

Chapter 2

General Program Overview

2.1 Description of the § 6217 Management Area

2.1.1 Introduction

Section 6217 of the CZARA of 1990 requires that the geographic scope of each coastal nonpoint program must be sufficient to ensure implementation of management measures to “restore and protect coastal waters.” NOAA, in consultation with USEPA, is required under this federal law to review each state’s existing coastal zone management boundary and recommend a § 6217 management area. The boundary must extend inland to the extent necessary to control nonpoint source pollution from land and water uses that have a significant impact on a state’s coastal waters.

Ohio’s coastal area covers part of nine counties along the Lake Erie shoreline and is defined in the state coastal management law as “the water of Lake Erie, the islands in the lake, and the lands under and adjacent to the lake, including transitional areas, wetlands, and beaches. The coastal area extends in Lake Erie to the international boundary line between the United States and Canada and landward only to the extent necessary to include shorelands, the uses of which have a direct and significant impact on coastal waters as determined by the director of natural resources.” Figure 2-1 provides a general view of Ohio’s coastal management boundary. For purposes of implementing the coastal nonpoint source requirements under § 6217, NOAA has recommended a larger area that encompasses Ohio’s entire Lake Erie watershed. This larger area includes portions of 35 counties and covers an area of 11,649 square miles (Figure 2-2). Figure 2-3 depicts the boundaries of the major (>100 sq. mi. drainage area) stream basins that are located within Ohio’s Lake Erie watershed area.

Ohio has determined NOAA’s recommended management area for the § 6217 program is reasonable for the protection of its coastal waters and does not wish to propose an alternate boundary.

2.1.2 Physical Characteristics

Ohio’s Lake Erie watershed lies within two physiographic provinces: the Till Plains and Huron-Erie Lake Plains Sections of the Central Lowland Province and the Glaciated Allegheny Plateaus Section of the Appalachian Plateaus Province. The Portage/Allegheny Escarpment marks the boundary between the two Provinces (Figure 2-4). The region’s geologic foundation consists of ancient igneous and metamorphic bedrock that was periodically covered by shallow seas and subsequent sediment deposits (Figure 2-5). These sediments formed layers of sandstone, shale, limestone, and dolomite that were, in turn, carved into wide valleys by river systems and advancing glacial ice. Four major stages of continental glaciation affected the Great Lakes area within the last 1.6 million years. Thick ice sheets advanced into the region, eroding soil and bedrock that was then deposited in other locations. About 14,500 years ago, the last of the ice sheets slowly melted and retreated, releasing large volumes of water. This meltwater and precipitation in the drainage basin collected in pools in the basins created by previous glacial scouring. As the ice margin continued to retreat, these pools enlarged to form a large post-glacial lake in what is now the

Lake Erie basin. Present-day glacial deposits in the region consist of mixtures of clay, sand, gravel, and boulders in various types of deposits resulting from different modes of deposition. Debris carried along by the glaciers was deposited in two principal fashions, either directly by the ice or by meltwater from the glacier. Kames and eskers, outwash, and lake deposits were left by glacial waters and are characteristically size-sorted. Ground moraine and end moraine deposits consist of unsorted clay to boulder size material that was deposited directly from the ice. Figure 2-6 depicts the occurrence of the various types of glacial deposits found in Ohio.

The climate of the Lake Erie Basin is typical of the temperate mid-continent region. Temperatures vary widely on an annual and daily basis. The annual mean temperatures reported by the National Climatic Data Center for Akron, Cleveland, Toledo, and Youngstown range from 48.3 to 49.7°F. The average annual precipitation reported for these stations ranges from 32.97 to 37.32 inches.

2.2 Land Uses in the § 6217 Management Area

Ohio's Lake Erie watershed encompasses 11,649 square miles and includes portions of 35 counties. Of this land, over 72 percent is agricultural or open space, 20 percent is wooded, and just over 2 percent remains as wetland. The developed and urban environment— industrial, commercial, residential, quarries, transportation, and institutional uses—accounts for 4 percent and the remaining 1 percent is covered by inland lakes and rivers (Figure 2-7). Land cover information was acquired from the Ohio Capabilities Analysis Program, a geographic information system (GIS) for natural resource data available through ODNR. The map is based on 1994 data, the most recent year for which the land cover information was available. Additional land cover changes have likely occurred over the past five years since the data were collected. The 1994 land cover map is derived from digital data layers including: urban, agricultural, shrub/scrub, wooded, open water, non-forested wetlands, and barren land covers. It is important to note that the agricultural land cover category overstates the amount of agricultural land cover in that it includes non-impervious land (such as lawns and golf courses) in urban areas, and, as a result, probably understates the amount of urban land.

Table 2-1 shows a breakdown of land use activity in the Lake Erie basin for each major (>100 sq. mi. drainage area) watershed. These percentages also indicate the enormous amount of urban development taking place in several watersheds, notably the Cuyahoga and Rocky River.

What has been gained over the past 200 years of development is a thriving agricultural and industrial based economy. The major change in land use over the past 20 years has been the conversion of farmland and woodlands to industrial, commercial, and residential uses. However, the dominant land use today in the Lake Erie Basin remains row crop agriculture. In comparison with the other Great Lakes drainage basins, where forestry is the dominant land use, the more intensive land uses in the Lake Erie Basin result in the delivery of larger loads of sediments, nutrients, and pesticides to the Basin's waters.

2.3 Water Quality in the § 6217 Management Area

Historical Perspective

The Lake Erie environment of today has been greatly modified from that of its natural condition, not only in terms of physical appearance, but in terms of water quality as well. Prior to European settlement, coastal processes were governed by water levels, wave energy, and sediment sources from tributaries and bluffs. Barrier beaches and spits accommodated the development of extensive and contiguous coastal wetlands, which provided critical spawning, nursery, and feeding habitat for many Lake Erie fishes. One such wetland system, the Black Swamp, covered an area of approximately 4,000 km² of the western Lake Erie basin watershed in Ohio, Indiana, and Michigan. This huge wetland system provided storage and purification for waters feeding Ohio's Maumee, Sandusky, and Portage Rivers. By 1850, Ohio was largely deforested and was converted to farmland, villages, and towns. Virtually all of the Black Swamp was cleared and drained between 1850 and 1900. The draining of Lake Erie's coastal wetlands and the Black Swamp eliminated most of the buffering capacity for pollutants and sediments generated in the upland portions of the watershed. In addition, the efficient drainage systems and extensive croplands which replaced the wetlands exacerbated future pollution problems by increasing erosion potential and accelerating the delivery of sediment and attached pollutants to the lake.

Since the turn of the century, urban, industrial, and agricultural land uses have jeopardized water quality in Lake Erie. Between 1920 and 1950, rapid urbanization and industrialization, as well as more intensive farming, led to a dramatic increase in phosphorus loading and eutrophication. Eutrophication results from excessive nutrient loads, which cause rapid growth of aquatic plants, particularly algae. As algae die, their decomposition utilizes large amounts of oxygen, lowering ambient oxygen levels in the lake, often to the point where most forms of aquatic life cannot survive. During the 1960s, Lake Erie suffered from massive algae blooms and thousands of square miles of oxygen depletion.

Many municipalities and industries discharged raw or poorly treated sewage and other contaminants into tributaries and directly into the lake from the early 1900s until water quality controls began to limit such activities in the 1970s. Agricultural practices (increased tile drainage, channelization, and greater chemical application) from the 1950s to the late 1980s also resulted in dramatic increases in sediment, nutrient, and pesticide loadings. As a result, phosphorus loadings to Lake Erie increased from approximately 4,000 metric tons per year in 1900 to over 30,000 metric tons per year in 1970. Overall, the trophic status of Lake Erie changed from optimal mesotrophic conditions at the time of European settlement to a period of increasing enrichment, peaking with hyper-eutrophic conditions in the 1960s and early 1970s.

Current Conditions

Water quality conditions in Lake Erie have improved considerably. The bulk of the effort to clean up the lake has centered on limiting the discharge of pollutants that reach the lake through a pipe—or point source pollution. Many billions of dollars have been spent in Ohio and around the Great Lakes in the construction of facilities to treat both domestic and industrial wastewater. Nowhere have the results been more spectacular than in the removal of phosphorus from Ohio's wastewater streams. Phosphorus concentrations from treated sewage

that once averaged seven milligrams per liter have now been reduced to less than half the 1.0 milligram per liter limit established by the International Joint Commission (IJC). As municipal wastewater and phosphorus inputs declined, their adverse impacts on the lake lessened, including the loss of oxygen in lake waters. Biochemical oxygen demand (BOD) is a measure of the amount of dissolved oxygen needed to decompose organic matter in water. It is an indicator of pollution since heavy organic waste loads (e.g., sewage and decomposing algae) have a high demand for oxygen. Figures 2-8 and 2-9 show reductions in both biological oxygen demand and phosphorus loads. These figures and much of the text in this section is taken directly from Ohio's *State of the Lake Report*, Ohio Lake Erie Commission, 1998.

Progress towards reducing pollutant loading through other pathways has not enjoyed the same degree of success as from point sources. Until recently, limited resources have been expended toward reducing the input of nonpoint pollutants—particularly from agricultural and urban runoff. However, reductions have been achieved in the decrease of individual nonpoint pollutants—phosphorus in particular. This reduction has been achieved because of widespread adoption of conservation tillage. Conservation tillage, as opposed to conventional tillage, leaves most if not all of the preceding year's crop residue on the field. The residue acts as a protective mulch, reducing the runoff of soil and the chemicals attached to soil, and promoting increased infiltration of precipitation, thereby reducing total water runoff and erosion. Figure 2-10 indicates the growth of this industry-changing environmental practice.

Although conditions have improved, present-day intensive agricultural activities, particularly west of the Huron River, continue to alter habitat and contribute sediment and nitrates to coastal waters. Urban sources of nonpoint pollutants, such as sediment from construction sites, combined sewer overflows, stream channel modification, and stormwater runoff, are having an increasingly negative impact on water quality. Dam construction, shoreline modification, marina development, diking, and other activities that alter the natural structure of the lakeshore, river mouths, and associated wetlands also continue to occur. Significant stretches of numerous tributaries, many rivermouths, and some nearshore areas within the lake itself have sediment contamination problems. These include elevated levels of nutrients (particularly phosphorus attached to sediment); metals (mercury, cadmium, lead, chromium, cyanide, copper, and zinc); and industrial contaminants (primarily polychlorinated biphenyls (PCBs) and polyaromatic hydrocarbons). The primary problem with contaminated sediments is that the chemicals of concern do not remain on the bottom. Small invertebrates living in the sediments will take these compounds into their bodies, and fish feeding on these invertebrates absorb the chemicals into their tissues. Chemicals may continue up the food chain until the contamination originating from the sediments accumulates at unhealthy levels in wildlife and humans. A recent analysis by the U.S. Army Corps of Engineers (USACE) found seven sites with sediments that are considered to be contaminated: the Ottawa River, Maumee Bay, Maumee River, Swan Creek, Black River, Cuyahoga River, and Ashtabula River.

In an effort to accurately define the varied and complex issues that contribute to persistent present water quality problems, the Ohio EPA monitors and assesses the state's surface waters using an *ecosystem* approach. Since 1978, Ohio EPA has employed the concept of tiered aquatic life uses to determine if surface waters meet Ohio Water Quality Standards. The tiered aquatic life uses include Warmwater Habitat, Exceptional Warmwater Habitat, Coldwater Habitat, Seasonal Salmonid Habitat, Modified Warmwater Habitat, Limited

Resource Water, and the now defunct Limited Warmwater Habitat. Ohio uses the fish and invertebrate communities that inhabit streams to assess water quality conditions in Ohio's waters. Aquatic animals are generally more sensitive to pollutants compared to other animals because they inhabit the water all of the time. Moreover, some notable successes have been measured concerning biological recovery, including mayfly and bald eagle populations (Figures 2-11 and 2-12). Bald eagles are a good water quality indicator species since they consume fish and are affected by the levels of toxic chemicals in fish tissue.

In addition to the biological data, Ohio EPA also collects information on the chemical quality of the water, sediment, and effluents; data on the contaminants in fish flesh; and data on the physical nature of streams (i.e., aquatic habitat, siltation). Analysis of these data is essential to accurately identify the factors that are limiting or impairing aquatic life and those that constitute threats to human health. *Causes* of impairment are the *agents* that actually damage or impair the aquatic life in a stream, such as the toxic effects of heavy metals or acidic water. *Sources* of impairment are the origin of the agent. For example, an industry may discharge a heavy metal, or a coal mine may be the source of acid water leaching into a stream. A listing of threatened and impaired stream segments identified in the 1996 Section 305(b) *Ohio Water Resource Inventory* Report for the Lake Erie Basin is provided in Appendix A.

The six leading causes of impairment to aquatic life use in Ohio's waters are identified in the 1998 *Ohio Water Resource Inventory* Report (updated statistics), as habitat alterations, organic enrichment, siltation, metals, flow alteration, and nutrients (Figure 2-13). The leading sources of surface water impairment are also shown in Figure 2-13. Hydromodification is the overall leading source of impairment in Ohio and is the cause of the altered habitat and siltation/sedimentation problems that impair many waters. Specific causes and sources of impairment for major streams included in the Lake Erie Basin are listed in Appendix B. A statewide comparison of the changes among the major causes of aquatic life impairment since 1988 indicates that point source related causes of impairment have declined, while nonpoint source related causes have emerged as major factors.

Point sources of impairment are the most rapidly declining pollution source, and have shown substantial declines as major sources of impairment since 1988. Ohio EPA projects that by the year 2002, point sources of impairment will be responsible for less than 10 percent of the remaining impairment statewide (Figure 2-14). Other leading nonpoint sources of impairment include agriculture, mining, other/unknown, and urban sources.

Substantial progress has been made in restoring the condition of many Ohio streams and rivers. In many ways, however, the most difficult causes and sources of impairment remain. A comparison of aquatic use attainment in Ohio's sub-basins for the time periods 1978-1987 and 1988-1996 is shown in Figure 2-15. These maps illustrate the impact of agricultural activities and extensive stream habitat modifications in Ohio's western Lake Erie Basin and the impact of development and construction activities in the Basin's urban areas.

Total Maximum Daily Load Development

If analyses indicate an impairment of water quality standards when technology-based controls are inadequate, Section 303 (d) of the Clean Water Act establishes the total maximum daily loads (TMDLs) development process to achieve state water quality

standards. A TMDL is a written, quantitative assessment of water quality problems and contributing sources. It specifies the amount a pollutant needs to be reduced to meet water quality standards, allocates pollutant load reductions in a watershed, and provides the basis for taking actions needed to restore a waterbody. It is the watershed approach requiring quantification of both the point and nonpoint sources.

TMDLs establish allowable loadings (both point and nonpoint source controls) necessary to meet water quality standards in a given waterbody. Specifically, allowable loading determinations are equal to the sum of individual wasteload allocations for point sources and the load allocations for both natural inputs and nonpoint sources. TMDL calculations also include margins of safety to take into account the variation and unknown factors between pollutant load and water quality. To complete the TMDL development, implementation plans are drafted, and monitoring recommendations given. Public input is solicited during the TMDL development process and public review and comment are encouraged on the implementation plans.

To most effectively use Ohio EPA resources, the Division of Surface Water recommends that TMDL development follow the appropriate five-year basin cycle currently utilized for National Pollutant Discharge Elimination System (NPDES) permits. This type of an approach will allow a TMDL to be completed prior to the expiration of NPDES permits that may be affected by that TMDL.

Ohio's final TMDL Priority List for 1998 identifies 881 waterbody segments statewide that require TMDL development (Appendix C). Based on this list, Ohio EPA has selected four watersheds for TMDL development in FFY 1999-2000. One of the watersheds selected for TMDL development is the Rocky River watershed, which is located within the § 6217 management area. Causes of impairment of the Rocky River watershed include ammonia, chlorine, and nutrients, resulting primarily from municipal point sources and urban runoff.

Other watersheds in the § 6217 management area identified for TMDL development include the Black River watershed (identified for TMDL development in FFY 1993-1994) and the Cuyahoga River watershed (identified for TMDL development in FFY 1997-1998). The Black River TMDL development project has not been completed due to resource constraints and has been included in Ohio EPA's tentative TMDL schedule to be reexamined and completed by 2003. The Cuyahoga River TMDL development has been broken down into two ongoing projects, one focusing on the Middle Cuyahoga and the other focusing on the Lower Cuyahoga. A preliminary TMDL report has been issued for the Middle Cuyahoga, and cites habitat alteration, excessive nutrient levels, and low dissolved oxygen as the primary causes of impairment in the stream segment. Main sources of impairment identified included flow modification, flow impoundment, and municipal discharges. Recommended restoration measures include increasing the natural river characteristics through modification of existing dams and their flow releases, and decreasing pollutant loadings that consume dissolved oxygen. Ongoing studies of the Lower Cuyahoga are being conducted in conjunction with the Cuyahoga RAP process and are focusing on developing solutions to address dissolved oxygen deficiencies in the shipping channel. A formal TMDL document has not been completed for the Lower Cuyahoga; however, the required TMDL elements appear to have been addressed.

The focus on TMDL development and implementation will provide an important construct for evaluating water quality goals at the watershed level. Ohio EPA is currently working with an external advisory group (EAG) to develop management strategies and protocols for future TMDL development. The EAG is comprised of federal, state, and local agencies; private organizations; and private citizens.

Concurrent with the external group deliberations, Ohio EPA has been developing approaches for organizing the technical work of a TMDL at the watershed level. A key piece currently under development is validation. The purpose of validation is to track progress towards attainment of water quality standards. The proposed validation process uses a three-tiered approach to measuring progress based on the environmental indicators continuum, moving from activity-based indicators to environmental indicators. The first tier assesses progress of implementing controls (both point and nonpoint source). The second tier tracks the in-stream effects of these controls, and the third tier assesses attainment of standards once an implementation plan has been both successfully completed and in effect for an appropriate duration.

Ohio will be evaluating the applicability of such an approach, particularly with the scope of detailed information needed (and available) at each tier to provide meaningful information. For this approach to be effective, input of self-reported information from local watershed projects will be critical. Overall, the validation process will provide a mechanism to organize information consistently to allow program and project managers to determine the effectiveness of the implementation plan as well as to measure progress towards meeting water quality goals.

Areas of Concern

In 1981, the IJC Water Quality Board designated 43 localized Areas of Concern (AOCs) on the Great Lakes system that exhibited serious environmental problems related to water, sediments, and biota. Four of these AOCs are located within Ohio's Lake Erie Basin. Since 1988, Ohio EPA has been working toward completion of remedial action plans (RAPs) for Ohio's four Lake Erie AOCs—the entire Black River watershed, and the lower Ashtabula, Cuyahoga, and Maumee rivers (Figure 2-16).

The Black River RAP process began in 1991. A fish consumption and contact advisory due to polynuclear aromatic hydrocarbon- (PAH-) contaminated sediments has been in effect for the lower Black River since 1983. Many remedial actions have already been completed to substantially reduce discharge from point sources along the river, and a riparian corridor restoration, enhancement, and protection pilot project is being planned to reduce the impacts of nonpoint sources.

The Ashtabula River RAP Advisory Council formed in March 1988 in partnership with Ohio EPA to design and implement future remedial actions in the AOC. The primary issue in the Ashtabula River AOC is contaminated sediment. A fish advisory, issued in 1983 due to PCBs and the presence of a variety of chlorinated chemicals, still exists. A 1993 interim dredging project removed an estimated 30,000 cubic yards of nontoxic, moderately polluted sediment from shoaled areas in the navigation channel. Additional sediment sampling was conducted in 1995 to further delineate the location of PCB-contaminated sediments and to test for the

presence of any Resource Conservation and Recovery Act (RCRA) regulated hazardous waste.

The Cuyahoga River RAP process was established in 1988 by the creation of the Cuyahoga River Coordinating Committee. Based on new (1993) risk-based guidance now used by Ohio, a fish consumption advisory has been issued for the Cuyahoga. Extensive work has been done investigating fecal coliform contamination in the river, and additional work is planned to investigate the potential impact of fecal coliform in sediment on nearshore water quality. Habitat enhancement is a priority effort underway in the Cuyahoga AOC and a project is underway to investigate the potential for creation/restoration of wetlands along the river to reduce impacts from nonpoint sources.

Top priorities of the Maumee RAP Implementation Committee in addressing this AOC include agricultural runoff, landfills and dumps, wetlands and habitat preservation, and urban runoff. Action groups have been formed for each issue and public participation is actively being sought. Implementation of best management practices (BMPs) throughout the Maumee watershed has been intensified to reduce sediment and the associated phosphorus and contaminant loading in the harbor.

The extensive contamination problems in the Ottawa River (Toledo) have prompted the formation of an additional action group. Along a segment of the Ottawa are wall-to-wall landfills that are actively leaking PCBs. Remediation efforts are underway to eliminate the leaching and to clean up a small, highly PCB-contaminated tributary.

2.4 Identification of Critical Coastal Areas

Critical coastal areas have been identified by ODNR through its GIS process by overlaying coastal nearshore areas with recent urbanization. Urbanization represents the greatest threat to attainment of water quality standards in coastal areas because of the changes in watershed runoff quality and quantity and the loss of habitat. The Ohio EPA's *Ohio Water Resource Inventory* (1996 and its 1998 update) identifies intensive urbanization, and particularly suburbanization, as the most significant threat to watersheds in the 1990s. (These problems are discussed at more length in Chapter Five, where urban water quality issues are addressed.)

The Great Lakes Commission has made direct connections between urban sprawl and declining environmental quality. In a working paper entitled "Impacts of Changing Land Use", it was stated that one of the most significant development issues in the Great Lakes basin was the "virtually uncontrolled sprawl of low-density residential areas." Urbanization reduces the infiltrative capacity of the ground to assimilate increased volumes of runoff. The resulting system significantly changes the existing hydrology and leads to reductions in water quality.

During urbanization, vegetated and open forested areas are converted to land uses that usually have large areas of impervious surfaces, resulting in increased runoff volumes and pollutant loadings (USEPA, *Management*, 1999). Changes in runoff and accompanying erosion increases sediment loadings (Schueler, 1987). Uncontrolled sediment loads have been reported to be on the order of 35 to 45 tons per acre per year (Novotny and Chesters, 1981;

Wolman and Schick, 1967; and York and Herb, 1976, 1978), whereas loadings from undisturbed woodlands are typically less than 1 ton per year (Leopold, 1968).

As population densities increase, there is a corresponding rise in pollutant loadings generated from human activities (Klein, 1985; Livingston and McCarron, 1992; and Schueler, 1987). The major pollutants found in runoff from urban areas include sediment, nutrients, oxygen-demanding substances, road salts, heavy metals, petroleum hydrocarbons, pathogenic bacteria, and viruses (USEPA, Management, 1999).

As Lake Erie's coastal areas are developed natural wetlands systems are lost. Wetland loss poses special problems for hydrological processes and water quality because wetlands naturally provide water storage and cleansing functions. Moreover, experts assert urban sprawl has contributed to declines and losses in native vegetation as well as wildlife and biodiversity. Coastal nearshore areas are especially environmentally-sensitive areas. Located at the interface between the land and the lake ecosystems, they support a diverse array of flora and fauna. Development in this area significantly alters the functioning of existing land and ecosystem processes. Shoreline erosion has increased, water storage and flood control capabilities have declined, and pollution filtering potential has been lowered. Nearshore waters continue to be polluted, and in some cases have become severely contaminated, from sanitary sewage, industrial toxic substances, and urban and agricultural runoff (State of the Lakes Conference, 1996).

According to the State of the Lakes Ecosystem Conference held in 1996, development in the nearshore area of Lake Erie has been substantial and is continuing. The shoreline offers numerous amenities that are extremely attractive to residential land uses. Unless additional steps are taken to control the environmental degradation associated with these land use changes, declines in water quality are expected to continue.

2.5 Coordination Mechanisms for Program Implementation

The Ohio Nonpoint Source Program historically has been a partnership program. Ohio EPA and ODNR have administered the program as well as nurtured a variety of partnerships. Some of these include the following groups and mechanisms:

- *Ohio Natural Resources Coordinating Committee*—This is a multi-agency body established to foster cooperation and coordination for the improvement and protection of the natural resources of Ohio.
- *State Groundwater Coordinating Committee*—This is a multi-agency body established to promote and guide the implementation of a coordinated, comprehensive, and effective groundwater protection and management program for the State of Ohio.
- *Area Assistance Teams*—There are five of these teams located throughout the State. They consist of staff from Ohio EPA, ODNR, Natural Resources Conservation Service (NRCS), and Ohio State University Extension (OSUE). Their charge is to provide regional nonpoint source assistance to Section 319 grant applicants and recipients.
- *Section 319 Project Advisory Teams*—Each Section 319 Project is required to establish an advisory team help to guide project implementation.

- *Stormwater Working Agreements*—The Ohio EPA and ODNR have signed stormwater working agreements with 17 Soil and Water Conservation Districts (SWCDs). These documents create a stormwater inspection and technical assistance function at the SWCD.

Ohio is also fortunate to have a high level of cooperation among federal, state, and local agencies having pollution control responsibilities. This has facilitated implementing watershed projects and leveraging funds from multiple sources. There are no watershed projects in Ohio being conducted by one agency or that are implemented with single sources of funding.

Section 6217 of the CZARA requires that state coastal nonpoint programs be closely coordinated with state and local water quality plans and programs under Sections 208, 303, 319, and 320 of the Clean Water Act, and with state coastal zone programs. Ohio's coastal nonpoint program will be integrated into the existing statewide Section 319 nonpoint program developed by ODNR and Ohio EPA. Outputs of a multi-year process resulting in the Ohio Nonpoint Source Management Program Upgrade 1999 have been extensively incorporated into this document as well. This is being done by the ODNR Division of Soil and Water Conservation, which is responsible for development of both the coastal and statewide nonpoint source pollution control plans. Excerpts from the recent statewide Upgrade have been used in the coastal nonpoint plan, and coastal and statewide nonpoint advisory groups are also being integrated. The TMDL, anti-degradation, and source water protection programs are a part of the statewide nonpoint source planning process also, thereby ensuring a high level of coordination with planning and implementation of coastal nonpoint source pollution prevention.

The existing networked OCMP provides for administrative coordination mechanisms to ensure that the various state, regional, and local agencies that play a role in the state's coastal program can fulfill their implementation responsibilities. These mechanisms, as briefly described below, will support the development and implementation of Ohio's CNPCP. A complete listing of state, regional, and local agencies, including a description of their missions, structures, and respective roles in the coastal nonpoint program, is provided in Appendix D.

The primary state statutory authority for implementation of the OCMP and the Ohio CNPCP is ORC Chapter 1506, which incorporates coastal management law into ORC Title 15, Conservation of Natural Resources. By definition in ORC §1506.01(B), the OCMP is "...the comprehensive action of the state and its political subdivisions cooperatively to preserve, protect, develop, restore, or enhance the resources of the coastal area and to ensure the wise use of the land and water resources of the coastal area..." ORC § 1506.02 designates ODNR as the lead agency for the development and implementation of the OCMP. This statute requires the director of ODNR to develop and adopt the coastal management program document and to administer the OCMP in accordance with the program document, ORC Chapter 1506, and the administrative rules adopted under it. Within ODNR, the Division of REALM has the lead for developing and implementing the OCMP. An Integrated Management Team assists REALM in coordinating and executing coastal management responsibilities within ODNR.

The OCMP is networked with other state agencies having authority and responsibilities in the coastal area through the Policies and Programs Coordinating Committee (PPCC) to ensure continuing communication and coordination among the agencies networked in the program. MOUs have been developed between ODNR, Ohio EPA, and the Ohio Department of Transportation (ODOT) (Appendix E). The MOUs set forth the respective agencies' responsibilities, means of minimizing duplication and delay, mechanisms to ensure state and federal consistency, and dispute resolution procedures. A critical element of the MOU with Ohio EPA pertains to coordination on Ohio's CNPCP.

2.6 Public Participation Measures

2.6.1 Introduction

Ohio agrees with the original intent of Congress that the public should be involved in the development and implementation of both the OCMP and coastal nonpoint program. Ohio also agrees that public education is a cornerstone of the programs.

Public participation for the OCMP began in the spring of 1992 when ODNR circulated for public review and comment a draft policy document for the OCMP. The review, by coastal area citizens, local governments, planning agencies, and other interests, provided ODNR with essential input for the development and refinement of coastal management policies. It set the stage for publication of the OCMP document and Draft Environmental Impact Statement (DEIS) in August 1996. The DEIS incorporated an appendix that described the CNPCP requirements and the status of Ohio's development of the program.

The National Oceanic and Atmospheric Administration, Office of Ocean and Coastal Resource Management (OCRM), conducted four public hearings to obtain comments and concerns regarding Ohio's DEIS. When public review of the DEIS and OCMP document was completed, ODNR and OCRM considered the comments received and prepared a responsiveness summary with the Final EIS.

The CNPCP shares the vision put forth for Ohio's nonpoint source pollution education, information, marketing and awareness program: "Every Ohioan will have adequate environmental information on which to base sound water resources related decisions and actions." It is the goal of Ohio's nonpoint source pollution education, information, marketing, and awareness program "to inspire local actions by individuals and groups to improve and protect water resources." These words were taken directly from the Education and Information Workgroup created as part of the statewide Upgrade. Ohio has consistently maintained that the coastal nonpoint program, including the public participation processes, should be a subset of the statewide nonpoint source management public education and involvement strategy.

The following material describes the public participation leading up to the development of both the Ohio CNPCP and the statewide NPSMP between August 1997 and the present.

2.6.2 Public Participation in Program Development

Public participation in the coastal nonpoint source program development began in August 1997 with the formation of six working groups (hydromodification/wetlands, agriculture,

information/education, forestry, urban, and marinas) to discuss issues related to nonpoint source pollution in the coastal area. Participants in these working groups included representatives from ODNR and other state and local agencies, members of the Coastal Resources Advisory Council (a representative citizens body that advises ODNR on coastal management), businesses, and citizens potentially affected by the coastal nonpoint program. The groups identified key issue areas and developed recommendations and action items to address the issue areas. Recommendations from the working groups have been forwarded to ODNR for consideration and incorporation into the state's CNPCP and NPSMP. (A list of the working group members is provided in Appendix F.)

Overlapping this process was a series of statewide meetings and special interest group briefings conducted by ODNR to secure input into the statewide Upgrade.

2.6.3 Upgrade of the Statewide Nonpoint Source Management Plan

Approximately every five years, the Ohio NPSMP initiates an extensive revision process. Beginning in the fall of 1997, the ODNR Division of Soil and Water Conservation held a series of public meetings and briefings to acquaint people with nonpoint source pollution issues and secure input on priorities and approaches for improving water quality. These meetings had three main purposes:

- To gain input regarding what the state's priorities should be for protecting Ohio's water resources.
- To provide information on the current status of Ohio's water resources and causes of degradation.
- To generate support for and ownership of the Nonpoint Source Program and its implementation.

Fourteen meetings were held, four in the coastal area, attended by more than 350 people. These meetings were attended by a variety of interested parties, including concerned citizens, local agency staff, township trustees, SWCDs, and county commissioners. Participants provided input on barriers to implementing nonpoint source control programs and suggested potential remedies. Comments were also received on what should be done to make the public more aware of threats to our water resources, and what priorities the state should adopt (i.e., what actions can be taken to control, reduce, or prevent nonpoint source pollution).

Three briefing meetings were held for industry and special interest groups with urban, agricultural, and environmental focus. The purpose of these meetings was to:

- Inform these groups about the status of Ohio's water resources and the urgency of dealing with nonpoint pollution.
- Present findings from the public meetings across Ohio.
- Introduce the process for revising Ohio's NPSMP.
- Offer opportunities for these groups to be involved in developing new strategies for nonpoint source pollution control.

These meetings had good representation and generated representatives to serve on the working groups. Special briefings were also conducted for the Ohio Livestock Coalition and the Ohio Water Resources Council.

The issues identified by the public meetings led to the development of ten work groups. They were charged with developing recommendations for nonpoint solutions to increase the rate of water quality improvement and then prioritizing their strategies. The groups and their chairs are listed below.

Resource Protection

Headwater Streams: Anne Weekes, Chair, Myers-Schmalenberger

Groundwater: Mike Hallfrisch, Chair, ODNR Division of Water

Lakes: John Hoopingarner, Chair,
Muskingum Watershed Conservancy District

Source Control

Agriculture: Dana York, Chair, NRCS

Urban: Tim Richardson, Chair, The Nature Conservancy

Septic Systems: Tim Gerber, Chair, ODNR Division of Soil and Water Conservation

Mining: Mary Ann Borch, Chair, Monday Creek Restoration Project

Program Management

Funding: Steve Grossman, Chair, Ohio Water Development Authority

Education, Marketing, Awareness Building:
Eric Norland, Chair, OSUE

Local Watershed Partnership Sustainability:
Teri Devlin, Chair, The Nature Conservancy

Work group membership was diverse, and attendance at the meetings was excellent. The efforts of the work groups, including recommendations and identification of major issues have been integrated into the sections on wetlands, hydromodification, marinas, agriculture, and urban runoff. Out of this revision process certain issues emerged:

- More state support for local watershed groups.
- Greater protection of stream integrity.
- Greater protection of lakes and groundwater.
- Better protection of riparian forests and tree canopy.
- Stronger enforcement of existing regulatory controls.
- Better coordination between programs.
- Provide funds for nonpoint source research and evaluation.

- Prioritize surface and groundwaters and target BMPs.
- Increase water quality monitoring efforts.
- Deliver more training and improve programs.

2.6.4 Public Participation/Education in Program Implementation

There has been no statewide public participation body for nonpoint source control since 1988. One outcome of the statewide nonpoint source public participation process was a realization that the lack of a policy advisory body for nonpoint source pollution was a weakness. Establishing a statewide policy-making body would lead to a more unified and focused program by providing guidance, oversight, and coordination and, at the same time, help establish collaborative partnerships among the many agencies and organizations involved in nonpoint source pollution management. In order to achieve these goals, Ohio will propose the establishment of a nonpoint source advisory group.

ODNR and Ohio EPA will assess the feasibility of integrating a nonpoint source advisory group with other forums for discussions on state water policies. Ohio believes the effect will be to increase the profile of nonpoint source pollution control and watershed management in the overall priorities of the state. There are numerous options as to how the structure of an advisory body may evolve while maintaining the focus of closely associating nonpoint source management with state water policy. Key functions of the group will include:

- Assessing the progress in meeting the objectives outlined in the Ohio NPSMP on an annual basis.
- Providing guidance on progress toward the short and long-term goals of Ohio's NPSMP.
- Reviewing priorities for state and federal nonpoint source funding programs.
- Analyzing and prioritizing the Phase II recommendations.
- Reviewing updates to the Unified Watershed Assessment.
- Identifying emerging nonpoint source issues and program implications.
- Providing input into policies implementing TMDLs, Source Water Protection, and similar nonpoint source pollution-related programs in Ohio.
- Examining the adequacy of coordination between the statewide nonpoint source program and CNPCP, Air Pollution Control, Source Water Assessment and Protection, Floodplain Management, etc.

The group will address coastal issues through the participation of members from the Coastal Resources Advisory Council and several Lake Erie-oriented entities, such as area-wide planning agencies. It is important to remember that Ohio has chosen to have one nonpoint source program, not a coastal and non-coastal program. As a result, nonpoint source programs and policies will be developed for statewide application, ensuring that specific coastal needs are addressed as part of the total program.

2.7 Technical Assistance for Program Implementation

Technical assistance for implementation of Ohio's CNPCP will be provided under existing partnership programs that are currently operating under Ohio's NPSMP and OCMP, and will be strengthened as additional programs and strategies for addressing coastal nonpoint concerns in Ohio are identified and implemented. Most of the project management and technical assistance responsibilities in Ohio's existing Nonpoint Source Program are shouldered by that particular program's implementing agency (NRCS, OSUE, ODNR, and the SWCDs). A description of the various partnership programs currently operating in Ohio is provided previously in Section 2-5.

2.8 Management Measures

Management Measures are defined in § 6217 of the CZARA as economically achievable measures to control the addition of pollutants to our coastal waters. These measures reflect the greatest degree of pollution reduction achievable through the application of the best available nonpoint pollution control practices, technologies, processes, siting criteria, operating methods, or other alternatives. States may select from a wide range of practices or combinations of practices that will achieve the level of control specified in each individual management measure.

In the following chapters, each management measure is identified by source category and a brief discussion of its applicability with regard to Ohio's CNPCP management area is provided. Ohio's existing programs are evaluated to determine whether they meet the provisions of each management measure, and tables summarizing pertinent information are presented. Copies of the referenced statutes, codes, and rules are provided in Appendix G.

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Table 2-1. Land Uses by Major Watersheds in the Lake Erie Basin (1994)

Watershed	Total Area (sq miles)	Percent Urban	Percent Agriculture	Percent Forest
Ashtabula Creek Basin	127.38	2.28	37.94	45.89
Black River Basin	470.73	5.08	64.92	27.42
Chagrin River Basin	265.44	5.25	22.90	61.42
Cuyahoga River Basin	810.32	16.37	28.07	46.64
Grand River Basin	705.74	1.34	39.53	45.21
Huron River Basin	406.59	1.75	80.60	15.61
Maumee River Basin	4823.22	1.72	88.51	7.95
Portage River Basin	582.22	1.61	88.27	7.18
Rocky River Basin	293.10	14.25	40.17	42.09
Sandusky River Basin	1421.45	1.17	83.99	12.64
Vermilion River Basin	268.77	0.95	70.80	26.13

