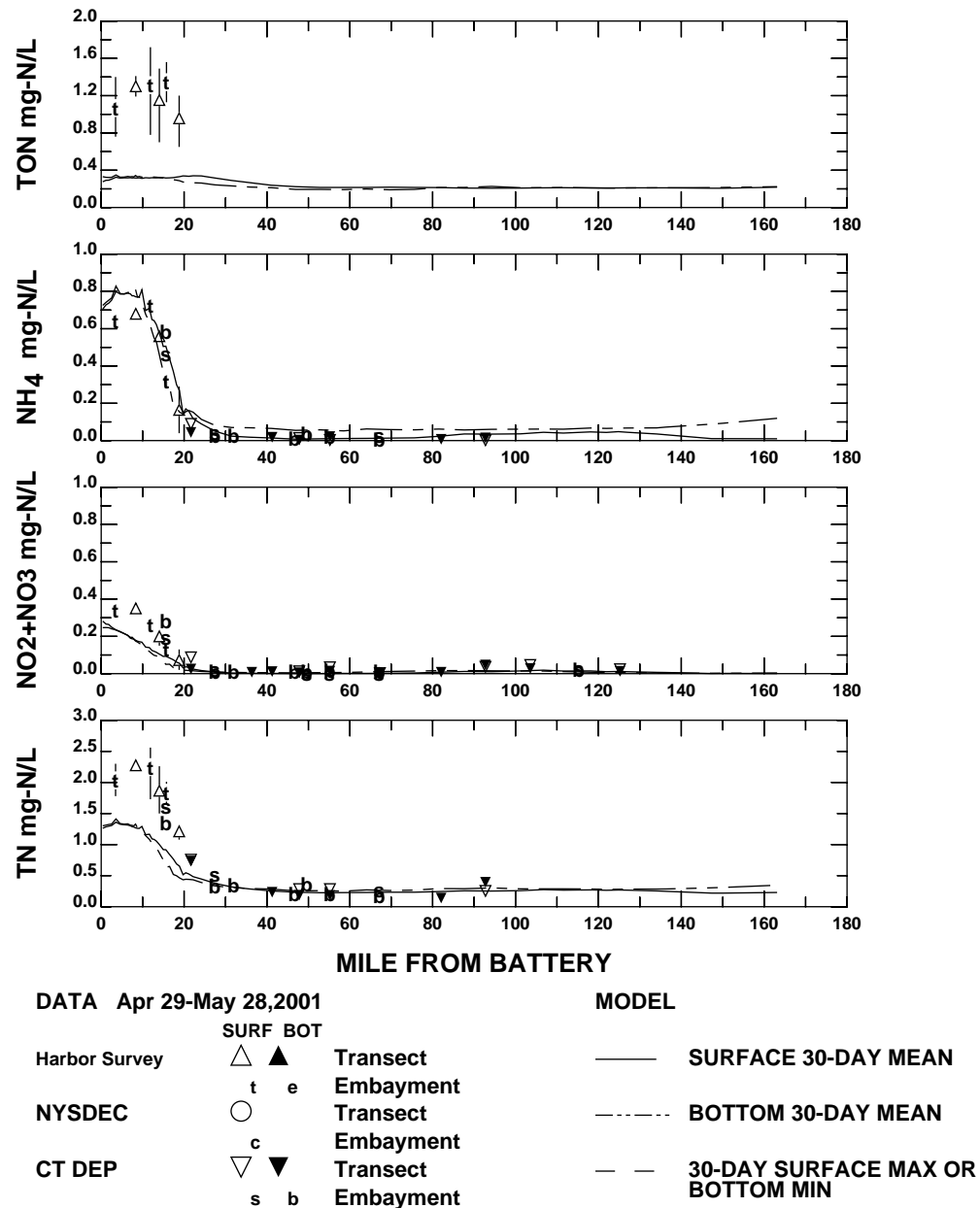
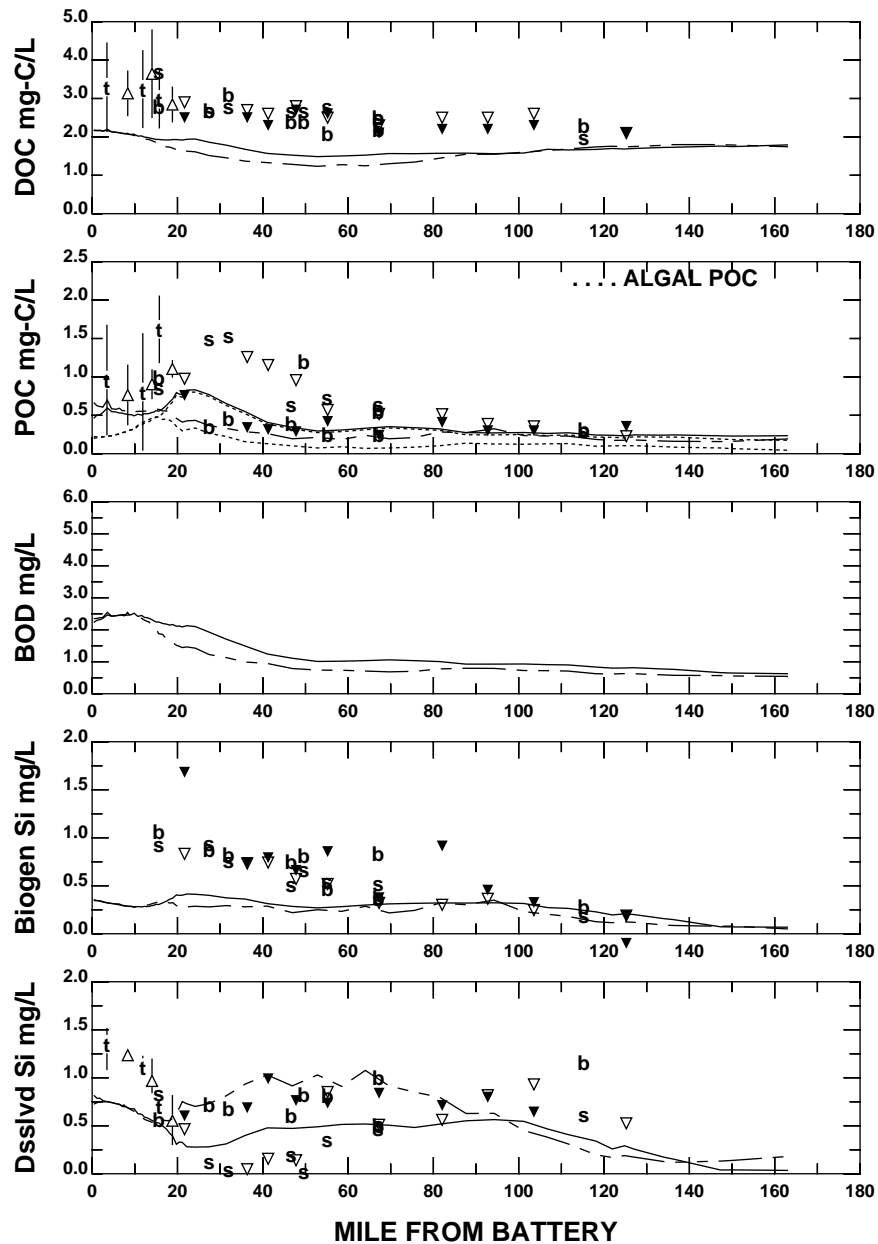
**EAST RIVER AND LONG ISLAND SOUND**



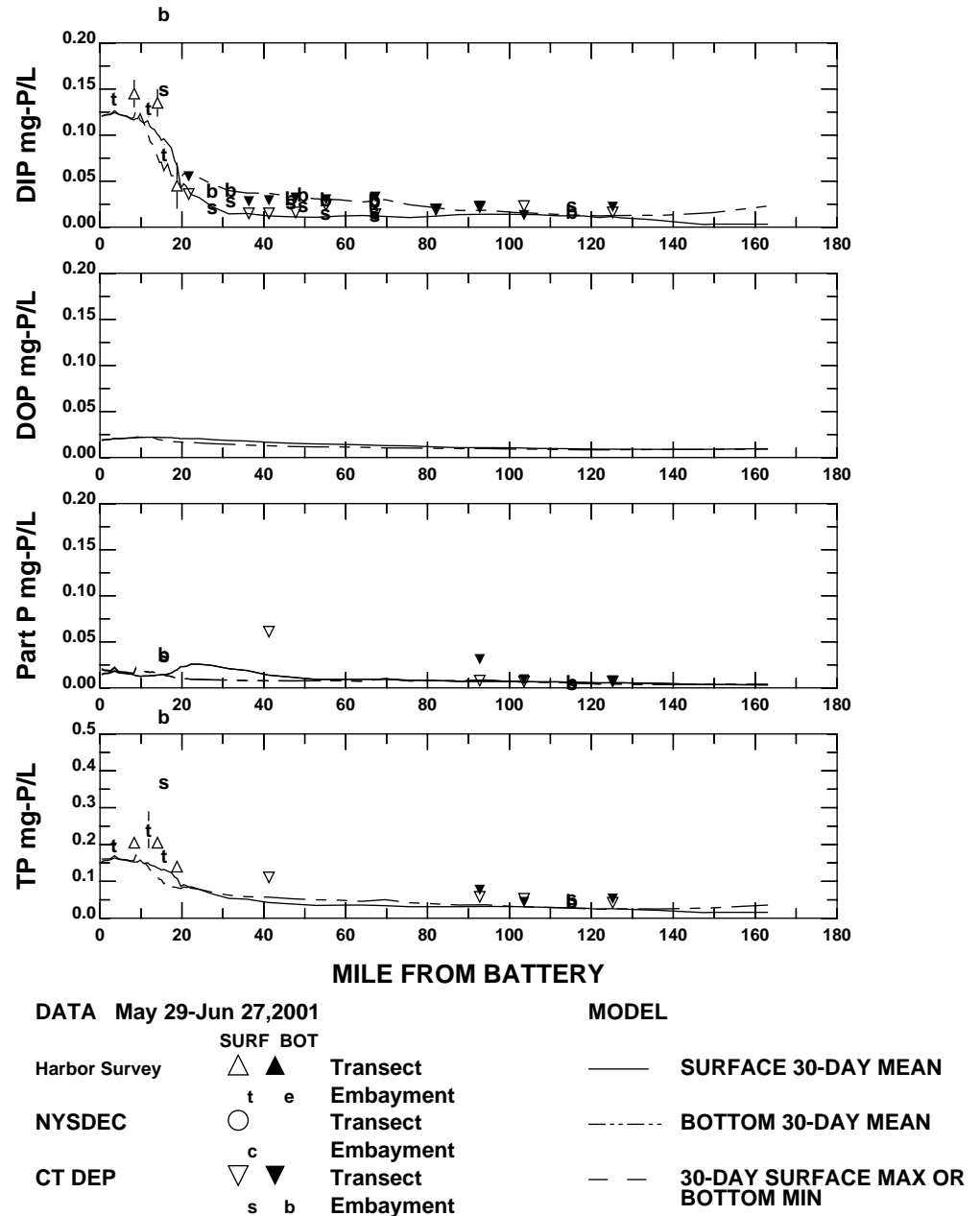
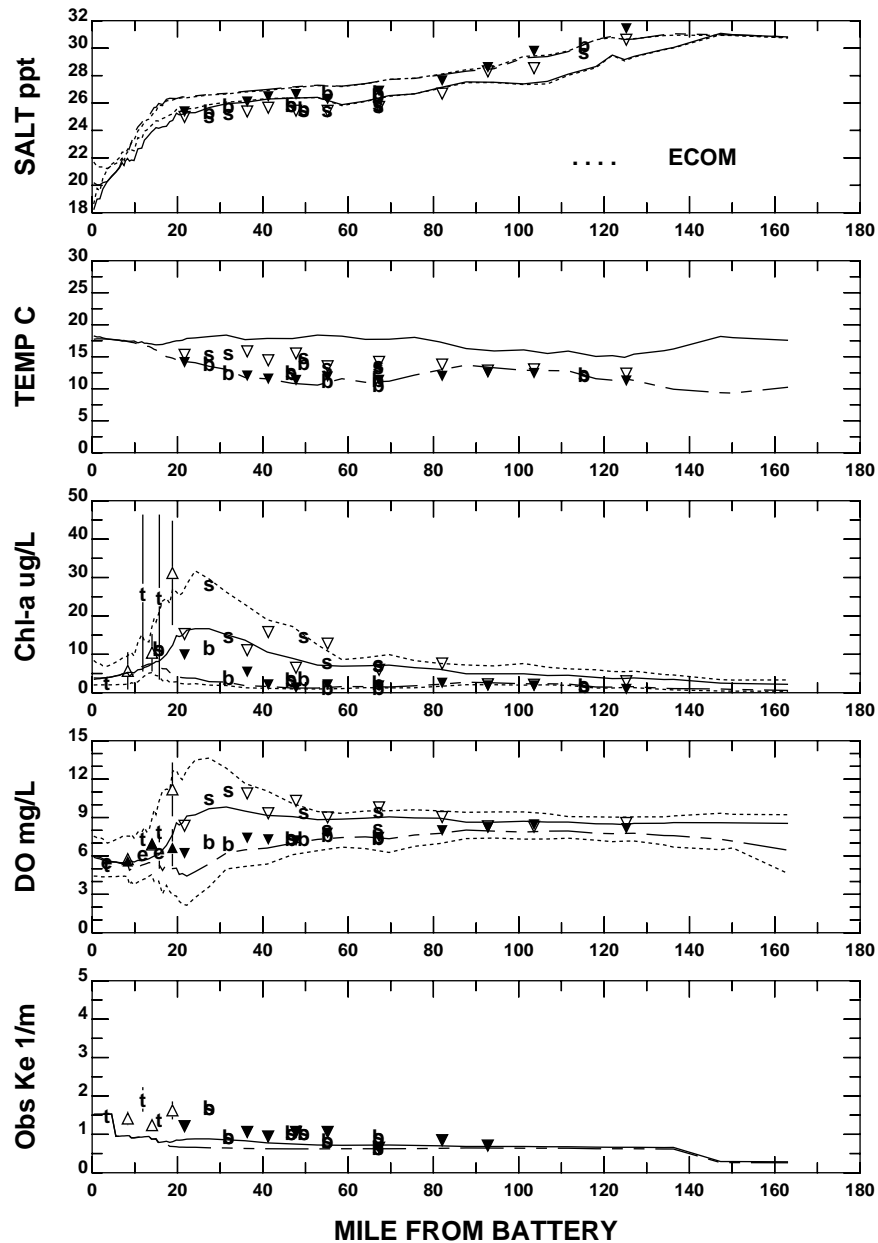
# EAST RIVER AND LONG ISLAND SOUND



## EAST RIVER AND LONG ISLAND SOUND

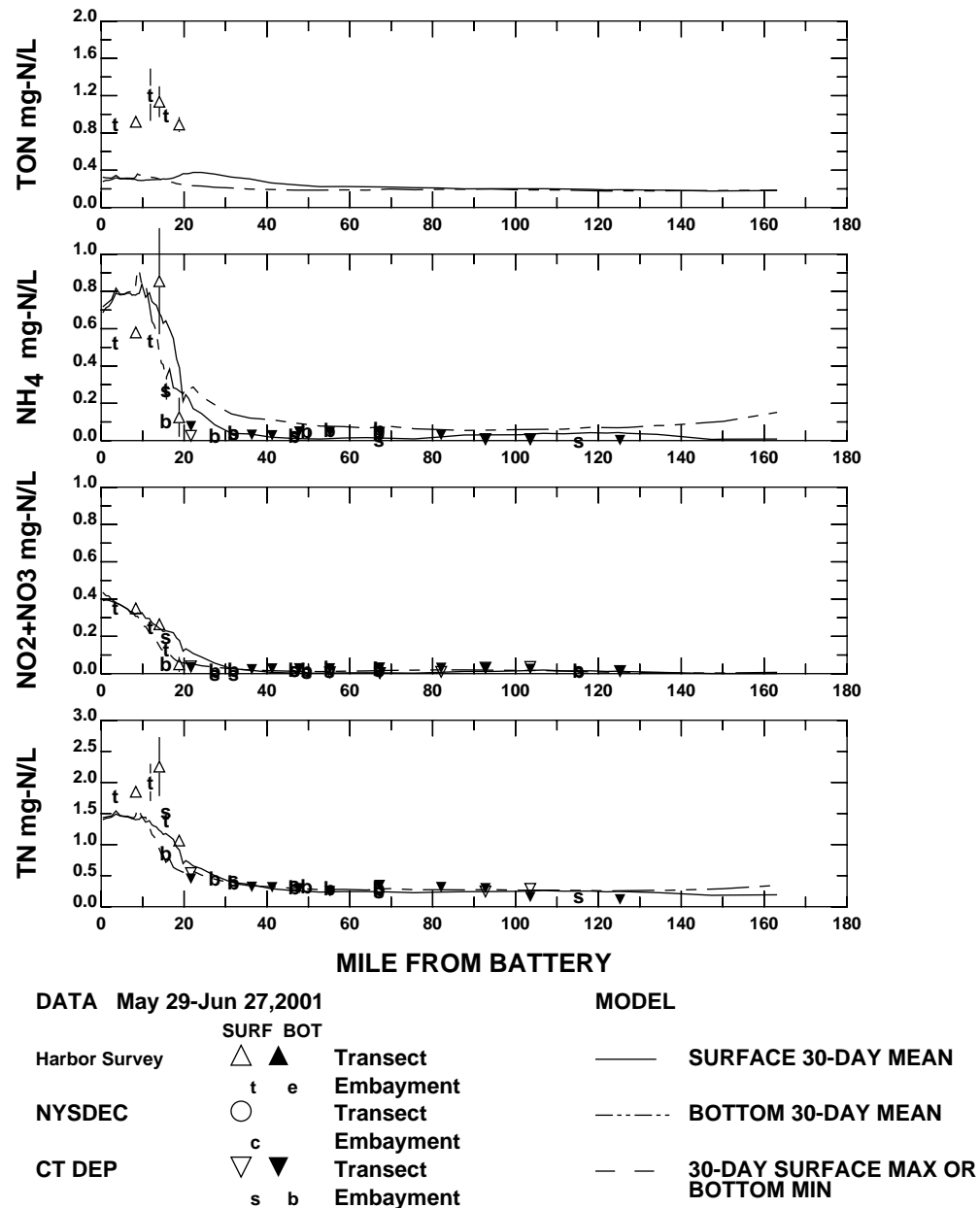
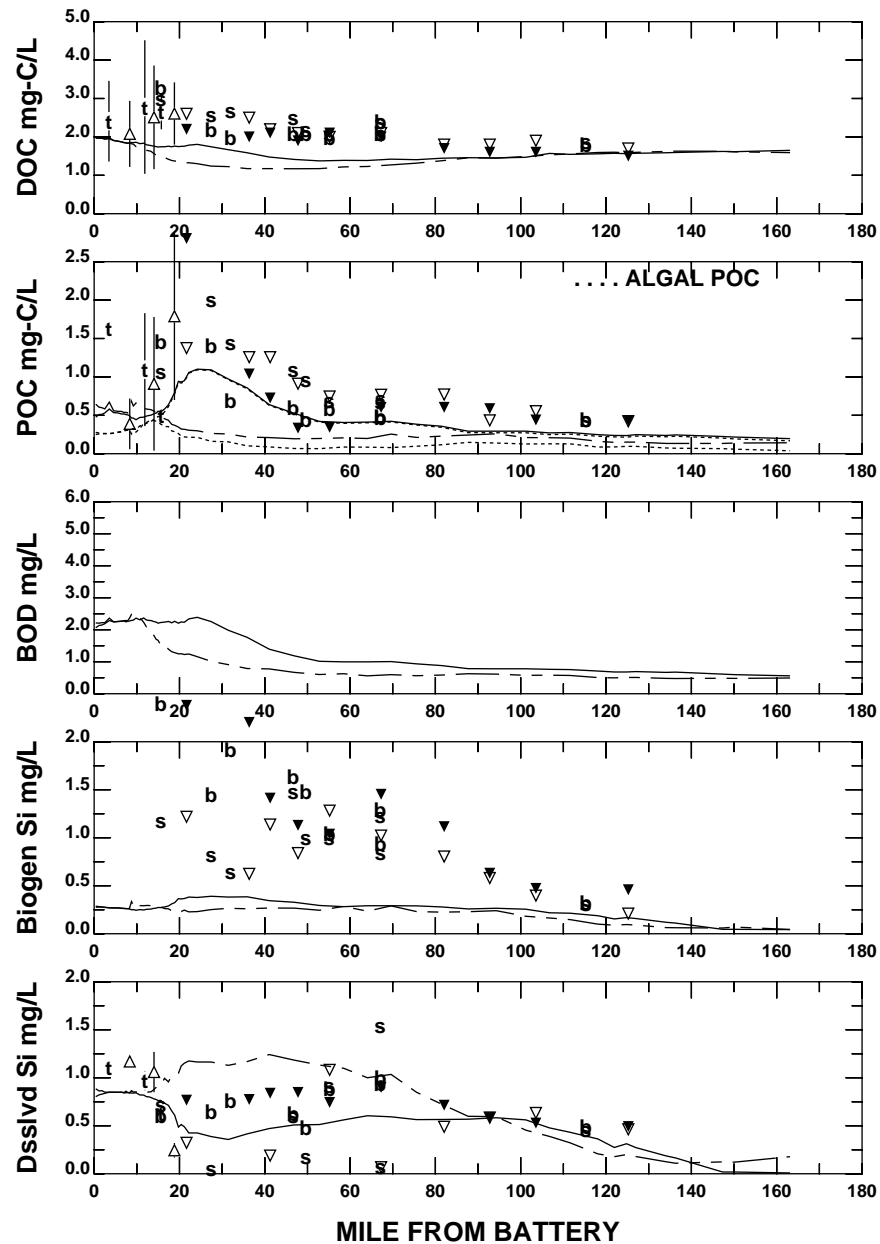


# EAST RIVER AND LONG ISLAND SOUND

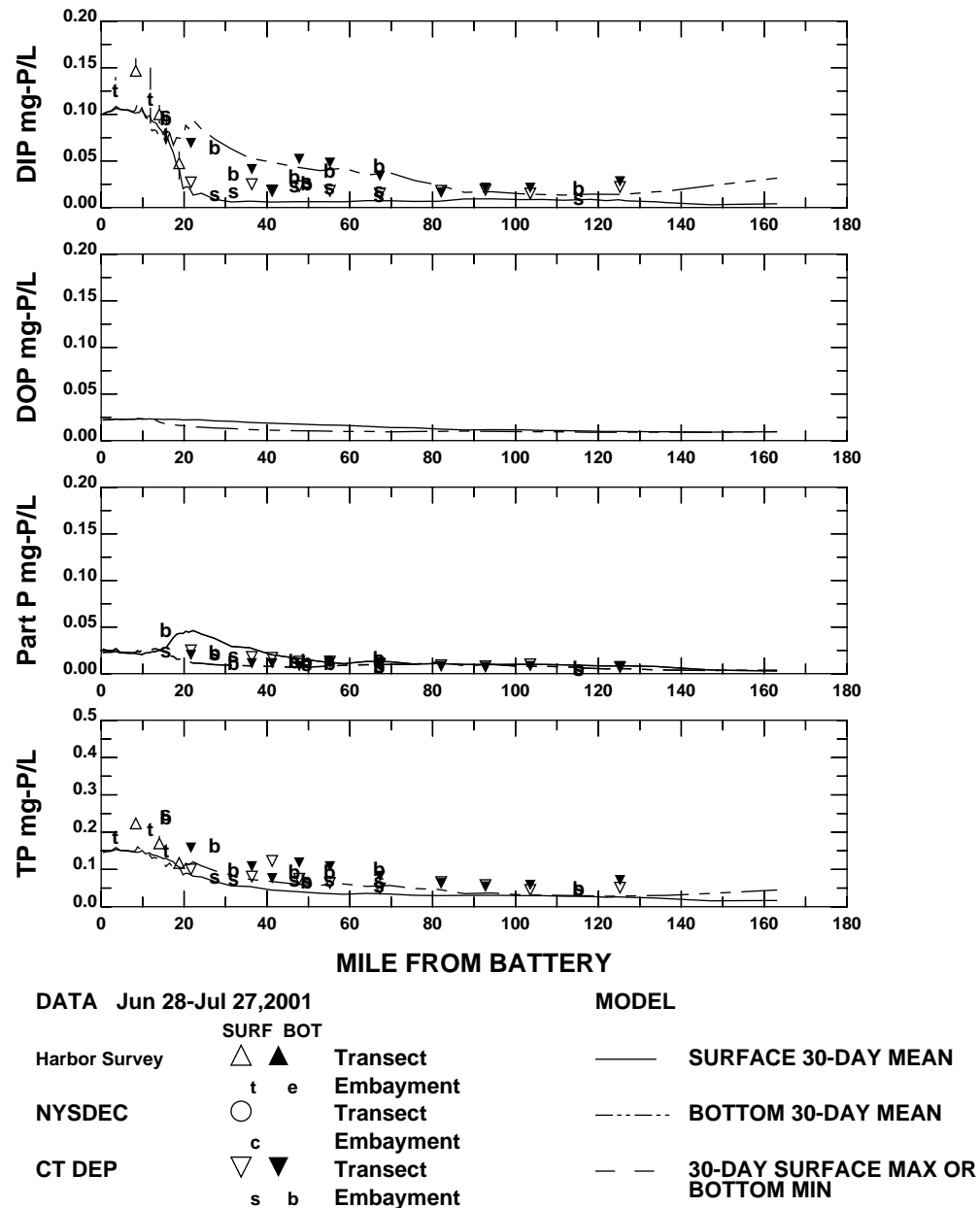
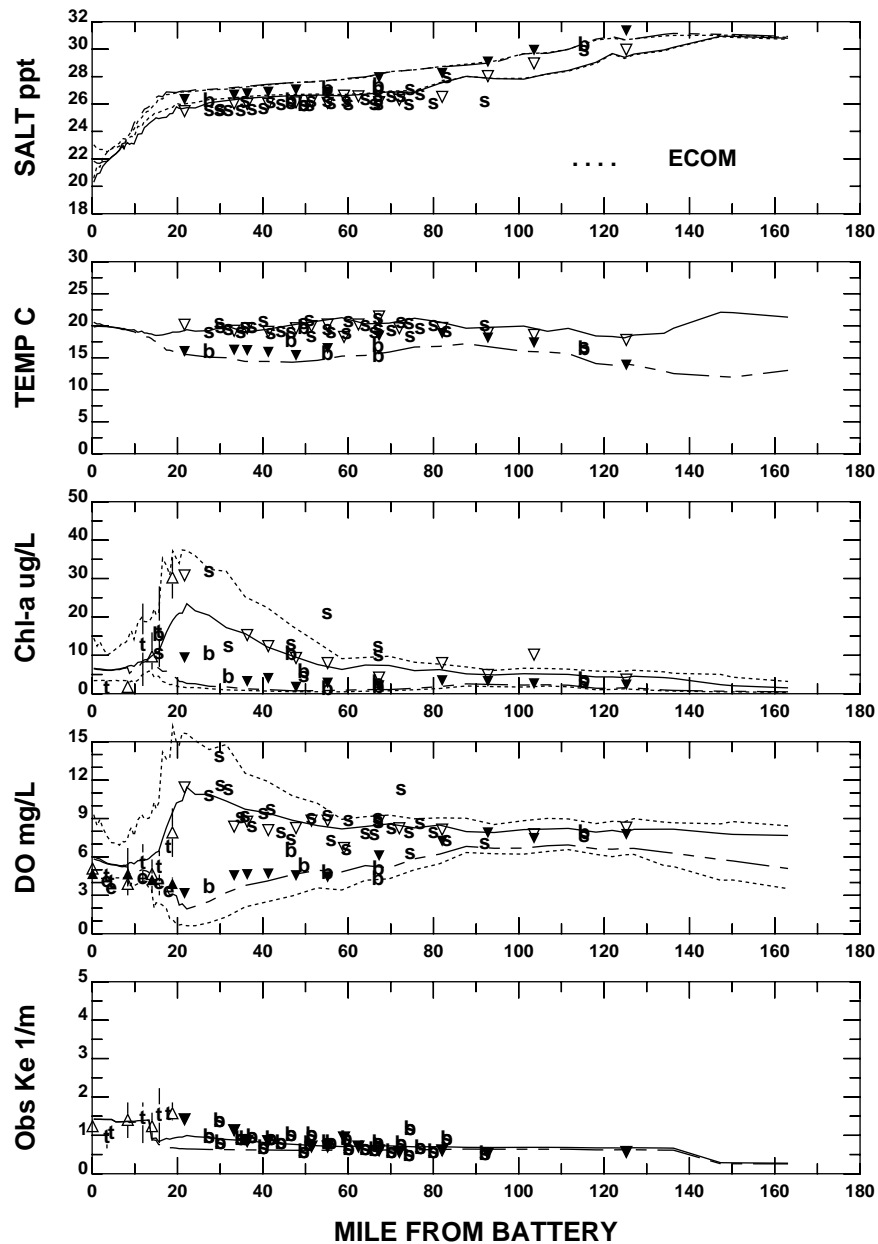


**EAST RIVER AND LONG ISLAND SOUND**

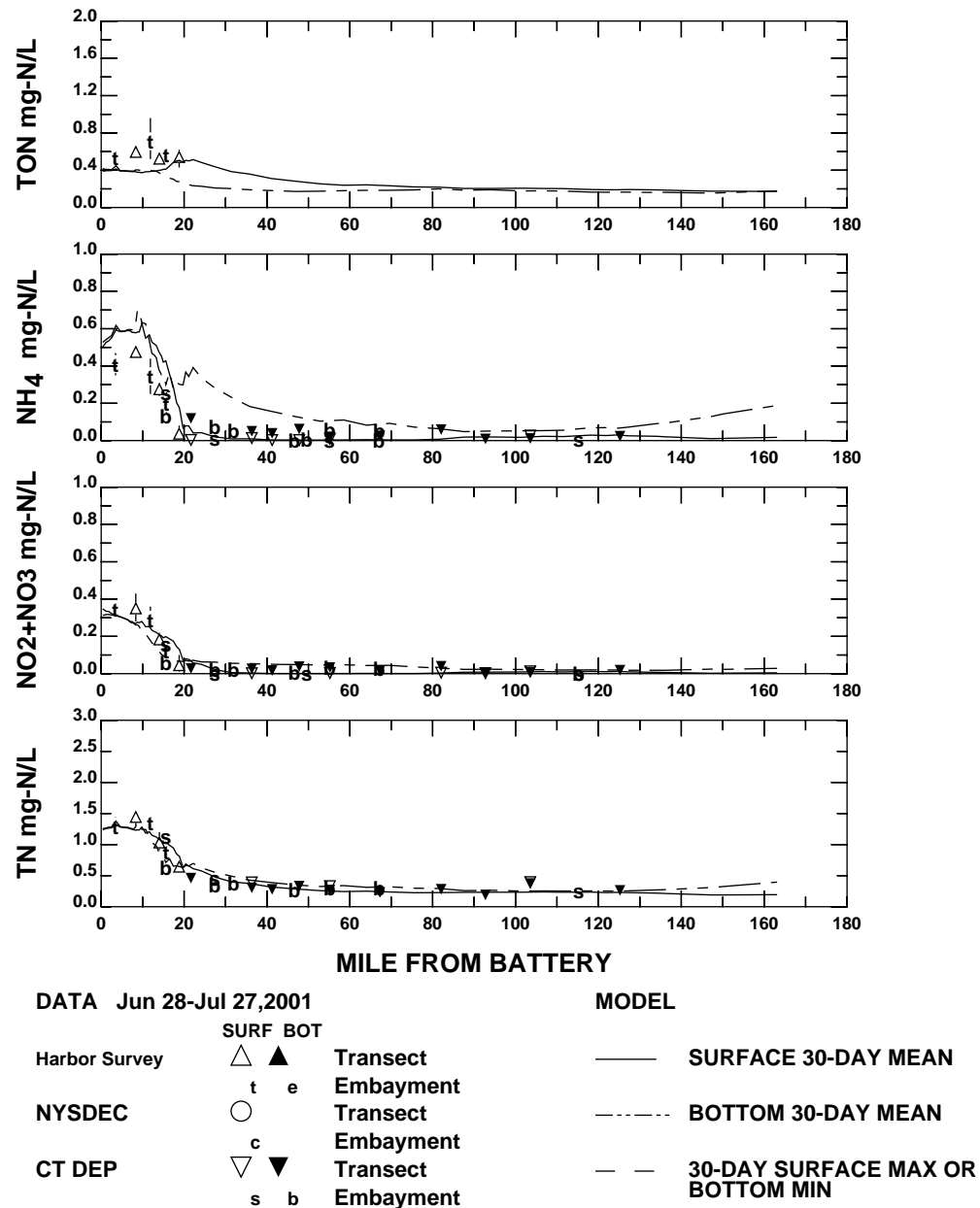
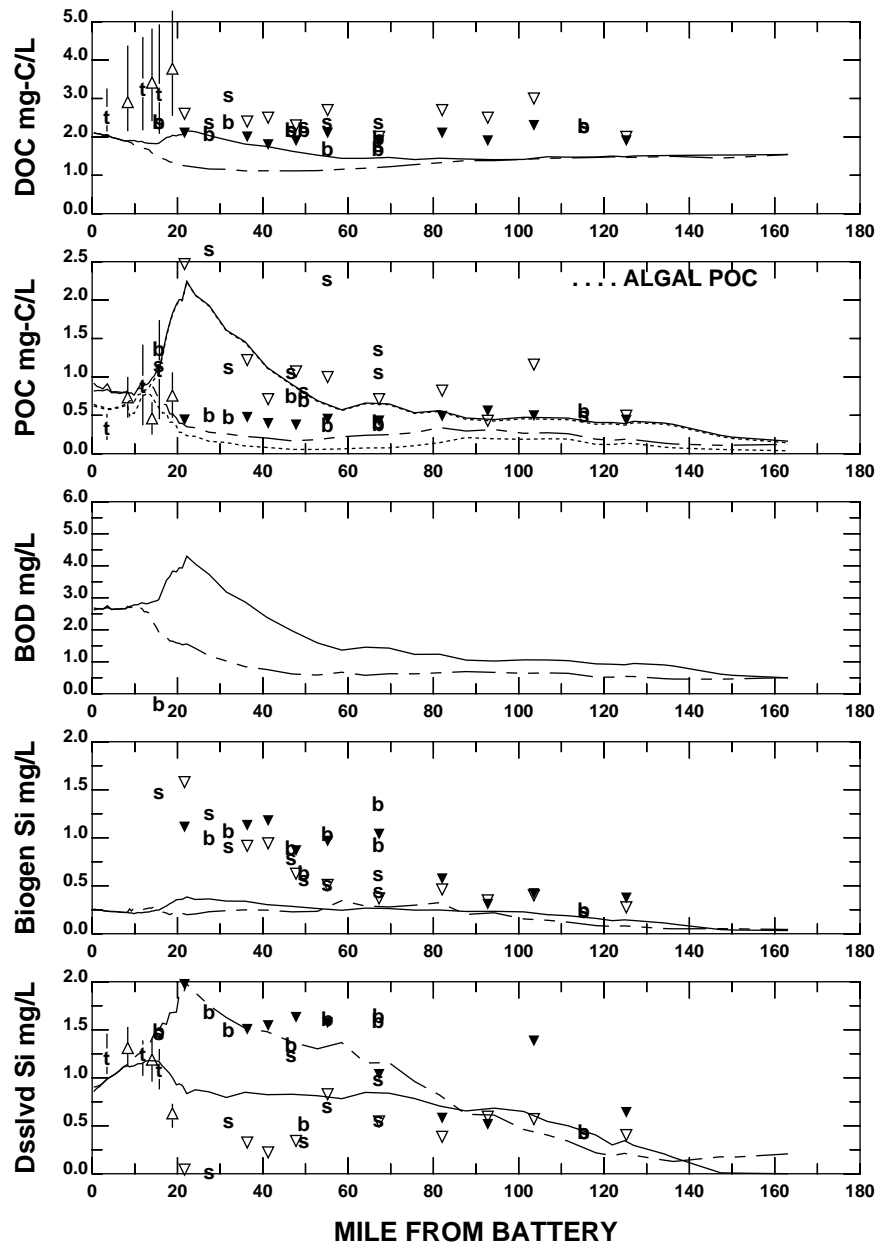




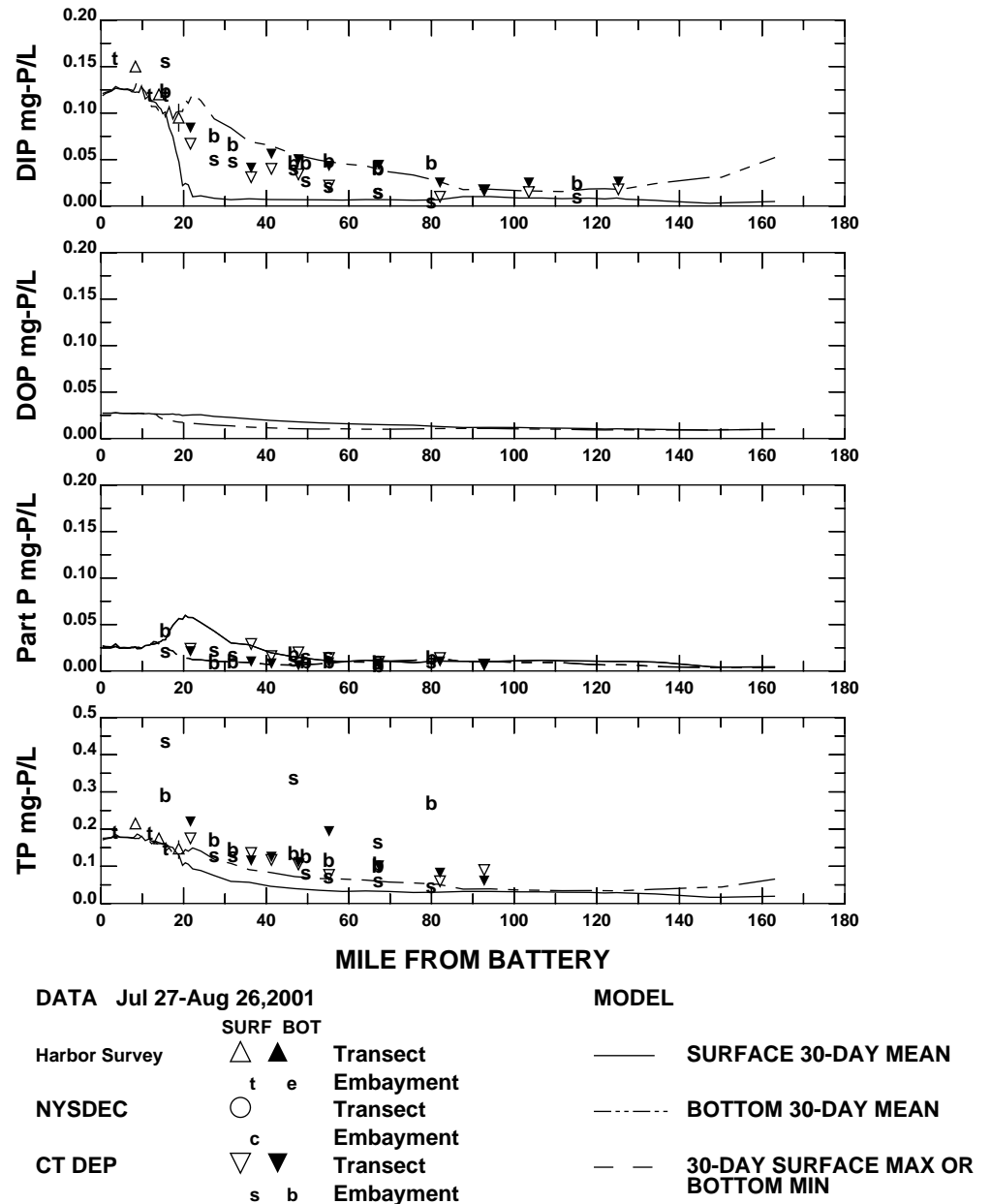
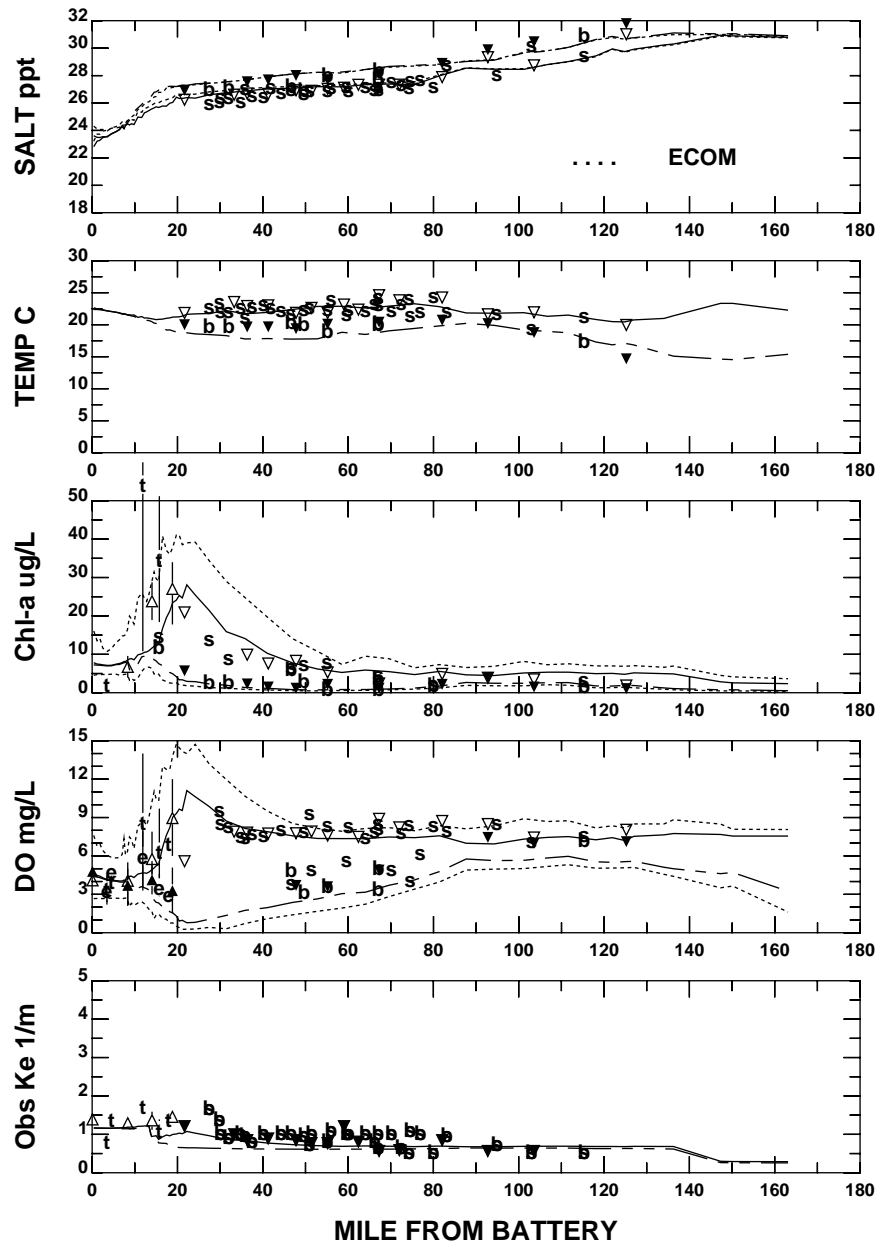
# EAST RIVER AND LONG ISLAND SOUND



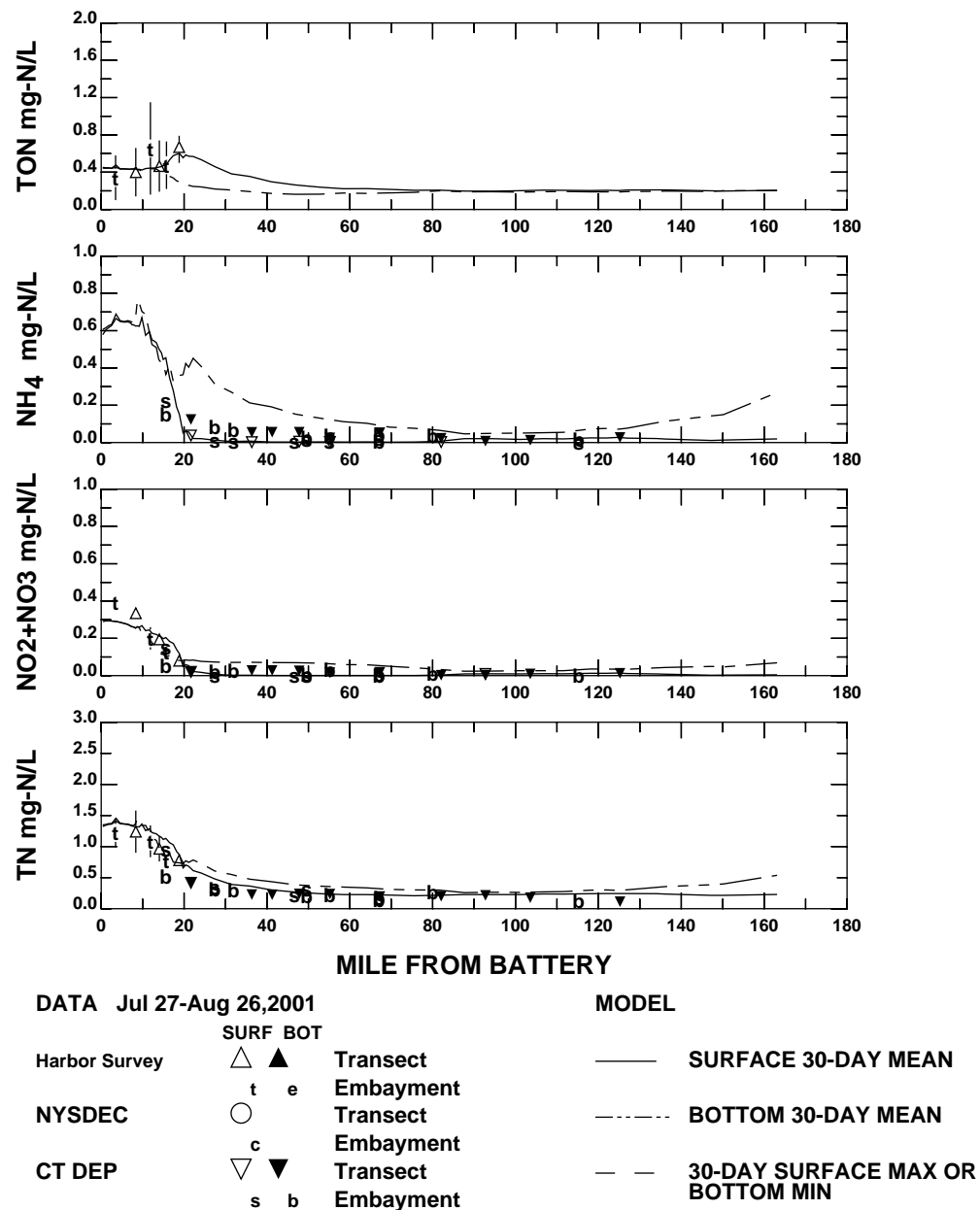
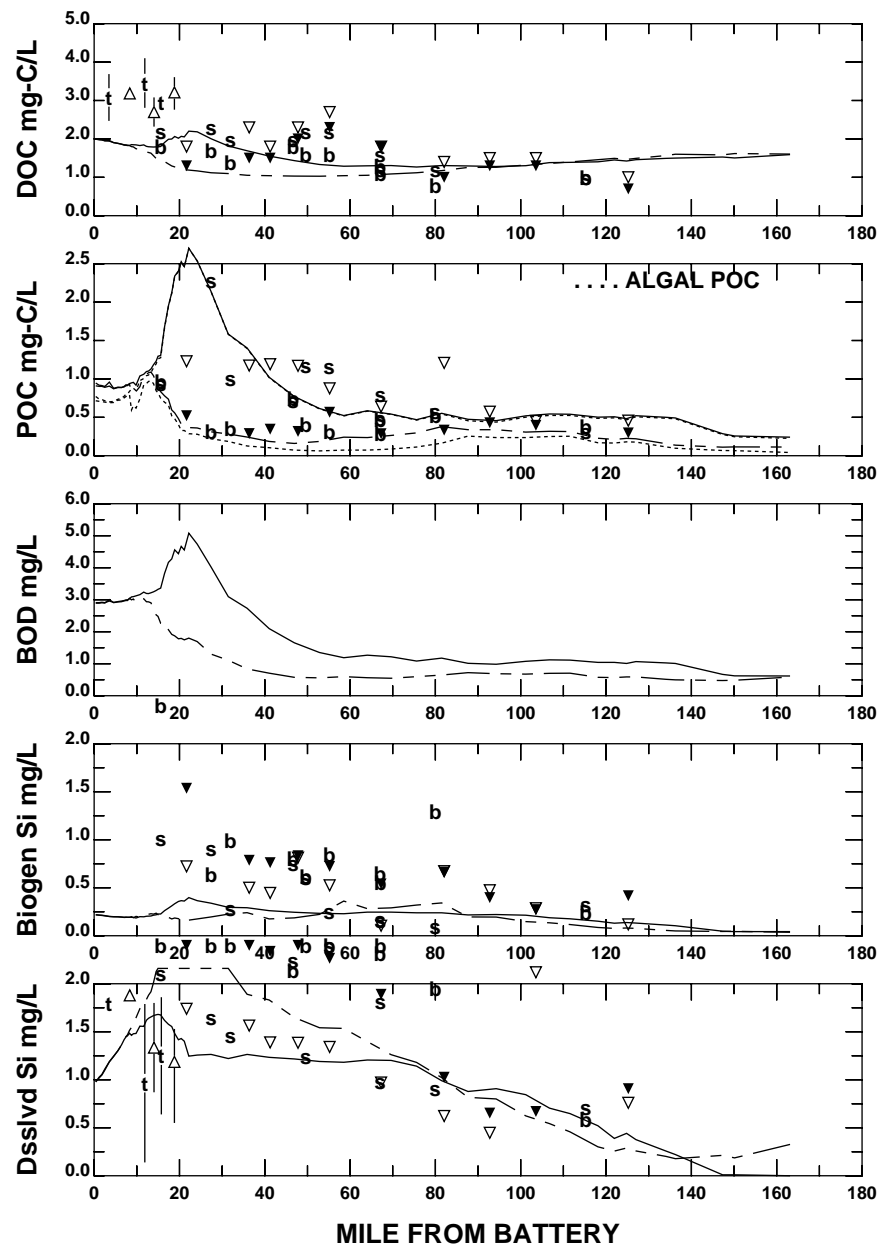
**EAST RIVER AND LONG ISLAND SOUND**



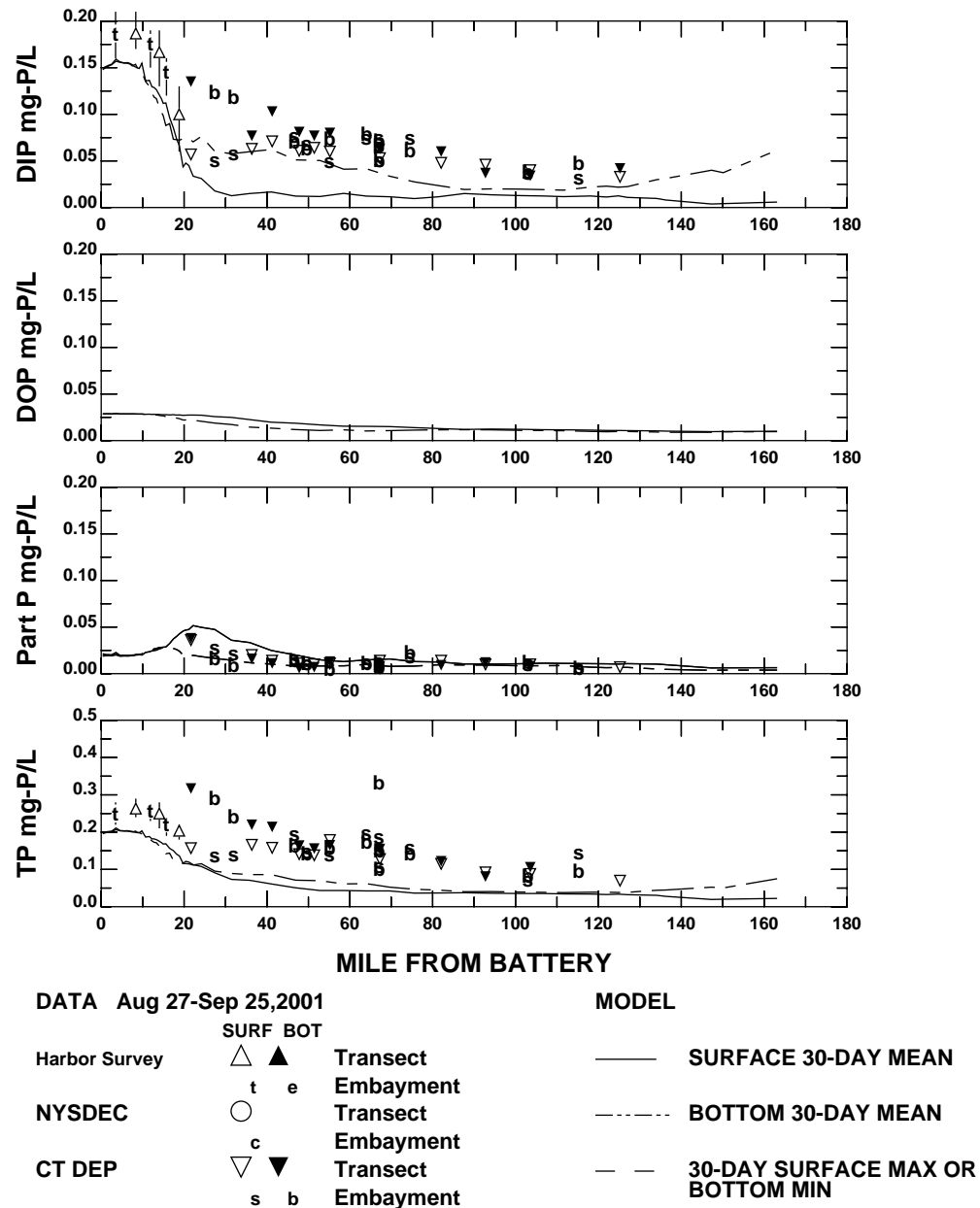
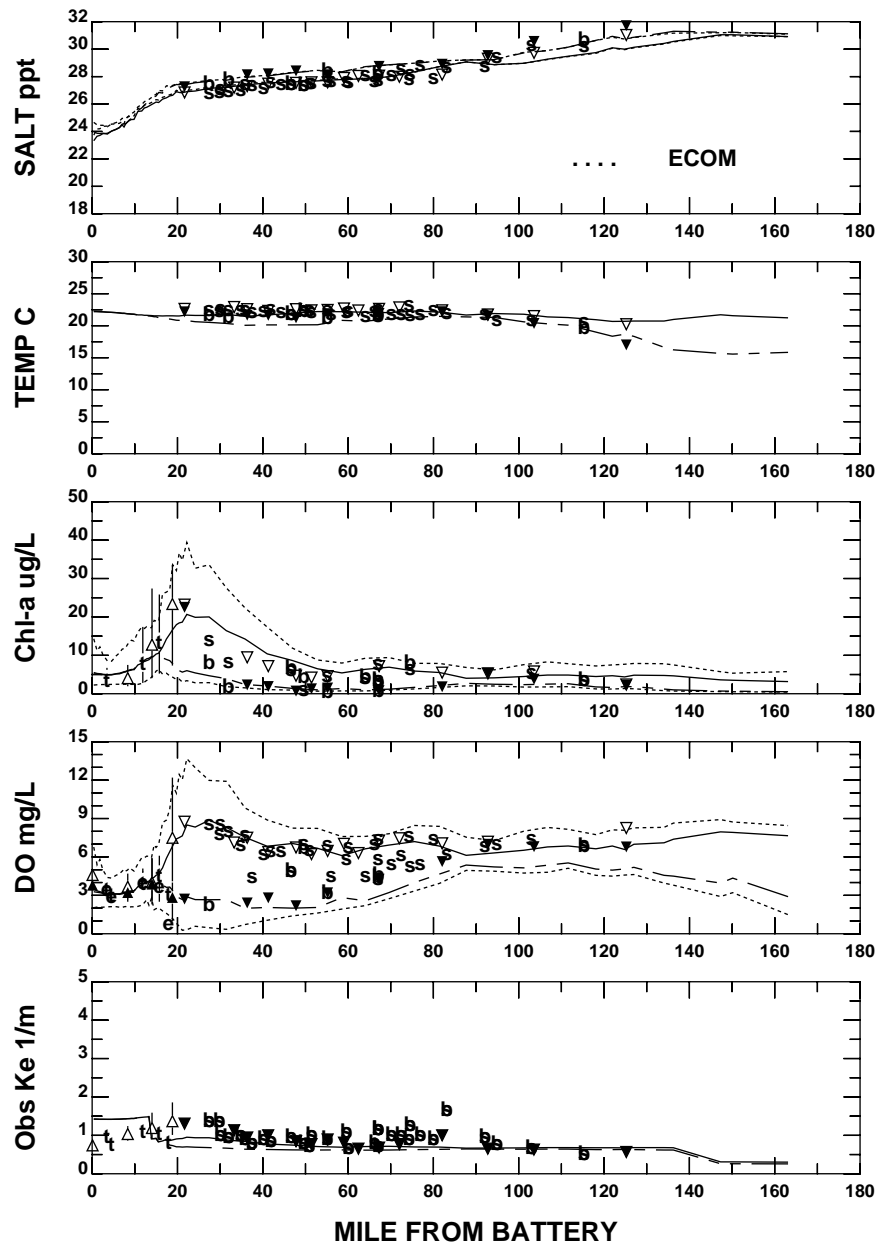
# EAST RIVER AND LONG ISLAND SOUND



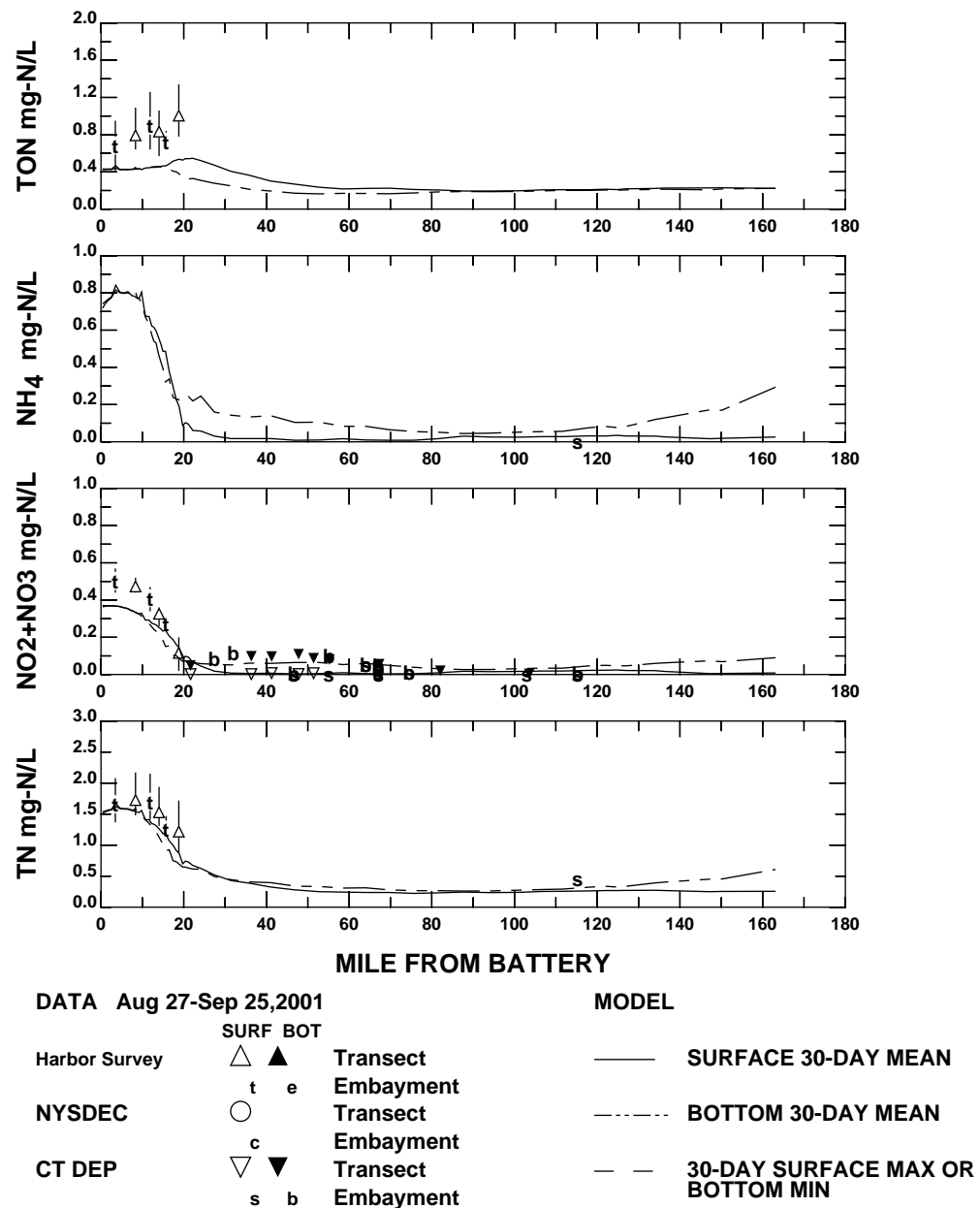
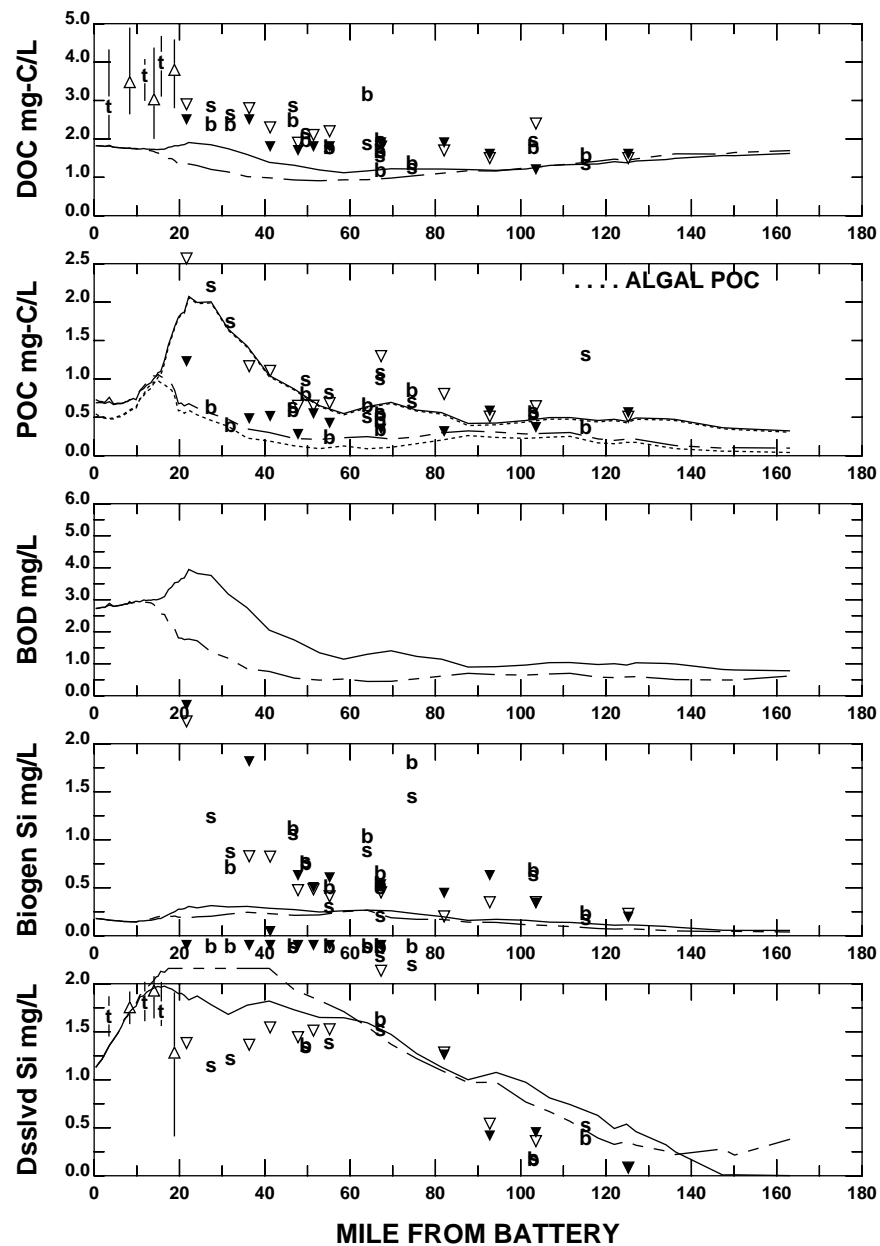
**EAST RIVER AND LONG ISLAND SOUND**



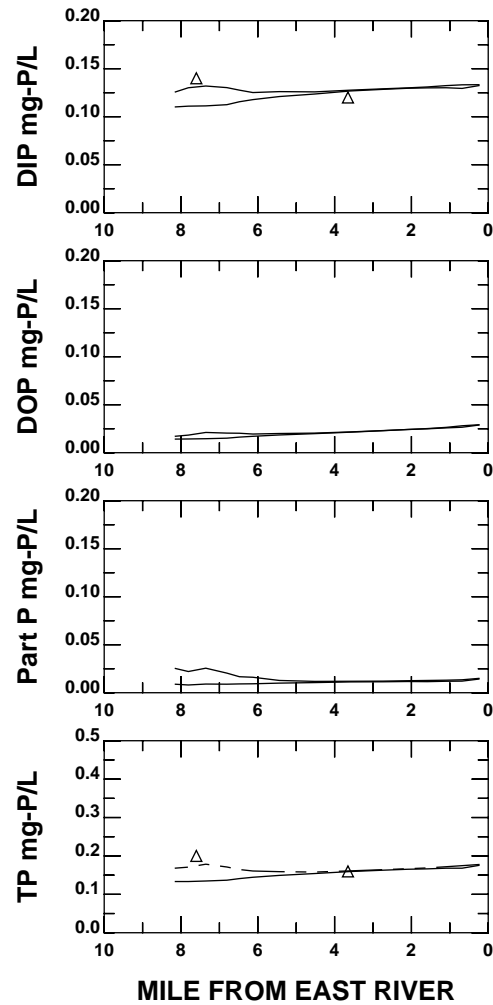
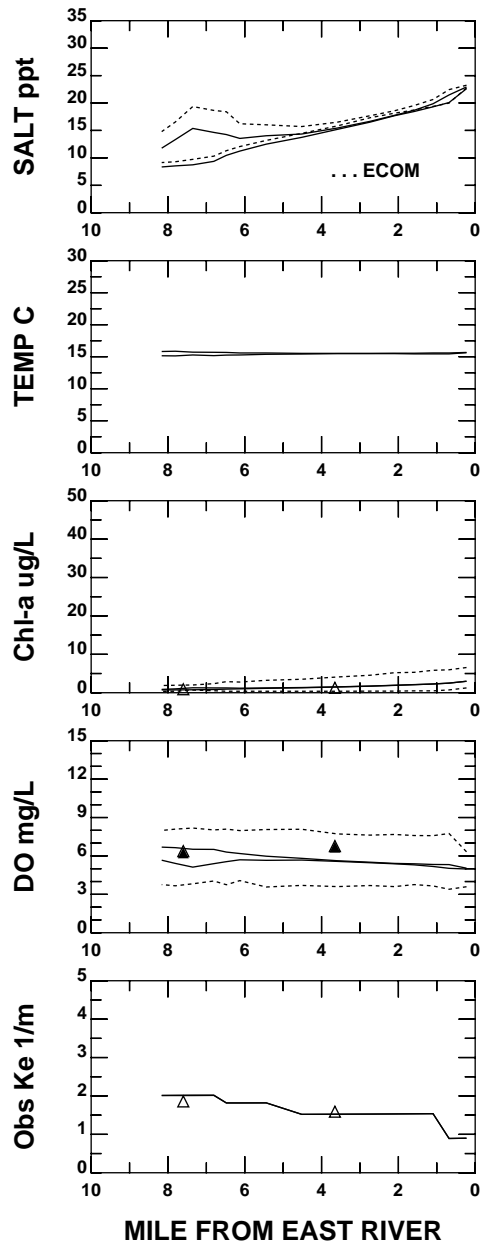
# EAST RIVER AND LONG ISLAND SOUND



# EAST RIVER AND LONG ISLAND SOUND



# EAST RIVER AND LONG ISLAND SOUND



DATA Oct 1-30,2000

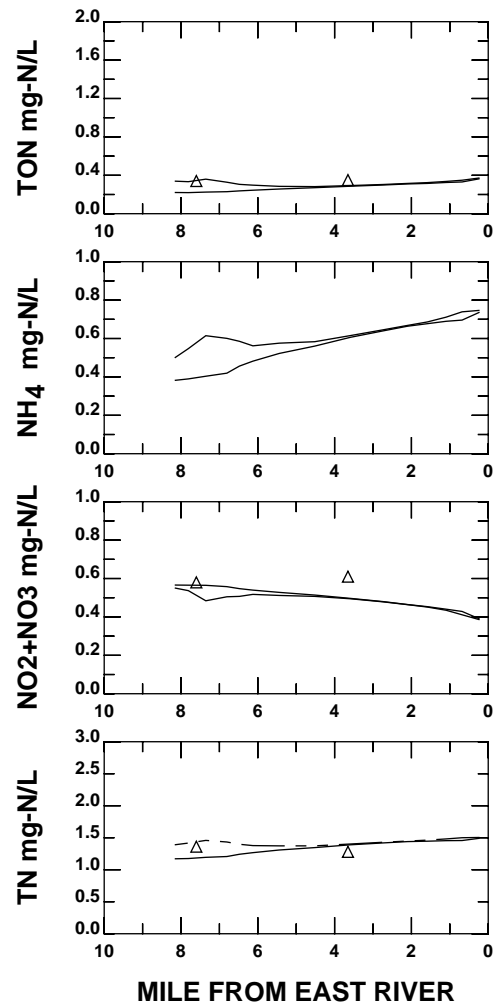
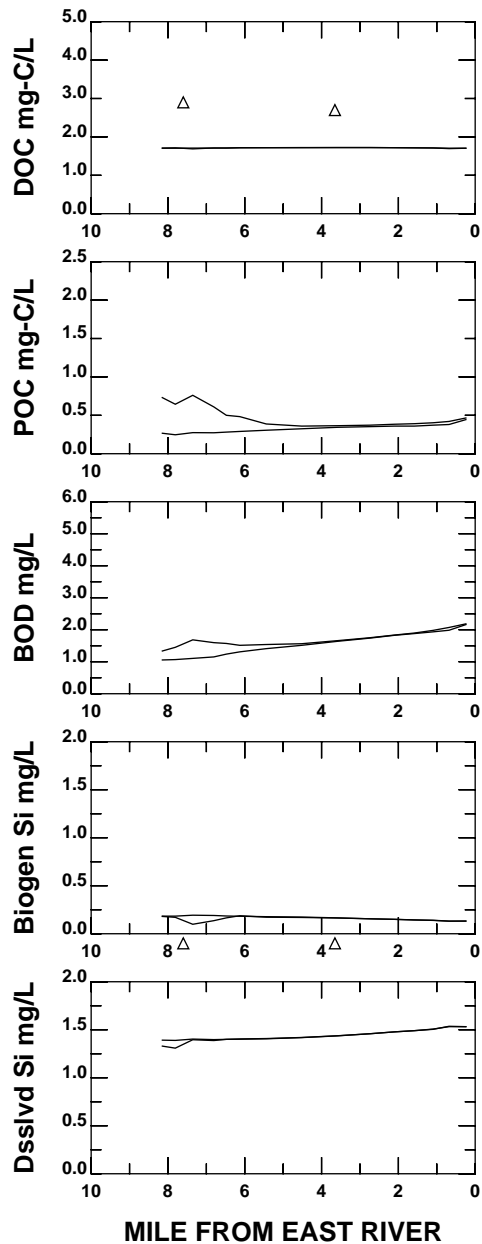
Harbor Survey     $\triangle$   $\blacktriangle$     Transect  
                          t e    Embayment  
 NYSDEC             $\circ$     Transect  
                          c    Embayment

MODEL

— SURFACE 30-DAY MEAN  
 - - - - - BOTTOM 30-DAY MEAN  
 - - - - - 30-DAY SURFACE MAX OR  
 BOTTOM MIN

**HARLEM RIVER**





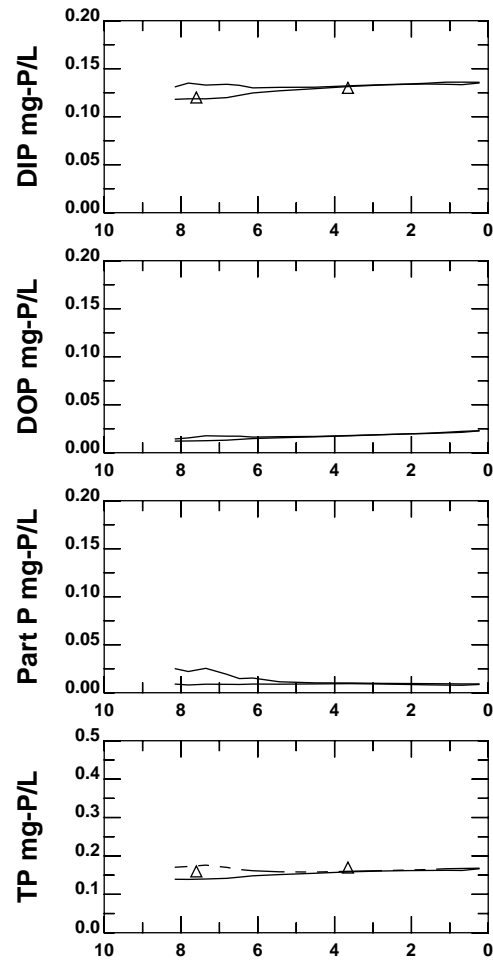
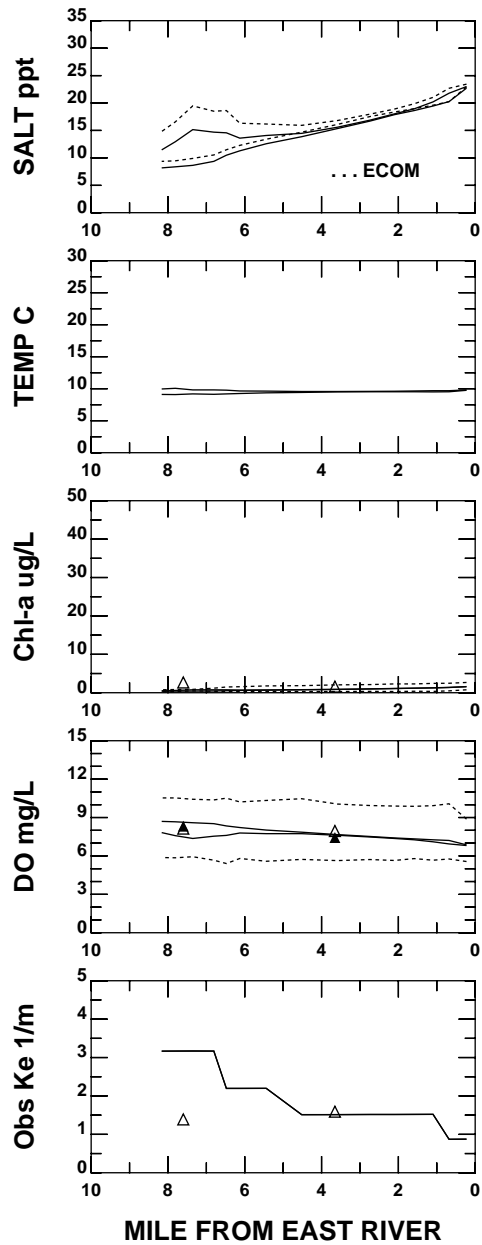
DATA Oct 1-30,2000

	SURF BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment

MODEL

—	SURFACE 30-DAY MEAN
- - - -	BOTTOM 30-DAY MEAN
- - -	30-DAY SURFACE MAX OR BOTTOM MIN

**HARLEM RIVER**



**DATA** Oct 31-Nov 29,2000

**MODEL**

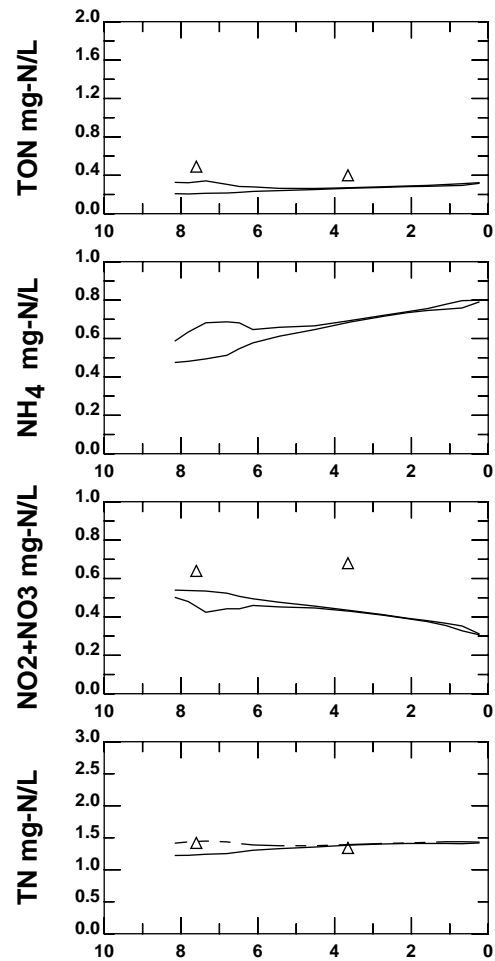
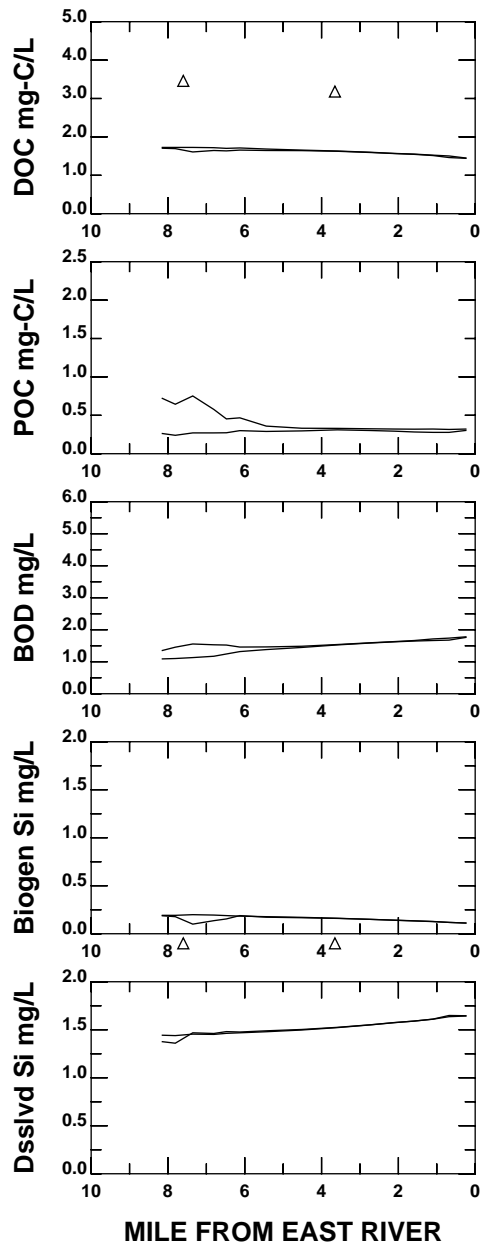
**SURF BOT**

Harbor Survey  $\triangle$   $\blacktriangle$  **Transect**  
 t e **Embayment**

NYSDEC  $\circ$  **Transect**  
 c **Embayment**

— **SURFACE 30-DAY MEAN**  
 - - - **BOTTOM 30-DAY MEAN**  
 - - - **30-DAY SURFACE MAX OR BOTTOM MIN**

**HARLEM RIVER**



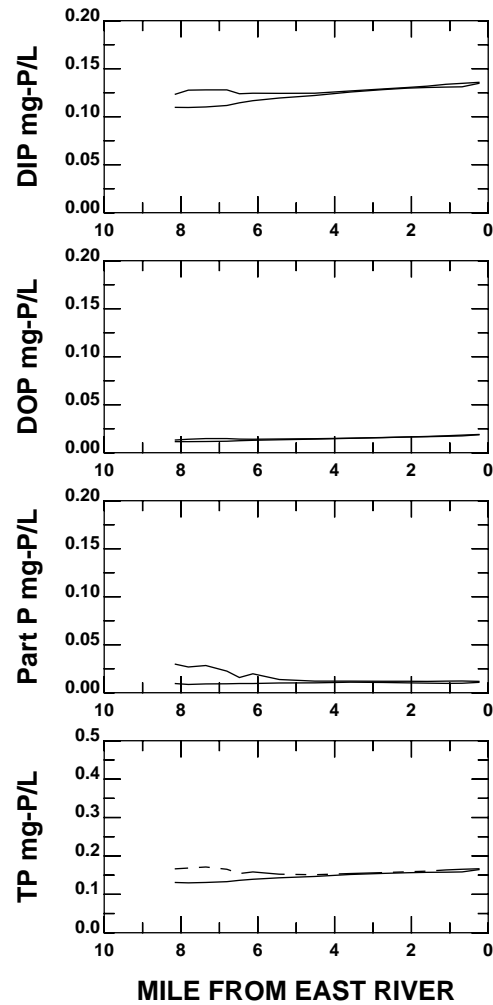
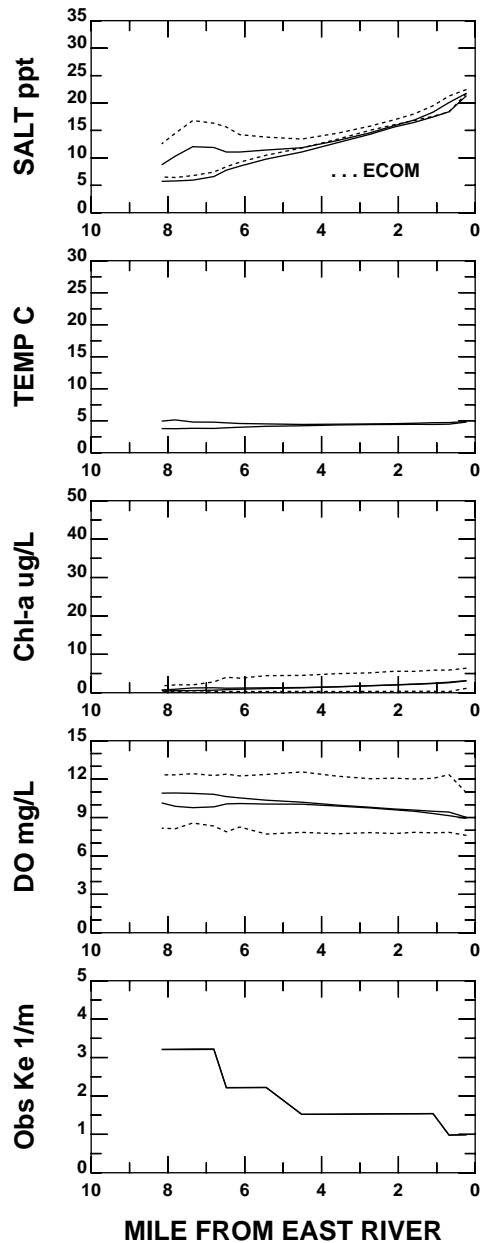
DATA Oct 31-Nov 29,2000

	SURF BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment

MODEL

—	SURFACE 30-DAY MEAN
---	BOTTOM 30-DAY MEAN
- -	30-DAY SURFACE MAX OR BOTTOM MIN

## HARLEM RIVER



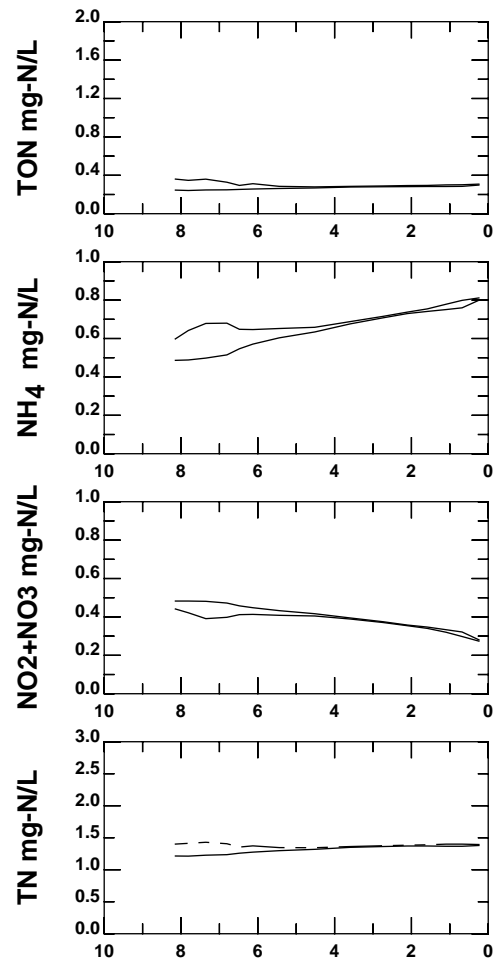
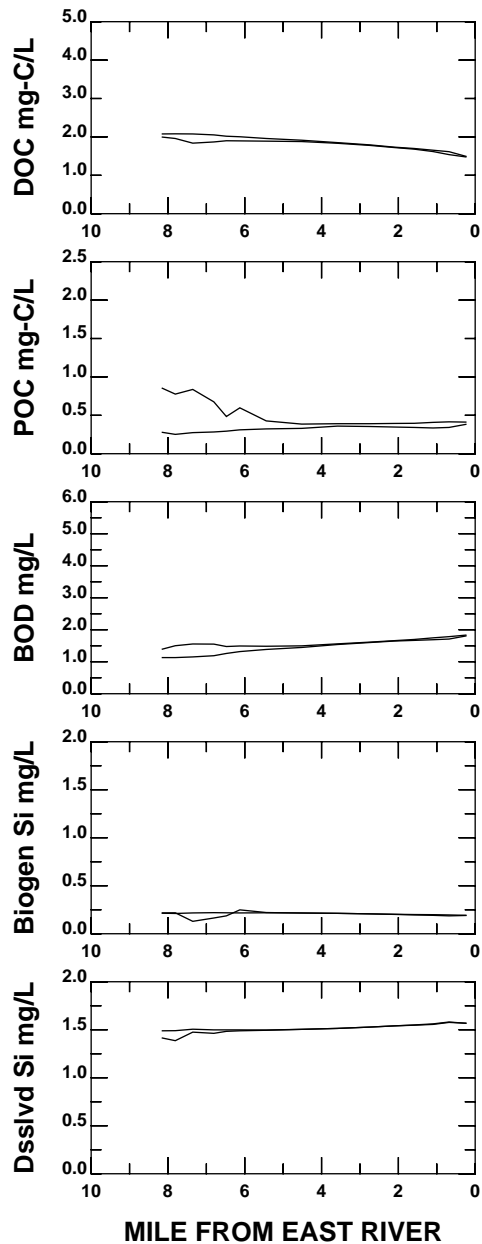
DATA Nov 30-Dec 29,2000

	SURF BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment

MODEL

—	SURFACE 30-DAY MEAN
- - -	BOTTOM 30-DAY MEAN
- - -	30-DAY SURFACE MAX OR BOTTOM MIN

**HARLEM RIVER**



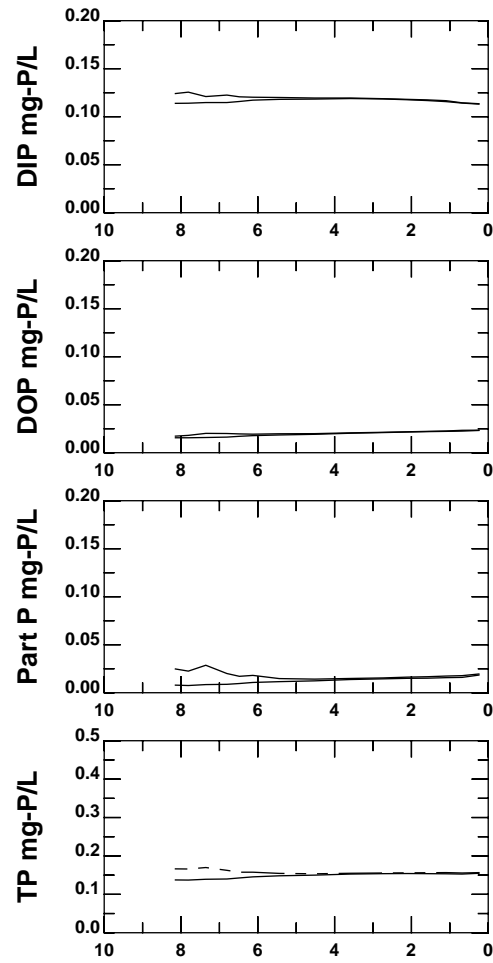
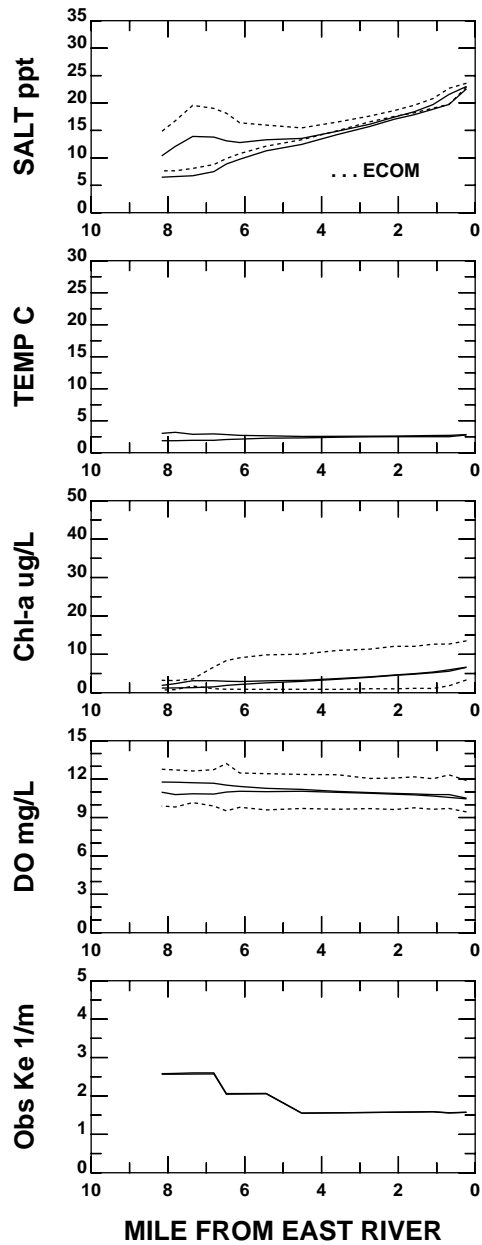
DATA Nov 30-Dec 29,2000

	SURF BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment

MODEL

————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

## HARLEM RIVER



MILE FROM EAST RIVER

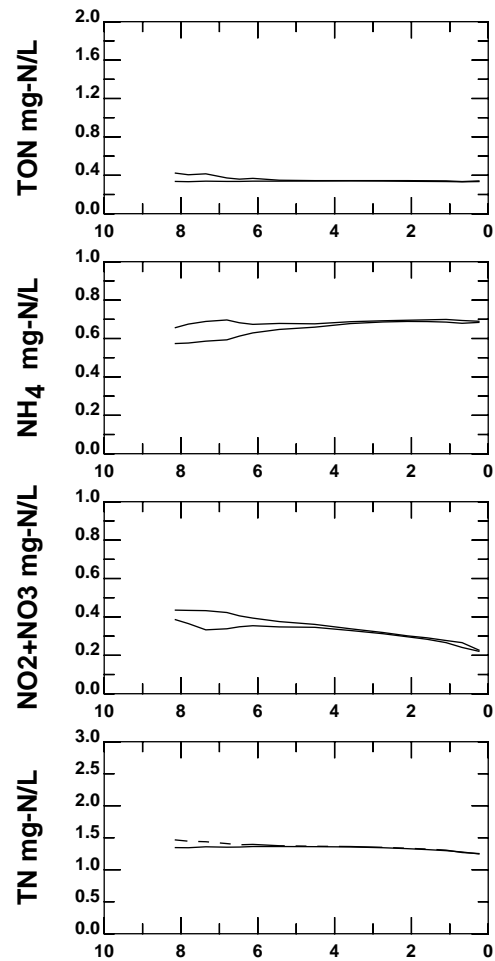
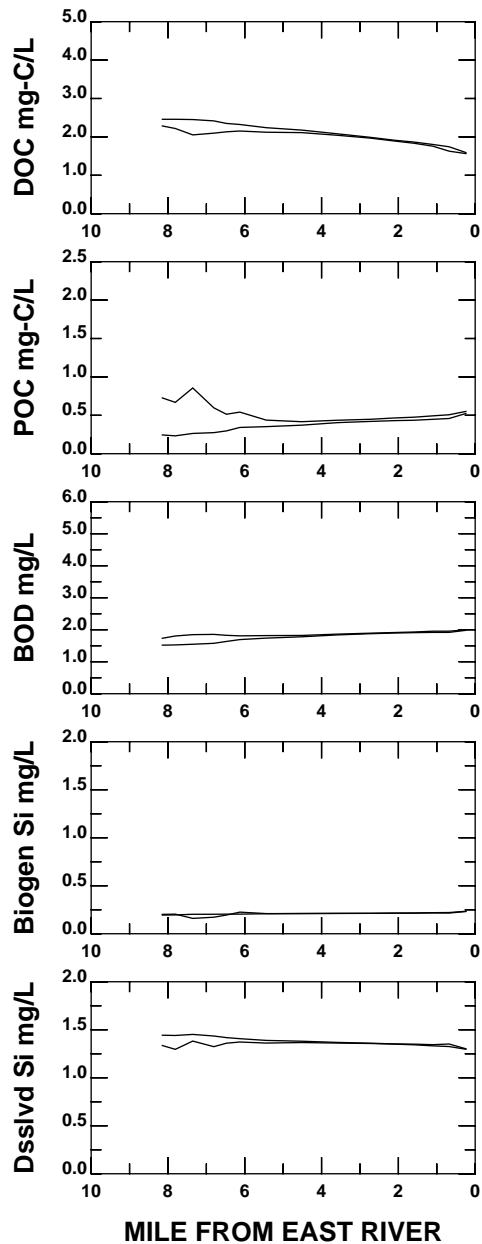
DATA Dec 30 2000 -Jan 28,2001

Harbor Survey SURF BOT  
 △ ▲ Transect  
 t e Embayment  
 NYSDEC ○ ○ Transect  
 c c Embayment

MODEL

— SURFACE 30-DAY MEAN  
 - - - - - BOTTOM 30-DAY MEAN  
 - - 30-DAY SURFACE MAX OR  
 BOTTOM MIN

**HARLEM RIVER**



**MILE FROM EAST RIVER**

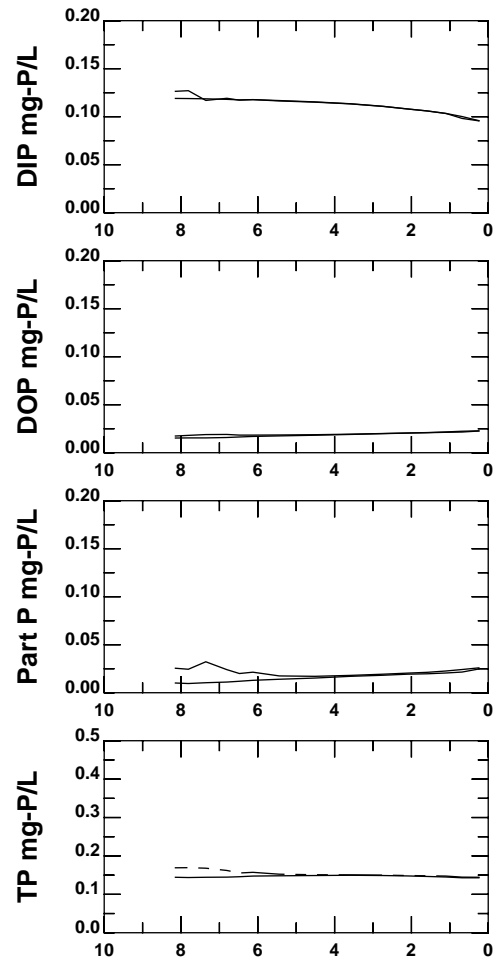
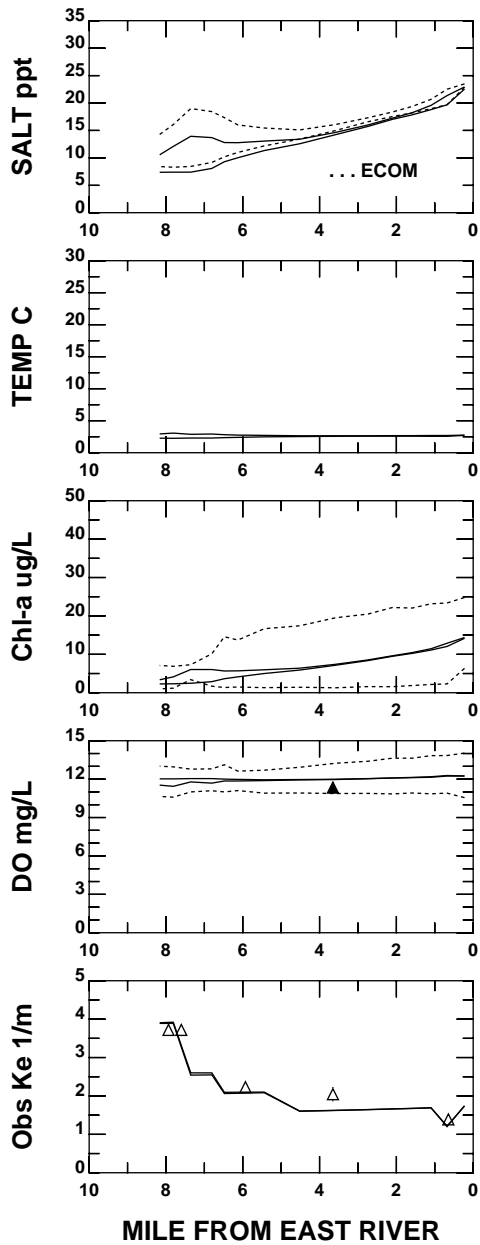
DATA Dec 30 2000 -Jan 28,2001

Harbor Survey SURF BOT  
 △ ▲ Transect  
 t e Embayment  
 NYSDEC ○ ○ Transect  
 c c Embayment

**MODEL**

— SURFACE 30-DAY MEAN  
 - - - - - BOTTOM 30-DAY MEAN  
 - - - 30-DAY SURFACE MAX OR  
 BOTTOM MIN

**HARLEM RIVER**



**DATA** Jan 29-Feb 27, 2001

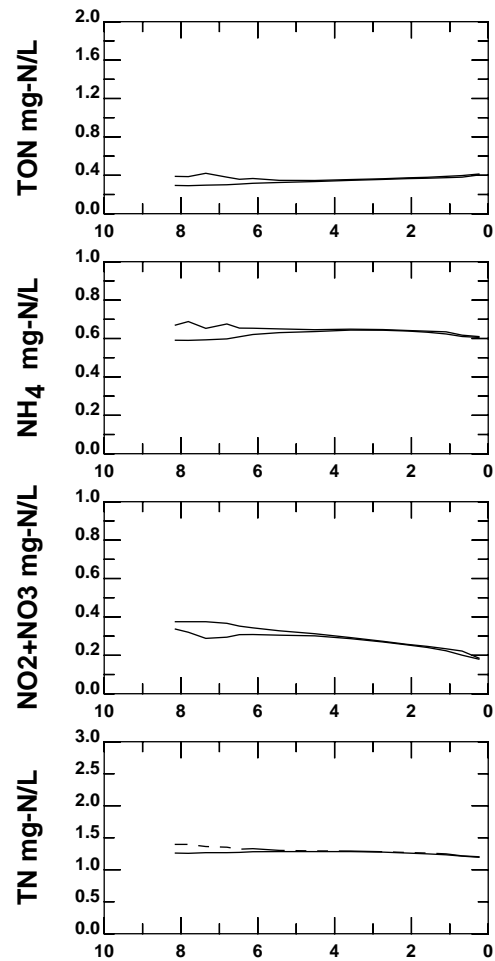
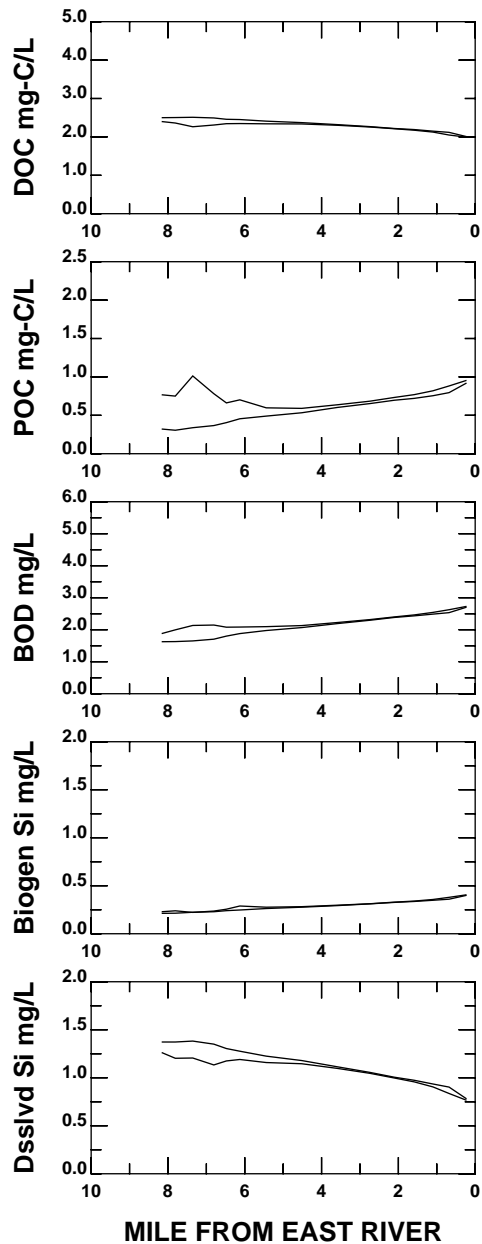
	SURF BOT		
Harbor Survey	△	▲	Transect Embayment
NYSDEC	○	c	Transect Embayment

**MODEL**

—	SURFACE 30-DAY MEAN
- - -	BOTTOM 30-DAY MEAN
- - -	30-DAY SURFACE MAX OR BOTTOM MIN

**HARLEM RIVER**





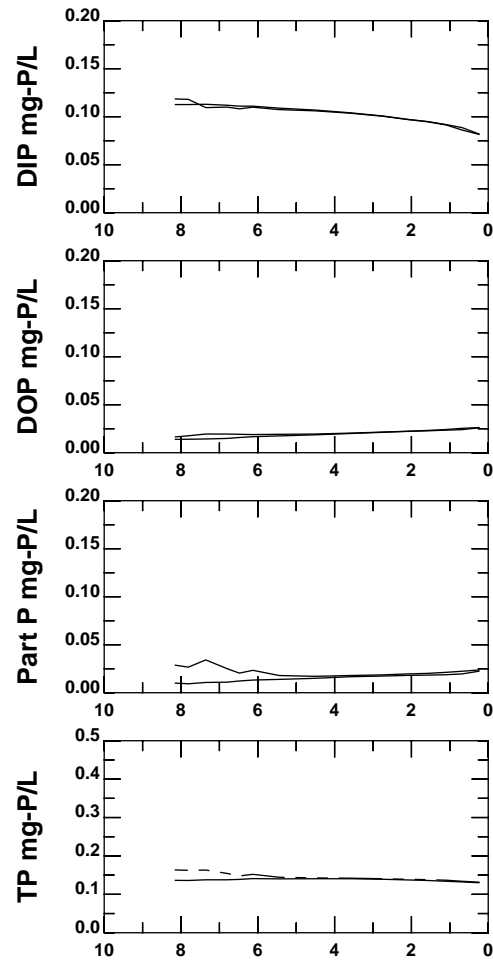
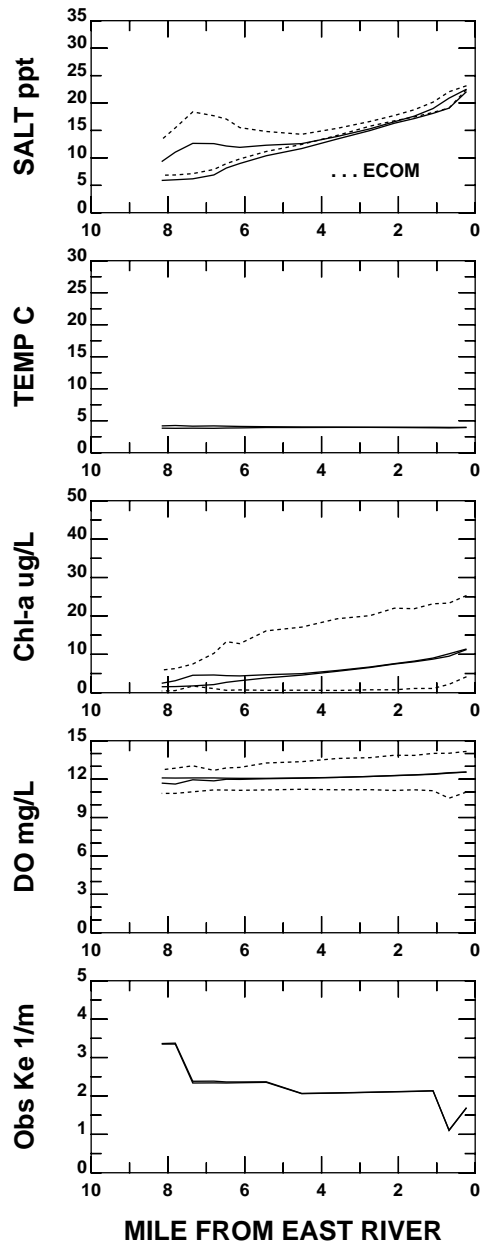
DATA Jan 29-Feb 27, 2001

Harbor Survey SURF BOT  
 △ ▲ Transect  
 t e Embayment  
 NYSDEC ○ ○ Transect  
 c c Embayment

MODEL

— SURFACE 30-DAY MEAN  
 - - - - - BOTTOM 30-DAY MEAN  
 - - - 30-DAY SURFACE MAX OR  
 BOTTOM MIN

**HARLEM RIVER**



**DATA Feb 28-Mar 29, 2001**

Harbor Survey    SURF    BOT    **Transect**

                         t    e    **Embayment**

NYSDEC            ○            **Transect**

                         c            **Embayment**

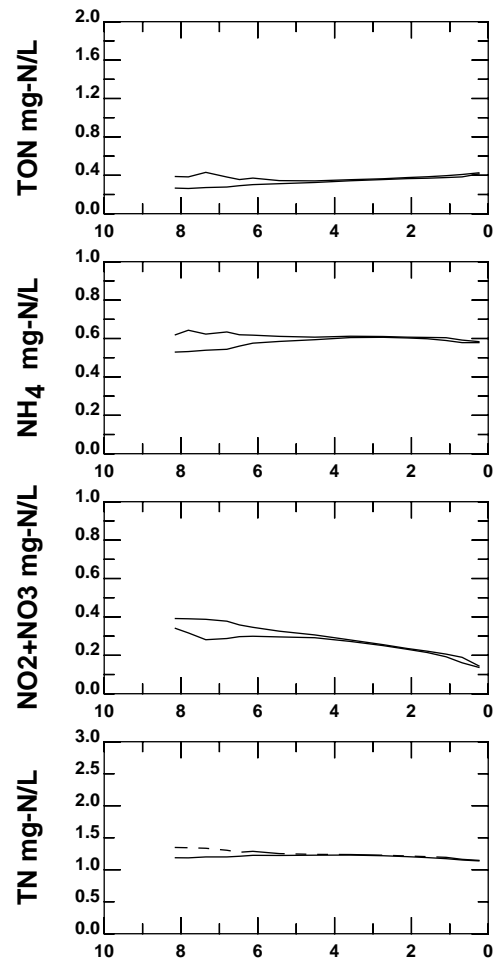
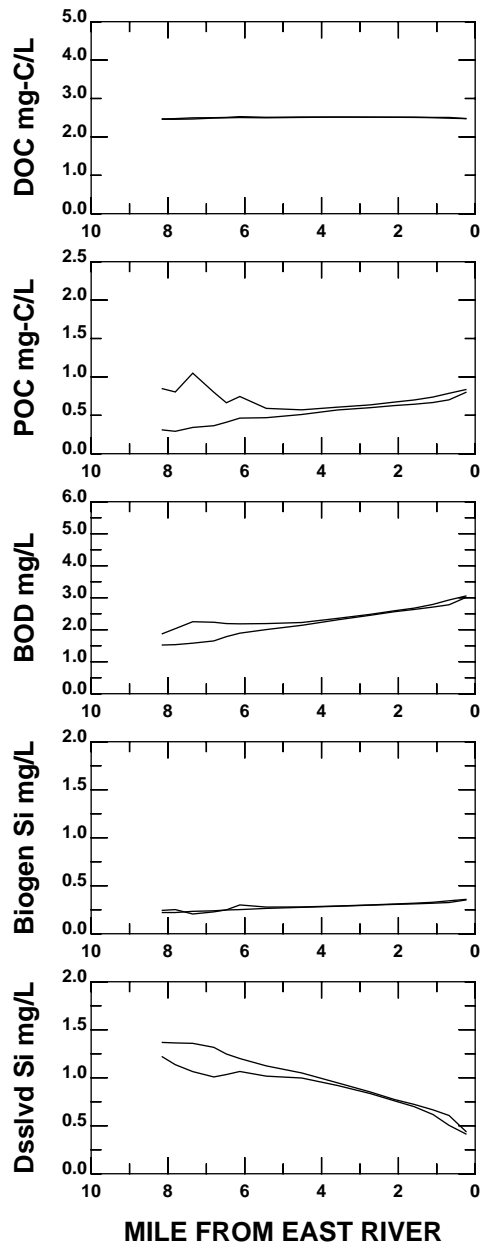
**MODEL**

———— **SURFACE 30-DAY MEAN**

----- **BOTTOM 30-DAY MEAN**

- - - - **30-DAY SURFACE MAX OR BOTTOM MIN**

**HARLEM RIVER**



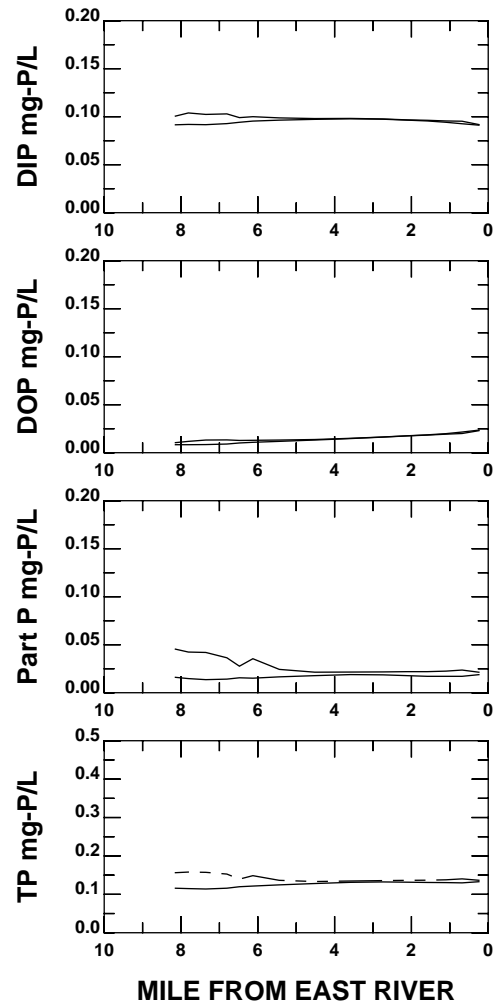
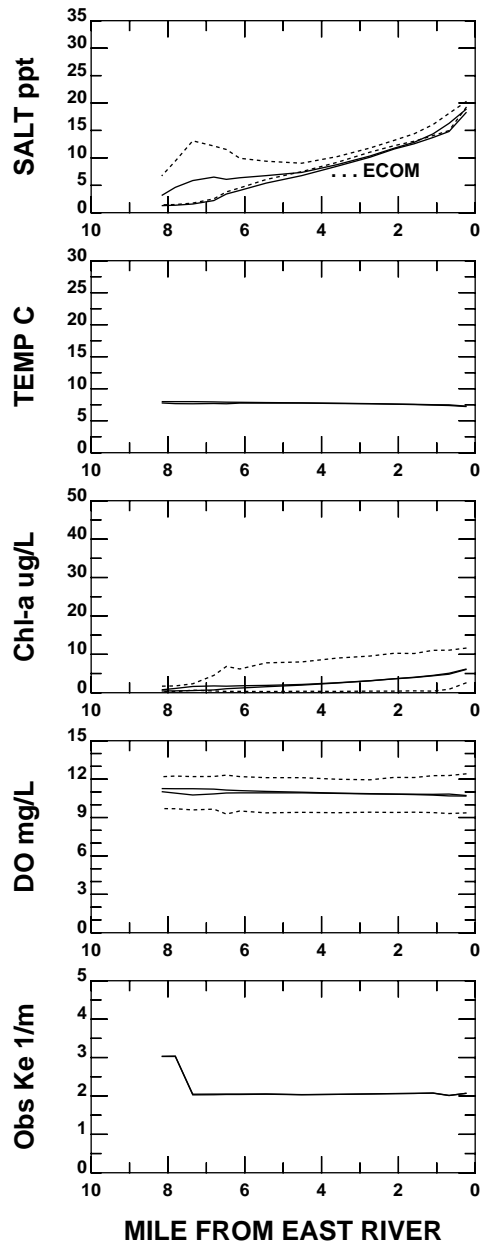
DATA Feb 28-Mar 29, 2001

Harbor Survey SURF BOT  
 △ ▲ Transect  
 t e Embayment  
 NYSDEC ○ ○ Transect  
 c c Embayment

MODEL

— SURFACE 30-DAY MEAN  
 - - - - - BOTTOM 30-DAY MEAN  
 - - - 30-DAY SURFACE MAX OR  
 BOTTOM MIN

**HARLEM RIVER**



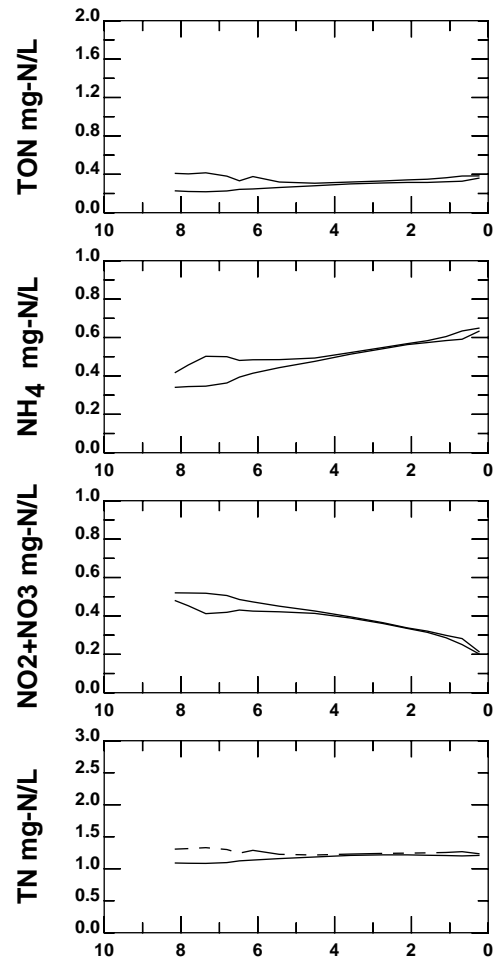
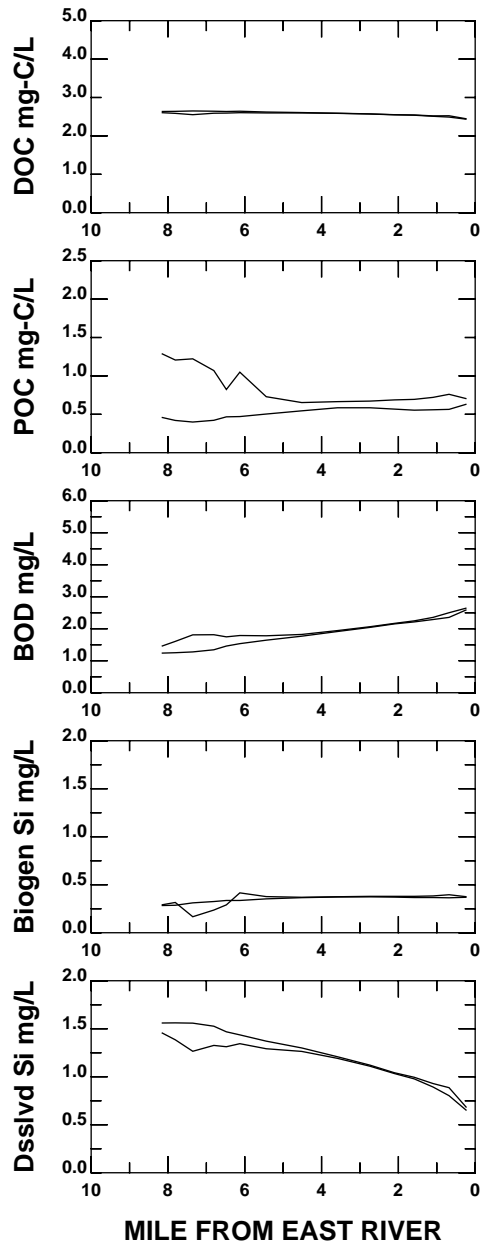
DATA Mar 30-Apr 28, 2001

Harbor Survey SURF BOT  
 △ ▲ Transect  
 t e Embayment  
 NYSDEC ○ Transect  
 c Embayment

MODEL

— SURFACE 30-DAY MEAN  
 - - - - - BOTTOM 30-DAY MEAN  
 - - - 30-DAY SURFACE MAX OR  
 BOTTOM MIN

**HARLEM RIVER**



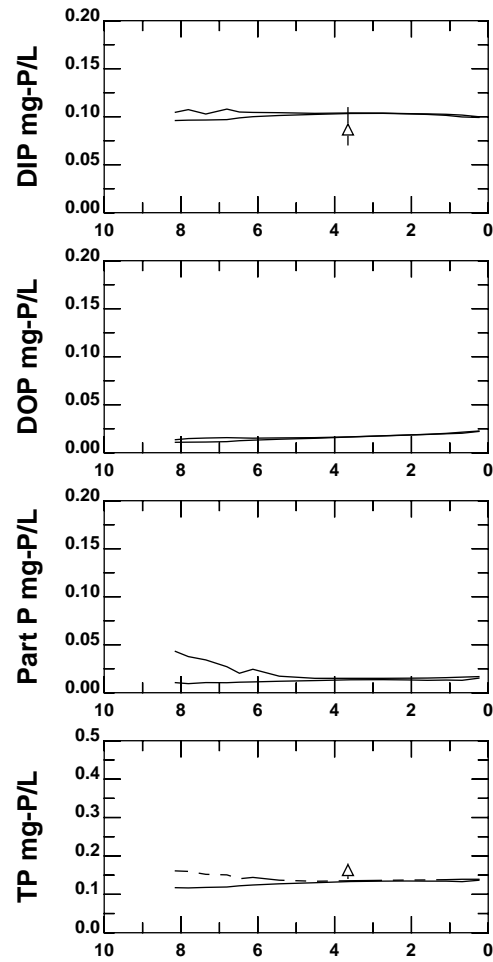
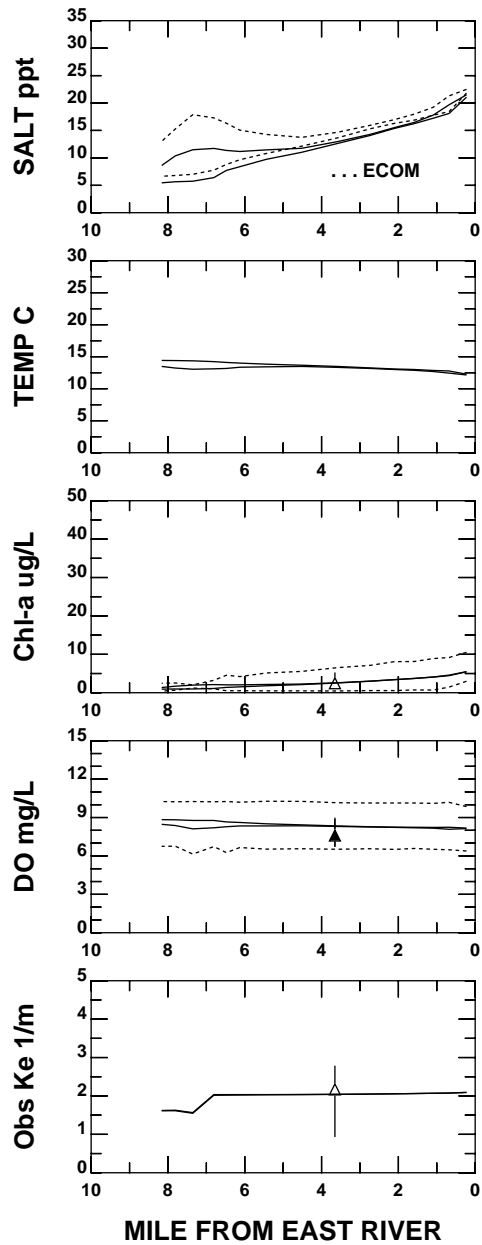
DATA Mar 30-Apr 28, 2001

Harbor Survey SURF BOT  
 △ ▲ Transect  
 t e Embayment  
 NYSDEC ○ ○ Transect  
 c c Embayment

MODEL

— SURFACE 30-DAY MEAN  
 - - - - - BOTTOM 30-DAY MEAN  
 - - - 30-DAY SURFACE MAX OR BOTTOM MIN

**HARLEM RIVER**



**DATA** Apr 29-May 28, 2001

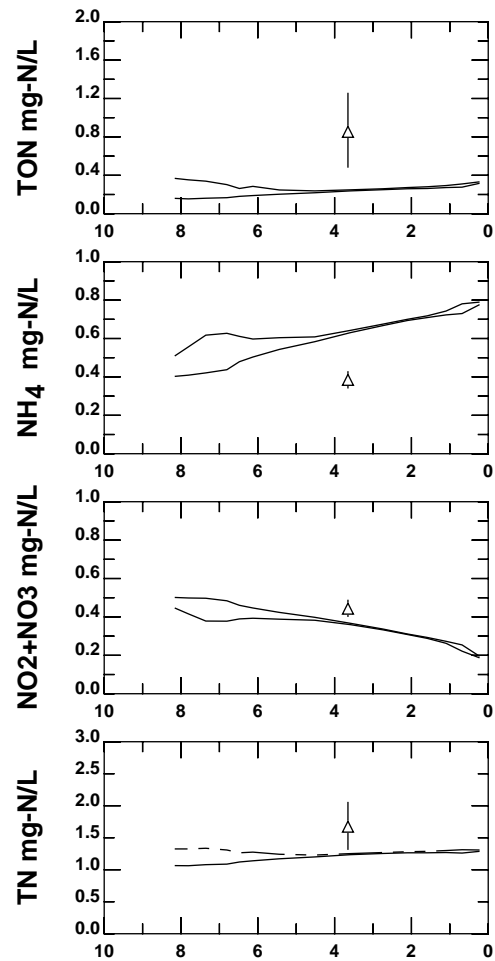
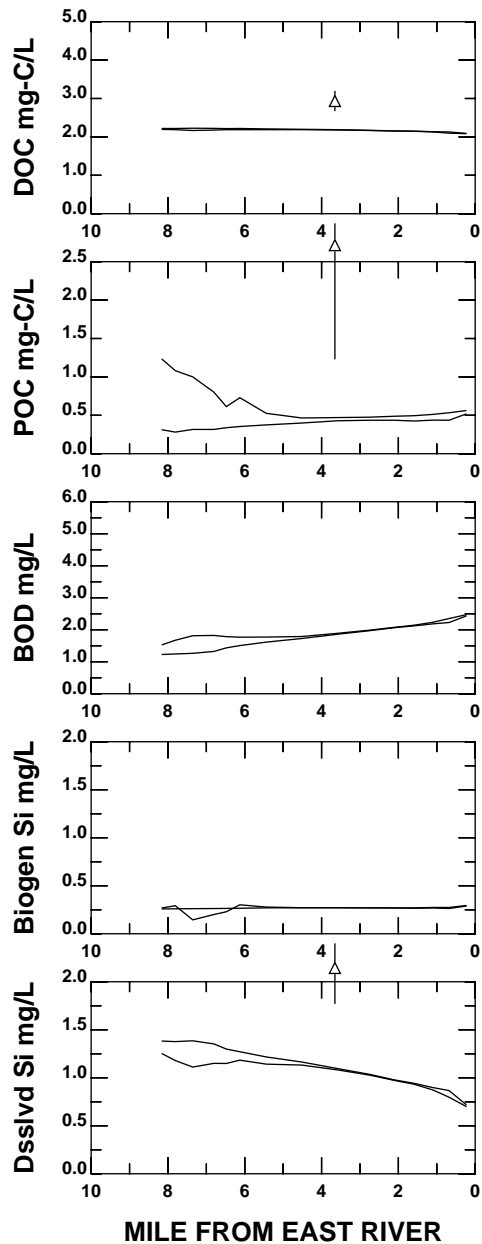
**MODEL**

	<b>SURF BOT</b>		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment

—	<b>SURFACE 30-DAY MEAN</b>
- - -	<b>BOTTOM 30-DAY MEAN</b>
- - -	<b>30-DAY SURFACE MAX OR BOTTOM MIN</b>

**HARLEM RIVER**



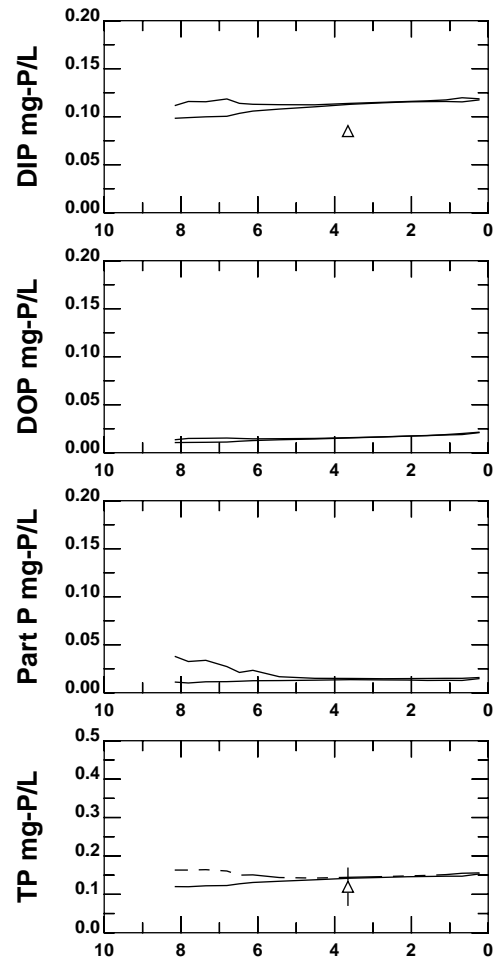
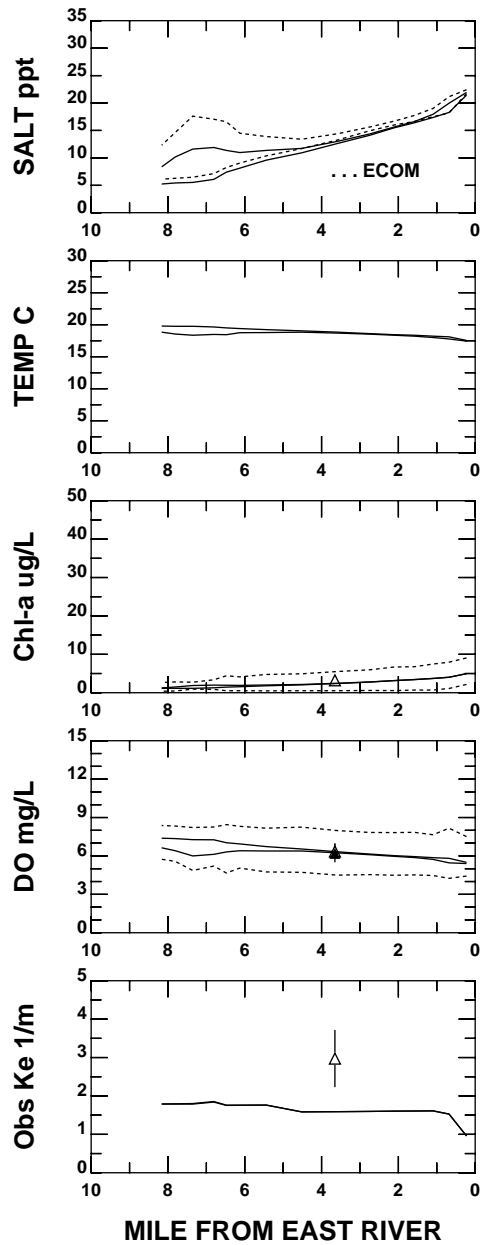
DATA Apr 29-May 28, 2001

	SURF BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment

MODEL

—	SURFACE 30-DAY MEAN
- - -	BOTTOM 30-DAY MEAN
- - -	30-DAY SURFACE MAX OR BOTTOM MIN

**HARLEM RIVER**



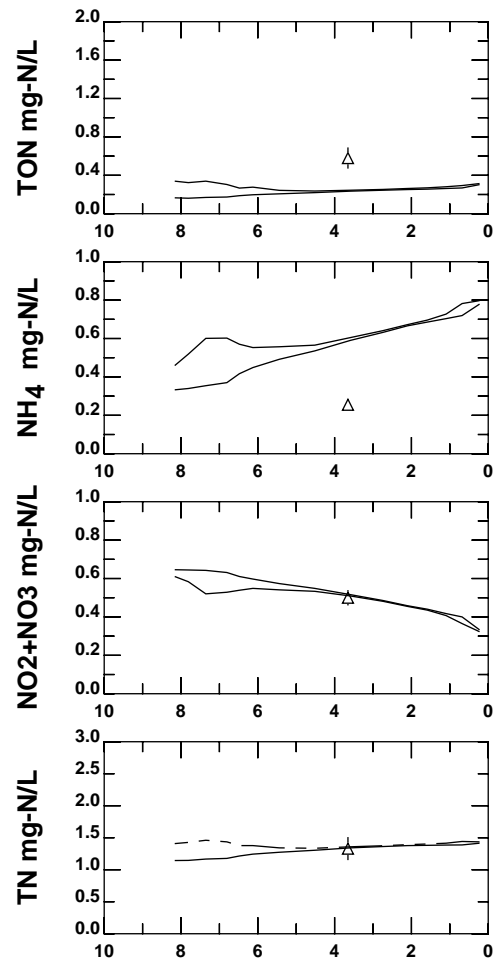
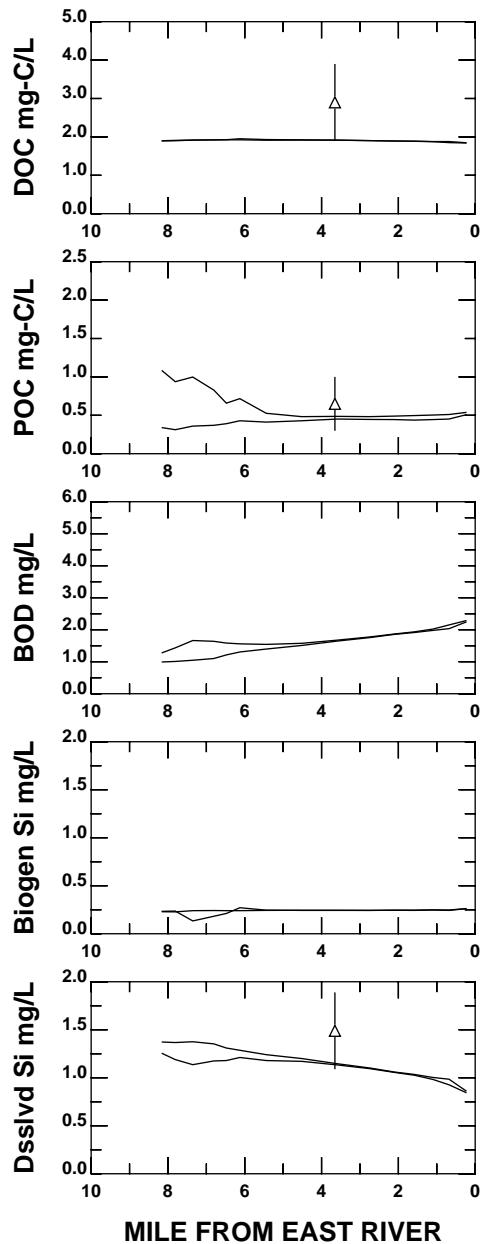
**MILE FROM EAST RIVER**

**DATA May 29-Jun 27, 2001**

Harbor Survey	△	▲	Transect		<b>MODEL</b>	
	t	e	Embayment	——		<b>SURFACE 30-DAY MEAN</b>
NYSDEC	○		Transect	-----		<b>BOTTOM 30-DAY MEAN</b>
	c		Embayment	- - -		<b>30-DAY SURFACE MAX OR BOTTOM MIN</b>

**HARLEM RIVER**





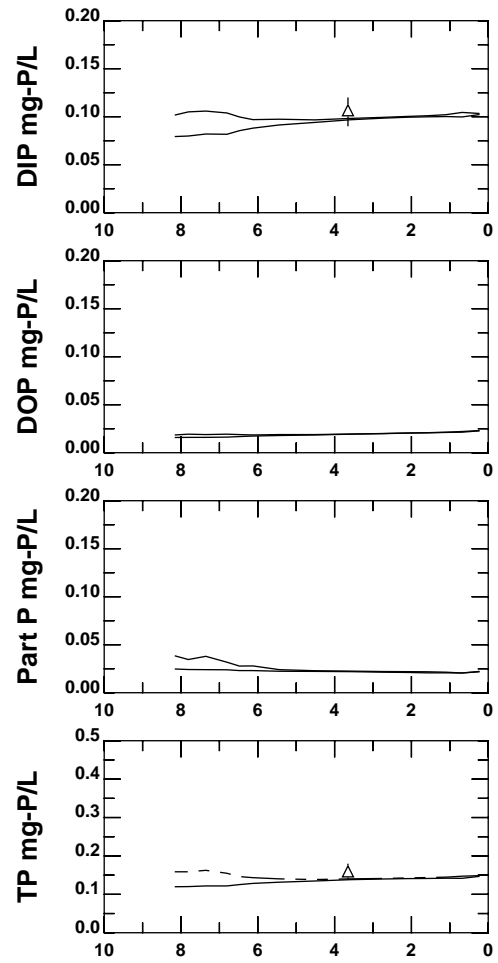
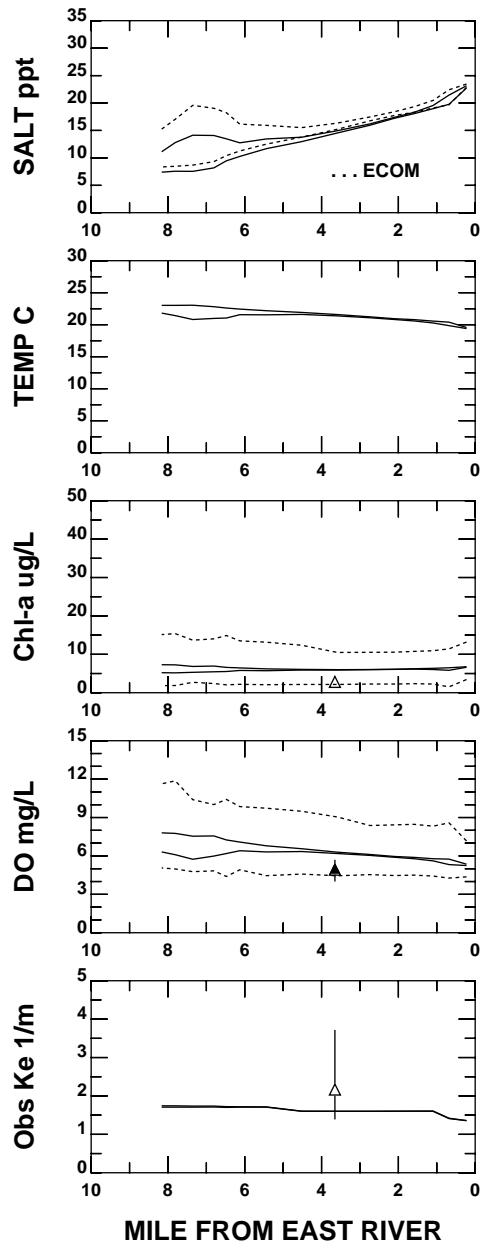
**DATA** May 29-Jun 27, 2001

	SURF BOT		
Harbor Survey	△	▲	Transect Embayment
NYSDEC	○	○	Transect Embayment

**MODEL**

—	SURFACE 30-DAY MEAN
- - -	BOTTOM 30-DAY MEAN
- - -	30-DAY SURFACE MAX OR BOTTOM MIN

**HARLEM RIVER**



**MILE FROM EAST RIVER**

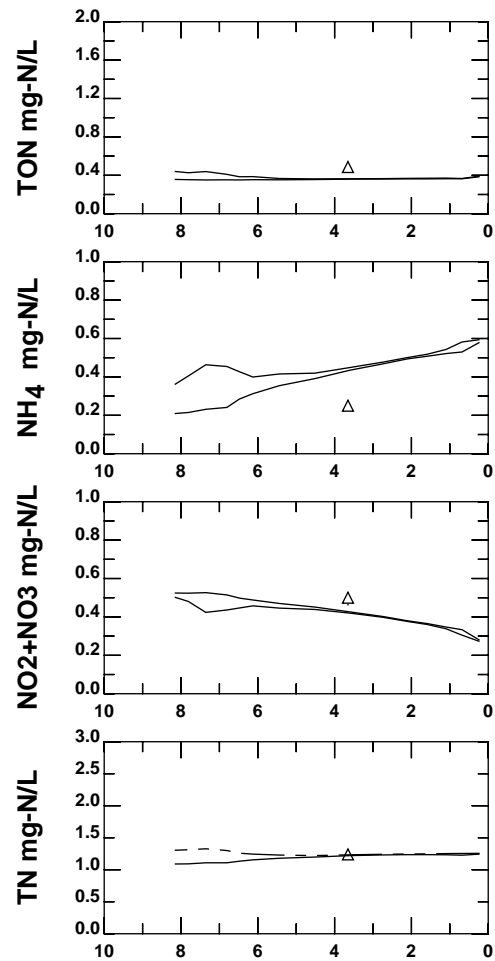
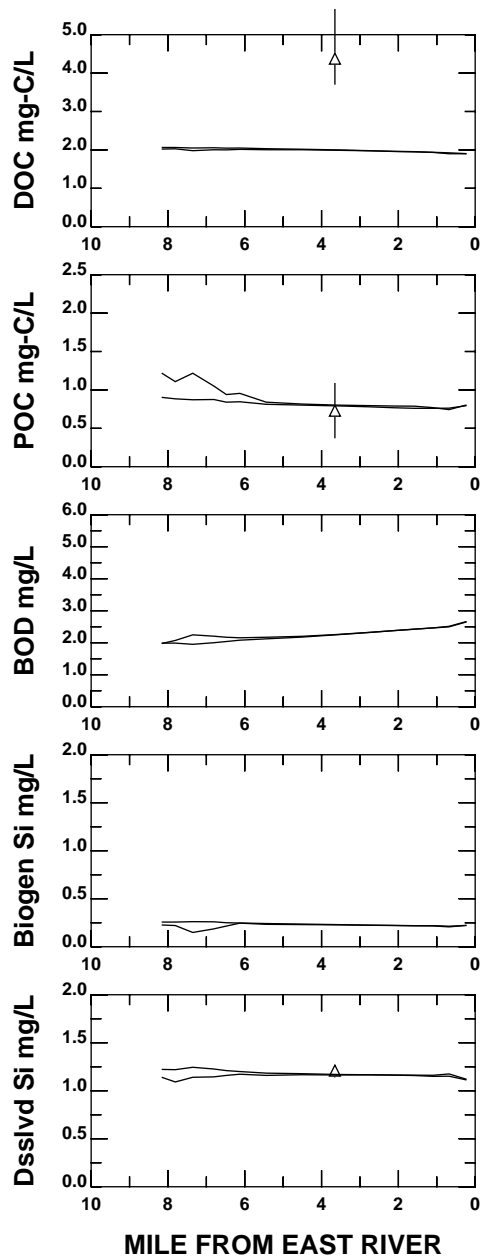
DATA Jun 28-Jul 27, 2001

Harbor Survey    SURF BOT  
 △ ▲    Transect  
 t e    Embayment  
 NYSDEC    ○    Transect  
             c    Embayment

**MODEL**

—    SURFACE 30-DAY MEAN  
 - - -    BOTTOM 30-DAY MEAN  
 - - -    30-DAY SURFACE MAX OR  
 BOTTOM MIN

**HARLEM RIVER**



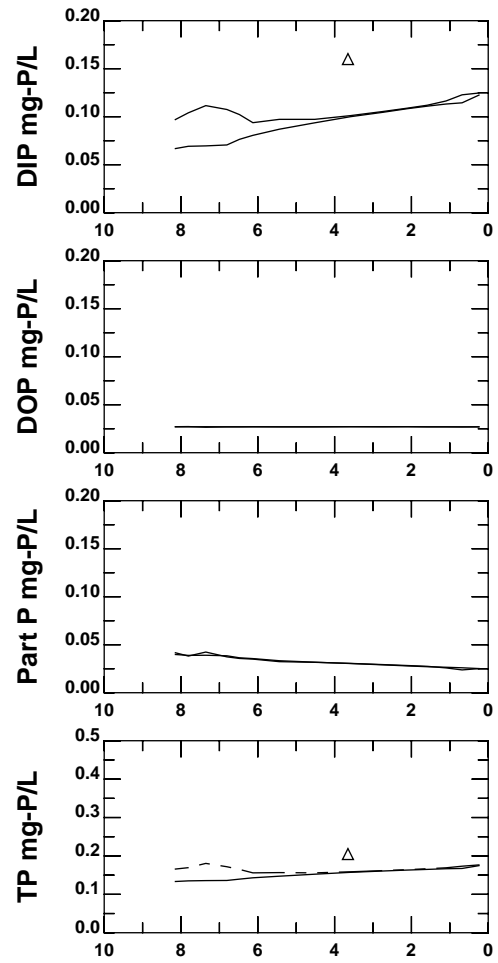
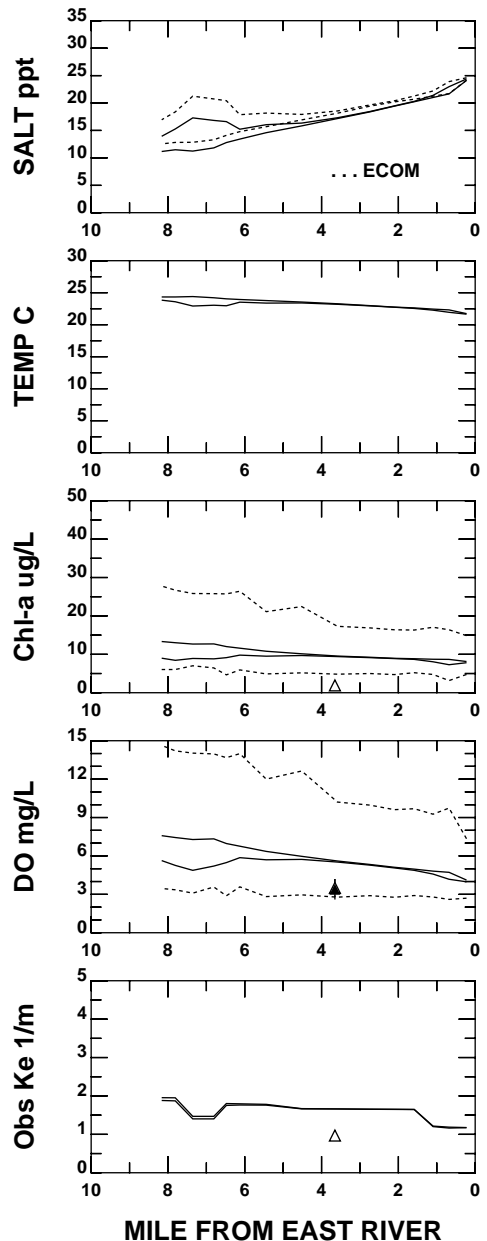
DATA Jun 28-Jul 27, 2001

	SURF BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment

MODEL

—	SURFACE 30-DAY MEAN
- - -	BOTTOM 30-DAY MEAN
- - -	30-DAY SURFACE MAX OR BOTTOM MIN

## HARLEM RIVER

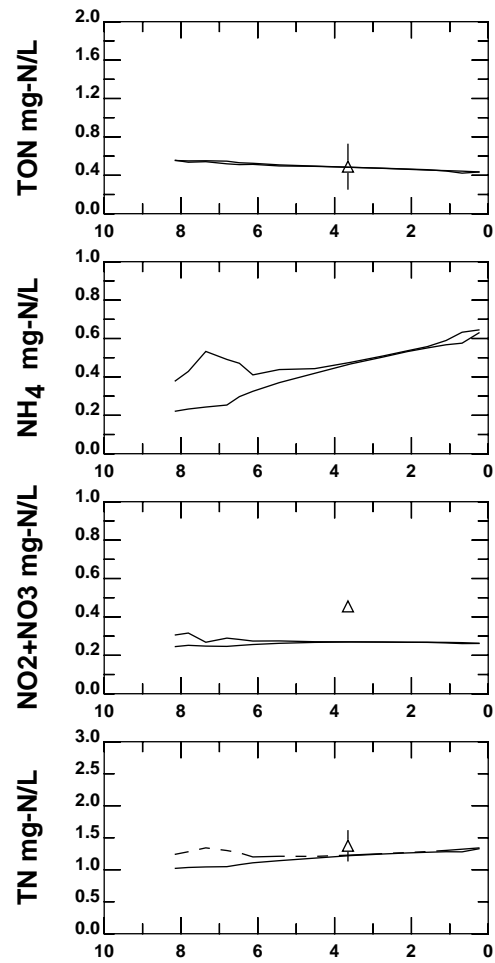
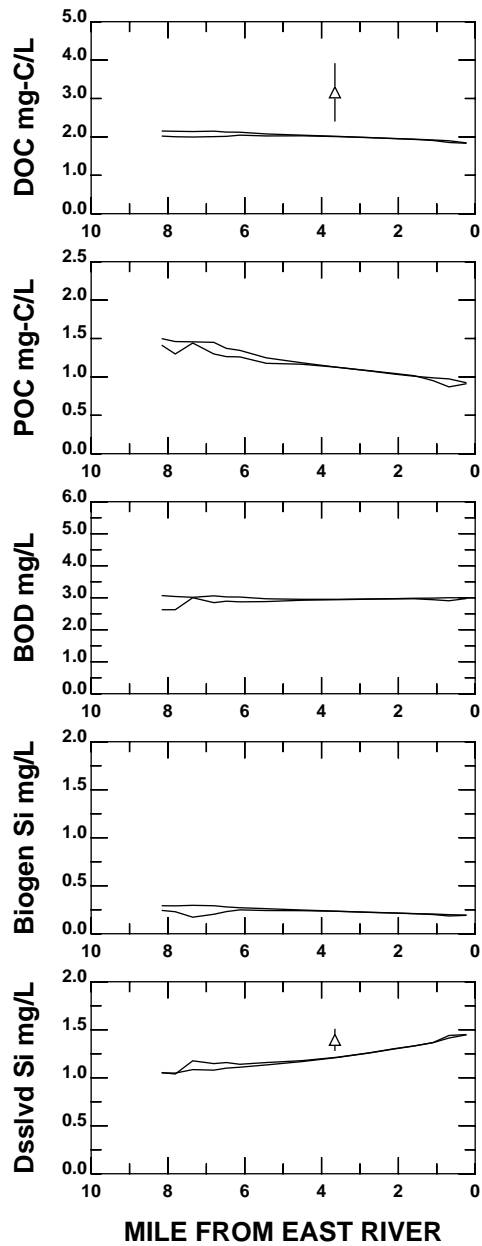


**DATA Jul 27-Aug 26, 2001**

**MODEL**

Harbor Survey	△	▲	Transect	—	SURFACE 30-DAY MEAN
	t	e	Embayment	.....	BOTTOM 30-DAY MEAN
NYSDEC	○		Transect	- - -	30-DAY SURFACE MAX OR BOTTOM MIN
	c		Embayment		

**HARLEM RIVER**



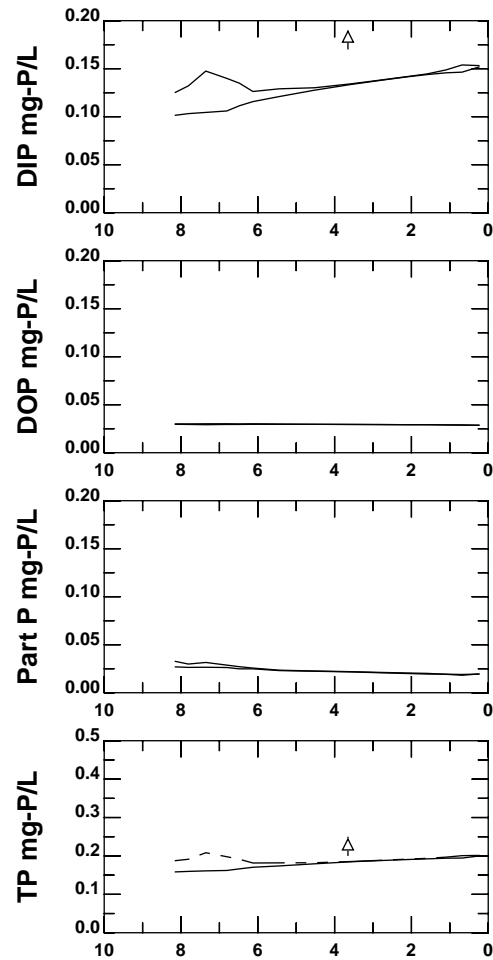
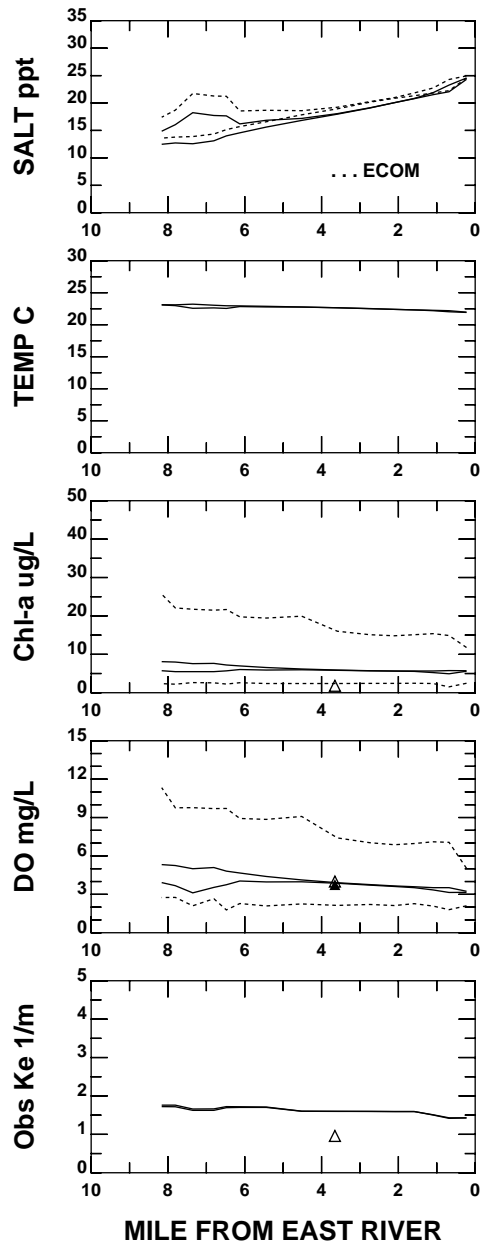
DATA Jul 27-Aug 26, 2001

	SURF BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment

MODEL

—	SURFACE 30-DAY MEAN
---	BOTTOM 30-DAY MEAN
- - -	30-DAY SURFACE MAX OR BOTTOM MIN

**HARLEM RIVER**



**DATA** Aug 27-Sep 25,2001

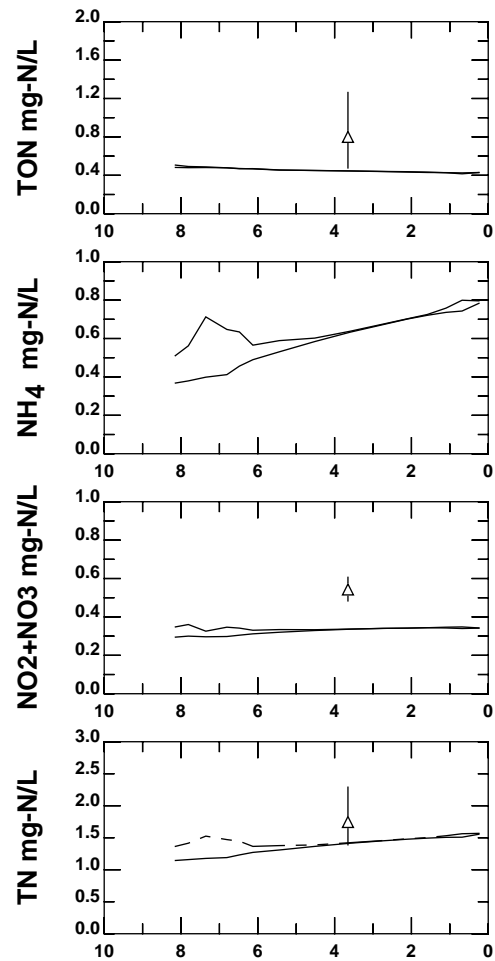
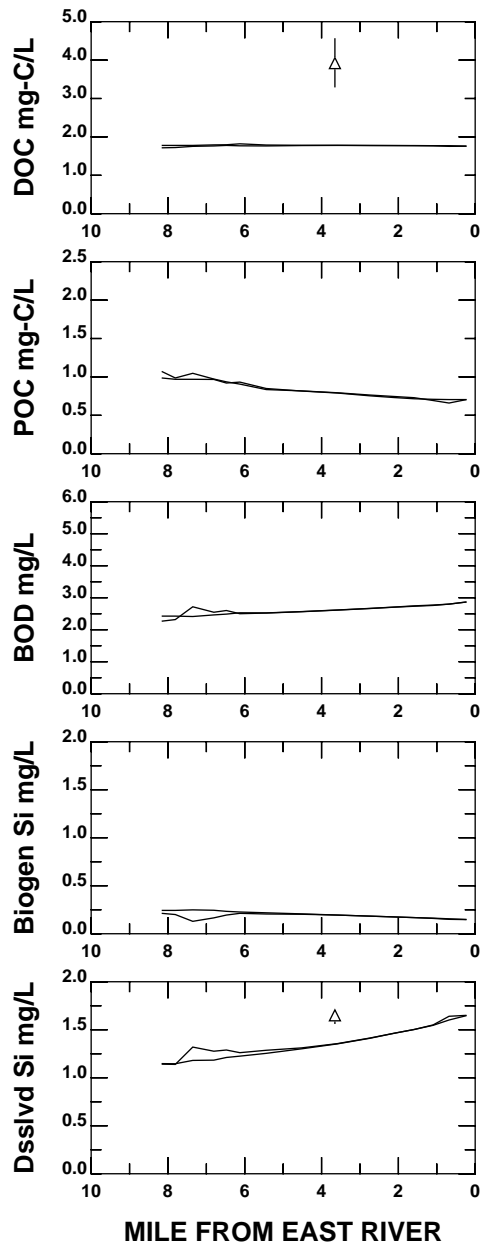
**MODEL**

	<b>SURF BOT</b>		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment

—	<b>SURFACE 30-DAY MEAN</b>
- - -	<b>BOTTOM 30-DAY MEAN</b>
- - -	<b>30-DAY SURFACE MAX OR BOTTOM MIN</b>

**HARLEM RIVER**



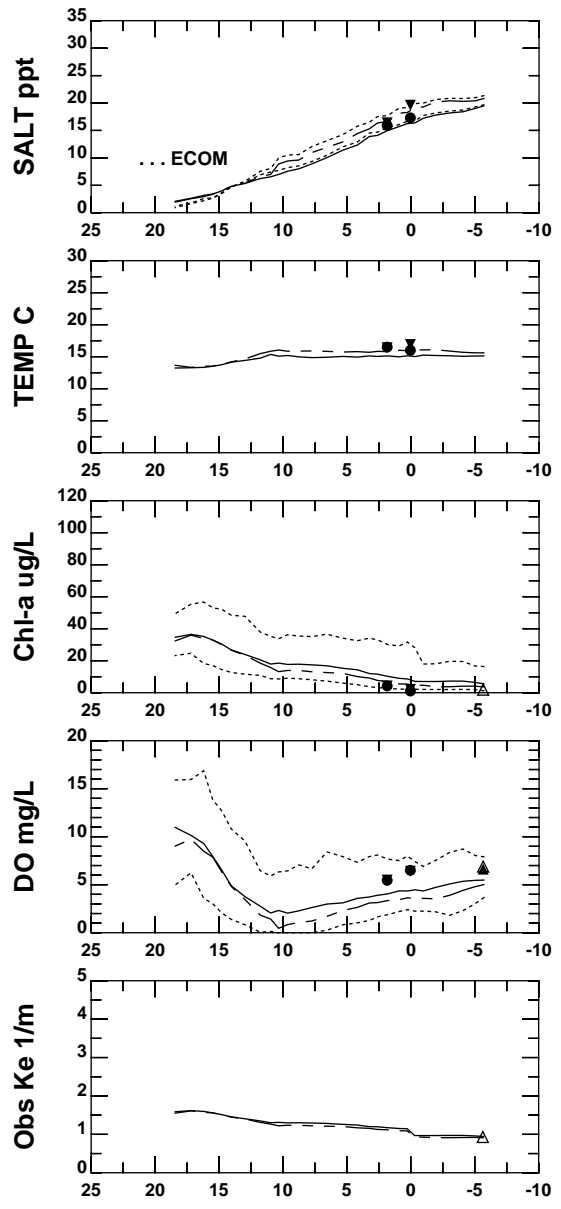
DATA Aug 27-Sep 25, 2001

	SURF BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment

MODEL

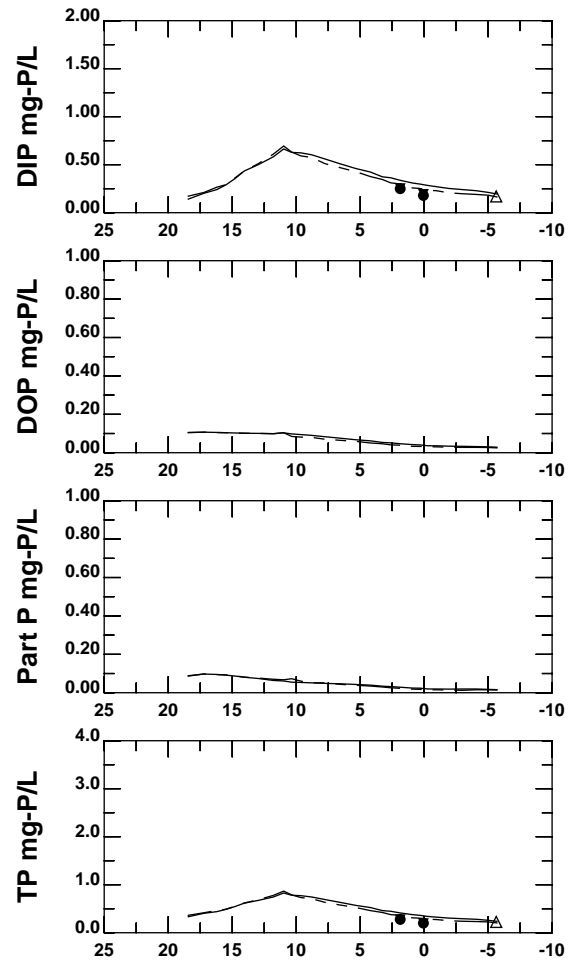
—	SURFACE 30-DAY MEAN
- - - -	BOTTOM 30-DAY MEAN
- - -	30-DAY SURFACE MAX OR BOTTOM MIN

## HARLEM RIVER



MILE FROM MOUTH HACKENSACK RIVER  
**HACKENSACK RIVER AND NEWARK BAY**

DATE: 4/07/2006 TIME: 11:28:52



MILE FROM MOUTH HACKENSACK RIVER

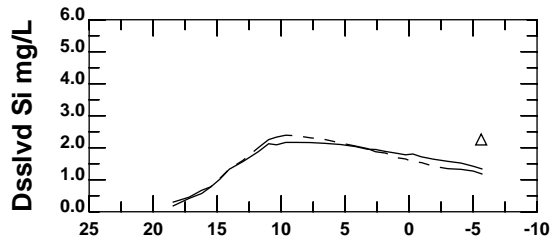
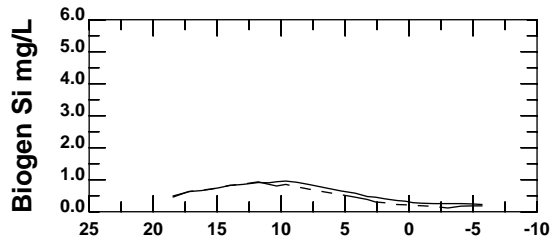
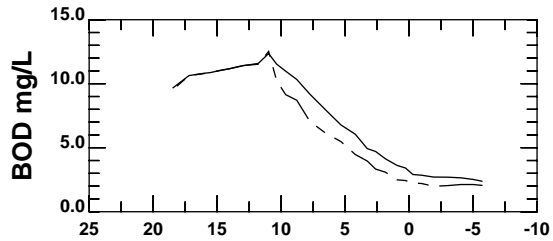
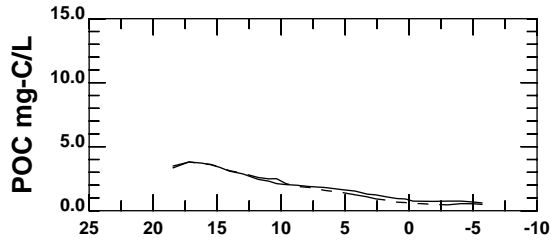
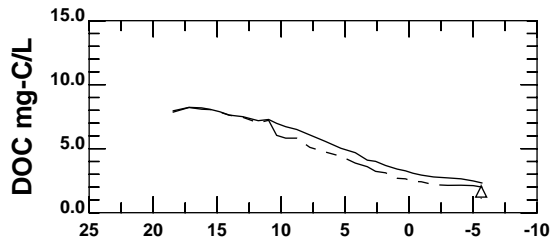
DATA Oct 1-30,2000

	SURF MID BOT			
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

MODEL

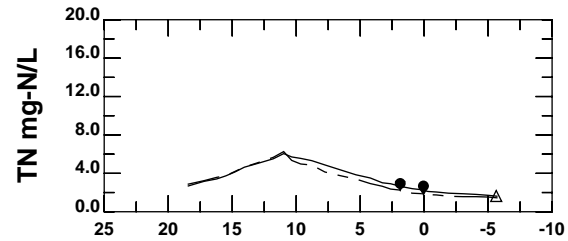
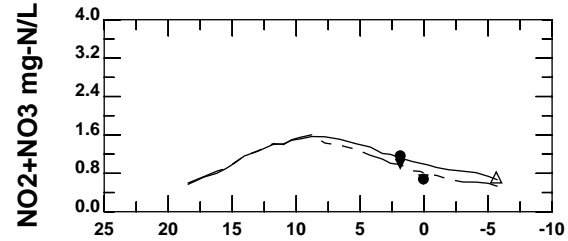
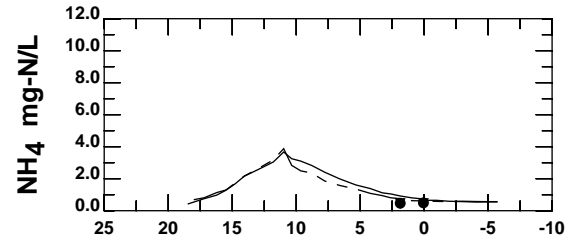
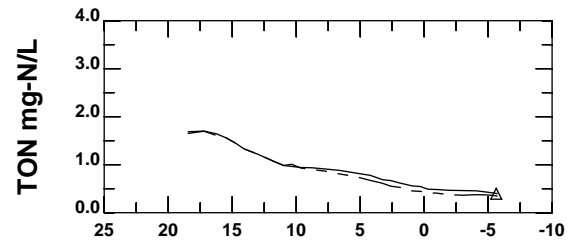
————	SURF 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN





**MILE FROM MOUTH HACKENSACK RIVER**  
**HACKENSACK RIVER AND NEWARK BAY**

DATE: 4/07/2006 TIME: 11:28:52



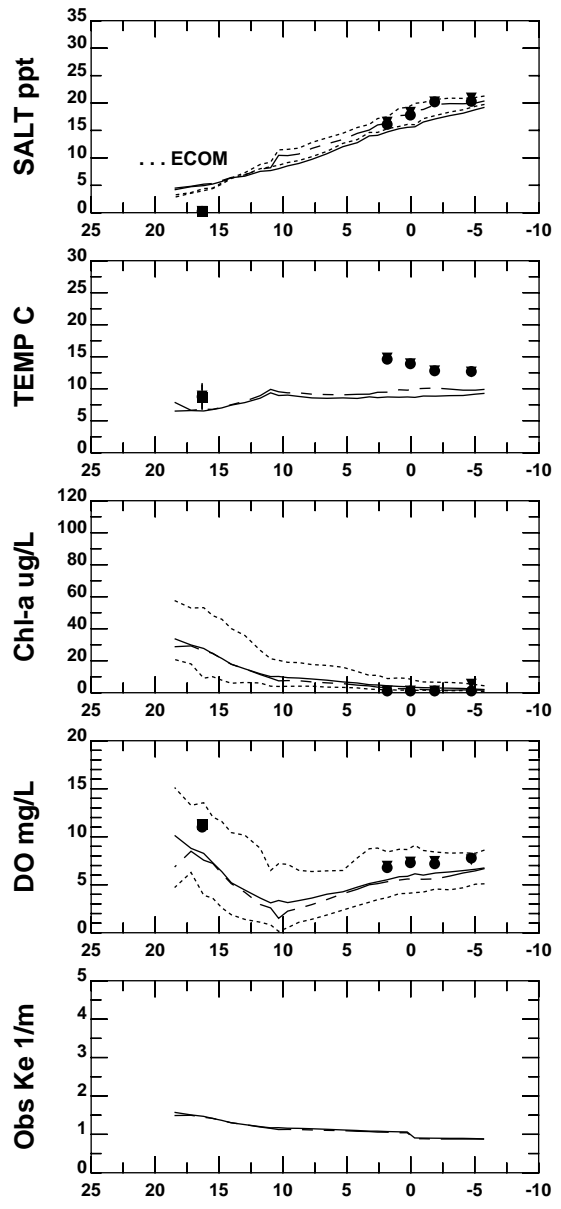
**MILE FROM MOUTH HACKENSACK RIVER**

DATA Oct 1-30,2000

	SURF MID BOT			
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

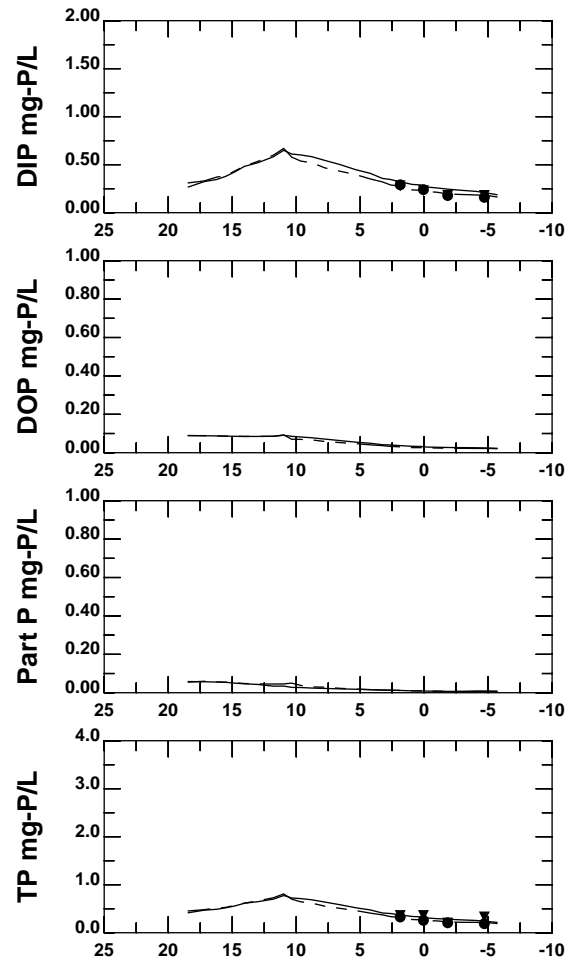
MODEL

—	SURFACE 30-DAY MEAN
- - - -	BOTTOM 30-DAY MEAN
- · - ·	30-DAY SURFACE MAX OR BOTTOM MIN



MILE FROM MOUTH HACKENSACK RIVER  
**HACKENSACK RIVER AND NEWARK BAY**

DATE: 4/07/2006 TIME: 11:28:55

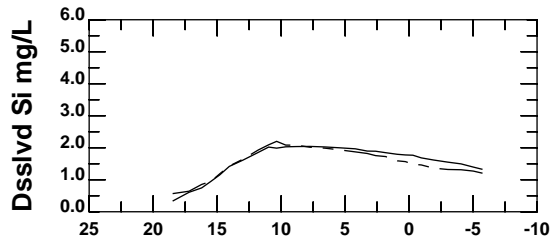
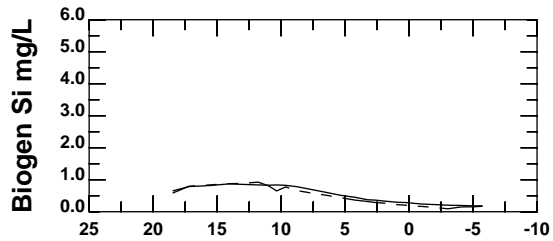
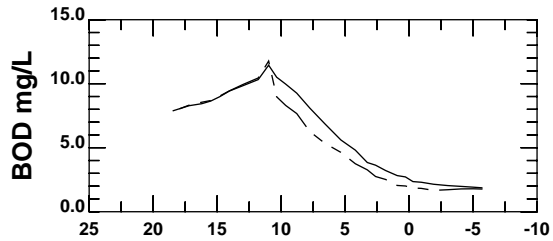
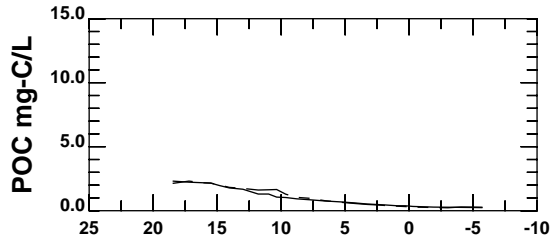
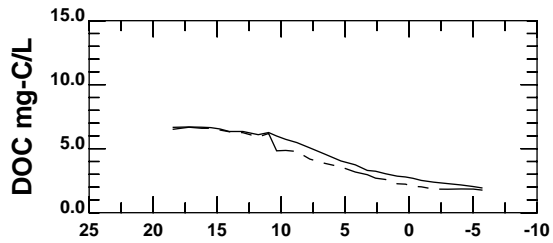


MILE FROM MOUTH HACKENSACK RIVER

DATA Oct 31-Nov 29,2000

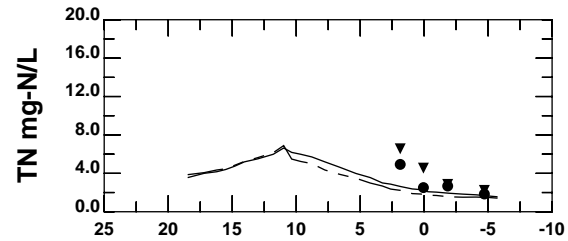
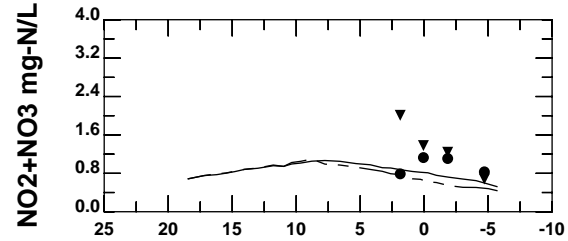
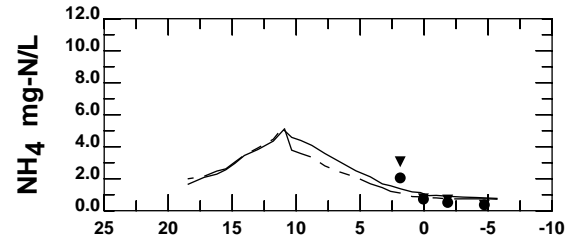
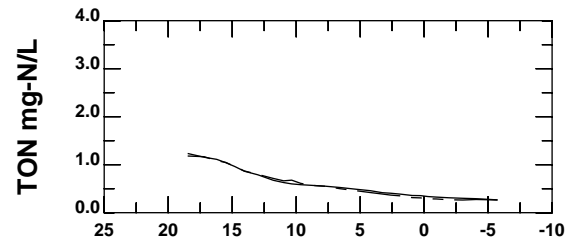
MODEL

	SURF MID BOT			
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment
			—	SURFACE 30-DAY MEAN
			- - -	BOTTOM 30-DAY MEAN
			- - -	30-DAY SURFACE MAX OR BOTTOM MIN



**MILE FROM MOUTH HACKENSACK RIVER  
HACKENSACK RIVER AND NEWARK BAY**

DATE: 4/07/2006 TIME: 11:28:55

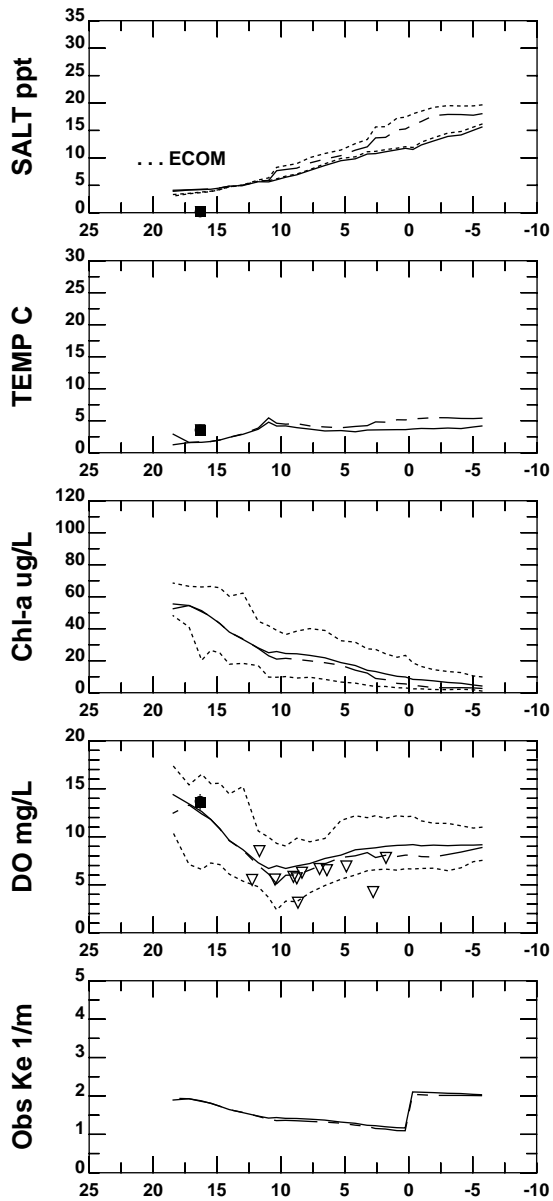


**MILE FROM MOUTH HACKENSACK RIVER  
DATA Oct 31-Nov 29,2000**

	SURF MID BOT			
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

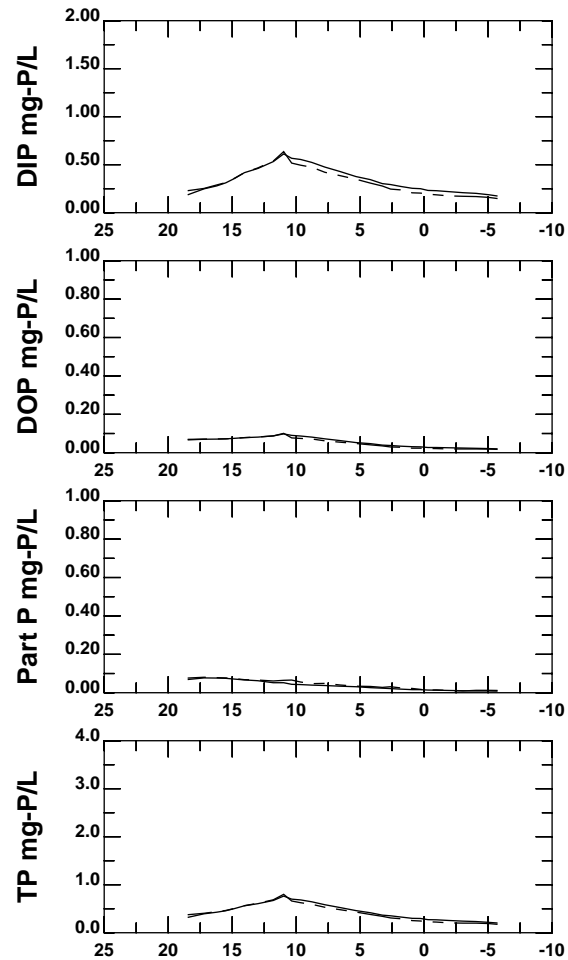
**MODEL**

————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN



MILE FROM MOUTH HACKENSACK RIVER  
**HACKENSACK RIVER AND NEWARK BAY**

DATE: 4/07/2006 TIME: 11:28:59



MILE FROM MOUTH HACKENSACK RIVER

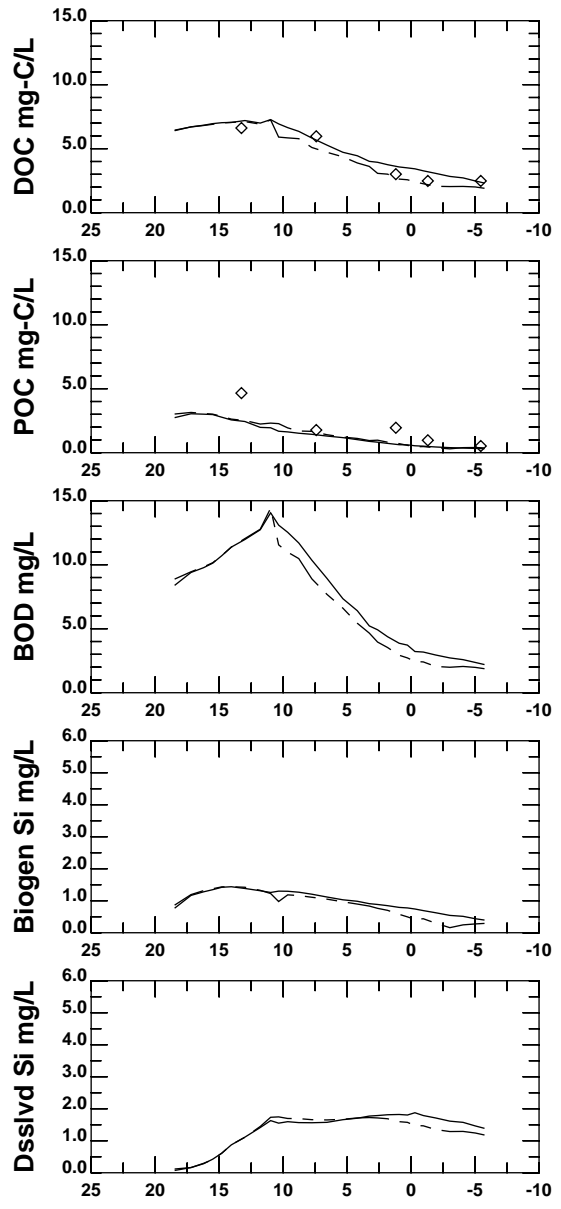
DATA Nov 30-Dec 29,2000

MODEL

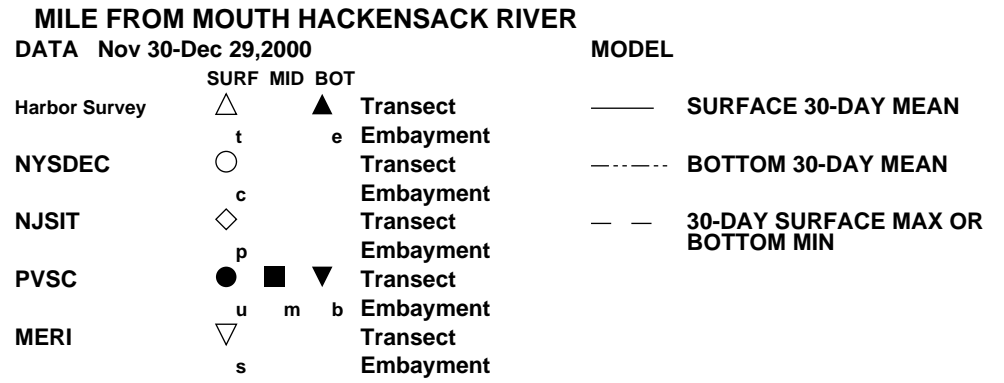
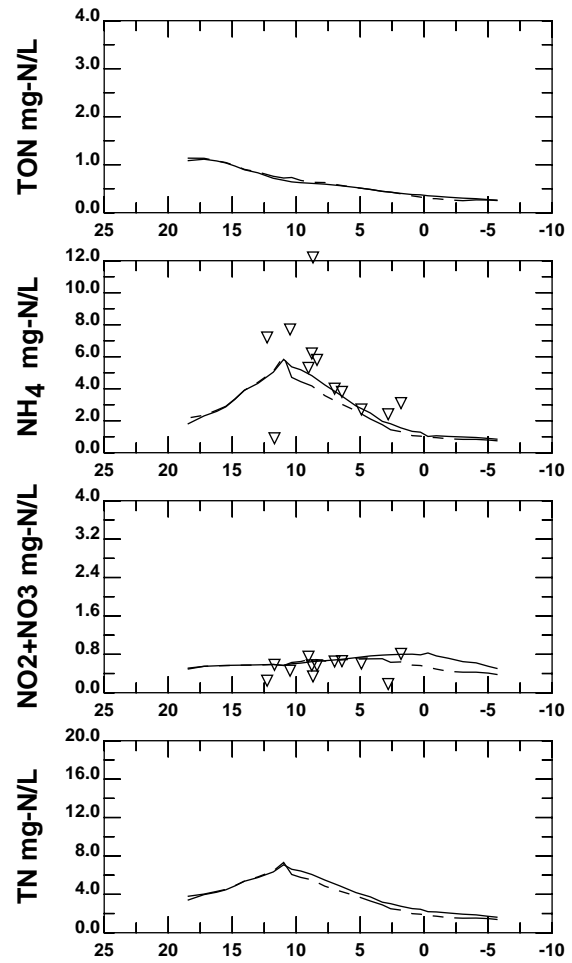
	SURF MID BOT			
Harbor Survey	△	▲	Transect	—
	t	e	Embayment	---
NYSDEC	○		Transect	----
	c		Embayment	- - -
NJSIT	◇		Transect	- - - -
	p		Embayment	- - - -
PVSC	●	■	Transect	
	u	m	Embayment	
MERI	▽		Transect	
	s		Embayment	

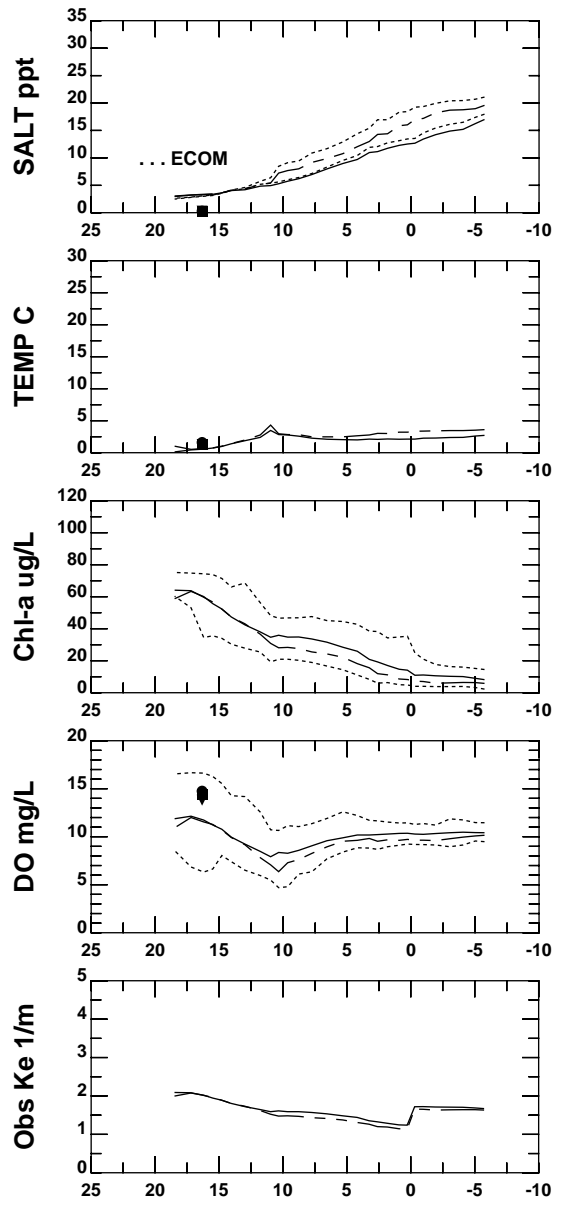
  

	—	SURFACE 30-DAY MEAN
	----	BOTTOM 30-DAY MEAN
	- - -	30-DAY SURFACE MAX OR BOTTOM MIN

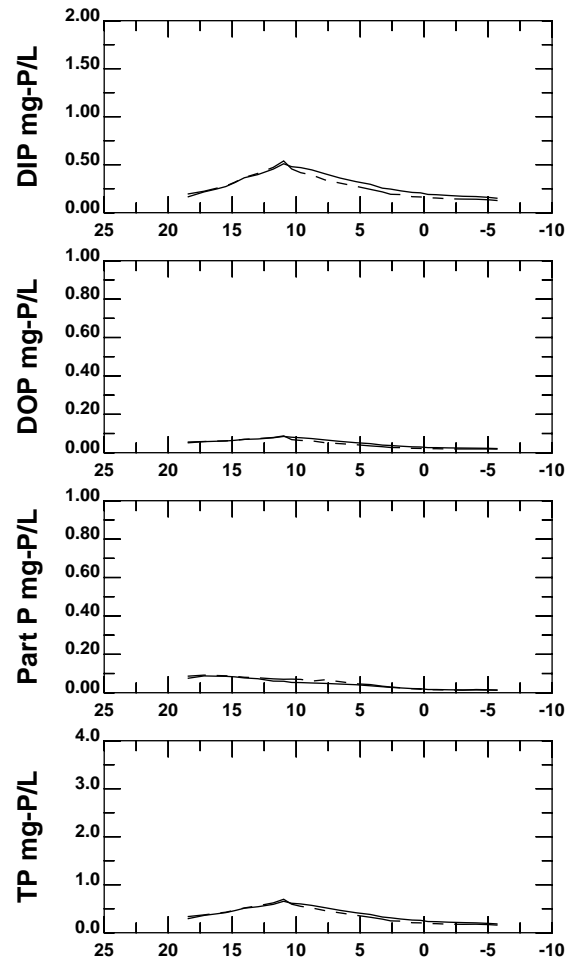


**MILE FROM MOUTH HACKENSACK RIVER  
HACKENSACK RIVER AND NEWARK BAY**





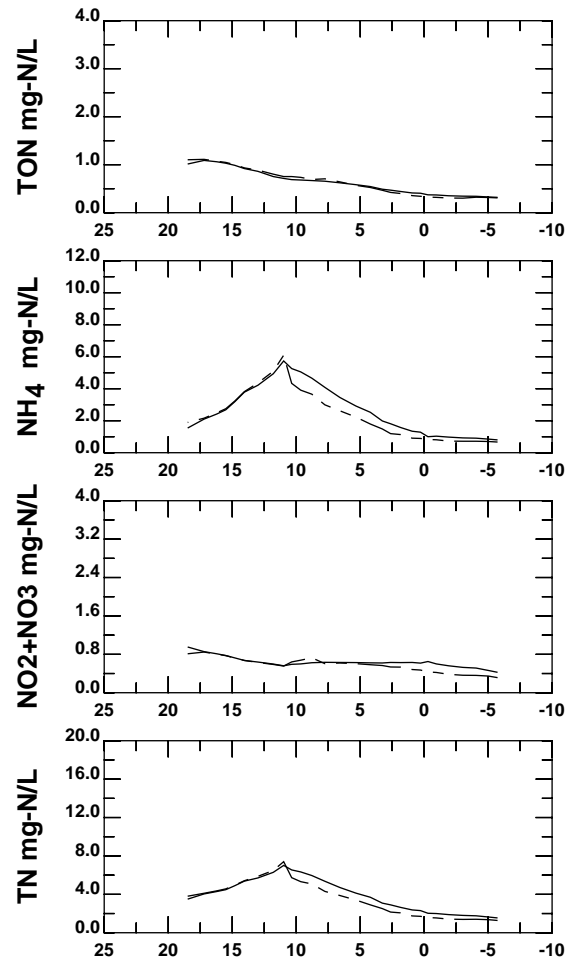
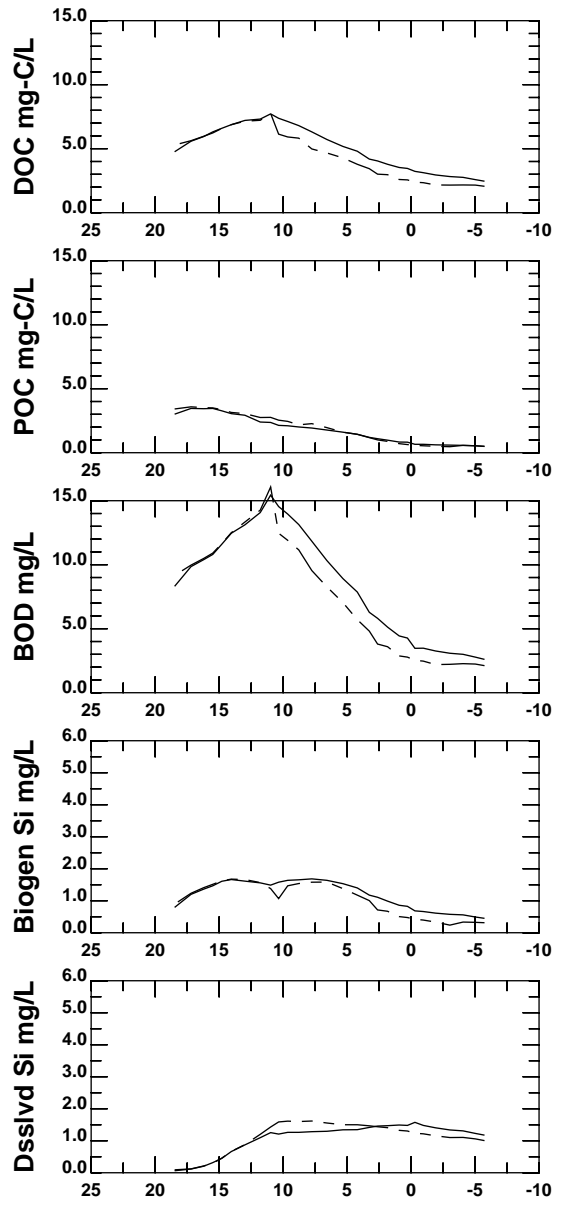
MILE FROM MOUTH HACKENSACK RIVER  
**HACKENSACK RIVER AND NEWARK BAY**



**MILE FROM MOUTH HACKENSACK RIVER**  
 DATA Dec 30 2000 -Jan 28,2001

	SURF MID BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment
PVSC	●	■	Transect
	u	m	Embayment
MERI	▽		Transect
	s		Embayment

—	SURFACE 30-DAY MEAN
- - - -	BOTTOM 30-DAY MEAN
- · - ·	30-DAY SURFACE MAX OR BOTTOM MIN



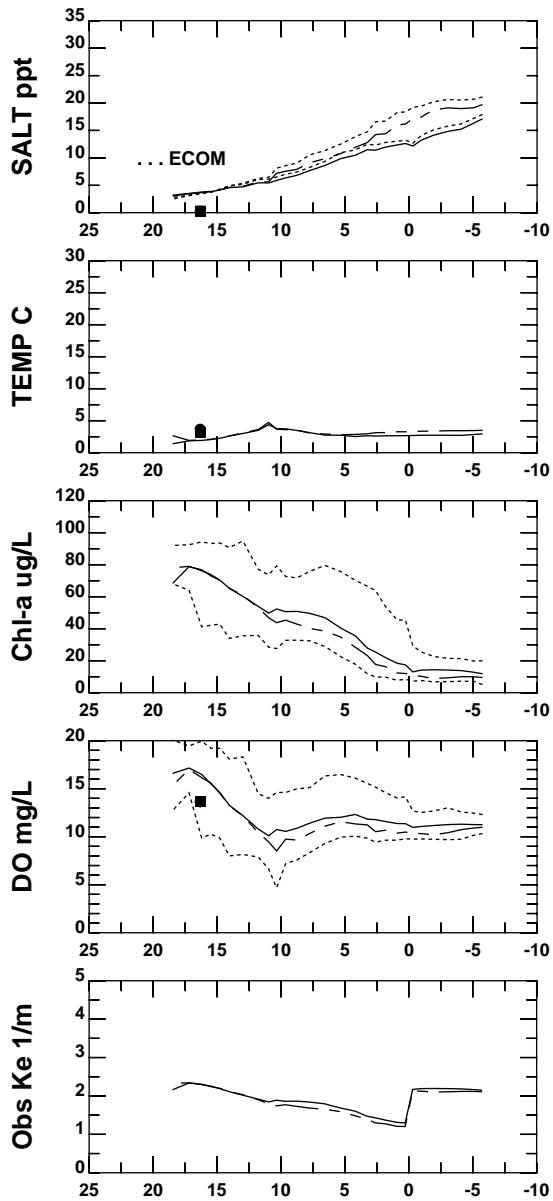
MILE FROM MOUTH HACKENSACK RIVER  
**HACKENSACK RIVER AND NEWARK BAY**

**MILE FROM MOUTH HACKENSACK RIVER**

DATA Dec 30 2000 -Jan 28,2001

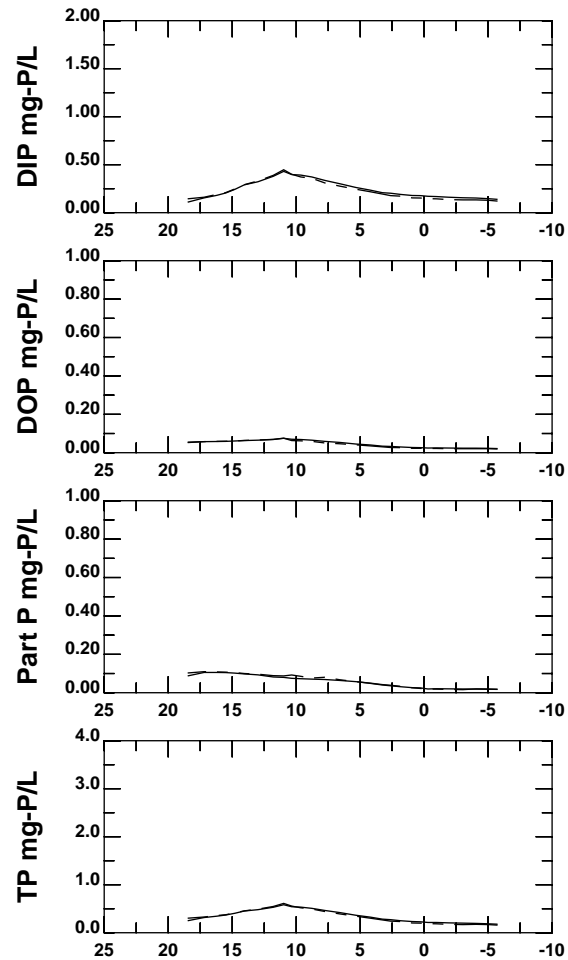
MODEL

	SURF MID BOT			
Harbor Survey	△	▲	Transect	— SURFACE 30-DAY MEAN
	t	e	Embayment	- - - - - BOTTOM 30-DAY MEAN
NYSDEC	○		Transect	- - - - - 30-DAY SURFACE MAX OR
	c		Embayment	— — — — — BOTTOM MIN
NJSIT	◇		Transect	
	p		Embayment	
PVSC	●	■	Transect	
	u	m	Embayment	
MERI	▽		Transect	
	s		Embayment	



**MILE FROM MOUTH HACKENSACK RIVER  
HACKENSACK RIVER AND NEWARK BAY**

DATE: 4/07/2006 TIME: 11:29: 6



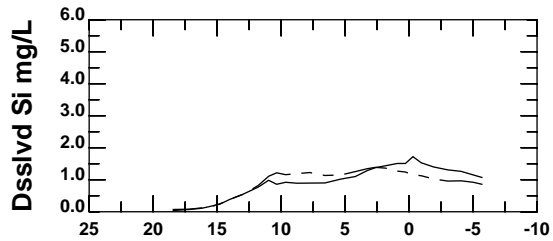
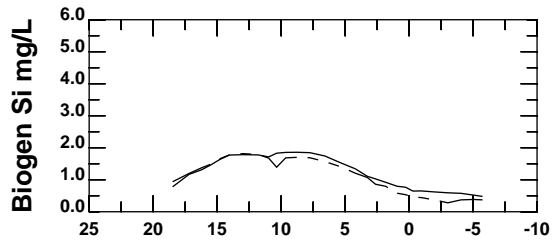
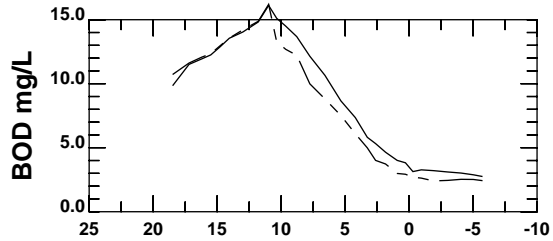
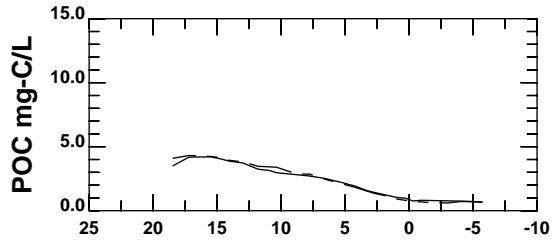
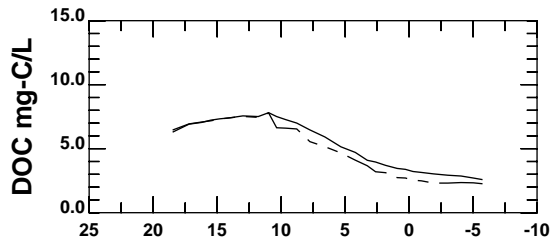
**MILE FROM MOUTH HACKENSACK RIVER**

DATA Jan 29-Feb 27, 2001

MODEL

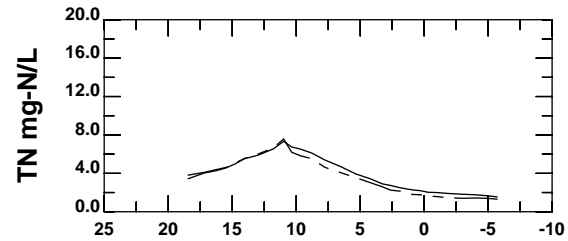
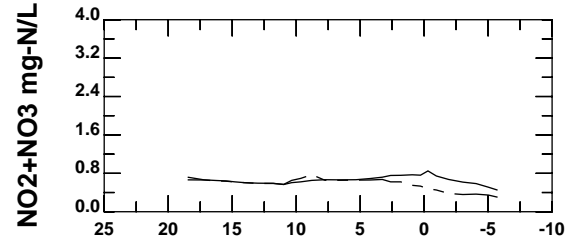
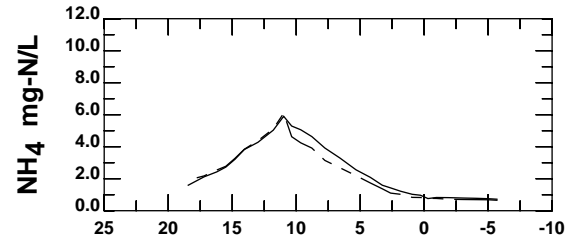
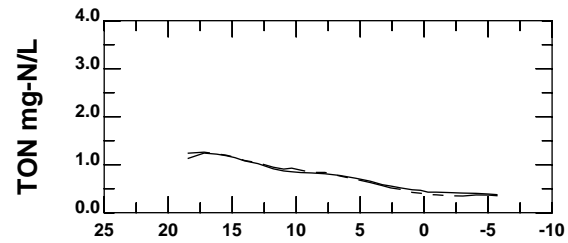
	SURF MID BOT			
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment
			—	SURFACE 30-DAY MEAN
			- - -	BOTTOM 30-DAY MEAN
			- - -	30-DAY SURFACE MAX OR BOTTOM MIN





MILE FROM MOUTH HACKENSACK RIVER  
**HACKENSACK RIVER AND NEWARK BAY**

DATE: 4/07/2006 TIME: 11:29: 6



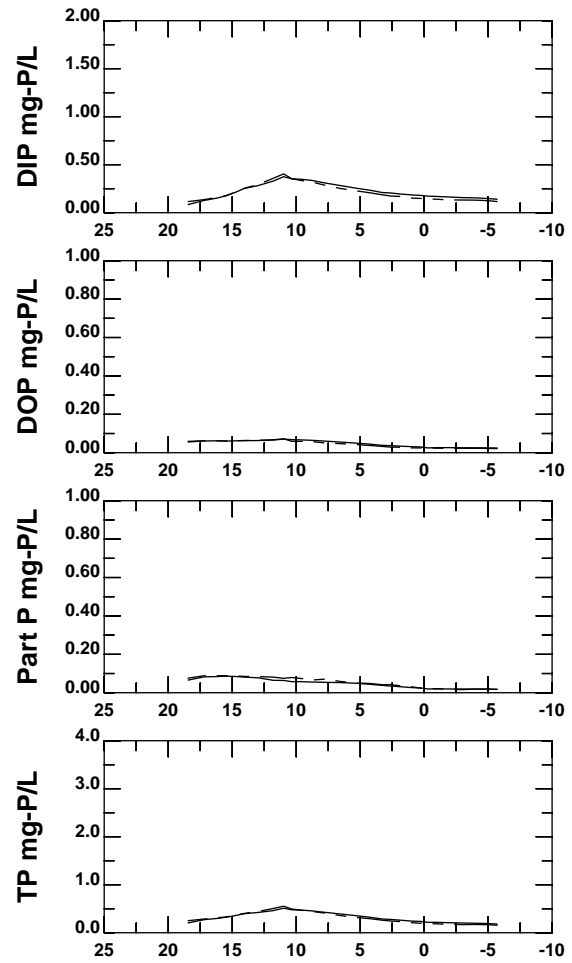
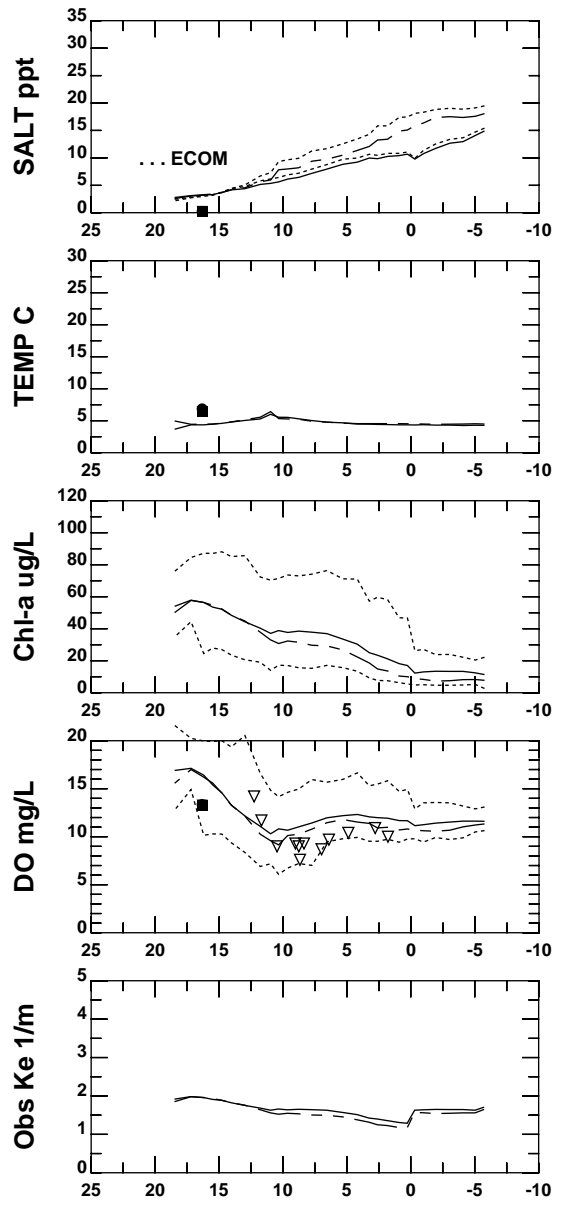
**MILE FROM MOUTH HACKENSACK RIVER**

DATA Jan 29-Feb 27, 2001

	SURF MID BOT			
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

**MODEL**

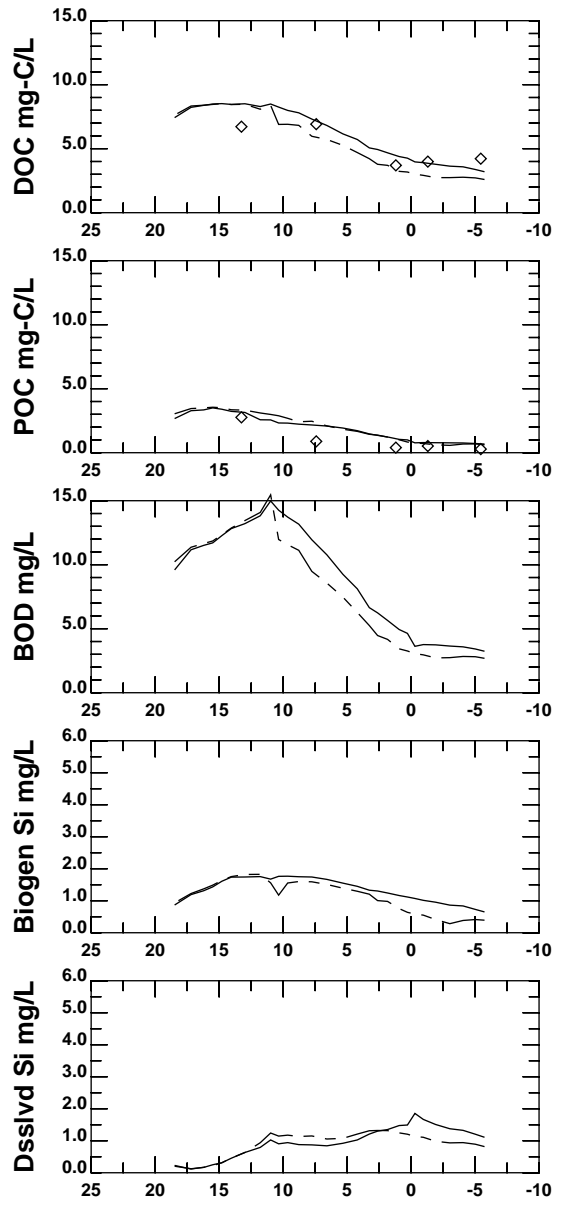
—	SURFACE 30-DAY MEAN
- - - -	BOTTOM 30-DAY MEAN
- · - ·	30-DAY SURFACE MAX OR BOTTOM MIN



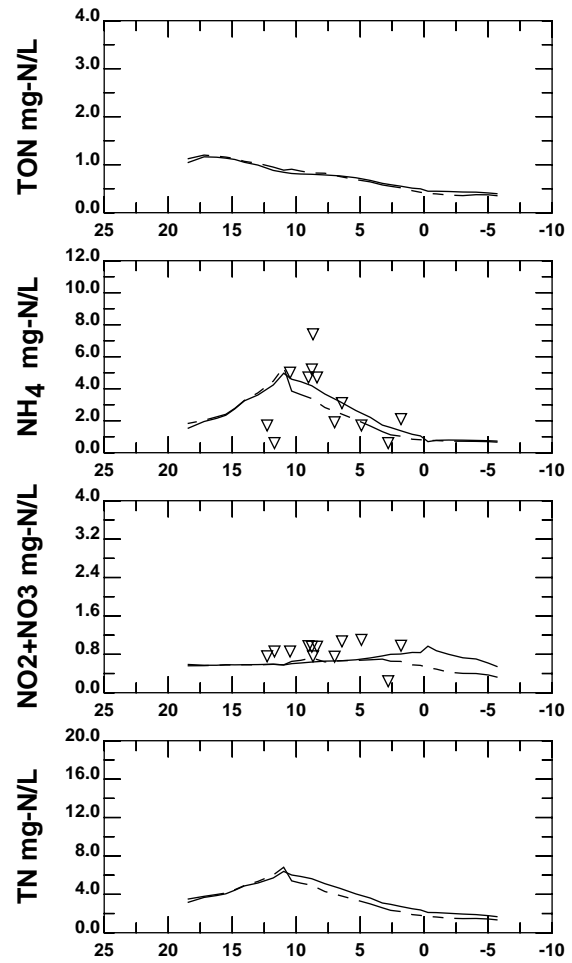
**MILE FROM MOUTH HACKENSACK RIVER  
HACKENSACK RIVER AND NEWARK BAY**

**MILE FROM MOUTH HACKENSACK RIVER**  
 DATA Feb 28-Mar 29, 2001

	SURF MID BOT			MODEL
Harbor Survey	△	▲	Transect	— SURFACE 30-DAY MEAN
	t	e	Embayment	- - - - - BOTTOM 30-DAY MEAN
NYSDEC	○		Transect	- - - - - 30-DAY SURFACE MAX OR
	c		Embayment	— — — — — BOTTOM MIN
NJSIT	◇		Transect	
	p		Embayment	
PVSC	●	■	Transect	
	u	m	Embayment	
MERI	▽		Transect	
	s		Embayment	



MILE FROM MOUTH HACKENSACK RIVER  
**HACKENSACK RIVER AND NEWARK BAY**

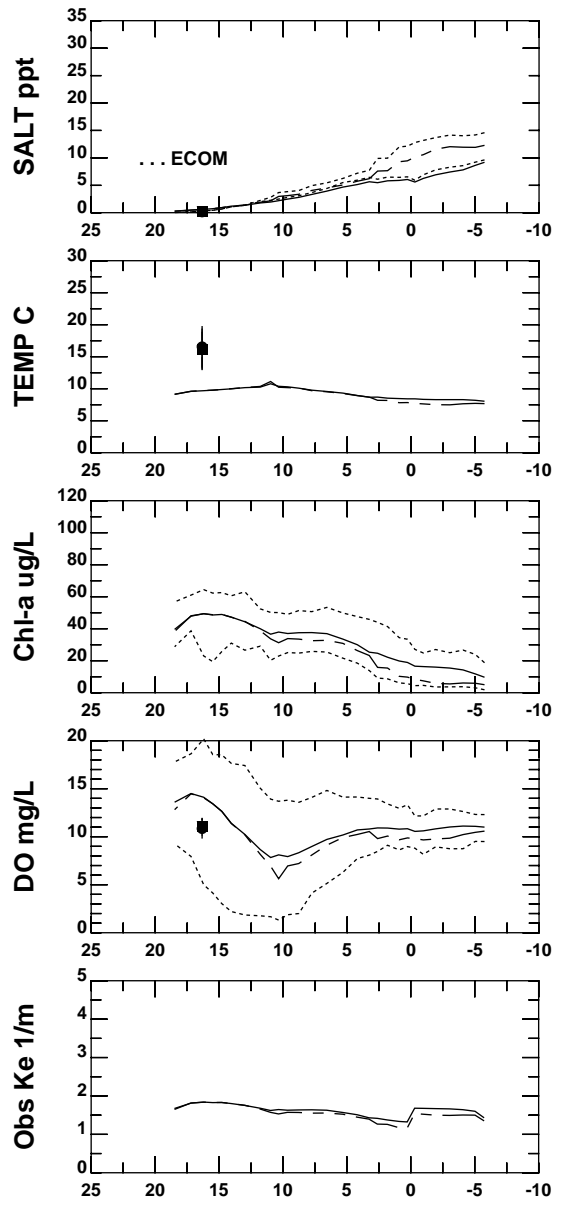


**MILE FROM MOUTH HACKENSACK RIVER**  
 DATA Feb 28-Mar 29, 2001

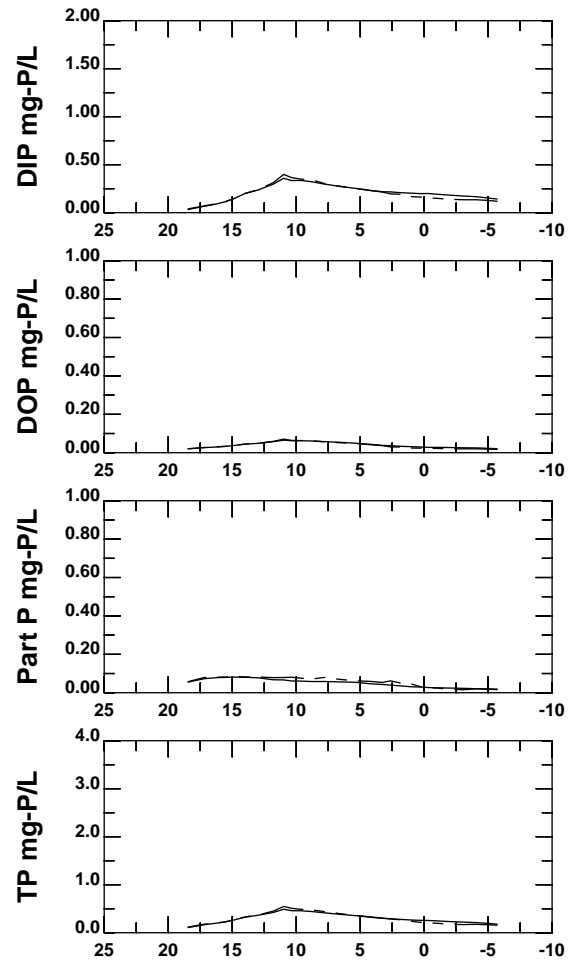
	SURF MID BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment
PVSC	●	■	Transect
	u	m	Embayment
MERI	▽		Transect
	s		Embayment

MODEL	—	SURFACE 30-DAY MEAN
	- - - -	BOTTOM 30-DAY MEAN
	- - -	30-DAY SURFACE MAX OR BOTTOM MIN

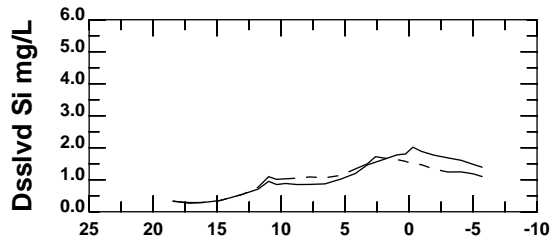
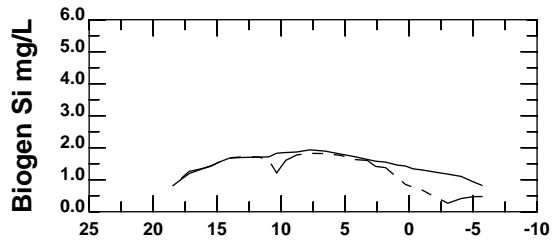
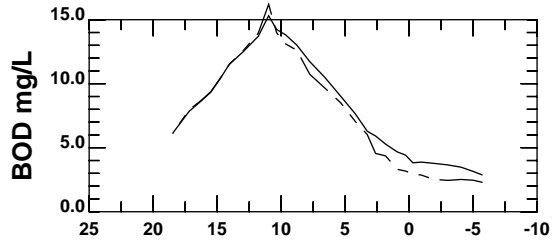
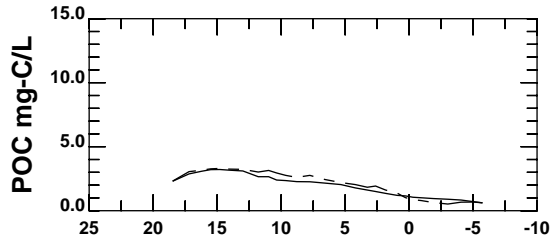
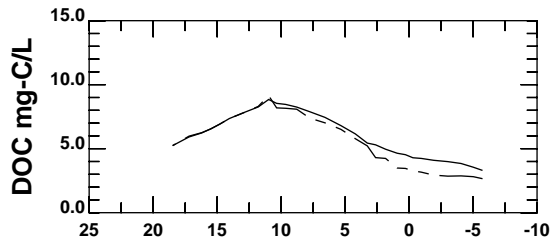


MILE FROM MOUTH HACKENSACK RIVER  
**HACKENSACK RIVER AND NEWARK BAY**



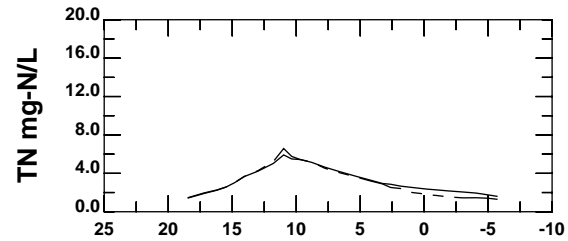
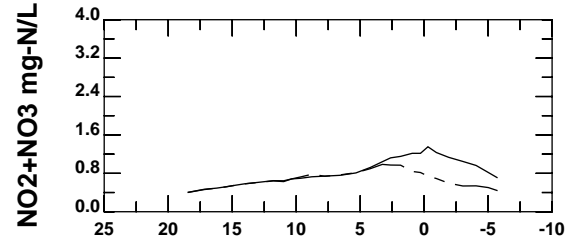
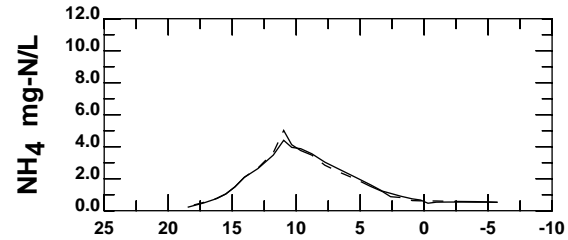
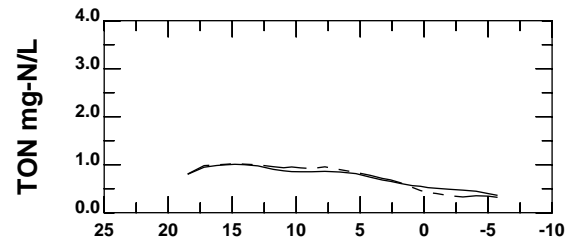
**MILE FROM MOUTH HACKENSACK RIVER**  
 DATA Mar 30-Apr 28,2001

	SURF MID BOT		MODEL
Harbor Survey	△	▲	— SURFACE 30-DAY MEAN
	t	e	- - - - - BOTTOM 30-DAY MEAN
NYSDEC	○		- - - - - 30-DAY SURFACE MAX OR
	c		BOTTOM MIN
NJSIT	◇		
	p		
PVSC	●	■ ▼	
	u	m b	
MERI	▽		
	s		



**MILE FROM MOUTH HACKENSACK RIVER  
HACKENSACK RIVER AND NEWARK BAY**

DATE: 4/07/2006 TIME: 11:29:13



**MILE FROM MOUTH HACKENSACK RIVER**

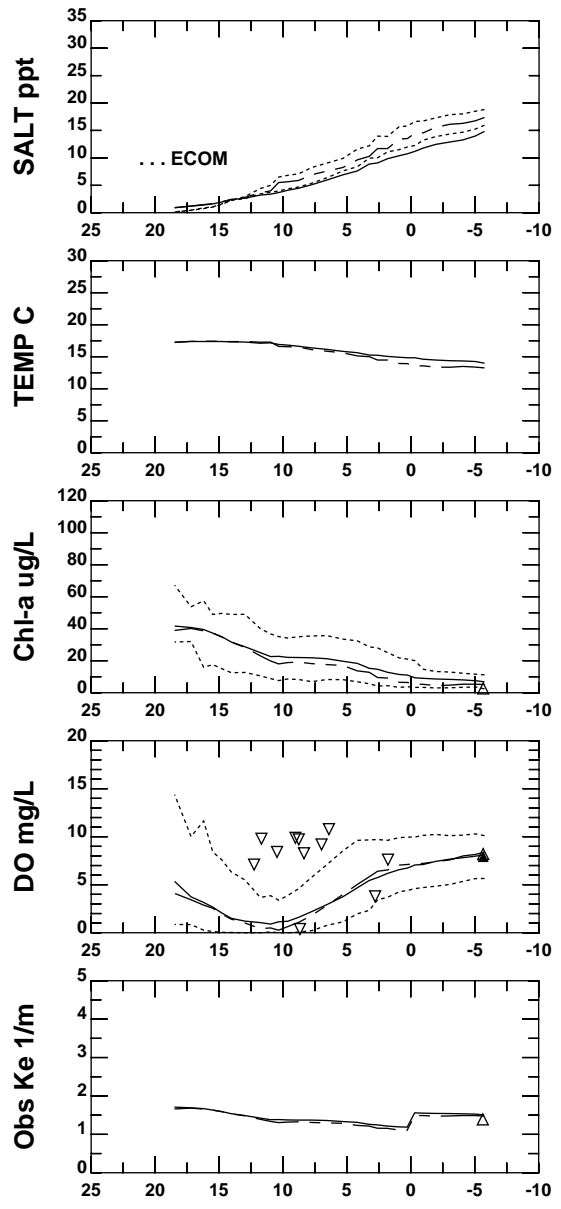
DATA Mar 30-Apr 28,2001

MODEL

	SURF MID BOT			
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

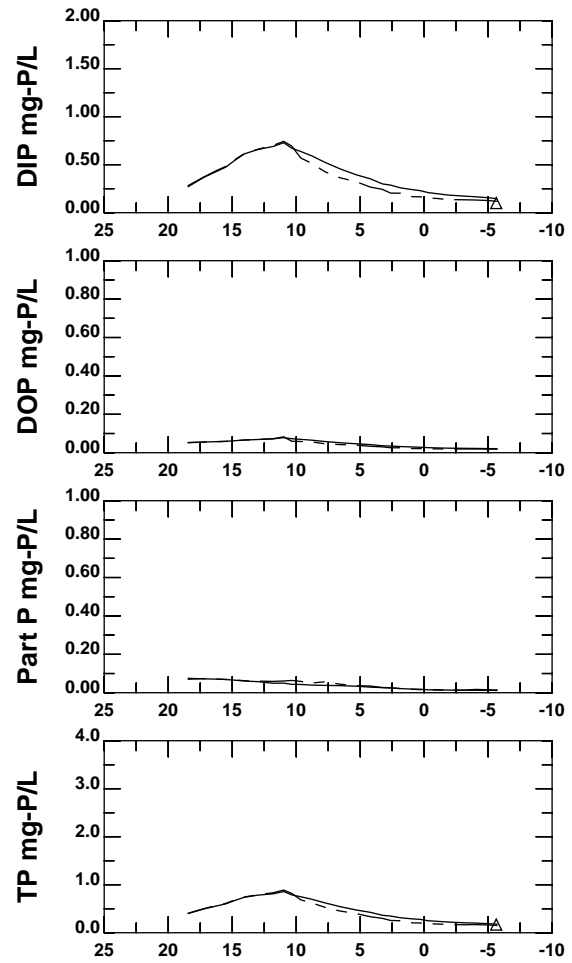
  

—	SURFACE 30-DAY MEAN
- - - -	BOTTOM 30-DAY MEAN
- - -	30-DAY SURFACE MAX OR BOTTOM MIN



MILE FROM MOUTH HACKENSACK RIVER  
**HACKENSACK RIVER AND NEWARK BAY**

DATE: 4/07/2006 TIME: 11:29:17



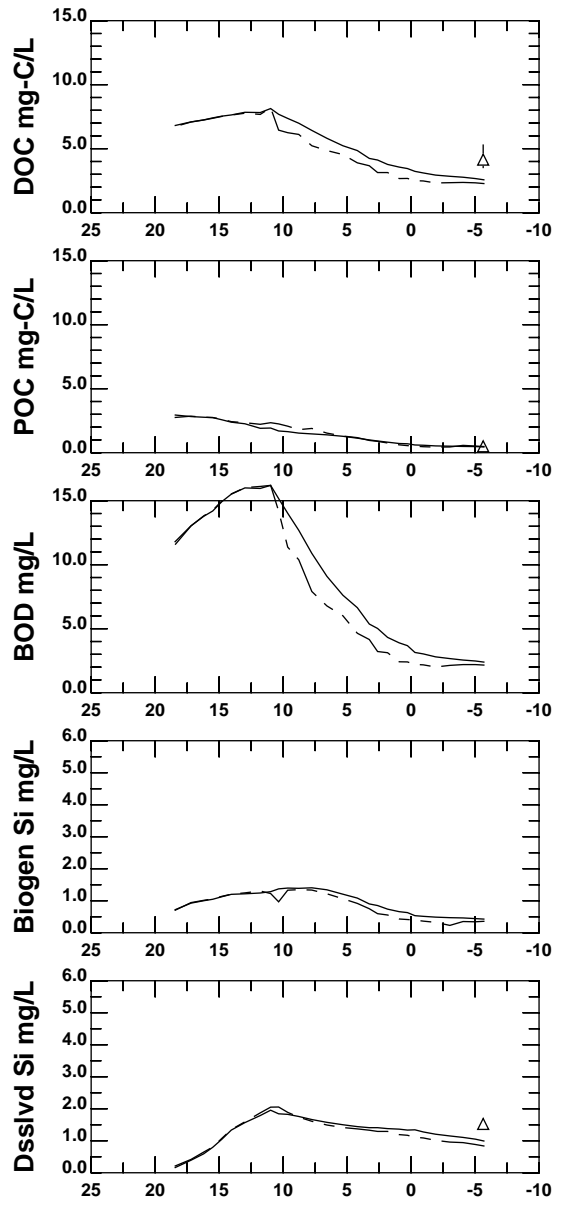
MILE FROM MOUTH HACKENSACK RIVER

DATA Apr 29-May 28,2001

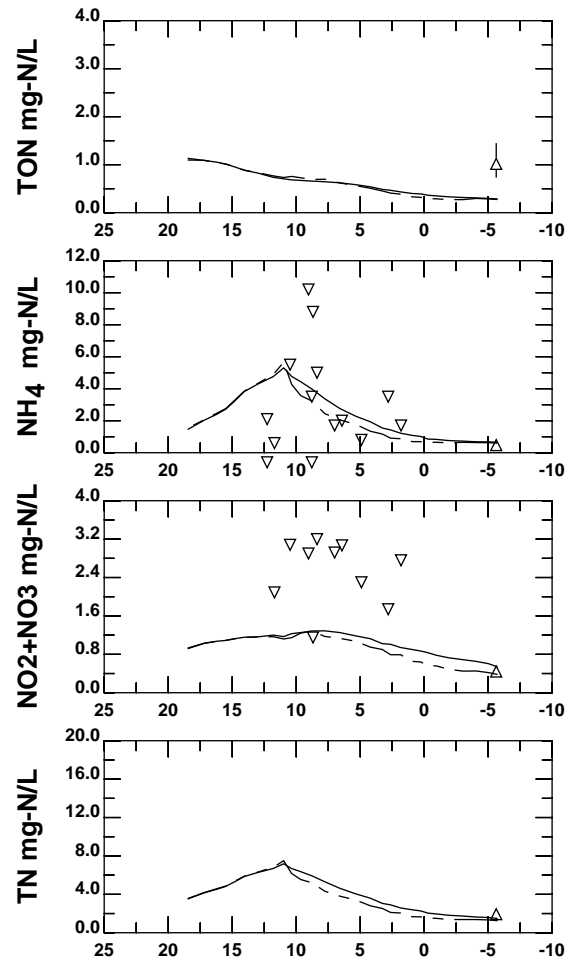
	SURF MID BOT			
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

MODEL

————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

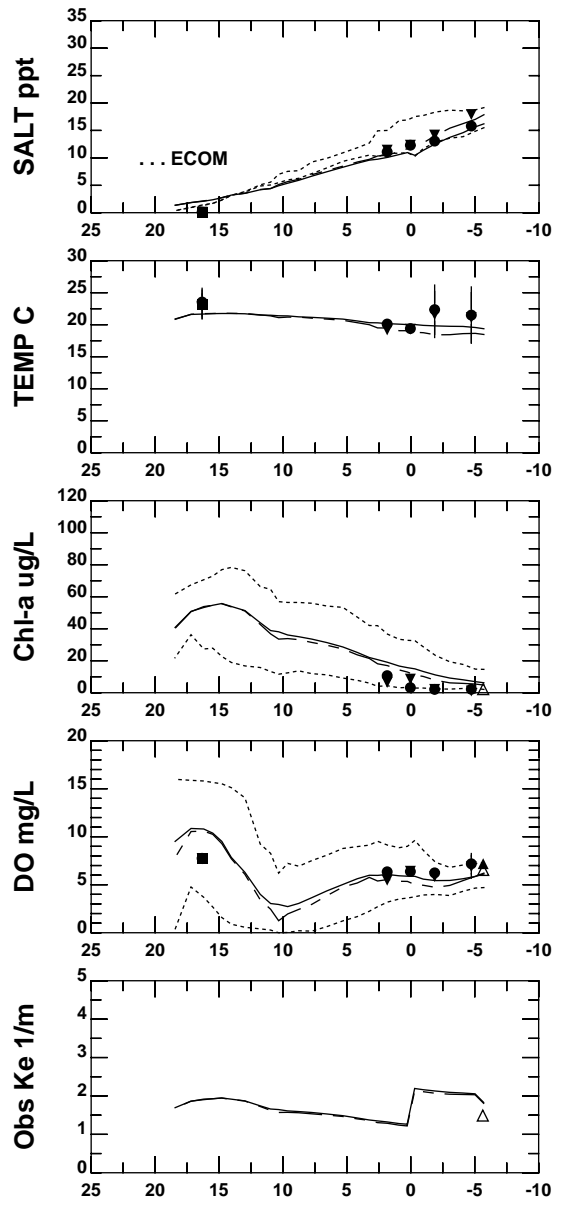


MILE FROM MOUTH HACKENSACK RIVER  
**HACKENSACK RIVER AND NEWARK BAY**



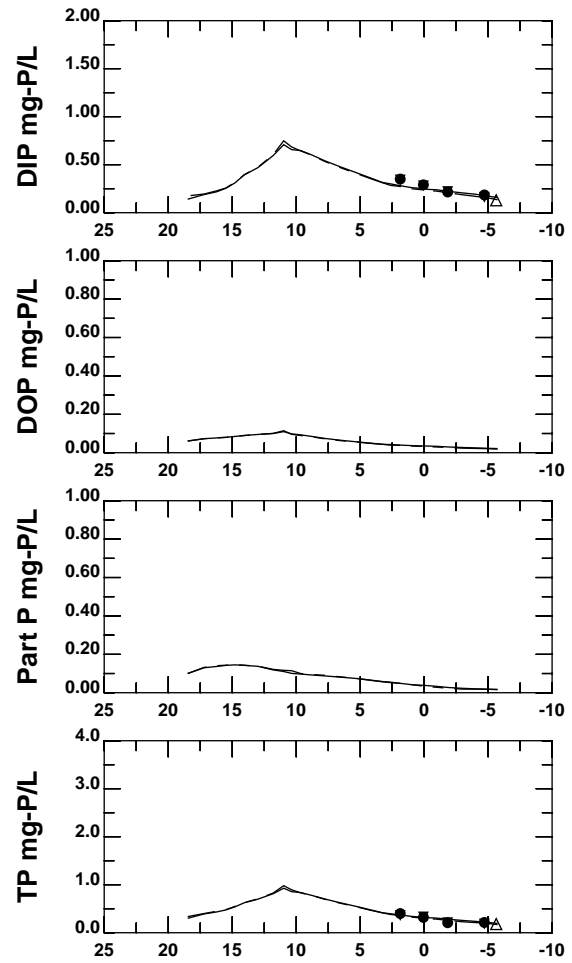
**MILE FROM MOUTH HACKENSACK RIVER**  
 DATA Apr 29-May 28, 2001

	SURF MID BOT			MODEL
Harbor Survey	△	▲	Transect	— SURFACE 30-DAY MEAN
	t	e	Embayment	- - - - - BOTTOM 30-DAY MEAN
NYSDEC	○		Transect	- - - - - 30-DAY SURFACE MAX OR
	c		Embayment	— — — — — BOTTOM MIN
NJSIT	◇		Transect	
	p		Embayment	
PVSC	●	■	Transect	
	u	m	Embayment	
MERI	▽		Transect	
	s		Embayment	



MILE FROM MOUTH HACKENSACK RIVER  
**HACKENSACK RIVER AND NEWARK BAY**

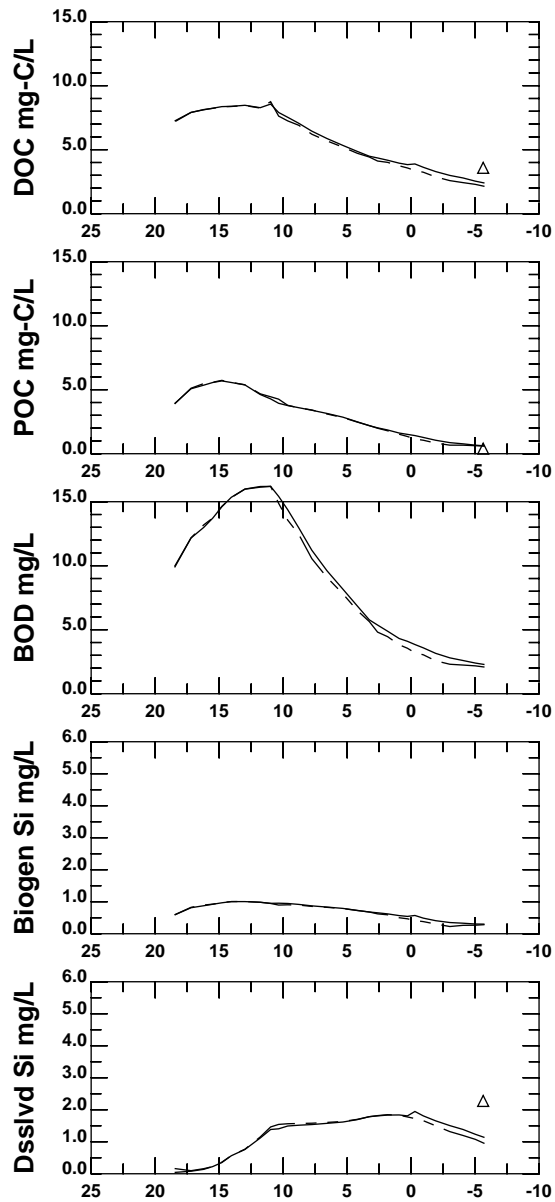
DATE: 4/07/2006 TIME: 11:29:21



MILE FROM MOUTH HACKENSACK RIVER  
 DATA May 29-Jun 27,2001

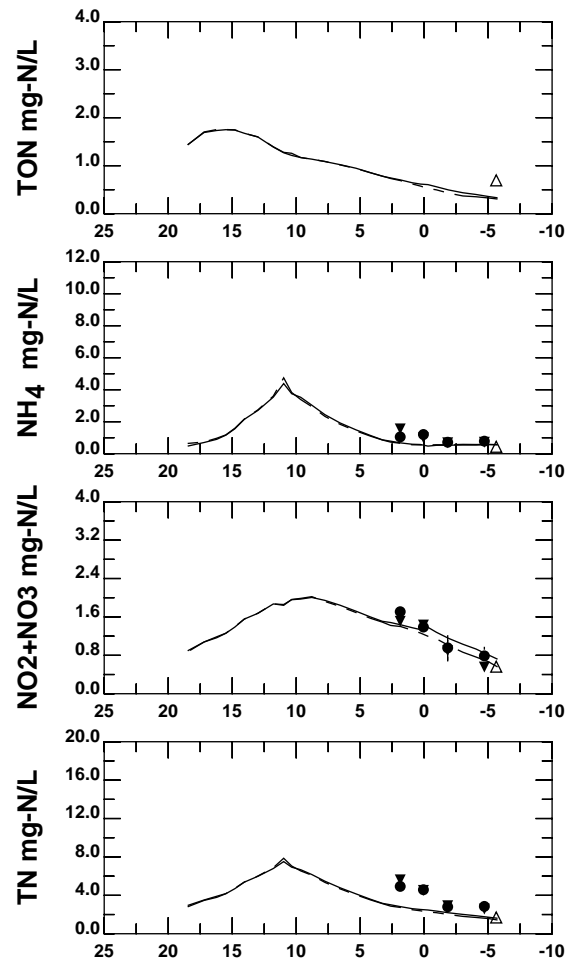
	SURF MID BOT			MODEL
Harbor Survey	△	▲	▲	— SURFACE 30-DAY MEAN
	t	e	e	- - - - - BOTTOM 30-DAY MEAN
NYSDEC	○	○	○	- - - - - 30-DAY SURFACE MAX OR BOTTOM MIN
	c	c	c	
NJSIT	◇	◇	◇	
	p	p	p	
PVSC	●	■	▼	
	u	m	b	
MERI	▽	▽	▽	
	s	s	s	





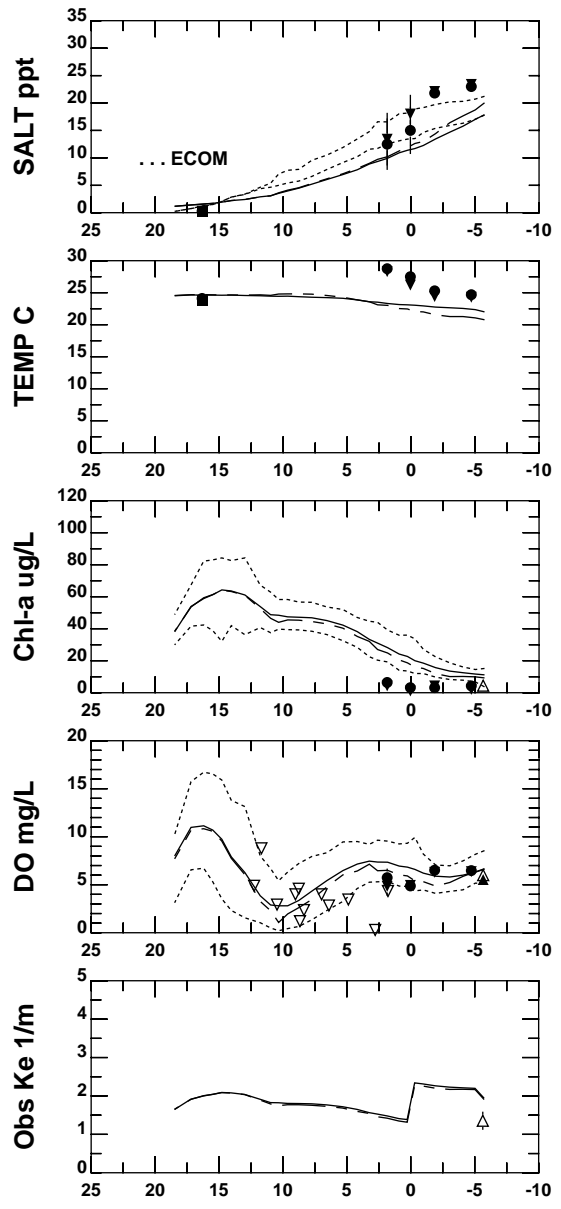
MILE FROM MOUTH HACKENSACK RIVER  
**HACKENSACK RIVER AND NEWARK BAY**

DATE: 4/07/2006 TIME: 11:29:21



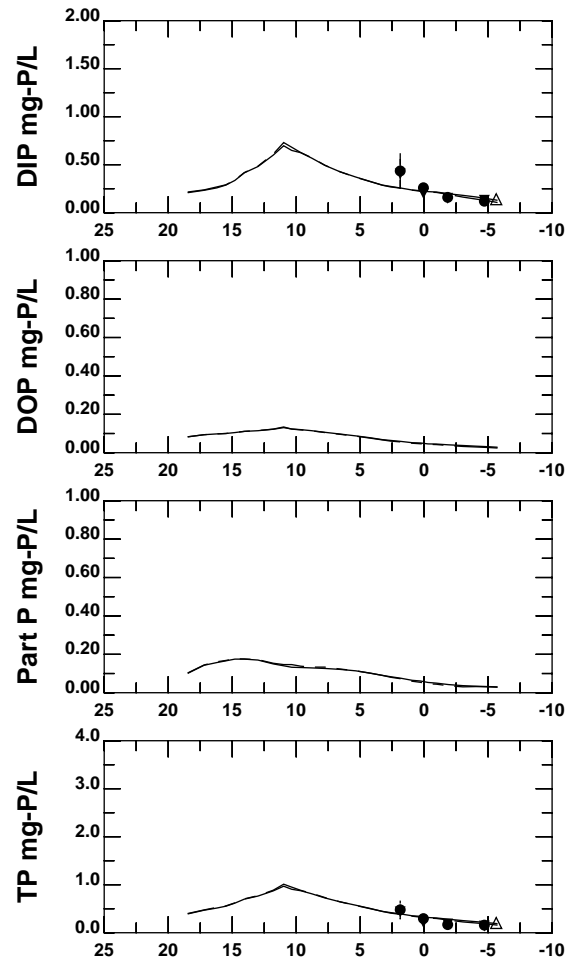
MILE FROM MOUTH HACKENSACK RIVER  
 DATA May 29-Jun 27, 2001

	SURF MID BOT			MODEL
Harbor Survey	△	▲	Transect	— SURFACE 30-DAY MEAN
	t	e	Embayment	--- BOTTOM 30-DAY MEAN
NYSDEC	○		Transect	- - - 30-DAY SURFACE MAX OR
	c		Embayment	BOTTOM MIN
NJSIT	◇		Transect	
	p		Embayment	
PVSC	●	■	Transect	
	u	m	Embayment	
MERI	▽		Transect	
	s		Embayment	



**HACKENSACK RIVER AND NEWARK BAY**

DATE: 4/07/2006 TIME: 11:29:25

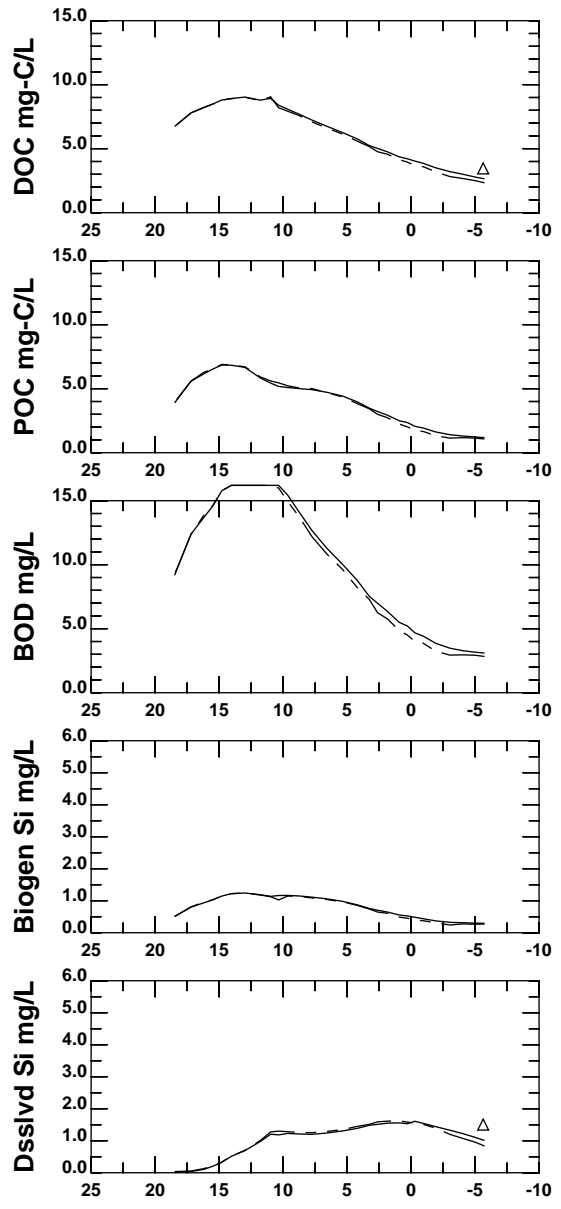


**MILE FROM MOUTH HACKENSACK RIVER**  
 DATA Jun 28-Jul 27,2001

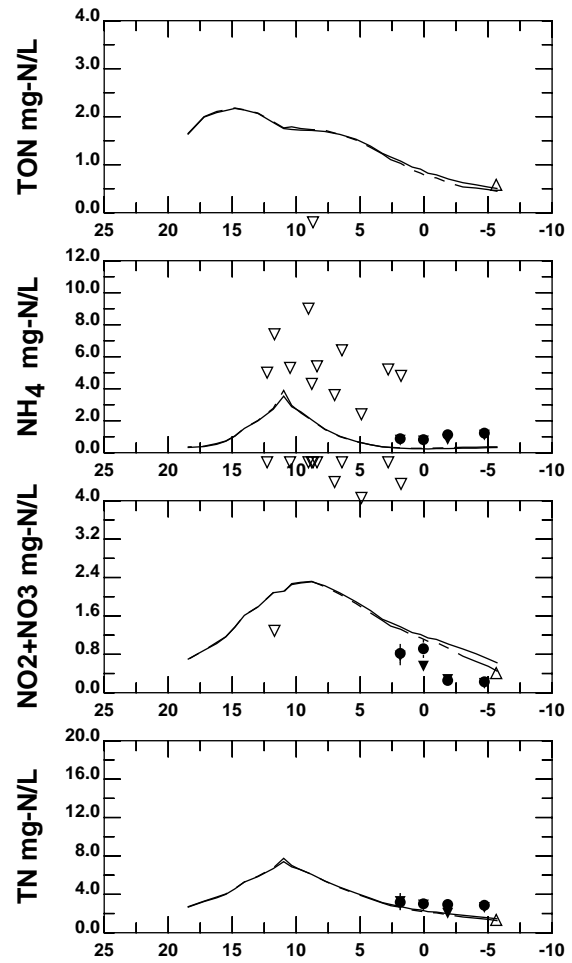
	<b>SURF MID BOT</b>		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment
PVSC	●	■	Transect
	u	m	Embayment
MERI	▽		Transect
	s		Embayment

MODEL	—	<b>SURFACE 30-DAY MEAN</b>
	- - -	<b>BOTTOM 30-DAY MEAN</b>
	- - -	<b>30-DAY SURFACE MAX OR BOTTOM MIN</b>

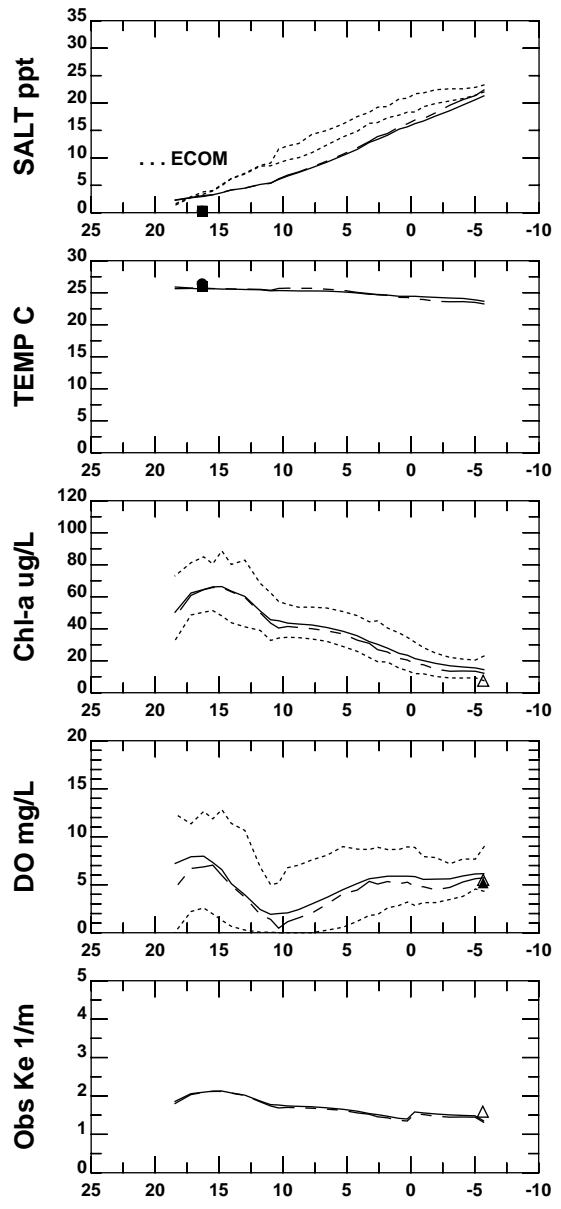


MILE FROM MOUTH HACKENSACK RIVER  
**HACKENSACK RIVER AND NEWARK BAY**



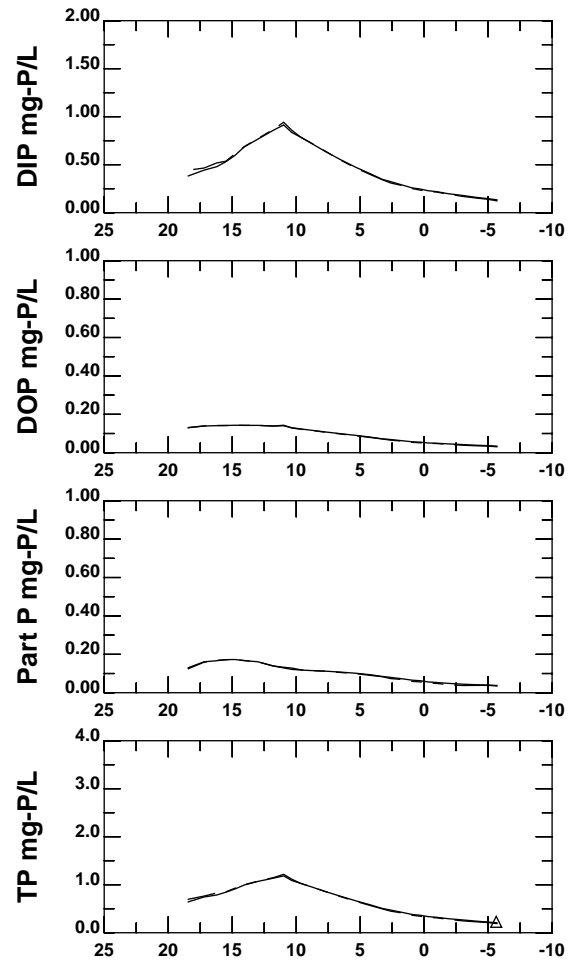
**MILE FROM MOUTH HACKENSACK RIVER**  
 DATA Jun 28-Jul 27, 2001

	SURF MID BOT			MODEL
Harbor Survey	△	▲	Transect	— SURFACE 30-DAY MEAN
	t	e	Embayment	- - - - - BOTTOM 30-DAY MEAN
NYSDEC	○		Transect	- - - - - 30-DAY SURFACE MAX OR
	c		Embayment	— — — — — BOTTOM MIN
NJSIT	◇		Transect	
	p		Embayment	
PVSC	●	■	Transect	
	u	m	Embayment	
MERI	▽		Transect	
	s		Embayment	



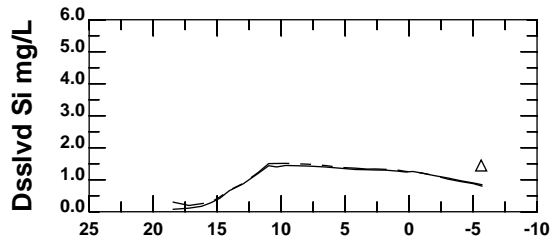
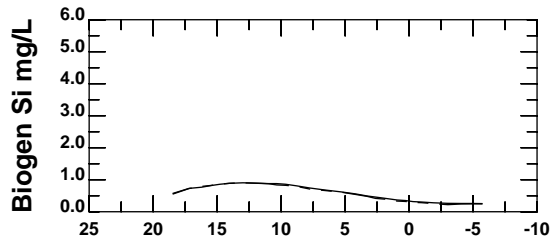
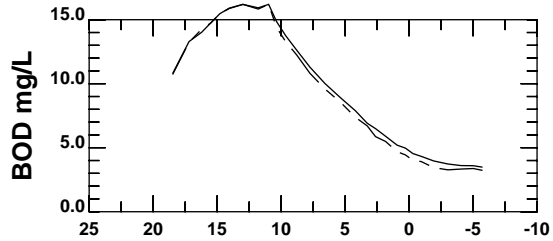
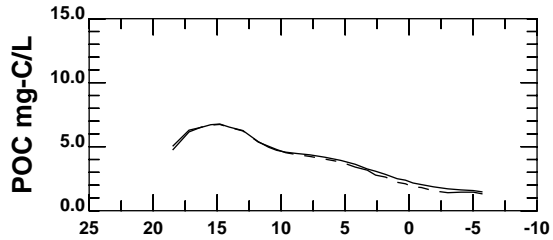
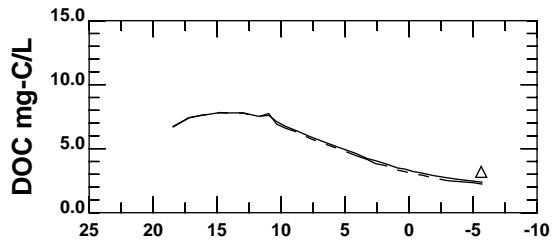
MILE FROM MOUTH HACKENSACK RIVER  
**HACKENSACK RIVER AND NEWARK BAY**

DATE: 4/07/2006 TIME: 11:29:30



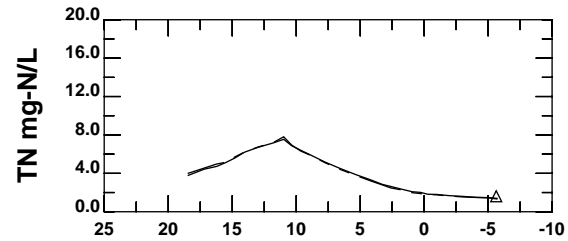
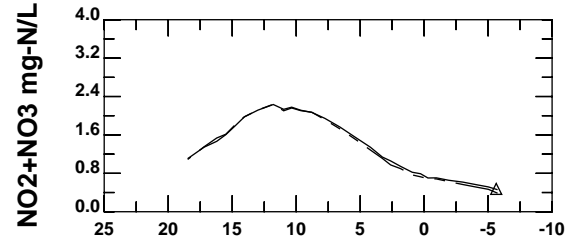
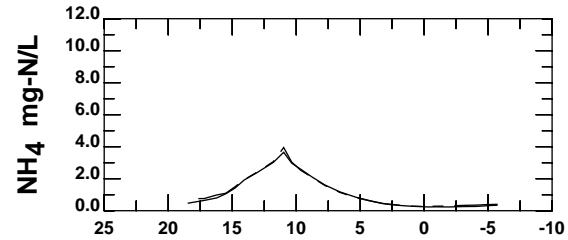
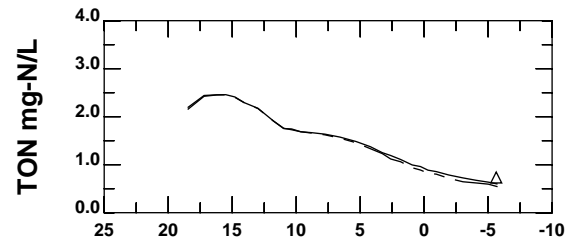
MILE FROM MOUTH HACKENSACK RIVER  
 DATA Jul 27-Aug 26,2001

	SURF MID BOT			MODEL
Harbor Survey	△	▲	▲	— SURFACE 30-DAY MEAN
	t	e	e	--- BOTTOM 30-DAY MEAN
NYSDEC	○			- - - 30-DAY SURFACE MAX OR BOTTOM MIN
	c			
NJSIT	◇			
	p			
PVSC	●	■	▼	
	u	m	b	
MERI	▽			
	s			



**MILE FROM MOUTH HACKENSACK RIVER**  
**HACKENSACK RIVER AND NEWARK BAY**

DATE: 4/07/2006 TIME: 11:29:30

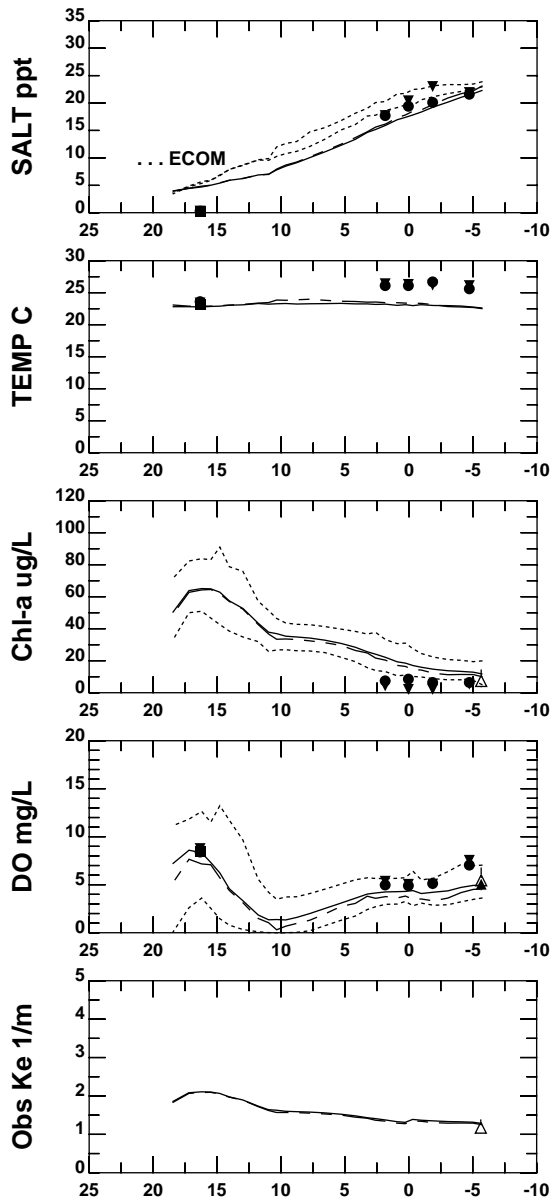


**MILE FROM MOUTH HACKENSACK RIVER**  
**DATA Jul 27-Aug 26, 2001**

	SURF MID BOT			
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

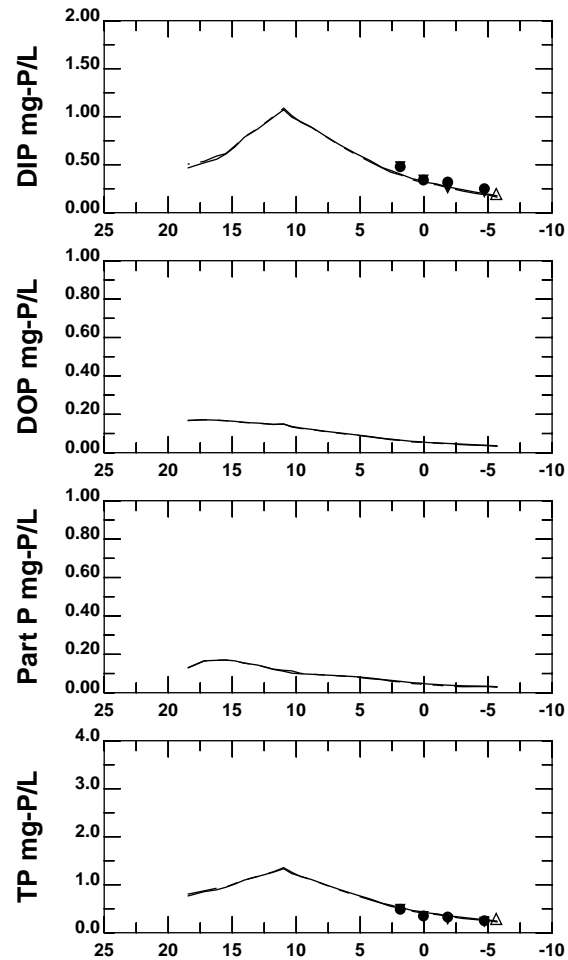
**MODEL**

————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN



**MILE FROM MOUTH HACKENSACK RIVER  
HACKENSACK RIVER AND NEWARK BAY**

DATE: 4/07/2006 TIME: 11:29:34

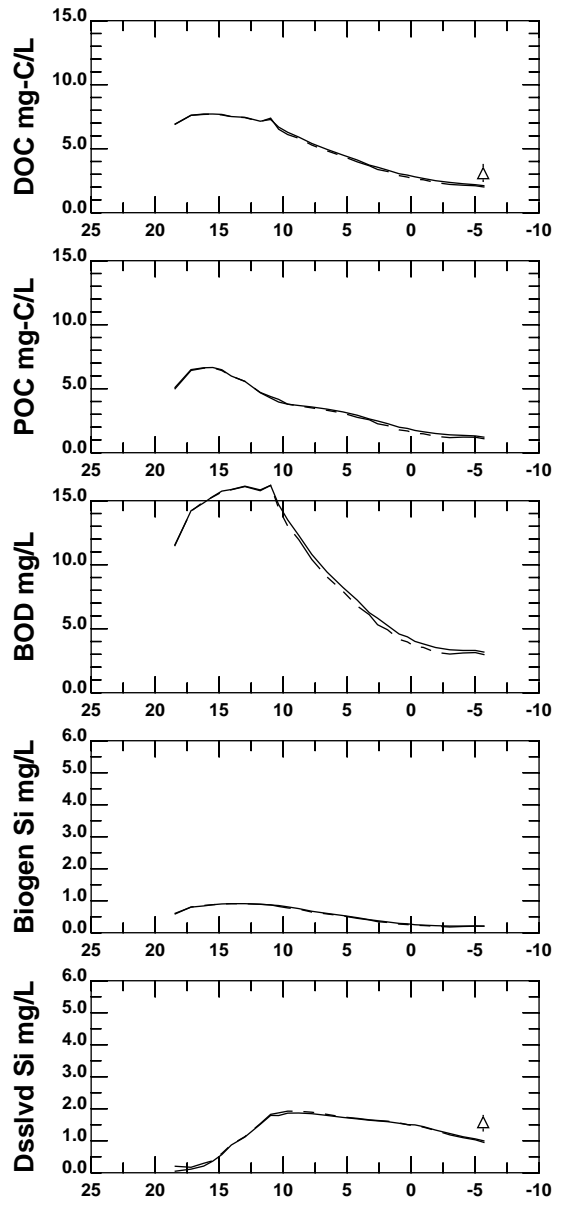


**MILE FROM MOUTH HACKENSACK RIVER  
DATA Aug 27-Sep 25,2001**

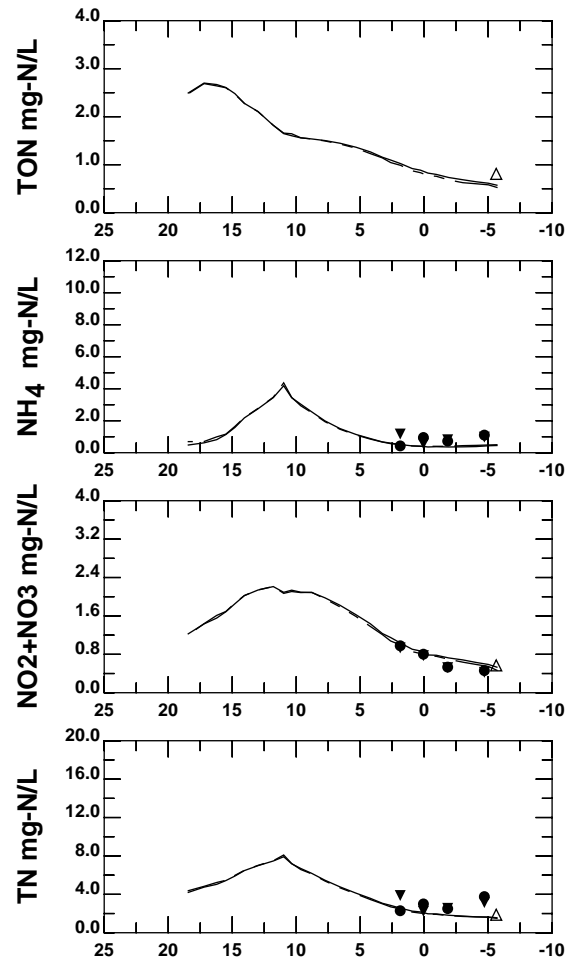
	SURF MID BOT			
Harbor Survey	△	▲	Transect	
	t	e	Embayment	
NYSDEC	○		Transect	
	c		Embayment	
NJSIT	◇		Transect	
	p		Embayment	
PVSC	●	■	Transect	
	u	m	Embayment	
MERI	▽		Transect	
	s		Embayment	

**MODEL**

—	SURFACE 30-DAY MEAN
- - - -	BOTTOM 30-DAY MEAN
- · - ·	30-DAY SURFACE MAX OR BOTTOM MIN

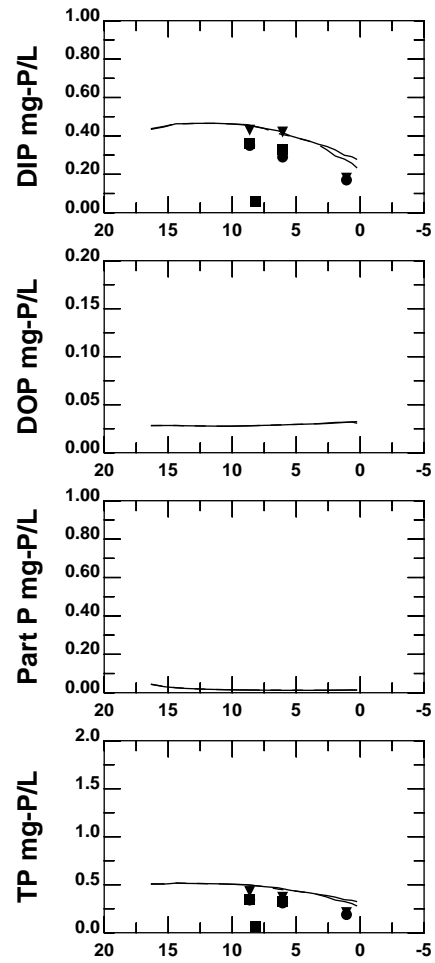
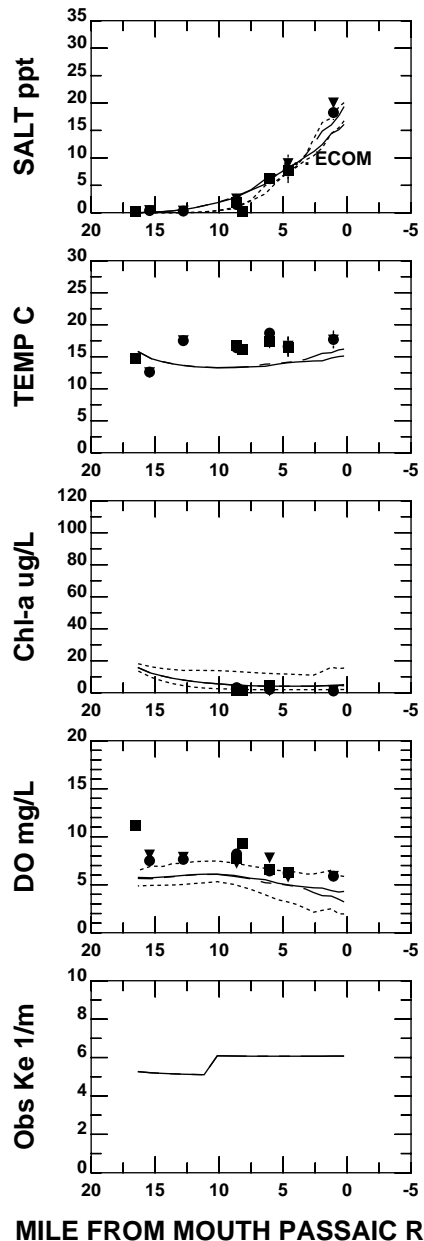


MILE FROM MOUTH HACKENSACK RIVER  
**HACKENSACK RIVER AND NEWARK BAY**



MILE FROM MOUTH HACKENSACK RIVER  
 DATA Aug 27-Sep 25,2001

	SURF MID BOT			MODEL
Harbor Survey	△		▲	— SURFACE 30-DAY MEAN
	t		e	- - - - - BOTTOM 30-DAY MEAN
NYSDEC	○			- - - - - 30-DAY SURFACE MAX OR BOTTOM MIN
	c			
NJSIT	◇			
	p			
PVSC	●	■	▼	
	u	m	b	
MERI	▽			
	s			



**MILE FROM MOUTH PASSAIC RIVER**

DATA Oct 1-30,2000

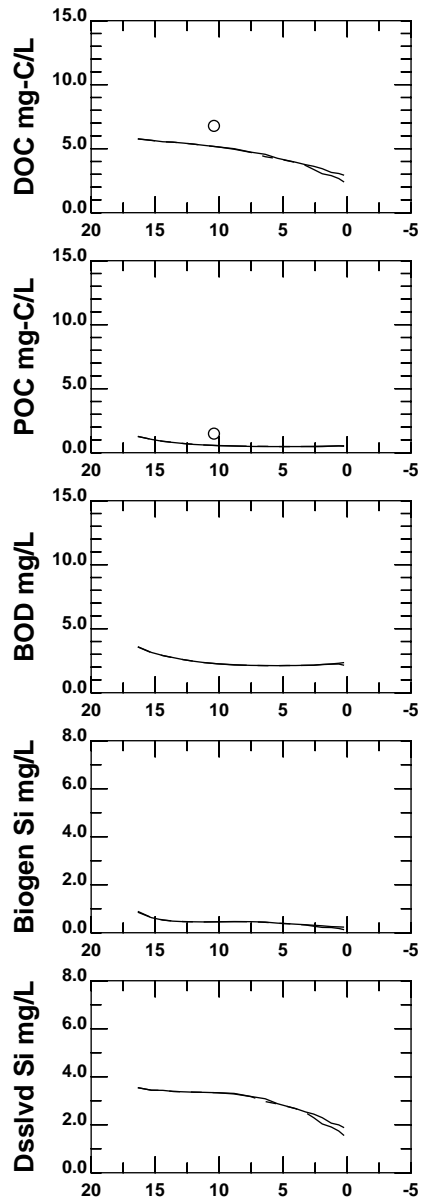
	SURF MID BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment
PVSC	●	■	Transect
	u	m	Embayment
MERI	▽		Transect
	s		Embayment

**MODEL**

————	SURFACE 30-DAY MEAN
- - - - -	BOTTOM 30-DAY MEAN
— — —	30-DAY SURFACE MAX OR BOTTOM MIN

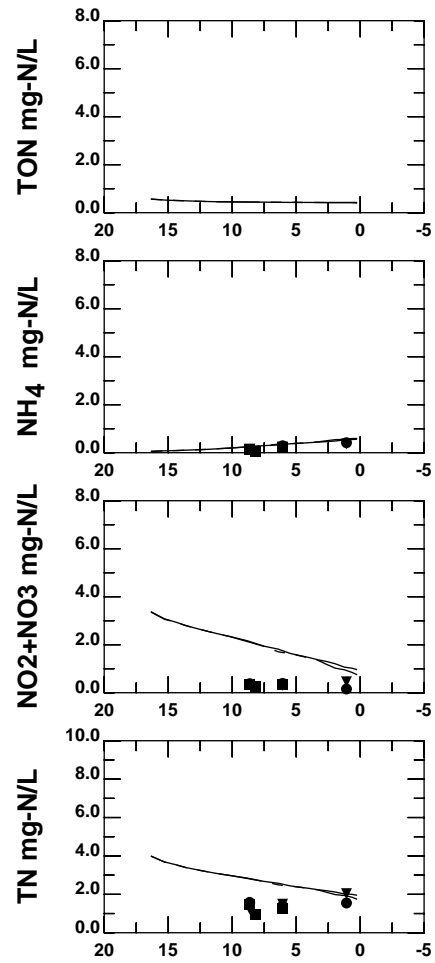
PASSAIC RIVER





MILE FROM MOUTH PASSAIC RIVER

### PASSAIC RIVER

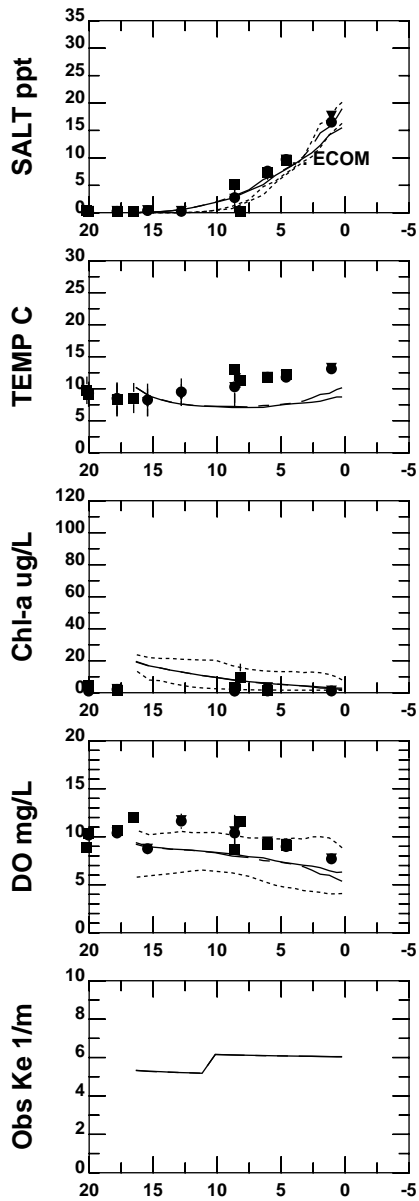


MILE FROM MOUTH PASSAIC RIVER  
DATA Oct 1-30,2000

	SURF	MID	BOT	
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

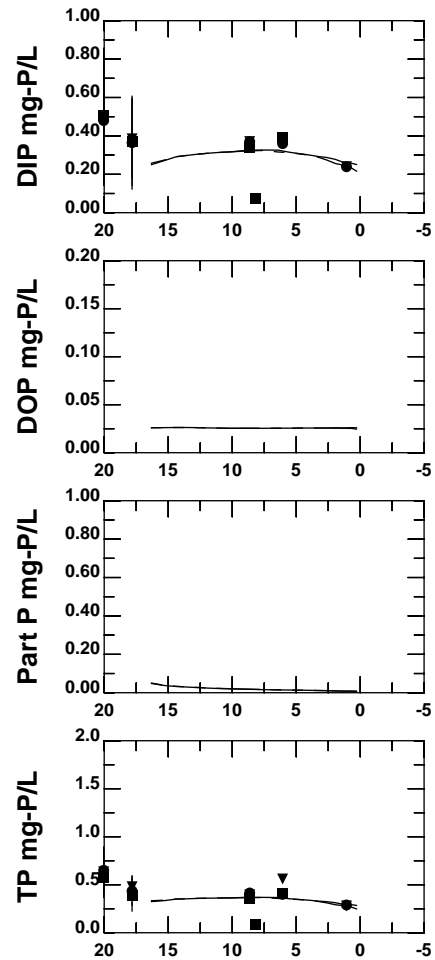
MODEL

- SURFACE 30-DAY MEAN
- - - - - BOTTOM 30-DAY MEAN
- - - 30-DAY SURFACE MAX OR BOTTOM MIN



MILE FROM MOUTH PASSAIC RIVER

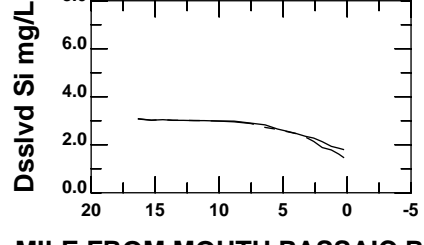
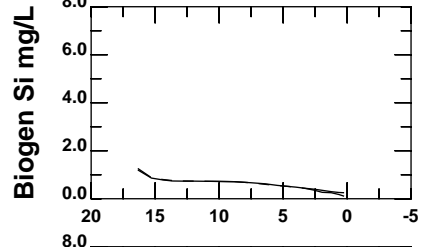
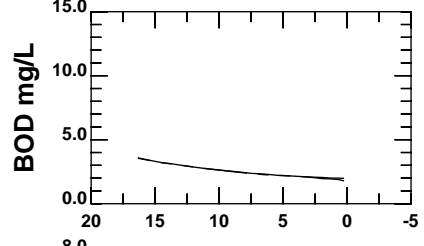
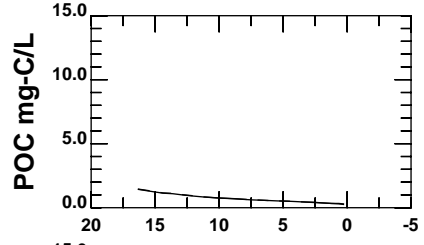
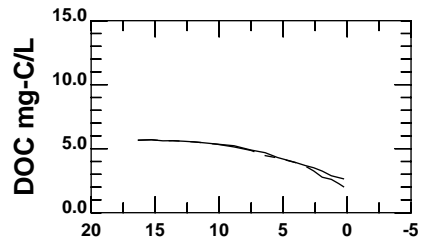
**PASSAIC RIVER**



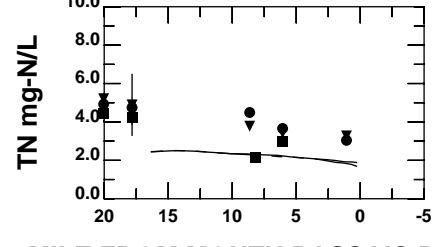
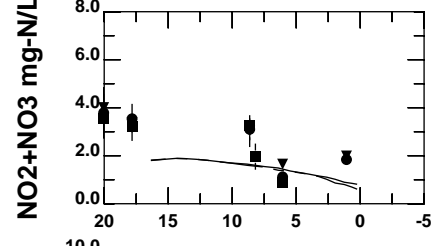
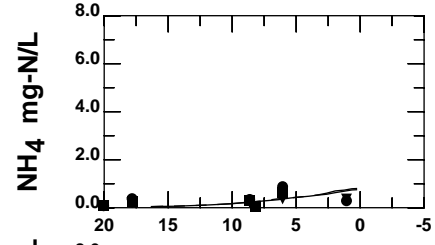
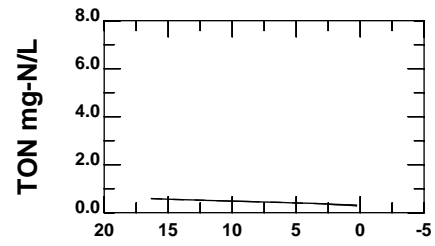
**MILE FROM MOUTH PASSAIC RIVER**  
 DATA Oct 31-Nov 29,2000

	SURF MID BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment
PVSC	●	■	Transect
	u	m	Embayment
MERI	▽		Transect
	s		Embayment

MODEL	
—	SURFACE 30-DAY MEAN
- - - -	BOTTOM 30-DAY MEAN
- · - ·	30-DAY SURFACE MAX OR BOTTOM MIN



MILE FROM MOUTH PASSAIC RIVER



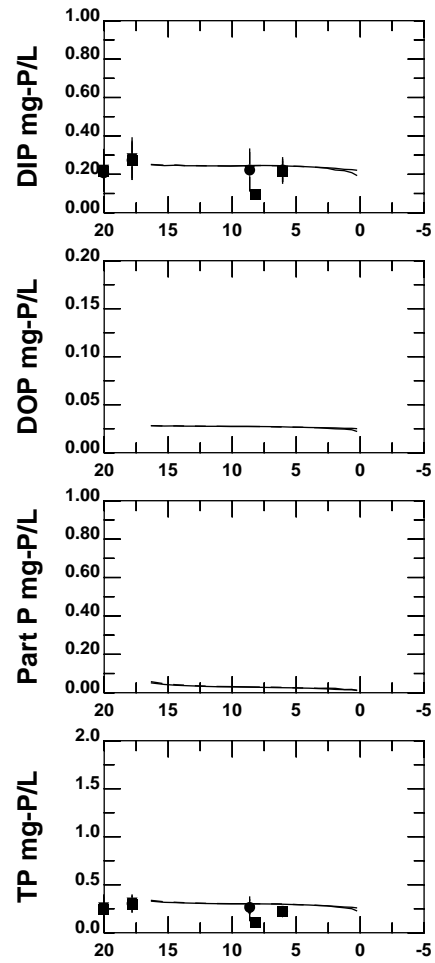
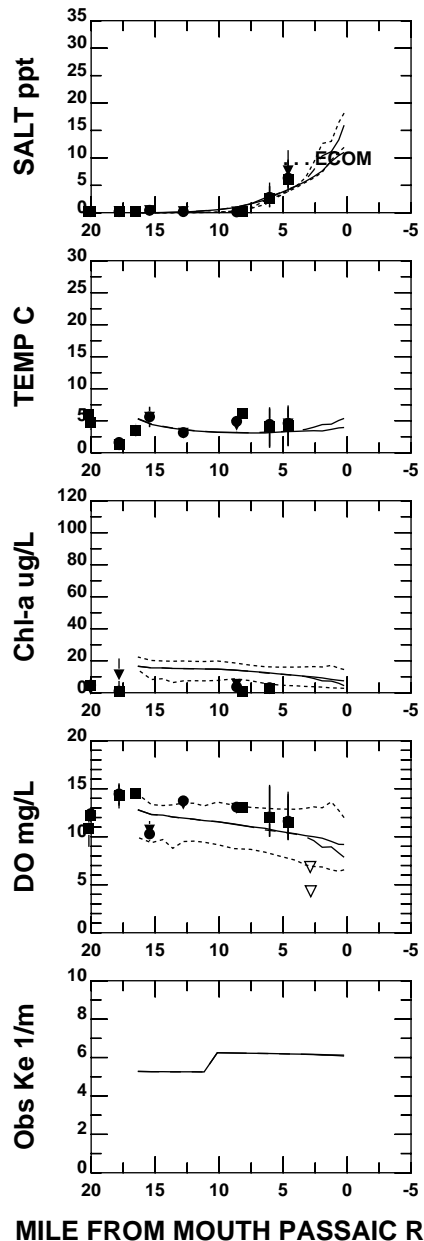
MILE FROM MOUTH PASSAIC RIVER  
DATA Oct 31-Nov 29,2000

	SURF MID BOT			
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

MODEL

- SURFACE 30-DAY MEAN
- - - - - BOTTOM 30-DAY MEAN
- - - 30-DAY SURFACE MAX OR BOTTOM MIN

**PASSAIC RIVER**



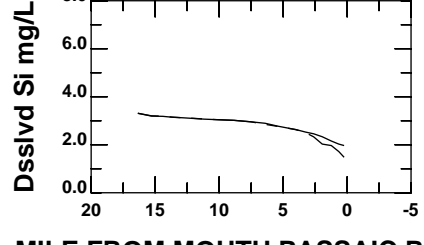
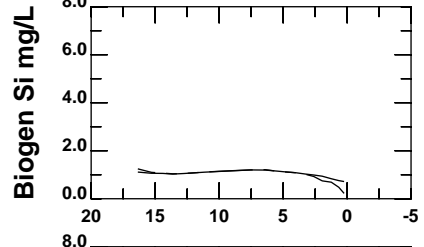
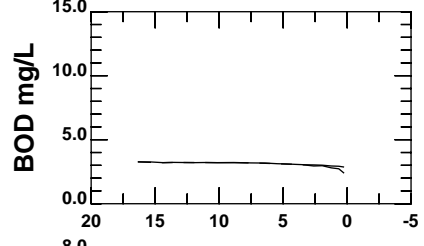
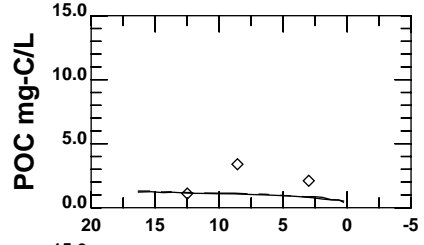
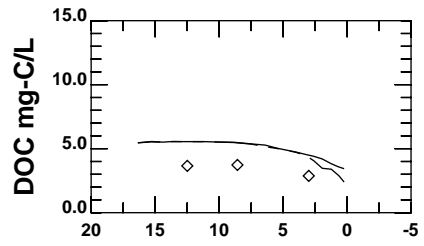
**MILE FROM MOUTH PASSAIC RIVER**  
 DATA Nov 30-Dec 29,2000

	SURF MID BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment
PVSC	●	■	Transect
	u	m	Embayment
MERI	▽		Transect
	s		Embayment

**MODEL**

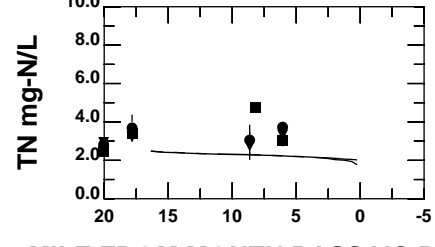
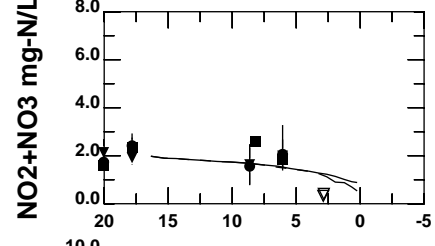
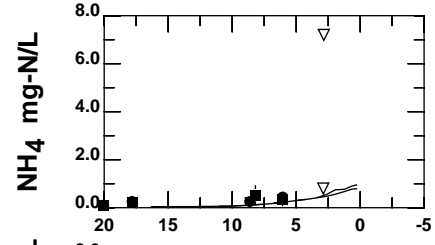
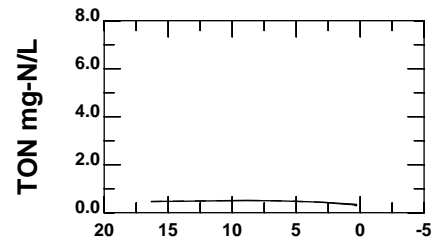
————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

**PASSAIC RIVER**



MILE FROM MOUTH PASSAIC RIVER

**PASSAIC RIVER**

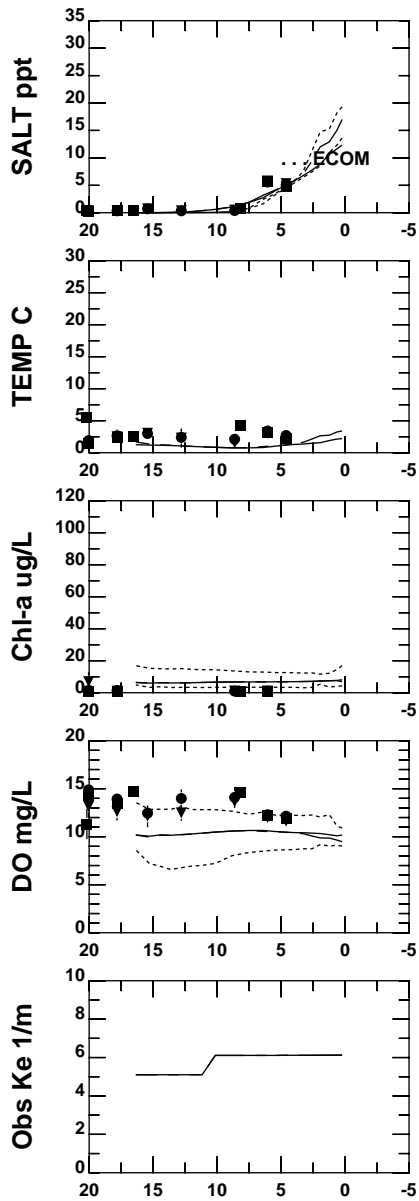


MILE FROM MOUTH PASSAIC RIVER  
DATA Nov 30-Dec 29,2000

	SURF MID BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment
PVSC	●	■ ▼	Transect
	u	m b	Embayment
MERI	▽		Transect
	s		Embayment

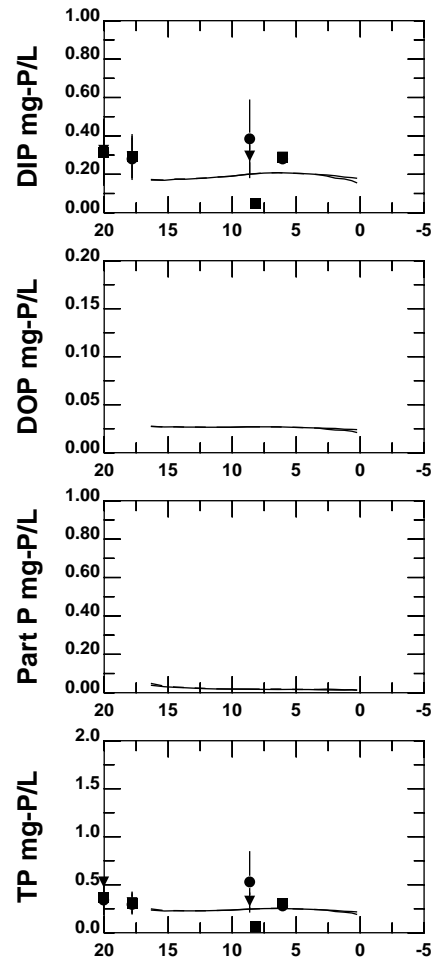
MODEL

- SURFACE 30-DAY MEAN
- - - - - BOTTOM 30-DAY MEAN
- · - 30-DAY SURFACE MAX OR BOTTOM MIN



MILE FROM MOUTH PASSAIC RIVER

### PASSAIC RIVER



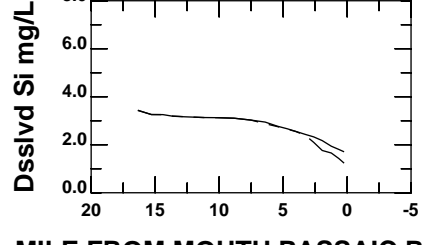
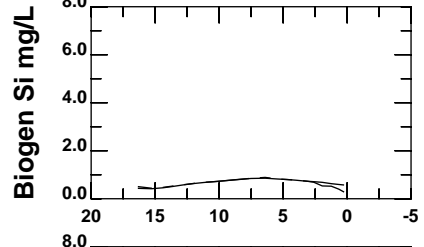
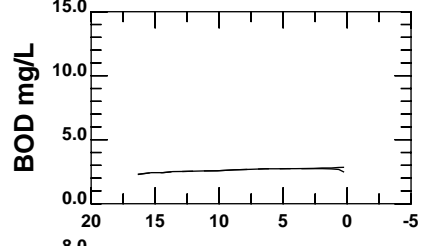
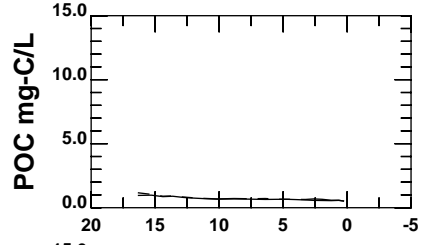
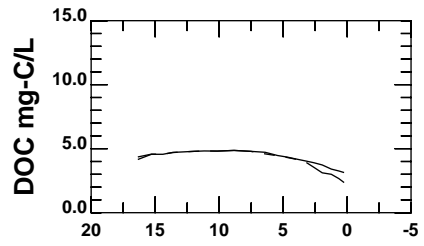
### MILE FROM MOUTH PASSAIC RIVER

DATA Dec 30 2000 -Jan 28,2001

	SURF MID BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment
PVSC	●	■	Transect
	u	m	Embayment
MERI	▽		Transect
	s		Embayment

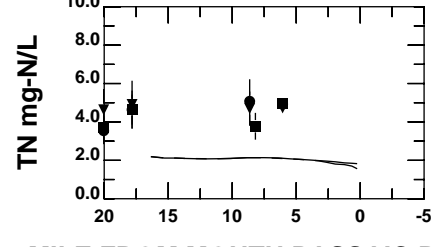
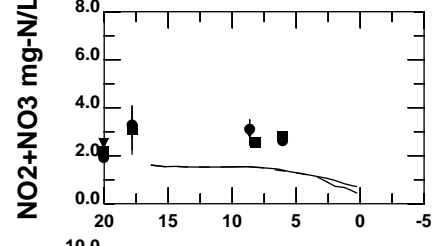
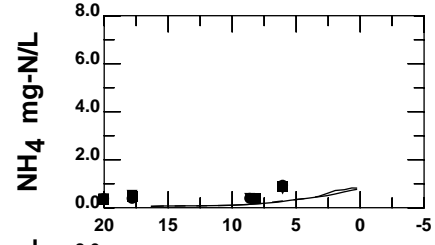
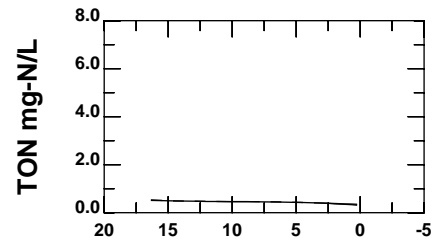
### MODEL

—	SURFACE 30-DAY MEAN
- - - -	BOTTOM 30-DAY MEAN
- · - ·	30-DAY SURFACE MAX OR BOTTOM MIN



MILE FROM MOUTH PASSAIC RIVER

**PASSAIC RIVER**



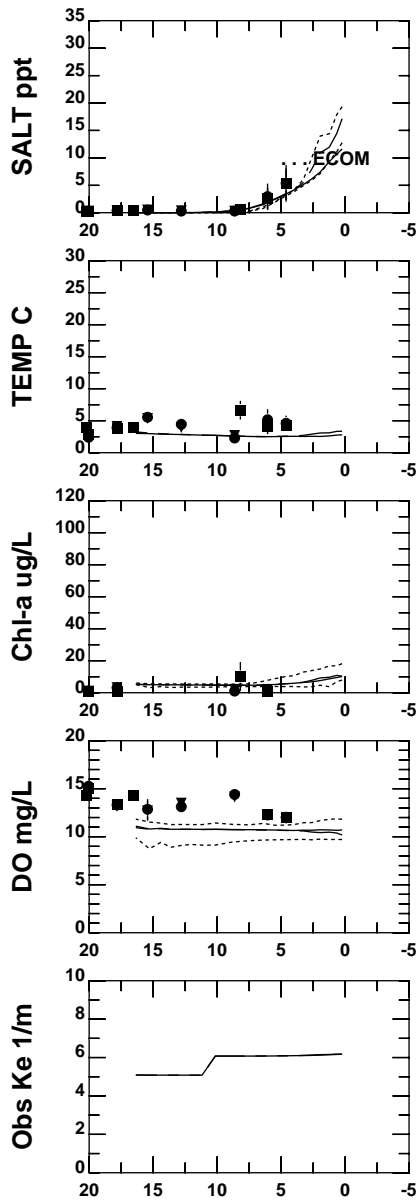
MILE FROM MOUTH PASSAIC RIVER

DATA Dec 30 2000 -Jan 28,2001

	SURF MID BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment
PVSC	●	■ ▼	Transect
	u	m b	Embayment
MERI	▽		Transect
	s		Embayment

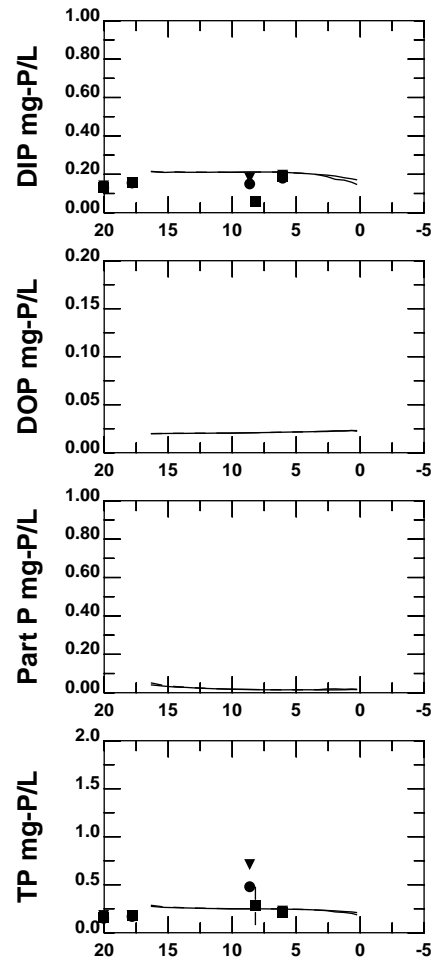
MODEL

- SURFACE 30-DAY MEAN
- - - - - BOTTOM 30-DAY MEAN
- - - 30-DAY SURFACE MAX OR BOTTOM MIN



MILE FROM MOUTH PASSAIC RIVER

**PASSAIC RIVER**



**MILE FROM MOUTH PASSAIC RIVER**

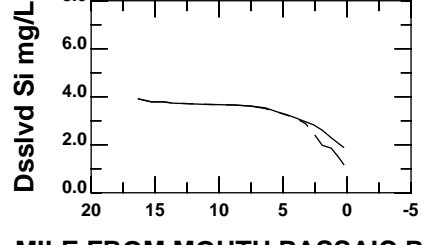
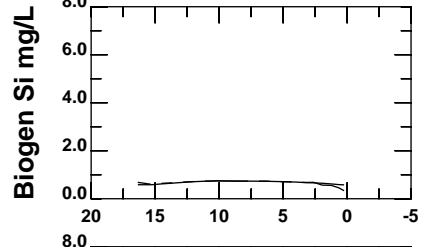
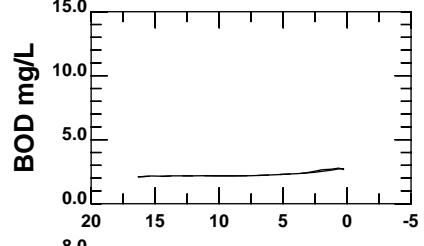
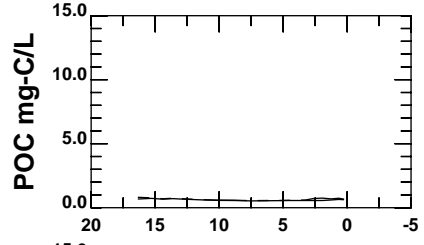
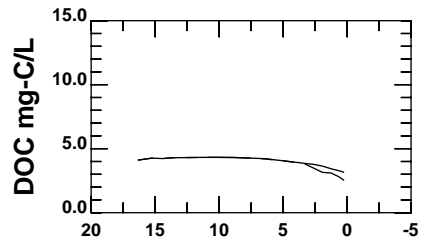
DATA Jan 29-Feb 27, 2001

	SURF MID BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment
PVSC	●	■ ▼	Transect
	u	m b	Embayment
MERI	▽		Transect
	s		Embayment

**MODEL**

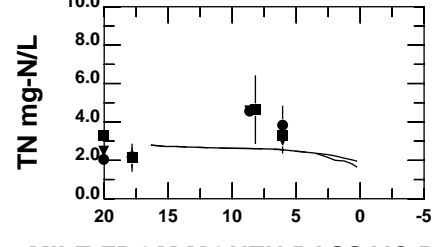
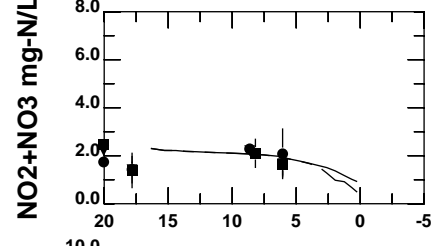
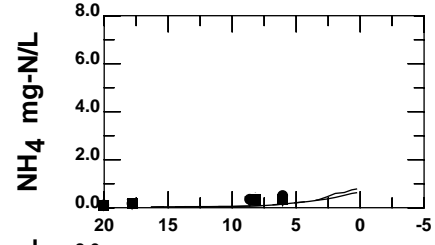
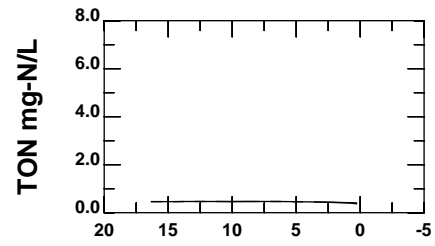
—	SURFACE 30-DAY MEAN
- - - -	BOTTOM 30-DAY MEAN
- - -	30-DAY SURFACE MAX OR BOTTOM MIN





MILE FROM MOUTH PASSAIC RIVER

**PASSAIC RIVER**

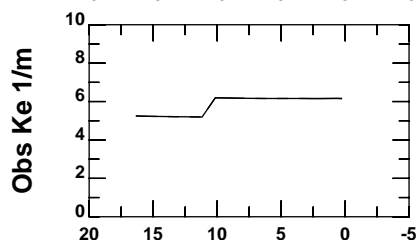
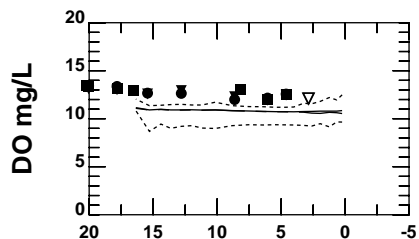
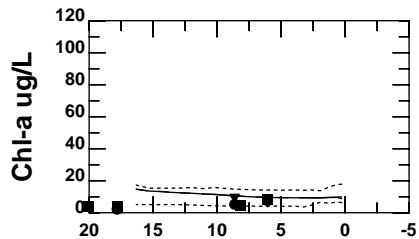
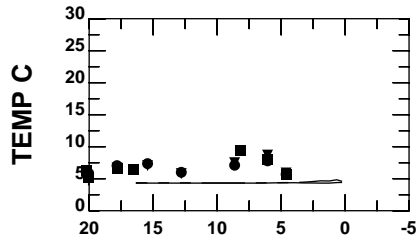
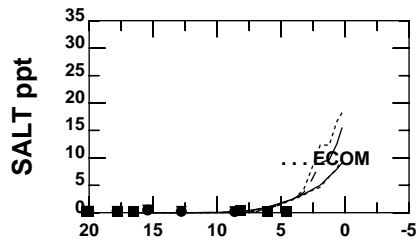


MILE FROM MOUTH PASSAIC RIVER  
DATA Jan 29-Feb 27, 2001

	SURF MID BOT			
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

MODEL

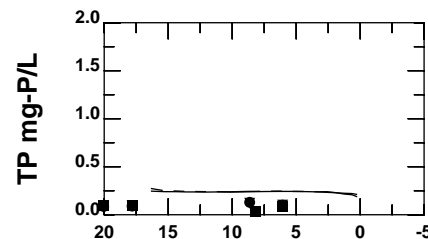
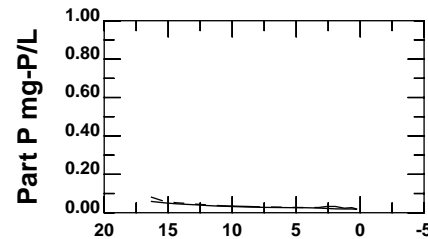
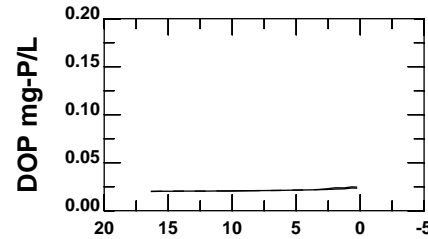
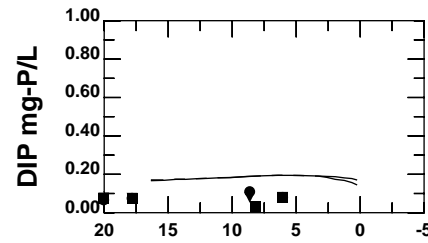
- SURFACE 30-DAY MEAN
- - - - - BOTTOM 30-DAY MEAN
- - - 30-DAY SURFACE MAX OR BOTTOM MIN



MILE FROM MOUTH PASSAIC RIVER

### PASSAIC RIVER

DATE: 4/07/2006 TIME: 11:29:56

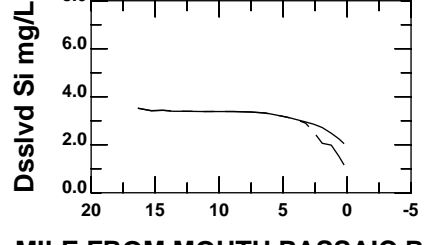
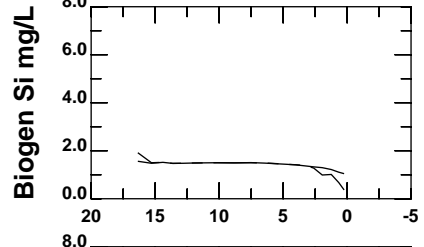
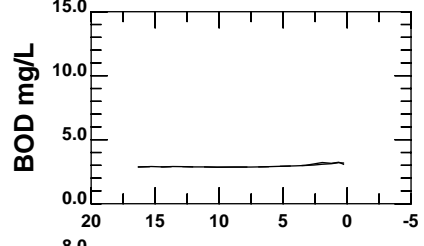
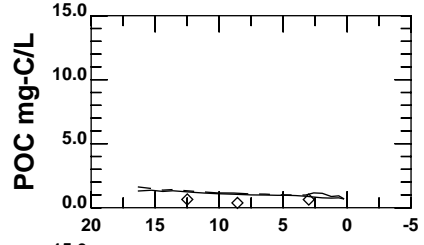
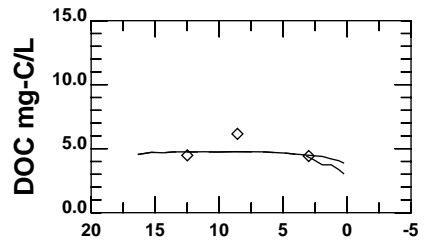


MILE FROM MOUTH PASSAIC RIVER  
DATA Feb 28-Mar 29,2001

	SURF MID BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment
PVSC	●	■	Transect
	u	m	Embayment
MERI	▽		Transect
	s		Embayment

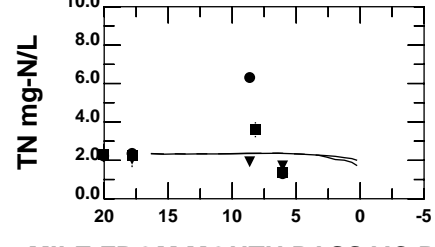
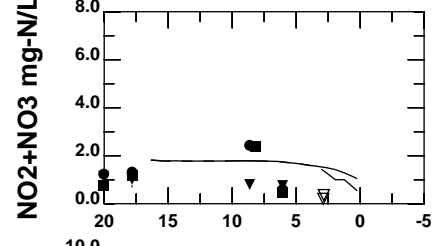
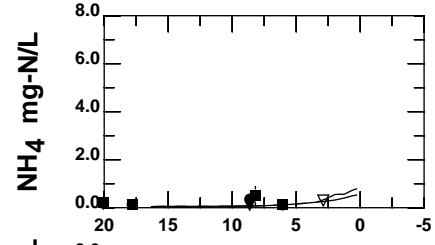
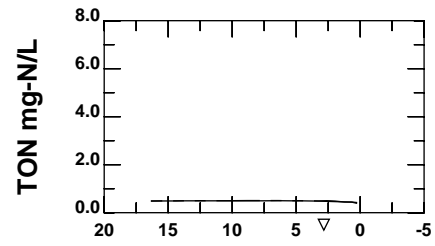
MODEL

—	SURFACE 30-DAY MEAN
- - - -	BOTTOM 30-DAY MEAN
- . - .	30-DAY SURFACE MAX OR BOTTOM MIN



MILE FROM MOUTH PASSAIC RIVER

**PASSAIC RIVER**

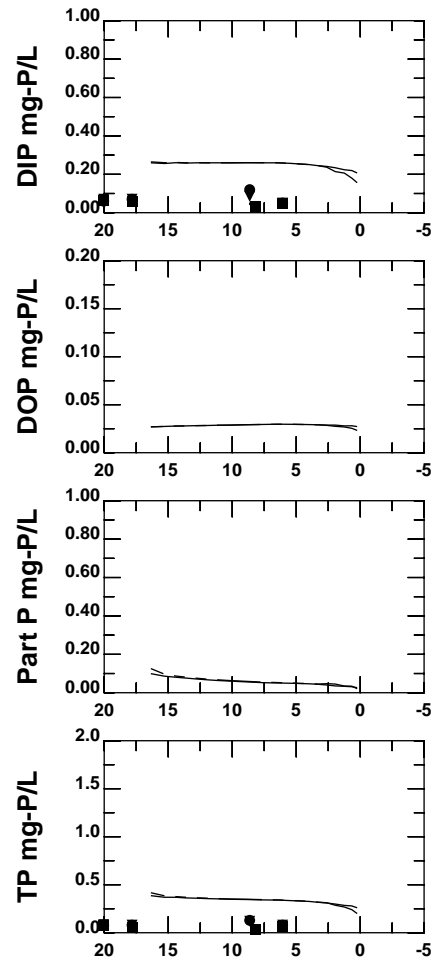
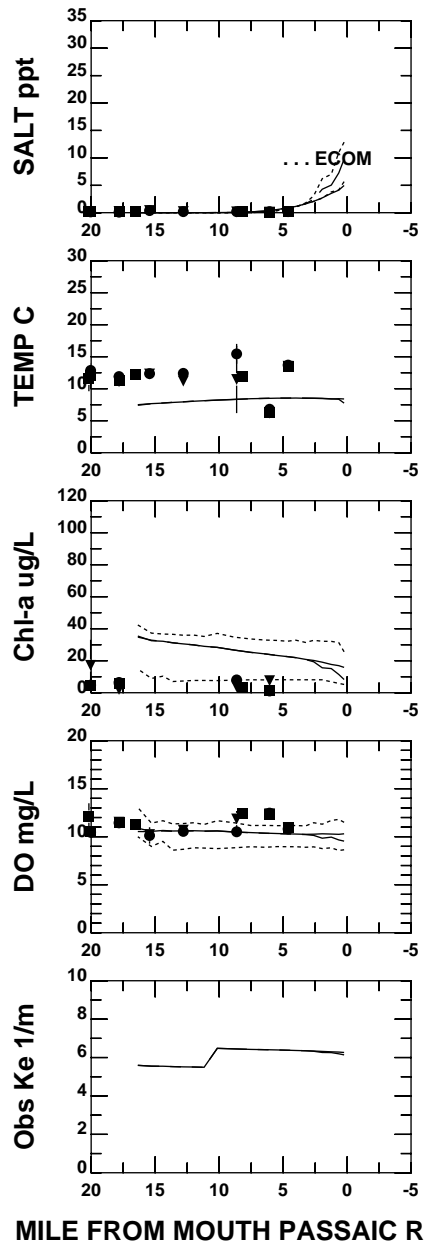


MILE FROM MOUTH PASSAIC RIVER  
DATA Feb 28-Mar 29, 2001

	SURF MID BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment
PVSC	●	■ ▼	Transect
	u	m b	Embayment
MERI	▽		Transect
	s		Embayment

MODEL

- SURFACE 30-DAY MEAN
- - - - - BOTTOM 30-DAY MEAN
- - - 30-DAY SURFACE MAX OR BOTTOM MIN



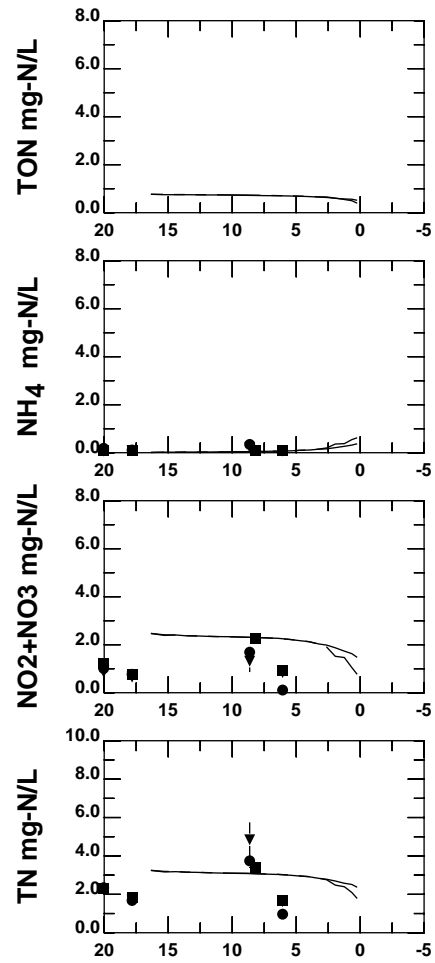
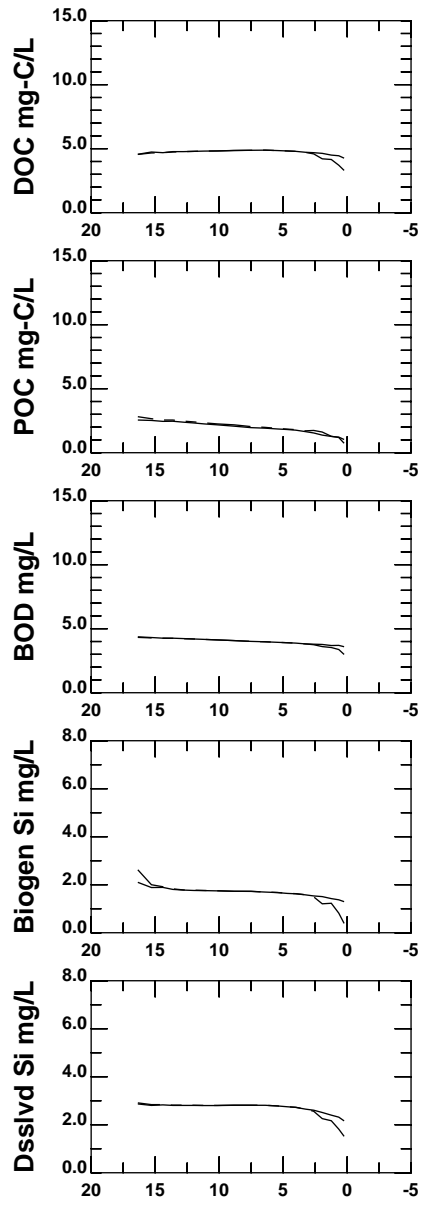
**MILE FROM MOUTH PASSAIC RIVER**  
 DATA Mar 30-Apr 28, 2001

	SURF	MID	BOT	
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

**MODEL**

————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

**PASSAIC RIVER**



MILE FROM MOUTH PASSAIC RIVER

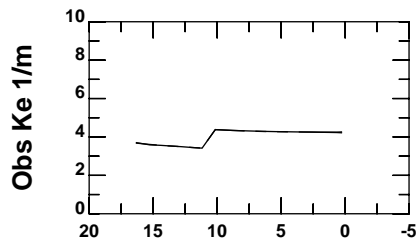
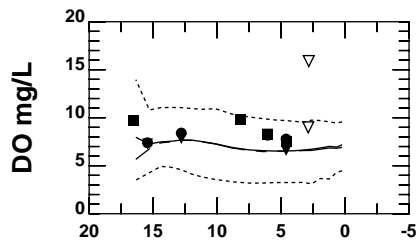
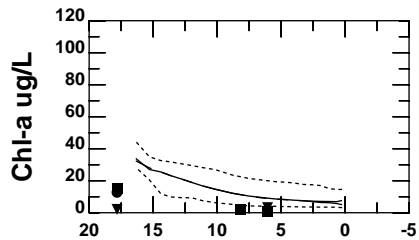
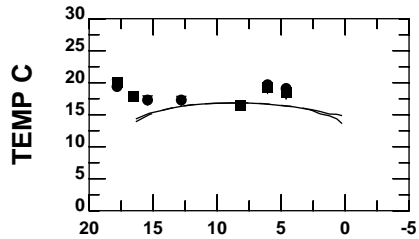
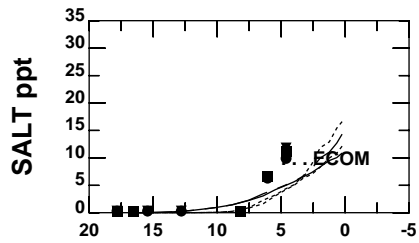
MILE FROM MOUTH PASSAIC RIVER  
DATA Mar 30-Apr 28, 2001

	SURF	MID	BOT	
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

MODEL

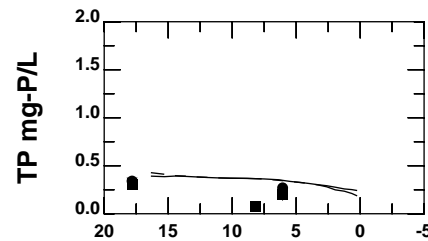
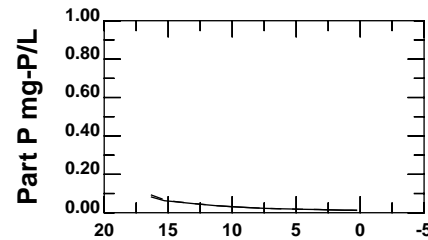
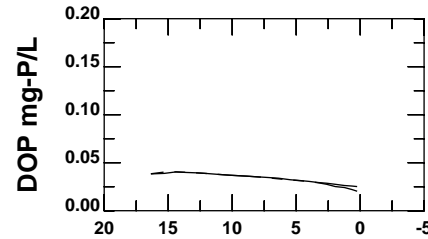
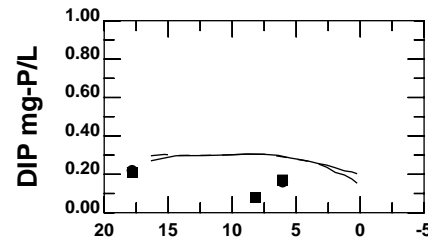
—	SURFACE 30-DAY MEAN
- - - -	BOTTOM 30-DAY MEAN
- - -	30-DAY SURFACE MAX OR BOTTOM MIN

PASSAIC RIVER



MILE FROM MOUTH PASSAIC RIVER

### PASSAIC RIVER



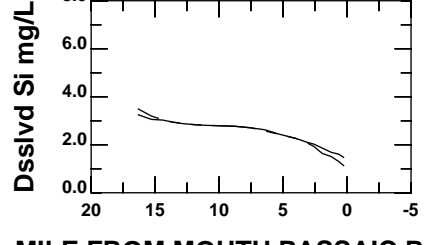
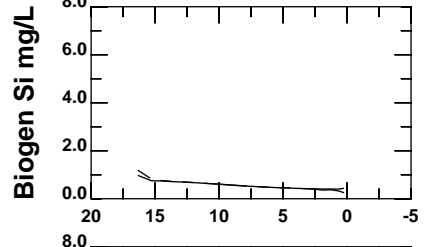
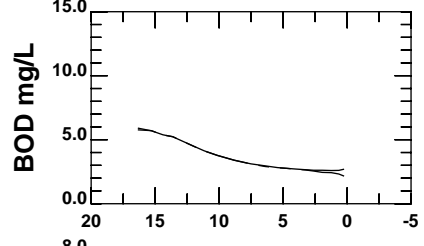
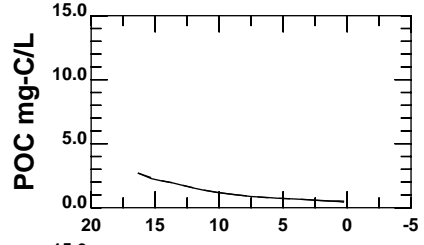
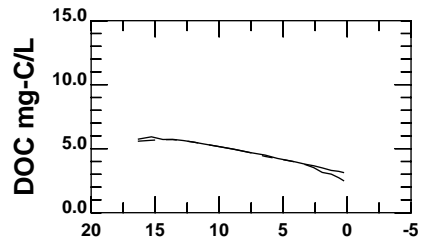
### MILE FROM MOUTH PASSAIC RIVER

DATA Apr 29-May 28,2001

	SURF MID BOT			
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

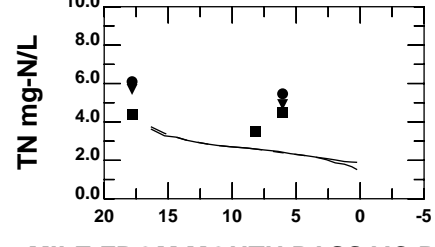
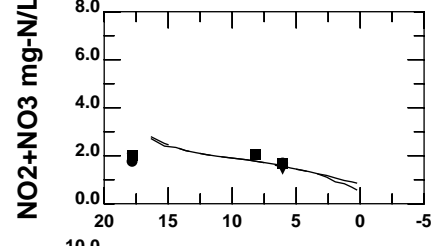
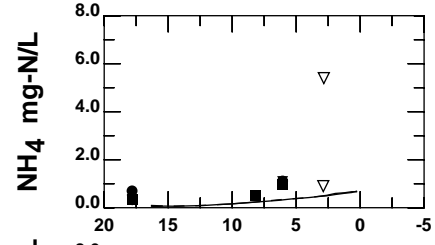
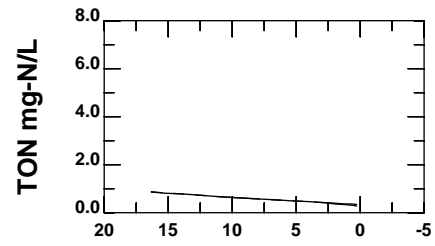
### MODEL

—	SURFACE 30-DAY MEAN
- - - -	BOTTOM 30-DAY MEAN
- · - ·	30-DAY SURFACE MAX OR BOTTOM MIN



MILE FROM MOUTH PASSAIC RIVER

### PASSAIC RIVER

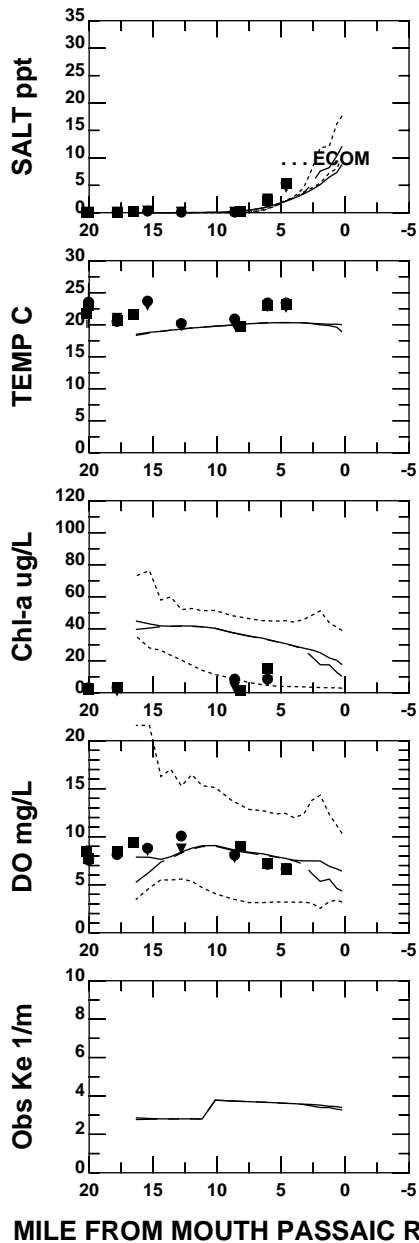


MILE FROM MOUTH PASSAIC RIVER  
DATA Apr 29-May 28, 2001

	SURF MID BOT			
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

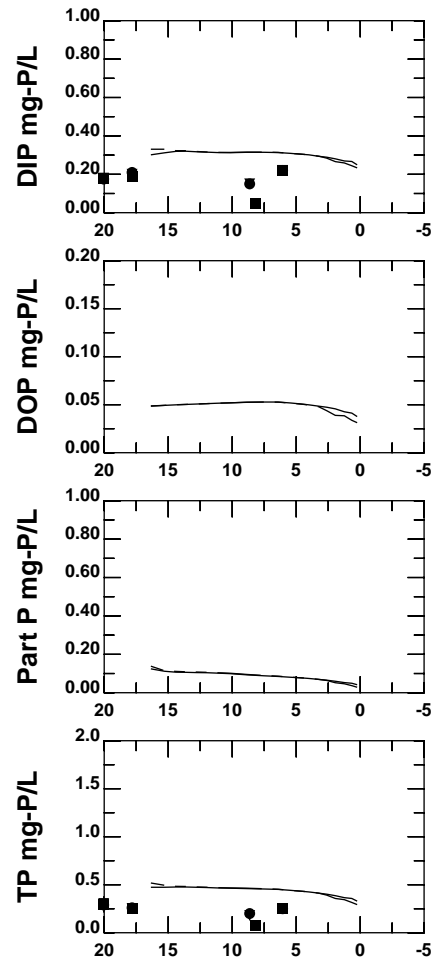
MODEL

- SURFACE 30-DAY MEAN
- - - - - BOTTOM 30-DAY MEAN
- - - 30-DAY SURFACE MAX OR BOTTOM MIN

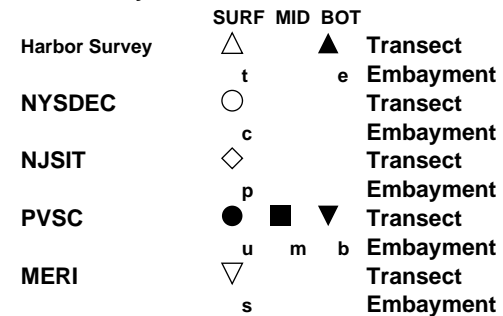


MILE FROM MOUTH PASSAIC RIVER

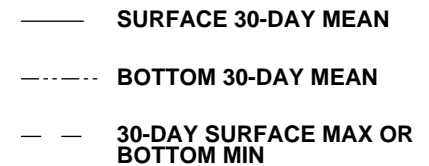
### PASSAIC RIVER



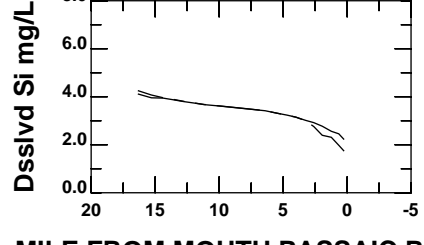
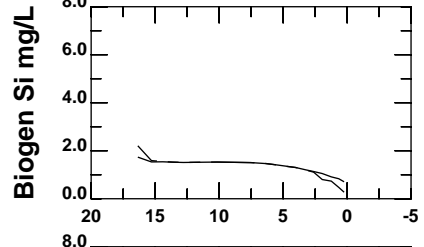
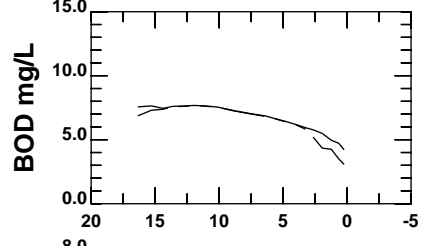
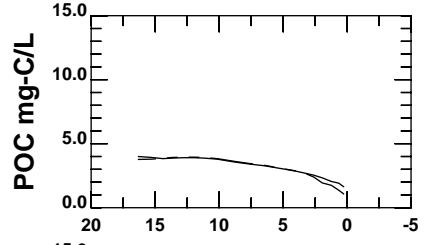
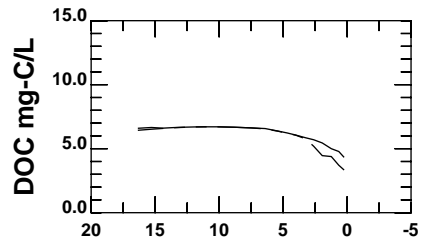
MILE FROM MOUTH PASSAIC RIVER  
DATA May 29-Jun 27,2001



MODEL

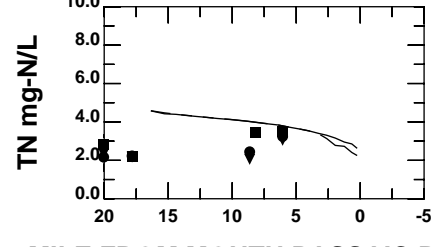
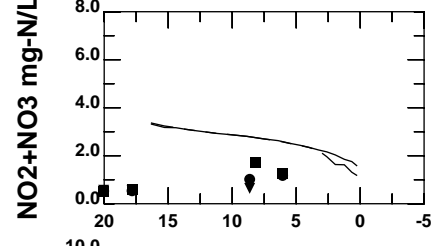
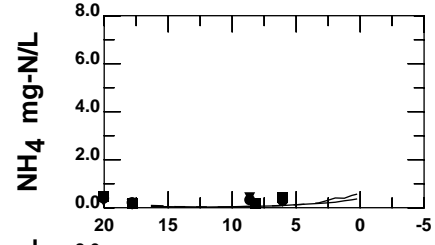
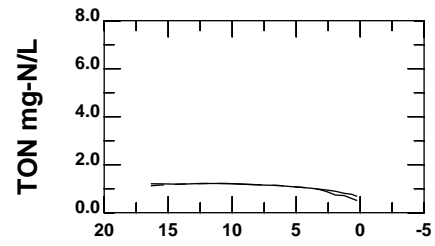






MILE FROM MOUTH PASSAIC RIVER

# PASSAIC RIVER

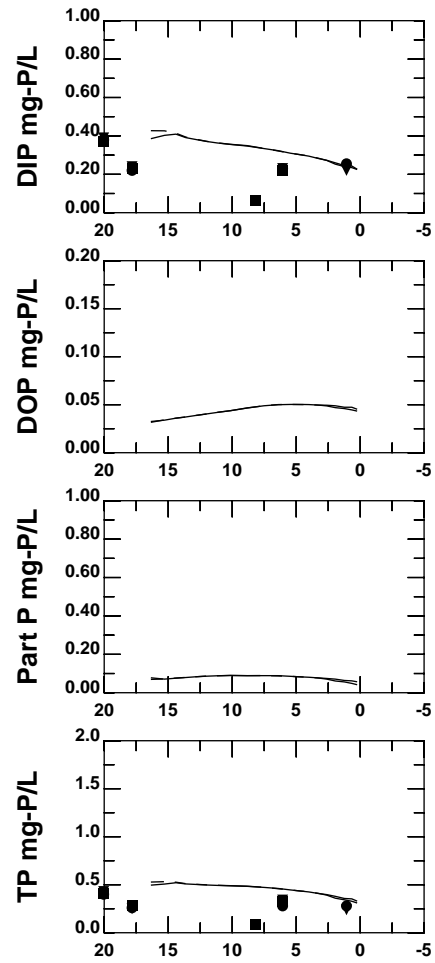
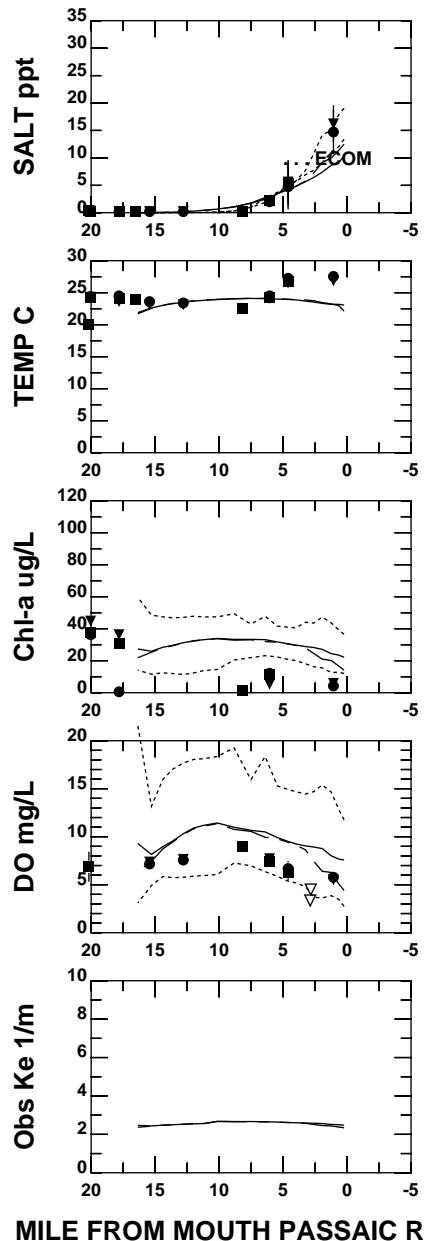


MILE FROM MOUTH PASSAIC RIVER  
DATA May 29-Jun 27,2001

	SURF	MID	BOT	
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

MODEL

- SURFACE 30-DAY MEAN
- - - - - BOTTOM 30-DAY MEAN
- - - 30-DAY SURFACE MAX OR BOTTOM MIN



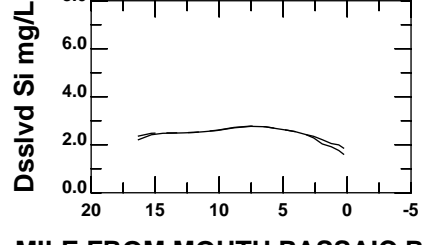
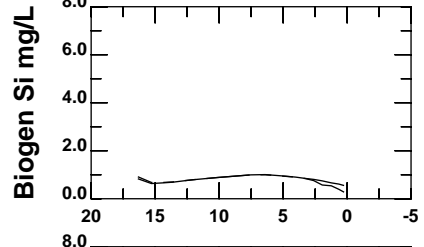
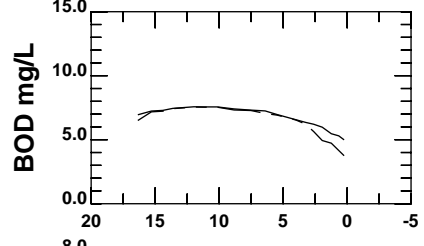
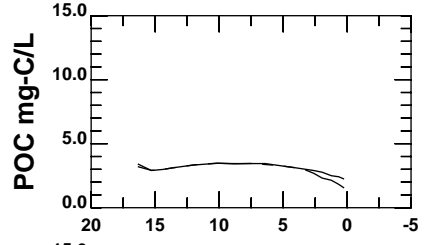
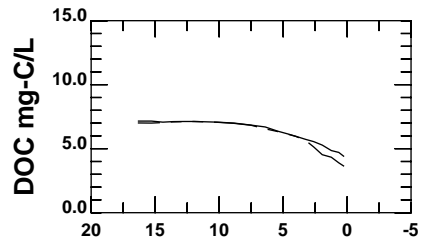
**MILE FROM MOUTH PASSAIC RIVER**  
 DATA Jun 28-Jul 27, 2001

	SURF MID BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment
PVSC	●	■	Transect
	u	m	Embayment
MERI	▽		Transect
	s		Embayment

**MODEL**

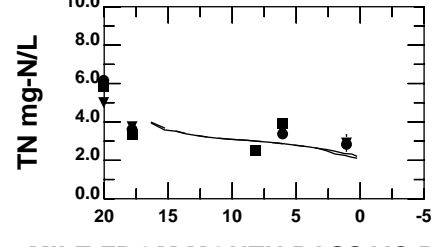
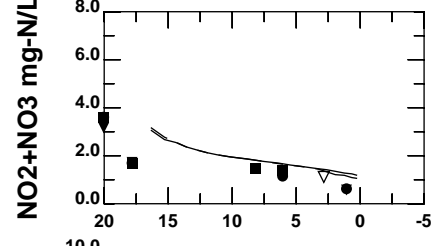
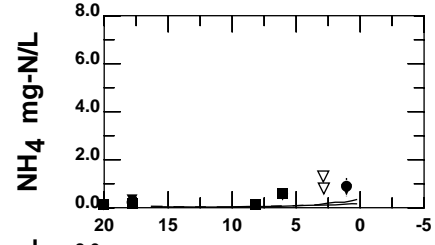
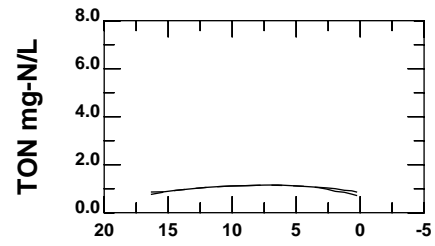
————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

**PASSAIC RIVER**



MILE FROM MOUTH PASSAIC RIVER

**PASSAIC RIVER**

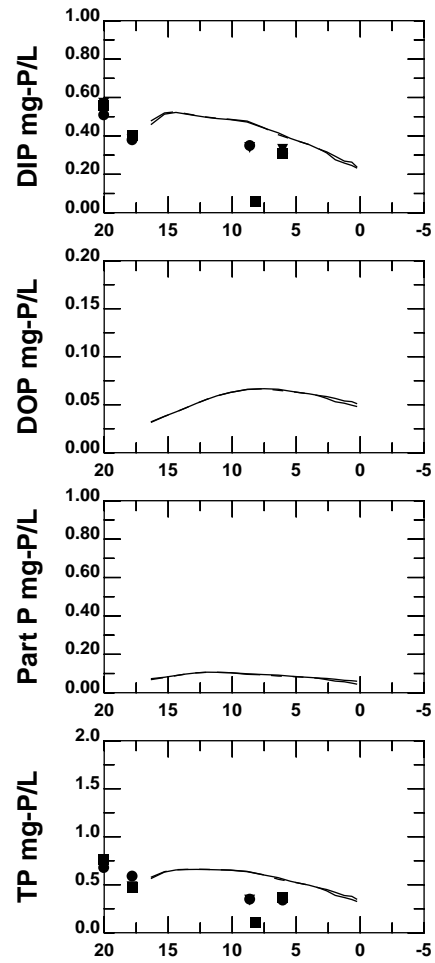
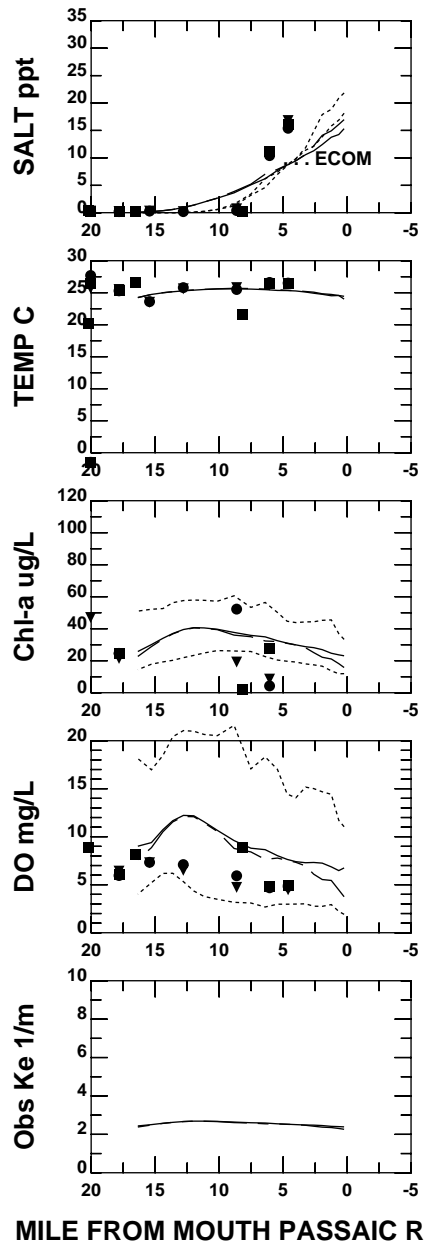


MILE FROM MOUTH PASSAIC RIVER  
DATA Jun 28-Jul 27, 2001

	SURF		MID		BOT		
Harbor Survey	△				▲		Transect
	t				e		Embayment
NYSDEC	○						Transect
	c						Embayment
NJSIT	◇						Transect
	p						Embayment
PVSC	●		■		▼		Transect
	u		m		b		Embayment
MERI	▽						Transect
	s						Embayment

MODEL

- SURFACE 30-DAY MEAN
- - - - - BOTTOM 30-DAY MEAN
- - - 30-DAY SURFACE MAX OR BOTTOM MIN



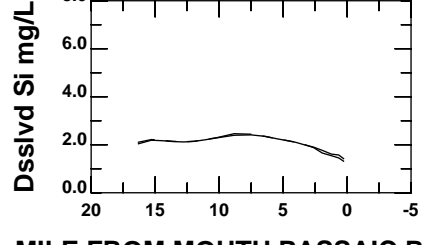
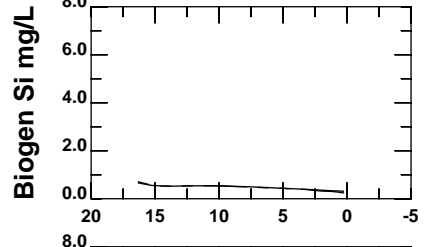
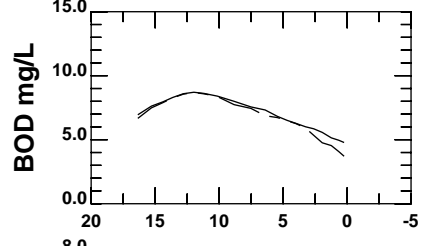
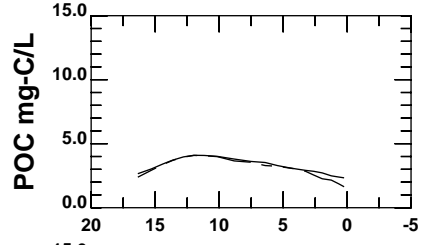
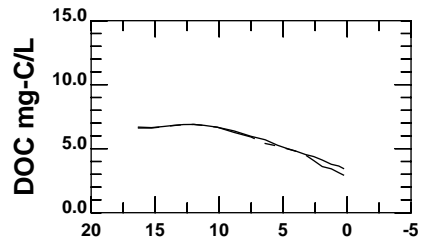
**MILE FROM MOUTH PASSAIC RIVER**  
 DATA Jul 27-Aug 26, 2001

	SURF MID BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment
PVSC	●	■	Transect
	u	m	Embayment
MERI	▽		Transect
	s		Embayment

**MODEL**

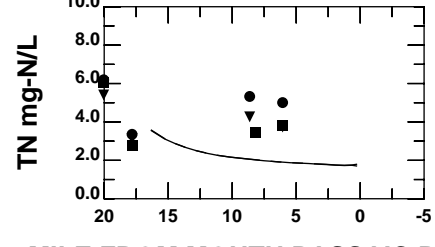
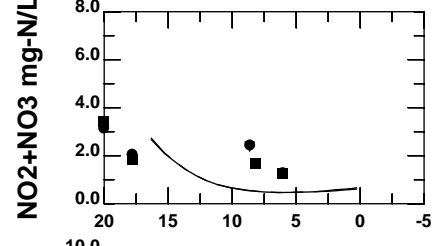
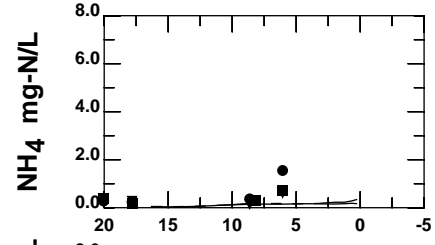
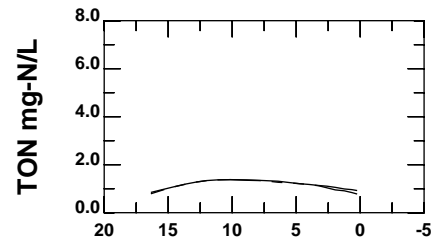
—	SURFACE 30-DAY MEAN
- - - -	BOTTOM 30-DAY MEAN
- . - .	30-DAY SURFACE MAX OR BOTTOM MIN

**PASSAIC RIVER**



MILE FROM MOUTH PASSAIC RIVER

# PASSAIC RIVER

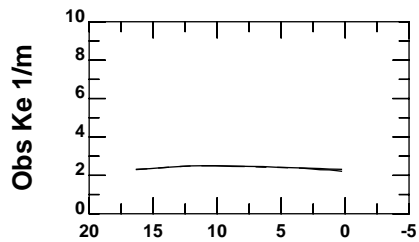
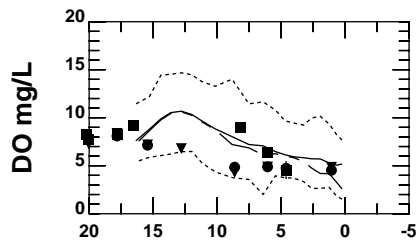
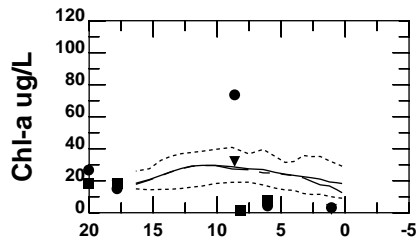
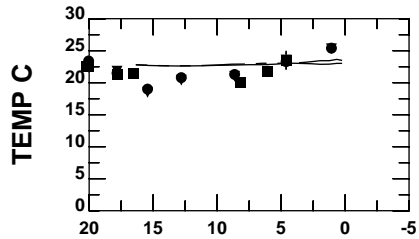
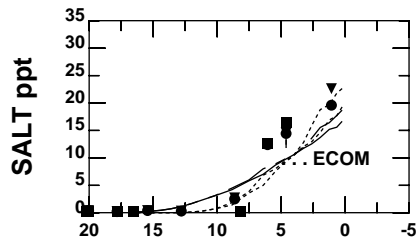


MILE FROM MOUTH PASSAIC RIVER  
DATA Jul 27-Aug 26, 2001

	SURF MID BOT			
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

MODEL

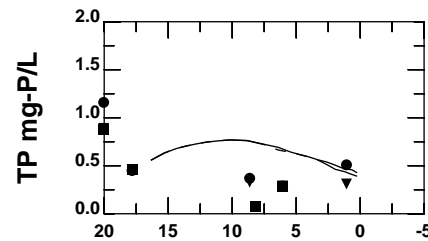
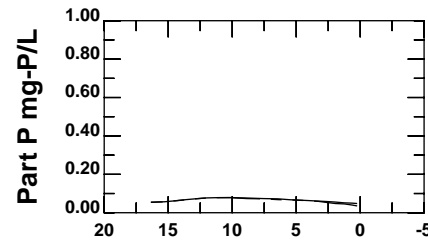
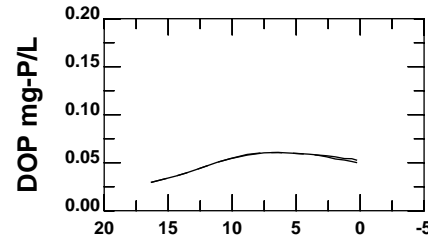
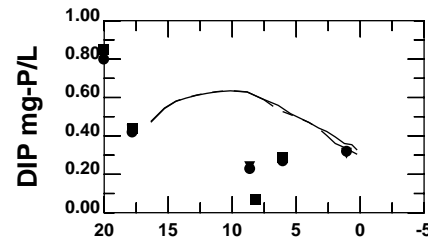
- SURFACE 30-DAY MEAN
- - - - - BOTTOM 30-DAY MEAN
- - - 30-DAY SURFACE MAX OR BOTTOM MIN



MILE FROM MOUTH PASSAIC RIVER

### PASSAIC RIVER

DATE: 4/07/2006 TIME: 11:30:21



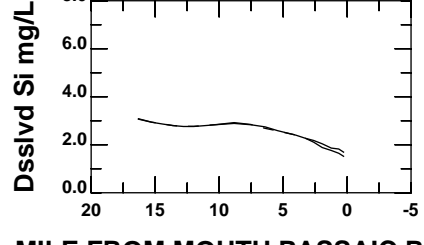
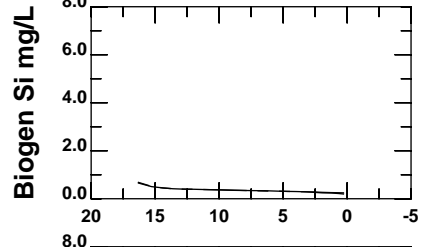
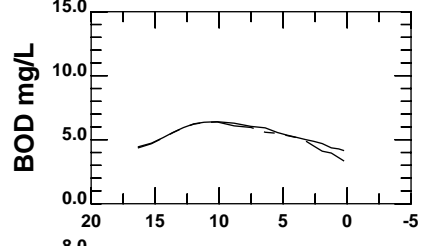
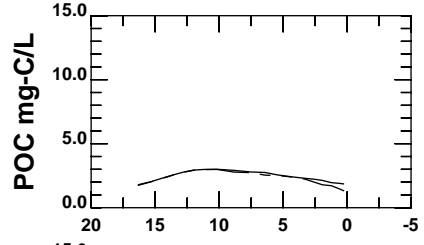
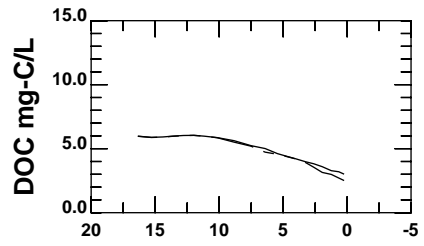
MILE FROM MOUTH PASSAIC RIVER

DATA Aug 27-Sep 25,2001

	SURF MID BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment
PVSC	●	■	Transect
	u	m	Embayment
MERI	▽		Transect
	s		Embayment

MODEL

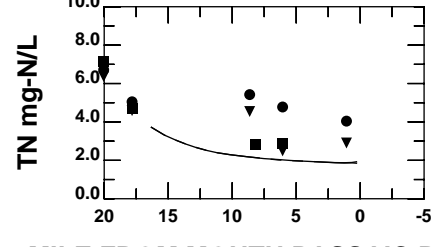
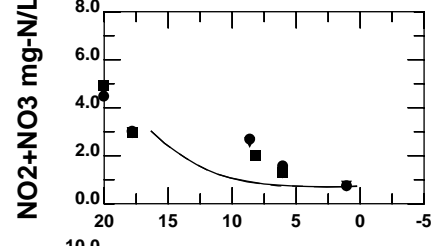
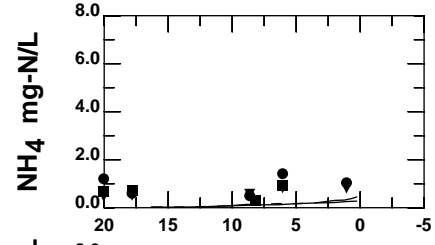
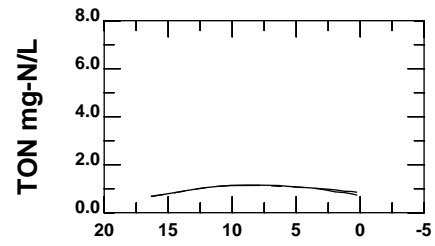
—	SURFACE 30-DAY MEAN
- - - -	BOTTOM 30-DAY MEAN
- · - ·	30-DAY SURFACE MAX OR BOTTOM MIN



MILE FROM MOUTH PASSAIC RIVER

# PASSAIC RIVER

DATE: 4/07/2006 TIME: 11:30:21

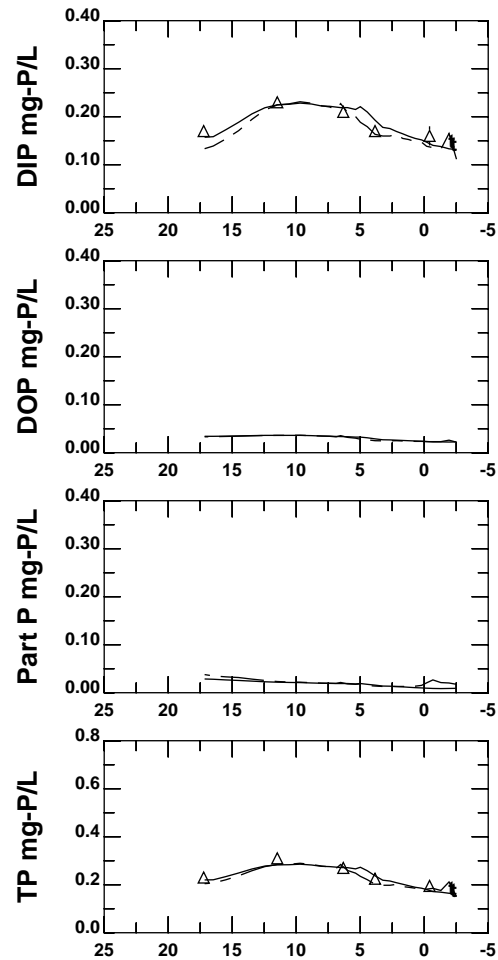
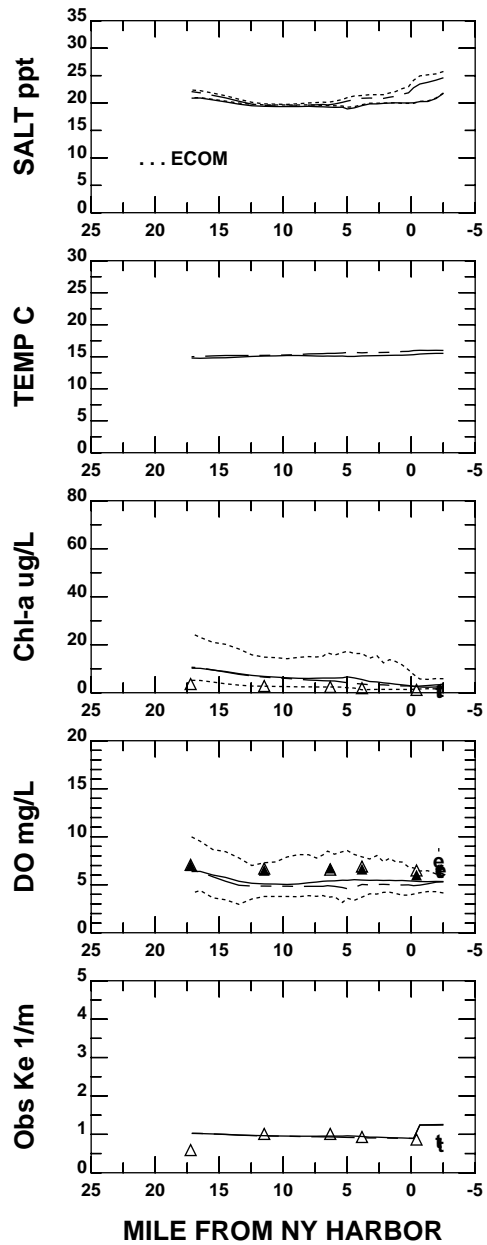


MILE FROM MOUTH PASSAIC RIVER  
DATA Aug 27-Sep 25,2001

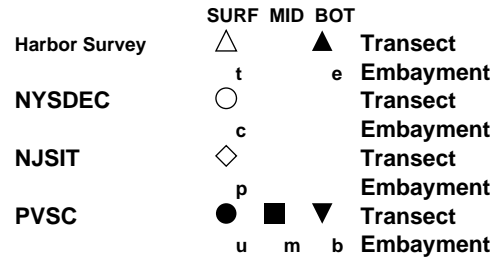
	SURF	MID	BOT	
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

MODEL

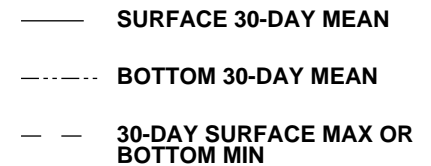
- SURFACE 30-DAY MEAN
- - - - - BOTTOM 30-DAY MEAN
- - - 30-DAY SURFACE MAX OR BOTTOM MIN



DATA Oct 1-30,2000

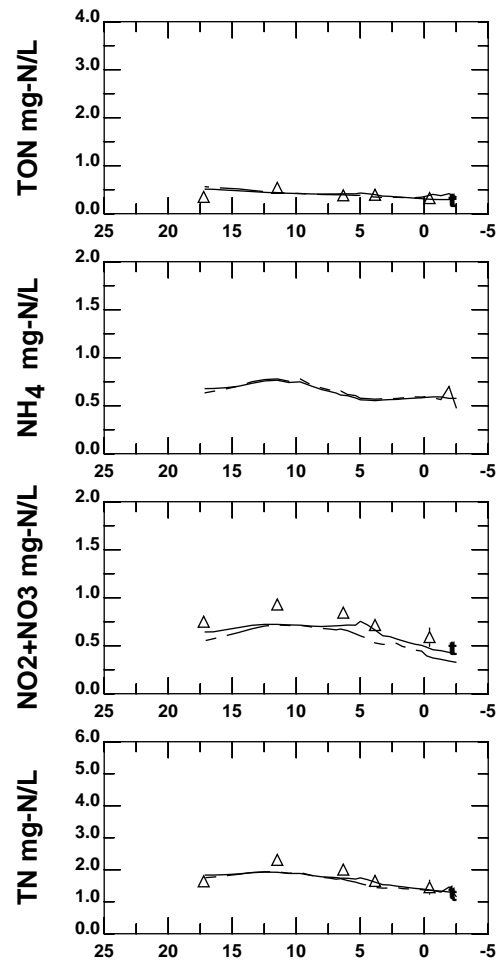
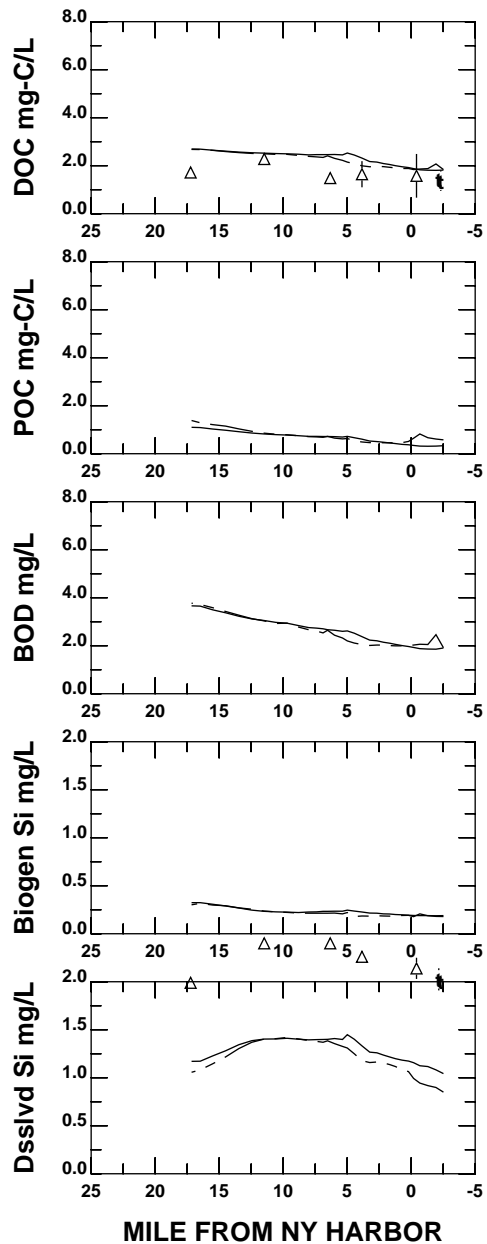


MODEL

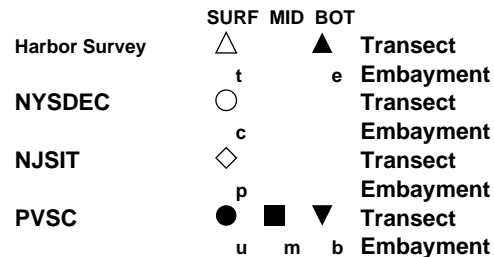


## ARTHUR KILL AND KILL VAN KULL

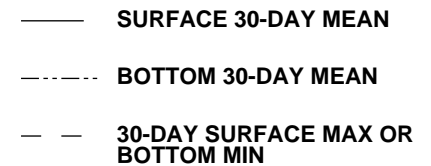




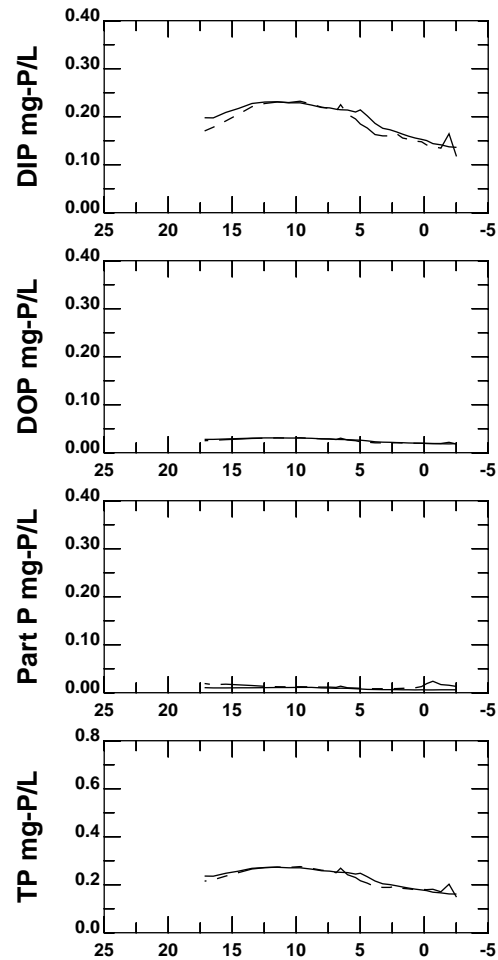
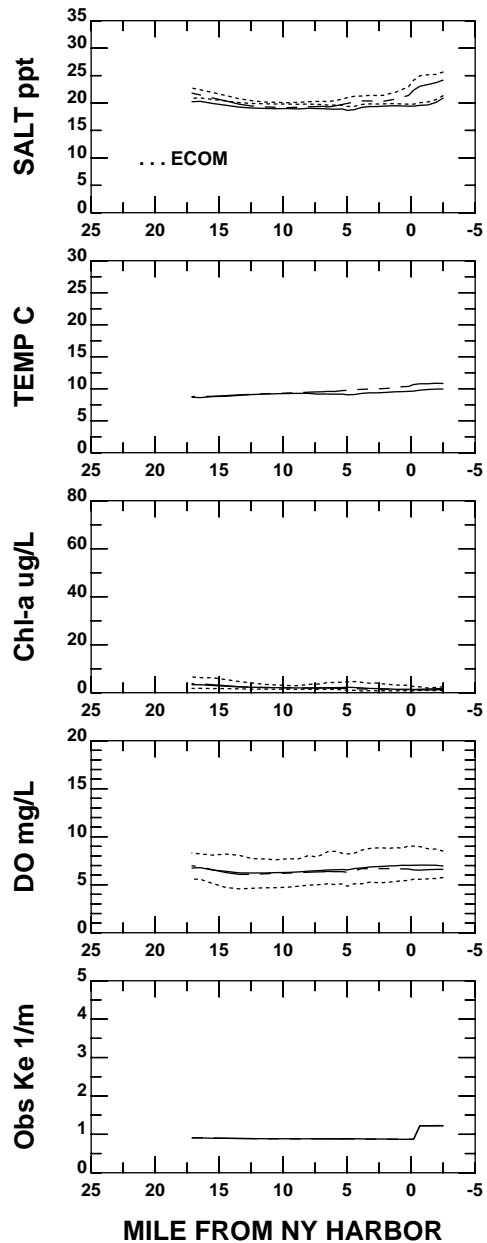
DATA Oct 1-30,2000



MODEL



## ARTHUR KILL AND KILL VAN KULL



**MILE FROM UPPER NY BAY**

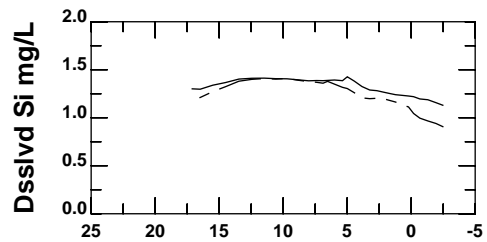
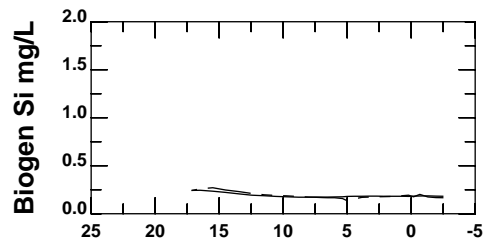
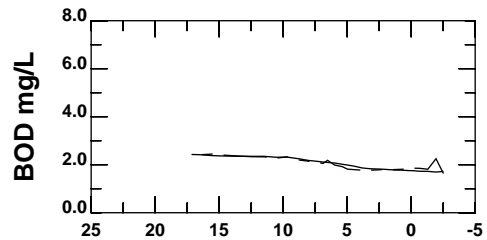
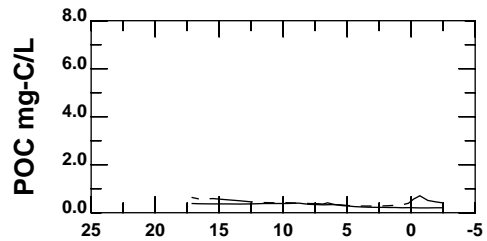
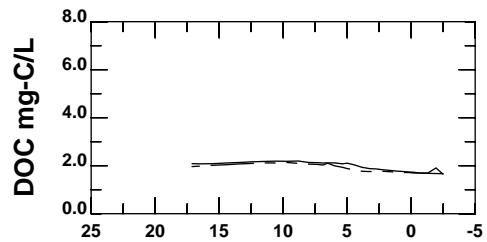
DATA Oct 31-Nov 29,2000

- |               |              |   |           |
|---------------|--------------|---|-----------|
|               | SURF MID BOT |   |           |
| Harbor Survey | △            | ▲ | Transect  |
|               | t            | e | Embayment |
| NYSDEC        | ○            |   | Transect  |
|               | c            |   | Embayment |
| NJSIT         | ◇            |   | Transect  |
|               | p            |   | Embayment |
| PVSC          | ●            | ■ | Transect  |
|               | u            | m | Embayment |
|               |              | ▼ | Transect  |
|               |              | b | Embayment |

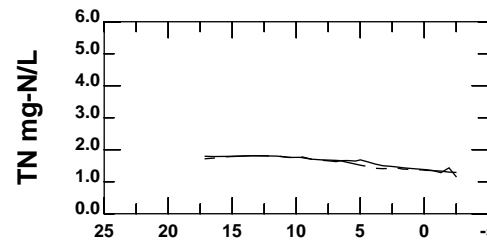
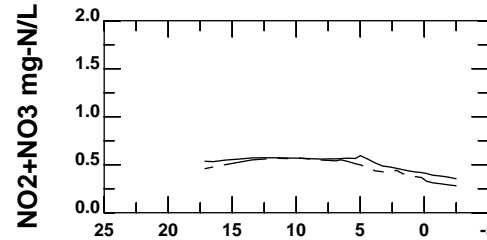
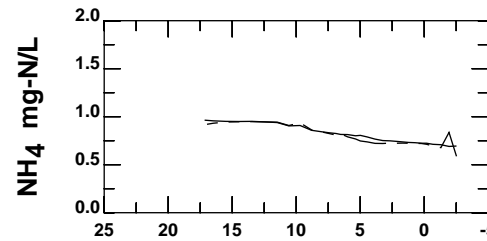
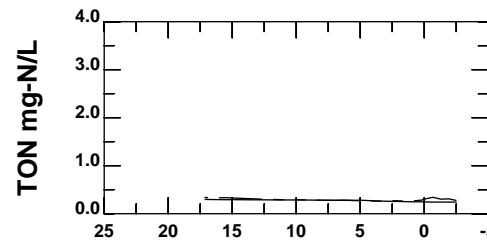
**MODEL**

- |         |                                  |
|---------|----------------------------------|
| ————    | SURFACE 30-DAY MEAN              |
| -----   | BOTTOM 30-DAY MEAN               |
| - - - - | 30-DAY SURFACE MAX OR BOTTOM MIN |

**ARTHUR KILL AND KILL VAN KULL**

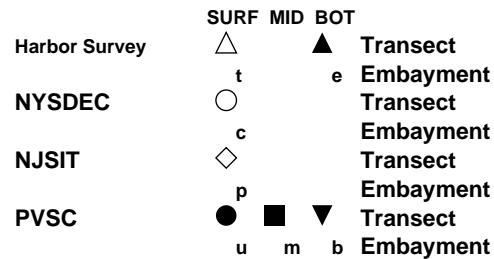


MILE FROM NY HARBOR

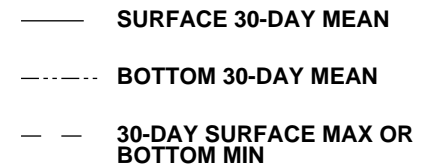


MILE FROM UPPER NY BAY

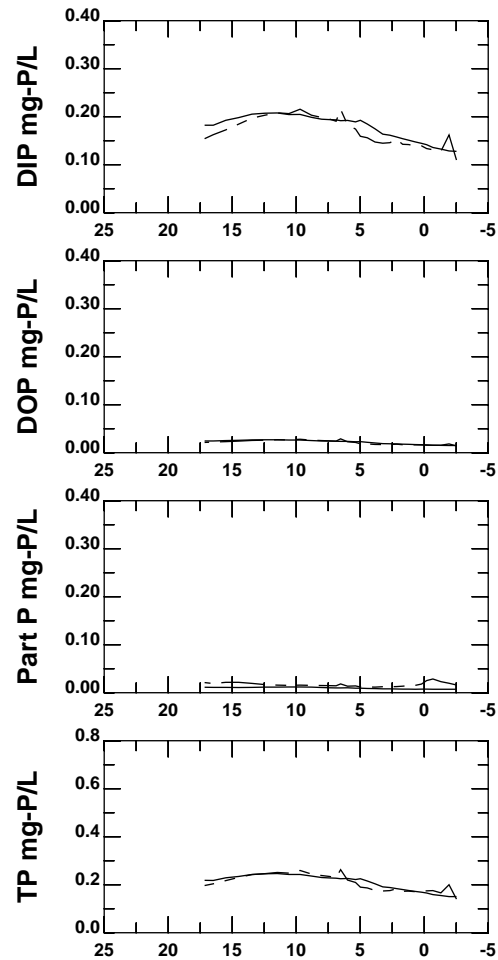
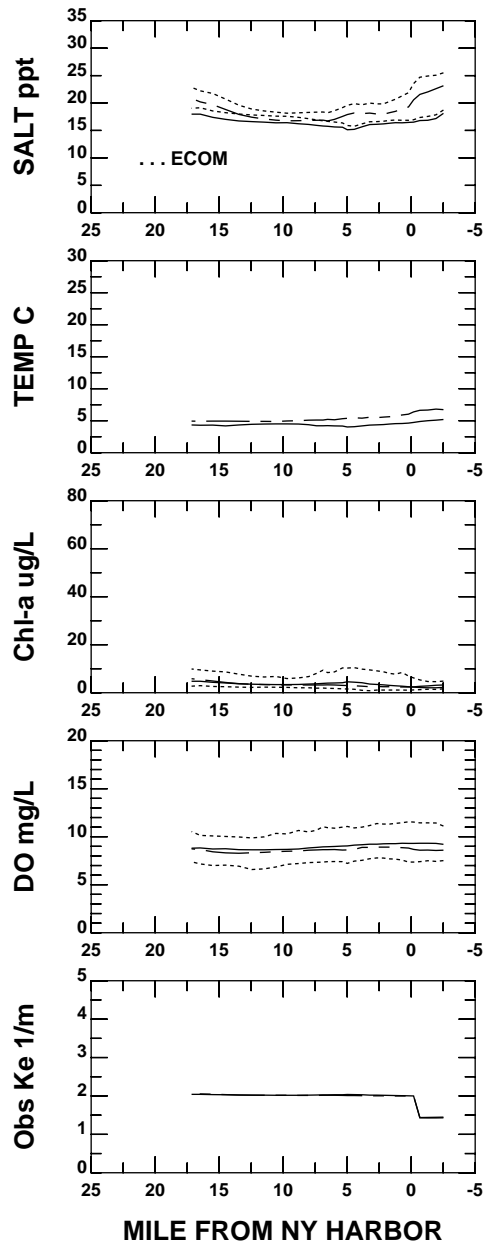
DATA Oct 31-Nov 29,2000



MODEL



ARTHUR KILL AND KILL VAN KULL



**MILE FROM UPPER NY BAY**

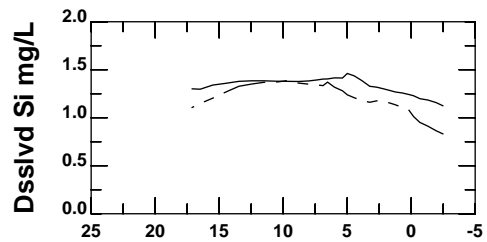
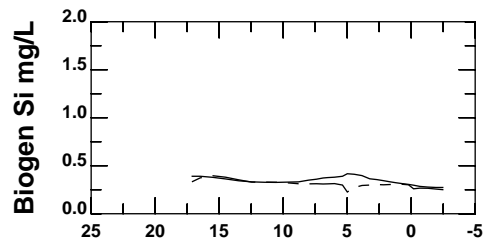
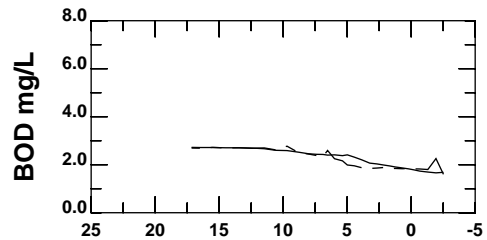
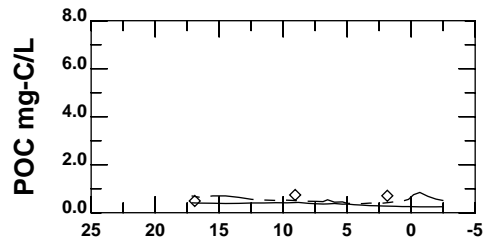
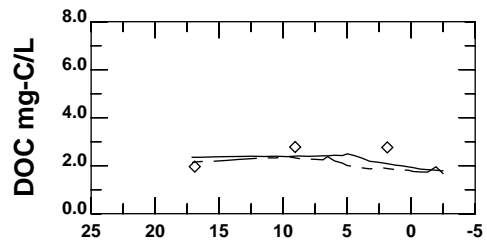
DATA Nov 30-Dec 29,2000

- |               |              |   |           |
|---------------|--------------|---|-----------|
|               | SURF MID BOT |   |           |
| Harbor Survey | △            | ▲ | Transect  |
|               | t            | e | Embayment |
| NYSDEC        | ○            |   | Transect  |
|               | c            |   | Embayment |
| NJSIT         | ◇            |   | Transect  |
|               | p            |   | Embayment |
| PVSC          | ●            | ■ | Transect  |
|               | u            | m | Embayment |
|               |              | ▼ | Transect  |
|               |              | b | Embayment |

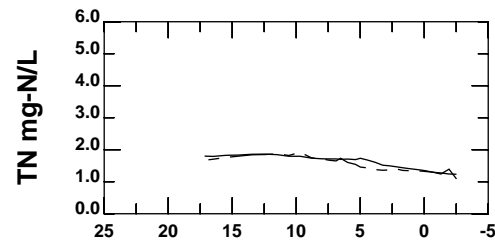
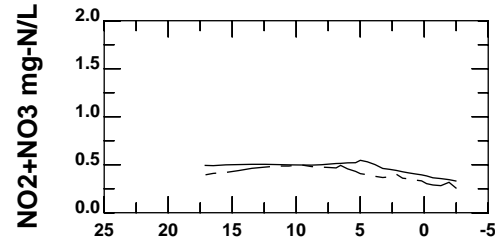
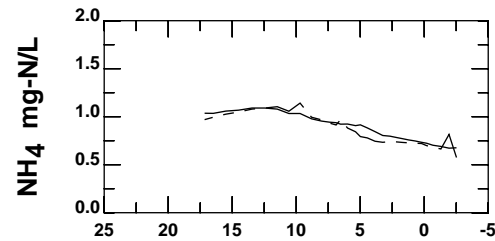
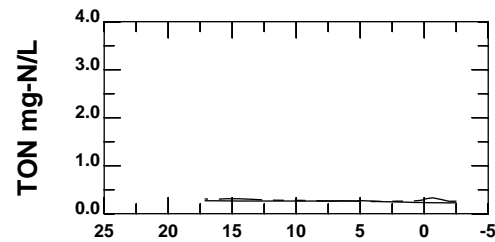
**MODEL**

- |         |                                  |
|---------|----------------------------------|
| ————    | SURFACE 30-DAY MEAN              |
| -----   | BOTTOM 30-DAY MEAN               |
| - - - - | 30-DAY SURFACE MAX OR BOTTOM MIN |

**ARTHUR KILL AND KILL VAN KULL**

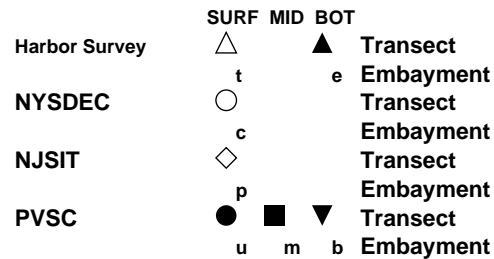


MILE FROM NY HARBOR

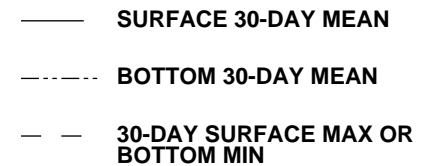


MILE FROM UPPER NY BAY

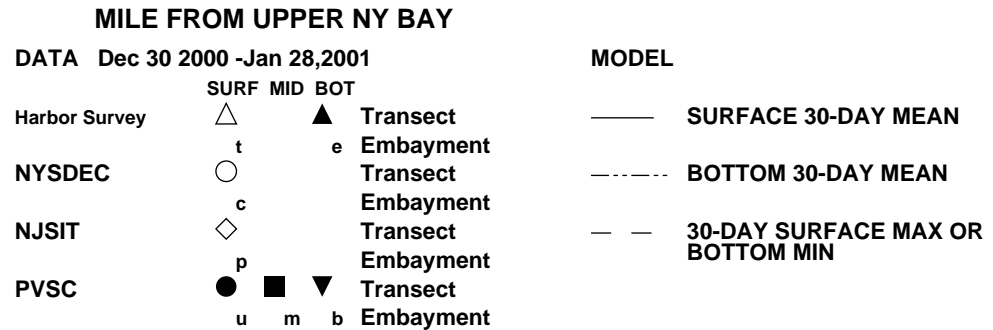
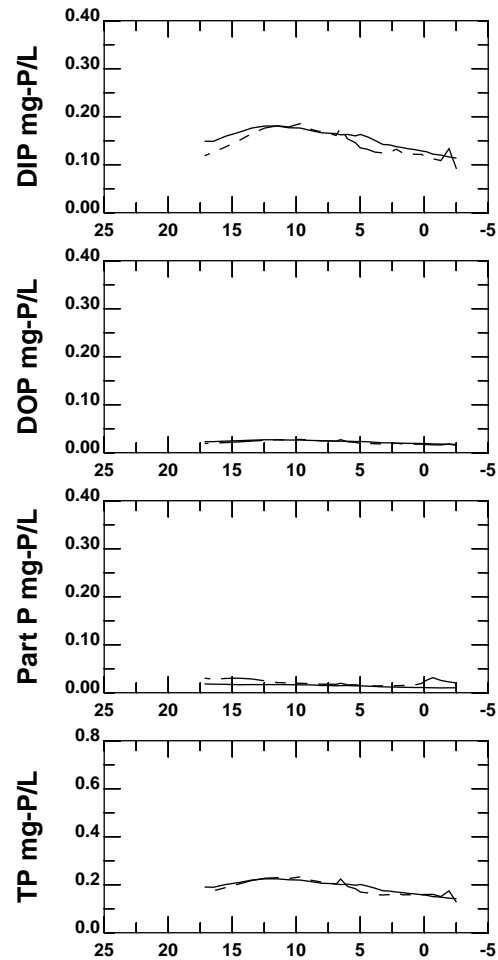
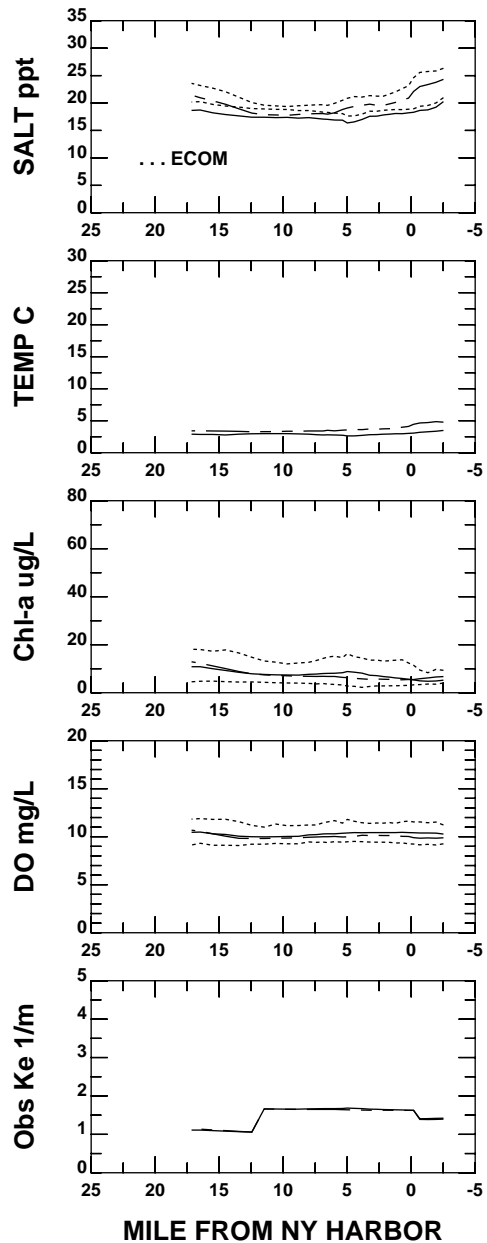
DATA Nov 30-Dec 29,2000



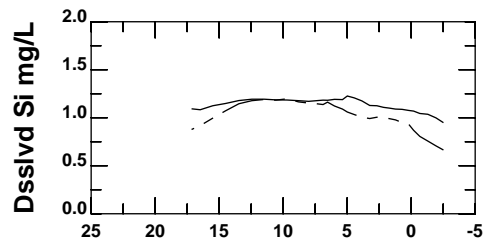
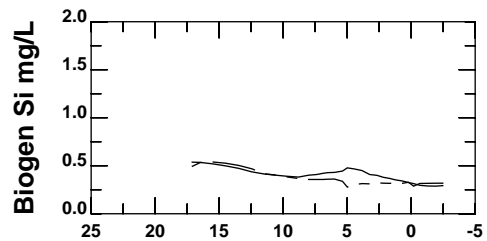
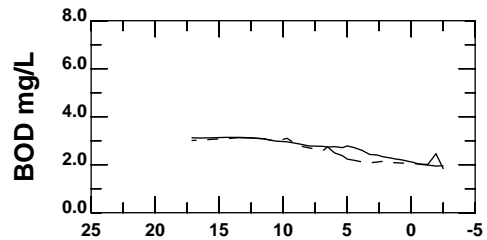
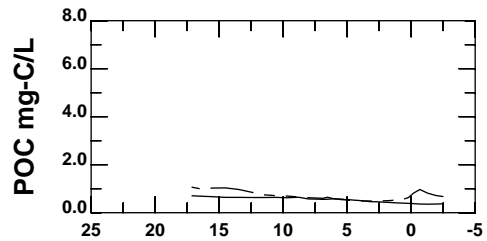
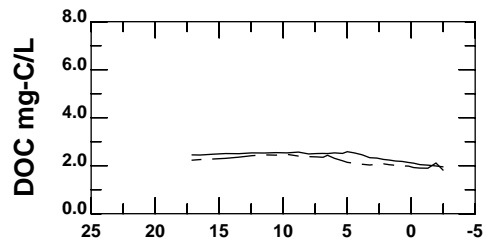
MODEL



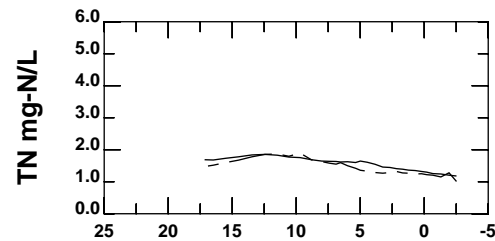
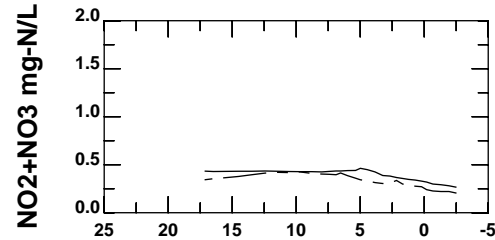
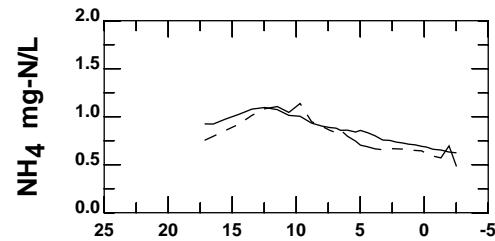
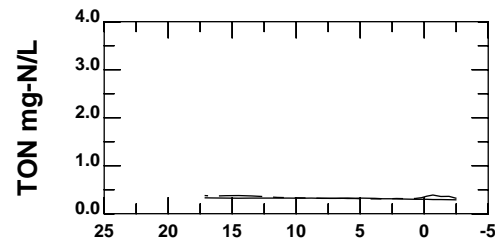
ARTHUR KILL AND KILL VAN KULL



**ARTHUR KILL AND KILL VAN KULL**

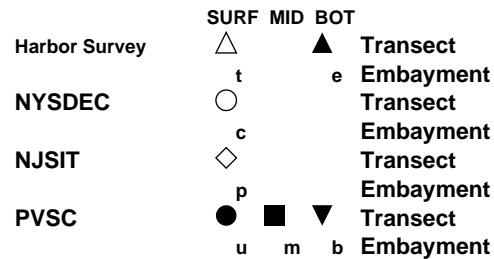


MILE FROM NY HARBOR

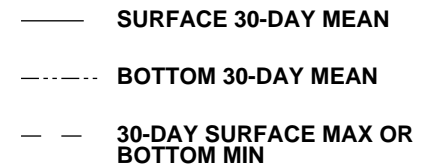


MILE FROM UPPER NY BAY

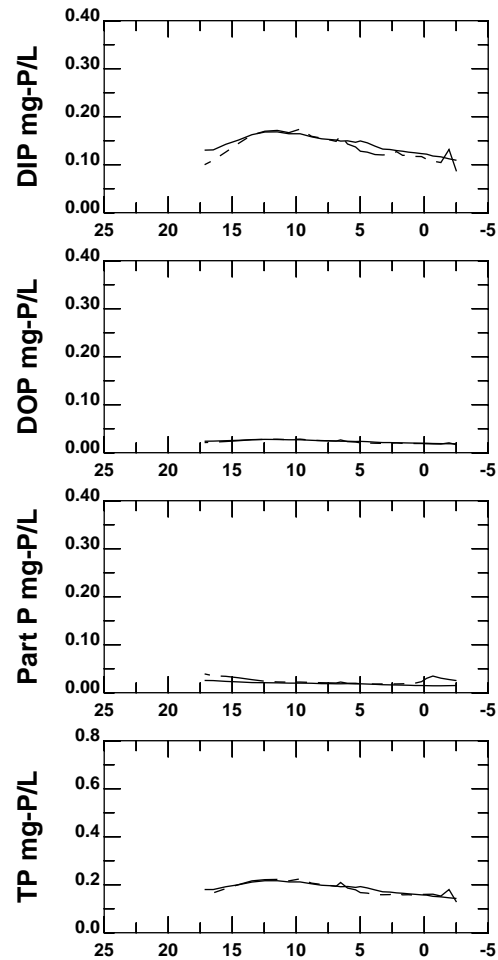
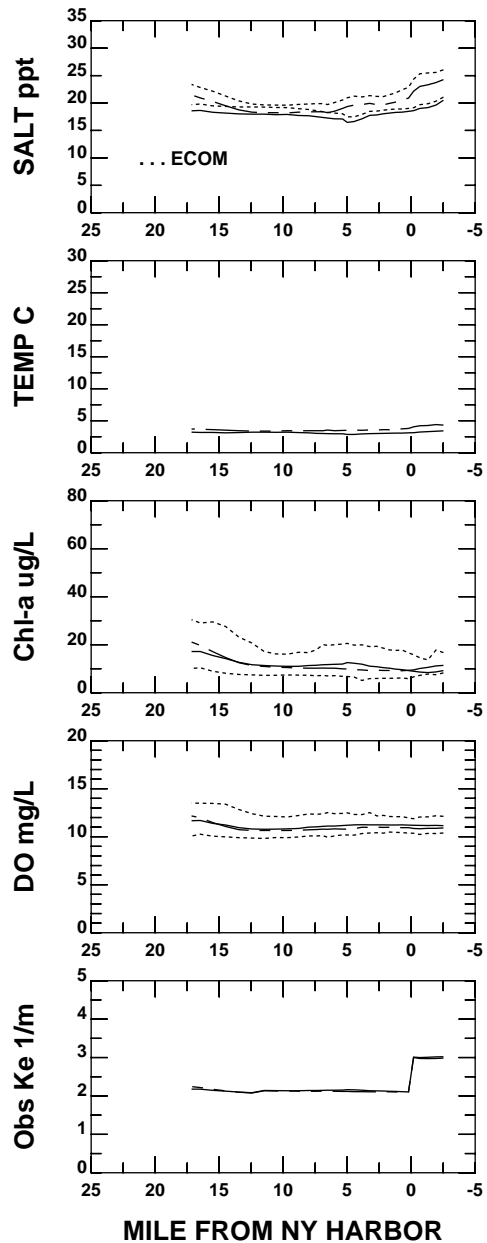
DATA Dec 30 2000 -Jan 28,2001



MODEL



ARTHUR KILL AND KILL VAN KULL



**MILE FROM UPPER NY BAY**

DATA Jan 29-Feb 27, 2001

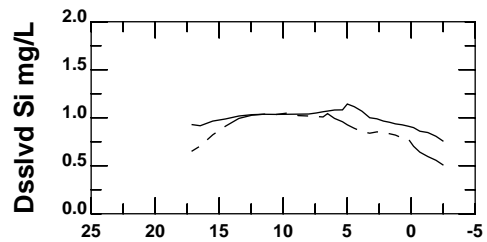
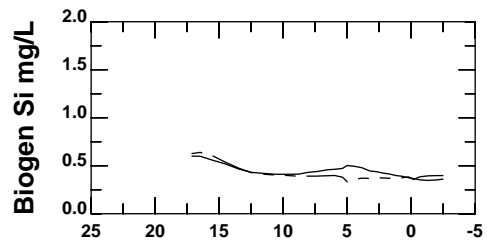
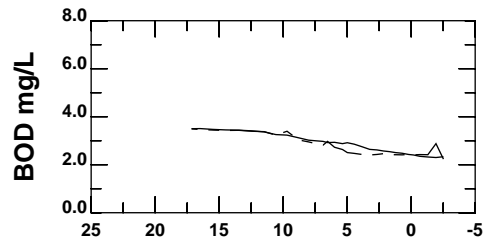
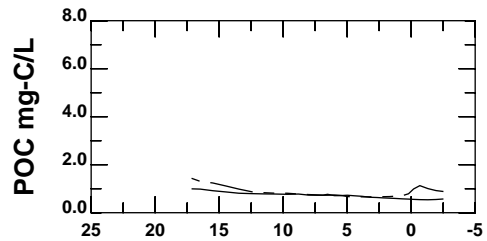
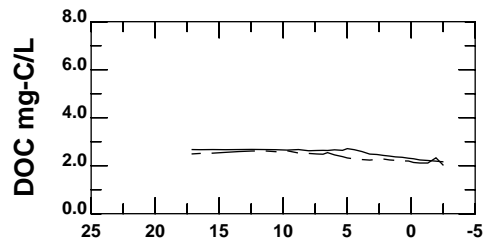
- |               |              |   |           |
|---------------|--------------|---|-----------|
|               | SURF MID BOT |   |           |
| Harbor Survey | △            | ▲ | Transect  |
| NYSDEC        | t            | e | Embayment |
|               | ○            |   | Transect  |
|               | c            |   | Embayment |
| NJSIT         | ◇            |   | Transect  |
|               | p            |   | Embayment |
| PVSC          | ●            | ■ | Transect  |
|               | u            | m | Embayment |
|               |              | ▼ | Transect  |
|               |              | b | Embayment |

**MODEL**

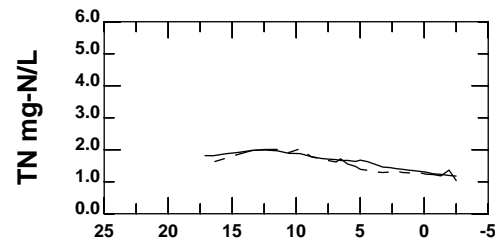
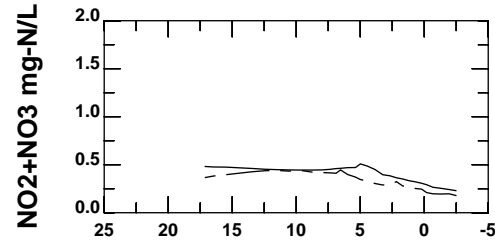
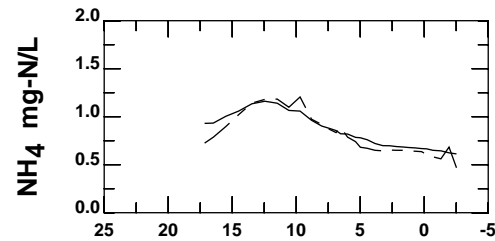
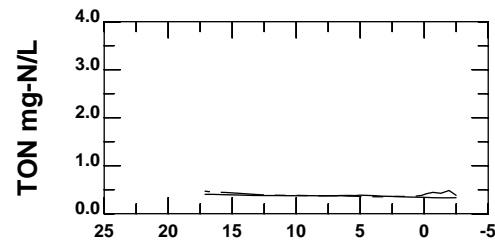
- |         |                                  |
|---------|----------------------------------|
| ————    | SURFACE 30-DAY MEAN              |
| -----   | BOTTOM 30-DAY MEAN               |
| - - - - | 30-DAY SURFACE MAX OR BOTTOM MIN |

**ARTHUR KILL AND KILL VAN KULL**



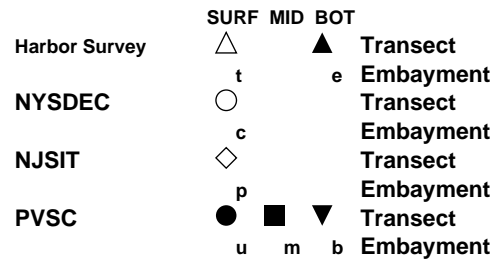


MILE FROM NY HARBOR

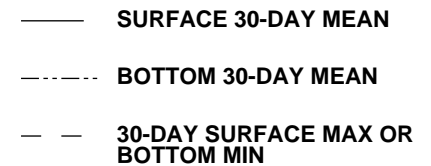


MILE FROM UPPER NY BAY

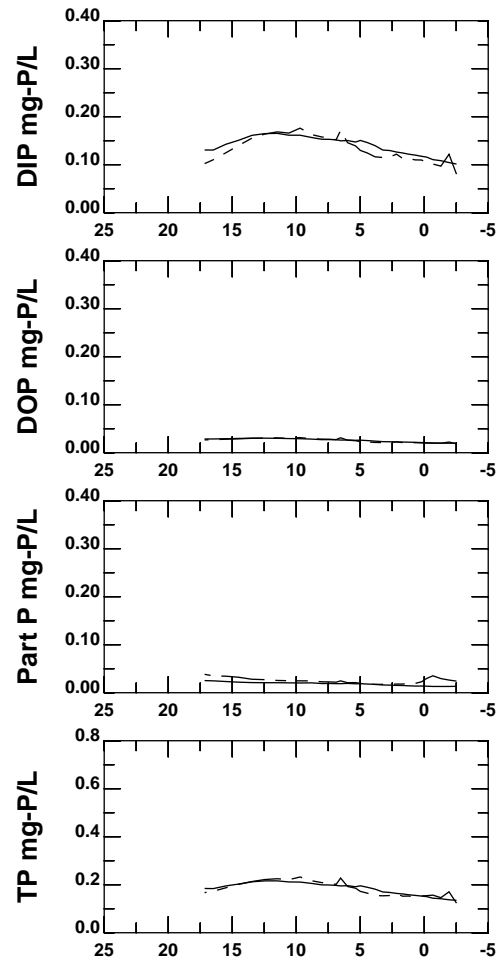
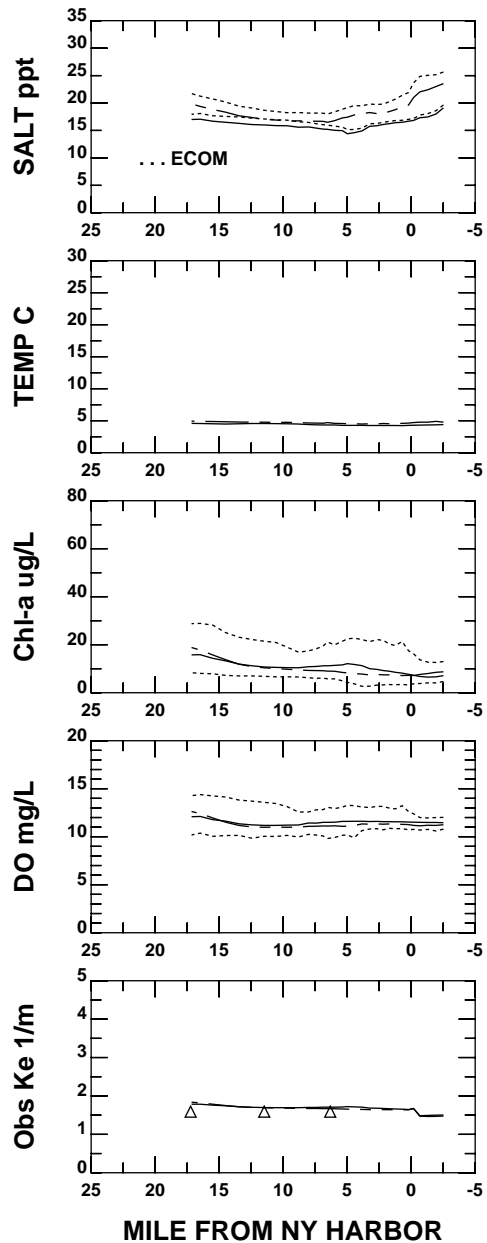
DATA Jan 29-Feb 27, 2001



MODEL



ARTHUR KILL AND KILL VAN KULL



**MILE FROM UPPER NY BAY**

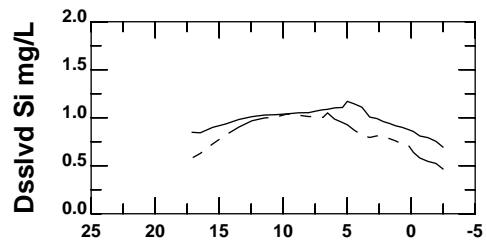
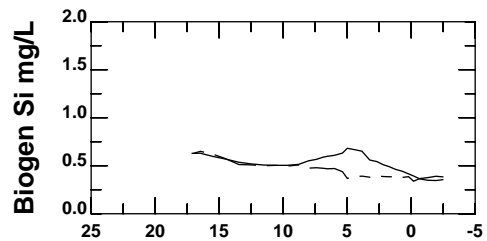
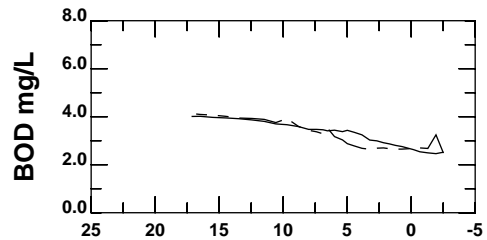
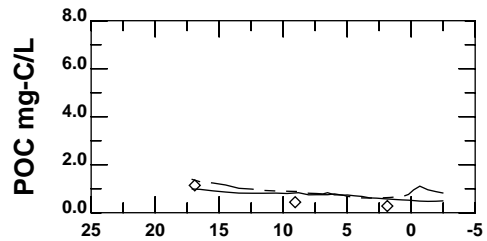
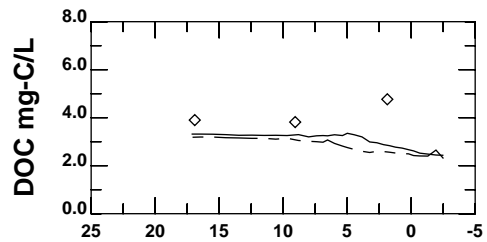
DATA Feb 28-Mar 29, 2001

	SURF		MID		BOT	
Harbor Survey	△	▲	△	▲	△	▲
NYSDEC	t	e	t	e	t	e
NJSIT	○	●	○	●	○	●
PVSC	c	■	c	■	c	■
	◇	▼	◇	▼	◇	▼
	p	u	p	m	p	b

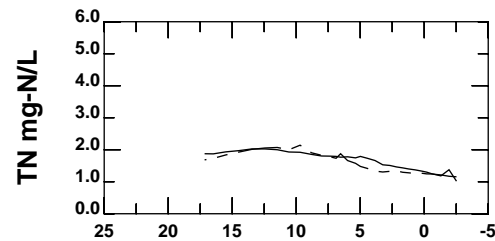
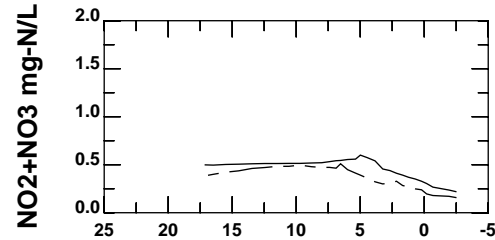
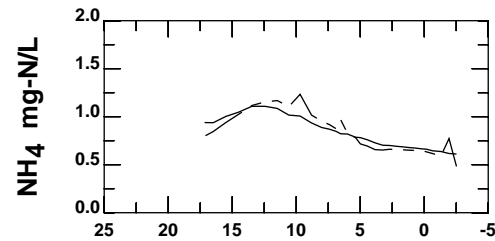
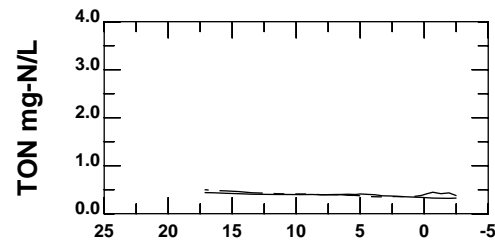
**MODEL**

—	SURFACE 30-DAY MEAN
- - -	BOTTOM 30-DAY MEAN
- - -	30-DAY SURFACE MAX OR BOTTOM MIN

**ARTHUR KILL AND KILL VAN KULL**

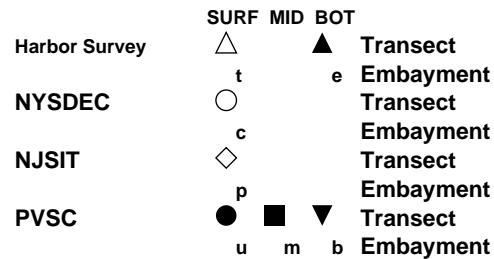


MILE FROM NY HARBOR

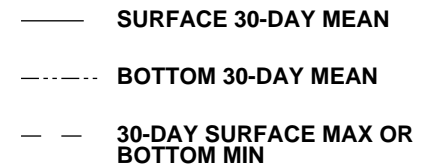


MILE FROM UPPER NY BAY

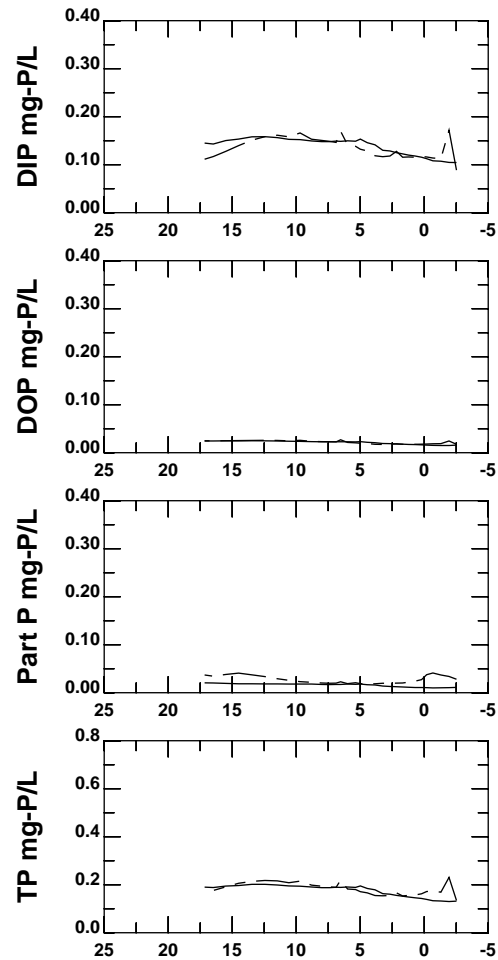
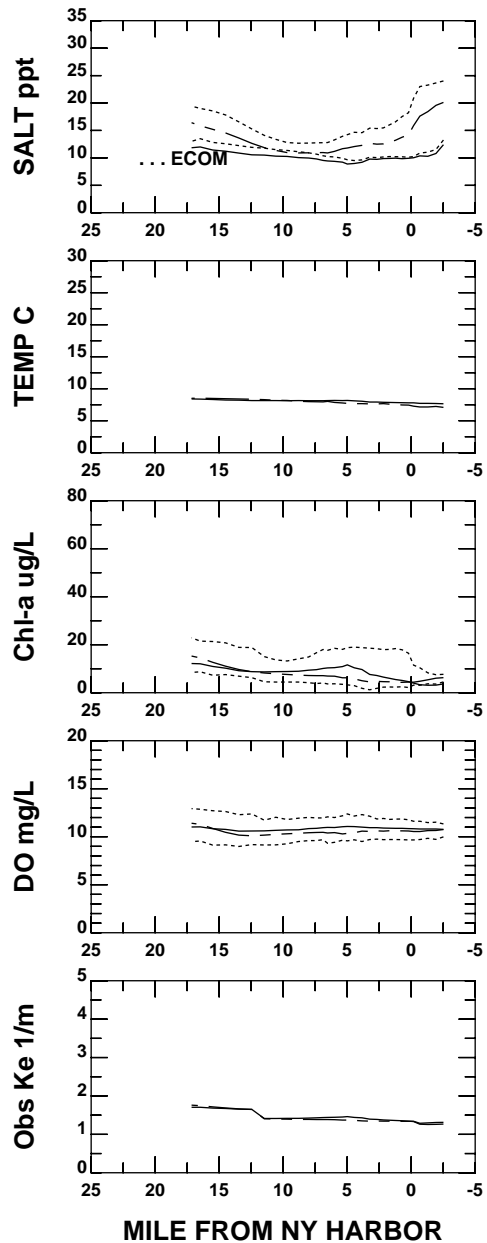
DATA Feb 28-Mar 29, 2001



MODEL



ARTHUR KILL AND KILL VAN KULL



**MILE FROM UPPER NY BAY**

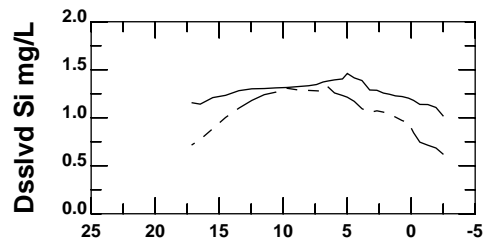
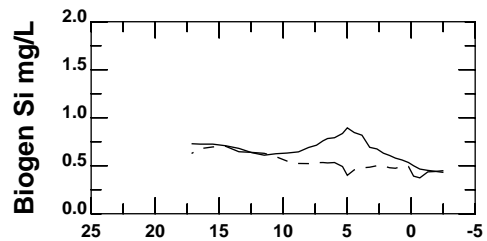
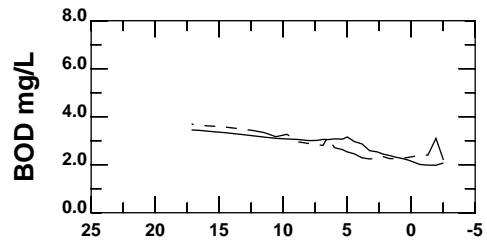
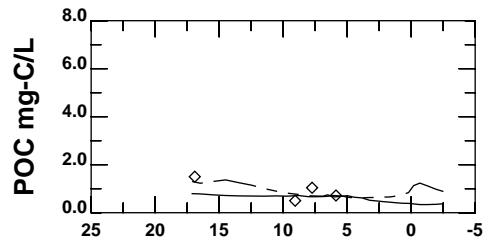
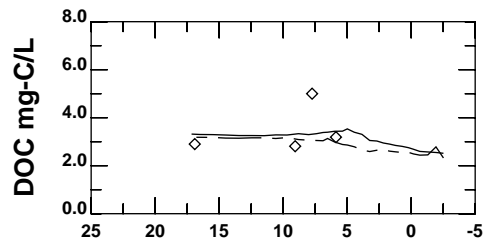
DATA Mar 30-Apr 28, 2001

	SURF MID BOT			
Harbor Survey	△	▲	Transect	
NYSDEC	t	e	Embayment	
	○		Transect	
	c		Embayment	
NJSIT	◇		Transect	
	p		Embayment	
PVSC	●	■	Transect	
	u	m	Embayment	
		▼	Transect	
		b	Embayment	

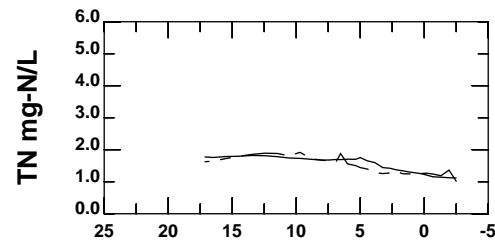
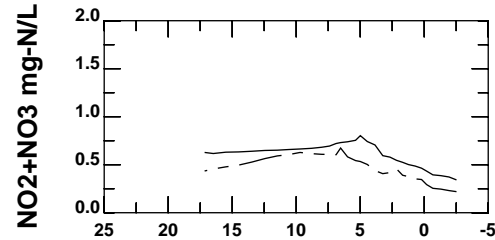
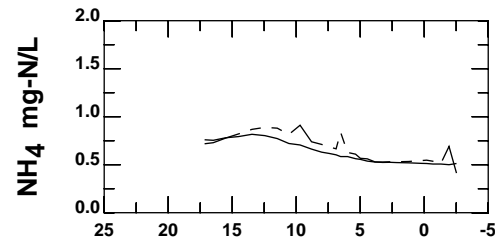
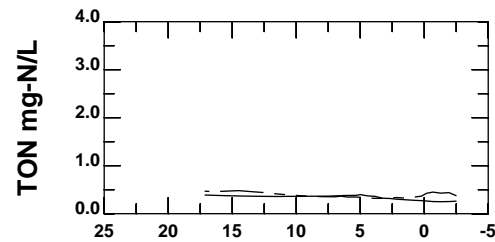
**MODEL**

————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

**ARTHUR KILL AND KILL VAN KULL**

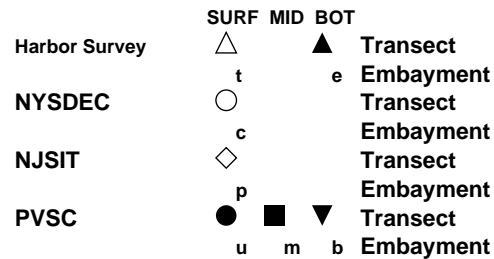


MILE FROM NY HARBOR

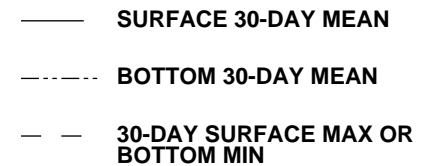


MILE FROM UPPER NY BAY

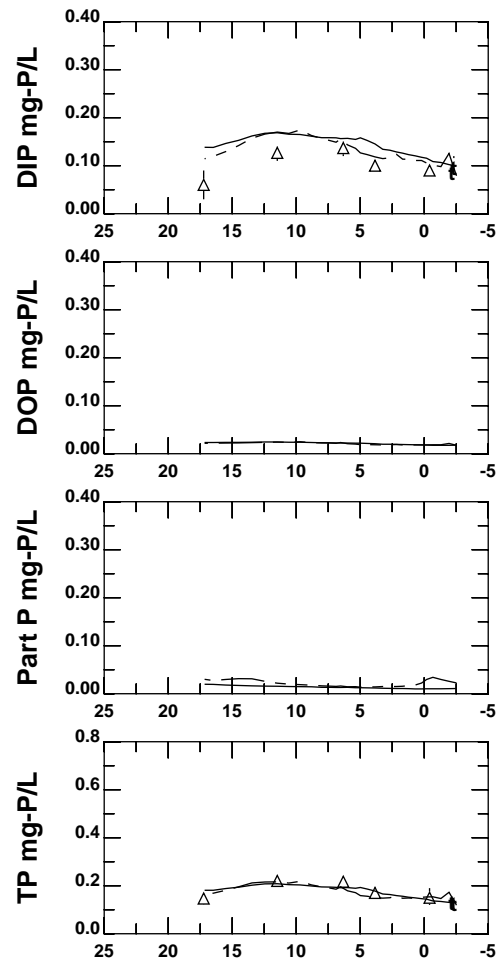
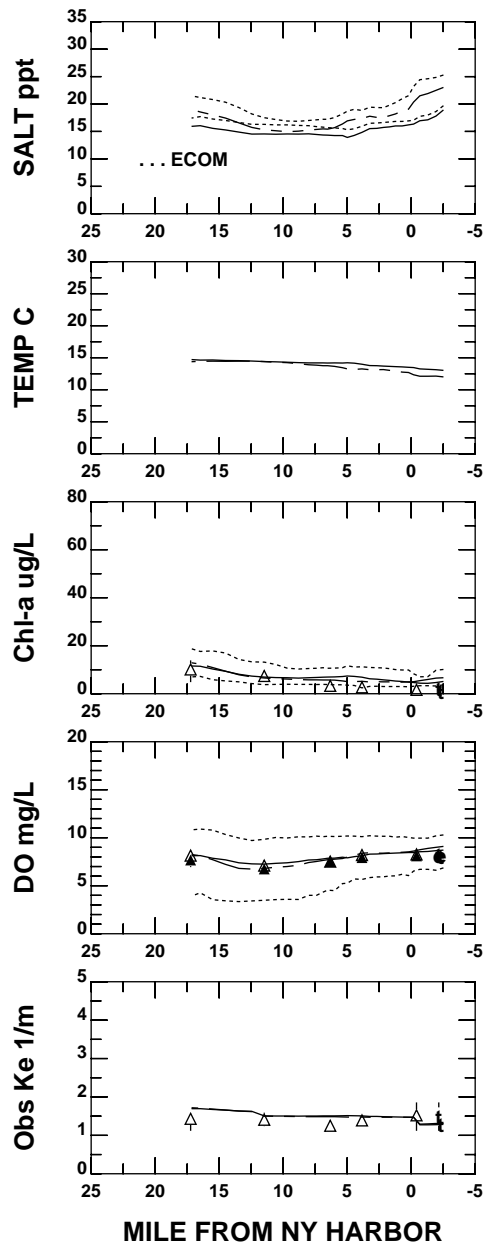
DATA Mar 30-Apr 28, 2001



MODEL



ARTHUR KILL AND KILL VAN KULL



**MILE FROM UPPER NY BAY**

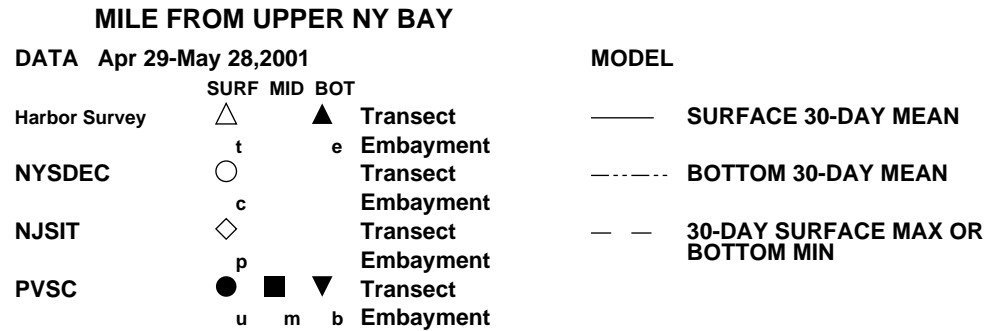
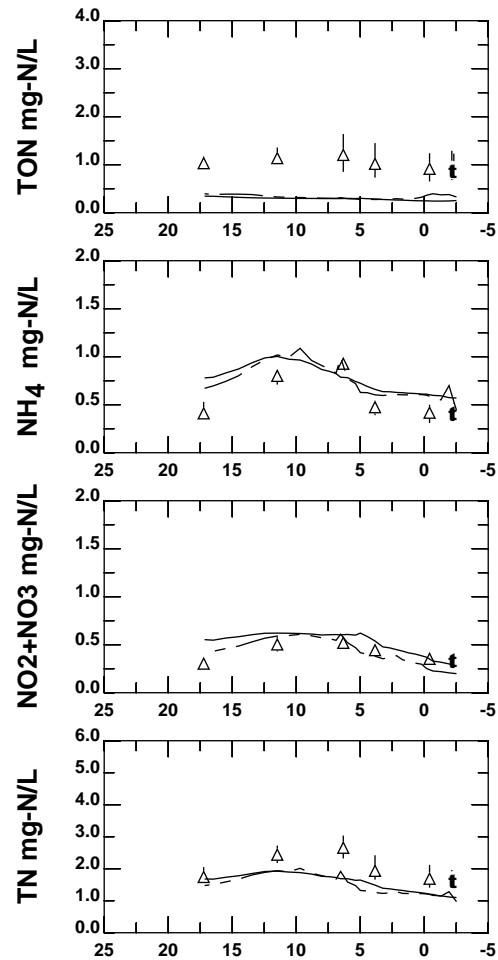
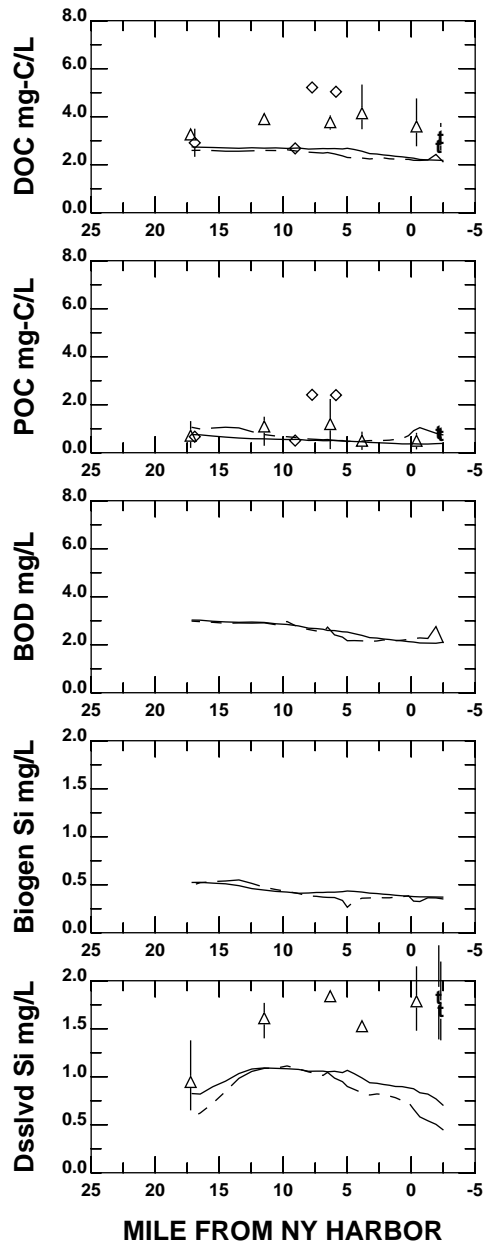
DATA Apr 29-May 28, 2001

	SURF		MID		BOT	
Harbor Survey	△		▲		▲	Transect
NYSDEC	t		e		e	Embayment
	○					Transect
	c					Embayment
NJSIT	◇					Transect
	p					Embayment
PVSC	●	■	▼		▼	Transect
	u	m	b		b	Embayment

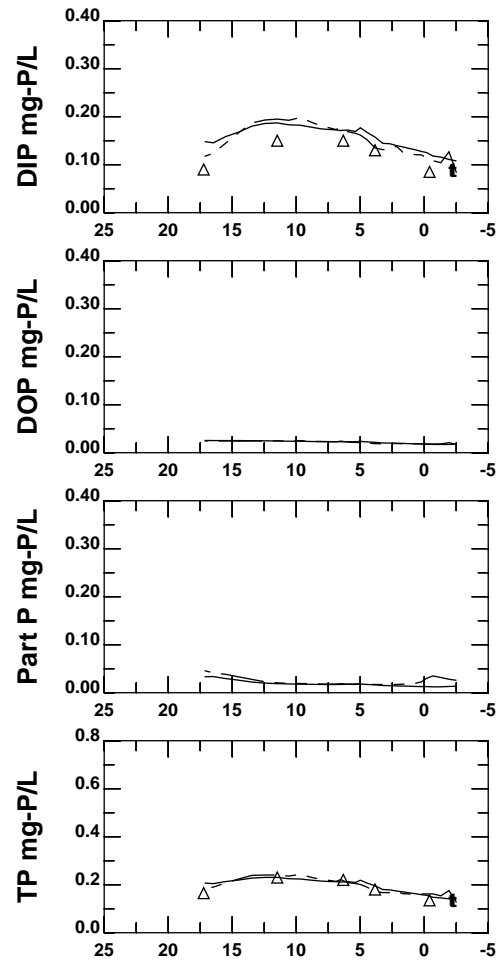
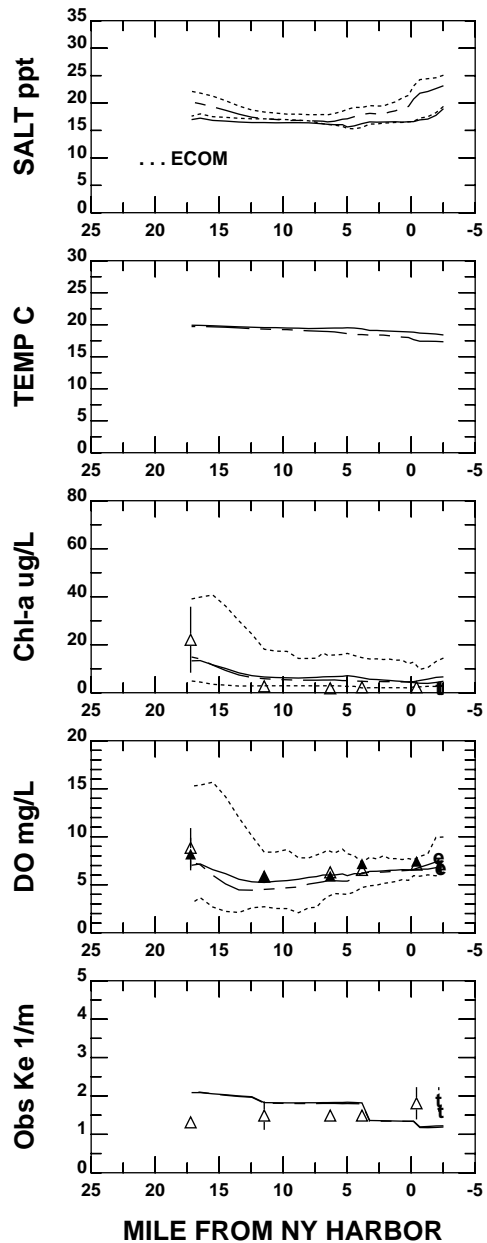
**MODEL**

————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

**ARTHUR KILL AND KILL VAN KULL**



**ARTHUR KILL AND KILL VAN KULL**



**MILE FROM UPPER NY BAY**

DATA May 29-Jun 27, 2001

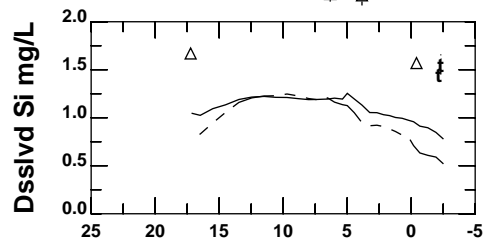
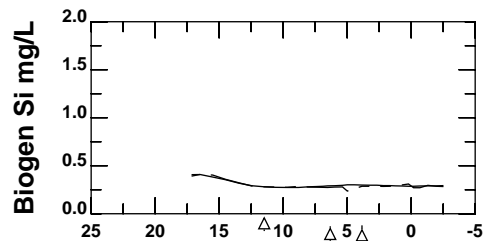
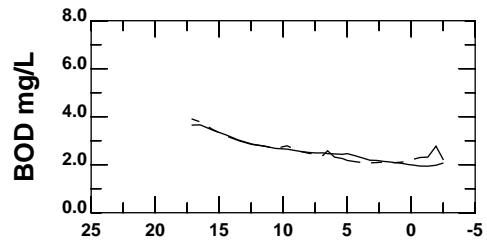
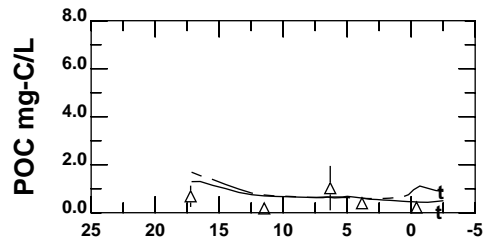
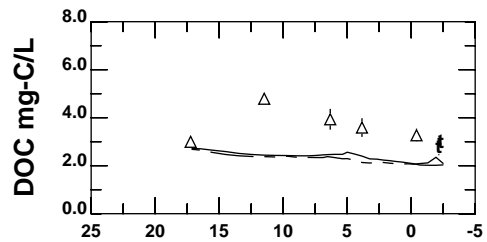
	SURF MID BOT		
Harbor Survey	△	▲	Transect
NYSDEC	t	e	Embayment
	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment
PVSC	●	■	Transect
	u	m	Embayment
		▼	Transect
		b	Embayment

**MODEL**

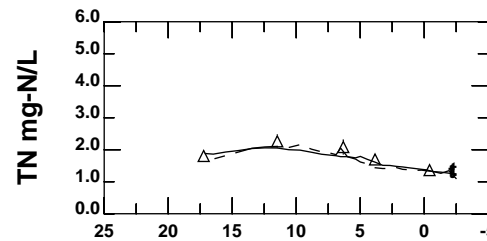
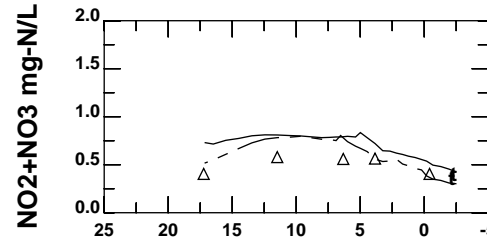
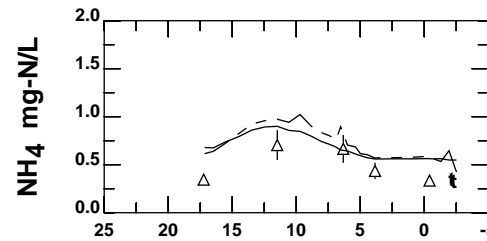
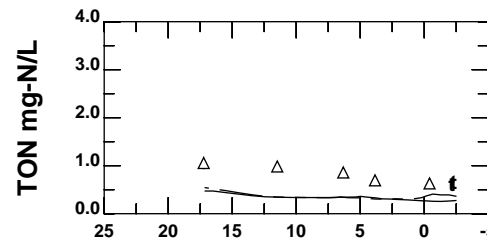
————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

**ARTHUR KILL AND KILL VAN KULL**



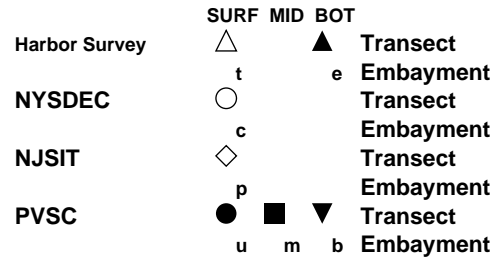


MILE FROM NY HARBOR

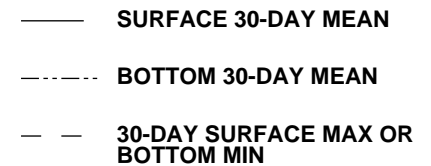


MILE FROM UPPER NY BAY

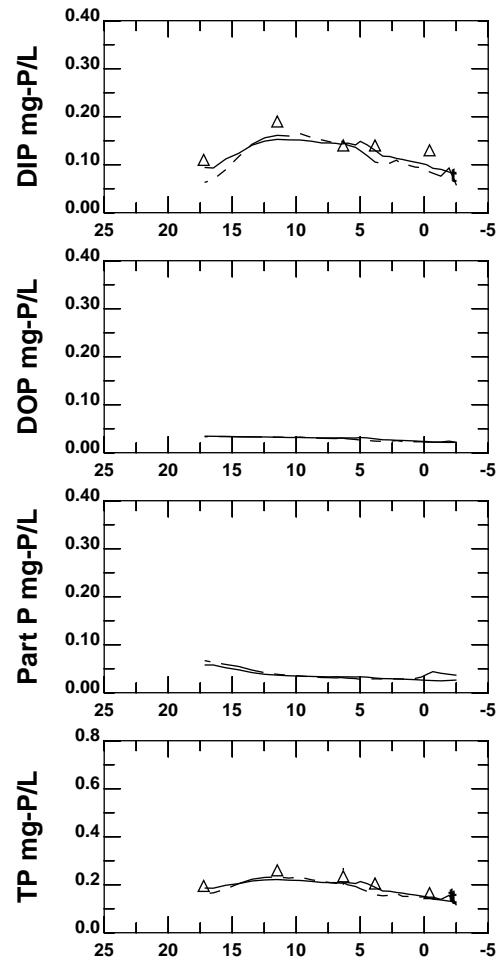
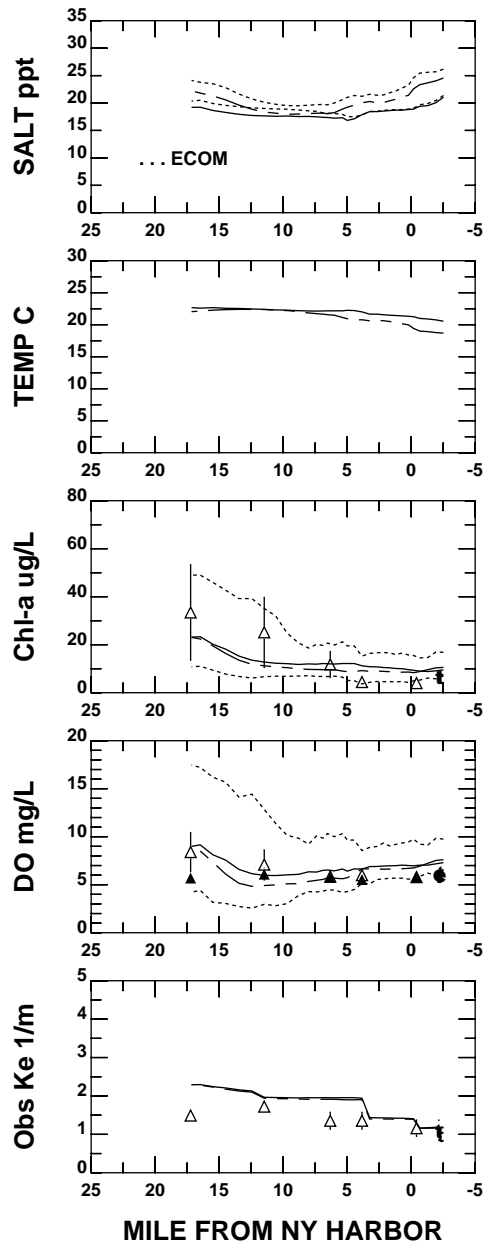
DATA May 29-Jun 27, 2001



MODEL



# ARTHUR KILL AND KILL VAN KULL



**MILE FROM UPPER NY BAY**

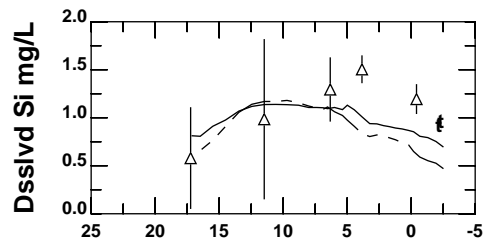
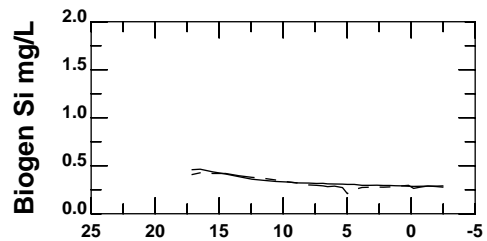
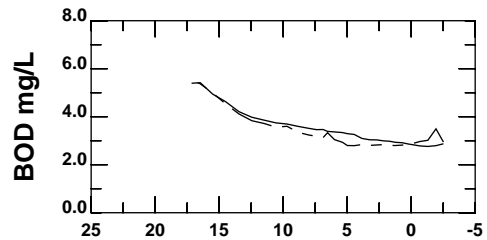
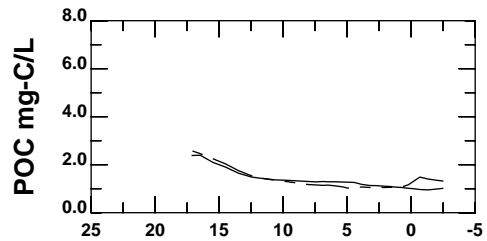
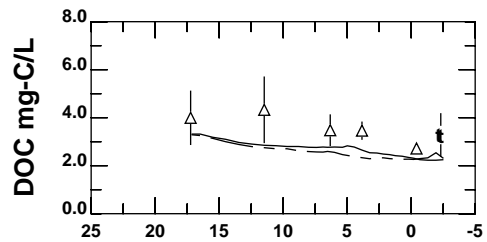
DATA Jun 28-Jul 27, 2001

	SURF	MID	BOT	
Harbor Survey	△		▲	Transect
NYSDEC	t		e	Embayment
	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment

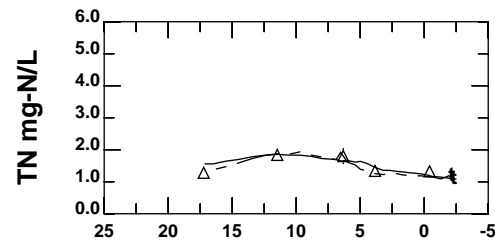
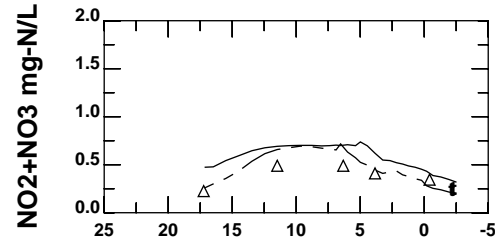
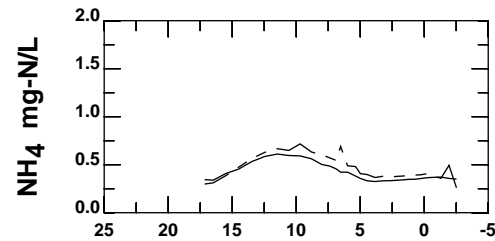
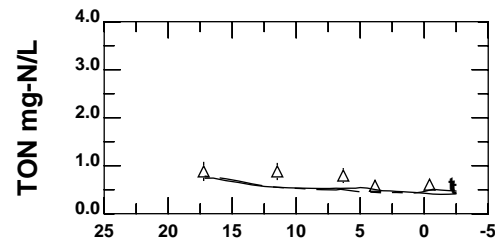
**MODEL**

————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

**ARTHUR KILL AND KILL VAN KULL**

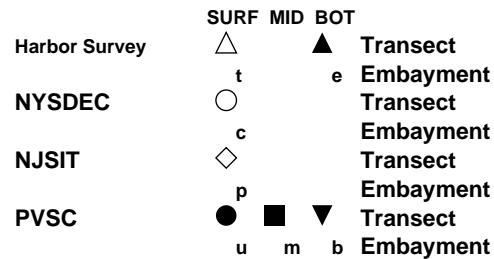


MILE FROM NY HARBOR

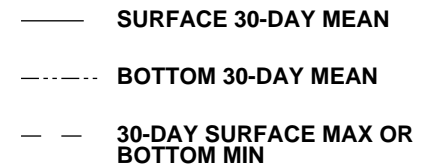


MILE FROM UPPER NY BAY

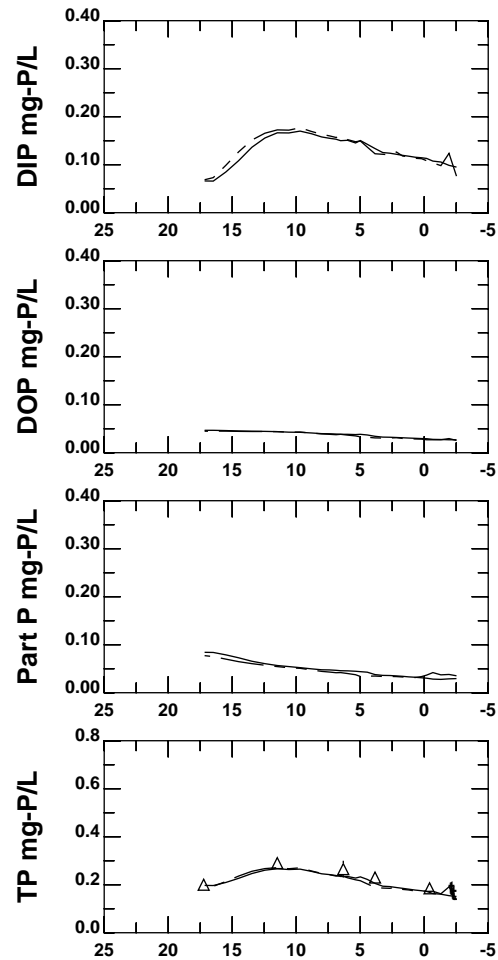
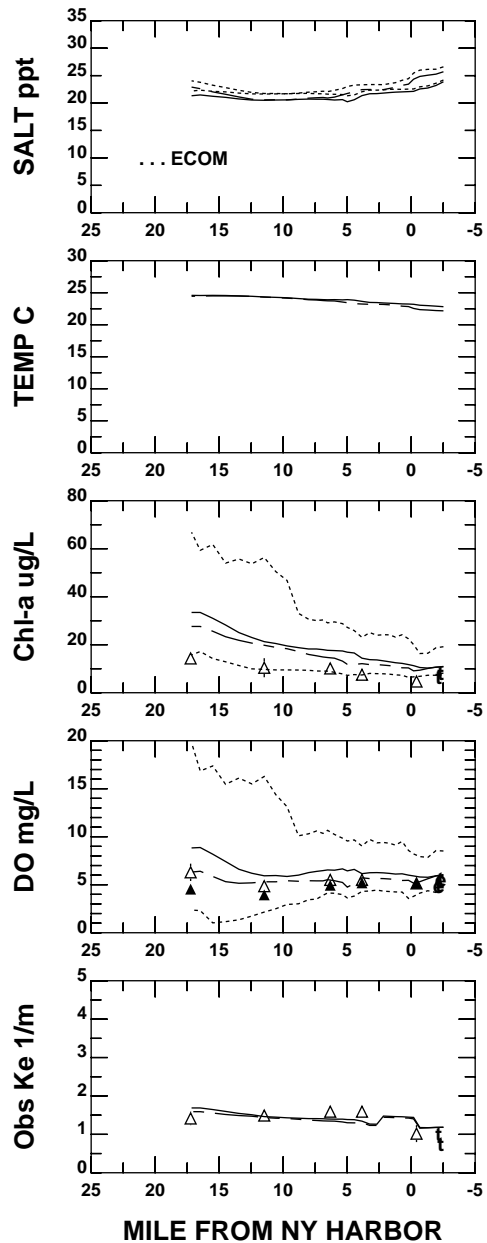
DATA Jun 28-Jul 27, 2001



MODEL



ARTHUR KILL AND KILL VAN KULL



**MILE FROM UPPER NY BAY**

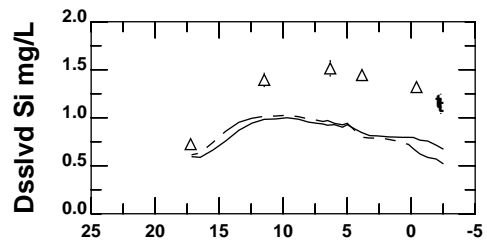
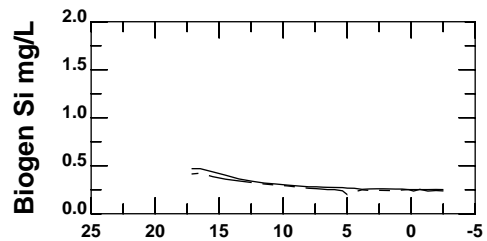
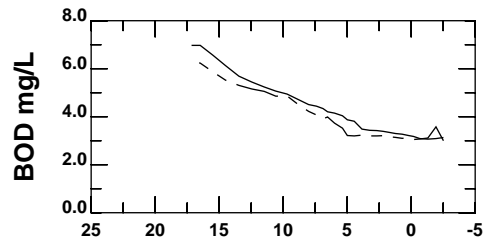
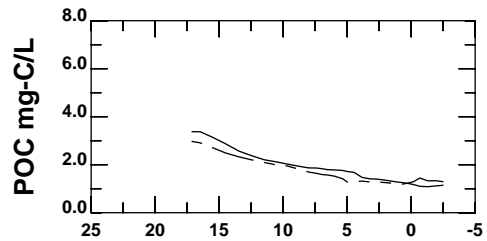
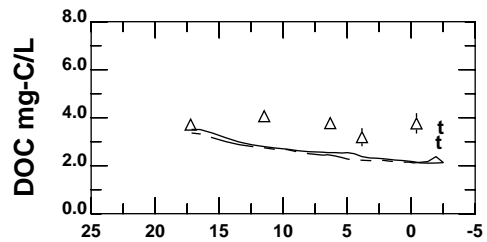
DATA Jul 27-Aug 26, 2001

	SURF		MID		BOT	
Harbor Survey	△	▲	△	▲	△	▲
NYSDEC	t	e	○	○	○	○
NJSIT	c		◇	◇	◇	◇
PVSC	p		●	■	▼	▼
	u	m	b	b	b	b

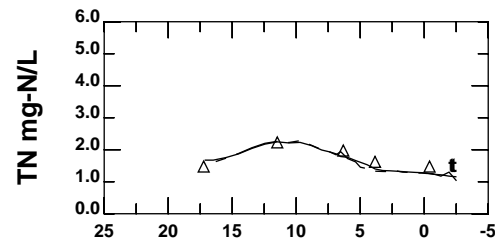
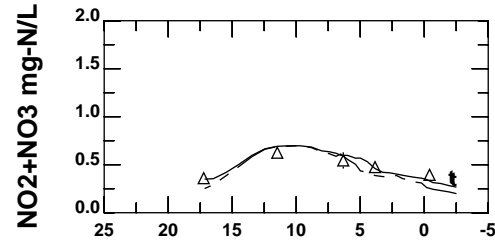
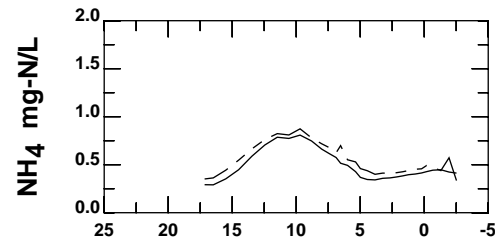
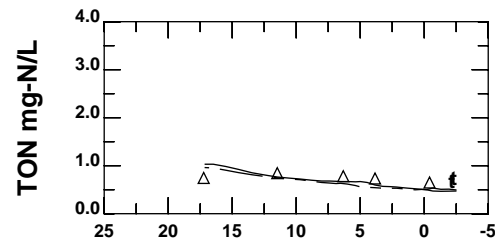
**MODEL**

—	SURFACE 30-DAY MEAN
- - -	BOTTOM 30-DAY MEAN
- - -	30-DAY SURFACE MAX OR BOTTOM MIN

**ARTHUR KILL AND KILL VAN KULL**

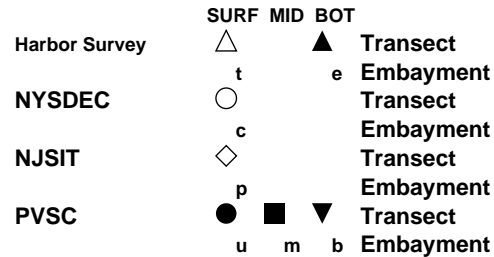


MILE FROM NY HARBOR

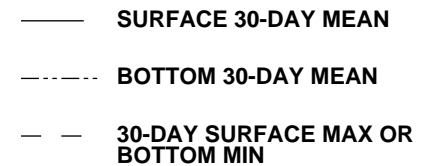


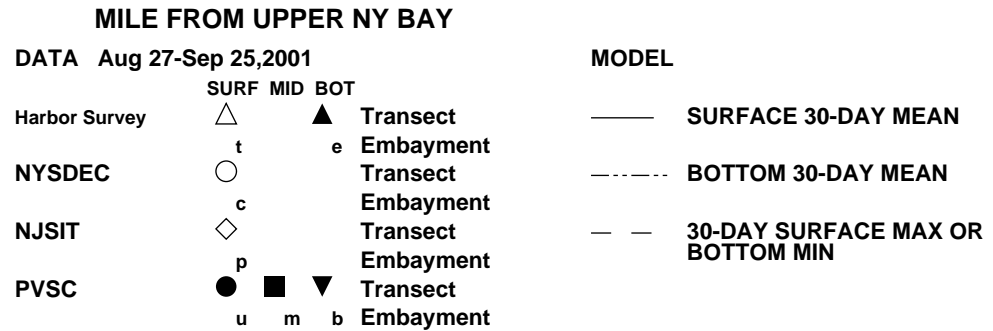
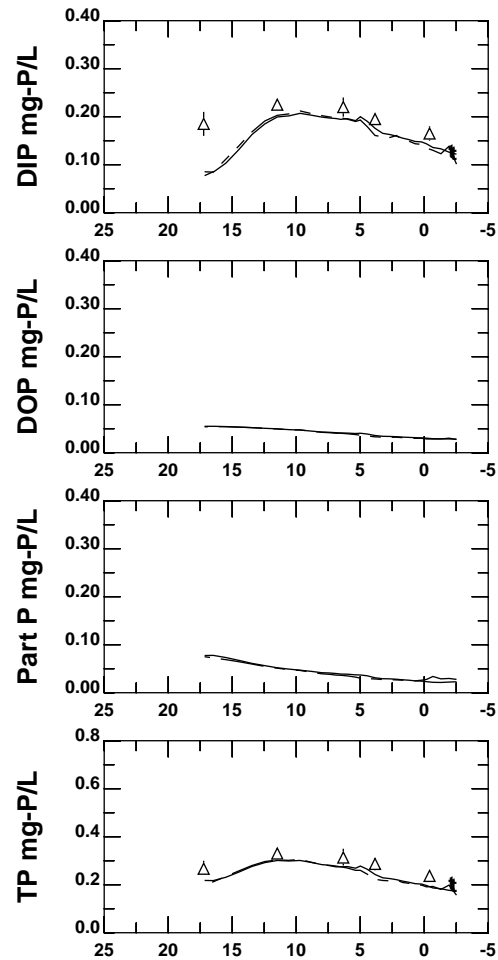
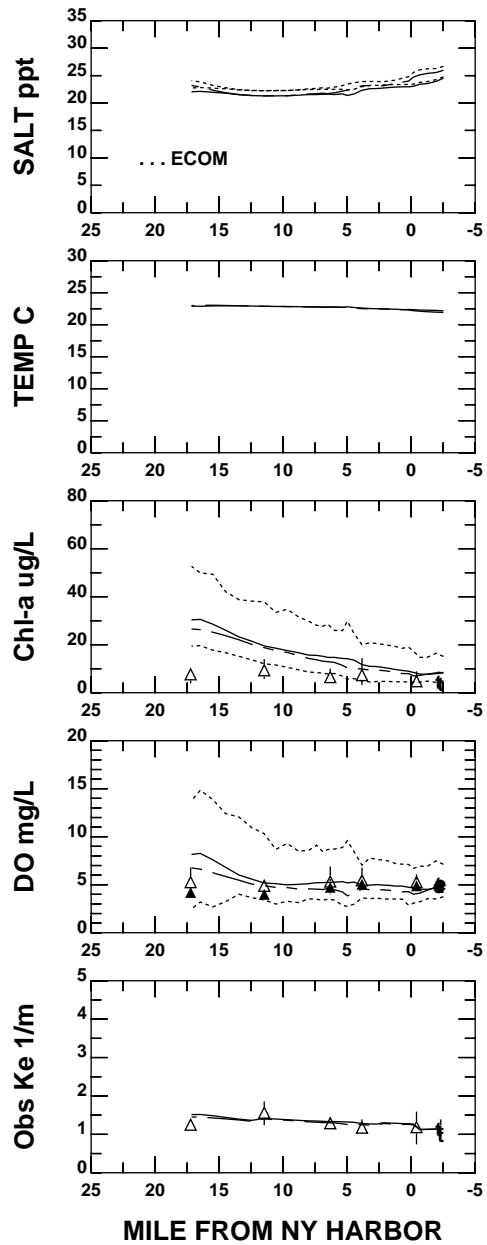
MILE FROM UPPER NY BAY

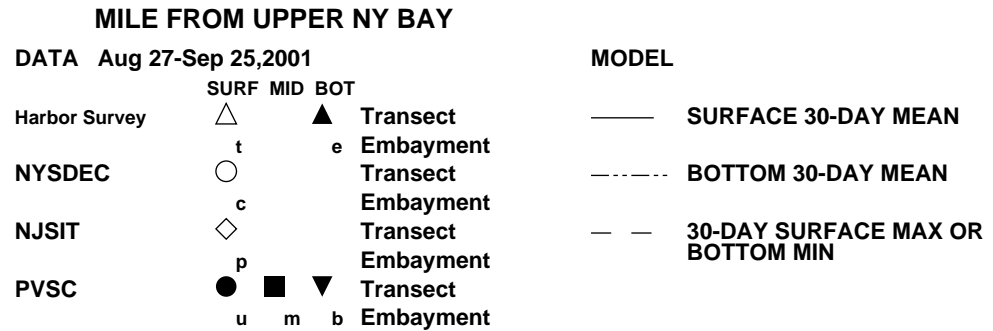
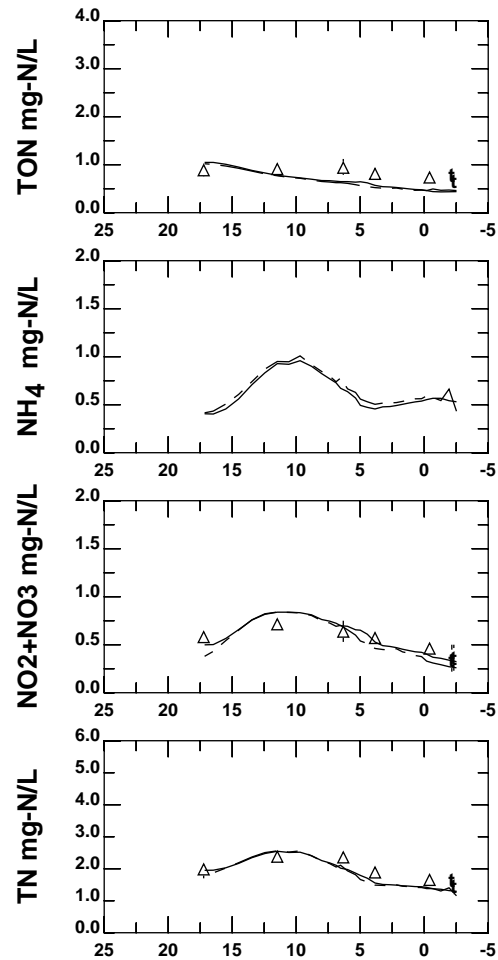
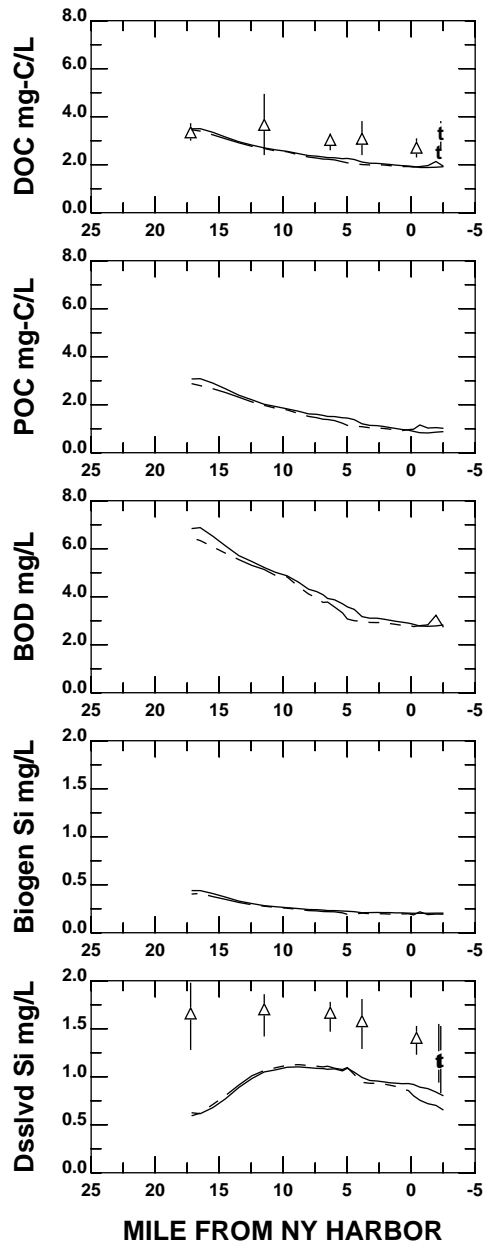
DATA Jul 27-Aug 26, 2001



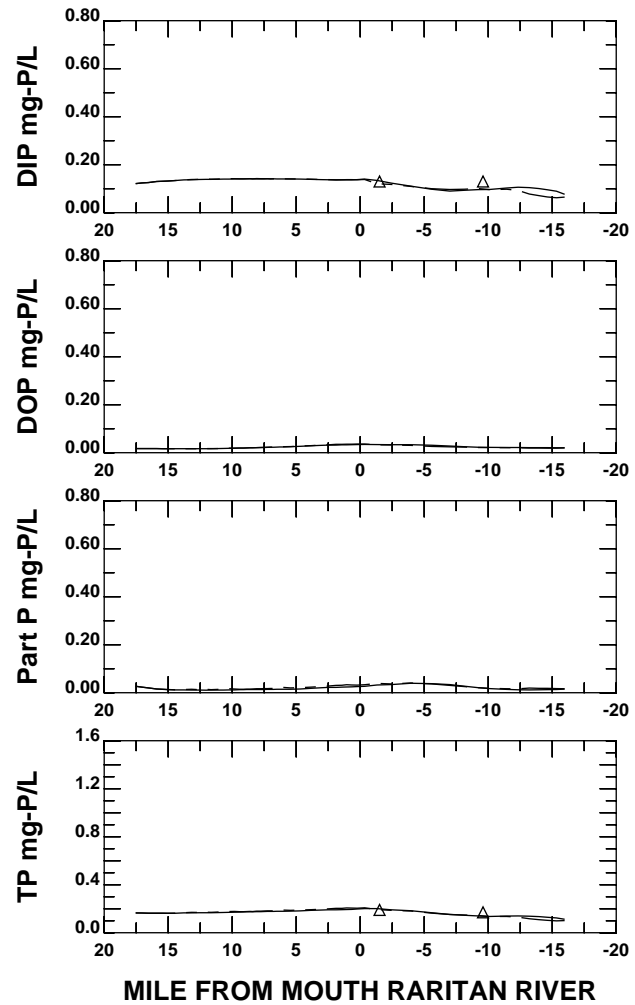
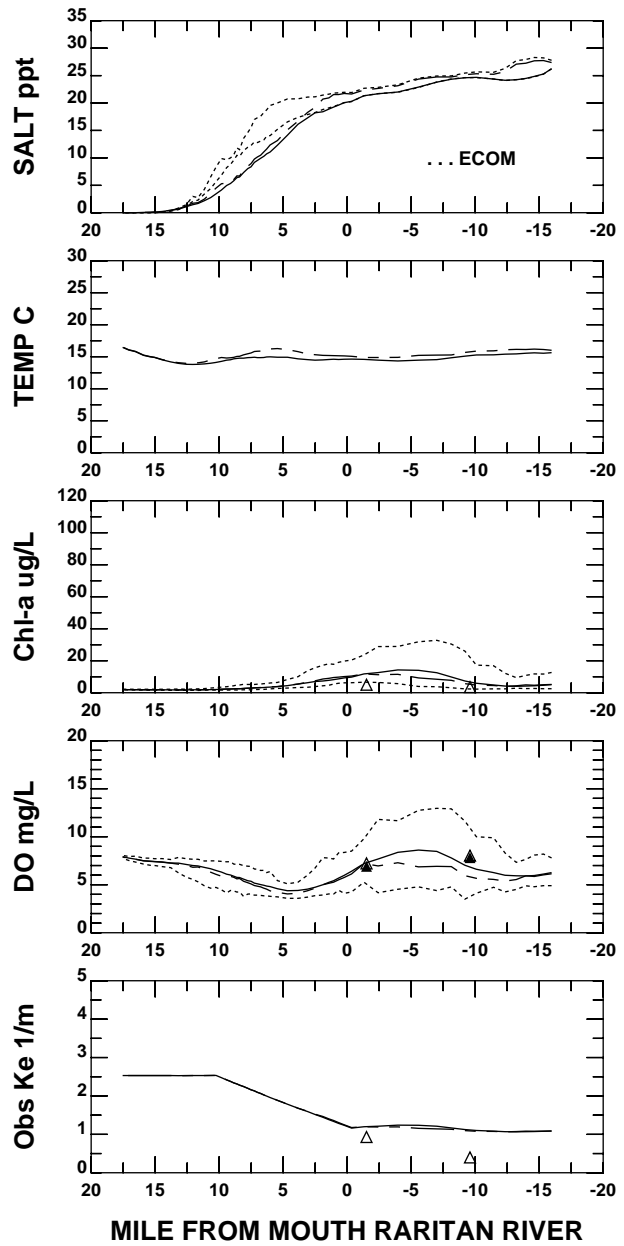
MODEL







**ARTHUR KILL AND KILL VAN KULL**



**DATA Oct 1-30,2000**

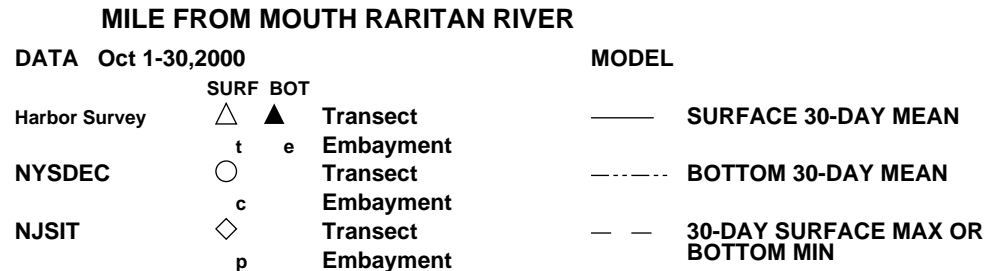
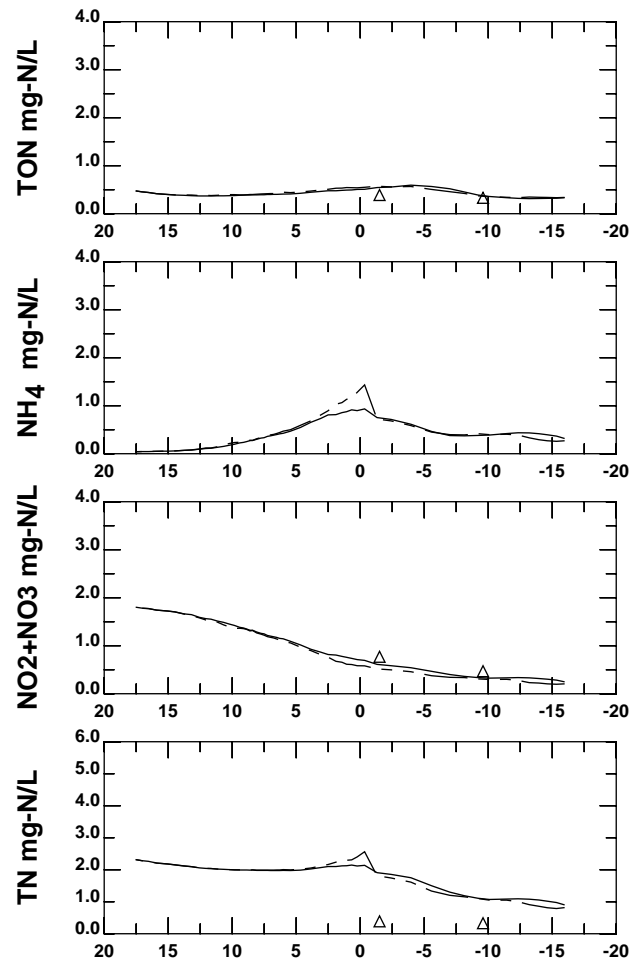
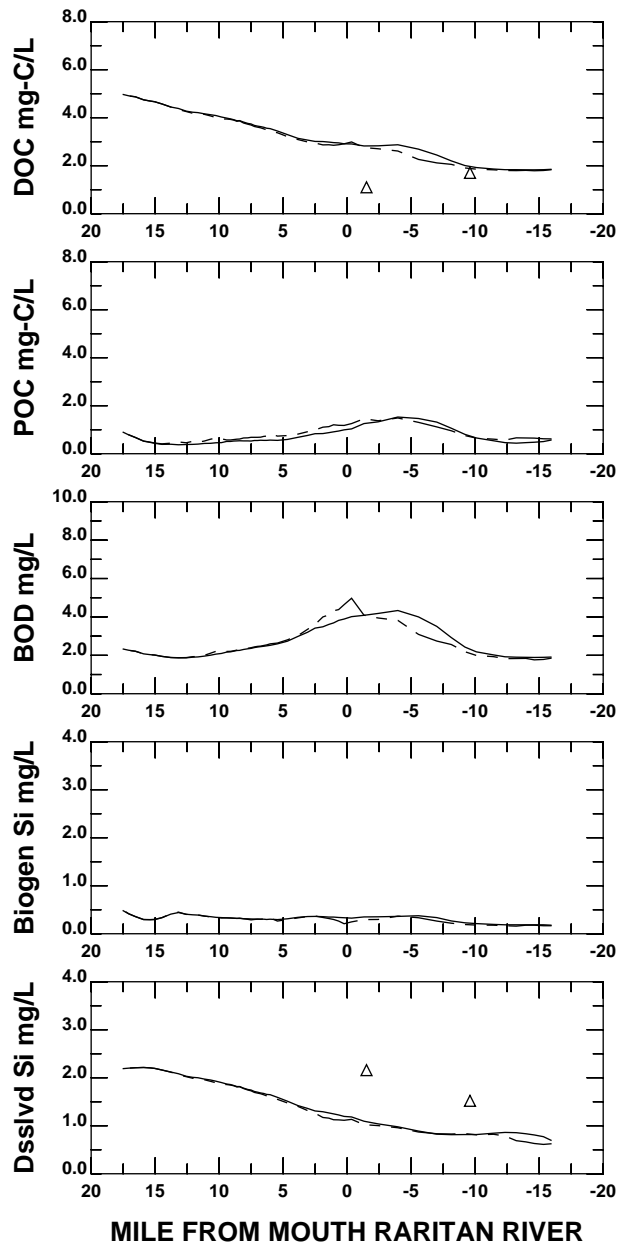
	<b>SURF BOT</b>		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment

**MODEL**

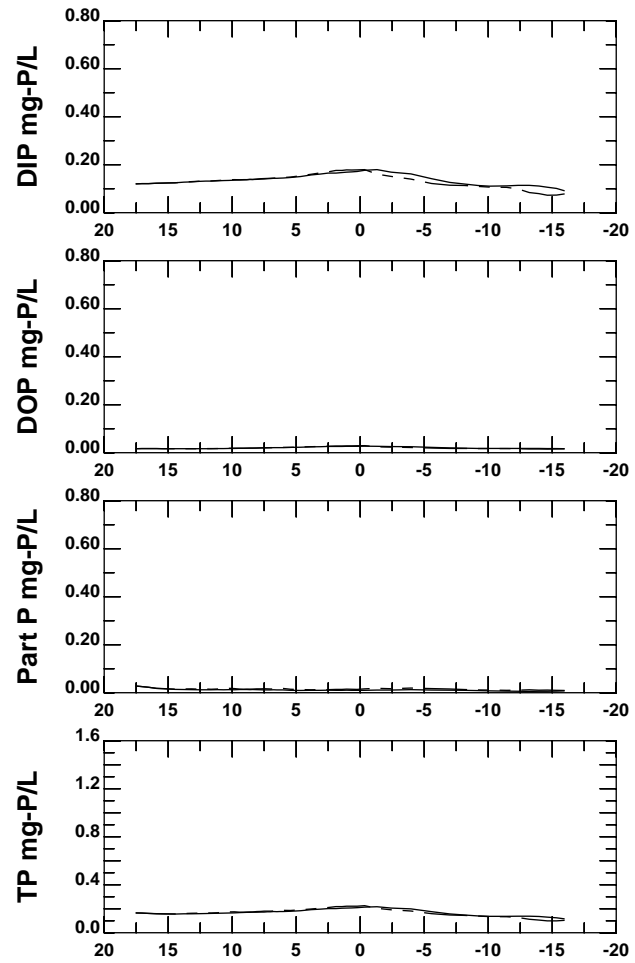
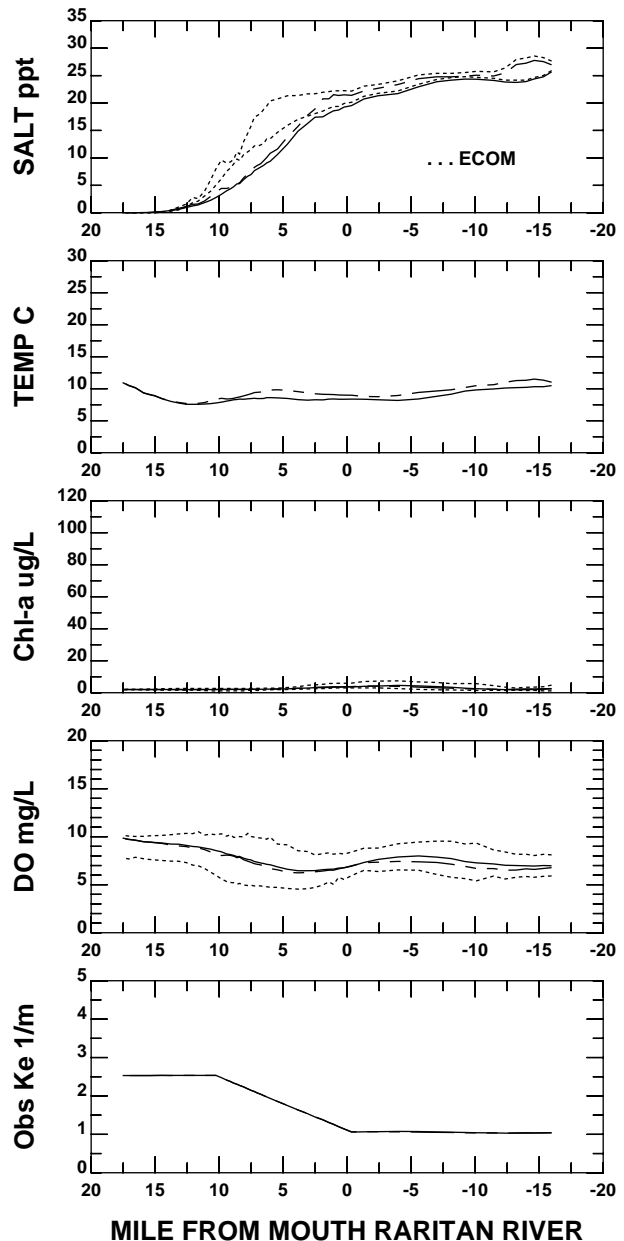
————	<b>SURFACE 30-DAY MEAN</b>
-----	<b>BOTTOM 30-DAY MEAN</b>
- - - -	<b>30-DAY SURFACE MAX OR BOTTOM MIN</b>

**RARITAN RIVER AND NORTH SHORE OF RARITAN BAY**





**RARITAN RIVER AND NORTH SHORE RARITAN BAY**



**DATA Oct 31-Nov 29,2000**

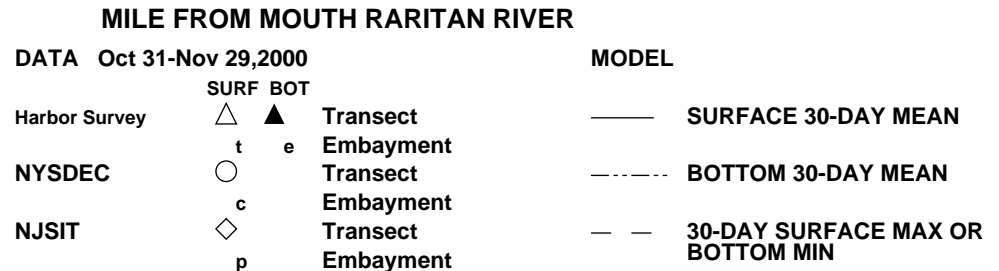
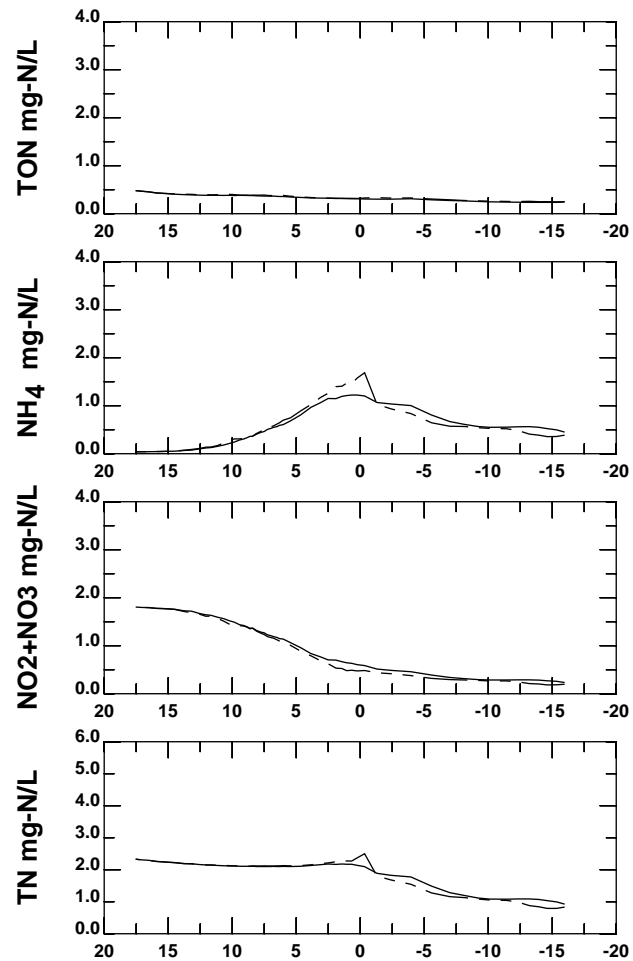
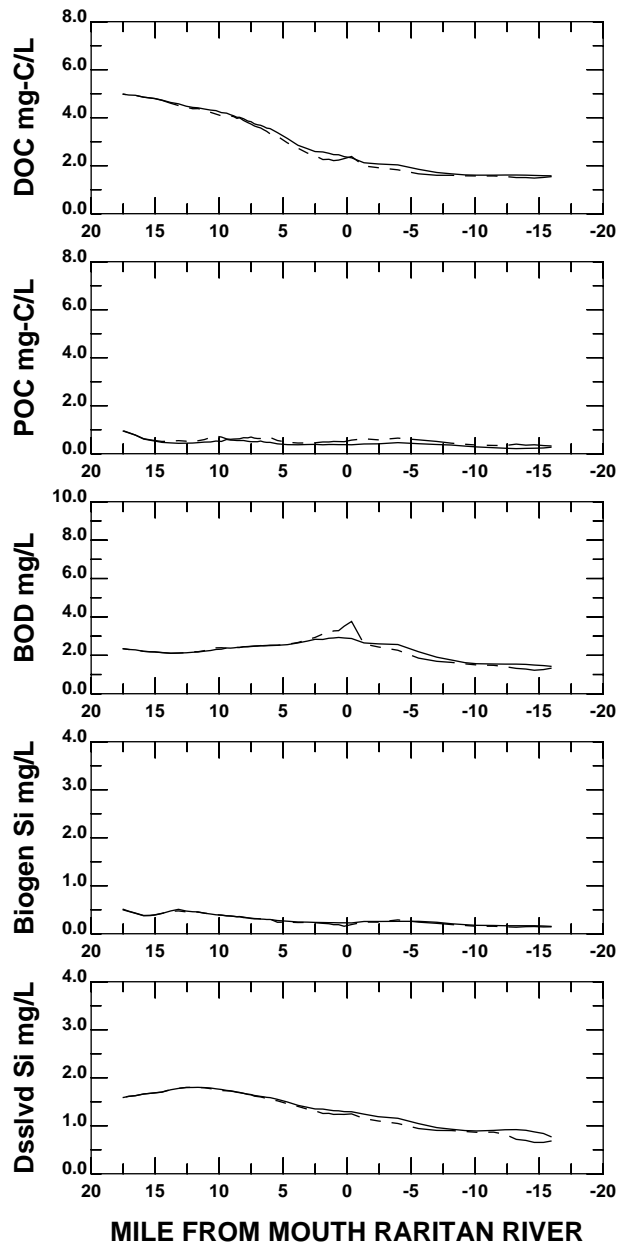
**MODEL**

	<b>SURF BOT</b>		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment

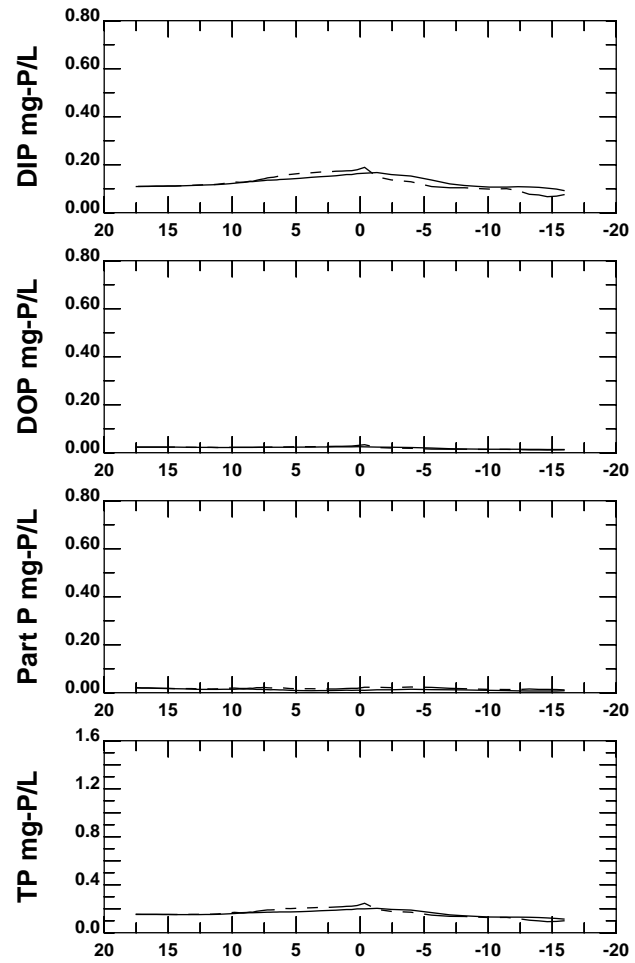
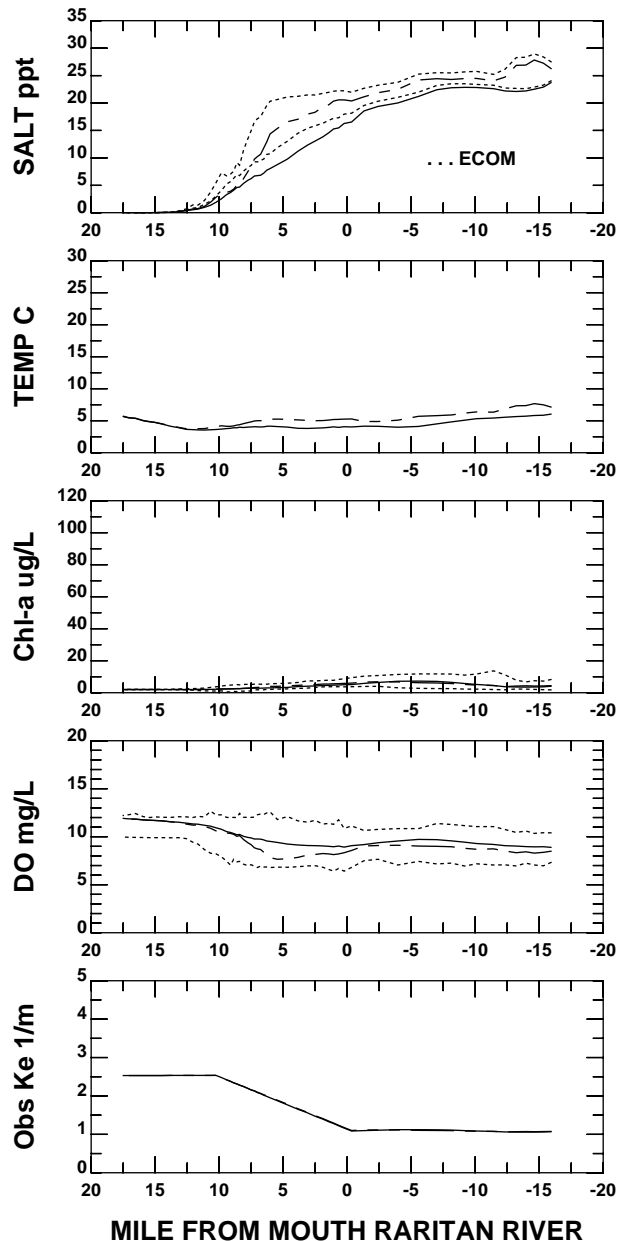
  

—	<b>SURFACE 30-DAY MEAN</b>
---	<b>BOTTOM 30-DAY MEAN</b>
- - -	<b>30-DAY SURFACE MAX OR BOTTOM MIN</b>

**RARITAN RIVER AND NORTH SHORE OF RARITAN BAY**



**RARITAN RIVER AND NORTH SHORE RARITAN BAY**



**DATA Nov 30-Dec 29,2000**

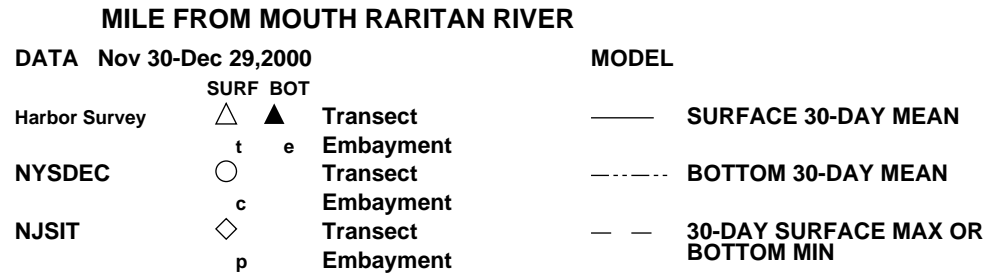
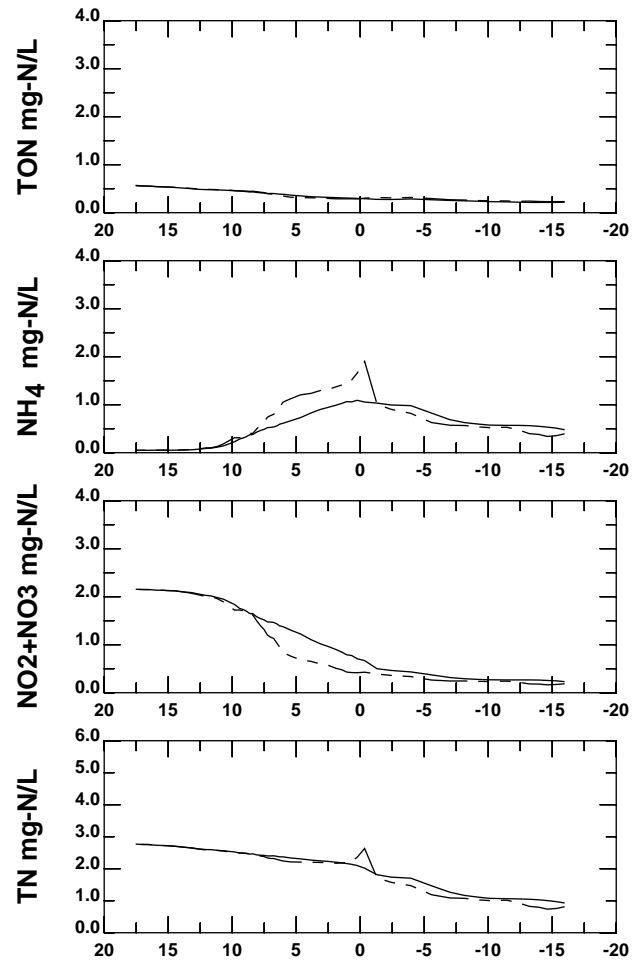
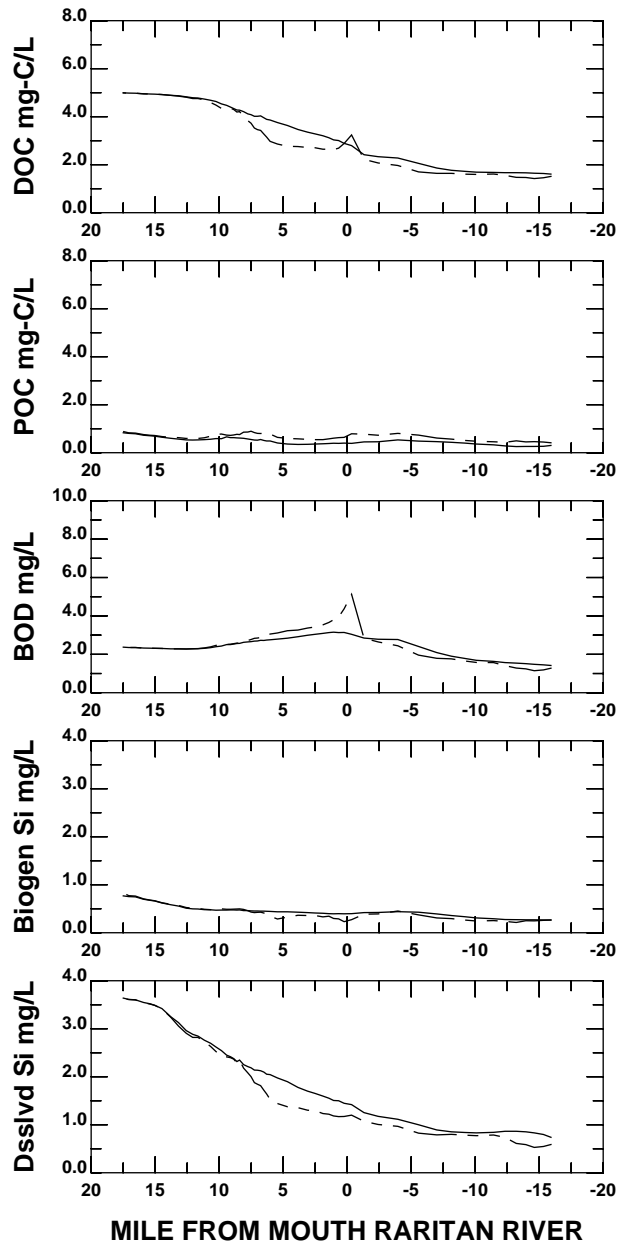
**MODEL**

	<b>SURF BOT</b>		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment

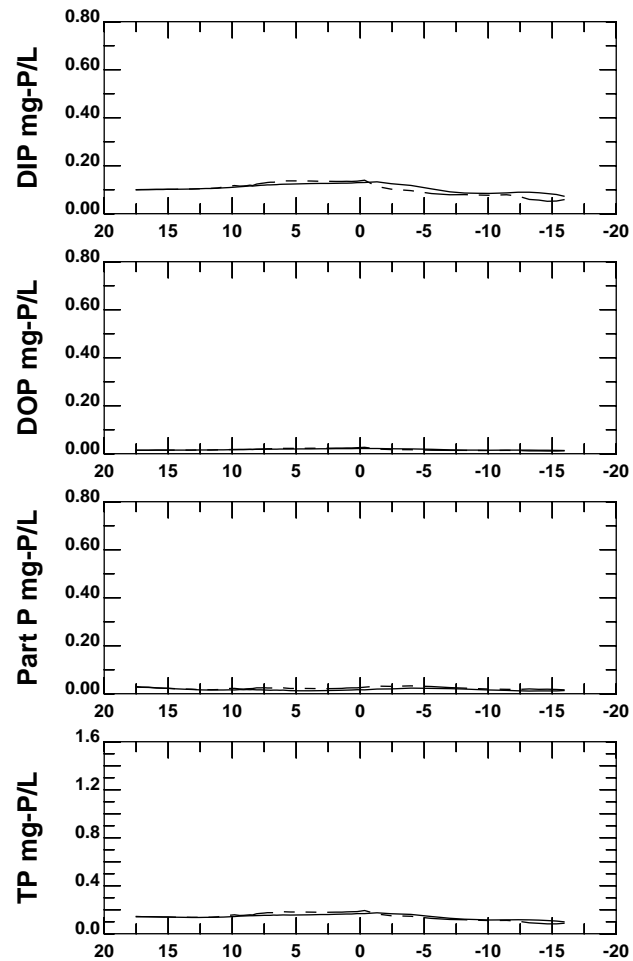
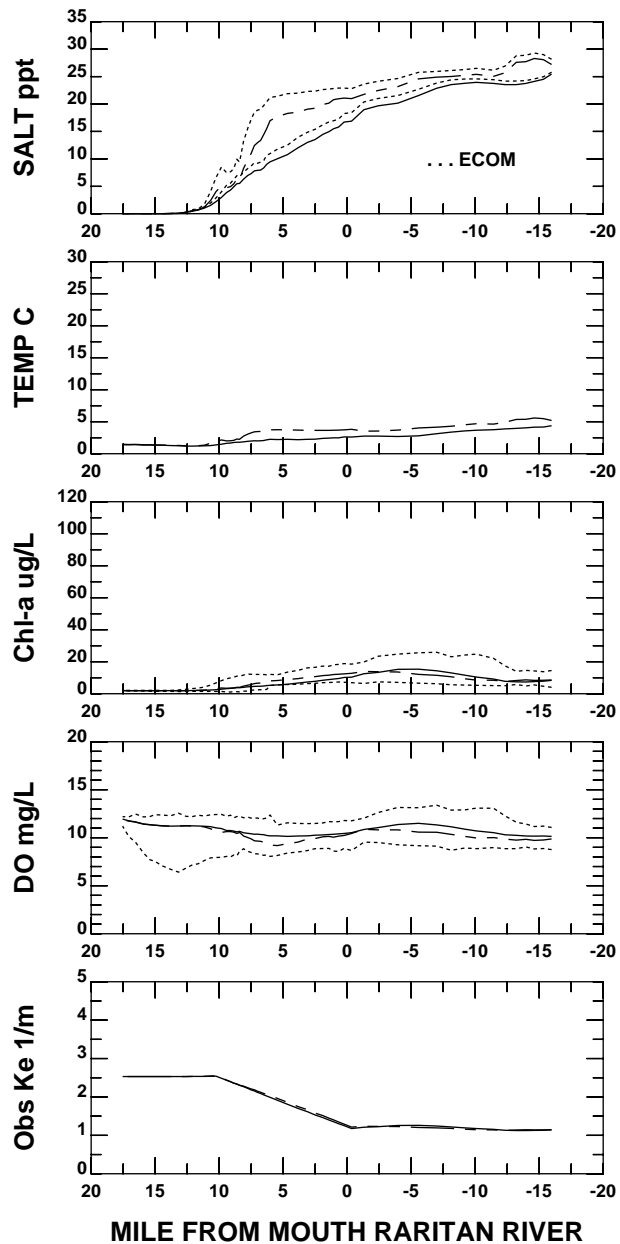
  

—	<b>SURFACE 30-DAY MEAN</b>
---	<b>BOTTOM 30-DAY MEAN</b>
- - -	<b>30-DAY SURFACE MAX OR BOTTOM MIN</b>

**RARITAN RIVER AND NORTH SHORE OF RARITAN BAY**



**RARITAN RIVER AND NORTH SHORE RARITAN BAY**

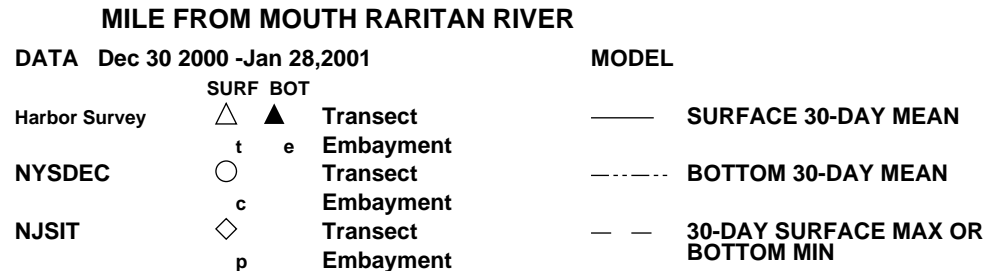
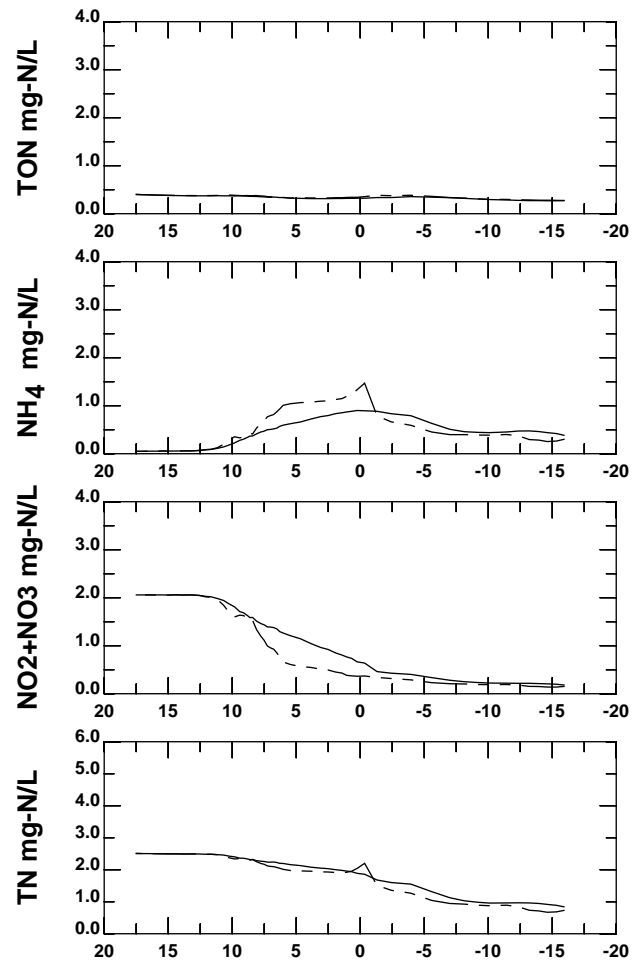
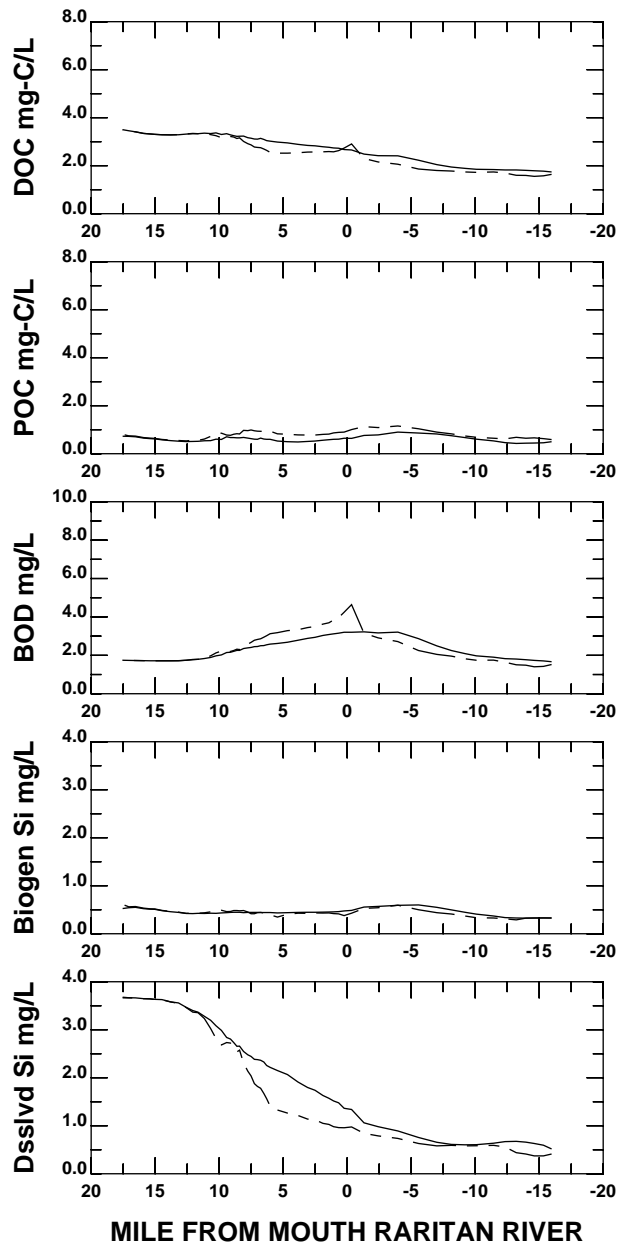


DATA Dec 30 2000 -Jan 28,2001

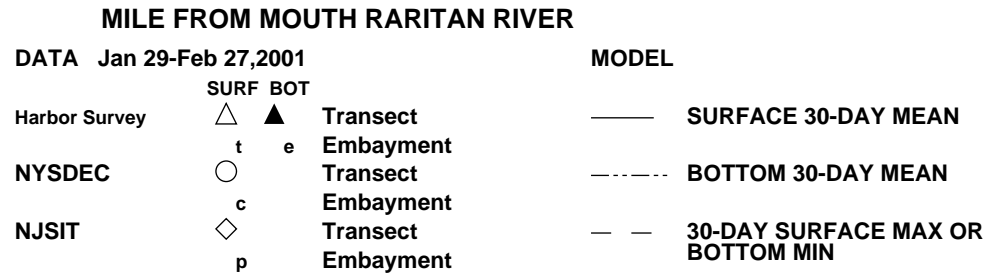
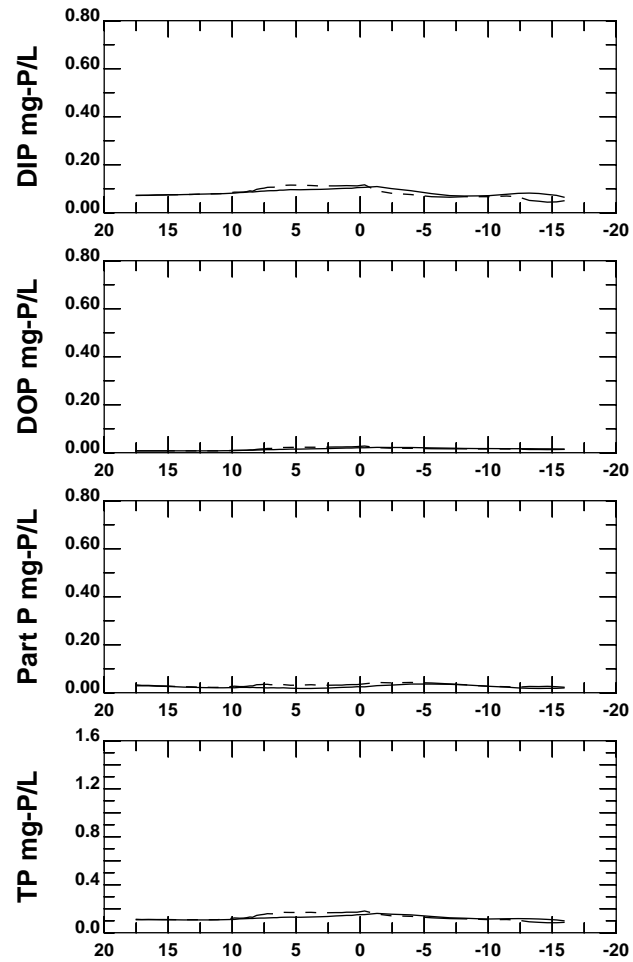
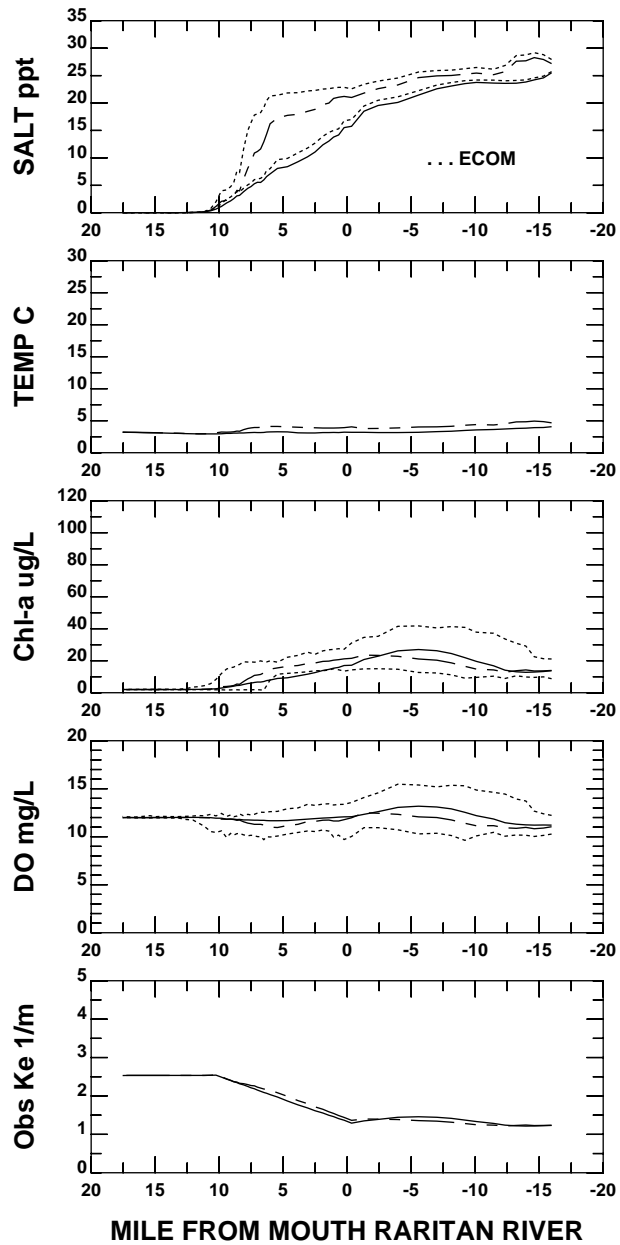
MODEL



## RARITAN RIVER AND NORTH SHORE OF RARITAN BAY

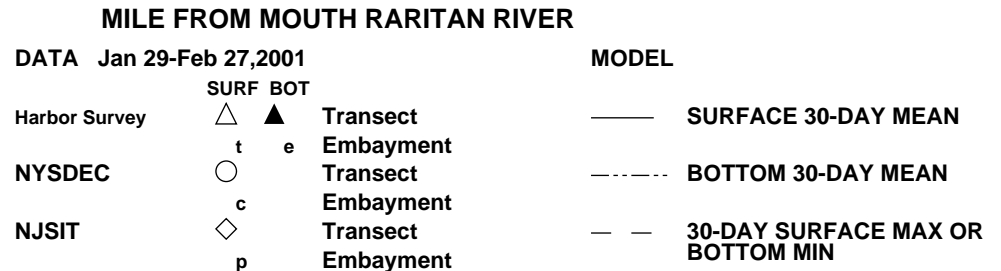
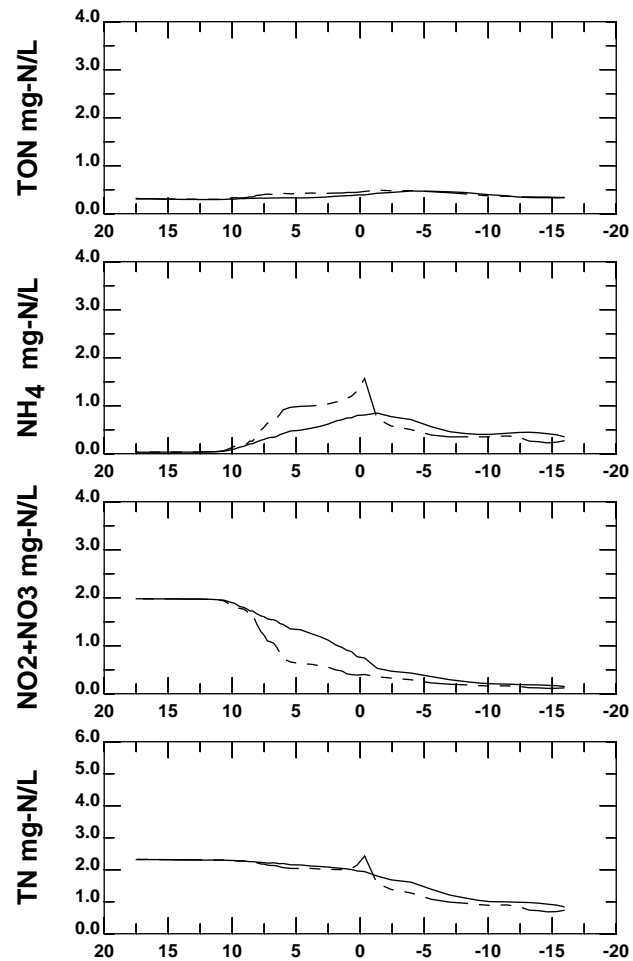
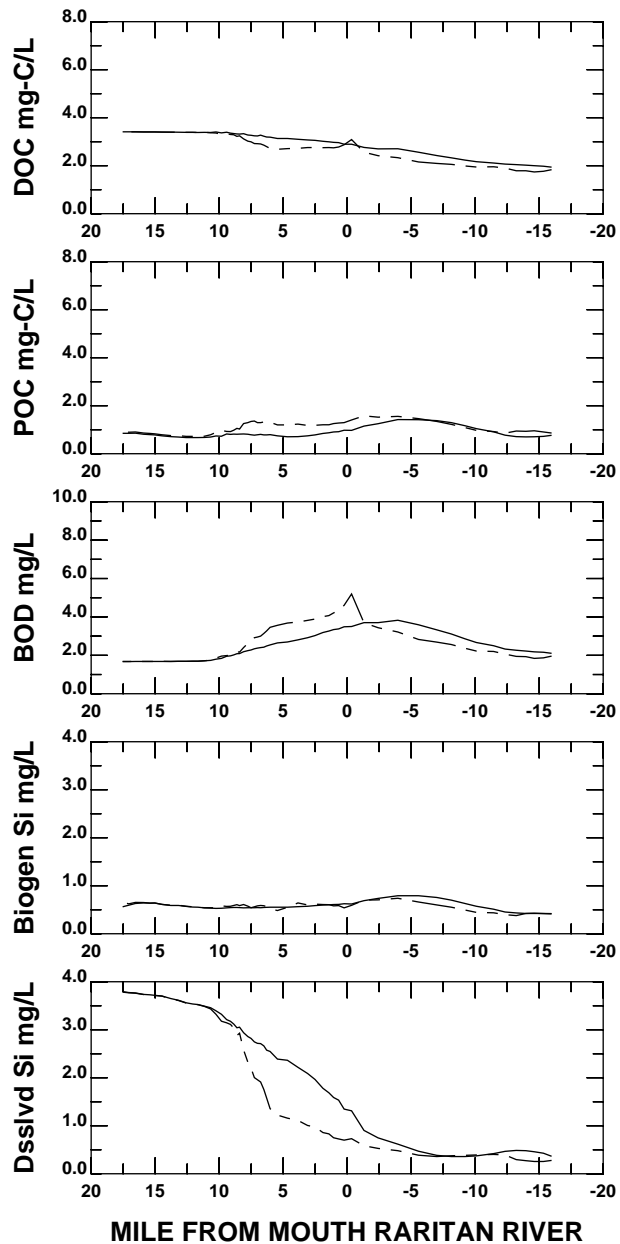


**RARITAN RIVER AND NORTH SHORE RARITAN BAY**

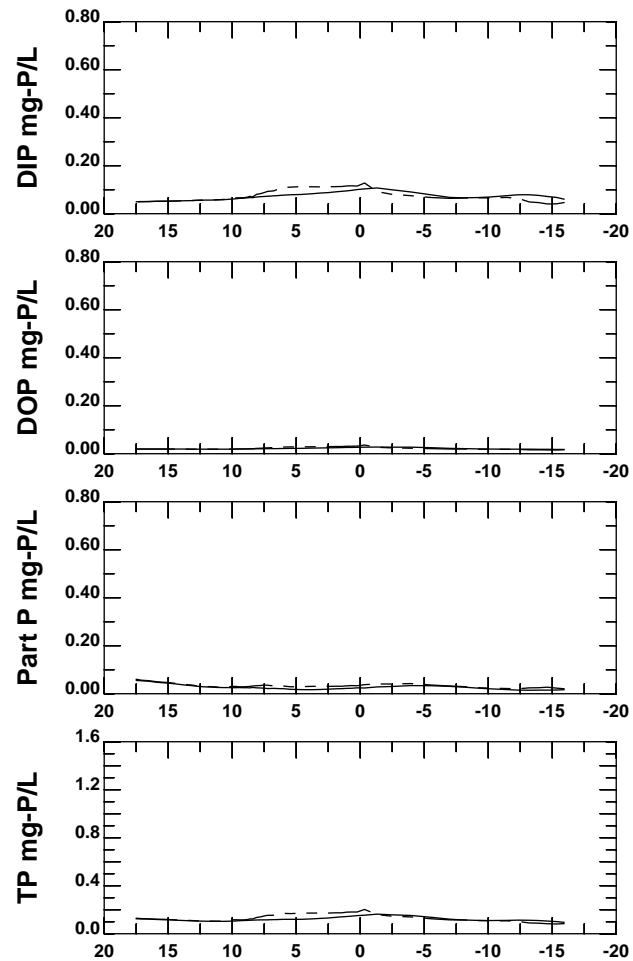
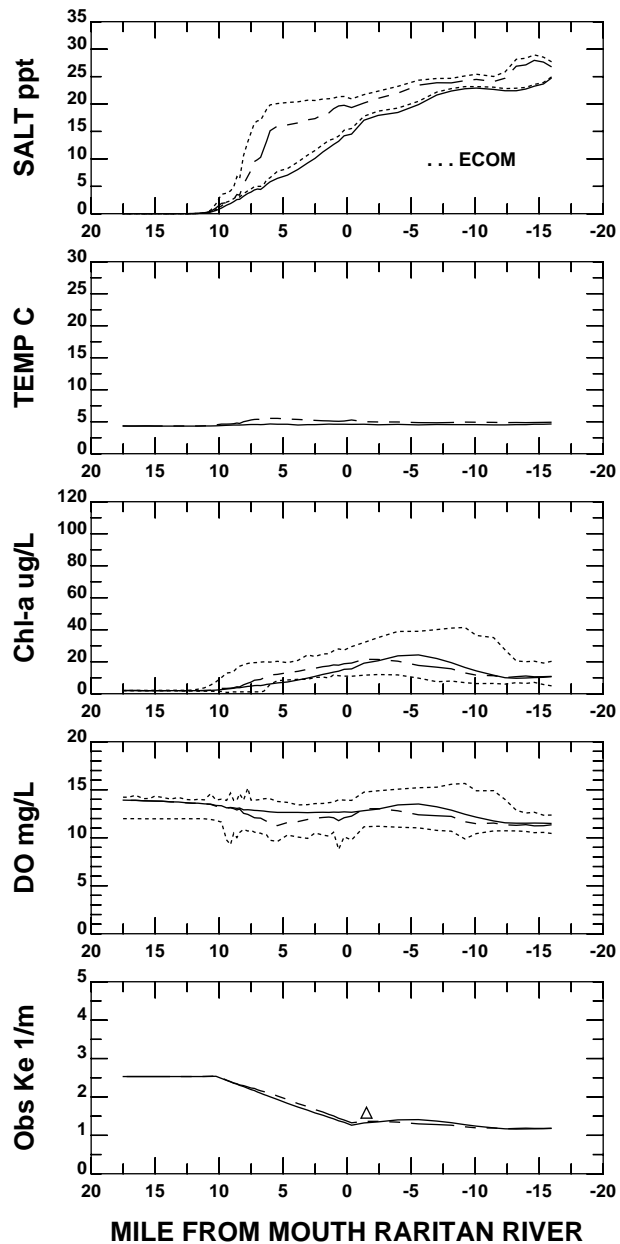


**RARITAN RIVER AND NORTH SHORE OF RARITAN BAY**





**RARITAN RIVER AND NORTH SHORE RARITAN BAY**



**DATA Feb 28-Mar 29, 2001**

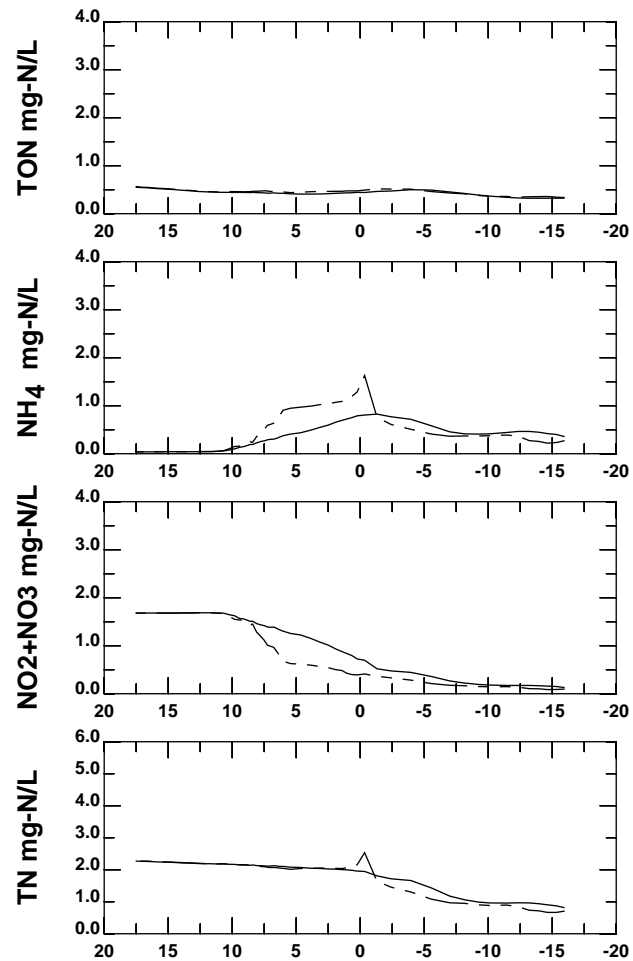
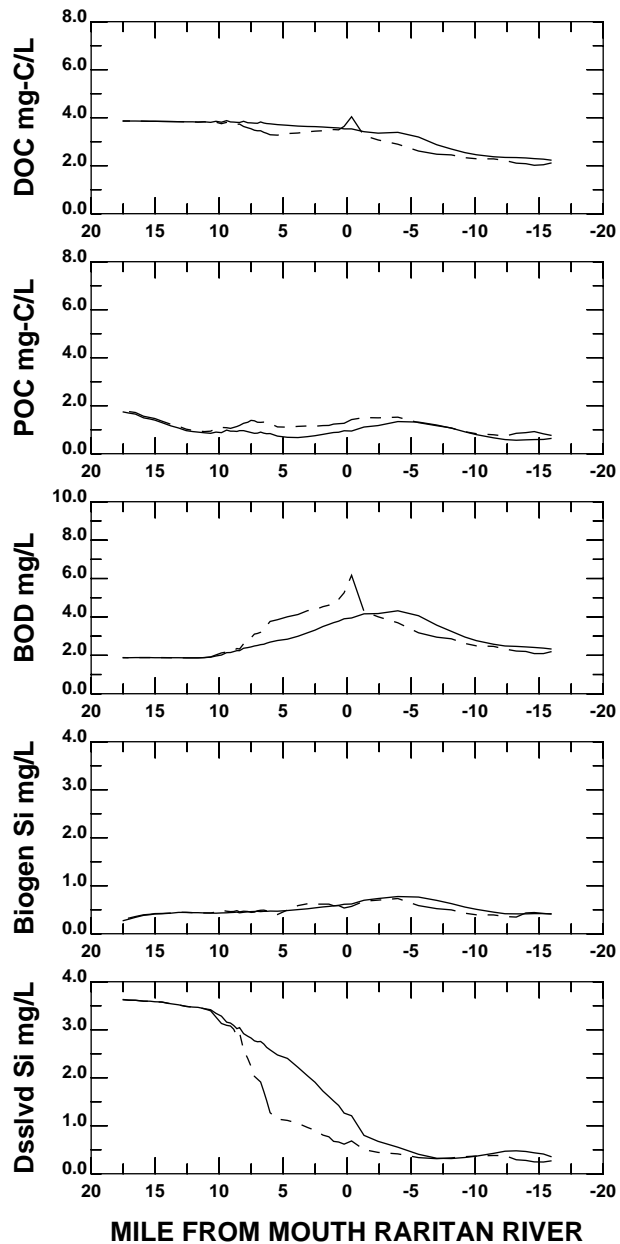
**MODEL**

	<b>SURF BOT</b>		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment

————	<b>SURFACE 30-DAY MEAN</b>
-----	<b>BOTTOM 30-DAY MEAN</b>
- - - -	<b>30-DAY SURFACE MAX OR BOTTOM MIN</b>

**RARITAN RIVER AND NORTH SHORE OF RARITAN BAY**

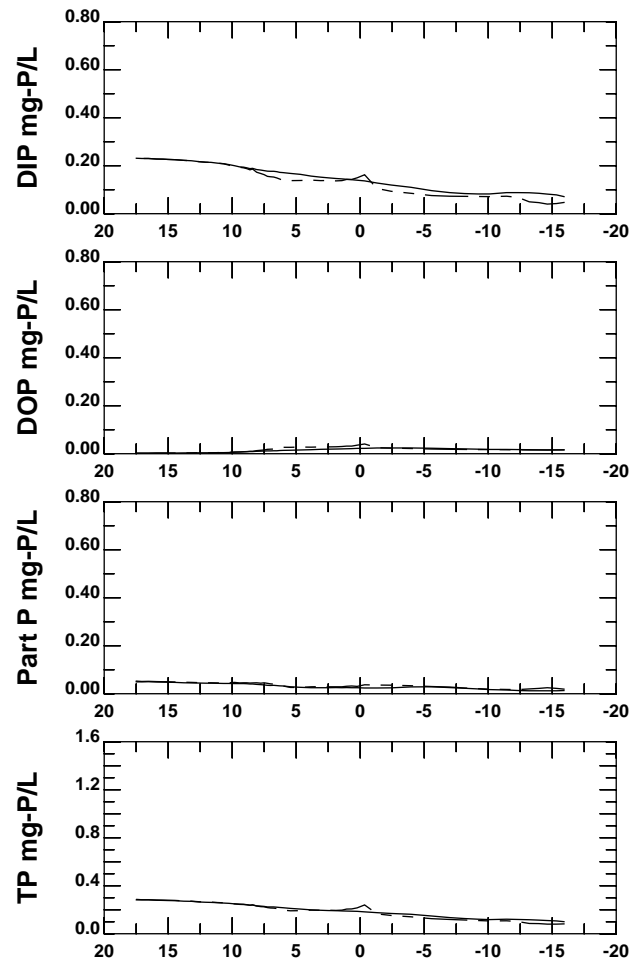
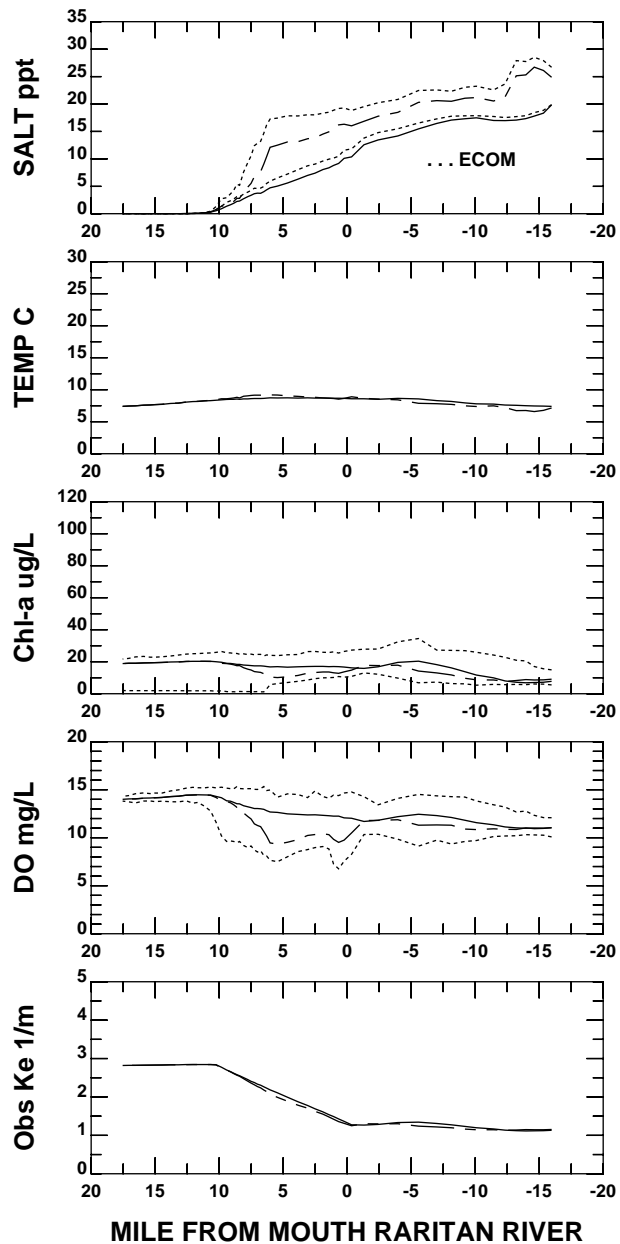


**MILE FROM MOUTH RARITAN RIVER**

**DATA Feb 28-Mar 29, 2001**

	<b>SURF</b>	<b>BOT</b>		<b>MODEL</b>
Harbor Survey	△	▲	Transect	— SURFACE 30-DAY MEAN
NYSDEC	t	e	Embayment	- - - BOTTOM 30-DAY MEAN
NJSIT	○		Transect	
	c		Embayment	
	◇		Transect	- - - 30-DAY SURFACE MAX OR
	p		Embayment	BOTTOM MIN

**RARITAN RIVER AND NORTH SHORE RARITAN BAY**



DATA Mar 30-Apr 28,2001

MODEL

SURF BOT

Harbor Survey  $\triangle$   $\blacktriangle$  Transect

t e Embayment

NYSDEC  $\circ$  Transect

c Embayment

NJSIT  $\diamond$  Transect

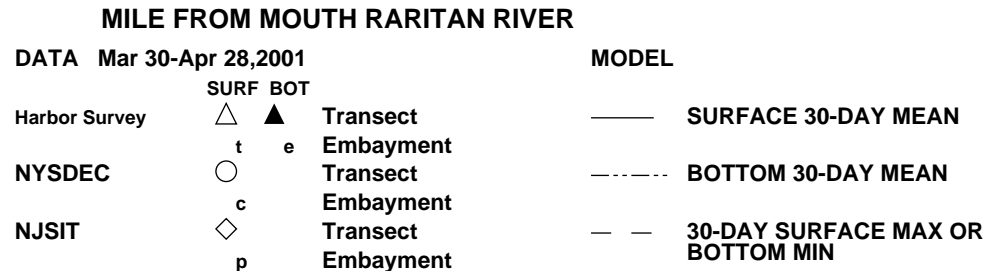
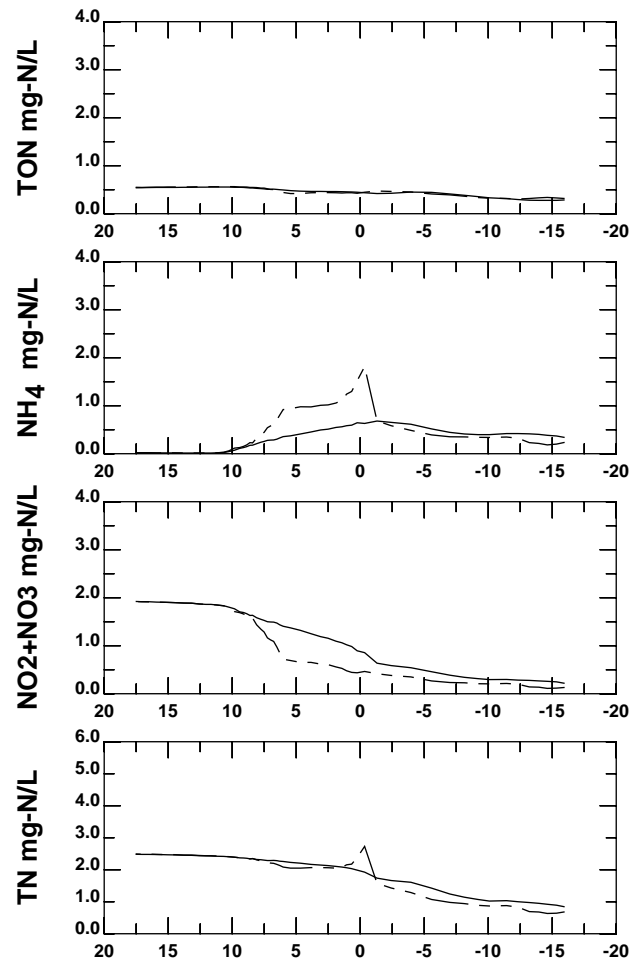
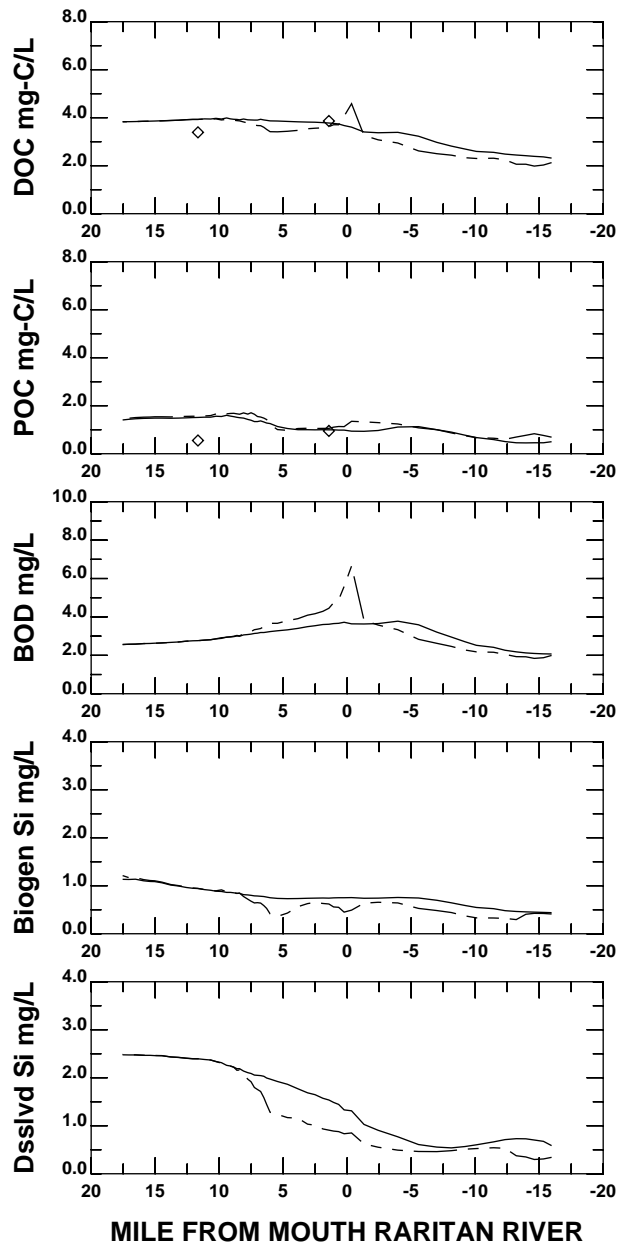
p Embayment

— SURFACE 30-DAY MEAN

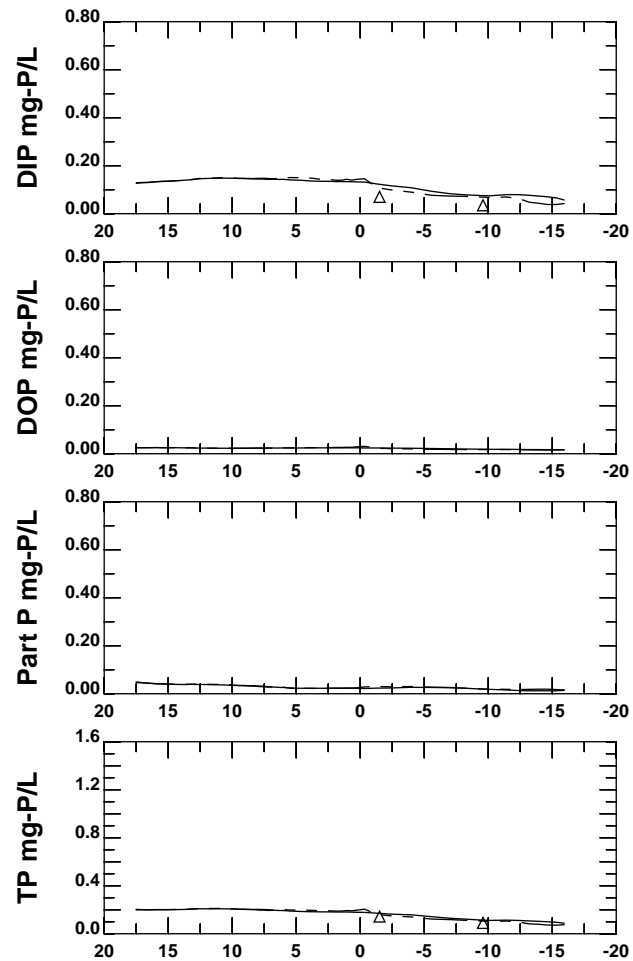
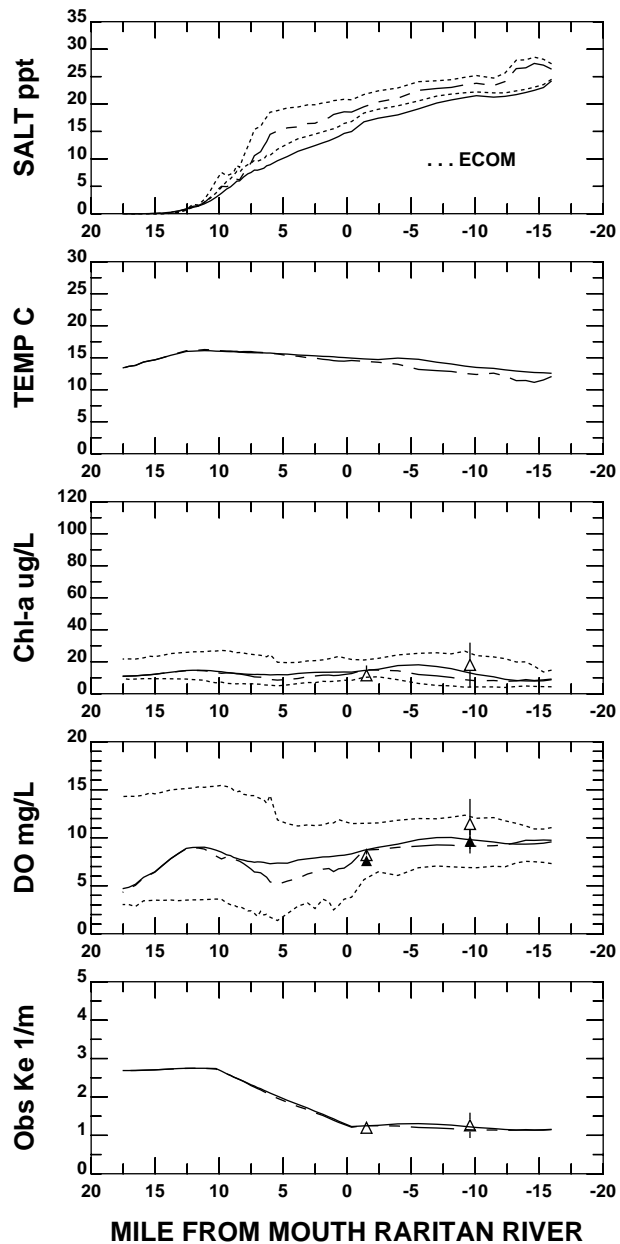
--- BOTTOM 30-DAY MEAN

- - - 30-DAY SURFACE MAX OR BOTTOM MIN

## RARITAN RIVER AND NORTH SHORE OF RARITAN BAY



**RARITAN RIVER AND NORTH SHORE RARITAN BAY**



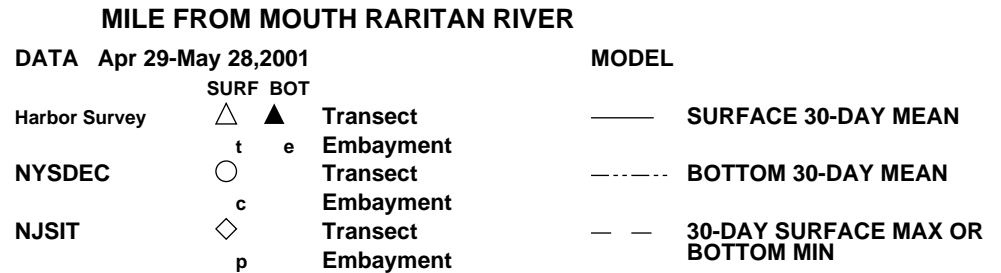
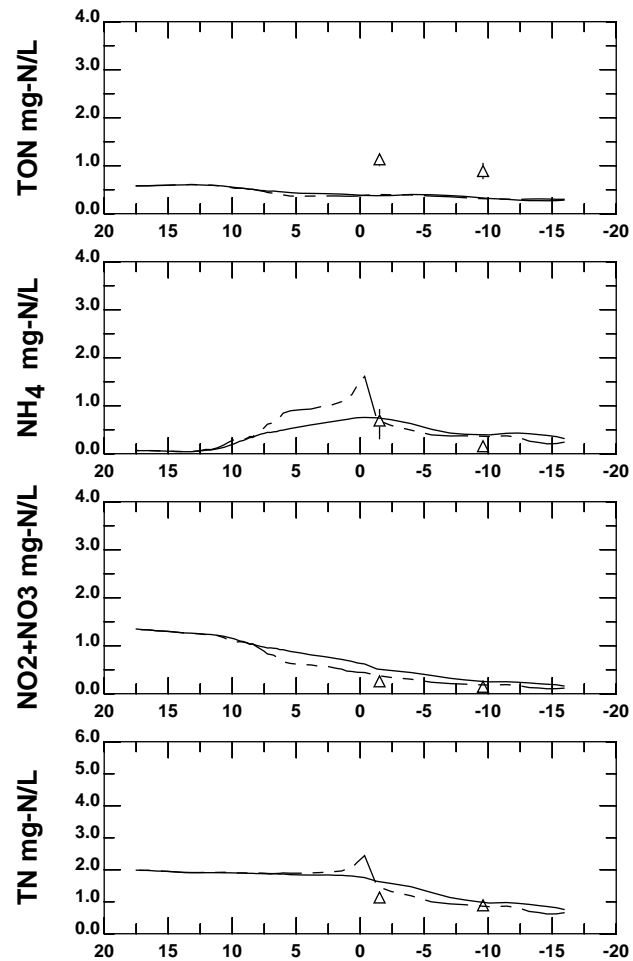
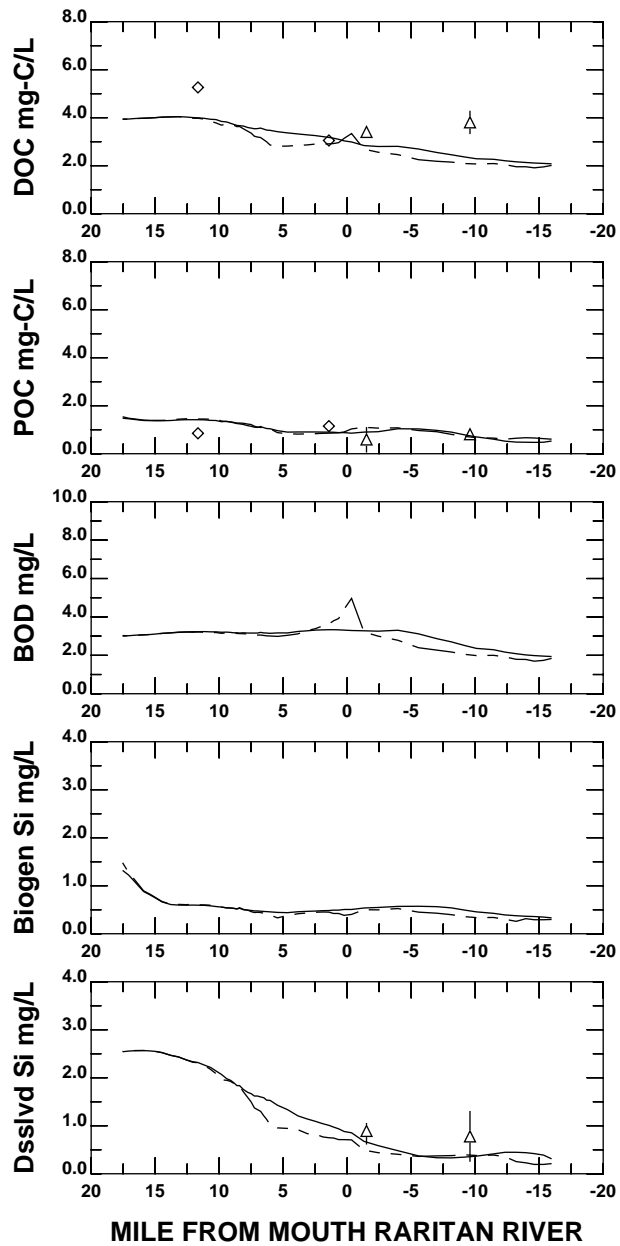
**DATA Apr 29-May 28, 2001**

	<b>SURF BOT</b>		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment

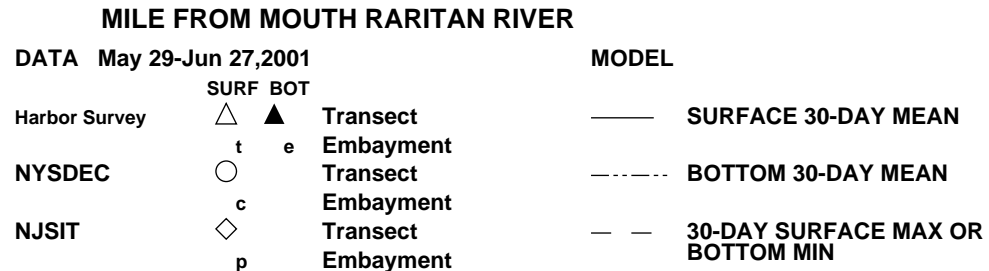
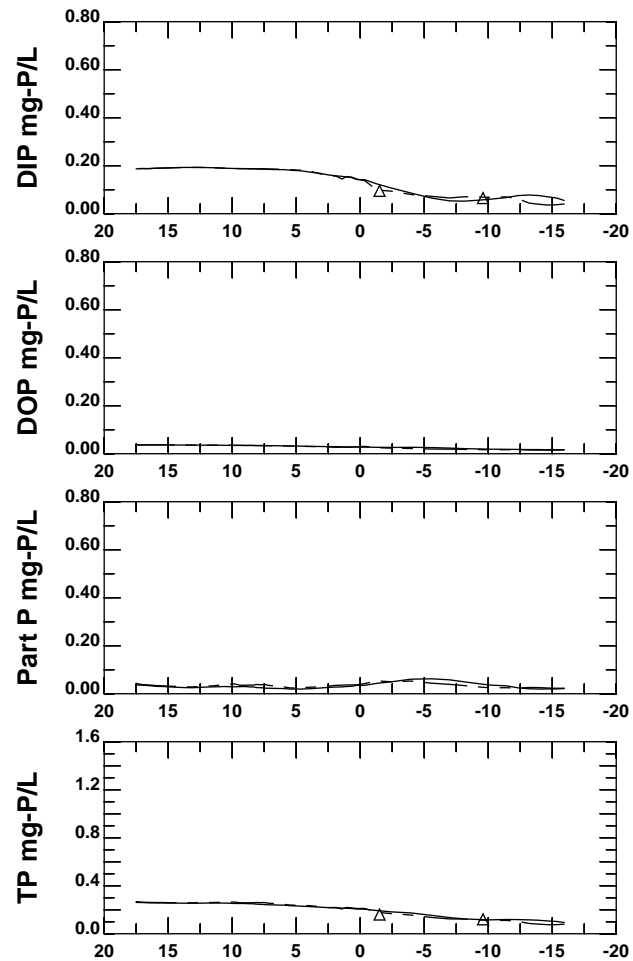
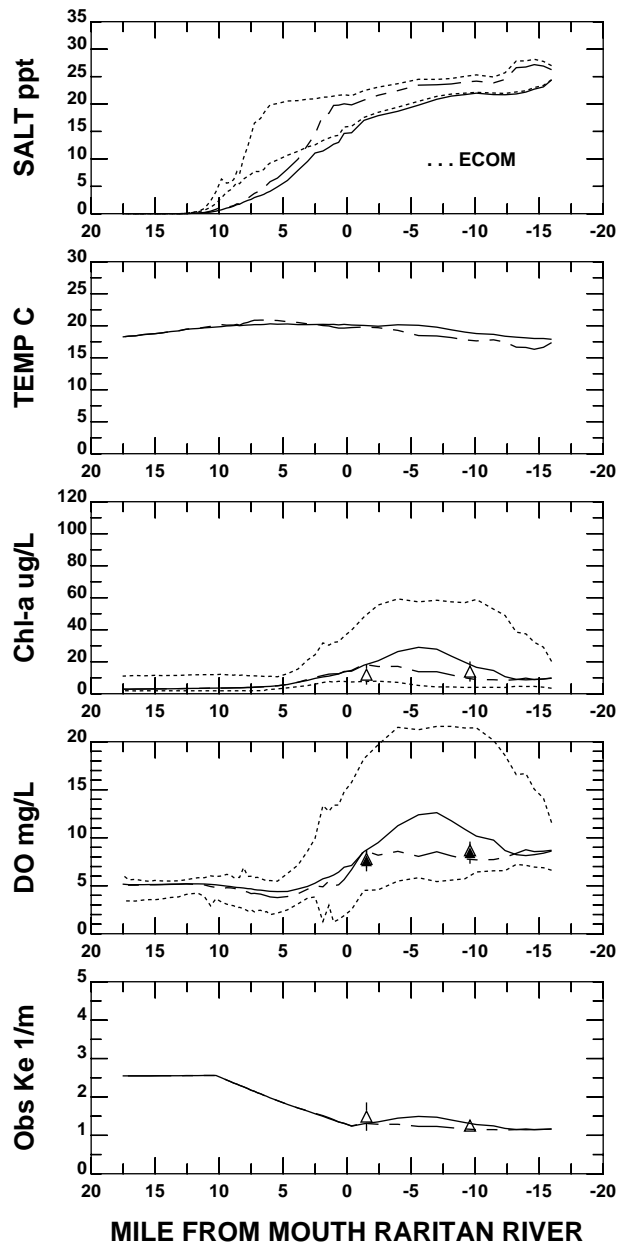
**MODEL**

————	<b>SURFACE 30-DAY MEAN</b>
-----	<b>BOTTOM 30-DAY MEAN</b>
- - - -	<b>30-DAY SURFACE MAX OR BOTTOM MIN</b>

**RARITAN RIVER AND NORTH SHORE OF RARITAN BAY**

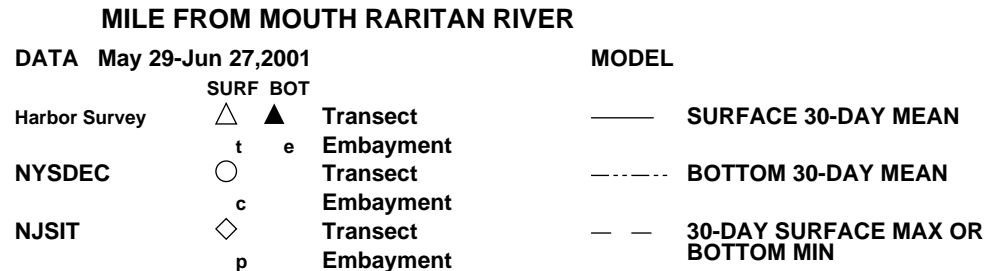
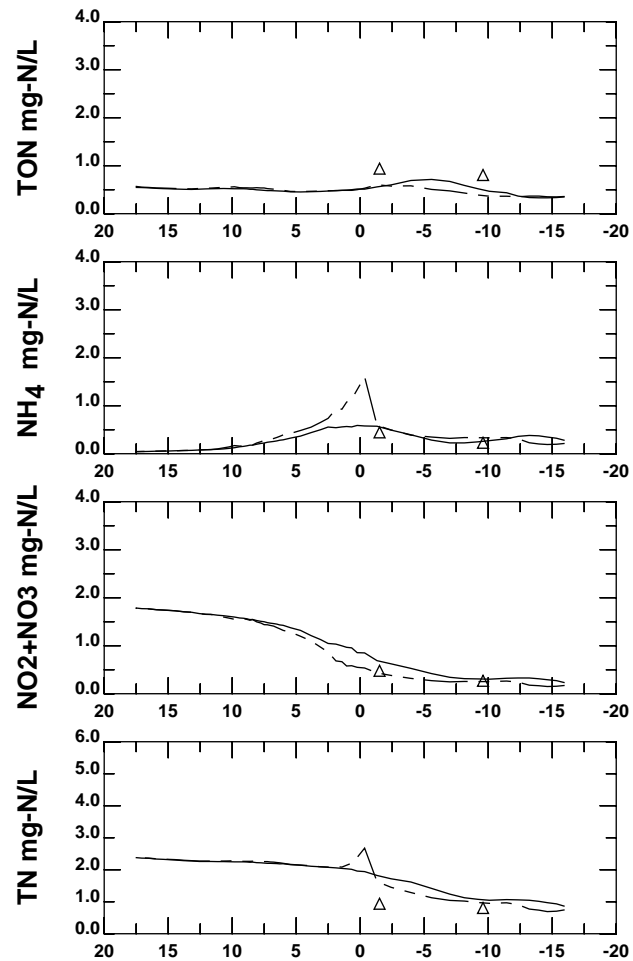
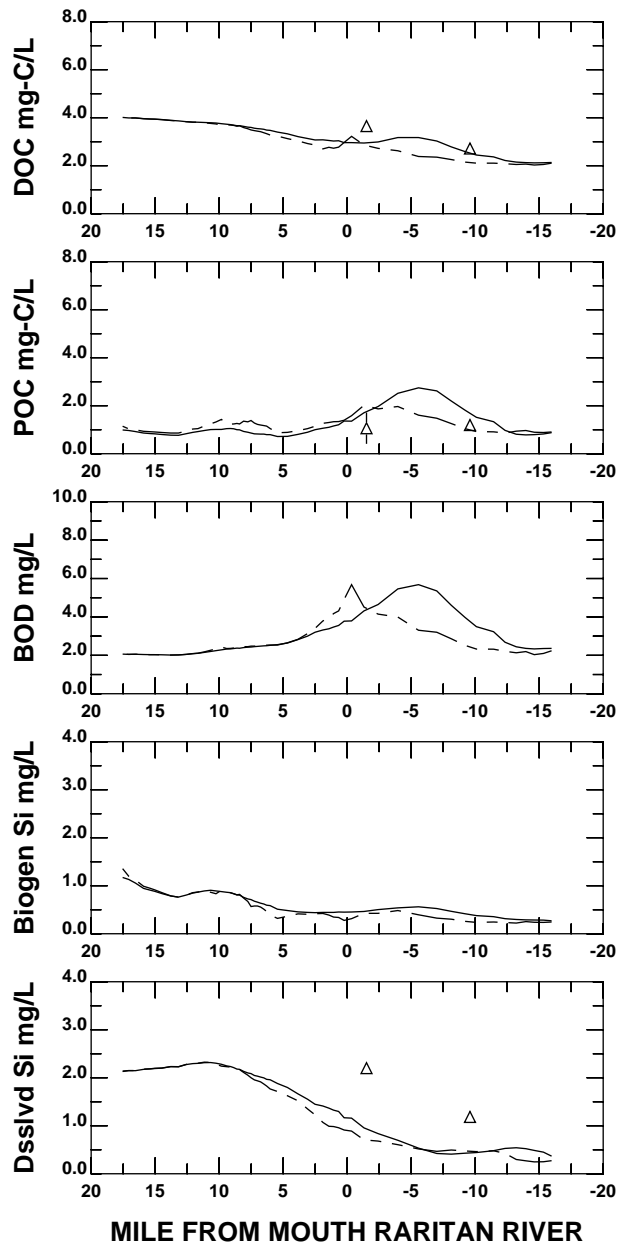


**RARITAN RIVER AND NORTH SHORE RARITAN BAY**

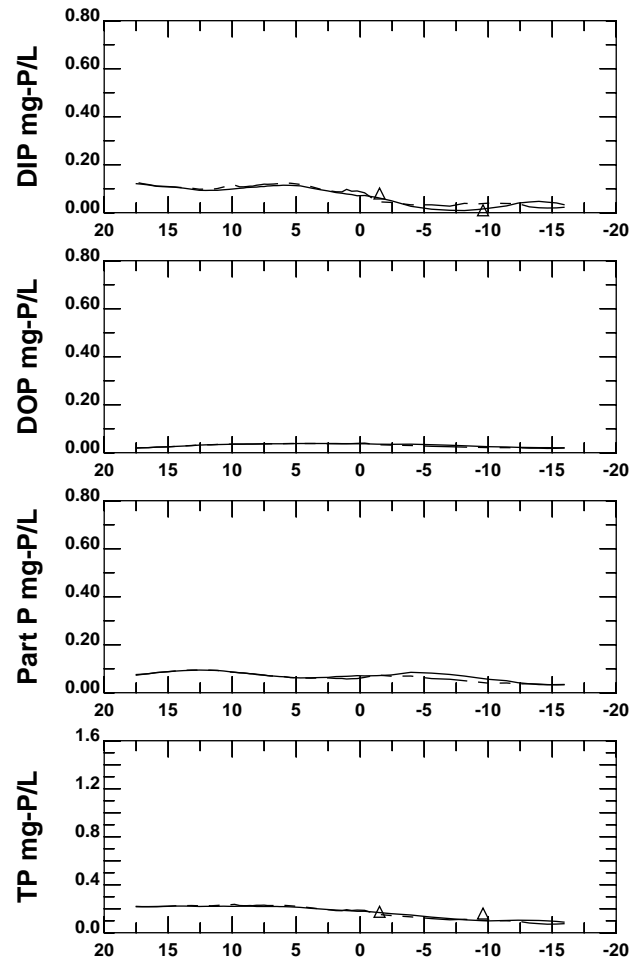
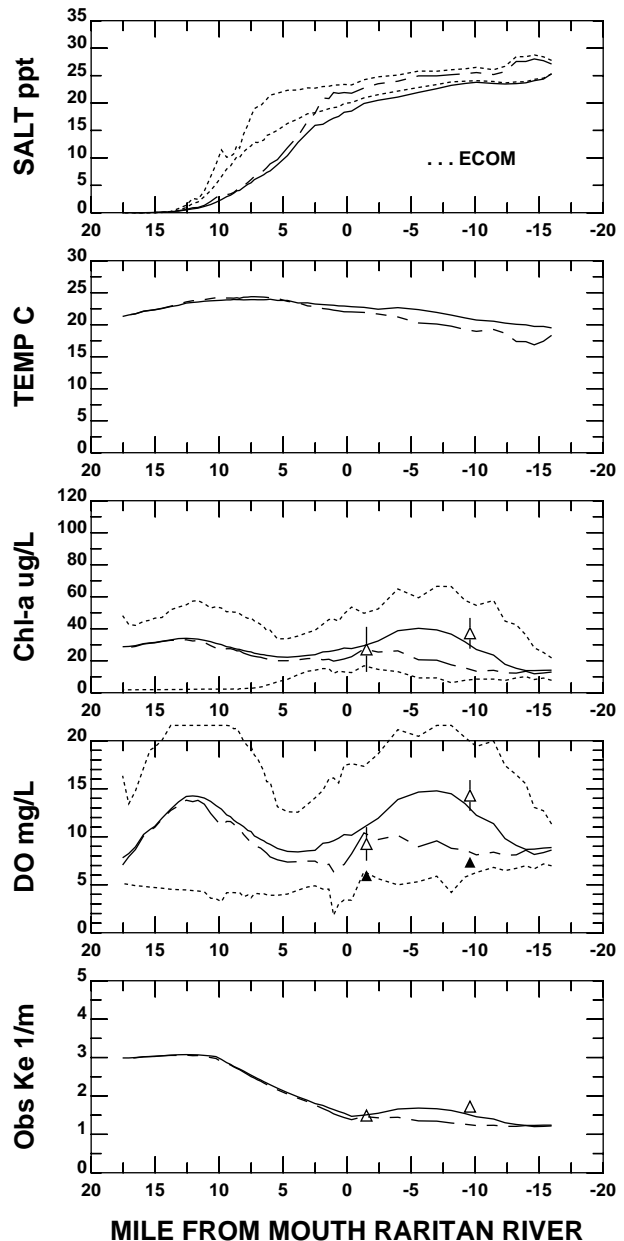


**RARITAN RIVER AND NORTH SHORE OF RARITAN BAY**





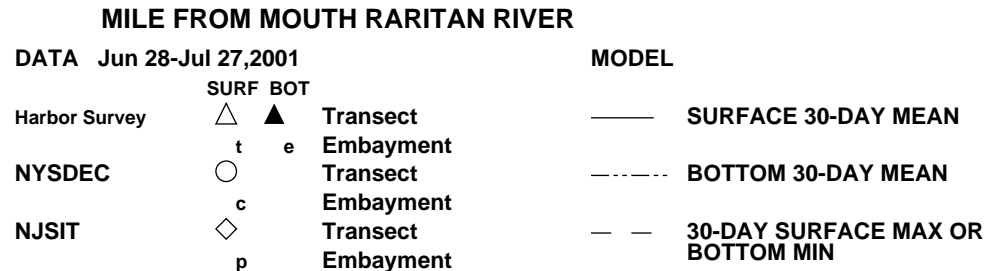
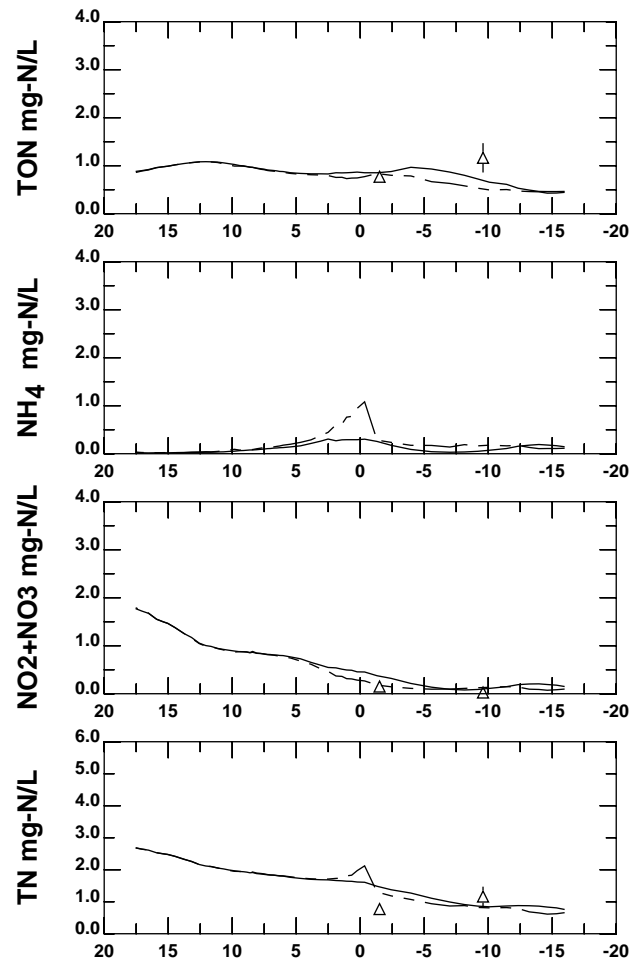
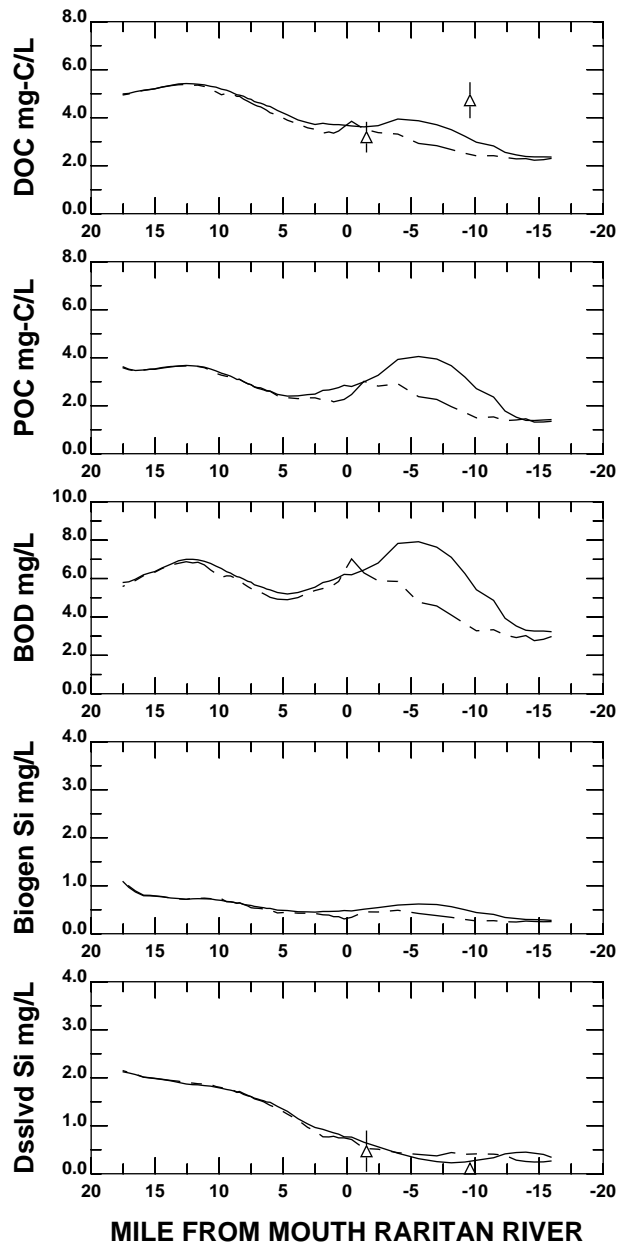
**RARITAN RIVER AND NORTH SHORE RARITAN BAY**



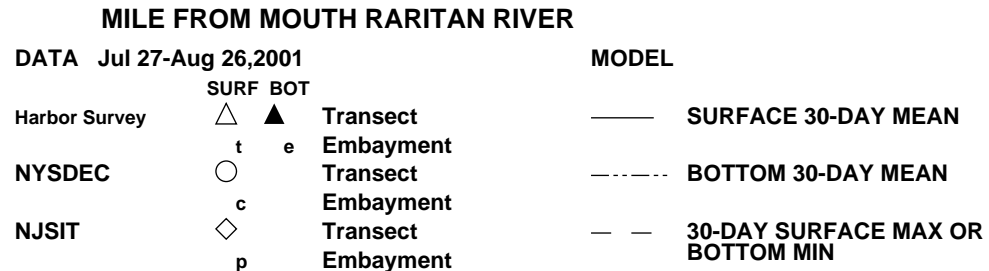
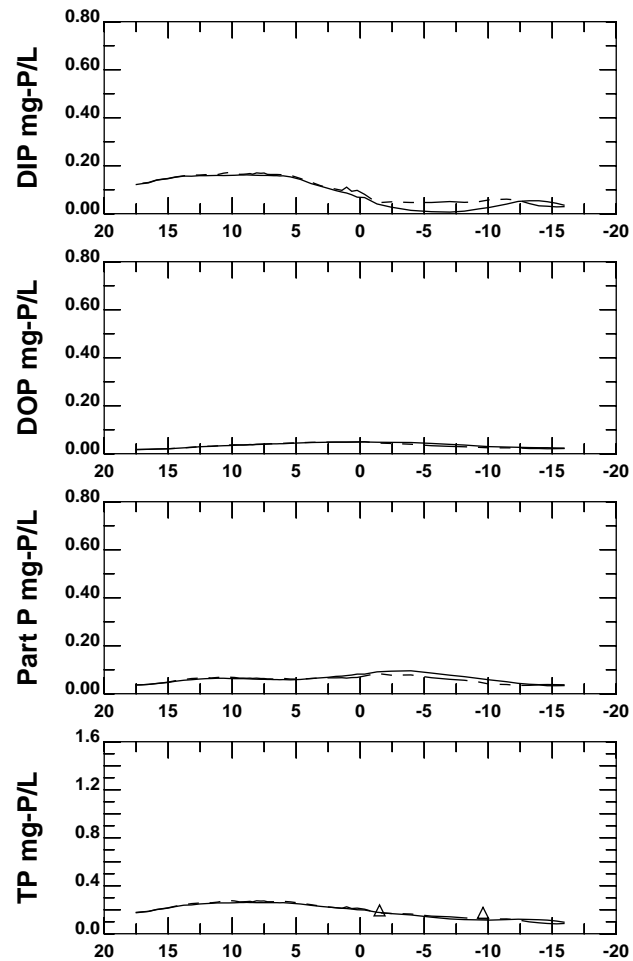
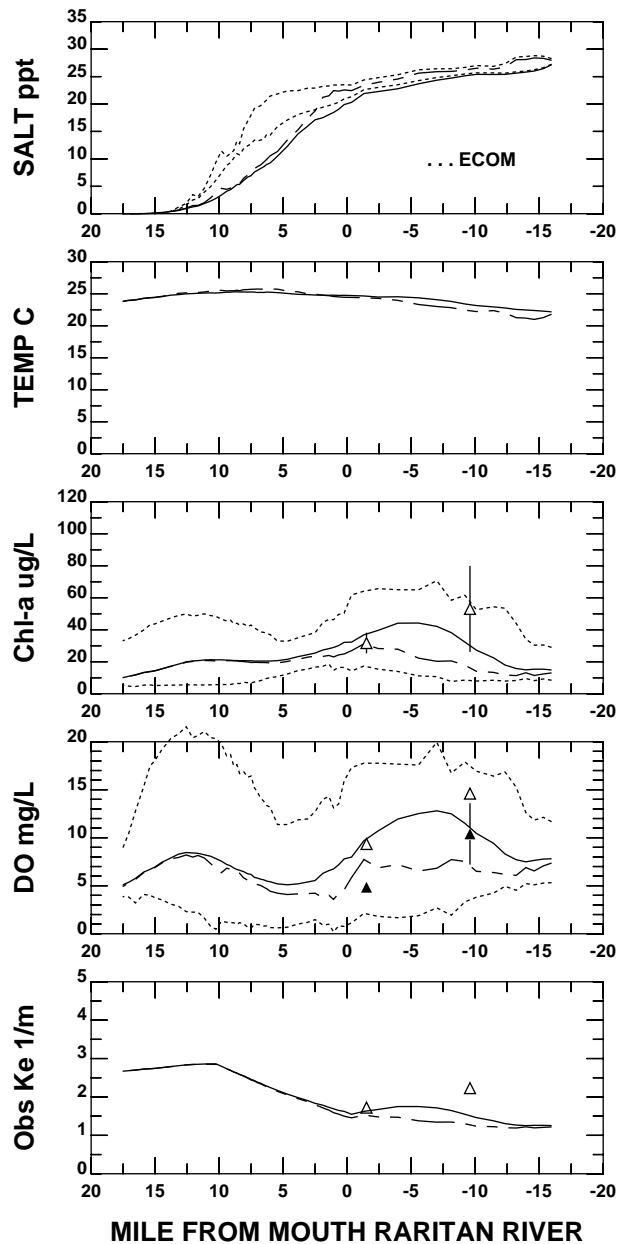
**MILE FROM MOUTH RARITAN RIVER**

<b>DATA Jun 28-Jul 27, 2001</b>		<b>MODEL</b>
	<b>SURF BOT</b>	
Harbor Survey	△ ▲ Transect	— SURFACE 30-DAY MEAN
	t e Embayment	- - - BOTTOM 30-DAY MEAN
NYSDEC	○ Transect	- - - 30-DAY SURFACE MAX OR BOTTOM MIN
	c Embayment	
NJSIT	◇ Transect	
	p Embayment	

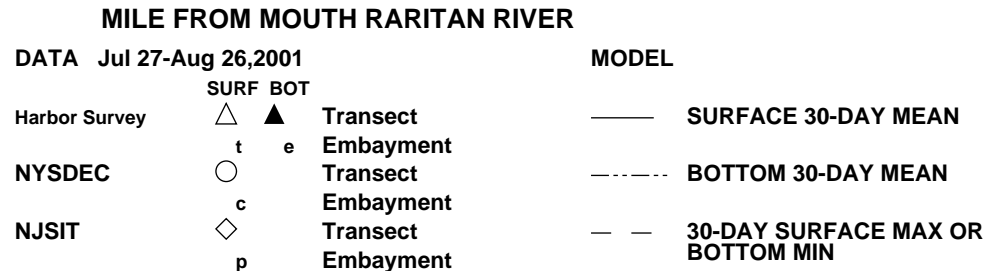
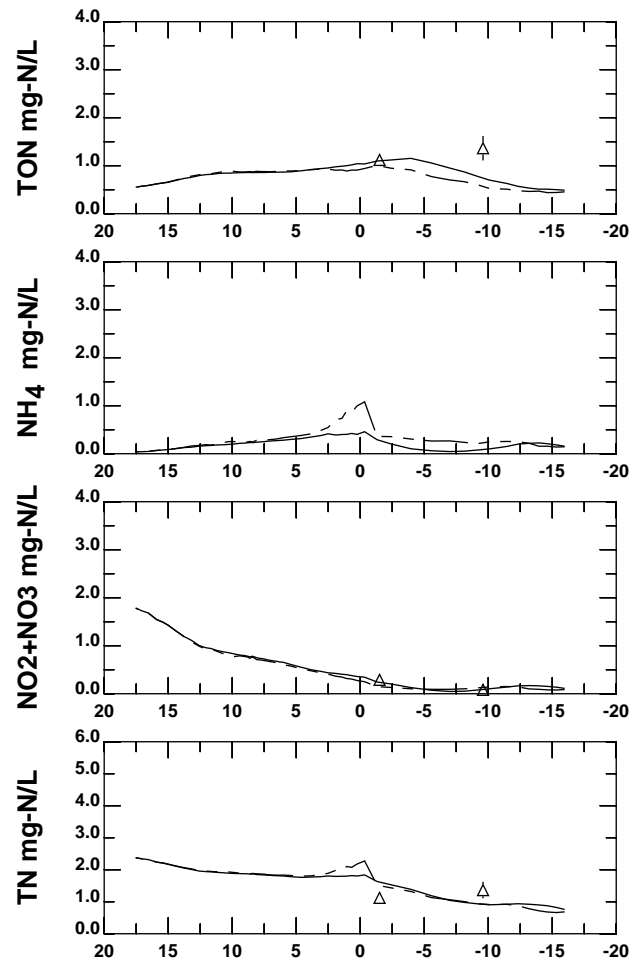
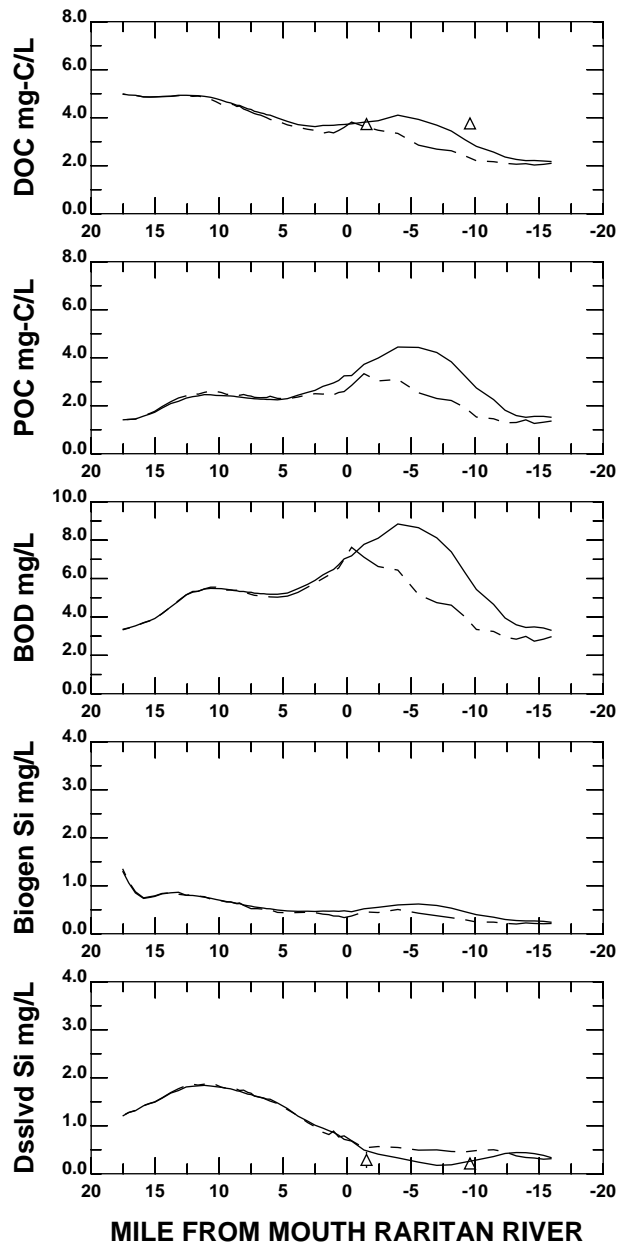
**RARITAN RIVER AND NORTH SHORE OF RARITAN BAY**



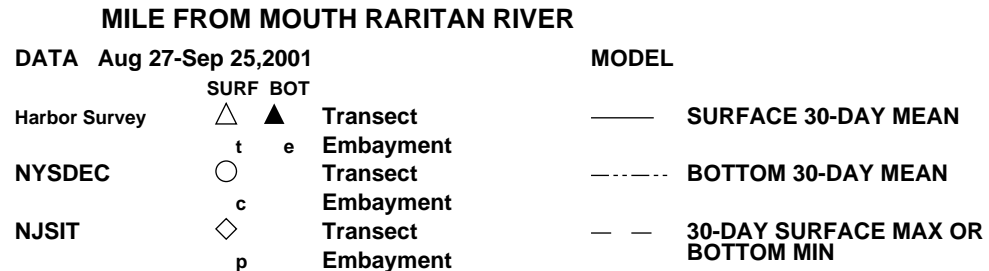
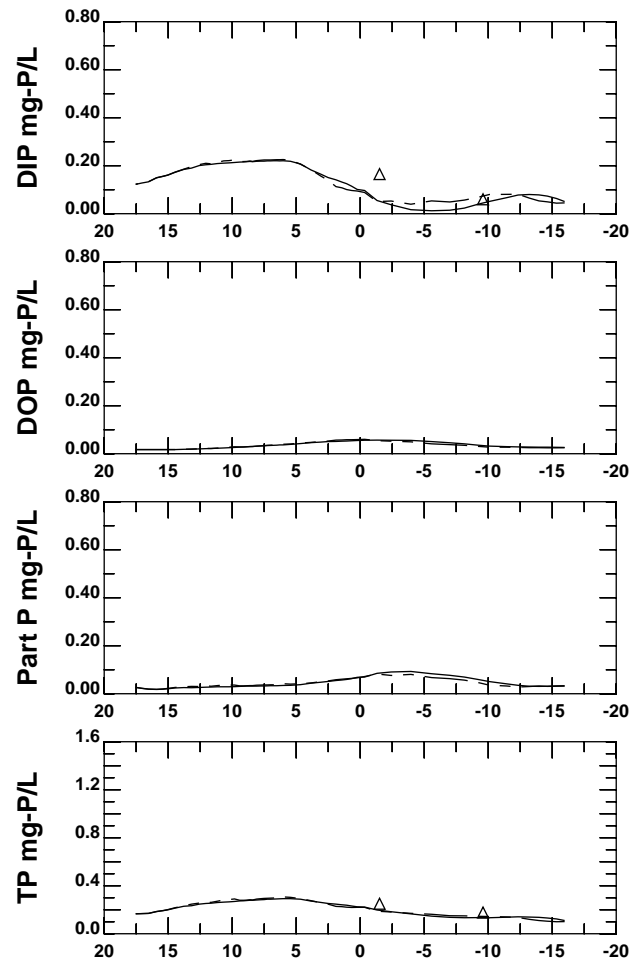
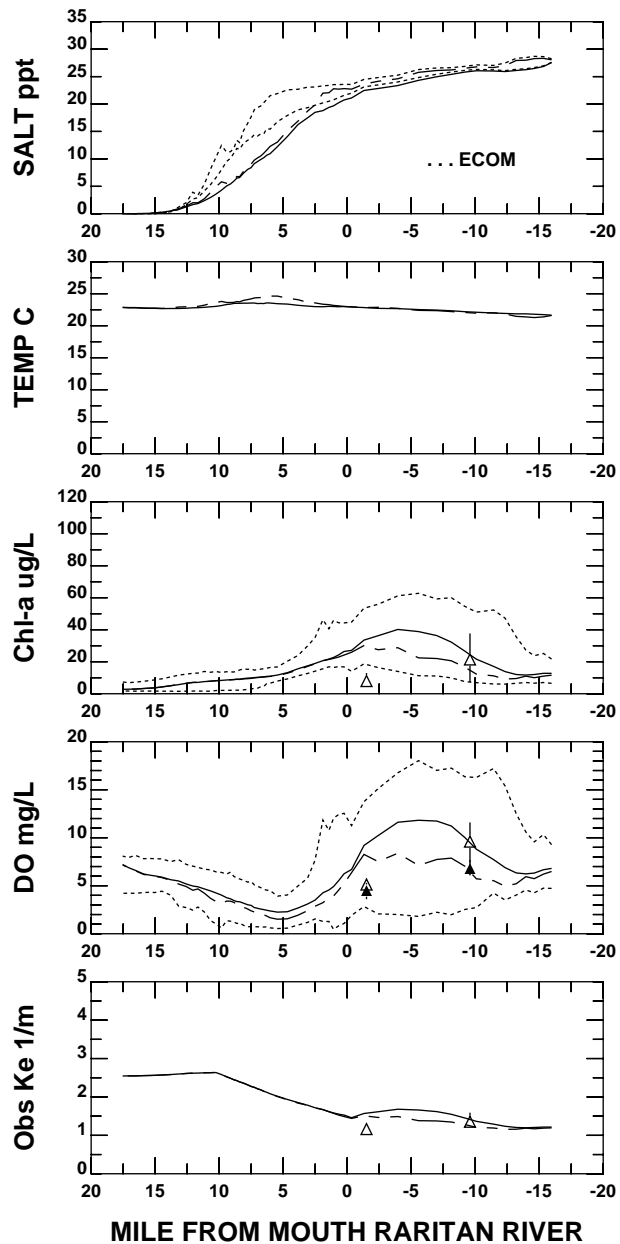
## RARITAN RIVER AND NORTH SHORE RARITAN BAY



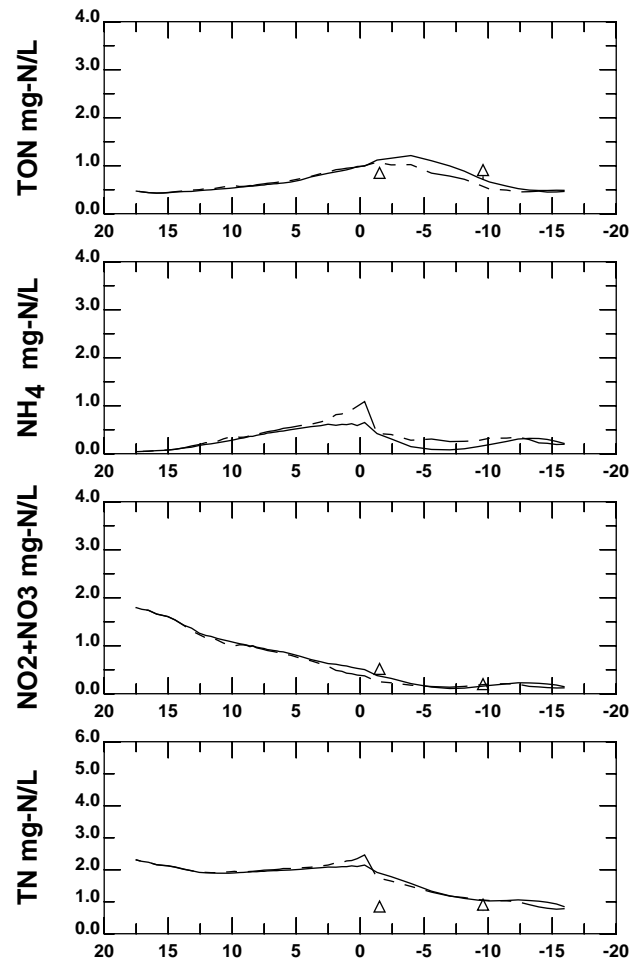
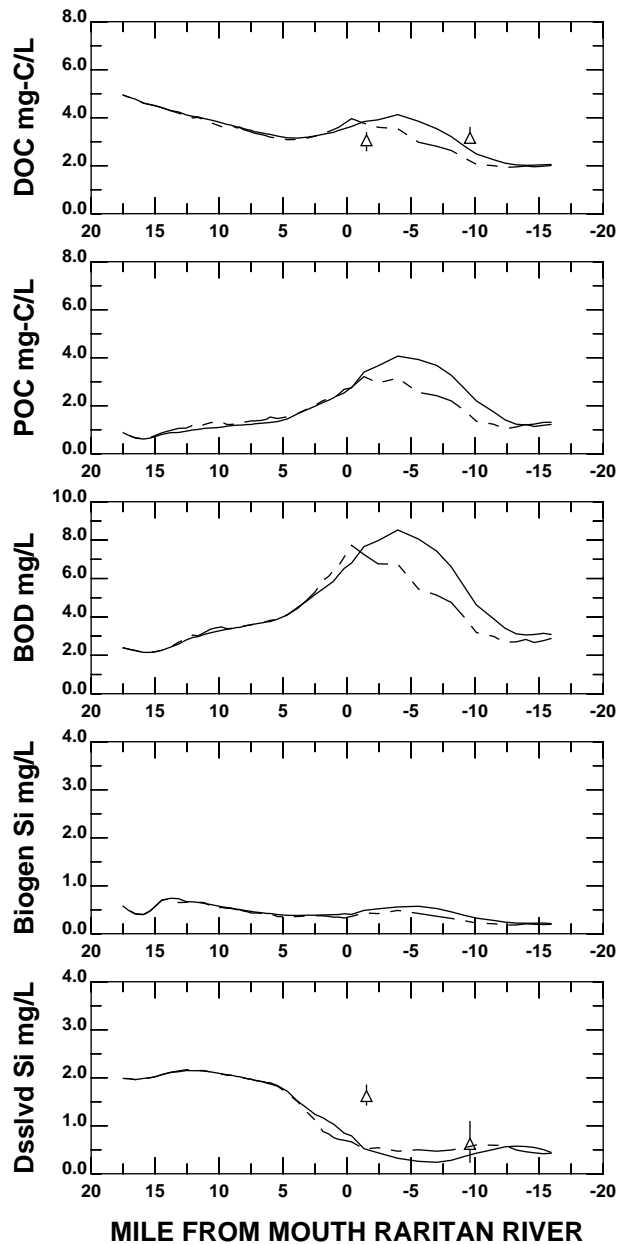
**RARITAN RIVER AND NORTH SHORE OF RARITAN BAY**



**RARITAN RIVER AND NORTH SHORE RARITAN BAY**



**RARITAN RIVER AND NORTH SHORE OF RARITAN BAY**



**DATA Aug 27-Sep 25, 2001**

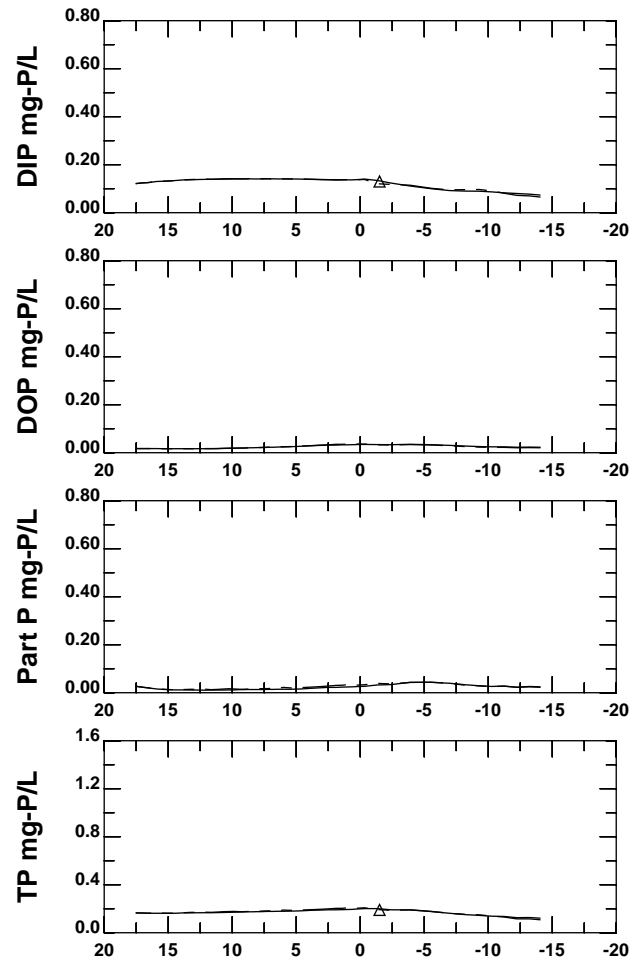
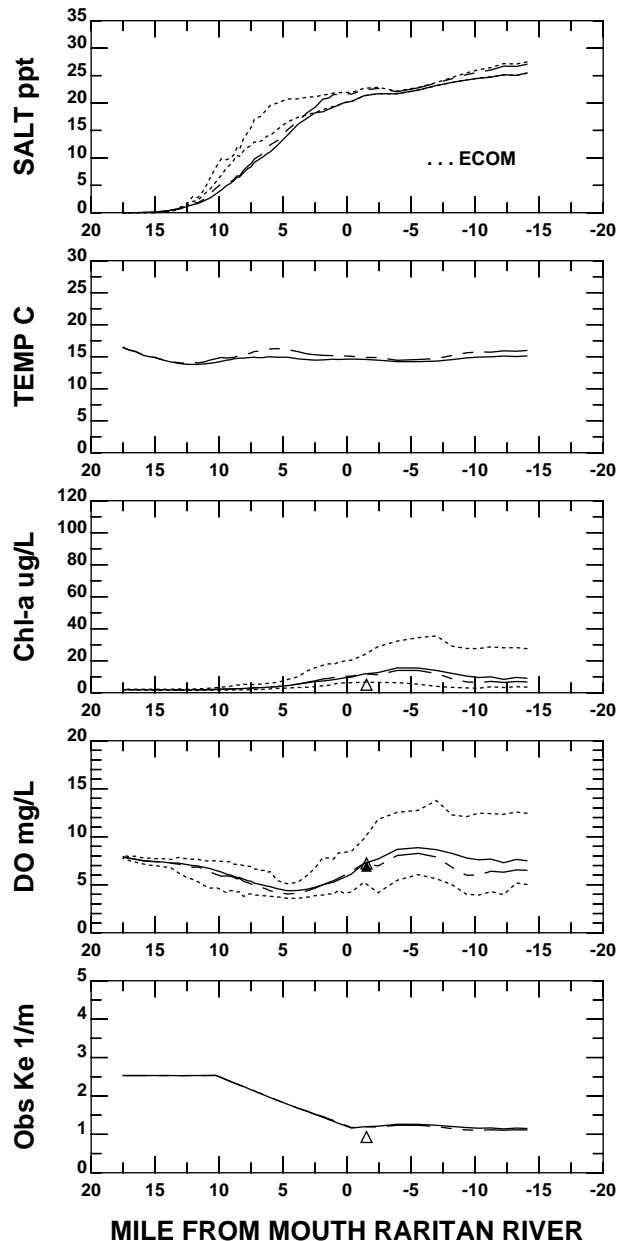
**MODEL**

	<b>SURF BOT</b>		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment

————	<b>SURFACE 30-DAY MEAN</b>
-----	<b>BOTTOM 30-DAY MEAN</b>
- - - -	<b>30-DAY SURFACE MAX OR BOTTOM MIN</b>

**RARITAN RIVER AND NORTH SHORE RARITAN BAY**



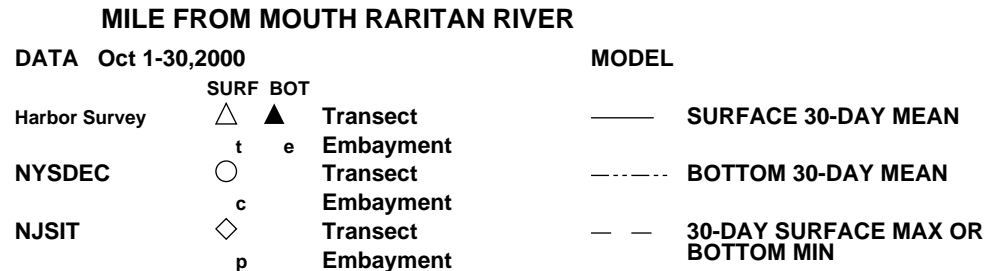
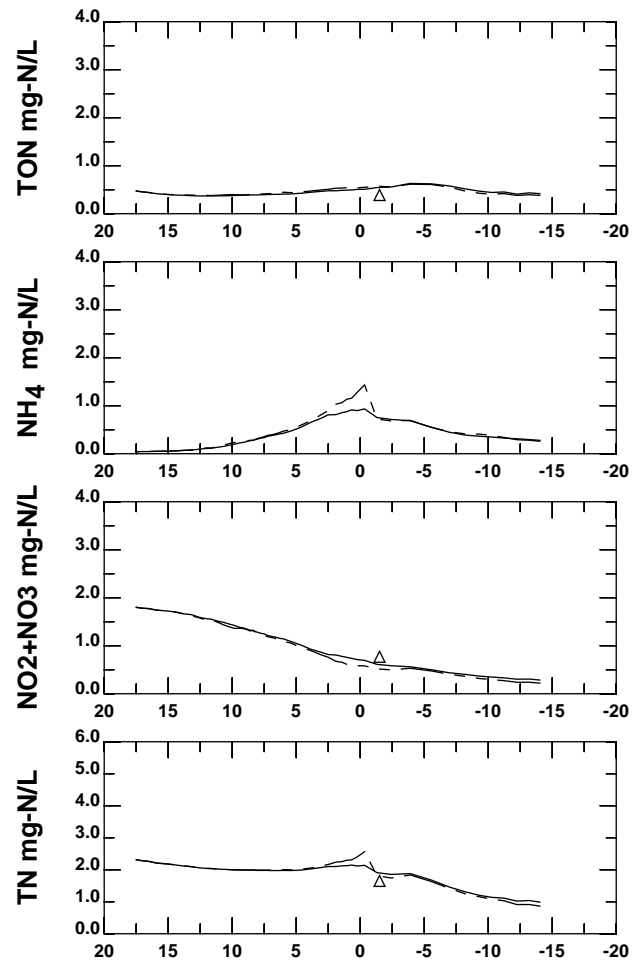
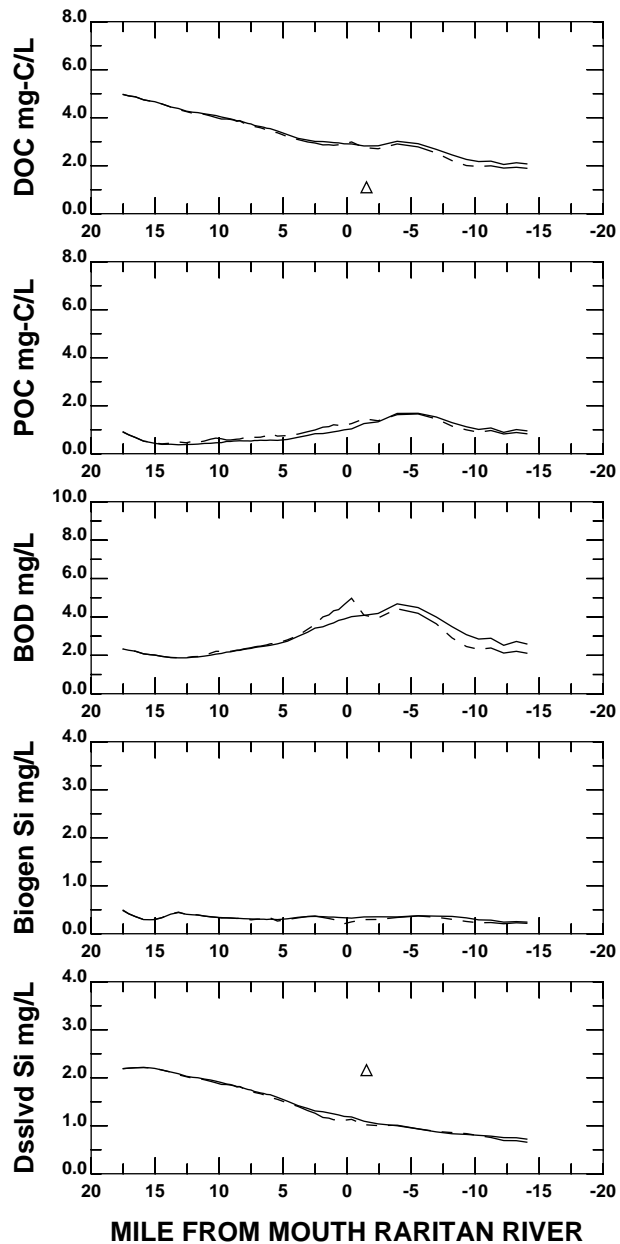
**DATA Oct 1-30,2000**

**MODEL**

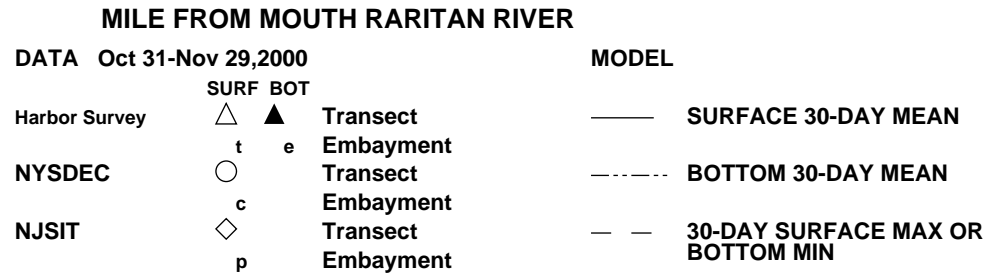
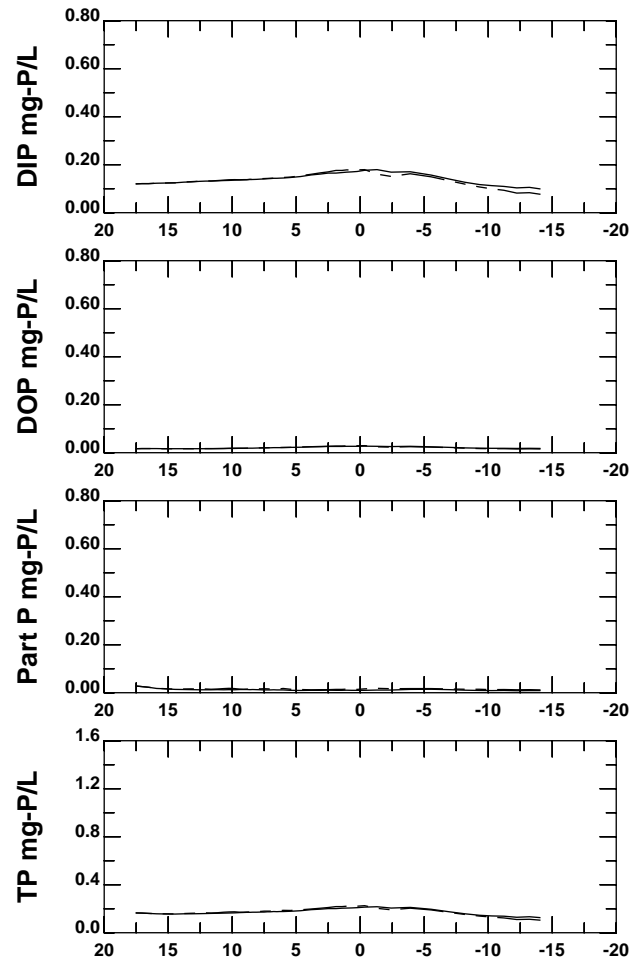
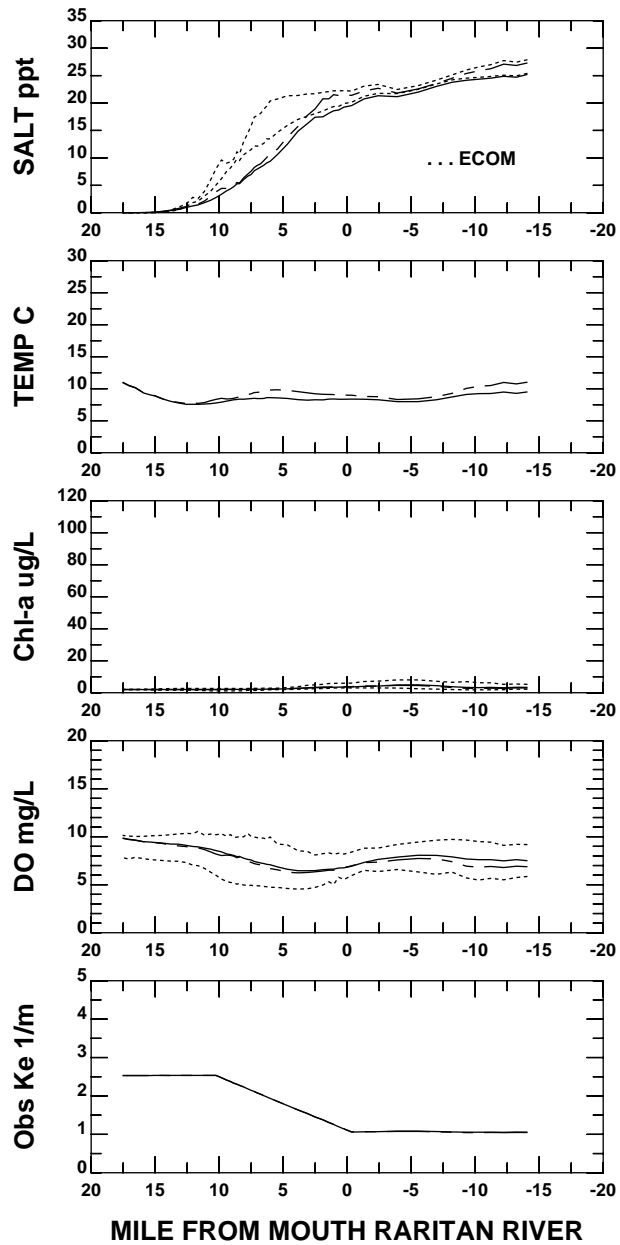
	<b>SURF</b>	<b>BOT</b>		
Harbor Survey	△	▲	Transect	— SURFACE 30-DAY MEAN
NYSDEC	t	e	Embayment	- - - - - BOTTOM 30-DAY MEAN
	○		Transect	
	c		Embayment	
NJSIT	◇		Transect	- - - 30-DAY SURFACE MAX OR
	p		Embayment	BOTTOM MIN

**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**

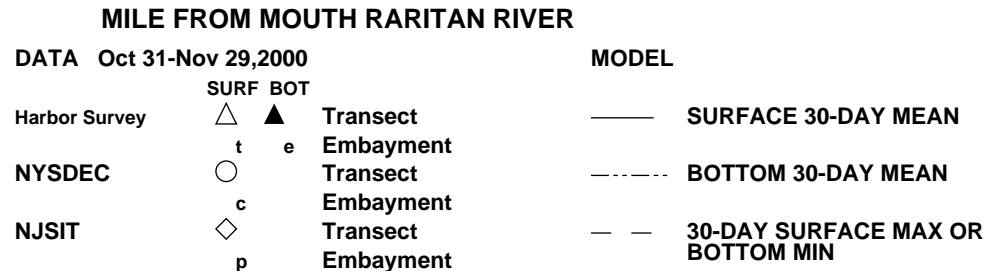
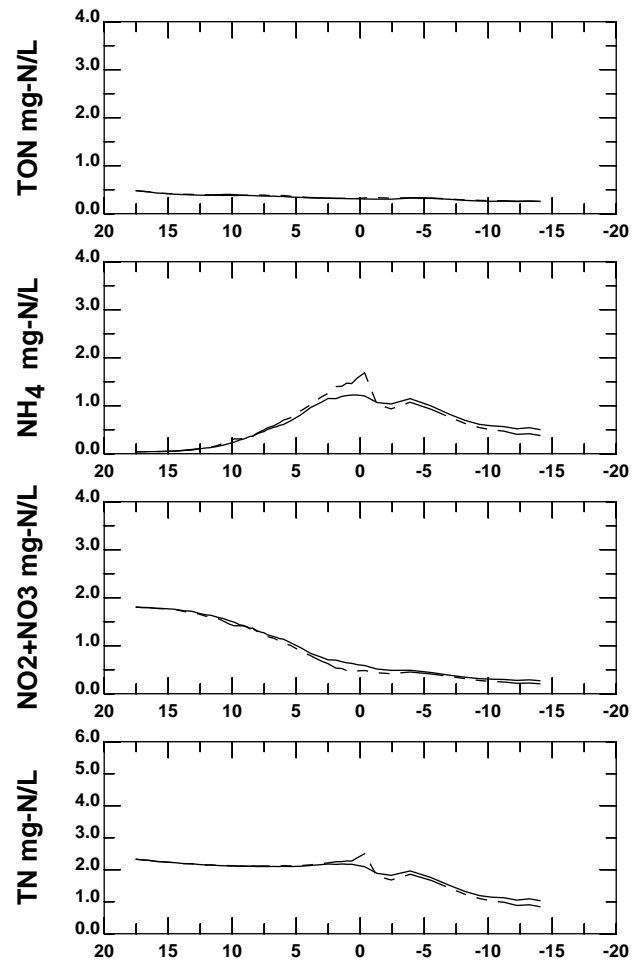
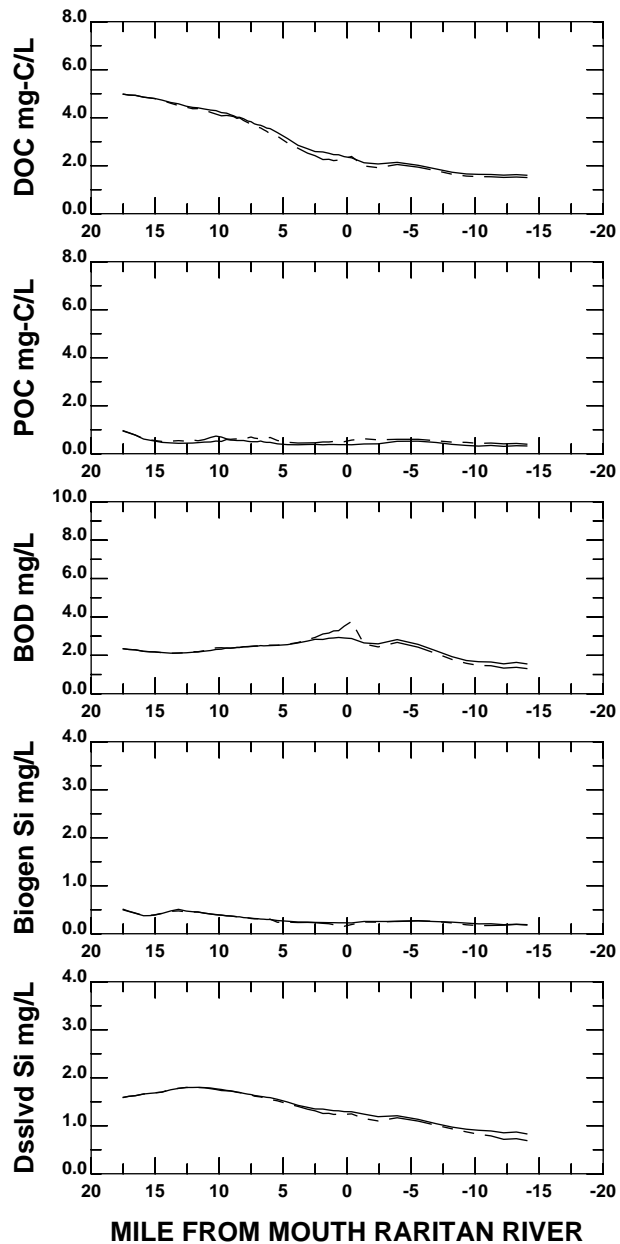




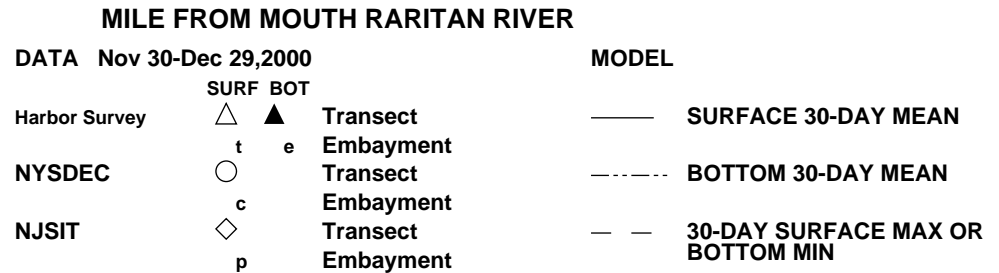
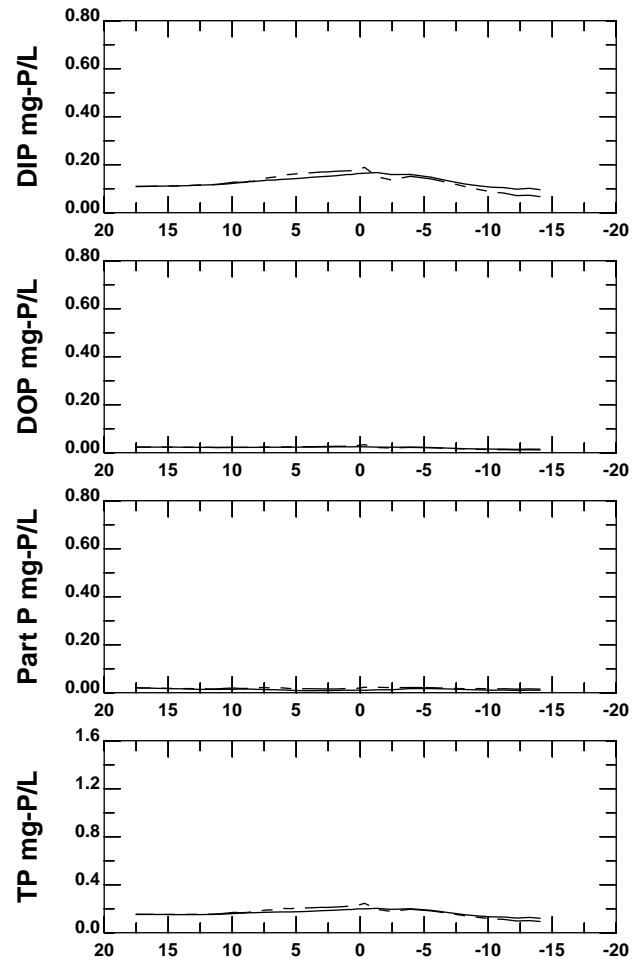
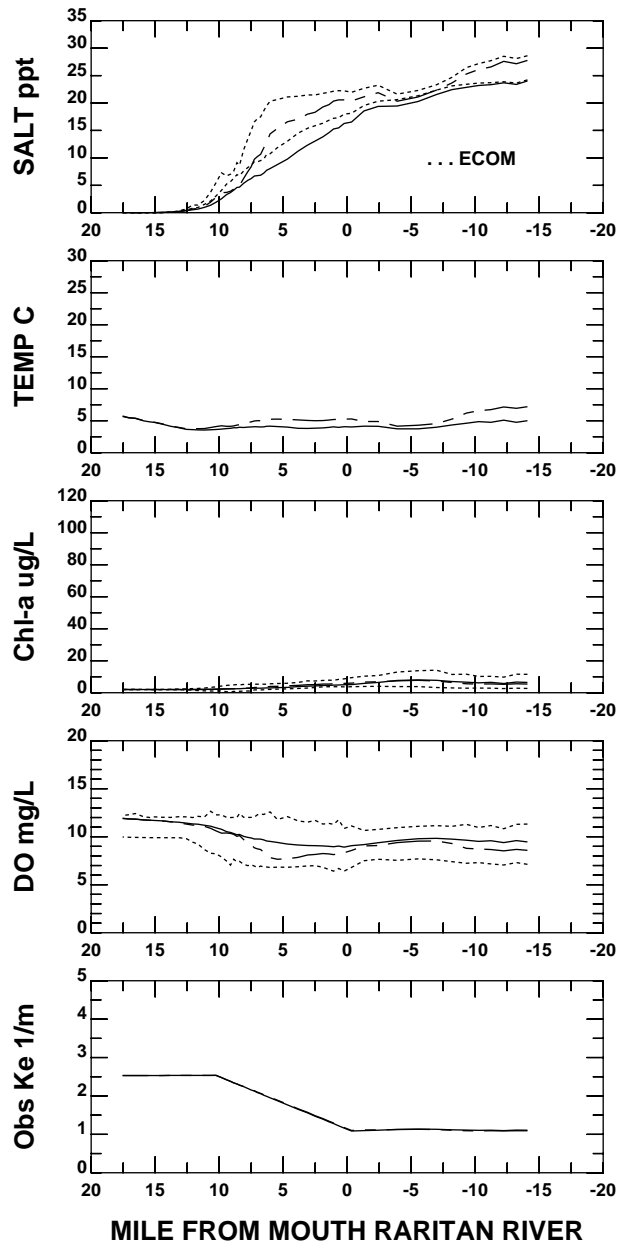
**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**



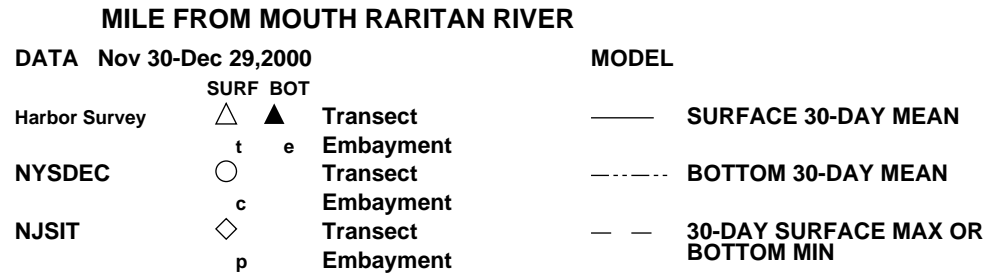
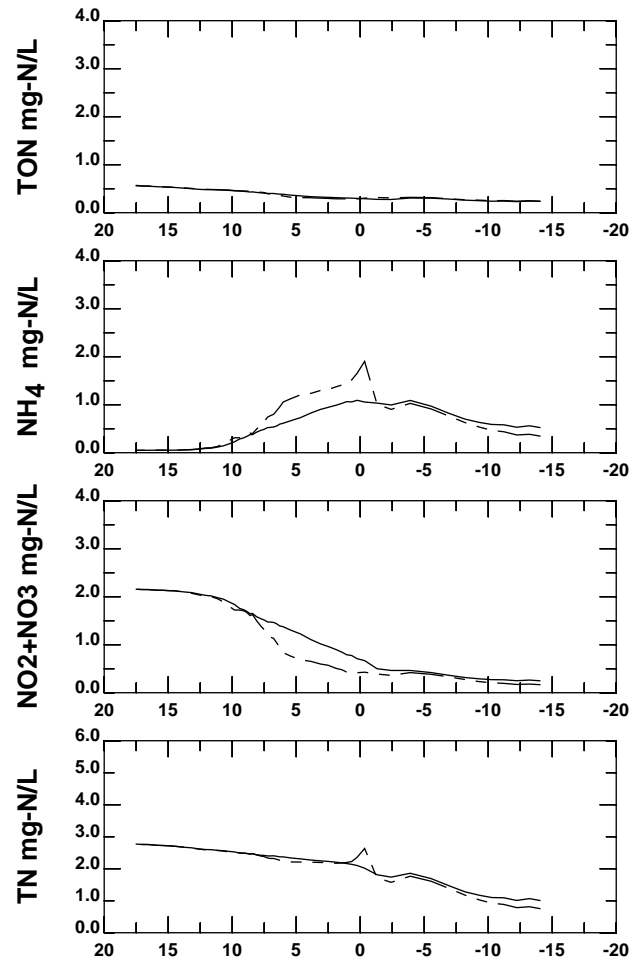
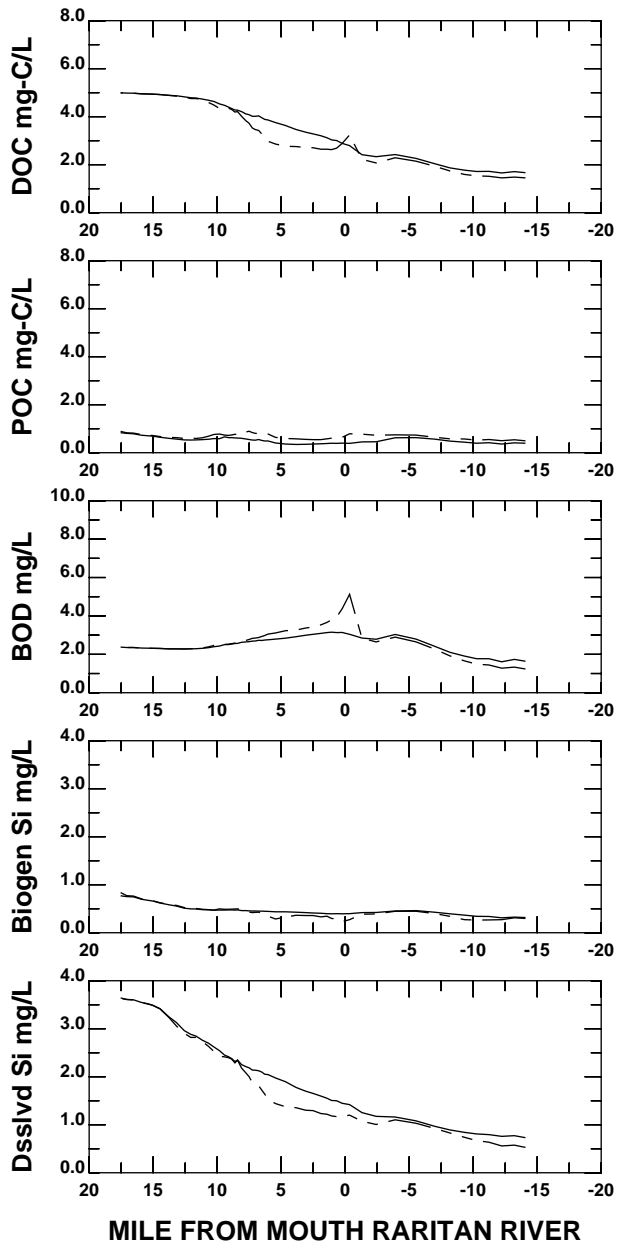
**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**



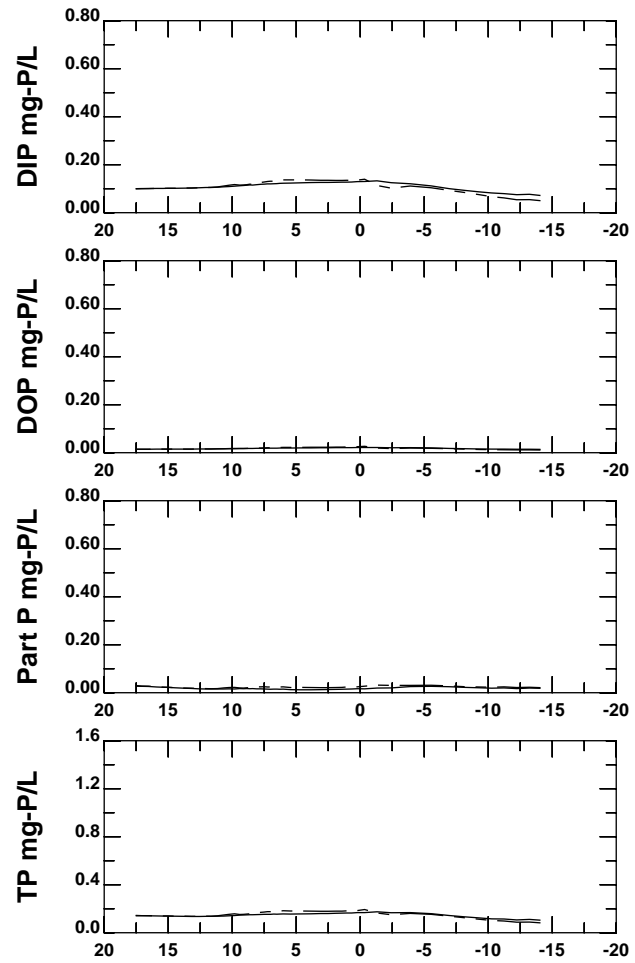
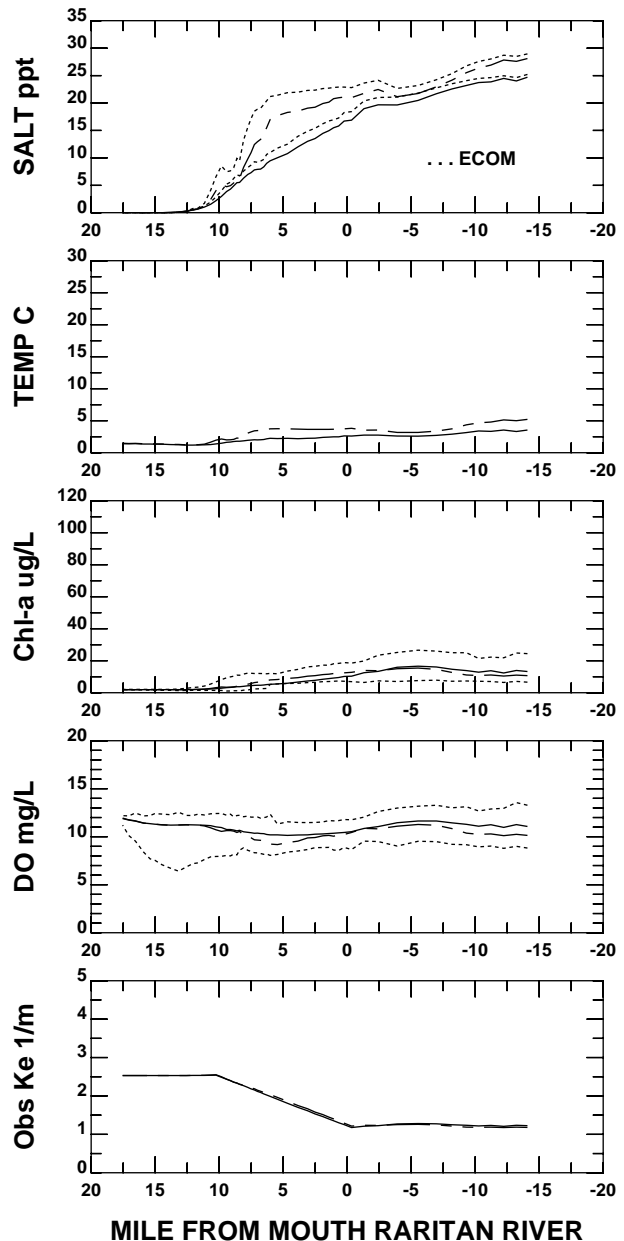
**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**



## RARITAN RIVER AND SOUTH SHORE RARITAN BAY



**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**



**DATA** Dec 30 2000 -Jan 28,2001

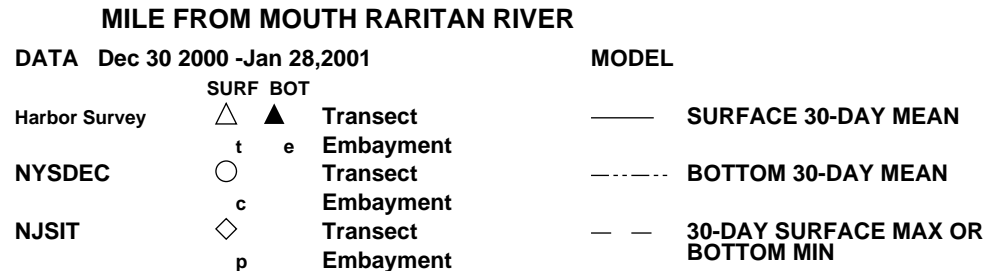
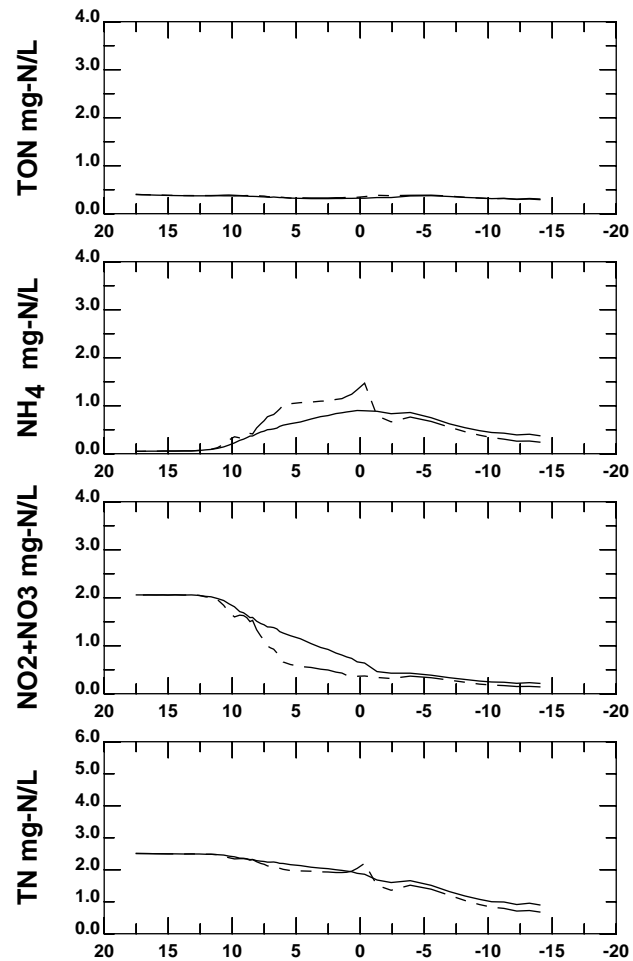
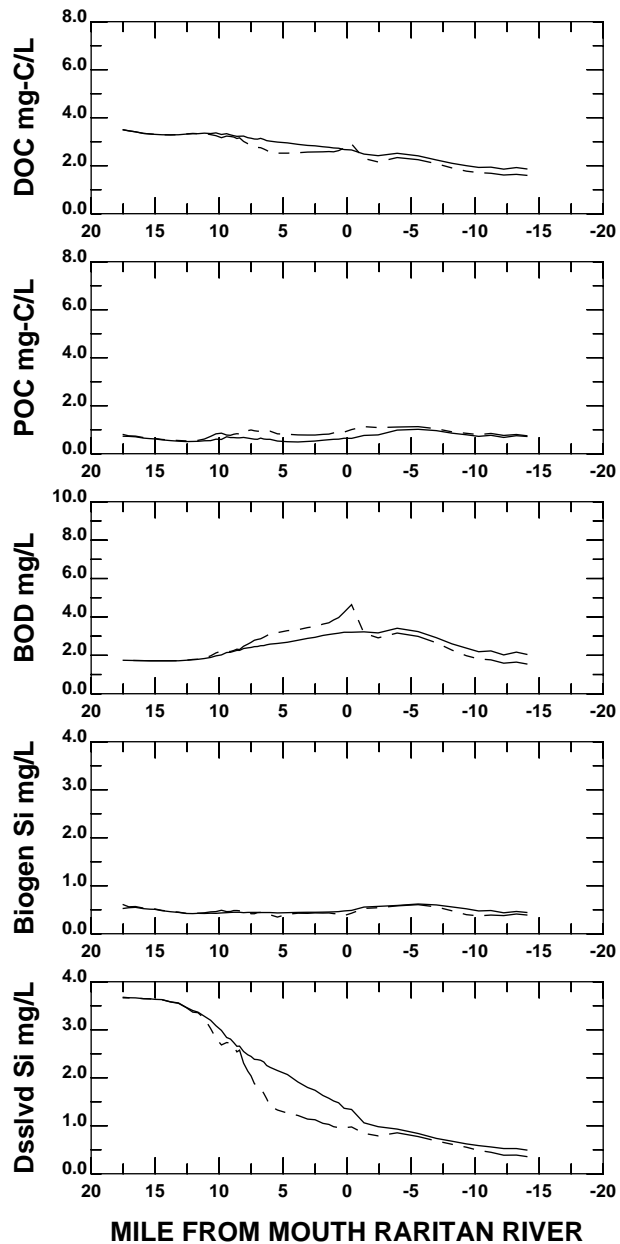
**MODEL**

	<b>SURF BOT</b>		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment

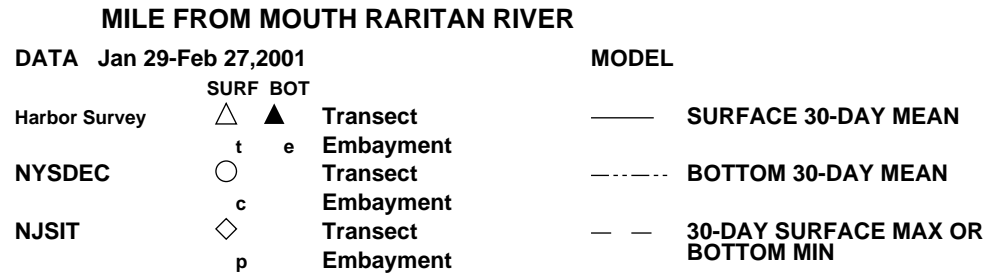
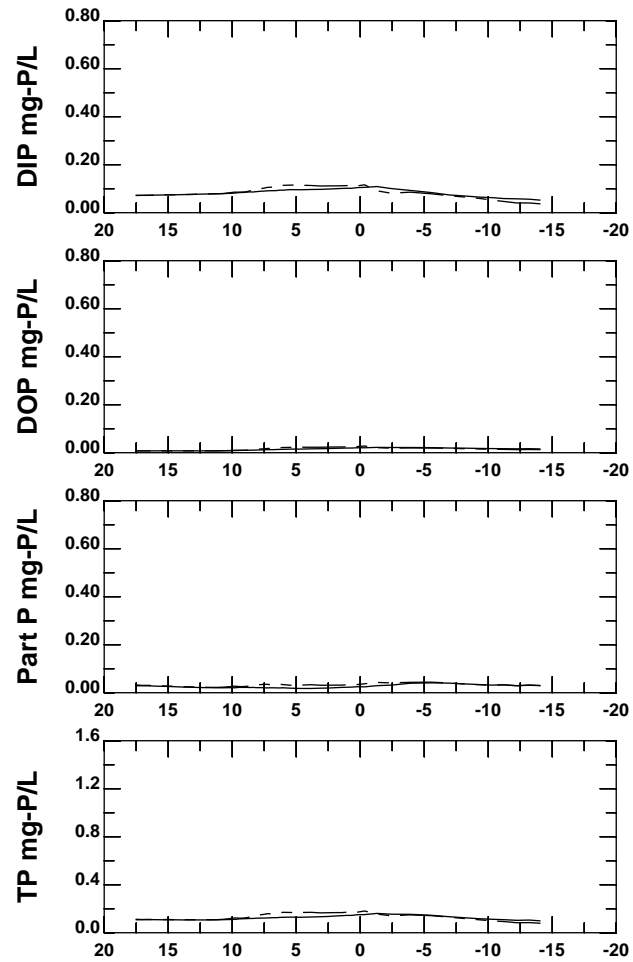
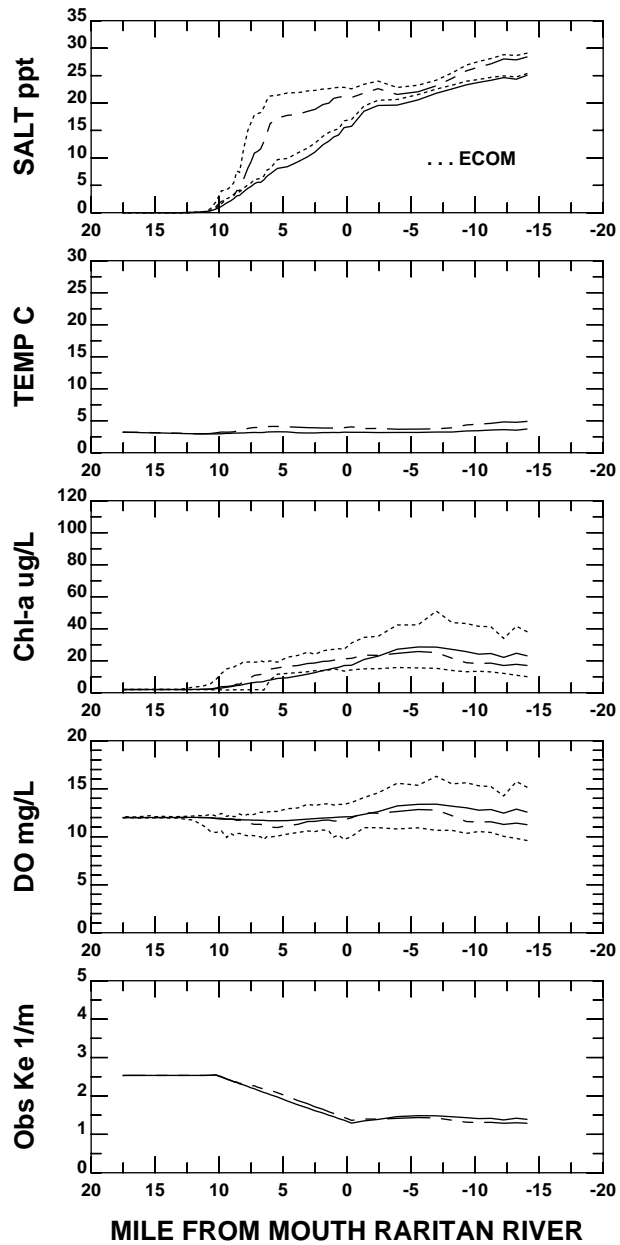
  

————	<b>SURFACE 30-DAY MEAN</b>
-----	<b>BOTTOM 30-DAY MEAN</b>
- - - -	<b>30-DAY SURFACE MAX OR BOTTOM MIN</b>

**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**

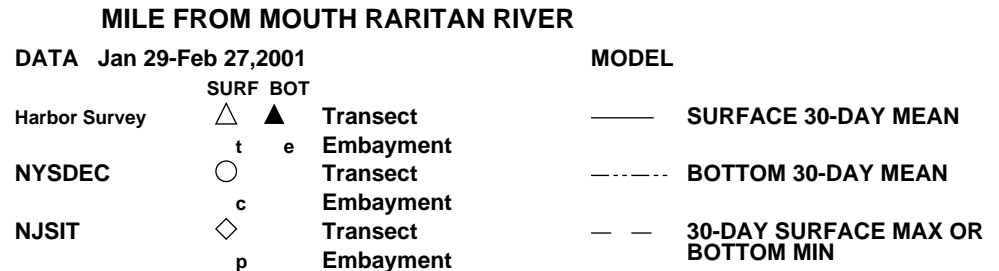
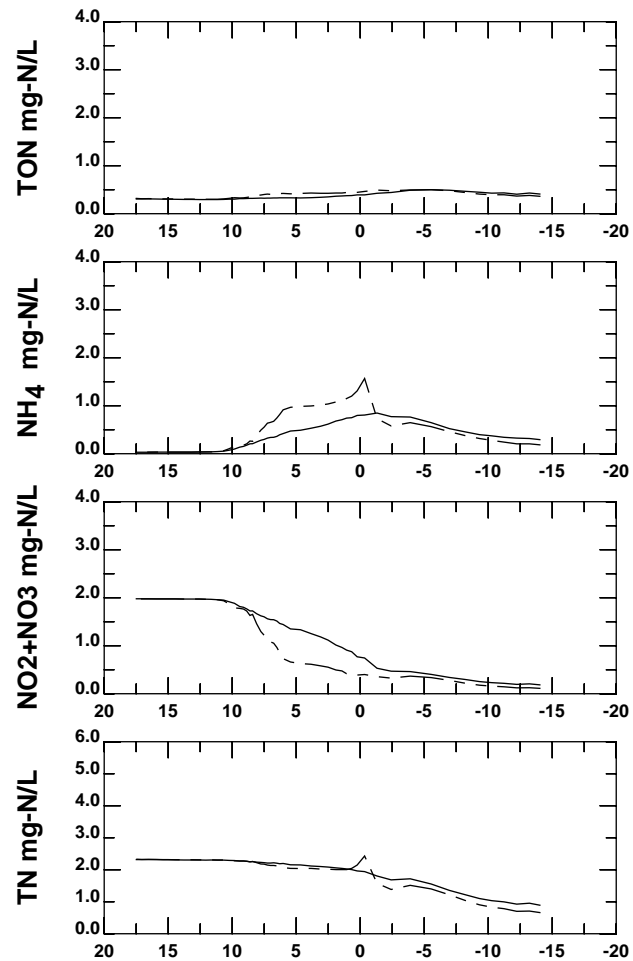
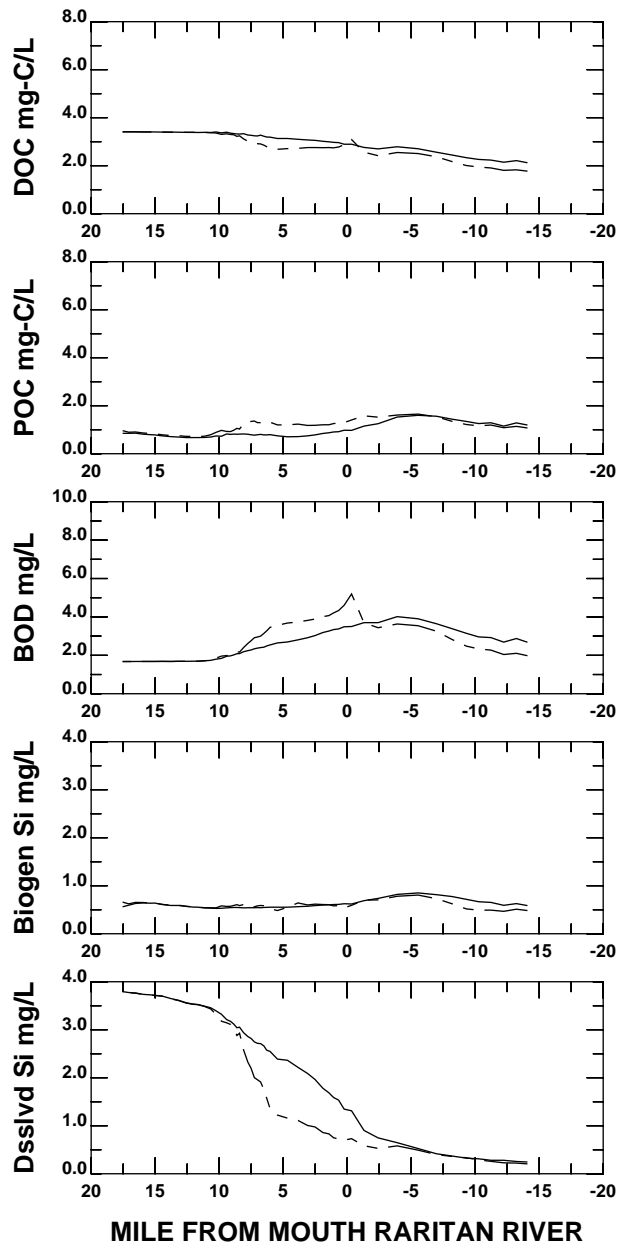


**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**

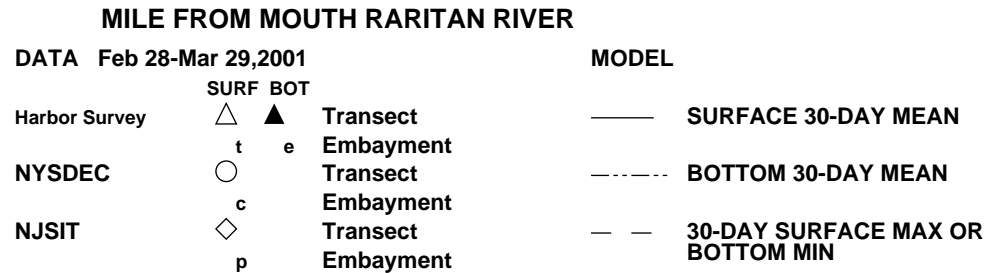
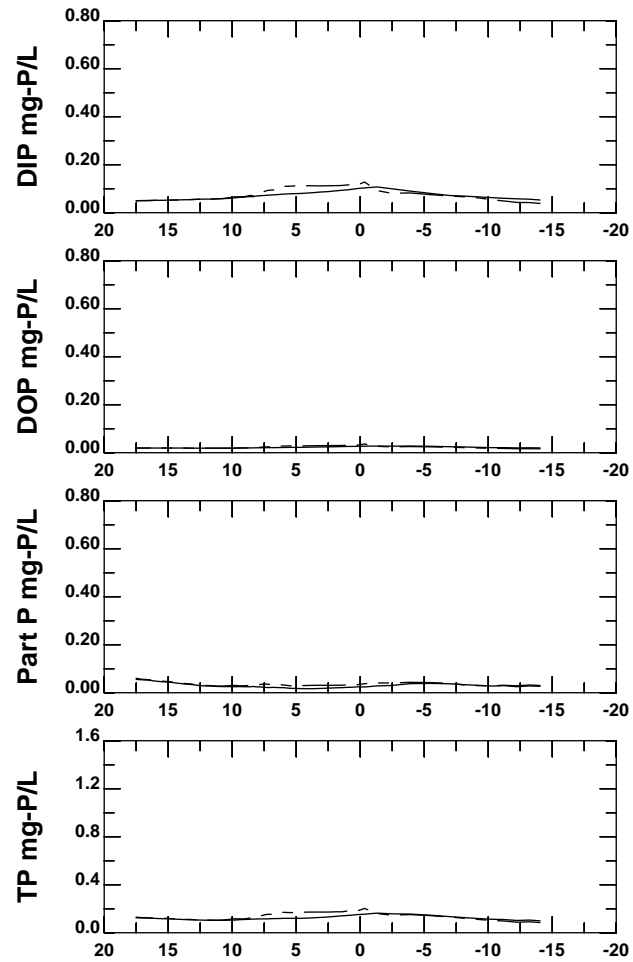
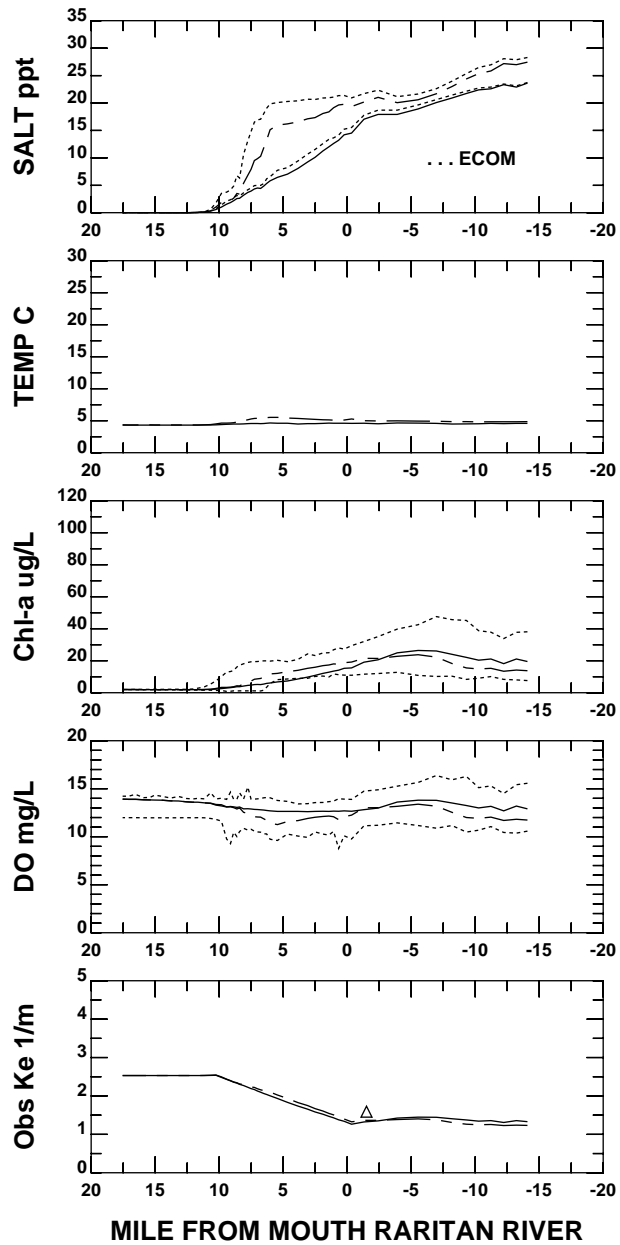


**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**

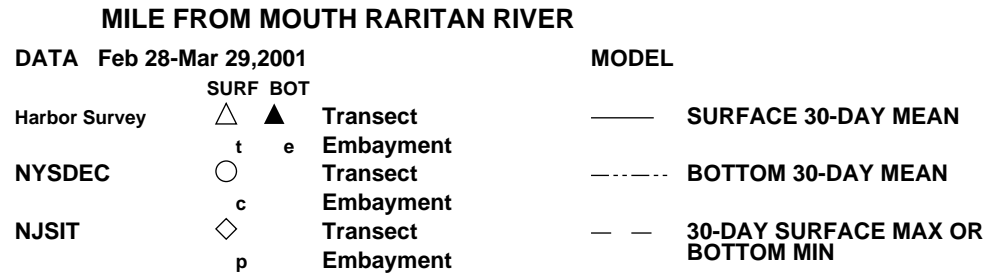
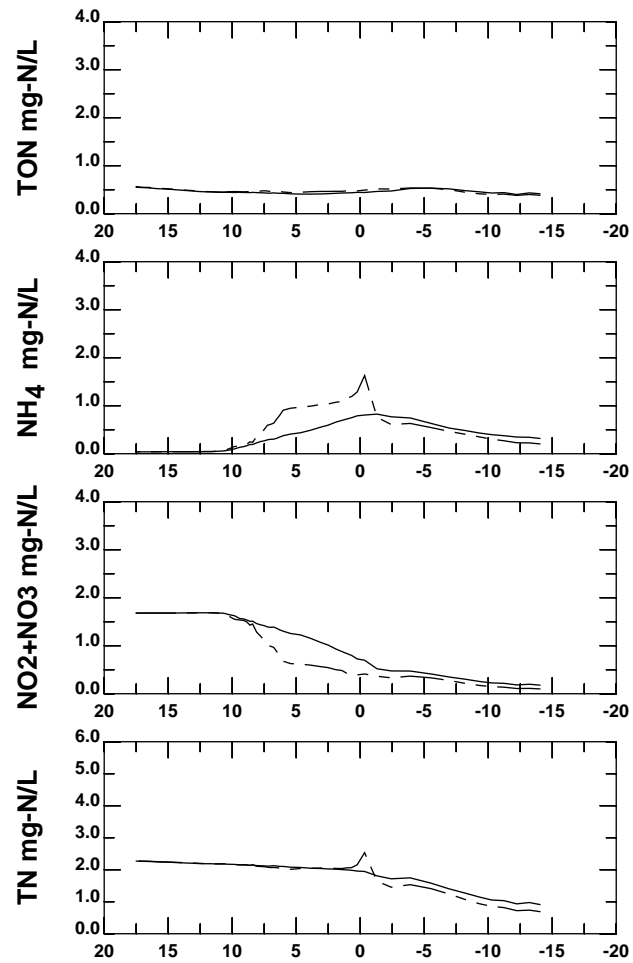
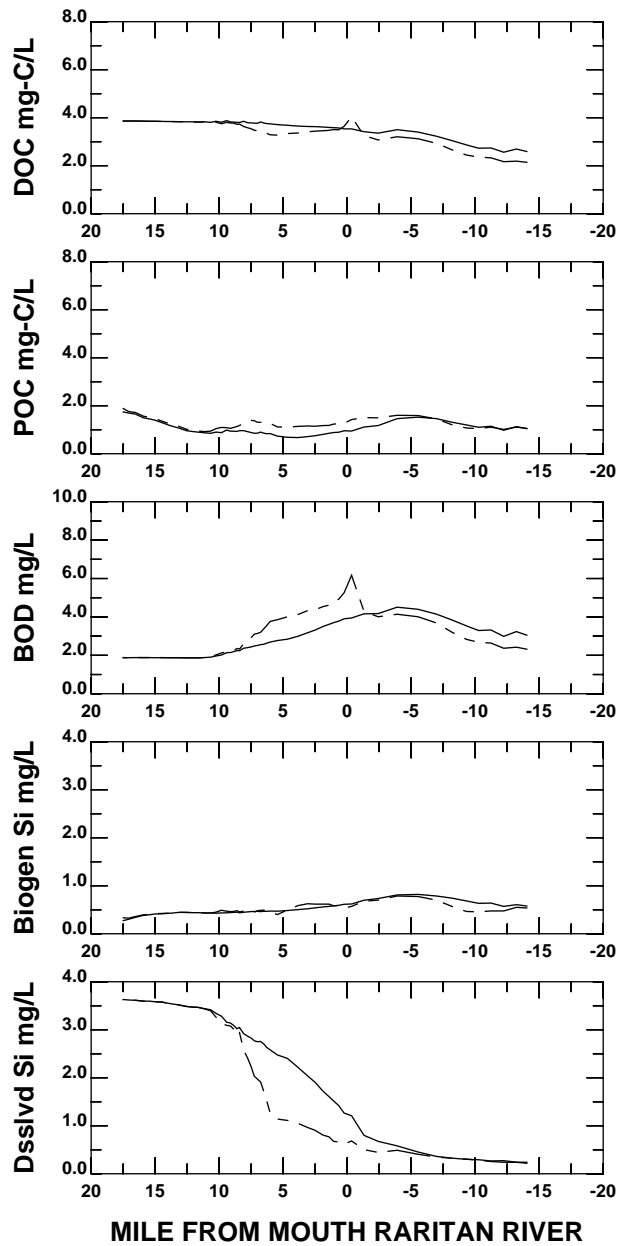




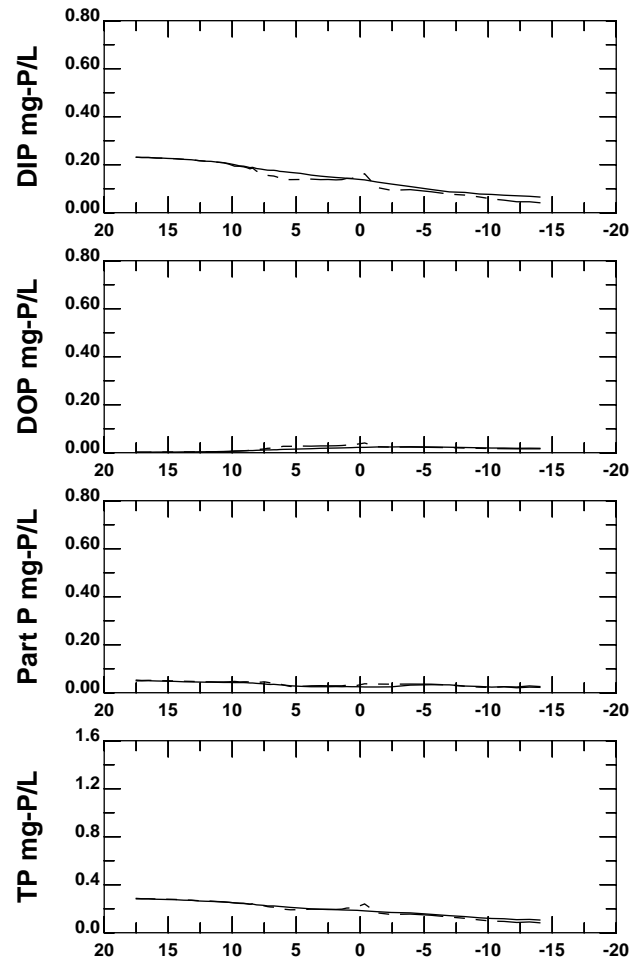
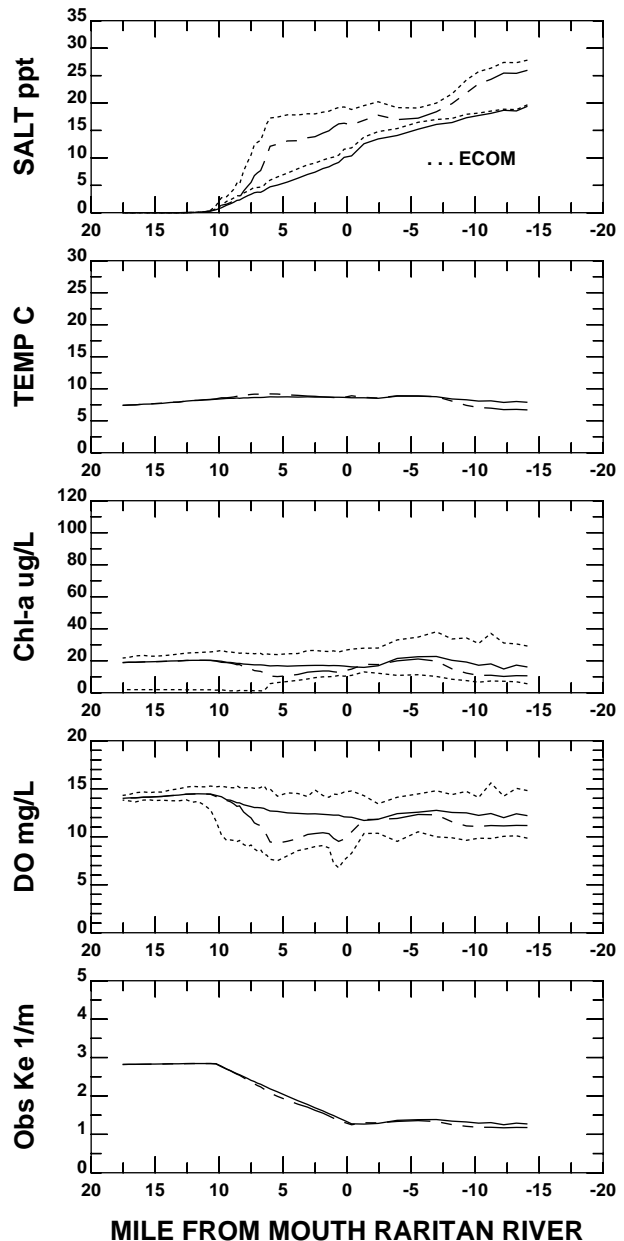
**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**



## RARITAN RIVER AND SOUTH SHORE RARITAN BAY



**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**



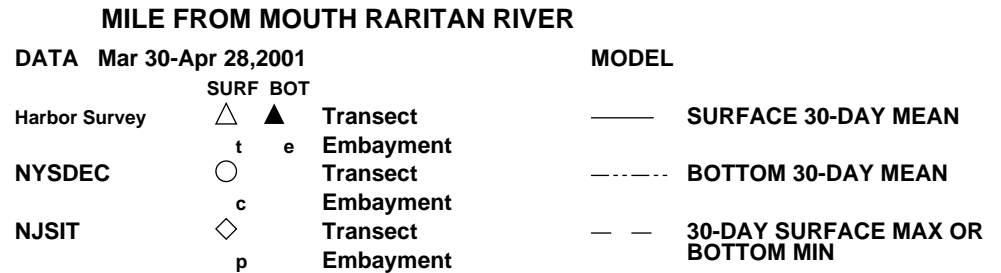
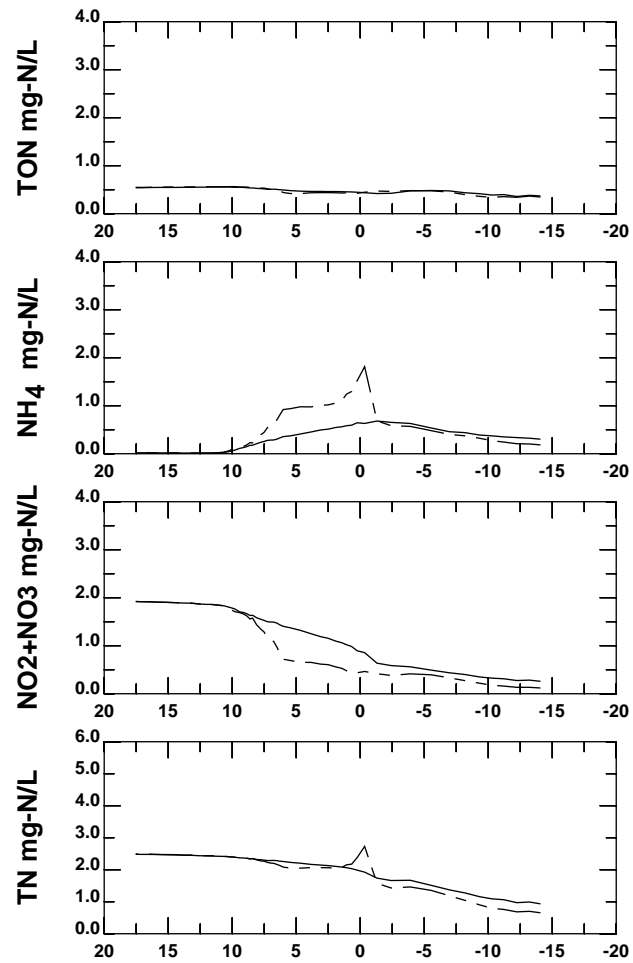
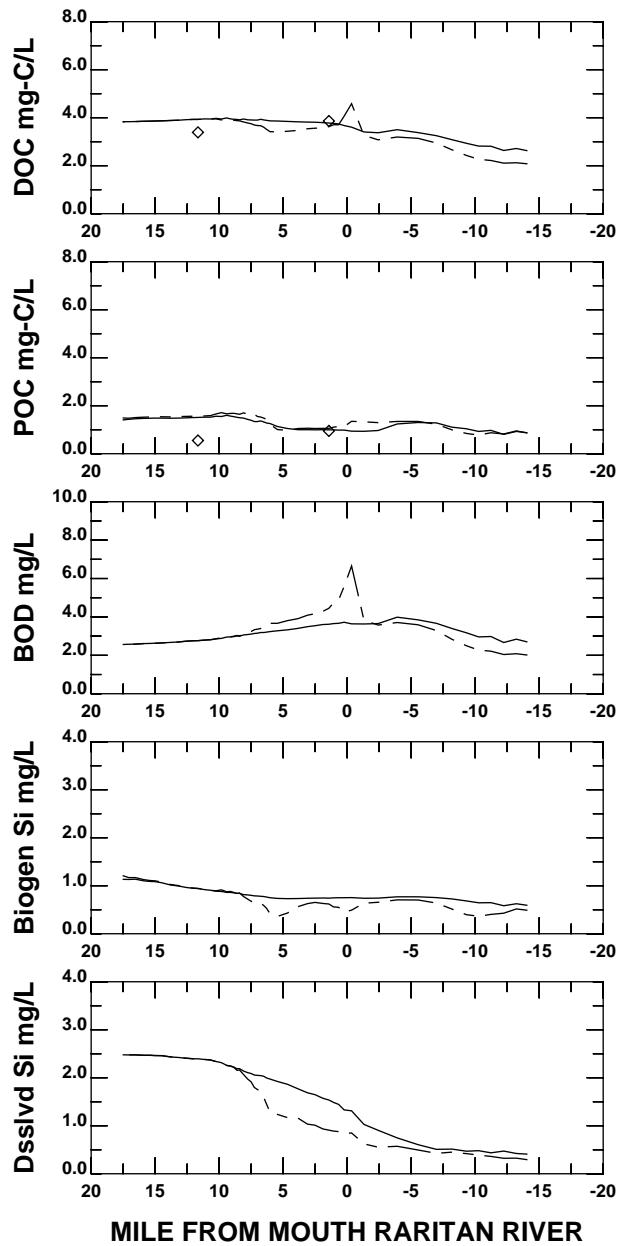
**DATA Mar 30-Apr 28, 2001**

	<b>SURF BOT</b>		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment

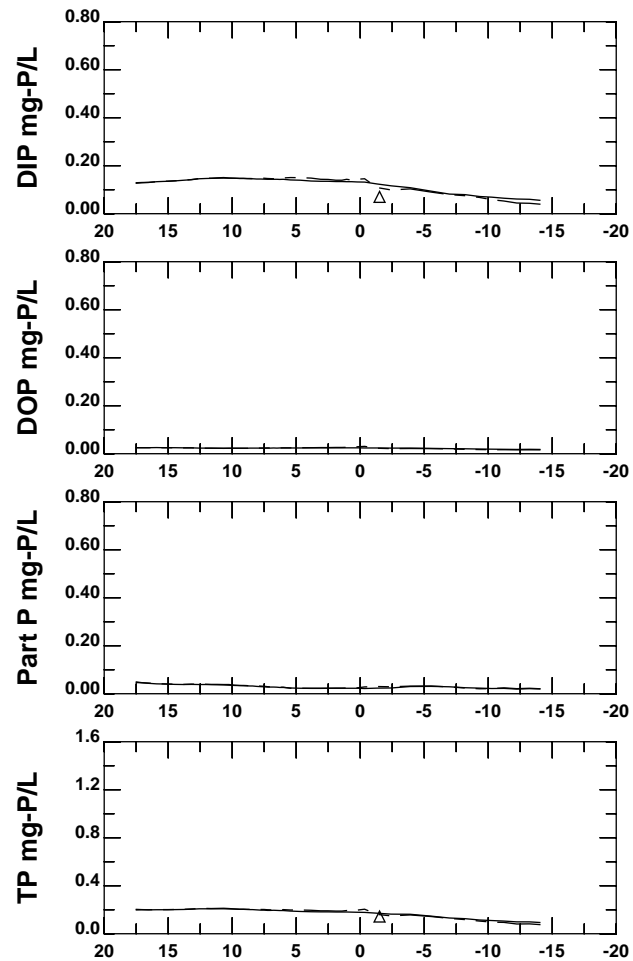
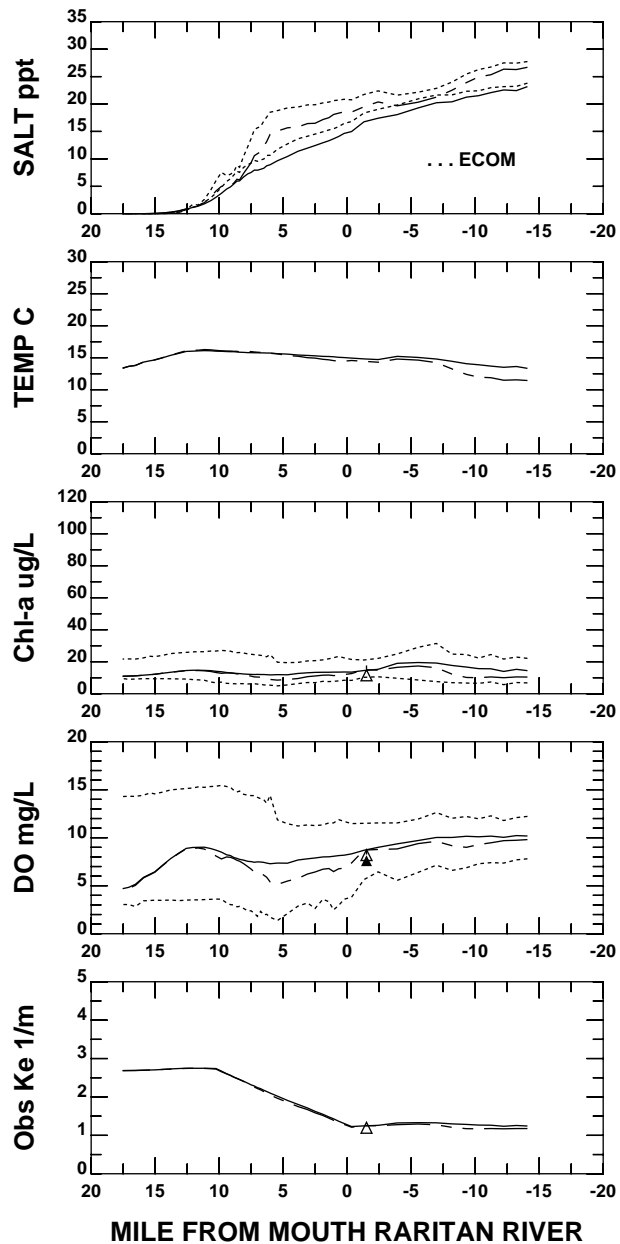
**MODEL**

————	<b>SURFACE 30-DAY MEAN</b>
.....	<b>BOTTOM 30-DAY MEAN</b>
- - - -	<b>30-DAY SURFACE MAX OR BOTTOM MIN</b>

**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**



**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**



DATA Apr 29-May 28, 2001

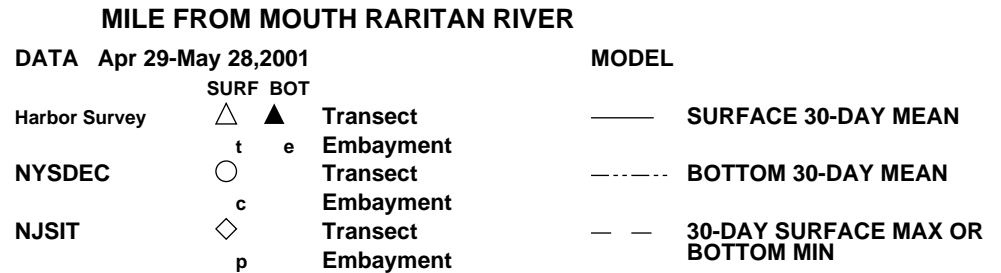
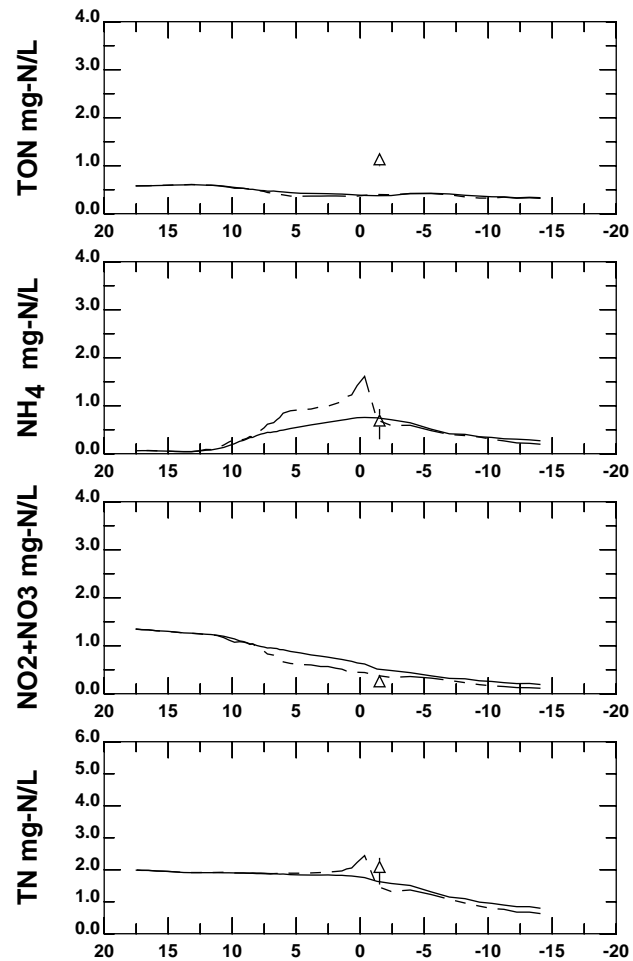
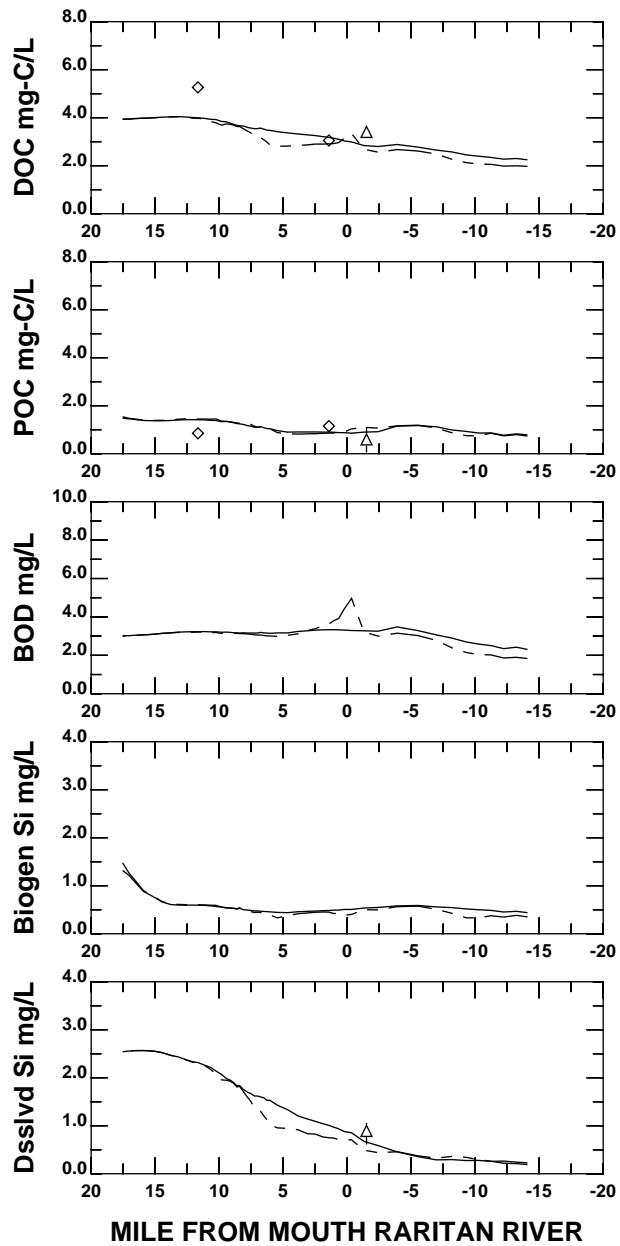
MODEL

	SURF		BOT	
Harbor Survey	△	▲	t	e
NYSDEC	○		c	
NJSIT	◇		p	

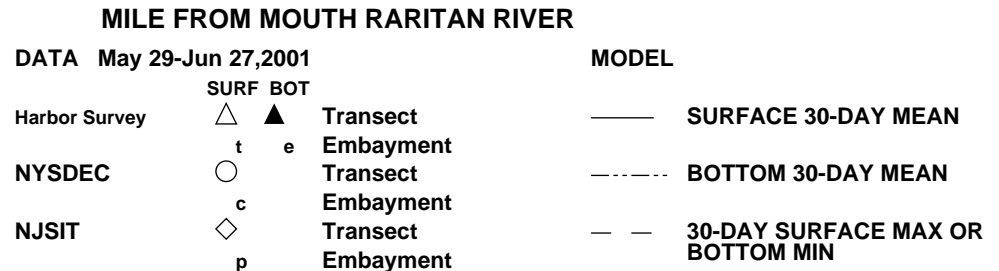
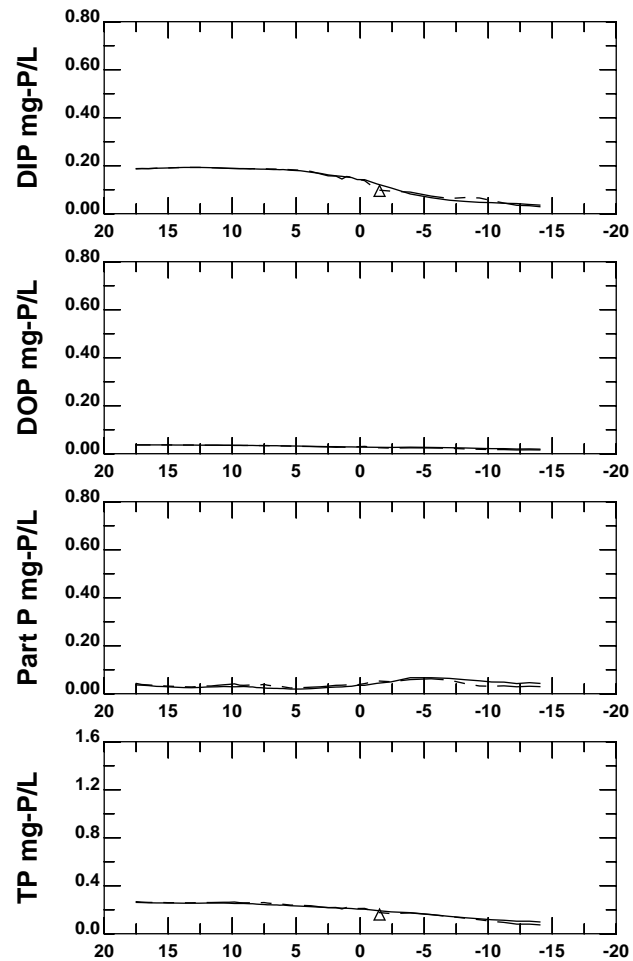
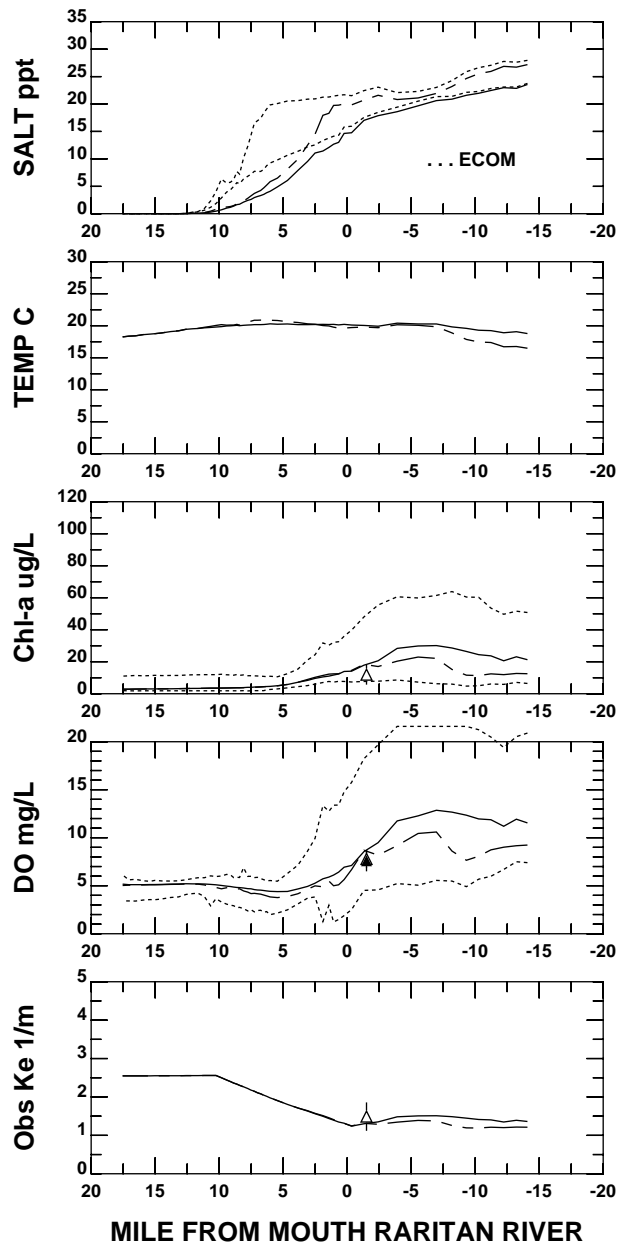
Transect  
Embayment  
Transect  
Embayment  
Transect  
Embayment

—	SURFACE 30-DAY MEAN
.....	BOTTOM 30-DAY MEAN
- - -	30-DAY SURFACE MAX OR BOTTOM MIN

## RARITAN RIVER AND SOUTH SHORE RARITAN BAY

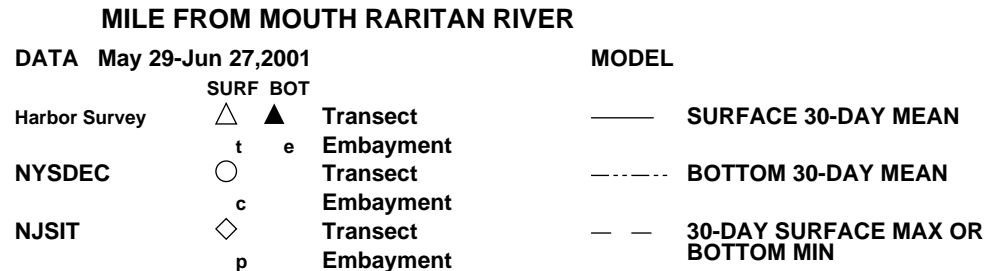
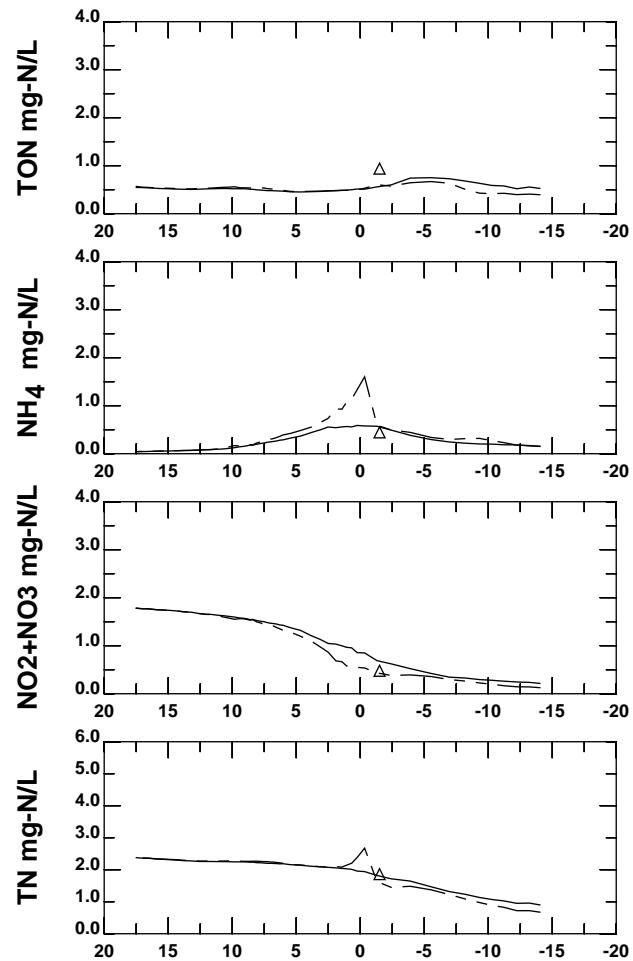
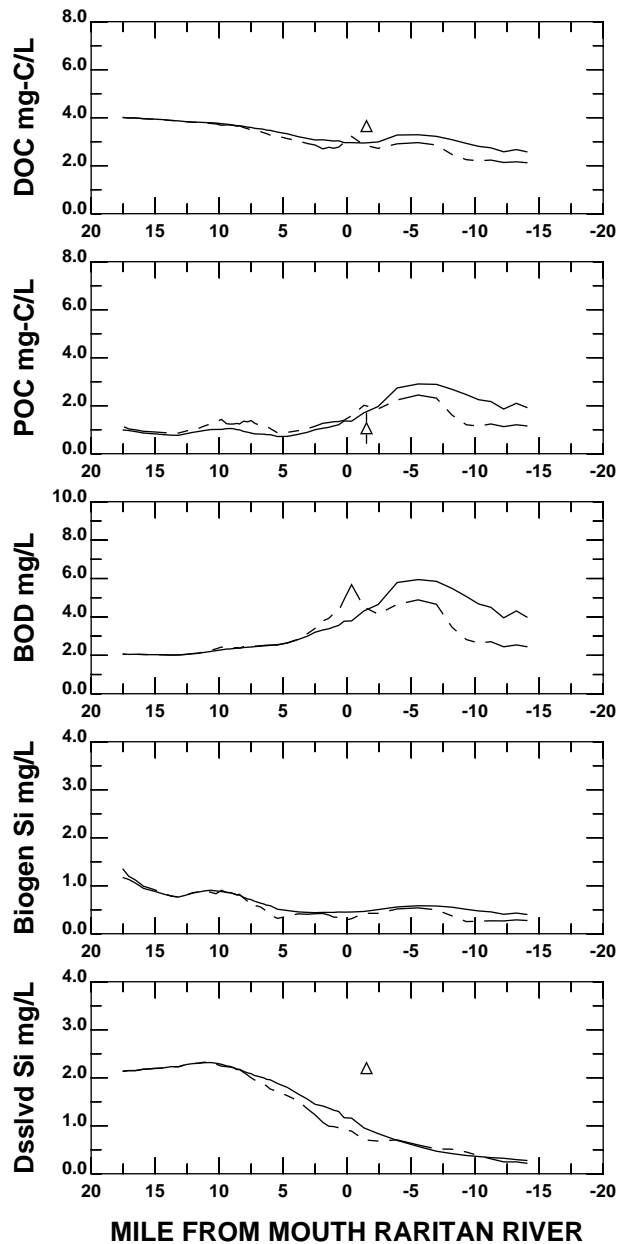


**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**

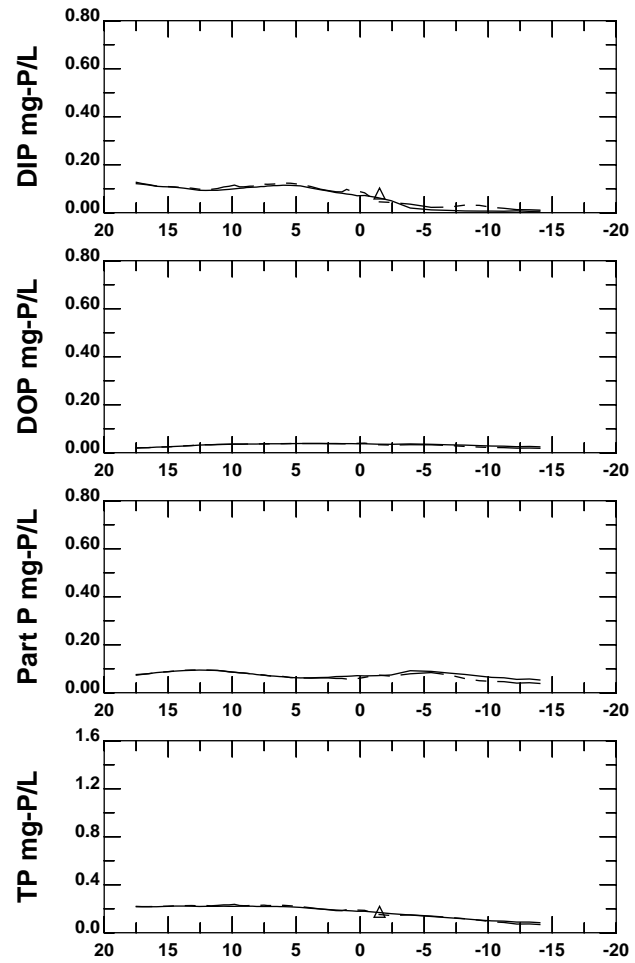
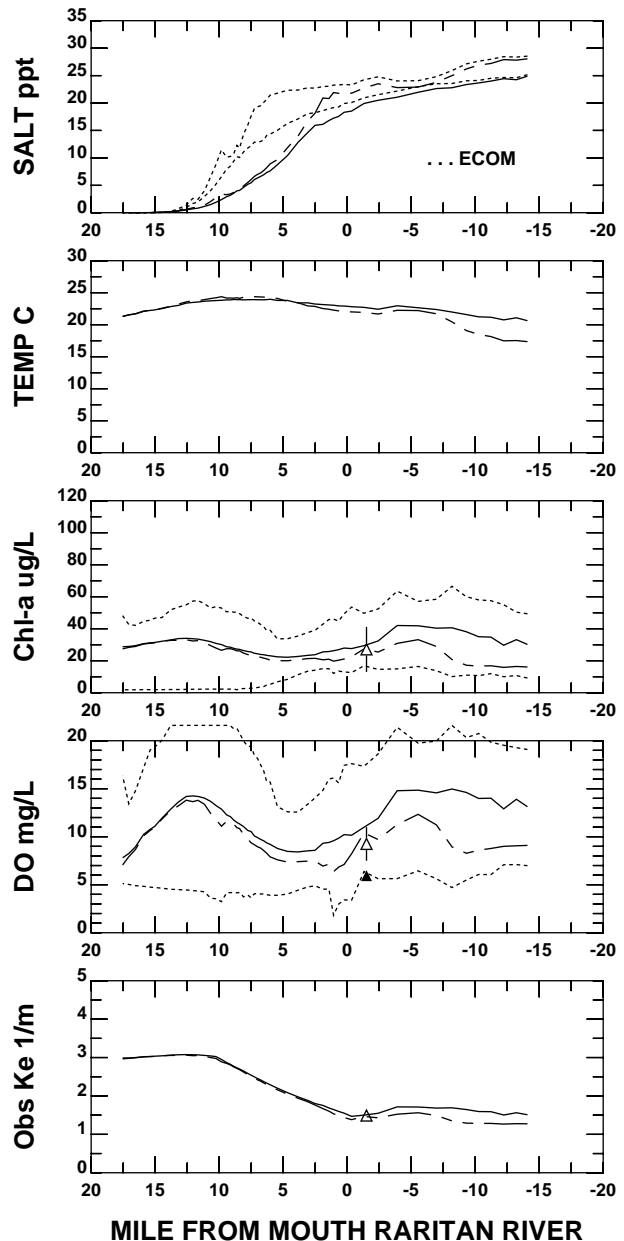


**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**





## RARITAN RIVER AND SOUTH SHORE RARITAN BAY



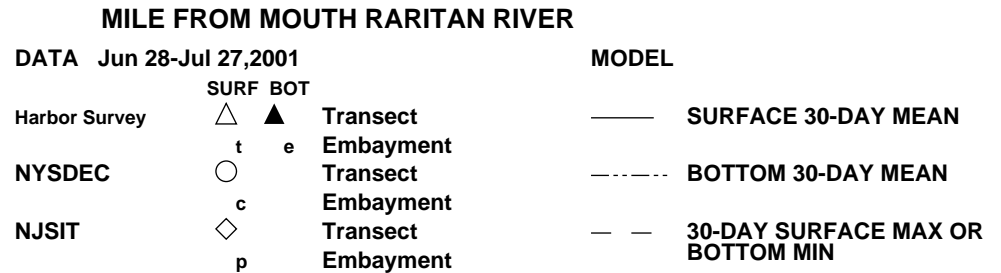
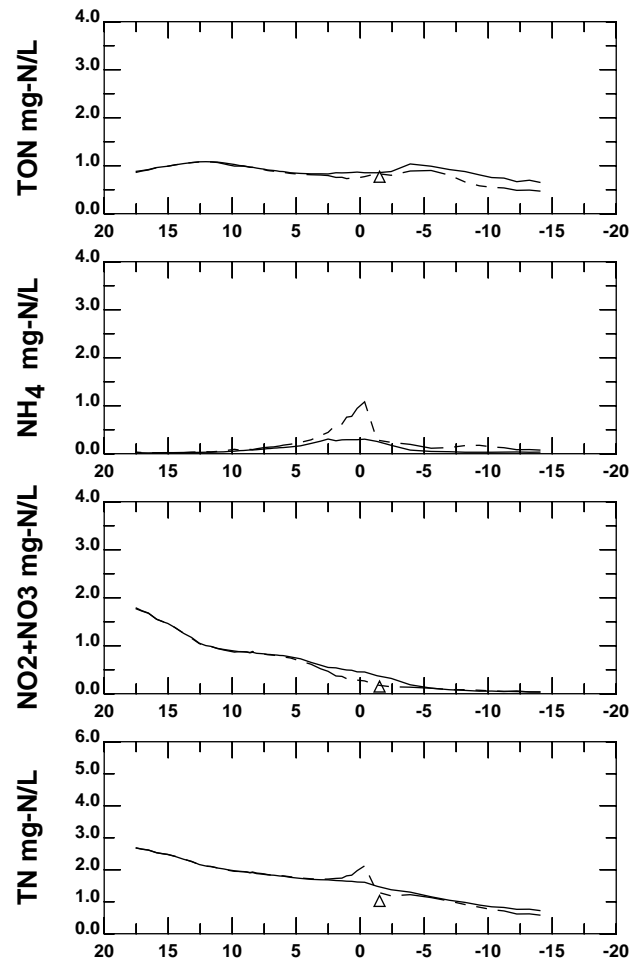
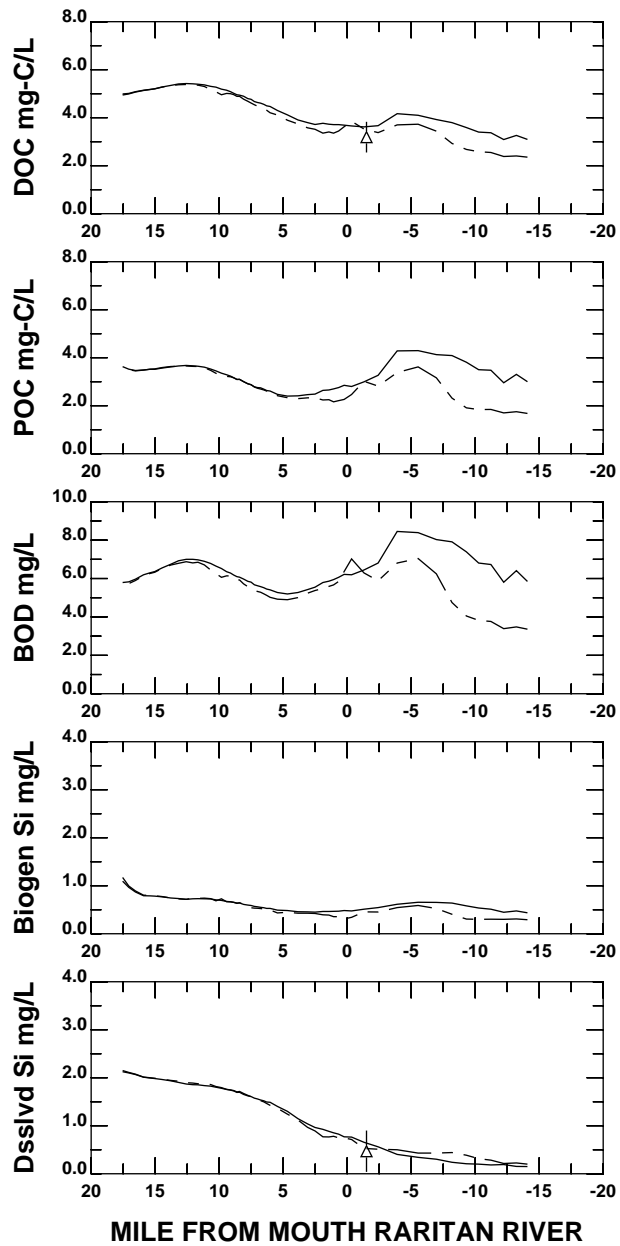
**DATA Jun 28-Jul 27, 2001**

	<b>SURF BOT</b>		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment

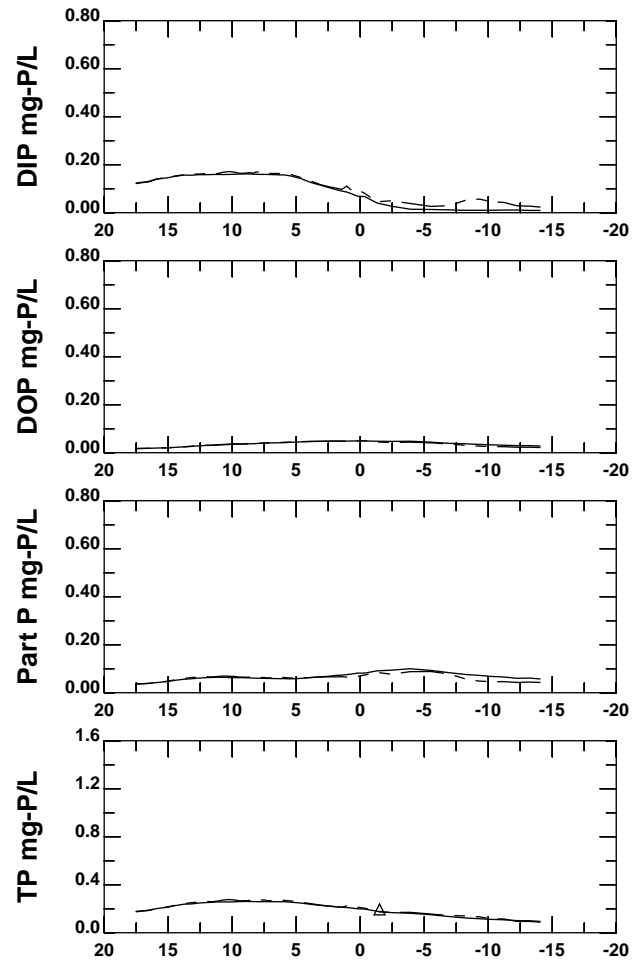
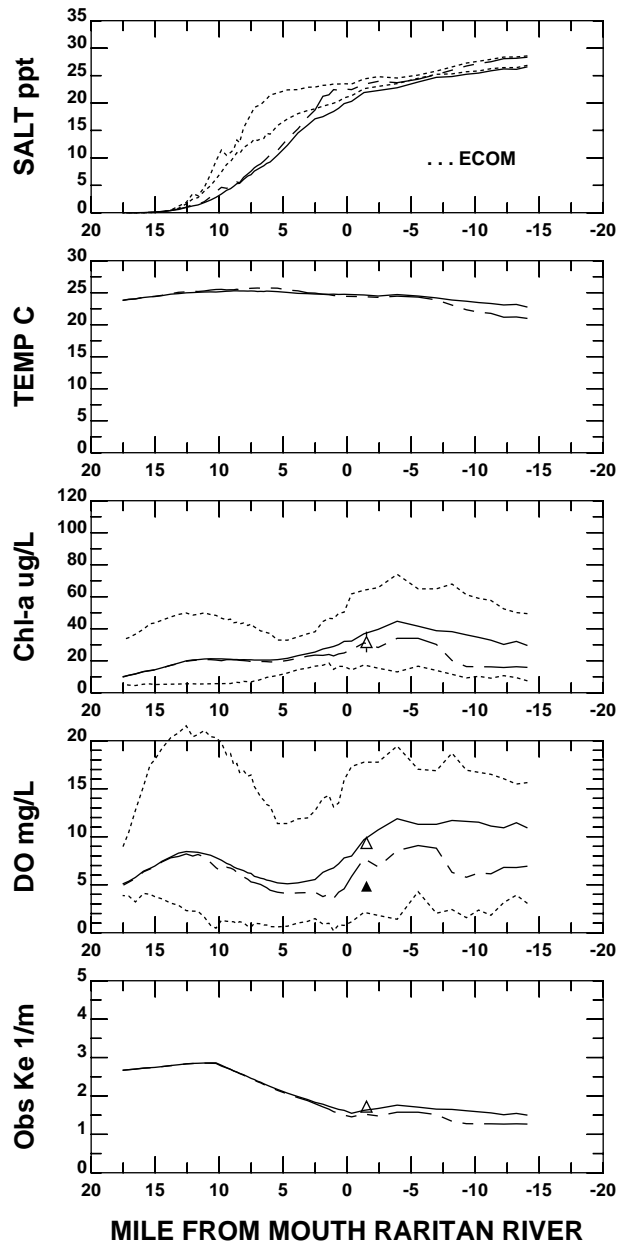
  

<b>MODEL</b>	—	<b>SURFACE 30-DAY MEAN</b>
	---	<b>BOTTOM 30-DAY MEAN</b>
	- - -	<b>30-DAY SURFACE MAX OR BOTTOM MIN</b>

**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**



## RARITAN RIVER AND SOUTH SHORE RARITAN BAY



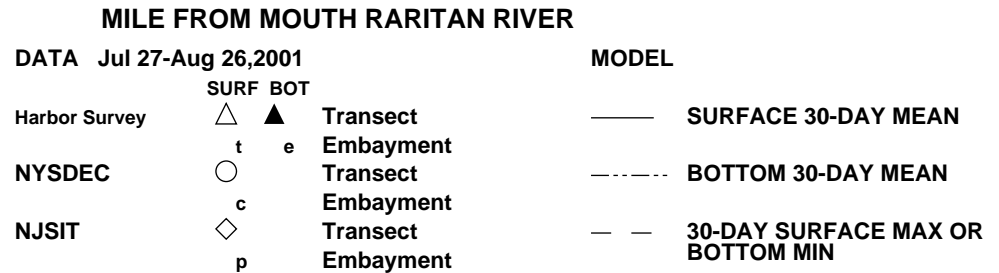
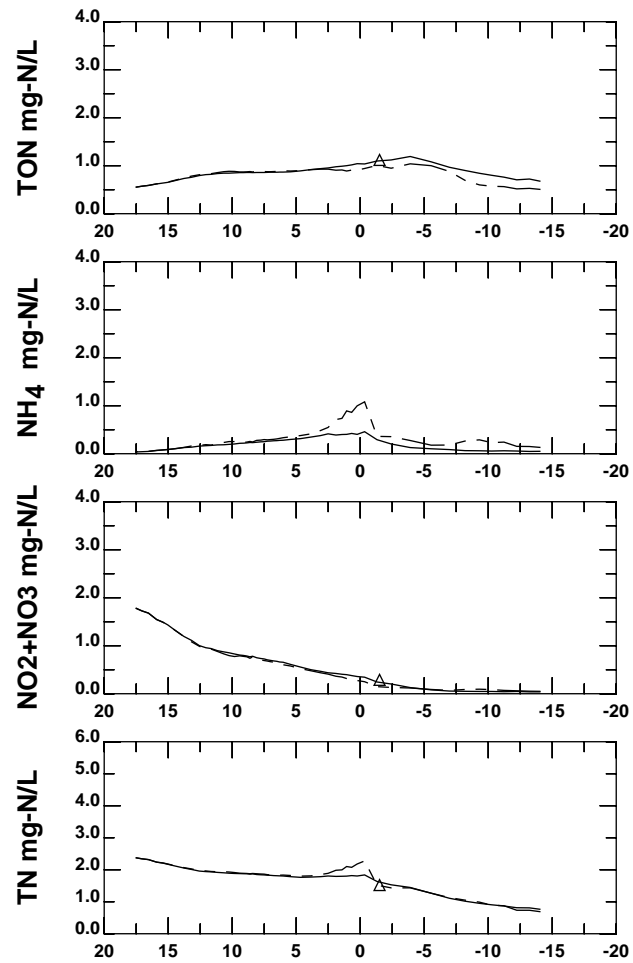
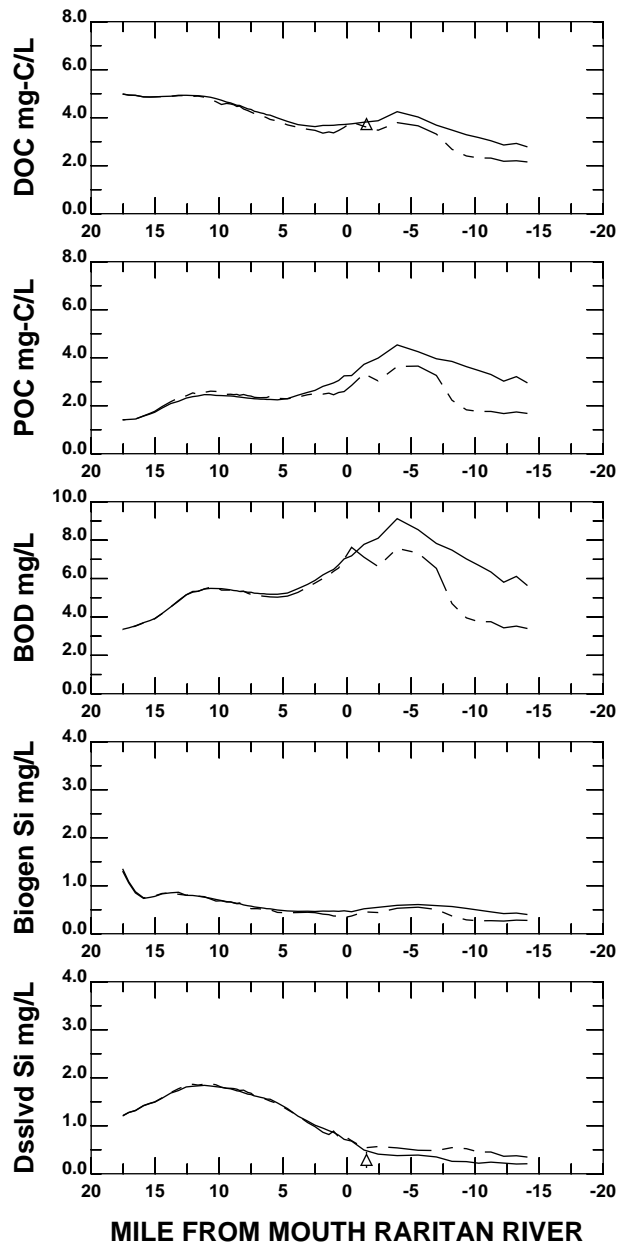
**DATA Jul 27-Aug 26,2001**

	<b>SURF BOT</b>		
Harbor Survey	△	▲	Transect
NYSDEC	t	e	Embayment
	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment

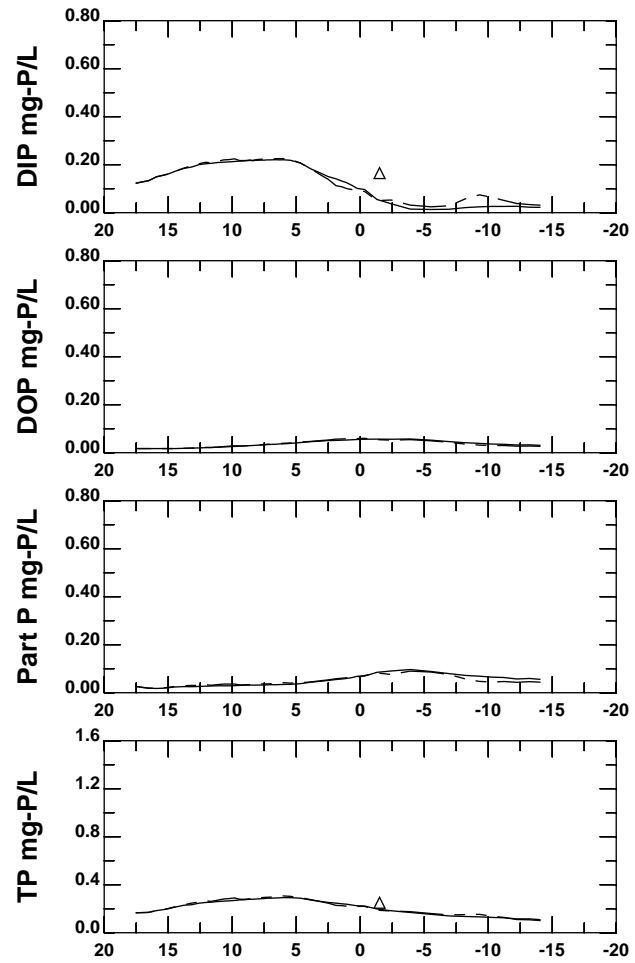
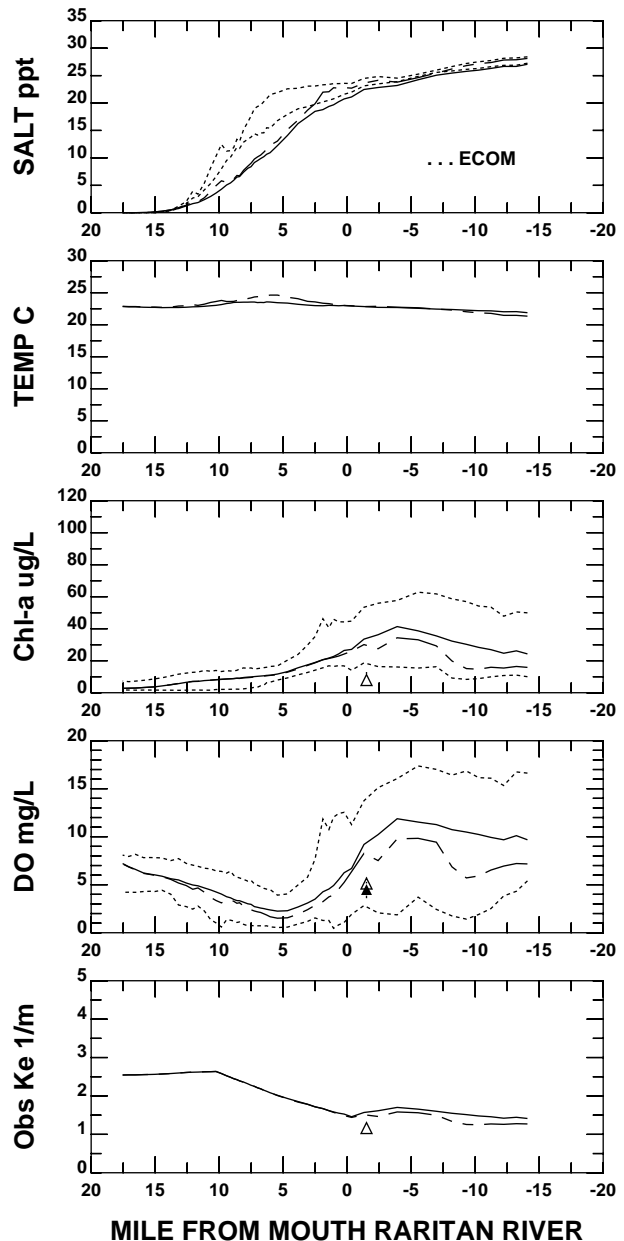
  

<b>MODEL</b>	—	<b>SURFACE 30-DAY MEAN</b>
	- - -	<b>BOTTOM 30-DAY MEAN</b>
	- - -	<b>30-DAY SURFACE MAX OR BOTTOM MIN</b>

**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**



**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**



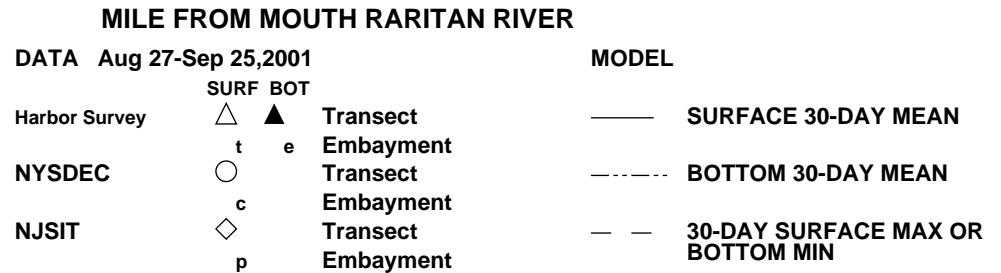
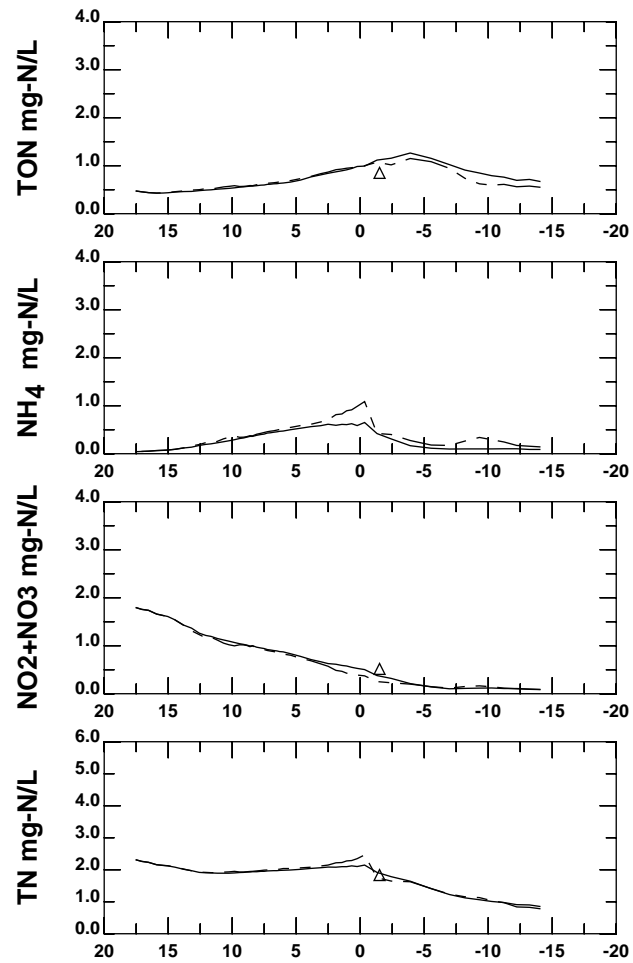
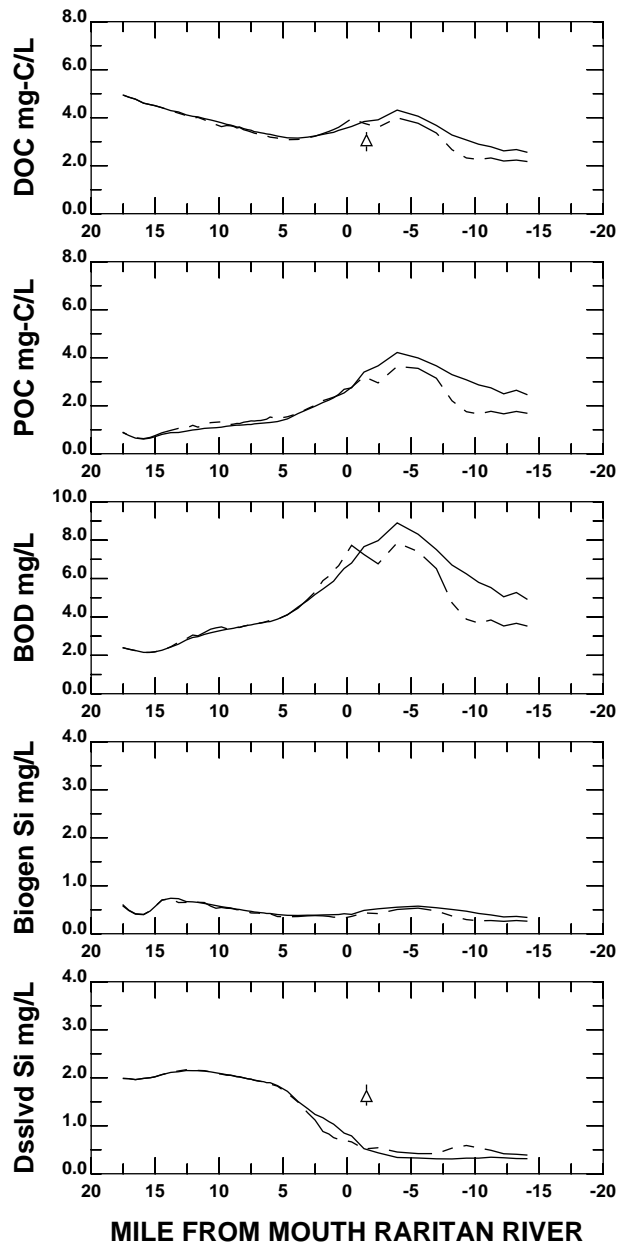
**DATA Aug 27-Sep 25,2001**

	<b>SURF BOT</b>		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment

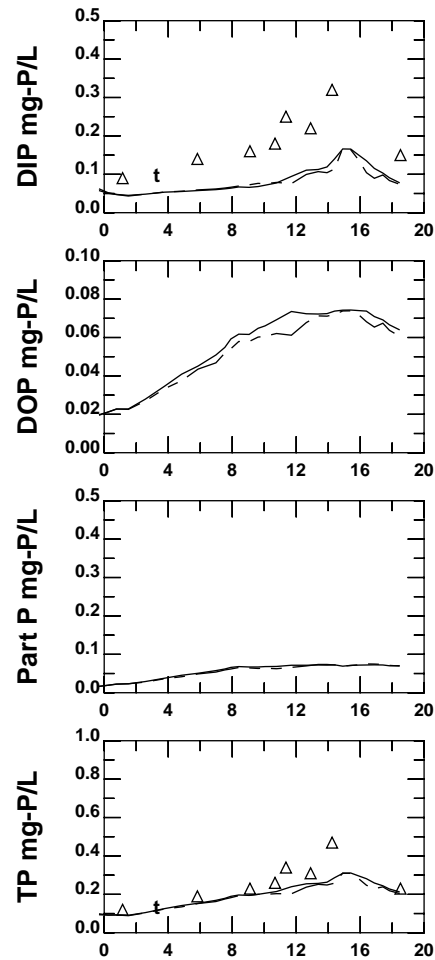
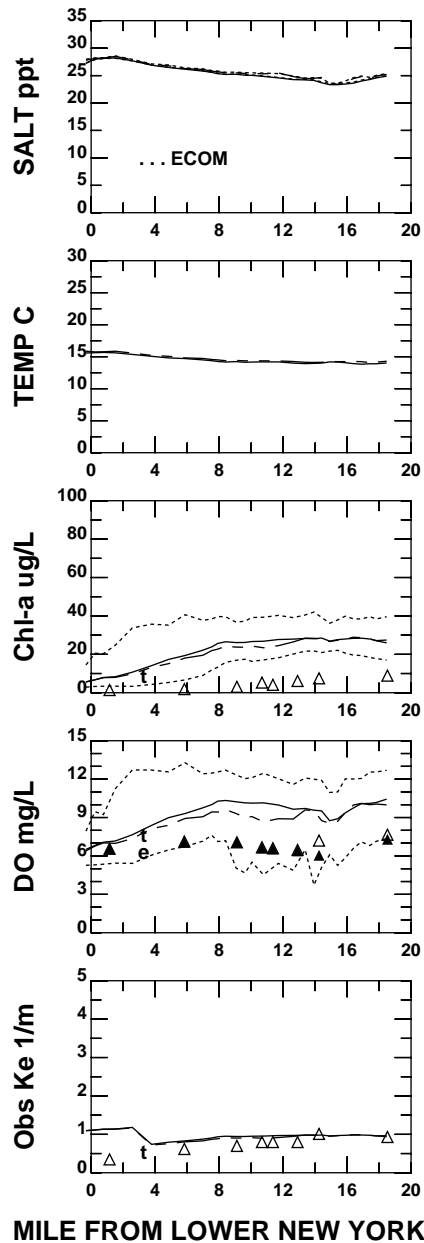
**MODEL**

—	SURFACE 30-DAY MEAN
- - -	BOTTOM 30-DAY MEAN
- - -	30-DAY SURFACE MAX OR BOTTOM MIN

**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**



**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**



**MILE FROM LOWER NEW YORK BAY**

DATA Oct 1-30,2000

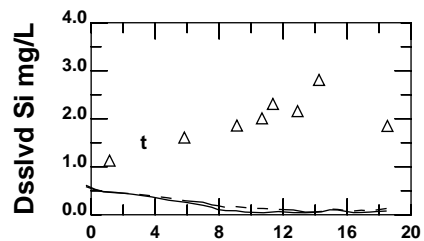
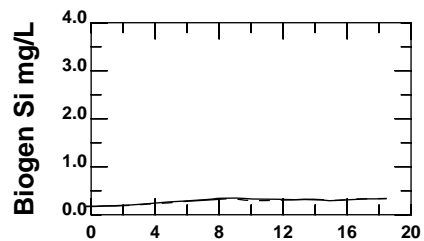
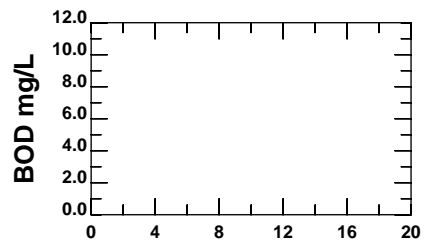
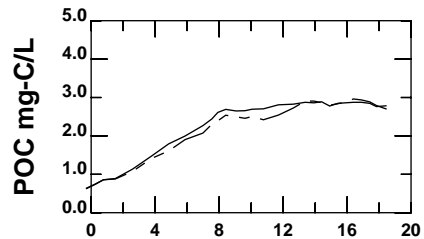
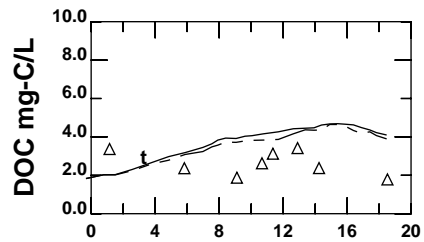
Harbor Survey SURF BOT  
 △ ▲ Transect  
 t e Embayment  
 NYSDEC ○ c  
 ○ c Embayment

**MODEL**

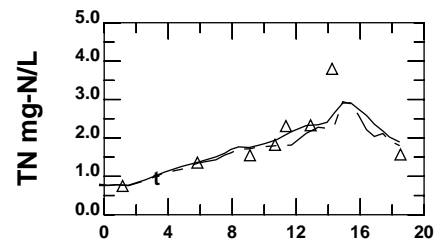
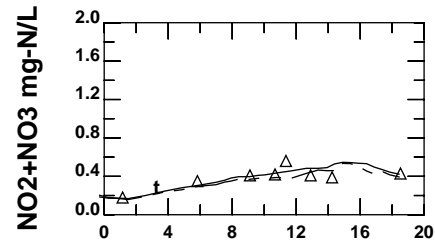
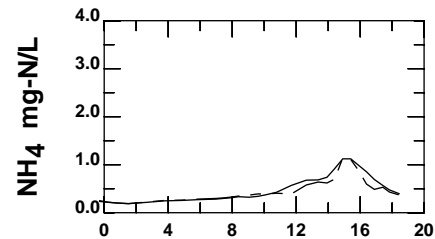
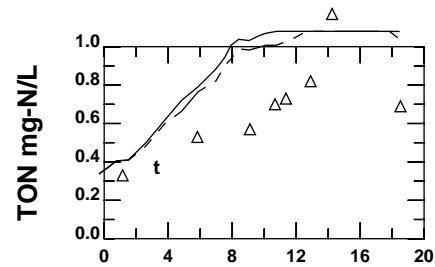
— SURFACE 30-DAY MEAN  
 - - - - - BOTTOM 30-DAY MEAN  
 - - - - - 30-DAY SURFACE MAX OR BOTTOM MIN

**CONEY ISLAND JAMAICA BAY TRANSECT**





MILE FROM LOWER NEW YORK BAY



MILE FROM LOWER NEW YORK BAY

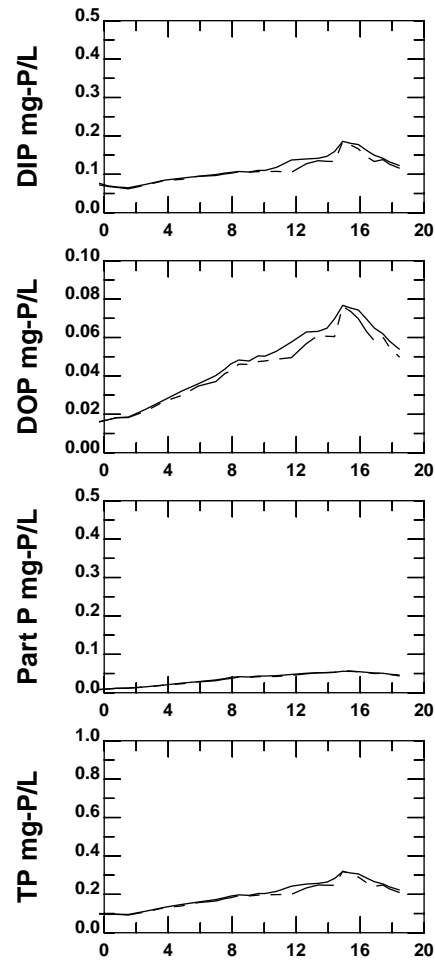
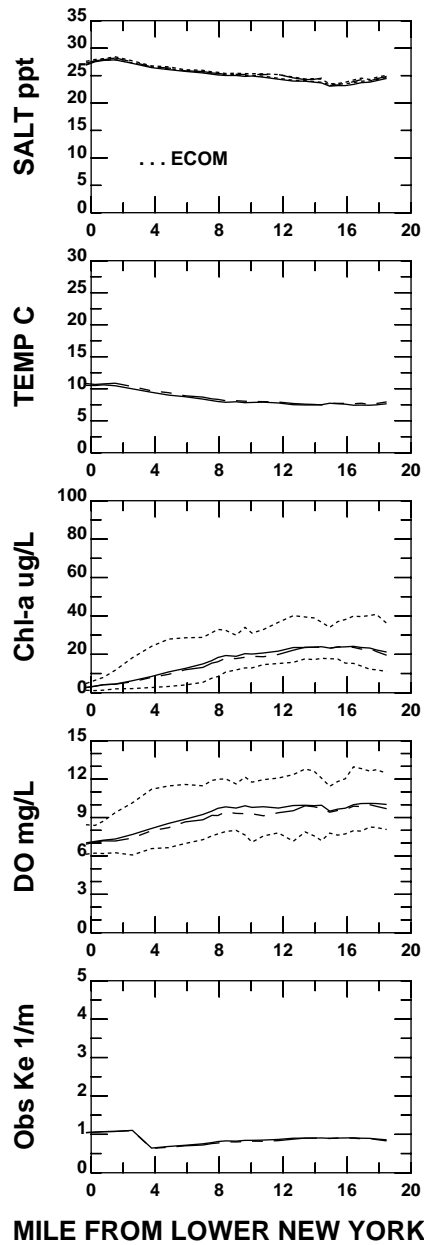
DATA Oct 1-30,2000

	SURF		BOT	
Harbor Survey	△	▲	Transect	
	t	e	Embayment	
NYSDEC	○		Transect	
	c		Embayment	

MODEL

—	SURFACE 30-DAY MEAN
- - - -	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

## CONEY ISLAND JAMAICA BAY TRANSECT



**MILE FROM LOWER NEW YORK BAY**

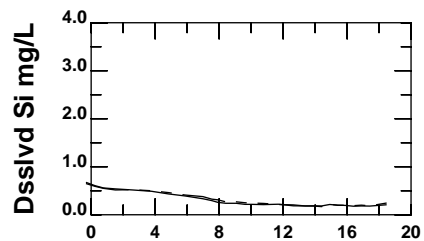
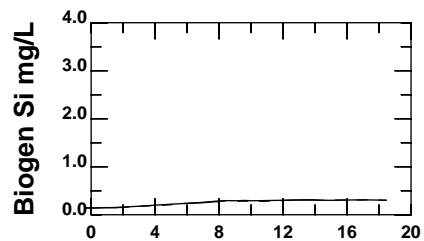
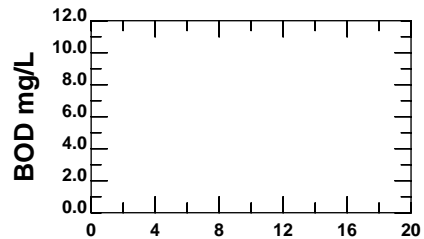
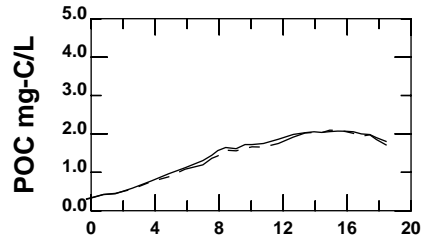
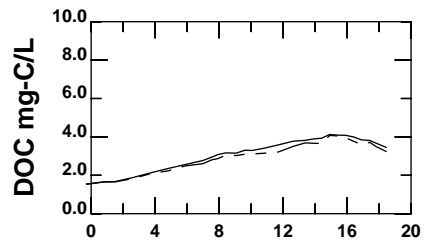
DATA Oct 31-Nov 29,2000

Harbor Survey    SURF    BOT  
 △    ▲    Transect  
 t    e    Embayment  
 NYSDEC    ○    Transect  
           c    Embayment

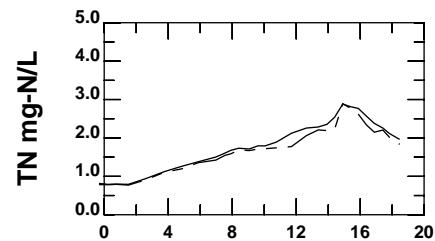
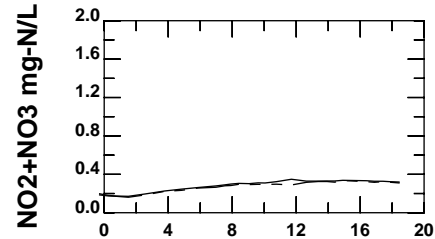
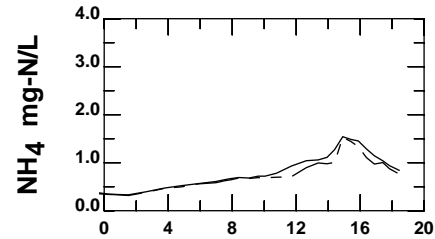
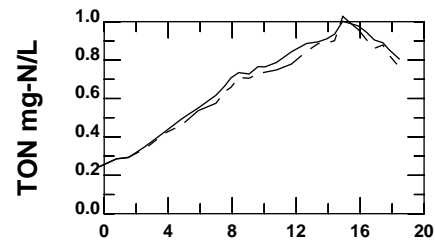
**MODEL**

—— SURFACE 30-DAY MEAN  
 - - - - BOTTOM 30-DAY MEAN  
 - - - - 30-DAY SURFACE MAX OR  
 BOTTOM MIN

**CONEY ISLAND JAMAICA BAY TRANSECT**



MILE FROM LOWER NEW YORK BAY



MILE FROM LOWER NEW YORK BAY

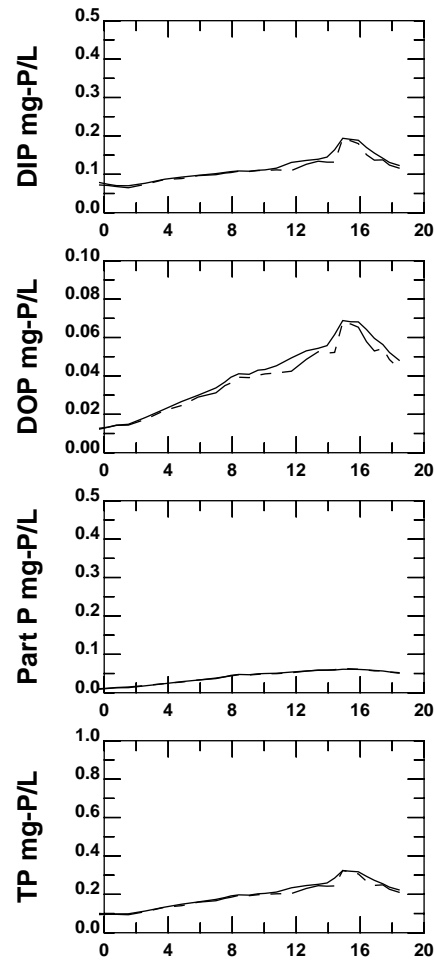
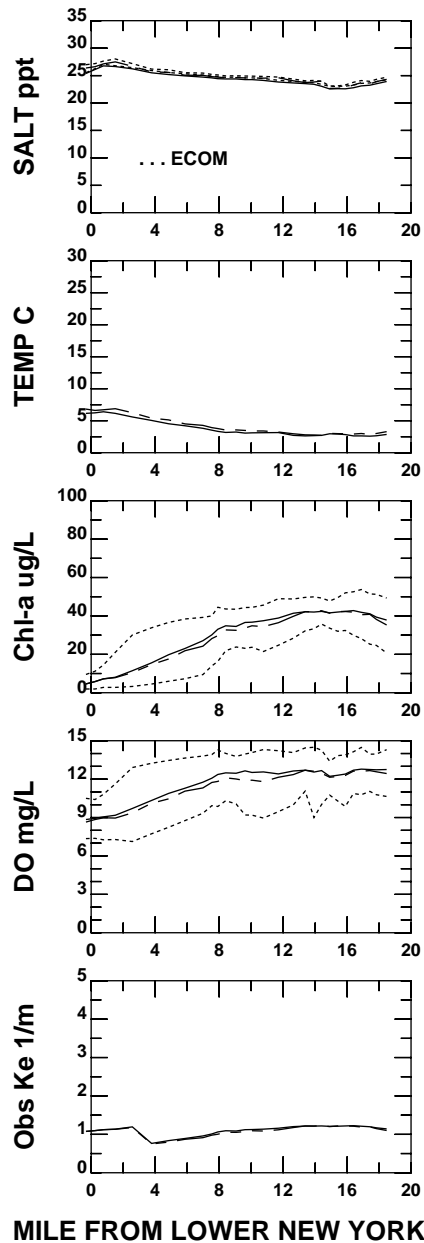
DATA Oct 31-Nov 29, 2000

	SURF		BOT	
Harbor Survey	△	▲	Transect	
	t	e	Embayment	
NYSDEC	○		Transect	
	c		Embayment	

MODEL

————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

## CONEY ISLAND JAMAICA BAY TRANSECT



**MILE FROM LOWER NEW YORK BAY**

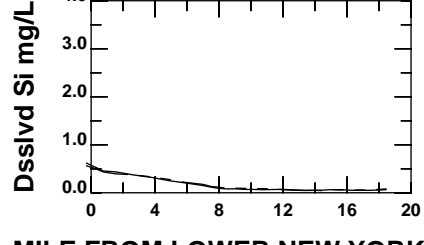
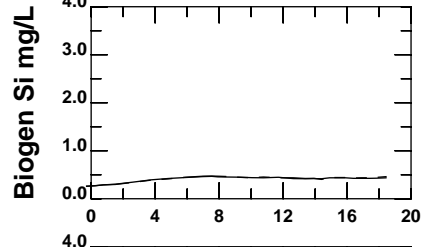
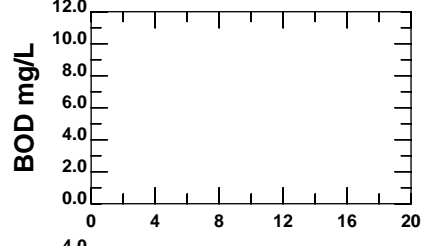
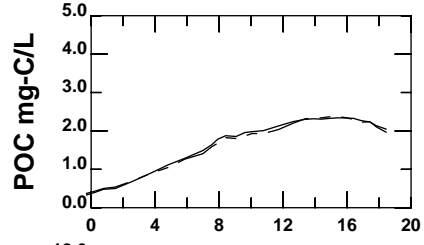
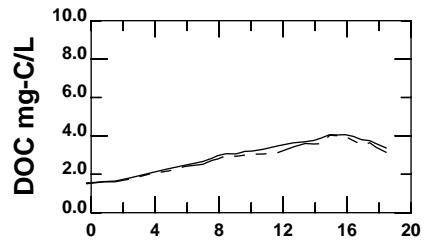
**DATA Nov 30-Dec 29,2000**

	<b>SURF</b>	<b>BOT</b>	
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment

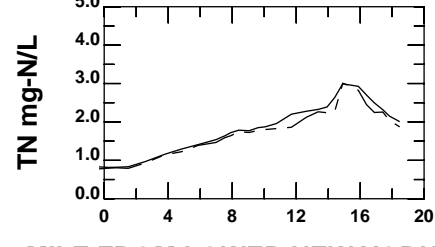
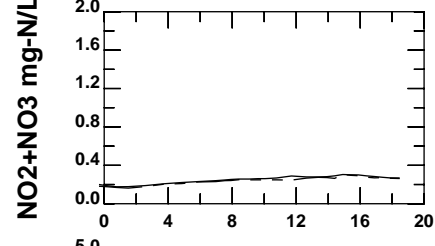
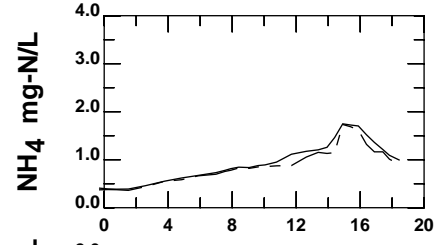
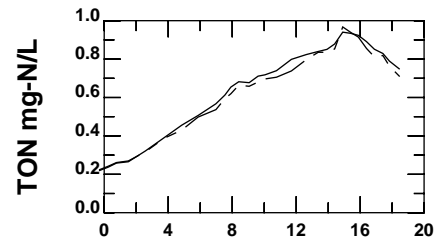
**MODEL**

————	<b>SURFACE 30-DAY MEAN</b>
-----	<b>BOTTOM 30-DAY MEAN</b>
- - - -	<b>30-DAY SURFACE MAX OR BOTTOM MIN</b>

**CONEY ISLAND JAMAICA BAY TRANSECT**



MILE FROM LOWER NEW YORK BAY



MILE FROM LOWER NEW YORK BAY

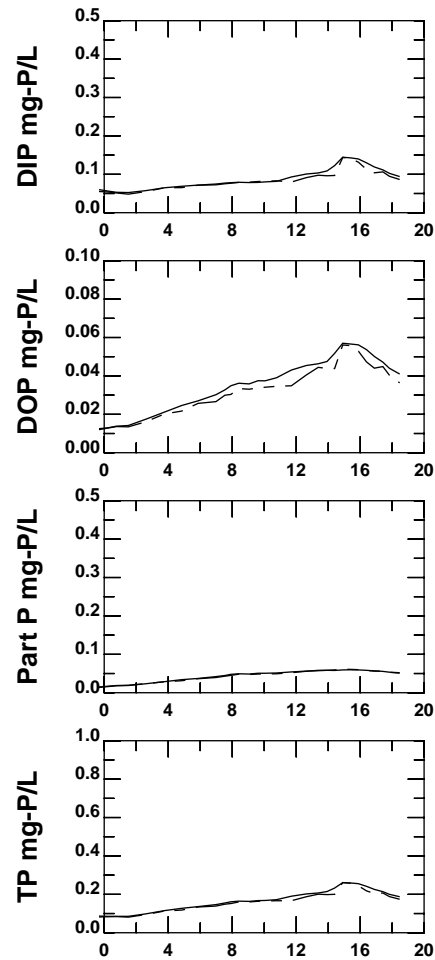
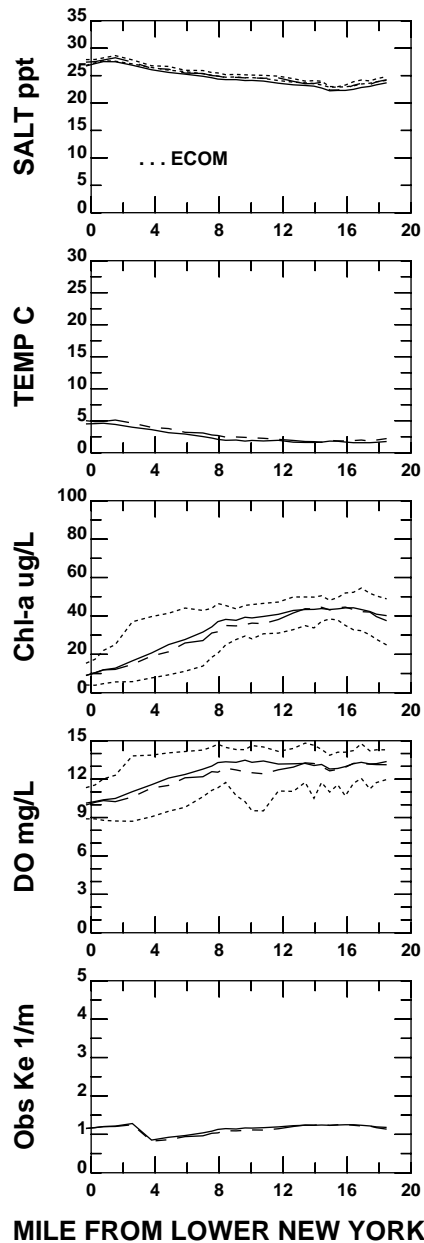
DATA Nov 30-Dec 29,2000

	SURF		BOT	
Harbor Survey	△	▲	Transect	
	t	e	Embayment	
NYSDEC	○		Transect	
	c		Embayment	

MODEL

————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

### CONEY ISLAND JAMAICA BAY TRANSECT



**MILE FROM LOWER NEW YORK BAY**

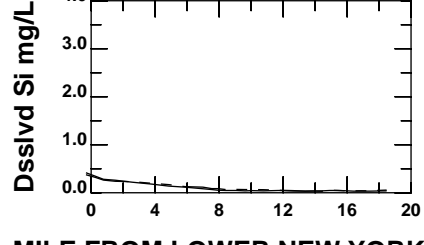
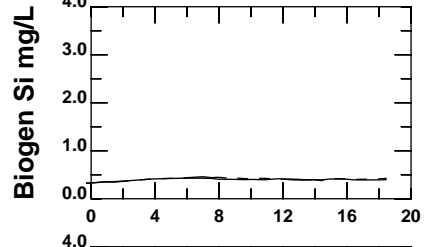
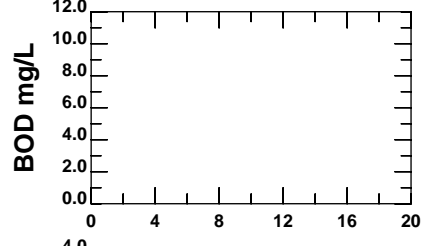
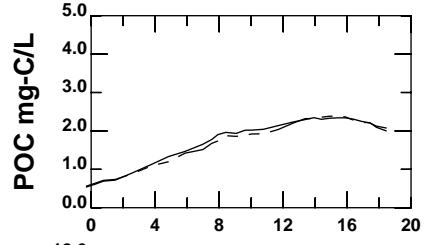
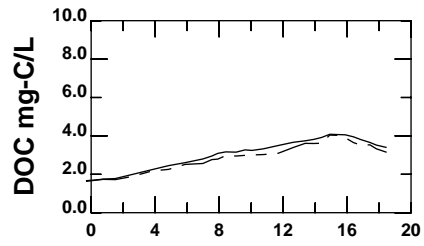
DATA Dec 30 2000 -Jan 28,2001

Harbor Survey SURF BOT  
 △ ▲ Transect  
 t e Embayment  
 NYSDEC ○ Transect  
 c Embayment

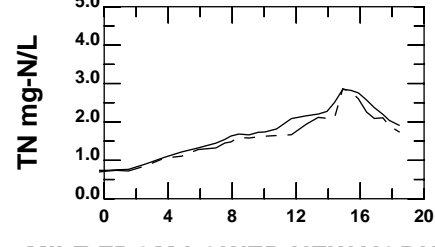
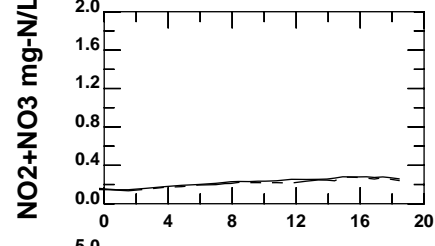
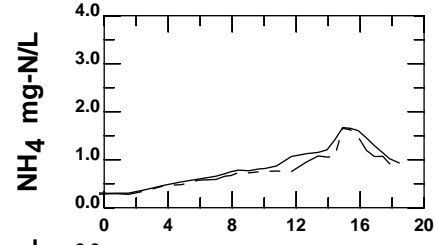
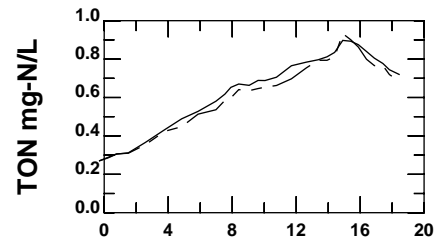
**MODEL**

— SURFACE 30-DAY MEAN  
 - - - - - BOTTOM 30-DAY MEAN  
 - - - 30-DAY SURFACE MAX OR  
 BOTTOM MIN

**CONEY ISLAND JAMAICA BAY TRANSECT**



MILE FROM LOWER NEW YORK BAY



MILE FROM LOWER NEW YORK BAY

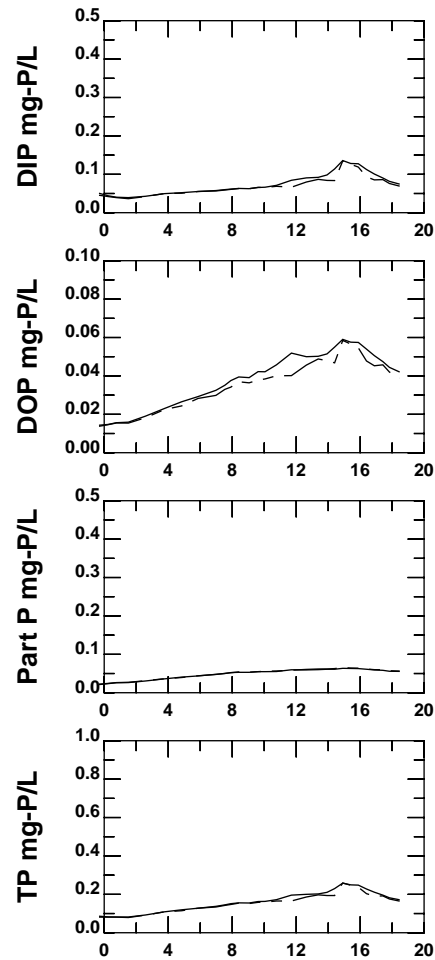
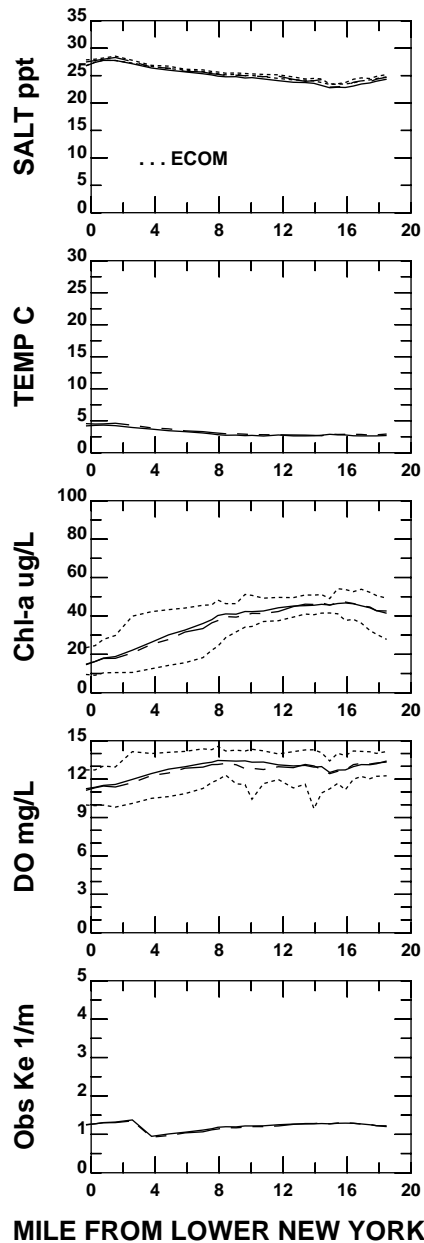
DATA Dec 30 2000 -Jan 28,2001

	SURF		BOT	
Harbor Survey	△	▲	Transect	
	t	e	Embayment	
NYSDEC	○		Transect	
	c		Embayment	

MODEL

————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

## CONEY ISLAND JAMAICA BAY TRANSECT



**MILE FROM LOWER NEW YORK BAY**

DATA Jan 29-Feb 27, 2001

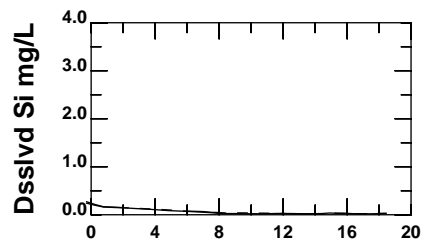
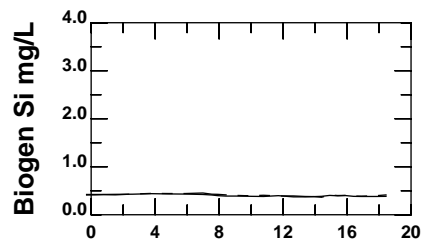
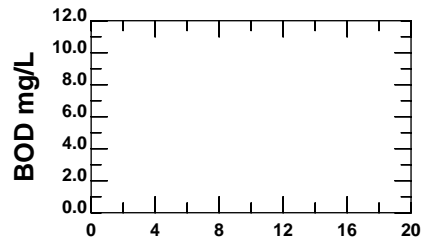
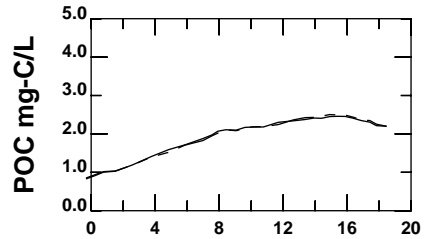
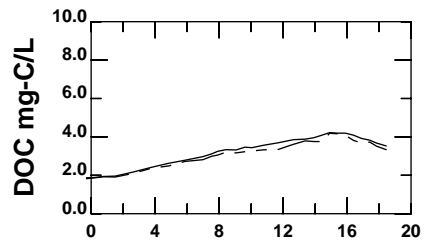
Harbor Survey    SURF    BOT  
 △    ▲    Transect  
 t    e    Embayment  
 NYSDEC    ○    Transect  
           c    Embayment

**MODEL**

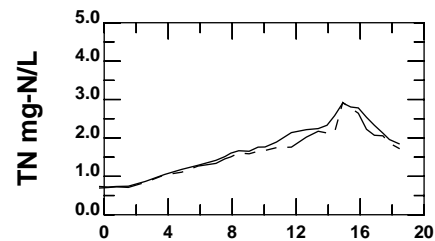
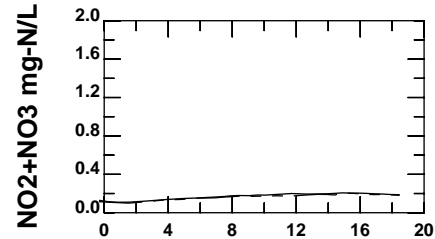
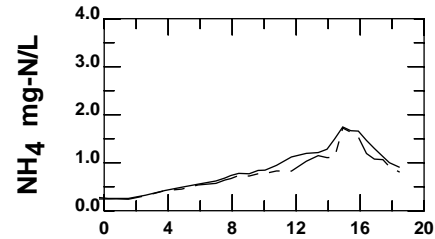
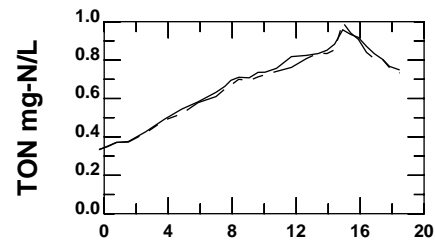
—— SURFACE 30-DAY MEAN  
 - - - - BOTTOM 30-DAY MEAN  
 - - - 30-DAY SURFACE MAX OR  
 BOTTOM MIN

**CONEY ISLAND JAMAICA BAY TRANSECT**





MILE FROM LOWER NEW YORK BAY



MILE FROM LOWER NEW YORK BAY

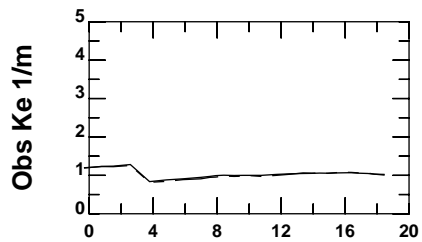
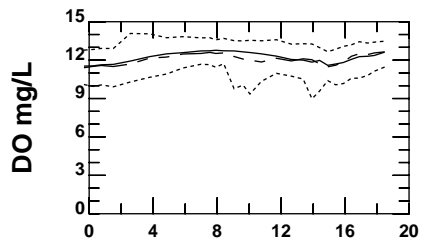
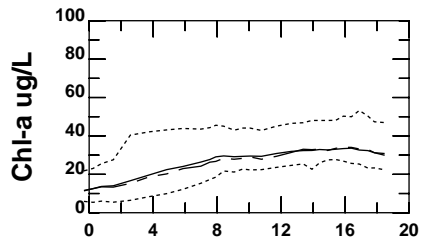
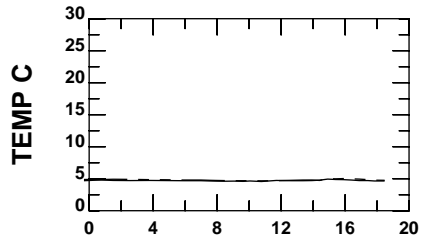
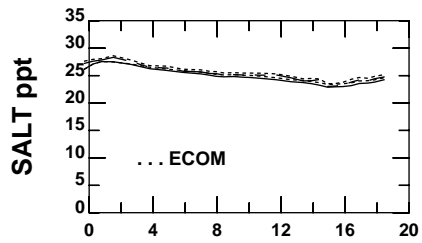
DATA Jan 29-Feb 27, 2001

	SURF		BOT	
Harbor Survey	△	▲	Transect	
	t	e	Embayment	
NYSDEC	○		Transect	
	c		Embayment	

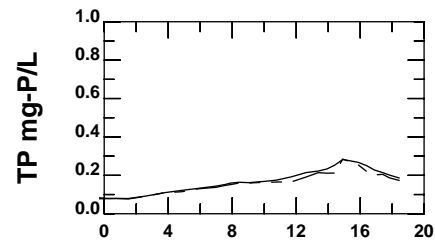
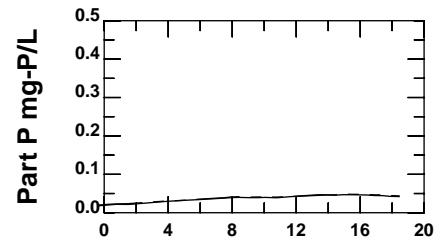
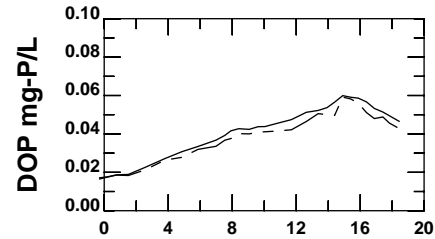
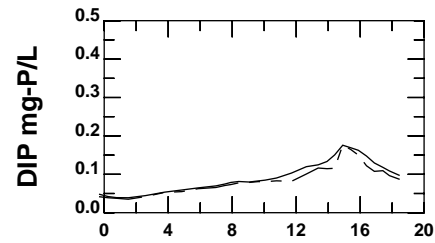
MODEL

————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

## CONEY ISLAND JAMAICA BAY TRANSECT



MILE FROM LOWER NEW YORK BAY



MILE FROM LOWER NEW YORK BAY

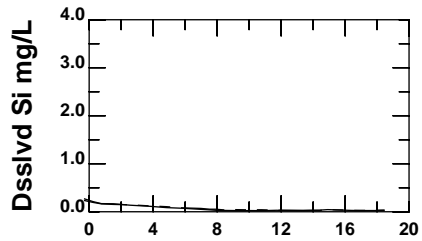
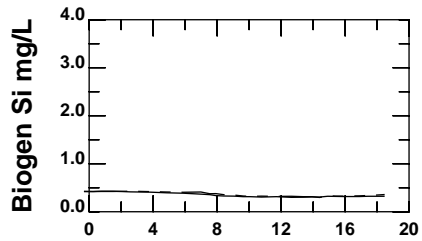
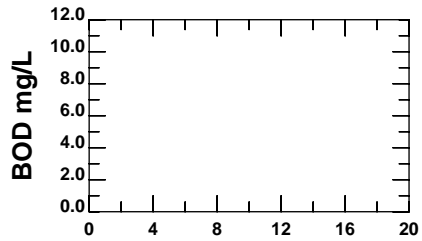
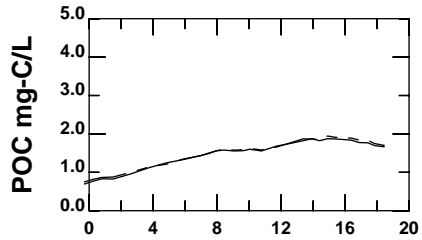
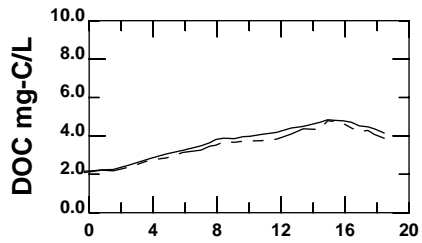
DATA Feb 28-Mar 29, 2001

	SURF		BOT	
Harbor Survey	△	▲	Transect	
	t	e	Embayment	
NYSDEC	○		Transect	
	c		Embayment	

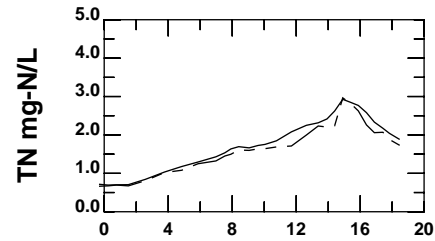
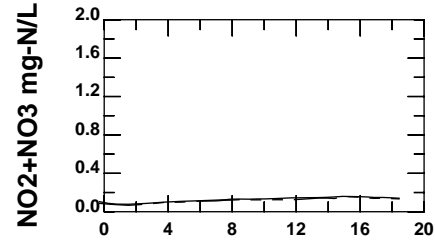
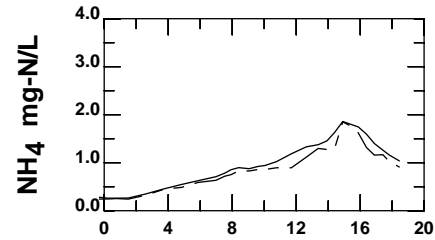
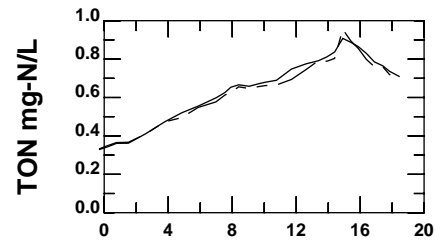
MODEL

—	SURFACE 30-DAY MEAN
- - -	BOTTOM 30-DAY MEAN
- . - .	30-DAY SURFACE MAX OR BOTTOM MIN

## CONEY ISLAND JAMAICA BAY TRANSECT



MILE FROM LOWER NEW YORK BAY



MILE FROM LOWER NEW YORK BAY

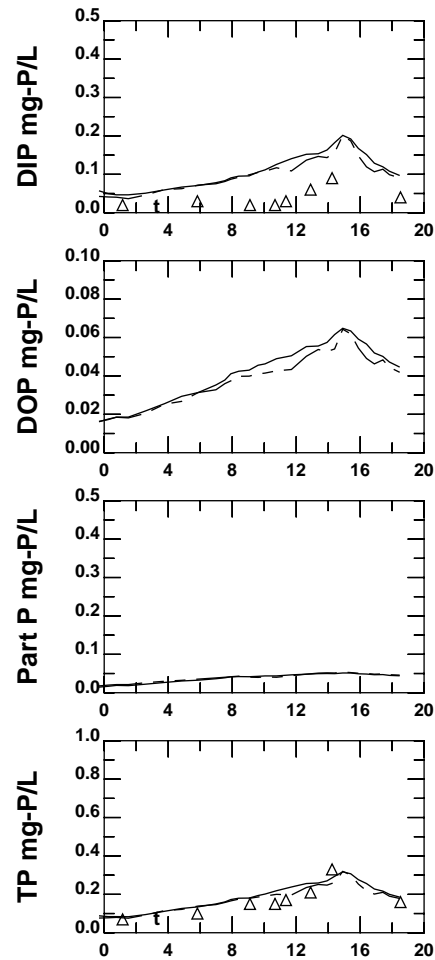
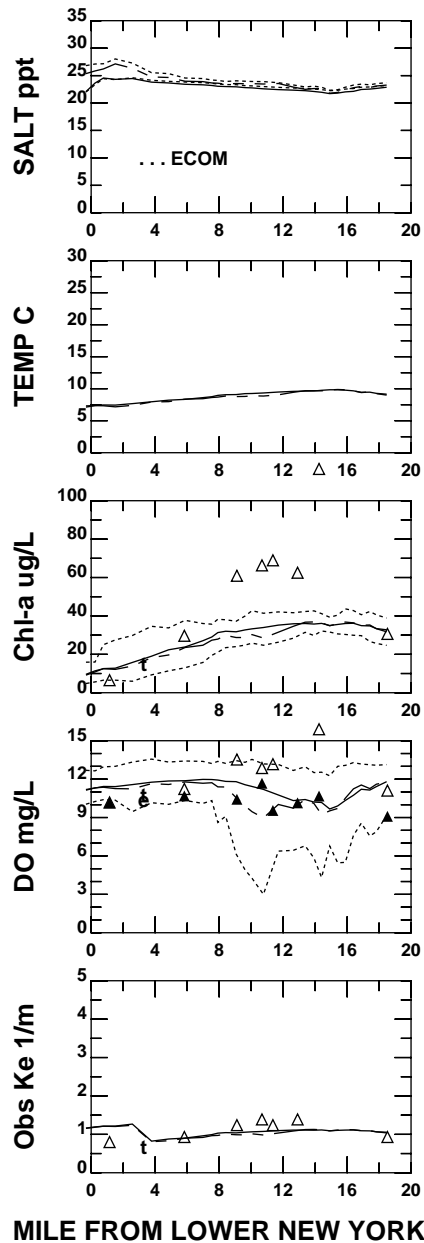
DATA Feb 28-Mar 29, 2001

	SURF		BOT	
Harbor Survey	△	▲	Transect	
	t	e	Embayment	
NYSDEC	○		Transect	
	c		Embayment	

MODEL

————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

## CONEY ISLAND JAMAICA BAY TRANSECT



**MILE FROM LOWER NEW YORK BAY**

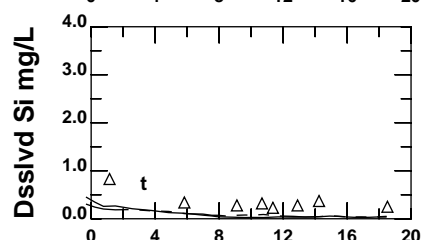
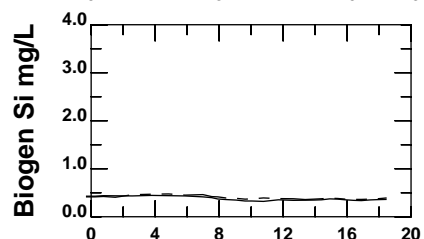
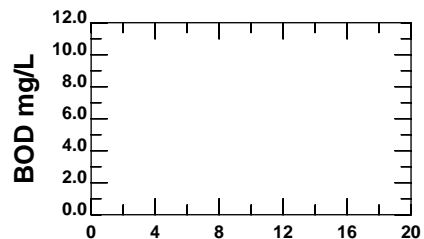
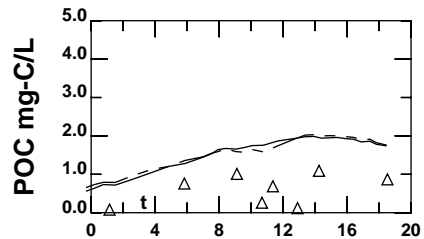
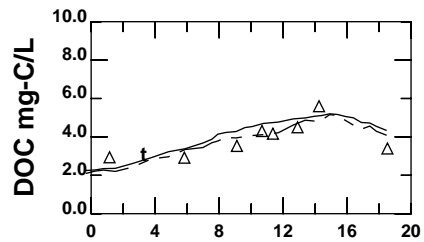
DATA Mar 30-Apr 28, 2001

	SURF		BOT	
Harbor Survey	△	▲	Transect	
	t	e	Embayment	
NYSDEC	○		Transect	
	c		Embayment	

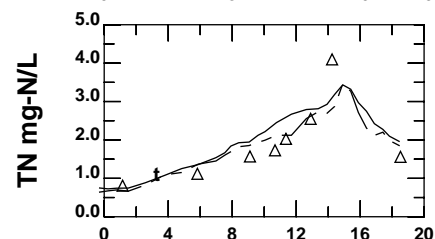
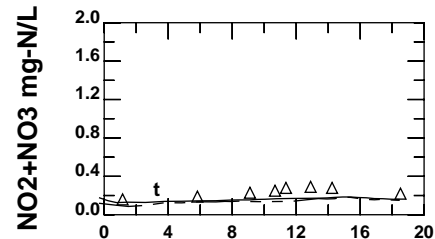
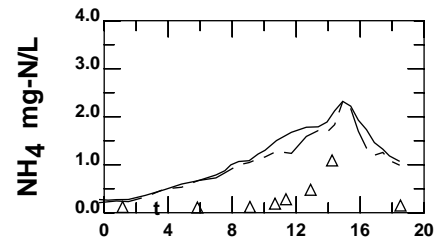
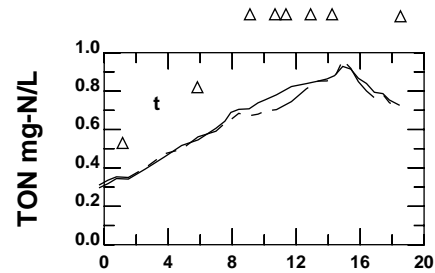
**MODEL**

————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

**CONEY ISLAND JAMAICA BAY TRANSECT**



MILE FROM LOWER NEW YORK BAY



MILE FROM LOWER NEW YORK BAY

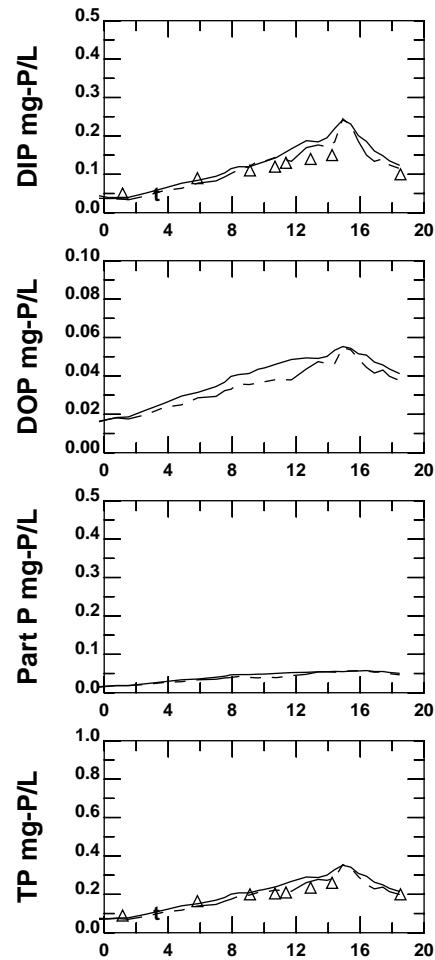
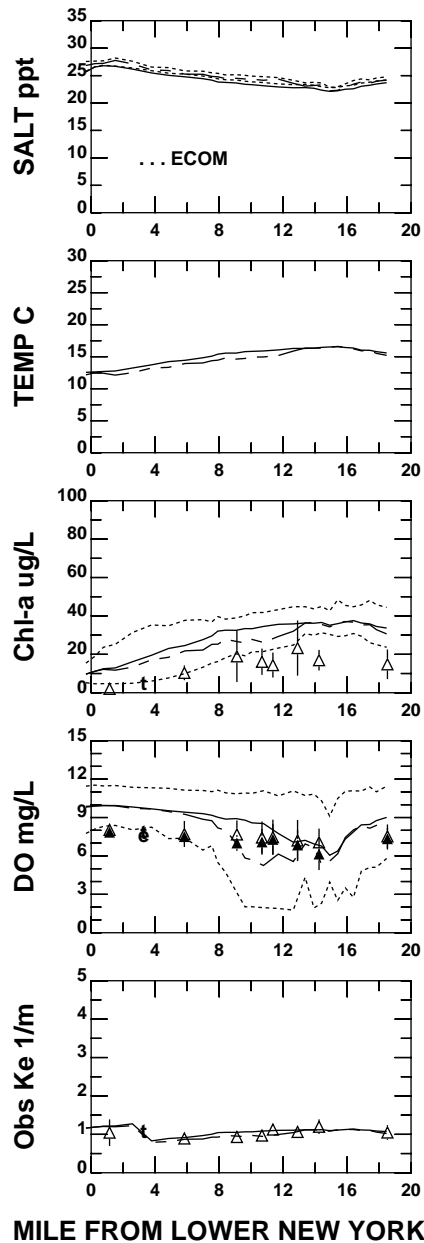
DATA Mar 30-Apr 28, 2001

	SURF		BOT	
Harbor Survey	△	▲	Transect	Transect
NYSDEC	t	e	Embayment	Embayment
	○		Transect	
	c		Embayment	

MODEL

—	SURFACE 30-DAY MEAN
- - -	BOTTOM 30-DAY MEAN
- · -	30-DAY SURFACE MAX OR BOTTOM MIN

# CONEY ISLAND JAMAICA BAY TRANSECT



**MILE FROM LOWER NEW YORK BAY**

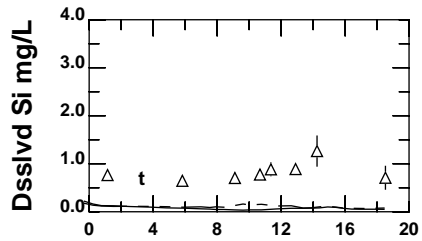
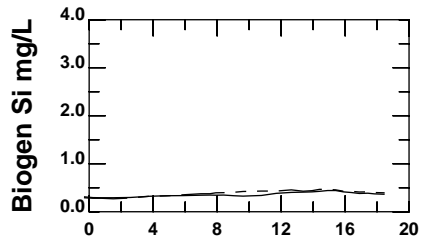
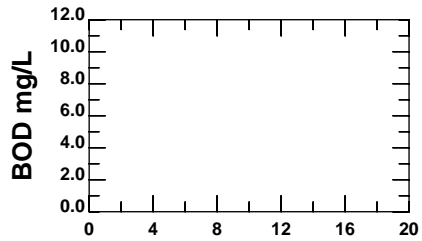
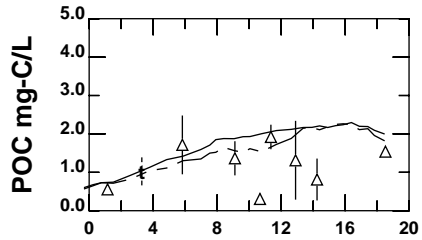
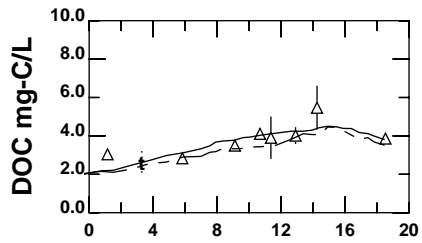
DATA Apr 29-May 28, 2001

Harbor Survey    SURF BOT  
 △    ▲    Transect  
 t    e    Embayment  
 NYSDEC    ○    Transect  
           c    Embayment

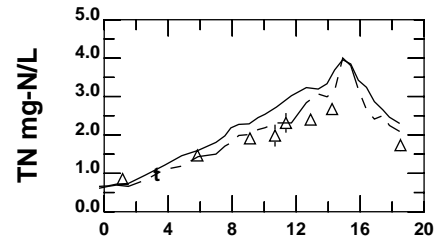
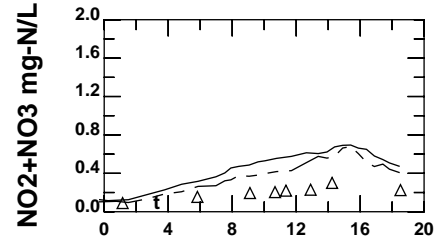
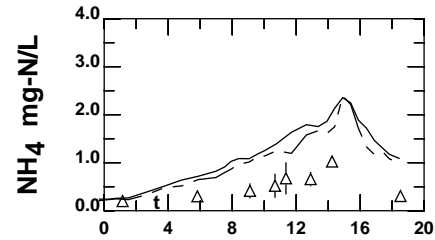
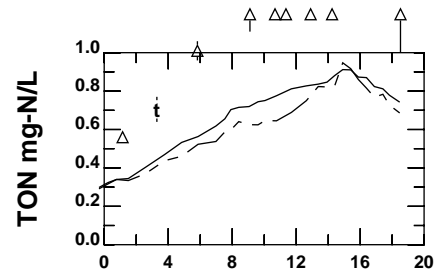
**MODEL**

—— SURFACE 30-DAY MEAN  
 - - - - - BOTTOM 30-DAY MEAN  
 - - - 30-DAY SURFACE MAX OR  
 BOTTOM MIN

**CONEY ISLAND JAMAICA BAY TRANSECT**



MILE FROM LOWER NEW YORK BAY



MILE FROM LOWER NEW YORK BAY

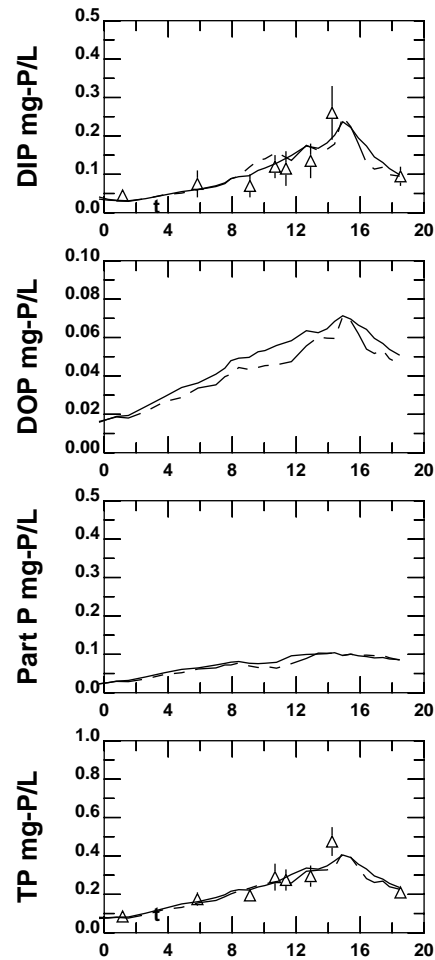
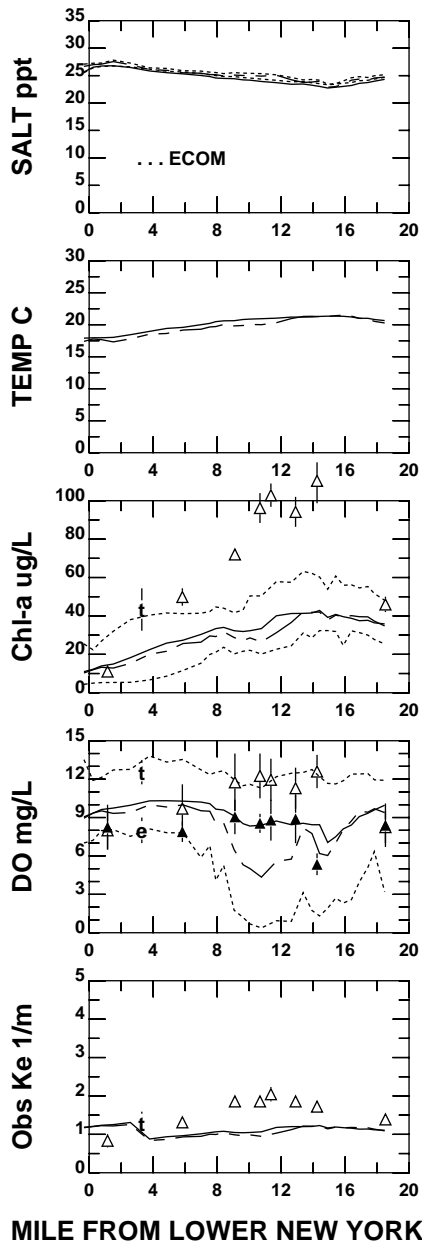
DATA Apr 29-May 28, 2001

	SURF		BOT	
Harbor Survey	△	▲	Transect	
	t	e	Embayment	
NYSDEC	○		Transect	
	c		Embayment	

MODEL

—	SURFACE 30-DAY MEAN
- - - -	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

CONEY ISLAND JAMAICA BAY TRANSECT



**MILE FROM LOWER NEW YORK BAY**

**DATA** May 29-Jun 27, 2001

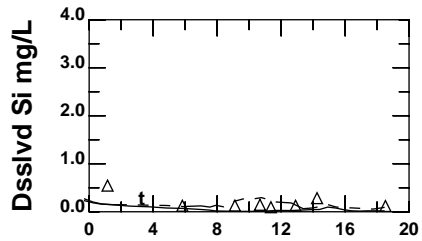
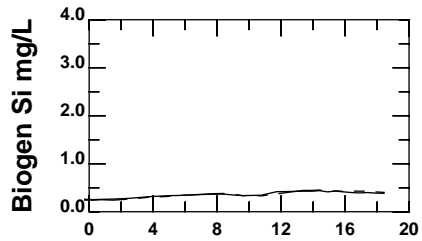
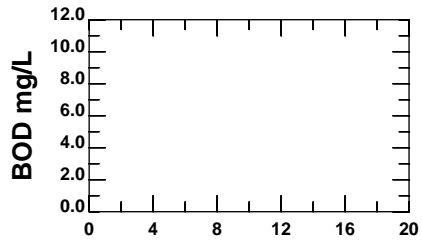
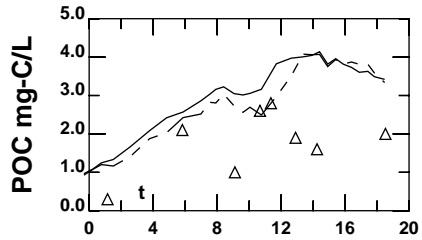
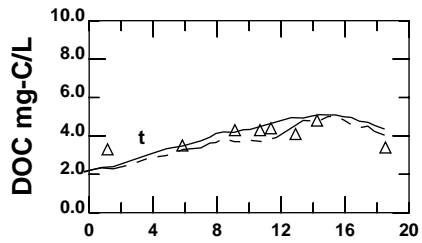
	<b>SURF</b>	<b>BOT</b>	
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment

**MODEL**

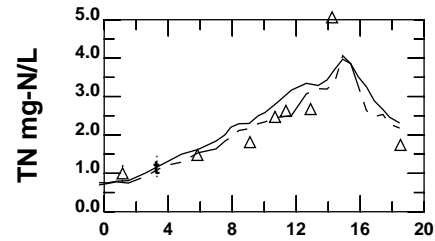
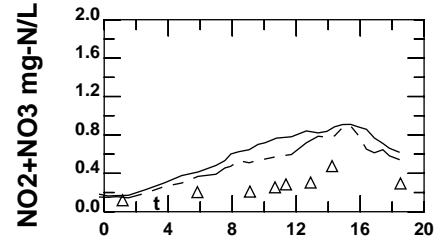
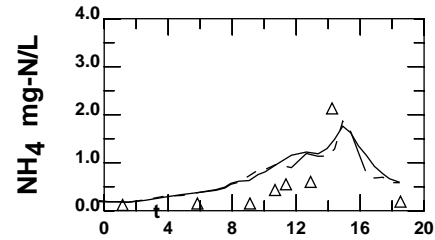
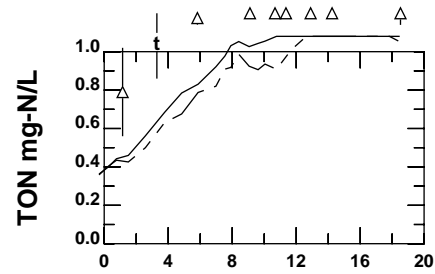
—	<b>SURFACE 30-DAY MEAN</b>
- - - -	<b>BOTTOM 30-DAY MEAN</b>
- - - -	<b>30-DAY SURFACE MAX OR BOTTOM MIN</b>

**CONEY ISLAND JAMAICA BAY TRANSECT**





MILE FROM LOWER NEW YORK BAY



MILE FROM LOWER NEW YORK BAY

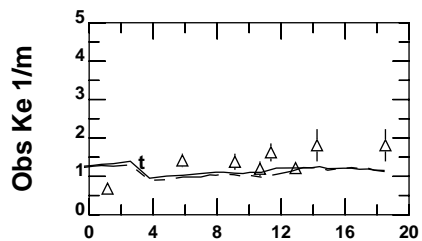
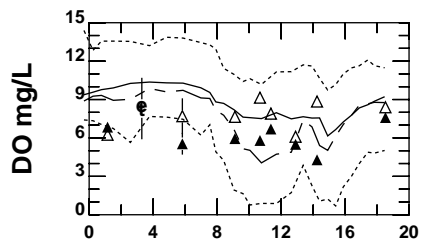
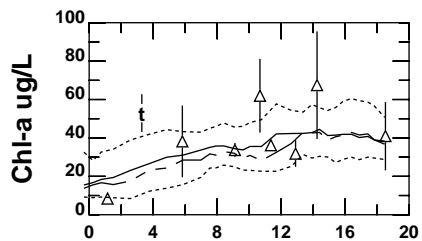
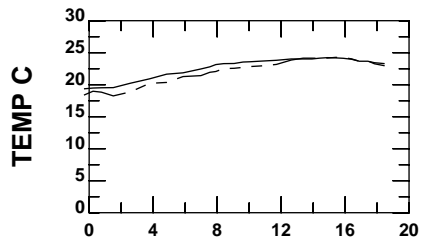
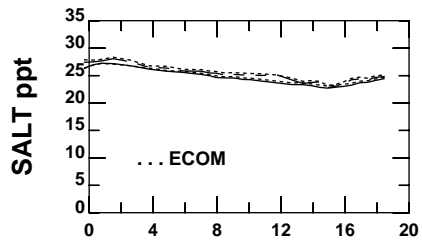
DATA May 29-Jun 27, 2001

	SURF		BOT	
Harbor Survey	△	▲	Transect	Embayment
NYSDEC	t	e	Transect	Embayment
	○	c	Transect	Embayment

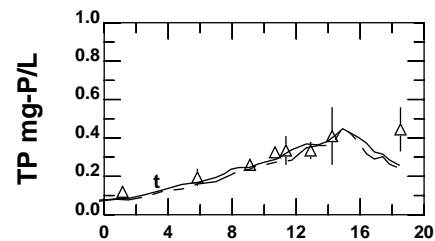
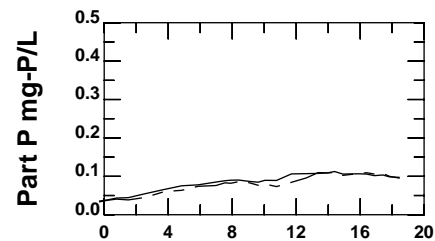
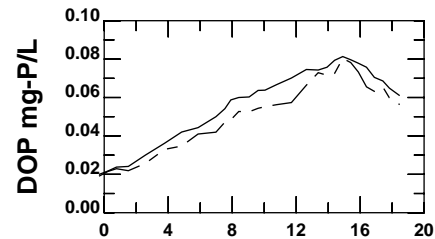
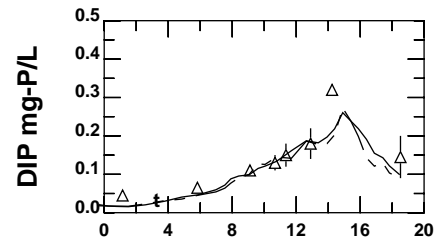
MODEL

—	SURFACE 30-DAY MEAN
- - - -	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

## CONEY ISLAND JAMAICA BAY TRANSECT



MILE FROM LOWER NEW YORK BAY



MILE FROM LOWER NEW YORK BAY

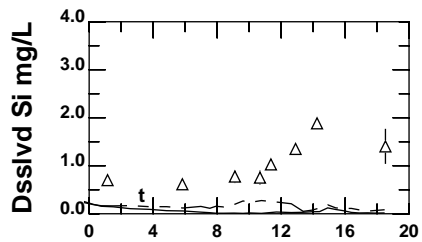
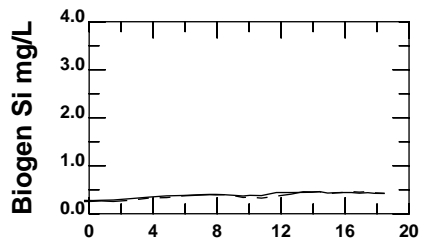
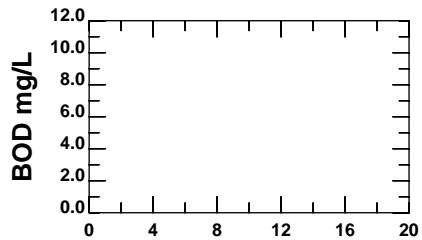
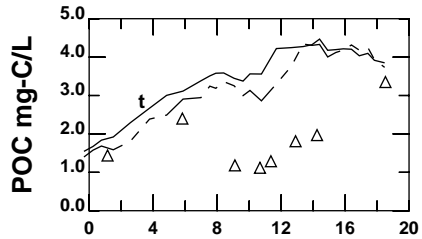
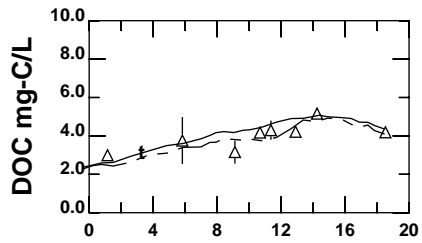
DATA Jun 28-Jul 27,2001

	SURF		BOT	
Harbor Survey	△	▲	Transect	Embayment
NYSDEC	t	e	Transect	Embayment
	○	c	Transect	Embayment

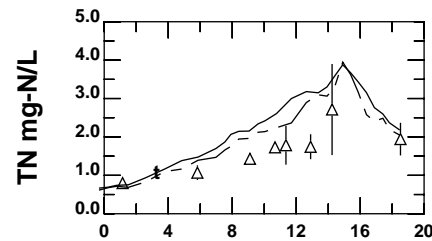
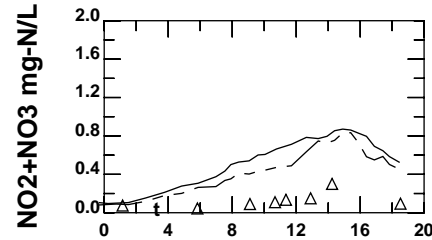
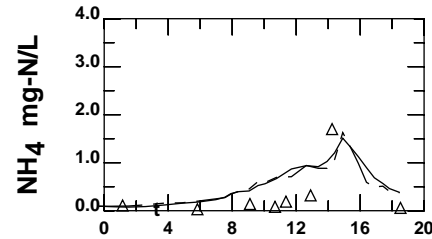
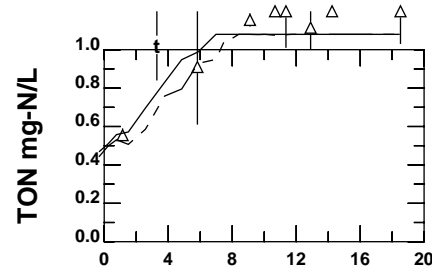
MODEL

—	SURFACE 30-DAY MEAN
- - -	BOTTOM 30-DAY MEAN
- - -	30-DAY SURFACE MAX OR BOTTOM MIN

## CONEY ISLAND JAMAICA BAY TRANSECT



MILE FROM LOWER NEW YORK BAY



MILE FROM LOWER NEW YORK BAY

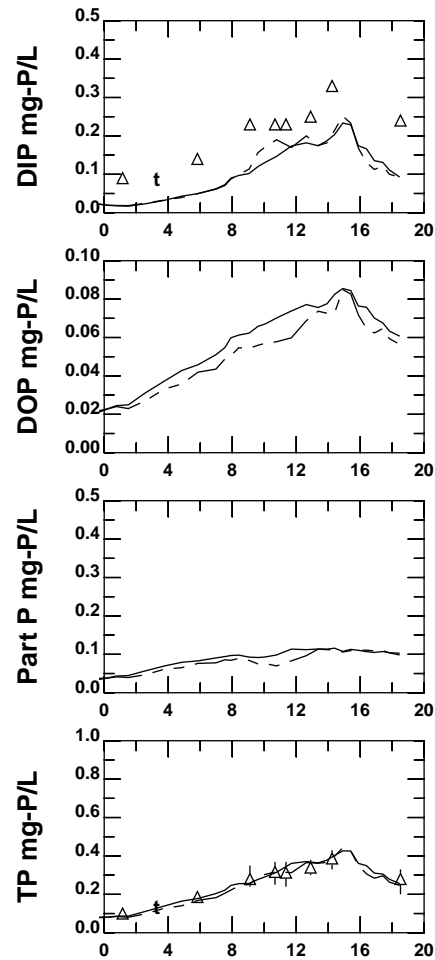
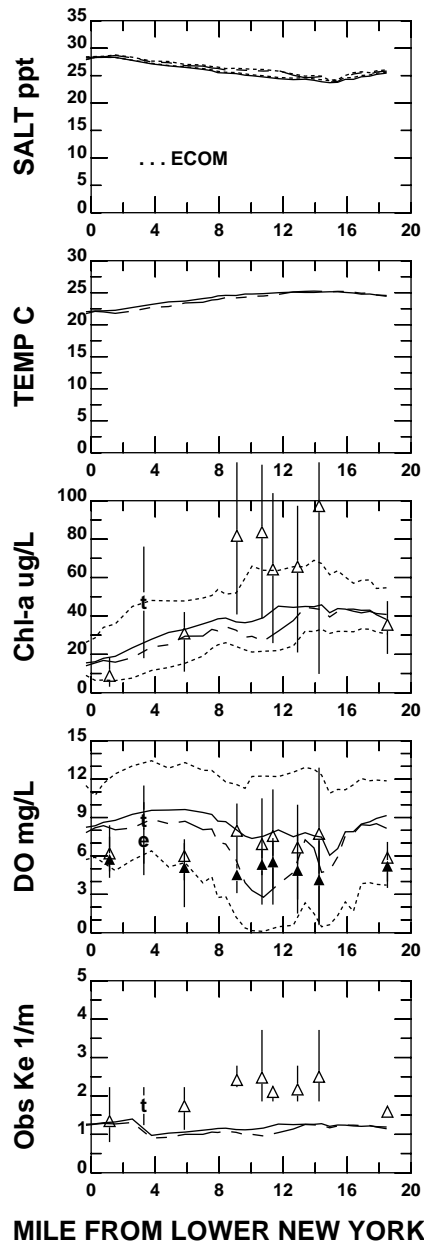
DATA Jun 28-Jul 27,2001

	SURF BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment

MODEL

—	SURFACE 30-DAY MEAN
- - -	BOTTOM 30-DAY MEAN
- - -	30-DAY SURFACE MAX OR BOTTOM MIN

# CONEY ISLAND JAMAICA BAY TRANSECT



**MILE FROM LOWER NEW YORK BAY**

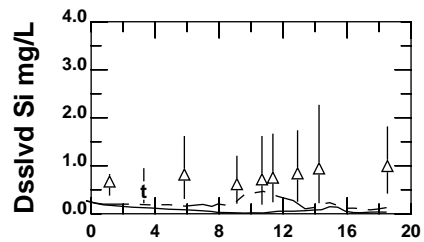
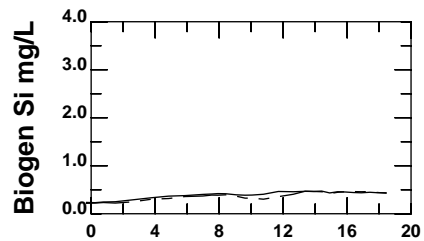
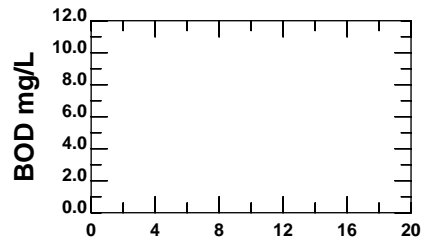
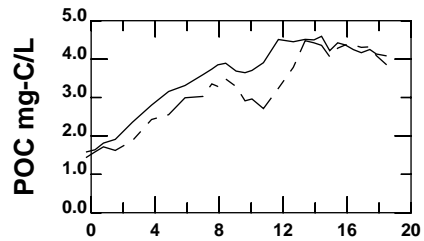
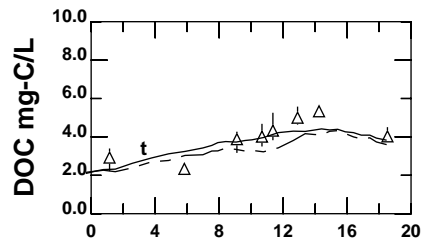
DATA Jul 27-Aug 26,2001

Harbor Survey SURF BOT  
 △ ▲ Transect  
 t e Embayment  
 NYSDEC ○ c Transect  
 Embayment

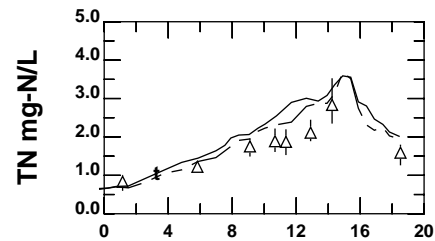
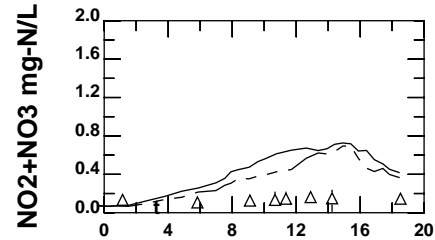
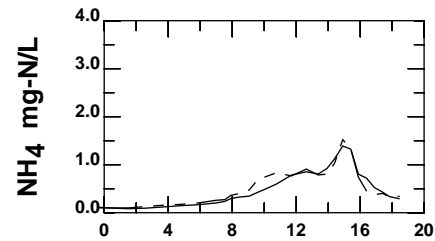
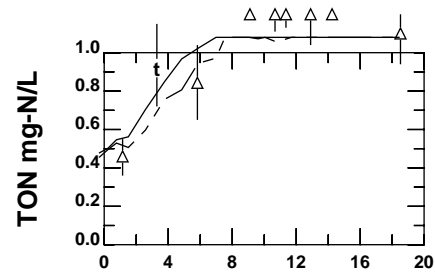
**MODEL**

— SURFACE 30-DAY MEAN  
 - - - - - BOTTOM 30-DAY MEAN  
 - - 30-DAY SURFACE MAX OR  
 BOTTOM MIN

**CONEY ISLAND JAMAICA BAY TRANSECT**



MILE FROM LOWER NEW YORK BAY



MILE FROM LOWER NEW YORK BAY

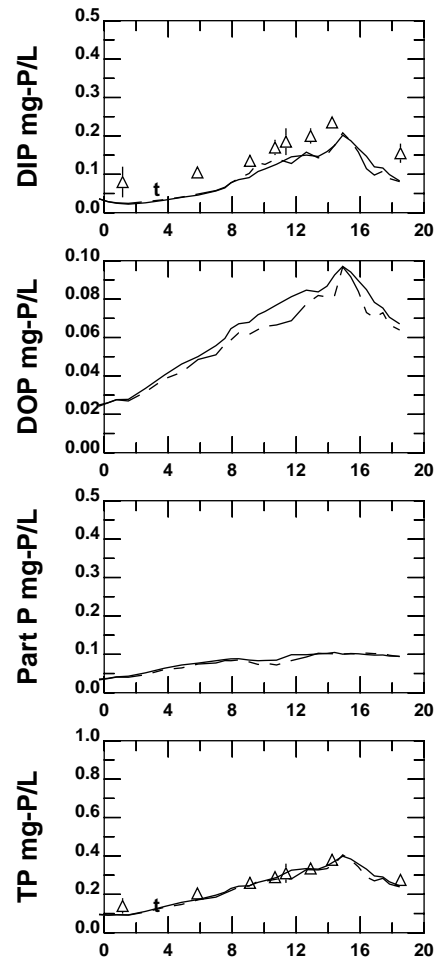
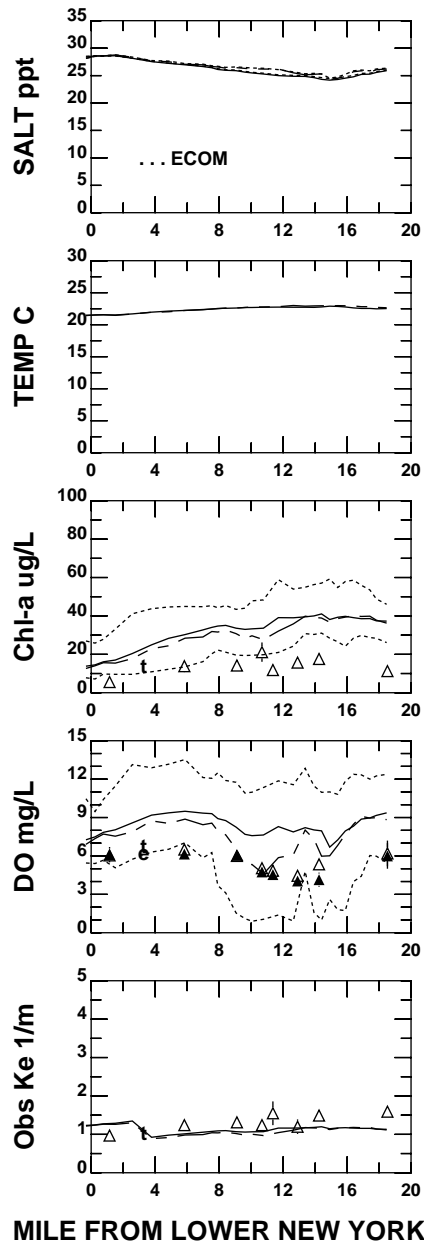
DATA Jul 27-Aug 26, 2001

	SURF		BOT	
Harbor Survey	△	▲	Transect	Transect
	t	e	Embayment	Embayment
NYSDEC	○		Transect	
	c		Embayment	

MODEL

—	SURFACE 30-DAY MEAN
- - - -	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

# CONEY ISLAND JAMAICA BAY TRANSECT



MILE FROM LOWER NEW YORK BAY

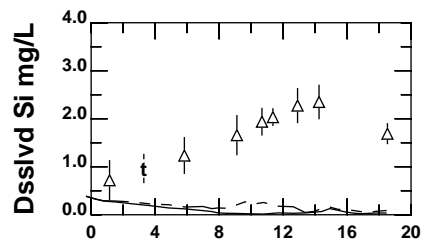
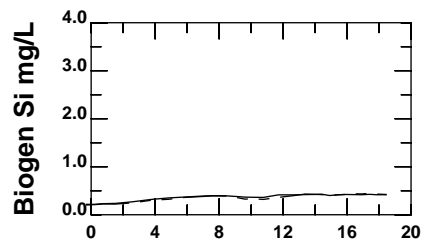
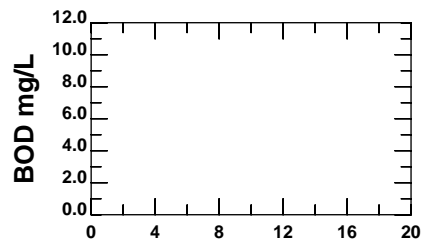
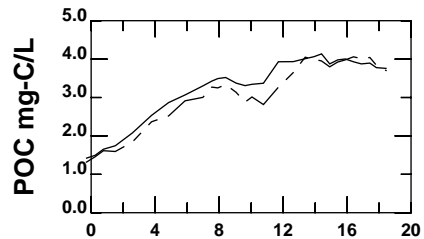
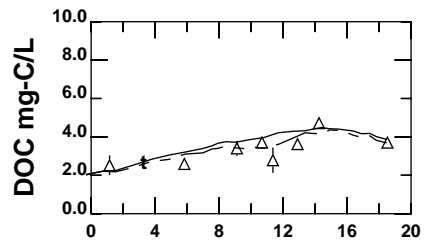
DATA Aug 27-Sep 25, 2001

	SURF		BOT	
Harbor Survey	△	▲	Transect	
	t	e	Embayment	
NYSDEC	○		Transect	
	c		Embayment	

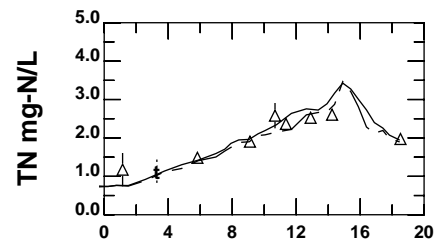
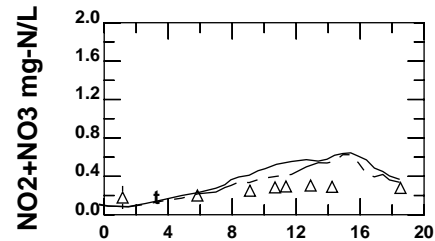
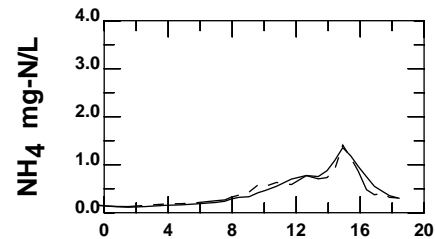
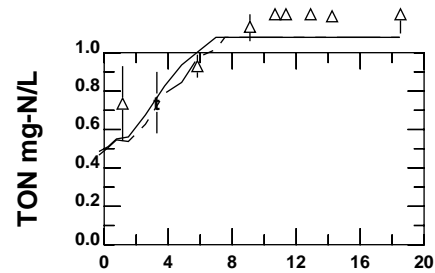
MODEL

—	SURFACE 30-DAY MEAN
- - - -	BOTTOM 30-DAY MEAN
- . - .	30-DAY SURFACE MAX OR BOTTOM MIN

## CONEY ISLAND JAMAICA BAY TRANSECT



MILE FROM LOWER NEW YORK BAY



MILE FROM LOWER NEW YORK BAY

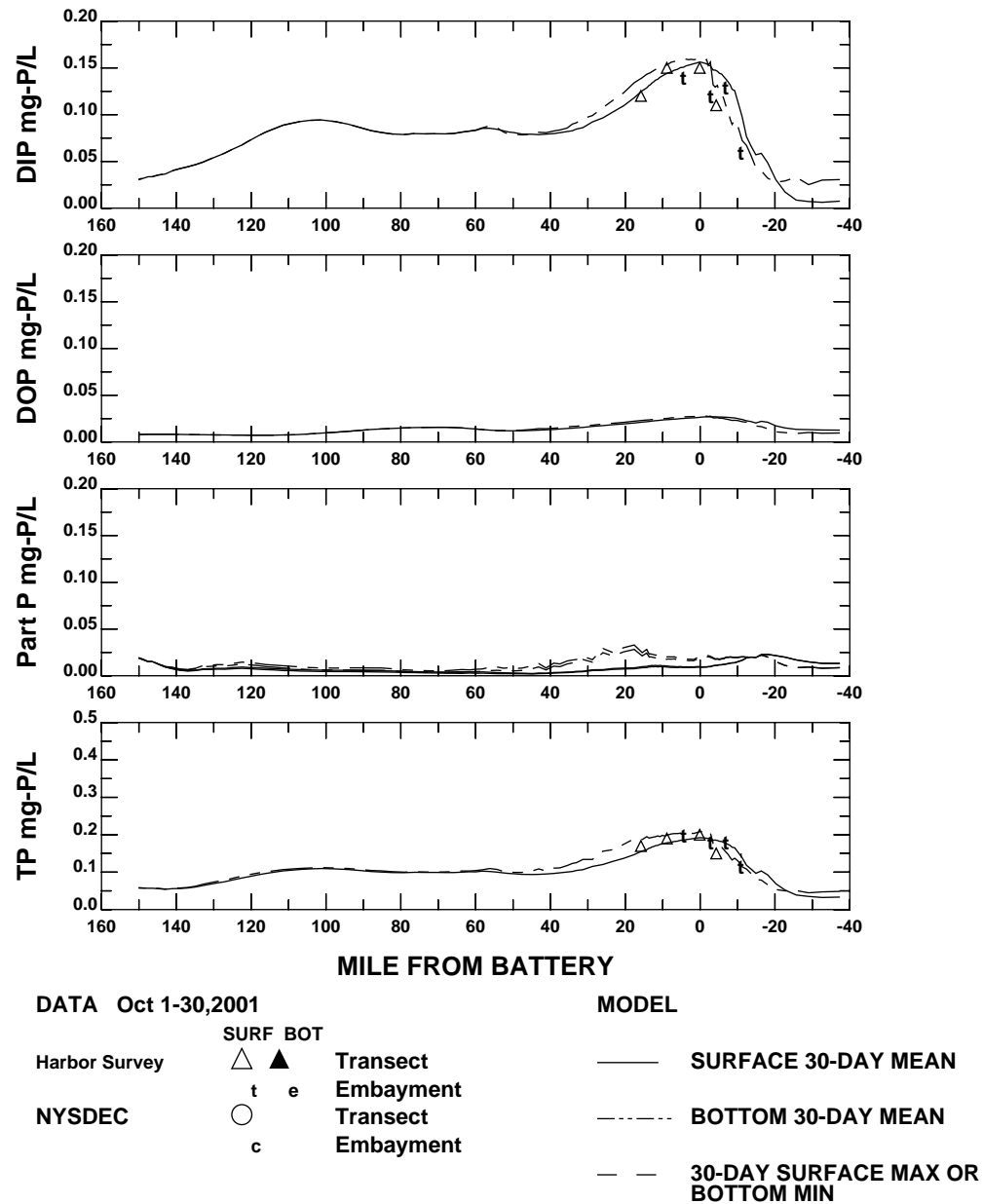
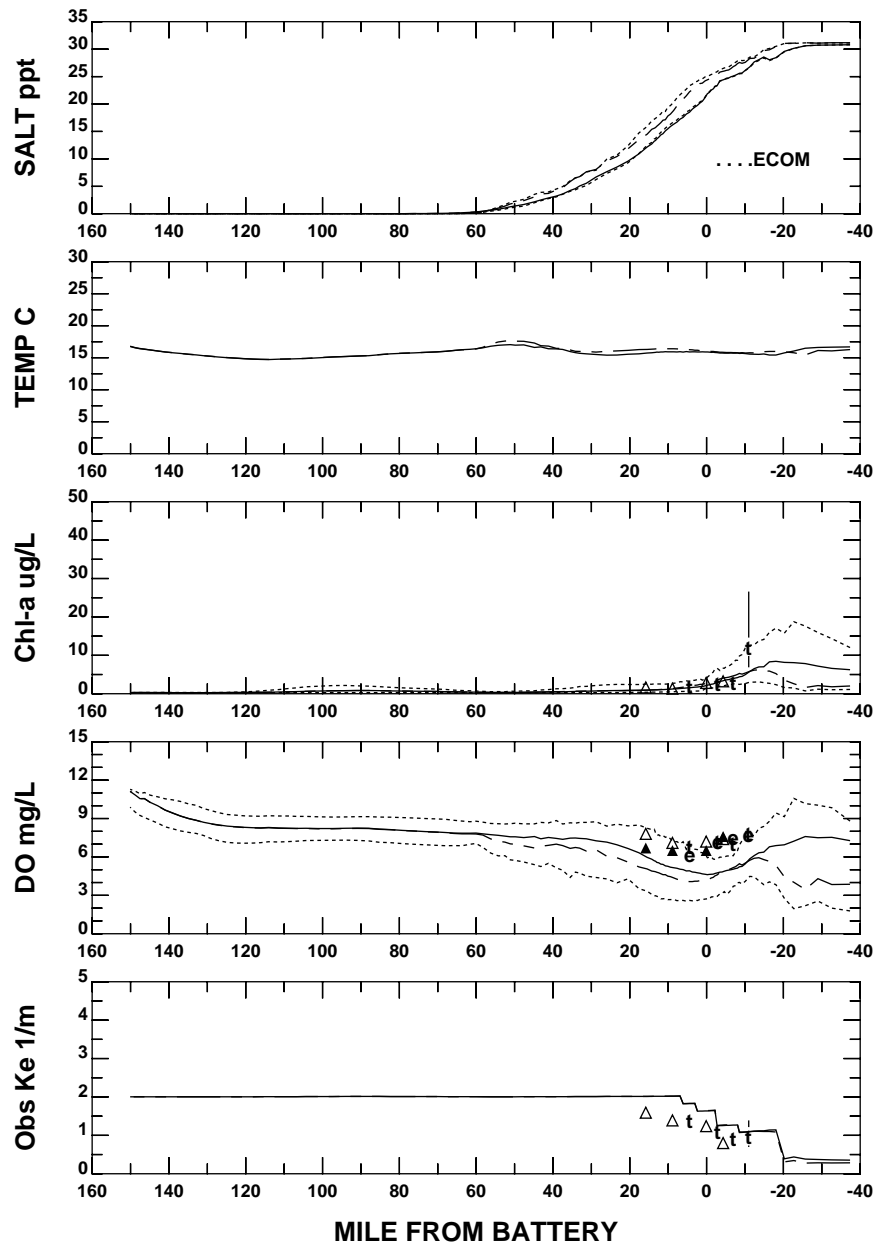
DATA Aug 27-Sep 25, 2001

	SURF		BOT	
Harbor Survey	△	▲	Transect	
	t	e	Embayment	
NYSDEC	○		Transect	
	c		Embayment	

MODEL

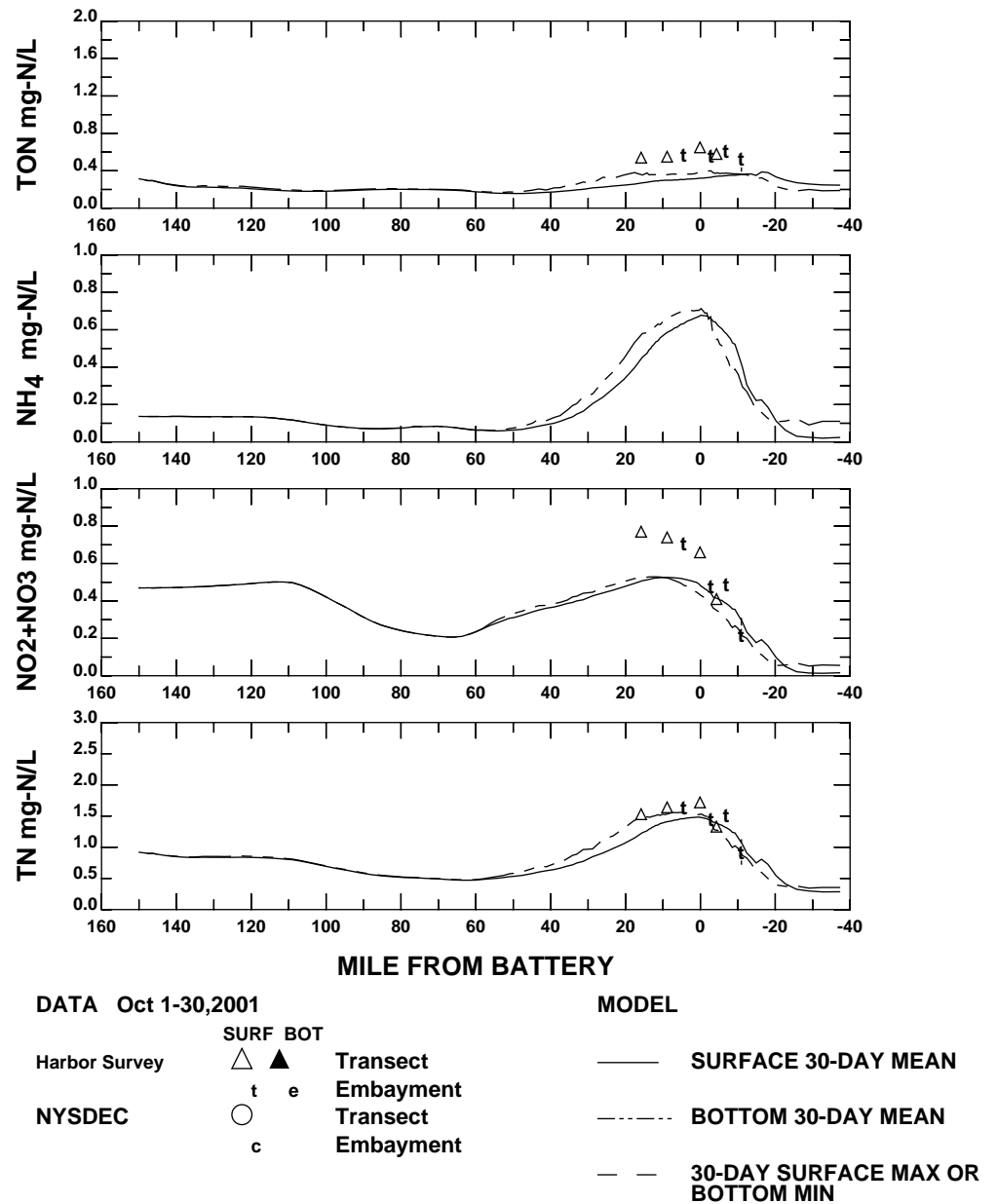
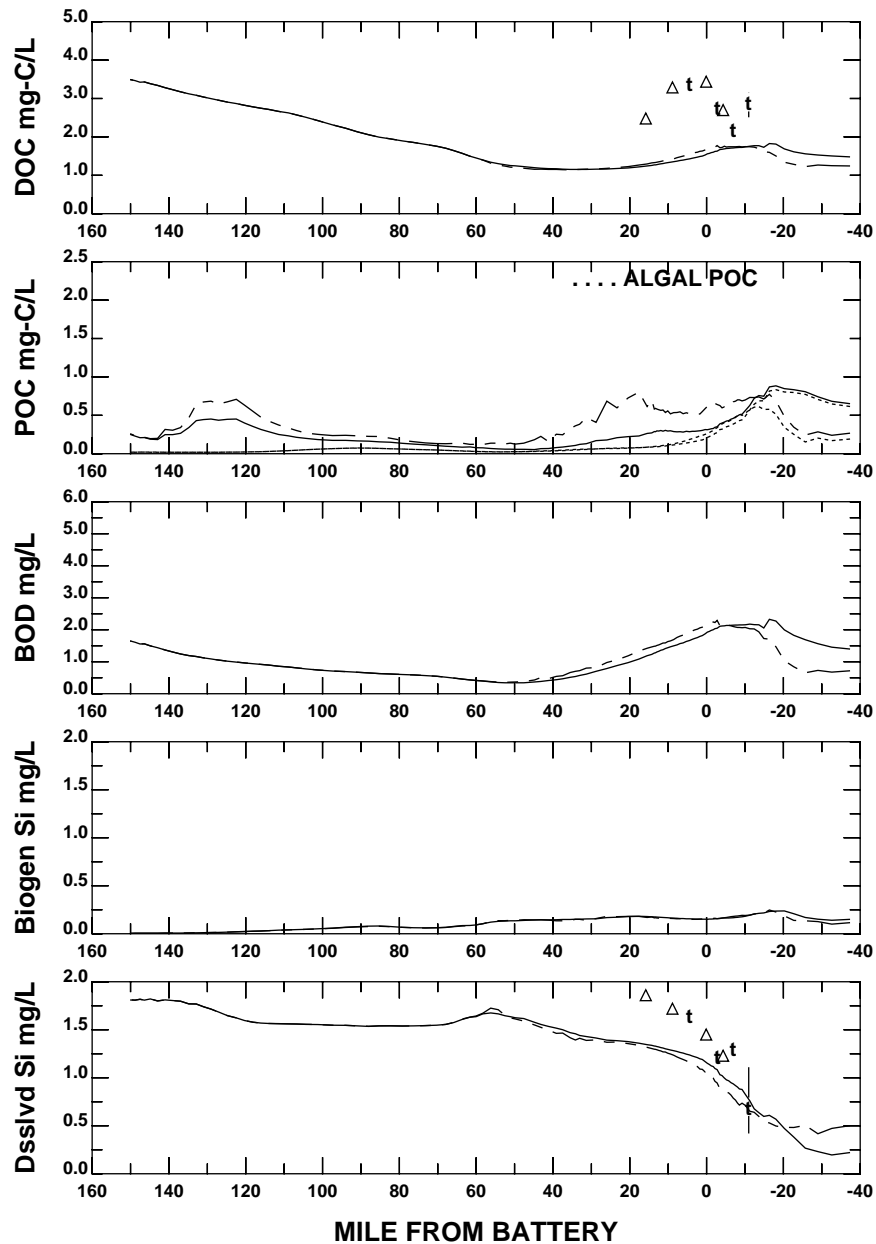
————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

### CONEY ISLAND JAMAICA BAY TRANSECT

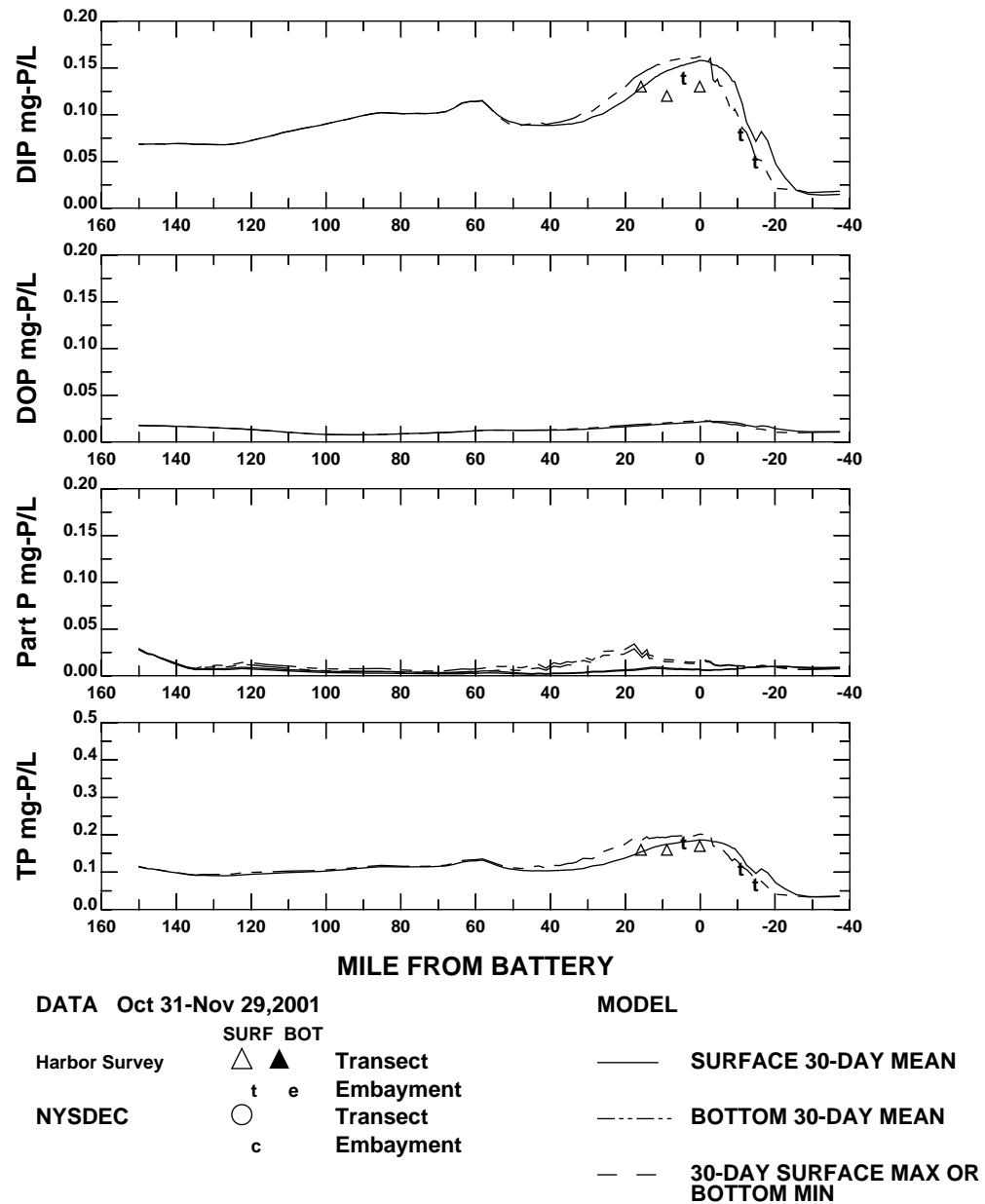
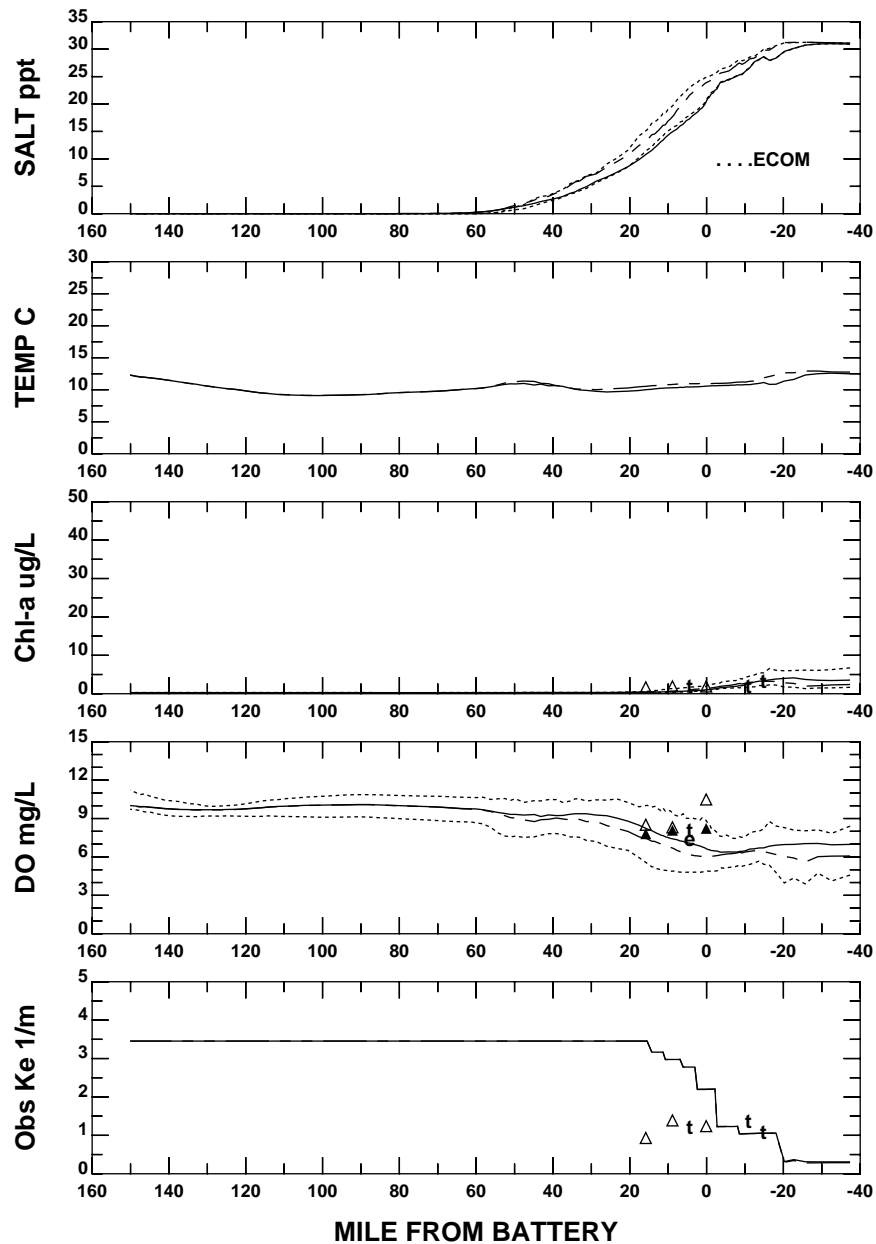


## HUDSON RIVER, UPPER AND LOWER BAY, OCEAN

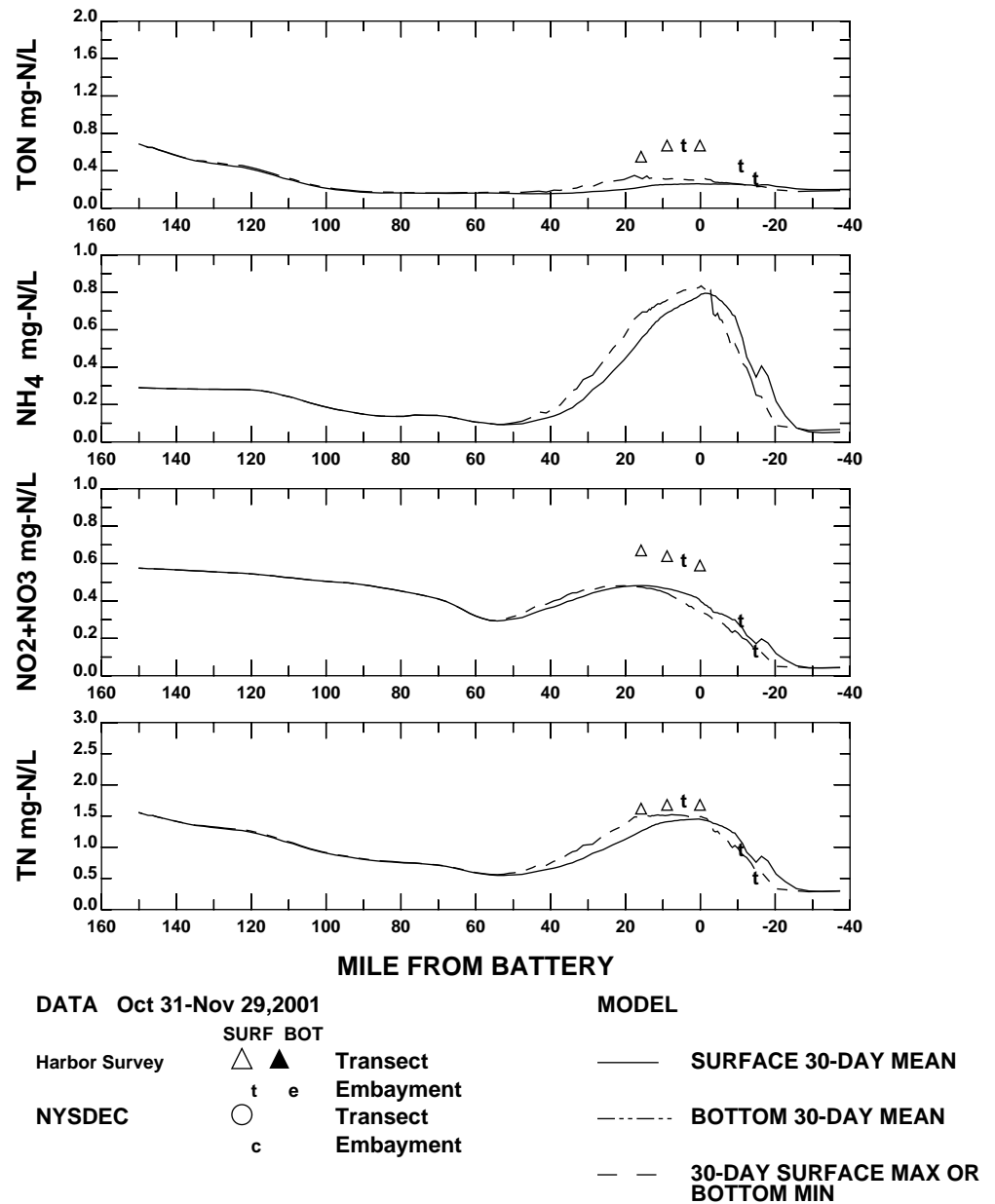
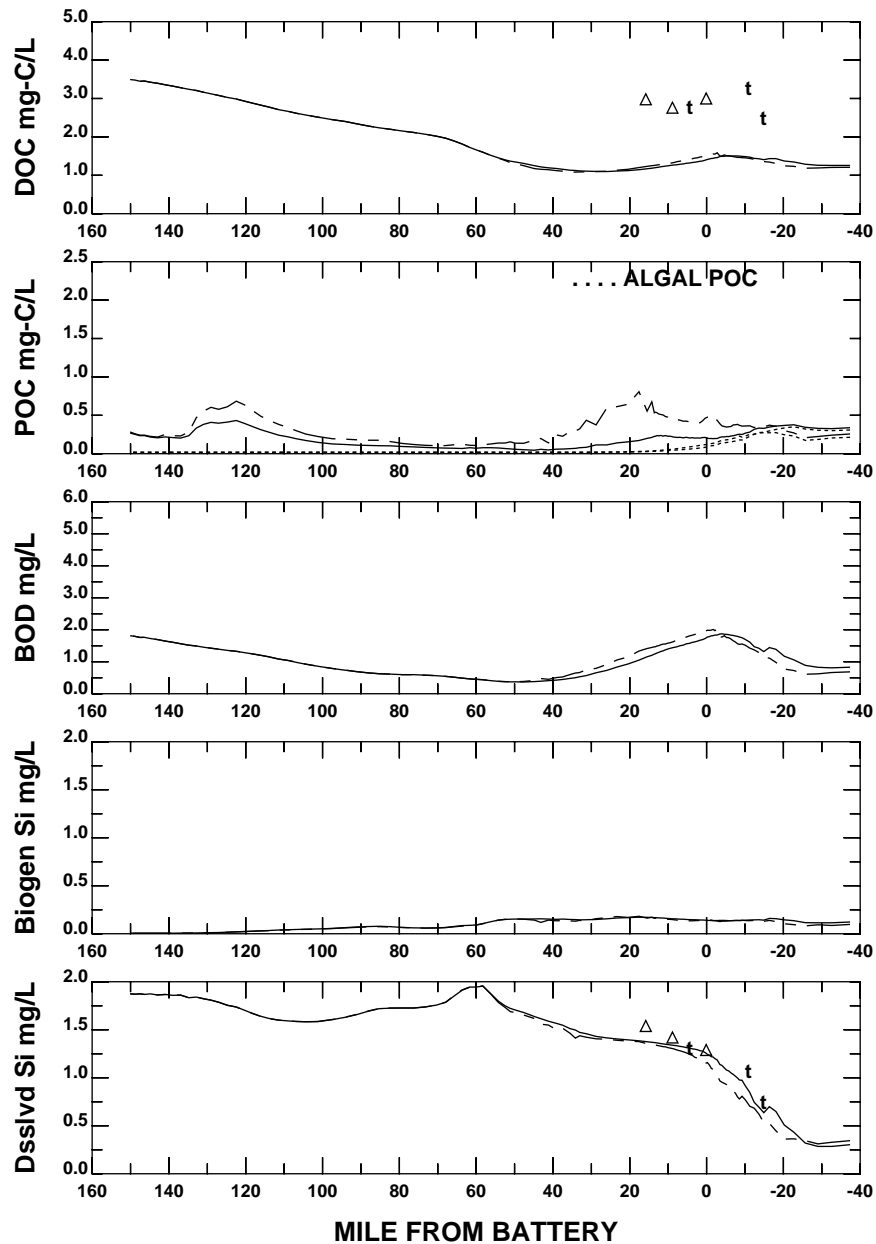




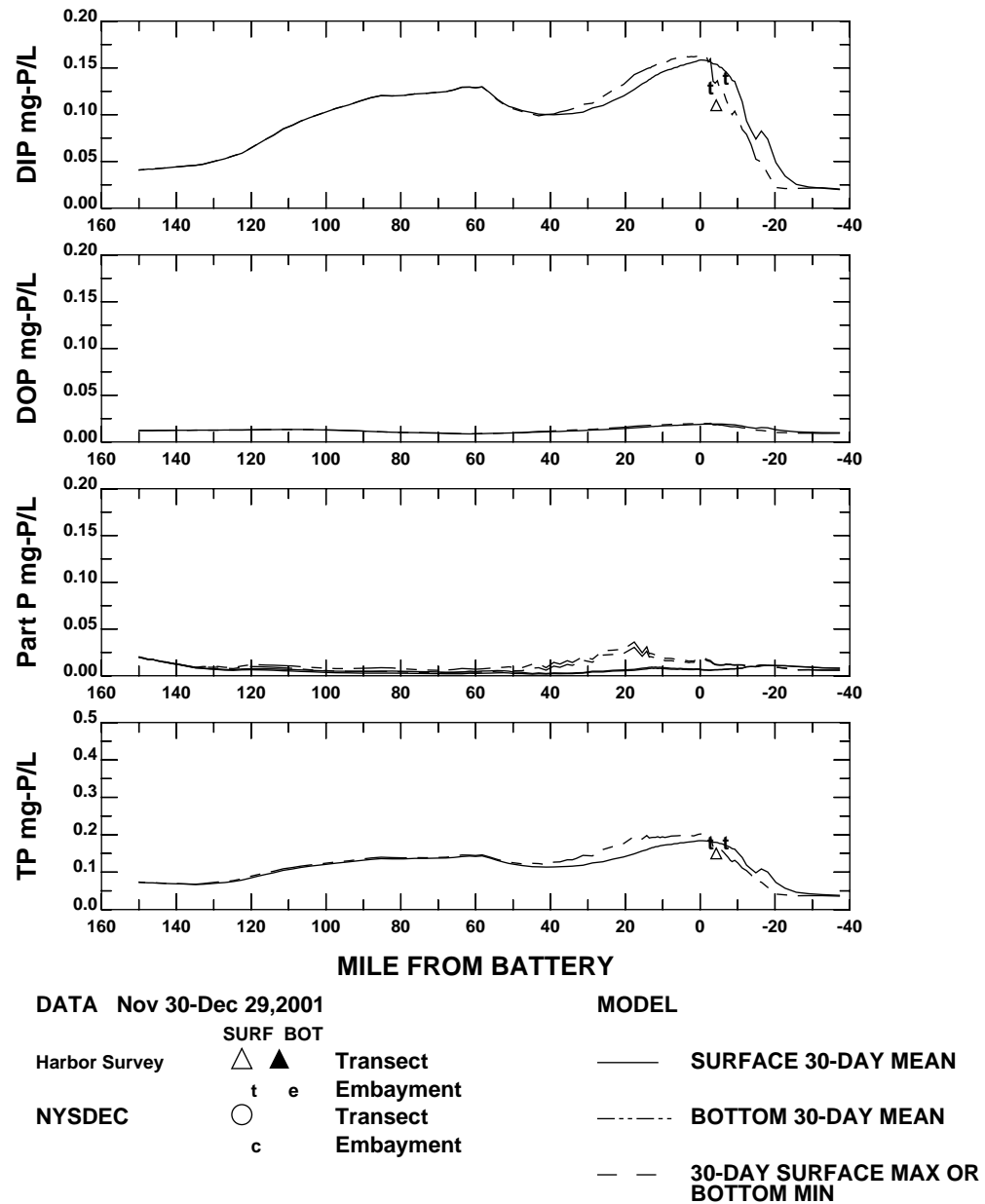
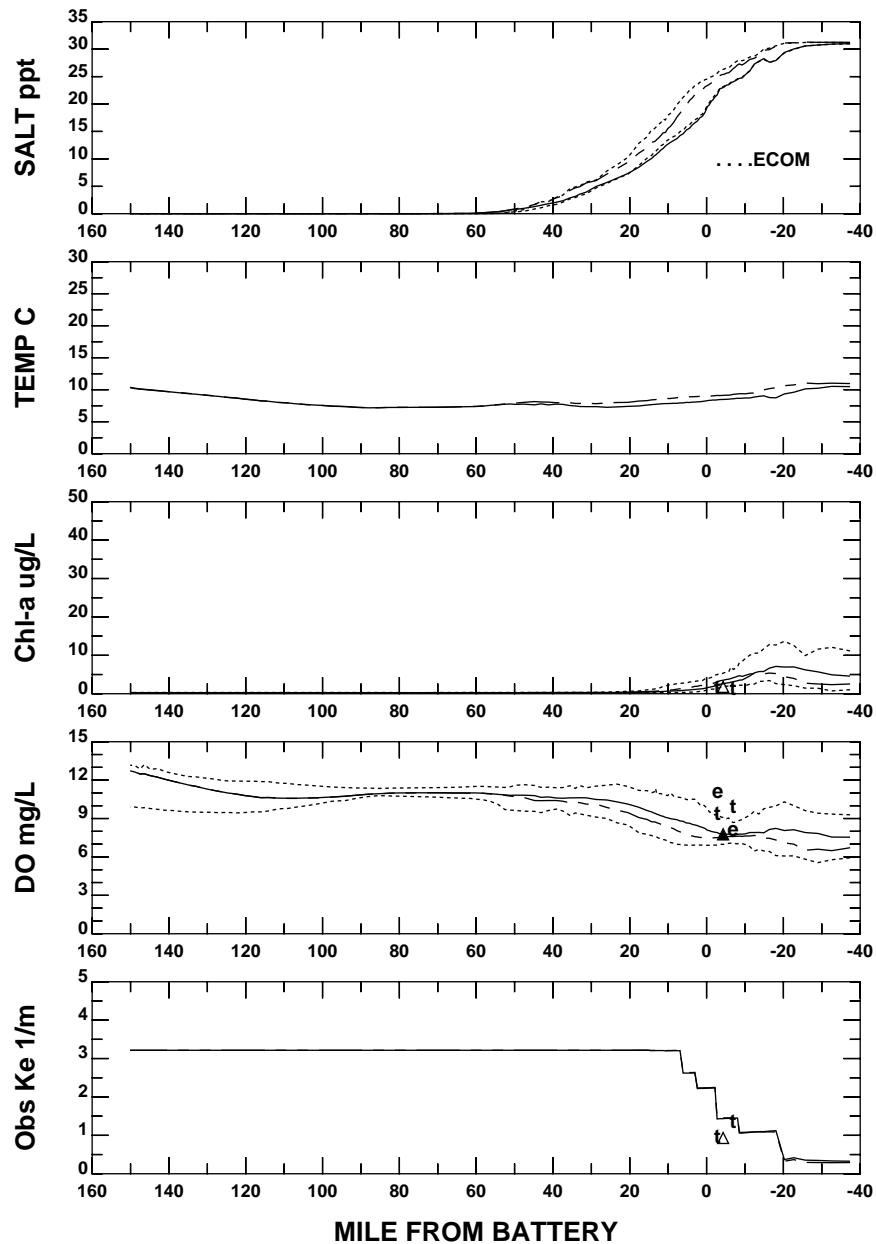
## HUDSON RIVER, UPPER AND LOWER BAY, OCEAN



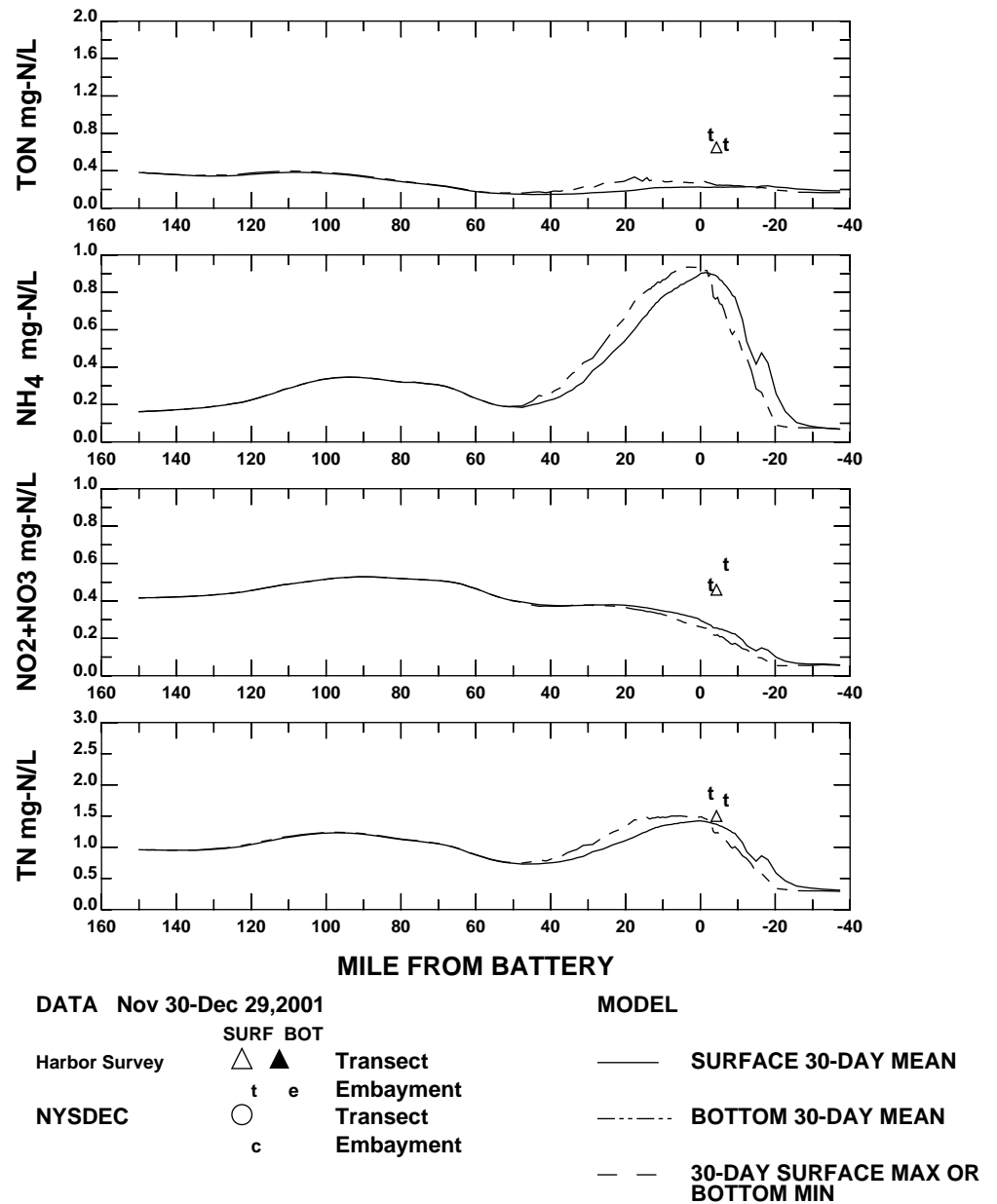
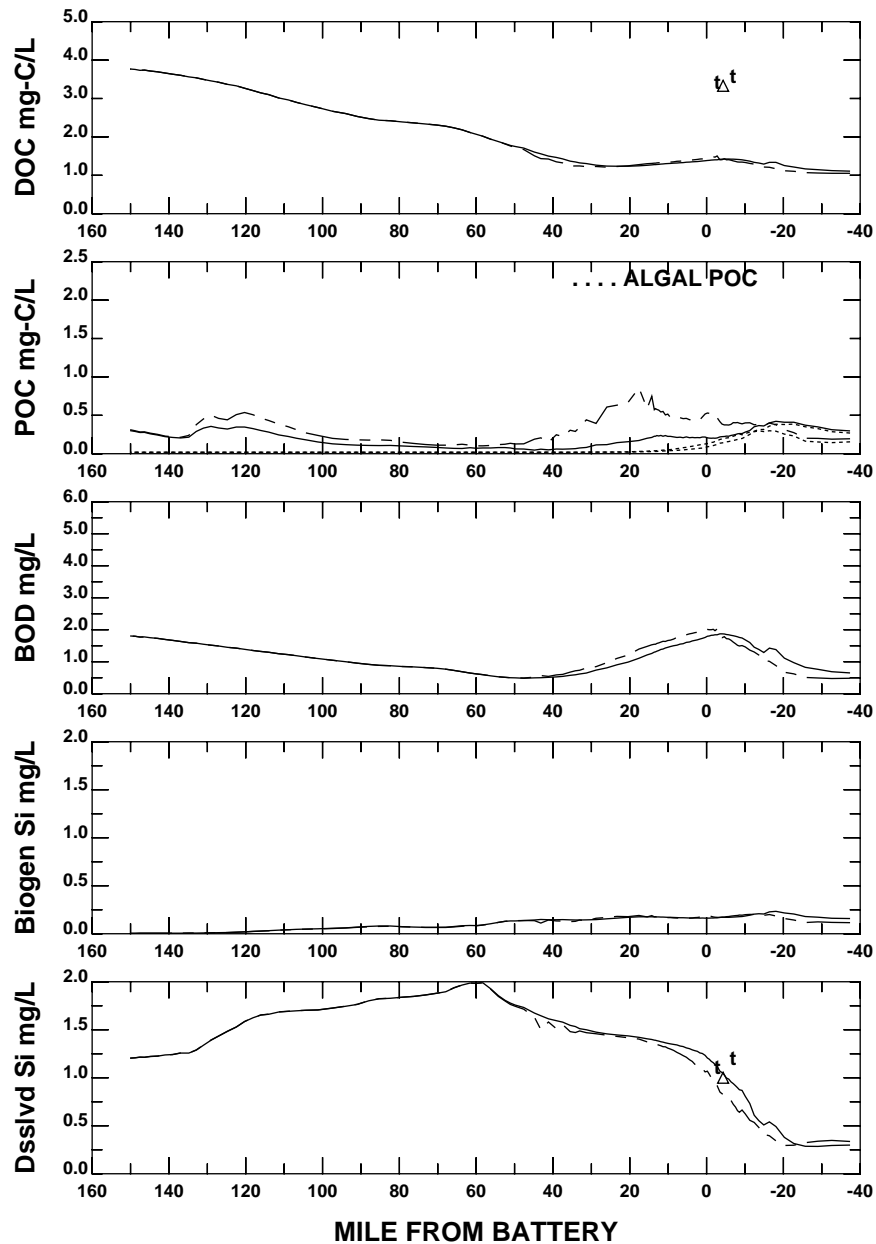
## HUDSON RIVER, UPPER AND LOWER BAY, OCEAN



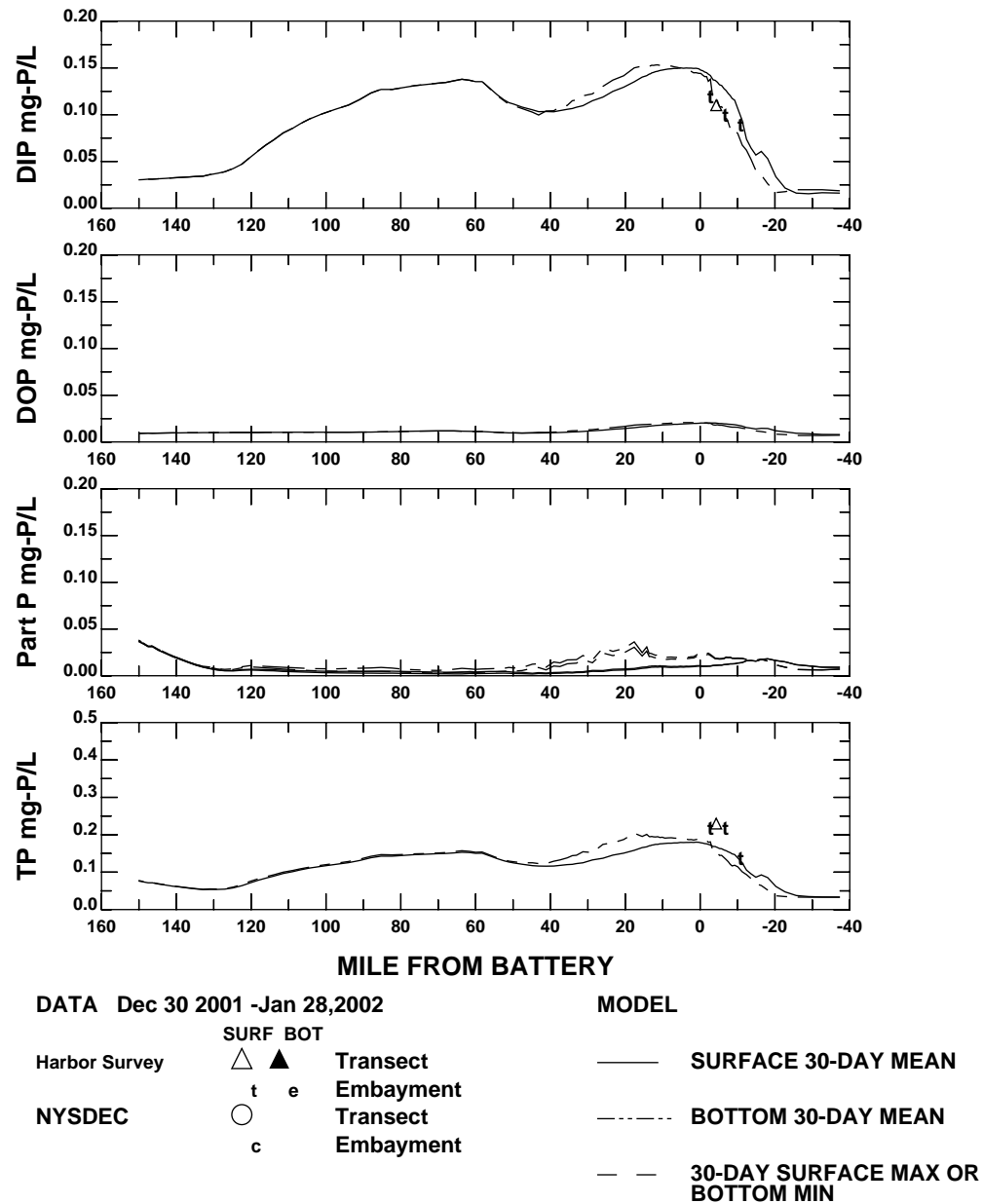
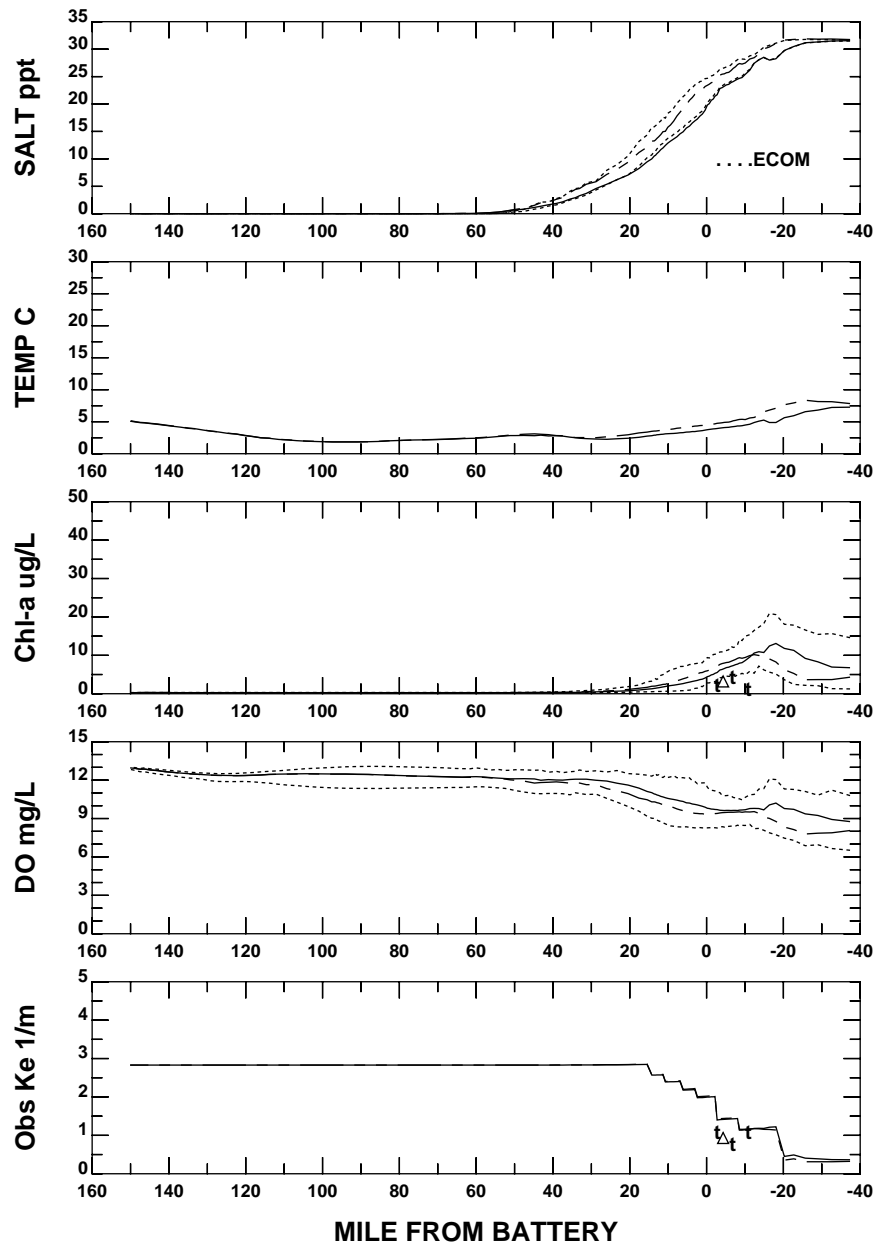
### HUDSON RIVER, UPPER AND LOWER BAY, OCEAN



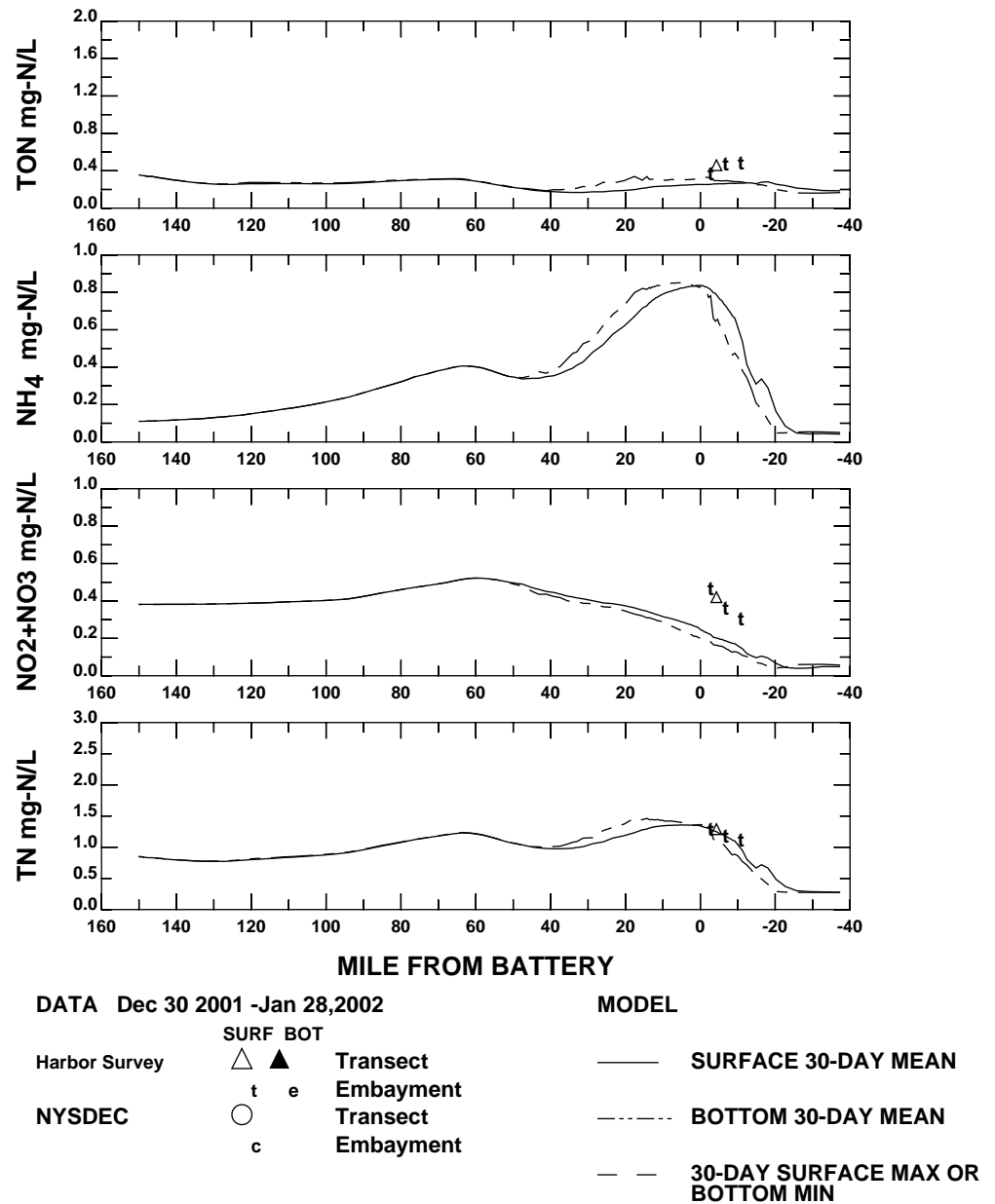
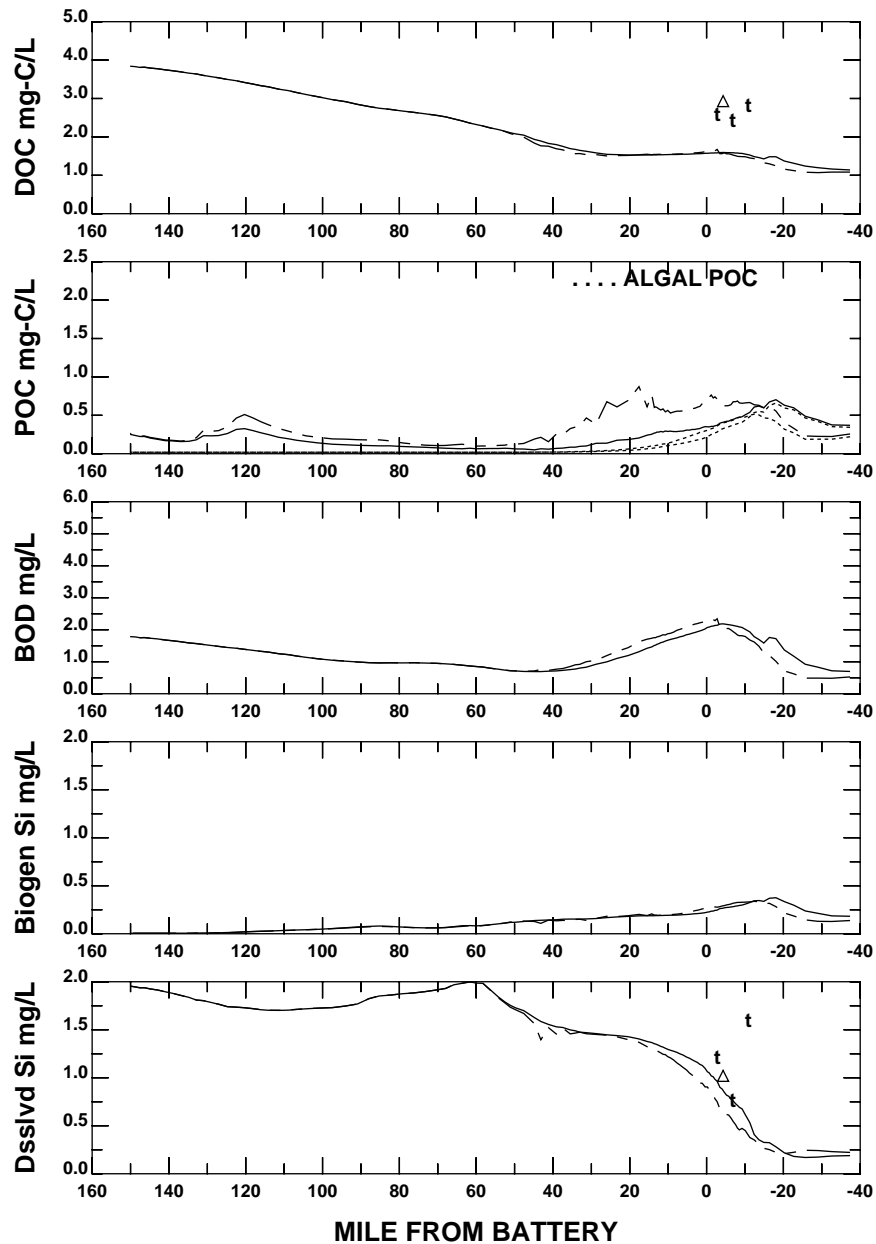
# HUDSON RIVER, UPPER AND LOWER BAY, OCEAN



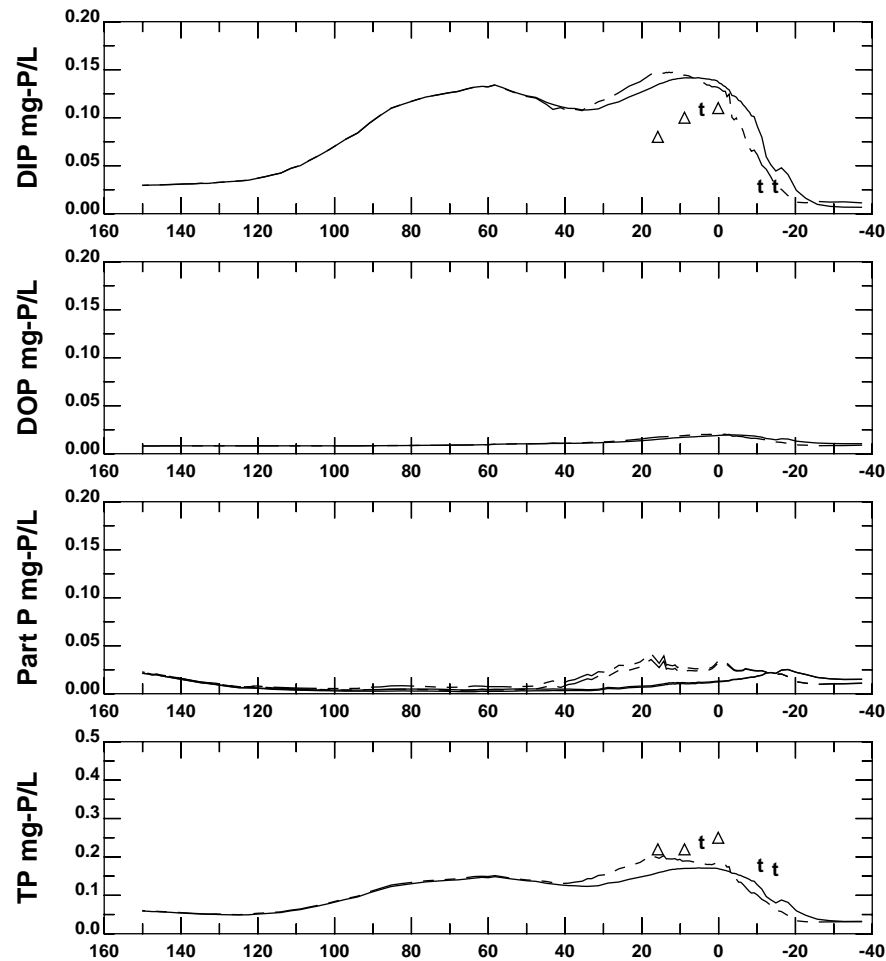
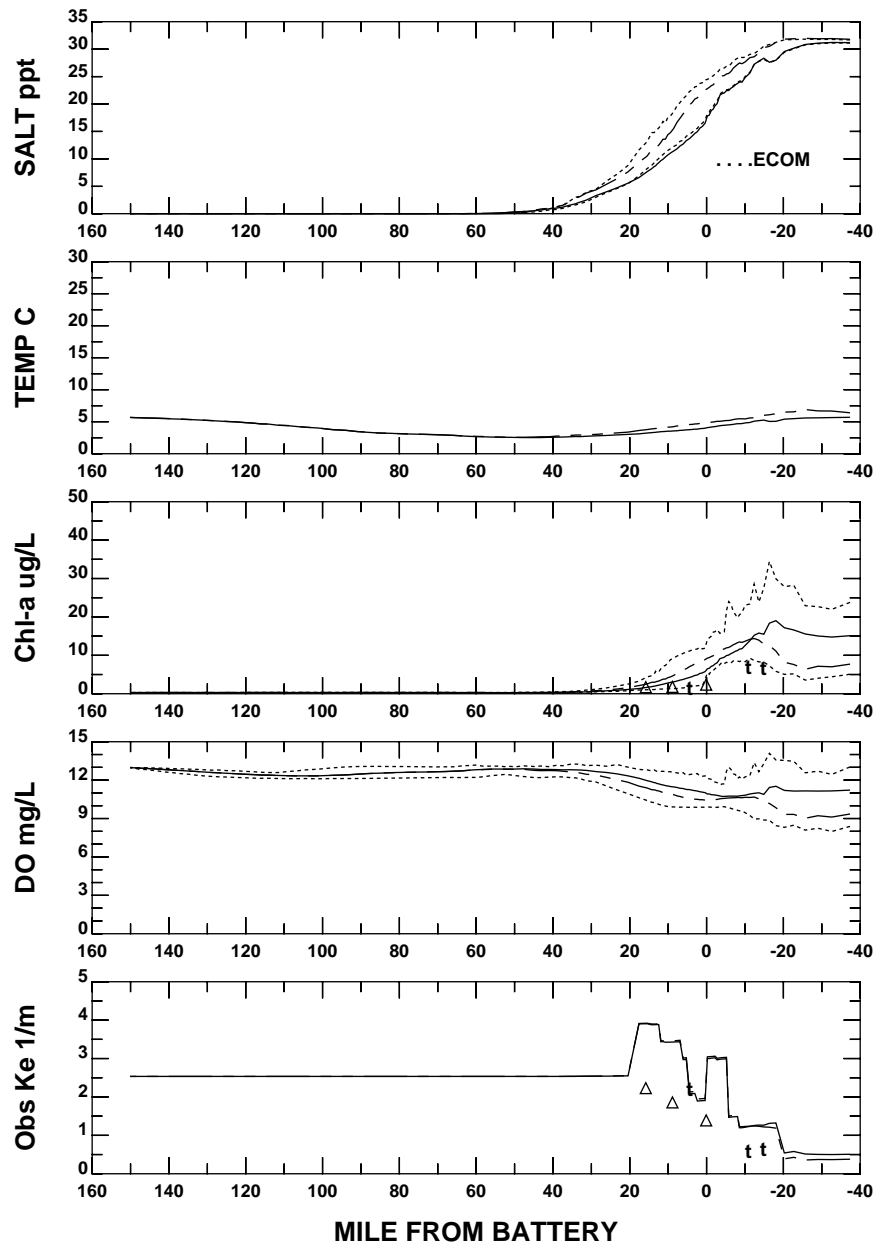
## HUDSON RIVER, UPPER AND LOWER BAY, OCEAN



## HUDSON RIVER, UPPER AND LOWER BAY, OCEAN



### HUDSON RIVER, UPPER AND LOWER BAY, OCEAN



DATA Jan 29-Feb 27, 2002

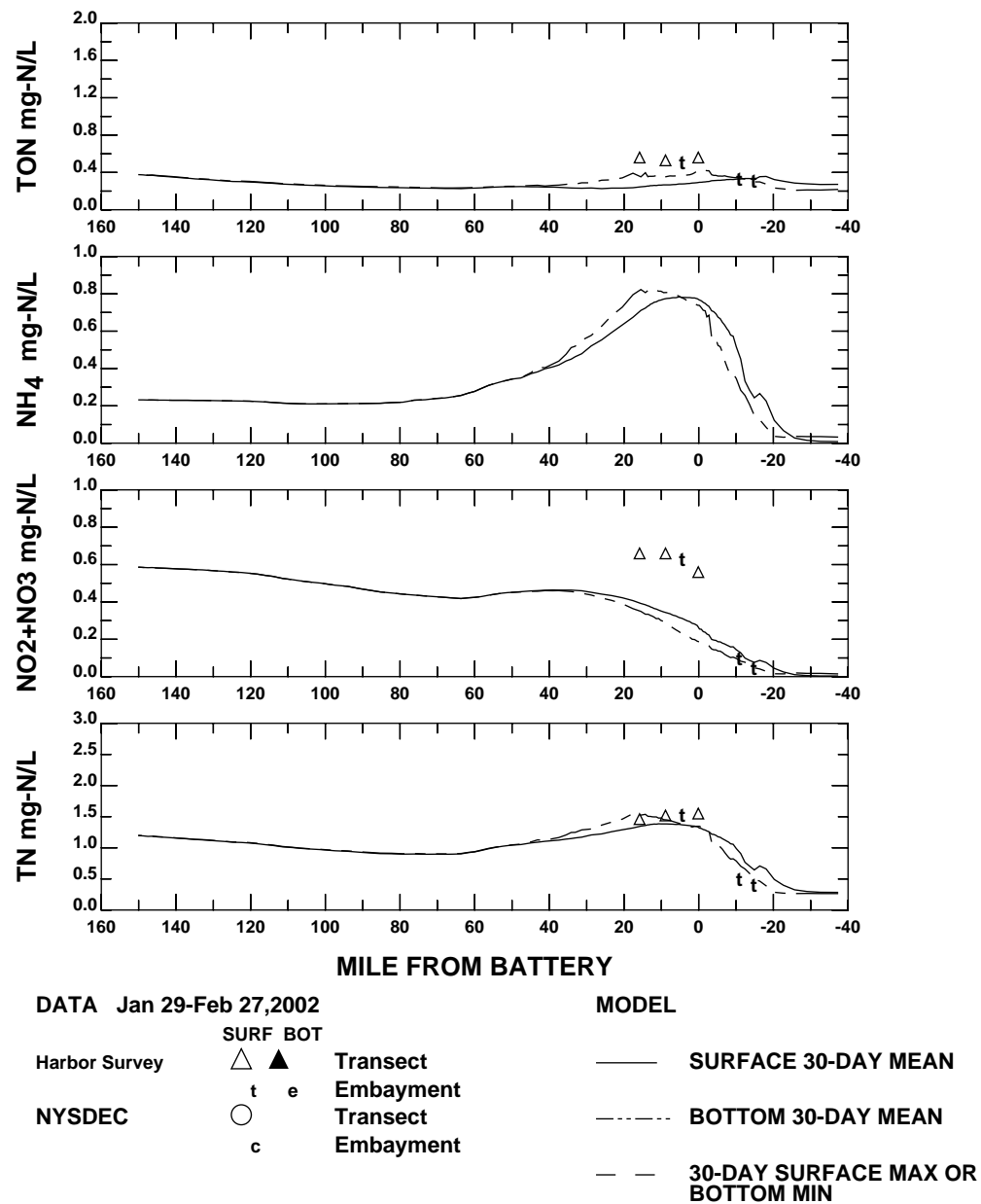
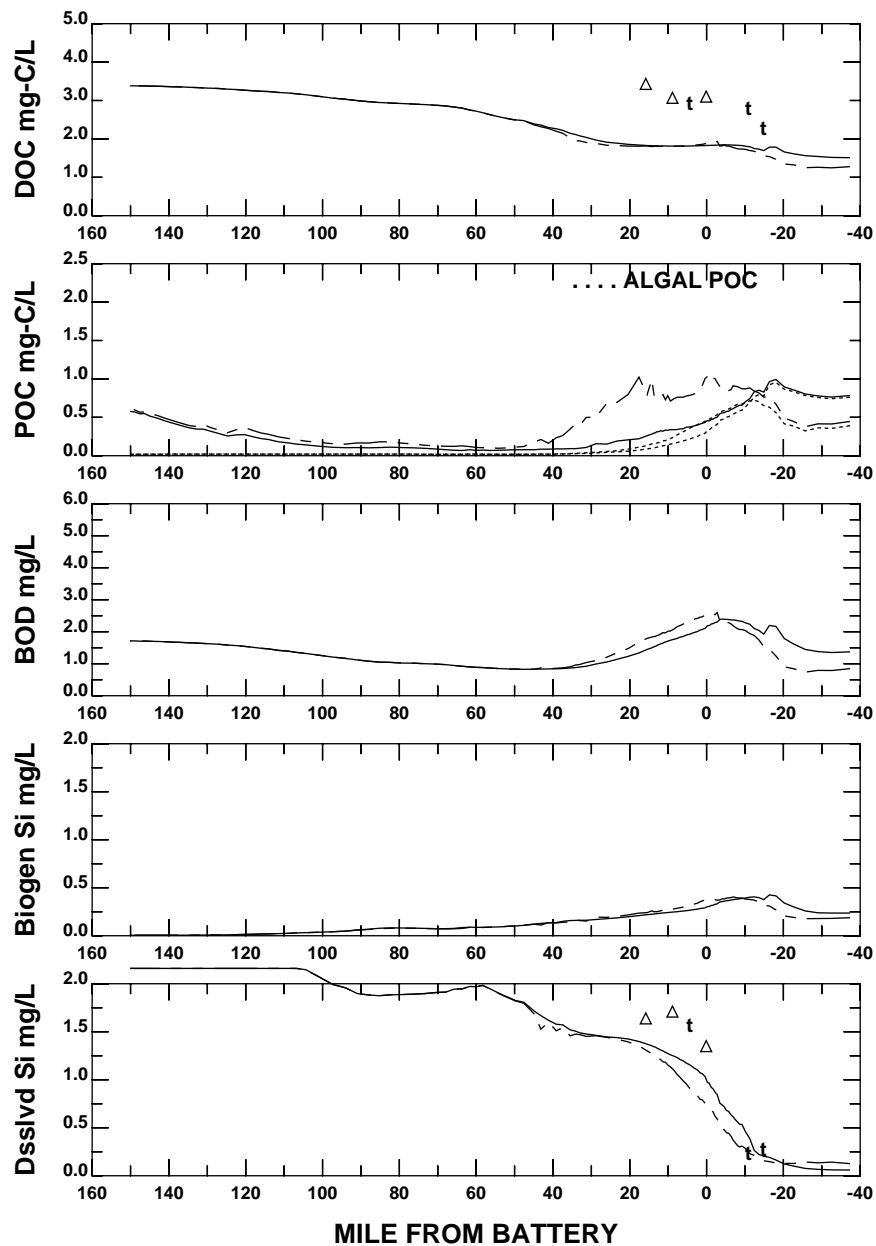
MODEL

Harbor Survey SURF BOT  
 ▲ ▲ Transect  
 t e Embayment  
 NYSDEC ○ ○ Transect  
 c Embayment

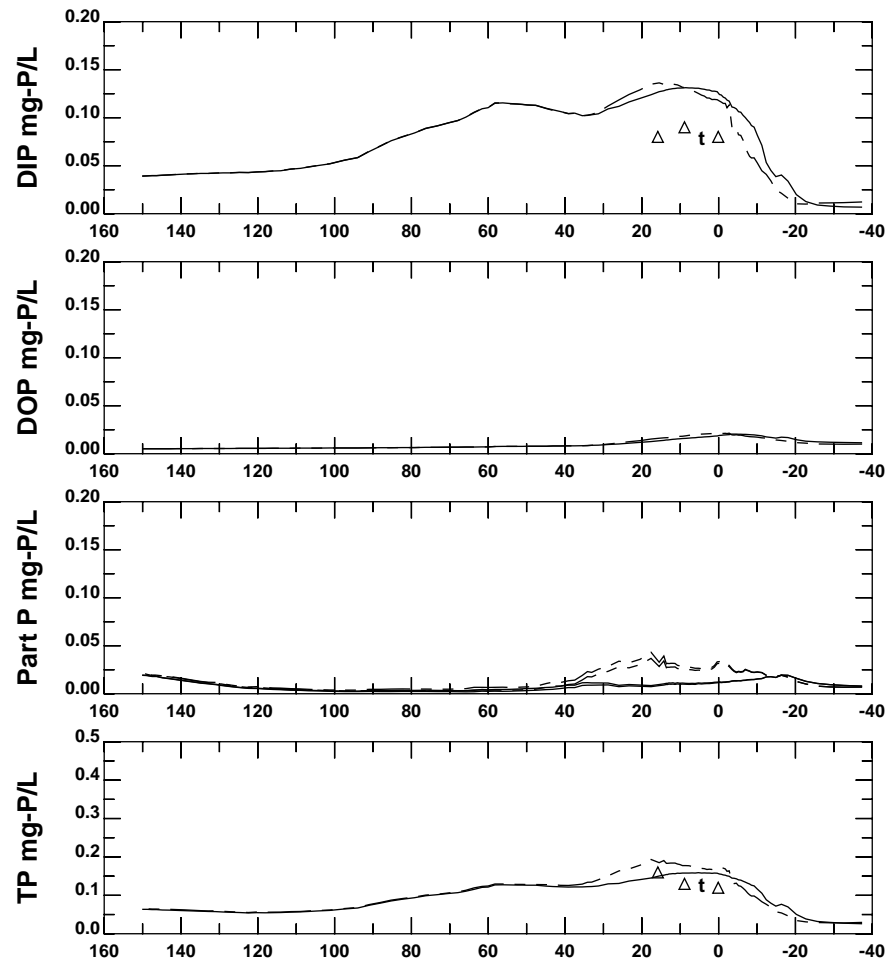
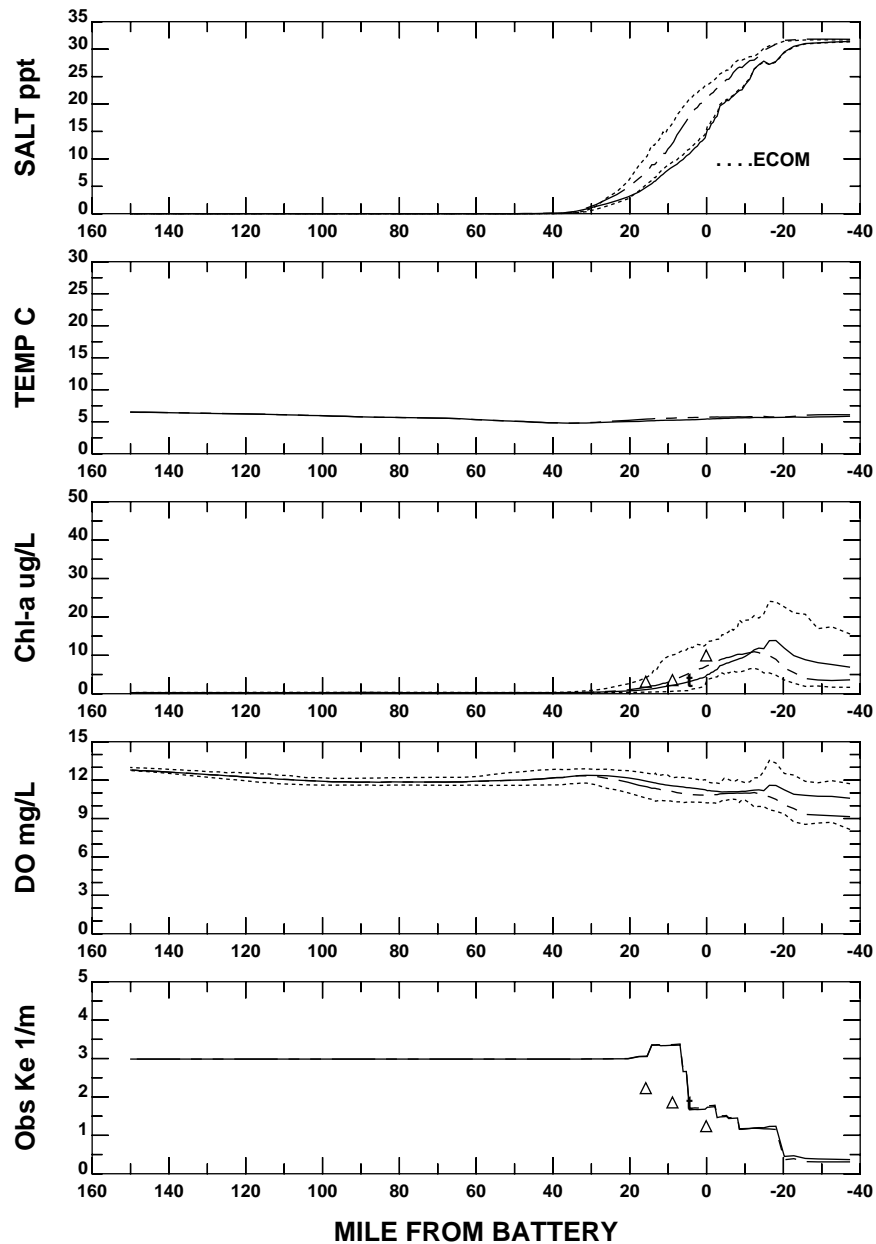
— SURFACE 30-DAY MEAN  
 - - - - - BOTTOM 30-DAY MEAN  
 - - - 30-DAY SURFACE MAX OR  
 BOTTOM MIN

**HUDSON RIVER, UPPER AND LOWER BAY, OCEAN**





## HUDSON RIVER, UPPER AND LOWER BAY, OCEAN



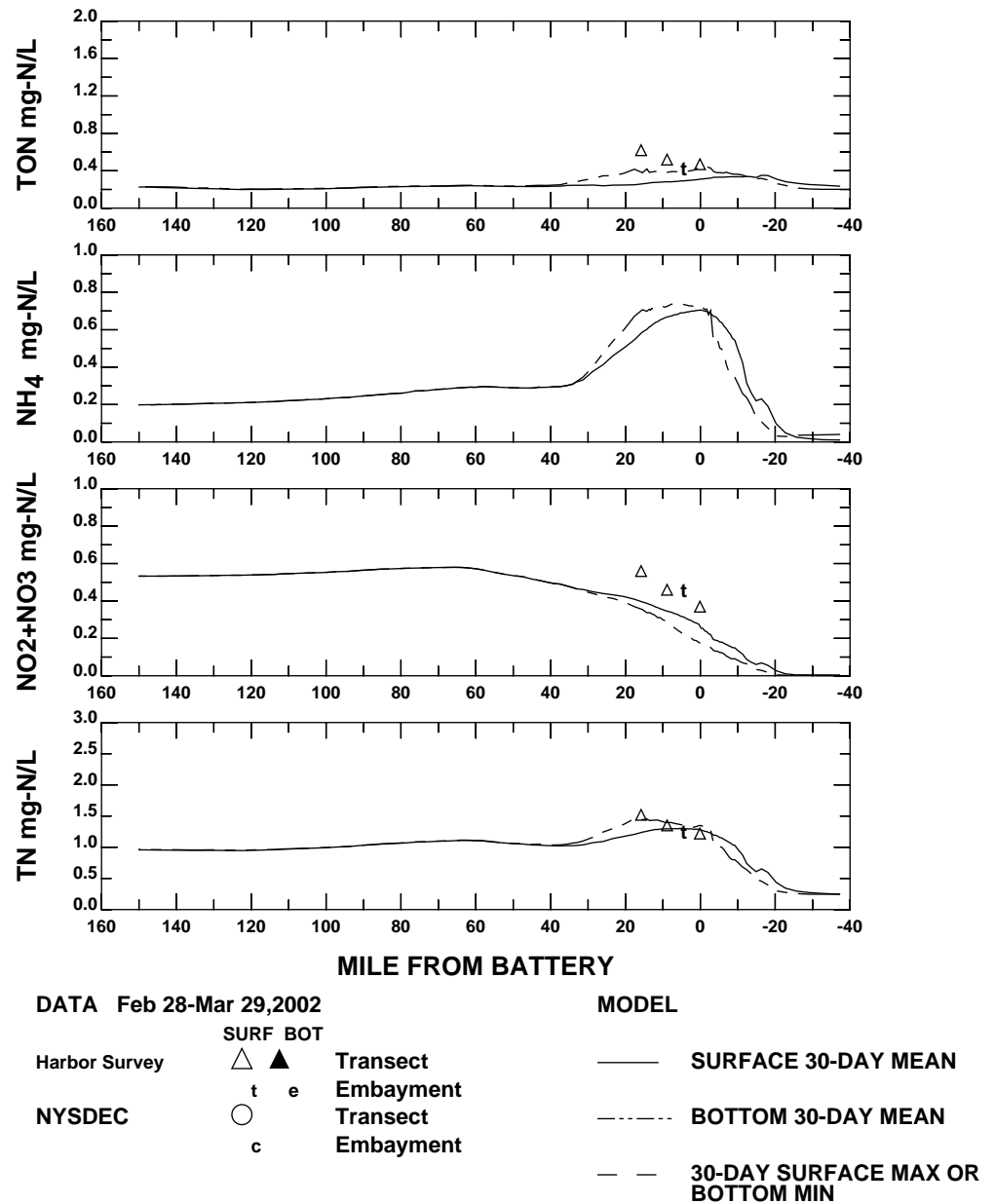
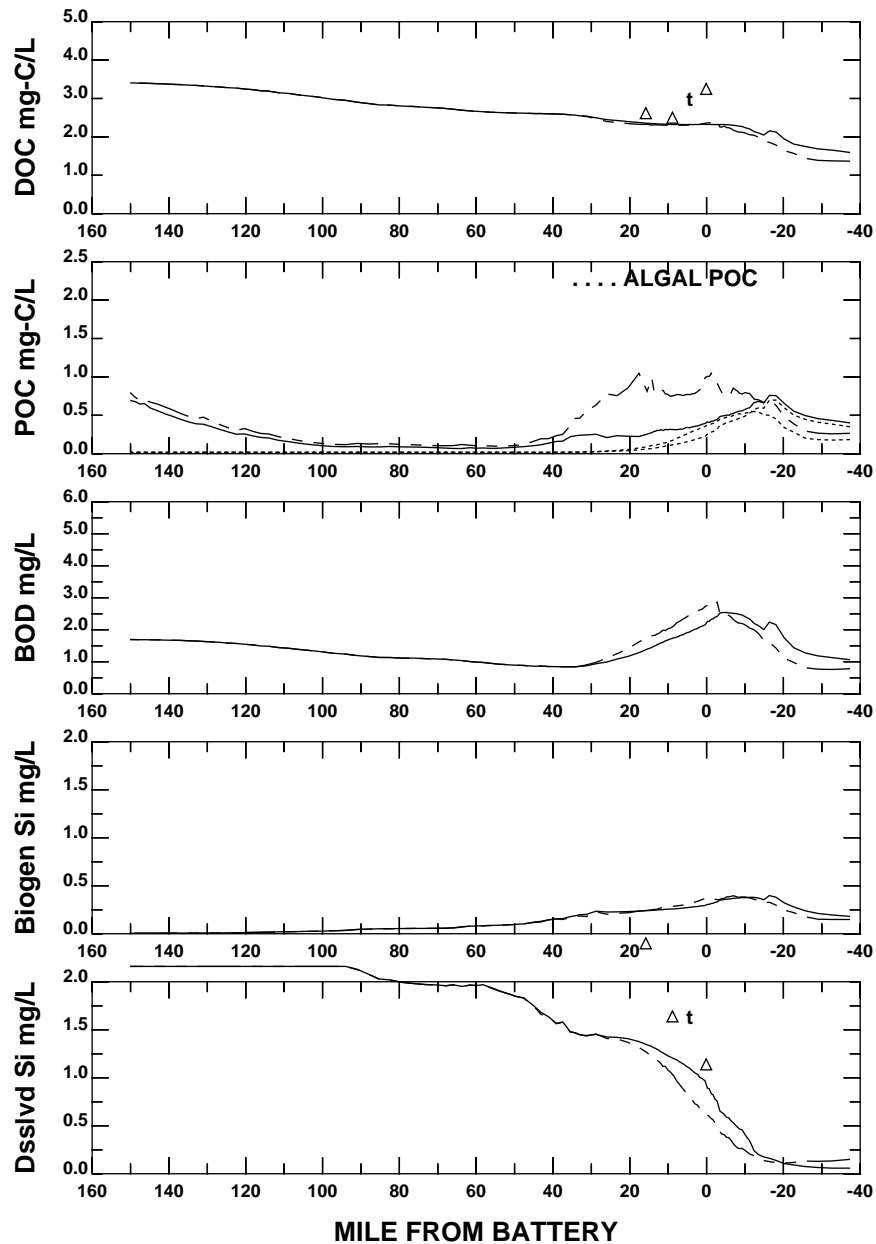
DATA Feb 28-Mar 29, 2002

MODEL

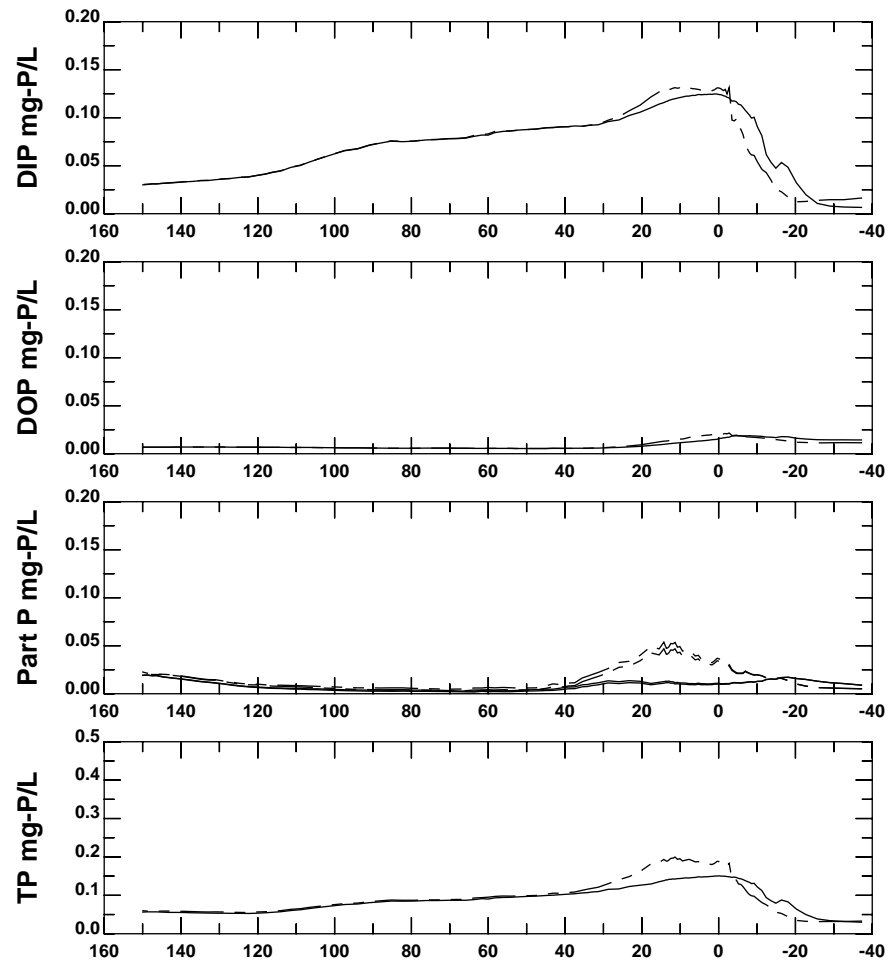
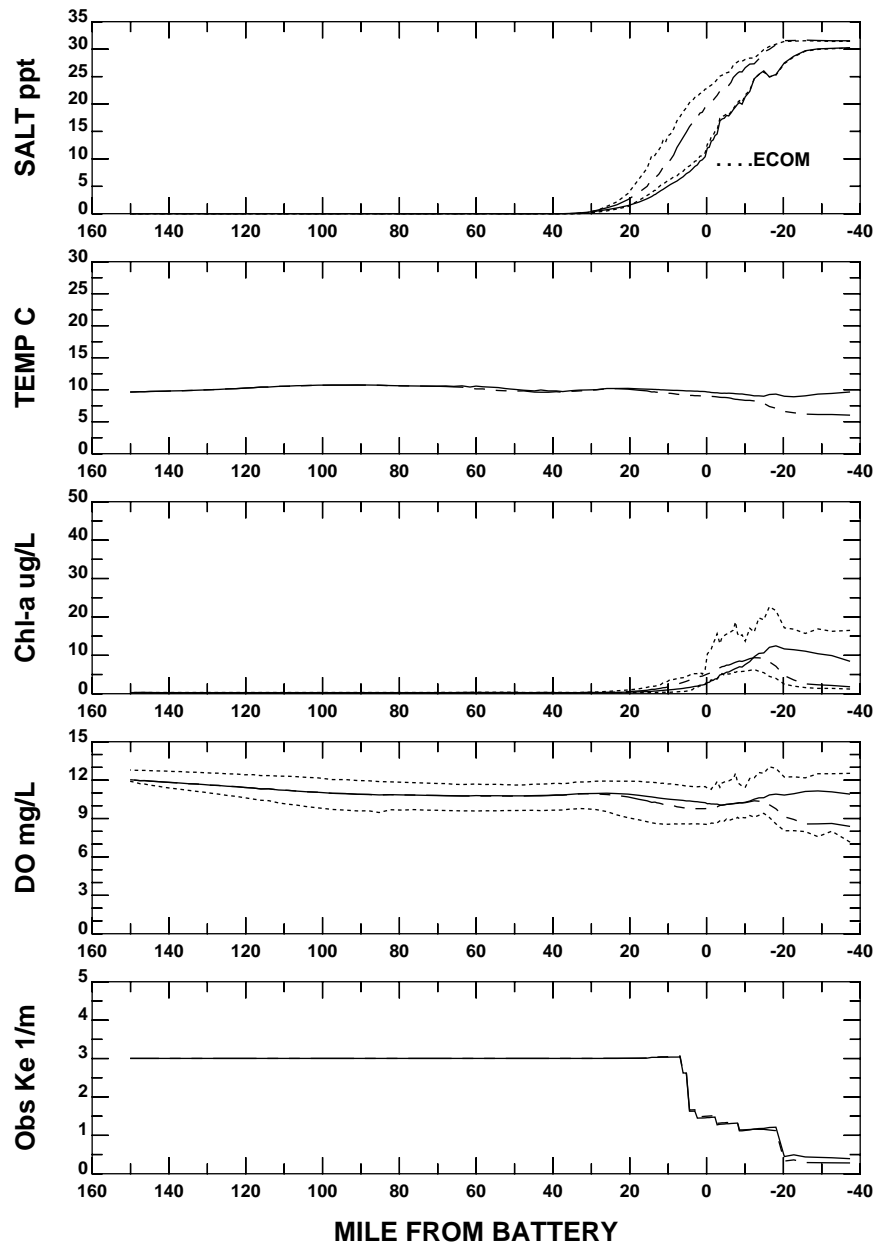
Harbor Survey SURF BOT  
 ▲ t e  
 NYSDEC ○ c

— SURFACE 30-DAY MEAN  
 - - - - BOTTOM 30-DAY MEAN  
 - - - 30-DAY SURFACE MAX OR BOTTOM MIN

**HUDSON RIVER, UPPER AND LOWER BAY, OCEAN**



## HUDSON RIVER, UPPER AND LOWER BAY, OCEAN



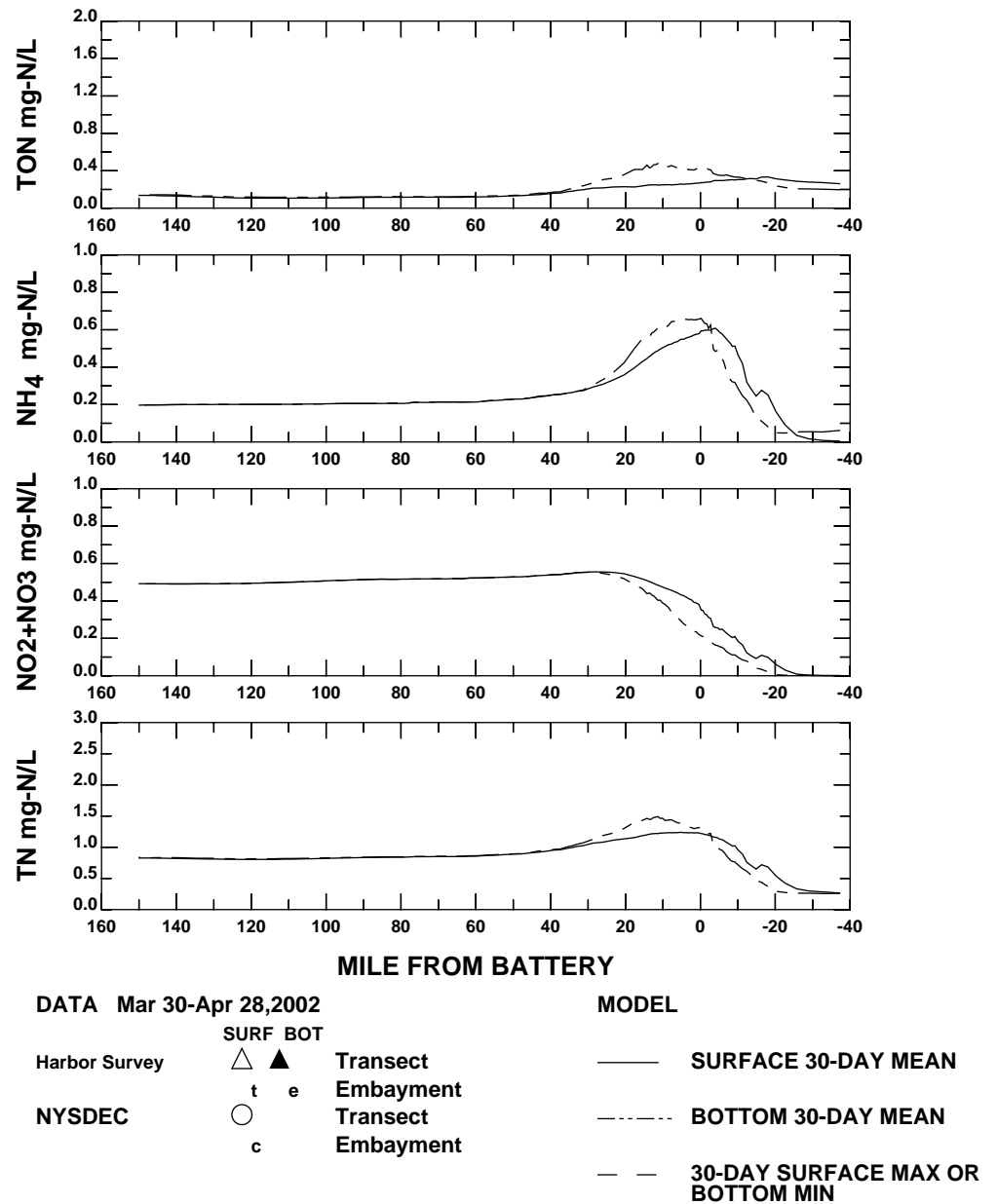
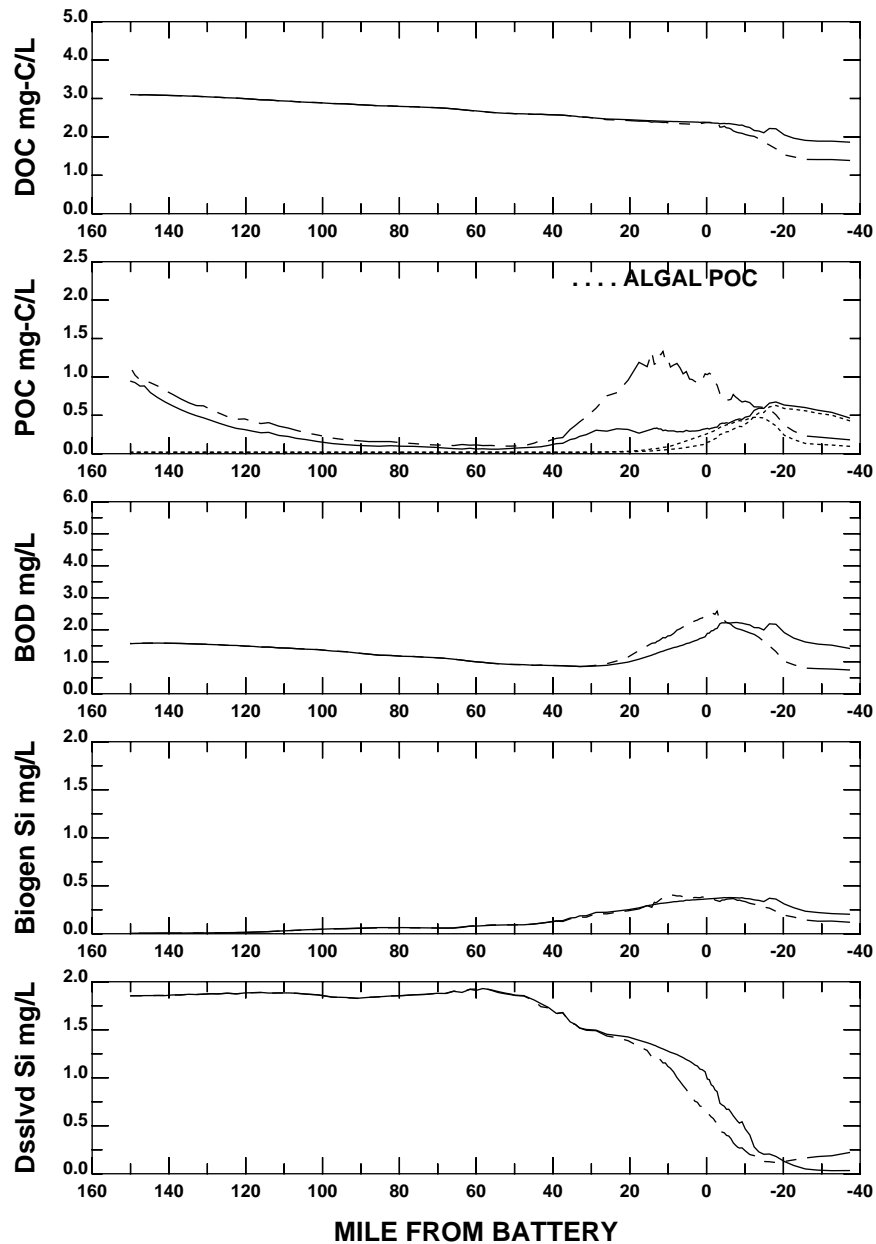
DATA Mar 30-Apr 28, 2002

MODEL

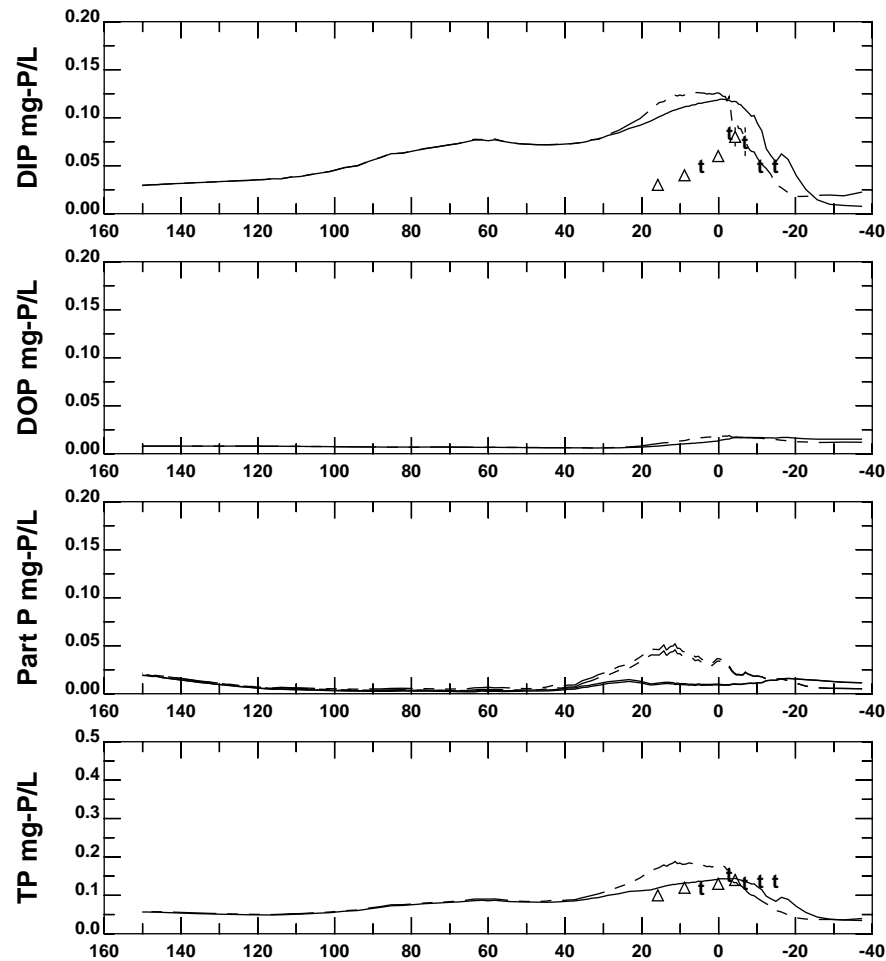
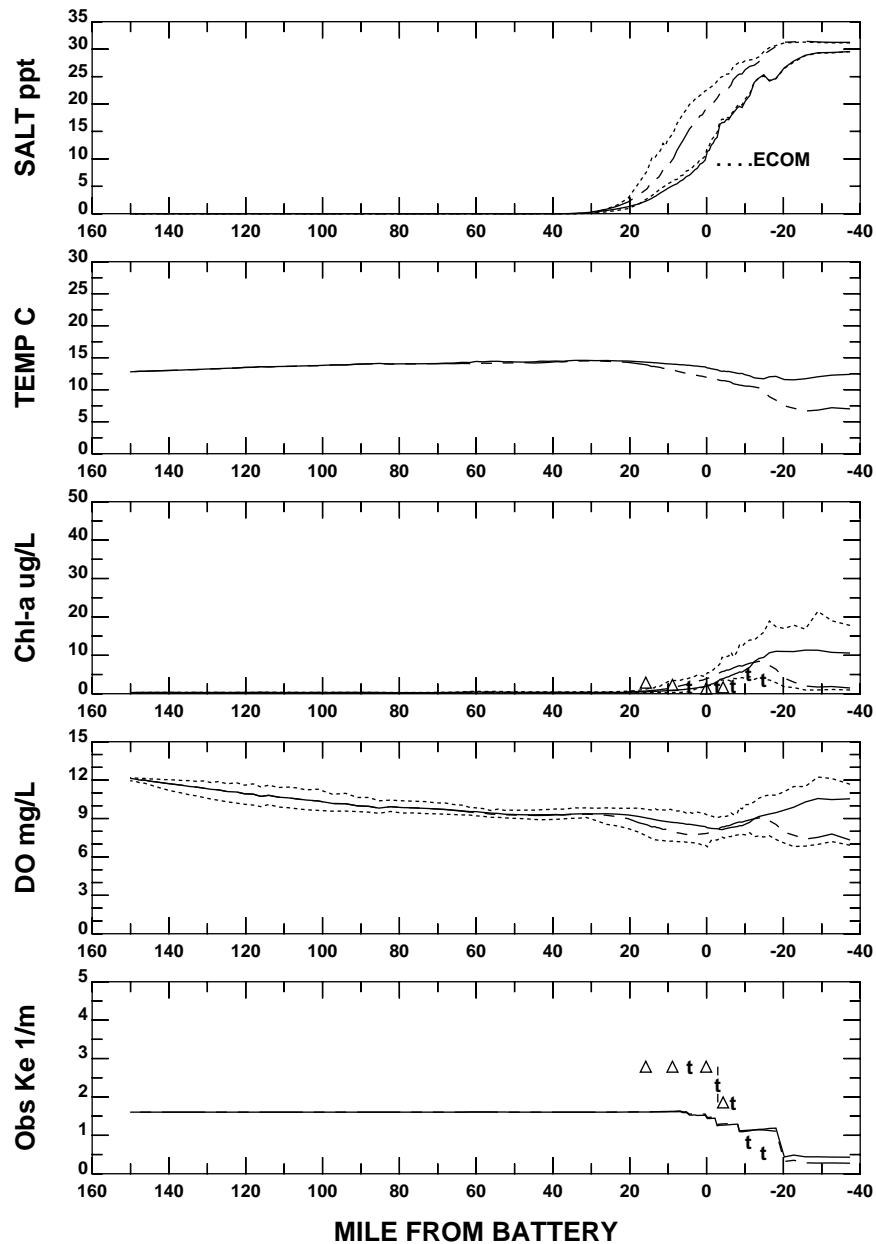
Harbor Survey SURF BOT  
 t e  
 NYSDEC o c

Transect  
 Embayment  
 Transect  
 Embayment  
 SURFACE 30-DAY MEAN  
 BOTTOM 30-DAY MEAN  
 30-DAY SURFACE MAX OR  
 BOTTOM MIN

**HUDSON RIVER, UPPER AND LOWER BAY, OCEAN**



### HUDSON RIVER, UPPER AND LOWER BAY, OCEAN



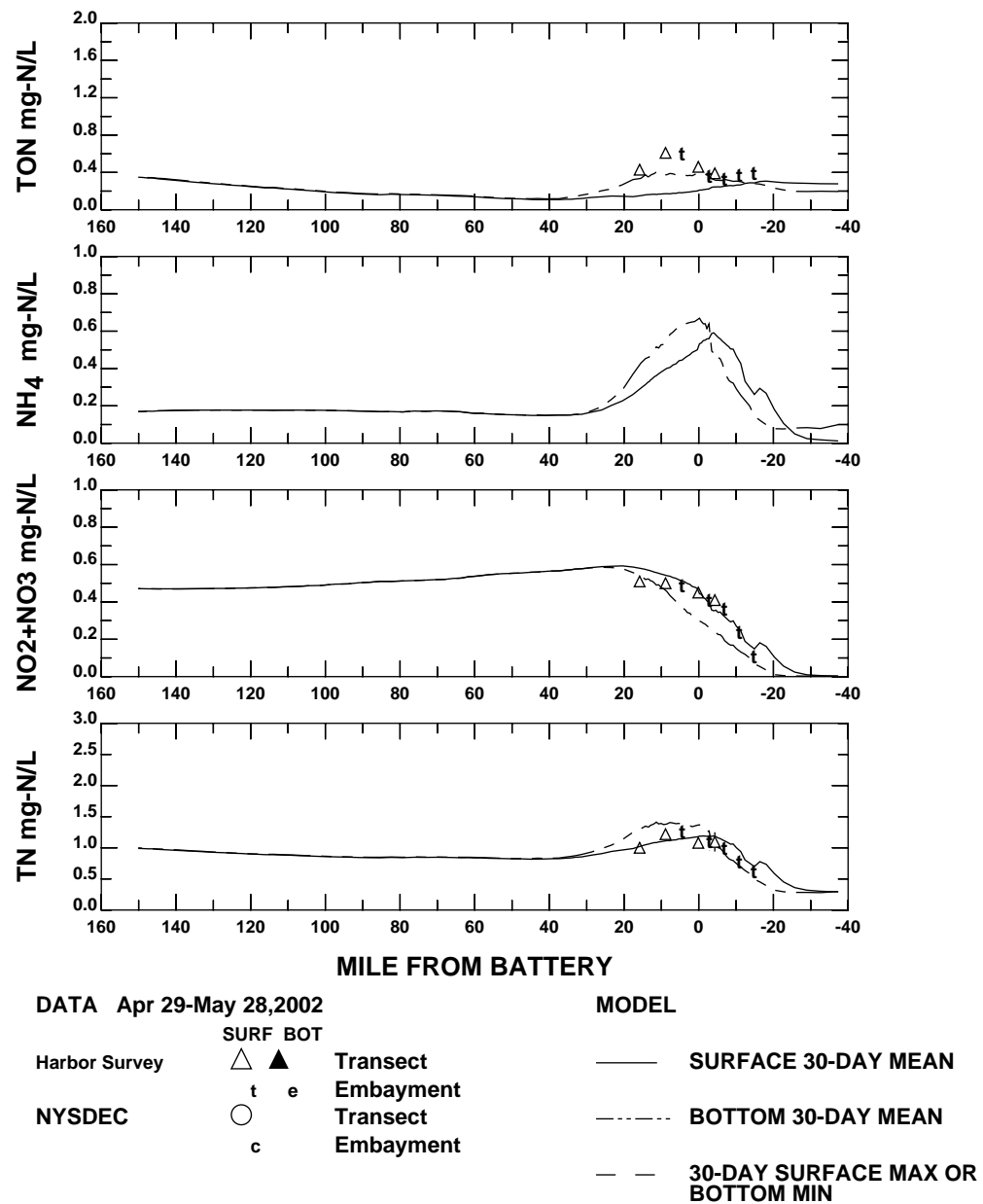
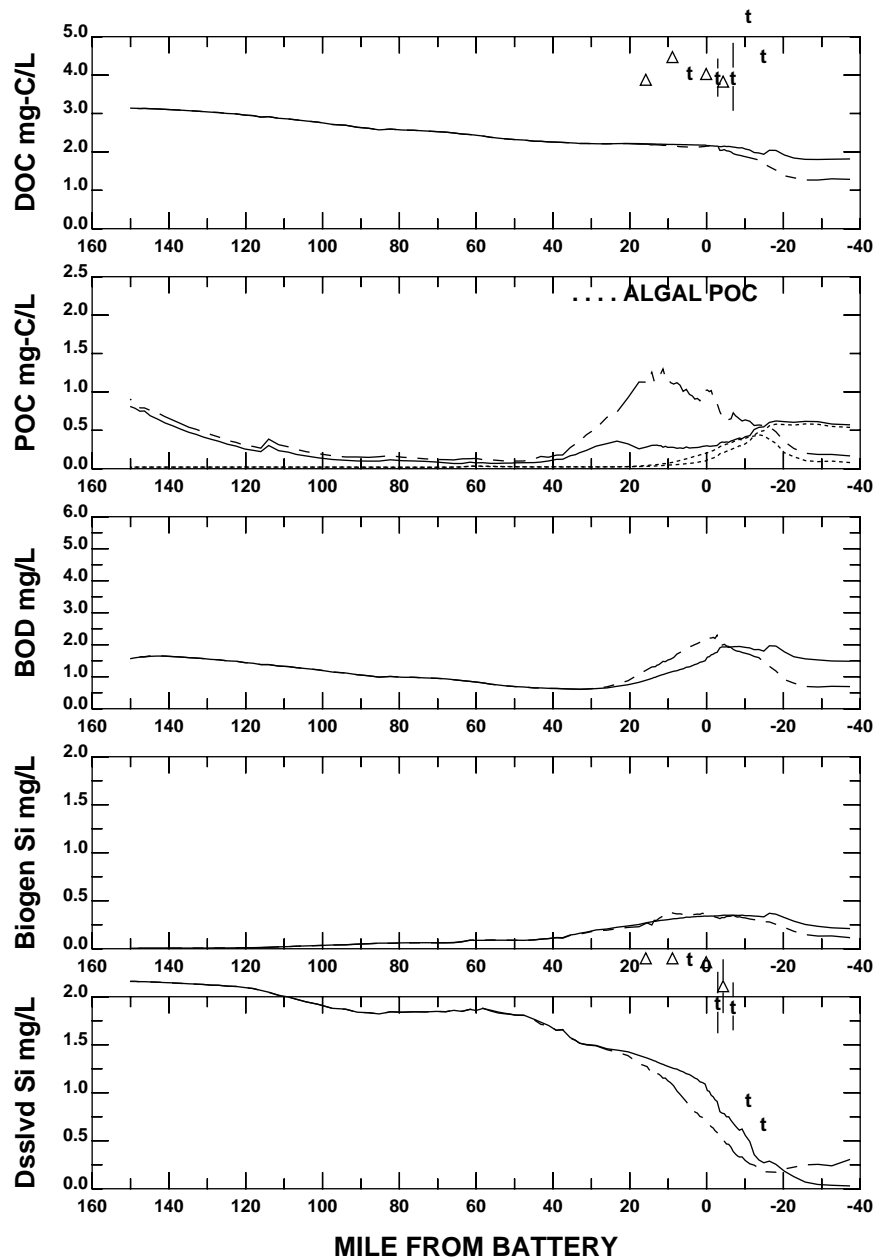
DATA Apr 29-May 28, 2002

MODEL

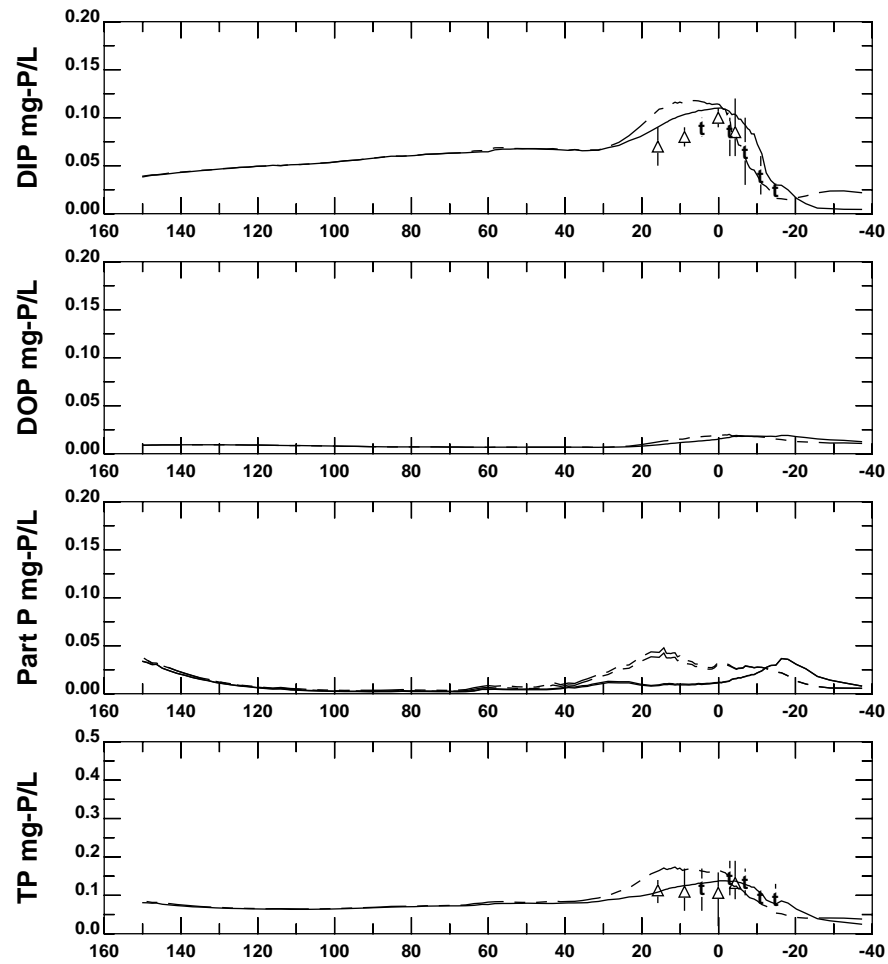
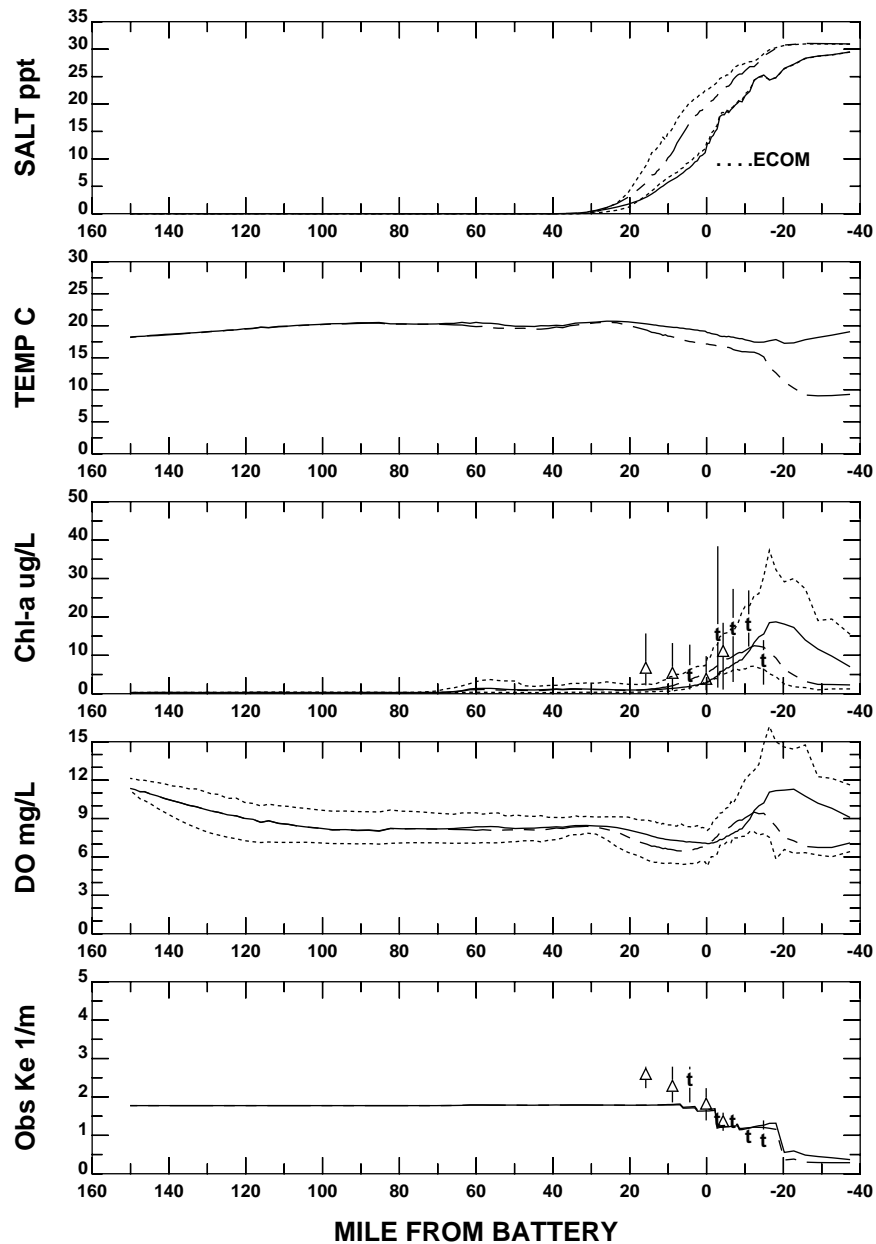
SURF BOT  
 Harbor Survey  $\triangle$   $\blacktriangle$  Transect  
 t e Embayment  
 NYSDEC  $\circ$  Transect  
 c Embayment

— SURFACE 30-DAY MEAN  
 - - - BOTTOM 30-DAY MEAN  
 - - - 30-DAY SURFACE MAX OR BOTTOM MIN

# HUDSON RIVER, UPPER AND LOWER BAY, OCEAN



## HUDSON RIVER, UPPER AND LOWER BAY, OCEAN



**MILE FROM BATTERY**

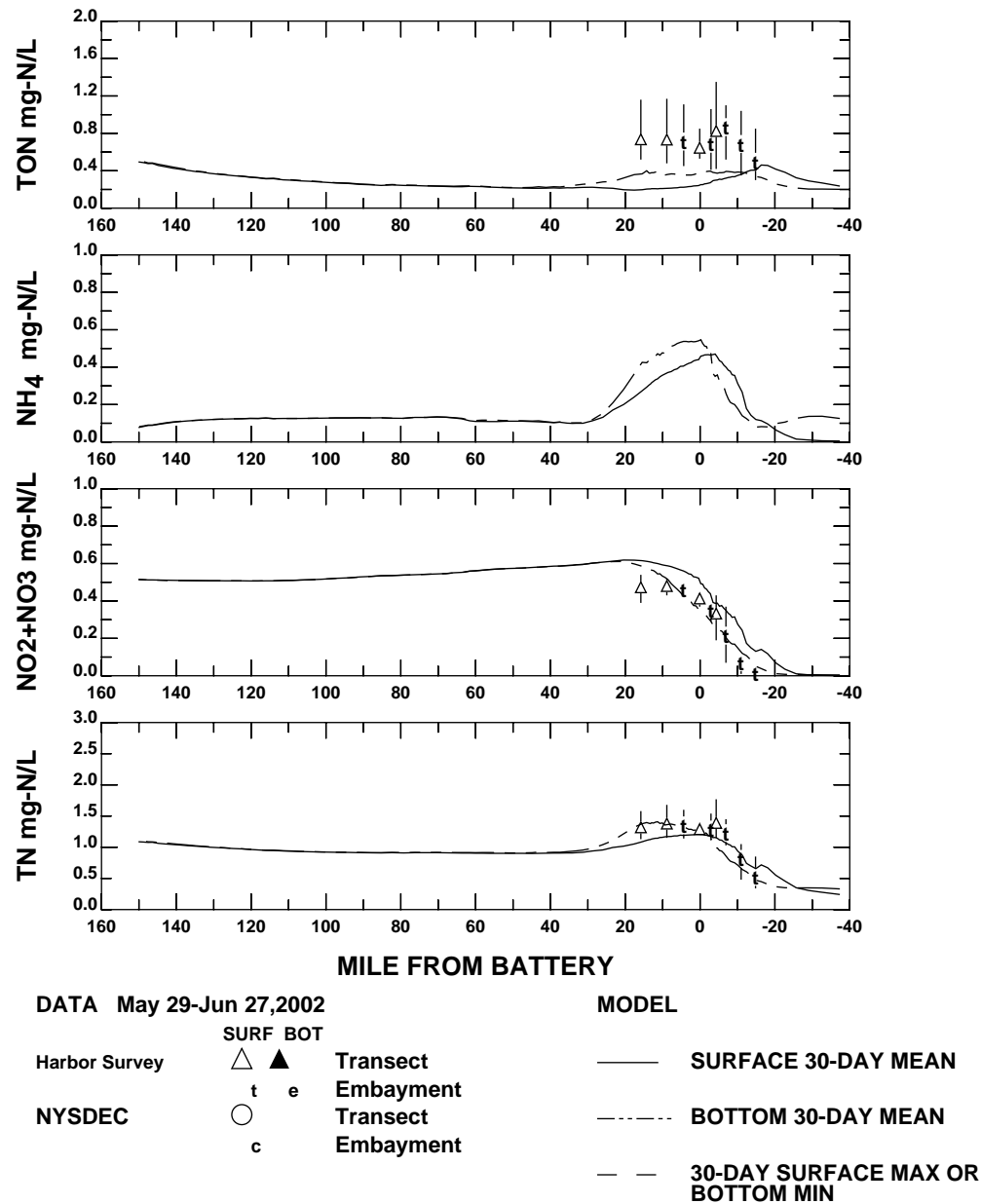
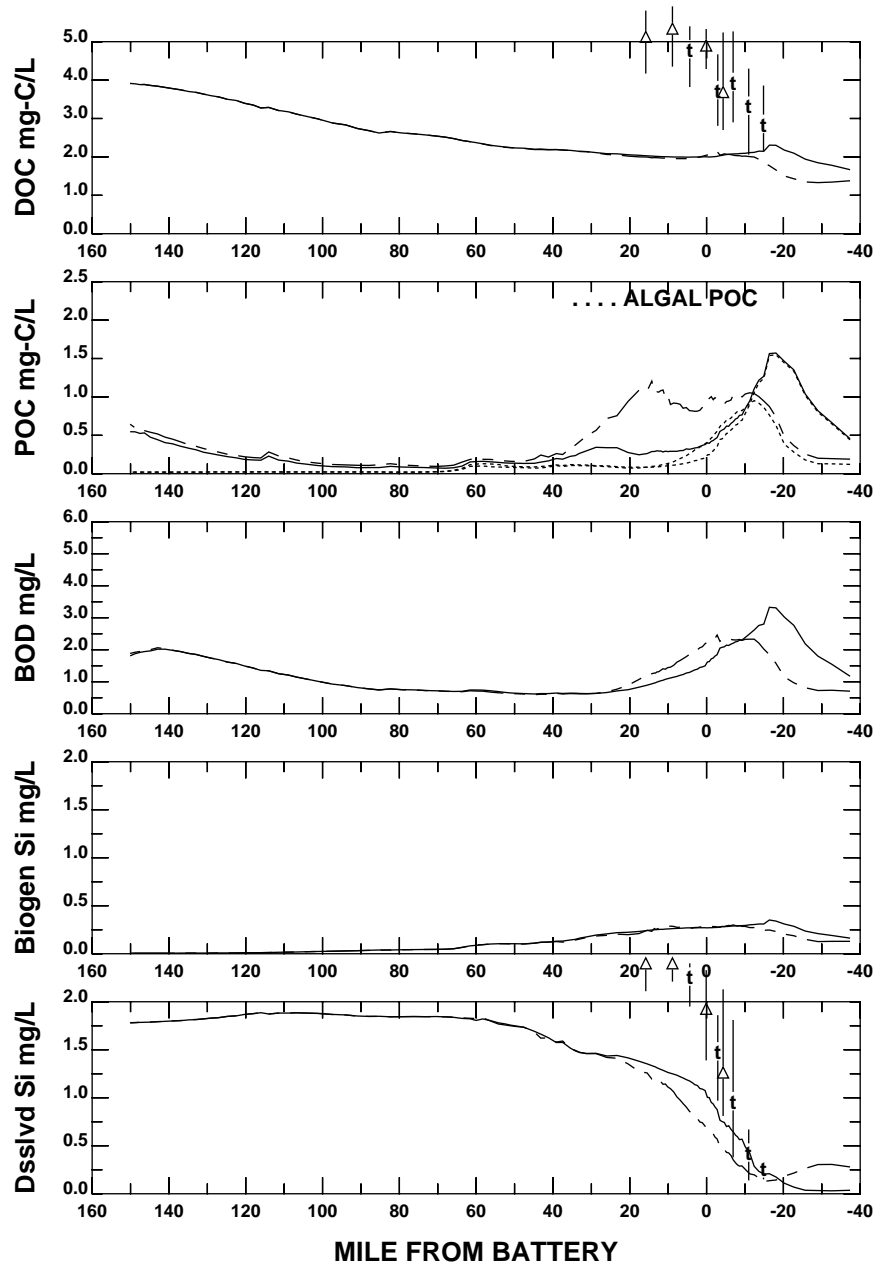
<b>DATA</b> May 29-Jun 27, 2002	<b>MODEL</b>
Harbor Survey	— SURFACE 30-DAY MEAN
NYSDEC	- - - BOTTOM 30-DAY MEAN
	- - - 30-DAY SURFACE MAX OR BOTTOM MIN

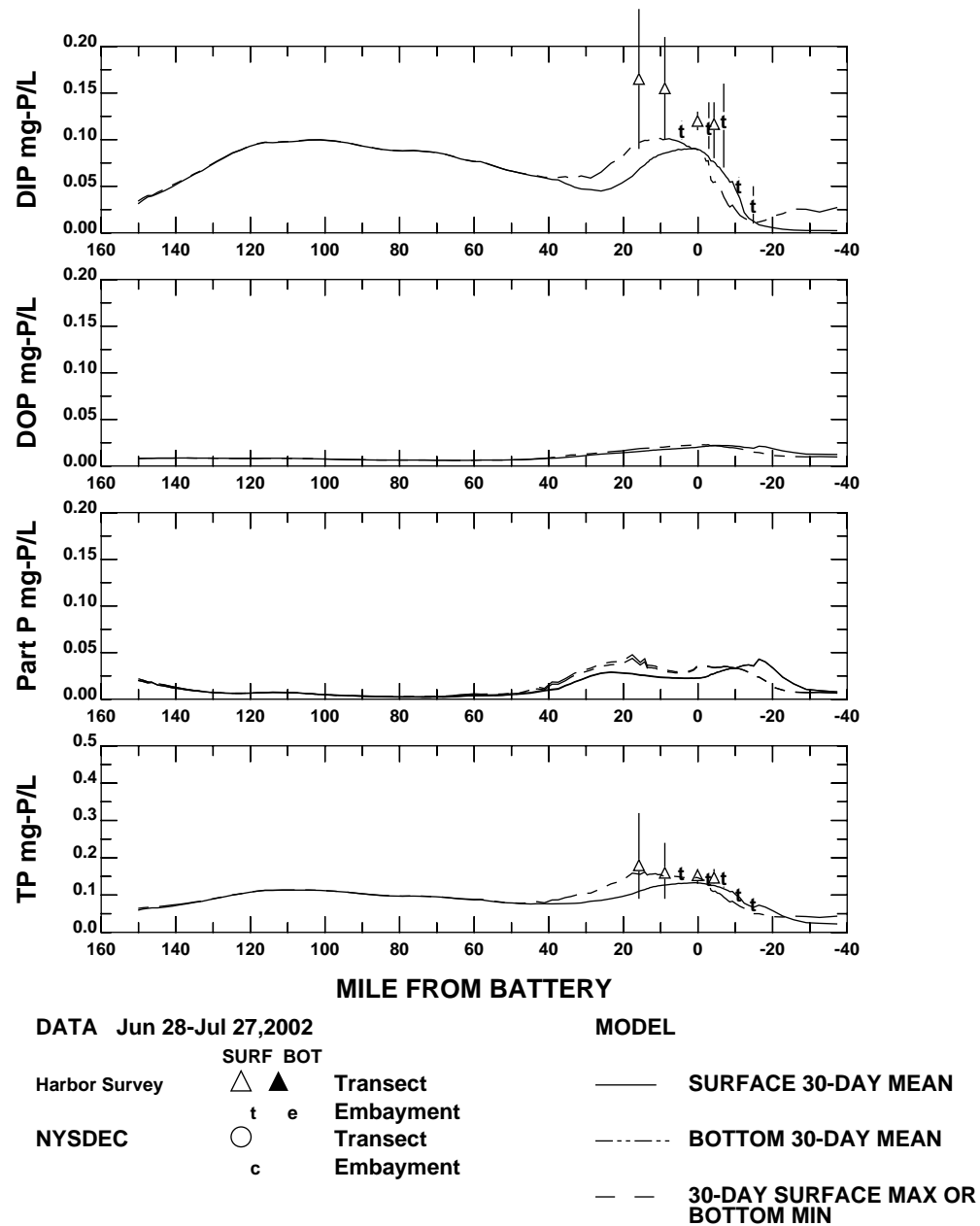
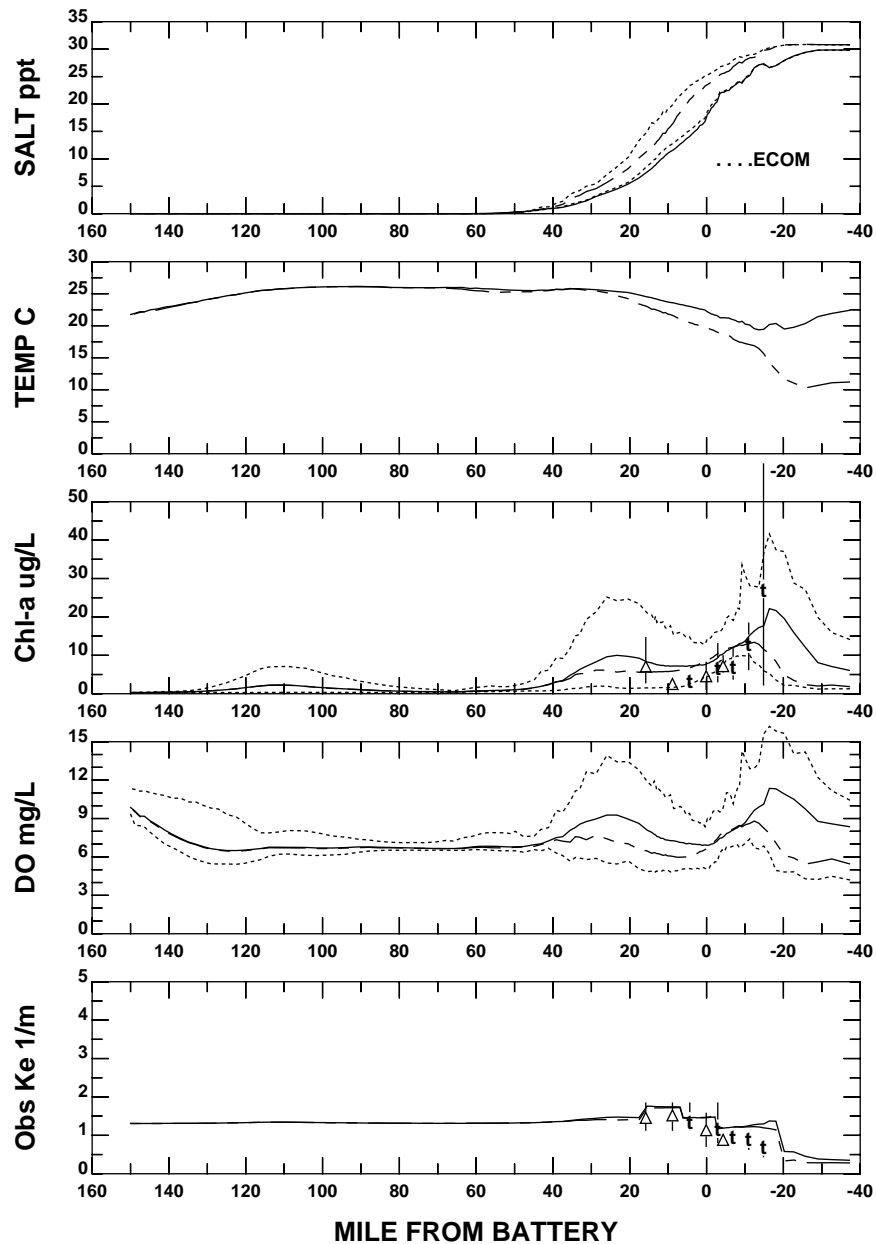
	<b>SURF</b>	<b>BOT</b>	
△	▲		Transect
t	e		Embayment
○			Transect
c			Embayment

## HUDSON RIVER, UPPER AND LOWER BAY, OCEAN

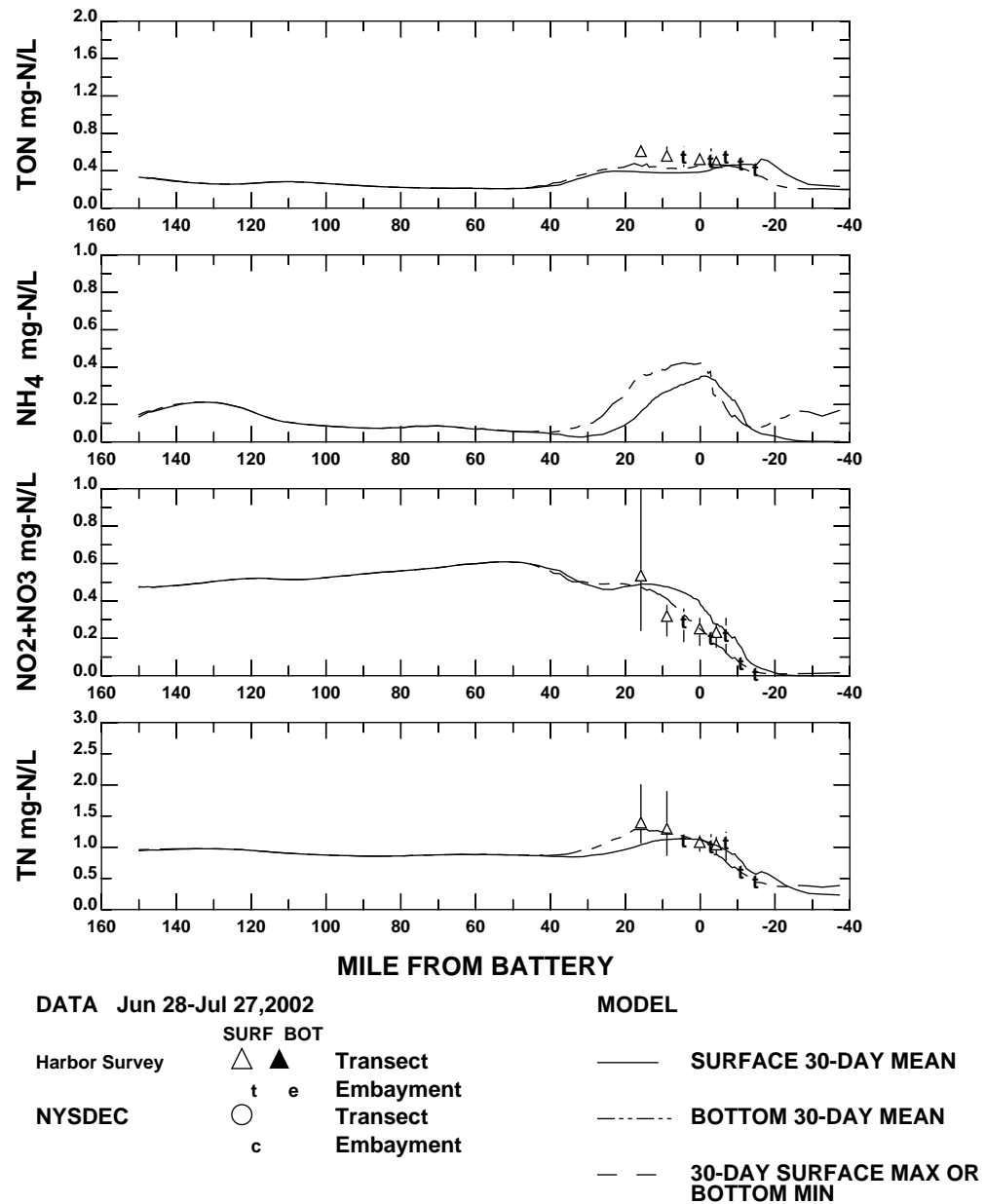
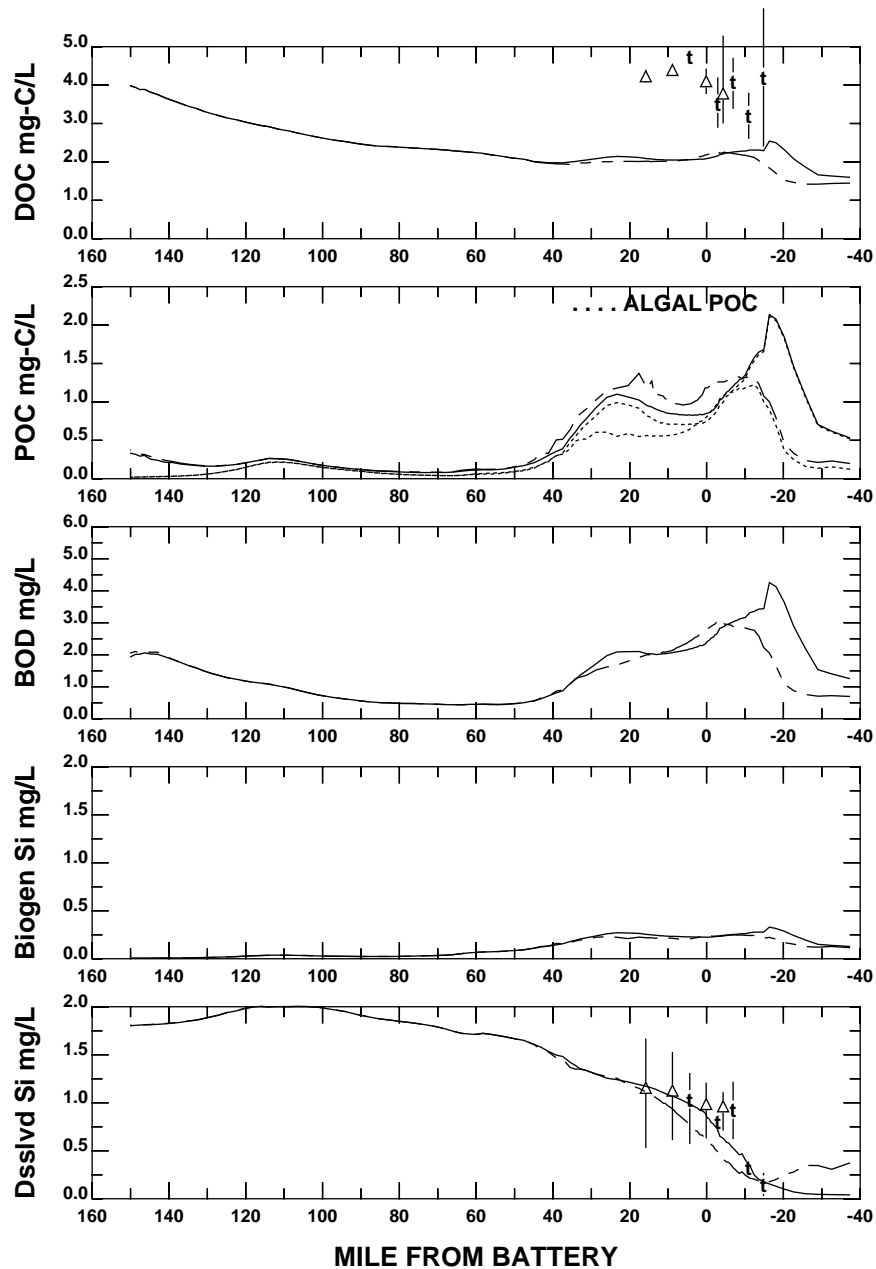




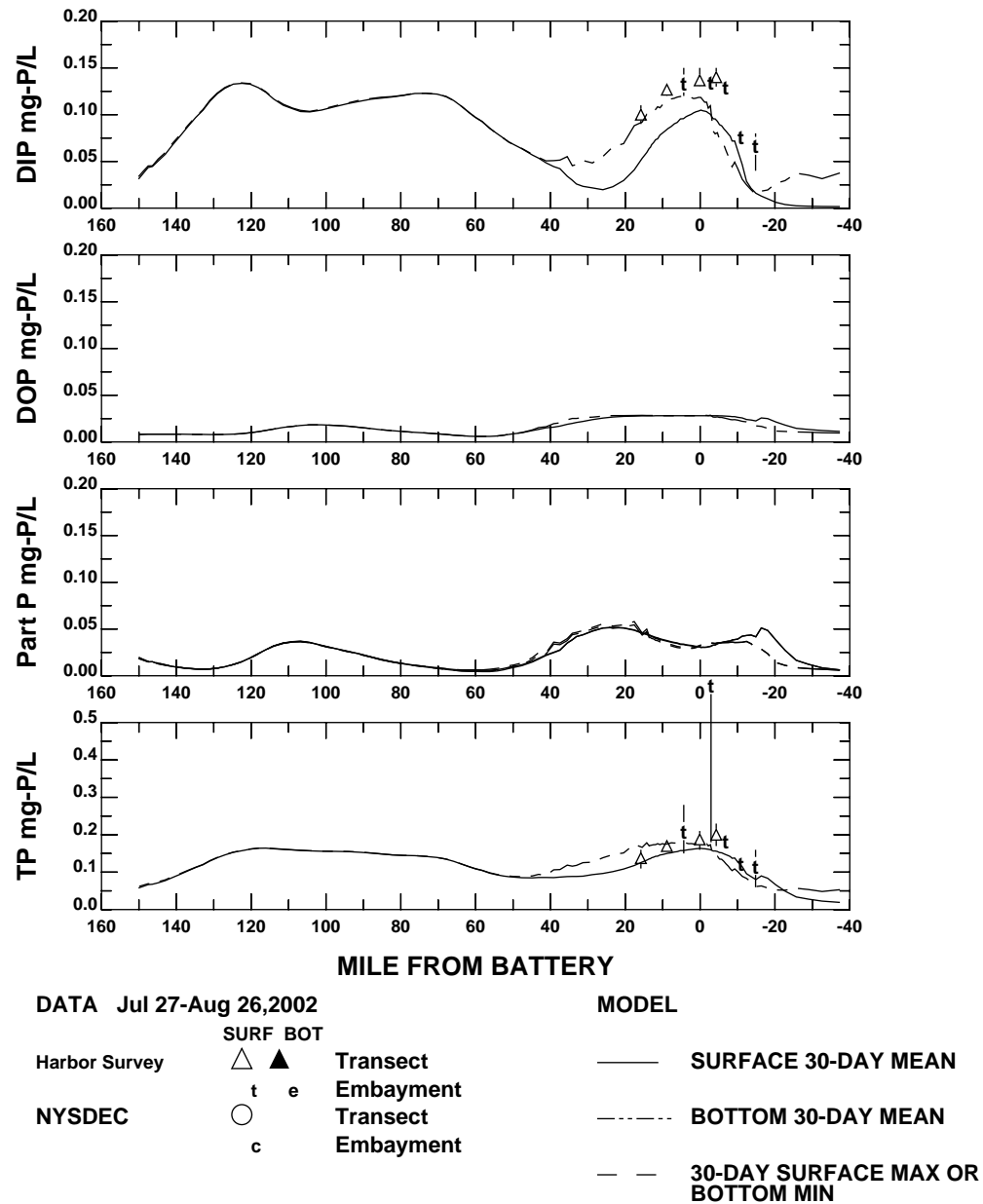
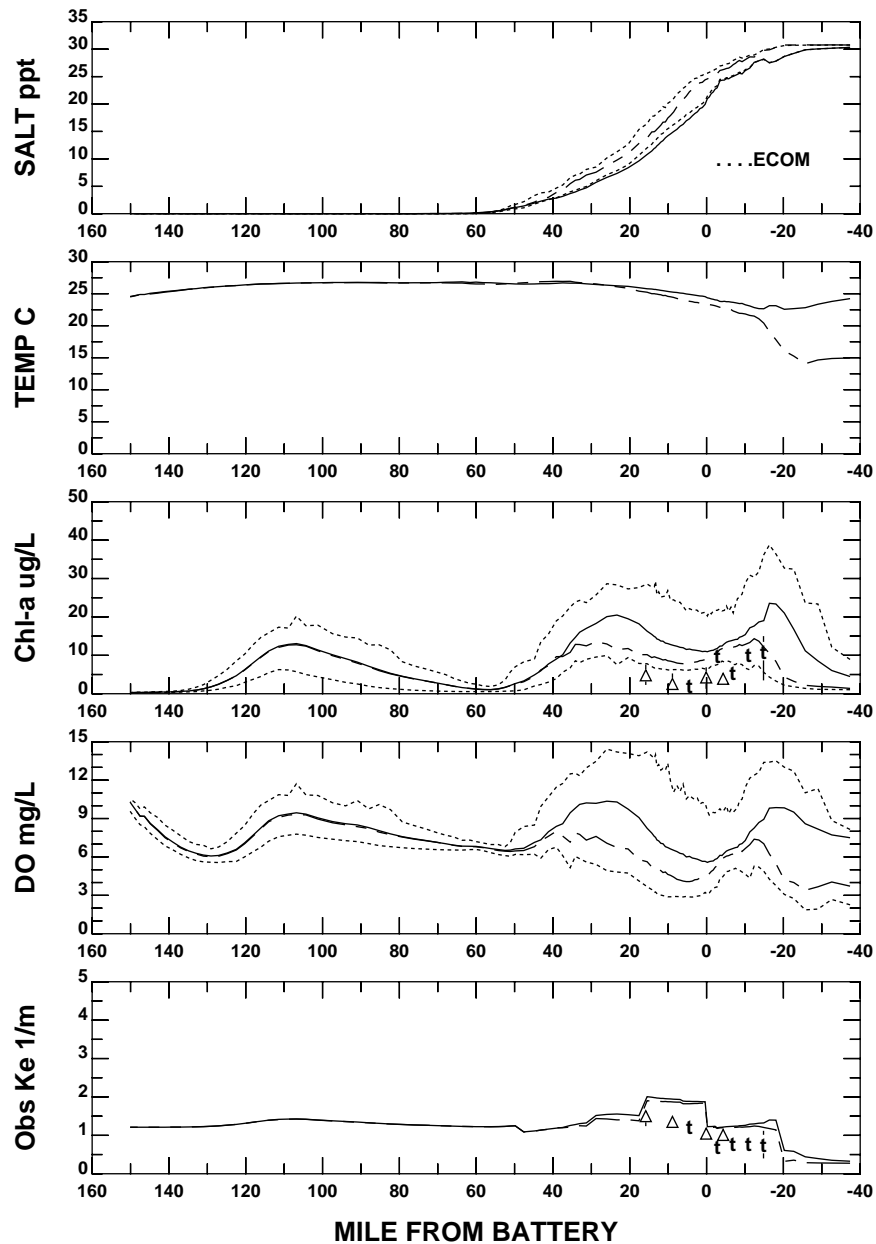
## HUDSON RIVER, UPPER AND LOWER BAY, OCEAN



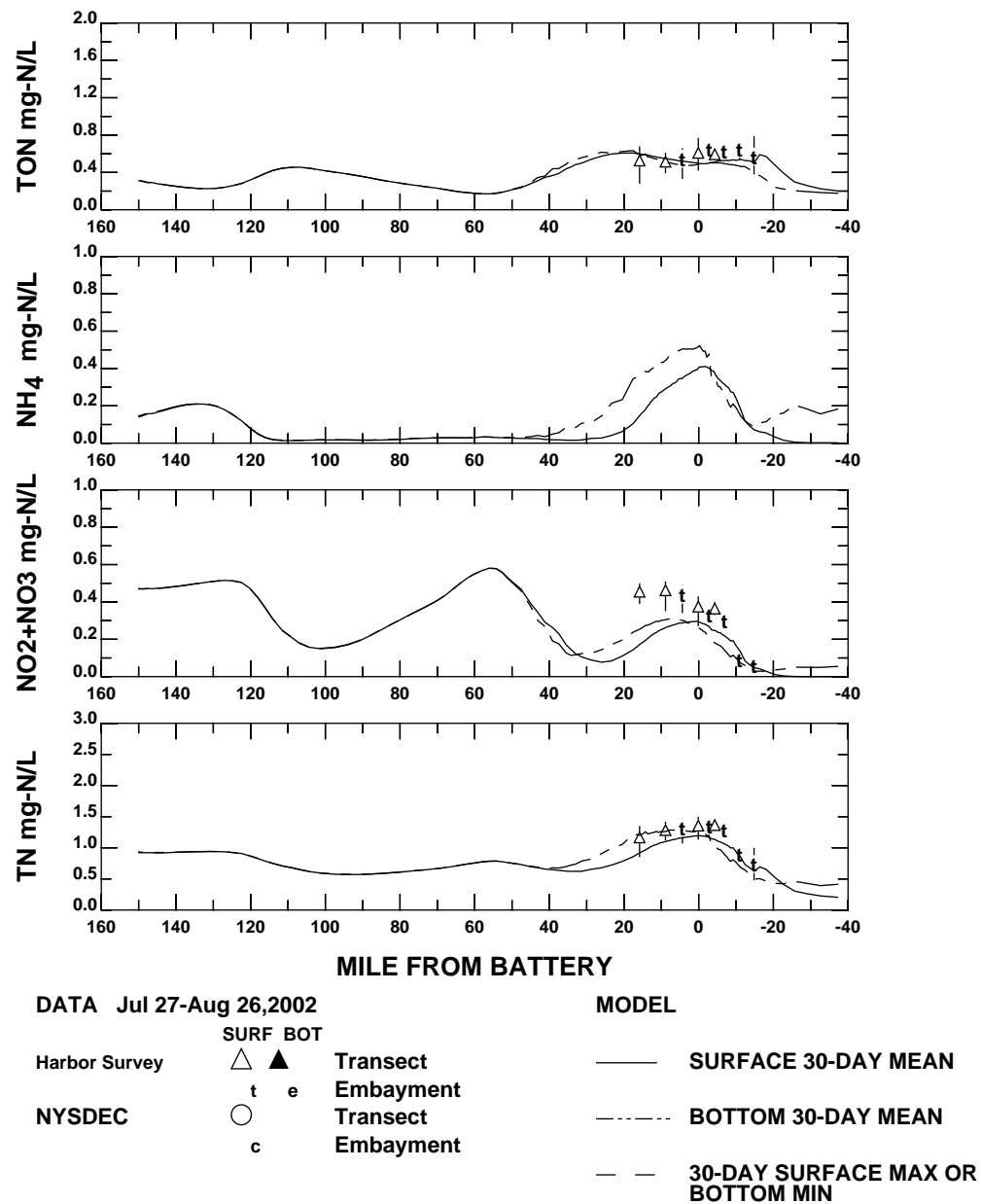
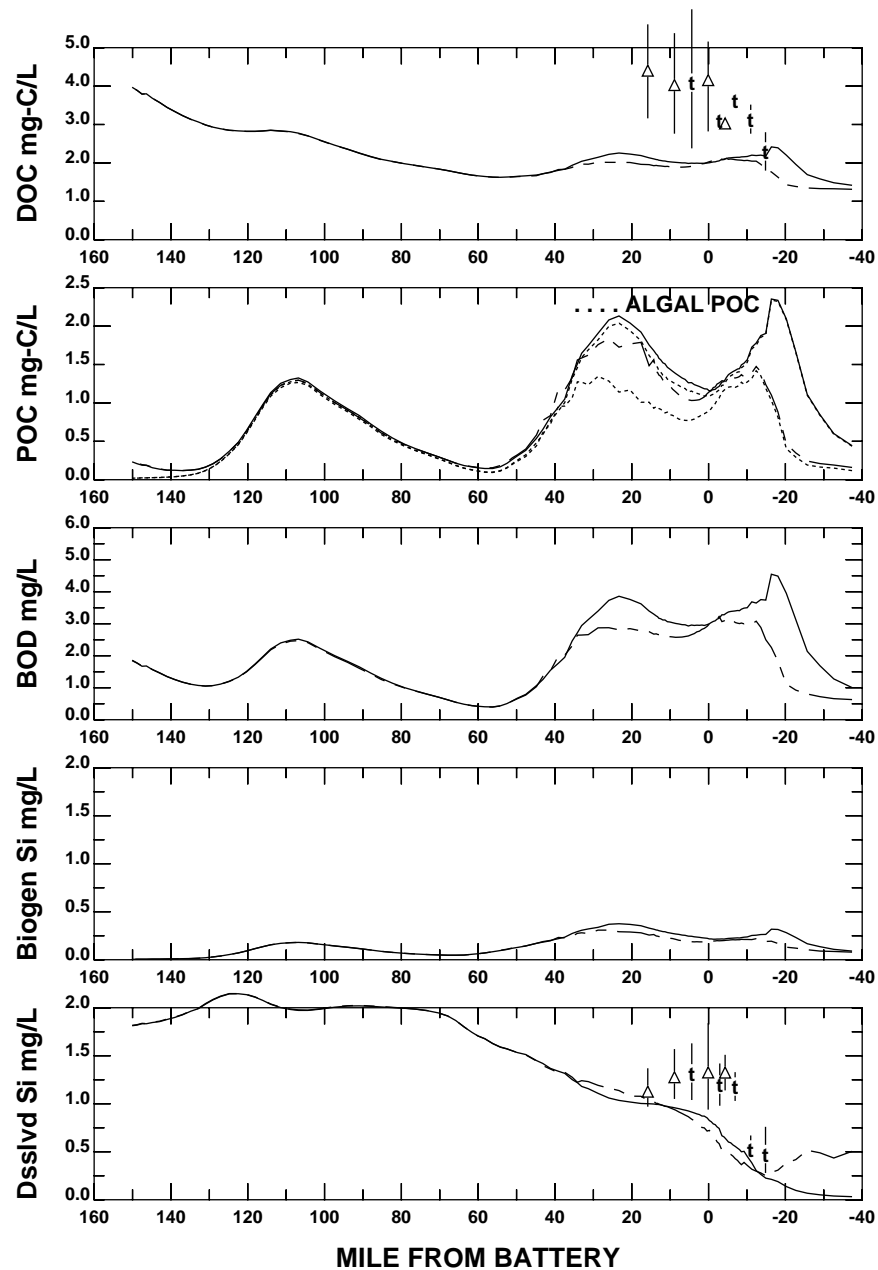
**HUDSON RIVER, UPPER AND LOWER BAY, OCEAN**



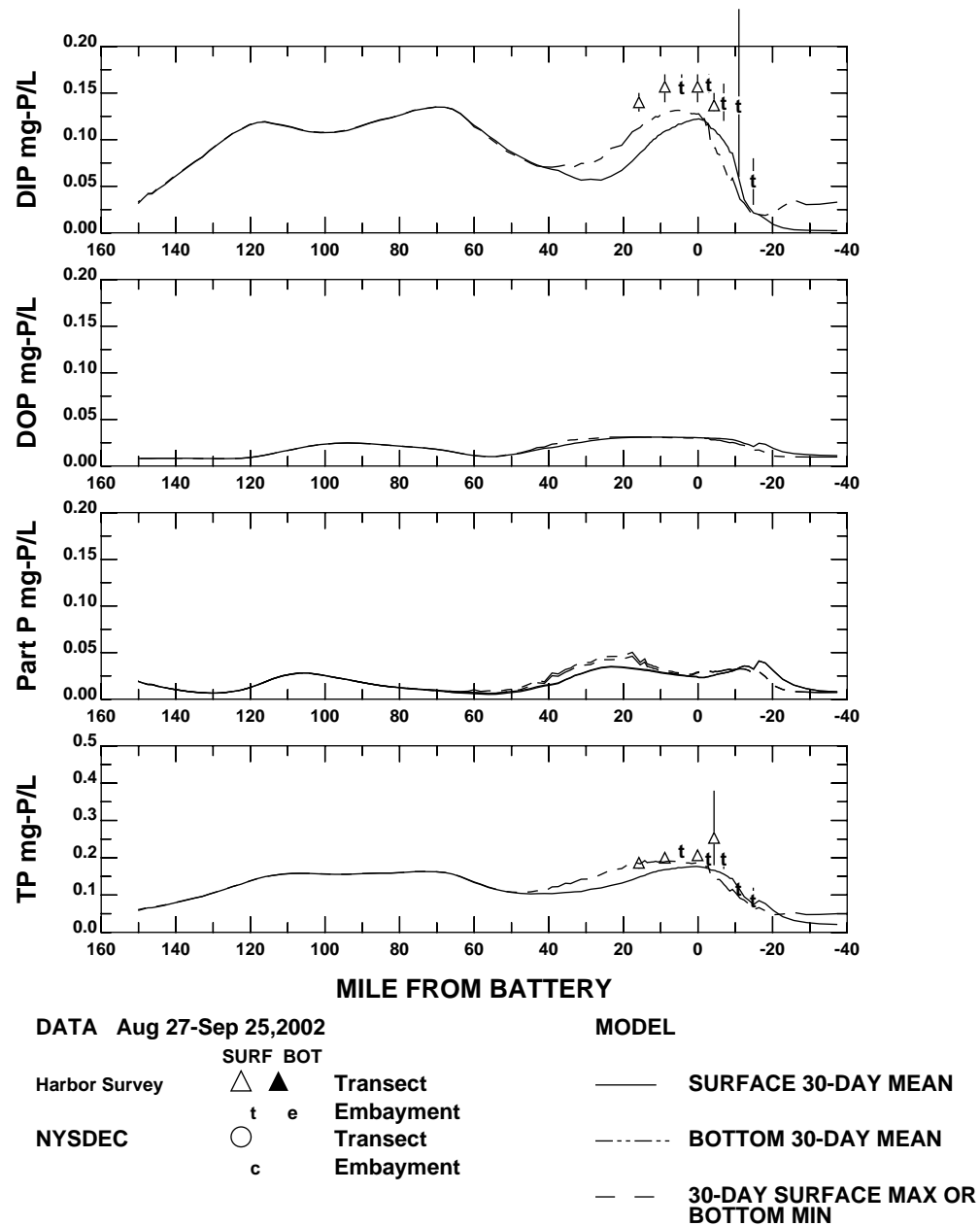
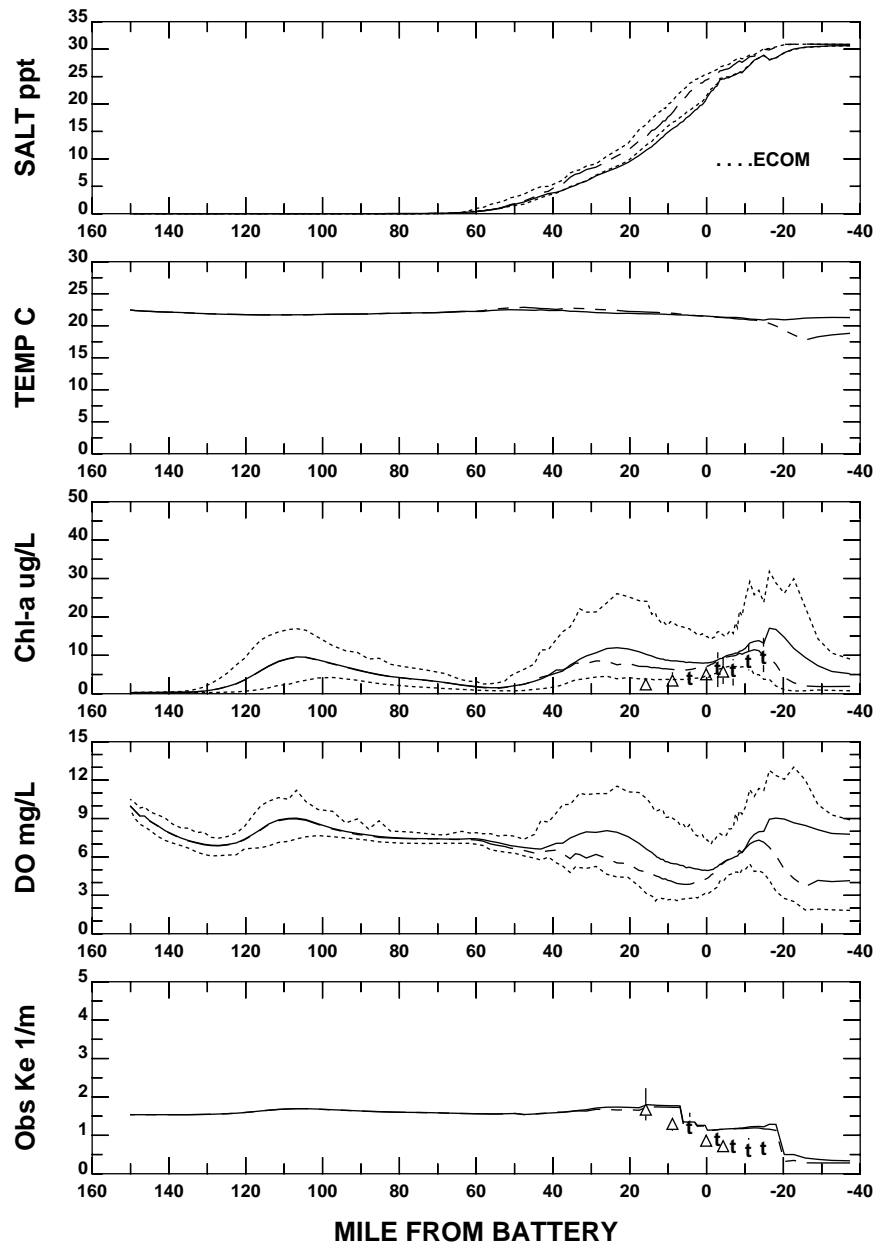
## HUDSON RIVER, UPPER AND LOWER BAY, OCEAN



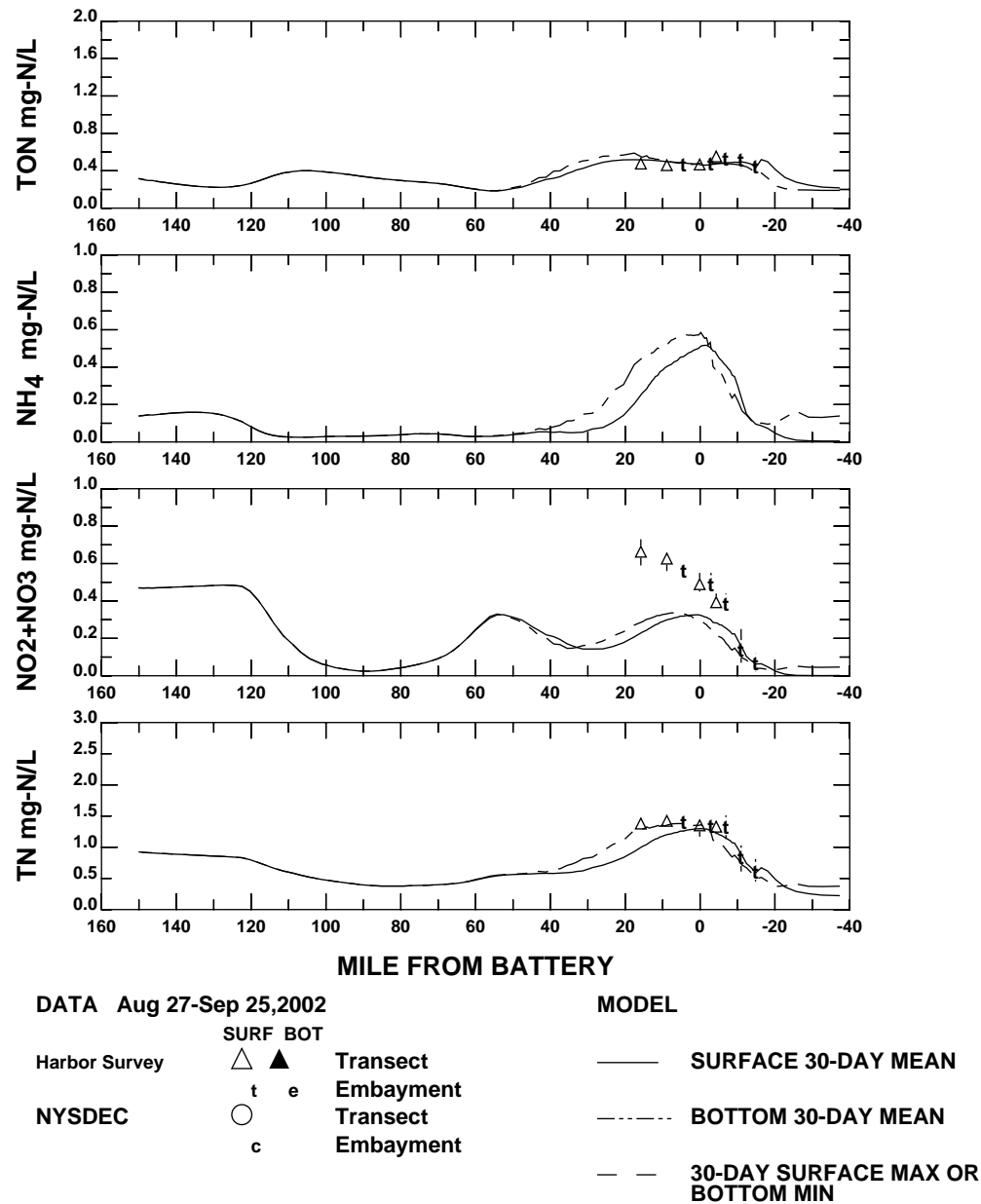
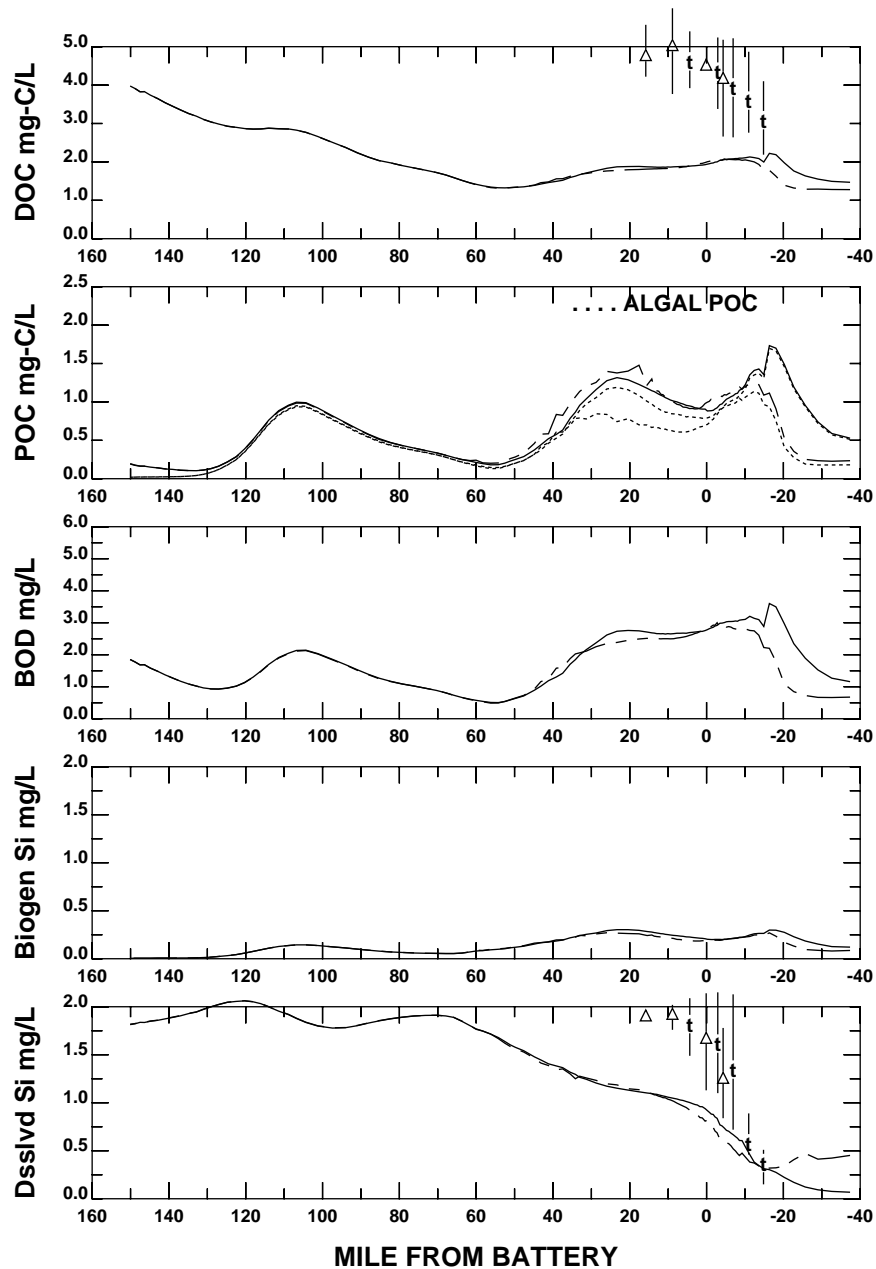
# HUDSON RIVER, UPPER AND LOWER BAY, OCEAN



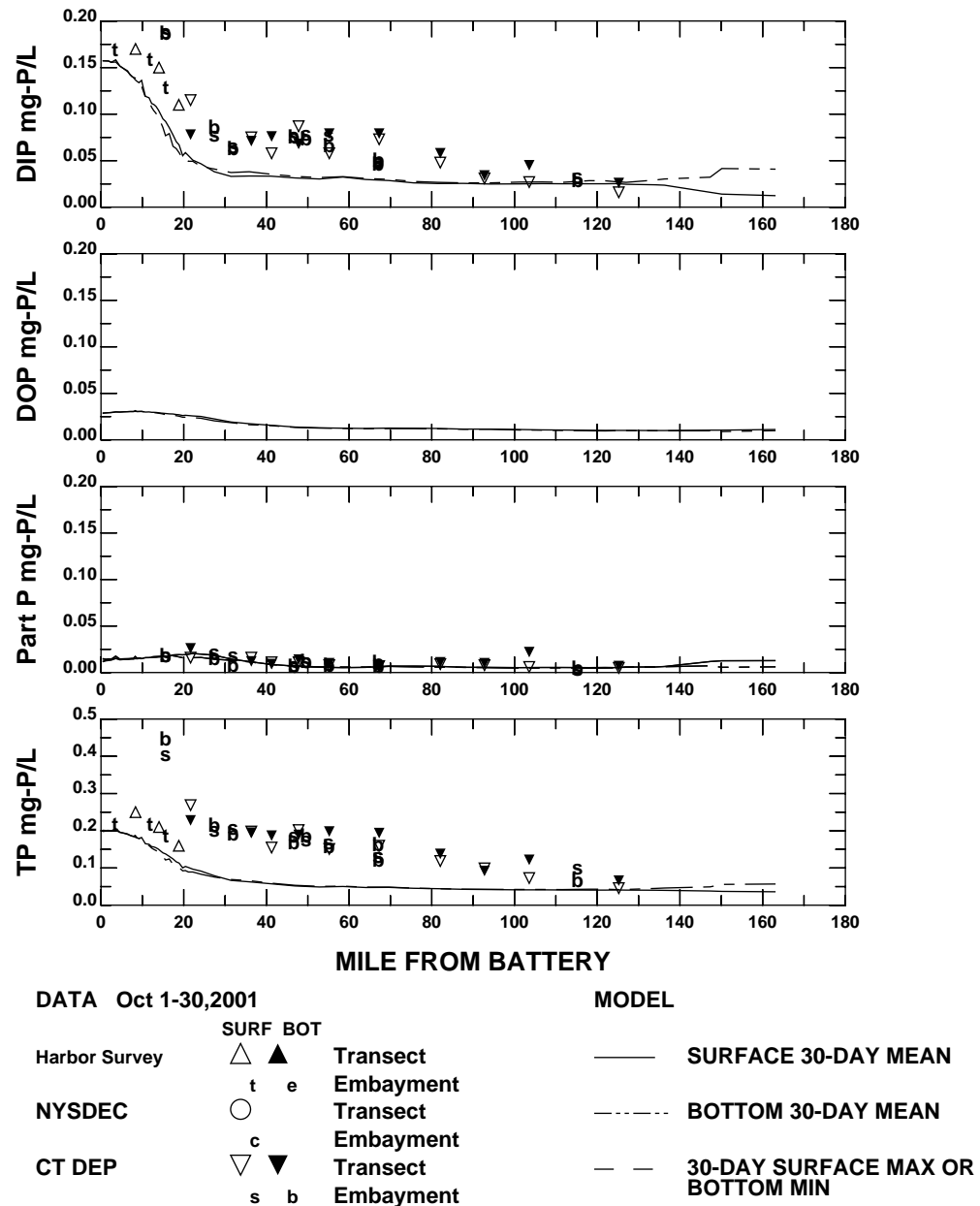
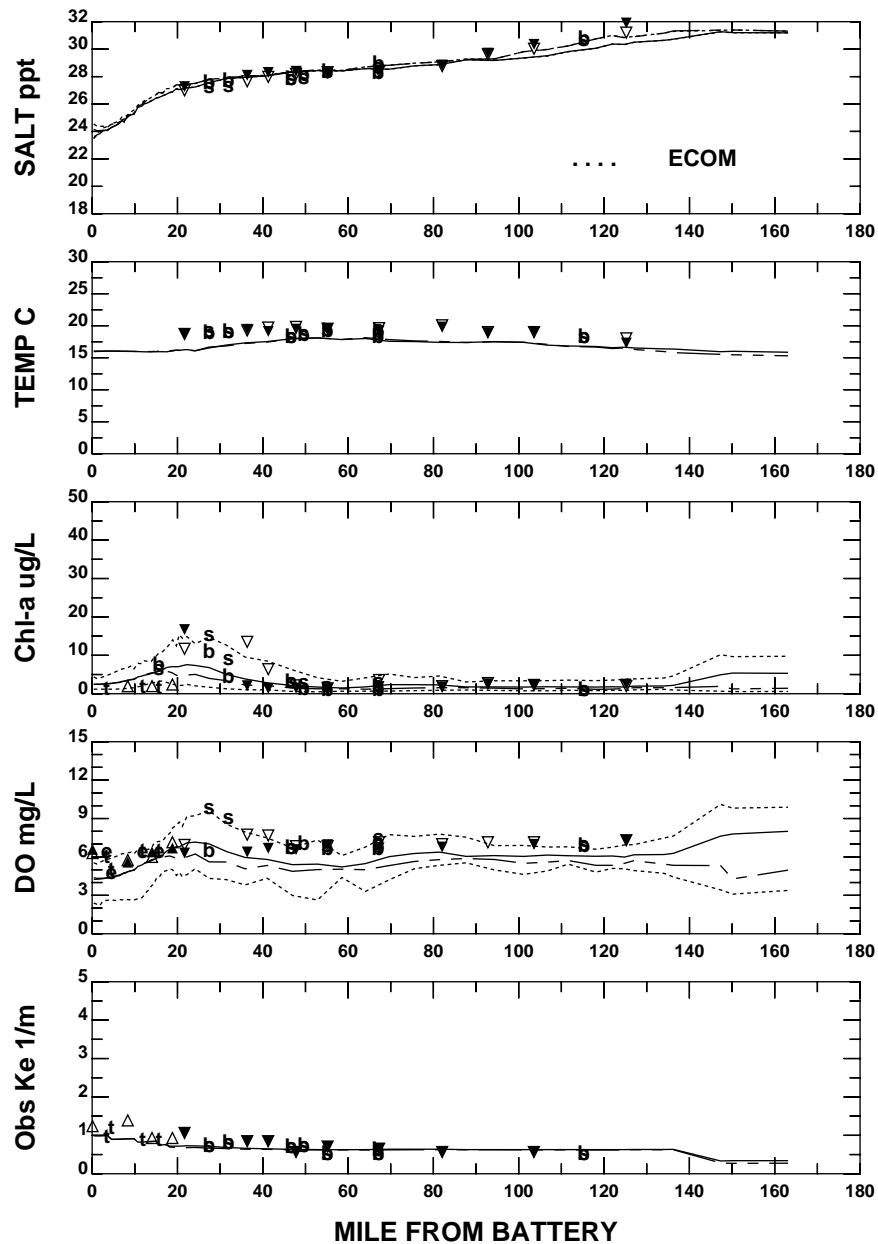
## HUDSON RIVER, UPPER AND LOWER BAY, OCEAN



**HUDSON RIVER, UPPER AND LOWER BAY, OCEAN**

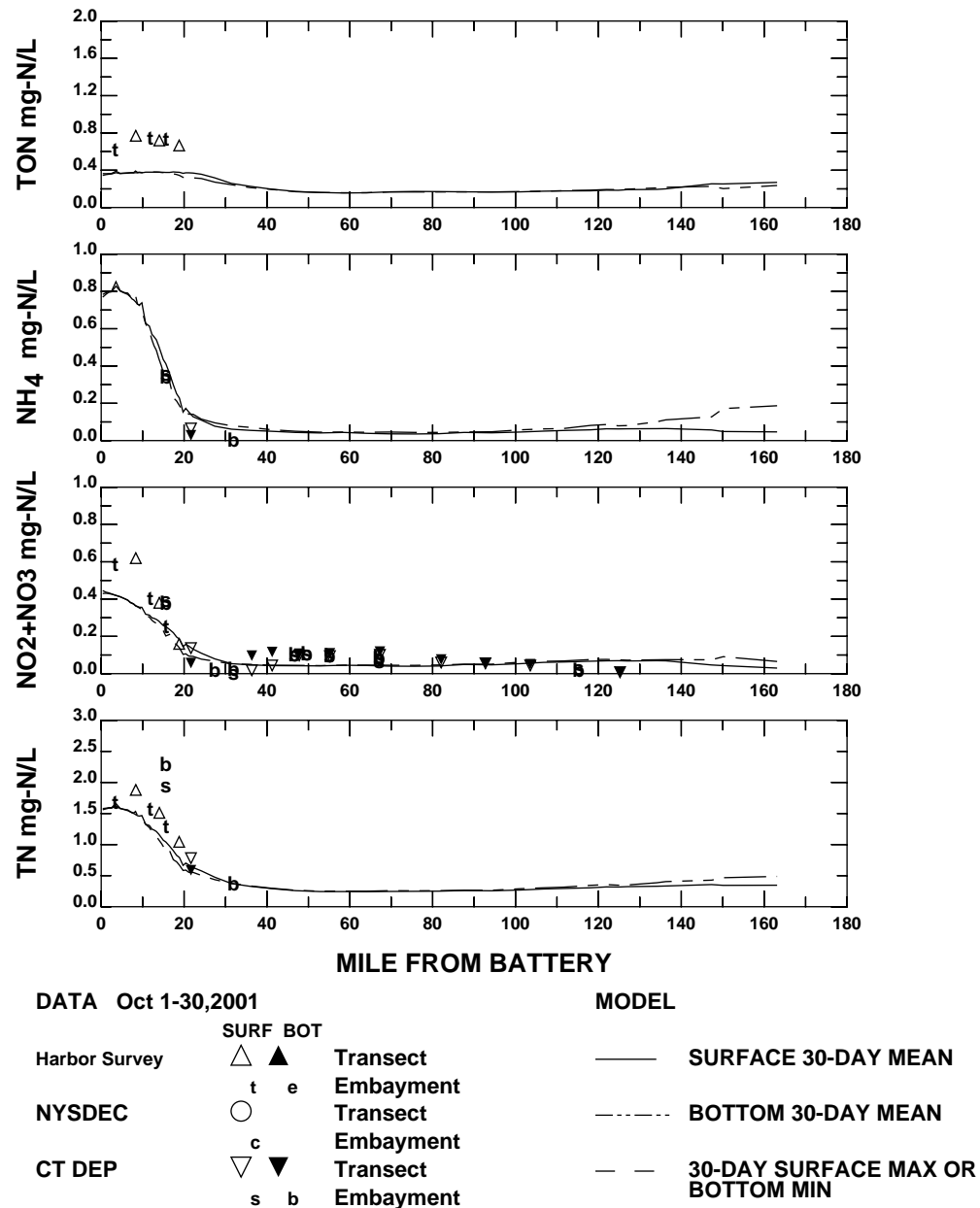
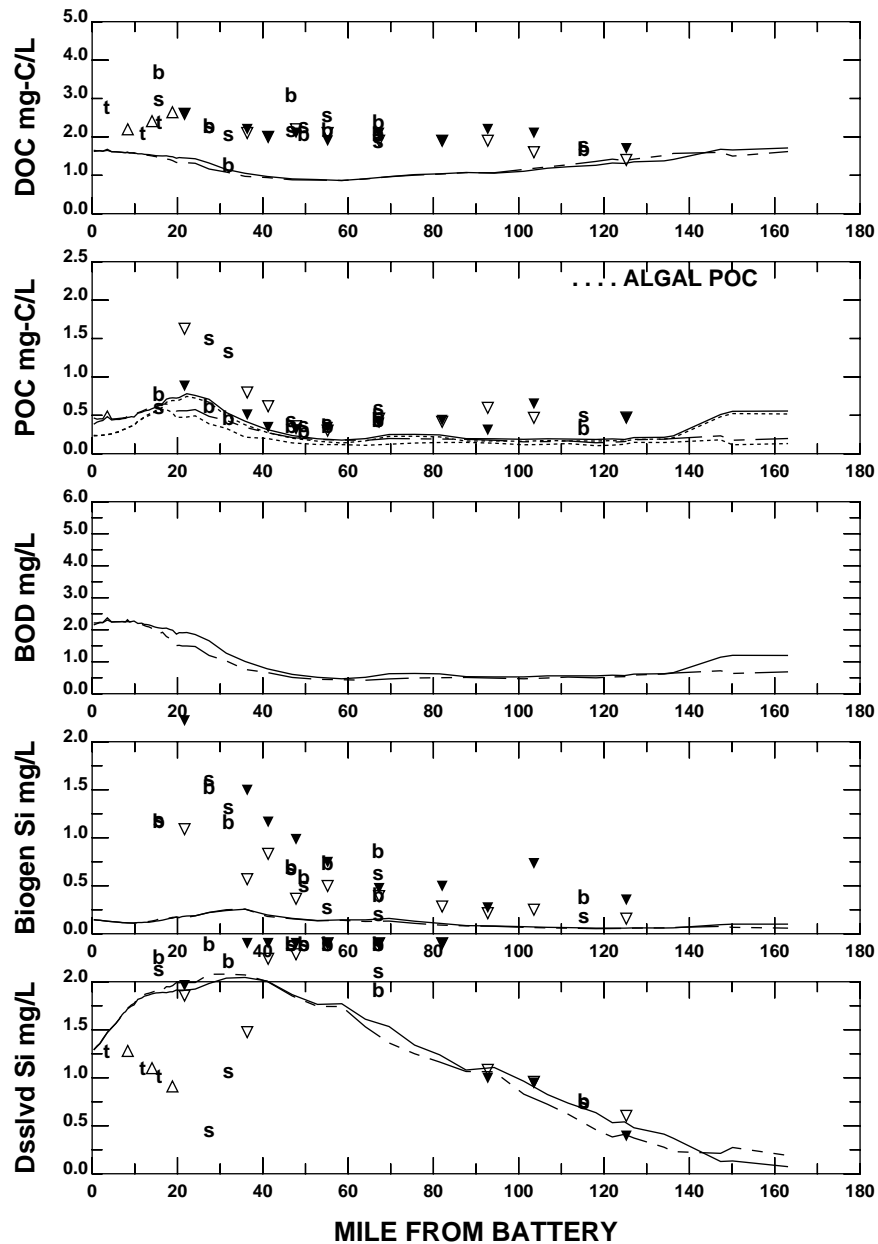


## HUDSON RIVER, UPPER AND LOWER BAY, OCEAN

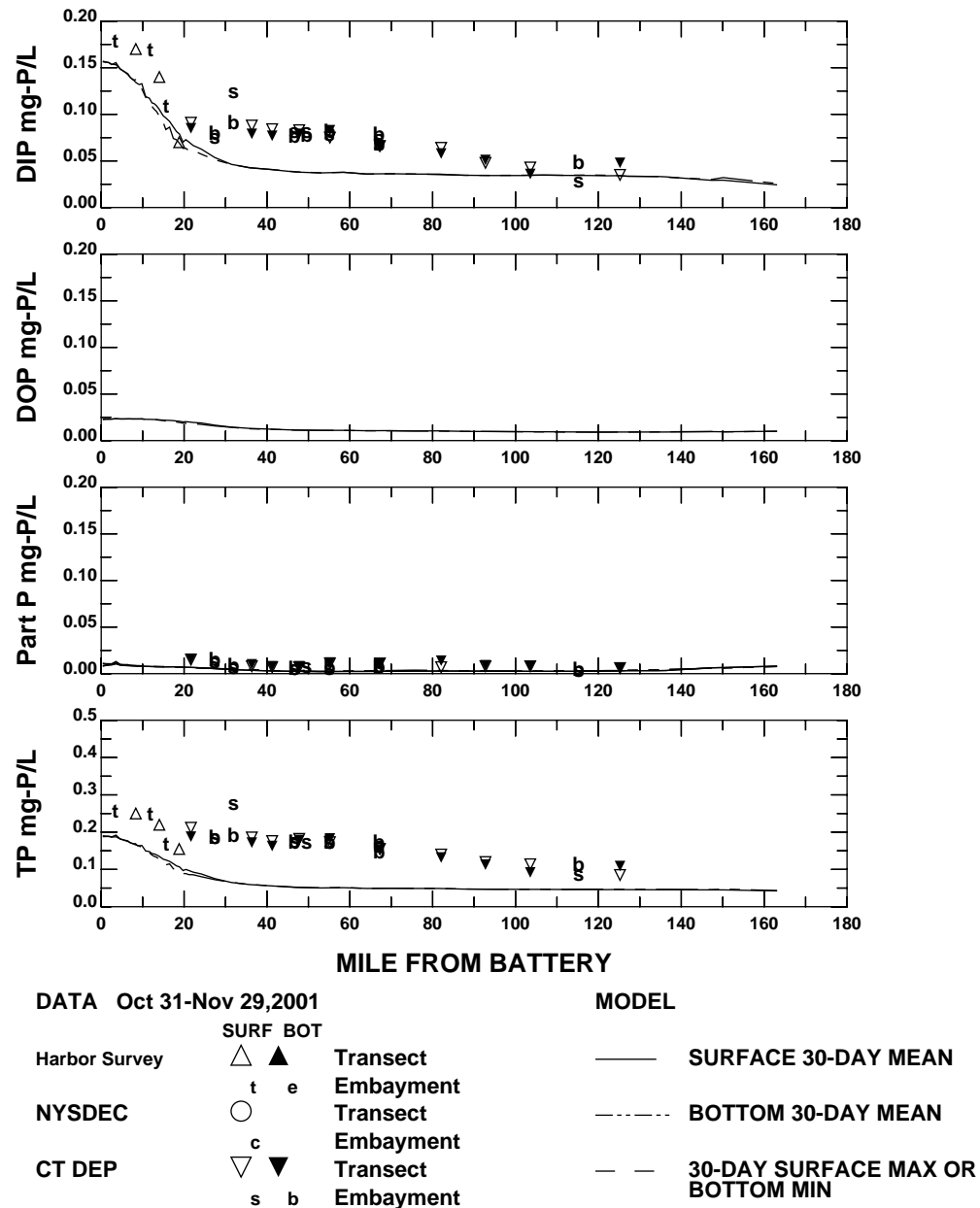
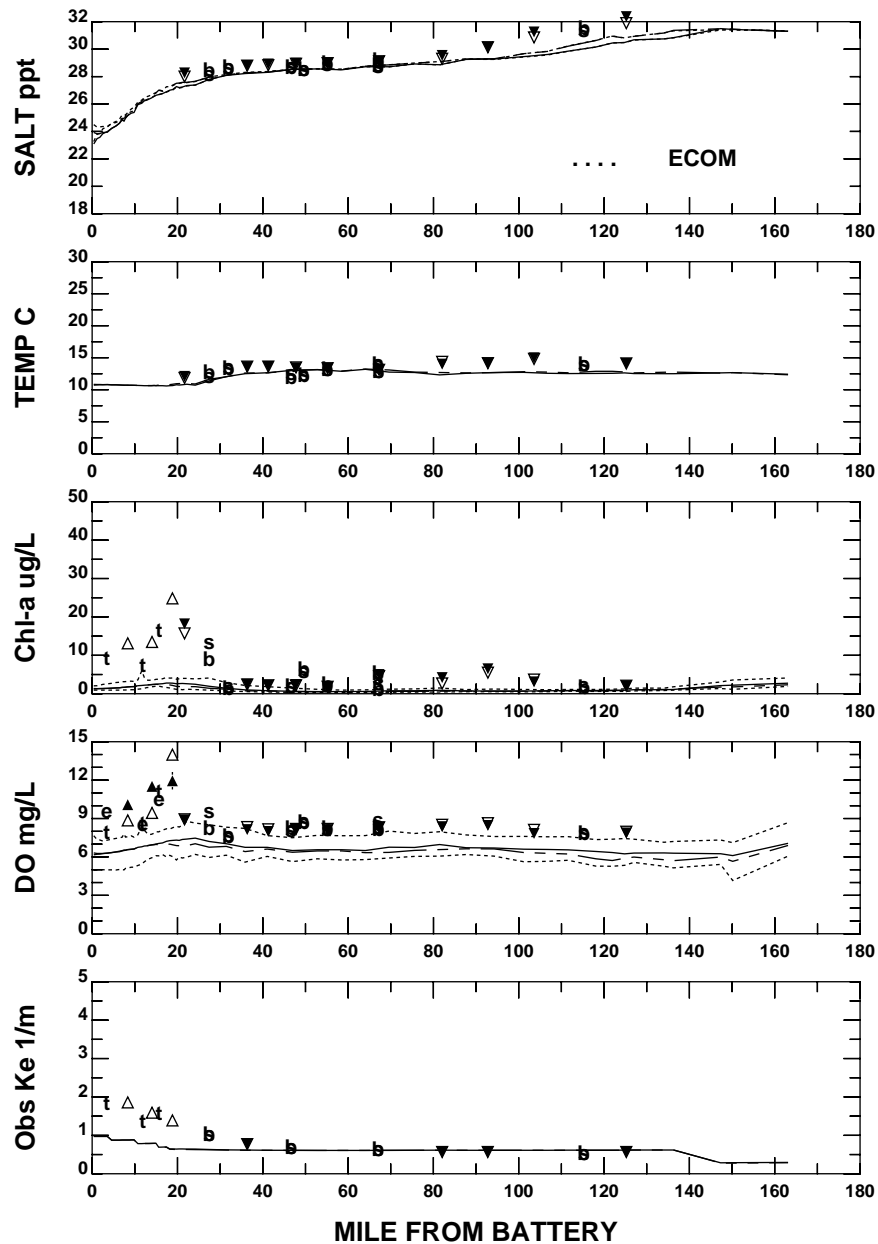


**EAST RIVER AND LONG ISLAND SOUND**

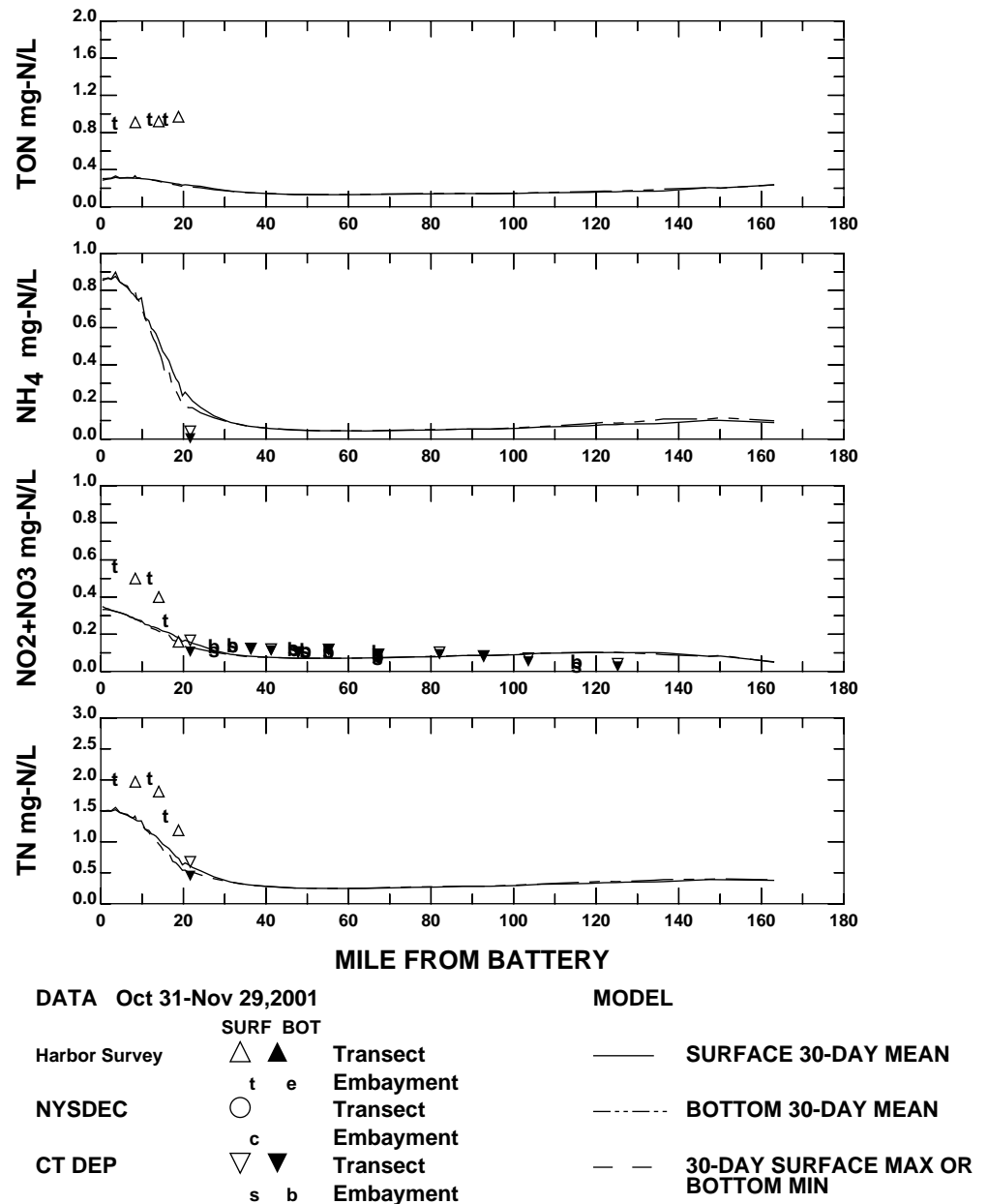
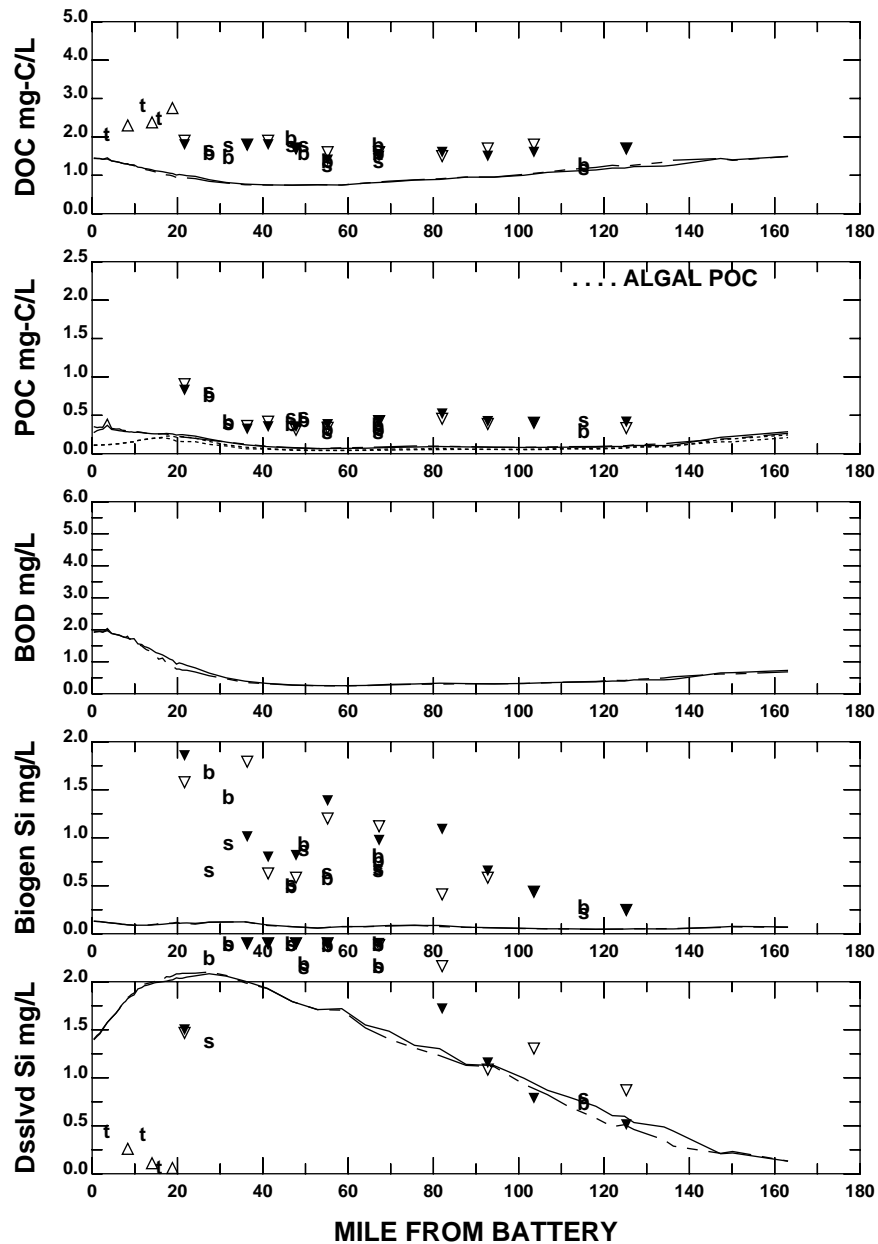




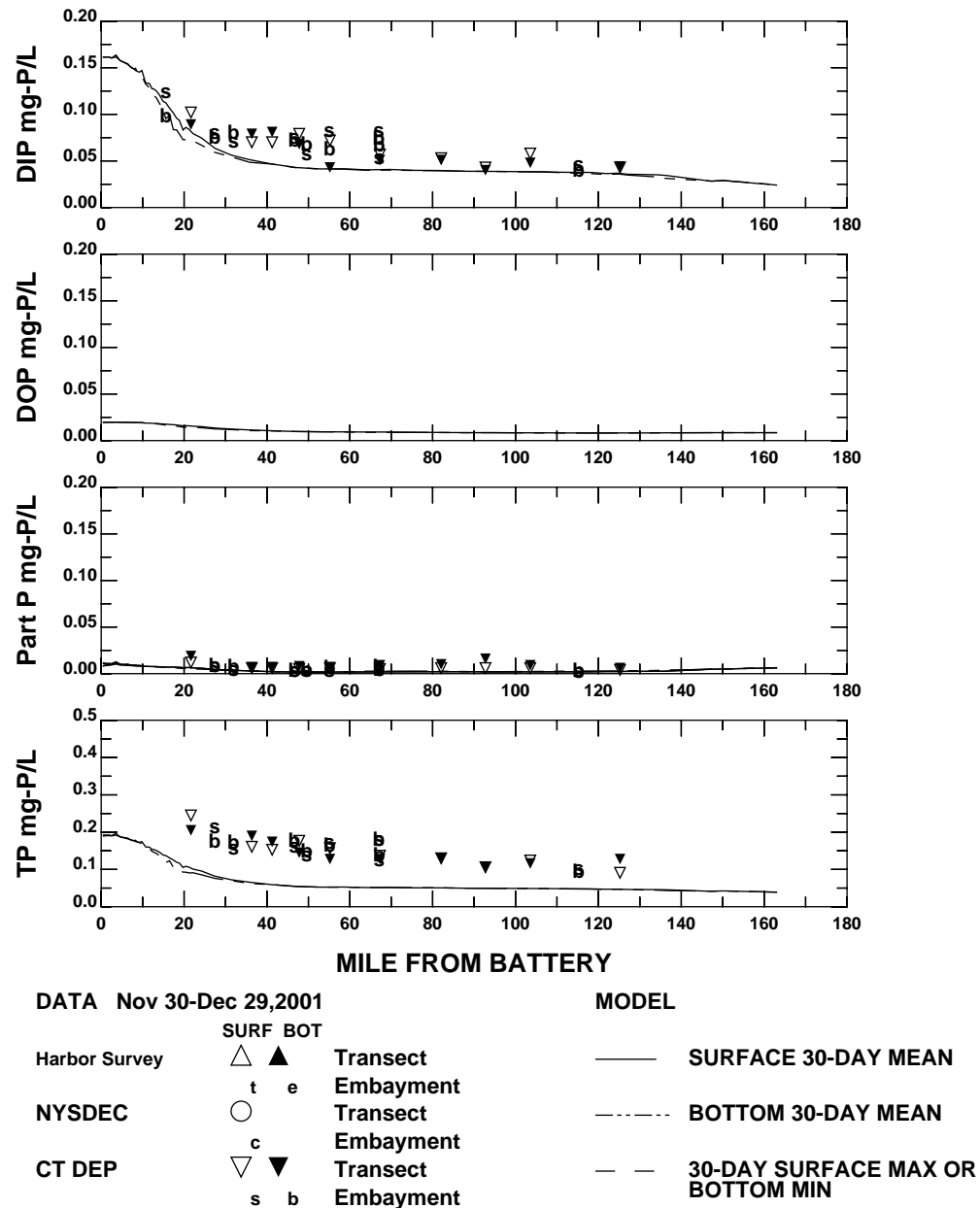
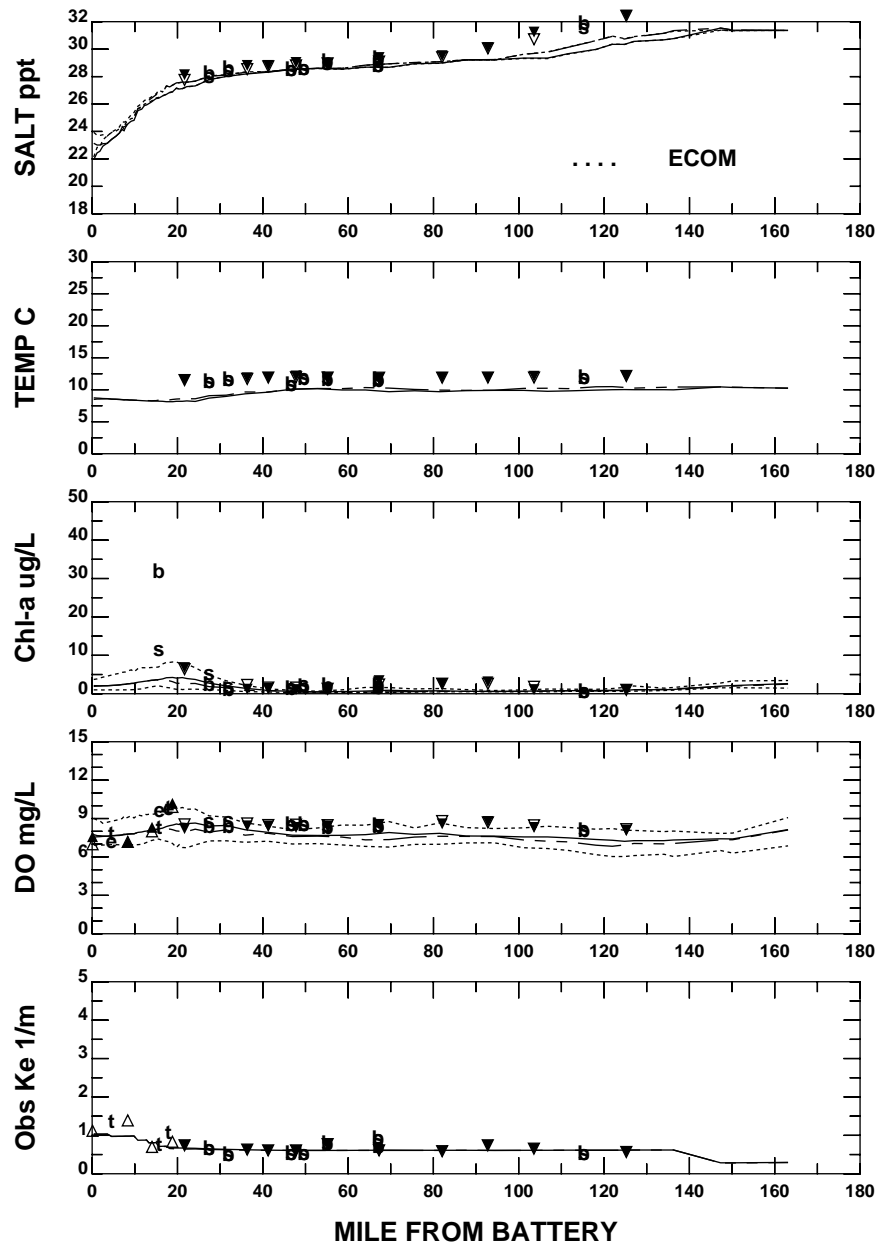
# EAST RIVER AND LONG ISLAND SOUND



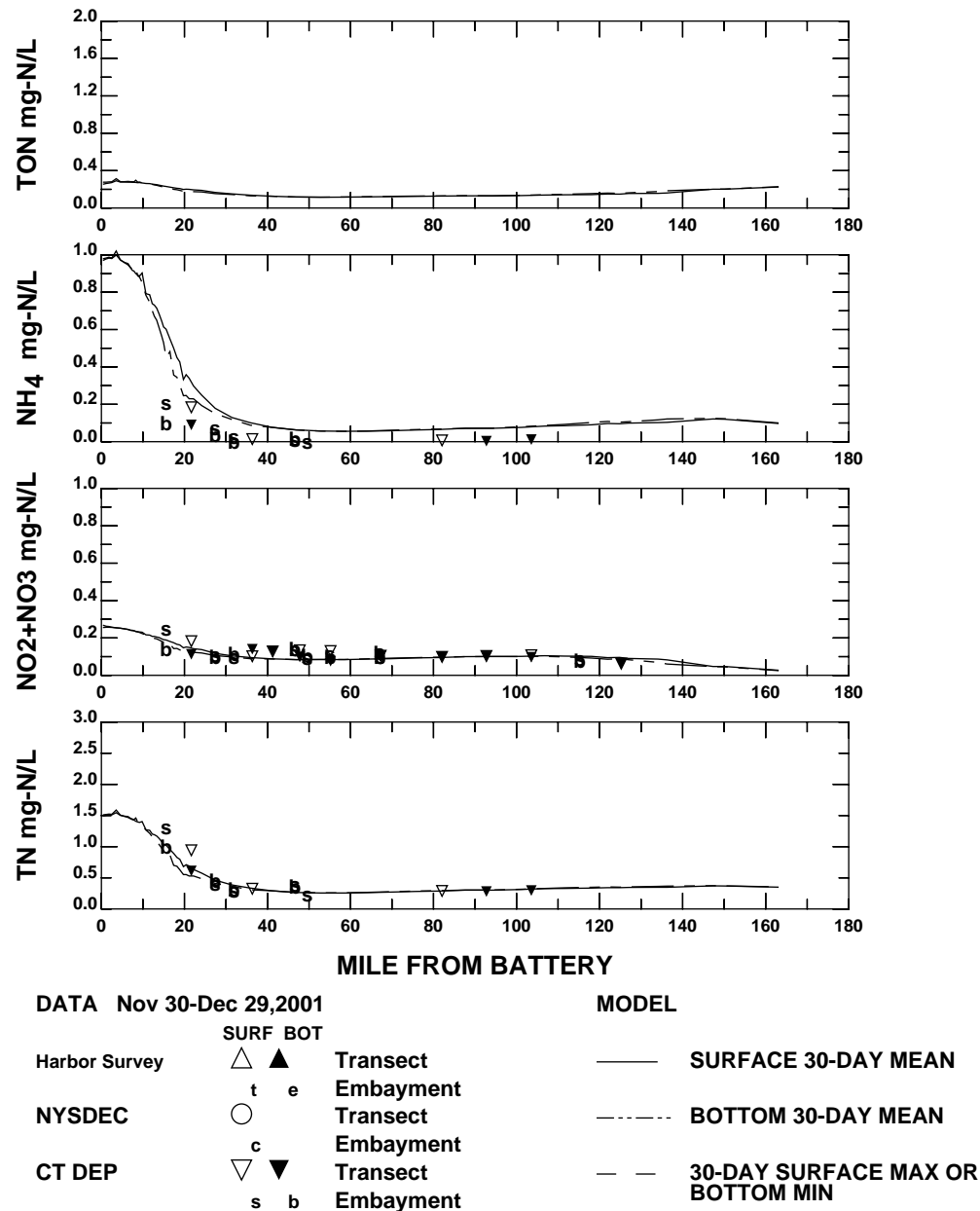
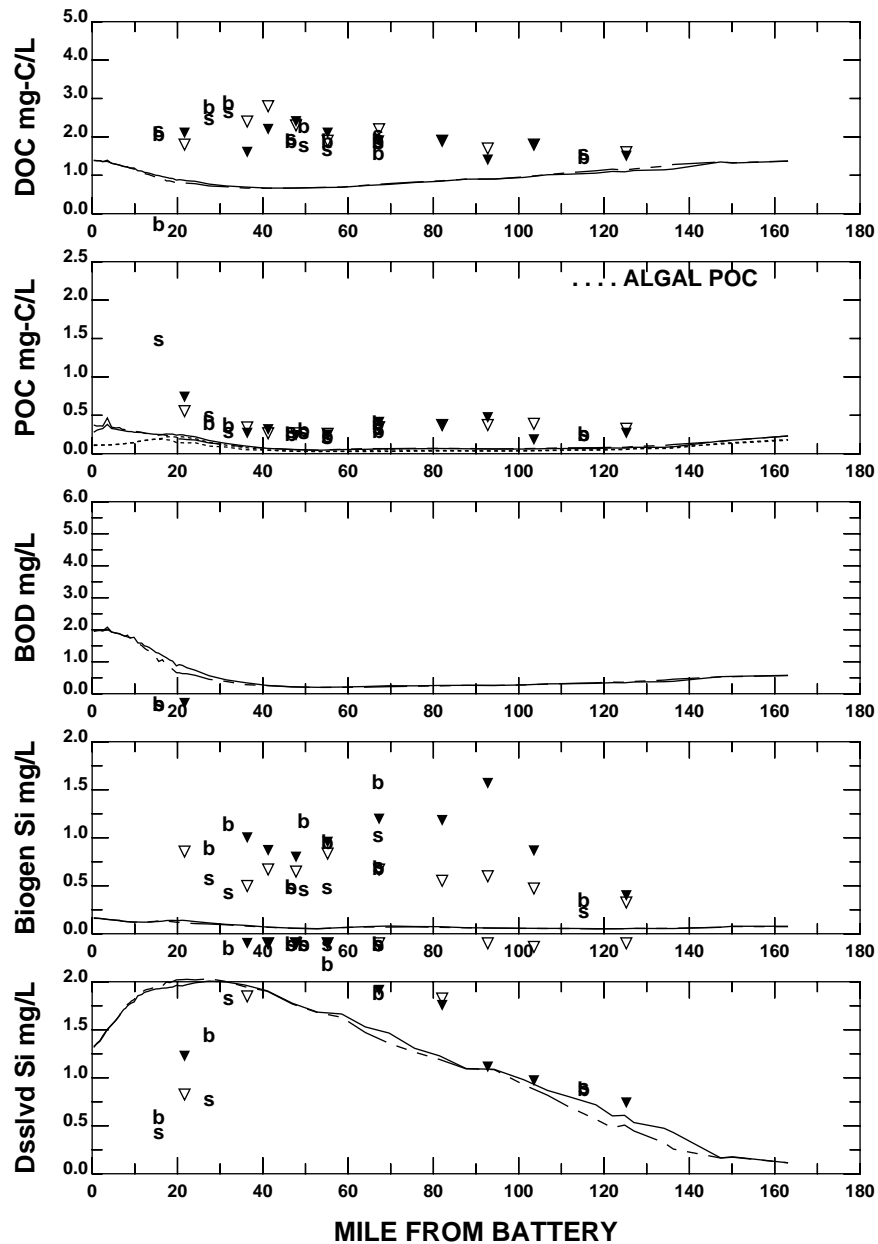
**EAST RIVER AND LONG ISLAND SOUND**



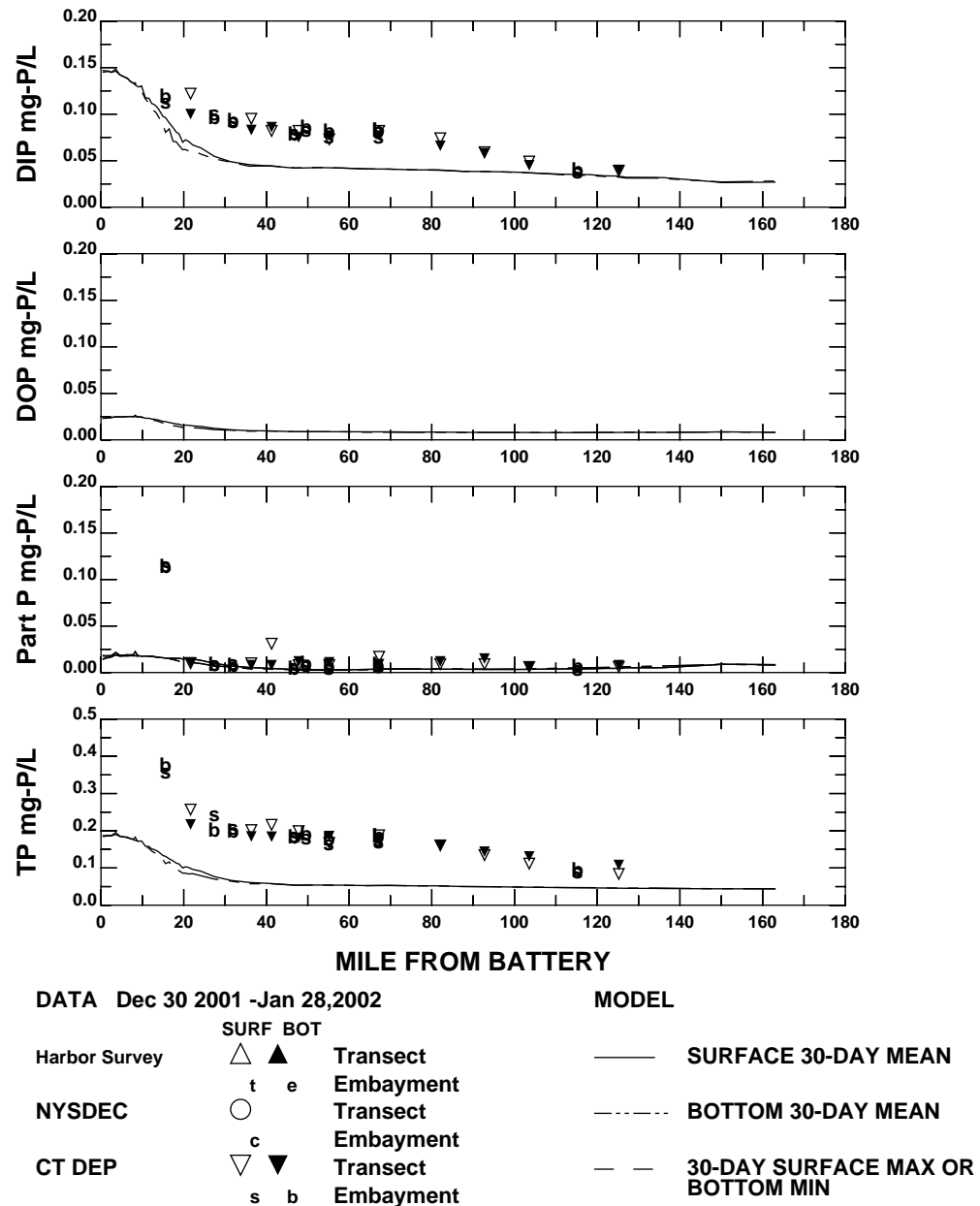
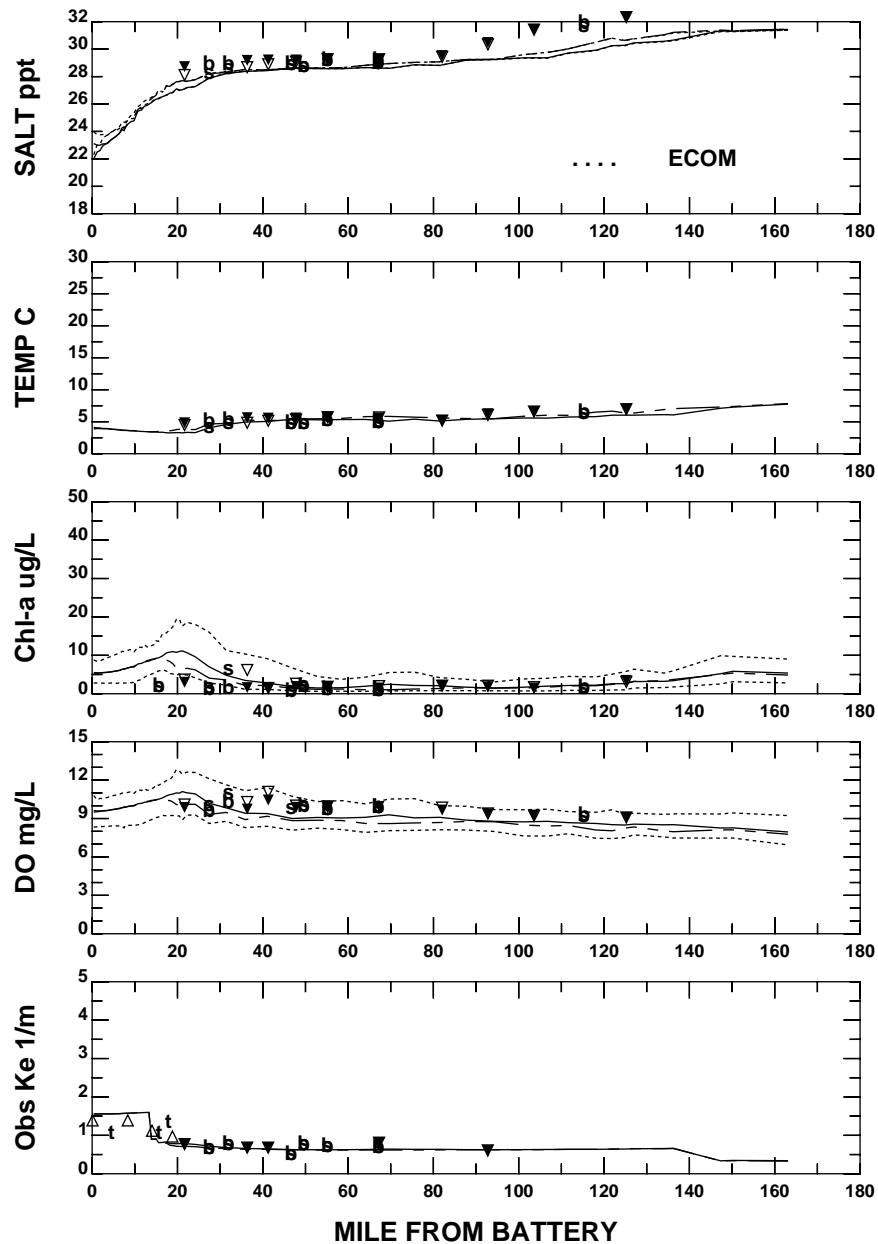
# EAST RIVER AND LONG ISLAND SOUND



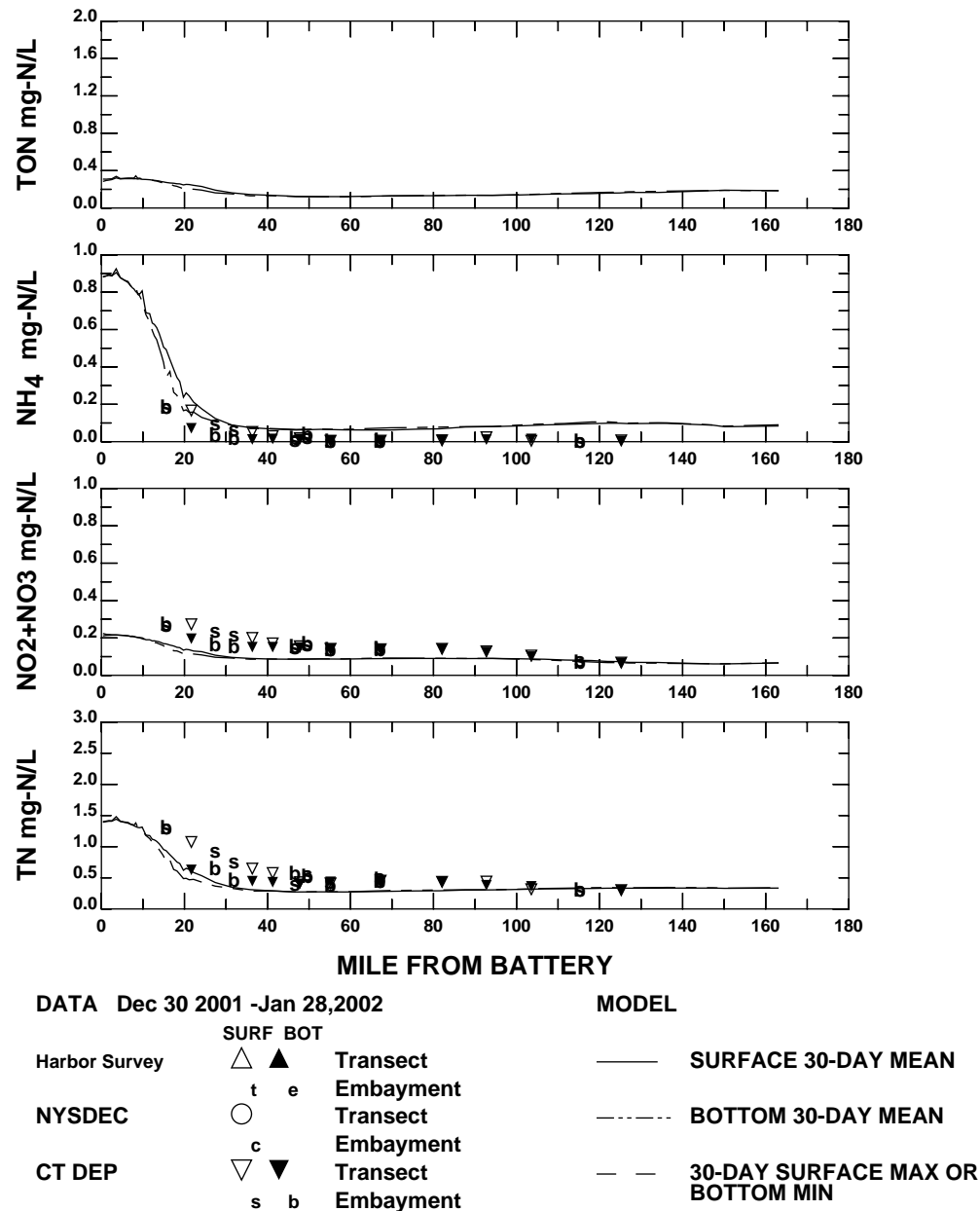
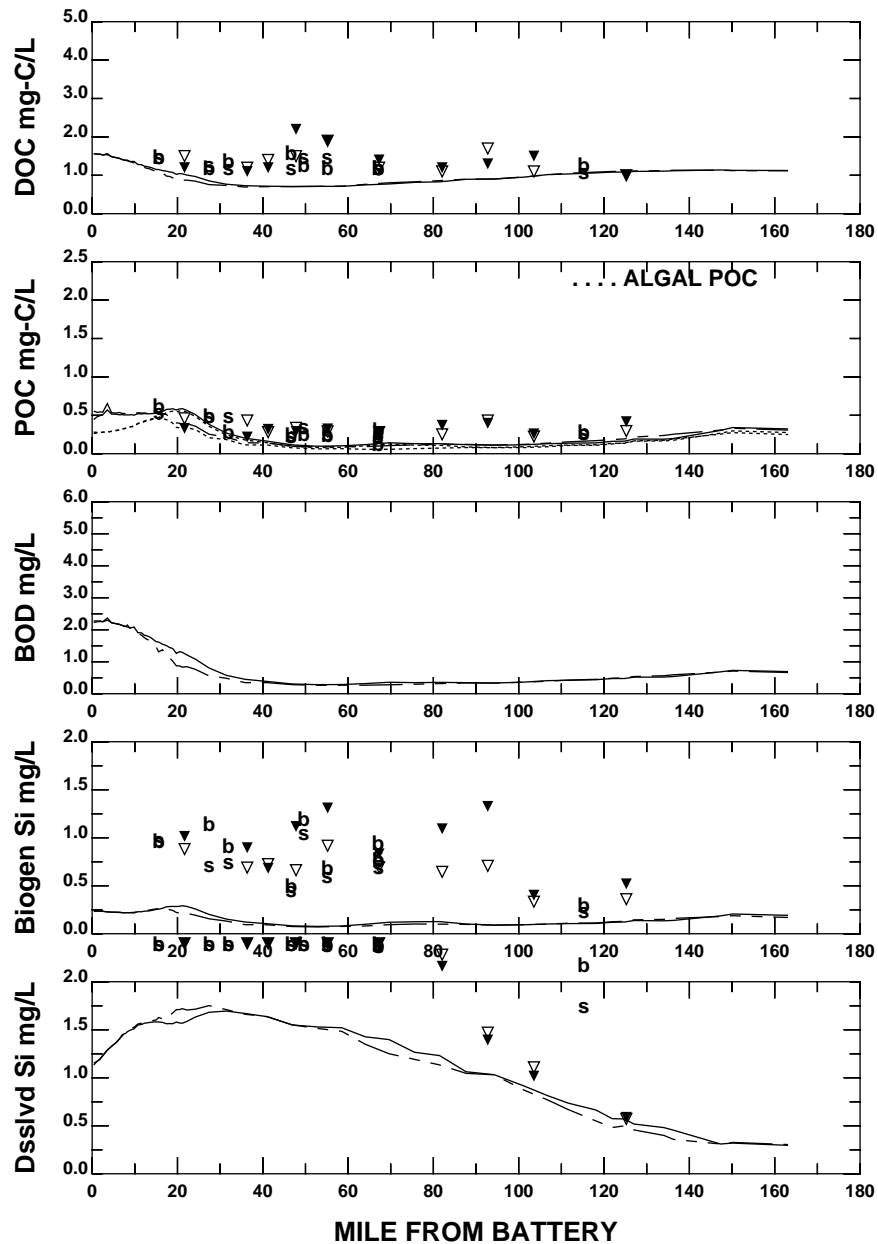
### EAST RIVER AND LONG ISLAND SOUND



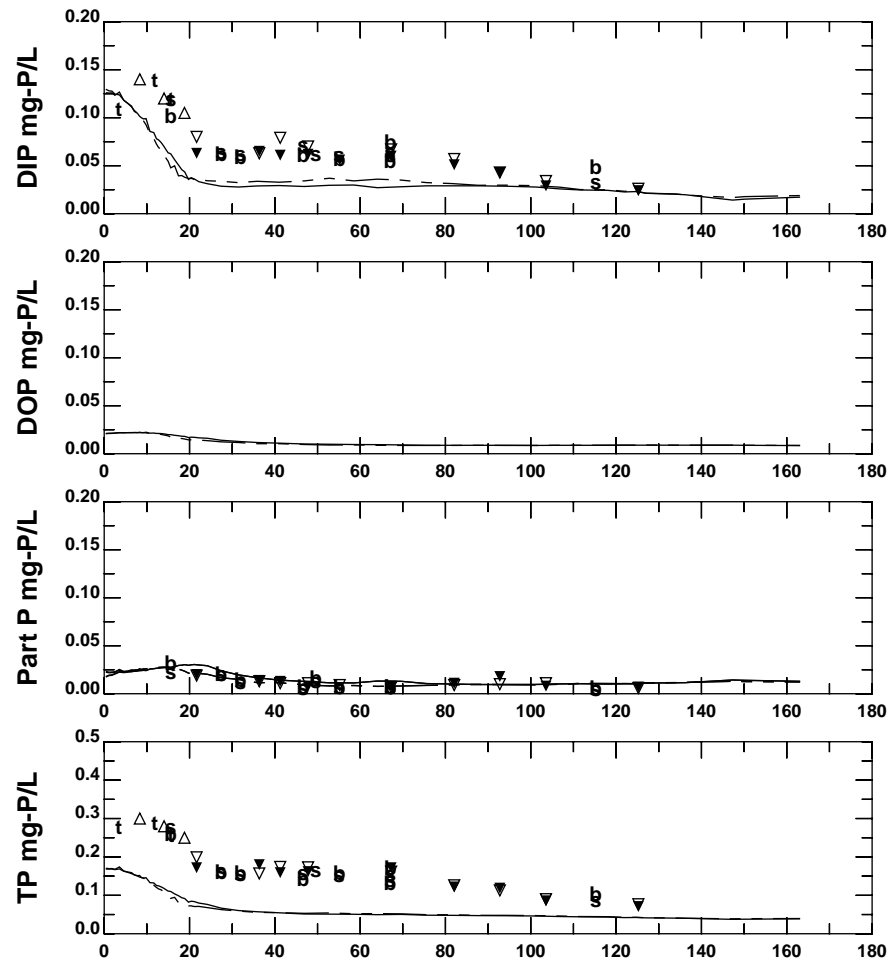
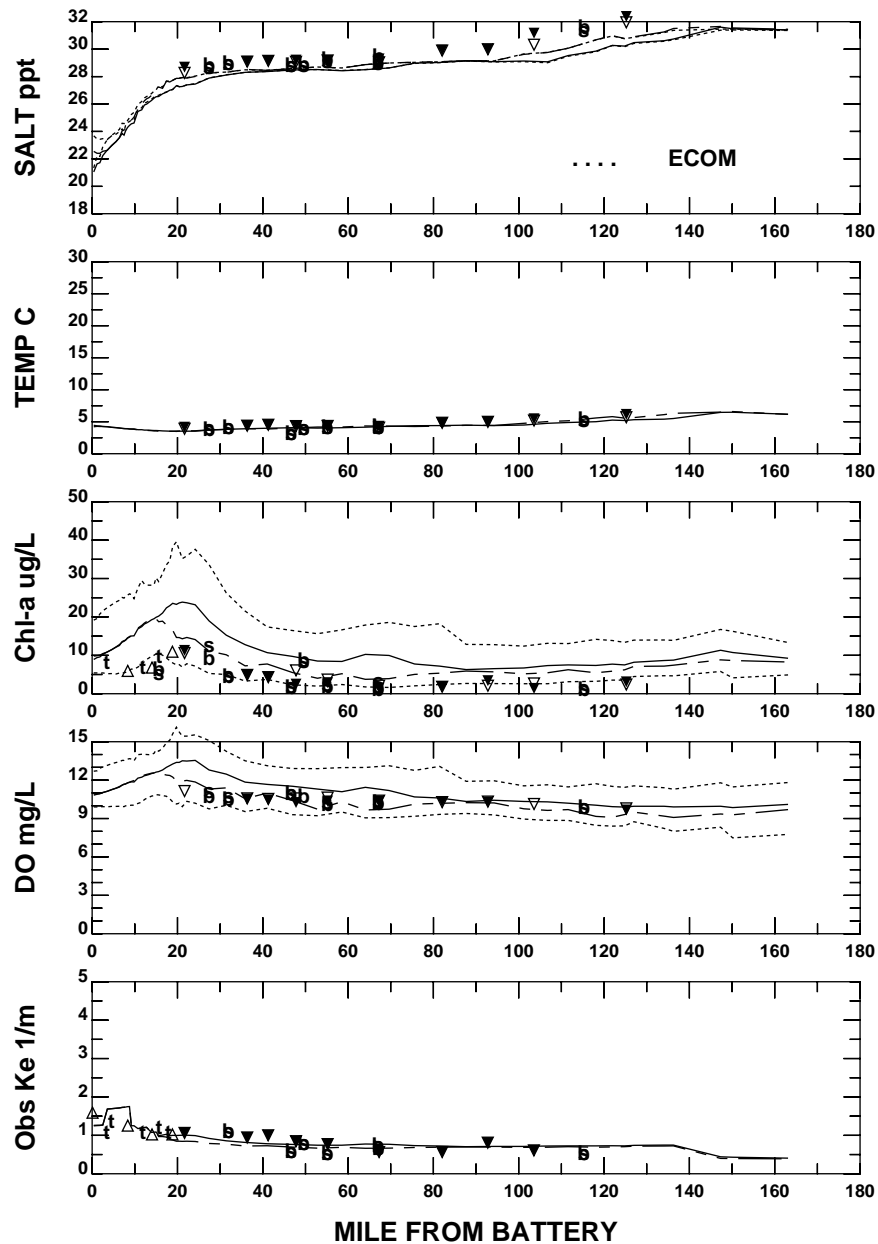
# EAST RIVER AND LONG ISLAND SOUND



**EAST RIVER AND LONG ISLAND SOUND**

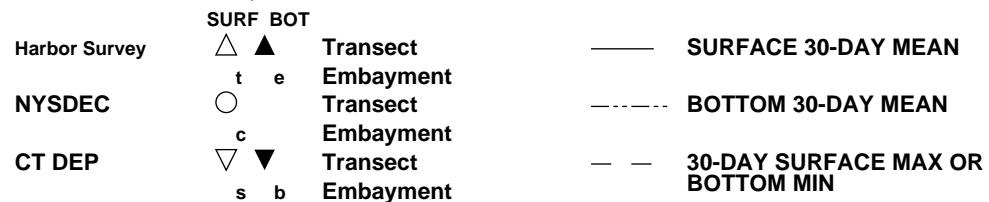


**EAST RIVER AND LONG ISLAND SOUND**



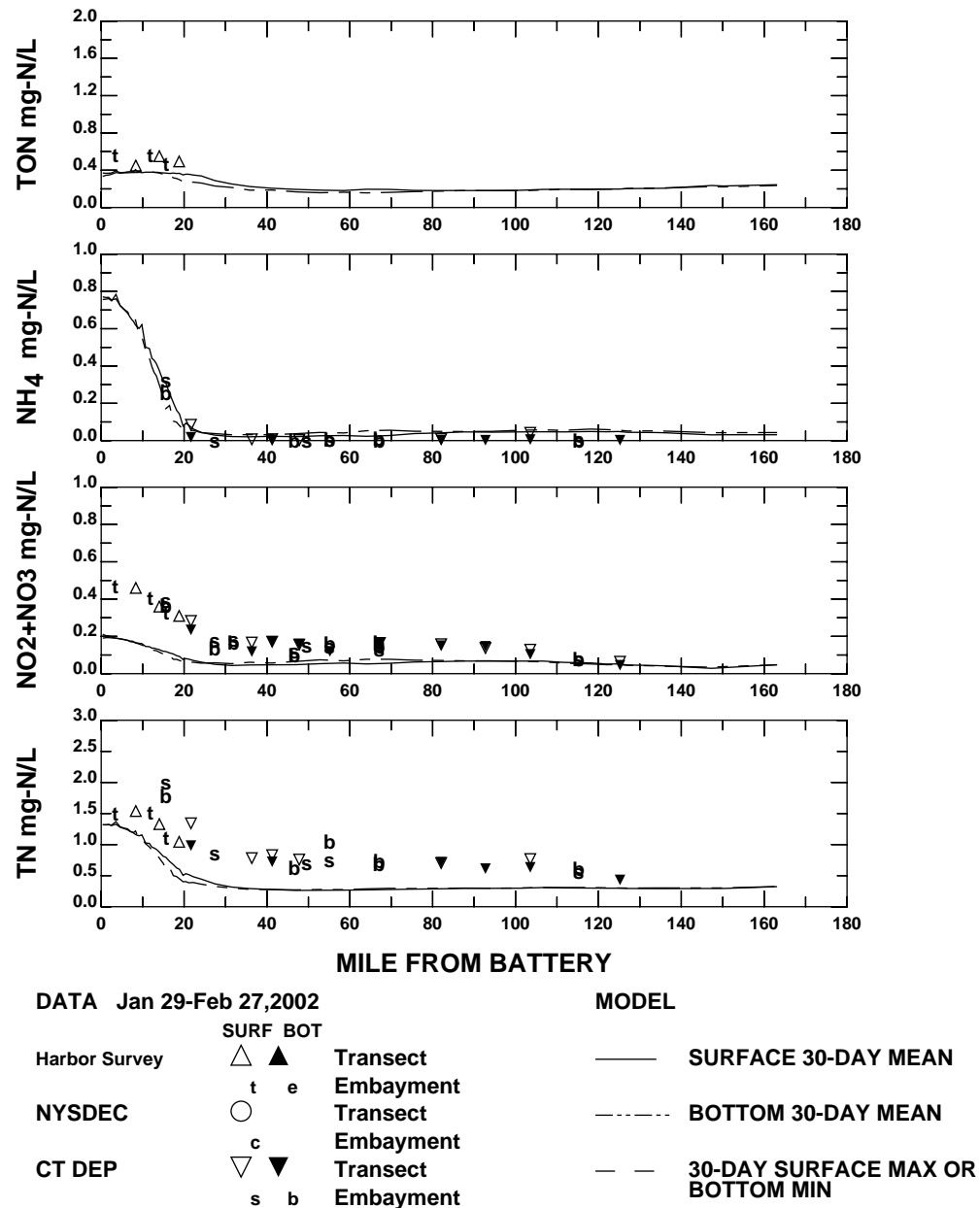
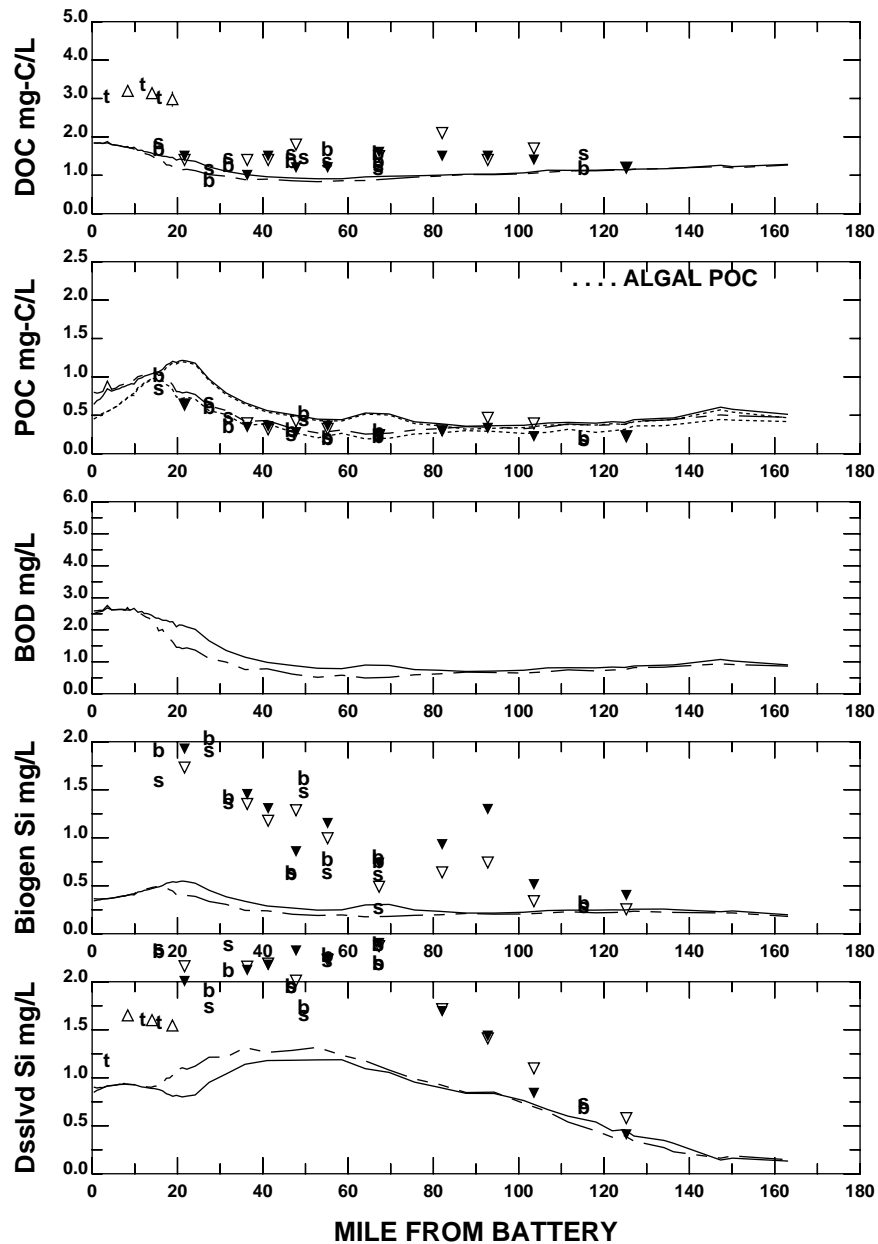
DATA Jan 29-Feb 27, 2002

MODEL

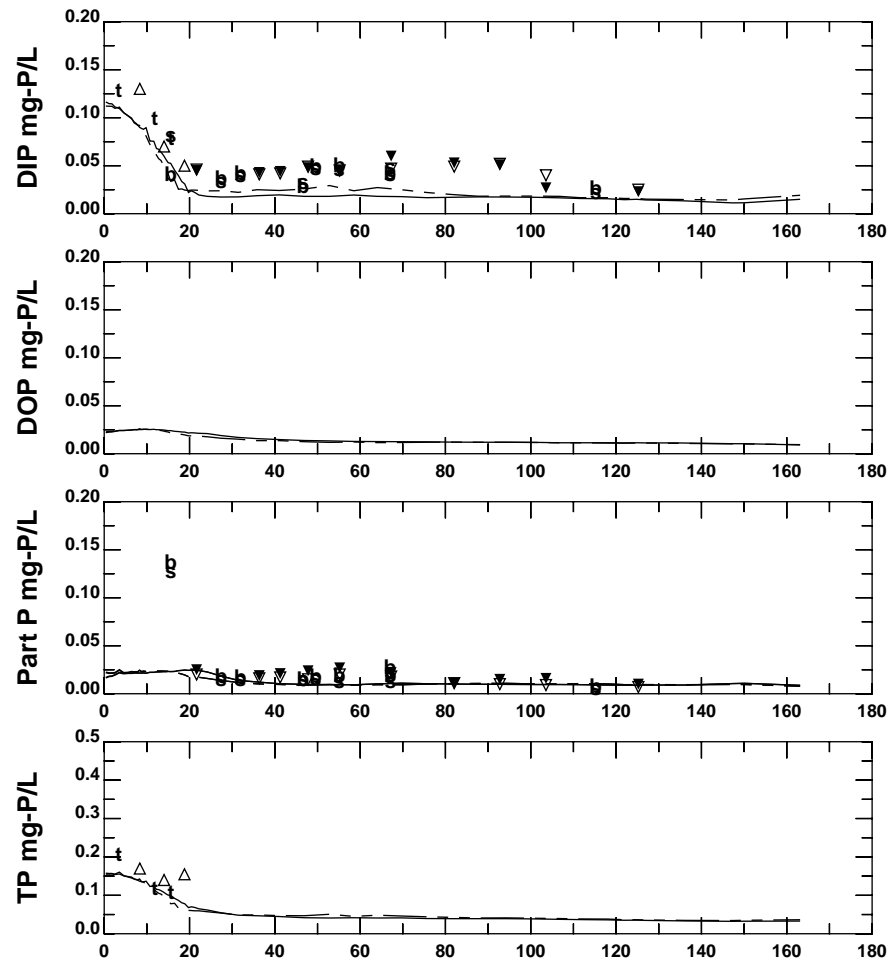
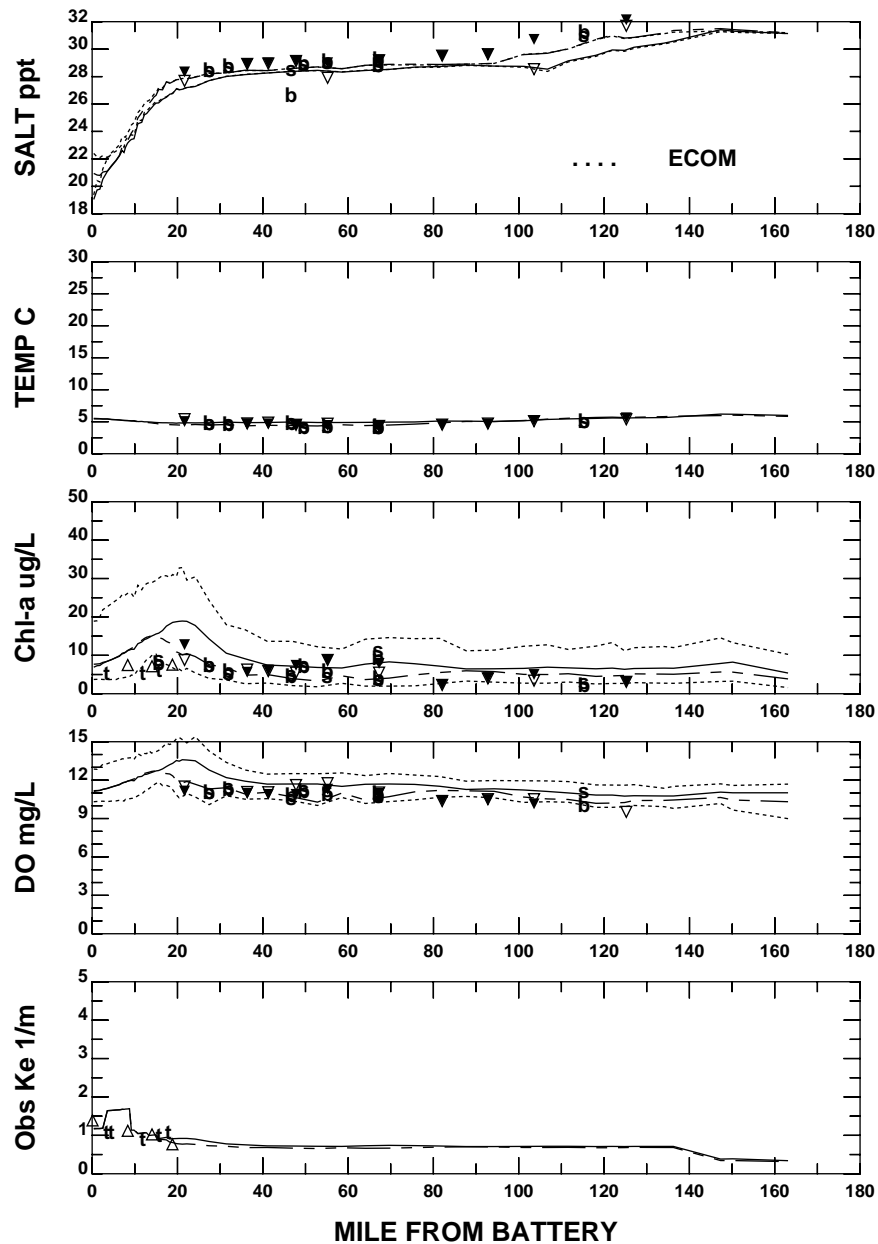


**EAST RIVER AND LONG ISLAND SOUND**



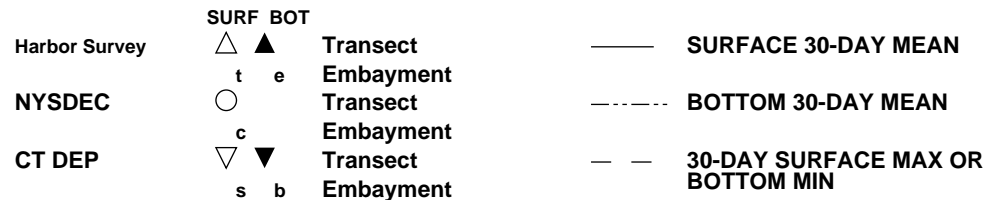


## EAST RIVER AND LONG ISLAND SOUND

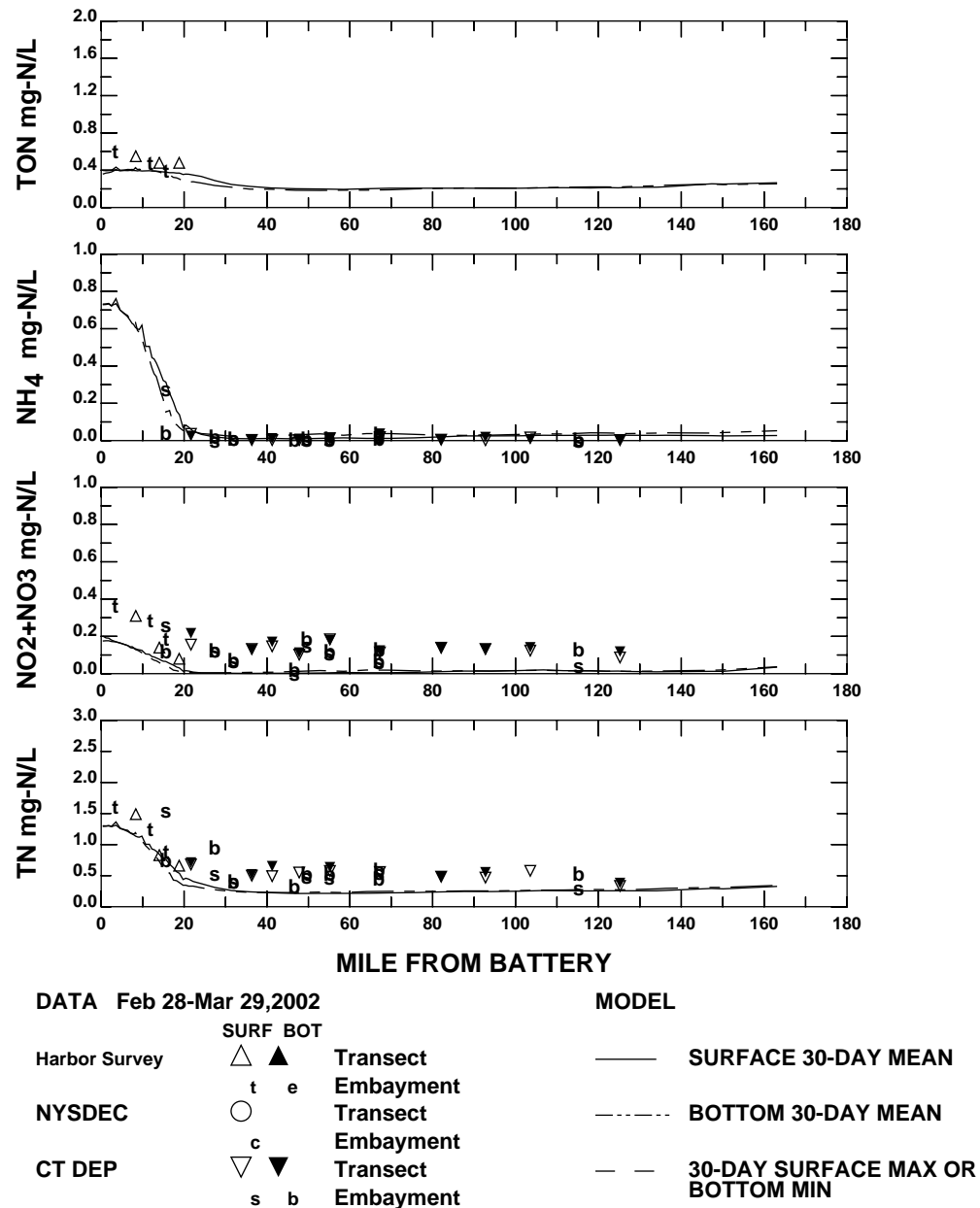
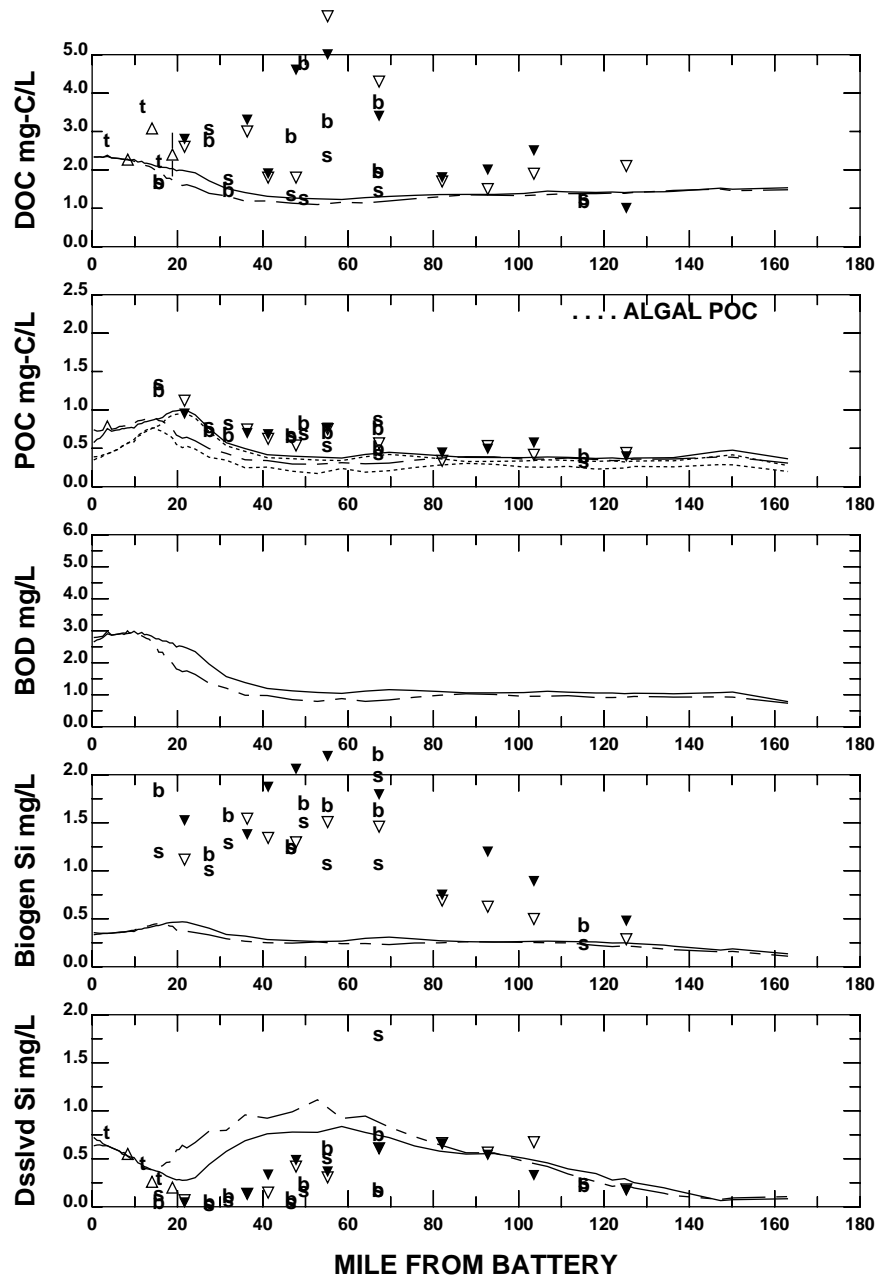


DATA Feb 28-Mar 29, 2002

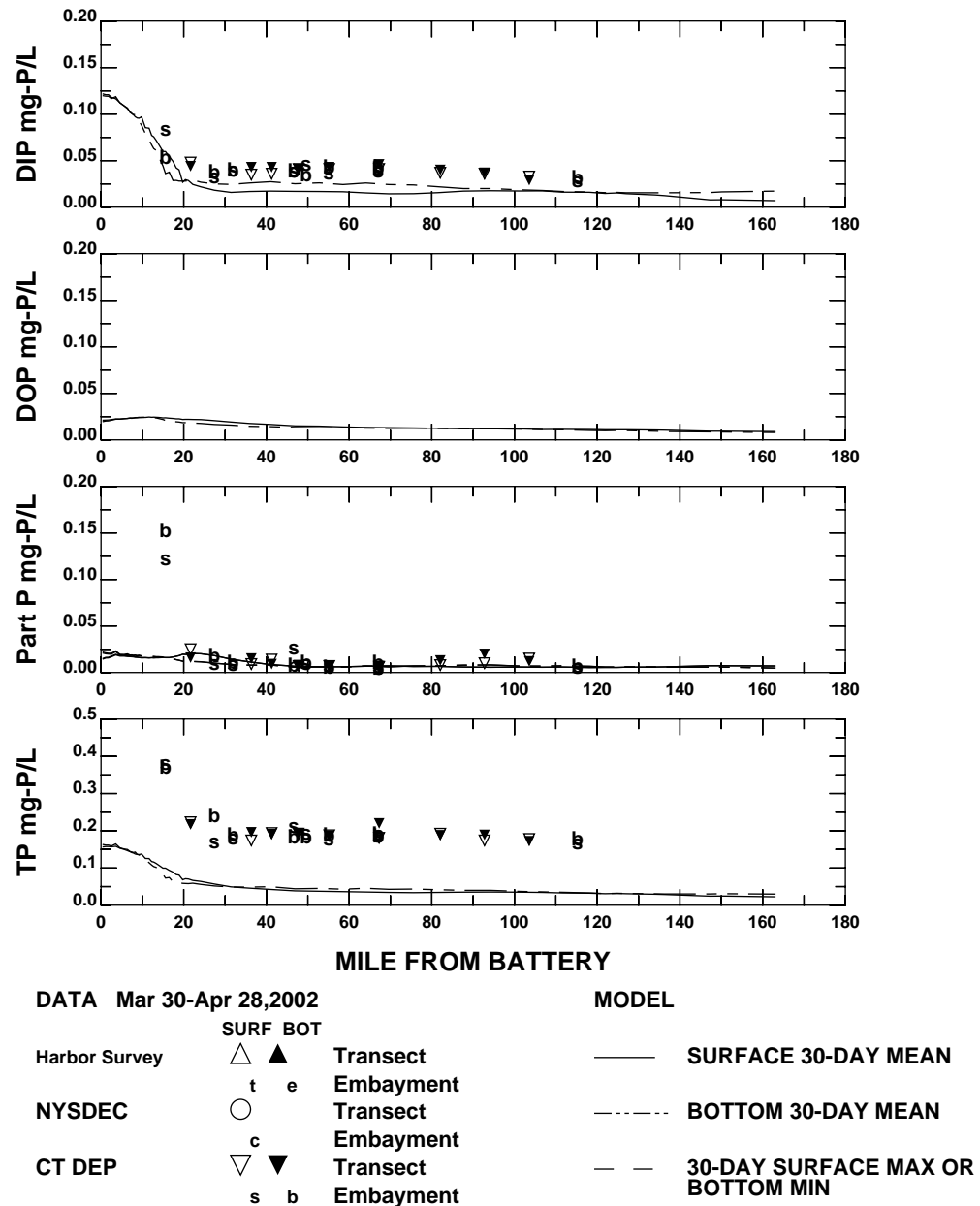
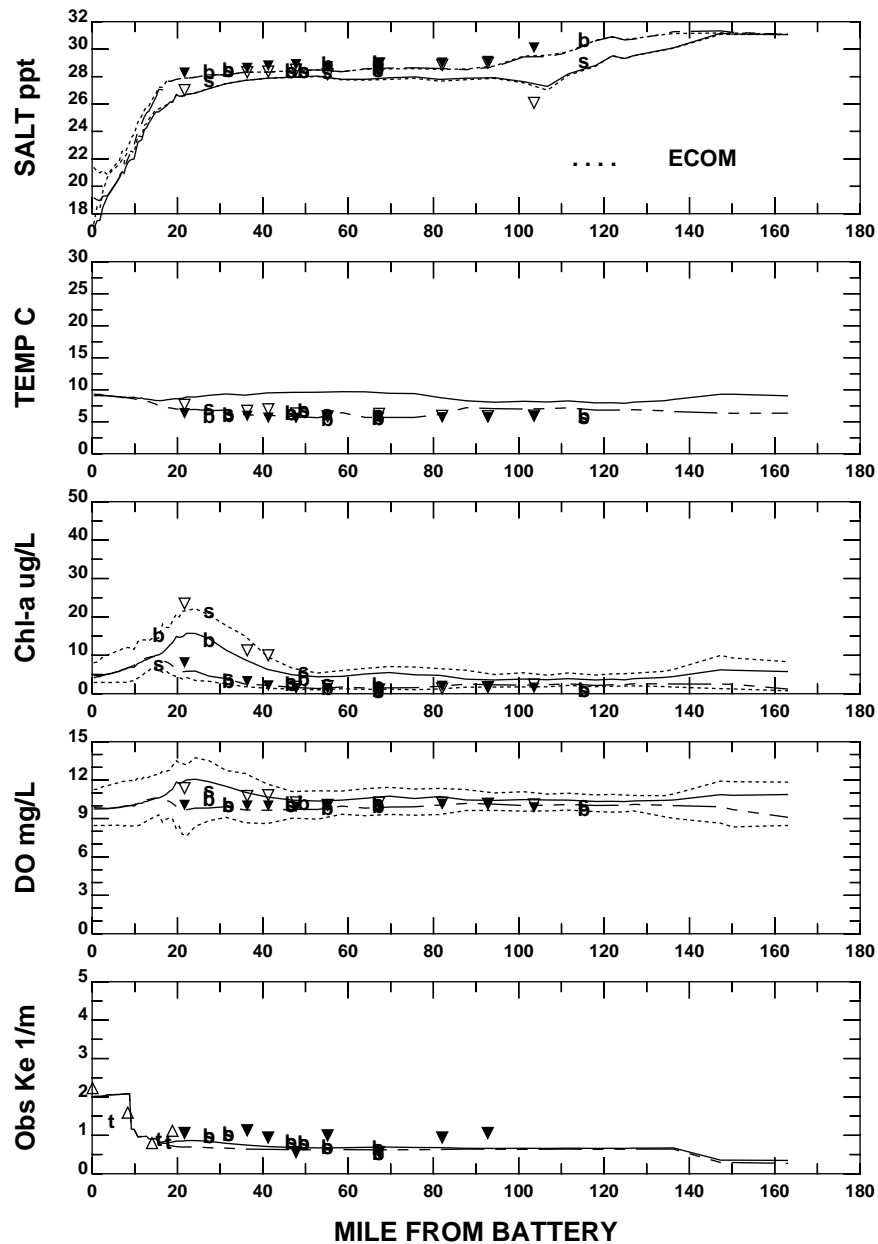
MODEL



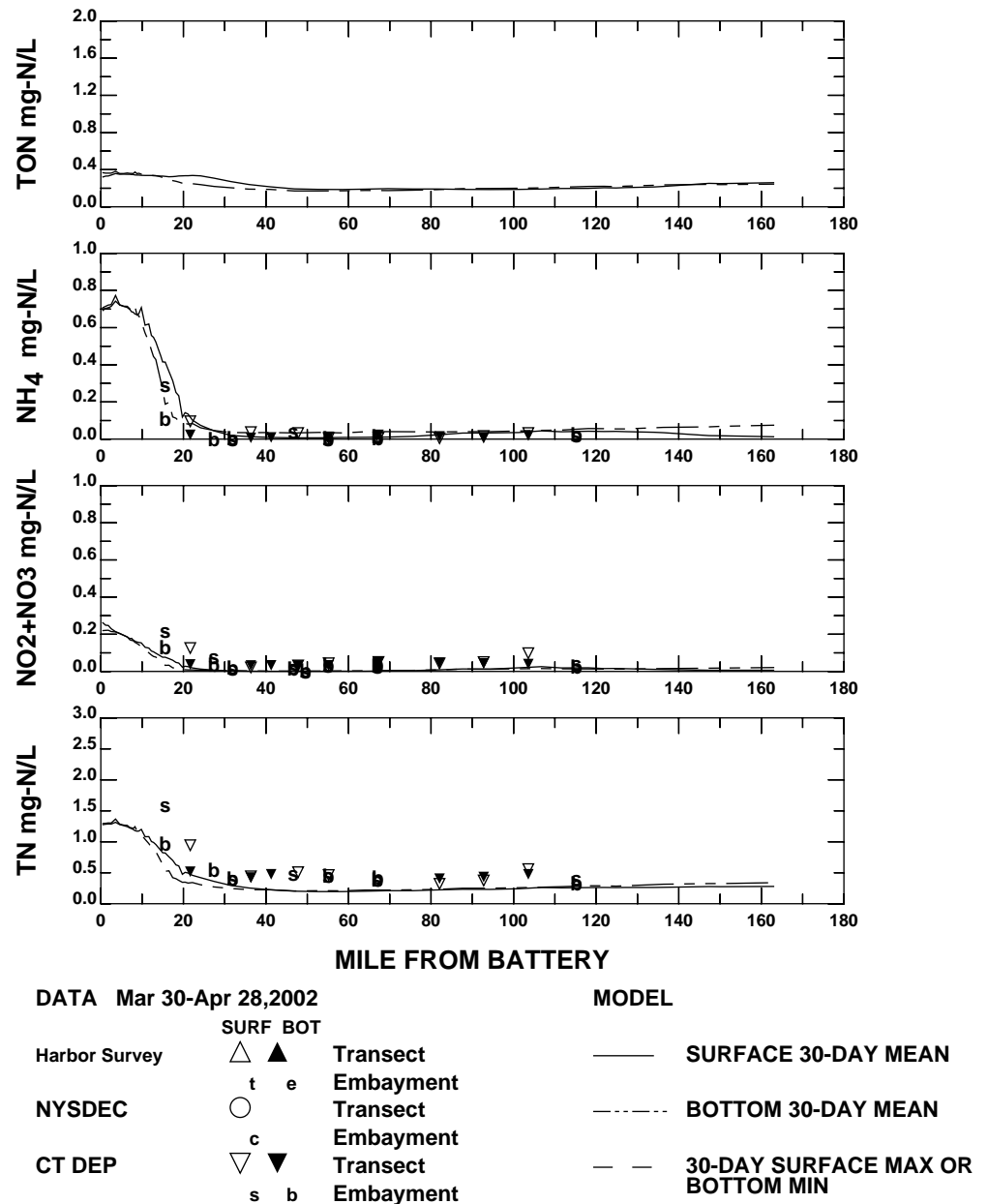
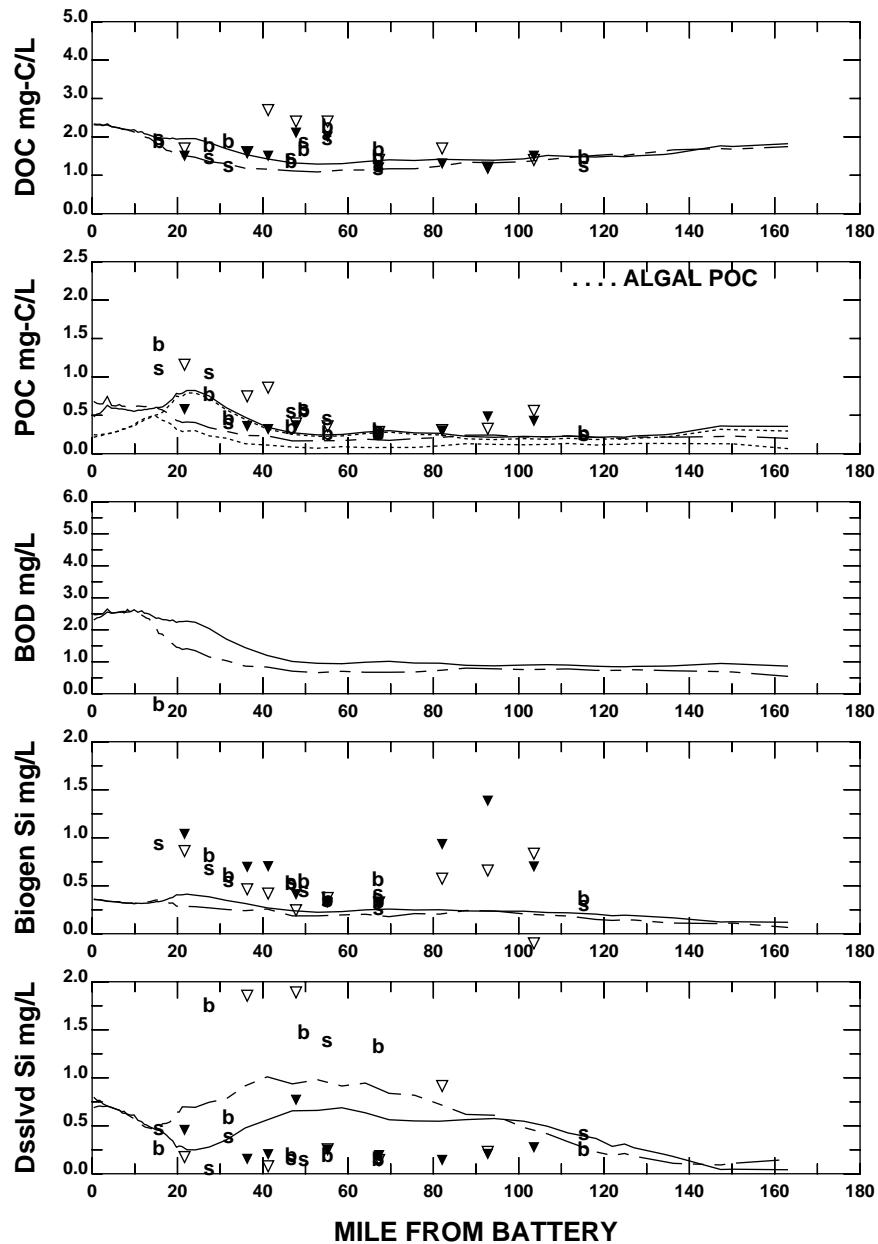
**EAST RIVER AND LONG ISLAND SOUND**



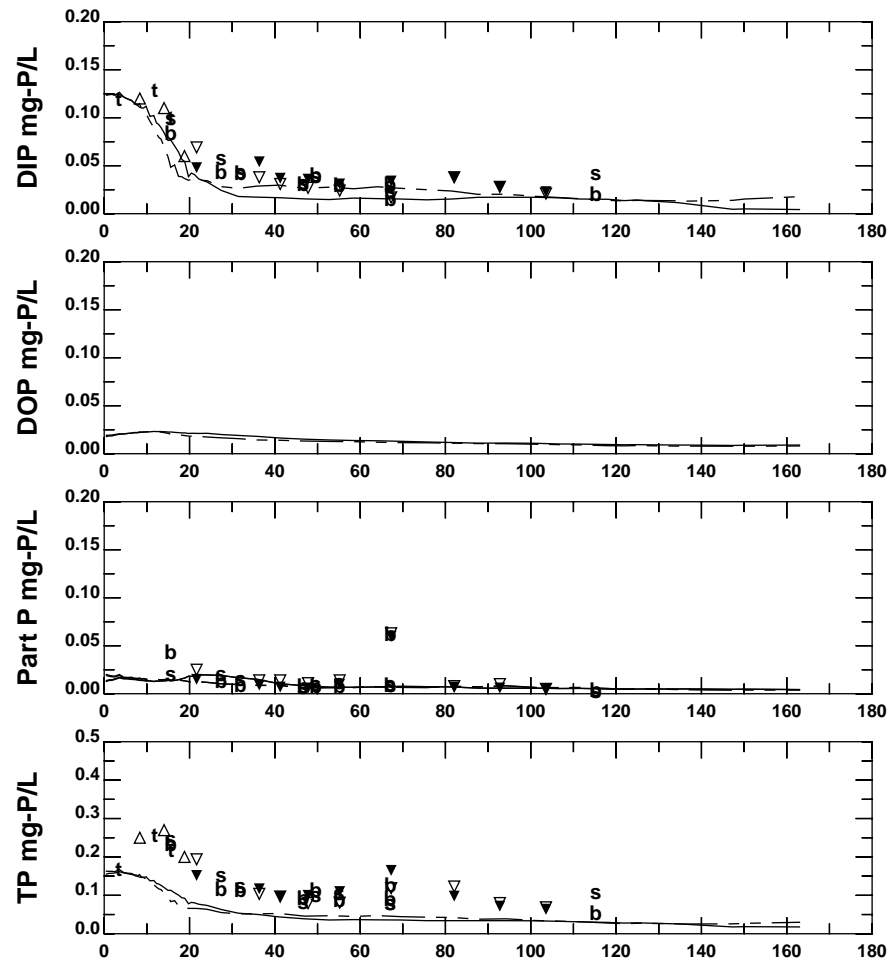
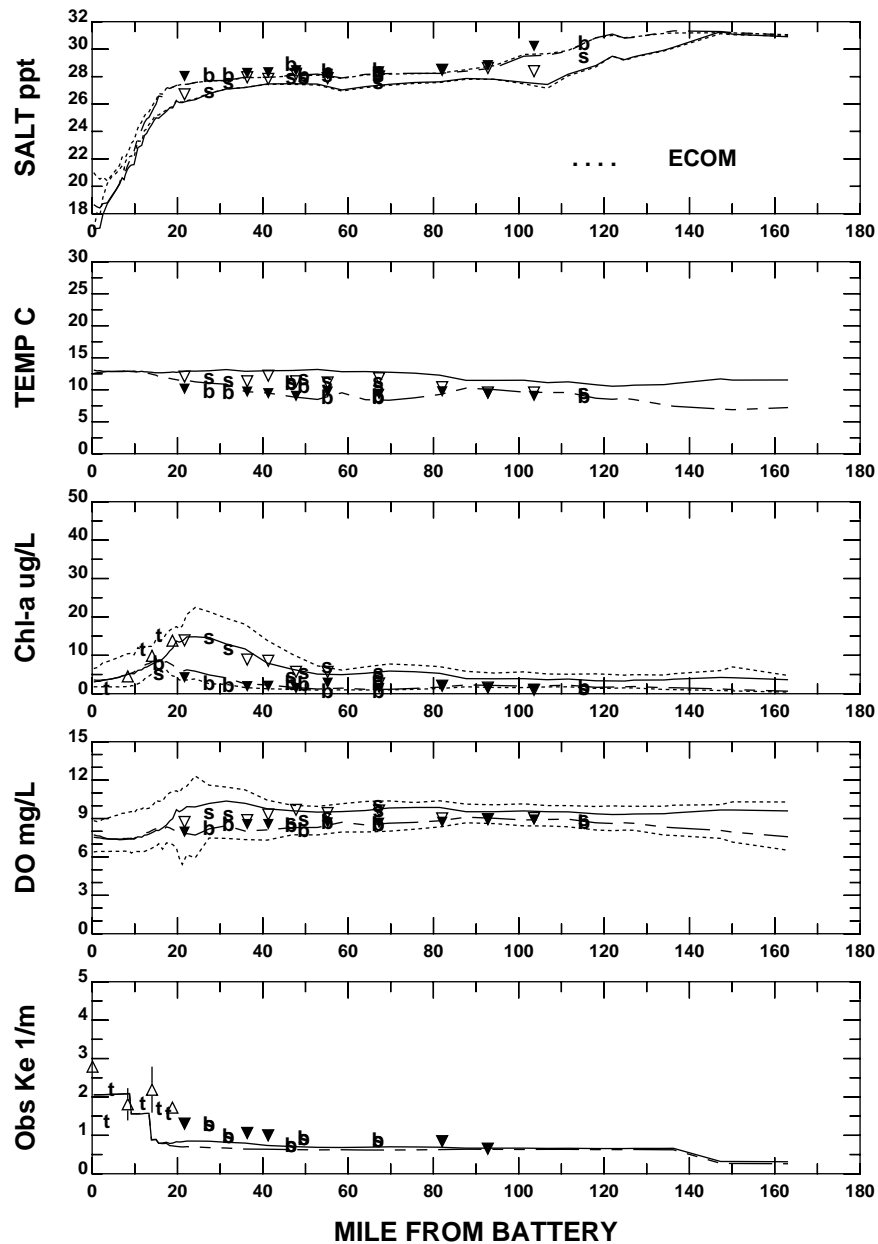
# EAST RIVER AND LONG ISLAND SOUND



**EAST RIVER AND LONG ISLAND SOUND**

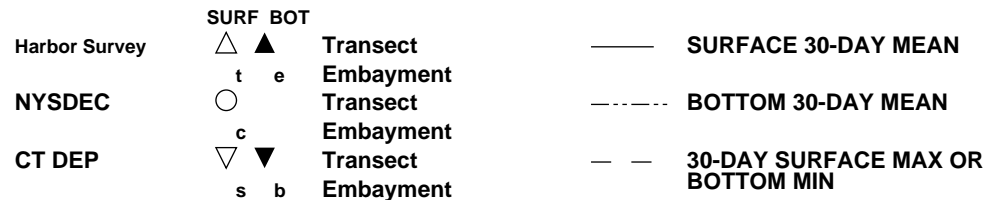


# EAST RIVER AND LONG ISLAND SOUND

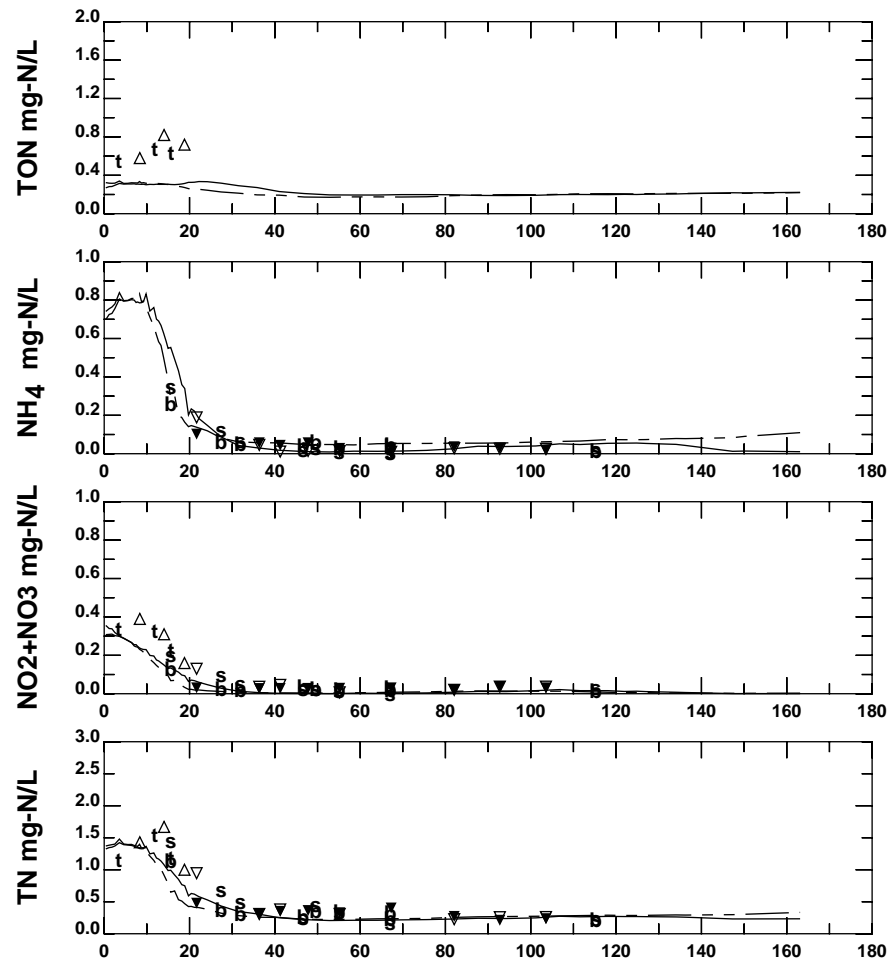
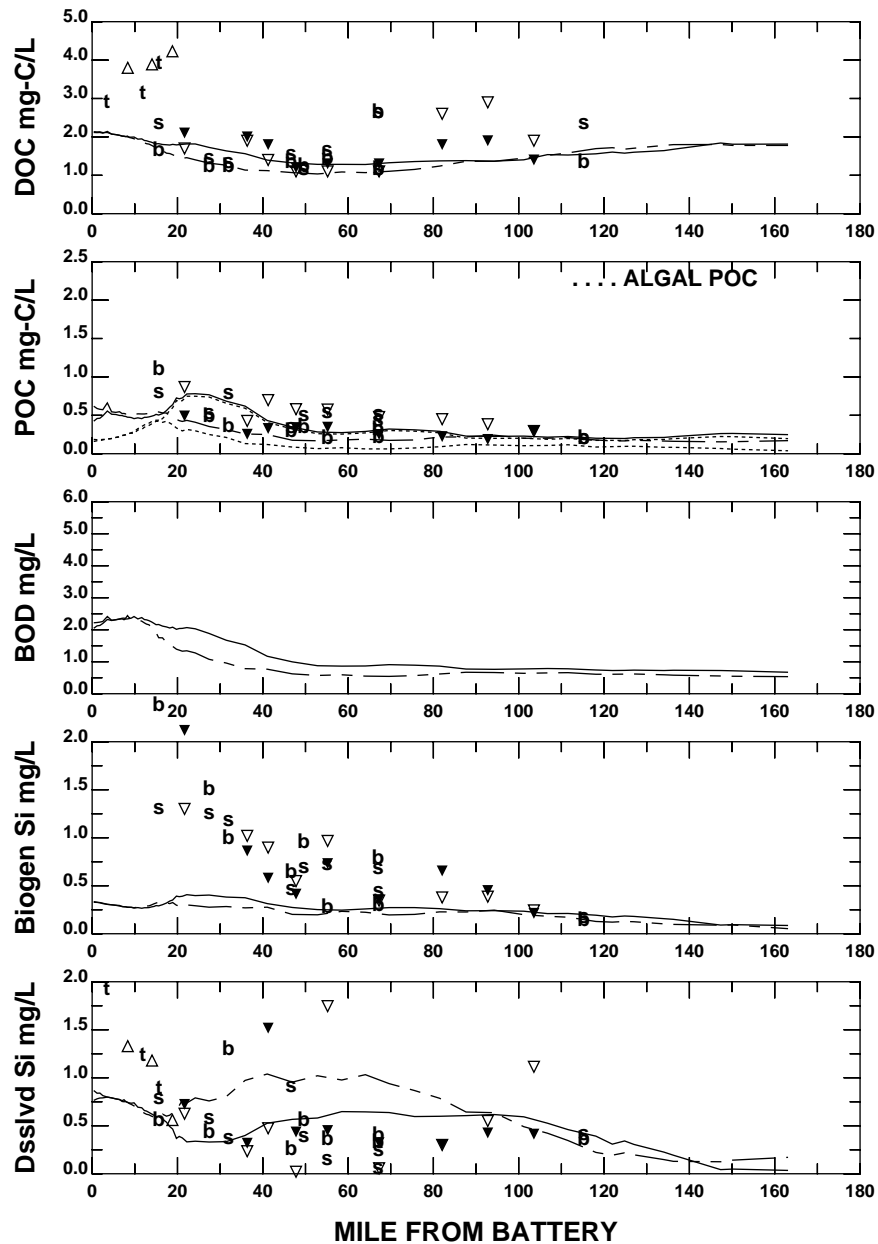


DATA Apr 29-May 28, 2002

MODEL



**EAST RIVER AND LONG ISLAND SOUND**



DATA Apr 29-May 28, 2002

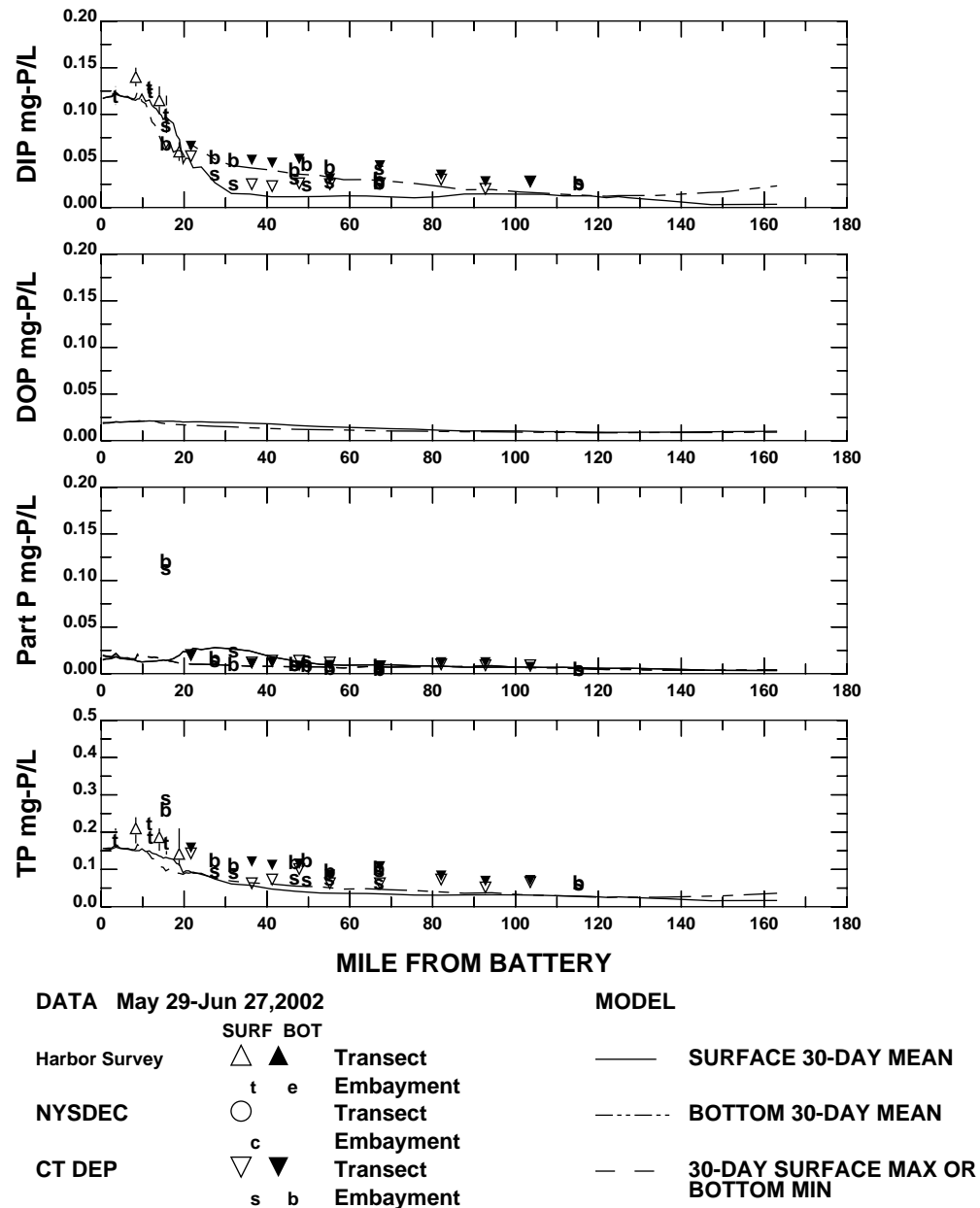
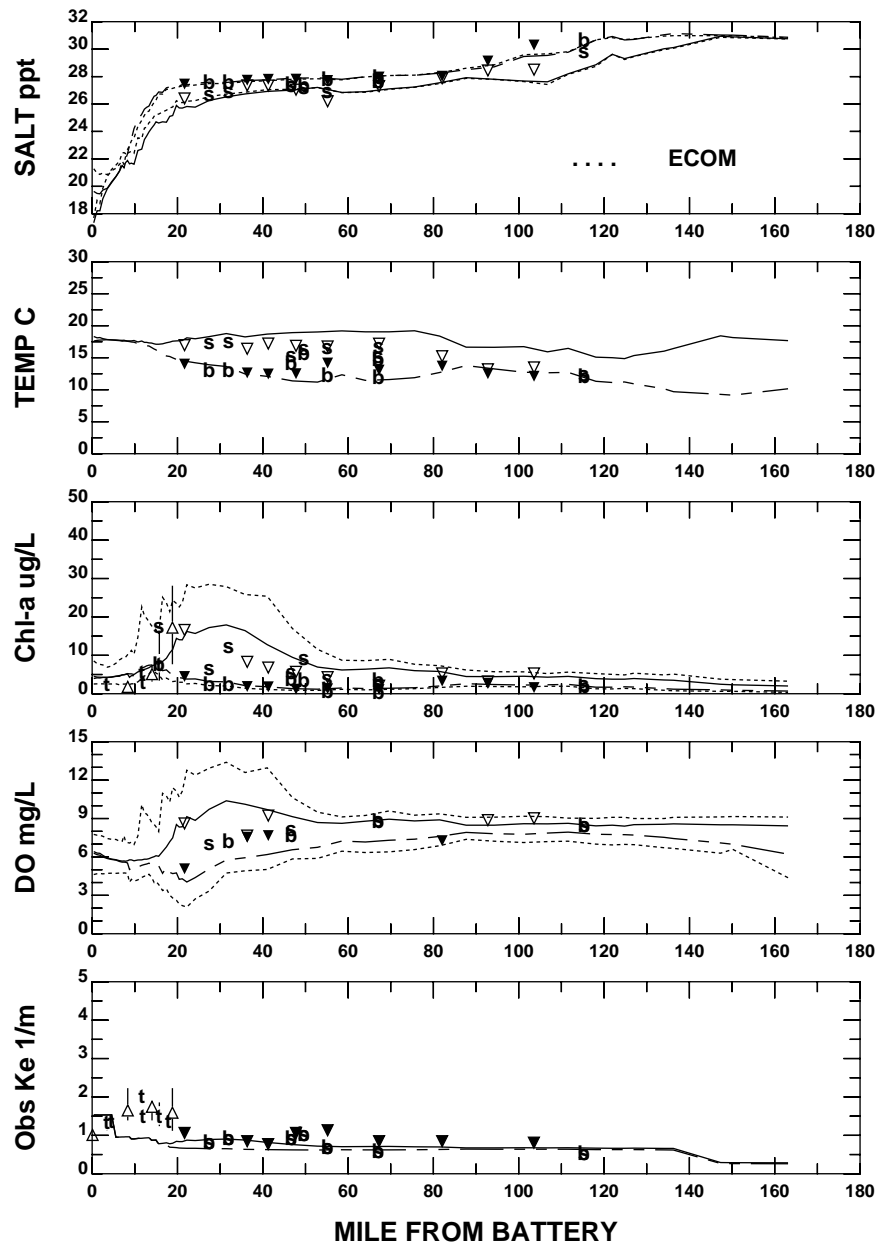
MODEL

SURF BOT

Harbor Survey  $\triangle$   $\blacktriangle$  Transect  
 t e Embayment  
 NYSDEC  $\circ$   $\bullet$  Transect  
 c Embayment  
 CT DEP  $\nabla$   $\blacktriangledown$  Transect  
 s b Embayment

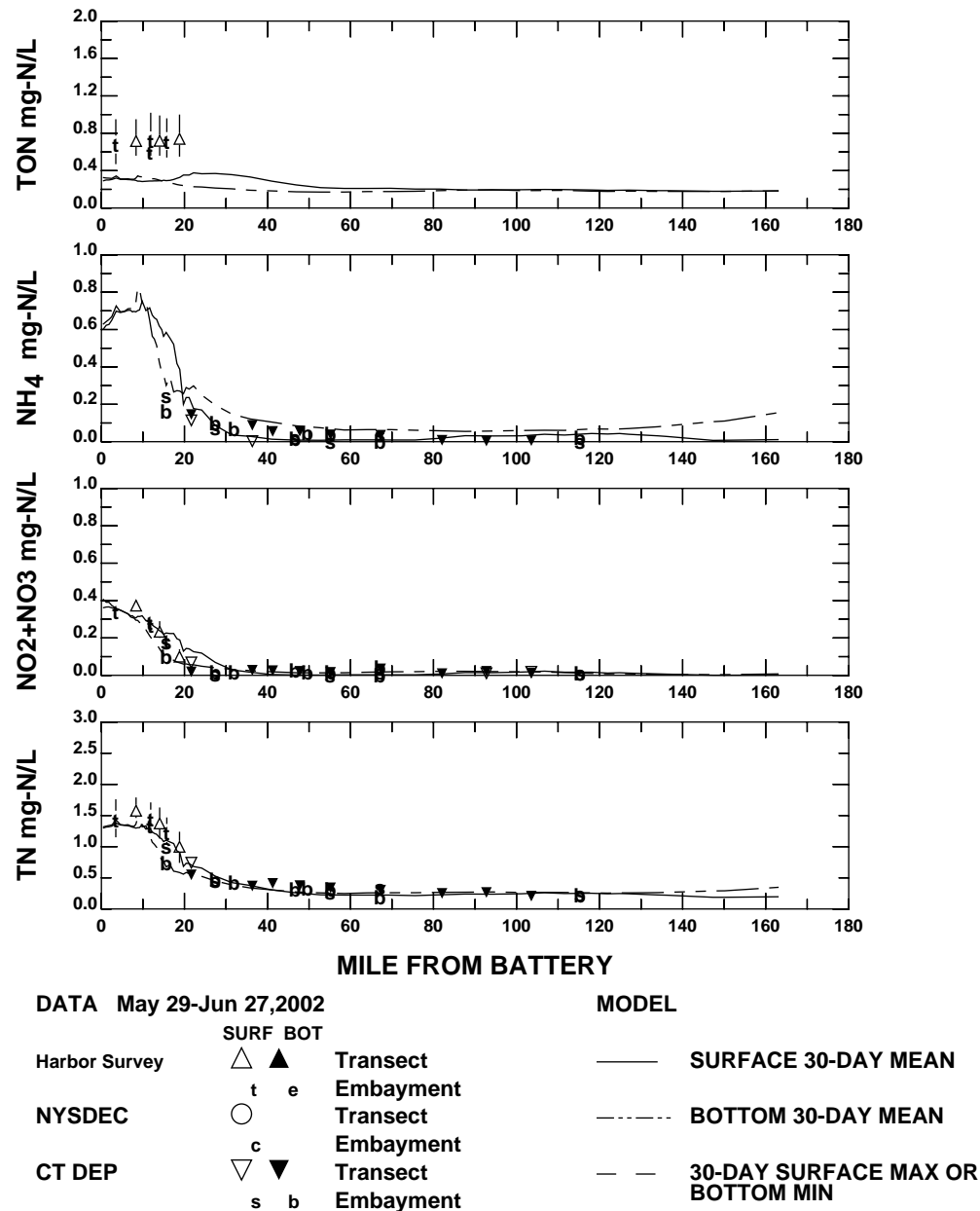
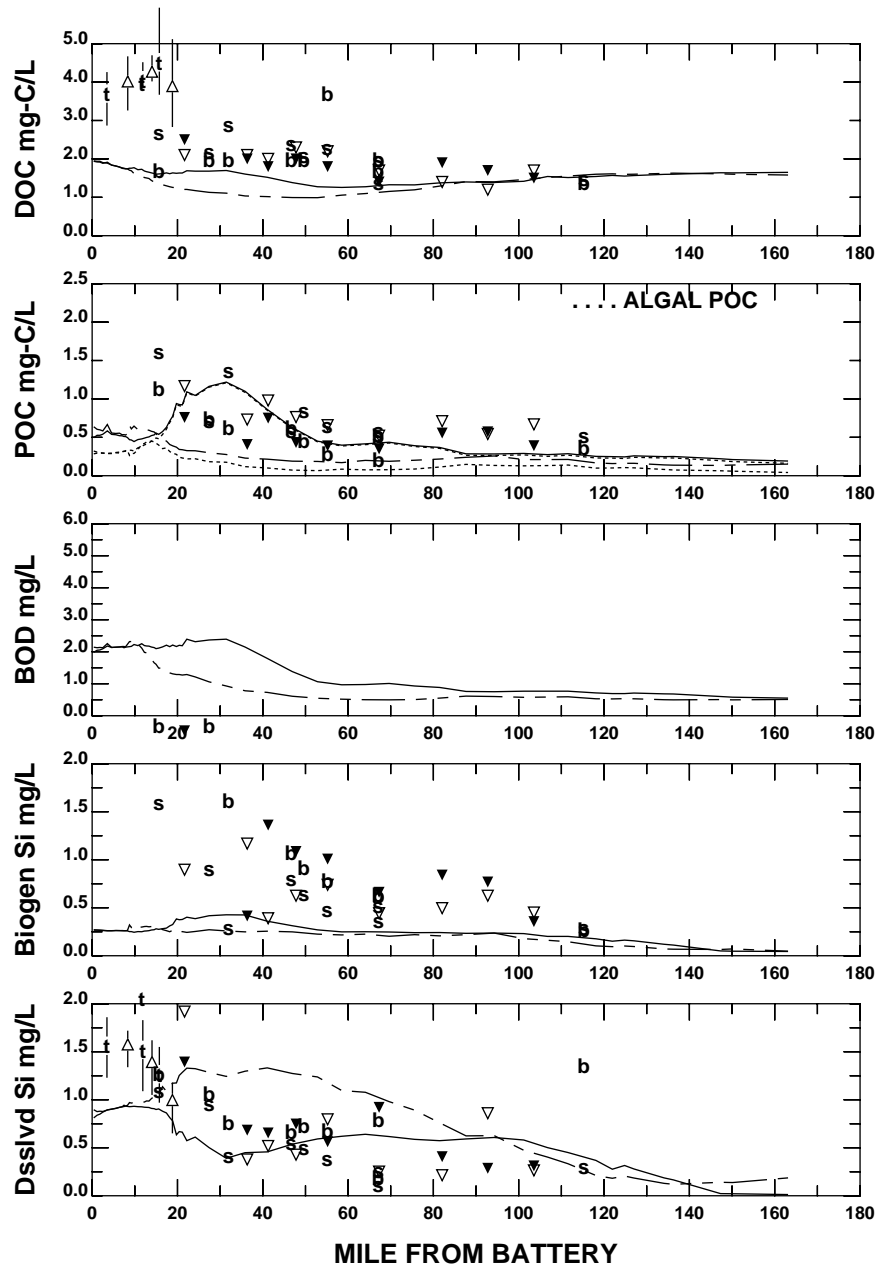
— SURFACE 30-DAY MEAN  
 - - - - - BOTTOM 30-DAY MEAN  
 - - - 30-DAY SURFACE MAX OR  
 BOTTOM MIN

# EAST RIVER AND LONG ISLAND SOUND

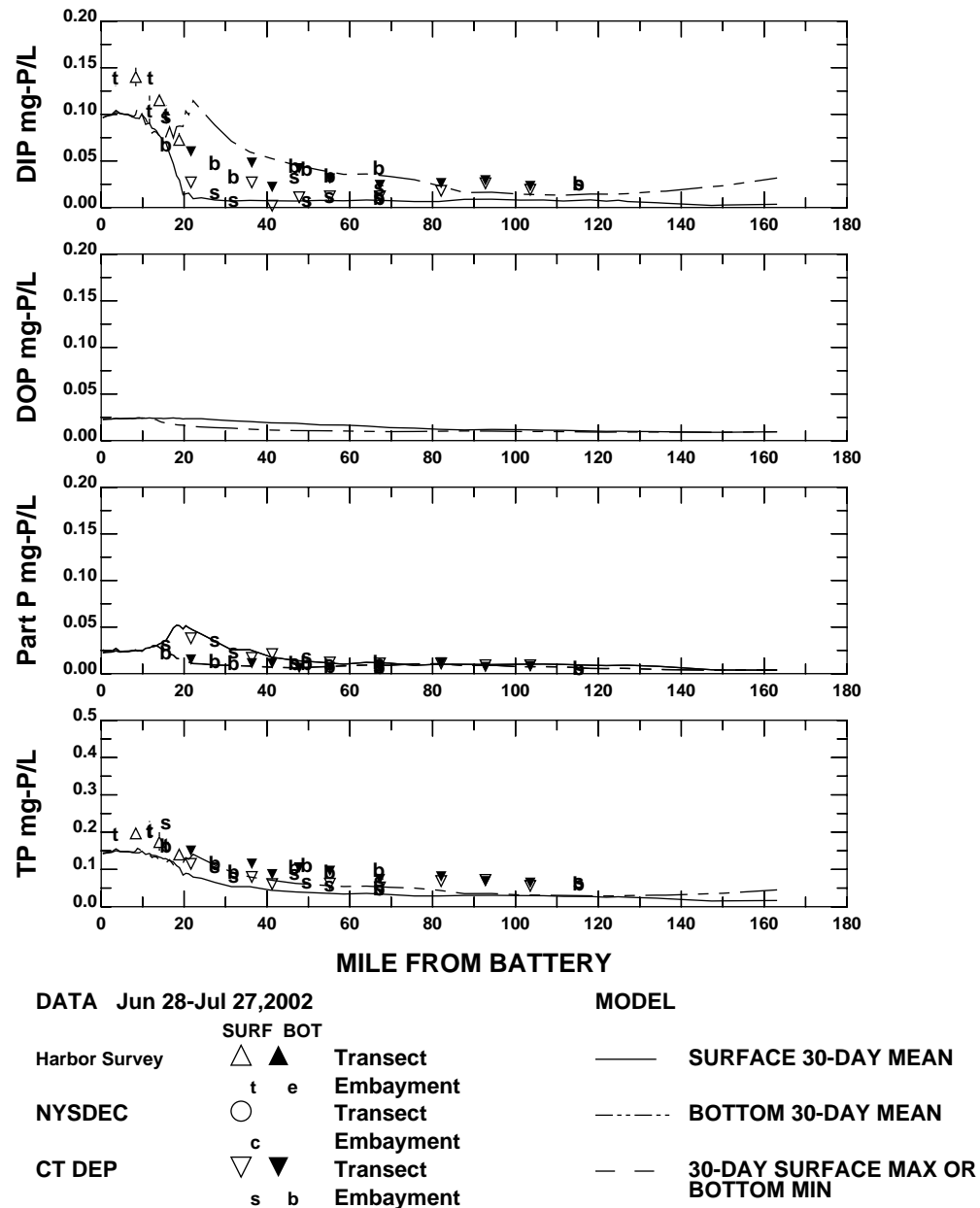
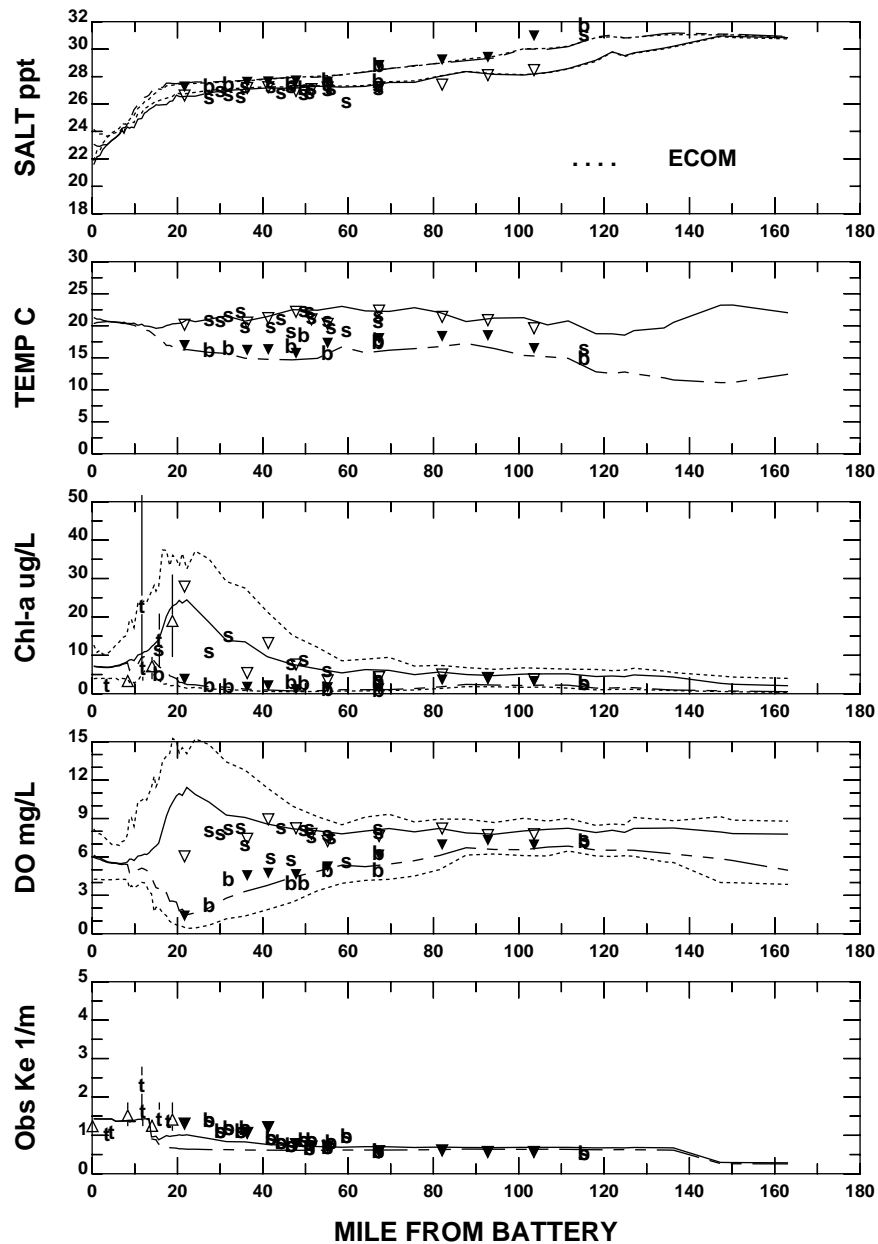


**EAST RIVER AND LONG ISLAND SOUND**

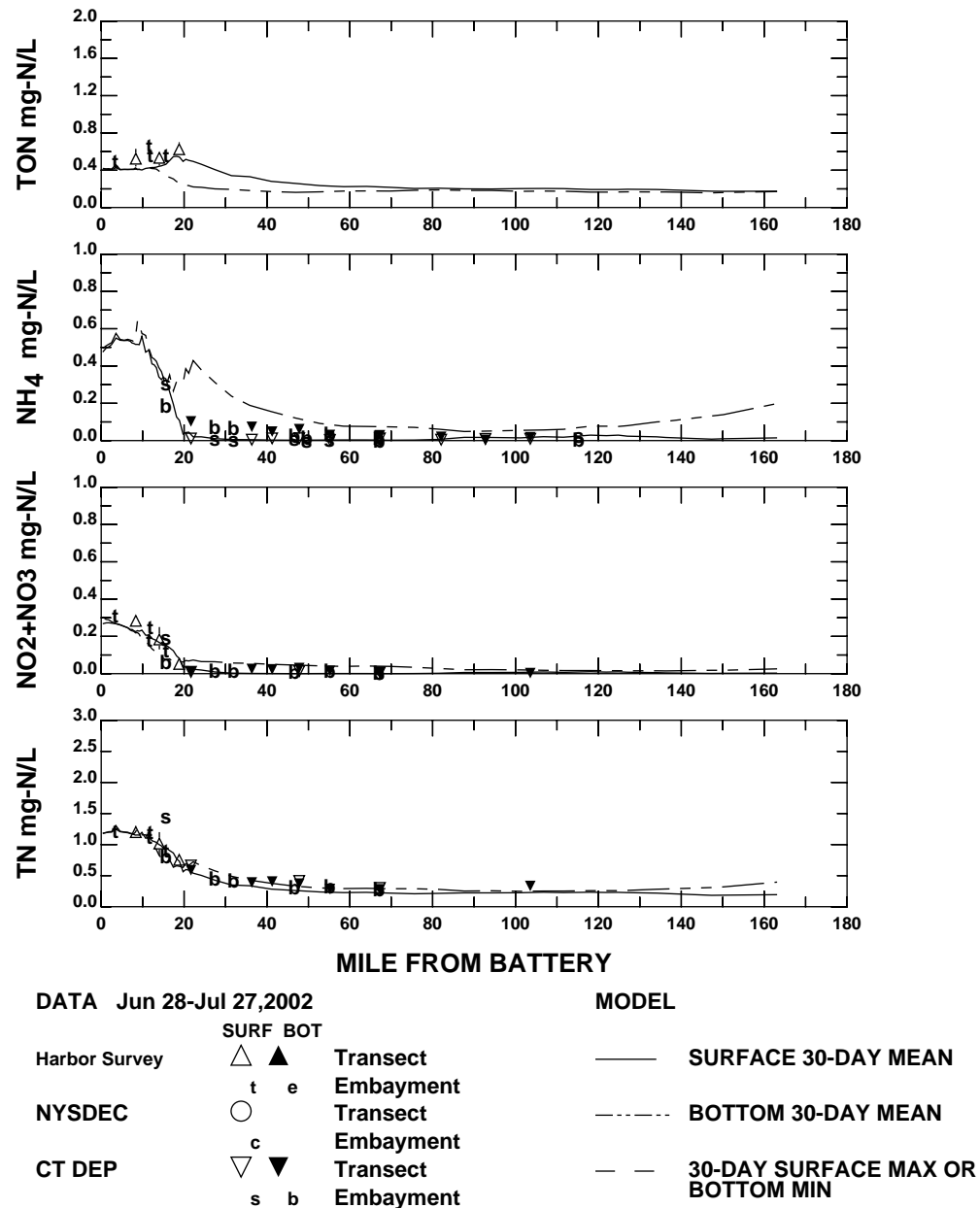
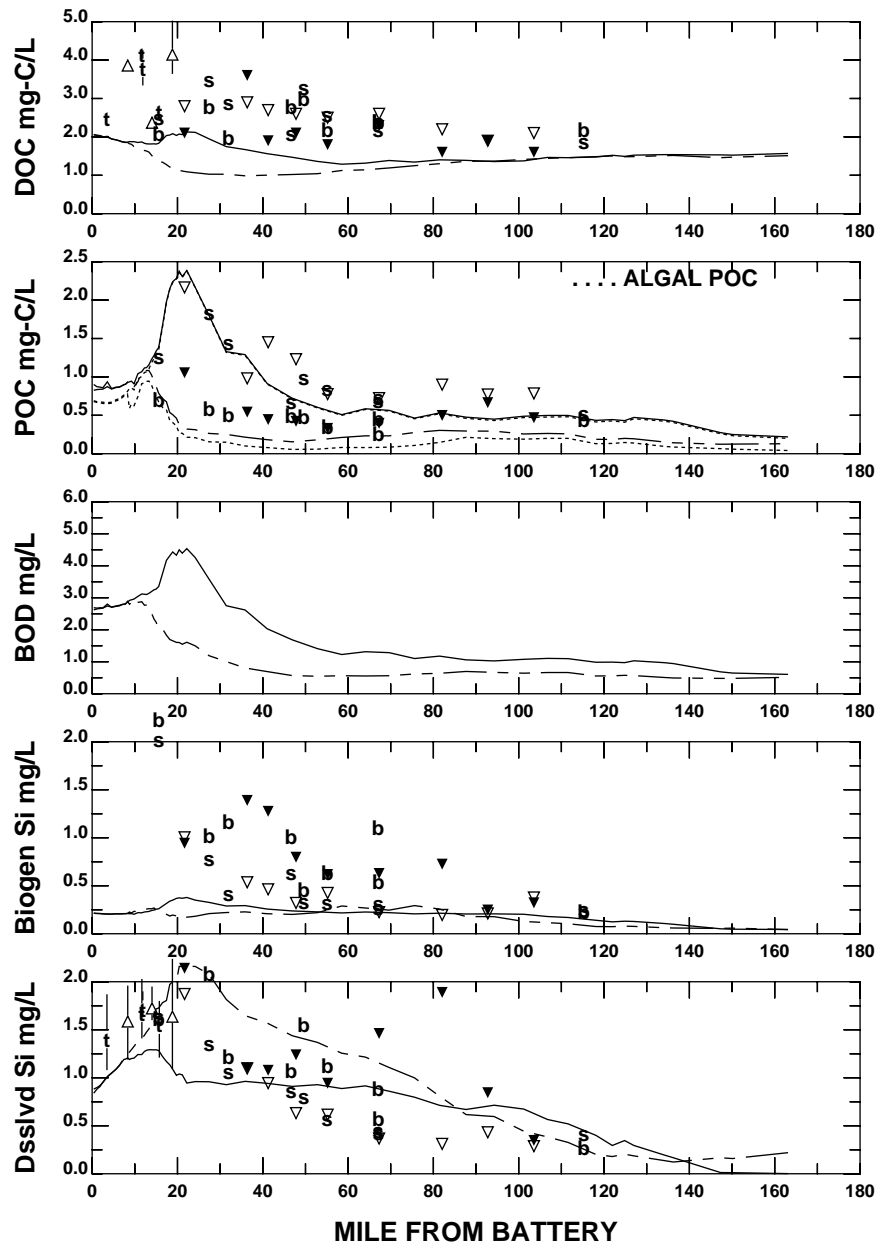




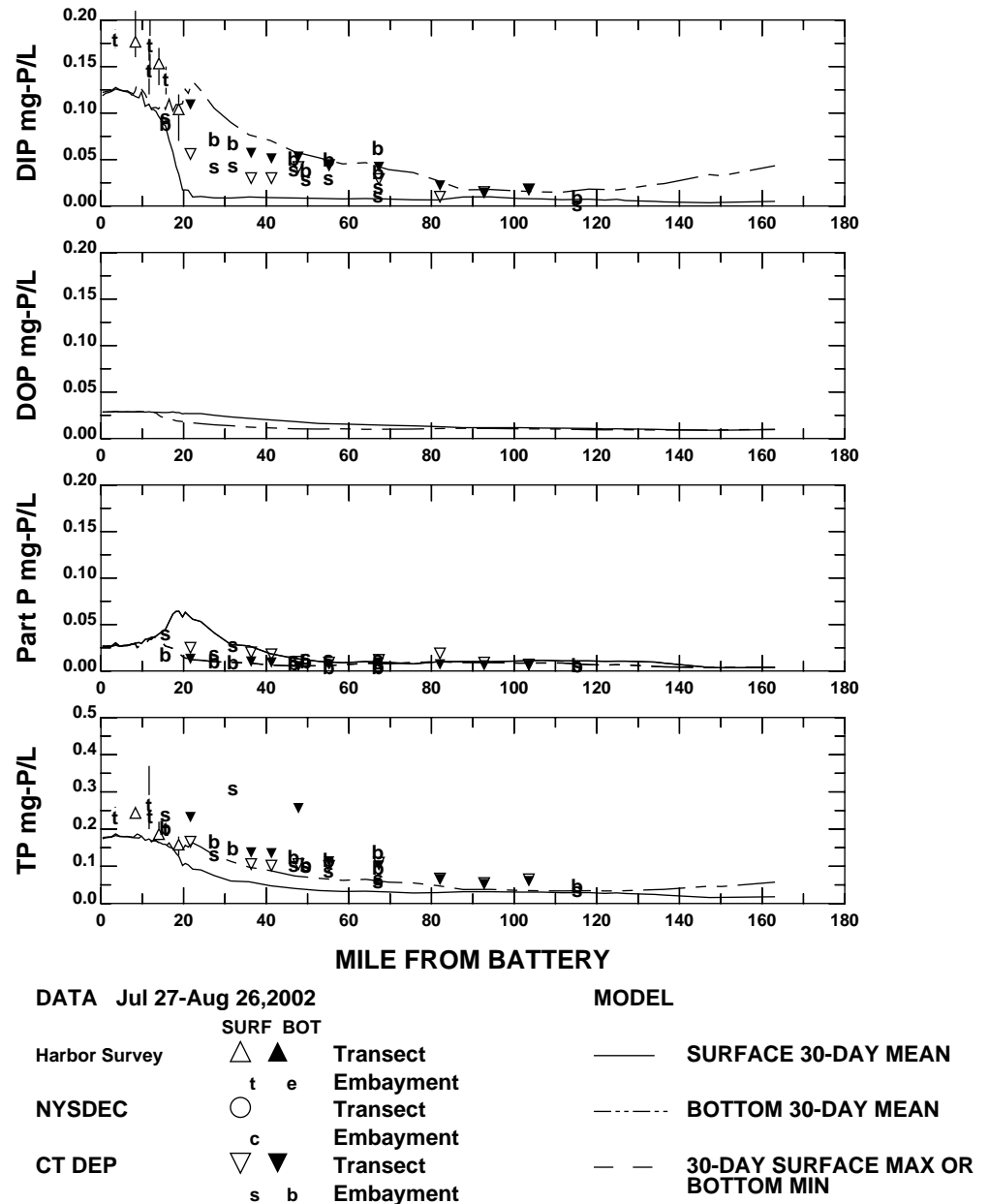
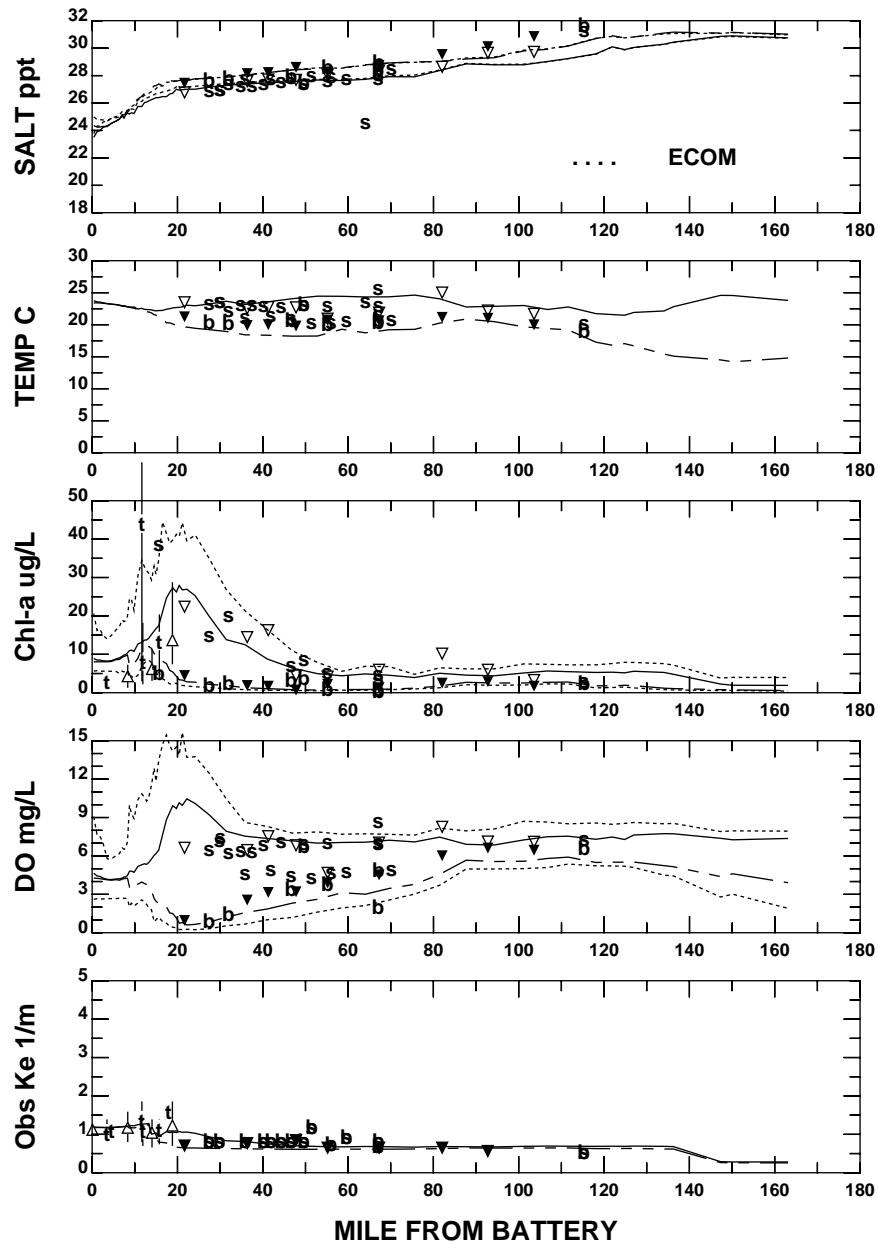
## EAST RIVER AND LONG ISLAND SOUND



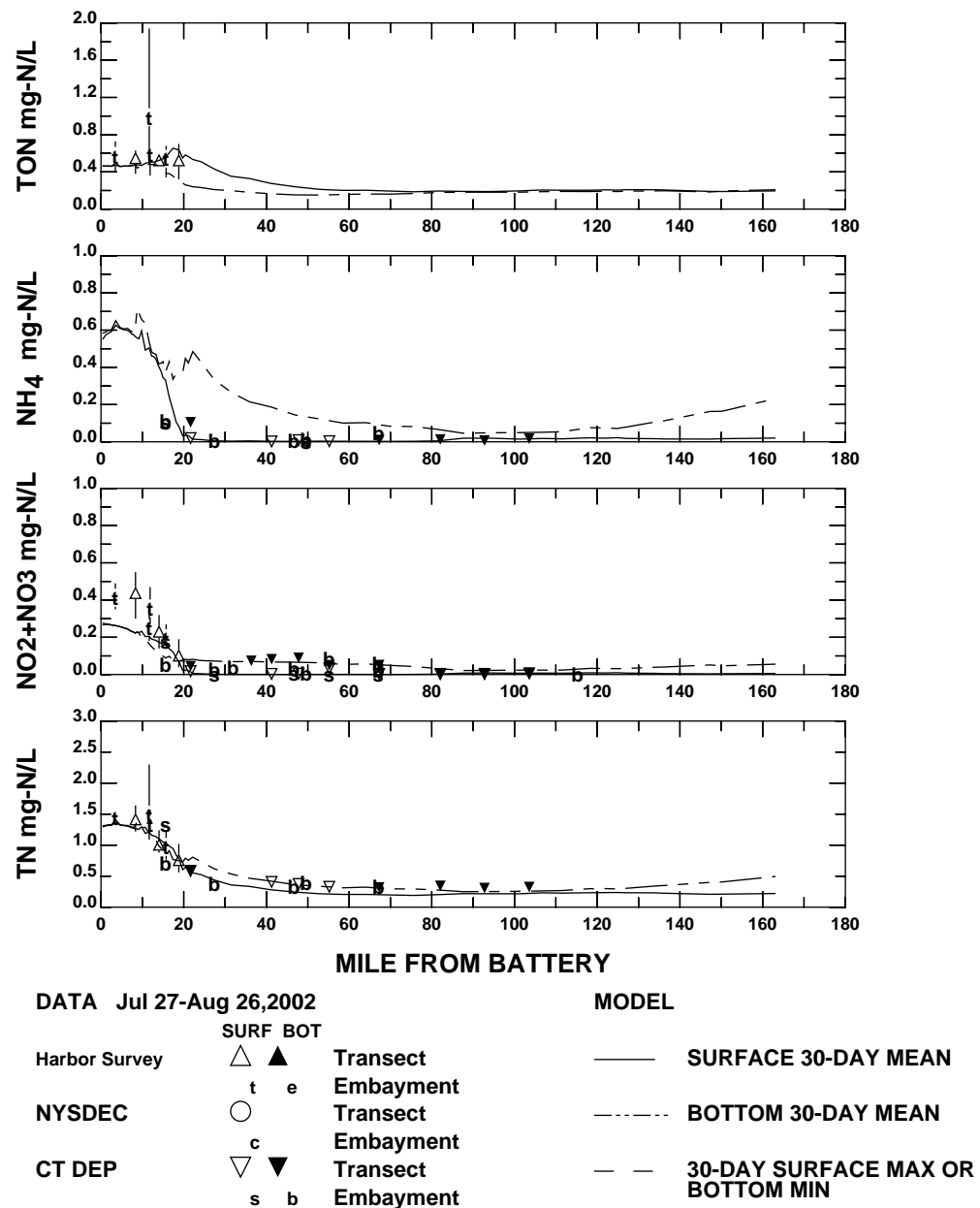
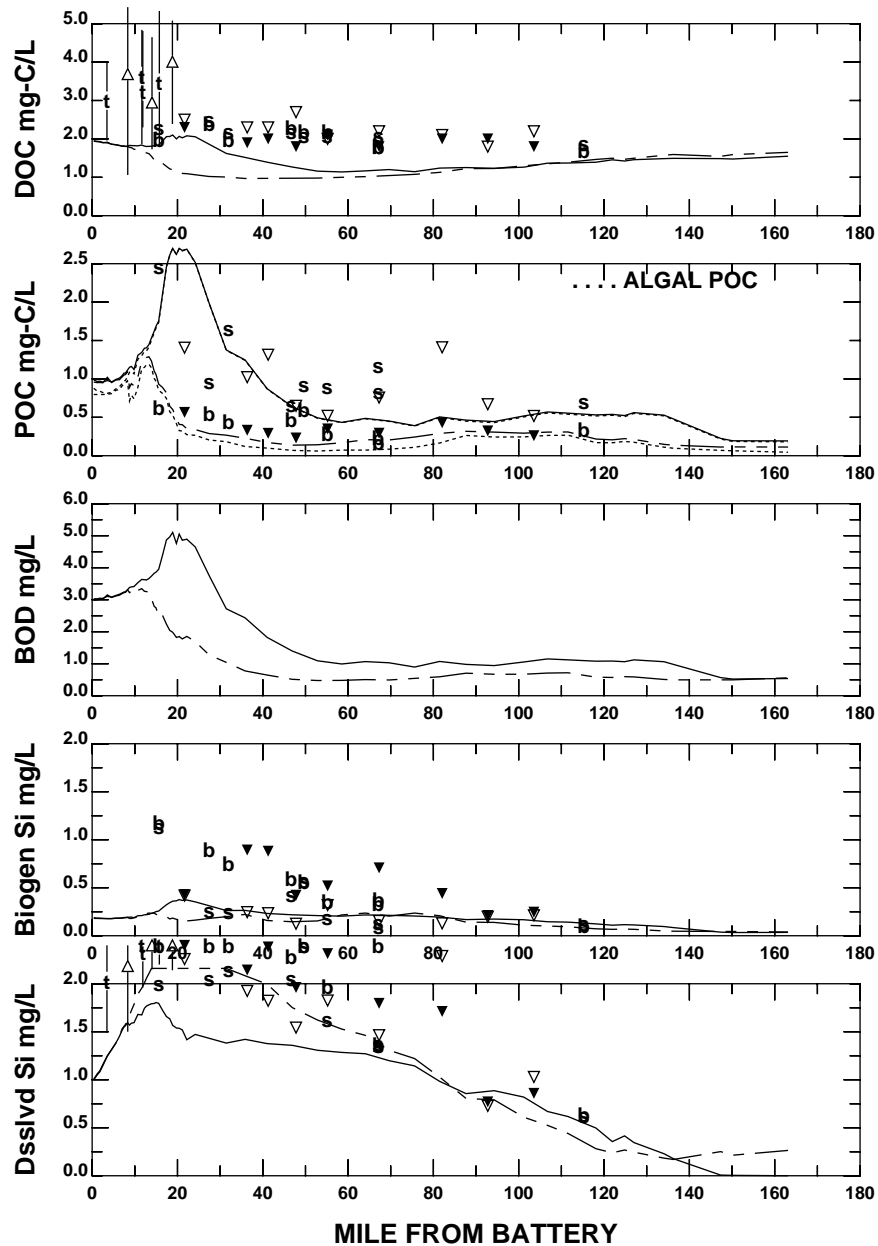
**EAST RIVER AND LONG ISLAND SOUND**



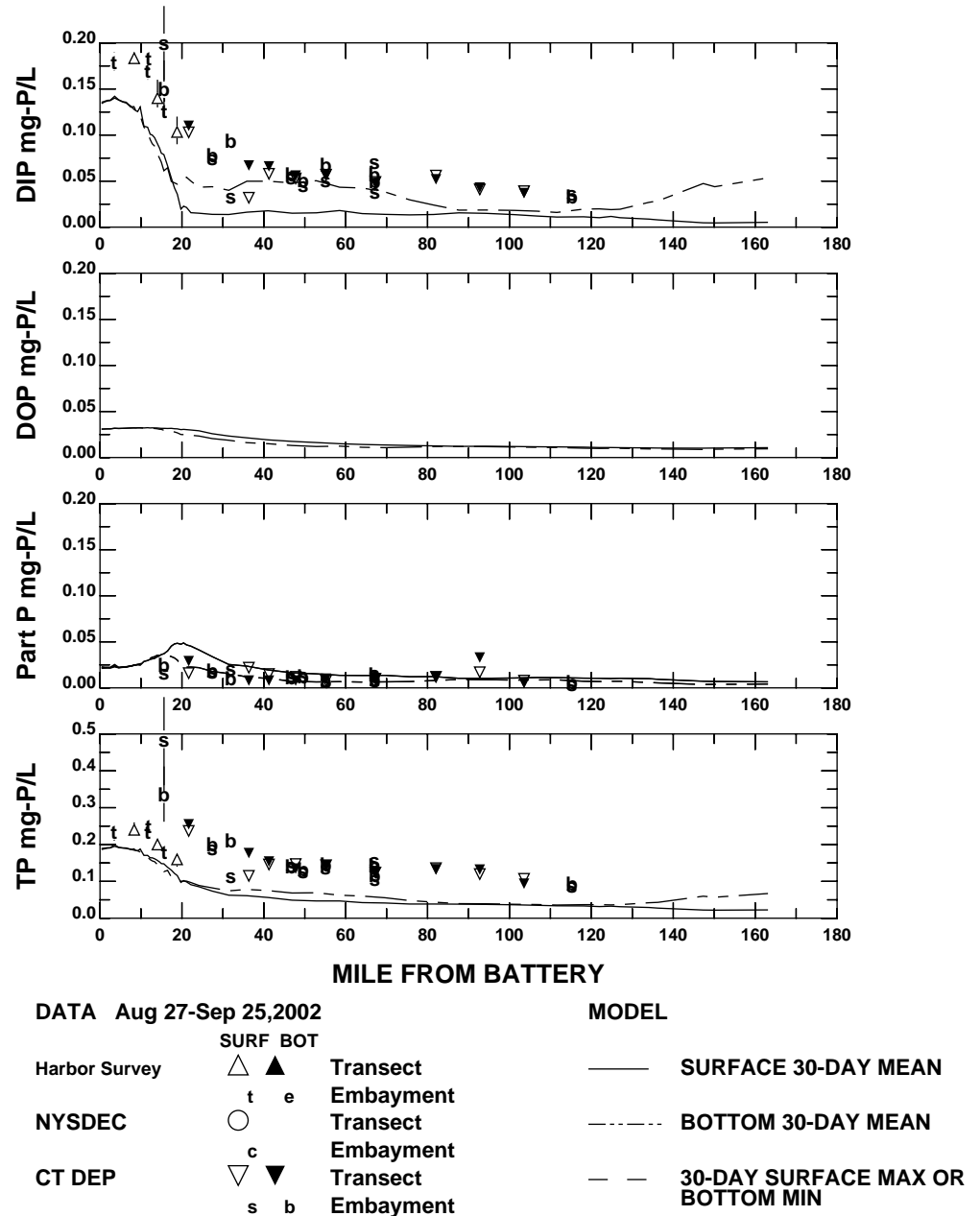
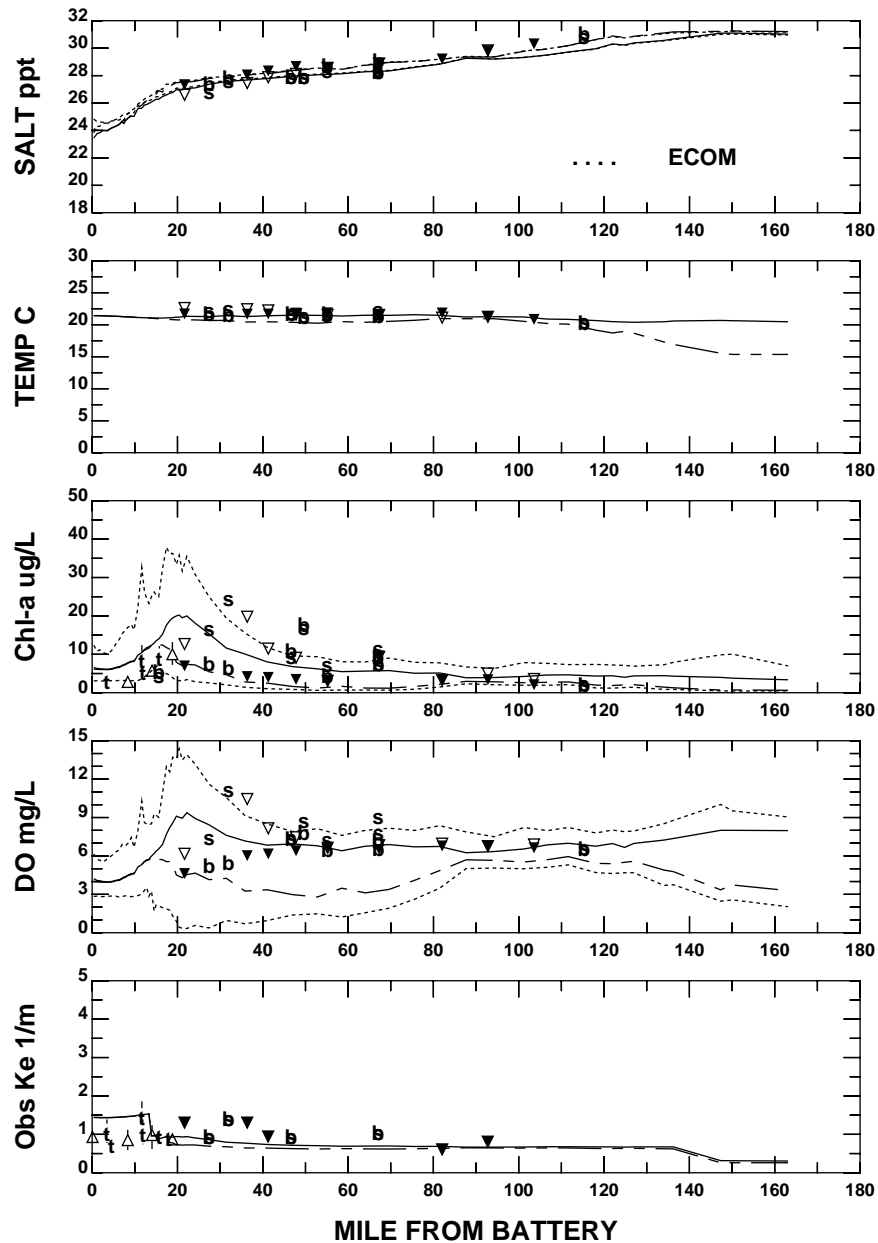
# EAST RIVER AND LONG ISLAND SOUND



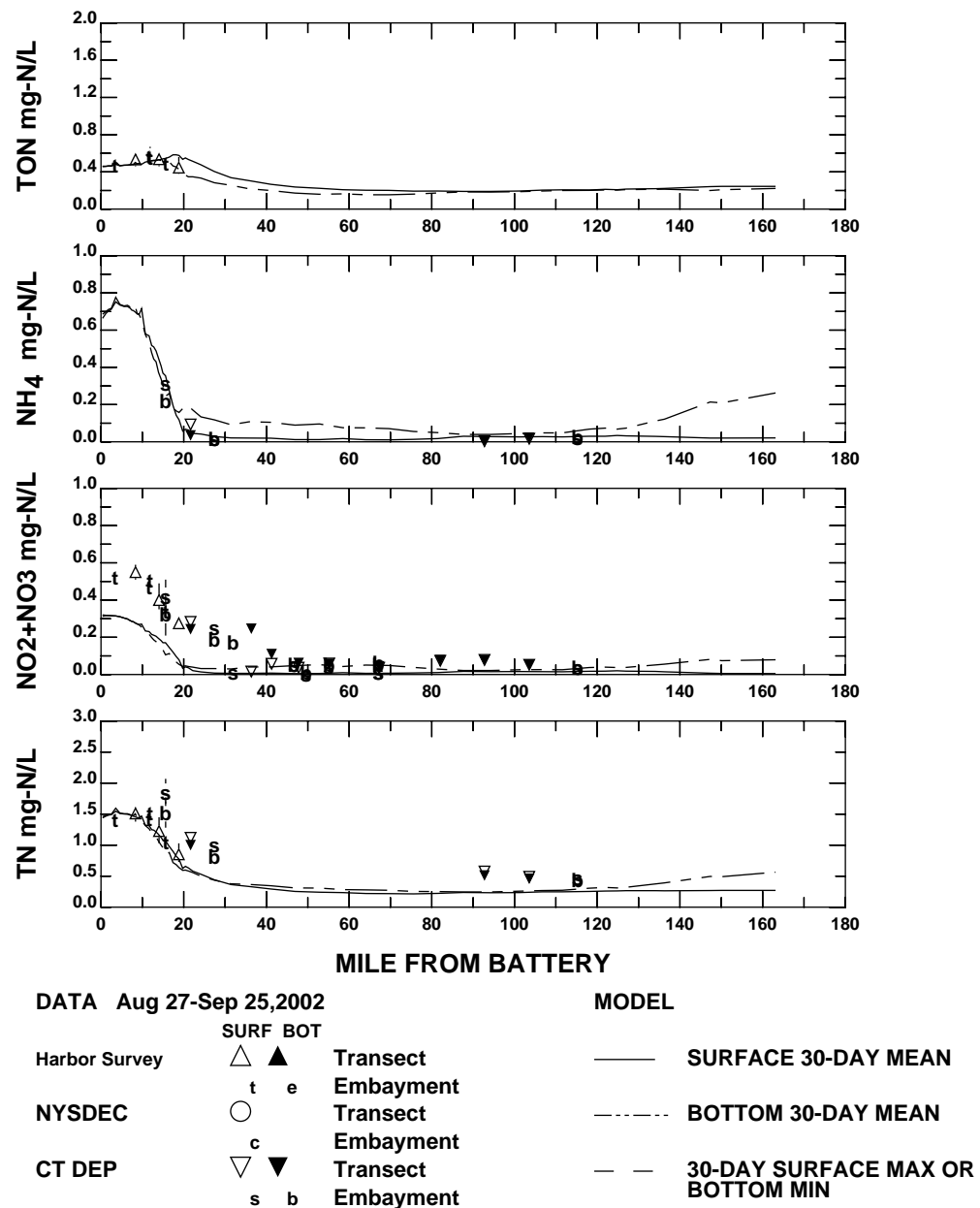
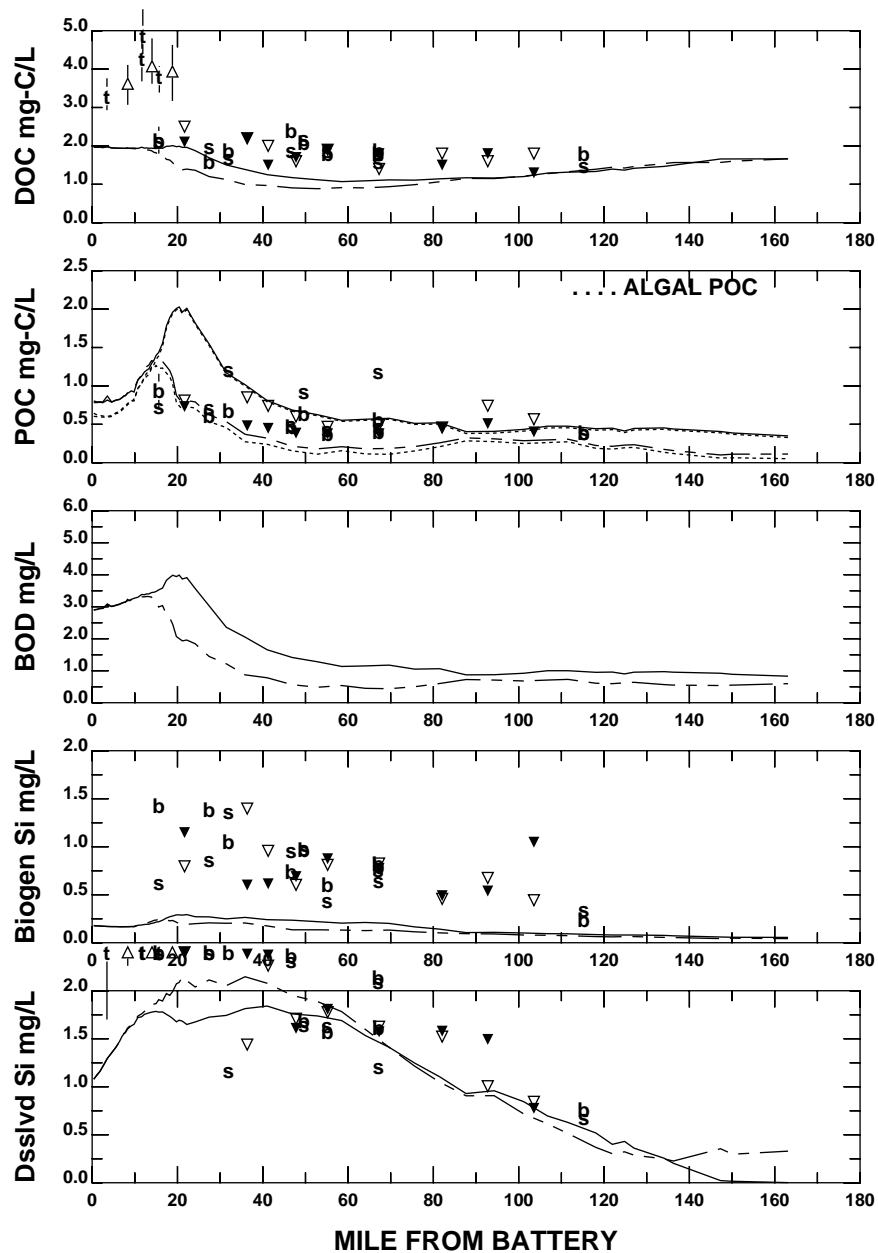
**EAST RIVER AND LONG ISLAND SOUND**



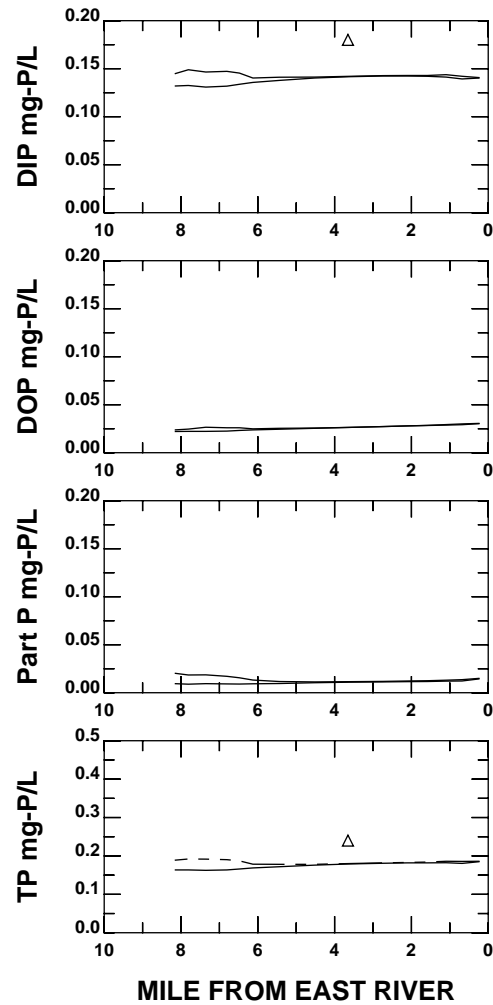
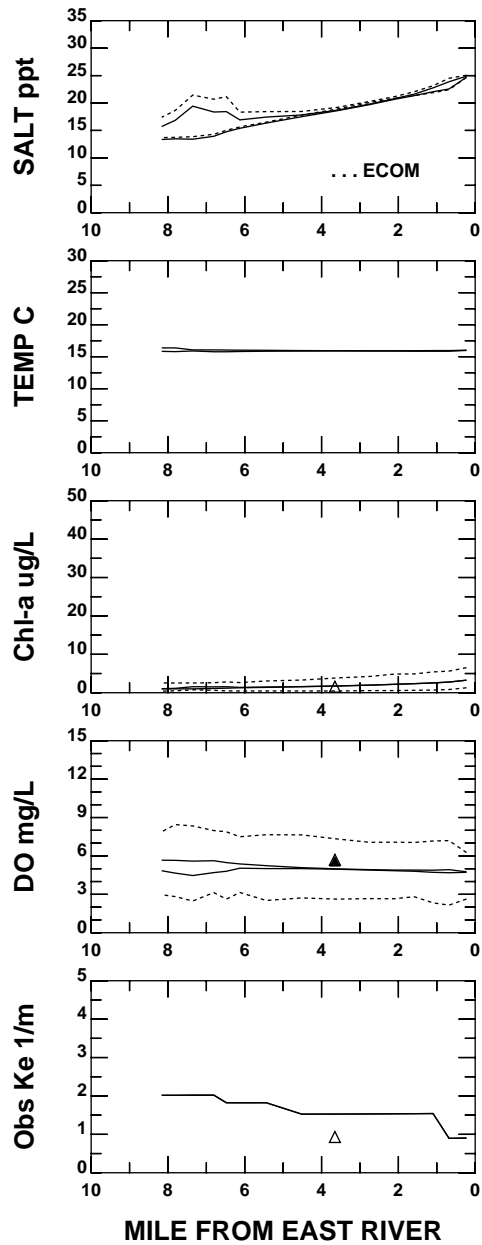
# EAST RIVER AND LONG ISLAND SOUND



**EAST RIVER AND LONG ISLAND SOUND**



**EAST RIVER AND LONG ISLAND SOUND**



DATA Oct 1-30,2001

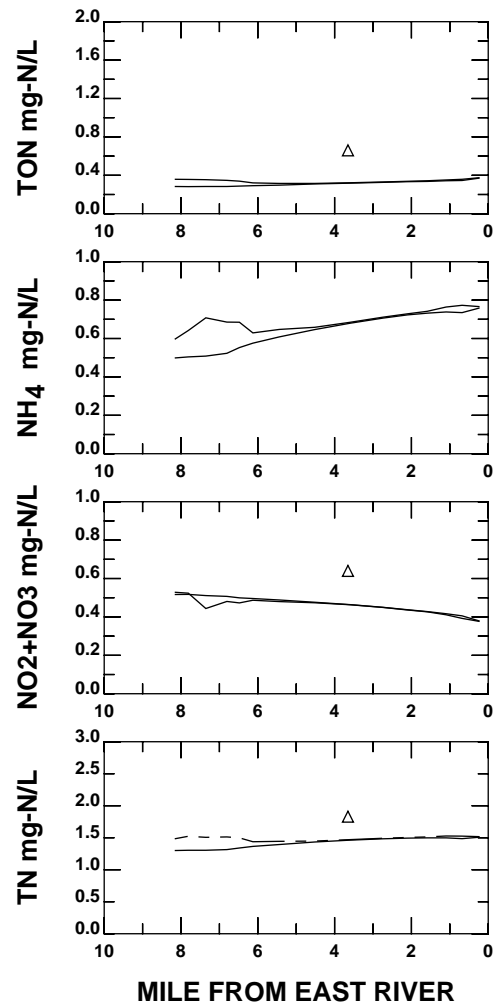
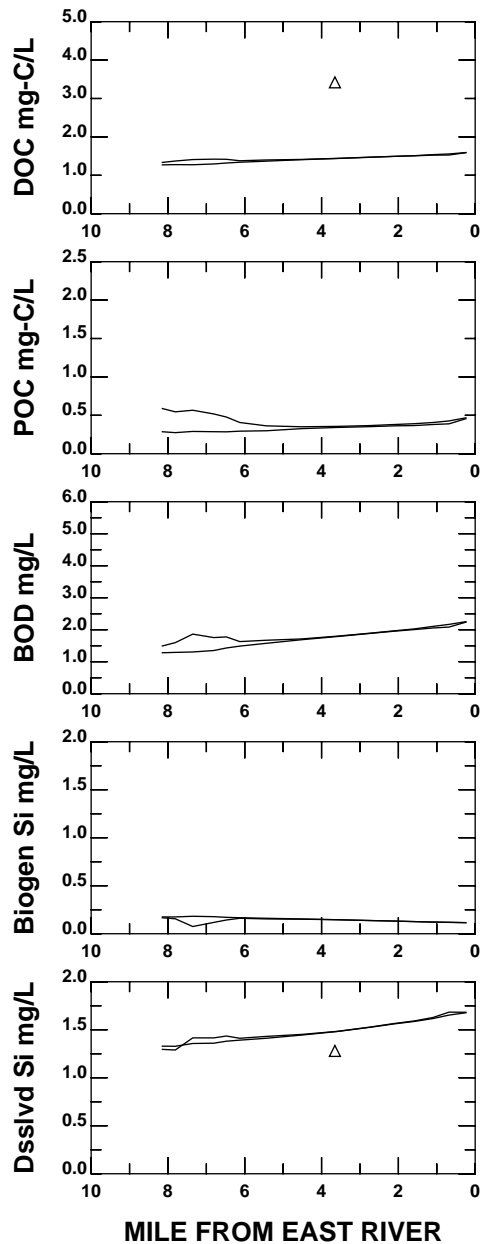
Harbor Survey    SURF BOT  
 △ ▲    Transect  
 t e    Embayment  
 NYSDEC    ○    Transect  
           c    Embayment

MODEL

—    SURFACE 30-DAY MEAN  
 - - -    BOTTOM 30-DAY MEAN  
 - -    30-DAY SURFACE MAX OR  
 BOTTOM MIN

**HARLEM RIVER**





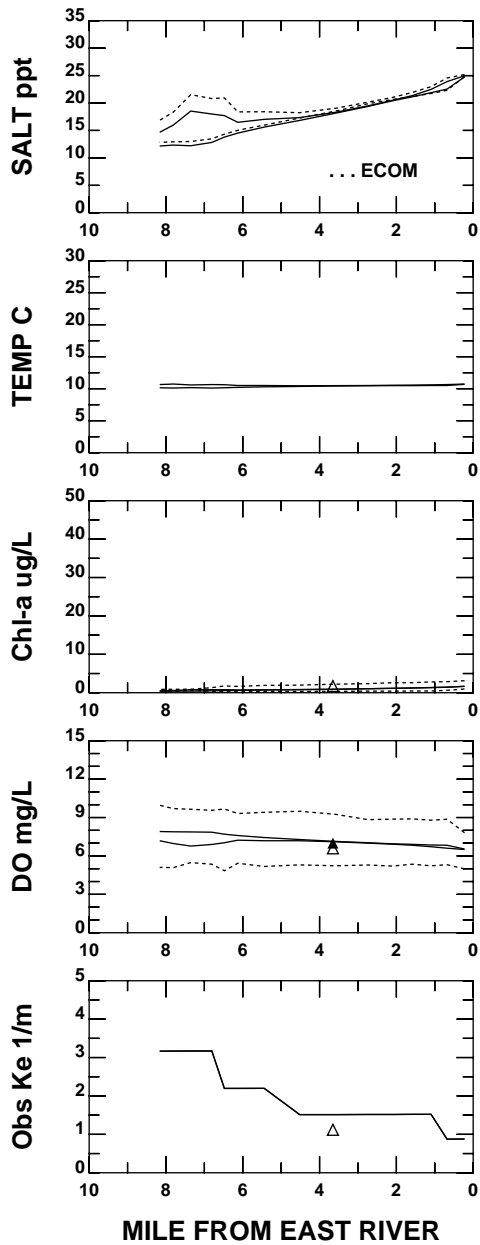
DATA Oct 1-30,2001

	SURF BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment

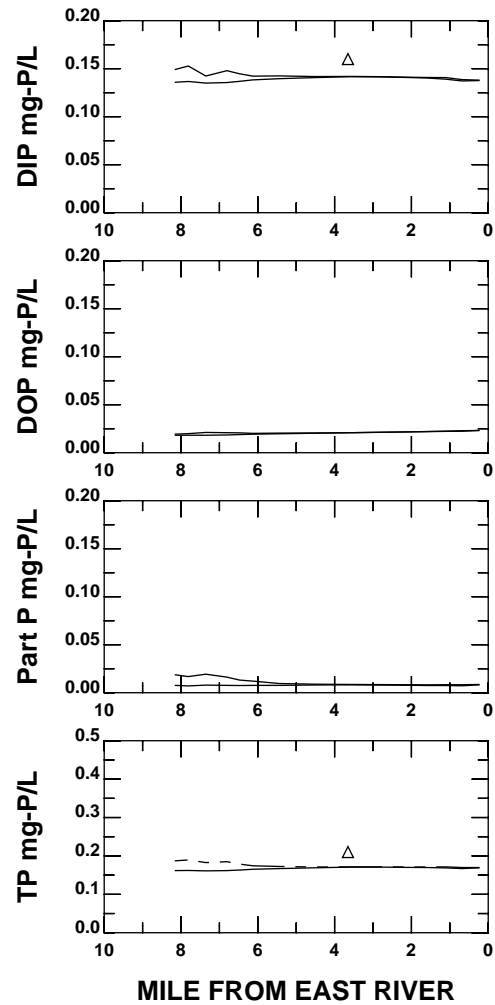
MODEL

—	SURFACE 30-DAY MEAN
- - -	BOTTOM 30-DAY MEAN
- - -	30-DAY SURFACE MAX OR BOTTOM MIN

## HARLEM RIVER



**HARLEM RIVER**

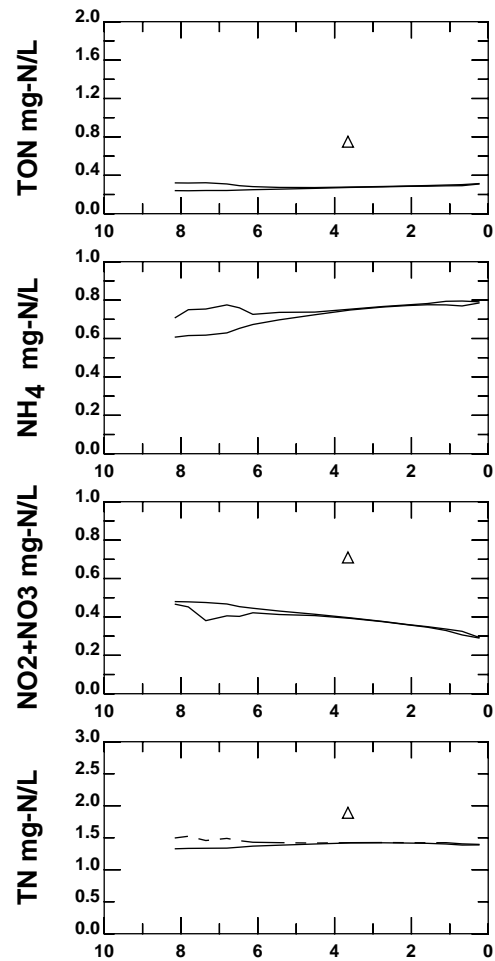
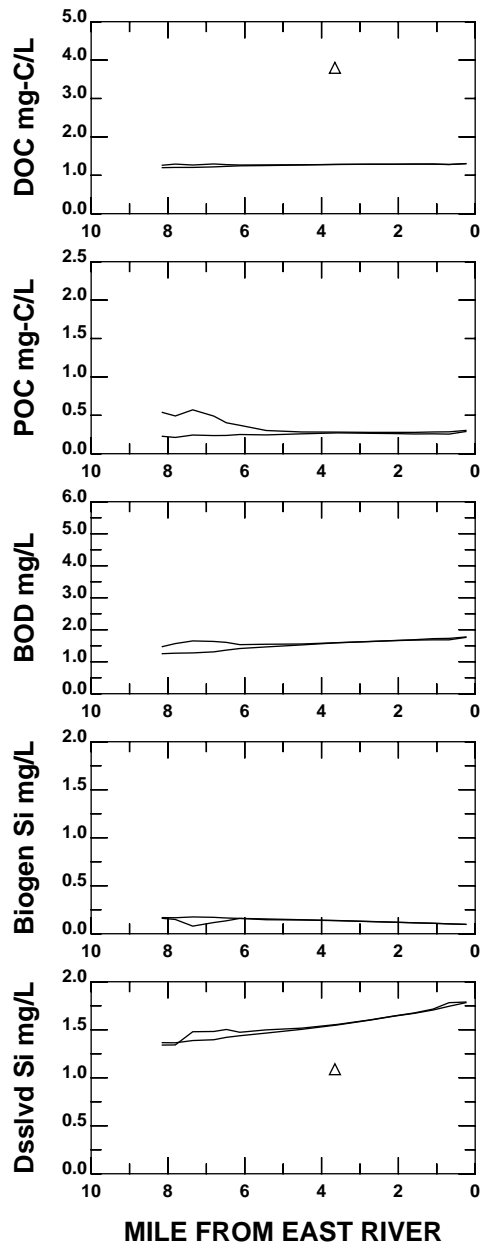


DATA Oct 31-Nov 29,2001

Harbor Survey SURF BOT  
 △ ▲ Transect  
 t e Embayment  
 NYSDEC ○ ○ Transect  
 c c Embayment

MODEL

— SURFACE 30-DAY MEAN  
 - - - - - BOTTOM 30-DAY MEAN  
 - - 30-DAY SURFACE MAX OR BOTTOM MIN



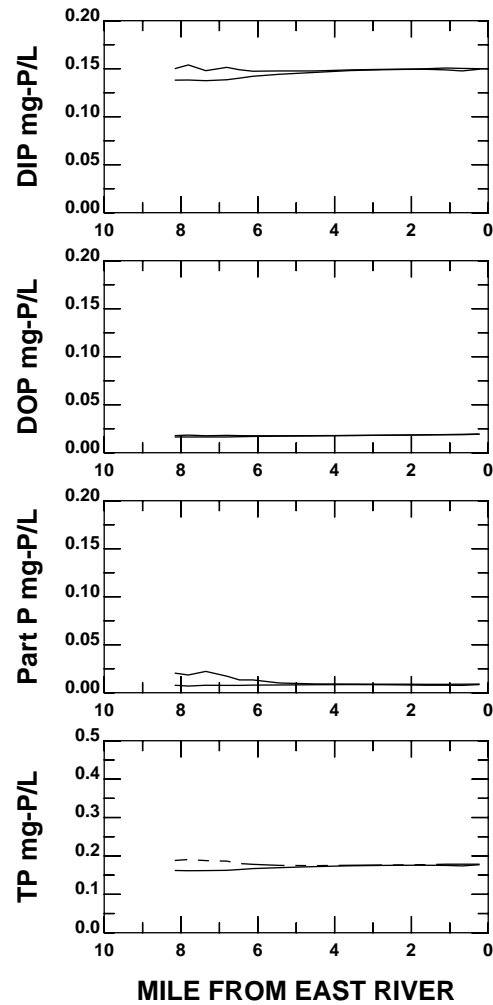
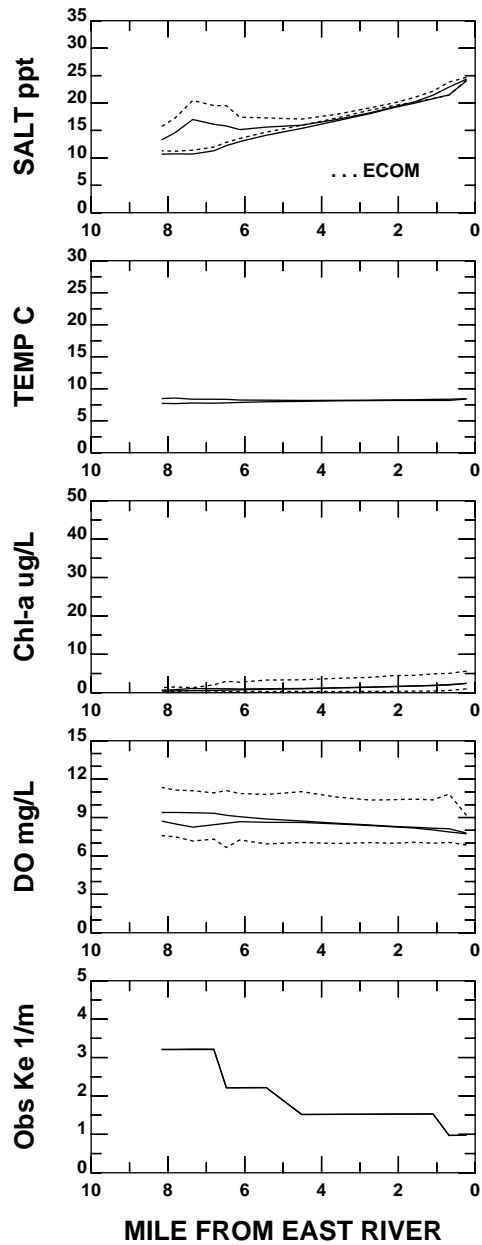
DATA Oct 31-Nov 29,2001

	SURF BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment

MODEL

—	SURFACE 30-DAY MEAN
- - - -	BOTTOM 30-DAY MEAN
- - -	30-DAY SURFACE MAX OR BOTTOM MIN

## HARLEM RIVER



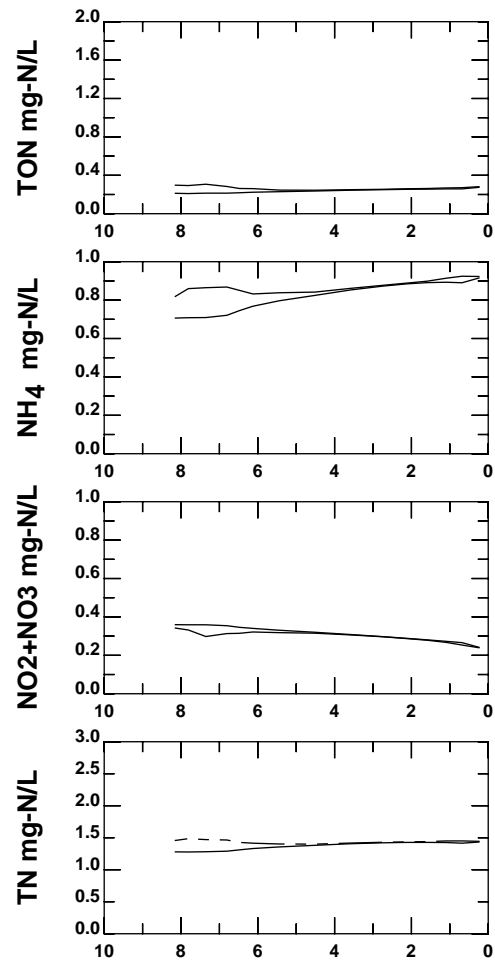
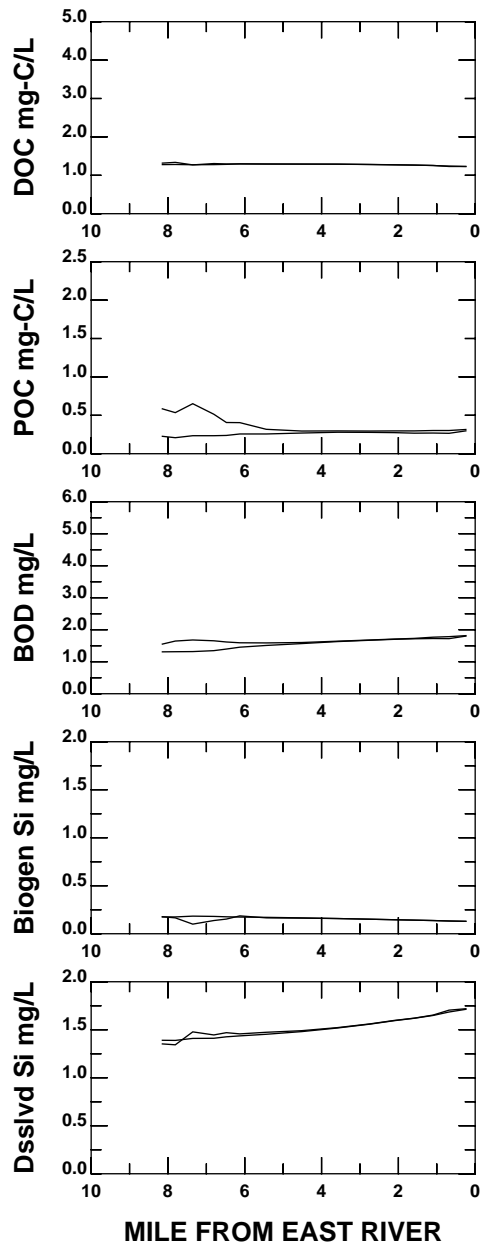
DATA Nov 30-Dec 29,2001

Harbor Survey SURF BOT  
 △ ▲ Transect  
 t e Embayment  
 NYSDEC ○ ○ Transect  
 c c Embayment

MODEL

— SURFACE 30-DAY MEAN  
 - - - - - BOTTOM 30-DAY MEAN  
 - - 30-DAY SURFACE MAX OR  
 BOTTOM MIN

**HARLEM RIVER**



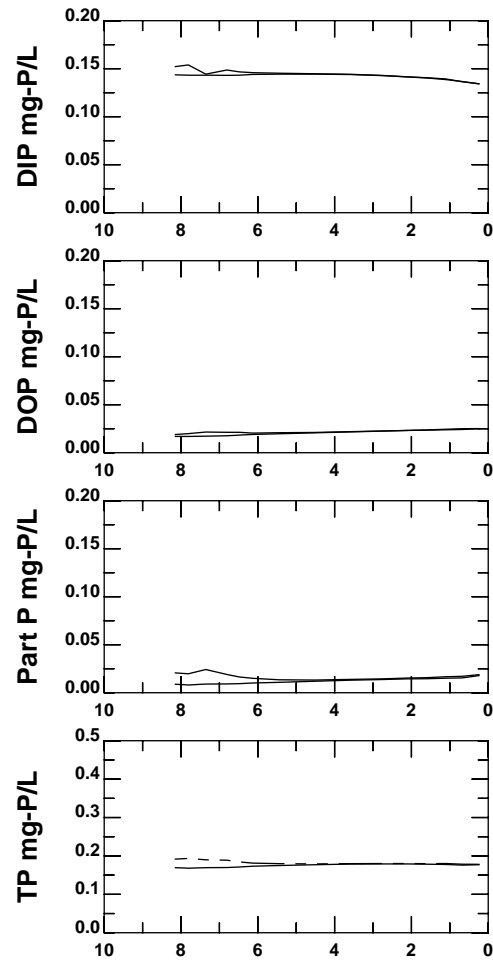
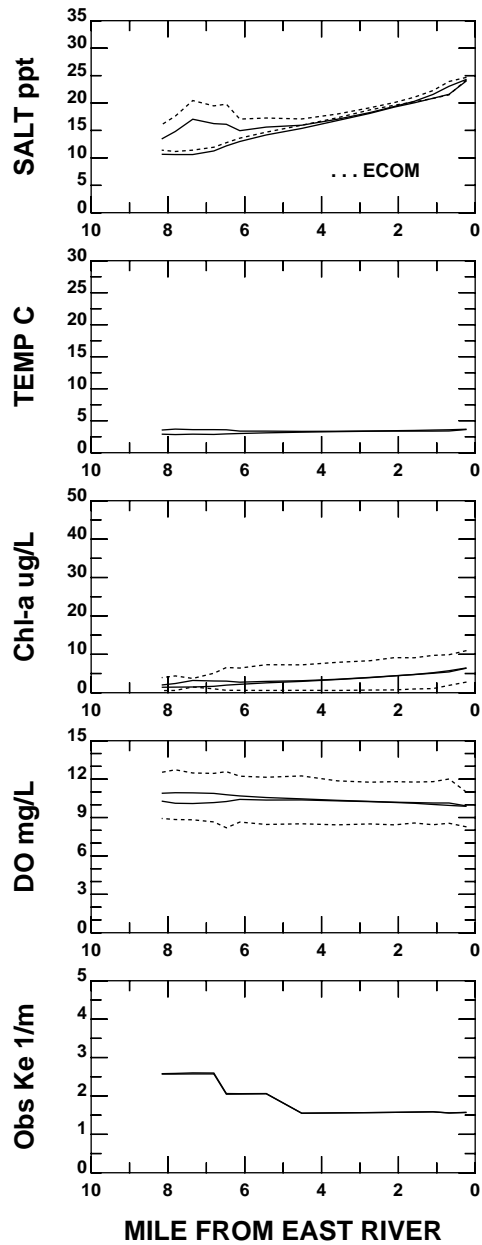
DATA Nov 30-Dec 29,2001

	SURF BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment

MODEL

————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

# HARLEM RIVER



**DATA** Dec 30 2001 -Jan 28,2002

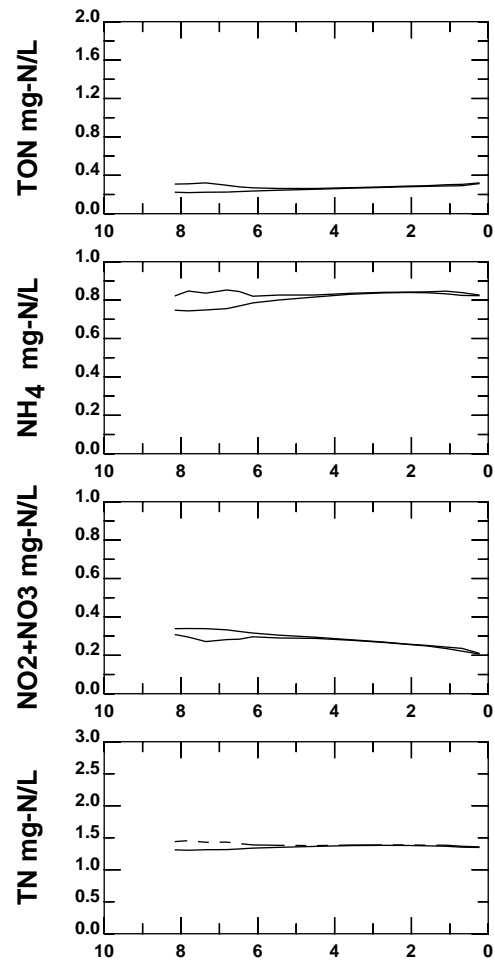
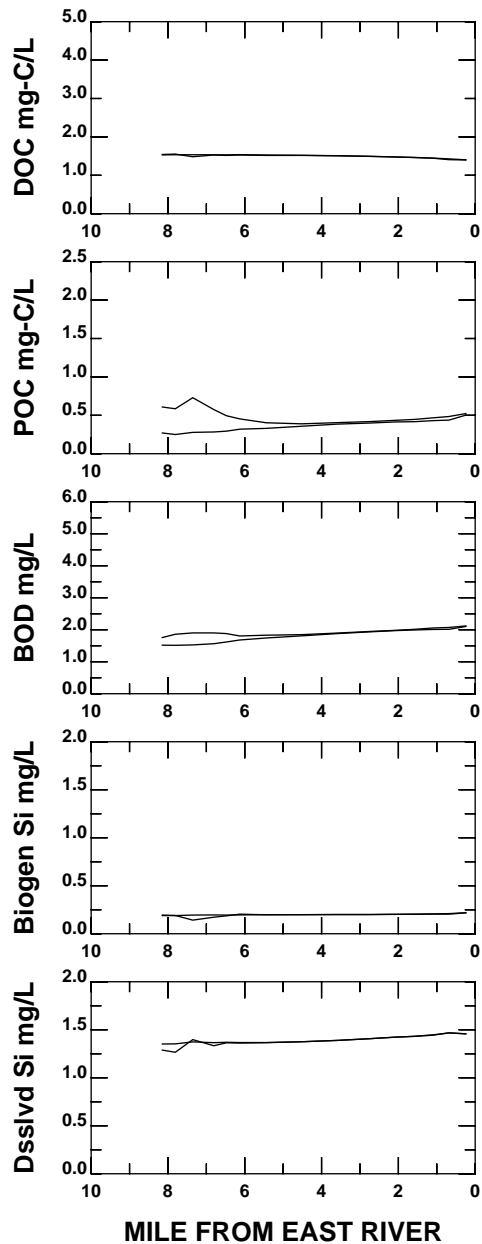
**MODEL**

	<b>SURF BOT</b>		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment

—	<b>SURFACE 30-DAY MEAN</b>
- - - -	<b>BOTTOM 30-DAY MEAN</b>
- - - -	<b>30-DAY SURFACE MAX OR BOTTOM MIN</b>

**HARLEM RIVER**



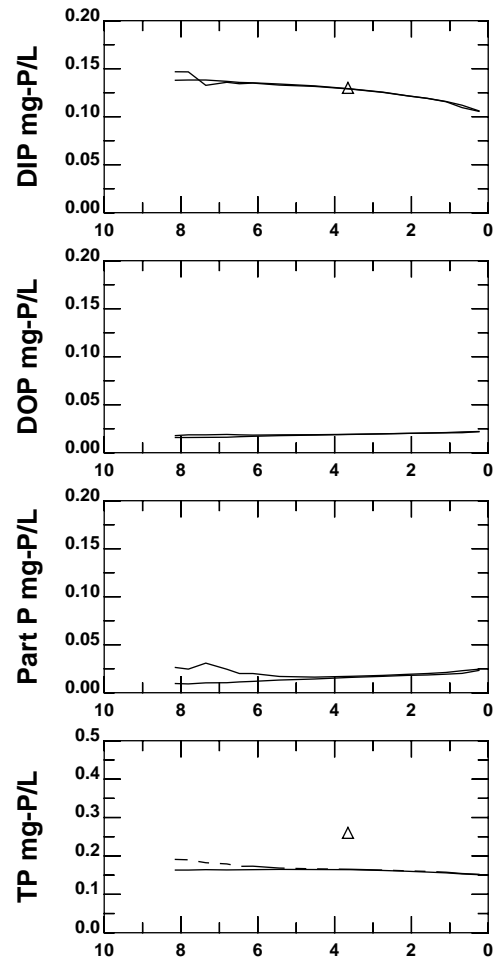
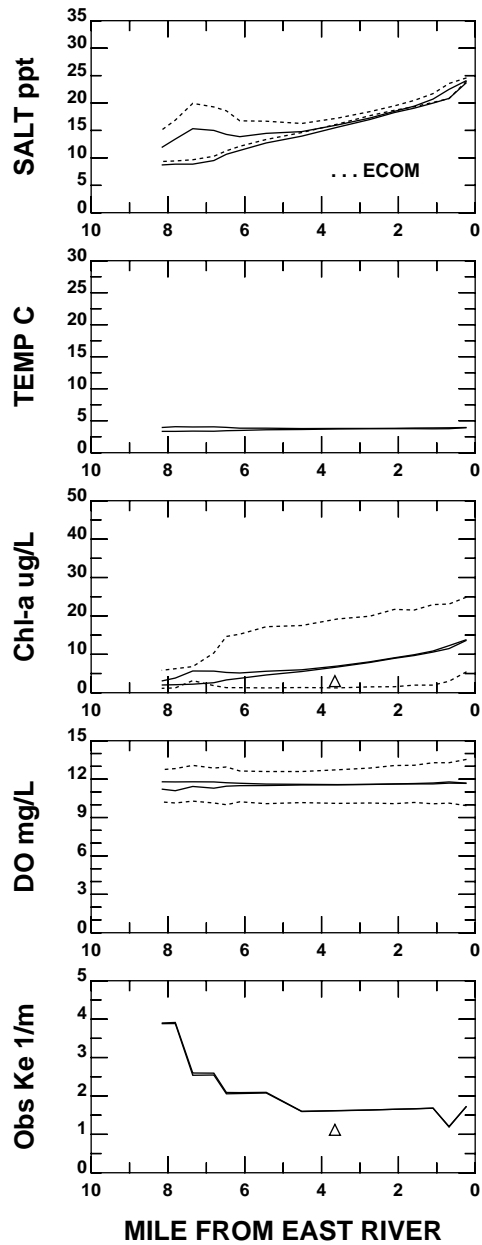
**DATA Dec 30 2001 -Jan 28,2002**

	SURF BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment

**MODEL**

————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

**HARLEM RIVER**



DATA Jan 29-Feb 27, 2002

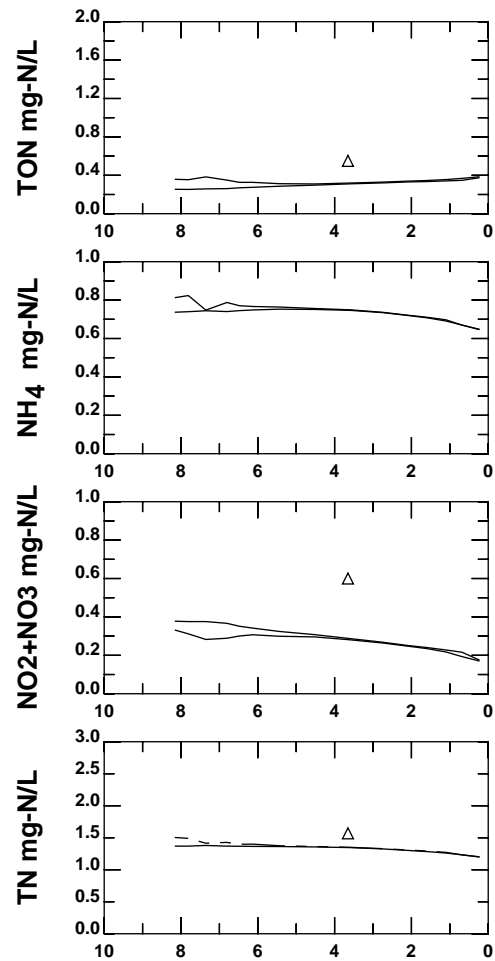
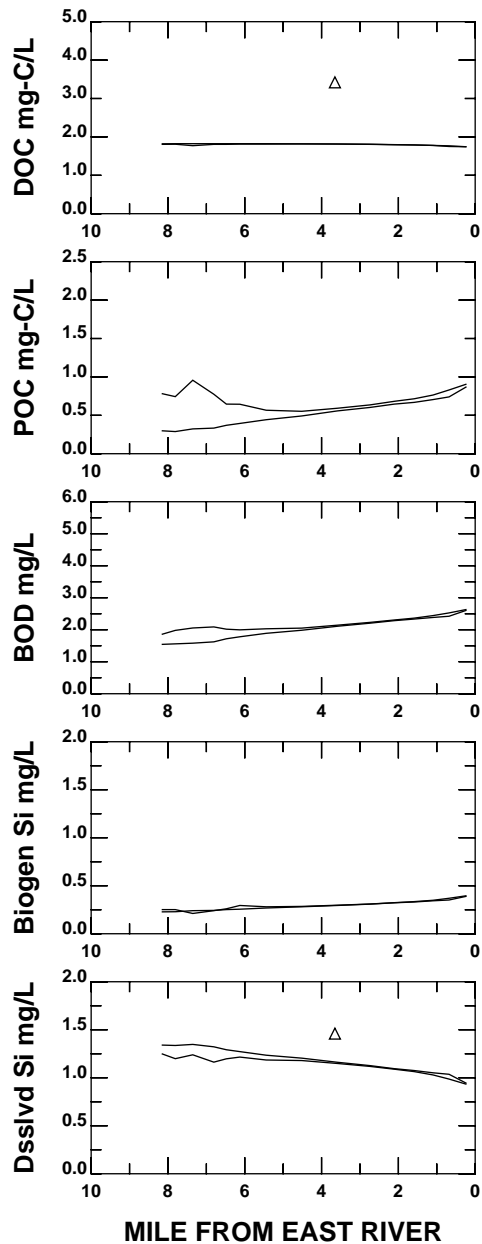
Harbor Survey     $\triangle$   $\blacktriangle$     Transect  
                          t e    Embayment  
 NYSDEC             $\circ$     Transect  
                          c    Embayment

MODEL

— SURFACE 30-DAY MEAN  
 - - - - - BOTTOM 30-DAY MEAN  
 - - - 30-DAY SURFACE MAX OR  
 BOTTOM MIN

**HARLEM RIVER**





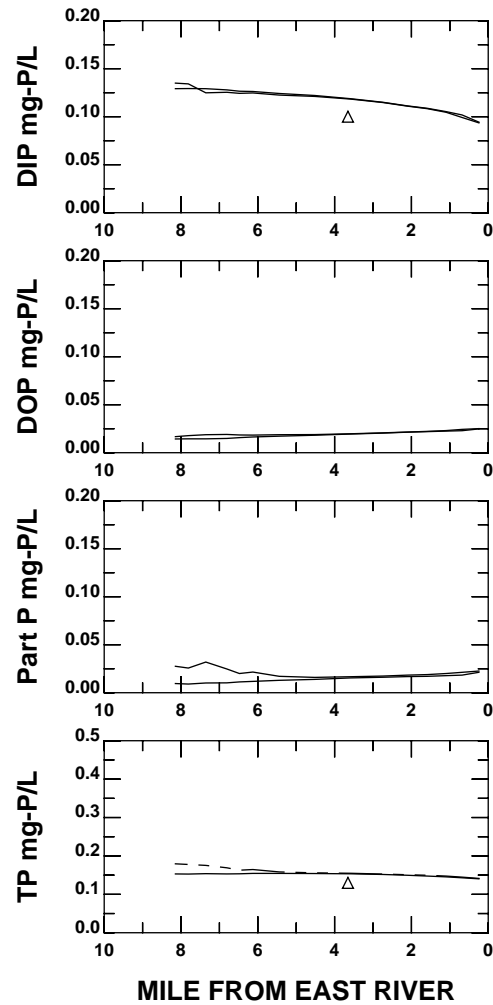
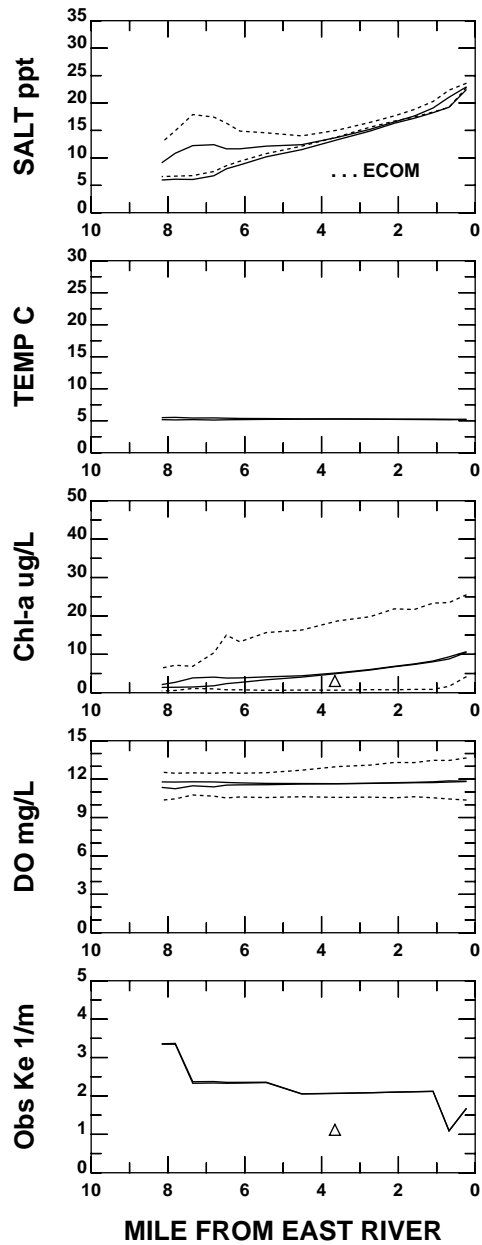
DATA Jan 29-Feb 27, 2002

	SURF BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment

MODEL

—	SURFACE 30-DAY MEAN
- - -	BOTTOM 30-DAY MEAN
- - -	30-DAY SURFACE MAX OR BOTTOM MIN

## HARLEM RIVER



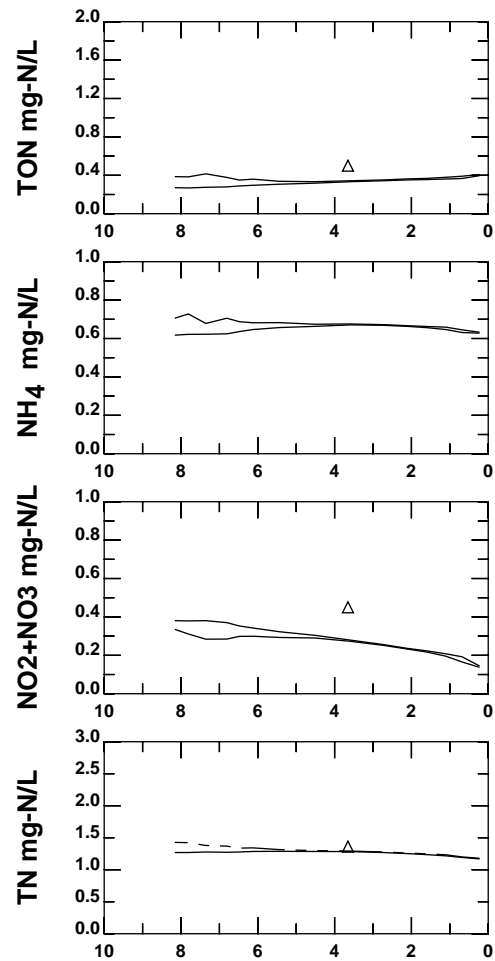
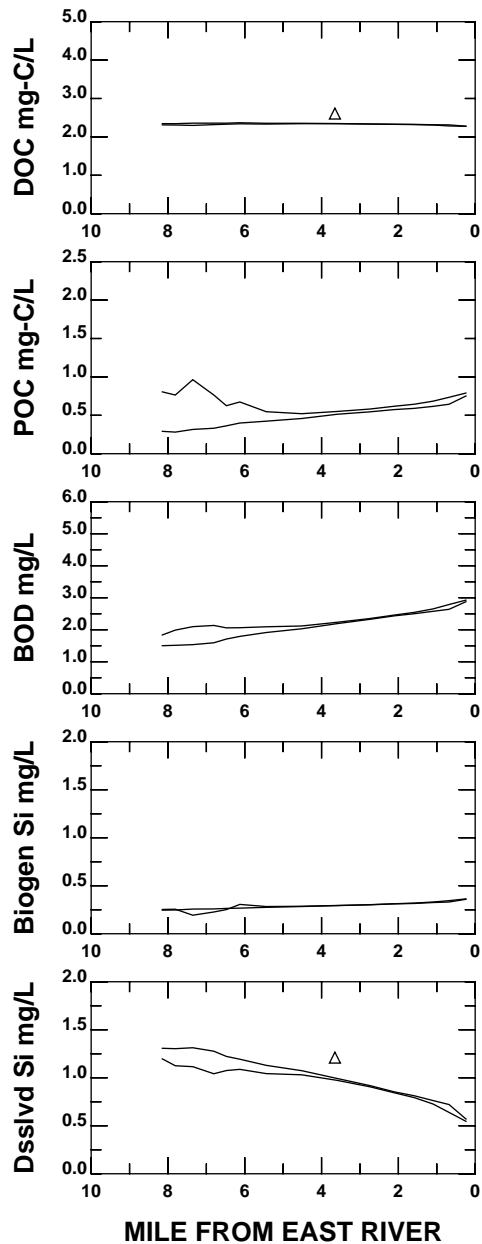
DATA Feb 28-Mar 29, 2002

Harbor Survey    SURF BOT  
 △    ▲    Transect  
 t    e    Embayment  
 NYSDEC    ○    Transect  
           c    Embayment

MODEL

—    SURFACE 30-DAY MEAN  
 - - -    BOTTOM 30-DAY MEAN  
 - -    30-DAY SURFACE MAX OR  
 BOTTOM MIN

**HARLEM RIVER**



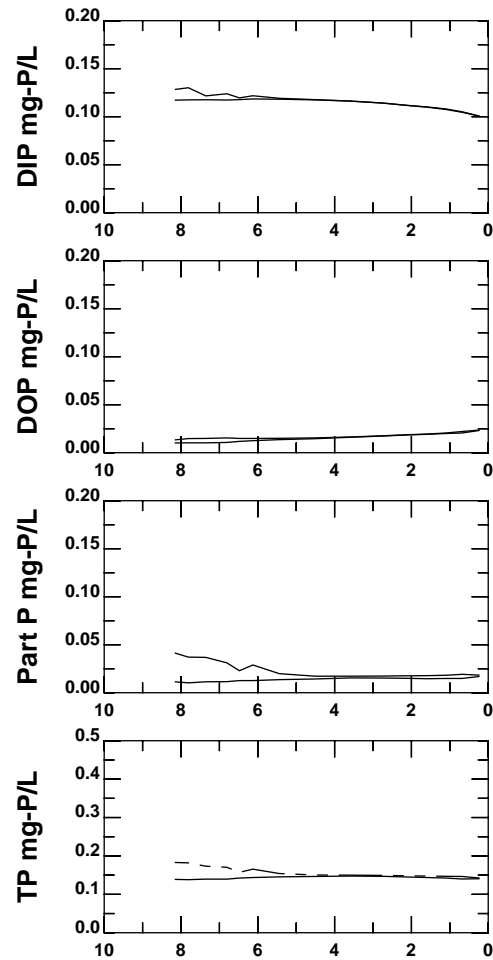
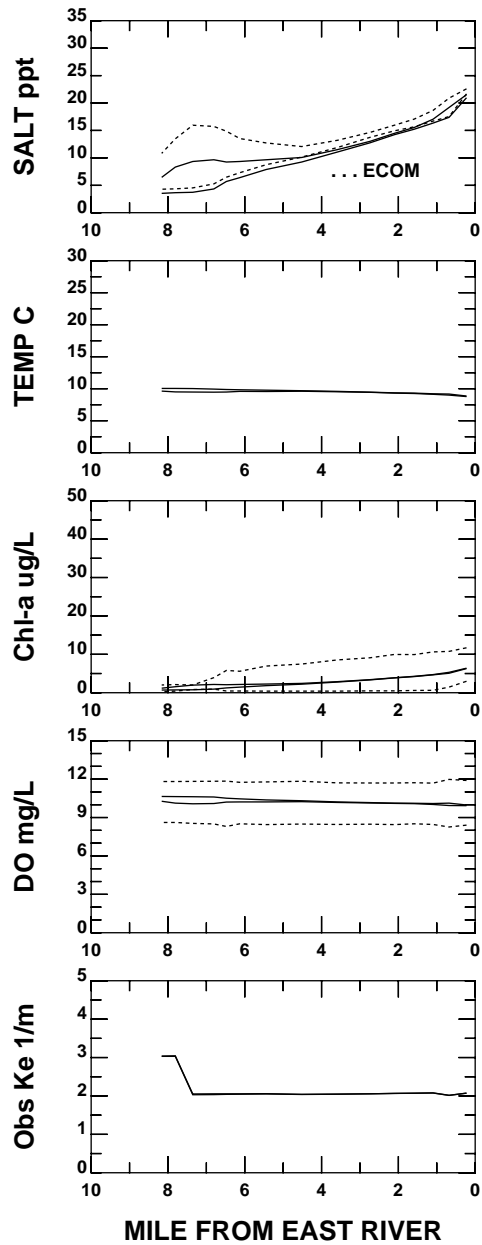
DATA Feb 28-Mar 29, 2002

	SURF BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment

MODEL

—	SURFACE 30-DAY MEAN
- - -	BOTTOM 30-DAY MEAN
- -	30-DAY SURFACE MAX OR BOTTOM MIN

## HARLEM RIVER



MILE FROM EAST RIVER

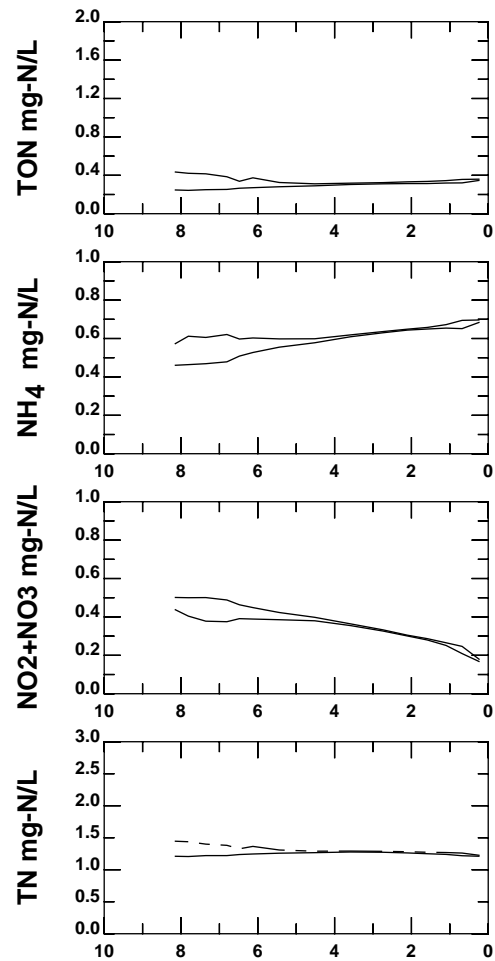
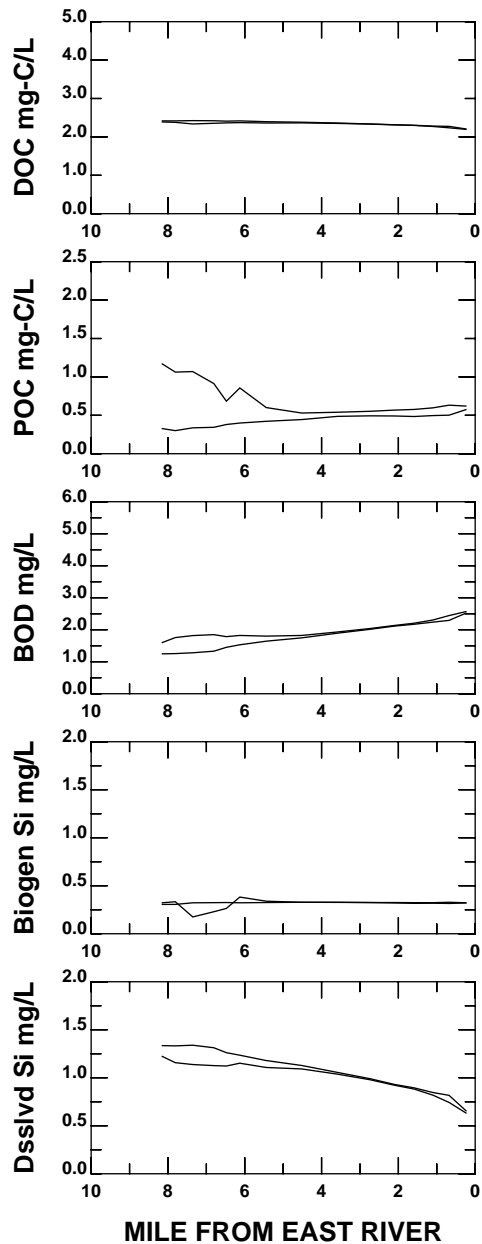
DATA Mar 30-Apr 28, 2002

Harbor Survey SURF BOT  
 △ ▲ Transect  
 t e Embayment  
 NYSDEC ○ ○ Transect  
 c c Embayment

MODEL

— SURFACE 30-DAY MEAN  
 - - - - - BOTTOM 30-DAY MEAN  
 - - 30-DAY SURFACE MAX OR  
 BOTTOM MIN

**HARLEM RIVER**



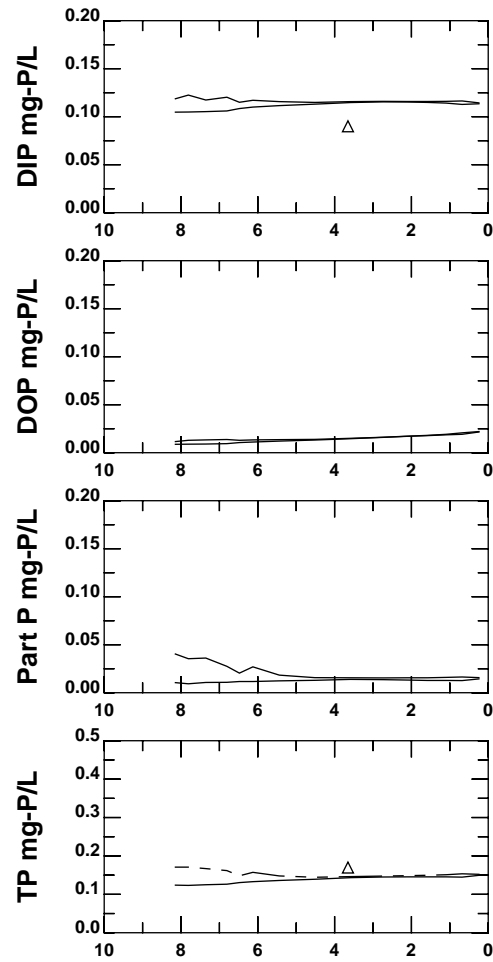
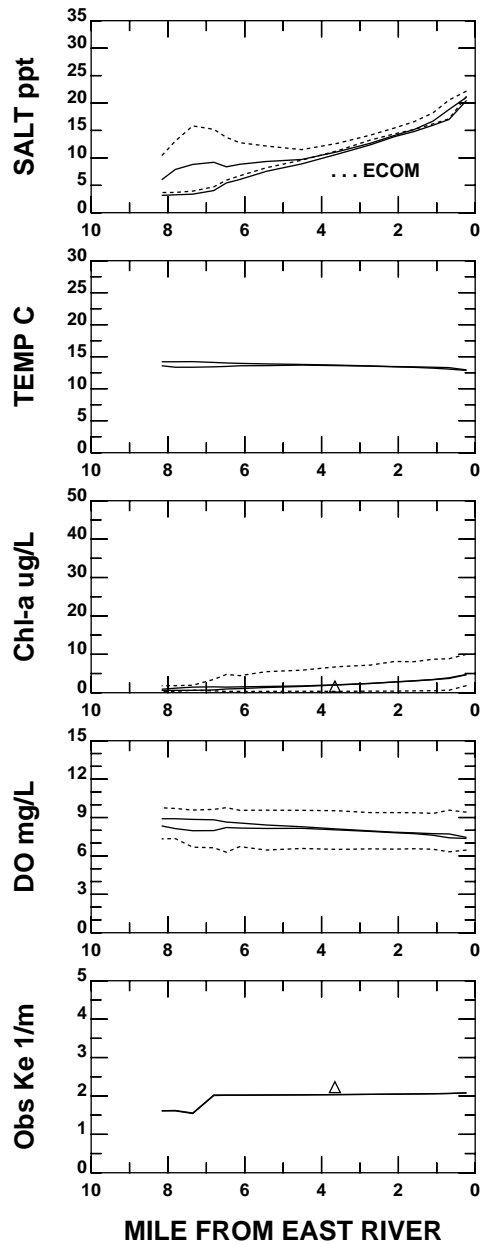
DATA Mar 30-Apr 28, 2002

	SURF BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment

MODEL

————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

# HARLEM RIVER



**DATA** Apr 29-May 28, 2002

**MODEL**

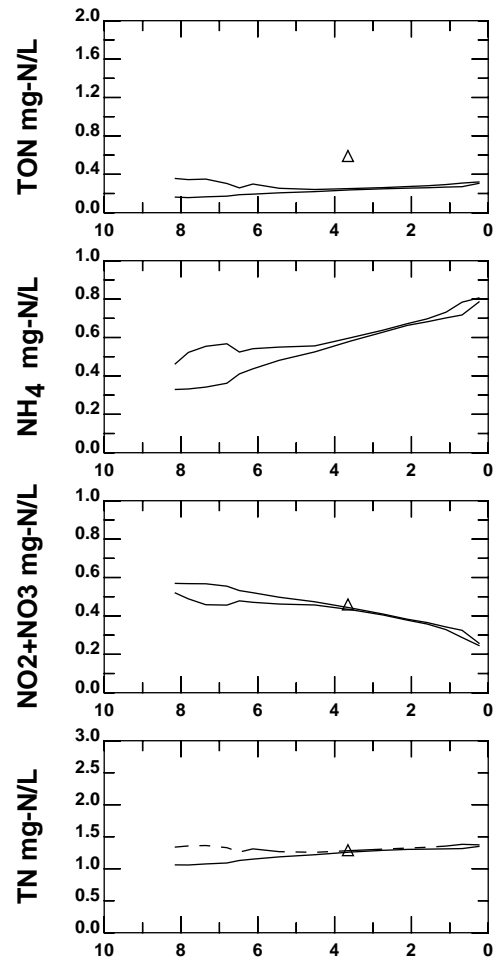
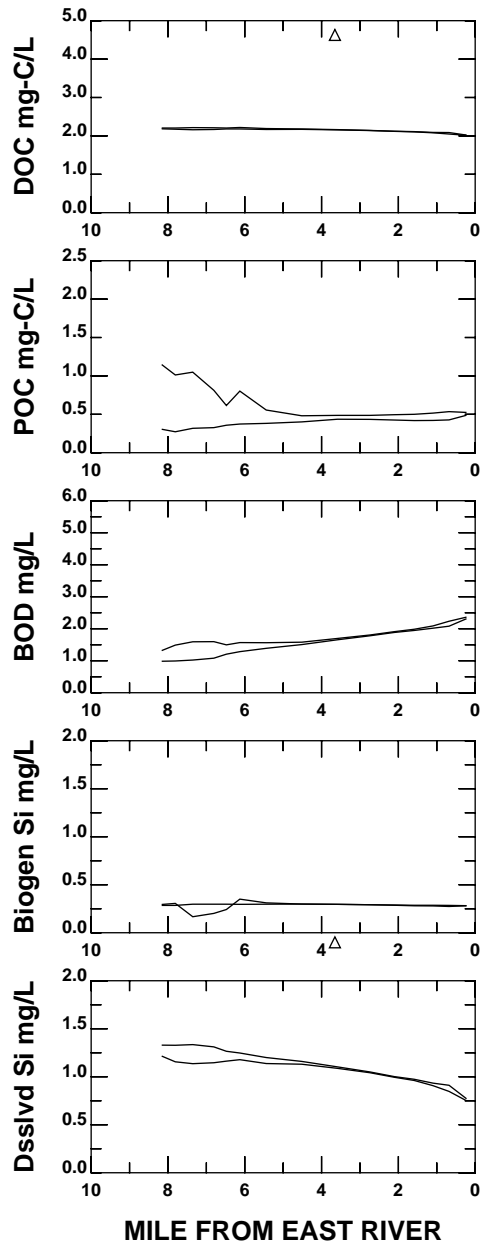
**SURF BOT**

Harbor Survey  $\triangle$   $\blacktriangle$  **Transect**  
 NYSDEC  $\circ$   $\bullet$  **Embayment**

**MODEL**

— **SURFACE 30-DAY MEAN**  
 - - - **BOTTOM 30-DAY MEAN**  
 - - - **30-DAY SURFACE MAX OR BOTTOM MIN**

**HARLEM RIVER**



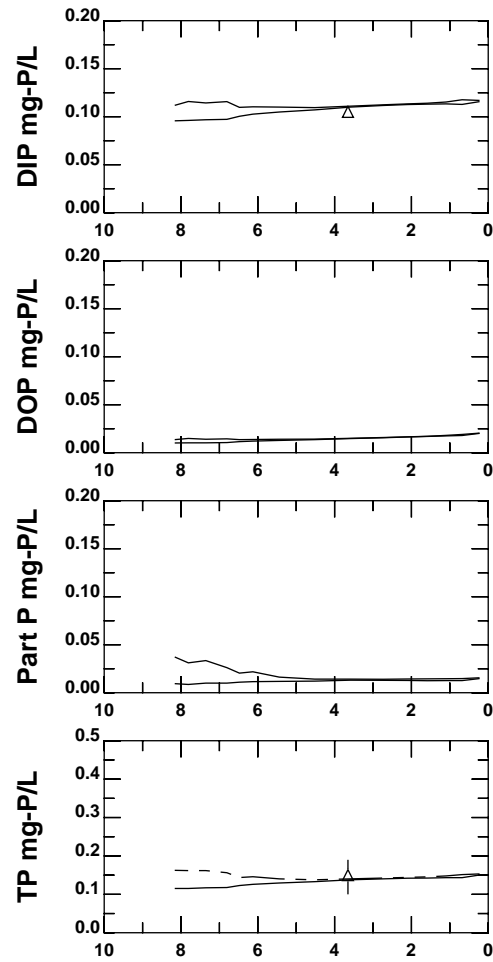
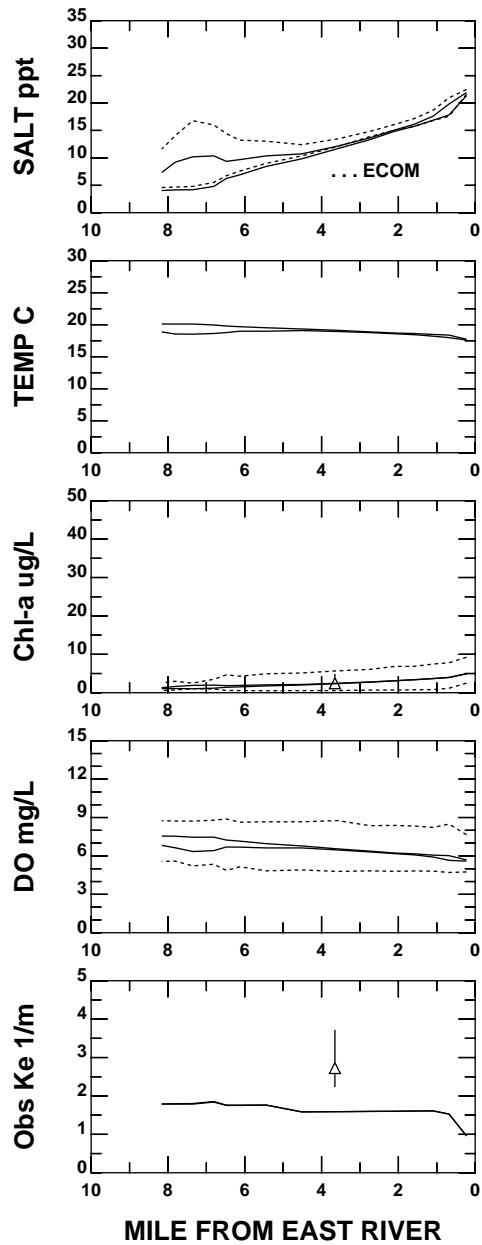
**DATA** Apr 29-May 28, 2002

	SURF BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment

**MODEL**

————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

**HARLEM RIVER**



**DATA** May 29-Jun 27, 2002

**MODEL**

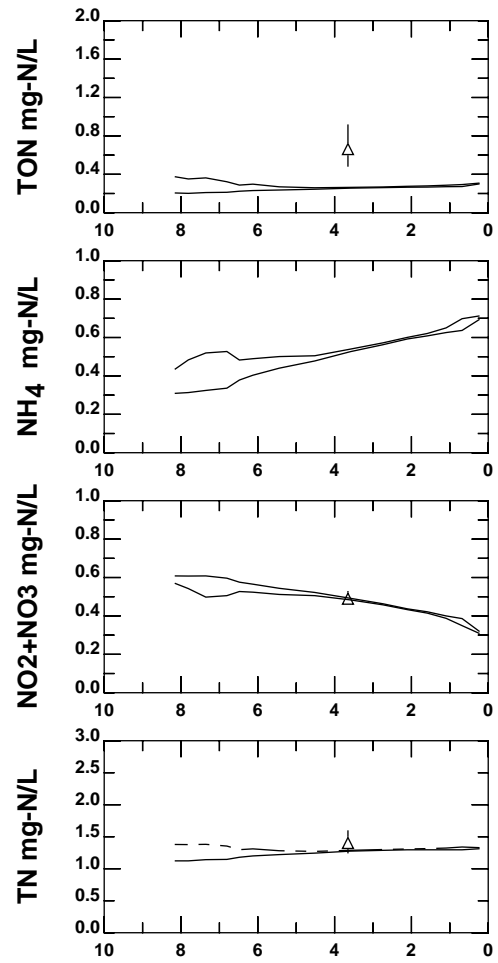
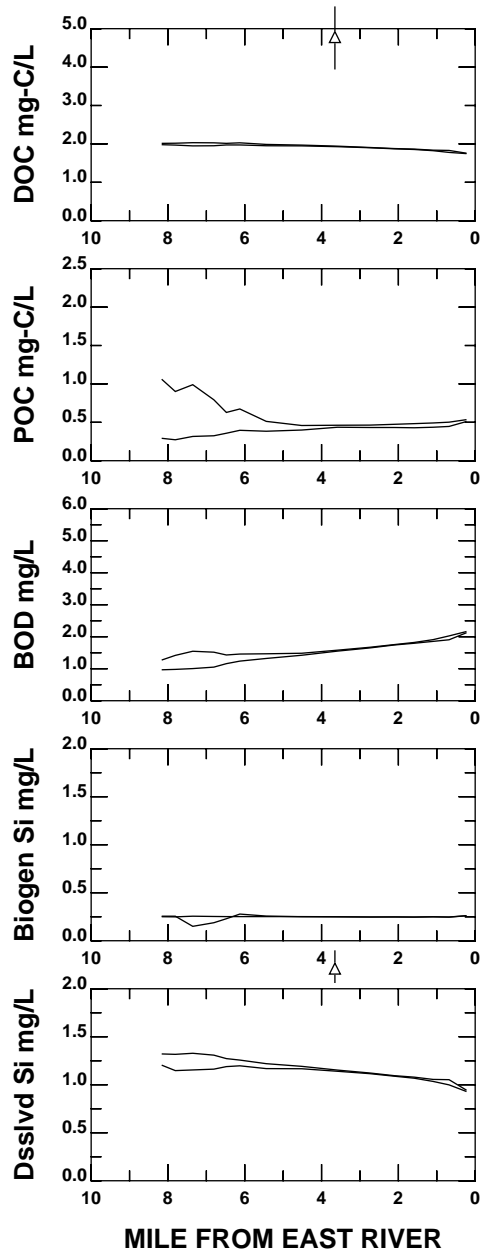
	<b>SURF</b>	<b>BOT</b>	
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment

—	<b>SURFACE 30-DAY MEAN</b>
- - -	<b>BOTTOM 30-DAY MEAN</b>
- - -	<b>30-DAY SURFACE MAX OR BOTTOM MIN</b>

**HARLEM RIVER**





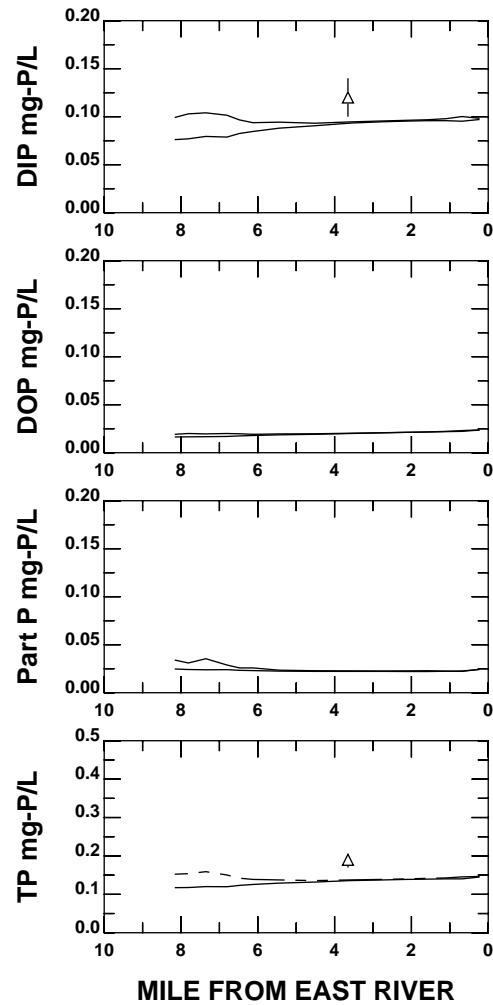
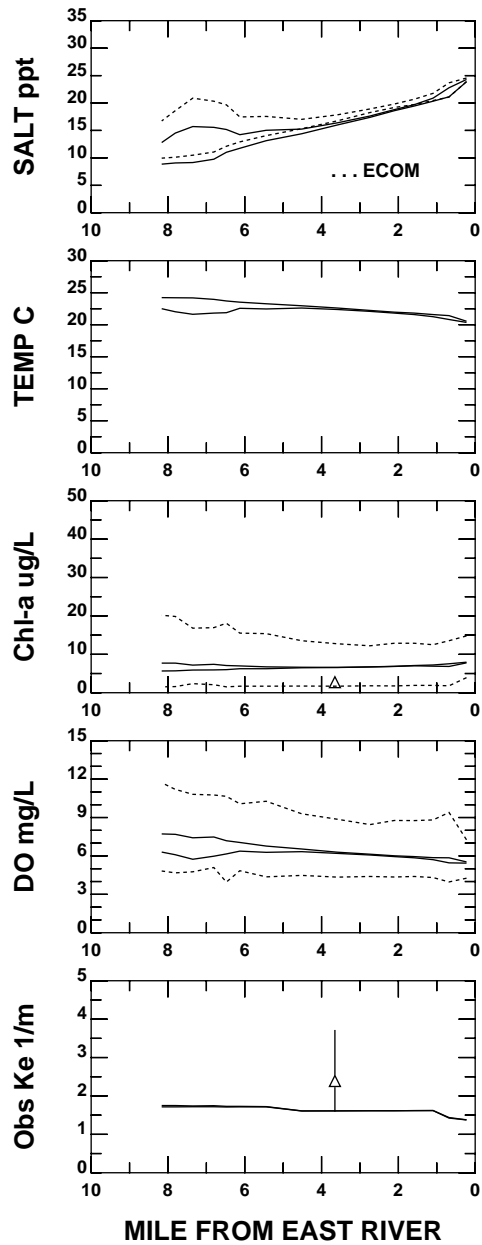
**DATA** May 29-Jun 27, 2002

**MODEL**

	<b>SURF</b>	<b>BOT</b>		
Harbor Survey	△	▲	Transect	—
	t	e	Embayment	---
NYSDEC	○	c	Transect	- - -
			Embayment	- - -
				- - -

— SURFACE 30-DAY MEAN  
 --- BOTTOM 30-DAY MEAN  
 - - - 30-DAY SURFACE MAX OR BOTTOM MIN

**HARLEM RIVER**

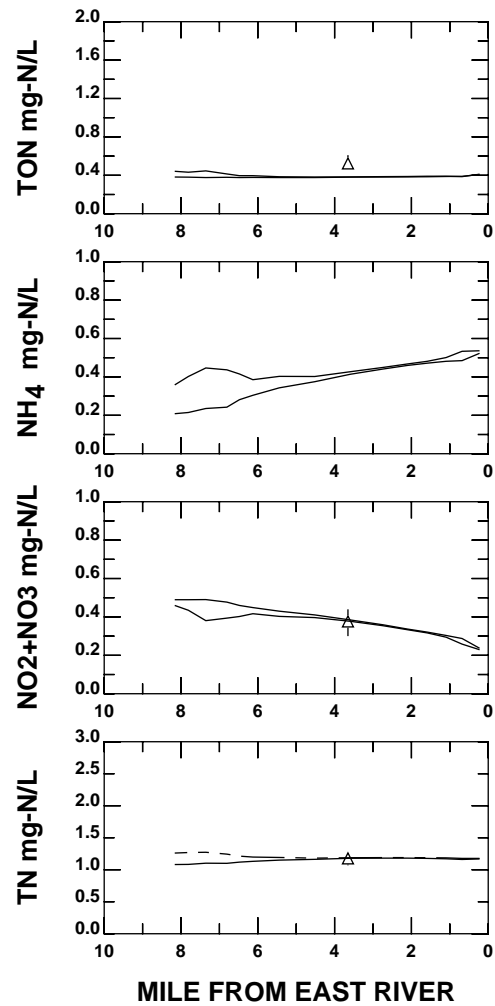
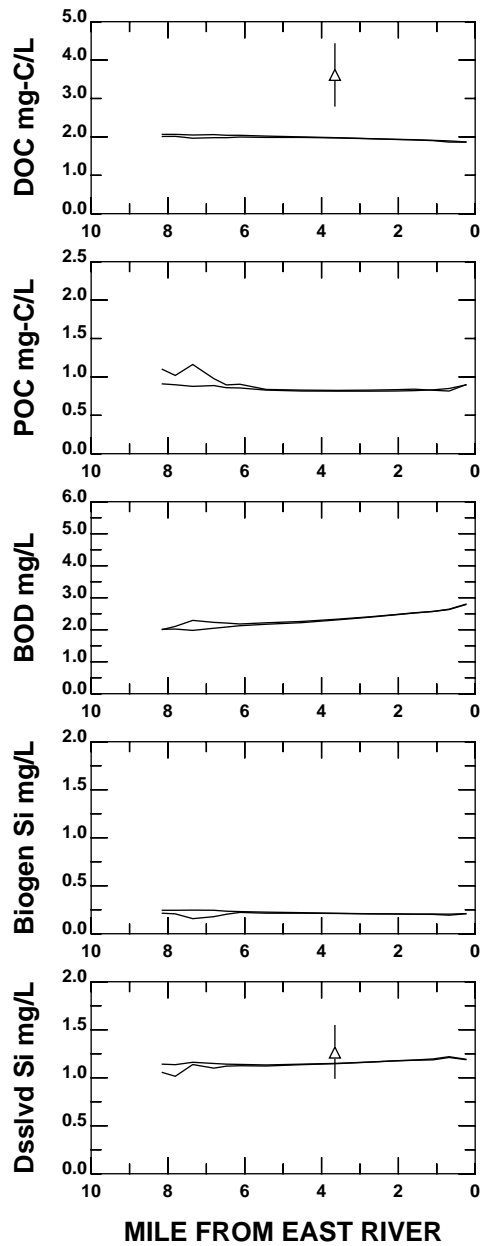


DATA Jun 28-Jul 27,2002

Harbor Survey SURF BOT  
 △ ▲ Transect  
 t e Embayment  
 NYSDEC ○ Transect  
 c Embayment

MODEL  
 — SURFACE 30-DAY MEAN  
 - - - - BOTTOM 30-DAY MEAN  
 - - 30-DAY SURFACE MAX OR BOTTOM MIN

**HARLEM RIVER**



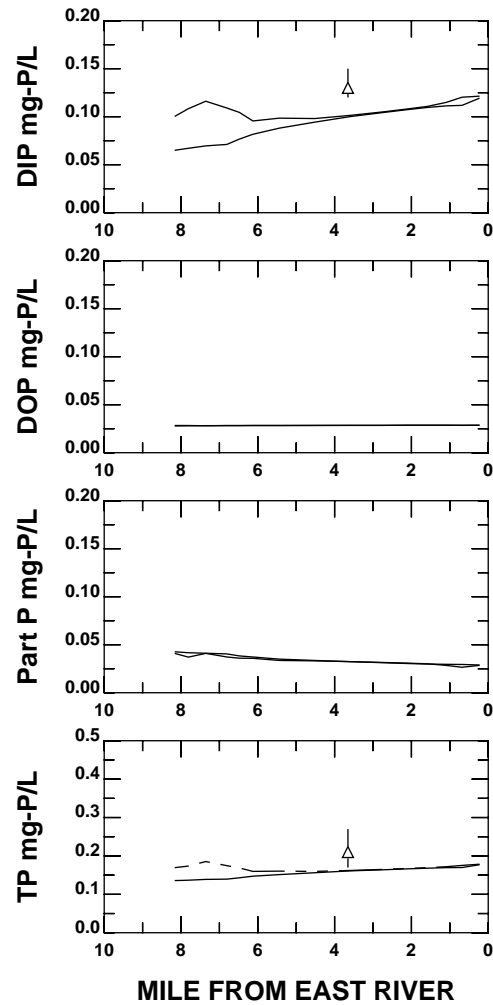
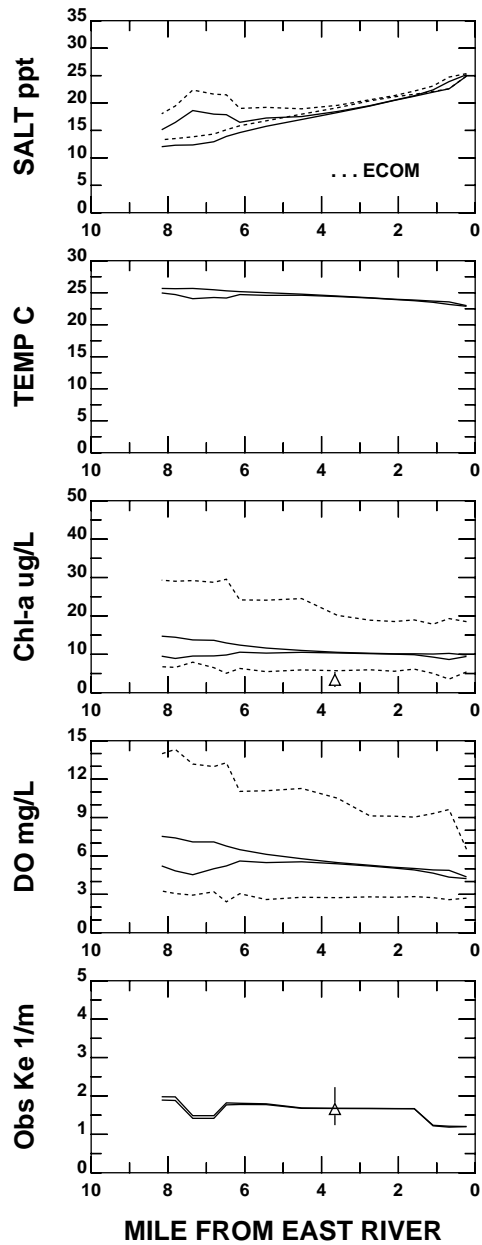
DATA Jun 28-Jul 27, 2002

	SURF BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment

MODEL

————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

**HARLEM RIVER**



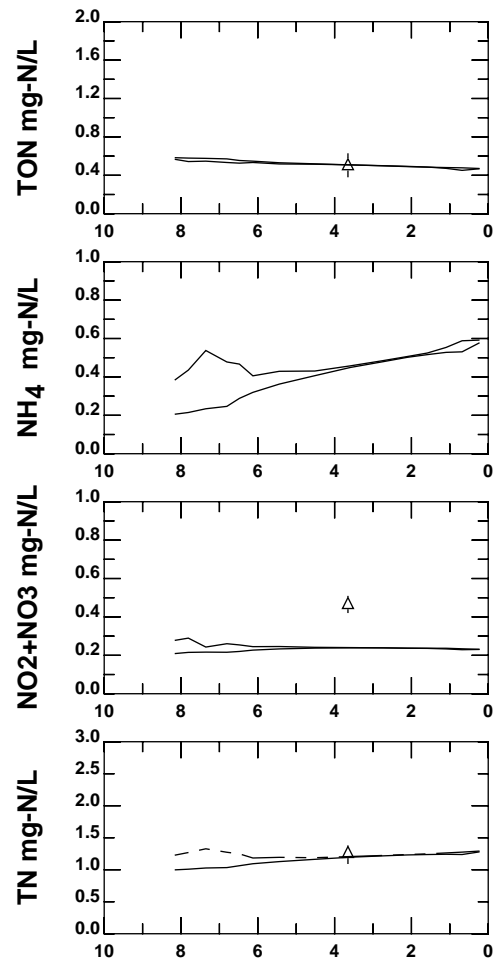
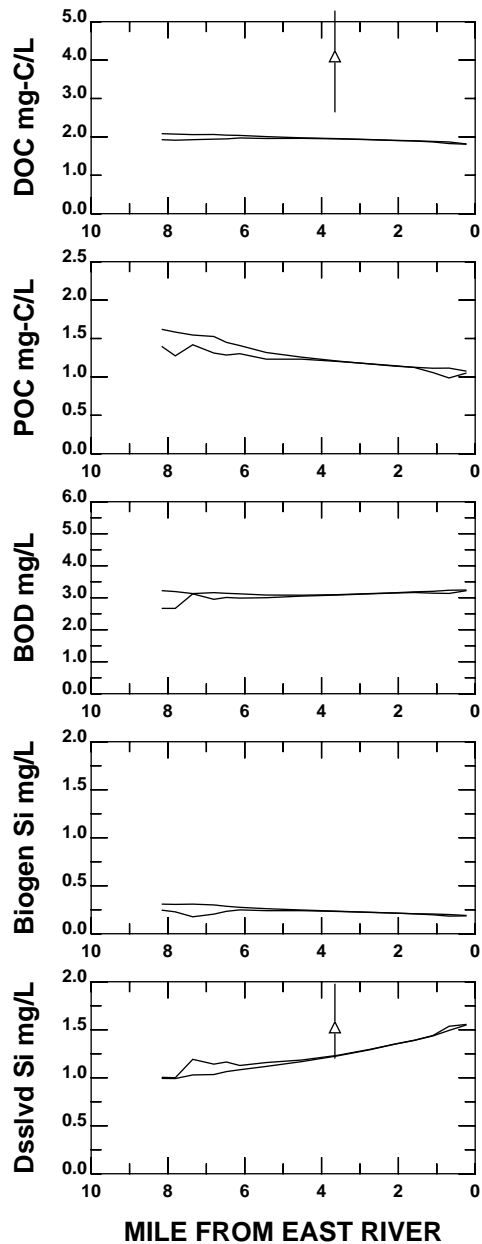
DATA Jul 27-Aug 26, 2002

Harbor Survey SURF BOT  
 △ ▲ Transect  
 t e Embayment  
 NYSDEC ○ ○ Transect  
 c c Embayment

MODEL

— SURFACE 30-DAY MEAN  
 - - - BOTTOM 30-DAY MEAN  
 - - - 30-DAY SURFACE MAX OR BOTTOM MIN

**HARLEM RIVER**



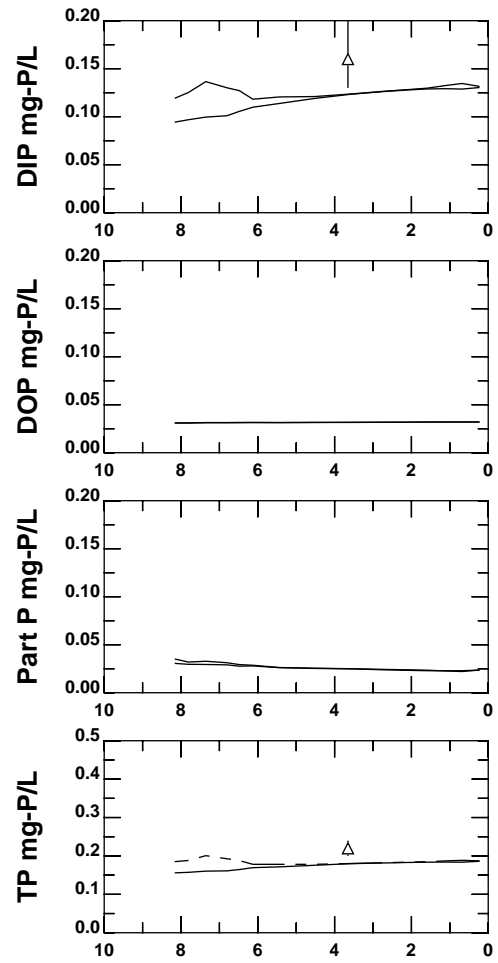
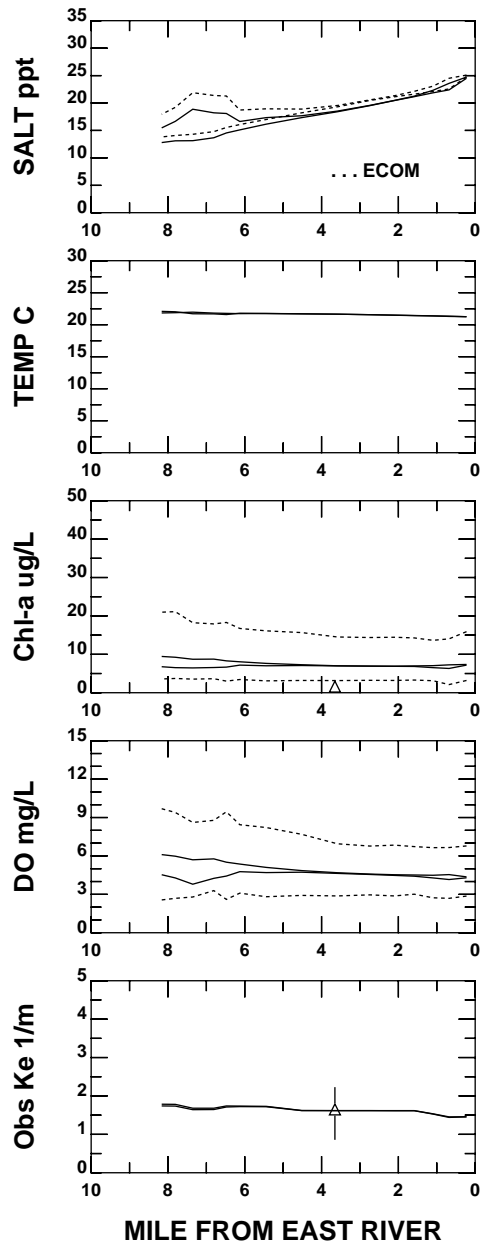
DATA Jul 27-Aug 26, 2002

	SURF BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment

MODEL

—	SURFACE 30-DAY MEAN
---	BOTTOM 30-DAY MEAN
- - -	30-DAY SURFACE MAX OR BOTTOM MIN

## HARLEM RIVER



**DATA** Aug 27-Sep 25,2002

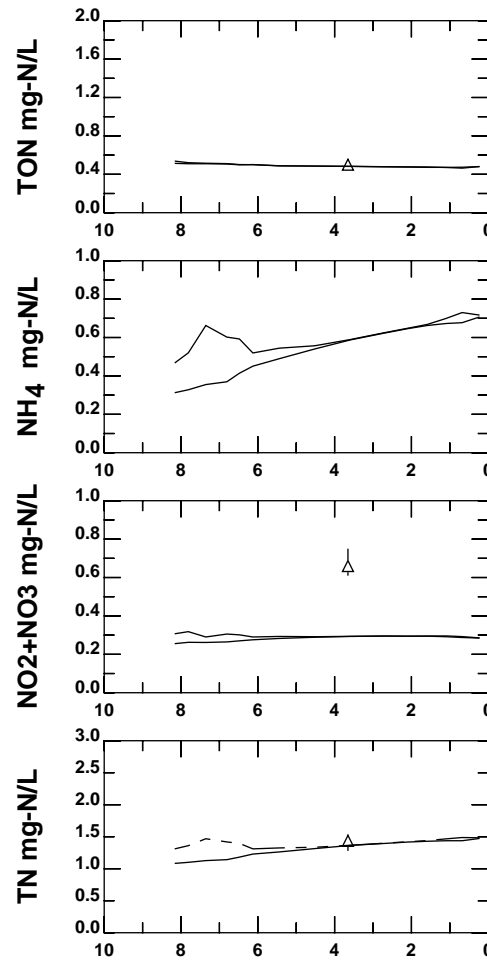
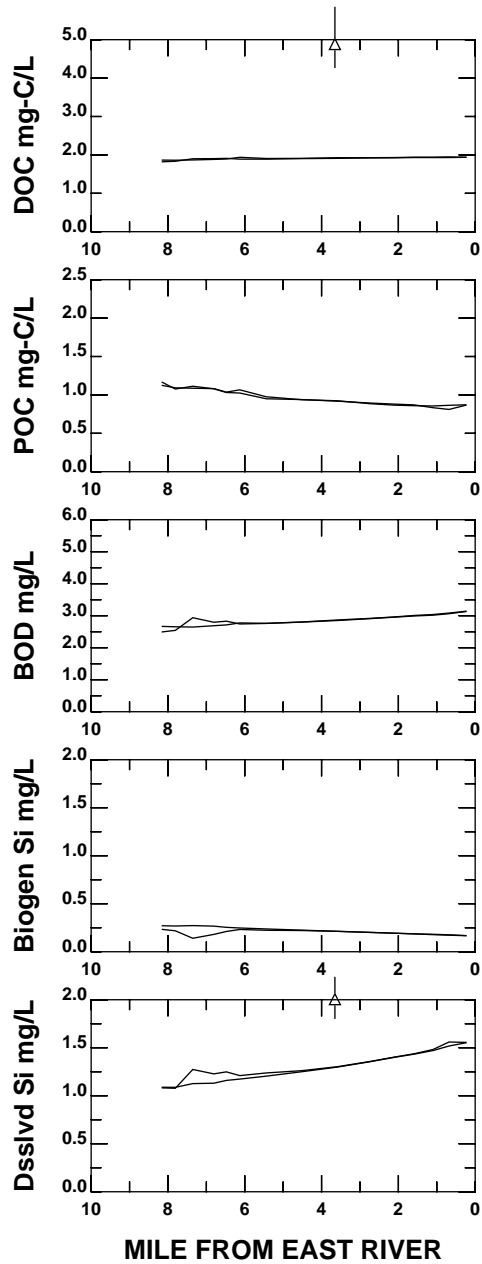
**MODEL**

	<b>SURF BOT</b>		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment

—	<b>SURFACE 30-DAY MEAN</b>
- - -	<b>BOTTOM 30-DAY MEAN</b>
- - -	<b>30-DAY SURFACE MAX OR BOTTOM MIN</b>

**HARLEM RIVER**



DATA Aug 27-Sep 25, 2002

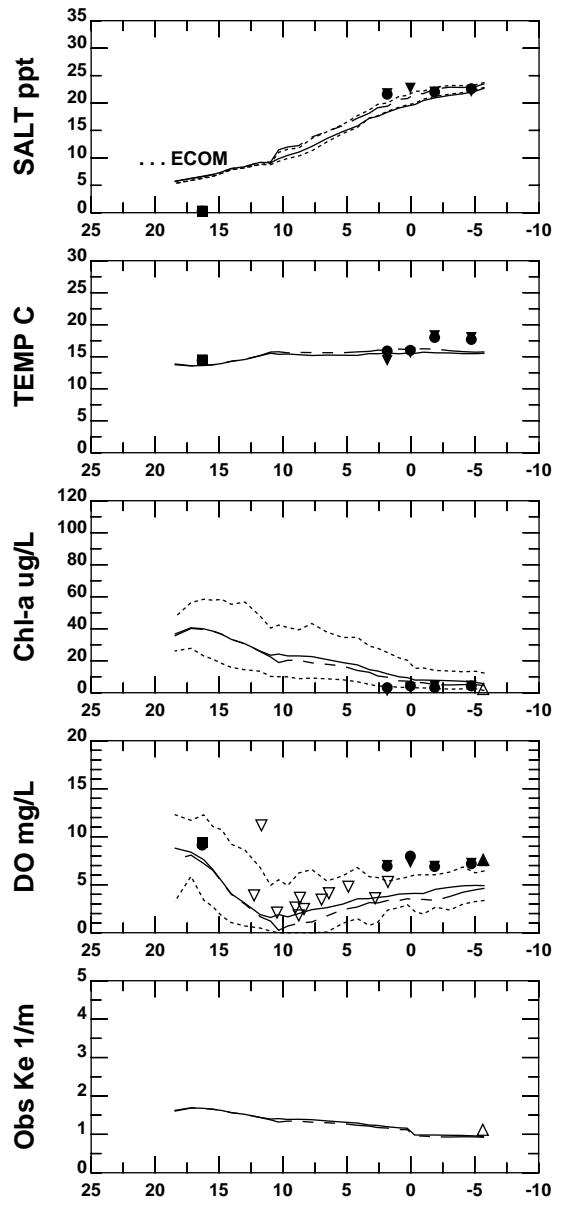
	SURF BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment

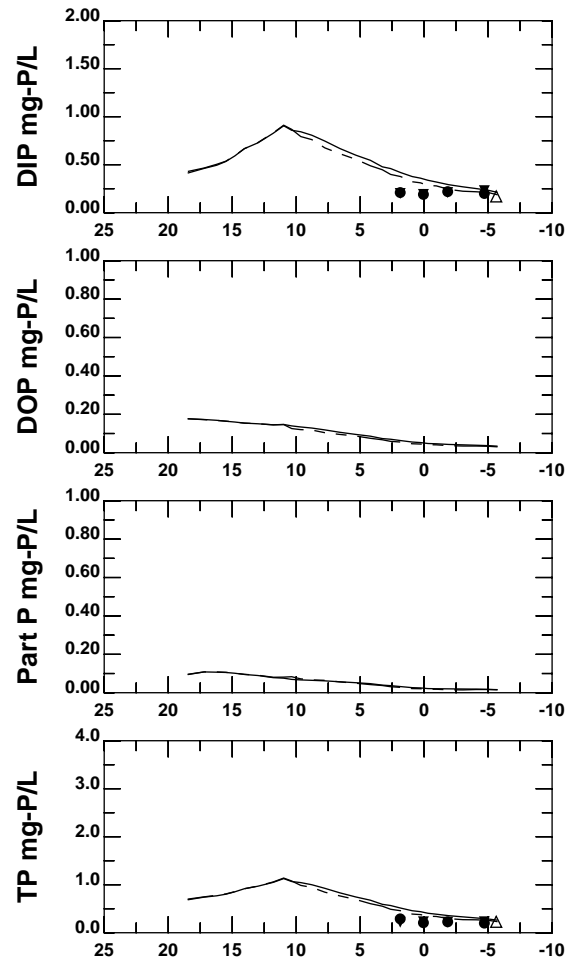
MODEL

————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

**HARLEM RIVER**



MILE FROM MOUTH HACKENSACK RIVER  
**HACKENSACK RIVER AND NEWARK BAY**



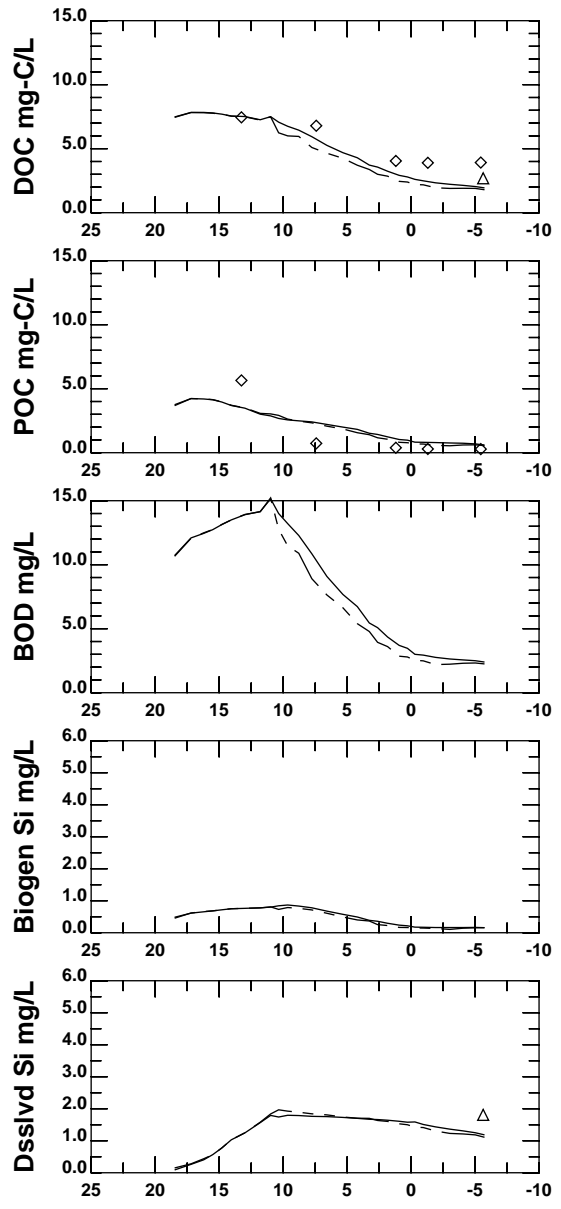
**MILE FROM MOUTH HACKENSACK RIVER**  
 DATA Oct 1-30,2001

	<b>SURF MID BOT</b>		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment
PVSC	●	■	Transect
	u	m	Embayment
MERI	▽		Transect
	s		Embayment

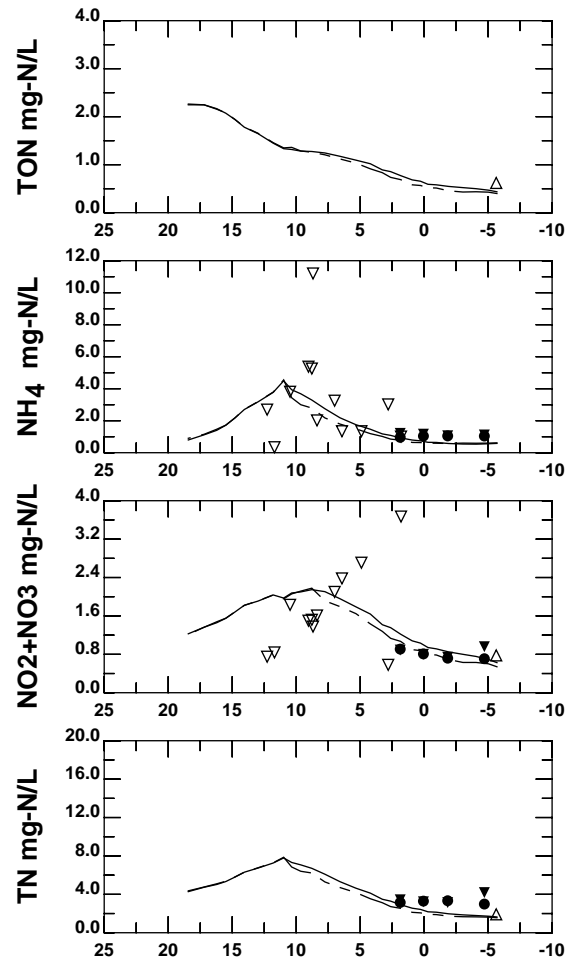
  

<b>MODEL</b>	—	<b>SURFACE 30-DAY MEAN</b>
	- - -	<b>BOTTOM 30-DAY MEAN</b>
	- · -	<b>30-DAY SURFACE MAX OR BOTTOM MIN</b>





**MILE FROM MOUTH HACKENSACK RIVER**  
**HACKENSACK RIVER AND NEWARK BAY**

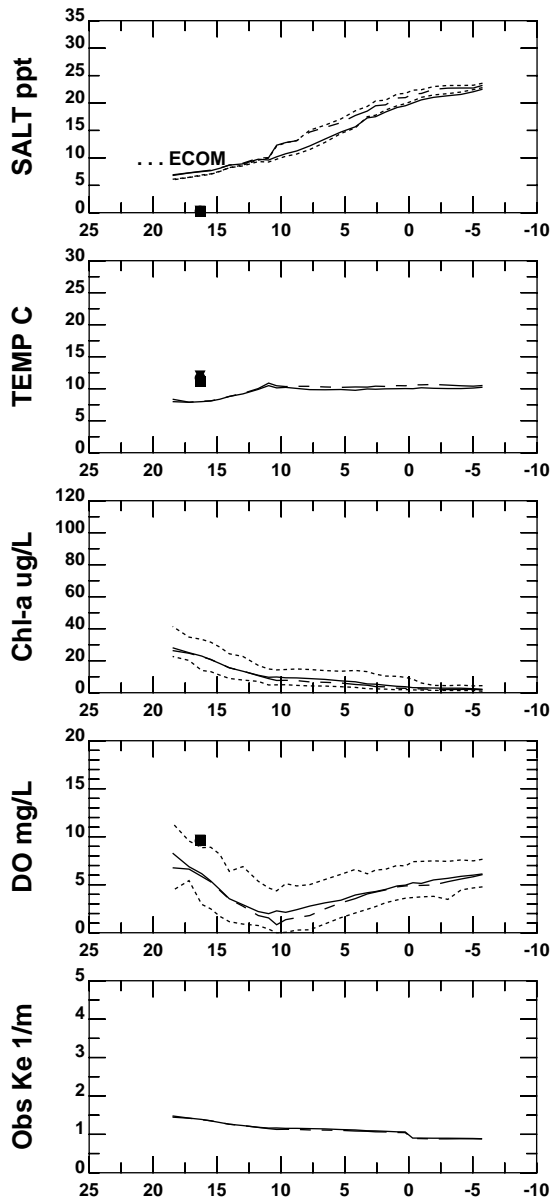


**MILE FROM MOUTH HACKENSACK RIVER**  
**DATA Oct 1-30,2001**

	SURF	MID	BOT		
Harbor Survey	△		▲	Transect	
	t		e	Embayment	
NYSDEC	○			Transect	
	c			Embayment	
NJSIT	◇			Transect	
	p			Embayment	
PVSC	●	■	▼	Transect	
	u	m	b	Embayment	
MERI	▽			Transect	
	s			Embayment	

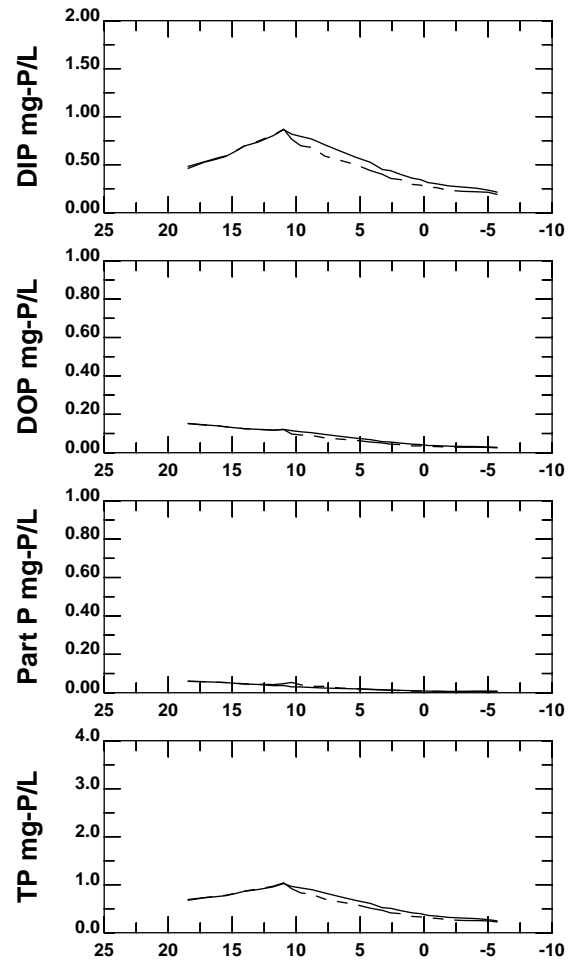
  

—			<b>SURFACE 30-DAY MEAN</b>
- - - -			<b>BOTTOM 30-DAY MEAN</b>
- · - ·			<b>30-DAY SURFACE MAX OR BOTTOM MIN</b>



**MILE FROM MOUTH HACKENSACK RIVER  
HACKENSACK RIVER AND NEWARK BAY**

DATE: 4/07/2006 TIME: 11:36:13



**MILE FROM MOUTH HACKENSACK RIVER**

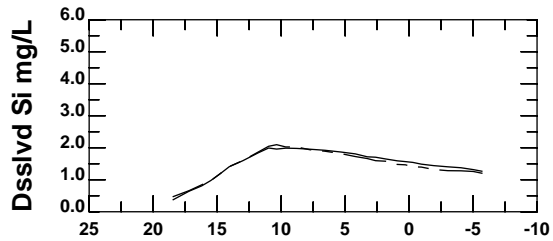
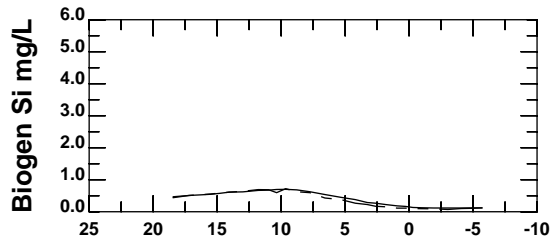
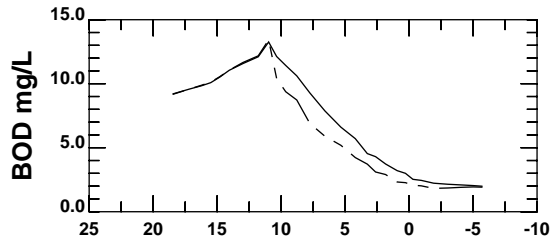
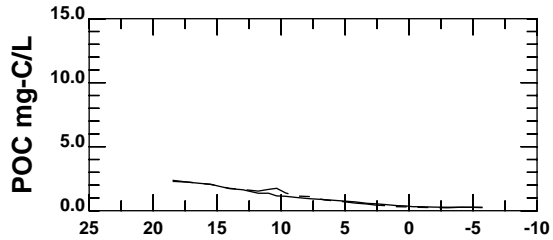
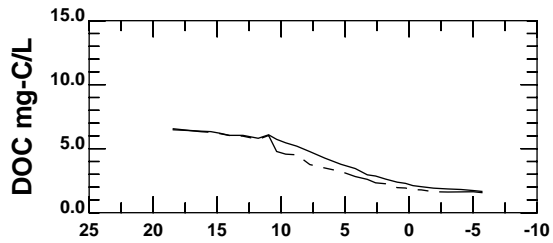
DATA Oct 31-Nov 29,2001

MODEL

	SURF MID BOT			
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

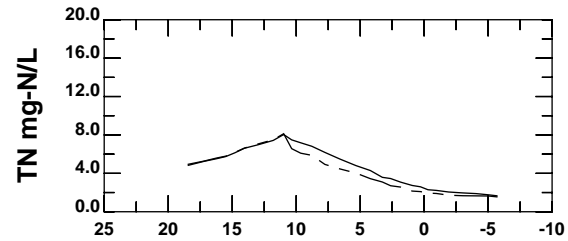
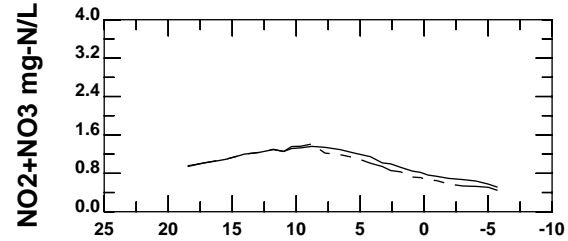
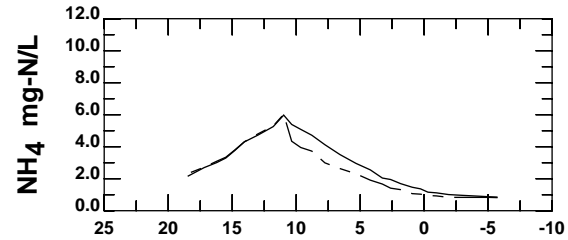
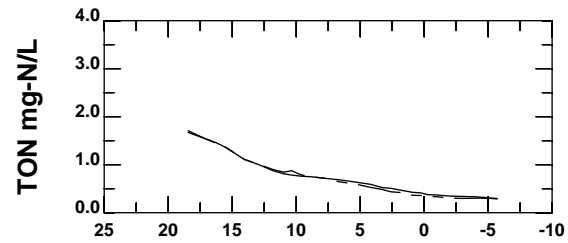
  

—	SURFACE 30-DAY MEAN
- - - -	BOTTOM 30-DAY MEAN
- · - ·	30-DAY SURFACE MAX OR BOTTOM MIN



**MILE FROM MOUTH HACKENSACK RIVER  
HACKENSACK RIVER AND NEWARK BAY**

DATE: 4/07/2006 TIME: 11:36:13



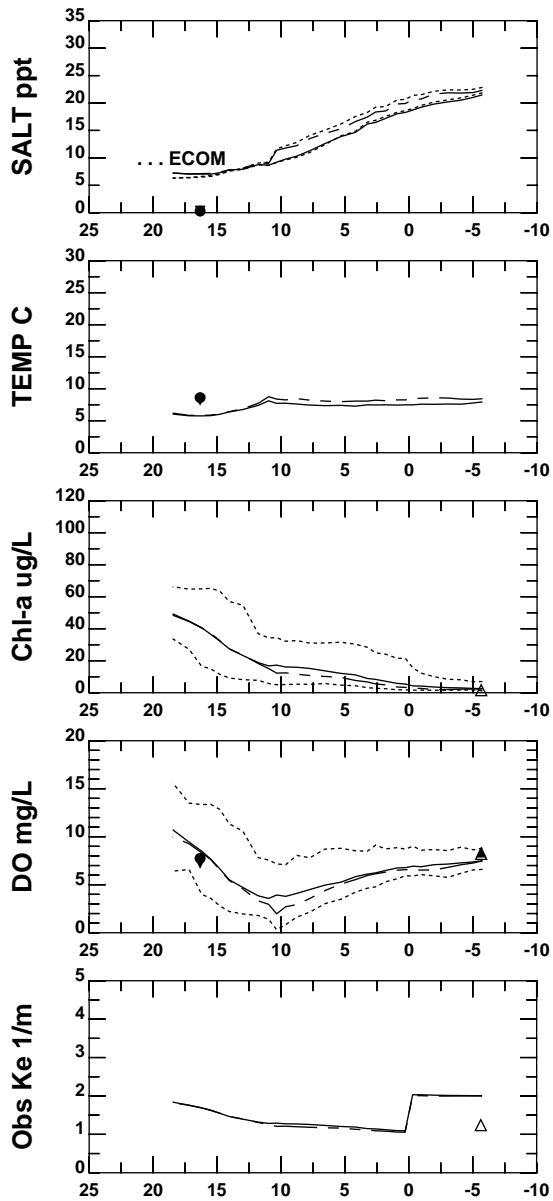
**MILE FROM MOUTH HACKENSACK RIVER**

DATA Oct 31-Nov 29,2001

	SURF MID BOT			
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

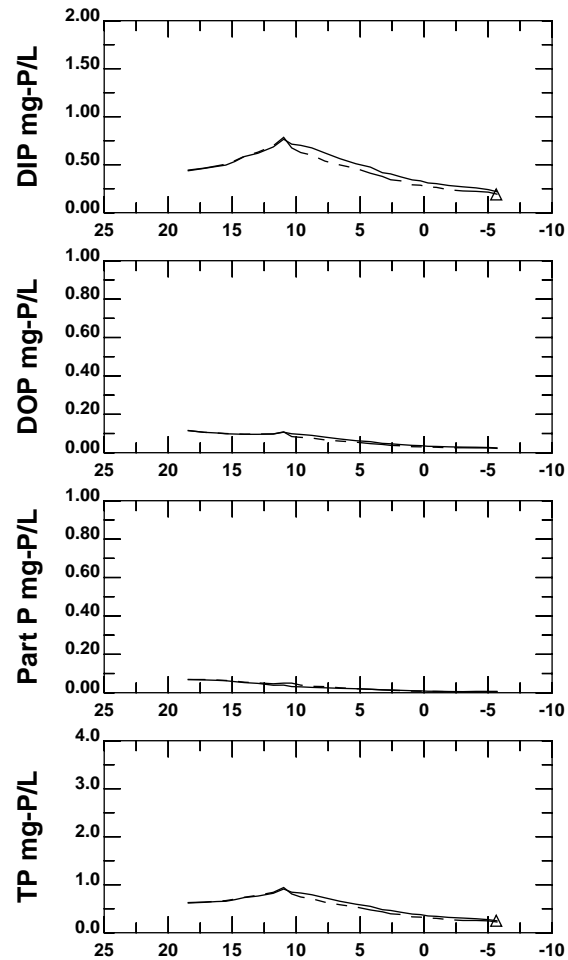
**MODEL**

- SURFACE 30-DAY MEAN
- - - - BOTTOM 30-DAY MEAN
- - - 30-DAY SURFACE MAX OR BOTTOM MIN



**MILE FROM MOUTH HACKENSACK RIVER  
HACKENSACK RIVER AND NEWARK BAY**

DATE: 4/07/2006 TIME: 11:36:16

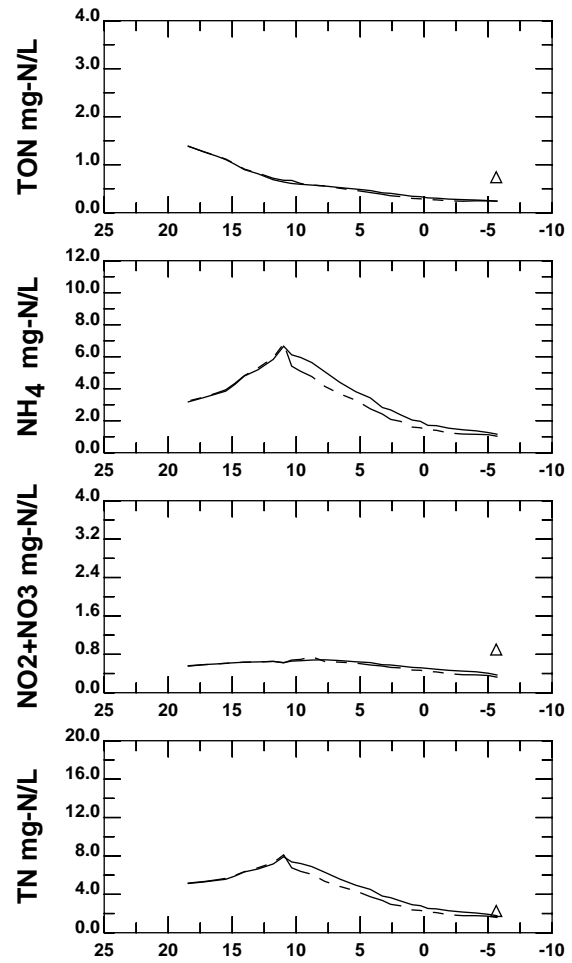
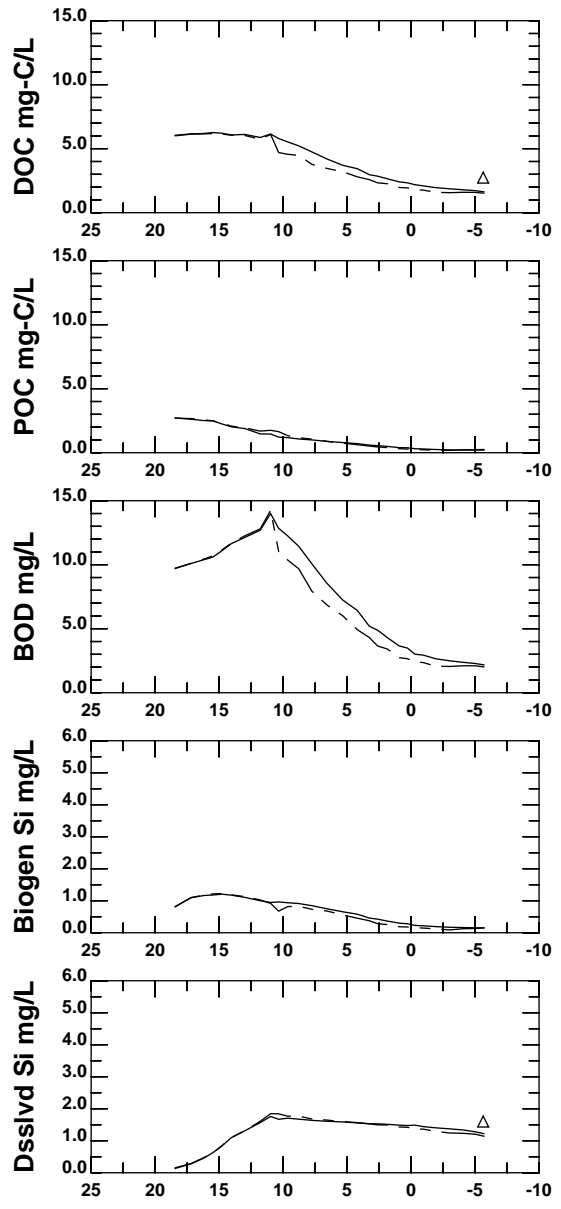


**MILE FROM MOUTH HACKENSACK RIVER**

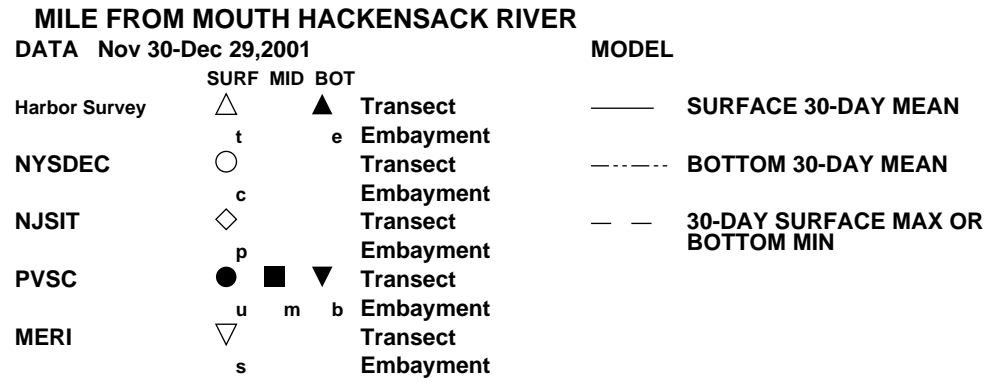
DATA Nov 30-Dec 29,2001

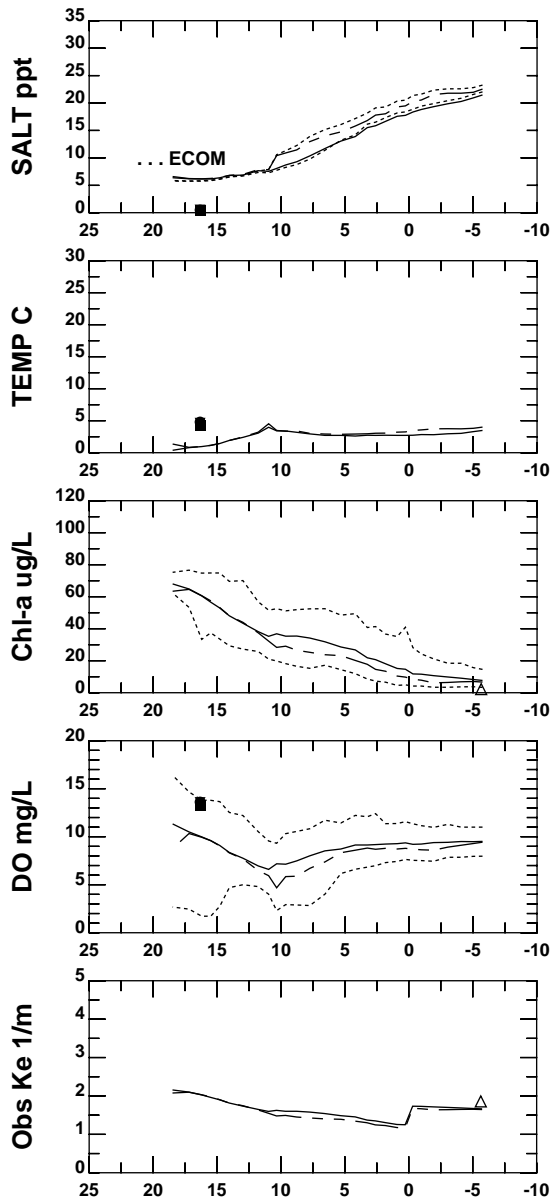
MODEL

	SURF MID BOT			
Harbor Survey	△	▲	Transect	—
	t	e	Embayment	---
NYSDEC	○		Transect	----
	c		Embayment	-.-.-
NJSIT	◇		Transect	- - -
	p		Embayment	
PVSC	●	■	Transect	
	u	m	Embayment	
MERI	▽		Transect	
	s		Embayment	
				— —
				30-DAY SURFACE MAX OR BOTTOM MIN



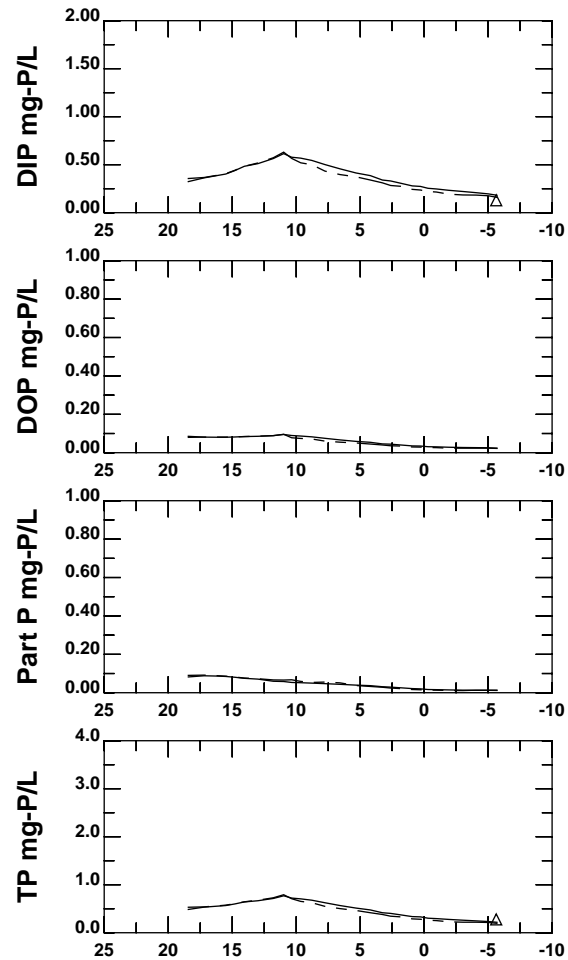
MILE FROM MOUTH HACKENSACK RIVER  
**HACKENSACK RIVER AND NEWARK BAY**





**MILE FROM MOUTH HACKENSACK RIVER  
HACKENSACK RIVER AND NEWARK BAY**

DATE: 4/07/2006 TIME: 11:36:19

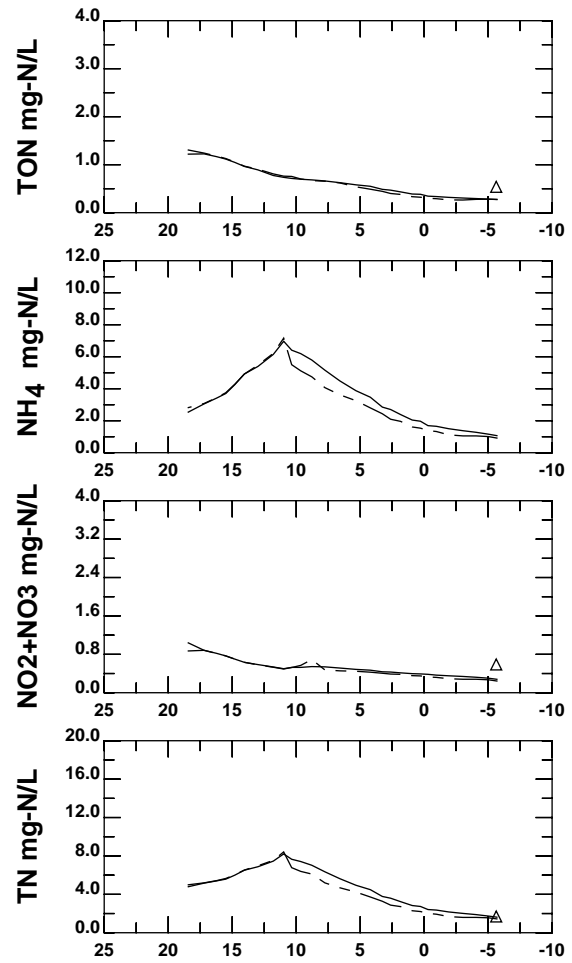
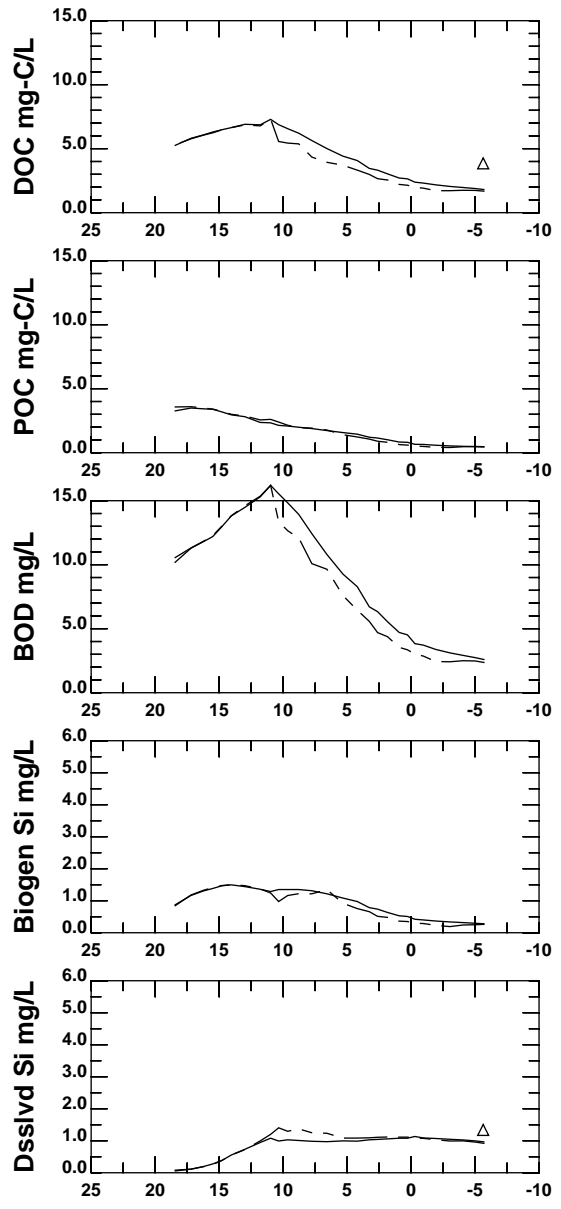


**MILE FROM MOUTH HACKENSACK RIVER**

DATA Dec 30 2001 -Jan 28,2002

MODEL

	SURF MID BOT			
Harbor Survey	△	▲	Transect	—
	t	e	Embayment	---
NYSDEC	○		Transect	----
	c		Embayment	- - -
NJSIT	◇		Transect	
	p		Embayment	
PVSC	●	■	Transect	
	u	m	Embayment	
MERI	▽		Transect	
	s		Embayment	
				— —
				30-DAY SURFACE MAX OR BOTTOM MIN



MILE FROM MOUTH HACKENSACK RIVER  
**HACKENSACK RIVER AND NEWARK BAY**

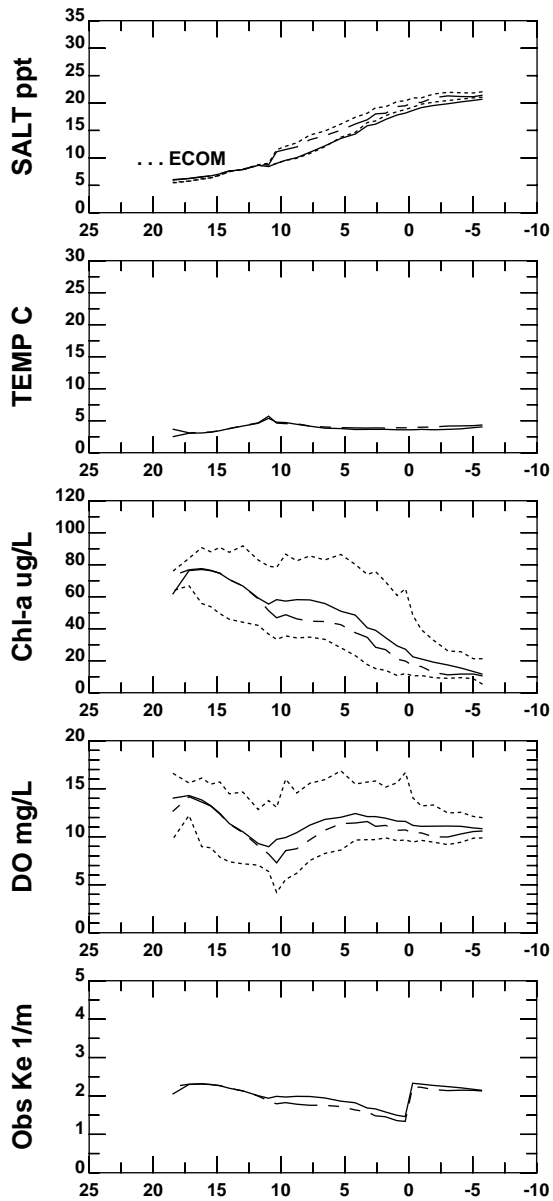
MILE FROM MOUTH HACKENSACK RIVER

DATA Dec 30 2001 -Jan 28,2002

	SURF MID BOT			
Harbor Survey	△	▲	Transect	
	t	e	Embayment	
NYSDEC	○		Transect	
	c		Embayment	
NJSIT	◇		Transect	
	p		Embayment	
PVSC	●	■	Transect	
	u	m	Embayment	
MERI	▽		Transect	
	s		Embayment	

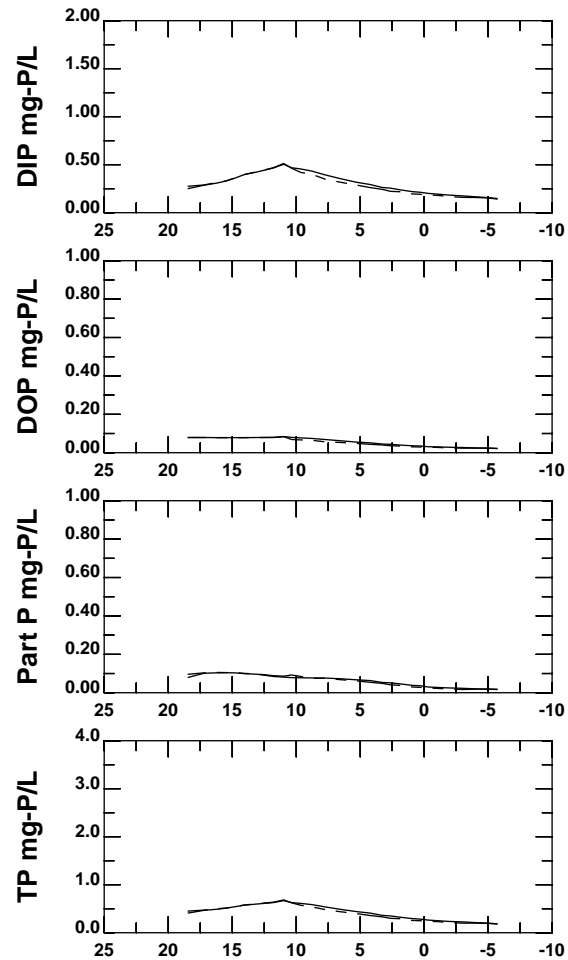
MODEL

—	SURFACE 30-DAY MEAN
- - - -	BOTTOM 30-DAY MEAN
- - -	30-DAY SURFACE MAX OR BOTTOM MIN



**MILE FROM MOUTH HACKENSACK RIVER  
HACKENSACK RIVER AND NEWARK BAY**

DATE: 4/07/2006 TIME: 11:36:23



**MILE FROM MOUTH HACKENSACK RIVER**

DATA Jan 29-Feb 27, 2002

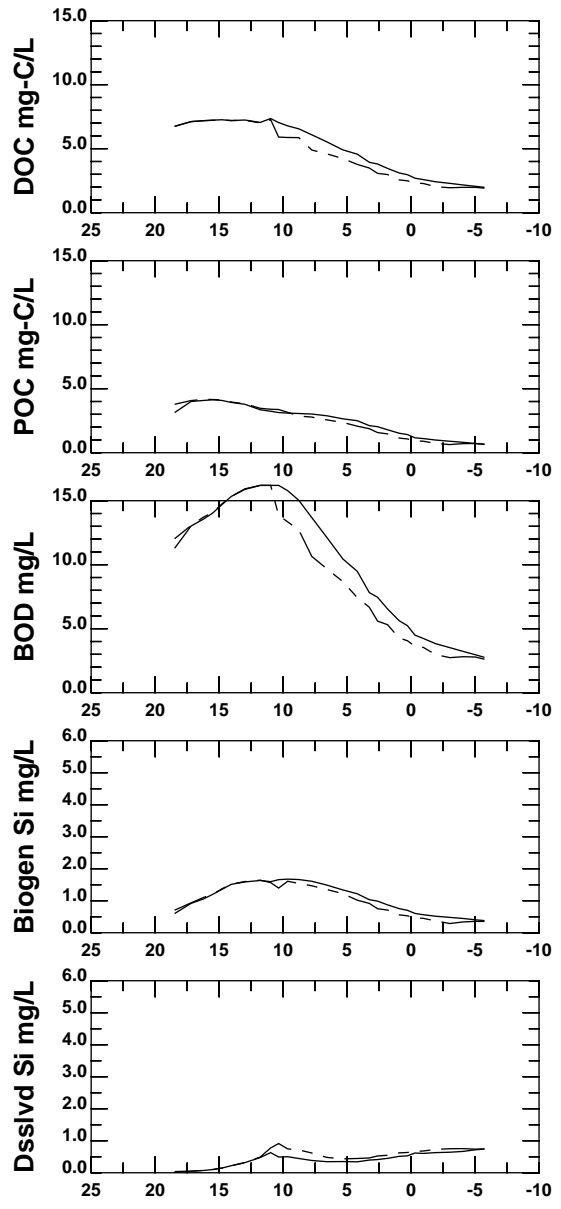
MODEL

	SURF MID BOT			
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

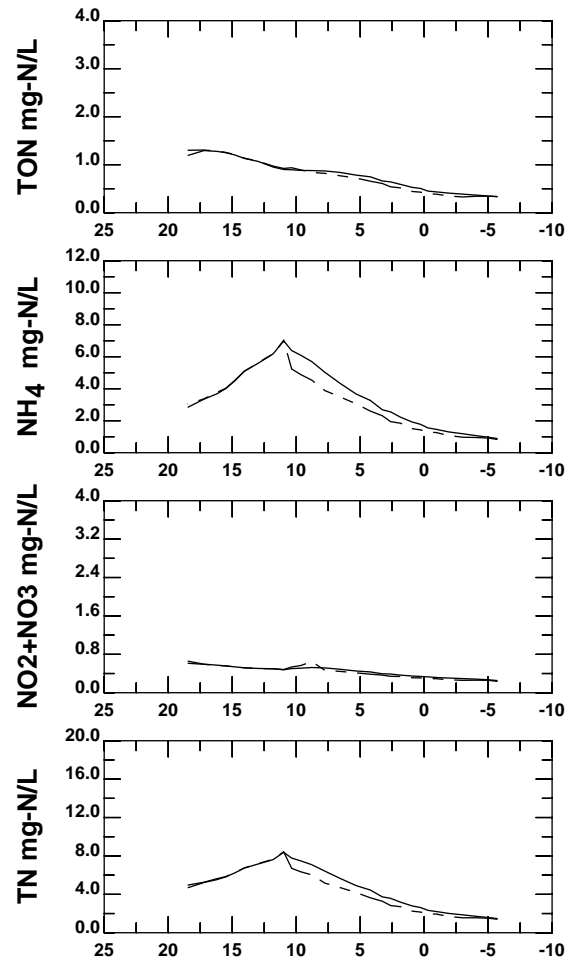
  

—	SURFACE 30-DAY MEAN
- - - -	BOTTOM 30-DAY MEAN
- · - ·	30-DAY SURFACE MAX OR BOTTOM MIN



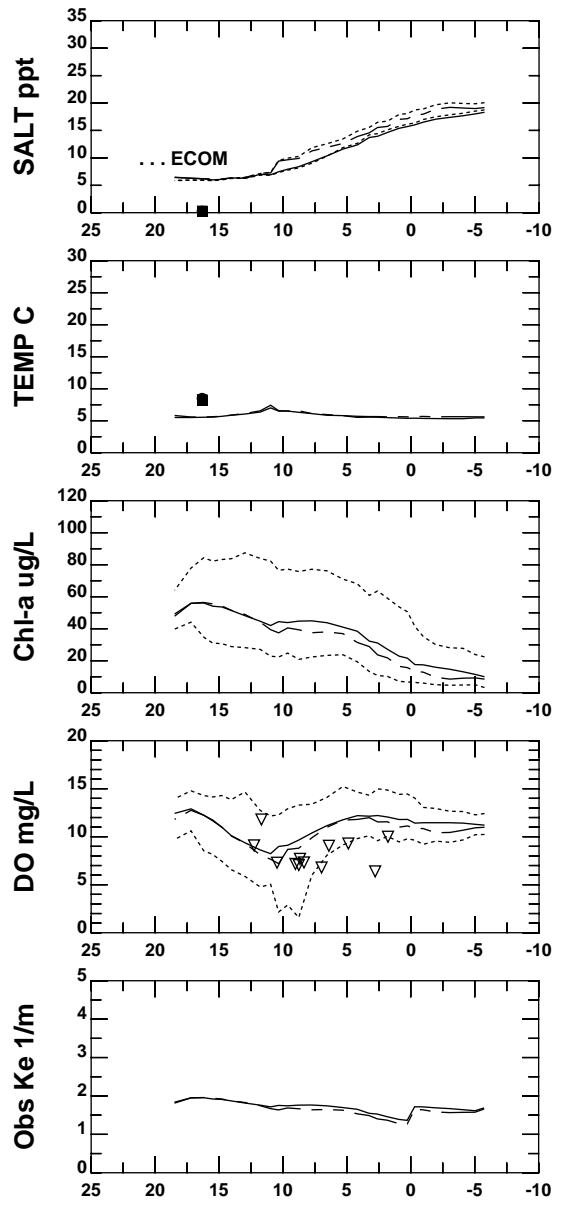


MILE FROM MOUTH HACKENSACK RIVER  
**HACKENSACK RIVER AND NEWARK BAY**



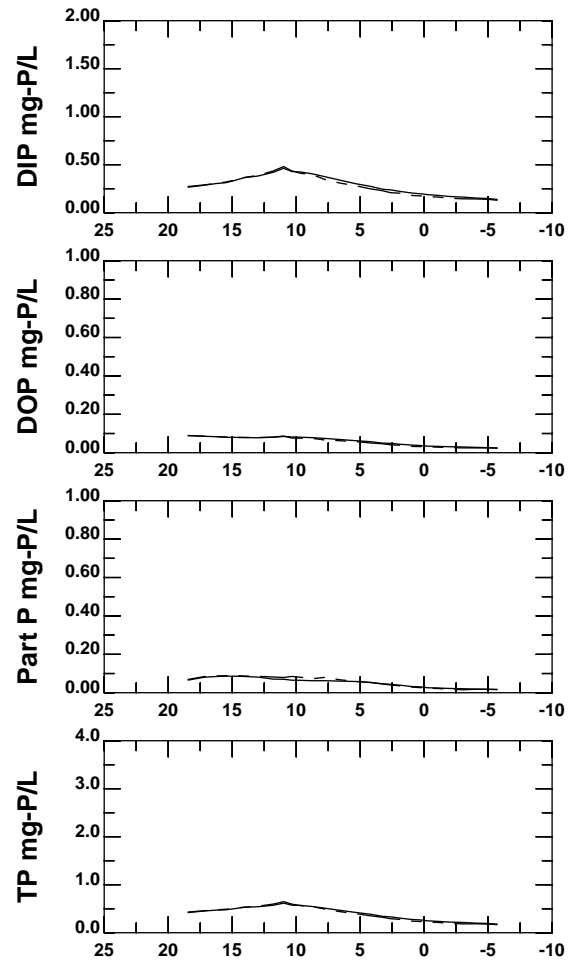
MILE FROM MOUTH HACKENSACK RIVER  
 DATA Jan 29-Feb 27, 2002

	SURF MID BOT			MODEL
Harbor Survey	△		▲	— SURFACE 30-DAY MEAN
	t		e	- - - - - BOTTOM 30-DAY MEAN
NYSDEC	○			- - - - - 30-DAY SURFACE MAX OR BOTTOM MIN
	c			
NJSIT	◇			
	p			
PVSC	●	■	▼	
	u	m	b	
MERI	▽			
	s			



MILE FROM MOUTH HACKENSACK RIVER  
**HACKENSACK RIVER AND NEWARK BAY**

DATE: 4/07/2006 TIME: 11:36:26



MILE FROM MOUTH HACKENSACK RIVER

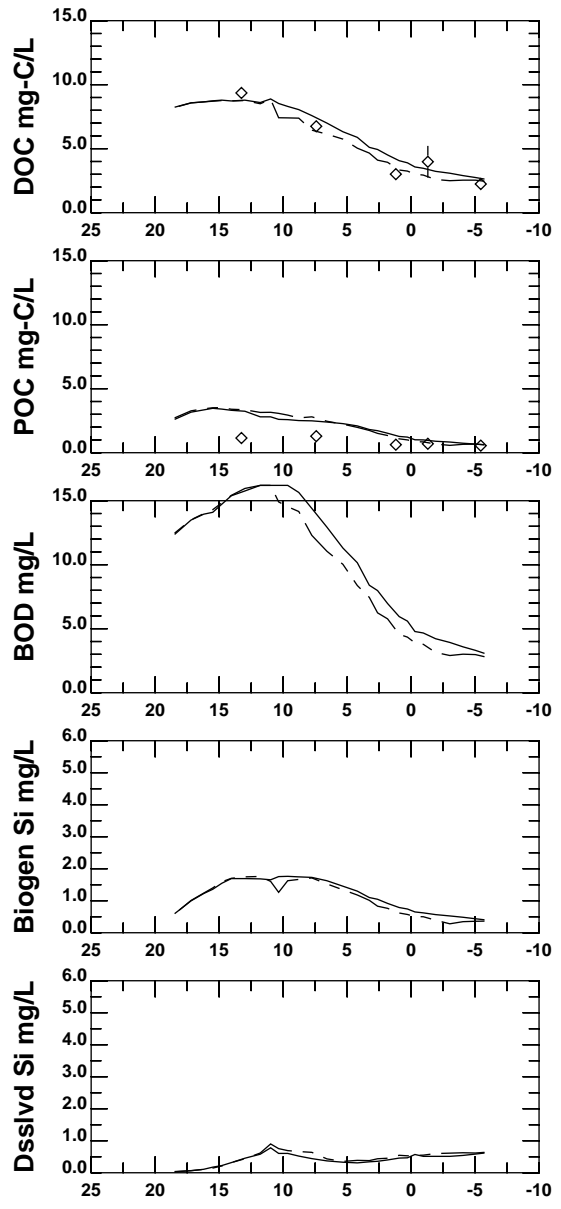
DATA Feb 28-Mar 29,2002

MODEL

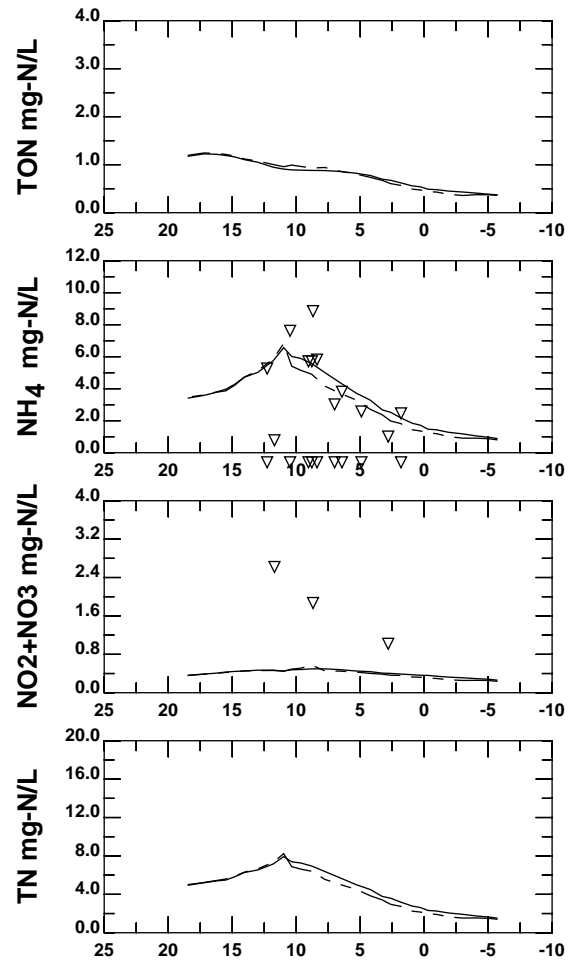
	SURF MID BOT			
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

—	SURFACE 30-DAY MEAN
- - - -	BOTTOM 30-DAY MEAN
- · - ·	30-DAY SURFACE MAX OR BOTTOM MIN

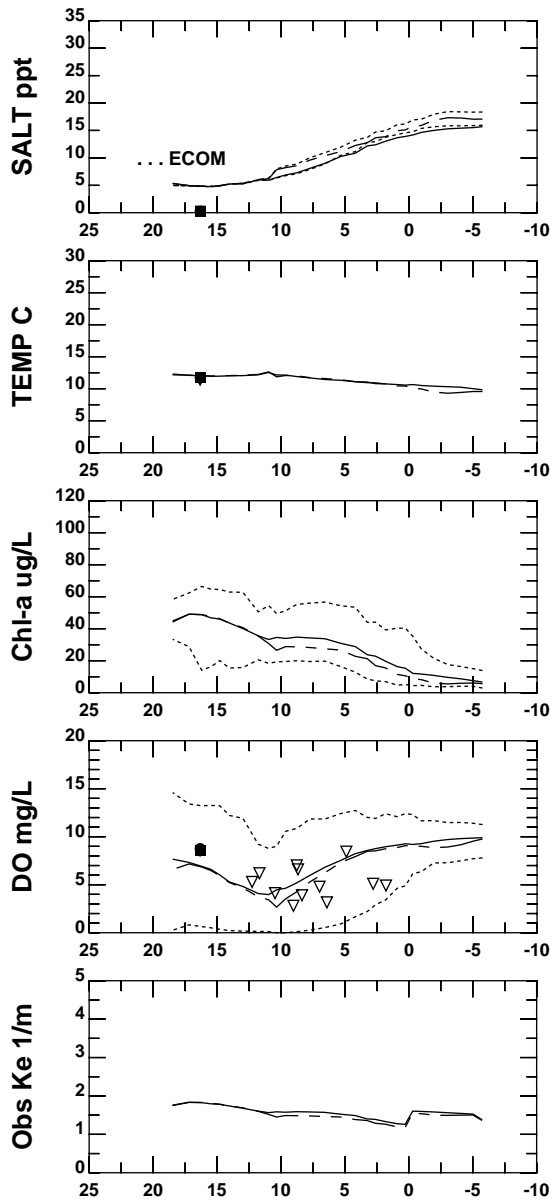


MILE FROM MOUTH HACKENSACK RIVER  
**HACKENSACK RIVER AND NEWARK BAY**



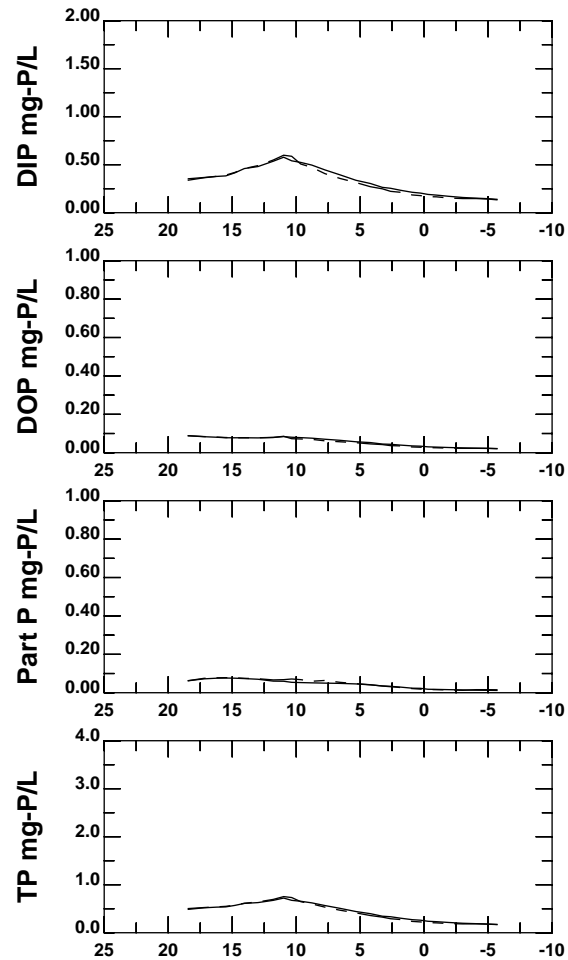
**MILE FROM MOUTH HACKENSACK RIVER**  
 DATA Feb 28-Mar 29, 2002

	SURF MID BOT			MODEL
Harbor Survey	△		▲	— SURFACE 30-DAY MEAN
	t		e	--- BOTTOM 30-DAY MEAN
NYSDEC	○			- - - 30-DAY SURFACE MAX OR BOTTOM MIN
	c			
NJSIT	◇			
	p			
PVSC	●	■	▼	
	u	m	b	
MERI	▽			
	s			



**MILE FROM MOUTH HACKENSACK RIVER  
HACKENSACK RIVER AND NEWARK BAY**

DATE: 4/07/2006 TIME: 11:36:30



**MILE FROM MOUTH HACKENSACK RIVER**

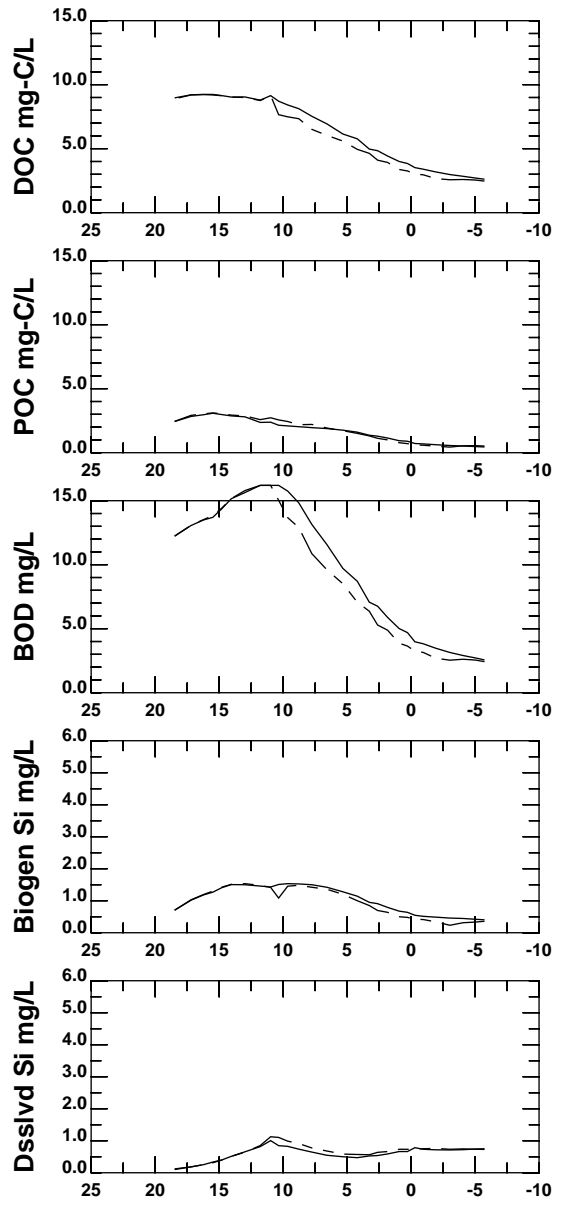
DATA Mar 30-Apr 28,2002

MODEL

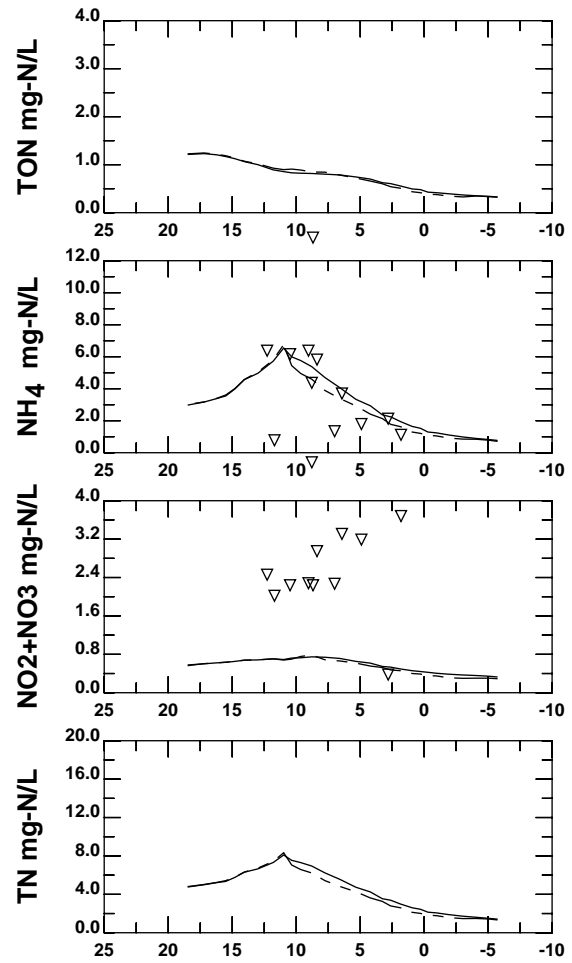
	SURF MID BOT			
Harbor Survey	△	▲	Transect	—
	t	e	Embayment	---
NYSDEC	○		Transect	----
	c		Embayment	- - -
NJSIT	◇		Transect	
	p		Embayment	
PVSC	●	■	Transect	
	u	m	Embayment	
MERI	▽		Transect	
	s		Embayment	

	—	SURFACE 30-DAY MEAN
	----	BOTTOM 30-DAY MEAN
	- - -	30-DAY SURFACE MAX OR BOTTOM MIN

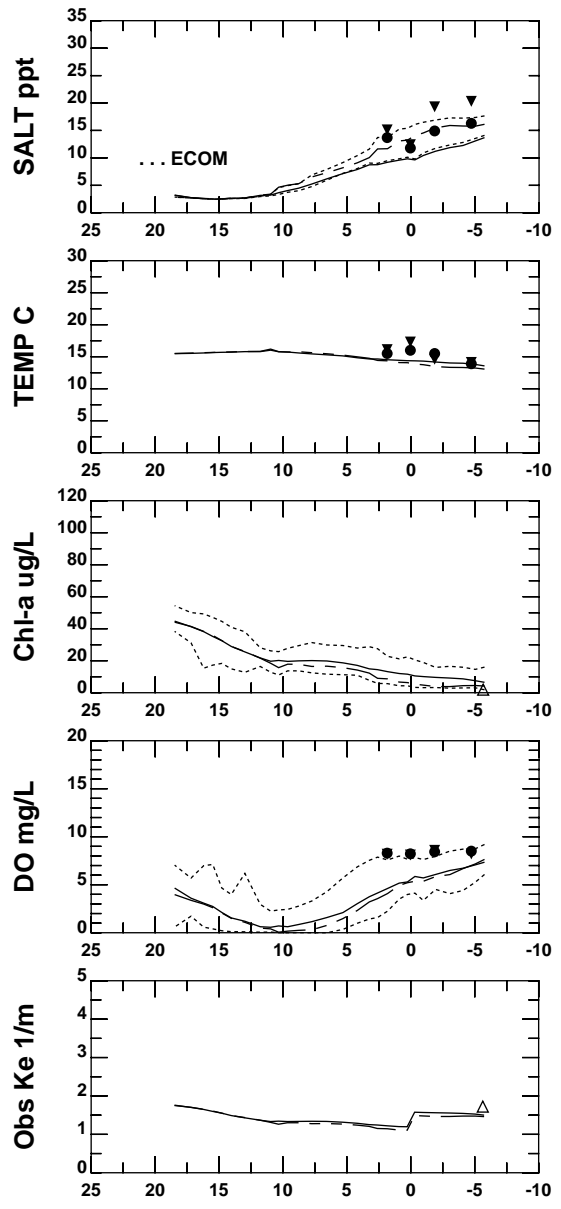


MILE FROM MOUTH HACKENSACK RIVER  
**HACKENSACK RIVER AND NEWARK BAY**



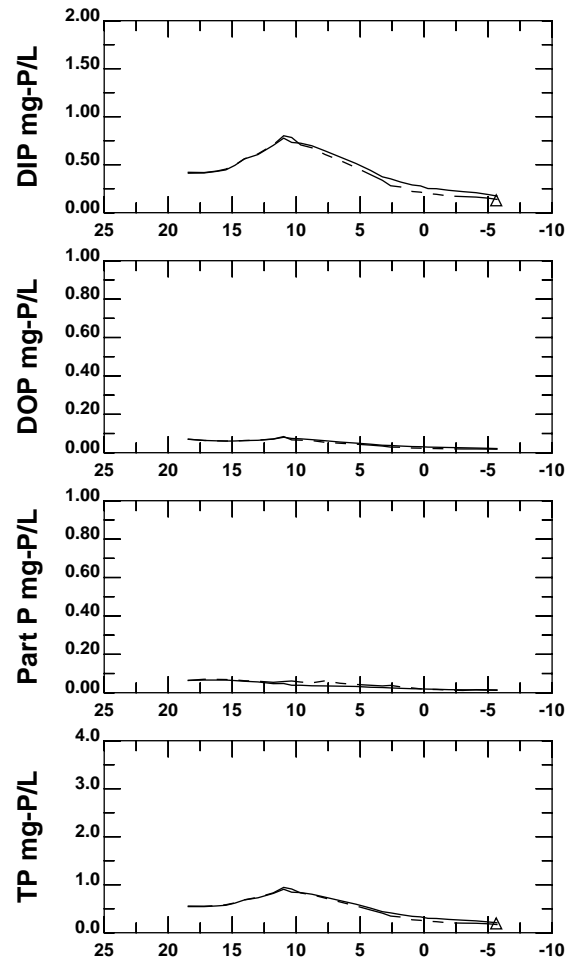
**MILE FROM MOUTH HACKENSACK RIVER**  
 DATA Mar 30-Apr 28, 2002

	SURF MID BOT		MODEL
Harbor Survey	△	▲	— SURFACE 30-DAY MEAN
	t	e	- - - - - BOTTOM 30-DAY MEAN
NYSDEC	○		- - - - - 30-DAY SURFACE MAX OR BOTTOM MIN
	c		
NJSIT	◇		
	p		
PVSC	●	■ ▼	
	u	m b	
MERI	▽		
	s		



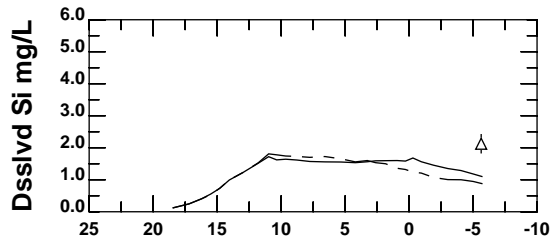
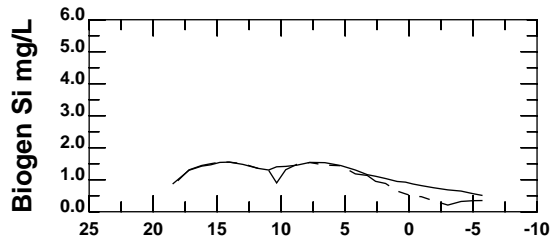
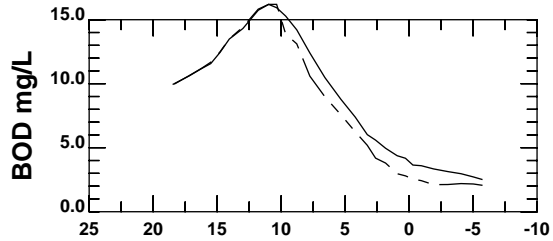
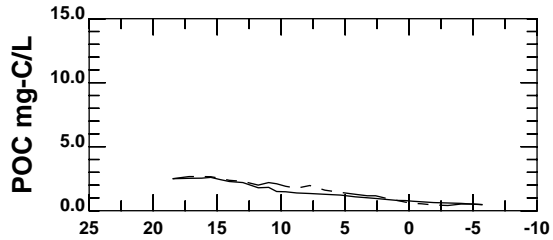
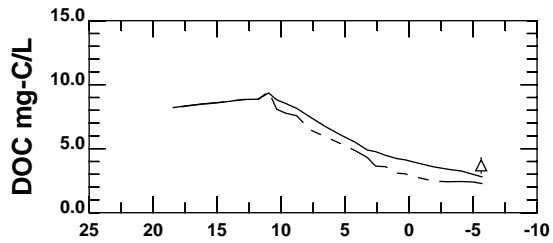
**MILE FROM MOUTH HACKENSACK RIVER**  
**HACKENSACK RIVER AND NEWARK BAY**

DATE: 4/07/2006 TIME: 11:36:34



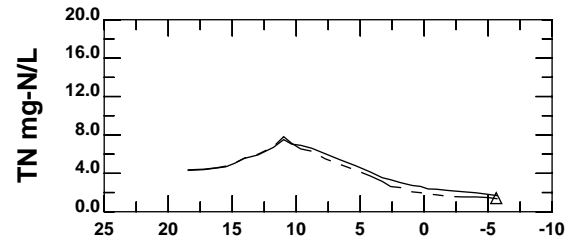
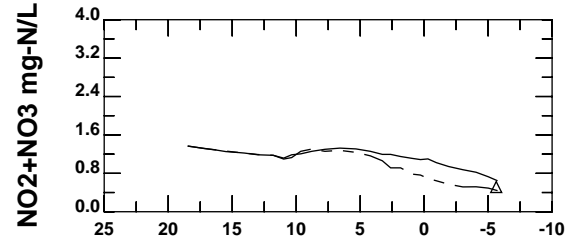
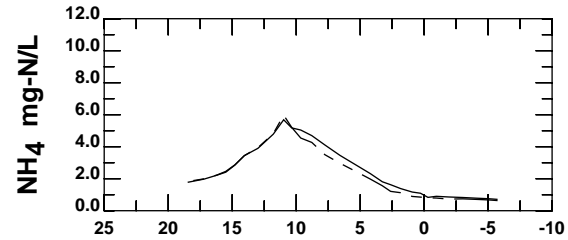
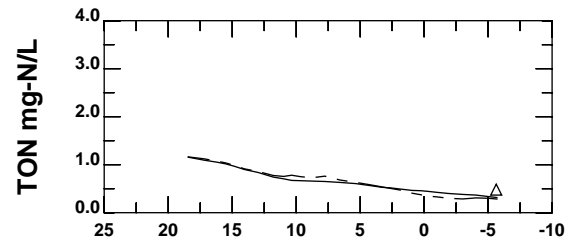
**MILE FROM MOUTH HACKENSACK RIVER**  
**DATA Apr 29-May 28,2002**

	SURF MID BOT			MODEL
Harbor Survey	△	▲	Transect	— SURFACE 30-DAY MEAN
	t	e	Embayment	--- BOTTOM 30-DAY MEAN
NYSDEC	○	c	Transect	- - - 30-DAY SURFACE MAX OR
			Embayment	BOTTOM MIN
NJSIT	◇	p	Transect	
			Embayment	
PVSC	●	■	Transect	
	u	m	Embayment	
MERI	▽	b	Transect	
	s		Embayment	



**MILE FROM MOUTH HACKENSACK RIVER  
HACKENSACK RIVER AND NEWARK BAY**

DATE: 4/07/2006 TIME: 11:36:34

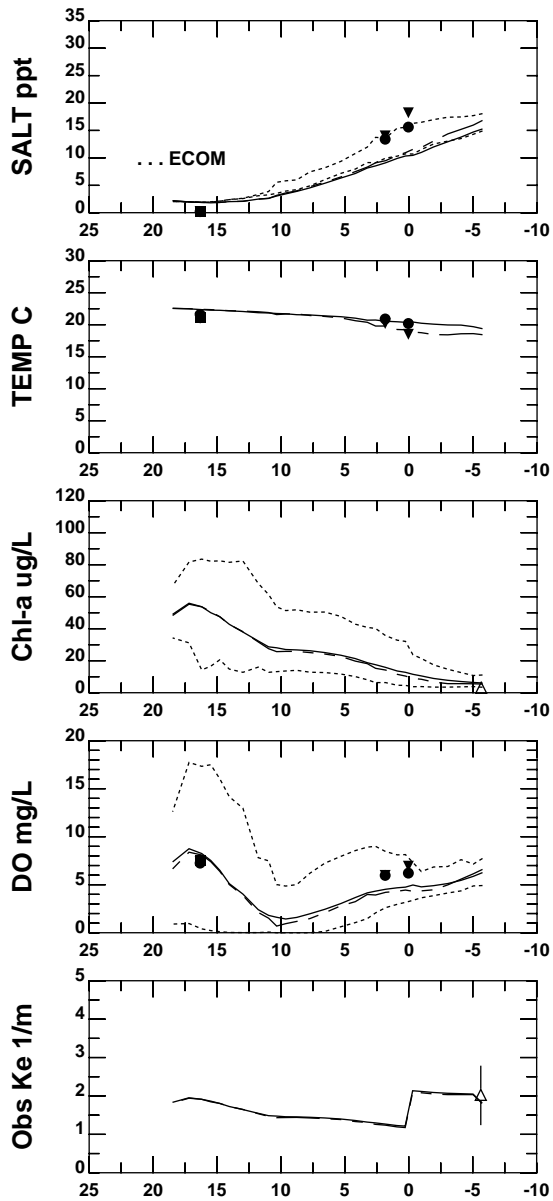


**MILE FROM MOUTH HACKENSACK RIVER  
DATA Apr 29-May 28,2002**

	SURF MID BOT			
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

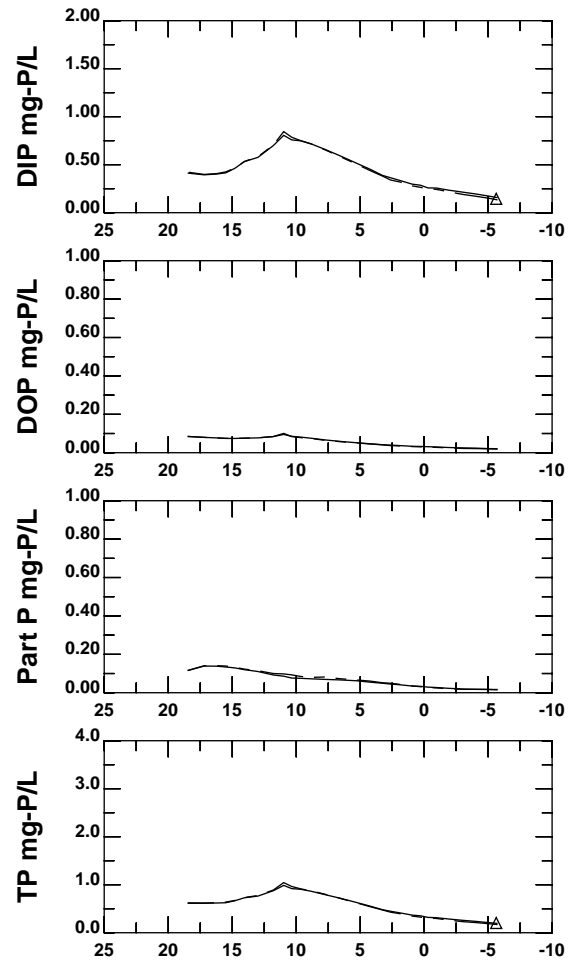
**MODEL**

————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

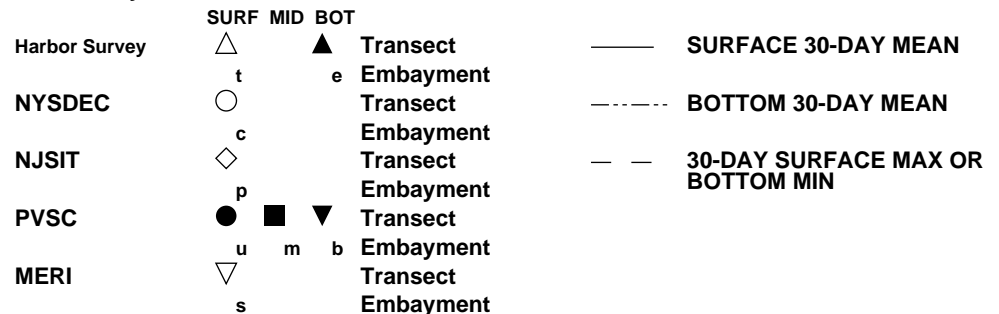


MILE FROM MOUTH HACKENSACK RIVER  
**HACKENSACK RIVER AND NEWARK BAY**

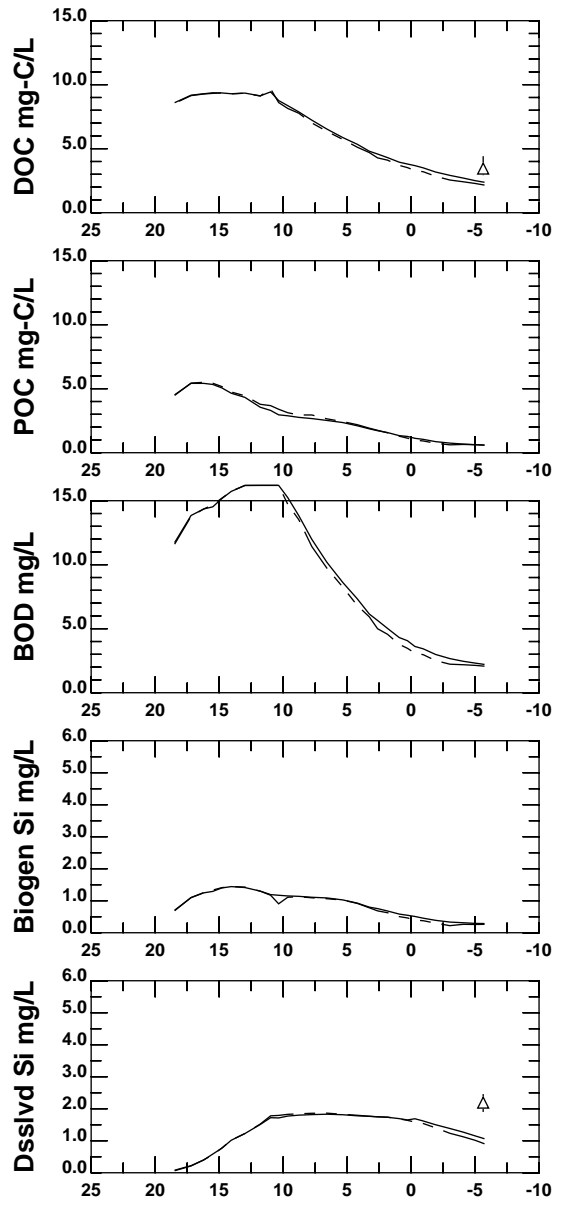
DATE: 4/07/2006 TIME: 11:36:38



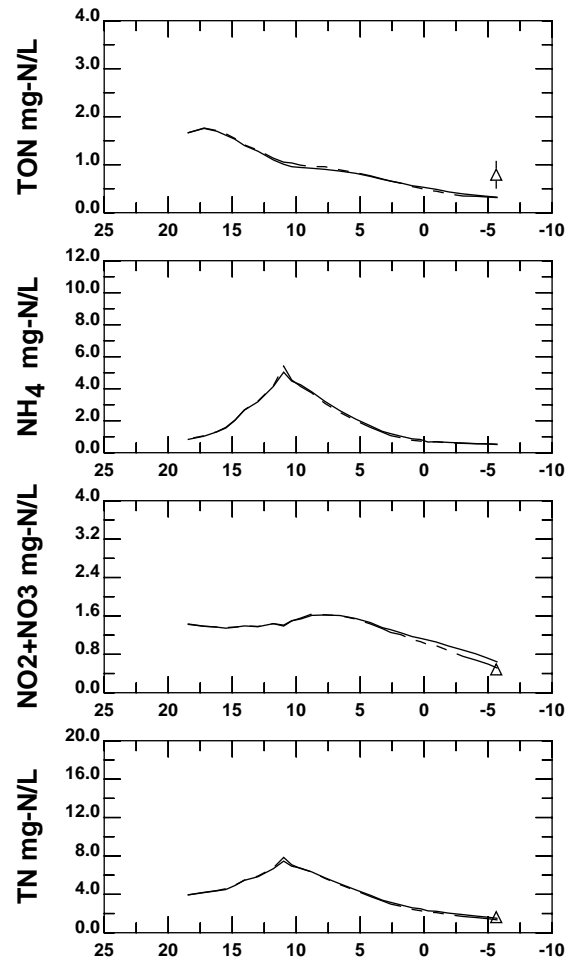
MILE FROM MOUTH HACKENSACK RIVER  
 DATA May 29-Jun 27,2002





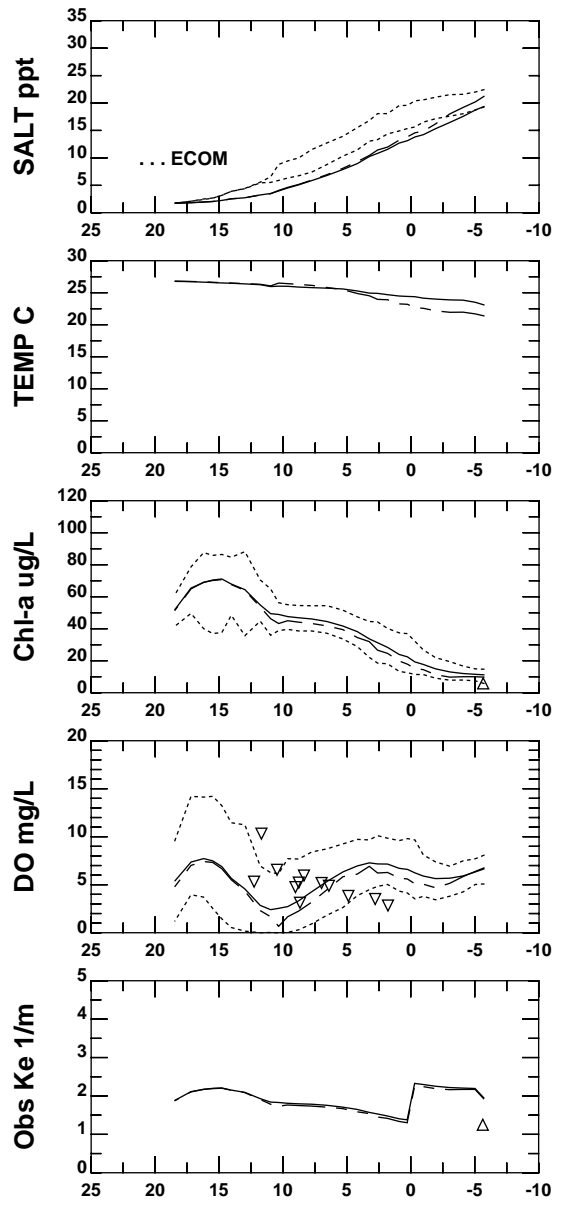


MILE FROM MOUTH HACKENSACK RIVER  
**HACKENSACK RIVER AND NEWARK BAY**



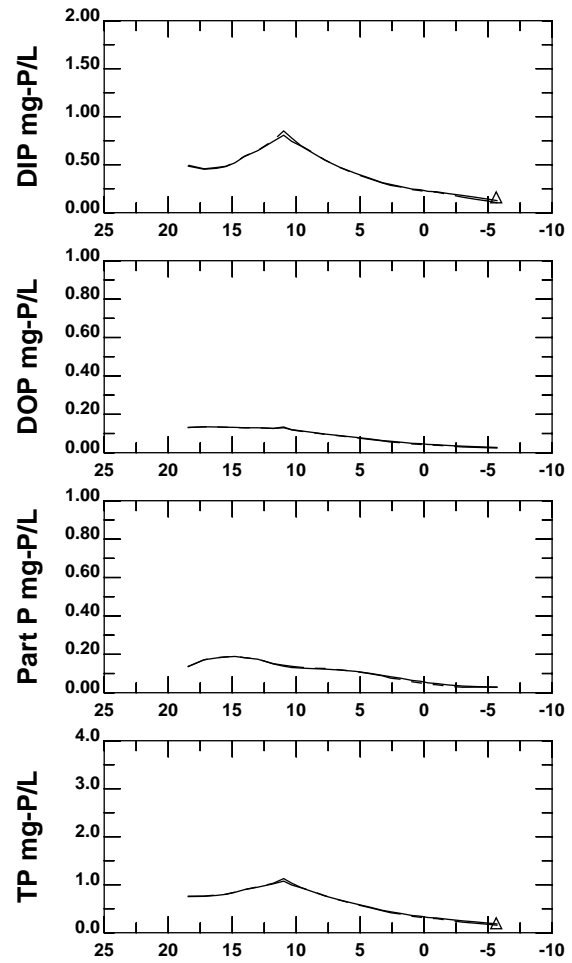
MILE FROM MOUTH HACKENSACK RIVER  
 DATA May 29-Jun 27, 2002

	SURF MID BOT			MODEL
Harbor Survey	△	▲	Transect	— SURFACE 30-DAY MEAN
	t	e	Embayment	- - - - - BOTTOM 30-DAY MEAN
NYSDEC	○	c	Transect	- - - - - 30-DAY SURFACE MAX OR
	c		Embayment	— - - - - BOTTOM MIN
NJSIT	◇	p	Transect	
		p	Embayment	
PVSC	●	■	Transect	
	u	m	Embayment	
MERI	▽	b	Transect	
	s		Embayment	



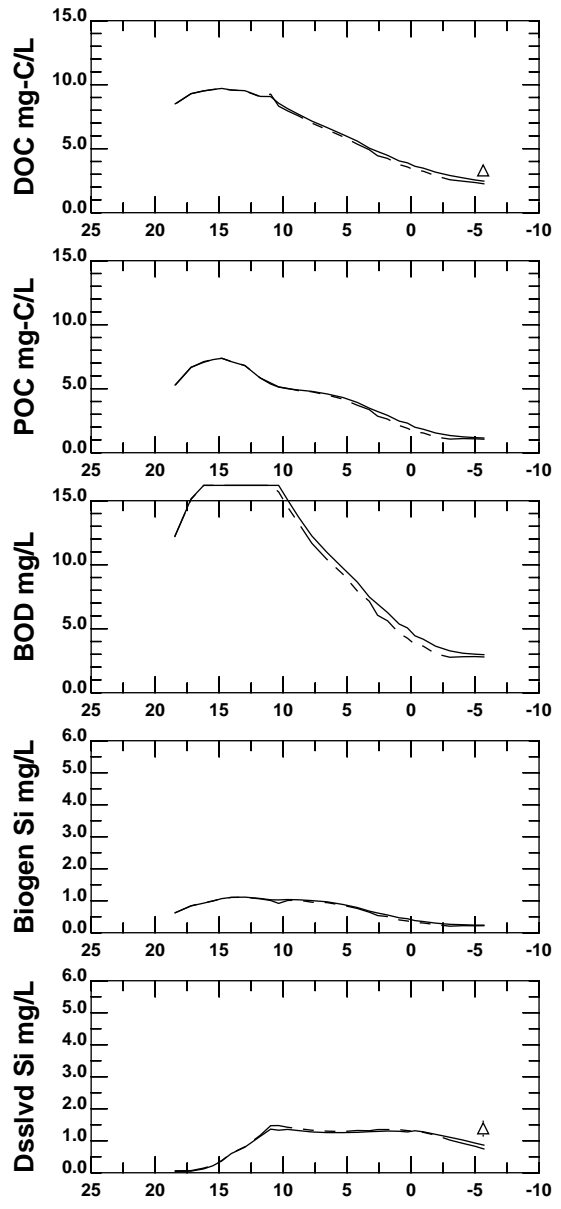
MILE FROM MOUTH HACKENSACK RIVER  
**HACKENSACK RIVER AND NEWARK BAY**

DATE: 4/07/2006 TIME: 11:36:43

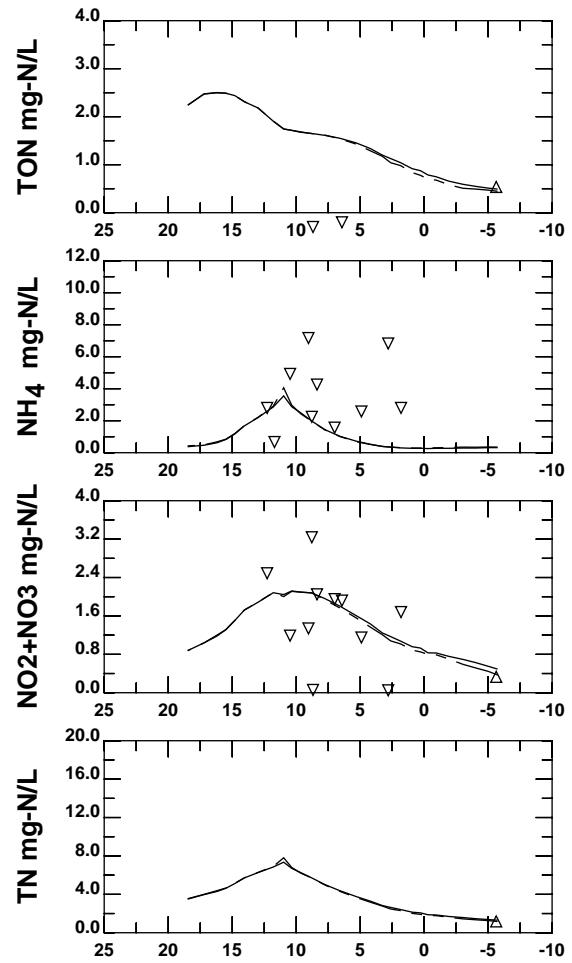


MILE FROM MOUTH HACKENSACK RIVER  
 DATA Jun 28-Jul 27,2002

	SURF MID BOT			MODEL
Harbor Survey	△	▲	▲	— SURFACE 30-DAY MEAN
	t	e	e	- - - - - BOTTOM 30-DAY MEAN
NYSDEC	○			- - - - - 30-DAY SURFACE MAX OR BOTTOM MIN
	c			
NJSIT	◇			
	p			
PVSC	●	■	▼	
	u	m	b	
MERI	▽			
	s			

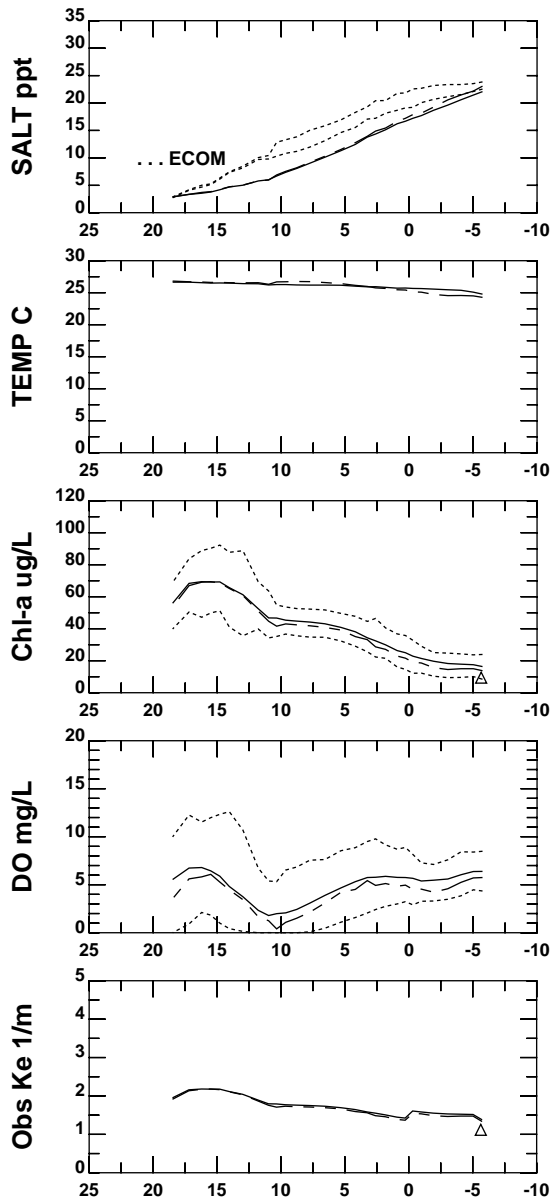


MILE FROM MOUTH HACKENSACK RIVER  
**HACKENSACK RIVER AND NEWARK BAY**



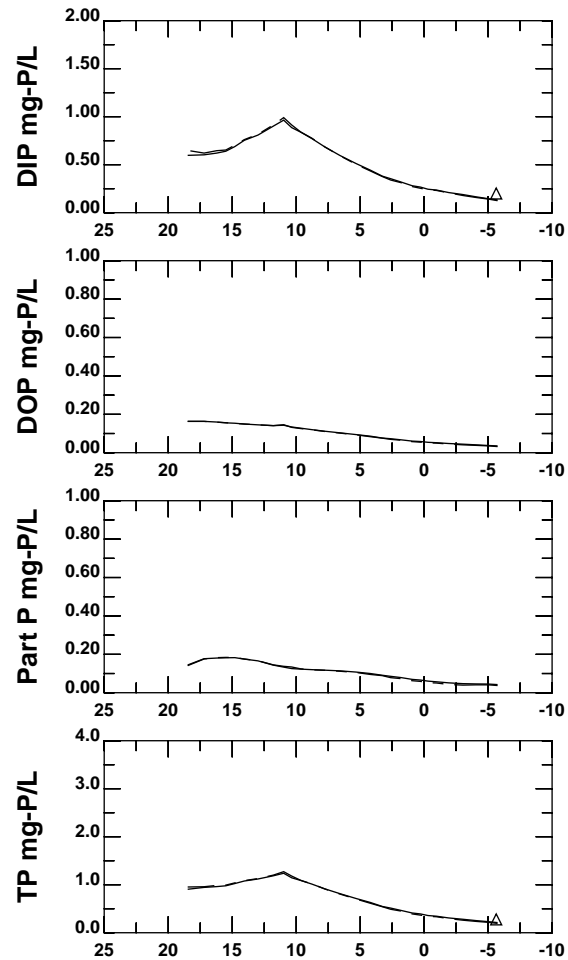
**MILE FROM MOUTH HACKENSACK RIVER**  
 DATA Jun 28-Jul 27, 2002

	SURF MID BOT			MODEL
Harbor Survey	△		▲	— SURFACE 30-DAY MEAN
	t		e	--- BOTTOM 30-DAY MEAN
NYSDEC	○			- - - 30-DAY SURFACE MAX OR BOTTOM MIN
	c			
NJSIT	◇			
	p			
PVSC	●	■	▼	
	u	m	b	
MERI	▽			
	s			



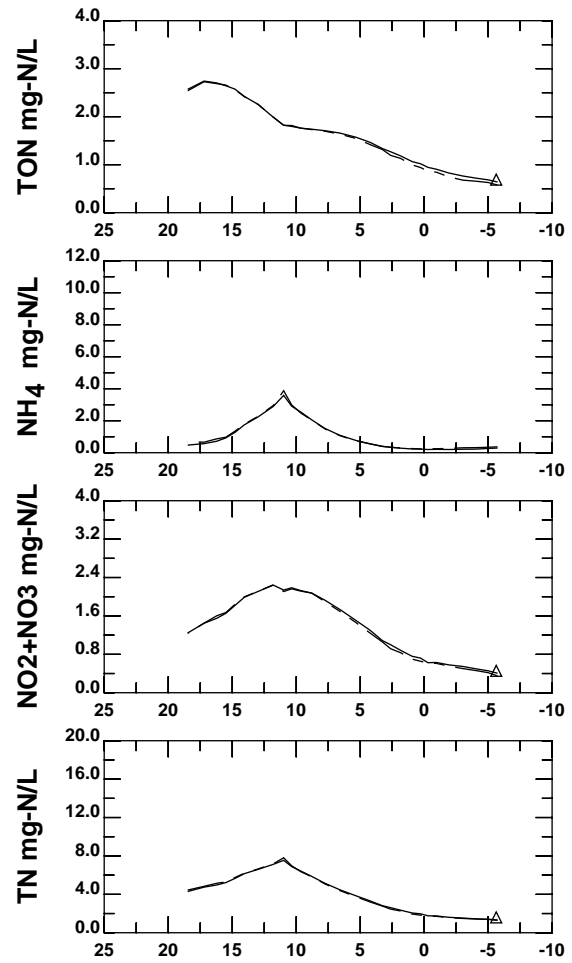
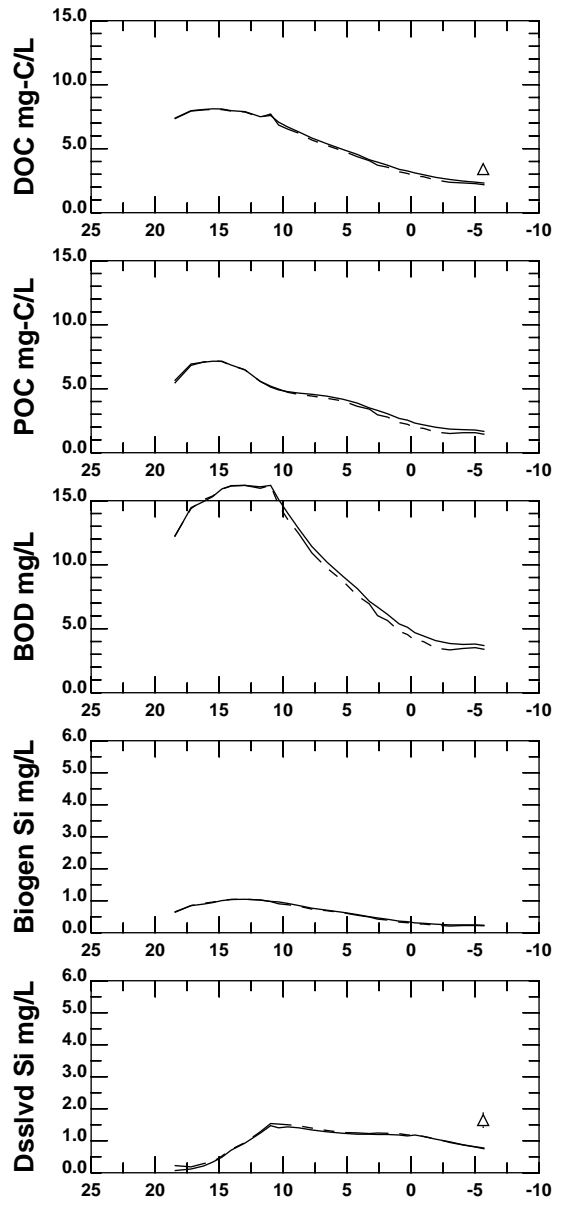
**MILE FROM MOUTH HACKENSACK RIVER  
HACKENSACK RIVER AND NEWARK BAY**

DATE: 4/07/2006 TIME: 11:36:47



**MILE FROM MOUTH HACKENSACK RIVER  
DATA Jul 27-Aug 26, 2002**

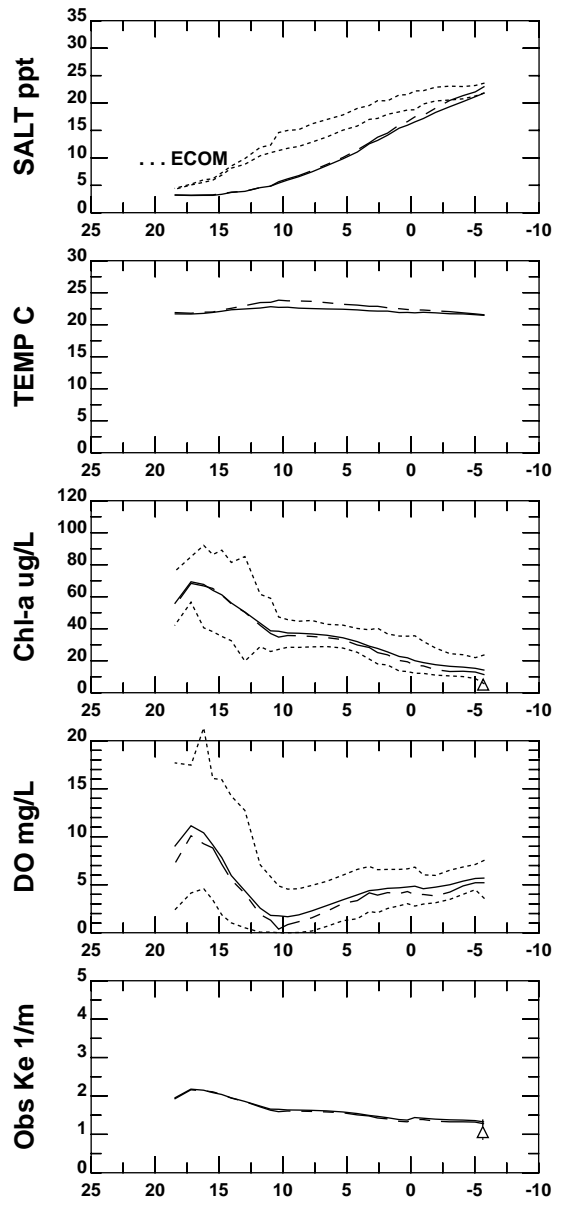
	SURF MID BOT			MODEL
Harbor Survey	△	▲	Transect	— SURFACE 30-DAY MEAN
	t	e	Embayment	--- BOTTOM 30-DAY MEAN
NYSDEC	○		Transect	- - - 30-DAY SURFACE MAX OR BOTTOM MIN
	c		Embayment	
NJSIT	◇		Transect	
	p		Embayment	
PVSC	●	■	Transect	
	u	m	Embayment	
MERI	▽		Transect	
	s		Embayment	



MILE FROM MOUTH HACKENSACK RIVER  
**HACKENSACK RIVER AND NEWARK BAY**

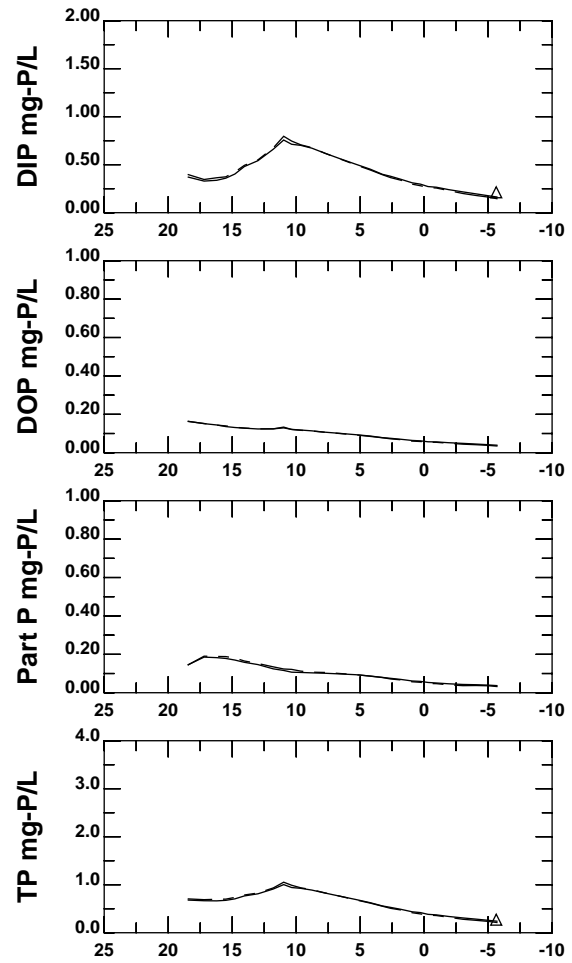
MILE FROM MOUTH HACKENSACK RIVER  
 DATA Jul 27-Aug 26, 2002

	SURF MID BOT			MODEL
Harbor Survey	△	▲	Transect	— SURFACE 30-DAY MEAN
	t	e	Embayment	- - - - - BOTTOM 30-DAY MEAN
NYSDEC	○		Transect	- - - - - 30-DAY SURFACE MAX OR
	c		Embayment	— — — — — BOTTOM MIN
NJSIT	◇		Transect	
	p		Embayment	
PVSC	●	■	Transect	
	u	m	Embayment	
MERI	▽		Transect	
	s		Embayment	



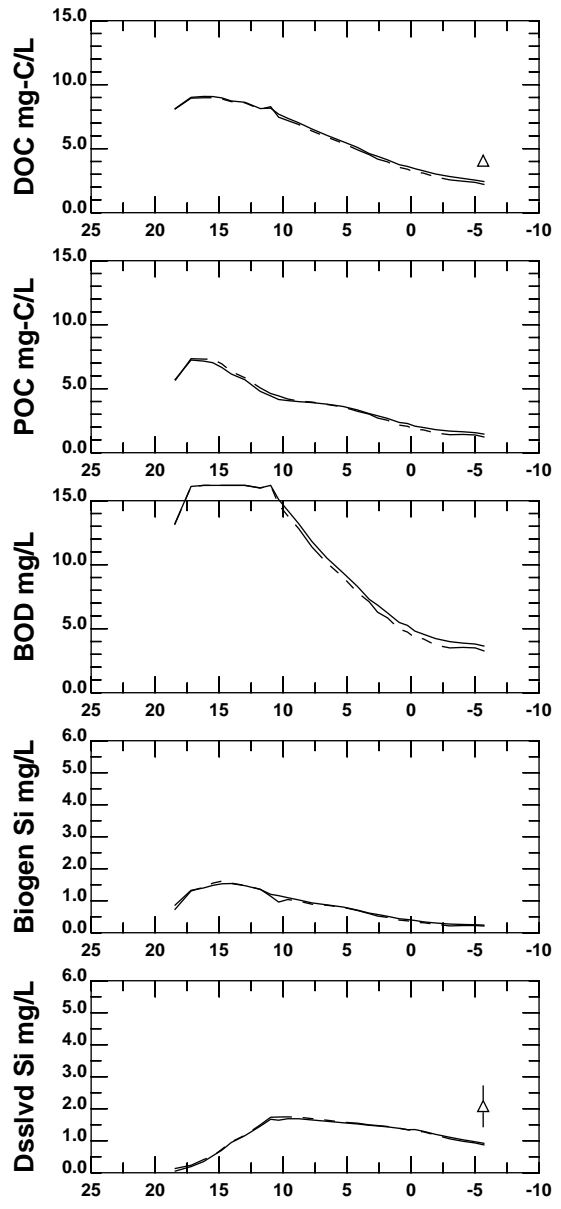
MILE FROM MOUTH HACKENSACK RIVER  
**HACKENSACK RIVER AND NEWARK BAY**

DATE: 4/07/2006 TIME: 11:36:52

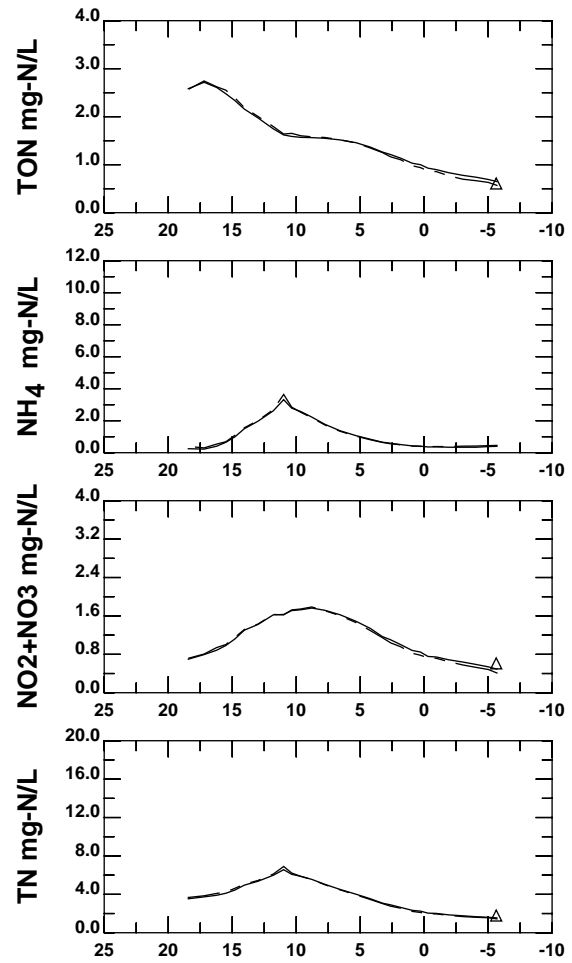


MILE FROM MOUTH HACKENSACK RIVER  
 DATA Aug 27-Sep 25,2002

	SURF MID BOT			MODEL
Harbor Survey	△	▲	Transect	— SURFACE 30-DAY MEAN
	t	e	Embayment	- - - - - BOTTOM 30-DAY MEAN
NYSDEC	○		Transect	- - - - - 30-DAY SURFACE MAX OR
	c		Embayment	— — — — — BOTTOM MIN
NJSIT	◇		Transect	
	p		Embayment	
PVSC	●	■	Transect	
	u	m	Embayment	
MERI	▽		Transect	
	s		Embayment	

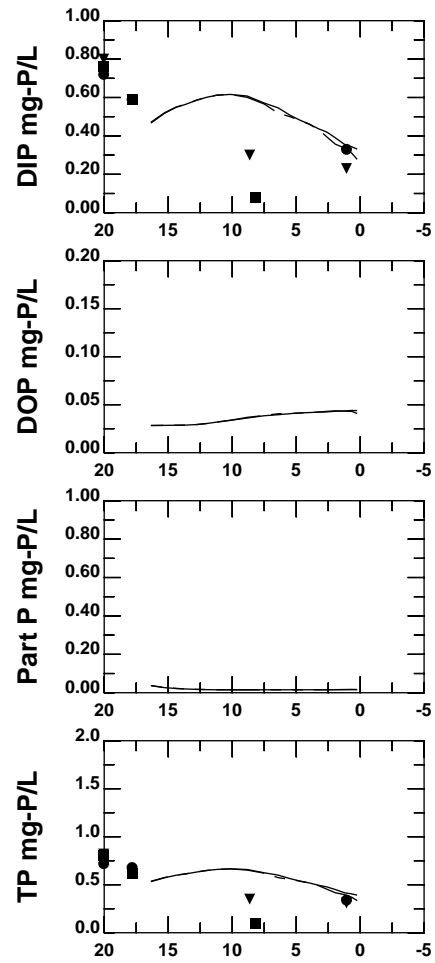
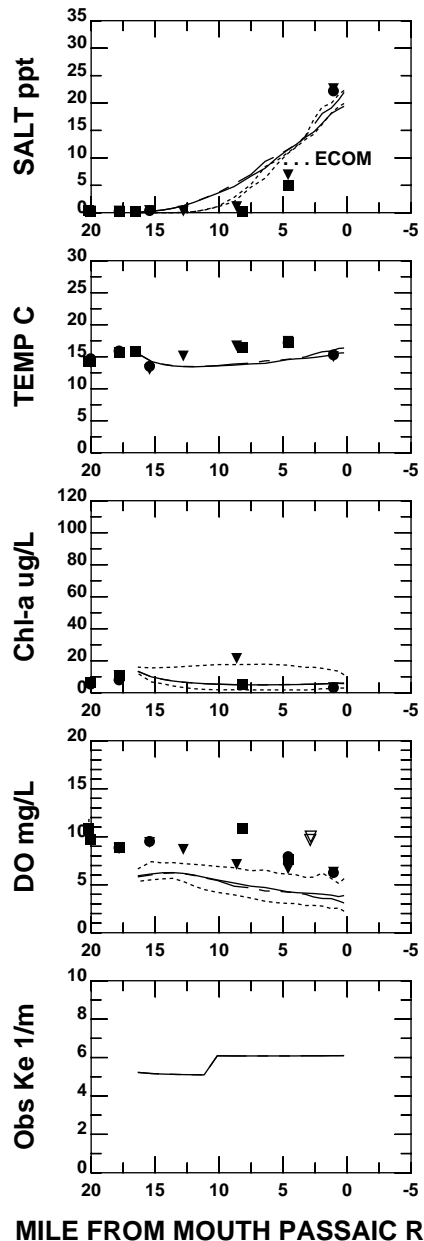


MILE FROM MOUTH HACKENSACK RIVER  
**HACKENSACK RIVER AND NEWARK BAY**



MILE FROM MOUTH HACKENSACK RIVER  
 DATA Aug 27-Sep 25,2002

	SURF MID BOT			MODEL
Harbor Survey	△	▲	Transect	— SURFACE 30-DAY MEAN
	t	e	Embayment	- - - - BOTTOM 30-DAY MEAN
NYSDEC	○	c	Transect	- · - · 30-DAY SURFACE MAX OR
	c		Embayment	· - - - BOTTOM MIN
NJSIT	◇	p	Transect	
			Embayment	
PVSC	●	■	Transect	
	u	m	Embayment	
MERI	▽	b	Transect	
	s		Embayment	



**MILE FROM MOUTH PASSAIC RIVER**  
 DATA Oct 1-30,2001

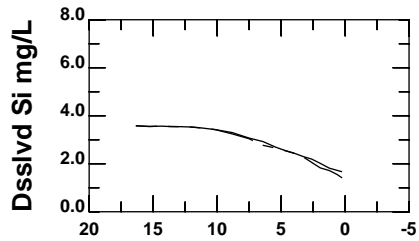
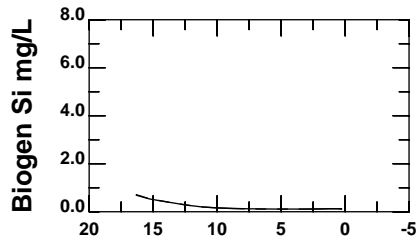
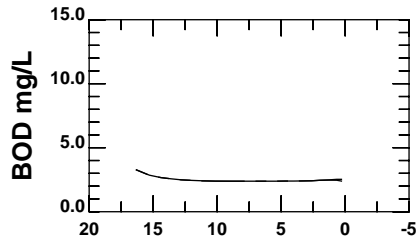
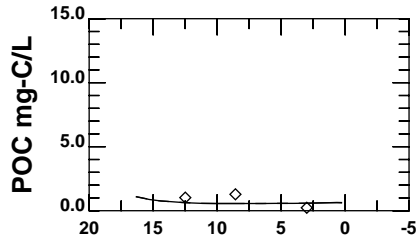
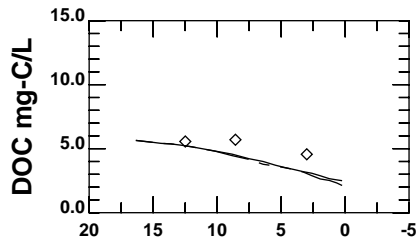
	SURF	MID	BOT	
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

**MODEL**

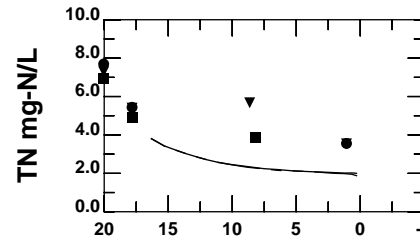
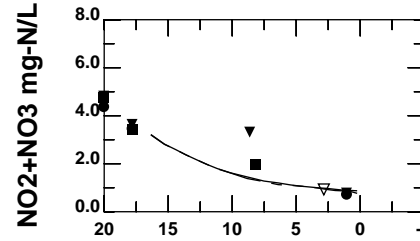
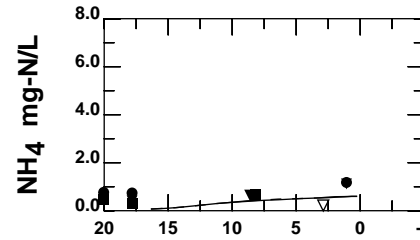
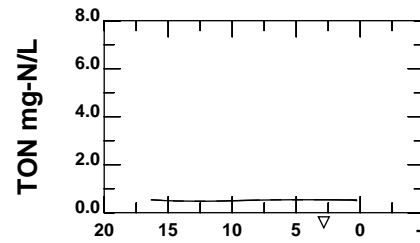
————	SURFACE 30-DAY MEAN
- - - - -	BOTTOM 30-DAY MEAN
— · — ·	30-DAY SURFACE MAX OR BOTTOM MIN

**PASSAIC RIVER**





MILE FROM MOUTH PASSAIC RIVER



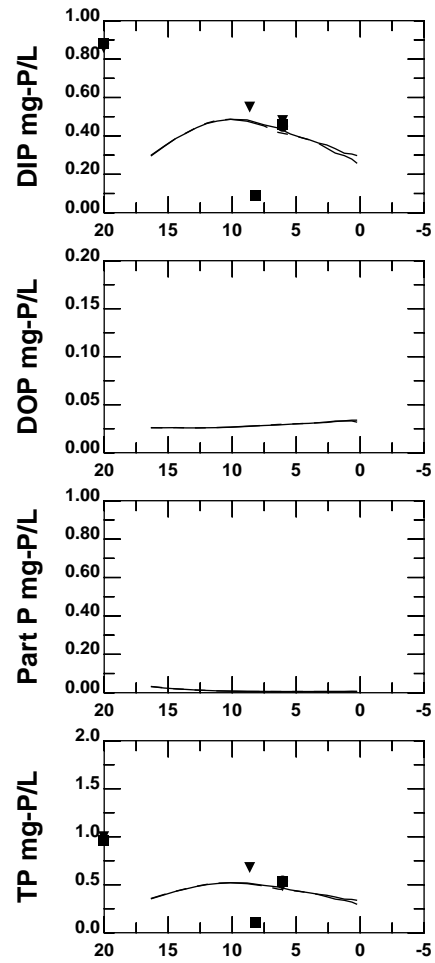
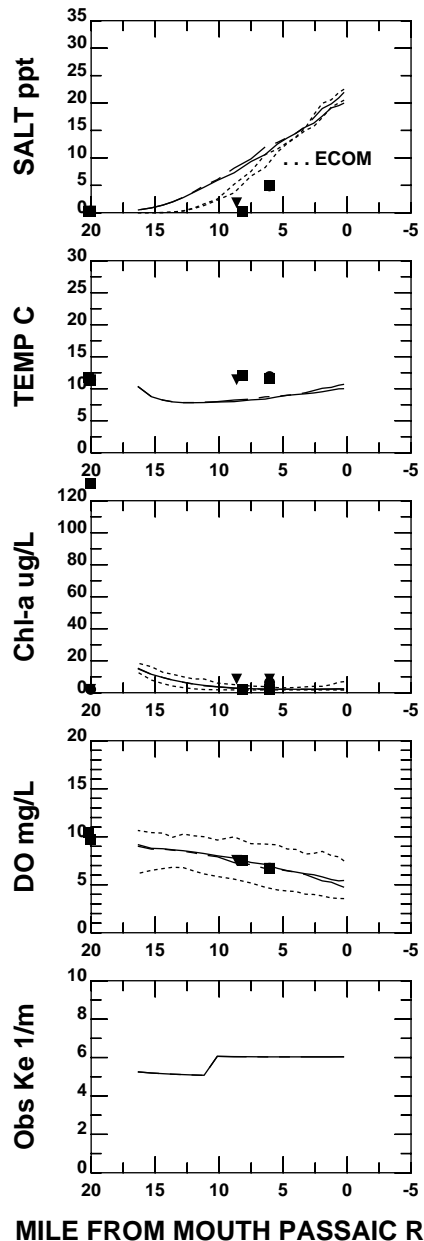
MILE FROM MOUTH PASSAIC RIVER  
DATA Oct 1-30,2001

	SURF	MID	BOT	
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

MODEL

- SURFACE 30-DAY MEAN
- - - - - BOTTOM 30-DAY MEAN
- - - 30-DAY SURFACE MAX OR BOTTOM MIN

# PASSAIC RIVER



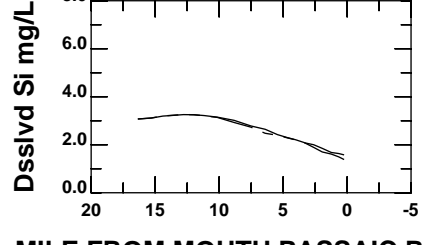
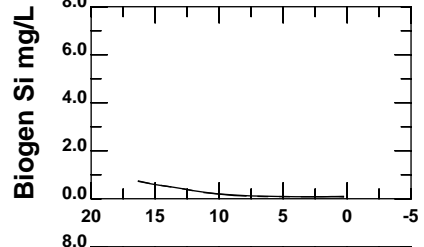
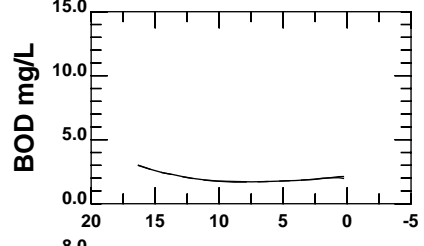
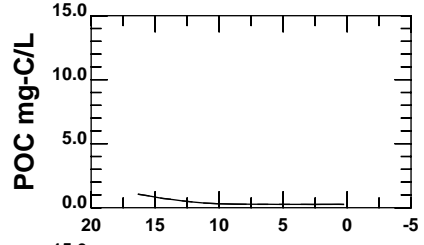
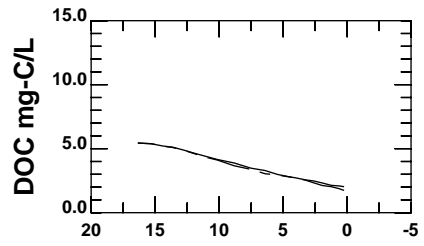
**MILE FROM MOUTH PASSAIC RIVER**  
 DATA Oct 31-Nov 29, 2001

	SURF MID BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment
PVSC	●	■	Transect
	u	m	Embayment
MERI	▽		Transect
	s		Embayment

**MODEL**

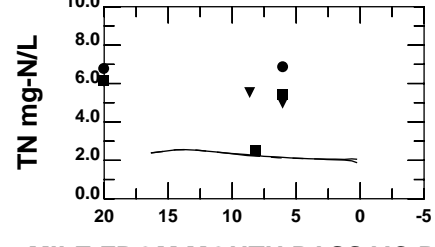
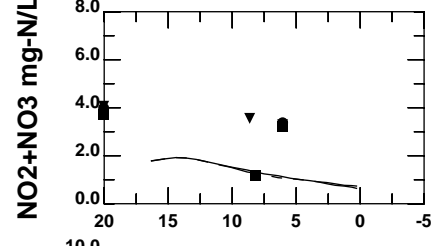
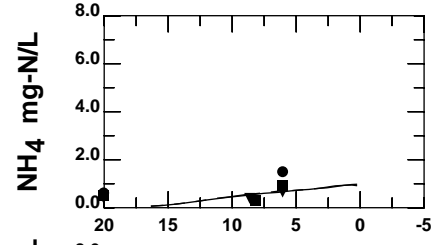
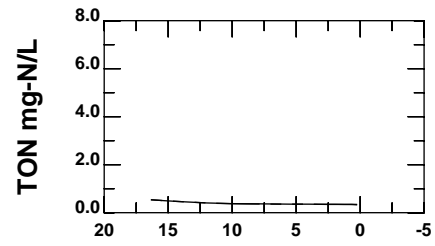
————	SURFACE 30-DAY MEAN
- - - - -	BOTTOM 30-DAY MEAN
— — —	30-DAY SURFACE MAX OR BOTTOM MIN

**PASSAIC RIVER**



MILE FROM MOUTH PASSAIC RIVER

**PASSAIC RIVER**

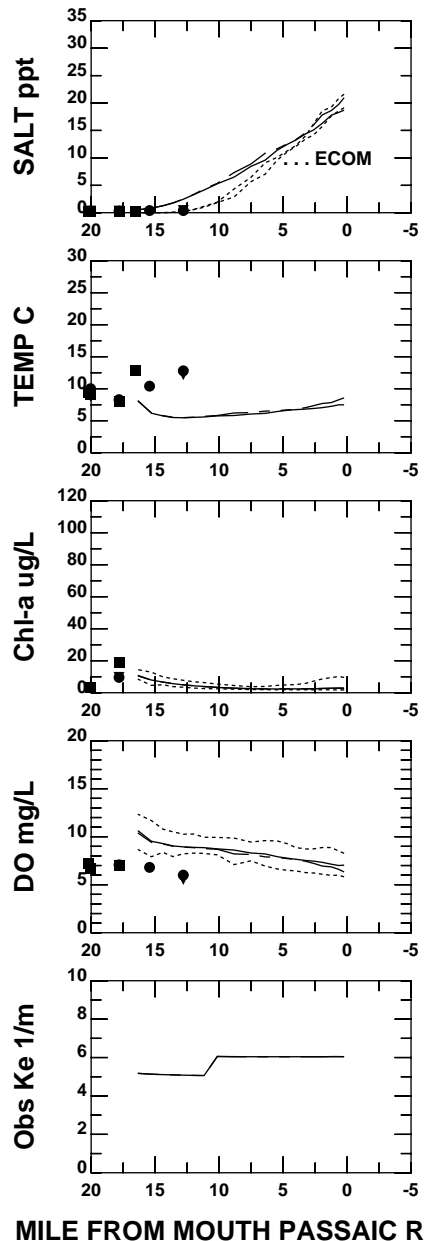


MILE FROM MOUTH PASSAIC RIVER  
DATA Oct 31-Nov 29, 2001

	SURF	MID	BOT	
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

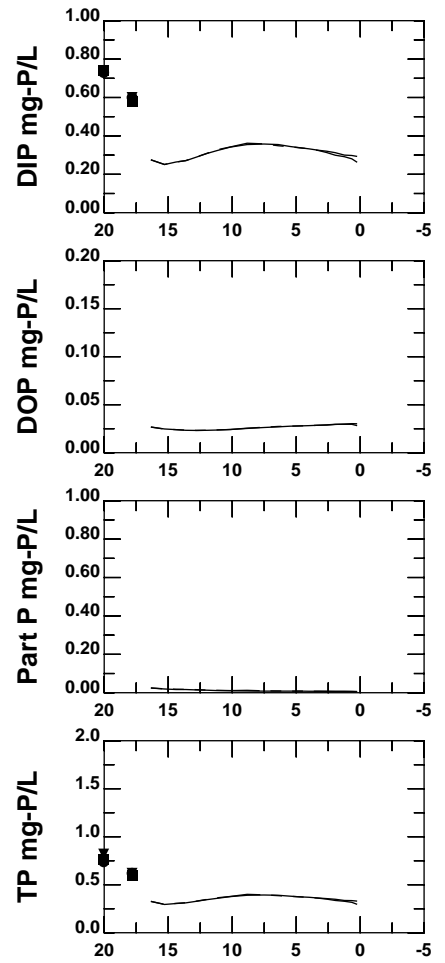
MODEL

- SURFACE 30-DAY MEAN
- - - - - BOTTOM 30-DAY MEAN
- - - 30-DAY SURFACE MAX OR BOTTOM MIN



MILE FROM MOUTH PASSAIC RIVER

### PASSAIC RIVER

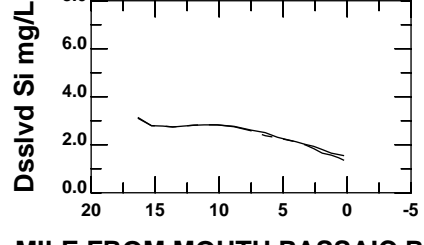
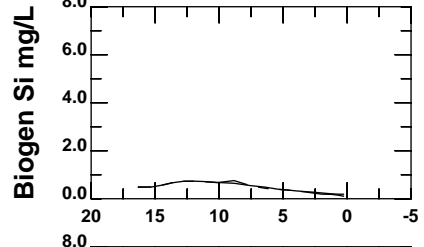
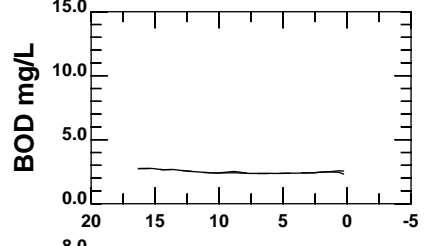
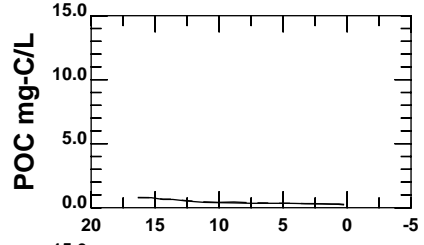
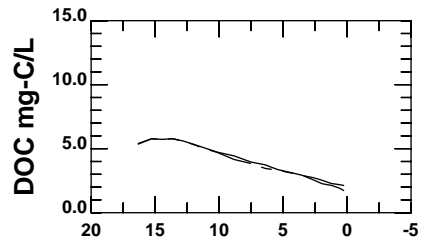


MILE FROM MOUTH PASSAIC RIVER  
DATA Nov 30-Dec 29,2001

	SURF MID BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment
PVSC	●	■ ▼	Transect
	u	m b	Embayment
MERI	▽		Transect
	s		Embayment

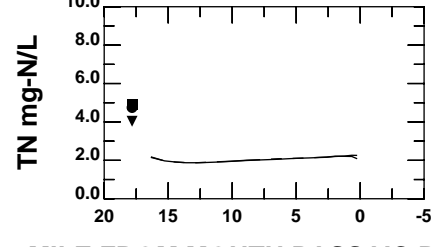
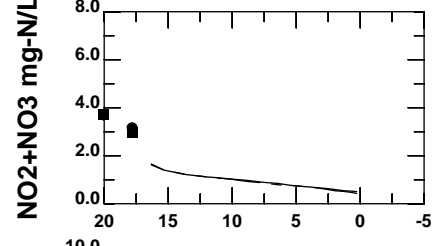
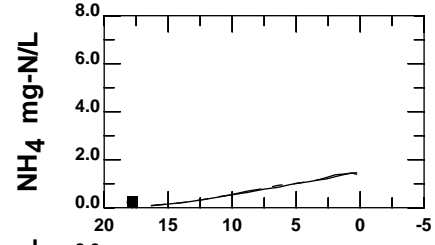
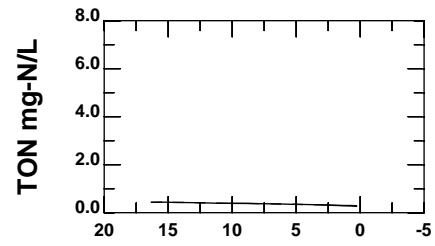
MODEL

- SURFACE 30-DAY MEAN
- - - - - BOTTOM 30-DAY MEAN
- - - 30-DAY SURFACE MAX OR BOTTOM MIN



MILE FROM MOUTH PASSAIC RIVER

### PASSAIC RIVER



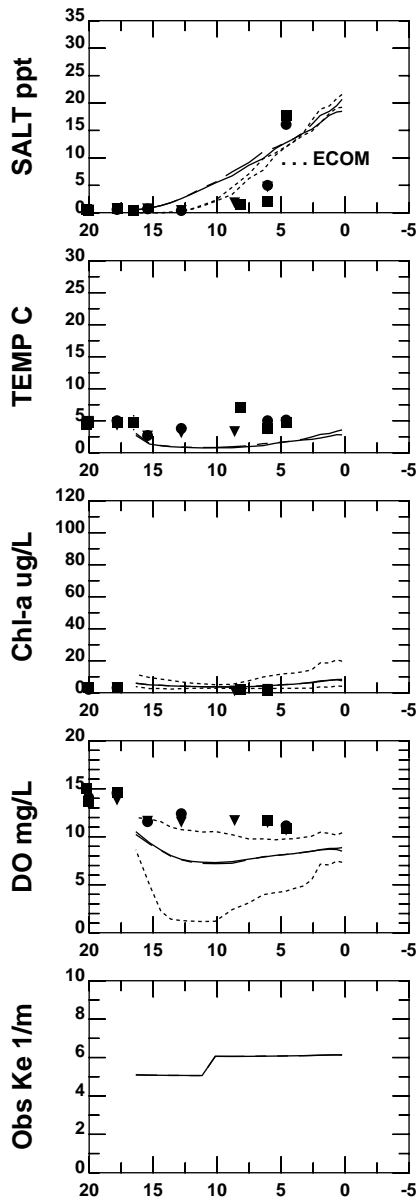
### MILE FROM MOUTH PASSAIC RIVER

DATA Nov 30-Dec 29,2001

	SURF MID BOT			
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

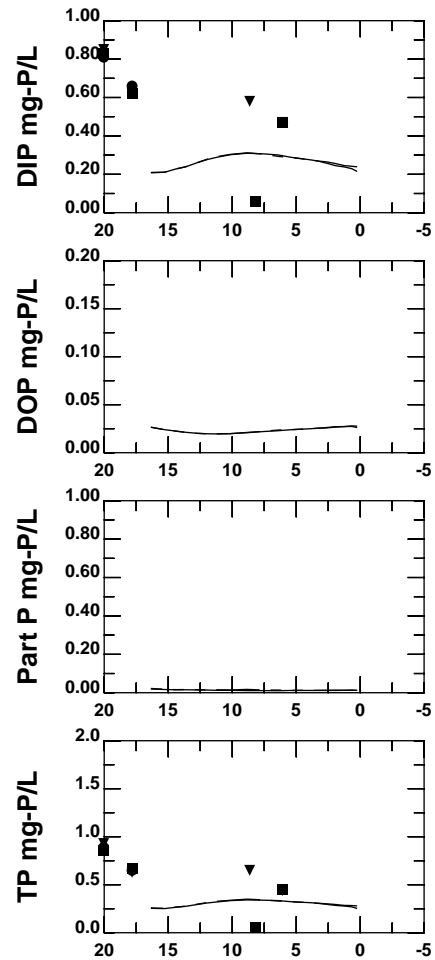
### MODEL

- SURFACE 30-DAY MEAN
- - - - - BOTTOM 30-DAY MEAN
- - - 30-DAY SURFACE MAX OR BOTTOM MIN



MILE FROM MOUTH PASSAIC RIVER

### PASSAIC RIVER



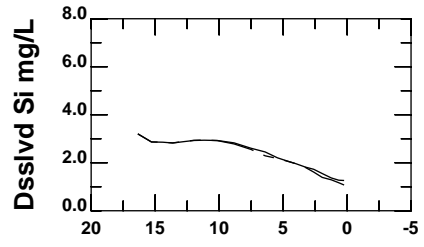
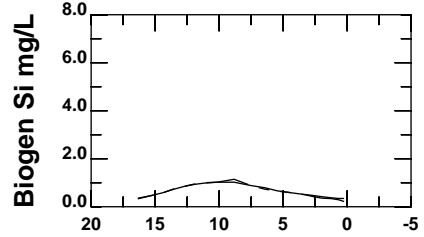
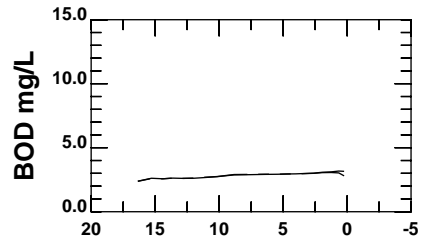
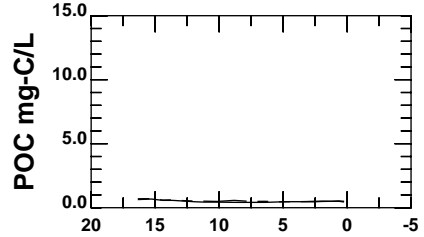
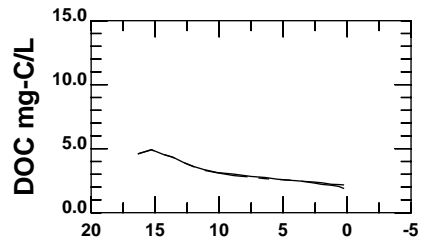
### MILE FROM MOUTH PASSAIC RIVER

DATA Dec 30 2001 -Jan 28,2002

	SURF MID BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment
PVSC	●	■	Transect
	u	m	Embayment
MERI	▽		Transect
	s		Embayment

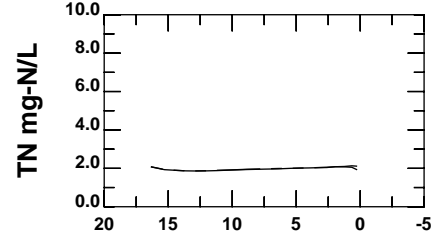
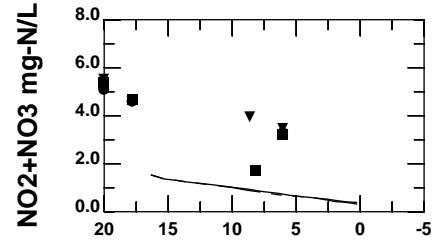
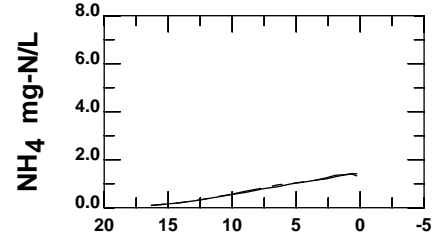
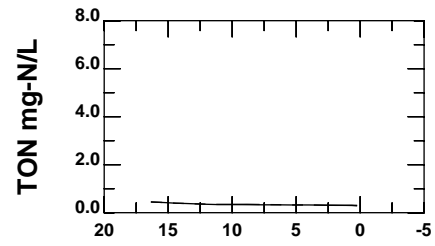
### MODEL

—	SURFACE 30-DAY MEAN
- - - -	BOTTOM 30-DAY MEAN
- · - ·	30-DAY SURFACE MAX OR BOTTOM MIN



MILE FROM MOUTH PASSAIC RIVER

### PASSAIC RIVER



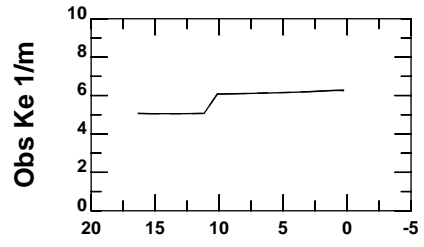
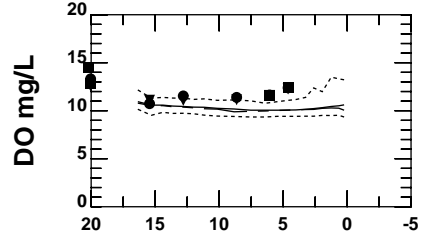
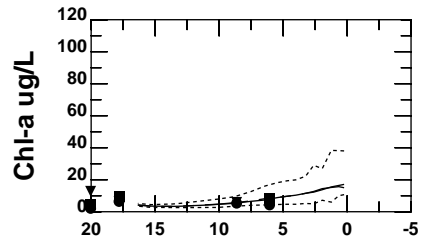
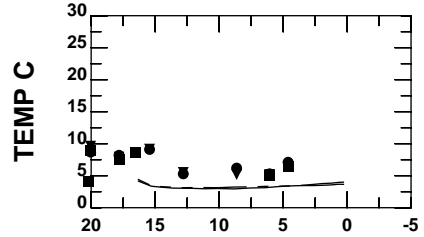
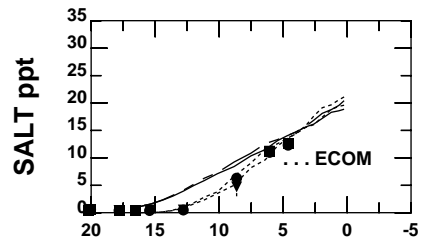
MILE FROM MOUTH PASSAIC RIVER

DATA Dec 30 2001 -Jan 28,2002

	SURF MID BOT			
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

MODEL

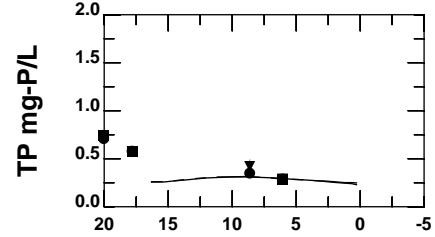
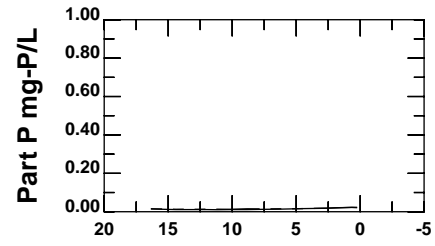
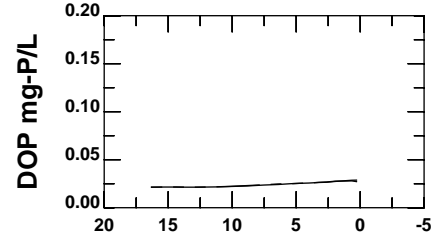
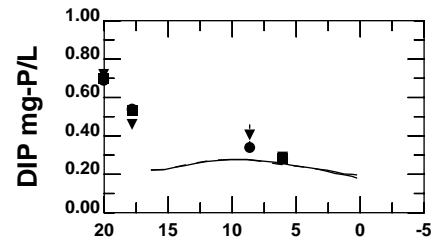
- SURFACE 30-DAY MEAN
- - - - - BOTTOM 30-DAY MEAN
- - - 30-DAY SURFACE MAX OR BOTTOM MIN



MILE FROM MOUTH PASSAIC RIVER

### PASSAIC RIVER

DATE: 4/07/2006 TIME: 11:37:10



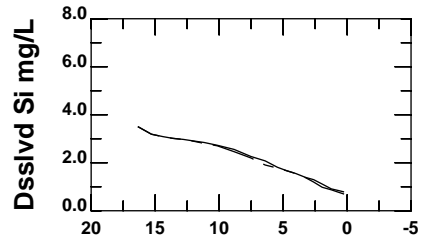
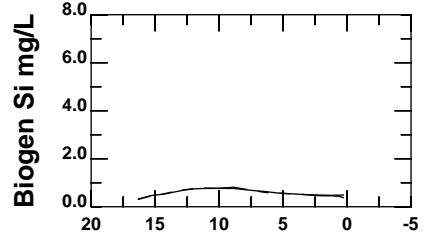
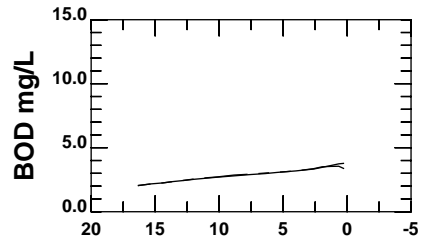
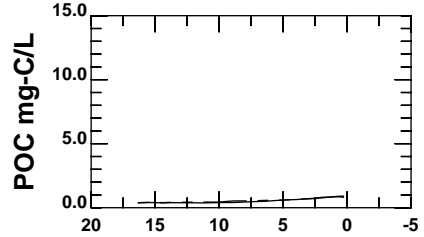
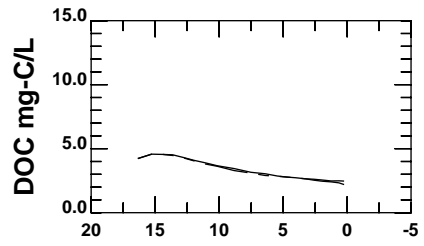
MILE FROM MOUTH PASSAIC RIVER  
DATA Jan 29-Feb 27, 2002

	SURF	MID	BOT	
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

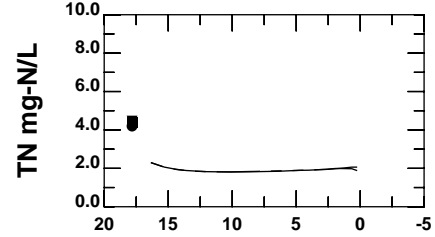
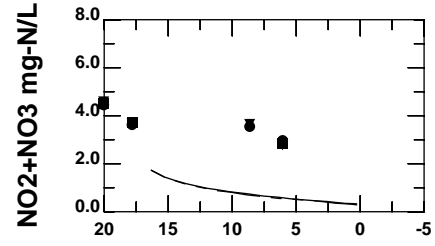
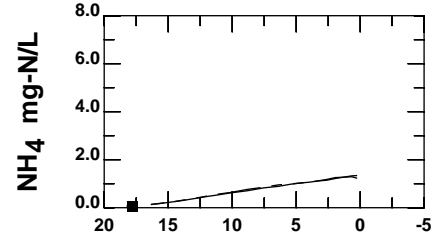
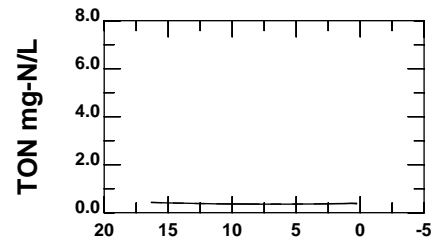
MODEL

- SURFACE 30-DAY MEAN
- - - - - BOTTOM 30-DAY MEAN
- · - · - 30-DAY SURFACE MAX OR BOTTOM MIN





MILE FROM MOUTH PASSAIC RIVER

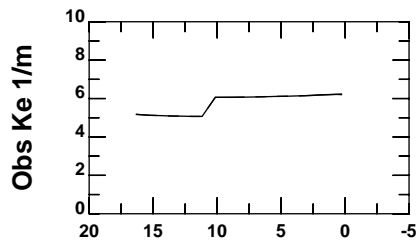
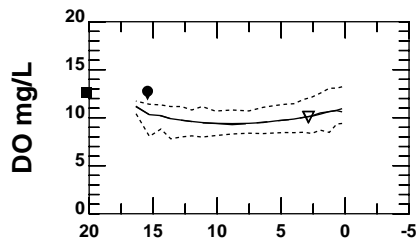
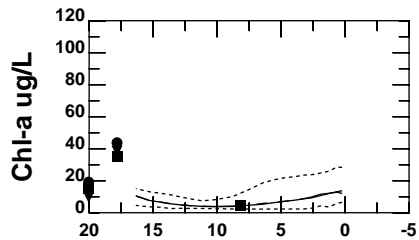
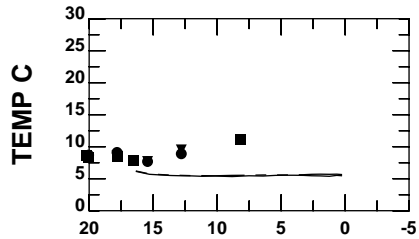
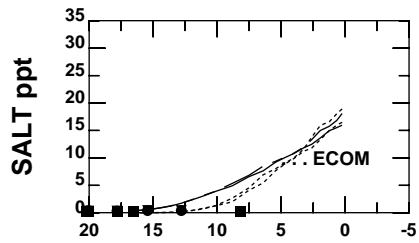


MILE FROM MOUTH PASSAIC RIVER  
DATA Jan 29-Feb 27, 2002

	SURF	MID	BOT	
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

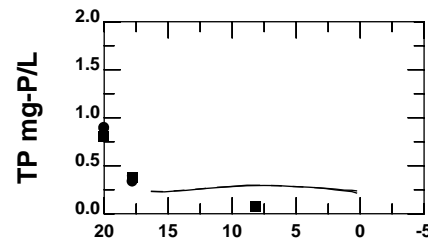
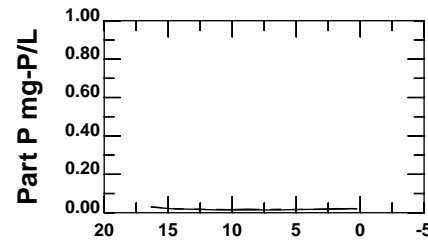
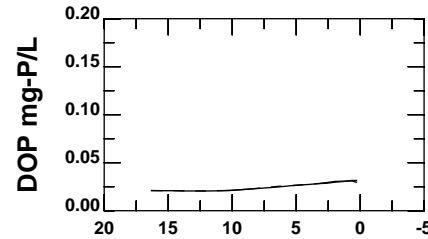
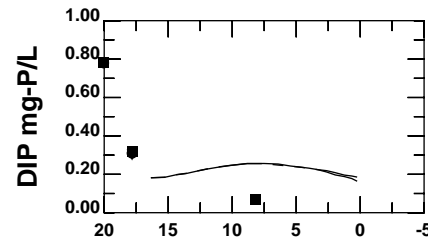
MODEL	
SURFACE 30-DAY MEAN	—
BOTTOM 30-DAY MEAN	- - - -
30-DAY SURFACE MAX OR BOTTOM MIN	- · - ·

PASSAIC RIVER



MILE FROM MOUTH PASSAIC RIVER

### PASSAIC RIVER



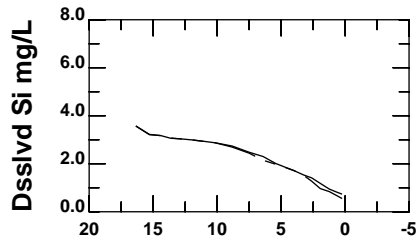
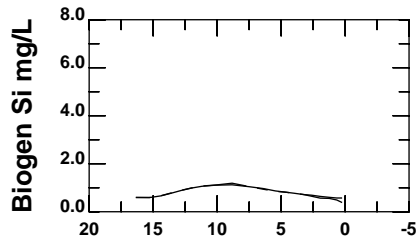
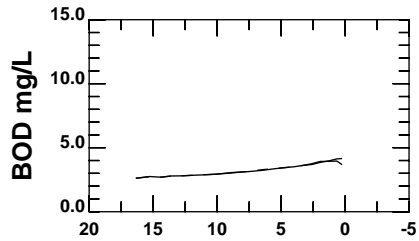
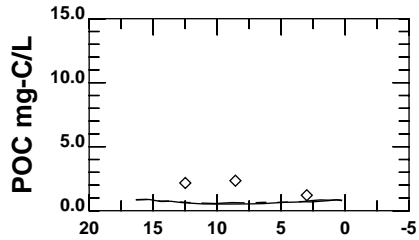
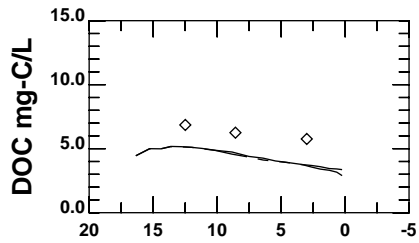
### MILE FROM MOUTH PASSAIC RIVER

DATA Feb 28-Mar 29,2002

	SURF MID BOT			
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

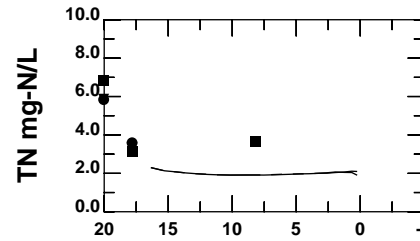
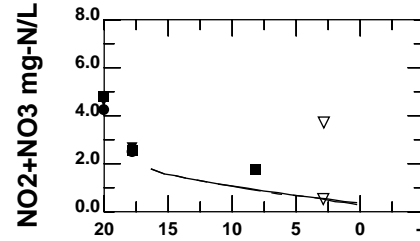
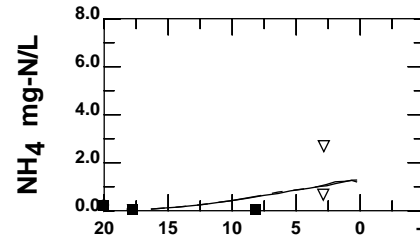
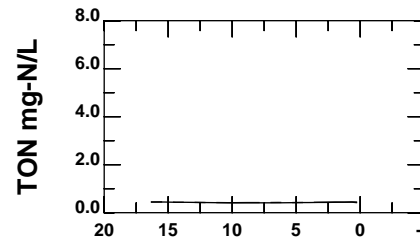
### MODEL

————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN



MILE FROM MOUTH PASSAIC RIVER

**PASSAIC RIVER**



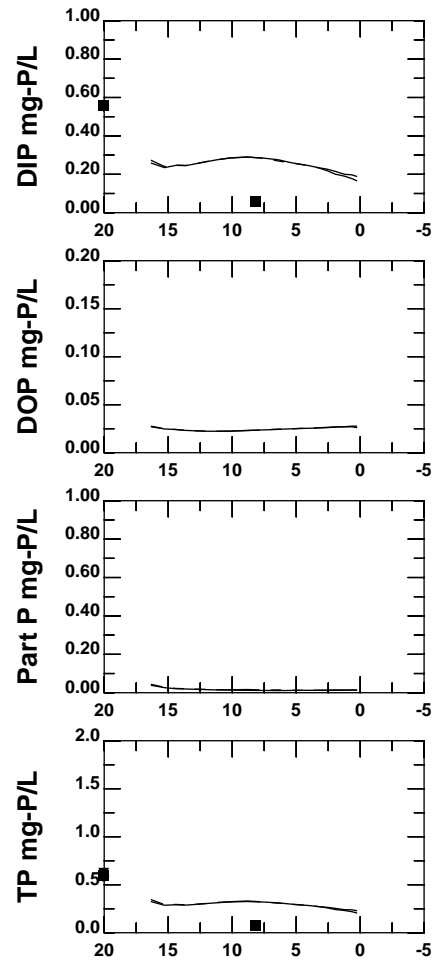
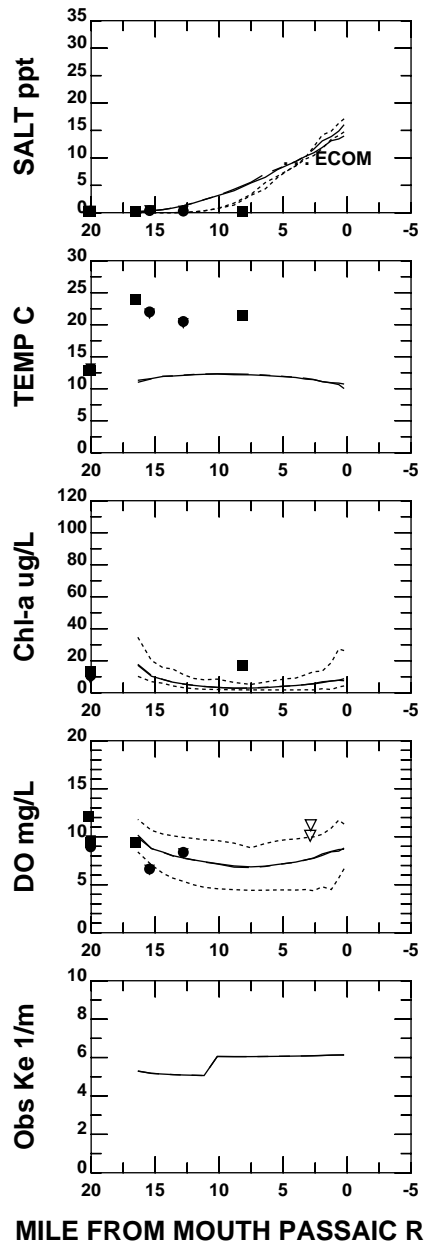
MILE FROM MOUTH PASSAIC RIVER

DATA Feb 28-Mar 29, 2002

	SURF		MID		BOT		
Harbor Survey	△				▲		Transect
	t				e		Embayment
NYSDEC	○						Transect
	c						Embayment
NJSIT	◇						Transect
	p						Embayment
PVSC	●		■		▼		Transect
	u		m		b		Embayment
MERI	▽						Transect
	s						Embayment

MODEL

- SURFACE 30-DAY MEAN
- - - - - BOTTOM 30-DAY MEAN
- - - 30-DAY SURFACE MAX OR BOTTOM MIN



**MILE FROM MOUTH PASSAIC RIVER**

DATA Mar 30-Apr 28,2002

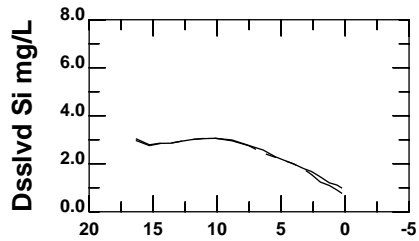
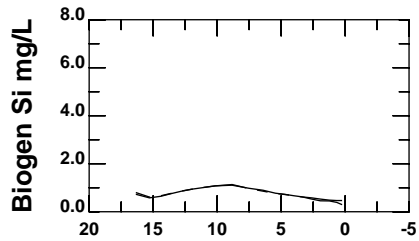
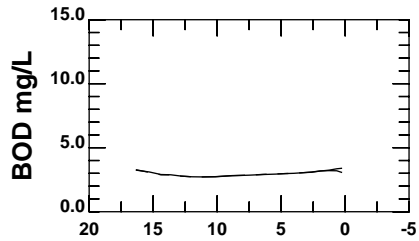
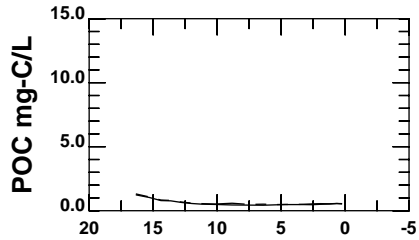
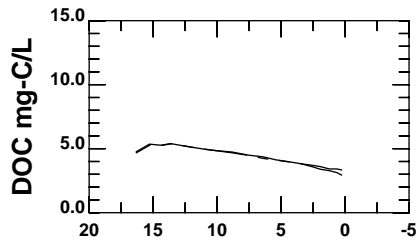
	SURF MID BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment
PVSC	●	■	Transect
	u	m	Embayment
MERI	▽		Transect
	s		Embayment

**MODEL**

————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

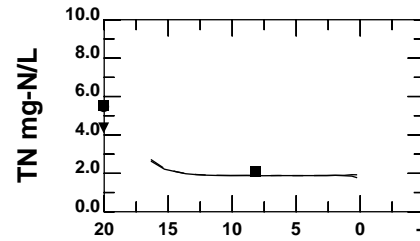
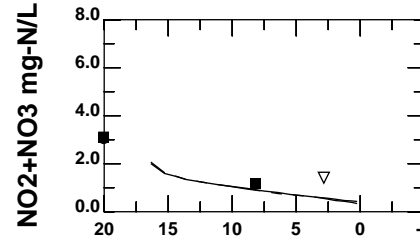
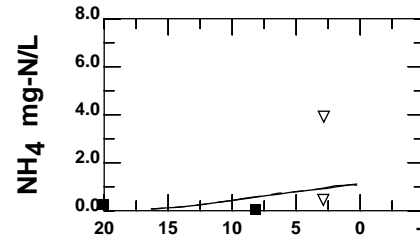
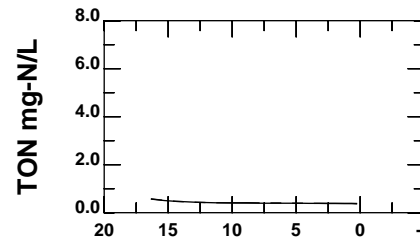
MILE FROM MOUTH PASSAIC RIVER

**PASSAIC RIVER**



MILE FROM MOUTH PASSAIC RIVER

**PASSAIC RIVER**



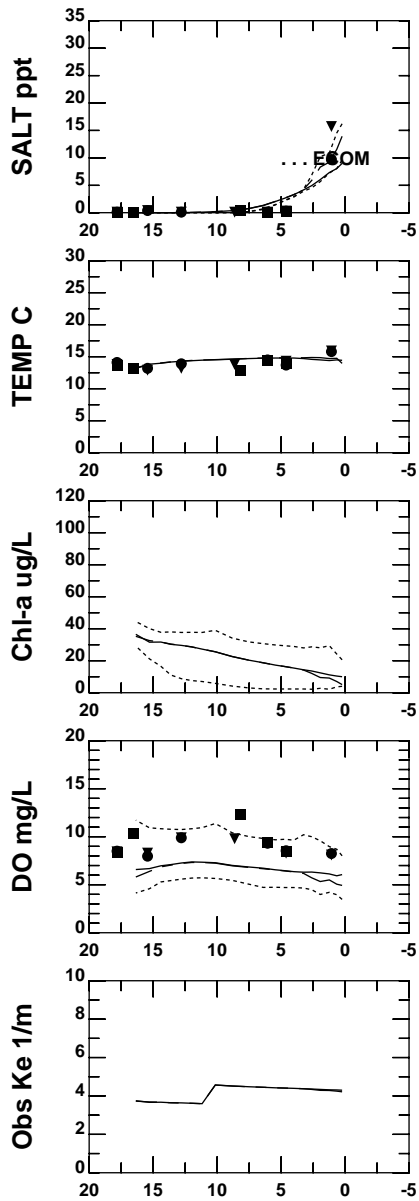
**MILE FROM MOUTH PASSAIC RIVER**

DATA Mar 30-Apr 28, 2002

	SURF	MID	BOT	
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

**MODEL**

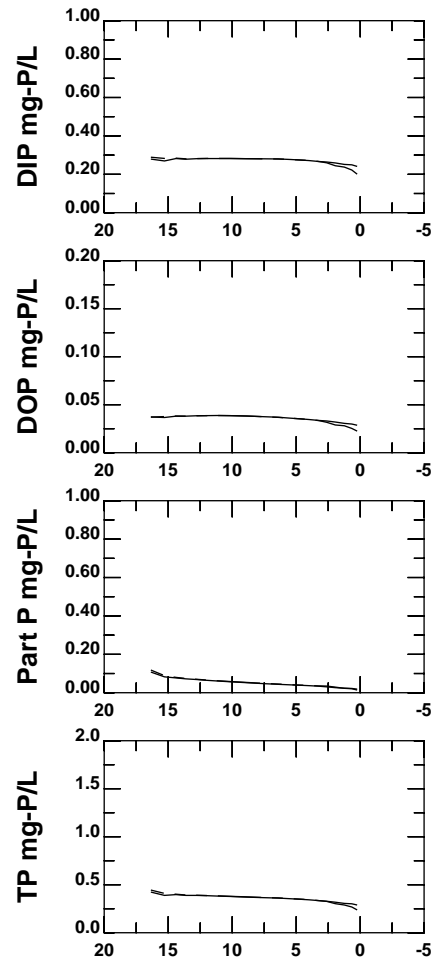
- SURFACE 30-DAY MEAN
- - - - - BOTTOM 30-DAY MEAN
- - - 30-DAY SURFACE MAX OR BOTTOM MIN



MILE FROM MOUTH PASSAIC RIVER

### PASSAIC RIVER

DATE: 4/07/2006 TIME: 11:37:22



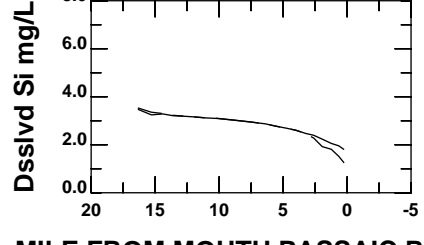
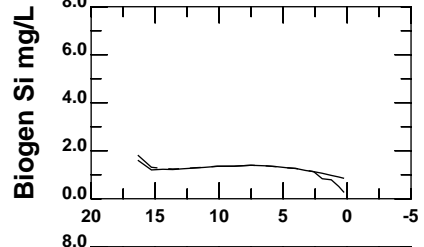
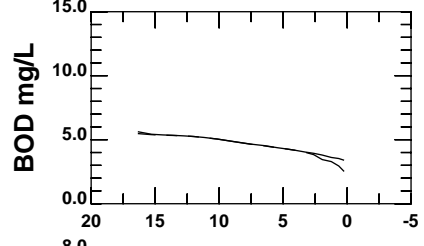
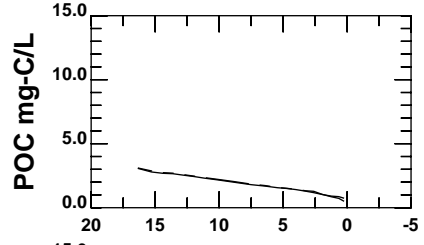
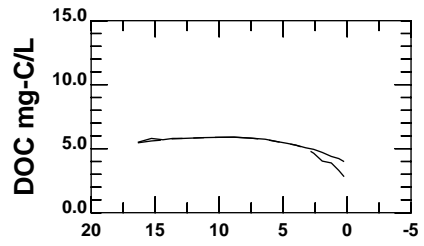
### MILE FROM MOUTH PASSAIC RIVER

DATA Apr 29-May 28,2002

	SURF MID BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment
PVSC	●	■ ▼	Transect
	u	m b	Embayment
MERI	▽		Transect
	s		Embayment

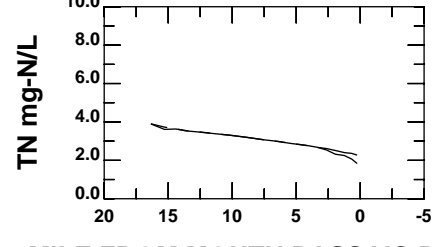
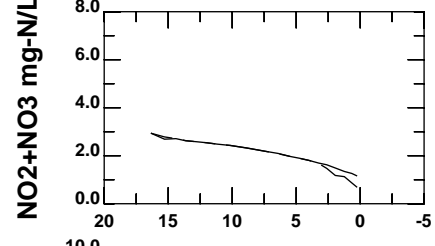
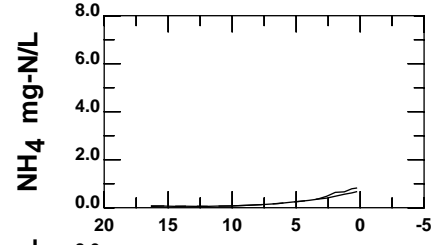
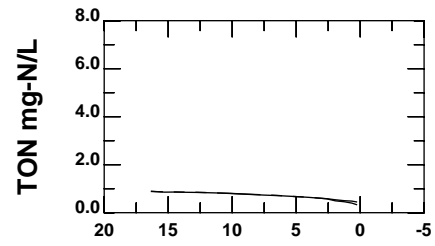
### MODEL

—	SURFACE 30-DAY MEAN
- - - -	BOTTOM 30-DAY MEAN
- · - ·	30-DAY SURFACE MAX OR BOTTOM MIN



MILE FROM MOUTH PASSAIC RIVER

**PASSAIC RIVER**

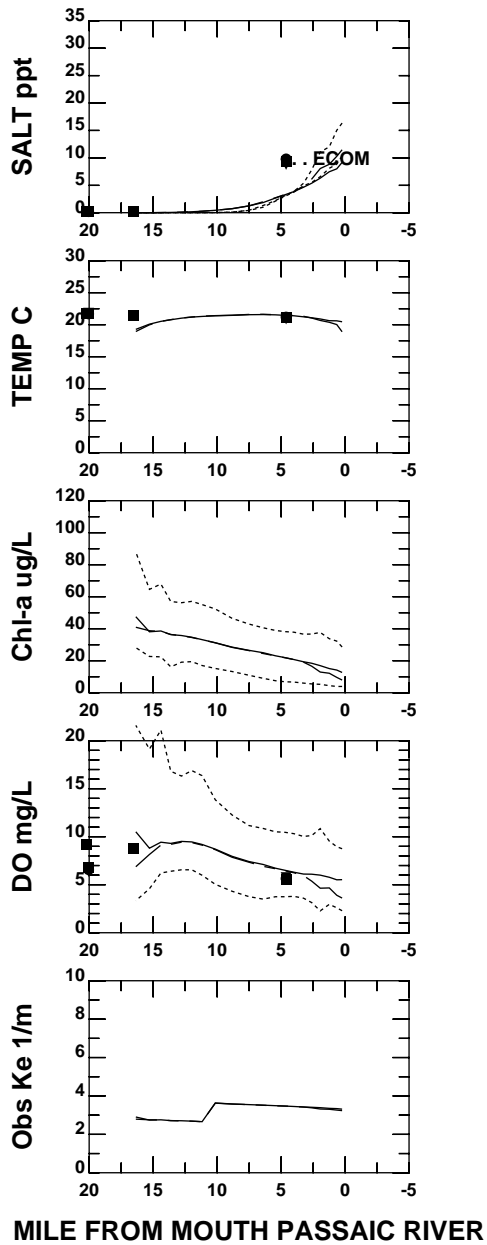


MILE FROM MOUTH PASSAIC RIVER  
DATA Apr 29-May 28,2002

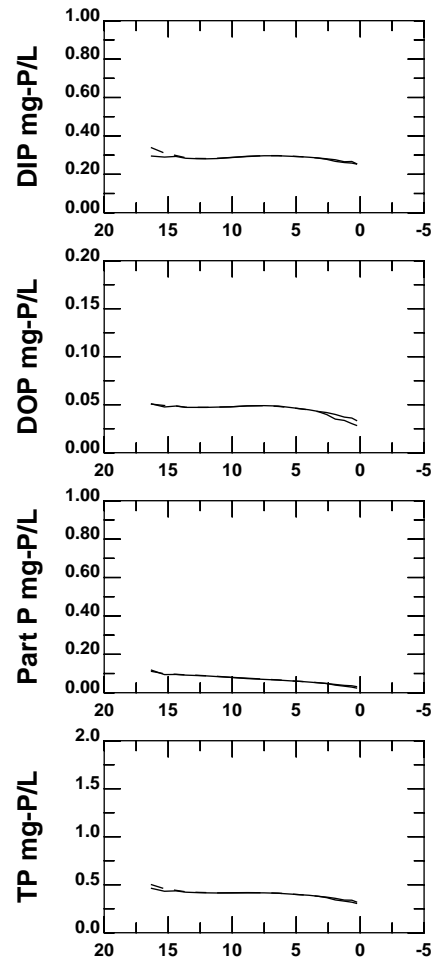
	SURF	MID	BOT	
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

MODEL

- SURFACE 30-DAY MEAN
- - - - - BOTTOM 30-DAY MEAN
- - - 30-DAY SURFACE MAX OR BOTTOM MIN



**PASSAIC RIVER**



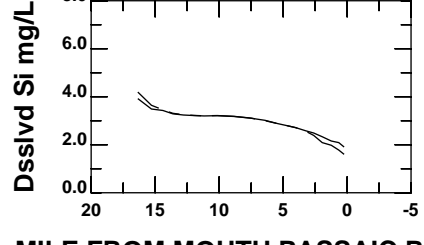
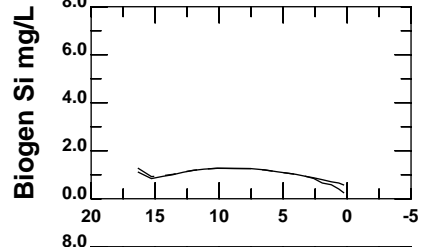
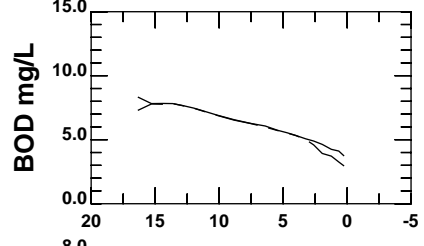
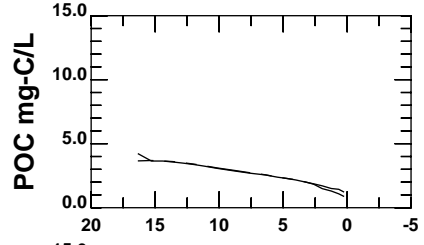
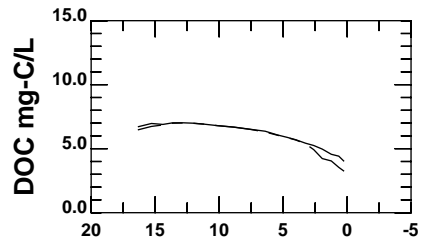
**MILE FROM MOUTH PASSAIC RIVER**  
 DATA May 29-Jun 27,2002

	SURF MID BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment
PVSC	●	■ ▼	Transect
	u	m b	Embayment
MERI	▽		Transect
	s		Embayment

**MODEL**

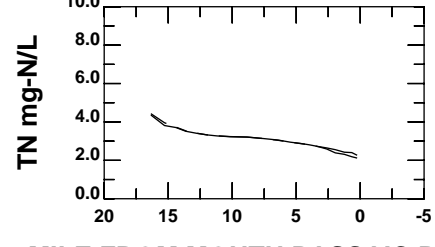
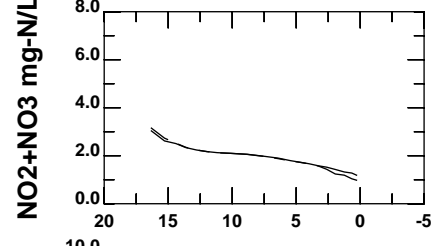
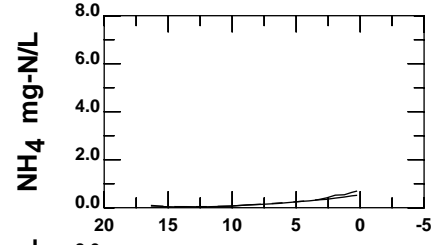
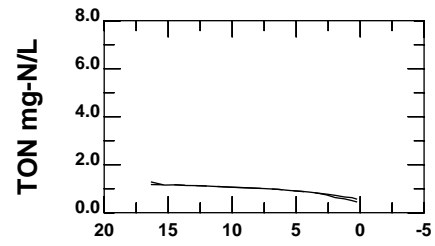
————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN





MILE FROM MOUTH PASSAIC RIVER

**PASSAIC RIVER**

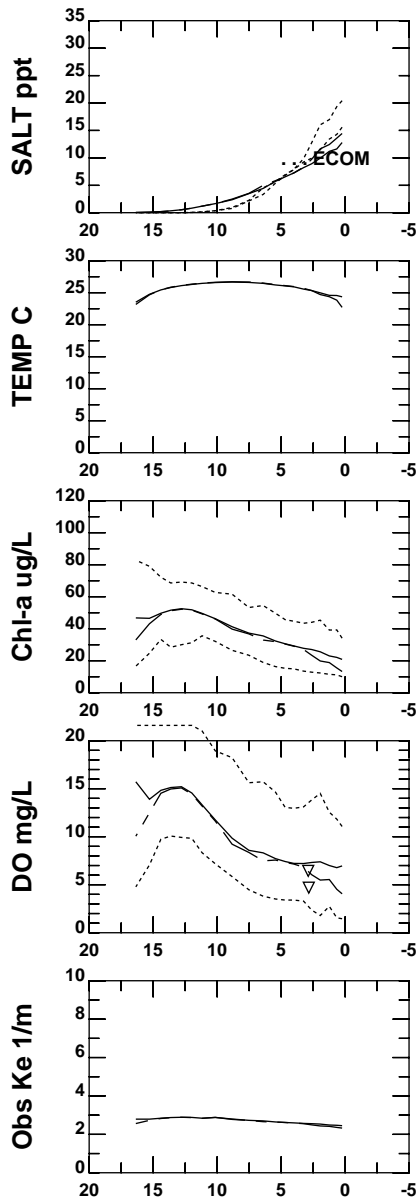


MILE FROM MOUTH PASSAIC RIVER  
DATA May 29-Jun 27,2002

	SURF	MID	BOT	
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

MODEL

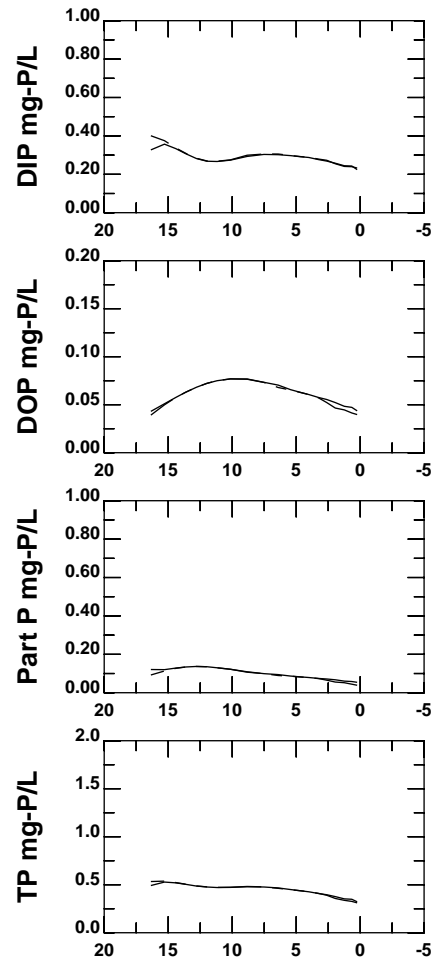
- SURFACE 30-DAY MEAN
- - - - - BOTTOM 30-DAY MEAN
- - - 30-DAY SURFACE MAX OR BOTTOM MIN



MILE FROM MOUTH PASSAIC RIVER

### PASSAIC RIVER

DATE: 4/07/2006 TIME: 11:37:30



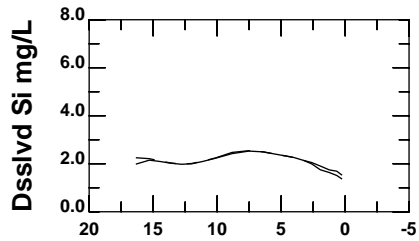
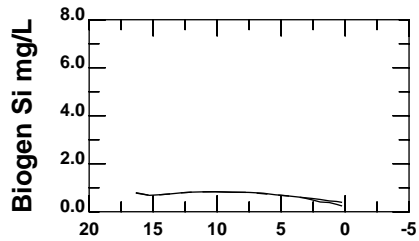
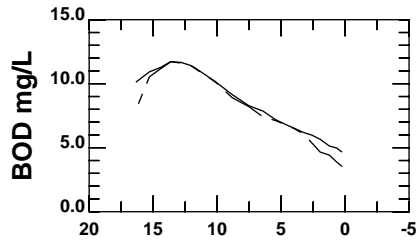
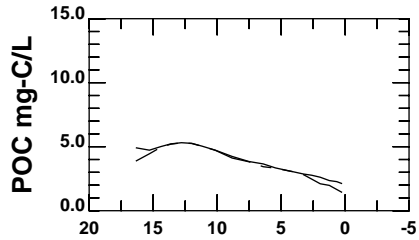
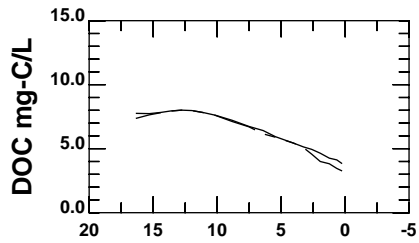
### MILE FROM MOUTH PASSAIC RIVER

DATA Jun 28-Jul 27,2002

	SURF MID BOT			
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

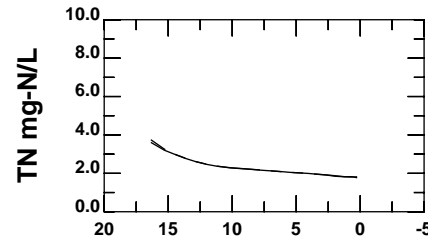
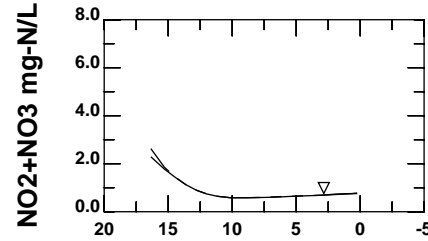
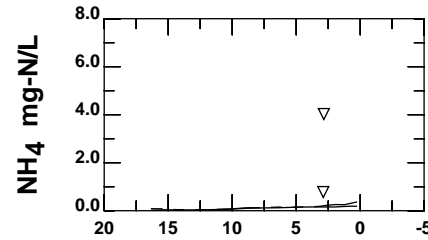
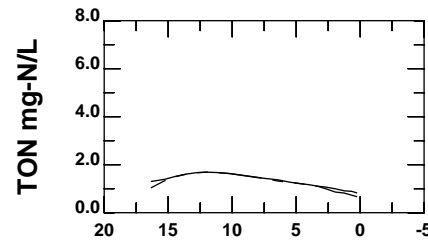
### MODEL

—	SURFACE 30-DAY MEAN
- - - -	BOTTOM 30-DAY MEAN
- · - ·	30-DAY SURFACE MAX OR BOTTOM MIN



MILE FROM MOUTH PASSAIC RIVER

**PASSAIC RIVER**



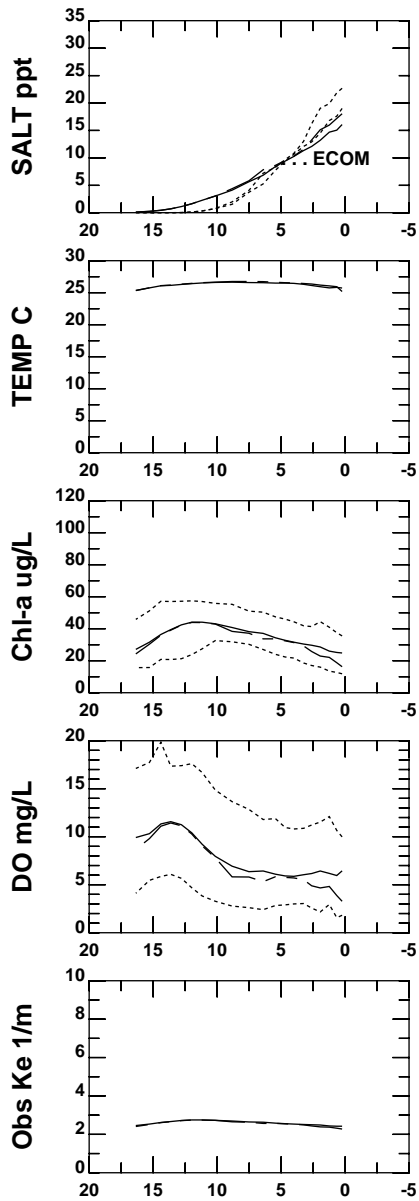
MILE FROM MOUTH PASSAIC RIVER

DATA Jun 28-Jul 27, 2002

	SURF	MID	BOT	
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

MODEL

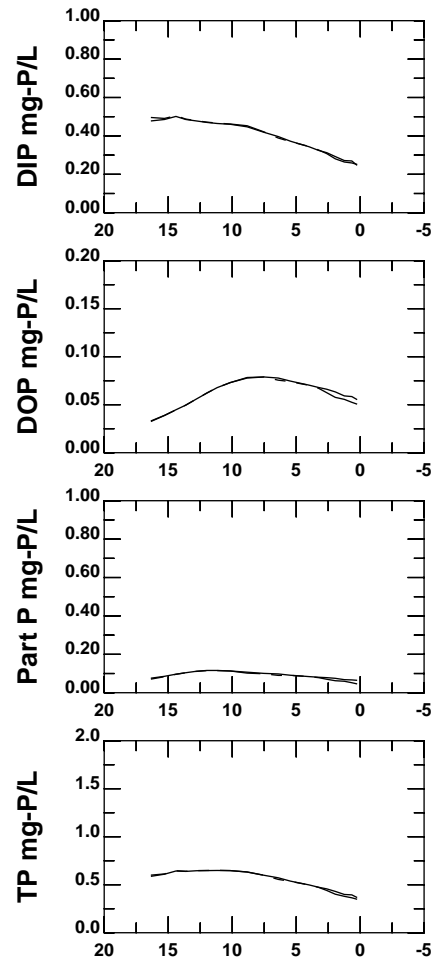
- SURFACE 30-DAY MEAN
- - - - - BOTTOM 30-DAY MEAN
- - - 30-DAY SURFACE MAX OR BOTTOM MIN



MILE FROM MOUTH PASSAIC RIVER

### PASSAIC RIVER

DATE: 4/07/2006 TIME: 11:37:34



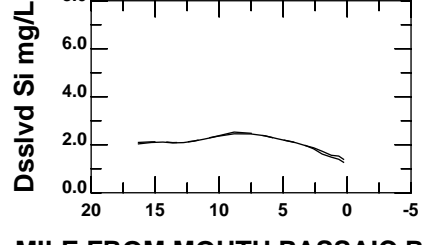
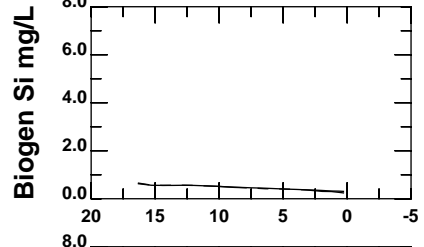
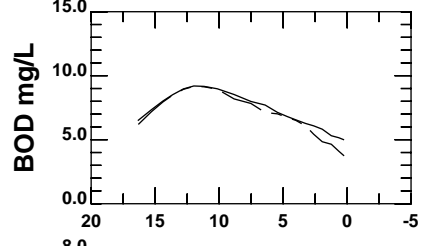
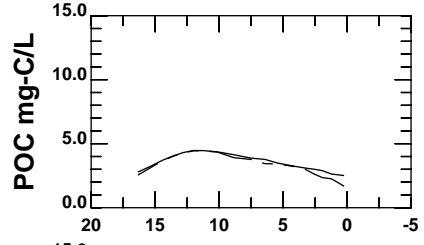
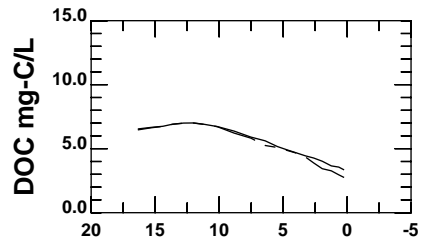
### MILE FROM MOUTH PASSAIC RIVER

DATA Jul 27-Aug 26,2002

	SURF MID BOT			
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

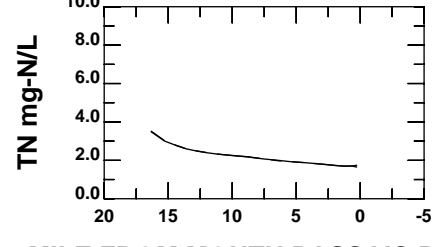
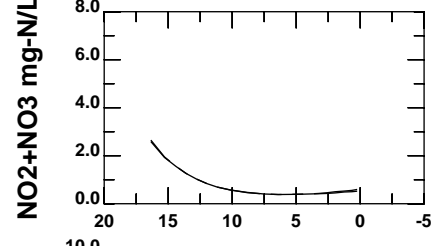
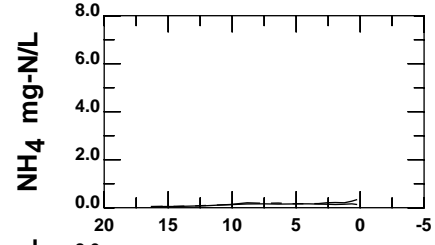
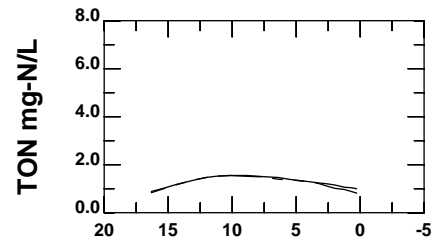
### MODEL

————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN



MILE FROM MOUTH PASSAIC RIVER

### PASSAIC RIVER

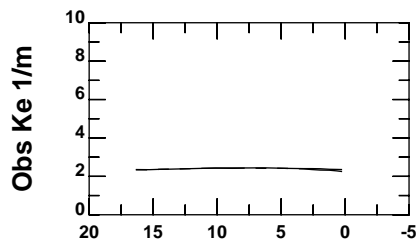
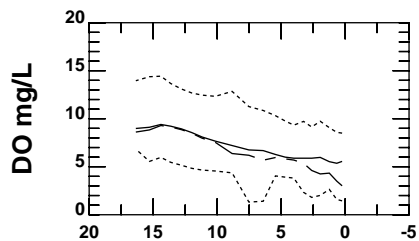
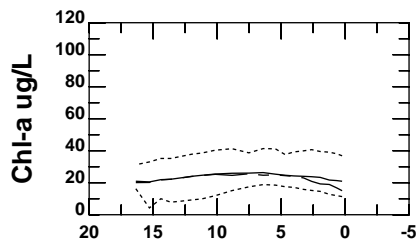
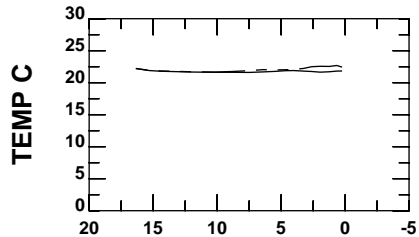
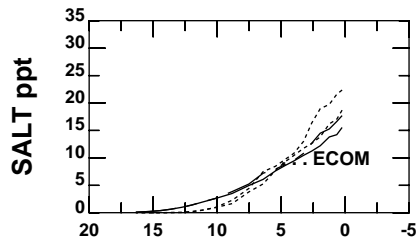


MILE FROM MOUTH PASSAIC RIVER  
DATA Jul 27-Aug 26, 2002

	SURF MID BOT			
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

MODEL

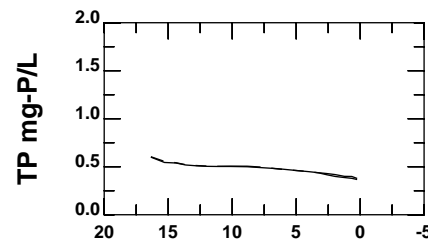
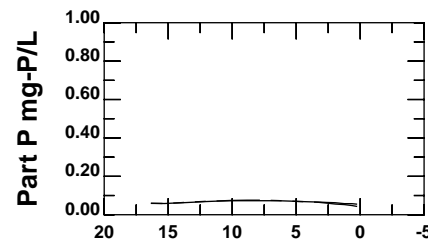
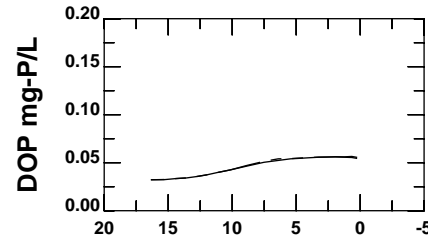
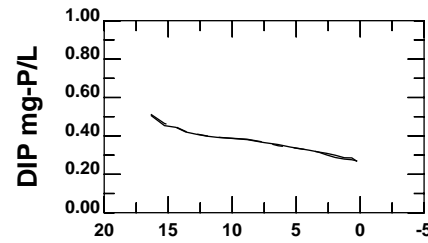
- SURFACE 30-DAY MEAN
- - - - - BOTTOM 30-DAY MEAN
- - - 30-DAY SURFACE MAX OR BOTTOM MIN



MILE FROM MOUTH PASSAIC RIVER

### PASSAIC RIVER

DATE: 4/07/2006 TIME: 11:37:39



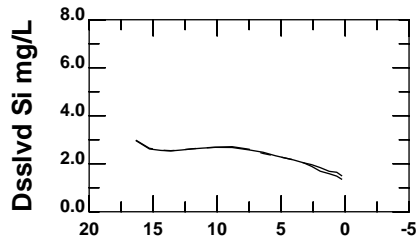
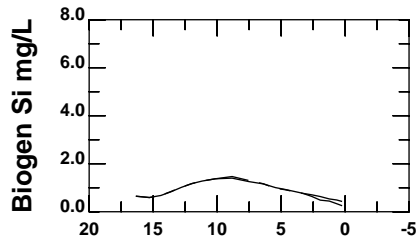
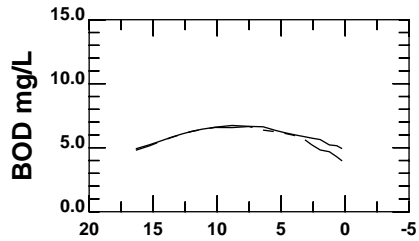
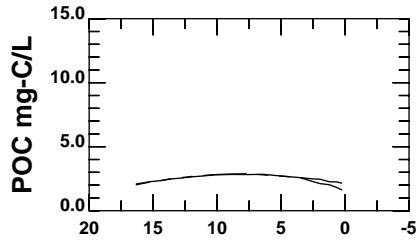
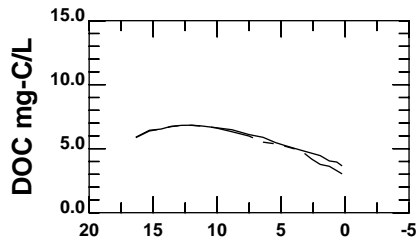
### MILE FROM MOUTH PASSAIC RIVER

DATA Aug 27-Sep 25,2002

	SURF MID BOT			
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

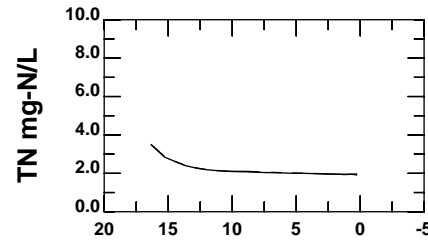
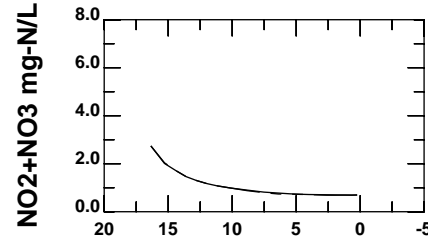
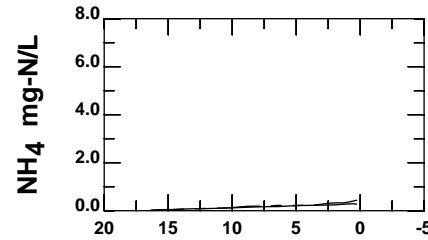
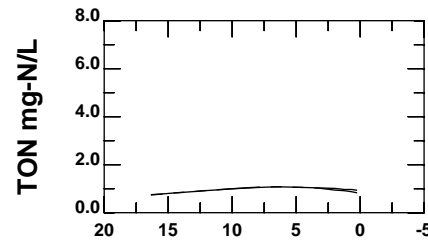
### MODEL

—	SURFACE 30-DAY MEAN
- - - -	BOTTOM 30-DAY MEAN
- · - ·	30-DAY SURFACE MAX OR BOTTOM MIN



MILE FROM MOUTH PASSAIC RIVER

**PASSAIC RIVER**

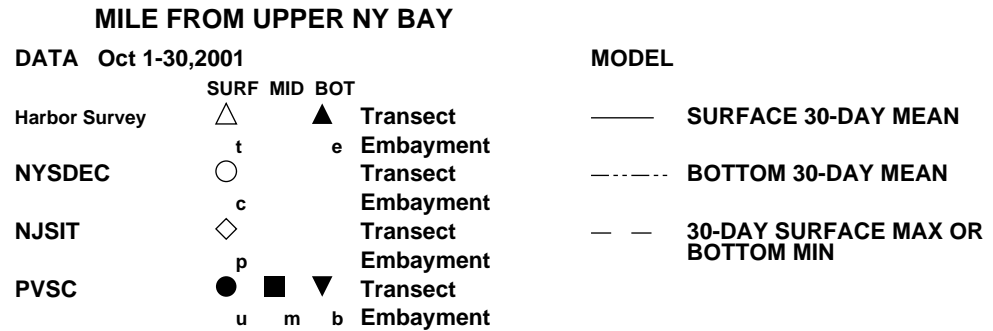
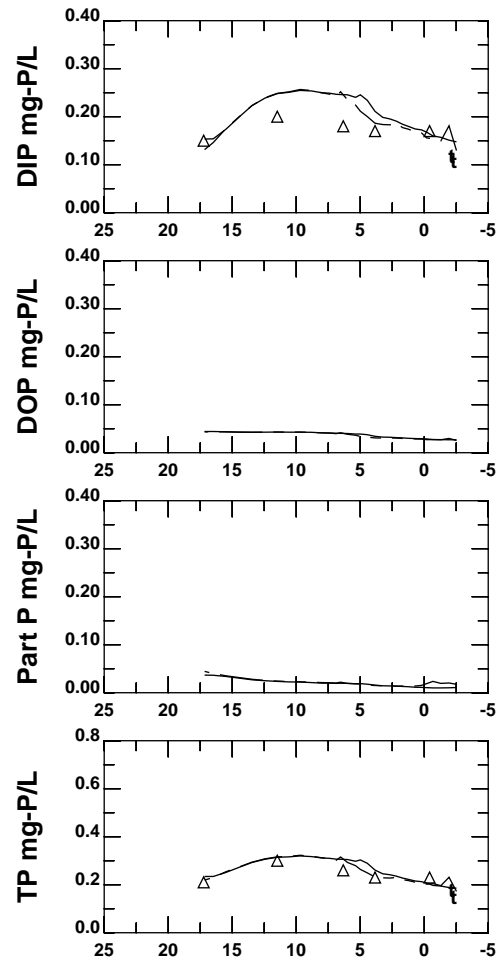
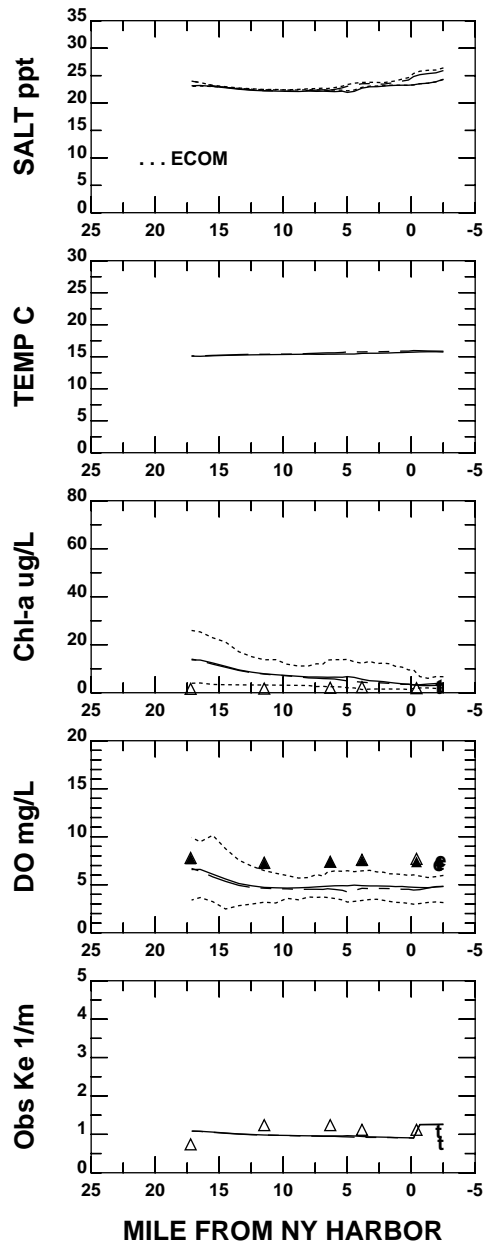


MILE FROM MOUTH PASSAIC RIVER  
DATA Aug 27-Sep 25,2002

	SURF	MID	BOT	
Harbor Survey	△		▲	Transect
	t		e	Embayment
NYSDEC	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment
MERI	▽			Transect
	s			Embayment

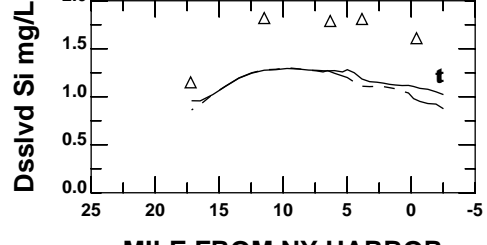
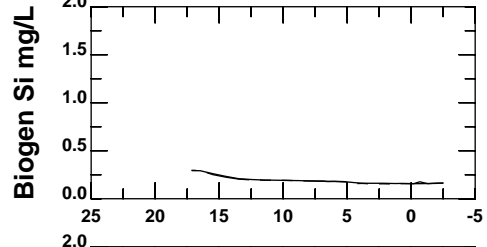
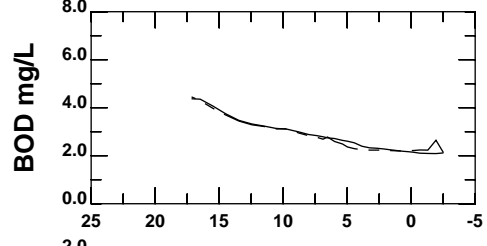
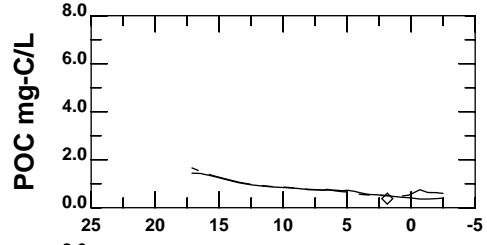
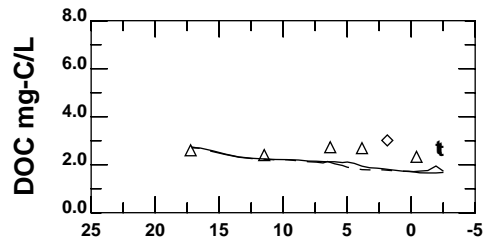
MODEL

- SURFACE 30-DAY MEAN
- - - - - BOTTOM 30-DAY MEAN
- - - 30-DAY SURFACE MAX OR BOTTOM MIN

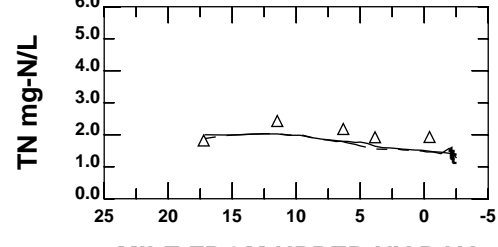
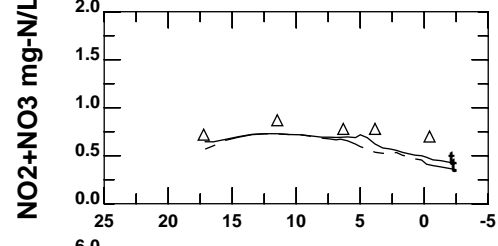
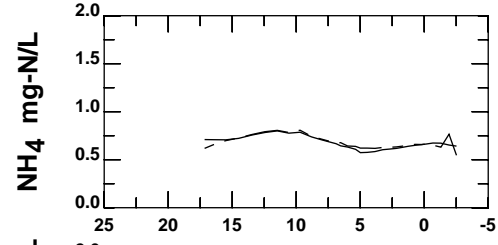
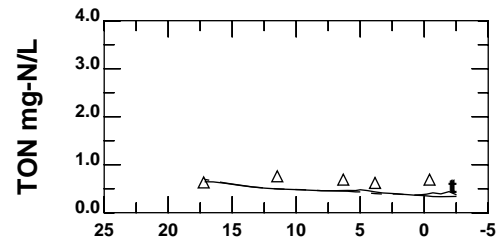


**ARTHUR KILL AND KILL VAN KULL**





MILE FROM NY HARBOR



MILE FROM UPPER NY BAY

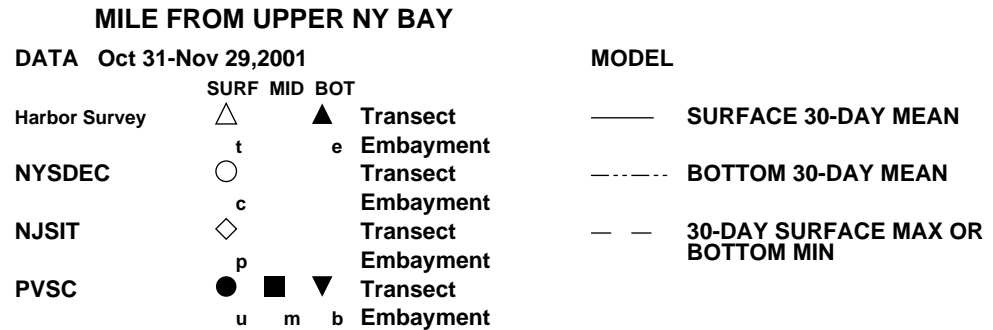
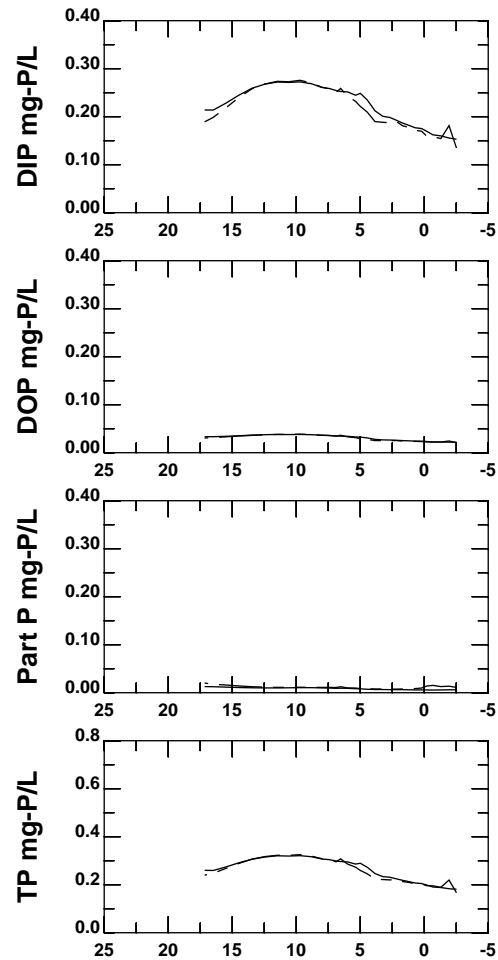
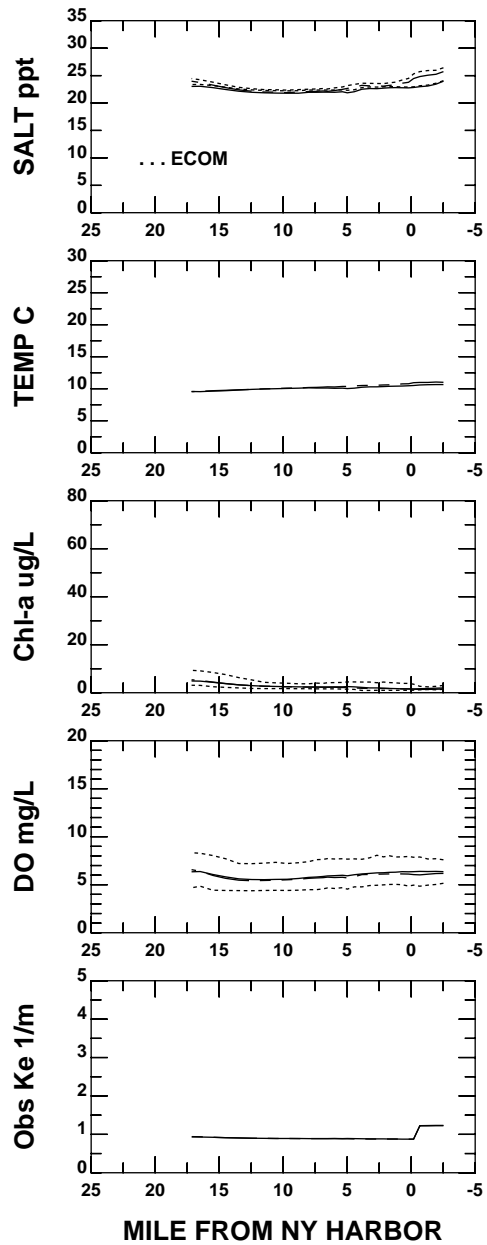
DATA Oct 1-30,2001

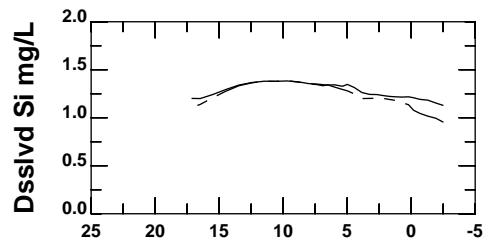
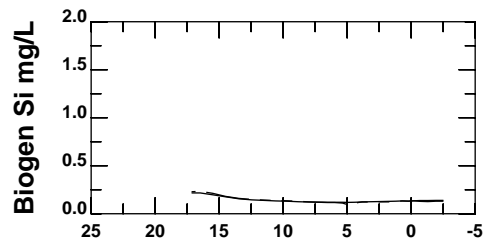
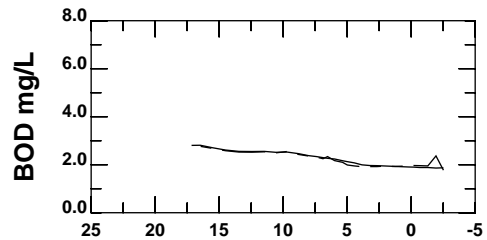
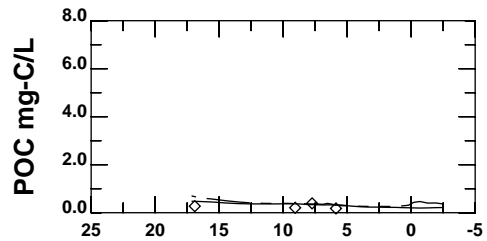
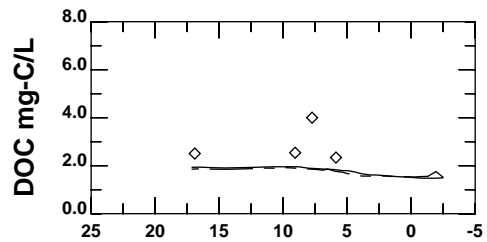
- |               |      |   |     |   |     |   |
|---------------|------|---|-----|---|-----|---|
|               | SURF |   | MID |   | BOT |   |
| Harbor Survey | △    | ▲ | △   | ▲ | △   | ▲ |
| NYSDEC        | t    | e | ○   | ○ | ○   | ○ |
| NJSIT         | c    |   | ◇   | ◇ | ◇   | ◇ |
| PVSC          | p    |   | ●   | ■ | ▼   | ▼ |
|               | u    | m | b   | b | b   | b |

MODEL

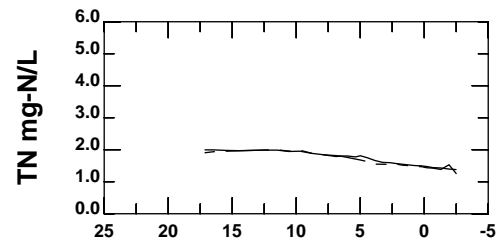
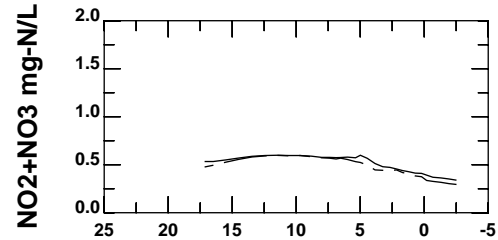
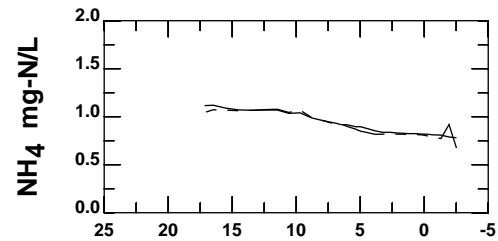
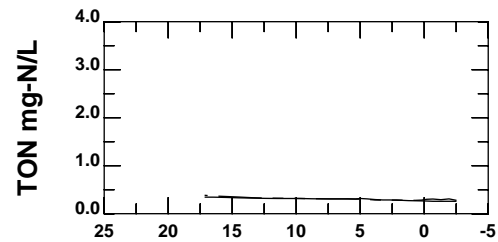
- SURFACE 30-DAY MEAN
- - - - - BOTTOM 30-DAY MEAN
- - - 30-DAY SURFACE MAX OR BOTTOM MIN

ARTHUR KILL AND KILL VAN KULL





MILE FROM NY HARBOR



MILE FROM UPPER NY BAY

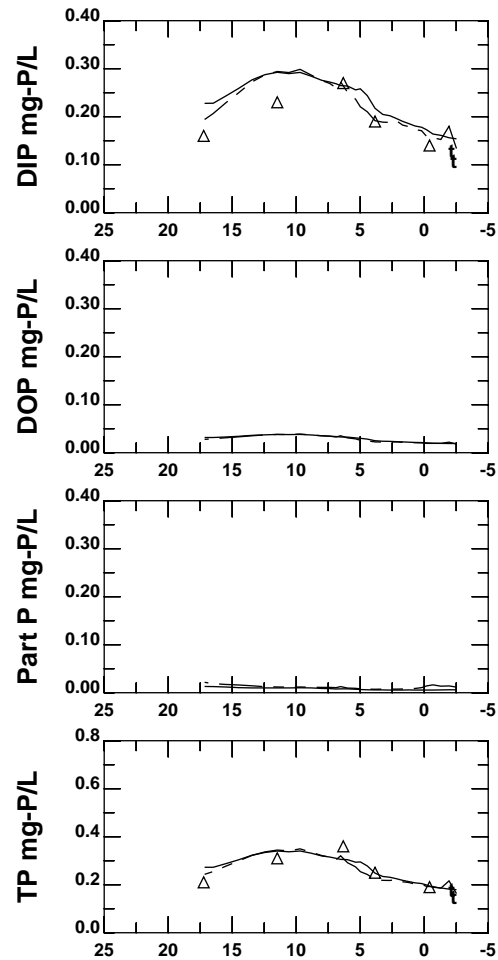
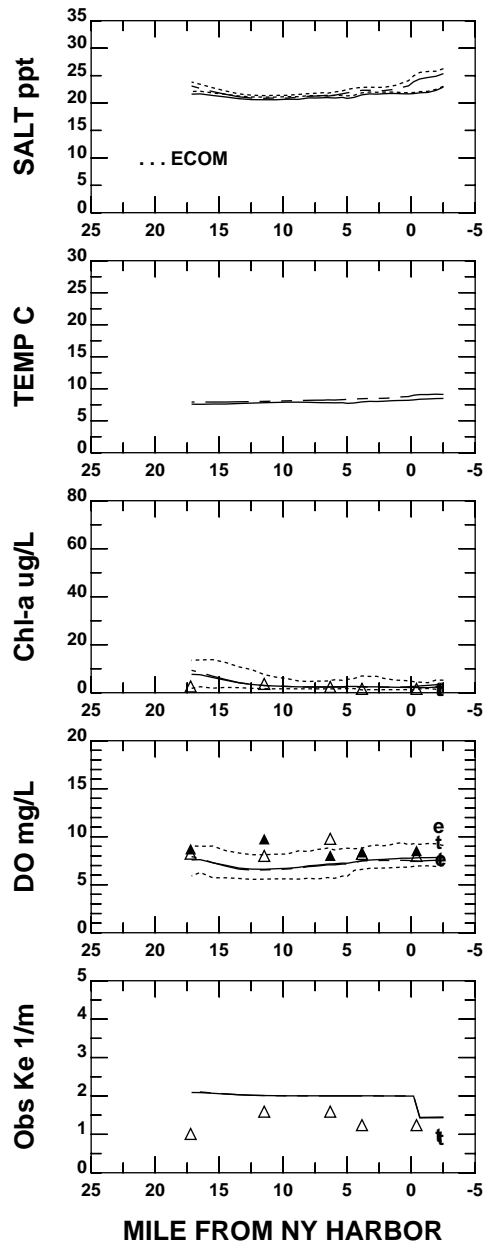
DATA Oct 31-Nov 29, 2001

	SURF MID BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment
PVSC	●	■	Transect
	u	m	Embayment
		▼	Transect
		b	Embayment

MODEL

—	SURFACE 30-DAY MEAN
- - - -	BOTTOM 30-DAY MEAN
- - -	30-DAY SURFACE MAX OR BOTTOM MIN

ARTHUR KILL AND KILL VAN KULL



**MILE FROM UPPER NY BAY**

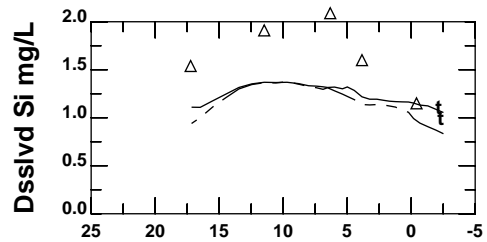
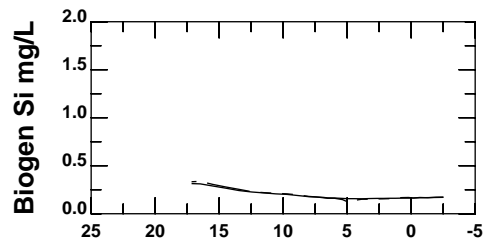
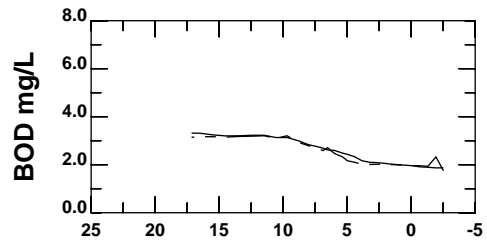
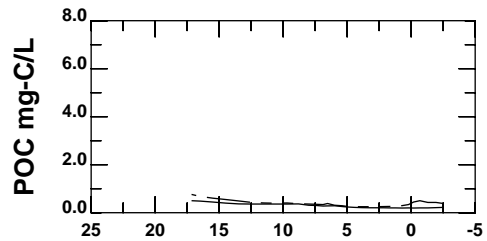
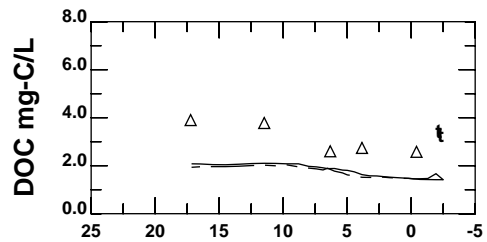
DATA Nov 30-Dec 29,2001

- |               |              |   |           |
|---------------|--------------|---|-----------|
|               | SURF MID BOT |   |           |
| Harbor Survey | △            | ▲ | Transect  |
| NYSDEC        | t            | e | Embayment |
| NJSIT         | ○            |   | Transect  |
|               | c            |   | Embayment |
|               | ◇            |   | Transect  |
|               | p            |   | Embayment |
| PVSC          | ●            | ■ | Transect  |
|               | u            | m | Embayment |
|               |              | ▼ | Transect  |
|               |              | b | Embayment |

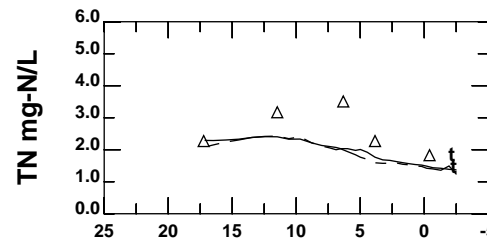
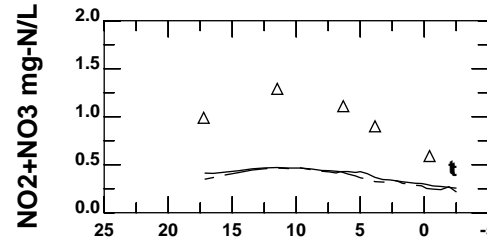
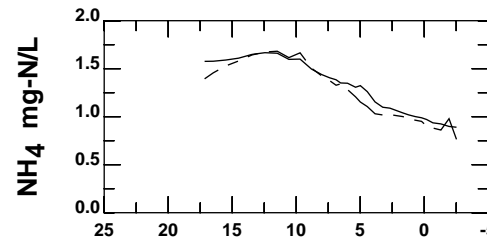
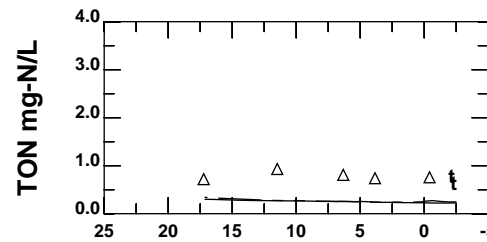
**MODEL**

- |         |                                  |
|---------|----------------------------------|
| ————    | SURFACE 30-DAY MEAN              |
| -----   | BOTTOM 30-DAY MEAN               |
| - - - - | 30-DAY SURFACE MAX OR BOTTOM MIN |

**ARTHUR KILL AND KILL VAN KULL**

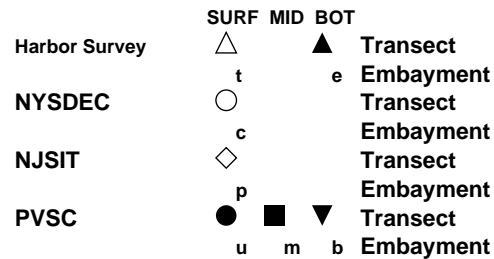


MILE FROM NY HARBOR

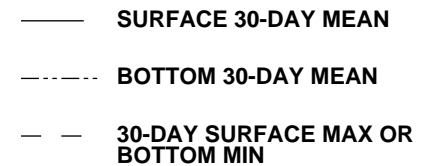


MILE FROM UPPER NY BAY

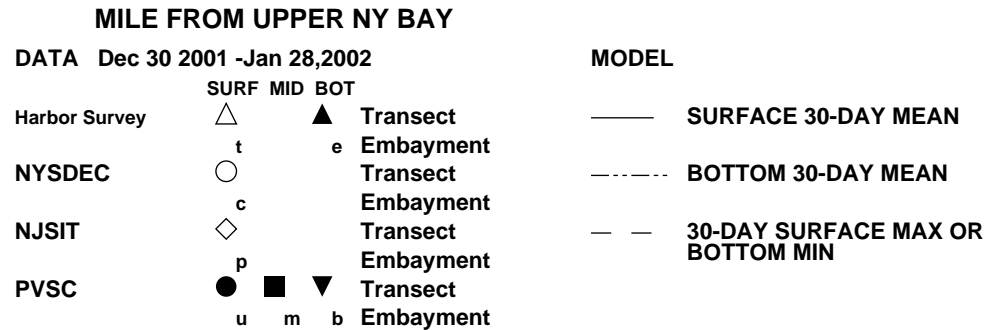
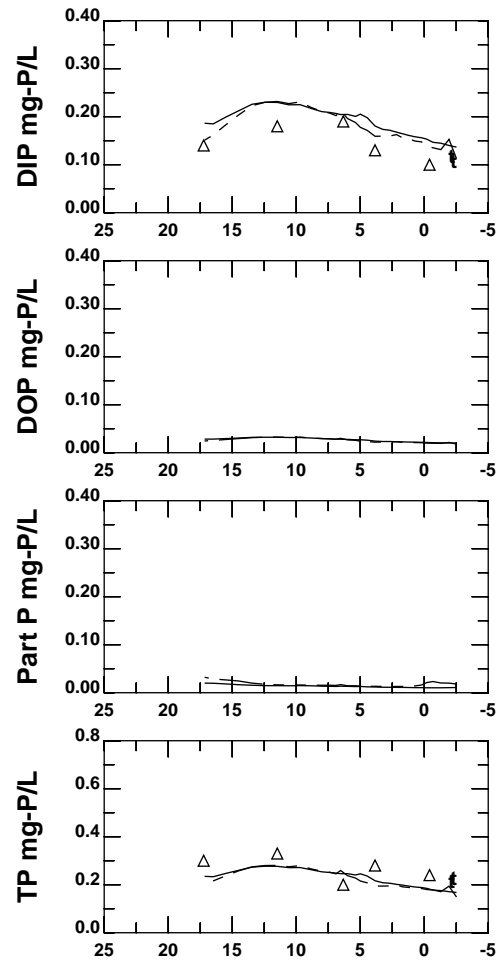
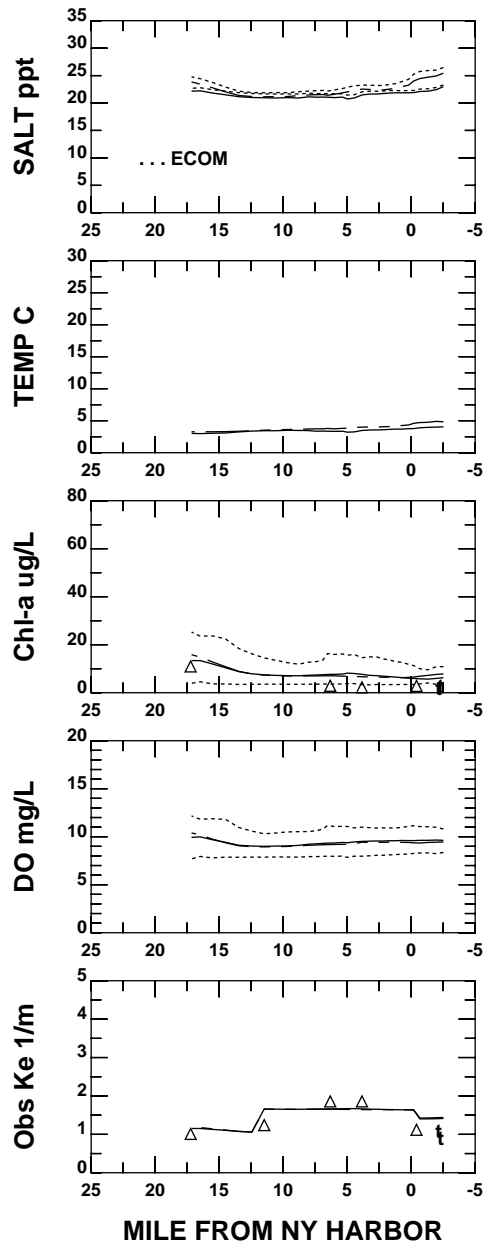
DATA Nov 30-Dec 29, 2001

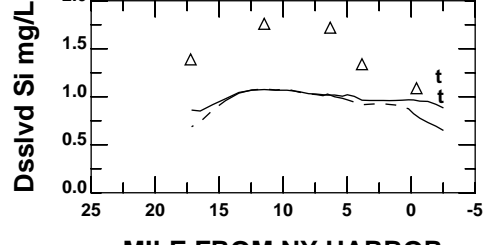
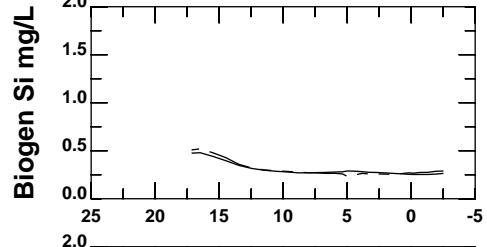
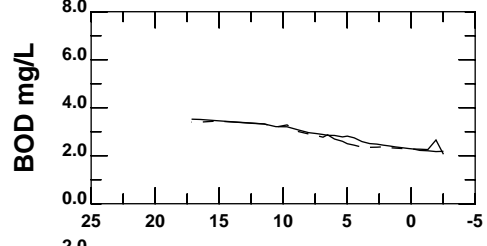
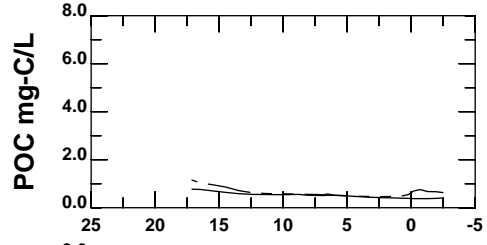
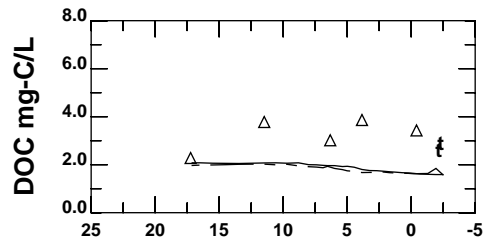


MODEL

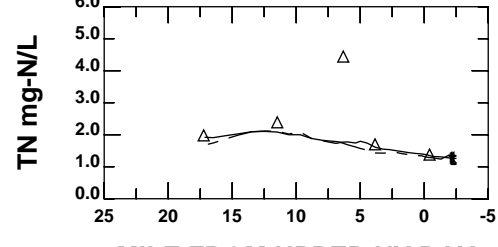
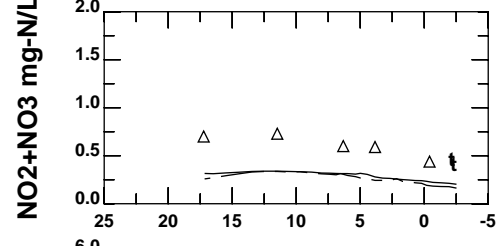
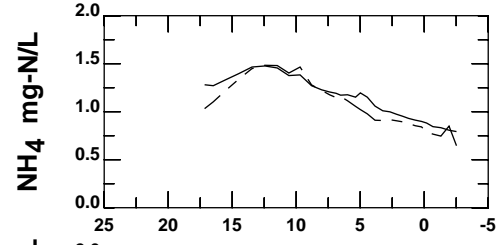
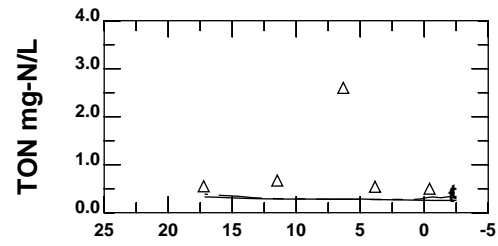


ARTHUR KILL AND KILL VAN KULL





MILE FROM NY HARBOR



MILE FROM UPPER NY BAY

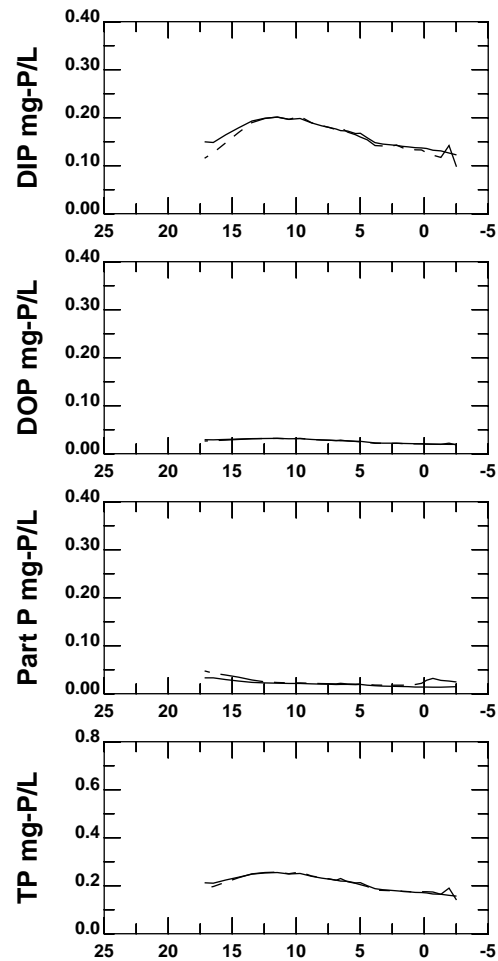
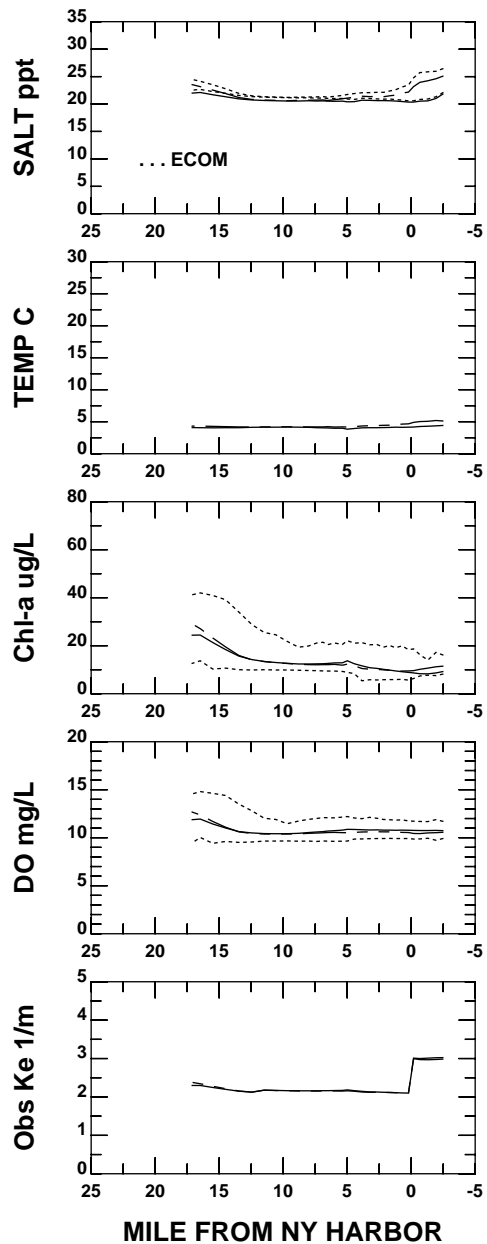
DATA Dec 30 2001 -Jan 28,2002

- |               |              |   |           |
|---------------|--------------|---|-----------|
|               | SURF MID BOT |   |           |
| Harbor Survey | △            | ▲ | Transect  |
| NYSDEC        | t            | e | Embayment |
|               | ○            |   | Transect  |
|               | c            |   | Embayment |
| NJSIT         | ◇            |   | Transect  |
|               | p            |   | Embayment |
| PVSC          | ●            | ■ | Transect  |
|               | u            | m | Embayment |
|               |              | ▼ | Transect  |
|               |              | b | Embayment |

MODEL

- |         |                                  |
|---------|----------------------------------|
| ————    | SURFACE 30-DAY MEAN              |
| -----   | BOTTOM 30-DAY MEAN               |
| - - - - | 30-DAY SURFACE MAX OR BOTTOM MIN |

ARTHUR KILL AND KILL VAN KULL



**MILE FROM UPPER NY BAY**

DATA Jan 29-Feb 27, 2002

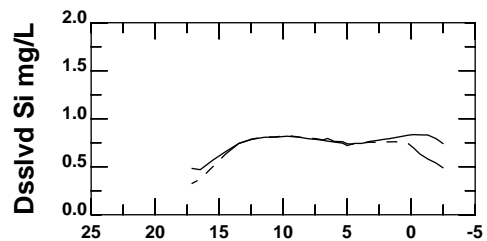
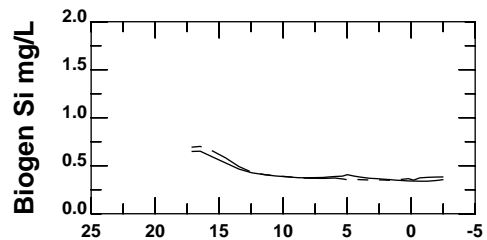
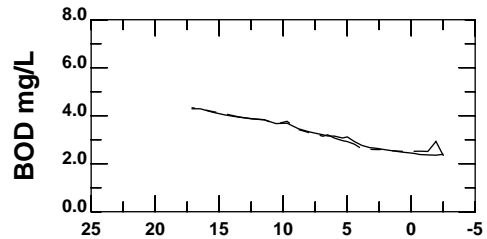
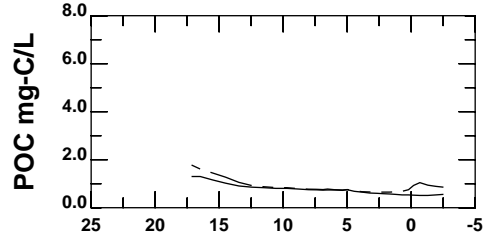
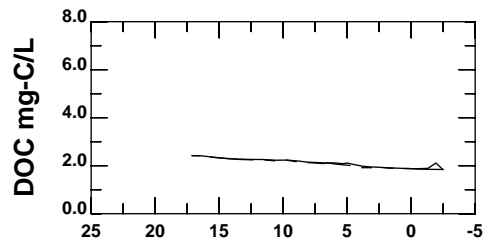
	SURF	MID	BOT	
Harbor Survey	△		▲	Transect
NYSDEC	t		e	Embayment
	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment

**MODEL**

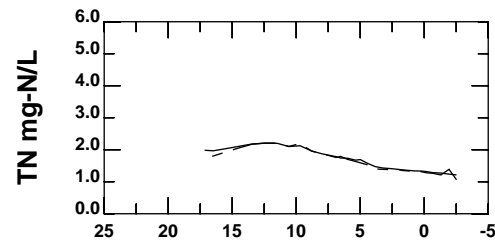
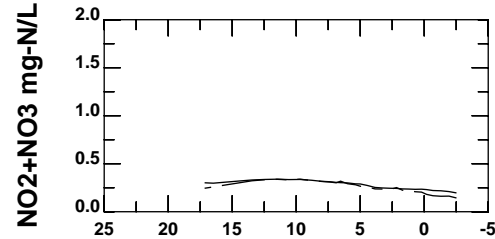
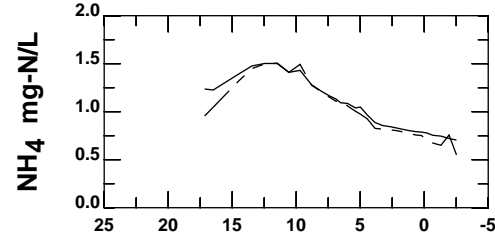
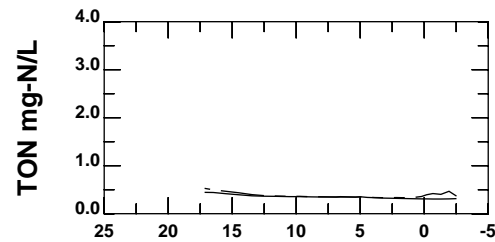
————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

**ARTHUR KILL AND KILL VAN KULL**



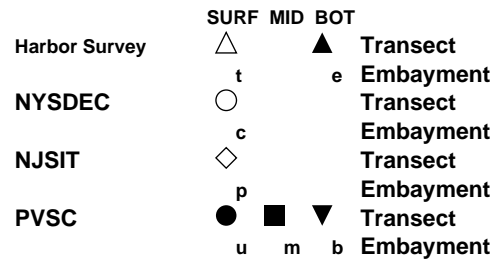


MILE FROM NY HARBOR

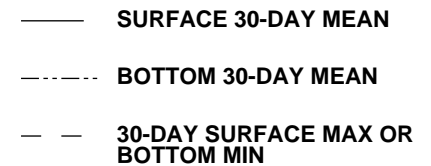


MILE FROM UPPER NY BAY

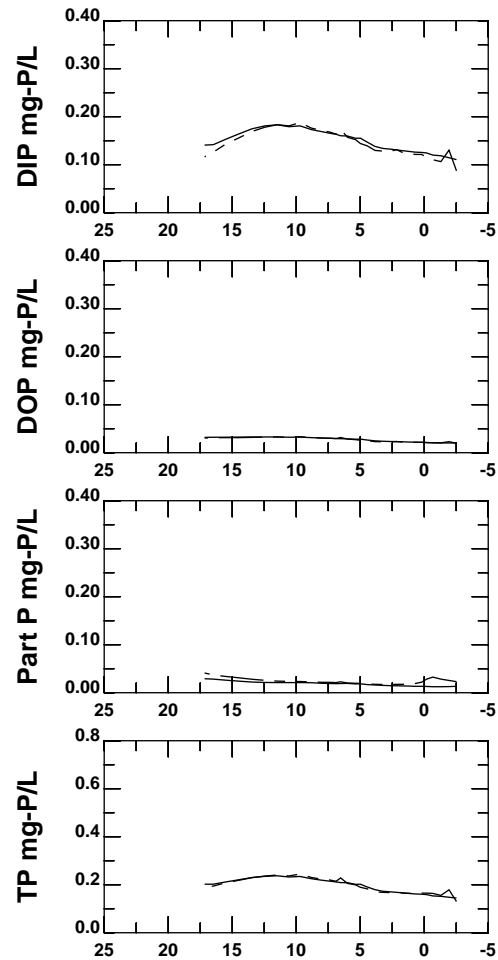
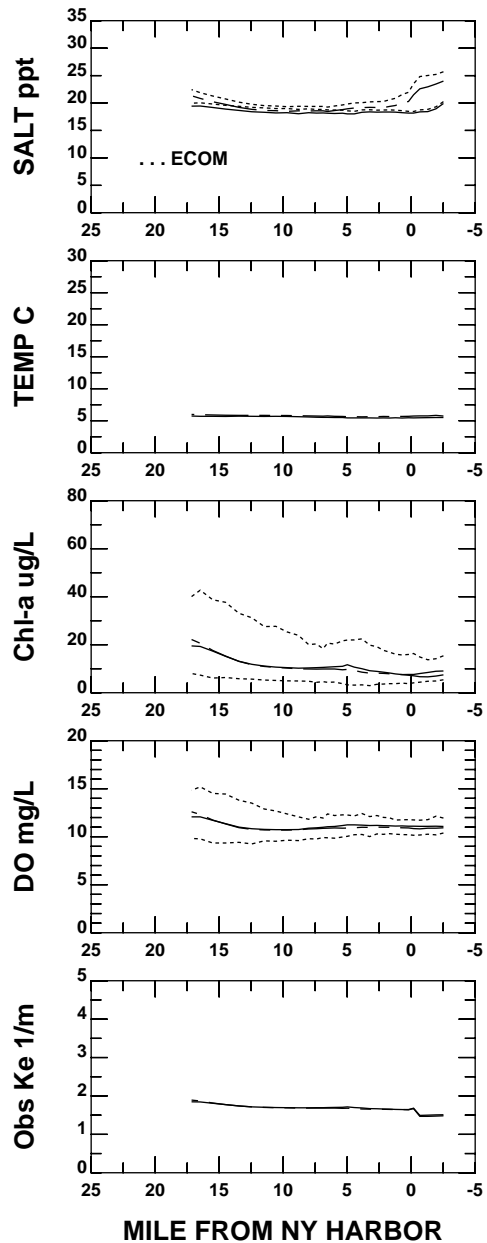
DATA Jan 29-Feb 27, 2002



MODEL



ARTHUR KILL AND KILL VAN KULL



**MILE FROM UPPER NY BAY**

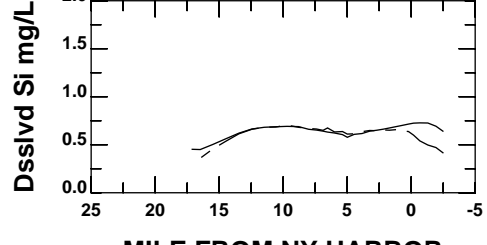
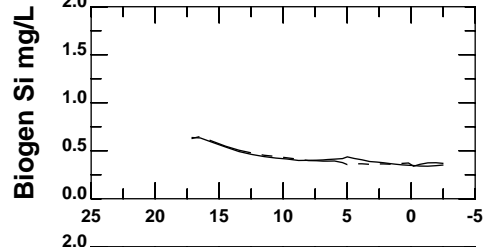
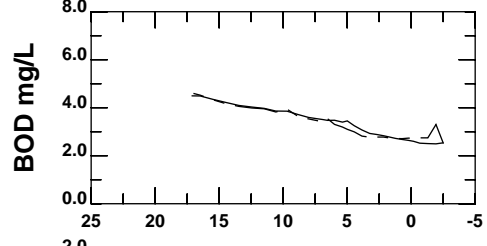
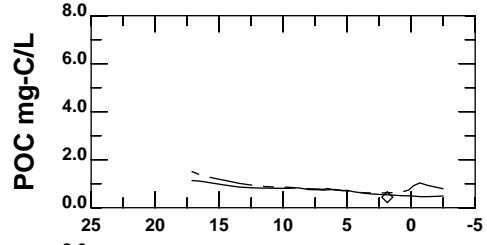
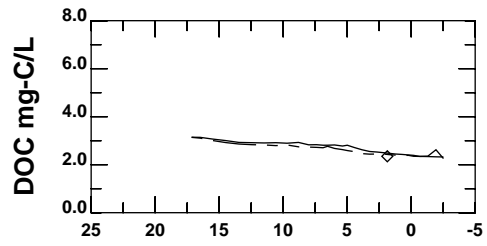
DATA Feb 28-Mar 29, 2002

	SURF		MID		BOT	
Harbor Survey	△	▲	△	▲	△	▲
NYSDEC	t	e	t	e	t	e
NJSIT	○		○		○	
	c		c		c	
PVSC	◇		◇		◇	
	p		p		p	
	●	■	●	■	●	■
	u	m	u	m	u	m
						b

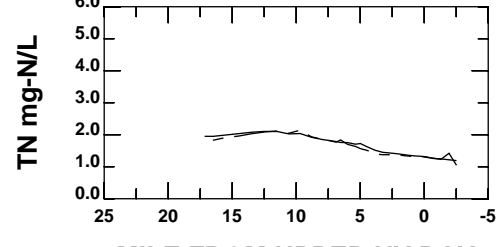
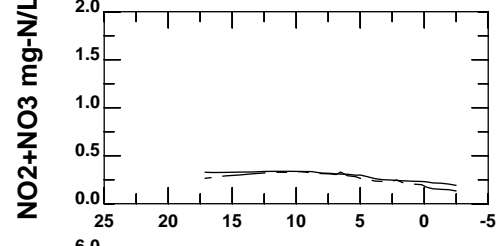
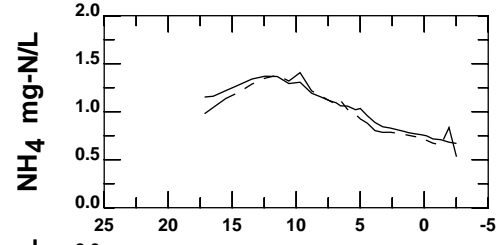
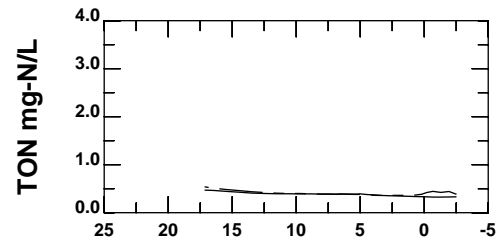
**MODEL**

—	SURFACE 30-DAY MEAN
---	BOTTOM 30-DAY MEAN
- - -	30-DAY SURFACE MAX OR BOTTOM MIN

**ARTHUR KILL AND KILL VAN KULL**



MILE FROM NY HARBOR



MILE FROM UPPER NY BAY

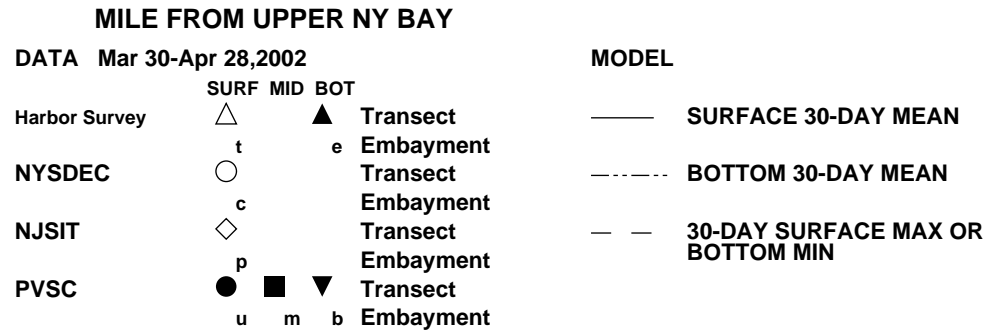
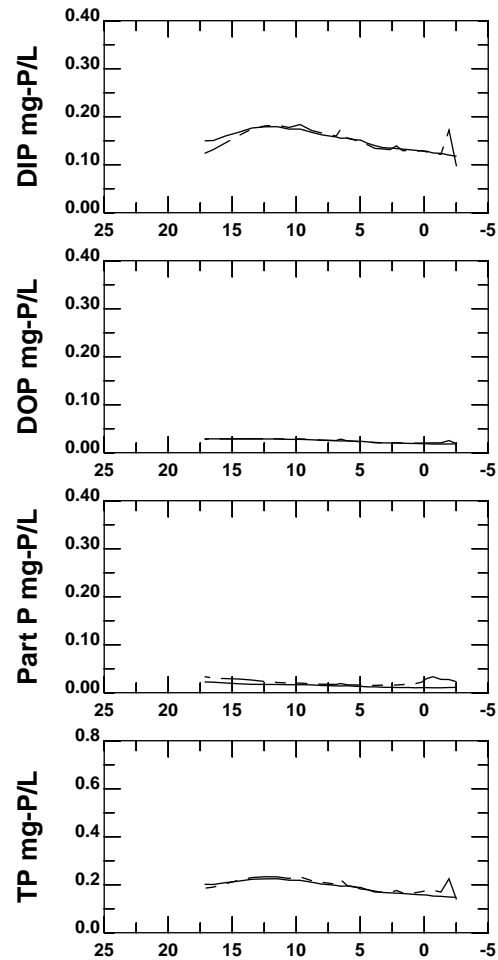
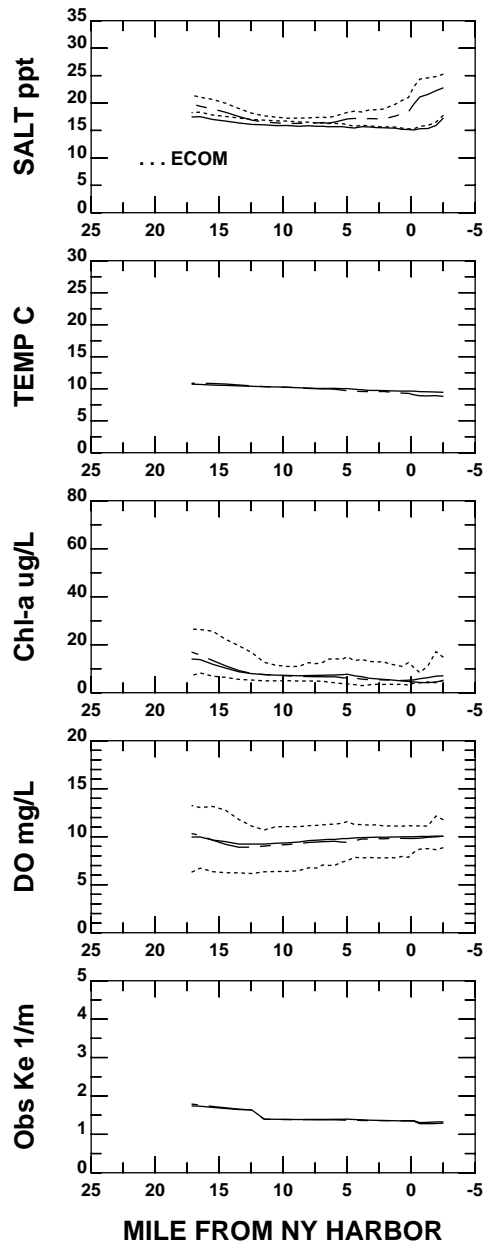
DATA Feb 28-Mar 29, 2002

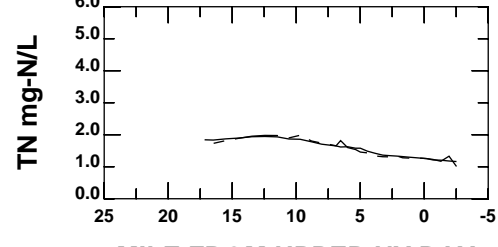
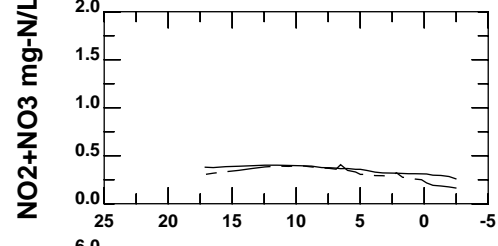
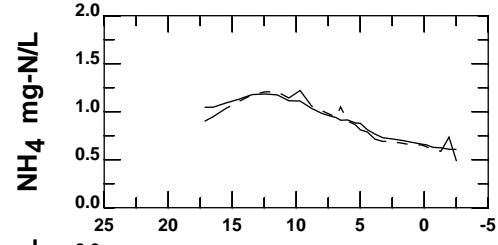
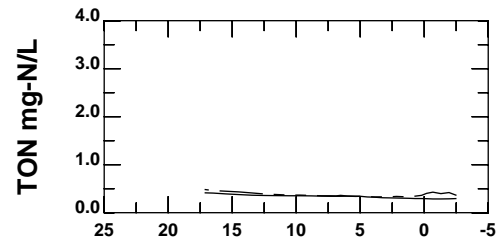
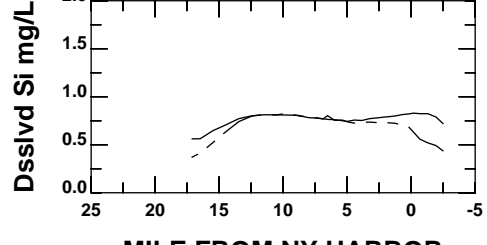
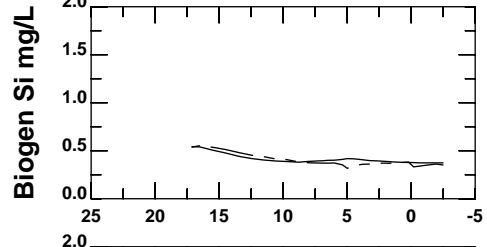
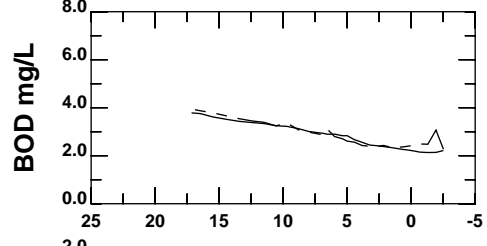
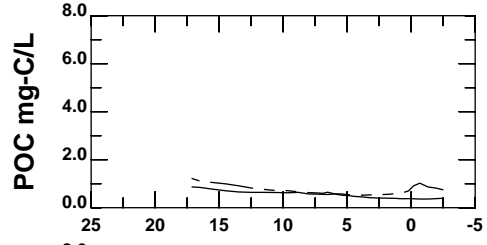
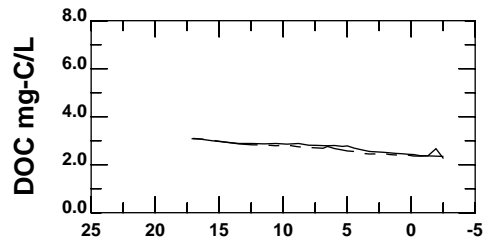
	SURF MID BOT		
Harbor Survey	△	▲	Transect
NYSDEC	t	e	Embayment
	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment
PVSC	●	■	Transect
	u	m	Embayment
		▼	Transect
		b	Embayment

MODEL

- SURFACE 30-DAY MEAN
- - - - - BOTTOM 30-DAY MEAN
- - - 30-DAY SURFACE MAX OR BOTTOM MIN

ARTHUR KILL AND KILL VAN KULL





MILE FROM UPPER NY BAY

DATA Mar 30-Apr 28, 2002

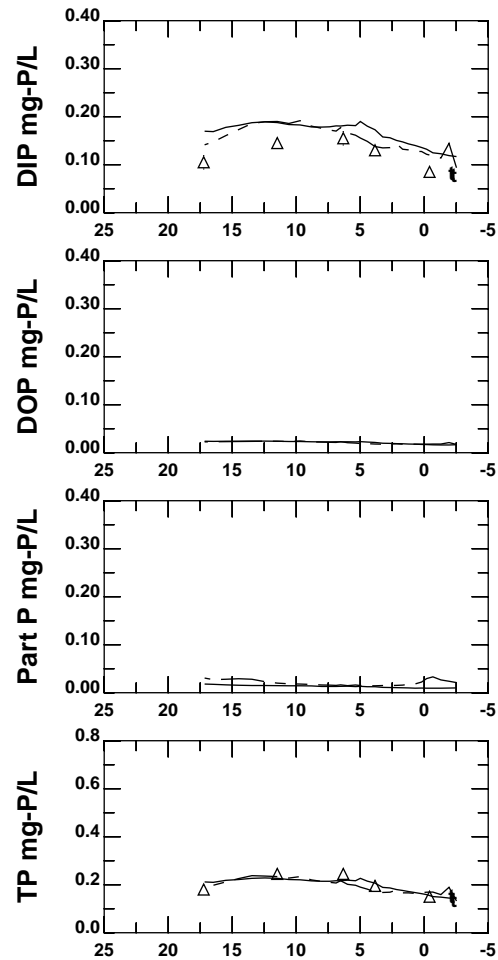
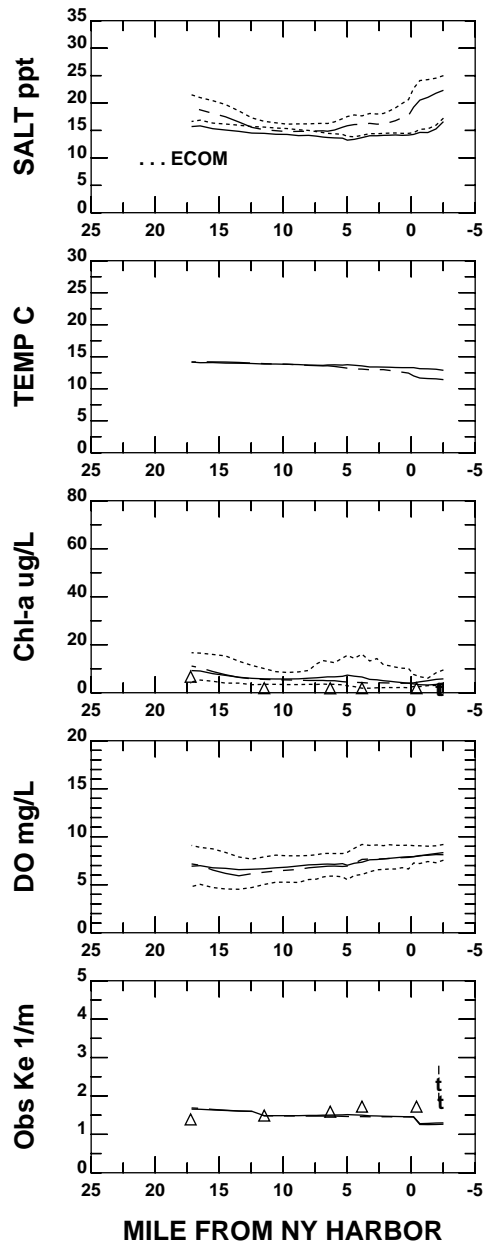
	SURF MID BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment
PVSC	●	■	Transect
	u	m	Embayment
		▼	Transect
		b	Embayment

MODEL

————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

MILE FROM NY HARBOR

ARTHUR KILL AND KILL VAN KULL



**DATA** Apr 29-May 28, 2002

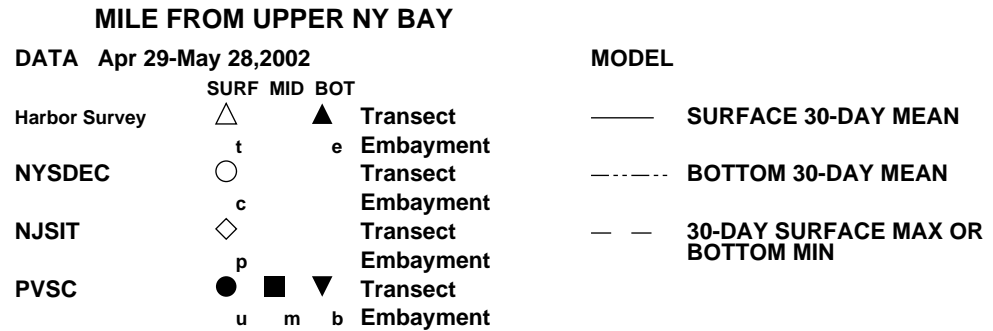
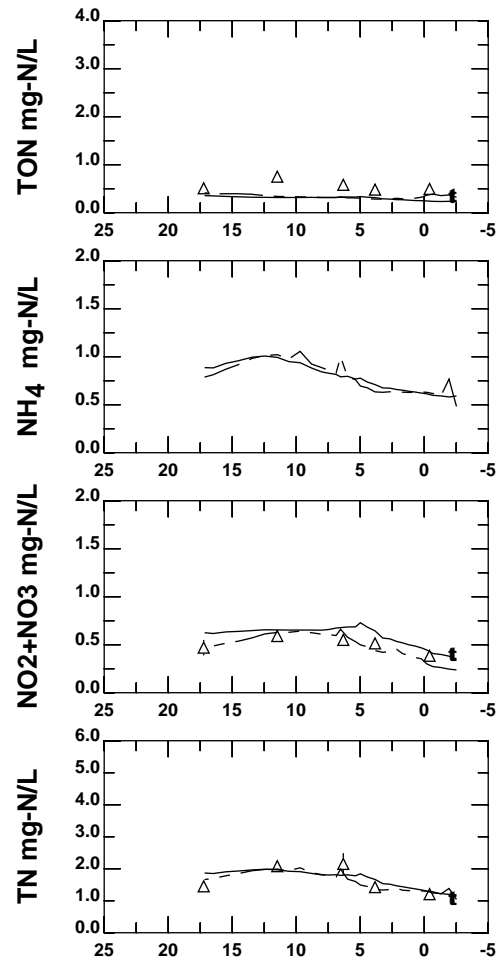
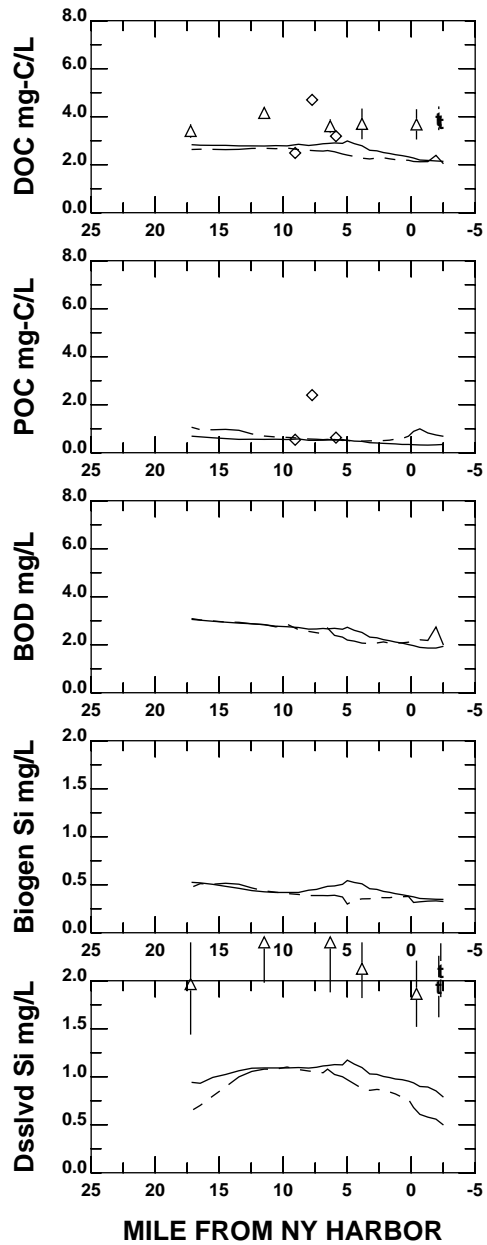
	<b>SURF MID BOT</b>		
Harbor Survey	△	▲	Transect
NYSDEC	t	e	Embayment
	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment
PVSC	●	■	Transect
	u	m	Embayment
		▼	Transect
		b	Embayment

**MODEL**

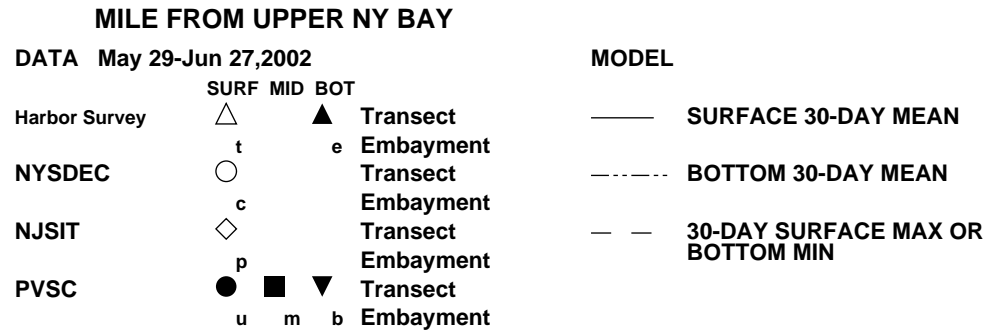
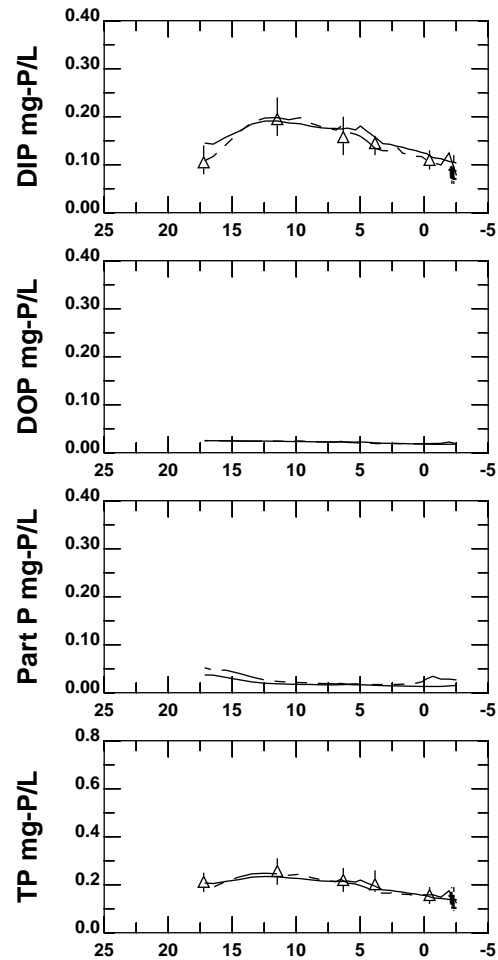
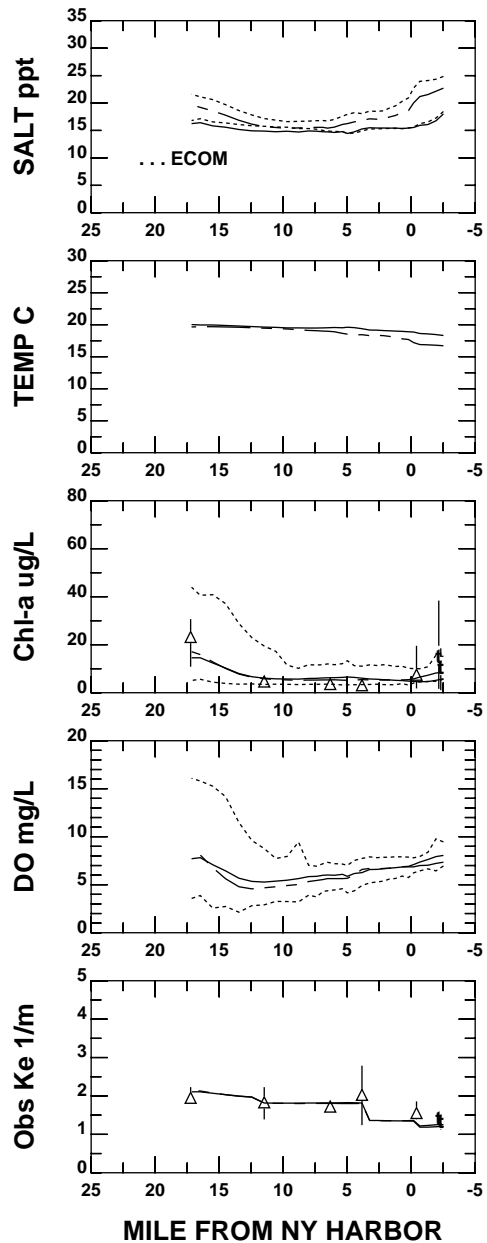
— SURFACE 30-DAY MEAN

--- BOTTOM 30-DAY MEAN

- - - 30-DAY SURFACE MAX OR BOTTOM MIN

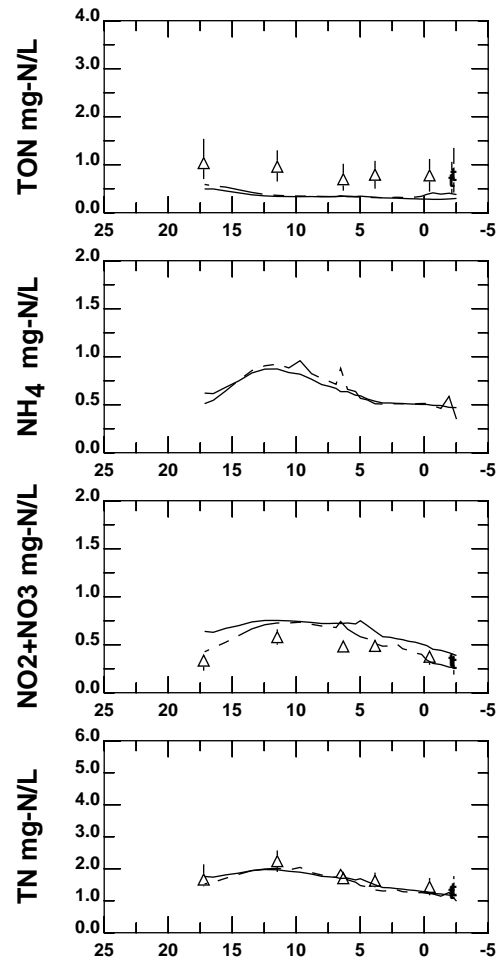
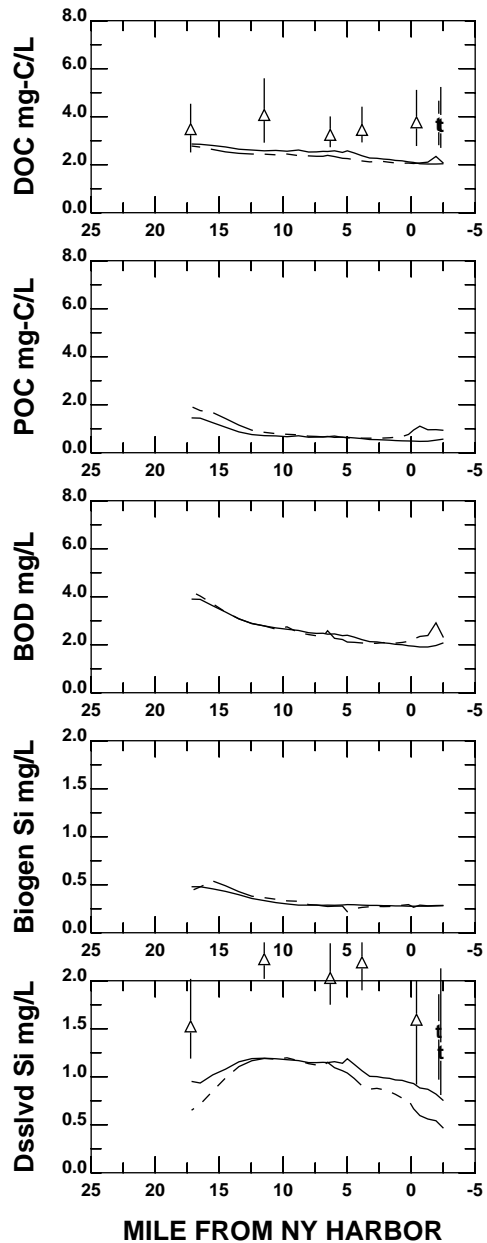


**ARTHUR KILL AND KILL VAN KULL**

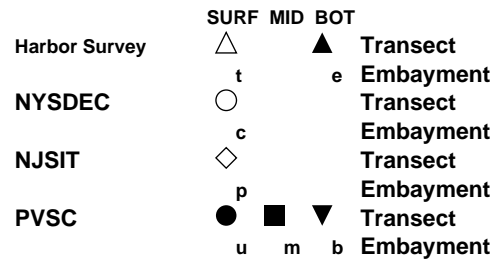


**ARTHUR KILL AND KILL VAN KULL**

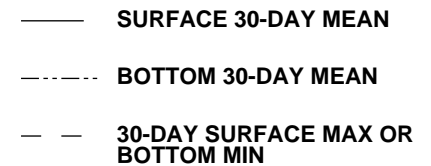




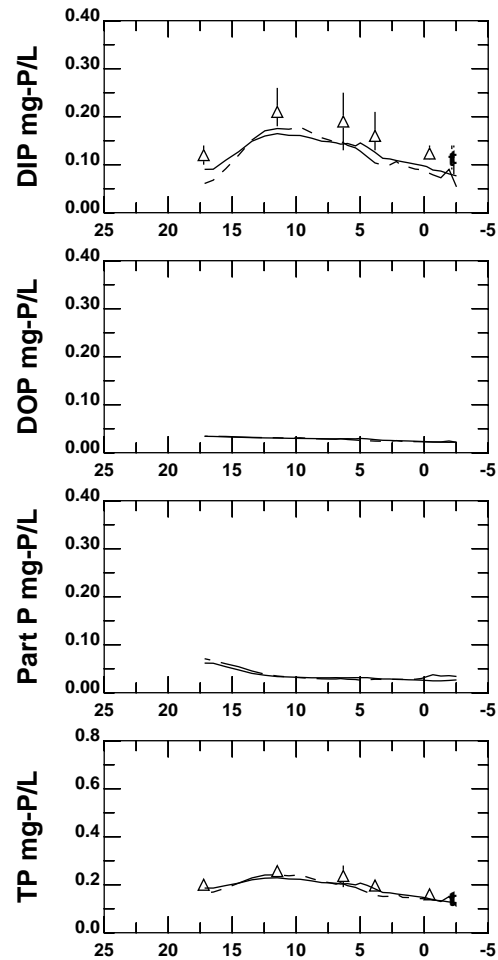
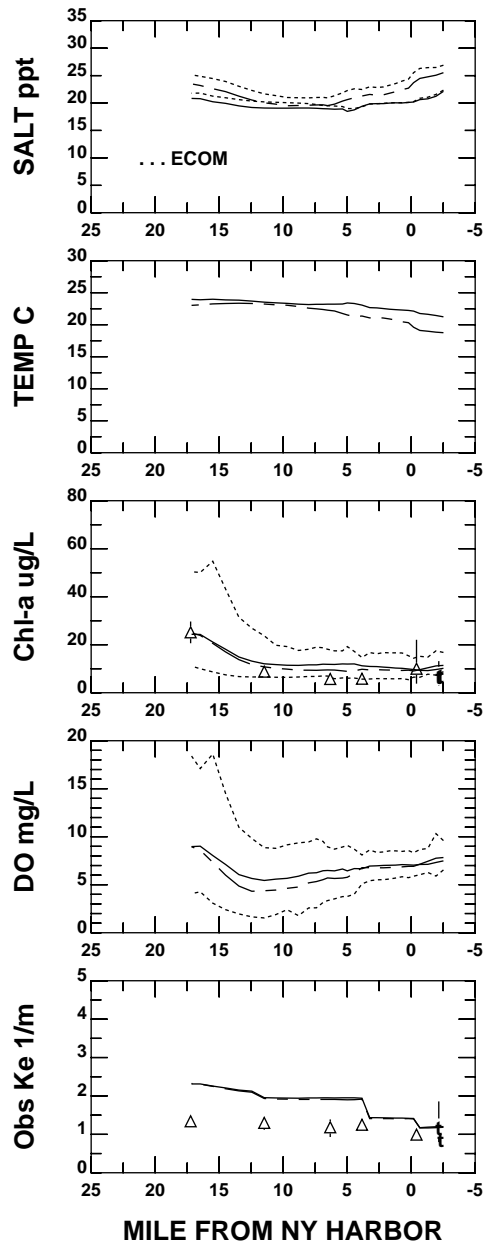
DATA May 29-Jun 27, 2002



MODEL



## ARTHUR KILL AND KILL VAN KULL



**MILE FROM UPPER NY BAY**

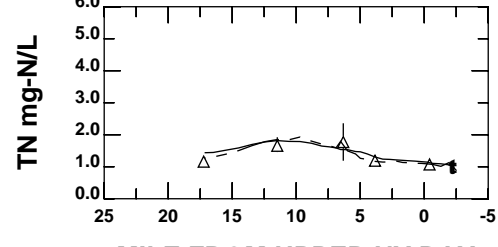
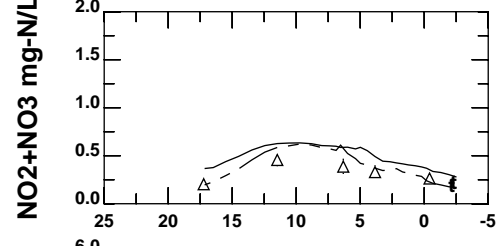
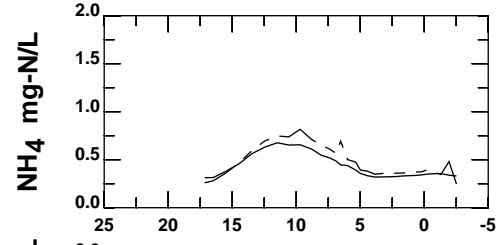
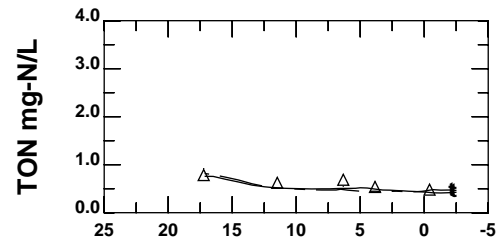
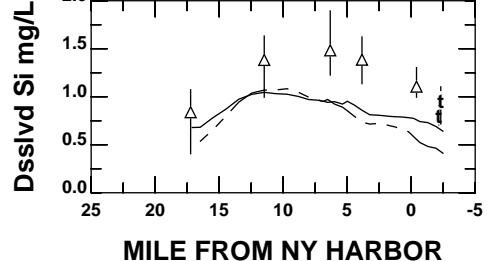
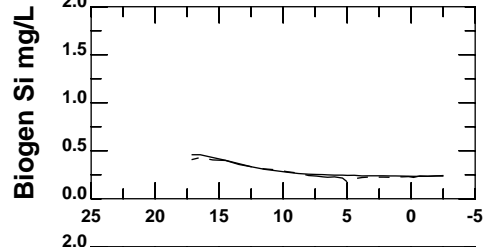
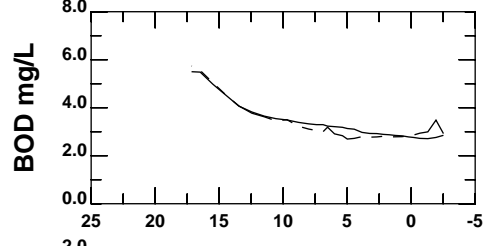
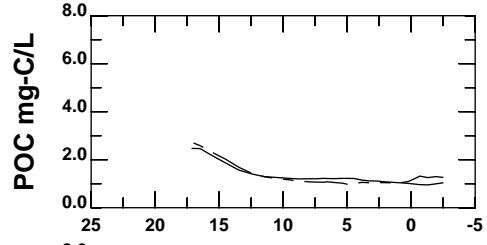
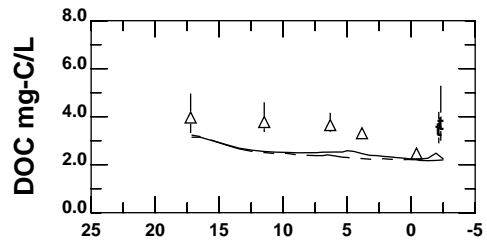
DATA Jun 28-Jul 27, 2002

	SURF	MID	BOT	
Harbor Survey	△		▲	Transect
NYSDEC	t		e	Embayment
NJSIT	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment

**MODEL**

————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

**ARTHUR KILL AND KILL VAN KULL**



MILE FROM UPPER NY BAY

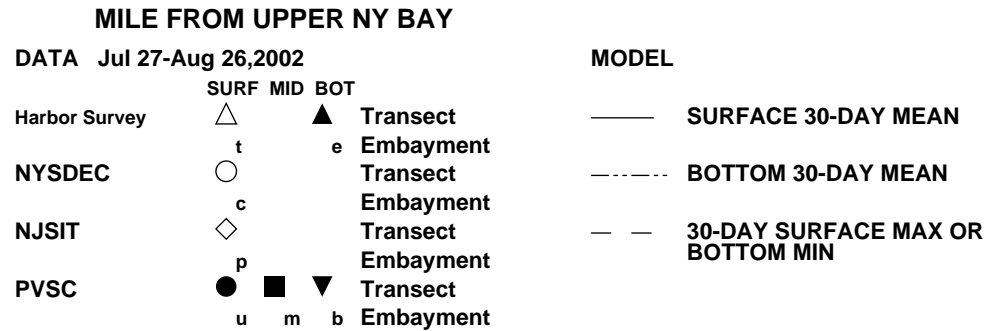
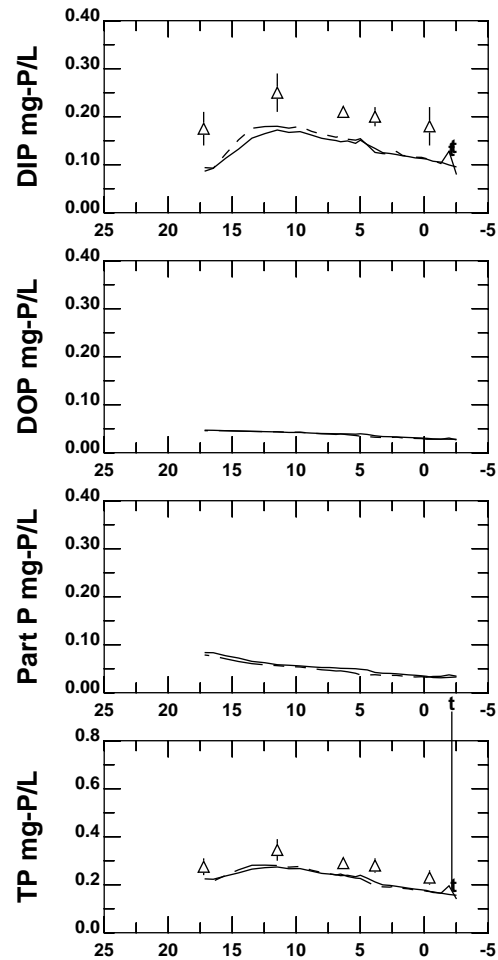
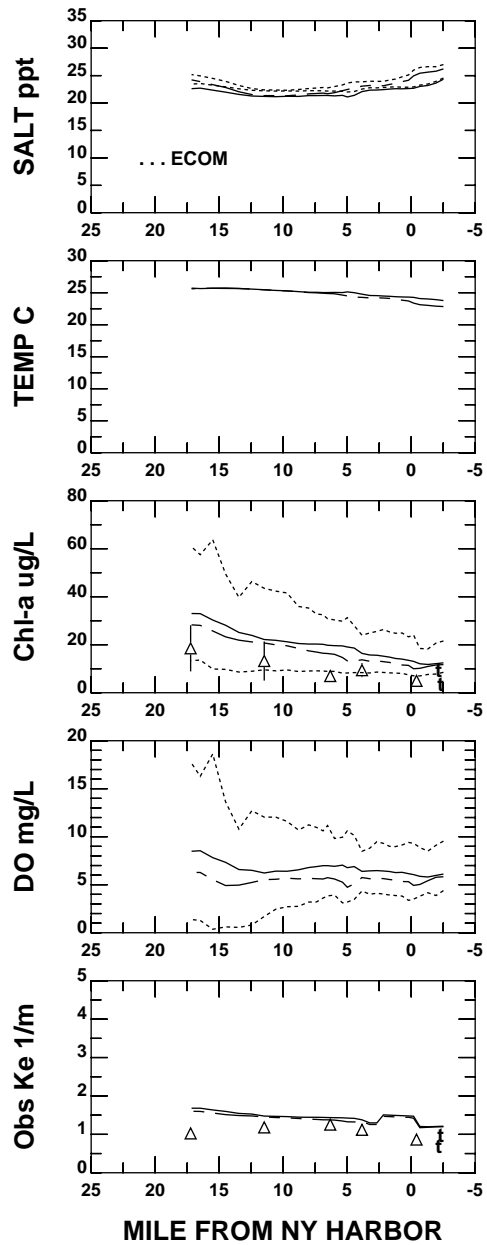
DATA Jun 28-Jul 27, 2002

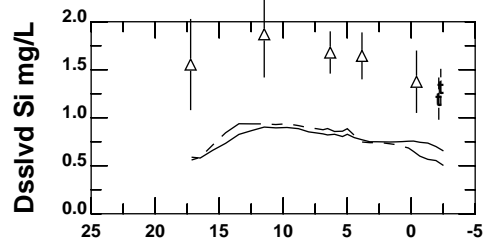
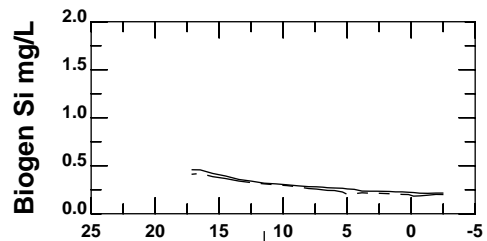
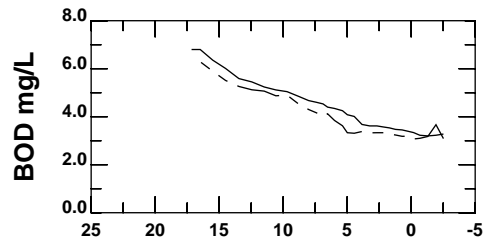
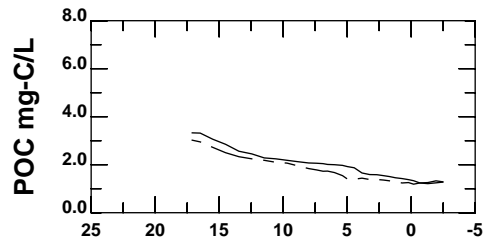
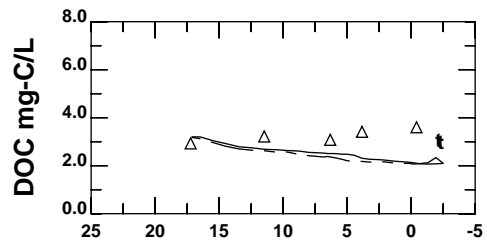
	SURF	MID	BOT	
Harbor Survey	△		▲	Transect
NYSDEC	t		e	Embayment
	○			Transect
	c			Embayment
NJSIT	◇			Transect
	p			Embayment
PVSC	●	■	▼	Transect
	u	m	b	Embayment

MODEL

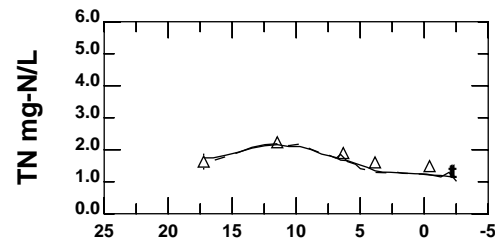
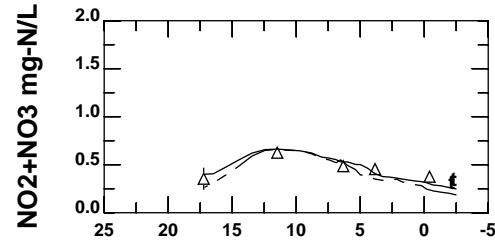
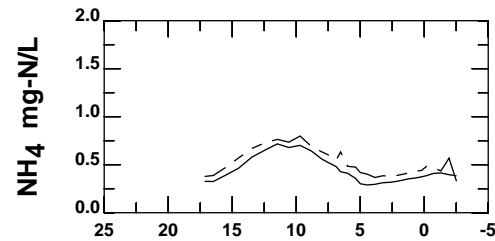
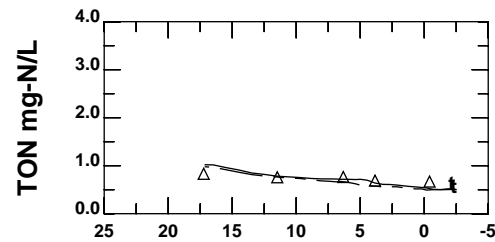
—	SURFACE 30-DAY MEAN
- - - -	BOTTOM 30-DAY MEAN
- - -	30-DAY SURFACE MAX OR BOTTOM MIN

ARTHUR KILL AND KILL VAN KULL



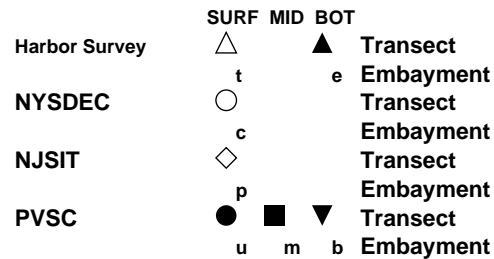


MILE FROM NY HARBOR

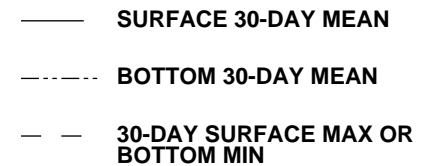


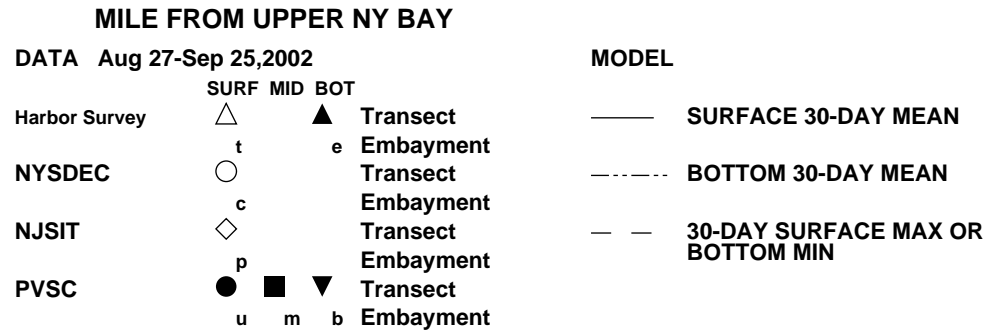
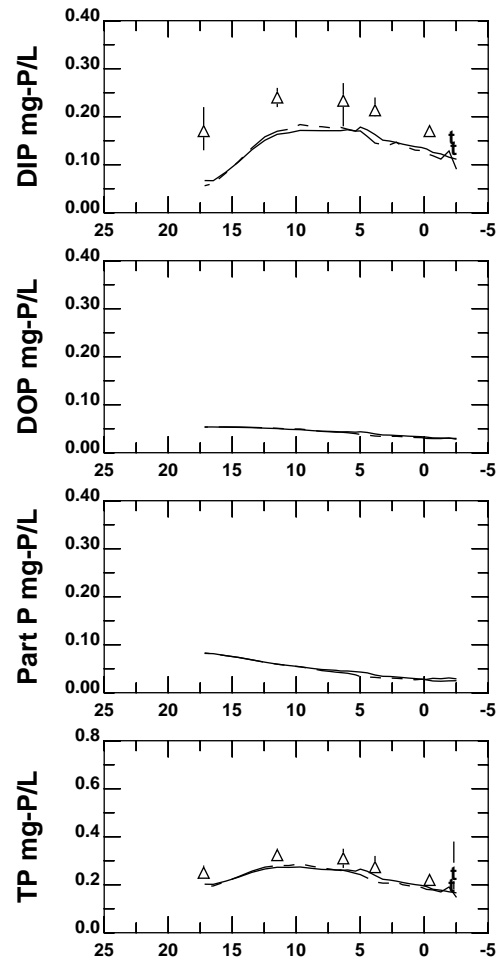
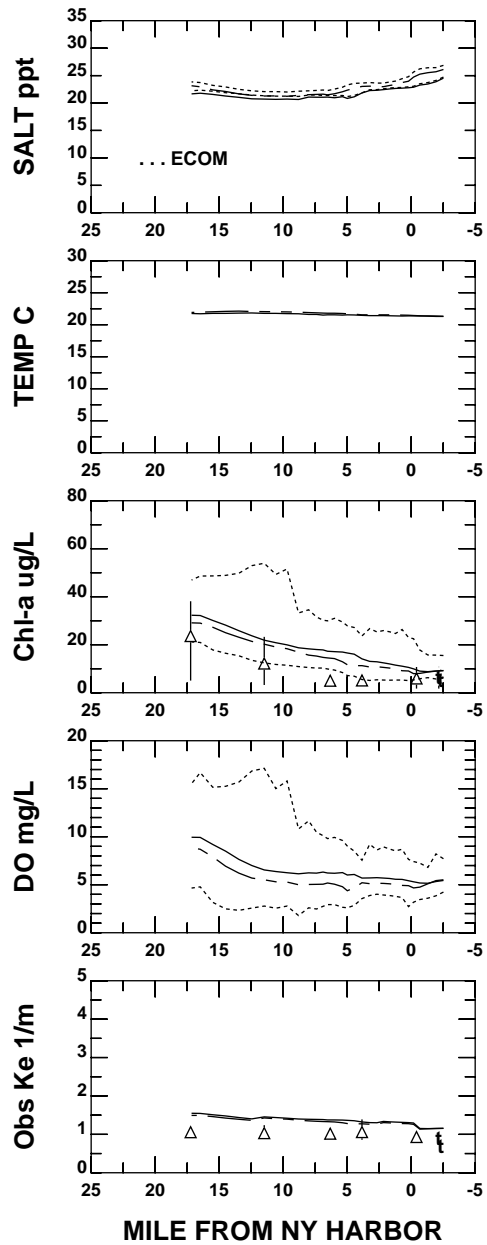
MILE FROM UPPER NY BAY

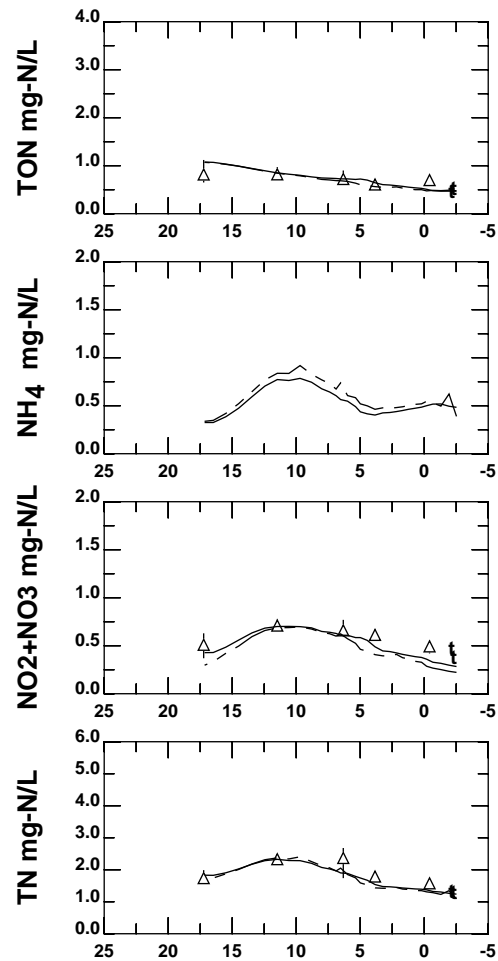
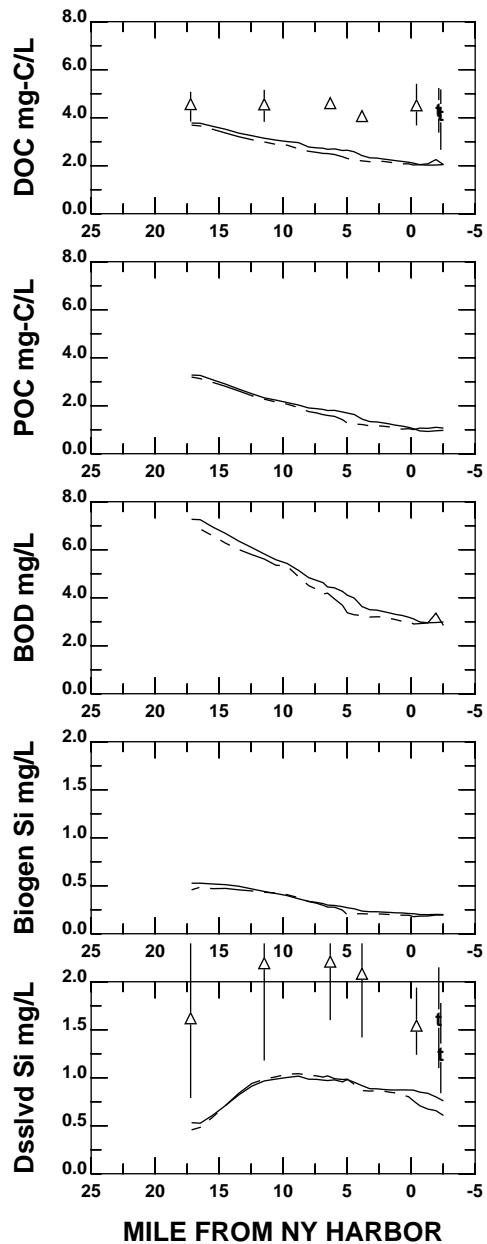
DATA Jul 27-Aug 26, 2002



MODEL







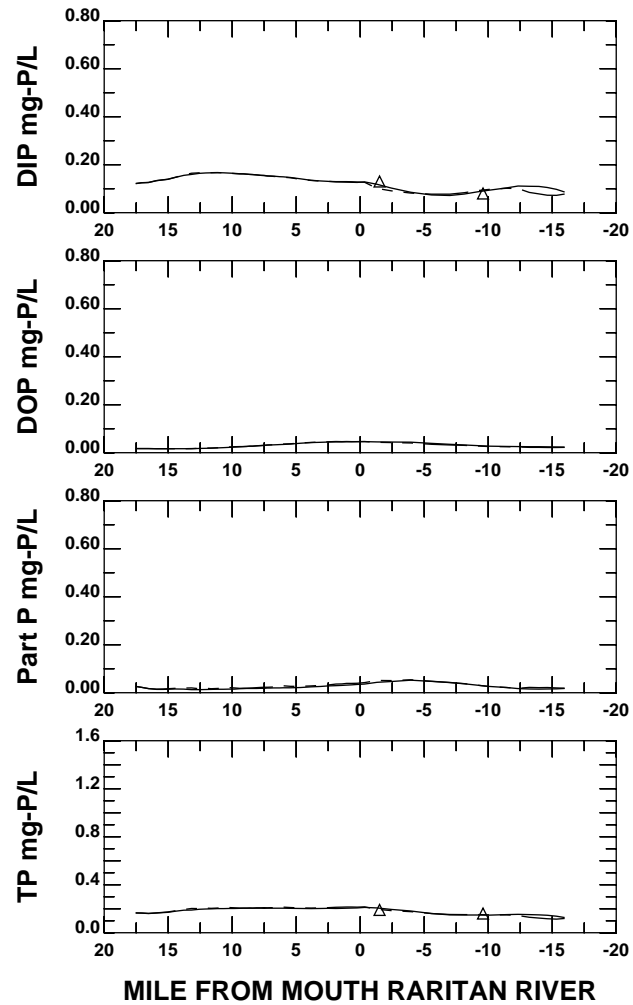
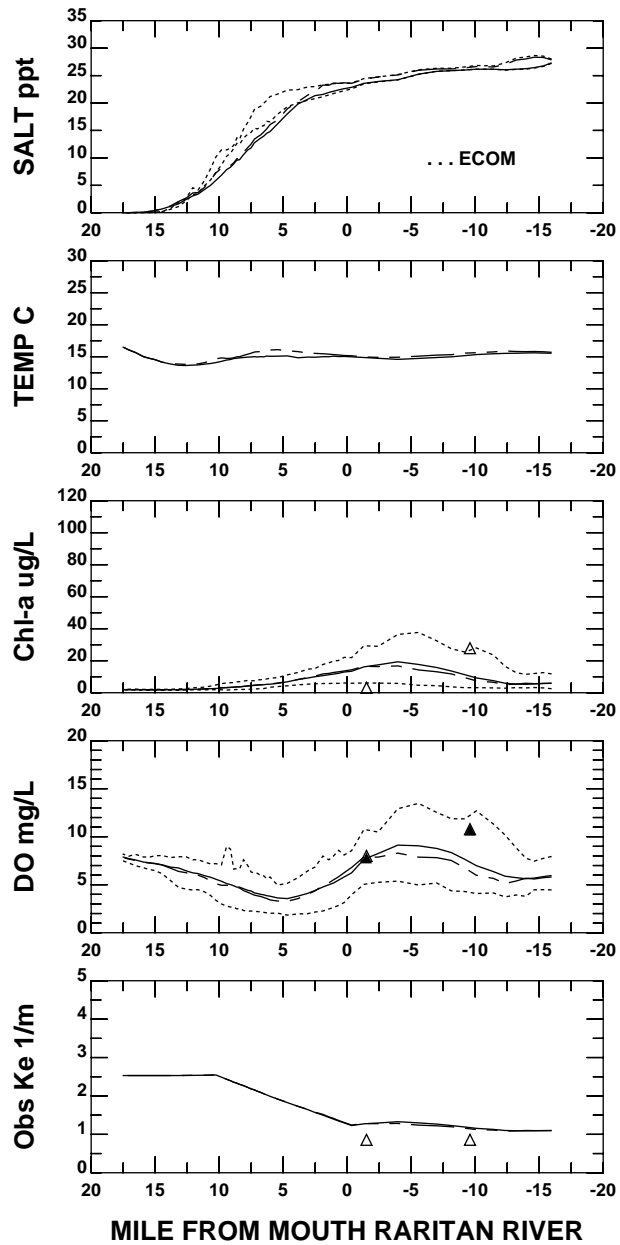
**DATA Aug 27-Sep 25, 2002**

	<b>SURF MID BOT</b>		
Harbor Survey	△	▲	Transect
NYSDEC	t	e	Embayment
	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment
PVSC	●	■	Transect
	u	m	Embayment
		▼	Transect
		b	Embayment

**MODEL**

- SURFACE 30-DAY MEAN
- BOTTOM 30-DAY MEAN
- - - 30-DAY SURFACE MAX OR BOTTOM MIN

**ARTHUR KILL AND KILL VAN KULL**



DATA Oct 1-30,2001

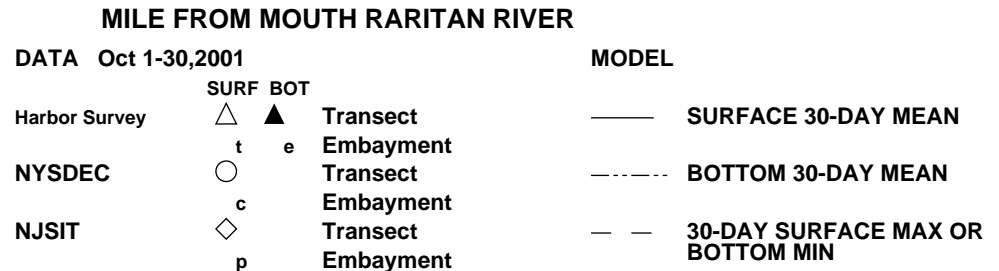
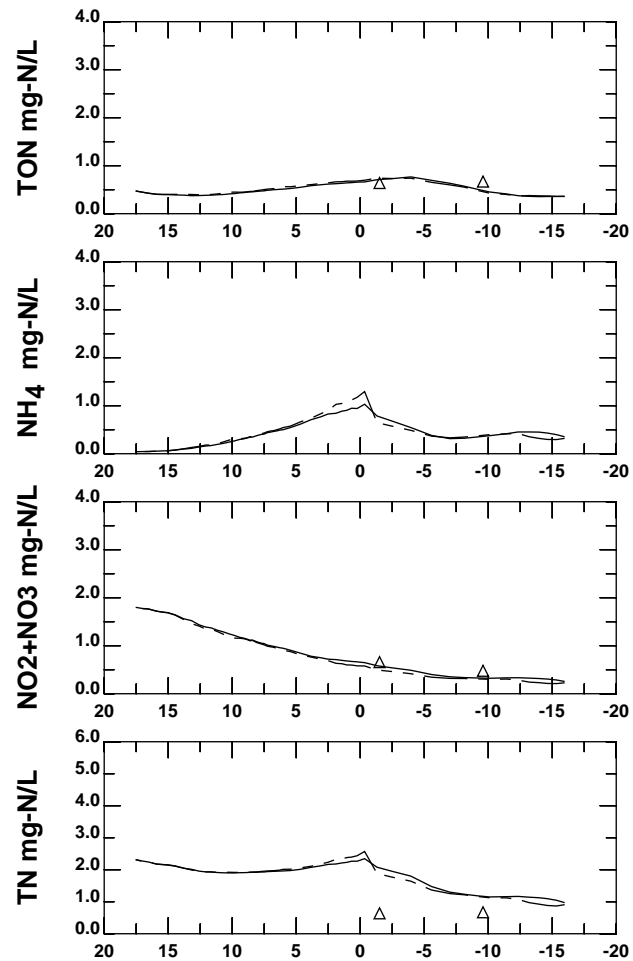
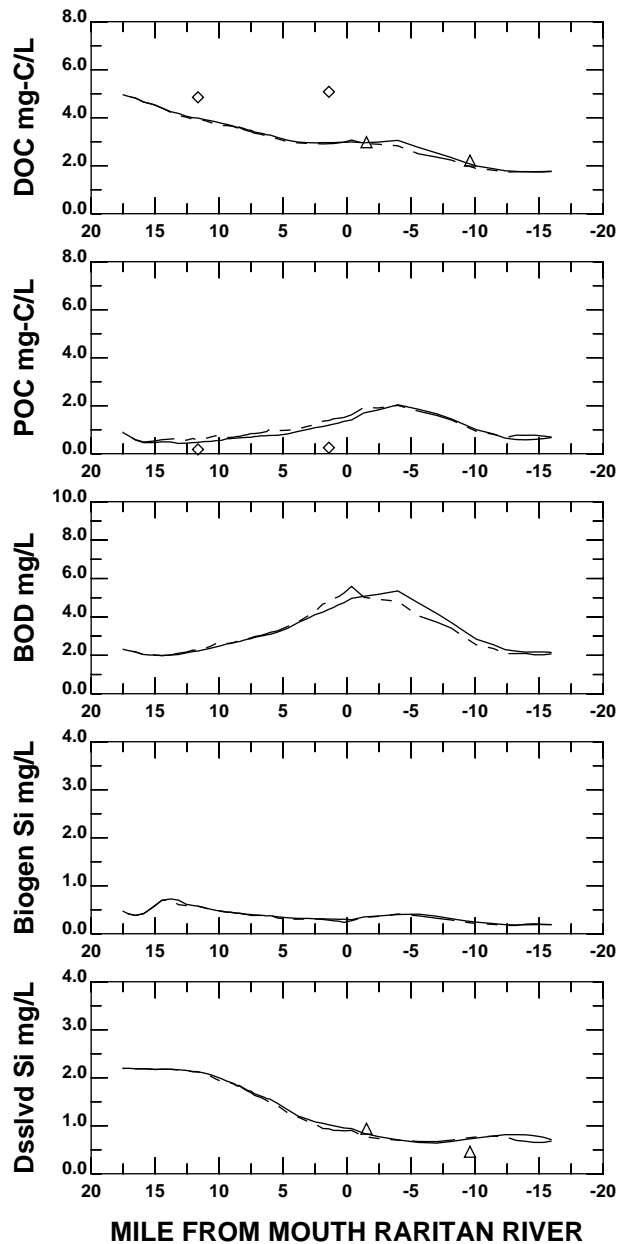
MODEL

	SURF BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment

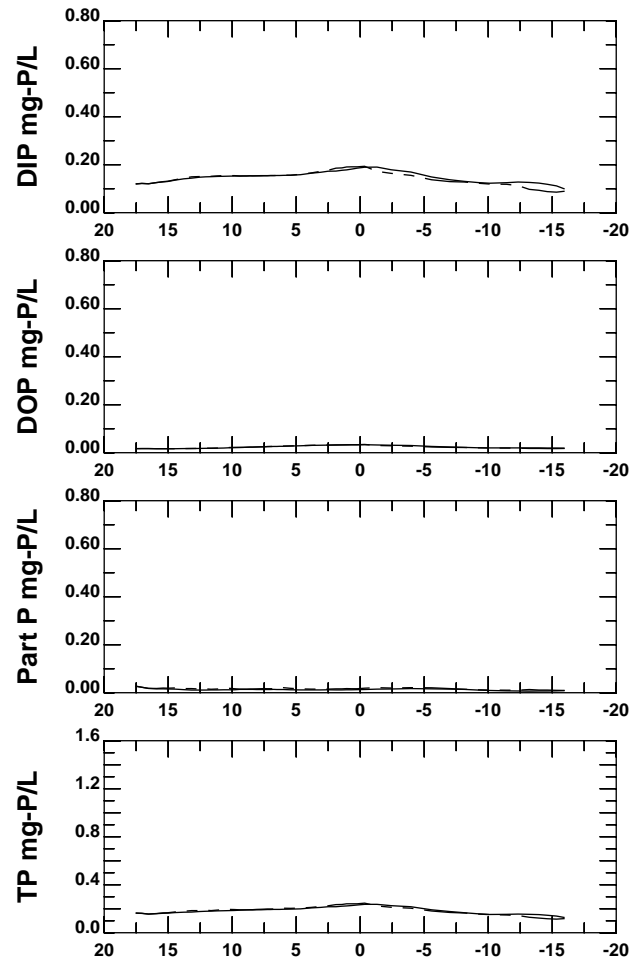
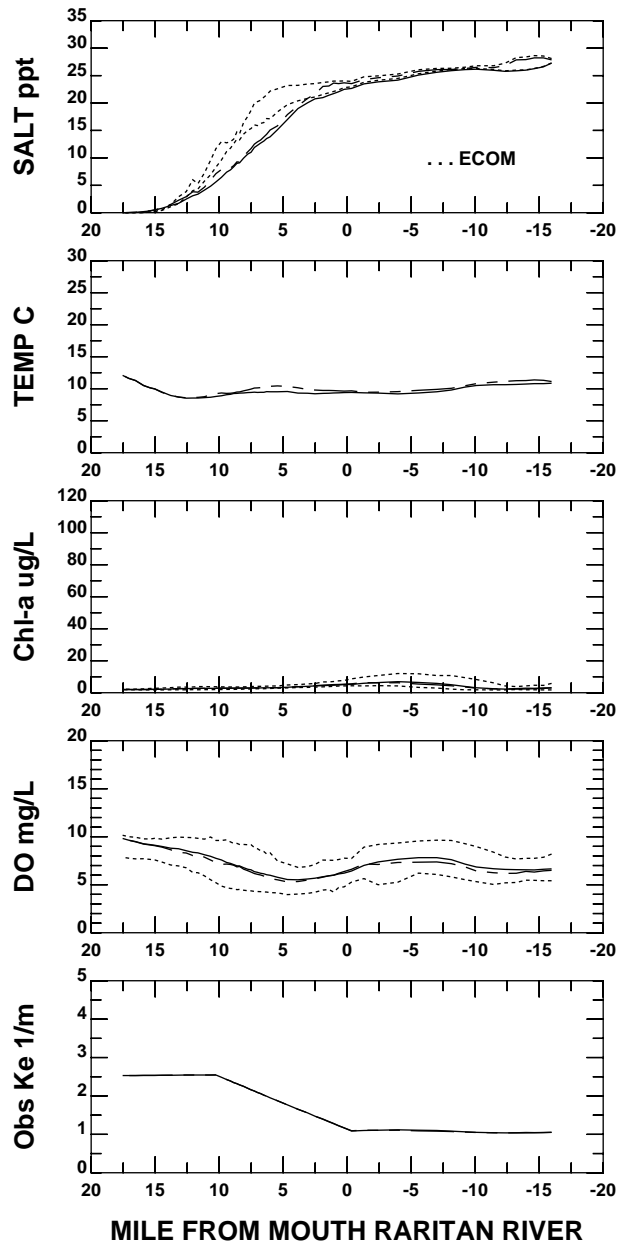
—	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - -	30-DAY SURFACE MAX OR BOTTOM MIN

**RARITAN RIVER AND NORTH SHORE OF RARITAN BAY**





**RARITAN RIVER AND NORTH SHORE RARITAN BAY**



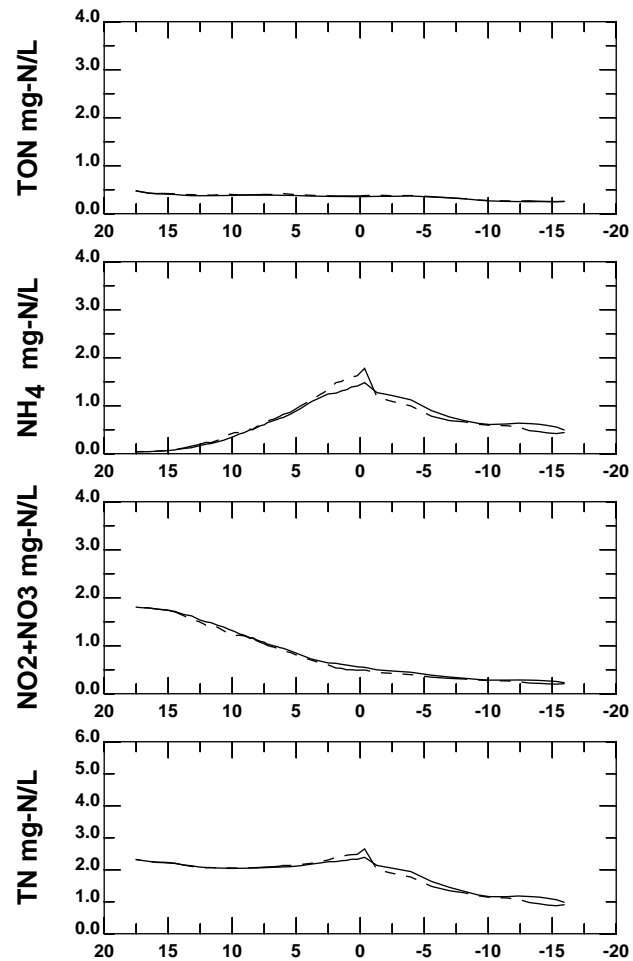
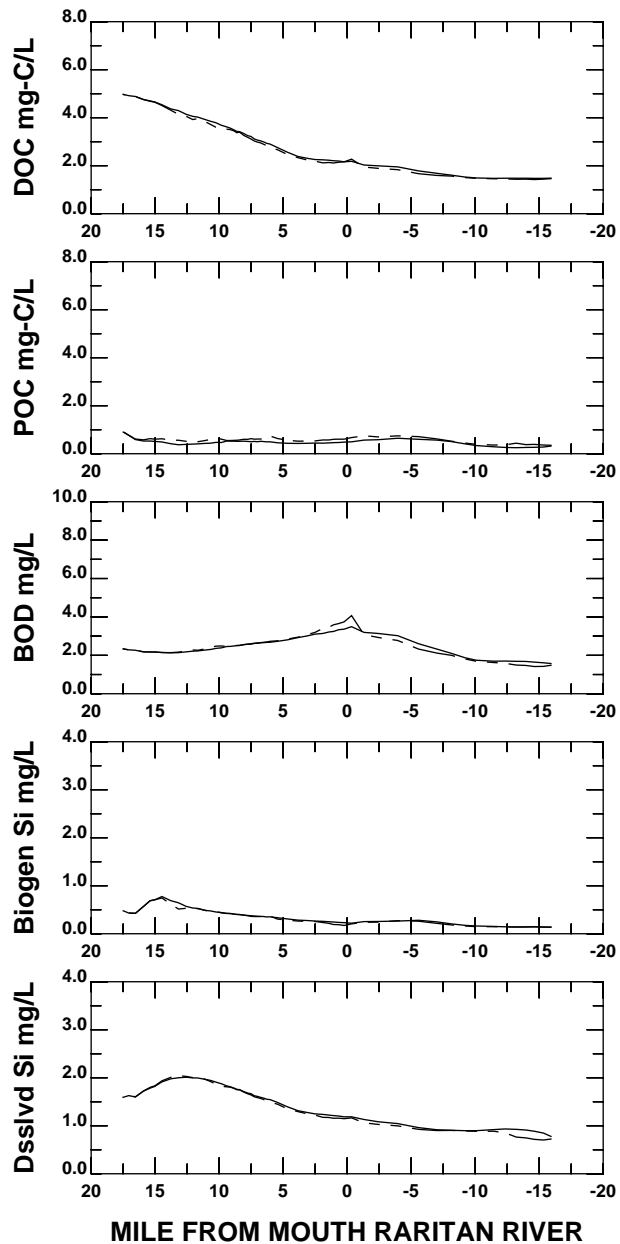
**DATA Oct 31-Nov 29, 2001**

	<b>SURF BOT</b>		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment

**MODEL**

————	<b>SURFACE 30-DAY MEAN</b>
-----	<b>BOTTOM 30-DAY MEAN</b>
- - - -	<b>30-DAY SURFACE MAX OR BOTTOM MIN</b>

**RARITAN RIVER AND NORTH SHORE OF RARITAN BAY**



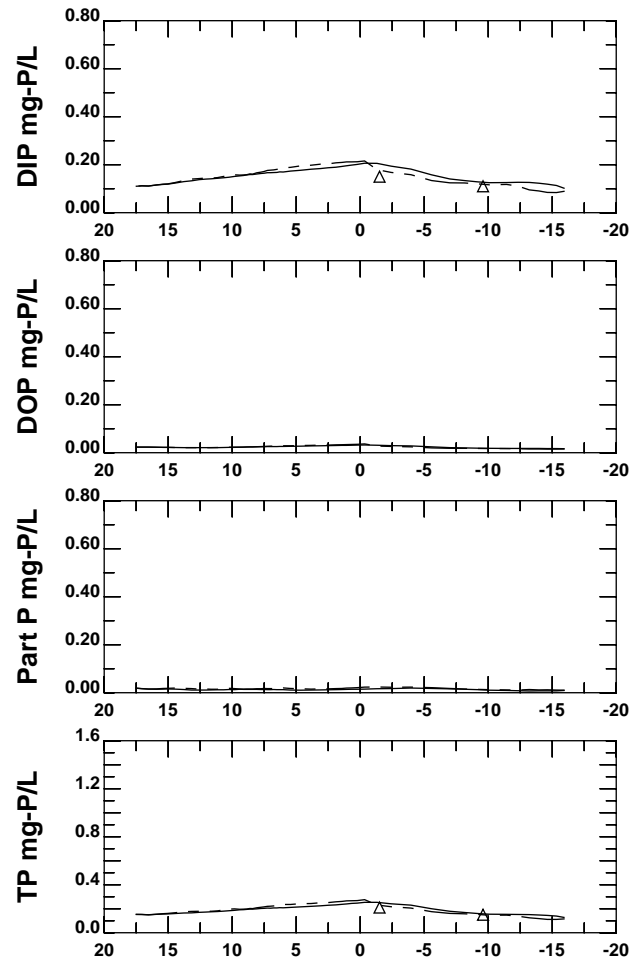
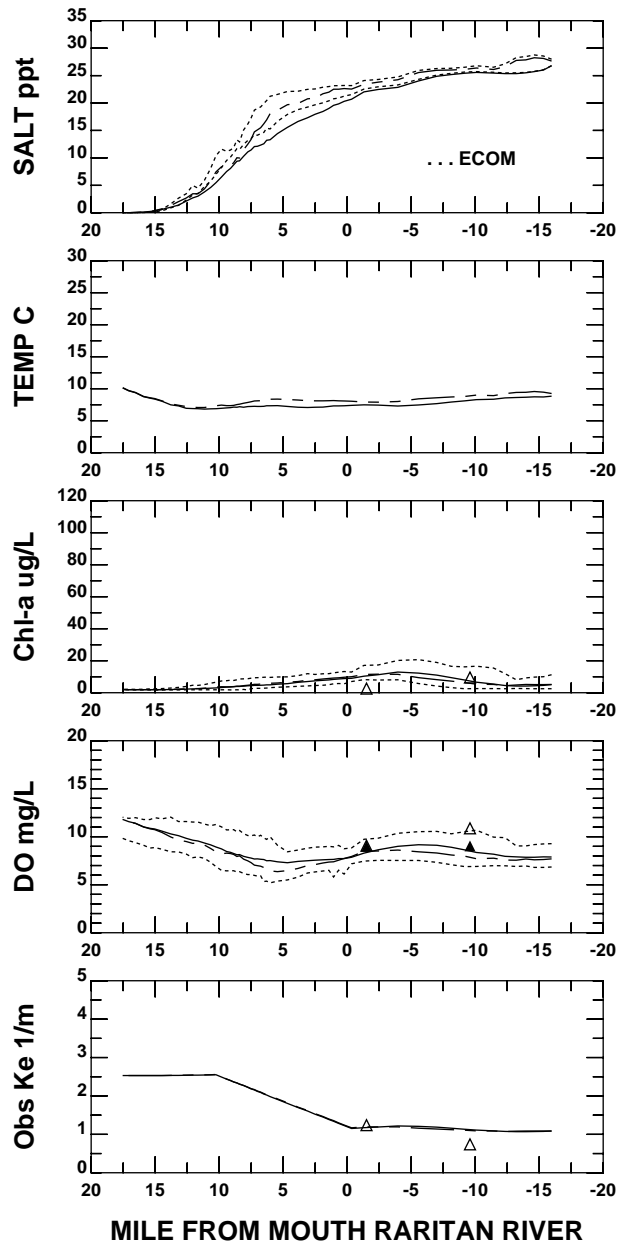
**DATA Oct 31-Nov 29, 2001**

	<b>SURF BOT</b>		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment

<b>MODEL</b>	—	<b>SURFACE 30-DAY MEAN</b>
	- - -	<b>BOTTOM 30-DAY MEAN</b>
	- - -	<b>30-DAY SURFACE MAX OR BOTTOM MIN</b>

**RARITAN RIVER AND NORTH SHORE RARITAN BAY**



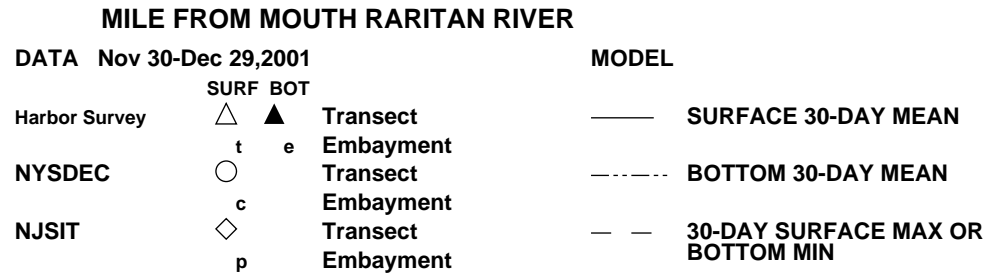
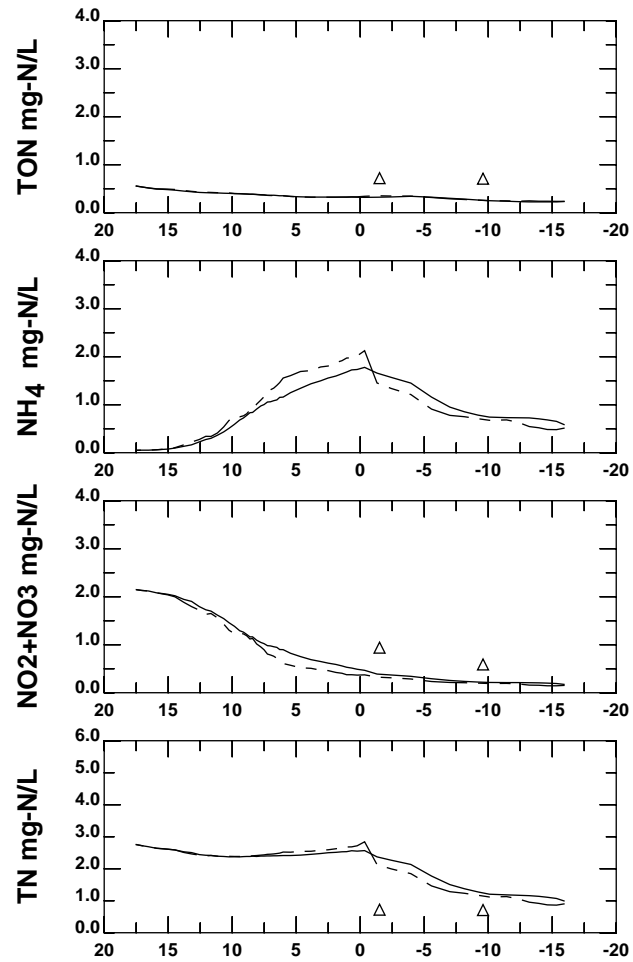
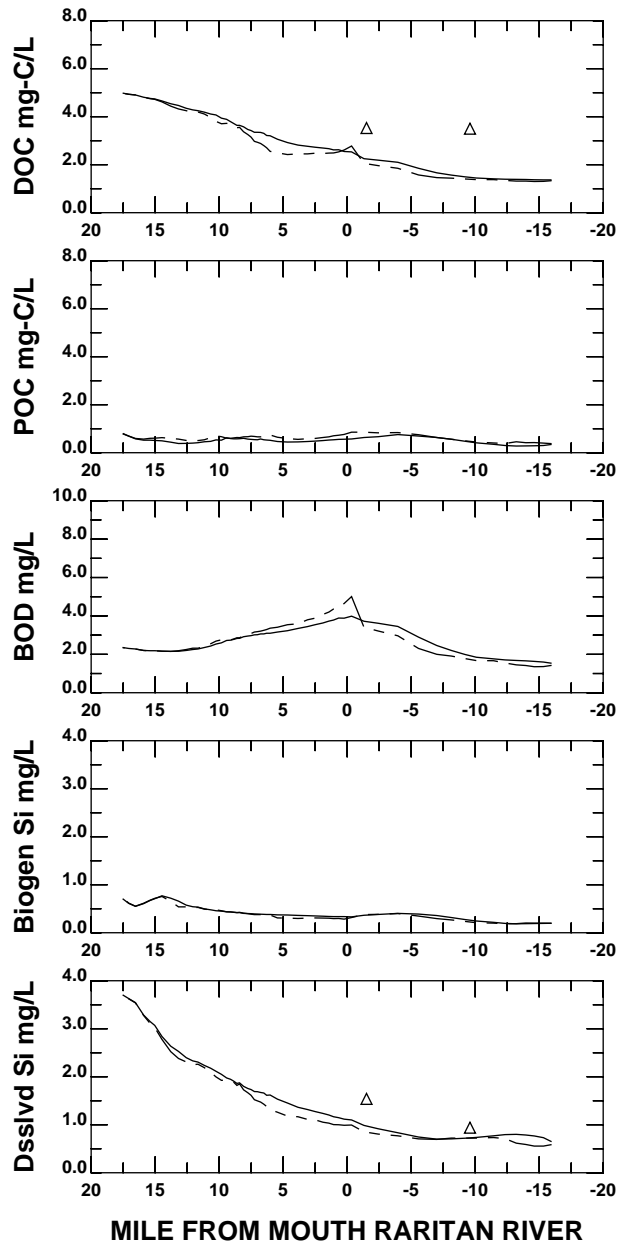
**DATA Nov 30-Dec 29,2001**

	<b>SURF BOT</b>		
Harbor Survey	△	▲	Transect
NYSDEC	t	e	Embayment
	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment

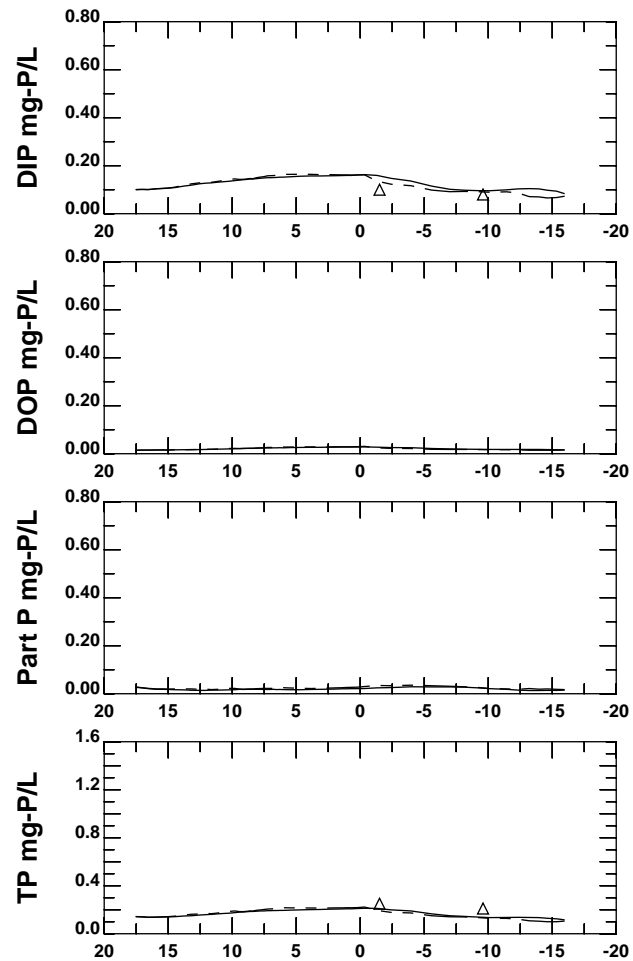
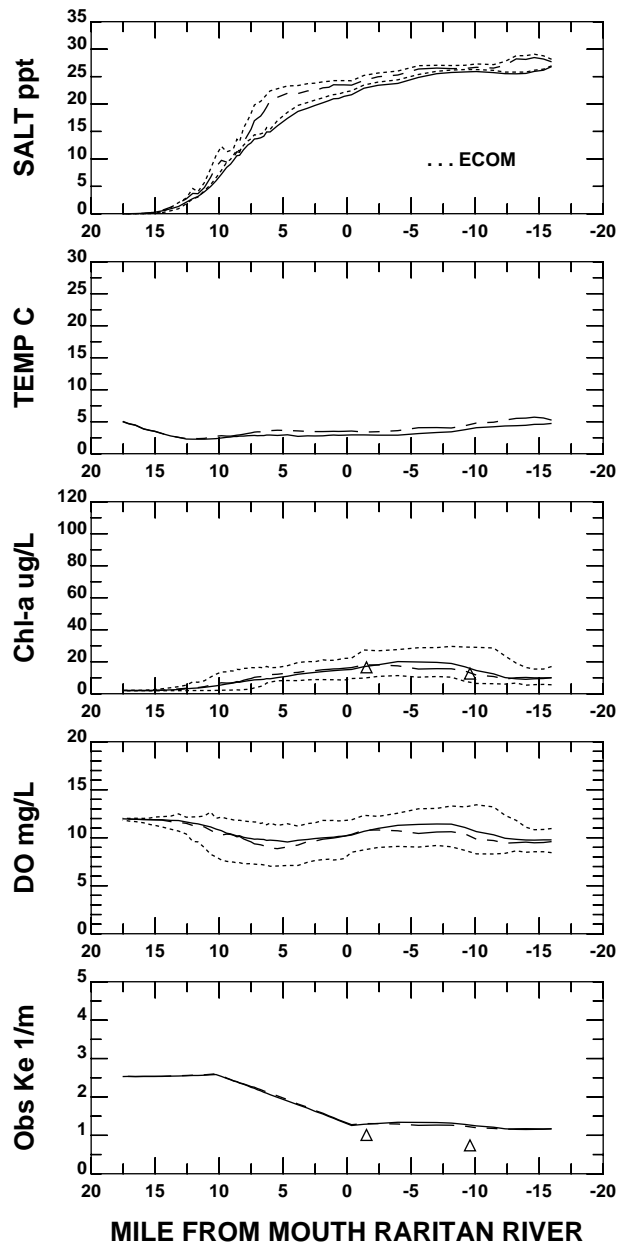
**MODEL**

—	<b>SURFACE 30-DAY MEAN</b>
- - -	<b>BOTTOM 30-DAY MEAN</b>
- - -	<b>30-DAY SURFACE MAX OR BOTTOM MIN</b>

**RARITAN RIVER AND NORTH SHORE OF RARITAN BAY**



**RARITAN RIVER AND NORTH SHORE RARITAN BAY**



**DATA** Dec 30 2001 -Jan 28,2002

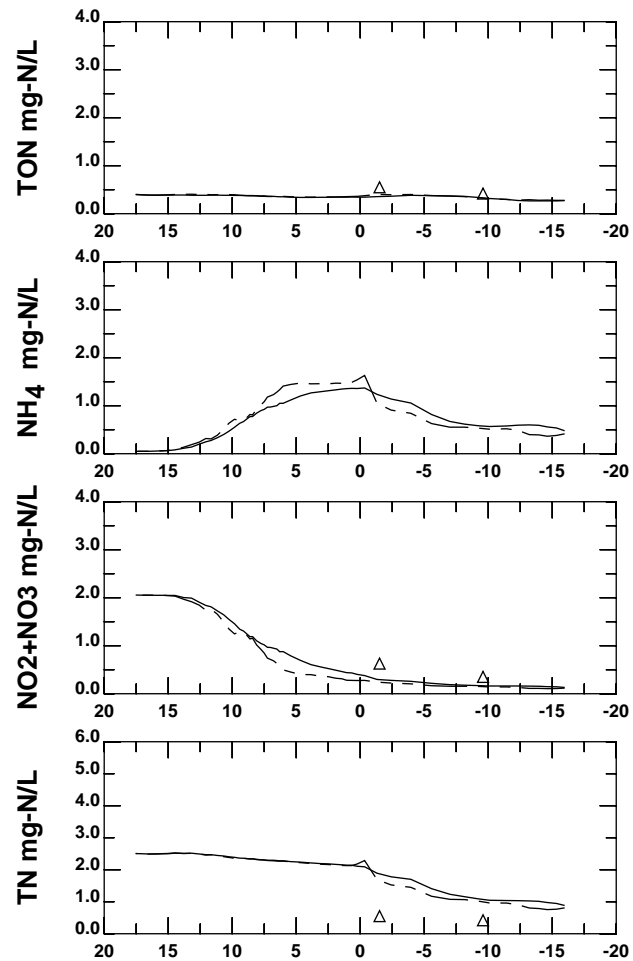
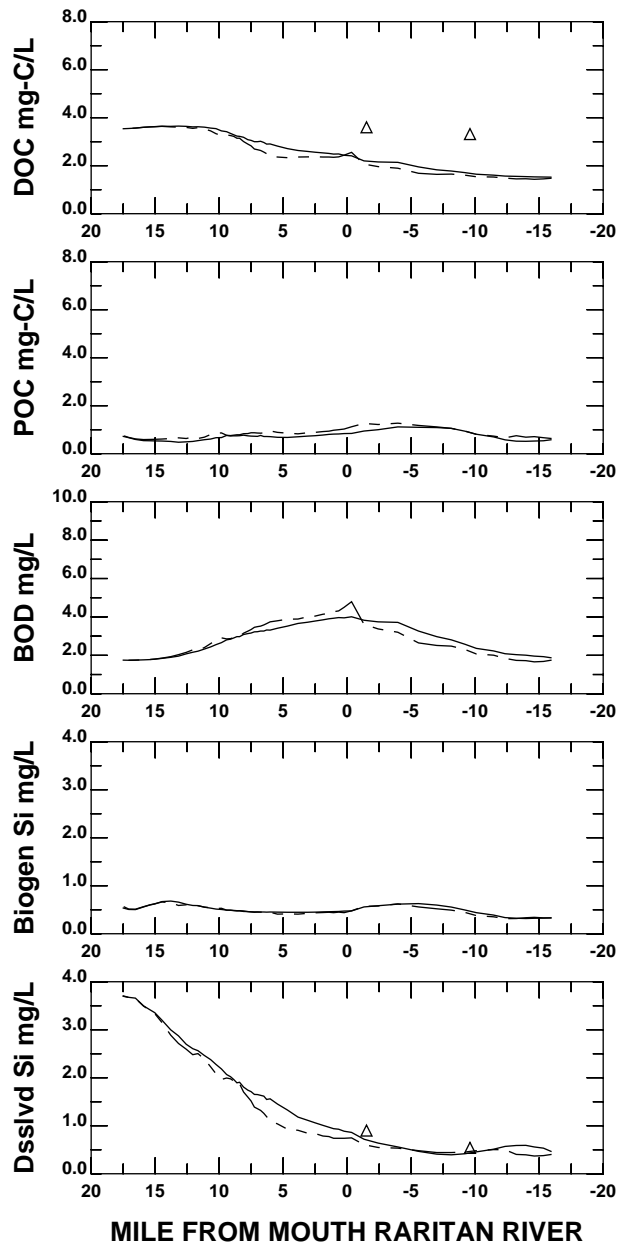
**MODEL**

	<b>SURF BOT</b>		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment

————	<b>SURFACE 30-DAY MEAN</b>
-----	<b>BOTTOM 30-DAY MEAN</b>
- - - -	<b>30-DAY SURFACE MAX OR BOTTOM MIN</b>

**RARITAN RIVER AND NORTH SHORE OF RARITAN BAY**



**DATA** Dec 30 2001 -Jan 28,2002

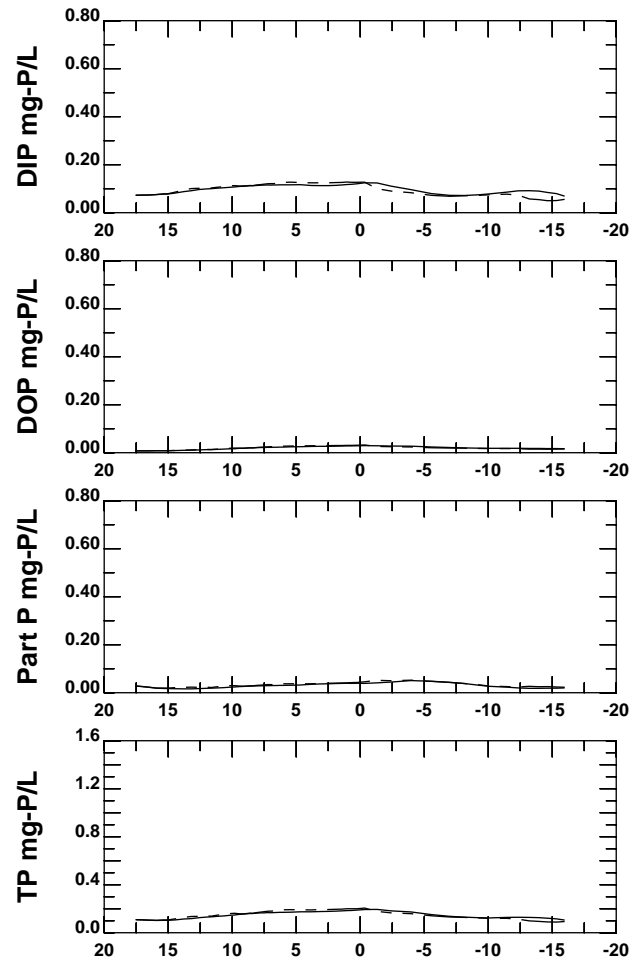
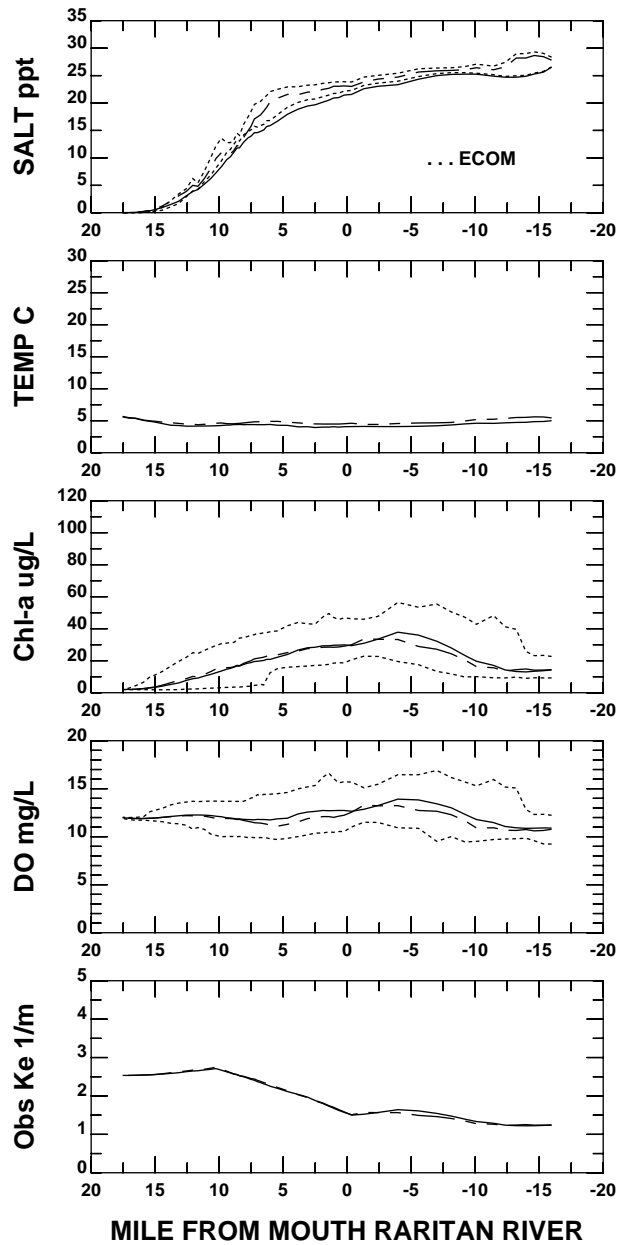
**MODEL**

	<b>SURF</b>	<b>BOT</b>	
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment

————	<b>SURFACE 30-DAY MEAN</b>
-----	<b>BOTTOM 30-DAY MEAN</b>
- - - -	<b>30-DAY SURFACE MAX OR BOTTOM MIN</b>

**RARITAN RIVER AND NORTH SHORE RARITAN BAY**



DATA Jan 29-Feb 27, 2002

MODEL

SURF BOT

Harbor Survey  $\triangle$   $\blacktriangle$  Transect  
 t e Embayment

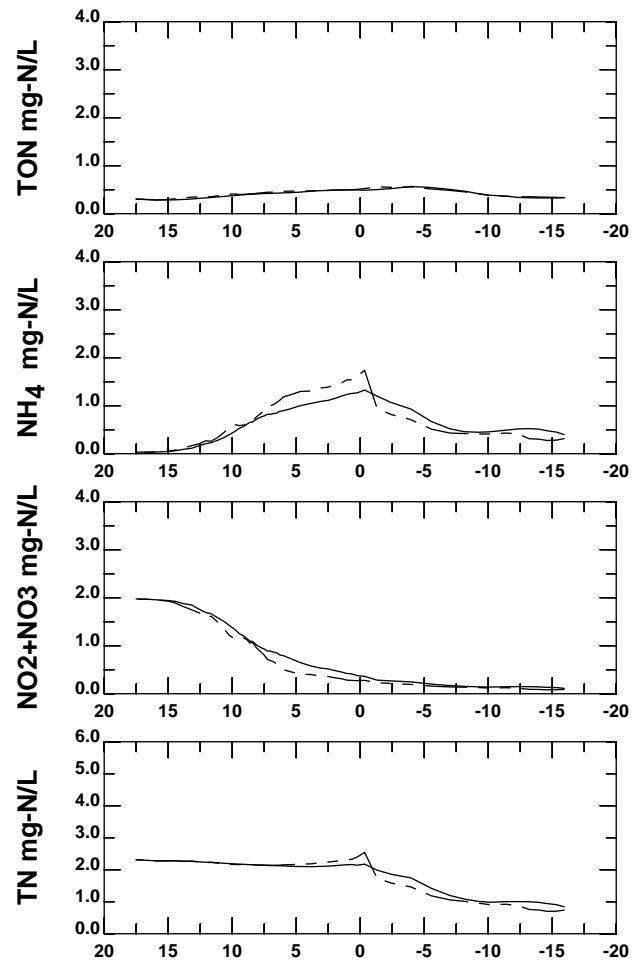
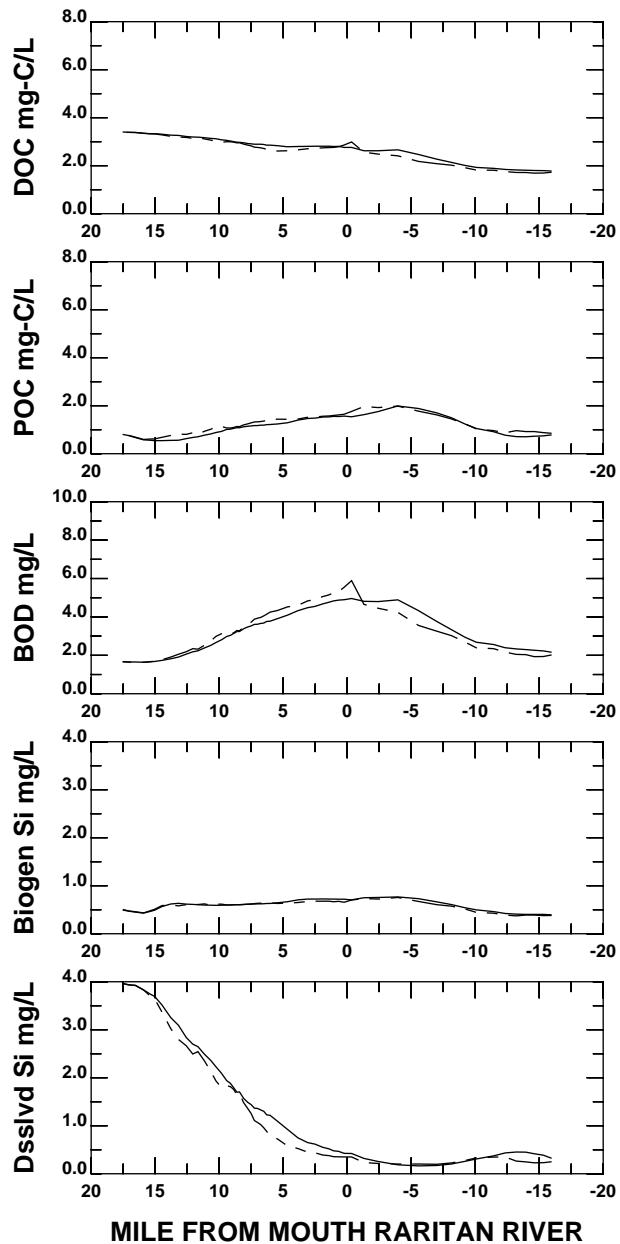
NYSDEC  $\circ$  Transect  
 c Embayment

NJSIT  $\diamond$  Transect  
 p Embayment

— SURFACE 30-DAY MEAN  
 - - - - - BOTTOM 30-DAY MEAN  
 - - 30-DAY SURFACE MAX OR  
 BOTTOM MIN

**RARITAN RIVER AND NORTH SHORE OF RARITAN BAY**





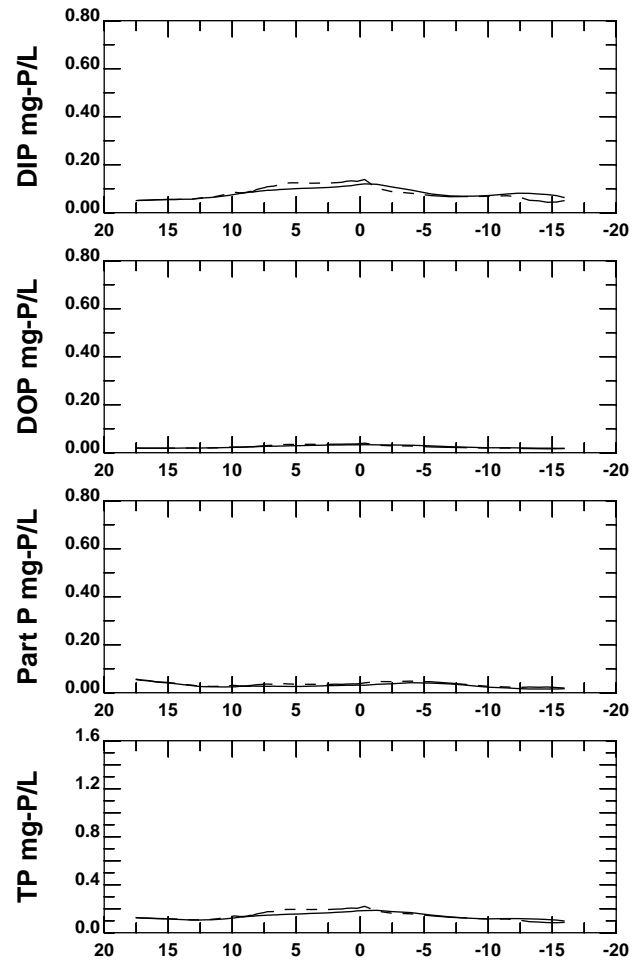
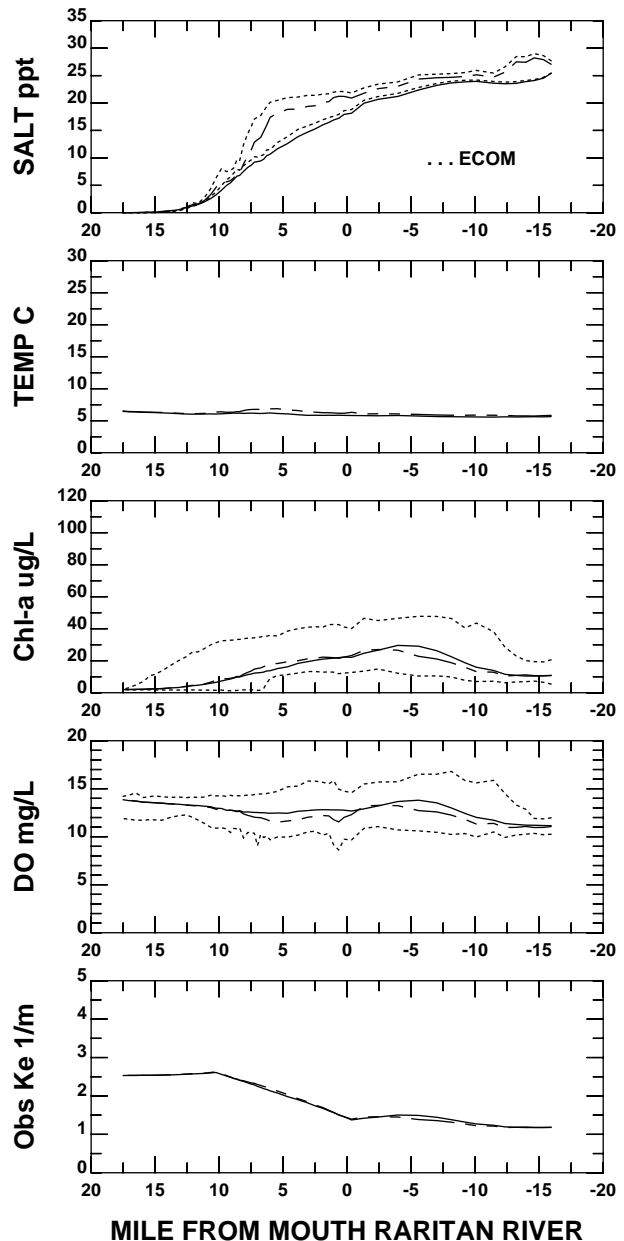
**MILE FROM MOUTH RARITAN RIVER**

**DATA Jan 29-Feb 27, 2002**

	<b>SURF BOT</b>		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment

<b>MODEL</b>	————	<b>SURFACE 30-DAY MEAN</b>
	- - - - -	<b>BOTTOM 30-DAY MEAN</b>
	- - - - -	<b>30-DAY SURFACE MAX OR BOTTOM MIN</b>

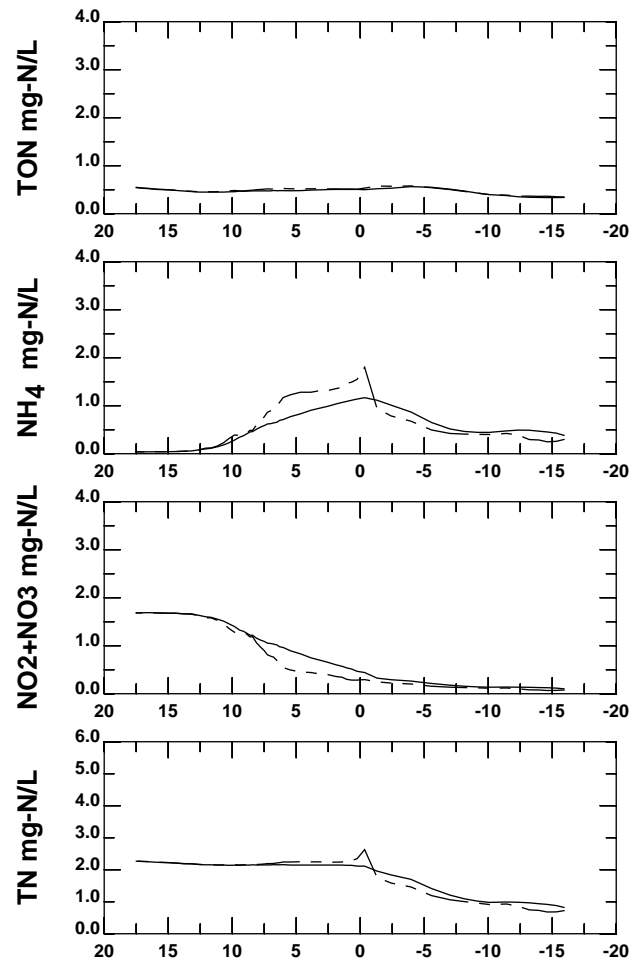
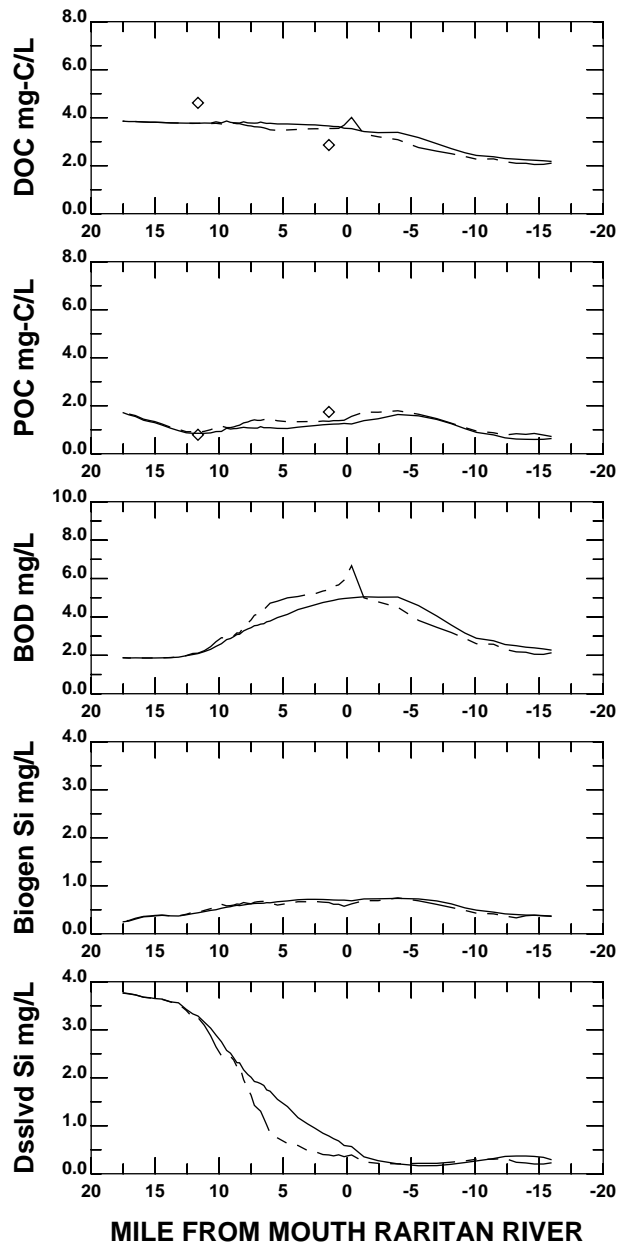
**RARITAN RIVER AND NORTH SHORE RARITAN BAY**



**MILE FROM MOUTH RARITAN RIVER**

<b>DATA</b> Feb 28-Mar 29, 2002		<b>MODEL</b>
	<b>SURF BOT</b>	
Harbor Survey	△ ▲	Transect
	t e	Embayment
NYSDEC	○	Transect
	c	Embayment
NJSIT	◇	Transect
	p	Embayment
	—	SURFACE 30-DAY MEAN
	---	BOTTOM 30-DAY MEAN
	- - -	30-DAY SURFACE MAX OR BOTTOM MIN

**RARITAN RIVER AND NORTH SHORE OF RARITAN BAY**



**MILE FROM MOUTH RARITAN RIVER**

**DATA Feb 28-Mar 29, 2002**

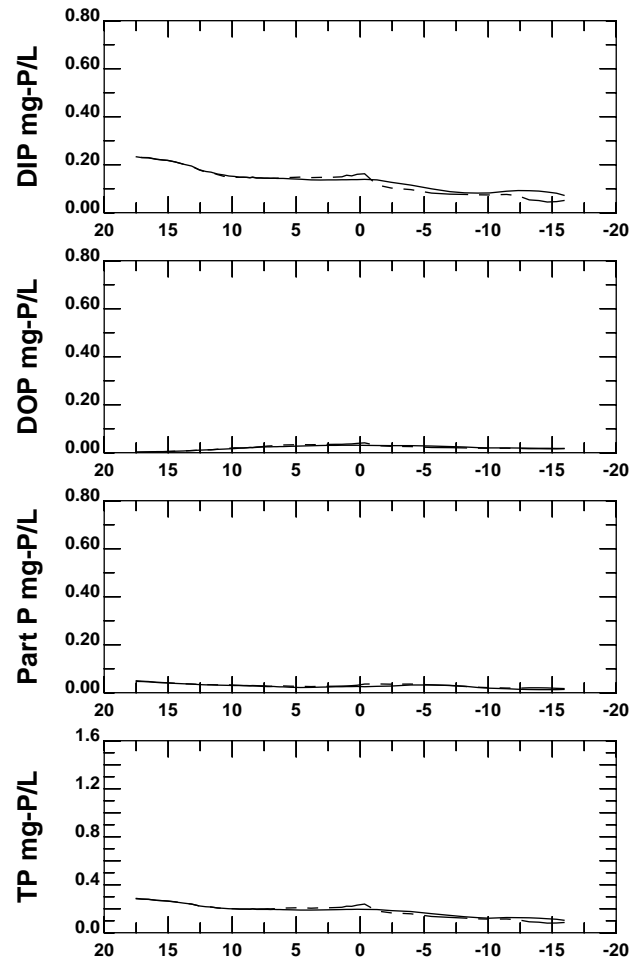
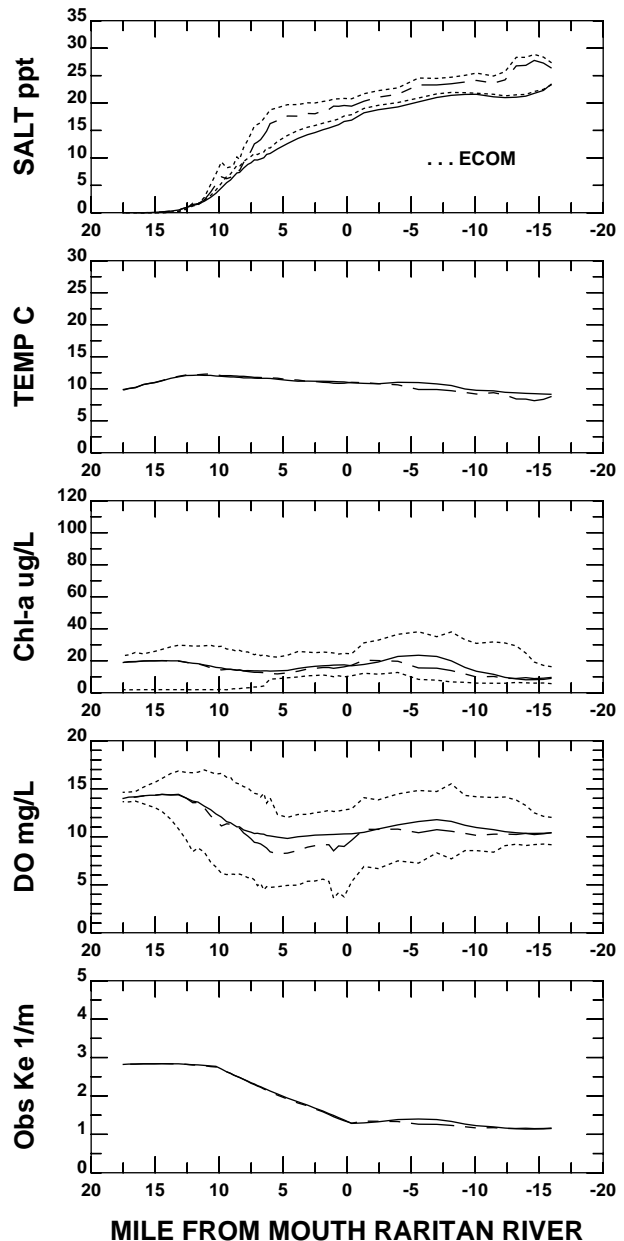
**MODEL**

	<b>SURF BOT</b>		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment

————	<b>SURFACE 30-DAY MEAN</b>
-----	<b>BOTTOM 30-DAY MEAN</b>
- - - -	<b>30-DAY SURFACE MAX OR BOTTOM MIN</b>

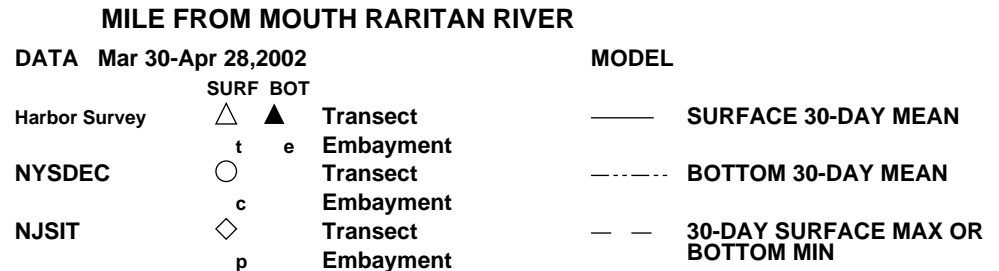
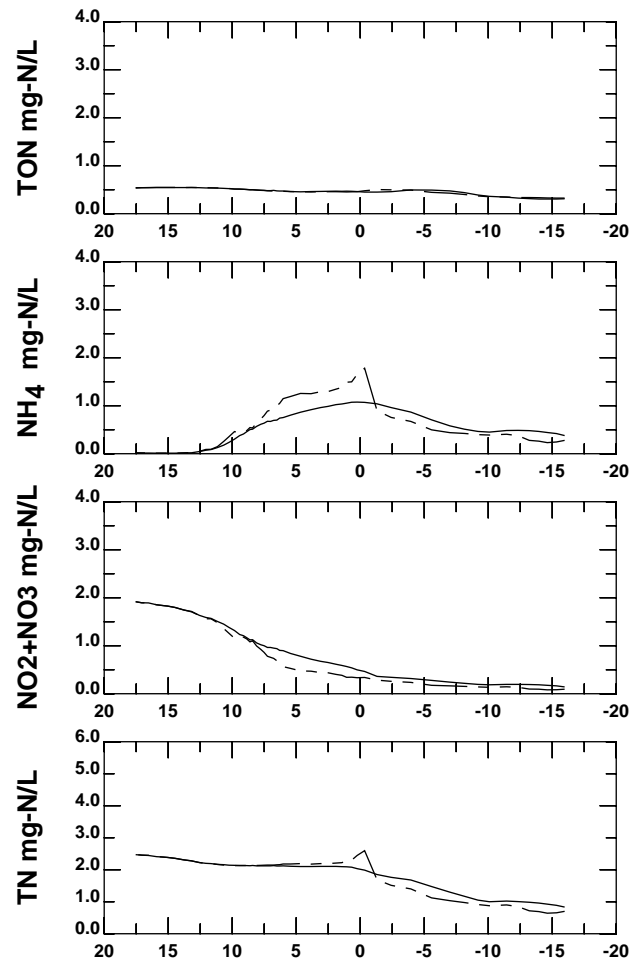
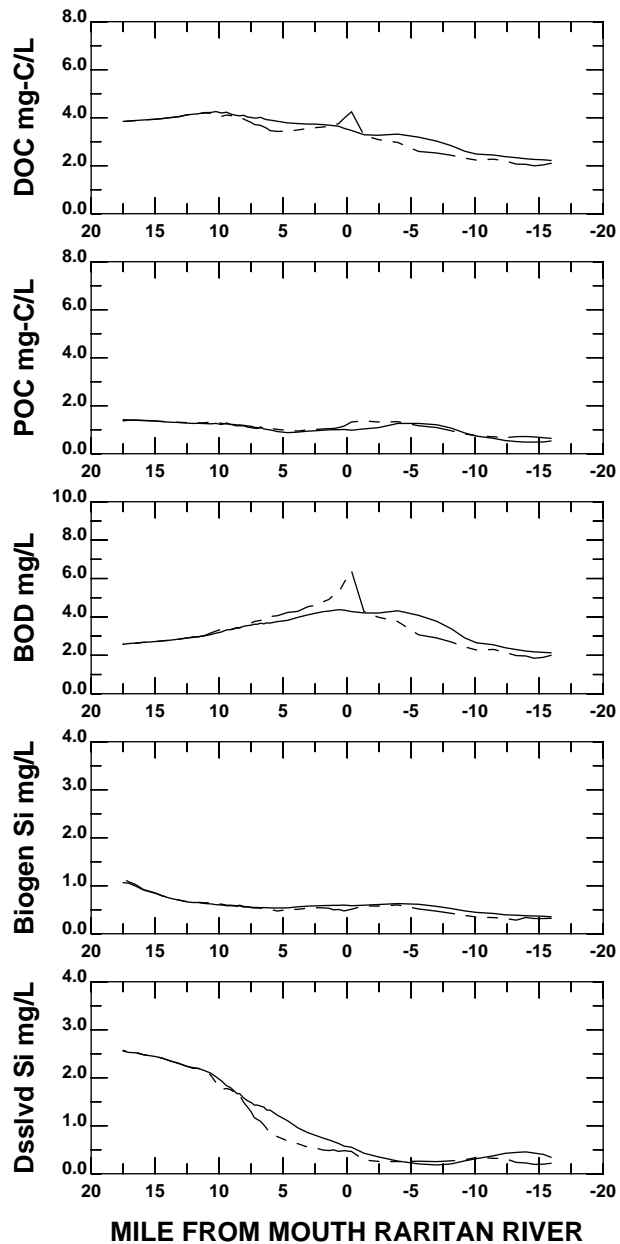
**RARITAN RIVER AND NORTH SHORE RARITAN BAY**



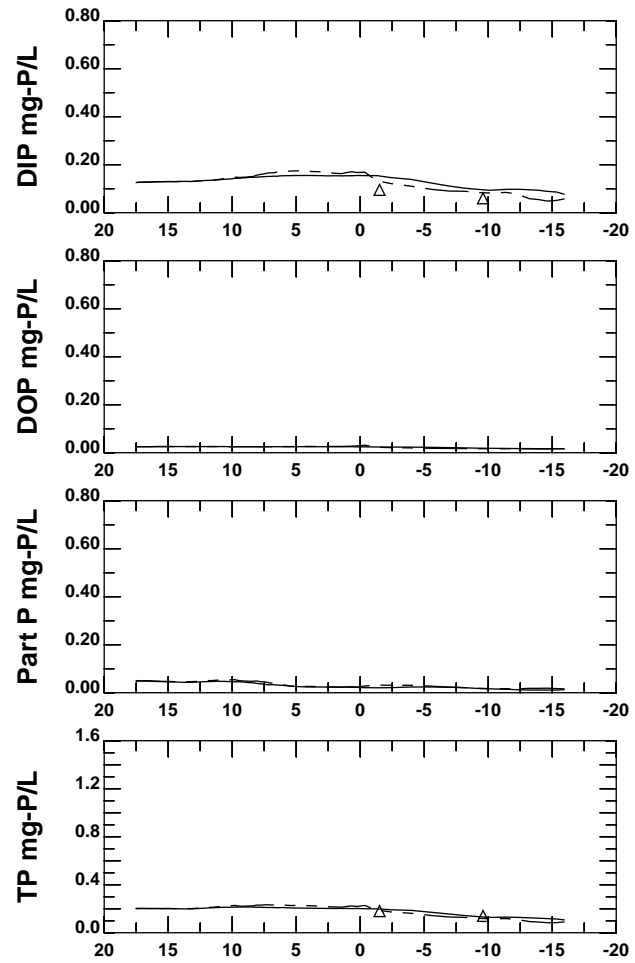
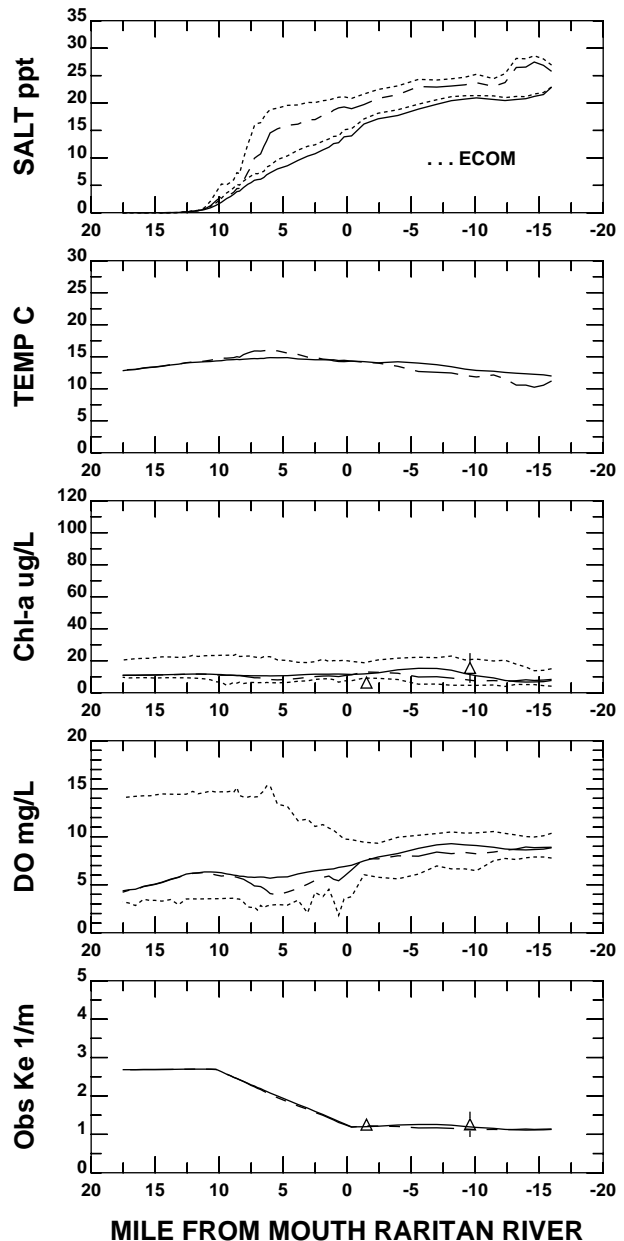
**MILE FROM MOUTH RARITAN RIVER**

<b>DATA Mar 30-Apr 28, 2002</b>		<b>MODEL</b>	
	<b>SURF BOT</b>		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment
		—	SURFACE 30-DAY MEAN
		- - -	BOTTOM 30-DAY MEAN
		- - -	30-DAY SURFACE MAX OR BOTTOM MIN

**RARITAN RIVER AND NORTH SHORE OF RARITAN BAY**



**RARITAN RIVER AND NORTH SHORE RARITAN BAY**



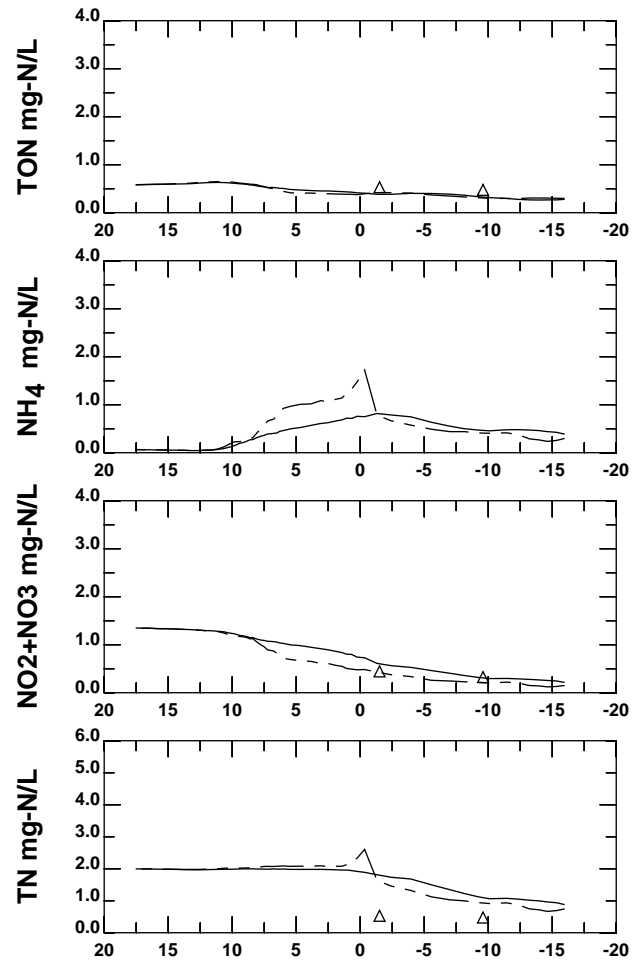
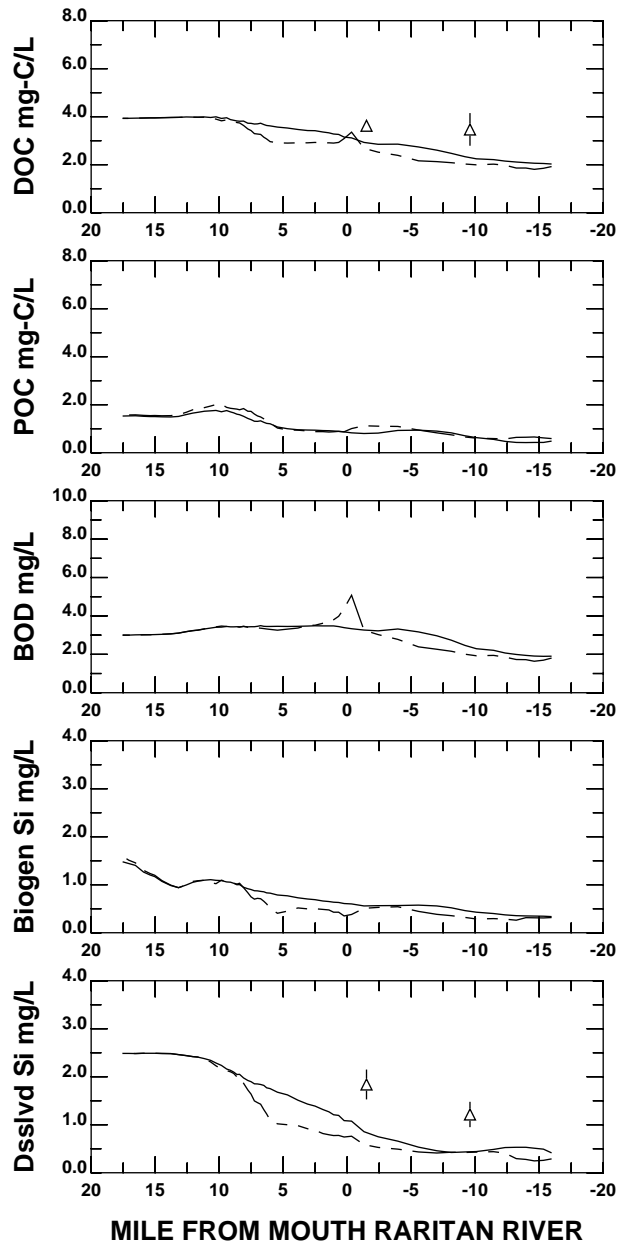
**DATA Apr 29-May 28, 2002**

	<b>SURF BOT</b>		
Harbor Survey	△	▲	Transect
NYSDEC	t	e	Embayment
	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment

<b>MODEL</b>	—	<b>SURFACE 30-DAY MEAN</b>
	- - -	<b>BOTTOM 30-DAY MEAN</b>
	- - -	<b>30-DAY SURFACE MAX OR BOTTOM MIN</b>

**RARITAN RIVER AND NORTH SHORE OF RARITAN BAY**



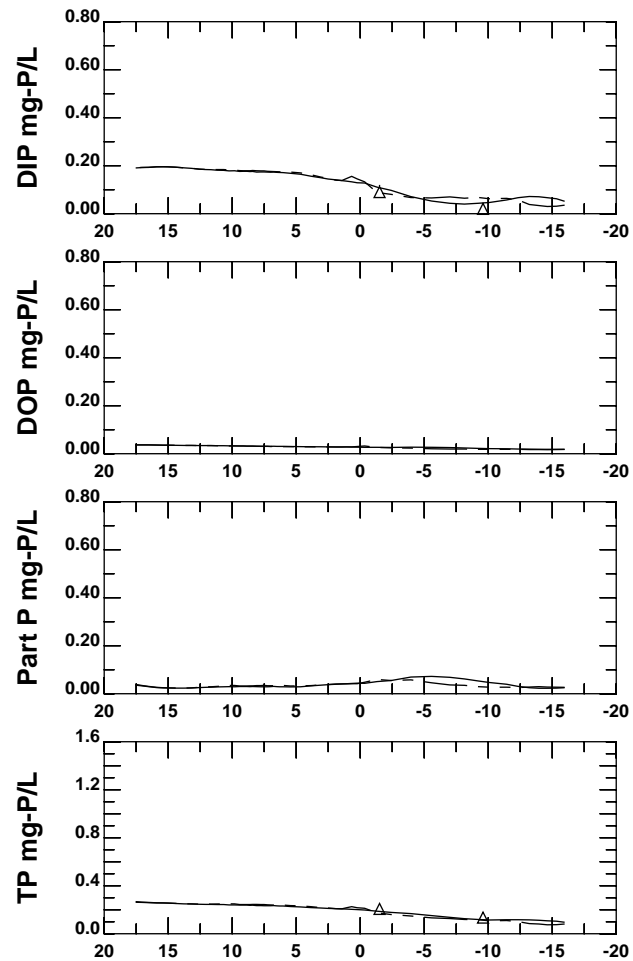
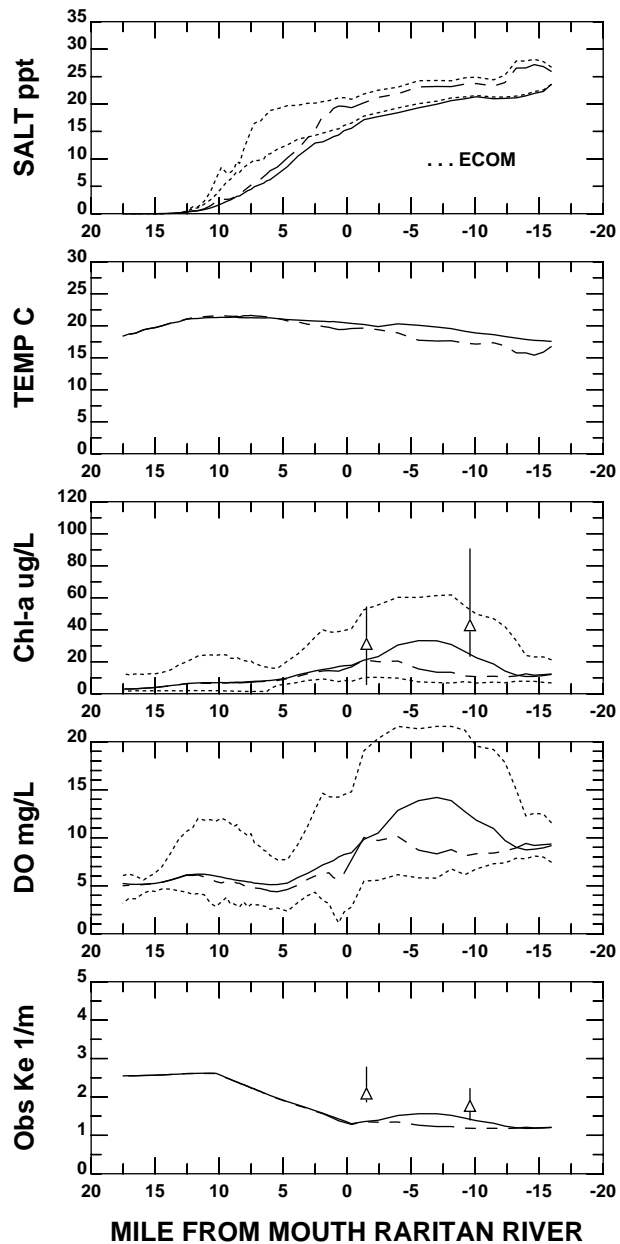
**DATA Apr 29-May 28, 2002**

	<b>SURF BOT</b>		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment

	<b>MODEL</b>
————	<b>SURFACE 30-DAY MEAN</b>
-----	<b>BOTTOM 30-DAY MEAN</b>
- - - -	<b>30-DAY SURFACE MAX OR BOTTOM MIN</b>

**RARITAN RIVER AND NORTH SHORE RARITAN BAY**

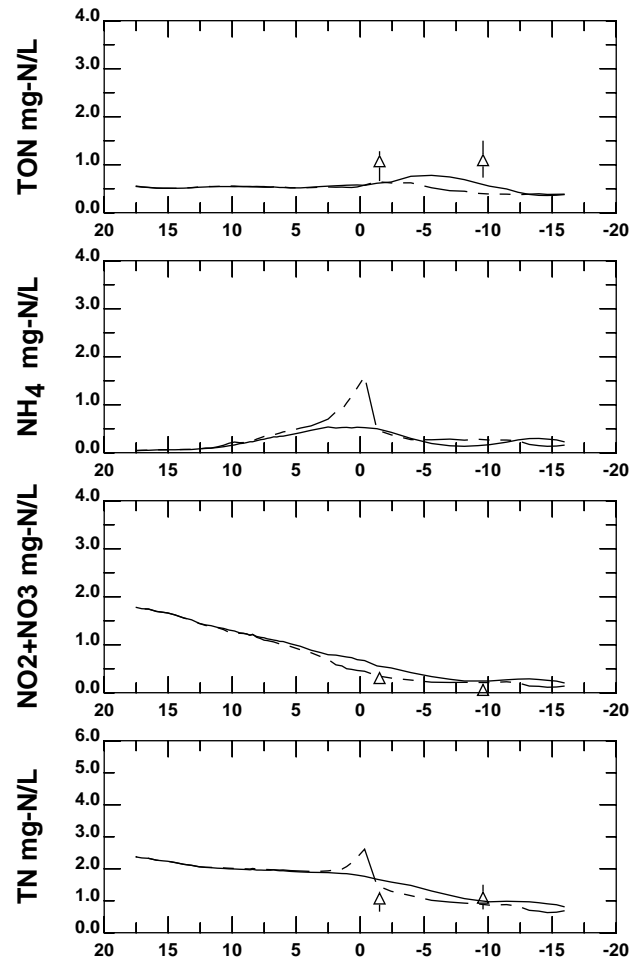
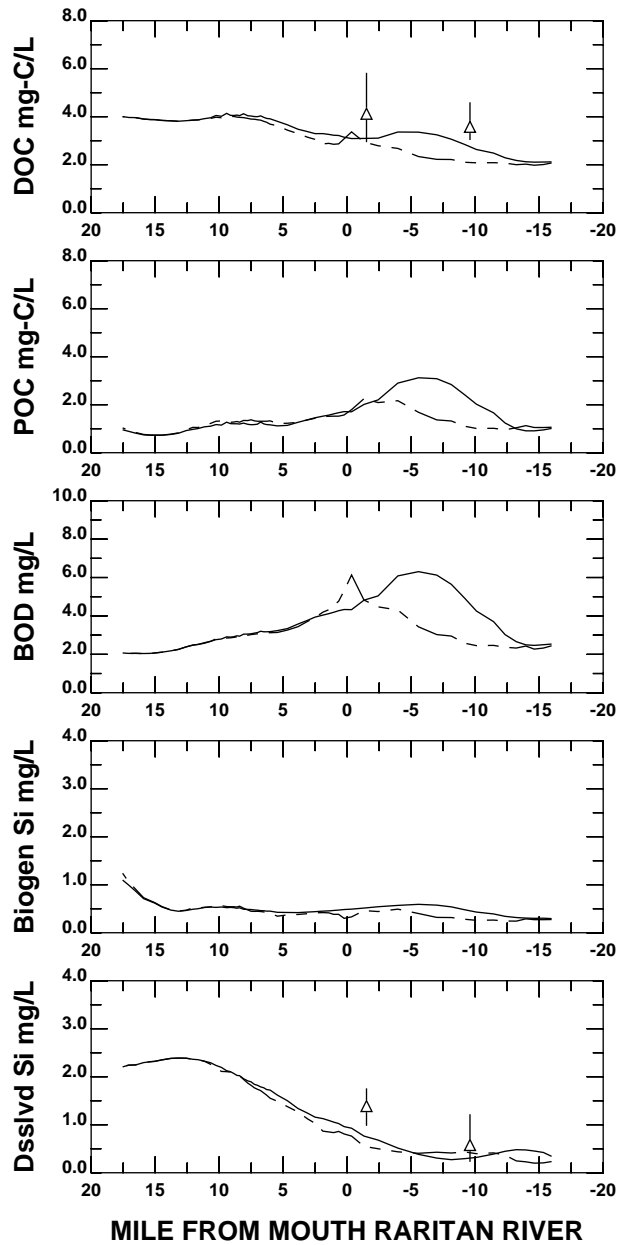


**DATA** May 29-Jun 27, 2002

	SURF BOT		MODEL
Harbor Survey	△	▲	— SURFACE 30-DAY MEAN
NYSDEC	t	e	- - - - BOTTOM 30-DAY MEAN
NJSIT	○		- - - 30-DAY SURFACE MAX OR BOTTOM MIN
	c		
	◇		
	p		

**RARITAN RIVER AND NORTH SHORE OF RARITAN BAY**





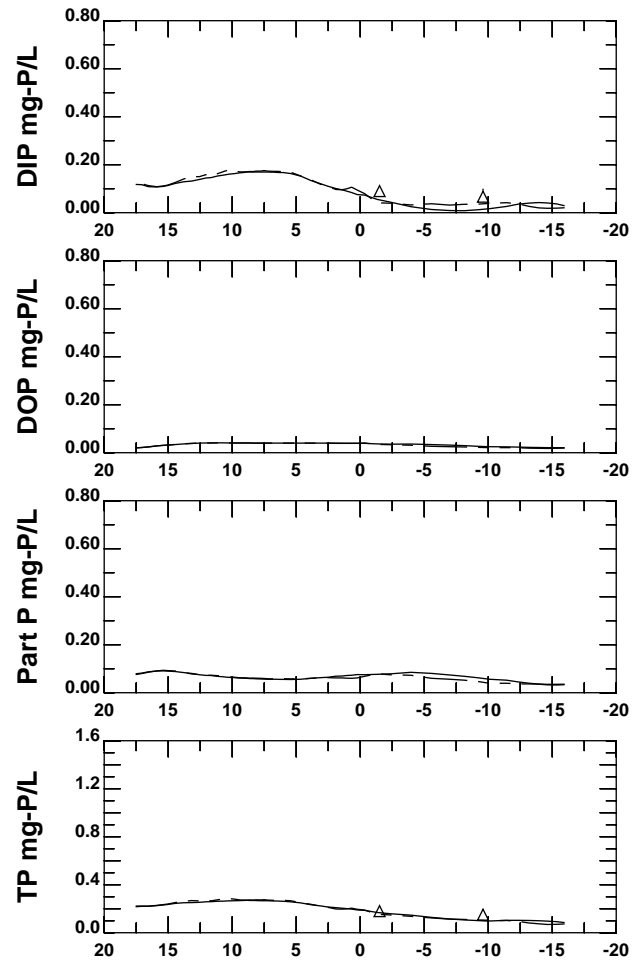
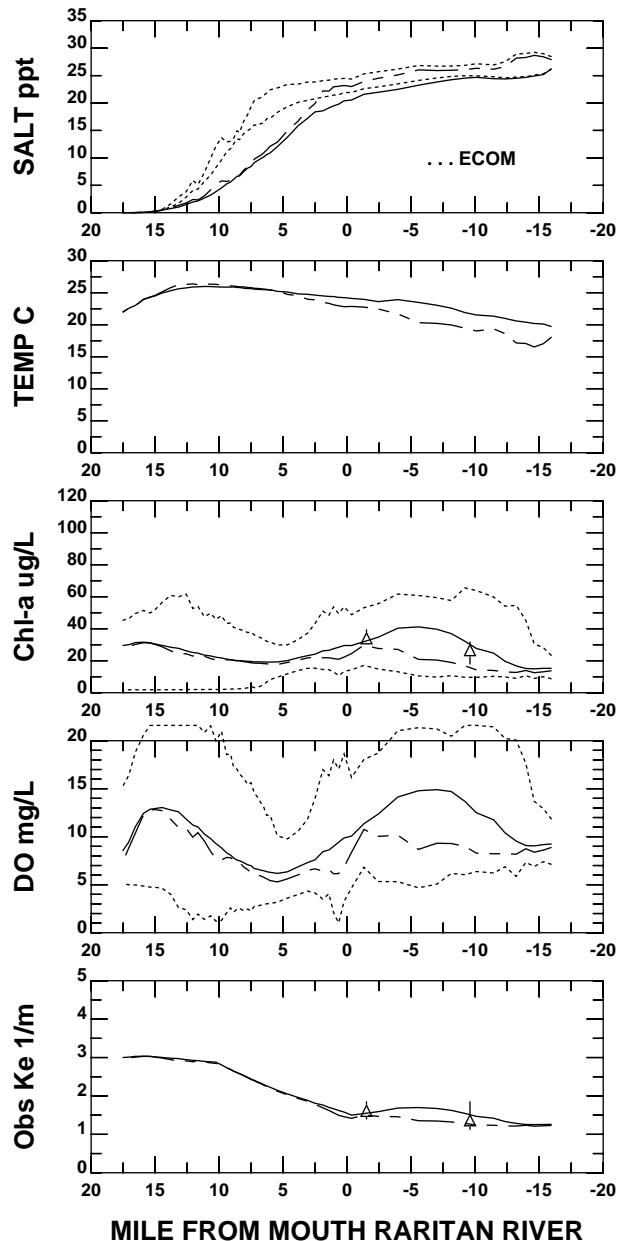
**DATA** May 29-Jun 27, 2002

**MODEL**

	<b>SURF</b>	<b>BOT</b>		
Harbor Survey	△	▲	Transect	—
	t	e	Embayment	---
NYSDEC	○		Transect	- · - ·
	c		Embayment	
NJSIT	◇		Transect	- - -
	p		Embayment	
				- · - ·

**30-DAY SURFACE MAX OR BOTTOM MIN**

**RARITAN RIVER AND NORTH SHORE RARITAN BAY**



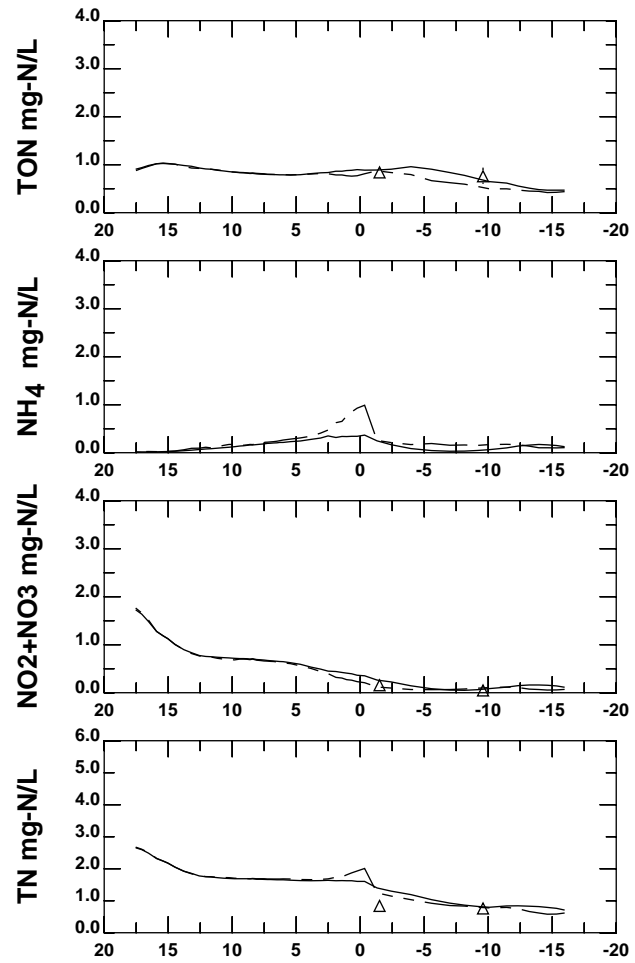
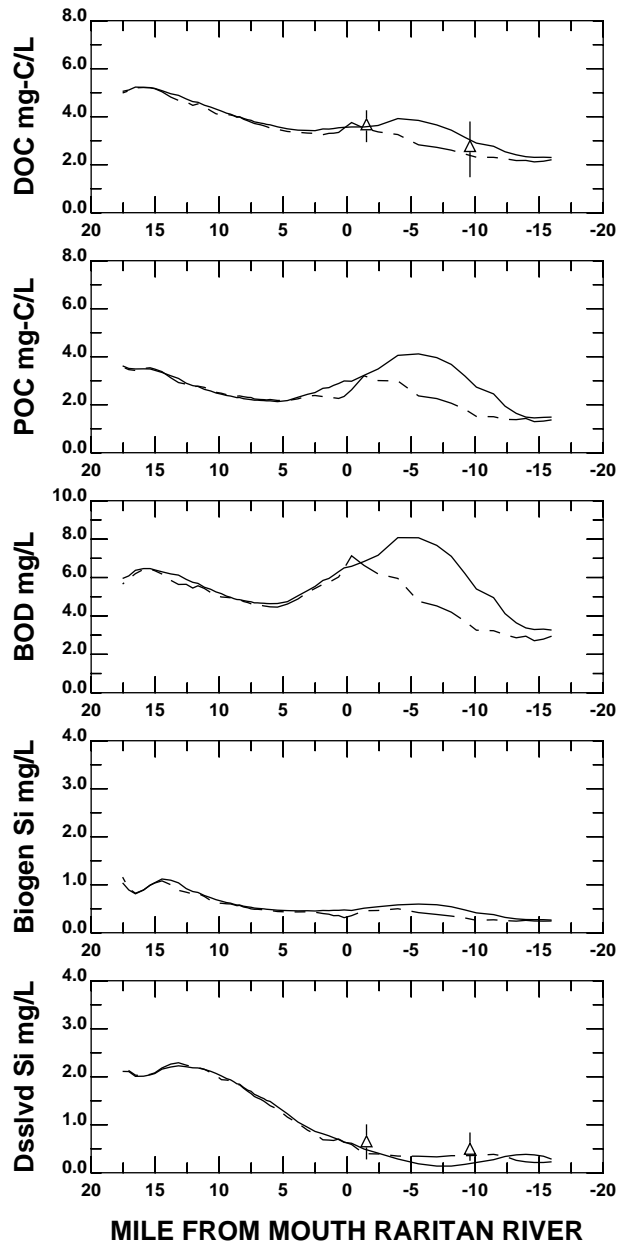
**DATA Jun 28-Jul 27, 2002**

	<b>SURF BOT</b>		
Harbor Survey	△	▲	Transect
NYSDEC	t	e	Embayment
	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment

<b>MODEL</b>	—	<b>SURFACE 30-DAY MEAN</b>
	- - -	<b>BOTTOM 30-DAY MEAN</b>
	- - -	<b>30-DAY SURFACE MAX OR BOTTOM MIN</b>

**RARITAN RIVER AND NORTH SHORE OF RARITAN BAY**



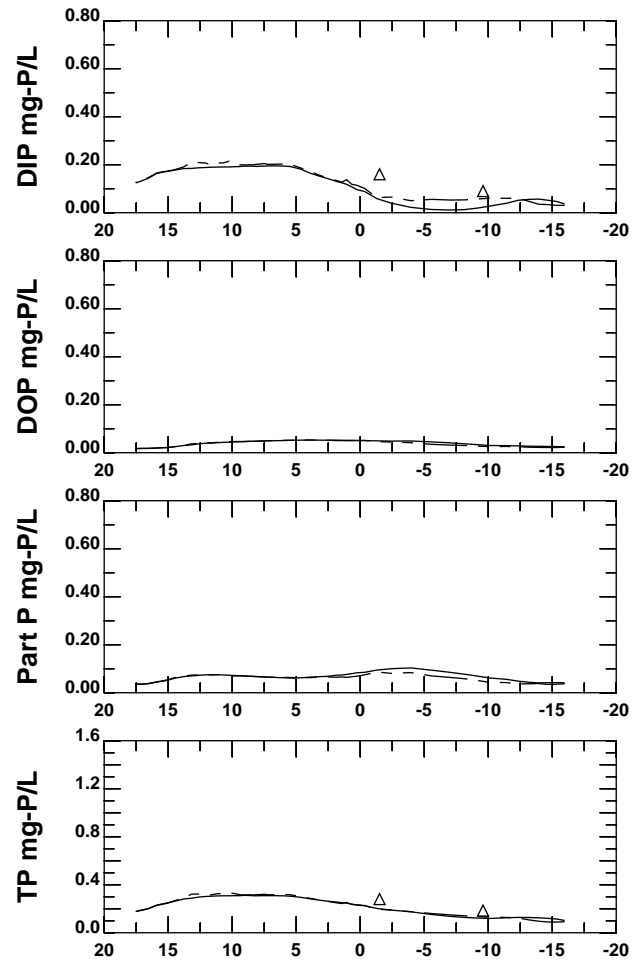
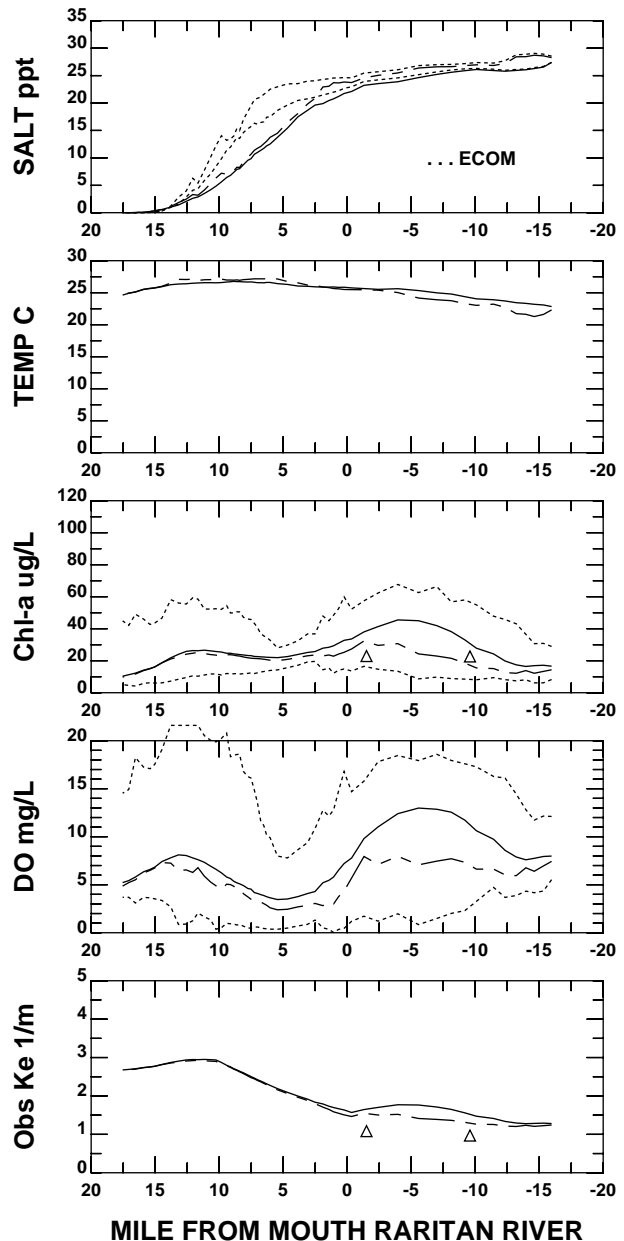
DATA Jun 28-Jul 27, 2002

	SURF BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment

MODEL	—	SURFACE 30-DAY MEAN
	- - -	BOTTOM 30-DAY MEAN
	- - -	30-DAY SURFACE MAX OR BOTTOM MIN

**RARITAN RIVER AND NORTH SHORE RARITAN BAY**



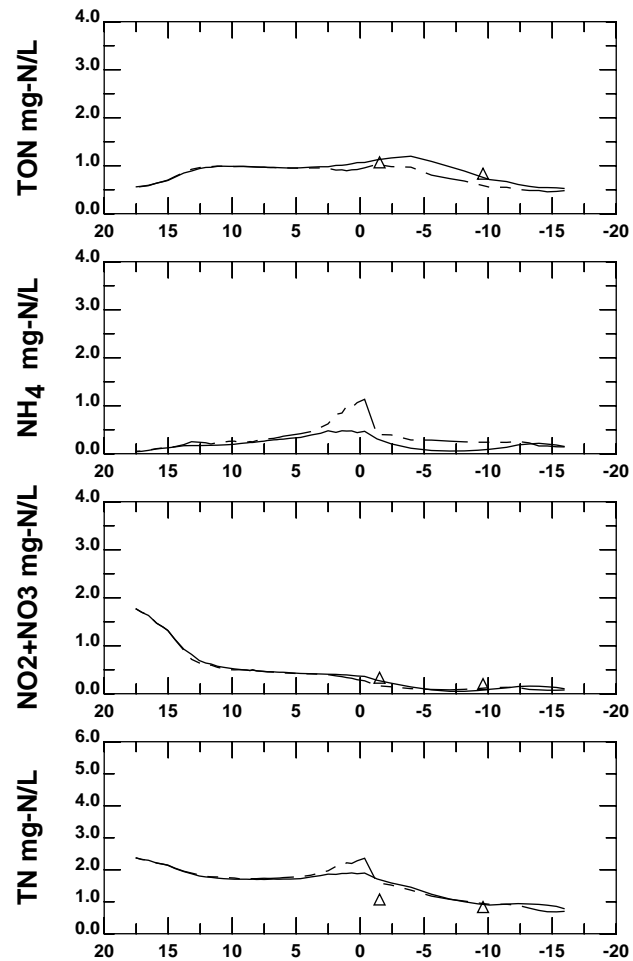
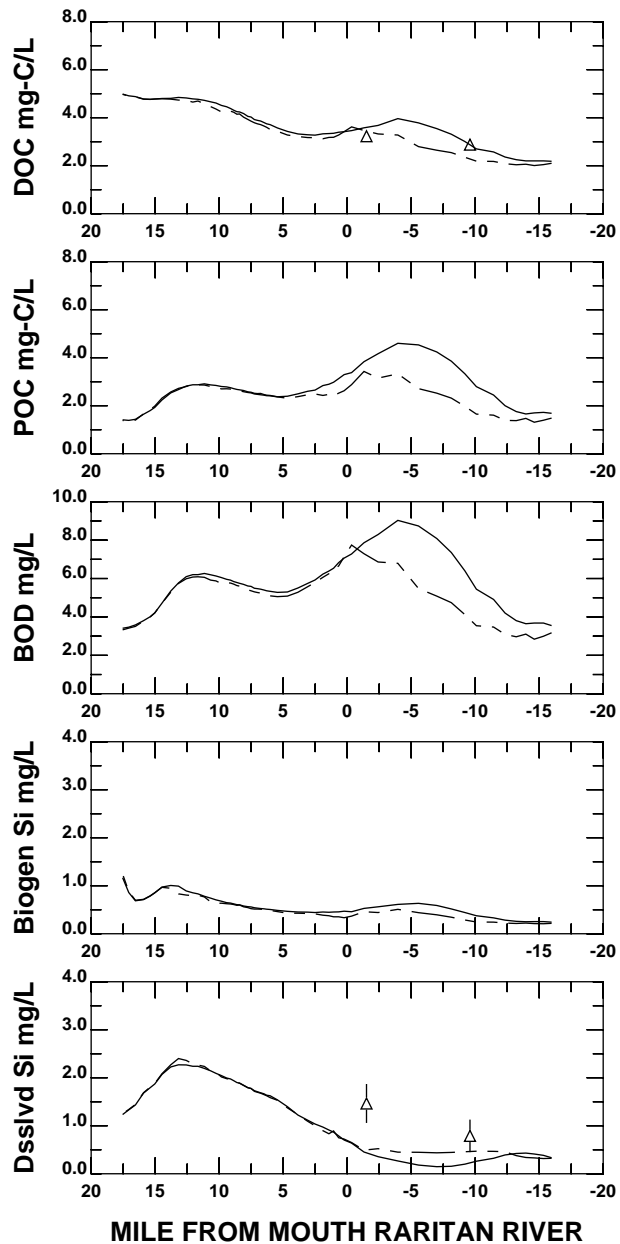
**DATA Jul 27-Aug 26, 2002**

	<b>SURF BOT</b>		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment

<b>MODEL</b>	—	<b>SURFACE 30-DAY MEAN</b>
	- - -	<b>BOTTOM 30-DAY MEAN</b>
	- - -	<b>30-DAY SURFACE MAX OR BOTTOM MIN</b>

**RARITAN RIVER AND NORTH SHORE OF RARITAN BAY**



**DATA Jul 27-Aug 26, 2002**

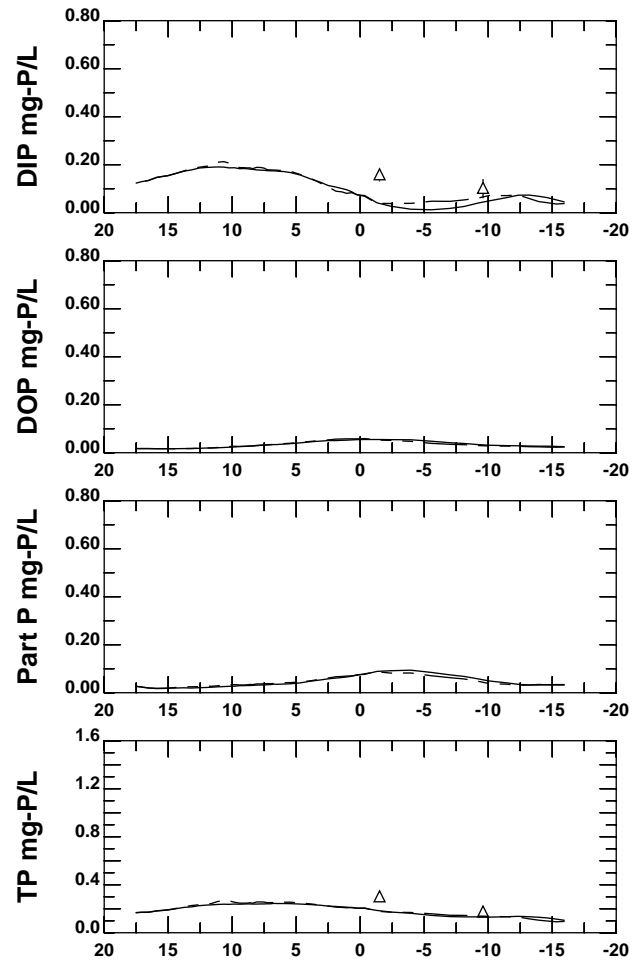
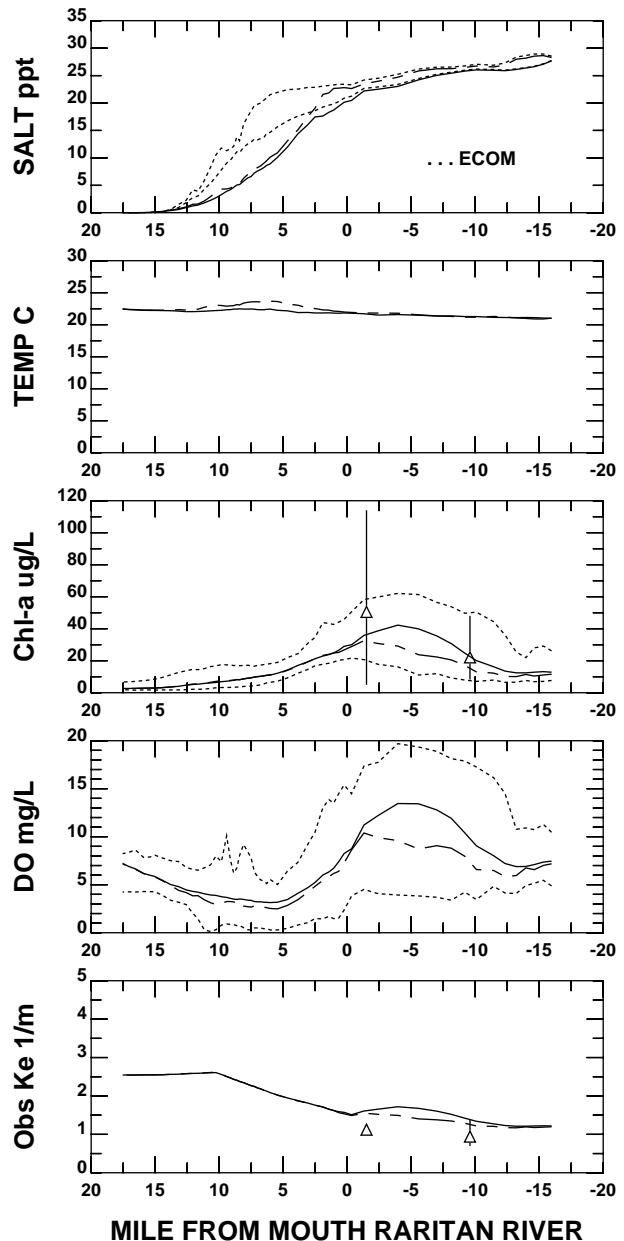
**MODEL**

	<b>SURF BOT</b>		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment

—	<b>SURFACE 30-DAY MEAN</b>
- - -	<b>BOTTOM 30-DAY MEAN</b>
- . - .	<b>30-DAY SURFACE MAX OR BOTTOM MIN</b>

**RARITAN RIVER AND NORTH SHORE RARITAN BAY**



**DATA Aug 27-Sep 25, 2002**

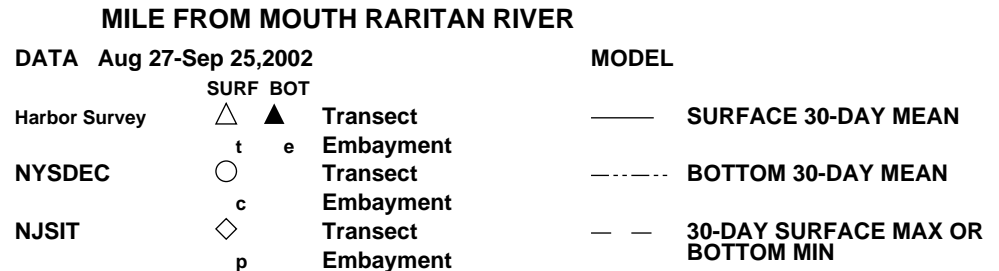
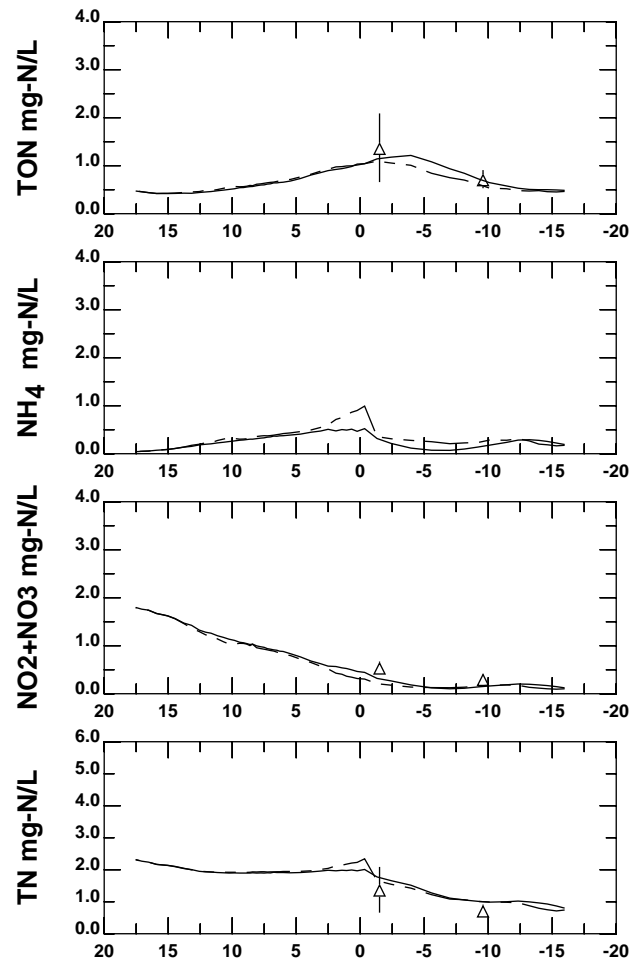
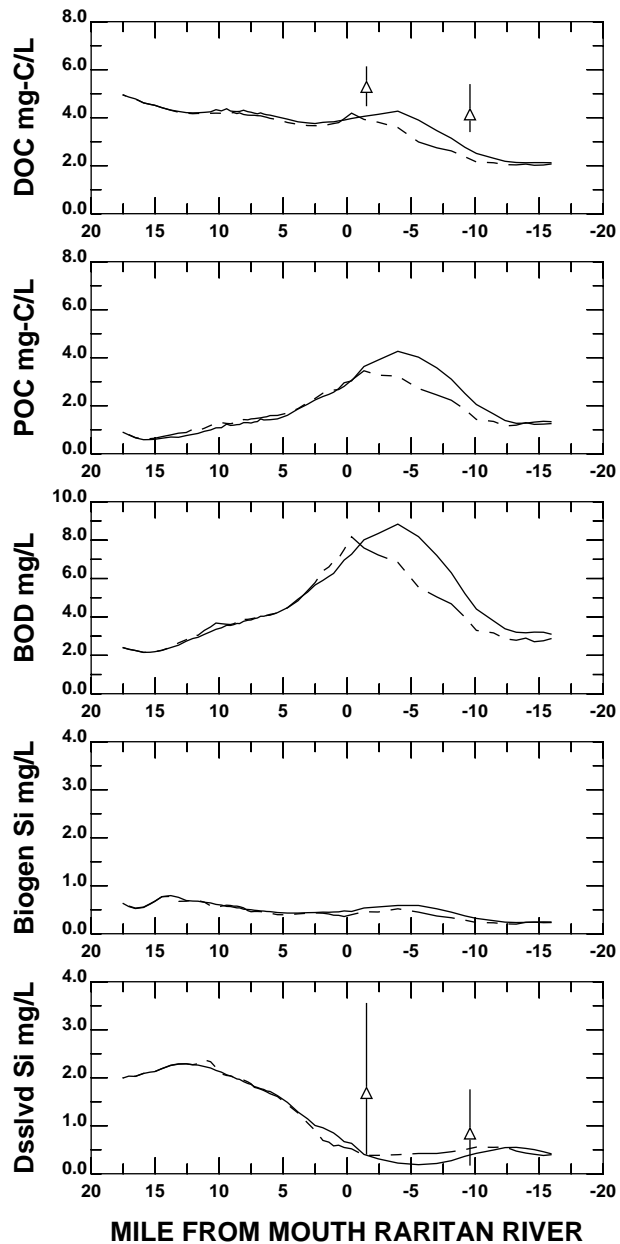
	<b>SURF BOT</b>		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment

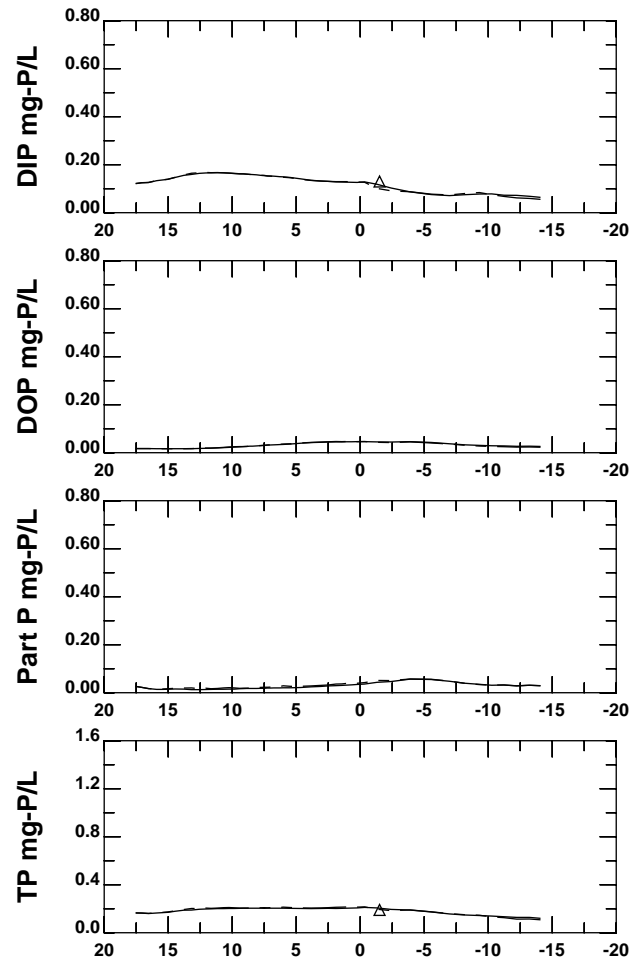
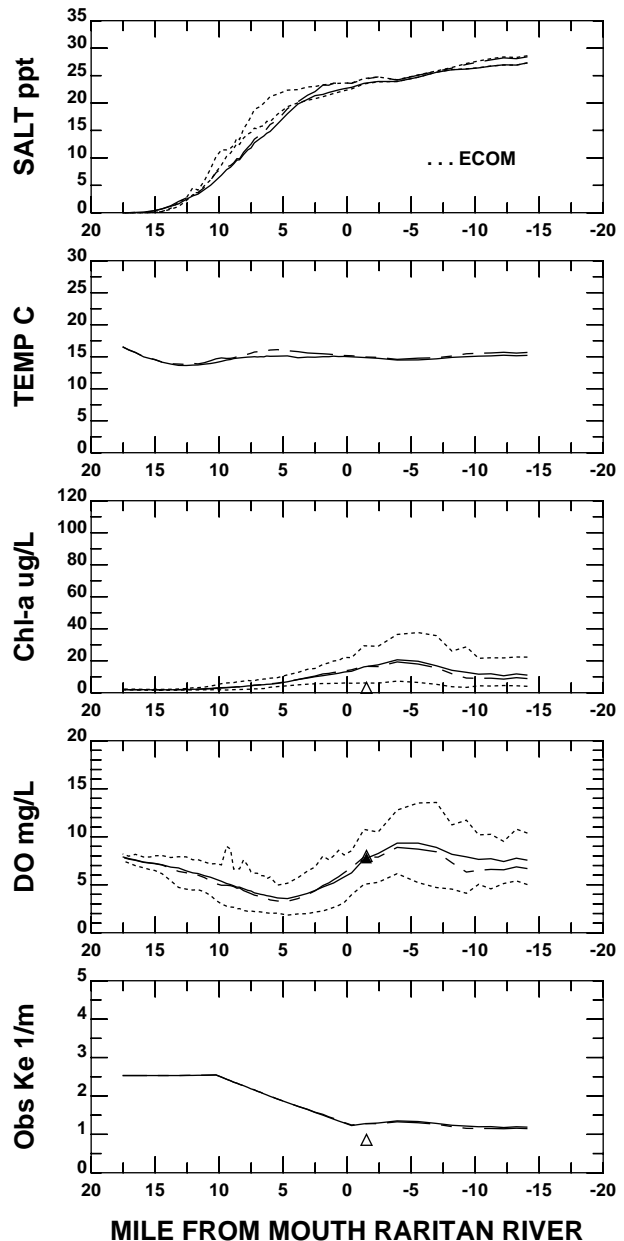
**MODEL**

————	<b>SURFACE 30-DAY MEAN</b>
-----	<b>BOTTOM 30-DAY MEAN</b>
- - - -	<b>30-DAY SURFACE MAX OR BOTTOM MIN</b>

**RARITAN RIVER AND NORTH SHORE OF RARITAN BAY**



**RARITAN RIVER AND NORTH SHORE RARITAN BAY**



**DATA Oct 1-30,2001**

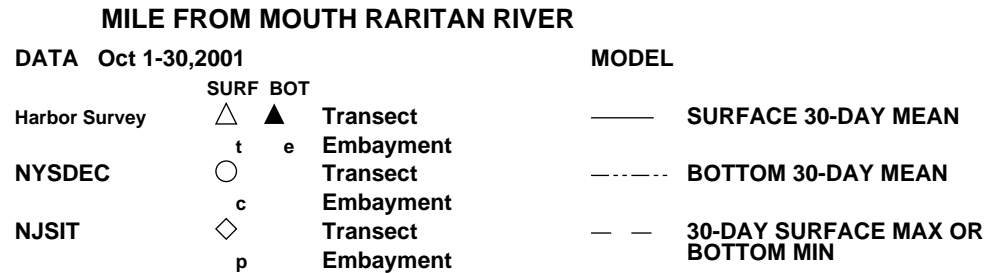
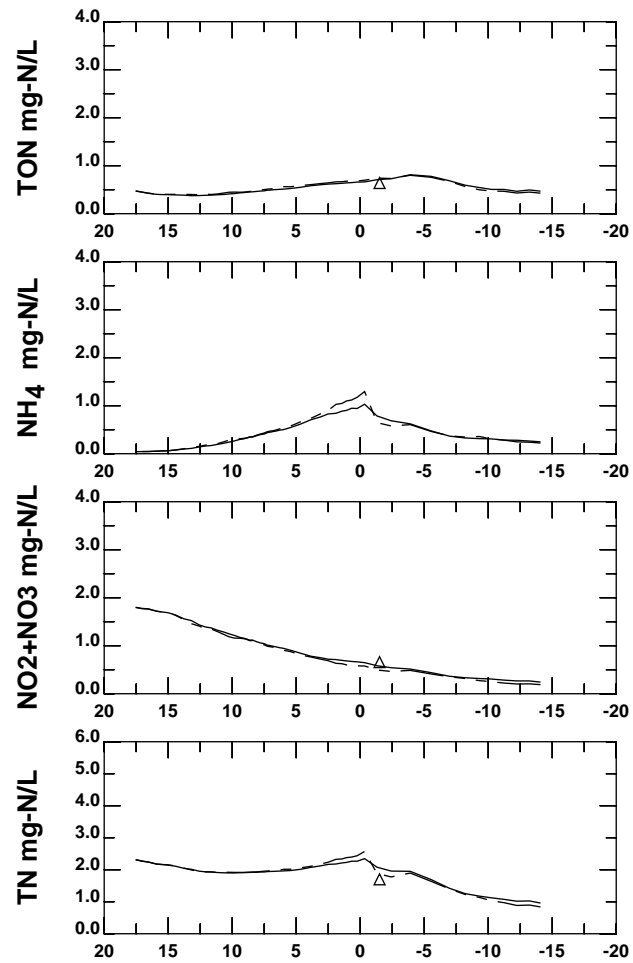
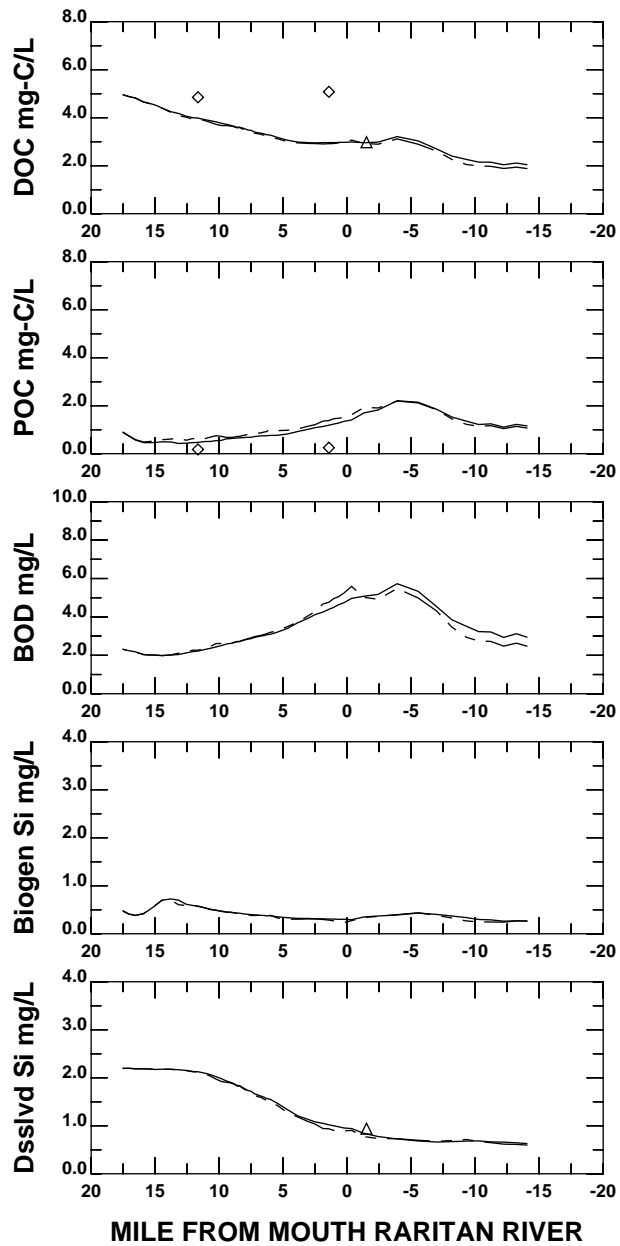
	<b>SURF BOT</b>		
Harbor Survey	△	▲	Transect
NYSDEC	t	e	Embayment
	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment

**MODEL**

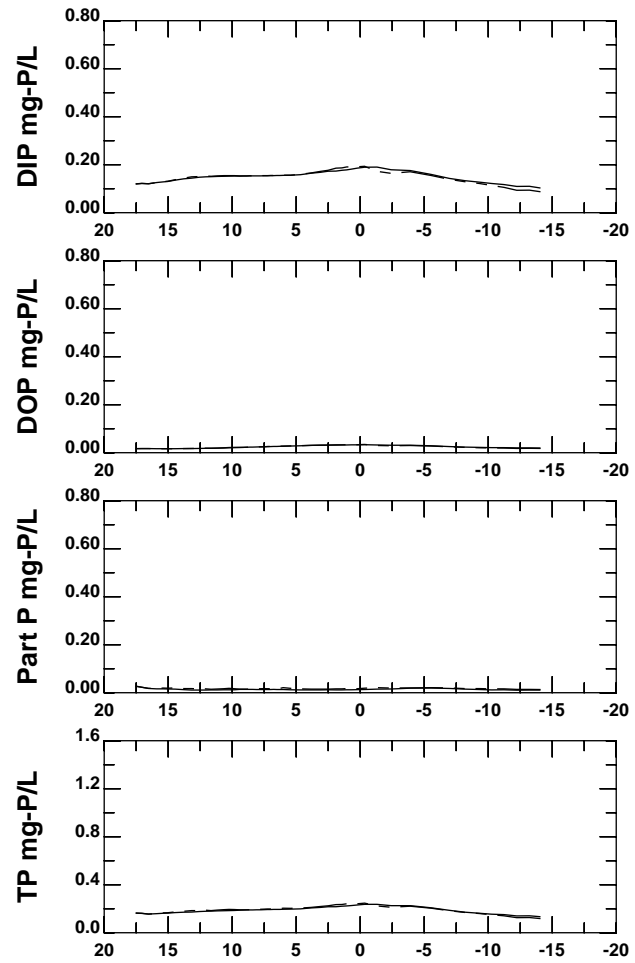
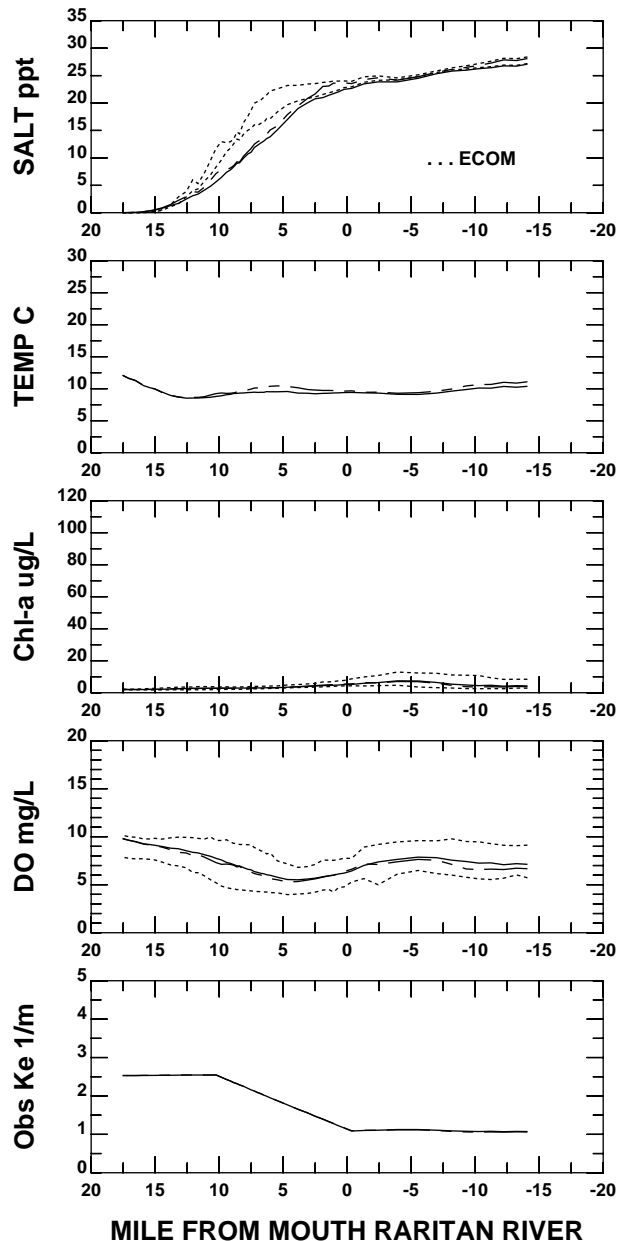
————	<b>SURFACE 30-DAY MEAN</b>
-----	<b>BOTTOM 30-DAY MEAN</b>
- - - -	<b>30-DAY SURFACE MAX OR BOTTOM MIN</b>

**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**





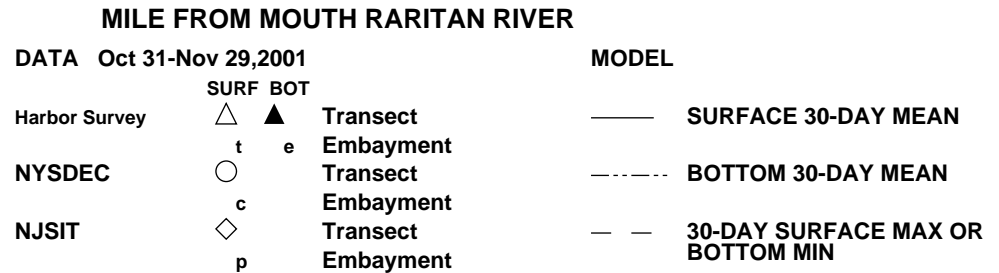
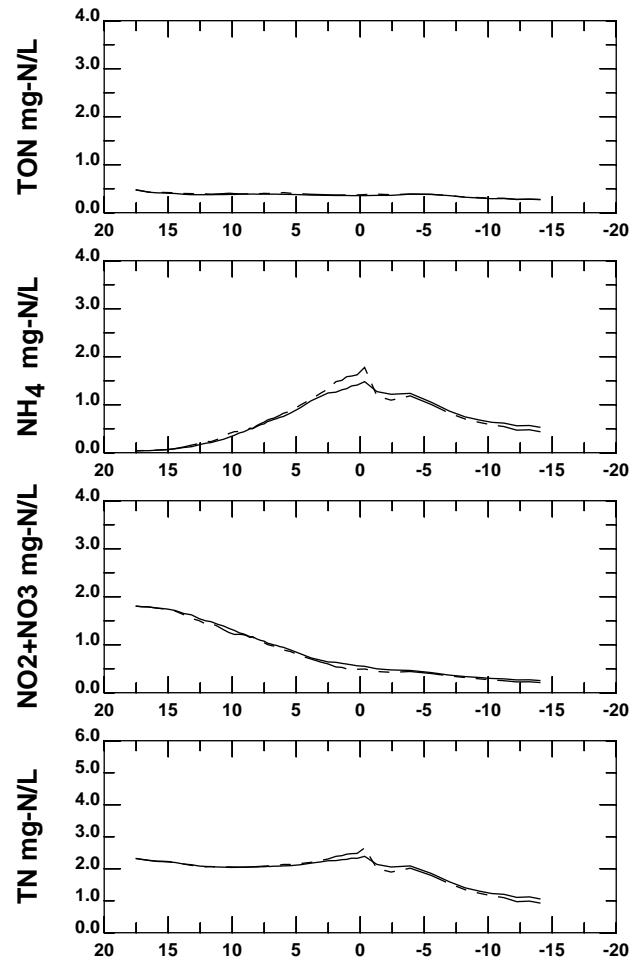
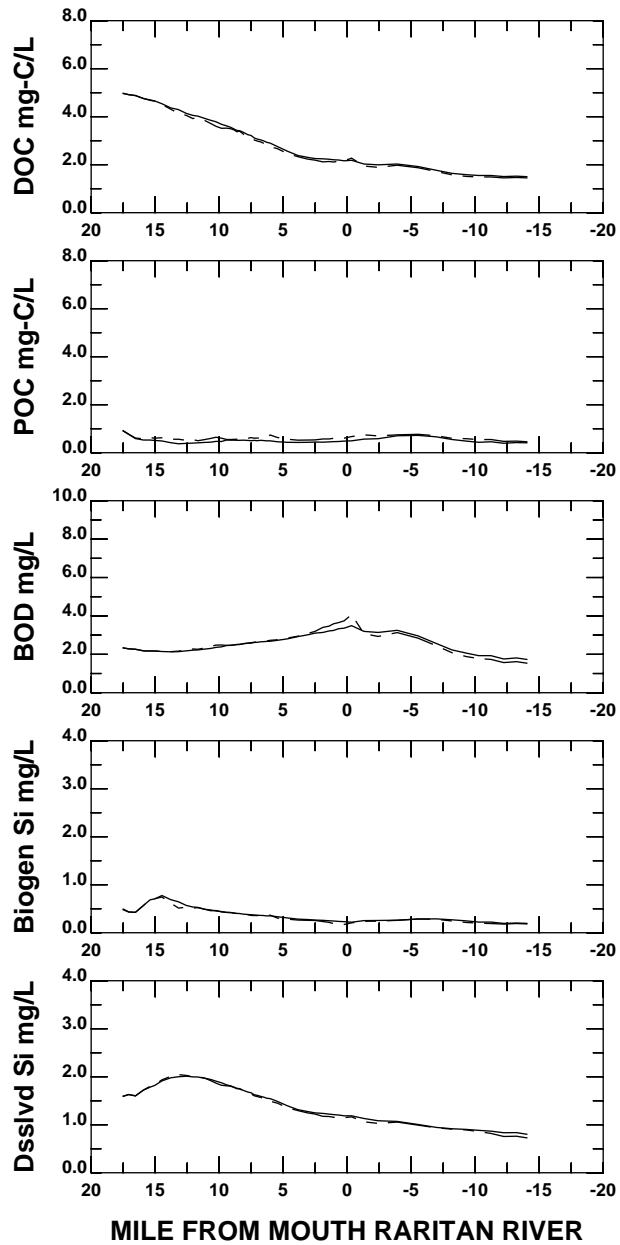
**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**



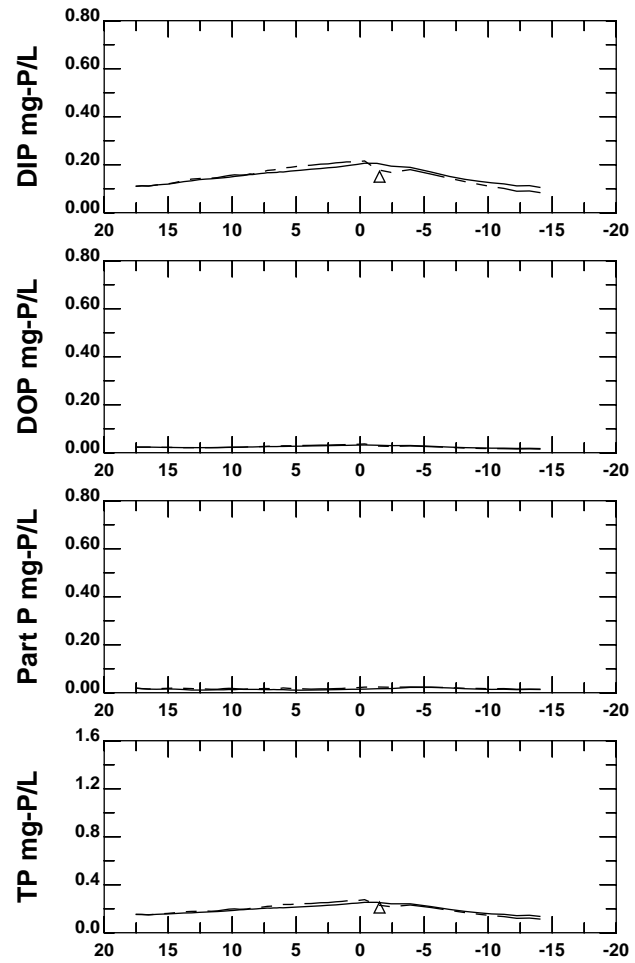
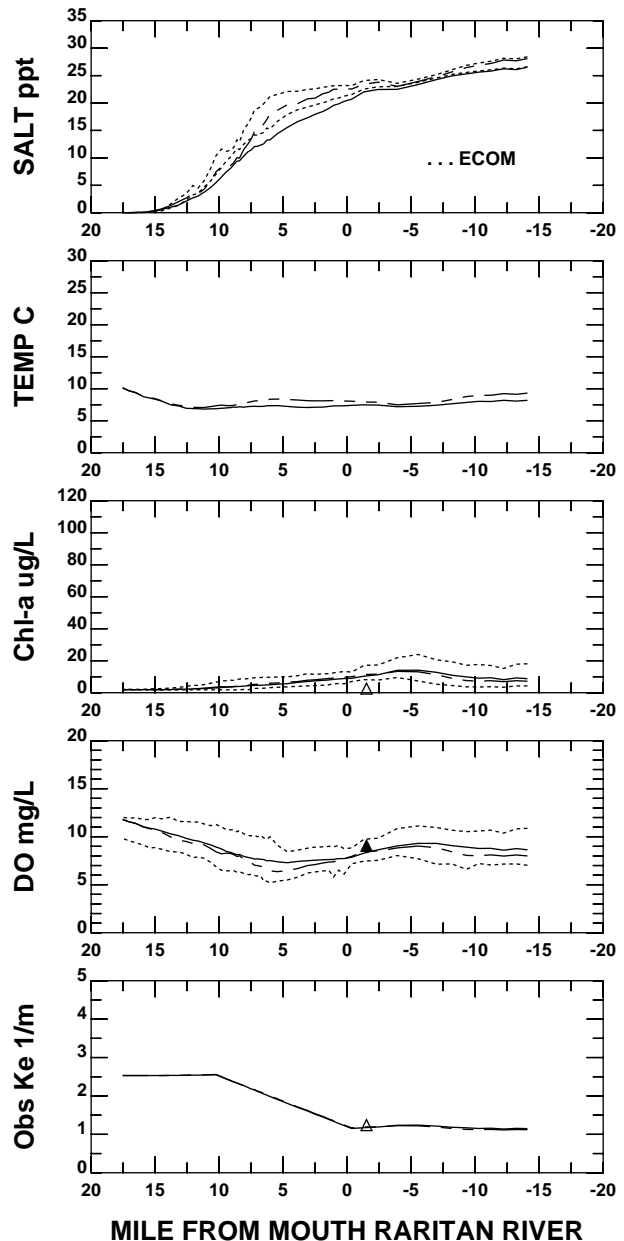
**MILE FROM MOUTH RARITAN RIVER**

<b>DATA</b> Oct 31-Nov 29,2001		<b>MODEL</b>
	<b>SURF BOT</b>	
Harbor Survey	△ ▲	Transect
	t e	Embayment
NYSDEC	○	Transect
	c	Embayment
NJSIT	◇	Transect
	p	Embayment
		— SURFACE 30-DAY MEAN
		- - - - - BOTTOM 30-DAY MEAN
		- - 30-DAY SURFACE MAX OR BOTTOM MIN

**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**



**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**



**DATA Nov 30-Dec 29,2001**

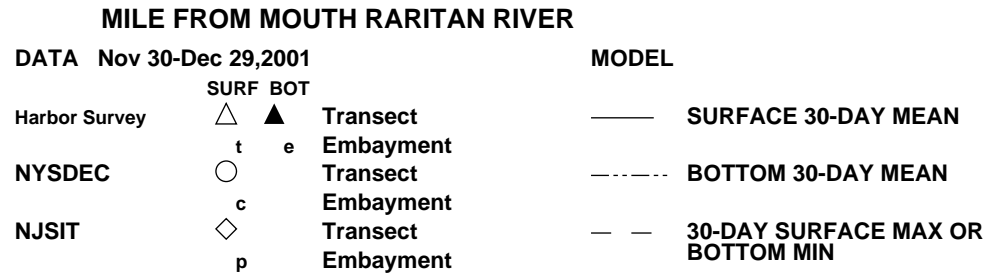
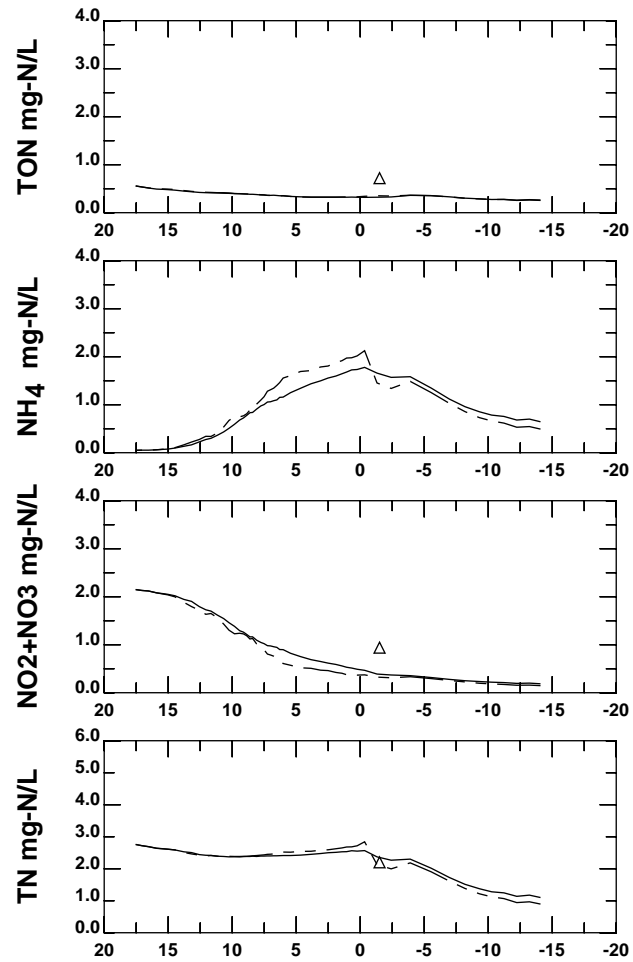
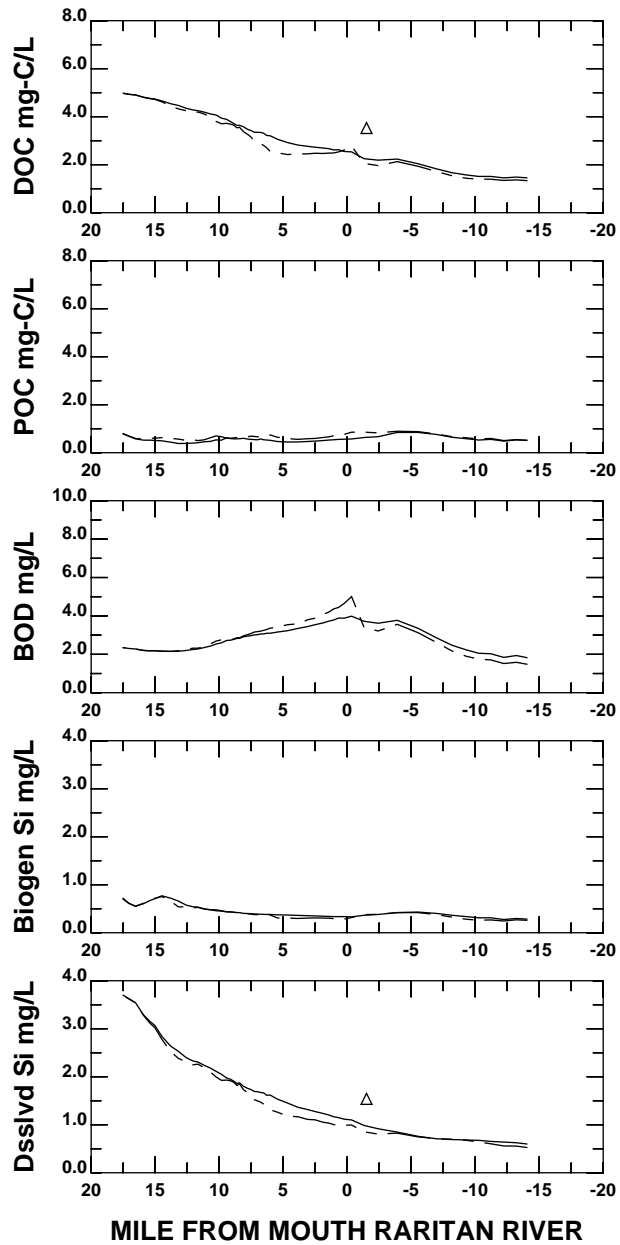
	<b>SURF BOT</b>		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment

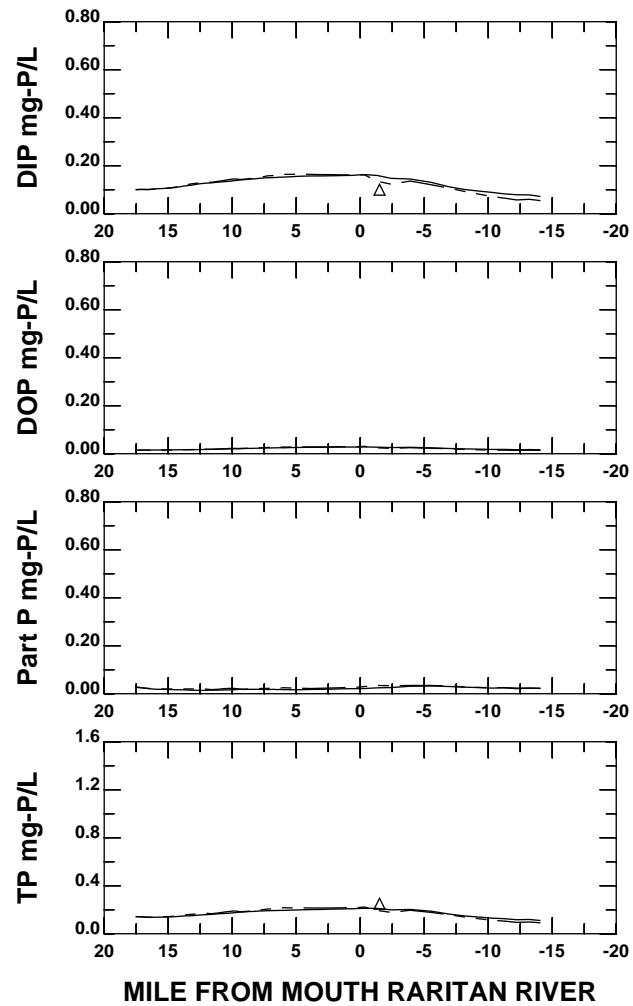
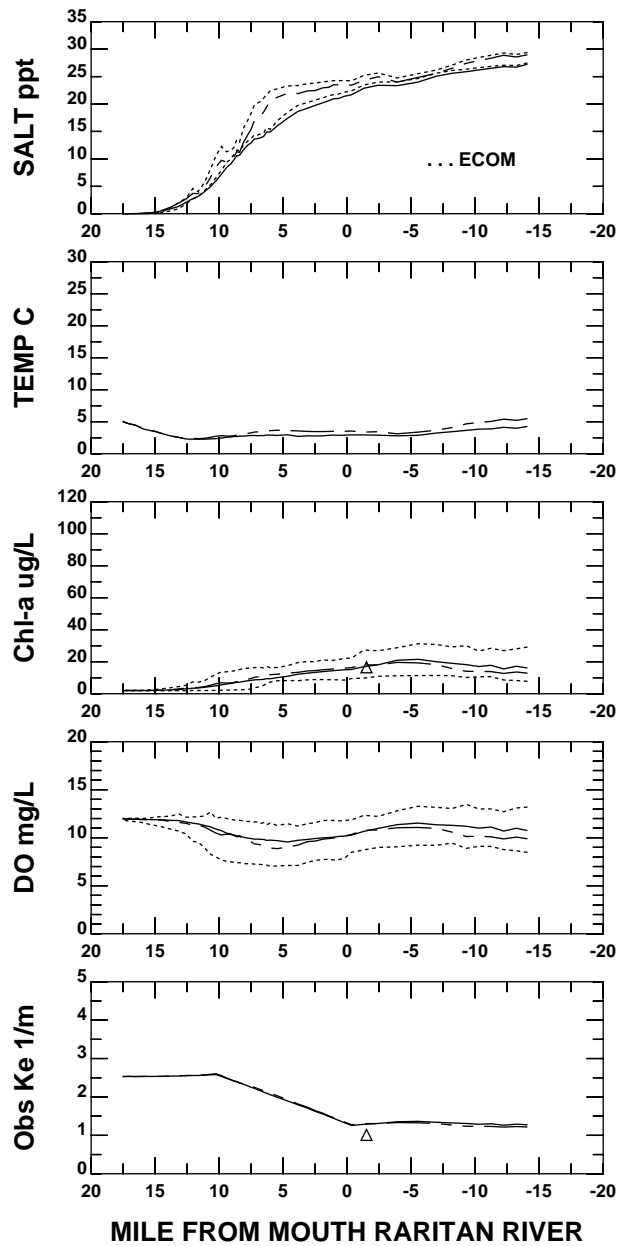
**MODEL**

—	SURFACE 30-DAY MEAN
---	BOTTOM 30-DAY MEAN
- - -	30-DAY SURFACE MAX OR BOTTOM MIN

**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**



**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**

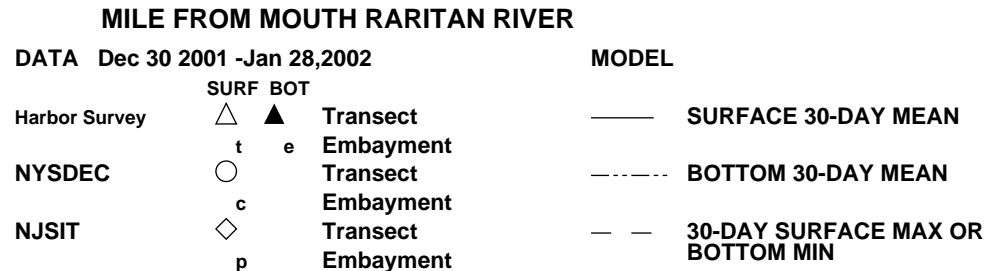
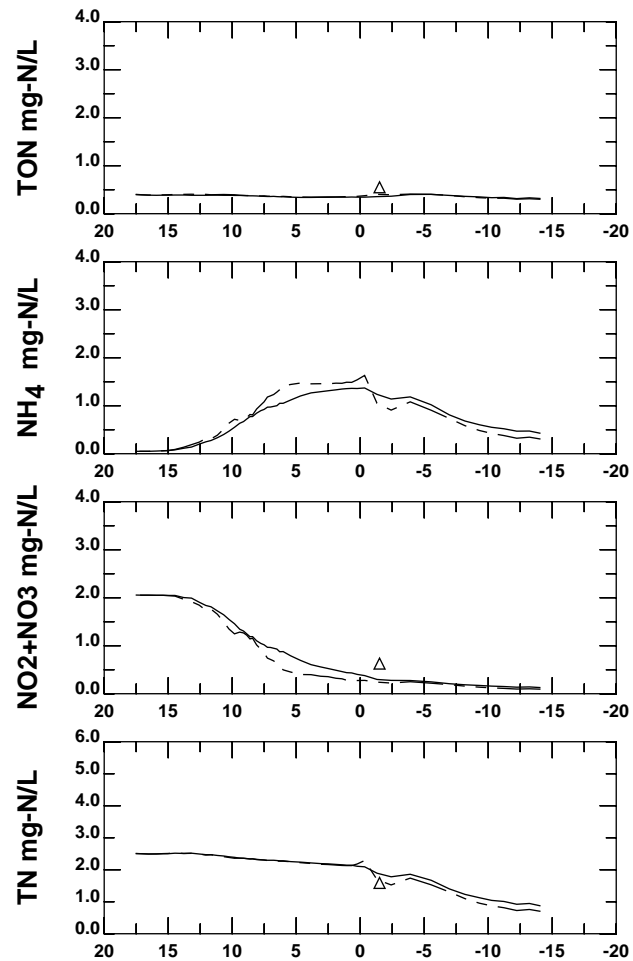
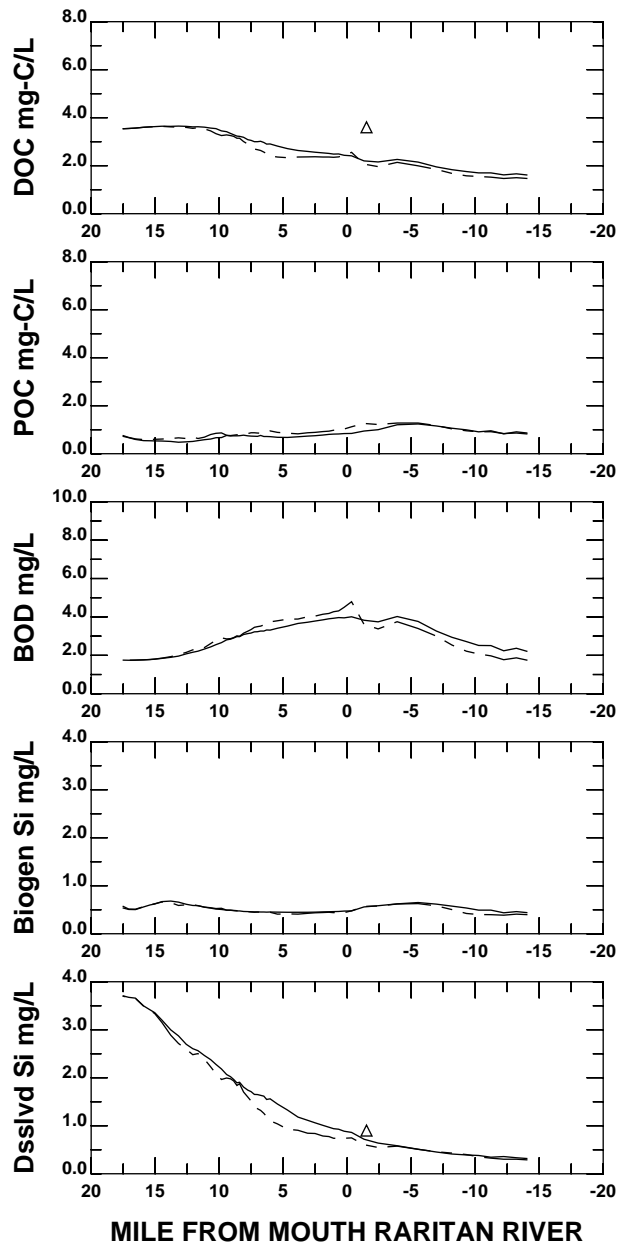


DATA Dec 30 2001 -Jan 28,2002

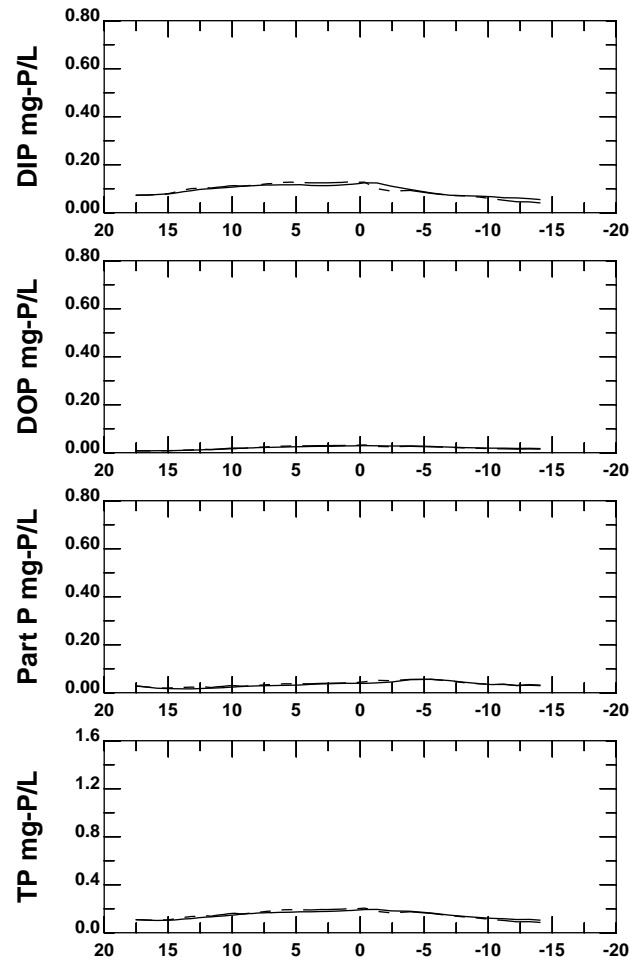
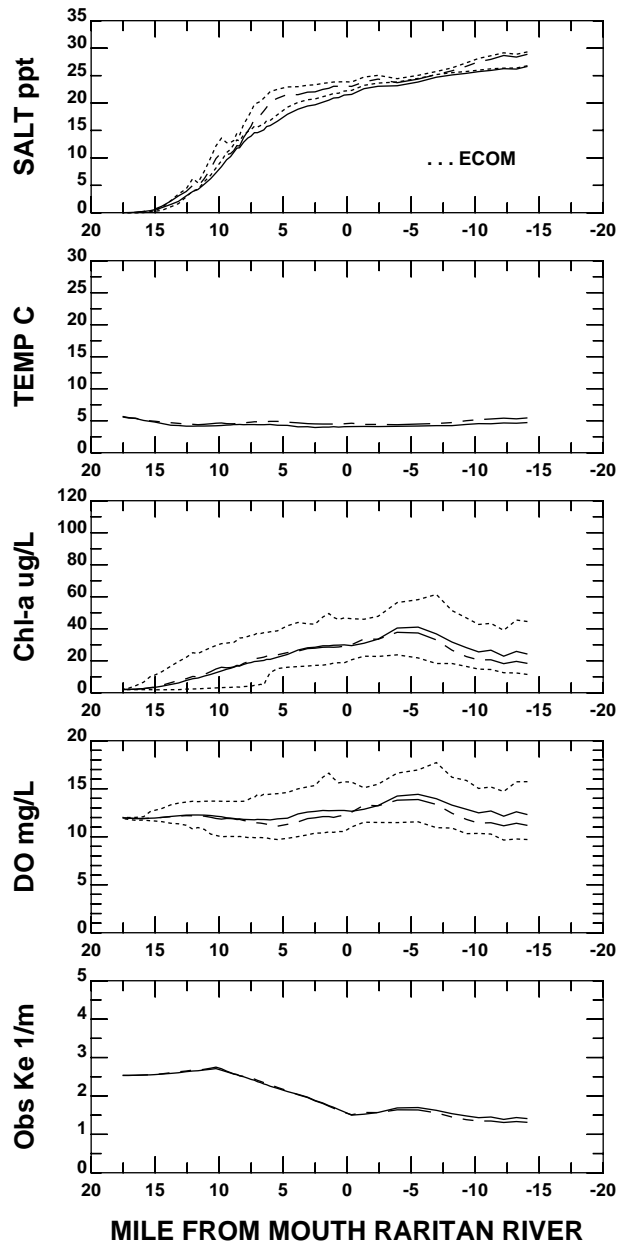
MODEL

	SURF BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment
			— SURFACE 30-DAY MEAN
			- - - - - BOTTOM 30-DAY MEAN
			- - - 30-DAY SURFACE MAX OR BOTTOM MIN

## RARITAN RIVER AND SOUTH SHORE RARITAN BAY



**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**

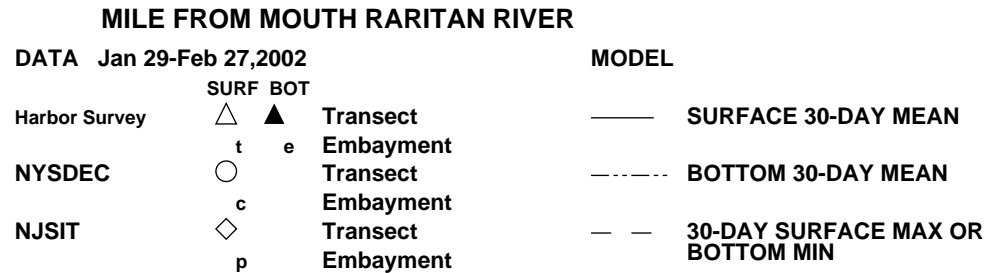
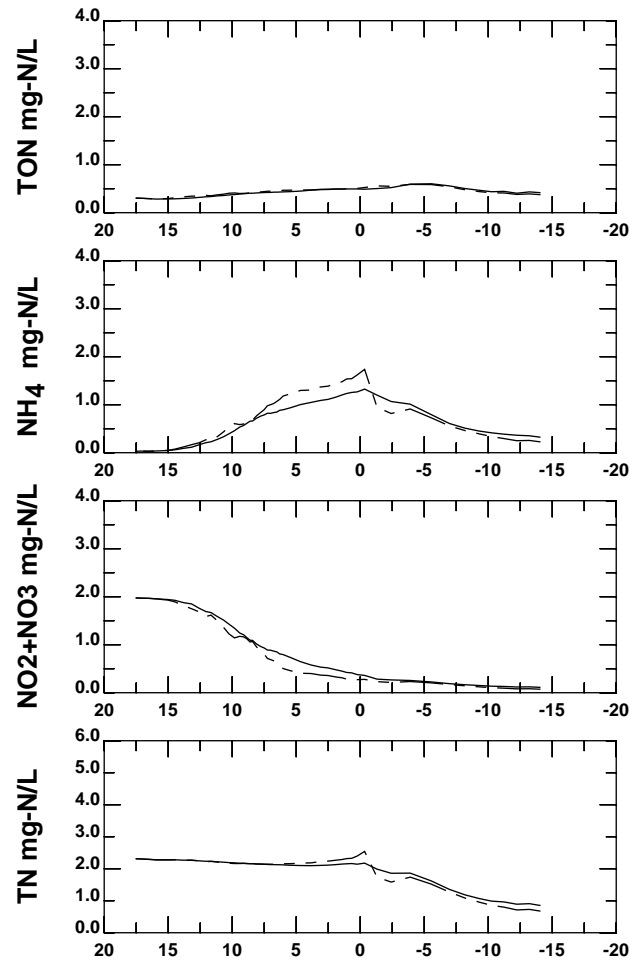
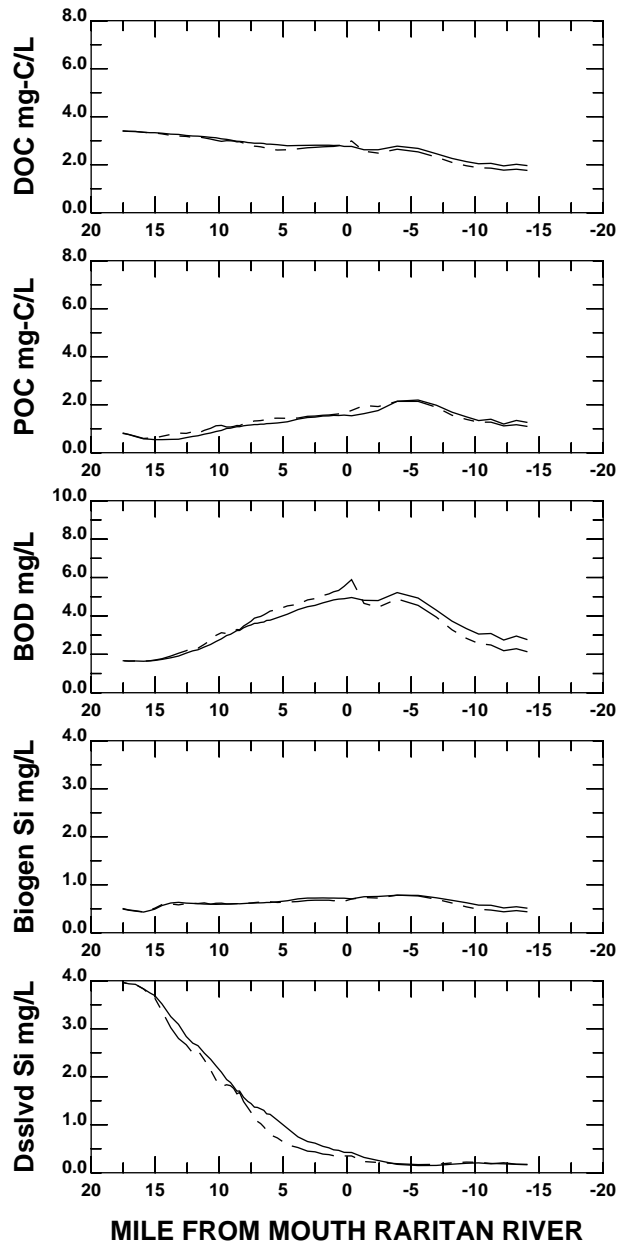


**MILE FROM MOUTH RARITAN RIVER**

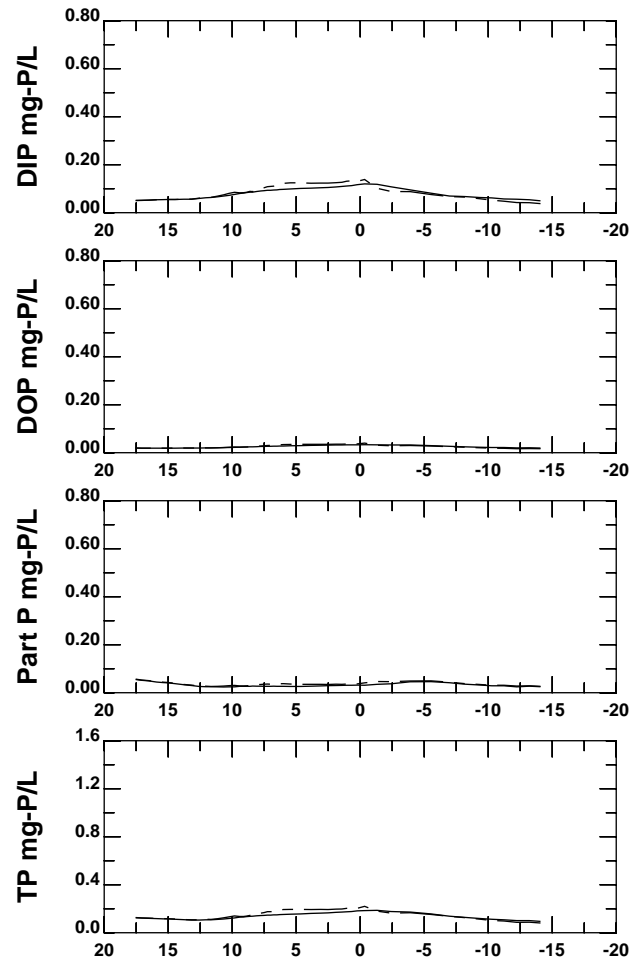
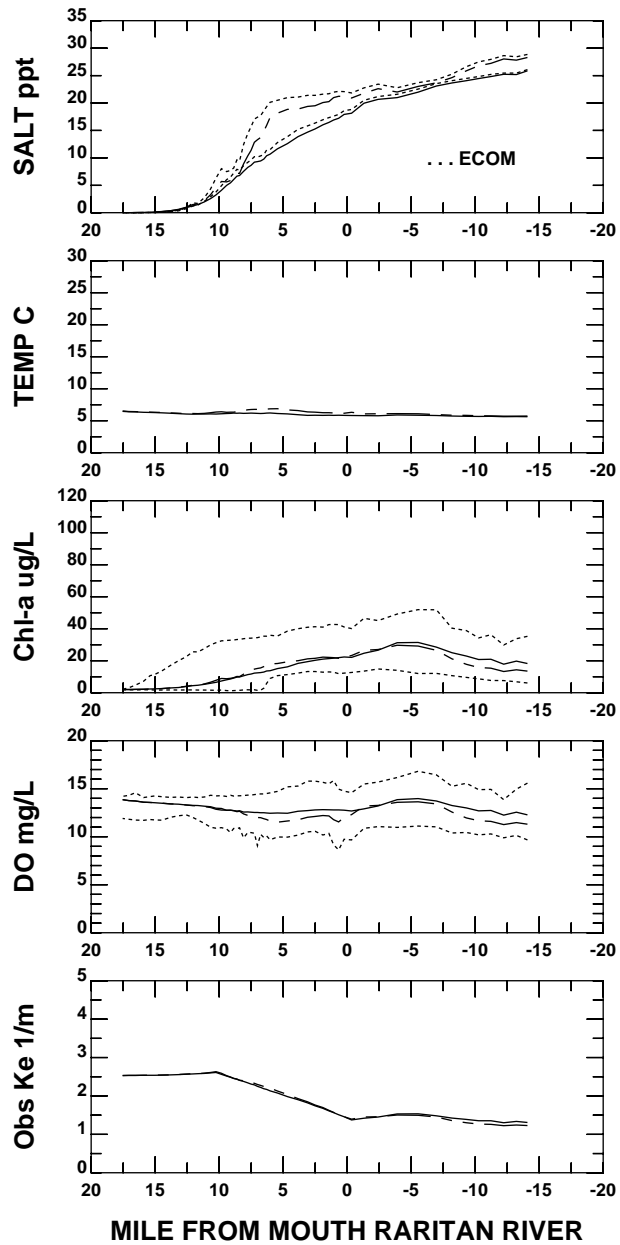
<b>DATA</b> Jan 29-Feb 27, 2002		<b>MODEL</b>
	<b>SURF BOT</b>	
Harbor Survey	△ ▲	Transect
	t e	Embayment
NYSDEC	○	Transect
	c	Embayment
NJSIT	◇	Transect
	p	Embayment
	—	SURFACE 30-DAY MEAN
	- - -	BOTTOM 30-DAY MEAN
	- - -	30-DAY SURFACE MAX OR BOTTOM MIN

**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**





**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**



**DATA Feb 28-Mar 29, 2002**

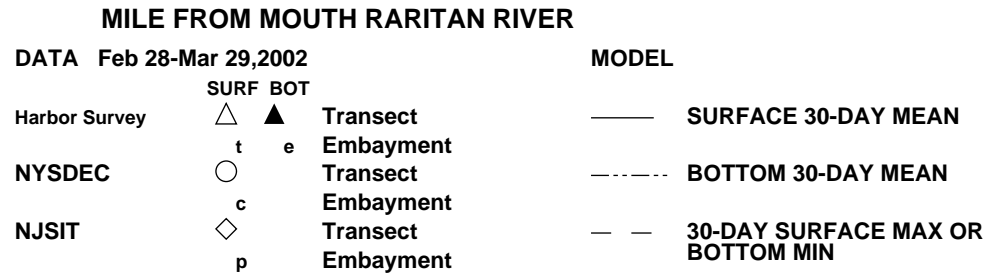
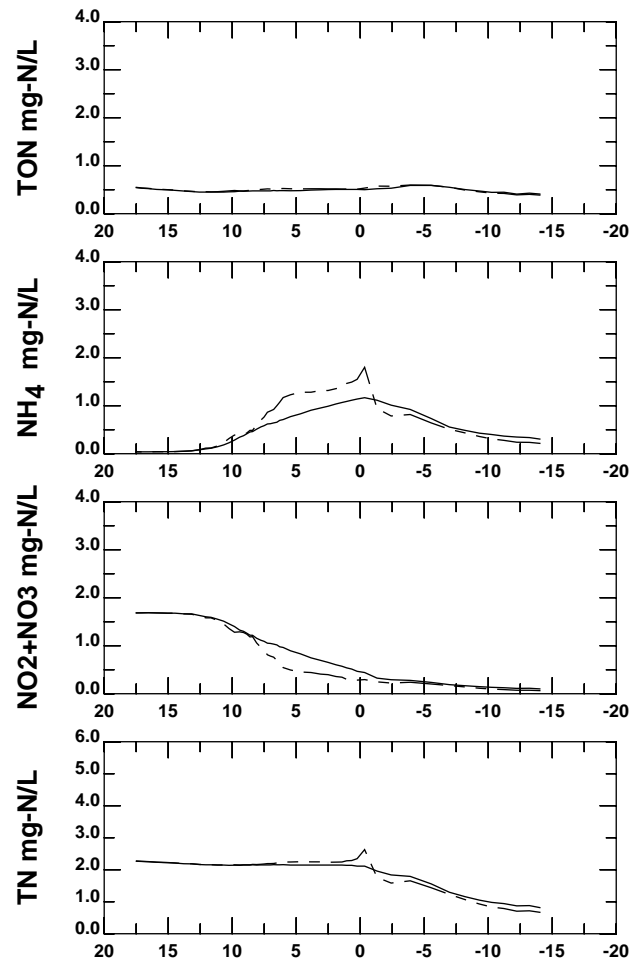
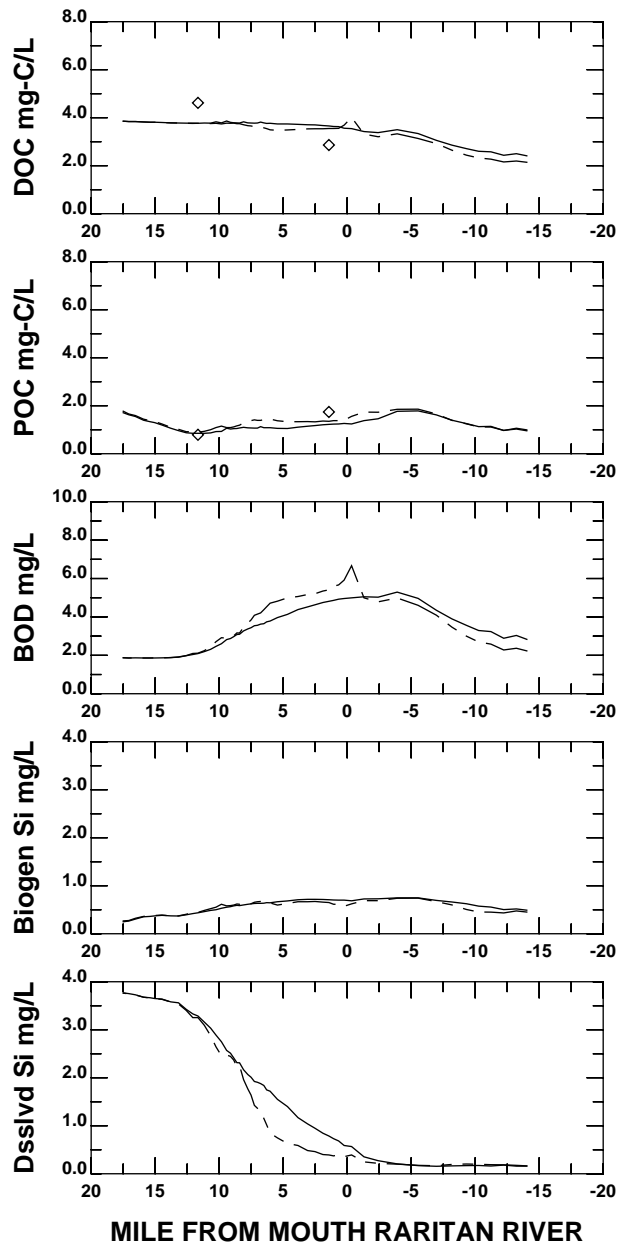
**MODEL**

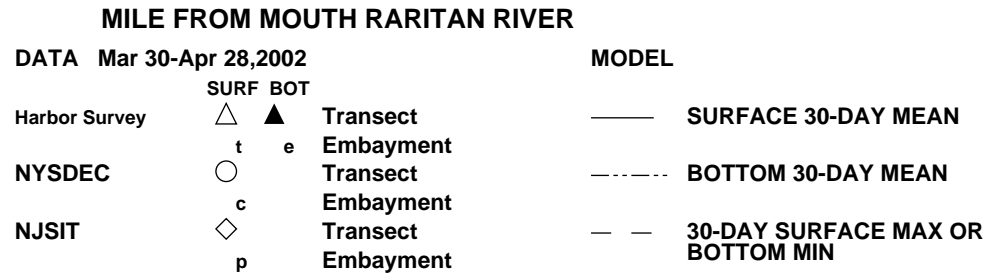
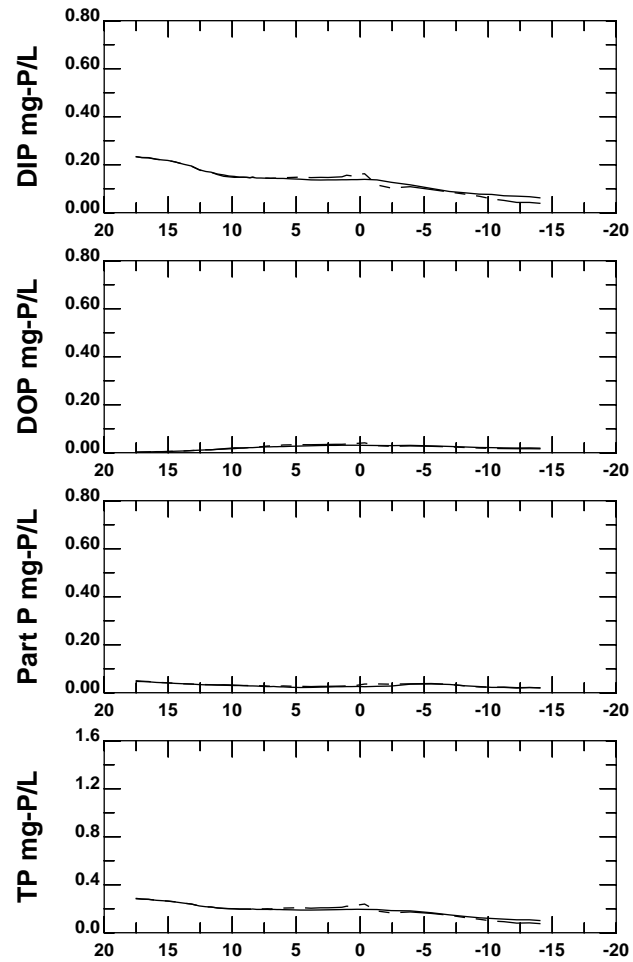
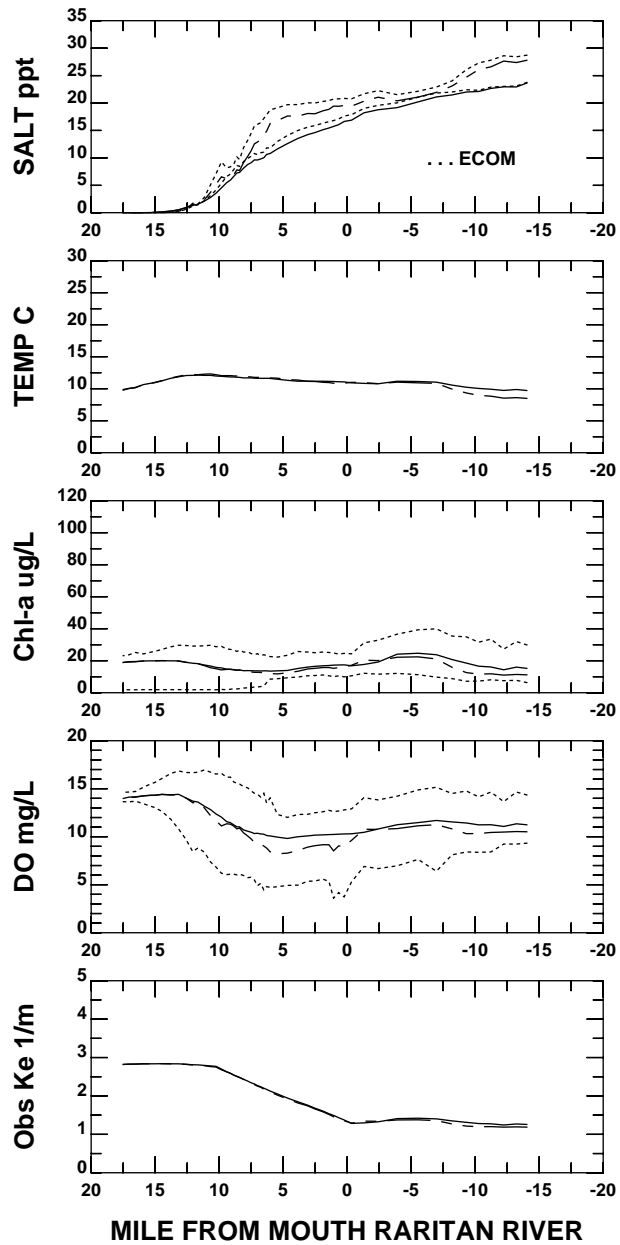
	<b>SURF BOT</b>		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment

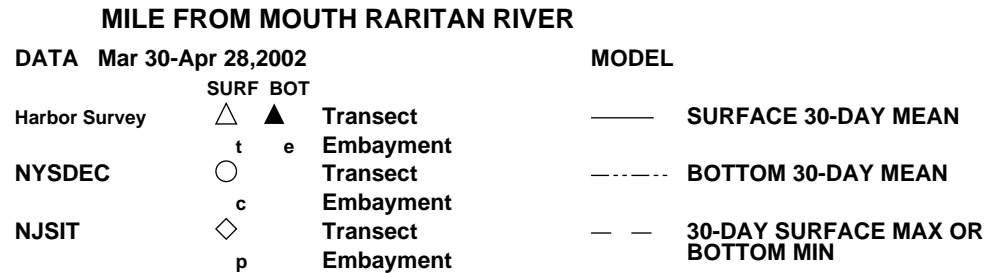
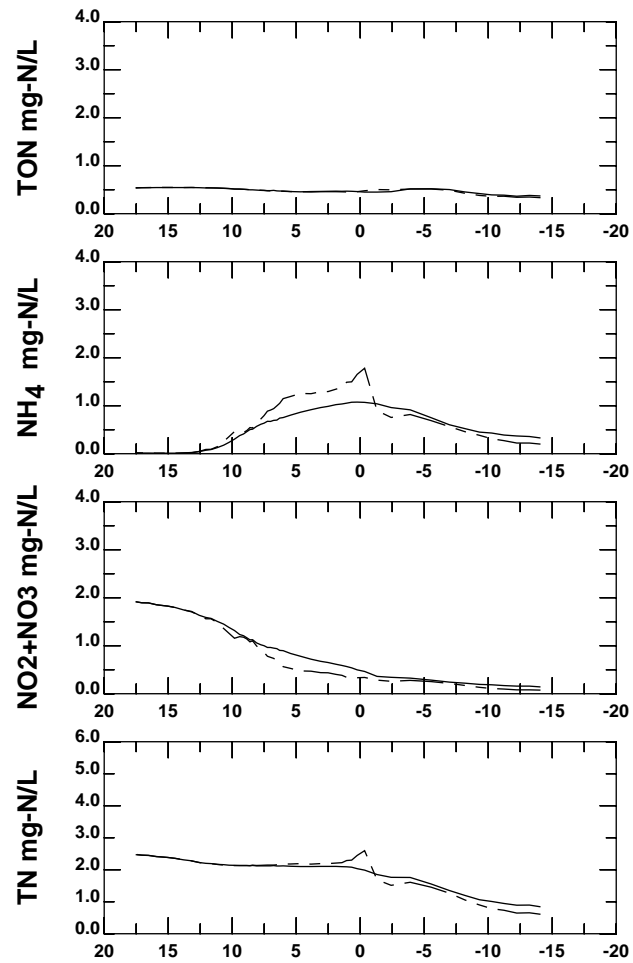
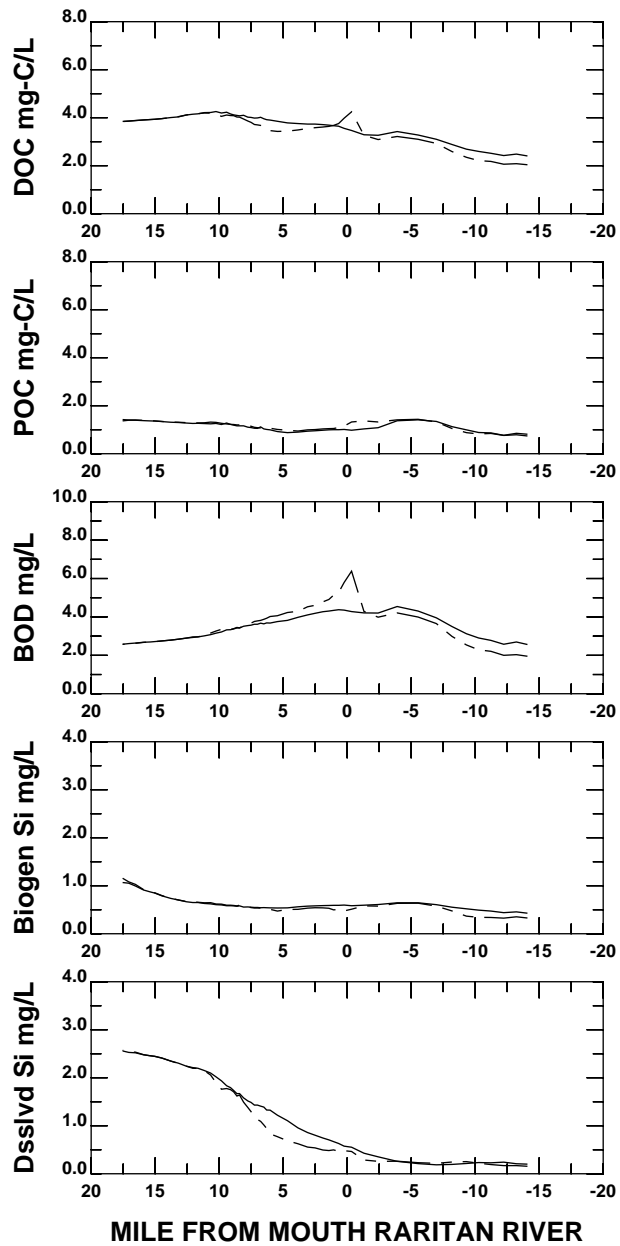
————	<b>SURFACE 30-DAY MEAN</b>
-----	<b>BOTTOM 30-DAY MEAN</b>
- - - -	<b>30-DAY SURFACE MAX OR BOTTOM MIN</b>

**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**

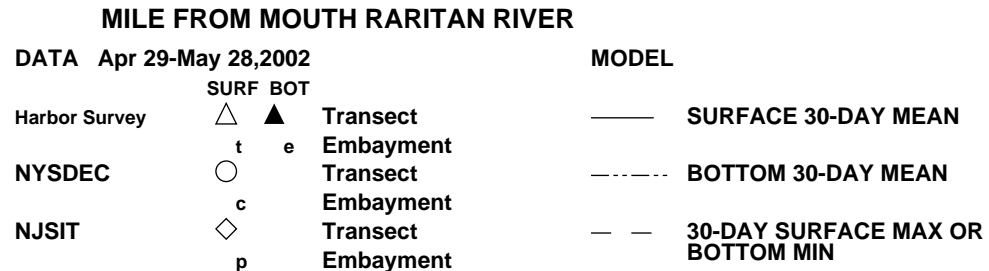
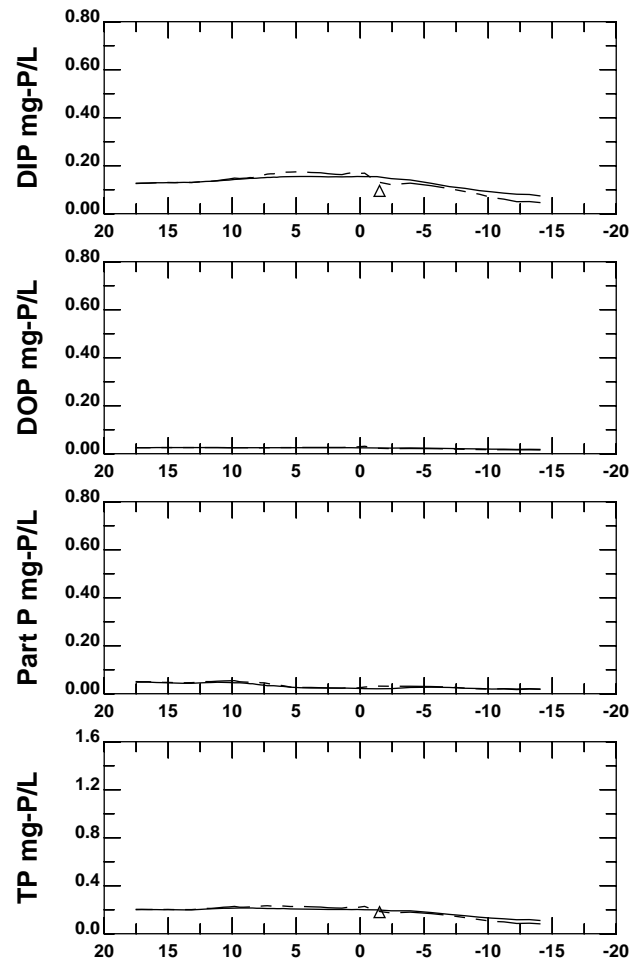
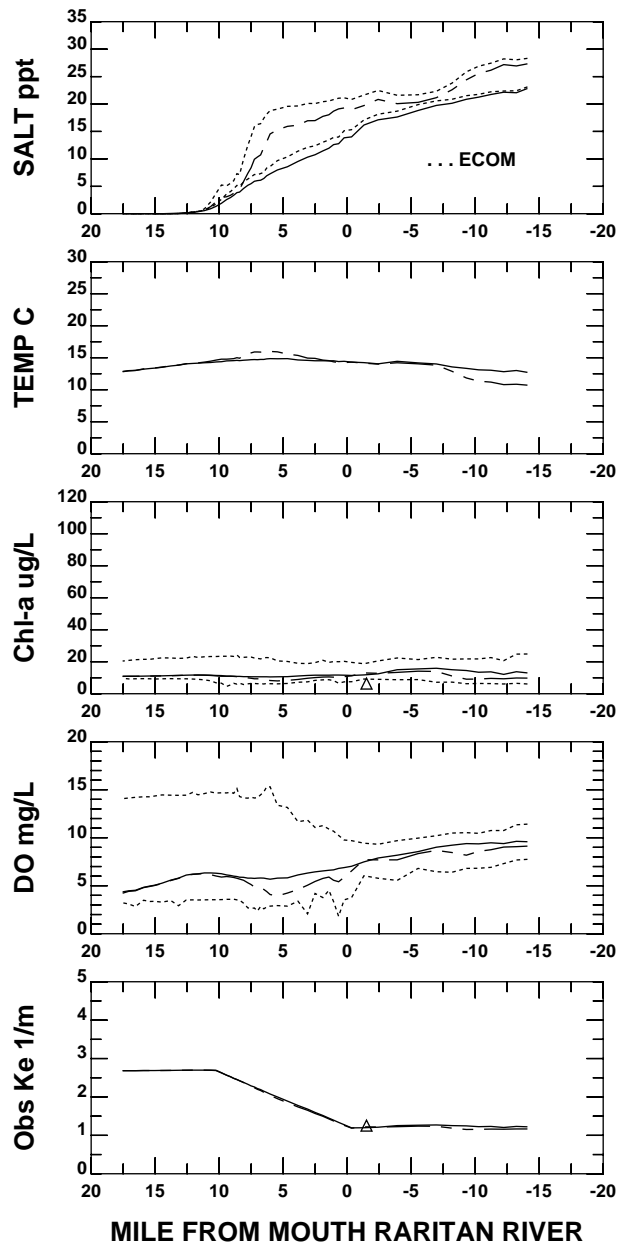




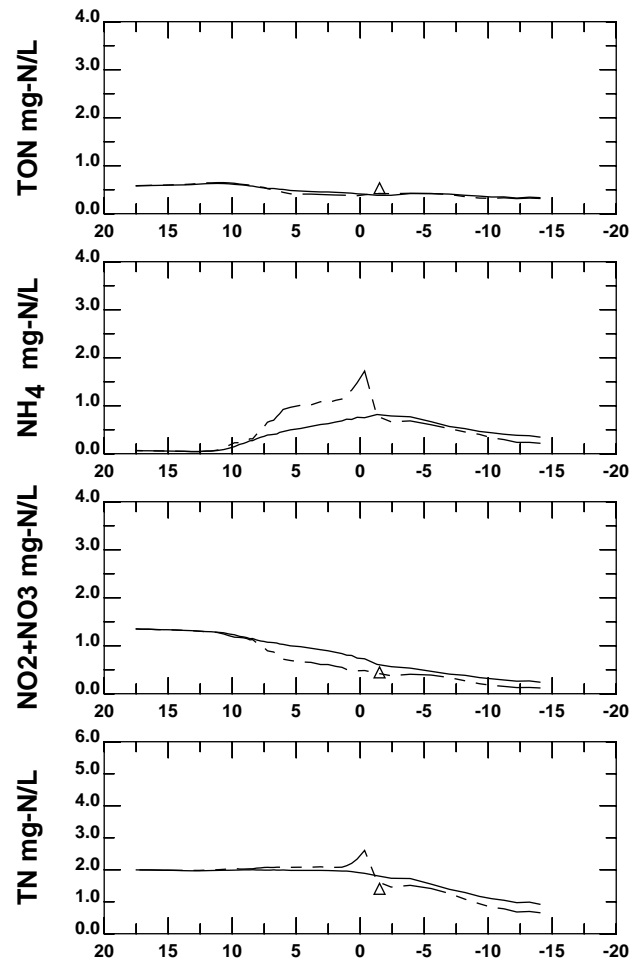
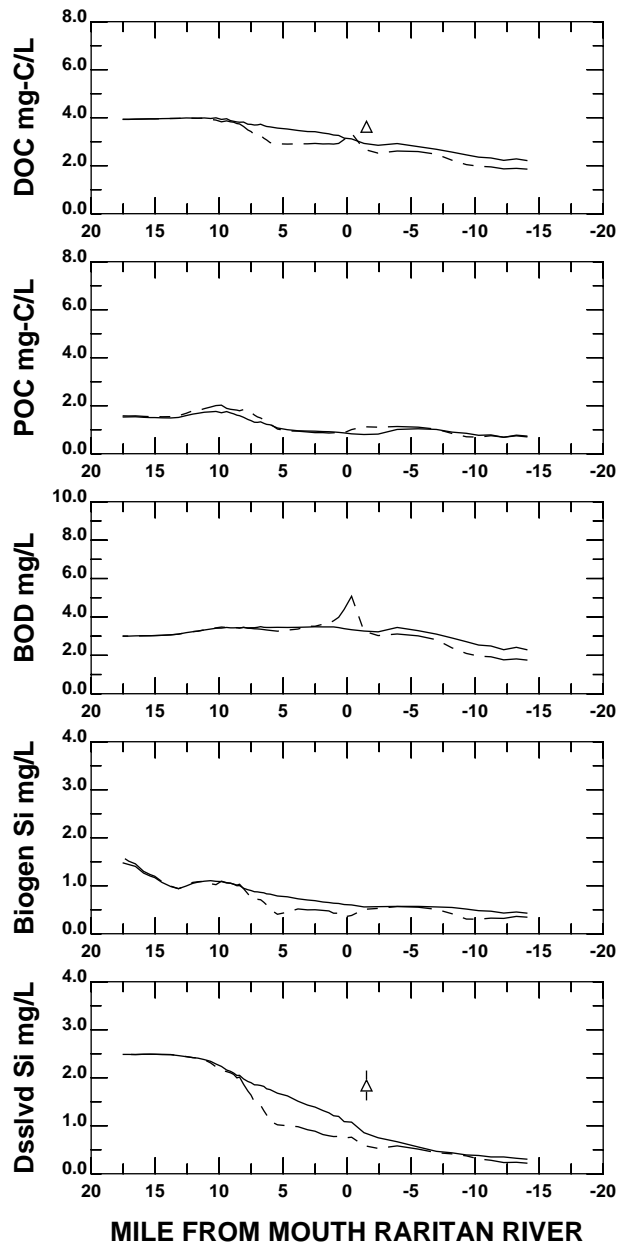
**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**



**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**



## RARITAN RIVER AND SOUTH SHORE RARITAN BAY



**DATA Apr 29-May 28, 2002**

	SURF		BOT	
Harbor Survey	△	▲	Transect	—
NYSDEC	○	●	Embayment	---
NJSIT	◇	◆	Transect	- - -
			Embayment	
			Transect	
			Embayment	

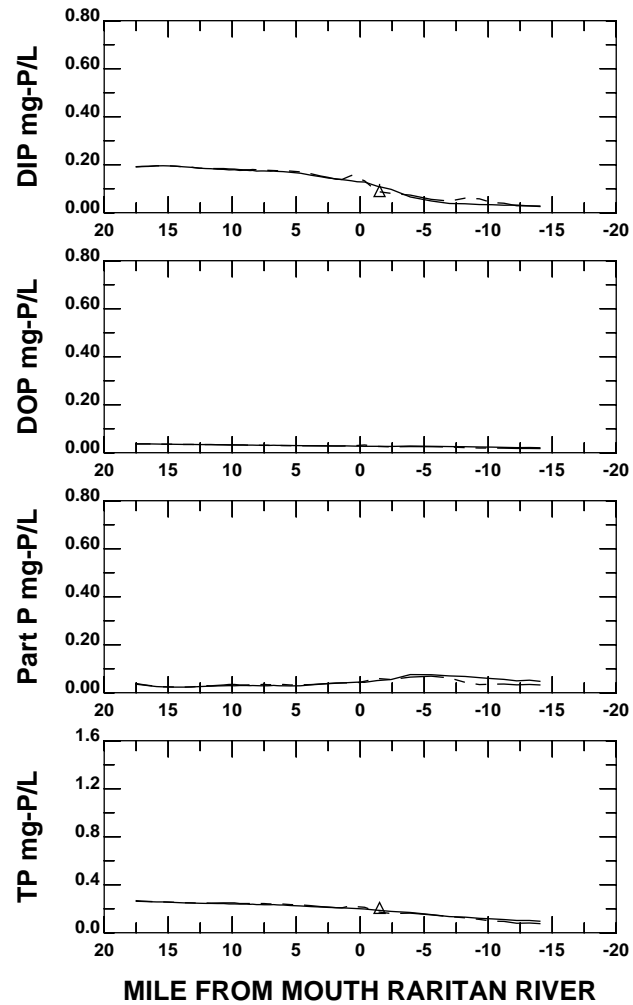
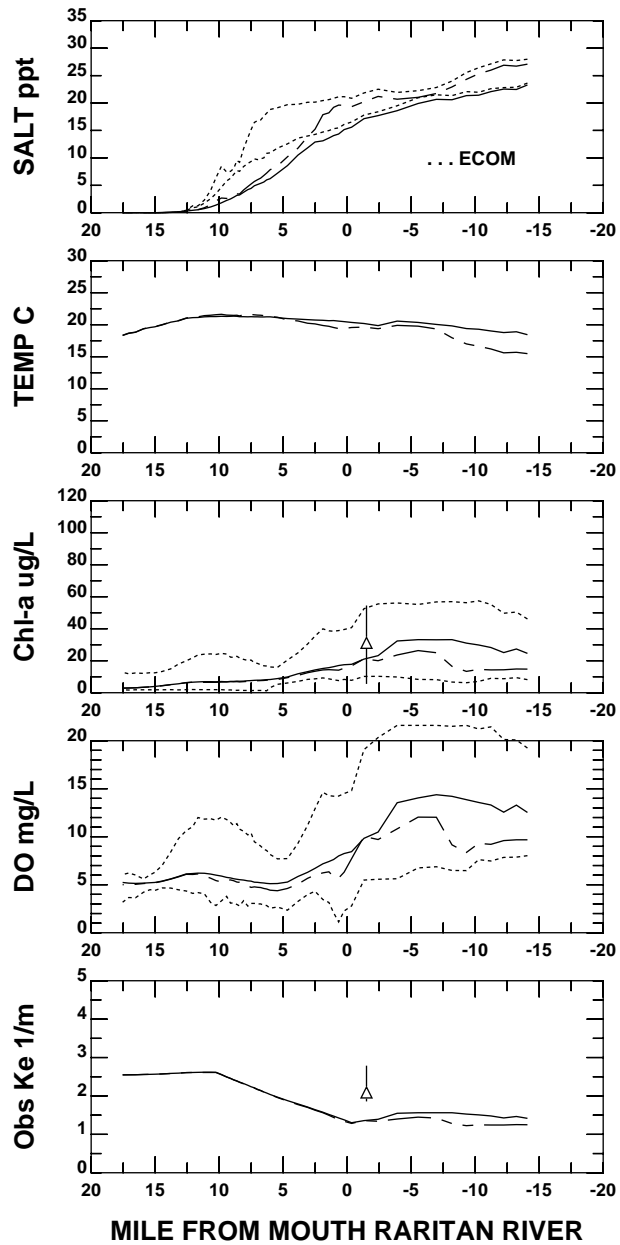
**MODEL**

— SURFACE 30-DAY MEAN

--- BOTTOM 30-DAY MEAN

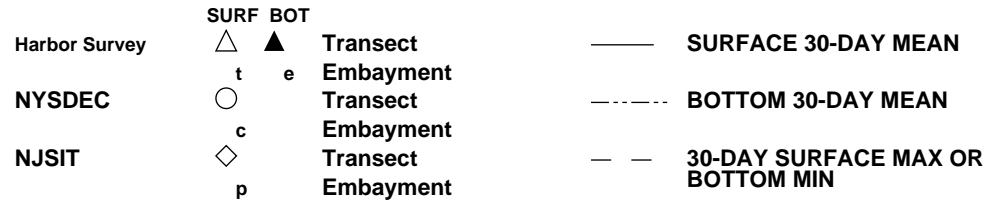
- - - 30-DAY SURFACE MAX OR BOTTOM MIN

**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**

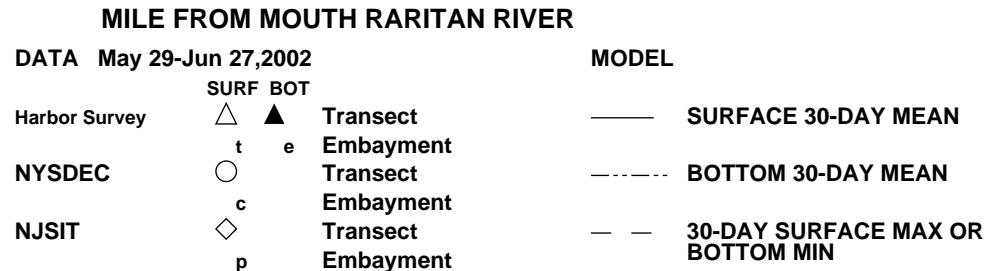
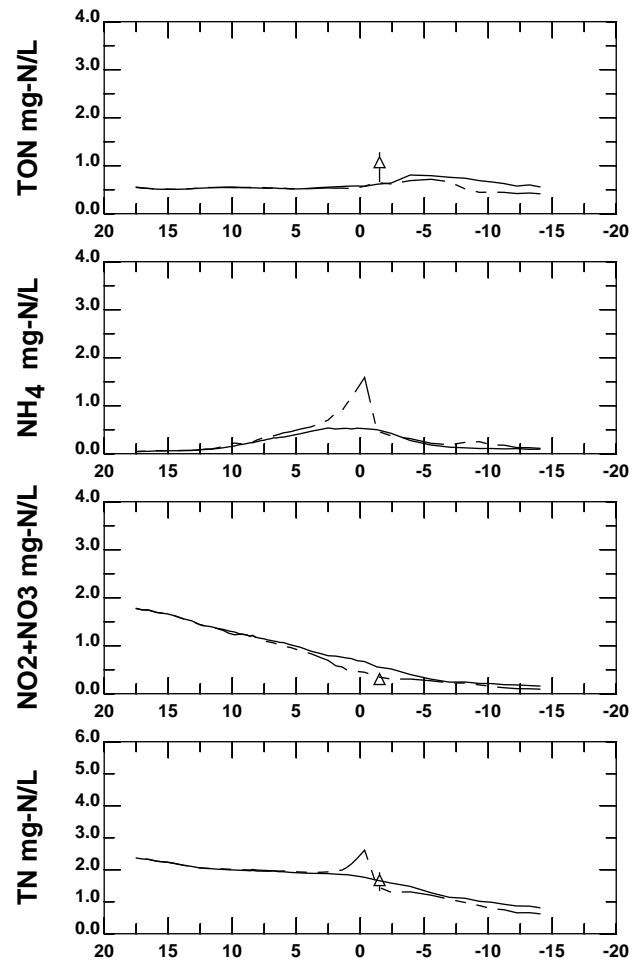
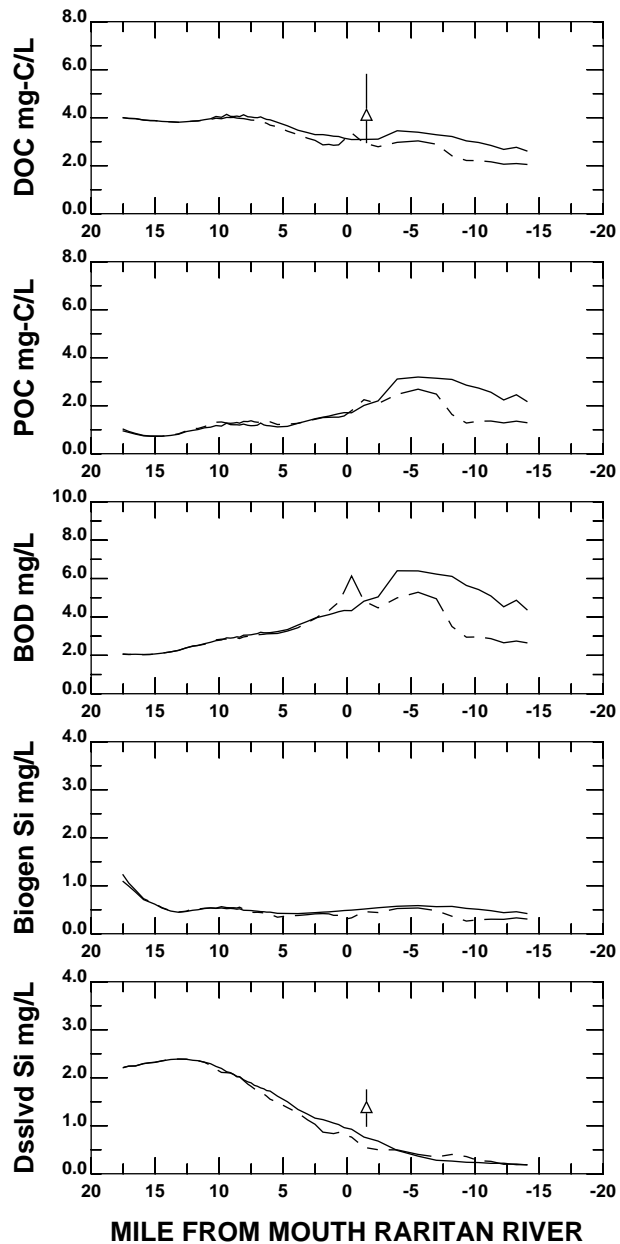


DATA May 29-Jun 27, 2002

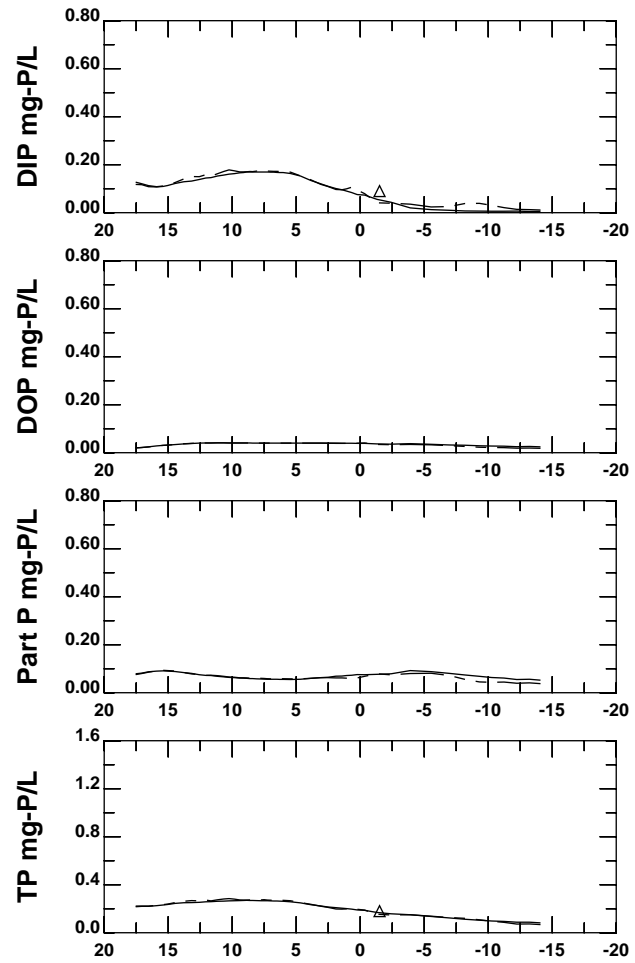
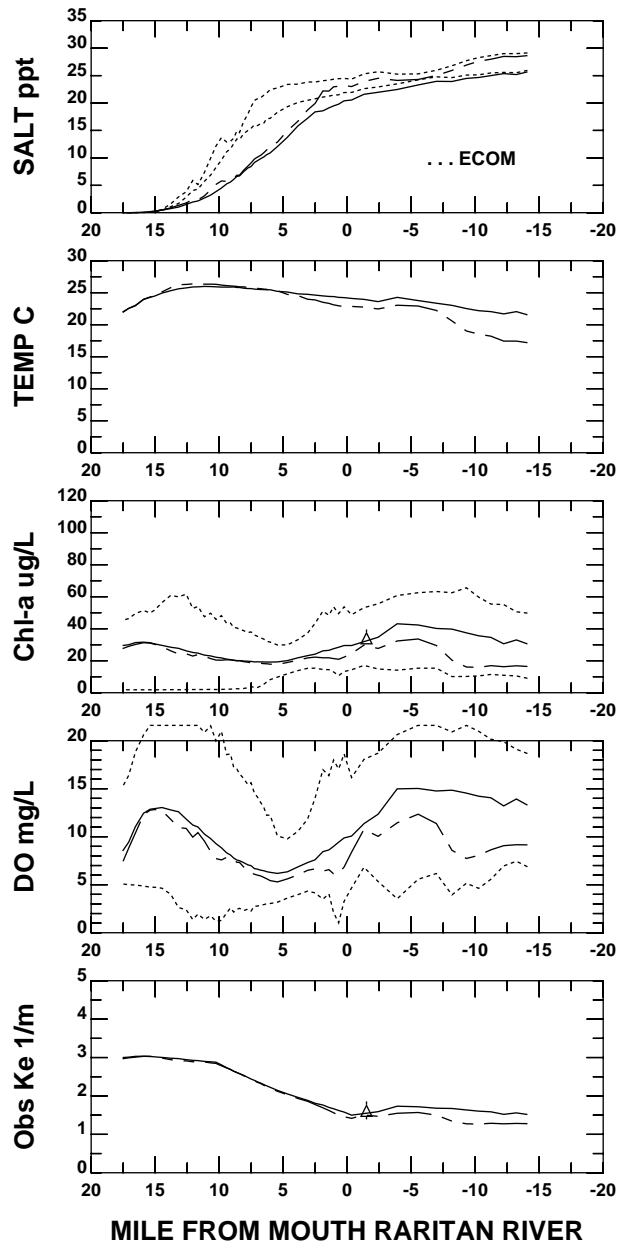
MODEL







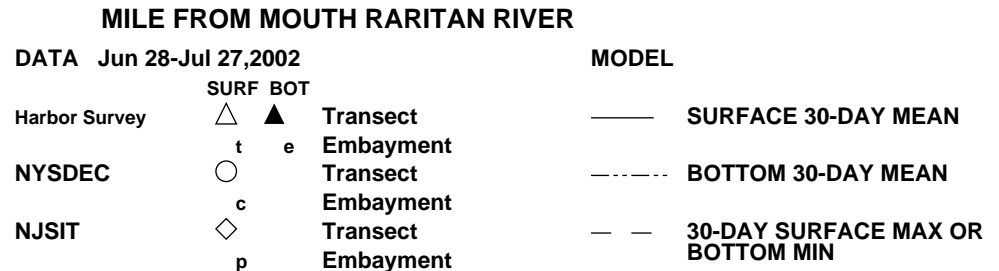
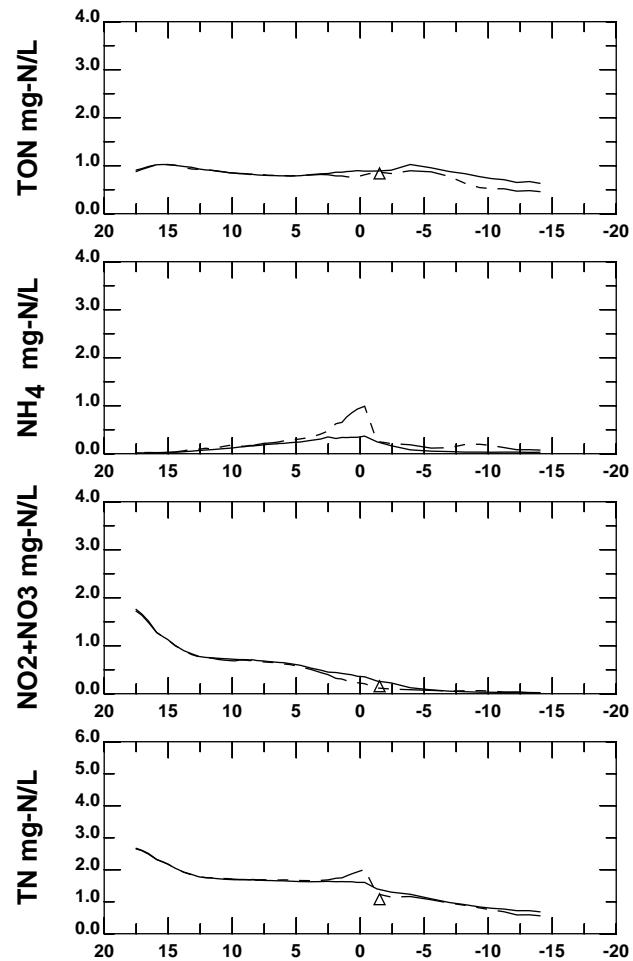
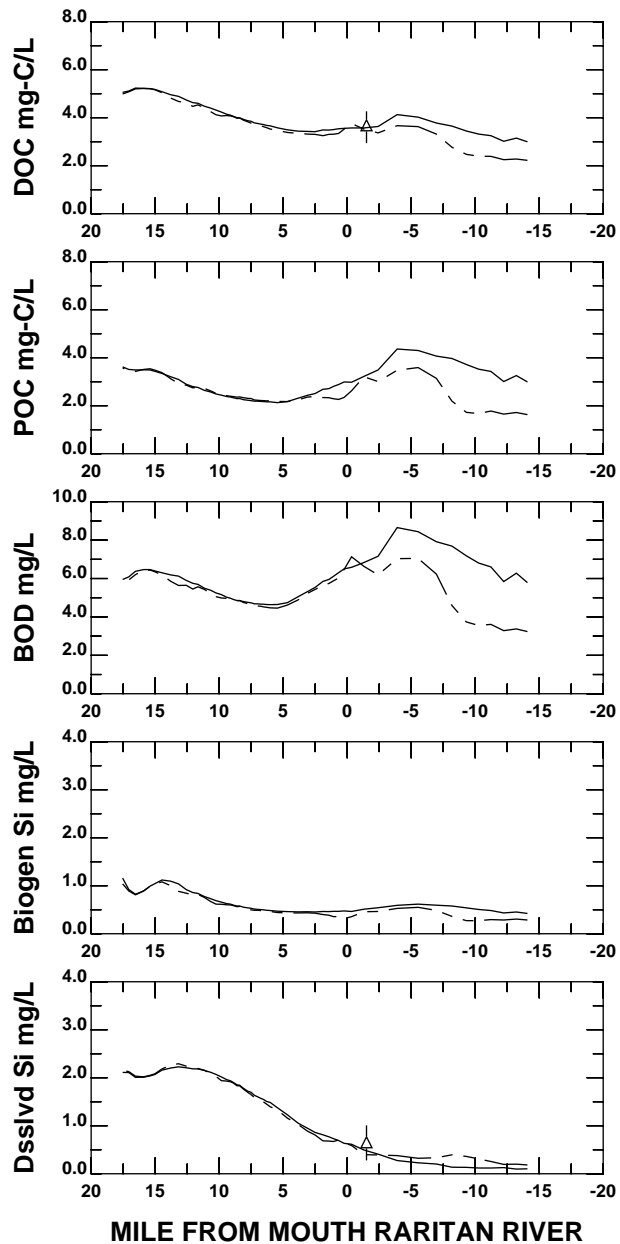
**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**



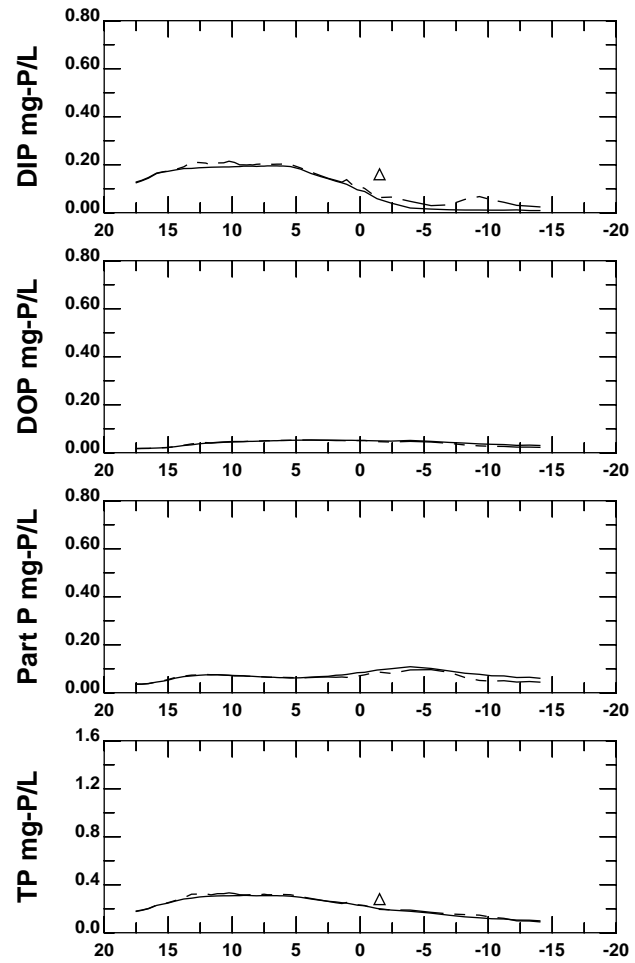
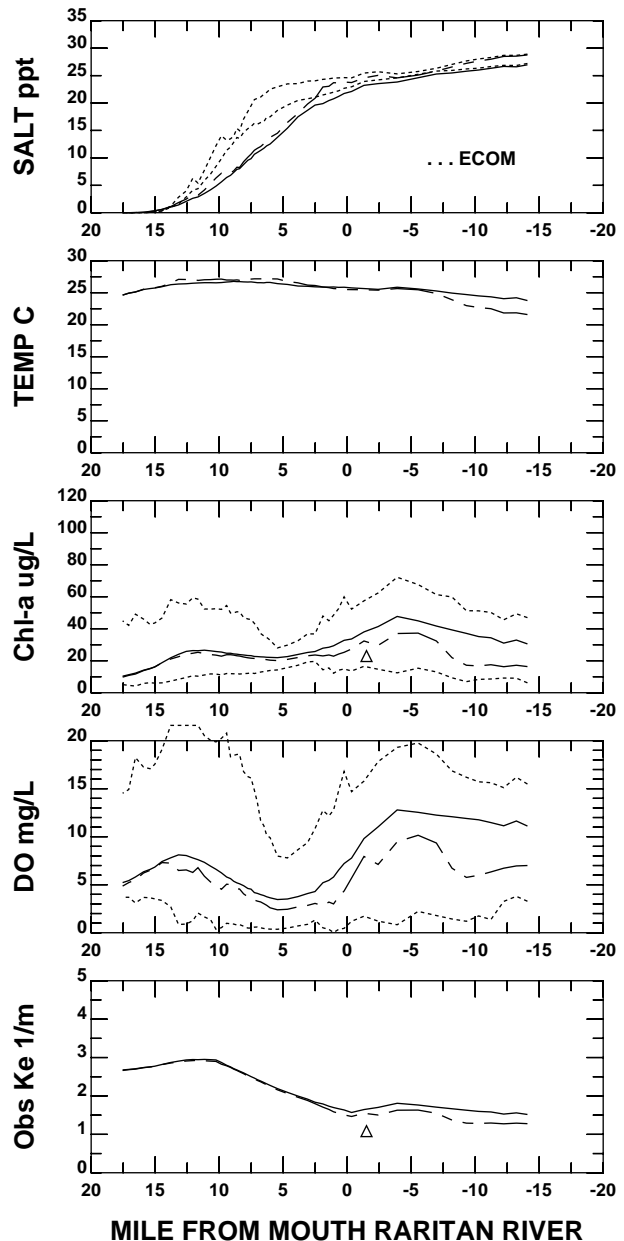
**DATA Jun 28-Jul 27, 2002**

	<b>SURF BOT</b>		<b>MODEL</b>
Harbor Survey	△	▲	— SURFACE 30-DAY MEAN
	t	e	--- BOTTOM 30-DAY MEAN
NYSDEC	○		- - - 30-DAY SURFACE MAX OR BOTTOM MIN
	c		
NJSIT	◇		
	p		

**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**



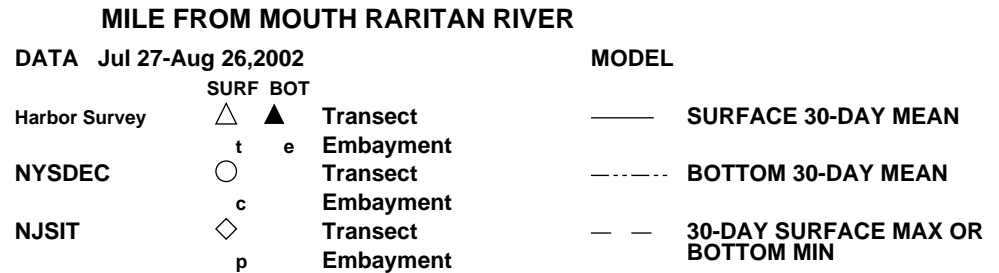
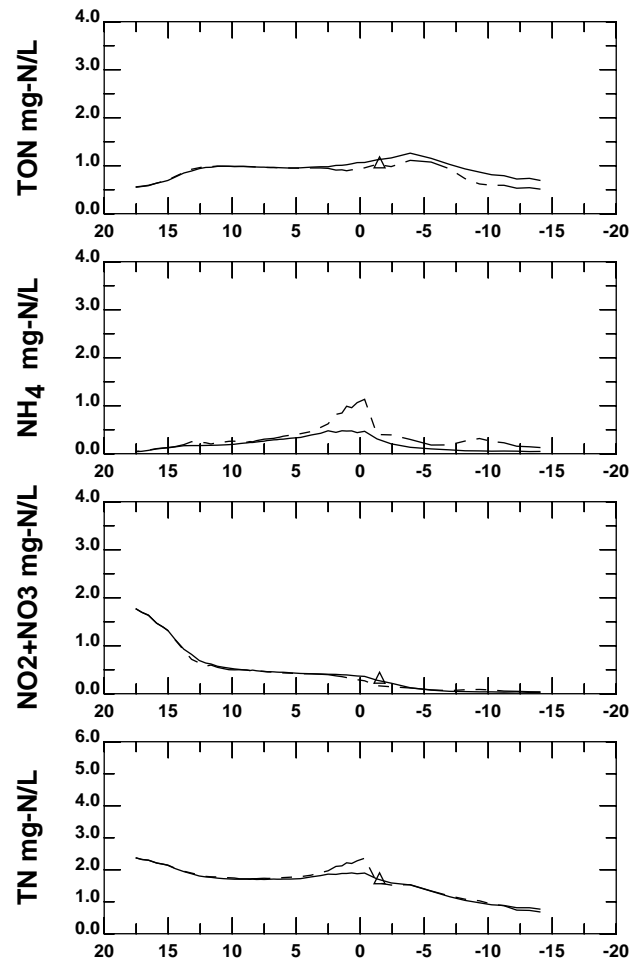
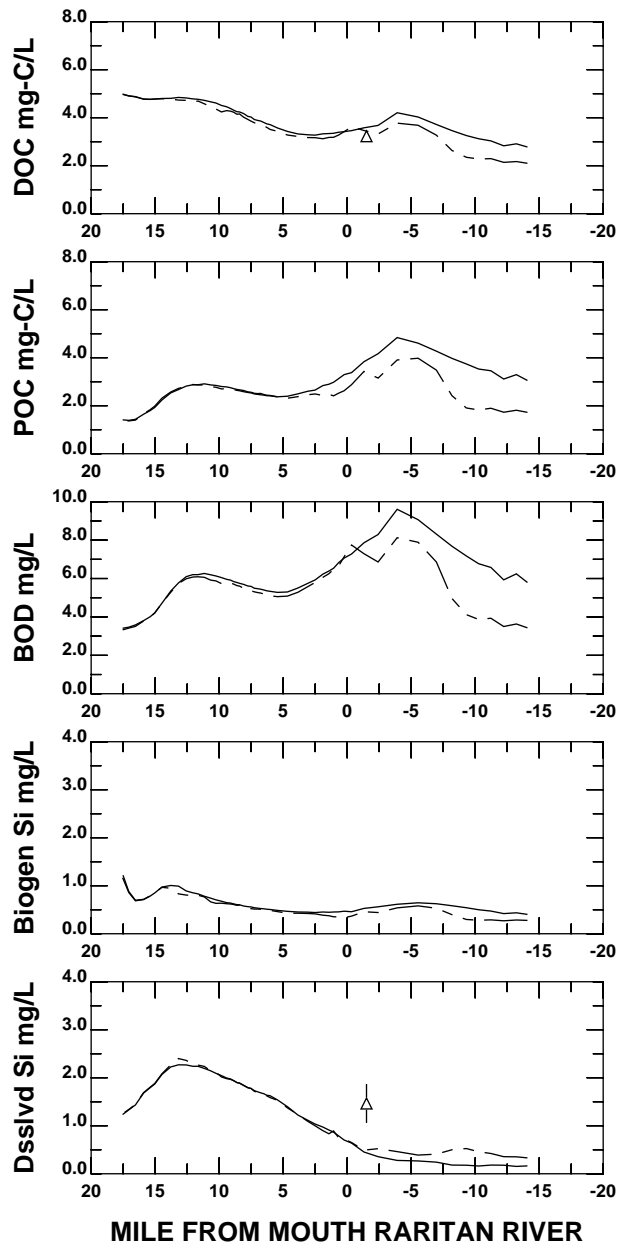
### RARITAN RIVER AND SOUTH SHORE RARITAN BAY



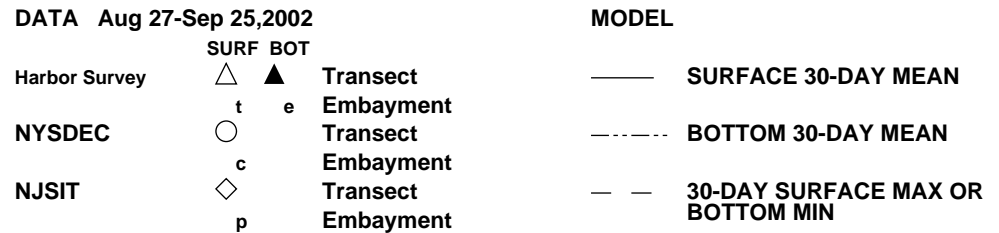
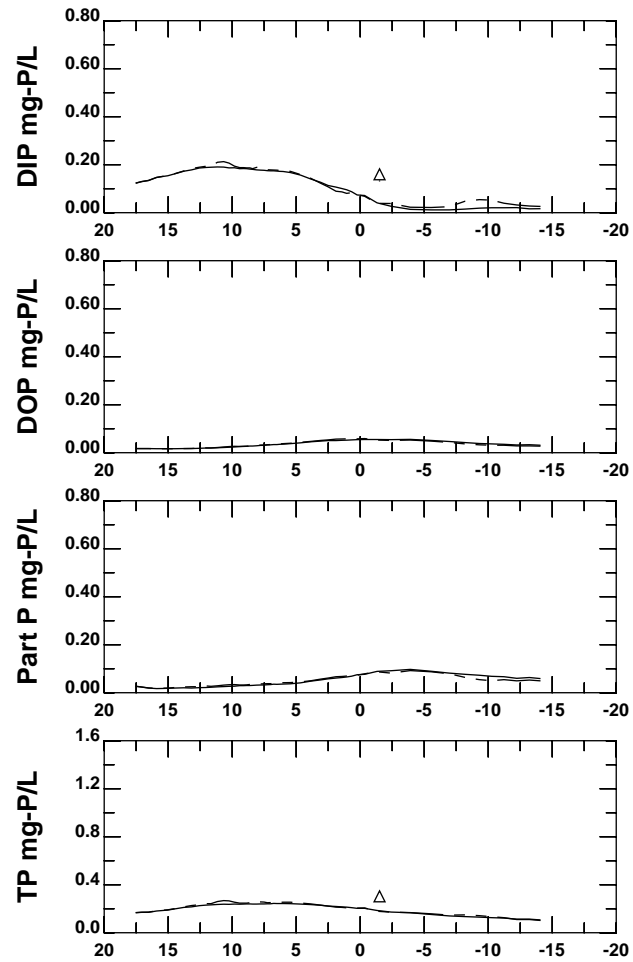
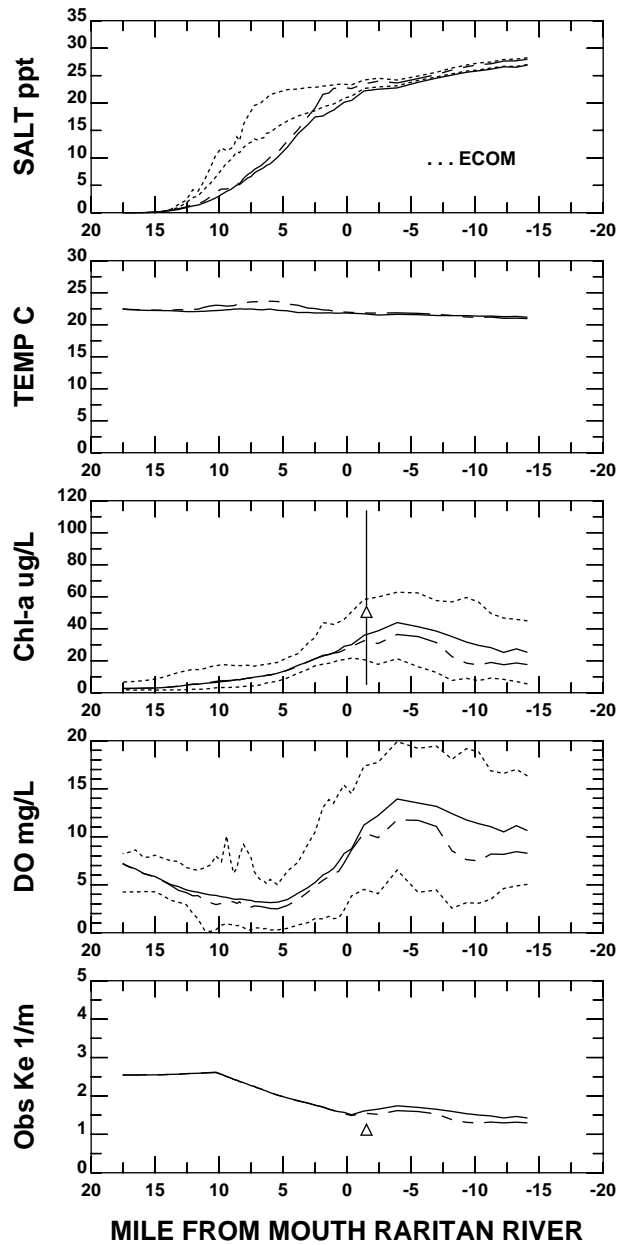
**MILE FROM MOUTH RARITAN RIVER**

<b>DATA Jul 27-Aug 26, 2002</b>		<b>MODEL</b>	
	<b>SURF</b>	<b>BOT</b>	
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment
NJSIT	◇		Transect
	p		Embayment
		—	SURFACE 30-DAY MEAN
		- - -	BOTTOM 30-DAY MEAN
		- - -	30-DAY SURFACE MAX OR BOTTOM MIN

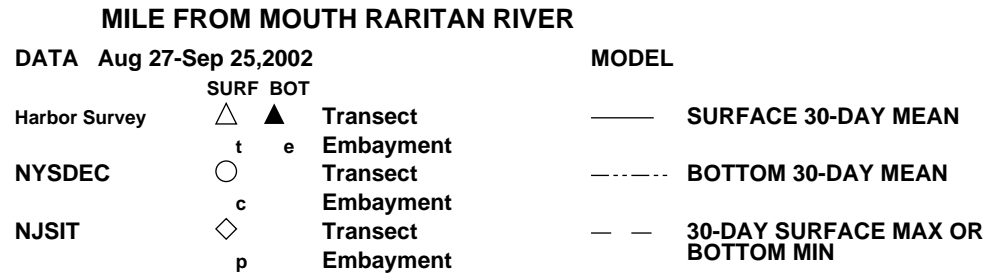
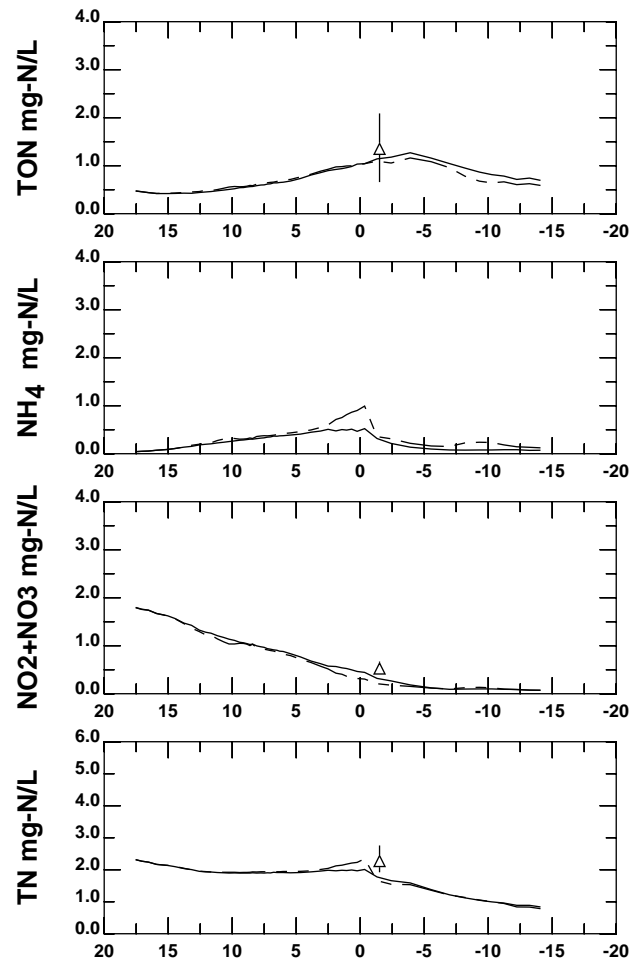
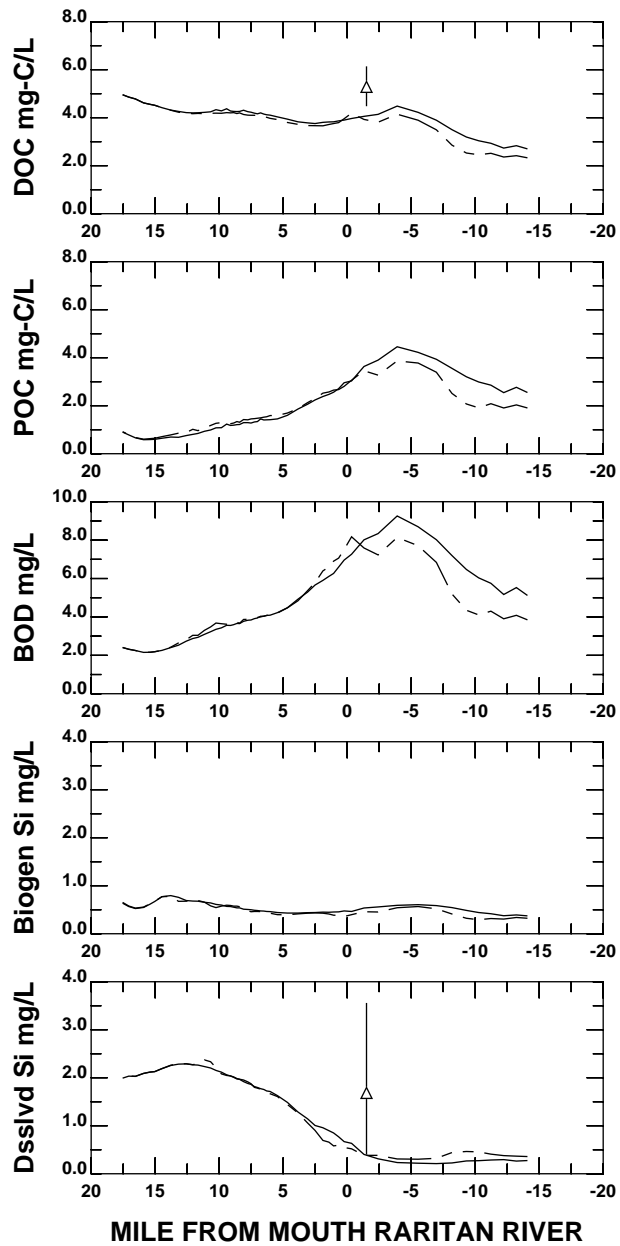
**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**



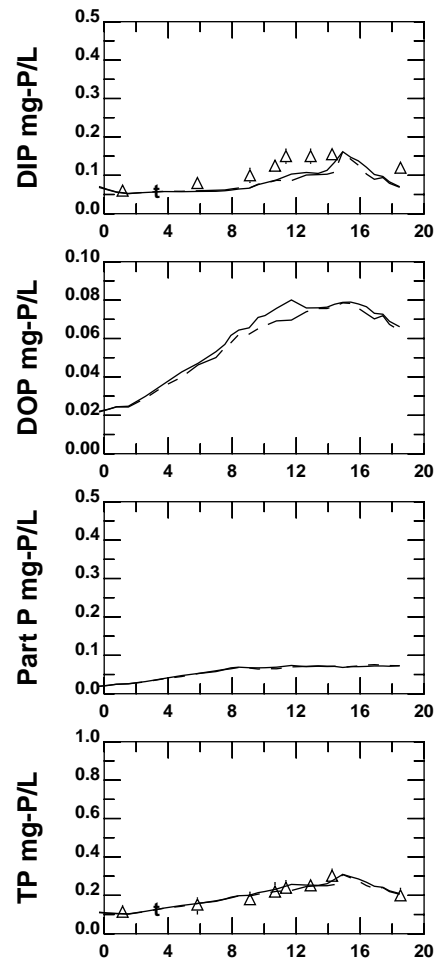
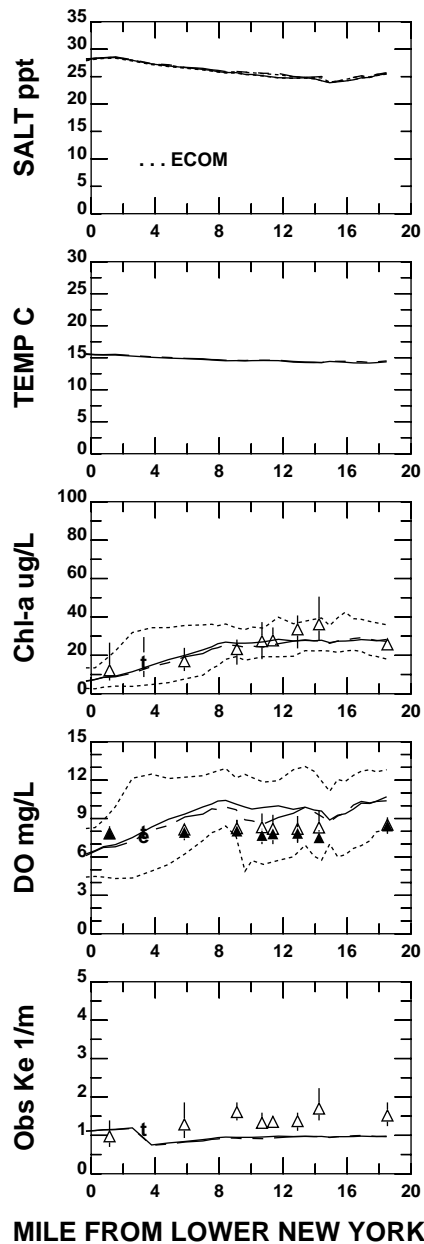
**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**



**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**



**RARITAN RIVER AND SOUTH SHORE RARITAN BAY**



**MILE FROM LOWER NEW YORK BAY**

DATA Oct 1-30,2001

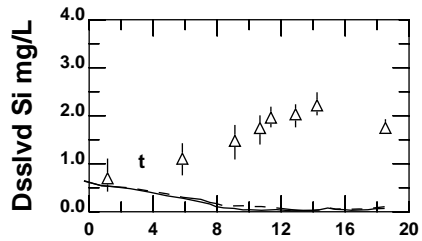
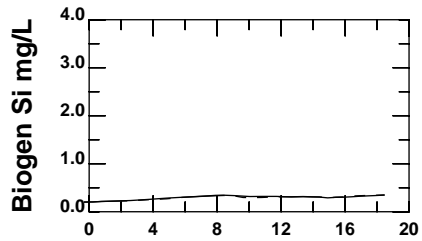
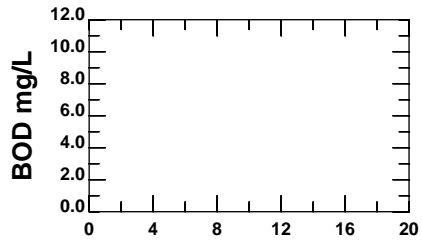
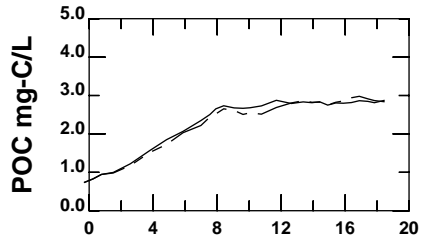
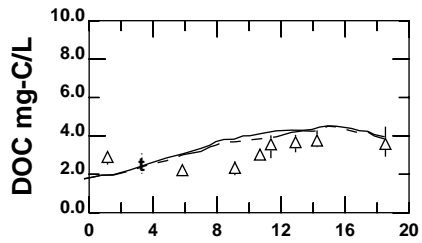
Harbor Survey    SURF   BOT  
 △   ▲   Transect  
 t   e   Embayment  
 NYSDEC    ○   Transect  
           c   Embayment

**MODEL**

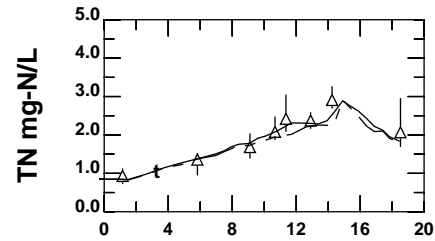
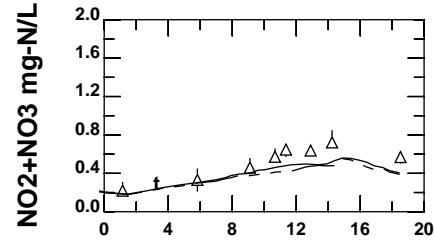
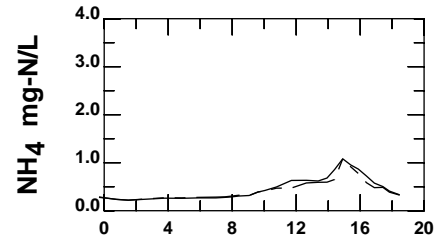
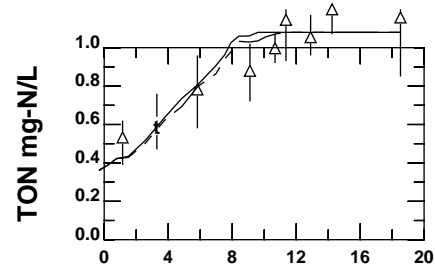
—    SURFACE 30-DAY MEAN  
 - - -    BOTTOM 30-DAY MEAN  
 - - -    30-DAY SURFACE MAX OR  
           BOTTOM MIN

**CONEY ISLAND JAMAICA BAY TRANSECT**





MILE FROM LOWER NEW YORK BAY



MILE FROM LOWER NEW YORK BAY

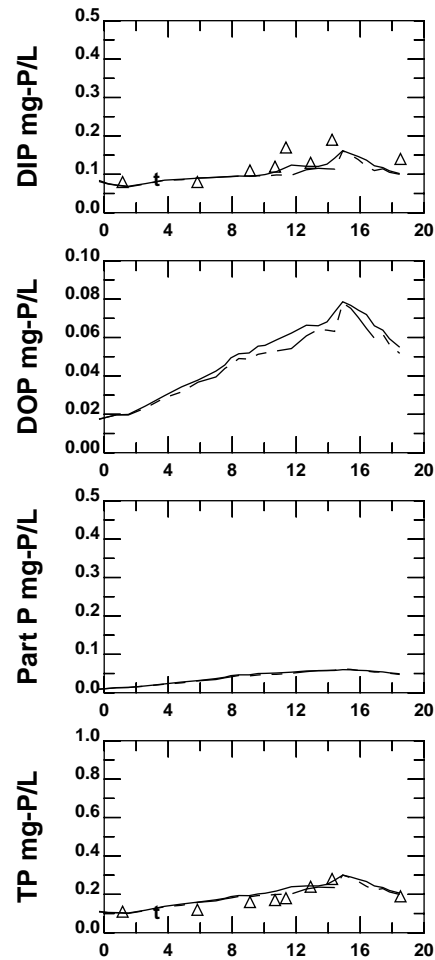
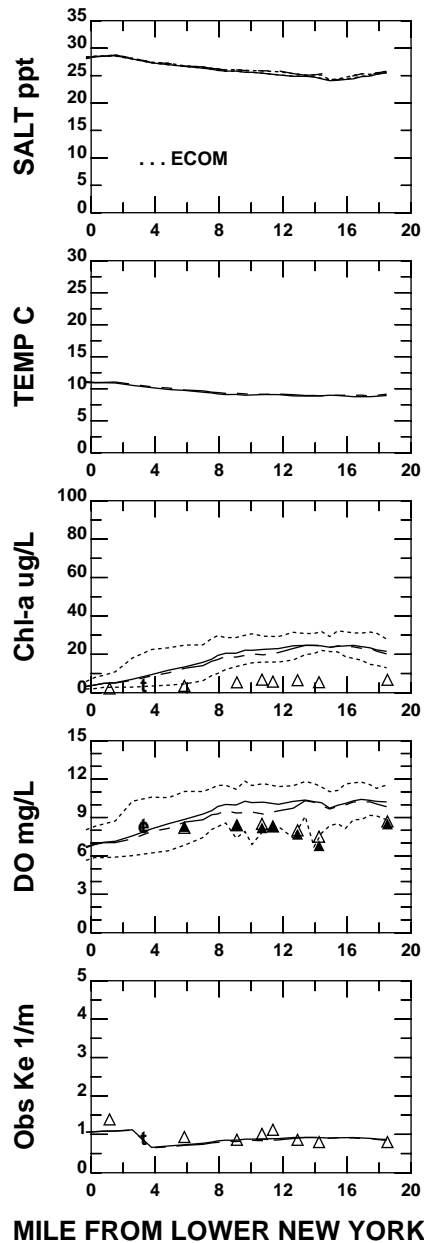
DATA Oct 1-30,2001

Harbor Survey	△	▲	Transect
NYSDEC	t	e	Embayment
	○		Transect
	c		Embayment

MODEL

—	SURFACE 30-DAY MEAN
- - -	BOTTOM 30-DAY MEAN
- - -	30-DAY SURFACE MAX OR BOTTOM MIN

## CONEY ISLAND JAMAICA BAY TRANSECT



**MILE FROM LOWER NEW YORK BAY**

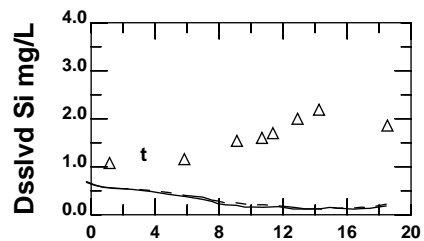
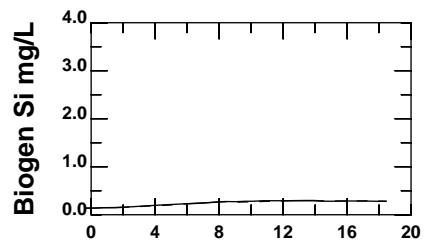
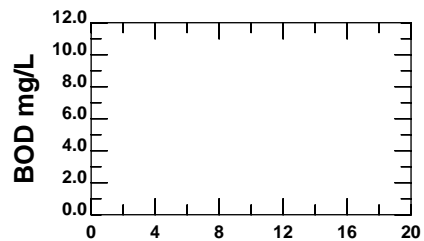
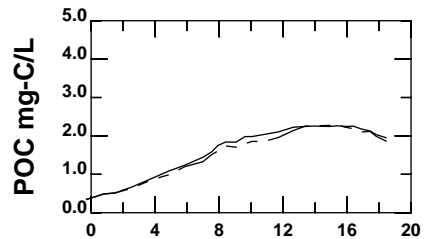
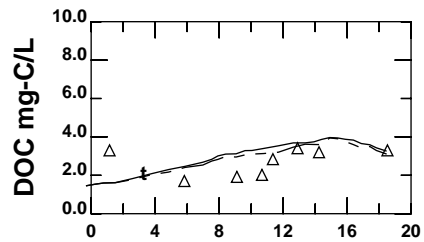
DATA Oct 31-Nov 29, 2001

Harbor Survey    SURF    BOT  
 △    ▲    Transect  
 t    e    Embayment  
 NYSDEC    ○    Transect  
           c    Embayment

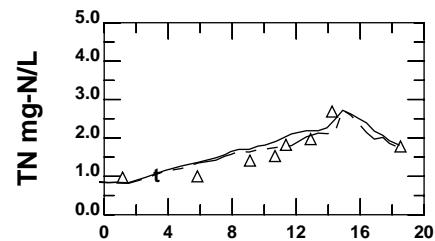
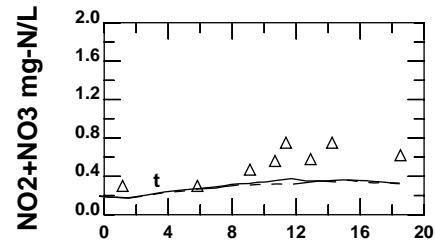
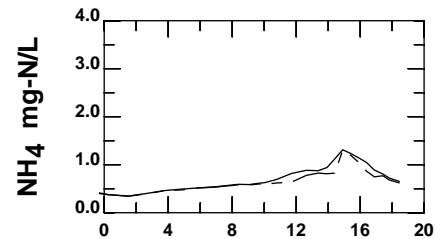
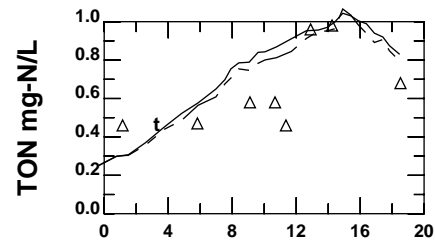
**MODEL**

—— SURFACE 30-DAY MEAN  
 - - - - - BOTTOM 30-DAY MEAN  
 - - - - - 30-DAY SURFACE MAX OR  
 BOTTOM MIN

**CONEY ISLAND JAMAICA BAY TRANSECT**



MILE FROM LOWER NEW YORK BAY



MILE FROM LOWER NEW YORK BAY

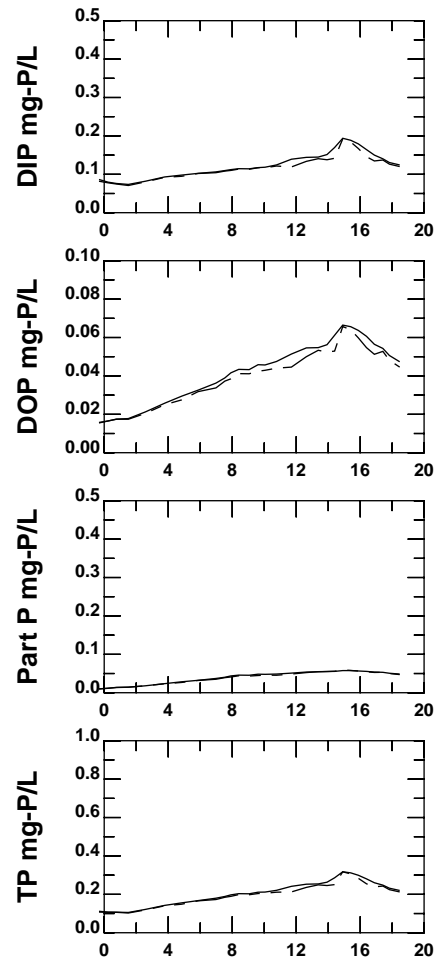
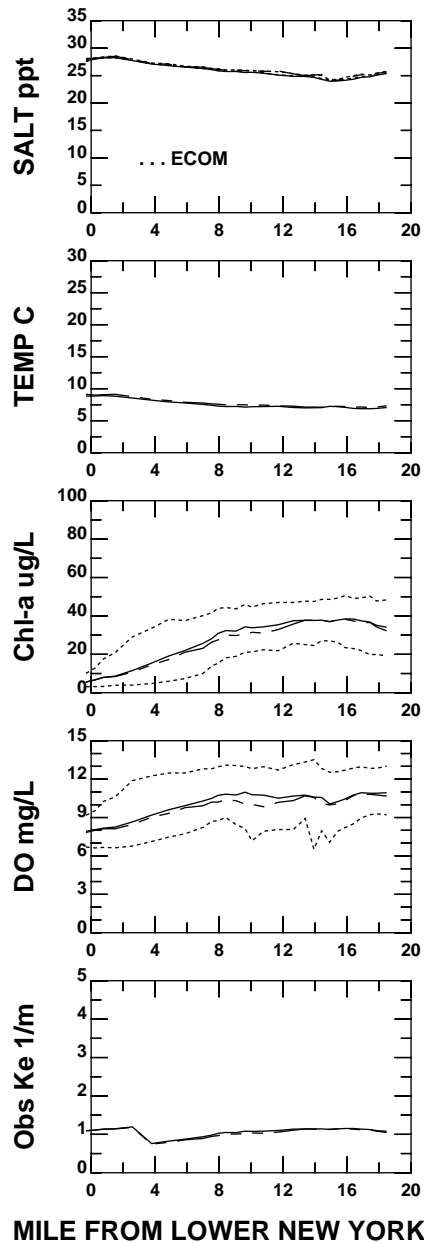
DATA Oct 31-Nov 29, 2001

	SURF		BOT	
Harbor Survey	△	▲	Transect	Transect
NYSDEC	t	e	Embayment	Embayment
	○		Transect	
	c		Embayment	

MODEL

—	SURFACE 30-DAY MEAN
- - - -	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

### CONEY ISLAND JAMAICA BAY TRANSECT



**MILE FROM LOWER NEW YORK BAY**

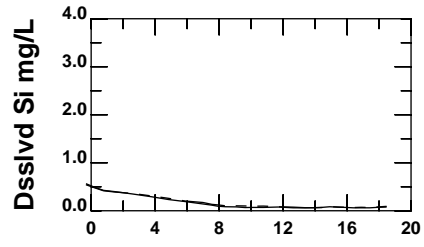
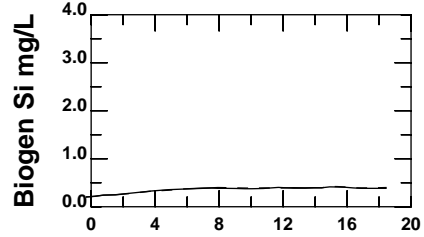
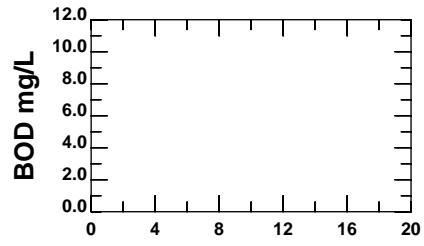
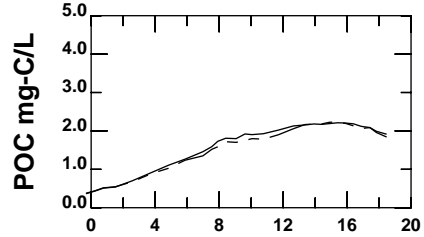
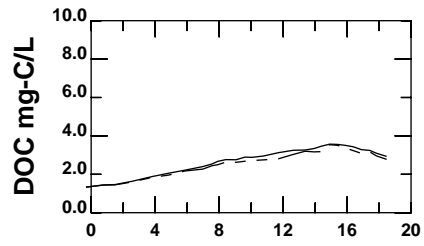
DATA Nov 30-Dec 29,2001

Harbor Survey    SURF    BOT  
 △    ▲    Transect  
 t    e    Embayment  
 NYSDEC    ○    Transect  
           c    Embayment

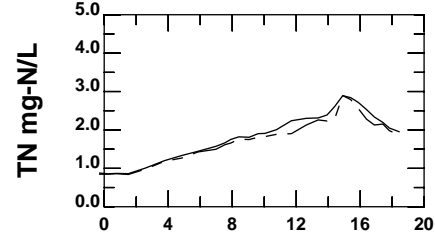
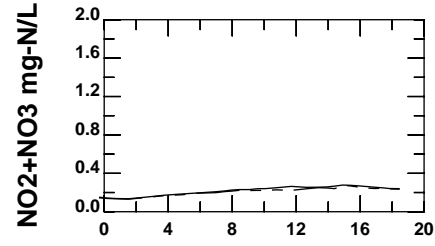
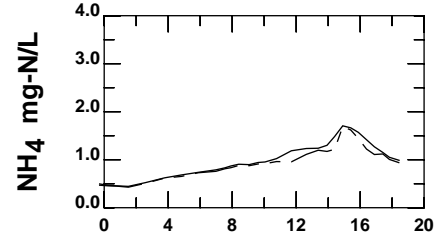
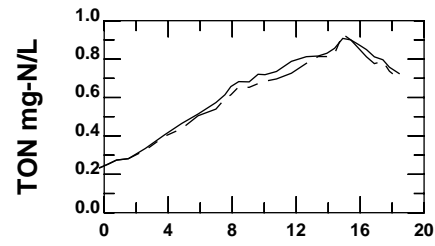
**MODEL**

—— SURFACE 30-DAY MEAN  
 - - - - - BOTTOM 30-DAY MEAN  
 - - - - - 30-DAY SURFACE MAX OR  
 BOTTOM MIN

**CONEY ISLAND JAMAICA BAY TRANSECT**



MILE FROM LOWER NEW YORK BAY



MILE FROM LOWER NEW YORK BAY

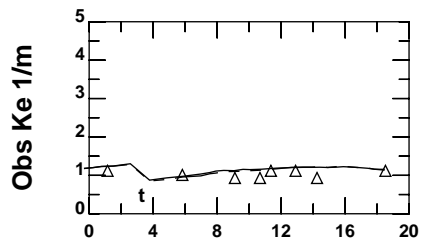
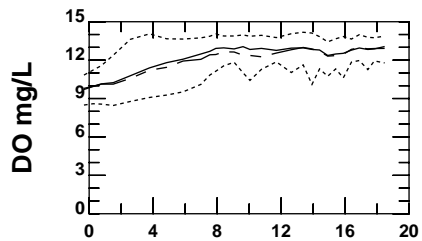
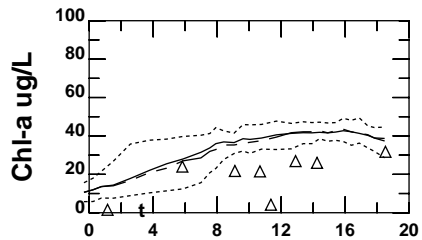
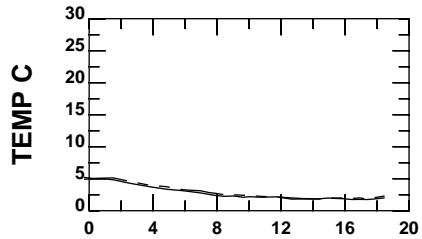
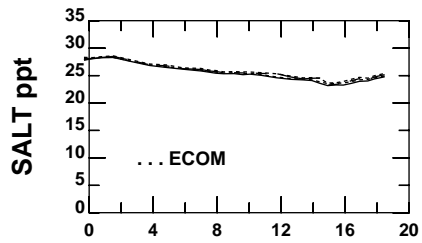
DATA Nov 30-Dec 29,2001

	SURF		BOT	
Harbor Survey	△	▲	Transect	
	t	e	Embayment	
NYSDEC	○		Transect	
	c		Embayment	

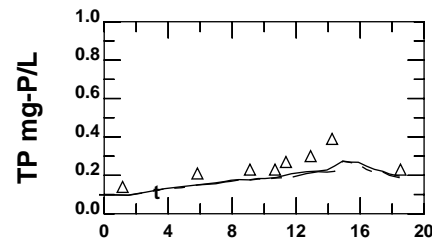
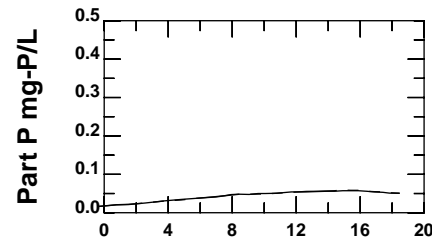
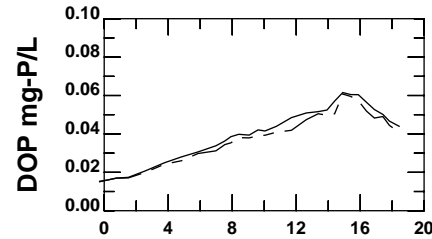
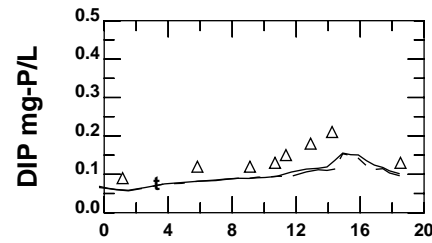
MODEL

————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

## CONEY ISLAND JAMAICA BAY TRANSECT



MILE FROM LOWER NEW YORK BAY



MILE FROM LOWER NEW YORK BAY

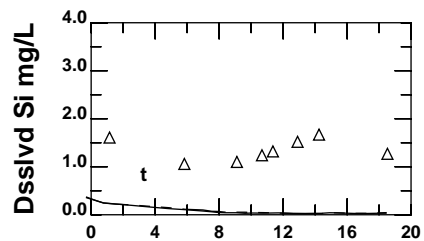
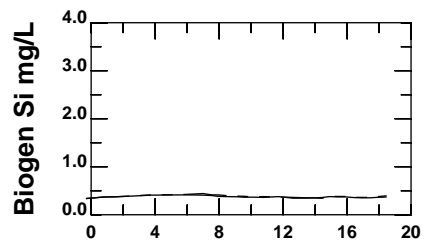
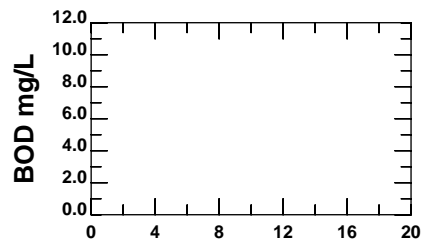
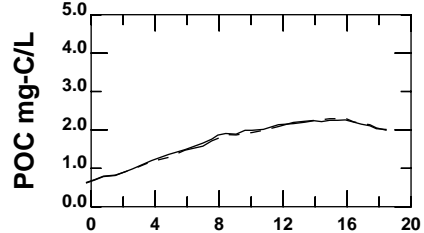
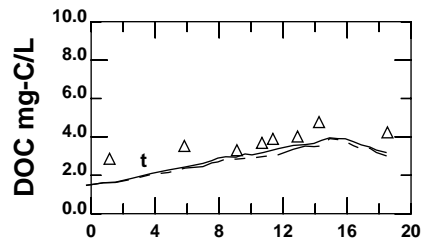
DATA Dec 30 2001 -Jan 28,2002

Harbor Survey SURF BOT  
 △ ▲ Transect  
 t e Embayment  
 NYSDEC ○ Transect  
 c Embayment

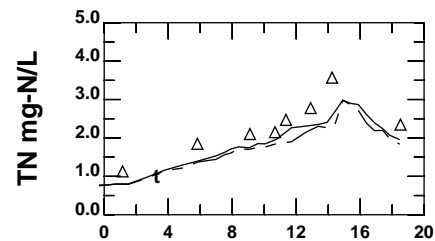
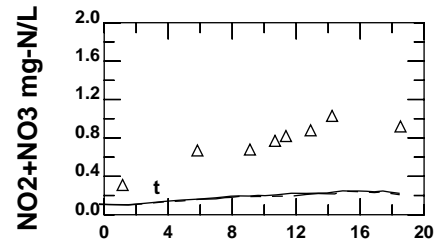
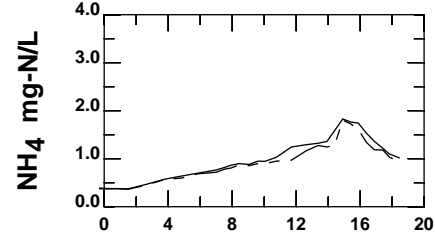
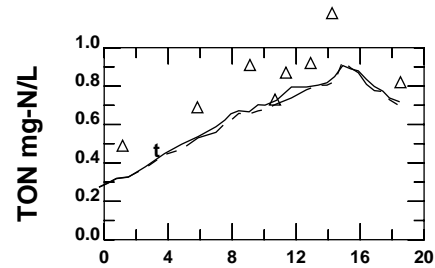
MODEL

— SURFACE 30-DAY MEAN  
 - - - - - BOTTOM 30-DAY MEAN  
 - - 30-DAY SURFACE MAX OR  
 BOTTOM MIN

## CONEY ISLAND JAMAICA BAY TRANSECT



MILE FROM LOWER NEW YORK BAY



MILE FROM LOWER NEW YORK BAY

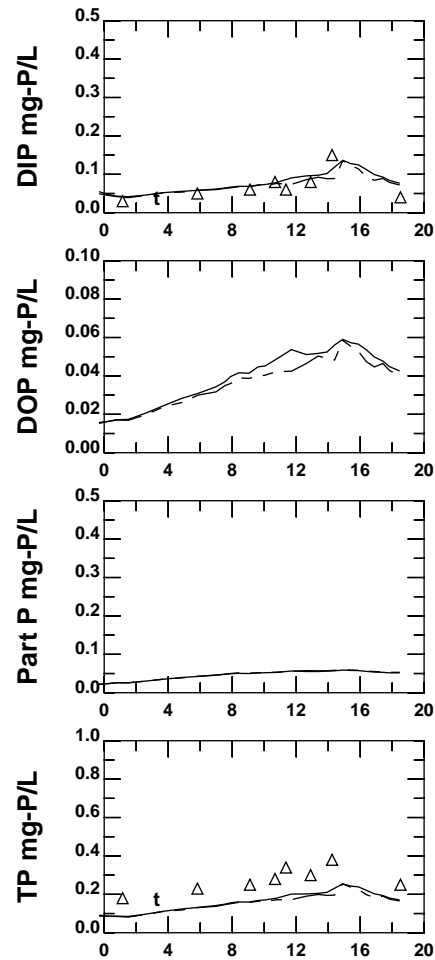
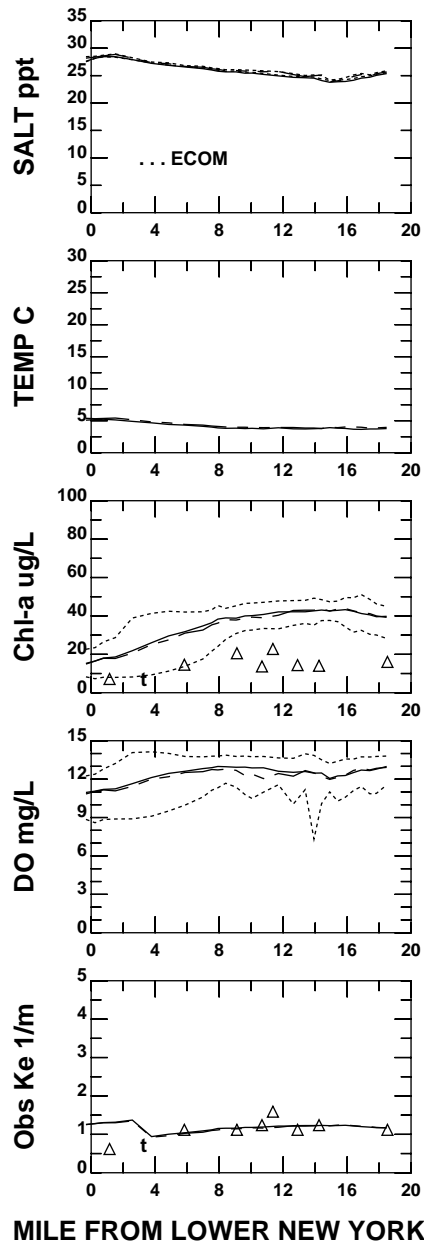
DATA Dec 30 2001 -Jan 28,2002

	SURF		BOT	
Harbor Survey	△	▲	Transect	Embayment
NYSDEC	t	e	Transect	Embayment
	○	c	Transect	Embayment

MODEL

—	SURFACE 30-DAY MEAN
- - - -	BOTTOM 30-DAY MEAN
- - -	30-DAY SURFACE MAX OR BOTTOM MIN

## CONEY ISLAND JAMAICA BAY TRANSECT



**MILE FROM LOWER NEW YORK BAY**

DATA Jan 29-Feb 27, 2002

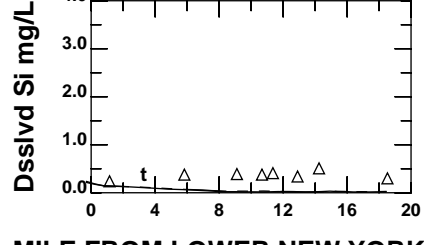
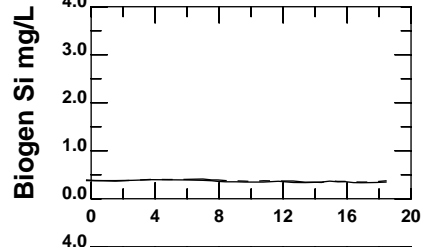
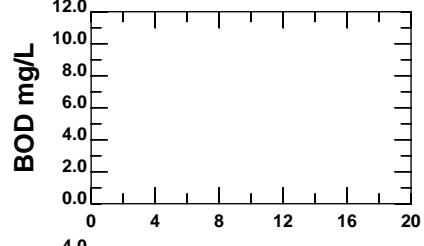
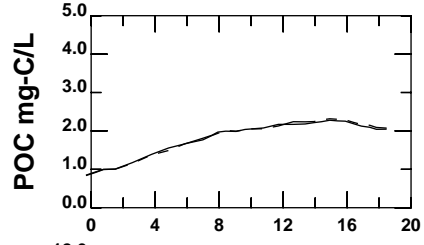
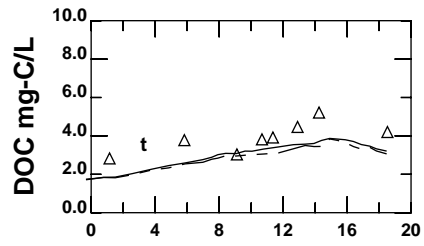
Harbor Survey SURF BOT  
 △ ▲ Transect  
 t e Embayment  
 NYSDEC ○ c  
 ○ c Embayment

**MODEL**

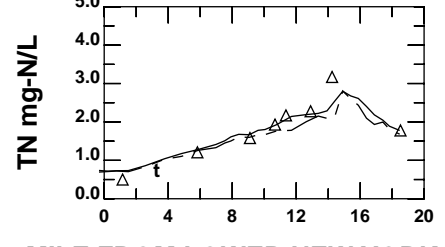
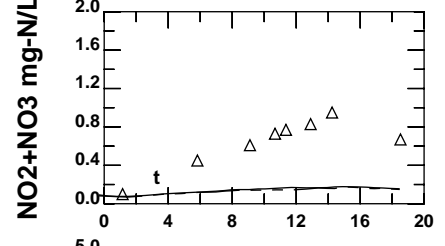
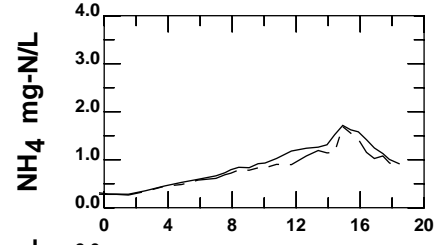
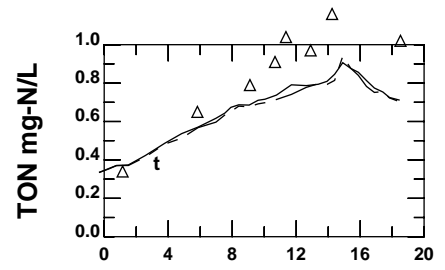
— SURFACE 30-DAY MEAN  
 - - - - - BOTTOM 30-DAY MEAN  
 - - - 30-DAY SURFACE MAX OR BOTTOM MIN

**CONEY ISLAND JAMAICA BAY TRANSECT**





MILE FROM LOWER NEW YORK BAY



MILE FROM LOWER NEW YORK BAY

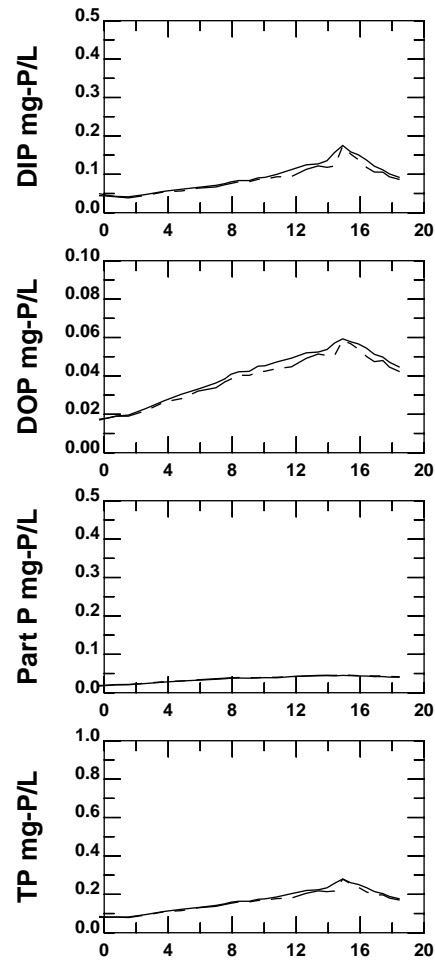
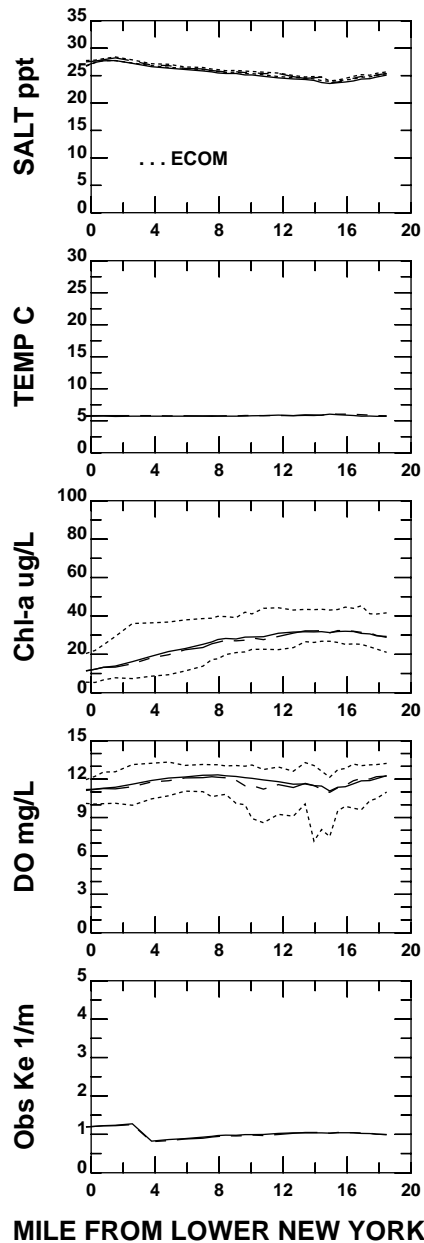
DATA Jan 29-Feb 27, 2002

Harbor Survey    SURF BOT  
 △    ▲    Transect  
 t    e    Embayment  
 NYSDEC    ○    Transect  
           c    Embayment

MODEL

— SURFACE 30-DAY MEAN  
 - - - - - BOTTOM 30-DAY MEAN  
 - - - 30-DAY SURFACE MAX OR  
 BOTTOM MIN

CONEY ISLAND JAMAICA BAY TRANSECT



MILE FROM LOWER NEW YORK BAY

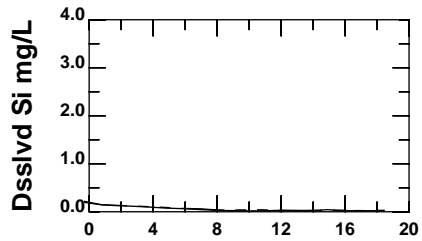
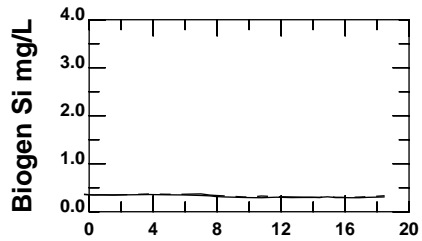
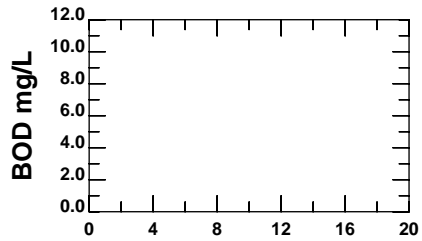
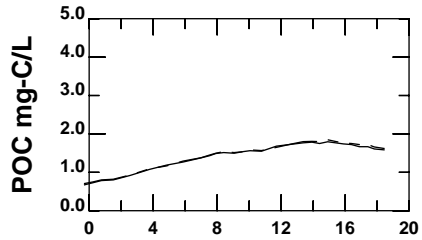
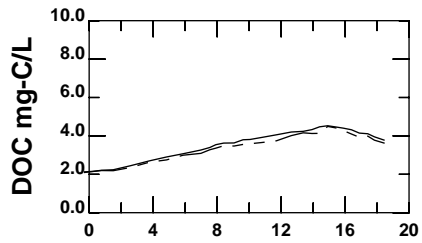
DATA Feb 28-Mar 29, 2002

Harbor Survey    SURF    BOT  
 △    ▲    Transect  
 t    e    Embayment  
 NYSDEC    ○    Transect  
           c    Embayment

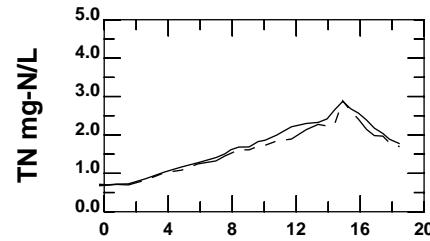
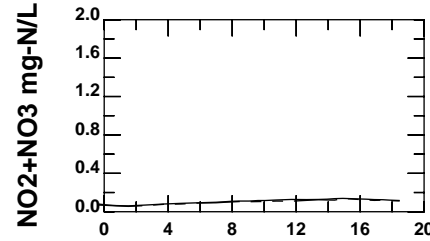
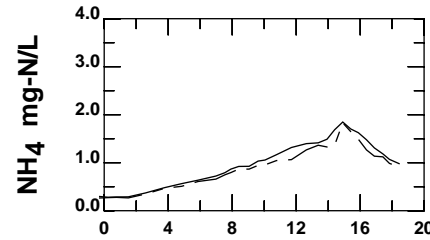
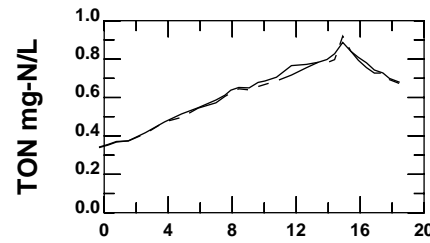
MODEL

—    SURFACE 30-DAY MEAN  
 - - -    BOTTOM 30-DAY MEAN  
 - - -    30-DAY SURFACE MAX OR  
           BOTTOM MIN

**CONEY ISLAND JAMAICA BAY TRANSECT**



MILE FROM LOWER NEW YORK BAY



MILE FROM LOWER NEW YORK BAY

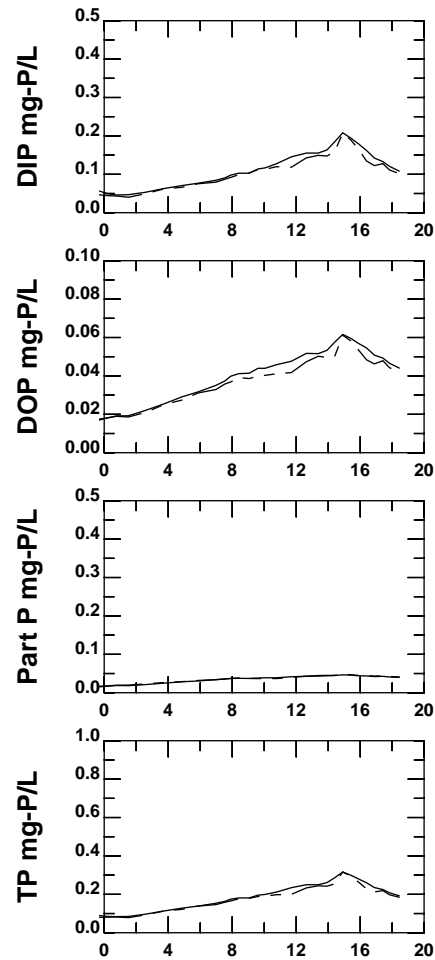
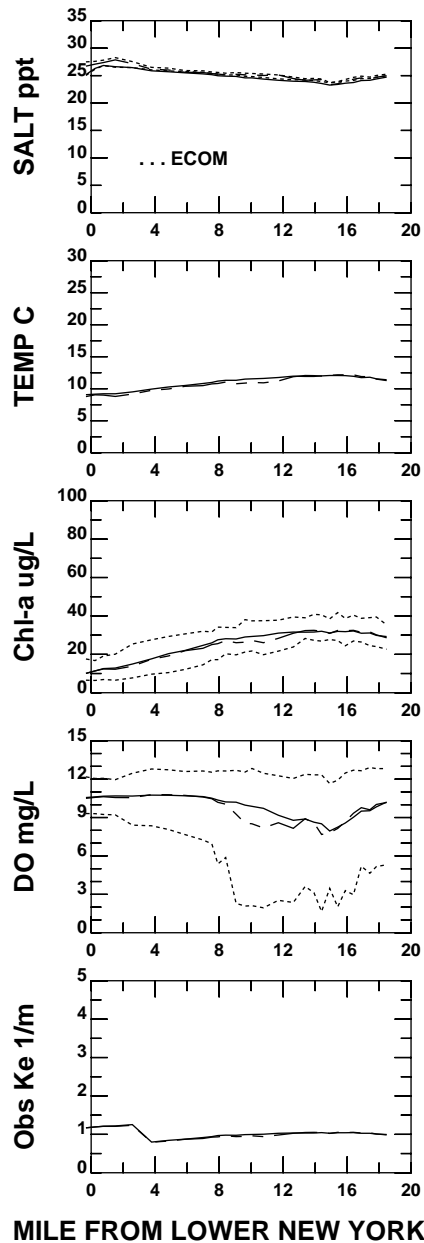
DATA Feb 28-Mar 29, 2002

	SURF		BOT	
Harbor Survey	△	▲	Transect	
	t	e	Embayment	
NYSDEC	○		Transect	
	c		Embayment	

MODEL

—	SURFACE 30-DAY MEAN
- - - -	BOTTOM 30-DAY MEAN
- · - ·	30-DAY SURFACE MAX OR BOTTOM MIN

## CONEY ISLAND JAMAICA BAY TRANSECT



**MILE FROM LOWER NEW YORK BAY**

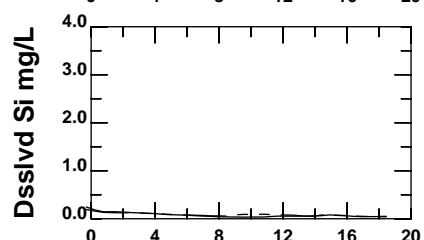
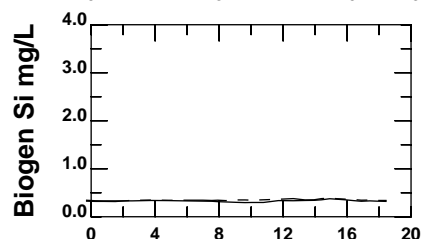
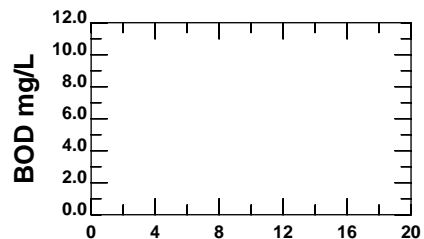
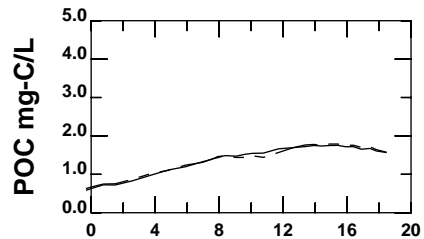
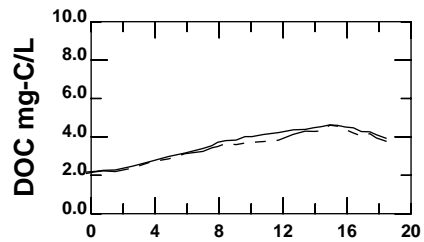
DATA Mar 30-Apr 28, 2002

Harbor Survey    SURF    BOT  
 △    ▲    Transect  
 t    e    Embayment  
 NYSDEC    ○    Transect  
           c    Embayment

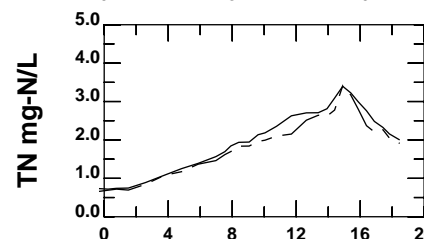
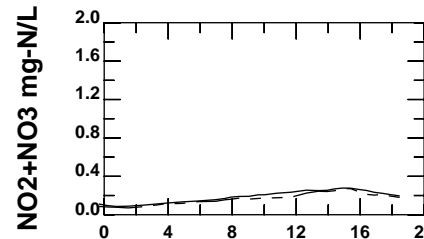
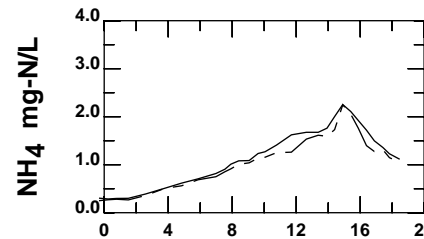
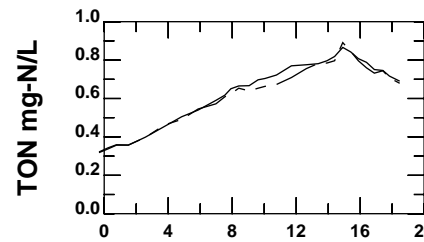
**MODEL**

—— SURFACE 30-DAY MEAN  
 - - - - - BOTTOM 30-DAY MEAN  
 - - - - - 30-DAY SURFACE MAX OR  
 BOTTOM MIN

**CONEY ISLAND JAMAICA BAY TRANSECT**



MILE FROM LOWER NEW YORK BAY



MILE FROM LOWER NEW YORK BAY

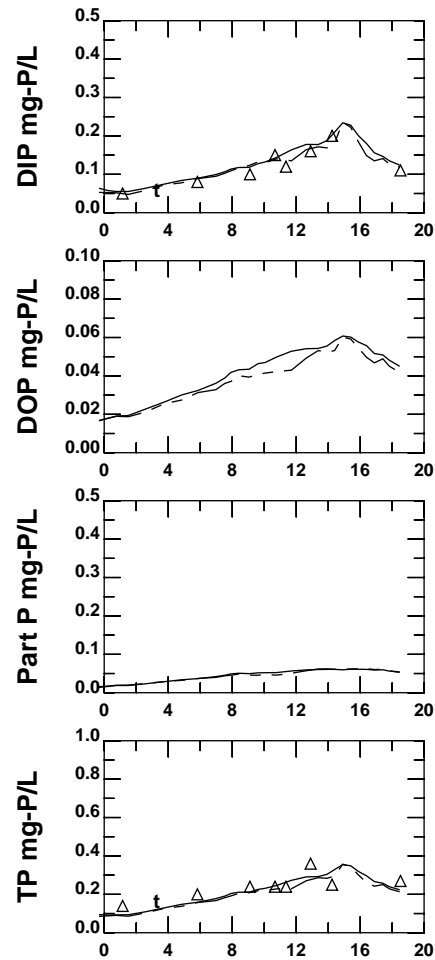
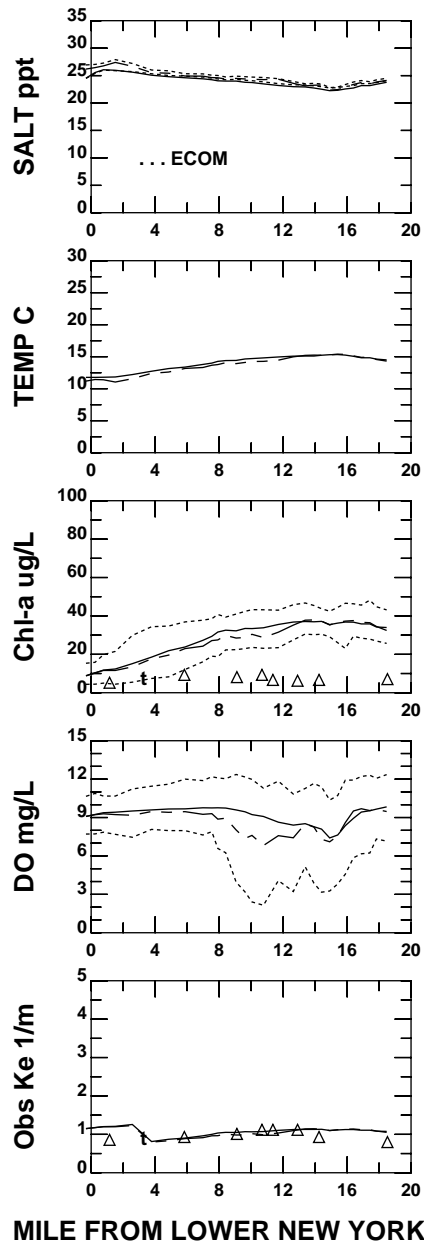
DATA Mar 30-Apr 28, 2002

	SURF		BOT	
Harbor Survey	△	▲	Transect	
	t	e	Embayment	
NYSDEC	○		Transect	
	c		Embayment	

MODEL

————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

## CONEY ISLAND JAMAICA BAY TRANSECT



**MILE FROM LOWER NEW YORK BAY**

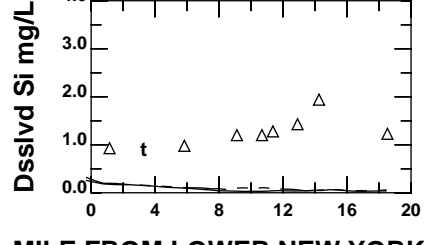
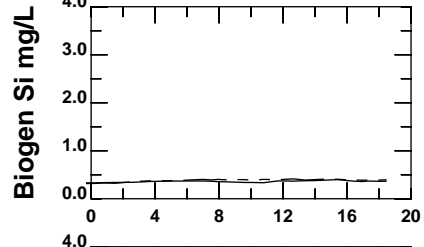
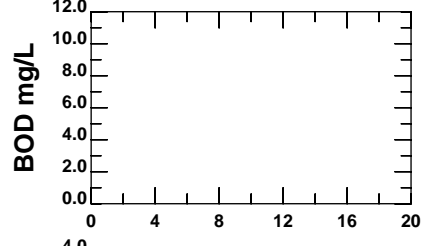
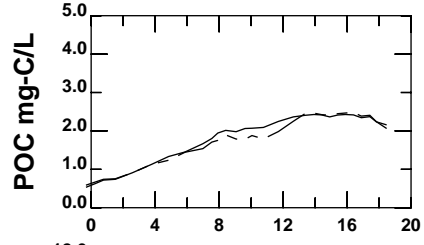
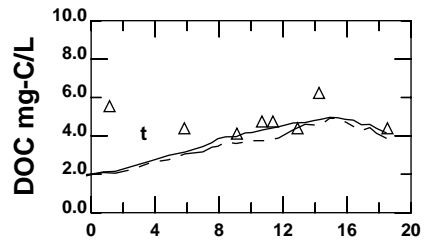
**DATA Apr 29-May 28, 2002**

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	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment

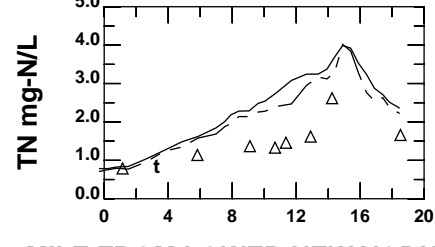
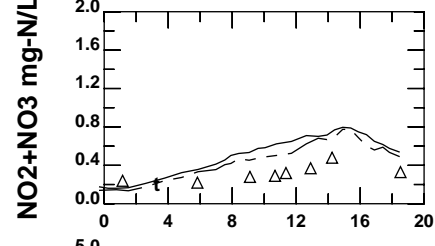
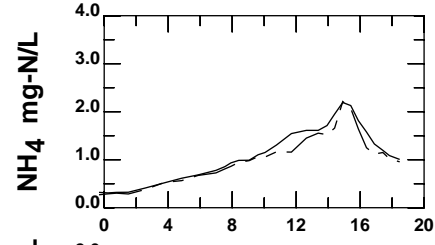
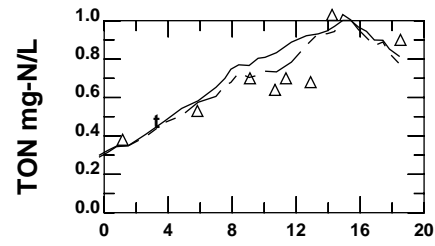
**MODEL**

————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

**CONEY ISLAND JAMAICA BAY TRANSECT**



MILE FROM LOWER NEW YORK BAY



MILE FROM LOWER NEW YORK BAY

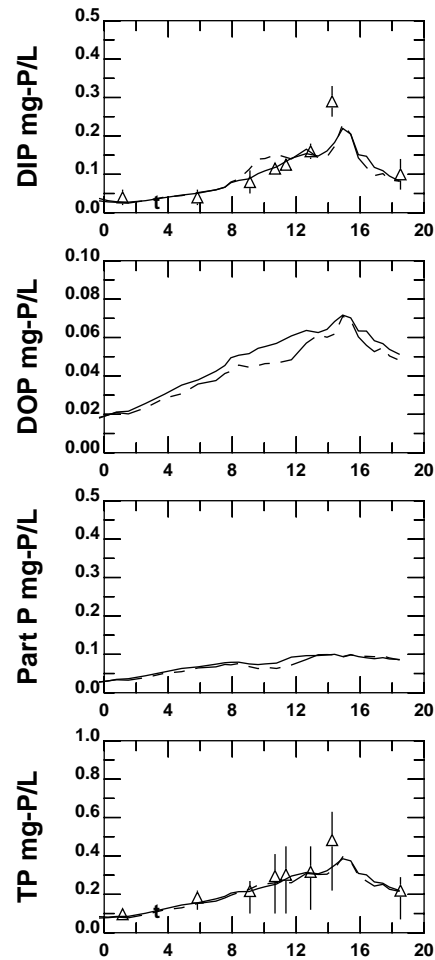
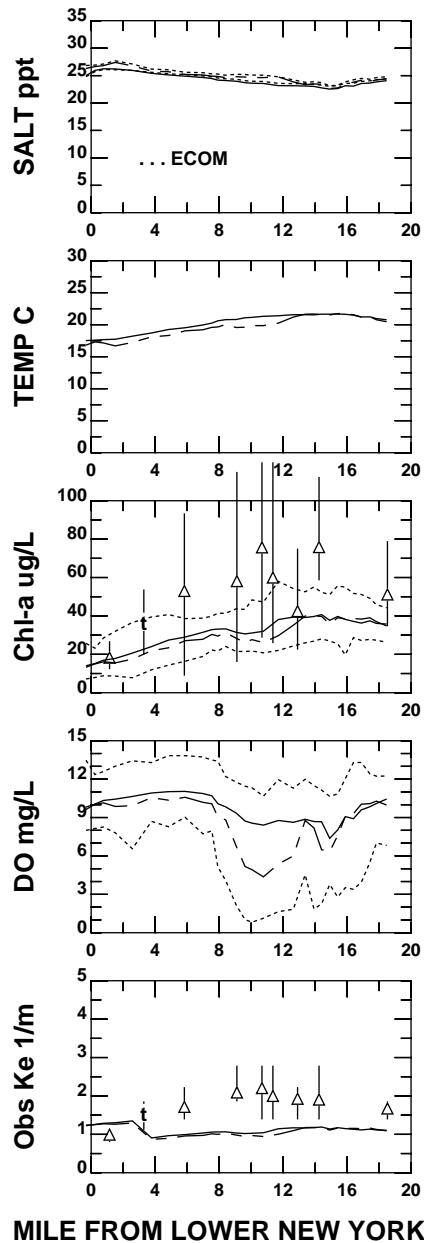
DATA Apr 29-May 28, 2002

Harbor Survey    SURF BOT  
 △    ▲    Transect  
 t    e    Embayment  
 NYSDEC    ○    Transect  
           c    Embayment

MODEL

—    SURFACE 30-DAY MEAN  
 - - -    BOTTOM 30-DAY MEAN  
 - -    30-DAY SURFACE MAX OR  
           BOTTOM MIN

CONEY ISLAND JAMAICA BAY TRANSECT



**MILE FROM LOWER NEW YORK BAY**

DATA May 29-Jun 27, 2002

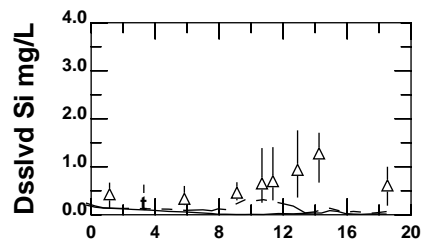
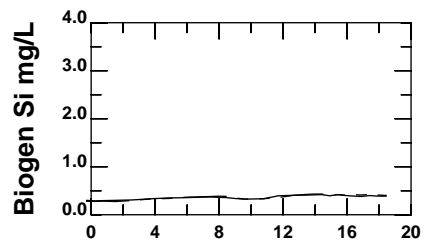
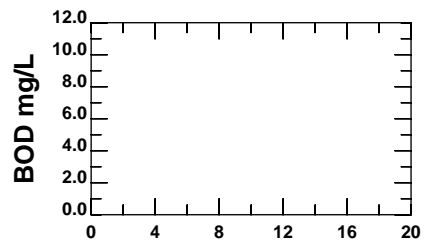
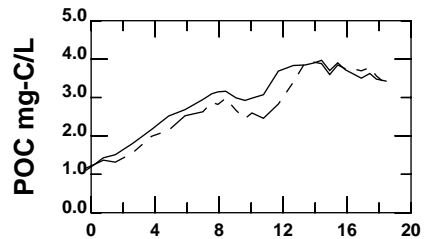
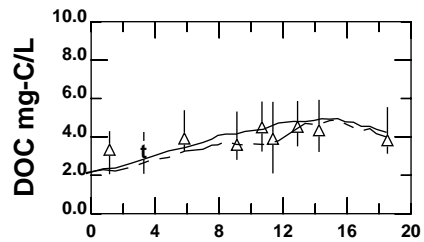
	SURF BOT		
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment

**MODEL**

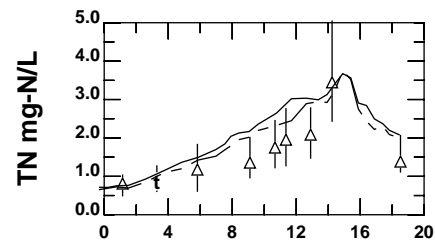
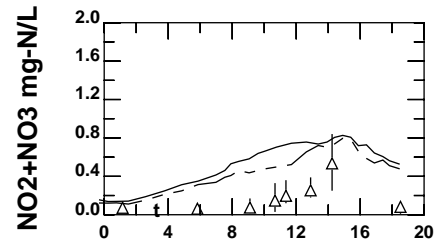
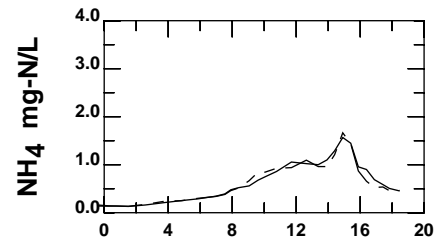
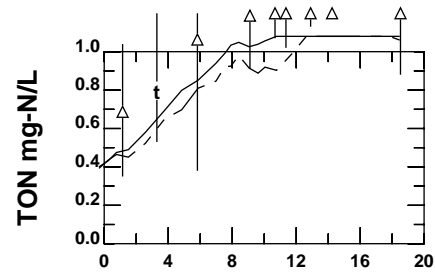
————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

**CONEY ISLAND JAMAICA BAY TRANSECT**





MILE FROM LOWER NEW YORK BAY



MILE FROM LOWER NEW YORK BAY

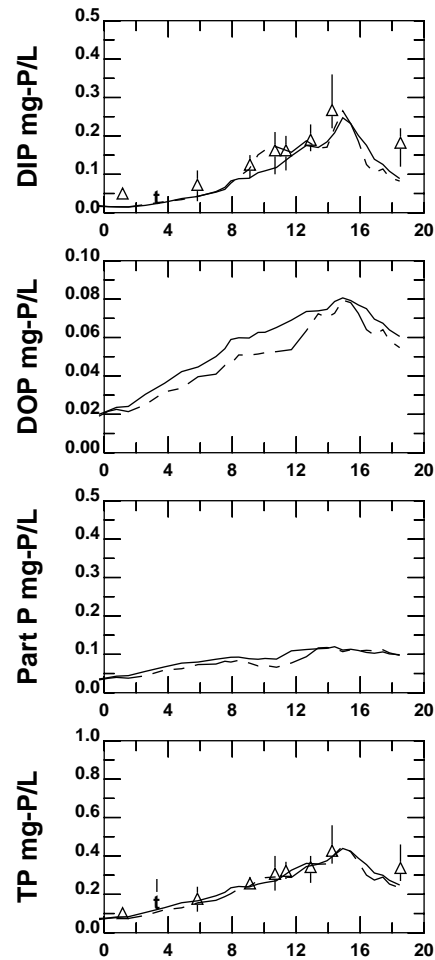
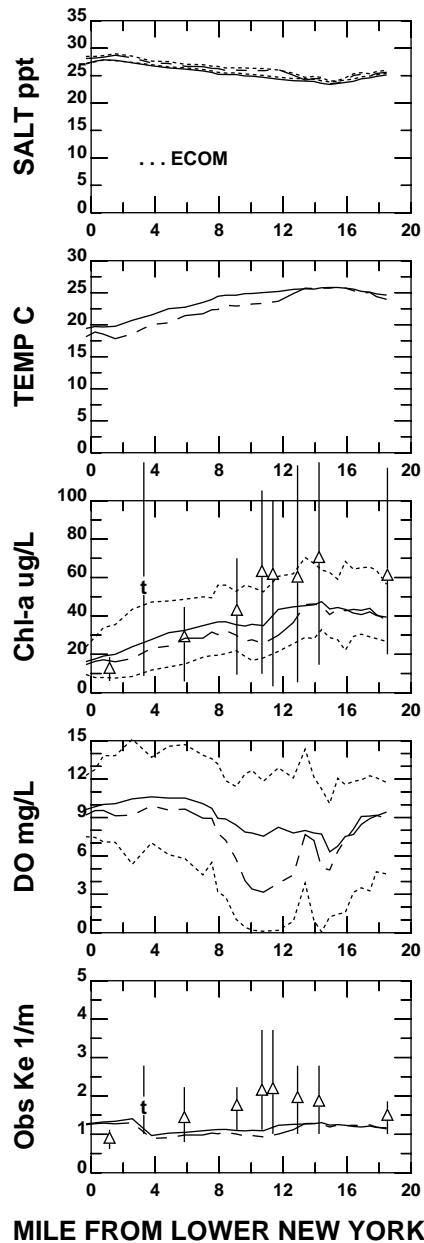
DATA May 29-Jun 27, 2002

	SURF	BOT	
Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment

MODEL

—	SURFACE 30-DAY MEAN
- - -	BOTTOM 30-DAY MEAN
- - -	30-DAY SURFACE MAX OR BOTTOM MIN

## CONEY ISLAND JAMAICA BAY TRANSECT



MILE FROM LOWER NEW YORK BAY

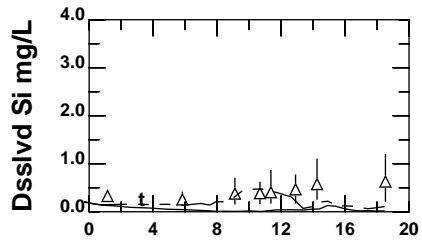
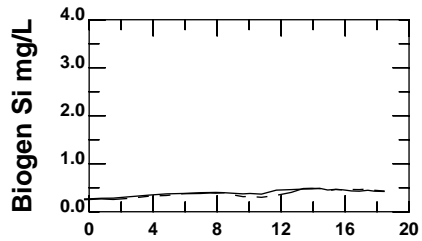
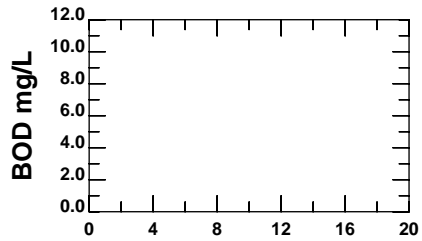
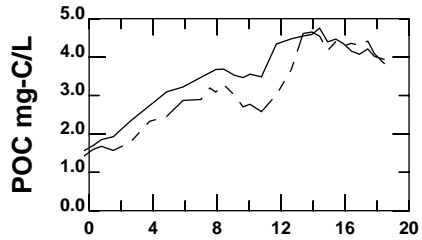
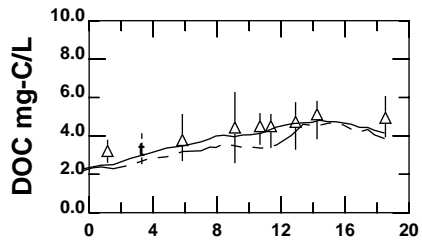
DATA Jun 28-Jul 27, 2002

Harbor Survey    SURF BOT  
 △    ▲    Transect  
 t    e    Embayment  
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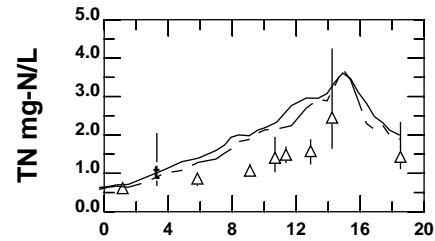
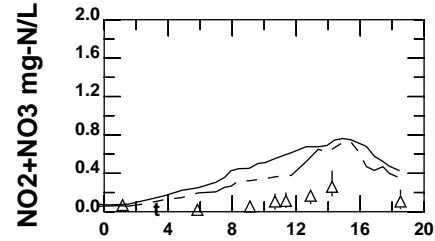
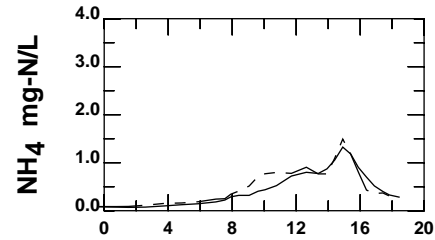
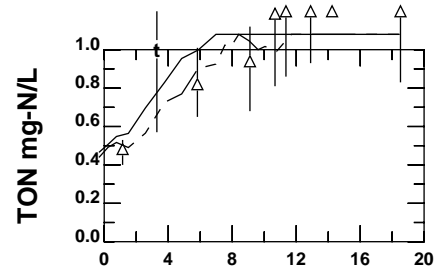
MODEL

—— SURFACE 30-DAY MEAN  
 - - - - - BOTTOM 30-DAY MEAN  
 - - - 30-DAY SURFACE MAX OR  
 BOTTOM MIN

**CONEY ISLAND JAMAICA BAY TRANSECT**



MILE FROM LOWER NEW YORK BAY



MILE FROM LOWER NEW YORK BAY

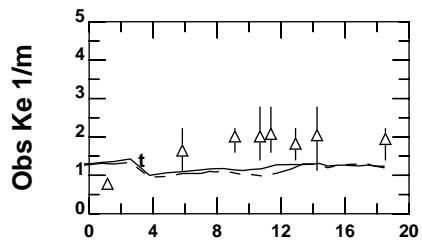
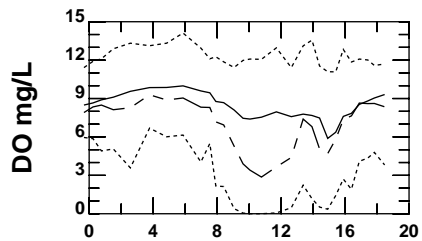
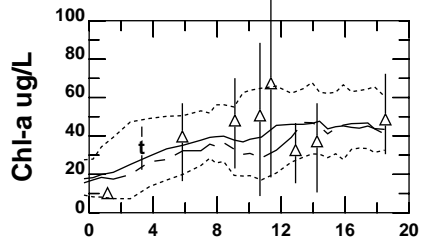
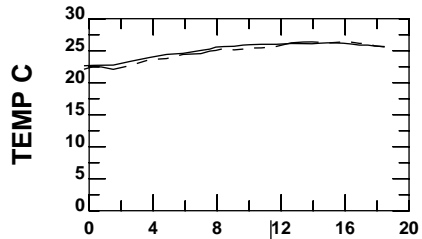
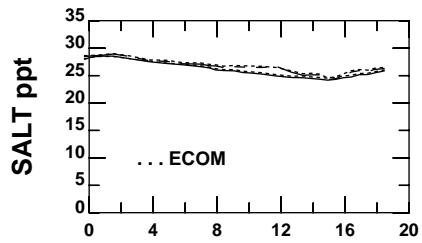
DATA Jun 28-Jul 27, 2002

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Harbor Survey	△	▲	Transect
	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment

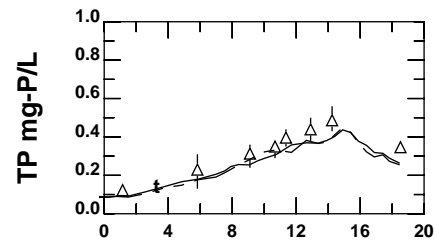
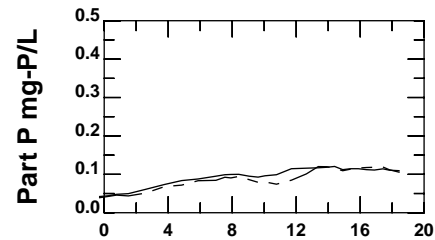
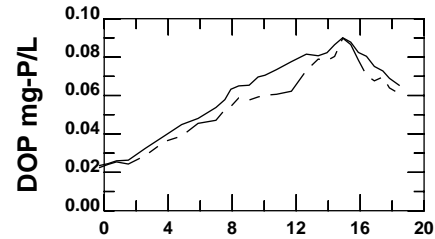
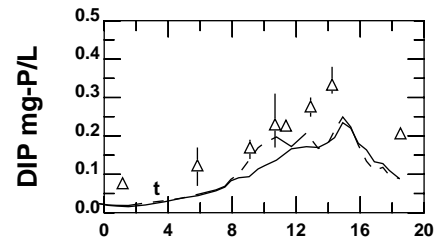
MODEL

————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

## CONEY ISLAND JAMAICA BAY TRANSECT



MILE FROM LOWER NEW YORK BAY



MILE FROM LOWER NEW YORK BAY

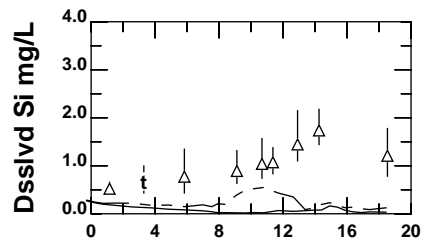
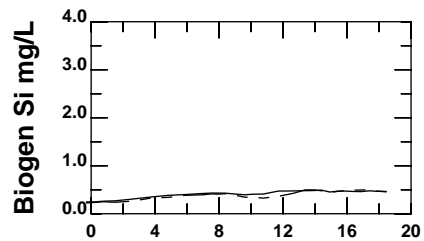
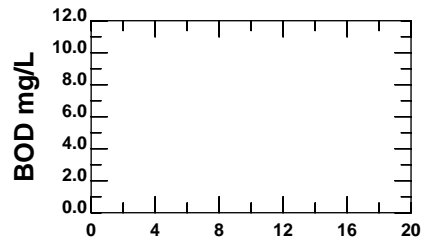
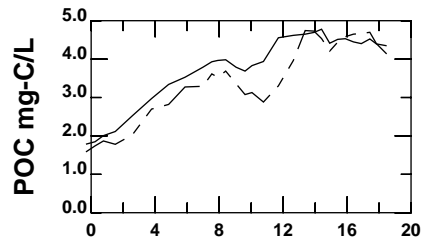
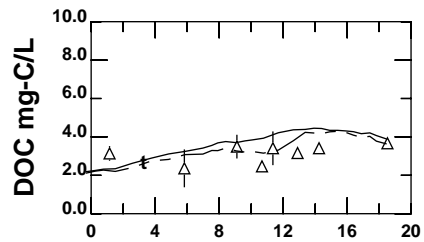
DATA Jul 27-Aug 26,2002

Harbor Survey SURF BOT  
 △ ▲ Transect  
 t e Embayment  
 NYSDEC ○ c  
 ○ c Embayment

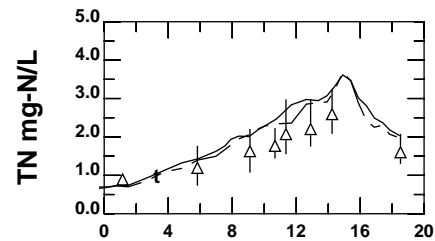
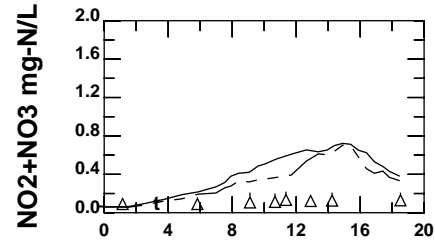
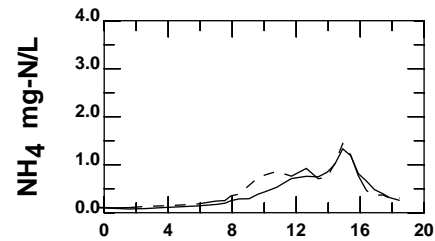
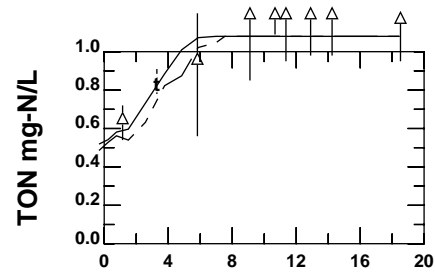
MODEL

— SURFACE 30-DAY MEAN  
 - - - - - BOTTOM 30-DAY MEAN  
 - - 30-DAY SURFACE MAX OR  
 BOTTOM MIN

### CONEY ISLAND JAMAICA BAY TRANSECT



MILE FROM LOWER NEW YORK BAY



MILE FROM LOWER NEW YORK BAY

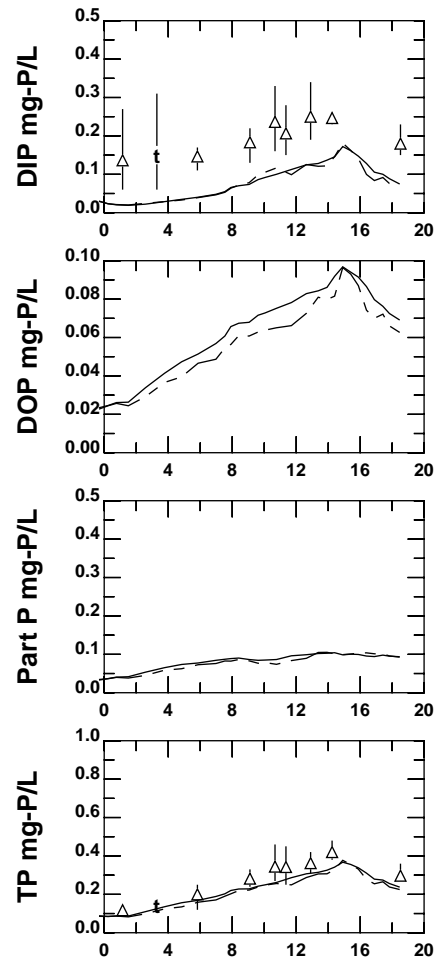
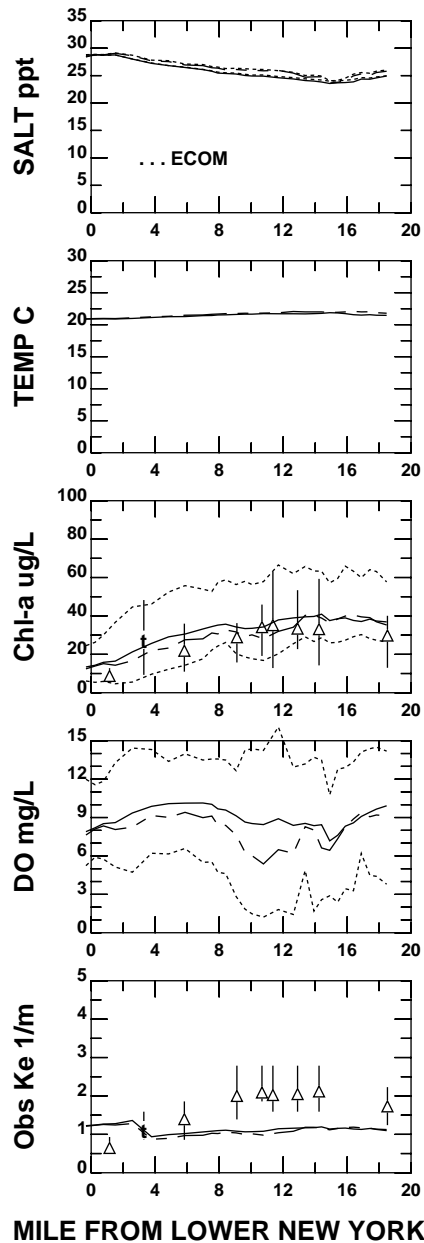
DATA Jul 27-Aug 26, 2002

	SURF		BOT	
Harbor Survey	△	▲	Transect	
	t	e	Embayment	
NYSDEC	○		Transect	
	c		Embayment	

MODEL

—	SURFACE 30-DAY MEAN
- - - -	BOTTOM 30-DAY MEAN
- - -	30-DAY SURFACE MAX OR BOTTOM MIN

# CONEY ISLAND JAMAICA BAY TRANSECT



MILE FROM LOWER NEW YORK BAY

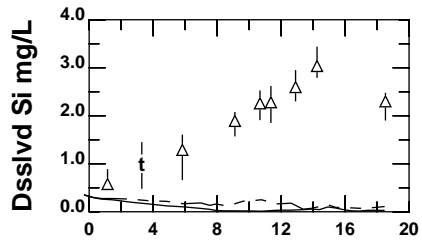
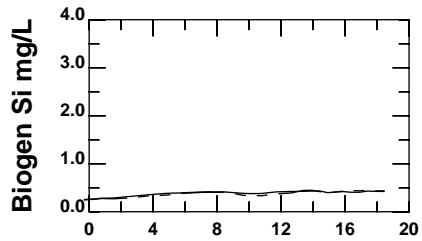
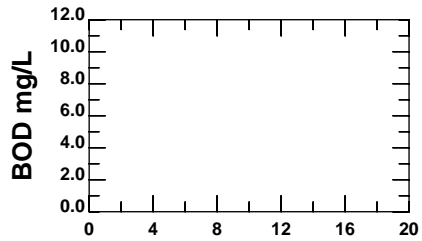
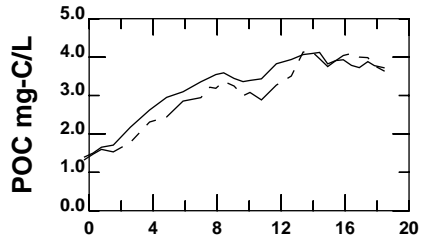
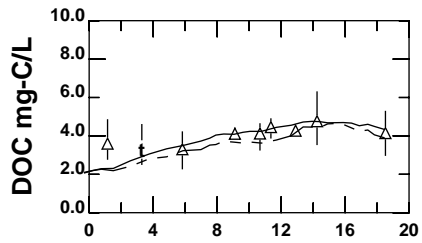
DATA Aug 27-Sep 25, 2002

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	t	e	Embayment
NYSDEC	○		Transect
	c		Embayment

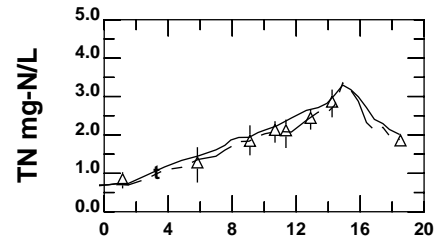
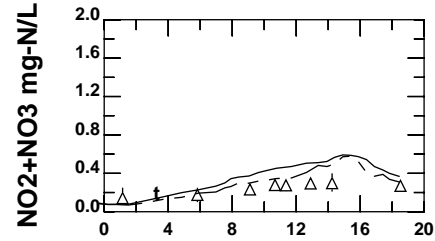
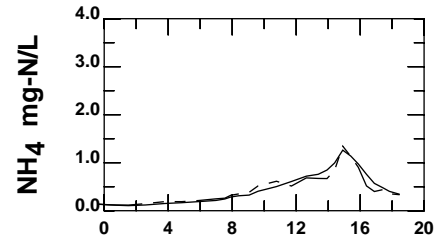
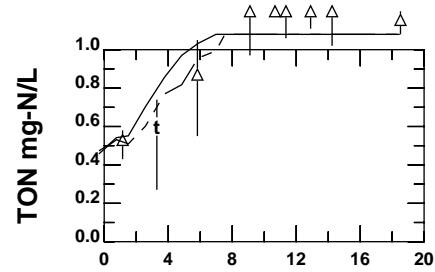
MODEL

————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

## CONEY ISLAND JAMAICA BAY TRANSECT



MILE FROM LOWER NEW YORK BAY



MILE FROM LOWER NEW YORK BAY

DATA Aug 27-Sep 25, 2002

	SURF		BOT	
Harbor Survey	△	▲	Transect	Transect
NYSDEC	t	e	Embayment	Embayment
	○		Transect	
	c		Embayment	

MODEL

————	SURFACE 30-DAY MEAN
-----	BOTTOM 30-DAY MEAN
- - - -	30-DAY SURFACE MAX OR BOTTOM MIN

# CONEY ISLAND JAMAICA BAY TRANSECT

**APPENDIX 6**

**MODEL EVALUATION GROUP (MEG)**

**FINAL SEDIMENT TRANSPORT/ORGANIC CARBON  
PRODUCTION**

**REVIEW COMMENTS AND**

**HYDROQUAL RESPONSE**



**Model Evaluation Group (MEG) Review of: “A Model for the Evaluation and Management of Contaminants of Concern in Water, Sediment, and Biota in the NY/NJ Harbor Estuary Sediment Transport/Organic Carbon Production Sub-Model” by HydroQual, Inc.**

This is a very complex and ambitious modeling effort. For the most part the performance of the model is consistent with the inherent challenges of different modeling tasks, but there are also performance issues that reflect varying levels of experience of the HydroQual team for different components. The organic carbon aspect of the model is very sophisticated, and it appears to be well calibrated based on comparisons with observations.

The performance of the sediment transport component is not as impressive, particularly insofar as it quantifies the trapping of sediment in different segments of the domain. In order to reduce the discrepancies between observed sediment trapping and the model results, various parameters were adjusted from one part of the domain to another. In some cases these adjustments were justified, based on consideration of physical processes not explicitly included in the model, such as wave resuspension. In other cases (such as adjustment of settling velocity and bottom stress), there was no physical justification other than to improve the model's agreement with data. Given the failure of the model to produce the observed sediment distributions with the a priori parameter specification, this fitting exercise was necessary and appropriate for the circumstances. However, it should be acknowledged in the report that the initial failure of the model represents a significant limitation to the predictive skill of the model, particularly with respect to the long-term distribution of sediment. This limitation may have a significant impact on the prediction of the long-term fate of contaminants.

The limitations of the model's ability to quantify sediment trapping is clearly illustrated in figure 4.7 (reproduced below). The red bars show how much sediment the model traps, whereas the blue bars indicate actual sediment trapping, based on dredging records. There are other sources of data that more-or-less support the dredging data. The distribution of sediment predicted by the model is uncorrelated with the observations. Notably, the model predicts about 5 times as much sediment trapping in the Hudson Highlands-to-Tappan Zee reach than in the Tappan Zee-to-Battery, whereas the observations indicate approximately the reverse ratio. This discrepancy occurs after the aforementioned adjustments of model parameters. Before these adjustments, the model trapped no sediment in the lower reach of the Hudson.

I am not sure what the model leaves out that would explain the discrepancy. There are a number of possibilities, including 1) inadequate lateral resolution to capture lateral trapping processes; 2) inadequate parameterization of temporal changes in sediment shear strength; 3) incomplete or

inaccurate specification of spatial variability of erodibility; 4) inadequate resolution of frontal trapping processes.

The implications of this model limitation are as follows: 1) inaccurate quantification of the long-term distribution of contaminants; 2) underestimates of the exposure of contaminants to organisms in the lower Hudson; 3) overestimates of exposure estimates in the middle reaches of the river.

The model does appear to resolve certain aspects of the dynamics, such as the initial trapping of sediment during the freshet. Figure 4.5b shows the accumulation of sediment in the lower reach of the Hudson during the spring freshet, similar to observations by Woodruff et al., 2001. The problem is that during the subsequent period of low river flow, all of the sediment that was previously trapped is transported northward, out of the observed sediment trapping zone (fig. 4.5c).

The model does better in the prediction of water column suspended sediment than in trapping. The comparison of data from Poughkeepsie with model results indicates good agreement (fig. 4.2). In addition, the model reproduces the general trend of higher suspended sediment concentrations in the estuarine part of the river than upstream (e.g., figure from p 334 in appendix 4. These patterns vary a lot from season to season, sometimes showing a greatly attenuated turbidity pattern, inconsistent with observations (e.g. p 345 in appendix 4).

In spite of the limited ability of the model to reproduce observations, it does include the key processes responsible for the resuspension and transport of sediment. Thus I believe that it captures important aspects of the sediment-water exchange processes and their influence on the fate of contaminants.

ST-SWEM is an ambitious attempt to couple sediment transport calculations with a 3D hydrodynamic model of the NY/NJ Harbor estuary. This is a challenging problem – one that various groups, including the USGS, is investing considerable time and effort in. The best developed of these models at present may be the commercially available ones, like Delft 3D.

The fundamental quantities that must be characterized in a sediment transport model such as ST-SWEM are the resuspension (or erosion) rate, deposition rate and flux rate. Resuspension rate depends on sediment properties (grain size, density, cohesion, consolidation), which control the critical shear stress and erosion rate coefficient ( $a_0$  in Eq. 8), and the flow-induced shear stress.

Deposition rate depends on sediment concentration near the bed and settling velocity, both of which can be affected by whether the sediment in suspension is aggregated (into flocs) or disaggregated. Sediment flux depends on the distribution of sediment in the water column and the velocity.

ST-SWEM relates deposition rate to sediment concentration  $C$ , layer depth  $h$ , a settling rate coefficient  $B$  and a correction for effects of salinity on aggregation rate. It isn't clear whether  $h$  is the flow depth or the depth of a thinner layer of the flow; presumably  $C$  is the average concentration over the depth  $h$ , but this also isn't stated. The settling rate coefficient  $B$  is related to the settling (fall) velocity of the sediment. A single value of  $B$  (Table 4-1) suggests that changes in deposition rate due to variations in grain size are unimportant in this system compared to changes associated with particle aggregation. The report doesn't discuss sediment size or its variability in the study area, so it is difficult to evaluate whether this assumption is reasonable. The salinity correction illustrated in Fig. 2-1, top panel, indicates a critical salinity of 20 ppt for aggregation. Most work I am aware of indicates a much lower value for the critical salinity – more like 5 ppt or less. There may be some other dynamics that become important at 20 ppt that this function captures. However, it might be worth investigating the effect of including another break at a salinity of 3-5 ppt.

ST-SWEM uses a standard erosion rate formulation to estimate resuspension rate, which depends on the bottom shear stress due to the flow, the critical shear stress, and a resuspension coefficient. In ST-SWEM, the resuspension coefficient is an adjustable parameter. This is reasonable, as it is difficult to predict in general and is often adjusted to provide the best fit between measured and calculated of suspended sediment concentration. The bottom shear stress is based on a near-bed log velocity profile, however the value of the von Karmen constant,  $\kappa$ , in the model is 25 times smaller than the canonical value of 0.4 (Table 4-1). No explanation is provided for setting  $\kappa$  to this value. A bottom roughness coefficient,  $z_0$ , of 0.001 (cm, I assume) is a reasonable for estimating skin friction stress, but neglects any spatial variability in sediment properties or bed morphology that might affect bed stresses. Are the results sensitive to this value? Critical shear stress is set to 0.5 dy/cm<sup>2</sup> in the upper 0-2 mm of the bed and 3.0 dy/cm<sup>2</sup> below that to reflect a fluff layer overlying a more consolidated bed. This suggests that net erosion on the time scale of the model calculations never exceeds 2 mm, while measurements by Geyer, Traykovski, and Sommerfield in the lower Hudson River show that a thick layer (many cm's) of the bed can be eroded and redeposited on tidal time scales during spring tides.

Nothing is said in the report about how suspended sediment is distributed vertically in the water

column in ST-SWEM. The vertical distribution is important because sediment flux (advection) is the product of velocity and concentration. A balance between upward turbulent diffusion and downward particle settling produces a concentration profile with a maximum at the bottom and a rapid dropoff with increasing height above the bottom. Processes such as aggregation (increasing settling rates) and stratification (inhibiting turbulent mixing) tend to further increase the gradient in suspended sediment concentration. This means that concentration is high where velocity is low and vice versa. As a result, the total flux (integrated over depth), depends strongly on the vertical distribution of sediment in the water column.

I would have appreciated reading a little more about running the model. What time steps were used? Which of the 5 adjustable calibration coefficients in the sediment transport part of ST-SWEM (listed on p. 4-4) are the sediment transport calculations (TSS and deposition) most sensitive to? How much variation was there in model coefficients yielding best fits for the 4 segments of the system considered in the calibration. Bottom roughness was also treated as an adjustable parameter. Is this the only one that was allowed to vary in space? How much was it allowed to vary? No seasonal variation in calibration coefficients was included in the model. Is this reasonable? The calibrated model seems to do a reasonable job of capturing spatial and temporal variations in TSS – which is important for characterizing the organic carbon exchange processes – but appears to have more difficulty in reproducing the observed depositional pattern.

Overall, the results suggest that the model can capture some of the important variations in sediment loads, organic carbon, and patterns of sediment accumulation. However, in any model with multiple adjustable parameters, it is difficult to know whether the model is reproducing these variations for the right reasons. This is important if the model is to be used to forecast how the system might respond to changes in input or forcing parameters outside of the range of the calibration. In particular, the lack of any spatial variation in sediment properties in the model is not likely to be realistic. Identifying the parameters the model is most sensitive to could point future field efforts to mapping these parameters to improve their characterization in the model.

**HydroQual Inc. Response to: Model Evaluation Group (MEG) Review of: “A Model for the Evaluation and Management of Contaminants of Concern in Water, Sediment, and Biota in the NY/NJ Harbor Estuary Sediment Transport/Organic Carbon Production Sub-Model”  
by HydroQual, Inc.**

As acknowledged in the MEG review presented above, HydroQual’s effort on the CARP sediment transport/organic carbon production model represents one of the first attempts to apply a sediment transport model to a domain as large and complex as the NY/NJ Harbor - Bight- Sound complex. Because field data for sediment transport model calibration were limited, the sediment transport model was initially developed based on simplified formulations and a set of geographically constant coefficients to describe the relevant processes of settling and resuspension. Spatial variations in settling (based on variations in salinity and fluid shearing rates), resuspension (based on consolidation in sediment), and bottom shear (based on wind waves) were then adopted to provide a better description of sediment transport throughout the CARP model domain. This sequential process of adjusting model coefficients and providing a physical justification for the adjustments is an important aspect of model calibration.

In addition to developing a new sediment transport model for the Harbor-Bight-Sound complex, HydroQual’s effort included incorporating the newly developed sediment transport model into a previously calibrated and validated organic carbon production model, effectively forming a new organic carbon production model. This necessitated both verification that the original calibrations/validations of the organic carbon production model had not been destroyed when the sediment transport model formulations were incorporated and skill assessment of the new organic carbon production model performance using data collected by CARP and other agencies during the 1998-2002 period. HydroQual is appreciative of the MEG’s involvement in the development and application of the sediment transport/organic carbon production model and the review provided above. A large portion of HydroQual’s project resources were devoted to sediment transport modeling. Successful calibration of the subsequent contaminant fate and transport models demonstrates the validity of the construct, calibration, validation, and skill assessments underlying the CARP hydrodynamic, sediment transport, and organic carbon production models.

As discussed in the Sediment Transport/Organic Carbon Production modeling report prepared for CARP, the sediment transport model was able to provide a good description of the major features characterizing sediment transport in NY-NJ Harbor and its adjoining waterways. In particular, the model provides a good description of the seasonal transport and trapping of sediment in the estuary. This trapping behavior is characterized by a large downstream movement of sediment

during the spring freshet and a landward movement of sediment after the freshet has past. On a finer scale, however, the sediment transport model appears to overpredict the seasonal movement of sediment between the North River and Haverstraw Bay.

It was not intended that HydroQual would formally respond to or act upon the final MEG review comments. Accordingly, no scope or budget had been allotted for this purpose in HydroQual's contract agreement with the Hudson River Foundation. Rather the intention of the final MEG review was to provide guidance for future users of the CARP model. It is noted that HydroQual had been working cooperatively with the MEG throughout the CARP model development process and that many interim MEG recommendations and suggestions were incorporated into the CARP model along the way. In that sense, there has already been a significant effort by HydroQual to respond to MEG comments and feedback.

While the purposes of HydroQual's response is not to refute or rebut the MEG's final review, the HydroQual response is intended to provide HydroQual with the opportunity to clarify for potential future users of the model (e.g., EPA and State TMDL programs, Superfund, restoration, etc.) any misunderstandings that may be inherent in the MEG review. Overall, HydroQual has found the final MEG review of the CARP sediment transport and organic carbon production models to be technically accurate with few exceptions. These few exceptions are noted below.

The MEG final review comments on the CARP sediment transport/organic carbon production model largely focus on two points: (1) that the model overpredicts the seasonal movement of sediment between the North River and Haverstraw Bay, and (2) that the model's deficiency in describing this seasonal movement of sediment may result in an inaccurate quantification of the long-term distribution of contaminants and contaminant exposures.

Regarding the first point, HydroQual is basically in agreement with the MEG. The model appears to overpredict the seasonal movement of sediment between the North River and Haverstraw Bay. As pointed out in the MEG final review, this deficiency in the model may in part be associated with inadequate spatial resolution in the CARP model grid. In particular, grid resolution of the CARP model in the North River region consists of only three lateral cells. This segmentation may not be sufficient to capture finer scale features (e.g., the Weehawken Channel and ship piers), or as pointed out by the MEG, to capture the lateral processes controlling sediment trapping in this section of the river. These effects should therefore be considered in greater detail in any future modeling efforts, particularly in more evaluations of sediment deposition patterns.

Regarding the second point, HydroQual respectfully disagrees with the MEG's final review. Although it is reasonable to expect, based upon a review of the sediment transport/organic carbon production model alone, that model overprediction of sediment transport to Haverstraw Bay would result in an inadequate quantification of the long-term distribution of contaminants and contaminant exposures, that is not the case. Based on subsequent evaluations presented in the CARP Contaminant Fate, Transport, and Bioaccumulation report, seasonal sediment transport patterns are most important in trapping particle-bound contaminants in the Harbor and in spreading particle-bound contaminants over large distances. These factors cause contaminant concentrations to be relatively constant throughout the North River and into Haverstraw Bay. One possible exception is 2,3,7,8-TCDD for which the dominant source is in the lower Passaic River. Based on CARP model results, the tail of the 2,3,7,8-TCDD distribution extends further up the Hudson River than can be supported by observations. According to the 2,3,7,8-TCDD hindcast calculation, however, the larger-scale processes of sediment trapping provide a good description of time responses of 2,3,7,8-TCDD for large portions of the most heavily-contaminated sections of the Harbor. Thus, the overprediction of seasonal sediment movement from the North River to Haverstraw Bay in the sediment transport/organic carbon production model does not appear to have a large impact on the overall behavior of the contaminants in CARP contaminant model simulations.

Regarding the MEG comment that according to Table 4-1 the canonical value of the von Karmen constant, 0.4, had been adjusted to be 25 times smaller, the typographical error in Table 4-1 has since been corrected. The accepted value of the von Karmen constant, 0.4, was used in all model calculations.

HydroQual acknowledges the many excellent suggestions that the MEG has made regarding potential future sediment transport model development and confirmation. Hopefully, these may be incorporated into future modeling work or other upcoming efforts within the region. Once again, HydroQual gratefully acknowledges and thanks the MEG members for all of their assistance with the CARP modeling effort. In particular, HydroQual thanks Rocky Geyer and Patricia Wiberg who were the lead authors of the MEG final review comments for the CARP sediment transport/organic carbon production model.