

THE LONG ISLAND SOUND STUDY

A MONITORING
PLAN FOR LONG
ISLAND SOUND

May 1994

**A MONITORING PROGRAM
FOR
LONG ISLAND SOUND**

Prepared By

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For

Tetrattech, Inc.

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INTRODUCTION

The two primary goals in designing this monitoring program were (1) to measure the effectiveness of management actions and programs implemented under the Long Island Sound Study's Comprehensive Conservation and Management Plan (CCMP); and (2) to provide essential information that can be used to redirect and refocus the management plan. To meet these goals a monitoring program for Long Island Sound must have the following characteristics:

- It must be a program with clear goals and objectives that are articulated as questions that are meaningful to the public and that provide the basis for scientific investigation.
- It must be a minimalist program, one that includes only what is needed so that the likelihood of being sustained during difficult budget times will be enhanced.
- It must be a program that takes full advantage of existing monitoring programs.
- It must be a program that generates a long-term commitment, one designed to answer key questions and to test key hypotheses.
- It must be a program that takes full advantage of new technologies and methodologies as they become available, but does everything possible to make new observations compatible with historical data.

- It must be a program that not only collects data, but pays as much attention and devotes significant resources to their management, synthesis, analysis, integration, and transformation into information.
- It must be a program that develops and sustains a rich array of informational products that are carefully tailored to the special needs and interests of different constituencies.

This document assumes some familiarity with the Long Island Sound Study's Comprehensive Conservation and Management Plan. Readers should refer to that document for detail on the program and for the rationale behind the areas of focus. The proposed LIS Monitoring Program is built around a small number of program elements. The major elements are:

- Nutrient Enrichment/Hypoxia
- Toxic Contaminants
- Pathogens
- Living Marine Resources
- Citizens' Monitoring
- Data and Information Management

The monitoring activities that are essential to fulfilling the goals for each program element are presented. These essential monitoring activities

are referred to as the "minimalist" program. A minimalist program is defined as the minimum level of additional effort required to produce the information needed to answer the relevant questions. Desirable additions to the minimalist program within each element are also presented.

This plan focuses primarily on environmental monitoring necessary to detect and chronicle the responses of the Sound to management actions. However, because of the natural variability of the Sound and the time it may take for expected improvements to be observed, the monitoring plan also identifies strategies of the management plan that should be tracked to provide early indications of program success. Programmatic monitoring is needed to track, on a regular basis, the status and progress of management plan implementation. This first level of information provides the basis for expected changes in environmental measurements, such as reductions in pollutant loading or habitat degradation (level two information) that will lead to improvements in water and habitat quality (level three information). Ultimately, the success of the management program will be judged by indications of improved health and abundance of living resources and increased uses and value of the Sound's resources (level four information). These four levels can be expressed as a hierarchy of indicators for assessing program success (See Figures 1 and 2).

The Long Island Sound Study management plan contains recommendations for continued programmatic and administrative oversight that would necessarily be part of any overall assessment of the effectiveness of plan implementation. The management plan's "action tables", which indicate the responsible parties and time frames for each

HIERARCHY OF INDICATORS

This flow chart is the preferred method for measuring environmental change

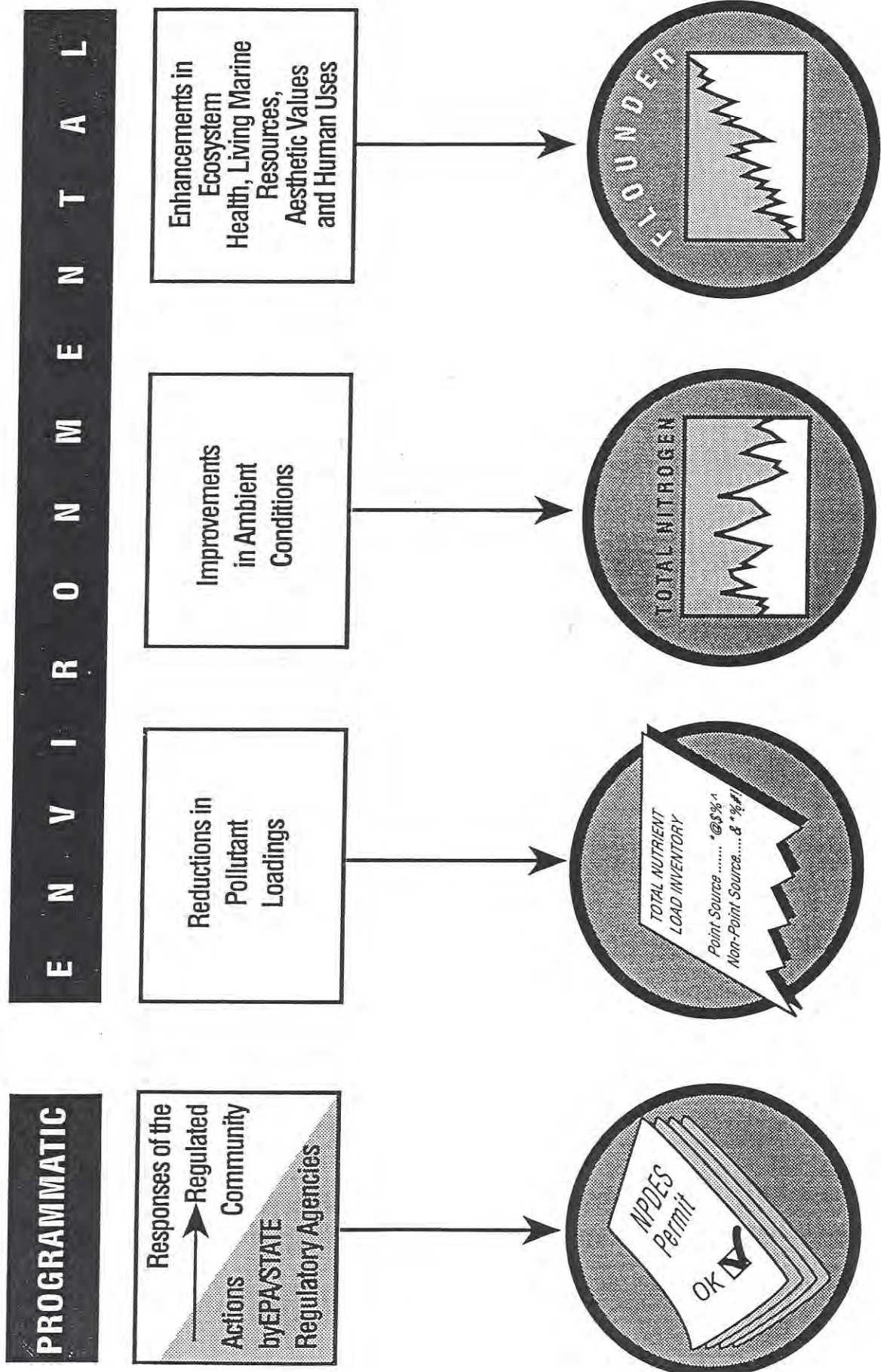


FIGURE 1

How the "Hierarchy of Indicators and "Track" System Come Together

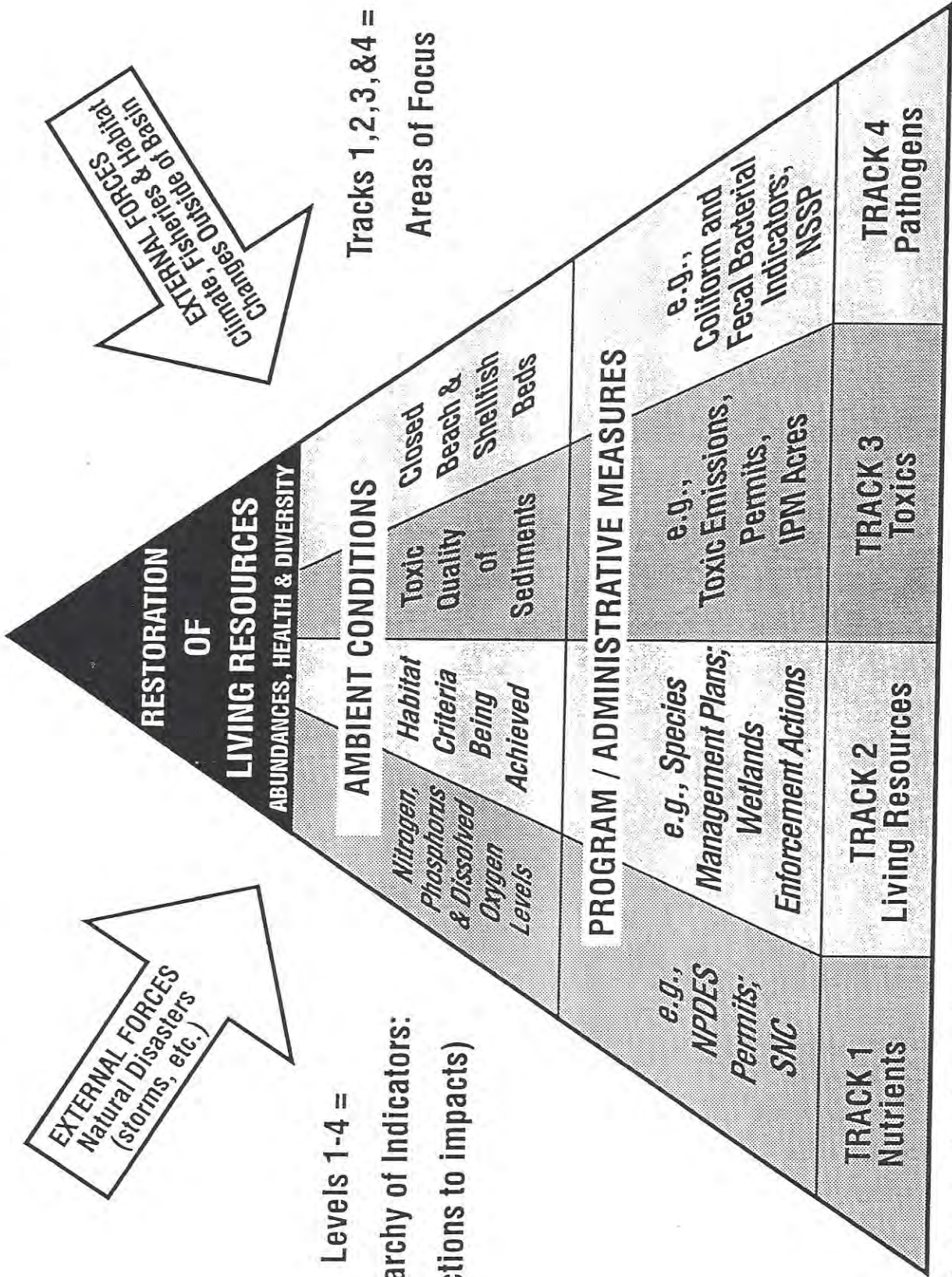


FIGURE 2

action, will be used to track and report on attainment of programmatic goals. The Management Conference will combine information on programmatic progress with indicators of environmental change to overall evaluate the effectiveness of management actions and the need to adjust management approaches.

The monitoring program described in the following pages was developed through a process that included commissioning of a series of white papers by experts; review of those papers by other experts; and extensive consultation, including three workshops. The Long Island Sound Study supplemented information from the workshops to make the monitoring plan consistent with the goals of the program and the Comprehensive Conservation and Management Plan. The proposed monitoring plan is summarized in Tables presented in Appendix A. We believe the proposed LIS Monitoring Program has the characteristics identified above. Titles of the white papers and their authors are listed in Appendix B. Copies are available from the Marine Sciences Research Center upon request. Workshops participants are listed in Appendix C. The agendas for the three workshops are included in Appendix D.