
One Watershed, One Plan Guidebook



Purpose:

The *One Watershed, One Plan Guidebook* is a series of supporting information documents for the *One Watershed, One Plan - Plan Content Requirements*. The documents contain definitions, examples, and considerations to help stimulate discussions and provide direction as planning groups move through each phase of the planning process. The following is not program policy, but rather, is intended to serve as a resource and point of reference for developing comprehensive watershed management plans.

For program policy, please see:

- One Watershed, One Plan – Plan Content Requirements
- One Watershed, One Plan Operating Procedures
- One Watershed, One Plan Guiding Principles



List of Documents

- Creating a Land and Water Resources Narrative
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- Using WRAPS Reports in Local Water Planning
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- Accounting for Local Funds
- Constructing a Targeted Implementation Schedule
- Implementation Schedule Sample Spreadsheet (*download from BWSR website*)
- Capital Improvements
- Data Collection and Monitoring
- Public Participation and Engagement (*coming soon*)
- Local Funding Authorities (list of statutes and laws)
- Organizational Structures for Water Management



Creating a Land and Water Resources Narrative

Supporting information for Section III.B of 1W1P Plan Content Requirements (version 2.0)

This document provides additional considerations for what types of information to include in your plan's Land and Water Resources Narrative, where to find the information, and how to effectively use it.

The narrative, at least in draft format, should be completed before - and used to inform - the process of identifying and prioritizing resources and issues. The narrative should help explain why issues exist in the watershed, and ultimately provides the justification for the actions identified in the plan.

The Importance of Telling the Watershed Story

The Land and Water Resources Narrative is a critical component of the plan and the planning process because it sets the context for the other plan elements. The narrative should paint a clear picture of watershed characteristics. To keep the Land and Water Resource Narrative sufficiently concise, consider highlighting only the most pertinent maps in this section, and including any other maps in the Plan Appendix.

Every watershed has a story – its long geological history and its location determine the native soils, vegetation, and natural abundance and quality of lakes, streams, and groundwater. Historical and recent land use changes and hydrologic alterations determine the watershed's current characteristics, while social and economic factors can give clues about the watershed's future. It's also important to acknowledge the watershed's context within the broader basin because actions in upstream watersheds affect downstream neighbors.

Effectively “telling” the watershed story will establish a common understanding among planning participants, help planning groups identify and prioritize issues, and support the plan's strategies and actions.

Content Considerations and Sources

There are multiple reports, plans, and studies that already contain most, if not all, of the pieces of information you include in your narrative, but they may not be organized by your planning boundary. The plan must contain sufficient land and water resource information to inform the planning process. Specifically, the plan must include a general description of the available land and water resource information, and where to find that information. The Plan Appendix should include a list of, and links to, data sources and references.

Some types of information are critical to supporting priorities and actions of the plan and may need to be described more thoroughly. For example, a description of trend analysis results may need in-depth coverage to support a priority issue in the plan, but the data used in the analysis does not need to be included (it can be referenced). If gaps in information are identified through the plan development process, consider implementation action(s) to fill the gap rather than delaying planning in order to generate new data.

Physical Characteristics

Table 1 (page 3) lists information types and sources to consider for each required element of the Land and Water Resources Narrative. Some items on this list may not be available or applicable in your watershed, and there may be additional items important to your watershed that are not included. This is simply meant to stimulate ideas on what items to include in the narrative. The information sources below are good starting points to gather information on your watershed's physical characteristics.

Existing local water plans

- [Minnesota Nutrient Planning Portal](#)
- [WRAPS reports \(MPCA\)](#)
- [GRAPS reports \(MDH\)](#)
- [DNR Watershed Health Assessment Framework Context reports](#)
- [Minnesota Forest Resources Council Landscape Stewardship Plans](#)
- [NRCS Rapid Watershed Assessments](#)
- [Minnesota Geospatial Commons](#)

Socioeconomic Characteristics

Knowing about the people that live and work in the watershed is crucial to the success of your planning effort. This is a critical, but often overlooked, body of information - it can help you begin to think about the values and motivations of the people in your watershed. **Table 2** (page 4) lists characteristics that you may want to consider, and the list below gives some ideas about where to start gathering information.

- [US Census American Fact Finder](#)
- [MN State Demographic Center](#)
- [USDA Economic Research Service](#)

Getting to a Quality Plan

At the end of this process, you should have a **detailed description of the watershed and its story**, giving the reader a clear picture of the characteristics that make the watershed unique. This description should also explain why the issues and actions identified in the plan are relevant and necessary. More detailed narrative information will allow you to be more accurate as you prioritize and target implementation.

The watershed story should explain the watershed's context – the geology, climate, and position in the basin. The main focus should be the major land uses, the people who are responsible for managing the land use, and the economy as a result. This information should appear in the appendix at a minimum, and could also be included in the executive summary and plan introduction sections. Include maps that support the story.

Table 1. Information types and sources to consider for plan content requirements for the Land and Water Resources Narrative.

Plan Content Requirements	Potential Information to Include	Potential Sources
Topography, Soils, General Geology	Topography: LiDAR Elevations, Slope; Soils: Soil Texture (percent sand, silt, and clay), Crop Productivity Index, Forest Productivity, Hydric Rating, Wind Erodibility; General Geology: Bedrock, Surficial Geology, Karst Features, Mineral Deposits, Ecological Classifications	MN Geospatial Commons, NRCS Web Soil Survey, Unites States Geological Survey, MN Geological Survey
Precipitation	Normal Annual Precipitation and Temperature, Precipitation and Temperature Trends, Runoff Rates	MN Climatology Office, National Weather Service, NOAA Atlas 14, Modeling (HSPF)
Surface water resources, including streams, lakes, wetlands, public waters and public ditches	Streams (perennial, seasonal), Lakes, Wetlands (current, historical), Public Waters, Public Ditches, Altered Watercourses, Hydrologic Position Index	MN Geospatial Commons, MN Department of Natural Resources, Drainage Authorities
Groundwater resources, including groundwater and surface water connections if known	Groundwater Vulnerability, Springs, Recharge Areas, Depth to Water Table, Well Locations and Depths, Nitrate Levels, Aquifer Properties and Boundaries, Aquifer Water Level Trends, Direction of Groundwater Flow, Water Chemistry	County Geologic Atlas, Regional Hydrogeologic Assessment, MN Geospatial Commons, MN Department of Agriculture Township Testing Program, MN Geological Survey, MN Department of Natural Resources, MN Department of Health
Water quality and quantity, including trends of key locations and 100-year flood levels and discharges, regulated pollutant sources and permitted wastewater discharges	Water Quality: Impairments, Stressors, Trend Information, Regulated Pollutant Sources, Wastewater Treatment Plants; Water Quantity: 100-year Floodplain, Known Damages	Watershed Restoration and Protection Strategies (and associated reports), MN Pollution Control Agency, MN Department of Natural Resources, Federal Emergency Management Agency
Stormwater systems, drainage systems and control structures	Stormwater Systems, Drainage Systems, Dams, Impoundments, Drain Tile Systems	MN Department of Natural Resources, Watershed Districts, Counties, US Army Corps of Engineers, Cities
Water-based recreation areas	Parks, Public Accesses, State Water Trails, Public Beaches, Fishing Piers, Wildlife Management Areas, Waterfowl Production Areas	MN Geospatial Commons, MN Department of Natural Resources, US Fish and Wildlife Service, Cities, Counties
Fish and wildlife habitat, rare and endangered species	Conservation Lands (public conservation lands, easements, etc.), Native Prairie, Important Wild Rice Areas, Tullibee Lakes, Designated Trout Streams, Rare and Endangered Species	MN Geospatial Commons, MN Department of Natural Resources, US Fish and Wildlife Service
Existing land uses and proposed development	Land Cover (present and pre-settlement), Crop Data (types, average yields, irrigated/non-irrigated), Feedlots (type, animal units), Road Network, Impervious Surfaces, Landfills (active, closed), Subsurface Sewage Treatment Systems, Proposed Development	MN Geospatial Commons, USDA Ag Census, MN Department of Natural Resources, MN Pollution Control Agency, MN Department of Agriculture, Counties, Cities

Table 2. Socioeconomic information that can be useful in the Land and Water Resources Narrative.

		Source(s)
People	Population	Population size, U.S. Census Bureau, Population Estimates Program. Point-in-time estimate, as of July 1st
	Age distribution	Sex by age, 2011-2015 American Community Survey 5-year estimates
	Educational attainment	Educational Attainment: population 25 years and older (U.S. Census Bureau)
	Employment by industry	Industry by occupation for civilian employed population 16 years and over, 2011-2015 American Community Survey 5-year estimates
	Income	Per capita income, 2011-2015. U.S. Census Bureau, American Community Survey
Economy	County economic base	U.S. Department of Agriculture, Economic Research Service, County Typology Codes, using data from the Bureau of Economic Analysis and the U.S. Census Bureau
	Land ownership	Minnesota Geospatial Information Office, County recorders, assessor's, or land surveyor's offices. Some Minnesota counties provide their parcel data sets online.



Identifying and Prioritizing Resources and Issues

Supporting information for Section III.C of the 1W1P Plan Content Requirements (version 2.0)

The following document provides suggestions for identifying and prioritizing resources and issues that will be addressed in your comprehensive watershed management plan. The intent is not to prescribe a particular process, but rather to stimulate ideas that lead to a robust discussion around priority issues and potential solutions. When designing your process, ask: What outcome(s) do we want? Who participates, and what is each participant's role in the process? What technique(s) will we use?

Identifying and prioritizing issues lays the foundation for the rest of the plan. The process should:

- Be thoughtful, inclusive, defensible, and documented
- Build on priorities established through other local and state planning efforts
- Be limited to, and focused on, creating and prioritizing issue statements and identifying geographic priorities (setting measurable goals and targeting strategies/actions will happen later)
- Use group decision-making techniques that keep the process moving forward
- Result in issue statements that clearly articulate real and actionable problems, risks, and opportunities that are connected to local values

Definitions

Prioritize – determining the relative importance and precedence of the resources and issues you have identified in your plan. This includes not only agreeing upon which items will be tackled **first**, but also those that will not be included in your plan.

Resources – natural features on the landscape that can be grouped into categories for management activities (e.g., unimpaired lakes, shallow groundwater aquifers, stream riparian corridors, productive soils).

Issues – problems, risks, or opportunities for your watershed's priority resources (e.g. flood damage, groundwater contamination, protect unimpaired waters, etc.) that will be addressed in your plan (see example issue statements below).

Setting the Stage

It's important that you make sure participants understand the process your group will use to identify issues and set priorities, and their role in that process. Transparency about the process before you start can help mitigate conflict later on. Note that the concepts below apply in the other stages of plan development, too.

Set Expectations

Clearly communicate the process design and goals to the participants. What are you trying to achieve? Who will be involved? How long will it take? Who will make the decisions and how? When will you know you are done?

Clarify Roles

Ideally, people who are interested in the planning effort or who may be affected by the resulting plan get a chance to *provide input* in identifying and/or setting priorities. While a large and diverse group of people will give a good base of information about local values, a smaller set of people who are more intimately engaged in the process (e.g., policy or advisory committees) will *make decisions* about the priority issues that go into the plan. Participants should be clear about their role and how their input will be used. The [IAP2 spectrum](#) offers a framework for thinking about goals for public participation (Inform, Consult, Involve, Collaborate, Empower), and the “promise to the public” that is associated with the opportunity to provide input.

You may want to consult with a **skilled facilitator** who has expertise in designing and leading a group decision making process.

Identify and Group Resources and Issues

Once the process is set, generate a list of resources and issues. The “Comprehensive Watershed Management Plans” section of the 1W1P Plan Content Requirements has a list of “issue areas” that must be addressed in the plan plus additional items that may enter the discussion. Priority resources and issues may also be aggregated from existing local plans, studies, and reports, and the Land and Water Resources Inventory.

Planning kickoff meetings are a good venue to gather information and feedback from a **broader group of watershed citizens and stakeholders**. Going into the community, instead of asking them to come to you, is often the best way to reach audiences that don’t normally participate in water conversations (but who may be important implementation partners).

The information you collect should be organized and summarized in two main ways. Your consultant, BWSR staff, or partnership development coach may recommend techniques, such as Zonation or other spatial models for mapping and prioritizing **resources**, and “affinity mapping” or other methods for grouping **issues** by theme.

Asking participants, especially those who will play a role in implementing the plan, to **share their values and concerns** around water resources will help in writing clear, meaningful, and actionable issue statements. That information will also be valuable in the process of prioritizing and targeting. You may want to provide maps where people can indicate the resources that are most important to them.

Map and prioritize resources

Which water resources will become the focal point of the planning effort? In all likelihood, your plan won’t be able to address all waters in the watershed at one time so it will be important to identify those that the community wants to protect and restore first.

Group issues by theme

The problems, risks, and opportunities faced by the priority resources must be well understood in order to move forward with effective planning and implementation. You may identify dozens of issues as you aggregate across existing plans and other sources of input, and those issues may relate to multiple resources. Review to see if there are opportunities to “lump” common statements (e.g., describe multiple contaminants for groundwater in one statement). Allow themes to emerge based on your watershed – and your partnership’s – unique

“personality.” It is best to narrow your list to as few themes as possible to ensure your prioritization has the desired focus.

Examples of clear, meaningful issue statements:

- Groundwater is at risk of being depleted because of overuse and loss of recharge.
- Water clarity in lakes is threatened by increased runoff and associated pollution from potential new development.
- Flooding is causing damage to homes and businesses located near the river.
- Trout populations in the watershed are highly sensitive to increased water temperatures and flashy peak flows resulting from loss of forest cover.

Prioritizing Issue Statements

There are a number of prioritization techniques your group can use to determine which of the issues will be addressed in the plan (and which will not). As part of this process, your plan should consider the high-level state priorities identified in the state’s Nonpoint Priority Funding Plan:

- Restore those impaired waters that are closest to meeting state water quality standards.
- Protect those high-quality unimpaired waters at greatest risk of becoming impaired.
- Restore and protect water resources for public use and public health, including drinking water.

Your group may decide to further prioritize issues (e.g., A, B, C) to help you focus implementation efforts.

Keep in mind that the value of prioritization not only lies in agreeing upon what you work on FIRST, but also in clarifying which activities will NOT be addressed in the plan (the plan should include an explanation of why certain priorities were rejected).

Apply local knowledge and consider the following factors to prioritize issue statements:

- Science and data generated through modeling, monitoring, and WRAPS, TMDLs, or equivalent
- Anticipated future impacts or land use changes that may provide an opportunity or escalate a risk if nothing occurs
- Understanding of precipitation frequency as per National Oceanic and Atmospheric Administration (NOAA) Atlas 14
- Understanding of trends and/or tipping points for individual water resources

These priorities will drive the next steps in the planning process, which are setting measurable goals and targeting strategies and actions. During those future discussions, you can consider other factors:

- Feasibility of the actions required to address the issue
- Cost effectiveness of actions/return on investment
- Landowner willingness to adopt the right practices in the right places
- Limitations from lack of data or modeling
- Time/resources available or anticipated to complete implementation actions

“Sticky dots” are often used as a method for voting on priorities. While they can be useful for taking the temperature of a group (provided you are working from well-crafted issue statements), other more robust techniques for prioritization may be appropriate for setting plan priorities. Check with your partnership development coach for ideas.

If you find during the next planning steps that you need to revisit and adjust your priorities, do so. This process is not linear and you may need to revisit and adjust your priorities as more information and data are provided.

Getting to a Quality Plan

At the end of this part of the planning process, you should have: 1) a prioritized list of issue statements that clearly conveys the most pressing problems, risks, and opportunities facing the watershed and 2) maps depicting locations of priority resources. The list can indicate those issues identified during the process that are not priorities for the plan, but that could be priorities for other groups. Keep in mind: your plan should guide you to work on the things that are MOST important - in the locations that are most important. "Opportunistic" plans will not serve your partnership when it comes to deciding where to invest your limited implementation resources. The measurable goals, targeted actions, and overall implementation plans and program in the rest of the plan should relate directly to the priority issues.



Using WRAPS Reports in Local Water Planning

This document provides a general overview of connections between a Watershed Restoration and Protection Strategies (WRAPS) report and a water plan, and outlines how local governments can incorporate the elements of a WRAPS report into their local water planning process. It is important to connect local water management programs and activities and WRAPS reports because each informs the other. Water plan in this document refers to County Water Plans, Watershed District Plans, Watershed Management Organization Plans, and Comprehensive Watershed Management Plans (One Watershed, One Plan).

Reports Available Through the MPCA & the WRAPS Process

Watershed Restoration and Protection Strategies Report (WRAPS)

This report summarizes the reports listed below, and uses that information to determine what actions are needed to improve or maintain water quality. The report includes current and past assessments of water quality, diagnostic studies and TMDL work, water quality (and in some cases drinking water) goals, and outlines ways to prioritize waters and focus implementation actions and strategies to enhance measurable outcomes. The WRAPS also provides:

- Water quality goals/targets for each assessed water
- Identification of critical source areas based on pollutant loading and/or hydrologic parameters (peak flows and volumes);
- An overview of civic engagement efforts that were conducted and that may be useful for future planning and implementation efforts
- Recommended strategies and timelines needed to fully meet restoration goals, protection targets, and groundwater and/or drinking water goals where appropriate

How to use the WRAPS report in water planning: The information in the WRAPS report can be valuable to understanding the broader watershed-wide water quality and water resource issues by providing information such as the relative magnitude and type of contributing pollutant sources and the relationships between water management practices and water quality conditions. The protection-related information in WRAPS is designed to help prioritize, target, and deliver measurable improvements in protection outcomes. The WRAPS may also incorporate statewide water quality plans, such as the Nutrient Reduction Strategy and sediment strategy reports where available; potentially streamlining the development of local water plan priorities. WRAPS strategies to restore impaired waters should be incorporated into a water plan. If WRAPS strategies are not identified as local priorities, the plan should include a description of why not.

Monitoring and Assessment Report

Identifies the results and status of sampled waters within the watershed over the most recent 10-year period and collects baseline information on a watershed's physical characteristics. The report provides valuable information on the specific resources monitored and assessed as well as any long-term trends within the watershed. Key information found in the report includes:

- Locations of permitted groundwater and surface water withdrawals and summaries of groundwater quality and quantity in the watershed
- Biological condition (fish, macroinvertebrates, and/or aquatic plants) for streams, rivers, and lakes;
- Habitat information documented during each fish sampling visit
- Stream channel stability information
- Watershed hydrology information
- Pollutant loading data at the major watershed outlet (and in some cases for some minor watersheds)
- Water chemistry results representing the outlet of the minor watersheds;
- A summary of lake water quality results
- A summary of drinking water protection needs where appropriate.

How to use the Monitoring and Assessment Report in water planning: This report characterizes the water quality conditions in the watershed. Data collected in support of the report (such as the physical characteristics) can be valuable for land and water resources inventory and subsequent prioritization of resources in a plan. Additionally, understanding the monitoring section of the report can assist with development of ongoing monitoring actions within the water plan.

Stressor Identification Report

Summarizes the key causes or “biotic stressors” contributing to impaired fish, aquatic macroinvertebrate, and aquatic plant communities and includes a comprehensive review of existing biological, chemical, and physical data to assess the stressors on stream and lake health (examples: low oxygen, excess sedimentation, temperature, poor water clarity, interrupted connectivity, and lack of habitat).

How to use the Stressor Identification Report in water planning: Stressors identified in the report should be identified as concerns or issues within the water plan. If these biotic stressors are not identified as priorities, the plan should describe why not. Management actions in the implementation sections of water plans should address the stressors to the extent possible.

TMDL Report

After impaired waters are listed, the MPCA addresses each of the impairments with a Total Maximum Daily Load (TMDL). The TMDL process identifies all sources of the pollutant and determines how much each source must reduce its contribution in order to meet the standard. Implementation recommendations are provided in the TMDL report and/or incorporated directly into the WRAPS report. Each TMDL project may contain one or more waterbodies or segments of a waterbody. A TMDL is the maximum amount of a pollutant a water body can receive without violating water quality standards, and an allocation of that amount to the pollutant’s sources. TMDLs may directly impact municipal stormwater (MS4), wastewater facilities, and permitted/regulated businesses with required pollutant load reductions.

How to use the TMDL in water planning: The source reduction strategies form the basis of the TMDL implementation plan which is further refined during the water planning process. The TMDL sets pollution reduction goals (examples: nitrogen, phosphorus, sediment), to be achieved through implementation of the water plan. The TMDL will also provide insight into capital projects and other practices that may be implemented within a watershed to address impairments. The TMDL report identifies the sources of the impairment while the associated TMDL modeling information provides further details about the water quality impairment that are useful for estimating future restoration costs and for funding applications.

Connecting WRAPS to the Water Planning Process

In the water planning process, data and information are used in the context of local values and needs to set priorities. The following table provides a general overview of the water plan development process and how a WRAPS report connects with those steps. Note that not all the steps are part of every planning process, not every WRAPS is complete, and that local water plans will address many items beyond those in the WRAPS. The connections outlined above may apply to other state plans, e.g. Groundwater Restoration and Protection Strategies report (GRAPS), the Nonpoint Priority Funding Plan.

	Planning Process Step	WRAPS Connection
Planning Start-up	Initial meetings of local government planning staff to discuss planning process	In the meeting, local staff are encouraged to include a discussion of the current status of the WRAPS
	Advisory committee or water plan task force meeting(s) shortly prior to plan initiation	MPCA staff may be asked to provide a WRAPS overview to the Advisory Committee (timing may be more appropriate after plan initiation).
	Governing Board passes a resolution to update the water plan	Local staff may want to consider including a commitment to the WRAPS in the resolution to update the plan.
	Local government requests initial input on the plan or Priority Concerns Scoping Document (PCSD) for County Water Planning	All agencies – be sure to reference WRAPS report and include critical items in the response letter (not all items in the WRAPS can be addressed in a 10-year water plan; specificity about agency priorities early on will help in the planning and approval processes)
County Water Planning PCSD	Local government develops the PCSD	Local staff encouraged to discuss approach for incorporating WRAPS into the PCSD with MPCA project manager, the WRAPS technical core team, or other experts the project manager references.
	Local government response to comments on the PCSD	Review response to comments to ensure any comments regarding WRAPS are addressed.
	Recommendation to BWSR Region Planning Committee (PCSD)	BWSR staff will specifically note if/how PCSD addresses critical issues identified in WRAPS in memo and presentation to board committee.
Plan Development	Local government hosts a plan kickoff meeting and ongoing Advisory Committee or task force meetings	Local staff should be communicating with MPCA staff about providing a WRAPS overview at the kick off meeting and/or to the advisory committee. All agencies should be discussing the WRAPS as appropriate at advisory committee meetings.
	Local government drafts the water plan. Drafts of the plan or plan sections may be provided along the way for feedback.	Go back to response letter submitted during plan start-up and make sure items in letter are addressed in the water plan. Agency staff will coordinate with local and BWSR staff if items are not addressed.
	Public hearing held on the water plan	No specific connection to the WRAPS Report.
Final Plan	Final water plan is submitted to BWSR.	BWSR reviews the plan against statute, rule, and policy requirements and agency letters received. BWSR ensures that critical issues identified in the WRAPS report have been incorporated into the water plan. BWSR will communicate

		with agencies about final review and coordinate if discrepancies are found in the plan.
	Presentation of the final plan to the BWSR Regional Planning Committee of the Board.	In presenting to this committee, LGUs are encouraged to specifically note how the water plan addresses critical issues identified in the WRAPS report. If the WRAPS is not sufficiently addressed in the plan, the committee may not recommend approval to the full BWSR Board.
	Final approval of the water plan by the BWSR Board	No specific connection to the WRAPS Report.

Information Used in WRAPS That Could Inform Local Water Planning

As part of WRAPS development, a **Hydrological Simulation Program—Fortran** (HSPF) model is built for each major watershed. Following construction of the model, a Scenario Application Manager (SAM) utility may be developed. This utility allows a water planner to evaluate the water quality effects of a range of scenarios (e.g., increase in perennial cover; conversion of forest to agriculture). The application does not require modeling expertise; however, knowledge of the assumptions associated with and appropriate uses for an HSPF model is recommended. A few WRAPS have used a Soil and Water Assessment Tool (SWAT) model instead of HSPF.

In addition, many WRAPS have used information on **fluvial geomorphology** (stream stability), **hydrology** (stream flow), and **connectivity** (dams and road crossings), as well as the Watershed Health Assessment Framework, which provides major watershed and catchment–scale scores for a variety of watershed health metrics.

Other data, analysis, and models not listed here may have been used in the WRAPS process and could be useful in developing a water plan. Agency staff can help local water planners determine what data is available and what analysis and models have been developed for a given watershed.

Should or Must?

Requirements for Using WRAPS and other information in Local Water Plans

Local water planning is a process of prioritizing water bodies and issues and selecting locally relevant strategies to work toward water resource goals. This process is informed by data, information, and goals from a variety of sources, including WRAPS, state-level plans and strategies, and citizen input. Strategies in local plans should be connected back to these sources, and ideally, they should provide multiple benefits to address a variety of issues identified in the planning process. Because WRAPS and some other sources are comprehensive, it's not expected that everything in a WRAPS or other source be reflected in a local water plan. The following clarifies the requirements for using this information in different plan types:

MUST: Using WRAPS is a key purpose of One Watershed, One Plan [see Minnesota Statutes §103B.801, Subd. 2(3)] and incorporating data and information from WRAPS and other sources, including state-generated reports, plans and strategies is required (see One Watershed, One Plan - Plan Content Requirements).

SHOULD: While this requirement is not presently outlined in statute for County Water Plans, Watershed District Plans, and Watershed Management Organization Plans, WRAPS can add value to all local water plans. All plans should connect information in WRAPS and other sources to the strategies and actions listed for locally identified priority resources.



Setting Measurable Goals

Supporting information for Section III.D of the 1W1P Plan Content Requirements (version 2.0)

Good watershed management – and the ability to demonstrate progress– relies on setting measurable goals that relate to your watershed’s priority areas and issues. Your ability to set truly measurable goals may be constrained by available data and a suite of uncertainties. During the planning process, it’s important to have robust discussions about how to strive for the most measurable plan possible. This document provides definitions, examples, and considerations for setting measurable goals.

Definitions

Desired future condition (a.k.a. long-term outcome, goal) - the attributes (water quality, water availability, habitat quality) you are striving to attain, regardless of time frame. The desired future condition (DFC) sets the direction for planning and future management. It should be described for priority water resources and should reflect stakeholder interests.

- Average summer water clarity of 10 feet in Round Lake
- All wells in Sand Township have nitrate levels of 3 ppm or less.

Measurable goal (a.k.a. plan goal) – the quantifiable change in resource condition you expect after you implement the 10-year plan. The measurable goal should relate to the desired future condition, and express what percent of progress toward the DFC you will make during the plan period. As you evaluate progress, measurable goals can be predicted through modeling the results of your outputs/outcomes or they can be measured directly via monitoring.

- Improve the water clarity in Round Lake from 4 to 7 feet in 10 years (50% toward DFC).
- Reduce the number of contaminated wells with more than 3 ppm nitrate in Sand Township from 30 to 20 in 10 years (33% toward DFC).

Outcome (a.k.a. result) – what, specifically, will happen as a result of the project you installed or the service you provided? Collectively, the outcomes of your activities should get you to your measurable goal (e.g. pollution reduction). Outcomes may also express changes in knowledge or behavior which lead to actions that contribute to measurable goals.

- Installing an infiltration basin will treat a 150 acre subwatershed and infiltrate 0.5 inches of runoff, reducing total phosphorus inputs to Round Lake by 105 pounds annually.
- 50 Sand Township land owners will attend a workshop about cover crops. 60% will report an increase in knowledge, and 40% will ask for additional information about our cost share program.

It’s difficult to demonstrate progress if you don’t know your starting point. Having a baseline measurement is essential to setting a truly measurable goal. If you lack the necessary data, consider using a surrogate goal that would allow you to measure based on what you do know, or include an action item in your plan to fill information gaps.

- 20% of Sand Township workshop attendees will plant cover crops (5,000 acres) which will collectively reduce total phosphorus losses by 2,000 lbs/year and nitrate losses by 22,700 lbs/year.

Output (a.k.a. widget) – countable projects, activities, services, or products. Counting outputs is useful for tracking the steps towards achieving your goals, but outputs are not goals in and of themselves because they do not quantify a change in resource condition.

- We installed one regional infiltration basin.
- We sealed 10 wells in a drinking water supply management area.
- We hosted 5 workshops (45 people total in attendance), conducted 6 site visits, and established a cost share program.

Indicator (a.k.a. metric, benchmark) – the “measuring stick” you use to determine progress toward achieving your goal.

- Secchi disk readings
- Nitrate concentrations in private wells
- Number of people participating in a cost share program

In some situations where a metric is not clear or feasible, your indicator might be the number of inputs or outputs themselves.

- Hours of staff time spent on landowner engagement
- Number of BMPs installed

Organizing your Goal-Setting Discussions

In planning, it is important to differentiate between measurable goals, outcomes, and outputs. While counting outputs is useful for tracking the steps taken towards achieving your goals, **outputs are not goals** because they do not describe the change in resource condition.

Logic models can be a useful framework for thinking about and establishing measurable goals, relating your outputs and outcomes to your desired future condition, measuring your progress as you implement your plan. See the One Watershed, One Plan webpage for a logic model template and sample questions to ask during the planning process.

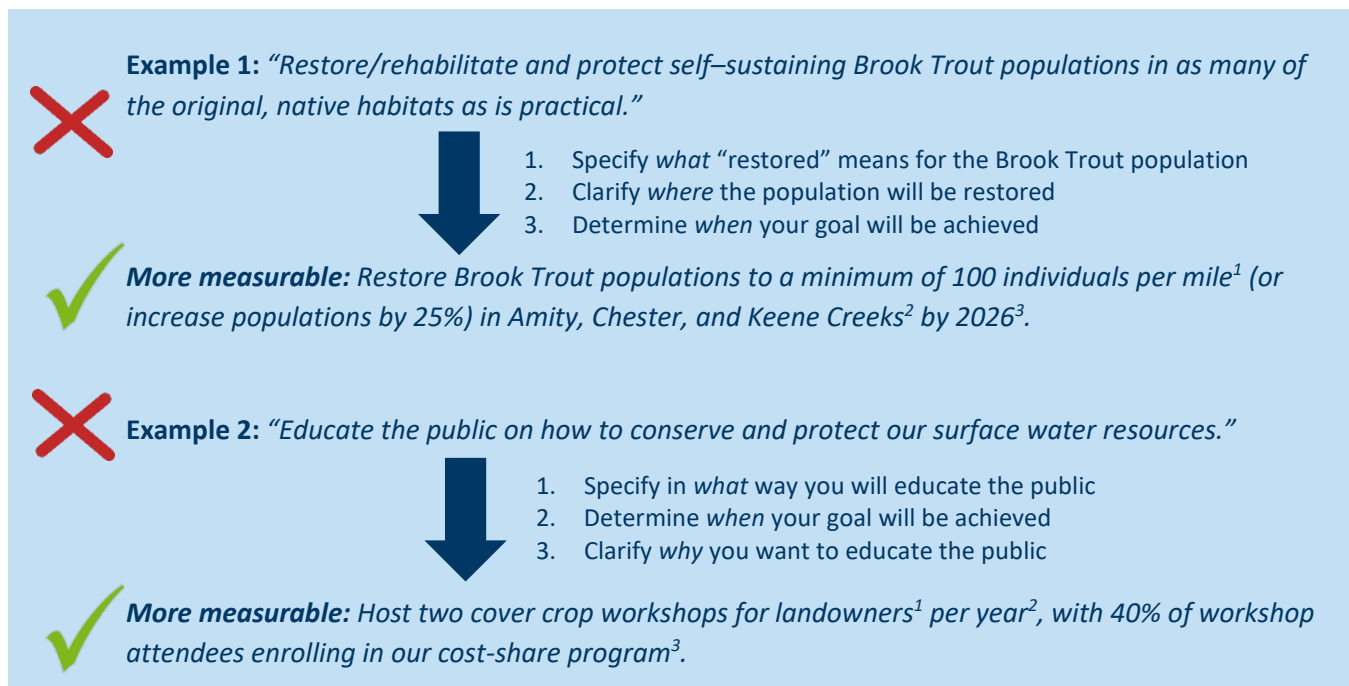
Logic models encourage you to ask a series of questions throughout the planning process:

- Can we state the **issue** in a way that links to what people care about?
- What is the **desired future condition**? **What** needs to change, and **by how much**, in order to get there?
- How much of that change can we make during the 10-year plan period? (**measurable goal**)
- What will we do to work toward our goal (**output**), and what, specifically, do we expect to accomplish (**outcome**)?
- Can our outcomes be measured directly? What indicator will we use?
- Who else needs to be involved, what is their role, and what can we do to motivate them?
- What other **assumptions** are we making about the results of our work? What **evidence** (e.g. existing data, models, literature values, anecdotes) leads us to believe our collective actions will lead to the desired results? How **confident** are we?
- Do people **care** enough about the issue to make the **required investments** to reach the goal?

What makes a Goal Measurable?

Goals should be specific and clearly defined. **Goals that start with words like “encourage” or “promote” are usually not measurable.** Goals that start with “improve” or “reduce” may be measurable, but progress toward that goal can only be evaluated if it has a quantifiable element.

When designing your goals, ask the following question: “will we be able to show that we have been successful in achieving this goal when we assess our implementation of the plan in the future?” Think about what you want to accomplish, who will be involved, how long it will take, the location, and the purpose. To be able to report success, your goals must ultimately be specific enough to answer five W’s: What? Who? When? Where? and Why?



Example 1: “Restore/rehabilitate and protect self-sustaining Brook Trout populations in as many of the original, native habitats as is practical.”

1. Specify *what* “restored” means for the Brook Trout population
2. Clarify *where* the population will be restored
3. Determine *when* your goal will be achieved

More measurable: Restore Brook Trout populations to a minimum of 100 individuals per mile¹ (or increase populations by 25%) in Amity, Chester, and Keene Creeks² by 2026³.

Example 2: “Educate the public on how to conserve and protect our surface water resources.”

1. Specify in *what* way you will educate the public
2. Determine *when* your goal will be achieved
3. Clarify *why* you want to educate the public

More measurable: Host two cover crop workshops for landowners¹ per year², with 40% of workshop attendees enrolling in our cost-share program³.

Considerations for Establishing Measurable Goals

BWSR acknowledges that there are constraints and limitations to setting and achieving goals. Natural systems are complex, and there are variables outside your control. You may lack necessary data, information, or models. Understanding and identifying what you can control, what you can influence, and what is truly outside your control will help you clarify your goals and the actions you will take. Some goals will be more measurable than others. You might include a small number of “aspirational” goals, but the vast majority should have a measurable component. The following points describe factors to consider and discuss while setting goals.

Uncertainty

- Despite your best efforts, external factors (e.g., land conversion, drain tile installation, changing precipitation patterns) may undo or negate the effects of your good work. You may want to consider adding an action item in your plan to track those factors if possible so you can evaluate whether your management actions were ineffective or if they prevented more severe degradation.

- In some situations, you may need to use a surrogate to quantify the effects of your actions. For example, you may not be able to directly measure a reduction in nitrates in a groundwater aquifer because groundwater systems are complex, but you can measure (or predict) a reduction in nitrogen-based fertilizer application that results from your work with agricultural producers.
- Often, success hinges on the willingness of landowners and citizens to modify their behaviors. A variety of social science techniques (e.g., surveys, focus groups) are available to measure the effectiveness of your education, outreach, and marketing activities.

Scale

- Measurable goals can be set for any scale in the watershed. While some actions in the plan will apply watershed-wide, your plan should also identify priority water resources or sub-watersheds where you will focus your efforts. Setting measurable goals for targeted lakes, stream reaches, or drinking water supply management areas will increase your chances for demonstrating success.

Achievability

- Consider what types of activities can be implemented with local resources versus what additional goals could be achieved given outside funding.
- The 1W1P approach encourages goal setting that stretches and challenges your group, but not to the extent that the goals feel demotivating or impossible. Take the time to understand the range of skills and resources present in your partnership, and where you will need to grow in order to achieve your goals.
- Not all water bodies have the potential to be restored to meet water quality standards or public expectations. Each water body must be evaluated for realistic expectations for measurable improvement within the limitations of science and funding.

Challenge your group to set a goal that is as measurable as possible, but **be realistic and take a balanced approach.**

Widgets and metrics are certainly countable, but how meaningful are they when it comes to your ultimate goal? Is the number that's easy to collect a distraction from the **hard work** of watershed management?

Don't get so caught up with what you will **measure** that you lose sight of what you hope to **accomplish.**

Protection

- If your goal is protection, the long-term goal may be no change in resource condition. Instead, you may be able to quantify risk of negative change (e.g. acres of forest that could get developed or converted to cropland), determine the level of change the resource can withstand while still achieving the desired future condition (e.g. no less than 75% forest cover), and set a measurable goal for prevention (e.g. maintain forest cover on the needed portion of at-risk acres via private forest management, zoning, or easements).

Getting to a Quality Plan

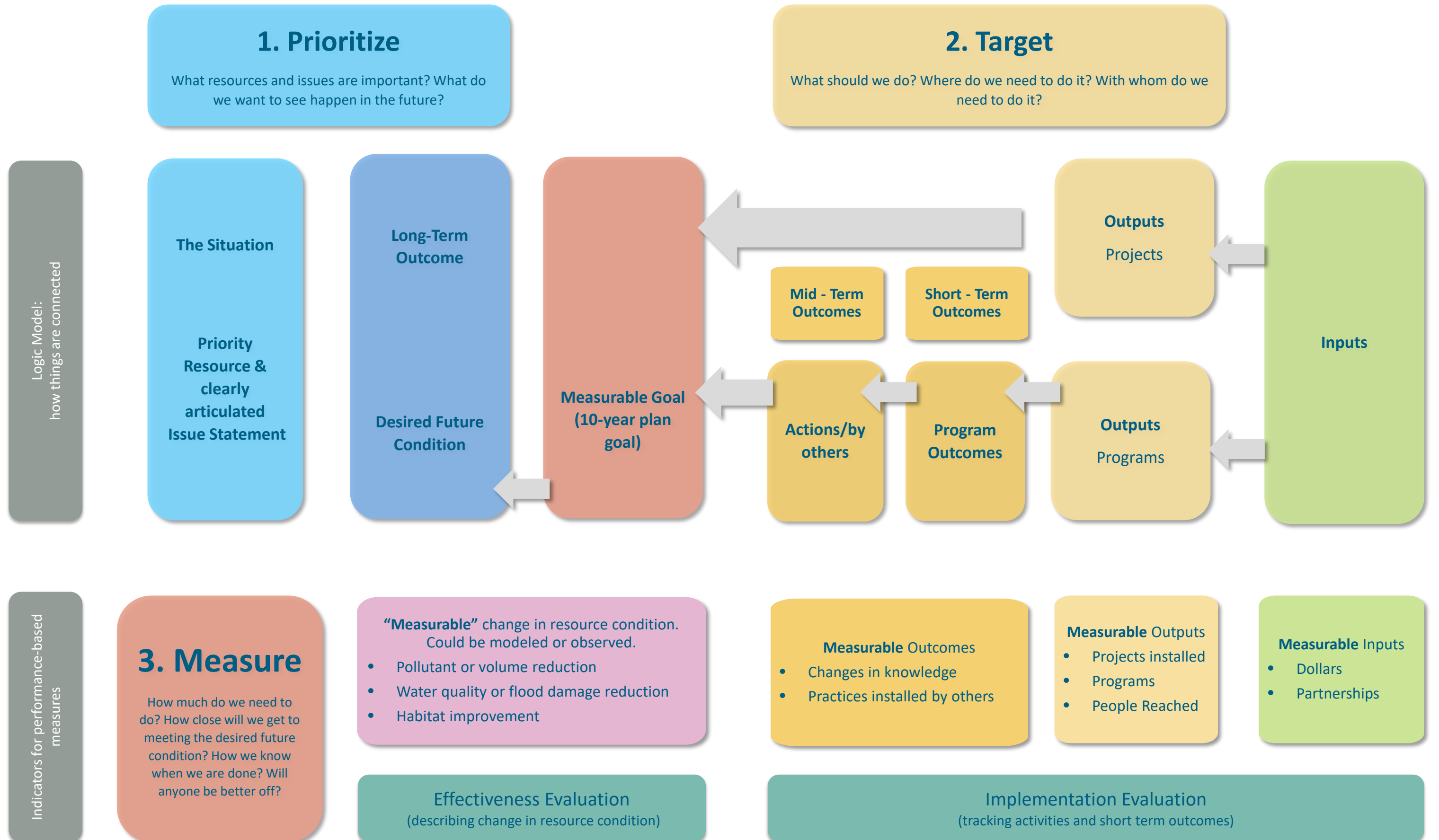
At the end of this process, you should have a set of quantifiable goals that clearly conveys expected changes in water resources during the 10-year timeframe of your watershed plan. Your goals should be a balance of broad versus focused, and shorter-term versus longer-term, relating directly to your prioritized issue statements. Your goals should indicate an intended pace of progress for addressing your watershed's priority issues, and will ultimately allow you to demonstrate your progress to the public, key stakeholders, and potential funders.

The Logic Model – a structure for telling your story.

A logic model is simply a way of organizing the elements of your plan or project. The questions below are designed to build a logic model that will help you successfully communicate your strategy to funders and stakeholders. Learn more at <http://www.bwsr.state.mn.us/planning/1W1P/index.html>: The “Setting Measurable Goals” section of the One Watershed One Plan Guidebook, as well as two instructional videos about logic models created by BWSR, provide more information about using logic models in planning. The template on the next page offers a starting point for your logic model discussion.



Logic models in One Watershed, One Plan. The logic model elements, arranged to reflect the **Prioritize, Target, Measure** aspects of developing a Comprehensive Watershed Management Plan.



The Situation

Inputs

Outputs

Short -Term Outcomes

**Medium -Term
Outcomes**

**Long -Term
Outcomes**

Metrics/indicators to evaluate progress

External Factors

Impact

The Context

Logical Relationships

Assumptions



One Watershed, One Plan

Targeting Implementation Activities

Supporting information for Section III.E of the 1W1P Plan Content Requirements

This document provides some considerations for targeting the implementation activities in your watershed plan. Additional information on how to organize these activities into a targeted implementation schedule, including examples of schedule templates, can be found in the [One Watershed, One Plan Guidebook](#).

Defining “Targeted”

BWSR’s vision for One Watershed, One Plan is for implementation actions to be **prioritized, targeted, and measurable (PTM)**. Before developing this schedule, your partnership will identify priority resources and concerns and an associated set of measurable goals. The next step is to identify when and where actions will be implemented within the watershed to achieve the desired goals within the 10-year timeframe of the plan. There are **three facets** to targeting your implementation plan:

Activity type

To address your watershed’s priority resources and issues, put careful thought into matching the problem to the proper solution. What primary and secondary BMPs will be most effective for addressing an identified pollutant? Can the practices you select achieve multiple benefits (e.g. pollution reduction and habitat improvement)? Are the outcomes of these activities measurable? Who needs to take action on the BMP, and what is needed to get them to act? (General education and outreach? site-specific technical assistance?) Also consider the availability of funds and labor for long-term BMP maintenance.

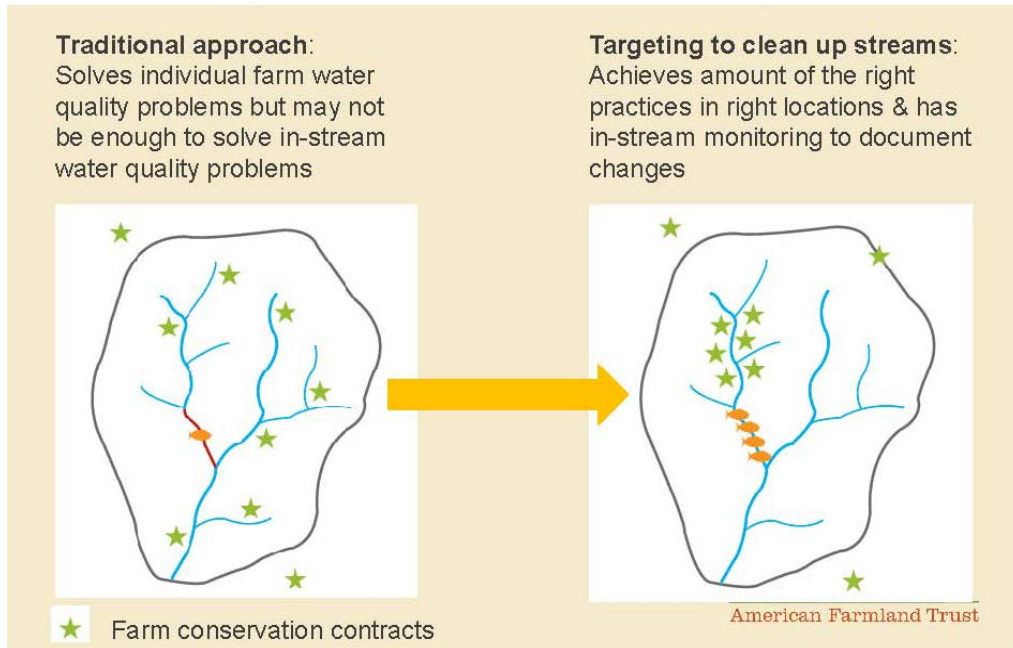
Timing

Targeting also involves deciding which priority resources and issues you will address first, second, third, and so on. The implementation schedule provides an order of events within the 10-year plan period to guide management actions. Identifying one or more annual or biennial increment for each activity allows for a more detailed expression of when actions will take place. Being specific will help in future work planning for specific activities and the supporting programs and project/staff development needed to get the work done. Two year increments provide a balance between a timeline that is unrealistically fine-grained and one that is unusably vague, and supports local annual work plans and budget requests submitted to the state.

Location

In addition to targeting the type and timing of your activities, you will need to target their installation locations. Availability of technical assistance/engineering, nutrient loading hotspots, watershed position, and interactions with other practices are factors that may influence your location decisions (see figure below). It should be noted that the location of the resource issue and where the strategies to address the issue will be applied may be different. For example, the strategies to address a main-stem flooding issue may be needed many miles upstream from where the flood damages occur.

The most useful comprehensive watershed management plans include maps that show the geographic location of the targeted resources, subwatersheds or management zones, focus areas within those zones, and projects or practices that will be implemented in those locations. Targeting implementation activities to specific watersheds does not preclude working with landowners outside the targeted area; however, LGUs may want to consider structuring incentive programs to provide increased benefits for selected practices in targeted areas.



Ultimately, the purpose of targeting is to ensure that the right practices are installed in the right locations at the right time.

The level of detail that appears in your plan will depend on practice types and the types of targeting tools used to develop your plan. Specific (field scale) locations for individual practice types are not required, but the plan should identify which subwatersheds will be the focus for implementation, and what approaches will be used to locate different types of BMPs or focus programs during implementation.

Keys to Successful Targeting

There are many factors to discuss when deciding how to target the types, timing, and locations of your implementation activities. A few key ideas are listed below as a jumping off point, but your planning group may want to incorporate other considerations unique to your watershed. The state’s [Nonpoint Priority Funding Plan](#) also lists “keys to implementation” and criteria for considering when selecting implementation activities.

Landowner participation

In most cases, landowners are the most important factor for successful voluntary implementation. It is important for your partnership to evaluate current and past attempts to generate landowner participation, and where such efforts have been successful (or not). That information could be useful to determine which areas you target in the future. Also consider marketing expertise needed to convince landowners to do conservation

work, and the technical support required to get projects done. Your plan should detail the strategies your group will use to get the level of landowner participation needed to accomplish watershed goals.

Root cause(s) of problem

Management activities should address the root cause(s) and drivers of degradation, not just the symptoms, resulting in long term solutions instead of temporary fixes. For example, one might assume that streambank erosion is happening as a result of riparian grazing and lack of stabilizing vegetation. In reality, the root cause of the streambank erosion may be increased volume of runoff moving through the stream channel due to tile drainage, wetland loss, or increased extreme rainfall events. The success of your actions depends on correctly identifying the root cause(s) of the problem so you can target effective management activities to address them (limiting grazing versus improving hydrology through constructing wetlands/WASCOBs). In those instances where drivers are beyond local control (e.g. increased rainfall), actions still need to be targeted to increase resiliency of the landscape and achieve goals (e.g. reduce peaks or reduce runoff volume). Additionally, when selecting actions, consider how you can strategically select and target activities to address multiple goals.

Cost effectiveness

Cost is an important consideration when selecting practices and programs. For example, while cover crops may be good at nitrate abatement, they are far less cost effective (in terms of dollars per kilogram of N removed) than controlled drainage (Christianson et al. 2013). On the other hand, cover crops may yield enough other benefits (increased soil health, improved hydrology) to make the investment worthwhile. Given a limited budget, your group may want to consider how to get the most “bang for your buck.” This includes factoring in the costs of establishment and maintenance, as well other considerations like potential impacts on crop yields.

Using models

The depth and specificity of targeted actions identified in the plan will vary. Generally, capital improvement projects and best management practices to be implemented on public land can be specifically located and identified in the plan. By contrast, conservation practices proposed for private lands will be more difficult to pinpoint. For these types of activities, models or other tools can be used to identify critical areas for implementation at various scales. For example, HSPF and PTMApp can help prioritize at the HUC-12 or subwatershed scale, while ACPF and PTMApp can be used to identify practices at a field-scale. For private lands, the plan must describe actions to work with landowners in these critical areas and tailor conservation practices in the plan implementation programs section.

Getting to a Quality Plan

At the end of this process, you should have a targeted implementation schedule that describes each action, when and where it will occur, and how the outcomes will be measured. Your implementation schedule will outline an intended pace of progress for achieving watershed goals, and will serve as a compass as your group sets the course for plan implementation. Moreover, the schedule will support the development of local annual work plans and budget requests to the state.



Accounting for Local Funds

Supporting information for Section G.3.a of the 1W1P Plan Content Requirements (version 2.0)

Money for implementing your comprehensive watershed management plan will come from a variety of local, state, and federal sources. Your plan will need to estimate the amount of money each of these sources will contribute to implementation. This document focuses on defining “local” funding so you can think about a range of funding mechanisms available to local governments*. Your planning partnership may want to estimate current water management expenditures for the watershed in order to set a baseline. This can inform future implementation levels based on what’s happening now and help determine whether the current local funding (along with anticipated state and federal funds) will be adequate to reach plan goals. This document is not intended to be a definitive list of local funding sources.

The plan should contain an estimate of locally generated money (funds derived from the ad valorem levies, fees, services, or donations from citizens, local organizations, or local chapters of national organizations). Local funds could include:

Remember to include locally generated money used to match state grants in your calculation of current and future water management expenditures.

- Locally generated money for water management activities identified in the plan
- County or watershed district (WD) support of Soil and Water Conservation Districts (SWCDs)
- Funds generated through the sale of services and products such as SWCD tree sales
- Local costs to administer ordinances including state rules and programs (e.g. shoreland, feedlots, subsurface sewage treatment systems , Wetland Conservation Act)
- Landowner/land occupier contributions toward conservation implementation, including cash and in-kind services used as matching funds for state and federal cost-share programs
- Money, including matching contributions from locally-based partnerships with non-governmental organizations (NGOs), corporations, local businesses, etc. that contribute to plan activities (e.g. lake association participation in volunteer monitoring efforts, habitat work by local conservation groups, other locally-led water initiatives that implement work identified in the plan)
- Local funds for capital improvement projects that are initiated by local governments and that benefit water resources (e.g., including municipal stormwater improvements, highway improvements that include stormwater treatment, hydraulic and hydrologic corrections within the watershed flow network) or that benefit other activities within the plan*
- Donated easements that have a primary or secondary purpose of water quality improvements
- Money spent by cities on stormwater management, drinking water supply, etc., if they are plan activities and/or if cities are officially part of the partnership*

*See the BWSR document “Local Funding Authorities” for an overview of Minnesota statutes and laws that provide authorities to local government to fund water management activities.

Watershed management activities and potential locally-generated funding sources

	County	SWCD	WD & WMO	Land Owners/ Occupiers	Volunteer Orgs & NGOs	Cities and smaller municipalities
Financial assistance and incentive programs	O	O	X			X
Funds used to match state and federal program funds	X	X	X	X	O	O
Capital Improvements, including stormwater, multi-purpose drainage management, hydraulic and hydrologic restorations including wetlands, and operations and maintenance work	X	O	X			X
Regulation & Enforcement	X		X			X
Data collection and monitoring (including volunteer monitoring)		O	X		X	O
Information, Outreach & Education	X	X	X		O	X
Landscape management (e.g., forestry) and acquisition (easements)	X	O	X	O	X	O

X Groups are most likely to contribute funding

O Groups may contribute funding, depending on project/organization resources available

[blank] Groups generally do not contribute funding (but may under some circumstances)

Calculating local funds on a watershed boundary

Contribution estimates from individual local government units fully within planning area boundaries can be aggregated for an overall local contribution amount. Special projects, capital improvement projects, and landowner or NGO contributions that will occur within the planning area boundaries may be included in their entirety.

In the case where funds collected on an ad valorem basis across a legal jurisdiction do not align with the planning area boundaries, these funds should be pro-rated. Planning partners can decide on a method for estimating the portion of those funds that will be included in the total local contribution to plan implementation such as:

- The percentage of the organization's land area that falls within the watershed boundary
- The percentage of the local government's population that lives within the watershed area
- A combination of the above or other locally-decided formula

The planning partners may choose any method, as long as it is described in the plan and is repeatable and consistent throughout the entire watershed.



Constructing a Targeted Implementation Schedule

Supporting information for Section III.E of the One Watershed, One Plan - Plan Content Requirements

Once your planning group has gone through the process of determining the practice types, locations, and timing needed to achieve watershed goals, the next step is to organize this information into an implementation schedule. This schedule gives structure to the implementation of your watershed plan, connecting plan activities to measurable goals.

The purposes of the implementation schedule are to: clearly indicate an intended pace of progress for achieving the goals, support development of shorter term work plans and budgets for the planning partners, and to support budget requests to the state. The schedule should be supported by maps indicating the location(s) of the targeted activities.

The schedule will likely take the form of a table but may also include narrative portions. The required elements of the implementation schedule are detailed in Section III.E of the One Watershed, One Plan - Plan Content Requirements. To ensure these requirements are met, some suggested column headers for your implementation table are given below:

- **Implementation action** – a very brief description of the activity itself (Requirement #1)
- **Location** – where the action will occur (Requirement #2)
- **Lead LGU** - who is ultimately accountable for seeing the project through? Several LGUs may provide support for a given activity, but designating a single responsible party increases the likelihood of success and provides an important element of accountability for your planning group. (Requirement #3)
- **Supporting Entities** - additional LGUs, NGOs, and other state or federal agencies that will assist the Lead LGU in executing plan activities. The specific roles of the Lead LGU and supporting entities, and the strategies they will use carry out the implementation actions, will be described in a detailed narrative in the Implementation Programs portion of your watershed plan. (Requirement #3)
- **Estimated cost** - your implementation schedule should allow you to estimate a total dollar figure for plan implementation. Requirements for outlining specific funding sources are described in detail in Section II.G.3 of the 1W1P Plan Content Requirements. (Requirement #4)
- **Timeframe** - the implementation schedule should provide a detailed order of events within the 10-year plan period to guide management actions. At a minimum, your timeline should be broken into 2-year increments but can be more specific (i.e. 1-year). These increments give specificity to your schedule and support budget requests to the state. (Requirement #5)
- **Measurable output** - countable projects, activities, services, or products you use to track progress toward achieving your goals. See also [Setting Measurable Goals](#). (Requirement #6)
- **Metric/Indicator** - the "measuring stick". See also [Setting Measurable Goals](#). (Requirement #6)

BWSR has created [three sample spreadsheets](#) to serve as a reference and a tool for your planning group as you construct your implementation schedule. The templates are not a required format; they simply show the minimum requirements for your implementation schedule. Your group is welcome to add elements to any of the templates or create an entirely new format that better suits your watershed and your plan.



One Watershed, One Plan

BWSR has created three templates (see the following tabs) to serve as a reference and a tool for your planning group as you construct your implementation schedule. The templates are not a required format; they simply show the minimum requirements for your implementation schedule. Your group is welcome to add elements to any of the templates, or create an entirely new format that better suits your watershed and your plan.

For more information, please see "Constructing a Targeted Implementation Schedule" on the BWSR website and in the [One Watershed, One Plan Planning Guidebook](#).

Priority Issue: Flooding is causing damage to homes and businesses located near the river.				Measurable goal: Reduce peak flow at Northville by 30% over 10 years.								
Location	Implementation Action	Measurable output for this location	Metric/Indicator	Timeframe					Estimated Cost	Estimated local contribution	Lead LGU	Supporting Entities
				2017-18	2019-20	2021-22	2023-24	2025-26				
Raspberry Creek Subwatershed	Wetland Restoration	497 acres restored	Acres		X	X	X	X	\$ 271,000		Pierce County	Stark County, Pierce SWCD, Stark SWCD, DNR
	Controlled Drainage	248 acres treated	Acres		X	X	X		\$ 56,000		Pierce SWCD	NRCS, BWSR
	Diversions	5 diversion structures	Each			X	X	X	\$ 9,500		Strong River WD	Pierce SWCD, Stark SWCD
South Branch Rose River Subwatershed	Wetland Restoration	359 acres restored	Acres	X	X	X	X		\$ 209,000		Pierce County	Stark County, Pierce SWCD, Stark SWCD, DNR
	Controlled Drainage	212 acres treated	Acres		X	X	X		\$ 48,000		Pierce SWCD	NRCS, BWSR
	Diversions	4 diversion structures	Each		X	X	X		\$ 7,000		Strong River WD	Pierce SWCD, Stark SWCD
Watershed-wide	Define, develop, and maintain an agricultural flood prone map	Map	Each	X					\$ 4,500		Stark SWCD	Pierce SWCD, Stark County, Pierce County
									Subtotal:	\$ 605,000		

Priority Issue: Drinking water is at risk due to high nitrate levels and loss of recharge.				Measurable goal: Reduce annual nitrate load by 45% over 10 years.								
Location	Implementation Action	Measurable output for this location	Metric/Indicator	Timeframe					Estimated Cost	Estimated local contribution	Lead LGU	Supporting Entities
				2017-18	2019-20	2021-22	2023-24	2025-26				
Raspberry Creek Subwatershed	Targeted nutrient management	8,300 acres	Acres	X	X	X			\$ 15,000		Stark SWCD	Pierce SWCD, NRCS, crop consultants, BWSR , MPCA
	Denitrifying bioreactors	3 bioreactors	Each				X	X	\$ 12,000		Stark SWCD	NRCS, Pierce SWCD
	Cover crops	6,500 acres	Acres	X	X	X	X	X	\$ 18,000		Pierce SWCD	Stark SWCD, NRCS, crop consultants, BWSR , MPCA
South Branch Rose River Subwatershed	Targeted nutrient management	7,655 acres	Acres	X	X	X	X	X	\$ 12,000		Stark SWCD	Pierce SWCD, NRCS, crop consultants, BWSR , MPCA
	Denitrifying bioreactors	2 bioreactors	Each		X	X			\$ 8,000		Stark SWCD	NRCS, Pierce SWCD
	Cover crops	4,865 acres	Acres	X	X	X	X	X	\$ 12,000		Pierce	Stark SWCD, NRCS, crop consultants, BWSR , MPCA
Watershed-wide	Update failing and deficient SSTS	50% SSTS compliance	% compliance	X	X	X	X	X	\$ 106,000		Stark County	Pierce County, Stark SWCD, Pierce SWCD, BWSR, MPCA
	Install long-term groundwater observation wells	15 wells	# of wells		X	X			\$ 36,000		DNR	MGS
									Subtotal:	\$ 219,000		

Priority Issue: Young forest and open land alter peak flows, affecting the stability of streams and rivers.				Measurable goal: Implement 4 previously-completed forest stewardship plans over 10 years.								
Location	Implementation Action	Measurable output for this location	Metric/Indicator	Timeframe					Estimated Cost	Estimated local contribution	Lead LGU	Supporting Entities
				2017-18	2019-20	2021-22	2023-24	2025-26				
Raspberry Creek Subwatershed	Increase local capacity to implement forest management plans	20 workshops	Workshops	X	X	X	X	X	\$ 19,000		Pierce SWCD	NRCS, USFS, DNR
									Subtotal:	\$ 19,000		
									PLAN TOTAL:	\$ 843,000		

Measurable goals:

- 1) Reduce peak flow at Northville by 30% over 10 years.
- 2) Reduce annual nitrate load by 45% over 10 years.
- 3) Implement 4 previously-completed forest stewardship plans over 10 years.

Location: Raspberry Creek Subwatershed (20,262 acres)

Priority Issue	Implementation Action	Measurable output for this location	Metric/Indicator	Timeframe					Estimated Cost	Estimated local contribution	Lead LGU	Supporting Entities
				2017-18	2019-20	2021-22	2023-24	2025-26				
Flood Damage Reduction	Wetland Restoration	497 acres restored	Acres		X	X	X	X	\$ 271,000		Pierce County	Stark County, Pierce SWCD, Stark SWCD, DNR
	Controlled Drainage	248 acres treated	Acres		X	X	X		\$ 56,000		Pierce SWCD	NRCS, BWSR
	Diversions	5 diversion structures	Each			X	X	X	\$ 9,500		Strong River WD	Pierce SWCD, Stark SWCD
Drinking Water Quality	Targeted nutrient management	8,300 acres	Acres	X	X	X			\$ 15,000		Stark SWCD	Pierce SWCD, NRCS, crop consultants, BWSR , MPCA
	Denitrifying bioreactors	3 bioreactors	Each				X	X	\$ 12,000		Stark SWCD	NRCS, Pierce SWCD
	Cover crops	6,500 acres	Acres	X	X	X	X	X	\$ 18,000		Pierce SWCD	Stark SWCD, NRCS, crop consultants, BWSR , MPCA
Timber Harvesting	Increase local capacity to implement forest management plans	20 workshops	Workshops	X	X	X	X	X	\$ 19,000		Pierce SWCD	NRCS, USFS, DNR
Local Total:									\$ 400,500			

Location: South Branch Rose River Subwatershed (17,155 acres)

Priority Issue	Implementation Action	Measurable output for this location	Metric/Indicator	Timeframe					Estimated Cost	Estimated local contribution	Lead LGU	Supporting Entities
				2017-18	2019-20	2021-22	2023-24	2025-26				
Flood Damage Reduction	Wetland Restoration	359 acres restored	Acres	X	X	X	X		\$ 209,000		Pierce County	Stark County, Pierce SWCD, Stark SWCD, DNR
	Controlled Drainage	212 acres treated	Acres		X	X	X		\$ 48,000		Pierce SWCD	NRCS, BWSR
	Diversions	4 diversion structures	Each		X	X	X		\$ 7,000		Strong River WD	Pierce SWCD, Stark SWCD
Drinking Water Quality	Targeted nutrient management	7,655 acres	Acres	X	X	X	X	X	\$ 12,000		Stark SWCD	Pierce SWCD, NRCS, crop consultants, BWSR , MPCA
	Denitrifying bioreactors	2 bioreactors	Each		X	X			\$ 8,000		Stark SWCD	NRCS, Pierce SWCD
	Cover crops	4,865 acres	Acres	X	X	X	X	X	\$ 12,000		Pierce	Stark SWCD, NRCS, crop consultants, BWSR , MPCA
Local Total:									\$ 296,000			

Location: Watershed-wide (667,354 acres)

Priority Issue	Implementation Action	Measurable output for this location	Metric/Indicator	Timeframe					Estimated Cost	Estimated local contribution	Lead LGU	Supporting Entities
				2017-18	2019-20	2021-22	2023-24	2025-26				
Flood Damage Reduction	Define, develop, and maintain an agricultural flood prone map	Map	Each	X					\$ 4,500		Stark SWCD	Pierce SWCD, Stark County, Pierce County
Drinking Water	Update failing and deficient SSTS	50% SSTS compliance	% compliance	X	X	X	X	X	\$ 106,000		Stark County	Pierce County, Stark SWCD, Pierce SWCD, BWSR, MPCA
	Install long-term groundwater observation wells	15 wells	# of wells		X	X			\$ 36,000		DNR	MGS
Local Total:									\$ 146,500			
PLAN TOTAL:									\$ 843,000			

Measurable goals:

- 1) Reduce peak flow at Northville by 30% over 10 years.
- 2) Reduce annual nitrate load by 45% over 10 years.
- 3) Implement 4 previously-completed forest stewardship plans over 10 years.

Implementation Action	Priority Issue			Measurable Output for this location	Metric	Timeframe					Estimated Cost	Estimated local contribution	Lead LGU	Supporting Entities
	Minimize flooding	Drinking water	Timber harvesting			2018-19	2019-20	2021-22	2023-24	2025-26				
Wetland Restoration														
Raspberry Creek Subwatershed	X			497 acres restored	Acres		X	X	X	X	\$ 271,000		Pierce County	Stark County, Pierce SWCD, Stark SWCD, DNR
South Branch Rose River Subwatershed	X			359 acres restored	Acres	X	X	X	X		\$ 209,000		Pierce County	Stark County, Pierce SWCD, Stark SWCD, DNR
Controlled Drainage														
Raspberry Creek Subwatershed	X			248 acres treated	Acres		X	X	X		\$ 56,000		Pierce SWCD	NRCS, BWSR
South Branch Rose River Subwatershed	X			212 acres treated	Acres		X	X	X		\$ 48,000		Pierce SWCD	NRCS, BWSR
Diversions														
Raspberry Creek Subwatershed	X			5 diversion structures	Each			X	X	X	\$ 9,500		Strong River WD	Pierce SWCD, Stark SWCD
South Branch Rose River Subwatershed	X			4 diversion structures	Each		X	X	X		\$ 7,000		Strong River WD	Pierce SWCD, Stark SWCD
Targeted nutrient management														
Raspberry Creek Subwatershed		X		8,300 acres	Acres	X	X	X			\$ 15,000		Stark SWCD	Pierce SWCD, NRCS, crop consultants, BWSR , MPCA
South Branch Rose River Subwatershed		X		7,655 acres	Acres	X	X	X	X	X	\$ 12,000		Stark SWCD	Pierce SWCD, NRCS, crop consultants, BWSR , MPCA
Denitrifying bioreactors														
Raspberry Creek Subwatershed		X		3 bioreactors	Each				X	X	\$ 12,000		Stark SWCD	NRCS, Pierce SWCD
South Branch Rose River Subwatershed		X		2 bioreactors	Each		X	X			\$ 8,000		Stark SWCD	NRCS, Pierce SWCD
Cover crops														
Raspberry Creek Subwatershed		X		6,500 acres	Acres	X	X	X	X	X	\$ 18,000		Pierce SWCD	Stark SWCD, NRCS, crop consultants, BWSR , MPCA
South Branch Rose River Subwatershed		X		4,865 acres	Acres	X	X	X	X	X	\$ 12,000		Pierce	Stark SWCD, NRCS, crop consultants, BWSR , MPCA
Increase local capacity to implement forest management plans														
Raspberry Creek Subwatershed			X	20 workshops	Workshops	X	X	X	X	X	\$ 19,000		Pierce SWCD	NRCS, USFS, DNR
Define, develop, and maintain an agricultural flood prone map														
Watershed Wide	X			Map	Each	X					\$ 4,500		Stark SWCD	Pierce SWCD, Stark County, Pierce County
Update failing and deficient SSTS														
Watershed Wide		X		50% SSTS compliance	% compliance	X	X	X	X	X	\$ 106,000		Stark County	Pierce County, Stark SWCD, Pierce SWCD, BWSR, MPCA
Install long-term groundwater observation wells														
Watershed Wide		X		15 wells	# of wells		X	X			\$ 36,000		DNR	MGS

PLAN TOTAL: \$ 843,000



Capital Improvements

Supporting information for Section III.F.2 of the 1W1P Plan Content Requirements

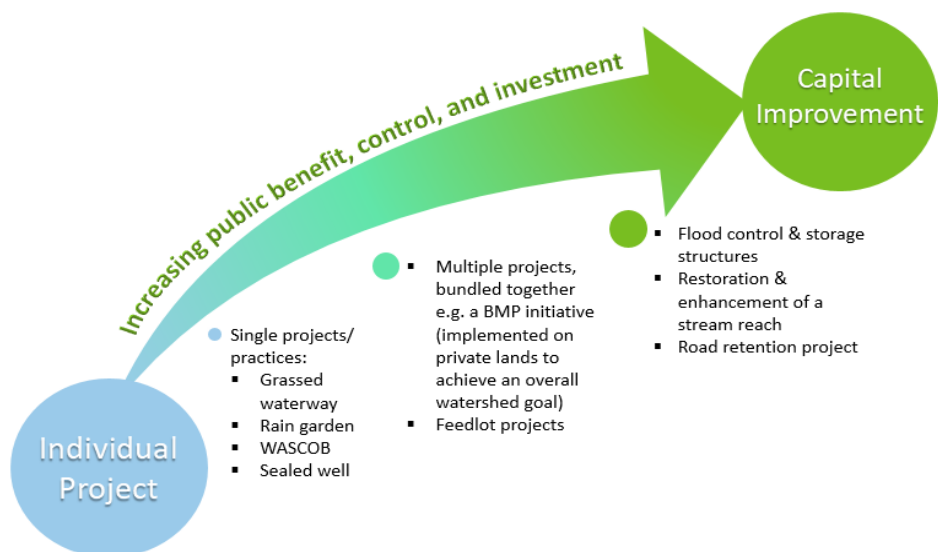
The capital improvements section of your plan will describe physical or structural projects with an extended life. Local governments have legal authorities to levy local funds to make a public investment that will have a public benefit. Your plan should describe opportunities to leverage those authorities to work toward your water management goals. Working together in a partnership presents a unique opportunity to focus multiple funding sources on work that is larger, more complex, and more impactful.

Definitions and Concept

“Capital improvements” in One Watershed, One Plan refers to making a public investment in a single large project or a grouping of smaller projects and practices focused on a single goal and funded with public dollars. A number of terms may apply, depending on the type of local government (see statutes for **definitions**):

- **Capital Improvement Programs** by counties ([§373.40](#)) and watershed management organizations within the seven-county metro area ([§103B.205](#) and [Minnesota Rule part 8410.0020](#))
- **Projects**
 - watershed district projects by watershed districts outside the seven county metro area ([§103D.011](#))
 - drainage projects by drainage authorities ([§103E.005](#)),
 - infrastructure projects including roads, drinking water supply, and wastewater treatment by counties ([§373.40](#)), municipalities ([§475.521, Subd. 3](#)), and townships.
- **Watershed Projects/Works of Improvement** by soil and water conservation districts ([§103C.101](#)).
- **Long-term and/or Permanent Land Protection:** easements or fee title acquisition by local governments, sometimes in partnership with state, federal or nongovernmental partners.

The **concept** of capital improvements goes beyond individual best management practices to larger practices or a “package” of smaller practices that are intentionally focused on a particular water body or issue. Thinking about watershed work in terms of capital improvements also opens the door to



authorities for local governments to create special taxing districts and other funding mechanisms to achieve a public benefit.

The One Watershed, One Plan program encourages groups to take a big picture, comprehensive approach to achieving watershed goals and to consider public investments in larger, more ambitious projects. There are several benefits to doing so:

- Allows for a systematic evaluation of multiple potential projects at the same time
- Fosters cooperation among units of government and communication about local priorities
- Ensures that public funds are used efficiently
- Serves as a public relations and community engagement tool
- Opens doors to additional funding authorities (see “funding,” below)

Multi-Purpose Drainage Management and Road Projects

In Minnesota, drainage projects are typically managed by counties and watershed districts under Minnesota statutes §103D and §103E. Planning on watershed boundaries provides an opportunity to incorporate multiple benefits associated with drainage and road projects. These include enhancing habitat for fish and wildlife, water quality and reducing damage to land and infrastructure from floods, proper sizing of culverts for current and future precipitation, and enhancing stormwater management opportunities in the road right of way. These projects often are completed through partnerships at the local, state, and federal level and they use funds generated by local taxes. Because of the costs associated with design, engineering, construction, and perpetual maintenance, these projects should be discussed in Capital Improvement section of the plan.

Watershed District Projects and Capital Improvement Programs

If there is a watershed district within the planning boundary, the plan should include or reference the watershed district’s **project** list or **capital improvement program**. See “Considerations for Watershed Management Organizations” below for more on meeting statutory requirements for these types of organizations.

- **Example: Minnehaha Creek Greenway.** Minnehaha Creek Watershed District set out to restore Minnehaha Creek via a series of intentional, organized projects including: reshaping the creek, creating additional green space, channel and wetland restoration, and building new trails and educational signage. The watershed district leveraged its authority, programs, and funding to secure over two dozen partners and nearly \$5,000,000 in contributions to the project.
- **Example: Wolverton Creek Restoration Project.** This project restores water quality and reduces flooding by acquiring land easements, installing structural BMPs such as side-inlets, restoring part of the channel, and installing required vegetated buffers on the legal drainage systems. The total cost of the project is just over \$3.7 million dollars from multiple sources including the Clean Water Fund, Outdoor Heritage Fund, Enbridge, and local landowners. The Buffalo-Red River Watershed District used their authority under §103D to set up the Wolverton Creek Watershed Management District. They own the project and will manage and maintain it.

Permanent Land Protection

Protecting watersheds from land disturbances or contaminants that can lead to degraded surface or drinking water is an important watershed management strategy. Local governments can work in partnership with private landowners as well as state, federal, and non-governmental partners using a combination of tools including private forest management, temporary tax incentives, permanent easements, and fee title acquisition. Key target areas for protection include wellhead areas that have soils at risk of contamination and watersheds of clean and healthy lakes and rivers at risk of land conversion.

- **Example: Crow Wing County Minor Watersheds.** Crow Wing County's water plan identified a minor watershed of the Mississippi River just north of Crosby as a priority for land protection based the fact that only 37% of the land was in "protected status," significantly less than the goal of 75% needed to keep lakes and streams clean and healthy. The county worked with the Mississippi Headwaters Board, who received funding from the Outdoor Heritage Fund for fee title acquisition of key riparian parcels (9%) and conservation easements (5%). They also worked with landowners to enroll property in the Sustainable Forest Incentive Act (14%). All told they were able to protect 65% of land in the watershed, dramatically increasing the chances for keeping this area clean and healthy long into the future.

Incorporating Capital Improvements in Your Plan

A key concept in the 1W1P program is to think about watershed management comprehensively, rather than as a series of individual practices or programs. Capital improvement programs are a great way to package a series of watershed management actions in your comprehensive watershed management plan as a focused and intentional initiative designed to reach your water management goals for a specific resource.

Questions to Ask

In thinking about the design and implementation capital improvements, ask the following questions:

- Who initiates?
- Who builds?
- Who owns, manages, and maintains?
- Who pays? (see below)

Funding

A key consideration for capital improvements is the degree to which the partnership is committed to using their existing funding authorities. Rolling individual projects up into an initiative in order to leverage specific funding authorities could be your key to success. Funding authorities specifically related to capital improvements are below. See also BWSR's summary of [Local Funding Authorities](#).

- Metropolitan Watershed Management Organizations (includes Watershed Districts) – [103B.245](#)
- Watershed Districts – [103D.601](#)

When to call it a capital improvement in 1W1P?

There's no test for whether implementation items should be considered capital improvements in your comprehensive watershed management plan. Use the definitions and questions in this document to help think about how to classify of projects and programs. Key elements:

- Project size, cost, funding source, partnerships required, lead entity
- Degree to which projects and programs are packaged as a comprehensive approach to address a particular priority issue or resource in your plan.

- Counties – [103B.331](#)

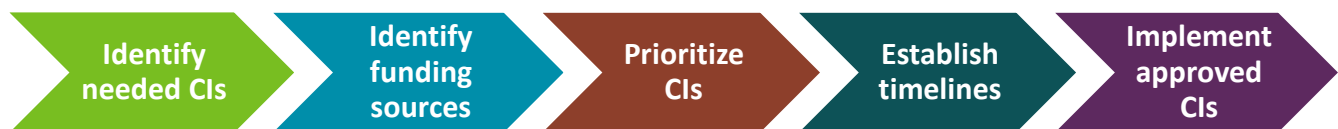
Elements of a Capital Improvement Program or Project List

Descriptions of large projects that will require substantial local public investment should contain the following:

- Justification/purpose of the program or project
- A list of the individual capital improvements or projects, ranked in order of preference
- Project costs and funding sources
- Explanation of expenses for the project
- A timetable for the construction or completion of the projects

Process for Developing a Capital Improvement (CI) Program or Project List

The process is very similar to the overall process of developing a comprehensive watershed management plan:



Considerations for Watershed Management Organizations

If there is a watershed management organization or watershed district within the planning boundary, the plan should include or reference the organization’s capital improvement program or project list.

Individual local governments, especially watershed districts with a different geographic boundary than the planning area, may want to maintain a separate chapter in the plan or a separate document for projects that will be implemented by individual local governments and not the planning partnership. You may wish to add something to your plan that describes how the planning partnership could be involved in updating these individual capital improvement programs or project lists. Involvement could include a courtesy review or notification when a project is being initiated.

For those watershed management organizations that are located in the metro area: if you wish to replace your existing plan with the comprehensive watershed management plan and you have a capital improvement program, you will need to maintain documents pertaining specifically to your organization separately in order to meet the requirements of MN Rule 8410.

Getting to a Quality Plan

Your comprehensive watershed management plan should at a minimum identify capital improvements that address priorities for the watershed as a whole. This section of your plan should outline a multi-year plan of expenditures that guides local governments’ long-term watershed management investment and infrastructure improvement. It may include a prioritized list of all individual capital improvements, along with construction and completion schedules and an estimation of project costs and potential sources of funding.



Data Collection and Monitoring

Supporting information for Section III.F.5 of the 1W1P Plan Content Requirements

This document discusses considerations for local governments in designing and carrying out data collection and monitoring for the purposes of watershed management and assessing progress toward plan goals. It also provides information on water data collected by Minnesota’s state agencies.

Good data and information are critical to effective watershed management. Managers need to know about the status of water bodies, what threatens them, and what strategies they can use to address those threats. They also need information on the effectiveness of management activities in order to adapt and improve. In the context of One Watershed, One Plan, data are useful in two main ways: 1) during planning for setting priorities and goals, and 2) after plan implementation as part of efforts to evaluate the effects of past restoration or protection work.

The *One Watershed, One Plan - Plan Content Requirements* require a description of: existing data collection efforts; adequacy of those efforts in demonstrating progress toward plan goals; and any additional data needed to meet watershed management goals, including filling data gaps.

In developing this section of the plan, determine whether enough data is being collected to demonstrate progress. If not, what new data needs to be collected? If you decide not to plan for any new data collection efforts, your plan should simply describe the status quo.

Once you have drafted measurable goals and discussed implementation activities, think about the metrics/indicators you will use to measure progress. For which priorities and goals will showing success be most important? What data will you need to tell your success stories? Where in the watershed do you hope to make the biggest gains? Your data collection should focus on answering the question “are we making progress on our highest priorities?”

Definitions

In this document, **data collection** refers broadly to activities that characterize water resources and/or populations (e.g. biological, physical, and chemical parameters; social measures). Some examples of data collection include:

- Inventorying unsealed wells
- Taking field measurements of stream stability
- Mapping and calculating percentage of land in the watershed that is in perennial vegetation
- Hosting focus groups to gauge landowner interest in installing controlled drainage

Monitoring is a special form of data collection that’s ongoing and systematically measures the same parameters at set time intervals, often in a fixed location. For example:

- Taking water samples at fixed locations during rain events

- Sampling fish and macroinvertebrates (biological monitoring) in a designated stream reach every 10 years
- Administering the same survey at predetermined points in an education initiative

Tracking is counting implementation outputs (number of best management practices installed, acres of prairie restored, feet of shoreline stabilized). Some of your plan metrics may require tracking, which does not need to be addressed in this section of the plan. How you will track your outputs should be described in the administration and coordination section of the plan (III.G.5.a in the *One Watershed, One Plan – Plan Content Requirements*).

Purposes for Collecting Data

Identifying the purpose for collecting data will be one of the first (if not **the** first) discussions for your planning partnership on this topic. There are three main categories of data collection, listed below. A particular data collection effort may fulfill one or more purpose. Please note that while much of the rest of this document focuses on data collection related to water quality and quantity, the same concepts apply when thinking about other types of data collection, including social measures.

Documenting conditions: determining baseline conditions; status, such as whether a water body meets established standards or a reference condition; or establishing trends. Note that establishing a trend requires a robust, long term data set.

Examples: MPCA’s intensive watershed monitoring program, continuous stream flow monitoring, statewide observation well network, fish contaminant monitoring, MDA’s township well testing program for nitrates, citizen stream and lake monitoring, Dr. Mae Davenport’s [community capacity assessments](#).

Investigating problems: collecting data in targeted locations to determine specific causes of impairments or other problems, to quantify inputs of pollution from various sources, or to calibrate models.

Examples: MPCA’s stressor identification work, groundwater chemistry to inform a county geologic atlas, surveys to understand why there is low engagement in a cost-share program.

Determining effectiveness: quantifying the outcomes of voluntary or regulatory management actions. This type of data collection is designed to evaluate and refine a particular management approach. Effectiveness monitoring can be done at the plot or field scale, or at a larger watershed scale.

Examples: (field scale) MDA’s Discovery Farms program; *(watershed scale):* pre and post surveys to evaluate a watershed-wise education initiative.

Considerations for Using Existing Data

Minnesota’s state water agencies – often in partnership with local or federal partners - collect, analyze, and synthesize data about groundwater and surface water quantity and quality across the state. Local governments may have separate efforts that also collect data periodically or have ongoing monitoring programs. To decide if existing state and local efforts are sufficient to meet and measure watershed management goals, consider the following questions:

- What kind of data is currently being collected? Who is collecting it? Where? How often?
- Why is *that* stream being monitored at *that* location (purpose)? What are the data going to tell us? How is it connected to our goals?
- Is the current level of effort – especially with regard to scale in space and time - adequate for watershed management and goal evaluation purposes?
- Does the scale of existing data collection align with the scale of our plan goals?

Scale

Your ability to leverage existing local or state data collection and monitoring efforts will depend on how well the scale of monitoring aligns with the scale of your plan’s goals. For example, if local data collection efforts are currently set up at the HUC-12 or subwatershed scale, but you’ve included watershed-wide goals in your plan, how will you scale up your data to assess progress towards these goals? Alternatively, if state-level efforts are conducted at the HUC-8 scale, but your plan includes goals for specific subwatersheds, will you be able to make use of the state data or will additional local effort at a smaller scale be required?

Another important aspect of scale is time. If the plan outlines a particular outcome in a particular timeframe, do existing data collection efforts align well enough with that timeline to be able to show progress? Are you collecting data frequently enough to say anything about trends?

State-Level Monitoring

The State has invested heavily in monitoring networks (see Table 1) and reporting frameworks (e.g. Clean Water Road Map, Clean Water Fund Performance Report) to measure progress at the sub-watershed, watershed and/or basin scale over time. While each statewide program has a specific purpose and design, the data may be very useful in local planning and in evaluating progress toward your plan goals during implementation. The planning process is also an opportunity to discuss coordination between state and local governments to maximize the return on our collective monitoring investments.

A detailed inventory spreadsheet, summarized in Table 1 and available from your BWSR or MPCA contact, includes a detailed description, parameters, scale, waterbody type, and contact information for each program. This tool is a good starting point – directly contacting agency program leads is the best way to get details.

Table 1. Summary of ongoing state-level water quality & quantity monitoring programs. RS = rivers & streams, L = lakes, W = wetlands, and GW = groundwater. See the associated spreadsheet for details about each program.

	MPCA	MN DNR	MDH	MDA
Nutrients	RS, L, W	RS, L		RS, GW
Suspended solids	RS, L, W	RS		RS
Productivity	RS, L	RS		
Pesticides				RS, L, W, GW
Bacteria	RS, L		GW	
Biology	RS, L, W	RS, L		
Water level/flow	RS, L	RS, L		GW
Algal toxins	L			

	MPCA	MN DNR	MDH	MDA
Invasive species		RS		
Fish contaminants	RS			
Chloride	RS, L, W	RS	RS, L, GW	RS
Sulfate	RS, L, W	RS, L	RS, L, GW	

Considerations for Collecting New Data

After identifying your purpose for data collection and thoroughly examining existing current state and local efforts, you may find that the available information is inadequate for evaluating progress toward plan goals or answering key watershed management questions. This may be because current efforts don't measure the parameter, location, and/or scale you're interested in. If you have determined that the only way to achieve your purpose is through collecting new data, you will need to describe these additional efforts in your watershed plan.

For new data collection efforts, your plan should demonstrate that you've thought through these questions:

- What additional data do we need, and where do we need it?
- Who will collect the data, and with what methods?
- How much will it cost? How will we pay for it?
- How much additional effort do we need? (e.g., is a continuous monitoring station the only way to get what you need?)
- Do we have staff with the proper training and knowledge to run the equipment and analyze the results?
- Where will we store our equipment when it's not in use? What is our replacement budget if someone steals a solar panel or the equipment breaks?
- Is our computer system set up to maintain that data? Do we want our data to be uploaded into a statewide database? If so, how will we conduct quality assurance and quality control?

State agencies have monitoring experts on staff who may be able to help your group think through these questions. Refer to the interagency monitoring inventory spreadsheet to find experts for the parameters you are interested in.

Cost Constraints

Cost considerations will have a substantial role in determining what data your partnership can collect. The data collection and monitoring section of your plan must be realistic; if it cannot be implemented due to cost constraints, you will need to re-think alternate approaches or surrogates. You might also consider using literature values from studies done in similar environments under similar conditions to estimate the impact of your management activities. Your planning partnership should demonstrate a commitment to finding money or collaborators to implement needed data collection efforts or develop adequate alternatives that provide an equivalent evaluation of progress.

Models and Tools

Collecting field data is expensive - investing in extensive local data collection to evaluate progress toward plan goals may not be feasible or an appropriate use of funding. When it comes to evaluating progress toward plan goals, models and tools can be a surrogate for data collection, provided 1) there is adequate “tracking” of implementation work (e.g., number, characteristics, and location of management practices installed); 2) there is enough empirical data to calibrate the model; and 3) the model is designed to answer the question at hand.

One activity in the data collection and monitoring section of your plan may be to fill data gaps in order to refine or better calibrate a model.

Scale

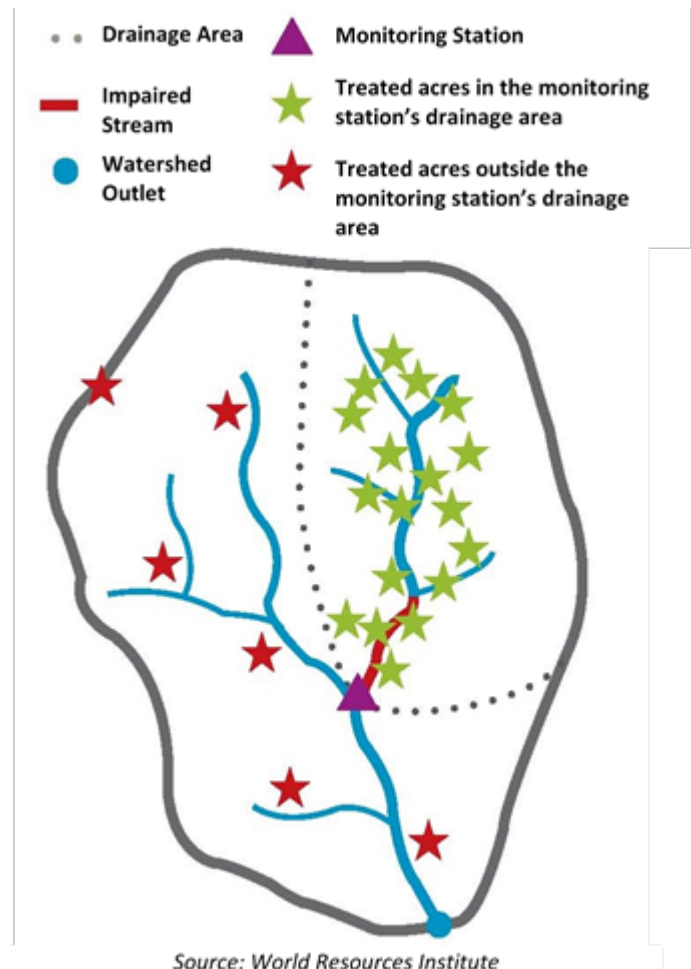
You will be better able to demonstrate progress towards plan goals if the scale of your data collection efforts matches the scale of your implementation efforts. Consider the graphic to the right. Implementation efforts are targeted upstream of the impaired stream, and the monitoring station is located at the outlet of the impaired stream. If practices had been dispersed across the watershed, or if the monitoring station had been located further downstream (in the mainstem of the river), it may have been impossible to demonstrate measurable progress.

Level of Effort

It may be appropriate to focus data collection efforts on practices with lesser-known outcomes rather than investigating practices with a high level of reliability and proven outcomes. BWSR suggests investing in the minimum amount of effort needed to reasonably assess progress toward key plan goals. This means the level of effort/intensity could vary significantly across the state for a particular type of goal or parameter, and it could vary across goals within a plan.

Communicating Results

Data collection will produce results that you will use to communicate measurable progress to the public, potential funders, and decision-makers at the local, state, and federal level. Determining how you will disseminate these results is a good thing to think about as you develop the data collection and monitoring section of your plan.



Getting to a Quality Plan

The data collection and monitoring section of your comprehensive watershed management plan should include a diverse set of activities that are directly tied to watershed goals. Data collection efforts will include all actions necessary to evaluate progress towards all types of plan goals, from water quality to community engagement. The plan will be thorough and realistic, describing when you can leverage existing data collection efforts and when you will use modeling or surrogate measures in place of on-the-ground data collection. Data collection and monitoring efforts will guide local watershed management, and you will ultimately use the results to report improvements to the public, key stakeholders, and funders.

Local Funding Authorities

Purpose: This table provides an overview of Minnesota statutes and laws that provide authorities to local governments to fund water management projects, to be used by local governments while exploring funding options for locally funded water projects. Does not include fees, fines, or wetland banking, grants, etc. This is not a legal document and should not be considered comprehensive, complete, or authoritative.

note: “metro” refers to Anoka, Carver, Dakota, Hennepin, Ramsey, and Washington counties or watershed organizations in the 7-county metro area.

Citation	Applies to	Summary <i>(please see details in the full text of each provision)</i>
§40A.152	Counties (metro)	Money from the county conservation account (see chapter 287) must be spent by the county to reimburse the county and taxing jurisdictions within the county for revenue lost under the conservation tax credit under §273.119 or the valuation of agricultural preserves under §473H.10 . Money remaining in the account after reimbursement may be spent on: 1) agricultural land preservation and conservation planning and implementation of official controls under this chapter or chapter 473H ; 2) soil conservation activities and enforcement of soil loss ordinances; 3) incentives for landowners who create exclusive agricultural use zones; 4) payments to municipalities within the county for the purposes of clauses 1-3.
§103B.241	Watershed districts & watershed management organizations (metro)	May levy a tax to pay for plan preparation costs & projects in the adopted plan necessary to implement the Metropolitan Water Management Program.
§103B.245	Watershed districts & watershed management organizations (metro)	May establish a watershed management tax district within the watershed to pay the costs of: planning required under §§ 103B.231 and 103B.235 , the capital costs of water management facilities described in the capital improvement program of the plans, and normal & routine maintenance of the facilities.
§103B.251	Watershed districts & watershed management organizations (metro), counties	May certify for payment by the county all or any part of the cost of a capital improvement contained in the capital improvement program of plans developed in accordance with §103B.231 . Counties may issue general obligation bonds to pay all or part of the cost of project. The county may pay the principal and interest on the bonds by levying a tax on all property located in the watershed or subwatershed in which the bonds are issued. Loans from counties to watershed districts for the purposes of implementing this section are not subject to the loan limit set forth in §103D.335 .

Citation	Applies to	Summary <i>(please see details in the full text of each provision)</i>
§103B.331 Subdivisions 3 & 4	Counties	(3) May charge users for services provided by the county necessary to implement the local water management plan.
		(4) May establish one or more special taxing districts within the county and issue bonds to finance capital improvements under the Comprehensive Local Water Management Act. After adoption of the resolution, a county may annually levy a tax on all taxable property in the district.
§103B.335	Counties, municipalities, or townships	May levy a tax to implement the Comprehensive Local Water Management Act or a comprehensive watershed management plan (§103B.3363). A county may levy amounts needed to pay the reasonable costs to SWCDs and WDs of administering and implementing priority programs identified in an approved & adopted plan or comprehensive watershed management plan.
§103B.555 Subdivisions 1 & 3	Counties	(1) May establish a Lake Improvement District and impose service charges on the users of lake improvement district services within the district. May levy an ad valorem tax solely on property within the lake improvement district for projects of special benefit to the district; may impose or issue any combination of service charges, special assessments, obligations, and taxes.
		(3) A tax under Subd. 1 may be in addition to amounts levied on all taxable property in the county for the same/similar purposes.
§103C.331 Subdivision 16	County boards on behalf of soil and water conservation districts	May levy an annual tax on all taxable real property in the district for the amount that the board determines is necessary to meet the requirements of the district.
§103D.335	Watershed districts	A watershed district has the power to incur debts, liabilities, and obligations and to provide for assessments and to issue certificates, warrants, and bonds.
§103D.601	Watershed districts	May set up special taxing districts via petition to conduct larger, Capital Improvement Projects (CIP). The costs to the affected parties cannot exceed \$750,000.
§103D.615	Watershed districts	May declare an emergency and order that work be done without a contract. The cost of work undertaken without a contract may be assessed against benefitted properties or raised by an ad valorem tax levy if the cost is not more than 25% of the most recent administrative ad valorem levy and the work is found to be of common benefit to the watershed district.

Citation	Applies to	Summary <i>(please see details in the full text of each provision)</i>
§103D.729	Watershed districts	May establish a water management district or districts in the territory within the watershed to collect revenues and pay the costs of projects initiated under §§ 103B.231 , 103D.601 , 103D.605 , 103D.611 , or 103D.730 . (Guidelines for creating water management districts)
§103D.901	Watershed districts	County auditors assess the amount specified in an assessment statement filed by managers. The county may issue bonds (§103E.635). An assessment may not be levied against a benefited property in excess of the amount of benefits received.
§103D.905 Subdivisions 2,3, 7-9	Watershed districts	Established funds for watershed districts (not a complete list – see full statute language): Organizational expense fund - consisting of an ad valorem tax levy, shall be used for organizational expenses and preparation of the watershed management plan for projects. General fund - consisting of an ad valorem tax levy, shall be used for general administrative expenses and for the construction or implementation and maintenance of projects of common benefit to the watershed district. May levy a tax not to exceed 0.00798 percent of estimated market value to pay the cost attributable to projects initiated by petition. Repair and maintenance funds - established under §103D.631 , Subd. 2. Survey and data acquisition fund - consists of the proceeds of a property tax that can be levied only once every 5 years and may not exceed 0.02418 percent of estimated market value. Project tax levy - a WD may levy a tax: 1. To pay the costs of projects undertaken by the WD which are to be funded, in whole or in part, with the proceeds of grants or construction or implementation loans under the Clean Water Partnership Law; 2. To pay the principal of, or premium or administrative surcharge (if any), and interest on, the bonds and notes issued by the WD pursuant to §103F.725 ; 3. To repay the construction or implementation loans under the Clean Water Partnership Law.
§103E.011 Subdivision 5	Drainage authorities	A drainage authority can accept and use external sources of funds together with assessments from benefited landowners in the watershed of the drainage system for the purposes of flood control, wetland restoration, or water quality improvements.
§103E.015 Subdivision 1a	Drainage authorities	When planning a “drainage project” or petitioned repair, the drainage authority must investigate the potential use of external sources of funding, including early coordination for funding and technical assistance with other applicable local government units.
§103E.601 §103E.635 §103E.641	Drainage authorities	Funding of all costs for constructed “ drainage projects ” are apportioned to benefited properties within the drainage system pro rata on the basis of the benefits determined (§103E.601). After the contract for the construction of a drainage project is awarded, the board of an affected county may issue bonds of the county

Citation	Applies to	Summary <i>(please see details in the full text of each provision)</i>
		in an amount necessary to pay the cost of establishing and constructing the drainage project. (§103E.635). Drainage authorities may issue drainage funding bonds (§103E.641).
§103E.728 §103E.731 §103E.735	Drainage authorities	Costs for drainage system repairs are apportioned pro rata on all benefited properties of record. The drainage authority may charge an additional assessment on property that is in violation of §103E.021 (ditch buffers) or a county soil loss ordinance (§103E.728). If there is not enough money in the drainage system account to make a repair, the board shall assess the costs of the repairs on all property and entities that have been assessed benefits for the drainage system (§103E.731). To create a repair fund for a drainage system to be used only for repairs, the drainage authority may apportion and assess an amount against all property and entities benefited by the drainage system, including property not originally assessed and subsequently found to be benefited according to law. (§103E.735).
Chapter 287	Counties	Counties participating in the agricultural land preservation program impose a fee of \$5 per transaction on the recording or registration of a mortgage or deed that is subject to tax under §§ 287.05 and 287.21 .
Chapter 365A	Towns	Townships may create subordinate service districts with special taxing authority. Requires a petition signed by at least 50 percent of the property owners in the part of the town proposed for the subordinate service district.
§373.475	Counties	A county board must deposit the money received from the sale of land under Laws 1998, chapter 389, article 16, section 31, subd. 3, into an environmental trust fund. The county board may spend interest earned on the principal only for purposes related to the improvement of natural resources.
Chapter 429	Municipalities	May levy special assessments against properties benefitting from special services (including curbs, gutters and storm sewer, sanitary sewers, holding ponds, and treatment plants).
§444.075	Municipalities	May collect stormwater utility fees to build, repair, operate & maintain stormwater management systems.
§462.358 Subdivision 2b(c)	Municipalities	May accept a cash fee for lots created in a subdivision or redevelopment that will be served by municipal sanitary sewer and water service or community septic and private wells. May charge dedication fees for the acquisition and development or improvement of wetlands and open space based on an approved parks and open space plan.
M. L. 1998, Chapter 389 Article 3, Section 29	Red River Watershed Management Board	Watershed Districts that are members of the Red River Watershed Management Board may levy an ad valorem tax not to exceed 0.04836 percent of the taxable market value of all property within their district. This levy is in excess of levies authorized by §103D.905.

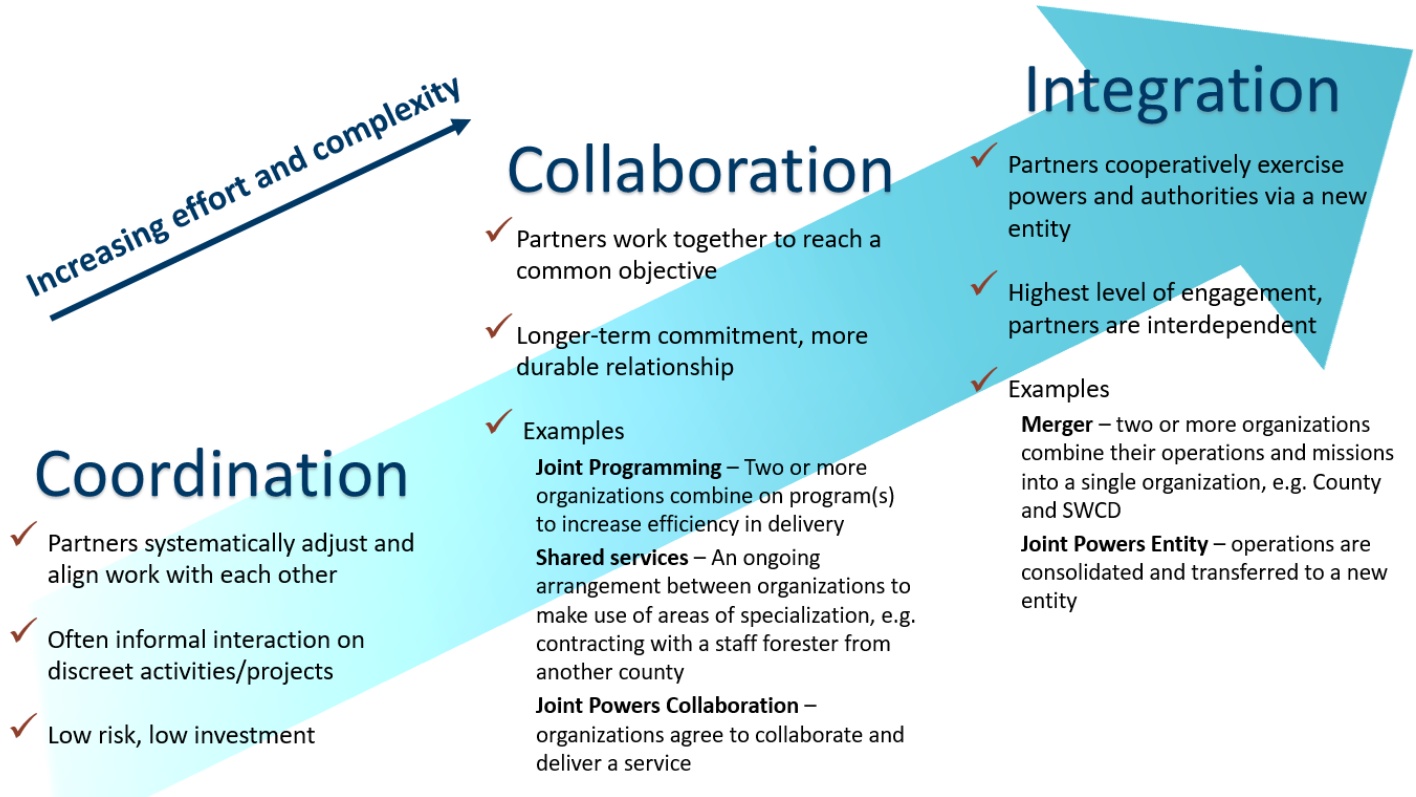


Organizational Structures for Water Management

Supporting information for Section III of the 1W1P Operating Procedures and Section III.G.1 of the 1W1P Plan Content Requirements

This document provides considerations for local government units working as a partnership and defines different levels of collaboration. The last page includes a table that outlines the types of formal agreements and recommendations for their use in relation to the One Watershed, One Plan program.

Partnerships vary in level of effort (commitment to working together) and integration (formality of agreement). The purpose for working together should drive the type of partnership that gets established. The following graphic illustrates the continuum of these working relationships and does not indicate a desired progression. In other words, integration is simply the far end of the spectrum, not necessarily an end goal.



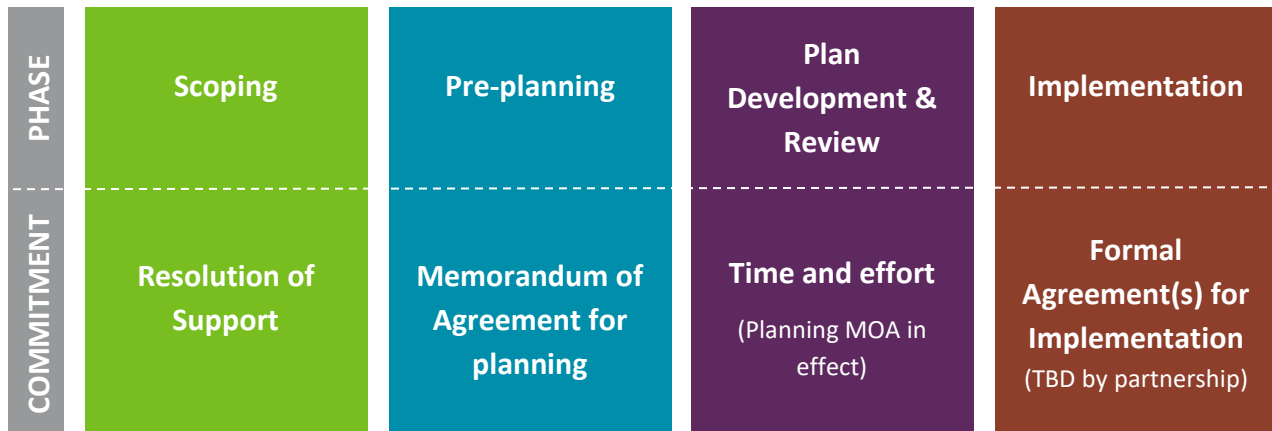
Through the One Watershed, One Plan program, partnerships of local governments come together to develop comprehensive watershed management plans. There are many benefits of being in partnership together:

- Improved efficiency in service delivery
- More consistent application of regulations
- Leverage of diverse strengths among the partners

- Distribution of workload
- More specialization in areas where staff are limited (through shared services)
- Shared risk in major capital projects

Planning Phases and Commitments

The planning partnership will likely enter into at least two agreements throughout the different phases of the One Watershed, One Plan process. As a first step, individual local governments may wish to pass a resolution of support as a signal of intent to participate in the program. This is not a requirement of 1W1P, but is considered a best practice. During the pre-planning phase, participating partners *must* enter into a Memorandum of Agreement (MOA) or other type of formal agreement (see section III.A of the One Watershed, One Plan Operating Procedures). The planning agreement will be in effect for the duration of the plan development and review process. Once the plan has been approved by the BWSR Board: if the planning partnership wishes to access BWSR’s watershed-based funding, they will need to establish one or more formal agreements for plan implementation, the details of which should be driven by the actions included in the plan (e.g. shared services, collaborative grant-making) and the partnership’s need to manage risk.



Formal Agreement Types and Recommended Uses

The One Watershed, One Plan program requires partnerships to establish a formal agreement during the plan development phase. BWSR suggests a formal agreement for the purposes of implementing their plan together (formal agreements are required for BWSR watershed-based funding). Formal agreements help manage risk and protect individual local governments from potential liabilities that could be associated with working in a partnership (see [MN Statute §471.59](#)). Note that a Joint Powers Agreement (JPA) only establishes a new entity if a Joint Powers Entity (JPE) is specifically formed. Both JPAs and JPEs are governed by [MN Statute §471.59](#).

The information in the following table should not be considered legal advice; legal counsel of the participating organizations should be involved in crafting any new formal agreement. *The ABCs of JPEs* is a useful reference from the Minnesota Counties Intergovernmental Trust: <https://www.mcit.org/resource/the-abcs-of-jpes-joint-powers-entities/>.

	Formal Agreement Type	Considerations for One Watershed, One Plan (1W1P)
Coordination	<p>Memorandum of Agreement (MOA) / Memorandum of Understanding (MOU)</p> <ul style="list-style-type: none"> Does not create a new entity (layer of government) Formal and outward commitment to work together as a partnership Specifies mutually-accepted expectations and guidelines between partners Not legally enforceable (if not being used as a contract or when MN Statute §471.59 is not referenced) 	<ul style="list-style-type: none"> Signals intent of partners to work together; establishes roles and expectations. Recommended formal agreement type for planning; meets minimum 1W1P program requirements for planning. A partnership established with an MOA cannot receive funds directly (one member must be designated as a fiscal agent). Places risk associated with grant agreements – and control of dollars – on the grantee instead of legally sharing among the partners. (The risk for developing a plan is low; risks associated with implementation are higher. A JPA is recommended for implementation grants.)
Collaboration	<p>Joint Powers Agreement (JPA) establishing a Joint Powers Collaboration (JPC)</p> <ul style="list-style-type: none"> Agreement to jointly deliver a service or product or manage or own property without creating a new entity (any board associated with a JPA is advisory only) Legally binding Must meet requirements of MN Statute §471.59 	<ul style="list-style-type: none"> An existing JPA can be used as a formal agreement for plan development, provided it covers the elements required in the 1W1P Operating Procedures and all the required partners are involved. A JPA is recommended for implementation grants and shared services. How the partners distribute risk and dollars depends on the structure of the agreement and any other agreements between partners. (One partner acts as a grantee and fiscal agent, as with MOA/MOU).
Integration	<p>Joint Powers Agreement (JPA) establishing a Joint Powers Entity (JPE)</p> <ul style="list-style-type: none"> Establishes a new entity or board that operates autonomously from the members Risk and liability are transferred to the new entity Legally binding Must meet requirements of Minnesota Statute §471.59 	<ul style="list-style-type: none"> The decision to use a JPE for plan implementation depends on the activities that will be pursued and the amount of risk and liability acceptable to the partners; consult legal counsel. A JPE can accept grant funds (and associated risk for contracts) and hire staff.

