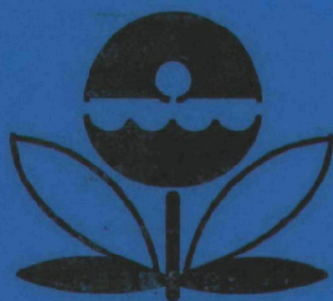


# **MARINE AND ESTUARINE ANALYTICAL METHODS WORKSHOP**

**EPA Regions II and III  
with support from the  
Office of Marine and Estuarine Protection**

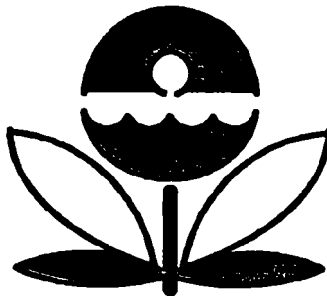


**May 2-3, 1990  
Annapolis, MD**



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## INTRODUCTION AND SUMMARY

Environmental Protection Agency personnel on a regional and national basis are involved with coastal, estuarine and marine monitoring programs. As many as 95 estuarine projects will potentially be included in the 17 National Estuary Programs (NEP). Each program must characterize its estuary and work to improve conditions demonstrating environmental results through management actions. Environmental monitoring is usually required.

Several Regions with extensive experience in estuarine and marine monitoring were seriously concerned about the lack of validated analytical methods for marine samples. In 1988, Regions II and III wrote a joint position paper to urge the development and validation of estuarine and marine methods. The Agency's approved water-based methods are appropriate for freshwater samples, but require modification for application to a saline-based matrix. These modifications are not consistent between laboratories and they are not validated. Regions II and III urged the establishment of a nationally coordinated effort to provide validated methods for estuarine and marine samples.

To test the assumptions of the two Regions and better identify the estuarine and marine community in the Agency and the States, questionnaires and a call for methods were distributed to the Regions through the Regional Quality Assurance Officers and the National Estuary Program managers. Responses were collated and it was determined that there was a general concern for analytical methods and quality assurance in the marine and estuarine environment.

A mechanism was sought to bring together those charged with designing and implementing monitoring programs in this problematic matrix. Further, if the needs of the estuarine community were to be met in the short time frame involved before methods needs would be crucial and in these times of tight resources, the estuarine and marine monitoring communities would have to be intimately involved. It was felt that much of the work identifying and evaluating existing methods and quality assurance materials as well as specifying the needs for development of new or modified methods and materials was best done by the community responsible for implementing these monitoring efforts.

To this end, Regions II and III with support from the Office of Marine and Estuarine Protection held a workshop in Annapolis, Maryland as the initial national meeting of the National estuarine and marine monitoring community. The nearly 60 participants included representatives of the EPA Estuarine Programs and their Quality Assurance Officers, the Office of Marine and Estuarine Protection, the Office of Research and Development, the States as partners in many of the estuarine monitoring efforts, university



personnel who serve as principal investigators on monitoring many estuarine programs as well as members of the consulting community. The workshop focused on estuarine and marine method needs identified by individuals involved in the sampling and analysis of saline matrices: water, sediment, and biologicals.

The meeting served to confirm the assumptions of Regions II and III that the community recognizes a critical need in the area of analytical methods and quality control materials in this problematic matrix. Four Workgroups were formed to include: Nutrients, Demand and Chlorophyll; Metals; Organics; and Biologic. Each Workgroup is charged with the collection, assembly, review and evaluation of existing analytical methods and standard reference materials in saline water, sediments and biologic. A heavy reliance upon round robins among the participating communities is anticipated. When methods or standard reference materials needs are identified, the Workgroups will make recommendations to the Agency for support from the Office of Research and Development.

The following is a brief proceedings of this meeting. Your advice and participation are encouraged throughout this continuing effort.



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## **MEETING FOCUS AND WELCOME**

**Charles Spooner  
Bettina Fletcher  
Chesapeake Bay Program**

**Charles Spooner welcomed the attendees to the CBP offices and offered copies of the latest Chesapeake Bay Program (CBP) documents for review:**

**Chesapeake Executive Council. The Second Progress Report under the 1987 Chesapeake Bay Agreement. December 1989.**

**The State of the Chesapeake Bay. Third Biennial Monitoring Report - 1989.**

**Cleaning Up of the Chesapeake Bay. The Federal Role. September 1989.**

**Recognizing that there is a great deal that each program can gain from the experience of the other, he encouraged meeting participants to draw from the Chesapeake experiences in the areas of analytical methods for saline waters and sediments for nutrient and demand parameters. To the same end, the Chesapeake Bay Program is eager to learn from the experiences of the other estuarine and marine monitoring efforts in the areas of toxics.**

**Bettina Fletcher echoed Charles Spooner's welcome to Region III and the Chesapeake Bay Program. She reflected on the considerable interest evidenced by the estuarine and marine community through their strong attendance at this first Workshop. She indicated that the basic purposes of this meeting were to get to know where the expertise lies, to share our problems and define solutions, and to obtain recommendations from others who have experienced similar problems. This is meant to be the beginning of a network of technical program operatives so that each project does not have to reinvent the proverbial wheel when it comes to the development of monitoring and quality assurance protocols for this problematic matrix. The final results of this meeting should be action items including the formation of workgroups to further identify our needs and provide guidance in selection of analytical methods and standard reference materials to those charged with implementation of monitoring in the estuarine and marine environments.**



## **EMAP OVERVIEW**

**Tom DeMoss  
CECEP**

**John Paul  
ORD Narragansett**

ORD developed the Ecological Monitoring and Assessment Program (EMAP) in 1987-88 under Administrator Lee Thomas, and then Bill Reilly. It took over two years to get the mandate for the program and the budget. The first EMAP project area will be Near Coastal Water and the first project under the Near Coastal Water Initiative will be the Virginian province. The budget is \$4.5-6 M in FY 91-92 for the Virginian province demonstration project.

EMAP is anxious to work with the Regions and States and wants to institutionalize EMAP over the long-term. Since there are at least 7 National Estuary Programs and the NY Bight study in the Virginian province, EMAP will attempt to integrate EMAP with existing monitoring work thereby extending the temporal, spatial and/or parametric coverage of each. The extremely broad spatial scale and long term monitoring design of the EMAP program will serve as an interesting contrast to the traditional monitoring schemes. Existing monitoring programs can serve as ground truth and verification schemes for the assumptions of the EMAP design. Conversely, it is anticipated that, for instance, the EMAP sampling grid design might be adopted by monitoring efforts in the estuaries. It is logical and likely that both the estuarine and marine programs and EMAP will be mutually beneficial. One of the likely areas of common needs may well be in the areas of tested analytical methods and standard reference materials.

The Center for Excellence for Coastal and Estuarine Programs (CECEP) wants to develop an inter-estuary information and expertise program to address the concerns of each estuary program such as regional testing of indicators, cross-training, and information sharing.

The Agency has in existence 20 significant coastal initiatives with common goals and problems and a lot of the same strategies. The Center will not evaluate, but will make information available to others to use or adapt. The expertise will include policy and information that can be exchanged and networked among coastal managers, with a one-on-one communication of ideas and information.

EMAP will be studying several ecosystems. These include Agroecosystems, Forests, Inland Waters, Drylands/Range Lands, Wetlands, and the Near Coastal. The status and trends of these ecosystems will be monitored on a broad scale, both regional and



national over the long-term. This is a cooperative multi-agency Federal Program with EPA in the lead and NOAA, USGS, FWS, USDA, NSF, DOE, and NASA.

EMAP is involved with several National Estuary Programs to test and evaluate indicators, identify and resolve logistical problems, standardize sampling methods (e.g., are perceived differences actually in the environment or resulting from sampling technique?), evaluate alternative sampling designs, refine study design (e.g., establish DQOs), and develop analytical procedures.

An index period for the Virginian province is scheduled for the 1990 summer period (July - September) due to insufficient resources for a year round study. Biogeographical provinces are based on offshore currents and meteorology. Within the provinces, the water bodies are classified based on physical dimensions, surface area and aspect ratio:

Large estuaries ( $>260 \text{ km}^2$ ,  $L/W < 20$ );  
Large tidal rivers ( $>260 \text{ km}^2$ ,  $L/W > 20$ ); and  
Small estuaries and rivers ( $<260 \text{ km}^2$ ,  $>2.6 \text{ km}^2$ ).

For this study 220 sampling sites are planned. These include base sampling sites (some random, some specific), index sites, long-term DO monitoring sites, indicator testing and evaluation sites, and supplemental sites.

The major subpopulations will be based upon salinity zones, geographic zones, and pollution vulnerability zones. The four types of indicators to be studied are stressor (nutrient loadings, atmospheric deposition, land use, discharge), exposure, response, and habitat (water depth, salinity, sediment, dredging). The impacts to be evaluated are eutrophication, contamination, habitat modification, and cumulative effects.

A possible constraint to any study is that the available technology is not always applicable to multiple habitat types. EMAP indicator strategy is presently divided into three groupings:

Core (sensitivity and reliability known - relatively stable over impact period);

Developmental (sensitivity and reliability not known but likely to be acceptable - stability over time needs to be demonstrated); and

Research (not known - methods need to be developed).



Quality assurance will be considered throughout the planning process. EMAP desires data of known quality, with a balance between cost and acceptable uncertainty. The QA program was developed jointly with NOAA and the draft program plan is being updated after review. Overall QA activities include: internal and external checks; test samples/duplicates/blanks; reference materials; field and lab audits; complete documentation; and as much computerization as much as possible (e.g., bar codes for sample labels).



## QUALITY CONTROL SAMPLES

Carolyn Keefe  
Chesapeake Biological Lab

In 1989, CBL conducted a study in which WP 284 series EPA quality control samples were diluted to concentrations normally found in estuarine systems, using three different matrices (deionized water, Chesapeake Bay water at 11 ppt salinity, and Block Island Sound water at 30 ppt salinity). After initial analysis (using a Technicon AutoAnalyzer and TrAAcs-800), subsamples were frozen and then analyzed over a two month period to determine any possible storage effects on nutrient concentrations as a function of time. The data are graphically depicted on several tables included as Attachment A to this document.

Results indicated excellent percent recoveries (92-105%) in all matrices of these additions for phosphate, total dissolved phosphorus, nitrate and total dissolved nitrogen. Some loss of total dissolved N and P after 30 days indicated that samples should be analyzed within that time period.

For all nutrients, ambient levels varied. Known spikes were added and samples analyzed. For ammonium, background levels deteriorated over time. Salinity corrections (interpolated between standards at different salinities) gave good spike recoveries. Knowing the appropriate dilution factor for samples is the key to the use of WP 284 standards. Refractive index correction for phosphate analyses was performed. Samples were filtered with glass fiber filters (GF/Fs) in the field, the spike was added, and then the samples were frozen (in 3 hr.). Individual samples were frozen until analysis in glass test tubes or AutoAnalyzer cups.

Ammonium results indicated a 10-15% decline in concentration after only two weeks. Therefore, samples for ammonium analysis should be analyzed as soon upon receipt as possible. A matrix problem was also identified for ammonium values at 30 ppt salinity. This 20% error was particularly evident at higher concentrations (>0.1 mg N/L) and it is recommended that for coastal or open ocean samples, standard curves be prepared in low nutrient filtered seawater (i.e., Sargasso Sea water). It is also recommended that for sample sets with a wide salinity range (i.e., estuarine systems), standards be prepared with good quality deionized water and that the higher salinity samples be corrected for matrix effects.

This adaptation of the traditional EPA quality control samples developed for Agency wastewater programs to a saline matrix attempts to make available to the monitoring community an immediate source of nutrient reference materials. Further study in this and a whole water approach to standard reference materials for low level nutrients in estuarine and marine waters are indicated.



## LOW LEVEL NUTRIENT PE SAMPLES

Larry Lobring  
EMSL/Cincinnati

(Note: Organizational information about EMSL/Cincinnati and the Water Research Committee is contained in Attachment B to this document.

The goal of the Marine Methods and Quality Assurance Project (B101 B 27) is to evaluate and validate standardized chemical methods for the analysis of contaminants in marine, estuarine and other saltwater matrices. The near-coastal areas are economically some of our richest and most sensitive ecosystems. Standardized methods are needed for the NEP, EMAP, and other programs. EPA does not have standardized methods and QA materials for monitoring and regulating chemical pollutants in the marine environment.

Studies will be conducted to determine whether existing (fresh water) QA materials are applicable to marine and estuarine waters. Analyte groups will include nutrients, metals, trace elements, and organics. We recommend the use of "whole water" samples, rather than concentrates. We would like guidance on which method area is most critical.

Available methods will be reviewed for applicability in marine environments and revised as necessary. Methods which are not applicable will be modified or new methods using state-of-the-art techniques will be developed.

Applicable methods will be validated with existing, appropriate QA materials. Method/analyte combinations, sample types and number of samples, and analyte concentrations will be selected by personnel experienced in marine studies.

The purpose of the Great Lakes project is to define the statistics for the measurement of a QC sample to support low-level phosphorus studies in the Great Lakes by calculating the mean and standard deviation of the data submitted to determine 95% confidence limits. These limits would be made available to the user with the QC sample.

In the first phase, LLP-1, 215 participating labs were instructed to dilute the sample (resulting in a phosphorus concentration of 3 ug/L). The analytical results obtained showed a measured concentration below the method detection limit (MDL).

In the second phase, LLP-2, 109 of the labs from LLP-1 analyzed samples at a concentration of 15 ug/L. Several methods of analysis (365 series and ASTM) were used. The average measured concentrations (detects only) were 18.0 to 29 with a standard



deviation of 7.6 to 32.6 for different methods; therefore, the 95% confidence interval includes zero!

A description of the Method Validation Study Design is included in Attachment B.

In saline matrices, metals can be determined by direct AA analysis, using delayed atomization devices (i.e., platforms) with matrix modifiers. A dionex metal concentrator may eliminate matrix interferences in ICP/MS. We want to eliminate chloride interferences so that HCl digestion can be used.

EMSL is interested in methods for the analysis of tributyltin (TBT) in marine waters - if you have any to recommend, please send them to Larry at EMSL/Cinn.



## COASTNET AND THE COMPENDIUM

Joe Hall

Office of Marine and Estuarine Protection

The Analytical Methods Compendium is a framework for presenting methods so that they can be used as presented. Before it was developed, there were few standard protocols, few reference materials, few system-wide studies, and much incompatible data. At issue were the parameters included in a previous work group, the availability of reference materials, and which reference materials are needed. An outline of the Compendium structure and levels is contained in Attachment C. The analytical methods are formatted so that each is stand-alone.

In 1985, the Technical Support Division developed an in-house electronic bulletin board system called "Estuary Program Central Info Exchange." It provided an effective method for transferring information between HQ and the Regions. It has served as a conduit for reports, data, phone numbers, policy updates and distribution of draft reports for comments and useful microcomputer programs and databases. COASTNET is an upgrade to that system which allows concurrent access of two persons to the NEP bulletin board.

COASTNET provides HQ and the Regions with state-of-the-art "instantaneous" communication and an alternative to "telephone tag." Users are able to communicate, download and upload information in files, post questions and E-mail. The bulletin section includes: about COASTNET, estuary programs, near coastal waters, activities calendar, legislative update, weekly reports, workgroups, documents available, and directory. There is a mechanism for teleconferencing with two or more individuals on-line. A user registry similar to a telephone book gives personal user information (duties and expertise) and IDs. There are currently about 200 people from ocean dumping and estuarine programs, as well as contractors registered. A prospective user needs an ID and password, which can be made available within 24 hr.

A draft COASTNET users guide is included in Attachment C.



## MARINE METHODS INVENTORY

Jerry McKenna  
Regional Quality Assurance Officer  
Region II

In order to focus on the marine analytical areas that actually present the greatest problems for current and anticipated monitoring, we surveyed current EPA-funded researchers. First, we sent a preliminary questionnaire to EPA program managers and project officers asking for identification of local estuary and marine studies and accompanying names of the principal investigators. A second, more detailed questionnaire was then sent to principal investigators asking several questions relating to their study: study objectives, main data uses, problems with data quality, and whether they felt that the levels measured were low enough to be useful. The returned questionnaires were studied for common complaints and finally sent to the EPA Regional Quality Assurance Officers for their concurrence, review, and additions.

Project officers and principal investigators did disagree, but some commonality was seen. The information was gathered and categorized, e.g., low level semivolatiles and nutrients, speciation of copper, mercury and chromium complexes, pesticides and tributyltin. One question was raised concerning the interim methods for priority pollutants in sediments and fish: is there a need for data when no method exists?

The information we received showed us that an approach is needed for method validation and comparison of marine and estuarine analytical methods. Standard reference materials are needed for low level nutrients (Standard Reference Materials, Quality Control samples, Performance Evaluation samples). Special studies are needed for the evaluation of, e.g., fluorometric vs. spectrophotometric methods for the determination of chlorophyll and separation techniques for dissolved and particulate fractions.

We need to develop low level marine analytical methods for semivolatiles, nutrients, certain metals (analysis and speciation), pesticides in water and tributyltin in sediments. We need validation of methods for analysis of priority pollutants in sediments and fish. We need reference materials for low level nutrients. We need to have "round robin" studies to test these methods.

As a result of the Marine Methods Inventory and discussions between Regions II and III, seven recommendations were developed for future funding for Regional Analytical Methods Initiatives through the Office of Research and Development:



1. Validation of Low Level Nutrient Methods;
2. Validation of EPA 600/4-81-055 "Interim Methods for Priority Pollutants in Sediments and Fish Tissue;"
3. Develop Low Level Nutrient Standard Reference Materials;
4. Develop and Validate Methods for Lower Level Semivolatiles with Emphasis on PAHs;
5. Separation of Particulate and Soluble Phases;
6. Comparison Study of Chlorophyll Spectrophotometric and Fluorometric Methods and Evaluation of Several Steps; and
7. Development of Preservation and Holding Time Recommendations.



## PUGET SOUND

John Armstrong  
EPA Region 10

The Puget Sound management program, called the Puget Sound Estuary Program, has been co-managed by three agencies: the Puget Sound Water Quality Authority (soon to be housed within the Washington State Department of Ecology), the Department of Ecology, and the Environmental Protection Agency.

Some of the issues and problems facing Puget Sound's managers include:

- toxics in sediment and seafood;
- pathogens causing shellfish bed closures;
- loss of wetland and riparian habitat;
- depleted natural resources;
- nutrient associated problems in some enclosed embayments;
- dramatic growth in the human population surrounding Puget Sound;
- phytoplankton-related fish kills; and
- paralytic shellfish poisoning closures of shellfishing areas.

A major effort, and we believe success, in the Puget Sound Estuary Program has been the development of the Recommended Protocols and Guidelines for Measuring Selected Environmental Variables in Puget Sound. The state-funded Puget Sound Ambient Monitoring Program, as well as most other data gathering efforts in Puget Sound, including monitoring for NPDES permitted discharges, use these Puget Sound Protocols and Guidelines. Attachment D contains pages which list the topics and chapters included in the Puget Sound Protocols and Guidelines and describe the elements included in the Puget Sound Ambient Monitoring Program.

If the protocols and guidelines are not used in a Puget Sound data gathering effort, the resulting analytical data are considered "qualified". Most federal, state, and local agencies are following the protocols and guidelines and program management believes that the data being collected from Puget Sound are of higher quality and are more comparable between studies than ever before. We believe others outside the Puget Sound area should use our process



(described in the papers mentioned below) and the protocols and guidelines manual as a starting point to develop similar guidance for other areas.

Copies of the protocols and guidelines, and a brief paper describing the development and acceptance of these protocols, can be obtained from:

John Armstrong  
EPA Region 10 WD-139  
1200 Sixth Avenue  
Seattle, WA 98101

The State-funded Puget Sound Monitoring Program for status and trends has begun. The Puget Sound Water Quality Authority is asking the state legislature for full funding. The second year started in March of 1990. The first annual report will be released in May of this year.

A manual will be available this summer (1990) to help non-chemists request and review chemical analyses. It will include sample contracts, what should be requested from the lab, and how to request and review it.

Nutrients are not high on our list of priorities, although they are included in the protocols. We also don't measure organics in water very much, although permittees could use the information.

Papers available include: protocols process, protocols and guidelines manual, monitoring program, annual report of the monitoring program, report comparing a regional monitoring program with the NOAA National Status and Trends Program, and the guidance manual on requesting and analyzing lab data.



## **BUZZARDS BAY**

**Joe Costa**  
**State Buzzards Bay Project Manager**

The Comprehensive Conservation and Management Plan (CCMP) for the Buzzards Bay Project (BBP) was just completed. Buzzards Bay has a 210 square mile area, with a 450 square mile drainage basin. It is shallow with a mean depth of 30-35 feet, with more than 95% of the bay above 25 ppt salinity. The three priority problems are: 1) pathogen and coliform contamination; 2) excessive anthropogenic nutrient inputs; and 3) contamination of fish, shellfish, and sediments with toxic materials, particularly PCB contamination in New Bedford Harbor. In Buzzards Bay, there are several significant point sources of pollution including a PCB Superfund cleanup site in New Bedford and five sewage treatment plants which service 40% of the population in the drainage basin. Although water quality is being degraded by these point sources, in most of Buzzards Bay non-point sources, particularly nutrient and coliform inputs, are the principal cause of water quality decline. The greatest impacts from these sources are observed nearshore (especially less than 1/2 mile), particularly in shallow, poorly flushed embayments. The exception to this rule is PCB contamination of seafood which represents a bay-wide concern.

The BBP has evaluated results from past monitoring efforts and is now developing a monitoring plan to assess the effectiveness of management actions taken through the CCMP and to identify new trends in water quality and living resources. In assessing past monitoring efforts, a number of problems were encountered, including difficulty in comparing data from past studies, difficulty in interpreting data because of sampling strategies that were poorly thought out or designed, inadequate or inappropriate field sampling and preservation techniques, poor training of field and laboratory personnel, poor QA/QC (e.g., no field blanks, duplicates, etc.), slow turnaround time of laboratory analysis, and inadequate intercalibration between labs. SAIC Woods Hole is working with the BBP to develop a monitoring program to fit within the existing framework and to overcome these problems. In the monitoring plan, we will identify the specific questions and objectives we are trying to assess with a monitoring program (for example, are PCBs contaminating seafood?). We will also identify appropriate analytical methods and sampling design to answer these questions. Problems we are facing in developing the plan include:

- EPA methods and Standard Methods are inadequate. They were developed for freshwater or monitoring effluent discharge. Unfortunately, state labs and contractors use these methods for their monitoring efforts. This needs to be changed.



- There is no money in EPA's National Estuary Program (NEP) for implementation, and funding in Massachusetts is now limited; hence, monitoring must be limited to essential issues due to lack of funding.
- Buzzards Bay will not develop new protocols, but rather reference existing appropriate methods, particularly methods used by academia who are on the cutting edge of the analytical technique. EPA must also identify new methods for salt water. We also need QC for non-EPA approved methods.

Other federal efforts will be inadequate for monitoring Buzzards Bay. For example, EMAP only plans to have one monitoring station in Buzzards Bay. This is inadequate for monitoring embayment problems. We must rely instead on cooperative efforts by State agencies in Massachusetts that have ongoing monitoring programs because of limited financial resources to dedicate to new monitoring programs. We hope the NEP will direct implementation funds to our effort, particularly because the State is in poor financial shape.

The monitoring plan will not be a handbook with recipes of methods. Instead, a sampling strategy and preferred methods (and sources of the methods) will be identified. We need a guidebook for certain monitoring situations (if this is the problem, then this is the monitoring strategy and go to this other document for technical details). It is clear that the problems faced in Buzzards Bay are not unique and it is unfortunate that everyone is going through the same process.

There must be an expanded national effort to address these problems, specifically:

- EPA methods must be expanded to include a seawater matrix;
- Field sampling methods must be documented; and
- A general guidance document must be developed, specifying monitoring options and analytical methods appropriate for answering a particular management question. This guidance document should include flow charts, etc.

In Buzzards Bay, we expect that most future monitoring will be conducted through state agencies. We will try to get agreement by these agencies on the appropriate methods to use. We don't control monitoring by researchers, but we should work toward incorporating research work into the assessment of Buzzards Bay, and into the management decision process. The monitoring methods used for discharges of a particular pollutant will be different than the methods used for monitoring the pollutant in receiving



waters. Analytical methods should be appropriate to the sample matrix. For example, TKN is fine for monitoring nitrogen from CSOs, but not for monitoring nitrogen loads in sea water. Guidance should include alternative analyses (non-EPA methods).

Data Quality Objectives (DQOs) should be determined upfront. What and why are you sampling? DQOs will determine what analytical methods can be used.



## **NARRAGANSETT BAY**

**Charles Porfert  
Region I QA Office**

The major concerns for the Narragansett Bay study are the management of fisheries, toxics, human health risks, and recreational use of the estuary. Toxic chemicals such as PCBs, pesticides, PAHs, and petroleum hydrocarbons are being studied in the bay. One problem we see is in data comparability. When two different analytical methods have been used, the data may vary widely.

We need definitions for such common concepts as particulate matter and filter pore size. We need sampling procedures to minimize contamination from the sampling device, e.g., a plastic sediment core device should not be used to collect samples for organic analysis. We suggest the compilation of a list of available devices, since a QA plan may mention Brand X without providing manufacturer's specifications.

In addition, we need validated, documented analytical methods. We would like to see method comparison documentation. All analytical results for a single parameter should be charted, for all methods and for all matrices. We need appropriate reference materials.

Some problems that we see when reviewing QA project plans are incomplete plans, proprietary methods, and inadequately defined methods (the use of non-EPA methods with which the reviewers are not familiar and references which are not provided with the document). Other problems are missing documentation of the subcontractor's QA program, inconsistencies within the document, and the fact that the Regional QA office generally only reviews the plan and does not look at the final data. We would like to have more involvement in auditing and data review.



## LONG ISLAND SOUND

Christine Olsen  
Connecticut DEP

(presenting Barbara Finazzo's information - EPA Region II)  
(outline of presentation in Attachment E)

The agencies involved in the Long Island Sound Study (LISS) are EPA Regions I and II, ORD, NYSDEC, CTDEP, NOAA (NMFS), COE (New England district), and the Interstate Sanitation Commission. The objective of the LISS program is to develop a management plan that will provide for systematic, technically-sound, region-wide protection of the water quality and marine resources of the Sound. Priority issues being studied are low dissolved oxygen concentrations (hypoxia), toxic contamination, fish and shellfish health, pathogens, and floatable debris.

Nutrient analysis is very critical in the study of hypoxia. The two models being developed, the water quality and the hydrodynamic models, will be run together to evaluate management strategies. LIS has tidal effects at both ends of the Sound and the East River is a tidal strait, complicating the hydrodynamics. Possible recommendations may be to upgrade sewage treatment plants to reduce nitrogen inputs.

Data collection activities during FY 88 and 89 Water Quality Monitoring Programs have revolved around the calibration and verification of the Water Quality model and filling gaps in the historical data record. The parameters being analyzed for water quality assessment are BOD<sub>5</sub>, BOD<sub>30</sub>, particulate organic carbon, dissolved organic carbon, total phosphorus, particulate organic phosphorus, dissolved organic phosphorus, dissolved inorganic phosphorus, particulate organic nitrogen, dissolved organic nitrogen, ammonia, nitrate/nitrite, total silica, dissolved silica, hydrogen sulfide, chlorophyll-a, salinity, dissolved oxygen, pH, and light penetration. Sediment parameters being evaluated are sediment oxygen demand, hydrogen sulfide, ammonia, nitrate, phosphate, and silica.

We feel that direct measurement of variables is needed. The measurement of the dissolved and particulate fractions should be independent, not an estimation by subtraction of one fraction from the total determination. In addition, the size of the filters defines the particulate fraction.

LISS has focussed on the nitrogen series. Is this appropriate and can we detect low levels? Modelers have been surprised at the difficulty in measuring salinity. Because the program did not specify equipment and exact procedures, we were not able to measure comparable nitrogen levels.



Most laboratories used procedures from EPA 40 CFR 136 and Standard Methods, but the Chesapeake Biological Laboratory (CBL) used their own SOPs. Some data sets from laboratories using traditional EPA fresh water methods were discarded since the detection limits were not low enough, the data were inconsistent with historical data, and the particulates were not measured directly. When results from split samples were found to be inconsistent, the LISS switched to CBL methods.

Some lessons learned when the State laboratories asked for EPA to recommend approved methods and EPA had no recommendations were that:

- EPA needs to compile and validate standard methods for low level nutrients, organics, and metals in marine and estuarine water;
- PE samples need to be developed and used to check laboratory capabilities, as is done in NPDES and drinking water programs; and
- Protocols are needed to analyze toxics in the water column, as data are questionable and inconsistent.

One question we have is whether the BOD measurement is appropriate for the sea water matrix. Considering the high error of the method, can analysis at low levels be meaningful?



## **MASSACHUSETTS BAY**

**Windsor Sung  
Massachusetts Water Resources Authority**

The Massachusetts Water Resources Authority (MWRA) is under a court order mandate to "clean up" Boston Harbor. A major portion of this task is to build a secondary wastewater treatment plant (peak capacity of 52.6 m<sup>3</sup>/s or 1200 MGD) and a 16.4 km (9.5 mile) long ocean outfall which discharges through a 2 km diffuser under 30 m of water. The outfall is scheduled to be operational by 1995.

As part of its monitoring efforts, MWRA is sponsoring a total of six cruises from the Fall of 1989 to the summer of 1990 to gather baseline information about hydrography, nutrients and productivity in the vicinity of the outfall. The Massachusetts Bay Program (MBP), a state program recently nominated into the National Estuary Program (NEP), is also sponsoring a series of transects and moorings to study the physical oceanography of Massachusetts Bay and Cape Cod Bay. A map showing these transects is included in Attachment F.

The MWRA and MBP have recognized the importance of standard operating procedures and inter-comparison of analytical techniques. There is an anecdotal account of two different groups on the same cruise measuring chlorophyll and getting different values; they were using different size filters! We would like to see Standard Reference Materials (SRM) developed by EPA for low level nutrients in marine matrices.

The MWRA also embarked on a monitoring program on combined sewer overflows (CSOs). The laboratory involved employed NPDES methods for metals and they came up with mostly non-detects except for copper and zinc. Another independent CSO research project by a university group showed that metal levels are typically very low, with dissolved metals in the sub-ppb range.

It is important to educate and communicate to the managers and decision makers the importance of monitoring. It is also important to establish clearly the various levels of data quality and how they may be used to address different hypotheses.



## REGION IX ESTUARY AND MARINE MONITORING PROGRAMS

Brian Melzian  
EPA Region IX

No estuarine programs were discussed since the national estuary programs in San Francisco and Santa Monica Bays have only just begun. The San Francisco Estuary Program is planning to conduct a monitoring workshop this fall in order to start development of a monitoring program.

Region IX recommends that the "Interim Methods for Priority Pollutants in Sediments and Fish Tissue" (EPA 600/4-81-055) not be validated because:

- they were published in 1981, and hence outdated; and
- practical experience in Region IX has found them to not be scientifically sound and "state of the art."

Because of the inadequacy of the "Interim" methods, the national 301(h) estuarine/marine chemistry protocols were produced to give detailed guidance to permittees.

In lieu of using EPA's "Interim" methods, it is recommended that we use the 301(h) chemistry protocols for tissues and sediments, along with portions of all other appropriate protocols (e.g., Puget Sound Protocols, NOAA's Status and Trends Program, EPA's Contract Laboratory Program). We do not need to invent new protocols.

Because of our past and ongoing experience in developing and using estuarine/marine inorganic and organic chemistry protocols, Region IX requests that resources be provided to the Narragansett, Newport, and Gulf Breeze marine laboratories to assist in the development efforts now underway in the EMSL/Cincinnati laboratory.

Before EPA publishes FINAL estuarine/marine analytical chemistry protocols, there should be interlaboratory comparison exercises between government, academic, and private laboratories. These exercises would be used to see whether the protocols are: a) practical; b) cost-effective; and c) scientifically and legally valid or defensible.

An outline of the presentation is contained in Attachment G.



Discussion:

question - should Joe Hall put this guidance or the availability of documents in COASTNET?

comment - Region X does not recognize 301(h) chemistry methodology due to lack of validation. Region IX disagrees and feels that some of Region X's comments are valid, but some are outdated.

We need a clearinghouse for analytical methodology where the methods are collected, compared, and made available. Bob King at OMEP is the contact for obtaining documents.



## **HARBOR ESTUARY PROGRAM**

**Eric Stern  
EPA Region II**

The Harbor Estuary Program (HEP) involves the NY-NJ Harbor, the Hudson Estuary, and the Raritan Estuary, and is a joint study involving EPA Region II, NYSDEC, and NJDEP. The goal is to develop a management plan for the HEP by 1994 that will restore and/or maintain an ecosystem that supports an optimal diversity of living resources on a sustained basis. Additional information and maps are included in Attachment H.

The program objectives are to:

- Preserve and restore an ecologically important habitat;
- Attain water quality that fully supports bathing and other recreational uses of the Estuary;
- Ensure that fish and shellfish in the Estuary are safe for unrestricted human consumption;
- Restore and enhance the aesthetic quality of the Estuary;
- Manage and balance the competing uses of the Estuary to improve environmental quality; and
- Manage pollutants within the Estuary so that they do not contribute to use impairments outside the Estuary.

In the New York Bight Restoration Plan (NYBRP), priority will be placed on the control of those pollutants most directly associated with water use impairments. Problems seen are beach closures, unsafe seafood, damage to commercial and recreational fisheries, damage to marine mammals, birds and reptiles, and adverse effect on commercial navigation.

The relationship between the NYBRP and the HEP is such that:

- The NYBRP will define the necessary reduction of pollutants from each input zone to help eliminate priority use impairments on the Bight; and
- The HEP will develop a plan to meet those requirements involving management practices and programs to control pollutant inputs within the Estuary.

At present, studies are underway involving synthesis of existing data to characterize the spatial and temporal trends of



estuarine resources and the nature, degree, and severity of pollution and other anthropogenic influences on the Estuary.

The focus during FY 90 will be collection of new data for management decisions, e.g., the development and implementation of a biomonitoring program for indicators previously studied. In addition, the HEP intends to develop a monitoring program for wasteload allocations for toxics and conventional pollutants and to model carbon and nutrient cycles relative to dissolved oxygen.

EPA is using the Lake Ontario toxics management plan as a model for toxics categorization. The three contaminants of priority concern are PCBs, dioxin (2,3,7,8-TCDD), and mercury.

General program concerns are:

- the validation of analytical methods for metals and PAHs in marine waters, sediments, and tissues;
- the determination of the reliability of "old" data and methods;
- the development of appropriate bioassay tests for ambient water toxicity studies; and
- the further development of Water Quality and Fish Tissue Standards and Criteria (cadmium, copper, lead, zinc).



## **DELAWARE ESTUARY**

**MARRIA O'MALLEY  
EPA Region III**

The Delaware Estuary was designated to the National Estuary Program on July 18, 1988. The preliminary goals of the program were to:

- provide for the restoration of living resources of the Estuary and to protect their habitats and ecological relationships for future generations;
- reduce and control point and nonpoint sources of pollution, particularly toxic pollution and nutrient enrichment, and attain the water quality conditions necessary to support abundant and diverse living resources in the Delaware Estuary;
- protect public water supplies and manage water allocations while maintaining ecological conditions within the estuary;
- manage the economic growth of the Delaware Estuary in accordance with the goal to restore and protect the estuary's living resources; and
- promote greater public understanding and participation in decisions and programs affecting the Delaware Estuary.

During the FY 1988 planning year, the Delaware Estuary Program initiated a public outreach and education program and established its management structure. Management and Policy, Citizens Advisory, Local Government, Scientific and Technical Advisory and Financial Planning Committees have been established.

At a series of workshops in February 1989, a tri-state kick-off workshop in April 1989, and the State of the Estuary workshop in October 1989, four key issues were identified for the program to address. Scientific characterization of these four issues was begun by choosing contractors in April 1990 from those responding to Requests for Proposals. Inventory and assessment of historical data sets for general water quality parameters, toxics, key plant and animal species, and habitat loss and alteration will be conducted by the contractors to determine status and trends. The Delaware River Basin Commission has conducted a 20 year monitoring program with 23 stations to evaluate the impact of point sources.

The state of Delaware is conducting an ongoing monitoring program for the Delaware inland bays. They are looking into the use of citizen monitoring, shellfish programs, and agricultural inputs.



## CHESAPEAKE BAY

Ray Alden  
Virginia Institute of Marine Science  
Old Dominion University

In the Chesapeake Bay Program, we have had a significant impact as a result of changing methods midstream in the study. Different methods have different biases and variances which should be evaluated. Everything has to be brought to the highest common denominator to prevent false downward trends (i.e., decreasing MDLs with improved methodology could be construed as decreasing amounts of the analyte). We need to make sure that mid-course corrections are worth the cost and we now know that we need a long period of time for the study of method compatibility (comparability studies must wait out the learning curve). If at all possible, the best method should be chosen in advance to address predetermined data quality objectives.

Comment from Bettina Fletcher: The Chesapeake Bay Program started out using EPA methodology for the first two years, then switched to CBL methods. Five years into the program, we are still trying to salvage some of the old data.

It certainly facilitates the evaluation of the effectiveness of management actions if the analytical methods with associated detection limits and performance criteria can be clearly defined in advance of the study. The close relationship between decision makers, data users and those charged with designing and implementing monitoring programs is essential. Data quality objectives (DQOs) or whatever label is applied must be established to the maximum extent possible before monitoring begins. However, as Dr. Alden mentioned, we are working in the area of a statistical based mid-course reevaluation of the Mainstem Monitoring Program in the Chesapeake. It is quite likely that this evaluation will result in recommendations for some changes in the current monitoring scheme. It will be the job of the Quality Assurance Program to document any changes in protocols and to establish the comparability of the two designs. The Chesapeake Bay Program will be eager to share its experience with this DQO effort as it proceeds.



Rob Hale

Mike Unger

VIMS

Contaminant screening should be carefully planned. There are many toxic compounds which are not on the priority pollutant list. Sample extraction methods must be seriously evaluated. For GC, Hall detectors are more specific and require less cleanup.

Retention markers should be employed for GC analysis. When compounds are measured against standards, retention times are used for identification. Unknown peaks can be observed during a review of the chromatograms from a historical study. When the compound is eventually identified, the "unknown" can be tracked by inspection of old raw data.

We need to be able to measure TBT at ppt levels due to its toxicity. The detection limit of the EPA method is insufficient for most estuaries. The tendency to regard a nondetect as zero is inappropriate. Clams could still be taking it up even when we can't measure it in the environment. We should identify or develop a reliable method checked with round robins and NIST reference materials.

Battelle developed a series of SOPs for the ocean dumping program for OMEP.



**GREETINGS FROM OMEP**

**Louise Wise  
Office of Marine and Estuarine Protection**

OMEP would like to assist the efforts of the workgroups wherever they can and is looking forward to receiving the "sense of the meeting." A letter describing the list of needs identified by the group should be sent to ORD (Mike Conlon) for further support.



## SENSE OF THE MEETING AND FORMATION OF WORKGROUPS

We are looking for a group statement of common problems and the organization to work on them. Bettina Fletcher asked that:

- participants convey back to their managers that there is a need and help to construct a written response;
- the letter should include a list of prioritized needs since the regional initiatives will be funded in FY 91; and
- we form a series of workgroups: nutrients, organics, metals, and biologicals.

Each workgroup will address 4 matrices: tissue, water, sediment, and air (deposition). Field sampling and remote sensing will be addressed wherever they are relevant to the concerns of the different workgroups. Each workgroup should ask questions and come up with the best possible approach without initially worrying about commonality or EPA methodology. Each group will consider the measurement process from sample collection on. The workgroups would get together (in person, by conference call or through CoastNet) to review existing methods; identify variations; identify how methods are used; identify needs for study, round robins, validations, and field tests; conduct intercomparisons, if possible; offer guidance (continuing and in documents); and identify ORD initiatives that need funding.

Discussion was held of the many items and problems which should be investigated and resolved. Volunteers were solicited to serve on workgroups addressing the above areas. Some of the major points of discussion are summarized below.

### Nutrients:

EPA wastewater methods are not directly applicable to saline waters without modifications, although State and some other Agency labs are required to use EPA methods as written. Most labs cannot modify methods since they lack the time and space and these samples represent a small component of their workload. Even if modifications could be made, a lot of the labs are not clean enough for trace analyses. The State of New Jersey says that it is illegal for a State-certified contractor laboratory to modify analytical methods and procedures.

We need to address DQOs. What are the intended uses of the data? How does this affect the choice of method? We need to define the filter size used for separating soluble and particulate fractions. Membrane filters are prone to contamination. Relative pore size can change during the process of filtering samples.



There are three major reasons for performance samples:

- need to specify method performance capabilities;
- blind samples sent to labs to check inter-comparability; and
- reference values known to analyst for QA/QC.

Jonathan Garber of ORD Narragansett asked that any guidance and methods developed by the workgroups allow flexibility for discretion of practitioners in the field to make site-specific modifications, get the units straight and make sure conversion factors are correct (dry vs. wet weight) and reported with the data, allow for salt interferences, and field test any new or modified methods before EPA goes final.

For nitrogen and phosphorus, are there any EPA methods acceptable for estuarine waters? ODU and Joe Costa say that the total and ortho phosphorus methods are acceptable for marine waters (except for the hot plate sample preparation steps). The method of standard additions should be used for accurate quantitation.

How does acid preservation affect the analysis? A slight error in the pH of a nitrogen sample can throw off the analysis, since nitrogen analyses are pH dependent. The alkaline persulfate method is better for determining nitrogen balance. TKN is too noisy.

For phosphorus analysis, a lot of acid is added during sample preparation and analysis, so preservation is not a significant issue.

The calibration procedure for phosphorus should be modified for estuaries, since it is unacceptable in a salt water matrix.

Diluted SRMs are not necessarily acceptable because they don't check method accuracy and precision. The dilution water which is used can affect results. We need performance evaluation samples arriving at the lab ready to analyze to eliminate variations. However, if whole water samples were used, many would be needed so that the proper salinity can be chosen. If concentrates were used, they could be diluted with water of the appropriate salinity.

CBL uses NaCl solution with a salinity at about mid-range of the samples for dilution of standards and for wash water. If the samples span a wide range of salinities, then break the sample batch into proportional segments and run separate standards.



Technicon specifies artificial seawater, although ODU does not use the commercially available synthetic seawater because dilutions have not been linear and they have experienced a problem with precipitation of salts when diluting artificial seawater (due to altered balance of salts and the ions react with reagents). NaCl solution should be used to calibrate and as wash water.

#### Chlorophyll:

There is not an accepted standardized calibration material. The EPA SRM does not include sample processing steps. There are six different ways to calculate chlorophyll-a. At two different labs, one gets half the amount of the other due to different calculations. In order to compare numbers, all raw data must be provided so that others can recalculate the numbers using their own preferred equations.

Can the oceanic equation be used for estuaries? Have the chlorophyll-a equations been validated for estuaries (where variable salinities are encountered)?

#### Demand:

What are the appropriate parameters? Modelers want long-term measurements to deal with the labile, refractory, and inert fractions.

#### Organics:

Priority should be given to low level PAHs and phthalates in the water column and sediments.

One concern is the mutagenic activity of waste water due to low levels of brominated compounds resulting from chlorinated byproducts converted to the brominated form in seawater. Some of these compounds are so reactive that they won't go through a GC column.

California NPDES and 301(h) permits require measurement of residual chlorine and require dechlorination before entering estuarine or marine waters.

The workgroups could provide education to data users about data quality and uses.

Should the particulate phase be focussed on? The answer depends on the goal of the study. If the researchers are modelling fate, whole water should be analyzed. If the researchers are interested in bioavailability, then the analyses should be specific. Animals like mussels get their dose from water with compounds adsorbed on particulates. Mussels, however, feed on different sized particulates than oysters.



Attention should be paid to the matrix when analyzing tissue - wet weight vs. dry weight vs. lipid weight. Where you sample on a fish affects the lipid content of the sample. Subsequent solvent extractions would result in different apparent levels of contaminants.

How should old PCB data be interpreted? We need a way to link the congener approach vs. aroclor approach, as well as any data with different detection limits.

We need to evaluate isotope dilution techniques vs. standard GC/MS as to performance, availability, and cost. We need to develop guidelines on correcting for bias with GC/MS (isotope dilution corrects for bias, but costs much more).

We need to develop methods for analysis of organometallics (we do not have methods for methylmercury, alkyl lead, selenium and cyanide metalloids, and tributyltin).

Do PAHs leach from CCA-treated wood or creosoted pilings in marine waters?

#### Metals:

According to Carlton Hunt, we don't need new methods, we just have to develop an appropriate QA program to validate and standardize the methods. Round robins should be conducted.

Should we do total or partial sediment digestion? Each method will give slightly different results and data will not be comparable if procedures are not standardized in advance.

We need to deal with biological availability. For ecological impacts, speciation of metals is becoming the hot issue. Do we need to do total metals analysis? Ecologists are not that interested. What does "total metals" tell you? TBT methods need to be validated. Acid volatile sulfides measurement in sediment is valuable. What are the questions being asked? What are the objectives of the study (DQOs)? They need to be identified before a decision is made on a method. We need to provide guidance on what the questions, possible uses of the data, and recommended QA/QC approaches are. A matrix of data uses vs. recommended analytical QC would be a good product of the workgroup.

Judy Pederson can provide information on a study of tissue methods (FDA vs. EPA).

According to Ray Alden, sediment analyses can be used for more purposes than currently applied. Carbon, Eh, aluminum, etc., can give useful information. Eh has a lot to say about the bioavailability of metals.



### Biologicals:

Major issues or areas of interest include bioassays, round robins, standard reference toxicants (particularly for sediments), chronic bioassays, and the FDA National Shellfish Contamination Committee.

According to Brian Melzian, we need more work in chronic bioassays and the effect of sediment sizes on toxics bioavailability.

Bill Muir pointed out many questions on the methods for pathogens.

### General:

We need to develop widely accepted definitions (for such things as particulates, digestion, sediment, etc.). We need to evaluate existing methods and formalize the commonly accepted modifications. What assistance EPA can provide?

Sampling methods are critical in metals analysis, as are sample preparation and lab controls. Alkylated lead compounds are an increasingly important environmental issue.

### Charge to the Workgroups:

Each of the workgroups should collect existing methods for review and evaluation. We should identify the need for round robins, validation, and/or special studies. Our "grass roots" intercomparison could lead to a guidance document. We should contact outside experts, involve academic and other federal agencies, and identify initiatives within ORD and EMAP.

Tom Pheiffer mentioned that as a renegade committee, we need to identify sources of support (e.g., EMAP, Regional Operations, ORD, the Environmental Monitoring Management Council, and new monitoring committees).



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Niranjan Vescio ENSECO, Inc. 205 Alewife Brook Parkway Cambridge, MA 02138	(617) 661-3111	

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**Attendees at the Marine and Estuarine Analytical Methods Workshop  
Annapolis, MD May 2-3, 1990**

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<b>Name and Address</b>	<b>Phone #</b>	<b>Fax #</b>
-------------------------	----------------	--------------

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Louise Wise	(202) 382-7166	
U.S. EPA (WH556F)	FTS 382-7166	
Office of the Director		
Office of Marine & Estuarine Protection		
401 M St., SW		
Washington, DC 20460		

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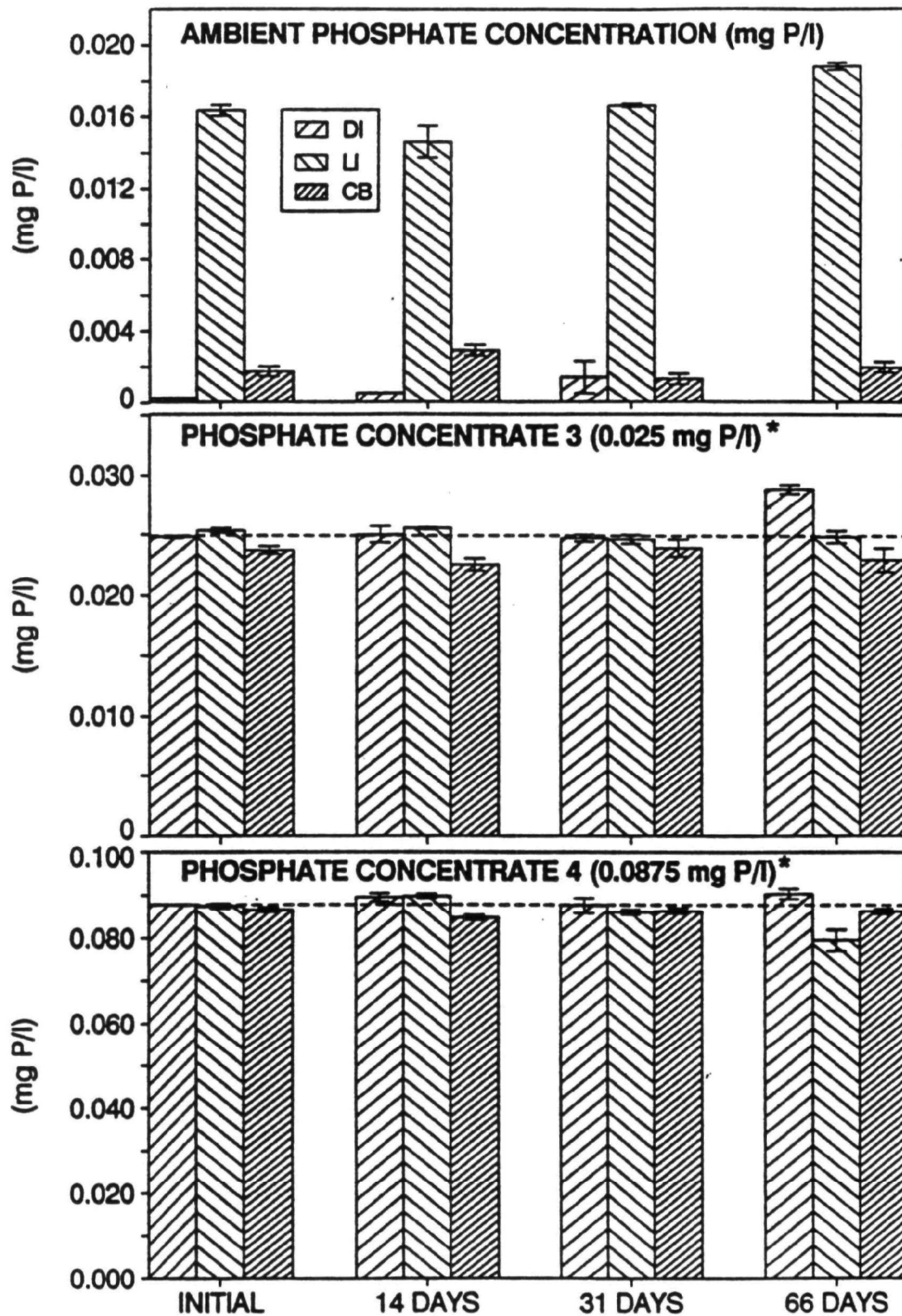


## **ATTACHMENTS**



**Attachment A**  
**Quality Control Samples**  
**Carolyn Keefe**





\* ambient correction included

Figure 1. Mean phosphate concentrations (mg P/l) of ambient and enriched series from May-July 1989. Error bars indicate +/- one standard deviation of the mean. Dotted line represents the expected concentration.



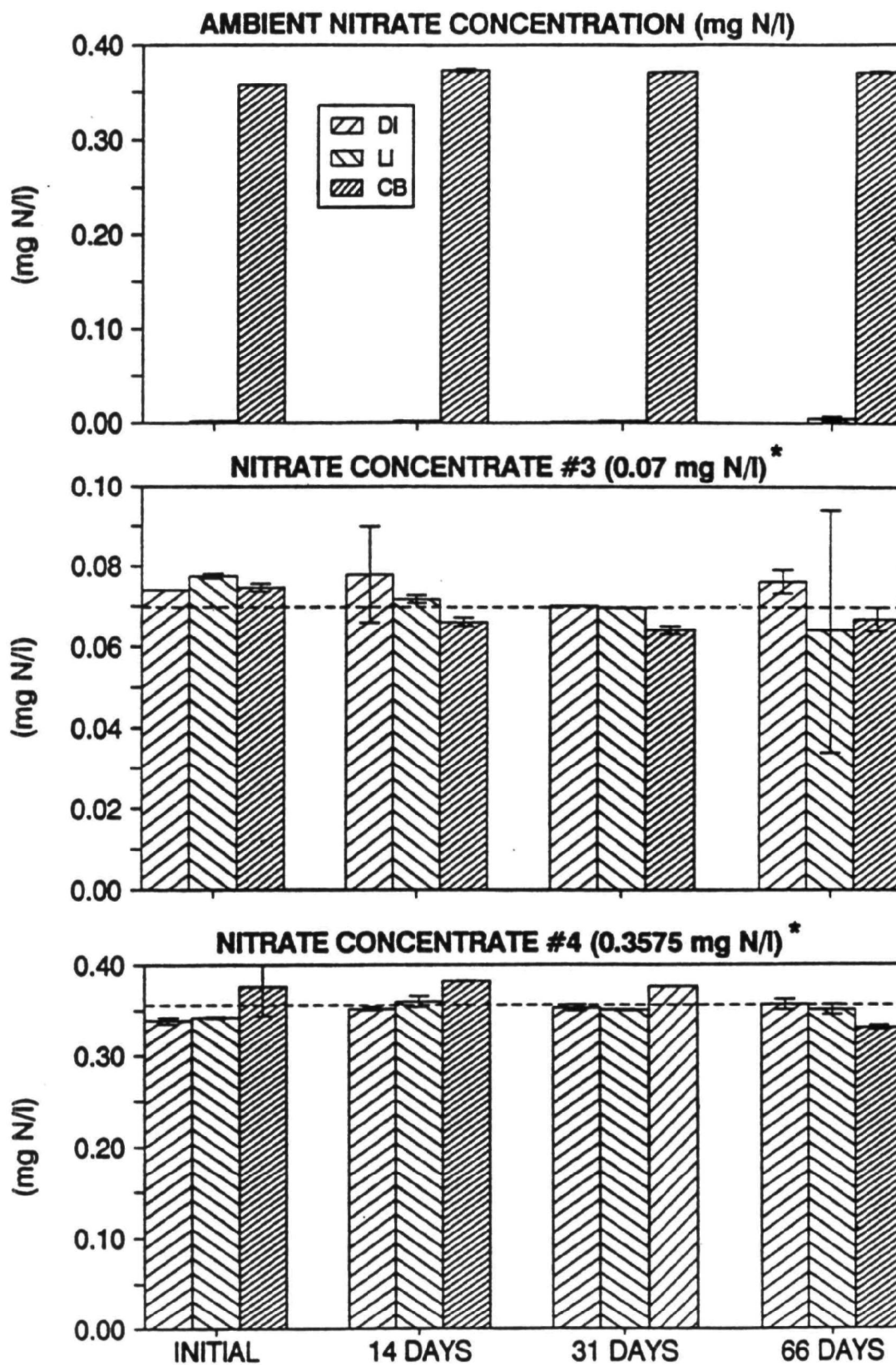


Figure 3. Mean nitrate concentrations (mg N/l) of ambient and enriched series from May-July 1989. Error bars indicate +/- one standard deviation of the mean. Dotted line represents the expected concentration. \* denotes that these concentrations have been corrected for ambient values.



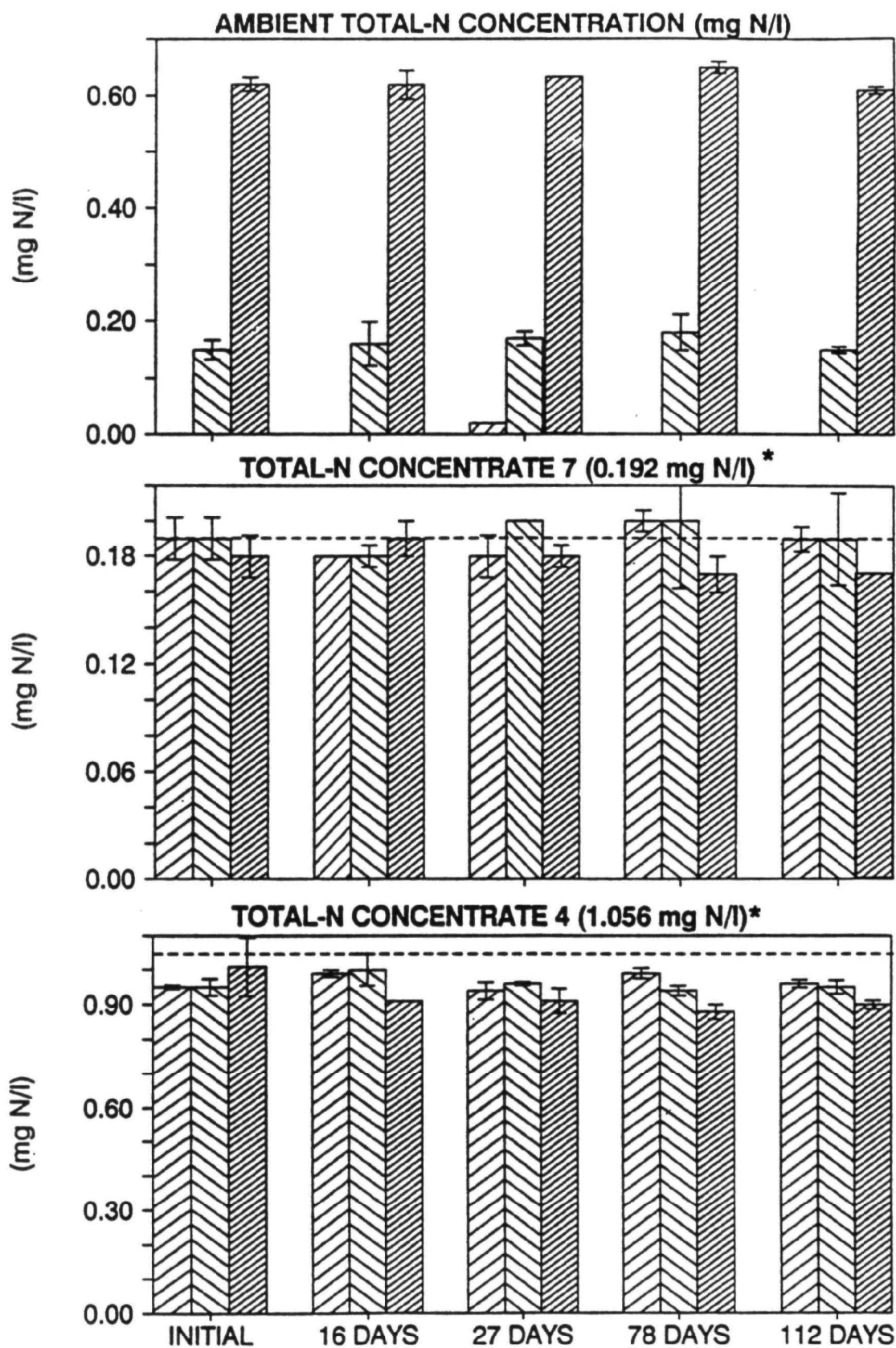
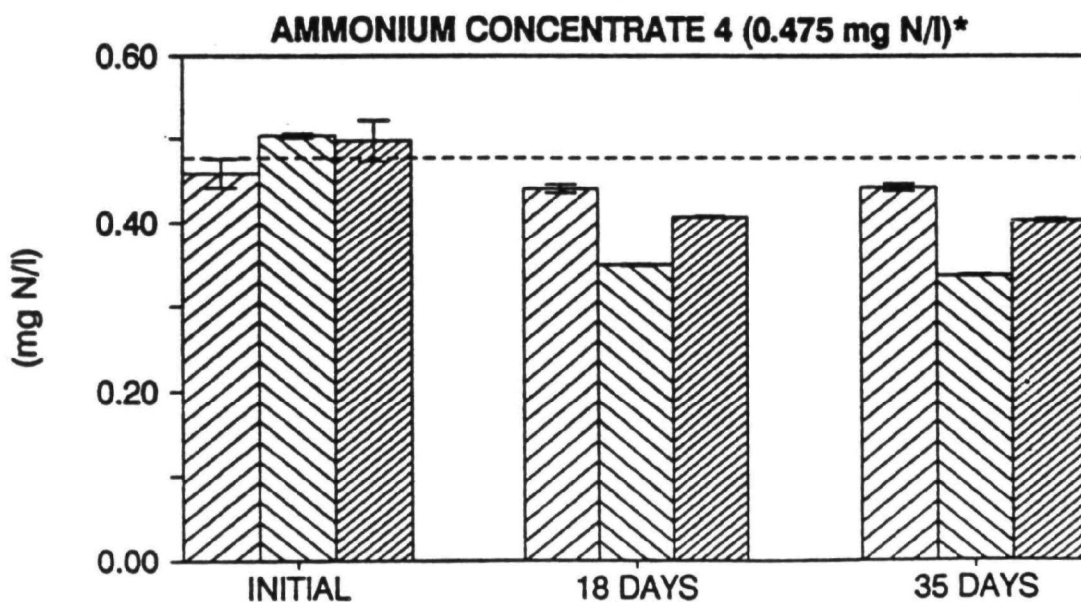
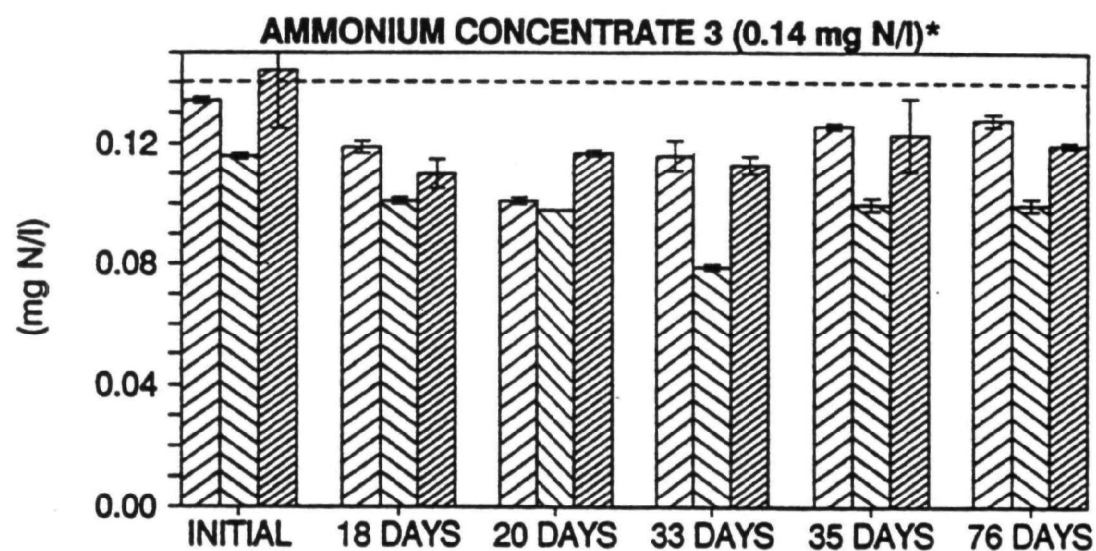
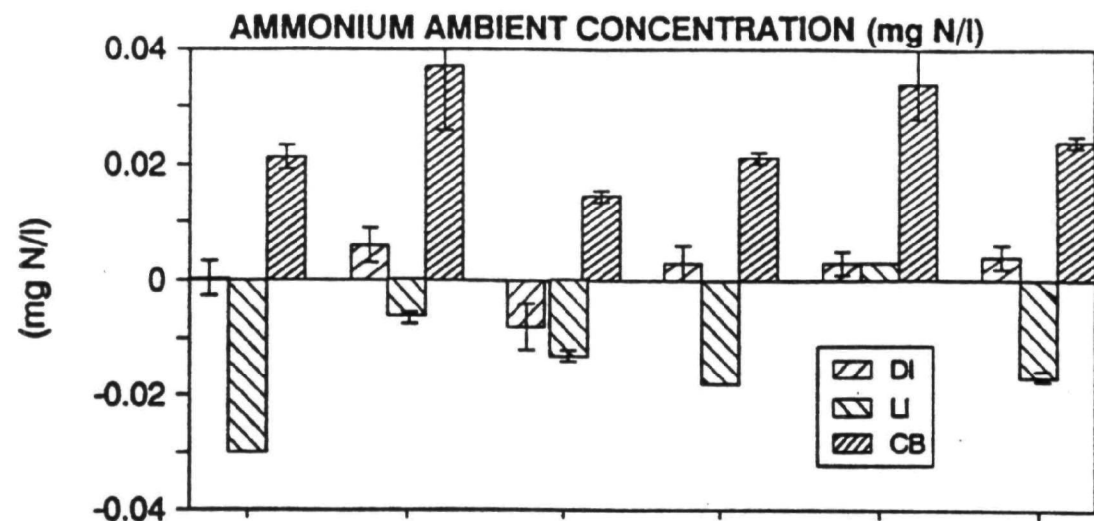


Figure 4. Mean total dissolved nitrogen concentrations (mg N/l) of ambient and enriched series from May-August 1989. Error bars indicate  $\pm$  one standard deviation of the mean. Dotted line represents the expected concentration.





\* ambient correction included

Figure 5. Mean ammonium concentrations (mg N/l) of ambient and enriched series from May-July 1989. Error bars indicate +/- one standard deviation of the mean. Dotted line represents the expected concentration. Long Island Sound concentrate results are uncorrected for possible matrix effects.



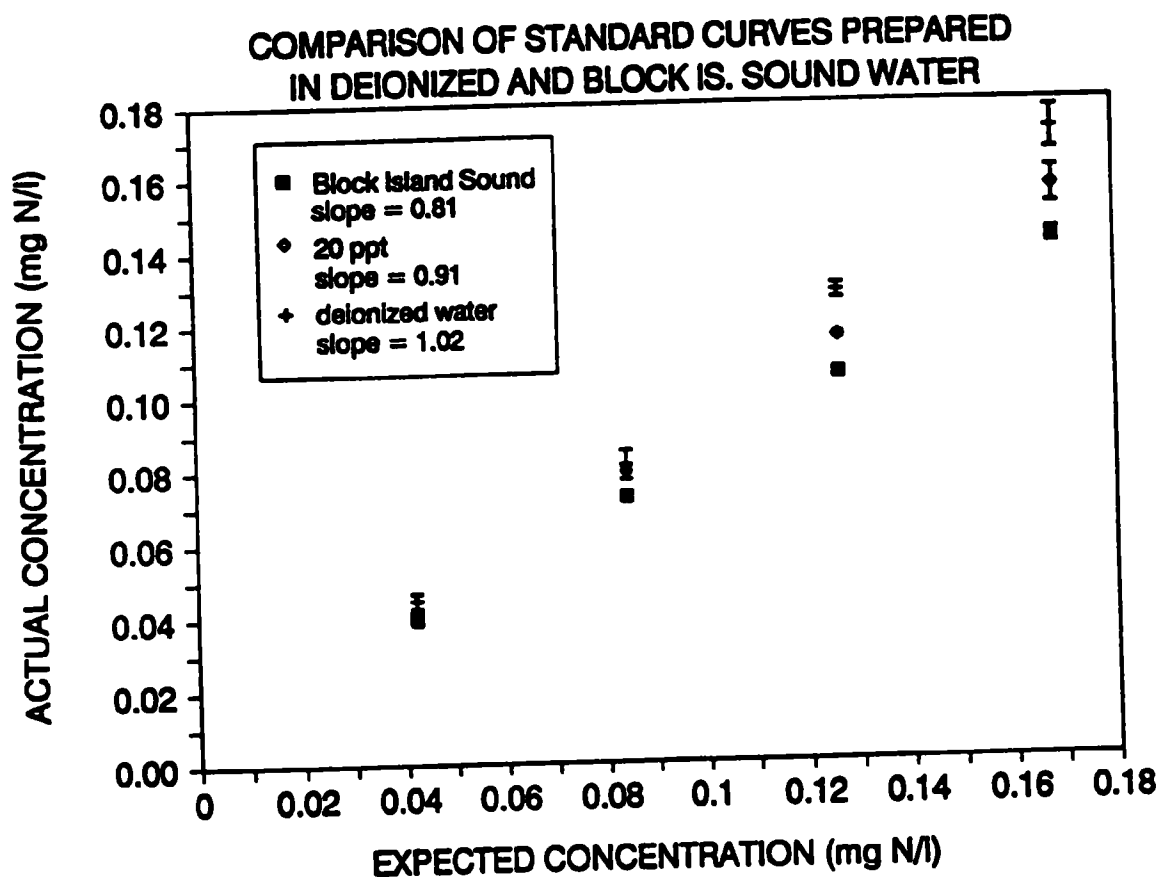


Figure 7. Comparison of standard curves prepared in deionized water, in water from Block Island Sound and Block Island Sound water which had been diluted to 20 ppt salinity with deionized water. These comparisons were made relative to a deionized water standard curve (expected concentration). Data represent mean concentration, +/- one standard deviation of from 3-5 replicate analyses.



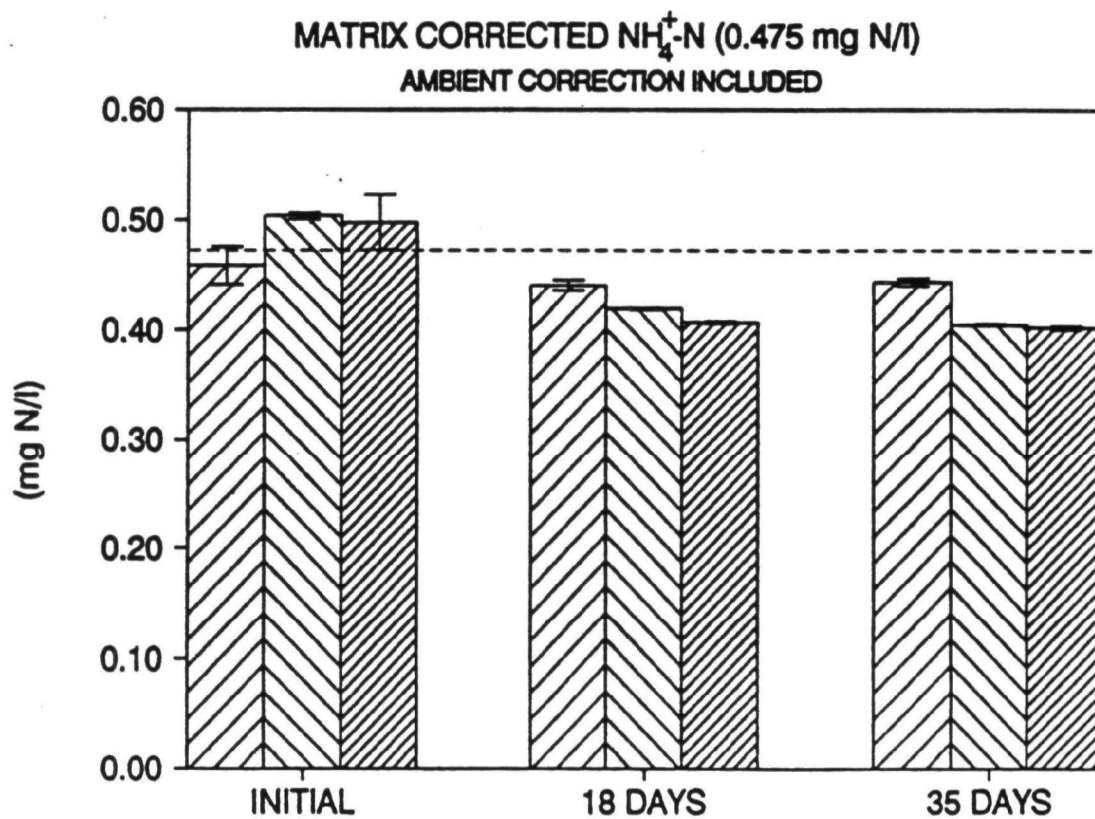
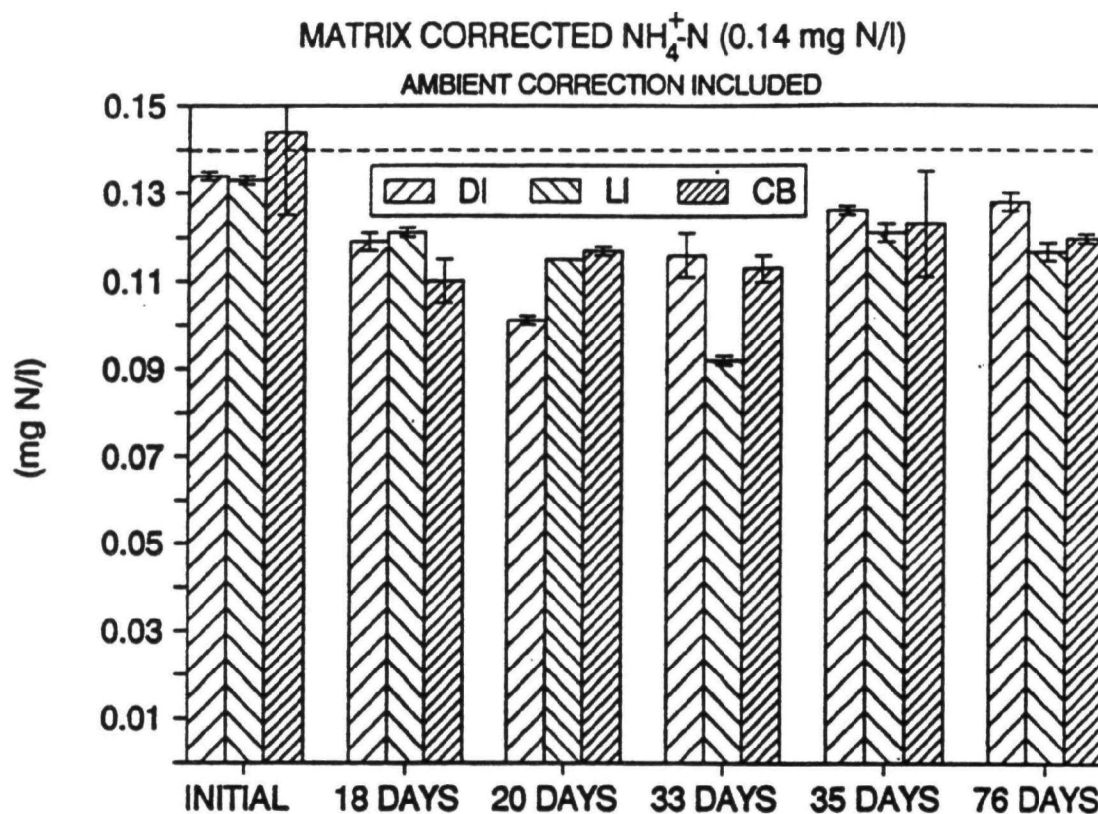


Figure 9. Matrix corrected ammonium data for the Long Island Sound concentrates # 3 and 4 in relation to the other two treatments. Dotted line represents the expected concentration.



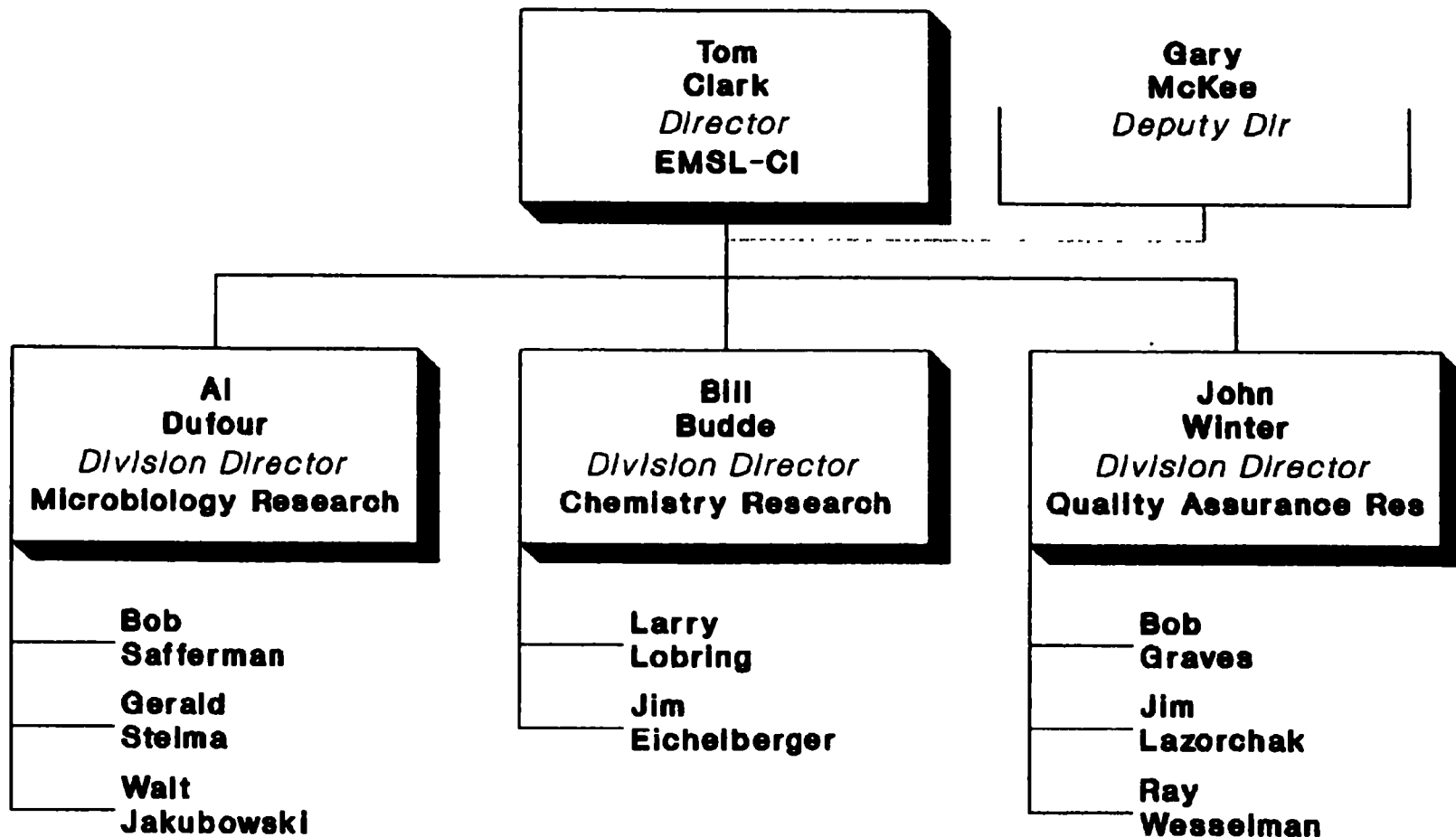
**Attachment B**

**Low Level Nutrient PE Samples**

**Larry Lobring**



# ENVIRONMENTAL MONITORING SYSTEMS LABORATORY - CINCINNATI

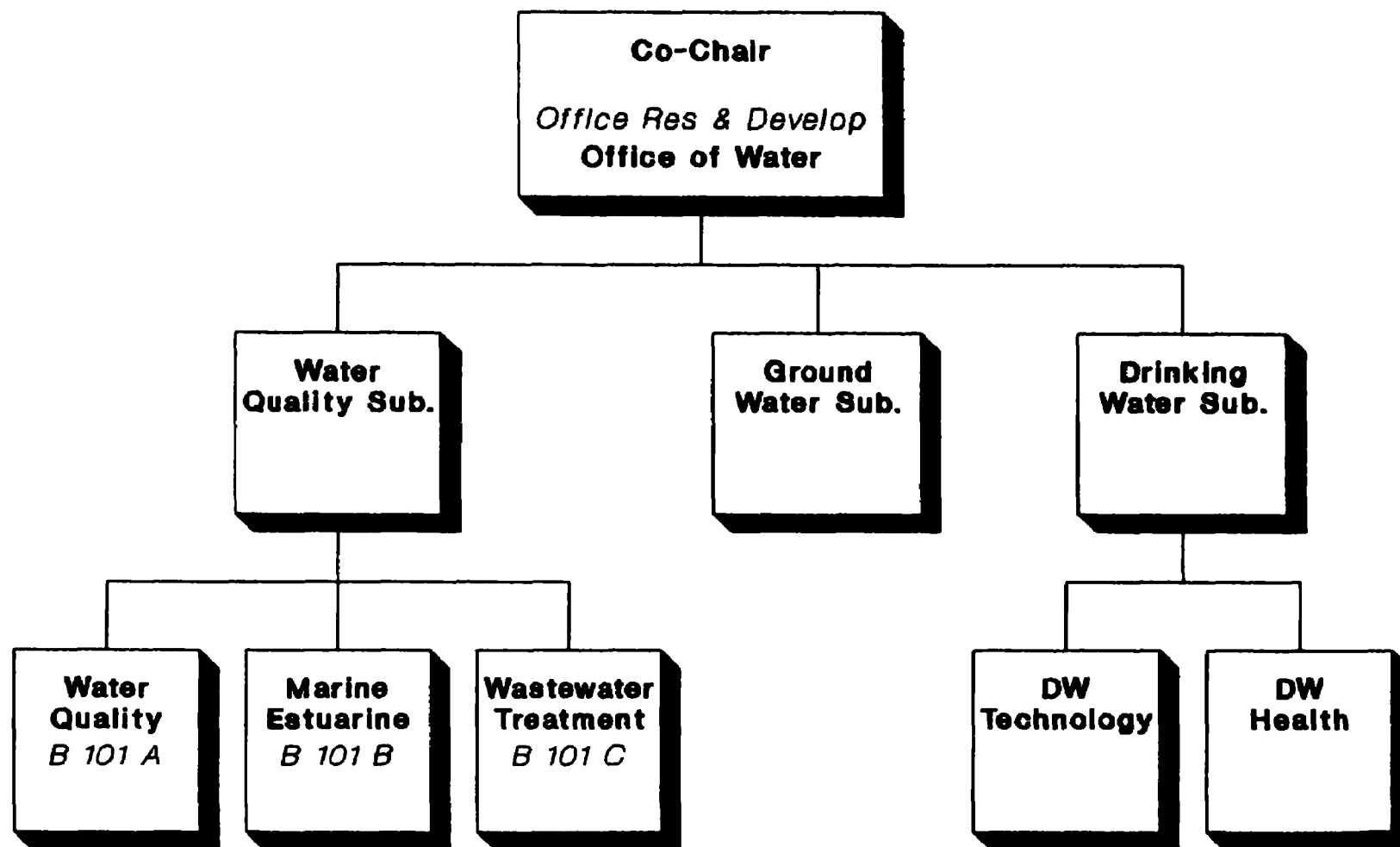


B-1

May 1, 1990



# Water Research Committee



December 1989



## **Project Description**

### **B101 B 27**

**Planned Start Date 9/30/89**  
**Planned Completion Date 9/30/90**

	<b>FTE(WY)</b>	<b>S&amp;E(\$K)</b>	<b>R&amp;D(\$K)</b>
<b>Resources</b>	<b>2.0</b>	<b>148</b>	<b>50</b>

**Project Manager**

**Larry Lobring**  
**FTS 684-7372**  
**COM 513-569-7372**



# **Marine Methods and Quality Assurance**

## **Marine Methods**

### **GOAL:**

**To evaluate and validate standardized chemical methods for the analysis of contaminants in marine, estuarine and other saltwater matrices.**



# **Marine Methods and Quality Assurance**

## **Marine Methods**

### **RATIONALE:**

**The near-coastal areas are economically some of our richest and and most sensitive ecosystems. Standardized methods are needed for the NEP, EMAP and other programs. EPA does not have standardized methods and QA materials for monitoring and regulating chemical pollutants in the marine environment.**



# **Marine Methods and Quality Assurance**

## **Marine Methods**

### **APPROACH:**

**Studies will be conducted to determine if existing QA materials are applicable to marine and estuarine waters. Analyte groups include nutrients, metals, trace elements and organics.**



# **Marine Methods and Quality Assurance** **Marine Methods**

## **APPROACH:**

**Available methods will be reviewed for applicability in marine environment and revised as necessary. Methods not applicable will be modified or new methods using state-of-the-art techniques will be developed.**



# **Marine Methods and Quality Assurance**

## **Marine Methods**

### **APPROACH:**

**Applicable methods will be validated with existing, appropriate, QA materials. Selection of method/analyte combinations, sample types and number of samples, and analyte concentrations will be selected by personnel experienced in marine studies.**



## **Method Validation Study Design Three Yoden Pair**

- **Six unique concentrations**
- **Each pair may be considered duplicates**
- **Six point weighted least square regression for overall recovery**
- **Overall precision based on six points**
- **Single operator precision based on three pairs**
- **Statistical comparison between matrices**
- **Includes a blank and QC sample for each matrix**



# Low-Level Total Phosphorus

## **PURPOSE:**

**To define the statistics for the measurement of a QC sample to support low-level phosphorus studies in the Great Lakes. To calculate the mean and standard deviation of the data submitted and determine the 95% confidence limits. This limit would be made available to the user with the QC sample.**



## Methods Used

### Study LLP 2

<u>METHOD</u>	<u>METHOD #</u>	<u># of LABS</u>
Automated Ascorbic Acid	365.1	25
Manual Ascorbic Acid	365.2	50
Manual Ascorbic Acid, 2-Reagent	365.3	10
Automated Block Digestor	365.4	14
Other		10



# **Low Level Total Phosphorus Study (LLP 1 and LLP 2)**

**LLP 1 - 215 laboratories participated at a  
phosphorus concentration of 3 ug/L**

**CONCENTRATION BELOW THE MDL**

**LLP 2 - 109 laboratories selected from the  
participants in LLP 1. Phosphorus  
concentration of 15 ug/L**



# Data Summary

## LLP 2 - 15ug/L

<u>METHOD #</u>	<u>MEAN ug/L</u>	<u>S D ug/L</u>
365.1	18.2	8.7
365.2	18.0	7.6
365.3	23	14.5
365.4	25	21.8
Other	29	32.6



**Attachment C**  
**COASTNET and the Compendium**  
**Joe Hall**



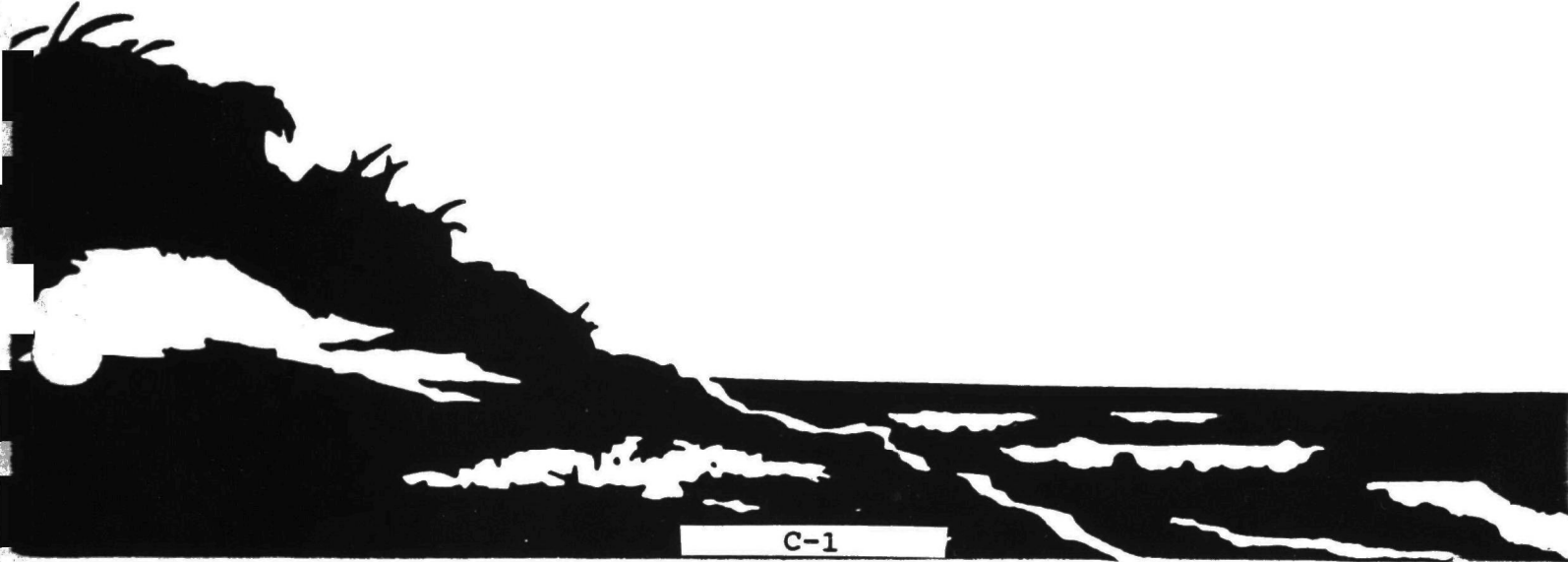


National Oceanographic  
and Atmospheric Administration



United States  
Army Corps of Engineers  
Waterways Experiment Station

# Compendium of Methods For Marine And Estuarine Environmental Studies





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**A-NITROGEN-2**

**Automated Method for the Determination of  
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**A-NITROGEN-3**

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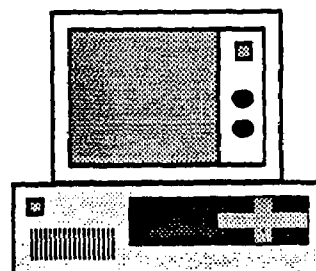


***What you will  
need to access  
COASTNET***

- Access to a Personal Computer
  - 1200 or 2400 Baud Modem
  - Communication Software  
(CrossTalk, ProComm, etc.)
- 
- A User-ID and Password assigned by the COASTNET System Operator

*For additional information, contact the  
COASTNET System Operator:  
Joseph N. Hall  
Office of Marine and Estuarine Protection  
FTS/475-7182*

***COASTNET  
Electronic  
Bulletin Board***



***Providing  
up-to-date  
information  
for people  
involved in  
near coastal  
and  
marine issues***

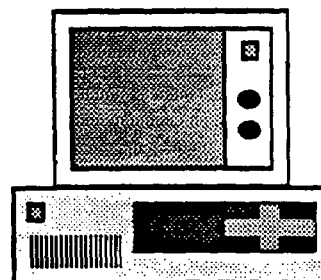
*Sponsored and Operated by  
The Office of Marine and Estuarine Protection  
Office of Water  
U.S. Environmental Protection Agency*



# **COASTNET**

## **Electronic Bulletin Board**

*Providing up-to-date information for people involved in near coastal and marine issues.*



**Now, with the touch of your fingers, you can have rapid access to a vast library of reports, proceedings, and applications -- 24 hours a day.**

**The bulletin board also keeps you up-to-date on meetings, events and key contacts in State, Regional, and Headquarters marine and estuarine protection offices around the country.**

### **Highlights**

#### **Bulletins**

Calendar of Events  
Activity Reports  
Directory of Staff  
Legislative Highlights  
Announcements  
... and others

#### **Libraries**

(Categories of files for uploading and downloading)

Policy	Public Involvement
Program Management	Toxicants
Statements of Work	Nutrients
Legislative Analysis	Habitat Loss
Financing Programs	Living Resources
Grant Regulations	Pathogens
Quality Assurance	...and others





***If you are interested in becoming a COASTNET user,  
please provide the following information.***

Name \_\_\_\_\_

Title \_\_\_\_\_

Office \_\_\_\_\_

Address \_\_\_\_\_

Phone \_\_\_\_\_

***Your will be notified by mail of your  
user ID and personal password.***

-----  
\_\_\_\_\_,  
You are now signed on as a **COASTNET** Electronic Bulletin Board User. Please refer to  
the enclosed fact sheet for the **COASTNET** phone numbers and sign-on directions.

Your user-ID is

Your initial password is

(You can change your password once you are on **COASTNET**.)

***COASTNET***  
***Electronic Bulletin Board***





# COASTNET

## *The Marine and Estuarine Electronic Bulletin Board System*

May 1990

Office of Marine and Estuarine Protection  
Office of Water  
U.S. EPA

**AMS**



**I. Introduction and Overview**

- Agenda

**II. What is COASTNET?**

- Purpose
- Users
- Structure

**III. Demonstration**

- E-Mail
- Bulletins
- Files
- Other Features

**IV. Questions & Hands-On Time**



**During this session, we will:**

- Introduce COASTNET's origins.
- Explain how COASTNET is structured.
- Demonstrate how COASTNET works.
- Allow you to test COASTNET yourselves.

**We have two hand-outs for you:**

- Copy of this Briefing
- 'Jump Start' Sheet



## **What is COASTNET**

# **COASTNET**

**COASTNET is an electronic Bulletin Board System (BBS) for persons working with or interested in marine and estuarine protection. The BBS provides:**

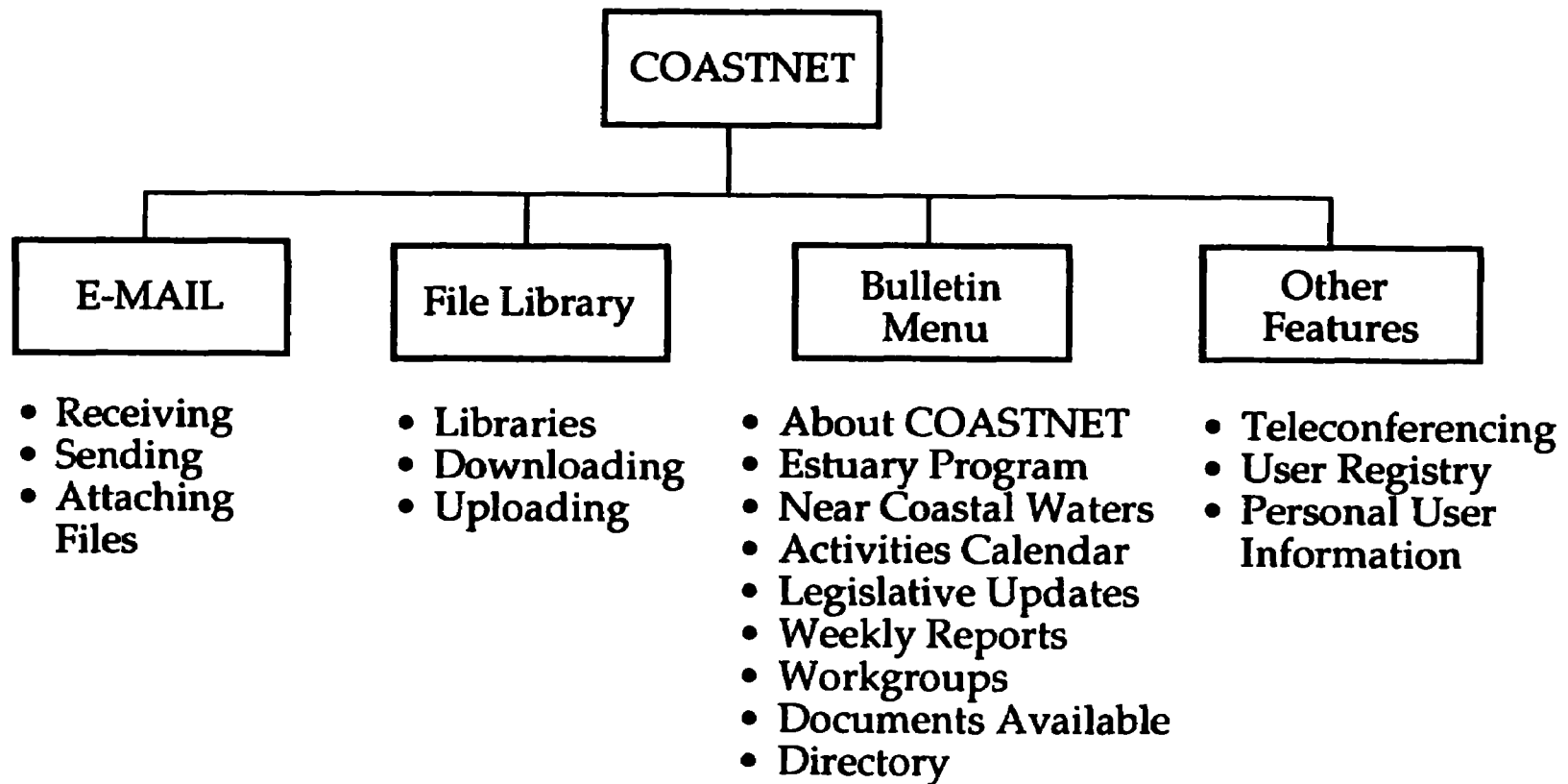
- **Timely Information about Marine and Estuarine Programs, Projects, and Events**
- **An Alternative to "Telephone Tag"**
- **Contact Names and Telephone Numbers**
- **Instantaneous Communication to a Wide Group of Users**



## What is COASTNET

# COASTNET

### COASTNET STRUCTURE





**Features of the COASTNET System:**

- **Bulletins**
- **E-Mail**
- **File Library**
- **Other Features**
  - Teleconferencing
  - User Registry
  - Personal User Information



**DRAFT**

# **COASTNET BULLETIN BOARD SYSTEM**

## **User's Guide and User's Reference**

**U. S. Environmental Protection Agency  
Office of Water  
Office of Marine and Estuarine Protection  
Washington, DC**



## **ACKNOWLEDGEMENTS**

This User's Guide and User's Reference was prepared under the direction of Joseph N. Hall II, Office of Marine and Estuarine Protection, Office of Water, United States Environmental Protection Agency.

The contribution of Stephanie Sarzone, Margheuta Pryor, and Rebecca Dernberger in the development of the informational structure were invaluable. Thanks are due to Arnold Smokler for the development of the hardware and software structure of COASTNET.



## **INTRODUCTION**

The National Estuary Program (NEP) and the Near Coastal Waters (NCW) initiatives are implemented through EPA Regional Offices under guidance from the Office of Marine and Estuarine Protection.

The Congress authorized four million dollars under the Clean Water Act (CWA) for four estuaries in 1985, expanding to six estuaries with twelve million in 1986. The National Estuary Program (NEP) now encompasses 12 estuary programs and seven coastal EOQA Regions.

The NEP is tasked with protecting, maintaining and restoring estuarine water quality and living resources. The success of this program is dependent on the development of and transfer of management and technical strategies among the estuary programs to accomplish these tasks. An electronic bulletin board is one tool that can provide efficient and timely interchange of information.

In 1985, the Technical Support Division developed an inhouse electronic bulletin board system called "Estuary Program Central Into Exchange." It provided an effective method for transferring information between HQ's and the Regions. It has served as a conduit for reports, data, phone numbers, policy updates and distribution of draft reports for comments and useful microcomputer programs and databases. COASTNET is an upgrade to that system which will allow concurrent access of two persons to the NEP Bulletin Board.

COASTNET will provide HQ's and the Regions with state-of-the-art "instantaneous" communication, provide an alternative to "telephone tag", up-to-date names and phone numbers of key contacts, and timely information.



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## **THE COASTNET BULLETIN BOARD SYSTEM. WHAT IS IT?**

The COASTNET Bulletin Board System (BBS) is designed to provide rapid access and dialogue among marine and estuarine protection staff in state agencies, EPA regional offices, EPA headquarters, and EPA Office of Water Staff.

The COASTNET Bulletin Section is like a private bulletin board which will provide up-to-date information on upcoming program activities, organizational contacts, and informational sources.

The Electronic Mail section is like a private post office which will allow users to exchange private messages, forward messages to another user and attached (upload) a file.

The COASTNET File Section is like a private library. Users will be able to download and upload information files and other items of interest.

All users of the BBS must be cleared and assigned a User-Id. Once you are assigned your unique Id, you will be allowed access to the system. The SYstems OPERator (SYSOP) makes these assignments. You are then known as a 'live' user. 'Non-live' users (those who are not assigned a User-Id) will not be allowed to access this BBS.



## CONNECTING TO THE COASTNET BBS

Before attempting to log on to The COASTNET BBS, you must first set the communication parameters within the communications program that you are using.

Set your system to operate at 1200 or 2400 Baud (depends on your modem's capability), 8 data bits, 1 stop bit, no parity and full duplex. If your communication program has an echo setting, set it for no echo. The following two tables list the parameters for CrossTalk and Procomm Plus.

**TABLE 1: CROSSTALK CONFIGURATION PARAMTERS**

NAME:	COASTNET BBS
NUMBER:	475-4296 or 475-8482 (see note 1)
SPEED:	1200 or 2400 (see note 2)
PARITY:	None
DUPLEX:	Full
DATA:	8
STOP:	1
EMULATE:	None
PORT:	1 or 2 (see note 3)
MODE:	Call

**TABLE 2: PROCOMM PLUS CONFIGURATION PARAMETERS**

NAME:	COASTNET BBS
NUMBER:	475-7296 or 475-8482 (see note 1)
BAUD:	1200 or 2400 (see note 2)
PARITY:	None
DATA BITS:	8
STOP BITS:	1
DUPLEX:	Full
SCRIPT:	(no entry, hit enter key to bypass)
PROTOCOL:	XModem
TERMINAL:	Ansi

If you have a color monitor with Procomm Plus, you will receive COASTNET in color. CrossTalk currently does not support color.

---

1 Local callers can dial these numbers direct. They do not roll, so if one line is busy try the other. They are on the FTS network. The area code is 302 for all other callers.

2 COASTNET can answer at 1200 or 2400 Baud. Set the speed according to the capabilities of your modem.

3 This is the communication port that your modem will be connected to. If you have one RS232C port, this will be port 1.



Some EPA Regions and Headquarters use a Port Selector or Telecommunications Switch (Data Switch) instead of a modem connected directly to the computer.

Table 3 lists the CrossTalk parameters for this set-up.

**TABLE 3. CROSSTALK DATA SWITCH CONFIGURATION PARAMETERS**

NAME:	Data Switch Defaults
NUMBER:	Local
SPEED:	9600
PARITY:	Even
DUPLEX:	Full
DATA:	7
STOP:	1
EMULATE:	VT-100
PORT:	2
MODE:	Call

At the CrossTalk Command? prompt thype GO LOCAL <Enter>. You may have to hit the <Enter> key more than once to get the Data Switch menu.

Follow the instructions you were given to access outside lines. Each Port Selector (Data Switch) has their own way of dialing outside lines through the modem bank.

The COASTNET BBS currently has two phone lines (202)475-7296 and (202)475-8482. If one line is busy try the other. They do not roll at this time.



## **CONNECTING TO THE COASTNET BBS**

Once you have set the communication parameters for your communications program, you are ready to dial The COASTNET BBS. Set the communication program to dial the number listed, either 475-7296 or 475-8482.

When you connect, your computer will receive and display the COASTNET welcome screen.

### **WELCOME TO THE COASTNET BULLETIN BOARD SYSTEM**

**SPONSORED & OPERATED BY  
THE OFFICE OF MARINE AND ESTUARINE PROTECTION  
OFFICE OF WATER  
U.S. ENVIRONMENTAL PROTECTION AGENCY  
401 M STREET, S.W. (WH-356F)**

**(Office located at 499 S Capitol St.)**

**OPERATING 24 HOURS/DAY - 1200 OR 2400 BPS**

**INFORMATION CONTACT: JOSEPH N. HALL (202)475-7182**

**TO CHANGE YOUR PASSWORD TYPE 'A' AT MAIN MENU  
THEN '9' CHANGE PASSWORD AND TYPE 'X' TO EXIT BACK  
TO MAIN MENU.**

**Please enter your USER-ID:**

Type in your User-ID\* and hit the <Enter> key.

Next you will be prompted for your password.

**Enter your password:**

Type in your password and press the <Enter> key.

---

\*The SYSOP makes assignments of User-IDs and passwords. The User-ID cannot be changed. If you prefer a different User-ID, please call the SYSOP, and he will try to accommodate you within the limits of the system software. Your password can be changed and it is advised to do so when first signing on. See section on CHANGING YOUR PASSWORD.



The following will be displayed on your computer screen:

```
Greetings, your ID, glad to see you back again
There is new E-MAIL waiting for you!
LIVE! From WASHINGTON, DC 20460! You have xxxxx credits!
```

The following services are available

```
T   Teleconferencing
C   COASTNET Bulletin Menu
E   Electronic Mail
A   Account display/edit
F   COASTNET File Library
R   Registry of Users
X   Exit (terminate session)
```

## CHANGING YOUR PASSWORD

To change your password type the letter A for Account display/edit and the <Enter> key.

The Account display/edit screen will look something like this:

```
User-ID ..... your ID
Account Created ..... 01/22/90
Last Logon ..... 02/01/90

1 Name ..... Your Full Name
2 Company ... Your Company
3 Addr Line 1 ... Your Street Address
4 Addr Line 2 .. Your City, State, Zip
5 Phone Number .. Your work phone number
6 System Type .. IBM PC or compatible (ANSI)
7 Screen Width .. 80
8 Screen Length .. 24
9 Age ..... 0
10 Sex .....
11 Password ..... (not displayed, for security reasons)
12 Credits ..... 199999940
```

Enter the line number of the item you wish to change or X to exit



Type 11, the Password line, and press the <Enter> key.

The next prompt will ask you for your new password.

**Enter your new password:**

Type in your NEW PASSWORD and press the <Enter> key. You can type in upper or lower case, as the system will recognize your password in either case.

The system will next display the following message:

Please WRITE THIS NEW PASSWORD DOWN and do not let anyone else know what it is. This is your ONLY PROTECTION against other people trashing your account. There will be nothing anyone can do for you if you either forget your password or give it out to someone who shouldn't have it.

Remember: your password is YOUR RESPONSIBILITY. If you lose it, you are "up the creek". WRITE IT DOWN.

We recommend that you change your password every quarter to protect your account from being compromised.

You will next be prompted to:

**Enter the line number of the item you want to change, or X to exit:**

Check the rest of the information in your account. Is it correct? If not change any line by type the line number and touching the <Enter> key. Type in the correct information and touch the <Enter> key. Type X <Enter> to return to the MAIN MENU prompt.\*

## **REGISTRY OF USERS INFORMATION**

From the MAIN MENU type R <Enter> to enter the Registry of Users. The following menu will appear:

---

\*Do not be concerned with lines 9, 10, & 12 Age will always show up as 0. Sex is blank Credits are required for each user including the SYSOP to access the system Credits are increased to the maximum amount each day



The following Registry services are available

- G => General information
- D => Directory of users in Registry  
( DA' to start at beginning)
- Y => Create YOUR entry
- L => Look-up another user's entry
- X => Exit to main menu

Select a letter from the above list

Type Y <Enter> to Create YOUR entry.

You will be prompted to enter certain information into the Registry database. If you prefer not to answer for any reason, type "N/A" (for not available). If you leave the entry questionnaire before finishing all the entries, it will not be saved (you can enter X to exit the questionnaire at any question).

After completing your Registry information, you will be able to edit any part of it at any time. Please update your information as the situation requires.

**Please enter your full name: *Type your name here.* <Enter>**

**What is your job title? *Type your title.* <Enter>**

**What is the name of your company? *Type your company name.* <Enter>**

**Where are you located (city and state)? *Type your city & state* <Enter>**

**What is your voice phone numbers: *Type up to 2 phone numbers* <Enter>**

**What is your FAX number? *Type your FAX number or N/A if none* <Enter>**

Ok, now you can enter a brief (39 characters max.) summary of yourself for others to see in the directory (option "D" from the Registry menu).

**Please enter your summary line: *Type your information here* <Enter>**

**Ok, your entry has been added to the database. Thanks for your participation!**



Type X <Enter> to return to the Registry menu.

Type ? <Enter> to display the Registry menu.

Note that the selection Y has changed from "Create YOUR entry" to "Edit YOUR entry". This function is to be used when you have to change, update, your registry database.

Type X <Enter> to return to the Main menu prompt. At the Main menu prompt, type ? <Enter> to display the Main menu help list.

You are logged in to The COASTNET Bulletin Board System

You are looking at the System Main Menu. We support a wide variety of online services -- please feel free to select any one you like

The following services are available:

- T Teleconferencing
- C COASTNET Bulletin Menu
- E Electronic Mail
- A .. Account display/edit
- F .. COASTNET File Library
- R Registry of Users
- X .. Exit (terminate session)

Please select one of the letters shown, and press RETURN.

## TELECONFERENCING

The teleconferencing feature allows several users to converse with one another from their PCs. Whatever one user types is sent to all other users on the same teleconference channel, identifying the user it came from. At present this BBS has the ability to handle three users, two on phone lines and the SYSOP at the BBS terminal.

When you first enter Teleconferencing, by typing T <Enter> from the main menu you "tune in" to channel 1. You are notified who else is on that channel. You can also type ? for help.

A user entering the Teleconferencing section is prompted with a colon ":". When a user types a message, followed by a Carriage Return (<Enter>), that message is broadcast to the user on the other line.

In the Teleconferencing section the following special commands are available to the user:



### **<ENTER>**

This will let the user know who else is on his teleconferencing channel by listing the User-Id.

### **PAGE <User-Id> <message>**

This will broadcast a message to the user on the other line requesting attendance. Paging the SYSOP when the SYSOP is not on line causes one's User-Id on the User Matrix of the Operator Console to blink.

The optional message, if used, is sent to the recipient's screen along with the page announcement.

### **PAGE ON/OFF/OK**

Allows/prevents/encourages others to page you.

**PAGE ON:** Enables a user to be paged or to receive chat requests. This is the the log-on default situation. Paging may only take place once in 2 minutes.

**PAGE OFF:** This prevents a user from being paged by another user. It also prevents another user from requesting to CHAT with the user.

**PAGE OK:** This allows a user to receive pages or chat requests as often as other users care to issue them.

### **WHISPER TO <User-Id> <message>**

In this way, a user can send a message to just one other user. No one else on the teleconferencing channel will be aware of the exchange.

### **/<User-ID> <message>**

This is the shorthand form of the whisper command.

### **CHANNEL #**

Switch to another channel. User must specify the channel number.

### **CHANNEL**

Shows the current channel number.

### **CHAT <User-ID>**

This command allows two users to enter "chat mode" where two users can converse directly with one another.



### **SCAN**

Shows a directory of the other users in Teleconferencing, and if they are "listed", what channels they are using.

### **UNLIST**

This prevents a user's teleconference channel from being seen by others when the scan command is issued, except if the user is on channel 1.

### **LIST**

This allows a user's teleconference channel number to be seen by others when the scan command is issued.

### **MODERATE <topic> \***

Sets conference topic and makes you the moderator.

### **APPOINT <UserId> \***

Allows the moderator to appoint another user as moderator.

### **SQUELCH <UserId> \***

The moderator can silence any other user on the teleconference channel by squelching. That user will no longer be able to communicate on that channel until the moderator un-squelches the user or the user logs off. The SYSOP can also squelch and un-squelch users.

### **UNSQUELSH <UserId> \***

The moderator and the SYSOP can permit a squelched user to communicate again with this command.

### **EXIT, or just X**

This takes the user out of the teleconference section and back to The COASTNET BBS Main menu.

---

\* These commands are of no real value until COASTNET adds more lines. At present there are only two phone lines. You will be advised as more lines become available.



## COASTNET BULLETIN MENU

You are logged in to The COASTNET Bulletin Board System

You are looking at the System Main Menu. We support a wide variety of online services -- please feel free to select any one you like.

The following services are available.

- T Teleconferencing
- C ... COASTNET Bulletin Menu
- E Electronic Mail
- A Account display/edit
- F COASTNET File Library
- R Registry of Users
- X Exit (terminate session)

Please select one of the letters shown and press RETURN.

To enter the COASTNET Bulletin Menu type C <Enter> and you will be presented with the list of COASTNET Bulletins.

The COASTNET Bulletin Board System

### COASTNET BULLETIN MENU

- 1 About COASTNET
- 2 National Estuary Program
- 3 Near Coastal Waters
- 4 Calendar of Activities
- 5 Legislative Updates
- 6 Weekly Activity Reports
- 7 Workgroups
- 8 Documents Available
- 9 Directory

Select an option, or ? for help.

Type the number of the bulletin you wish to read followed by the <Enter> key. The bulletin will scroll on your display one screen at a time. To go to the next screen just press any key on your keyboard.

To return to the Main Menu type X <Enter>.

For a list of auxiliary commands type ? <Enter>



The additional commands available when in the bulletin menu section are:

<b>&lt;CR&gt;</b>	- Refresh screen, see full menu text.
<b>X</b>	- Exit one menu level (to parent menu).
<b>EXIT</b>	- Exit to the system Main Menu.
<b>GO &lt;page&gt;</b>	- Go directly to a page (e.g. GO TOP).
<b>PAUSE</b>	- Toggle pausing at screen boundaries.
<b>FIND (stg)</b>	- Find a specific topic of interest.
<b>USERS</b>	- List all users online at the moment.
<b>RECENT</b>	- List users recently logged off.

All bulletins can be downloaded in ASCII or WordPerfect format. See COASTNET File Library section on downloading to your system.

## ELECTRONIC MAIL

This section allows users to leave messages for other users. When a user has incoming mail, the user is so notified at log-on time. The user should then access the Electronic Mail Section from the main menu, read the mail and answer if required. The message remains on file, accessible to both sender and recipient, until the recipient chooses to delete it. The user is given the choice to delete a message each time it is read.

You are logged in to The COASTNET Bulletin Board System.

You are looking at the System Main Menu. We support a wide variety of online services -- please feel free to select any one you like.

The following services are available:

<b>T</b>	Teleconferencing
<b>C</b>	COASTNET Bulletin Menu
<b>E</b>	Electronic Mail
<b>A</b>	Account display/edit
<b>F</b>	COASTNET File Library
<b>R</b>	Registry of Users
<b>X</b>	Exit (terminate session)

Please select one of the letters shown, and press RETURN:

An Electronic Mail message consists of the following parts:

- **Message Number**      An arbitrary number assigned when the message is first written.



- **Topic** Up to 40 characters long (including spaces).
- **Sender** This is a user who writes and sends the message.
- **Recipient** This is the user that is identified by the sender to receive the message.
- **Message** Up to 1920 characters long, including spaces and one extra terminator character per line.
- **Attachment** This is a file that the sender of a message may upload for the reader(s) of the message to download.
- **Return receipt option** When the sender chooses this option, he is notified, by return receipt, when the recipient reads the message.

When the user types E <Enter> from the Main Menu the following information is displayed on his screen:

The following E-Mail services are available:

R => Read message(s)  
W => Write a message  
M => Modify a message  
E => Erase a message  
X => Exit from E-Mail

Select a letter from the above list, or ? for more info:

If you select the ? for more info you will be presented with the following:

Anyone can read electronic mail addressed to themselves, or write mail addressed to the SYSOP. Only "live" users can write messages to other users.

A message may have a file "attached" to it: the message sender can upload a file, which is downloaded by the recipient. Message "forwarding", "return receipts", and a "cc:" (carbon copy) feature are also available.



When you log on, you are automatically notified if any messages are waiting for you. You should erase your messages after you read them, so that you will not be bothered with reading your old messages over and over. Messages are automatically purged when 10 days old in any case.

### Read Message(s)

To read messages, select type R <Enter>. The BBS will ask if you want to:

Read messages (T)o you, (F)rom you, or ? for help:

If you select the ? for help, you will be presented with:

Select one of the following letters:

I to read messages TO you  
F to read messages FROM you  
X to return to the main E-Mail menu

(( Note that you can include your selection from this menu on the ))  
(( same line with your "R" selection from the main E-Mail menu. ))  
(( ))  
(( For example, type "RT" from the main E-Mail menu to read the ))  
(( messages TO you (R for Read, T for To). Better yet type "ERT" ))  
(( from the SYSTEM main menu to go straight into scanning your ))  
(( in-basket after logging on (E for E-Mail, R for Read, T for To. ))  
(( and "." (period) to start with the first of your new messages. ))

Read messages (T)o you, (F)rom you, or X to exit:

Type T <Enter> to read all messages to you and the screen will display:

Enter message number to start with, or ? for help  
(Just hit RETURN to start with message #36):

Hit the <Enter> key and your screen will display something like:

#38 08-FEB-90 08:39 From Arn To: Sysop RRR ATT  
Re: COASTNET DRAFT DOCS (Reply to #30)

(N)ext, (P)revious, or (R)ead this message?



What does this all mean?

**#38** This is the message number.

**08-FEB-90 08:39** Date and time message was written. Time is military time.

**From: Arn** The sender's User-Id.

**To: Sysop** The recipient's User-Id.

**RRR** Return receipt was requested. The sender receives a notification (message) when the recipient reads this message.

**ATT** The sender of this message has uploaded a file and attached it to this message for the recipient to download.

**Re: COASTNET DRAFT DOCS.** This is the message topic.

**Reply to #30** This says that this message is a reply to message #30 sent by Sysop to Arn.

Typing R <Enter> will display the message on the screen. When you reach the end of the message you will be given several choices.

(R)eply and erase, just (E)rase, (F)orward it, (P)revious or (N)ext?

(R)eply and erase: Answer the message and erase it,

(E)rase: Erase the message with no reply or other option.

(F)orward it: This option allows the recipient of the message to forward it to another user. Just one user can be specified with this option. The forwarded message is identical in terms of message content, topic, and attachment. The sender is unchanged, and the identity of the original recipient (the user who is forwarding the message) appears in a parenthetical note after the topic.

(P)revious or (N)ext: Answering P or N scans other messages, just as in the question after the summary.

If the sender of a message has uploaded an attachment the recipient will see the following message on his display after the message has been read.



**Would you like to display or download the file now (Y/N)?**

Answering Y <Enter> for YES will display the download screen.

Select one of the following

- 1 ASCII Text display
- 2 XMODEM download
- 3 XMODEM-CRC download
- 4 Ymodem-CRC download

(The operation will begin as soon as you type a digit and press RETURN)  
Indicate your choice, or ? for help

Your communication program must support these downloading protocols. CrossTalk supports 1 and 2. Procomm Plus supports all four.

If the file is an ASCII text file you can view the file on your screen, one screen at a time, because the file will automatically be paused after each screenful. By typing 1C, you can download the ASCII text file using the "capture" or "log" feature of your communications program. After the download you can:

(R)eply and erase, just (E)rase, (F)orward it, (P)revious or (N)ext?

### **Write a Message**

When the user type W <Enter> the following question appears:

User-Id to send message to (hit RETURN for "Sysop"):

If you do not know or remember the User-Id EXIT back to the Main menu, type R to enter the Registry database, and type DA for a listing of those who are in the Registry.

As noted, to send a message to the SYSOP just hit the <Enter> key.

To send a message to anyone else, type the User-Id and hit the <Enter> key. You will then be asked for the message topic.

**Enter the topic of this message (40 chars.):**

Type the topic and press the <Enter key>.



The on-line editor will be activated and the following will be shown on your screen:

Your message can be up to 1920 characters long. When done, type OK on a line by itself. (Or, type /S to save and proceed, without editing).

The on-line screen editor allows the user to type in text same as on a typewriter. There are two editor modes, the Entry Mode and the Command Mode. See appendix for explanation of both modes.

When the user is finished typing the message, he types OK <Enter> at the beginning of the next line and the system will display the EDITOR MENU.

#### EDITOR OPTIONS

S)ave message	R)e-type a line
A)ppend message	D)elele line
L)ist message	I)nsert line(s)
C)hange text	N)ew message
H)elp	T)opic change

Select an option from the above list

To display the help screen type H <Enter>.

#### Help is available on the following functions

S => Saving your message to disk  
A => Continuing with input (append)  
L => Listing your message w/line #\n  
C => Changing a string of text  
  
R => Re-typing a single line  
D => Deleting a line of text  
I => Insertin line(s) of text  
N => Starting over with a new slate  
T => Changing the topic of your message

Q => Quitting this edit session

Choose an option from the above list for help.



## **E-MAIL EXTENDED HELP MESSAGES**

Extended on screen help is available by selecting the letter of the help message you wish to review.

The **S**ave function will record your message to disk and exit you from the editor. You may quick-save your message directly while in the input mode by entering a **.S** or **/S** on a blank line.

The **A**ppend message function allows you to continue entering your message from where you last left off.

The **L**ist message function will display your message on the screen with line numbers for your editing convenience.

The **C**hange function allows you to replace a portion of text in any line. Instead of re-typing an entire line because of a misspelled word, you may relace the incorrect word or phrase with the correct one.

The **R**e-type function allows you to re-type an entire line of text, and will replace the old line with a new one.

The **D**elete function allows you to delete a line of text from your message.

The **I**nsert line(s) function allows you to insert lines of text in front of any specific line in your message. To add a line or lines after the last line, use the **A**ppend function.

The **N**ew message function allows you to import a new copy of another message, to use as a starting point for further editing. You can also use this feature to make "photocopies" of a message for people other than the original recipient, or to customize "form letter" messages that you keep on hand for this purpose. Only messages that are **FROM YOU** can be imported.

Another option of the **N**ew message function is to clear your edit area so that you can start your message over from scratch. This clears the current message from your buffer and lets you begin again with a clean slate.

The **T**opic change option lets you re-enter the message topic line.

The **Q**uit option allows you to exit the Editor Session.

Enter just the letter **X** on a line by itself, to exit the editor at any time. If you are writing a message for the first time, it will not be saved. If you are modifying a message, any changes you made will not be updated to disk.



## **ATTACHING A FILE TO A MESSAGE**

Once the message is saved the user is given the option of attaching a file to the message. This is also known as uploading a file to be attached to the message.

Do you wish to "attach" a file to this message (Y/N)?

Answering Y <Enter> displays the Upload Menu.

Select an upload method.

- 1 regular ASCII text
- 2 XMODEM
- 3 XMODEM-CRC
- 4 YMODEM-CRC

Indicate your choice, or ? for help

For help press the ? followed by the <Enter> key and you will see:

You may "upload" a file from your machine to the BBS, and it will become attached to the message you just created, which means that the person who reads the message will be able to download the file afterwards. The upload process can be accomplished using your choice of protocols:

- 1 ... regular ASCII text: use this to simply type the file in, from your keyboard, one line at a time.
- 2 ... XMODEM: use the original "Christensen protocol" to transfer the file to the BBS, reasonably well-protected from errors.
- 3 ... XMODEM-CRC: use the more reliable "CRC" form of XMODEM to transfer the file to the BBS.
- 4 ... YMODEM: use the faster (1K blocked) form of XMODEM-CRC to transfer the file to the BBS.

Note that methods 2, 3, and 4 require you to invoke the corresponding upload software on your end of the line, after choosing a number here.



To upload a file using methods 2 to 4 requires that the user have the appropriate communications software. CrossTalk XVI supports only methods 1 and 2. Procomm Plus supports all four methods.

If the user uploads using method one, then at the end of the upload on the next blank line the user needs to type OK <Enter> to end this mode of upload.

The next question asked by the system before the message is saved is:

**Do you want a "return receipt" when this message is read (Y/N)?**

If the user answers Y for yes to this option, he will get back a return receipt message when the message is read by the recipient.

The message is then saved and the BBS will cause to be displayed on the user's screen a confirmation message.

**<<< CONFIRMED: MESSAGE #124 WRITTEN TO DISK >>>**

The user is then asked if the message is to be copied to another user.

**Do you want to send a copy of this message to anyone (Y/N)?**

Typing Y <Enter> bring up the User-Id prompt:

**Enter a User-Id or SIG to copy this message (cc:) to:**

The confirmation message is displayed and the next question appears.

**<<< CONFIRMED: MESSAGE #124 COPIED TO #125 SENT TO "User-Id" >>>**

**Do you want to send a copy of this message to anyone else (Y/N)?**

You can send up to thirty copies of the message to thirty users.

### **Modify a Message**

When the user types M <enter> from the Electronic Mail menu, he is asked for a message number. If the user doesn't recall the message number, he can type "RF" from the Electronic Mail menu, and scan through his outgoing messages that are still on file, to find the message number of the message to be changed. The user can then type M <Enter> and the message number. This will onvoke the on-line editor with the following menu displayed on the screen:



#### EDITOR OPTION

S)ave message	R)e-type a line
A)ppend message	D)etele a line
L)ist message	I)nsert line(s)
C)hange text	N)ew message
H)elp	T)opic change

Select an option from the above list

See Appendix C, On-Line Editor, for instructions on using the Editor. Only the topic and body text of the message can be modified. The recipient, attachment, and return receipt option may not be modified. If a user has forwarded a message to several other users, each message has to be modified individually. Forwarded message have their own message number and are listed separately when the user scans messages FROM YOU.

#### Erasc a Message

To erase a message the user type E <Enter> from the Electronic Mail menu. He is then asked for the message number. If the user types the number of a message the he wrote, or that was written to him, that message is deleted. Only the sender and recipient of a message are able to erase (delete) the message.



## COASTNET FILE LIBRARY

You are logged in to The COASTNET Bulletin Board System

You are looking at the System Main Menu. We support a wide variety of online services -- please feel free to select any one you like

The following services are available:

- T Teleconferencing
- C COASTNET Bulletin Menu
- E Electronic Mail
- A Account display/edit
- F COASTNET File Library
- R Registry of Users
- X Exit (terminate session)

Please select one of the letters shown, and press RETURN

The COASTNET library facility allows you to download or upload files. Files are organized into library information banks, or LIBs. Files are tagged with descriptions and keywords. You can search for a file through its keywords or specify it directly by its name.

From the main menu type F <Enter> to enter the COASTNET File Library section. Your screen will then display the available services.

The following Library services are available:

- G => General Information
- S => Select a LIB (type 'S?' for a list)
- F => File directory
- D => Download a file (or just search for one)
- U => Upload a file

Current LIB MAIN The MAIN LIB

\*\*\* 4 new uploads this week \*\*\*

Select a letter from the above list (or X to exit):

The default LIB is The Main LIB. The system also displays the number of new files that were uploaded during the week.

Typing G <Enter> from this menu places you into the on-screen help section. See Appendix D for more information.



For an on-screen listing of the current LIBs type S? <Enter>. The listing will show the name of the LIB, the number of files each LIB contains and a short description of the LIB.

The Library Information Banks currently on the system are:

LIB -----	FILES -----	Description -----
MAIN	5	The Main LIB
DIRA	5	Policy
DIRB	3	Program Management
DIRC	2	National Estuary Program SOW's
DIRD	2	Data Management
DIRE	2	Financing Environmental Programs
DIRF	4	Quality Assurance
DIRG	2	Risk Assessment
DIRH	3	Public Involvement
DIRI	2	Grant Regulations (Section 320)
DIRJ	2	Toxicants
DIRK	2	Habitat Loss
DIRL	2	Living Resources
DIRM	2	Pathogens
DIRN	2	COASTNET Newsletters
DIRO	20	Bulletins for Downloading
DIRP	2	Proceedings to Major Activities
DIRQ	3	General Documents
DIRR	4	PC Applications
DIRS	6	Legislature

To change from one LIB to another type S <LIB name> <Enter>. Eg. To go from the MAIN LIB to the LIB called DIRS Legislature type S DIRS <Enter>.

Your screen will display general information on LIB DIRS.

**LIB DIRS. Legislature**

Contains: 6 files 122583 bytes  
Capacity: 50 files 50000 bytes (50000 bytes maximum per upload)  
Created: 02/01/90 00:48:08

Legislative bills status reports, comparisons of pending coastal legislation, legislative analyses.

Current LIB: DIRS Legislature  
Select a Library option (G.S.F.D.U.X or ? for help).



To list the files in LIB DIRS type F <Enter>. The system will display the file directory in alpha order of LIB DIRS.

**FILE DIRECTORY OF LIB DIRS Legislature**

File	Bytes	Source	Description
BILLS.ASC	10496	Sysop	Status of Coastal Legislation (ASCII)
BILLS WP	11520	Sysop	Status of Coastal Legislation (WP50)
CZMCOMP.WP	29056	Sysop	Comparison of CZM Bills (WP50)
FILES	722	Sysop	File Directory of the 'DIRS' LIB
INDEX	1669	Sysop	Index of files in the 'DIRS' LIB
WQCOMP WP	69120	Sysop	Comparison of Water Quality Bills (WP50)

-----  
122183 bytes  
6 files

Current LIB. DIRS Legislature  
Select a Library option (G.S.F.D.U.X. or ? for help):

The user can now download one of the listed files. To download type D <Enter> and your screen will display the command line:

**File name(s), keyword, date (MM/DD/YY), or days ago (-DD):**

To download the file BILLS.ASC type the file name BILLS.ASC <Enter>. Your screen will display.

**File BILLS.ASC Status of coastal legislation (ASCII)**

Date 02/01/90 From: Sysop Downloads: 2  
Time 02:22 22 Size: 10496 bytes Download time: about 1 minute

Keywords: bills legislation plastics

Summary of currently pending coastal legislation in the HOUSE and SENATE

L --> List this file, one screen at a time \ Use these options  
A --> Download it using ASCII text protocol / only on ASCII files  
M --> Download using XMODEM  
C --> Download using XMODEM-CRC  
Y --> Download using YMODEM  
Z --> Download using ZMODEM  
S --> Search for another file  
R --> Review the description of this file

What do you want to do next? (Type 'X' to exit or ' ' for help):



Typing L <Enter> send the file to your screen, one screen at a time. You "hit any key" to view the next screen. This is similar to viewing a bulletin in the COASTNET Bulletin section, except that you can EXIT (typing X <Enter>) after any screen.

Typing A <Enter> sends the file to your computer in a steady ASCII stream. First you have to invoke the "capture on" or "log on" facility of the communication program that you are using. Ctrl S (XOFF) will pause the sending of the data and Ctrl Q (XON) will resume. Hitting the <Enter> key aborts.

M, C, Y, & Z are binary or non-ASCII data transfer methods. CrossTalk supports only M for XMODEM. Procomm Plus supports all four.

To download in the XMODEM binary format, type M <Enter> at the "What do you want to do next?" prompt.

You will receive the following message:

**Ready to begin XMODEM download (CTRL-X to cancel)...**

You must now invoke the download procedure on your end.

When the download is completed you will get a message saying that the download has been successful followed by the library option prompt.

**Select a Library option (G,S,F,D,U,X, or ? for help):**

To upload a file, that is transferring a file from your system to The COASTNET BBS, type U <Enter>. You will be prompted for the file name.

**Name of file to upload (or '\*' for multiple files):**

We will deal with the single file upload as that is all the CrossTalk will support.

Type the file name and extension if any. The system will then ask you for a short description.

**Type in a short (40 char) \_\_\_\_\_  
description of your file:**

After typing the short description, you will prompted to type in a longer description.

Now please type a longer description of your file. You may use up to 320 characters (about 4 lines). When you are done, type a single line with only the word 'OK' on it.



If you do not wish to furnish a longer description type OK <Enter> on the next blank line.

You will next be prompted to type in "keywords" for your file.

Please type in the keywords for your file, indicating the file's content or subject. If you don't know our conventions for keywords, please type '?'. When done typing your keywords, type ' . '

Keyword 1: >

No keyword(s) type . <Enter>. Your screen will now display the upload protocols that you can use.

```
A --> ASCII text protocol
M --> XMODI:M protocol
C --> XMODEM protocol with CRC
Z --> ZMODEM protocol
```

Select a method from this list for uploading your file.

For example you want to upload a file called FV126.EXE to the MAIN LIB. Type U <Enter>. Then type the file name FV126.EXE <Enter>. Next the description, File Viewer version 1.26 <Enter>. You do not want to furnish a longer description, so just type OK <Enter>. There are no keywords, therefore type . <Enter>. To set The COASTNET BBS to receive the file you now have to designate what protocol to use. For this example the XMODEM protocol will be used. Now type M <Enter>. Your screen will display the message:

**Beginning XMODEM upload...**

Now invoke the upload procedure from your computer. For CrossTalk, at the Command? prompt type XX *filename.ext* <Enter>. For Procomm Plus, press the Page Up key and answer the prompts. When the upload has been received by the BBS, your screen will display a message similar to:

**\*\*\* UPLOAD COMPLETE \*\*\***

**File FV126.EXE            File Viewer version 1.26**

<b>Date: 02/15/90</b>	<b>From: Arn</b>
<b>Time: 20:47:26</b>	<b>Size 7168 bytes</b>

**Keywords: <none>**



You will also be given a chance to change certain items on the file you have just uploaded. The following question will be displayed on your screen:

Would you like to change anything about your file?

Answering Y <Enter> will give you the following options:

You have uploaded the file "FV126.EXE" onto the "MAIN" LIB, so you may:

- S --> Change the Short Description
- L --> Change the Long Description
- K --> Change the Keywords
- U --> Upload the file all over again

Select one of the letters (or '?' to review, or 'X' to exit):

Answering N <Enter> displays the following message and logs the file in to the LIB that was chosen.

Thank you for uploading file "FV126.EXE". It is now available for other users to download. By the way, you may change this file, retype its descriptions, change its keywords, or delete it, by trying to re-upload it.

Creating file....  
Inserting new keywords

File "FV126.EXE" has been logged into the "MAIN" LIB.

Current LIB: MAIN The Main LIB



## APPENDIX A

### GLOSSARY

- ASCII** American Standard Code for Information Exchange. This standard defines the character representation used by microcomputers
- BAUD** A unit of signalling speed representing modulations per second. Technically speaking it is different from bits-per-second in some modem protocols, but the term is frequently used interchangeably with BPS.
- BPS** Bits Per Second. The eight data bits of each communicated byte are cradled between the start and stop bit, so there are actually ten bit-times needed to carry one byte of data. That means that the byte-rate, or bytes per second is one tenth of the BPS rate.
- BBS or BULLETIN BOARD SYSTEM** A central system that provides a dial-up service to computers that may be separated by small or great distances. Services may include: access to data, exchange of data, E-Mail, multi-user access, uploading and downloading of programs and or information, and so on.
- DOWNLOAD** Transfer a file from The COASTNET BBS to the user's system.
- KBYTES** 1024 8-bit bytes.
- LOG OFF** The disconnection of a users from The COASTNET BBS by "exiting" from the main menu.
- LOG ON** The connection of a user to The COASTNET BBS when the user supplies the correct User-Id and password.
- MAIN MENU** The main pick-list of user services, such as teleconferancing, electronic mail, bulletin section and file section.



- MESSAGE** Text written from one user to another user
- MODEM** Short for modulator-demodulator. This is a piece of hardware that allows the computer to "talk" over the phone.
- ON-LINE** A user has logged on to the COASTNET BBS and is making menu selections, doing file transfers, etc.
- SESSION** The period between logging on and logging off
- START BIT** A bit (always 0) transmitted just before the first data bit, to synchronize the receiver.
- STOP BIT** A bit (always 1) transmitted just after the last data bit, insuring that there will be a 1-to-0 transmission at the beginning of the Start Bit.
- SYSOP** Short for system operator.
- UPLOAD** Transfer a file from a user's system to the COASTNET BBS.
- USER** Owner of a system or terminal who accesses The COASTNET BBS via modems and a telephone line.
- USER-ID** Name or "handle" by which a user is known to The COASTNET BBS, or to other users on-line.



## APPENDIX B

### UNIVERSAL USER COMMANDS

Some of the commands that a user types are treated in a consistent manner throughout The COASTNET BBS. They are:

- ? <ENTER>** Help. This is a user's request for help. The BBS sends to the screen the appropriate help message.
- X <ENTER>** Means EXIT. This is the user's request for a way out. The user is taken back to the previous menu. Eventually the user will return to the log-off menu.
- <Ctrl S>, also known as <XOFF>** Suspend command. Holding the Ctrl key down and then the S key stops the BBS. This is useful when the user wants to stop the screen for a moment. Typing any key resumes the output.
- <Ctrl O>** This is an abort message to the computer. Only the current block of output is chopped off.
- <ENTER>** This aborts all output. When the BBS is sending long text to the user, the output is aborted if the user hits the <ENTER> key.

### SCREEN BREAKS

If a prompt or series of messages to a user is longer than will fit on his screen, he is shown only one screen at a time with the message:

**<< hit any key >>**

at the bottom of each screen, giving the user time to read each screen one at a time.

### COMMAND CONCATENATION

When users become proficient with the BBS, they can enter a stream of menu selections all at once. E.g.: after logging on the user may want to read their incoming E-Mail. They can do this by typing **ERT** from the Main Menu, which stands for Electronic mail / Read messages / written To that user / starting with the first message. This answers four questions at once, instead of one at a time. The maximum of six commands that can be concatenated this way.

B-1



## APPENDIX C

### ON-LINE EDITOR

#### Entry Mode

When the user types the body of a brand new message, he is in the Entry Mode. Text entry is like typing on a typewriter; typing line after line of a message. Text entry is automatically "word wrapped" so that the user need not hit <Enter> at the end of each line within a paragraph. If the user types in an "empty" line (hits the <Enter> key when the cursor is at the left margin) then the editor gives a brief help message but no text is added to the message. To add a blank line to the message the user needs to type a space (hit the space bar once) and hit the <Enter> key from the left margin.

While in ENTRY mode, if a user wants to:	He types in a single line with only this on it:	Meaning:
-----	-----	-----
Switch to COMMAND mode,	OK	end-of-message
Exit the editor and save the message,	/S	save
Exit the editor, throwing away any changes to the message since the editor was last started,	X	exit

C-1



## ON-LINE EDITOR

### Command Mode

When the user enters Command Mode, the editor menu is displayed:

**EDITOR OPTIONS**

S)ave message	R)e-type a line
A)ppend message	D)elele line
L)ist message	I)nsert line(s)
C)hange text	N)ew message
H)elp	T)opic change

Select an option from the above list

The short form of the command menu is:

Select an editor option (S,A,L,C,H,R,D,I,N,T, or ? for menu):

While in Command mode, if a user wants to:	He types in the following command:	Meaning:
-----	-----	-----
Switch to Entry mode (picking up at the end of the message),	A	append
Exit the editor and save the message,	S	save
Exit the editor, throwing away any changes to the message since the user last started the editor,	X	exit



## **APPENDIX D**

### **LIBRARY FILE DEFINITIONS & HELP SECTION**

#### **LIBRARY INFORMATION**

The library facility allows the user to download or upload files. Files are organized into Library Information Banks, or LIB's. Files are tagged with descriptions and keywords. You can search for a file through its keywords, or specify it directly by its name.

From the Library Menu, you may select a specific LIB, list the files it contains, search for a file based on its keywords and then download it, or upload your own file into the LIB.

#### **LIBRARY INFORMATION BANKS**

LIB's are designed to organize information in The COASTNET BBS Library. Each LIB represents a unique sphere of interest in which you may retrieve (download) or contribute (upload) data. The specialization associated with a LIB allows you to zero in on your specific needs, and frees you from interaction with data in which you have no interest.

Think of a LIB as a section of your neighborhood library. In the humanities section you would find the classic works of the philosophers Gobineau and Goethe. If you were researching the metabolism of pilot whales, you would go to the science section. Just as each section of a traditional library has a specialized purpose, the LIB's of The COASTNET BBS Library support a high degree of specialization.

When you select a LIB, you have access to all files in that LIB. When you select the main LIB (named "MAIN") you have access to all files in the library.

#### **KEYWORDS AND INDEXES INFORMATION**

Keywords are attached to each file in the Library so that the file can be referenced by its content or subject. In INDEX is a list of files, sorted by these keywords. In the MAIN LIB, the file "INDEX." is the Master Index: a list, by keyword, of all files in the entire library. In the other LIB's, the file named "INDEX." is a list, by keyword, of the files in that LIB. Newly uploaded files will not appear in the INDEX of the MAIN or other LIBs until 3.00AM, which is when the BBS performs the scheduled cleanup.

D-1



**COMMANDS****FILE DETAILS**

---

**D <file>**

Complete description of a file in current LIB.

(you must include the period "." in the file name).

**D <lib>\<file>**

Complete description of file in a specific LIB.

**KEYWORD SORTED INDEXES OF FILES**

---

**D INDEX. L**

Index of all files in the current LIB.

**D <lib>\INDEX. L**

Index of all files in the &lt;lib&gt; LIB.

**D MAIN\INDEX. L**

Master Index of all files in the library.

**KEYWORD DRIVEN SEARCHES**

---

**D <keyword>**

Search for a files, based on its keywords, within the current LIB.

**S <lib> D <keyword>**

Search for a file, based on its keywords, within a specific LIB. Side effect: &lt;lib&gt; is selected.

**S MAIN D <keyword>**

Search for a file, based on its keywords, across the entire library. Side effect: MAIN LIB is selected.



## APPENDIX E

### CONNECTING TO COASTNET VIA PORT SELECTORS, DATA or TELECOMMUNICATIONS SWITCHES

Some Regions use a Port Selector, also known as a Data Switch or Telecommunications Switch, instead of a modem. The computer is hard wired directly to this device along with many other terminals or PCs. CrossTalk is used as the communications software to access the switch.

From your main menu select CrossTalk. The parameters that are displayed on the CrossTalk screen should be set as outlined in Table 3, Page 3.

When you have connected with the Switch you should receive a READY or CONNECTED message. hold the Ctrl key down and hit the letter E. Release both keys and hit the <Enter> key. You should get the message "HELLO I'M READY". Type D followed by the phone number and <Enter>. Ex.: D 8k202475-7182 <Enter>. The system should tell you it is dialing.

Some Switches will present you with a menu when you connect. Choose MODEM <Enter>. You should get a CONNECTED message displayed on your screen with an asterisk (\*) on the next blank line. Type D followed by the COASTNET phone number. Ex.:

WIC1-S1400012 CONNECTED TO 3671/02

•

At the Asterisk Prompt type D followed by the phone number:

• D 475-7182 <Enter>

The system will tell you that it is DIALING...

When connected to The COASTNET Bulletin Board System your screen will display the welcome message as illustrated on page 4.

Follow COASTNET log-on procedures. Enter your User-ID and then your Password.

E-1



**Attachment D**

**Puget Sound**

**John Armstrong**



# **PUGET SOUND ESTUARY PROGRAM PROTOCOLS/GUIDELINES**

- **GENERAL QA/QC**
- **STATION POSITIONING**
- **SEDIMENT CONVENTIONAL PARAMETERS**
- **ORGANIC COMPOUNDS IN MARINE  
SEDIMENT AND TISSUES**
- **METALS IN MARINE WATER, SEDIMENT  
AND TISSUES**
- **BENTHIC MACROINVERTEBRATE  
ASSEMBLAGES**



- **SEDIMENT BIOASSAYS**
- **FISH PATHOLOGY**
- **MICROBIOLOGICAL STUDIES**
- **CONVENTIONAL WATER QUALITY  
VARIABLES AND METALS IN FRESH  
WATERS**
- **SAMPLING SOFT BOTTOM DEMERSAL FISH  
BY BEACH SEINE AND TRAWL**
- **CONVENTIONAL MARINE WATER COLUMN  
VARIABLES**
- **MARINE MAMMAL TISSUE SAMPLING AND  
ANALYSIS**



## **THE PUGET SOUND AMBIENT MONITORING PROGRAM**

### **SEDIMENT**

- Sediment Chemistry**
- Bioassays**
- Benthic Invertebrates**

### **WATER COLUMN**

- Temperature**
- Salinity**
- Dissolved Oxygen**
- Turbidity**
- Nutrients**
- Chlorophyll**
- Pathogen Indicators**
- Odors, Floatables, Spills**

### **FISH**

- Toxic Chemicals in Fish**
- Fish Disease**
- Fisheries Harvests and Stock Assessments**



## **SHELLFISH**

- Shellfish Abundances**
- Toxic Chemicals in Shellfish**
- PSP in Shellfish**
- Bacteria in Shellfish**
- Aquaculture Sites and Yields**

## **BIRDS**

- Avian Abundances**
- Waterfowl Harvests**

## **MARINE MAMMALS**

- Marine Mammal Abundances**
- Tissue Contamination**

## **NEARSHORE HABITAT**

- Eelgrass Meadows**
- Kelp Beds**
- Fringing Marshes**

## **FRESH WATER**

- Flow in Rivers and Streams**
- Conventional Parameters in the Water Column**
- Metals in the Water Column**
- Fish Tissue Toxicants**

## **RIVER MOUTHS**

- Nearshore Estuarine Sediments**
- Nearshore Estuarine Water Column**



**Attachment E**  
**Long Island Sound**  
**Christine Olsen**



# **LONG ISLAND SOUND STUDY**

## **AGENCIES INVOLVED IN PROGRAM**

**EPA, REGIONS I & II, ORD  
NYSDEC, CTDEP  
NOAA (NMFS)  
COE (New England District)  
ISC**

## **PROGRAM OBJECTIVES**

**TO DEVELOP A MANAGEMENT PLAN THAT WILL  
PROVIDE FOR SYSTEMATIC, TECHNICALLY-SOUND,  
REGION-WIDE PROTECTION OF THE WATER  
QUALITY AND MARINE RESOURCES OF THE  
SOUND.**

## **PRIORITY PROBLEMS**

- o LOW DISSOLVED OXYGEN CONCENTRATIONS  
(HYPOXIA)**
- o TOXIC CONTAMINATION**
- o HEALTH OF FISH & SHELLFISH**
- o PATHOGENS**
- o FLOATABLE DEBRIS**



# **LONG ISLAND SOUND STUDY**

## **LOW DISSOLVED OXYGEN CONCENTRATIONS** **(HYPOXIA)**

- o WATER QUALITY MODEL**
- o HYDRODYNAMIC MODEL**

**The Two Models Will Be Run Together To  
Evaluate Management Strategies**



# **LONG ISLAND SOUND STUDY**

## **FY 88 & 89 WATER QUALITY MONITORING PROGRAMS**

### **Purpose of Data Collection:**

- o For calibration & verification of the WQ model of the Sound.**
- o Will provide baseline data, filling in the gaps in the historical data.**

### **Data Collectors:**

**FY88: CTDEP/CTDOHS/CBL  
NYSDEC/NYDOH  
SUNY-Stony Brook  
University of Connecticut  
ISC**

**FY89: CTDEP/CBL  
NYSDEC/NYSDOH  
SUNY - Stony Brook  
University of Connecticut  
ISC  
NYCDEP**



# **LONG ISLAND SOUND STUDY**

## **Data Users:**

**FY88 & FY89: HydroQual & NOAA**

## **Parameters Analyzed:**

### **Laboratory WQ Measurements:**

- o BOD<sub>5</sub>**
- o BOD<sub>30</sub>**
- o Particulate Organic Carbon**
- o Dissolved Organic Carbon**
- o Total Phosphorus**
- o Particulate Organic Phosphorus**
- o Dissolved Organic Phosphorus**
- o Dissolved Inorganic Phosphorus**
- o Particulate Organic Nitrogen**
- o Dissolved Organic Nitrogen**
- o Ammonia**
- o Nitrate/Nitrite**
- o Total Silica**
- o Dissolved Silica**
- o Hydrogen Sulfide**
- o Chlorophyll-a**



# **LONG ISLAND SOUND STUDY**

## **Field WQ Measurements:**

- o Salinity**
- o Dissolved Oxygen**
- o pH**
- o Light Penetration**

## **Sediment Measurements:**

- o Sediment Oxygen Demand**
- o Hydrogen Sulfide**
- o Ammonia**
- o Nitrate**
- o Phosphate**
- o Silica**



# **LONG ISLAND SOUND STUDY**

## **Methods Used:**

### **Laboratory WQ Measurements:**

**FY88 - CTD0HS & NYSD0H both used EPA NPDES methods (CFR Part 136, Table II) and Std. Methods, with some modification to reach lower detection levels.**

**CBL used their own in-house SOPs that have much lower detection limits and are specific to marine and estuarine waters.**

**FY89 - All the analyses, except BOD were conducted by CBL using their in-house SOPs. NYSD0H used a modified BOD method.**



# **LONG ISLAND SOUND STUDY**

## **Problems Encountered:**

**FY88 - Results received mid-way through the sampling period for the nutrient analyses were not consistent with the historical nutrient data on the Sound. The NPDES methods did not reach the level of detection that the models needed. No detects were reported often.**

**The methods also did not directly measure particulates - this measurement was done by subtracting the dissolved fraction from the total.**

**A meeting was held with all interested parties, including CBL. Sample collection and analysis were discussed by both state labs and CBL to determine the differences.**

**It was decided that split samples would be collected and analyzed by both CBL and the state labs (cost absorbed by CTDEP), to see if there were any differences.**



## **LONG ISLAND SOUND STUDY**

**The results of the split samples using the NPDES methods still showed inconsistencies with the historical data. CBL results were consistent with the historical data. The required low detection level was also achieved.**

**FY89 - All samples were sent to CBL, except for BOD; they were sent to NYSDOH.**

### **Lessons to be Learned:**

**First lesson to be learned from the LISS experience is that when EPA was asked by the two state labs what "approved" methods does EPA recommend for low level nutrient analyses, there was no answer to give them.**

**Second lesson to learn is there is also a need for checking the capability of any lab conducting marine and estuarine analyses. A series of Performance Evaluation (PE) samples, similar to the NPDES and drinking water**



## **LONG ISLAND SOUND STUDY**

**series, should be developed specifically for marine and estuarine waters.**

### **Conclusion:**

**EPA needs to compile and validate standard methods for low level nutrient, organic and metals analyses in marine and estuarine waters. PE samples should be developed to check analytical capabilities of labs using these methods.**

**There is a real need for this with the increasing number of near coastal waters and estuary programs being initiated every year.**



**Attachment F**  
**Massachusetts Bay**  
**Windsor Sung**



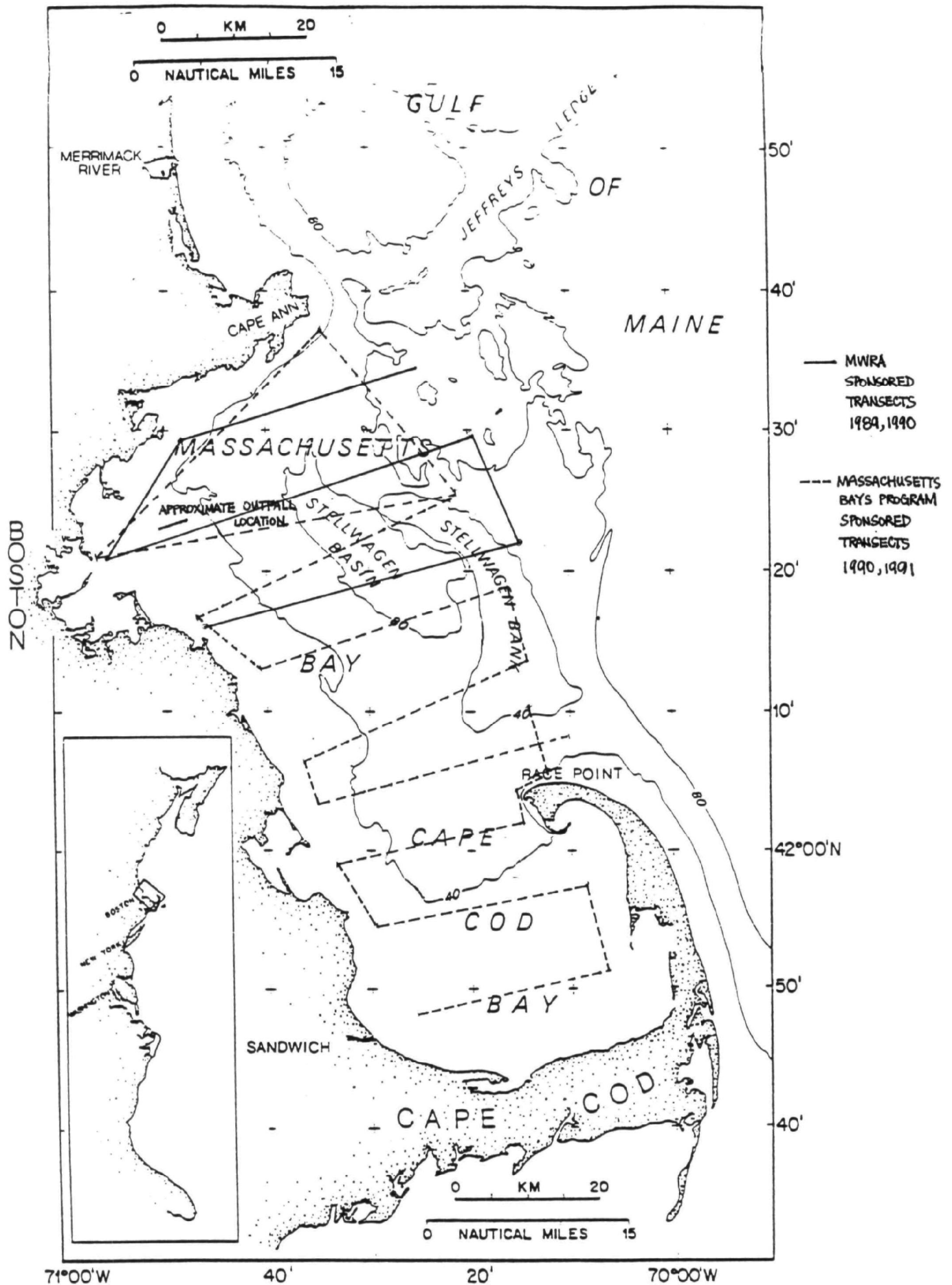


Figure 1: Massachusetts Bay is located on the southwestern end of the Gulf of Maine. Bathymetry is shown in meters.



**Attachment G**  
**Region IX Estuary and Marine Monitoring Programs**  
**Brian Melzian**





**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
OFFICE OF RESEARCH AND DEVELOPMENT**

**ENVIRONMENTAL RESEARCH LABORATORY  
SOUTH FERRY ROAD  
NARRAGANSETT RHODE ISLAND 02882**

**U.S. EPA ESTUARINE AND MARINE ANALYTICAL METHODS WORKSHOP**

**May 2 and 3, 1990  
Annapolis, Maryland**

**TITLE**

**EPA REGION IX's EXPERIENCE IN DEVELOPING AND IMPLEMENTING  
ESTUARINE AND MARINE MONITORING PROGRAMS**

**By**

**Brian D. Melzian, Ph.D.  
Regional Oceanographer  
Wetlands, Oceans and Estuaries Branch (W-7)  
Region IX  
San Francisco, California**



### ABSTRACT

Estuarine and marine monitoring programs are often required by EPA near sewage outfalls [e.g., 301(h) permits], at designated near coastal water disposal sites (e.g., sites used for disposal of drilling muds or dredged materials), at outer continental shelf (OCS) oil and gas facilities, and near outfalls from industries that have a National Pollutant Discharge Elimination System (NPDES) permit. Alone or after consultation with state agencies (e.g., California Regional Water Quality Control Boards) or federal agencies (e.g., NOAA, USFWS, COE, MMS), EPA is often required to design the monitoring programs found in the permits. In many cases, these programs require the collection of various physical, chemical, geological, and biological measurements. In addition, EPA is also required to give technical and scientific guidance during the implementation of the monitoring programs, and during the analysis and interpretations of the data and information collected. Examples of west coast 301(h), NPDES, and dredged material monitoring/sampling programs will be illustrated and discussed.



## OUTLINE

### A. EXAMPLE OF A 301(h) MONITORING PROGRAM:

- ° County Sanitation Districts of Orange County (CSDOC):
  - Largest 301(h) permitte in the country (e.g., about 240 MGD; 1.5 million dollars/year spent on monitoring).
- ° Water Column Sampling:
  - "Rosette" Sampler (discrete water samples and vertical profiles).
- ° Current Meter Moorings:
  - Electromagnetic Current Meters (e.g., Interocean® S4)
- ° Benthic Sampling (sediments and infauna):
  - 0.1 m<sup>2</sup> Modified "Double van Veen" grab sampler: used for sampling silt/clay and fine sandy sediments;
  - Infauna and sediment chemistry (EPA Priority Pollutants and 301(h) pesticides); and
  - Replication and statistical "power analyses" (benthic infauna).
- ° Demersal Fish and Macroinvertebrate Samping:
  - Marinovich 7.6 m (25 ft.) headrope otter trawl;
  - Community analyses; and
  - Bioaccumulation monitoring.
- ° Mussel (Mytilus californianus) Bioaccumulation Monitoring:
  - Priority pollutant analyses and growth measurements; and
  - Deployment and retrieval after one month of exposure at 40 meters water depth.
- ° Development and use of the 301(h) TECHNICAL SUPPORT AND GUIDANCE DOCUMENTS (see attached list of titles).

### B. HAWAII SUGARCANE MILLS MARINE ENVIRONMENTAL STUDY:

- ° Two Hilo-Hamakua coast sugarcane mills (i.e., Hamakua Sugar Company, Inc. and Hilo Coast Processing Company) requested that the NPDES effluent limitation guidelines for total suspended solids be waived because of economic hardship.
- ° As required by the U.S Congress, EPA formed a "Task Force" to evaluate pertinent factors relating to wastewater discharges from the sugarcane mills.



- Marine environmental study conducted in February of 1989.
- Remote sensing.
- Conversion of U.S. Coast Guard Cutter (CAPE CROSS) to an oceanographic vessel.
- Collection of Discrete Water Samples (Niskin® 10 Liter water bottle) for chemical analyses (i.e., nutrients, metals, pesticides).
- Preservation, storage, and shipment of water samples (QA/QC concerns).
- Collection of sediment samples by Scuba Divers.
- Scuba diver transect surveys of coral communities.
- ROV surveys with PHANTOM® IV.
- Results.

C. PORT OF OAKLAND DREDGING PROJECT:

- Oakland Inner Harbor sampling stations:
  - Turning Basin (Schnitzer Steel and Todd Shipyard).
- Collection and shipment of sediment samples:
  - Gravity cores (clay layer problems); and
  - Chemical analyses and toxicity testing.
- Production of suspended particulate and solid phases for toxicity testing.
- Suspended Particulate Phase Toxicity Tests:
  - Oyster Larvae (48 hours: development and mortality);
  - Mysid shrimp (96 hours: mortality); and
  - Speckled Sandabs (96 hours: mortality).
- Solid Phase Toxicity Tests:
  - Clams (10 days: mortality and bioaccumulation);
  - Polychaete worms (10 days: mortality); and
  - Amphipods (10 days: mortality);
    - Rhepoxynius abronius; and
    - Ampelisca abdita.
- Results (sediment chemistry and toxicity).
- EPA ENFORCEMENT ACTIONS.



**D. SOME PROBLEMS WITH THE DESIGN, IMPLEMENTATION, AND ENFORCEMENT OF ESTUARINE/MARINE MONITORING PROGRAMS:**

- ° Lack of detailed knowledge of relevant federal, state, and local statutory regulations and requirements;
- ° Major differences in interpretation of federal and state regulations (e.g., ocean dumping regulations);
- ° Not enough sharing of expertise between federal, state, and local agencies;
- ° Economical and "to the extent practicable" limitations;
- ° Scientific unknowns and uncertainties (e.g., how is "unreasonable degradation" measured and quantified?); and
- ° Lack of flexibility in changing programs after they have been implemented.

**E. SOME RECENT POSITIVE DEVELOPMENTS:**

- ° Production of 301(h) Technical Support and Guidance Documents:
  - Reviewed by EPA's national 301(h) Task Force; and
  - Contain much state-of-the-art information and guidance.
- ° Development of Puget Sound Protocols:
  - State of the art guidance and recommendations.
- ° Development of the new dredged material testing document (i.e., "Green Book");
- ° Development of protocols to support NOAA's national Status and Trends program (sediments and tissues); and
- ° Development and refinement of "indicators" by EPA's Ecological Monitoring and Assessment Program's (EMAP) Near Coastal Demonstration Project (1990).



## **301(h) TECHNICAL SUPPORT AND GUIDANCE DOCUMENTS**

Prepared by Tetra Tech, Inc.

Prepared for:  
United States Environmental Protection Agency  
Office of Marine and Estuarine Protection  
Marine Operations Division

March 1989

### **Monitoring Program Development, Implementation and Evaluation**

- Design of 301(h) Monitoring Programs for Municipal Wastewater Discharges to Marine Waters. 1982, EPA 430/9-82-010.
- Ecological Impacts of Sewage Discharges on Coral Reef Communities. 1983, EPA 430/9-83-010.
- Initial Mixing Characteristics of Municipal Ocean Discharges. 1985, EPA 600/3-85/073a
- Summary of U.S. EPA-Approved Methods, Standard Methods, and Other Guidance for 301(h) Monitoring Variables. 1985, Tetra Tech, Inc., Final Report, EPA Contract No. 68-01-6938.
- Analytical Methods for U.S. EPA Priority Pollutants and 301(h) Pesticides in Estuarine and Marine Sediments. 1986, Tetra Tech, Inc., Final Report, EPA Contract No. 68-01-6938.
- Evaluation of Survey Positioning Methods for Nearshore Marine and Estuarine Waters. 1987, EPA 430/9-86-003
- Framework for 301(h) Monitoring Programs. 1987, EPA 430/09-88-002.
- Guidance for Conducting Fish Liver Histopathology Studies during 301(h) Monitoring. 1987, EPA 430/9-87-004.
- Quality Assurance and Quality Control (QA/QC) for 301(h) Monitoring Programs: Guidance on Field and Laboratory Methods. 1987, EPA 430/9-86-004.
- Recommended Biological Indices for 301(h) Monitoring Programs. 1987, EPA 430/9-86-002.
- A Simplified Deposition Calculation (DECAL) for Organic Accumulation Near Marine Outfalls. 1987, EPA 430/09-88-001
- Technical Support Document for ODES Statistical Power Analysis. 1987, EPA 430/9-87-005.
- Evaluation of Differential Loran-C for Positioning in Nearshore Marine and Estuarine Waters. 1988, Tetra Tech., Inc., Draft Report, EPA Contract No. 68-C8-0001.



## **301(h) TECHNICAL SUPPORT AND GUIDANCE DOCUMENTS (Continued)**

### **Bioaccumulation Monitoring Guidance Series**

- **Bioaccumulation Monitoring Guidance: 1) Estimating the Potential for Bioaccumulation of Priority Pollutants and 301(h) Pesticides Into Marine and Estuarine Waters.** 1985, Tetra Tech, Inc., Final Report, EPA Contract No. 68-01-6938.
- **Bioaccumulation Monitoring Guidance: 2) Selection of Target Species and Review of Available Bioaccumulation Data.** 1985, EPA 430/9-86-005.
- **Bioaccumulation Monitoring Guidance: 2) Selection of Target Species and Review of Available Bioaccumulation Data, Appendix.** 1985, EPA 430/9-86-006.
- **Bioaccumulation Monitoring Guidance: 3) Recommended Analytical Detection Limits.** 1985, Tetra Tech, Inc., Final Report, EPA Contract No. 68-01-6938.
- **Bioaccumulation Monitoring Guidance: 4) Analytical Methods for U.S. EPA Priority Pollutants and 301(h) Pesticides in Tissue from Estuarine and Marine Organisms.** 1986, Tetra Tech, Inc., Final Report, EPA Contract No. 68-01-6938.
- **Bioaccumulation Monitoring Guidance: 5) Strategies for Sample Replication and Compositing.** 1987, EPA 430/9-87-003.

### **Permit Application and Evaluation**

- **Revised Section 301(h) Technical Support Document.** 1982, EPA 430/9-82-011.
- **301(h) Permit Reissuance Guidance Document for Small Dischargers.** 1988, Tetra Tech, Inc., Draft Final Report, EPA Contract No. 68-01-6922.

### **Data Management**

- **Ocean Data Evaluation System (ODES) Data Submissions Manual.** 1988, Tetra Tech, Inc. and American Management Systems, Final Report, EPA Contract No. 68-01-6938.
- **Ocean Data Evaluation System (ODES): User Guide.** 1988, Tetra Tech, Inc. and American Management Systems, Final Report, EPA Contract No. 68-01-6938.
- **Ocean Data Evaluation System (ODES): Data Briefs**
  1. Use of ODES Reference Information
  2. Analysis of Influent/Effluent Data
  3. Use of Numerical Classification Tools
  4. Use of Graphic and Mapping Tools
  5. Downloading ODES Graphics for Enhancement
  6. Use of the Analysis of Variance Tool

1988, Tetra Tech, Inc. and American Management Systems, Final Report, EPA Contract No. 68-01-6938.



**Attachment H**  
**Harbor Estuary Program**  
**Eric Stern**





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The New York-New Jersey Harbor . . . Estuary Program

**Goal: To develop a management plan for the Hudson/Raritan Estuary by 1994 that will restore and/or maintain an ecosystem that supports an optimal diversity of living resources on a sustained basis.**

**Program Objectives:**

- Preserve and restore ecologically important habitat.**
- Attain water quality that fully supports bathing and other recreational uses of the Estuary.**
- Ensure that fish and shellfish in the Estuary are safe for unrestricted human consumption.**
- Restore and enhance the aesthetic quality of the Estuary.**
- Manage and balance the competing uses of the Estuary to improve environmental quality.**
- Manage pollutants within the Estuary so that they do not contribute to use impairments outside the Estuary.**



# **NEW YORK BIGHT RESTORATION PLAN**

**Objective: Plan will place priority on control of those pollutants most directly associated with water use impairments.**

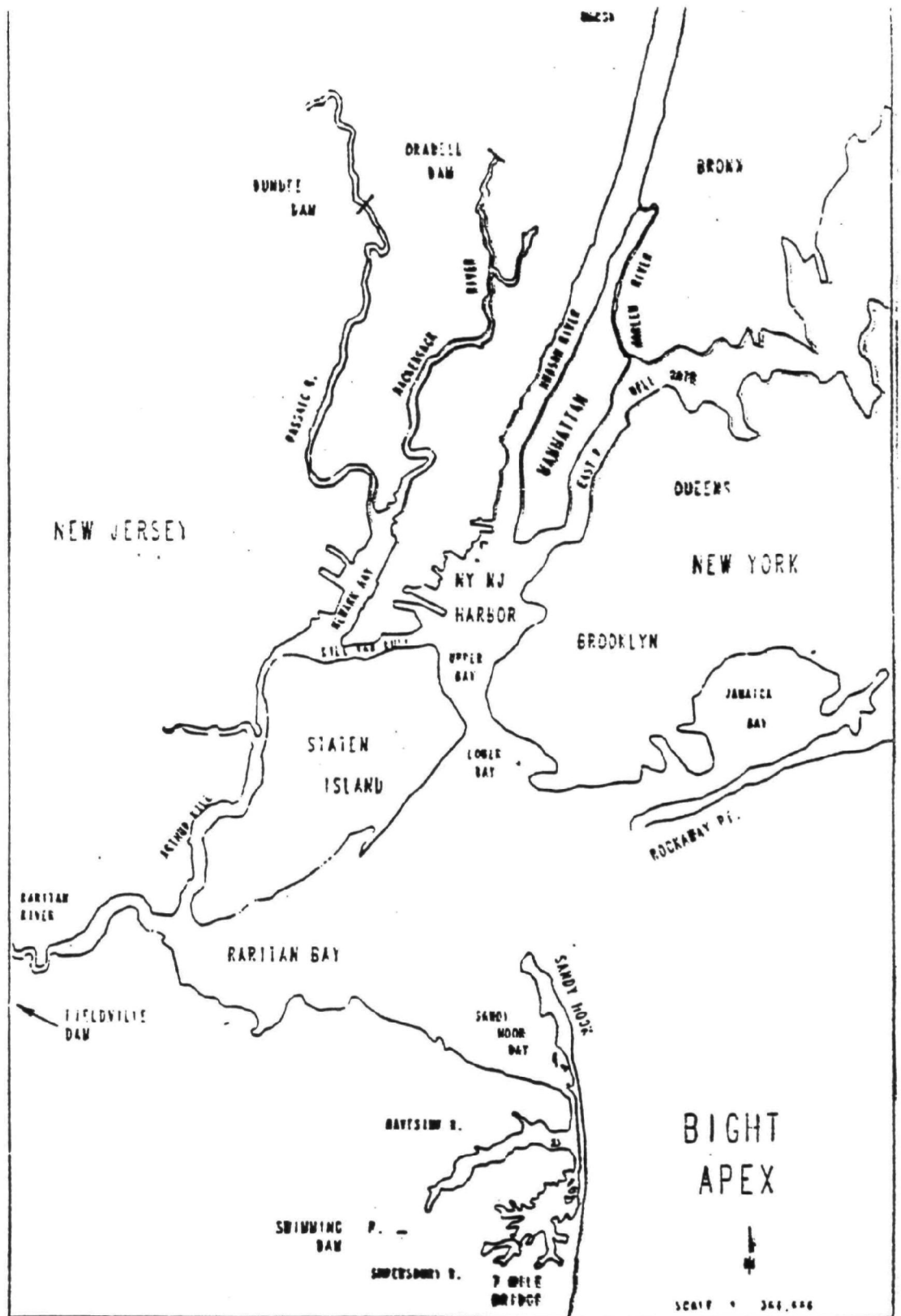
**Will provide an ecosystem perspective within which more detailed site-specific solutions can be developed.**

- A. BEACH CLOSURES**
- B. UNSAFE SEA FOODS**
- C. DAMAGE TO COMMERCIAL AND RECREATIONAL FISHERIES**
- D. DAMAGE TO MARINE MAMMALS, BIRDS and REPTILES**
- E. EFFECT ON COMMERCIAL NAVIGATION**



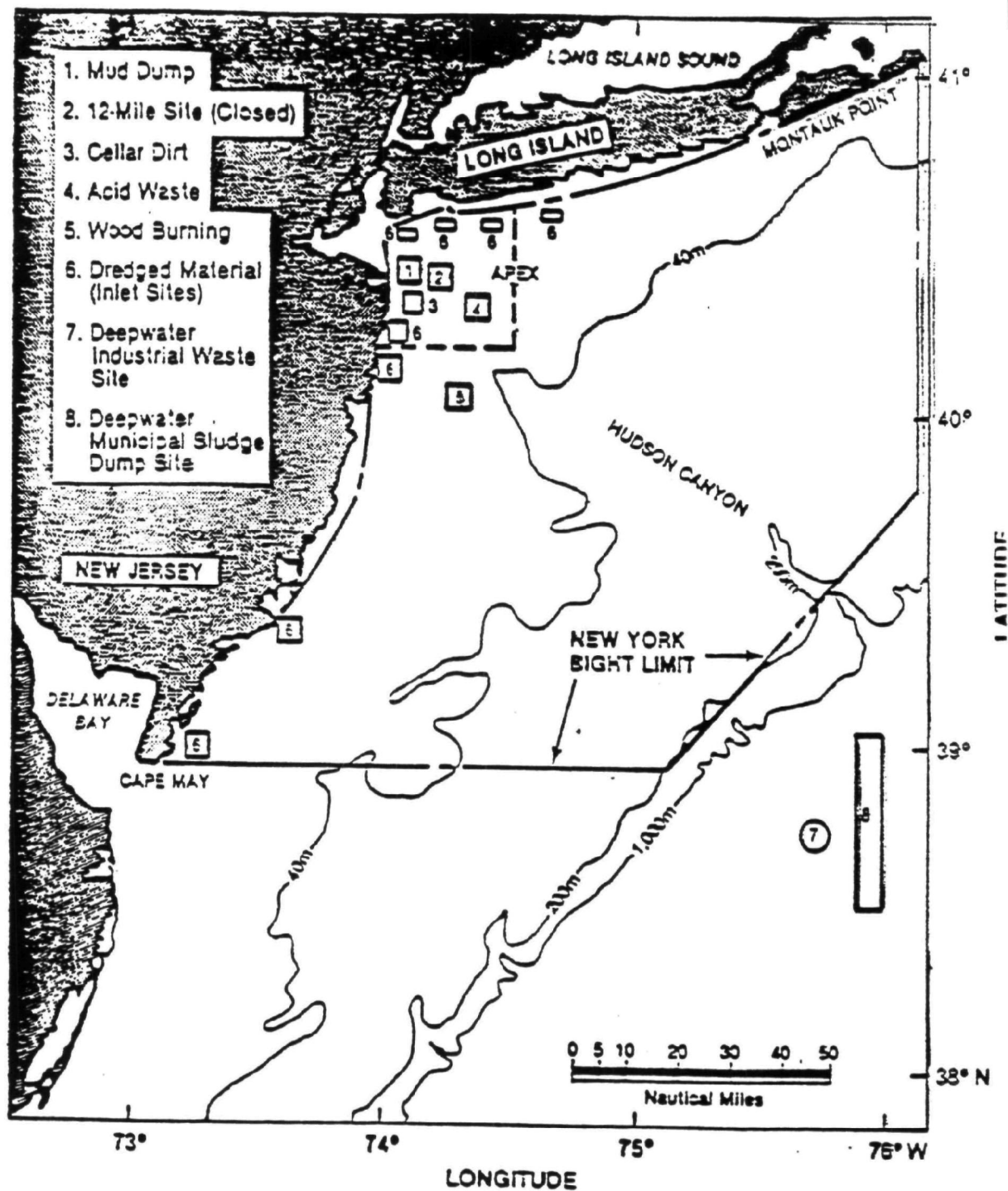






CORE AREA OF THE NY-NJ HARBOR ESTUARY PROGRAM





NEW YORK BIGHT OCEAN DISPOSAL SITES



# **RELATIONSHIP BETWEEN NYBRP and NY-NJ HEP**

**A. The NYBRP defines the necessary reduction of pollutants from each input zone to help eliminate priority use impairments on the Bight.**

**B. NY-NJ HEP will have the responsibility for developing the plan to meet those requirements.**

- Technology**
- Management Practices**
- Costs**
- Developing programs needed to control pollutant inputs within the Estuary**



**Present: Studies are underway involving  
SYNTHESIS OF EXISTING DATA  
THAT WILL CHARACTERIZE THE:**

- 1. spatial/temporal trends of  
estuarine resources**
- 2. evaluate the nature/degree/severity  
of pollution and other anthropogenic  
influences on the Estuary**



**Specific Efforts: FY 89:**

- 1. Inventory/Categorization of Ambient Toxicants in Water, Sediments and Biota .  
(NYU Environmental Lab, Tuxedo, NY)**
- 2. Ambient Water Toxicity Testing to Characterize Toxic Effects on Early-Life Stages throughout the Estuary.  
(NJ Medicine and Dentistry, Newark, NJ)**
- 3. Analysis of the Distributions of DO, Nutrients and Organic Carbon.  
(University of Rhode Island)**
- 4. Inventory of Pollutant Loadings for Source Categories.  
(HydroQual, Inc., Mahwah, NJ)**
- 5. Effects of Toxicants on Distribution of Benthic Organisms.  
(Ramapo College, Ramapo, NJ)**
- 6. Inventory of Habitat and Wildlife Population.  
(University of Connecticut)**
- 7. Analysis of Fish Distribution in Relation to Habitat and Toxicants.  
(SUNY-Stony Brook)**



**Specific Efforts: FY 89: (continued)**

**8. Effects of Toxicants on Marine  
Birds.  
(Rutgers University, New Brunswick)**

**9. Inventory of Pathogen Contamination.  
(NJ Department of Environmental  
Protection)**



**Direction/Studies Planned for FY 90.**

**1. Focus: Collection of new data for management.**

**A. Develop and Implement a Long-Term  
Toxicant Effects Biomonitoring Program  
for Indicators Studied in FY 89.**

- 1. reproductive success of selected  
marine birds**
- 2. toxic effects on benthic invertebrates**
- 3. effects on fish and shellfish,  
particularly sensitive life stages  
and resource species**



**Direction/Studies Planned for FY 90. (continued)**

**B. Continue Assessment of the Extent of Early-Life Toxicant Induced Impacts in Sensitive Species.**

**Objectives:**

- 1. quantify the extent of toxicity of ambient waters**
- 2. provide ambient baseline data for load reductions by whole effluent or by numerical standards and/or criteria**
- 3. support development of whole effluent toxicity testing protocols by NY and NJ**



**Direction Studies Planned for FY 90. (continued)**

**C. Develop a Monitoring Program  
Wasteload Allocations for  
Toxics and Conventional Pollutants.**

**Monitoring Objectives Include:**

- sampling of ambient water discharges

(CSO's and stormwater and atmospheric deposition)

**D. Monitoring for conventional pollutants  
as needed to Model carbon and nutrient  
cycling relative to Dissolved oxygen  
in the NY-NJ Harbor/Bight/LIS Complex.**



**PRELIMINARY TOXICS CATEGORIZATION**  
**NEW YORK EIGHT BASELINE SUMMARY**  
**OF PRIORITY TOXICS OF CONCERN**

TABLE 2

<b><u>TOXIC</u></b>	<b><u>CATEGORIZATION</u></b>		
	<b><u>F.T.</u></b>	<b><u>W.O.</u></b>	<b><u>Overall</u></b>
PCBs (total)	I.A.	I.A.	I.A.
Dioxin (2,3,7,8-TCDD)	I.A.	II.A.1.	I.A.
Mercury	I.A.	I.B.	I.A.
-----			
Chlordane	I.B.	I.B.	I.B.
DDT + DDD, DDE	I.B.	I.B.	I.B.
Dieldrin	I.B.	I.B.	I.B.
Aldrin	I.B.	I.B.	I.B.
Heptachlor + Hept. Epoxide	I.C.	I.B.	I.B.
Hexachlorobenzene	I.B.	I.C.	I.B.
Hexachlorocyclohexane (BHC)			
a-alpha	I.B.	I.C.	I.B.
r-gamma (Lindane)	I.B.	I.B.	I.B.
PAHs			
LMW: Anthracene	I.B.	I.B.	I.B.
Phenanthrene	I.B.	I.C.	I.B.
HMW: Benzo(a)anthracene	I.B.	I.C.	I.B.
Benzo(a)pyrene	I.B.	I.B.	I.B.
Chrysene	I.B.	I.B.	I.B.
Fluoranthene	I.B.	I.C.	I.B.
Pyrene	I.B.	I.C.	I.B.
Arsenic	I.B.	I.B.	I.B.
Cadmium	I.E.	I.B.	I.B.
Copper	I.E.	I.B.	I.B.
Silver	I.B.	I.C.	I.B.
Zinc	I.E.	I.B.	I.B.
-----			
Endrin	I.C.	I.C.	I.C.
Hexachlorocyclohexane (BHC)			
b-beta	II.A.2	I.C.	I.C.
Mirex	I.C.	I.C.	I.C.
Cl-produced Oxidants	-	I.C.	I.C.
Total Organics	-	I.C.	I.C.
Antimony	I.C.	I.C.	I.C.
Chromium (Hexa- + Trivalent)	I.C.	I.C.	I.C.
Nickel	I.C.	I.C.	I.C.
Selenium	I.C.	II.A.1	I.C.
-----			
No toxics appear on Category ID in the Preliminary Categorization			
-----			
Bis (2-Chloroethoxy) Methane	II.A.1	I.E.	I.E.
Chloronaphthalene	II.A.1	I.E.	I.E.
Dibenzothiophene	I.E.	I.E.	I.E.



TABLE II (cont.)

<u>TOXIC</u>	<u>CATEGORIZATION</u>		
	<u>F.T.</u>	<u>W.O.</u>	<u>Overall</u>
Dibromochloropropane	I.E.	I.E.	I.E.
2,6-Dinitrotoluene	II.A.1	I.E.	I.E.
1,2-Transdichloroethylene	II.A.1	I.E.	I.E.
TCDF	I.E.	II.A.2.	I.E.
Trans-Nonachlor	I.E.	I.E.	I.E.
PAHs			
LMW: Biphenyl	I.E.	I.E.	I.E.
1-Methylnaphthalene	I.E.	I.E.	I.E.
2-Methylnaphthalene	I.E.	I.E.	I.E.
Methylphenanthrene	I.E.	I.E.	I.E.
Naphthalene	I.E.	I.E.	I.E.
HMW: Benzo(e)pyrene	I.E.	I.E.	I.E.
Perylene	I.E.	I.E.	I.E.
Oil and Grease	I.E.	I.E.	I.E.
Petroleum HC - Aromatic	I.E.	I.E.	I.E.
Aliphatic	I.E.	I.E.	I.E.
Aluminum	II.A.1	I.E.	I.E.
Chloride	II.A.1	I.E.	I.E.
Cobalt	I.E.	II.A.2	I.E.
Fluoride	II.A.2	I.E.	I.E.
Iron	I.E.	I.C.	I.E.
Lead	I.E.	I.C.	I.E.
Manganese	I.E.	II.A.1	I.E.
Magnesium	I.E.	II.A.1	I.E.
Potassium	I.E.	II.A.1	I.E.
Plutonium	II.A.1	I.E.	I.E.
Radium	II.B.	I.E.	I.E.
Rubidium	II.B.	I.E.	I.E.
Sodium	I.E.	II.A.2	I.E.
Thorium	II.B.	I.E.	I.E.
Tin	I.E.	II.A.2	I.E.
Vanadium	II.B.	I.E.	I.E.

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F.T. CAT. = Fish Tissue Categorization  
W.Q. CAT. = Water Quality Categorization  
Category I.A. = Ambient Data Exceeds Enforceable Standard  
Category I.B. = Ambient Data Exceeds More Stringent But  
Unenforceable Criteria  
Category I.C. = Ambient Data Is Below Most Stringent Criteria  
Category I.E. = There Is No Criteria Available For Ambient Data  
Category II.A.1. = No Ambient Data Available, Yet Evidence of  
Input Into the New York Bight Proper  
Category II.A.2. = No Ambient Data Available, Yet Evidence of  
Input the NY-NJ Harbor and Coastal Tributaries  
Category II.B. = No Ambient Data Available, No Evidence of Input  
LMW = Low Molecular Weight Polycyclic Aromatic Hydrocarbon (PAH)  
HMW = High Molecular Weight PAH



## **PROGRAM NEEDS:**

- 1. validation of analytical methods for metals and PAH's (priority pollutants, Dioxins ) in marine waters, sediment and tissue.**
- 2. How reliable is "old" data and methods for categorization evaluation? ie: [Hg]**
- 3. Appropriate bioassay consensus?  
ie: show ambient water toxicity**
- 4. Further development of Water Quality and Fish Tissue Standards/Criteria  
Cd, Cu, Pb, Zn**