

WATERSHED MANAGEMENT PLAN CHECKLIST AND INSTRUCTIONS

(UPDATED 2009)



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OVERVIEW

1. Nationwide, watershed plans funded through Section 319 of the Clean Water Act must meet nine minimum elements as defined by the United States Environmental Protection Agency (US-EPA). The Indiana Department of Environmental Management (IDEM) believes that requirements above and beyond US-EPA's nine elements are necessary for successful watershed planning. US-EPA's nine elements and IDEM's additional requirements are outlined in [IDEM's Watershed Management Plan \(WMP\) Checklist](#), which must be satisfied for WMP approval and eligibility for Section 319 implementation funds. This document contains formal instruction on how to satisfy IDEM's checklist. Each item in the IDEM WMP Checklist is essential for a comprehensive and effective WMP and is required for IDEM's approval of the plan. Your group will benefit by reading all of the following instructions prior to beginning the WMP process.
2. Each numbered or lettered item in the checklist and instructions is a requirement to be placed in the WMP. Text beneath the numbers or letters is instruction on how to satisfy the requirements and must be followed. *Italicized text in the instructions is guidance and does not have to be followed in order to satisfy the requirements.*
3. The shaded topic headings in the checklist and instructions represent the order that these topics are to be placed within the WMP. Items beneath the shaded topic headings may be ordered how you choose and additional material may be added.
4. All projects funded by IDEM watershed planning grants, regardless of watershed size, must follow these instructions.
5. All maps, figures, and plates must adhere to the instructions below and the definitions in the [Glossary](#).
6. It is the responsibility of the project sponsor to edit the WMP for grammar and punctuation. Final drafts submitted with excessive grammar or punctuation errors will not be approved by IDEM.
7. If your project area is within the Little Calumet-Galien watershed (HUC 04040001), you must work with the Indiana Department of Natural Resources (DNR) Coastal Program to ensure that their ["6217" requirements](#) (see glossary) are incorporated into the WMP. 6217 requires that the WMP addresses agriculture, silviculture, urban and rural areas, marinas and recreational boating, and hydromodifications.
8. Any questions about these instructions should be directed to your [IDEM Project Manager](#).

NINE ELEMENTS OF WATERSHED PLANS

(Source: [*Handbook for Developing Watershed Plans to Restore and Protect Our Waters*](#))

U.S.EPA's nine elements include:

1. Identification of causes of impairment and pollutant sources or groups of similar sources that need to be controlled to achieve needed load reductions, and any other goals identified in the watershed plan. Sources that need to be controlled should be identified at the significant subcategory level along with estimates of the extent to which they are present in the watershed (e.g., X number of dairy cattle feedlots needing upgrading, including a rough estimate of the number of cattle per facility; Y acres of row crops needing improved nutrient management or sediment control; or Z linear miles of eroded streambank needing remediation). [IDEM elements 18 and 19](#)
2. An estimate of the load reductions expected from management measures. [IDEM element 26](#) (If a TMDL for affected waters has been developed, the WMP should be crafted to achieve or exceed the load reductions called for in the TMDL. If a TMDL has not yet been developed, the plan should be designed to attain water quality standards if possible, in addition to other environmental goals). [IDEM element 22](#)
3. A description of the nonpoint source management measures that will need to be implemented to achieve load reductions in item (2) above, and a description of the critical areas in which those measures will be needed to implement this plan. [IDEM element 25 and 24](#)
4. Estimate of the amounts of technical and financial assistance needed, associated costs, and/or the sources and authorities that will be relied upon to implement this plan. [IDEM element 29 and 31](#)
5. An information and education component used to enhance public understanding of the project and encourage their early and continued participation in selecting, designing, and implementing the nonpoint source management measures that will be implemented. [IDEM element 27b](#)
6. Schedule for implementing the nonpoint source management measures identified in this plan that is reasonably expeditious. [IDEM element 27](#)
7. A description of interim measurable milestones for determining whether nonpoint source management measures or other control actions are being implemented. [IDEM element 28](#)

8. A set of criteria that can be used to determine whether loading reductions are being achieved over time and substantial progress is being made toward attaining water quality standards, and if not, the criteria for determining whether the WMP needs to be revised. IDEM element [23](#) and [33](#)
9. A monitoring component to evaluate the effectiveness of the implementation efforts over time, measured against the criteria established under item (8) above. IDEM element [32](#)

IDEM WATERSHED MANAGEMENT PLAN (WMP) CHECKLIST (2009)

Name of Project:		
WMP Draft Date:		
IDEM Reviewers:		WMP Review Date:
1.	2.	3.

Instructions: The numbered elements (1-33) make up the IDEM WMP Checklist (2009). The items with boxes are the requirements needed to meet the numbered elements. These items come directly from the WMP Checklist instructions. The WMP cannot be approved until all numbered elements are complete.

Page(s) #	Required Content						
WATERSHED COMMUNITY INITIATIVE							
	<p>1. The reasons the community decided to initiate this watershed project.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Explain the concerns that led leaders to initiate the project <input type="checkbox"/> Explain who the local leaders are <input type="checkbox"/> Explain how/why they decided to work together <p><i>Comments:</i></p>						
	<p>2. A description of the steering committee and who they represent.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Explain how stakeholder involvement was generated <input type="checkbox"/> Explain how additional stakeholder concerns were gathered <input type="checkbox"/> In a figure include: <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <tr> <td style="width: 50%;"><input type="checkbox"/> Title</td> <td style="width: 50%;"><input type="checkbox"/> Number</td> </tr> <tr> <td><input type="checkbox"/> Title and Number in Table of Contents</td> <td><input type="checkbox"/> Figure is legible</td> </tr> <tr> <td colspan="2"><input type="checkbox"/> A list of the steering committee members and their affiliation</td> </tr> </table> <input type="checkbox"/> Describe any outreach efforts used to generate stakeholder involvement <p><i>Comments:</i></p>	<input type="checkbox"/> Title	<input type="checkbox"/> Number	<input type="checkbox"/> Title and Number in Table of Contents	<input type="checkbox"/> Figure is legible	<input type="checkbox"/> A list of the steering committee members and their affiliation	
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<input type="checkbox"/> Title and Number in Table of Contents	<input type="checkbox"/> Figure is legible						
<input type="checkbox"/> A list of the steering committee members and their affiliation							
	<p>3. A list of stakeholder concerns.</p> <ul style="list-style-type: none"> <input type="checkbox"/> In a figure include: <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <tr> <td style="width: 50%;"><input type="checkbox"/> Title</td> <td style="width: 50%;"><input type="checkbox"/> Number</td> </tr> <tr> <td><input type="checkbox"/> Title and Number in Table of Contents</td> <td><input type="checkbox"/> Figure is legible</td> </tr> <tr> <td colspan="2"><input type="checkbox"/> A list of concerns from the steering committee and the stakeholders</td> </tr> </table> <p><i>Comments:</i></p>	<input type="checkbox"/> Title	<input type="checkbox"/> Number	<input type="checkbox"/> Title and Number in Table of Contents	<input type="checkbox"/> Figure is legible	<input type="checkbox"/> A list of concerns from the steering committee and the stakeholders	
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<input type="checkbox"/> Title and Number in Table of Contents	<input type="checkbox"/> Figure is legible						
<input type="checkbox"/> A list of concerns from the steering committee and the stakeholders							
WATERSHED INVENTORY							
	<p>Part One of the Watershed Inventory:</p> <p>4. A description of the geology/topography as it pertains to the watershed.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Explain karst magnitude and general distribution <ul style="list-style-type: none"> <input type="checkbox"/> Not applicable <input type="checkbox"/> Explain the topographic features that define the watershed's drainage patterns <p><i>Comments:</i></p>						

5. A brief overview of the hydrology as it pertains to the watershed.

<input type="checkbox"/> Map(s) of project area showing:	
<input type="checkbox"/> Labeled Streams	<input type="checkbox"/> Lakes
<input type="checkbox"/> Watershed names and boundaries	<input type="checkbox"/> HUCs
<input type="checkbox"/> Legal drains	<input type="checkbox"/> Wetlands
<input type="checkbox"/> Labeled Population centers <input type="checkbox"/> Not applicable	<input type="checkbox"/> Labeled Major roads <input type="checkbox"/> Not applicable
<input type="checkbox"/> County boundaries	<input type="checkbox"/> North arrow
<input type="checkbox"/> Title	<input type="checkbox"/> Number
<input type="checkbox"/> Title and Number in Table of Contents	<input type="checkbox"/> Not smaller than 40 square inches
<input type="checkbox"/> Legend	<input type="checkbox"/> Scale

Explain how the following resources are used by the public:

<input type="checkbox"/> Streams	<input type="checkbox"/> Lakes
<input type="checkbox"/> Ditches	<input type="checkbox"/> Legal drains
<input type="checkbox"/> Wetlands	

Where possible, connect hydrologic characteristics and relevant stakeholder concerns

Quantify:

<input type="checkbox"/> Streams in miles	<input type="checkbox"/> Ditches in miles
<input type="checkbox"/> Legal drains in miles	<input type="checkbox"/> Wetlands in acreage
<input type="checkbox"/> Lakes by number in the watershed and estimated total acreage	

Describe hydrologic modifications within the watershed

Comments:

6. Soil characteristics that can affect water quality including, but not limited to, highly erodible soil (HES), hydric soils, and septic system suitability.

Explain how soil characteristics impact water quality in the watershed
 Not Applicable

Where possible, connect soil characteristics and relevant stakeholder concerns
 Not Applicable

Map(s) of the project area showing:

<input type="checkbox"/> Labeled Streams <input type="checkbox"/> Not applicable	<input type="checkbox"/> Labeled Population centers <input type="checkbox"/> Not applicable
<input type="checkbox"/> Labeled Major roads <input type="checkbox"/> Not applicable	<input type="checkbox"/> Title
<input type="checkbox"/> Number	<input type="checkbox"/> Not smaller than 40 square inches
<input type="checkbox"/> Title and Number in Table of Contents	<input type="checkbox"/> Legend
<input type="checkbox"/> North arrow	<input type="checkbox"/> Scale
<input type="checkbox"/> HES	<input type="checkbox"/> Hydric soils
<input type="checkbox"/> Septic system suitability	

Quantify according to the percentage of total watershed area they cover:

- HES
- Hydric soils
- Septic system suitability

Include tillage transect information
 Not Applicable

Describe unsewered areas

	<input type="checkbox"/> Map(s) of project area showing: <table border="1" data-bbox="358 275 1360 554"> <tr> <td data-bbox="358 275 867 344"> <input type="checkbox"/> Labeled Streams <input type="checkbox"/> Not applicable </td> <td data-bbox="867 275 1360 344"> <input type="checkbox"/> Labeled Population centers <input type="checkbox"/> Not applicable </td> </tr> <tr> <td data-bbox="358 344 867 413"> <input type="checkbox"/> Labeled Major roads <input type="checkbox"/> Not applicable </td> <td data-bbox="867 344 1360 413"> <input type="checkbox"/> Title </td> </tr> <tr> <td data-bbox="358 413 867 447"> <input type="checkbox"/> Number </td> <td data-bbox="867 413 1360 447"> <input type="checkbox"/> Title and Number in Table of Contents </td> </tr> <tr> <td data-bbox="358 447 867 480"> <input type="checkbox"/> Not smaller than 40 square inches </td> <td data-bbox="867 447 1360 480"> <input type="checkbox"/> Legend </td> </tr> <tr> <td data-bbox="358 480 867 514"> <input type="checkbox"/> Scale </td> <td data-bbox="867 480 1360 514"> <input type="checkbox"/> North arrow </td> </tr> <tr> <td colspan="2" data-bbox="358 514 1360 554"> <input type="checkbox"/> Large unsewered communities </td> </tr> </table> <p><i>Comments:</i></p>	<input type="checkbox"/> Labeled Streams <input type="checkbox"/> Not applicable	<input type="checkbox"/> Labeled Population centers <input type="checkbox"/> Not applicable	<input type="checkbox"/> Labeled Major roads <input type="checkbox"/> Not applicable	<input type="checkbox"/> Title	<input type="checkbox"/> Number	<input type="checkbox"/> Title and Number in Table of Contents	<input type="checkbox"/> Not smaller than 40 square inches	<input type="checkbox"/> Legend	<input type="checkbox"/> Scale	<input type="checkbox"/> North arrow	<input type="checkbox"/> Large unsewered communities	
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<input type="checkbox"/> Scale	<input type="checkbox"/> North arrow												
<input type="checkbox"/> Large unsewered communities													
	<p>7. A description of land-use in the watershed.</p> <input type="checkbox"/> Map(s) of the project area showing: <table border="1" data-bbox="358 661 1307 940"> <tr> <td data-bbox="358 661 867 730"> <input type="checkbox"/> North arrow </td> <td data-bbox="867 661 1307 730"> <input type="checkbox"/> Labeled Streams <input type="checkbox"/> Not applicable </td> </tr> <tr> <td data-bbox="358 730 867 800"> <input type="checkbox"/> Labeled Population centers <input type="checkbox"/> Not applicable </td> <td data-bbox="867 730 1307 800"> <input type="checkbox"/> Labeled Major roads <input type="checkbox"/> Not applicable </td> </tr> <tr> <td data-bbox="358 800 867 833"> <input type="checkbox"/> Title </td> <td data-bbox="867 800 1307 833"> <input type="checkbox"/> Number </td> </tr> <tr> <td data-bbox="358 833 867 867"> <input type="checkbox"/> Title and Number in Table of Contents </td> <td data-bbox="867 833 1307 867"> <input type="checkbox"/> Not smaller than 40 square inches </td> </tr> <tr> <td data-bbox="358 867 867 900"> <input type="checkbox"/> Legend </td> <td data-bbox="867 867 1307 900"> <input type="checkbox"/> Scale </td> </tr> <tr> <td colspan="2" data-bbox="358 900 1307 940"> <input type="checkbox"/> land-use layers pertinent to the watershed and stakeholder concerns. </td> </tr> </table> <input type="checkbox"/> Quantify in acreage and percent of the watershed, the mapped landuses <input type="checkbox"/> Explain how current landuses or land-use trends can potentially impact water quality <input type="checkbox"/> Where possible, connect land-use and relevant stakeholder concerns <input type="checkbox"/> Not Applicable <input type="checkbox"/> Explain the uses of fertilizer on urban and suburban land <input type="checkbox"/> Not Applicable <input type="checkbox"/> Explain where pet and/or wildlife waste may be an issue <input type="checkbox"/> Not Applicable <p><i>Comments:</i></p>	<input type="checkbox"/> North arrow	<input type="checkbox"/> Labeled Streams <input type="checkbox"/> Not applicable	<input type="checkbox"/> Labeled Population centers <input type="checkbox"/> Not applicable	<input type="checkbox"/> Labeled Major roads <input type="checkbox"/> Not applicable	<input type="checkbox"/> Title	<input type="checkbox"/> Number	<input type="checkbox"/> Title and Number in Table of Contents	<input type="checkbox"/> Not smaller than 40 square inches	<input type="checkbox"/> Legend	<input type="checkbox"/> Scale	<input type="checkbox"/> land-use layers pertinent to the watershed and stakeholder concerns.	
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<input type="checkbox"/> land-use layers pertinent to the watershed and stakeholder concerns.													
	<p>8. Other planning efforts in the watershed project area.</p> <input type="checkbox"/> Explain how other planning efforts impact water quality in the watershed <input type="checkbox"/> Not Applicable <input type="checkbox"/> Where possible, connect planning efforts and relevant stakeholder concerns <input type="checkbox"/> Not Applicable <input type="checkbox"/> Map(s) of the project area showing: <input type="checkbox"/> Not Applicable <table border="1" data-bbox="358 1486 1411 1766"> <tr> <td data-bbox="358 1486 867 1556"> <input type="checkbox"/> Labeled Streams <input type="checkbox"/> Not applicable </td> <td data-bbox="867 1486 1411 1556"> <input type="checkbox"/> Labeled Population centers <input type="checkbox"/> Not applicable </td> </tr> <tr> <td data-bbox="358 1556 867 1625"> <input type="checkbox"/> Labeled Major roads <input type="checkbox"/> Not applicable </td> <td data-bbox="867 1556 1411 1625"> <input type="checkbox"/> Title </td> </tr> <tr> <td data-bbox="358 1625 867 1659"> <input type="checkbox"/> Number </td> <td data-bbox="867 1625 1411 1659"> <input type="checkbox"/> Title and Number in Table of Contents </td> </tr> <tr> <td data-bbox="358 1659 867 1692"> <input type="checkbox"/> Not smaller than 40 square inches </td> <td data-bbox="867 1659 1411 1692"> <input type="checkbox"/> Legend </td> </tr> <tr> <td data-bbox="358 1692 867 1726"> <input type="checkbox"/> Scale </td> <td data-bbox="867 1692 1411 1726"> <input type="checkbox"/> North arrow </td> </tr> <tr> <td colspan="2" data-bbox="358 1726 1411 1766"> <input type="checkbox"/> Areas in need of Rule 5 enforcement and/or areas of unmanaged construction/sprawl </td> </tr> </table>	<input type="checkbox"/> Labeled Streams <input type="checkbox"/> Not applicable	<input type="checkbox"/> Labeled Population centers <input type="checkbox"/> Not applicable	<input type="checkbox"/> Labeled Major roads <input type="checkbox"/> Not applicable	<input type="checkbox"/> Title	<input type="checkbox"/> Number	<input type="checkbox"/> Title and Number in Table of Contents	<input type="checkbox"/> Not smaller than 40 square inches	<input type="checkbox"/> Legend	<input type="checkbox"/> Scale	<input type="checkbox"/> North arrow	<input type="checkbox"/> Areas in need of Rule 5 enforcement and/or areas of unmanaged construction/sprawl	
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	<p>Include on the map(s) the jurisdiction of:</p> <table border="1"> <tr> <td><input type="checkbox"/> MS4 Plans <input type="checkbox"/> Not Applicable</td> <td><input type="checkbox"/> Regional Sewer District Plans <input type="checkbox"/> Not Applicable</td> </tr> <tr> <td><input type="checkbox"/> City/County Master Plans <input type="checkbox"/> Not Applicable</td> <td><input type="checkbox"/> TMDL Reports <input type="checkbox"/> Not Applicable</td> </tr> <tr> <td><input type="checkbox"/> Other WMPs <input type="checkbox"/> Not Applicable</td> <td><input type="checkbox"/> Urban Retrofit Plans <input type="checkbox"/> Not Applicable</td> </tr> <tr> <td colspan="2"><input type="checkbox"/> Groundwater and/or Source Water Protection Plans <input type="checkbox"/> Not Applicable</td> </tr> </table> <p><i>Comments:</i></p>	<input type="checkbox"/> MS4 Plans <input type="checkbox"/> Not Applicable	<input type="checkbox"/> Regional Sewer District Plans <input type="checkbox"/> Not Applicable	<input type="checkbox"/> City/County Master Plans <input type="checkbox"/> Not Applicable	<input type="checkbox"/> TMDL Reports <input type="checkbox"/> Not Applicable	<input type="checkbox"/> Other WMPs <input type="checkbox"/> Not Applicable	<input type="checkbox"/> Urban Retrofit Plans <input type="checkbox"/> Not Applicable	<input type="checkbox"/> Groundwater and/or Source Water Protection Plans <input type="checkbox"/> Not Applicable															
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	<p>9. <input type="checkbox"/> An identification of threatened and endangered plants and animals that may be found in the watershed and a description of the types of habitat they prefer.</p> <p><i>Comments:</i></p>																						
	<p>10. <input type="checkbox"/> A description of the relevant relationships between the characteristics discussed in elements 4 through 9.</p> <p><i>Comments:</i></p>																						
	<p>Part Two of the Watershed Inventory:</p> <p><input type="checkbox"/> A section discussing checklist elements 12-14 for each 12 digit HUC. If the project is at the 10 digit scale, 12 digit HUCs may be combined into sections.</p> <p><input type="checkbox"/> Each section has a map of the applicable subwatershed(s) and all required map information from elements 11-14 may go on these maps</p> <table border="1"> <tr> <td><input type="checkbox"/> Labeled Streams <input type="checkbox"/> Not applicable</td> <td><input type="checkbox"/> Labeled Population centers <input type="checkbox"/> Not applicable</td> </tr> <tr> <td><input type="checkbox"/> Labeled Major roads <input type="checkbox"/> Not applicable</td> <td><input type="checkbox"/> Title</td> </tr> <tr> <td><input type="checkbox"/> Number</td> <td><input type="checkbox"/> Title and Number in Table of Contents</td> </tr> <tr> <td><input type="checkbox"/> Not smaller than 40 square inches</td> <td><input type="checkbox"/> Legend</td> </tr> <tr> <td><input type="checkbox"/> Scale</td> <td><input type="checkbox"/> North arrow</td> </tr> </table> <p><i>Comments:</i></p> <p>11. Data and Targets.</p> <p><input type="checkbox"/> For each report, plan, or document whose data is used:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Explain the background of the data <input type="checkbox"/> State the data's age <input type="checkbox"/> State how often those data were collected <p><input type="checkbox"/> Explain methodologies for collecting:</p> <table border="1"> <tr> <td><input type="checkbox"/> Windshield survey (Watershed Inventory must include a windshield survey or desktop survey) <input type="checkbox"/> Not Applicable</td> <td><input type="checkbox"/> Desktop survey (Watershed Inventory must include a windshield survey or desktop survey) <input type="checkbox"/> Not Applicable</td> </tr> <tr> <td><input type="checkbox"/> Habitat data</td> <td><input type="checkbox"/> Biological data</td> </tr> </table> <p><input type="checkbox"/> In a figure include:</p> <table border="1"> <tr> <td><input type="checkbox"/> Targets for water quality parameters of concern</td> <td><input type="checkbox"/> Targets for habitat data</td> </tr> <tr> <td><input type="checkbox"/> Targets for biological data</td> <td><input type="checkbox"/> Title</td> </tr> <tr> <td><input type="checkbox"/> Number</td> <td><input type="checkbox"/> Title and Number in Table of Contents</td> </tr> <tr> <td><input type="checkbox"/> Figure is legible</td> <td><input type="checkbox"/> Legend</td> </tr> </table>	<input type="checkbox"/> Labeled Streams <input type="checkbox"/> Not applicable	<input type="checkbox"/> Labeled Population centers <input type="checkbox"/> Not applicable	<input type="checkbox"/> Labeled Major roads <input type="checkbox"/> Not applicable	<input type="checkbox"/> Title	<input type="checkbox"/> Number	<input type="checkbox"/> Title and Number in Table of Contents	<input type="checkbox"/> Not smaller than 40 square inches	<input type="checkbox"/> Legend	<input type="checkbox"/> Scale	<input type="checkbox"/> North arrow	<input type="checkbox"/> Windshield survey (Watershed Inventory must include a windshield survey or desktop survey) <input type="checkbox"/> Not Applicable	<input type="checkbox"/> Desktop survey (Watershed Inventory must include a windshield survey or desktop survey) <input type="checkbox"/> Not Applicable	<input type="checkbox"/> Habitat data	<input type="checkbox"/> Biological data	<input type="checkbox"/> Targets for water quality parameters of concern	<input type="checkbox"/> Targets for habitat data	<input type="checkbox"/> Targets for biological data	<input type="checkbox"/> Title	<input type="checkbox"/> Number	<input type="checkbox"/> Title and Number in Table of Contents	<input type="checkbox"/> Figure is legible	<input type="checkbox"/> Legend
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<input type="checkbox"/> Figure is legible	<input type="checkbox"/> Legend																						

	<p><input type="checkbox"/> If an Indiana State Standard exists for a parameter of concern, target must be at least as stringent as that standard <input type="checkbox"/> Not Applicable</p> <p><input type="checkbox"/> If a NPS TMDL exists for the watershed, target must be at least as stringent as the NPS TMDL target <input type="checkbox"/> Not Applicable</p> <p><input type="checkbox"/> On the appropriate subwatershed map, include your sampling locations and locations from other data as appropriate</p> <p><i>Comments:</i></p>												
	<p>12. Water Quality Information.</p> <p><input type="checkbox"/> Discuss data pertaining to all concerns <input type="checkbox"/> Summarize and discuss data from:</p> <table border="1" data-bbox="358 653 1179 1066"> <tr> <td><input type="checkbox"/> 305b and 303d lists <input type="checkbox"/> Not Applicable</td> <td><input type="checkbox"/> TMDL Reports <input type="checkbox"/> Not Applicable</td> </tr> <tr> <td><input type="checkbox"/> OLQ surface water data <input type="checkbox"/> Not Applicable</td> <td><input type="checkbox"/> Assessment Branch surface water data <input type="checkbox"/> Not Applicable</td> </tr> <tr> <td><input type="checkbox"/> LARE Studies <input type="checkbox"/> Not Applicable</td> <td><input type="checkbox"/> NPDES facilities <input type="checkbox"/> Not Applicable</td> </tr> <tr> <td><input type="checkbox"/> Permit compliance <input type="checkbox"/> Not Applicable</td> <td><input type="checkbox"/> Other WMPs <input type="checkbox"/> Not Applicable</td> </tr> <tr> <td><input type="checkbox"/> USGS <input type="checkbox"/> Not Applicable</td> <td><input type="checkbox"/> Flow gauges <input type="checkbox"/> Not Applicable</td> </tr> <tr> <td colspan="2"><input type="checkbox"/> Project data <input type="checkbox"/> Not Applicable</td> </tr> </table> <p><input type="checkbox"/> On the appropriate subwatershed map, include impaired waterbodies</p> <p><i>Comments:</i></p>	<input type="checkbox"/> 305b and 303d lists <input type="checkbox"/> Not Applicable	<input type="checkbox"/> TMDL Reports <input type="checkbox"/> Not Applicable	<input type="checkbox"/> OLQ surface water data <input type="checkbox"/> Not Applicable	<input type="checkbox"/> Assessment Branch surface water data <input type="checkbox"/> Not Applicable	<input type="checkbox"/> LARE Studies <input type="checkbox"/> Not Applicable	<input type="checkbox"/> NPDES facilities <input type="checkbox"/> Not Applicable	<input type="checkbox"/> Permit compliance <input type="checkbox"/> Not Applicable	<input type="checkbox"/> Other WMPs <input type="checkbox"/> Not Applicable	<input type="checkbox"/> USGS <input type="checkbox"/> Not Applicable	<input type="checkbox"/> Flow gauges <input type="checkbox"/> Not Applicable	<input type="checkbox"/> Project data <input type="checkbox"/> Not Applicable	
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<input type="checkbox"/> OLQ surface water data <input type="checkbox"/> Not Applicable	<input type="checkbox"/> Assessment Branch surface water data <input type="checkbox"/> Not Applicable												
<input type="checkbox"/> LARE Studies <input type="checkbox"/> Not Applicable	<input type="checkbox"/> NPDES facilities <input type="checkbox"/> Not Applicable												
<input type="checkbox"/> Permit compliance <input type="checkbox"/> Not Applicable	<input type="checkbox"/> Other WMPs <input type="checkbox"/> Not Applicable												
<input type="checkbox"/> USGS <input type="checkbox"/> Not Applicable	<input type="checkbox"/> Flow gauges <input type="checkbox"/> Not Applicable												
<input type="checkbox"/> Project data <input type="checkbox"/> Not Applicable													
	<p>13. Habitat/Biological Information.</p> <p><input type="checkbox"/> Discuss data pertaining to all concerns <input type="checkbox"/> Summarize and discuss data from:</p> <table border="1" data-bbox="358 1283 1179 1696"> <tr> <td><input type="checkbox"/> 305b and 303d lists <input type="checkbox"/> Not Applicable</td> <td><input type="checkbox"/> TMDL Reports <input type="checkbox"/> Not Applicable</td> </tr> <tr> <td><input type="checkbox"/> OLQ surface water data <input type="checkbox"/> Not Applicable</td> <td><input type="checkbox"/> Assessment Branch surface water data <input type="checkbox"/> Not Applicable</td> </tr> <tr> <td><input type="checkbox"/> LARE Studies <input type="checkbox"/> Not Applicable</td> <td><input type="checkbox"/> NPDES facilities <input type="checkbox"/> Not Applicable</td> </tr> <tr> <td><input type="checkbox"/> Permit compliance <input type="checkbox"/> Not Applicable</td> <td><input type="checkbox"/> Other WMPs <input type="checkbox"/> Not Applicable</td> </tr> <tr> <td><input type="checkbox"/> USGS <input type="checkbox"/> Not Applicable</td> <td><input type="checkbox"/> Flow gauges <input type="checkbox"/> Not Applicable</td> </tr> <tr> <td colspan="2"><input type="checkbox"/> Project data <input type="checkbox"/> Not Applicable</td> </tr> </table> <p><input type="checkbox"/> Data from a desktop and/or windshield survey <input type="checkbox"/> Not Applicable to Habitat/Biological Information</p> <p><i>Comments:</i></p>	<input type="checkbox"/> 305b and 303d lists <input type="checkbox"/> Not Applicable	<input type="checkbox"/> TMDL Reports <input type="checkbox"/> Not Applicable	<input type="checkbox"/> OLQ surface water data <input type="checkbox"/> Not Applicable	<input type="checkbox"/> Assessment Branch surface water data <input type="checkbox"/> Not Applicable	<input type="checkbox"/> LARE Studies <input type="checkbox"/> Not Applicable	<input type="checkbox"/> NPDES facilities <input type="checkbox"/> Not Applicable	<input type="checkbox"/> Permit compliance <input type="checkbox"/> Not Applicable	<input type="checkbox"/> Other WMPs <input type="checkbox"/> Not Applicable	<input type="checkbox"/> USGS <input type="checkbox"/> Not Applicable	<input type="checkbox"/> Flow gauges <input type="checkbox"/> Not Applicable	<input type="checkbox"/> Project data <input type="checkbox"/> Not Applicable	
<input type="checkbox"/> 305b and 303d lists <input type="checkbox"/> Not Applicable	<input type="checkbox"/> TMDL Reports <input type="checkbox"/> Not Applicable												
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<input type="checkbox"/> USGS <input type="checkbox"/> Not Applicable	<input type="checkbox"/> Flow gauges <input type="checkbox"/> Not Applicable												
<input type="checkbox"/> Project data <input type="checkbox"/> Not Applicable													

14. land-use Information.

- Discuss data pertaining to all concerns
- Include data from a desktop and/or windshield survey
- Discuss, at a minimum:

<input type="checkbox"/> Open space	<input type="checkbox"/> Industry
<input type="checkbox"/> Areas slated for development	<input type="checkbox"/> land-use trends

- Describe and map on the appropriate subwatershed map(s):

<input type="checkbox"/> Stream miles needing buffers <input type="checkbox"/> Not Applicable	<input type="checkbox"/> Stream banks needing stabilization <input type="checkbox"/> Not Applicable
<input type="checkbox"/> Brownfields <input type="checkbox"/> Not Applicable	<input type="checkbox"/> LUSTs <input type="checkbox"/> Not Applicable
<input type="checkbox"/> Other remediation sites <input type="checkbox"/> Not Applicable	

- Describe:
 - Fertilizer use on non urban/suburban land uses
 Not Applicable
 - Hobby farms and other AFOs
 Not Applicable
 - Application of municipal wastewater sludge
 Not Applicable

- Quantify and then map on the appropriate subwatershed map(s):

<input type="checkbox"/> CSOs <input type="checkbox"/> Not Applicable	<input type="checkbox"/> SSOs <input type="checkbox"/> Not Applicable
<input type="checkbox"/> CAFOs <input type="checkbox"/> Not Applicable	<input type="checkbox"/> CFOs <input type="checkbox"/> Not Applicable
<input type="checkbox"/> Other non agricultural animal operations <input type="checkbox"/> Not Applicable	

Comments:

Part Three of the Watershed Inventory:

15. Watershed Inventory Summary.

- Summarize important findings, relationships, or trends
- Map(s) of the project area or subwatersheds showing:

<input type="checkbox"/> Labeled Streams <input type="checkbox"/> Not applicable	<input type="checkbox"/> Labeled Population centers <input type="checkbox"/> Not applicable
<input type="checkbox"/> Labeled Major roads <input type="checkbox"/> Not applicable	<input type="checkbox"/> Title
<input type="checkbox"/> Number	<input type="checkbox"/> Title and Number in Table of Contents
<input type="checkbox"/> Not smaller than 40 square inches	<input type="checkbox"/> Legend
<input type="checkbox"/> Scale	<input type="checkbox"/> North arrow
<input type="checkbox"/> Important water quality and habitat/biology results	

Comments:

	<p>16. Analysis of Stakeholder Concerns.</p> <p><input type="checkbox"/> In a figure include:</p> <table border="1"> <tr> <td><input type="checkbox"/> Title</td> <td><input type="checkbox"/> Number</td> </tr> <tr> <td><input type="checkbox"/> Title and Number in Table of Contents</td> <td><input type="checkbox"/> Figure is legible</td> </tr> <tr> <td><input type="checkbox"/> Each concern</td> <td><input type="checkbox"/> Whether the concern's supported by data</td> </tr> <tr> <td><input type="checkbox"/> Evidence for each concern</td> <td><input type="checkbox"/> If the concern is quantifiable</td> </tr> <tr> <td><input type="checkbox"/> If the concern is outside the project's scope</td> <td><input type="checkbox"/> Which concerns will be focused on</td> </tr> </table> <p><input type="checkbox"/> Explain why concerns supported by data will not be focused on <input type="checkbox"/> Not Applicable</p> <p><i>Comments:</i></p>	<input type="checkbox"/> Title	<input type="checkbox"/> Number	<input type="checkbox"/> Title and Number in Table of Contents	<input type="checkbox"/> Figure is legible	<input type="checkbox"/> Each concern	<input type="checkbox"/> Whether the concern's supported by data	<input type="checkbox"/> Evidence for each concern	<input type="checkbox"/> If the concern is quantifiable	<input type="checkbox"/> If the concern is outside the project's scope	<input type="checkbox"/> Which concerns will be focused on
<input type="checkbox"/> Title	<input type="checkbox"/> Number										
<input type="checkbox"/> Title and Number in Table of Contents	<input type="checkbox"/> Figure is legible										
<input type="checkbox"/> Each concern	<input type="checkbox"/> Whether the concern's supported by data										
<input type="checkbox"/> Evidence for each concern	<input type="checkbox"/> If the concern is quantifiable										
<input type="checkbox"/> If the concern is outside the project's scope	<input type="checkbox"/> Which concerns will be focused on										
IDENTIFY PROBLEMS AND CAUSES											
	<p>17. Problems that reflect the concerns on which the group has chosen to focus.</p> <p><input type="checkbox"/> In a figure include:</p> <table border="1"> <tr> <td><input type="checkbox"/> Title</td> <td><input type="checkbox"/> Number</td> </tr> <tr> <td><input type="checkbox"/> Title and Number in Table of Contents</td> <td><input type="checkbox"/> Figure is legible</td> </tr> <tr> <td><input type="checkbox"/> The concerns</td> <td><input type="checkbox"/> Problems related to the concerns</td> </tr> </table> <p><i>Comments:</i></p>	<input type="checkbox"/> Title	<input type="checkbox"/> Number	<input type="checkbox"/> Title and Number in Table of Contents	<input type="checkbox"/> Figure is legible	<input type="checkbox"/> The concerns	<input type="checkbox"/> Problems related to the concerns				
<input type="checkbox"/> Title	<input type="checkbox"/> Number										
<input type="checkbox"/> Title and Number in Table of Contents	<input type="checkbox"/> Figure is legible										
<input type="checkbox"/> The concerns	<input type="checkbox"/> Problems related to the concerns										
	<p>18. The potential cause(s) for each identified problem.</p> <p><input type="checkbox"/> In a figure include:</p> <table border="1"> <tr> <td><input type="checkbox"/> Title</td> <td><input type="checkbox"/> Number</td> </tr> <tr> <td><input type="checkbox"/> Title and Number in Table of Contents</td> <td><input type="checkbox"/> Figure is legible</td> </tr> <tr> <td><input type="checkbox"/> The problems</td> <td><input type="checkbox"/> Potential causes. Causes must be a specific pollutant parameter, but secondary causes may also be identified.</td> </tr> </table> <p><i>Comments:</i></p>	<input type="checkbox"/> Title	<input type="checkbox"/> Number	<input type="checkbox"/> Title and Number in Table of Contents	<input type="checkbox"/> Figure is legible	<input type="checkbox"/> The problems	<input type="checkbox"/> Potential causes. Causes must be a specific pollutant parameter, but secondary causes may also be identified.				
<input type="checkbox"/> Title	<input type="checkbox"/> Number										
<input type="checkbox"/> Title and Number in Table of Contents	<input type="checkbox"/> Figure is legible										
<input type="checkbox"/> The problems	<input type="checkbox"/> Potential causes. Causes must be a specific pollutant parameter, but secondary causes may also be identified.										
IDENTIFY SOURCES AND CALCULATE LOADS											
	<p>19. Potential sources for each pollution problem.</p> <p><input type="checkbox"/> In a figure include:</p> <table border="1"> <tr> <td><input type="checkbox"/> Title</td> <td><input type="checkbox"/> Number</td> </tr> <tr> <td><input type="checkbox"/> Title and Number in Table of Contents</td> <td><input type="checkbox"/> Figure is legible</td> </tr> <tr> <td colspan="2"><input type="checkbox"/> Sources paired with: <input type="checkbox"/> Appropriate environmental problems <input type="checkbox"/> Causes <input type="checkbox"/> Subwatersheds</td> </tr> <tr> <td colspan="2"><input type="checkbox"/> Provide enough information to explain the magnitude of the source</td> </tr> </table> <p><i>Comments:</i></p>	<input type="checkbox"/> Title	<input type="checkbox"/> Number	<input type="checkbox"/> Title and Number in Table of Contents	<input type="checkbox"/> Figure is legible	<input type="checkbox"/> Sources paired with: <input type="checkbox"/> Appropriate environmental problems <input type="checkbox"/> Causes <input type="checkbox"/> Subwatersheds		<input type="checkbox"/> Provide enough information to explain the magnitude of the source			
<input type="checkbox"/> Title	<input type="checkbox"/> Number										
<input type="checkbox"/> Title and Number in Table of Contents	<input type="checkbox"/> Figure is legible										
<input type="checkbox"/> Sources paired with: <input type="checkbox"/> Appropriate environmental problems <input type="checkbox"/> Causes <input type="checkbox"/> Subwatersheds											
<input type="checkbox"/> Provide enough information to explain the magnitude of the source											
	<p>20. Current loads for each pollutant identified as a problem's cause.</p> <p><input type="checkbox"/> In a figure include:</p> <table border="1"> <tr> <td><input type="checkbox"/> Title</td> <td><input type="checkbox"/> Number</td> </tr> <tr> <td><input type="checkbox"/> Title and Number in Table of Contents</td> <td><input type="checkbox"/> Figure is legible</td> </tr> <tr> <td colspan="2"><input type="checkbox"/> All current loads for pollutants identified as a problem's cause</td> </tr> </table> <p><i>Comments:</i></p>	<input type="checkbox"/> Title	<input type="checkbox"/> Number	<input type="checkbox"/> Title and Number in Table of Contents	<input type="checkbox"/> Figure is legible	<input type="checkbox"/> All current loads for pollutants identified as a problem's cause					
<input type="checkbox"/> Title	<input type="checkbox"/> Number										
<input type="checkbox"/> Title and Number in Table of Contents	<input type="checkbox"/> Figure is legible										
<input type="checkbox"/> All current loads for pollutants identified as a problem's cause											

21. The load reduction needed to achieve the target pollutant load.

In a figure include:

<input type="checkbox"/> Title	<input type="checkbox"/> Number
<input type="checkbox"/> Title and Number in Table of Contents	<input type="checkbox"/> Figure is legible
<input type="checkbox"/> The current loads	<input type="checkbox"/> The target loads
<input type="checkbox"/> The reductions needed to meet the target load	

Comments:

SET GOALS AND IDENTIFY CRITICAL AREAS

22. Water quality improvement or protection goal statements based on the calculated loads. Social and/or administrative goal statements may also be developed.

Goal statements include:

<input type="checkbox"/> Problem or pollutant	<input type="checkbox"/> Current pollutant load or level for water quality goal statement <input type="checkbox"/> current condition of the problem for social/administrative goal statement
<input type="checkbox"/> Target pollutant load, level, or condition of the problem	<input type="checkbox"/> Timeframe for goal completeness

If water quality standards exist for a pollutant, the goal, at a minimum, must be to meet that standard

Not applicable

If a NPS TMDL has been developed for the watershed, the goal, at a minimum, must be designed to achieve the reduction in pollutant load called for in the NPS TMDL

Not applicable

Comments:

23. An indicator that can be measured for each goal in order to determine whether progress is being made toward achieving that goal.

Water quality restoration goal indicators show environmental changes in the aquatic ecosystem or water chemistry

Non-water quality restoration goal indicators show administrative success or social change

Not applicable

Comments:

24. Critical areas where implementation will be needed within the watershed project area.

Identify critical areas

Describe the specific water quality pollutant(s) and source(s) in each critical area

Critical areas conform to the definition in the Checklist Instructions

Map(s) of project area or subwatersheds showing:

<input type="checkbox"/> Labeled Streams <input type="checkbox"/> Not applicable	<input type="checkbox"/> Labeled Population centers <input type="checkbox"/> Not applicable
<input type="checkbox"/> Labeled Major roads <input type="checkbox"/> Not applicable	<input type="checkbox"/> Title
<input type="checkbox"/> Number	<input type="checkbox"/> Title and Number in Table of Contents
<input type="checkbox"/> Not smaller than 40 square inches	<input type="checkbox"/> Legend
<input type="checkbox"/> Scale	<input type="checkbox"/> North arrow
<input type="checkbox"/> All critical areas	

Comments:

CHOOSE MEASURES /BMPs TO APPLY

25. A description of best management practices (BMPs) or measures that would be appropriate to address the goals.

In a figure include:

<input type="checkbox"/> Title	<input type="checkbox"/> Number
<input type="checkbox"/> Title and Number in Table of Contents	<input type="checkbox"/> Figure is legible
<input type="checkbox"/> BMPs and measures appropriate for each critical area	<input type="checkbox"/> Identify why that area was designated critical

Comments:

26. The load reduction expected for each BMP.

Calculate load reductions for applicable BMPs and include in element 25's figure.

Comments:

ACTION REGISTER & SCHEDULE

27. A series of objectives scheduled to achieve each goal.

Identify objectives designed to achieve the goals determined in element 22

The objectives should incorporate the BMPs or measures listed in element 25

Identify audiences for each objective

Comments:

28. Interim measurable milestones for determining whether each objective is being implemented according to the schedule.

Milestones for early stages of implementation

Milestones for later stages of implementation

Comments:

29. An estimate of financial cost (in dollar amount) for each objective.

List financial estimates for BMPs and outreach activities, salary, promotional costs, technical costs, travel, training, etc.

Comments:

30. Determine possible partners to implement each objective.

Comments:

31. Technical assistance needed to implement the plan.

Explain the technical assistance needed and who will provide it.

Comments:

Information from elements 27-31 are in a Action Register:

<input type="checkbox"/> Title	<input type="checkbox"/> Number
<input type="checkbox"/> Title and Number in Table of Contents	<input type="checkbox"/> Figure is legible

Comments:

TRACKING EFFECTIVENESS

32. A strategy to track each goal's indicators and evaluate the effectiveness of the implementation efforts over time.

Method that tracks water quality indicators through monitoring, modeling load reductions, or other method documenting environmental change. Social and administrative indicators are tracked through databases, surveys, marketing tools, or other methods.

Explain:

<input type="checkbox"/> How indicators are tracked	<input type="checkbox"/> The cost
<input type="checkbox"/> Tracking schedule	<input type="checkbox"/> Possible partners
<input type="checkbox"/> Technical assistance needed to track indicators	

Comments:

33. A description of future WMP activity.

Criteria for when WMP will be revised

Project contact information

Describe:

When the WMP will be re-evaluated

Who will be responsible for the re-evaluating and revisions

Comments:

INSTRUCTIONS

WATERSHED COMMUNITY INITIATIVE

1. The reasons the community initiated this watershed project.

Include a brief explanation of the initial [concerns](#) (see glossary) that led local groups or individuals to gather enough support to initiate this project. Also explain who the local groups or individuals are and how/why they decided to work together.

2. A description of the steering committee and who they represent.

Explain how stakeholder involvement in the project was generated and how additional stakeholder concerns, beyond the initial concerns listed in element 1, were gathered. In a [Figure](#) (see glossary), list the steering committee members and their affiliation. Briefly [describe](#) (see glossary) any public meetings or outreach efforts that were used to generate stakeholder involvement.

If your group created a mission or vision statement, include it in this section.

3. A list of stakeholder concerns.

In a figure, list the concerns of the steering committee and those collected from stakeholders at public meetings or outreach efforts. List every concern.

In your figure of concerns, you may want to group the concerns by similarity. Example groupings may include: Agricultural Concerns, Educational Concerns, and Urban Concerns. Stakeholders surveys conducted as part of your project may be discussed here or elsewhere in the WMP as deemed appropriate.

WATERSHED INVENTORY

About the Watershed Inventory:

The Watershed Inventory is a comprehensive inventory that [quantifies](#) (see glossary), describes, and summarizes available monitoring and other watershed data. The goal of the Watershed Inventory is to discover the true current conditions of the watershed and clearly identify the link between stakeholder concerns and those watershed conditions by compiling and examining available data and deciding which of the stakeholder concerns is supported by the data, unsupported by the data, or outside the project's scope. State if the data related to specific watershed concerns cannot be quantified. If new concerns are found or brought up through the Watershed Inventory process, data pertaining to those concerns must also be quantified, described, and summarized. Many methods, including the [Watershed Inventory Workbook for Indiana](#), exist for collecting Watershed Inventory data. Watershed groups are to use a [desktop](#) or [windshield survey](#) (see glossary).

Data in the Watershed Inventory must be presented in three parts:

- Part One: Includes elements 4-10, below, and needs to be presented on the entire watershed project scale. *This can include information about the historical and cultural aspects of your watershed.*
- Part Two: Includes elements 11-14, below, and needs to be presented on the [subwatershed](#) (see glossary) scale. This part must be divided into individual narrative sections for each 12 digit [hydrologic unit code\(s\) \(HUC\)](#) (see glossary) subwatershed. If topics from elements 4-10 have a particular relevance to a specific subwatershed, it is important to include that information in the appropriate narrative section.
- Part Three: Includes elements 15-16, below, and needs to summarize the watershed inventory findings and discuss which stakeholder concerns are supported by the collected data, unable to be quantified, or outside the project's scope.

PART ONE OF THE WATERSHED INVENTORY

The first part of the Watershed Inventory focuses on data at the watershed project scale and includes geology/topography, hydrology, soils, landuse, and planning efforts. These topics are generally broad and may not easily be summarized at the subwatershed scale.

4. A description of the geology/topography as it pertains to the watershed.

You do not have to include long narrative histories about the bedrock layers and glacial movements in your watershed unless they are pertinent to the concerns of your group.

If your watershed has karst topography, a description of the karst's magnitude and general distribution throughout the watershed is required. Briefly discuss the important topographic features that define the watershed's drainage patterns.

5. A brief overview of the hydrology as it pertains to the watershed, which includes, at a minimum:

- a. A [map](#) (see glossary) showing streams, lakes, watershed names and boundaries, hydrologic unit codes, legal drains, wetlands, population centers, major roads, and county boundaries. *This can be done on one map or several placed in consecutive order in the WMP. If flooding is a concern in your watershed, consider including a map of the floodplains.*
- b. A description of how the streams, lakes, ditches, legal drains, and wetlands are used by the public. *Possible public uses worth including are fishing and recreational areas and streams or lakes with development on them. Whenever possible make a narrative connection between hydrologic characteristics and relevant stakeholder concerns. (Example: Stakeholders are concerned about possible health risks of swimming in local streams and lakes. Across the watershed, there are X streams with public beaches and Y lakes with public beaches.)* Quantify

streams, ditches, and legal drains in miles, lakes by number in the watershed and estimated total acreage, and wetlands in acreage.

- c. A description of the hydrologic modifications (dams, reservoirs, drainage ditches, etc.) within the watershed.

6. Soil characteristics that can affect water quality including, but not limited to, highly erodible soil (HES), hydric soils, and septic system suitability.

- a. Explain how soil characteristics can potentially impact water quality in the watershed. Whenever possible make a narrative connection between soil characteristics and relevant stakeholder concerns. *(Example: Stakeholders are concerned about eroding soil washing into local streams. 25% of the watershed is covered by HES.)*
- b. Include a map showing highly erodible soil (HES), hydric soils, and septic system suitability and quantify those three soil characteristics according to the percentage of total watershed area they cover. *This can be done on one map or several placed consecutively in the WMP. HES data may be obtained from the eFOTG and turned into a unique GIS layer by associating it with an existing GIS layer of your watershed's soils.*
- c. Include tillage transect information (if available).
- d. Provide a description of unsewered areas. Include a map of large unsewered communities (schools, campgrounds, package plants, 20+ homes, etc.).

7. A description of land-use in the watershed.

- a. Include a map of important land-use layers pertinent to the watershed and stakeholder concerns *(Examples: agricultural lands, forests, open water, and urban areas)*.
 - i. Quantify in acreage and percentage of the watershed, the mapped landuses.
- b. Include an explanation of how current landuses or land-use trends can potentially impact water quality in the watershed. Whenever possible make a connection between land-use and relevant stakeholder concerns. *(Example: Stakeholders are concerned about eroding soil washing into local streams. The watershed has the highest rate of new construction in the state. Stakeholders are concerned about the impacts of failing septic systems. The western third of the watershed is unsewered.)*
- c. Include a description of the uses of fertilizer on urban and suburban land (if applicable).
- d. Include a description of areas where pet and/or wildlife waste may be an issue (if applicable).

8. Other planning efforts in the watershed project area.

- a. Explain how other planning efforts can potentially impact water quality in the watershed. Whenever possible, make a narrative connection between planning efforts and relevant stakeholder concerns. *(Example: Stakeholders are concerned about eroding soil washing into*

local streams. The MS4 plan, county master plan, and urban retrofit plan are not integrated enough to minimize disturbance of HES.)

- b. When spatial data exists, include a map(s) showing the jurisdiction of other planning efforts. Applicable planning efforts may include the following:
 - i. [Municipal Separate Storm Sewer System \(MS4\)](#) plans (see glossary)
 - ii. Regional Sewer District plans
 - iii. City/county master plans
 - iv. Groundwater and/or source water protection plans
 - v. Total Maximum Daily Load (TMDL) Reports
 - vi. Other WMPs
 - vii. [Urban Retrofit Plans](#) (see glossary)
 - viii. General areas in the watershed (i.e. the headwaters of Christina Creek or the northern third of the project area) in need of [Rule 5](#) (see glossary) enforcement and/or threatened by unmanaged construction/sprawl. These areas (8b. viii) must be mapped, however the map does not have to be so detailed that individual parcels of land or the identity of landowners can be identified.

9. An identification of threatened and endangered plants and animals that may be found in the watershed and a description of the types of habitat they prefer.

10. A description of the relevant relationships between the characteristics discussed in elements 4 through 9.

Many of the watershed characteristics in Part One of the Watershed Inventory, when examined together, help provide a clearer picture of the water quality issues. As applicable, describe those relationships. *Examples of characteristics and water quality issues they illustrate include:*

- Population centers and soils unsuitable for septic— their overlap may show the scope of an E. coli source
- Topography and soil type— their overlap may show the most important HES to protect from erosion
- Hydrology, landuse, and population centers— their overlap may show specific types of urban pollution sources
- Soils and location of construction— their overlap may show HES that need extra erosion control BMPs during construction or hydric soils that should be protected
- Endangered species and hydrology/soil types— their overlap may show soils that would support needed habitat for an endangered species

PART TWO OF THE WATERSHED INVENTORY:

This section of the Watershed Inventory must have a narrative section for each individual subwatershed (12 digit HUC) within the project area. Projects at the 10 digit HUC scale may combine several subwatersheds' narrative sections into one section if the data is similar across those HUCs. Each narrative section is to include information from elements 12-14 and begin with a map of the subwatershed being discussed. All requested map layers from elements 11-14 can be included on this map. *This can be done on one map or several placed consecutively in the WMP.*

If information discussed in Part One of the Watershed Inventory has specific applicability at the subwatershed scale, those details should be included when the pertinent subwatershed is discussed in Part Two of the Watershed Inventory, as shown in the examples below.

Example 1: A Regional Sewer District may cover the entire project area and best be summarized within Part One of the Watershed Inventory. However, if the District is installing sewers in subwatershed X, that specific information should be discussed in the section on subwatershed X.

Example 2: In Part One of the Watershed Inventory, data across the entire watershed may show specific landuses where wildlife or pet waste could be a pollution source. Those landuses may dominate certain areas at the subwatershed level, and that distinction should be highlighted in Part Two of the Watershed Inventory.

Example Outline of the Watershed Inventory's second part:

Watershed Inventory Part Two

Introduce the sources of data and water quality and habitat/biological targets (element 11)

Christina Creek Subwatershed

Subwatershed Map(s)

Water Quality Information (element 12)

-Summarize data

Habitat/Biological Information (element 13)

-Summarize data

Landuse Information (element 14)

-Description of general land-use information

-Description and quantification of land-use concerns

Katie-Lilly Run Subwatershed

Subwatershed Map(s)

Water Quality Information (element 12)

-Summarize data

Habitat/Biological Information (element 13)

-Summarize data

Landuse Information (element 14)

-Description of general land-use information

-Description and quantification of land-use concerns

11. Data and Targets.

Describe the background and age of each report, plan, or document whose [data](#) (see glossary) you will reference as well as how often those data were collected. Methodologies for collecting windshield survey, desktop survey, habitat data, and biological data should briefly be explained. In a figure, identify [targets](#) (see glossary) for water quality parameters of concern and habitat/biological data for the purpose of interpreting inventory data and defining problems. If an Indiana State Standard exists for a parameter of concern, your target must be at least as stringent as that standard. If a NPS TMDL exists for your watershed, your target must be at least as stringent as the NPS TMDL target. *IDEM has an online guidance document with examples of commonly used [water quality targets](#). If you have access to the Quality Assurance Project Plan (QAPP) from any of your data sources, consider referencing or including them in the appendix.* On the appropriate subwatershed map, include the locations where sampling occurred by your project and, as you deem appropriate, sampling points from reports whose data you will reference.

12. Water Quality Information.

The description of Water Quality Information should examine water quality data relevant to all stakeholder concerns as well as other water quality concerns discovered during the collection of data.

Element 12a-g is a list of data sources to be summarized and discussed as they relate to stakeholder concerns (if applicable to your project area). *The age of data should be considered before including it in the WMP. Data older than 5 years can often show trends, but changes in the watershed may affect data's relevance. When deciding to include any data older than 5-10 years, IDEM recommends careful consideration of watershed changes that have occurred since the data was originally collected. The EPA [Handbook for Developing Watershed Plans to Restore and Protect Our Waters](#) has information on summarizing data.*

- a. IDEM
 - i. 305b and 303d lists. On the appropriate subwatershed map, include impaired waterbodies
 - ii. TMDL Report data and conclusions
 - iii. Office of Land Quality surface water data
 - iv. Assessment Branch surface water data (*include groundwater/drinking water data if relevant to your concerns*)
- b. DNR Lake and River Enhancement (LARE) Diagnostic Studies
- c. NPDES facilities, permit compliance
- d. Other WMPs
- e. United States Geologic Survey Reports/Data
- f. Flow gauges (data does not have to be discussed, but may be used to calculate loads as appropriate)

- g. Data collected as a result of this project, including a desktop and/or windshield survey.

Data might also be available from:

- a. Local Universities*
- b. Municipalities*
- c. Local health departments*
- d. Municipal waste water/drinking water facilities*
- e. Local storm water program*
- f. Soil and Water Conservation Districts*
- g. Hoosier Riverwatch*

13. Habitat/Biological Information.

The description of Habitat/Biological Information should include habitat/biological data relevant to all stakeholder concerns as well as other habitat/biological concerns discovered during the collection of data. Possible sources of data include:

- a. Those listed above for 'Water Quality Information' (element 12a-g)
- b. Desktop survey and/or windshield survey done as part of your project

14. Land-use Information.

The description of land-use Information is a more detailed examination of land-use than presented in Part One of the Watershed Inventory. It should examine land-use data relevant to all stakeholder concerns as well as other land-use concerns discovered during the collection of data. In order to map, describe, and quantify information about land-use concerns at the subwatershed level, use a desktop survey and/or windshield survey. IDEM reserves the right to request additional information/maps depending on the issues focused on during your project. The following information must be included (if applicable to the subwatershed being discussed):

- a. Narrative information on land-use including, but not limited to: open spaces (i.e. recreational areas, cemeteries, etc.) industry, land-use trends, areas slated for development.
- b. Element 14bi-iii are land-use concerns that the project may or may not have identified. For those concerns that were identified, follow the instructions below on how to describe them. Consult your IDEM Project Manager for instruction on how to describe concerns not listed below.
 - i. The following concerns should be described and mapped on the appropriate subwatershed map.
 - a. Stream miles needing buffers
 - b. Stream banks needing stabilization
 - c. Brownfields, Leaking Underground Storage Tanks (LUST), and other remediation sites
 - ii. The following concerns should be described.

- a. Spreading of fertilizer on non urban/suburban land uses such as: agriculture, forest, and reclaimed mine land
- b. Hobby farms and other [Animal Feeding Operations \(AFO\)](#) (see glossary)
- c. Land application of municipal wastewater sludge
- iii. The following concerns should be quantified and then mapped on the appropriate subwatershed map.
 - a. [Combined Sewer Overflow \(CSO\)](#) or [Storm Sewer Overflow \(SSO\)](#) (see glossary)
 - b. [Concentrated Animal Feeding Operations \(CAFO\)](#), [Confined Feeding Operations \(CFO\)](#) (see glossary), and other non agricultural animal operations such as fairgrounds and kennels

PART THREE OF THE WATERSHED INVENTORY:

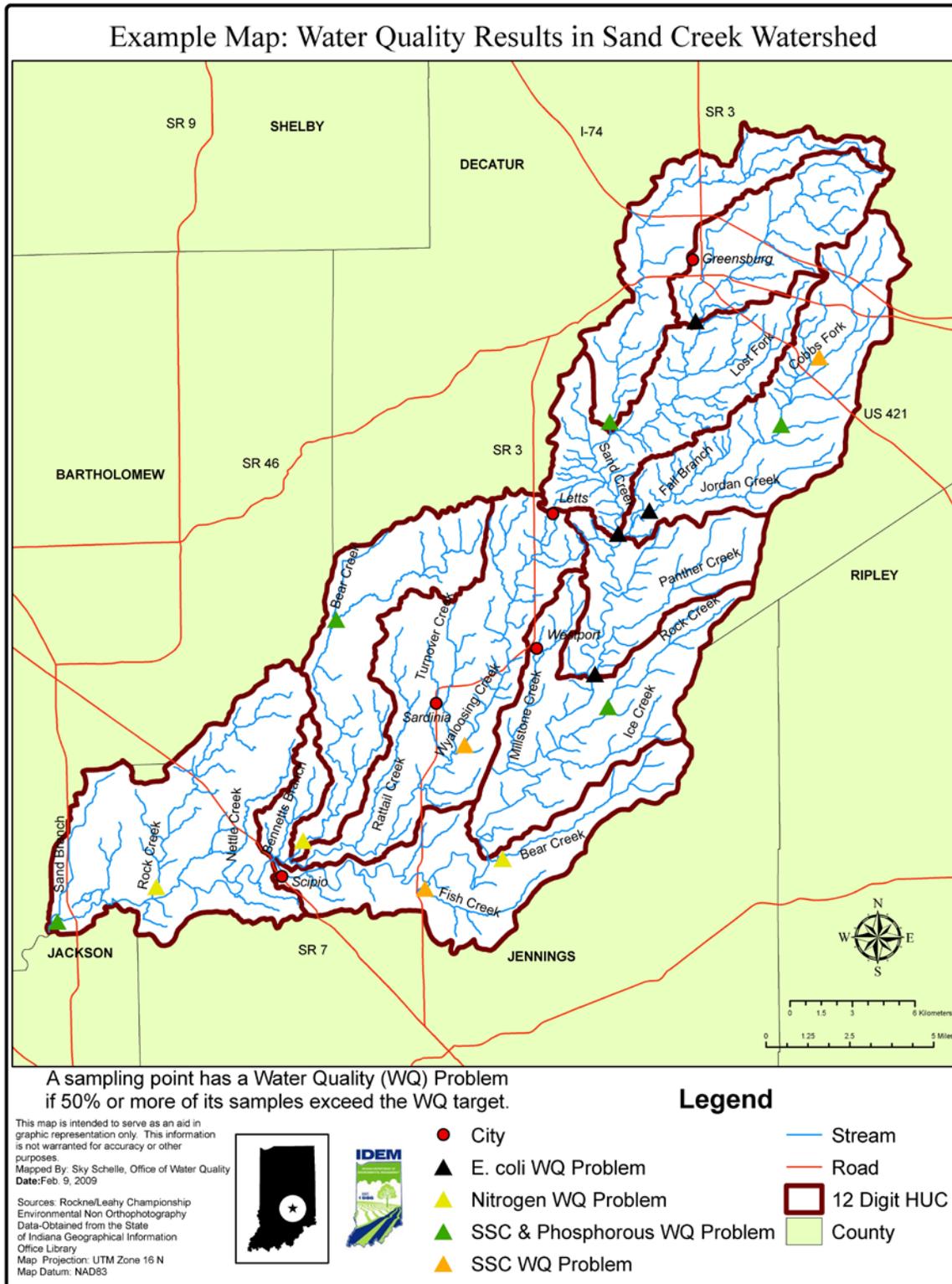
The third part of the Watershed Inventory is a short narrative focusing on important data and relationships found within Parts One and Two. This section should explain how that information can be used to better understand the stakeholder concerns and the direction they give to the watershed planning process.

15. Watershed Inventory Summary

The Watershed Inventory summary should be a brief recap of important inventoried data. Instead of restating every datum from Parts One and Two, provide a narrative summarizing important findings, relationships, or trends that the data showed. As part of the summary, include a map(s) summarizing the important water quality and habitat/biology results.

The map can be of the entire watershed and include water, habitat, and biology data if the data can be clearly labeled. Every exceedance does not need to be mapped. The purpose of the map is to represent the cumulative data and to highlight the range of results. If the data cannot fit on one map, make two maps.

Example: *Map 14: Water Quality Results in the Sand Creek Watershed*



IDEM Disclaimer: The sampling locations and data represented on the map above are for educational purposes only and may not accurately represent this specific watershed.

16. Analysis of Stakeholder Concerns.

Put every stakeholder concern—including those found during the Watershed Inventory—in a figure (see example below), and based on the information collected in the Watershed Inventory decide which concerns are supported by the collected data, what evidence you have for each concern, whether the concern is quantifiable, and whether the concern is outside the project’s scope. Finally, identify which concerns the project chose to focus on. If the group chose to not focus on a supported concern, that decision needs to be explained.

Example:

Concern	Supported by our data?	Evidence	Quantifiable?	Outside Scope?	Group wants to focus on?
The public doesn’t know who to contact about watershed related concerns	Yes	County does not publicize which offices have watershed information	Yes	No	Yes
1200 foot log jam in Holtz River	No	None collected	No	Yes	No
Water contact is unhealthy	Yes	Area streams on 303(d) list	Yes	No	Yes
Several different groups and agencies are giving conflicting information about the streams and rivers	Yes	Anecdotal evidence from stakeholders who have worked with agencies	No	No	Yes
Some farms lack manure management BMPs	Yes	Windshield survey and SWCD confirmed	Yes	No	Yes
Livestock have access to streams at multiple points	Yes	56 access points identified during windshield survey	Yes	No	Yes
CSOs discharge with every 0.5 inch rain	Yes	City records	Yes	Yes, but we can work on reducing urban runoff	Yes
Erosion control practices don’t appear to be used properly	Yes	Rule 5 inspector can’t keep up with complaints	Yes	No	Yes
The public lacks education about fertilizer use	No	None, we assume this is a valid concern	No	No	Yes
Watershed restoration is underfunded	Yes	Zero local funding sources	Yes	No	Yes

IDENTIFY PROBLEMS AND CAUSES

17. Problems that reflect the concerns on which the group has chosen to focus.

Problems (see glossary) can be thought of as conditions that exist because of the concerns. In a figure, list the concerns and the problems related to them. One problem can relate to several similar concerns. Some concerns may already be phrased as a problem and in these instances may be copied verbatim in the “Problem” column of your figure (see example).

Example:

Concern(s)	Problem
-Erosion control practices don't appear to be used properly -Livestock have access to streams at multiple points	Area streams are very cloudy and turbid
-The public doesn't know who to contact about watershed related concerns -Several different groups and agencies are giving conflicting information about the streams and rivers	A unified group for the entire watershed does not currently exist
-Livestock have access to streams at multiple points -CSOs discharge with every .5 inch rain -Some farms lack manure management BMPs -The public lacks education about fertilizer use	Area streams have nutrient levels exceeding the target set by this project
-CSOs discharge with every .5 inch rain -Water contact is unhealthy -Some farms lack manure management BMPs	Area streams are impaired for recreational contact on IDEM's 303(d) list
-Watershed restoration is underfunded	Watershed restoration is underfunded

18. The potential cause(s) for each identified problem.

Include a figure showing the problems and their relationship to the potential **causes** (see glossary). Causes of water quality problems must be defined as a specific pollutant parameter, but secondary causes may also be identified. It is appropriate that some problems and causes will be identical. *Consider the underlying cause(s) for the problems identified. Causes may include specific pollutants, social behaviors, etc. If you cannot identify a problem's potential cause, it may be that your problem is too broad, and you should try to narrow it.*

Example:

Problem	Potential Cause(s)
Area streams are very cloudy and turbid	- Total Suspended Sediment (TSS) levels exceed the target set by this project
A unified group for the entire watershed does not exist	-Lack of public awareness of watershed issues -Lack of unified government strategy about watershed management
Area streams have nutrient levels exceeding the target set by this project	- Nutrient levels exceed the target set by this project -Targeted nutrient reduction education does not exist
Areas streams are impaired by IDEM for recreational contact	- <i>E. coli</i> levels exceed the water quality standard
Watershed restoration is underfunded	-No effort to educate local officials, foundations, and other funding sources on the importance of watershed protection

IDENTIFY SOURCES AND CALCULATE LOADS

19. Potential sources for each pollution problem.

Since most, if not all, [sources](#) (see glossary) should have been identified through the inventory process it is not necessary to reiterate them here. Instead, in a figure, pair sources with appropriate environmental problems and potential causes and connect them to the appropriate subwatersheds. Provide enough information to explain the magnitude of the source. Sources are not needed for administrative or social problems.

Example:

Problem	Potential Cause(s)	Potential Source(s)
Area streams are very cloudy and turbid	- TSS levels exceed the target set by this project	3 developing sites with improper construction practices along the urban fringes in the subwatersheds Christina Creek and Lilly Run. 6 of 8 stream miles along the headwaters of Kettering Ditch are unbuffered. Approximately 3500 acres of row crops in the watershed are conventionally tilled.
A unified group for the entire watershed does not exist	-Lack of public awareness of watershed issues -Lack of unified government strategy about watershed management	N/A
Area streams have nutrient levels exceeding the target set by this project	- Nutrient levels exceed the target set by this project -Targeted nutrient reduction education does not exist	14 CSOs and urban fertilizer in the headwaters of Christina Creek, Lilly Run, and Kettering Ditch. 35 documented livestock access points and agricultural fertilizer in the subwatersheds Lilly Run, Kettering Ditch, and Rockne Run. 14 of 18 stream miles in Rockne Run are unbuffered.
Areas streams are impaired by IDEM for recreational contact	- <i>E. coli</i> levels exceed the water quality standard	14 CSOs in the headwaters of Christina Creek, Lilly Run, and Kettering Ditch. 35 documented livestock access points in the subwatersheds Lilly Run, Kettering Ditch, and Rockne Run.
Watershed restoration is underfunded	-No effort to educate local officials, foundations, and other funding sources on the importance of watershed protection	N/A

20. Current loads for each pollutant identified as a problem's cause.

Create a figure showing all current loads for pollutants identified as a problem's cause. There are several ways to characterize current loads for mass based pollutants such as nutrients and sediment. At a minimum, groups should summarize loads as pounds or tons/year on an annual basis. Depending on sampling locations, loads may be able to represent the entire watershed or smaller parts such as subwatersheds or individual sampling sites. *Consider what geographic area you want loads to represent when choosing your project's sampling sites.*

E. coli has no mass and its "load" is expressed as a concentration of colony forming units (cfu). Unless your watershed has a TMDL with an *E. coli* load, the easiest way to summarize *E. coli* is by averaging your samples. Since the *E. coli* water quality standard is in effect during the recreational season (April through October) it is acceptable to only average *E. coli* (as cfu/100ml) during those months; although it can be averaged year-round, if desired. *No matter the pollutant, it is acceptable for groups to calculate loads over smaller time periods, such as per season, month, or flow condition. Groups may also calculate loads for specific landuses, using L-THIA, if they choose.*

Data availability affects which load calculation methods can be used. IDEM encourages watershed groups to consider what geographic region (entire watershed, subwatershed, each sampling site, etc.) the loads should represent, but does not mandate that the loads be calculated for a specific geographic area or using a certain method. Using models to create loads is acceptable.

1. [Long-term Hydrologic Impact Assessment \(L-THIA\)](#) (see glossary) - determines the average impact a land-use change will have on annual runoff and average amount of several NPS pollutants including sediment, nutrients, and fecal coliforms.
2. [Spreadsheet Tool for Estimating Pollutant Load \(STEPL\)](#) (see glossary) - calculates nutrient and sediment loads at the watershed level.
3. [IDEM Load Calculation Tool](#) (see glossary) - uses flow and pollutant concentration data to estimate loads for mass-based pollutants and *E. coli*.
4. Purdue University's website will house the Online Load Duration Curve Tool. This tool will allow groups to input their data and the tool will generate load duration curves. Contact IDEM for more information about this resource.

21. The load reduction needed to achieve the target pollutant load.

The target load is the pollutant load of a stream which meets the applicable water quality standard or water quality target. Create a figure showing the current loads, the target loads, and the reductions needed to meet the target load.

Example:

TSS Loads	Amount
Current Load	100 tons/yr of TSS
Target Load	25 tons/yr of TSS
Reduction Needed	75 tons/yr of TSS

SET GOALS AND IDENTIFY CRITICAL AREAS

22. Water quality improvement or protection goal statements based on the calculated loads. Social and/or administrative goal statements may also be developed.

Each goal statement needs to include:

- a. Problem or pollutant
- b. Current pollutant load or current pollutant level (usually expressed as a concentration) for water quality goal statements, or current condition of the problem for social/administrative goal statements
- c. The target pollutant load, level, or condition of the problem (the target is your goal)
If water quality standards exist for a pollutant, the goal, at a minimum, must be to meet that standard. If a NPS TMDL has been developed for the watershed, the goal, at a minimum, must be designed to achieve the pollutant load reduction called for in the NPS TMDL.
- d. A timeframe for when the group expects the goal to be met. *One method of drafting timeframes is to estimate, using the load reductions associated with each BMP, how many BMPs would have to be installed to meet the goal and how long that realistically may take.*

Example TSS Goal Statement:

Excess TSS has been identified as a problem. We want to reduce the watershed's TSS load from 100 tons/year to 25 tons/year (a 75% reduction) within 20 years.

An Action Register (elements 27-31) will later be built to address each goal.

23. An indicator that can be measured for each goal in order to determine whether progress is being made toward achieving the goal.

For water quality restoration goals, select [indicators](#) (see glossary) that will show environmental changes in the aquatic ecosystem (such as benthic macroinvertebrate indices, fish community indices, or habitat evaluations) or water chemistry (such as pollutant concentration or reduced loading). For non-water quality restoration goals, select indicators that will show administrative success (such as number of people at meetings, number of field days held) or social change (such as measured change through a social indicators survey). *Information on selecting social indicators may be found in [The Social Indicator Planning and Evaluation System for Nonpoint Source Management](#).*

Example TSS Goal Indicator:

Water Quality and Social data will be used as indicators to show progress toward attaining this goal. The environmental indicator will be TSS testing conducted at each site on a monthly basis for 30 months after the first implementation phase is complete. The social indicator will be surveys that measure the social changes created through our education program.

Indicators should be placed after each goal. See the Action Register (elements 27-31) for an example.

24. Critical areas where implementation will be needed within the watershed project area.

Use inventoried data (element 4-14), current loads (element 20) and potential sources (element 19) to identify [critical areas](#) (see glossary) where best management practices or [measures](#) (see glossary) will be needed to address the NPS pollution causes and achieve project goals.

- a. Briefly describe the specific water quality pollutant(s) and source(s) in each critical area.
- b. Include a map showing the location of all critical areas.

This can be done on one map or several placed in consecutive order in the WMP.

How to Select Critical Areas:

Critical Areas are defined areas where WMP implementation can remediate NPS sources in order to improve water quality and/or can mitigate the impact of future sources in order to protect water quality. Because storm water delivers additional pollutants and flow to streams, and excess flow has been shown to destabilize banks and add to pollutant loads, the reduction of flow may be designated as a critical activity if that reduction will reduce a NPS pollutant in a Critical Area. This does not mean that Section 319 funds can address flooding concerns, but does mean that projects showing a decrease in flow reaching a Water of the State may be considered eligible.

Critical Areas cannot be defined as:

- The entire project area
- A group of geographic areas which when combined make up the entire project area.
- A source or land-use that covers 100% of the entire project area (ex: If the entire project area is HES, all HES can not be designated as critical).
- Every stream and/or every stream buffer (regardless of buffer width) within the entire project area.

Within a WMP and following the above guidelines, critical areas should be identified as one or a combination of the following descriptions:

1. 12 digit HUCs or smaller geographic areas where a particular pollutant needs to be addressed to meet the water quality goals of the WMP. If the watershed project area is smaller than a 10 digit HUC, an entire 12 digit HUC cannot be designated as a critical area. However, if the project area is one 10 digit HUC or larger, one or several (but not all) entire 12 digit HUCs can be designated as critical areas (*example: Kettering Ditch and Rockne Run subwatersheds are critical water quality improvement areas for E. coli. Christina Creek subwatershed is a critical water quality protection area from future nutrient NPS pollution*).

2. Specific region within a 12 digit HUC or smaller geographic area where a particular source(s) is contributing a pollutant of concern and needs to be addressed to meet the water quality goals of the WMP (*example: The city of Athens that lies within the Kettering Ditch subwatershed is a critical water quality improvement area for urban construction, CSOs, and reducing TSS through the reduction of flow. Christina Creek's headwaters are a critical water quality protection area from future urban fertilizer use*).
3. Specific source(s), anywhere in the project area, that are contributing a pollutant of concern (*example: The entire Salt Creek Watershed is a critical water quality improvement area for cattle crossings. The entire Salt Creek Watershed is a critical water quality protection area from future CAFOs*).

CHOOSE MEASURES/BMPs TO APPLY

25. A description of best management practices (BMPs) or measures that would be appropriate to address the goals.

List the BMPs and measures in a figure identifying which BMPs or measures are appropriate for each critical area and why that area was designated critical. *Consider right-of-ways, neighborhood association by-laws, zoning requirements, and other ordinances that may impede the ability to implement BMPs in the critical areas. Do not list every possible BMP or measure that would be appropriate for every conceivable circumstance in your watershed—only list BMPs or measures you want to focus on during implementation (regardless of Section 319 eligibility). Your IDEM Watershed Specialist can help identify non-Section 319 funding. Consider defining what each BMP is and how it's used in an Appendix.*

Example:

Critical Area	Reason for being critical	BMP or Measure
Lilly Run, Kettering Ditch, and Rockne Run subwatersheds	<i>E. coli</i>	Ordinance Education for Local Planners
		Cattle Exclusion/Alternative Watering
		Septic System Maintenance Workshops
The city of Athens that lies within the Kettering Ditch subwatershed	Increased flow and pollutant loads due to urbanization	Low Impact Development Workshops
		Ordinance Education for Local Planners
		Vegetative Swale
Salt Creek Watershed	Cattle crossings	Rain barrels/Cisterns
		Cattle Exclusion/Alternative Watering
		Nutrient Application Management

26. The load reduction expected for each BMP.

Using the Region 5 Load Estimation Spreadsheet Model, STEPL, or other appropriate methods, calculate estimated load reductions for each individual BMP. If a methodology that estimates load reductions does not exist for certain BMPs, state that in the WMP. Estimated load reductions, along with estimated costs, can help you calculate the resources needed to achieve your goals. Insert the load reductions into element 25's figure (see example below).

- [Region 5 Model](#) (see glossary) - provides gross estimates of sediment and nutrient load reductions for BMPs at the field level.
- [STEPL](#) - calculates nutrient and sediment load reductions for BMPs at the watershed level.

Example:

Critical Area	Reason for being critical	BMP or Measure	Estimated Load Reduction for a Single BMP*		
			Sediment	Phosphorus	Nitrogen
Lilly Run, Kettering Ditch, and Rockne Run subwatersheds	<i>E. coli</i> **	Ordinance Education for Local Planners	N/A	N/A	N/A
		Cattle Exclusion (modeled as a filter strip)/Alternative Watering	2 tons/yr	60 lbs/yr	120 lbs/yr
		Septic System Maintenance Workshops	N/A	N/A	N/A
The city of Athens that lies within the Kettering Ditch subwatershed	Urbanization	Low Impact Development Workshops	N/A	N/A	N/A
		Ordinance Education for Local Planners	N/A	N/A	N/A
		Vegetative Swale	4 tons /yr	9 lbs/yr	8 lbs/yr
		Rain barrels/Cisterns	N/A	N/A	N/A
Salt Creek Watershed	Tillage Practices	Implement no-till (modeled on 100 acres)	12 tons /yr	60 lbs/yr	120 lbs/yr

* All load reductions are examples and do not represent actual Region V or STEPL calculations.

***E. coli* reductions are not easily modeled. However, BMPs known to reduce *E. coli* should be listed and pollutant reductions from those BMPs, but associated with other pollutants, included in the figure.

ACTION REGISTER & SCHEDULE

The Action Register is a figure displaying each goal's scheduled objectives and milestones, estimated financial costs, and possible partners. Examples of how to build an action register are shown with elements 27-29. These are examples to demonstrate how to build the action register and do not need to be included in the WMP. The complete action register figure is shown in element 31 and must be included in the WMP.

27. A series of objectives scheduled to achieve each goal.

- a. Identify specific [objectives](#) (see glossary) designed to achieve the goals determined in element 22. The objectives should incorporate the BMPs or measures listed in element 25.
- b. Identify a target audience(s) for each goal’s objectives.

Example:

TSS Goal Statement:

Excess TSS has been identified as a problem. We want to reduce the watershed’s TSS load from 100 tons/year to 25 tons/year (a 75% reduction) within 20 years.

TSS Goal Indicator:

Water Quality and Social data will be used as indicators to show progress toward attaining this goal. The environmental indicator will be TSS testing conducted at each site on a monthly basis for 30 months once the implementation phase is complete. The social indicator will be surveys that measure the behavior changes created through our education program.

Action Register for TSS Goal

Objective	Target Audience
Develop Sediment Education Program for Farmers and Developers	Agricultural (AG) Landowners and Operators; Contractors and Developers
Implement No-Till on 1,000 Acres	AG Landowners and Operators

28. Interim measurable milestones for determining whether each objective is being implemented according to the schedule.

[Milestones](#) (see glossary) are needed for every goal’s objectives. Milestones scheduled during the early stages of implementation must be specific and focused on clearly outlining how the objective will be achieved. Milestones scheduled during the later stages of implementation may be less specific and focused on maintaining the direction of the project: i.e. monitoring, securing funding, updating data, adapting to new circumstances, and updating the WMP.

Example:

TSS Goal Statement:

Excess TSS has been identified as a problem. We want to reduce the watershed’s TSS load from 100 tons/year to 25 tons/year (a 75% reduction) within 20 years.

TSS Goal Indicator:

Water Quality and Social data will be used as indicators to show progress toward attaining this goal. The environmental indicator will be TSS testing conducted at each site on a monthly basis for 30 months once the implementation phase is complete. The social indicator will be surveys that measure the behavior changes created through our education program.

Action Register for TSS Goal

Objective	Target Audience	Milestone
Develop Sediment Educational Program for Farmers and Developers	AG Landowners and Operators; Contractors and Developers	Within 6 months of implementation starting, develop a survey that determines barriers to farmers and developers utilizing sediment reduction practices
		By end of year 1, develop two educational programs--one for farmers and one for developers--based on survey results
		By end of year 2, find source for donated radio and TV PSA time
		By end of year 4, resurvey watershed
		By end of year 5, reevaluate education program
		On a 5 year cycle, continue to educate and reevaluate
Implement No-Till on 1,000 Acres	AG Landowners and Operators	By 3 rd month of implementation, develop a 319 cost share program
		By 6 th month of implementation, be using existing SWCD/NRCS educational materials to inform landowners about no-till
		By end of year 1, identify non-319 sources of no-till financial assistance
		Every year, using all known funding sources, implement 200 acres of no-till
		Once implementation is complete, monitor TSS to measure possible reductions

29. An estimate of financial cost (in dollar amount) for each objective.

Financial cost estimates are necessary to determine the estimated cost of implementing the WMP. Financial cost estimates are expected for BMPs and educational/outreach activities, salary, promotional costs, technical costs, travel, training, etc.

Example:

TSS Goal Statement:

Excess TSS has been identified as a problem. We want to reduce the watershed's TSS load from 100 tons/year to 25 tons/year (a 75% reduction) within 20 years.

TSS Goal Indicator:

Water Quality and Social data will be used as indicators to show progress toward attaining this goal. The environmental indicator will be TSS testing conducted at each site on a monthly basis for 30 months once the implementation phase is complete. The social indicator will be surveys that measure the behavior changes created through our education program.

Action Register for TSS Goal

Objective	Target Audience	Milestone	Cost
Develop Sediment Educational Program for Farmers and Developers	AG Landowners and Operators; Contractors and Developers	Within 6 months of implementation starting, develop a survey that determines barriers to farmers and developers utilizing sediment reduction practices	\$1,000
		By end of year 1, develop two educational programs--one for farmers and one for developers--based on survey results	\$2,500
		By end of year 2, find source for donated radio and TV PSA time	Estimate 2 weeks of staff time= \$1,700
		By end of year 4, resurvey watershed	\$1,000
		By end of year 5, reevaluate education program	\$3,000
		On a 5 year cycle, continue to educate and reevaluate	\$7,000/5 year cycle
Implement No-Till on 1,000 Acres	AG Landowners and Operators	By 3 rd month of implementation, develop a 319 cost share program	\$500
		By 6 th month of implementation, be using existing SWCD/NRCS educational materials to inform landowners about no-till	¼ of a full time staff =\$10,000/year
		By end of year 1, identify non-319 sources of no-till financial assistance	Volunteer based
		Every year, using all known funding sources, implement 200 acres of no-till	Equipment modification costs \$2,500 per planter
		Once implementation is complete, monitor TSS to measure possible reductions	\$175/sample

30. Determine possible partners to implement each objective.

31. Technical assistance needed to implement the plan.

Explain the specific type of technical assistance needed and who will be relied upon to provide it. *NRCS' new modeling tool, the [Rapid Watershed Assessment](#), may help watershed groups estimate the amount of technical and financial assistance needed to implement their WMP.*

Complete Action Register Example:

TSS Goal Statement:

Excess TSS has been identified as a problem. We want to reduce the watershed's TSS load from 100 tons/year to 25 tons/year (a 75% reduction) within 20 years.

TSS Goal Indicator:

Water Quality and Social data will be used as indicators to show progress toward attaining this goal. The environmental indicator will be TSS testing conducted at each site on a monthly basis

for 30 months once the implementation phase is complete. The social indicator will be surveys that measure the behavior changes created through our education program.

Action Register for TSS Goal

Objective	Target Audience	Milestone	Cost	Possible Partner (PP) and needed Technical Assistance (TA)
Develop Sediment Educational Program for Farmers and Developers	AG Landowners and Operators; Contractors and Developers	Within 6 months of implementation starting, develop a survey that determines barriers to farmers and developers utilizing sediment reduction practices	\$1,000	PP=Watershed Group (WG) TA=University to create survey
		By end of year 1, develop two educational programs--one for farmers and one for developers--based on survey results	\$2,500	PP=WG
		By end of year 2, find source for donated radio and TV PSA time	Estimate of 2 weeks of staff time= \$1,700	PP=WG
		By end of year 4, resurvey watershed	\$1,000	PP=Watershed Group (WG) TA=University to create survey
		By end of year 5, reevaluate education program	\$3,000	PP=WG
		On a 5 year. cycle, continue to educate and reevaluate	\$7,000/5 year cycle	PP=Watershed Group (WG) TA=University to create survey
Implement No-Till on 1,000 Acres	AG Landowners and Operators	By 3 rd month of implementation, develop a 319 cost share program	\$500	PP=WG
		By 6 th month of implementation, be using existing SWCD/NRCS educational materials to inform landowners about no-till	¼ of a full time staff =\$10,000/year	PP=WG
		By end of year 1, identify non-319 sources of no-till financial assistance	Volunteer based	PP=WG
		Every year, using all known funding sources, implement 200 acres of no-till	Equipment modification costs \$2,500 per planter TSP costs \$300	PP=WG TA=steering committee to help discuss program with landowners and TSP to write conservation plans
		Once implementation is complete, monitor TSS to measure possible reductions	\$175/sample	PP=city wastewater plant runs samples TA=University monitoring design

TRACKING EFFECTIVENESS

32. A strategy to track each goal's indicators and evaluate the effectiveness of the implementation efforts over time.

Water quality indicators need to be tracked through monitoring, modeling load reductions, or other method that documents environmental change. Social and administrative indicators can be tracked through databases, surveys, marketing tools, or other methods. Ensure that the method used to track your indicators is explained and the cost, tracking schedule, possible partners, and technical assistance needed are included within the WMP. *Example: Water quality indicators will be tracked using the same methodology we used to collect water quality data for this WMP, however parameters will be limited to those identified in our goals. Data collection will begin 12 months after the first implementation phase ends and will be performed by our partners at the wastewater treatment plant and university for a cost between \$10,000 and \$15,000.*

33. A description of future WMP activity.

A WMP is a living document which requires periodic updates as water quality and land-use change and BMPs and measures are implemented. Determine criteria for when the plan will be revised. Provide a short description of when the WMP will be re-evaluated and who will be responsible for the re-evaluating and making the revisions or adaptations of the plan. If a NPS TMDL is developed after the WMP is finished, the plan will need to be amended to be consistent with the load allocations in the NPS TMDL. Include contact information for questions about the WMP.

GLOSSARY

6217—Requirements designed to improve water quality by strengthening the link between federal and state coastal zone management programs and 319 programs. 6217 is administered by the Indiana Department of Natural Resources Lake Michigan Coastal Program. Program information can be found at: <http://www.in.gov/dnr/lakemich/issues/cprprogram.htm>

Animal Feeding Operation (AFO)—An AFO is an agricultural operation where animals are kept and raised in confined situations. It is a lot or facility (other than an aquatic animal production facility) where the following conditions are met:

1. Animals have been, are, or will be stabled or confined and fed or maintained for a total of 45 days or more in any 12-month period, and
2. Crops, vegetation, forage growth, or post-harvest residues are not sustained in the normal growing season over any portion of the lot or facility.

Cause—A cause is an event, agent, or series of actions that produces an effect. Within the realm of this document, that effect is known as a problem. Causes of water quality problems must be defined as a specific pollutant parameter. It is appropriate for some causes and problems to be identical.

Concern—A concern is an issue or topic that a stakeholder believes is relevant to the watershed. All concerns need to be documented and, through the planning process, the steering committee will decide which concerns should be focused on, which concerns are not actual problems, and which are outside the scope of their project. It is appropriate that some concerns and problems will be identical.

Concentrated Animal Feeding Operation (CAFO)—A CAFO is an operation that must meet the definition of an AFO before it can be defined or designated as a CAFO. Previous US-EPA regulations based the definition of CAFOs on the number of "animal units" confined. US-EPA no longer uses the term "animal unit," but instead refers to the actual number of animals at the operation to define a CAFO. View a brief summary here of how the regulations define [Large, Medium, and Small CAFOs](#). The NPDES program regulates the discharge of pollutants from point sources to waters of the United States. CAFOs are point sources, as defined by the CWA [Section 502(14)], are issued a State no discharge permit, and are ineligible for Section 319 funding.

Confined Feeding Operation (CFO)—A CFO is an AFO engaged in the confined feeding of at least 300 cattle, or 600 swine or sheep, or 30,000 fowl, such as chickens, turkeys or other poultry. CFOs are issued a State no discharge permit. The IDEM regulates these confined feeding operations, as well as smaller operations which have violated water pollution rules or laws, under IC 13-18-10.

Combined Sewer Overflow (CSO)—A CSO is an event where the discharge of untreated human and industrial sewage and storm water into local waterways occurs because the capacity of a combined storm/sanitary sewer system is exceeded by local runoff.

Critical Area—Critical Areas are defined area(s) where WMP implementation can remediate NPS sources in order to improve water quality and are defined areas where WMP implementation can mitigate the impact of future sources in order to protect water quality.

Data—Data is any and all information collected, gathered, or brought together as part of the Watershed Inventory’s Second Part.

Describe—To describe or give a description of something means to discuss its relative distribution within the watershed. An acceptable description will verbally illustrate a concern, problem, cause, or source as located in a particular part of the watershed or along specific streams or stream reaches. To describe something does not mean to simply state that it exists within a watershed. When mapping items that are described, highlight their general location on the map. Do not attempt to pinpoint every occurrence.

Desktop Survey—A method of collecting watershed field information using desktop tools such as maps, existing reports and plans, GIS, mapping software such as Google Maps and Google Earth, and the internet. The purpose of the desktop survey is to help describe and quantify information pertaining to stakeholder concerns. Examples of collected information may include: miles of unbuffered streams, number of animal operations, location of Combined Sewer Overflows (CSOs), and location of dams and other hydromodifications. Often, a desktop survey will be combined with a windshield survey, the general knowledge of a steering committee, and other data sources to help describe and quantify watershed characteristics. Desktop surveys are referred to as a “Tier One” collection method in the [Watershed Inventory Workbook for Indiana](#).

Figure—A figure is a chart, table, or graph that presents information. Figures must have a title and a number assigned to them. All figures shall be listed in the Table of Contents by title and number. Figures must be legible.

Geographic Information System (GIS)—A GIS is an organized collection of computer hardware, software, and geographic data designed to efficiently capture, store, update, manipulate, analyze, and display all forms of geographically referenced information. There are several sites where the public can access GIS layers and produce maps using GIS (see Resources).

Hydrologic Unit Code (HUC)—A HUC is a watershed designation system created by the United State Geological Survey (USGS) to identify each drainage basin in the US from largest smallest. The USGS uses a series of digits to label each HUC. The smaller a HUC, the more digits in its label. IDEM only funds groups working at the 8, 10, and 12 digit HUC scale.

IDEM Load Calculation Tool –The IDEM Load Calculation Tool is a simple spreadsheet that calculates mass-based pollutant loads for individual sampling events. It is not designed to calculate aggregate loads across a watershed or even at individual sites over time. The tool can be found on IDEM’s website: <http://www.in.gov/idem/nps/2624.htm>.

Indicator—An indicator is a parameter or criteria that can be measured to determine whether substantial progress is being made towards achieving a goal.

Long Term Hydrologic Impact Assessment (L-THIA)—L-THIA is an analysis tool that provides site-specific estimates of changes in runoff, recharge and nonpoint source pollution resulting from past or proposed land-use changes. L-THIA can be found at this website: <http://www.ecn.purdue.edu/runoff/index.html>.

Map—A map is a spatial representation of information. All maps must have a title and a number assigned to them and not be smaller than 40 square inches. All maps will be listed in the Table of Contents by title and number. In addition, all maps must have a legend, scale, north arrow. Mapped population centers, major streams, and major roads must be labeled. Maps created by editing existing maps can be used in the WMP. Existing maps are discussed in the [Resources](#) section of the instructions. Original GIS maps can be produced by the project sponsor, their subcontractor, or partners and in addition to the requirements above, must show subwatershed boundaries. IDEM reserves the right to request additional layers be added to maps.

The WMP instructions ask for several maps. IDEM can assist groups with finding mapping resources. The use of GIS is not mandatory. There are several methods which will allow you to use and edit existing maps for your WMP. Existing electronic maps, for instance, can be copied into a Word document so additional text and symbols can be added to it. Hard copy maps can also be manually edited and scanned into the WMP. IDEM's GIS Specialist can provide you with more information. Maps created by editing existing maps must, at a minimum, have a legend, scale, and north arrow and label, population centers, streams, and major roads. The following are websites which can provide map layers.

Abbrev.	Web Mapping Applications/Data Portals	Links to Applications
IWQA	In Water Quality Atlas	http://www.in.gov/idem/nps/3371.htm
IM	IndianaMap	http://129.79.145.7/arcims/statewide%5Fmxd/viewer.htm
IV	IndianaView	http://www.indianaview.org
ISDP	IN Spatial Data Portal	http://gis.iu.edu
IGIC	Indiana Geographic Information Council	http://www.igic.org/standards/metadata.html
GDG	USDA Geospatial Data Gateway	http://datagateway.nrcs.usda.gov/
SDM	NRCS Soil Data Mart	http://soildatamart.nrcs.usda.gov
SSURGO	NRCS Soil Survey Geographic Database	http://soils.usda.gov/survey/geography/ssurgo
IWF	Indiana Watershed Finder	https://engineering.purdue.edu/~iwla/watershed/watershedfinder.html
WGI	Indiana Watershed Groups Inventory	https://engineering.purdue.edu/SafeWater/Atlas/map.html
RF	DNR Recreation Finder	http://www.in.gov/gis-dnr-web/website/DnrRecFinder_AI/viewer.htm
ITI	Indiana Trails Inventory	http://www.in.gov/dnr/outdoor/4240.htm
MP	DNR Mine Permits	http://www.in.gov/dnr/reclamation/5397.htm
KP	DNR Kudzu Map	http://www.in.gov/dnr/entomolo/5908.htm
WW	DNR Water Wells (approx. locations)	http://www.in.gov/gis-dnr-web/website/DNR_WaterWells_II/viewer.htm
AI	accessIndiana	http://www.in.gov/apps/ingisi/mapOfIndiana/map.jsp?currentPage=gotoIndex
ISS	Indiana StreamStats	http://water.usgs.gov/osw/streamstats/indiana.html
SI	Stats Indiana	http://www.stats.indiana.edu/
TNM	The National Map Seamless Viewer	http://seamless.usgs.gov/website/seamless/viewer.htm
SDV	USDA Soil Data Viewer	http://websoilsurvey.nrcs.usda.gov/app/
RWA	IN Rapid Watershed Assessments	http://www.in.gov/isda/2732.htm
CAAGIS	Interactive Maps on the Internet	http://cobweb.ecn.purdue.edu/~watergen/
LCDM	Purdue Local Community Decision Maker	http://ldm.agriculture.purdue.edu/
GIO	State Agencies SDE Library	(Internal Source of GIS Data Layers)
IID	Internal State Databases	(Internal Tabular Data with and without Spatial Reference)
	Add'l links to on-line mapping applications	http://www.igic.org/

Measure—A measure is an action, activity, program, or event that will help a project achieve its objectives. Examples of measures include educational events, workshops, field days, surveys, and brochures.

Methodology—Methodology refers to the way in which information is found or something is done. The methodology includes the methods, procedures, and techniques used to collect.

Milestone—A milestone is a step that shows the objective’s BMPs and measures are being implemented on a schedule that will allow the objective to be reached and the goal accomplished. Milestones are not changes in water quality.

Municipal Separate Storm Sewer System (MS4) —MS4 is a conveyance or system of conveyances (sewers, roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, storm drains) that is usually owned or operated by a city, county, or association. Population areas of a certain size must have an IDEM approved MS4 plan that details, through six different measures, how storm water pollution will be minimized within the MS4 area.

Objective—An objective is a specific and focused strategy that if achieved will help a project achieve its goals. Examples of objectives include installing BMPs, completing measures, securing funding, and organizing a volunteer base.

Plate—A plate is a photograph or other image. Plates must have a title and a number assigned to them. All plates will be listed in the Table of Contents by title and number. Plates must not be smaller than 9 square inches.

Problem—A problem is an issue that exists due to one or more of the concerns. Problems build on concerns by formally stating a condition or action that needs to be changed, improved, or investigated further. It is appropriate that some concerns and problems will be identical.

Quantify—To quantify something means to provide a reasonable estimate of its magnitude. The magnitude must be expressed numerically or as a unit of measurement (acreage, miles, etc.). To quantify something does not mean to express its magnitude with adjectives such as common or sparse.

Region 5 Load Estimation Spreadsheet Model—The Region 5 Model is an Excel workbook that provides a gross estimate of sediment and nutrient load reductions from the implementation of agricultural and urban BMPs. It can be found on EPA’s web site: ([http://it.tetrattech-ffx.com/step1/models\\$docs.htm](http://it.tetrattech-ffx.com/step1/models$docs.htm)).

Rule 5—Rule 5 is a performance-based regulation designed to reduce pollutants that are associated with construction and/or land disturbing activities that disturb one acre or more. It overlaps with the MS4 rule in that, the MS4 rule requires MS4 entities to develop ordinances for the Construction and Post-Construction MCMs, and those ordinances must meet the minimum requirements of 327 IAC 15-5 (Rule 5). Rule 5 applies statewide, but the ordinances developed by the MS4s are specific to each MS4 jurisdictional area. Section 319 funds cannot be spent on Rule 5 requirements unless the proposed project is above and beyond the rule’s requirements.

Spreadsheet Tool for Estimating Pollutant Load (STEPL)—STEPL is a tool that computes watershed surface runoff; nutrient loads, including nitrogen, phosphorus, and 5-day biological oxygen demand (BOD5); and sediment delivery based on various landuses and management practices. It can be found on EPA’s web site: <http://it.tetrattech-ffx.com/stepl/default.htm>.

Sanitary Sewer Overflow (SSO)—An SSO is a condition whereby untreated sewage is illegally discharged into the environment, without undergoing wastewater treatment.

Source—A source is an activity, material, or structure that results in a cause of nonpoint source pollution. Sources should be described in enough detail to show the part of the watershed where they occur and, when applicable, what their magnitude is across the watershed.

Stakeholder—A stakeholder is a person (or group) who is responsible for making or implementing a management recommendation, who will be affected by the recommendation, or who can aid or prevent its implementation.

Subwatershed—A subwatershed, for the purposes of this document, is a watershed with a 12 digit Hydrologic Unit Code (HUC).

Target—A target is the desired measurable level of a water quality or habitat/biological parameter that your group has decided streams in the watershed should meet.

US-EPA, *Handbook for Developing Watershed Plans to Restore and Protect Our Waters*—A comprehensive guide published by US-EPA outlining that agency’s 9 required elements as well as tools and ideas pertinent to successful watershed planning (http://www.epa.gov/nps/watershed_handbook).

Urban Retrofit Plan—An urban retrofit plan is a strategy within an urban or suburban environment to add storm water retrofits with water quality features to existing BMPs or storm water infrastructure. The Center for Watershed Protection has a manual on urban retrofits on their web site: http://www.cwp.org/documents/cat_view/68-urban-subwatershed-restoration-manual-series/89-manual-3-urban-stormwater-retrofit-practices-manual.html.

Windshield Survey—A method of collecting watershed field information by driving the watershed (or parts of it) and observing areas or practices of concern. The purpose of the windshield survey is to describe and quantify information pertaining to stakeholder concerns. Examples of collected information may include: miles of unbuffered streams, number of animal operations, location of Combined Sewer Overflows (CSOs), and location of dams and other hydromodifications. Often, a windshield survey will be combined with a desktop survey, the general knowledge of a steering committee, and other data sources to help describe and quantify watershed characteristics. Windshield surveys are referred to as a “Tier Two” collection method in the [Watershed Inventory Workbook for Indiana](#).