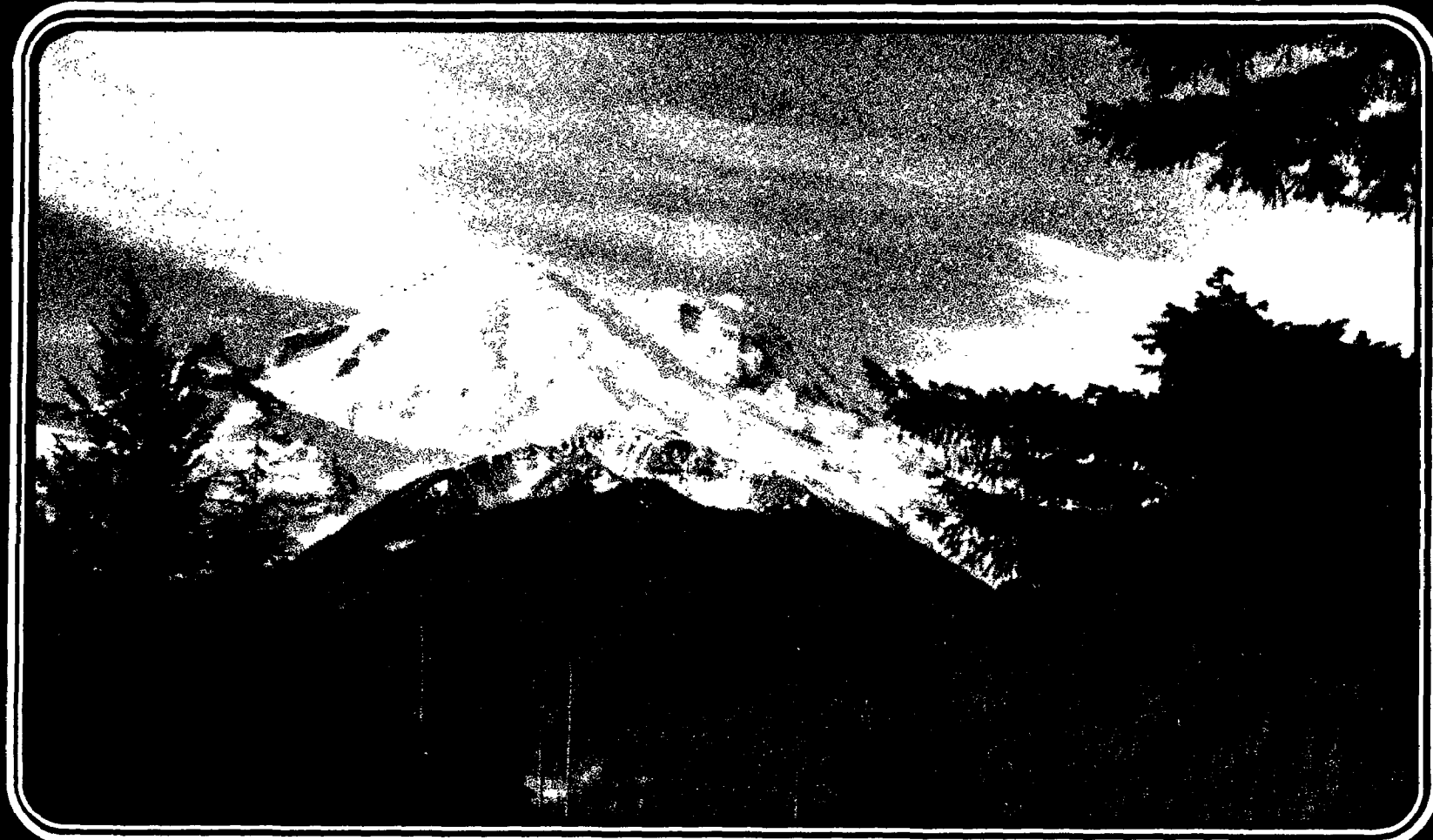


NATIONAL ENVIRONMENTAL QUALITY INDICATORS

HOW TO IMPROVE THE WAY EPA MEASURES AND REPORTS THE STATE OF THE ENVIRONMENT AND PROGRESS IN IMPROVING ENVIRONMENTAL QUALITY



**APRIL 1977 OFFICE OF THE DEPUTY REGIONAL ADMINISTRATOR, REGION X,
U.S. ENVIRONMENTAL PROTECTION AGENCY, SEATTLE, WASHINGTON**

NATIONAL ENVIRONMENTAL QUALITY INDICATORS

HOW TO IMPROVE THE WAY EPA REPORTS ENVIRONMENTAL
QUALITY TO THE PUBLIC

APRIL 1977

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EXECUTIVE SUMMARY

PROBLEM ADDRESSED BY THE REPORT: EPA has been increasingly concerned in recent years in finding better ways of describing the ambient quality of the environment. The National Academy of Sciences and others have challenged EPA and CEQ to provide more useful indicators of environmental quality. These indicators are needed for better informing the public and elected officials and to allow improved evaluation of the effect on the environment of National policies and programs. Regional, state and local governmental entities need similar information in order to effectively explain problems and programs to the public and special interest groups.

Two principal problems have plagued the development of a national system of indicators:

- (1) There is insufficient data to rigorously measure the ambient environmental quality at a precise level, which is consistent throughout the Nation.
- (2) It has not been possible to reach an agreement on which of the many technical algorithms is most appropriate for producing indicators of water quality, air quality and for other environmental programs.

HYPOTHESIS UNDERLYING THE PROJECT: The project was conducted under the hypothesis that complete data bases do not exist and there are no uniformly acceptable algorithms. However, there is available knowledge on the state-of-the-environment at the regional, state and local level which is not being used. It was further

hypothesized that this knowledge could be aggregated and displayed in a report which would be informative to the public and elected officials and which could improve the evaluation of the effectiveness on EPA's programs. Thus, the project was conducted under the hypothesis that a national system of environmental indicators (a "national environmental profile") could be best achieved by carefully aggregating local, state and regional perceptions of environmental quality rather than by attempting to construct and apply uniform analytical techniques to an inadequate data base. This hypothesis in no way was intended to diminish the ultimate importance of either data bases or analytical techniques for measuring environmental quality but was intended to face current realities. Where data are adequate technical algorithms should be used to substitute for or verify professional judgments.

PROCESS: The project was based on initial reports devising systems of environmental indicators in Regions I, VIII and X and research by the Office of Planning and Evaluations in Headquarters. Based on this initial work and with the collaboration of all EPA Regional offices, Region X, over the course of one year, drafted and refined a series of graphical displays. In January 1977, a set of 43 of these displays were circulated for comment to all Regional Offices and interested Headquarters personnel. Approximately 20 of the displays were selected as feasible to produce at the regional or state level and useful at the national level as well as Regional and state levels for purposes of producing a national environmental quality profile in the near future.

These displays rely heavily on color to convey information and to emphasize issues. Specifications for the preparation of the displays along with comments of all reviewers are presented in this report. The displays cover river, marine, lake and drinking water, air, pesticides, noise, radiation and solid waste.

FINDINGS AND CONCLUSIONS: It was the consensus of the EPA regional offices and interested headquarters personnel that the graphical displays, with some modifications, would improve the ability of EPA to describe the quality of the environment. Some regions believed that not only would the profiles produce useful public information, but that the same information could be used to improve the measurement of performance as required by the Agency's MBO system. With technical support, most regions should be able to develop the proposed indicators by 1979.

RECOMMENDATIONS: The report recommends that work be continued at the regional and national level to produce a profile using the displays described in the report and that:

- (1) The development of the information needed for these displays be made an element of the MBO outputs for all S&A Divisions in 1979.
- (2) The organizational approach used in the past be continued, i.e., coordination by Region X in close collaboration with all Regional Offices and the Office of Planning and Evaluation.
- (3) Region X conduct a pilot study on the feasibility of using the information in

the profile to improve MBO output measures and to illustrate the impact of policies and allocation of resources.

- (4) \$270,000 be allocated for technical support for the project for FY 1978 for technical support of the Regional Officers.

PREFACE AND HOW THIS REPORT IS ORGANIZED

The purpose of this report is to present the findings and conclusions obtained from a year-long study of the feasibility of developing a National Environmental Quality Profile based, in part, on graphical displays developed in the Regional Offices of EPA.

This report was prepared by Anthony Mason and Richard Bauer of the Region X Office. The project was directed by L. Edwin Coate. Science Applications, Inc. provided consultative assistance. William Garetz of the Program Evaluation Division of OPE assisted in the design and implementation of the project, and coordinated Headquarters reviews. Guidance and important contributions were made by all Regional Offices, Headquarters, and interested persons in several states.

The report is organized into two major sections. Section 1 provides background information on events leading to the project (Section 1.1), and findings and recommendations (Section 1.2). Section 1.3 shows examples of the graphical displays of national environmental quality thought to be relatively feasible and useful in the construction of a National

Environmental Quality Profile in the near future. Also included in Section 1.3 is a synopsis of comments and recommendations made by various interested persons in the Regional and Headquarters offices.

The comments made by Regional and Headquarters personnel were in response to a set of 43 graphical displays and specifications for their preparation that were circulated by Region X in January, 1977, in a report entitled Draft Displays and Specifications for a National Environmental Quality Profile.

These January 1977, materials in their entirety comprise Section 2 of this document. In addition, all comments received on the January report are included in Section 2.

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1.1 BACKGROUND

In 1974, both EPA Headquarters and several Regional Offices initiated efforts to develop improved environmental quality measures.

The Headquarter's effort was conducted by the Program Evaluation Division of OPE. The objective of this project was to identify a set of measures of environmental quality that would provide a better framework for internal program evaluation, an improved basis for decision making by the Administrator, and a more solid basis for explaining to the public and Congress what the national investment in pollution control is buying.

The work initiated independently in Region X in 1974 had similar overall objectives. In Region X, however, the immediate goal was to develop an "environmental profile" for the Northwest for public information purposes. This profile was to include measures of air and water quality as well as descriptions of other environmental issues such as radiation, noise, solid waste disposal, pesticides, drinking water, land use, and a variety of miscellaneous topics of interest to the public and elected officials of the Northwest.

By mid-1975, both Region X and the Program Evaluation Division of the Office of Planning and Evaluation in Headquarters had reached the end of the first phase of their efforts. The results of the Program Evaluation Division work were published in a document entitled Analysis and Applications of Environmental Quality Indicators. The report made important contributions for better understanding the problems of establishing environmental measures. By relating a hierarchy of types of measures against a hierarchy of EPA goals and objectives, it clarified the role that various types of indicators can play in EPA's MBO and program evaluation systems as well as clarifying crucial distinctions between types of measures.

Region X had, by mid-1975, completed a draft "environmental profile" for the Northwest, which provided indices related to water quality, air quality, and solid waste disposal, and provided graphical characterizations of the issues and problems associated with radiation, pesticides, noise, land use, and some miscellaneous regional concerns. The document was circulated to individuals and groups in the Northwest for

comment, was revised to reflect these suggestions, and was published in 1976 as a comprehensive overview of environmental quality in the Northwest. Color graphics were extensively used in this document.

Also by mid-1975, several other Regions had undertaken efforts to construct profiles or measures of environmental quality. In August of 1975, Region I published Environmental Quality in New England, which addressed four major areas of environmental concern for the New England area: air quality, water quality, drinking water quality, and solid waste management. Projects were also underway in Regions VII and VIII, with Region VIII publishing color graphics illustrating the water quality of its principal streams and rivers. Work was being performed by the National Academy of Sciences, the National Wildlife Federation, the National Sanitation Foundation, the Council for Environmental Quality, and others.

Currently there is a clear need at the National level for improved ways of concisely describing the state-of-the-environment. Moreover, scores of state and local governments critically need improved measures of environmental quality.

Even though the issues and specific needs of users differ from locality to locality and there are differences between local and national governmental entities, the underlying concern is the same everywhere, viz, the need for improved ways of illustrating and explaining the status of the environment and the impact of programs intended to improve the quality of the environment.

Principal Hypothesis Underlying the Project

Within EPA, environmental quality indicators are needed at two levels: At the Headquarters level they are needed to assist in broad evaluation and for communicating with Congress and the public. At the Regional level they are needed for similar purposes, but with quite different audiences. Between Regions there is widely differing emphasis on issues, and differing perceptions as to the utility or meaningfulness of information. The ideal would be to have a fixed set of indices or measures that simultaneously satisfy both national, Regional and local needs. However, differing environmental priorities, data availability, and analytical preferences, make it unlikely that a fixed set of indices may be constructed and applied effectively in each of the Regions and, simultaneously, at the national level.

This does not mean, however, that a national "system" of measures cannot be constructed. While long-term research is proceeding on the "ultimate indicators" as recommended in the 1975 report of the Program Evaluation Division, there is a near-term approach which can provide an improved set of environmental quality measures for use at the national level and simultaneously help the Regions and local government.

This approach is based on the idea that the most practical way of realizing a national system is to create it as an aggregation of systems that are realizable and meaningful at the State and Regional level. In other words, one first starts with a determination of what is feasible and useful at the local and Regional level. With this information in hand one next deduces what can be synthesized for use at the national level. Stated differently, the national system would be constructed from an aggregation of indices and measures that are feasible and useful at the state and Regional level.

While this approach does not guarantee that a perfect national system can be constructed, it has several advantages:

- (1) To the extent that the national system is an aggregation of useful Regional systems, implementation at the national level will be supported by the Regions and states and be viewed as a worthwhile undertaking rather than a reporting obligation.
- (2) To be useful at the Regional level, any national system must be disaggregated with issues displayed in different ways and emphasized differently. The need to disaggregate will be avoided.
- (3) The concept meets an important objective of any effective management information system: information collected at a lower level of the organization for use at a higher level should also be useful at the level at which it was collected.

Thus, at the beginning of 1976, it was believed that there was a good probability that an improved national profile could be constructed as an aggregation of measures that would be meaningful and useful at the Regional and local level.

How the Project Was Conducted

This belief led to a project that was initiated in early 1976, and which is the subject of this report. The project was a joint effort involving personnel in all Regions and Headquarters; staffed by personnel and consultants to Region X and the Program Evaluation Division of EPA; and coordinated by the Deputy Regional Administrator of Region X.

The project was composed of several phases. First, all Regions were visited to obtain ideas as to the types of indices and ways of characterizing issues that would be most meaningful and feasible at the Regional level. Out of these ideas, a set of draft graphical displays of environmental quality were constructed along with some preliminary specifications as to how they would be prepared in order to allow aggregation at the national level. Through subsequent visits and review of materials by Regional personnel throughout the Country, these draft displays were modified and the specifications refined.

At the end of 1976, the recommendations of the Regional Offices along with comments by persons in various EPA Headquarters Offices were

used to produce a group of 43 graphical displays, many relied heavily on color both to convey information and to emphasize issues.

Of the 43 graphical displays that were formulated, about 20 were felt to be currently feasible and useful at the national level for purposes of a "national environmental quality profile." Of these 20 displays, about two-thirds required the development or interpretation of data at the Regional level. The remaining one-third could be constructed without assistance from the Regions, i.e., they did not require information to be developed at or aggregated from the Regional level.

The remainder of the 43 displays were prepared to illustrate a concept or idea that appeared to be useful at the local or Regional level or to illustrate displays at a national level which would be very desirable to have, but for one reason or another were not feasible in the near-term.

Preliminary specifications were also assembled for the preparation of these displays, with emphasis on those items that required the aggregation of data developed or interpreted at the Regional or state level.

In January 1977, all 43 displays along with specifications for their preparation were circulated in a report prepared by Region X titled, Draft Displays and Specifications for a National Environmental Quality Profile.

Comments were received from all Regions, several interested state organizations and a number of EPA Headquarters personnel.

The recommendations and findings which follow are based on these comments.

All 43 displays along with their tentative specifications were distributed in January 1977, to all the Regional Offices and to Headquarters through OPR. Comments received from Regional and Headquarters personnel were reviewed, certain specifications and formats changed, and this report prepared.

Because of the high cost of color printing and the marginal utility of making corrections in the art work used in the January report, the original color graphics as they appeared in the January report have been retained in this report. However, as the result of the comments by Regional personnel, several of the displays proposed in the January report have been deleted, and specifications changed in a number of places.

An attempt was made to address all criticisms and suggestions. Nevertheless, the recommendations in this report were strongly influenced by several of the authors' opinions:

- A priority need at both the Regional and national level is for a better way to communicate the state-of-the-environment, as well as changes in it, to certain persons and groups. Principally, these are elected and appointed officials at all levels of state and local government and special interest groups.
- We currently have a good idea as to what kinds of ultimate indicators and indices of environmental quality we would like to have. In general, these types of indicators are fully described in the 1975 OPR Report. They involve meeting the high-level objectives of Congress and of the American people and deal with the degree of mortality, morbidity, aesthetic degradation and property damage due to pollution.
- While substantial progress is being made in formulating these indicators, it will be some years before they are perfected. In the meantime, improved measures of the

ambient quality of the environment can and should be produced for the public. This has already been demonstrated by several Regional Offices.

- The user of the proposed profile is neither the analyst involved in resource allocation nor the engineer or scientist designing control strategies. Rather, the user is the public and its elected and appointed officials. For this reason, it is possible to substitute the judgments of experienced and knowledgeable people for rigorous analytic algorithms when it can be shown that judgments will produce information with sufficient reliability to be helpful but not misleading, and where the "algorithm" is technically controversial or requires non-existent data.
- Clear and vivid synopses of the state-of-the-environment and of changes in it can be constructed based on current knowledge. As data and data analyzing methods improve, the preciseness of an environmental profile can be improved and previous estimates revised. In the meantime we have ample information upon which to make judgments

where we lack precise data. These judgments can be put in a form that will be useful and will involve negligible risk of misinforming the public in any substantive manner.

1.2 FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

1.2.1 SUMMARY OF RECOMMENDATIONS

It is believed that the proposed approach has sufficient merit for undertaking the next steps in compiling the profile. This belief is, for the most part, supported by comments received from the Regions, although there are several technical problems that will have to be resolved (Section 1.3 provides a chart-by-chart discussion of these problems).

It is recommended that:

- The following charts be developed for each Region (where applicable) and information aggregated so as to produce a draft national profile during the next 12-month period:
 - (1) Water Quality of Nation's Principal River Basin (a color-coded map, cf. RW-1): subject to definition of segments of river basins to be included; resolution of treatment of flow rates; and determination if a more precise definition of meeting water quality goals is needed to facilitate aggregation.
 - (2) River Miles Meeting National Goals by Principal River Basin (color-coded bar chart showing relative length of rivers and degree of meeting goals, cf. RW-2): subject to same considerations as item (1).
 - (3) Types of River Water Standards Violations in the Nation's Principal Rivers (color-coded matrix showing types and importance of violations with trends arrows, cf. RW-4): subject to same considerations as item (1).
 - (4) Lake Surface Area for Which Highest Beneficial Use is Impaired (color-coded bar chart showing the degree to which use is impaired, cf. LW-1): subject to being able to accumulate sufficient data to make a national aggregation meaningful.
 - (5) Eutrophication of Major Lakes (color-coded bar chart showing degree of eutrophication, cf. LW-3): subject to same considerations as item (4).
 - (6) Percent of Swimming Beaches of Great Lakes Meeting Water Quality or Health Standards (color-coded bar chart by lake, cf. GLW-1).
 - (7) Commercial Shellfish Acreage Open for Harvesting (color-coded bar chart, cf. MW-1).
 - (8) Population Served by Drinking Water Supplies Meeting all Standards (color-coded bar chart, cf. DW-1).
 - (9) Reduction in Stationary Source Emission Attributable to Air Quality Controls (bar chart, cf. AIR-1).

- (10) Number of Days of Standards Violations by Type of Pollutant by AQCR (color-coded bar chart, cf. AIR-2): subject to finding satisfactory way to combine worst case statistics with other violation-day statistics.
 - (11) Trends in Air Quality by Pollutant (matrix, cf. AIR-4): subject to same considerations as item (10).
 - (12) Total Suspended Particulate Air Quality Status (color-coded map, cf. AIR-11): subject to improved resolution of boundaries on map.
 - (13) Percent of Population Served by State Approved Solid Waste Disposal Facilities (bar charts, cf. SW-1).
 - (14) Numbers of Persons Served by State Approved Solid Waste Disposal Facilities (bar and pie charts, cf. SW-2).
 - (15) Trend in Amount of Radiation in the Environment Due to "Fall Out" (Strontium 90 in Milk) (bar chart, cf. RAD-1).
 - (16) Trend in Amount of Radioactive Materials Escaping from Nuclear Plants (bar chart, cf. RAD-2).
 - (17) Average Amount of Exposure to Radiation, Per Person, Per Year (bar chart, cf. RAD-3).
 - (18) Pesticide Usage by Year (bar chart, cf. PEST-1).
 - (19) Change in Pesticide Residual Levels in Fish (graph, cf. PEST-2).
 - (20) Benefits of Pesticide Usage (bar chart, cf. PEST-3).
 - (21) Numbers of Persons Living in Areas with Objective Noise Ordinances (bar and pie charts, cf. NOISE-1).
 - (22) Number of Persons Exposed to Unacceptable Noise Levels by Source of Noise (bar chart, cf. NOISE-2).
 - (23) Noise Energy by Major Source (bar chart, cf. NOISE-2).
- That the information for preparing these displays be made an element of the MBO system output for all Surveillance and Analysis Divisions in the Regions for 1979.
 - That the possibility of using the proposed graphics to illustrate the impact of alternate policies be investigated on a pilot basis in Region X, along with possibilities of replacing existing surrogate measures of program accomplishment with measures of the ambient quality of the environment of the type proposed in the profile.
 - That the existing study team and organizational approach be continued.
 - That resources be provided to assist both the Regions and the study team. It is

estimated that approximately five professional man-years of consultative assistance (\$270,000) including special assistance to the Regional Offices will be required to meet the objectives outlined above.

1.2.2 OBJECTIVES FOR A 12-MONTH NEXT PHASE

It is recommended that the same general project team be retained for the next phase of the project, with the addition of special consultative assistance for the Regions. The reason for this is that the current organizational and staffing scheme seems to be working reasonably well. This proposal was discussed at the April 1977, DRA Meeting in Dallas and the consensus of this group was that this would be an acceptable approach.

There are several specific objectives proposed for the next twelve months of the project:

- (1) Produce Regional displays as needed for the 23 graphics listed in the preceding section of this report, and resolve the several technical problems discussed above.

- (2) Aggregate this information into a trial national environmental quality profile document.
- (3) On a pilot basis, explore the feasibility of using these same characterizations of environmental quality for purposes of showing the impact of alternative policies and allocation of resources (this is discussed in Section 1.2.4 below).
- (4) On a pilot basis, analyze the feasibility of replacing some of the current FPRS requirements with information that would support the environmental quality profile.

Items (2) and (3) would be done on a pilot or experimental basis in Region X, and result in recommendations for changes in the FPRS in subsequent years on a national basis.

In order to accomplish these objectives, it is believed that a level of effort equivalent to approximately five professional person-years at the project-team level will be required in addition to between 1 and 2 professional person-years per region. This manpower can be assembled either by the use of EPA personnel, through consultative assistance, or by a mixture of the two.

The resources would be distributed approximately as follows:

Planning, Coordination,
and Direction 6 person-months

Aggregation of the national displays
after completion of the Regional
displays. 4 person-months

Development of water-related information
including assistance to Regional
Offices 18 person-months

Development of air-related information
including assistance to Regional
Offices 12 person-months

Development of other information (solid
waste, drinking water, etc.) at Regional
level and refinement of information not
obtained from the Regions (radiation,
pesticides, noise). 10 person-months

Analysis of FPRS and policy illustration
implications on pilot basis
in Region X 6 person-months

Supporting art work and related editorial
tasks 6 person-months
62 person-months
or approximately 5 person-years

The first step in implementing the next phase would be a detailed summary of the perhaps 40 individual tasks that must be accomplished to bring the profile together along with a schedule for their implementation.

1.2.3 OTHER BENEFITS FROM THE PREPARATION OF THE PROFILE

The success or failure of national environmental quality control efforts depends upon a well coordinated state-federal partnership in which Congress has cast EPA in an overview role.

During FY 77 Region X initiated a program to integrate profiles of state environmental status of the type proposed in this report into the annual program planning process. The schedule for this process is as follows:

JANUARY-MARCH

- 1) Monitoring and other information reduced to graphical form.
- 2) EPA interpretation of graphics sent to states for review, comments and state use.
- 3) Regional environmental control strategies jointly updated to reflect a consensus of
 - a) Where we are
 - b) Reasons for non-attainment
 - c) Short-term goals
 - d) Policy issues
 - e) Measures of program progress

APRIL-JUNE

- 1) Agency directors meet to address and resolve issues surfaced by the above process.

- 2) Initiate formal program planning with prior agreement on objectives, priorities and policies.
- 3) State Environmental Measures Reports printed and released to public.

JULY-SEPTEMBER

- 1) Negotiate outputs, output measures and reporting requirements.
- 2) Finalize Program Plans

OCTOBER-DECEMBER

- 1) Commence program implementation
- 2) Track program progress

State reaction in Region X to this approach has thus far been very positive. The states were very cooperative in updating draft strategy documents which keyed off the environmental assessments. In addition to facilitating planning, the states have also found the data displays useful to support budget requests, technical assistance requests and public information releases.

Additional potential benefits of an annual National Environmental Quality Indicators Report include the following:

- 1) If properly constructed such a report could satisfy the required annual 305b Report to Congress which addresses

water pollution abatement and problems.

- 2) National and regional research and technical assistance needs could be keyed to environmental assessments thus improving their rationale.
- 3) Displays contained in the reports can be reassembled in various ways useful for legislative, staff and public briefings.
- 4) Policy decision making can be helped by graphically portraying anticipated results from various abatement alternatives. A more detailed discussion and illustration of this idea are contained in the next section (1.2.4).

1.2.4 USE OF THE PROFILE FOR BETTER ILLUSTRATING POLICY AND RESOURCE ALLOCATION EFFECTS ON ENVIRONMENTAL QUALITY

While the graphical displays discussed in this report were proposed for the purpose of illustrating to the public the current state of affairs in environmental quality, it is interesting to speculate on the degree to which these same displays can be used to show the relative benefits of alternative policies and implications of resource allocation plans.

The question is: If projections can be made will these displays better illustrate the impact of policies and expenditures to the public and elected and appointed officials?

This question is of interest because of the difficulty in clearly and vividly communicating the effect of current and proposed EPA policies to the public.

The four exhibits on the following pages were constructed to illustrate how certain of the displays in this report could conceivably be used to project the effects of policy alternatives. It is believed that these types of projections could be done by some, if not all, of the Regions in at least some areas of concern. The information shown on the displays is solely illustrative of the type of visual impact that an actual detailed analysis would produce in terms of Region X, and does not represent an actual projection of ambient conditions as a function of policy.

Exhibit A shows the percent of stream miles meeting water quality goals, (a) currently; (b) under water quality, that which would result from achieving BPT and secondary treatment; and (c) that which would result from BPT, secondary treatment, and BMP on public lands.

Exhibit D is a bar chart showing future changes in overall Regional water quality as a function of BPT, secondary treatment, and BMP on public lands.

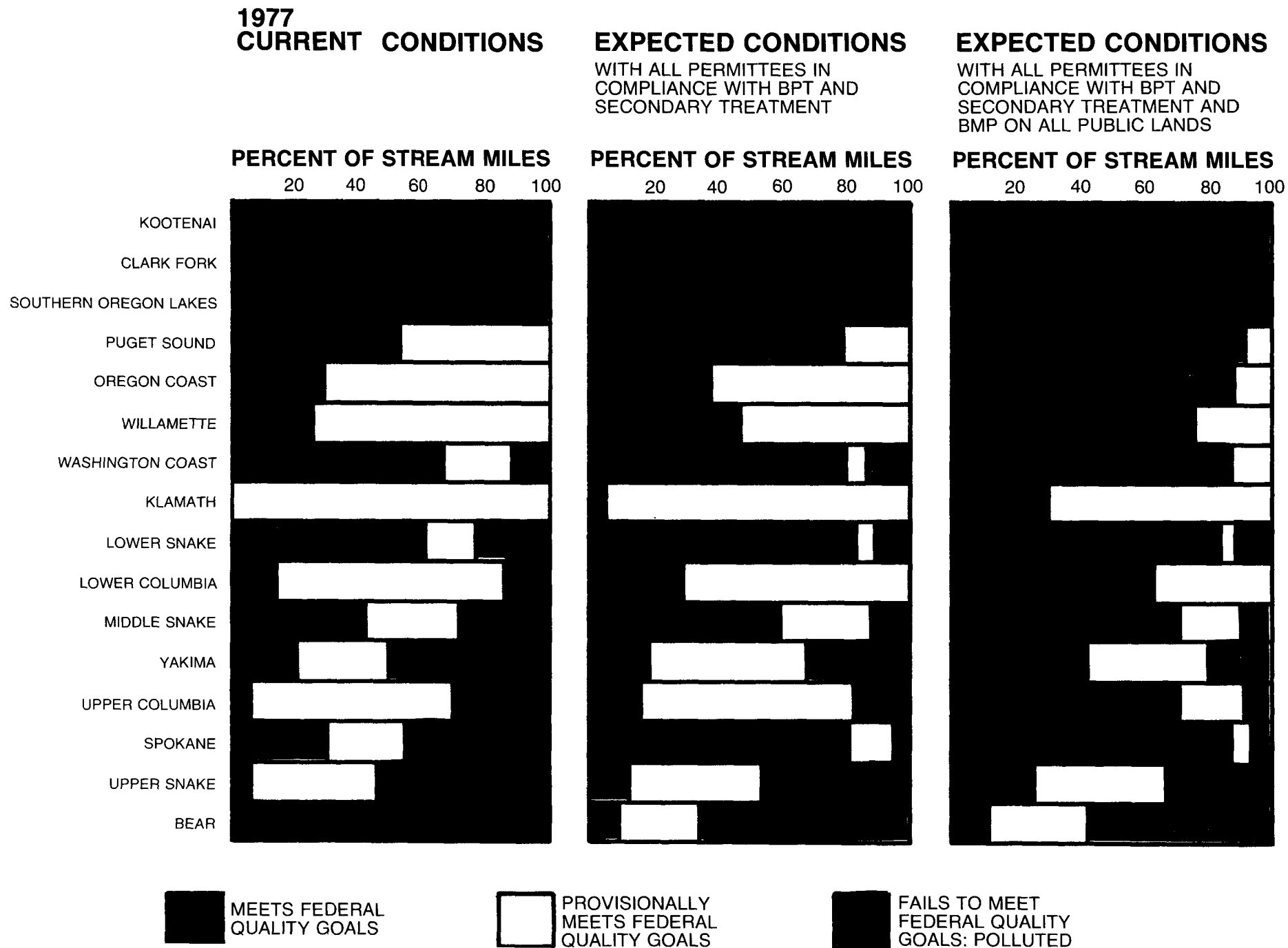
Exhibit E shows the changes in days of air quality standards violations for various counties in Region X that would result from all 25 ton sources in compliance, continuance of the FMVCP, and continued operation of an Inspection and Maintenance program at all non-attainment areas for carbon monoxide.

Exhibit F shows the changes in the severity of air quality standards violations for various counties in Region X under the same policy alternatives assumed in Exhibit E.

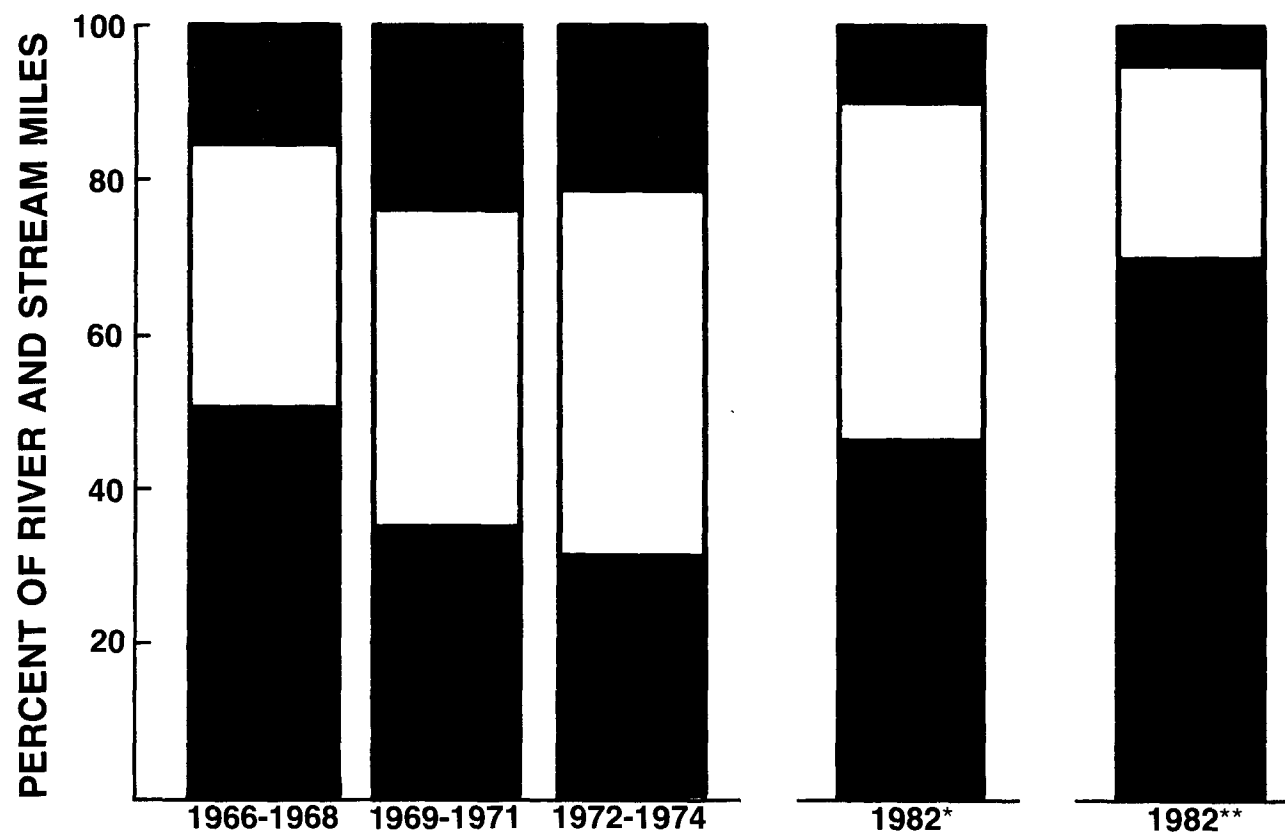
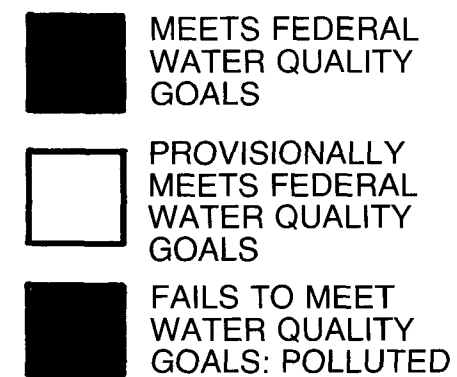
While these types of displays in themselves neither resolve the question of optimal allocation of resources nor present a benefit-cost assessment of the problem, it is believed that they have the potential to better illustrate the impact of policies than the current methods that are available.

The utility of the displays described in this report is not dependent on an ability to use the profile for purposes of projecting the impact of policies and expenditures. On the other hand, some of the displays could be used for this purpose.

PERCENT OF STREAM MILES IN REGION X MEETING WATER QUALITY GOALS



**PERCENT OF PRINCIPAL STREAM AND RIVER MILES
MEETING WATER QUALITY GOALS**



*ALL PERMITTEES IN COMPLIANCE WITH BPT AND SECONDARY TREATMENT

**ALL PERMITTEES IN COMPLIANCE WITH BPT AND SECONDARY TREATMENT AND BPT ON PUBLIC LANDS

TYPES AND NUMBERS OF AIR QUALITY STANDARDS VIOLATIONS

TSP  PARTICULATE MATTER CO  CARBON MONOXIDE Ox  OXIDANTS SO₂  SULFUR DIOXIDE

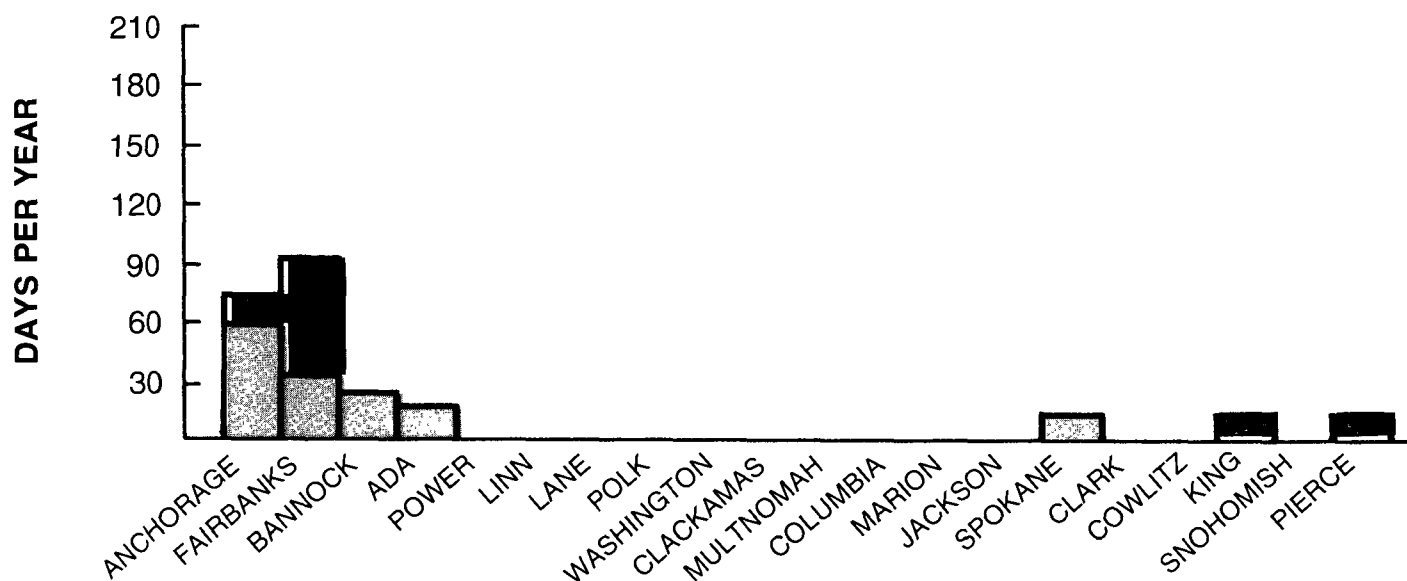
DAYS OF STANDARDS VIOLATIONS BY TYPE OF POLLUTANT

CURRENT 1977 CONDITIONS



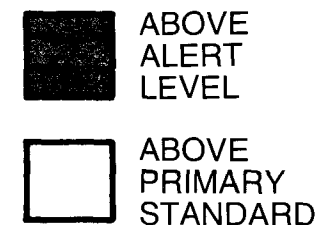
EXPECTED CONDITIONS

WITH 25 TON PER YEAR
SOURCES IN
COMPLIANCE, FMVCP,
AND AN I&M PROGRAM
FOR ALL CO
NON-ATTAINMENT
AREAS

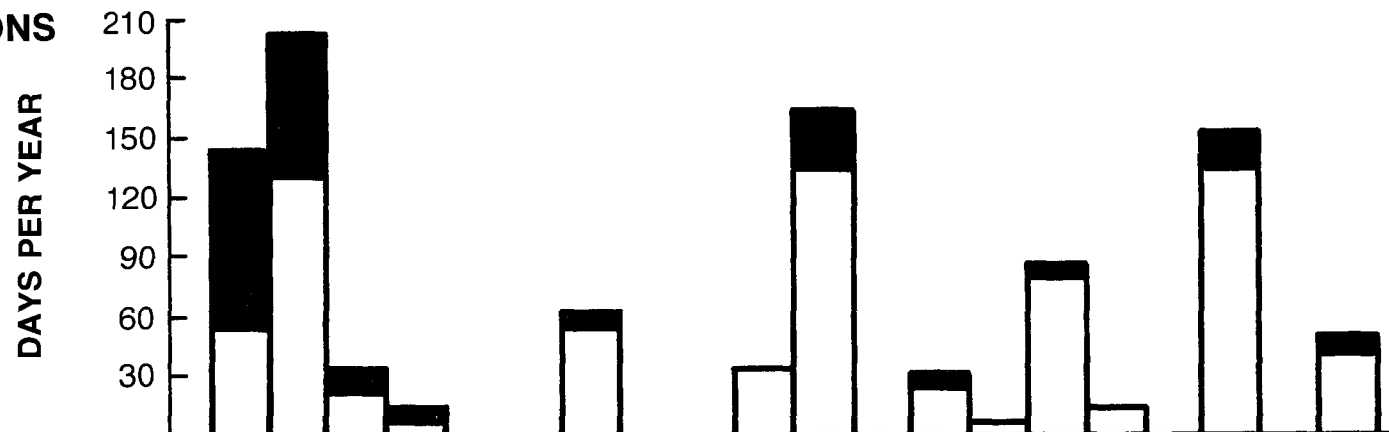


SEVERITY OF AIR QUALITY STANDARDS VIOLATIONS

DAYS OF STANDARDS VIOLATIONS BY SEVERITY

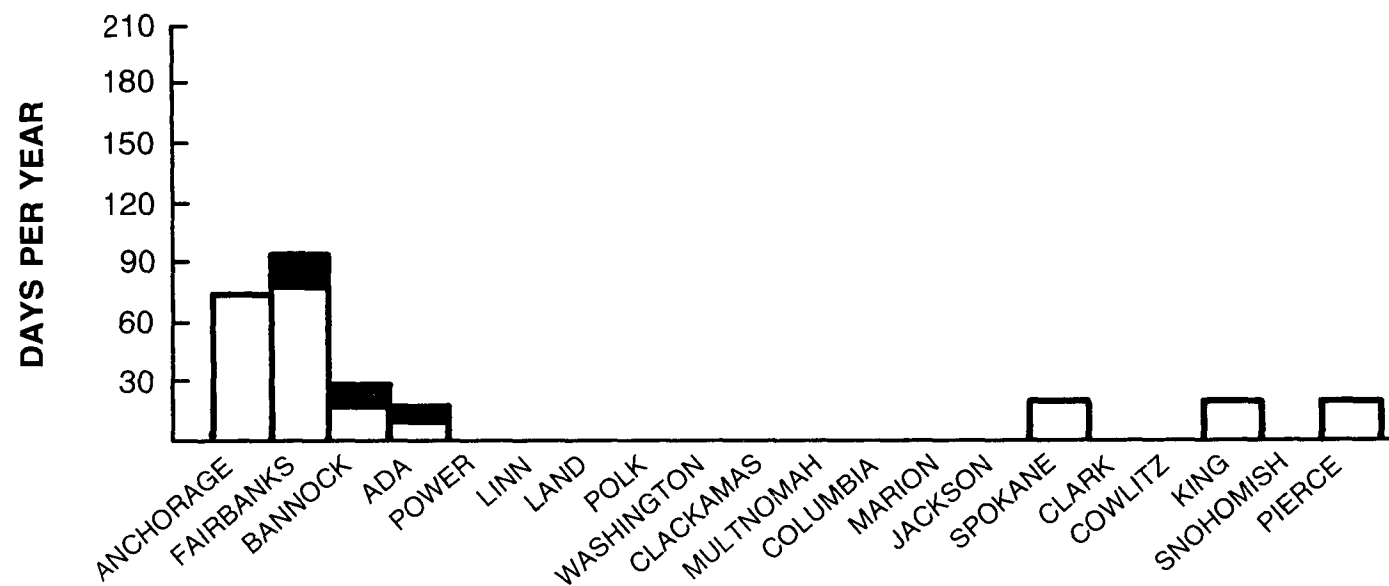


CURRENT 1977 CONDITIONS



EXPECTED CONDITIONS

WITH 25 TON PER YEAR SOURCES IN COMPLIANCE, FMVCP, AND AN I&M PROGRAM FOR ALL CO NON-ATTAINMENT AREAS



1.2.5 REMARKS ON IMPLEMENTING REGIONAL ENVIRONMENTAL PROFILES

During the course of the project a number of opinions were formulated regarding the design of useful indices and profiles. Some of these opinions are briefly discussed below.

Agreement on What an Index Is: The terms "indices," "indicators," and "measures" are often used interchangeably. The term "measure" or "indicator" can be defined to mean a single aspect of the environment which can be measured directly. Indices are formed by transforming one or more measures or indicators into ratios or other functions. In addition, we can formulate graphical characterizations of problems or issues which are really none of these, but which are useful in constructing a profile of a community or region. The term "profile" is used to mean a group of indices, indicators, and other characterizations of issues which collectively portray the state-of-the-environment.

Agreement on What is Environmental: A great deal of psychic energy can be expended on trying to define what is an environmental index as opposed to a quality-of-life index, social index, or whatever. Attempting to rigorously

define these concepts for purposes of a regional profile is not likely to be productive. Certainly water and air quality are environmental in nature. Indices of land use may serve several purposes. A profile should deal with those issues which are popularly considered to be "environmental" regardless of whether they might be more appropriately described under other categories. What is perceived as "environmental" and how to appropriately measure it varies significantly from region to region.

Who Uses the Information: The usefulness of indices must be evaluated in terms of the intended user or use of the information. Some alternatives found in most regions include:

- Public Information/Education (the public at large).
- Public Policy (elected and appointed officials and special interest groups).
- Program Policy and Broad Resource Allocation Needs (managers, elected and appointed officials).
- Program and Project Evaluations, including degree in meeting specific objectives (managers).

It is absolutely critical that the user be identified. The scientist, administrator,

elected official, and general public cannot usually be satisfied by the same environmental measure. The administrator needs to see the resource allocation implications and the scientist needs to see the cause and effect implications. Who the user is will also affect geographical or political aggregation of data and the decision to highlight or obscure inter-jurisdictional comparisons.

Even if The Regional Profile is for public information needs, indices which comprise the profile may be useful in meeting needs in other categories. In most cases, however, it is difficult to find a single measure which will completely satisfy all categories of needs.

Benefit/Cost Analysis: Indices may provide the "benefit" measure in cost/benefit ratios or the "effectiveness" measure in cost/effectiveness studies. An index will be more valuable to the extent that it can be formulated as a known variable of resources spent or tactics used. It has been amply demonstrated, however, that this is a difficult and frustrating undertaking. The cause and effect relationships and relationships to cost are poorly understood. Accordingly, it

should not be expected that indices used in a profile for public information will serve cost/benefit analysis purposes. However, to the extent they aid in the formation of perception of trade-offs, they will be useful.

Data Accuracy: Useful indicators can be constructed from existing data bases and without new data collection efforts or elaborate manipulation of data. To accomplish this may mean that it will be necessary to make some reasonable estimates of parameters rather than precisely determining them by a special study. The precision and accuracy of data used in indices must be dictated by the use to which the index will be put. For purposes of public information the accuracy requirements are less than for standards enforcement and other management purposes. The principal problem with regard to data inaccuracy lies in portraying a trend as improving when it is actually worsening (or vice versa) rather than in inaccuracies in the degree of change. In certain cases the risk may be assessed quantitatively as a probability.

Other Considerations: For public information, education and broad policy formation purposes, indicators fail to be useful if they fail to meet the following requirements:

(1) They must be easily understood or the user must think he understands the meaning of the index. For example, few people understand the basis for and implication of statistics on the gross national product. Yet, it is a useful index from a public information standpoint as well as for certain technical purposes.

(2) They must be credible in the sense that what the index is showing is not at odds with what can be observed or what is perceived to be the situation. For example, if an air quality index shows air quality to be improving in general, while the air quality of a particular locality is deteriorating, it will not be credible to those who live in the deteriorating area.

(3) The frequency of reporting or updating must be such that the time series has impact. For example, daily reporting of air pollution levels may have little impact if there are insignificant changes from day to day or over short intervals of time.

(4) From a public information standpoint, an index should be stated in terms which clearly relate to health, lifestyle, and similar concerns rather than to technical or programmatic considerations. For this reason, air

quality indices or forecasts may only become of significant interest to the public when they approach or exceed health standards or approach levels where counter-measures such as curtailing playground activities or driving are required.

(5) Indices which relate to the high-level goals and objectives of legislation and ordinances are particularly needed.

(6) An index number which is a weighted aggregation of a number of variables, e.g., ORAQI, may fail to be meaningful from a public information standpoint even though the index numbers may be interpreted and displayed as "good," "bad," etc. Conversely, a measure which has units in common use, e.g., lbs. (of emissions), numbers of people (affected), miles (of river), etc., will do a better job.

1.3 DISCUSSION OF DISPLAYS RECOMMENDED FOR A NEAR-TERM NATIONAL PROFILE

This section discusses on a media-by-media basis the findings of the study team with regard to each of the 23 displays that were proposed in the January 1977 report as a near-term national profile.

The section also includes a synopsis of comments and problems raised by Regions in connection with each of the displays. A complete summary of these comments is provided in Section 2.4.

Specifications for the development and interpretation of needed data is provided in Section 2.2.

There were several comments that occurred frequently and applied to the displays in general:

- A version of the displays that is not so dependent on color should be constructed so as to allow reproduction and use in a variety of documents.
- It is important that the sources of data be clearly indicated on the display or highlighted in text accompanying the display.
- Narrative descriptions of the meaning of the display along with a discussion of issues is needed to supplement the

graphics in most cases. As pointed out by Region VIII:

"Many pages in the draft are devoted to explaining the displays themselves, but there is no mention of how much of that kind of explanatory material will accompany these displays once they are included in a final document. Many of the displays, standing alone, fail to convey the total intended information. If a page of descriptive text were placed on the facing page, the whole would be more useful."

- "Cross-media" charts should be considered to help clarify which geographical areas have what types of problems.

These recommendations could be readily implemented in a final "profile document" which would include text describing the meaning of the graphics, sources of data, and special issues. A non-color version of most of the graphics can be constructed although quality reproduction would still be required. Cross-media charts can be developed, although this would be of greatest interest in Regional or local versions of the profiles.

1.3.1

RIVER WATER QUALITY

In the materials reviewed by the Regions, three displays were believed to be useful and feasible for characterizing the river water quality of the nation. These were in the following formats:

- A map of the United States on which the principal rivers are color-coded according to the degree to which they meet water quality goals (Chart RW-1);
- A bar chart, also listing the principal rivers of the nation, on which the height of the bars denotes the length of the rivers, and where the bar is color-coded to show the degree to which the river miles are meeting water quality goals (Chart RW-2);
- A matrix of principal rivers arrayed against causes of standards violations and showing the degree to which a particular type of violation is contributing to the river failing to meet water quality goals, and indicating by arrows whether conditions are improving or worsening (RW-4).

The detailed specifications proposed for the preparation of these displays are given in

Section 2.2 of this report. However, there are several concepts underlying these displays that should be highlighted.

It is believed that the units of measurements (river miles) used in RW-2 is preferable to a water quality index number for the river, even though the use of a water quality index number may be the best way to arrive at the information shown in the displays for certain Regions. The concept of "miles of river meeting water quality goals" is more understandable by the public and provides a clearer link of the national goal of "swimmable and fishable water."

While the quality of much of the nation's rivers may be successfully described by an index number, there are cases in which such an approach fails because of lack of data or unusual local conditions. In order to overcome this problem it was proposed that each Region, along with the states, make the best possible judgment on the degree to which water quality goals are being attained. This judgment may be based wholly or in part on a water quality index or by whatever method is most appropriate. This decision would be made by each Region in collaboration with the states, taking into account the availability and accuracy of data on the river.

There is no index method which in itself, and in relation to data availability, will accurately characterize all river waters throughout the nation. Moreover, since it now appears that most of the popular water quality indices have strikingly high correlations, the adoption of a uniform index may have little practical significance.

For these reasons it is believed that the adoption of a particular national water quality index method is neither necessary nor desirable at this time for characterizing river water quality.

Comments received from the Regions and other persons regarding displays RW-1, RW-2, and RW-4, were favorable in an overall sense and indicated that, for the most part, the preparation of the charts was feasible and the resulting information would be useful at the Regional level.

Specifications criticisms and problems included the following:

The Need to Adopt a Uniform Water Quality Index Method for Specifying Water Quality: The adoption of various water quality indices was proposed by several Regions. For example, comments received from Region V were as follows:

"For the water media, Region V has been investigating an objective water quality

index method, based on Dr. Ralph D. Harkins' modification of the cluster analysis method. The advantages of this method are:

- (1) It is not subject to differences of opinion as when weight factors are used for calculating the index number.
- (2) The number of parameters used in calculating the index is not fixed.
- (3) The interpretation of cluster analysis index values are subject to statistical tests to determine if changes or trends are significant.
- (4) These index values are amenable to averaging and other mathematical calculations which allow the calculating of quarterly averages by station, basin, time intervals, setting of confidence intervals and statistical tests of confidence.
- (5) Stations can be compared with one another at the same time or at different time periods."

The Need to Adopt Consistent Methods for Judging the Degree to Which Water Quality Goals are Being Met: In addition to consistencies between Regions, a need for consistency between the states within Regions was stressed. For example, Region II commented that, "There should

be a standard system against which all Regions determine whether or not water quality meets fishable-swimmable standards. This would allow uniformity in reporting the river conditions."

Need to Agree on the "Representative Network" of Rivers: In addition to establishing the representative network that would be used for the national profile, river segments need to be defined in more detail.

Taking Into Account Flow: Several Regions indicated that river flow needed to be taken into account, or alternatively, a moving average used to smooth differences in water quality due to flow differences between years.

The Effectiveness of the Grant Programs Should Be Included in Near-Term Displays: One or more displays should be included that illustrate the effectiveness of national programs for improving water quality. Comments by Region VII included the following:

"One of the Agency's main goals has been to reduce water loads to receiving waters through the permit and construction grant program. It would seem, therefore, appropriate to display such information as trends (in loads) in a river basin. This information would also be necessary for

development of a display describing the relative contributions from point and non-point sources.

A number of displays could be used to evaluate the effectiveness of the grant program, for example, a survey of BOD/TSS removal per \$1000 of grant money and/or a chart showing numbers of people on no sewage treatment, primary, secondary, and tertiary treatment."

Specific comments on the three displays that were proposed for use in a near-term profile included the following:

RW-1: It was pointed out that this display, "at a much greater level of detail, would be more useful for managers."

RW-2: Comments by Region VIII on this display included the following: "Color doesn't particularly help this graphic which is really an extension of RW-1. Skillfully done, this could be merged into RW-1. In fact, if actual river miles were shown alongside each segment, it should enhance the usefulness of this graphic. Either way little or no additional time would be required in Region VIII to work this up, once the desired level of detail

for RW-1 is developed. Together, RW-1 and RW-2, if developed in sufficient detail, would be good for both public information and as a tool for basic management purposes."

RW-4: Several Regions felt a significant effort would be required to produce this graphic, but that it was also very valuable. "River" should be changed to "River Basin" in the title.

Finally, it was recommended that a special section be devoted to particular problems such as the Colorado River salinity, oil spills, and so forth.

Additional comments may be found in Section 2.4.2 of this report.

In order to develop displays RW-1, RW-2, and RW-4, it will be necessary to define nationally the river segments that will be included. Along with this it will also be necessary to agree on the extent to which year-by-year changes will be smoothed. It is believed that each Region, in cooperation with the states, can make reasonably accurate judgments on the percent of the river basin meeting water quality goals, although there will be missing data or places where "no judgment" can be made.

As discussed above, it is not believed that it is necessary to adopt a uniform water quality

index method to produce reasonably accurate statements of the degree to which the principal river basins are meeting water quality goals.

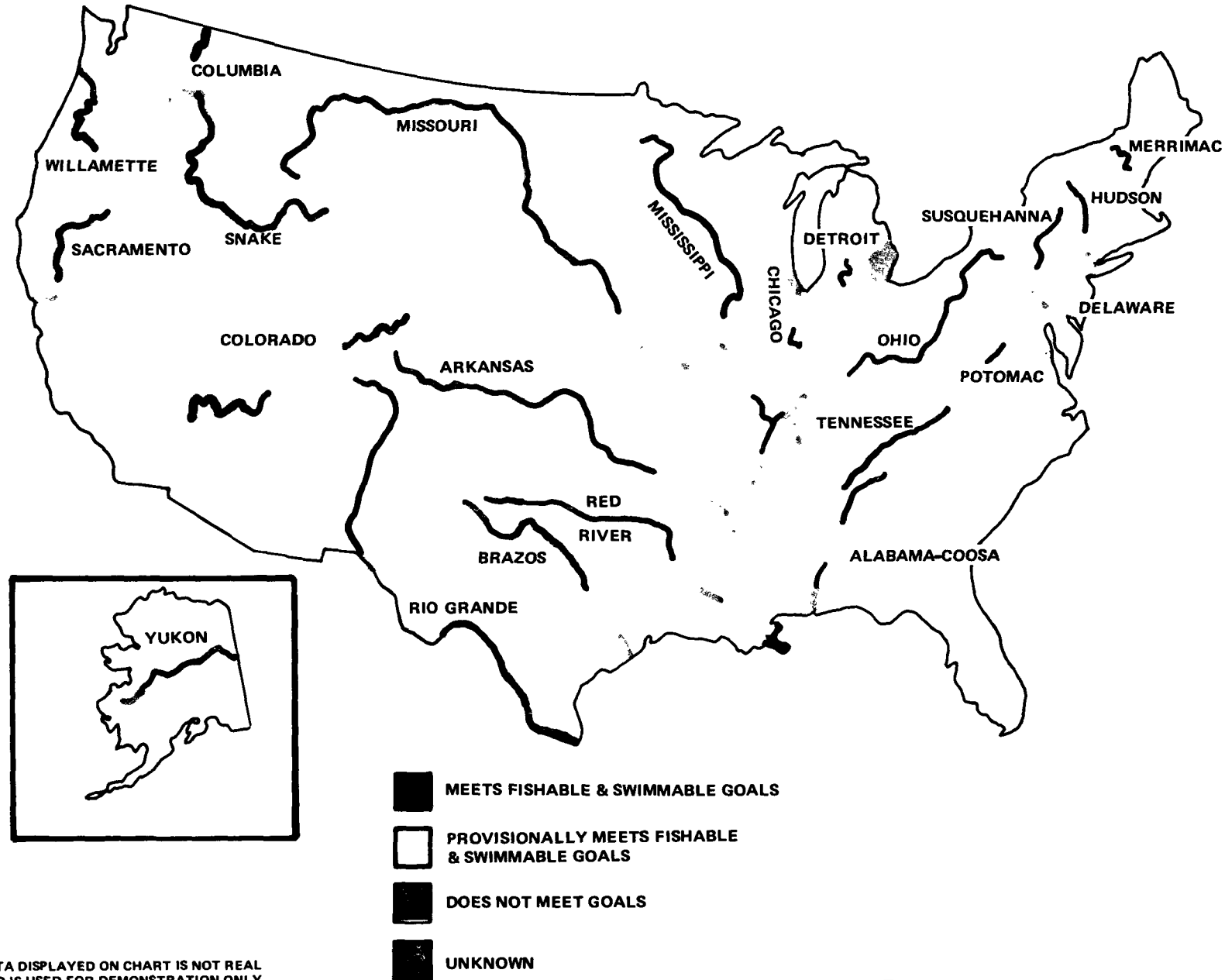
It is proposed that an attempt be made to construct draft versions of RW-1, RW-2, and RW-4 for each Region. When this has been partially accomplished, a trial aggregation at the national level would be attempted and consistency and comparability problems addressed using the real data. It is believed that most of the potential problems can be resolved, and that this can be most effectively accomplished with real data in hand. In other words, formulating a more precise definition of what constitutes meeting water quality goals would be deferred until a clearer understanding of the need for preciseness is obtained.

1.3.2 LAKE AND GREAT LAKES WATER QUALITY

Graphics for displaying the quality of lake water were separated into two categories: the Great lakes and all other lakes.

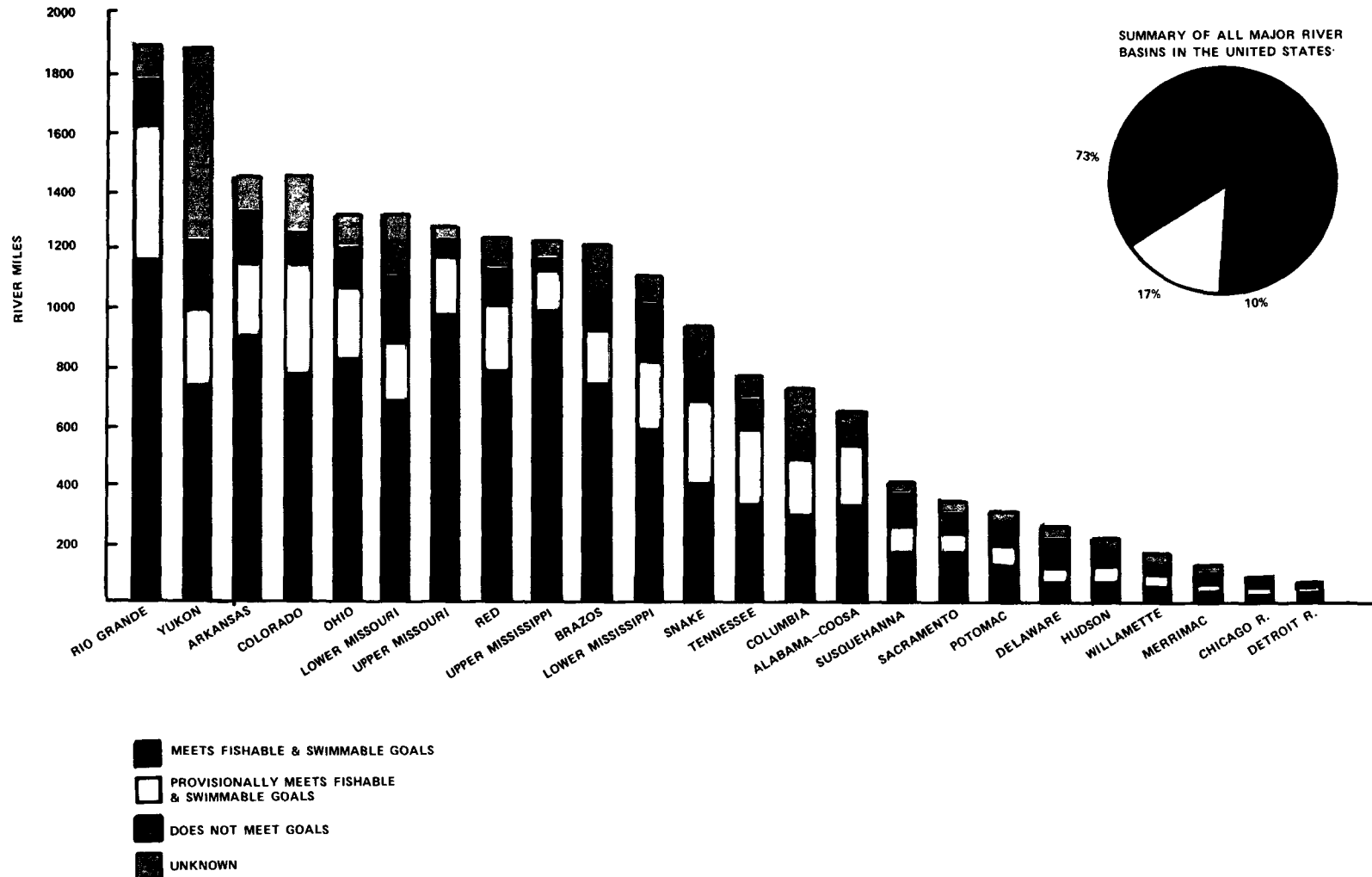
For the Great Lakes, one display, GLW-1, appears to be feasible in the near-term. This is a bar chart showing the percent of swimming beaches of the Great Lakes meeting water quality.

WATER QUALITY OF NATION'S PRINCIPAL RIVER BASINS



DATA DISPLAYED ON CHART IS NOT REAL
AND IS USED FOR DEMONSTRATION ONLY.

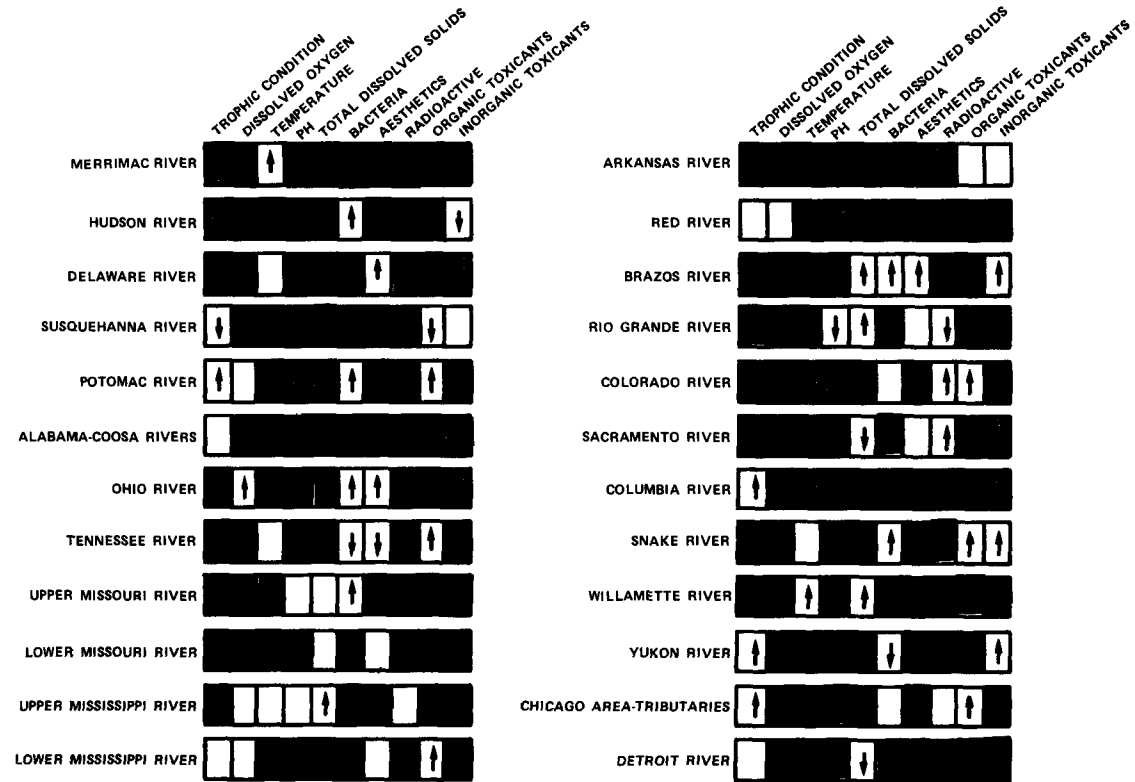
RIVER MILES MEETING NATIONAL GOALS BY PRINCIPAL RIVER BASIN



DATA DISPLAYED ON CHART IS NOT REAL
AND IS USED FOR DEMONSTRATION ONLY.

TYPE N-1 — THIS CHART IS PROPOSED FOR THE FIRST
EDITION OF THE NATIONAL PROFILE.

TYPES OF RIVER WATER STANDARDS VIOLATIONS IN THE NATION'S PRINCIPAL RIVERS



LEGEND

- NOT A CONTRIBUTOR TO VIOLATIONS
- MINOR CONTRIBUTOR TO VIOLATIONS
- MAJOR CONTRIBUTOR TO VIOLATIONS
- INSUFFICIENT DATA, UNKNOWN

NUMBERS OF VIOLATIONS

- ↑ QUALITY IMPROVING
- ↓ QUALITY DETERIORATING

NOTE: NO ARROW MEANS
NO CHANGE

DATA DISPLAYED ON CHART IS NOT REAL
AND IS USED FOR DEMONSTRATION ONLY.

or health standards. The data necessary to formulate this display would be assembled from information available from the International Joint Commission and from local public health agencies. The display is color coded according to the degree of impairment, and an evaluation scheme was proposed in the specifications accompanying this display in Section 2.2 of the report.

The evaluation scheme identifies three principal uses (swimming, fishing, and drinking) arrayed against criteria as to the degree of impairment associated with fecal coliform concentrations, total phosphorus, etc.

For other lakes, two displays were believed to be feasible in the near-term. These were:

- The percent of lake surface area for which the highest beneficial use is impaired--divided by Region and color coded as to the degree of impairment (see display LW-1).
- Eutrophication of major lakes expressed in square miles of lakes by Region and color coded as to the degree of eutrophication (see LW-4).

It was proposed that only major lakes be included, and that they be defined as lakes and reservoirs with surface areas of 10 square miles

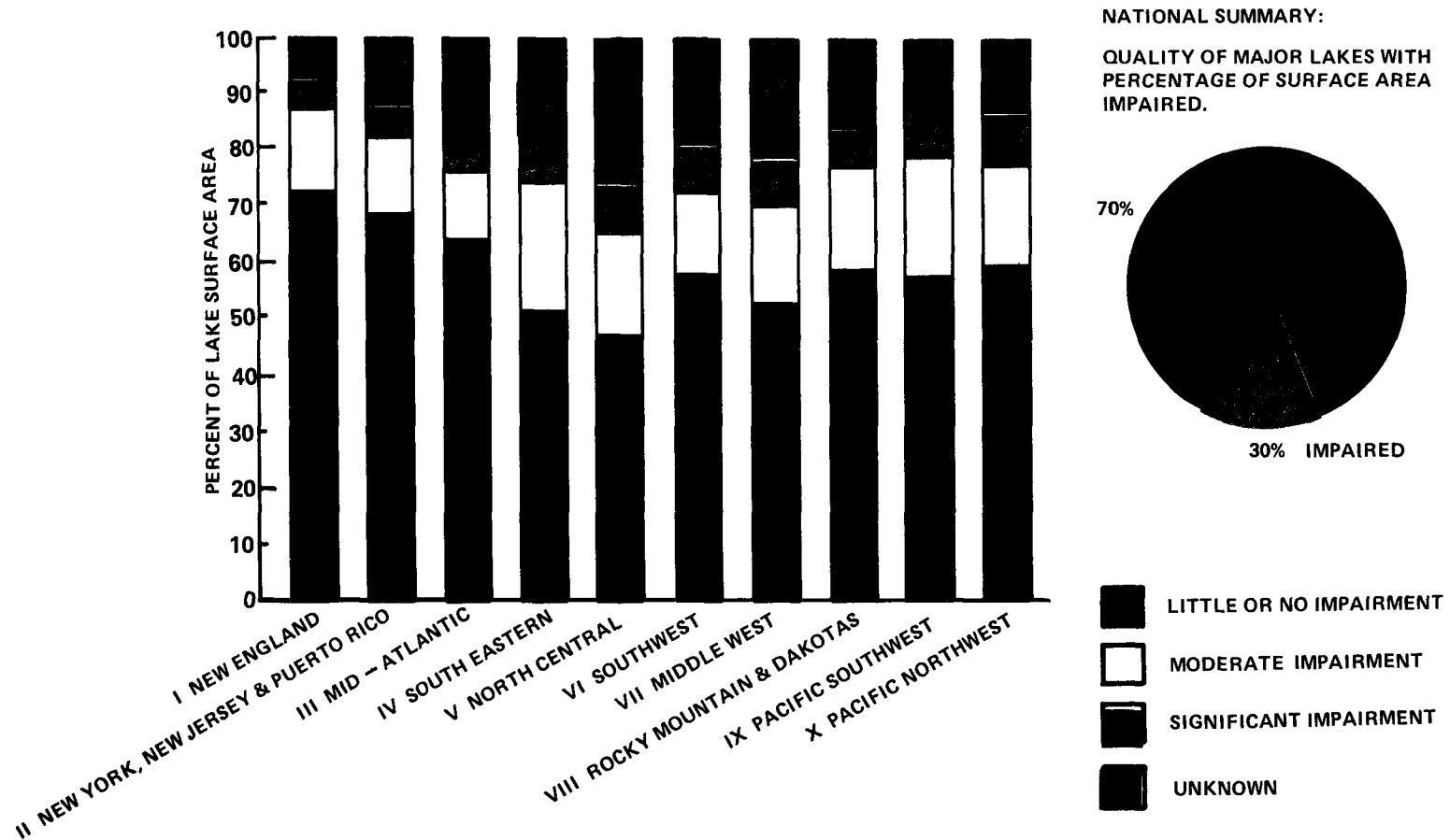
(64,000 acres) or greater. A scheme similar to that proposed for the Great Lakes for evaluating the degree of impairment was proposed and is outlined in Section 2.2. This scheme identified four uses--swimming, fishing, boating, and aesthetics--along with criteria for classifying the surface area as to whether there is no impairment, moderate impairment, or significant impairment.

In the case of trophic conditions, it was proposed that data be obtained from the National Eutrophication Survey and from local and regional university and state agency surveys. The degree of eutrophication was color coded according to whether or not the lake was perceived to be non-eutrophic (blue), moderately eutrophic (yellow), and eutrophic (red).

Comments received from Region VIII on the two proposed graphics for lake water quality included the following:

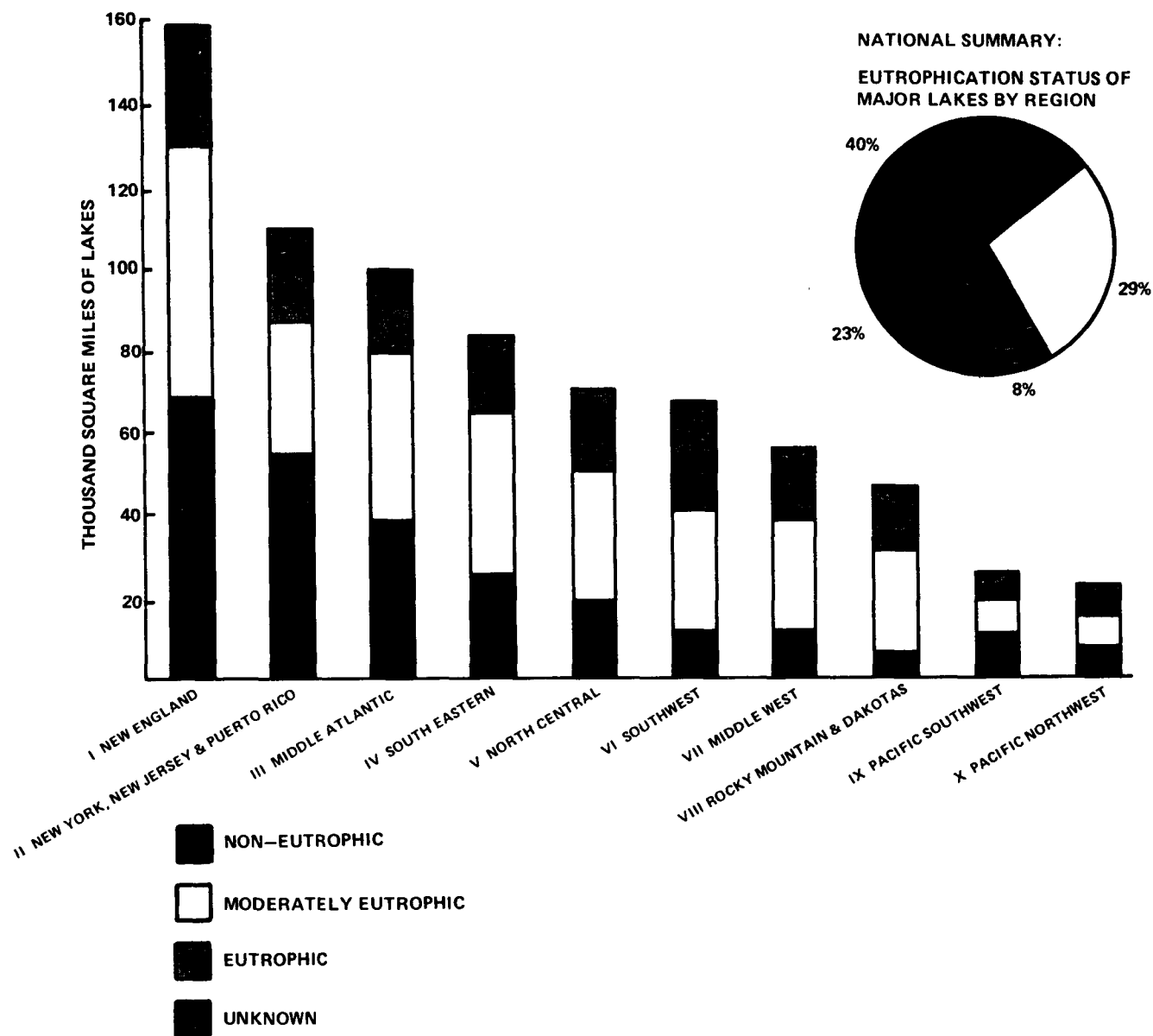
LW-1: "To date practically no data is available in STORET or is otherwise available to aid this kind of an assessment for the 2300+ Region VIII (significant) lakes identified in 106 plans. With the NES and some other fragmented information we were able to do a trophic assessment only

LAKE SURFACE AREA FOR WHICH HIGHEST BENEFICIAL USE IS IMPAIRED (PRINCIPAL LAKES EXCLUDING GREAT LAKES)



DATA DISPLAYED ON CHART IS NOT REAL
AND IS USED FOR DEMONSTRATION ONLY.

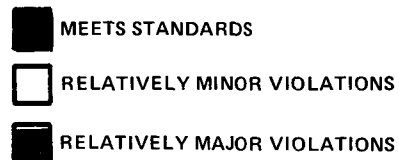
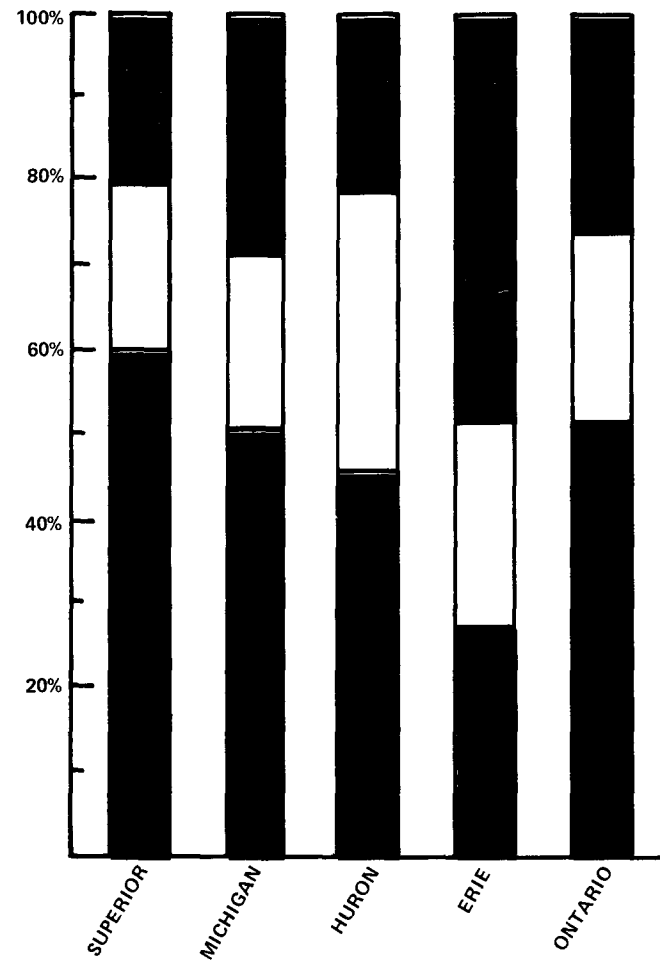
EUTROPHICATION OF MAJOR LAKES (EXCEPT GREAT LAKES)



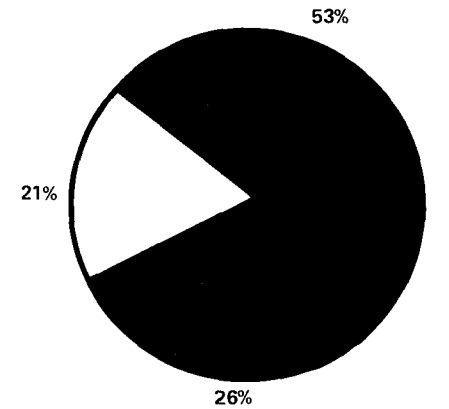
DATA DISPLAYED ON CHART IS NOT REAL
AND IS USED FOR DEMONSTRATION ONLY.

TYPE N-1 - THIS CHART IS PROPOSED FOR THE FIRST
EDITION OF THE NATIONAL PROFILE.

PERCENT OF SWIMMING BEACHES ON GREAT LAKES MEETING WATER QUALITY OR HEALTH STANDARDS



DATA DISPLAYED ON CHART IS NOT REAL
AND IS USED FOR DEMONSTRATION ONLY.



SUMMARY OF SWIMMING BEACH
STATUS FOR THE FIVE GREAT LAKES

TYPE N-1 — THIS CHART IS PROPOSED FOR THE FIRST
EDITION OF THE NATIONAL PROFILE.

It is not clear whether judgments on a sufficient number of lakes can be made to make a national aggregation meaningful. It is proposed to proceed with this display with the understanding that the "unknown" category may be substantial.

1.3.3 MARINE WATER

Only one display was believed to be feasible in the near-term in this subject area. This display (see MW-1) shows the percent of commercial shellfish acreage open for harvesting by Region, with the percentages divided into three categories: open for harvesting (color coded blue), limited usage due to pollution (yellow), and closed due to pollution (red).

The data necessary to construct this display was believed to be available from existing reports, including the National Shellfish Register of Classified Estuarine Water. However, it would be necessary for each Region to review and update the NEIC reports before the final information could be aggregated into the proposed national display.

Supplemental information, which would enhance the meaningfulness of the proposed

displays, includes "types of marine water quality violations" (see MW-2 in Section 2.2), "trends in commercial shellfish harvesting areas" (see MW-3), as well as other displays that would be meaningful at the local level (cf. MW-4, "status of shellfish harvesting areas," a map).

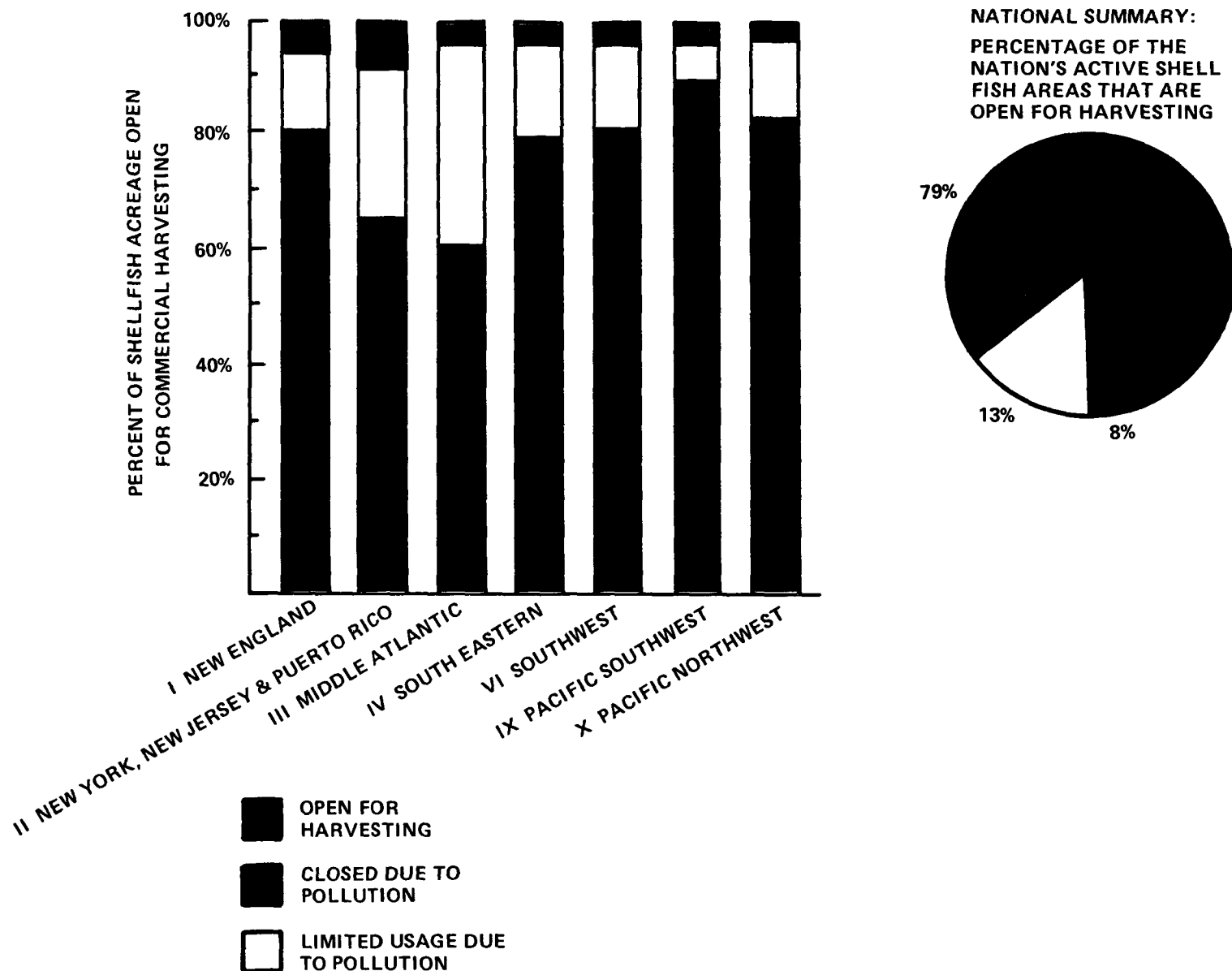
However, it appears that sufficient information is not available, nor will it be available in the near-term to construct these displays for most Regions.

Other concepts, such as the miles of beach open for recreation or the percentage of marine recreational areas impaired due to water pollution, were considered. Initial attempts to construct graphical displays around these concepts failed due to either the minute percentages involved or the inability to accurately portray the degree of impairment. Further consideration to these concepts may be appropriate in the future to the extent that the proposed "shellfish harvesting area" measure is not completely effective. In addition, they may be useful at the local level.

Comments by Region II indicated that MW-1 and MW-3 could be readily constructed.

It is proposed to proceed with MW-1 at this time and make a determination as to the current feasibility of combining MW-3 with MW-1.

COMMERCIAL SHELLFISH ACREAGE OPEN FOR HARVESTING



DATA DISPLAYED ON CHART IS NOT REAL
AND IS USED FOR DEMONSTRATION ONLY.

TYPE N-1 - THIS CHART IS PROPOSED FOR THE FIRST
EDITION OF THE NATIONAL PROFILE.

1.3.4

DRINKING WATER

One display was proposed for drinking water. This chart shows the population of each of the ten Regions served by water supplies meeting all standards, water supplies with relatively minor standards violations, and water supplies with relatively major violations (see DW-1).

The basis for this chart would be state-supplied information on standards violation in community water supplies. The determination of whether the violations are minor or major would be left up to the Regional offices. However, general specifications for reaching these judgments must be formulated.

Variations on this display may be created by manipulation of the basic data. These would include percentage of people served by a drinking water supply meeting standards, and so forth.

Displays indicating the "number of drinking water supplies meeting standards" (see DW-3 in Section 2.2) may be useful at the local and Regional level, but were not perceived as being useful at the national level. In addition, a matrix-type chart providing an overview of the causes of drinking water standards violations by

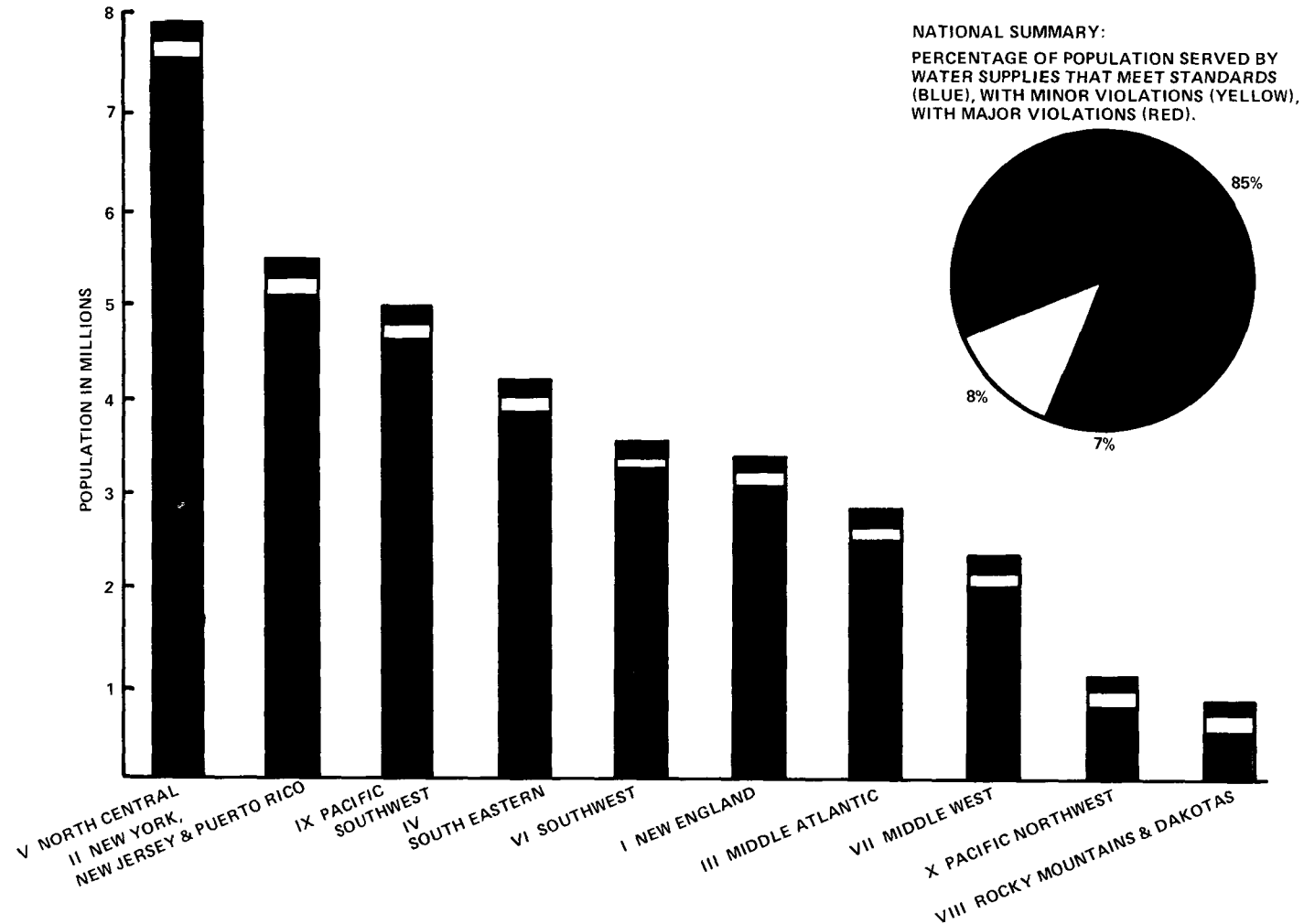
Region or state would be desirable, but is probably not feasible in the immediate future.

While it was believed that associating population statistics with water supplies could be done with reasonable accuracy and fairly easily, Region VIII felt otherwise:

Information needed to put this profile together will not be easily obtainable. While the water supply inventory will be a part of the MSIS System, and data on systems with violations will be recorded in the ADP system, there is no program at this time to produce a data output that shows the population served by supplies meeting all standards. Also, it will be difficult to show trends with this type of bar graph because of the difficulty in showing differences in small population changes. If used, this profile should be limited to people served by community systems. However, it will not be possible to evaluate all community supplies for all standards until 1980."

In addition, several reviewers felt that the displays should indicate the source (rivers, lakes, etc.) of the drinking water supplies being described. See Section 2.4.5 for additional comments.

POPULATION SERVED BY DRINKING WATER SUPPLIES MEETING ALL STANDARDS



- SERVED BY WATER SUPPLY THAT MEETS ALL STANDARDS
- SERVED BY WATER SUPPLY WITH RELATIVELY MINOR VIOLATIONS
- SERVED BY WATER SUPPLY WITH RELATIVELY MAJOR VIOLATIONS

DATA DISPLAYED ON CHART IS NOT REAL AND IS USED FOR DEMONSTRATION ONLY.

TYPE N-1 - THIS CHART IS PROPOSED FOR THE FIRST EDITION OF THE NATIONAL PROFILE.

It is proposed to proceed with DW-1 with the belief that a reasonably accurate, if not precise, estimate of the population served can be made.

1.3.5 AIR QUALITY

Four charts were proposed for the air quality area. These were:

- A bar chart showing the reduction in stationary source emissions attributable to air quality controls (see AIR-1).
- A bar chart showing for each non-attainment AQCR the days of standards violations (see AIR-2). This chart is arrayed by state rather than AQCR--this was a mistake, and the names of the AQCR's rather than the states should be shown.
- A chart in matrix form that arrays the principal air pollutants against all AQCR's, showing the degree to which the pollutant is a contributor to standards violations and whether the conditions are improving or worsening (see AIR-4).

- A map of the United States showing the areas in which standards are violated (see AIR-11).

In Section 2.2, a number of other displays are shown that either were believed to be desirable but infeasible in the near-term, or were believed to be useful at the local or Regional level rather than at the national level.

The data for the chart illustrating the reduction in emissions from stationary sources due to controls, AIR-1, would be produced from OAQPS information, and there would be no Regional involvement in the preparation of this display.

For AIR-2, data for the days of standards violations for each non-attainment air quality control region would be calculated in the Regions, and the national display would simply be an aggregation of this information. In order to accomplish this, it would be necessary for each Region to determine the site in each AQCR for each pollutant that represents the worst case for the AQCR for that pollutant. The days of standards violations are then counted and color coded as shown in the chart. Severity of standards violations may be shown by varying the density of the color in the bar (see AIR-3 in

Section 2), or by providing a companion chart on which the total days of standards violations for the worst case sites in the AQCR are color coded according to whether the violations were above the alert level or just above the primary standard level.

The matrix in AIR-4, showing the degree to which the different air pollutants are contributors to standards violations, uses the same data as required for the preceding chart, except that a judgment as to whether the trend is improving or worsening would have to be made. In addition, this chart, by color coding, suggests the degree to which the pollutant is a major or minor contributor to the standards violations. The rule for making this decision has not been formulated, although it is believed that such a rule can be formulated when data for the nation's non-attainment AQCR's is consolidated.

The last display that is proposed (AIR-11) is based on existing OAQPS data. However, as drafted the display does not provide sufficient resolution of the actual geographical areas affected by the pollutant to be useful, even at the national level. In order to correct this problem, and as noted in the specifications, it

would be necessary for each Region to reconstruct the boundaries of the areas affected to provide better resolution. In other words, boundaries of the area affected need not be exact, but substantially greater resolution than that shown in the chart must be attained. It is believed that a color-coded map can be prepared which conveys the proper ideas as to the location and extent of problems.

Some of the comments received were as follows:

Use of Worst Case Approach: Comments by Region VI on this issue included the following:

"The graphs labeled AIR-2 and AIR-3 use the "worst case" approach to depict general air quality for an entire state or AQCR. The use of this approach will be misleading to the general public. To offset this, information depicting the "average" number of violation days in a state or AQCR should be displayed. This information could be something like the number of violation days exceeded by 50% of the AQCR's in a state. Similar information could be given for multiple-site AQCR's."

"Overall the series of graphs presented will provide a good general description of the status of air quality in the nation and in each of the Regions."

"One possible addition to the Regional presentation would be to display pollution/wind roses for each pollutant for the major metropolitan areas in the Region."

Near exclusive use of bar graphs is monotonous. Were other types of graphs considered?"

Chart Format: Region VIII offered the following suggestions for better visualization of the relative differences between pollutants:

"Each pollutant should be separated with its own bar chart. That way, the worst case for each pollutant can be distinguished and the bias associated with the lack of any data will not be as misleading."

Region II also recommended, "separating the types of pollutants, one per national display."

Trend Information As Shown In AIR-4:

Several Regions expressed uneasiness with how trends would be calculated. Other Regions felt the display was the best from among those proposed for the air quality area.

Data Processing Procedures: Region V offered the following comments regarding changes in data processing procedures:

"The air media presentations could be implemented easily if current data processing procedures were modified and enhanced."

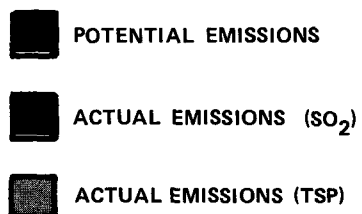
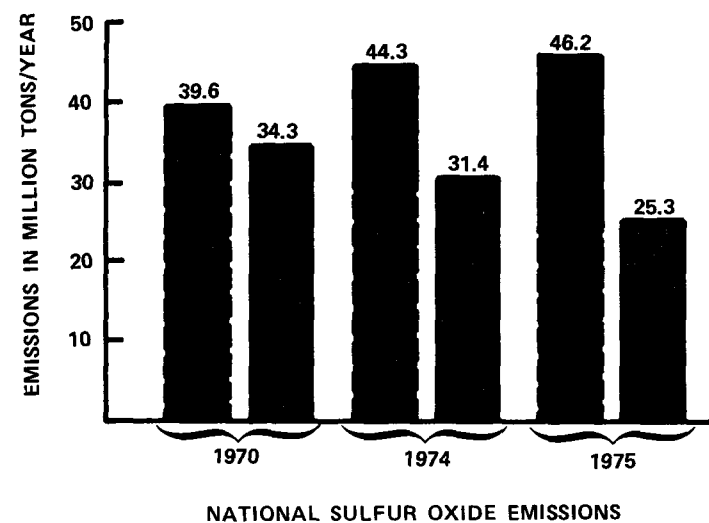
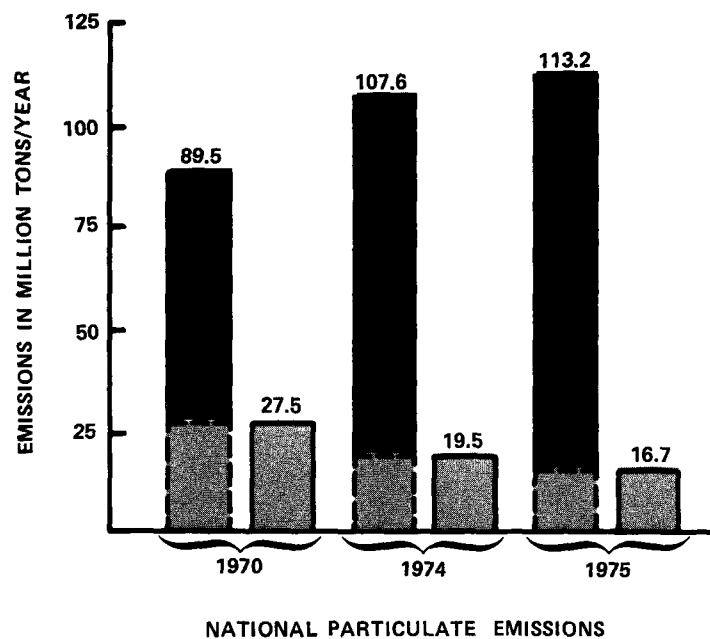
"We believe that standardization of these capabilities is most important to be cost effective. We realize each Region will have a variety of needs, some unique because of population, geography, meteorology, hydrology, and industry. However, once some of these displays have national acceptance, they should be available centrally (i.e., Headquarters, RTP). This effort should fit in with the final Standing Air Monitoring Work Group plan. We note that the Monitoring and Data Analysis Division is proposing new air data graphical displays (isopleth mapping, for instance) which is one of the FY 77-78 SAMWG goals."

"Finally, we desire this capability to be technically sound and capable of going the long haul, and that any display be clearly annotated."

Additional comments on the use of "worst case" data and on other points are included in Section 2.4.6 of this report.

In order to deal with the problems of the "worst case" approach it is proposed that other

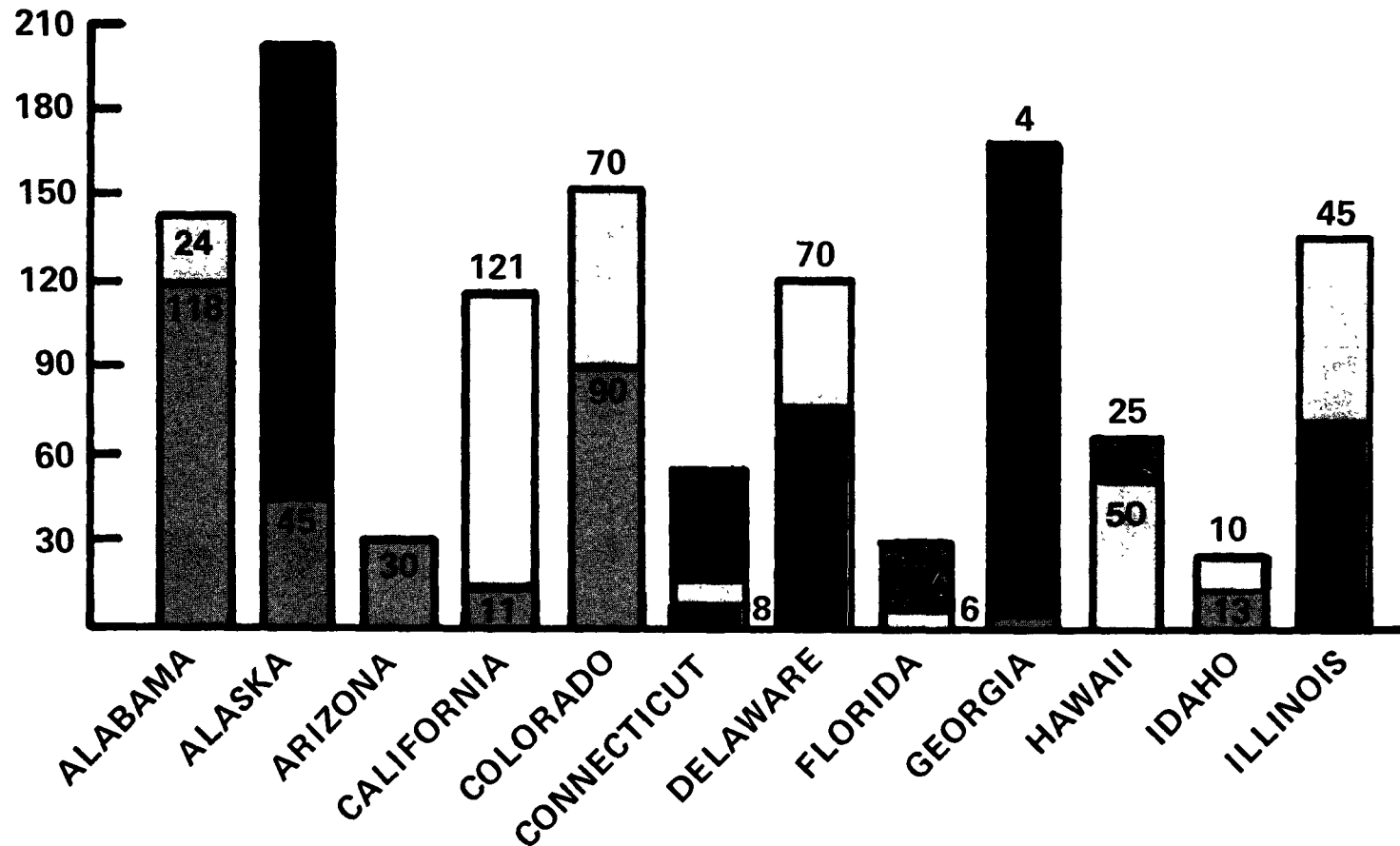
REDUCTION IN STATIONARY SOURCE EMISSIONS ATTRIBUTABLE TO AIR QUALITY CONTROLS



DATA DISPLAYED ON CHART IS NOT REAL
AND IS USED FOR DEMONSTRATION ONLY.

TYPE N-1 — THIS CHART IS PROPOSED FOR THE
FIRST EDITION OF THE NATIONAL
PROFILE

AIR QUALITY NUMBER OF DAYS WITH STANDARDS VIOLATIONS BY TYPE OF POLLUTANT

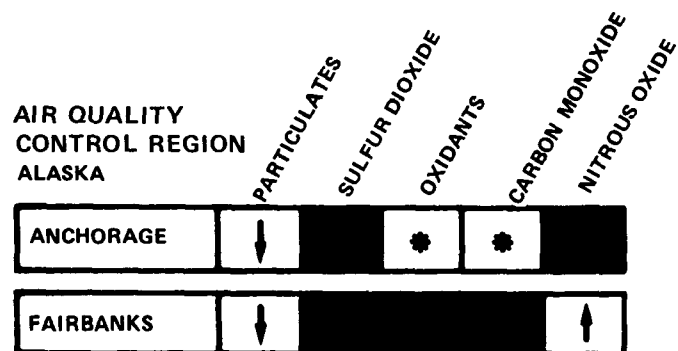


- TOTAL SUSPENDED PARTICULATE (TSP)
- SULFUR DIOXIDE (SO₂)
- OXIDANTS (O_x)
- CARBON MONOXIDE (CO)
- NITROGEN OXIDES (NO_x)
- NO VIOLATIONS

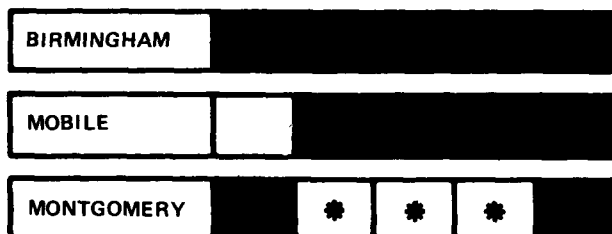
DATA DISPLAYED ON CHART IS NOT REAL
AND IS USED FOR DEMONSTRATION ONLY.

TYPE N-1- THIS CHART IS PROPOSED FOR THE FIRST
EDITION OF THE NATIONAL PROFILE.

TRENDS IN AIR QUALITY BY POLLUTANT



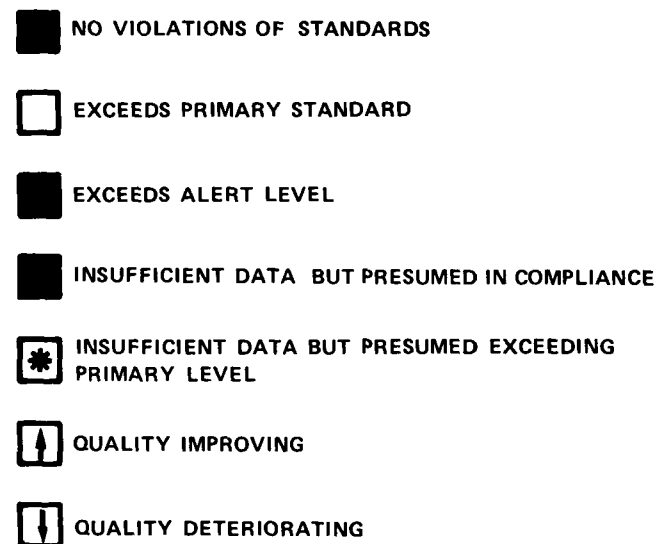
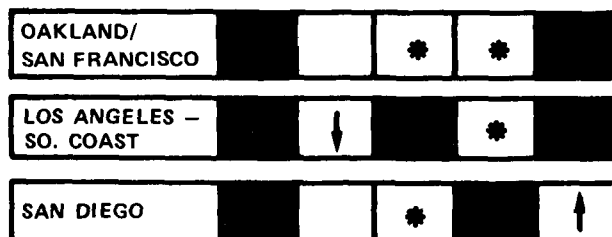
ALABAMA



ARIZONA

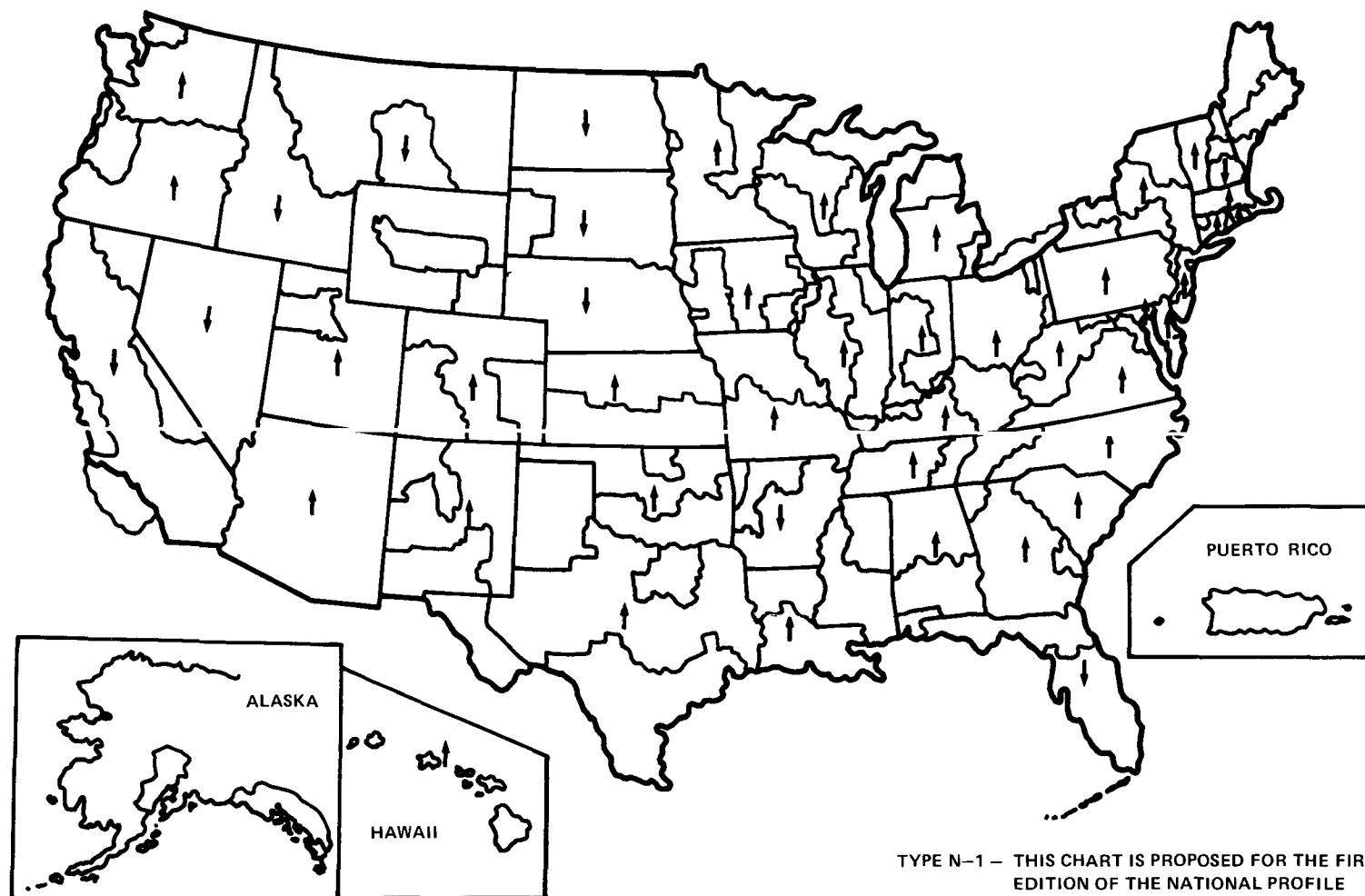


CALIFORNIA



NOTE: NO CHANGE IN QUALITY INDICATED BY NO ARROW.

TOTAL SUSPENDED PARTICULATE AIR QUALITY STATUS



TYPE N-1 – THIS CHART IS PROPOSED FOR THE FIRST EDITION OF THE NATIONAL PROFILE

- ☐ REGIONS NOT MEETING PRIMARY ANNUAL AMBIENT AIR QUALITY STANDARDS
- ☒ STATE – AMBIENT LEVELS AT MORE MONITORS IN STATE IMPROVING THAN DETERIORATING 1970 – 1975
- ☒ STATE – AMBIENT LEVELS AT MORE MONITORS IN STATE DETERIORATING THAN IMPROVING 1970 – 1975

SOURCE: OAQPS, EPA DATA

DATA DISPLAYED ON CHART IS NOT REAL
AND IS USED FOR DEMONSTRATION ONLY.

TYPE N-1 – THIS CHART IS PROPOSED FOR THE FIRST EDITION OF THE NATIONAL PROFILE

statistics as to days of standards violations be combined on one chart with a separate chart for each pollutant. The other statistics could include "average days of standards violations," "days exceeded by 50% of sites," and so forth. Before proceeding with these graphics, these concepts should be explored further. It is believed, however, that a satisfactory exposition of information can be obtained.

1.3.6 SOLID WASTE DISPOSAL

Two charts were proposed for inclusion in a near-term national profile for the area of solid waste disposal. These were:

- Percent of population served by a state-approved solid waste disposal facility by year, further color coded as to whether the violations are relatively major or minor (see SW-1).
- Number of persons served by state-approved solid waste disposal facilities by Region, and color coded as to whether the violations are relatively major or minor (see SW-2).

The data for these two displays can be constructed from data reported by the states

along with census information. A rule for distinguishing between "major" and "minor" violations was not proposed in the specifications, but it is believed that one can be formulated. Accordingly, it is proposed to proceed with these displays.

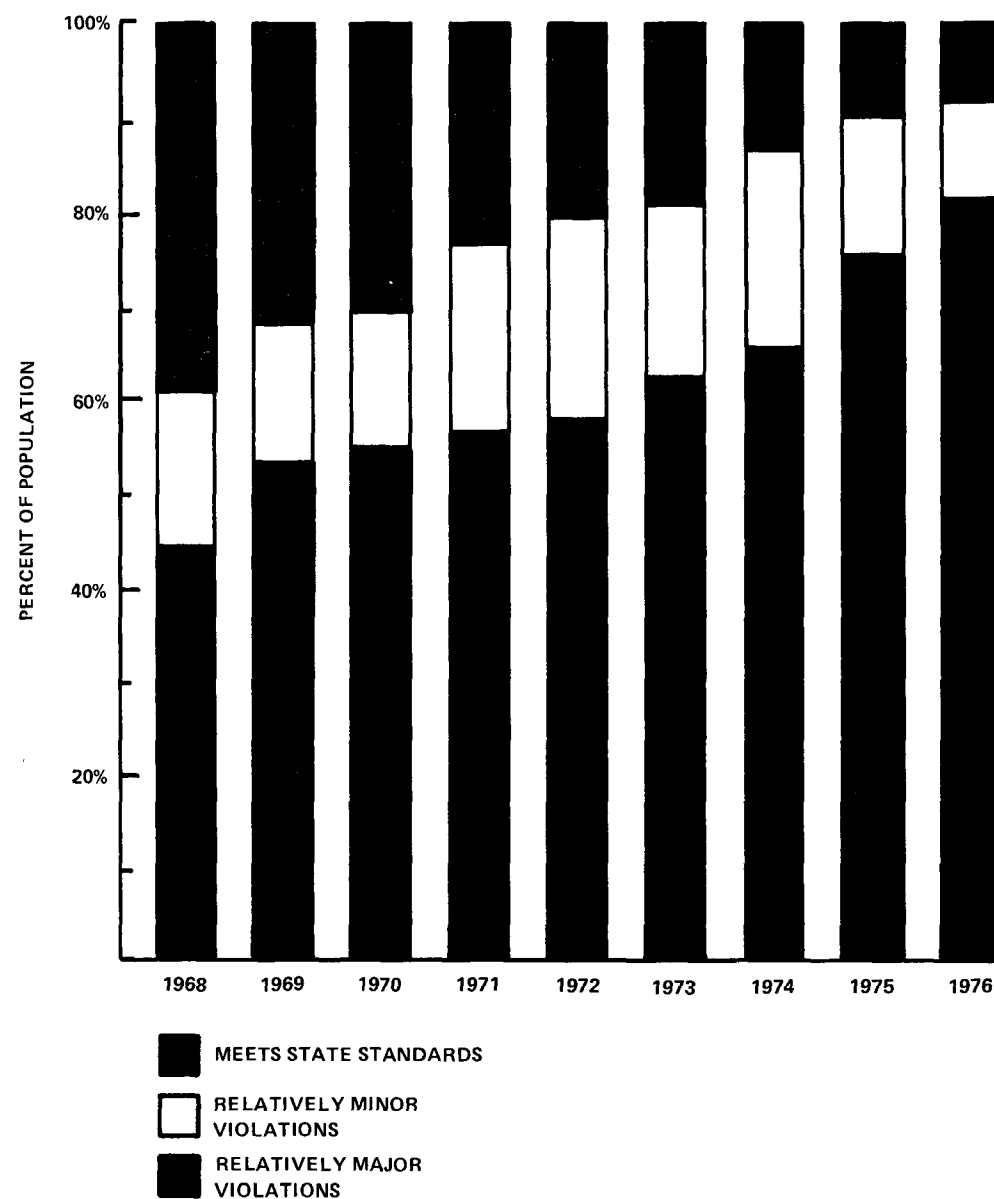
Several other displays were considered in the solid waste disposal area. These included "tons of hazardous waste disposed of by state-approved methods in relation to tons generated" (see SW-3 in Section 2.2), and population served by acceptable sludge disposal systems (see SW-4 in Section 2.2). Neither of these displays were believed possible for the near-term on a national basis because of lack of data.

1.3.7 RADIATION

The three displays proposed for use in a national profile in the area of radiation may be constructed using existing data. The three graphics were:

- trend in the amount of radiation in the environment due to fallout (RAD-1);
- trend in the amount of radiation escaping from nuclear plants (RAD-2);
- Average amount of exposure to radiation per person per year (RAD-3).

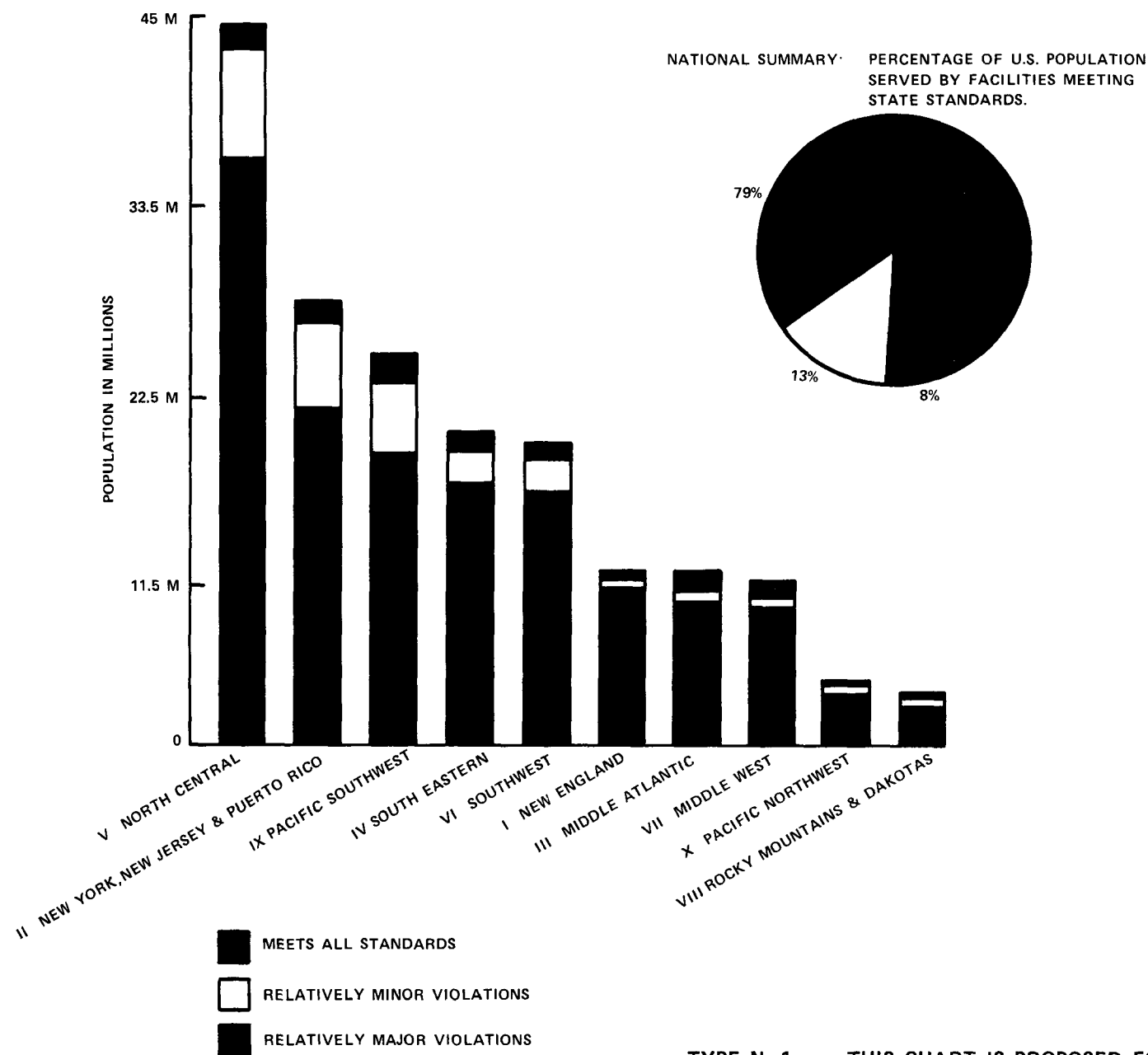
PERCENT OF POPULATION SERVED BY STATE APPROVED SOLID WASTE DISPOSAL FACILITIES



DATA DISPLAYED ON CHART IS NOT REAL
AND IS USED FOR DEMONSTRATION ONLY.

TYPE N-1 - THIS CHART IS PROPOSED FOR THE FIRST
EDITION OF THE NATIONAL PROFILE.

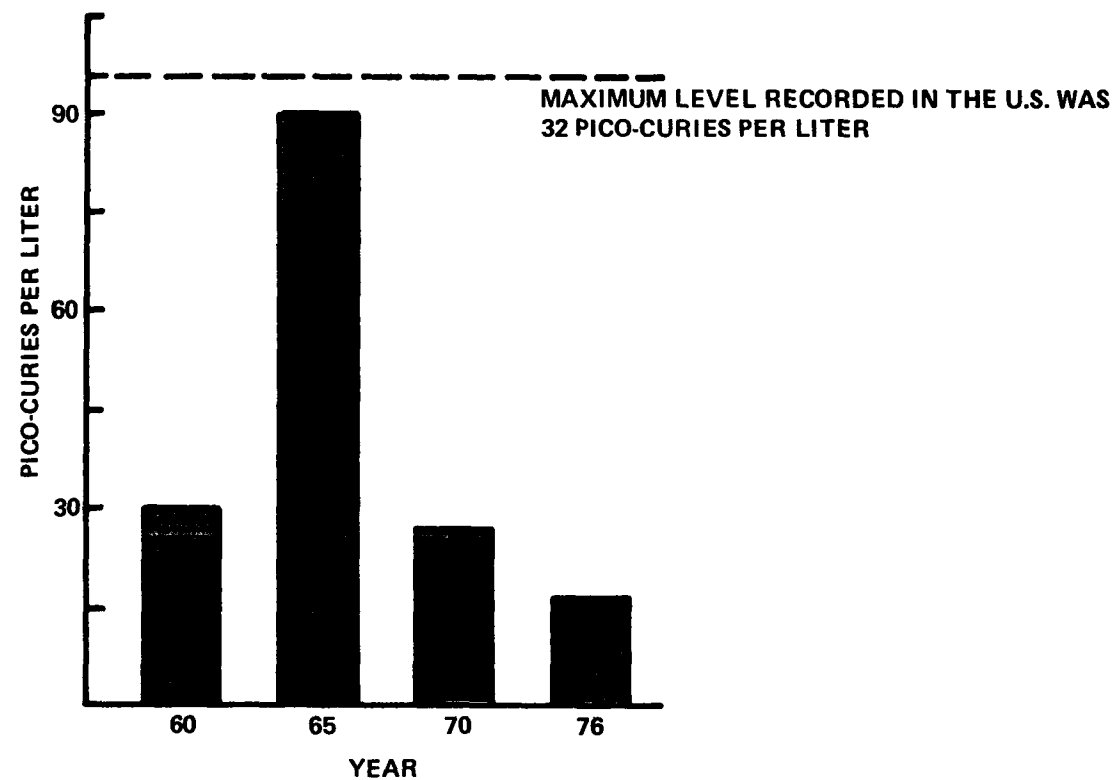
NUMBERS OF PERSONS SERVED BY STATE APPROVED SOLID WASTE DISPOSAL FACILITIES



DATA DISPLAYED ON CHART IS NOT REAL

TYPE N-1 — THIS CHART IS PROPOSED FOR THE FIRST
EDITION OF THE NATIONAL PROFILE.

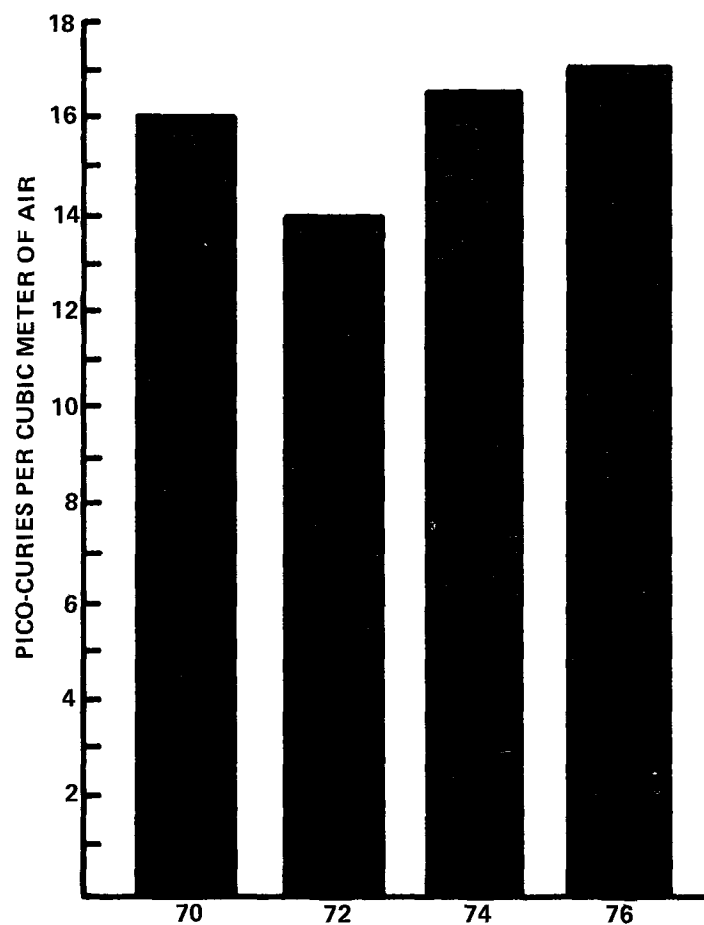
**TREND IN AMOUNT OF RADIATION IN THE
ENVIRONMENT DUE TO "FALL-OUT"
(STRONTIUM 90 IN MILK)**



DATA DISPLAYED ON CHART IS NOT REAL
AND IS USED FOR DEMONSTRATION ONLY.

TYPE N-1 — THIS CHART IS PROPOSED FOR THE FIRST
EDITION OF THE NATIONAL PROFILE.

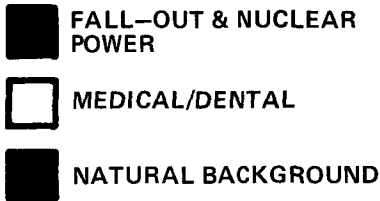
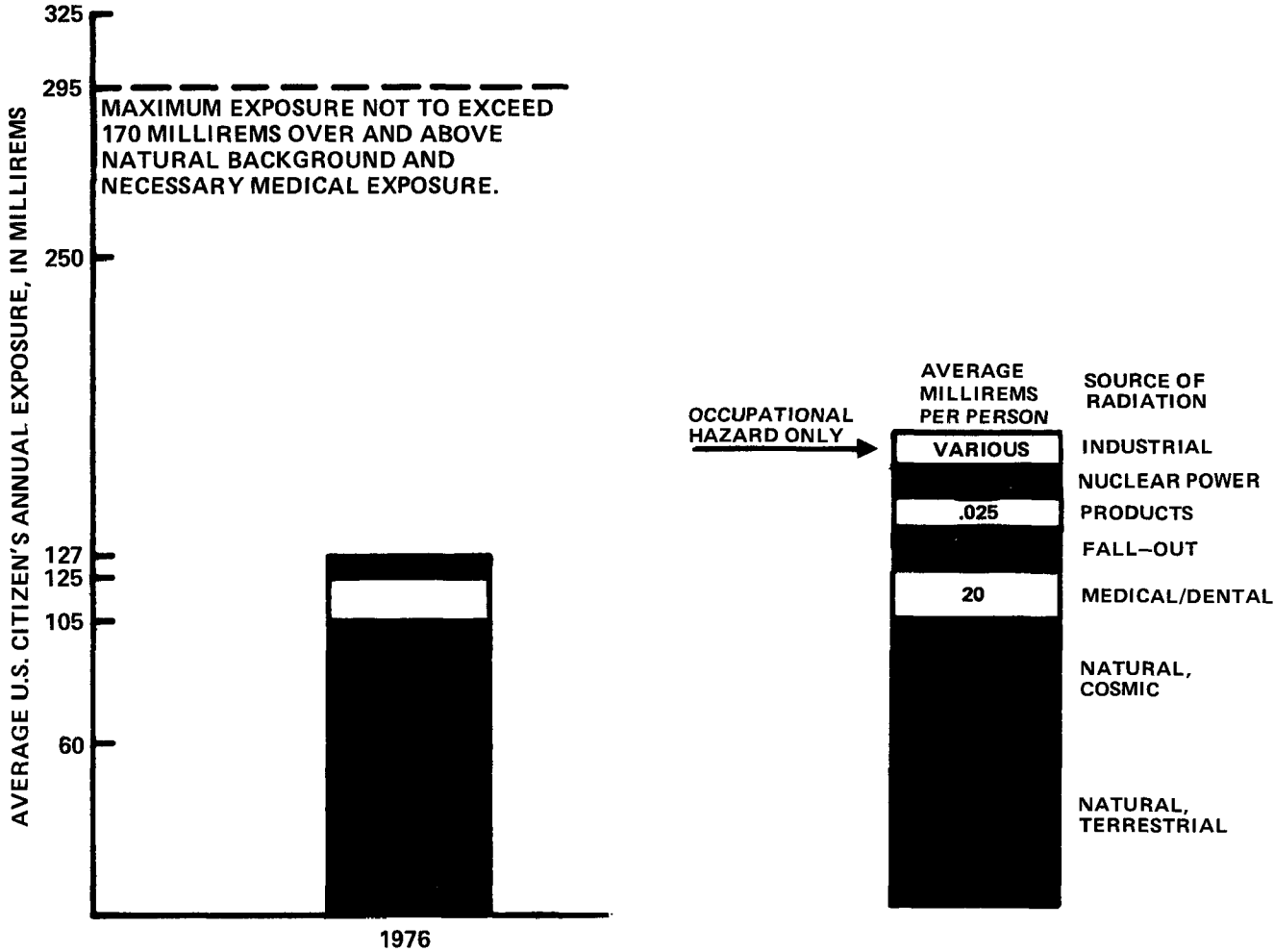
**TREND IN AMOUNT OF RADIOACTIVE MATERIALS
ESCAPING FROM NUCLEAR PLANTS
(KRYPTON 85 IN AIR)
(NO STANDARD ESTABLISHED)**



DATA DISPLAYED ON CHART IS NOT REAL
AND IS USED FOR DEMONSTRATION ONLY.

TYPE N-1 — THIS CHART IS PROPOSED FOR THE FIRST
EDITION OF THE NATIONAL PROFILE.

AVERAGE AMOUNT OF EXPOSURE TO RADIATION, PER PERSON, PER YEAR



TYPE N - 1 - THIS CHART IS PROPOSED FOR THE FIRST EDITION OF THE NATIONAL PROFILE.

Radiation due to fallout would be measured by the trends in Strontium 90 in milk. In the case of radiation associated with nuclear plants, the average amount of Krypton 85 in the air would be used.

The purpose of the chart illustrating the sources and amount of radiation per person per year is to help put in perspective the relative exposure to radiation from controllable and non-controllable sources, as well as to put the impact of various sources of radiation in perspective. The graphics shown in R-3 are not entirely adequate for this task, but something similar to this is probably needed.

No Regional input would be required for these types of displays, and improved alternatives to those illustrated may very well exist.

A number of revisions in these displays were proposed by the Office of Deputy Assistant Administrator for Radiation Programs and are shown in Section 2.4.8. In particular the feasibility of RAD-3 was questioned.

1.3.8 PESTICIDES

The three displays proposed for the pesticide area were addressed to three issues:

(1) trends in the usage of pesticides; (2) changes in the residual levels of pesticides; and (3) the benefits of pesticide usage.

The charts identified as PEST-1, PEST-2, and PEST-3 are illustrative of the type of material that could be presented in connection with these issues. No Regional support would be required for these or similar displays.

1.3.9 NOISE

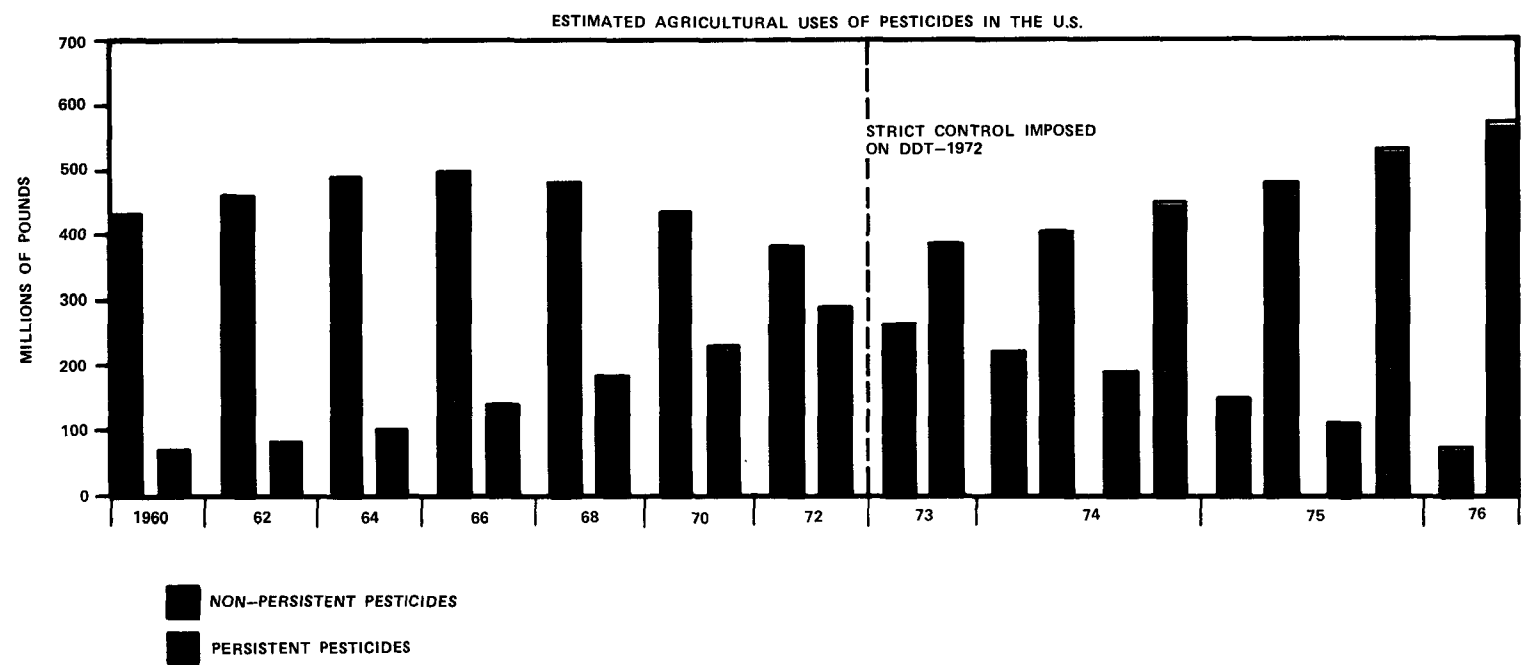
Three displays were proposed for the noise area of the profile. These are:

- Numbers of persons living in areas with objective noise ordinances (see NOISE-1);
- Numbers of persons exposed to unacceptable noise levels (see NOISE-2);
- Noise energy by major source (see NOISE-3).

The first of these charts will require that the Regions match community populations with noise ordinances.

The two remaining charts may be prepared without Regional assistance based on existing estimates of the parameters involved.

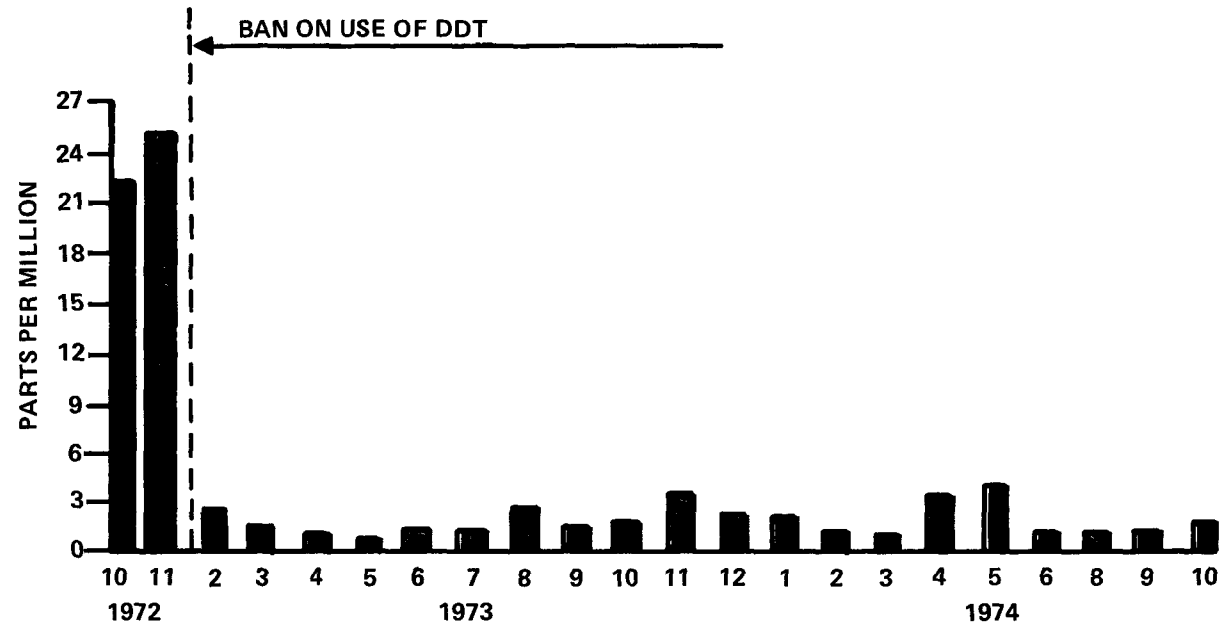
PESTICIDE USAGE, BY YEAR



DATA DISPLAYED ON CHART IS NOT REAL
AND IS USED FOR DEMONSTRATION ONLY.

TYPE N-1 - THIS CHART IS PROPOSED FOR THE
FIRST EDITION OF THE NATIONAL
PROFILE

CHANGE IN PESTICIDE RESIDUAL LEVELS IN FISH (SPECIES MENHADEN) SINCE DDT WAS BANNED

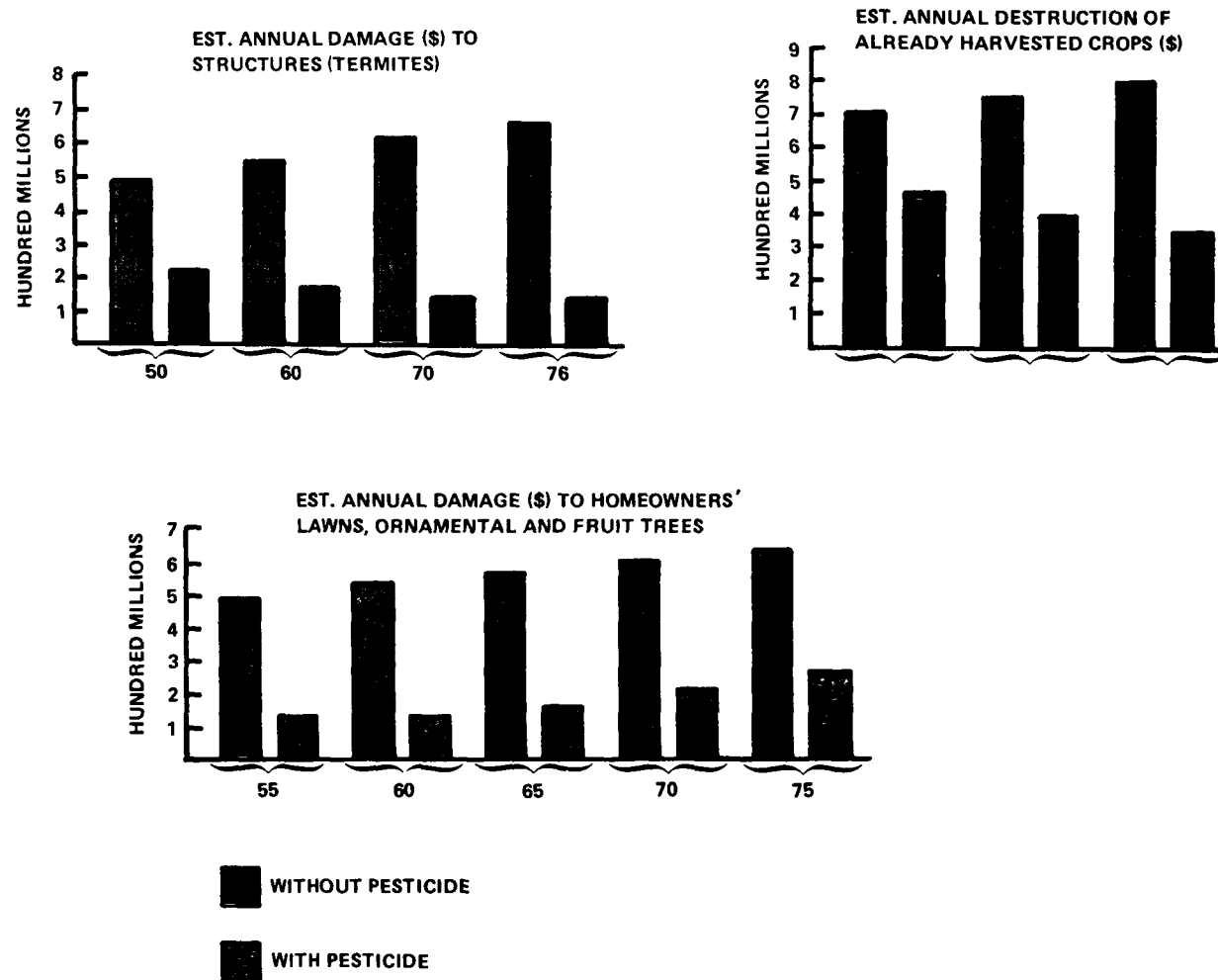


SOURCE: PHILIP A. BUTLER, PROJECT OFFICER, GULF BREEZE (FLORIDA) LABORATORY

NOTE: PESTICIDES ARE DEFINED IN P.L. 92-516 TO INCLUDE RODENTICIDES, HERBICIDES, FUNGICIDES

DATA DISPLAYED ON CHART IS NOT REAL
AND IS USED FOR DEMONSTRATION ONLY.

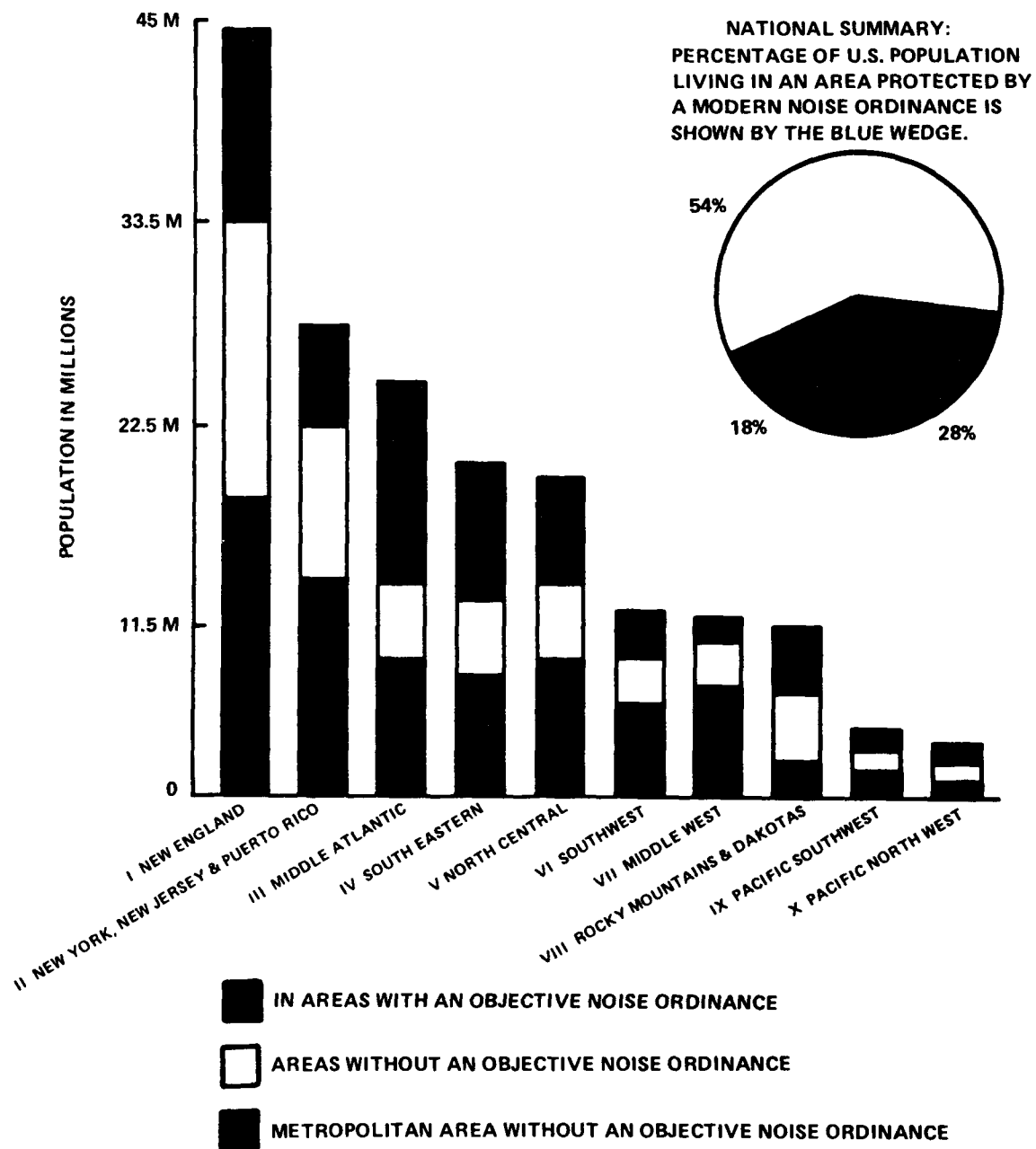
BENEFITS OF PESTICIDE USAGE



DATA DISPLAYED ON CHART IS NOT REAL
AND IS USED FOR DEMONSTRATION ONLY.

TYPE N-1 – THIS CHART IS PROPOSED FOR THE
FIRST EDITION OF THE NATIONAL
PROFILE.

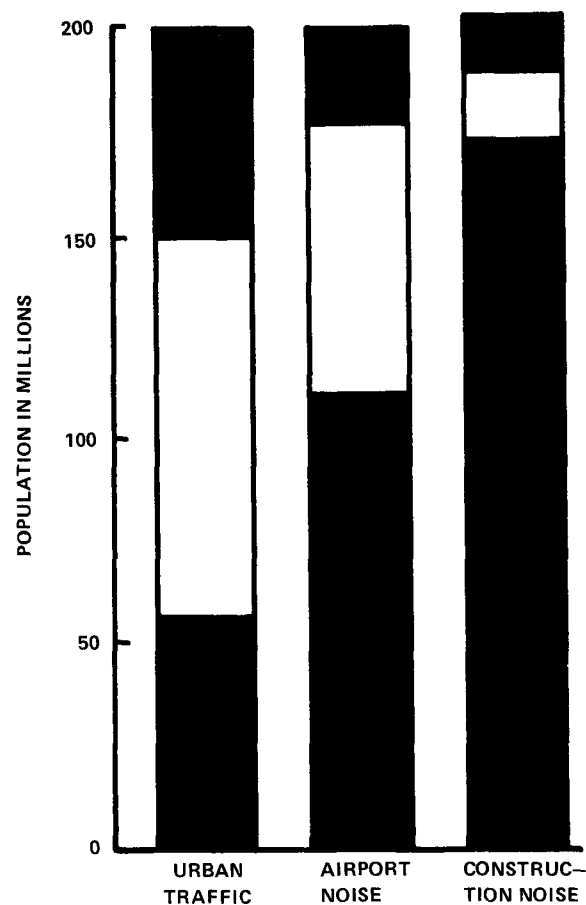
NUMBERS OF PERSONS LIVING IN AREAS WITH OBJECTIVE NOISE ORDINANCES



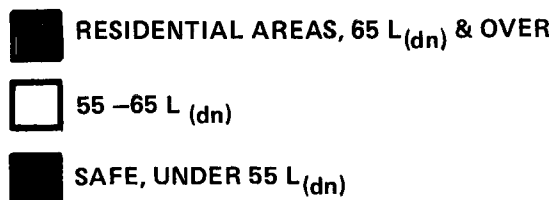
DATA DISPLAYED ON CHART IS NOT REAL
AND IS USED FOR DEMONSTRATION ONLY.

TYPE N-1 — THIS CHART IS PROPOSED FOR THE FIRST
EDITION OF THE NATIONAL PROFILE

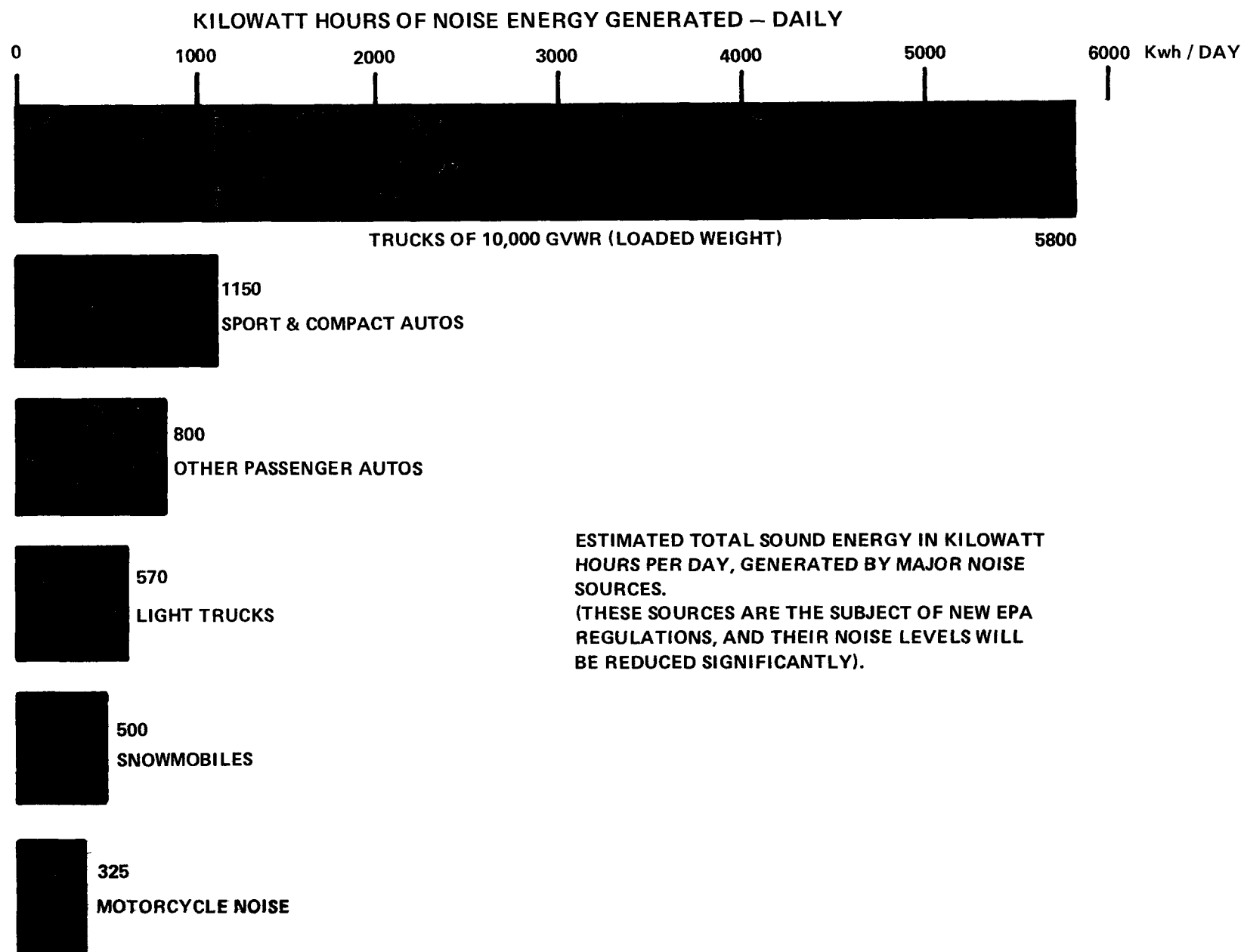
NUMBERS OF PERSONS EXPOSED TO UNACCEPTABLE NOISE LEVELS- GREATER THAN 55 $L_{(dn)}$ - BY SOURCE OF NOISE



SOURCE: EPA REPORT, 39FR 121
PAGE 22297, 21 JUNE 1974



NOISE ENERGY BY MAJOR SOURCE



DATA DISPLAYED ON CHART IS NOT REAL
AND IS USED FOR DEMONSTRATION ONLY.

TYPE N-1 – THIS CHART IS PROPOSED FOR THE
FIRST EDITION OF THE NATIONAL
PROFILE.

1.3.10 SUMMARY OF FINDINGS ON FEASIBILITY OF PROPOSED DISPLAYS

The Table below summarized our findings with regard to each of the 43 displays presented in the January 1977 document. Illustrations of the displays not included above may be found in Section 2.2.

SUMMARY OF FINDINGS

<u>Chart Number</u>	<u>Title</u>	<u>Format</u>	<u>Conclusions and Recommendations</u>
RW-1	Water Quality of Nation's River Basins	Map	Proceed with this display resolving problems in definitions, flow rates, etc., after some real data aggregated.
RW-2	River Miles Meeting National Goals By Principal River Basin	Bar & Pie Chart	(Same as RW-1)
RW-3	Trend in Percent of River Miles Meeting Goals	Bar Chart	Further information on feasibility needed.
RW-4	Types of River Water Standards Violations in the Nation's Principal Rivers	Matrix	(Same as RW-1)
RW-5	Point vs. Non-Point Source Contributions to River Water Pollution	Bar Chart	Do not pursue at this time at national level.
LW-1	Lake Surface Area for Which Highest Beneficial Use is Impaired (Principal Lakes Excluding Great Lakes)	Bar & Pie Chart	Attempt this display in next phase subject to being able to get enough lakes included to make national aggregation meaningful.
LW-2	Causes of Impairment of Principal Lake Water Quality	Matrix	Consider for future.
LW-3	Eutrophication of Major Lakes (Except Great Lakes)	Bar & Pie Chart	(Same as LW-1)

Chart Number	Title	Format	Conclusions & Recommendations
LW-4	Trend in Eutrophication of Major Lakes of the United States (Except Great Lakes)	Bar Chart	Consider for future.
LW-5	Miles of Lake Shoreline Acceptable for Swimming	Bar & Pie Chart	For regional or local use only.
LW-1	Percent of Swimming Beaches of Great Lakes Meeting Water Quality or Health Standards	Bar & Pie Chart	Proceed with this display at this time.
GLW-2	"Problem Areas" in Great Lakes	Map	Proceed with this display at this time.
MW-1	Commercial Shellfish Acreage Open for Harvesting	Bar & Pie Chart	Proceed with this display at this time.
MW-2	Types of Marine Water Standards Violations	Matrix	Consider for future.
MW-3	Trend in Commercial Shellfish Areas Open for Harvesting	Bar Chart	This may be feasible now and could be combined with MW-1. Further study needed.
MW-4	Status of Shellfish Harvesting Areas	Map	For regional or local use only.
DW-1	Population Served by Drinking Water Supplies Meeting All Standards	Bar & Pie Chart	Proceed at this time.
DW-2	Types of Drinking Water Standards Violations	Matrix	Consider for future.
DW-3	Number of Drinking Water Supplies Meeting Standards	Bar & Pie Chart	For regional or local use.

Chart Number	Title	Format	Conclusions & Recommendations
AIR-1	Reduction in Stationary Source Emissions Attributable to Air Quality Controls	Bar Chart	Proceed with this display.
AIR-2	Number of Days with Standards Violations by Type of Pollutant	Bar Chart	Combine with other violation-day statistics to get satisfactory display concept before proceeding.
AIR-3	Days of Standards Violations by Type of pollutant and Severity of Violation for Non-Attainment Air Quality Control Regions	Bar Chart	For regional or local use only
AIR-4	Trends in Air Quality by Pollutant	Matrix	Proceed with this display at this time.
AIR-5	Types & Trends in Number of Days of Air Quality Standards Violations by State	Matrix	Drop this display.
AIR-6	Number of Persons Exposed to Air Quality Standards Violations	Bar & Pie Chart	Consider for future.
AIR-7	Cost of Air Pollution	Bar Chart	Consider for future.
AIR-8	Numbers of Persons Exposed to Air Quality Standards Violations, by Year	Bar Chart	Consider for future.
AIR-9	Maximum One-Hour Oxidant Concentration for "Your City" by Year	Bar Chart	For regional or local use.
AIR-10	Days of Air Quality Standards Violations, by City & by Month of Year for All Pollutants	Bar & Pie Chart	For regional or local use.

Chart Number	Title	Format	Conclusions & Recommendations
AIR-11	Total Suspended Particulate Air Quality Status	Map	Do example with improved resolution before proceeding.
SW-1	Percent of Population Served by State Approved Solid Waste Disposal Facilities	Bar Chart	Proceed with data collection for this display at this time.
SW-2	Numbers of Persons Served by State Approved Solid Waste Disposal Facilities	Bar & Pie Chart	Proceed with data collection for this display at this time.
SW-3	Tons of Hazardous Waste Disposed of by State Approved Methods	Bar & Pie Chart	Consider for future.
SW-4	Population Served by Acceptable Sludge Disposal System	Bar & Pie Chart	Consider for future.
SW-5	Implementation Status of Full-Scale Resource Recovery Systems	Map & Pie Chart	For regional or local use.
RAD-1	Trend in Amount of Radiation in the Environment Due to "Fall Out" (Strontium 90 in Milk)	Bar Chart	All right for inclusion in national profile with revisions.
RAD-2	Trend in Amount of Radioactive Materials Escaping from Nuclear Plants (KRYP.85 in Air)	Bar Chart	(Same as RAD-1)
RAD-3	Average Amount of Exposure to Radiation, Per Person, Per Year	Bar Chart	Consider for future.
PEST-1	Pesticide Usage, by Year	Bar Chart	All right for inclusion in national profile with revisions.
PEST-2	Changes in Pesticide Residual Levels in Fish (Species Menhaden) Since DDT Was Banned	Graph	(Same as PEST-1)

Chart Number	Title	Format	Conclusions & Recommendations
PEST-3	Benefits of Pesticide Usage	Bar Chart	(Same as PEST-1)
NOISE-1	Numbers of Persons Living in Areas With Objective Noise Ordinances	Bar & Pie Chart	Proceed with data collection at this time.
NOISE-2	Number of Persons Exposed to Unaccep- table Noise Levels (Greater Than 55 Ldn) by Source of Noise	Bar Chart	Alright for inclusion
NOISE-3	Noise Energy by Major Source	Bar Chart	Alright for inclusion

SECTION 2

This section of the report presents the materials that were circulated for comment in January 1977, and the comments that were received. It is composed of four items.

- Section 2.1: An index to the displays.
- Section 2.2: The complete group of 43 displays along with the specifications for their preparation as originally proposed.
- Section 2.3: A summary of the format and content of the displays which summarize the degree to which causes of problems and trend information has been covered.
- Section 2.4: All comments made by reviewers prior to publication deadline.

2.1. INDEX TO DISPLAYS IN THE JANUARY 1977 REPORT

The following lists the 43 displays that were circulated for review in January 1977.

INDEX TO DISPLAYS IN THE JANUARY 1977 REPORT

DISPLAY	AREA	TYPE*	TITLE	FORMAT
1	RW-1	N-1	WATER QUALITY OF NATION'S RIVER BASINS	MAP
2	RW-2	N-1	RIVER MILES MEETING NATIONAL GOALS BY PRINCIPAL RIVER BASIN	BAR&PIE CHART
3	RW-3	N-2	TREND IN PERCENT OF RIVER MILES MEETING GOALS	BAR CHART
4	RW-4	N-1	TYPES OF RIVER WATER STANDARDS VIOLATIONS IN THE NATION'S PRINCIPAL RIVERS	MATRIX
5	RW-5	R-2	POINT VS. NON-POINT SOURCE CONTRIBUTIONS TO RIVER WATER POLLUTION	BAR CHART
6	LW-1	N-1	LAKE SURFACE AREA FOR WHICH HIGHEST BENEFICIAL USE IS IMPAIRED (PRINC. LAKES EXCL. GREAT LAKES)	BAR&PIE CHART
7	LW-2	N-2	CAUSES OF IMPAIRMENT OF PRINCIPAL LAKE WATER QUALITY.	MATRIX
8	LW-3	N-1	EUTHROPHICATION OF MAJOR LAKES (EXCEPT GREAT LAKES)	BAR&PIE CHART
9	LW-4	N-2	TREND IN EUTHROPHICATION OF MAJOR LAKES OF THE UNITED STATES (EXCEPT GREAT LAKES)	BAR CHART
10	LW-5	R-2	MILES OF LAKE SHORELINE ACCEPTABLE FOR SWIMMING	BAR&PIE CHART
11	GLW-1	N-1	PERCENT OF SWIMMING BEACHES OF GREAT LAKES MEETING WATER QUALITY OR HEALTH STANDARDS	BAR&PIE CHART
12	GLW-2	R-1	"PROBLEM AREAS" IN GREAT LAKES	MAP
13	MW-1	N-1	COMMERCIAL SHELLFISH ACREAGE OPEN FOR HARVESTING	BAR&PIE CHART

*N = NATIONAL LEVEL
R = REGIONAL OPTION

1 = FEASIBLE IN NEAR-TERM
2 = CONSIDER FOR FUTURE
3 = FEASIBILITY UNKNOWN

N-1 DISPLAYS COMPRISE NEAR-TERM NATIONAL PROFILE
RW RIVER WATER GLW GREAT LAKES WATER
LW LAKE WATER MW MARINE WATER
DW DRINKING WATER SW SOLID WASTE
RAD RADIATION PEST PESTICIDES

DISPLAY	AREA	TYPE	TITLE	FORMAT
14	MW-2	N-3	TYPES OF MARINE WATER STANDARDS VIOLATIONS.	MATRIX
15	MW-3	N-2	TREND IN COMMERCIAL SHELLFISH AREAS OPEN FOR HARVESTING	BAR CHART
16	MW-4	R-1	STATUS OF SHELLFISH HARVESTING AREAS	MAP
17	DW-1	N-1	POPULATION SERVED BY DRINKING WATER SUPPLIES MEETING ALL STANDARDS	BAR&PIE CHART
18	DW-2	N-2	TYPES OF DRINKING WATER STANDARDS VIOLATIONS.	MATRIX
19	DW-3	R-1	NUMBER OF DRINKING WATER SUPPLIES MEETING STANDARDS.	BAR&PIE CHART
20	AIR-1	N-1	REDUCTION IN STATIONARY SOURCE EMISSIONS ATTRIBUTABLE TO AIR QUALITY CONTROLS	BAR CHART
21N	AIR-2	N-1	NUMBER OF DAYS WITH STANDARDS VIOLATIONS BY TYPE OF POLLUTANT	BAR CHART
21R	AIR-3	R-1	DAYS OF STANDARDS VIOLATIONS BY TYPE OF POLLUTANT AND SEVERITY OF VIOLATION FOR NON-ATTAINMENT AIR QUALITY CONTROL REGIONS.	BAR CHART
22	AIR-4	N-1	TRENDS IN AIR QUALITY BY POLLUTANT	MATRIX
23	AIR-5	N-2	TYPES & TRENDS IN NUMBER OF DAYS OF AIR QUALITY STANDARDS VIOLATIONS BY STATE	MATRIX
24	AIR-6	N-2	NUMBER OF PERSONS EXPOSED TO AIR QUALITY STANDARDS VIOLATIONS	BAR&PIE CHART
25	AIR-7	N-3	COST OF AIR POLLUTION.	BAR CHART
26	AIR-8	N-3	NUMBERS OF PERSONS EXPOSED TO AIR QUALITY STANDARDS VIOLATIONS, BY YEAR	BAR CHART
27	AIR-9	R-1	MAXIMUM ONE-HOUR OXIDANT CONCENTRATION FOR "YOUR CITY" BY YEAR	BAR CHART

DISPLAY	AREA	TYPE	TITLE	FORMAT
28	AIR-10	R-1	DAYS OF AIR QUALITY STANDARDS VIOLATIONS, BY CITY & BY MONTH OF YEAR, FOR ALL POLLUTANTS.	BAR&PIE CHART
29	AIR-11	N-1	TOTAL SUSPENDED PARTICULATE AIR QUALITY STATUS.	MAP
30	SW-1	N-1	PERCENT OF POPULATION SERVED BY STATE APPROVED SOLID WASTE DISPOSAL FACILITIES.	BAR CHART
31	SW-2	N-1	NUMBERS OF PERSONS SERVED BY STATE APPROVED SOLID WASTE DISPOSAL FACILITIES	BAR&PIE CHART
32	SW-3	N-2	TONS OF HAZARDOUS WASTE DISPOSED OF BY STATE APPROVED METHODS.	BAR&PIE
33	SW-4	N-2	POPULATION SERVED BY ACCEPTABLE SLUDGE DISPOSAL SYSTEM.	BAR&PIE CHART
34	SW-5	R-1	IMPLEMENTATION STATUS OF FULL-SCALE RESOURCE RECOVERY SYSTEMS.	MAP& PIE
35	RAD-1	N-1	TREND IN AMOUNT OF RADIATION IN THE ENVIRONMENT DUE TO "FALL OUT" (STRONTIUM 90 IN MILK).	BAR CHART
36	RAD-2	N-1	TREND IN AMOUNT OF RADIOACTIVE MATERIALS ESCAPING FROM NUCLEAR PLANTS (KRYPT. 85 IN AIR) (NO STD ESTAB.).	BAR CHART
37	RAD-3	N-1	AVERAGE AMOUNT OF EXPOSURE TO RADIATION, PER PERSON, PER YEAR.	BAR CHART
38	PEST-1	N-1	PESTICIDE USAGE, BY YEAR.	BAR CHART
39	PEST-2	N-1	CHANGE IN PESTICIDE RESIDUAL LEVELS IN FISH (SPECIES MENHADEN) SINCE DDT WAS BANNED.	GRAPH
40	PEST-3	N-1	BENEFITS OF PESTICIDE USAGE.	BAR CHART
41	NOISE-1	N-1	NUMBERS OF PERSONS LIVING IN AREAS WITH OBJECTIVE NOISE ORDINANCES.	BAR&PIE CHART
42	NOISE-2	N-1	NUMBER OF PERSONS EXPOSED TO UNACCEPTABLE NOISE LEVELS (GREATER THAN 55L _{dn}) BY SOURCE OF NOISE.	BAR CHART
43	NOISE-3	N-1	NOISE ENERGY BY MAJOR SOURCE.	BAR CHART


2.2 COMPLETE LISTING OF THE DISPLAYS AND SPECIFICATIONS FOR THEIR PREPARATION

The tables below provide the original specifications proposed for developing the displays as they appear in the January 1977 report along with all original art-work.

SPECIFICATIONS FOR PROPOSED NATIONAL PROFILE
WITH NOTES ON SELECTED REGIONAL &
SUPPLEMENTAL DISPLAYS

NEAR TERM RESOURCES,
IN PROFESSIONAL PERSON YEAR

2.2.1

ENVIRONMENT MEDIA	REF =	TYPE	TITLE - DESCRIPTION	APPROACH	REQUIREMENTS OF REGIONS	REQUIRED FROM OTHERS	REPORT INTEGRATION - EPA, D C.	PER REGION	OTHER
RIVER WATER	1 RW-1	N-1	WATER QUALITY OF NA- TION'S PRINCIPAL RIVER BASINS. This map shows 22 major river basins in the Nation, color coded to denote water quality. Blue denotes those segments of the rivers which meet na- tional goals of being fishable & swimmable Yellow denotes those segments which provi- sionally meet goals & red denotes segments which currently fail to meet goals. Green is used where water quality cannot be esti- mated.	Aggrega- tion of maps supplied by Regions.	The Regions will need to color code a regional river basin map of all STORET major and minor mainstem rivers, indicating whether or not water quality meets Federal goals. The regional maps would be aggre- gated together to produce the na- tional map. Each Region must: (1) Adopt and document a system for determining whether or not water quality meets fishable-swimmable goals consistent with available data and generally accepted profes- sional procedures. Adopted pro- cedures will be evaluated for suit- ability & comparability prior to aggregation. (2) Segment by segment, determine if water quality meets fishable- swimmable goals (blue), provision- ally meets goals (yellow) or plainly does not meet goals (red). (3) Color code the river basin map as determined above. See note (1) below for additional comments.		1.0	.5 (.2)	None Likel
RIVER WATER	2 RW-2	N-1	RIVER MILES MEETING NATIONAL GOALS BY PRIN- CIPAL RIVER BASIN. This bar chart display shows by region the mainstem STORET & minor basin river miles which meet	Aggre- gation of re- gional displays.	To produce the regional displays, the Regional Offices would be re- quired to: (1) Determine the length of each segment color coded on the river basin maps as discussed under dis- play #1. (Continued...)	None	Included in dis- play #1	Includ- ed in display #1	None Likel
LEGEND  N = NATIONAL LEVEL R = REGIONAL OPTION			1: FEASIBLE IN NEAR-TERM 2: CONSIDER FOR FUTURE 3: FEASIBILITY UNKNOWN "N-1" DISPLAYS COMPRISE NEAR-TERM NATIONAL PROFILE		NOTES: (1) The following is a brief synopsis of the manner in which three Regions are currently approaching the problem of determining relative river water quality. <u>Region X:</u> The Region X approach is to use STORET data to calculate a water				

NOTES ON
SPECIFICATIONS FOR PROPOSED NATIONAL PROFILE

NOTE (1) Continued:

quality index for various segments of the river. If the index value is below a particular level, it is assumed that the river segment is fishable & swimmable unless there is other evidence that a healthy biota does not exist. Conversely, a segment may also be considered fishable & swimmable, even though it does not have the required index number, if there is evidence that the segment has a healthy biota. In short, the index number, based upon STORET data, is used as a general guide to whether the water in a particular segment is fishable & swimmable, but final conclusions are subject to other evidence and judgments, apart from the index number itself.

The index is based on eleven parameters (dissolved oxygen, temperature, pH, total dissolved gases, total dissolved solids, bacteria, radioactivity, organic toxicants, inorganic toxicants plus two categories of aesthetics). In order to interpret the index, index numbers for various segments were compared with the perceived water quality of those segments, taking into account the types of violations, their severity, and any other available information. As a result of this analysis, it was decided that a segment with an index number less than 3.0 was likely to be "fishable & swimmable" unless there was other evidence that a healthy biota did not exist. Similarly, it was concluded that a segment with an index number in excess of 8.0 was the result of "significant violations."

The final results of this process are presented in bar chart form in which the "bar" for a particular segment of the river is color-coded blue, yellow, and red with the following interpretations: BLUE: fishable & swimmable or equivalent, or "essentially meets water quality standards"; RED: relatively severe violations (corresponding to an index number in excess of 8.0); and YELLOW: for the remaining percentage of the river, suggesting less than severe violations but not considered "fishable & swimmable". In each case, the conclusion based on the index number can be pre-empted by any other tangible evidence that contradicted the STORET data.

Percent of river miles was calculated by taking the known lengths of the segments in the three color-coded categories and finding the percentage of total river miles that each represented.

Region VIII: The approach used in Region VIII is similar to that of Region X, except that the state water quality index, as computed, was based on four parameter groupings: (1) DO and BOD, (2) bacteria, (3) nitrogen and phosphorous, and (4) a grouping of other aesthetic and physical considerations. Each of the parameter groupings was weighted equally and the index number was calculated as the percent of violations observed. Thus, the index for a particular river segment could range from 0 to 100 where "0" would mean that there were no violations in any of the four groupings, and "100" means that all groupings were violated at all of the observations made.

A "severe events approach" was used to augment the index numbers that were calculated for each of the river segments. Seven categories were considered under "severe events": pesticides toxic to fish, pesticides non-toxic to fish, public drinking water standards, temperature in excess of state standards, pH outside the 6-9 range, fish kills, and high salinity. No attempt was made to numerically combine these "severe events" with the index and they are treated separately in Region VIII's reporting system.

Using the index numbers computed from the STORET data, a color-coded map of the principal rivers in Region VIII was prepared and published, which is similar to chart RW-1.

NOTE (1) Continued: Region VIII uses the following color code:

<u>Color</u>	<u>Index Number</u>	<u>Interpretation</u>
Blue	0-5	Water has infrequent water quality problems.
Yellow	5-15	Water with intermittent water quality problems.
Red	above 15	Water with significant water quality problems.
Green	--	Insufficient data.

The range of index numbers associated with each water quality classification was based on general perceptions of the relationship between the various index numbers, and water quality in Region VIII.

The lines on the map were drawn as dotted lines when there was a strong belief as to the condition of the water but insufficient data to calculate an index value. Where there was other evidence that contradicted the index values, the river segment was changed to reflect this evidence and the index value was not used. Those portions of the river which were coded "blue" (index number of 0-5) could also be stated in words such as "essentially fishable & swimmable."

Thus, as with Region X, the Region VIII index serves the purpose of providing a current indication of the probable quality, which would only be accepted in the absence of contradictory perceptions or knowledge of other physical or biological factors that are not included in the computation of the formal index.

Region I: The approach used by Region I does not involve the computation of an index number. In order to estimate the number of river miles that are not meeting Class B standards, State 305 (b) reports are used as a point of departure. These reports provide estimates, on a water body by water body basis, of the miles (or surface acres) not meeting Class B standards, as established by the States. Where there are doubts as to the sufficiency or validity of data, Region I personnel, in collaboration with State personnel, take additional samples or make judgments based upon other available evidence, as to the probable water quality. Predictions as to meeting the 1983 water quality goals are based on composite judgments of State & Regional personnel.

The number of river miles meeting Class B standards is considered to be roughly equivalent to the number of river miles that are "fishable & swimmable." The reporting format used for public information purposes, reports the number of river miles not meeting standards. The reciprocal can easily be calculated for use in a National Profile of Environmental Quality.

NOTE (1) Continued...

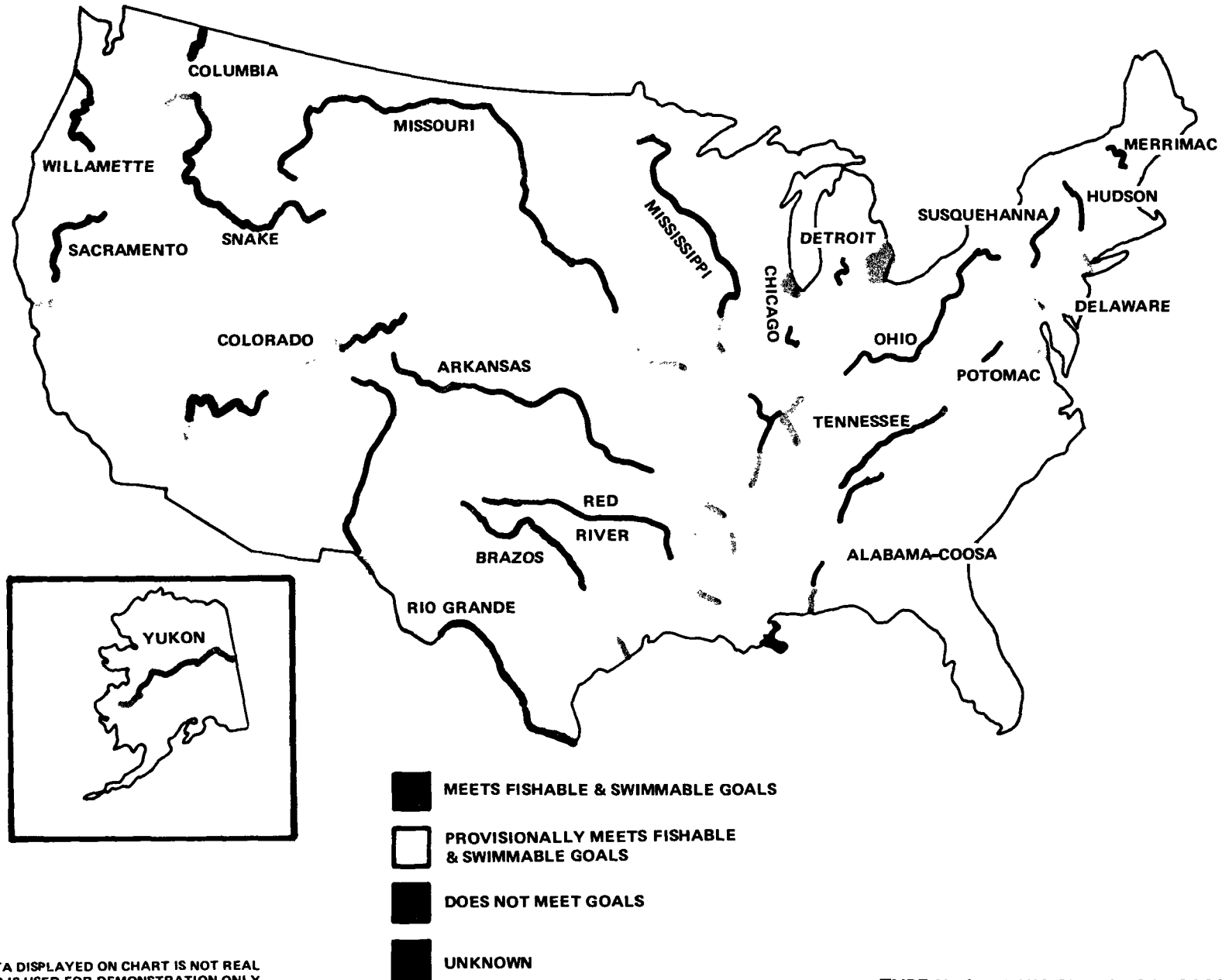
NOTES ON
SPECIFICATIONS FOR PROPOSED NATIONAL PROFILE

NOTE (1) Continued:

DEFINITION OF "MAIN STEM" OR MAJOR RIVER & TRIBUTARIES THAT QUALIFY AS "MAIN STEM"

1. "Main Stem" rivers should be selected using any one of the following criteria:
 - a. Greater than 100,000 square miles drainage area.
 - b. Greater than 50,000 cfs average annual discharge at the mouth.
 - c. Has a length of 200 miles or more.
 - d. Major cities of 100,000 or more people or has major industrial complexes along it.
 - e. Be interstate or international on terminal streams with a length of 200 miles or more.
2. Tributaries will qualify as "Main Stem" rivers if they meet one or more of the following criteria:
 - a. The flow of the tributary is 10% or more of the major river (measured downstream of the tributary).
 - b. River Basin population per square mile of drainage area is 70 people/mile.
 - c. Population of any single community is 200,000 people or more.
 - d. Industrial loading adversely affects stream quality and when drainage area exceeds 1000 square miles.
 - e. Amount of irrigated land per square mile of drainage area is 0.5 or 50% or more and when drainage area exceeds 1000 square miles.
 - f. Amount of forest land per square mile of drainage area is 0.5 or 50% or greater when drainage area exceeds 1000 square miles.

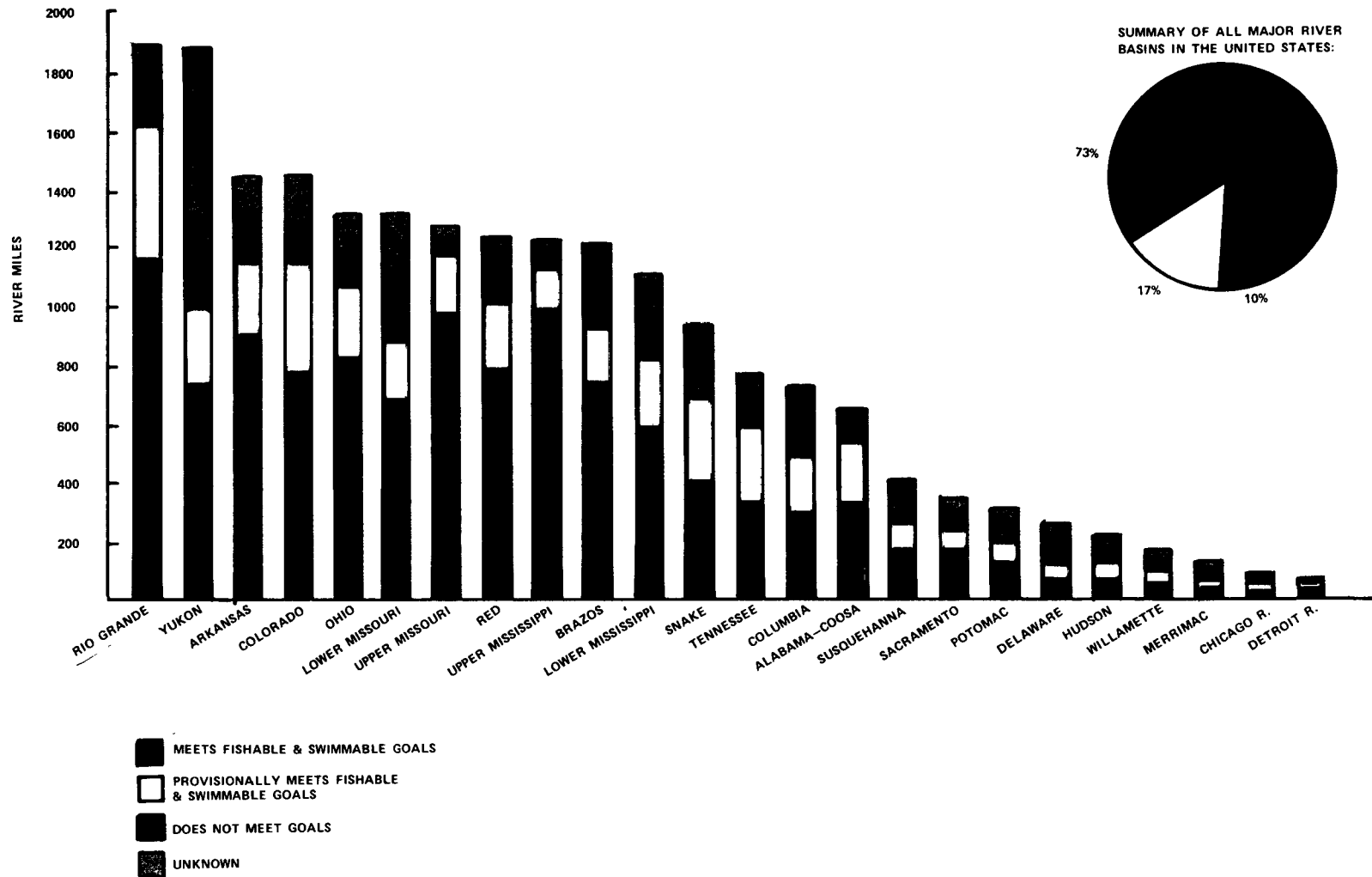
WATER QUALITY OF NATION'S PRINCIPAL RIVER BASINS



DATA DISPLAYED ON CHART IS NOT REAL
AND IS USED FOR DEMONSTRATION ONLY.

TYPE N-1 — THIS CHART IS PROPOSED FOR THE FIRST
EDITION OF THE NATIONAL PROFILE.


RIVER MILES MEETING NATIONAL GOALS BY PRINCIPAL RIVER BASIN



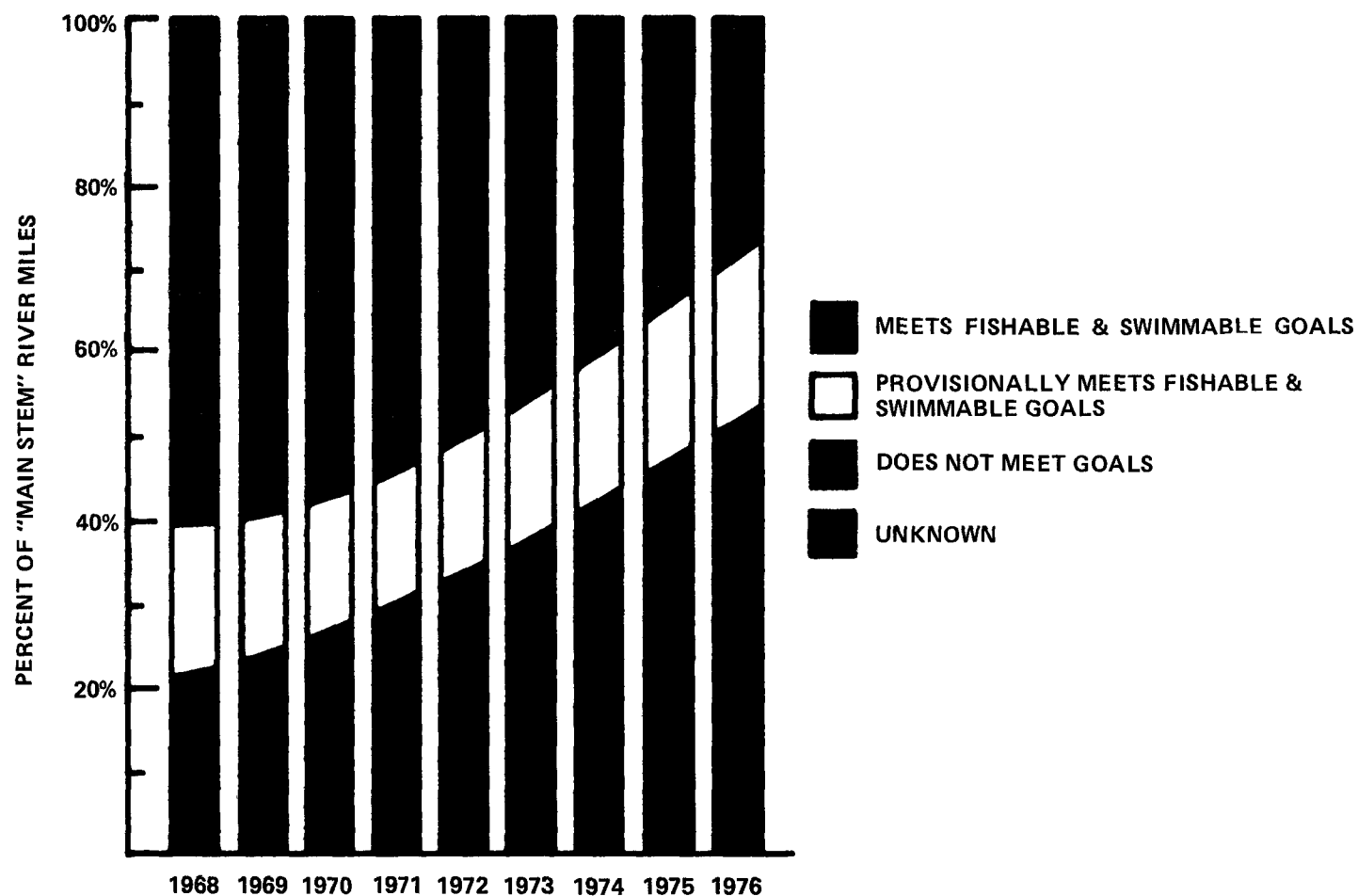
DATA DISPLAYED ON CHART IS NOT REAL
AND IS USED FOR DEMONSTRATION ONLY.

SPECIFICATIONS FOR PROPOSED NATIONAL PROFILE
WITH NOTES ON SELECTED REGIONAL &
SUPPLEMENTAL DISPLAYS

NEAR TERM RESOURCES,
IN PROFESSIONAL PERSON YEARS

ENVIRONMENT MEDIA	REF	TYPE	TITLE - DESCRIPTION	APPROACH	REQUIREMENTS OF REGIONS	REQUIRED FROM OTHERS	REPORT INTEGRATION -		
							EPA, D.C.	PER REGION	OTHERS
RIVER WATER Cont'd	2 RW-2		Federal fishable-swimmable water quality goals (blue), provisionally meet Federal goals (yellow), and fail to meet Federal water quality goals (red). The pie chart represents the national summary of these regional evaluations.		(2) By state, determine the total length of all segments of the same color and the total length of all rivers included in each state evaluation. (3) Calculate for each state the percent of total river miles determined to be blue, yellow, and red. Aggregate all states to determine the regional summary percentage for each category. (4) Prepare a three color bar chart summarizing the individual state evaluations showing, by state, the percent of river miles judged to be blue, yellow, and red. (5) On the above bar chart, construct a three color pie diagram showing the regional summary; percentage river miles judged to be blue, yellow, and red. Each color sector should be labeled with its respective numerical value. List the total river miles included in the evaluation to allow national aggregation of regional evaluations.				
RIVER WATER	3 RW-3	N-2	TREND IN PERCENT OF RIVER MILES MEETING GOALS. This chart shows trend in percent of river miles meeting standards by year,	Aggregation of regional displays as feasible in	This display is the aggregation of all river miles, color coded as described above for various points in time, e.g., 1965, 1970, 1975, or, if possible, for each year since 1965, by interpolation. This	None	TBD	TBD	None Likely
LEGEND  N = NATIONAL LEVEL R = REGIONAL OPTION				1- FEASIBLE IN NEAR-TERM 2- CONSIDER FOR FUTURE 3- FEASIBILITY UNKNOWN "N-1" DISPLAYS COMPRISE NEAR-TERM NATIONAL PROFILE NOTES:					

TREND IN PERCENT OF RIVER MILES MEETING GOALS




DATA DISPLAYED ON CHART IS NOT REAL
AND IS USED FOR DEMONSTRATION ONLY.

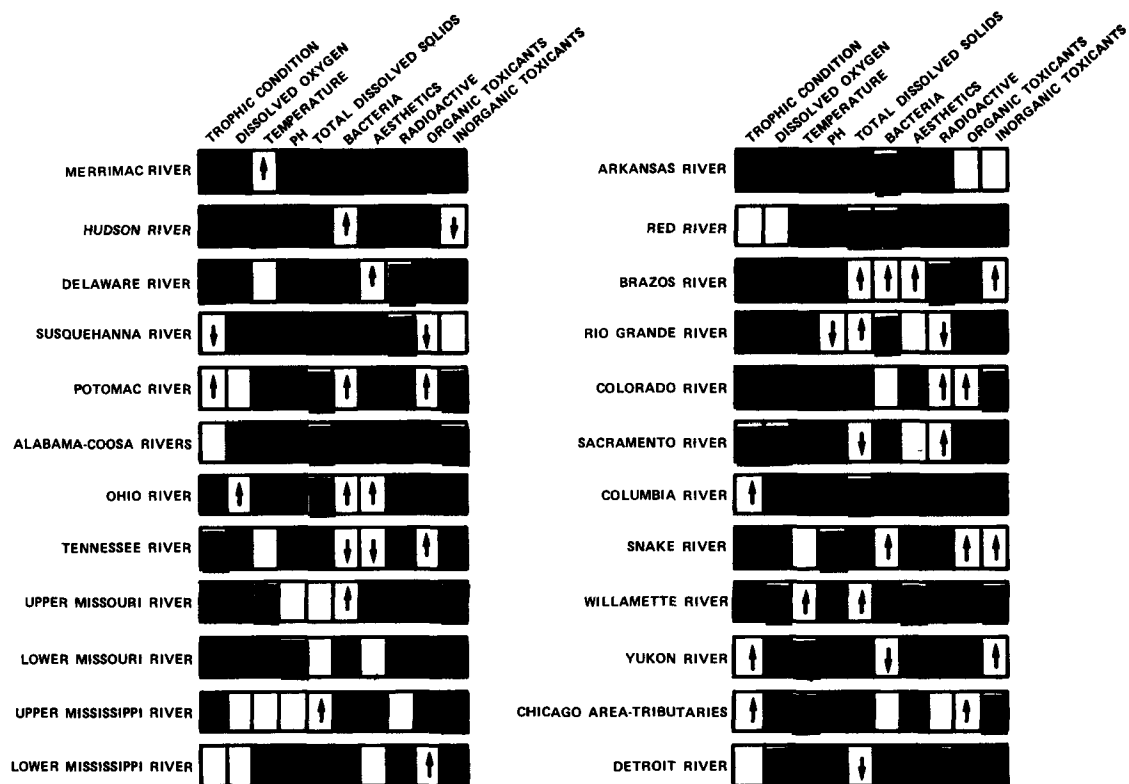
TYPE N-2 — THIS CHART IS PROPOSED FOR FUTURE
EDITIONS OF THE NATIONAL PROFILE
AND WILL BE INCLUDED WHEN REQUIRED
INFORMATION IS AVAILABLE.

SPECIFICATIONS FOR PROPOSED NATIONAL PROFILE
WITH NOTES ON SELECTED REGIONAL &
SUPPLEMENTAL DISPLAYS

NEAR TERM RESOURCES,
IN PROFESSIONAL PERSON YEARS

ENVIRONMENT MEDIA	REF. #	TYPE	TITLE - DESCRIPTION	APPROACH	REQUIREMENTS OF REGIONS	REQUIRED FROM OTHERS	NEAR TERM RESOURCES, IN PROFESSIONAL PERSON YEARS		
							REPORT INTEGRATION - EPA, D.C.	PER REGION	OTHERS
RIVER WATER Cont'd	3 RW-3		color-coded as in display #2.	the future.	display is not proposed for near-term implementation at national level, but is feasible in some of the Regions.				
RIVER WATER	4 RW-4	N-1	TYPES OF RIVER WATER STANDARDS VIOLATIONS IN NATION'S PRINCIPAL RIVERS. This chart shows the causes of river water standards violations and trend in frequency of violations, by principal river basin in the Nation.	(Not proposed for National Profile. Approach will vary from region to region.)	None relative to National Profile at this time. (Feasibility and format will vary from region to region.) The upward and downward pointing arrows reflect changes in the number of observed violations between reporting periods.	None	TBD	TBD	None Likely
RIVER WATER	5 RW-5	R-2	POINT VS. NON-POINT SOURCE CONTRIBUTIONS TO RIVER WATER POLLUTION. This bar chart illustrates the relative point vs. non-point contributions to river water standards violations, by river basin.	Not proposed for National Profile. (Approach to be determined.)	None relative to National Profile. (Feasibility and format will vary from Region to Region.) This display indicates the increment of pollution that is controllable by NPDES and is perceived as being very important in certain regions. It can be shown as a bar chart with percent of river not meeting goals, or alternatively included as an additional column in display #4. See Note (2) for additional comments.	None	N.A.	Varies	None Likely
LEGEND  N = NATIONAL LEVEL R = REGIONAL OPTION				NOTES. (2) Point vs. non-point contributions would attempt to show the potential of the NPDES program to make a significant impact on water quality. In some reaches of major rivers, the non-point contribution may be so great that the NPDES will have little effect. No attempt will be					
				1 FEASIBLE IN NEAR-TERM 2 CONSIDER FOR FUTURE 3 FEASIBILITY UNKNOWN "N-1" DISPLAYS COMPRISE NEAR-TERM NATIONAL PROFILE					

TYPES OF RIVER WATER STANDARDS VIOLATIONS IN THE NATION'S PRINCIPAL RIVERS



LEGEND

- NOT A CONTRIBUTOR TO VIOLATIONS
- MINOR CONTRIBUTOR TO VIOLATIONS
- MAJOR CONTRIBUTOR TO VIOLATIONS
- INSUFFICIENT DATA, UNKNOWN

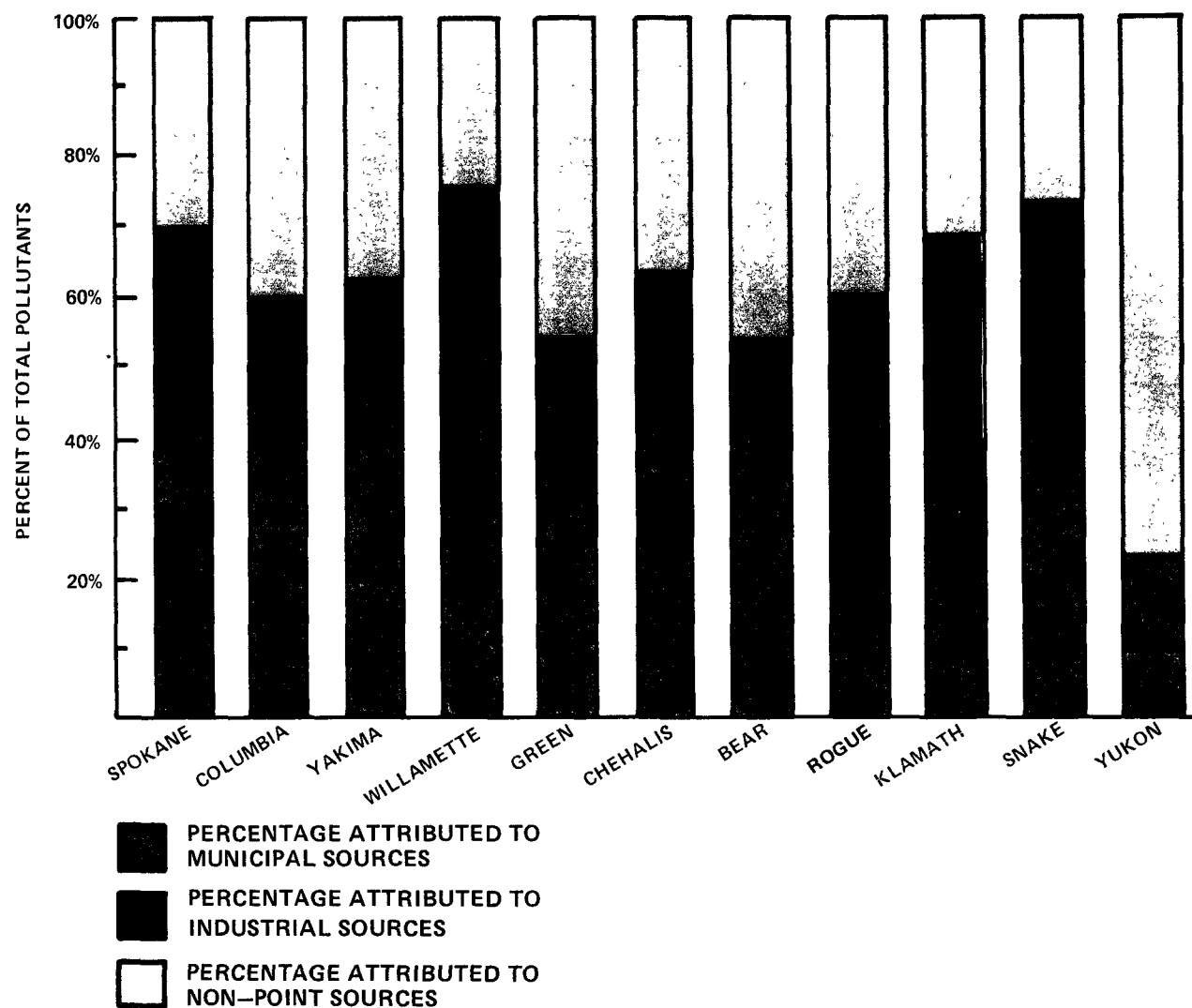
NUMBERS OF VIOLATIONS

- ↑ QUALITY IMPROVING
- ↓ QUALITY DETERIORATING

NOTE: NO ARROW MEANS
NO CHANGE

DATA DISPLAYED ON CHART IS NOT REAL
AND IS USED FOR DEMONSTRATION ONLY.

POINT VS. NON-POINT SOURCE CONTRIBUTIONS TO RIVER WATER POLLUTION




DATA DISPLAYED ON CHART IS NOT REAL
AND IS USED FOR DEMONSTRATION ONLY.

TYPE R-2 — THIS CHART IS PROPOSED FOR FUTURE
EDITIONS OF THE REGIONAL PROFILE
AND WILL BE INCLUDED WHEN REQUIRED
INFORMATION IS AVAILABLE.

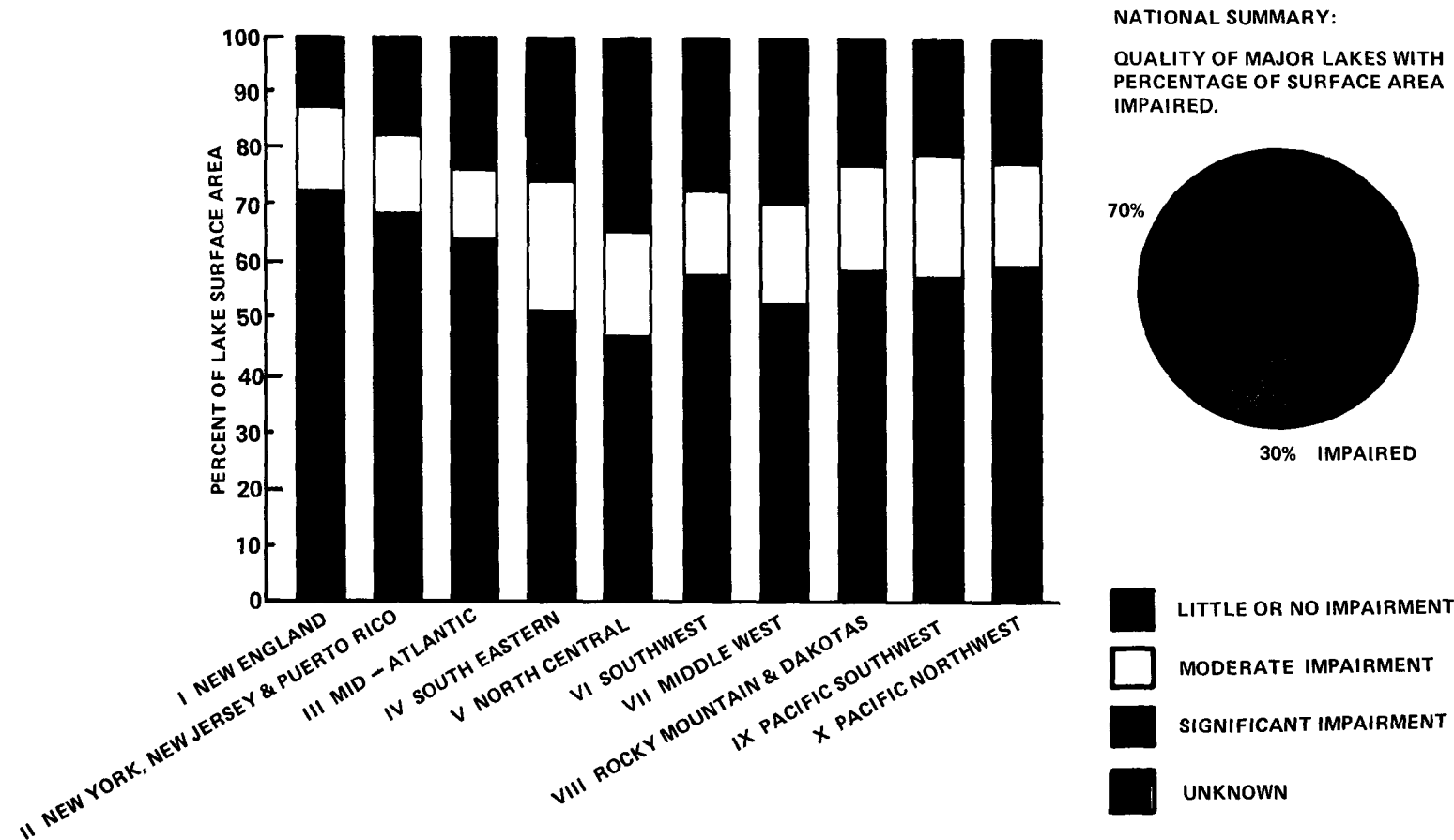
SPECIFICATIONS FOR PROPOSED NATIONAL PROFILE
WITH NOTES ON SELECTED REGIONAL &
SUPPLEMENTAL DISPLAYS

NEAR TERM RESOURCES,
IN PROFESSIONAL PERSON YEARS

2.2.2

ENVIRONMENT MEDIA	REF. #	TYPE	TITLE - DESCRIPTION	APPROACH	REQUIREMENTS OF REGIONS	REQUIRED FROM OTHERS	REPORT		
							INTEGRATION - EPA, D.C.	PER REGION	OTHERS
LAKE WATER	6 LW-1	N-1	LAKE SURFACE AREA FOR WHICH HIGHEST BENEFICIAL USE IS IMPAIRED (PRINCIPAL LAKES EXCLUDING GREAT LAKES). This chart shows for each of the ten regions in the Nation the sq. mi. of principal lake surface area (excluding Great Lakes) which is impaired and not impaired in terms of swimming, fishing, boating, and aesthetics. The chart is color-coded to denote the severity of impairment.	Aggregation of regional displays.	The national display would be produced by aggregation of ten regional displays evaluating principal lake & reservoir water quality in each state within the region. Production of regional displays would require each Regional Office to: (1) Produce and maintain a listing of all lakes and reservoirs within the region which the states feel have significant recreational value. The criteria for selection would be left to Regional Office-State discretion. (2) Obtain the surface area measurements of all such water bodies. (State Fish and Game, Natural Resource Departments.) (3) Adopt and document a method for judging which portions of principal lakes & reservoirs are or are not impaired. Adopted methods for determining water quality status would be reviewed for suitability. (4) Determine for each state the square miles of principal lake-reservoir surface area which <u>are</u> or <u>are not</u> impaired. (5) Produce a bar chart which rank orders, by state, the total number of sq. miles of principal lake-reservoirs within each state.	None	.75	.50	None Likely
LEGEND  N = NATIONAL LEVEL R = REGIONAL OPTION				NOTES: (2) Continued: made to estimate industrial contributions to municipal sewers, and we will only estimate direct industrial discharges (from NPDES data). 1: FEASIBLE IN NEAR-TERM 2: CONSIDER FOR FUTURE 3: FEASIBILITY UNKNOWN "N-1" DISPLAYS COMPRISE NEAR-TERM NATIONAL PROFILE					


LAKE SURFACE AREA FOR WHICH HIGHEST BENEFICIAL USE IS IMPAIRED (PRINCIPAL LAKES EXCLUDING GREAT LAKES)



DATA DISPLAYED ON CHART IS NOT REAL
AND IS USED FOR DEMONSTRATION ONLY.

SPECIFICATIONS FOR PROPOSED NATIONAL PROFILE
WITH NOTES ON SELECTED REGIONAL &
SUPPLEMENTAL DISPLAYS

NEAR TERM RESOURCES,
IN PROFESSIONAL PERSON YEARS

ENVIRONMENT MEDIA	REF. #	TYPE	TITLE - DESCRIPTION	APPROACH	REQUIREMENTS OF REGIONS	REQUIRED FROM OTHERS	REPORT INTEGRATION - EPA, D.C.	PER REGION	OTHERS
LAKE WATER Cont'd	6 LW-1		Cont'd		(Lakes & reservoirs on state boundaries should be divided to avoid double counting.) (6) Color code the above chart showing how much lake-reservoir surface area is non-impaired (blue), moderately impaired (yellow) or significantly impaired (red). See Note (3) below.				
LAKE WATER	7 LW-2	N-2	CAUSES OF IMPAIRMENT OF PRINCIPAL LAKE WATER QUALITY. Color coded matrix showing causes of impairment in lake water quality and trend.	Aggregation of regional data as feasible	To be specified. (Feasibility and format may vary from Region to Region making completeness difficult.)	None	TBD	TBD	None Likely
LAKE WATER	8 LW-3	N-1	EUTROPHICATION OF MAJOR LAKES (EXCEPT GREAT LAKES). Eutrophication of major lakes by region; the proposed display shows, by region, the trophic condition of all national major lakes & reservoirs. The Regions are presented according to rank order of total sq. miles of major lake & reservoir surface area existing within	Aggregation of regional displays.	Regional Offices would be required to: (1) Identify all lakes and reservoirs which have a surface area of 10 sq. miles (6,400 acres) or greater. See references in Note 3. (2) Determine the trophic condition of each of the above lakes & reservoirs. (Trophic conditions data should be available from the National Eutrophication Survey, universities or state agencies.) (3) Prepare a rank order bar chart showing by state the total	USGS Information.	.10	.25	
LEGEND  N = NATIONAL LEVEL R = REGIONAL OPTION			1 FEASIBLE IN NEAR-TERM 2 CONSIDER FOR FUTURE 3 FEASIBILITY UNKNOWN "N-1" DISPLAYS COMPRISE NEAR-TERM NATIONAL PROFILE	NOTES: (3) Each lake would be evaluated by completing the following evaluation matrix. The appropriate column for each use is checked in accordance with the listed evaluation criteria. An overall rating is then established by summing the weighted use impairment ratings and comparing that sum with					

NOTE (3) Continued: the interpretation criteria.

EVALUATION MATRIX

Recreational Use	None (Blue)	Moderate (Yellow)	Significant (Red)
Swimming	Fecal Coliforms/100 ML Geometric Mean <50	Fecal Coliforms/100 ML Geometric Mean 50-200	Fecal Coliforms/100 ML Geometric Mean >200
Fishing*	No conditions impaired	No more than <u>one</u> condition impaired	More than <u>one</u> condition impaired
Boating	Surface area affected by macrophytes <10%	Surface area affected by macrophytes >10% - <30%	Surface area affected by macrophytes >30%
Aesthetics **	a) Secchi Disc: >10' Mean Transparency b) Chlorophyll <u>a</u> : 0-3 mg/M ³ c) Total P (Phosphorous): >10 µg/liter	a) Secchi Disc: 1 1/2'-10' Mean Transparency b) Chlorophyll <u>a</u> : 3-20 mg/M ³ c) P = 10-20 µg/liter	a) Secchi Disc: <1 1/2' Mean Transparency b) Chlorophyll <u>a</u> : >20 mg/M ³ c) P = >20 µg/liter
TOTALS			

*Fishing impairment judgments to be made by State Fish and Game Departments, etc. based solely upon water quality effects on the following conditions: growth, propagation, diversity & numbers of native species, and edibility.

**Region may select any of the 3 suggested criteria for aesthetics

- INTERPRETATION:
1. Sum the number of checks in each degree of impairment column
 2. Compute a weighted sum as follows: (# None x 1) + (# Moderate x 2) + (# Significant x 3)
 3. Determine the overall impairment rating by comparing the computed weighted sum with the following criteria:

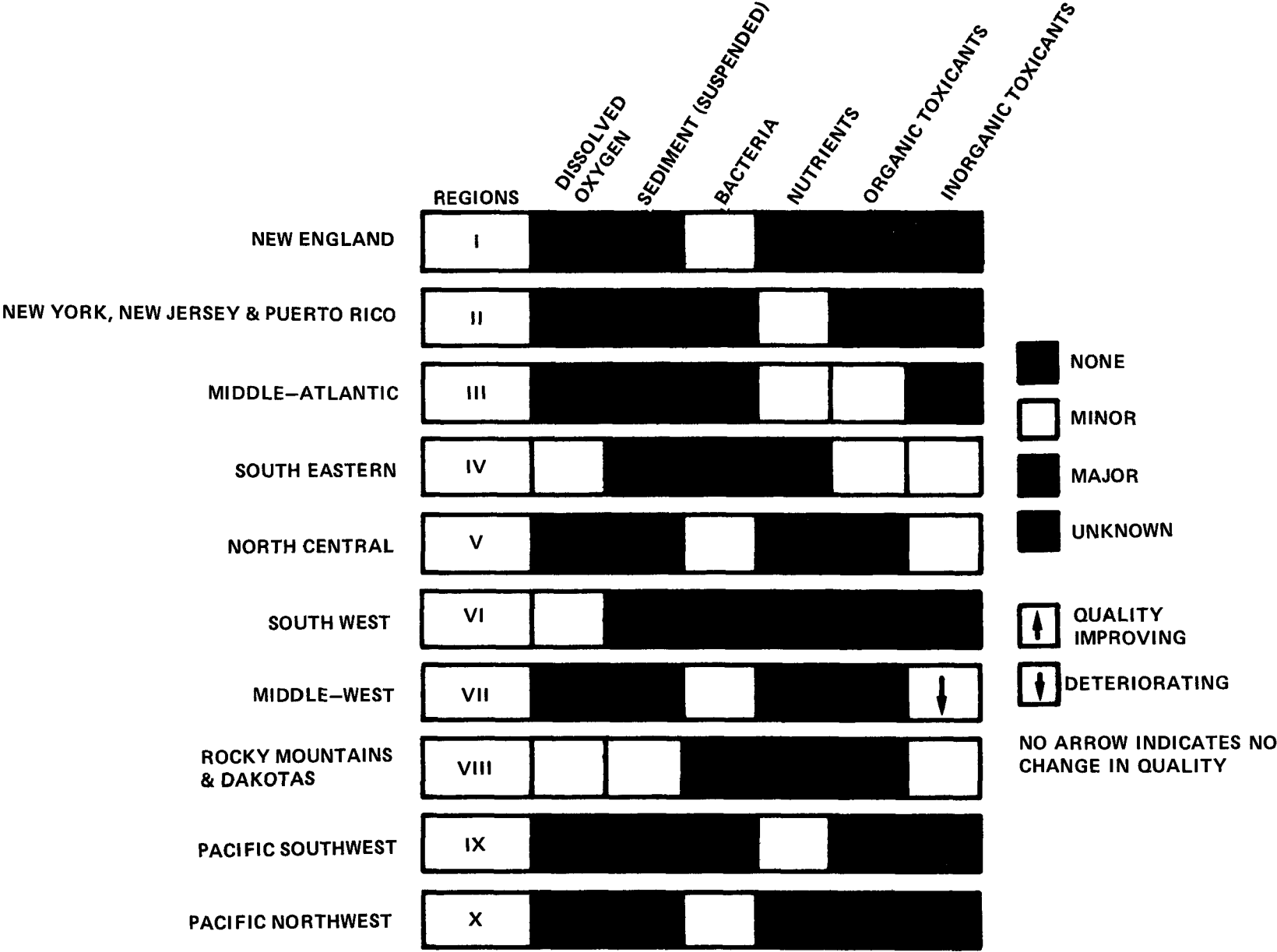
<u>Degree of Impairment</u>	<u>Weighted Sum</u>
None	4
Moderate	5 - 8
Significant	9 - 12

If certain recreational uses are prohibited by regulation (e.g., swimming in water supply reservoirs), rate use impairment as None.

Major lakes, by state, are described in U.S. Geological Survey Circular #476 (by C. D. Bue, 1963).

Reservoirs are described in U.S. Geological Survey - Water Supply Paper #1360-A (by Thomas & Harbeck, 1956).

CAUSES OF IMPAIRMENT OF PRINCIPAL LAKE WATER QUALITY




DATA DISPLAYED ON CHART IS NOT REAL
AND IS USED FOR DEMONSTRATION ONLY.

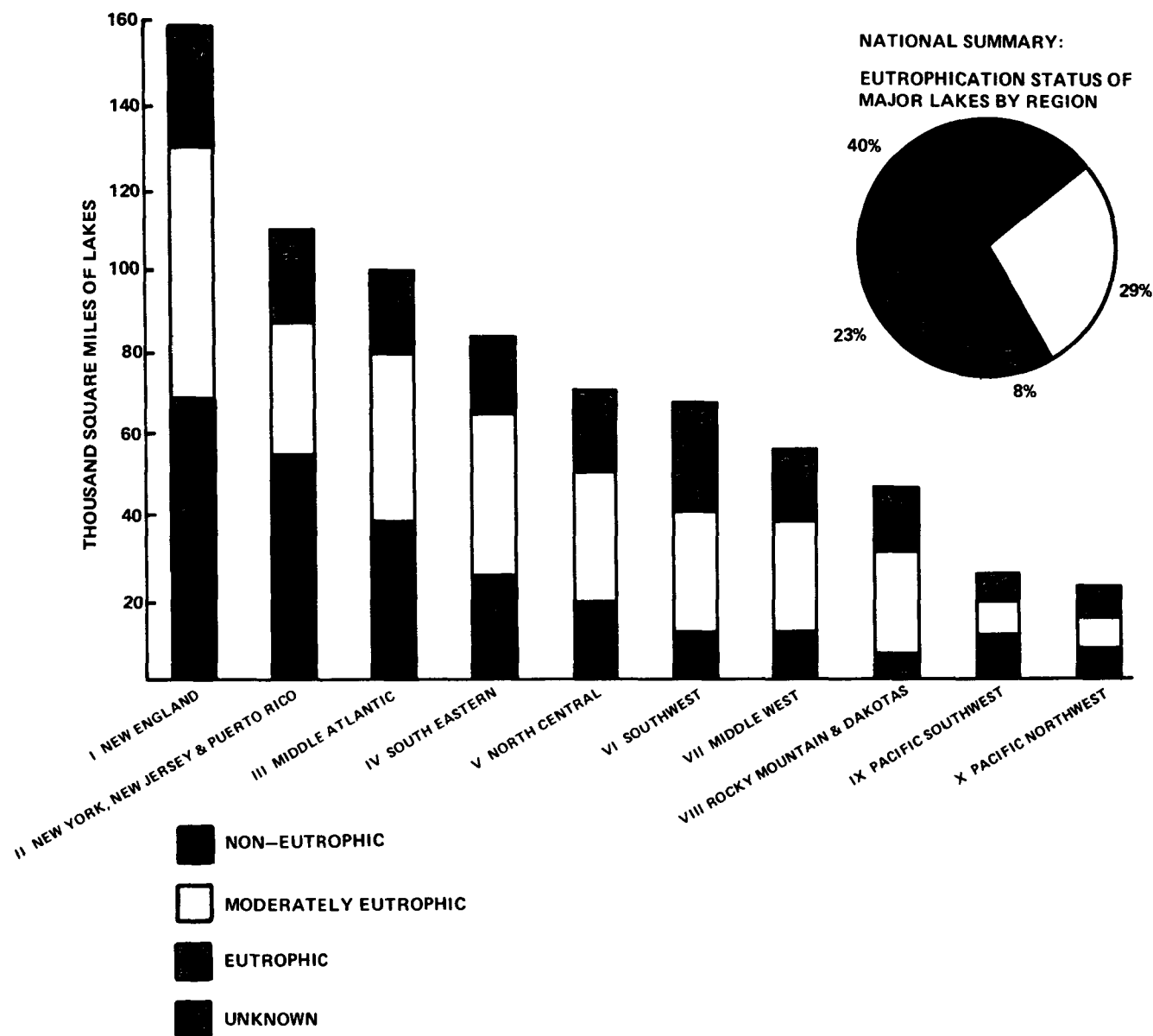
TYPE N-2 - THIS CHART IS PROPOSED FOR FUTURE
EDITIONS OF THE NATIONAL PROFILE
AND WILL BE INCLUDED WHEN REQUIRED
INFORMATION IS AVAILABLE

SPECIFICATIONS FOR PROPOSED NATIONAL PROFILE
WITH NOTES ON SELECTED REGIONAL &
SUPPLEMENTAL DISPLAYS

NEAR TERM RESOURCES,
IN PROFESSIONAL PERSON YEARS

ENVIRONMENT MEDIA	REF. #	TYPE	TITLE - DESCRIPTION	APPROACH	REQUIREMENTS OF REGIONS	REQUIRED FROM OTHERS	REPORT INTEGRATION - EPA, D.C.	PER REGION	OTHERS
LAKE WATER Cont'd	8 LW-3		within the Region. Tro- phic conditions are in- dicated by color code: Non-eutrophic (blue), moderately eutrophic (yellow), and eutroph- ic (red). A summariza- tion of the national status is presented in the pie chart in the upper right-hand corner of the display. "Major lakes and reservoirs" are defined as those with 10 sq. miles (6,400 acres) or greater surface area.		sq. miles of major lake and reser- voir surface area within each state, color coding the bars to show the number of square miles non-eutrophic (blue), moderately eutrophic (yellow), and eutrophic (red). (4) Prepare a pie diagram summar- izing the trophic status for all regional major lakes and reservoirs color coded consistent with the bar chart. Each sector should be labeled with its res- pective numerical value.				
LAKE WATER	9 LW-4	N-2	TREND IN EUTROPHICATION OF MAJOR LAKES OF THE UNITED STATES (EXCEPT GREAT LAKES). Bar chart showing sq. miles of eutrophication of lakes by year.	Aggre- gation of re- gional data.	Feasibility and specifications uncertain at this time. Degree of change over time is unknown but would be slow.	None	TBD	TBD	TBD if any
LAKE WATER	10 LW-5	R-2	MILES OF LAKE SHORELINE ACCEPTABLE FOR SWIM- MING. Bar chart showing percentage of lake shoreline open for swimming, by state.	Would vary from region to region.	Not proposed for National Profile at this time.	None	N.A.	Varied	TBD if any
LEGEND  N = NATIONAL LEVEL R = REGIONAL OPTION				NOTES: 1 FEASIBLE IN NEAR-TERM 2 CONSIDER FOR FUTURE 3. FEASIBILITY UNKNOWN "N-1" DISPLAYS COMPRISE NEAR TERM NATIONAL PROFILE					

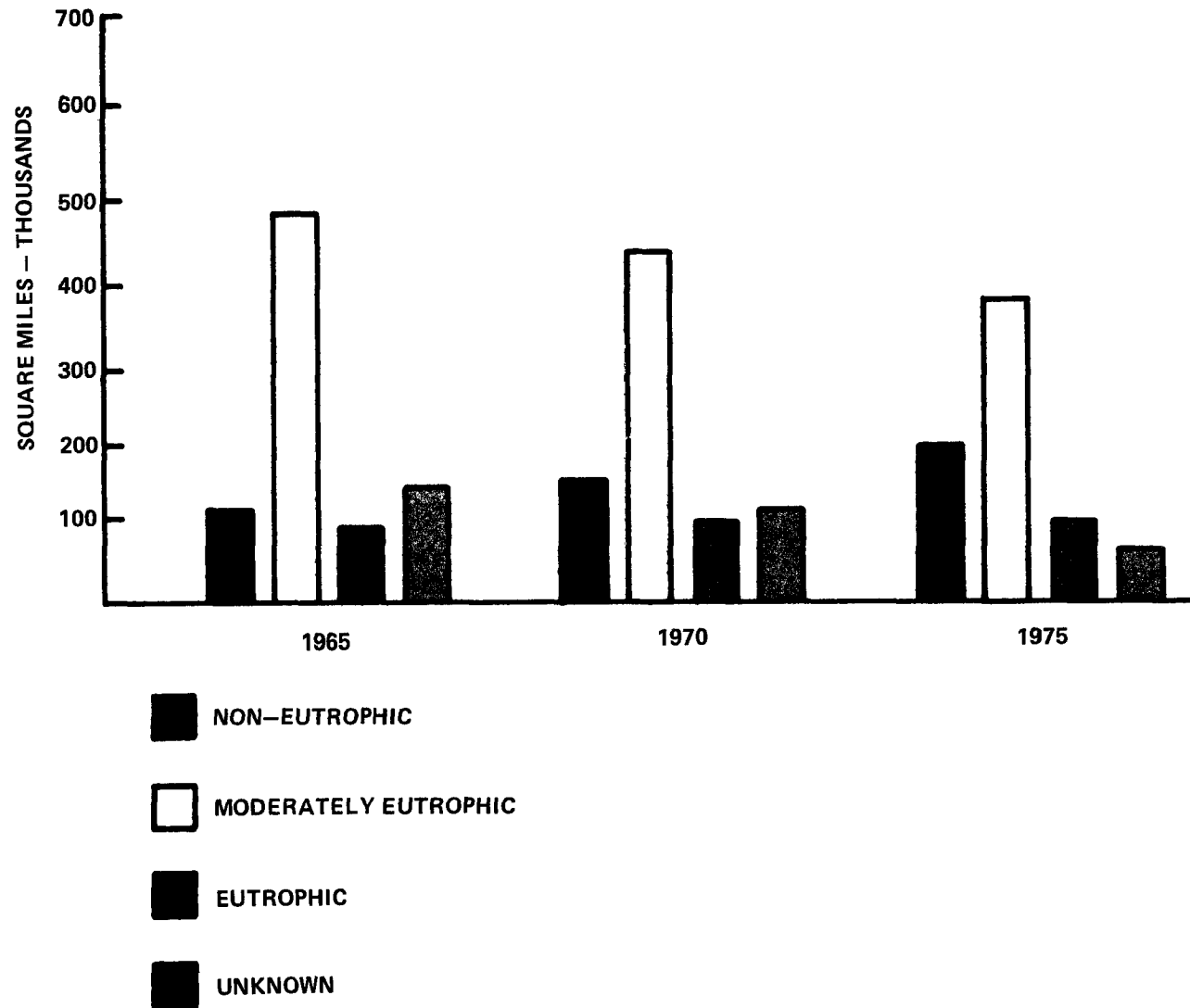
EUTROPHICATION OF MAJOR LAKES (EXCEPT GREAT LAKES)



DATA DISPLAYED ON CHART IS NOT REAL
AND IS USED FOR DEMONSTRATION ONLY.

TYPE N-1 - THIS CHART IS PROPOSED FOR THE FIRST
EDITION OF THE NATIONAL PROFILE.

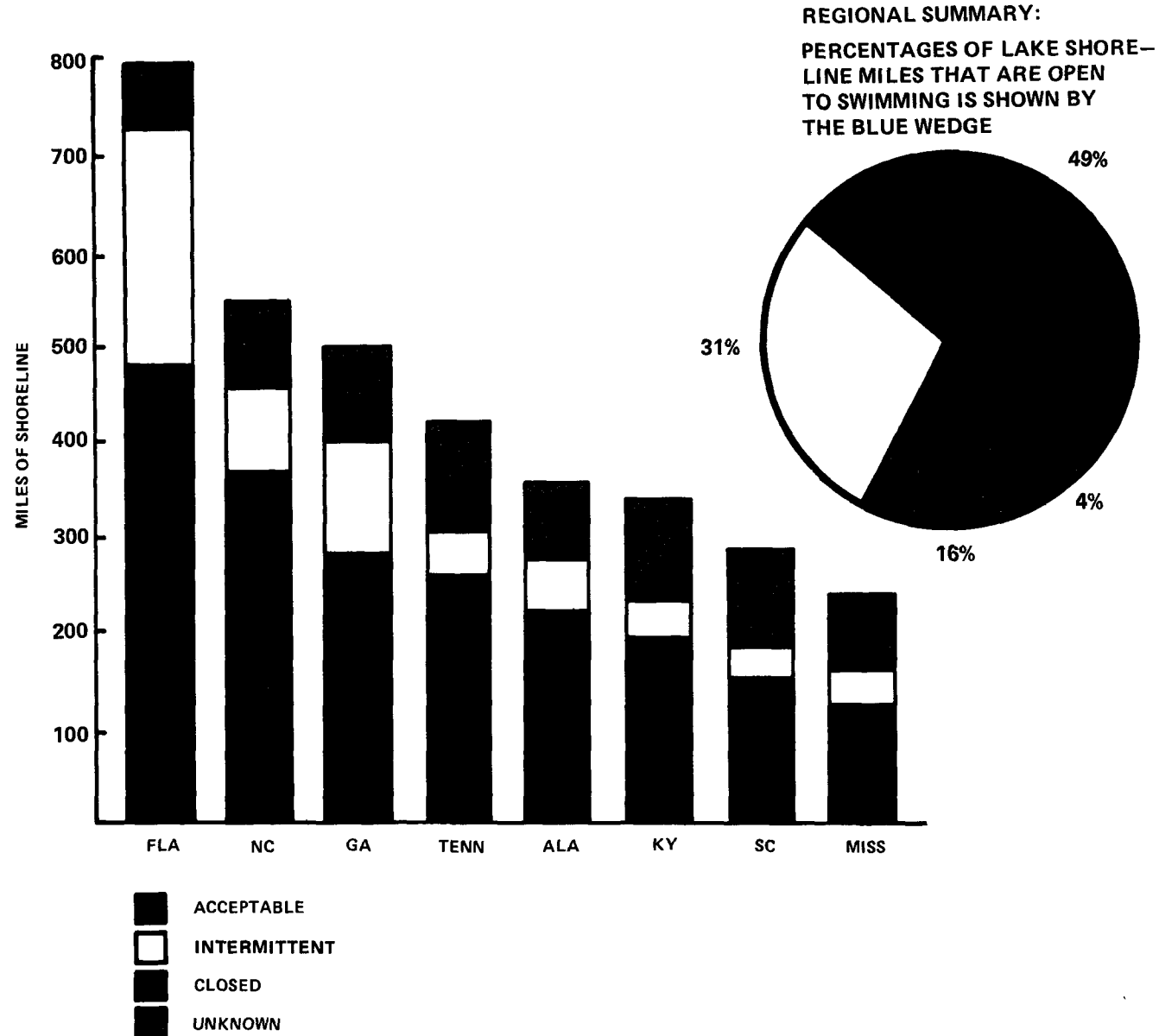
TREND IN EUTROPHICATION OF MAJOR LAKES OF THE UNITED STATES (EXCEPT GREAT LAKES)



DATA DISPLAYED ON CHART IS NOT REAL
AND IS USED FOR DEMONSTRATION ONLY.

TYPE N-2 — THIS CHART IS PROPOSED FOR FUTURE
EDITIONS OF THE NATIONAL PROFILE
AND WILL BE INCLUDED WHEN REQUIRED
INFORMATION IS AVAILABLE

MILES OF LAKE SHORELINE ACCEPTABLE FOR SWIMMING



DATA DISPLAYED ON CHART IS NOT REAL
AND IS USED FOR DEMONSTRATION ONLY.


TYPE R-2 — THIS CHART IS PROPOSED FOR FUTURE
EDITIONS OF THE REGIONAL PROFILE
AND WILL BE INCLUDED WHEN REQUIRED
INFORMATION IS AVAILABLE.

SPECIFICATIONS FOR PROPOSED NATIONAL PROFILE
WITH NOTES ON SELECTED REGIONAL &
SUPPLEMENTAL DISPLAYS

NEAR TERM RESOURCES,
IN PROFESSIONAL PERSON YEARS

2.2.3

2.2.3

ENVIRONMENT MEDIA	REF =	TYPE	TITLE - DESCRIPTION	APPROACH	REQUIREMENTS OF REGIONS	REQUIRED FROM OTHERS	REPORT INTEGRATION - EPA, D.C.	PER REGION	OTHERS
GREAT LAKES	11 GLW-1	N-1	PERCENT OF SWIMMING BEACHES ON GREAT LAKES MEETING WATER QUALITY OR HEALTH STANDARDS. Bar chart showing percentage of swimming beaches of Great Lakes meeting stds. by lake with pie chart summary.	Use of existing data.	None other than to review existing data collected by local public health agencies. See Note (4) regarding method of computation.	I.J.C. data.	.1	TBD	Negligible
GREAT LAKES	12 GLW-2	R-1	"PROBLEM AREAS" IN GREAT LAKES. Map showing problem areas in Great Lakes.	Not proposed for National Profile.	Review I.J.C. and other data sources to produce map showing location of problems.	I.J.C. data	N.A.	TBD	None Likely
MARINE WATER	13 MW-1	N-1	COMMERCIAL SHELLFISH ACREAGE OPEN FOR HARVESTING. Bar chart showing percentage of shellfish area open for harvesting, by Region.	Aggregation of regional data after regional update of NEIC reports. (4)	Review NEIC data. National Shellfish Register of Classified Estuarine Water, 1974 (EPA-330/1-75-002).	NEIC Denver data	.25	Less Than .1	None Likely
MARINE WATER	14 MW-2	N-3	TYPES OF MARINE WATER STANDARDS VIOLATIONS. Matrix showing types of marine water standards violations and trend in frequency of violations, by year.	Aggregation of regional data.	To be determined. Feasibility uncertain.	None	TBD	TBD	TBD
<div>LEGEND</div> <div></div> <div>N = NATIONAL LEVEL R = REGIONAL OPTION</div>				<div>NOTES</div> <div>(4) SUGGESTED PROCEDURE FOR EVALUATING GREAT LAKES WATER QUALITY. Beaches are evaluated by completing the following evaluation matrix for selected areas. The appropriate column for each use is checked in accordance with the listed evaluation criteria. An overall rating</div>					
<div>1 FEASIBLE IN NEAR-TERM 2 CONSIDER FOR FUTURE 3 FEASIBILITY UNKNOWN "N-1" DISPLAYS COMPRISE NEAR-TERM NATIONAL PROFILE</div>									

NOTE (4) Continued:

is then established by summing the weighted use impairment ratings and comparing that sum with the interpretation criteria.

EVALUATION MATRIX

Use	Degree of Impairment		
	None (Blue)	Moderate (Yellow)	Significant (Red)
Swimming	Fecal Coliforms/100 ML Geometric Mean <50	Fecal Coliforms/100 ML Geometric Mean 50-200	Fecal Coliforms/100 ML Geometric Mean >200
Fishing* Growth Propagation Native Species Edibility	No conditions impaired	One condition impaired	More than <u>one</u> condition impaired
Drinking** Bacteria Toxic & Hazardous Materials Turbidity	No criteria*** exceeded	One criteria exceeded	More than one criteria exceeded
Aesthetics-Choose either a), b) or c): a) Secchi disc b) Chlorophyll <u>a</u> c) Phosphorous	a) Secchi Disc: >10' Mean Transparency b) Chlorophyll <u>a</u> : 0-3 mg/M ³ c) Phosphorous (total P): 5-10 µg/liter	a) Secchi Disc: 1.5'-10' Mean Transparency b) Chlorophyll <u>a</u> : 3-20 mg/M ³ c) Phosphorous (total P): 10-15 µg/liter	a) Secchi Disc: <1.5' Mean Transparency b) Chlorophyll <u>a</u> : >20 mg/M ³ c) Phosphorous (total P): >15 µg/liter

* Fishing impairment judgments to be made by State Fish and Gams Departments, etc. based solely upon water quality effects on: growth, propagation, and edibility of species that the department biologist would expect to find in the waters.

** Criteria for drinking water is given in 40 CFR Section 141, Part B.

*** 40 CFR No. 248 Subpart B - Maximum Contaminant Levels.

NOTES ON
SPECIFICATIONS FOR PROPOSED NATIONAL PROFILE

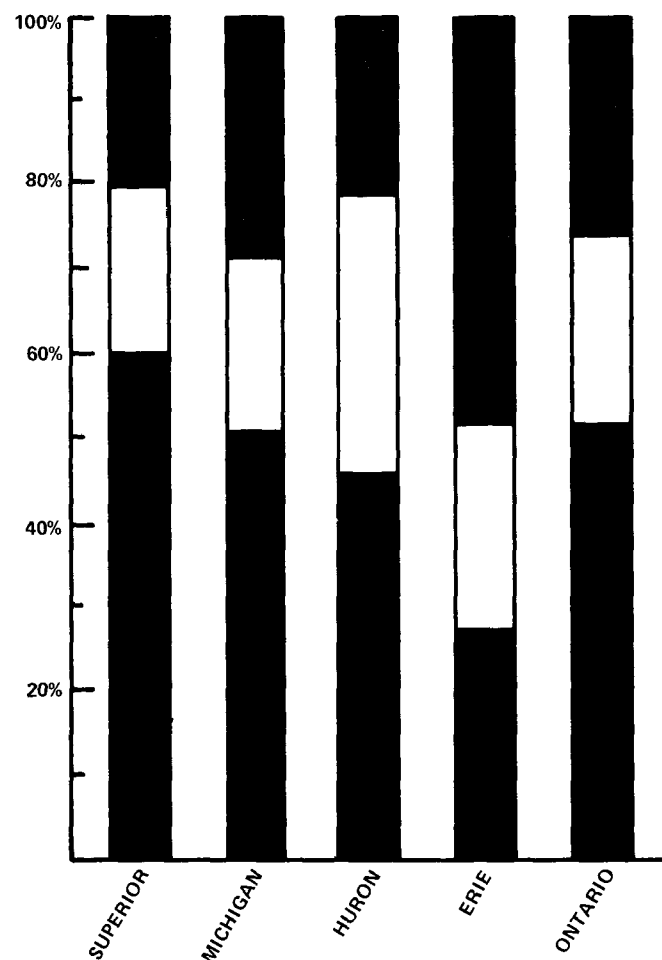
NOTE (4) Continued:




INTERPRETATION:

1. Sum the number of checks in each "Degree of Impairment" column.
2. Compute a weighted sum as follows:
$$(\# \text{ None} \times 1) + (\# \text{ Moderate} \times 2) + (\# \text{ Significant} \times 3)$$
3. Determine the overall impairment rating by comparing the computed weighted sum with the following criteria:

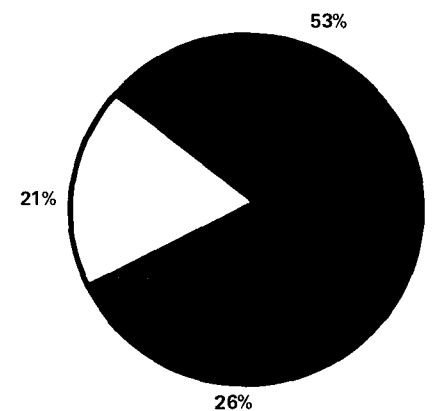
<u>Degree of Impairment</u>	<u>Weighted Sum</u>
None	4
Moderate	5 - 8
Significant	9 - 12

PERCENT OF SWIMMING BEACHES ON GREAT LAKES MEETING WATER QUALITY OR HEALTH STANDARDS



 MEETS STANDARDS
 RELATIVELY MINOR VIOLATIONS
 RELATIVELY MAJOR VIOLATIONS

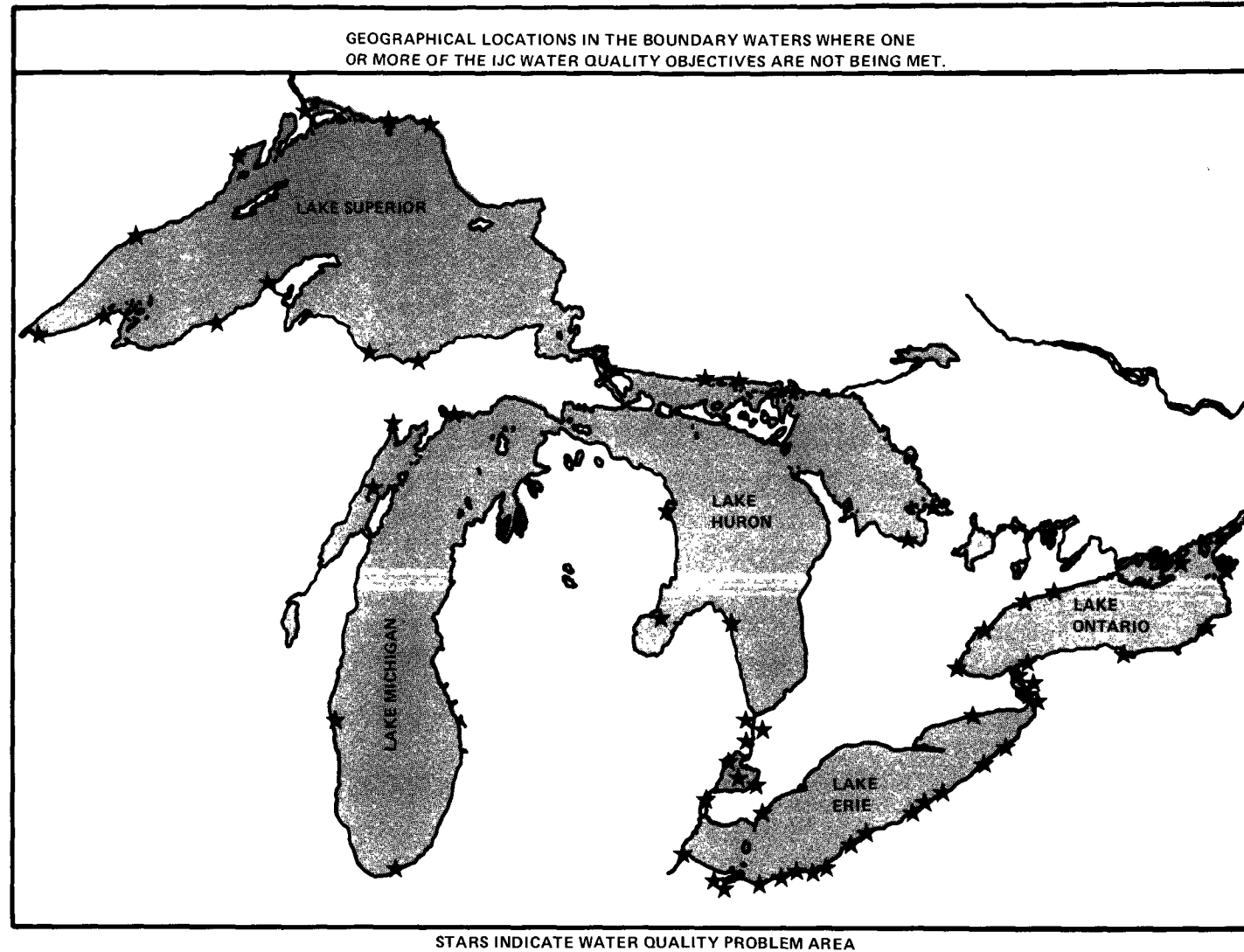
DATA DISPLAYED ON CHART IS NOT REAL
AND IS USED FOR DEMONSTRATION ONLY.



SUMMARY OF SWIMMING BEACH
STATUS FOR THE FIVE GREAT LAKES

TYPE N-1 – THIS CHART IS PROPOSED FOR THE FIRST
EDITION OF THE NATIONAL PROFILE.

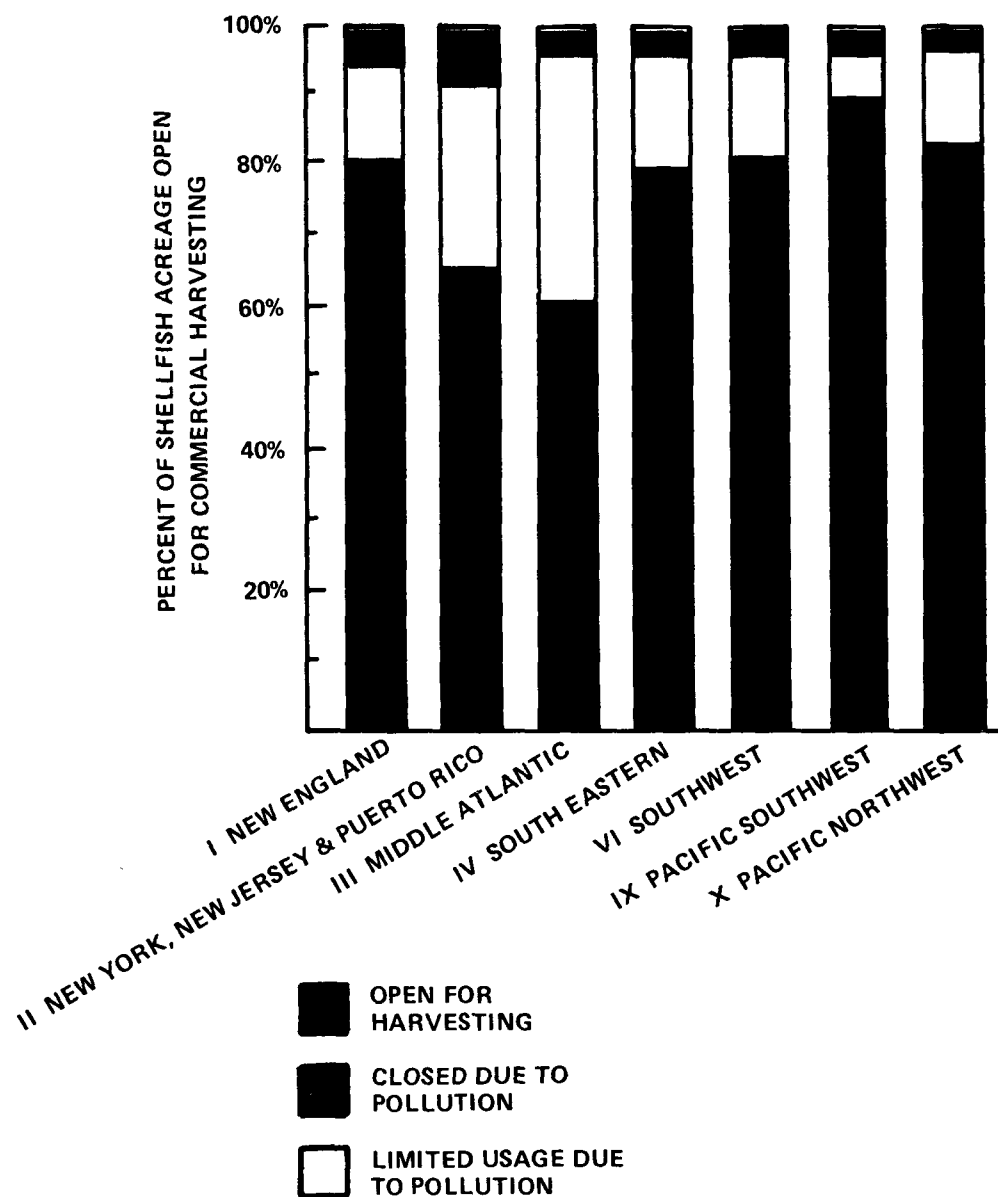
"PROBLEM AREAS" IN GREAT LAKES



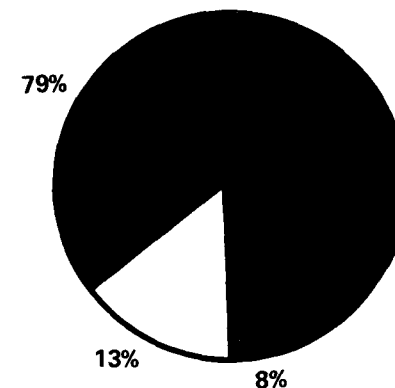
DATA DISPLAYED ON CHART IS NOT REAL
AND IS USED FOR DEMONSTRATION ONLY.

TYPE R-1 — THIS CHART IS PROPOSED FOR THE FIRST
EDITION OF THE REGIONAL PROFILE

COMMERCIAL SHELLFISH ACREAGE OPEN FOR HARVESTING



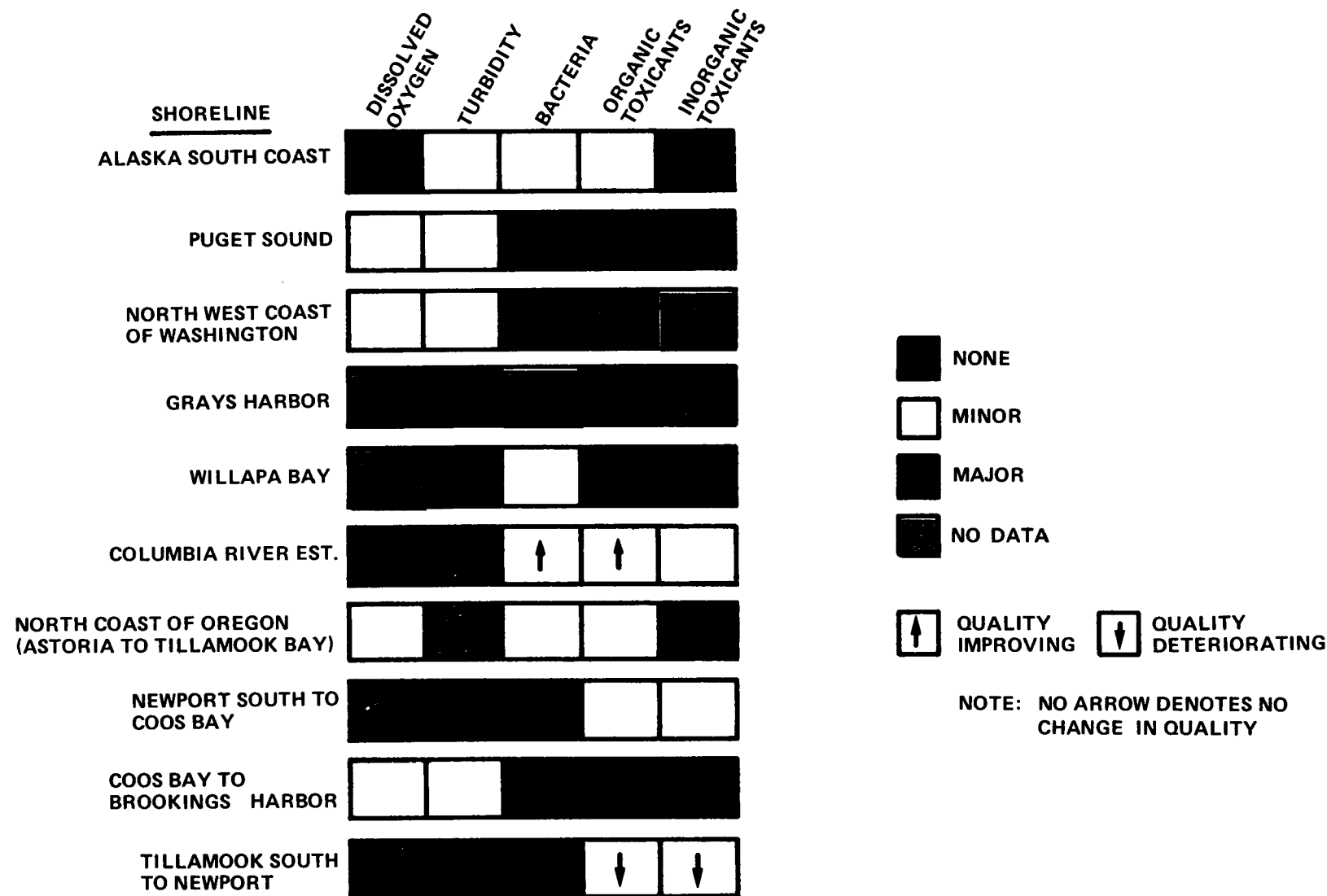
NATIONAL SUMMARY:
PERCENTAGE OF THE
NATION'S ACTIVE SHELL
FISH AREAS THAT ARE
OPEN FOR HARVESTING



DATA DISPLAYED ON CHART IS NOT REAL
AND IS USED FOR DEMONSTRATION ONLY.

TYPE N-1 — THIS CHART IS PROPOSED FOR THE FIRST
EDITION OF THE NATIONAL PROFILE.

TYPES OF MARINE WATER STANDARDS VIOLATIONS




DATA DISPLAYED ON CHART IS NOT REAL
AND IS USED FOR DEMONSTRATION ONLY.

TYPE N-3 — THIS CHART IS PRESENTED ONLY TO
ILLUSTRATE A CONCEPT. FEASIBILITY
IS UNCERTAIN AT THIS TIME.

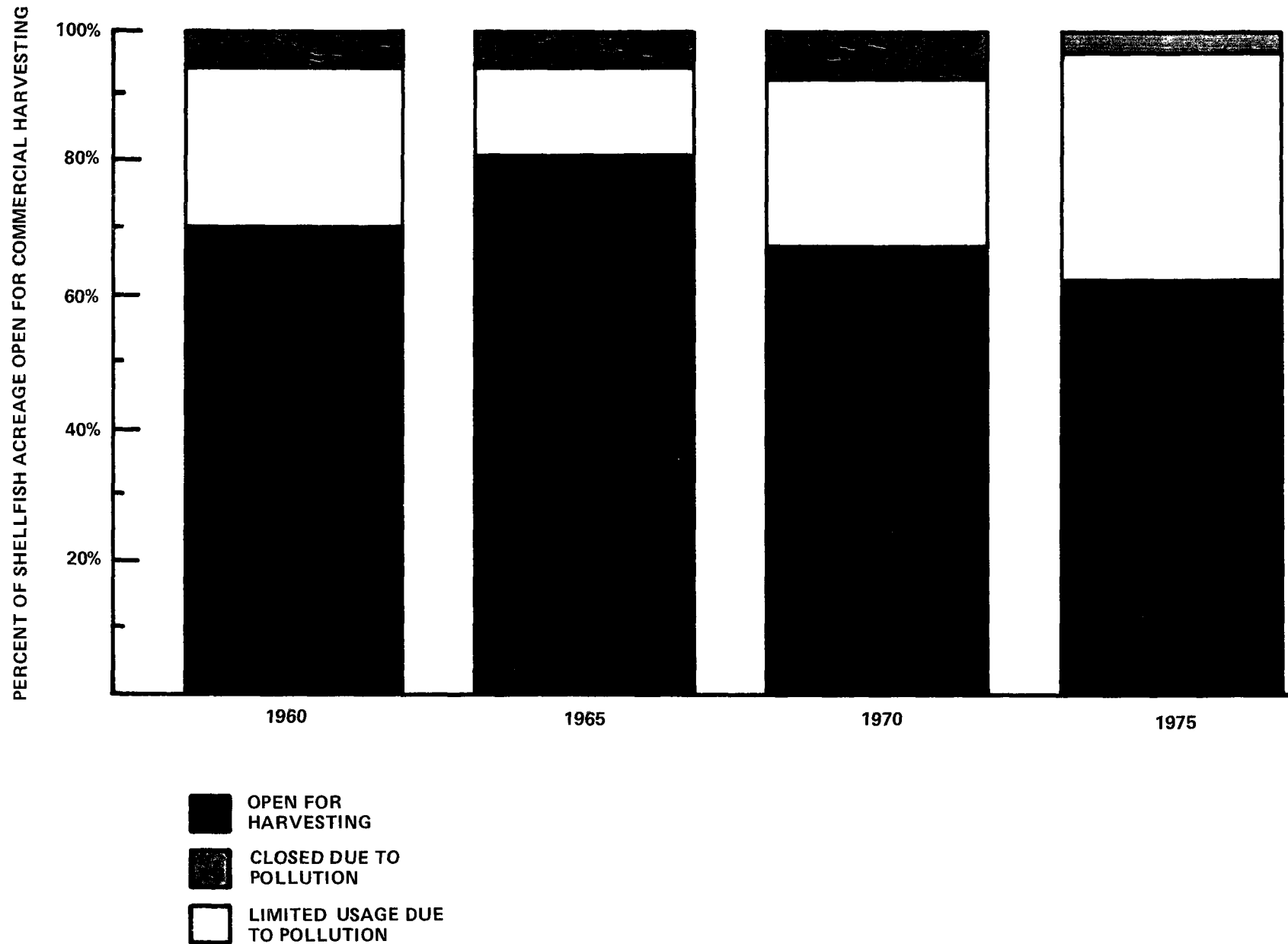
SPECIFICATIONS FOR PROPOSED NATIONAL PROFILE
WITH NOTES ON SELECTED REGIONAL &
SUPPLEMENTAL DISPLAYS

NEAR TERM RESOURCES,
IN PROFESSIONAL PERSON YEARS

2.2.4

ENVIRONMENT MEDIA	REF =	TYPE	TITLE - DESCRIPTION	APPROACH	REQUIREMENTS OF REGIONS	REQUIRED FROM OTHERS	REPORT INTEGRATION - EPA, D.C.	PER REGION	OTHERS
MARINE WATER	15 MW-3	N-2	TREND IN COMMERCIAL SHELLFISH AREAS OPEN FOR HARVESTING. Bar chart showing percentage of shellfish areas open for harvesting by year and closed due to pollution or proximity of outfall.	To be determined.	To be determined in future and not proposed for near-term display. 1971 vs. 1974 available from NEIC - Denver report.	NEIC - Denver	TBD	TBD	TBD
MARINE WATER	16 MW-4	R-1	STATUS OF SHELLFISH HARVESTING AREAS. Map showing the shellfish areas which are not open for harvesting.	Not proposed for National Profile.	None relative to National Profile at this time. National map is perhaps feasible in future.	None	N.A.	Varies	None
2.2.5 DRINK- ING WATER	17 DW-1	N-1	POPULATION SERVED BY DRINKING WATER SUPPLIES MEETING ALL STANDARDS. Bar chart showing population in each Region that is served by a drinking water supply that meets all standards. A pie chart summarizes the percentage of the total U.S. population served by supplies that meet standards.	Aggregation of Regional Displays	Each state will supply a summary of violations, for all community water supplies, for turbidity and bacteria, by September of 1977. Inorganic and organic toxicant violations will be reported by September 1978. Regions will receive interim reports of violations from state drinking water officials and the Regions will be obliged to make a judgment as to whether these violations are "Minor" or "Major."		TBD	TBD	None
LEGEND  N = NATIONAL LEVEL R = REGIONAL OPTION				NOTES. 1: FEASIBLE IN NEAR-TERM 2: CONSIDER FOR FUTURE 3: FEASIBILITY UNKNOWN "N-1" DISPLAYS COMPRISE NEAR-TERM NATIONAL PROFILE					

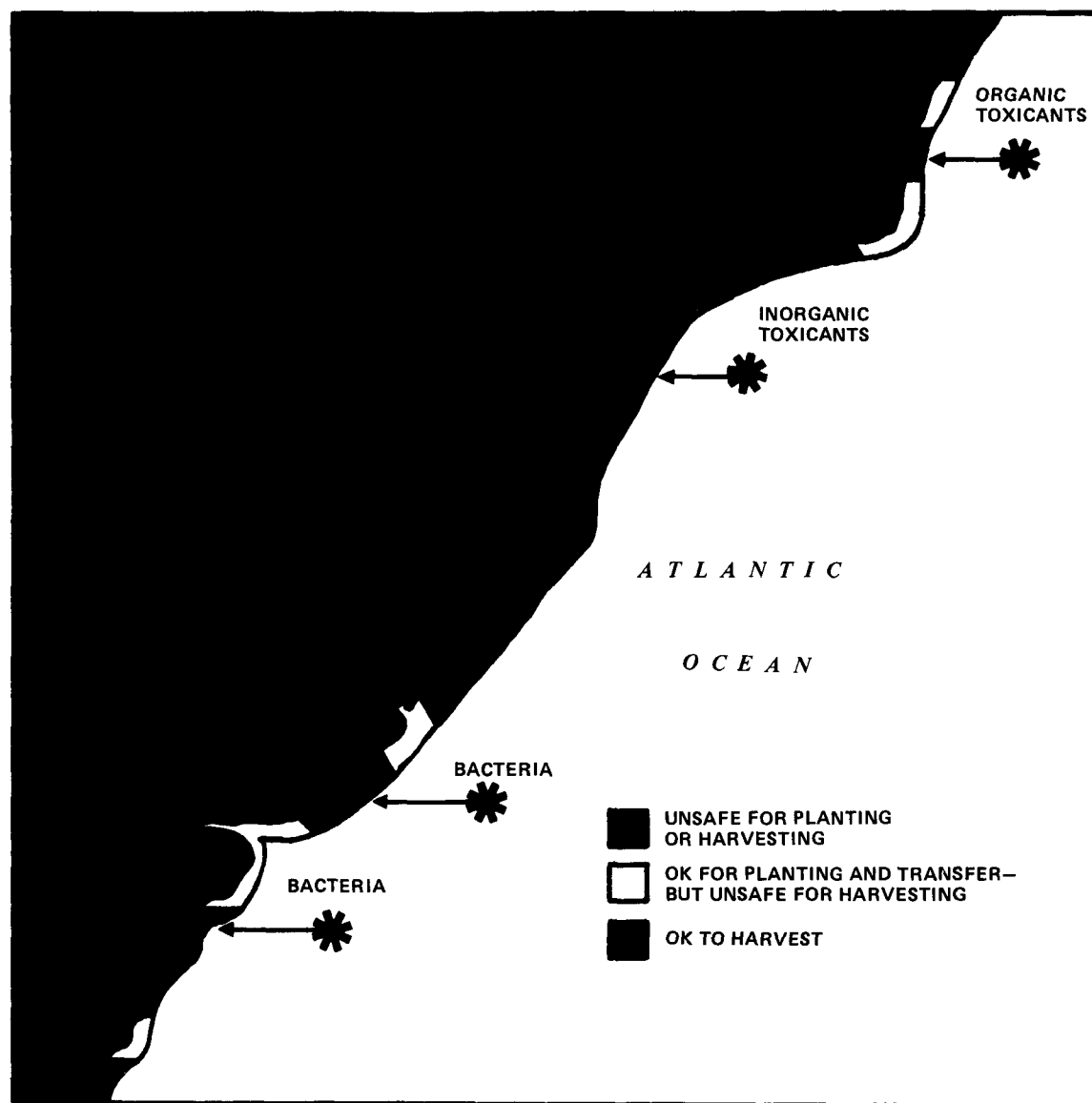
TREND IN COMMERCIAL SHELLFISH AREAS OPEN FOR HARVESTING



DATA DISPLAYED ON CHART IS NOT REAL
AND IS USED FOR DEMONSTRATION ONLY.

TYPE N-2 — THIS CHART IS PROPOSED FOR FUTURE
EDITIONS OF THE NATIONAL PROFILE
AND WILL BE INCLUDED WHEN REQUIRED
INFORMATION IS AVAILABLE.

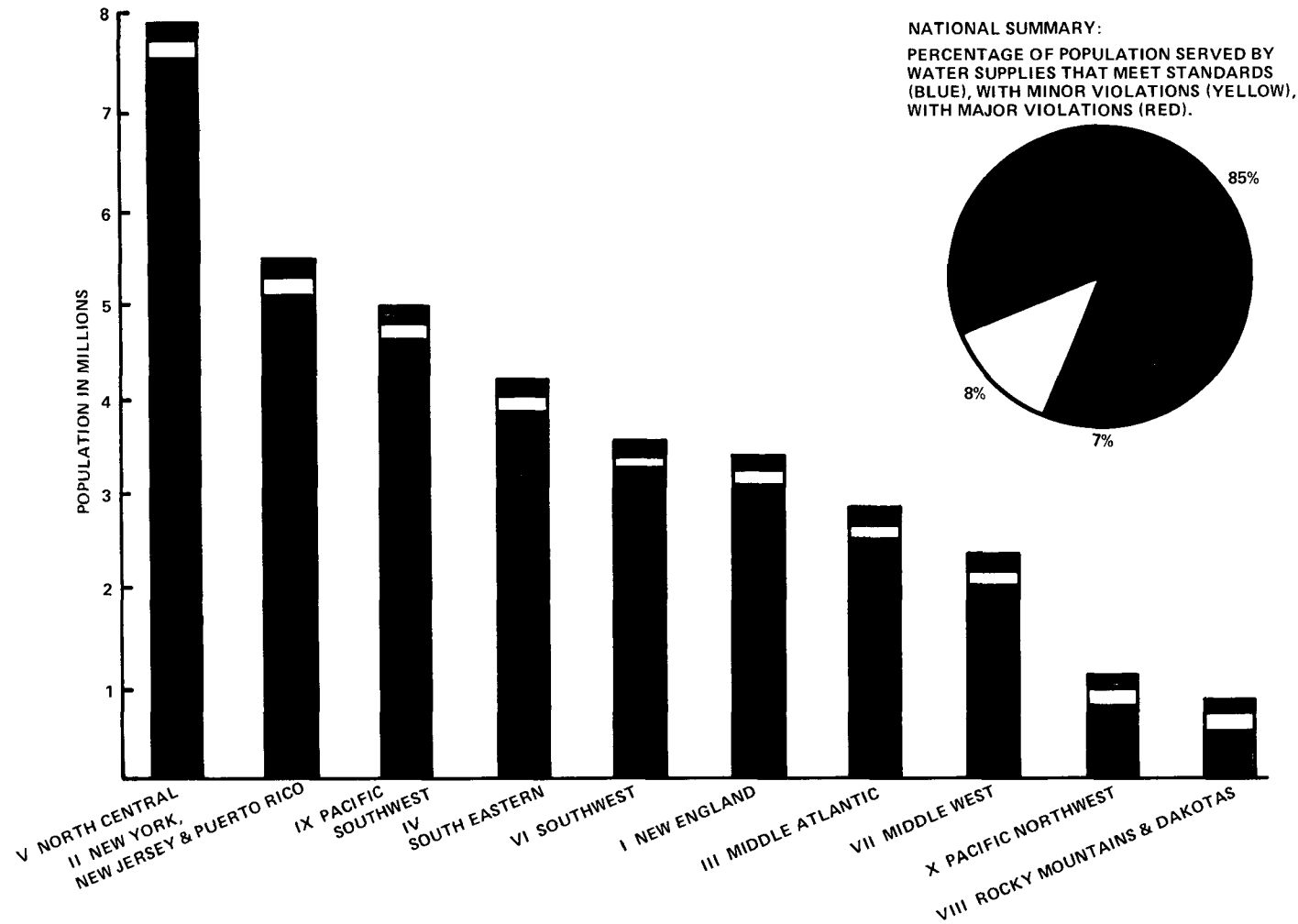
STATUS OF SHELLFISH HARVESTING AREAS



DATA DISPLAYED ON CHART IS NOT REAL
AND IS USED FOR DEMONSTRATION ONLY.

TYPE R-1 — THIS CHART IS PROPOSED FOR THE FIRST
EDITION OF THE REGIONAL PROFILE.

POPULATION SERVED BY DRINKING WATER SUPPLIES MEETING ALL STANDARDS




- SERVED BY WATER SUPPLY THAT MEETS ALL STANDARDS
- SERVED BY WATER SUPPLY WITH RELATIVELY MINOR VIOLATIONS
- SERVED BY WATER SUPPLY WITH RELATIVELY MAJOR VIOLATIONS

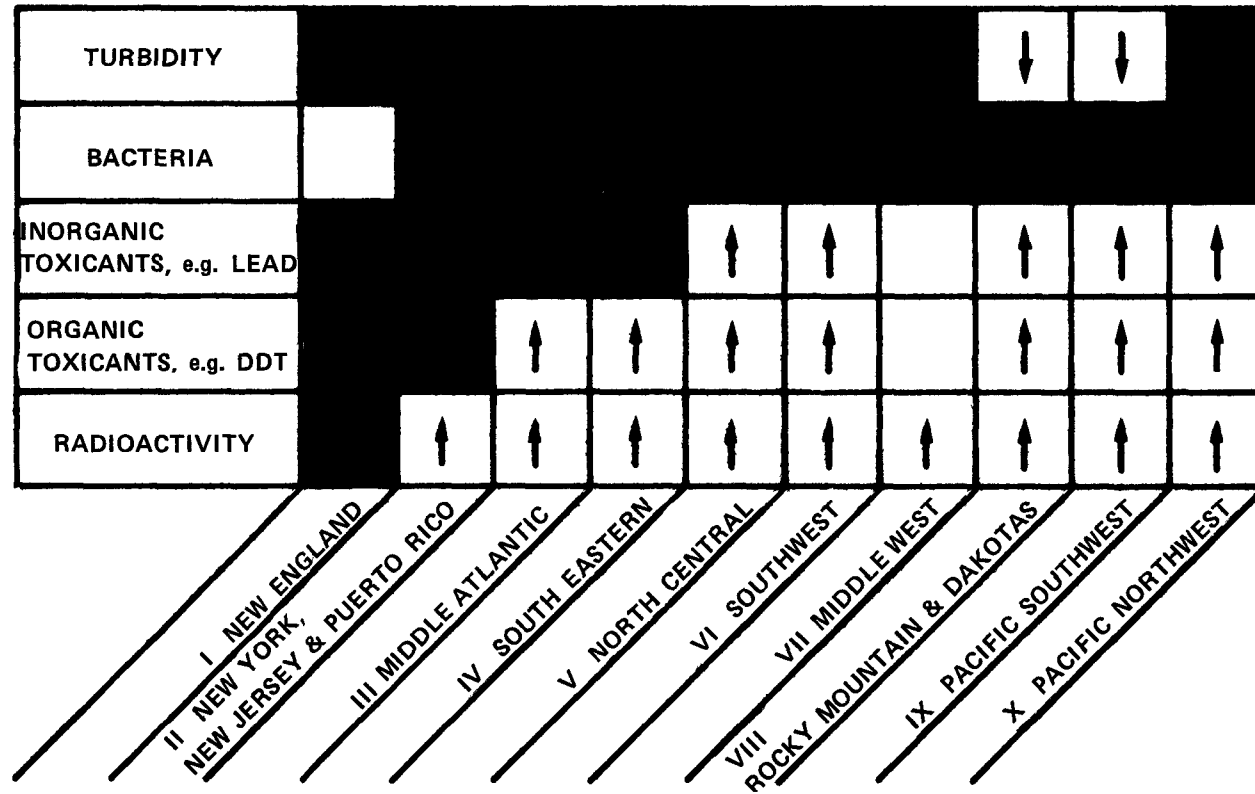
DATA DISPLAYED ON CHART IS NOT REAL AND IS USED FOR DEMONSTRATION ONLY.

SPECIFICATIONS FOR PROPOSED NATIONAL PROFILE
WITH NOTES ON SELECTED REGIONAL &
SUPPLEMENTAL DISPLAYS

NEAR TERM RESOURCES,
IN PROFESSIONAL PERSON YEARS

ENVIRONMENT MEDIA	REF. #	TYPE	TITLE - DESCRIPTION	APPROACH	REQUIREMENTS OF REGIONS	REQUIRED FROM OTHERS	REPORT INTEGRATION - EPA, D C	PER REGION	OTHERS
DRINK- ING WATER	18 DW-2	N-2	TYPES OF DRINKING WATER STANDARDS VIOLA- TIONS. This is a matrix type of display that illustrates the degree of severity of standards violations for 5 parameters of drinking water quality.	Aggre- gation of Re- gional Dis- plays.	Violation data would be reported for turbidity and bacteria viola- tions on a monthly basis, by state officials. Information on ITOX and OTOX will not be avail- able from the states until Sept. 1978 and data on radiological characteristics will not be available until 1980, or later.		TBD	TBD	None
DRINK- ING WATER	19 DW-3	R-1	NUMBER OF DRINKING WATER SUPPLIES MEETING STANDARDS. This is a bar chart showing the number of drinking water supplies meeting standards, by state, with a pie chart show- ing the percentage of all systems in the re- gion that meet stds.	Regional display. Not proposed for Na- tional Profile.	Basic information will be supplied by states to the regional offices. Regional Drinking Water Office will have to make judgment on severity of violation. Chart may also be drawn in terms of percent of total supply systems in each state, or with separate bars for underground vs. surface water supplies, for each state.		None	Varies (Op- tional)	None
2.2.6 AIR	20 AIR-1	N-1	REDUCTION IN STATION- ARY SOURCE EMISSIONS ATTRIBUTABLE TO AIR QUALITY CONTROLS. Con- trolled vs. actual emissions per year for Nation (bar chart).	To be supplied from existing data from DSSE.	Some Regions have enforcement data for the states and could produce a regional display of this type.	OAQPS supplied data.	Less than .1	None	Negli- gible
LEGEND  N = NATIONAL LEVEL R = REGIONAL OPTION				NOTES: 1 FEASIBLE IN NEAR-TERM 2 CONSIDER FOR FUTURE 3 FEASIBILITY UNKNOWN "N-1" DISPLAYS COMPRISE NEAR-TERM NATIONAL PROFILE					

TYPES OF DRINKING WATER STANDARDS VIOLATIONS



LEGEND

- NOT A CONTRIBUTOR TO VIOLATIONS
- MINOR CONTRIBUTOR TO VIOLATIONS
- MAJOR CONTRIBUTOR TO VIOLATIONS
- INSUFFICIENT DATA, UNKNOWN

NUMBER OF VIOLATIONS

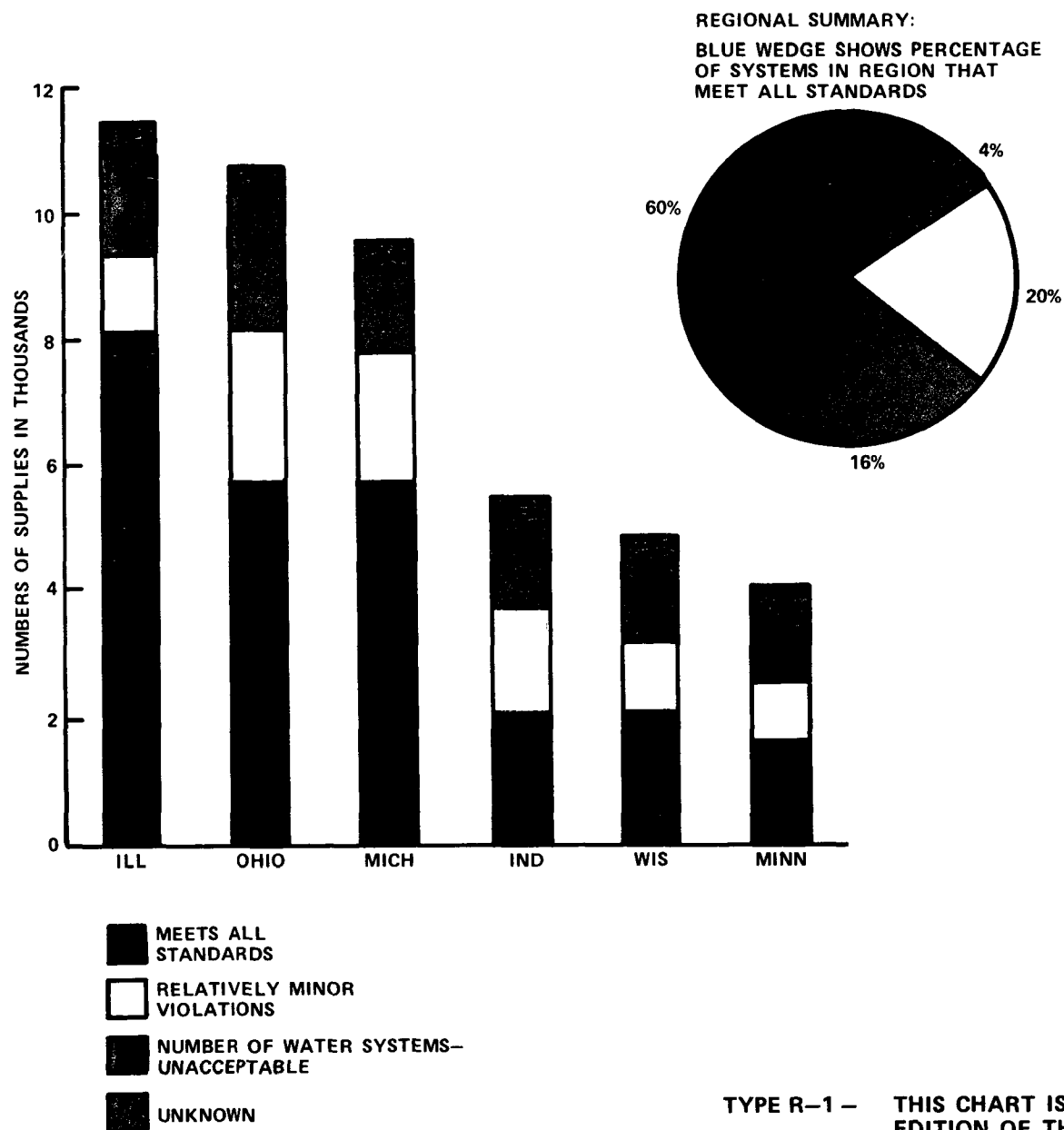
- QUALITY IMPROVING
- QUALITY DETERIORATING

NOTE: NO ARROW MEANS NO CHANGE

DATA DISPLAYED ON CHART IS NOT REAL AND IS USED FOR DEMONSTRATION ONLY.

TYPE N-2 — THIS CHART IS PROPOSED FOR FUTURE EDITIONS OF THE NATIONAL PROFILE AND WILL BE INCLUDED WHEN REQUIRED INFORMATION IS AVAILABLE

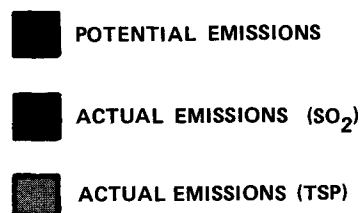
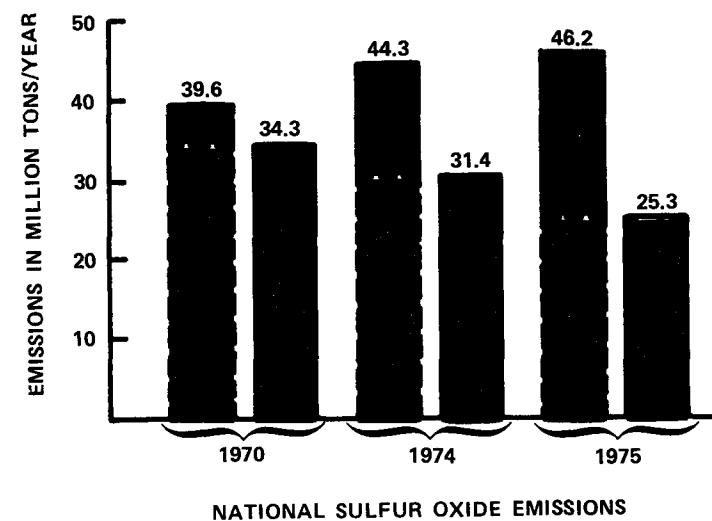
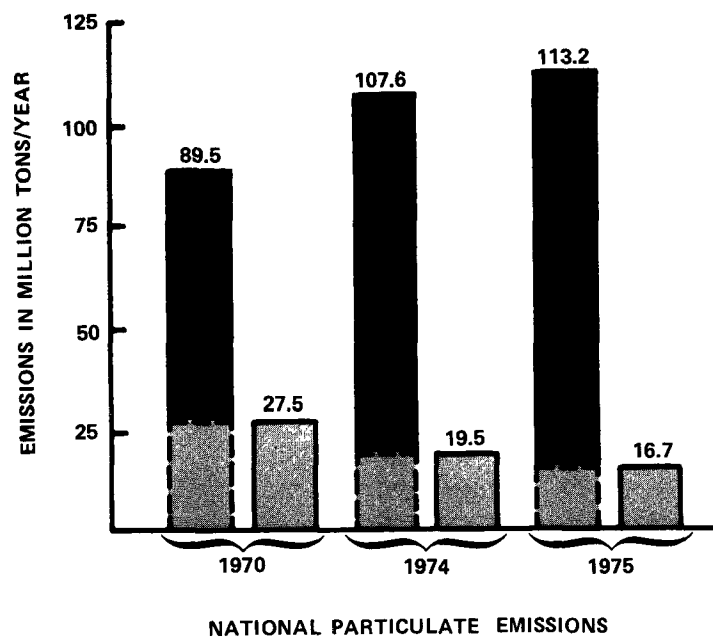
NUMBER OF DRINKING WATER SUPPLIES MEETING STANDARDS



DATA DISPLAYED ON CHART IS NOT REAL
AND IS USED FOR DEMONSTRATION ONLY


TYPE R-1 — THIS CHART IS PROPOSED FOR THE FIRST
EDITION OF THE REGIONAL PROFILE IF
STATE DATA IS AVAILABLE IN TIME. 100

REDUCTION IN STATIONARY SOURCE EMISSIONS ATTRIBUTABLE TO AIR QUALITY CONTROLS

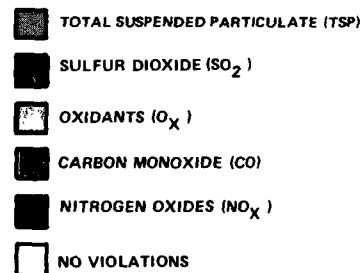
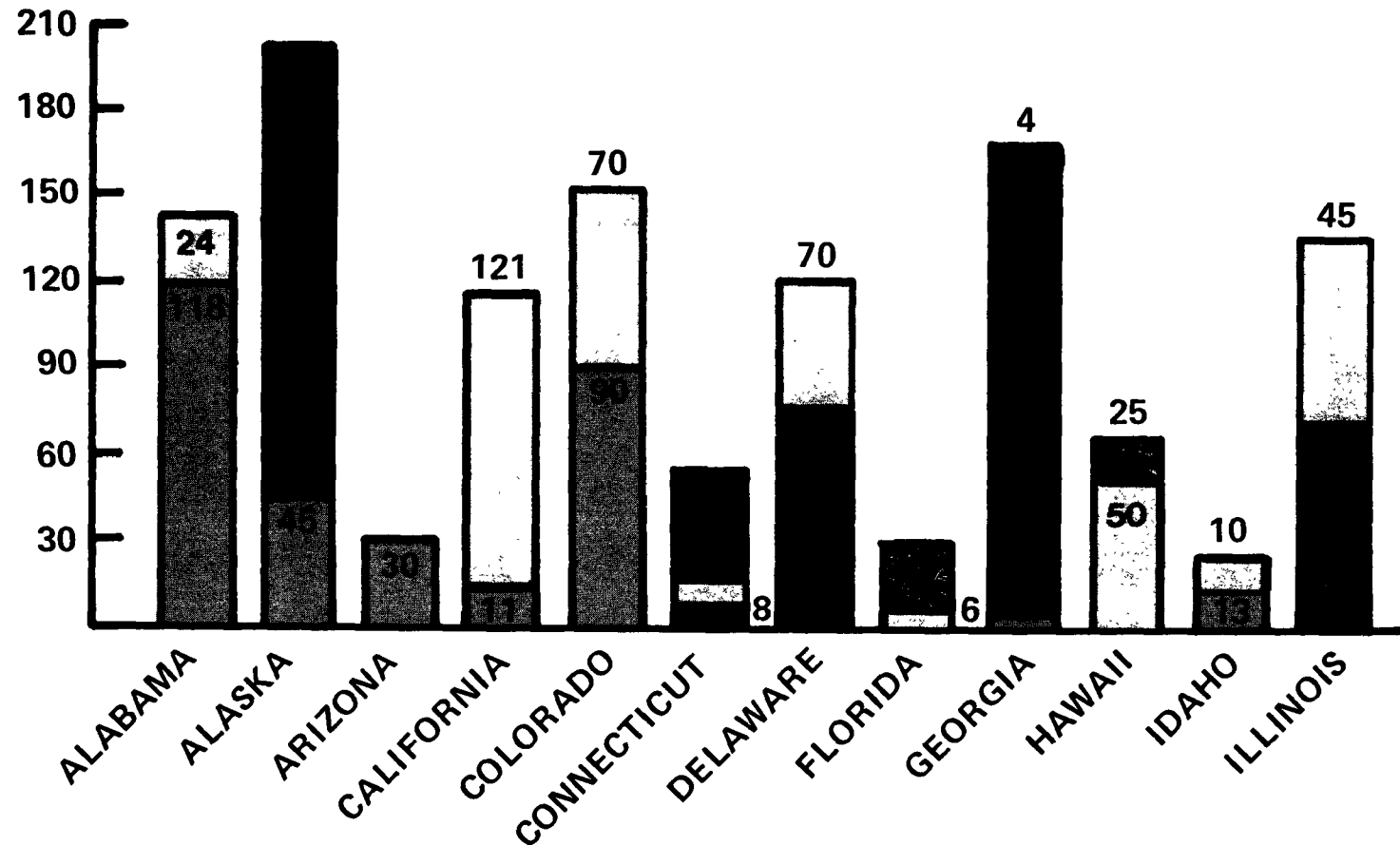


SPECIFICATIONS FOR PROPOSED NATIONAL PROFILE
WITH NOTES ON SELECTED REGIONAL &
SUPPLEMENTAL DISPLAYS

NEAR TERM RESOURCES,
IN PROFESSIONAL PERSON YEARS

ENVIRONMENT MEDIA	REF =	TYPE	TITLE - DESCRIPTION	APPROACH	REQUIREMENTS OF REGIONS	REQUIRED FROM OTHERS	REPORT INTEGRATION - EPA, D.C.	PER REGION	OTHERS
AIR	21N AIR-2	N-1	NUMBER OF DAYS WITH STANDARDS VIOLATIONS BY TYPE OF POLLUTANT. Bar chart with a single bar for each state, showing, by a separate color, the number of days in which the primary standards are exceeded at the worst location in each state.	To be supplied by re-tions from best data available.	For each state, select the AQCR that has the poorest air quality, and for that AQCR only, estimate the number of days per year in which the primary standards are being violated for TSP, SO ₂ , O _x , CO and NO ₂ . Notes on estimating contained in next chart description (AIR-3) apply also to this display.	None	Combined with AIR-5	Com-bined with AIR-5	None
AIR	21R AIR-3	R-1	DAYS OF STANDARDS VIOLATIONS BY TYPE OF POLLUTANT AND SEVERITY OF VIOLATION FOR NON-ATTAINMENT AIR QUALITY CONTROL RE-GIONS. Bar chart showing days of stan-dards violations by type of pollutant for each non-attainment AQCR in Region with a separate bar for each pollutant and 2 shades of color cod-ing. Light color is used to designate the number of days during which the primary standard was violated & the dark shade of	To be supplied directly by the Regions.	For each AQCR in non-attainment status, the best current estimate of the number of days per year in which standards are being viola-ted at the primary and alert levels on a "worst case basis" by type of pollutant (TSP, SO ₂ , O _x , CO & NO ₂). "Worst case basis" means that if any monitoring site in the AQCR shows a violation, then the entire AQCR records a violation for that day. Projec-tions from limited sample quan-tities to "days per year" shall be based on the most reliable statistical technique in the judgment of the Region. Best judgments shall be used where data is not definitive. Situations where there is absolutely no basis for a judgment or estimate	None	Combined with AIR-4	Com-bined with AIR-4	None
LEGEND  N = NATIONAL LEVEL R = REGIONAL OPTION				NOTES: 1 FEASIBLE IN NEAR-TERM 2 CONSIDER FOR FUTURE 3 FEASIBILITY UNKNOWN "N-1" DISPLAYS COMPRISE NEAR-TERM NATIONAL PROFILE					

AIR QUALITY NUMBER OF DAYS WITH STANDARDS VIOLATIONS BY TYPE OF POLLUTANT

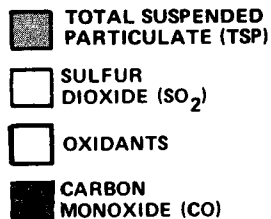
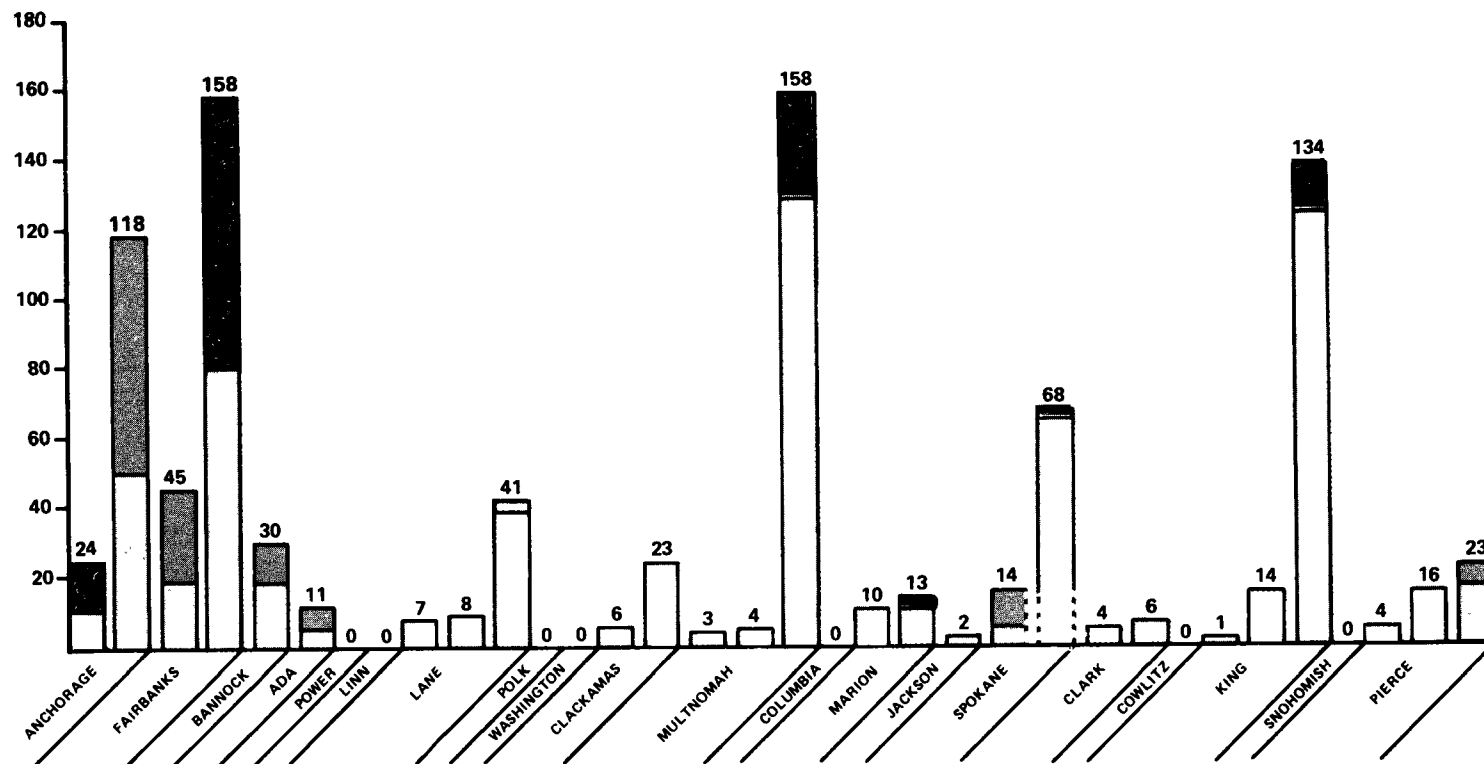


DATA DISPLAYED ON CHART IS NOT REAL
AND IS USED FOR DEMONSTRATION ONLY.

TYPE N-1- THIS CHART IS PROPOSED FOR THE FIRST
EDITION OF THE NATIONAL PROFILE. 103

DAYS OF STANDARDS VIOLATIONS BY TYPE OF POLLUTANT AND SEVERITY OF VIOLATION FOR NON-ATTAINMENT AIR QUALITY CONTROL REGIONS


REGIONAL



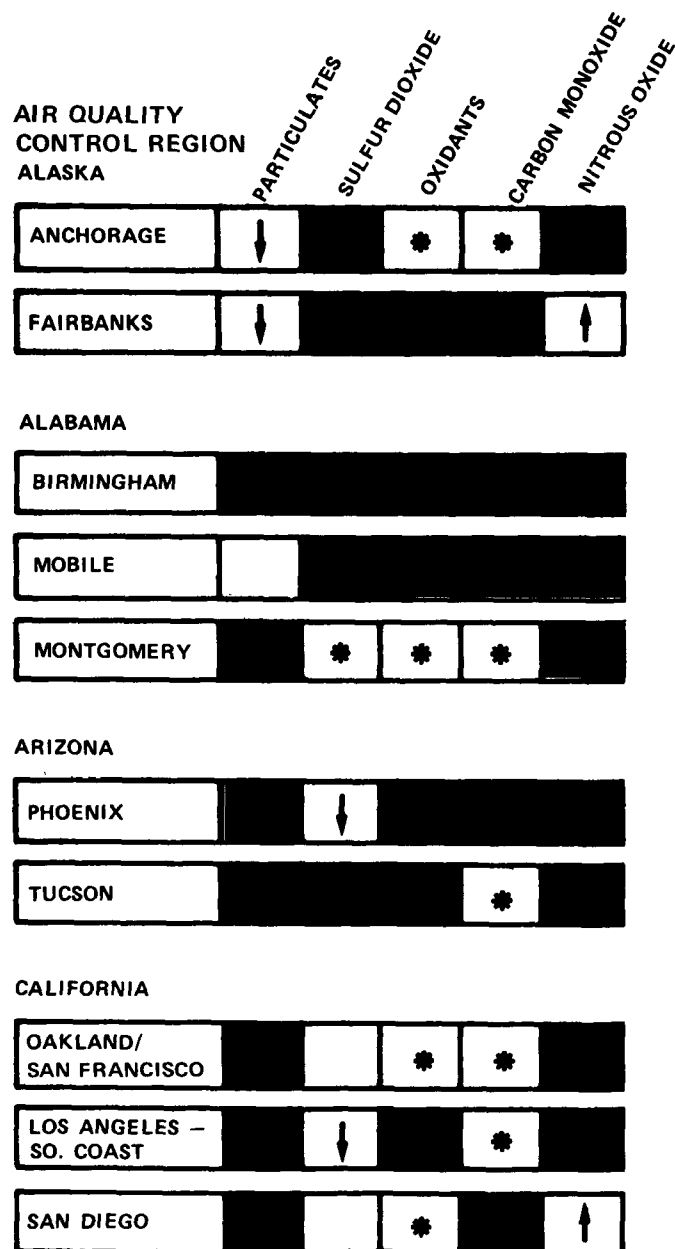
NOTE: LIGHT COLOR INDICATES VIOLATION OF PRIMARY STANDARD. DARK COLOR (TOP PORTION OF BAR) INDICATES NO. OF DAYS THAT AIR QUALITY REACHED THE ALERT LEVEL FOR THAT POLLUTANT.








SPECIFICATIONS FOR PROPOSED NATIONAL PROFILE
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SUPPLEMENTAL DISPLAYS

NEAR TERM RESOURCES,
IN PROFESSIONAL PERSON YEARS

ENVIRONMENT MEDIA	REF =	TYPE	TITLE - DESCRIPTION	APPROACH	REQUIREMENTS OF REGIONS	REQUIRED FROM OTHERS	REPORT INTEGRATION -		
							EPA, D C	PER REGION	OTHERS
AIR Cont'd	21R AIR-3		same color is used to designate the number of days in which the alert level was exceeded.		shall be so indicated. Each region shall provide description of technique used for estimating from limited data.				
AIR	22 AIR-4	N-1	TRENDS IN AIR QUALITY BY POLLUTANT. Color coded matrix arraying all AQCRs against types of air pollutants with cells color coded to denote degree to which pollutant is a contributor to standards violations & with arrows denoting current trend, measured by comparing number of days of standards violations this year, with the number last year.	To be supplied directly by Regions in connection with Display AIR-3 data.	For all AQCRs in the Region, and for each type of pollutant (TSP, SO ₂ , O _x , CO & NO ₂) whether the pollutant is <u>not</u> a contributor to days of violations, a "minor" contributor, or a "major" contributor & whether the number of days of standards violations is increasing, decreasing or remaining relatively unchanged. In order for a pollutant to be a major contributor, it must be estimated that there is at least one day of a standard violation at or above the alert level, or 25% of the possible days above the primary standard level. Best judgments shall be used where data is not definitive. Situations where there is absolutely no basis for a judgment or estimate shall be so indicated. Rule for "major" vs. "minor" contributor subject to modification after all data collected and a trial display drawn.	None	0.25 ⁽⁷⁾ (0.25)	0.5 (0.25)	None
LEGEND  N = NATIONAL LEVEL R = REGIONAL OPTION				NOTES: 1 FEASIBLE IN NEAR-TERM 2 CONSIDER FOR FUTURE 3 FEASIBILITY UNKNOWN "N-1" DISPLAYS COMPRISE NEAR-TERM NATIONAL PROFILE					

TRENDS IN AIR QUALITY BY POLLUTANT




-  NO VIOLATIONS OF STANDARDS
-  EXCEEDS PRIMARY STANDARD
-  EXCEEDS ALERT LEVEL
-  INSUFFICIENT DATA BUT PRESUMED IN COMPLIANCE
-  INSUFFICIENT DATA BUT PRESUMED EXCEEDING PRIMARY LEVEL
-  QUALITY IMPROVING
-  QUALITY DETERIORATING

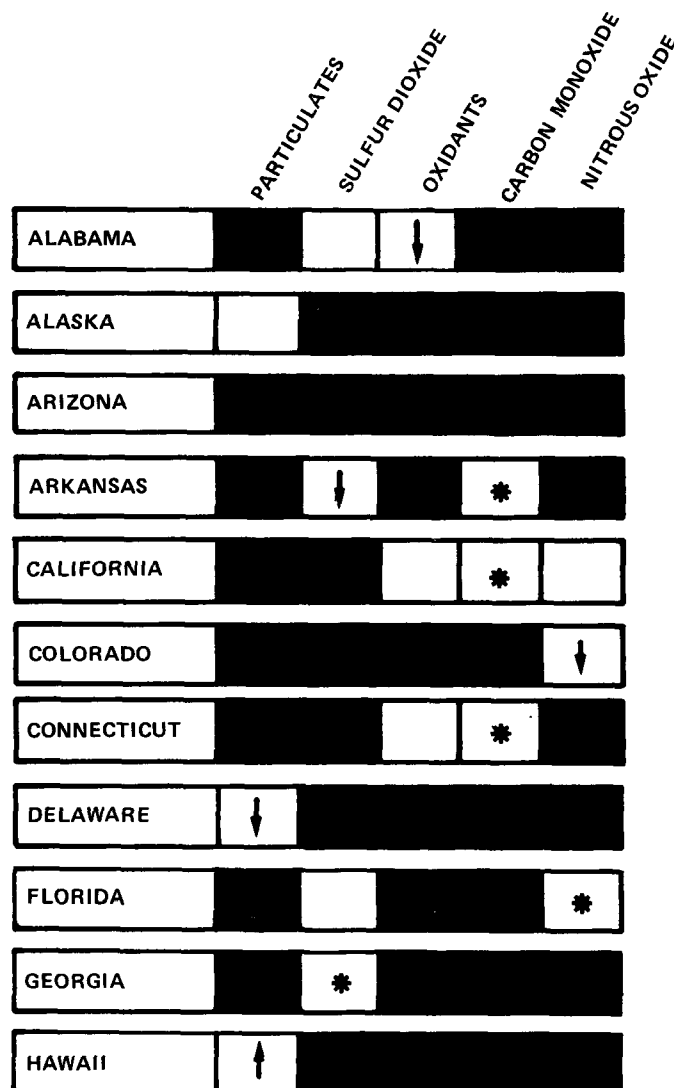
NOTE: NO CHANGE IN QUALITY INDICATED BY NO ARROW.








**SPECIFICATIONS FOR PROPOSED NATIONAL PROFILE
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SUPPLEMENTAL DISPLAYS**

NEAR TERM RESOURCES,
IN PROFESSIONAL PERSON YEARS

ENVIRONMENT MEDIA	REF =	TYPE	TITLE - DESCRIPTION	APPROACH	REQUIREMENTS OF REGIONS	REQUIRED FROM OTHERS	REPORT INTEGRATION -		
							EPA, D C	PER REGION	OTHERS
AIR	23 AIR-5	N-2	TYPES AND TRENDS IN NUMBER OF DAYS OF AIR QUALITY STANDARDS VIOLATIONS BY STATE. Same as AIR-4, except aggregated by State to reduce size of display and provide state-by-state comparison.	Uses data in Exhibit AIR-4 satisfactory aggregation method can be found.	No additional data required. Problem is lack of discrimination as AQCRs are combined--"Worst case approach" does not work well, but possibly can be made to be representative.	None	.3	.25	None Likely
AIR	24 AIR-6	N-2	NUMBER OF PERSONS EX- POSED TO AIR QUALITY STANDARDS VIOLATIONS. Numbers of persons ex- posed to standards violations of TSP and SO ₂ by Region (bar chart) and for Nation (pie chart).	Estimate to be provided by RTP & modified as appropriate by Region.	Where the Region has developed a technique for making an estimate of numbers of persons exposed to standards violations, this technique shall be used for TSP and SO ₂ . Otherwise, estimate shall be supplied by RTP and reviewed by the Regions. Feasibility of this display depends in part on EPA-Durham ability to apply the current population at risk model. It is expected that estimates will be routinely made for major population centers in the future.	RTP	N.A.	N.A.	
AIR	25 AIR-7	N-3	COST OF AIR POLLUTION. Bar charts of various health and/or economic impacts as function of time	Long- term research to address these issues, as (cont.)	None at present. Bar chart drawn to suggest format and content of such a display only.	None at present.	N.A.	None	N.A.
LEGEND  N - NATIONAL LEVEL R - REGIONAL OPTION				NOTES 1 FEASIBLE IN NEAR TERM 2 CONSIDER FOR FUTURE 3 FEASIBILITY UNKNOWN "N 1" DISPLAYS COMPRISE NEAR TERM NATIONAL PROFILE					

TYPES & TRENDS IN NUMBER OF DAYS OF AIR QUALITY STANDARDS VIOLATIONS BY STATE



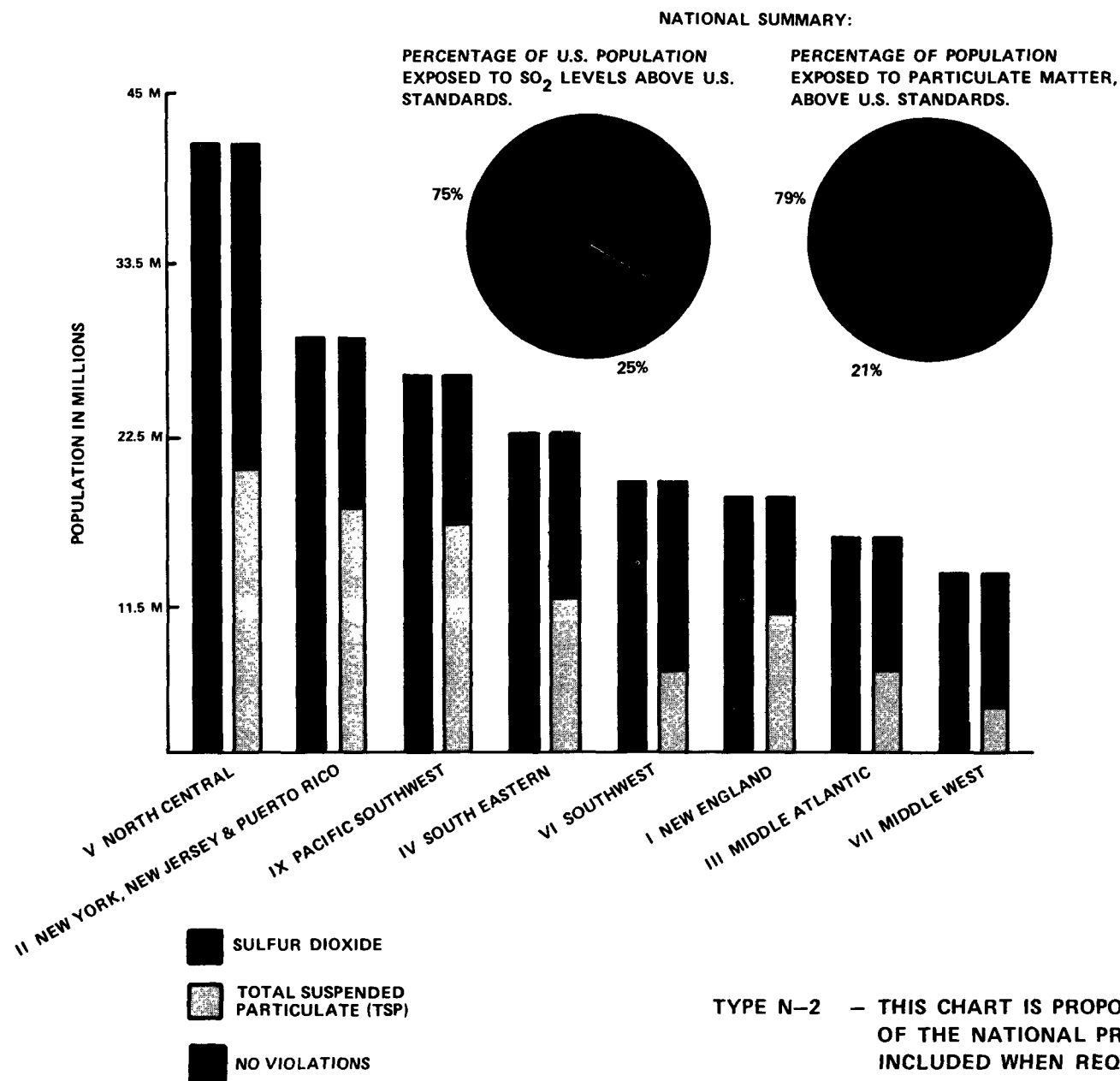
-  NO VIOLATIONS OF STANDARDS
-  EXCEEDS PRIMARY STANDARD
-  EXCEEDS ALERT LEVEL
-  INSUFFICIENT DATA BUT PRESUMED IN COMPLIANCE
-  INSUFFICIENT DATA BUT PRESUMED EXCEEDING PRIMARY LEVEL
-  QUALITY IMPROVING
-  QUALITY DETERIORATING

NOTE: NO CHANGE IN QUALITY INDICATED
BY NO ARROWS.

DATA DISPLAYED ON CHART IS NOT REAL
AND IS USED FOR DEMONSTRATION ONLY.

TYPE N-2 - THIS CHART IS PROPOSED FOR FUTURE EDITIONS
OF THE NATIONAL PROFILE AND WILL BE
INCLUDED WHEN REQUIRED INFORMATION IS
AVAILABLE.

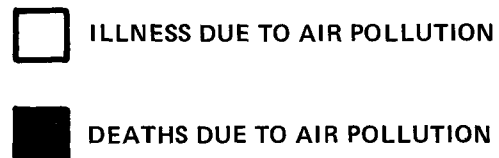
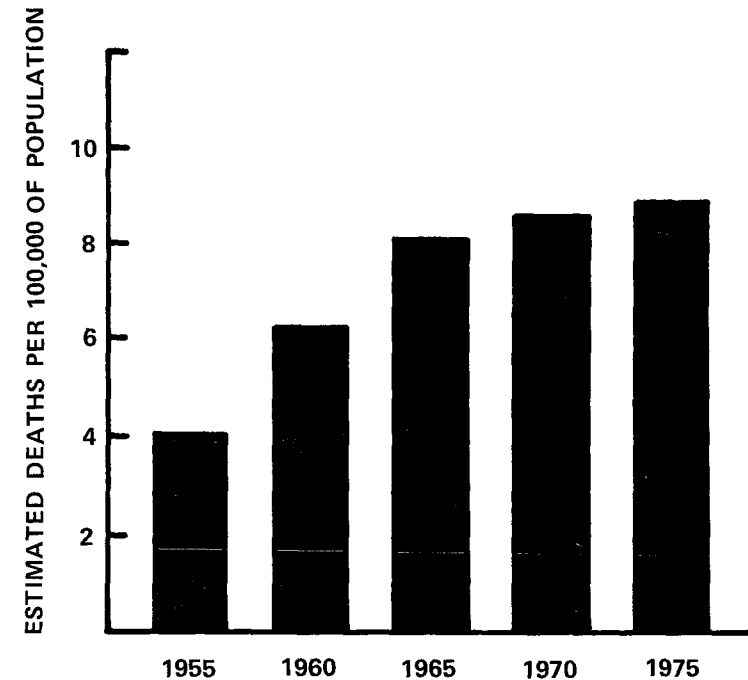
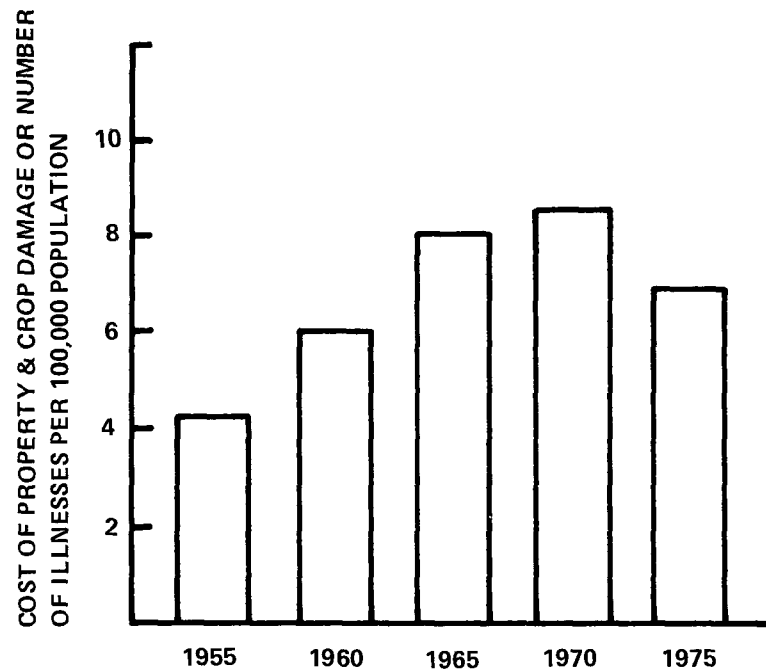
NUMBER OF PERSONS EXPOSED TO AIR QUALITY STANDARDS VIOLATIONS



DATA DISPLAYED ON CHART IS NOT REAL

TYPE N-2 — THIS CHART IS PROPOSED FOR FUTURE EDITIONS OF THE NATIONAL PROFILE AND WILL BE INCLUDED WHEN REQUIRED INFORMATION IS AVAILABLE.

COST OF AIR POLLUTION




DATA DISPLAYED ON CHART IS NOT REAL
AND IS USED FOR DEMONSTRATION ONLY.

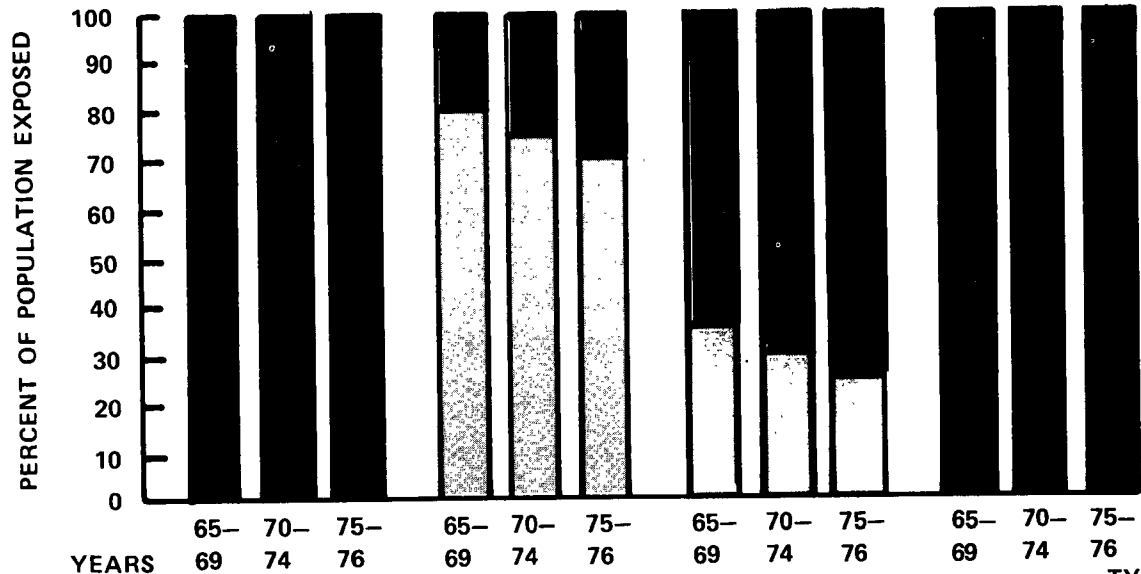
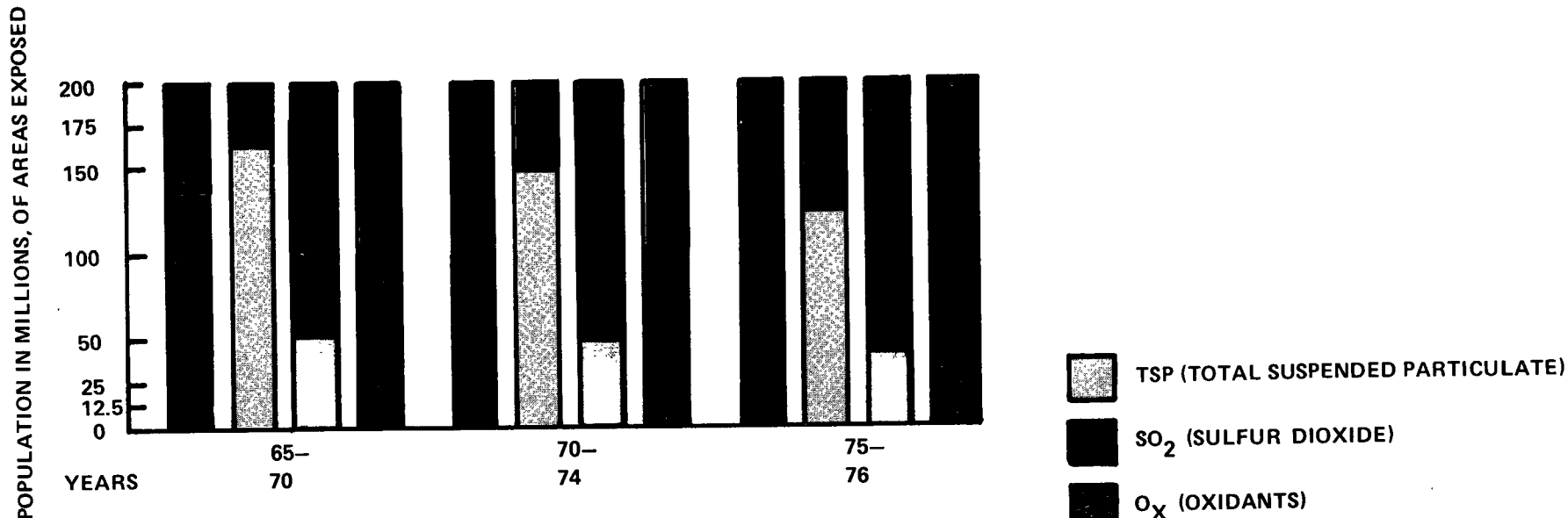
TYPE N-3 - THIS CHART IS PRESENTED ONLY TO
ILLUSTRATE A CONCEPT. FEASIBILITY
IS UNCERTAIN AT THIS TIME.

SPECIFICATIONS FOR PROPOSED NATIONAL PROFILE
WITH NOTES ON SELECTED REGIONAL &
SUPPLEMENTAL DISPLAYS

NEAR TERM RESOURCES,
IN PROFESSIONAL PERSON YEARS

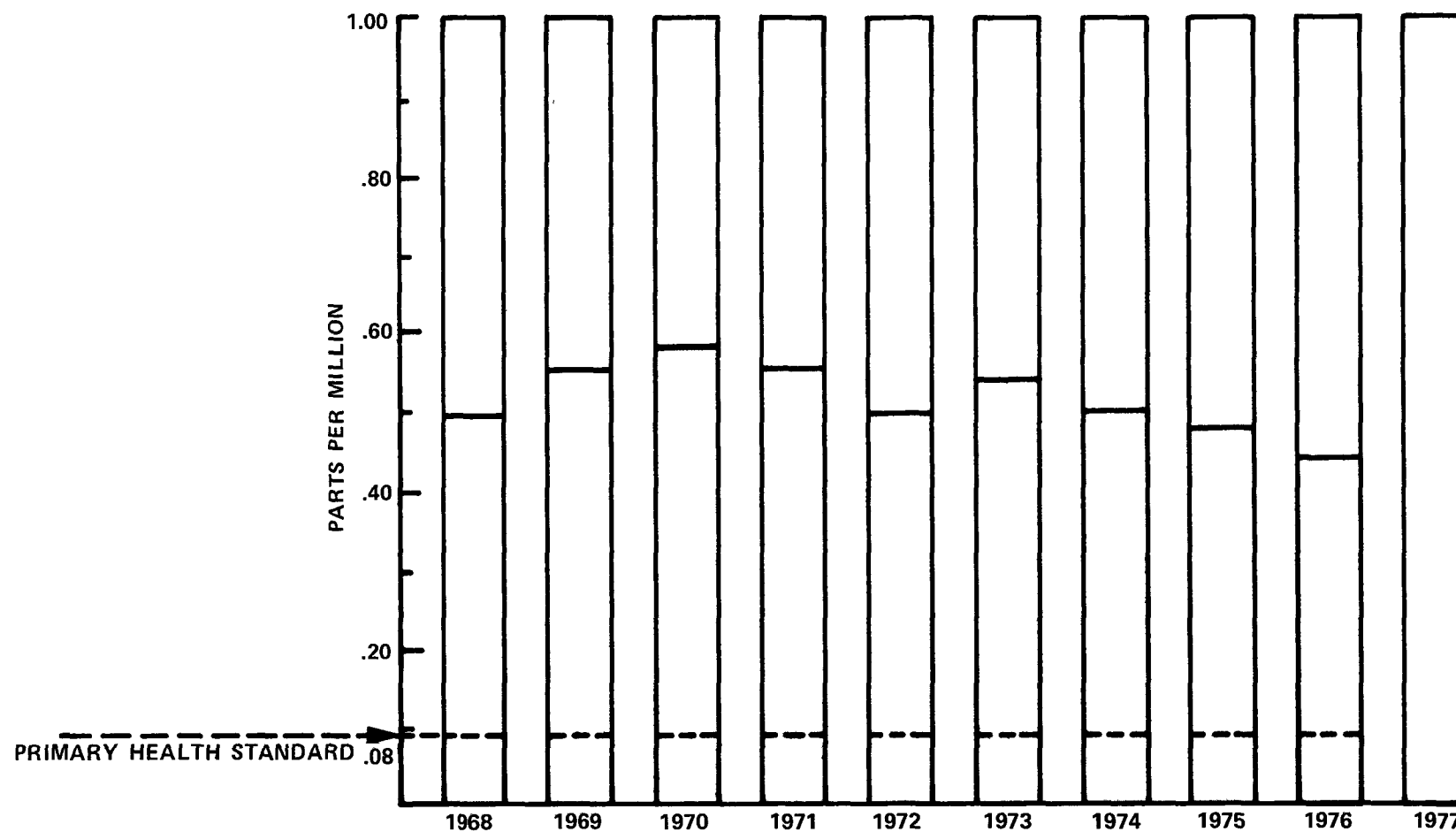
ENVIRONMENT MEDIA	REF. =	TYPE	TITLE - DESCRIPTION	APPROACH	REQUIREMENTS OF REGIONS	REQUIRED FROM OTHERS	REPORT INTEGRATION - EPA, D.C.	PER REGION	OTHERS
AIR	26 AIR-8	N-3	NUMBERS OF PERSONS EX- POSED TO AIR QUALITY STANDARDS VIOLATIONS BY YEAR. Population exposed to standards violations by year by type of pollutant (bar chart).	proposed in pre- vious EPA docu- ments. Similar to AIR-6	None at present, as work would be done by EPA-RTP, and reviewed by Regions. See Note (5).		N.A.	N.A.	N.A.
AIR	27 AIR-9	R-1	MAXIMUM ONE-HOUR OX- IDANT CONCENTRATIONS FOR "YOUR CITY" BY YEAR. Maximum oxidant concentrations by year by locality (bar chart).	Regional (not part of proposed National Profile).	Optional at regional level.	None	N.A.	Varies	None Likely
AIR	28 AIR- 10	R-1	DAYS OF AIR QUALITY STANDARDS VIOLATIONS BY CITY & BY MONTH OF YEAR FOR ALL POLLU- TANTS. Days of stan- dards violations by city by month of year (bar chart).	Regional (not part of proposed National Profile).	Optional at regional level.	None	N.A.	Varies	None Likely
LEGEND  N = NATIONAL LEVEL R = REGIONAL OPTION				NOTES: (5) The top and bottom charts are optional methods of displaying the "Population at Risk" data and one of these will be recommended, based upon comments received from Regions.					
				1 FEASIBLE IN NEAR-TERM 2 CONSIDER FOR FUTURE 3 FEASIBILITY UNKNOWN "N-1" DISPLAYS COMPRISE NEAR-TERM NATIONAL PROFILE					

NUMBERS OF PERSONS EXPOSED TO AIR QUALITY STANDARDS VIOLATIONS BY YEAR



TYPE N-3 - THIS CHART IS PRESENTED ONLY TO ILLUSTRATE A CONCEPT. FEASIBILITY IS UNKNOWN AT THIS TIME

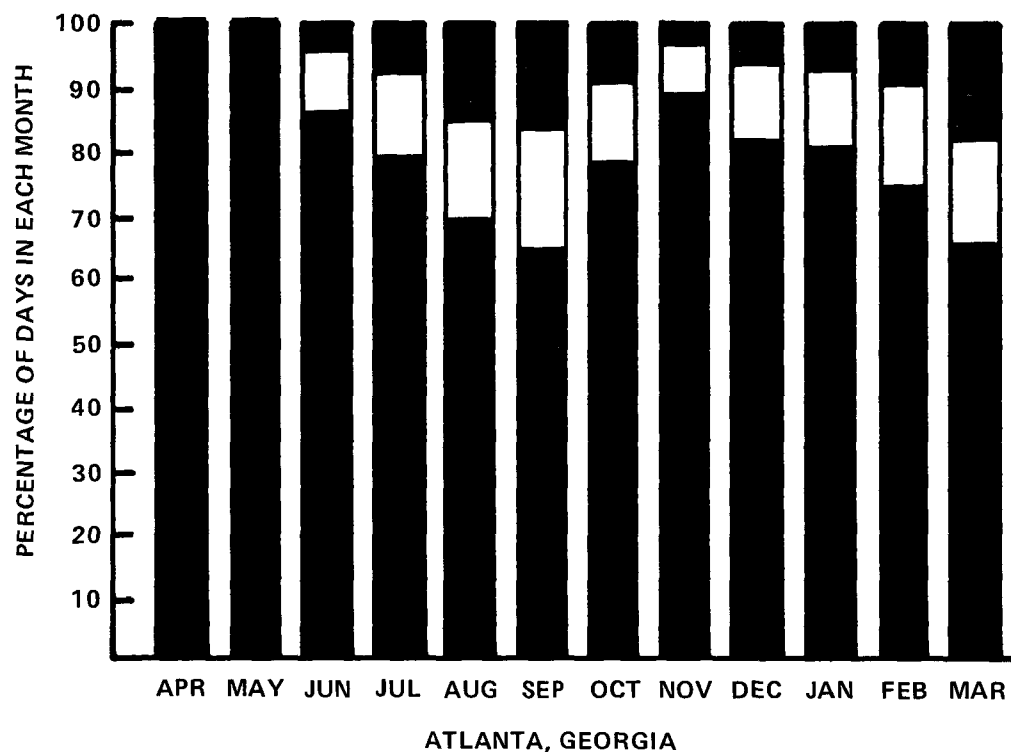
MAXIMUM ONE HOUR OXIDANT CONCENTRATIONS FOR "YOUR CITY" BY YEAR



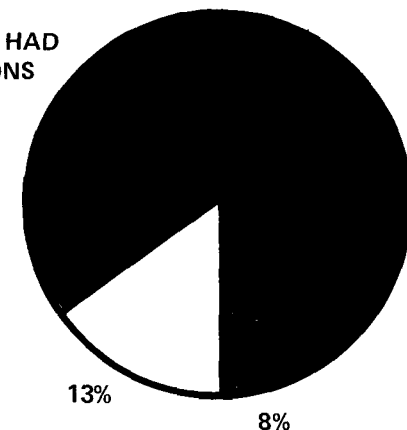
DATA DISPLAYED ON CHART IS NOT REAL
AND IS USED FOR DEMONSTRATION ONLY.

TYPE R-1 — THIS CHART IS PROPOSED FOR THE FIRST
EDITION OF THE REGIONAL PROFILE.

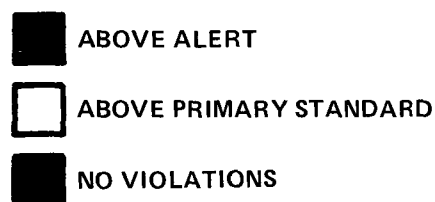
DAYS OF AIR QUALITY STANDARDS VIOLATIONS, BY CITY, BY MONTH OF YEAR FOR ALL POLLUTANTS



79% OF DAYS HAD
NO VIOLATIONS



PERCENTAGE OF DAYS PER YEAR
IN WHICH SHORT TERM STANDARDS
WERE VIOLATED FOR SO₂, O_X, CO,
AND NO₂.




TYPE R-1 — THIS CHART IS PROPOSED FOR THE FIRST
EDITION OF THE REGIONAL PROFILE.

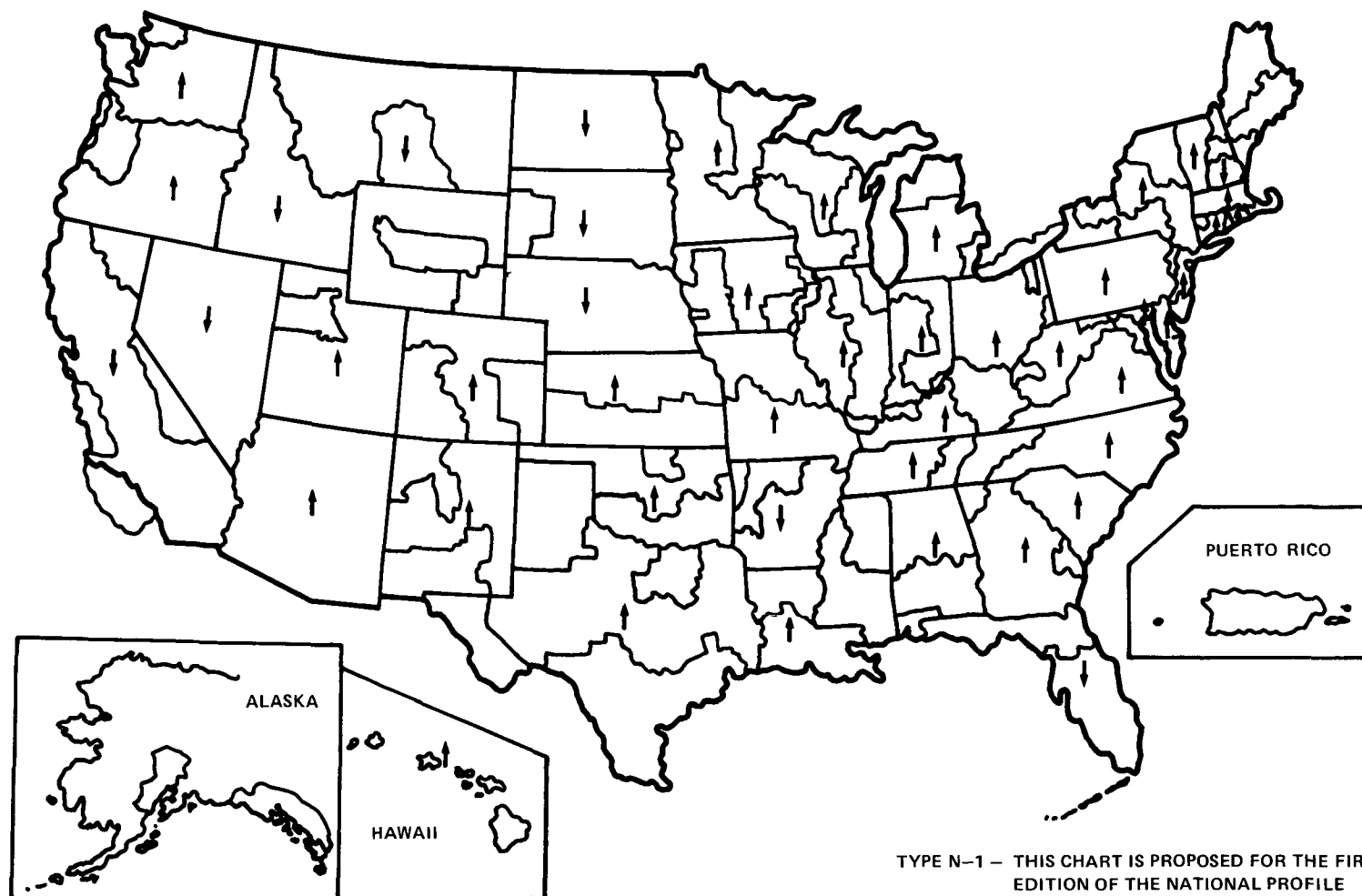
DATA DISPLAYED ON CHART IS NOT REAL
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SPECIFICATIONS FOR PROPOSED NATIONAL PROFILE
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SUPPLEMENTAL DISPLAYS

NEAR TERM RESOURCES,
IN PROFESSIONAL PERSON YEARS

ENVIRONMENT MEDIA	REF. =	TYPE	TITLE - DESCRIPTION	APPROACH	REQUIREMENTS OF REGIONS	REQUIRED FROM OTHERS	REPORT INTEGRATION - EPA, D.C.	PER REGION	OTHERS
AIR	29 AIR-11	N-1	TOTAL SUSPENDED PARTICULATE AIR QUALITY STATUS. Map of U.S. showing non-attainment area for various pollutants. This chart shows TSP only.	Use existing OAQPS data after modification by regions.	The map shown does not have sufficient resolution to be useful. Regions would be required to redraw boundaries to better illustrate area not in attainment. However, precise boundaries not needed.	OAQPS	.1	.1	Negligible
SOLID WASTE	30 SW-1	N-1	PERCENT OF POPULATION SERVED BY STATE APPROVED SOLID WASTE DISPOSAL FACILITIES. Percent of population served by state approved solid waste disposal facility by year. This is a bar chart in blue, yellow & red.	National display constructed as aggregation of regional displays	Data for recent years is available from state and is reported to EPA Regional Office. This data is reported at least annually by the state health or solid waste agency and can be aggregated to a percentage of total regional population, with little effort. The trend may move down for some years due to the fact that states might decertify a facility that had previously been approved.	None	TBD Less than .1	Less than .1	None
SOLID WASTE	31 SW-2	N-1	NUMBERS OF PERSONS SERVED BY STATE APPROVED SOLID WASTE DISPOSAL FACILITIES. Pie chart summary of U.S. plus bar chart showing population in each Region served by disposal facilities meeting state stds. in 1976.	National display constructed as aggregation of regional displays	State data is reported to EPA Regions who will aggregate. The statewide population measure will be sensitive to compliance by large metropolitan areas but will not show the number of cities or towns that are not in compliance.	TBD Less than .1	Less than .1	None	None
LEGEND  N = NATIONAL LEVEL R = REGIONAL OPTION				NOTES: 1 FEASIBLE IN NEAR-TERM 2 CONSIDER FOR FUTURE 3 FEASIBILITY UNKNOWN "N-1" DISPLAYS COMPRISE NEAR-TERM NATIONAL PROFILE					

TOTAL SUSPENDED PARTICULATE AIR QUALITY STATUS

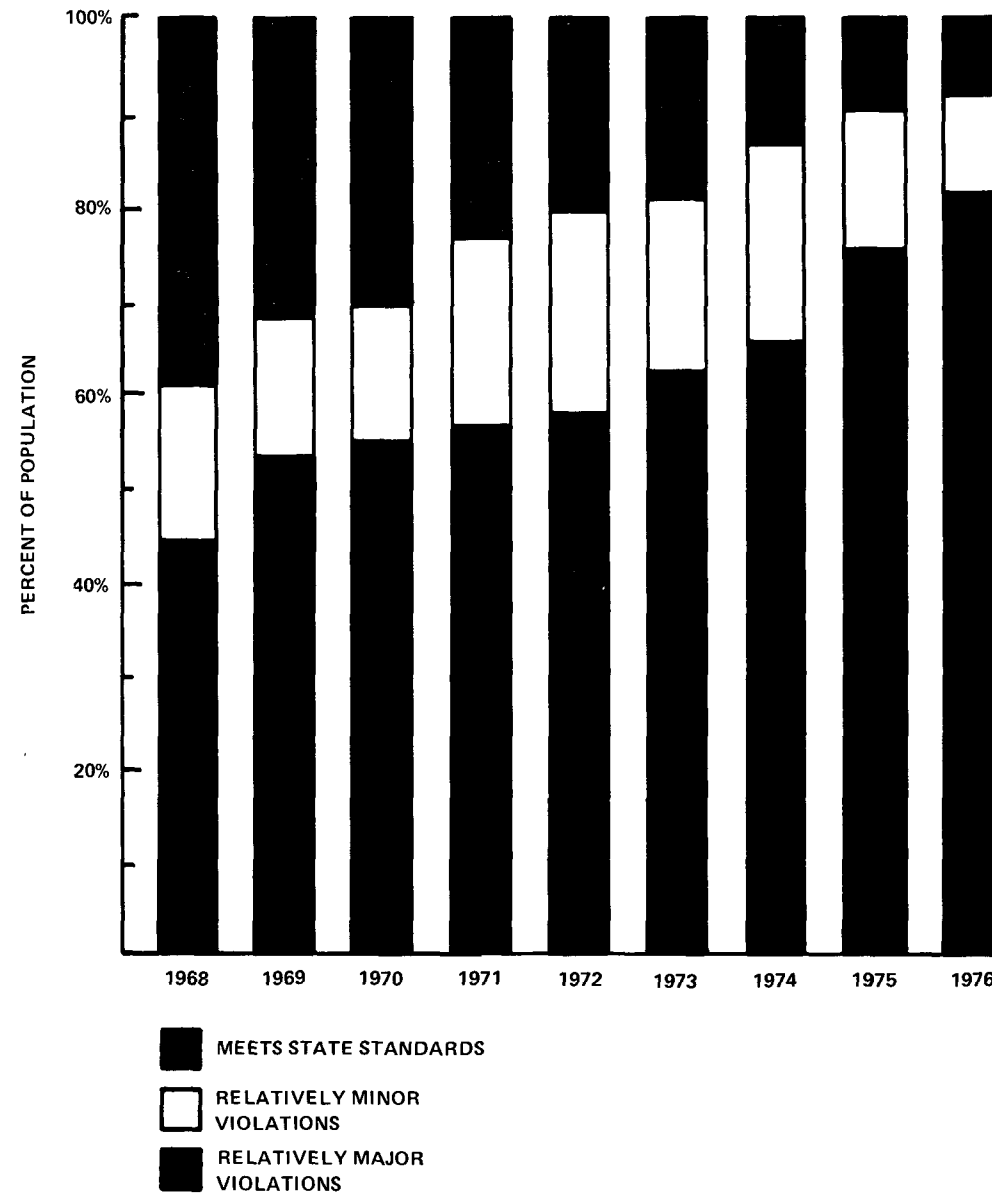


TYPE N-1 - THIS CHART IS PROPOSED FOR THE FIRST EDITION OF THE NATIONAL PROFILE

DATA DISPLAYED ON CHART IS NOT REAL AND IS USED FOR DEMONSTRATION ONLY.

TYPE N-1 - THIS CHART IS PROPOSED FOR THE FIRST EDITION OF THE NATIONAL PROFILE 116

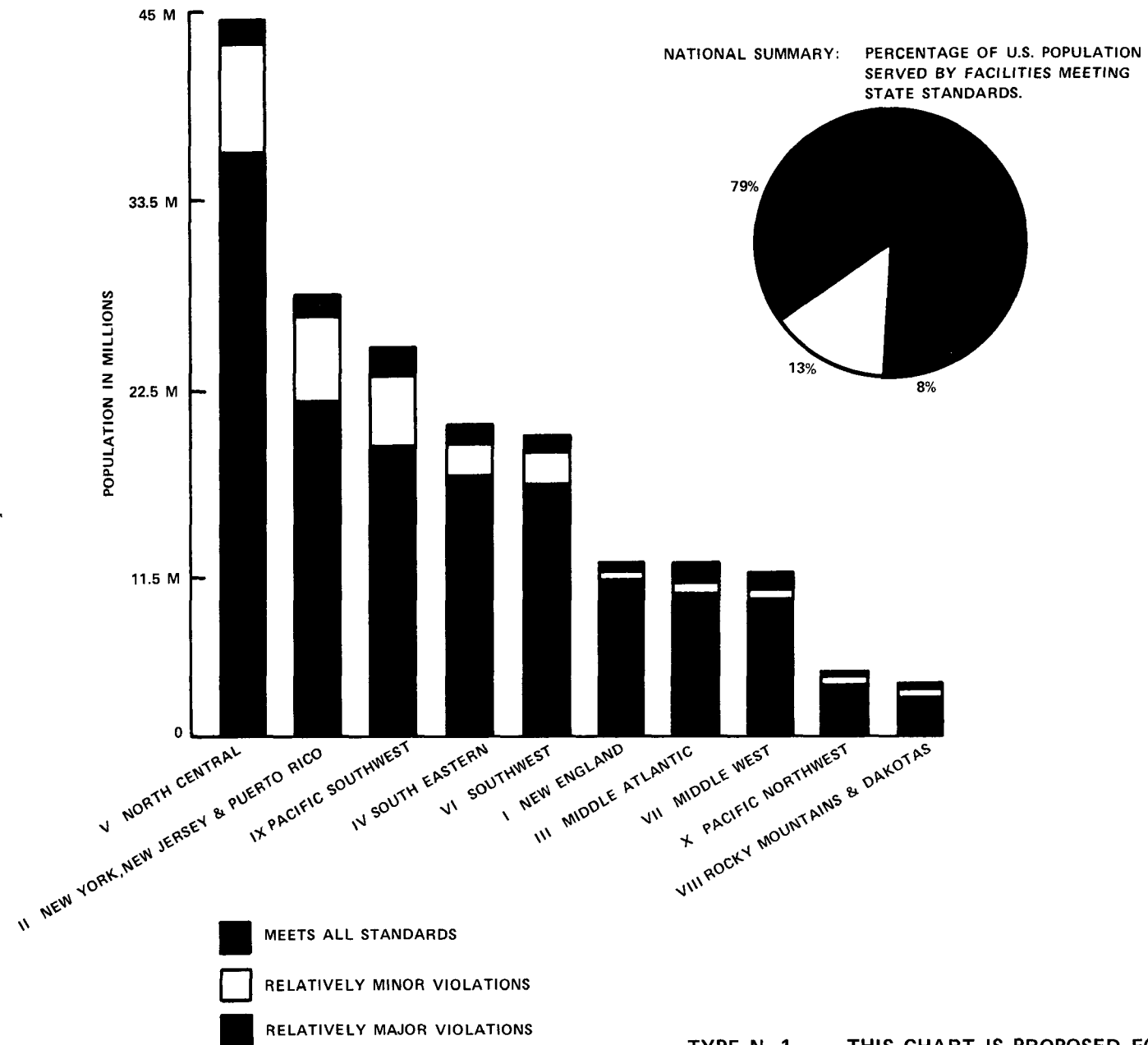
PERCENT OF POPULATION SERVED BY STATE APPROVED SOLID WASTE DISPOSAL FACILITIES



DATA DISPLAYED ON CHART IS NOT REAL
AND IS USED FOR DEMONSTRATION ONLY.

TYPE N-1 — THIS CHART IS PROPOSED FOR THE FIRST
EDITION OF THE NATIONAL PROFILE.

NUMBERS OF PERSONS SERVED BY STATE APPROVED SOLID WASTE DISPOSAL FACILITIES




DATA DISPLAYED ON CHART IS NOT REAL

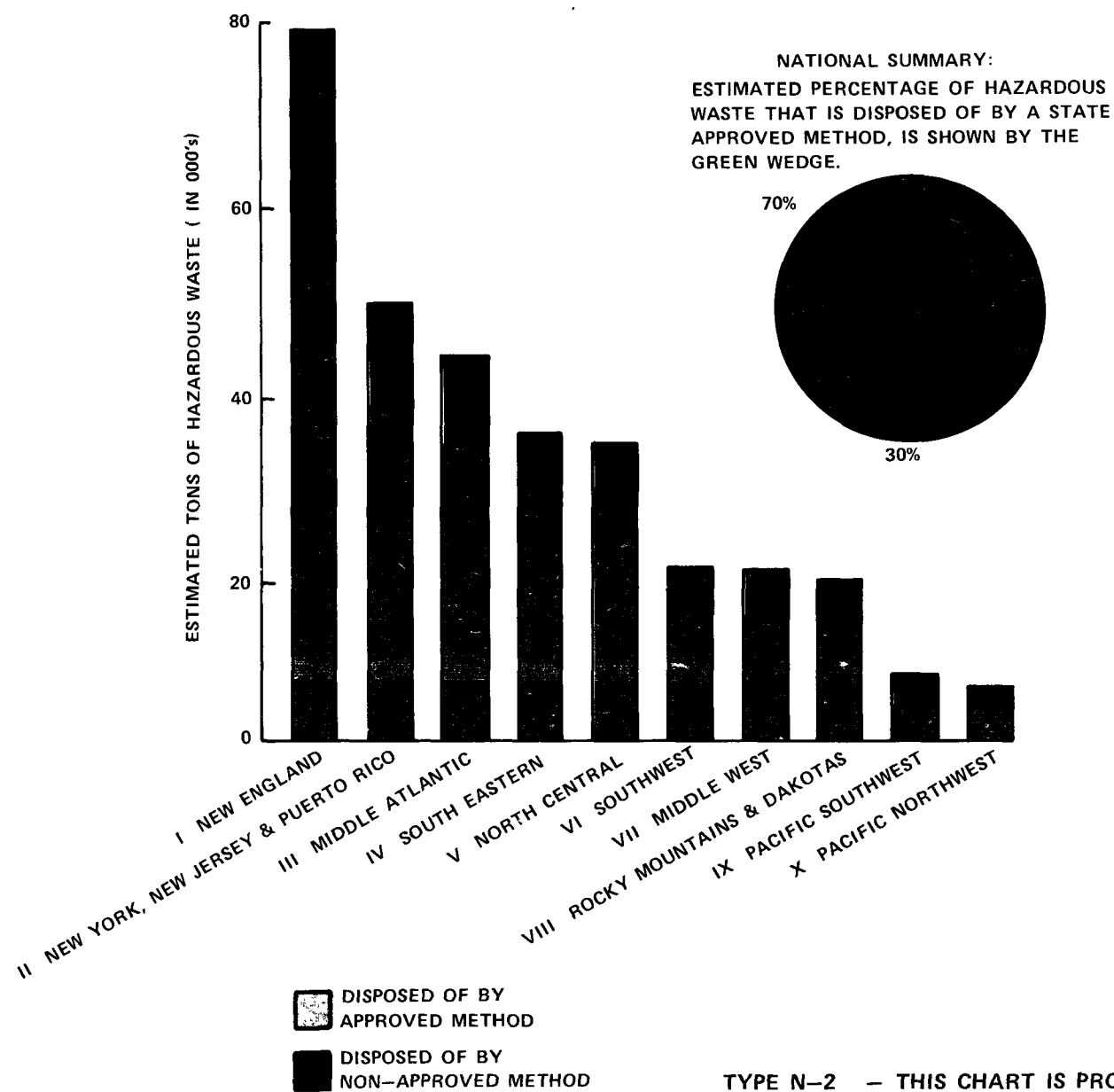
TYPE N-1 — THIS CHART IS PROPOSED FOR THE FIRST
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SPECIFICATIONS FOR PROPOSED NATIONAL PROFILE
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SUPPLEMENTAL DISPLAYS

NEAR TERM RESOURCES,
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ENVIRONMENT MEDIA	REF. #	TYPE	TITLE - DESCRIPTION	APPROACH	REQUIREMENTS OF REGIONS	REQUIRED FROM OTHERS	REPORT INTEGRATION - EPA, D C	PER REGION	OTHERS
SOLID WASTE	32 SW-3	N-2	TONS OF HAZARDOUS WASTE DISPOSED OF BY STATE APPROVED METHODS. Two color bar chart with status of each Region plus pie chart summary of the U.S. showing esti- mated tonnage of hazardous waste that is generated and ton- nage that is disposed of in a manner ap- proved by the States. See Note (6).	National display con- structed as ag- gregate of re- gional displays	Data to be obtained by Regions from the States. This information is not currently reported, but could be estimated, using the classes of wastes generated per million dollars of product ship- ped by each SIC, and then counting the generators in each state that fall within each SIC code. The states are able to estimate the amount of hazardous waste being disposed of in approved facili- ties, so the difference between estimated tons generated, and tons going to approved facility, is being dumped promiscuously, unless there is evidence that it is being taken to an approved site in another state.	None	N.A.	N.A.	None Likely
SOLID WASTE	33 SW-4	N-2	POPULATION SERVED BY ACCEPTABLE SLUDGE DISPOSAL SYSTEM. Four color bar chart showing percentage of population in each Region that is served by a state approved sludge disposal or utilization system, plus pie chart sum- mary of U.S. popu- lation so served. See Note (6).	National display con- structed as ag- gregate of re- gional displays	Section 208 (Area-wide Planning) requires that an assessment be made of the adequacy of sludge disposal procedures, from a water & air quality standpoint, and this data will support this dis- play in one or two years from now. Only a few states have cri- teria for an acceptable sludge disposal facility, but EPA has a draft of recommended criteria that can be used by state water quality or health officials in gauging the progress made by	None	N.A.	N.A.	None Likely
LEGEND  N = NATIONAL LEVEL R = REGIONAL OPTION				NOTES: (6) Public Law 94-580 brings hazardous wastes and sludge under the regulatory authority of the EPA and new rules will soon require that states control these substances in accordance with Federal standards.					
1 FEASIBLE IN NEAR-TERM 2 CONSIDER FOR FUTURE 3 FEASIBILITY UNKNOWN "N-1" DISPLAYS COMPRISE NEAR-TERM NATIONAL PROFILE									

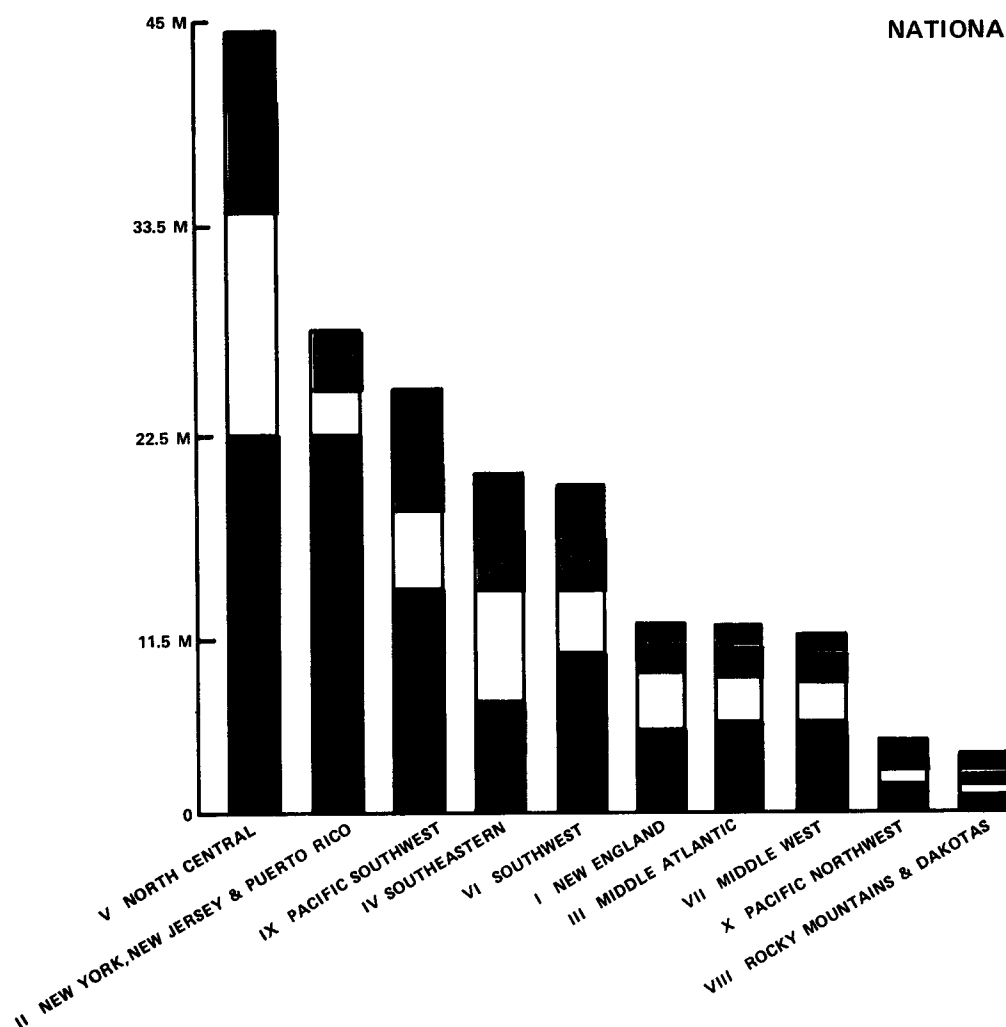
TONS OF HAZARDOUS WASTE DISPOSED OF BY STATE APPROVED METHOD



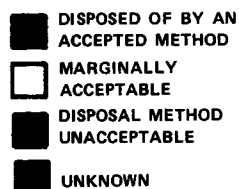
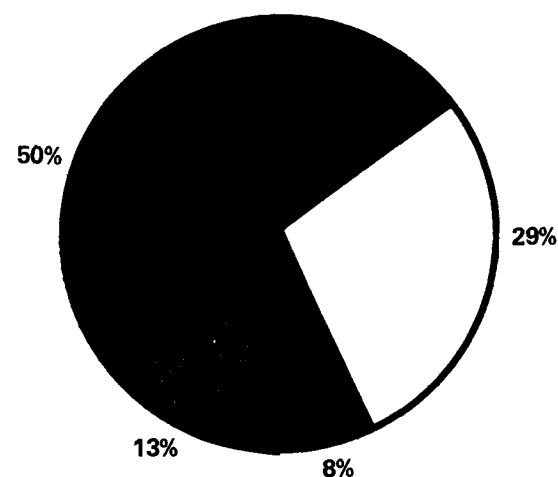
DATA DISPLAYED ON CHART IS NOT REAL
AND IS USED FOR DEMONSTRATION ONLY.

TYPE N-2 - THIS CHART IS PROPOSED FOR FUTURE
EDITIONS OF THE NATIONAL PROFILE
AND WILL BE INCLUDED WHEN REQUIRED
INFORMATION IS AVAILABLE

POPULATION SERVED BY ACCEPTABLE SLUDGE DISPOSAL SYSTEM



NATIONAL SUMMARY: PERCENTAGE OF POPULATION SERVED BY ACCEPTABLE SLUDGE DISPOSAL METHOD (BLUE), BY marginally acceptable (YELLOW), UNACCEPTABLE (RED) AND WHERE METHOD IS UNKNOWN, THE CHART IS GREEN




DATA DISPLAYED ON CHART IS NOT REAL AND IS USED FOR DEMONSTRATION ONLY.

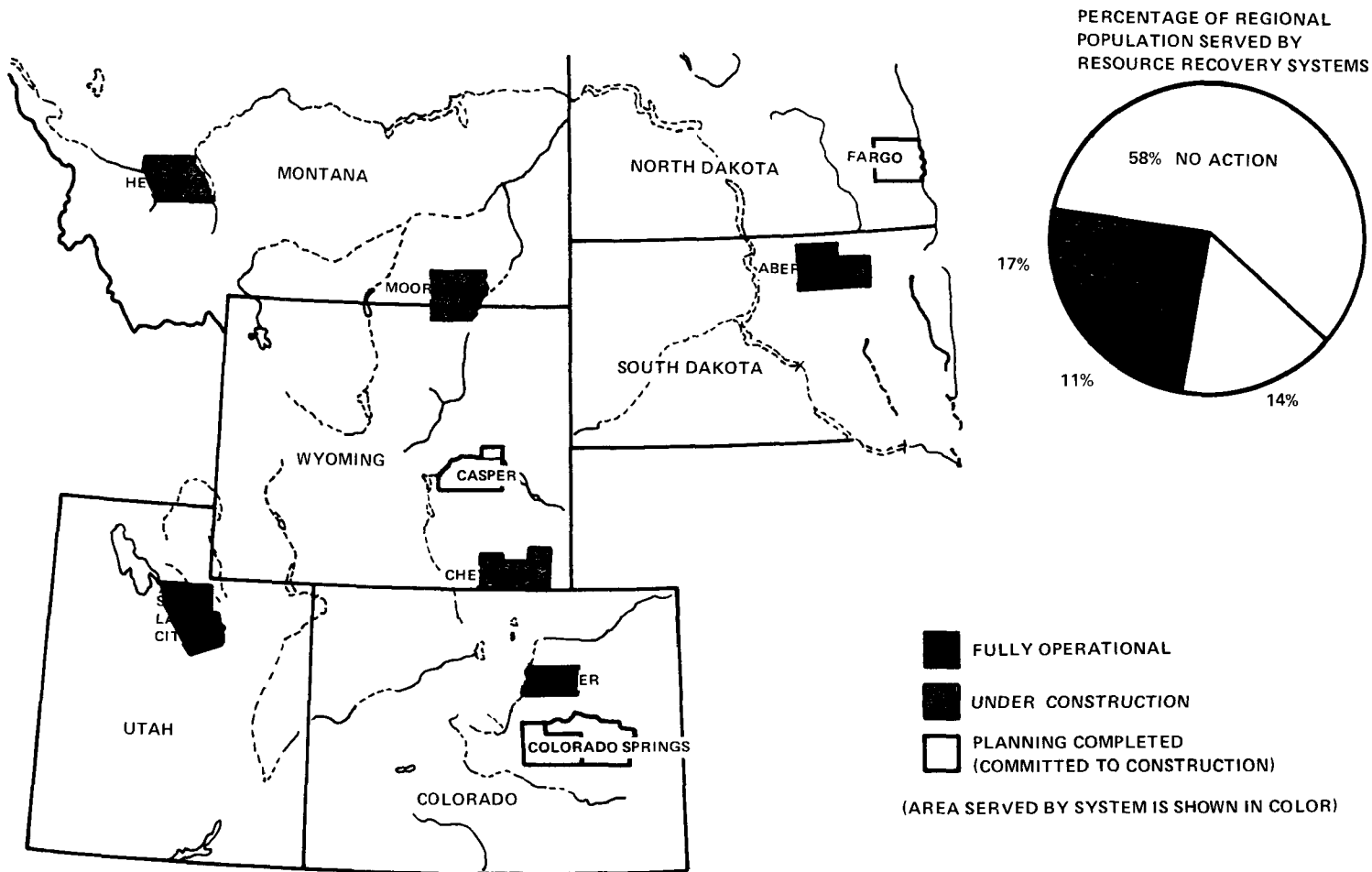
TYPE N-2 — THIS CHART IS PROPOSED FOR FUTURE EDITIONS OF THE NATIONAL PROFILE AND WILL BE INCLUDED WHEN REQUIRED INFORMATION IS AVAILABLE

SPECIFICATIONS FOR PROPOSED NATIONAL PROFILE
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NEAR TERM RESOURCES,
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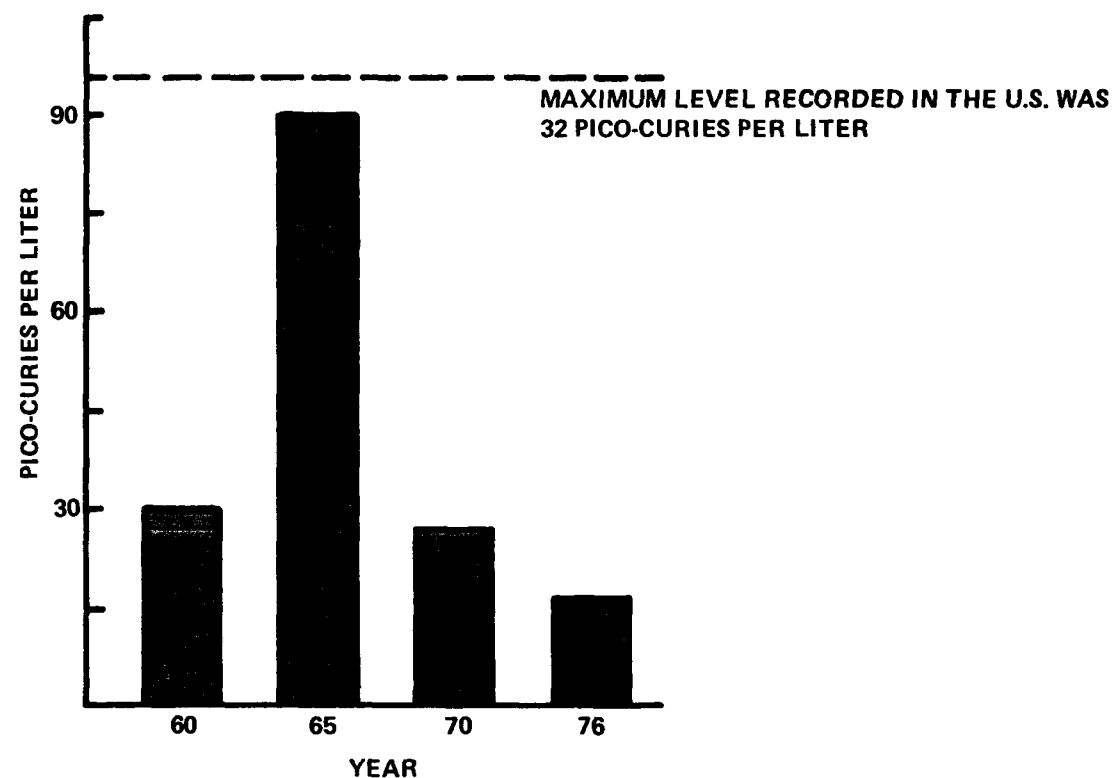
ENVIRONMENT MEDIA	REF =	TYPE	TITLE - DESCRIPTION	APPROACH	REQUIREMENTS OF REGIONS	REQUIRED FROM OTHERS	REPORT INTEGRATION - EPA, D C	PER REGION	OTHERS
SOLID WASTE	34 SW-5	R-1	IMPLEMENTATION STATUS OF FULL-SCALE RESOURCE RECOVERY SYSTEMS. Four color map of Region showing location and status of resource re- covery activities, by state, along with a pie chart summary of percentage of popu- lation served.	OSWMP (EPA-DC) main- tains such a status & can sup- ply list of re- source recovery facili- ties.	their state. This display is not proposed for near-term. Regional Office will compute percentage of population served by such facilities. This display is not proposed for national pro- file but would be useful at regional level.	OSWMP list of facili- ties	N.A.	Less than .1	
2.2.8 RADIA- TION	35 RAD-1	N-1	TREND IN AMOUNT OF RADIATION IN THE EN- VIRONMENT DUE TO "FALL-OUT" (STRONTIUM 90 IN MILK). Bar chart showing year to year levels of strontium 90 in milk.	Data will be supplied by EPA Head- quarters	None	Utilize data from EPA- Office of Rad- iation Programs Annual Report, EPA-520 /1-76- 010.	Less than .1	None	
LEGEND  N = NATIONAL LEVEL R = REGIONAL OPTION				NOTES: 1 FEASIBLE IN NEAR-TERM 2 CONSIDER FOR FUTURE 3 FEASIBILITY UNKNOWN "N-1" DISPLAYS COMPRISE NEAR TERM NATIONAL PROFILE					

IMPLEMENTATION STATUS OF FULL-SCALE RESOURCE RECOVERY SYSTEMS



DATA DISPLAYED ON CHART IS NOT REAL
AND IS USED FOR DEMONSTRATION ONLY.

**TREND IN AMOUNT OF RADIATION IN THE
ENVIRONMENT DUE TO "FALL-OUT"
(STRONTIUM 90 IN MILK)**




DATA DISPLAYED ON CHART IS NOT REAL
AND IS USED FOR DEMONSTRATION ONLY.

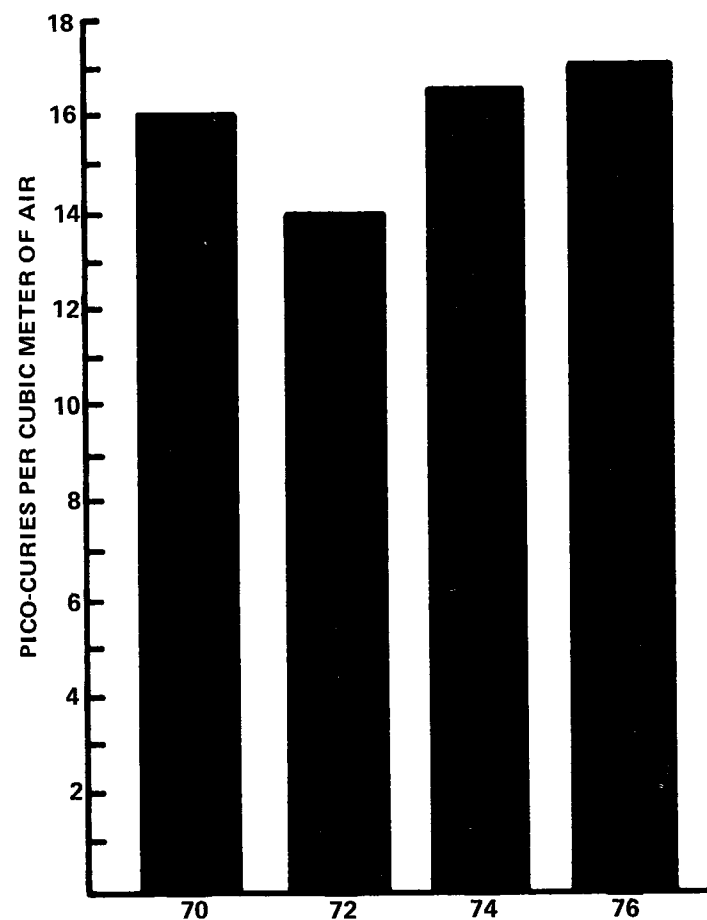
TYPE N-1 — THIS CHART IS PROPOSED FOR THE FIRST
EDITION OF THE NATIONAL PROFILE.

SPECIFICATIONS FOR PROPOSED NATIONAL PROFILE
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NEAR TERM RESOURCES,
IN PROFESSIONAL PERSON YEARS

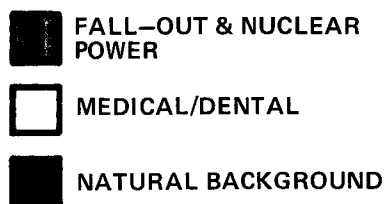
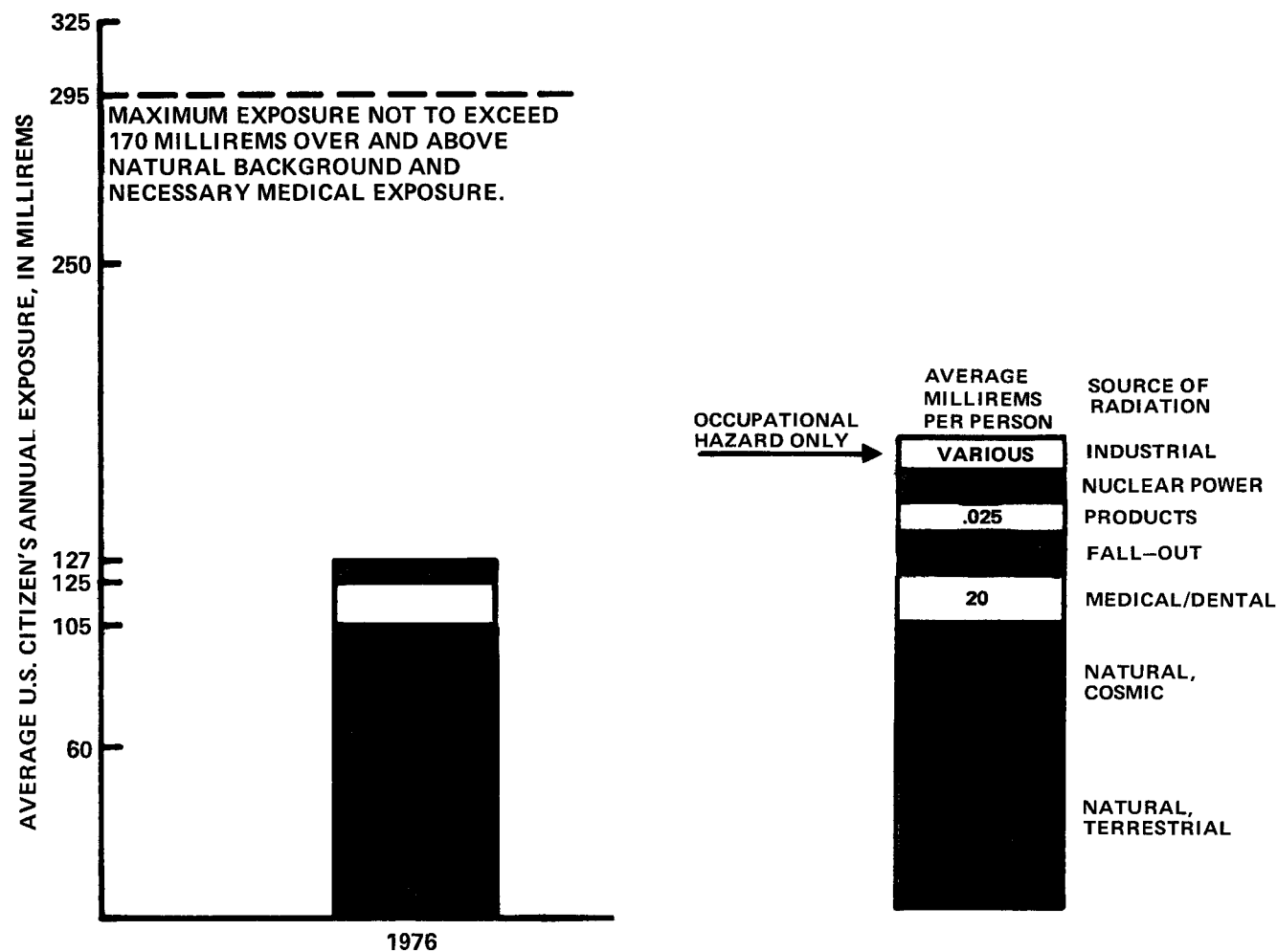
ENVIRONMENT MEDIA	REF =	TYPE	TITLE - DESCRIPTION	APPROACH	REQUIREMENTS OF REGIONS	REQUIRED FROM OTHERS	REPORT INTEGRATION - EPA, D.C.	PER REGION	OTHERS
RADIA- TION	36 RAD-2	N-1	TREND IN AMOUNT OF RADIOACTIVE MATERIALS ESCAPING FROM NUCLEAR PLANTS (KRYPTON 85 IN AIR) (NO STANDARDS ESTABLISHED). Bar chart of Krypton 85 in air, average for the entire nation, related to nuclear power plants.	Data will be supplied by EPA Headquarters	None	Utilize from EPA-Office of Radiation Programs Annual Report, EPA-520 /1-76-010.	Less than .1	None	None Likely
RADIA- TION	37 RAD-3	N-1	AVERAGE AMOUNT OF EXPOSURE TO RADIATION, PER YEAR. 1976 chart, in 3 colors showing total dose rate to which average person is exposed along with amount of radiation contributed by each natural and manmade source of this contaminant.	Data will be supplied by EPA Headquarters	None	Utilize data from EPA-Office of Radiation Programs Annual Report, EPA-520 /1-76-010.	Less than .1	None	None Likely
2.2.9 PESTI- CIDE	38 PEST-1	N-1	PESTICIDE USAGE, BY YEAR. Bar chart of persistent vs. non-persistent pesticide usage by year.	Use data from U.S. Dept. of Agri. & EPA Denver Labs	None	USDA, etc.	Less than .1	None	None Likely
LEGEND  N = NATIONAL LEVEL R = REGIONAL OPTION				NOTES: 1 FEASIBLE IN NEAR-TERM 2 CONSIDER FOR FUTURE 3 FEASIBILITY UNKNOWN "N-1" DISPLAYS COMPRISE NEAR-TERM NATIONAL PROFILE					

**TREND IN AMOUNT OF RADIOACTIVE MATERIALS
ESCAPING FROM NUCLEAR PLANTS
(KRYPTON 85 IN AIR)
(NO STANDARD ESTABLISHED)**



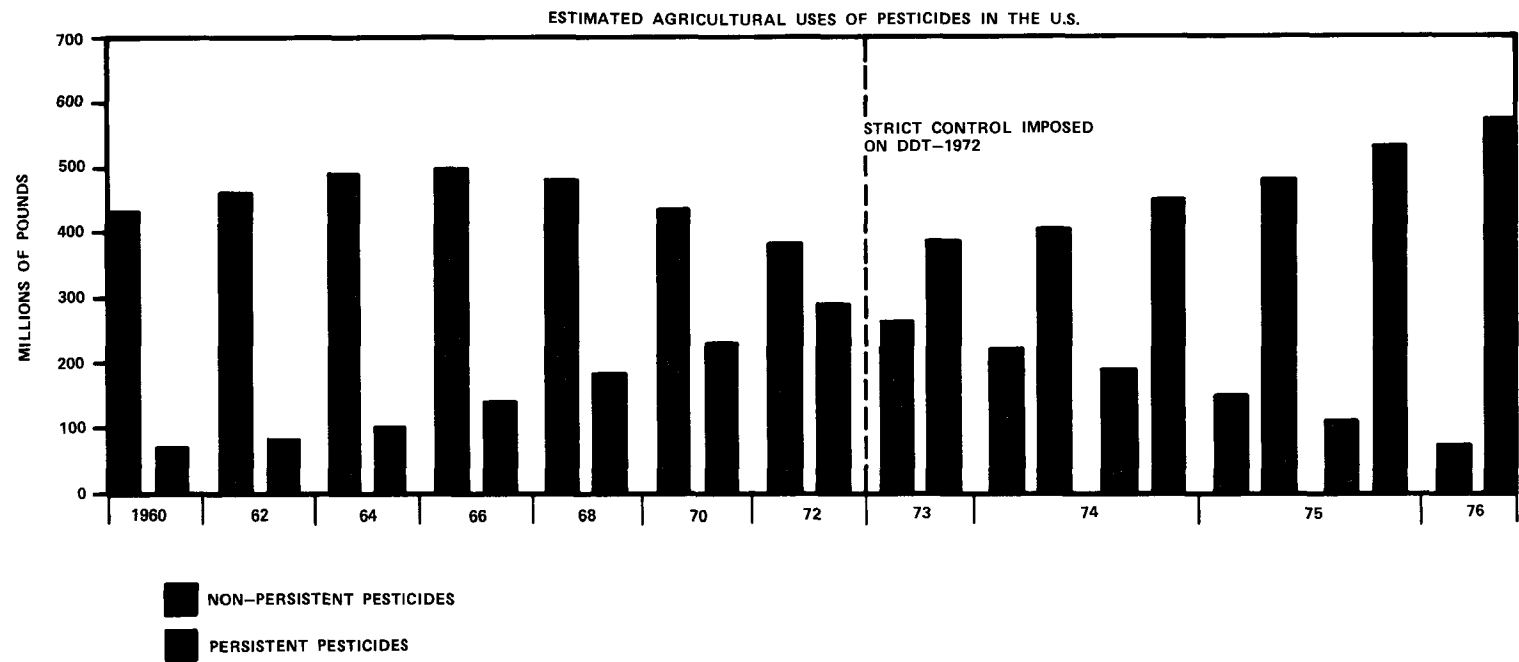
DATA DISPLAYED ON CHART IS NOT REAL
AND IS USED FOR DEMONSTRATION ONLY.

AVERAGE AMOUNT OF EXPOSURE TO RADIATION, PER PERSON, PER YEAR



TYPE N - 1 - THIS CHART IS PROPOSED FOR THE FIRST EDITION OF THE NATIONAL PROFILE.

PESTICIDE USAGE, BY YEAR




DATA DISPLAYED ON CHART IS NOT REAL
AND IS USED FOR DEMONSTRATION ONLY.

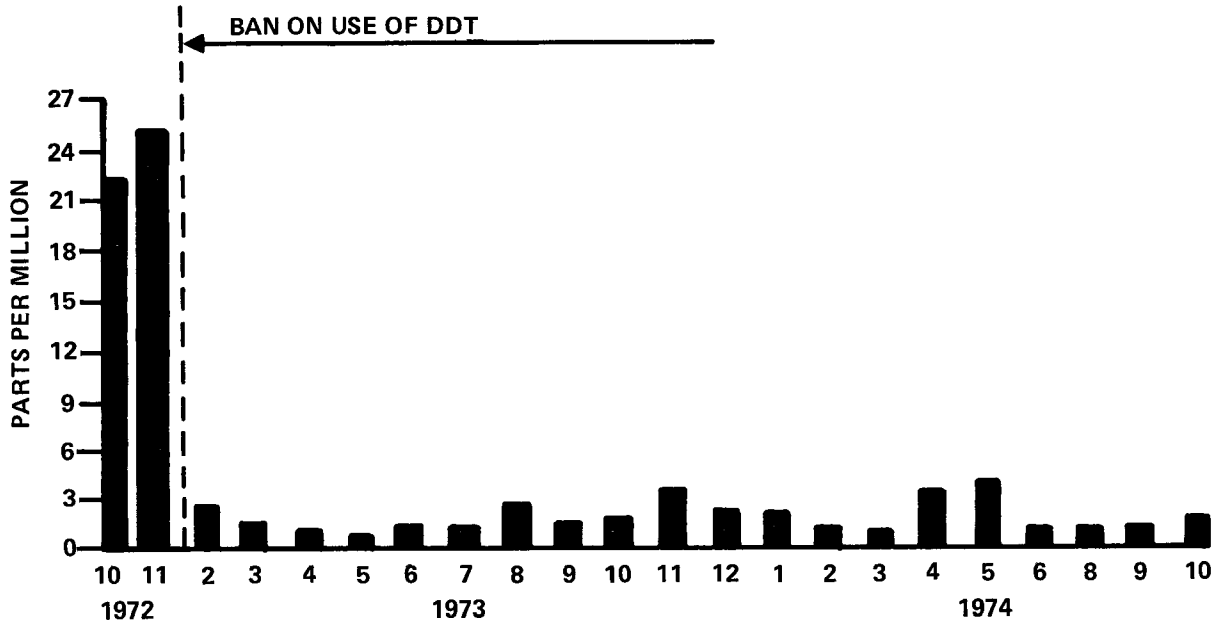
TYPE N-1 — THIS CHART IS PROPOSED FOR THE
FIRST EDITION OF THE NATIONAL

SPECIFICATIONS FOR PROPOSED NATIONAL PROFILE
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ENVIRONMENT MEDIA	REF. #	TYPE	TITLE - DESCRIPTION	APPROACH	REQUIREMENTS OF REGIONS	REQUIRED FROM OTHERS	REPORT INTEGRATION - EPA, D.C.	PER REGION	OTHERS
PESTI- CIDES	39 PEST- 2	N-1	CHANGE IN PESTICIDE RESIDUAL LEVELS IN FISH (SPECIES MENHADEN) SINCE DDT WAS BANNED. Graph showing selected pesticide residual levels.	Existing data.	None		Less than .1	None	None Likely
PESTI- CIDES	40 PEST- 3	N-1	BENEFITS OF PESTICIDE USAGE. Series of charts showing dollar savings due to use of pesticides plus other issues as appropriate.	Use data from Center for Com- munic- able Dis- ease (USPHS) Atlanta	None	Use data from Center for Com- munic- able Disease (USPHS) Atlanta	TBD Less than .1	None	None Likely
2.2.10 NOISE	41 NOISE 1	N-1	NUMBERS OF PERSONS LIVING IN AREAS WITH OBJECTIVE NOISE OR- DINANCES. Bar chart of number of persons living in metropolitan areas protected by a modern noise ordinance with specific decibel limits, with pie chart summary for the entire U.S.	Aggre- gation of re- gional displays	To be developed by Noise Program Specialist at each Region. Many already have much of this data. EPA is sponsoring a model ordin- ance in which the dBA limits are blank (to be established by city councils) and the number of cities with such ordinances can be obtained by a telephone survey.	None	TBD Less than .1	.1	None Likely
LEGEND  N = NATIONAL LEVEL R = REGIONAL OPTION				NOTES. 1 FEASIBLE IN NEAR-TERM 2 CONSIDER FOR FUTURE 3 FEASIBILITY UNKNOWN "N-1" DISPLAYS COMPRISE NEAR-TERM NATIONAL PROFILE					

**CHANGE IN PESTICIDE RESIDUAL LEVELS IN FISH
(SPECIES MENHADEN) SINCE DDT
WAS BANNED**

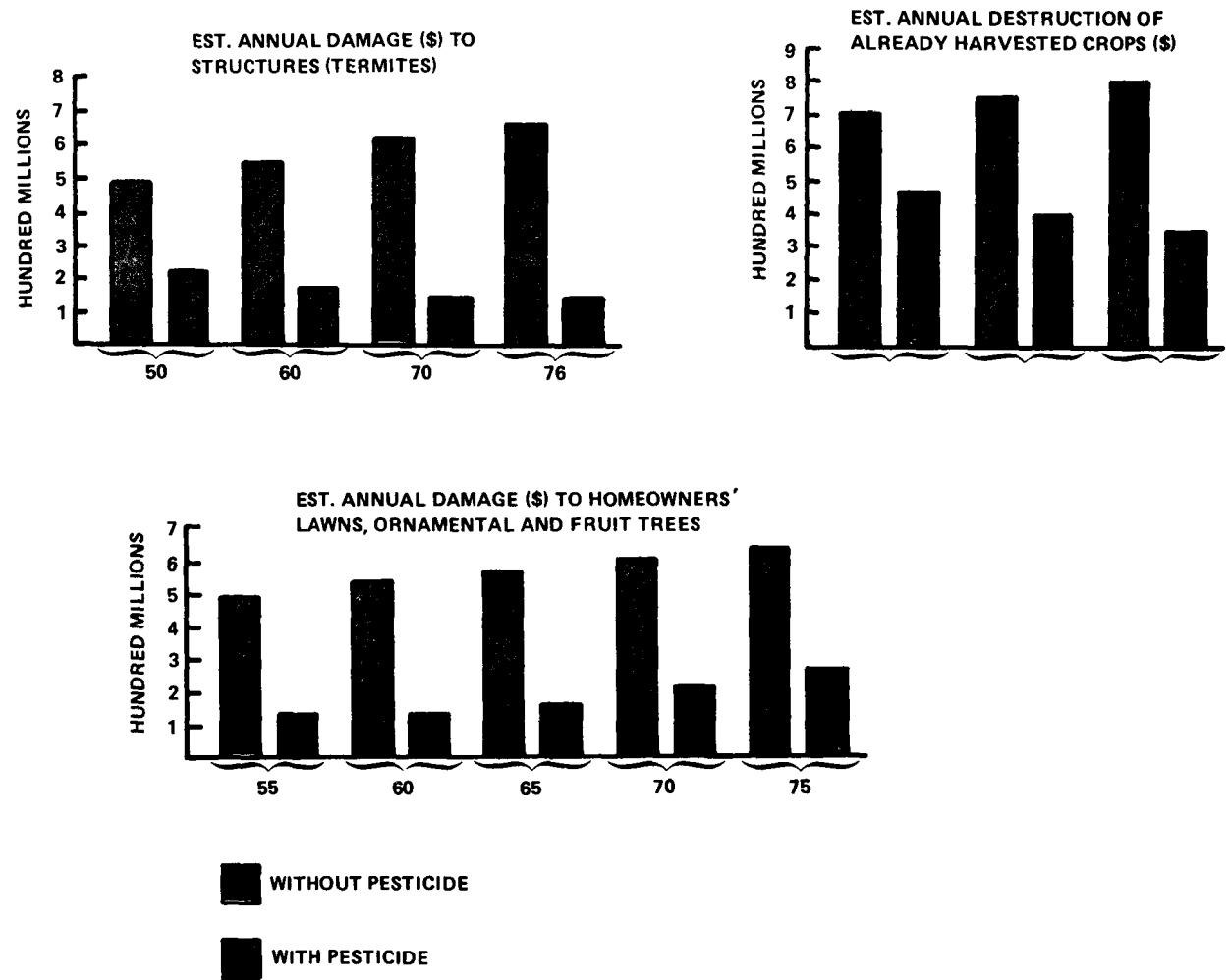


SOURCE: PHILIP A. BUTLER, PROJECT OFFICER, GULF BREEZE (FLORIDA) LABORATORY

NOTE: PESTICIDES ARE DEFINED IN P.L. 92-516 TO INCLUDE RODENTICIDES, HERBICIDES, FUNGICIDES

DATA DISPLAYED ON CHART IS NOT REAL
AND IS USED FOR DEMONSTRATION ONLY.

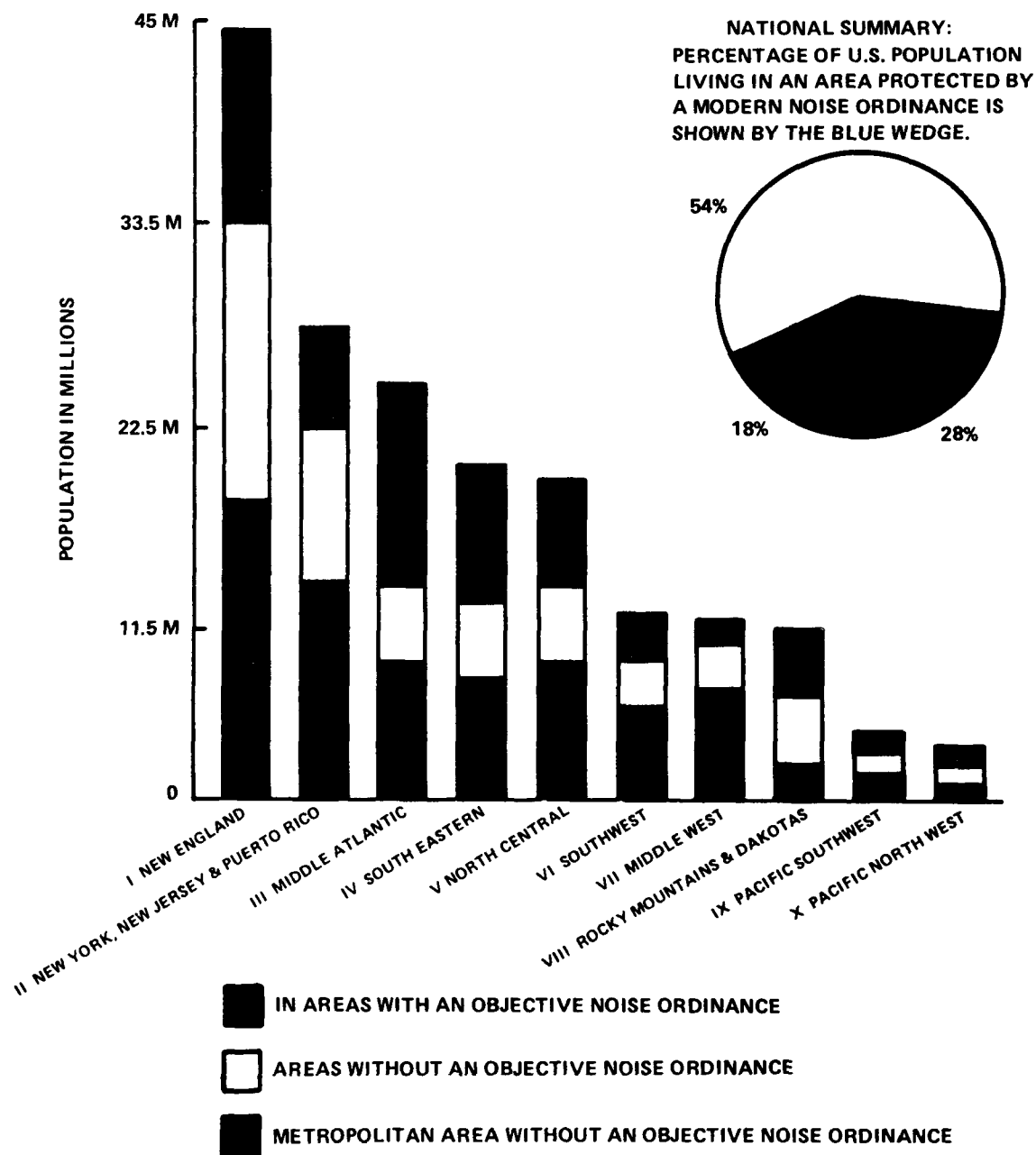
BENEFITS OF PESTICIDE USAGE



DATA DISPLAYED ON CHART IS NOT REAL
AND IS USED FOR DEMONSTRATION ONLY.

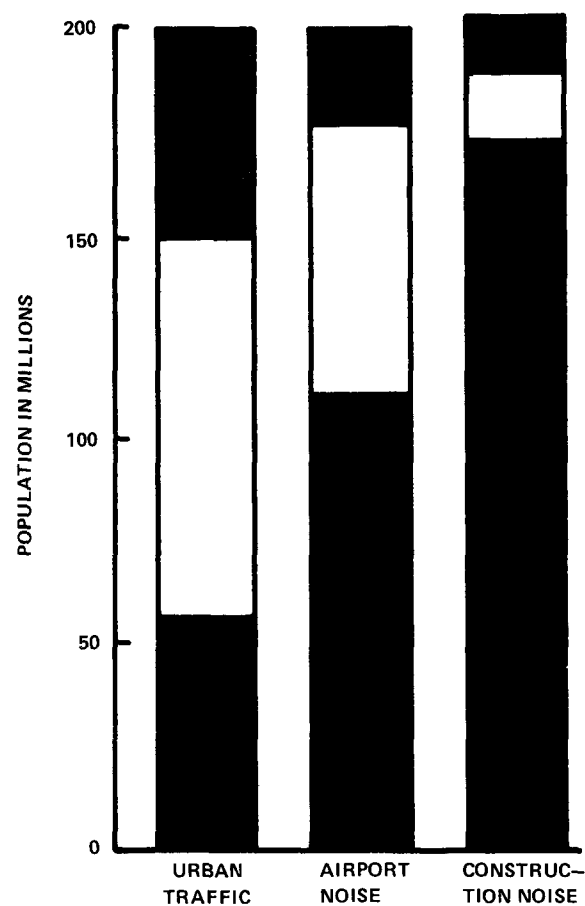
TYPE N-1 – THIS CHART IS PROPOSED FOR THE
FIRST EDITION OF THE NATIONAL
PROFILE.

NUMBERS OF PERSONS LIVING IN AREAS WITH OBJECTIVE NOISE ORDINANCES

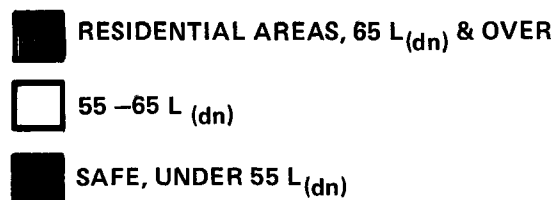


DATA DISPLAYED ON CHART IS NOT REAL
AND IS USED FOR DEMONSTRATION ONLY.

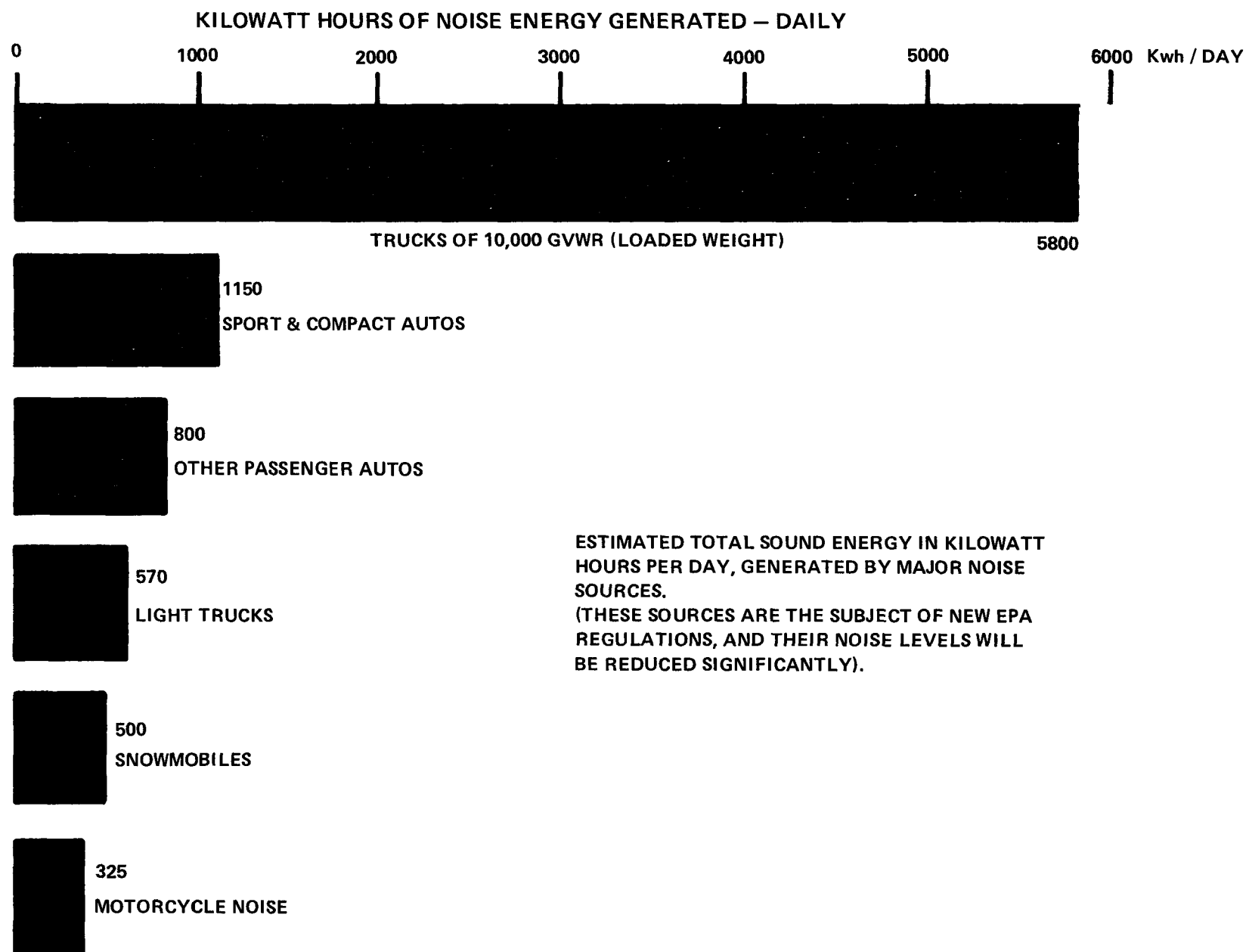
NUMBERS OF PERSONS EXPOSED TO UNACCEPTABLE NOISE LEVELS- GREATER THAN 55 L_(dn)-BY SOURCE OF NOISE



SOURCE: EPA REPORT, 39FR 121
PAGE 22297, 21 JUNE 1974



NOISE ENERGY BY MAJOR SOURCE



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AND IS USED FOR DEMONSTRATION ONLY.

TYPE N-1 — THIS CHART IS PROPOSED FOR THE
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PROFILE.

2.3 SUMMARY OF CONTENT OF DISPLAYS

The table below summarized the content of the displays prepared in the January 1977 report and provides an overview of the extent to which trends, causes of problems, and geographical or political aggregation of data was proposed.

DISPLAY	AREA	TYPE*	TITLE	FORMAT	LOCATION OF PROBLEM		WAY IN WHICH DEGREE OF PROBLEM MEASURED						CAUSES OF PROBLEM IDENTIFIED	TREND IN SEVERITY SHOWN
					MAP	AREA NAMED	EMIS- SIONS	CONCEN- TRATION	STDS VIOLATIONS	POP- ULATION EXPOSED	ECONO/ HEALTH EFFECTS	OTHER		
1	RW-1	N-1	WATER QUALITY OF NATION'S RIVER BASINS	MAP	US				YES (W/2 LEVELS OF SEVERITY)					
2	RW-2	N-1	RIVER MILES MEETING NATIONAL GOALS BY PRINCIPAL RIVER BASIN	BAR&PIE CHART		BY RIVER BASIN			YES (W/2 LEVELS OF SEVERITY)					
3	RW-3	N-2	TREND IN PERCENT OF RIVER MILES MEETING GOALS	BAR CHART		BY RIVER BASIN			YES (W/2 LEVELS OF SEVERITY)					BY YEAR
4	RW-4	N-1	TYPES OF RIVER WATER STANDARDS VIOLATIONS IN THE NATION'S PRINCIPAL RIVERS	MATRIX		BY RIVER BASIN			YES (W/2 LEVELS OF SEVERITY)				YES	ARROW SHOWING CURRENT TREND
5	RW-5	R-2	POINT VS NON-POINT SOURCE CONTRIBUTIONS TO RIVER WATER POLLUTION	BAR CHART		BY REGION						% OF TOTAL POLLUTANTS	YES POINT VS NON-POINT	
6	LW-1	N-1	LAKE SURFACE AREA FOR WHICH HIGHEST BENEFICIAL USE IS IMPAIRED (PRINC LAKES EXCL GREAT LAKES)	BAR&PIE CHART		BY REGION						USE IM- PAIRMENT		
7	LW-2	N-2	CAUSES OF IMPAIRMENT OF PRINCIPAL LAKE WATER QUALITY	MATRIX		BY REGION			YES				YES	ARROW SHOWING CURRENT TREND
8	LW-3	N-1	EUTHROPHICATION OF MAJOR LAKES (EXCEPT GREAT LAKES)	BAR&PIE CHART		BY REGION		YES						
9	LW-4	N-2	TREND IN EUTHROPHICATION OF MAJOR LAKES OF THE UNITED STATES (EXCEPT GREAT LAKES)	BAR CHART									LEVEL OF EUTROPHICATION	BY YEAR
10	LW-5	R-2	MILES OF LAKE SHORELINE ACCEPTABLE FOR SWIMMING	BAR&PIE CHART		BY REGION						MILES OF SHORELINE		
11	GLW-1	N-1	PERCENT OF SWIMMING BEACHES OF GREAT LAKES MEETING WATER QUALITY OR HEALTH STANDARDS	BAR&PIE CHART		BY LAKE			YES (WITH SEVERITY)					
12	GLW-2	R-1	PROBLEM AREAS IN GREAT LAKES	MAP	GREAT LAKES	BY LAKE						TYPE PROBLEM NAMED ON MAP		
13	MW-1	N-1	COMMERCIAL SHELLFISH ACREAGE OPEN FOR HARVESTING	BAR&PIE CHART		BY REGION						ACRES		
14	MW-2	N-3	TYPES OF MARINE WATER STANDARDS VIOLATIONS	MATRIX		BY REGION			YES				YES	ARROW SHOWING CURRENT TREND
15	MW-3	N-2	TREND IN COMMERCIAL SHELLFISH AREAS OPEN FOR HARVESTING	BAR CHART								ACRES		BY YEAR
16	MW-4	R-1	STATUS OF SHELLFISH HARVESTING AREAS	MAP	LOCAL							UNSAFE AREA		
17	DW-1	N-1	POPULATION SERVED BY DRINKING WATER SUPPLIES MEETING ALL STANDARDS	BAR&PIE CHART		BY REGION				YES				
18	DW-2	N-2	TYPES OF DRINKING WATER STANDARDS VIOLATIONS	MATRIX		BY REGION			YES				YES	
19	DW-3	R-1	NUMBER OF DRINKING WATER SUPPLIES MEETING STANDARDS	BAR&PIE CHART		BY STATE			YES					
20	AIR-1	N-1	REDUCTION IN STATIONARY SOURCE EMISSIONS ATTRIBUTABLE TO AIR QUALITY CONTROLS	BAR CHART			YES							BY YEAR
21N	AIR-2	N-1	NUMBER OF DAYS WITH STANDARDS VIOLATIONS BY TYPE OF POLLUTANT	BAR CHART		LOCAL NAME OF AQCR								
21R	AIR-3	R-1	DAYS OF STANDARDS VIOLATIONS BY TYPE OF POLLUTANT AND SEVERITY OF VIOLATION FOR NON-ATTAINMENT AIR QUALITY CONTROL REGIONS	BAR CHART					YES (W/2 LEVELS OF SEVERITY)					

SUMMARY OF CONTENT OF DISPLAYS (CONT'D)

DISPLAY	AREA	TYPE	TITLE	FORMAT	LOCATION OF PROBLEM		WAY IN WHICH DEGREE OF PROBLEM MEASURED					CAUSES OF PROBLEM IDENTIFIED	TREND IN SEVERITY SHOWN
					MAP	AREA NAMED	EMIS- SIONS	CONCEN- TRATION	STDS VIOLATIONS	POPUL- ATION EXPOSED	ECONO/ HEALTH EFFECTS	OTHER	
22	AIR-4	N-1	TRENDS IN AIR QUALITY BY POLLUTANT	MATRIX		LOCAL NAME OF AQCR			YES (W/2 LEVELS OF SEVERITY)				ARROWS SHOWING CURRENT TREND
23	AIR-5	N-2	TYPES & TRENDS IN NUMBER OF DAYS OF AIR QUALITY STANDARDS VIOLATIONS BY STATE	MATRIX		BY STATE			YES (W/2 LEVELS OF SEVERITY)				ARROWS SHOWING CURRENT TREND
24	AIR-6	N-2	NUMBER OF PERSONS EXPOSED TO AIR QUALITY STANDARDS VIOLATIONS	BAR&PIE CHART		BY REGION				YES			
25	AIR-7	N-3	COST OF AIR POLLUTION	BAR CHART							YES		BY YEAR
26	AIR-8	N-3	NUMBERS OF PERSONS EXPOSED TO AIR QUALITY STANDARDS VIOLATIONS BY YEAR	BAR CHART					YES	YES			BY YEAR
27	AIR-9	R-1	MAXIMUM ONE-HOUR OXIDANT CONCENTRATION FOR YOUR CITY BY YEAR	BAR CHART		METROPO- LITAN AREA		YES					BY YEAR
28	AIR-10	R-1	DAYS OF AIR QUALITY STANDARD VIOLATIONS BY CITY & BY MONTH OF YEAR FOR ALL POLLUTANTS	BAR&PIE CHART					YES				
29	AIR-11	N-1	TOTAL SUSPENDED PARTICULATE AIR QUALITY STATUS	MAP	U S				YES				
30	SW-1	N-1	PERCENT OF POPULATION SERVED BY STATE APPROVED SOLID WASTE DISPOSAL FACILITIES	BAR CHART						YES			BY YEAR
31	SW-2	N-1	NUMBERS OF PERSONS SERVED BY STATE APPROVED SOLID WASTE DISPOSAL FACILITIES	BAR&PIE CHART		BY REGION				YES			
32	SW-3	N-2	TONS OF HAZARDOUS WASTE DISPOSED OF BY STATE APPROVED METHODS	BAR&PIE		BY REGION	YES						
33	SW-4	N-2	POPULATION SERVED BY ACCEPTABLE SLUDGE DISPOSAL SYSTEM	BAR&PIE CHART		BY REGION				YES			
34	SW-5	R-1	IMPLEMENTATION STATUS OF FULL-SCALE RESOURCE RECOVERY SYSTEMS	MAP & PIE	REG							AREAS SHOWN ON MAP	
35	RAD-1	N-1	TREND IN AMOUNT OF RADIATION IN THE ENVIRONMENT DUE TO FALL OUT (STRONTIUM 90 IN MILK)	BAR CHART				YES	YES				BY YEAR
36	RAD-2	N-1	TREND IN AMOUNT OF RADIOACTIVE MATERIALS ESCAPING FROM NUCLEAR PLANTS (KRYPT 85 IN AIR) (NO STD ESTAB)	BAR CHART				YES					BY YEAR
37	RAD-3	N-1	AVERAGE AMOUNT OF EXPOSURE TO RADIATION PER PERSON PER YEAR	BAR CHART									BY YEAR
38	PEST-1	N-1	PESTICIDE USAGE BY YEAR	BAR CHART			YES						YES
39	PEST-2	N-1	CHANGE IN PESTICIDE RESIDUAL LEVELS IN FISH (SPECIES MENHADEN) SINCE DDT WAS BANNED	GRAPH									
40	PEST-3	N-1	BENEFITS OF PESTICIDE USAGE	BAR CHART							YES		BY YEAR
41	NOISE-1	N-1	NUMBERS OF PERSONS LIVING IN AREAS WITH OBJECTIVE NOISE ORDINANCES	BAR&PIE CHART		BY REGION			YES	YES			
42	NOISE-2	N-1	NUMBER OF PERSONS EXPOSED TO UNACCEPTABLE NOISE LEVELS (GREATER THAN 55Ldn) BY SOURCE OF NOISE	BAR CHART						YES		YES	
43	NOISE-3	N-1	NOISE ENERGY BY MAJOR SOURCE	BAR CHART									

2.4 SUMMARY OF COMMENTS MADE BY REVIEWERS

This section provides a summary of comments made by Regional and Headquarters personnel in response to the January 1977 Draft. The section begins with general comments on the proposed approach and usefulness of the profile. This is followed by comments relating to each of the topical areas presented in the Draft Report.

2.4.1 GENERAL COMMENTS

- D.A.A. for Water Planning and Standards:
"Publishing the measures and formats forwarded in your March 4 memo can embrace public awareness and understanding of the Nation's pollution problems and, when aggregated on a national level, the data would meet many other reporting needs, such as those of the Council on Environmental Quality. Fruition of this project, a national environmental profile, will benefit all who are concerned with the quality of the environment."

"However, I have reservations about proposing this reporting system to the Administrator until both the practicality of consistent data acquisition and the cost/manpower requirements receive careful consideration. In

addition, Regions should focus initially on those displays which are most readily available from STORET and other ongoing data sources."

"There are too many figures. For the purpose of public reporting, the color-coded matrix formats and the color-coded maps are preferred as providing the most precise information on the nature, extent and location of water quality problems."

"Bar graphs which compare actual river miles, surface area or numbers of people, are preferred to displays which compare percentages, because of the additional information made available. For example the display, which depicts by Region the percentage contributions of point vs. non-point sources to river water pollution, could present (1) color-coded pollutant loadings, or (2) pollutant loadings along with the color-coded percentages."

- Program Integration Branch: "A national environmental profile will be of benefit to all who are concerned with the quality of our environment, and we would certainly like to see fruition of this project."

- Region V: "This project is a useful and positive step towards compiling visual overviews for public information."

- Region VIII: "The kind of generalized portrayals which are submitted in your report are needed to allow the agency, legislators and the general public to intelligently assess programs and overall progress pertinent to the attainment of environmental goals."
- "The presentations should stay away from percentage descriptions especially when looking at trends, since the base line data (i.e. total river miles in a basin, total lake surface, etc.) may change from year to year."
- "There should be a version of these displays which are not so dependent on color, so that they can be used for newspapers and photocopying."
- "The majority of the displays convey a great deal of information in a single display and are sometimes misleading. It should be recognized that by condensing so much material into a simple graphic, there is a tendency to sacrifice accuracy and exactness."
- "A number of displays could be used to evaluate the effectiveness of the grant program, for example, a survey of BOD/TSS removal per \$1000 of grant money and/or a chart showing numbers of people on no sewage treatment, primary, secondary, and tertiary treatment."

- "Consideration should be given to cross-media charts. As it presently stands we look at each media individually. One may want to see at a glance that an area has air, water, etc., pollution problems."
- "Many pages in the draft are devoted to explaining the displays themselves, but there is no mention of how much of that kind of explanatory material will accompany these displays once they are included in a final document. Many of the displays, standing alone, fail to convey the total intended information. If a page of descriptive text were placed on the facing page, the whole would be more useful."
- "Certain delay provoking concerns continually arise which question such things as cost effectiveness, unique regional reporting and informational requirements, data availability and the optimal level of technical detail. However, this Region recognizes an immediacy to analyze, qualify and display those environmental measures of progress which can be supported through the utilization of the information and resources which are presently available."
- "In summary, Region VIII feels that the establishment of a 'National Profile' is a necessary and desirable goal."

- Program Reporting Division, OPE: "The proposed profile is very comprehensive, well thought out, and the charts make excellent visual aids. The displays delineate yearly comparisons through which visual trend analysis can be made to approximate a time frame when certain environmental goals, such as fishable and swimmable waters, smog-free areas, and safe drinking waters, will be attained. Other charts display problem pollutant discharges, such as oxides of nitrogen and sulfur in air emissions and hazardous substances in water discharges. Thus, a person can obtain a good idea of various environmental quality indicators by reviewing the charts at a glance. This approach can be very effective if the presentations are qualified properly. My concern would be that in the early stages of this development effort, every effort be made not to mislead the ultimate consumers of the information being presented."

"If, on the one hand, the intended use of the proposed displays and specifications is for the preparation of an Agency annual report for public relations purposes, the format in its entirety is probably a bit too comprehensive and graphical for the average citizen to comprehend statistics displayed. Also, the cost of

printing and distributing could be prohibitive considering the high production costs. You might reconsider shaping this material along the lines of a large industrial firm's annual report to its stockholders."

"However, if the intended use of the profile is to serve as a framework for other Regions to follow in preparing their public relations Regional reports, similar to the ones prepared by Region X for its Region and Oregon, the proposed chart displays would serve a very useful purpose in bringing homogeneity to the type of environmental quality indicators displayed and to the format of the displays themselves. I would strongly endorse and support such an effort. Regions I's annual report would be very similar to that of Region X's and, in fact, the Agency's annual report. The similarities would not only make for easy reading and continuity, but the successive annual reports will also provide case histories of environmental improvements in the States and Regions, as well as in the Nation. Region X's environmental quality profile, 1976, for its Region and the technical supplement for Oregon are excellent examples of good public relations pamphlets, which include discussions of problem areas as well as accomplishments."

"It should be noted that the chartbook is designed to depict environmental quality; it is not designed to show any effort made by EPA programs nor the compliance status of any class or type of polluters regarding compliance with EPA regulations. The package includes 43 graphic displays and none of the displays are based upon data which is collected through the Formal Planning and Reporting System (FPRS). The FPRS by necessity and state-of-the-art has tended to focus on day-to-day work load measures (i.e., permits issued, construction grants awarded, etc.) and has not been able to track or measure more sophisticated environmental indicators. This effort is fully supported by this Division. Perhaps for the FY-79 guidance, we could include some basic environmental indicators in our management-by-objectives (MBO) outputs tracked in the FPRS, assuming we've developed the integration techniques necessary to make the interface between program outputs and the direct environmental impact."

2.4.2

RIVER WATER

- D.A.A. for Water Planning and Standards:
"Our experience with 1975 and 1976 Section

305(b) reports indicates that unless the data requirements and analyses are made rigorously consistent, comparisons between Regions result in erroneous conclusions. Areas where specific guidance is required are suggested by such questions as: How many and which miles of stream (miles of beach, square miles of lake, etc.) can be represented by a single monitoring station? How will 'contradictory information' be factored into the index violation rates? When is water quality 'unknown'? Consistent well-documented data handling techniques can dispel concern about publishing water quality data developed using methodologies which cannot be replicated."

"States are required under CFR 130/131 to designate reach use classifications and deviations from the standards. Without too great an additional burden to the Regions, displays RW-1 and RW-2, which depict water quality for river miles, might be made required Regional outputs. Although this data is sometimes difficult to develop, I believe it would be well worth the effort. We will need to develop detailed guidance, however, since the States' response to the 1976 305(b) guidance request for stream miles meeting goals was highly inconsistent."

"STORET can provide data for near-term national profiles RW-4 and LW-2, and supplementary data for displays RW-1, RW-2, RW-3, LW-1, LW-3, LW-4".

- Program Integration Branch: "How will improvement or deterioration be calculated? River Miles Charts should be normalized for varying lengths of rivers."
- Criteria and Standards Division: "Overall, the types of reporting items and formats proposed here could be extremely useful as a measure of where we are in environmental quality. On a year-to-year or longer basis the information also could be of great value in measuring improvement or degradation."

"Following a full evaluation of feasibility/cost/manpower requirements such a system might be proposed to the Administrator as a useful policy guidance tool. The specific information on water quality would be of special interest and use to the Criteria and Standards Division. However, both the practicality of consistent data acquisition and the cost/manpower requirements need careful quantification. In addition, the organizational and management implications of such a system--based on specific uses--need careful development."

- Region II: "RW-1, Water Quality of Nation's Principal River Basins:

1. There should be a standard system against which all Regions determine whether or not water quality meets fishable-swimmable standards. This would allow uniformity in reporting the river conditions.
2. No definition for segment; this should also be standard for all Regions.
3. Would have to set up certain ambient fixed stations to gather required data.
4. Think that State would have to provide help."

"RW-2, River Miles Meeting National Goals by Principal River Basin:

1. No problem as long as we could get information for RW-1."

"RW-3, Trend in Percent of River Miles Meeting Goals:

1. Would require State help to get information on past dates."

"RW-4, Types of River Water Standards Violations in Nation's Principal Rivers:

1. Title should be '. . . Principal River Basins.'
2. Believe chart would be useful and should be part of profile.

3. This should be the crux for the other parts of the profile dealing with water quality."

"RW-5, Point vs. Non-Point Source Contributions to River Water Pollution:

1. State would have to provide most of information--but it might come through 208."

- Region V: "Region V has been investigating an objective water quality index method, based on Dr. Ralph D. Harkins' modification of the cluster analysis method.

The advantages of this method are:

1) It is not subject to differences of opinion as when weight factors are used for calculating the index number.

2) The number of parameters used in calculating the index is not fixed.

3) The interpretation of cluster analysis index values are subject to statistical tests to determine if changes or trends are significant.

4) These index values are amenable to averaging and other mathematical calculations which allow the calculating of quarterly averages by station, basin, time intervals, setting of confidence intervals and statistical tests of confidence.

5) Stations can be compared with one another at the same time or at different time periods.

The project's usefulness will be greatly enhanced if there is agreement on the representative network of rivers and stations. Region V is willing to consider implementing this project in the water media after the Basic Water Monitoring Program is in place. This program will provide a network of stations, and regular parametric data."

- Region VI: "The aggregation of state and regional results into one national composite implies that the state and regional methods (indices, standards, etc.) should be consistent (see page 1 of January report).

What is done with data concerning other parameters? How are fixed-station ambient data related to river miles?

'208' areas and high quality/recreation/ 'aesthetic' type streams might be included.

It is not clear whether basins or streams are indicated.

On pages 9 and 16, the two graphs (Types of Standard Violations) would require very large efforts or many generalized assumptions.

Since the Basic Water Monitoring Program will emphasize the intensive surveys as the major input to state 305(b) reports, and 305(b) reports are to report information depicted in these graphics, these state reports should be mentioned as a primary source for regional and national aggregation.

If toxic substances are to be evaluated, either stream-specific 96LC50 type criteria will have to be used or generalized assumptions will have to be made.

Some statements about data sources, study methods, and assumptions should accompany generalized graphics of this type.

The use of printed color on the graphics produces excellent readability; however, on a regional and state level, color graphics and printing/reproduction present many logistical and cost problems. Without the color printing, the graphs will be much less readable."

- Region VIII: "One of the agency's main goals has been to reduce waste loads to receiving waters through the permit and construction grant program. It would seem, therefore, appropriate to display such information as trends in a river basin. This information would also be necessary for

development of a display describing the relative contributions from point and non-point sources.

Speaking of non-point sources, RW-5 is not feasible to produce nor is it meaningful. The whole area of how to display anything related to non-point sources needs much more consideration.

All assessments of water quality must be flow weighted (see 1972 CEQ Annual Report, pages 44-46).

Special conditions, e.g., Colorado River salinity, should be treated in special sections of the 'National Profile'.

Another display that could be considered would be 'Quality of Oil Spilled' to the waters of the U.S. over a certain period of time. These statistics are available and could be graphed readily."

"RW-1 - As is, this graph is primarily for broad public information purposes. Among these 22 major river basins, we, in Region VIII, have headwaters for 5. If we use our Water Quality Index for color coding, we can provide this information with very little additional manpower. To do this on a broader regional basis going into greater detail, say for a regional administrators report, we would need about two man months, including graphics, to do this for

all the 'main stems' (according to the criteria on page 4 of the January report). With greater detail this graphic becomes progressively more useful for water quality managers."

"RW-2 - Color doesn't particularly help this graphic which is really an extension of RW-1. Skillfully done, this could be merged into RW-1. In fact if actual river miles were shown alongside each segment it would enhance the usefulness of this graphic. Either way little or no additional time would be required in Region VIII to work this up once the desired level of detail for RW-1 is developed. Together RW-1 and RW-2, if developed in sufficient detail, would be good for both public information and as a tool for basic management purposes."

"RW-3 - This graphic is feasible with minimal resources right now in Region VIII since our Water Quality Index is fully computerized. This would be a very powerful tool for evaluating state program effectiveness, if, and only if, the data are flow normalized--which is really a major complication. With longer periods, say 3 years, this could be a reasonably good comparison for Region VIII. (Provided flow did not vary more than 25% from the mean in the

three year period.) You might be able to do without flow normalization. Ideally, the assessment should have a frequency distribution weighting factor, for example, fractional departure from median conditions for different three-year periods at varying flow frequencies (1972 CEQ Annual Report)."

"RW-4 - This is a cluttered presentation which is not amenable to our Index. This workup could be done using STORET without a big commitment of resources. Again, the direction of violations must be flow factored so as not to be misleading. Data gaps, I believe, would be striking, especially for radioactivity, organic and inorganic toxicants. With bigger scale, like LW-2, this would be a lot easier to read. Also, it would be more useful if it were on a segment-by-segment basis. Really, a short narrative accompanying RW-1 could eliminate this display and should be adequate for management use for which it seems intended, and since this display is not especially good for general information purposes. The color maps in RW-1 could also show both miles and reasons for violations, thereby consolidating RW-2 and RW-4 into RW-1."

"RW-5 - While it may be feasible to aggregate all pollutants responsible for point and NPS pollution on a single display, it is kind of misleading. Assuming that TSS, Nutrients, Total Coliform and BOD are part of the aggregate each will have vastly different impact, for example, Region X notes that point sources account for 0.1% of TSS, 5% of phosphorous, and 15% of BOD loadings at the mouths of their 'main stems.' Each parameter must be sorted out with its share graphically indicated.

At this point we are not in a very good position to do even a river 'mouth' analysis and would need a major emphasis on these kind of data collection. Much of the needed data are not in STORET or available in recent years from the USGS, or other Federal agencies. If the areawide 208's do a good job, some of these data may emerge from their studies, but to provide this information on an ongoing basis the state-wide 208's will need to add this as a basic part of their monitoring programs. Although it will require a 'large' commitment of resources it could be a useful tool in balancing NPS vs. point source efforts and in tracking the success of the NPS efforts."

"RW-1, RW-2, RW-3 - For these profiles to be accurate and meaningful, we need to develop adequate criteria to be used in evaluating stream conformance to fishable and swimmable goals. In addition, the adequacy of water quality monitoring data needs to be evaluated against the criteria."

Region VII: Water Programs - "We believe the concept to be good; however, the regional resources are very limited at this time. Much of our data have not been analyzed and classified in the manner necessary for this effort. At the state level, resources are even more restrictive and just time or resources to review an effort by regional staff might not be available. If this region is to participate in such an effort, resources must be made available."

2.4.3

LAKE WATER

-Region II: "LW-1 - Lake Surface Area for Which Highest Beneficial Use is Impaired: This would require State input. There should be some uniform standard for all the Regions against which to compare lakes."

LW-2 - Causes of Impairment of Principal Lake Water Quality: This is an important area and should receive a higher status.

LW-3 - Eutrophication of Major Lakes (Except Great Lakes): Will require State input. Data could be hard to obtain.

LW-4 - Trend in Eutrophication of Major Lakes of the U.S.: Need some sort of monitoring on a regular time frame.

LW-5 - Miles of Lake Shoreline Acceptable for Swimming: Information should come from LW-1--is this chart really necessary?

GLW-1 - Percent of Swimming Beaches on Great Lakes Meeting Water Quality or Health Standards: State and County input."

Region VIII: "LW-1 - To date, practically no data are available in STORET or otherwise available to aid this kind of an assessment for the 2300+ Region VIII (significant) lakes identified in 106 plans. With the NES and some other fragmented information we were able to do a trophic assessment only of 185 lakes. Since the NES was a one-shot deal and provided coverage for 115 of these lakes, it will take a significant commitment to simply match the NES. Data on bacteria is nil and practically non-existent for organic and inorganic toxicants.

Since our focus has not been on lakes, we need a major commitment of resources to get a good data base for a representative cross-section of Region VIII's significant lakes.

Done right, this could be a worthwhile tool in following the ability of our programs to make assessments and to pinpoint high priority lakes for clean up. The lake 'Evaluation Matrix' is not especially profound, since impairment may be due to natural causes. To me, it appears essential to sort out natural from man-related causes. Also, Secchi disc values are too lenient since a reading of less than 5 feet (not 1 1/2 feet) is normally viewed as a significantly poor condition. In addition, a chlorophyll of 10mg/m^3 (not 20mg/m^3) is considered poor. By contrast a total P of 25ug/l (not 20ug/l) is considered a significant symptom of impairment through eutrophication. Aesthetically though P by itself is not a good indicator but rather algae cell count; a more direct measure should be considered at 10,000 cells/ml as a bad aesthetic indicator. Macrophytes can also be a significant deterrent to swimming, as can poor clarity. A lake index like our Water Quality Index could be developed using the same basic structure as used for

stream assessments, but with adjustments to 'violation' levels. Really though, until we get a data base it is purely academic to develop a lake index at this point. To do any quantitative assessment for this display it will not be feasible in Region VIII in the near term. Long term feasibility depends on near-term inclusion of lakes in basic monitoring programs."

"LW-3 - A good concept for a display. Our data base needs substantial improvement for us to begin thinking about an assessment of this sort. Several major lakes could be sorted out by name just like the major river basins are, for example, Oahe, Sakakawea, Flaming Gorge, Lake Powell, Bear Lake, etc. Dissolved oxygen and nutrients could be lumped into a eutrophication category. Sediment (suspended), as opposed to turbidity, should be considered an impairment only if, after settling, it significantly shortens the life of a lake or eliminates intended spawning, otherwise curtails benthic productivity, and/or significantly contributes to DO depletion, heavy metal dissolution, or introduction of pesticides. Standing alone sediment (suspended) is a rather nebulous impairment. Much of the substance of this graphic will be lost on the general reader,

and its usefulness to its prime audience, namely water quality managers, should be enhanced with actual information on which heavy metals, pesticides, etc., are causing impairment."

"LW-3 - This is a good idea and will be feasible only if the ongoing monitoring data are made available in the state programs (see LW-1). Rather than use only large lakes (greater than 10 square miles) a list of criteria as used for the river mainstems should be used--including high recreation uses, miles of shoreline access, proximity to population centers, clean lake grantee, pristine state and/or other unique features. This display is feasible to a limited extent in Region VIII only because the NES (now complete) was conducted. Continuing feasibility depends on ongoing 106 programs and the possibility of another NES effort."

"LW-4 - Again, to be meaningful, natural from man-caused eutrophication must be sorted out--a very difficult and expensive process. Use of Vollenweider loading rates might be used to show trends on a phosphorous loading per acre basis. Without too much, if any, problem, LW-4 could be consolidated into LW-3."

"LW-5 - There is little to fault with this graphic and it should be considered for future use as supported by an adequate monitoring program."

"LW-1 through LW-5 - It seems questionable if these profiles could be developed without a considerable Regional and/or state effort."

2.4.4 MARINE WATER

- Region II: "MW-1 - Commercial Shellfish Acreage Open for Harvesting: States could provide all the information.

MW-2 - Types of Marine Water Standards Violations: Would require State and County input. If information is available, this task should not be too difficult.

MW-3 - Trend in Commercial Shellfish Areas Open for Harvesting: This should be combined with MW-1. Would require State input, but should not be too difficult.

MW-4 - Status of Shellfish Harvesting Areas: Is this necessary? MW-1 and MW-3 should say it all. As a generalized map it may be O.K."

2.4.5

DRINKING WATER

D.A.A. for Water Planning and Standards, and Others: "Drinking water charts should be broken down by sources of water (e.g., rivers, lakes, etc.)."

Region II: "DW-1 - Population Served by Drinking Water Supplies Meeting All Standards: Need some standard for making 'minor' or 'major' violation judgments. State input required.

DW-2 - Types of Drinking Water Standards Violations: Need State input.

DW-3 - Number of Drinking Water Supplies Meeting Standards: With DW-1 no need for this."

Region VIII: "DW-1 - Information needed to put this profile together will not be easily obtainable. While the water supply inventory will be a part of the MSIS System, and data on systems with violations will be recorded in the ADP system, there is no program at this time to produce a data output that shows the population served by supplies meeting all standards. Also, it will be difficult to show trends with this type of bar graph because of the difficulty in showing differences in small population changes. If used, this profile should be limited to people served by community systems.

However, it will not be possible to evaluate all community supplies for all standards until 1980."

"DW-2 - It is indicated that the data to develop this profile will be available on a monthly basis. This is incorrect, as the states are only required to submit this kind of data on an annual basis. Also, without very good guidelines on whether violations are major, minor or not a contributor to violations, there will probably be a considerable difference in interpretation from Region to Region, which could be misleading on a national basis."

"DW-3 - Data to put this profile together should be available for community systems, but not until 1980 when data on radioactive quality becomes available. The profile should be done on an annual basis because the data will not be available on a monthly basis."

2.4.6 AIR QUALITY

- Monitoring and Data Analysis Division: "We have seen Region X's earlier multi-colored report and thought they had many excellent ideas on displaying air quality data. The use of color in their report and in this present study is very effective. For example, the AIR-1

display is basically similar to a black and white presentation used in DSSE's reports, but the latter does not have nearly the same visual impact. The same is true for many of our graphs. In fact, Region X's previous report is one of the reasons we are publishing a multi-color lay-public version of our trends report this year. This pamphlet is presently being printed and will be available in a few weeks.

One of the goals of our most recent report, 'National Air Quality and Emissions Trends Report, 1975,' has been to indicate trends in pollutant exposure. Our past experience with presentations such as AIR-2 and AIR-4 from a national viewpoint has indicated many potential problems. In our 1973 report (Figures 3.1, 3.2, 3.3 and 3.4), we used an AQCR type summarization on maps and received many negative comments. We have since dropped this approach because a single monitor around an isolated point source can easily mask the genuine progress being made in our highly populated areas. The same type of problem occurs with the AIR-11 type of presentation. One approach that we are presently using is based upon population distorted maps so that the size of each state is proportional to its

population. We are using this technique for displaying TSP trends and feel that it minimized many of our earlier problems. At the present time, only TSP has sufficient data nationwide for such a presentation. As indicated in your report, the feasibility of presentations such as AIR-8 is uncertain at this time, although we can do it for TSP as shown in Figures 3.7 and 3.8 of our 1975 report.

We are also currently trying different techniques to increase the amount of information on each graph. In our 1975 report, we used Box Plots (Figures 3.1, 3.2, 3-10) to display the type of information given in AIR-9. We simplified this technique somewhat for the lay-public version of our trends report, but it still enables us to display more than just the maximum. Based upon past data, the influence of meteorology and the erratic behavior of the maximum may mask genuine improvements being made by control programs. The most recent CEQ report also discussed this potential pitfall.

We like the use of the number of days of air quality violations such as in AIR-5. We have gone to this type of approach more and more. In our 1975 report (Figure 3-5) we used this to show nationwide improvement in peak value TSP.

Another type of presentation that you may want to consider is the standard type of isopleth display for a particular area. We used several of these in section 2 of our 1975 report. Such maps are essentially an intermediate step in our population exposure analyses, but the response we have received indicates that they are useful in themselves. Many of the comments received by SAMWG favored such presentations, and it does appear to be a convenient and informative data display.

The positive response we have received on our population exposure analysis from several Regions has encouraged us to expand this type of effort. Currently, we plan to provide assistance to interested Regions to do 1-2 cities per Region.

The data limitations are an obvious concern, but we hope to investigate the use of modeling results to supplement the actual air quality data. Although this is intuitively appealing, we still need to examine the feasibility in terms of required resources."

Region V: "AIR-1 - The source of this information would be the National Emissions Data System (NEDS). Unfortunately this trend summary would not necessarily be accurate since emission

inventories are not presently archived by NADB. Better information on sources and increase in the number of sources on the data file over the years may reflect a false increase or decrease in emission totals."

"AIR-2 - The plot of number of days with standards violations is to be developed by choosing the worst AQCR in the state. This could easily be done for the entire state with total days computed for all AQCR's in the state. We recommend separating the types of pollutants one per national display. This could be a useful display at the regional level."

"AIR-3 - As with AIR-2, each pollutant should be separated. This could be generated for any AQCR's, AQMA's or county."

"AIR-4 - This exhibit is one of the best. This can be implemented on a county, AQCR, AQMA, or state basis. This should be utilized at the regional level. This display is also open to the most debate, depending on what statistics are used for trend determination.

The number of days monitored for particulates is approximately 1/6 of the total possible per year, with most sites monitoring the same day; however, the approach used here, days rather than total violations or total sites in violation, is more equitable. Perhaps index

sites monitoring every day (as in Ohio) or staggered sampling could be established in every state to determine these trends."

"AIR-5 - In using this display on a national basis, we emphasize that monitoring methods and siting in all states are assumed to be fairly standardized with enough sites to discriminate days exceeding of air quality standards. We agree that the data may not be currently available in all Regions."

"AIR-6 - Population exposure graphs for large geographic areas could be implemented on a worst case basis or limited number of AQCR's within a Region at first using the population at risk model. We wish to apply the model in certain selected urban areas (Chicago, Cleveland, and Detroit) with adequate data basis to refine the standardized air quality gridding. Perhaps another, simpler technique can be applied for yearly trends over these larger areas."

"AIR-7 - Some health and welfare information may be available for research organizations to present number of days illness and property damage. We assume data on mortalities due to air pollution may be available on a very limited scale both in years and geography."

"AIR-8 - Comments on AIR-6 are applicable here.

"AIR-9 - Maximum concentration bar graphs have already been utilized in Region V for selected pollutants and areas (Enclosure 0). This is one of the more useful displays too, regionally as well as publicly."

"AIR-10 - This is also a very good exhibit for worst case AQCR's."

"AIR-11 - We assume this statue chart of the Nation is operational presently at Headquarters.

The air media presentations could be implemented easily if current data processing procedures were modified and enhanced.

Further, Region V has information summarized as in the Region X report, page 10, 'Trends in Air Pollutants in Primary Abatement Area' on a state, AQCR, and county basis.

. . . The Region V Air Quality Tracking System (UNIVAC-1110) . . . documentation will be available to all Regional offices within a few weeks. Plotting of air quality data is a fairly new concept in our Region and we hope to implement more trend analysis features this year.

In summary, we believe that standardization of these capabilities is most important to be cost-effective. We realize each Region will have a variety of needs, some unique because of

population, geography, meteorology, hydrology, and industry. However, once some of these displays have national acceptance, they should be available centrally (i.e., Headquarters, RTP). This effort should fit in with the final Standing Air Monitoring Work Group plan. We note that the Monitoring and Data Analysis Division is proposing new air data graphical displays (isopleth mapping, for instance), which is one of the FY-77-78 SAMWG goals.

Finally, we desire this capability to be technically sound and capable of going the long haul, and that any display be clearly annotated."

- Region VI: "The graphs labeled AIR-2 and AIR-3 use the 'worst case' approach to depict general air quality for an entire site or AQCR. The use of this approach will be misleading to the general public. To offset this, information depicting the 'average' number of violation days in a state or AQCR should be displayed. This information could be something like the number of violation days exceeded by 50% of the AQCR's in a state. Similar information could be given for multiple-site AQCR's.

Overall, the series of graphs presented will provide a good general description of the status of air quality in the nation and in each of the Regions.

One possible addition to the Regional presentation would be to display pollution/wind roses for each pollutant for the major metropolitan areas in the Region.

Near exclusive use of bar graphs is monotonous. Were other types of graphs considered?"

- Region VIII: "Charts such as AIR-3 may have too much information on it to be very useful to general public.

The TSP Air Quality Status would need to be smaller than AQCR's; otherwise National Parks, etc. in West would be indicated nonattainment.

For nonattainment AQCR's, it may be useful to consider a pie chart with emission source types.

Trends approach is good for AQCR, question use on statewide basis.

Would seem appropriate to use readings identified in regulations, e.g., second max for AIR-9.

AIR-6 (persons exposed) seems of questionable value on regional basis--perhaps should consider nonattainment AQCR's.

AIR-8 seems to have minimal applicability. Top chart hard to read.

For AIR-10, there would be a question of the value used. Consideration of sampling accuracy must be included. If reading 1 ug/m^3 above or below standard, how is it handled? Once this issue handled, display is good.

As PSD areas redesignated, by land managers or Congress, it would be well to have regional maps depicting these areas."

"AIR-1 - Good concept. Is it really possible to compare years, since the emissions data base may have substantial changes in quantity and quality over the years? Has some merit."

"AIR-2 - Each pollutant should be separate with its own bar chart. That way the worst case for each pollutant can be distinguished and the bias associated with the lack of any data will not be as misleading."

"AIR-3 - Again, pollutants should be separated onto district pollutant specific charts. Also, the alert level is reached so infrequently in Region VIII, that the solid colors would be insignificant."

"AIR-4 - Trend arrows are misleading if based on year-to-year variations. Regional resources needed are overestimated."

"AIR-5 - Not very meaningful.

"AIR-6 - Good concept. Should be developed and implemented."

"AIR-7 - The ultimate graphic, however, are we even close to being able to correlate these costs to air pollution? The development of the graphic should be low priority."

"AIR-8 - Good concept. Should be followed through."

"AIR-9 - A chart of 2nd high values would be more appropriate."

"AIR-10 - Again, separation by pollutant is essential."

"AIR-11 - Totally misleading, particularly in Region VIII. The AQCR's are so large that problem areas are not highlighted. One site over the Standard in Wyoming turns 2/3 of the State into a yellow region. Recommended this graphic be dropped from the list."

- Department of Environmental Quality, State of Wyoming:

"We have concerns over two of the proposed displays: AIR-2 and AIR-11. We strongly believe that the AIR-2 chart would be misinterpreted by the general public since it would reflect the data from the worst site in a state without regard to the situation of that site or how wide-spread the problem is. For example, we

have one site in the state (Lyman Sampler at Rock Springs) which reported an annual geometric mean of 90 ug/m^3 in 1975 with 11 samples in excess of 150 ug/m^3 . At the same time, two other sites in Rock Springs reported corresponding values of 44 ug/m^3 and 40 ug/m^3 for 1975 with only two values in excess of 150 ug/m^3 . Therefore, the State of Wyoming would be reported as having 13 days in excess of the standard with the possible interpretation that this was a statewide experience rather than a problem that existed over an area of maybe 10 square miles. This type of chart would not reflect the data showing good air quality as measured by some 30 to 35 other samplers in the state.

This same line of thought applies to the map shown on AIR-11. We do not think that AQCR boundaries should be used to show the status as indicated. Refer to the map (AIR-11) and note that the Wyoming Interstate AQCR is a large area and could be included as an "area" not meeting the NAAQS. However, to be more precise, an area of a very few square miles in the southwest corner in and around Rock Springs is the problem area. A layman might draw the conclusion from

the suggested map that Yellowstone Park and Sundance, Wyoming were experiencing violation of the standards.

We recognize the difficulty in putting together a summary for general distribution, but feel that the above comments indicate areas where the general public might be presented with information more to his understanding."

2.4.7 SOLID WASTE

- Region VIII: "SW-4 - This profile would need considerably more definition before being used. Presumably it refers to municipal or publicly owned wastewater treatment plant sludges; however, it does not say so in the specifications. Also, there is not yet at this time any national set of criteria on which to judge sludge disposal systems on a national basis. Is it true that Section 208 requires that an assessment be made of the adequacy of sludge disposal procedures in 208 study areas from a water and air quality standpoint?"
- Deputy Assistant Administrator for Solid Waste: Charts 30 and 31 -- "Solid Waste Disposal Facilities" is too broad a term; for practical use in reporting data, it should be defined."

Chart 32 -- We have data only on tons of hazardous wastes generated in each State. No data is available on how much hazardous waste is disposed of in each State, let alone whether it is disposed of in an approved manner. We doubt that this data is obtainable from the States."

Chart 33 -- It is not reasonable to report such data at the present time, since there are no criteria currently under development for judging acceptable sludge disposal, except those planned under P.L. 94-580."

"Chart 34 -- This chart is acceptable."

2.4.8 RADIATION

Deputy Assistant Administrator for Radiation Programs: "The draft displays and specifications on radiation topics for a national environmental quality profile have been reviewed as you requested. In general, the proposed reporting formats appear good for presenting environmental data to the general public. Specific comments on the radiation items follow."
"35 RAD-1

This chart on strontium-90 in milk is appropriate. It is suggested that the title be revised to, "Trend in Environmental Radioactivity Concentrations due to 'Fallout' from

Atmospheric Nuclear Weapons Testing (Strontium-90 in Pasteurized Milk.)" This chart would also be more informative with data for each one or two years instead of five-year intervals.

Another approach would be a series on "Trends in Environmental Radioactivity Concentrations in Pasteurized Milk." Three charts could then show data for strontium-90, cesium-137, and carbon-14, all of which provide indications of nuclear weapons testing or other nuclear operations such as fuel reprocessing.

Other indicators of fallout or nuclear fuel cycle operations include airborne particulates containing uranium-234,-235,-238 or plutonium -238,-239; or tritium in precipitation, surface water, and drinking water."

"36 RAD-2

The idea behind this chart is good but some revisions are suggested. The title should indicate, "Trend in Environmental Radioactivity Concentrations Resulting from the Nuclear Fuel Cycle. (Krypton-85 in Air)." The reason for this change is to recognize that krypton-85 is one of the major waste products of nuclear fuel reprocessing. Also, much of the krypton-85 in the environment may originate outside the United

States. EPA has promulgated an environmental standard for krypton-85 which will become effective in 1983."

"37 RAD-3

The concept behind this chart is also good, but our information is not adequate to complete such a chart. The ideal would be to present a pie chart showing the proportional dose equivalent to the U.S. population from each source of ionizing radiation. However, we do not yet have population dose data for many categories. There is also a problem with this chart in that individual dose equivalents should not be added. Our survey of radiation source categories provides some individual dose data but no one group of individuals is going to be exposed to all source categories. Also, you will note in the EPA report, EPA-520/1-76-010, that the summary table on dose data contains many footnotes which are necessary for interpretation of these data. The kind of chart proposed tends to leave out such footnotes, and consequently, the chart could be very misleading."

"Conclusions

Charts 35 and 36 could be useful with the revisions suggested. Chart 37 should not be

attempted at this time. It is understood that the data for preparing charts of type 35 and 36 would be provided by the Office of Radiation Programs. ORP will be pleased to provide such assistance towards preparing the overall national environmental quality profile."

2.4.9 NOISE

Region VII: "Noise - It seems logical that this might be done at the state level. Funding would be needed by the states, but actually the states might prefer to have funds for other uses in noise control since their budgets are so small. We could report the total number of people in those communities with objective noise ordinances. We need guidelines for reporting. Many numbers would be simply estimates."

Office of Noise Abatement and Control: "Since many communities have ordinances which are not enforced, we do not feel that the indicator suggested (Number of Persons Living in Areas with Objective Noise Ordinances) would be very useful in conveying the actual efforts being made at the State and local level to control noise. Instead we would like to propose a reporting item which would show the populations covered by the following:

- a. established programs (States and municipalities in this category have adopted a comprehensive approach to noise control based on the implementation of legislation incorporating acoustical criteria. Characterized by a high level of noise control activity and integration of program elements into a structured, functional relationship, these programs have personnel, funding, instrumentation, and include enforcement activities.)
- b. limited programs (The absence of one or more of the program elements characterizing an established program is the primary criteria for placing a State or municipal program in this category. However, both a moderate degree of noise control activity and a demonstrated interest in abating noise problems are present. Limited programs fall into three sub-categories: (1) programs based solely on the implementation of and enforcement of nuisance provisions. (Despite the absence of performance standards and noise measurement instrumentation,

- noise control efforts are actively pursued); (2) programs directed at the control of noise from only one major class of noise sources (e.g., motor vehicles) or that utilize only one noise control approach (e.g., zoning). (Although structured programs with legislation, funding, personnel, instrumentation, and enforcement, these efforts lack the comprehensive orientation of established programs); (3) comprehensive program in the initial stages of development.)
- c. minimal activities (States and municipalities in this category do not have a structured noise control program. Efforts usually consist of investigation of complaints and limited enforcement of nuisance provisions. Resources (personnel, funding, instrumentation) are drawn from other programs and applied on an as needed basis.)
- d. no program effort This break-out is feasible and is compatible with current data collections efforts being carried out at ONAC and in Regions. At

present, data is available only on communities with populations greater than 75,000; however, in three years complete data should be available for communities with populations greater than 50,000."

"We do not feel that this item "Numbers of Persons Exposed to Unacceptable Noise Levels (Greater than 55 Ldn) by Source of Noise" should be used. The data is an extrapolation from one study done several years ago and has been used by EPA as one of the criteria for priority ordering products for regulations. It is not used, and is not intended to be used, as a device for assessing progress on anything but a long-range basis. Therefore, it would be impossible to use it in a yearly report. ONAC is in the process of determining what assessment program should be used, in keeping with our resources and legislative mandate. Undoubtedly whatever assessment program is used will require State and local support. In the absence of such State and local program it is premature to

include an indicator assessing progress toward specific Ldn goals."

"ONAC does not have data for all sources broken out into kilowatt hours per day of sound energy, although this could be derived (Noise Energy by Major Sources). Sources have been rated for relative population noise impact, and this would be a more convenient indicator to use. However, there are more substantive problems. First, there is not apt to be much change between the relative impact of sources in the near-term since EPA regulations take some time to go into effect, and a product population must be replaced in order for noise from that product source to drop. Secondly, even if it were possible to show changes in the relative source impact it is not clear that this communicates very much. It certainly doesn't say anything about the overall problem. Therefore, we do not feel that this should be included as an indicator."

2.4.10

PESTICIDES

Region VII: "Pesticides - The three categories are of interest. We have no way to determine the data for amounts used or relative dollar benefits. Recently we attempted to get the figures for the amount of pesticides used by states. This information is not available from the U.S.D.A. Statistical Data Survey."