Supplementary Material

for the

Stage II Remedial Action Plan

Glossary of Common Terms

Acidification: Tending to form an acid. (The American Heritage College Dictionary, third edition, Houghtin Mifflin Company 1993).

Anthropogenic: The scientific study of the origin and development of human beings. (The American Heritage College Dictionary, third edition, Houghtin Mifflin Company 1993).

Aquifer: An underground geological formation, or group of formations, containing usable amounts of groundwater that can supply wells and springs. (United States Environmental Protection Agency, Terms of Environment 1994).

Benthos: The collection of organisms living on or in sea or lake bottoms. (p. 129, The American Heritage College Dictionary, third edition, Houghtin Mifflin Company 1993).

Best Management Practices: Methods that have been determined to be the most effective, practical means of preventing or reducing pollution from non-point sources. (United States Environmental Protection Agency, Terms of Environment 1994).

Best Management Practices: Schedules of activities, prohibitions of practice, treatment requirements, operation and maintenance procedures, use of containment facilities, and other management practices to prevent or reduce the pollution of waters of the state. BMPs can be employed, for example to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw materials storage resulting from manufacturing, commercial, mining, or silvicultural activities. (327 IAC 5-1-2(5), 1997).

Bioaccumulative chemicals of concern: Any chemical which, upon entering the surface waters, by itself or as its transformation product, bioaccumulates in aquatic organisms by a factor greater than one thousand (1,000) at six percent (6%) lipids. (Indiana Department of Environmental Management, Office of Water Management, revisions to 327 IAC 2-1, 2-1.5, 5 and 15, 1997).

Bioavailability: The property of a toxicant that governs its effect on exposed organisms. A reduced bioavailability would have a reduced toxic effect). (Burton, Manual for Evaluating Stormwater Runoff Effects in Receiving Waters 1991 Draft).

Bioconcentration: The increase in concentration of the chemical of concern and its metabolites in or on the target organism (or specified tissues thereof) relative to the concentration of the chemical of concern in the ambient water. (Indiana Department of Environmental Management, Office of Water Management, revisions to 327 IAC 2-1, 2-1.5, 5 and 15, 1997).

Biodiversity: Refers to the variety and variability among living organisms and the ecological

complexes in which they occur. Diversity can be defined as the number of different items and their relative frequencies. For biological diversity, these items are organized at many levels, ranging from complete ecosystems to the biochemical structures that are the molecular basis of heredity. Thus, the term encompasses different ecosystems, species, and genes. (United States Environmental Protection Agency, Terms of Environment 1994).

Bioindicator (indicators of the environment): Measurable features used to show environmentally significant trends, reflect a change in human welfare due to a change in the environment, and measure environmental stresses, conditions and management responses. (Indiana Department of Environmental Management Fact Sheet 1996).

Biological Magnification: Refers to the process whereby certain substances such as pesticides or heavy metals move up the food chain, work their way into rivers or lakes, and are eaten by aquatic organisms such as fish, which in turn are eaten by large birds, animals or humans. The substances become concentrated in tissues or internal organs as they move up the chain. (United States Environmental Protection Agency, Terms of Environment 1994).

Biomonitoring: The use of living organisms to test the suitability of effluents for discharge into receiving waters and to test the quality of such waters downstream from the discharge. (United States Environmental Protection Agency, Terms of Environment 1994).

Carcinogen: A chemical which causes an increased incidence of benign or malignant neoplasms, or a substantial decrease in the latency period between exposure and onset of neoplasm through oral or dermal exposure, or through inhalation exposure when the cancer occurs at nonrespiratory sites in at least one (1) mammalian species or man through epidemiological and/or clinical studies. (Indiana Department of Environmental Management, Office of Water Management, revisions to 327 IAC 2-1, 2-1.5, 5 and 15, 1997).

Chironomus tentans: ***c. tentans***, Test organism. (Hoke et al., 1993)

Chronic toxicity: The capacity of a substance to cause long-term poisonous human health effects. (United States Environmental Protection Agency, Terms of Environment 1994).

Clean up: After June 30, 1997, clean up means, for purposes of Indiana Code 13-18-6, to take the action necessary to neutralize, remove, collect, gather, pump, separate, cover, and as is otherwise necessary, affirmatively act to most effectively prevent, minimize, or mitigate damage or threatened damage to: public health, safety, and welfare; aquatic biota; animal life; plant life; or recreational, domestic, commercial, industrial, or agricultural water uses; as a result of a spill. (Indiana Department of Environmental Management, IC 13-11-2-28, 1997).

Contaminant: Any solid, semi-solid, liquid, or gaseous matter, or any odor, radioactive material, pollutant (as defined in the federal Solid Waste Disposal Act (42 U.S.C. 6901 et seq.), as in effect on January 1, 1989), hazardous waste (as defined by the Federal Water Pollution

Control Act (33 U.S.C. 1251 et seq.), as in effect on January 1, 1989), any constituent of a hazardous waste, or any combination of the items described in this section, from whatever source that: is injurious to human health, plant or animal life or property; interferes unreasonably with the enjoyment of life or property; or otherwise violates: environmental management laws; or rules adopted under environmental laws. (Indiana Department of Environmental Management, IC 13-11-2-44, 1997).

Criteria pollutants: The 1970 amendments to the Clean Air Act required the U.S. EPA to set National Ambient Air Quality Standards for certain pollutants known to be hazardous to human health. EPA has identified and set standards to protect human health and welfare for six pollutants: ozone, carbon monoxide, total suspended particulate, sulfur dioxide, lead, and nitrogen oxide. The term, "criteria pollutants" derives from the requirement that U.S. EPA must describe the characteristics and potential health and welfare effects of these pollutants. It is on the basis of these criteria that standards are set or revised. (United States Environmental Protection Agency, Terms of Environment 1994).

Designated use: Under 327 IAC 2-1-3, as amended under the Great Lakes Initiative rulemaking, water uses are designated by the water pollution control board. (Indiana Department of Environmental Management, Office of Water Management, revisions to 327 IAC 2-1-3, 1997).

Effluent: A wastewater discharge from a point source to the waters of the state. (Indiana Department of Environmental Management, Office of Water Management, revisions to 327 IAC 2-1, 2-1.5, 5 and 15, 1997).

Effluent limitation: Any restriction established by the commissioner of quantities, discharge rates, and concentrations of pollutants that are discharged, or will be discharged, from point sources into waters of the state of Indiana. (Indiana Department of Environmental Management, Office of Water Management, revisions to 327 IAC 5-1-2(13), 1997).

Eutrophication: The process of the accumulation of refractory organic debris in the sediments of a body of water, and the buildup of organic matter and nutrient concentrations in the water column which occur naturally, as well as a decrease in the depth of the body of water caused by sediment accumulation. The process occurs over hundreds of thousands of years and can eventually cause most lakes to fill up with sediments. (Laws, Aquatic Pollution: An Introductory Text, second edition, 1993).

Geohydrology: The combined geology and hydrology of the area of concern. In this case, the geologic deposits of concern to this study are bedrock deposits of Silurian and Devonian age and unconsolidated deposits of Quaternary age. The four hydrologic units of concern to this study are surface-water bodies, the unconsolidated sand aquifer, the unconsolidated silt and clay confining unit, and the carbonate aquifer. (United States Environmental Protection Agency and United States Geological Survey, Water-Resource Investigations Report 95-4253, Geohydrology, Water Levels and Directions of Flow, and Occurrence of Light-Nonaqueous-Phase Liquids on

Ground Water in Northwestern Indiana and the Lake Calumet Area of Northeastern Illinois 1996).

GIS (Geographic Information System): A computer system designed for storing, manipulating, analyzing, and displaying data in a geographic context. (United States Environmental Protection Agency, Terms of Environment 1994).

Groundwater: Such accumulations of underground water, natural and artificial, public and private, or parts thereof, which are wholly or partially within, flow through, or border upon this state, but excluding manmade underground storage or conveyance structures. (Indiana Department of Environmental Management, Office of Water Management, revisions to 327 IAC 2-1, 2-1.5, 5 and 15, 1997).

Habitat: The place where a population (e.g., human, animal, plant, microorganism) lives and its surroundings, both living and non-living. (United States Environmental Protection Agency, Terms of Environment 1994).

Hyalella azteca: ***h. azteca,*** Test organism. (Hoke et al., 1993).

Holistic: Emphasizing the importance of the whole and the interdependence of its parts. (The American Heritage College Dictionary, third edition, Houghtin Mifflin Company 1993).

Hydrologic Cycle: The way in which water moves around the earth. During its endless circulation from ocean to atmosphere to earth and back to ocean, the water is stored temporarily in streams, lakes, the soil or groundwater and becomes available for use. (Dunne, Water in Environmental Planning, W.H. Freeman and Company, New York, 1978, 13th printing 1995 VB).

Lichens: A fungus, usually of the class Ascomycetes, that grows symbiotically with algae, resulting in a composite organism that characteristically forms a crust-like or branching growth on rocks or tree trunks. (The American Heritage College Dictionary, third edition, Houghtin Mifflin Company 1993).

Macroinvertebrate: Large invertebrate organisms sometimes arbitrarily defined as those retained by sieves with 0.425 - mm to 1.0 - mm mesh screens. (Burton, Manual for Evaluating Stormwater Runoff Effects in Receiving Waters, 1991 Draft).

Nonpoint sources: Diffuse pollution sources (i.e., without a single point of organ or not introduced into a receiving stream from a specific outlet). The pollutants are generally carried off the land by storm water. Common non point sources are agriculture, forestry, urban, mining, construction, dams, channels, land disposal, saltwater intrusion, and city streets. (United States Environmental Protection Agency, Terms of Environment 1994).

Oxidants: A substance containing oxygen that reacts chemically in air to produce a new substance; the primary ingredient of photochemical smog. (United States Environmental Protection Agency, Terms of Environment 1994).

Particulate matter: Any airborne finely divided solid or liquid material, excluding uncombined water, with an aerodynamic diameter smaller than one hundred (100) micrometers. PM_{10} is any particulate matter with an aerodynamic diameter less than or equal to a nominal ten (10) micrometers as measured by an applicable reference method specified in 40 CFR Part 50 or by an equivalent or alternative method approved by the commissioner. Total suspended particulate (TSP) is any particulate matter as measured by the method described in Appendix B of 40 CFR Part 50.

Point Sources: A discernible, confined, and discrete conveyance from which wastewater is or may be discharged to the waters of the state. (Indiana Department of Environmental Management, Office of Water Management, revisions to 327 IAC 2-1, 2-1.5, 5 and 15, 1997).

Pollutant: Means, but is not necessarily limited to, dredged spoil, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, chemical wastes, solid wastes, toxic wastes, hazardous substances, biological materials, radioactive materials (except those regulated under the Atomic Energy Act of 1954, as amended; 42 U.S.C. 2011, et seq.), heat, wrecked, or discarded equipment, rock, sand, cellar dirt, and other industrial, municipal, and agricultural waste discharged into water. (Indiana Department of Environmental Management, Office of Water Management, 327 IAC 3-1-2, 1997).

Primary NAAQS: National Ambient Air Quality Standards designed to protect human health with an adequate margin for safety. (United States Environmental Protection Agency, Terms of Environment 1994).

Protocol: A series of formal steps for performing a test. (United States Environmental Protection Agency, Terms of Environment 1994).

REMEDIAL ACTION PLAN (Remedial Action Plan): A remedial action plan is an ecosystem restoration plan for an Area of Concern that addresses the impairments to the fourteen beneficial uses, as designated by the International Joint Commission. (Indiana Department of Environmental Management, Remedial Action Plan Stage I, 1991).

Remediation: Actions necessary to: prevent; minimize; or mitigate damages to the public health or welfare or to the environment that may otherwise result from a release or threat of a release. Actions consistent with a permanent remedy taken instead of or in addition to removal actions if a release or threaten release of a hazardous substance or petroleum into the environment occurs to eliminated the release of hazardous substances or petroleum so that the hazardous substances or petroleum do not migrate to cause substantial danger to present or future public health or welfare or the environment. The cleanup or removal of released hazardous

substances or petroleum from the environment. (Indiana Department of Environmental Management, IC 13-11-2-186, 1997).

Secondary NAAQS: National Ambient Air Quality Standards designed to protect welfare, including effects on soils, water, crops, vegetation, manmade materials, animals, wildlife, weather, visibility, and climate; damage to property; transportation hazards; effects on economic values, and on personal comfort and well-being. (United States Environmental Protection Agency, Terms of Environment 1994).

Sediment: Native and non-native materials that have settled in a body of water.

Slag: The vitreous mass left as a residue by the smelting of metallic ore. (The American Heritage College Dictionary, third edition, Houghtin Mifflin Company 1993).

Superfund: The program operated under the legislative authority of CERCLA and SARA that funds and carries out EPA solid waste emergency and long-term removal and remedial activities. These activities include establishing the National Priorities List, investigating sites for inclusion on the list, determining their priority and conducting and/or supervising the cleanup and other remedial actions. (United States Environmental Protection Agency, Terms of Environment 1994).

Toxic Substances: Substances which are or may become harmful to plant or animal life, or to food chains when present in sufficient concentrations or combinations. Toxic substances include, but are not limited to, those pollutants identified as toxic under section 307(a)(1) of the Clean Water Act. (Indiana Department of Environmental Management, Office of Water Management, revisions to 327 IAC 2-1, 2-1.5, 5 and 15, 1997).

Troposphere: The layer of the atmosphere closest to the earth's surface. (United States Environmental Protection Agency, Terms of Environment 1994).

Watershed: A drainage area of basin in which all land and water areas drain or flow toward a central collector such as a stream, river, or lake at a lower level elevation. (United States Environmental Protection Agency, EPA-840-B-92-002, January, 1993).

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CARE Mission Statement

The purpose of the Citizen's Advisory for the Remediation of the Environment (CARE) Committee is to advise IDEM on development and implementation of the Remedial Action Plan (REMEDIAL ACTION PLAN) for the Grand Calumet River, Indiana Harbor Ship Canal and Nearshore Lake Michigan Area of Concern. CARE also will advise other agencies that work with IDEM to ensure consistency and adherence with the REMEDIAL ACTION PLAN and to ensure that these agencies promote the REMEDIAL ACTION PLAN. The REMEDIAL ACTION PLAN is a State requirement of the 1987 Great Lakes Water Quality Agreement that mandates an ecosystem approach for restoring beneficial uses.

Specifically, the purpose of CARE is to:

- Advise IDEM on the REMEDIAL ACTION PLAN
- Review components of the REMEDIAL ACTION PLAN
- Advocate and encourage agencies' actions to be consistent with the REMEDIAL ACTION PLAN
- Review State resources pertaining to the REMEDIAL ACTION PLAN
- Advise IDEM on adequacy of components
- Recommend a time-line for implementation of the REMEDIAL ACTION PLAN
- Promote activities consistent with the REMEDIAL ACTION PLAN
- Monitor and track implementation, and suggest appropriate action

List of Current CARE Members

The current CARE members and their organizational designees, if any, are as follows:

City Appointees	City Designees
Hon. Scott King Mayor of Gary, Indiana	none
Hon. Robert A. Pastrick Mayor of East Chicago, Indiana	Michael Suty Utilities Director
Hon. Duane W. Dedlow, Jr. Mayor of Hammond, Indiana	Ronald Novak Milan Kruszynski
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Ms. Zemmer Morris GARD	none
Tom Anderson Save the Dunes	none
Corporate Appointees	Corporate Designees
Mr. Dan Wilson, Plant Mgr. AMOCO Refinery	Ms. Julie Murphy Mr. Shiv Baloo
Mr. John Fekete Indiana Steel Industry Advisory Commission	Mr. Gary Allie
Mr. Thomas McDermott Northwest Indiana Forum	Ms. Christine Newell

Mr. Peter Wilke
The Hammond Group, Inc.

Mr. Mark Volkman

Academic Institution Appointees

Institutional Designee

Dr. Mark Reshkin
Indiana University Northwest

none

Citizen-At-Large Appointee

Ms. Lorraine Stasek

The services provided by former CARE member Sue Lynch, former Executive Director of the People Against Hazardous Landfill Sites ("PAHLS") were invaluable.

CARE's Subgroups responses to the challenge of restoring the Area of Concern provided an excellent foundation for the development of the Stage II document. The co-Chairpersons for CARE's Subgroups are:

Paul Labus
Habitat Subcommittee

Dan Olson
Toxic Pollution Prevention Workgroup

Tom Anderson
Lagoon Subcommittee

RAP Technical Team Members

The following list is by no means complete. Participants are listed under their primary team. Most participants contributed to more than one team.

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Remedial Action Plan Coordinator
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Legal Counsel
Jody Harney

List of Participants

Listed below are the internal participants, i.e., offices within IDEM that can provide technical and/or financial support toward comprehensively addressing the impaired beneficial uses. Also listed are partners external to the IDEM which can address these problems. These include federal, state, county, local, and nonprofit organizations, in addition to other interested entities and individuals potentially available as partners in the Area of Concern.

Internal Participants:

- Northwest Regional Office
- Office of Water Management
- Office of Air Management
- Office of Solid and Hazardous Waste Management
- Office of Environmental Response
- Office of Pollution Prevention and Technical Assistance
- Office of Media and Communication Services
- Office of Enforcement
- Office of Legal Counsel

External Participants:

Municipal Participants

- City of Gary
- City of Hammond
- City of East Chicago
- Gary Sanitary District
- Hammond Sanitary District
- East Chicago Sanitary District
- East Chicago Waterway Management District

State Participants

- Indiana Department of Natural Resources (IDNR)
  - Division of Water
  - Division of Fish and Wildlife
  - Division of Forestry
  - Division of Nature Preserves
  - Division of Outdoor Recreation
  - Division of Soil Conservation
- Indiana Geological Survey (IGS)
- Indiana University
- Purdue University

Federal Participants

U.S. Environmental Protection Agency (U.S. EPA)
U.S. Army Corps of Engineers (U.S. ACE)
U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS)
U.S. Fish and Wildlife Service (U.S. FWS)
U.S. Geological Survey (USGS)
National Oceanic and Atmospheric Administration (NOAA)
National Park Service

Other Participants:

Citizens' Advisory for Remediation of the Environment
(CARE) Committee
Habitat Subcommittee
The Nature Conservancy (TNC)
Friends of Gibson Woods
Cooperative Extension Service Sea Grant Program
Grand Cal Task Force
Save the Dunes Council
Hoosier Environmental Council
Lake Michigan Federation
Northwestern Indiana Regional Planning Commission
Natural Resources Commission
Other private sector (industrial/commercial) entities including:
NIPSCO
Inland Steel
U.S. Steel, Gary Works
DuPont

How to Obtain IDEM Northwest Indiana RAP GIS Data

RAP GIS Database Request/Database Correction Form

Requests: Each request is to include the completed attached form, your floppies or tape, name, title, organization, phone number and mailing address. If necessary, include your anonymous ftp site address, and operating system (UNIX, DOS, etc.). Requests will be processed on an as-time-is-available basis.

Mail request with blank floppies or tapes to:

Ms. Beth Admire
Northwest Indiana Coordinator, IDEM
100 North Senate, PO Box 6015
Indianapolis IN 46206-6015

Data Delivery: **Small requests (only a few files) will be mailed on 3.5" floppy disks that you included with your written request. Large requests will be mailed on 8mm helical scan data cartridges that you included with your written request. We do have the capability to ftp the data out.**

The data are available only as Environmental Systems Research Institute's ArcView 2.1 shapefiles (.shp, .shx, .dbf). This is a Windows 3.1 compatible application for personal computers. The combined data are roughly 50 megabytes total. We do not have CD write capability, nor can we provide this data in formats other than as shapefiles.

Disclaimer: **The data listed have not been tested for accuracy, precision or consistency. Release of the data DOES NOT imply any quality of the data. The data are released to facilitate the Remedial Action Plan (RAP) process. Continued maintenance of the data is not being considered at this time. It is the responsibility of the parties using the data to assure that the data are adequate for the intended use. The users of the data are solely responsible for any damages or liability from the use or interpretation of the data.**

Additional Statewide Geographic Data & Contacts:

Wetlands **Federal & State Managed Lands**	**Barrett Cooper, IDNR (317) 232-0675**
Rare, Threatened & Endangered Species	**Cloyce Hedge, IDNR (317) 232-4052**
Water Well Driller's Logs	**Phil Bonneau, IDNR (317)232-1106**
Fish Tissue **Macroinvertebrates** **Sediments**	**Lee Bridges, IDEM (317) 308-3183**

Appendix

DESCRIPTION OF REGULATORY AND RESOURCE MANAGEMENT PROGRAMS FOR THE NORTHWEST INDIANA AREA OF CONCERN REMEDIAL ACTION PLAN - STAGE II

I. Introduction

Delisting of the fourteen impaired uses requires a multi-media approach. The coordination of multiple regulatory programs is necessary as pollutants enter the environment through the water, the soil, and the air. Additionally, pollutants cross media, going from the air into the river, for example, making them difficult to regulate effectively. The pollutants themselves exist as suspended solids in the waters, as sediments underneath the water, and in the soil, and as particulate matter in the air.

To restore and enhance the water quality in the Great Lakes system, the International Joint Commission signed the Great Lakes Water Quality Agreement. This agreement established the goals or beneficial uses for restoration and enhancement of water quality in the Great Lakes system. To effectuate these goals, this agreement and the Great Lakes Critical Programs Act of 1990 required the development of the Great Lakes Water Quality Guidance (Guidance). This guidance provides the foundation for the regulation of pollutants in the Grand Calumet River, the Indiana Harbor Ship Canal, and the near shore area of Lake Michigan, the three main water bodies in this Area of Concern.

In addition to the guidance, provisions of the Clean Water Act, Indiana statutes and rules, and other federal statutes contain provisions which have the potential to help restore the beneficial uses by regulating the release of pollutants into the environment. No single environmental statute is specifically designed to address sediment contamination and remediation. Federal statutes such as the Clean Air Act, Comprehensive Environmental Response, Compensation and Liability Act, the Resource Conservation and Recovery Act, and the Oil Pollution Control Act all may be used to restore the Area of Concern.

Existing state and federal laws may be used to compel the private party to clean up contaminated sediments; to obtain reimbursement from private parties for federally-funded clean ups; or to obtain monetary damages necessary to restore natural resources. To bring an enforcement action, the U.S. EPA may need to rely upon multiple information gathering and enforcement authorities to compel private parties to assume responsibility for the clean up. Additionally, IDEM has a state-funded clean up statute. To expedite the remediation and restoration processes, the U.S. EPA and IDEM encourage private parties to enter into voluntary partnerships.

II. Great Lakes Water Quality Guidance

A. Background of the U.S. EPA Great Lakes Water Quality Guidance

The Great Lakes Water Quality Agreement and the Great Lakes Critical Programs Act of 1990 required the development of this guidance. Representatives from the eight Great Lakes States, three Great Lakes U.S. EPA Regions, and U.S. EPA Headquarters, as well as representatives from various environmental groups and the regulated community worked together for over four years to develop this guidance.

This guidance contains three major parts:

- Great Lakes specific water quality criteria for the protection of aquatic life, human health, and wildlife, and procedures for calculating these criteria.
- Implementation procedures for translating these criteria into NPDES permit limits.
- An antidegradation policy and implementation procedures for bioaccumulative chemicals of concern.

The guidance was published in final form on March 23, 1995. The Great Lakes States were required to revise their own water quality standards and permitting regulations to be consistent with (as protective as) the guidance by March 1997. States were only required to adopt the guidance for those waters which are in the Great Lakes Basin. It is optional for other state waters. Indiana revised the water quality standards for waters in the Great Lakes Basin before this deadline. These provisions are referred to as the Great Lakes Initiative rulemaking.

B. IDEM Process to Develop Indiana's Great Lakes Program

In October 1995, Deputy Commissioner Method set up a Great Lakes Water Quality Guidance Advisory Work Group. The work group is made up of representatives from the environmental and regulated communities, U.S. EPA, Indiana Association of Cities and Towns, Indiana's Manufacturers' Association, Indiana Chamber of Commerce, various trade associations, legal firms, and IDEM staff.

The work group provided a forum for interested parties to participate in the development of Indiana rules to implement the Great Lakes Water Quality Guidance. This was accomplished by educating the members as to the substance of the guidance and providing opportunity for open discussions of issues involved in its implementation.

This work group, over the course of more than a year, met approximately fifteen times to develop the rules to implementing the guidance. The majority of these meetings were held in the Great Lakes basin in locations such as Fort Wayne, South Bend, East Chicago, Michigan City, and Gary. During this period, IDEM also held two public meetings in the Great Lakes Basin and had numerous meetings with individual components of the work group. On December 16, 1996, Indiana became the first state to adopt rules implementing the guidance when the rules developed by the work group were adopted by the Water Pollution Control Board in a meeting held in

Whiting. These rules were signed by Governor Bayh on January 10, 1997, and then submitted to the Secretary of State for filing. They became effective February 13, 1997.

III. Clean Water Act

The Federal Water Pollution Control Act. (Clean Water Act), 33 USC Sections 1251 *et seq.*, offers multiple remedies for the problems of contaminated sediments, and provides a regulatory framework to prevent re-contamination of the water bodies in the Area of Concern. Both state and federal agencies may enforce this act. The Indiana Water Pollution Control Board, under IC 13-1-3-4, has the power to adopt rules necessary to implement this Act. The following contains a list of specific provisions IDEM may use to remediate existing sediments in the waters of the state. IDEM may bring an action to remediate sediments in federal district court under specific provisions of the Clean Water Act listed below. However, IDEM generally brings its enforcement actions under state statutory authority.

A. Research Programs

The Clean Water Act mandates the undertaking of research and program initiatives which may provide the evidentiary basis for enforcement actions. IDEM and the IDNR are authorized under IC 13-2-7-2(b) to conduct research in their respective areas of jurisdiction for the purpose of securing the scientific and technical data and information necessary for the solution of problems involving the wise beneficial development, use, and management of the water resources of Indiana. This research may be accomplished through the state special fund, independently, or in cooperation with agencies of the state or of the United States. Examples of this include the Great Lakes Water Quality Agreement and the Great Lakes Critical Programs Act. These programs embody a systematic and comprehensive ecosystem approach, which includes nonpoint sources, to restore and protect beneficial uses in the Areas of Concern.

B. Federal Enforcement Authority to Remediate

To effectuate the available remedial measures, the Clean Water Act includes both the authority to bring enforcement actions in addition to provisions which allow governmental agencies to gather information necessary to bring an enforcement action under another statute. Further, certain provisions, such as Section 301, contain language allowing for citizen suits to enforce water quality standards. The following is a summary of sections of the Clean Water Act applicable to the remediation of sediments.

1. Section 115

Section 115 provides direct enforcement authority to take remedial measures. This Section directs the U.S. EPA administrator to identify the location of in-place pollutants and, through the Secretary of the Army, to make contracts for the removal of contaminated sediments.

2. Section 301

A citizen may commence an action under section 505 to enforce the provisions of

section 301, 302, 306, 307, 401, 402, or 405. The citizen must meet the qualifications of the eleventh amendment of the U.S. Constitution to bring a suit against the governmental agency alleged to be in violation of an effluent standard or limitation or agreed order.

3. Section 309

Enforcement actions which may be brought under the Clean Water Act are set forth here. Some case law supports bringing enforcement actions solely to remove contaminated sediments. Actions brought under this Section also serve to encourage dischargers to undertake sediment pollutant removal as an "environmentally beneficial expenditure" in lieu of a portion of a proposed penalty.

4. Section 311

Section 311 of the Clean Water Act addresses oil and hazardous substance liability and also offers the potential for addressing sediments which are contaminated with either of these substances. This section allows the U.S. EPA Administrator to act to mitigate the damage done by discharges of oil and hazardous substances to waters of the United States and then to recover the costs of this remediation from the owner or operator of the source of the pollutant. Oil and hazardous substances can be found throughout the Grand Calumet River and Indiana Harbor Ship Canal.

5. Section 404

This section of the Act regulates the discharge of "dredged and fill" materials into navigable waters, including wetlands. Persons wishing to do work in wetlands or other Waters of the United States must obtain a Section 404 permit from the U.S. Army Corps of Engineers, unless a nationwide permit exists for the type of work proposed. Before the U.S. ACE issues this permit, either the U.S. ACE or the applicant must also receive a Section 401 Water Quality Certification from IDEM for the activity.

Two projects, the Ralston Street Lagoon project and the U.S. EPA advanced identification of Sites Program wetlands unsuitable for filling, have been approved under both section 404 and section 401, and are currently underway in the Area of Concern. Clean Water Act Section 404 may afford an enforcement action in a situation where large quantities of materials are being discharged into a waterway. A violation results in a restoration order by the U.S. ACE.

6. Section 401

Section 401 is the state counterpart to a section 404 permit. All persons seeking to construct or operate a facility which may result in any discharge into the navigable waters must obtain a permit from the state water pollution control agency, or IDEM, Office of Water Management. Failure to obtain a permit may result in an enforcement action.

The Section 401 Certification ensures that unacceptable impacts to water quality

will not occur as a result of the proposed activity. IDEM has three options when reviewing an application for 401 certification: issue the permit: deny the permit: or waive certification. If IDEM determines that unacceptable impacts are likely to occur, it may deny this certification and the U.S. ACE must deny the Section 404 permit. If IDEM grants the certification with some conditions, the U.S. ACE must include these conditions in the Section 404 permit if it is issued. The U.S. ACE may choose to deny the permit even if IDEM waives or grants the Section 401 Water Quality Certification.

When reviewing applications for this certification, IDEM determines if potential impacts to wetlands or other waters can be avoided or at least minimized and allows the applicant to accomplish the purpose of the project. If both goals are obtainable, the applicant may be asked to modify the project accordingly. Unavoidable impacts may require mitigation to replace the lost functions of the wetlands or other waters with respect to its water quality regulating attributes. Some projects may result in water quality impacts that cannot be adequately avoided, minimized or mitigated. These projects are denied 401 certification.

7. Section 508

As a consequence of criminal or civil violations of the Clean Water Act, facilities may be prohibited from obtaining federal government contracts, grants, or loans. Section 508, Contractor Listing, provides the U.S. EPA with an administrative tool to obtain compliance with the Clean Water Act. See Clean Water Act Section 508, and Clean Air Act Section 306, as implemented by regulations promulgated at 40 CFR Part 15.

C. State Authority to Restore and Maintain Water Quality

U.S. EPA's efforts to protect the Nation's waters from future contamination emphasize the use of watershed programs. This marks a significant change in water quality management programs, which also regulate sediment quality. Rivers, lakes, streams, and groundwater are now viewed as part of an entire system, rather than as individual components with no interaction. A watershed approach allows the U.S. EPA, States, Tribes, municipalities and the public to better tailor to the characteristics, problems, risks, and implementation of management programs in individual watersheds with meaningful involvement from local communities. IDEM has adopted this approach and is currently in the process of using GIS to help implement it.

1. State Authority to Remediate and Restore Water Quality

IDEM adopted the objective of the U.S. Congress stated in the Clean Water Act Section 101. "The goal of the state is to restore and maintain the chemical, physical and biological integrity of the waters of the state," 327 IAC. Under the authority of IC 13-7-11-2, IDEM may bring an action to enforce water quality standards and goals. More specifically, under IC 13-18-7, IDEM may order the clean up of pollution to enforce water quality standards. As part of an enforcement action, may mandate corrective action, including corrective action to be taken beyond the boundaries of the area owned or controlled by the person to whom the order is directed, to alleviate the violation.

Enforcement actions typically are based upon a violation of a permit condition. State rules which regulate water quality standards provide the foundation for water permit conditions. Permit writers in the IDEM Office of Water Management incorporate provisions of the water rules (327 IAC) into permits for facilities who discharge into, or otherwise affect, waters of the state. Water quality standards have three components: use designations; antidegradation policy; and water quality criteria. The Indiana Administrative Code contains provisions regulating each of these provisions. For a violation of a permit condition, enforcement begins when the commissioner sends a notice of violation to the alleged violator. This notice must either require the alleged violator to take specific action to correct the problem, or assess a civil penalty, or both.

a. Use Designations

The Clean Water Act (Clean Water Act) Section 131.10 requires states to specify the water uses to be achieved and protected and prohibits removal of existing uses. Under 327 IAC 2-1-3, the East Branch of the Grand Calumet River is "designated for full-body contact recreation", shall "be capable of supporting a well-balanced warm water aquatic community". This designation did not change under the Great Lakes Initiative Rulemaking.

b. Antidegradation Policy

The Indiana Water Pollution Control Board adopted the following general policy of nondegradation under the Great Lakes Initiative. "For all waters of the state within the Great Lakes system, existing instream uses and the level of water quality necessary to protect existing uses shall be maintained and protected. Where designated uses of the waterbody are impaired, there shall be no lowering of the water quality with respect to the pollutant or pollutants that are causing the impairment." 327 IAC 2-1.5-4(a).

The Great Lakes Initiative added a provision to the antidegradation standard. This provision, 327 IAC 2-1.5-4(d), states that Outstanding National Resource Waters shall be maintained and protected in their present high quality without degradation. Currently, no waters in Indiana are designated as Outstanding Natural Resource Waters. However, the IDEM Office of Water Management has begun a rulemaking to evaluate the various types of special designation waters. If any waters in Indiana are designated Outstanding Natural Resource Waters, this rule would protect that status by not allowing degradation due to any pollutant or pollutants.

c. Water Quality Criteria

Indiana's water quality criteria, adopted in 1990, apply to the Grand Calumet River are primarily based on the EPA Ambient Water Quality Criteria Documents published in the early and mid 1980's. They reflect the most up to date scientific thinking concerning the criteria necessary to adequately protect

aquatic life and human health. These criteria are generally implemented through the NPDES permitting program to ensure that discharges of the various substances requiring limitations do not cause exceedences of the water quality criteria. At the present time, only a few of the dischargers in the Area of Concern have received NPDES permits with limitations based on these criteria.

2. Implementation of Permits

As stated above, violations of permits generally provide the basis for enforcement actions. IDEM issues water permits under the NPDES. IDEM classifies discharges as either point sources or nonpoint sources, and issues NPDES permits to point source discharges. A "point source" is a discernible, confined, and discrete conveyance, usually associated with a pipe, ditch, or channel. A nonpoint source means all other discharges. A violation of either a point source or a nonpoint source discharge under 13-7-11-2 is also a violation of 325 IAC 5.

a. Point Source Discharges

Section 402 of the Clean Water Act provides for the National Pollutant Discharge Elimination System (NPDES) to regulate the type and amount of pollutants entering a water body from a point source. Indiana incorporated this provision into 327 IAC 5. This section also authorizes each state to develop its own NPDES program, subject to approval by the Administrator of the U.S. EPA. The state may also require the remediation of sediments through enforcement actions, for an NPDES permit violation, brought in accordance with IC 13-7-11-2.

327 IAC 2-6-2 requires " a person who owns, operates, controls, or maintains any... industrial, municipal or commercial facility... to immediately communicate a spill report on said spill to the Office of Environmental Response...." The Indiana Water Pollution Control Board has final adopted another rule, 327 IAC 2-6.1-1, to cover spills which do not directly enter the waters of the state. Under 327 IAC 2-6.1-1, the spill would not have to directly enter a water of the state, but it must occur in a location where it may damage state water. Dischargers covered by these provisions must clean up the spill.

b. Nonpoint Source Discharges

While IDEM does not issue permits to nonpoint source discharges, IDEM has the authority to regulate the impacts on water quality from nonpoint sources. The federal Clean Water Act includes provisions for a non-regulatory, resource management approach to nonpoint source pollution remediation. The Clean Water Act also provides federal funding through Section 319 for nonpoint source activities. Section 314 Clean Lakes Program, Section 104(b)(3) Watershed Management Program, and Section 604(b) Water Quality Planning Program also fund nonpoint source-related activities administered statewide through the nonpoint source Program.

One of the major goals of the Nonpoint Source Section has been to look at a watershed as a whole as it relates to nonpoint source water pollution sources and any other sources that may be contributing to water pollution within the watershed. This view mirrors the U.S. EPA's views toward water regulations. By looking at the watershed as a whole, all users in the watershed may become involved the planning and implementation practices which are designed to prevent pollution.

IDEM is working with the U.S. EPA to fund projects that will reduce or eliminate water quality impacts from nonpoint sources. Several projects of this nature have been completed or are still ongoing in the Area of Concern. The many nonpoint source projects in the Area of Concern funded through Section 319, Section 314, Section 604(b), and Section 104(b)(3) are a combination of local and regional efforts sponsored by various public and not-for-profit organizations. The emphasis of these projects has been on local, voluntary implementation of nonpoint source water pollution controls. These include the adoption of best management practices, watershed restoration activities, pollution prevention activities, and education and technical assistance. The funding provided has been used for such projects as urban runoff controls, cost-share programs for the installation of water quality improvement practices, atmospheric deposition monitoring, lake management planning, and hydrologic unit area mapping in the Area of Concern. More detailed descriptions of these projects can be found in chapter 5, Actions to Attain Goals.

IDEM has the authority to regulate impacts to water quality from the discharge of storm water runoff. The rules supporting this authority are found at 327 IAC 15-5 (Rule 5) for construction sites, and at 327 IAC 15-6 (Rule 6) for industrial sites, and 327 IAC 5-4-6, individual storm water permits. The purpose of Rule 5 is to minimize the erosion of soil caused by precipitation events and its runoff into surface waters. Rule 5 requires the development and implementation of an erosion control plan at construction sites where five acres or more of land surface will be disturbed. The purpose of Rule 6 is to reduce the water quality impacts that would result from storm water runoff from improper land use activities, such as outdoor storage of raw materials. This includes storage of salt, ores, metals, or other supplies needed by such industries as foundries, mills, contractors, and highway departments. Rule 6 requires certain types of industrial activities to develop and implement pollution prevention / minimization plans. Industrial facilities are also required to periodically sample and analyze their storm water discharges and submit these results to IDEM.

Compliance is voluntary in instances where sites are greater than one acre but less than five acres. Each person or company that falls under these categories must develop a storm water management plan and provide a notice of intent as a

condition of proceeding with activities.

Other state agencies also help control nonpoint source pollution. The State Soil Conservation Board, established by statute under IC 13-3-1-4 within the Indiana Department of Natural Resources, consists of nine members appointed by the governor and is authorized to hold public hearings, adopt rules (IC 13-3-1-4(a) and IC 13-3-1-4(d)(9)), and perform any functions which promote the use of sediment and erosion controls. This Board offers assistance to supervisors of the county soil and water conservation districts (established under IC 13-3-1-8, Soil and Water Conservation District Act), secures the cooperation and assistance of the federal and state agencies which work in such districts, disseminates information throughout the state concerning activities and programs of the districts, and administers the funding for the Indiana Department of Natural Resource's Lake and River Enhancement Program. Its major purpose is to reduce erosion in order to prevent the loss of soil. Therefore, voluntary pollution prevention and assessment through watershed management planning are promoted by the Board throughout the state as well as in the Area of Concern.

3. Maintaining Water Quality Standards

IDEM has numerous mechanisms available to maintain the integrity of the waters of the state and to uphold the water quality standards. Once all applicable water quality criteria and pollutant parameters have been established, the waters and the sediment must be monitored and tested to ensure that accumulation of sediments causes no impairment of designated or beneficial uses. Various rules authorize IDEM to incorporate biomonitoring, sediment testing provisions, and toxicity testing in NPDES permits. The instream biological monitoring and sediment monitoring provisions in the NPDES Permit are designed to provide assurances that the problems of past accumulation of contaminated sediments are not repeated.

a. Instream Biomonitoring

Instream biomonitoring is necessary to determine if effluent discharges adversely impact the development of a well-balanced aquatic community in the Grand Calumet River. Pollutants from a permittee's effluent may remain in the water column, be ingested or absorbed by aquatic life, accumulate in sediments, or enter the benthic community. Comprehensive biomonitoring provisions in all NPDES permits will provide a means to measure each of these parameters and the quality of water. Biomonitoring provisions may require a permittee to sample the fish community, fish tissue, the benthic community, sediment chemistry and sediment toxicity.

Under 327 IAC 5-1-3, a permittee shall "install, use, and maintain such monitoring equipment or methods (including, where appropriate, biomonitoring methods); ... sample such effluents, ... or other material ... at such locations, at

such times, and in such a manner as the commissioner may reasonably prescribe." *See 327 IAC 5-1-3(a)(3).* Furthermore, 327 IAC 15-1-3, the General Permit Rule Program, states that "any person... subject to this article shall... install, use, and maintain such monitoring equipment or methods (including, where appropriate, biomonitoring methods... at such locations, at such times, and in such a manner, as the commissioner may reasonably prescribe." *See 327 IAC 15-1-3(a)(3).*

Another purpose of the instream biomonitoring condition is to determine if the thermal effluent requirements contained in an NPDES Permit are adequate to protect the aquatic life of the Grand Calumet River / Indiana Harbor Ship Canal. Extremely high temperatures, such as those which may result from a discharge of non-contact cooling water, stress the aquatic community and also may cause degradation of fish and wildlife populations; the growth of undesirable algae; and a loss of fish habitat. 327 IAC 2-1-6(b)(4) provides conditions for surface water temperature to ensure conditions necessary for the maintenance of a well-balanced aquatic community. "There shall be no abnormal temperature changes that may adversely affect aquatic life unless caused by natural conditions. The normal daily and seasonal temperature fluctuations that existed before the addition of heat due to other than natural causes shall be maintained. The maximum temperature rise at any time or place above natural temperatures shall not exceed ... 5°F." *See 327 IAC 2-1-6(b)(4).* Monthly maximum water temperatures are also established in this rule.

b. Sediment Monitoring

In addition to biomonitoring authority, IDEM may monitor the effluent to assure that a discharge does not contain substances that will settle to form objectionable deposits. In the Great Lakes Initiative rulemaking, water quality based effluent limitations were implemented specifically for the Great Lakes Basin, in NPDES permits using the procedures in 327 IAC 5, which are based upon the water quality criteria contained in 327 IAC 2-1 and 327 IAC 2-1.5. "When the water quality based effluent limitation for any substance is less than the limit of quantification normally achievable and determined by the commissioner to be appropriate for that substance in the effluent, the permit... may contain... other requirements, as appropriate, such as engineering assessments or sediment analyses." A pollutant may exist in a permittee's effluent in amounts that cannot be measured using current technology. Even though this pollutant cannot be measured, it still may contaminate sediment after traveling through the water column. Sediment monitoring enables IDEM to detect these pollutants before they accumulate to an extent such that uses become degraded.

A second provision, 327 IAC 15-4-1, states that persons regulated under the NPDES general permit program shall allow IDEM to... sample or monitor, at

reasonable times, for the purposes of assuring compliance with the applicable general permit rule conditions or as otherwise authorized by the Clean Water Act, any substances or parameters at any location. *See 327 IAC 15-4-1(l)(4).*

c. Whole Effluent Toxicity Testing

Pursuant to the Great Lakes Water Quality Guidance, Indiana adopted whole effluent toxicity provisions that account for chemical interactions and for data gaps regarding individual pollutants in an effluent. These provisions apply to all facilities, measure both acute and chronic toxicity, and limit the toxic effects on aquatic life from the effluent as a whole. On October 16, 1995, the U.S. EPA adopted the whole effluent toxicity analytical methods in 40 CFR Part 136 to determine the toxicity of each dischargers effluent. Indiana adopted these analytical methods in the Great Lakes Initiative rulemaking.

d. Construction of Wastewater Treatment Plants

Any person who causes or allows the construction, installation, or modification of any water pollution treatment/control facility or sanitary sewer, without a valid permit issued by the commissioner of IDEM, may be forced to take remedial measures pursuant to IC 17-11, or IC 13-7-12, emergency provisions. 327 IAC 3-2 regulates permit applications for construction of a treatment plant. Applications must be made in accordance with the procedures established by the commissioner in 327 IAC 3-2-2.

The United States Supreme Court recently held that a state department may enforce broad water quality standards by conditioning certification of a plant upon compliance with them. Northwest Environmental Advocates v. City of Portland, 1995 WL 336001 (9th Cir.(OR.)), *petition for rehearing denied*, No. 92-35044 (9th Cir. Jan. 24, 1996); PUD No.1 of Jefferson County and City of Tacoma v. Washington Department of Ecology, 114 SCT 1900 (1994).

D. Pretreatment Rules

This provision implements 40 CFR Part 403 and related provisions of the Clean Water Act, and applies to the discharges of industrial pollutants into publicly owned treatment works. Any violation of these rules may result in an enforcement action requiring remediation. Indiana's pretreatment program at 327 IAC 5-11-1 et seq. has three general objectives:

(1) to prevent the introduction of pollutants into Publicly Owned Treatment Works which will interfere with the operation of a Publicly Owned Treatment Work, including interference with the use or disposal of municipal sludge;
(2) to prevent the introduction of pollutants into Publicly Owned Treatment Works which will pass through the treatment works without receiving effective treatment or otherwise be incompatible with such works; and
(3) to improve opportunities to recycle and reclaim municipal and industrial

waste waters and sludges.

D. Combined Sewer Overflows

A combined sewer system is a wastewater collection system that conveys sanitary waste waters and storm water through a single-pipe system to a Publicly Owned Treatment Works treatment plant. A combined sewer overflow is the discharge from a combined sewer system at a point prior to the Publicly Owned Treatment Works treatment plant. Three Publicly Owned Treatment Works lie within the Area of Concern, one in each of the following cities: East Chicago, Gary, and Hammond. Combined Sewer Overflows are point sources subject to NPDES permit requirements, including both technology-based and water quality-based requirements of the Clean Water Act. Montgomery Environmental Coalition v. Costle, 646 F.2d 568 (D.C. Cir. 1980).

IDEM's current Combined Sewer Overflow strategy has three required objectives: to ensure that if Combined Sewer Overflow discharges occur, they are only as a result of wet weather; to bring all wet weather Combined Sewer Overflow discharge points into compliance with the technology-based and water quality-based requirements of the Clean Water Act; and to minimize water quality, aquatic biota, and human health impacts from Combined Sewer Overflow. *Indiana Register, Volume 18, Number 12, September 1, 1995.* While none of these objectives specifically list prevention of impairment of beneficial uses in the Area of Concern, both sets of goals are compatible. The Combined Sewer Overflow strategy is coordinated with the State Water Quality Program. All waters of the State have a designated use of fishable / swimmable, and must meet a daily maximum bacteria standard for E. Coli, the main pollutant of concern during Combined Sewer Overflow discharges. Prevention of exceedences of the maximum numerical standard for E. Coli will enable permittees to comply with the requirements of the Clean Water Act and the IDEM's goal of all State surface waters meeting Indiana's water quality standards.

327 IAC 3 and 327 IAC 4 regulate wastewater treatment facilities by prescribing requirements for construction and operation, authorizing requests for data, and also by regulating overflows during both wet and dry weather. Enforcement of these provisions, in addition to implementation of the Combined Sewer Overflow strategy provided in the Indiana Register, will reduce the accumulation of non-natural sediments in the Grand Calumet River.

F. Unlawful Acts in the Floodway

Where IDEM shows that the accumulation of sediments on the bottom of the Grand Calumet River and Indiana Harbor Ship Canal increases costs of shipping materials in the canal, or causes fish deformities, such as those listed in the Habitat Component of the Stage II RAP, the IDNR may bring an enforcement action for the remediation of that transect of the Grand Calumet River and the Indiana Harbor Ship Canal. The IDNR regulates the floodways of Indiana under IC 14-28-1-20-2.

This statute states that a person may not erect, make, use or maintain in or on any

floodway, or suffer or permit the erection, making, use, or maintenance in or on any floodway, a structure, an obstruction, a deposit, or an excavation that will do any of the following:

(A) Adversely affect the efficiency of or unduly restrict the capacity of the floodway.

(B) By virtue of its nature, design, method of construction, state of maintenance, or physical condition do any of the following:

(I) Constitute an unreasonable hazard to the safety of life or property.

(ii) Results in unreasonably detrimental effects upon the fish, wildlife, or botanical resources. IC 14-28-1-20.

IC 14-28-1-21 declares any structure, obstruction, deposit, or excavation described in section 20(2) to be and to constitute a public nuisance.

G. Obstruction of Navigable Waters

Under this statute, IC 14-29, a person, other than a public or municipal water utility, may not: place, fill, or erect a permanent structure in; remove water from; or remove material from a navigable waterway without a permit from IDNR. IC 14-29-1-8(a). Failure to receive a permit when required under either IC 14-28 (above) or IC 14-29 prior to commencing a designated activity may result in the issuance of a restoration order. Additionally, the Indiana Department of Natural Resources commonly issues restoration orders as part of the permit. Typically these orders require a party to restore affected wetlands and mitigate harmful effects on surrounding wetlands, fish, wildlife, and botanical resources. Where a party dredges or fills a waterway without a permit, the IDNR or the U.S. ACE may issue a restoration order to return the waterway to its previous state.

IV. Water Resources Development Act of 1992

While this Act, 102 Public Law 580, creates no sediment enforcement authority, it does provide a mechanism for seeking private-public partnerships for sediment cleanup. The Act states that whenever necessary to meet the requirements of the Clean Water Act, the Secretary of the Army, in consultation with the U.S. EPA Administrator, may remove, as part of operation and maintenance dredging of a navigation project, contaminated sediments outside the boundaries of and adjacent to the navigation channel. The U.S. ACE may remove contaminated sediments from navigable waters for the purpose of environmental enhancement and water quality improvement if such removal is requested by a non federal sponsor and the sponsor agrees to pay 50 percent of the cost of such removal.

V. Waste Management Programs

IDEM's Office of Solid and Hazardous Waste Program and Office of Environmental Response implement the state's waste management program. The Office of Solid and Hazardous Waste, and the rules governing the program are divided into two sections, one for hazardous waste and one for solid waste. Generally, there are no federal counterparts for

Indiana's solid waste rules. Indiana's hazardous waste rules incorporate provisions from the federal rules governing hazardous waste. For example, the Resource Conservation and Recovery Act and the federal Comprehensive Environmental Response, Compensation, and Liability Act authorize the state to develop a framework for managing hazardous waste. Under this regulatory framework, IDEM may issue permits, conduct inspections, institute cleanup activities, and conduct enforcement actions with minimal oversight by U.S. EPA. IDEM has the authority to remediate contaminants in the environment under its enforcement at IC 13-7-11-2.

IDEM uses a combined regulatory and non-regulatory approach for prevention and remediation of land and groundwater environmental contamination. Under the existing regulatory framework, IDEM uses information from the waste management and remediation programs to develop activities in the Area of Concern. In some cases, IDEM and U.S. EPA work as partners to improve environmental management in selected programs and sites.

The sediments underlying the Grand Calumet River and the Indiana Harbor Ship Canal may be classified as waste under both state and federal regulations. The types and levels of contaminants in the sediments vary both within and between reaches. Additionally, large concentrations of pollutants such as lead, arsenic, and PCBs exist in certain areas. Petroleum can also be found in the sediments, as well as floating on top of the water. The regulations discussed below define the sediments in the Grand Calumet River / Indiana Harbor Ship Canal as waste, and provide mechanisms for their removal from the riverbed. This portion of the chapter begins with a discussion of the two primary federal regulations which may be used to remediate these sediments, their state counterparts, and then concludes with the state cleanup provisions.

A. Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)

The guiding policy of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 as amended (CERCLA), 42 USC Section 9601-9675 is to achieve private party cleanup. This act covers both hazardous and nonhazardous substances, and imposes strict liability for a violation. CERCLA provides the authority to: gather information; obtain private party sediment cleanup; receive reimbursement for U.S. EPA cleanup costs; and provide compensation to natural resource trustees for damages to natural resources affected by contaminated sediments. Although its primary purpose is to clean up leaking hazardous waste disposal sites, CERCLA may also be used to compel remediation of pollutants found in other areas of the environment.

The primary enforcement provision under CERCLA, Section 107, provides a means of obtaining natural resource damages that may be used to clean up contaminated sediments and restore the beneficial uses of the stream. Section 107(f)(1) provides that "[i]n the case of injury to destruction of, or loss of natural resources ... liability shall be to the United States Government and to any State for natural resources within the State." To the extent that these damages are not inconsistent with the National Contingency Plan, generators and transporters of

hazardous substances, as well as owners and operators or the disposal, or treatment facilities receiving such substances shall be liable for: all removal costs incurred by the governmental entity; all other necessary response costs incurred by other parties; and damages to natural resources resulting from the release. These provisions have been codified under IDEM's state cleanup statute. Therefore, where contaminated sediments can be linked to an injured natural resource, natural resource damages may be used to obtain remediation of the sediment and restoration of the beneficial uses.

B. Resource Conservation and Recovery Act (RCRA)

The U.S. EPA may use several provisions under the Resource Conservation and Recovery Act of 1976 (RCRA), as amended by the Hazardous and Solid Waste Amendments of 1984, 42 USC 6901-6992k (1982 and Supp. III 1985), to address contaminated sediments associated with a RCRA-regulated hazardous waste treatment, storage or disposal facility. These authorities are found in 42 USC Sections 6928(h), 6924(u), and 6924(v). Article 3.1 of the Indiana Administrative Code incorporates many of these provisions by reference, and establishes a hazardous waste management program for Indiana consistent with the requirements and regulations promulgated pursuant to RCRA.

C. State Waste Programs

Responsibility for developing and implementing land and groundwater protection lies with the Office of Solid and Hazardous Waste Management. This office issues solid and hazardous waste facility permits; assures compliance of permitted/approved facilities and generators; tracks disposal of solid, hazardous, and special wastes; facilitates cleanup of RCRA-regulated facilities; and investigates illegal tire and open dumps. The Office of Environmental Response responds to environmental incidents such as chemical spills, and conducts investigation, scoring, and site management (including cleanup and oversight of cleanup activities) of contaminated waste sites through the state and federal Superfund process. The Office of Environmental Response also investigates groundwater contamination and the impact of underground storage tanks upon the surrounding environment.

1. Indiana's Solid Waste Program

Different state rules govern solid wastes and hazardous wastes. Solid wastes are governed under 329 IAC 2. Solid waste facilities are governed by these rules and permit provisions. Either a violation of the rule itself, or a provision in the solid waste permit may trigger IDEM's enforcement mechanism.

There are both private and municipal landfills in Northwest Indiana. Private landfills are governed largely by state rules with no federal counterparts. In 1991, the U.S. Environmental Protection Agency published revised municipal waste landfill standards, referred to as Subtitle D (40 CFR Part 248) of the Resource Conservation and Recovery Act. These standards went into effect in October 1993 for large landfills and April 1994 for small landfills. The Subtitle D standards for landfills are comprised of six categories: location restrictions; operation; design; groundwater monitoring and

corrective action; closure and post-closure; and financial assurance.

Subtitle D is a self-implementing set of federal standards. This means that landfills are required to abide by the federal regulations. However, each state has the option to obtain authorization for partial or full approval to enforce the Subtitle D standards. A state which has authorization is allowed some flexibility in the standards. For example, the groundwater monitoring standards can be modified to be applicable to the local aquifer characteristics and potential hazards.

Indiana's final approval for Subtitle D authorization was published in the May 1, 1996 Federal Register. IDEM has recently upgraded the standards for the design and operation of municipal solid waste landfills through a revision of the solid waste rules, 329 IAC 10. These changes went into effect in April 1996. Full Subtitle D authorization became effective in Indiana on December 9, 1996.

2. Indiana's Hazardous Waste Program

IC 13-7-8.5 declares that IDEM shall regulate and require the proper and safe transportation, treatment, storage, and disposal of any hazardous waste that is generated in or transported into this state. IDEM regulates hazardous materials pursuant to 329 IAC 3.1. IAC Indiana's hazardous waste permitting program is modeled after the federal RCRA program. All generators and transporters of hazardous waste, and owners and operators of hazardous waste facilities must be permitted under 329 IAC 3.1-1-1. Violations of these permits provide the basis for enforcement actions pursuant to IC 13-7. The statute also authorizes the commissioner to order the responsible party to perform corrective action beyond the boundaries of the facility from which the release occurred.

In January 1986, Indiana received authority to issue permits and closure plans for hazardous waste treatment, storage, and disposal facilities under RCRA Subtitle C. Hazardous waste permits also address the six categories listed for Subtitle D facilities.

In 1995, the hazardous waste permit program has participated in developing a document entitled "The Organization and Management Improvement Plan for the Hazardous Waste Permitting Program". This document is an in-depth assessment of the hazardous waste permit program and was developed to improve the efficiency and effectiveness of the program. During fiscal year 1996, staff began implementing these recommendations.

3. Office of Environmental Response

Spills and releases which threaten the waters of the State (including both surface and ground water) are monitored by IDEM's Emergency Response program. A comprehensive emergency plan has been developed which addresses response issues across the entire county and lays a groundwork for coordination of response mechanisms throughout Lake County.

4. Compliance and Enforcement

IDEM has spent considerable time and resources to improve its compliance and enforcement efforts in Northwest Indiana, including the establishment of a Northwest Indiana Regional Office. During the past two years the number of solid and hazardous waste staff assigned to the Northwest Indiana Regional Office has been increased from one inspector to five inspectors. In addition, the Office of Environmental Response has assigned a full-time inspector in the Northwest Indiana Regional Office to investigate any underground storage tank problems.

The emphasis on a greater presence in Northwest Indiana has resulted in better cooperation between state and local agencies. For example, IDEM worked with local agencies to clean up over 900,000 tires from illegal dumps and tire piles in Lake County during the past year. IDEM is also conducting community-based initiatives to assess the impact of hazardous waste management practices on the Grand Calumet River through increased inspections and other outreach mechanisms. IDEM will continue to develop new and improved tools for facilitating compliance with the State's environmental laws.

IC 13-7-8.5.5.5, the state clean up provision states that whenever there has been a release of a hazardous waste, or a constituent of a hazardous waste, into the environment from a facility authorized to operate under state law, the commissioner must take steps to protect human health and the environment. Options the commissioner has include: issuing an order requiring corrective action or another response measure; or commencing a civil action to compel corrective action. The corrective action may be ordered to extend beyond the boundaries of the facility from which the release occurred.

Corrective Action Orders allow the regulatory agency to order clean up on a much broader scale than a RCRA closure. Constituents that would not normally fall under RCRA closure may now be addressed. Off site migration of a hazardous substance or its constituents may now be remediated. This means that if constituents of a hazardous substance contaminate sediment, the facility can be held responsible for the remediation. Contaminated sediments can affect aquatic life, human health, the environment, drinking water supplies, and recreational uses.

IDEM has a variety of programs to identify contaminated sites and assist with the remediation of these sites in order to protect human health and the environment. IDEM works with existing facilities to remediate contaminated sites at RCRA-regulated hazardous waste facilities through the RCRA Corrective Action program. IDEM identifies other contaminated sites from the National Priorities List (NPL), the federal CERCLIS list, and other state and local investigations. These sites are then assigned to the IDEM's Immediate Removals, State Cleanup or Superfund programs for remedial action. IDEM received authorization in October 1996 for the Corrective Action program. These programs develop remediation strategies to protect human health and

the environment. IDEM is examining ways to improve data collection and analysis to identify better measures of performance of the activities in the Area of Concern.

D. Non-Regulatory Approaches

IDEM works with businesses, industry, and local governments to reduce environmental hazards and encourage practices that go beyond compliance by using a variety of tools. These include outreach education campaigns and non-regulatory site inspections. These efforts help facilities to better understand environmental rules and statutes and to identify opportunities for waste minimization and waste reduction. In addition, efforts are underway to streamline reporting requirements and further explore electronic submission of reports, thus reducing paperwork. Voluntary efforts to cleanup sites that may be of concern, but may not score high enough to facilitate immediate federal and state cleanup efforts (due to limited resources), may be recognized under the Voluntary Remediation Program.

1. Voluntary Remediation

The IDEM Voluntary Remediation Program (authorized under IC 13-7-8.9) provides a mechanism for site owners or operators to voluntarily enter an agreement with IDEM to cleanup contaminated property. When the remediation activity is successfully completed, IDEM will issue a Certificate of Completion and the Governor's office will issue a Covenant Not to Sue to the property owner. These documents provide assurance that the remediated areas will not become the subject of future IDEM enforcement action.

2. Brownfields

Brownfields are previously used commercial or industrial sites that may possess low-levels of contamination or are perceived to be contaminated. Incomplete information about the environmental condition of abandoned urban industrial land can be an impediment to redevelopment activities. Local communities often do not have the expertise or resources to accurately evaluate these properties. IDEM assists in the identification and characterization of these sites under the Brownfields Program.

The IDEM was awarded $150,000 by U.S. EPA Region V, pursuant to its CERCLA Site Assessment Cooperative Agreement, to fund brownfield environmental assessments in Northwest Indiana (and in the city of Indianapolis). IDEM's Site Investigation Section has been working cooperatively with the Northwest Indiana Brownfields Redevelopment Project, which consists of representatives from the communities of Gary, Hammond, and East Chicago. Presently, one site has been sampled in each of the represented cities in Northwest Indiana. The Site Investigation Section has developed a Brownfields Environmental Assessment Application to facilitate the cities with their site selection and to assist IDEM in determining the sites on which to conduct the brownfield environmental assessments. The environmental assessments will include: researching the site history; a review of available file information; a site reconnaissance; and the collection of environmental samples, if

necessary. A report will be completed, which will provide sufficient information to enable prospective buyers to ascertain any potential liability, evaluate the risks, and encourage them to purchase the sites for redevelopment and reuse.

With the remaining funds in the pilot and the restructuring of the U.S. EPA/IDEM cooperative agreement, the Site Investigation Section plans to conduct at least one additional environmental assessment in each of the cities represented by the Northwest Indiana Brownfields Redevelopment Project, and is currently offering assistance to other communities across the State.

VI. Toxic Substances Control Agreement

In 1986, the governors of the eight Great Lakes States signed the Great Lakes Toxic Substances Control Agreement. The purpose of the Agreement was to establish a framework for coordinated regional action in controlling toxic substances entering the Great Lakes System; to further the understanding and control of toxic substances; and to develop common goals, management practices and control strategies for toxics to ensure a cleaner and healthier Great Lakes Basin ecosystem. As a result of this agreement, the states agreed to jointly develop a program for coordinating the control of toxic releases in the Great Lakes System. In 1989, the states and U.S. EPA began working on the Great Lakes Water Quality Initiative to address these concerns. This initiative, now called the Great Lakes Water Quality Guidance, was finalized March 23, 1995. The Office of Water Management completed revisions to the water quality and implementation rules consistent with the guidance, and on December 16, 1996, the Water Board final adopted the rules. Governor Bayh signed the rules into law on January 9, 1997. These new criteria and implementation procedures will be applicable to the Grand Calumet River and Indiana Harbor Ship Canal.

VII. OPA - Oil Pollution Act of 1990

The Oil Pollution Control Act, 33 USC 2701-2761, also provides enforcement authority for the remediation or removal of oil and attached sediments caused by a discharge of oil into navigable waters. Each responsible party for a vessel or a facility from which oil is discharged, or which poses the substantial threat of a discharge of oil, into or upon the navigable waters or adjoining shorelines is liable for the removal costs and damages specified under this act. IC 13-7-20.1-8 authorizes the IDEM to issue an order requiring an owner or operator or a responsible party to remove or remediate a petroleum release.

VIII. Intermodal Surface Transportation Enforcement Act

Established in 1991, this provides authorizations for highways, highway safety, and mass transportation. The purpose of the Act is "to develop a National Intermodal Transportation System that is economically efficient, environmentally sound, provides the foundation for the Nation to compete in the global economy and will move people and goods in an energy efficient manner." The environmental aspect of this Act provides highway funds for activities that

enhance the environment, such as wetland banking, mitigation of damage to wildlife habitat, historic sites preservation, activities that contribute to meeting air quality standards, a wide range of bicycle and pedestrian projects, and highway beautification. For all future public construction projects funded by the Intermodal Surface Transportation Enforcement Act within the Area of Concern, except publicly funded best management practices which are installed according to an approved watershed management plan, the following are required as a part of this Act:

1. A quantification and characterization of the nonpoint source pollution to be generated both during and after construction;
2. An assessment of their ecological impact upon water bodies and groundwater within the Area of Concern; and
3. The alternatives available for preventing and reducing those impacts.

An environmental assessment or environmental impact statement that contains this information in an understandable format is sufficient for purposes of fulfilling this requirement. The IDEM furnishes any public information that it has available to help in the preparation of these assessments or impact statements.

IX. Regulations Affecting Air Quality

In Indiana, responsibility for developing and implementing air programs is located within the IDEM, Office of Air Management. IDEM has the authority, through the Air Pollution Control Board, to develop state rules and programs to improve air quality and to carry out requirements of the Clean Air Act. Indiana's air pollution control rules are contained in Title 326 of the Indiana Administrative Code.

Two cities within the Area of Concern, Gary and Hammond, operate local air pollution control agencies. These agencies work with IDEM to develop and implement air programs within their specific jurisdictions and have varying responsibilities for permitting and compliance activities.

A. State Implementation Plan

The Clean Air Act requires the states to develop and implement a State Implementation Plan to attain and maintain the National Ambient Air Quality Standards. Indiana's State Implementation Plan consists in part of rules and policies that have been established to limit the emission of pollutants into the air. In addition, the State Implementation Plan contains information and analysis, such as summaries of emissions inventories or modeling data to demonstrate the effectiveness of the rules as well as contingency measures in case projected emission reductions and attainment are not achieved. The State Implementation Plan is a living instrument, each time Indiana promulgates a rule intended to contribute to attainment or maintenance of a particular air quality standard, IDEM submits a notice concerning the State

Implementation Plan to U.S. EPA. Upon U.S. EPA's approval of the rule, it becomes part of Indiana's State Implementation Plan.

Development of the State Implementation Plan is a very public process. The Indiana rulemaking statute provides several opportunities for public input and comment, both in writing and at two public hearings held before the board. In addition, U.S. EPA must publish notice of its intent to approve or disapprove a State Implementation Plan submittal and provide an opportunity for the public to comment. State Implementation Plan documents are available for public inspection.

B. Federal Programs

The Clean Air Act requires U.S. EPA to develop certain national rules and programs such as National Emission Standards for Hazardous Air Pollutants and New Source Performance Standards. U.S. EPA is also required to perform ongoing research on complicated air pollution issues and to develop national policy for issues that are not bound by jurisdictional boundaries (acid rain, long-range transport of pollution). IDEM is active in efforts with other states and U.S. EPA to develop regional and national approaches to addressing air pollution issues. Most of the responsibility and authority for implementing federal rules and programs are delegated to IDEM.

C. Permits

The Clean Air Act Amendments of 1990 include provisions for a new operating permit program to develop comprehensive operating permits to be issued for an entire source. On March 10, 1994, the Indiana Air Pollution Control Board adopted new rules establishing this program. IDEM is currently in the process of implementing this program, which is also known as the Title V program. An estimated 62 sources in Lake County may eventually be affected by this program. Sources statewide that have the potential to emit greater than 100 tpy of any regulated pollutant, 10 tpy of a single hazardous air pollutant, or 25 tpy of a combination of hazardous air pollutants are required to obtain a Title V operating permit unless they agree to enforceable limits on their actual emissions that keep them below these thresholds. In Lake County, sources with the potential to emit 25 tpy or more of volatile organic compounds or nitrogen oxides are also required to obtain a Title V operating permit. Additionally, Title V operating permits are required for other sources such as those subject to the prevention of significant deterioration program or the major new source review program in non attainment counties. The Title V operating permit program imposes no new substantive requirements such as emission limits, but rather enhances IDEM's permitting, compliance, and enforcement capabilities with respect to sources located in Lake County. IDEM is identifying priority sources for issuance of Title V operating permits based on environmental priorities, such as location in a non attainment area or a history of compliance problems.

D. Compliance

IDEM has spent considerable time and resources to improve its compliance and

enforcement efforts in Lake County. A Northwest Indiana Regional Office has been established to help focus these efforts in the region. The number of air program staff has been increased to ten with further increases projected in the future. The Air Compliance Section has developed a targeted inspection model and enforcement referral ranking system that focus resources on the sources that have the most serious air pollution impacts.

The Office of Air Management's Compliance Branch is presently drafting detailed "Steel Mill Action Plans" for each of the major steel mills. These plans will set out inspection targets for each facility, modes of compliance verification and compliance history and context of each steel mill facility. The plans will also contain a meaningful reporting mechanism so that the public will have a means to assess the success of our efforts. Additionally, the Office of Air Management is working with sources subject to Lake County's PM_{10} (particulate matter) plan requirement to ensure that the plans as submitted are sufficient to accomplish the goal of improving air quality to meet the NAAQS and then to maintain good air quality in Lake County. Since Lake and Porter Counties are designated for ozone, Office of Air Management has initiated an effort to strategically target major sources of volatile organic compounds for special attention. The Compliance Branch is presently screening source lists to choose a number of the largest industrial sources of volatile organic compounds as candidates for "Site-Specific Action Plans." These plans will incorporate allocation of additional compliance resources, multi-media and multi-agency approaches as well as an emphasis on pollution prevention.

The Northwest Indiana Regional Office relies on IDEM's main office in Indianapolis for support (e.g., training, enforcement, technical assistance). Recent efforts have helped to greatly improve communications and coordination. Northwest Compliance staff have recently begun attending Office of Air Management Compliance Branch meetings on a regular basis and Office of Air Management continues to emphasize consistency by holding weekly Compliance Branch manager meetings in order to enhance communications.

X. Public Nuisance

The nuisance statute states, "[w]hatever is injurious to health, or indecent, or offensive to the senses, or an obstruction to the free use of property, so as to interfere with the comfortable enjoyment of life or property, is a nuisance, and the subject of an action." IC 34-1-52-1. The State may bring a public nuisance claim under IC 34-1-52-1. IC 34-1-52-2 defines those persons who may bring an action under the nuisance statute:

Sec.2. (a) An action to abate or enjoin a nuisance may be brought by any person whose property is injuriously affected or whose personal enjoyment is lessened by the nuisance.

(b) A civil action to abate or enjoin a nuisance may also be brought by an attorney representing the county in which a nuisance exists or by the attorney of any city or town in which a nuisance exists.

The State of Indiana alleged a nuisance cause of action in a cross-claim filed June 6,

1994, in U.S. v. The Sanitary District of Hammond, et al.

XI. Regulations Affecting Natural Resources

Various laws, statutes, policies and agreements are available which, if properly utilized, can contribute to the protection, conservation, restoration or enhancement of wetlands and aquatic habitats. Several authorities have been outlined by Dodge and Kavetsky, 1995 and Votteler and Muir, 1996. Some are listed below.

A. International/Binational

Authority	Legal Citation	Species or Target Habitat
North American Waterfowl Management Plan (1986)		Conservation of waterfowl habitat
Migratory Bird Convention		Migratory birds
Great Lakes Water Quality Agreement		Wetlands preservation
Strategic Plan for Great Lakes Fisheries Management		Binational management for fish species and their habitats
RAMSAS Convention on Wetlands of International Importance		Important wetlands identified and protected through legislation
B. UNITED STATES		
National Wildlife Refuge System Administration Act	16 USC 668dd-668jj	Fish and wildlife on all US Fish and Wildlife Service lands
Fish and Wildlife Coordination Act	16 USC 661-667e	Fish and wildlife, must be federal project
Great Lakes Fisheries Act	16 USC 931-939c	Fish habitat, sea lamprey control
Endangered Species Act	16 USC 1531-1543	Any listed or candidate species habitat
Migratory Bird Treaty Act and Migratory Bird Conservation Act	16 USC 701-718i	Migratory birds
Emergency Wetlands Resources Act	P.L. 99-645	Wetlands

Fish and Wildlife Act of 1956, as amended	16 USC 742a-742j	Fishery and Wildlife Resources
Natural Resource Damages - Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), as amended by SARA (1986)	42 USC 9601 et seq. Assessment rule at 43 CFR 11	Construct habitat projects to restore or replace injured resources
Airport and Airway Development Act	49 USC 1701-1742; 84 Stat. 219	Habitat
Anadromous Fish Conservation Act	16 USC 757a-757g; 79 Stat. 1125	Andromous fishery resources
Bankhead-Jones Farm Tenant Act	7 USC 1000.1006,1010-1012; 50 Stat.522	"..Land conservation and utilization in order to correct maladjustments in land use..."
Estuary Protection Act	16 USC 1221-1226; 82 Stat. 625	Pre-acquisition study and inventory of estuaries of the United States, including land and water of the Great Lakes
Federal Power Act	16 USC 791a-825r; 31 Stat. 1063	Fish and wildlife resources
Lacey Act of 1900	16 USC 701,702; 31 Stat. 187, 32 Stat. 285	Fish and wildlife, also injurious species controls
Sikes Act	USC 670a-670o; 74 Stat. 1052	Fish and wildlife, esp. Military and tribal lands
Watershed Protection and Flood Prevention Act	16 USC 1001-1009; 33 USC 701b; 68 Stat. 666	Fish and wildlife
Federal Water Project Recreation Act	16 USC 4601-21	Facilities for fish and wildlife at all reservoirs under the control of the Secretary of Interior except those within National Wildlife Refuges

Federal Aid in Sport Fish Restoration Act of 1950 (Dingell-Johnson) and (Wallop-Breaux)	16 USC 777-777k	Funding to States for management of sport fish (land acquisition, research, development and management projects)
Wildlife Restoration Act (Pittman-Roberson)	16 USC 669-669i	Funding to States for land or water adaptable as feeding, resting, or breeding places for wildlife
Coastal Zone Management Act	16 USC 1451-1464	Assist State programs to protect, develop and enhance coastal resources
Federal Water Pollution Control Act Amendments	33 USC 1251-1365, 1281-1292, 1311-1328, 1342-1345, 1361-1376	Water quality which provides for protection of fish, shellfish, and wildlife; Bay/Estuary programs
Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990	16 USC 4701-4741	Unintentional introduction of nonindigenous aquatic species
North American Wetlands Conservation Act of 1989	16 USC 4401-4412	Wetland ecosystems and other habitats for migratory birds and other fish and wildlife
Great Lakes Fish and Wildlife Restoration Act of 1990	16 USC 941a-941g	Fish and wildlife resources and their habitats of the Great Lakes basin
Federal Water Pollution Control Act (Clean Water Act) Section 404	PL 92-500	Regulates activities of dredge and disposal - impacts wetlands and fish & wildlife habitat
Rivers & Harbors Act of 1938	52 Stat. 802	"du regard" given fish & wildlife conservation in Federal project planning
Rivers & Harbors Appropriation Act of 1899, Section 10	30 Stat. 1151	prohibited unauthorized obstruction of or alteration of navigable waters
Watershed Protection and Flood Prevention Act	68 Stat. 666	investigation of fish & wildlife conservation on NRCS watershed projects

Wild & Scenic Rivers Act	PL 90-542	protects designated river segments
Land & Water Conservation Fund Act	PL 88-578	funds to acquire wildlife areas
Migratory Bird Hunting & Conservation Stamps	Ch. 71, 48 Stat. 452)	acquire wetland easements from fees for hunting birds
Surface Transportation Revenue Act of 1991	PL 102-240)	funding for wetland mitigation banks for State DOT
US Tax Code Tax Reform Act of 1986	PL 99-514	deductions for donation of wetlands to some non-profit groups
Water Bank Act	PL 91-559	wetland leases for 10 year period
Wetlands Loan Act	PL 87-383	interest-free loans for wetland acquisition & easements
Executive Order 11990, Protection of Wetlands (1977)		Federal Agencies minimize impacts of Federal activities on Wetlands
Executive Order 11988, Protection of Floodplains (1977)		Federal Agencies minimize impacts of Federal Projects on floodplains
Federal Noxious Weed Act (1975)	PL 93-629	control of noxious weeds on Federal Lands
Food, Agriculture, Conservation, and Trade Act of 1990	PL 101-624	Wetland Reserve Program - perpetual nondevelopment easements on farmed wetlands
Food Security Act of 1985	PL 99-198	"Swampbuster" - suspends agricultural subsidies to farmers who converts wetlands to cropland & Conservation Easements protect wetlands
Oil Pollution Act of 1990	PL 101-380	enhance response to oil spills & requires natural resource damage assessments

Tax Deductions for Conservation Easements	Section 6 PL 96-541)	deduction for property interest contributed to conservation organization for conservation
US Tax Code Reform Act of 1986	PL 99-514	Eliminated incentives for clearing land - deductible conservation expenditures for wetland protection
Water Resources Development Act of 1976, 1986, 1988, 1990	PL's 94-587, 99-662, 100-676, 101-640	Future mitigation plans for federal water projects should include "in kind" mitigation for bottom-land hardwood forests

C. Natural Resource Damage Assessments

Natural Resource Damage Assessment rules established at 43 CFR 11 for the release of hazardous substances and 15 CFR 900 for the release of oil provides a framework for conducting sound natural resource damage assessments that achieve restoration of the environment and make the public whole for injuries suffered to natural resources and natural resource services. These restoration actions supplement response and remedial procedures established under the National Oil and Hazardous substances Pollution Contingency Plan (NCP) at 40 CFR part 300 and Section 1006(e)(1) of the Oil Pollution Act of 1990 and Title I (Sections 101 - 127) of the Comprehensive Environmental Response, Compensation, and Liability Act (as amended). The Clean Water Act Section 311 also contains provisions for Natural Resource Damages.

1. Process

The process for addressing natural resource damages is divided into three parts: a pre-assessment screen; restoration planning / assessment phase; and restoration implementation / post-assessment phase. Non governmental groups and organizations, including potentially responsible parties, are encouraged to commit resources to developing and implementing restoration plans. *See 43 CFR Part 11; 15 CFR Part 990; 40 CFR Section 300.185.* Additionally, the statutes allow for settlement at any time during the restoration process. With the involvement of responsible parties and the public, restoration of natural resources will be achieved more quickly, transaction costs will decrease, and litigation will be avoided. *43 CFR Part 11; 15 CFR 990.*

Part I - The Pre-assessment Screen

To date, the natural resource trustees, as authorized under 43 CFR 11 and 15 CFR 990, have completed a pre-assessment screen and have determined to perform a natural resource damage assessment on the Grand Calumet River and Indiana Harbor Ship Canal. The trustees determined that a release of a hazardous substance or oil has occurred; the natural resources for which the trustees may assert trusteeship have been or are likely to be adversely affected by the release; the quantity and concentration of the

released hazardous substances are sufficient to potentially cause injury to natural resources for which the trustees may assert trusteeship; data sufficient to pursue natural resource damage assessment are available or likely to be obtained at a reasonable cost; and currently implemented and planned response actions have not and will not remedy the injury to natural resources without further action.

Part II - Restoration Planning / Assessment Stage

The extent of injury and damage to natural resources is determined during the restoration planning / assessment phase. The goal of the injury assessment is to evaluate the nature, degree, and spatial and temporal extent of injuries to natural resources and services. The information gathered here will provide a technical basis to determine the need for and scale of restoration action.

Assessments brought under 43 CFR Part 11 divide these procedures into three phases: the injury determination phase; a quantification phase; and a damage determination phase. Additionally, the trustees, with recommendations from potentially responsible parties and the public, must decide whether to perform a Type A or Type B Assessment under 43 CFR Part 11. A Type A procedure is a simplified assessment of damage in coastal and marine environments which examines the pathway of contamination; natural resource injury; and an economic damage model. The Type B procedure is more complex, and includes the injury to the resource caused by the release; a quantification of baseline level of reduction in sources; alternatives such as restoration; rehabilitation, replacement, and / or acquisition of equivalent resources.

Restoration of natural resources and services under 15 CFR Part 990 consist of an injury assessment and the selection of a restoration plan. The injury assessment procedure, like those for Type A and Type B above, consists of determining the pathway linking the incident to the exposed and injured natural resources and an injury quantification stage. Further, the selection of a restoration plan occurs after an evaluation of a reasonable range of restoration alternatives. The trustees may choose to use all or parts of existing Regional Restoration Plans. These restoration plans must be consistent with the Oil Pollution Control Act's requirement that damages recovered be used solely to restore, replace, rehabilitate, or acquire the equivalent of injured natural resources and services.

Part III - Post Assessment / Restoration Phase

Post assessment procedures consist of a report of assessment with the administrative record, an accounting, and the publication of the restoration plan. The administrative record contains the body or information supporting the trustees' decisions through restoration planning. The restoration plan describes how the monies will be used to address natural resources, and specifically identifies what restoration, rehabilitation, replacement, or acquisition of the equivalent resources will occur. Modifications may be made to the plan where necessary as the plan proceeds.

2. Data Collection

The Natural Resource Damage Assessments Final Rules specifically requires that the trustees perform each of the phases listed above before implementing a Final Restoration Plan. According to 15 CFR Section 990.42, trustees must conduct data collection to assess injuries and determine whether to conduct restoration planning. Under 43 CFR Section 11.62, trustees must determine if and the extent of injuries to natural resources using the methodologies and guidance provide under Section 11.64. The rule does not place any limitations on how the trustees may collect the data but do provide acceptance criteria which data must meet to produce injury to resources. However, the rules limit the types of data the trustee may collect and states that the collection of data must be coordinated with response actions such that collection and analysis do not interfere with response actions.

The National Contingency Plan provides procedures for the response and remediation of release of hazardous substance or oil and establishes requirements for the performance of a remedial investigation and feasibility studies (RI/FS). The procedures for hazardous substances may be found at 40 CFR 300.430. The data collected must assist in accelerating the response actions and begin to identify the need for treatability studies. Coordination of trustee's natural resource damage assessments with response and/or remedial activities will enhance data needs and eliminate duplicative efforts.

3. Adoption of a Restoration Plan

Natural Resource Damage Assessment rule developed under the Oil Pollution Act (15 CFR 900) provides for the potential development of a "Regional Assessment Plan". Such a plan would have to be developed following all NEPA guideline established in the final rule (15 CFR 900). Once approved, the plan or parts of it could be implemented to address natural resource damages caused by the release of oil without the necessity of site specific restoration planning. The final rules developed under CERCLA for the release of hazardous substances do not contain provisions for the development of or the use of a regional restoration plan. However, components of the RAP which meet the requirements of restoration plan(s) developed under 43 CFR 11 can and should be utilized by the Natural Resource Trustees.