

**Appendix 8 update – Outline of a Watershed Plan from
“A Guide to Developing Local Watershed Action Plans in Ohio”
(This update includes 2003 USEPA guidance to the States)**

To access funding from USEPA, Ohio EPA or ODNR, the overall purpose of the watershed plan is to restore and maintain the chemical, physical and biological integrity of waterbodies within the watershed, an objective of the Clean Water Act of 1972. The short-term goal for Ohio is to have 80 % of streams achieving use attainment standards by 2010.

1. KEY CONCEPTS FOR IMPROVED WATER RESOURCE INTEGRITY

- a. The Clean Water Act stated its objective namely "...to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." This would be accomplished by eliminating the discharge of pollutants into navigable waters by 1985, and by achieving specific water quality criteria in order to protect fish, shellfish, and wildlife while providing for recreation, i.e., swimmable and fishable goals.
 - i. Chemical Integrity – Ohio’s Water Quality Standards are listed in Section 3745-1 of the Ohio Administrative Code. All streams should meet these standards. If streams do not meet the standards, Ohio is required to develop a total maximum daily load for the parameters currently not meeting standards.
 1. The Total Maximum Daily Load (TMDL) program, established under Section 303(d) of the Clean Water Act ([33 U.S.C. 1313](#)), focuses on identifying and restoring polluted rivers, streams, lakes and other surface waterbodies. A TMDL is a written, quantitative assessment of water quality problems in a waterbody and contributing sources of pollution. It specifies the amount a pollutant needs to be reduced to meet [water quality standards \(WQS\)](#), allocates pollutant load reductions, and provides the basis for taking actions needed to restore a waterbody. Your watershed plan needs to encompass the recommendations made by the TMDL, if one has been completed in your watershed.
 2. Even if there is no water quality standard for a certain chemical pollutant, the TMDL restoration target for that chemical will be based on the aquatic use designation. Can the stream assimilate this pollutant and still preserve aquatic life use? Note: TMDL may also address habitat issues in a stream.
 - ii. Physical Integrity – physical characteristics which allows a stream and associated floodplain to function, improve and maintain itself.
 1. Protect and restore stable stream channels with connected floodplains using:
 - a. riparian corridors along natural channels
 - b. floodplain restoration
 - c. perpetual conservation easements (by purchase or donation)
 - d. landowner programs and incentives
 - e. livestock exclusion and off stream watering devices
 - f. natural channel design techniques
 - g. dam removal or provide fish passage
 - h. levee removals or setbacks
 - i. storm flow impacts
 2. Evaluate and monitor the physical attributes of stream channels using:

- a. Survey of channel dimension, pattern, profile, bed materials, embeddedness, and stage of channel evolution.
 - b. Qualitative Habitat Evaluation Index (QHEI) is Ohio's tool to evaluate the characteristics of a stream segment by looking at the various attributes of the available habitat to support viable, diverse aquatic faunas. QHEI evaluates the type and quality of the substrate, amount of instream cover, channel morphology, extent of riparian canopy, pool and riffle development and quality, and stream gradient. Scores usually range from 20 to 100.
 - c. Headwater Habitat Evaluation Index categorizes three types of primary headwater habitat streams (PHWH) in Ohio:
 - i. Class III –PHWH Stream (cool water adapted native fauna)
 - ii. Class II - PHWH Stream (warm water adapted native fauna)
 - iii. Class I – PHWH (ephemeral stream, seasonal dry channel)
3. Protect and restore natural floodplain functions using:
- a. Appropriate land use controls to limit loss of floodplain storage
 - b. Riparian corridors and setbacks
 - c. Landowner conservation programs and incentives (Hazard Mitigation Grant Program administered by the Ohio Emergency Management Agency <http://www.state.oh.us/odps/division/ema/Mitigation.htm>)
 - d. Erosion and sediment controls.

iii. Biological Integrity -

- 1. Ohio's aquatic life use (Exceptional Warmwater Habitat (EWWH), Warmwater Habitat (WWH), etc.) designations are based on fish and bug indices. The more diverse and numerous the populations, the better the water quality. There are also use designations for water supply source, or the type of recreation a river, lake or stream can support.
 - a. The Ecological Assessment Unit at Ohio EPA uses these indices, in concert with other chemical and physical water quality data, to evaluate the use attainment of particular waterbodies.
 - i. The Index of Biological Integrity (IBI) is a measure of fish species diversity and species populations. Scores can range from 0 to 60, with the higher score showing most diversity.
 - ii. The invertebrate community index (ICI) is based on measurements of the macroinvertebrate communities living in a stream or river. Like the IBI, scores can range from 0 to 60.
 - iii. The modified index of well being (MiWB) is based upon the index of well being, which is a calculation of fish mass and density.

2. INTRODUCTION

The purpose of this plan is to reduce water resource impairment in all waterbodies within your watershed that do not currently meet water quality standards. It is also to identify areas that are meeting standards, and protect these areas. Watershed groups may also wish to address issues of local concern to build public support. However, the goal of your plan should be to restore and maintain the chemical,

physical and biological integrity of waterbodies within the watershed. Don't forget that lakes, ponds, wetlands are all covered under state and federal law.

- a. Name, size, administrative boundaries of the watershed
 - i. Counties
 - ii. Incorporated/ Unincorporated areas
 - iii. Special districts (park, school, conservancy, sewer, soil and water, agriculture, regional planning orgs.)
 - iv. Special designations (National and state wild & scenic rivers)
 - v. Phase 2 Stormwater Communities
- b. Demographics (Population, ages, education and income levels, locations of growth and economic patterns.)
- c. Geographic locators; USGS HUC and state 305(b) identification numbers
- d. Background/historic information on previous and/or current watershed protection and management activities, including previous planning documents

3. WATERSHED PLAN DEVELOPMENT

Your watershed plan will be compiled by a watershed group, which should include partners that can make implementation happen. The plan will need stakeholder support in order to succeed.

- a. Watershed Group
 - i. Watershed partners - See list on page 8 of the "Guide to Developing Local Watershed Action Plans in Ohio"
 1. Watershed residents
 2. Businesses
 3. Landowners
 4. Community organizations
 5. Local Government
 6. State Government
 7. Educational institutions or educators
 8. Non Governmental Organizations
 9. Regulated community
 - ii. Mission
 - iii. Structure (legal status for example, non profit organization or board of directors)
Additionally, partner roles and responsibilities pertaining to creating and implementing the plan should be defined.
 - iv. Operational Procedures/Bylaws
 - v. Group decision making process (could be described in a Memo of Understanding)
- b. Outline of the plan's content
- c. Endorsement of plan by key watershed partners and adoption of the plan by local units of government.
- d. An information/education component that will be used to enhance public understanding of the project and encourage their early and continued participation in selecting, designing, and implementing the NPS management measures that will be implemented.

4. WATERSHED INVENTORY

This is a comprehensive list of potential data that could be included. In this section, the State will be asking you to inventory physical, biologic, habitat and use characteristics of the watershed on a subwatershed basis. This data will support the identification of impairments in Section 5 and goal development in Section 6. The inventory should also detail which waterbodies are high quality and should be protected, the causes and sources of pollutants, as identified in the 305 (b) report and other technical support documents, and other issues that your group wants to include in the plan. We recommend including at minimum the following items:

- a. Description of the watershed
 - i. Geology
 - a. Topography
 - b. Geology
 - c. Soils
 - d. Glacial History
 - ii. Biological Features
 - 1. Rare, threatened and endangered species
 - a. Fish
 - b. Mussels
 - c. Invertebrates
 - d. Mammals
 - e. Birds
 - f. Reptiles & amphibians
 - g. Plants
 - 2. Invasive nonnative species and their potential impacts
 - iii. Water resources
 - a. Climate and Precipitation
 - b. Surface Water
 - i. Wetlands
 - ii. Streams (include map/description of subwatersheds)
 - 1. Tributary name, length and watershed size, cfs, 10 year low flows, floodplain areas, sinuosity and entrenchment indices
 - 2. Tributary use designation, utilizing Ohio's water quality standards.
 - iii. Lakes and reservoirs (size, uses, watersheds, detention time).
 - c. Ground Water
 - i. Aquifers (location, recharge rates, uses)
 - 1. Flow regime
 - 2. Source Water Assessment Plan (SWAP) information
 - 3. What do DRASTIC maps say about sensitivity of groundwater to local sources of contamination?
 - iv. Land Use
 - 1. Land cover description (with percentages by subwatershed)

- a. Urban
 - i. Impervious surfaces
 - ii. Home sewage treatment systems location
 - b. Forest
 - c. Agriculture
 - i. Crop type
 - ii. Tillage
 - iii. Rotations
 - iv. Livestock Inventory
 - v. Grazing
 - vi. Chemical use patterns
 - vii. Irrigation
 - d. Water
 - e. Non-forested wetlands
 - f. Barren
 - 2. Protected Lands
 - a. City, county, district, state or national public forests and/or parks
 - b. Land protected by private foundations or land trusts
 - 3. Status and Trends (Historical, current, projected).
- b. Cultural Resources
- i. Sites of historical, cultural or recreational significance
- c. Previous and Complementary Efforts
- i. History of previous water quality efforts in the watershed
 - ii. A listing of current efforts that will help to meet water quality standards that are occurring in the watershed.
- d. Physical attributes of streams and floodplain areas that support habitat, recreation, water quality, etc. (aka Habitat modification inventory on a subwatershed or stream segment basis)
- i. Early settlement conditions
 - ii. Channel and floodplain condition. (does the channel have access to its floodplain?)
 - iii. Forested riparian corridor assessment
 - iv. Number of miles with forested natural riparian buffer (describe)
 - v. Number of miles with permanent protection
 - vi. Miles of natural channel (Never modified or fully recovered)
 - vii. Miles & location of modified channel
 - viii. Dams
 - ix. Channelization
 - x. Streams with unrestricted livestock access
 - xi. Eroding banks (number and severity of sediment produced)
 - xii. Floodplain connectivity
 - xiii. Riparian levees
 - xiv. Entrenched miles
 - xv. Status and Trends
 - 1. expected residential/commercial development
 - 2. expected road, highway, bridge construction

- e. Water Resource Quality (to meet the requirements of the Clean Water Act, lakes, streams and wetland must be included in this assessment)
 - 1. Locationally-referenced use designations/use attainment
 - a. Number of waterbodies/miles in full attainment
 - b. Number of threatened miles
 - i. Number of waterbodies/miles in partial attainment
 - ii. Number of segments/miles in non-attainment
 - iii. Number of streams designated but not monitored
 - iv. Lakes/quality
 - v. Wetlands/quality
 - vi. Groundwater/quality
 - 2. Causes and sources of impairment or threats as presented in the 305(b) 303 (d) integrated water quality report for the above-listed waterbodies/miles. (See Attachment A for a listing of causes and sources). Keep in mind that sources as presented in Ohio EPA's documents do not represent the level of definition/detail needed to identify and target technical solutions. Please consult with your Area Assistance Team for more detail on source identification.
 - 3. Point sources (by subwatershed or stream segment)
 - a. Permitted discharges (NPDES)
 - b. Spills and illicit discharges
 - 4. Non point sources (by subwatershed or stream segment)
 - a. An inventory of home sewage treatment systems, and a projected number of failing systems.
 - b. Number of new homes being built.
 - c. Number and size of animal feeding operations.
 - d. Acres of Highly Erodible Land and potential soil loss.
 - e. Is the stream culverted?
 - f. Channelized?
 - g. Levied?
 - h. Exhibiting little human impact?
 - i. What's the effluent volume?
 - j. Dammed? (How many stream miles are impounded)
 - k. Officially classified and/or unofficially maintained as petition ditches?
 - 5. Status and trends (areas where water quality is in attainment, but local information indicates that the current situation, if unchanged, will likely result in water quality degradation.)

5. WATERSHED IMPAIRMENTS (See Chapter 3 – Defining problems)

To complete this section make certain that the inventory provides enough information to identify and quantify the sources of pollution impairing or threatening water resource quality in the watershed. These sources will need to be controlled to achieve the load reduction needed to significantly improve water quality. Section 4 (e) Water Resource Quality shows where the streams are not attaining. This section also shows the causes and sources in general that are causing the water quality problem. The problem

statement(s) is to link each cause with its source(s), the load estimate or relative pollutant contribution from each source or habitat limitation with the water resource quality by stream segment or 14 digit HUC subwatershed, or another scale as agreed upon between the project and the state. The problem statement should contain actual projected loading numbers and units (tons of soil delivered, gallons of untreated waste, miles of channelized stream, etc.).

- a. Pollutant loading (OEPA/USDA/ODNR can help develop this, if one of the following models is not available):
 1. TMDL
 2. Sediment Delivery Model
 3. Agricultural nonpoint source pollution model
- b. Habitat conditions (dams, corridor and riparian cover)
 1. Review and assess habitat modification inventory (Item 4 (d) above)
- c. **Problem statement to link cause and source of impairments; and estimates load.** (See Attachment B for sample problem statements, restoration goals and implementation plans.)

6. WATERSHED RESTORATION AND PROTECTION GOALS

Once you have your problem statement(s) relating to impaired/threatened waterbodies, this section asks you to create impairment reduction goals for each stressor on an individual stream segment or 14 digit watershed to move that segment towards water quality attainment. You then need to choose a combination of objectives (BMPs, policies and actions) that can obtain those results. If there are existing TMDL recommendations, see Attachment C.

Target the most impaired waterbodies or sub-watersheds first where you feel you can actually make a difference in the impairment status. You should also include protection strategies for waters that are meeting their designed uses, but might be threatened by changing land use, etc.

- a. Goals should be based on measurable indicators, with appropriate indicators of success (pollutant load reduction to meet WQ standard, habitat improvements, or any other appropriate administrative indicator) for each problem defined in 4(e) (compiled by 14 digit watershed or waterbodies)
- b. Objectives to accomplish each goal should contain technical solutions (BMPs, policies or actions) and amount of each to achieve each individual goal

7. IMPLEMENTATION

Target the most impaired waterbodies or sub-watersheds first where you feel you can actually make a difference in the impairment status. You may also want to consider targeting waterbodies where there is likely to be the strongest support and/or participation. Using source information gathered in the inventory, identify the critical areas in which implementation measures will be needed.

- a. Prioritize objectives.
 1. Time line to include task, solutions, resources, method, timeframe, performance indicators for each solution. (See Attachment D)
- b. Education/information/marketing strategy
- c. Funding strategy

Watersheds plans within the Ohio Lake Erie Basin must (others are strongly encouraged) describe how the following Management Measures of the Ohio Coastal Nonpoint Pollution Control Program will be implemented within the specific watershed, if watershed inventory or sources and causes of impairment indicate applicability:

Agriculture

(3.3.6) Grazing Management

(3.3.7) Irrigation Water Management

Urban

(5.3.3) Site Development

(5.6.1) New On-Site Disposal Systems (Part 3)

(5.6.2) Operating On-Site Disposal Systems

(5.8.1) Planning, Siting, and Developing Roads and Highways (Local Roads & Highways Only)

(5.8.2) Bridges (Local Roads & Highways Only)

Hydromodification

(7.4.1) Channelization and Channel Modification - Physical and Chemical Characteristics of Surface Waters

(7.4.2) Channelization and Channel Modification - Instream and Riparian Habitat Restoration

(7.5.1) Dams – Erosion and Sediment Control

(7.5.2) Dams – Chemical and Pollutant Control

(7.5.3) Dams – Protection of Surface Water Quality and Instream and Riparian Habitat

(7.6.1) Eroding Streambanks and Shorelines

Ohio Coastal Nonpoint Pollution Control Program Plan:

<http://www.dnr.state.oh.us/soilandwater/Coastalnonpointprogram.htm>

USEPA Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters:

<http://www.epa.gov/owow/nps/MMGI/>

8. EVALUATION

Evaluation is easier if your goals and objectives are specific. Remember, the ultimate evaluation will be if the non-attaining segments move into attainment as a result of your implementation efforts. Items to include in your evaluation include:

- a. A set of criteria that can be used to determine whether loading reductions are being achieved over time and substantial progress is being made towards attaining water quality standards and, if not, the criteria for determining whether this watershed-based plan (or incorporated TMDL recommendations) needs to be revised.
- b. Plan allows for easy tracking of progress. Who will monitor plan progress? How will they? How will plan progress be publicized to officials and the public? Are there adequate resources to monitor progress? What time frame will likely occur before progress is discernible? What surrogates of water quality progress will be tracked and reported? By whom to whom? At what point will the success or lack of progress on certain objectives call for a revision of the implementation strategy?
- c. Evaluation highlights successful activities, and shows which activities not to repeat in the same manner.
- d. Evaluation contributes to substantive and/or methodological knowledge of processes and programs
- e. A monitoring component to evaluate the effectiveness of the implementation efforts over time, measured against item 8(a) above.

9. PLAN UPDATE/REVISION

Create a strategy that keeps the plan in front of the general public and responsible officials, starting with a distribution list for the plan, and an on-going information/education component to keep the stakeholders involved in the plan. Designate an agency to assess how conditions have changed over time, which will call attention to the need to update the plan.

Practical matters to include in the plan:

- a. In a title page, include a contact person with contact information.
- b. Create a distribution list for the plan, along with an on-going information/education component to involve the public.
- c. Brief calendar of past and planned events and table defining acronyms is included.
- d. Listed organization to keep all the records and documents involved in the plan for future reference.

Attachment A – Causes and Sources of Impairment recognized by the Ohio 2002 Integrated Water Quality Monitoring and Assessment Report (prepared to fulfill requirements of Sections 305 (b) and 303 (d) of the Clean Water Act

Causes

- a. Siltation
- b. Flow alterations
- c. Other habitat alterations
- d. Nutrient Enrichment
- e. Unionized Ammonia
- f. Oil and Grease
- g. Organic Enrichment/DO
- h. Priority Organics (pesticides)
- i. Metals
- j. Noxious Aquatic Weeds
- k. Unknown Toxicity
- l. Temperature

Sources

- a. Nonirrigated Crop Production
- b. Irrigated Crop Production
- c. Agriculture
- d. Channelization
- e. Municipal Point Sources
- f. Industrial Point Sources
- g. Urban Runoff/Storm Sewers
- h. Onsite Wastewater Systems
- i. Flow Regulation/modification
- j. Contaminated Sediments
- k. Upstream Impoundment
- l. Dam Construction
- m. Removal of Riparian Vegetation
- n. Other
- o. Source Unknown
- p. Natural
- q. Stream Bank Modification/Destabilization
- r. Combined Sewer Overflows
- s. Pasture Land

Attachment B – Sample problem statements with implementation plan worksheets

Example #1

Background: Along the West Fork of the Water River in subwatershed XYZ, RM05 to RM10 is not meeting water quality use designation due to excessive siltation and nutrients.

Problem Statement: Excessive siltation in the subwatershed XYZ is impairing use attainment. The source of the sediment as per field inventory is over the land runoff and streambank erosion. In collaboration with the local NRCS Office, we have estimated that the total sediment loss at 75,000 tons/year off the cropland, with a delivery ratio of 0.10 (7,500 tons) to the system. Streambank erosion contributes an additional estimated 1,200 tons, mainly from 10 eroding sites. This problem may be further complicated due to only partial riparian corridor.

Goals:

- 1.- Reduce sedimentation by 50% from agricultural fields
- 2.- Control erosion and establish 10 eroding sites

Task Description (Objective)	Resources	How	Time frame	Performance Indicators
Establish conservation tillage in 10,000 acres. The first priority being highly erodible fields up to a mile from both sides of the main stem and tribs. It estimated this level of implementation will reduce soil delivery by 3,000 tons/year	\$300,000 for a conservation tillage incentive program	Local watershed group or an authorized member of the partnership will apply for 319 or USDA grant	January 2003 to January 2005	Document soil saved/not delivered to stream using RUSLE or other model
Control soil erosion and stabilize 10 (total 5000 LF) eroding sites in the subwatershed.	\$500,000 for field work and easement purchase.	Local watershed group or the authorized members of partnership will apply for 319 or USDA grant	June 2003 to Nov. 2004	Eroding sites stabilized using appropriate techniques. Riparian area of appropriate width (based on elevation) set aside and planted to native vegetation

Example #2

Background: Subwatershed XYZ is not meeting its water quality use designation from RM05 to RM10 due to excessive siltation and nutrient. It is only partially meeting attainment from RM10 to RM20 due habitat degradation and lack of riparian vegetation.

Problem statement

QHEI scores for this portion of the stream only average 45 (generally a value above 60 is needed to achieve warmwater biological criteria). Of the QHEI factors (substrate, instream cover, morphology, riparian, and flood plain) the lack of riparian vegetation seems to explain the low QHEI scores. Inventory data indicates that only five miles of the stream length have adequate riparian width and composition.

Goal:

Improve QHEI score (RM05 to RM20) from current average score of 45 to an average of 65.

Task Description (Objective)	Resources	How	Time frame	Performance Indicators
Establish riparian corridor in the length of the impaired segment	\$2,000,000 for easement & LTA and vegetation establishment	Local watershed group or the authorized members of partnership apply for 319 CRP/CREP grants	January 2003 to September 2006	Miles of riparian set aside and established; improved QHEI scores
Set aside five miles with functional riparian through an easement program	\$1,000,000 for easement establishment	Local watershed group or the authorized members of partnership apply for 319 & other grants	January 2003 to September 2006	Miles of riparian set aside and established; improved QHEI scores

Example #3

Problem Statement: In subwatershed XYZ, excessive sedimentation in the west fork of the Water River between RM 20 and 25 is occurring due to increased construction and development. On average, ten homes per year are constructed within this subwatershed utilizing no erosion or sediment control BMPs. Estimated soil loss per acre on this soil type is 10 tons annually. Each site is one acre. Due to unprotected storm sewers, delivery ratio to the creek is estimated at 90 percent.

Impairment Reduction Goal: Reduce sedimentation into the river by 90 tons annually.

Task Description (Objective)	Resources	How	Time frame	Performance Indicators
Work with developers to ensure county urban erosion control and sedimentation guidelines are followed	Add an urban conservationist to the staff of the local SWCD	SWCD has committed to establish an urban erosion inspection program.	Starting January 1, 2003, the SWCD will fill an urban conservation position.	Urban conservationist is hired and adequately trained.
Work with the County to adopt a riparian set-back ordinance	200 hours of time and educational outreach to public officials by the watershed group.	Research existing ordinances from home rule states and pull together a task force to draft the ordinance.	Immediately, with a goal of having the ordinance in place in one year	Set-back ordinance passed and in place within a year

Example #4

Problem Statement: High nutrient loads in the west fork of the Water River between RM 15 and 19 are occurring due to unmaintained on-site sewage treatment systems. The County Health Department estimates that 10 percent of the 581 systems in place in this section of the watershed are failing. Based on an average of four persons per household, these 58 systems produce an estimated nutrient load of 8.7 pounds of total nitrogen and 5.8 pounds of total phosphorus per day.

Goal: Over the course of the next two years, work with local Health Departments to upgrade 100 percent of the failing systems.

Task Description (Objectives)	Resources	How	Time frame	Performance Indicators
Work with the County Health to determine which 58 systems are failing	HD Inspectors time to inspect all 581 systems; dye	Inspect all 581 systems	Jan 2003 to January 2004	Failing on-site report with addresses generated
Replace/upgrade failing systems.	Watershed Coordinator's time to write application	Apply to DEFA for a low interest on-site loan program for the county	June 2003	DEFA low interest loan program available in county; target 58 failing on-site systems owners for special outreach/program inclusion
Replace/upgrade failing systems	Watershed Coordinator's time to write application.	Apply for a 319 grant to cost share on on-site septic system replacement	January 2003	Grant submitted
319 grant awarded	Watershed Coordinator prepared to be timely with reports	58 failing on-site owners who did not take advantage of DEFA loan targeted for special outreach	January 2004	Number of targeted 58 homeowners who take advantage of the Septic system replacement grant.
All 58 systems upgraded	County sanitarian's time; backbone	With backing from local politicians, County Health Department begins enforcement actions against homeowners who have not replaced their failing systems	January 2005	All failing septic systems replaced/updated.

Attachment C: Coordination Among Ohio EPA TMDL Teams, Watershed Coordinator and 319 Watershed Planning Grants

Part 1

Introduction

The purpose of this document is to describe the roles and expectations of Ohio EPA TMDL teams in conjunction with the 319-funded watershed coordinator (WC) positions and the 319-funded watershed planning grants. While this document suggests general roles and responsibilities, Ohio EPA expects to work with each watershed coordinator to identify more specific tasks tailored for each project (individual project needs will vary depending on the TMDL schedule and level of readiness by local sponsors). This document may also serve as a basis for other watershed stakeholder groups that may not be supported with Section 319 funds, but are interested in working with Ohio EPA and the TMDL program on behalf of water quality improvement.

A collaborative effort among local governments, various agencies, private organizations and citizens is the most effective approach to comprehensively address water resource quality. By maximizing the technical expertise assembled for the Ohio EPA TMDL teams, the coordinator can focus on stakeholder group development/education, planning, and coordinating with local, county, and state agencies to set a solid foundation for implementation of the plan.

Ohio EPA is prepared to provide much of the technical data and analysis necessary for an approvable TMDL. They are also prepared to take lead responsibility for implementation measures involving point source controls in a watershed. Projects supported with Section 319 funds (including watershed coordinators) should provide the lead responsibility for coordinating the nonpoint source elements of TMDL projects. As more TMDL watershed plans are developed, Ohio will direct 319 implementation project funds into these watersheds to the maximum extent possible.

The following lists are meant as guidance, and do not exclude additional tasks that may be needed for specific watersheds.

Ohio EPA TMDL teams

Ohio EPA intends to support a locally driven process by providing the technical data and analysis necessary for a TMDL. Ohio EPA invites active participation from watershed stakeholders for all of the activities listed for the Ohio EPA TMDL team.

- Collect & compile water quality data
- Inventory: point sources, land cover, hydrology, etc
- Determine causes of impairments
- Identify preliminary sources of impairment
- Develop restoration target (to meet water quality standards)
- Calculate existing and desired loads
- Identify needed load reduction
- Generate example restoration scenarios
- Provide wasteload allocations for point sources by subwatershed

- Provide loading allocations for nonpoint sources by subwatershed
- Assist with monitoring progress toward water quality goal

Watershed Coordinator/319 watershed planning grant recipients

Ohio EPA will look to watershed coordinators and planning grant recipients for taking responsibility for the nonpoint source components of the watershed restoration plan including identification and prioritization of nonpoint source restoration strategies to meet water quality goals. Working with watershed stakeholders, they will also have key responsibility for structuring the implementation activities.

Ohio EPA will be available on a consultative basis for these phases of a project. Our participation will vary depending on project need and available staff resources. Ohio EPA will support the implementation planning to ensure the strategies identified in the plan will meet the restoration targets.

- Establish watershed groups; recruit stakeholders
- Create a mission statement (jointly with Ohio EPA TMDL team)
- Promote water quality activities (education, citizen monitoring) in the watershed
- Identify sources by subwatershed for nonpoint sources of impairment
- Define goals based on measurable indicators (jointly with Ohio EPA TMDL team)
- Work with stakeholders to build consensus on necessary load reductions
- Identify possible reduction scenarios
- Identify implementation scenarios
- Prioritize implementation strategies to achieve water quality goals
- Create action/implementation plan (jointly with Ohio EPA TMDL team, if feasible)
- Measure progress; revisit action plan

Part 2

TMDLs and *A Guide to Developing Local Watershed Action Plans*

Both the Watershed Coordinator program and the 319 planning grant require the development of a watershed or water resource protection plan (within 2 years), including a 1-5 year action strategy based upon the document, *A Guide to Developing Local Watershed Action Plans in Ohio*. For watersheds with an existing plan, the coordinator will work to secure adoption and implementation of the plan. Below are some examples of TMDL activities following the steps recommended in the *Guide* (fig. 1.3):

1. Create an inventory of the Watershed: This is a requirement for all TMDL projects, therefore the watershed coordinator will work with the Ohio EPA TMDL team to determine what information has already been compiled, and providing local data that may have been missed. Ohio EPA team can provide lists of point source dischargers, landfills, etc. while the WC coordinator can compile (from local agencies) information on livestock distribution, farming practices, etc for the watershed.
2. Define the Problems: This includes identifying parameters (and their sources) that are causing water quality problems, identifying high quality areas to protect, and formulating a problem statement. This is also required for TMDL projects; therefore the watershed coordinator can help bring together the watershed groups and the Ohio EPA TMDL team to discuss these issues. The coordinator can also provide information to the Ohio EPA

TMDL teams about stakeholders that should be involved, to assure broad public participation. The Ohio EPA TMDL team will provide habitat, biological and chemical data to help identify the parameters of concern.

3. Set Goals and Develop Solutions: The coordinator can assist in development of viable goals and solutions by providing opportunities for interaction/discussion between watershed groups and available technical advisors from the Ohio EPA TMDL team. The Ohio EPA TMDL team will be estimating load reductions for the parameters of concern, and stakeholder input is valuable to develop and select restoration scenarios that are feasible and attain the desired water quality goals. Indicators should also be chosen to show progress toward the goal. The Ohio EPA TMDL team will work with watershed group to help select goals, solutions and indicators that will achieve use attainment.

4. Create an Action Plan: This involves preparing schedules to implement the selected actions, setting up time frames/assigning tasks needed to achieve the goals, and obtaining funding. The Ohio EPA TMDL team can work with the watershed coordinator for many of these tasks, particularly describing the actions that will be implemented, schedule development, and time needed to attain the goals.

5. Implement and Evaluate the Plan: Once the plan is in place, the coordinator must measure progress and make adjustments as needed. The Ohio EPA TMDL team can assist in the development of monitoring plans /milestones to determine effectiveness of the action plan, so that measurable milestones are in place when the plan is implemented.

Part 3

Terminology

The purpose of this section is to build a understanding of the common terms used in watershed and TMDL projects.

Total maximum daily load (TMDL) The sum of the individual loads for point sources and nonpoint sources and natural background. TMDLs can be expressed in terms of either mass per time, toxicity, or other appropriate measure that relate to a State's water quality standard.

Loading capacity The greatest amount of pollutant loading that a water body can receive without violating water quality standards.

Load allocation A term referred to in the Clean Water Act that refers to the portion of the receiving waters loading capacity attributed either to one of its existing or future nonpoint sources of pollution or to natural background sources.

Wasteload allocation A term referenced in the Clean Water Act that refers to the portion of a receiving water's loading capacity that is allocated to its existing and future point sources of pollutant.

Reduction target The quantitative or qualitative determination of the parameters necessary for a waterbody to meet and maintain water quality standards. Some examples of individual reduction targets include: reduction of x pounds of copper, increase of stream flow by 2 MGD, an increase in riparian zone by x acres.

Restoration scenario The set of specified control actions and/or management measures which, if implemented, may meet the reduction target(s).

Best Management Practice (BMP) A practice or combination of practices determined to be the most practicable means of preventing or reducing to a level compatible with water quality goals the amount of pollution generated by nonpoint sources. BMPs are selected on the basis of site specific conditions that reflect natural background conditions and political, social, economic, and technical feasibility.

Implementation plan The written end product of the basin management approach. It should contain a quantitative assessment of water quality problems and contributing sources (TMDL report) and an implementation plan identifying responsible parties and specifying actions needed to restore and protect water quality standards.