EPA/620/R-95/006
August 1995

Environmental Monitoring and Assessment Program (EMAP) Cumulative Bibliography

edited by

Jo Anne Tippett
ManTech Environmental Technology, Inc.
Research Triangle Park, NC 27709

Contract No. 68-D0-0106

Project Officer

Berne Bennett
National Exposure Research Laboratory
U.S. Environmental Protection Agency
Research Triangle Park, NC 27711

Environmental Monitoring and Assessment Program
National Health and Environmental Effects Research Laboratory
Office of Research and Development
U.S. Environmental Protection Agency
Research Triangle Park, NC 27711

Printed on Recycled Paper

Abstract

The *Environmental Monitoring* and Assessment Program (EMAP) Cumulative Bibliography contains a list of EMAP-related documents from the program's inception in 1989 through 1995. All citations included in this document have been verified and meet criteria based on authorship, peer review, funding, and publication.

Key Words:
environmental sciences—bibliography, environmental monitoring—bibliography, environmental literature, environmental policy literature, environmental policy—bibliography, risk assessment—bibliography, ecology—United States, ecological risk assessment, environmental impact assessment, environmental indicators, indicators (biology), biological diversity, U.S. EPA-EMAP

Preferred Citation:
Tippett, J., ed. 1995. *Environmental Monitoring and Assessment Program (EMAP) Cumulative Bibliography.* EPA/620/R-95/XXX Research Triangle Park, NC: U.S. Environmental Protection Agency, Office of Research and Development, Environmental Monitoring and Assessment Program, EMAP Center.

Notice:
The information in this document has been funded wholly or in part by the United States Environmental Protection Agency under contracts #68-D0-0106 to ManTech Environmental Technology Inc. Mention of trade names or commercial products does not constitute endorsement or recommendation for use.

Acknowledgements

This document was prepared under the direction of D. Eric Hyatt, Technical Coordinator, EMAP-Assessment and Reporting and Joan Currin, Technical Information Manager, EMAP, Research Triangle Park, NC.

Preface

The Environmental Monitoring and Assessment Program (EMAP) integrates ecological research, monitoring, and assessment activities from many federal agencies, universities, and contractors. EMAP scientists and administrators produce technical reports, program plans, statistical summaries, and project reports which become official EPA documents after peer review and clearance. The program's scientists and administrators also produce articles, letters, responses, and reviews for publication in the peer-reviewed scientific literature. This bibliography is to serve as an index to these published materials, not to chronicle what has been done. This bibliography does not include materials not available to the general community (e.g., information presented at symposia through lectures and posters and other nonpermanent records).

EMAP's authors have made conscious efforts to provide information that fits the needs of its users as well as preserve the accuracy of the information and the known confidence of the data. To help address the users' needs, EMAP RTP-NC has established an electronic bibliography of EMAP documents. The EMAP cumulative bibliography will be published annually. The ultimate goal of the program is to place the EMAP bibliography "online" and make its resources available to its users via computer.

Contents

Abstract iii
Acknowledgements iv
Preface v
Introduction 1
EMAP Publications and Technical Information 3
Index (Authors) 27

Introduction

The goals of the Environmental Monitoring and Assessment Program (EMAP) are to monitor and assess the condition of the Nation's resources, thereby contributing to decisions on environmental protection and management. EMAP works to attain four objectives:

- *Estimate the current status, trends, and changes* in selected indicators of the condition of the Nation's ecological resources on a regional basis with known confidence.
- *Estimate the geographic coverage and extent of the Nation's ecological resources with known confidence.*
- *Seek associations between selected indicators* of natural and anthropogenic stresses and indicators of condition of ecological resources.
- *Provide annual statistical summaries and periodic assessments of the Nation's ecological resources.*

Both the goals and the objectives require that EMAP provide decision makers with useful information; they also require that EMAP identify and clearly state important social values associated with ecological resources and policy.

From EMAP's inception, EMAP scientists and administrators have been both producers and consumers of program information and documents. At the same time, they have demanded full participation in the administration of that information, from the review stage to the dissemination and cataloging. The process of managing the creation, flow, and archiving of EMAP documents has been evolutionary; as the program has matured, EMAP authors have come to understand the requirements necessary to assure quality and access.

Two approaches can be taken to index publications in a developing program. First, components of the program can track publications of its personnel and later compile and verify a program-wide list. The other approach is to look into the literature of science and public policy through public sources, cross- correlating public sources against government publication records. The documents in this publication were compiled and verified using strategies combining both approaches.

First, lists of authors and known publications from EMAP activities were collected from the EMAP administrators responsible for maintaining partial lists. References were also compiled from lists of both current and upcoming publications routinely printed in monthly progress reports, *EMAP News,* and the *EMAP Monitor.* These sources were verified by means of a variety of electronic and paper bibliographic databases.

This bibliography catalogs documents that were written by EMAP personnel or produced under its aegis. There are citations in the bibliography of documents which supported the early stages of the program but were not strictly speaking EMAP documents. The earlier documents were prepared under predecessor programs to EMAP. This bibliography will be updated annually with EMAP documents.

The following criteria was considered in the selection of citations for the EMAP bibliographic database:

1. The work was authored by grantees, contractors, and/or employees of the federal government.
2. The work was funded wholly or in part by EMAP (up to three years following the agreement/contract expiration).
3. The topics of the work apply to EMAP research, monitoring, or assessment activities (as judged by title, abstract, or key words).
4. The work had passed a peer-review process.
5. The work was published by a nongovernmental source or a government agency (assigned a number and printed for public dissemination by

EPA (EPA #), by the National Technical Information Service (NTIS) (PB #), or by the Government Printing Office (Supt. of Docs. #).

Record numbers are provided for each publication. The author index cross-references authors and publications by record number. This document and its supporting electronic database are works-in-progress and will be refined regularly to remain current. Every author is asked to contribute future verified citations to the EMAP RTP-NC Technical Information Manager (TIM) so that it can be maintained.

EMAP Publications and Technical Information

A

10 Adamus, P.R. 1992. Choices in monitoring wetlands. In: *Ecological Indicators*, Vol. 1, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 571–92. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

20 Alexander, S.A. 1992. *Forest Health Monitoring 1991 statistical summary.* (EPA/600/S3-91/051). Washington, DC: U.S. Environmental Protection Agency, Office of Research and Development, Environmental Monitoring and Assessment Program.

30 Alexander, S.A., M. Baldwin, W.A. Bechtold, D.L. Cassell, S. Cline, T. Droessler, J.W. Hazard, J.G. Isebrands, V.J. LaBau, K.H. Riitters, R.D. Van Remortel, H. Schreuder, S.J. Steele, and M.S. Williams. 1994. *Forest Health Monitoring*: 1991 Georgia Indicator Evaluation and Field Study. (EPA/620/R-94/007). Corvallis, OR: U.S. Environmental Protection Agency.

40 Alexander, S.A., and J.E. Barnard. 1993. *Forest Health Monitoring 1992 Activities Plan.* (EPA/620/R-93/002, PB94-114717). Washington, DC: U.S. Environmental Protection Agency, Office of Research and Development.

50 Alexander, S.A., J.A. Carlson, and J.E. Barnard. 1992. The visual damage survey: A study to evaluate the eastern forest condition. In: *Ecological Indicators*, Vol. 1, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 361–72. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

60 Arndt, U. 1992. Bioindication and the European perspective and position. In: *Ecological Indicators*, Vol. 2, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 1485–90. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

70 ——. 1992. Key reactions in forest disease used as effects criteria for biomonitoring. In: *Ecological Indicators*, Vol. 2, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 829–40. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

B

80 Baker, J.R., and G.D. Merritt. 1991. *Environmental Monitoring and Assessment Program Guidelines for preparing logistics plans.* (EPA/600/4-91/001). Las Vegas, NV: U.S. Environmental Protection Agency, Office of Research and Development, Environmental Monitoring Systems Laboratory.

90 Baker, J.R., and D.W. Sutton. 1991. *Environmental Monitoring and Assessment Program six-year logistics options and alternatives.* (EPA/600/X-91/085). Las Vegas, NV: U.S. Environmental Protection Agency, Environmental Monitoring Systems Laboratory.

100 Balogh, M.E., and R. Lunetta. 1990. Evaluation of remote sensing for Environmental Monitoring and Assessment Program landscape characterization. Abstract in: *1990 ACSM-ASPRS Fall Convention Technical Papers*. p. B-152–53. Bethesda, MD: American Society for Photogrammetry and Remote Sensing and American Congress on Surveying and Mapping.

110 Barber, C.M. 1994. *Environmental Monitoring and Assessment Program: Indicator Development Strategy.* (EPA/620/R-94/022). Research Triangle Park, NC: U.S. Environmental Protection Agency, Office of Research and Development, EMAP Center.

120 Barrows, E. H. 1990. Analysis and integration of ecological monitoring data. In: *Proceedings on the International Symposium on the Design of Water Quality Information Systems*. R.C. Ward, J.C. Loftis, G.B. McBride, eds. Colorado Water Resources Institution Information Series No. 61, p. 276–86.

130 Bascietto, J.J., and K.A. Higley. 1992. Ecological assessment at U.S. Department of Energy environmental restoration sites. In: *Ecological Indicators*, Vol. 2, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 1219–38. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

140 Beardsley, D.P. 1992. Using environmental indicators for policy and regulatory decisions. In: *Ecological Indicators*, Vol. 1, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 61–63.

(EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

150 Berstein, B. 1992. A framework for trend detection: coupling ecological and managerial perspectives. In: *Ecological Indicators*, Vol. 2, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 1101–14. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

160 Bezuneh, T., K. Yilala, and T. Kibreab. 1992. The vulnerability of agricultural systems to ecological and climate change in sub-Saharan Africa (a summary). In: *Ecological Indicators*, Vol. 1, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 705–712. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

170 Billheimer, D., and P. Guttorp. 1994. Zooplankton proportion estimates from non-uniformly sampled Poisson counts. *Journal of Environmental and Ecological Statistics*

180 Blazer, V.S., D.E. Facey, J.W. Fournie, L.A. Courtney, and J.K. Summers. 1994. Macrophage aggregates as indicators of environmental stress. In: *Modulators of Fish Immune Responses: Models for Environmental Toxicology, Biomarkers, and Immunostimulators*, p. 169–86. Fair Haven, NJ: SOS Publications.

190 Breckenridge, R.P., W.G. Kepner, and D.A. Mouat. 1993. Monitoring for assessing sustainability of arid ecosystems. In: *Proceedings of the 25th International Symposium on Remote Sensing and Global Environmental Change*. p. I-583–94.

200 Bretthauer, E.W. 1992. Protecting the environment: A research strategy for the 1990s-An indicator of change in EPA. In: *Ecological Indicators*, Vol. 1, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 53–59. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

210 Brewer, G.D., and F.M. Piltz. 1992. Monitoring benthic ecosystem process on the outer continental shelf: An intergrated approach for offshore southern California. In: *Ecological Indicators*, Vol. 2, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 1355–83. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

220 Bromberg, S.M. 1990. Identifying ecological indicators: An environmental monitoring and assessment program. (EPA/600/J-90/306, PB91-146605). *Journal of the Air and Waste Management Association* 40 (7):976–78.

230 Bromenshenk, J. 1992. Site-specific and regional monitoring with honey bees: Case study comparisons. In: *Ecological Indicators*, Vol. 1, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 689–704. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

C

240 Campbell, C.L., J. Bay, C.D. Franks, A.S. Hellkamp, N.P. Helzer, G.R. Hess, M.J. Munster, D. Neher, G.L. Olson, S.L. Peck, J.O. Rawlings, B. Schumacher, and M.B. Tooley. 1994. *Environmental Monitoring and Assessment Program — agroecosystem pilot field program plan -1993*. (EPA/620/R-93/014). Washington, DC: U.S. Environmental Protection Agency.

250 Carr, D.B. 1993. Constructing legends for classed choropleth maps. *Statistical Computing & Graphics Newsletter* 4 (3):15–18.

260 ——. October, 1994. *Converting Tables to Plots*. (Technical Report No. 101). George Mason University, Fairfax, VA: Center for Computational Statistics.

270 ——. 1993. Production of stereoscopic displays for data analysis. *Statistical Computing & Graphics Newsletter* 4 (1):2–7.

280 Carr, D.B., A.R. Olsen, and D. White. 1992. Hexagon mosaic maps for display of univariate and bivariate geographical data. *Cartography and Geographic Information Systems* 19 (4):228–36, 271.

290 Carr, D.B., and A.R. Olsen. 1995. Parallel coordinate variants of CDF and quantile plots. *Statistical Computing & Graphics Newsletter* 6 (1):13–18.

300 Carr, D.B., and L.W. Pickle. 1993. Plot production issues and details: smoothed cancer

rates and hexagon mosaic maps. *Statistical Computing & Graphics* 4 (2):16–20.

310 Coates, J.F. 1992. Factors shaping and shaped by the environment: 1990–2010. In: *Ecological Indicators*, Vol. 1, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 7–52. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

320 Collins, G., and S. Fink. 1995. Environmental Monitoring and Assessment Program (EMAP): *Methods Format Guidance*. (EPA/620/R-95/001). Cincinnati, OH: U.S. Environmental Protection Agency.

330 Cook, J.R., and L.A. Stefanski. 1994. Stimulation-Extrapolation Estimation in Parametric Measurement Error Models. *American Statistical Association* 89 (428):1314–1327.

340 Cooter, E.J., S.K. LeDuc, L. Truppi, and D.R. Block. 1991. *Climate data and analysis for the New England Forest Health Monitoring project.* (EPA/600/D-91/107, PB91-196071). Research Triangle Park, NC: U.S. Environmental Protection Agency, Atmospheric Research and Exposure Assessment Laboratory.

350 ——. 1991. *Role of climate in forest monitoring and assessment: A New England example.* (EPA/600/3-91/074, PB92-132885). Research Triangle Park, NC: U.S. Environmental Protection Agency, Atmospheric Research and Exposure Assessment Laboratory.

360 Copeland, J., C. Smith, S. Hale, P. August, and R. Latimer. 1994. EPA program monitors U.S. coastal environments. *GIS World* 7:44–47.

370 Cordy, C.B., and D.A. Griffith. 1993. Efficiency of least squares estimators in the presence of spatial autocorrelation. *Communications in Statistics — Simulation* (22):1161–79.

380 Cordy, C.B., and C.M. Thompson. 1995. An application of the deterministic variogram to design-based variance estimation. *Mathematical Geology* 27 (2):173–205.

390 Cordy, C.B. 1993. An extension of the Horvitz-Thompson theorem to point sampling from a continuous universe. *Statistics and Probability Letters* (18):353–62.

400 Cormier, S.M., and R.N. Racine. 1992. Biomarkers of environmental exposure and multivariate approaches for assessment and monitoring. In: *Ecological Indicators*, Vol. 1, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 229–42. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

410 Costa, J.E., B.L. Howes, A.E. Giblin, and I. Valiela. 1992. Monitoring nitrogen and indicators of nitrogen loading to support management action in Buzzards Bay. In: *Ecological Indicators*, Vol. 1, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 499–531. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

420 Costanza, R. 1992. Ecological economic issues and considerations in indicator development, selection and use: Toward an operational definition of system health. In: *Ecological Indicators*, Vol. 2, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 1491–1502. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

430 Couch, J.A., and J.W. Fournie. 1992. *Pathobiology of marine and estuarine organisms*. (EPA/600/R-92/232, PB93-131217). Gulf Breeze, FL: U.S. Environmental Protection Agency, Environmental Research Laboratory.

440 Coughenour, M. 1992. Spatial modeling and landscape characterization of an African pastoral ecosystem: A prototype model and its potential use for monitoring drought. In: *Ecological Indicators*, Vol. 1, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 787–810. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

450 Cowling, E.B. 1992. Challenges at the interface between ecological and environmental monitoring: Imperatives for research and public policy. In: *Ecological Indicators*, Vol. 2, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 1461–80. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

D

460 Daly, C. 1990. Estimation of wet deposition to surface water systems for the TIME project: A geographical approach. In: *Proceedings of the*

International Symposium on the Design of Water Quality Information Systems. R.C. Ward, J.C. Loftis, G.B. McBride, eds. Colorado Water Resources Institute Information Series No. 61: p. 436–46.

470 Debinski, D.M., and P.F. Brussard. 1992. Biological diversity assessment in Glacier National Park, Montana: I. Sampling design. In: *Ecological Indicators*, Vol. 1, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 393–407. (EPA/600/9-91/039, PB92-11413). New York, NY: Elsevier Applied Science.

480 Dionne, M., and J.R. Karr. 1992. Ecological monitoring of fish assemblages in Tennessee river reservoirs. In: *Ecological Indicators*, Vol. 1, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 259–81. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

490 Dixit, S.S., J.P. Smol, J.C. Kingston, and D.F. Charles. 1992. Diatoms: Powerful indicators of environmental change. *Environmental Science Technician* 26:23–33.

500 Dixit, S.S., and J.P. Smol. 1994. Diatoms as indicators in the Environmental Monitoring and Assessment Program-Surface Waters (EMAP-SW). *Environmental Monitoring and Assessment* 31:275–306.

510 Dixit, S.S., B.F. Cumming, J.P. Smol, and J.C. Kingston. 1992. Monitoring environmental changes in lakes using algal microfossils. In: *Ecological Indicators*, Vol. 2, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 1135–55. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

520 Driscoll, C.T., and R. Van Dreason. 1993. Seasonal and long-term temporal patterns in the chemistry of Adirondack lakes. *Water, Air, and Soil Pollution* 67 (3–4):319–44.

E

530 Earle, S.A. 1992. Ecological indicators of marine condition. In: *Ecological Indicators*, Vol. 1, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 65. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

540 EMAP-Indicators Coordination Group. 1993. *Synopsis of Environmental Values, Assessments Questions, and Indicator Development by EMAP Resource Groups* (Draft).

550 Environmental Monitoring and Assessment Program. 1992. *1992 Project descriptions*. (EPA/600/R-92/146). Washington, DC: U.S. Environmental Protection Agency, Office of Research and Development.

560 ——. 1991. *America's Ecological Report Card: Environmental Monitoring and Assessment Program (EMAP)*. [Videocassette]. (EPA/600/V-92/001, PB92-780865). Washington, DC: U.S. Environmental Protection Agency, Office of Research and Development.

570 ——. 1994. *Chesapeake Bay Watershed Pilot Project*. (EPA/620/R-94/020). Washington, DC: Environmental Protection Agency.

580 ——. 1991. *A desktop information and mapping system for near coastal areas of the mid-Atlantic United States: Supporting EPA's Environmental Monitoring and Assessment Program*. Rockville, MD: U.S. Department of Commerce, National Oceanic and Atmospheric Administration.

590 ——. 1992. *EMAP monitor*. March 1992. (EPA/600/M-91/051, PB92-239557). Washington, DC: U.S. Environmental Protection Agency, Office of Research and Development.

600 ——. 1993. *EMAP monitor*. February 1993. (EPA/620/N-92/001). Washington, DC: U.S. Environmental Protection Agency, Office of Research and Development.

610 ——. 1990. *Environmental Monitoring and Assessment Program overview*. (EPA/600/9-90/001). Washington, DC: U.S. Environmental Protection Agency, Office of Research and Development, Office of Modeling Monitoring Systems and Quality Assurance.

620 ——. 1990. *Environmental Monitoring and Assessment Program 1990 project descriptors*. (EPA/600/9-90/028, PB93-116150). Washington, DC: U.S. Environmental Protection Agency, Office of Research and Development.

630 ——. 1991. *Environmental Monitoring and Assessment Program (EMAP) surface waters monitoring and research strategy, fiscal year 1991*. (EPA/600/4-91/019). Washington, DC:

U.S. Environmental Protection Agency, Office of Research and Development.

640 ——. 1991. *Environmental Monitoring and Assessment Program surface waters implementation plan: Northeast pilot lake study, Summer 1991*. (EPA/600/4-91/019). Washington, DC: U.S. Environmental Protection Agency, Office of Research and Development.

650 ——. 1992. *Environmental Monitoring and Assessment Program (EMAP) Great Lakes monitoring and research strategy*. (EPA/620/R-92/001). Washington, DC: U.S. Environmental Protection Agency, Office of Research and Development.

660 ——. 1993. *Environmental Monitoring and Assessment Program: Master glossary*. (EPA/620/R-93/013). Washington, DC: U.S. Environmental Protection Agency, Office of Research and Development, Environmental Monitoring and Assessment Program.

670 ——. 1990. *Operational procedures for peer review, first edition*. Washington, DC: U.S. Environmental Protection Agency, Office of Research and Development.

680 Erhardt, W., H. Gebhardt, K. Hopker, A. Keitel, T. Mayer, K. Kreimes, L. Murmann-Kristen, R. Umlauff-Zimmermann, and R.D. Zimmermann. 1992. Biological monitoring of air pollution effects in the state of Baden-Wurttemberg, Federal Republic of Germany. In: *Ecological Indicators*, Vol. 2, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 917–28. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

690 Ernst, T.L., N.C. Leibowitz, D. Roose, S. Stehman, and N.S. Urquhart. 1995. *Evaluation of U.S. EPA Environmental Monitoring and Assessment Program's (EMAP)-Wetlands Sampling Design and Classification. Environmental Management* 19 (1):99–113.

700 Ernst, T.L., and N.C. Leibowitz. 1993. Statistical evaluation of EMAP-Wetlands classification. In: *Proceedings of INTERCOL IV International Wetlands Conference*. (EPA/600/A-93/121, PB93-199446). Columbus, OH:

F

710 Fabrizio, M.C., C.P. Ferreri, and M.J. Hansen. 1995. *Prey Fish Communities As Indicators Of Ecosystem Health In Lake Michigan: Project Completion Report. Duluth, MN*: U.S. Environmental Protection Agency.

720 Folmar, L. 1990. *Diagnostic indicators for marine systems: Physiology and biochemistry*. (EPA/600/X-90/287). Gulf Breeze. FL: U.S. Environmental Protection Agency, Office of Research and Development, Environmental Research Laboratory.

730 Folmar, L.C. 1993. Effects of chemical contaminants on blood chemistry of teleost fish: A bibliography and synopsis of selected effects. *Environmental Toxicology and Chemistry* 12:337–375.

740 Folmar, L.C., S. Bonomelli, T. Moody, and J. Gibson. 1993. The effect of short-term exposure to three chemicals on the blood chemistry of the pinfish (*Lagodon rhomboides*). *Archives of Environmental Contamination and Toxicology* 24:83–86.

750 Folmar, L.C., G.R. Gardner, J. Hickey, S. Bonomelli, and T. Moody. 1993. Serum chemistry and histopathological evaluations of brown bullheads (*Ameiurus nebulosus*) from the Buffalo and Niagara Rivers, New York. *Archives of Environmental Contamination* 25:298–303.

760 Folmar, L.C., T. Moody, S. Bonomelli, and J. Gibson. 1992. Annual cycle of blood chemistry parameters in striped mullet (*Mugil cephalus L.*) and pinfish (*Lagodon rhomboides L.*) from the Gulf of Mexico. *Journal of Fish Biology* 41:999–1011.

770 Ford, J., and D.H. Landers. 1990. Contamination of U.S. arctic ecosystems by long-range transport of atmospheric contaminants. In: *Proceedings of the International Conference on the Role of the Polar Regions in Global Change*. (EPA/600/D-90/190, PB91-137109). Washington, DC: U.S. Department of Agriculture, Forest Service.

780 Ford, J., T. Young, and J. Stoddard. Long-term monitoring for aquatic effects of acidic deposition: An approach to regionalizing information from existing monitoring sites. In: *Proceedings of the 5th Annual Meeting of the International Cooperative Programme on*

Assessment and Monitoring of River and Lake Acidification.

790 Ford, J., J.L. Stoddard, and C.F. Powers. 1993. Perspectives on environmental monitoring: An introduction to the U.S. EPA long-term monitoring (LTM) project. *Water, Air, and Soil Pollution* 67 (3–4):247–55.

800 Foresta, R. 1992. Developing-world bureaucracies as partners in environmental management. In: *Ecological Indicators*, Vol. 2, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 1191–1202. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

810 Franson, S. 1990. *Data confidentiality in the Environmental Monitoring and Assessment Program — issues and recommendations.* (EPA/600/X-90/129). Las Vegas, NV: U.S. Environmental Protection Agency, Environmental Monitoring Systems Laboratory.

820 Franson, S.E., ed. 1993. *Environmental Monitoring and Assessment Program: EMAP-Arid Colorado plateau pilot study — 1992.* (EPA/620/R-93/001, PB93-181618). Las Vegas, NV: U.S. Environmental Protection Agency, Environmental Monitoring Systems Laboratory.

830 ——. 1993. *Project summary, Environmental Monitoring and Assessment Program: EMAP-Arid Colorado plateau pilot study — 1992: Implementation plan.* (EPA/620/SR-93/001). Las Vegas, NV: U.S. Environmental Protection Agency, Environmental Monitoring Systems Laboratory.

840 Frithsen, J.B., J. Gerritsen, G. Saul, M.C. Fabrizio, and A. F. Holland. 1991. *Example environmental assessment report for estuaries.* (EPA/600/4-91/026, PB92-102656). Research Triangle Park, NC: U.S. Environmental Protection Agency, Office of Research and Development.

850 Frithsen, J.B., and A.F. Holland. 1992. Benthic communities as indicators of ecosystem condition. In: *Ecological Indicators*, Vol. 1, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 459–60. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

860 Frost, T.M., S.R. Carpenter, and T.K. Kratz. 1992. Choosing ecological indicators: Effects of taxonomic aggregation on sensitivity to stress and natural variability. In: *Ecological Indicators*, Vol. 1, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 215–227. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

G

870 Garner, J.H.B. 1992. Nitrogen oxides, plant metabolism and ecosystem response. In: *Proceedings, The Third International Symposium on Gaseous Pollutants and Plant Metabolism.* Blacksburg, VA: Virginia Polytechnic Institute and State University.

880 Garner, J.H.B., D.E. Hyatt, and D.A. Vallero. 1992. Assessing exposure and risk to the nation's ecological resources. In: *Measurement of Toxic and Related Air Pollutants*. p. 957–61. (EPA/600/R-92/131). Pittsburgh, PA: Air & Waste Management Association.

890 Gaston, G.R., J.A. McLelland, and R.W. Heard. 1992. Feeding biology, distribution, and ecology of two species of benthic polychaetes: *Paraonis fulgens* and *Paraonis pygoenigmata (Polychaeta: Paraonidae). Gulf Research Reports* 8:395–99.

900 Gentile, J.H., and M.W. Slimak. 1992. Endpoints and indicators in ecological risk assessments. In: *Ecological Indicators*, Vol. 2, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 1385–97. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

910 Gillespie, J.R., M. Miller-Weeks, C. Barnett, and W. Burkman. 1993. *Summary Report, Forest Health Monitoring,* New England/Mid-Atlantic, 1992. (NE\NA-INF-115-R93). USDA Forest Service.

920 Goldberg, E. 1992. Rational marine pollution monitoring. In: *Ecological Indicators*, Vol. 2, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 1075–87. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

930 Goldman, L.R., M. Gomez, S. Greenfield, L. Hall, B.S. Hulka, W.E. Kaye, J.A. Lybarger, D.H. McKenzie, R.S. Murphy, D.G. Wellington, and T. Woodruff. 1992. Use of exposure

databases for status and trends analysis. *Archives of Environmental Health* 47 (6):430–38.

940 Gosselink, J.G., G.P. Shaffer, and L.C. Lee. 1990. Landscape conservation in a forested wetland watershed: Can we manage cumulative impacts? *Bioscience* 40 (8):588.

950 Gosz, J., R.R. Parmenter, and D. Marshall. 1992. Ecological indicators in a desert/grassland transition. In: *Ecological Indicators*, Vol. 1, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 739–64. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

960 Greenwalt, L.A. 1992. Global Indicators: What the people expect. In: *Ecological Indicators*, Vol. 1, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 109–14. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

970 Griffith, J.A., and C.T. Hunsaker. 1994. *Ecosystem Monitoring and Ecological Indicators: An Annotated Bibliography.* (EPA/620/R-94/021). Athens, GA: U.S. Environmental Protection Agency, Office of Research and Development.

980 Guttorp, P. 1993. Statistical analysis of biological monitoring data. In: *Multivariate Environmental Statistics*, 6, G.P. Patil, and C.R. Rao, eds. New York: North-Holland/Elsevier.

H

990 Haire, M.S., N.N. Panday, D.K. Domotor, and D.G. Flora. 1992. Chesapeake Bay water quality indices. In: *Ecological Indicators*, Vol. 2, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 1115–34. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

1000 Hammond, A. 1992. The greenhouse index: A global ecological indicator (summary). In: *Ecological Indicators*, Vol. 2, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 1013–14. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

1010 Hazard, J.W., and B.E. Law. 1989. *Forest survey methods used in the USDA Forest Service.* (EPA/600/3-89/065, PB90-179672). Corvallis, OR: U.S. Environmental Protection Agency, Environmental Research Laboratory.

1020 Heck, W.W., C.L. Campbell, R.P. Breckenridge, G.E. Byers, A.L. Finkner, G.R. Hess, J.R. Meyer, T.J. Moser, S.L. Peck, J.O. Rawlings, and C.N. Smith. 1991. *Environmental Monitoring and Assessment Program: Agroecosystem monitoring and research strategy.* (EPA/600/4-91/013, PB93-100071). Las Vegas, NV: U.S. Environmental Protection Agency, Environmental Monitoring Systems Laboratory.

1030 Heck, W.W., C.L. Campbell, A.L. Finkner, C.M. Hayes, G.R. Hess, J.R. Meyer, M.J. Munster, D. Neher, S.L. Peck, J.O. Rawlings, C.N. Smith, and M.B. Tooley. 1992. *Environmental Monitoring and Assessment Program — Agroecosystem 1992 pilot project plan.* (EPA/620/R-93/010). Washington, DC: U.S. Environmental Protection Agency.

1040 Hedtke, S., A. Pilli, D. Dolan, G. McRae, and B. Goodno. 1992. *Environmental Monitoring and Assessment Program (EMAP) Great Lakes monitoring and research strategy.* (EPA/620/R-92/001, PB94-114832). Duluth, MN: U.S. Environmental Protection Agency, Environmental Research Laboratory.

1050 Hinckley, D., and G. Tierney. 1992. Early ecological indicators of climate change. In: *Ecological Indicators*, Vol. 2, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 1157–64. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

1060 Hirvonen, H. 1992. The development of regional scale ecological indicators: A Canadian approach. In: *Ecological Indicators*, Vol. 2, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 901–15. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

1070 Hoefs, N.J., and T.P. Boyle. 1992. Contribution of fish community metrics to the index of biotic integrity in two Ozark rivers. In: *Ecological Indicators*, Vol. 1, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 283–303. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

1080 Holland, A.F., ed. 1990. *Near coastal program plan for 1990: Estuaries.* (EPA/600/4-90/033, PB93-116176). Narragansett, RI: U.S.

Environmental Protection Agency, Environmental Research Laboratory.

1090 Holland, A.F., J.K. Summers, K.J. Scott, and J.F. Paul. 1991. Preliminary results of EMAP 1990 field sampling in estuaries. *Bulletin of the Ecological Society of America* 72 (2):143.

1100 Holland, M.M., D.M. Lawrence, D.J. Morrin, C. Hunsaker, D. Inouye, A. Janetos, H.R. Pulliam, W. Robertson, and J. Wilson. 1992. *Profiles of ecologists: Results of a survey of the membership of the Ecological Society of America.* Washington, DC: Ecological Society of America Public Affairs Office.

1110 Hughes, R.M. 1989. Ecoregional biological criteria. In: *Water Quality Standards for the 21st Century.* p. 147–51. Washington, DC: U.S. Environmental Protection Agency, Office of Water.

1120 ——. 1990. Ecoregions and biological integrity of fish assemblages. *American Fisheries Society Oregon Chapter Annual Meeting Symposium* (27):31.

1130 ——. 1990. The IBI: A quantitative, easily communicated assessment of the health and complexity of entire fish communities. *U.S. Fish and Wildlife Service Biological Report* 90 (5):26–28.

1140 ——. 1993. *Stream indicator and design workshop.* (EPA/600/R-93/138, PB93-222321). Corvallis, OR: U.S. Environmental Protection Agency, Environmental Research Laboratory.

1150 ——. 1990. What can biological monitoring tell us about the environmental health of aquatic ecosystems? *Proceedings of the International Symposium on the Design of Water Quality Information Systems.* R.C. Ward, J.C. Loftis, G.B. McBride, eds. Colorado Water Resources Institute Information Series No. 61: p. 447–460.

1160 Hughes, R.M., S.A. Heiskary, W.J. Matthews, and C.O. Yoder. 1992. Use of ecoregions in biological monitoring. In: *Biological Monitoring of Freshwater Ecosystems,* S.L. Loeb, ed. Chelsea, MI: Lewis Publishers.

1170 ——. 1994. Use of ecoregions in biological monitoring. In: *Biological Monitoring of Aquatic Systems,* S.L. Loeb, and A. Spacie, eds. p. 125–51. Boca Raton, FL: Lewis.

1180 Hughes, R.M., D.P. Larsen, and S.G. Paulsen. In review. *An Indicator Development Strategy for EMAP-Surface Waters.* Washington, DC: U.S. Environmental Protection Agency, Office of Research and Development.

1190 Hughes, R.M., and R.F. Noss. 1992. Biological diversity and biological integrity: Current concerns for lakes and streams. *Fisheries* 17 (3):11–19.

1200 ——. 1991. Lake and stream indicators for the Environmental Monitoring and Assessment Program. In: *Proceedings of the International Symposium on Ecological Indicators.* (EPA/600/D-91/095, PB91-191080). Corvallis, OR: U.S. Environmental Protection Agency, Environmental Research Laboratory.

1210 Hughes, R.M., T.R. Whittier, S.A. Thiele, J.E. Pollard, D.V. Peck, S.G. Paulsen, D. McMullen, J. Lazorchak, D.P. Larsen, W.L. Kinney, P.R. Kaufmann, S. Hedtke, S.S. Dixit, G.B. Collins, and J.R. Baker. 1992. Lake and stream indicators for U.S. EPA's Environmental Monitoring and Assessment Program. In: *Ecological Indicators,* Vol. 1, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 305–335. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

1220 Hunsaker, C.T., D. Carpenter, and J.J. Messer. 1990. Ecological indicators for regional monitoring. *Bulletin of the Ecological Society of America* (71):165–72.

1230 Hunsaker, C.T., and D.E. Carpenter., eds. 1990. *Environmental Monitoring and Assessment Program: Ecological Indicators.* (EPA/600/3-90/060, PB91-14196). Research Triangle Park, NC: U.S. Environmental Protection Agency, Atmospheric Research and Exposure Assessment Laboratory.

1240 Hunsaker, C.T., R.L. Graham, G.W. Suter, R.V. O'Neill, L.W. Barnthouse, and R.H. Gardner. 1990. Assessing ecological risk on a regional scale. *Environmental Management* 14 (3):325–32.

1250 Hunsaker, C.T., D.A. Levine, S.P. Timmins, B.L. Jackson, and R.V. O'Neill. 1992. Landscape characterization for assessing regional water quality. In: *Ecological Indicators*, Vol. 2, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 997–1006. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

1260 Hyatt, D.E. 1992. "Meetings/Symposia (Global) Database Management" (Review). *Bulletin of the Ecological Society of America* 73 (2):137.

1270 Hyatt, D.E., and O. Gutenson., eds. 1992. *Biological populations as indicators of environmental change*. (EPA/230/R-92/011). Washington, DC: U.S. Environmental Protection Agency, Office of Policy, Planning, and Evaluation.

J

1280 Jager, H.I., and W.S. Overton. 1993. Explanatory models for ecolgical response surfaces. In: *Environmental Modeling with GIS*, M.F. Goodchild, B.O. Parks, and L.T. Steyaert, eds. p. 422–31. New York, NY: Oxford University Press.

1290 Jenkins, K.D., and B.M. Sanders. 1992. Monitoring with biomarkers: A multi-tiered framework for evaluating the ecological impacts of contaminants. In: *Ecological Indicators*, Vol. 2, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 1279–93. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

1300 Jones, K.B. 1991. The Environmental Monitoring and Assessment Program: An ecological monitoring program for the 1990's and beyond. In: *GIS/LIS '90 Proceedings*. 2: p. 669–81. Bethesda, MD: American Society for Photogrammetry and Remote Sensing, American Congress on Surveying and Mapping.

1310 ——. 1990. Habitat use and predatory behavior of *Thamnophis-cyrtopsis Serpentes Colubridae* in a seasonally variable aquatic environment. *Southwestern Naturalist* 35 (2):115–22.

1320 Jones, K.B., and B.R. Riddle. 1994. Regional scale monitoring of biodiversity. In: *Conservation of Biological Diversity in Managed Landscapes*, D.A. Johnson, and R.C. Szaro, eds. Oxford University Press.

1330 Jorgensen, S.E. 1992. Ecological indicators and ecological modelling. In: *Ecological Indicators*, Vol. 1, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 201–09. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

K

1340 Kahl, J.S., T.A. Haines, S.A. Norton, and R.B. Davis. 1993. Recent trends in the acid-base status of surface waters in Maine, USA. *Water, Air, and Soil Pollution* 67 (3–4):281–300.

1350 Kaufmann, P.R., A.T. Herlihy, M.E. Mitch, and W.S. Overton. 1991. Chemical characteristics of streams in the eastern United States: I. Synoptic survey design, acid base status, and regional patterns. *Water Resources Research* 27:611–27.

1360 Kaufmann, P.R., A.T. Herlihy, and L.A. Baker. 1992. Sources of acidity in lakes and streams of the United States. *Environmental Pollution* 77:115–122.

1370 Kay, J.J., and E.D. Schneider. 1992. Thermodynamics and measures of ecological integrity. In: *Ecological Indicators*, Vol. 1, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 159–82. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

1380 Kellar, P., P. Suk, and A. Beach. 1991. *Environmental Monitoring and Assessment Program: 1991 Project descriptors*. (EPA/600/4-91/015, PB92-114479). Washington, DC: U.S. Environmental Protection Agency, Office of Research and Development.

1390 Kent, D.M., R.J. Reimold, J.M. Kelly, and C.E. Tammi. 1992. Coupling wetlands structure and function: Developing a condition index for wetlands monitoring. In: *Ecological Indicators*, Vol. 1, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 559–70. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

1400 Kepner, W.G. 1993. *Arid ecosystems 1993 implementation plan Colorado plateau plot design study*. (EPA/620/R-93/016). Las Vegas, NV: U.S.Environmental Protection Agency, Environmental Monitoring Systems Laboratory.

1410 Kepner, W.G., C.A. Fox, J. Baker, R. Breckenridge, and C. Elvidge. 1991. *Arid ecosystems strategic monitoring plan, 1991.* (EPA/600/4-91/018, PB93-100139). Las Vegas, NV: U.S. Environmental Protection Agency, Environmental Monitoring Systems Laboratory.

1420 Kisner, D., D.M. Muchoney, S. Pelczarski, K.K. Stout, and R. Sullivan. 1990. *EMAP landscape characterization information requirements summary.* (TS-PIC-90385). Warrenton, VA: U.S. Environmental Protection Agency.

1430 Klemm, D.J., and J.M. Lazorchak., eds. 1993. *Environmental Monitoring and Assessment Program, surface waters and Region 3 Regional Environmental Monitoring and Assessment Program, 1993 pilot field operations and methods manual, streams.* Cincinnati, OH: U.S. Environmental Protection Agency, Office of Research and Development, Environmental Monitoring Systems Laboratory.

1440 Klopatek, J. 1992. Cryptogamic crusts as potential indicators of disturbance in semi-arid landscapes. In: *Ecological Indicators*, Vol. 1, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 773–86. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

1450 Knapp, C.M., D.R. Marmorek, J.P. Baker, K.W. Thornton, J.M. Klopatek, and D.F. Charles. 1991. *Indicator development strategy for the Environmental Monitoring and Assessment Program.* (EPA/600/3-91/023, PB91-168500). Corvallis, OR: U.S. Environmental Protection Agency, Environmental Research Laboratory.

1460 Kromroy, K., M.F. Olsen, D.F. Grigal, D.R. French, and G.H. Amundson. 1992. Testing a biological system for indicating ozone in Minnesota. In: *Ecological Indicators*, Vol. 1, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 675–88. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

1470 Kucera, R., and B.E. Martin., eds. 1991. *FY91 indicator evaluation field study for Environmental Monitoring and Assessment Program —forests.* Research Triangle Park, NC: U.S. Environmental Protection Agency, Office of Research and Development, Atmospheric Research and Exposure Assessment Laboratory.

1480 Kucera, R., C.J. Palmer, and E.R. Smith. 1992. Indicator evaluation. In: *Forest Health Monitoring 1992 Activities Plan*, S.A. Alexander, and J.E. Barnard, (EPA/620/R-93/002). Washington, DC: U.S. Environmental Protection Agency.

1490 Kutz, F.W., R.A. Linthurst, C. Riordan, M. Slimak, and R. Frederick. 1992. Ecological research at EPA—new directions. *Environmental Science & Technology* 26 (5):860–66.

1500 Kutz, F.W., and R.A. Linthurst. 1990. A systems-level approach to environmental assessment. *Toxicological and Environmental Chemistry* 28 (2–3):105–14.

L

1510 LaBau, V.J. 1993. Regional monitoring with plot networks. *Environmental Monitoring and Assessment* (26):283–94.

1520 Landers, P.B. 1992. Ecological indicators: Panacea or liability? In: *Ecological Indicators*, Vol. 2, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 1295–1318. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

1530 Larsen, D.P. *In Press.* The role of ecological sample surveys in the implementation of biocriteria. In: *Biological Assessment and Criteria: Tools for Water Resource Planning and Decision Making for Rivers and Streams*, W. Davis, and T. Simon, eds.

1540 Larsen, D.P., K.W.Thornton, N.S. Urquhart, and S.G. Paulsen. *In Press.* The role of probability-based surveys for monitoring the condition of the nation's lakes. *Environmental Monitoring and Assessment.*

1550 Larsen, D.P., D.L. Stevens, A.R. Selle, and S.G. Paulsen. 1991. *Environmental Monitoring and Assessment Program — Surface Waters: A northeast lakes pilot.* (EPA/600/J-92/417, PB93-135747). Lakes and Reservoir Management 7 (1):1–11.

1560 Larsen, D.P., N.S. Urquhart, and D.L. Kugler. 1995. Regional scale trend monitoring of indicators of trophic condition of lakes. *Water Resources Bulletin* 31:117–40.

1570 Larsen, D.P., and S.J. Christie., eds. 1993. *EMAP-Surface Waters 1991 pilot report.* (EPA/620/R-93/003, PB93-156008). Washington, DC: U.S. Environmental Protection Agency, Office of Research and Development, Environmental Monitoring and Assessment Program.

1580 Lazorchak, J., C. Palmer, and J. Lawrence. 1990. *Proceedings of the Third Annual Ecological Quality Assurance Workshop, Canada Centre for Inland Waters.* Cinncinnati, OH: U.S. Environmental Protection Agency, Environmental Monitoring and Support Laboratory.

1590 Lear, J.S., and C.B. Chapman. 1994. *Environmental Monitoring and Assessment Program (EMAP) Cumulative Bibliography.* (EPA/620/R-94/XXX). Research Triangle Park, NC: U.S. Environmental Protection Agency.

1600 Leibowitz, N.C., T.L. Ernst, N.S. Urquhart, S. Stehman, and D. Roose. 1993. *Evaluation of EMAP-wetlands sampling design using national wetland inventory data.* (EPA/620/R-93/008, PB93-202851). Corvallis, OR: U.S. Environmental Protection Agency, Office of Research and Development, Environmental Research Laboratory.

1610 Leibowitz, N.C., L. Squires, and J.P. Baker. 1991. *Environmental Monitoring and Assessment Program: Research plan for monitoring wetland ecosystems.* (EPA/600/3-91/010, PB91-149526). Corvallis, OR: U.S. Environmental Protection Agency, Environmental Research Laboratory.

1620 Lesser, V., and W.S. Overton. 1994. EMAP *Status Estimation: Statistical Procedures and Algorithms.* (EPA 620/R-94/008, PB94-160611, ERL-Cor-812). Corvallis, OR: U.S. Environmental Protection Agency.

1630 Lesser, V.M. 1992. *A comparison of periodic survey designs employing multi-stage sampling.* (Institute of Statistics Series 1897T). Chapel Hill, NC: University of North Carolina — Chapel Hill, Department of Biostatistics.

1640 Lewis, T.E., and B.L. Conkling., eds. 1994. *Forest Health Monitoring Southeast Loblolly/Shortleaf Pine Demonstration Interim Report.* (EPA/620/R-94/006). Washington, DC: U.S. Environmental Protection Agency.

1650 Linthurst, R.A., K.W. Thornton, and L.E. Jackson. 1992. Integrated monitoring of ecological condition: Issues of scale, complexity and future change. In: *Ecological Indicators*, Vol. 2, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 1421–41. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

1660 Loftis, J.C., C.H. Taylor, A.D. Newell, and P.L. Chapman. 1991. Multivariate trend testing of lake water quality. *Water Resources Bulletin* 27:461–73.

1670 Longest II, H.L. 1992. Superfund-environmental progress? A report on environmental indicators. In: *Ecological Indicators*, Vol. 2, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 1203–10. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

1680 Ludwig, J., and D.J. Tongway. 1992. Monitoring the condition of Australian arid lands: Linked plant-soil indicators. In: *Ecological Indicators*, Vol. 1, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 765–72. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

1690 Lunetta, R.S., R.G. Congalton, L.D. Fenstermaker, J.R. Jensen, K.C. McGwire, and L.R. Tinney. 1991. Remote-sensing and geographic information-system data integration: Error sources and research issues. *Photogrammetric Engineering and Remote Sensing* 57 (6):677–87.

M

1700 Macauley, J.M., J.K. Summers, P.T. Heitmuller, V.D. Engle, and A.M. Adams. 1993. *Louisianian Province statistical summary: EMAP-Estuaries:* 1992. (EPA/620/R-94/002). U.S. Environmental Protection Agency, Office of Research and Development, Environmental Research Laboratory: Gulf Breeze, FL.

1710 Macauley, J.M., J.K. Summers, V.D. Engle, P.T. Heitmuller, G.T. Brooks, M. Babikow, and A.M. Adams. 1994. *Statistical Summary: EMAP-Estuaries Lousianian Province — 1992.* (EPA/620/R-94/002). Gulf Breeze, FL: U.S. Environmental Protection Agency, Environmental Research Laboratory, Office of Research and Development.

1720 Mace, T.M. 1991. Multistage remote sensing for a national environmental monitoring program database. In: *GIS/LIS '90 Proceedings*. Vol. 2: p. 691–700. Bethesda, MD: American Society for Photogrammetry and Remote Sensing; American Congress on Surveying and Mapping.

1730 Mata, N. 1991. *Standard operating procedures for EMAP information management technical workgroups*. (TS-PIC-91383). Warrenton, VA: U.S. Environmental Protection Agency.

1740 McAllister, L., T. Ernst, and B. Huntly. 1993. *Research strategy for the Environmental Monitoring and Assessment Program-Wetlands 1993 Gulf of Mexico estuarine emergent salt marsh pilot study, phase 2*. (EPA/620/R-93/015). Corvallis, OR: U.S. Environmental Protection Agency, Environmental Research Laboratory.

1750 McDonald, L.L., and B.F.J. Manly. 1992. *Statistical inference procedures for probability selection functions in long term monitoring programs*. (EPA/620/R-93/004, PB93-163012, ERL-COR 768). Corvallis, OR: U.S. Environmental Protection Agency, Environmental Research Laboratory.

1760 McKenzie, D.H. 1992. Synthesizing indicator needs of scientific, policy and regulatory communities. In: *Ecological Indicators*, Vol. 2, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 1503–06. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

1770 McKenzie, D.H., D.E. Hyatt, and V.J. McDonald. 1992. *Ecological Indicators*, Vols. 1 and 2, (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

1780 McKenzie, M. 1991. *EMAP-Landscape Characterization cartographic production methods research*. (TS-PIC-91394). Warrenton, VA: U.S. Environmental Protection Agency, Environmental Photographic Interpretation Center.

1790 Mendelssohn, I.A., and K.L. McKee. 1992. Indicators of environmental stress in wetland plants. In: *Ecological Indicators*, Vol. 1, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 603–24. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

1800 Menzer, R.E., J.W. Fournie, and L. Folmar. 1990. *Use of the Center for Marine and Estuarine Disease of the Gulf Breeze Environmental Research Laboratory in supporting EMAP-near coastal*. (EPA/600/X-90/289). Gulf Breeze, FL: U.S. Environmental Protection Agency, Office of Research and Development.

1810 Messer, J.J. 1989. Keeping a closer watch on ecological risks. *EPA Journal* (15):34–36.

1820 Messer, J. 1990. Why monitor? In: *Proceedings of the International Symposium on the Design of Water Quality Information Systems*. R.C. Ward, J.C. Loftis, G.B. McBride, eds. Colorado Water Resources Institute Information Series No. 61: p. 16–21.

1830 Messer, J.J., R.A. Linthurst, and W.S. Overton. 1991. An EPA program for monitoring ecological status and trends. *Environmental Monitoring and Assessment* (17):67–78.

1840 Messer, J.J., R.A. Linthurst, and C. Riordan. 1989. A national program for environmental monitoring and assessment. In: *Air Pollution Effects on Vegetation, Including Forest Ecosystems, Proceedings of the Second U.S./U.S.S.R. Symposium*. R.D. Nobel, J.L. Martin, K.S. Jensen, eds. p. 211–215. Broomall, PA: USDA Forest Service, Northeastern Forest Experiment Station.

1850 Messer, J.J. 1992. Indicators in regional ecological monitoring and risk assessment. In: *Ecological Indicators*, Vol. 1, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 135–46. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

1860 Metcalf, R.C., D.V. Peck, and L.J. Arent. 1990. Effect of KCl additions on pH measurements of dilute sulfuric acid standards. *Analyst* 115:855–905.

1870 Meyer, J.R., C.L. Campbell, T.J. Moser, G.R. Hess, J.O. Rawlings, S. Peck, and W. Heck. 1992. Indicators of the ecological status of agroecosystems. In: *Ecological Indicators*, Vol. 1, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 629–58. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

1880 Milne, B.T. 1992. Indications of landscape condition at many scales. In: *Ecological Indicators*, Vol. 2, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 883–95. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

1890 Minor, T.B., T.G. Wade, J.M. Lancaster, and D.A. Mouat. 1993. The use of GIS in the development of a drylands risk index: A hypothetical assessment of desertification. In: *Proceedings of the 13th Annual Environmental Systems Research Institute User's Conference*. Vol. 1: p. 235–47.

1900 Mitsch, W.J. 1992. Ecological indicators for ecological engineering in wetlands. In: *Ecological Indicators*, Vol. 1, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 537–58. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

1910 Moors, A.K. 1993. *Towards an avian index of biotic integrity for lakes*. M.S. Thesis. Bangor, ME: University of Maine.

1920 Morrison, M., A. Newell, and R. Hjort. 1991. *Data user's guide to the United States Environmental Protection Agency's long-term monitoring project: Quality assurance plan and data dictionary*. (EPA/600/3-91/072, PB92-239573). Corvallis, OR: U.S. Environmental Protection Agency, Environmental Research Laboratory.

1930 Mouat, D.A., G.G. Mahin, and J.M. Lancaster. 1993. Remote sensing techniques in the analysis of change detection. *Geocarto International* 8 (2):39–50.

1940 Mouat, D., C.A. Fox, and M.R. Rose. 1992. Ecological indicator strategy for monitoring arid ecosystems. In: *Ecological Indicators*, Vol. 1, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 717–38. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

1950 Mulik, J., J. Varns, P. Koutrakis, M. Wolfson, and D. Williams. 1992. *Passive sampling device as a simple tool for assessing ecological change: An extended monitoring study in ambient air*. (EPA/600/A-92/242, PB93-120988). Research Triangle Park, NC: U.S. Environmental Protection Agency, Atmospheric Research and Exposure Assessment Laboratory.

1960 Murdoch, P.S., and J.L. Stoddard. 1993. Chemical characteristics and temporal trends in eight streams of the Catskill Mountains, New York. *Water, Air, and Soil Pollution* 67 (3–4):367–95.

N

1970 National Research Council Water Science and Technology Board. 1992. *Review of EPA's Environmental Monitoring and Assessment Program (EMAP): Interim report*. (PB93-146348). Washington, DC: U.S. Environmental Protection Agency.

1980 Neher, D. 1992. Ecological sustainability in agricultural systems. *Journal of Sustainable Agriculture* (2):51–61.

1990 Neilson, R.P., and G.A. King. 1992. Continental scale biome responses to climatic change. In: *Ecological Indicators*, Vol. 2, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 1015–40. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

2000 Newell, A.D., and M.L. Morrison. 1993. Use of overlap studies to evaluate method changes in water chemistry protocols. *Water, Air, and Soil Pollution* 67 (3–4):433–57.

2010 Newell, A.D. 1993. Inter-regional comparison of patterns and trends in surface water acidification across the United States. *Water, Air, and Soil Pollution* 67 (3–4):257–81.

2020 Newell, A.D., D.J. Blick, and R.C. Hjort. 1993. Testing for trends when there are changes in methods. *Water, Air, and Soil Pollution* 67 (3–4):457–68.

2030 Newton, B.J. 1992. The U.S. Clean Water Act: Programmatic needs and experiences. In: *Ecological Indicators*, Vol. 2, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 1211–17. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

2040 Nielson, R.P., and G.A. King. 1992. Continental scale biome responses to climate change. In: *Ecological Indicators*, Vol. 2, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 1015–40. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

2050 Nip, M.I., J.B. Latour, F. Klijn, P.K. Koster, C.L.G. Groen, H.A. Udo de Haes, and H.A.M. De Kruijf. 1992. Environmental quality assessment of ecodistricts: A comprehensive method for environmental policy. In: *Ecological Indicators*, Vol. 2, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 865–81. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

2060 Norton, D.J. 1990. *Landscape characterization FY 1990 implementation plan.* (EPA/600/X-90/001). Warrenton, VA: U.S. Environmental Protection Agency, Environmental Photographic Interpretation Center.

2070 Norton, D.J., D.M. Muchoney, and E.T. Slonecker. 1990. Ecological monitoring using remote sensing-supported GIS. In: *Technical Papers, 56th Annual Meeting of the American Society of Photogrammetry and Remote Sensing.* IV: p. 306–15. Denver, CO:

2080 Norton, D.J., D.M. Muchoney, E.T. Slonecker, and J.H. Montanari. 1989. *Landscape characterization for ecological monitoring.* (TS-PIC-89301). Warrenton, VA: U.S. Environmental Protection Agency, Environmental Photographic Interpretation Center.

2090 Norton, D.J., and E.T. Slonecker. 1990. EMAP landscape characterization and common exposure settings. Abstract in: *Society for Environmental Toxicology and Chemistry (SETAC) Annual Meeting.*

2100 ——. 1991. The Environmental Monitoring and Assessment Program's landscape characterization database: New opportunities in spatial analysis. In: *GIS/LIS '90 Proceedings.* Vol. 2: p. 682–90. Bethesda, MD: American Society for Photogrammetry and Remote Sensing, American Congress on Surveying and Mapping.

2110 ——. 1991. Landscape characterization: The ecological geography of EMAP. *GeoInfoSystems* 1 (1):32–42.

2120 Novitzki, R.P. 1994. EMAP-Wetlands: A sampling design with global application. Vegetat 10, *The International Journal of Plant Ecology, Special Issue of Proceedings of INTECOL's IV International Wetland Conference*

2130 ——. 1994. *EMAP-Wetlands: A program for assessing wetlands condition. Global Wetlands: Old World and New*, W.J. Mitsch, ed. p. 691–709. Amsterdam, The Netherlands: Elsevier Science B.V.

O

2140 Oberdorff, T., and R.M. Hughes. 1992. Modification of an index of biotic integrity based on fish assemblages to characterize rivers of the Seine Basin, France. *Hydrobiologia* 228:117–30.

2150 O'Connor, R.J. 1992. The analysis of geographic scale and population processes in bird population monitoring data. In: *Ecological Indicators*, Vol. 2, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 929–60. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

2160 O'Connor, R.J., and R.B. Boone. 1992. A retrospective study of agricultural bird populations in North America. In: *Ecological Indicators*, Vol. 2, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 1165–84. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

2170 Olsen, A.R., and M. Ivanovich. 1993. *EMAP Monitoring Strategy and Sampling Design.* [Videocassette]. (EPA/620/V-93/001, PB94-780111, ERL-COR-800V). Corvallis, OR: U.S. Environmental Protection Agency, Environmental Research Laboratory.

2180 O'Neill, R.V., K.B. Jones, K.H. Riitters, J.D. Wickham, and I.A. Goodman. 1994. *Landscape monitoring and assessment research plan.* (EPA/620/R-XX/XXX). Las Vegas, NV: U.S. Environmental Protection Agency, Environmental Monitoring Systems Laboratory.

2190 O'Neill, R.V., C.T. Hunsaker, and D.A. Levine. 1992. Monitoring challenges and innovative ideas. In: *Ecological Indicators*, Vol. 2, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 1443–60. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

2200 Overpeck, J. 1992. The past as a key indicator for assessing future climate-induced ecological change. In: *Ecological Indicators*, Vol. 2, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 1089–96. (EPA/600/9-91/039, PB92-

114131). New York, NY: Elsevier Applied Science.

2210 Overton, J., T.C. Young, and W.S. Overton. 1993. Using "found" data to augment a probability sample: Procedure and case study. *Environmental Monitoring and Assessment* (26):65–83.

2220 Overton, W.S. 1993. Probability sampling and population inference in monitoring programs. In: *Environmental Modeling with GIS*, M.F. Goodchild, B.O. Parks, and L.T. Steyaert, eds. p. 470–80. (EPA/600/A-92/108, PB92-180272). New York, NY: Oxford University Press.

2230 Overton, W.S., and S.V. Stehman. 1993. Properties of designs for sampling continuous spatial resources from a triangular grid. *Communications in Statistics, Part A Theory & Methods* 22 (9):2641–60.

2240 Overton, W.S., D. White, and D.L. Stevens. 1990. *Design Report for EMAP, Environmental Monitoring and Assessment Program.* (EPA/600/3-91/053, PB92-103449). Corvallis, OR: U.S. Environmental Protection Agency, Environmental Research Laboratory.

2250 Owecke, J. 1990. *Report on the northeast aerial photographic acquisition, Spring 1990.* (TS-PIC-90397). Warrenton, VA: Environmental Photographic Interpretation Center.

P

2260 Palmer, C.J., and G.E. Byers. 1992. *Environmental Monitoring and Assessment Program: Quality Assurance Project Plan for Forest Health Monitoring for Fiscal Year 1992.* Las Vegas, NV: U.S. Environmental Protection Agency.

2270 Palmer, C.J., K.H. Riitters, T. Strickland, D.L. Cassell, G.E. Byers, M.L. Papp, and C.I. Liff. 1992. *Monitoring and research strategy for forests — Environmental Monitoring and Assessment Program,* Vol. 1. (EPA/600/4-91/012, PB92-146208). Las Vegas, NV: U.S. Environmental Protection Agency, Environmental Monitoring Systems Laboratory.

2280 Papp, M., T. Shaw, V. La Bau, R. Van Remortel, K. Stolte, T.S. Lewis, R. O'Brien, S. Cline, A. Harvey, and G. McDonald. 1991. *FY 91 Forest Health Monitoring Western Pilot Operations Report.* (EPA/600/X-92/009). Washington, DC: U.S. Environmental Protection Agency.

2290 Paul, J.F., A.F. Holland, K.J. Scott, and D.A. Flemer. 1989. Ecological Status and Trends Program: EPA's approach to monitoring condition of the Nation's ecosystems. *Oceans '89, An International Conference Addressing Methods for Understanding the Global Ocean, Vol 2 (Ocean Pollution).* p. 579–82. (EPA/600/D-90/221, PB91-136986, ERLN-1050). Piscataway, NJ: Institute of Electrical and Electronics Engineers (IEEE).

2300 Paul, J.F., A.F. Holland, J.K. Summers, S.C. Schimmel, and K.J. Scott. 1991. EPA's Environmental Monitoring and Assessment Program: An ecological status and trends program. In: *Canadian Technical Report of Fisheries and Aquatic Sciences* No. 1774. Vol. 1: p. 80–98. (EPA/600/D-91/250, PB92-121169).

2310 Paul, J.F., A.F. Holland, S.C. Schimmel, J.K. Summers, and K.J. Scott. 1990. U.S. Environmental Protection Agency's Environmental Monitoring and Assessment Program: An ecological status and trends program. In: *Federal Coastal Wetland Mapping Programs, Fish and Wildlife Services Biological Report.* S.J. Karaly, F.A. Cross, J.D. Buffington, eds. p. 71–78. (EPA/600/J-90/548, PB92-121292). U.S. Fish and Wildlife Service Research Center.

2320 Paul, J.F., K.J. Scott, A.F. Holland, S.B. Weisberg, and J.K. Summers. 1992. *Estuarine component of the U.S. EPA's Environmental Monitoring and Assessment Program.* (EPA/600/J-93/136, PB93-185833). Narragansett, RI: U.S. Environmental Protection Agency, Environmental Research Laboratory.

2330 Paul, J.F., K.J. Scott, A.F. Holland, S.B. Weisberg, J.K. Summers, and A. Robertson. 1992. The estuarine component of the U.S. EPA's Environmental Monitoring and Assessment Program (EMAP). *Chemistry and Ecology* 7:93–116.

2340 Paulsen, S.G., D.P. Larsen, P.R. Kaufmann, T.R. Whittier, J.R. Baker, D.V. Peck, J. McGue, R.M. Hughes, D. McMullen, D.L. Stevens, J.L. Stoddard, J. Lazorchak, W. Kinney, A.R. Selle, R. Hjort, W.S. Overton, J. Pollard, D. Heggem,

G. Collins, M. Morrison, C.B. Johnson, S. Thiele, N. Tallent-Halsell, K. Peres, S.J. Christie, and J. Mello. 1991. *EMAP-surface waters monitoring and research strategy — fiscal year 1991.* (EPA/600/3-91/022, PB91-168518). Corvallis, OR: U.S. Environmental Protection Agency, Environmental Research Laboratory.

2350 Paulsen, S.G., and R.A. Linthurst. 1994. Biological monitoring in the Environmental Monitoring and Assessment Program. *Biological Monitoring of Aquatic Systems.*, S.L. Loeb, and A. Spacie, eds. p. 297–322. Ann Arbor, MI: Lewis Publishers.

2360 Peck, D.V., and R.C. Metcalf. 1991. Dilute, neutral pH standard of known conductivity and acid neutralizing capacity. *Analyst* 116:221–31.

2370 Pegov, S. 1992. Ecological forecasting: "What for?". In: *Ecological Indicators*, Vol. 1, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 67–84. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

2380 Peterson, R.W. 1992. Indicators of the causes of ecological impacts or what's causing the global environmental crisis. In: *Ecological Indicators*, Vol. 1, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 89–100. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

2390 Peterson, S.A. 1994. The Environmental Monitoring and Assessment Program (EMAP): Its Objectives, Approach, and Status Relative to Wetlands. In: *Monitoring of ecological change in wetlands of Middle Europe*, Proc. International Workshop. G. Aubrecht, G. Dick, C. Prentice, eds. 31 and 30: p. 181–95. Linz, Austria and Slimbridge, UK: Stapfia and IWRB.

2400 Plafkin, J.L., M.T. Barbour, K.D. Porter, S.K. Gross, and R.M. Hughes. 1989. *Rapid bioassessment protocols for use in streams and rivers: Benthic macroinvertebrates and fish.* (EPA/444/4-89/001). Washington, DC: U.S. Environmental Protection Agency, Office of Water.

2410 Pollard, J.E., K.M. Peres, and S.G. Paulsen. 1991. *Environmental Monitoring and Assessment Program: Surface waters implementation plan — northeast pilot lake survey, Summer 1991.* (EPA/600/4-91/019, PB92-139948). Las Vegas, NV: U.S. Environmental Protection Agency, Environmental Monitoring Systems Laboratory.

2420 Potter, B.G., and L.E. Jackson. 1993. *Environmental Monitoring and Assessment Program project descriptions* (FY93 Edition). (EPA/620/R-93/009, PB94-114915). Washington, DC: U.S. Environmental Protection Agency, Office of Research and Development, Office of Modeling, Monitoring Systems and Quality Assurance.

2430 Preston, E., and C.A. Ribic. 1992. *EMAP and other tools for measuring biodiversity, habitat conditions, and environmental trends.* (EPA/600/A-92/205, PB93-106748). Corvallis, OR: U.S. Environmental Protection Agency, Environmental Research Laboratory.

R

2440 Rapport, D.J. 1992. Evolution of indicators of ecosystem health. In: *Ecological Indicators*, Vol. 1, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 121–34. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

2450 Reagan, D.P., and C.L. Fordham. 1992. An approach for selecting and using indicator species to monitor ecological effects resulting from chemical changes in soil and water. In: *Ecological Indicators*, Vol. 2, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 1319–39. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

2460 Reams, M.A., S.R. Coffee, A.R. Machen, and K.J. Poche. 1992. Use of environmental indicators in evaluating effectiveness of state environmental reglatory programs. In: *Ecological Indicators*, Vol. 2, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 1245–73. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

2470 Regier, H.A. 1992. Indicators of ecosystem integrity. In: *Ecological Indicators*, Vol. 1, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 183–200. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

2480 Riddle, B., and K.B. Jones. 1994. Phylogeography and its implications for conserving biodiversity. In: *Conservation of Biological Diversity in Managed Landscapes*, D.A. Johnson, and R.C. Szaro, eds. Oxford University Press.

2490 Riitters, K.H. 1990. A comparison of chronologies from tree rings. *Canadian Journal of Forest Research-Journal Canadien De La Recherche Forestiere* 20 (1):76–83.

2500 Riitters, K.H., and J.E. Barnard. 1990. Criteria for evaluating indicators of forest health. In: *Proceedings of the Conference on Global Natural Resource Monitoring and Assessments: Preparing for the 21st Century*. G. Lund, ed. International Union of Forestry Research Organizations and the United Nations Food and Agricultural Organization.

2510 Riitters, K.H., B. Law, R. Kucera, A. Gallant, R. DeVelice, and C. Palmer. 1990. Section 6, Indicator strategy for forests and Appendix D, Indicator fact sheets for forests. In: *Ecological Indicators*, C. Hunsaker, and D.E. Carpenter, eds. (EPA/600/3-90/060). Washington, DC: U.S. Environmental Protection Agency, Atmospheric Research and Exposure Assessment Laboratory.

2520 Riitters, K.H., B.E. Law, R.C. Kucera, A.L. Gallant, DeVelice.R.L., and C.J. Palmer. 1992. A selection of forest condition indicators for monitoring. *Environmental Monitoring and Assessment* (20):21–23.

2530 Riitters, K.H., L.F. Ohmann, and D.F. Grigal. 1991. Woody tissue analysis using an element ratio technique (DRIS). *Canadian Journal of Forest Research* 21 (8):1270–77.

2540 Riitters, K., M. Papp, D. Cassell, and J. Hazard. 1991. *Forest Health Monitoring plot design and logistics study*. (EPA/600/3-91/051, PB92-118447). Research Triangle Park, NC: U.S. Environmental Protection Agency, Atmospheric Research and Exposure Assessment Laboratory.

2550 Robison, E.G., and P.R. Kaufmann. 1994. Evaluating two objective techniques to define pools in small streams. In: *Effects of Human-Induced Changes on Hydrologic Systems*, p. 659–68.

2560 Roose, D.V. 1990. *EMAP ten hexagon pilot project data dictionary*. (TS-PIC-90383). Warrenton, VA: U.S. Environmental Protection Agency, Environmental Photographic Interpretation Center.

2570 Roose, D.V., and K.K. Stout. GIS Methods for Reclassifying Wetland Maps for EMAP Sampling and Monitoring. *Proceedings of the Twelfth Annual Environmental Systems Research Institute User Conference*. p. 19 pp.

2580 Rose, K.A., and J.K. Summers. 1992. Relationships between long-term fisheries abundances and hydrographic variables and gross pollution indicators in northeastern U.S. estuaries. *Fish Oceanography* 1:281–293.

2590 Rosen, B.H., P. Adamus, and L. Harbans. *In Press*. A Conceptual Model for the Assessment of Depressional Wetlands in the Prairie Pothole Region. *Wetlands, Ecology, and Management*.

S

2600 Saint, C.G., P. Kellar, and A. Beach. 1991. *EMAP monitor. January 1991*. (EPA/600/M-90/022, PB91-191320). Washington, DC: U.S. Environmental Protection Agency, Office of Research and Development.

2610 Saul, G., K. Thorton, and R. Linthurst. 1993. Environmental monitoring and assessment: A national priority. In: *Environmental Analysis: The NEPA Experience*. S.G. Hildebrand, J.B. Cannon, eds. Boca Raton, FL: Lewis Publishers.

2620 Schaefer, D.A., and C.T. Driscoll. 1993. Identifying sources of snowmelt acidification with a watershed mixing mode. *Water, Air, and Soil Pollution* 67 (3–4):345–65.

2630 Schimmel, S.C., and C.J. Strobel. 1991. *Environmental Monitoring and Assessment Program: 1990 Demonstration project field activities report*. (EPA/600/9-90/028). Washington, DC: U.S. Environmental Protection Agency, Office of Research and Development.

2640 Schneider, E.D. 1992. Monitoring for ecological integrity: The state of the art. In: *Ecological Indicators*, Vol. 2, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 1403–19. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

2650 Schreuder, H.T., and R.L. Czaplewski. Long-term strategy for the statistical design of a forest health monitoring system. *Environmental Monitoring and Assessment* (27):81–94.

2660 Schubert, R. 1992. Possibilities and limitations in bioindication on landscape monitoring scales. In: *Ecological Indicators*, Vol. 2, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 817–27. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

2670 Schumacher, B.A., K.C. Shines, J.V. Burton, and M.L. Papp. 1990. Comparison of three methods for soil homogenization. *Soil Science Society of America Journal* 54 (4):1187–90.

2680 Seager, J., I. Milne, and M. Crane. 1992. The application of *in situ* bioassays as ecological indicators for assessing river quality. In: *Ecological Indicators*, Vol. 1, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 243–58. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

2690 Selle, A.R., D.P. Larsen, and S.G. Paulsen. 1991. GIS procedure to create a national lakes frame for environmental monitoring. In: *Proceedings of the ESRI User Conference*. (EPA/600/D-91/178, PB91-226464). Corvallis, OR: U.S. Environmental Protection Agency, Environmental Research Laboratory.

2700 Shaw, C.G. 1993. Forest Health Monitoring: A New Program of the USDA Forest Service and the U.S. Environmental Protection Agency. *Proceedings of the 1992 Joint International Symosium on Air Pollution, Soil Microbiology, and Biotechnology of Forestry*. C. Chiang, Y. Wang, eds. p. 1–8.

2710 Shepanek, R. 1994. *EMAP Information Management Strategic Plan: 1993–1997.* (EPA/620/R-94/017). Washington, DC: U.S. Environmental Protection Agency, Office of Research and Development.

2720 Sherman, K. 1992. Monitoring and assessment of large marine ecosystems: A global and regional perspective. In: *Ecological Indicators*, Vol. 2, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 1041–74. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

2730 Short, H.L. 1992. Use of the habitat linear appraisal system to inventory and monitor the structure of habitats. In: *Ecological Indicators*, Vol. 2, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 961–74. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

2740 Simmons, G.R. 1992. Consideration of ecological factors in resource management planning for Bureau of Land Management administered lands. In: *Ecological Indicators*, Vol. 2, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 1139–44. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

2750 Sisula, H. 1992. The need for international cooperation within intergrated monitoring frameworks. In: *Ecological Indicators*, Vol. 2, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 1507–14. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

2760 Smith, E.R., and K.H. Riiters. 1994. A comparison of forest canopy transmittance estimators. *Canadian Journal of Forest Research* 24:pp. 188–92.

2770 Squires, L. 1992. *Environmental Monitoring and Assessment Program: 1991 Estuarine Emergent Gulf of Mexico Pilot Study Field Operations Report.* (EPA/600/R-92/216, PB93-122398). Corvallis, OR: U.S. Environmental Protection Agency, Environmental Research Laboratory.

2780 ——. 1993. A research strategy to develop ecological indicators of wetland condition. In: *Wetlands: Proceedings of the 13th Annual Symposium of the Society of Wetland Scientists.* M.C. Landin, ed. p. 778–91. (EPA/600/A-93/021, PB93-156073). Corvallis, OR: U.S. Environmental Protection Agency, Environmental Research Laboratory.

2790 Squires, L., and A.G. Van Der Valk. 1992. Water-depth tolerances of the dominant emergent macrophytes of the Delta Marsh, Manitoba. *Canadian Journal of Botany, Canadian Review of Botany* (70):1860–67.

2800 Stehman, S.V. 1994. Estimating the Kappa Coefficient and its variance under stratified random sampling. *Photogrammetric Engineering and Remote Sensing*.

2810 ——. 1995. Thematic map accuracy assessment from the perspective of finite population sampling. *International Journal of Remote Sensing* 16:589–93.

2820 ——. 1992. Comparison of systematic and random sampling for estimating the accuracy of maps generated from remotely sensed data. (EPA/600/J-93/147, ERL-COR 1585J/PB93-191443). *Photogrammetric Engineering & Remote Sensing* 58 (9):1343–50.

2830 Stehman, S.V., and W.S. Overton. 1994. Comparison of variance estimators of the Horitz-Thompson estimator for randomized variable probability systematic sampling. *Journal of American Statistical Association* 89:30–43.

2840 ——. 1994. Environmental Sampling and Monitoring. *Handbook of Statistics*, 12, G.P. Patil, and C.R. Rao, eds. p. 263–306. (EPA 600/A-94/072, NTIS PB94-174612, ERL-Cor-1739A). Elsevier Science B.V.

2850 Stemberger, R.S. 1995. The influence of mixing on rotifer assemblages of Michigan Lakes. *Hydrobiologia* 297:149–61.

2860 ——. *In Press*. Pleistocene refuge areas and postglacial dispersal of copepods of the northeastern United States. *Canadian Journal of Fisheries and Aquatic Sciences*.

2870 Stemberger, R.S., and J.M. Lazorchak. 1994. Zooplankton food web responses to disturbance gradients. *Canadian Journal of Fisheries and Aquatic Sciences* 51:2435–447.

2880 Steubing, L. 1992. Air pollution effects on healthland. In: *Ecological Indicators*, Vol. 2, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 841–64. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

2890 Stevens Jr., D.L. 1994. Implementation of a National Monitoring Program. (for U.S. EPA EMAP/Enviromental Research Laboratory). *Journal of Environmental Management* 42:1–29.

2900 Stoddard, J.L. Long-term Changes in Watershed Retention of Nitrogen: Its Causes and Aquatic Consequences. *Environmental Chemistry of Lakes and Reservoirs, Advances in Chemistry*, 237, L.A. Baker, ed. American Chemical Society.

2910 ——. 1991. Long-term changes in watershed retention of nitrogen: Its causes and aquatic consequences. *Abstracts of Papers of the American Chemical Society* 201 (Apr):70.

2920 ——. 1991. Trends in Catskill stream water quality: Evidence from historical data. *Water Resources Research* 27 (11):2855–64.

2930 Stoddard, J.L., and J.H. Kellog. 1993. Trends and patterns in lake acidification in the State of Vermont: Evidence from the long-term monitoring project. *Water, Air, and Soil Pollution* 67 (3–4):301–19.

2940 Stokes, S.L. 1994. Parametric Ranked Set Sampling. *Annals of Institute of Statistical Mathematics*.

2950 Stolte, K.W. 1994. Forest Health Monitoring Program in the United States. Climate and Atmospheric Deposition Studies in Forests. J. Solon, E. Roo-Zielinska, A. Bytnerowicz, *Conference Papers* 19: p. 13–64. Warsaw, Poland: IGSO PAS.

2960 Stolte, K., K. Doty, Tonnessen, and R. Fisher. 1993. Lessons from seven case studies. Section 8 in: *Lichens as Bioindicators of Air Quality*, L.S. Huckaby, ed. p. 116–27. (General Technical Report RM-224). Fort Collins, CO: Rocky Mountain Forest and Range Experiment Station.

2970 Stolte, K., D. Mangis, and R. Doty. 1993. Introduction. Section 1 in: *Lichens as Bioindicators of Air Quality*, L.S. Huckaby, ed. p. 1–5. (General Technical Report RM-224). Fort Collins, CO: Rocky Mountain Forest and Range Experiment Station.

2980 Stolte, K., S. Pittam, and R. Rosentreter. 1993. Site characteriztion. Section 3 in: Lichens as *Bioindicators of Air Quality*, L.S. Huckaby, ed. p. 16–40. (General Technical Report RM-224). Fort Collins, CO: Rocky Mountain Forest and Range Experiment Station.

2990 Stolte, K.W., and D. Mangis. 1992. Identification and use of plant species as ecological indicators of air pollution stress in national park units. In: *Ecological Indicators*, Vol. 1, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 373–92. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

3000 Summers, J.K. 1991. Assessment of Contaminated Sediments in the EMAP Louisianian Province. *Procedural Workings on Contaminated Sediments in the Gulf of Mexico*. p. 10–11. Gulf of Mexico Program Publication.

3010 Summers, J.K., and V.D. Engle. 1993. Evaluation of sampling strategies to characterize dissolved oxygen condition in northern Gulf of Mexico estuaries. *Environmental Monitoring and Assessment* 24 (3):219–229.

3020 Summers, J.K., J.M. Macauley, P.T. Heitmuller, V.D. Engle, A.M. Adams, and G.T. Brooks. 1993. *Annual statistical summary: EMAP-Estuaries Louisianian Province — 1991*. (EPA/620/R-93/007, PB94-117488). Gulf Breeze, FL: U.S. Environmental Protection Agency, Office of Research and Development, Environmental Research Laboratory.

3030 Summers, J.K., J.M. Macauley, T. Wade, and W. Benson. 1992. Contaminant levels in sediment and biota in the Gulf of Mexico estuaries. *The Gulf of Mexico Symposium: Issues and Opportunities*. J.D. Jacobson, p. 10–11.

3040 Summers, J.K., J.M. Macauley, R. Heard, and G. Gaston. 1992. Ecological condition of benthic habitats in Gulf of Mexico estuaries. *The Gulf of Mexico Symposium: Issues and Opportunities*. J.D. Jacobson, p. 15–16.

3050 Summers, J.K., J.M. Macauley, and P.T. Heitmuller. 1990. *Implementation plan for monitoring the estuarine waters of the Louisianian Province — 1991 Demonstration*. (EPA/600/5-91/288). Gulf Breeze, FL: U.S. Environmental Protection Agency, Environmental Research Laboratory.

3060 Summers, J.K., J.M. Macauley, V.D. Engle, G.T. Brooks, P.T. Heitmuller, and A.M. Adams. 1994. *Louisianian Province demonstration report: EMAP-Estuaries — 1991*. (EPA/600/R-94/001). Gulf Breeze, FL: U.S. Environmental Protection Agency, Office of Research and Development, Environmental Research Laboratory.

3070 Summers, J.K., H.T. Wilson, and J.Y. Kou. 1992. A method for quantifying the prediction uncertainties associated with water-quality models. *Ecological Modelling* 65 (3–4):161–76.

3080 Summers, K., J. Macauley, N. Rubinstein, R. Latimer, and J. Paul. 1993. An overview of estuarine monitoring in the Environmental Monitoring and Assessment Program: 1990–1992. In: *Sixth International Symposium: The Interactions Between Sediments and Water*. Santa Barbara, CA: University of California at Santa Barbara.

3090 Sumner, M.E., and N.W. Barbour. 1992. The Diagnosis and Recommendation Integrated System (DRIS) as an ecological indicator for agricultural and forest systems. In: *Ecological Indicators*, Vol. 1, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 663–74. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

3100 Svanberg, O.F. 1992. Toxic effects monitoring in Baltic Sea coastal areas. In: *Ecological Indicators*, Vol. 1, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 413–24. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

3110 Swenson, E.M., J.M. Lee, and R.E. Turner. 1992. *Quality Assurance Project Plan: 1991 EMAP Wetlands Southeastern Pilot Study*. (EPA/620/R-92/002, PB93-141067). Corvallis, OR: U.S Environmental Protection Agency, Environmental Research Laboratory.

T

3120 Terrell, C.R. 1992. The Soil Conservation Services's new water quality indicators guide. In: *Ecological Indicators*, Vol. 1, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 659–61. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

3130 Thornton, K.W., G.E. Saul, and D.E. Hyatt. 1994. *Environmental Monitoring and Assessment Program Assessment Framework*. (EPA/620/R-94/016). Research Triangle Park, NC: U.S. Environmental Protection Agency EMAP Center.

3140 Thornton, K.W., D.E. Hyatt, and C.B. Chapman., eds. 1993. *Environmental Monitoring and Assessment Program Guide*. (EPA/620/R-93/012). Research Triangle Park, NC: U.S. Environmental Protection Agency, Office of Research and Development, Environmental Monitoring and Assessment Program.

3150 Tidwell, R.L., and R. Kucera. 1992. Field logistics overview. In: *Forest Health Monitoring Activities Plan*, S.A. Alexander, and J.E. Barnard, (EPA/620/R-93/002). Washington, DC: U.S. Environmental Protection Agency.

3160 Turgeon, D.D., S.B. Bricker, and T.P. O'Conner. 1992. National Status and Trends Program: Chemical and biological monitoring of U.S. coastal waters. In: *Ecological Indicators*, Vol. 1, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 425–57. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

3170 Turk, J.T., D.H. Campbell, and N.E. Spahr. 1993. Monitoring of lakes in the Mt. Zirkel and Weminuche wilderness areas, Colorado. *Water, Air, Soil Pollution* 67:415–33.

3180 ——. 1993. Use of chemistry and stable sulfur isotopes to determine sources of trends in sulfate of Colorado lakes. *Water, Air, and Soil Pollution* 67 (3–4):415–32.

U

3190 Ulrich, B., and M. Bredemeier. 1992. Ecological indicators of temperate forest ecosystem condition. In: *Ecological Indicators*, Vol. 1, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 345–60. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

3200 Urquhart, N.S., W.S. Overton, and D.S. Birkes. *In Press*. Comparing sampling designs for monitoring ecological status and trends: Impact of temporal patterns. *Biometrics*.

3210 ——. 1993. Comparing sampling designs for monitoring ecological status and trends: Impact of temporal patterns. In: *Statistics for the Environment*, V. Barnett, and K.F. Turkman, eds. p. 71–85. (EPA/600/A-93/196, PB93-222289). Sussex, England: John Wiley & Sons, Ltd.

3220 U.S. Environmental Protection Agency. 1994. *EMAP Surface Waters 1994 Streams Pilot Field Operations and Methods Manual*. (EPA/620/R-94/004). Washington, DC.: Office of Research and Development.

3230 ——. 1994. *EMAP-Surface Waters Stream Pilots in the Mid-Atlantic Highlands*. (Draft). Washington, DC: Office of Research and Development.

3240 ——. 1992. *Framework for Ecological Risk Assessment. Risk Assessment Forum*. Washington, DC:

3250 ——. 1991. *Pesticides in Natural Systems: "How Can Their Effects Be Monitored"*. (EPA/910/9-91/011, PB91-197053). Seattle, WA: U.S. Environmental Protection Agency, Region X.

3260 USDA Forest Service. 1993. *Northeastern area forest health report*. (NA-TP-03-93). USDA Forest Service.

V

3270 Van Der Valk, A.G., and L. Squires. 1992. Indicators of flooding derived from aerial photography in northern prairie wetlands. In: *Ecological Indicators*, Vol. 1, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 593–602. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

3280 Van Remortel, R.D., J.J. Miah, B.L. Conkling, and G.E. Byers. 1991. Estimation of spatial variability in physical and chemical soil properties of forest health monitoring field plots. *Annual Meeting of Soil Science Society of America*. p. 357. Madison, WI: Agronomy Abstracts.

3290 Van Remortel, R.D., H.W. Reed, C.J. Palmer, B.L. Conkling, and D.L. Cassell. 1993. Exploratory data analysis for the development of forest soil health indices. Presented at: *Annual Meeting of the Soil Science Society of America*. Madison, WI: Agronomy Abstracts.

3300 Van Remortel, R.D., and D.A. Shields. 1993. Comparison of clod and core methods for determination of soil bulk density. *Community Soil Science Plant Anal* 24 (17/18):2517–25.

3310 Van Remortel, R.D., J.E. Teberg, and V.C. Rogers. 1992. Real-time data entry and verification system for soil pedon

characterization and sample collection. *Annual Meetings of the American Society of Agronomy.* p. 84. Madison, WI: Agronomy Abstracts.

3320 Varanasi, U., J.E. Stein, L.L. Johnson, T.K. Collier, E. Casillas, and M. Myers. 1992. Evaluation of bioindicators of contaminant exposure and effects in coastal ecosystems. In: *Ecological Indicators*, Vol. 1, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 461–98. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

W

3330 Waddell, T., and M.M. Holland. 1994. The Mid-Atlantic Integrated Assessment (MAIA) Project. *Annual Meeting of the Ecological Society of America and the American Institute of Biological Sciences. ESA Abstracts.*

3340 Walker, J., and K.B. Jones. 1992. The U.S. Environmental Monitoring and Assessment Program (EMAP): Towards the use of indicators to assess ecological sustainable development at regional and continental scales. In: *Environmental Indicators for Sustainable Agriculture.* A. Hamblin, ed. p. 44–49. Canberra, ACT, Australia: Goanna Print.

3350 Ward, R.C. 1992. Indicator selection: A key element in monitoring system design. In: *Ecological Indicators*, Vol. 1, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 147–57. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

3360 Weatherley, N.S., and S.J. Ormerod. 1992. The utility of biological indicators of stream acidity in Wales. In: *Ecological Indicators*, Vol. 2, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 1341–54. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

3370 Webster, K.E., P.L. Brezonik, and B.J. Holdhusen. 1993. Temporal trends in low alkalinity lakes in Minnesota, Wisconsin and Michigan (1983–1989): The influence of climate and deposition factors. *Water, Air, and Soil Pollution* 67:397–415.

3380 Wegman, E.J., and D.B. Carr. 1993. Statistical graphics and visualization. In: *Handbook of Statistics*, 9, C.R. Rao, ed. p. 857–958. New York: North Holland.

3390 Wegman, E.J., D.B. Carr, and Q. Luo. 1993. Visualizing multivariate data. In: *Multivariate Analysis*: Future Directions, C.R. Rao, p. 423–466. New York: North Holland.

3400 Weisberg, S.B., J.B. Frithsen, A.F. Holland, J.F. Paul, K.J. Scott, J.K. Summers, H.T. Wilson, R. Valente, D.G. Heimbuch, J. Gerritsen, S.C. Schimmel, and R.W. Latimer. 1993. *Virginian Province demonstration report EMAP-Estuaries: 1990.* (EPA/620/R-93/006, PB93-229854). Narragansett, RI: U.S. Environmental Protection Agency, Environmental Research Laboratory.

3410 Wheeler, D.P. 1992. Earth day plus 20: Rediscovering ecology. In: *Ecological Indicators*, Vol. 1, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 101–08. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

3420 White, D., A.J. Kimerling, and W.S. Overton. 1992. Cartographic and geometric components of a global sampling design for environmental monitoring. *Cartography and Geographic Information Systems* 19 (1):5–22.

3430 Whittier, T.R. 1990. Environmental Monitoring and Assessment Program (EMAP) overview. In: *Proceedings of the Water Quality Data Assessment Workshop.* San Antonio, TX: U.S. Environmental Protection Agency, Region 6.

3440 ——. 1993. *Sampling and assessment issues in using fish as indicators of ecological condition in lakes: A workshop report.* (3rd draft report). (EPA/620/R-93/005, PB93-186278). Corvallis, OR: U.S. Environmental Protection Agency, Environmental Research Laboratory.

3450 Whittier, T.R., and S.G. Paulsen. 1992. The surface waters component of the Environmental Monitoring and Assessment Program (EMAP): An overview. (EPA/600/J-92/397, PB93-121267). *Journal of Aquatic Ecosystem Health* (1):119–26.

3460 Whittier, T.R., and E.T. Rankin. 1992. Regional patterns in three biological indicators of stream condition in Ohio. In: *Ecological Indicators*, Vol. 2, D.H. McKenzie, D.E. Hyatt, and V.J. McDonald, eds. p. 975–95. (EPA/600/9-91/039, PB92-114131). New York, NY: Elsevier Applied Science.

3470 Wickham, J., M. Fauss, and J. Miller. 1992. *Methods manual for classifying and mapping landscape pattern types*. (TS-PIC-91392). Warrenton, VA: U.S. Environmental Protection Agency, Environmental Photographic Interpretation Center.

3480 Wickham, J.D., and D.J. Norton. 1994. Mapping and analyzing landscape patterns. *Landscape Ecology* (9):7–23.

Y

3490 Young, G., C.L. Brown, R.S. Nishioka, L.C. Folmar, M. Andrews, J.R. Cashman, and H.A. Bern. 1994. Histopathology, blood chemistry, and physiological status of normal and moribund striped bass (*Morone saxatilis*) involved in summer mortality ('die off') in the Sacramento-San Joaquin Delta of California. *Journal of Fish Biology* 44:491–512.

3500 Young, T.C., and J. Ford. 1990. Site selection procedures for temporally integrated monitoring of ecosystems (TIME). In: *Proceedings of the International Symposium on the Design of Water Quality Information Systems*. R.C. Ward, J.C. Loftis, G.B. McBride, eds. Colorado Water Resources Research Institute Information Series No. 61: p. 425–35.

Notes:

Index

A

Adams, A.M., 1700, 1710, 3060, 3020
Adamus, P.R., 10, 2590
Alexander, S.A., 20, 30, 40, 50
Amundson, G.H., 1460
Andrews, M., 3490
Arent, L.J., 1860
Arndt, U., 60, 70
August, P., 360

B

Babikow, M., 1710
Baker, J., 1410
Baker, J.P., 1450, 1610
Baker, J.R., 80, 90, 1210, 2340
Baker, L.A., 1360
Baldwin, M., 30
Balogh, M.E., 100
Barber, C.M., 110
Barbour, M.T., 2400
Barbour, N.W., 3090
Barnard, J.E., 40, 50, 2500
Barnett, C., 910
Barnthouse, L.W., 1240
Barrows, E.H., 120
Bascietto, J.J., 130
Bay, J., 240
Beach, A., 1380, 2600
Beardsley, D.P., 140
Bechtold, W.A., 30
Benson, W., 3030
Bern, H.A., 3490
Berstein, B., 150
Bezuneh, T., 160
Billheimer, D., 170
Birkes, D.S., 3200, 3210
Blazer, V.S., 180
Blick, D.J., 2020
Block, D.R., 340, 350
Bonomelli, S., 740, 750, 760
Boone, R.B., 2160
Boyle, T.P., 1070
Breckenridge, R., 1410
Breckenridge, R.P., 190, 1020
Bredemeier, M.; 3190
Bretthauer, E.W., 200
Brewer, Gary D., 210
Brezonik, P.L., 3370
Bricker, S.B., 3160
Bromberg, S.M., 220
Bromenshenk, J., 230
Brooks, G.T., 1710, 3020, 3060
Brown, C.L., 3490
Brussard, P.F., 470
Burkman, W., 910
Burton, J.V., 2670
Byers, G.E., 1020, 2260, 2270, 3280

C

Campbell, C.L., 240, 1020, 1030, 1870
Campbell, D.H., 3170, 3180
Carlson, J.A., 50
Carpenter, D.E., 1220, 1230
Carpenter, S.R., 860
Carr, D.B., 250, 260, 270, 280, 290, 300, 3380, 3390
Cashman, J.R., 3490
Casillas, E., 3320
Cassell, D.L., 30, 2270, 2540, 3290
Chapman, C.B., 1590, 3140
Chapman, P.L., 1660
Charles, D.F., 490, 1450
Christie, S.J., 1570, 2340

Cline, S., 30, 2280
Coates, J.F., 310
Coffee, S.R., 2460
Collier, T.K., 3320
Collins, G., 320, 1210, 2340
Congalton, R.G., 1690
Conkling, B.L., 1640, 3290
Conkling, B.L., 3280
Cook, J.R., 330
Cooter, E.J., 340, 350
Copeland, J., 360
Cordy, C.B., 370, 380, 390
Cormier, S.M., 400
Costa, J.E., 410
Costanza, R., 420
Couch, J.A., 430
Coughenour, M., 440
Courtney, L.A., 180
Cowling, E.B., 450
Crane, M., 2680
Cumming, B.F., 510
Czaplewski, R.L., 2650

D

Daly, C., 460
Davis, R.B., 1340
De Kruijf, H.A., 2050
Debinski, D.M., 470
DeVelice.R.L., 2510, 2520
Dionne, M., 480
Dixit, S.S., 490, 500, 510, 1210
Dolan, D., 1040
Domotor, D.K., 990
Doty, K., 2960
Doty, R., 2970
Driscoll, C.T., 520, 2620
Droessler, T., 30

E

Earle, S.A., 530
Elvidge, C., 1410
Engle, V.D., 1700, 1710, 3010, 3020, 3060
Environmental Monitoring, 540 550, 560, 570, 580, 590, 600, 610, 620, 630, 640, 650, 660, 670
Erhardt, W., 680
Ernst, T.L., 690, 700, 1600, 1740

F

Fabrizio, M.C., 710, 840
Facey, D.E., 180
Fauss, M., 3470
Fenstermaker, L.D., 1690
Ferreri, C.P., 710
Fink, S., 320
Finkner, A.L., 1020, 1030
Fisher, R., 2960
Flemer, D.A., 2290
Flora, D.G., 990
Folmar, L.C., 720, 730, 740, 750, 760, 1800, 3490
Ford, J., 770, 780, 790, 3500
Fordham, C.L., 2450
Foresta, R., 800
Fournie, J.W., 180, 430, 1800
Fox, C.A., 1410, 1940
Franks, C.D., 240
Franson, S.E., 810, 820, 830
Frederick, R., 1490
French, D.R., 1460
Frithsen, J.B., 840, 850, 3400
Frost, Thomas M., 860

G

Gallant, A.L., 2510, 2520
Gardner, G.R., 750
Gardner, R.H., 1240
Garner, J.H., 870, 880
Gaston, G.R., 890, 3040

Gebhardt, H., 680
Gentile, J.H., 900
Gerritsen, J., 840, 3400
Giblin, A.E., 410
Gibson, J., 740, 760
Gillespie, J.R., 910
Goldberg, E., 920
Goldman, L.R., 930
Gomez, M., 930
Goodman, I.A., 2180
Goodno, B., 1040
Gosselink, J.G., 940
Gosz, J., 950
Graham, R.L., 1240
Greenfield, S., 930
Greenwalt, L.A., 960
Griffith, D.A., 370
Griffith, J.A., 970
Grigal, D.F., 1460, 2530
Groen, C.L.G., 2050
Gross, S.K., 2400
Gutenson, O., 1270
Guttorp, P., 170, 980

H

Haines, T.A., 1340
Haire, Michael S., 990
Hale, S., 360
Hall, L., 930
Hammond, A., 1000
Hansen, M.J., 710
Harbans, L., 2590
Harvey, A., 2280
Hayes, C.M., 1030
Hazard, J.W., 30, 1010, 2540
Heard, R.W., 890, 3040
Heck, W.W., 1020, 1030, 1870
Hedtke, S., 1040, 1210
Heggem, D., 2340
Heimbuch, D.G., 3400
Heiskary, S.A., 1160, 1170
Heitmuller, P.T., 1700, 1710, 3020, 3050, 3060
Hellkamp, A.S., 240
Helzer, N.P., 240
Herlihy, A.T., 1350, 1360
Hess, G.R., 240, 1020, 1030, 1870
Hickey, J., 750
Higley, K.A., 130
Hinckley, D., 1050
Hirvonen, H., 1060
Hjort, R., 1920, 2340
Hjort, R.C., 2020
Hoefs, N.J., 1070
Holdhusen, B.J., 3370
Holland, A.F., 840, 1080, 1090, 2290, 2300, 2310, 2320, 3400
Holland, A.F., 850
Holland, A.F., 2330
Holland, M.M., 1100, 3330
Hopker, K., 680
Howes, B.L., 410
Hughes, R.M., 1210
Hughes, R.M., 1110, 1120, 1130, 1140, 1150, 1160, 1170, 1180, 1190, 1200, 2140, 2340, 2400
Hulka, B.S., 930
Hunsaker, C.T., 970, 1100, 1220, 1230, 1240, 1250, 2190
Huntly, B., 1740
Hyatt, D.E., 880, 1260, 1270, 1770, 3130, 3140

I

Inouye, D., 1100
Isebrands, J.G., 30
Ivanovich, M., 2170

J

Jackson, B.L., 1250
Jackson, L.E., 1650, 2420

Jager, H.I., 1280
Janetos, A., 1100
Jenkins, K.D., 1290
Jensen, J.R., 1690
Johnson, C.B., 2340
Johnson, L.L., 3320
Jones, K.B., 1300, 1310, 1320, 2180, 2480, 3340
Jorgensen, S.E., 1330

K

Kahl, J.S., 1340
Karr, J.R., 480
Kaufmann, P.R., 1210, 1350, 1360, 2340, 2550
Kay, J.J., 1370
Kaye, W.E., 930
Keitel, A., 680
Kellar, P., 1380, 2600
Kellog, J.H., 2930
Kelly, J.M., 1390
Kent, D.M., 1390
Kepner, W.G., 190, 1400, 1410
Kibreab, T., 160
Kimerling, A.J., 3420
King, G.A., 1990, 2040
Kingston, J.C., 490, 510
Kinney, W.L., 1210, 2340
Kisner, D., 1420
Klemm, D.J., 1430
Klijn, F., 2050
Klopatek, J.M., 1440, 1450
Knapp, C.M., 1450
Koster, P.K., 2050
Kou, J.Y., 3070
Koutrakis, P., 1950
Kratz, T.K., 860
Kreimes, K., 680
Kromroy, K., 1460
Kucera, R.C., 1470, 1480, 2510, 2520, 3150
Kugler, D.L., 1560
Kutz, F.W., 1490, 1500

L

LaBau, V.J., 30, 1510, 2280
Lancaster, J.M., 1890, 1930
Landers, D.H., 770
Landers, P.B., 1520
Larsen, D.P., 1180, 1210, 1530, 1540, 1550, 1560, 1570, 2340, 2690
Latimer, R., 360, 3080, 3400
Latour, J.B., 2050
Law, B.E., 1010, 2510, 2520
Lawrence, D.M., 1100
Lawrence, J., 1580
Lazorchak, J., 1210, 1430, 1580, 2340, 2870
Lear, J.S., 1590
LeDuc, S.K., 340, 350
Lee, J.M., 3110
Lee, L.C., 940
Leibowitz, N.C., 690, 700, 1600, 1610
Lesser, V., 1620, 1630
Levine, D.A., 1250, 2190
Lewis, T.E., 1640
Lewis, T., 2280
Liff, C.I., 2270
Linthurst, R.A., 1490, 1500, 1650, 1830, 1840, 2350, 2610
Loftis, J.C., 1660
Longest II, H.L., 1670
Ludwig, J., 1680
Lunetta, R.S., 100, 1690
Luo,Q., 3390
Lybarger, J.A., 930

M

Macauley, J.M., 1700, 1710, 3020, 3030, 3040, 3050, 3060, 3080
Mace, T.M., 1720
Machen, A.R., 2460

Mahin, G.G., 1930
Mangis, D., 2970, 2990
Manly, B.F., 1750
Marmorek, D.R., 1450
Marshall, D., 950
Martin, B.E., 1470
Mata, N., 1730
Matthews, W.J., 1160, 1170
Mayer, T., 680
McAllister, L., 1740
McDonald, G., 2280
McDonald, L.L., 1750
McDonald, V.J., 1770
McGue, J., 2340
McGwire, K.C., 1690
McKee, K.L., 1790
McKenzie, D.H., 930
McKenzie, D.H., 1760, 1770
McKenzie, M., 1780
McLelland, J.A., 890
McMullen, D., 1210, 2340
McRae, G., 1040
Mello, J., 2340
Mendelssohn, I.A., 1790
Menzer, R.E., 1800
Merritt, G.D., 80
Messer, J.J., 1220, 1810, 1820, 1830, 1840, 1850
Metcalf, R.C., 1860, 2360
Meyer, J.R., 1020, 1030, 1870
Miah, J.J., 3280
Miller, J., 3470
Miller-Weeks, M., 910
Milne, B.T., 1880
Milne, I., 2680
Minor, T.B., 1890
Mitch, M.E., 1350
Mitsch, W.J., 1900
Montanari, J.H., 2080
Moody, T., 740, 750, 760
Moors, A.K., 1910
Morrin, D.J., 1100
Morrison, M.L., 1920, 2000, 2340
Moser, T.J., 1020, 1870
Mouat, D.A., 190, 1890, 1930, 1940
Muchoney, D.M., 1420, 2070, 2080
Mulik, J., 1950
Munster, M.J., 240, 1030
Murdoch, P.S., 1960
Murmann-Kristen, L., 680
Murphy, R.S., 930
Myers, M., 3320

N

National Research Council, 1970
Neher, D., 240, 1030, 1980
Neilson, R.P., 1990
Newell, A.D., 1660, 1920, 2000, 2010, 2020
Newton, B.J., 2030
Nielson, R.P., 2040
Nip, M.I., 2050
Nishioka, R.S., 3490
Norton, D.J., 2060, 2070, 2080, 2090, 2100, 2110, 3480
Norton, S.A., 1340
Noss, R.F., 1190, 1200
Novitzki, R.P., 2120, 2130

O

Oberdorff, T., 2140
O'Brien, R., 2280
O'Conner, T.P., 3160
O'Connor, R.J., 2150, 2160
Ohmann, L.F., 2530
Olsen, A.R., 280, 290, 2170
Olsen, M.F., 1460
Olson, G.L., 240
O'Neill, R.V., 1240, 1250, 2180, 2190

Ormerod, S.J., 3360

Overpeck, J., 2200

Overton, J., 2210

Overton, W.S., 1280, 1350, 1620, 1830, 2210, 2220, 2230, 2240, 2340, 2830, 2840, 3200, 3210, 3420

Owecke, J., 2250

P

Palmer, C.J., 1480, 1580, 2260, 2270, 2510, 2520, 3290

Panday, N.N., 990

Papp, M.L., 2270, 2280, 2540, 2670

Parmenter, R.R., 950

Paul, J.F., 1090, 2290, 2300, 2310, 2320, 2330, 3080, 3400,

Paulsen, S.G., 1180, 1210, 1540, 1550, 2340, 2350, 2410, 2690, 3450

Peck, D.V., 1210, 1860, 2340, 2360

Peck, S.L., 240, 1020, 1030

Peck, S., 1870

Pegov, S., 2370

Pelczarski, S., 1420

Peres, K., 2340, 2410

Peterson, R.W., 2380

Peterson, S.A., 2390

Pickle, L.W., 300

Pilli, A., 1040

Piltz, F.M., 210

Pittam, S., 2980

Plafkin, J.L., 2400

Poche, K.J., 2460

Pollard, J.E., 1210, 2340, 2410

Porter, K.D., 2400

Potter, B.G., 2420

Powers, C.F., 790

Preston, E., 2430

Pulliam, H.R., 1100

R

Racine, R.N., 400

Rankin, E.T., 3460

Rapport, D.J., 2440

Rawlings, J.O., 240, 1020, 1030, 1870

Reagan, D.P., 2450

Reams, M.A., 2460

Reed, H.W., 3290

Regier, H.A., 2470

Reimold, R.J., 1390

Ribic, C.A., 2430

Riddle, B.R., 1320,

Riitters, K.H., 30, 2180, 2270, 2490, 2500, 2510, 2520, 2530, 2540, 2760

Riordan, C., 1490, 1840

Robertson, A., 2330

Robertson, W., 1100

Robison, E.G., 2550

Rogers, V.C., 3310

Roose, D., 690, 1600, 2560, 2570

Rose, K.A., 2580

Rose, M.R., 1940

Rosen, B.H., 2590

Rosentreter, R., 2980

Rubinstein, N., 3080

S

Saint, C.G., 2600

Sanders, B.M., 1290

Saul, G., 840, 2610, 3130

Schaefer, D.A., 2620

Schimmel, S.C., 2300, 2310, 2630, 3400

Schneider, E.D., 1370, 2640

Schreuder, H.T., 30, 2650

Schubert, R., 2660

Schumacher, B., 240, 2670

Scott, K.J., 1090, 2290, 2300, 2310, 2320, 2330, 3400

Seager, J., 2680

Selle, A.R., 1550, 2340, 2690

Shaffer, G.P., 940

Shaw, C.G., III, 2700

Shaw, T., 2280
Shepanek, R., 2710
Sherman, K., 2720
Shields, D.A., 3300
Shines, K.C., 2670
Short, H.L., 2730
Simmons, G.R., 2740
Sisula, H., 2750
Slimak, M., 1490
Slimak, M.W., 900
Slonecker, E.T., 2070, 2080, 2090, 2100, 2110
Smith, C.N., 360, 1020, 1030
Smith, E.R., 1480, 2760
Smol, J.P., 490, 500, 510
Spahr, N.E., 3170, 3180
Squires, L., 1610, 2770, 2780, 2790, 3270
Steele, S.J., 30
Stefanski, L.A., 330
Stehman, S.V., 690, 1600, 2230, 2800, 2810, 2820, 2830, 2840
Stein, J.E., 3320
Stemberger, R.S., 2850, 2860, 2870
Steubing, L., 2880
Stevens, D.L., 1550, 2240, 2340, 2890
Stoddard, J.L., 780, 790, 1960, 2340, 2900, 2910, 2920, 2930
Stokes, S.L., 2940
Stolte, K.W., 2280, 2950, 2960, 2970, 2980, 2990
Stout, K.K., 1420, 2570
Strickland, T., 2270
Strobel, C.J., 2630
Suk, P., 1380
Sullivan, R., 1420
Summers, J.K., 180, 1090, 1700, 1710, 2300, 2310, 2320, 2330, 2580, 3000, 3010, 3020, 3030, 3040, 3050, 3060, 3070, 3400
Summers, K., 3080
Sumner, M.E., 3090
Suter, G.W., 1240
Sutton, D.W., 90
Svanberg, O.F., 3100
Swenson, E.M., 3110

T

Tallent-Halsell, N., 2340
Tammi, C.E., 1390
Taylor, C.H., 1660
Teberg, J.E., 3310
Terrell, C.R., 3120
Thiele, S., 2340
Thiele, S.A., 1210
Thompson, C.M., 380
Thornton, K.W., 1450, 1540, 1650, 3130, 3140
Thorton, K., 2610
Tidwell, R.L., 3150
Tierney, G., 1050
Timmins, S.P., 1250
Tinney, L.R., 1690
Tongway, D.J., 1680
Tonnessen, K., 2960
Tooley, M.B., 240, 1030
Truppi, L., 340, 350
Turgeon, D.D., 3160
Turk, J.T., 3170, 3180
Turner, R.E., 3110

U

Udo de Haes, H.A., 2050
Ulrich, B., 3190
Umlauff-Zimmermann, R., 680
Urquhart, N.S., 690, 1540, 1560, 1600, 3210, 3200
U.S. EPA, 3220, 3230, 3240, 3250
USDA Forest Service, 3260

V

Valente, R., 3400
Valiela, I., 410
Vallero, D.A., 880

Van Der Valk, A.G., 2790, 3270
Van Dreason, R., 520
Van Remortel, R.D., 30, 2280, 3280, 3290, 3300, 3310
Varanasi, U., 3320
Varns, J., 1950

W

Waddell, T., 3330
Wade, T.G., 1890 ,3030
Walker, J., 3340
Ward, R.C., 3350
Weatherley, N.S., 3360
Webster, K.E., 3370
Wegman, E.J., 3380, 3390
Weisberg, S.B., 2320, 2330, 3400
Wellington, D.G., 930
Wheeler, D.P., 3410
White, D., 280, 3420
White, D., 2240
Whittier, T.R., 1210, 2340, 3430, 3440, 3450, 3460
Wickham, J.D., 2180, 3470, 3480
Williams, D., 1950
Williams, M.S., 30
Wilson, H.T., 3070, 3400
Wilson, J., 1100
Wolfson, M., 1950
Woodruff, T., 930

Y

Yilala, K., 160
Yoder, C.O., 1160, 1170
Young, G., 3490
Young, T.C., 780, 2210, 3500

Z

Zimmermann, R.D., 680

☆U.S. GOVERNMENT PRINTING OFFICE: 1995 - 650-006/22081

United States
Environmental Protection Agency
Center for Environmental Research Information
Cincinnati, OH 45268

Official Business
Penalty for Private Use
$300

EPA/620/R-95/006

Please make all necessary changes on the below label; detach or copy, and return to the address in the upper left-hand corner.

If you do not wish to receive these reports CHECK HERE ☐; detach, or copy this cover, and return to the address in the upper left-hand corner.

BULK RATE
POSTAGE & FEES PAID
EPA
PERMIT No. G-35