

# **North Dakota Total Maximum Daily Load Prioritization Strategy**

**Final  
January 2017**

**North Dakota Department of Health  
Division of Water Quality  
Surface Water Quality Management Program**



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## BACKGROUND AND PURPOSE

A Total Maximum Daily Load (TMDL) is a pollution budget and includes a calculation of the maximum amount of a pollutant that can occur in a waterbody and allocates the necessary reductions to one or more pollutant sources. A TMDL serves as a planning tool and potential starting point for restoration or protection activities with the ultimate goal of attaining or maintaining water quality standards. In North Dakota, the North Dakota Department of Health, Division of Water Quality's Watershed Management Program (WMP) is responsible for the development, implementation and delivery of several water quality programs, including the TMDL Program. There are two components to the TMDL Program, both which are required under Section 303(d) of the Clean Water Act and its accompanying regulations (CFR Part 130 Section 7).

Part one of the program requires each state to identify individual waterbodies (i.e., river, streams, lakes and reservoirs) which are considered water quality limited and which require load allocations, waste load allocations and TMDLs. For North Dakota, this list of impaired waters is prepared and submitted to EPA every two years in the form of the "Integrated Section 305(b) Water Quality Assessment Report and the Section 303(d) List of Impaired Waters Needing Total Maximum Daily Loads (TMDLs)" (aka the Integrated Report).

Following the development of its list of impaired waters needing TMDLs, the second part of the program involves the development of TMDLs for waters on the list. Prior to this strategy, TMDL development pace, or the number of TMDLs to be completed each year, was determined during each two year Integrated Reporting cycle with annual updates. Under the old prioritization system TMDL development priorities were determined by two main factors: 1) availability of data to complete the TMDL; and 2) public interest to implement the recommendations of the TMDL in the form of a Section 319 Nonpoint Source Project Implementation Plan or similar watershed management plan.

Historically, TMDL priorities and the pace of TMDL development for many states was driven by lawsuits and settlement agreements that dictated how many TMDLs a state was required to complete and how long the state had to complete their TMDLs. As the TMDL settlement agreements for many states were nearing completion, EPA began collaborating with the states and the Association of Clean Water Administrators (ACWA) to develop a new national vision and goals for the Section 303(d) TMDL program. The TMDL Program "Vision" and goals were finalized in 2013 (<http://water.epa.gov/lawsregs/lawsguidance/cwa/tmdl/programvision.cfm>). The following is the vision statement for the TMDL Program.

*"The Clean Water Act Section 303(d) Program provides for effective integration of implementation efforts to restore and protect the nation's aquatic resources, where the nation's waters are assessed, restoration and protection objectives are systematically prioritized, and Total Maximum Daily Loads and alternative approaches are adaptively implemented to achieve water quality goals with the collaboration of States, Federal agencies, tribes, stakeholders, and the public."*

Implementation of the vision is organized around goals for the following six vision elements:

**“Prioritization”** For the 2016 integrated reporting cycle and beyond, States review, systematically prioritize, and report priority watersheds or waters for restoration and protection in their biennial integrated reports to facilitate State strategic planning for achieving water quality goals.

**“Assessment”** By 2020, States identify the extent of healthy and CWA Section 303(d) impaired waters in each State’s priority watersheds or waters through site-specific assessments.

**“Protection”** For the 2016 reporting cycle and beyond, in addition to the traditional TMDL development priorities and schedules for waters in need of restoration, States identify protection planning priorities and approaches along with schedules to help prevent impairments in healthy waters, in a manner consistent with each State’s systematic prioritization.

**“Alternatives”** By 2018, States use alternative approaches, in addition to TMDLs, that incorporate adaptive management and are tailored to specific circumstances where such approaches are better suited to implement priority watershed or water actions that achieve the water quality goals of each State, including identifying and reducing nonpoint sources of pollution.

**“Engagement”** By 2014, EPA and the States actively engage the public and other stakeholders to improve and protect water quality, as demonstrated by documented, inclusive, transparent, and consistent communication; requesting and sharing feedback on proposed approaches; and enhanced understanding of program objectives.

**“Integration”** By 2016, EPA and the States identify and coordinate implementation of key point source and nonpoint source control actions that foster effective integration across CWA programs, other statutory programs (e.g., CERCLA, RCRA, SDWA, CAA), and the water quality efforts of other Federal departments and agencies (e.g., Agriculture, Interior, Commerce) to achieve the water quality goals of each state.

Describing a process and plan for prioritizing North Dakota’s impaired waters for TMDL development is fundamental to meeting the TMDL vision prioritization goal and is the purpose of this document. This North Dakota TMDL prioritization strategy describes the WMP’s approach for prioritizing TMDL development for federal fiscal years 2016-2022.

## **PRIORITIZATION STRATEGY AND PERFORMANCE MEASURE**

Prioritization is defined as the systematic ranking in order of importance. We live in a world of limited resources - limited in terms of time, manpower and money. Prioritization is therefore, necessary to wisely allocate our limited resources where they can do the most good. With respect to TMDL development and watershed planning, the WMP does not have sufficient technical or financial resources to address all the impaired waterbodies and watersheds identified on the State’s TMDL list immediately. For this reason it is necessary to develop an efficient and effective method to identify and target priority waterbodies and watersheds within the State where TMDLs and watershed plans are needed the most and where the implementation of these TMDLs and watershed plans are likely to be the most successful in improving water quality and restoring and

protecting beneficial uses.

To accomplish the TMDL Program's prioritization goal of systematically prioritizing and reporting on priority watersheds or waters for restoration and protection and to facilitate State strategic planning to achieve water quality protection and improvement, the WMP has developed a two-phased strategy for prioritizing impaired waters for TMDL development and watershed planning.

In order to track and measure progress in meeting the prioritization goal, EPA has developed a new national water quality program performance measure termed WQ-27. WQ-27 is defined as the "extent of priority areas identified by each State that are addressed by EPA-approved TMDLs or alternative restoration approaches for impaired waters that will achieve water quality standards. These areas may also include protection approaches for unimpaired waters to maintain water quality standards."

Since progress in meeting the WQ-27 measure is based on the State's list of priority impaired waters, a primary objective of TMDL prioritization strategy is to support the national program measure that will be used to set the baseline for achieving progress in meeting the measure. Specifically, the TMDL prioritization strategy will be used to identify:

- A list of priority waters targeted for TMDL development or alternative approaches in the next two years (near term); and
- A list of priority waters scheduled for likely TMDL development or alternative approaches over the through 2022 (long term).

Additionally, this strategy provides the strategic rationale for the State in setting these near term and long term TMDL development and watershed planning priorities.

In developing its list of near term and long term TMDL development and watershed planning priorities, the WMP will use the list of impaired waters as provided in the 2014 Integrated Report ([http://www.ndhealth.gov/WQ/SW/Z7\\_Publications/IntegratedReports/2014\\_North\\_Dakota\\_Integrated\\_Report\\_Final\\_20150428.pdf](http://www.ndhealth.gov/WQ/SW/Z7_Publications/IntegratedReports/2014_North_Dakota_Integrated_Report_Final_20150428.pdf)).

As stated earlier, TMDL prioritization will be implemented in two phases, the first of which has been completed and is discussed below as Phase 1. Phase 2, also discussed below, will be completed as WMP's Basin Water Quality Management Framework is implemented.

## **PHASE 1 PRIORITIZATION**

Prioritization completed under Phase 1 was a review of the Section 303(d) list of impaired waters needing TMDLs included in the 2014 Integrated Report. The purpose of the review was two-fold. One, to identify as low priority, waterbodies and/or waterbody-pollutant combinations listings which had insufficient data for immediate TMDL development, where there was uncertainty regarding the basis for the impairment listing, or where the TMDL was beyond the technical and financial ability of the WMP; and two, to identify as high priority (near term and long term), impaired waterbodies and/or waterbody/pollutant combinations where there are currently sufficient data available for TMDL development, where there is strong local support for

a TMDL development project, and/or where the WMP has the technical resources and capability to develop the TMDL.

The new TMDL vision also affords States the opportunity to address their priority impaired waters through Alternative Plans rather than through TMDL development. By definition, TMDLs are a plan that simply describes a pollutant load reduction necessary to meet water quality standards. There is no requirement in a TMDL to implement BMPs or other conservation practices that will result in water quality improvement. Alternative Plans are thought of as a new way of doing water quality business whereby the development of a full blown TMDL is suspended while a plan is implemented that addresses the impairments in a watershed.

The TMDL prioritization strategy recognizes Alternative Plans as a practical alternative to TMDLs for many waterbody impairments. Since implementation is a requirement of Alternative Plans, they have the opportunity to resolve many water quality impairments in the State. The North Dakota TMDL Prioritization Strategy, therefore, also recognizes impaired waters listings as high priority where the waterbody impairment(s) are due exclusively to nonpoint sources and where there is a Section 319 Nonpoint Source Project Implementation Plan (PIP) in place that could address the listed impairment(s). In these cases, the Section 319 Nonpoint Source PIPs will have many of the components of a TMDL, such as a pollutant reduction target, a load allocation, and the identification of sources causing the impairment. In many cases, multiple waterbody/pollutant combinations were identified and prioritized in watersheds which can be addressed by a single Section 319 Nonpoint Source PIP. In these cases the Section 319 Nonpoint Source PIP will be revised to address all of the waterbody/pollutant combinations in the watershed and the sources causing the impairment(s).

While there are a number of impaired waterbodies identified as low priority for both near and long term TMDL development, they may be high priority for other WMP programs (e.g., education and outreach, monitoring and assessment, water quality standards).

Priorities identified for immediate TMDL development are also based on the impairment as it relates to State water quality standards. E. coli has a numeric water quality standard and is given high priority for TMDL development where data are available.

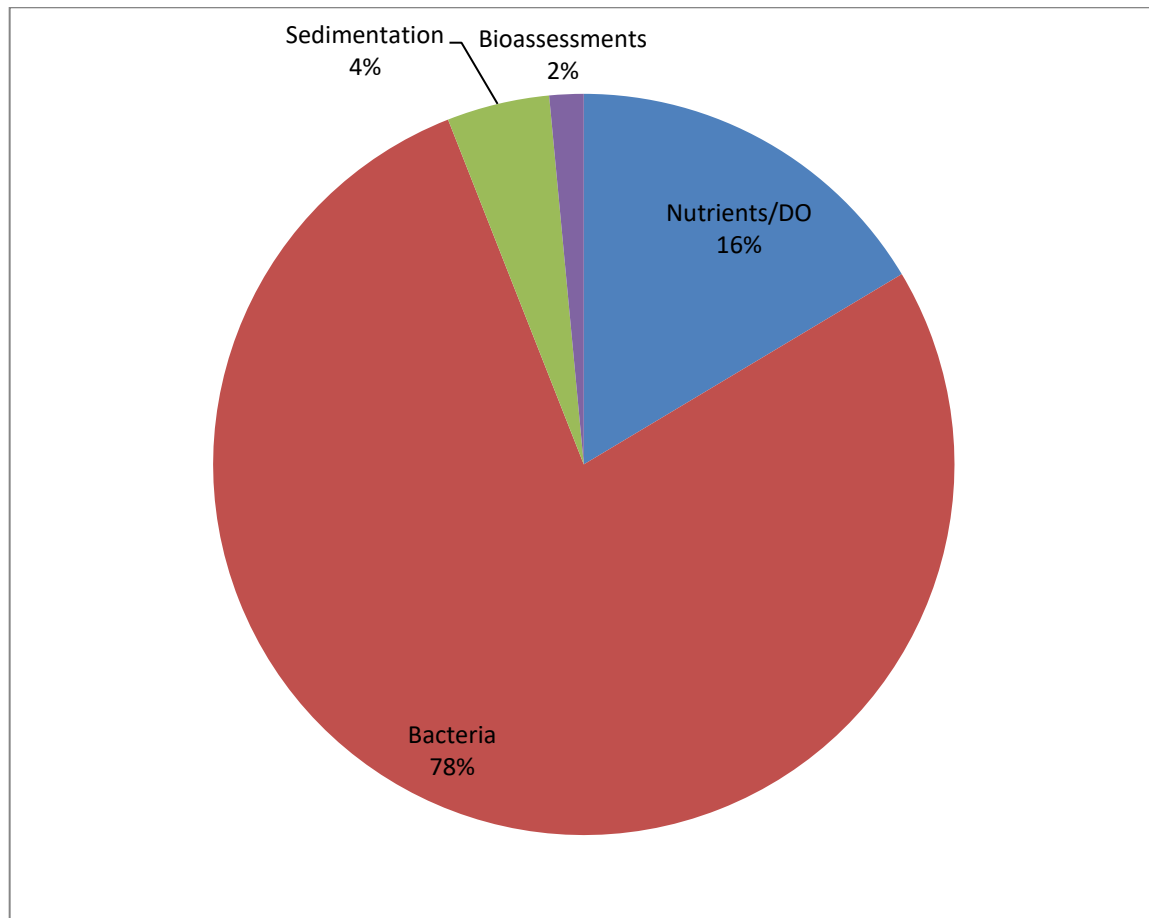
### **Phase 1 Results-High Priority Selection**

The 2014 Section 303(d) list of impaired waters needing TMDLs is represented by 217 individual waterbodies (assessment units) which includes 27 lakes and reservoirs and 189 river and stream segments. This results in 340 individual waterbody/pollutant combinations which are identified as needing a TMDL. From this list of impaired waters, the Phase 1 prioritization identified 67 waterbody/pollutant listings as long term high priorities for TMDL or alternative plan development by 2022. Of these, and as a part of the Phase 1 prioritization, 34 waterbody/pollutant combinations were further prioritized and targeted for near term TMDL or alternative plan development in the next two year timeframe.

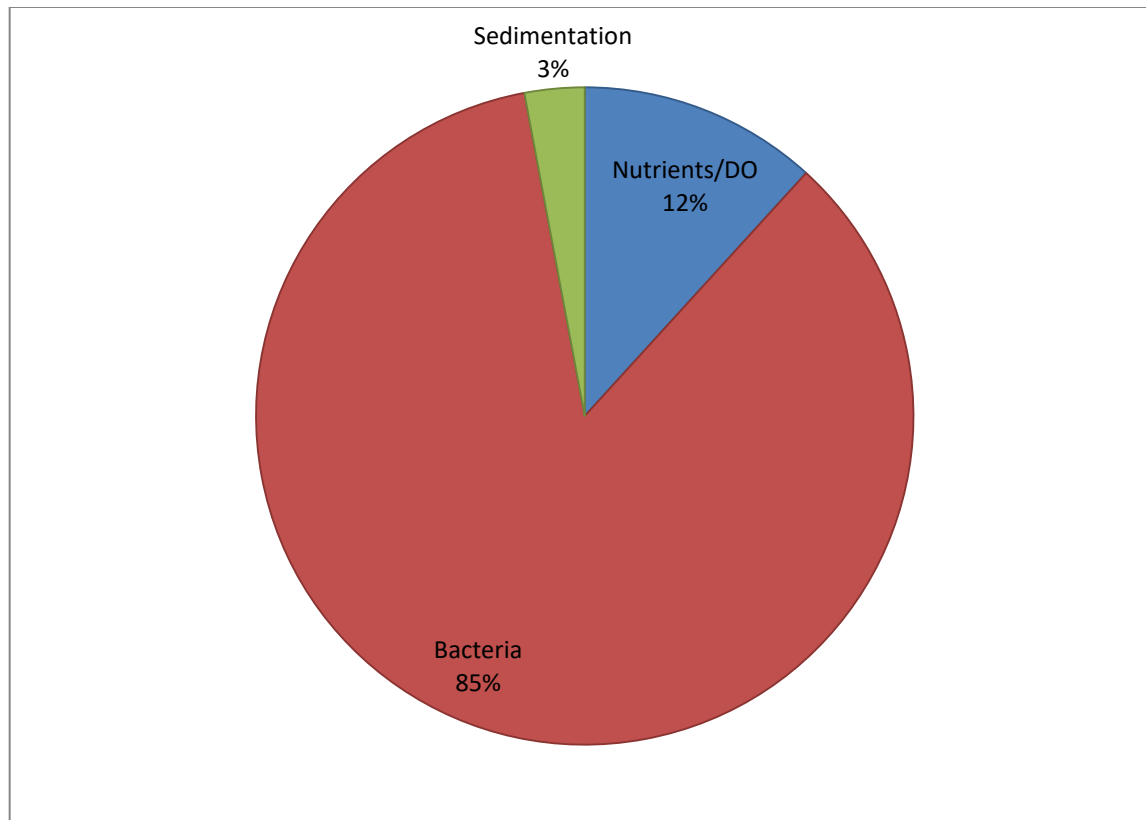
As illustrated in Figure 1, of the 67 pollutant/waterbody combinations identified as high priority in Phase 1 most are E. coli bacteria listings for rivers and stream segments (52), followed by lake/reservoir nutrient/dissolved oxygen/sediment listings (14), and one (1) river and stream

bioassessments (including benthic macroinvertebrates and fish). It should also be noted that many of the waterbody/pollutant combination categories targeted for TMDL development in the next two year cycle (near term) are similar to those indentified for long term TMDL development (Figure 2).

It should be noted that in the case of the high priority lake/reservoir sediment listings and river and with the stream bioassessment listing, these impairment listings will be addressed through alternative plans where a Section 319 Nonpoint Source PIP is already in place to address other nonpoint sources causes (e.g., nutrients, E. coli bacteria). In these cases the PIP will be amended to address the additional impairment causes and their sources.



**Figure 1. Phase 1 Long Term (2016-2022) TMDL and Alternative Plan Development Priorities (n=67).**



**Figure 2. Phase 1 Near Term (2017-2018) TMDL and Alternative Plan Development Priorities (n=34).**

### **Low Priority Impaired Waters Cause Categories**

As described earlier, the WMP identified as low priority, waterbodies and/or waterbody-pollutant combinations listings which had insufficient data for immediate TMDL development, where there was uncertainty regarding the basis for the impairment listing, or where the TMDL was beyond the technical and financial ability of the WMP. Excluded from the list of high priority impaired waters were several categories of waterbodies and/or pollutant causes where there is considerable uncertainty regarding the status of the impairment. The rationale for identifying a waterbody or waterbody/pollutant combination as low priority for TMDL development is described for the following waterbody/pollutant categories.

#### ***Mercury***

Water bodies are listed as impaired due to mercury due to elevated levels of methylmercury in fish tissue. Mercury accumulates in fish tissues as methylmercury, the form that presents the greatest risk to human health through the consumption of contaminated fish. Contributions may come from a combination of local, regional, and global sources. Because of this great variety of potential mercury sources, developing TMDLs for mercury-impaired waters will involve the coordination among multiple programs. Because of the complexity of how mercury moves through natural systems as well as those issues associated with source identification and control, the WMP is identifying TMDL development for mercury impairments as a lower priority while

additional information is acquired and evaluated. While the WMP prepares for mercury TMDL development, fish consumption advisories are in place throughout the State to protect human health.

***Trace Elements-As, Cd, Cu, Pb, and Se (Rivers and Streams)***

TMDLs for trace elements provide another series of challenges for this State's TMDL development. Most of those rivers and streams listed in the State's Integrated Report as impaired for these elements are thought to have significant background levels that may be contributing to the elevated concentrations. It will be necessary to conduct a Use Attainability Analysis to determine if naturally occurring pollutant concentrations are preventing the attainment of the use. As mentioned before, due to the State's limited resources of time, manpower, and funding, the WMP is identifying TMDL development for trace element impairments as a lower priority.

***Sedimentation/Siltation (Rivers and Streams)***

Sediment listings were identified by the WMP as a low priority for TMDL development primarily because the State has no numeric criteria for sediment. Additionally, implementation of BMPs to control nonpoint source pollution through the State's Section 319 Nonpoint Source Program will reduce sediment loading to the watershed along with the reduction of other pollutant loadings. Using the Alternative Plan approach through Section 319 NPS PIPs and including all the waterbody/pollutant combinations in the watershed, reduction for sediment can occur alongside reductions in E. coli bacteria and other NPS pollution without a separate TMDL being created.

***Biological Indicators (Rivers and Streams)***

The WMP has developed ecoregion specific multi-metric indices of biological integrity (IBIs) for North Dakota. This tool is designed to detect environmental stresses that result in alteration of the biological community (i.e., aquatic life impairment), but does not identify specific stressors. Once a segment is listed, the cause of impairment must be identified through additional data collection. Only once the pollutant/cause is identified, can a TMDL be written. For this reason, these aquatic life use impairment listings due to biological indicators were given a low priority for TMDL development.

***Nutrients (Rivers and Streams)***

Rivers and streams listed as impaired for nutrients/eutrophication are considered low priority by the WMP. Narrative nutrient criteria are being proposed for the next triennial water quality standards update later this year. These narrative criteria will provide the justification for the development of numeric thresholds which can be used for water quality assessment and TMDL development. As numeric nutrient thresholds are developed and as waterbodies are assessed as impaired for nutrients, this prioritization will be reviewed, and revised, if necessary. Also, it is believed that with the adoption of BMPs implemented through Section 319 NPS watershed project, a variety of nonpoint source pollutants will be reduced, including nutrients.



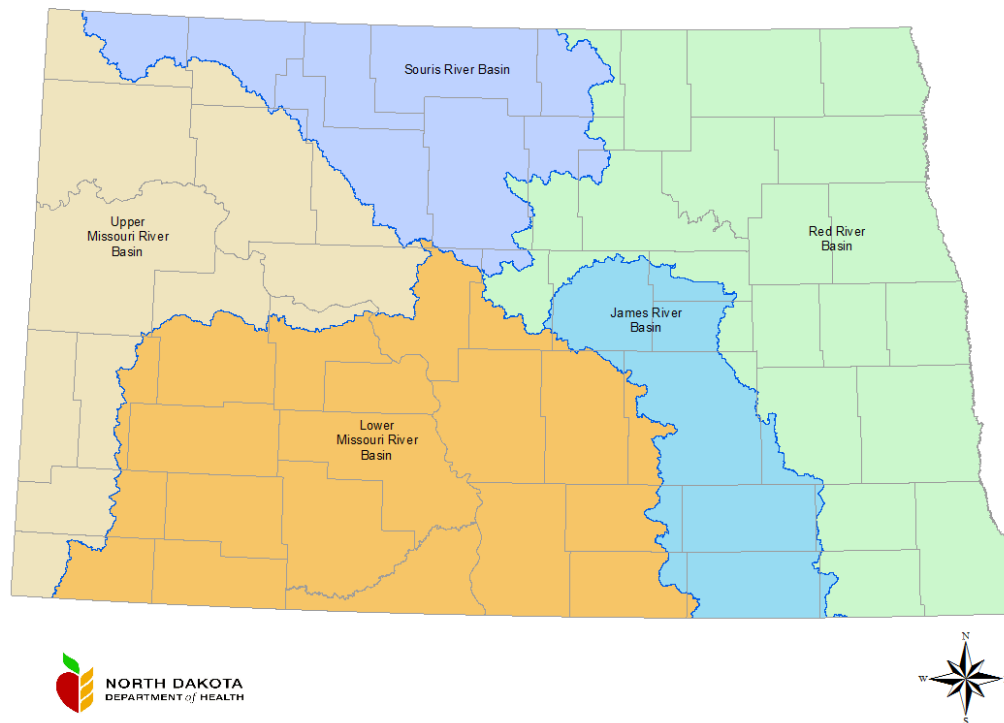
***Nutrient/Dissolved Oxygen/Sedimentation (Lakes and Reservoirs)***

In order to immediately address as many waterbody impairments as possible, a priority focus is on waterbodies where data are both available and recent. Where the data are limited and old, such as for some nutrient/dissolved oxygen/sediment impairments to lakes and reservoirs, these listings were given a low priority for TMDL development. These lakes and reservoirs, while a low priority for TMDL develop, will be a high priority for monitoring and assessment.

**PHASE 2 PRIORITIZATION**

While Phase 1 of the TMDL prioritization process focused on the near term creation of TMDLs and alternative plans, Phase 2 will look at addressing longer term goals and identifying data gaps and information needs through an inclusive stakeholder driven process whereby priorities will be identified in each of the state’s five major river basins (Figure 3). This approach is called the Basin Water Quality Management Framework, and is described below.

As the list of impaired waters changes with each biennial Integrated Report, the state TMDL development priorities will likely change during Phase 2. This may result in priority changes. It is also expected that TMDL development priorities will be adjusted as the WMP implements the Basin Framework.



**Figure 3. Major River Basins in North Dakota.**

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## **Overview of Basin Water Quality Management Framework**

To improve the delivery of its water quality management programs, the WMP recognized the need for a locally-led process to identify and address water quality restoration and protection issues in the State's major river basins. The North Dakota Basin Water Quality Management Framework (Basin Framework) was developed to serve as a guide for water quality management planning and implementation through a targeted basin management approach (Appendix A). This process will also promote a more coordinated effort for the collection and sharing of data and information, increased availability of technical and financial resources, and more focused and effective water quality management activities. Phase 2 of the prioritization strategy, which will help refine the prioritization of the remaining 86 waterbody/pollutant combinations identified in Phase 1 as well as future waterbody/pollutant listings, will be guided by input which will be obtained from basin stakeholders through implementation of the Basin Framework.

Starting with the Red River Basin, a Basin Stakeholder Advisor Group (BSAG) will be organized. This BSAG will be made up of stakeholders living in the basin who have a resource interest in the basin, and will provide local leadership to assist the WMP in the development of priorities for impaired waterbodies within the basin. Priorities for each basin in the State will be included in that basin's 5-year basin plan. Basin Technical Advisory Groups (BTAG) will provide technical guidance for plan development and will be made up of various agencies, academic representatives, and resource professionals.

## **Overview of the Recovery Potential Screening Tool**

The primary method used for prioritization within the Basin Framework will be the Recovery Potential Screening Tool (RPST). The RPST is a watershed prioritization tool that uses several ecological, stressor, and social indicators which are selected based on a watershed management scenario or question being asked. The RPST has the advantage over other watershed prioritization methods in that it also measures the likelihood of success regarding the management or restoration efforts applied to a watershed.

Below are descriptions of the three types of indicators:

- The ecological index score reflects overall condition and the capacity of the watershed to regain functionality, based on metrics related to natural watershed processes and structure.
- The stressor score reflects the pressures on watershed condition from several primary sources of pollutants and water quality impairments.
- The social context score includes many factors, such as community involvement, incentives, economics, governance, regulation, and planning status that do not constitute watershed condition but often strongly influence the level of effort and complexity of making improvements.

The BSAGs along with the WMP will identify a few indicators specific to their basin from each category. Using these indicators, the tool calculates individual index scores as well as a combined

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Recovery Potential Index score, which then can be used to focus TMDL development and alternative plan priorities in support of waterbodies with the greatest potential for restoration. These priorities will be used in the development of the 5-year basin plan. For more information about the RPST, please reference

<http://water.epa.gov/lawsregs/lawsguidance/cwa/tmdl/recovery/overview.cfm>

Initial work in the development of the North Dakota RPST has been completed and several indicators have been added. Based on the availability of information and other feasibility considerations, the WMP will continue to add RPST indicators as each basin's 5-year basin plan is developed and issues of concern for the BSAG are identified.

After the development of a 5-yr basin plan, organization of the next basin's BSAG will occur. This process will continue until all five basins in North Dakota (Figure 3) are addressed. It is expected that the list of 129 priorities remaining after 2017 will grow as each basin contributes to the discussion of impairments in their watershed and nutrient criteria for the State are finalized.

**Appendix A**  
**North Dakota Basin Water Quality Management Framework**

**North Dakota Basin Water Quality  
Management Framework  
2015-2027**

**Final  
October 2015**

**North Dakota Department of Health  
Division of Water Quality  
Surface Water Quality Management Program**



## **Introduction**

The North Dakota Department of Health, Division of Water Quality's Surface Water Quality Management Program (SWQMP) is responsible for the development, implementation and delivery of several water quality management programs, including monitoring and assessment, Total Maximum Daily Loads (TMDLs), Section 319 Nonpoint Source Pollution Management and nutrient management. To date, the SWQMP has implemented these programs and projects on a statewide basis which has led to a lack of watershed priorities and an inefficient allocation of limited resources, both technical and financial.

To improve the delivery of its water quality management programs, the SWQMP recognizes the need for a locally-led process to identify and address water quality restoration and protection issues in the state's major river basins. In response, the SWQMP has developed the "North Dakota Basin Water Quality Management Framework" (Basin Framework). The purpose of this framework is to serve as a guide for water quality management planning and implementation through a targeted basin management approach. It is also anticipated that the basin water quality management planning process will promote a more coordinated effort for the collection and sharing of data and information, increased availability of technical and financial resources, and more focused and effective water quality management activities.

## **Vision and Mission**

As stated in the North Dakota Department of Health's Strategic Plan (2011-2015), the mission of the North Dakota Department of Health (NDDoH) is "to protect and enhance the health and safety of all North Dakotans and the environment in which we live." To accomplish this mission the NDDoH is committed "to preserving and improving the quality of the environment," including the state's water resources.

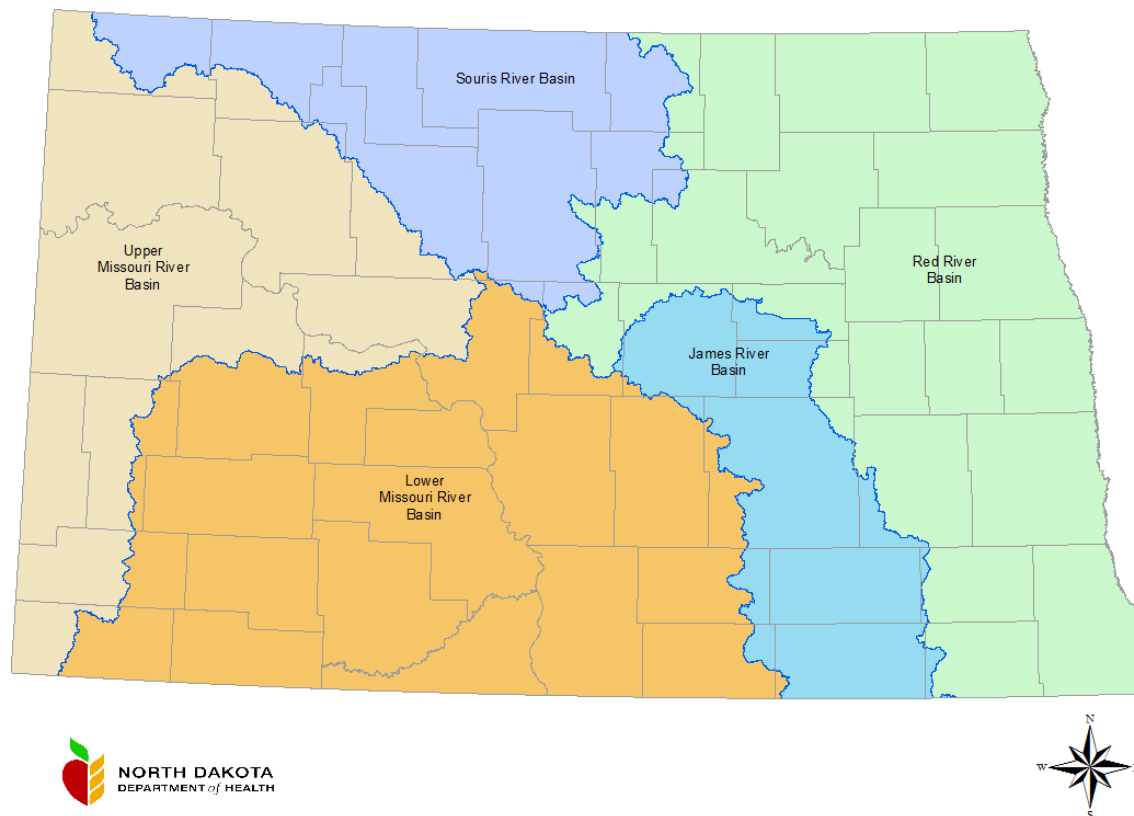
To accomplish the NDDoH's mission, the SWQMP has as its **vision** "to protect and restore the water quality and beneficial uses of the state's rivers, streams, lakes, reservoirs and wetlands through an integrated basin management approach" and as its **mission** "to develop and implement an efficient and coordinated process for the delivery of water quality monitoring, assessment, restoration and protection programs, projects and activities in the state's major river basins."

## Basin Water Quality Management Framework

The Basin Water Quality Management Framework (Basin Framework) is organized around five major river basins in the state (Figure 1):

1. Red River Basin;
2. James River Basin;
3. Souris River Basin;
4. Upper Missouri River Basin (including Lake Sakakawea); and
5. Lower Missouri River Basin (including Lake Oahe).

The SWQMP will begin implementation of the Basin Framework with the Red River Basin. The SWQMP is starting with the Red River Basin because this basin already has a well established stakeholder structure (i.e., Red River Basin Commission) which will facilitate and aid in the organization of a Basin Stakeholder Advisory Group (BSAG) and with collection of existing information and data. The order in which basins will be selected for implementation of the Basin Framework in subsequent years will be determined by the SWQMP as the Basin Framework is further developed and implemented.



**Figure 1. Major River Basins in North Dakota.**

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## **Roles and Responsibilities**

The SWQMP is committed to providing the necessary assistance to develop a locally led process for basin water quality management. SWQMP staff will assist newly formed BSAGs through each step of the basin water quality management planning process. Initially, SWQMP staff will aid in the gathering of existing data and information, identifying data gaps and preparing a summary report which describes water quality and resource conditions in the basin, as well as, where there is a need for additional data and information (see Phase 1 Goal, Objective 2).

The first step in implementing the Basin Framework in a specific basin will be the formation and organization of the Basin Stakeholder Advisory Group (BSAG). Each BSAG will be made up of stakeholders living in the basin who have a resource interest in the basin. The BSAG will provide the local leadership for developing and implementing each Basin Water Quality Management Plan (Basin Plan). Each BSAG, in cooperation with the SWQMP, will be responsible for overseeing the two phases of the Basin Plan. The BSAG will be responsible for the facilitation, coordination and implementation of the water quality assessment, restoration and protection, and education activities outlined by the basin plan.

The Basin Technical Advisory Groups (BTAGs) will provide expertise and technical guidance to the BSAG for the development and implementation of the basin plan. It is anticipated that members of this group will be primarily from state and federal agencies and academic representatives, including, but not limited to the NDDoH, US Geological Survey, Natural Resources Conservation Service, US Fish and Wildlife Service, ND State Water Commission, ND Game and Fish Department, ND Department of Agriculture, ND Forest Service and NDSU Extension.

Utilizing the data that has been gathered, the BSAGs will identify and prioritize water quality problems and issues in the basin. It is expected that the primary method for prioritization will be through the use of the Recovery Potential Screening Tool (RPST). The RPST is a watershed prioritization tool that uses several ecological, stressor, and social indicators which are selected based on the watershed management scenario or question being asked. The RPST has the advantage over other watershed prioritization methods in that it also measures the likelihood of successful management or restoration efforts in a watershed. The precise indicators selected for use in the RPST will vary based on the watershed management scenario, question, or priority interest (e.g., pathogen impairments, urban waters, heavily agricultural watersheds).

The SWQMP will work with the BSAG and associated BTAG in each basin to implement the RPST in each basin. Based on the results of the RPST, the BSAGs will set watershed and educational priorities within the basin and develop a 5-year basin plan from its list of priorities. SWQMP staff will provide the necessary technical assistance to finalize the plan and secure financial assistance for the implementation of the priority projects. In subsequent years, SWQMP staff will be committed to providing technical support in the form of identifying changes and amendments to the plan based on issues identified during plan implementation, training and guidance for field staff, and maintaining communications with the BSAGs to insure the success of the Basin Plans.



Over the long term, the BSAG's, in cooperation with the BTAGs and the SWQMP, will be responsible for all updates to the Basin Plans. Also, the BSAGs may choose to evolve into a more formalized structure and take a more proactive approach in implementing their Basin Plan.

### **Phased Basin Water Quality Management Planning and Implementation Approach**

Phase one of each basin water quality management planning process will involve development of an initial Basin Plan. The phase one Basin Plan will be the key document used by the BSAG and its partners to: 1) describe resource conditions in the basin; 2) identify water quality management priorities; 3) identify information and education priorities; 4) schedule implementation of priority projects; and 5) estimate financial needs for the five year project implementation period. An outline describing the proposed elements of a Basin Plan is provided in Appendix A.

Phase two of the basin water quality management planning process will involve updating the initial Basin Plan. To coincide with the five major river basins on which this Framework is organized, each phase two Basin Plan update will be completed on a 5-year cycle. Updates to the Basin Plans will be conducted to: 1) evaluate the progress/success of implementation projects and activities; 2) measure the performance of meeting Basin Plan goals and objectives; 3) incorporate new data; 4) set new Basin Plan goals and objectives; and 5) establish schedules for new or ongoing priority projects.

Key to the implementation of the Phase 1 Basin Plans and Phase 2 Basin Plan updates will be the adaptive management process. Adaptive management, also known as adaptive resource management (ARM), is a systematic approach for improving resource (or in this case water quality) management policies and practices by learning from management outcomes. ARM acknowledges uncertainty about how natural resource systems function and how they respond to management actions. ARM is designed to improve our understanding of how a resource system works, so as to achieve management objectives. ARM also makes use of management interventions and follow-up monitoring to promote understanding and improve subsequent decision making. In the context of the Basin Framework, ARM consists of the development, implementation and evaluation of a Basin Plan. If a desired outcome is not accomplished, then the plan will be modified or changed. It is expected that this phase of the planning and implementation process will be repeated several times throughout the 5-year cycle as new data becomes available and lessons are learned. Therefore, the Basin Plan will be a dynamic and living document with changes expected.

### **Goals, Objectives and Tasks of the Basin Water Quality Management Framework**

Goals, objectives and tasks for development, implementation, and continuation of the Basin Water Quality Management Framework are:

**Phase 1 Goal** – Develop and implement an initial Basin Water Quality Management Plan (Basin Plan) for each of the state's five major river basins

**Objective 1.** Establish a Basin Stakeholder Advisory Group (BSAG) for each major river basin which will be responsible for the development and implementation of the basin plan.

- Task 1. Coordinate with “core” local entities (e.g., soil conservation districts, water resource boards) to identify specific local organizations/agencies to be represented on the BSAG. BSAG membership will be limited to representatives with water management and resource interests in the basin.
- Task 2. Convene an initial meeting with the full membership of the newly formed BSAG to discuss roles and responsibilities of the BSAG, establish an organizational structure, and set a schedule and milestones for developing and completing the initial Basin Plan.
- Task 3. Establish a Basin Technical Advisory Group (BTAG) for each major river basin. Each BSAG will work with the SWQMP to identify agencies/organizations to be on the BTAG and to define the responsibilities of the BTAG in the development and implementation of the Basin Plan.
- Task 4. Identify resource needs (e.g., staffing, funding) and responsibilities (project reviews, prioritization) for organizing and conducting BSAG meetings and other activities related to the development and implementation of the Basin Plan.

**Objective 2.** Compile existing information/data and determine information needs and data gaps.

- Task 1. Identify existing reports, plans, studies, and datasets to characterize water quality and resource conditions in the basin.
- Task 2. Determine data gaps and additional information that is needed to characterize water quality and resource conditions in the basin and in watersheds and sub-watersheds in the basin..
- Task 3. Complete a summary report which describes water quality and resource conditions in the basin, as well as, where there is a need for additional data and information.

**Objective 3.** Identify priority water quality management issues, problems and concerns in the basin.

- Task 1. Based on existing data and information (see Objective 2) and input from the BSAG, BTAG, and the SWQMP, identify and prioritize water quality management issues, problems and concerns in the basin and at the watershed (10 digit HUC) and sub-watershed (12 digit HUC) scale within each basin.

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**Objective 4.** Establish basin water quality management program and project (e.g., monitoring and assessment, TMDL, Section 319 NPS source pollution implementation, nutrient reduction) priorities in the basin which will address priority water quality problems, issues and concerns in the basin (see Objective 3).

Task 1. Develop water quality management scenarios and/or questions which will be the basis for the development of basin prioritization.

Task 2. Using the Recovery Potential Screening Tool (RPST) or other standardized prioritization methods, establish priorities for water quality management programs, projects and activities in the basin. Note: For most water quality management scenarios and/or questions, basin priorities will be established at the watershed or sub-watershed scale.

Task 3. Identify potential roadblocks to the implementation of basin priorities.

Task 4. Identify short (1-5 years) and long term (5-10 years) basin water quality management priorities.

**Objective 5.** Educate and inform the public as to the basin issues that were used to develop the goals, objects and priorities described in the Basin Plan.

Task 1. Define information and education goals and objectives based on the stakeholder representation.

Task 2. Identify and analyze the target audience.

Task 3. Create and package the message.

Task 4. Distribute the message by using methods and/or focus groups as the BSAG and BTAG determines most effective (e.g. media outlets, public meetings, etc.).

Task 5. Create evaluation criteria and a schedule to determine effectiveness, update content, and make changes.

**Objective 6.** Develop five year Basin Plan.

Task 1. Using the outline provided in Appendix A as a template, develop a 5-year Basin Plan. The Basin Plan will describe the programs, projects and activities that, when implemented, will address priority water quality problems and issues in the basin. The Basin Plan should also include milestones for implementation and identify performance criteria for meeting

basin goals.

**Objective 7.** Secure financial support and implement priority programs, projects and activities in the basin.

Task 1. Compile list of potential funding sources from federal, state, local, nonprofit, and industry organizations.

Task 2. Identify sponsors for the implementation of priority programs, projects and activities in the basin.

Task 3. Work with sponsors to secure funding for the implementation of programs, project and activities indentified in the Basin Plan.

**Objective 8.** Evaluate progress in meeting the Phase 1 Basin Plan goals, objectives and tasks.

Task 1. Determine the extent of implementation of priority projects.

Task 2. Complete a summary of Basin Plan implementation progress, including a description of lessons learned, financial issues, and project improvements.

### **Phase 2 Goal – Long Term Implementation, Support, and Revision of Basin Plan**

The goal of Phase 2 is to provide ongoing updates to the Basin Plan based on ARM, the summary of Phase 1 progress (see Phase 1 Goal, Objective 8), and long term support for assessment and implementation projects identified as priorities in the Basin Plan. This will be accomplished by making any necessary modifications to the BSAGs and/or BTAGs, revising watershed priorities, if needed, identifying additional data gaps and educational needs, and continued support of priority projects. To assure these objectives are met, basin monitoring and assessment will be conducted to evaluate the progress of the Basin Plan.

**Appendix A**  
**Basin Plan Template**

## **River Basin Water Quality Management Plan Outline**

### **A. Introduction**

- 1) Overview of the basin, major industries, landuse, etc.
- 2) Identify current state or locally driven water quality monitoring activities in the basin
- 3) Describe the relationship/interaction of the basin plan with the statewide Basin Framework and other Programs addressing water quality.
- 4) Summarize the purpose/focus of the basin plan

### **B. Basin Description**

- 1) General description of the basin - landuse, industries, waterbody types, population, cities, land ownership, etc.
- 2) Current and state/federal/local programs focused on water quality restoration and assessment. (e.g., USDA Programs, state & local monitoring programs, 319 projects)
- 3) Current water quality and beneficial use conditions

### **C. Beneficial Use Impairments and Pollution Sources and Causes**

- 1) Identify documented beneficial use impairments (e.g., listed waterbodies, TMDLs)
- 2) Point Sources – Identify sources and types of point source pollution, associated beneficial use impairments, and industry in the state. Also identify known solutions
- 3) Nonpoint Sources - Identify sources and types of NPS pollution; associated beneficial use impairments; and related industries in the state. Also identify known solutions.
- 4) Identify emerging or potential point/nonpoint source pollution sources and causes

### **D. Management Plan Purpose**

- 1) Describe the goals and objectives of the Plan

### **E. Advisory Committees and Partnerships**

- 1) Describe interaction with other state/local/federal agencies, NGO's and other entities to coordinate and/or pool financial and technical resources focused on water quality management
- 2) Identify membership on the Statewide Pollution Management Task Force and describe roles and responsibilities in the review of statewide Also describe the Task Force role in the review of basin-specific plans and projects.
- 3) Describe potential membership on the BSAGs and BTAGs and the roles these groups play in the development and implementation of the basin-specific management plans and local projects within the basins.

### **F. Water Quality Management Goals and Priorities**

- 1) Identify basin-wide pollution priorities; subwatershed priorities for assessment and restoration; healthy watersheds priorities and land management priorities.
- 2) Set goals for priorities and establish milestones for gauging progress toward those goals
- 3) Describe process for soliciting and selecting assessment, restoration or protection projects in the basin

### **G. Assessment, Restoration and Protection Initiatives**

- 1) Identify Basin and Local Assessment Projects and Prioritization and Planning Programs. The QAPPs and budgets can be attached in the appendices of the Plan
- 2) Identify Watershed Restoration and Protection projects and Basin-wide Actions and Programs. The PIPs, QAPPs and budgets can be attached in the Plan appendix

### **H. Public Out-Reach and Education**

- 1) Describe the strategy for basin and local level public out-reach.

2) Identify basin and local level public education programs for the 5-year period. The PIPs and budgets can be attached in the Plan appendix

I. Milestones for Gauging Implementation Progress

1) Table displaying the 5-year and interim milestones and outputs for local projects and basin-wide activities supported under the plan

J. Financial and Technical Support

1) Identify financial and technical assistance available through the NDDoH and describe the processes for soliciting assistance to support basin plans/projects.

2) Identify and describe other local, state and federal sources for financial and/or technical support for water quality improvement projects.

K. Evaluation and Reporting

1) Describe annual reporting requirements and performance measures at the basin and local levels.

2) Identify responsibilities and timelines for reporting monitoring and evaluation results to the BSAGs, NDDoH, local residents and project partners.