Minnesota Pollution Control Agency (MPCA) logo and Clean Water Land and Legacy logo­

[Month and Year of report]

**Draft [Watershed name]   
Watershed Restoration and Protection Strategy Report Update [year]**

*Picture can be inserted in this space. Right click on this picture, choose Change picture, click on the picture you want, then Insert. Resize/Crop the picture to fit this area. Please try to leave same amount of white space above and below. Landscape pictures work best.*

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Edit administrative staff name, project phase (EPA Preliminary Review, Public Notice, or Final), and date review complete.

Cover photo credit

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Would it be beneficial to add a List of Tables and a List of Figures?Please use sentence case and PCA styles within this template. Delete these instructions from draft reports prior to routing for review.  
Use MS Word’s default **Heading 1** for Contents, Key terms, Executive summary, etc.

These PCA Report Headings are section, part, sub-part, and additional sub-parts and are numbered as 1.; 1.1; 1.1.1; 1.1.1.2; etc.

PCA Report Headings should appear as standalone (i.e., not part of a paragraph).

PCA Report Section Heading (e.g., 4) 1 (with underline) – Sentence case Calibri Bold 22, spacing 0 pt/6 pt) (Level 1).

PCA Report Part Heading (e.g., 4.1) 2 (Sentence case) Calibri Bold 16, spacing 6 pt/6 pt (Level 2).

PCA Report Sub-part (e.g., 4.1.1) Heading 3 (Sentence case) Calibri Bold 14, spacing 6 pt/6 pt (Level 3).

PCA Report additional sub-part Heading (e.g., 4.1.1.1) 4, (Sentence case) Calibri Bold 12, spacing 6 pt/6 pt (Level 4).

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PCA Report additional sub-part Heading (e.g., 4.1.1.1.1.1) 6 (Sentence case) (Level 6).

PCA Body Text = Calibri 11 spacing 0 points before/6 points after (line spacing Multiple at 1.15 pt).

For displayed lists using numbers or letters to enumerate items on the list, use the designated PCA Body Text. Notes – use a period after the number/letter and after the item. Also, do not indent.

Examples:

1. This is a PCA numbered list – spacing 0 points before/6 points after (line spacing multiple 1.15 pt).

2. This is a PCA numbered list.

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3. This is a PCA lettered list.

For displayed lists using bullets to separate items on the list, use the designated PCA Body Text. Notes – use a period after the item and indent.

Example:

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* This is a PCA bullet list.
* This is a PCA bullet list.

**Figure 1. PCA Figure/Table title Calibri 10 bold spacing 0 pts before/0 points after.**

|  |  |  |
| --- | --- | --- |
| **PCA Table heading Calibri 10 bold 3/0** | **PCA Table heading** | **PCA Table heading** |
| PCA Table text Calibri 3/0 | PCA Table text | PCA Table text\* |
| PCA Table text | PCA Table text | PCA Table text |
| PCA Table text | PCA Table text | PCA Table text |

\*PCA Table footnote text should be Calibri 9 spacing 3 points before/6 points after.

Figure and Table titles should be placed above the figure or table.

Use ‘Insert Caption’ function to assign numbers to figure and tables (this will automatically build your table of figures/tables in the document). Instructions:

* Create figure/table title, then place cursor at beginning of title.
* Go to ‘References’ tab, select ‘Insert Caption’.
* Select ‘Table’ or ‘Figure’ from ‘Label’ dropdown.
* Select ‘Okay’.

Number Tables and Figures sequentially throughout the document (e.g., Figure 1, Figure 2, Table 1, Table 2), not sequentially throughout the section (e.g., Figure 2-1, Figure 2-2, Table 2-1, Table 2-2).

Size all maps to fit full page (allow room for footnotes if necessary).

Do not use text boxes over maps or figures. Place descriptive text outside images to ensure it can be read by assistive technologies.

Table lines = Style: Solid; Color: Automatic; Width: ¼ pt. (PCA Bullet List style used here.)

Before/after spacing 3/0.

Try to align bottom left first; however, this is flexible due to the different tables we encounter.

Repeat header on the top of each succeeding page in the table, when possible.

Hyperlinks - When hyperlinking to other MPCA reports, hyperlink to the watershed webpage instead of the report. This will eliminate the need to re-link if document link changes. Same goes to references.

Be consistent in breaks between sections – Either add a section break between all sections or don’t add between any.

Delete any extra spaces and/or “enters”. Screen readers for visually impaired reads each of them.

General rules for expressing numbers in writing:

* Spell out numbers zero through ten; use figures for numbers greater than ten (e.g., 11, 12, 13).
* Use the same style to express numbers within a sentence; if any of the numbers are greater than ten, use figures for all. (e.g., “I have two dogs and three cats.” “We have 12 dogs and 3 cats.”).
* Spell out a number that begins a sentence and follow numbering rules after that (e.g., “Eleven comes before 12 and after 10.”).
* Use the percent symbol (%), rather than spell out ‘percent’.

# Key terms and abbreviations (Section Heading 1)

ACPF Agricultural Conservation Planning Framework

103E Minn Stat. ch 103E. Drainage

1W1P One Watershed, One Plan

bio biological

BMP best management practice

BWSR Board of Water and Soil Resources

CE Civic Engagement

DNR Minnesota Department of Natural Resources

EAO Environmental Analysis & Outcomes

eDNA environmental deoxyribonucleic acid

FIBI fish community-based Index of Biological Integrity

FWMC flow weighted mean concentration

GRAPS Groundwater Restoration and Protection Strategies

HSPF Hydrologic Simulation Program–Fortran

IBI index of biological integrity

IMPLAND impervious overland surface runoff module

IWM intensive watershed monitoring

LA load allocation

LGU local government unit

LID Low Impact Development

mg/L milligrams per liter

MPCA Minnesota Pollution Control Agency

MS4 Municipal Separate Storm Sewer System

MSHA MPCA Stream Habitat Assessment

N nitrogen

NPDES National Pollutant Discharge Elimination System

P phosphorus

PERLAND pervious overland surface runoff module

PTM App Prioritize Target and Measure Application

SAM Scenario Application Manager

SDS State Disposal System

SID stressor identification

SSTS Subsurface Sewage Treatment Systems

SWAG Surface Water Assessment Grant

SWAT Soil and Water Assessment Tool

SWCD Soil and Water Conservation District

10X Ten times (chemistry samples collected on 10 dates)

TALU tiered aquatic life uses

TMDL total maximum daily load

TSS total suspended solids

USGS United States Geological Survey

WARSSS Watershed Assessment of River Stability and Sediment Supply

WD Watershed District

WMO Watershed Management Organization

WOMP Watershed Outlet Monitoring Program

WPLMN Watershed Pollutant Load Monitoring Network

WLA wasteload allocation

WRAPS watershed restoration and protection strategy

WWTF Wastewater Treatment Facility

# Executive summary (Section Heading 1)

**Content Description:** Tell the overall “story” here in summary. Describe valuable insights or key features of local perspective. Short remarks on the purpose of an update and who the primary audience is. Key summations of each major section of the update report.

**Notes:** Take time to develop a good summary. Communications staff will use the material for the communications strategies they will develop as needed. Communication needs are found here. (Communication Wiki [Watershed Communications Process and Training - Tempo Wiki (state.mn.us)](https://tempowiki.pca.state.mn.us/index.php?title=Watershed_Communications_Process_and_Training)) Engage with Communication Staff early on to assure needs are met.

Be consistent in breaks between sections – Either add a section break between all sections or don’t add between any.

1. Watershed approach (Section Heading)

Provide high-level, background information on the Watershed Approach and WRAPS reports. Define the purpose, scope, and audience of the WRAPS report. Be brief.

**Content Menu considerations:**

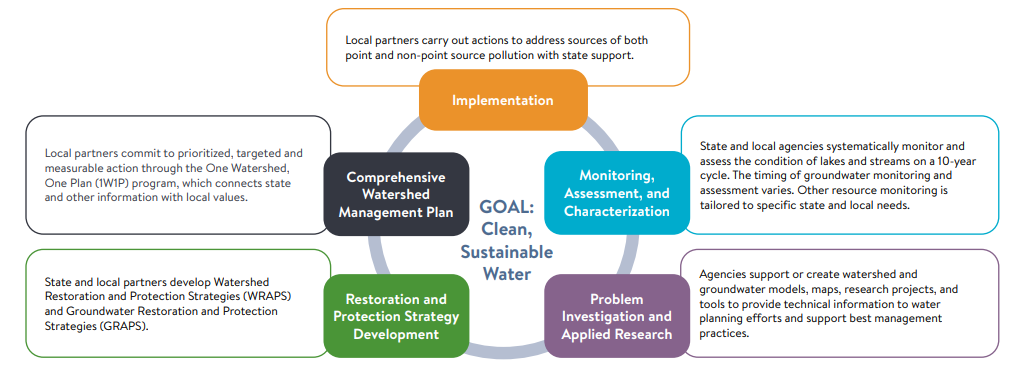
* One page summary of the Watershed Approach; see, “The MN Water Management Framework,” in [The Lorax](https://bwsr.state.mn.us/sites/default/files/The%20Minnesota%20Water%20Management%20Framework%202023.pdf) (under Watershed Management guidance)
* Graphics: Watershed approach, timeline of work Cycle I to Cycle II. Note that the report element of Cycle II is an “UPDATE”.
* Adequate narrative describing years of work/timelines, Cycle I vs. Cycle II: timelines, big picture messages, etc.

**Notes:** The **purpose, scope, and audience are KEY FACTORS** for the WRAPS Update that should be stated in the Introduction and Background Section of a WRAPS report.

The ***purpose*** of the WRAPS Update is to summarize MPCA work completed in the second cycle of the Watershed Approach, to compare and contrast Cycle I and Cycle II results in order to assess changes and progress towards Cycle I goals, and to update estimated strategies necessary to restore or protect surface water quality within the watershed.

The primary ***audience*** for the WRAPS Update is local planners and natural resource managers; the secondary audience may include decision-makers, neighboring downstream states, agricultural business, governmental agencies, and other stakeholders. The scope of the report is surface water bodies and their uses as currently assessed by the MPCA, including issues impacting or relevant to these surface water quality beneficial uses.

Minnesota has adopted a watershed approach to address the state’s 80 major watersheds. The Minnesota watershed approach incorporates **water quality assessment, watershed analysis, public participation, planning, implementation, and measurement of results** into a 10-year cycle that addresses both restoration and protection.

Along with the watershed approach, the Minnesota Pollution Control Agency (MPCA) developed a process to identify and address threats to water quality in each of these major watersheds. 

This process is called Watershed Restoration and Protection Strategy (WRAPS) development. The WRAPS reports have two parts: impaired waters have strategies for restoration, and waters that are not impaired have strategies for protection.

Waters not meeting state standards are listed as impaired, and total maximum daily load (TMDL) studies are developed for them. The TMDLs are incorporated into the WRAPS reports. In addition, the watershed approach process facilitates a more cost-effective and comprehensive characterization of multiple water bodies and overall watershed health, including both protection and restoration efforts. A key aspect of this effort is to develop and use watershed-scale models and other tools to identify strategies for addressing point and nonpoint source pollution that will cumulatively achieve water quality targets. For nonpoint source pollution, the WRAPS report informs local planning efforts, but ultimately the local partners decide what work will be included in their local plans. The WRAPS report also serves as a building block for addressing the U.S. Environmental Protection Agency’s (EPA) Nine Minimum Elements of watershed plans, to help qualify applicants for eligibility for Clean Water Act Section 319 implementation funds.

1. Watershed description (Section Heading)

**[Content Description:** Provide basic information on the watershed and high-level watershed attributes relevant to surface water quality.

***[Insert Watershed Map (e.g., land cover map)]***

**Note:** Key information only; keep minimal and short. Include only maps and information that are relevant to the surface water quality “story.”

Some items that could be in the description could be placed in the Sources/Risks section or other sections of the report, depending on how the WRAPS Update Team wants to organize information. Maps may be produced throughout the watershed cycle at different points. It would be appropriate to consider map development early on and throughout the watershed cycle as more information is made available.

**Content Menu considerations:**

* Watershed “Key” (Streams, Lakes, Subwatersheds, Counties, Cities, Major Highways, etc.) map and narrative
* Maps and graphics – land use, elevation, soils, tribal lands, geology, ownership and narratives
* Unique history and land uses (e.g., forestry, peat mining, feedlots, or other industry)
* Social capacity and partnerships in the Watershed (Lakeshore Association, Lake Improvement Districts), Active Non-government organizations (The Nature Conservancy, Forest Guild, Ducks Unlimited etc.), Watershed Districts, Watershed Management Organizations etc.
* Groundwater to surface water connectivity
* Traditional Ecological Knowledge provided by tribal partners.

1. Assessing water quality (Section Heading)

**Content Description:** Provide high-level information on how water quality is assessed via the watershed approach procedures. Introduce key water quality terms that will be used in the report (e.g., impaired, stressor, beneficial use). EAO web pages may have generally useful text with references to more detailed evaluative reports to point a reader to more detailed information.

**Note:** Provide basic explanations of the processes used to assess water quality, and reference applicable reports and resources for more detailed information. Mention briefly any key or significant change and how to find more detailed information.

**Content Menu Considerations:** High-level information and terms and definitions about water quality monitoring (standards, assessment, SID, modeling).

* Map of monitoring locations (Cycle I vs. Cycle II or just Cycle II: intensive watershed monitoring (IWM; bio, 10x, and Surface Water Assessment Grant, Watershed Pollutant Load Monitoring Network, Volunteer Monitoring program sites, other special sites from partners, locally selected/influenced sites etc.). Consult with EAO Surface Water Monitoring program on reports, maps, and data produced as part of Cycle II monitoring and assessment products.
* Water quality beneficial uses flow chart graphic
* Differences between Cycles
* Tiered Aquatic Life Use, microbial sources, other changes and updates pertinent to assessment
* Changes in water quality standards since Cycle I (e.g., river eutrophication standards) Changes to Municipal Separate Storm Sewer Systems
* Municipal Separate Storm Sewer Systems (MS4) Permit language, new permitted discharges, wastewater treatment facility (WWTF) expanded wasteload allocations (WLAs), TMDL deferments and re-categorizations.
* Surface water drinking water impairments where defined (Table and map/case by case)

1. Watershed Condition (Section Heading)

**Content Description:** Summarize the monitoring and assessment status of waters, including the status (current condition: pollutants and stressors), trends (changes in condition), and the sources/risks (causes of condition), and goals. Avoid repeating a lot of information already existing in reports, rather use references. Indicate changes from Cycle I to Cycle II. It will also be important to note what work identified during Cycle 1 has not yet been addressed, or whether it has been incorporated yet into 1W1P.

**Note:** This information can be broken down by parameter, by region, or by another organizing unit. Highlight changes between Cycle I and Cycle II like new listings, de-listings or recategorizations.

**Content Menu Considerations:**

* A summary of “how the watershed is doing” – narrative style, derived from professional judgment of the watershed team; start off with some good prose rather than going right into maps and figures and bullets. Check in with communications staff for guidance.
* Beneficial Use Map(s) (i.e., Aquatic Life, Aquatic Recreation, Aquatic Consumption or other as per watershed)
* Assessments(maps) for individual parameter(s) (pollutants, stressors, bio-impairments)
* Lake Index of Biological Integrity (IBI) from Minnesota Department of Natural Resources ([DNR] check with EAO assessment leads for DNR contact if unknown)
* Monitoring and assessment report summary. New listings and de-listings, assessment results from deferred reaches. Clarify, if needed, changes from Cycle 1. For example, water resources being assessed for the first time in data history, or resources that were meeting standards but now are failing. Some additional language may be needed. Check with EAO staff if clarifying language is needed.
* Provide state-wide perspective using watershed pollutant Load network, load, or yield map(s), and WPLMN daily pollutant load plots ([WPLMN Data Viewer](https://public.tableau.com/app/profile/mpca.data.services/viz/WatershedPollutantLoadMonitoringNetworkWPLMNDataViewer/WPLMNBrowser)). Watershed nutrient reduction strategies may be discussed here. Where practical, use tableau-based Nutrient Reduction Strategy tracking applications ([MN Nutrient Reduction Strategy BMP Summary](https://public.tableau.com/app/profile/mpca.data.services/viz/MinnesotaNutrientReductionStrategyBMPSummary/MinnesotaNutrientReductionStrategyBMPSummary)) for statewide or major drainage area results. Also, consider using the Watershed Pollutant Load Reduction Calculator Tool to assess the environmental impacts of practices.
* Hydrological Simulation Program Fortran (HSPF) stream model results (consider sediment, nitrogen, phosphorus; load/volume; mg/L] (Placeholder for future HSPF/MN River Water Storage Project-derived maps/visualization tools to link to WRAPS – Expecting this project to be completed in June 2024 with data published on the GDRS or tableau app later in 2024 after project completion and metadata for the GIS layers are created).
* Provide other model summaries or short descriptions that may have been used in the watershed.
* Subwatershed assessment information if available from study.
* Water quality related products not specifically produced by the MPCA (i.e., county culvert surveys/indexes if fish habitat and passage has been considered an issue).
* Status of certain influencing sources and information from other programs (e.g., WWTF influence on phosphorus could also go in sources or trends)
* New studies related to status of water bodies
* Pie charts or summary counts of numbers of water bodies, number assessed, impaired, supporting, and need more data (by beneficial use and/or by pollutant and stressor)
* Land use changes, considerations, ongoing issues etc. May include BWSR/U of M cover crop and crop residue trend data available on the MN GEO Commons and U of M MOSH site found here: [Remote Sensing Analysis of Crop Residue Levels and Cover Crop Emergence](https://gisdata.mn.gov/dataset/env-cov-crop-res).
* Link to 1W1P document, if available.
  1. Water quality trends (Part Heading)

**Content Description:** Present water quality trends information, summarizing how the status has changed over time. Indicate how the trend has changed since Cycle I. Optionally, present trends on factors that impact water quality.

**Notes:** This section could provide limited scope of water quality trends via statistical analysis or could be used to summarize broad trends in aspects influencing water quality. The word "trends" like "assessment" has a rigorously specific meaning in the MPCA, be careful in its use describing data. Use MPCA guidance or DNR guidance materials or check other professionals for clarity. EAO assessments include a trend comment over time for lakes and streams, as do Environmental Data Access evaluations, see the web page. Other trend information for sentinel lakes are found in the published reports. Best advice, refer to a subject matter expert for help if needed.

**Content Menu Considerations:**

* Reported statistically significant water quality trends (typically, only have these for WPLMN or U.S. Geological Survey sites and for lake clarity, other trends may emerge after a decade or more).
  + Table (multiple for comparison)
  + Plot (typically individual trend of one water body)
* Trends in biological data
* Trends in parameters affecting water quality: land use, climate (See DNRs Watershed Scale climate reports), etc. including adding major climate summaries published by the DNR on a HUC-8 level
* Trends from partner organizations (e.g., Met Council, DNR Stream hydro-geomorphology)
* Trends in areas of best management practices (BMPs) implemented by landowners, Local Government Units (LGUs), and others.
* Brief summary of implementation activity occurring since last WRAPS that contributes to water quality goals for waters within the watershed and downstream. Summarize BMP implementation that also address N and P at the major basin level (i.e., did any of the practices check the boxes of the BMPs listed on pages 15 and 16 of the NRS executive summary found here: [Minnesota Nutrient Reduction Strategy – Executive Summary](https://www.pca.state.mn.us/sites/default/files/wq-s1-80a.pdf)). Also, consider downstream goals found here: [Watershed Nutrient Loads to Accomplish Minnesota’s Nutrient Reduction Strategy Goals](https://www.pca.state.mn.us/sites/default/files/wq-s1-86.pdf).

Table 1. Water quality trends of the Pomme de Terre River at Appleton (just upstream from the mouth of the river), green values indicate an improving trend in water quality for that parameter while red values indicate a degrading trend in water quality for that parameter.

|  |  |  |
| --- | --- | --- |
| Parameter | Historical trend (1971-2009) | Recent trend (1995-2009) |
| Total suspended solids | no trend | -38% |
| Biochemical oxygen demand | -56% | no trend |
| Total phosphorus | -42% | no trend |
| Nitrite/Nitrate | +280% | no trend |
| Chloride | +89% | no trend |

* 1. Sources, risks, and natural conditions

**Content Description:** Describe and discuss the reasons for the current water quality. Include: source assessment results (by source type and/or geography) for impaired areas, natural background conditions contributing to an impairment, or pristine/natural conditions of supporting waters. Present source/risk assessment results for areas supporting healthy water resources and meeting standards.

**Notes:** Provide background source information relevant to multiple sources and provide the specific source assessment results by parameter. For predominantly supporting areas, this may be more of a narrative of the risks. Information in this section could closely relate to trends information, and report organization needs to be carefully crafted.

**Content Menu Considerations:**

* Source assessment by parameter (pie chart, table, or narrative)
* Model results (pie charts for sources by land use and yield maps for sources by geography)
  + HSPF model results, by source type where applicable (may include point source, nonpoint source by land cover category presented as mass/acre, channel sources; sediment, nitrogen, phosphorus, water) and narrative
* Summary of phosphorus and nitrogen MPCA study results at the major watershed, major river basin, and statewide Nutrient Reduction Strategy scales - (pie charts)
* Watershed/region finger printing or other specific work (e.g., sediment finger printing, lake coring, other)
* Other developed analyses (e.g., bacteria calculators, spreadsheet examples in the WRAPS Update Tool Kit)
* SID sources table information
* Microbial source tracking or other bacterial targeting work (beaches, eDNA fingerprinting, risk assessment, etc.)
* Enhanced source assessment studies (see guidance)
* Feedlot map and narrative
* Point sources (National Pollutant Discharge Elimination System [NPDES]/ State Disposal System [SDS] WWTF Industrial + Domestic) map and narrative including changes since Cycle I and progress towards meeting TMDL WLAs – Note: The Wastewater N Strategy (separate from the overall NRS), still under development, may result in a list of facilities or a reference map to use to identify progress towards meeting wastewater N strategy goals. We will need to revisit this topic for this section at a later time.
* New building/land alteration permits
* Wetland loss/fill/alteration permits or new wetland acres
* Public drainage system projects within the past ten years (maintenance, repairs, improvements, benefit redeterminations, etc. Include flood damage reduction projects (e.g., Red River Basin), diversion projects.
* Subsurface Sewage Treatment System (SSTS)/sewer extensions/other sewer relevant maps and narrative
* MS4s(NPDES/SDS), Industrial storm/other relevant municipals map and narrative
* Altered watercourse maps; wetlands map and narrative
* Tile drained estimate map and narrative (historically drained, new drains, drainage arrangement, maps/table of projects, repairs, improvements, re-determination of benefits, 103E regulated systems etc.)
* Links to and information on other local reports regarding the sources/risks (e.g., Ann Lake Internal Load Feasibility Study)
* DNR Evaluation of Hydrologic Change (EHC) summary, if available. (Note: The DNR only produced EHC summaries for watersheds with established stream gaging stations that had adequate data. Not all watersheds will have an EHC.

1. Climate change

The MPCA staff via a lateral team are working on a watershed focused climate change guidance to include a general statement about climate change in watersheds. Some groups have modeled climate change scenarios and may choose to provide comment on those efforts. The DNR, in general, has useful information on websites including broad scale climate change condition scenarios for various ecoregions of Minnesota. These scenarios indicate changing land cover, increased or decreased precipitation respectively, and response variables in lakes and streams, wetlands, and groundwater. Check with DNR staff. Some communities may have done climate planning projects.

**Content Menu Considerations**:

* DNR Evaluation of Hydrologic Change summary-check with local hydrologist
* Could also include summary of DNR’s monthly Hydrologic Conditions Reports
* Precipitation change maps (DNR Climatology graphics)
* Lake level graphics/narrative
* Presence of drought narrative
* Locally observed recent impacts, significant storms or floods of record etc.
* Impacts on recreational uses (swimming, fishing) from algae blooms, reduced ice cover, shifting fish populations, etc.
* Inventory of interagency monitoring locations that are tracking parameters of interest related to climate change
* Discuss where in the watershed are we committed to long-term data collection for flow, water temp, fish, bugs?
* Info/strategies from the recently released Climate Action Framework, particularly the “natural and working lands” section.
* BMPs that should be emphasized to concurrently meet water quality goals and climate action goals (e.g., resiliency to climate extremes, GHG emission reductions, carbon storage in soil).

1. Environmental justice

The MPCA Environmental Justice (EJ) webpage provides a number of helpful resources to use in addressing this issue in your work. <https://lorax.pca.state.mn.us/resources/environmental-justice>

The Watershed Division EJ Lateral Team has also produced a guidance document for project managers to use as they are developing EJ considerations in their watershed. That guidance can be found here:

<https://document.pca.state.mn.us/AppNetDocPop/docpop/docpop.aspx?clienttype=html&docid=3885674>

* Content Menu Considerations:
* EJ Map
* Narrative identifying EJ community
* Narrative summary of key “interface points” (if known), at which EJ communities

encounter water resources in the watershed . For example are there key fisheries that

minority communities “use?”

* Traditional Ecological Knowledge concerns from tribal partners

1. Goals to meet water quality standards and fully supporting uses

**Content Description:** Recommended, but narrative is flexible as to presentation.

Water quality goals are developed and presented for water bodies to reach full support, halt declining trends, and maintain support of standards. Ten-year (interim targets) may be developed and presented. Discussion should occur with local partners on how best this information could inform the development of 1W1P goals or update existing goals. Detail the water quality goals by parameter with as much numeric and geographic specificity as possible. Synthesize multiple goals (by areas: subwatershed, major watershed, basin; and by types: TMDL, state level strategy, downstream TMDL, etc.) into one goal per area (either subwatershed or major watershed scale). Indicate how the goals have changed since Cycle I.

**Note:** This is probably the best location to report progress made towards Cycle I water quality goals. Providing this information in an understandable (synthesized/summarized) and usable format is key. For instance, information like the maximum pollutant reduction per flow regime data (commonly provided in TMDL tables) can be complicated and not necessarily the most usable. Please do list all TMDLs completed in the WRAPS Update timeframe.

**Content Menu Considerations:**

* Watershed specific goals for each parameter (pollutants, stressors, and biology) developed from multiple data forms including WPLMN data, TMDLs, state nutrient reduction strategy, other data or strategies
* Altered hydrology goals and flow alterations
* Index of Biological Integrity (IBI) goals
* Surrogate goals for non-pollutant parameters (e.g., modeling results showing parameter reductions estimated to meet F-IBI)
* Minnesota Stream Habitat Assessment (MSHA) for habitat goals
* Nitrogen and phosphorus goals from Minnesota Nutrient Reduction Strategy and associated NRS web site documents. Goals include HUC8 outlet reductions and goals for specific waters within the HUC8, and could include both dissolved and total N and P.
* Sediment and water storage goals from applicable sediment reduction strategies, if available for your area. Could also include classification and fingerprinting (organic vs inorganic, grain size, bed load vs suspended and impacts on habitat)
* Average or surrogate reductions by parameter at the watershed’s scale
* Identify specific issues faced in the watershed (blue green algae blooms, fish kills, high water level fluctuation)
* Percent reduction calculated by current condition versus goal condition
* Goals table – present goals for all pollutant and stressors at the watershed scale (or subwatershed scale) in one clean table.
* 10-year targets (optional in new legislation)
* TMDL report links, summary, and/or synthesis of that information
* Cycle I goals compared to Cycle II goals/progress made towards Cycle I goals. Have de-listings or significant adjustments occurred?
* Evaluate progress towards 1W1P 10-year goals (if those goals pertain to water quality, adoption/landscape goals should go in the strategies portion of the WRAPS Update)
* Baseline trend analysis, as appropriate for the given metric, and using that information to help set goals.
* Healthier Watersheds BMP map and narrative

1. Restoration and protection

**Content Description:** Summarize information on how the water quality goals can be reached and areas where work needs to be done. This could be an update from Cycle 1 including what has worked, what no longer is appropriate, new strategies, etc. This could highlight changes in strategies from Cycle 1. Other protection reports may have been developed and should be commented on or summarized here. See for example the North Fork Crow River Lake Protection Report.

**Notes:** While the entire WRAPS Update should inform local planning, Section 8 and Section 9 are the relevant sections to discuss how the WRAPS will inform comprehensive local water management plans and comprehensive watershed management plans.

1. Strategies

(Include link to new strategies table or an alternate format as decided by the update team)

**Content Description:** Summarize the:

1) spectrum of scientifically supported strategies, and

2) socially supported strategies and other relevant aspects of public outreach work and/or findings.

Identify which of these strategies were selected in a strategies table or alternate format with as much numeric and geographic specificity as possible or appropriate. Indicate progress towards Cycle I strategies and revisions to strategies from Cycle I to Cycle II.

**Notes:** A strategy “table” is **NOT REQUIRED**. A strategy table is still acceptable, but the WRAPS Update Team may find new ways to supply this information. It is also appropriate to adapt the Cycle I strategy table if the Update Team determines it is useful. This is probably the best section to reflect what physical or social strategies were or were not implemented since Cycle I and potentially offer insight or analysis.

**Content Menu considerations:**

* Information/summary/links to scientifically supported strategies by land use (e.g., Minnesota Department of Agriculture [MDA] BMP handbook, Natural Resources Conservation Service [NRCS] Technical Field Manual, MN Nutrient Reduction Strategy with associated website and dashboards - Note: NRS dashboard and other content intended to support PMs are being developed with a target release date by 2025)
* Stormwater manual
* Stream banks, flood plain
* Lakes and wetlands
* Forestry
* Critical Habitat/Resource areas
* Connectivity barriers
* Healthier Watersheds BMP summary maps
* Culvert inventory
* Watershed Model scenarios considerations (show examples of BMP scenarios (types and adoptions) that can meet goals
  + Various model outputs (HSPF SAM, SWAT, MPCA’s Watershed Load Reduction Calculator Tool, water storage, ag ditches, PTMApp, ACPF)
  + Nitrogen BMP, phosphorus BMP spreadsheet scenarios on Lake Pepin Full Cost Accounting
  + Climate change scenarios
  + Subwatershed assessment information, e.g., cost benefit information
  + Stormwater model/scenario tools
* Socially supported strategies discussion
  + Summarize 1W1P Status, Partnerships/Entities that emerged as a result of the planning and cite/link to pertinent parts of the plan as they relate to WRAPS products.
  + Summarize civic engagement projects and findings, focusing on obstacles, opportunities, and further steps/recommendations. Note: Cycle I citizen involvement used civic engagement as a method. Later evolved to public participation.
  + Evaluate public involvement efforts and effectiveness (what works to achieve cleaner water) and develop activity recommendations – is there a better way to continue? (e.g., get contact information and follow up in one year to see if there is any lasting impact/behavioral change)
  + Results Based Accountability – correctly define purpose of activity to allow for effective evaluations. (<https://www.pca.state.mn.us/water/healthier-watersheds>)
  + Link to Cycle I Civic Engagement project information. Find reports on watershed web pages.
  + Definitions/images/graphics that help explain civic engagement/public involvement
  + Lake Superior Lakewide Action Management Plan strategies, and specific Clean Water Fund Soil and Water Conservation District capacity initiative priority projects
* Report on implementation (BMPs installed) including associated water quality improvements
* [Tracking the Actions Taken – Healthier Watersheds Report](https://www.pca.state.mn.us/business-with-us/healthier-watersheds-tracking-the-actions-taken)
* Additional BMP geospatial data can be found here: [State Funded BMPs BWSR eLink](https://gisdata.mn.gov/dataset/env-state-cons-bmp-locs)
  + Wastewater upgrades, stormwater improvements, acres of BMPs when reported via sources like accountability/healthier watersheds report, which is data since 2004 – could use graphic from this specific for a watershed)
  + Analysis of why progress toward water quality goals is or is not being met.
  + Include a link or summary of the accountability report and healthier watersheds webpage. Possible details to include would be number of BMPs, estimated reduction, acres of BMPs adopted, types of BMPs implemented, etc.
* Strategies table/other format: Selected Strategies – show selected strategies and adoption rates selected that are estimated to meet the goals for all pollutants and stressors (ideally at same scale that the goals and source assessment are presented) (link to new strategies table).

1. Priorities

**Content Description:** Identify and justify priority areas or issues for water quality restoration and protection. Local considerations should also be taken into account. Summarize other priority areas for multi-benefits (in addition to water quality) that are important to local staff and citizens. Summarize the selected priority areas from Cycle I planning efforts.

**Notes:** This section offers a good opportunity of how to translate WRAPS data and information to priority areas that could be used for planning. Ideally, the WRAPS Update Team will work with local partners to make this table/information more usable.

**Content Menu Considerations:**

* Table/narrative of priority types and specific examples, clarifying the difference between water quality goals and other/multi-benefit goals
  + List/name priorities for protecting or improving water quality (for example, protecting the best lakes or focusing pollution reduction efforts on a subwatershed that is clearly the major loader).
* Maps of priority areas (derived by scientific principles) including how regional or state priority maps (i.e., environmental justice map and/or nutrient reduction strategy priority watershed maps) relate to this watershed. NOTE: this is intended as a placeholder for future priority mapping links.
* List of “waters near threshold,” formerly known as “nearly/barely”.
* Locally identified specific priority areas (could be mapped in a workshop, for example).
* Compare/narrative/analysis of 1W1P priority areas. See Figure 1 below for a flowchart of the overlap and information sharing between WRAPS development and any 1W1P effort.
* Summarize priority areas and issues that have thus far been identified in the watershed (including anything from 1W1P).
* Provide water quality priorities by 1W1P planning/priority area (where applicable).
* Summary of tools for prioritizing and targeting (may be most appropriate in the appendix).
* List out any new or updated tools, data, etc. that may be used to further identify priorities or BMP specific priorities (for example Zonation, choosing which cities are most important for flood control, stating that one BMP is priority over another, etc.) should only be included when it’s wanted and selected by local partners. Agency staff should avoid dictating priorities.
* Surface water as a drinking water source, especially when impaired.

1. Monitoring locations/Monitoring plan (alternate to covering in Background information)

**Content Description:** Describe additional water quality monitoring needs.

**Notes:** This information may be worked into a separate section of the WRAPS. If a discrete process is undertaken with local partners to identify monitoring (which could be reflected in the 1W1P if local partners want), then carving out this separate section is probably warranted.

1. Public participation/Public notice

The TMDLs will continue public noticing as described in the TEMPO WIKI process. The TMDLs and WRAPS should go through a public notice/public comment concurrently when it is deemed appropriate for that shared effort. The WRAPS public noticing may be more discretionary for a WRAPS Update. Some WRAPS Update Teams may opt for the more formal and traditional public notice and public comment. Follow the procedure from TEMPO WIKI. Engage with Communications staff early to develop the communications tactics that will best suit the needs of the watershed story and communication strategy for public notice/public comment. Some Update Teams may opt out of a formal public notice due to the style or version of Update that was produced. It may be that an informal public meeting is sufficient for a public process. Discuss with your team and supervisor. For Public Notice/Public Comment activities, be aware that a software package titled “Smart Comment” will be utilized to manage public comments. Follow procedures and information provided by Communications and Watershed staff tasked with “Smart Comment” management and web pages.

Public notice for comments

Providing an opportunity for public comment is an important part of the MPCA’s watershed work and public expectations. If there was extended time given to the public comment period, please indicate that and why extended time was granted. Examples of items that one could summarize include specific public comments that were felt to be special or a common theme running through multiple comments. At a minimum, please include this statement:

An opportunity for public comment on the draft WRAPS report was provided via a public notice in the *State Register* from [XXX] through [XXX]. There were [xx] comments received and responded to as a result of the public comment period.

1. References

[Include any references cited in the text such as SID reports, monitoring and assessment reports, TMDLs, documentation for tools and implementation strategies.]

When inserting URLs in the document, please insert only the most important links and select links that should have the most longevity. Instead of inserting URLs in the body of the report, **reference** documents in the report and add links to the reference citations in that section. Be consistent in your citation style.

When citing MPCA documents, hyperlink to the webpage where the document is posted and not the PDF document link. This will eliminate any future link updates if and when webpages are updated. Examples below:

Chandrasekaran, R., M. J. Hamilton, P. Wang, C. Staley, S. Matteson, A. Birr, and M. J. Sadowsky. 2015. Geographic Isolation of *Escherichia coli* Genotypes in Sediments and Water of the Seven Mile Creek — A Constructed Riverine Watershed. Science of the Total Environment 538:78–85. [https://doi.org/10.1016/j.scitotenv.2015.08.013](https://gcc01.safelinks.protection.outlook.com/?url=https%3A%2F%2Fdoi.org%2F10.1016%2Fj.scitotenv.2015.08.013&data=02%7C01%7Ckaren.evens%40state.mn.us%7C7041f18c66f24fba538608d7ebbc9d11%7Ceb14b04624c445198f26b89c2159828c%7C0%7C0%7C637237067625026406&sdata=SHyMq0sgXrbcVTY4Soc%2FX7HGva6ilVKII9cB4D7I1Io%3D&reserved=0)

EPA (U.S. Environmental Protection Agency). 2013. A Long-Term Vision for Assessment, Restoration, and Protection under the Clean Water Act Section 303(d) Program. December 2013. [https://www.epa.gov/sites/production/files/2015-07/documents/vision\_303d\_program\_dec\_2013.pdf](https://gcc01.safelinks.protection.outlook.com/?url=https%3A%2F%2Fwww.epa.gov%2Fsites%2Fproduction%2Ffiles%2F2015-07%2Fdocuments%2Fvision_303d_program_dec_2013.pdf&data=02%7C01%7Ckaren.evens%40state.mn.us%7C7041f18c66f24fba538608d7ebbc9d11%7Ceb14b04624c445198f26b89c2159828c%7C0%7C0%7C637237067625036363&sdata=FuLl3c%2B0268E6TODIjc8wTiPpM9CikqmKY%2BJbYJEdwk%3D&reserved=0)

MPCA. 2022. Root River Watershed Stressor Identification Update. Document number: wq-ws5-07040008b). <https://www.pca.state.mn.us/watershed-information/root-river>

1. Appendix