

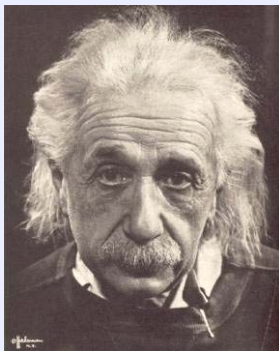
9. Evaluation and Revision



Quotable Quotations

“Not everything that can be counted counts, and not everything that counts can be counted.”

- Albert Einstein



“However beautiful the strategy, you should occasionally look at the results.”

- Winston Churchill



Introduction

This Watershed Management Plan (WMP) is a living document and is meant to be used, revised, and altered to fit the changing needs of the subwatershed as new information becomes available. This adaptive management approach to watershed planning provides for continuous input and modification of procedures, processes, and products. An integral component of planning in this setting is the evaluation and revision mechanisms that drive these modifications.

As required by the Watershed-based Permit, the WMP must include the following evaluation and revision components:

- Evaluate the effects of the implemented actions and progress toward goals and objectives; and
- Re-evaluate goals and objectives as part of an on-going, iterative process.

This chapter establishes the evaluation procedures (including monitoring protocols selected from Chapter 9) and lists suggestions for steps to guide revision of the WMP. The procedures and suggestions reflect the importance of an on-going iterative process. Portions of this chapter are based on “A Framework for Assessing the Effectiveness of Jurisdictional Urban Runoff Management Programs” developed by the San Diego Municipal Storm Water Co-Permittees (2003).

Elements of Watershed Planning

Watershed planning generally consists of three elements:

- Program Planning;
- Program Implementation; and
- Effectiveness Assessment.

The relationship between the three elements is presented in Figure 9-1. They are discussed in the following subsections.

Figure 9-1. Relationship between the three elements.



Program Planning

The program planning phase requires a significant amount of public participation to characterize the watershed and develop and prioritize goals and objectives for the watershed. While the elements of program planning interact in a cyclical manner, program planning typically initiates the cycle (as it has done for this initial submittal of the WMP). However, program planning also occurs following the effectiveness assessment phase if changes to the WMP are necessary.

This program planning phase can be broken down into the four steps discussed in the topics below 1) Goal and Objective Development, 2) Action Development, 3) Measures of Success, and 4) Assessment.

Goal and Objective Development

The subwatershed advisory group (SWAG) has worked with the stakeholders and public to obtain input and comments during the initial watershed planning process. Discussions at SWAG meetings helped to prioritize long-term watershed goals and short-term objectives that would impact water quality within the watershed. Every effort was made to involve the public during the development process in order to gain support for implementation. The public participation efforts are documented in Chapter 4. The finalized goals and objectives are presented in Chapter 6.

Action Development

To implement the goals and objectives, specific actions were developed for each objective. Action plan development was completed as part of this WMP and is presented in detail in Chapter 8. The actions were assigned a schedule, responsible party, cost, and means to measure success (see following topic).

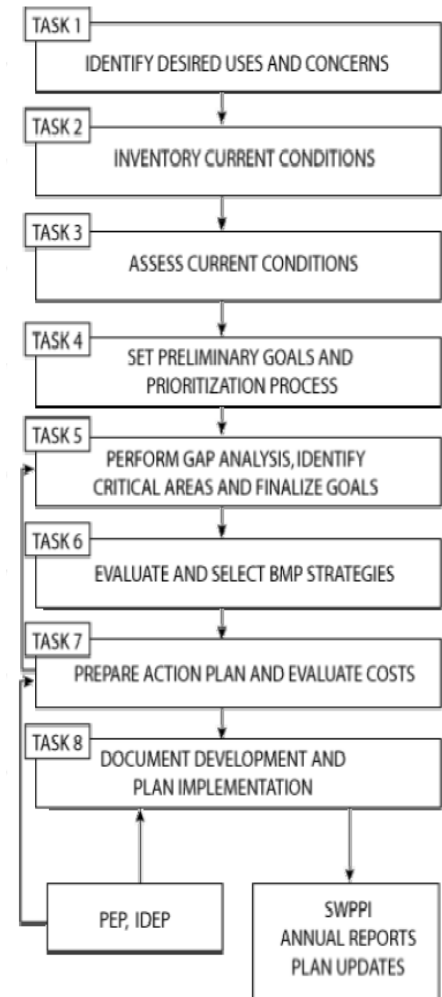
Measures of Success

Measures of success, or 'evaluation mechanisms', are essential to gauge implementation status and assess the effectiveness of the overall program. Identification of quantifiable measures provides both measurability and accountability within the program. Six success levels have been established, as shown in Figure 9-2, to provide an organizing framework for the evaluation mechanisms.

Figure 9-2. Success levels.



The Planning Process (detail) – see Chapter 1 for Expanded Information



Permit Requirements

The following actions are Phase II requirements that are being implemented to meet 'Success Level 1':

- 1-2: Evaluation and Revision Procedure
- 1-5: Update SWPPI
- 1-6: Update WMP
- 1-7: Annual Reports
- 1-8: Total Maximum Daily Loads
- 2-1: Public Education Plan Implementation
- 2-3: Municipal Employee Training
- 3-1: Stormwater Management Standards
- 3-2: Managing Development Patterns
- 3-3: Preserve Natural Areas/Features
- 4-3: Storm Water Sewer System Maintenance and Operations
- 4-4: Minimizing Pollution from Roads and Lots
- 4-5: Minimizing Pollution from Municipal Facilities
- 4-6: Turf Management Practices
- 4-10: Flood Control Projects
- 4-11: Illicit Discharge Elimination Program (IDEP)

Level 1: Compliance with Activity-Based Permit Requirements

Success at this level involves implementing the actions that are described or required in the permit. These activities are expected to be beneficial to water quality because they are part of a successful WMP.

Level 2: Changes in Knowledge / Awareness

Success at this level requires showing an increase in knowledge and awareness in the various elements of the public that are targeted through the Public Participation Plan (PPP), Public Education Plan (PEP), and this WMP.

Level 3: Behavioral Change / BMP Implementation

Success at this level requires showing behavioral changes in the public due to increased knowledge and awareness. This may be documented through the use of a survey or tracking the number of Best Management Practices (BMPs) installed or retrofitted.

Level 4: Load Reductions

Success at this level requires showing that the amount of pollutants entering local waterbodies are being reduced. Load reductions may be quantified by comparing monitoring data from before and after a particular action is implemented or calculated based on other information.

Level 5: Changes in Discharge Quality

Success at this level requires showing that the stormwater discharge entering waterbodies is of better quality than before. This involves comparing stormwater outfall monitoring data from before and after a series of complementary actions (to address a specific problem) has been implemented.

Level 6: Changes in Receiving Water Quality

Success at this level requires showing that the water quality of the receiving waterbody is of better quality than before. This involves comparing waterbody monitoring data from future 'improved' conditions to the data collected when waterbody problems were defined.

Assessment

Each evaluation mechanism requires some data as feedback to allow an assessment to occur. Thus the evaluation mechanisms can be classified based on the data that is required, as follows:

Measure of Activity Completion

These mechanisms require only an indication of whether or not an activity has been completed. These measures are used to assess implementation and include the 'Implementation Milestones' which are discussed in a subsection of the 'Evaluation and Revision Procedure' section of this chapter.

Measure of Usage

These mechanisms require data concerning how much a facility has been used or how much material has been distributed or collected. These measures are used to assess implementation.

Measure of Change

These mechanisms require data concerning baseline and post-action levels of knowledge or water quality. These measures are used to assess effectiveness.

Measures which are used to assess the effectiveness of WMP implementation are sometimes referred to as 'Indirect'. Those which are used to assess changes in water quality are 'Direct'.

Program Implementation

The program implementation phase consists of implementing the actions defined in the WMP which was developed or updated during the program planning phase.

Data, lessons learned, and comments on the WMP are compiled during this phase and are addressed in the effectiveness assessment phase.

Effectiveness Assessment

The effectiveness assessment phase consists of a water quality assessment, a program assessment, and an integrated assessment, as discussed in the following topics.

Water Quality Assessment

Water quality assessment is the analysis of water quality data to draw conclusions on the condition of or changes to the condition of receiving waters or discharges to those waters. The water quality assessment provides a way to assess the direct evaluation mechanisms. Long-term assessment is also necessary to ensure that seasonal, annual, and other variables can be identified and are considered when interpreting the results.

Program Assessment

Program assessment involves reviewing the attainment of the indirect evaluation mechanisms. This review involves checking that implementation has occurred according to schedule and that program effectiveness can be shown (where appropriate). The review also involves investigating failures and making recommendations for the plan update, including continuing the implementation of certain actions, modifying some, and ceasing others – as well as the reasons behind the recommendations.

Program assessment is an annual task that will be reported in the annual progress reports.

Integrated Assessment

The integrated assessment incorporates the water quality assessment and program assessment and evaluates the entire watershed management plan as a whole. The integrated assessment identifies and addresses data gaps in the water quality monitoring program and finds causal relationships between actions taken through the WMP and changes in load reductions, discharge quality, and receiving water quality.

Generally, determining the effectiveness of the actions is a qualitative process that relies on both the assessments showing at least minimal improvement in water quality / awareness and knowledge over time.

Evaluation Procedure

This section defines the specific evaluation and revision guidance (ERG) that has been developed for this WMP, based on the information presented in the preceding section of this chapter.

Evaluation Mechanisms

The first component of the ERG involves looking at each action and assessing its success in implementation according to its schedule and effectiveness. As discussed in the previous section of this chapter, success

Notes on the Annual Reports

The annual progress report is required to cover decisions made, actions performed, and results of the IDEP, PEP, SWPPI, and other stormwater actions conducted during the previous permit year. The IDEP and PEP are separate documents containing additional actions and evaluation mechanisms not covered in this WMP. The annual report must also cover updates of nested drainage system agreements and point source discharges to the stormwater system.

Characteristics of the Evaluation Measures

In accordance with the Water Quality Management Plan (SEMCOG, 1999) for Southeast Michigan, the evaluation measures for this plan have been developed to:

- Be understandable;
- Reflect changes over time; and
- Reflect the unique characteristics of the study area.

is evaluated through six levels which can be grouped under three classifications 1) Measure of Activity Completion, 2) Measure of Usage, and 3) Measure of Change

Measure of Activity Completion

Most of the actions can be assessed on the basis of whether or not they are complete and on schedule (some cannot as they are ongoing). This is indicated and tracked in Table 8-2. These evaluation mechanisms are largely not included in a level of the success level pyramid. However, for those actions which are Phase II Requirements, the measures of activity completion fall into Level 1 of the success level pyramid (Compliance with Activity-Based Permit Requirements).

Measure of Usage

Most of the actions can be assessed on the basis of measure of usage. Many of the actions also have multiple measures of usage associated with them. As with the activity completion assessments, most of the usage assessments do not fall into any level of the success level pyramid; however, some do fall into Level 1.

Measure of Change

The same actions that are assessed on the basis of a measure of usage can also be assessed on the basis of a measure of change. All of the 'measure of change' assessments fall into one of four levels:

- Level 2: Changes in Knowledge / Awareness;
- Level 3: Behavioral Change / BMP Implementation;
- Level 4: Load Reductions; and
- Level 5: Changes in Discharge Quality.

Level 2: Changes in Knowledge and Awareness are measured primarily with respect to the Public Education and Participation actions (Action Category 2 in Chapter 8).

Level 3: Behavioral Change and BMP Implementation are measured primarily with respect to:

- Ordinance, Zoning, and Development Standards (Action Group 3 in Chapter 8) - e.g. observing the rate at which communities adopt ordinances, zoning, and development standards;
- Good Housekeeping and Pollution Prevention (Action Group 4 in Chapter 8) - e.g. observing the rate at which communities adopt procedures and programs;
- Stormwater BMPs: Non-construction Related SESC (Action Group 5 in Chapter 8) - e.g. observing the amount of implementation that occurs at problem sites on private land;
- Stormwater BMPs: Other Pollutant Load Reduction Controls (Action Group 6 in Chapter 8) - e.g. observing the amount of implementation that occurs on private land; and
- Natural Features and Resource Management (Action Group 7 in Chapter 8) - e.g. observing the amount of implementation that occurs on private land.

Level 4: Load Reductions can be measured primarily with respect to:

- Good Housekeeping and Pollution Prevention actions (Category 4) – e.g. calculating the load reductions associated with newly implemented activities;
- Stormwater BMPs: Non-construction Related SESC actions (Category 5) – e.g. calculating load reductions associated with installed BMPs; and
- Stormwater BMPs: Other Pollutant Load Reduction Controls actions (Category 6) – e.g. calculating the load reductions associated with installed BMPs.

Level 5: Changes in Discharge Quality can be documented through an assessment opportunity presented through Action 4-12 (*IDEP*) by documenting the discovery rate of illicit discharges over time.

Note that none of the task or action assessments fall into Level 6: Changes in Receiving Water Quality; rather all of the tasks and actions in this WMP are working together to help improve receiving water quality.

The correlation between actions, the specific measures, and their respective success levels are displayed in Table 9-1. While these assessment measures are presented in Chapter 9, they are technically part of the actions (from Chapter 8) with which they are associated. As such, the measures listed that are associated with Phase II requirements are part of the commitment made by each permittee. These measures are shown in italics. All of the measures associated with the other actions (non-Phase II) are suggestions for potential measures. Additional measures, substitutions, or omissions may be made depending on the specific activities undertaken under these actions (as they are generally less specific in nature than the Phase II actions).

The data by which to assess some of the evaluation mechanisms comes directly from implementation of the associated action. However, data to assess other evaluation mechanisms requires additional actions. For example, Changes in Knowledge and Awareness (Level 2) and Behavioral Change / BMP Implementation (Level 3) likely require some sort of survey. Load Reductions (Level 4) likely require post-implementation monitoring and/or calculations. Additionally, Changes in Discharge Quality (Level 5) and Changes in Receiving Water Quality (Level 6) have few or no measures associated with specific actions and likely require extensive review of collected monitoring data or the collection of new monitoring data to gauge success.

Actions Most Likely to have Quantifiable Load Reductions

The following actions are listed in Chapter 8 as having the potential for quantifiable load reductions associated with them:

- 4-3: Storm Sewer System Maintenance and Operations
- 4-4: Minimizing Pollution from Roads and Lots
- 4-5: Minimizing Pollution from Municipal Facilities
- 4-8: Animal Waste Control
- 4-9: Sanitary and Combined Sewer System Planning and Maintenance
- 4-11: Illicit Discharge Elimination Program (*IDEP*)
- 4-12: Septic System Practices
- 5-1: Bare Soil Repair
- 5-2: Streambank / Shoreline Stabilization
- 5-3: Road and Ditch Stabilization
- 5-4: Streambank Use Exclusion
- 5-5: Sensitive Site Control
- 5-6: Structural Controls
- 5-7: Agricultural BMPs
- 6-1: Mitigate Existing Impervious Surfaces
- 6-2: Infiltration Techniques
- 6-3: Filtration Techniques
- 6-4: Vegetative Buffers and Natural Conveyance
- 6-5: Retention and Detention
- 7-4: Natural Feature Restoration

Table 9-1. Measures of success associated with the actions.

Action Category	No.	Action	Measure of Usage		Measure of Change	
			Short Title	Data requirement	Success Level	Data requirement
	1	1	SWAG	Percentage of all entities in subwatershed participating		
	1	1	SWAG	Average percentage of SWAG members represented at meetings		
	1	4	Grants	The number of grant proposals submitted		
	1	4	Grants	The number of grants received		
	1	6	Update WMP	Percentage of all entities in subwatershed participating	1	
	1	6	Update WMP	Percentage of eligible permittees continuing with watershed permit	1	
	1	6	Update WMP	Percentage of nested jurisdictions incorporated into planning	1	
	1	8	TMDLs	Percentage of completed TMDLs addressed in WMP	1	
	1	9	Clearinghouse	Percentage of SWAG members reporting to clearinghouse		
	1	9	Clearinghouse	Documented number of non-SWAG actions supporting WMP		
	1	10	Sources	Number of additional sources consulted during identification		
	2	1	PEP	see PEPs	1	see PEPs
	2	1	PEP			2
	2	2	Public Ed.	Number of education materials distributed		Percentage of target audience indicating increased awareness
	2	2	Public Ed.			Percentage of target audience implementing recommendations
	2	3	Municipal Ed.	Percentage of staff trained	1	Percentage of municipal tasks performed with improved protocols
	2	3	Municipal Ed.	Percentage of staff surveyed	1	Knowledge level trends over time
	2	4	Demos	Number of projects identified		
	2	4	Demos	Number of projects initiated		
	2	4	Demos	Number of projects completed		
	2	5	Signage	Percentage of watershed boundary locations with signs		
	2	5	Signage	Percentage of boat launch locations with signs		
	2	5	Signage	Number of other signs installed		
	2	6	Involvement	Percentage of total catch basins with markers		
	2	6	Involvement	Percentage of total road miles adopted		
	2	6	Involvement	Percentage of total stream miles cleaned		
	2	6	Involvement	Number of volunteers for various events		
	2	6	Involvement	Number of river walks held		
	2	7	Meetings	Number of individuals attending events		Percentage of attendees providing positive feedback
	2	7	Meetings	Percentage of specifically invited individuals attending events		
	2	8	Officials	Percentage of municipal officials directly educated		Percentage of municipal officials familiar with SWAG / WMP
	2	8	Officials	Percentage of municipal officials surveyed / responding		Percentage of municipal officials with positive perception
	3	1	Standards	Percentage of committed permittees adopting standards	1	Percentage of other SWAG members adopting standards
	3	2	Development	Percentage of committed permittees managing development	1	Percentage of other SWAG members managing development
	3	3	Natural Features	Percentage of committed permittees protecting natural features	1	Percentage of other SWAG members protecting natural features
	3	4	Prevention	Percentage of committed permittees adopting ordinances/progs.		Percentage of other SWAG members adopting ordinances/progs.
	4	1	Sed. Sources	Number of additional sources consulted during identification		
	4	3	Storm Sewer	Percentage of committed permittees adopting procedures	1	Percentage of other SWAG members adopting procedures
	4	3	Storm Sewer	Number of downspouts disconnected from system		Pollutant load reductions
	4	3	Storm Sewer	Percentage of appropriate infrastructure documented / labeled		
	4	4	Roads / Lots	Percentage of committed permittees adopting procedures	1	Percentage of other SWAG members adopting procedures
	4	4	Roads / Lots	Percentage reduction in sand/salt application to roads		Pollutant load reductions
	4	5	Garages	Percentage of committed permittees adopting procedures	1	Percentage of other SWAG members adopting procedures
	4	5	Garages			Pollutant load reductions
	4	6	Turf Practices	Percentage of committed permittees adopting procedures	1	Percentage of other SWAG members adopting procedures
	4	6	Turf Practices	Percentage reduction in chemical application to turf		Percentage of population familiar with / implementing procedures
	4	6	Turf Practices	Percentage reduction in water usage for turf		Pollutant load reductions
	4	6	Turf Practices	Number of trees planted		
	4	7	Waste	Percentage of SWAG members implementing action		Percentage of SWAG members implementing action
	4	7	Waste	Percentage increase in materials collected		Pollutant load reductions
	4	8	Animal Waste	Percentage of SWAG members implementing action		Percentage of SWAG members implementing action
	4	8	Animal Waste	Number of waste disposal stations added		Percentage of visitors collecting wastes
	4	8	Animal Waste	Number of pet run areas		Percentage of visitors utilizing pet run areas
	4	8	Animal Waste			Pollutant load reductions
	4	9	San. Sewer	Percentage of SWAG members implementing action		Percentage of SWAG members implementing action
	4	9	San. Sewer	Number of recommendations made / projects undertaken		Reduction of basement backups / CSOs / SSOs
	4	9	San. Sewer			Pollutant load reductions
	4	10	Flood	Percentage of committed permittees adopting procedures	1	Percentage of other SWAG members adopting procedures
	4	10	Flood			Percentage of flood control structures augmented based on action
	4	10	Flood			Pollutant load reductions
	4	11	IDEP	see IDEPs	1	see IDEPs
	4	11	IDEP			see IDEPs
	4	11	IDEP			Pollutant load reductions
	4	11	IDEP			Change in discharge quality due to illicit discharges removed
	4	12	Septic	Percentage of SWAG members implementing action		Percentage of SWAG members implementing action
	4	12	Septic	Percentage of existing septic systems connected to sewers		
	4	12	Septic	Percentage of septic system owners requesting technical assistance		Percentage of septic systems voluntarily implementing upgrades
	4	12	Septic	Percentage of septic systems inspected		
	4	12	Septic	Percentage of inspected systems with enforcement action		Percentage of enforcement actions resulting in problem abatement
	4	12	Septic			Pollutant load reductions

Table 9-1. Measures of success associated with the actions (continued).

Action Category	Action Number	Short Title	Data requirement	Success Level	Data requirement	Success Level
4	13	Trash	Percentage of SWAG members implementing action		Percentage of SWAG members implementing action	3
4	13	Trash	Percentage of stream miles / crossings with trash problems			
4	13	Trash	Amount of trash removed		Number of volunteers participating	3
4	14	Spills	Percentage of SWAG members implementing action		Percentage of SWAG members implementing action	3
4	14	Spills	Percentage of spills contained		Pollutant load reductions	4
4	14	Spills	Percentage of notifications for uncontained spills			
4	14	Spills	Number of assisted investigations			
4	15	Marine	Percentage of SWAG members implementing action		Percentage of SWAG members implementing action	3
4	15	Marine	Number of additional pump-out stations provided			
4	16	Groundwater	Percentage of SWAG members implementing action		Percentage of SWAG members implementing action	3
4	16	Groundwater	Number of wellhead areas delineated / registered with MDEQ			
4	16	Groundwater	Number of abandoned wells located			
4	16	Groundwater	Percentage of located wells closed			
5	1	Bare Soil	Percentage of SWAG members implementing action		Percentage of SWAG members implementing action	3
5	1	Bare Soil	Total square feet (sf) of area repaired		square feet (sf) of repairs done by private landowners	3
5	1	Bare Soil			Pollutant load reductions	4
5	2	Stream Banks	Percentage of SWAG members implementing action		Percentage of SWAG members implementing action	3
5	2	Stream Banks	Total square feet (sf) of area repaired		Pollutant load reductions	4
5	3	Roads	Percentage of SWAG members implementing action		Percentage of SWAG members implementing action	3
5	3	Roads	Total square feet (sf) of area repaired		square feet (sf) of repairs done by private landowners	3
5	3	Roads			Pollutant load reductions	4
5	4	Use Exclusion	Percentage of SWAG members implementing action		Percentage of SWAG members implementing action	3
5	4	Use Exclusion	Total square feet (sf) of area excluded		square feet (sf) of exclusion done by private landowners	3
5	4	Use Exclusion			Pollutant load reductions	4
5	5	Sensitive Sites	Percentage of SWAG members implementing action		Percentage of SWAG members implementing action	3
5	5	Sensitive Sites	Number of sites where controls installed		Number of controls installed by private owners	3
5	5	Sensitive Sites			Pollutant load reductions	4
5	6	Structural	Percentage of SWAG members implementing action		Percentage of SWAG members implementing action	3
5	6	Structural	Number of sites where controls installed		Number of controls installed by private owners	3
5	6	Structural			Pollutant load reductions	4
5	7	Agricultural BMPs	Percentage of SWAG members implementing action		Percentage of SWAG members implementing action	3
5	7	Agricultural BMPs	Number of controls installed in public right of way		Number of controls installed by private owners	3
5	7	Agricultural BMPs			Pollutant load reductions	4
6	1	Imperviousness	Percentage of SWAG members implementing action		Percentage of SWAG members implementing action	3
6	1	Imperviousness	Total square feet (sf) of mitigated imp. surface		square feet (sf) of mitigation done by private owners	3
6	1	Imperviousness			Pollutant load reductions	4
6	2	Infiltration	Percentage of SWAG members implementing action		Percentage of SWAG members implementing action	3
6	2	Infiltration	Total square feet (sf) of area treated w/ infiltration		square feet (sf) of area treated w/ infiltration by private owners	3
6	2	Infiltration			Pollutant load reductions	4
6	3	Filtration	Percentage of SWAG members implementing action		Percentage of SWAG members implementing action	3
6	3	Filtration	Total square feet (sf) of area treated w/ filtration		square feet (sf) of area treated w/ filtration by private owners	3
6	3	Filtration			Pollutant load reductions	4
6	4	Natural Buffers	Percentage of SWAG members implementing action		Percentage of SWAG members implementing action	3
6	4	Natural Buffers	Total linear feet (lf) of natural conveyance implemented		linear feet (lf) of natural conveyance implemented by private owners	3
6	4	Natural Buffers	Total linear feet (lf) of vegetative buffers implemented		linear feet (lf) of vegetative buffer implemented by private owners	3
6	4	Natural Buffers			Pollutant load reductions	4
6	5	Re-/Detention	Percentage of SWAG members implementing action		Percentage of SWAG members implementing action	3
6	5	Re-/Detention	Total square feet (sf) of area subject to re/detention		square feet (sf) of area subject to re/detention by private owner	3
6	5	Re-/Detention			Pollutant load reductions	4
7	1	ID Natural Features	Number of additional sources consulted during identification			
7	2	Land Reserves	Percentage of SWAG members implementing action		Percentage of SWAG members implementing action	3
7	2	Land Reserves	Total acres of land protected		Number of inquiries about programs	3
7	3	NF Protection	Percentage of SWAG members implementing action		Percentage of SWAG members implementing action	3
7	3	NF Protection	Number of protections installed / undertaken		Number of protections installed by private owners	3
7	4	NF Restoration	Percentage of SWAG members implementing action		Percentage of SWAG members implementing action	3
7	4	NF Restoration	Number of restorations undertaken		Restorations undertaken by private owners	3
8	1	Recreation Program	Percentage of SWAG members participating		Percentage of SWAG members participating	3
8	2	Riparian Parks	Percentage of SWAG members implementing action		Percentage of SWAG members implementing action	3
8	2	Riparian Parks	Number of parks established / total acreage			
8	3	Access	Percentage of SWAG members implementing action		Percentage of SWAG members implementing action	3
8	3	Access	Number of landings / access sites added			
8	4	Fishing	Percentage of SWAG members implementing action		Percentage of SWAG members implementing action	3
8	4	Fishing	Number of fishing opportunities restored			
8	5	Trails / Decks	Percentage of SWAG members implementing action		Percentage of SWAG members implementing action	3
8	5	Trails / Decks	Number of trail miles established			
8	5	Trails / Decks	Number of observation decks constructed			

Guideposts for Achieving Loading Reductions

SEDIMENT

The preferred way to determine if sediment loading reductions are being achieved is to quantitatively analyze water chemistry data.

Alternatively, or in addition to analyzing water quality data, reductions may be qualitatively shown through: improved macroinvertebrate and fish communities; reduced time between dredging; and a decrease in the number/severity of bank erosion problems.

PHOSPHORUS

The preferred way to determine if phosphorus loading reductions are being achieved is to quantitatively analyze water chemistry data.

Alternatively, or in addition to analyzing water quality data, reductions may be qualitatively shown through a reduced prevalence of algae and macrophytes.

PATHOGENS

The preferred way to determine if pathogen loading reductions are being achieved is to quantitatively analyze water chemistry data.

Alternatively, or in addition to analyzing water quality data, reductions may be qualitatively shown through: continued progress in correcting illicit connections; decreased occurrences of sanitary and combined sewer overflows (i.e. SSO, CSOs); and fewer beach closings.

Evaluation Procedure Actions

The actions listed below are designed to ensure that at least the minimum amount of data and assessments are conducted to provide ample evaluation of the WMP and guide revisions to it. They are listed in category '9' to provide consistency between the actions in Chapter 8 and those presented here.

The data collected through these actions should be coordinated with data presented in earlier chapters of this WMP to facilitate temporal analyses of conditions at a variety of locations. Additionally, the monitoring and assessments should be conducted in such a way as to develop relationships between them and a holistic view of a particular area.

9-1a Water Quality Assessment: Existing Monitoring Programs

The SWAG and its members will leverage existing data collection programs to obtain data for assessing water quality. These data will generally be used to document success in Level 4: Load Reductions, Level 5: Changes in Discharge Quality, and Level 6: Changes in Receiving Water Quality (and any measures of success in these levels listed in Table 9-1).

The programs to leverage may include:

- Clinton River Watershed Council (CRWC) benthic macroinvertebrate monitoring;
- County or municipal IDEP;
- County surface water quality monitoring; and
- State/federal water quality monitoring.

Specifically, the data obtained from these programs will be used to assess if the target reductions for stressors (sediment, phosphorus, and pathogens) are being met.

Where appropriate, the SWAG and/or its members should make recommendations to the organizations collecting data to ensure that the data collected is beneficial to the evaluation of this WMP. Specific recommendations for monitoring protocols are listed in Chapter 5.

9-1b Water Quantity Assessment: R-B Index

The SWAG and its members will conduct an assessment of the R-B Index every five years to see if the target for no increase in the R-B Index is being met (related to the hydrologic flow stressor). This assessment will generally rely on existing flow data being collected at gage locations by the United States Geological Survey (USGS).

Where appropriate, the SWAG and/or its members should make recommendations to ensure that the data collected is beneficial to the evaluation of this WMP. Specific recommendations for monitoring protocols are listed in Chapter 5.

9-2 Surveys and PEP Data Assessment

SWAG entities are currently involved in numerous surveys and assessments involved with assessing public education activities. The SWAG and its members will continue to leverage these surveys and assessments. If appropriate, the SWAG and/or its members will recommend changes to existing surveys and/or develop new surveys to meet the assessment needs of this WMP.

These needs include documenting success at Level 2: Changes in Knowledge and Awareness and Level 3: Changes in Behavior / BMP Implementation – among the public (and addressing any measures of success in these levels – see Table 9-1)

The data and associated assessments may be related to any of the stressors affecting the watershed, but any pollutant load reductions from the actions being assessed through surveys and such are not likely to be quantifiable.

9-3 Program Assessment

SWAG members are currently implementing a portion of the program assessment through documentation provided in the annual reports. The SWAG and its members will enhance the program assessment to include:

- Logging which actions have been started and which have been completed;
- Making calculations (e.g. pollutant load reductions) associated with action implementation;
- Considering the organizational structure of the SWAG and its effectiveness in implementing the actions; and
- Checking the milestones to see if they have been met.

The data generated from these activities will generally be used to document success in Level 1: Compliance with Activity-based Permit Requirements, Level 3: Changes in Behavior / BMP Implementation – among SWAG members, Level 4: Load Reductions (and any measures of success in these levels, and those associated with no level, in Table 9-1).

9-4 Field Data Collection

The SWAG and its members will implement some of the field data collection activities that were conducted during the development of this plan. The methodologies to obtain this data may include:

- Road/stream crossing assessments;
- Stream assessments; and
- Unified Subwatershed and Site Reconnaissance.

The data collected through these activities will help develop a holistic view of the health of the subwatershed and identify more specific sources to target for achieving pollutant load reductions.

Table 9-2 presents the details of the evaluation actions. The table lists the actions, comments, schedule, and cost/labor to implement the assessment techniques, and commitments to perform them. The commitment level notation is the same as the notation used in Chapter 8:

- = no commitment by the Phase II permittee as the action is not applicable;
- N = no commitment by the Phase II Permittee as the action is not able to be implemented;
- W = no commitment by the Phase II Permittee, but would like to consider implementing the action if funding is acquired;
- Y = Phase II Permittee commits to the action;
- E = Phase II Permittee commits to the action and is already doing it in some capacity; and
- D = Phase II Permittee commits to the action and has already completed it.

Guideposts for Achieving Loading Reductions (continued)

HYDROLOGIC FLOW

The preferred way to determine if hydrologic flow flashiness reductions are being achieved is to quantitatively analyze actual flow data.

Alternatively, or in addition to analyzing flow data, reductions may be qualitatively shown through reduced levels of impervious cover.

Field Data Collection for Developing the Plan: Unified Stream Assessment

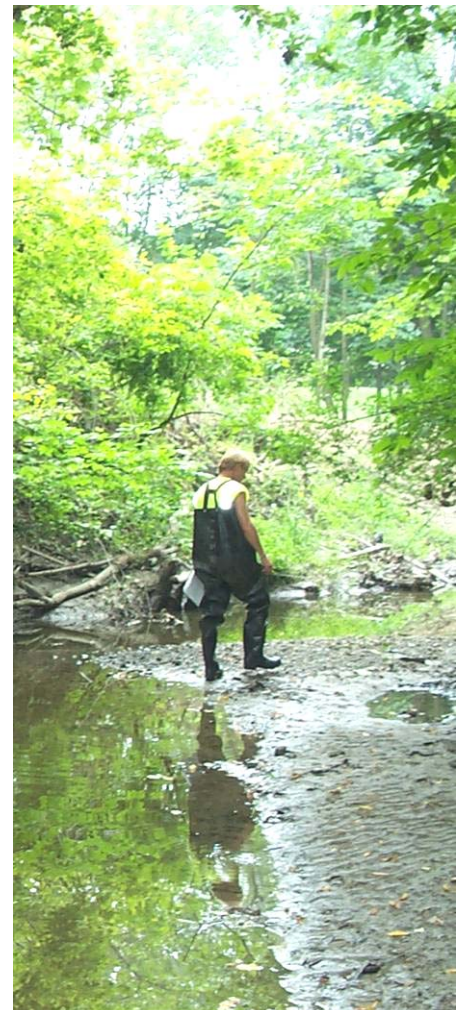


Photo courtesy of MCPWO.

Table 9-2. Evaluation action details.

Number	Action		Schedule	Estimated Costs			Commitment Level											
							--=not applicable N=no commitment W=no commitment, wish list item E=commitment, already doing Y=commitment											
Action Category	Action Number	Action Title	Comments	Cycle * - or permit cycle	Material Costs (SWAG total)	Labor Hours (SWAG total)	Cost / Labor Basis	Bruce Township	Clinton Township	Fraser, City of	Harrison Township	Macomb Township	Mt. Clemens, City of (+ nested Jurisdiction)	Romeo, Village of	Shelby Township	Utica, City of	Washington Township	Macomb County (+nested Jurisdictions)
9	1a	Water Quality Assessment: Existing Monitoring Programs		Annually		200-400	annual	E	E	E	Y	Y	Y	Y	Y	Y	E	Y
9	1b	Water Quantity Assessment: R-B Index		5-year*		50-100	cycle	W	W	W	Y	Y	Y	Y	Y	Y	W	W
9	2	Surveys and PEP Data Assessment		Annually	\$10,000	200-400	annual	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
9	3	Program Assessment		Annually		100-200	annual	E	E	E	Y	Y	Y	Y	Y	Y	E	Y
9	4	Field Data Collection		Annually		500-1000	annual	E	E	E	Y	Y	Y	Y	Y	Y	E	Y

Implementation Milestones

This sub-section lists out and expands upon the implementation milestones initially addressed in Chapter 8. The milestones are presented to gauge progress and are not meant to indicate commitments for any of the actions, as many of the actions are highly dependent on the availability of funding that the SWAG and its members have limited control over.

The primary function of the milestones is to act as a mechanism for guiding realistic revisions to actions and schedules in future versions of this WMP. Commitments to actions by the permittees are detailed in Tables 8-2 and 9-2. However, the milestones associated with Phase II requirements are highlighted textually for cross-referencing purposes.

Year

Milestone

By 2007

Action 1-5: Update SWPPI

As a Phase II requirement, each permittee will have submitted a Storm Water Pollution Prevention Initiative (SWPPI) that considers the contents of this WMP by the date listed in their respective certificates of coverage.

Action 1-2: Evaluation and Revision Procedure

If this action has been implemented (above and beyond the Phase II requirement to include ‘progress evaluation mechanisms’ in the WMP – which is met by the contents of this chapter), the SWAG will have formalized the Evaluation and Revision Procedure in consideration of any conditions that have changed since 2006.

By 2008

Action 1-6: Update WMP

As a Phase II requirement, the SWAG will have developed and submitted an updated WMP or provided a written determination not to update the WMP to the MDEQ by November 1st, 2008.

- By 2009** **Action 1-5: Update SWPPI**
 As a Phase II requirement, each permittee will have submitted a Storm Water Pollution Prevention Initiative (SWPPI) by the date listed in their respective certificate of coverage.
- By 2010** **Action 1-1: Promote and Reconvene SWAG**
 If the action has been implemented, the SWAG will have agreed on and implemented a mechanism for long term implementation of the WMP.
 If the action has been implemented, the SWAG will have increased participation and meeting attendance over levels documented at the time of submittal of the plan.
- Action 1-9: Implementation Clearinghouse**
 If the action has been implemented, the SWAG will have developed an implementation clearinghouse which effectively logs actions taken and allows members to easily obtain implementation information.
- Action 1-10: Pollutant Source Identification**
 If the action has been implemented, the SWAG will have completed a pollutant source identification that can be used to implement many other actions in the WMP.
- Action 2-5: Signage**
 If the action has been implemented, those SWAG members participating will have installed ample signage to further achievement of the appropriate goals and objectives of the WMP.
- Action 2-6: Public Involvement**
 If the action has been implemented, those SWAG members participating will have conducted public involvement activities in a more ambitious schedule than existed at the time of submittal of this WMP and will have provided opportunities for a greater segment of the population to become involved.
- Action 2-7: Community Forums & Stakeholder Wkshps.**
 If the action has been implemented, those SWAG members participating will have conducted public meetings in a more ambitious schedule than existed at the time of submittal of this WMP and will have provided opportunities for a greater segment of the population to become involved.
- Action 2-8: Municipal Officials' Involvement and Educ.**
 If the action has been implemented, those SWAG members participating will have educated municipal officials in a more ambitious schedule than existed at the time of submittal of this WMP and utilizing educational agendas with a greater scope of information.
- Action 4-1: Identify Sources of Sediment Contaminants**
 If the action has been implemented, the SWAG will have completed an identification of sources of sediment contaminants that can be used to implement many other actions in the WMP.
- Action 4-2: Identify Actions to Remediate Contaminated Sediments**
 If the action has been implemented, the SWAG will have completed an identification of the actions necessary to remediate contaminated sediments that can be used to implement many other actions in the WMP.
- Action 4-13: Trash/Debris Reduction**
 If the action has been implemented, those SWAG members participating will have implemented a program to identify and clean-up areas of excessive trash in the subwatershed.
- Action 4-14: Spill Prevention / Notification / Response**
 If the action has been implemented, those SWAG members participating will have implemented a spill prevention, notification, and response program that reduces pollution to a degree that is greater than what would have been expected at the time of submittal of this WMP.
- Action 7-1: Identify Natural Features**
 If the action has been implemented, the SWAG will have conducted an identification of natural features that can be used to implement other actions of the WMP.

By 2013

Action 2-3: Municipal Employee Training

Each of the permittees committing to this action as a Phase II requirement, or other SWAG members implementing this action, will participate in, or have in place, a program that regularly trains all employees on pollution reducing measures to be utilized during regular job performance.

Action 3-1: Stormwater Management Standards

Each of the permittees committing to this action as a Phase II requirement, or other SWAG members implementing this action, will have researched and adopted measures to manage stormwater from areas new development and significant redevelopment.

Action 3-2: Managing Development Patterns

Each of the permittees committing to this action as a Phase II requirement, or other SWAG members implementing this action, will have researched and adopted measures to manage development patterns such that new development and significant redevelopment occur in such a way as to lessen environmental impacts in comparison to traditional development.

Action 3-3: Preserve Natural Areas / Features

Each of the permittees committing to this action as a Phase II requirement, or other SWAG members implementing this action, will have researched and adopted measures to preserve natural areas and features by protecting them from destruction or the undesirable impacts of traditional development practices.

Action 3-4: Preserve Natural Areas / Features

If the action has been implemented, those SWAG members participating will have enacted and/or instituted ordinances and programs to increase the level of pollution prevention to a greater degree than was in place at the time of submittal of this WMP. Each of the permittees committing to this action as a Phase II requirement (as a component of, or in lieu of an action from category 4), will also have enacted and/or instituted programs to increase the level of pollution prevention.

Action 4-3: Storm Sewer Maintenance and Operations

Each of the permittees committing to this action as a Phase II requirement, or other SWAG members implementing this action, will have defined procedures for the maintenance and operations of the storm sewer system that reduce pollutant discharges.

Action 4-4: Minimizing Pollution from Roads and Lots

Each of the permittees committing to this action as a Phase II requirement, or other SWAG members implementing this action, will have defined procedures for the minimization of pollutant discharges from streets, roads, highways, and parking lots.

Action 4-5: Minimizing Pollution from Municipal Facilities

Each of the permittees committing to this action as a Phase II requirement, or other SWAG members implementing this action, will have defined procedures for the minimization of pollutant discharges from municipal facilities.

Action 4-6: Turf Management Practices

Each of the permittees committing to this action as a Phase II requirement, or other SWAG members implementing this action, will have defined procedures for turf management that minimize the discharge of pollutants such as pesticides, herbicides, and fertilizers.

By 2015

Action 1-8: Total Maximum Daily Loads

As a Phase II requirement, the SWAG will have incorporated all completed TMDLs (currently scheduled through 2012) into the regularly scheduled WMP updates.

Action 1-5: Demonstration Projects

If the action has been implemented, those SWAG member participating will have at least identified one demonstration project and begun preliminary activities towards completing it.

Action 4-7: Waste Management

If the action has been implemented, those SWAG members participating will have implemented or augmented existing waste management programs such that pollution potential from waste or the collection infrastructure is reduced to a level below that which existed when the WMP was submitted.

Action 4-8: Animal Waste Control

If the action has been implemented, those SWAG members participating will have implemented or augmented existing animal waste control facilities or programs such that pollution potential from animal waste is reduced to a level below that which existed when the WMP was submitted.

Action 4-9: Sanitary / Combined Sewer Planning and Maintenance

If the action has been implemented, those SWAG members participating will have engaged in the planning of and/or defined maintenance procedures for, the sanitary/combined sewer system such that pollutant discharges are reduced to a level that is lower than at the time of submittal of this WMP.

Action 4-10: Flood Control Projects

Each of the permittees committing to this action as a Phase II requirement, or other SWAG members implementing this action, will have defined mechanisms for ensuring that flood control projects are assessed for water quality impacts and incorporate all reasonable measures to reduce these impacts.

Action 4-12: Septic System Practices

If the action has been implemented, those SWAG members participating will have implemented various mechanisms and programs to ensure that the pollutant discharges from septic systems as a whole is reduced to level lower than that which existed at the time of submittal of this WMP.

Action 4-15: Marine Industry Practices

If the action has been implemented, those SWAG members participating will have taken steps to reduce the pollution potential from marine activities to a level lower than that which existed at the time of submittal of this WMP.

Action 4-16: Groundwater

If the action has been implemented, those SWAG members participating will have taken steps to ensure that groundwater levels and quality are protected such that the conditions existing at the time of submittal of this WMP are preserved.

Actions 5-1 through 5-7: Non-Construction Related Soil Erosion and Sediment Control

The SWAG and/or its members will have implemented some combination of these actions such that at least 20% of the sediment loading reduction target is being achieved (also considering reductions from previously implemented actions from other categories).

By 2020

Actions 6-1 through 6-5: Other Pollutant Load Reducing Controls

The SWAG and/or its members will have implemented some combination of these actions such that at least 40% of the sediment loading reduction target and 20% of the phosphorus loading reduction targets are being achieved (also considering reductions from previously implemented actions from other categories).

Action 7-2: Natural Land Reserves

If the action has been implemented, those SWAG members participating will have preserved at least one parcel of natural land.

Action 7-3: Natural Feature Protection

If the action has been implemented, those SWAG members participating will have implemented programs or completed projects such that natural features are protected to an extent greater than at the time this WMP was submitted.

Action 7-4: Natural Feature Restoration

If the action has been implemented, those SWAG members participating will have implemented programs or completed projects such that natural features have been restored to a condition greater than that which existed at the time this WMP was submitted.

By 2025

Actions 8-1 through 8-5: Recreation Promotion and Enhancement

If these actions have been implemented, the participating SWAG members will have increased recreational opportunities in the subwatershed to a level greater than that which existed at the time of submittal of this WMP.

Non-Action Milestones

By 2030

Over the summer 4-month period, the instances of pathogen water quality standard violations will have decreased 50% from the number of instances documented in 2007.

A trend will have emerged that at least shows that the flashiness indices (e.g. R-B Index) for the measured waterbodies are slowing their rate of increase.

Actions without Milestones

Actions without milestones include: Action 1-3 (Funding Program), Action 1-4 (Grant Proposals), Action 1-7 (Annual Reports), Action 2-1 (Public Education Plan Implementation), Action 2-2 (Additional Public Education), and Action 4-11 (Illicit Discharge Elimination Program). Also, none of the evaluation actions (Category 9) have been assigned any milestones.

Goals and Objectives Evaluation – Phase II Related

In the 'Evaluation Questions' column of Table 9-3, those specific actions which are Phase II related are in bold. Where an 'Action Group' is referenced, it is italicized if the group contains actions that are Phase II related. For these, one would have to refer to Chapter 8 to determine which actions in the group are Phase II related.

Guidance for Revision of the WMP

The SWAG will be updating this WMP regularly for both regulatory purposes and to reflect changing conditions in the subwatershed. The following sub-sections discuss some of the revision options available.

Integrated Assessment

The SWAG and/or its members may wish to implement some form of integrated assessment to look at all collected data holistically and help guide any WMP revisions. The integrated assessment may involve:

- Examining collected data and related assessments to identify gaps in the data;
- Looking for causal relationship between the actions taken and the results documented; and
- Examining the goals and objectives (see Table 9-3) for achievement status, modification, omission, or addition.

Other Data and Assessments

The SWAG and/or its members may wish to collect additional data or implement other assessments that they deem to be necessary to successful watershed management planning. Examples of possible activities are presented in Chapter 7. Such activities should be added to the evaluation procedure actions in this chapter

Final Recommendations for WMP Modification

The SWAG and/or its members may wish to summarize recommendations for changes to the WMP (to assist in implementing Action 1-6) based on collected data, associated assessments, and the findings of such assessments. Recommendations may include:

- Updating actions to reflect current implementation levels;
- Modifying goals and objectives;
- Modifying actions; and
- Modifying evaluation mechanisms and monitoring protocols.

Goals and Objectives Evaluation

In addition to evaluating the actions, it is also beneficial to ask some general questions with respect to the goals / objectives, as presented in Table 9-3. The answers to these questions will assist in determining the progress being made toward achieving the goals / objectives. This progress helps define the changes to be made to the WMP, when revised.

References

- Michigan Department of Environmental Quality [MDEQ]. Website. Via: <http://www.deq.state.mi.us/documents/deq-wb-swas-strategyupdate.pdf>. Last Accessed: July 20, 2006.
- Michigan Department of Natural Resources [MDNR]. Website. Via: <http://www.michigan.gov/dnr>. Last Accessed July 20, 2006.
- Mitchell, Mark K. and William B. Stapp. "Field Manual for Water Quality Monitoring". 2000
- San Diego Municipal Storm Water Co-Permittees [SDMSWC]. "A Framework for Assessing the Effectiveness of Jurisdictional Urban Runoff Management Programs". 2003.
- Southeast Michigan Council of Governments [SEMCOG]. "Water Quality Management Plan for Southeast Michigan". 1999.

Table 9-3. Goals and Objectives evaluation questions.

Goal / Objective	Evaluation Questions
<u>Goal I: To protect, restore, and enhance water quality of the subwatershed</u>	Are objectives (A), (B), (C), and (D), below, being addressed? Has water quality deteriorated in any part of the subwatershed? Has water quality been restored or enhance in any part of the subwatershed?
A. Address existing and future contaminated sediments.	Are parts (i) and (ii), below, being addressed?
i. Identify feasible actions to remediate existing contaminated sediments.	Has Action 4-2 been completed?
ii. Identify and implement pollution prevention activities for current and future sources.	Has Action 4-1 been completed? Have BMPs been implemented under <i>Action Group 4</i> or 6 that specifically target current and future sediment contamination sources?
B. Reduce the amount of nutrients and excessive algae to improve dissolved oxygen levels.	Are parts (i) and (ii), below, being addressed? Do monitoring data show loading reductions for nutrients? Do monitoring data show lower nutrient concentrations in receiving waters? Have there been incidences of excessive algae documented in the subwatershed? Do monitoring data show improved dissolved oxygen levels?
i. Identify sources of nutrients and BOD.	Has Action 5-1 been completed?
ii. Identify and implement management practices to limit nutrient and BOD loadings.	Have BMPs been implemented under <i>Action Groups 4, 5, or 6</i> that specifically reduce nutrient and BOD loadings?
C. Reduce the amount of sediment	Are parts (i) and (ii), below, being addressed? Do monitoring data show loading reductions for sediment? Do monitoring data show lower sediment concentrations in receiving waters?
i. Identify sources of sediment.	Has Action 1-10 been completed?
ii. Identify and implement management practices to limit sediment loadings.	Have BMPs been implemented under <i>Action Groups 4, 5, or 6</i> that specifically reduce nutrient and BOD loadings?
D. Reduce amount of pathogens.	Are parts (i), (ii), and (iii), below, being addressed? Do monitoring data show loading reductions for pathogens? Do monitoring data show lower pathogen concentrations in receiving waters?
i. Identify and address failing septic systems.	Has Action 4-12 been implemented?
ii. Identify and address illicit connections.	Has Action 4-11 been implemented?
iii. Identify stormwater management techniques to reduce other nonpoint source pathogen loadings and implement techniques where practical.	Have BMPs been implemented under <i>Action Groups 4, 5, or 6</i> that specifically reduce pathogen loadings?
<u>Goal II: To educate the public on how to protect, restore, and enhance water quality</u>	Are objectives (A), (B), and (C), below, being addressed? Do survey results indicate that the public is learning how to protect, restore, and enhance water quality?
A. Increase the public's level of awareness about watershed problems and management activities.	Are parts (i) and (ii), below, being addressed? Do survey results indicate the public is becoming aware about watershed problems and management activities?

Table 9-3. Goals and Objectives evaluation questions. (continued)

Goal / Objective	Evaluation Questions
i. Develop and utilize existing outreach materials using messages and formats tailored to specific target audiences.	Have Actions 2-1, 2-2, 2-3, 2-5, and 2-8 been implemented?
ii. Provide hands-on, interactive learning opportunities focused on watershed concepts tailored to specific target audiences.	Have Actions 2-1, 2-2, 2-4, 2-6, and 2-7 been implemented?
B. Increase the public's understanding of steps to take to improve water quality.	Are parts (i) and (ii), below, being addressed? Do survey results indicate that the public is understanding the steps needed to improve water quality?
i. Ensure existing outreach materials focused on positive actions to improve water quality reach key target audiences.	Have Actions 2-1, 2-2, 2-3, 2-5, and 2-8 been implemented?
ii. Provide hands-on learning opportunities for key target audiences that address specific behaviors and pollutants of concern.	Have Actions 2-1, 2-2, 2-4, and 2-7 been implemented?
C. Produce measurable changes in the public's behaviors that negatively impact water quality.	Are parts (i) and (ii), below, being addressed? Do survey results indicate that behaviors in the public that negatively impact water quality are decreasing?
i. Develop and utilize existing social marketing programs that target specific polluting behaviors in specific target audiences.	Have Actions 2-1, 2-2, 2-3, 2-5, and 2-8 been implemented?
ii. Conducting evaluations of outreach and social marketing activities to assess effectiveness over time.	Have Actions 1-2 and 1-9 been implemented?
<u>Goal III: To promote and enhance recreational opportunities in the subwatershed</u>	Is objective (A), below, being addressed?
A. Increase opportunities for water-based recreation.	Are parts (i), (ii), and (iii), below, being addressed?
i. Educate the public about the potential dangers and health risks associated with water-based recreational activities.	Has Action 2-2 been implemented?
ii. Educate public on watershed-based recreational opportunities in the subwatershed.	Have Actions 2-2, 8-1, 8-3, and 8-5 been implemented?
iii. Increase recreational opportunities through additional programs / facilities and enhance public access to existing facilities.	Have Actions 8-1 through 8-5 been implemented?
<u>Goal IV: To appropriately manage suitable habitat for aquatic life, wildlife, and fisheries in the subwatershed</u>	Is objective (A), below, being addressed?
A. Increase the amount of desired suitable habitat to support aquatic life, wildlife, and fisheries.	Are parts (i) and (ii), below, being addressed?
i. Identify high-quality habitat in need of protection.	Have Actions 3-3 and 7-1 been implemented?
ii. Identify targeted areas with habitat in need of restoration.	Have Actions 3-3 and 7-4 been implemented?
<u>Goal V: To reduce runoff impacts through sustainable stormwater management</u>	Are objectives (A), and (B), below, being addressed?
A. Reduce impacts from urban stormwater runoff.	Is part (i), below, being addressed?
i. Identify and implement best management practices to effectively manage quantity and quality of urban stormwater.	Have BMPs been implemented under <i>Action Groups 3, 5, or 6</i> that specifically reduce nutrient and BOD loadings?

Table 9-3. Goals and Objectives evaluation questions. (continued)

Goal / Objective	Evaluation Questions
B. Reduce urban stormwater contributions leading to CSOs and SSOs.	Is part (i), below, being addressed?
i. Identify and implement best management practices to effectively manage quantity and quality of urban stormwater that will promote reduction of CSO and SSO frequency.	Have BMPs been implemented under <i>Action Groups 3, 4, or 6</i> that specifically manage quantity and quality of urban stormwater?
<u>Goal VI: to seek out opportunities to sustain implementation of the plan</u>	Are objectives (A), and (B), below, being addressed?
A. Increase funding available for implementation.	Are parts (i), (ii), and (iii), below, being addressed?
i. Identify existing federal, state, and local funding opportunities.	Has Action 1-3 been implemented?
ii. Coordinate the development of grant proposals.	Has Action 1-4 been implemented?
iii. Create new opportunities for funding.	Has Action 1-3 been implemented?
B. Institutionalize the plan and the advisory group.	Are parts (i) and (ii), below, being addressed?
i. Identify and adopt a mechanism for ensuring the advisory group continues its activities in the future.	Has Action 1-1 been implemented?
ii. Identify and adopt a mechanism for ensuring the plan is implemented, updated, and revised in the future.	Have Actions 1-1, 1-2 , 1-3, 1-5 , 1-6 , 1-7 , and 1-9 been implemented?
<u>Goal VII: To promote opportunities to preserve, protect, restore, and enhance natural features</u>	Are objectives (A), (B), and (C), below, being addressed?
A. Protect existing high-quality natural features.	Are parts (i) and (ii), below, being addressed?
i. Compile an inventory of existing high-quality natural features for protection.	Has Action 7-1 been implemented?
ii. Identify and implement tools to protect inventoried natural features, such as ordinances and programs for managing natural features to benefit stormwater quality and quantity.	Have Actions 3-3 , 7-2, and 7-3 been implemented? Have other BMPs been implemented under <i>Action Groups 3, 4, 5 or 6</i> that specifically protect inventoried natural features?
B. Restore important natural features.	Are parts (i) and (ii), below, being addressed?
i. Compile an inventory of natural features in need of restoration.	Has Action 7-1 been implemented?
ii. Develop plans and tools for restoration of natural features.	Have Actions 7-2, 7-3, and 7-4 been implemented?
C. Enhance existing natural features.	Are parts (i) and (ii), below, being addressed?
i. Participate in local and regional efforts to promote green infrastructure.	Have BMPs been implemented under <i>Action Groups 3, 6, or 7</i> that specifically promote green infrastructure?
ii. When feasible, stabilize streambanks where erosion is occurring and prevent streambank failure in susceptible locations.	Have BMPs been implemented under <i>Action Groups 3, 6, or 7</i> that specifically stabilize eroding streambank and protect other locations?
<u>Additional / Revised Goals?</u>	Have any additional goals been identified for inclusion in the plan? Do any goals need to be eliminated or revised?
Additional / Revised Objectives?	Have any additional objectives been identified for inclusion in the plan? Do any objectives need to be eliminated or revised?